# EARTHQUAKE HAZARD ANALYSIS FOR BANGLADESH

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BY

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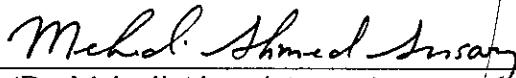
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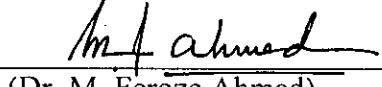
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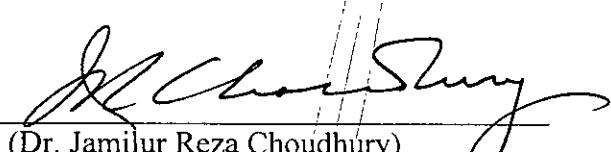
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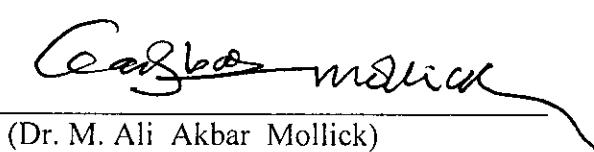
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ABSTRACT

As a first step in earthquake disaster mitigation, this study aims to identify and evaluate the seismic hazards in Bangladesh. The seismic environment of Bangladesh is first studied. This includes geological and seismotectonic setup in Bangladesh, probable major seismic sources, existing zoning maps/etc.

Due to the lack of a proper seismotectonic map in the region under consideration, the insufficiency of data and high uncertainties in seismic source parameters, a simple model for earthquake occurrence using a newly developed earthquake catalogue is used. Initially a detailed earthquake catalogue analysis is carried out to understand the nature of seismicity. For the development of the catalogue, earthquake data are collected from various sources, such as ISC, ISS, USGS, RRLJ and other independent researchers. Different correlations are developed using the collected data to homogenize earthquake magnitudes. The data completeness of the earthquake catalogue is examined and the time periods in which the data are complete are identified for each magnitude. For the maximum use of the available data, the data of the large earthquakes are taken from the long time period while the data of small earthquakes are taken from the shorter time period in which they are complete.

Using the simple catalogue based model, the seismic hazard at 42 points in Bangladesh is estimated. The seismic hazard maps are presented as contour maps in terms of horizontal Peak Ground Acceleration (PGA) based on 50, 100, 200 years return period and 10% probability of exceedance in a design life of 50 years. A return period seismic hazard map for $PGA \geq 150$ cm/s^2 is also presented. In addition expected Ms values for 34 points are estimated for 50, 100 and 200 years return period

By comparing the seismic base shear coefficients with the values of the hazard maps, a new seismic zoning map for short period structures are proposed based on the 200 year PGA. Similar to the BNBC 1993 seismic zoning map, the proposed map has three seismic zones. It assigns higher seismicity to Bandarban, Faridpur, Kustia, Natore,

Nilphamari, Panchogarh, Rajshahi, Sandwip and significant part of Bogra, Cox'sbazar, Khagrachari, Noakhali, Rangamati and Rangpur. These areas have been assigned low seismicity in the seismic zoning map of BNBC 1993.

The findings of this study shows that considerable seismic hazard exists for major parts of the country. Based on the 1991 Census data and proposed seismic zoning map, about 42 million people, representing one third of the total population live in Zone 3 (38% area), i.e. areas which may be classified as "liable to severe damage", another 52 million (i.e. approx. 46% of the population) live in Zone 2 (39% area), i.e. areas "liable to moderate damage" and the rest 19 million population live in Zone 1 (23% area), i.e. areas "liable to slight damage". The outcome of this study, coupled with vulnerability studies, must guide, stimulate and facilitate the efforts of the respective government, the earthquake engineering and the disaster mitigation planning communities to take specific practical preventive measures to reduce seismic risk of Bangladesh.

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NOTATIONS

D	epicentral distance in kilometers
∇	epicentral distance in degrees
h	depth of focus
r	hypocentral distance
y	peak ground acceleration
M	earthquake magnitude
M_s	surface-wave magnitude
M_b	body-wave magnitude
M_d	duration magnitude
p	probability
ν	mean annual occurrence rate
t	given time
a & b	regression parameters
T	return period
$b_1..b_4$	coefficients of attenuation law
A/T	maximum value of the ratio of ground displacement amplitude in microns and T in seconds
PGA	Peak Ground Acceleration
NEIC	National Earthquake Information Centre
ISS	International Seismological Summary
ISC	International Seismological Centre
USGS	United States Geological Survey
RRLJ	Regional Research Laboratory, Jorhat

CHAPTER ONE
INTRODUCTION

1.1 GENERAL

Earthquake is one of the most deadly natural disasters that may affect the human environment. Even a relatively moderate earthquake can lead to a very large number of deaths. For example, the February 29, 1960 Morocco earthquake with magnitude of only 5.8 caused as many as 15,000 deaths. Although earthquakes may affect rural as well as urban areas, damage due to earthquakes is usually maximum when urban areas are affected. There are records of whole cities being destroyed by earthquakes.

Bangladesh is one of the most disaster prone countries in the world. Floods, cyclones and storm surges are the major disasters and earthquakes, droughts, tornadoes, river erosions are other types of disasters in this country. Although in recent past no major earthquake has affected this country, a major event may affect the country any moment. It may be noted that the 1897 Great Indian earthquake with a magnitude of 8.7 and considered to be one of the strongest earthquakes in the world, originated at a epicentral distance of only 230 km from Dhaka. While the earthquake affected almost whole of Bangladesh, damages were very severe particularly in Sylhet, Rangpur and Mymensingh. In the city of Dhaka most of the brick masonry buildings either collapsed or were severely damaged (Oldham,1899). The low incidence of severe earthquakes affecting Bangladesh during the 20th century has led to a situation where most of the population and policy makers don't perceive seismic risk to be important. However, due to increasing number of buildings, bridges and industrial structures being built during the last two decades, proper assessment of hazard due to earthquakes is essential. Underestimation of the hazard may lead to unsafe structures, whereas overestimation will lead to unnecessary increase in investments.

Considering the seismicity of Bangladesh, disaster mitigation is needed and should be undertaken. Generally the seismic hazard should be evaluated. In particular, the first step in disaster mitigation is to recognize the existence of this risks. The next step is to

quantify the risk and to minimize its effect. The total elimination of risk may be difficult and impractical. Moreover in developing countries like Bangladesh, economic considerations usually take precedence over safety and reliability considerations in engineering design.

Generally, the outcome of a hazard assessment is presented on a map in which locations or zones with different levels of hazard potential are identified. Seismic hazard maps are practical tools in seismic design of structures because they provide important guidance when it is not feasible to do the earthquake hazard assessment at particular sites. These maps give a good indication on the areal extent of expected strong shaking for large earthquakes. This study aims to present the seismicity of Bangladesh and seismic hazards in Bangladesh comprehensively.

The findings of this study would benefit engineers and city planners by providing useful information regarding earthquake hazards for a given site, and should be an integral part of the whole process of economic and social development in Bangladesh. They constitute a fundamental means which should guide officials at the national and regional levels in the formulation of development strategies in seismically active zones, land use management, revision and enforcement of appropriate building codes and formulation of plans for mitigating measures against earthquake risk affecting the region considered.

1.2 SCOPE AND OBJECTIVES OF PRESENT RESEARCH

Both the seismic hazard analysis and the establishment of seismic hazard maps are made difficult in Bangladesh due to lack of homogeneous, accurate and complete data. The existing catalogue of earthquake in Bangladesh is incomplete and consists of non uniform magnitude, therefore the primary objective is to develop an homogeneous, complete and accurate database (catalogue). The collected data will then be used for hazard analysis for Bangladesh and neighbouring region. In the first stage data will be stored for data completeness for a particular magnitude range of earthquakes. These data will then be used for hazard analysis. The result of this

analysis will be presented in the form of maps for different return period of earthquakes. The two specific objectives are as follows:

- To develop a homogeneous and complete earthquake catalogue

- To develop seismic hazard maps for Bangladesh

Figure 1.1 shows the earthquake catalogue and seismic hazard analysis through a flow chart.
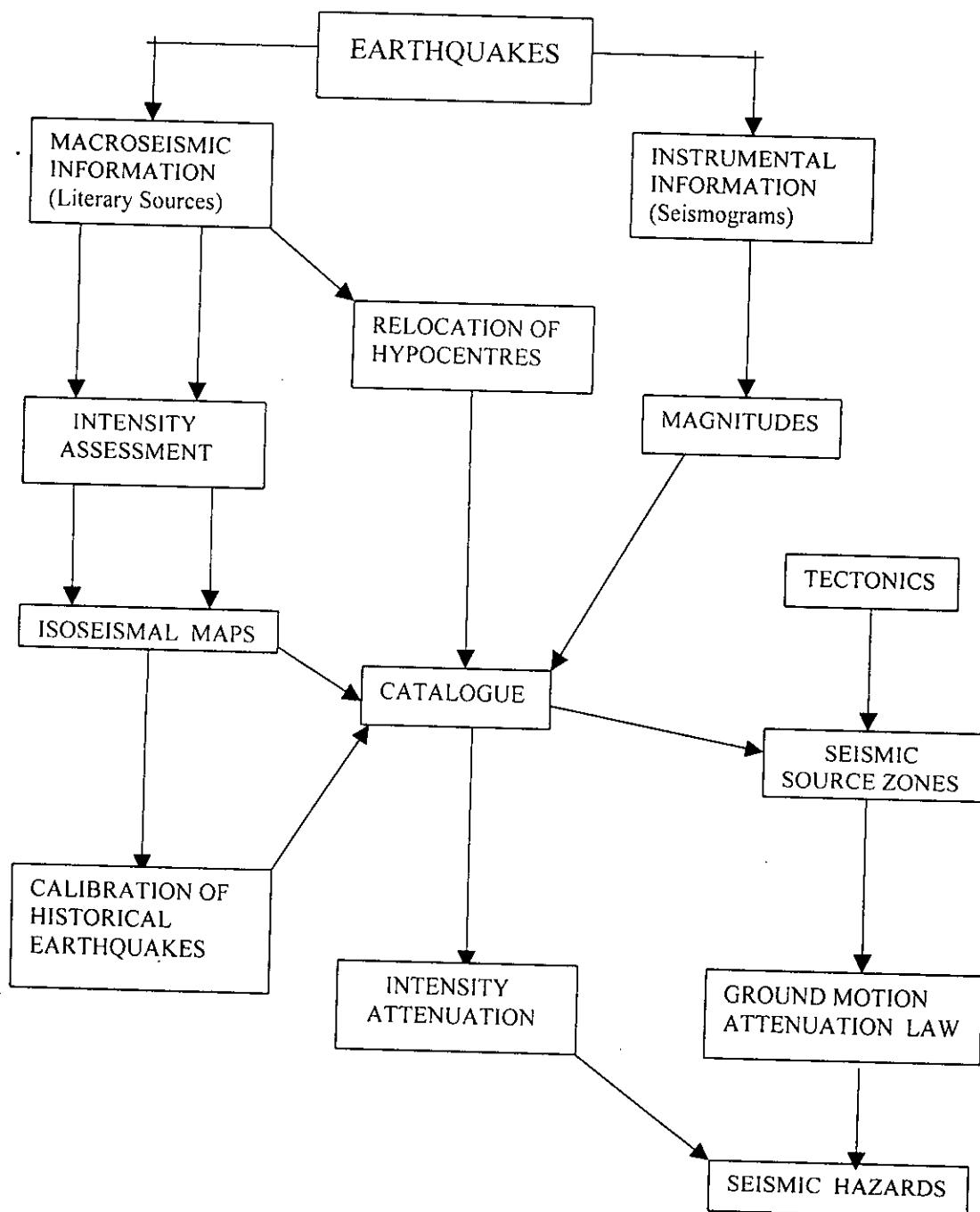
Fig 1.1 Earthquake catalogue and seismic hazard analysis flowchart

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1.3 OUTLINE OF THE STUDY

The remaining of the thesis consists of four chapters.

Chapter two reviews the seismic environment prevailing in Bangladesh as a part of the evaluation of seismic risk. Important tectonic features of Bangladesh and evolution of seismic zoning maps are also discussed. Short description of some historical earthquakes and some recent earthquake are also presented.

Chapter three deals with the earthquake catalogue. This includes calculation of surface wave magnitudes of some earthquake from raw data, development of correlations between surface-wave magnitude and body wave magnitude, surface-wave magnitude and duration magnitude surface-wave magnitude and number of stations (NS) which recorded an event. Surface-wave magnitude of all earthquakes are determined wherever possible. Data completeness is also checked.

Chapter four deals with the seismic hazard for Bangladesh. Seismic hazard is evaluated by a simple method which uses the historical occurrence of earthquakes. Using assumed attenuation law for Bangladesh, basic seismic risk parameter is calculated. Contour maps of the seismic hazards are then developed.

Chapter five presents the conclusion and recommendation for further study.

CHAPTER TWO
GEOLOGY AND SEISMOTECTONIC HISTORY

2.1 GENERAL

Bangladesh is a moderately seismic region. It is a known fact that earthquakes do not occur just anywhere. They tend to cluster around defined areas or lines. Figure 2.1 shows plate boundaries and earthquake epicenters of the world. Bangladesh and its adjoining areas is situated in the northeast part of the Indian subcontinent where earthquakes frequently occur. This region lies along the border of Eurasian and Indo-Australian plates.

The Plate Tectonic theory states that the earth's crust is composed of plates which move relative to one another because of natural forces acting on these plates. Ninety percent earthquakes occur along the boundary of these tectonic plates. Earthquake also occur due to volcanic eruption, man made activities such as reservoir induced, excavation, mining etc.

2.2 PHYSICAL GEOLOGY

Physically Bangladesh may be classified into four distinct regions each having distinguishing characteristics of its own as shown in Fig 2.2. The four regions are as follows:

- Flood Plains of the Ganges, the Brahmaputra and the Meghna river system.
- The Great Table Land.
- The Delta and
- The Eastern and Northern Frontier Hilly Regions.

The flood plains of the Ganges, the Brahmaputra, and the Meghna cover approximately forty percent of Bangladesh. The elevation of major part of flood plains of these three great rivers ranges from 3 meter to 15 meter above sea level. The flood plain covers almost all of the regions of the Rajshahi and Dhaka division except the Table Land of Barind Tract and the Modhupur Garh. Flood plains of the upper reaches of the Meghna and the Surma also covers the district of Sylhet and Northern

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part of Comilla. One characteristic feature of the flood plains is that numerous swamp have developed in flood plains.

The Table Lands are large blocks of high lands that exhibit smooth rolling topography. The major Table lands areas are the Barind Tract in Rajshahi, Bogra and Dinajpur districts, the Modhupur Garh in Dhaka, Tangail and Mymensingh districts and a small area of Lalmai Hills in Comilla district. The Table Land covers an area of about ten percent of Bangladesh. These Table Lands are product of Pleistocene vertical upheavel and look like a chain of isolated circular of elongated low hillocks standing at a higher level than the surrounding flat alluvium. The Table Lands and the sediments underlying it are affected by a series of faults. According to Morgan and McIntire (1959), the Modhupur clay has not been folded but is broken into a number of fault blocks, some of which have been slightly tilted.

The maximum elevation of the Table Lands above mean sea level is about 55 meter in the district of Dinajpur, 32 meter at Lalmai and 16 meter in the district of Dhaka and Mymensingh.

The present delta in Bangladesh is a combination of three deltas, namely- the Ganges delta, the Old Brahmaputra-Meghna delta and the Ganges-Jamuna-Meghna delta. The deltas covers approximately about 32 percent of the country including the rivers. The height of the deltas range from 3 to 16 meter.

The Eastern and Northern frontier hilly Region comprise of the Eastern hills, hills of Lalmai and north –eastern Sylhet district and a narrow strip of a series of low hill range and isolated circular and elongated hill looks along the northern frontier of Sylhet and Mymensing districts. Towards the east of Chittagong and Hill Tracts districts the elevation of the hills get higher with steep slopes until they reach the highest hill range, near the border region of Bangladesh, Burma and India. The heighest peak of the hill at Mowdak Mual (Khan, 1991) reaches and elevation of about 1003 meter from the sea level.

The Lalmai Hill covers a very small area in Comilla district and heighest peak is about 64 meter above the sea level.

The maximum elevation of the hill of Norhern frontier of Sylhet and Mymensingh district reaches 61 meter above the sea level at Jaflong. The total hilly area occupy 18 percent of Bangladesh.

2.3 REGIONAL TECTONICS

Plate tectonics provides a physically simple mechanism for large-scale horizontal motions of separate portions of the earth's crust. One of the central concepts of plate tectonics is that a small number of large plates of high strength lithosphere, move rigidly with respect to one another at rates of 1 to 20 cm/year over the low-strength asthenosphere. According to Molnar and Tapponnier (1975) for the past 40 million years the Indian subcontinent has been pushing northward against the Eurasian plate at a rate of 5 cm/year, giving rise to the severest earthquakes and most diverse land forms known. Figure 2.3 shows India's northward drift over the last 70 million years.

The region of northeastern India, northern Burma and Southwestern China is tectonically and seismically one of the most interesting active plate boundaries. The region comprises the Himalayas, the Indo-Burma Ranges, the Tripura folded belt, the Bengal Basin, the Shillong Plateau and the Assam Valley. Figure 2.4 shows the tectonic features of the Indian subcontienent in terms of plate tectonics and Fig 2.5 shows the tectonic map of northeast India and northern Burma.

Bangladesh occupies major part of the Bengal Basin. It is a rifted eastern marginal basin of Indian plate that is gradually shortening due to the subduction of the Indian plate and overriding of the Burmese plate from the east.

2.4 SEISMOTECTONIC SETUP

Khandaker (1989) has divided Bangladesh into three major tectonic zones:
(1) The Shelf zone: It consists of mainly the northwestern part of the country including the districts of Rangpur, Dinajpur and Bogra.
2) The Hinge zone: It passes through Calcutta, Pabna, Mymensingh and extend further NE across the Dauki fault.

(3) The Bengal Foredeep zone: It comprises of the rest area of the country and occupies the area between the Shelf zone in the west and Arakan-Yoma Hill range in the east. The deep basin area of the foredeep is composed of the Surma Basin or Sylhet Trough, Faridpur Trough and the Hatia Trough.

The generalized Tectonic map of Bangladesh and adjoining areas are given in Fig. 2.6.

The junction between the platform and the foredeep running southwest from Mymensingh to Calcutta (the Hinge line) is considered to be a zone of weakness; however, no association of the hinge with earthquakes has so far been established. The Foredeep is terminated in the northeast by a major fault, the Dauki fault-at the southern margin of the Shillong Plateau. Some major earthquakes can be related to this fault. There are numerous faults particularly in the eastern part of the folded flank of the Foredeep. Here again there is no association with any major earthquake. Most recorded earthquakes had epicenter further east in Burma.

The eastern margin of the Indian plate is supposed to run through Myanmar, not far from the Bangladesh border, and northeast Assam (Arunachal Prodesh) is considered to be a corner of the northern and eastern margins of the plate.

The Himalayan arc can be regarded as one of the most intensely active seismic regions of the world. In northeast India the Shillong plateau and adjacent syntaxis between the two arcuate structures is one of the most unstable regions in the Alpine-Himalayan belt and faced three major earthquakes of magnitude greater than 8.0 within the last two hundred years (1897, 1934, and 1950).

Northeast India can be broadly classified into four geotectonic units (Das, 1992), namely, (i) Arunachal Himalayas, (ii) Lohit Himalayas, (iii) Patkoi-Naga-Lushi-Arakan Yoma (Indo-Burma) hill ranges and (iv) Shillong Plateau-Assam basin. The region of Shillong Plateau-Assam basin has been identified as one of potential sites for severest earthquakes.

Shillong massif and its northeasterly projected spur form the basement on which the alluvium and unfolded Tertiary formations of Assam basin have been deposited. It forms a wedge shaped triangular crustal block bounded by Arunachal Himalaya towards northwest, Lohit Himalaya towards northeast, the Indo-Burma folded belt towards southeast, the Bengal Burma basins on the south and Rajmahal-Garo-Sylhet gap towards the west. The contact of these geotectonic units with the Shillong plateau is marked by conspicuous thrust and tear faults. Two prominent tectonic features forming the boundary of Shillong plateau towards west and south are the Dhubri and Dauki tear faults, respectively. The plateau is bounded towards northwest by the Main Boundary Fault, towards northeast by Paleozoic and Precambrian formation of Mishmi and Lohit thrusts, towards southeast by Tertiary group of Naga thrust belts and on the south by Cambrian formation of Dauki tear fault, which merges towards east with the Haflong-Disang thrust zone. This complex tectonic regime surrounding Shillong Plateau reveals that the area has experienced great compressive stresses and resulting north-eastward drift of Indian plate along with westward overriding of Burmese plate.

At present, the southernmost thrusting in the Himalaya-Shillong Plateau region could be taking place along the southern fringe of the plateau coinciding with the Dauki fault. Currently, it is believed that the Shillong plateau has a thrust plane beneath it and is undergoing southward thrusting against a concept of vertical tectonism along the Dauki fault.

The Shillong plateau and its adjoining region including the northeastern part of Bangladesh have high seismic status. The seismic activity along the Dauki-Haflong fault zone is comparatively lower and a seismic gap has been postulated along this fault zone. The major earthquake that have affected Bangladesh since the middle of the last century is presented in Table 2.1

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Table 2.1 Great historical earthquakes in and around Bangladesh

Date	Name	Epicentre	Magnitude (M)
10-01-1869	Cachar Earthquake	Jantia Hill, Assam	7.5
14-07-1885	Bengal Earthquake	Sirajgonj, Bangladesh	7.0
12-06-1897	Great Indian Earthquake	Shillong Plateau	8.7
18-07-1918	Srimangal Earthquake	Srimangal, Sylhet	7.6
02-07-1930	Dhubri Earthquake	Dhubri, Assam	7.1
15-01-1934	Bihar-Nepal Earthquake	Bihar, India	8.3

2.5 MAJOR SEISMIC SOURCES

Bolt (1987a) analyzed different seismic sources in and around Bangladesh and arrived at conclusions related to maximum likely earthquake magnitude (Bolt, 1987a). Bolt identified the following four major sources:

(i)   Assam fault zone

(ii)   Tripura fault zone

(iii)   Sub- Dauki fault zone

(iv)   Bogra fault zone

Figure 2.7 shows seismotectonics lineaments capable of producing damaging earthquakes. A brief description of geology, tectonics of the individual fault zone are given below:

(i) Assam fault zone: The east-west fault separates the Assam fault zone separates the Assam fault zone from sub-Dauki fault zone. This zone consists of Archaean Proterozoic basement complex and characterized by the maximum concentration earthquake events. The hypocenter beneath the Shillong plateau are shallow focus in origin and are scattered. Only a few epicenters appear on or close to Dauki fault indicate that this fault is relatively seismically inactive during the recent time. But it was active sice the Jurassic and was the main architect for the evolution of Shillong plateau. The great earthquake of 1897 originated in the Asam fault zone. A number morphotectonic lineaments have been identified from the study of the satellite imagery. Most of the lineaments trend NE-SW with a few trending N-S. The N-S

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trending Brahmaputra fault is present along the course of Brahmaputra river. The fault dip steeply to the north. This zone is characterized by scattered shallow depth earthquake probably due to prevalent upward forces existing below the Shillong Plateau.

. *ii) Tripura fault:* This zone is characterized by high concentration of earthquake events. A number of morphotectonic lineaments have been identified. Among these the Kopili lineament trending NW-SE is remarkable and is geologically recent in origin. Seismic section reveals that this lineament is the surface expression of deep seated subvertical fault and termed as the Kopili fault, which belongs to the category of high angle reverse fault. At the north of this zone Halflong-Dissang thrust is present. Morphotectonic lineaments around the Halflong-Dissang thrust zone trend NE-SW, E-W and NW-SE. Mikir hill is present to the northeast corner of the Halflong-Dissang thrust, which separates the Shillong plateau by Kopili fault.

iii) Sub-Dauki fault zone: This zone covers the southern part of Dauki fault and eastern part of Bogra fault zone and bounded by longitude 90°E and 92°E. The morphotectonic lineaments trend NNW- SSE and NW-SE. The Sylhet plain covers the area and comprises the vast alluvial tract and the linear belts of folded Tertiary rocks trending N-S and NNE-SSW. Sylhet lineament of 180 km long trending NE-SW is the subsurface expression of deep seated high angle reverse fault having a dip of about 70° towards southeast and as named as Sylhet fault. A number of epicenteres fall on or close to this fault and some of them were of damaging character. Among them the earthquake of 1845 and Srimangal earthquake of 1918 are remarkable.

iv) Bogra fault zone: This is the westernmost area bounded by latitude 20°N and 28°N, and longitude 87°E and 90°E. The area is covered with thick deposits of alluvium. The main boundary fault of Himalayan ranges occurs in the north of this fault zone. A number of morphotectonic lineaments have been identified from the study of satellite imagery. These are mostly oriented NW/ NNW- SE/SSE. One such . lineament is Teesta lineament. Gupta and Nandi seismic activity in the Garo-Rajmahal gap is related to the activity along the Jamuna fracture which is the surface manifestation of apparently deep seated sub-vertical fault. Most of the earthquakes

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along this fault are shallow in depth. But one earthquake had a depth of hypocentre of 100 km. The 1885 earthquake of magnitude 7.0 was originated in this fault.

The magnitudes of earthquake suggested by Bolt (Table 2.2) are the maximum magnitude generated in these blocks as recorded in the historical seismic catalogue. The historical seismic catalogue of the regions covers approximately 250 years of (starting 1762) recent seismicity of the region and such a meagre data base does not provide true picture of seismicity of the tectonic provinces. For example, the Assam and Tripura fault zones contain significant faults capable of producing magnitude 8.6 and 8.0 earthquakes respectively in future. Similarly maximum magnitude of 7.5 in Sub-Dauki fault zone and Bogra fault zones are not unlikely events.

Table 2.2 Significant seismic sources and maximum likely earthquake magnitude in Bangladesh (after Bolt, 1987a)

Location	Maximum likely earthquake magnitude
A. Assam fault zone	8.0
B. Tripura fault zone	7.0
C. Sub-Dauki fault zone	7.3
D. Bogra fault zone	7.0

After a thorough review of available data, Ali and Choudhury (1992) recommended magnitudes of Operational Basis Earthquakes and Maximum Credible Earthquakes (Table 2.3). The depth of focus of earthquakes are also given in this table.

Table 2.3 Operational basis earthquake, maximum credible Earthquake and depth of focus of earthquakes for different seismic sources (after Ali and Chowdhury, 1992)

Location	Operational basis earthquakes (Richter)	Maximum credible earthquakes	Depth of focus (km)
A. Assam fault zone	8.0	8.7	0-70
B. Tripura fault zone	7.0	8.0	0-70
C. Sub-Dauki fault zone	7.3	7.5	0-70
D. Bogra fault zone	7.0	7.5	0-70

2.6 DAMAGE DUE TO SOME LARGE HISTORICAL EARTHQUAKES

2.6.1 Cachar Earthquake of 1869

The Cachar earthquake of 10th Jan 1869 occurred at 5 hr (GMT) is the first and one of the most destructive seismic events that North-East of Indo-Bangladesh experienced in the last two centuries. According to the seismic history of the region this zone has been the site of high seismic status due to Dauki fault. The main shock was strong enough to cause the collapse of many local traditional dwellings in Shilchar, Monipur and upper Burma region. This shock was followed by a series of aftershocks and the earthquake was associated with significant ground surface rupture. Details of casualties and homeless among the population and cost of damage were not communicated. The earthquake is classified as a heavy destructive event with a focal depth of about 56 km. Compilation and detailed analysis of the macroseismic information inferred from contemporary accounts have led to a re-estimation of intensities. Maximum intensity has been re-evaluated at Io=IX~X (ESC, 1993) and allocated to Monipur and Shilchar. From the intensity data an isoseismal map has been drawn and macroseismic epicentre is located slight east of Silchar at (24.75^0 N, 93.25^0 E). Figure 2.8 shows the isoseismal map of this earthquake reevaluated using European Macroseismic Scale (ESC, 1993) scale.

2.6.2 Bengal Earthquake of 1885

There were no seismographic record available for the Bengal earthquake of 1885. Only the felt reports and observed damage to buildings, boundary walls, factory chimney, tomb, cemetry, tower like octagonal mandirs with conical apex, earth fissures and vents were described in the report on the Bengal earthquake by Middlemiss (1885). According to the report, this earthquake was felt with violence throughout the Bengal province. The extent of felt areas extended west-ward into Chota Nagpur and Bihar, northwards into Shikim and Bhutan, and eastward into Assam, Manipur and Burma.

The area over which it was sensibly felt may be roughly 6,00,000 sq. km. An irregular line through Daltongunge (in Palamow), Durbhanga (in Bihar). Darjeeling,

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Sibsagar, Manipur and Chittagong was the limit of area from which reports of the shock had been received. Bolt (1987) showed this line as a isoseismal of radius 490 km and recalculated the magnitude of the earthquake (Ms) using Ambrasey's formula. For this earthquake, the magnitude was found to be 7.0.

According to Middlemiss, another irregular line through Calcutta, Sitarampur, Monghir. Purneah, Siligori. the Garo hills, Chattak and Barisal enclosed an area over which the shack was felt with such considerable violence as to shake loose objects, rattle windows and produce small cracks in two storied building. Bolt considered this line as another isoseist similar to fourth isoseist of Oldham scale. Its raddi was 260 km.

Finally Middlemiss defined another isoseist which bounded areas of Rangpur, Bogra, Sherpur, Mymensingh , Dhaka and Pabna, where destruction to buildings was greatest and loss of life had occurred. Bolt considered this line as another isoseist, similar to third isoseist of Oldham scale. Its radii was 75 km.

For calculating the acceleration from isoseismal map, it is required to divide the earthquake felt area into different zones based on intensities of the earthquake. For this reason, the isoseismal map of Bengal earthquake is divided into three zones. Zone-1 is encircled by third isoseist, zone-2 by forth isoseist and zone-3 by fifth isoseist. These zones with their average radii is considered for deriving the attenuation of acceleration away from epicenter. as shown in Fig 2.9.

· 2.6.3 Great Earthquake of 1897

Oldham (1899) as the head of the Geological Survey of India, directed and personally investigated the Great Indian earthquake of 1897. He defined a scale of intensity of six degrees and drew the isoseismal map, which is shown in Fig.2.10. The area over which the shock was felt amounted to not less than 31,20,000 sq. km. This does not include the detached areas near Ahmedabad or any part of the Bay of Bengal, nor the large area in Tibet and Western China, over which the shock was certainly sensible. If the area included in these tracts are taken into consideration, the total area over which the shock was felt amounts to 45,50,000 sq. km., while the area

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over which known serious damage to masonry buildings occurred was not less than 3,77,000 sq. km.

The first isoseist includes all areas of such places as Shillong and Goalpara, where destruction was universal. The isooeist runs near Sylhet and Rangpur of Bangladesh and then extends to Kutchbihar in India. The second isoseist includes Murshidabad, Malda, Darjeeling in India and it extends upto Dhaka in Bangladesh. The third isoseist encloses the area of Bhagalpur, Krishnanagar and Calcutta in the western border of Bangladesh, the whole of Bangladesh and all eastern districts of India except north-east extremity of Assam. The fourth includes western Bihar and the eastern half of the northwest provinces, in India and extends to Bay of Bengal in Bangladesh. In the east it includes all areas of India end extends to Union of Mayanmar. The fifth isoseist extends upto Agra.

The longest dimension of mezoseismal area was 260 km ,the mean radius of the area of serious damage was 480 km and the mean radius of the area of perceptibility was 1440 km. Area covered by the first isoseist of raddi 175 km is denoted by Zone-1 in the map. It covers Rangpur, Mymensingh and Sylhet districts in Bangladesh, where the destruction was universal. Area covered by the second isoseist of raddi 330 km is denoted by zone-2 and it covers Bogra, Pabna and Dhaka district. Finally areas covered by the third isoseist of raddi 455 km is denoted by zone-3 and it covers the southern part of Bangladesh. Beyond the third isoseist of raddi 735 km, only Chittagong district of Bangladesh is covered and it is denoted by zone-4.

2.6.4 Srimangal Earthquake of 1918

Stuart (1920) drew the isoseismal map for this earthquake. He drew the isoseist on the intensity scale originally adopted by Oldham in his investigation of the Great Indian Earthquake of 1897.

The greatest damage occurred in the tea garden areas of the Balisera, Doloi and Luskerpore valleys. The epicentral area of the earthquake was located at the Balisera vally and part of the Doloi vally. With few exceptions, all brick buildings were found to be destroyed within this area. Water and sand spouted up to a to be destroyed

. within this area. Water and sand spouted up to a height of several feet and numerious vents occurred in the ground in various places. The intensity of the shock was so great that it was impossible to stand on foot.

The area enclosed by second isoseist are the Doloi, Luskerpore valleys, and the town of Habiganj and Mauluvibazar. Practically every brick or masonry buildings were damaged and many were thrown down in the areas enclosed by this isoseist. The third isoseist covers the areas of Agartala, Akhaura, Kishoreganj and Sylhet and the tea gardens of the Langla and Juri areas, During the earthquake shock, the ground cracked and sand and water spouted out in numerous places and long fissures appeared generally running parallel to a road or embankment. In some places the ground sank into small hollows. The area enclosed by fourth isoseist comprises the area where furniture And ornaments were overturned, but little or no damage was done to sound brick or stone buildings. Comilla, Mymensingh, Netrakona and Cherrapunji are included within this isoseist. The area of fifth isoseist was derived from the reports of observers, newspapers accounts and the earthquake enquiry forms. These areas are Aijal, Barisal, Bassein, Bhagalpore, Borjule, Burdwan, Chandpur, Chinsurah, Chittagong, Dhaka, Dinajpur, Darjelling, Dumka, Falam, Chinhills, Faridpur, Feni, Gouhati, Henzada, Jamalpur, Krishnanagar, Kurseong, Kyaukpyu, Kyauktaw (Akyab), Lushi Hills, Mawlaik, Midnapur, Minbya (Akyab), Nagrakata, Narayanganj, Noakhali, Pabna, Purnea, Rangamati, Rangpur, Solonah, and Tura. The sixth isoseist enclosed the area where the earthquake was felt by certain people and where no damage was done to buildings of ordinary strength or stability. The area covered by this isoseist includes Allahbad, Agra, Bankiporg, Bilaspur, Calcutta, Cuttack, Chatisgarh, Daltunganj, Deoghur, Fort-hertz, Hukitata, Katmundu, Magwe, Mandalay, Maiktila, Monywa, Muzaffarpur, Myitkyina, Prome, Rangoon, Sambalyore, Saundoway, Thayetmyo, Yamethin, and Yatung.

Like Bengal earthquake, the isoseismal map is divided into zones with their average raddi for calculating acceleration value. Zone-1 of raddi 13 km is encircled by first isoseiet Zone-2 of raddi 40 km, zone-3 of raddi 90 km, zone-4 of raddi 120 km and sons-5 of raddi 540 km encircled try second, third, fourth and fifth isoseists respectively are shown in Fig. 2.11.

2.6.5 Dhubri Earthquake of 1930

The earthquake originated near the north-western end of the Garo- hills and the adjoining valley of the Brahmaputra river, a short distance to the south of Dhubri town. The disturbed area of the earthquake was about 3,35,000 sq. km. This earthquake had disastrous results in northern Bengal and in Western Assam, and was felt very distinctly over a wide area, extending from Dibrugarh and Manipur in the east, to Chittagong and Calcutta in the south, to Patna in the west, and beyond the frontiers of Nepal, Sikkim and Bhutan in the north.

The isoseismal lines of different intensities of the felt area was drawn by Gee (1934) using the Oldham intensity scale. Gee recommended that the main shocks within the epicentral tract was of the order of second degree of Oldham intensity scale. The destruction of brick and stone buildings were not practically universal within the epicentral tract including the town of Dhubri and only the overthrow of some pillars and statues had been recorded.

The area enclosed by isoseist no.3 were Rangpur, Lalmonirhat, Cooch-Bihar City, Bilaspara and Tura, in which the damage consisted of serious cracking of all old buildings and less intense damage to newer structures. Fissures had developed extensively and a mixture of sand and water had been forced out to the surface. Some of the fissures were as much as 15 cm. wide and 6 to 9 meter long. The area enclosed by isoseist no 4 were Buxa Port, Goalpara, Gauhati, Shillong and Cherrapunji in India and central and northern districts of Bangladesh.

The area enclosed by isoseist no 5 extend far south in Bangladesh and includes the Ganges delta and Chittagong hill tracts. The western areas included the Damodar valley coalfields and Monghyr, Patna and Dharbhanga localities. Eastern areas included consists of the district of Sylhet in Bangladesh and Cachar and Tezpur areas in India and extends eastward into Naga hills and beyond Dibrugarh.

For calculating the acceleration from intensities, the isoseismal map of Dhubri earthquake is divided into five zones. Zone-1, zone- 2 and zone- 4 are encircled by

second, third and fourth isoseist of average raddi 15 km, 65 km and 230 km respectively.

In between third and fifth isoseist there is another isoseist of radii 150 km. The fourth ·isoseist of raddi 480 km covers zone-5 as shown in Fig. 2.12.

2.6.6 Bihar-Nepal Earthquake of 1934

The area of greatest devastation was in north Bihar and Nepal, but the damage gradually diminished into adjacent provinces. The shock was felt by persons over a distance of up to 1600 km. from the central tract as far as Peshwar in the north-east, Fort-hertz in the east, Akyab in the south-east, Bezwada and Ongole in the south and Bombay in the south-west. It was felt over an area of approximately 4,920,000 squara kilometers in India and Tibet. The earthquake affected the three main geological units of India: the peninsula, the Gangetic alluvium and the Himalaya.

Over a large area roads were badly damaged, railway tracks were completely destroyed, and telegraph and telephone communications were entirely dislocated. Dunn et al. (1934) were deputed to investigate the destruction and damage pattern of the affected areas and compare the individual investigation. They made a precise isoseismal map of the central region using Mercalli scale. Immediately after the field work was completed, preliminary reports were submitted to the respective Government by different investigators.

The isoseismal line of different intensities were drawn according to the Mercalli modification of the Rossi-Forel scale. Isoseismal VI to X were shown in the regions of Bihar, Nepal and Bengal, that were mostly affected by the earthquake. The emission of sand from vents and fissure was sufficient within isoseismal VIII, but rare in areas included by other isoseismals.

The isoseismal X covered three tacts, where the majority of the buildings were practically razed to the ground. The total area within isoseismal X was approximately 3,400 sq. km including area of Sitamarhi to Madhubani, southeast of Katmandu which included the towns of Bhatgaon and Monghyr.

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The combined area affected by very severe intensity equal to IX cover about 36,0110 sq. km in Bihar and Nepal. The included areas were North-Bihar, Patna to Monghyr and Nepal valley.

Isoseismal VIII enclosed an area of 31,000 square miles in Bihar, Bengal and Nepal. The most important towns situated near the edge of this isoseismal are Bhagalpur, Bihar, Chapra, Bettiah, Darjeeling and Kurseong. Other important towns affected within this zone were Dhankuta, Khagaria and Samastipur. A number of old and weak buildings collapsed in these areas.

Isoseismal VII and below had been prepared on the basis of the answers to the earthquake questionnaries. The important areas covered by this isoseismal was Mirzapur, Benaras and Allahabad, where the damage was not quite high.

Isoseismal VI included a number of large towns, such as Agra, Lucknow, Canpore, Katni, Ranchi, Dhanbad. Asansol, Burdwan, Dhubri and Calcutta, which is located at the southern edge of this isoseist.

Like other earthquakes for calculating acceleration, the isoseismal map of Bihar-Nepal earthquake is divided into six zones, based an the Modified Mercalli intensity. Zone-1 of radii 32 km, zone-2 of radii 130 km, zone-3 of raddi 165 km, zone-a of raddi 260 km, zone-5 of raddi 500 km, zona-6 of raddi 830 km for the isoseismal of X, IX, VIII, VII, VI, and V respectively. Fig. 2.13 shows the isoseismal map.

2.7 DAMAGE DUE TO SOME RECENT EARTHQUAKES

2.1.1 Sylhet Earthquake of 1997

In 1997 a damaging earthquake of body-wave magnitude 5.6 have occurred in Bangladesh. It has taken place in early morning of May 8. It caused moderate damage mainly to Sylhet area, north-east of capital Dhaka and about 200 km away. The epicentral location (24.894N, 92.250E) is close to Kanaighat, a small town in

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Sylhet region. Extensive damage to brick masonry structures (e.g. Police station, Jaintia college, etc.) and cracking of a number of buildings (e.g. Sylhet Air Port Building, Grameen Bank Building at Borolekha, police station at Moulvibazar etc.) in the epicentral region have occurred and even in the city Dhaka minor cracks is observed in some structures.

2.1.2 Chittagong Earthquake of 1997

In November 21, 1997 another damaging earthquakes of body-wave magnitude 6 have occurred in Bangladesh. During this earthquake, 23 people were killed after collapse of an under-construction building in Chittagong. In Chittagong many low to middle rise buildings have suffered minor cracks although major damage has not been observed. The epicentral area (22.225N, 92.743E) is close to Ruma in Bandarban district of Chittagong Hill Tracts region. Many houses are damaged and old trees are uprooted in the epicentral region. Partial collapse of a long earthen dam (Prantik lake) has been observed.

2.7.3 Moheskhali Earthquake of 1999

On July 22, 1999, at 4:42 pm (local time), an intense earthquake shook the island of Moheskhali causing damage to several houses and some buildings, killing 6 people and injuring 200 people. The main damage has been reported to be in Shaplapur and Huanok Unions.

Field visits has been made to Dineshpur and Kaidabad under Shaplapur Union, where heavy damage has been reported. Cracking and spalling in reinforced concrete columns at the beam-column joint of a cyclone shelter at Dineshpur has been observed. Several rural houses with mud walls and thatched or tin roof construction have been severely damaged. At Kaidabad EU cyclone shelter is also badly damaged.

Bara Maheshkhali and Huanok Union are also visited. Severe cracking have formed in many mudwall houses of the area. The cracking pattern has similarity with that observed in Shaplapur. Some landslides are also observed which could have been

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triggered by the earthquake. The few buildings in Bara Moheshkhali were not damaged. However minor plaster cracking has occurred in some cases.

The hypocentre of the earthquake has been initially estimated (USGS, 1999a) to be at 21.47°N, 91.90°E (focal depth = 10 km, origin time 16:42:12). The focal depth of this earthquake was quite shallow. The location of the hypocenter has later been corrected (USGS, 1999b) to be at 21.54°N, 91.88°E. The magnitude of the main shock was 5.1 on bodywave magnitude scale. Three more aftershocks of smaller intensity have occurred in the same island on the following night.

While visiting different areas, questionnaire survey has been conducted among the local people who were present at the time of the earthquake. Based on the observed damage and questionnaire survey, the seismic intensity map (Fig. 2.14) has been drawn for in and around Moheskhali. The European Macroseismic Scale (ESC, 1993) with intensity scale ranging from I to XII has been used. Figure 2.14 shows that the earthquake had a maximum intensity of VII, which has been registered in Huanok-Saplapur Unions. The epicentre may be conceived to be within this central area of the island. This can also explain the loud sound and type of shaking reported by the local people.

2.8 SEISMIC ZONING MAPS

The first seismic zoning map of the subcontinent (Fig 2.15) has been compiled by the Geological Survey of India in 1935 (Choudhury, 1994). Three zones have been indicated in the maps, viz. *liable to severe damage, liable to moderate damage and liable to slight damage*. Areas which suffered moderate to severe damage in the past earthquakes with an intensity approximately higher than Rossi-Forel VII (equivalent to Modified-Mercalli scale of VIII) within the first zone are also shown. This qualitative map has been based mainly on records of earthquake occurrence in the past. A major part of Bangladesh (in the north, northeast, and southeast) is shown under the "*liable to severe damage*".

In the sixties, the Meteorological Department has prepared a zoning map (Fig. 2.16), which has been later adopted by the Bangladesh Meteorological Department

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(Choudhury, 1994). The country has been divided into four zones, viz. major damage (seismic factor g/5 to g/10), moderate damage (g/10 to g/15), minor damage (g/15 to g/20) and negligible damage (≤g/20). In the mid-seventies, when a number of large industrial complexes have been designed, the need for a more detailed investigation of seismic risk has been felt.

In 1977, the government has constituted a Committee of Experts (GSB, 1979) to examine the problem and make appropriate recommendations. The terms of reference included preparing seismic zoning maps, preparing an outline of a building code for earthquake resistant design of structures, proposing means of educating the masses about the hazard and precautionary measures to minimize damage, and recommending facilities for observation, analysis and interpretation of relevant data. The committee, after reviewing all the available information has prepared a seismic zoning map (Fig. 2.17).

In the Bangladesh National Building Code (BNBC) published in 1993, a new seismic zoning map for Bangladesh has been presented. The pattern of ground surface acceleration contours having 200 year return period presented in Fig. 2.18 (Hattori, 1979) forms the basis of this seismic zoning map. The proposed BNBC zoning map is shown in Fig. 2.19.
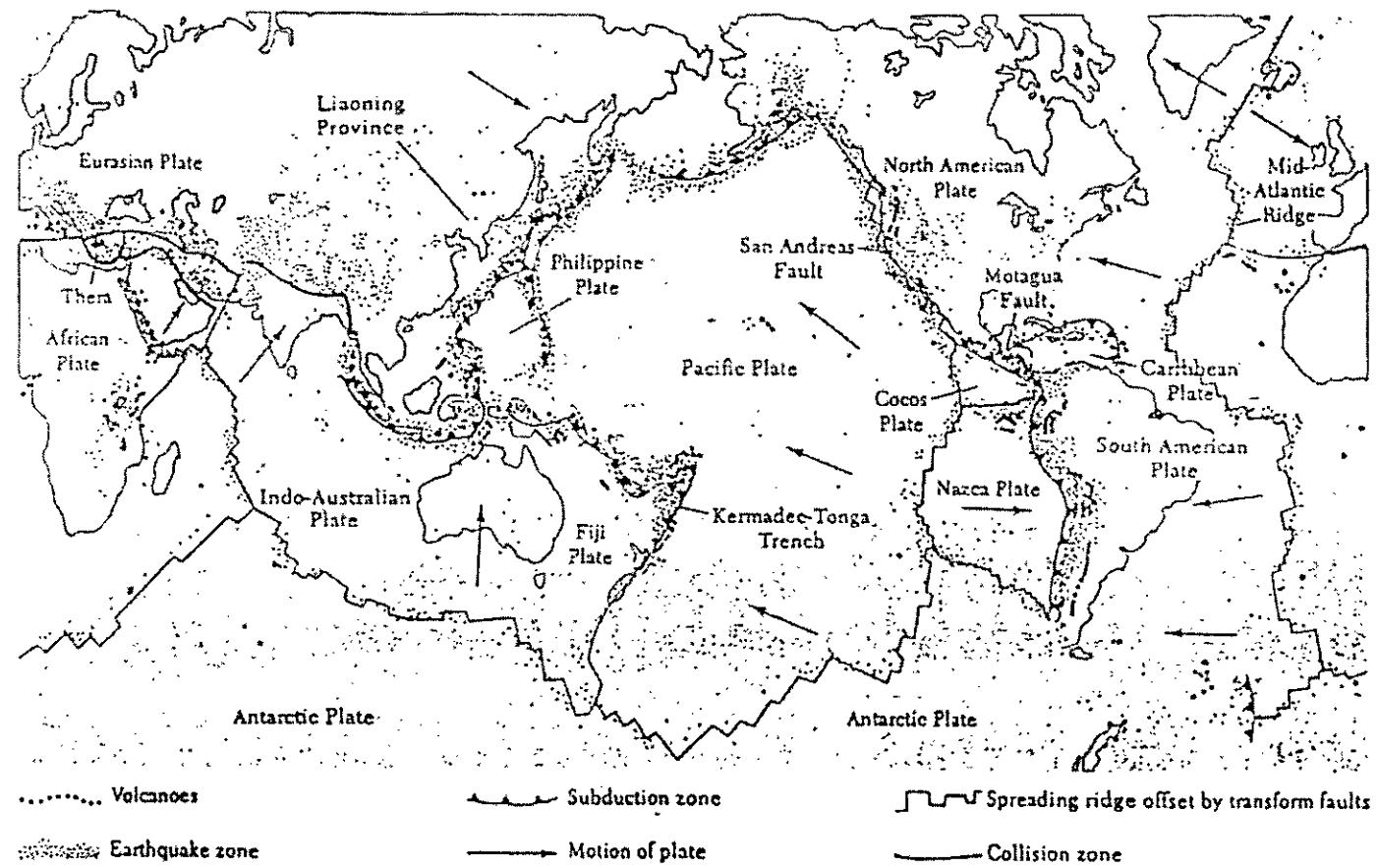
Fig 2.1 Earthquake epicentres for the world (after Bolt, 1987b)
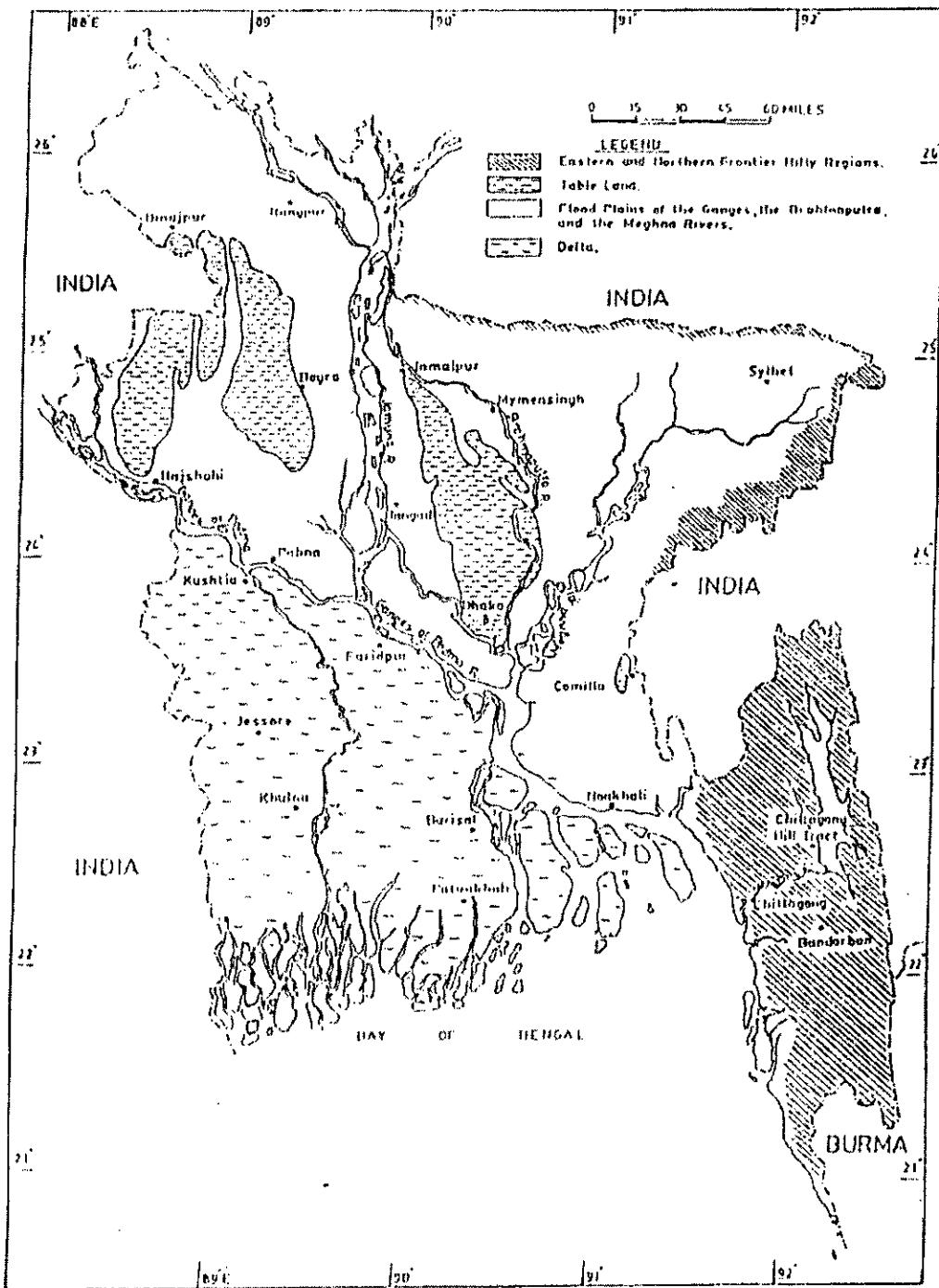
Fig 2.2 Physiographic division of Bangladesh (after Khan, 1991)
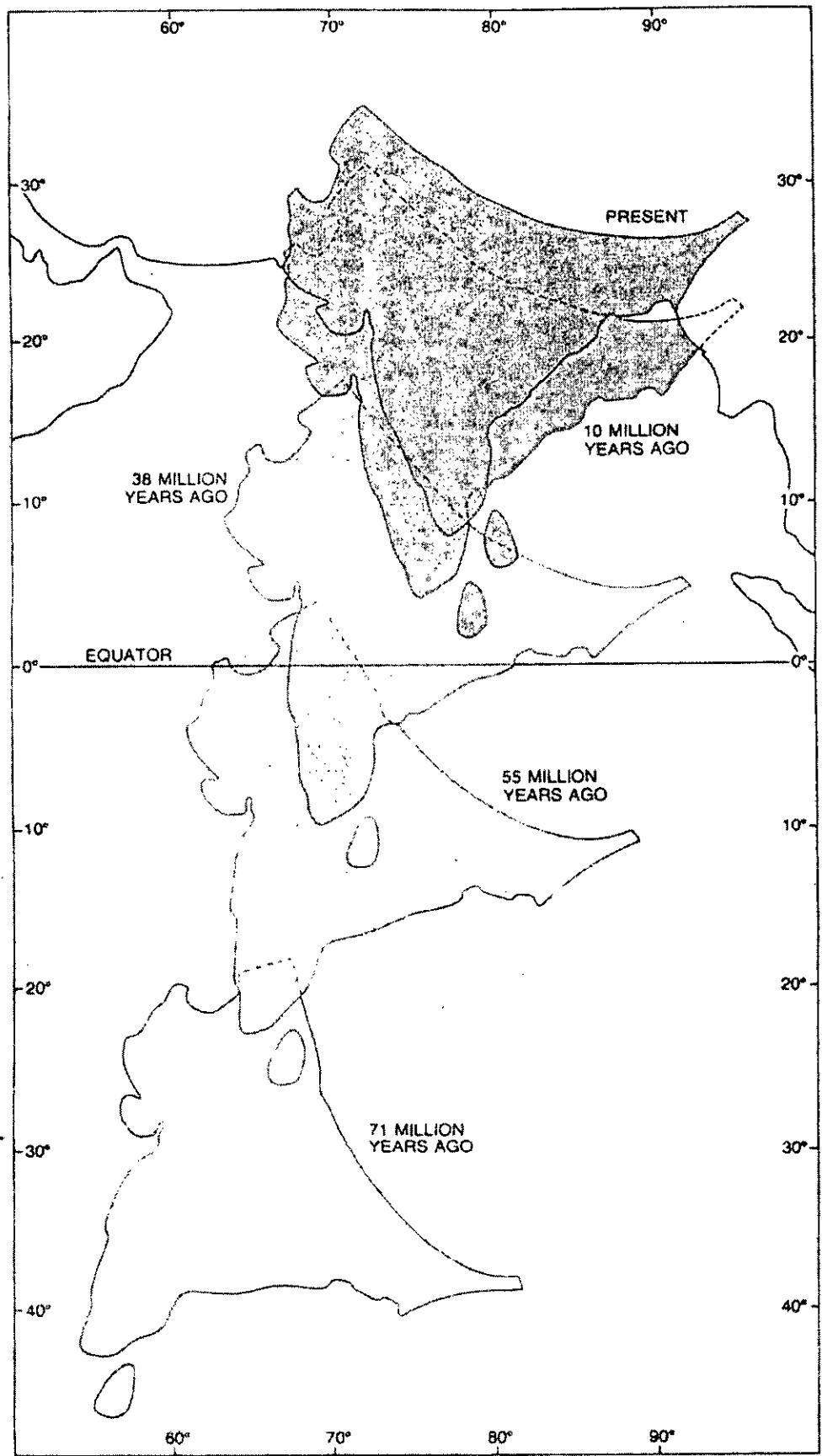
Fig 2.3 India's northward drift over the past 70 million years
(after Molnar and Tapponnier,1975)

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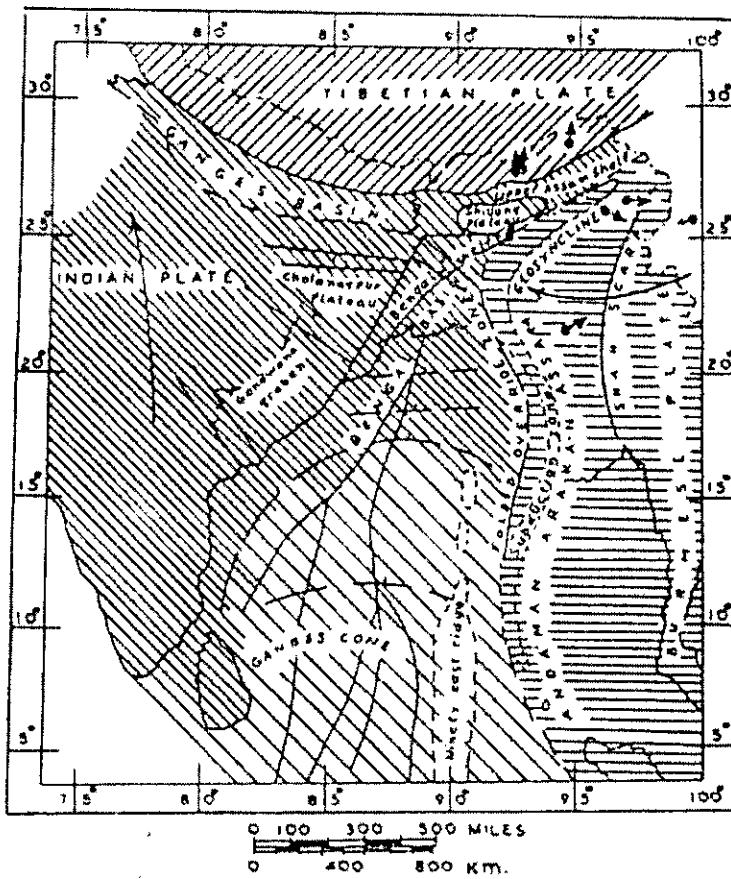
Fig 2.4 Tectonic features of the Indian sub-Continent

(after Verma et al. 1976)
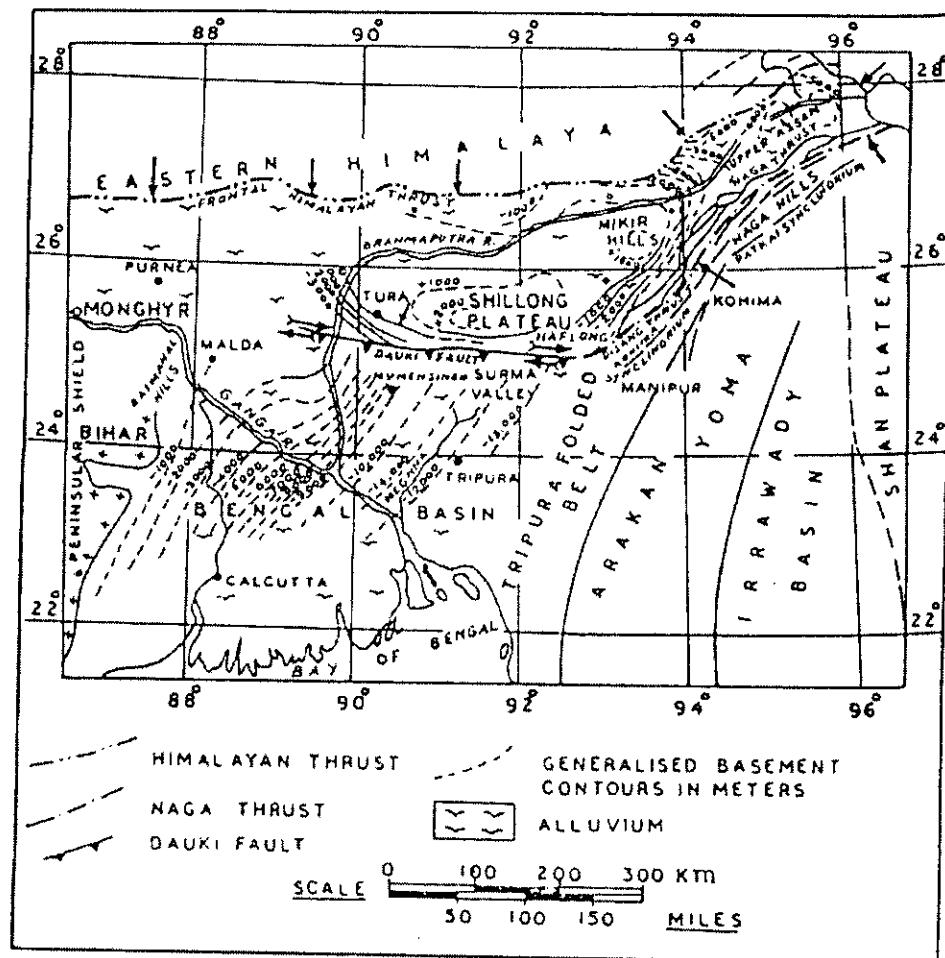
Fig 2.5 Tectonic map of the north east India and northern
Burma (after Verma et al., 1976)
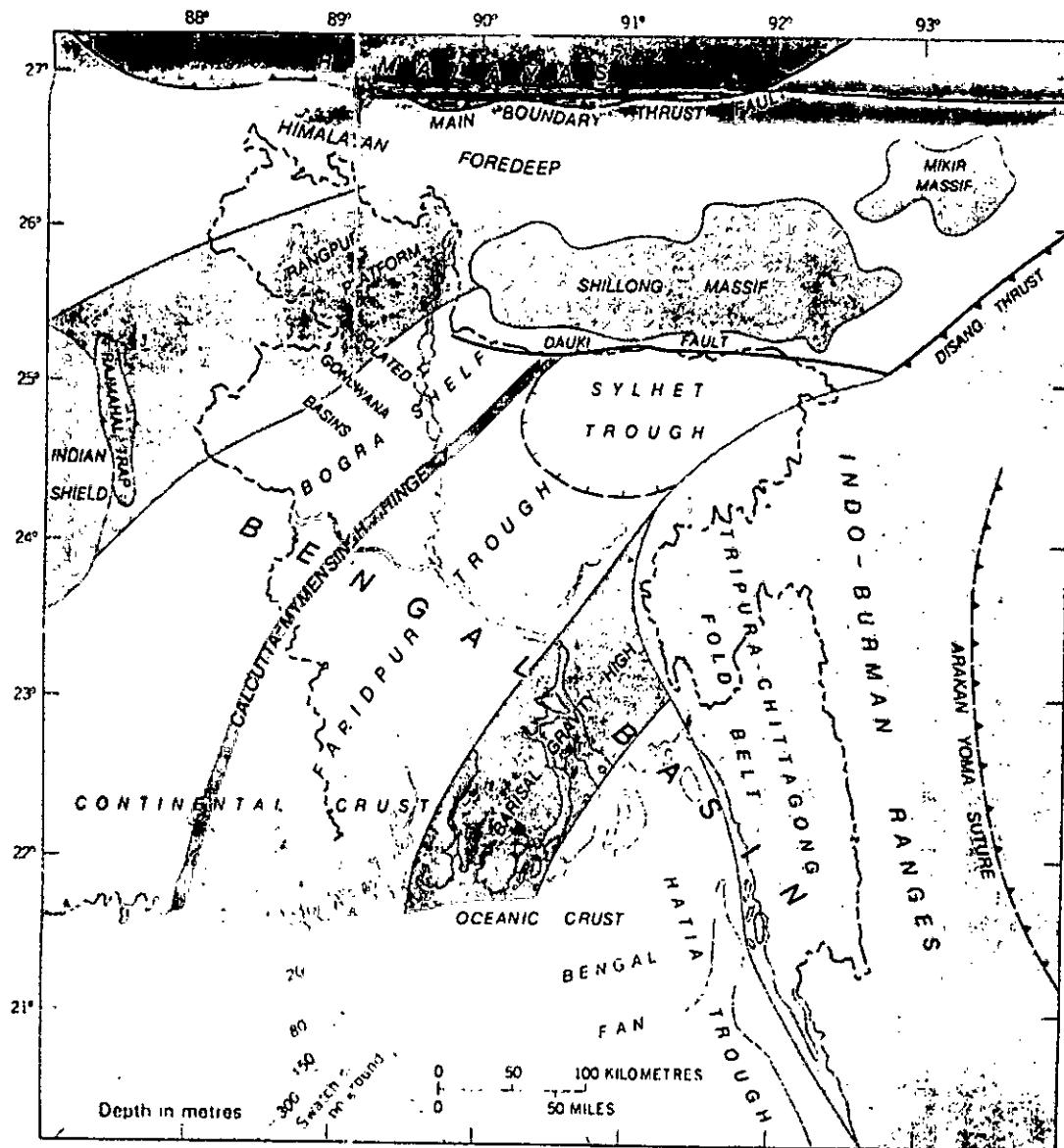
Fig. 2.6 Generalized tectonic map of Bangladesh and adjoining areas
(after GSB, 1991)

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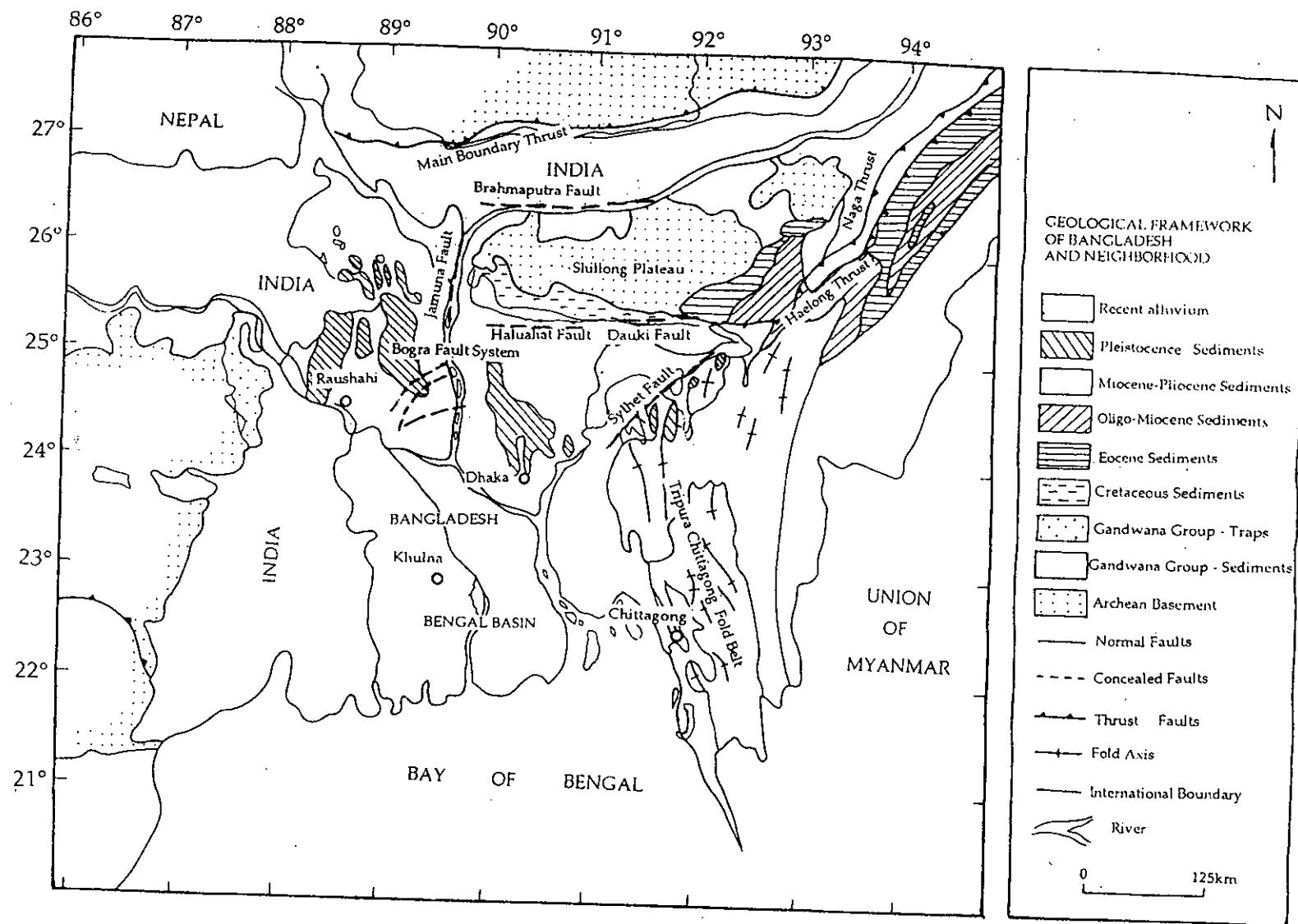
Fig. 2.7 Seismo–tectonic lineaments capable of producing damaging earthquakes (after Ali and Choudhury, 1992)
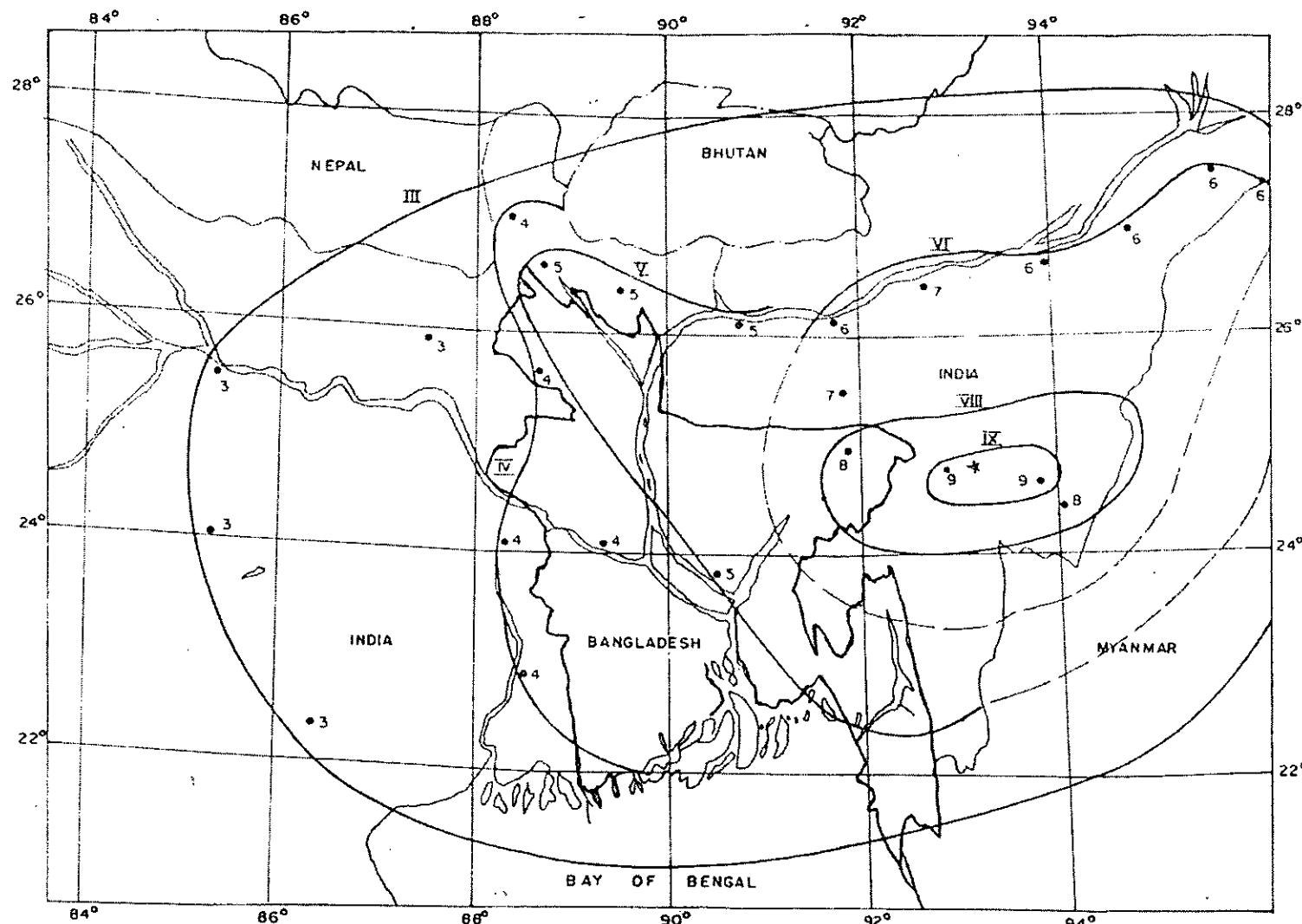
Fig.2.8 Isoseismal of Cachar earthquake of 1869 (after Sabri, 2001)
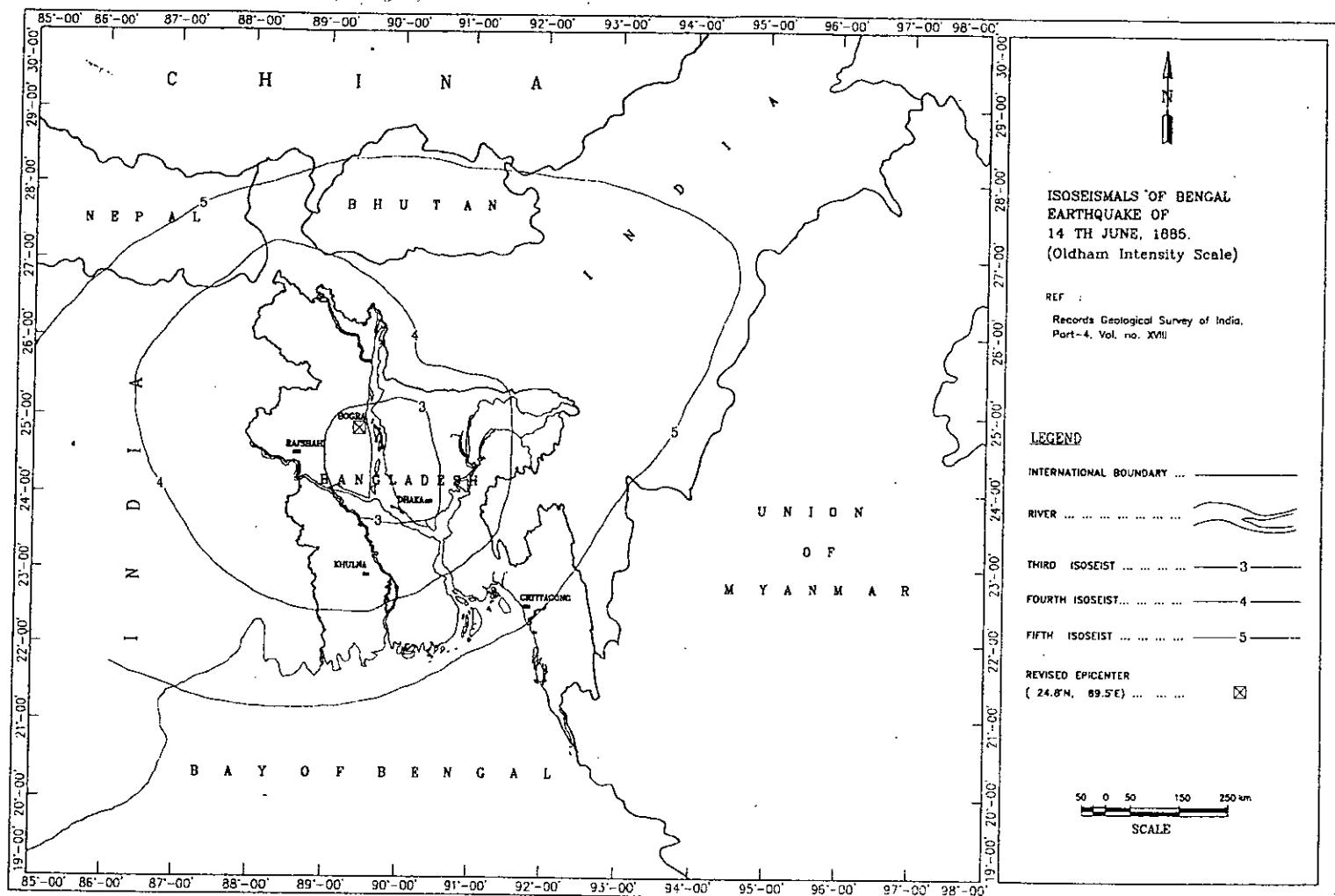
Fig.2.9 Isoseismal of Bengal earthquake of 1885 (after Middlemiss, 1885)
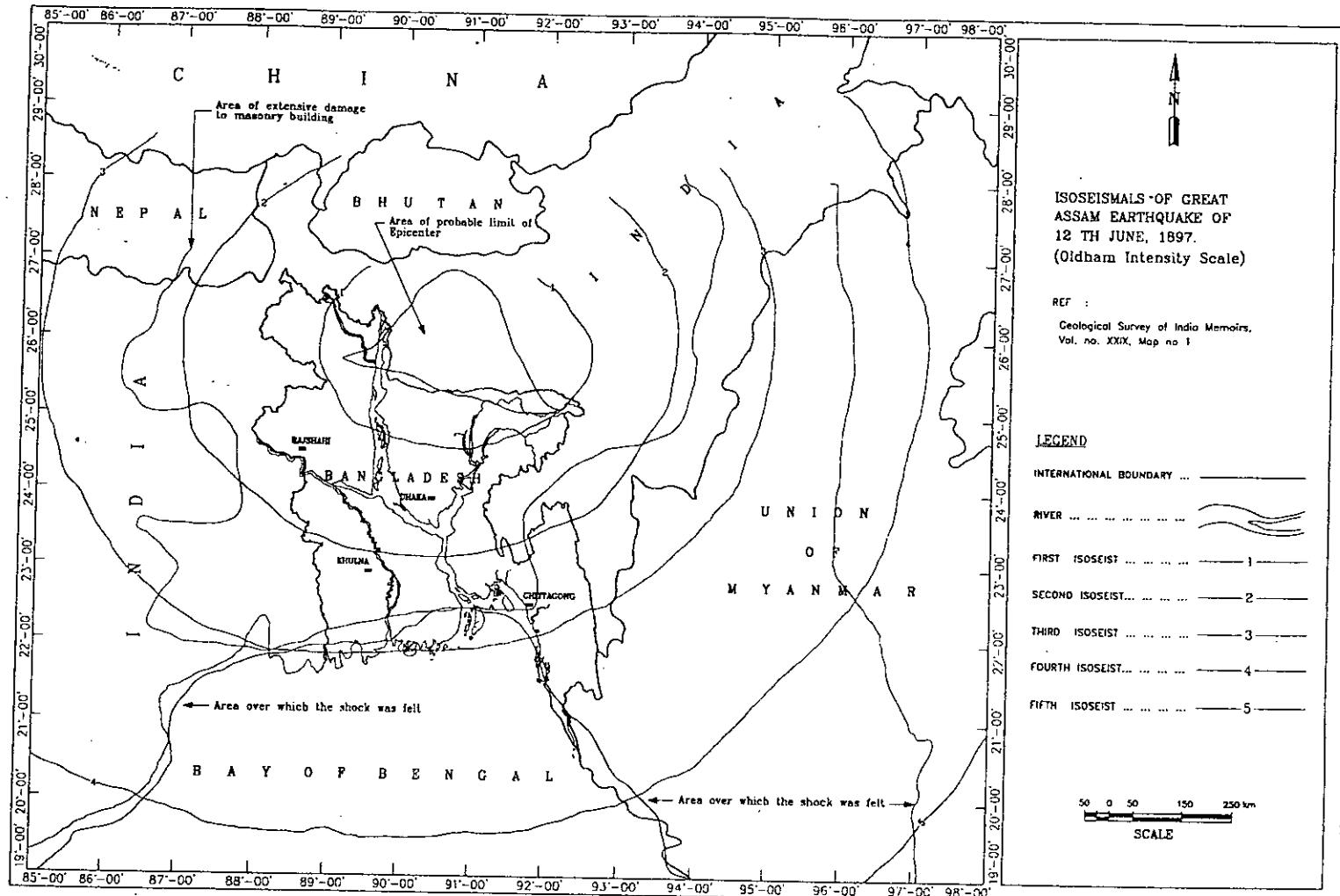
Fig.2.10 Isoseismal of Great Indian earthquake of 1897 (after Oldham, 1899)
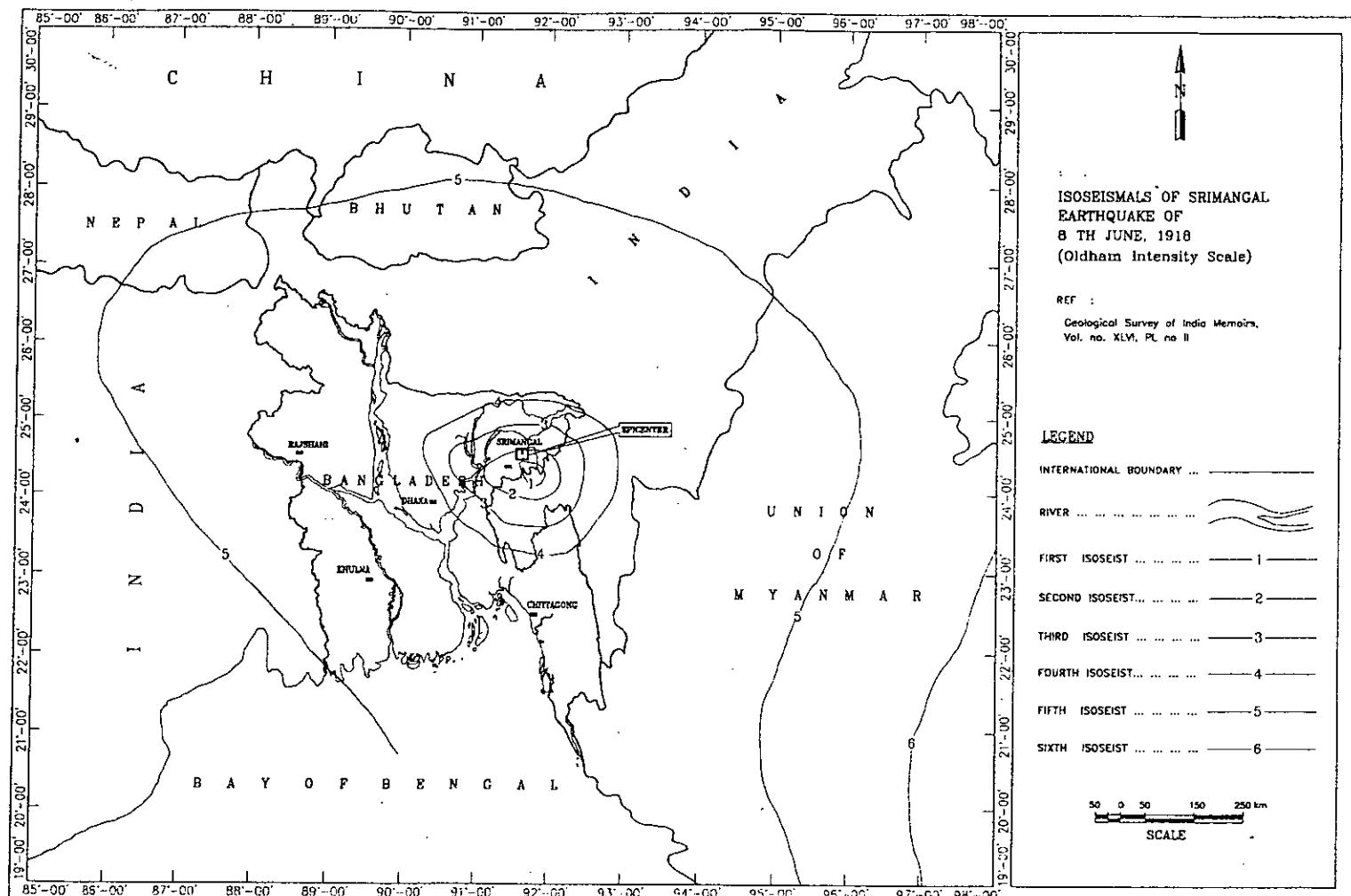
Fig.2.11 Isoseismal of Srimangal earthquake of 1918 (after Stuart, 1920)
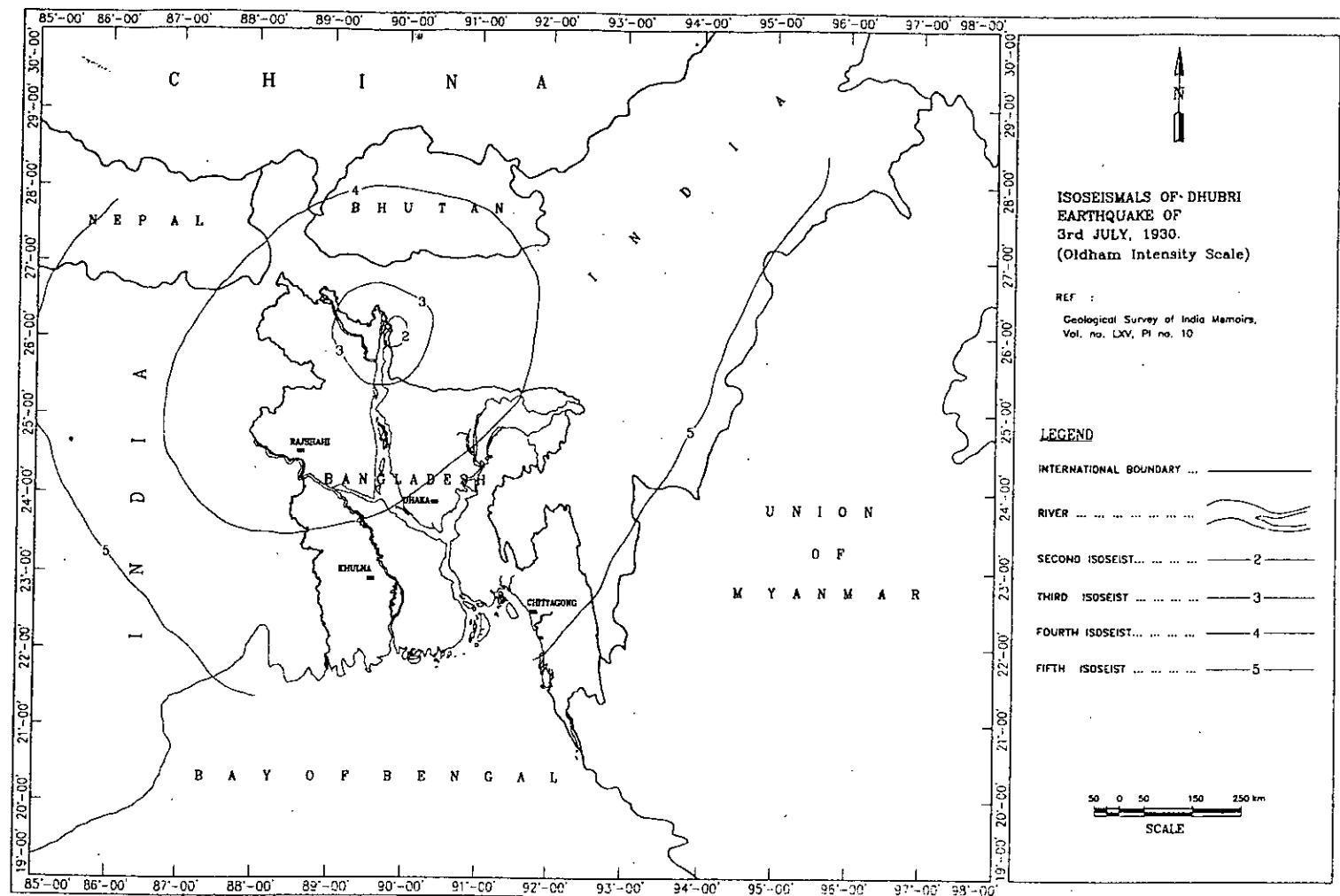
Fig.2.12 Isoseismal of Dubri earthquake of 1930 (after Gee, 1934)
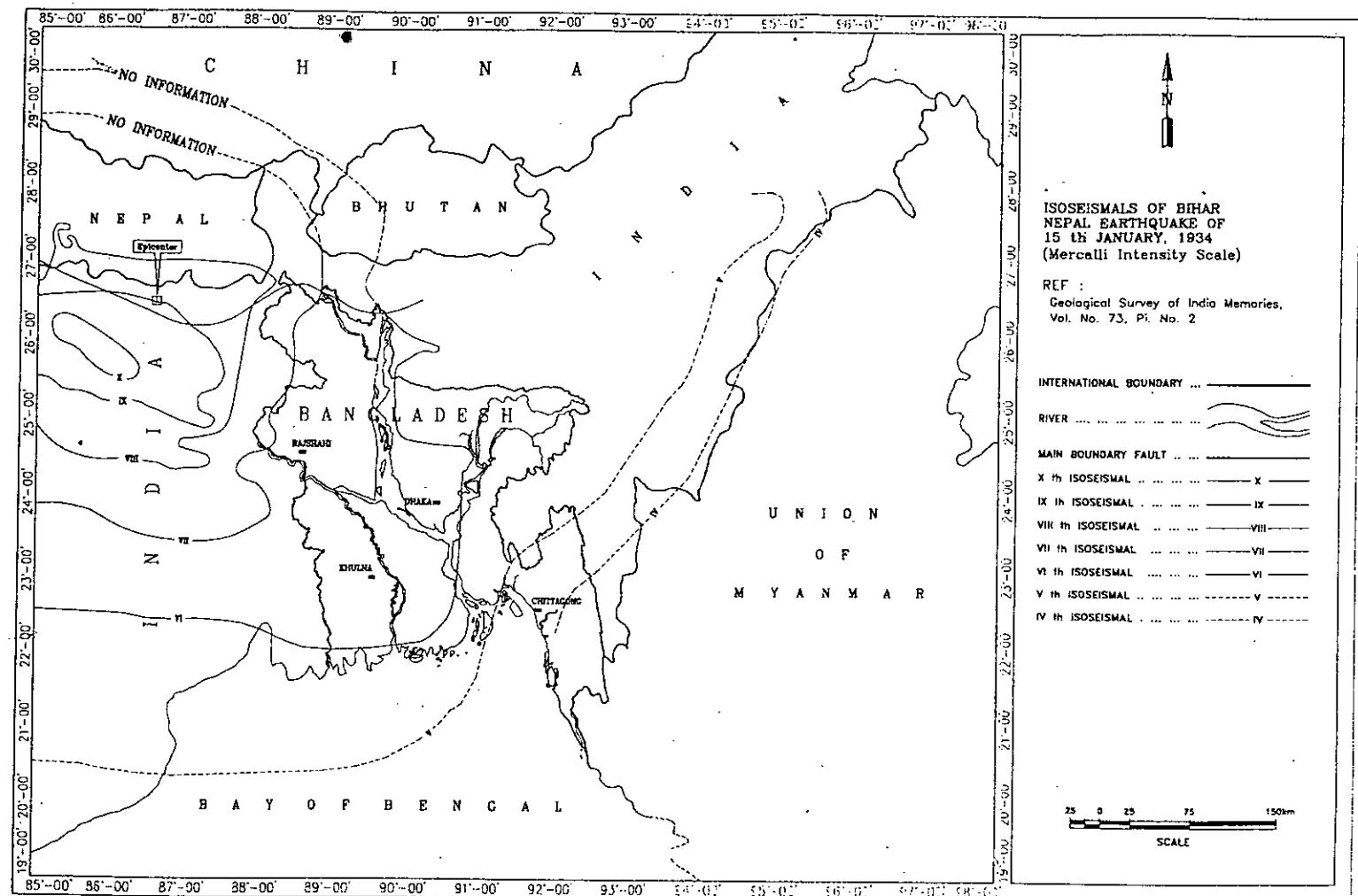
Fig.2.13 Isoseismal of Bihar-Nepal earthquake of 1934 (after Dunn et al., 1939)
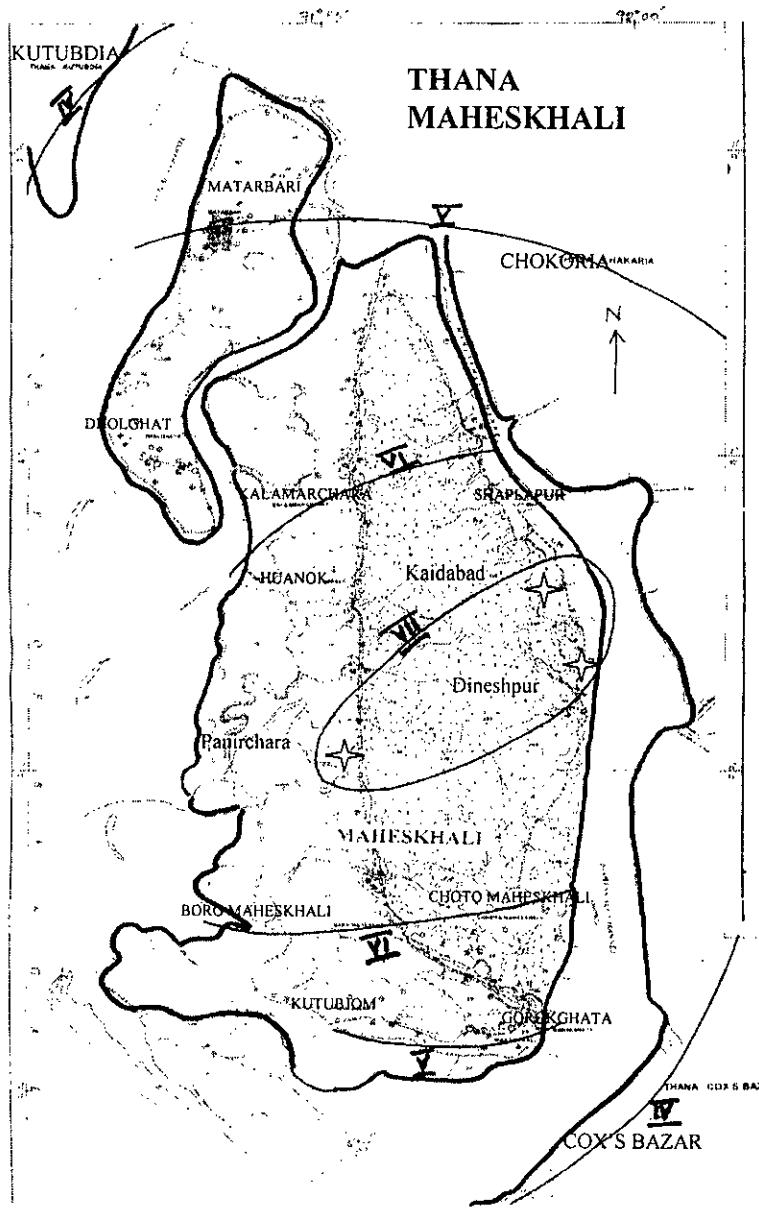
Fig.2.14 Isoseismal of Moheskhali earthquake of 1999

(after Ansary et al., 1999)
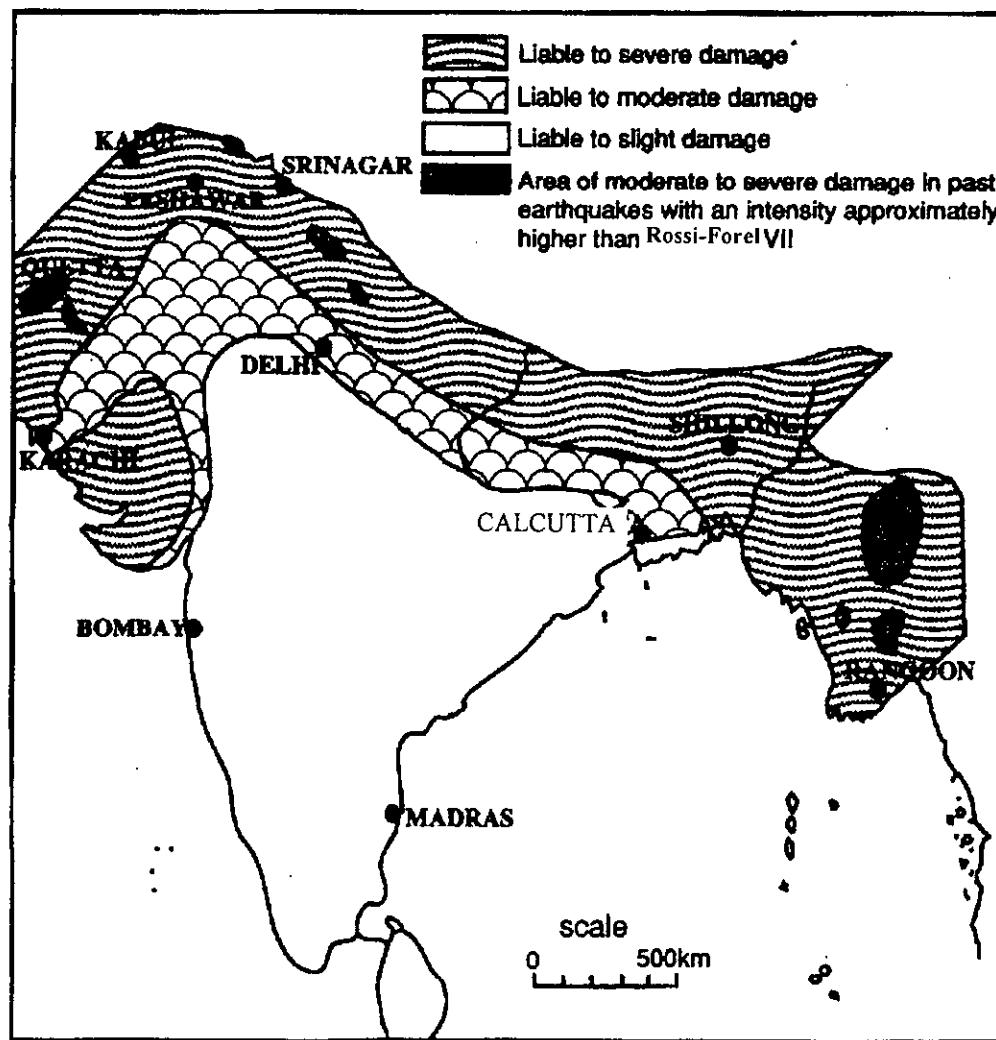
Fig. 2.15 Seismic zones of Indian sub continent compiled by the Geological
Survey of India in 1935 (after Choudhury, 1994)
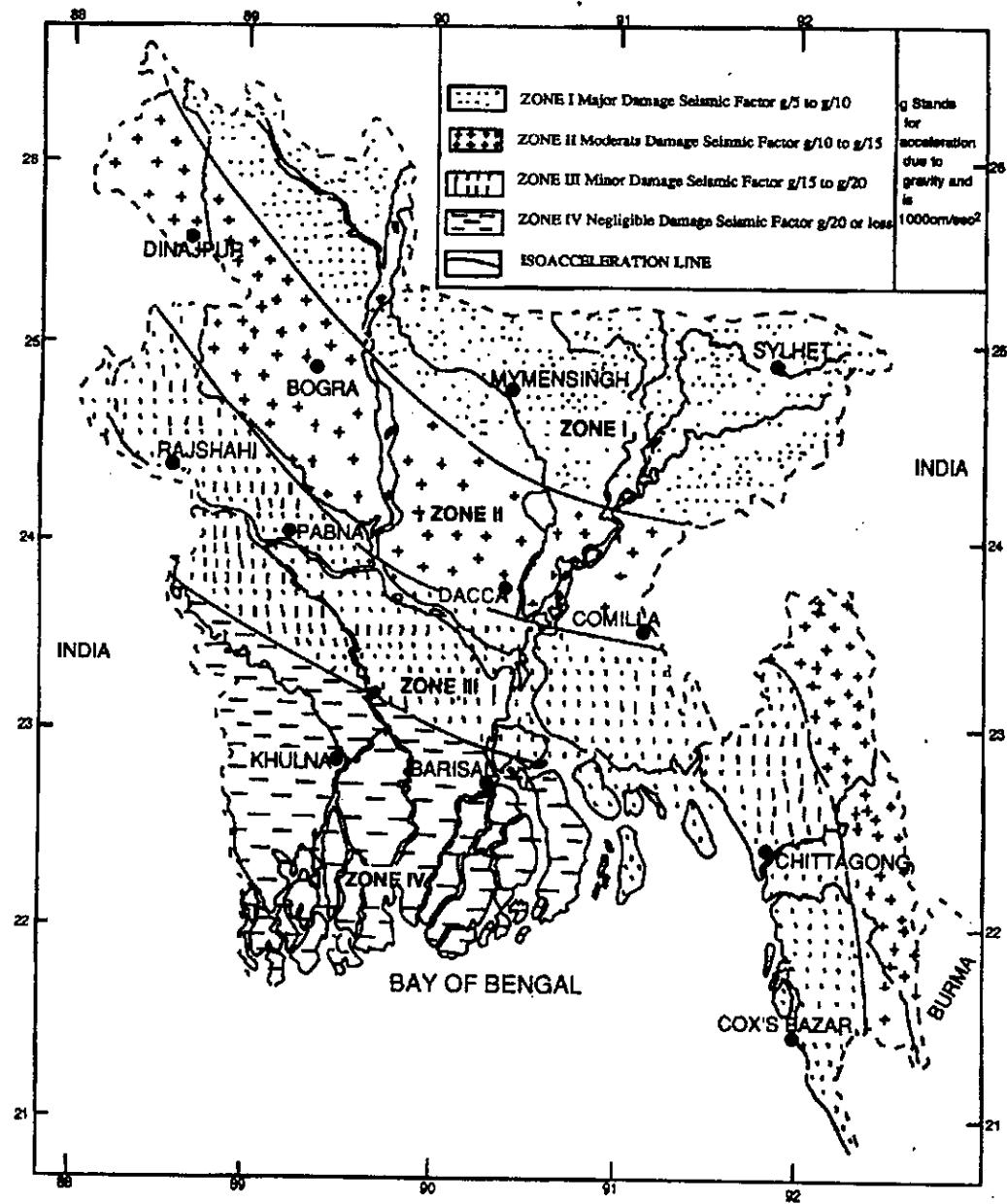
Fig. 2.16 Seismic zones of Bangladesh prepared by Bangladesh Meteorological
Department (after Choudhury, 1994)
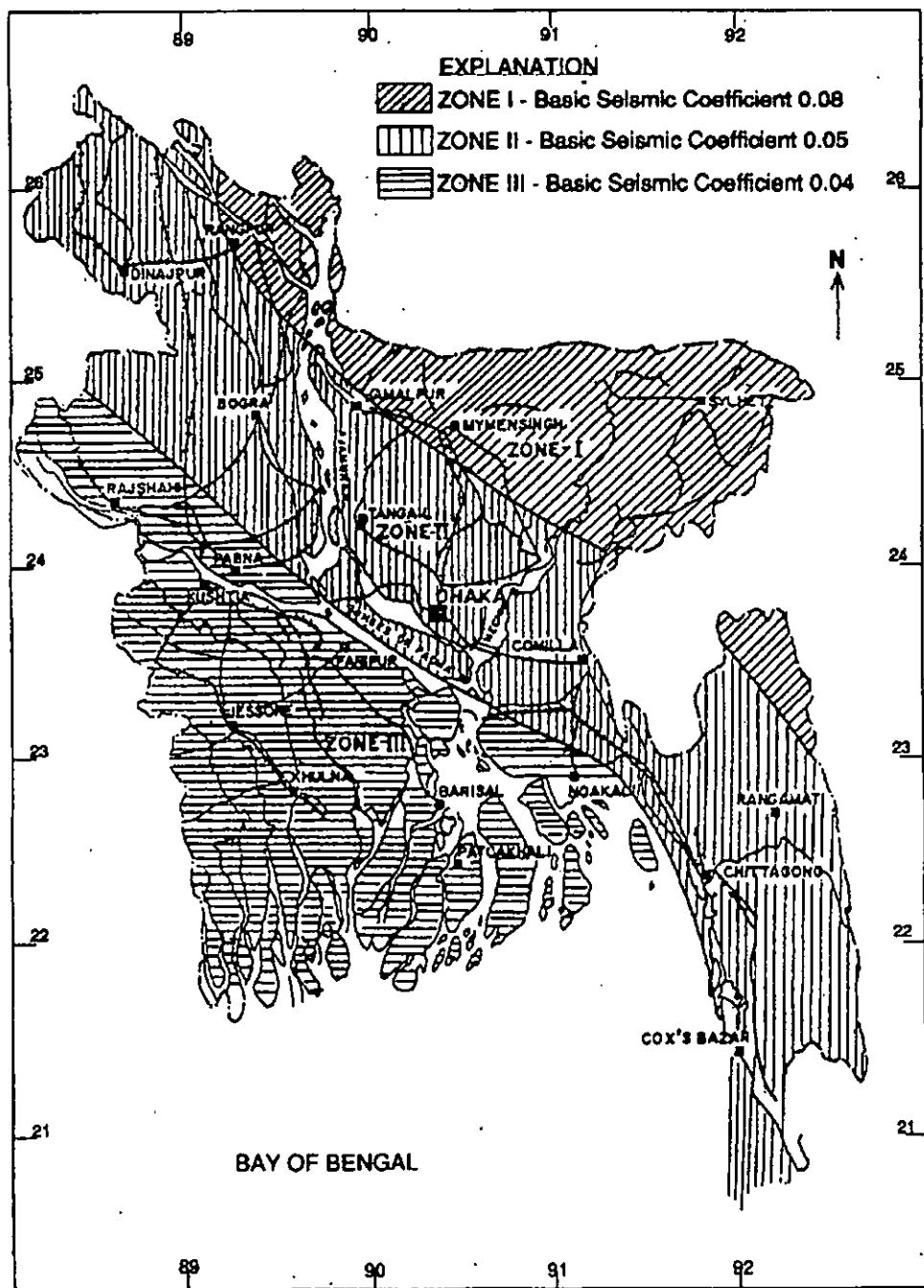
Fig. 2.17 Seismic zoning map of Bangladesh (after GSB, 1979)
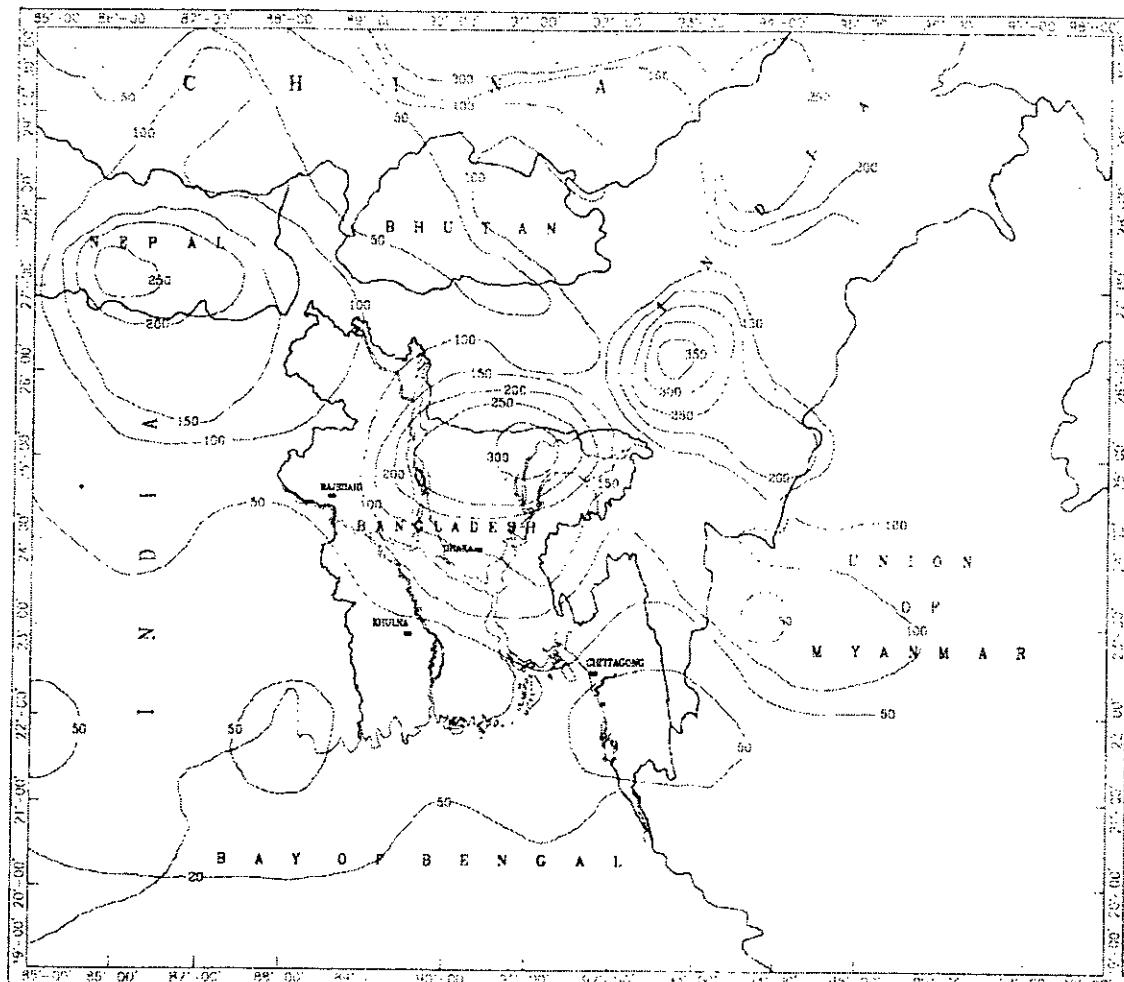
Fig. 2.18 Seismic map of Bangladesh and surrounding area showing 200 year ground surface acceleration(cm/s^2) (after Hattori, 1979)
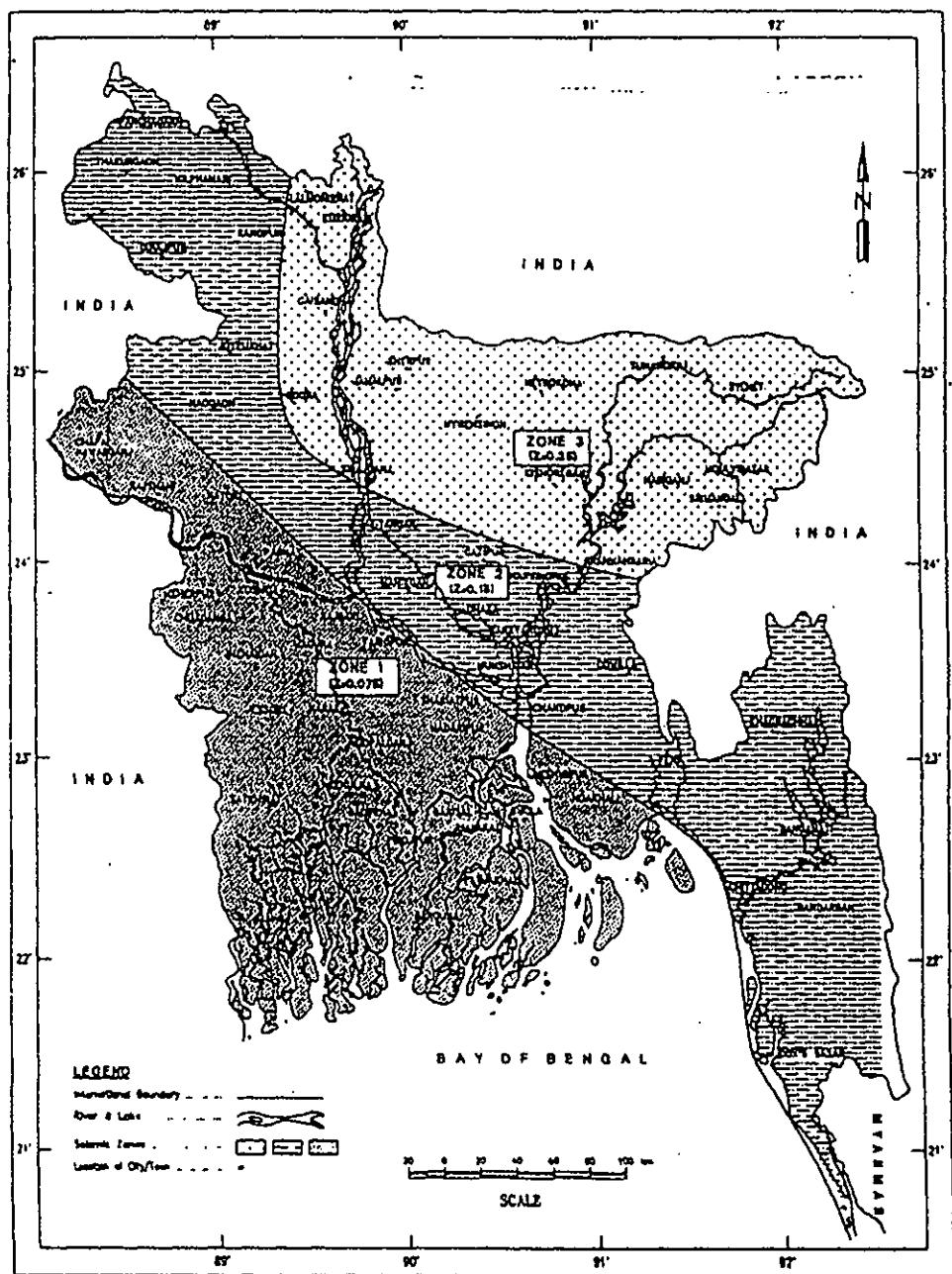
Fig. 2.19 Seismic zoning map of Bangladesh (after BNBC, 1993)

CHAPTER THREE
EARTHQUAKE CATALOGUE

3.1 GENERAL

An earthquake catalogue forms a valuable input for seismic hazard assessment and microzonation studies. Critical structures such as nuclear power plants and dams, as well as siting of any new industry, require earthquake data that are accurate, homogeneous and as complete as possible, so that hidden tectonic features may be revealed and seismic hazard be assessed. Although catalogues are available, they cover different time periods, incomplete at a given region, are grossly deficient in period of occurrences, magnitudes, depths and locations. For some events, especially those prior to 1960, epicentral locations, magnitudes and other pertinent earthquake characteristics are inaccurate or simply not available. A large number of events after 1960 are also incomplete. Great caution must be taken in using published earthquake catalogues uncritically. The previous catalogues are mostly biased against the low magnitude range because of the small number and poor azimuthal distribution of seismographic stations. This problem has been given special consideration since around 1960 as a consequence of the general improvement in the number, distribution and the sensitivity of the seismographic stations (Fig. 3.1). Because of these deficiencies and the point of view of long term prediction and seismic hazard assessment, it is very important that input data in the earthquake catalogue of Bangladesh and adjoining region be revised and homogenized.

In this chapter, an attempt is made to assess the seismicity of Bangladesh and adjoining region (20-28^0 north latitude and 86-95^0 east longitude) during the period 1900-1995 by reviewing instrumental data and macroseismic information retrieved from various sources. In addition earthquake data from 1865 to 1899 are also studied.

3.2 EXISTING EARTHQUAKE CATALOGUE

The present earthquake catalogue of the country consists of data 20-28^0 north latitude and 87-94^0 east longitude (Kundu, 1992). The catalogue has one important drawback, which shows earthquake magnitude M (unknown type) for period up to 1962 and from 1962 onwards earthquakes are represented by body-wave magnitude (Table 3.1).

3.3 REVISION OF MAGNITUDES

The idea of revising and unifying existing magnitudes is carried out. The main goal is to produce a file of reliable data that reflect, as homogeneously and completely as possible, the seismicity of the region. Using non-homogeneous and incomplete magnitude estimations will lead, obviously, to significant bias in magnitude frequency recurrence formula, which is fundamental in seismic hazard evaluation. This problem is solved by

1) Calculation of surface wave magnitude

Surface-wave magnitudes of some earthquake are calculated from the A/T data given in the ISC bulletin using *Prague formula*. The formula is given below

$$Ms = \log(A/T) + 1.66 \log \nabla + 3.3$$

where (A/T) is the maximum value of the ratio of the ground displacement amplitude in microns, T is the corresponding period in seconds, and ∇ is the focal distance in degrees.

2) Use of correlations

i) Surface-wave magnitudes are estimated where possible from semi-empirical relationships between M_S and M_b. The derivation of an empirical relationship between surface-wave magnitude M_S and body-wave magnitude M_b is sought in the form of $M_s = a + b*M_b$. For the region under study, the regression gives

$$M_s = 0.63 + 0.774*M_b \quad \text{- period 1978-1995}$$

This is based on the M_s magnitude given in the ISC catalogue. The other empirical relationship between surface-wave magnitude M_S and body-wave magnitude M_b is based on the calculated Ms using *Prague formula*. That relation is in the form of

$$M_s = 1.27 + 0.68*M_b \quad \text{- period 1964-1977}$$

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Table 3.1 Sample of existing earthquake catalogue (after Kundu, 1992)

Date	Lat N°	Long E°	Magnitude M	Mb	Focal depth(km)
16-08-1950	27.5	91.9	5.5		
17-08-1950	27.9	91.9	6.0		
24-12-1950	24.4	91.7	6.3		
07-04-1951	25.9	90.5	5.0		
07-11-1952	25.5	94.0	6.0		
23-02-1954	27.8	91.7	6.0		
17-04-1955	26.5	90.0	4.5		
29-08-1955	26.0	90.5	4.2		
20-09-1955	27.5	90.0	5.7		
23-11-1955	26.5	90.0	5.0		
14-12-1955	22.0	92.5	6.5		
21-01-1956	23.6	93.5	6.1		
14-03-1956	25.2	90.8	5.0		
12-06-1956	24.8	90.9	5.3		
12-07-1956	22.0	94.0	6.3		
01-07-1957	24.4	93.8	7.2		
12-12-1957	24.5	93.0	5.5		
09-02-1958	25.0	90.5	5.0		
13-02-1958	27.5	92.0	5.5		
22-03-1958	23.5	93.8	6.5		
13-04-1959	22.0	93.3	5.9		
07-06-1959	24.0	94.0	5.4		
02-11-1959	21.5	92.4	5.0		30
26-05-1960	27.0	93.0	5.0		
29-07-1960	26.5	90.5	5.5		
21-08-1960	27.0	88.5	5.5		29
29-09-1961	28.0	87.6	5.5		100
06-11-1961	26.7	91.9	5.0		37
25-12-1961	27.0	90.4	5.5		33
23-10-1962	26.6	93.3	5.5		
17-08-1964	24.2	94.0		4.7	
30-08-1964	27.6	88.3		5.2	21
30-08-1964	27.1	88.4		5.0	
01-09-1964	27.2	92.3		5.7	33
12-01-1965	27.6	88.0		6.1	23
12-01-1965	27.3	87.7		5.3	33
11-04-1965	26.7	92.3		5.1	70
18-06-1965	25.0	93.8		5.8	
06-11-1965	27.2	91.6		4.3	40
09-12-1965	27.5	92.5		5.3	29
24-02-1966	26.3	91.5		5.1	51
24-02-1966	26.0	91.0		5.1	
23-06-1966	25.9	90.0		4.4	20
23-04-1966	26.0	90.4		4.7	25
06-05-1966	22.1	93.2		4.1	
05-06-1966	24.6	93.4		4.1	
26-06-1966	26.2	92.8		4.8	49
05-07-1966	27.8	92.7		4.8	33
26-09-1966	27.5	92.6		5.5	19
26-09-1966	27.5	92.7		4.2	33
04-01-1967	23.4	93.9		5.1	
30-01-1967	25.4	90.5		5.0	46
25-02-1967	27.4	92.4		5.1	33
26-06-1967	22.7	93.9		4.7	

ii) Another empirical method to assess a surface-wave magnitude of a particular earthquake is by using the number of stations (NS) reported to the ISS or ISC.

Many authors have already used the number of stations to assess magnitudes (Karnik, 1969; Rothe,1969; Ambraseys and Melville, 1982). The empirical relationship is assumed to be in the form of

$$M_s = a + b* \text{Log (NS)}$$

The determination of the constants a and b in the above equation is made for three different time intervals for the regions under study:

$$a = 4.21, b = 1.12 \text{ - period } 1900\text{-}1963$$
$$a = 3.21, b = 0.72 \text{ - period } 1964\text{-}1977$$
$$a = 2.77, b = 0.81 \text{ - period } 1978\text{-}1995$$

iii) Surface-wave magnitudes are also estimated where possible from semi-empirical relationships between M_s and duration magnitude M_d. The relation is in the form of

$$M_s = 0.57 + 1.057*M_d \text{ - period } 1993\text{-}1995$$

Figures 3.2 to 3.7 show empirical relations derived above.

After re-scaling, 1262 earthquake events with $M_s \geq 4$ magnitudes are obtained which are shown in Fig. 3.8.

3.4 SEISMIC INSTRUMENTATION IN BANGLADESH

The first seismic instrument in this region was placed at Alipore, Calcutta and was put into service from 1898 (Chaudhury, 1970). The instrument installed was Milne's seismographs. For Bangladesh, the first and the only seismic observatory was placed at Ambagan, Chittagong in 1954 by the Meteorological Department. The seismic instrument consists of three-component short and long periods, low magnification Sprengnether seismographs. At present only the NS component is working. During 1997 Chittagong earthquake the seismograph has been activated and recorded a maximum amplitude of 85 mm.

Due to lack of seismic instrument information regarding many local earthquakes that are not reported by ISC, NEIC, etc. are lost. Recently RRLJ (Regional Research Laboratory, Johrat), a local dense instrument network of India has started reporting to ISC, the earthquake data increased many folds after its inception. Figure 3.9 shows location of seismological observatories in Bangladesh and adjoining areas according to 1996 ISC Bulletin and 1998 RRLJ report.

3.5 THE NEW EARTHQUAKE CATALOGUE

The first task to develop a comprehensive catalogue is to make an inventory of all existing catalogues covering the whole region or parts of it and period under investigation and to compare and combine their entries. In this section, a brief description of the inventoried catalogues of the region and main bulletins of international seismological organizations, which represent an important source of information, are presented.

3.5.1 Previous Catalogues

Cataloguing of earthquakes in the Indian subcontinent started well before 1900. The earliest known earthquake catalogues are those of Oldham (1883), Milne (1912), Tandon and Srivastava (1974), Srivastava and Ramachandran (1985) and Gupta et al. (1986) covering respectively the periods between 1664 to 1869, 1870 to 1899, 1833 to 1971, 1839 to 1900 and 1548 to 1897 and 1897 to 1962. Also other general catalogues, are those of Mallet (1850-1857), ISETR (1983), SEASEE (1985), Turner et al. (BAAS: 1899-1917). In the following section, the main earthquake catalogues used for collecting data in the period of 1900 to 1995 are described briefly.

A. N. Tandon and H. N. Srivastava (1974): a catalogue of earthquakes in India from 1720-1971. They divided India into six regions. The regions are: Kashmir and Western Himalayas (1828-1968), Nepal (1803-1970), Northeast India (1822-1971), Andaman Nicobar Islands (1917-1971), Indo-Gangetic plains and Rajasthan (1720-1970), Kutch and Cambay (1819-1965) and Peninsular India (1764-1970).

H. K. Gupta, K. Rajendran and H. N. Singh (1986): a catalogue of earthquakes in

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north-east Indian region. In the first part they provided a historical catalogue (1548-1897) of the region and in the later part a catalogue containing data from 1897-1962 are placed.

B. Gutenberg and C. F. Richter (1954): a listing of large earthquakes in the world during the period 1904-1952. They used various sources around the world.

J. P. Rothe (1969): this catalogue is the continuation of the seismicity of the Earth by Gutenberg and Richter (1954). It covers the whole World during the period 1953-1965 for magnitudes larger than 5.

3.5.2 Seismological Bulletins

Monthly bulletins of different seismological stations and international organizations have been used along this study for checking the event itself, completing missing characteristics as the magnitude. Moderate earthquakes in Bangladesh and adjoining areas are recorded by BJI (Beijing), MOS (Moscow) and RRLJ. Also the seismological bulletins of the following international organizations on which the new catalogue of Bangladesh and adjoining areas are based are listed:
- International Seismological Summary (ISS) (1918-1963);
- International Seismological Centre (ISC) (1964-1995);
- United States Geological Survey (USGS);
- National Earthquake Information Centre (NEIC).

3.5.3 Structure of the New Catalogue

The catalogue for Bangladesh and adjoining areas consists data of $20\text{-}28^0$ north latitude and $86\text{-}95^0$ east longitude and for the period 1865-1995. The new earthquake catalogue for Bangladesh is presented in Appendix A

Each event in the catalogue is defined by the following entries as they appear:
Date - Year, month and day (YR-MNH-DY). For the events where the month is not known, the month is replaced by a <hyphen> and if the day is not available, the day is replaced by a <hyphen>.

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Time - Hours, minutes and seconds (H-MIN-S) are given in GMT. The time is that reported by the cited author or seismological station or agency. When a time component is not known, the field is replaced by a <hyphen>.

Epicentre - It refers to the geographic longitude and latitude position of the epicentre. The longitude (LON) is given in degrees and the latitude (LAT) is also given in degrees.

Depth - The focal depth (DEP) is given in kilometers. The depth values reported by calculating agency or authors are adopted in this catalogue. When the depth is not known, this field is replaced by a <hyphen>.

Magnitudes - The catalogue contain five types of magnitudes:

M_S: surface-wave magnitude. This magnitude is followed by a code indicating its source: ( ) determined from amplitude-period readings.; (1) converted from number of reporting seismological stations; (2) converted from body-wave magnitude; (3) converted from local magnitude, (4) converted from duration magnitude

M_b: body-wave magnitude

M: unspecified magnitude

M_l: local magnitude

M_W: moment magnitude

M_d: duration magnitude

If a magnitude is not available, the field is replaced by a <hyphen>.

Intensity - Maximum intensity reported by ITSC. The intensity does not necessarily correspond to the epicentral intensity. If an intensity is not available, the field is replaced by a <hyphen>.

Intensity scale - Intensities are re-evaluated according to EMS-92 (European Seismological Commission, 1993) scale. The degree of accuracy of the intensity assigned has also to be determined according to the quality and completeness of the data available. For earthquakes for which macroseismic data are not sufficient to allow an intensity re-evaluation and for the homogeneity of the catalogue, intensities reported in other intensity scales are converted directly to the EMS scale.

Number of stations - NS is the number of seismological stations reporting the event.

Remarks - Eventual remarks (RMK) concerning the data and the event itself:

M: macroseismic location (if blank: instrumental location)

F: foreshock

A: aftershock (if blank: main shock)

*: complete study with isoseismal map

Sometimes macroseismic area of an earthquake together with number of aftershocks is reported.

Localisation - The site in which the earthquake was most felt. If a location is not available, the field is replaced by a <hyphen>.

Country - BD: Bangladesh; BU: Bhutan; ID: India; MR: Myanmar; NP: Nepal; CH: China.

References - Codes are used to define the names of the authors, national or international seismological stations or agencies that reported the event. The complete list of these sources is given below:

BJI/PEK - Beijing, Institute of Geophysics, China

CS - Chaudhury and Srivastava (1976)

DUDA - Duda (1965) covers data from 1897 to 1964

GBG - Gosavi, Bapat and Guha (WCEE)

GEE - E. R. Gee (1934)

GR - Gutenberg and Richter (1954) covers data from 1903 to 1952

HKG - Gupta et al. (1986) covers data from 1548 to 1962

HRVD - Harvard University, Department of Geological Sciences

ISETR - Indian Society of Earthquake Technology Roorkee (1983) covers data from 1926 to 1979

ISS - International Seismological Summary covers data from 1918 to 1963

ISC - International Seismological Centre covers data from 1964 onwards

MDS - C. S. Middlemiss (1906)

MOS - Moscow, Institute of the Physics of the Earth, Russia

MST - Murray Stuart (1920)

NDI - Delhi, Meteorological Department, India

NEIC - National Earthquake Information Centre, USGS, USA

QUE - Quetta, Geophysical Centre, Pakistan Meteorological Department,

ROT - Rothe (1969) covers data from 1953 to 1965

RRLJ - Regional Research Laboratory Jorhat, India covers data from 1992 onwards

SEASEE - Southeast Asia Association of Seismology and Earthquake Engineering (Volume II - Thailand, 1985) covers data from 624 BC to 1983

SHL - Shillong, Central Seismological Observatory, India

TS - Tandon and Srivastava (1974) covers data from 1720 to 1971

TM - Tandon and Mukherjee (1956)

TR1 - British Association for Advancement of Science (16th BAAS, 1911) covers data from 1899 to 1903

TR2 - British Association for Advancement of Science (17th BAAS, 1912) covers data from 1904 to 1909

TR3 - British Association for Advancement of Science (18th BAAS, 1913) covers data of 1910

USCGS - United States Coast and Geodetic Survey

It is to be noted that the data from ISETR are less reliable. In some cases it is observed that for same earthquake event which is reported in the ISC bulletin but from different sources are shown as different earthquake in ISETR catalogue.

3.6   DETECTABILITY OF EARTHQUAKES

Since the occurrence probabilities of earthquakes is taken from historical occurrence data only, it is important to analyze these data for consistency and statistical homogeneity. The technology for detecting and measuring earthquakes has improved significantly over the last century. This has enhanced the precision of the data gathered. For statistical purposes, it must be determined if the sample used for analysis is representative of the population.

Figure 3.10 shows the number of earthquakes with known and unknown magnitudes. As shown in the figure, there is a sharp increase in the number of earthquakes with known magnitudes starting around the early 1960s. This trend may be attributed to the improvement of the technology for the detection of earthquakes worldwide. From the early 1960s, the number of earthquakes with known magnitudes increased.

From the late 1980s, the number of earthquakes with small magnitudes dramatically increased. Figure 3.11 shows the number of detected earthquakes with small magnitudes and Fig. 3.12 shows the number of detected earthquakes with medium and large magnitudes. It can be seen that the number of large magnitude earthquakes

has been fairly constant throughout the period. It can be also noticed that earthquakes with magnitudes between 5 to 6 outnumber the earthquakes with larger magnitudes.

Figure 3.13 shows the frequency distribution of the magnitude classes for all earthquakes in the database. However, the plot shows some distortions due to uneven tendencies in magnitude detectability from 1865 to 1995, as discussed above.

To understand more clearly, the frequency distributions of the magnitude for three time periods are plotted in Fig. 3.14. The figure shows predominance of earthquakes with large magnitudes from 1900 to 1963 and also shows that earthquakes with unknown magnitudes were prevalent from 1865 to 1963. The predominance of small magnitude earthquakes from 1964 to 1995 is also observed. The distribution from 1964 to 1995 is closer to the expected logarithmic occurrence frequency of the different magnitudes. It should be noted, however, that these frequencies are for the whole region under study. For earthquake hazard analysis, it is important to exclude earthquakes, which are far from the site.

From the above discussions, it seems that the historical data will have a bias depending on the time period chosen for the analysis. However, it can also be noted that the data is reasonably consistent for large magnitude earthquakes.

The increase in the number of smaller earthquakes (M<5.0) may have caused the number of larger magnitude earthquakes to decrease because of the frequent but milder release of the strain energy. Another very plausible explanation is that modern instruments can detect more small magnitude earthquakes than before. It would then be a case of observation capability instead of a rising trend in seismic activity of medium magnitude earthquakes. In such a case, the decrease in the occurrence rate of large magnitude earthquakes may then mean that excess strain energy is being accumulated. This might be a case of seismic gap in that more large magnitude earthquakes are to be expected in the future.

3.6.1 Temporal Distribution of Grouped Events

Figure 3.15 shows the number of earthquakes per decade in the study region grouped

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into five magnitude ranges, $3 \leq M < 4$, $4 \leq M < 5$, $5 \leq M < 6$, $6 \leq M < 7$ and $7 \leq M$. The total number of events per decade is also plotted. Table 3.2 lists the numerical magnitude data from the compiled catalogue associated with Fig. 3.15. Examining Table 3.2 and Fig. 3.15, the first observation to note is the uniformity in the number of reports of large earthquakes per decade with surface-wave magnitude equal to or larger than 6. It is likely that these large events have been completely reported during the whole period 1865-1995. Another interesting feature is the significant increase in the total number of reported shocks(more than 100) in the last four decades (1955-1995). This is due to the considerable contribution of small magnitude events gained from the low detection threshold introduced by the global improvement in the sensitivity, distribution and number of seismographic stations. About 90 percent of the earthquakes in the compiled catalogue were reported in the last 41-year, interval from 1955 to 1995. This is in contrast to 5 percent in the next oldest 40-year period, from 1915 to 1954, and only 5 percent in the first 50 years of the catalogue. This gives a good idea of the degree of incompleteness of the early earthquake data sample. A third important observation, in Fig. 3.15, is the characteristic exponential trend in the distribution of magnitudes in each decade. This exponential behavior is clearly observed in the last four decades of the catalogue, where all the magnitude ranges have contributed to the shape of the curve. In the first nine decades of the catalogue, the exponential trend is not traced. This may be explained by the inadequacy in the early earthquake reports which obviously led to incomplete magnitude classes.

Table 3.2 Number of earthquakes reported in each decade since 1865

Period	3≤M<4	4≤M<5	5≤M<6	6≤M<7	7≤M	Unknown	Total
1865-74	-	-	-	-	1	40	41
1875-84	-	-	-	-	-	49	49
1885-94	-	-	-	-	1	21	22
1895-04	-	-	-	-	1	20	21
1905-14	-	-	-	-	-	8	8
1915-24	-	-	2	-	2	6	10
1925-34	-	1	14	3	2	11	31
1935-44	-	-	18	8	2	4	32
1945-54	-	-	9	4	1	31	45
1955-64	5	13	9	18	-	66	111
1965-74	18	116	7	-	-	16	157
1975-84	78	165	8	1	-	4	256
1985-95	826	768	51	7	1	56	1709
	927	1063	118	41	11	332	2492

3.7 Completeness of Earthquake Catalogues

This catalogue is also analysed for completeness using the method proposed by Stepp (1972). This method determines the time period in which the estimate of the occurrence rate of a certain magnitude class is stable.

It is common for databases to have old data dating back to before the 1960s. During that time, the capability to determine epicenters, magnitudes, and depths of small earthquakes occurring worldwide was still not developed. In that case, the time period of observation for small magnitude earthquakes should not be taken as the period of the entire database. Otherwise, the rate of occurrence of small earthquakes will be underestimated.

The occurrence of large earthquakes is limited. Thus, a catalogue with a short time period will not be able to represent its occurrence rate accurately.

Therefore, there is a need to determine the "correct" time period for each class or range of magnitudes. For small earthquakes, the time period should be short enough to exclude incomplete years but should be long enough to establish stability or the rate of occurrence. For large magnitudes, the time period should be long enough to estimate the occurrence rate. Generally, a longer time period is better. But if only databases with short time periods are available, it must first be established whether this time period is enough or not.

3.7.1 Methodology

Stepp (1972) proposed the use of the moments of the Poisson distribution to evaluate the completeness of a data set. The proposed method can be summarized as:

Let λ be the mean rate of occurrence of an event. The event may be defined as an earthquake of a certain magnitude, of a certain intensity, etc. If N is the cumulative sum of such events, then:

$$\lambda = N \,/\, \text{year} \tag{3.1}$$

If $k1$, $k2$, $k3$, ..., kn are the number of events per unit time interval and these events follow the Poisson distribution, then an unbiased estimate of the mean rate of

$$\lambda = \frac{1}{n} \sum_{i=1}^{n} k_i \tag{3.2}$$

occurrence per unit time interval is:

and the variance of λ is:

$$\sigma_\lambda^2 = \frac{\lambda}{n} \tag{3.3}$$

where n is the number of unit time intervals. If the unit time interval is taken as one year, then:

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$$n = T \qquad (3.4)$$

where T is the time period of the sample. Eq. 3.3 then becomes:

$$\sigma_\lambda^2 = \frac{\lambda}{T} \qquad (3.5)$$

and the standard deviation is:

$$\sigma_\lambda = \sqrt{\frac{\lambda}{T}} \qquad (3.6)$$

Assuming stationarity of the sample, the mean rate of occurrence will be constant. Then:

$$\sigma_\lambda = A.\sqrt{\frac{1}{T}} \qquad (3.7)$$

where A is a constant and is equal to $\sqrt{\lambda}$.

Therefore, for a given sample with assumed stationarity, σ_λ should have the same shape as $1/\sqrt{T}$.

When plotted on a log-log scale, $1/\sqrt{T}$, is linear. Therefore, the catalogue is deemed to be complete for the range of time where the standard deviation of λ is linear and has the same slope as $1/\sqrt{T}$.

3.7.2 Application

The database previously mentioned will be subjected to the procedure described above. But first, the cumulative frequency of the events will have to be computed. The analysis was done for magnitudes 3.0 to greater than 7.0.

To have many magnitude classes and still have workable values, an interval of 1.0 magnitude was used in the analysis. Thus, five classes or intervals of the magnitude will be analyzed.

Let T be the number of years from the most recent year considered and j be the class or interval of the magnitude. Substituting Eqs. 3.2 and 3.4 in Eq. 3.5 gives:

$$\sigma_\lambda(j,T) = \frac{\sqrt{\frac{1}{T}\sum_{i=1}^{T}k_i(j)}}{\sqrt{T}} \tag{3.8}$$

For each interval, the standard deviation, σ_λ, is plotted and compared with the model line:

$$\sigma_\lambda = \sqrt{\frac{1}{T}} \tag{3.9}$$

This procedure was applied to the three databases from the most recent data to the oldest.

It is common for this type of databases to consider the most recent data as preliminary and which may be adjusted after a more thorough study. Considering this fact, the analysis is also done for the database when the most recent year considered was 1995.

3.7.3 Results

The frequencies for the magnitude classes has been obtained. This is done for each year of the data set. The frequency table has then been sorted from newest to oldest data. T was set as the number of years from the most recent year. Then, for each T and for each magnitude class, j, Eq. 3.8 has been applied. The values of the standard deviation of the mean occurrence rate are then plotted on a log-log graph.

The procedure used here is as suggested by Stepp (1972). Stepp computed σ_λ using five-year intervals. Table 3.3 gives the values of mean occurrence rate.

Table 3.3 Values of mean occurrence rate λ and standard deviation σ_λ for five magnitude classes and time interval T for Bangladesh during 1865-1995

Period	T Years	$T^{-0.5}$	3≤M<4			4≤M<5			5≤M<6			6≤M<7			7≤M		
			N	λ	σ	N	λ	σ	N	λ	σ	N	λ	σ	N	λ	σ
1995-1991	5	0.45	722	144.4	5.37	645	129	5.08	43	8.6	1.31	6	1.2	0.49	0	0	0
1995-1986	10	0.32	818	81.8	2.86	753	75.3	2.74	50	5	0.71	7	0.7	0.26	1	0.1	0.1
1995-1981	15	0.26	875	58.33	1.97	845	56.33	1.94	54	3.6	0.49	7	0.47	0.18	1	0.07	0.07
1995-1976	20	0.22	902	45.1	1.5	916	45.8	1.51	57	2.85	0.38	8	0.4	0.14	1	0.05	0.05
1995-1971	25	0.2	913	36.52	1.21	977	39.08	1.25	62	2.48	0.31	8	0.32	0.11	1	0.04	0.04
1995-1966	30	0.18	919	30.63	1.01	1034	34.47	1.07	65	2.17	0.27	8	0.27	0.09	1	0.04	0.04
1995-1961	35	0.17	927	26.49	0.87	1062	30.34	0.93	71	2.03	0.24	10	0.29	0.09	1	0.03	0.03
1995-1956	40	0.16	927	23.18	0.76	1062	26.55	0.81	75	1.88	0.22	25	0.63	0.13	1	0.03	0.03
1995-1951	45	0.15	927	20.6	0.68	1062	23.6	0.72	77	1.71	0.19	27	0.6	0.12	2	0.04	0.03
1995-1946	50	0.14	927	18.54	0.61	1062	21.24	0.65	83	1.66	0.18	30	0.6	0.11	2	0.04	0.03
1995-1941	55	0.13	927	16.85	0.55	1062	19.31	0.59	89	1.62	0.17	32	0.58	0.1	3	0.05	0.03
1995-1936	60	0.13	927	15.45	0.51	1062	17.7	0.54	102	1.7	0.17	36	0.6	0.1	4	0.07	0.03
1995-1931	65	0.12	927	14.26	0.47	1062	16.34	0.5	107	1.65	0.16	39	0.6	0.1	5	0.08	0.03
1995-1926	70	0.12	927	13.24	0.43	1062	15.17	0.47	116	1.66	0.15	41	0.59	0.09	6	0.09	0.03
1995-1921	75	0.12	927	12.36	0.41	1062	14.16	0.43	118	1.57	0.14	41	0.55	0.09	7	0.09	0.04
1995-1916	80	0.11	927	11.59	0.38	1062	13.28	0.41	118	1.48	0.14	41	0.51	0.08	8	0.1	0.04
1995-1911	85	0.11	927	10.91	0.36	1062	12.49	0.38	118	1.39	0.13	41	0.48	0.08	8	0.09	0.03
1995-1906	90	0.11	927	10.3	0.34	1062	11.8	0.36	118	1.31	0.12	41	0.46	0.07	8	0.09	0.03
1995-1901	95	0.1	927	9.76	0.32	1062	11.18	0.34	118	1.24	0.11	41	0.43	0.07	8	0.08	0.03
1995-1896	100	0.1	927	9.27	0.3	1062	10.62	0.33	118	1.18	0.11	41	0.41	0.06	9	0.09	0.03
1995-1891	105	0.1	927	8.83	0.29	1062	10.11	0.31	118	1.12	0.1	41	0.39	0.06	9	0.09	0.03
1995-1886	110	0.1	927	8.43	0.28	1062	9.65	0.3	118	1.07	0.1	41	0.37	0.06	9	0.08	0.03
1995-1881	115	0.09	927	8.06	0.26	1062	9.23	0.28	118	1.03	0.09	41	0.36	0.06	10	0.09	0.03
1995-1876	120	0.09	927	7.72	0.25	1062	8.85	0.27	118	0.98	0.09	41	0.34	0.05	10	0.08	0.03
1995-1871	125	0.09	927	7.42	0.24	1062	8.5	0.26	118	0.94	0.09	41	0.33	0.05	10	0.08	0.03
1995-1865	131	0.09	927	7.08	0.23	1062	8.11	0.25	118	0.9	0.08	41	0.31	0.05	11	0.08	0.03

Figure 3.16 shows the standard deviation of the mean annual recurrence rate for the compiled data set. This figure shows the expected behavior of over each of the magnitude classes of the total 131 year period of the new earthquake catalogue. From this figure, it can be observed that four regions may describe each magnitude class.

A steep negative slope characterizes the first region. It can be seen that the numerator of Eq. 3.8 is dependent on both T and k_j. It is common for some years to have zero occurrences of large magnitude earthquakes. In this case, the summation term on the numerator would be constant and Eq. 3.8 would become:

$$\sigma_\lambda (j,T) = C \frac{\sqrt{\dfrac{1}{T}}}{\sqrt{T}}$$

(3.10)

where C is a constant. The logarithm of $\sigma_\lambda(j,T)$ can then be simplified to:

$$\log \sigma_\lambda (j,T) = \log C + \log 1 - \log T$$

(3.11)

. The slope on the log-log plot would then be constant equal to -1 on the log-log scale. This value can be derived by taking the derivative of Eq. 3.11 with respect to log T.

A slope gradually becoming close to the slope of the model equation (Eq. 3.9) characterizes the second region. In this region, the data set can be surmised as complete for the corresponding magnitude class.

The third region is characterized by a shift in slope; i.e., from negative slope to a positive slope. This region is clearly seen in magnitude classes 6.0 to 7.0, and M greater than 7.0 in Figure 3.16.

A slope equal to the slope of the first region characterizes the fourth region. This region is commonly found in the smaller magnitudes; i.e., the first three magnitude classes. The reason for this trend is that as the data set becomes older (T becomes large), the detection of smaller magnitude earthquakes approaches zero. This condition would then be similar to the case of large magnitude earthquakes with small

T. The completeness results of the new earthquake catalogue are summarized in Table 3.4.

Table 3.4 Results from analysis of completeness for the new catalogue (1865-1995)

Magnitude class	Period of complete reporting (year)
3≤M<4	1964-1995
4≤M<5	1964-1995
5≤M<6	1923-1995
6≤M<7	1927-1995
7≤M	1865-1995
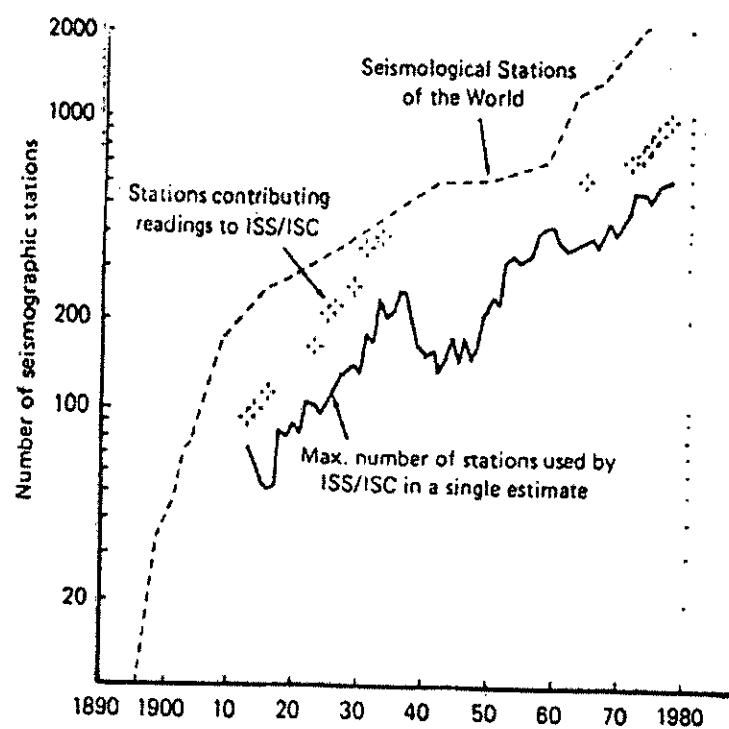
Fig. 3.1 Chronological conspectus of the seismological stations in the world (after Ambraseys, 1982)
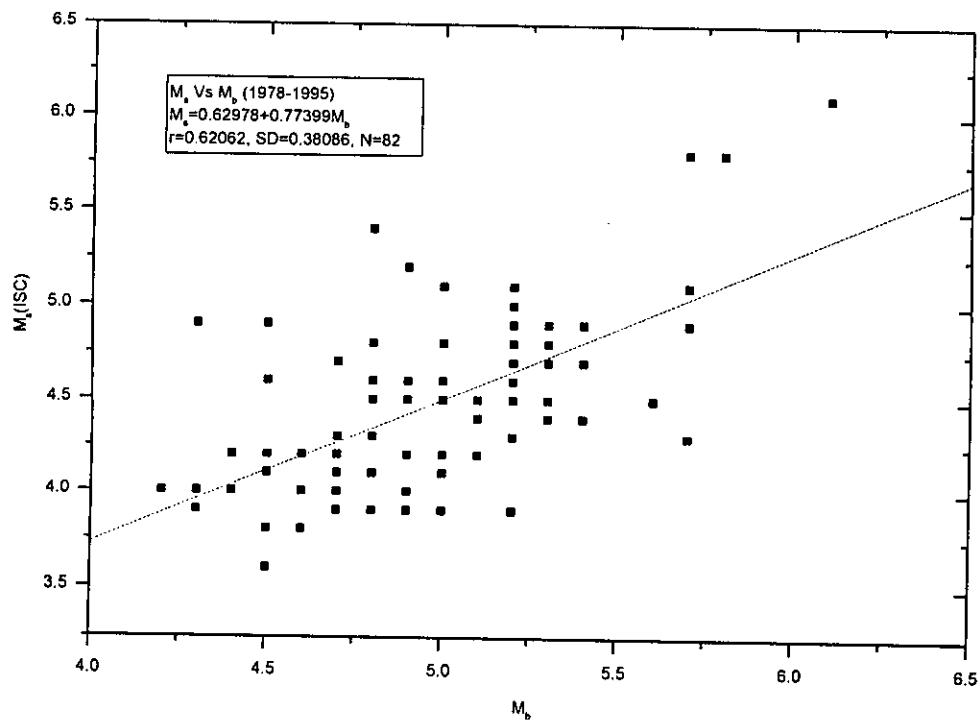
Fig. 3.2 Correlation between M_s (ISC) and M_b
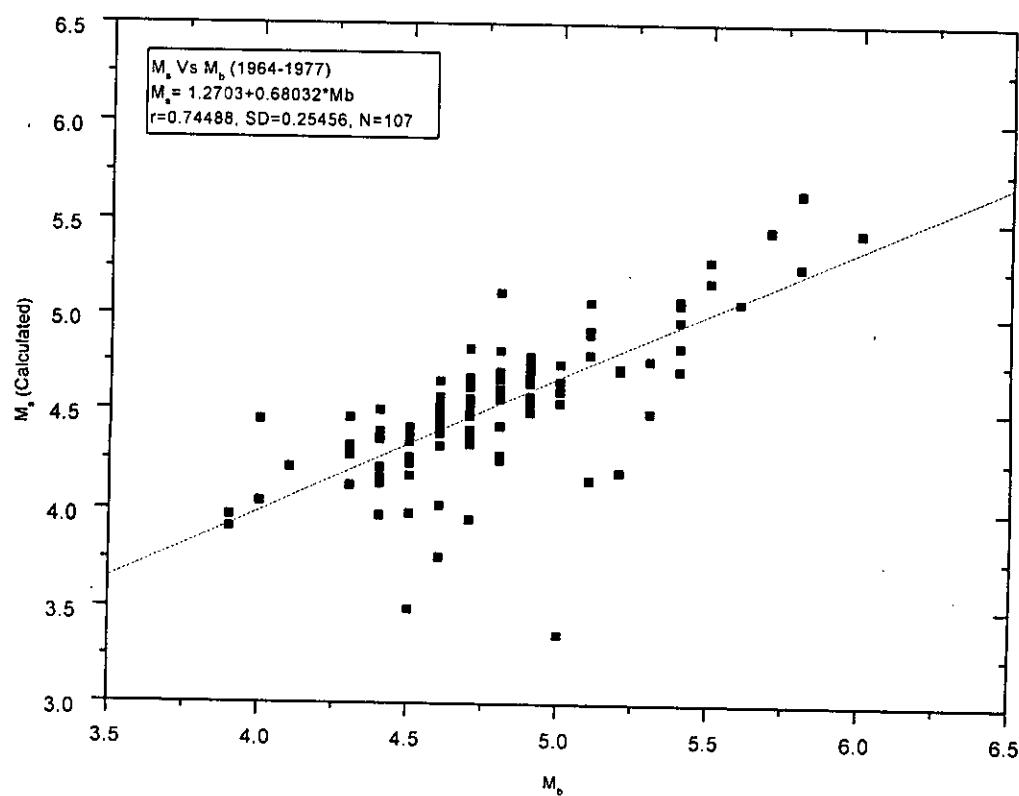
Fig. 3.3 Correlation between calculated M_s and M_b
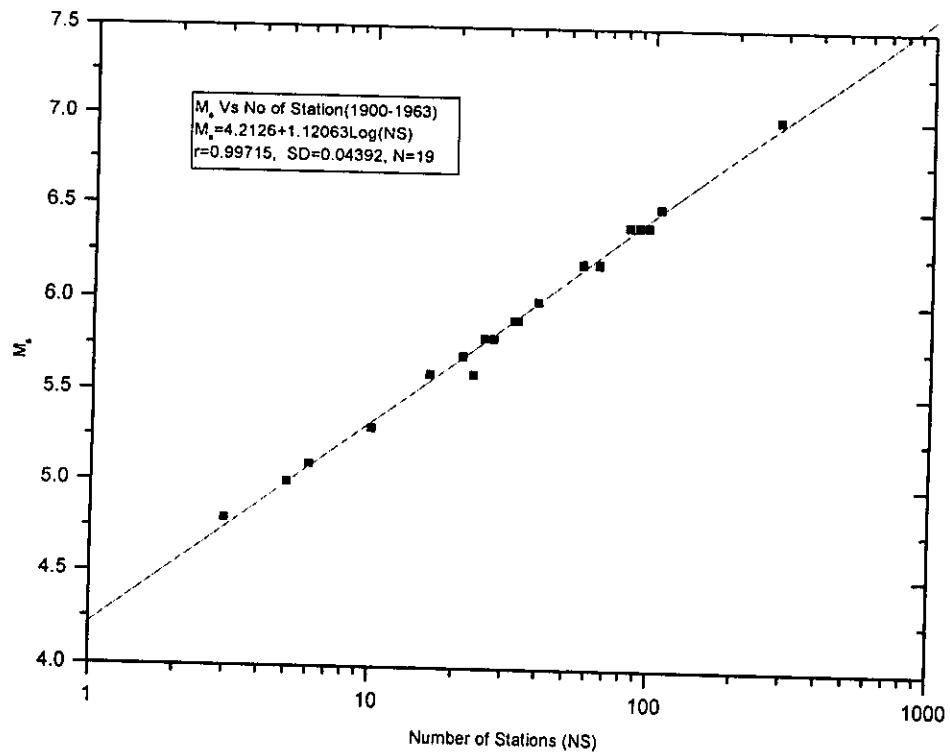
Fig.3.4 Correlation between M_s and Number of Stations (NS)
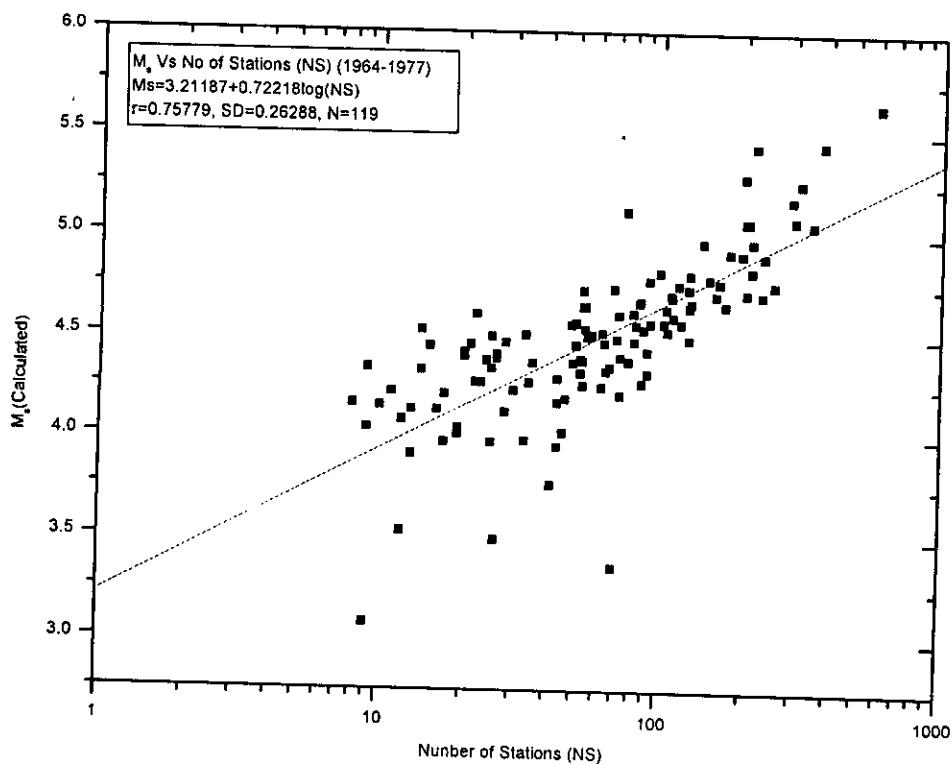
Fig. 3.5 Correlation between Ms (calculated) and number of stations (NS)

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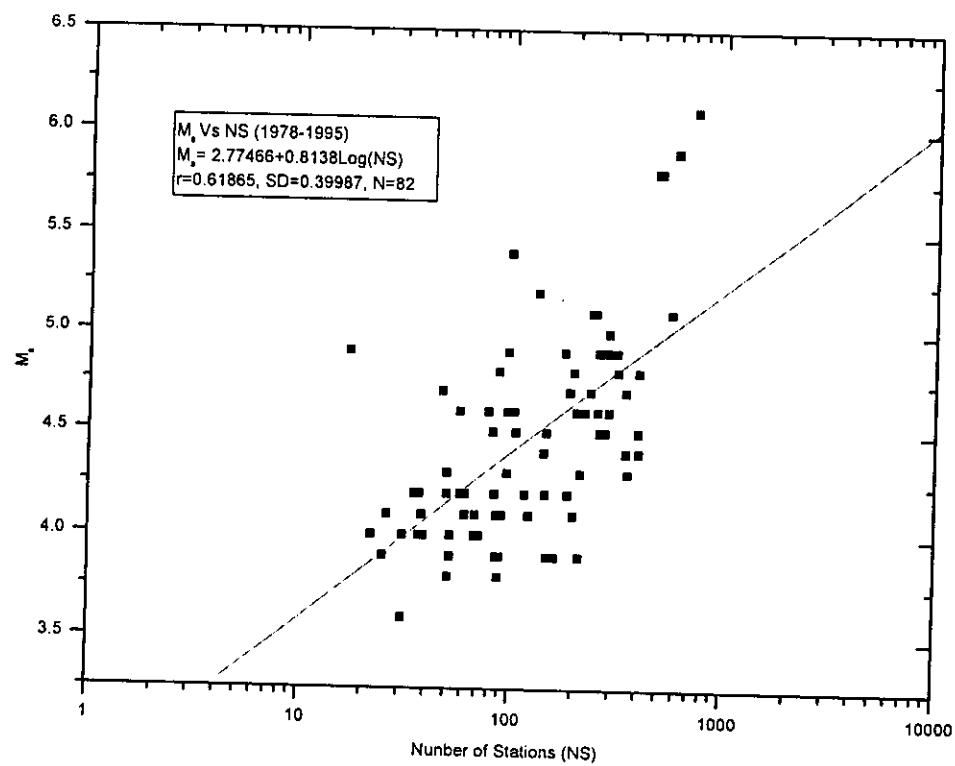
Fig. 3.6 Correlation between Ms and number of stations (NS)
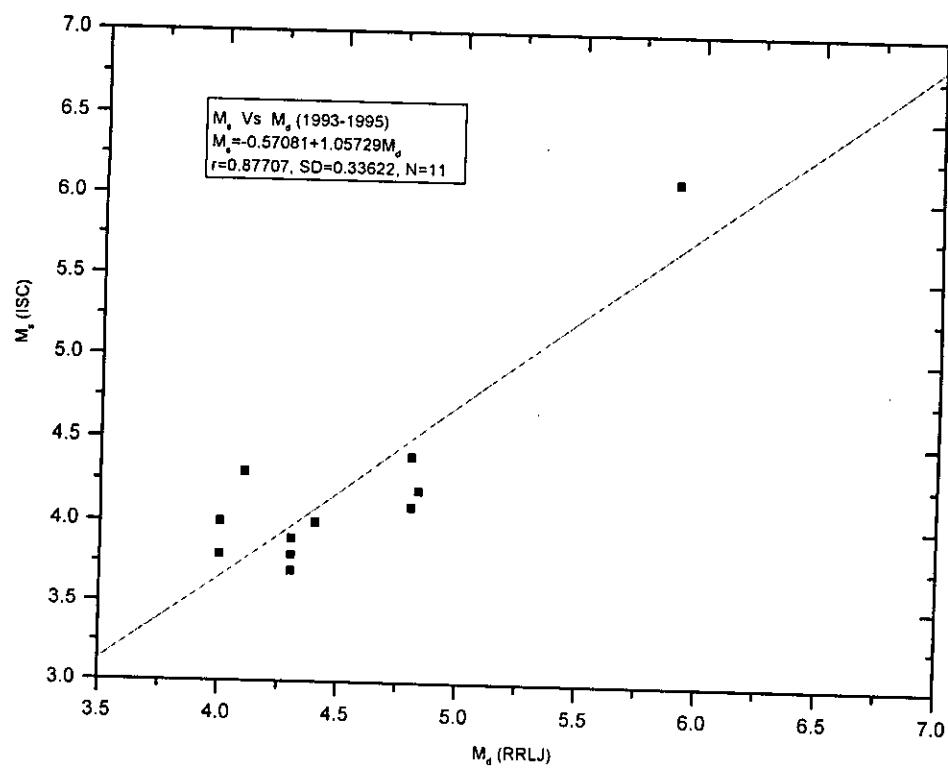
Fig. 3.7 Correlation between M_s and M_d
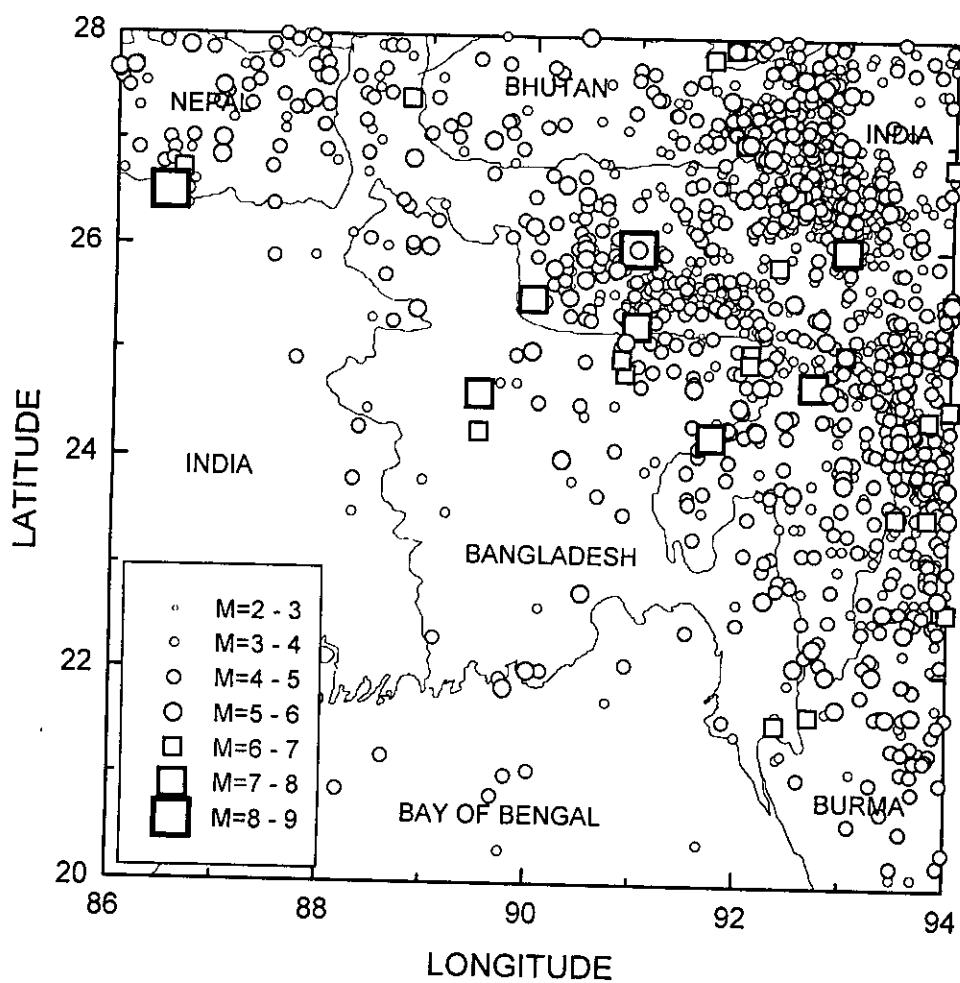
Fig. 3.8 Geographical distribution of seismicity of Bangladesh and adjacent region
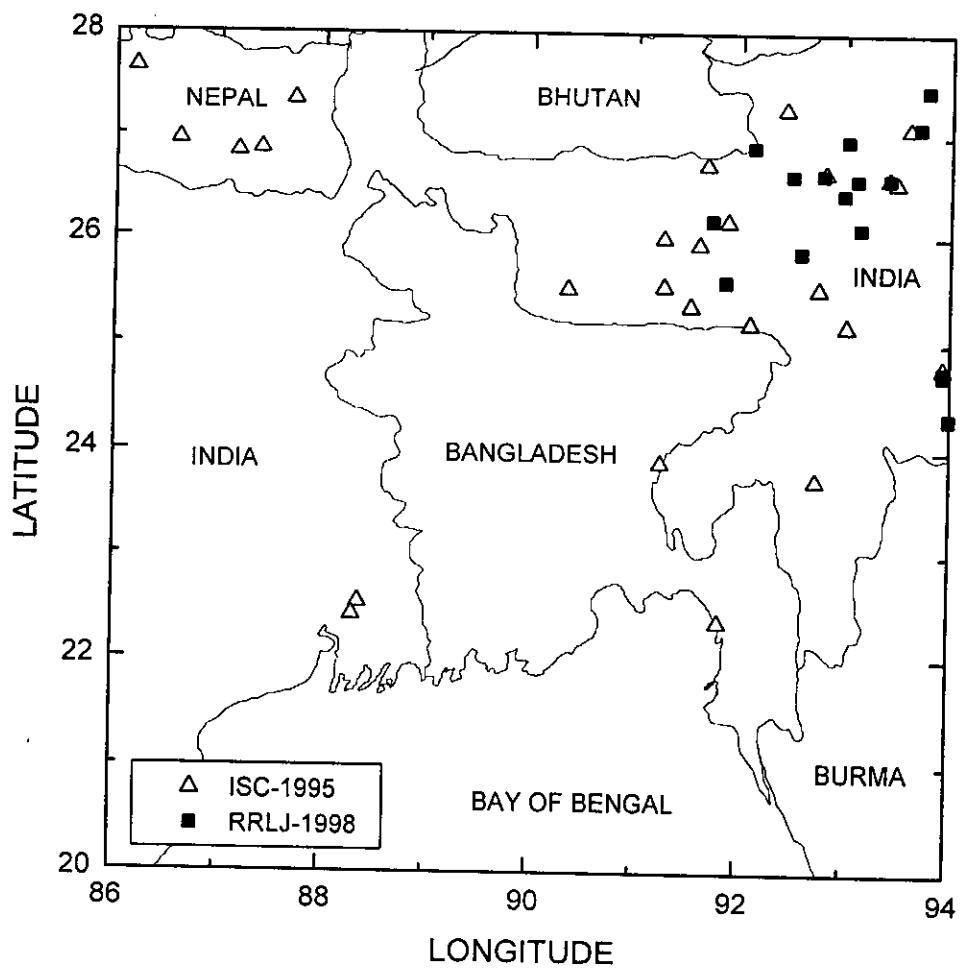
Fig.3.9 Seismic monitoring stations surrounding Bangladesh
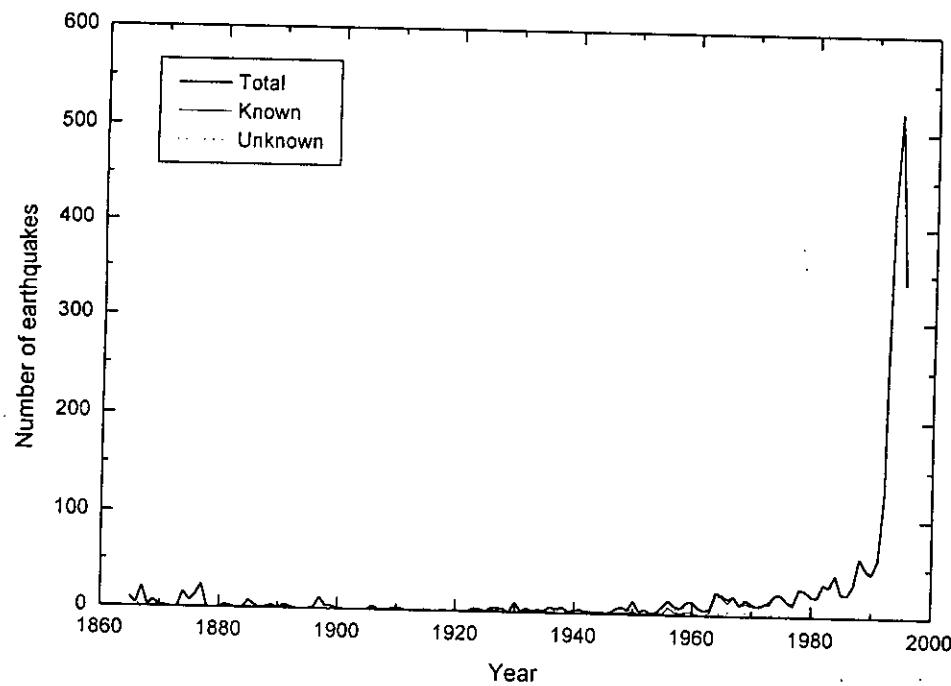
Fig. 3.10 Number of earthquakes with known and unknown magnitudes
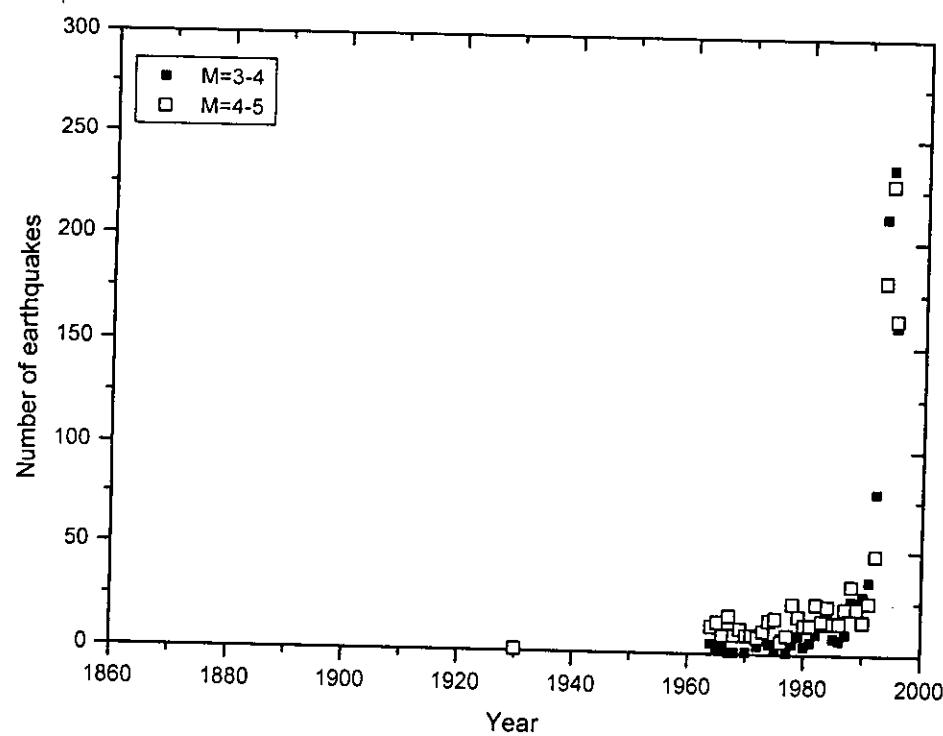
Fig. 3.11 Detection of small earthquakes

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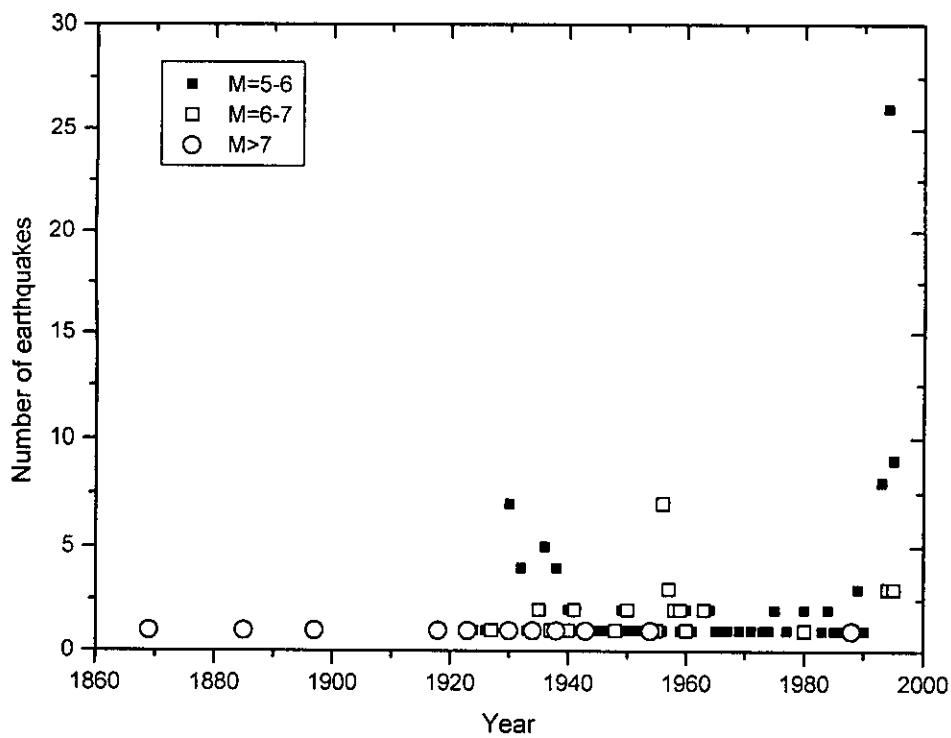
Fig.3.12 Detection of medium and large earthquakes
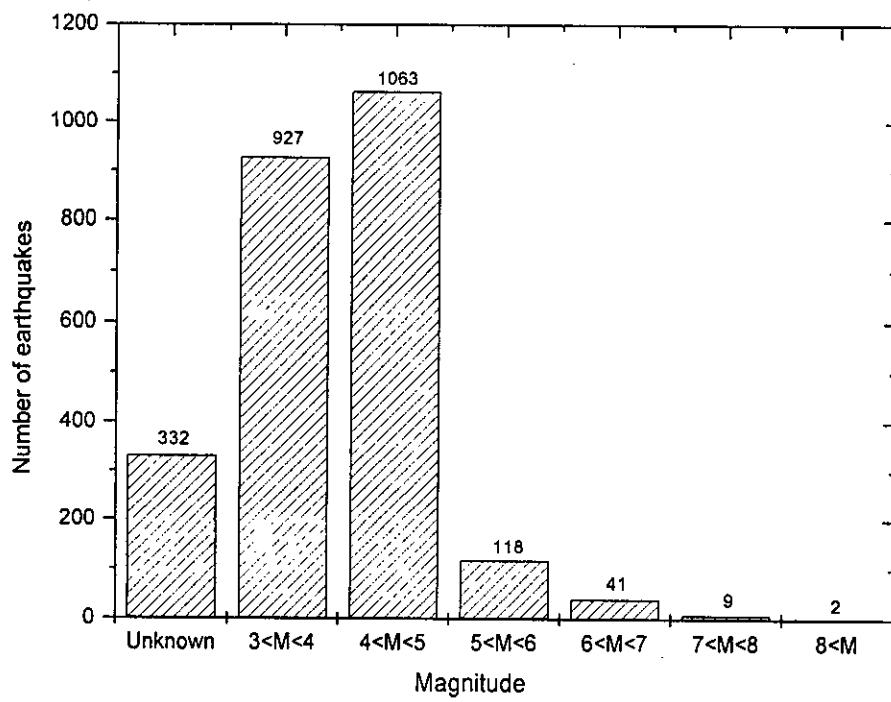
Fig.3.13 Distribution of magnitudes for the present database (1865-1995)

66
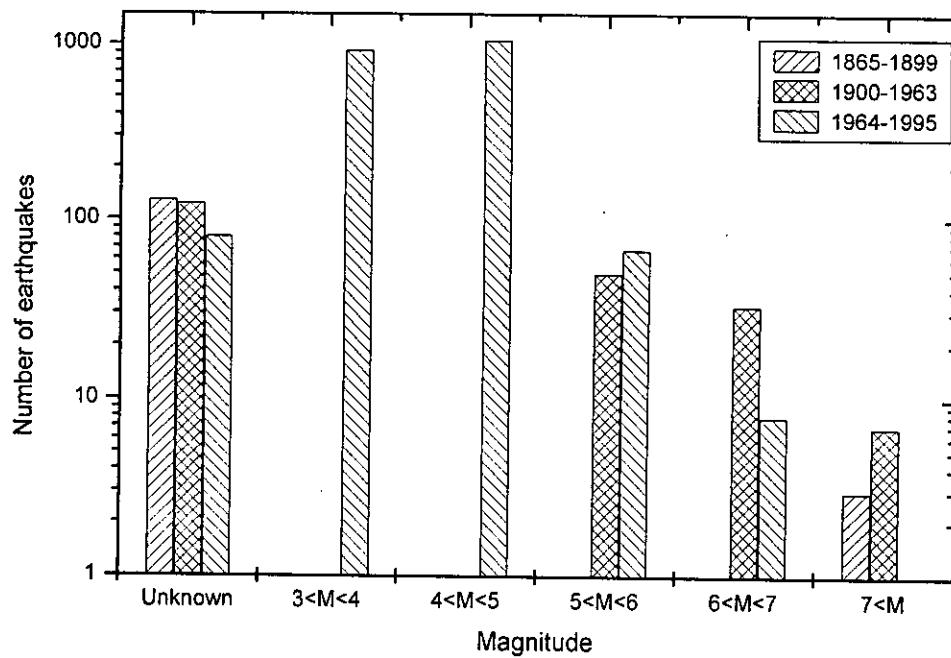
Fig.3.14 Distribution of earthquakes for three time period
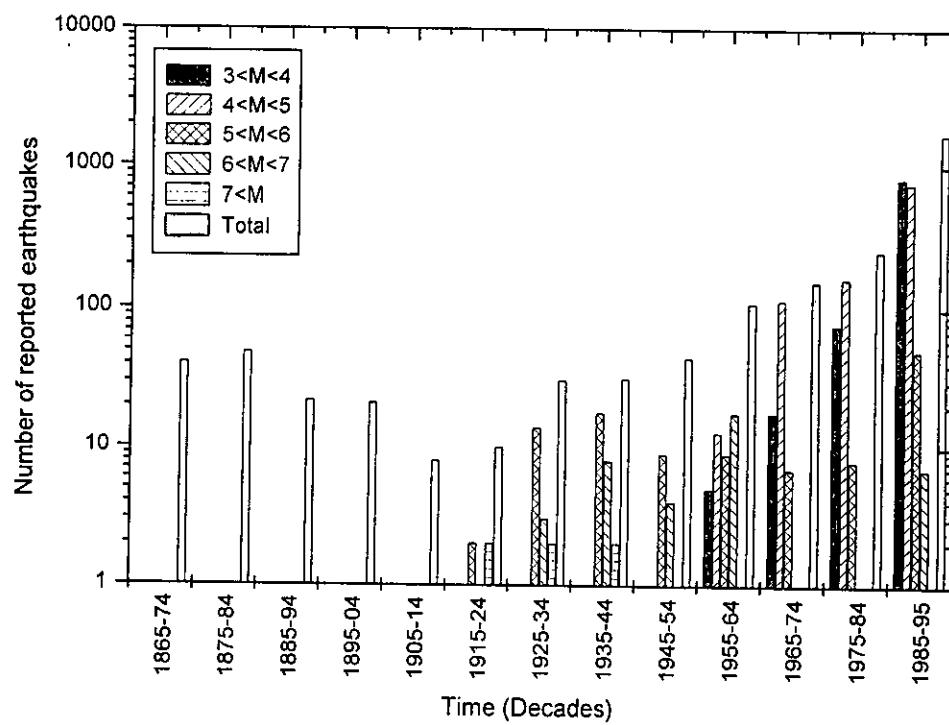
Fig.3.15 number of earthquakes per decade and grouped
into five magnitude classes
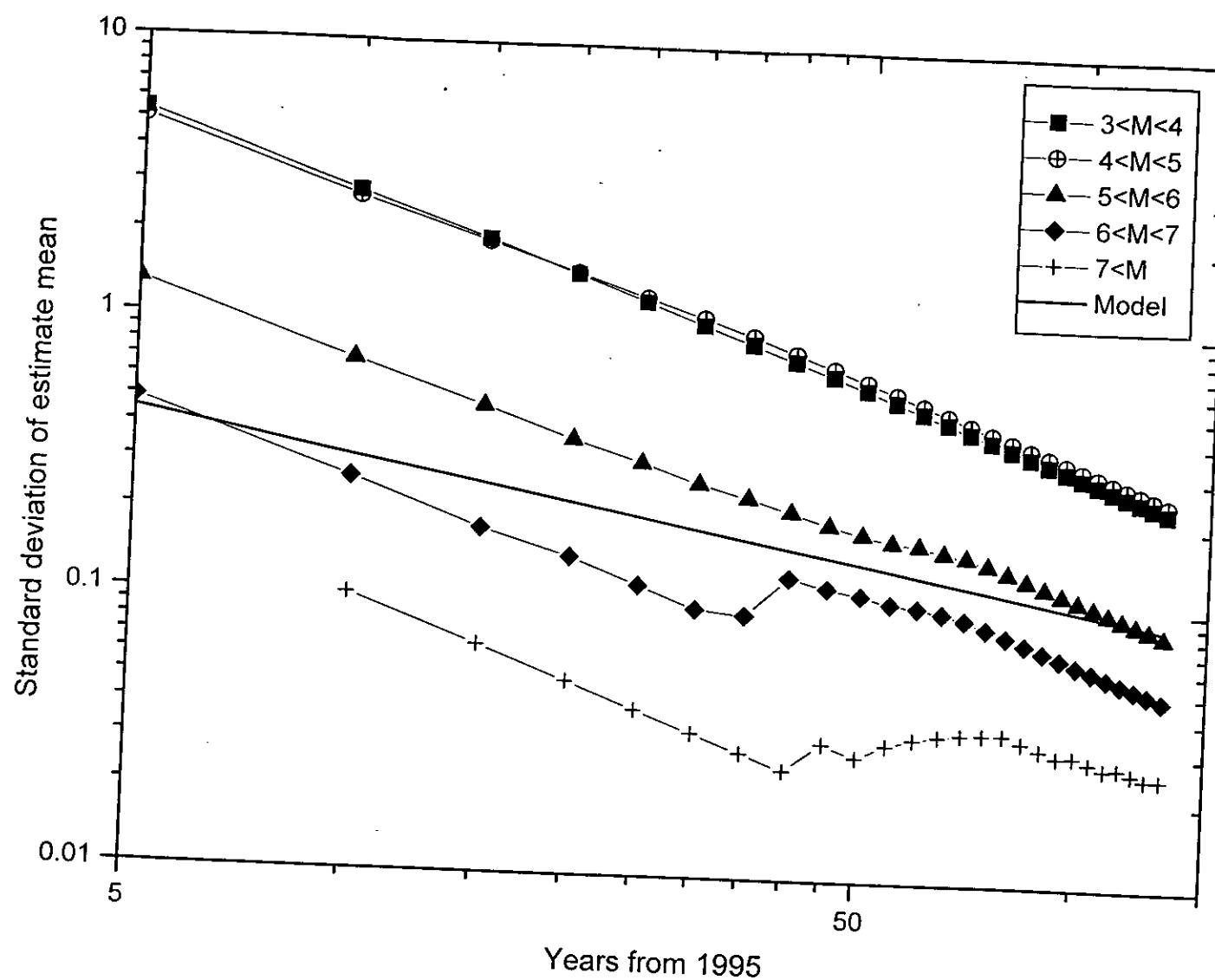
Fig. 3.16 Standard Deviation of the Mean Annual Recurrence Rate for the New BD Catalogue for Different Magnitude Classes

CHAPTER FOUR
SEISMIC HAZARD ANALYSIS

4.1 GENERAL

During land use management, city planning, engineering design and in similar applications, proper evaluation of earthquake hazard are needed. For Bangladesh, earthquake hazard constitutes a constant threat to human life and property. The first step in reducing the risk of the society from earthquake hazard is an assessment of the hazard itself. Both the seismic hazard analysis and the establishment of seismic hazard maps were made difficult in Bangladesh due to the lack of homogeneous, accurate and complete data. Today, after the re-evaluation of the seismicity of Bangladesh and adjacent regions,(chapter three)it became possible to produce these maps. For this purpose, this study intends to assess the seismic hazard and to produce earthquake hazard maps in Bangladesh

In this study, seismic hazard is defined as the probability that an event is exceeded for a given time interval and the frequency of occurrence of this event. Thus seismic risk analysis determines the probability of occurrence of a given event or conversely, the identification of the event for a given probability or risk for a given site or area. The event may be any parameter (e.g., PGA, PGV, PGD, Intensity) which is deemed to be representative of the effect which is to be studied.

It is important to consider the parameters which will correlate well with the effect to be considered. For instance, if the damage to structures are to be minimized, it is deemed appropriate to use PGA because it directly affects the lateral force imposed on the structures. This expected lateral force should then be considered in the design.

4.2 METHODOLOGY

Numerous methods for earthquake hazard assessment in a given site are available today. Lomnitz and Epstein (1966) employed the Poisson process for the occurrence of large earthquakes which is still used. Cornell (1968) and Esteva (1968) derived the general basis for the most complete analysis of the whole seismic hazard problem with the inclusion of the propagation mechanism of the ground motion. Shah and Vagliente (1972) used the Markov model of earthquake prediction in seismic hazard analysis. A methodology for seismic hazard estimation based on historical earthquake occurrences is presented in detail in Tomatsu and Katayama (1988) and Molas and Yamazaki (1994). In Japan, the seismic risk method proposed by Kawasumi (1951) is still popular while in the United States, the basic method proposed by Cornell(1968) is often used.

A methodology for seismic hazard estimation based on historical earthquake occurrences is presented in detail below. The seismic hazard evaluation at a specified site depends upon the definition of the following four models:

(a) *Earthquake source model:* It is based on geological evidence, Seismic sources are identified and modelled as a point, line, area or dipping plane. In this study, a point source model is used. Fig. 4.1 shows different source models.

(b) *Seismicity model:* The seismicity of each of the modelled sources is first determined
from past data available. The recurrence relationship relating the size of the past events in terms of Magnitude (M) and Peak Ground Acceleration (PGA) is derived, The seismicity model used in Molas and Yamazaki(1994) is usually taken as

$$log(v) = a + b*M \qquad .(4.1)$$

$$log(v) = a + b*log(y) \qquad (4.2)$$

where *M is* the earthquake magnitude and y is the peak ground acceleration, *v* is occurrence rate per year and a and b are regression constants. These relations can be written as

$$M = (-log(T) - a)/b \qquad (4.3)$$

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$$log(y) = (-log(T) - a)/b \qquad (4.4)$$

where T (=l/v) is the return period in years. Thus, the above equations. represent magnitude and the peak ground acceleration for a return period of T years.

·(c) Attenuation model of ground motion:

This describes the transfer of ground motions from the source to a particular site as a function of magnitude, distance and soil conditions. Here, the peak ground acceleration is used to characterize the ground motion; the attenuation law is in the form

$$log(y) = b_1 + b_2 (Ms) - b_3 log (r) - b_4 (r) \qquad (4.5)$$

where $r^2 = d^2 + h^2$, r is the hypocentral distance (km), d is the epicentral distance (km), h is the focal depth and Ms is the surface-wave magnitude. The attenuation law is required to determine the peak ground acceleration at the site for different events and then to determine the regression constants a and b for Equation (4.4)

(d) *Recurrence forecasting model-* Various statistical models have been tested in numerous research papers; however, for practical purposes, earthquakes are considered to be random events, and the Poisson process is used, which implies assumptions of stability and independence over time. Since hazard analysis defines the occurrence of ground motions equal to or larger than a specified value, the probability of exceedance is used. For a Poisson process this may be expressed as

$$p = 1 - exp(- vt) \qquad (4.6)$$

where v is the mean annual occurrence rate of events of particular peak ground acceleration over a given time t. From equations the value of the peak ground acceleration for a given b and time period t can be calculated as:

$$log(y) = log(-ln(p/t)-a)/b \qquad (4.7)$$

From the assumption of the Poisson process, the relation between the probability of exceedance and the return period of peak ground acceleration, T, is given by

$$T = 1/v = -t/log(p) \qquad (4.8)$$

Fig. 4.2 shows the flowchart for earthquake hazard analysis.

4.3 ZONE UNDER INVESTIGATION

In this study, an attempt is made to assess the seismicity of Bangladesh (20-28° north latitude and 86^0-95° east longitude. The region under study has similar geological process and similar historical development. Similarities in population settlements, building stock characteristics and socio-economic and demographic conditions, etc., are very important parameters in the whole process of seismic hazard studies in the region. Table 4.1 shows the latitude and longitude of 34 selected points. Figure 4.3 shows the geographical locations of the investigated sites.

Table 4.1 Latitude and Longitude of 42 selected sites for Hazard Analysis

Grid Point	Latitude	Longitude	Grid Point	Latitude	Longitude
1	26.5	88.5	22 (Dhaka)	23.8	90.3
2	25.5	88.5	23 (Khulna)	22.8	89.6
3	25.5	89.5	24 (Barisal)	22.7	90.3
4	24.5	88	25 (Chittagong)	22.35	91.75
5	24.5	89.5	26	26.5	89.5
·6	24.5	90.5	27	26.5	90.5
7	24.5	91.5	28	26.5	91.5
8	23.5	89	29	26.5	92.5
9	23.5	89.5	30	25.5	90.5
10	23.5	90.5	31	25.5	91.5
11	23.5	92	32	25.5	92.5
12	22.5	89	33	23.5	91.5
13	22.5	90	34	21.5	91.5
14	22.5	91	35	24.85	93
15	22.5	92	36	24	92
16	22.5	92.5	37	24	93
17	21.5	92	38	23	93
18	21.5	92.5	39	22	93
19	20.5	92.25	40	21	93
20 (Rajshahi)	24.42	88.5	41	26	88·
21 (Sylhet)	24.85	91.8	42	25	88

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4.4 ATTENUATION LAW OF PEAK GROUND ACCELERATION

The quantitative assessment of seismic hazard at any particular site within a region requires an attenuation law for the Peak Ground Acceleration (PGA). The maximum ground motion to be expected in the site constitutes a crucial problem in earthquake engineering. For Bangladesh, as in many other parts of the world, no PGA attenuation law has been developed, due mainly to the shortage of strong motion data. However, in order to assess the seismic hazard in this region, we have to adopt an attenuation law from the literature. A great amount of PGA attenuation relationships, predicting strong ground motions in terms of magnitudes, distance, site geology, and in some cases other factors, using various models and data sets are established for different parts of the world. Reviews of these laws are presented in Campbell (1985) and Joyner and Boore (1988). Some of the published attenuation laws are presented in Table 4.2

Table 4.2 Attenuation Laws

Author	Law
Esteva	$y=1230e^{3M}(d+25)^{-2}$
Esteva & Rosenblueth (1964)	$y=110e^{0.8M}r^{-1.6}$
Dugal (1989)	$y=227\times10^{0.308M}(d+30)^{-1.2}$
McGuire (1978)	$y=0.0306e^{0.89M}r^{-1.17}e^{-0.2S}$ where S=0 for rock and S=1 for alluvium
Katayama (1974)	$Logy=2.308-1\ 637log(r+30)+0.411M$
WoodwardClyde Consultants(1978)	$y=276e^{(0.68M)}*(r+c)^{-1.2}$ $C=0.864e^{0.463M}$
Ambraseys (1995)	$Logy=-1.43+0.245Ms-0.001r-0.786logr$ $r=(d^2+2.7^2)^{1/2}$

where y=PGA; M=magnitude; d=epicentral distance; r=hypocentral distance

In this study, the attenuation law for alluvial soil proposed by Public Works Research Institute (PWRI) in Japan (Duggal, 1989) and McGuire (1978) have been used. This is due to the fact that the soil of Bangladesh is similar to the type of soil used in the above two laws.

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These equations are presented below:

$$y = 227.3 \times 10^{0.308M}(d+30)^{-1.201} \text{ (in cm/s}^2)$$

where M is the magnitude and d is the epicentral distance (km), and y is the PGA (cm/s^2).

$$y = 0.0306 e^{0.89M} r^{-1.17} e^{-0.2} \text{ (in g)}$$

where, $r = \sqrt{(d^2 + h^2)}$. For this calculation h is assumed to be 30 km.

4.5 SELECTION OF EARTHQUAKES AROUND THE SITE

To estimate the seismic hazard in any particular site within a region requires a selection of earthquakes which affect significantly the value of the hazard output. However, there is no strict rule for selecting the maximum epicentral distance to the site. A sensitivity study for different maximum epicentral distances, for three sites in the region considered, was carried out to show the influence on the seismic hazard evaluation, as shown in Figure 4.4. A small area around the site results in a smaller number of earthquakes to be considered and some events outside the zone considered may affect the hazard in the site. This, naturally, will decrease the data set for regression. On the other hand, a too large area may include earthquakes which do not affect the seismic hazard in the site and are thus useless. The findings show that for an epicentral distance of 200 km and beyond, the b-coefficient of the Gutenberg-Richter formula is relatively stable. Thus, it is assumed that significantly earthquakes are equally likely to occur anywhere in the area of 200 km in radius surrounding the sites under consideration. Figure 4.5 shows the regression curve fitting for a site. The evaluation of seismic hazard at a site is carried out only if the number of earthquakes in the area considered (200 km radius) is larger than 10 and the surface-wave magnitude is equal to or greater than 4.0.

4.6 REGRESSION ANALYSIS

In applying linear regression to each site which is taken as the centre of an area of 200 km radius where past earthquakes are likely to occur again., it was found that very high peak ground accelerations are calculated in some very low seismicity zones. It was found that the fitting curve of peak ground acceleration and its occurrence rate do not fit the data accurately. This is due to the high mean annual occurrence rate of

small peak ground acceleration. To solve this problem we studied some sites where unusually high values of the PGA are found and also some other random sites were also analyzed. Figure 4.6 shows the regression curve fitting for a site where high PGA was calculated. It can be clearly seen that taking into account so many small accelerations tend to flatten the regression line and thus affect seriously the earthquake hazard in the site.

The findings of this study suggest that these small events be removed from the analysis by cutting the regression at $v=1$ (i.e. disregarding data with occurrence rates greater than 1.0 per year) be applied to the evaluation of seismic hazard of this region. A good fit of the new regression line with the data sample with a cut off at $v=1$ is also shown in Fig. 4.6. Obviously cutting the data samples for these sites will tend to decrease the value of the predicted PGA. This will be more visible if only a small number of high PGA occurred at the site. The regression curves for different sites are presented in Appendix B.

Table 4.3 a & b parameter for the 42 selected sites (PGA)

According to Rajiv			According to McGuire		
Grid Point	a	b	Grid Point	a	b
1	1.829	-1.76	1	1.229	-1.672
2	0.869	-1.418	2	0.86	-1.691
3	1.767	-1.783	3	0.952	-1.513
4	1.55	-2.02	4	0.053	-1.31
5	0.574	-1.174	5	0.214	-1.128
6	1.224	-1.447	6	1.247	-1.689
7	1.525	-1.527	7	1.127	-1.461
8	0.395	-1.311	8	0.192	-1.456
9	1.897	-2.145	9	0.191	-1.374
10	1.121	-1.577	10	1.97	-1.913
11	1.722	-1.632	11	1.587	-1.816
12	-	-	12	-	-
13	-	-	13	-	-
14	3.918	-3.579	14	-	-
15	2.613	-2.431	15	2.021	-2.527
16	2.501	-2.178	16	3.53	-3.326
17	1.082	-1.4	17	1.095	-1.618

According to Rajiv				According to McGuire		
Grid Point	a	b		Grid Point	a	b
18	1.033	-1.24		18	0.833	-1.307
19	1.066	-1.607		19	0.935	-1.47
20	0.94	-1.489		20	0.012	-1.2
21	1.915	-1.72		21	1.217	-1.52
22	0.95	-1.428		22	0.829	-1.629
23	0.068	-1.917		23	-	-
24	1.604	-2.054		24	-	-
25	1.395	-1.59		25	0.964	-1.583
26	1.815	-1.755		26	1.115	-1.586
27	1.63	-1.569		27	0.997	-1.377
28	2	-1.689		28	1.308	-1.494
29	2.549	-1.987		29	1.646	-1.777
30	1.651	-1.559		30	1.098	-1.388
31	2.143	-1.775		31	1.397	-1.575
32	2.39	-2.005		32	1.828	-1.932
33	1.913	-1.799		33	1.359	-1.757
34	1.549	-1.749		34	1.247	-1.772
35	2.461	-1.902		35	2.05	-1.954
36	2.118	-1.79		36	1.331	-1.588
37	2.777	-2.145		37	2.413	-2.393
38	4.591	-3.316		38	2.495	-2.447
39	2.113	-1.813		39	1.889	-1.978
40	2.664	-2.29		40	1.951	-2.235
41	0.465	-1.379		41	1.245	-2.143
42	0.866	-1.228		42	0.838	-1.26

Table 4.4 a & b parameter for the 34 selected sites (M_s)

Grid Point	a	b
1	2.077	-0.503
2	2.238	-0.595
3	2.443	-0.561
4	1.625	-0.524
5	2.20	-0.55
6	2.385	-0.537
7	2.691	-0.577
8	2.178	-0.60
9	2.40	-0.632
10	2.578	-0.612
11	3.45	-0.713
12	-	-
13	-	-
14	3.526	-0.823
15	2.90	-0.66
16	3.92	-0.818
17	3.143	-0.743
18	4.36	-0.86
19	2.62	-0.67
20	1.408	-0.463
21	2.4	-0.565
22	2.897	-0.597
23	2.725	-0.711
24	2.889	-0.724
25	3.77	-0.801
26	2.30	-0.535
27	2.70	-0.573
28	3.05	-0.612
29	3.06	-0.625
30	2.54	-0.548
31	2.94	-0.60
32	3.23	-0.64
33	2.86	-0.61
34	2.58	-0.654

4.7 EARTHQUAKE HAZARD MAPS

Bangladesh, as defined in Fig. 4.3, has been first divided into 42 grids having sides of one degree. Earthquake hazard is estimated in terms of (1) expected Ms for 50, 100 and 200 year return periods, (2) expected peak ground horizontal accelerations for 50, 100 and 200 year return periods, (3) 10% probability of exceedance in a design life of 50 years (4) return period in years for PGA$\geq$150 cm/s^2 which is considered as an important value in engineering purposes.

Table 4.5 presents expected Ms for different return periods. The earthquake hazard maps using the above criteria are shown in Figures 4.7 to 4.16. It can be seen that higher seismic hazard is observed especially in Sylhet, Chittagong Hill Tracts and northern part of Bangladesh. These regions were struck by several damaging earthquakes during the last and the current centuries which are 1869 Cachar earthquake, 1885 Bengal earthquake, 1897 Great Indian earthquake, 1918 Srimangal earthquake, 1930 Dhubri earthquake and 1934 Bihar-Nepal earthquake. The south-western area of Bangladesh is almost an earthquake free zone; it is of interest to mention that very few earthquakes were reported and no seismic lineament can be clearly observed in this region. Based on the above hazard maps, an updated seismic zoning map of Bangladesh is proposed as shown in Fig. 4.17.

4.8 COMPARATIVE ANALYSIS OF BNBC 1993 AND THE PROPOSED SEISMIC MAP

Similar to the BNBC 1993 seismic zoning map, the proposed map has three seismic zones. The proposed seismic zoning map assigns higher seismicity to Bandarban, Faridpur, Kustia, Natore, Nilphamari, Panchogarh, Rajshahi, Sandwip and significant part of Bogra, Cox'sbazar, Khagrachari, Noakhali, Rangamati and Rangpur. These areas have been assigned low seismicity in the seismic zoning map of BNBC 1993. Figure 4.18 compares the proposed seismic zoning map with the existing seismic zoning map of Bangladesh (BNBC 1993) as shown in Fig. 2.19. Table 4.6 presents a comparison between the BNBC 1993 and the proposed seismic zoning maps with

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respect to area and population (based on the 1991 Population Census data) which falls within the three different seismic zone boundaries.

Table 4.5. Expected M$_s$ for different Return Periods of 34 Selected Sites

Grid Point	Ms Value for Return Periods (Years) of			Grid Point	Ms Value for Return Periods (Years) of		
	50	100	200		50	100	200
1	7.5	8.1	8.7	18	7.0	7.4	7.7
2	6.6	7.1	7.6	19	6.4	6.9	7.3
3	7.4	7.9	8.4	20	6.7	7.4	8.0
4	6.4	6.9	7.5	21	7.9	8.3	8.7
5	7.1	7.7	8.2	22	7.5	8.1	8.7
6	7.6	8.2	8.7	23	5.9	6.3	6.7
7	7.6	8.1	8.7	24	6.2	6.6	7.0
8	7.5	7.9	8.4	25	6.8	7.2	7.6
9	6.3	6.8	7.3	26	7.5	8.0	8.6
10	7.0	7.5	8.0	27	7.7	8.2	8.7
11	7.2	7.7	8.1	28	7.6	8.3	8.7
12	-	-	-	29	7.6	8.1	8.6
13	-	-	-	30	7.7	8.3	8.8
14	6.4	6.7	7.1	31	7.7	8.2	8.7
15	7.0	7.5	7.9	32	7.7	8.2	8.6
16	6.9	7.2	7.6	33	7.5	8.0	8.5
17	6.5	6.9	7.3	34	6.5	7.0	7.5

Table 4.6. Comparison between BNBC 1993 and the Proposed Seismic Zoning Maps

Zone	Assigned PGA (cm/s^2)	BNBC 1993		Proposed	
		% Area	Population in Millions	% Area	Population in Millions
1: liable to slight damage	75	36	34	23	19
2: liable to moderate damage	150	38	50	39	52
3: liable to severe damage	250	26	29	38	42
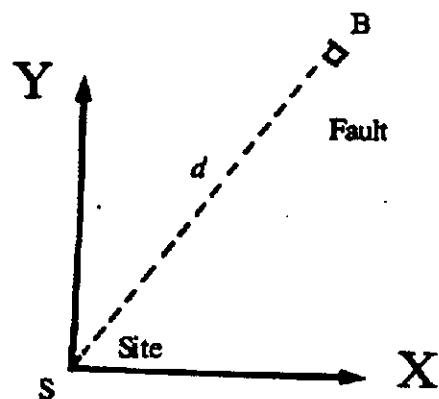
(a) Point source
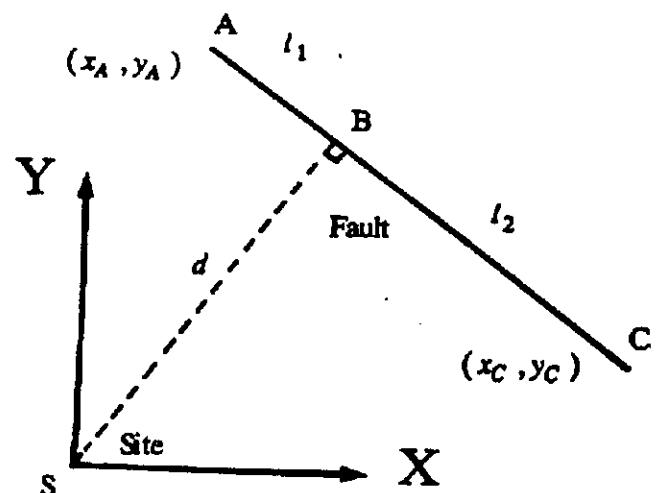
(b) Line source
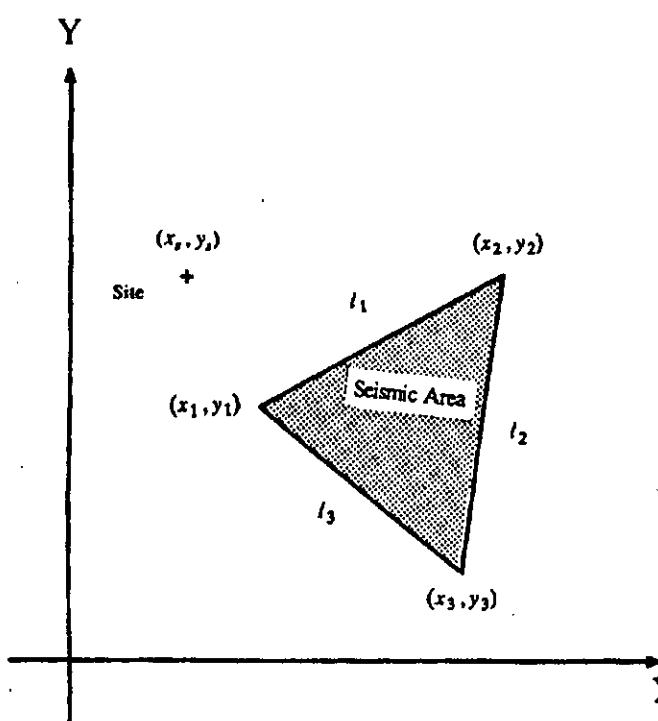
(c) Different area sources

Fig. 4.1 Different source models

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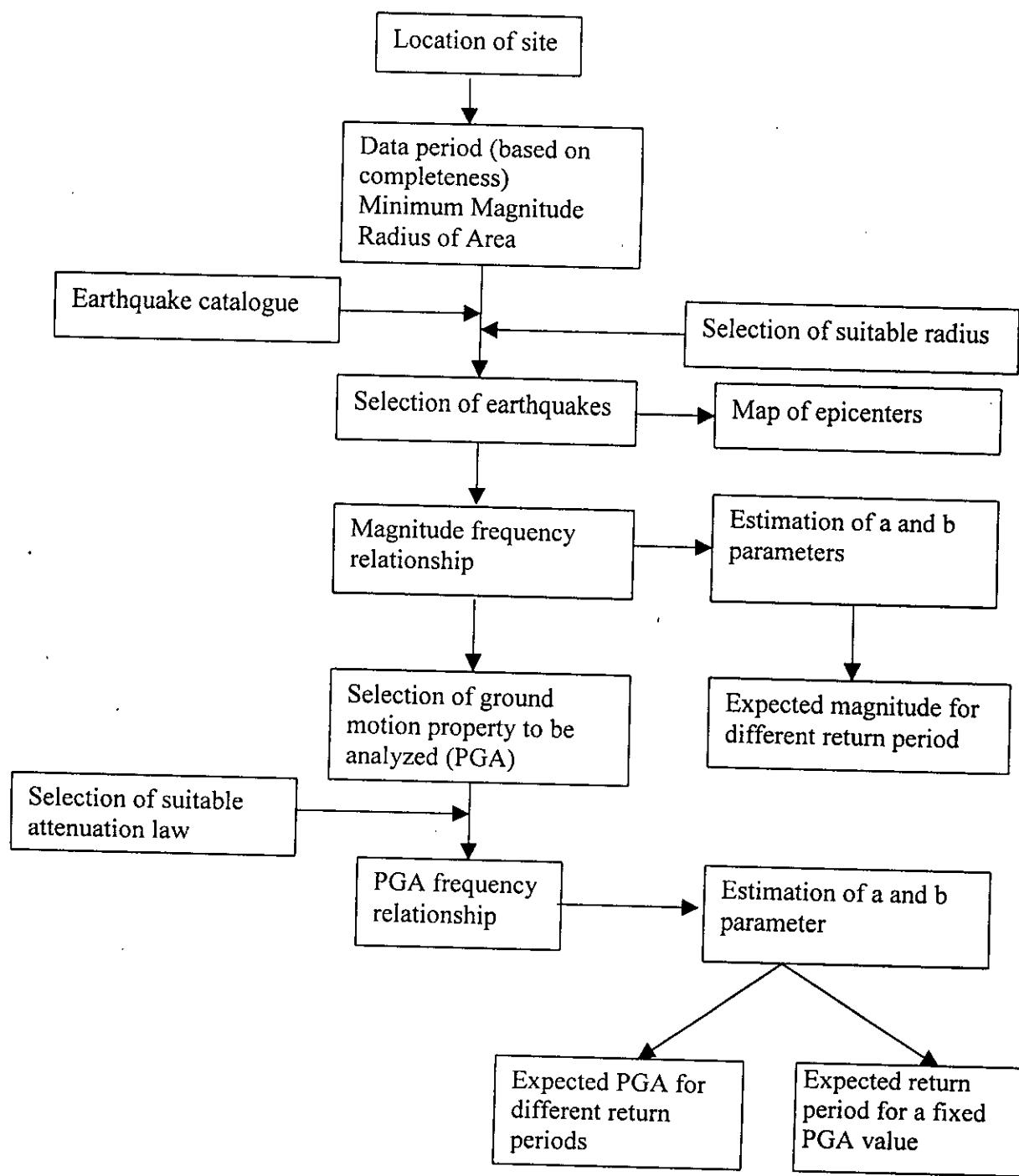
Fig. 4.2 Schematic flow of earthquake hazard analysis for a selected site

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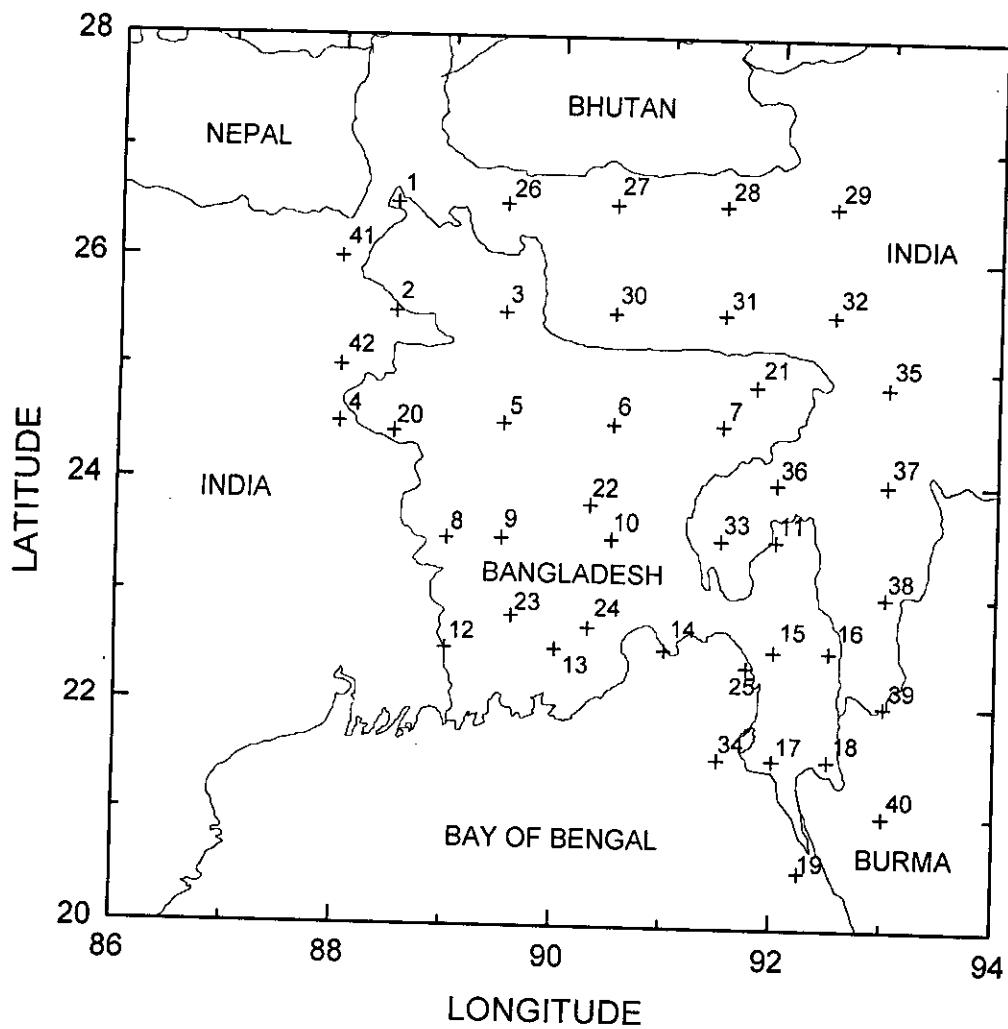
Fig. 4.3 Map Showing the limits of Bangladesh and adjoining region together with 42 selected sites
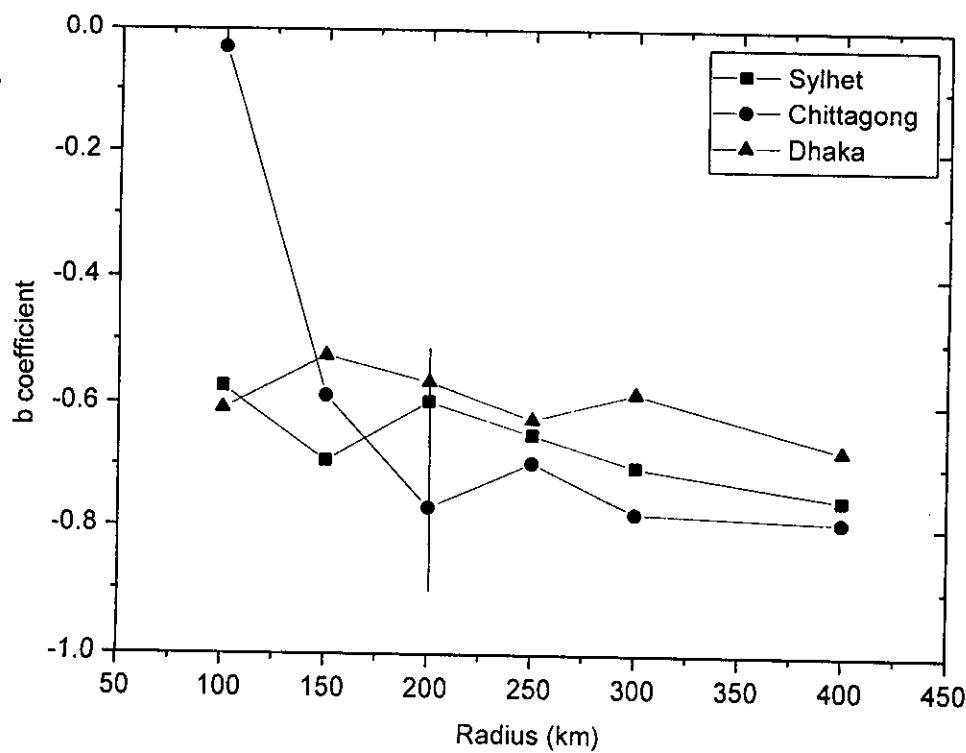
Fig. 4.4 Sensitivity of b-coefficient to the increase in radius
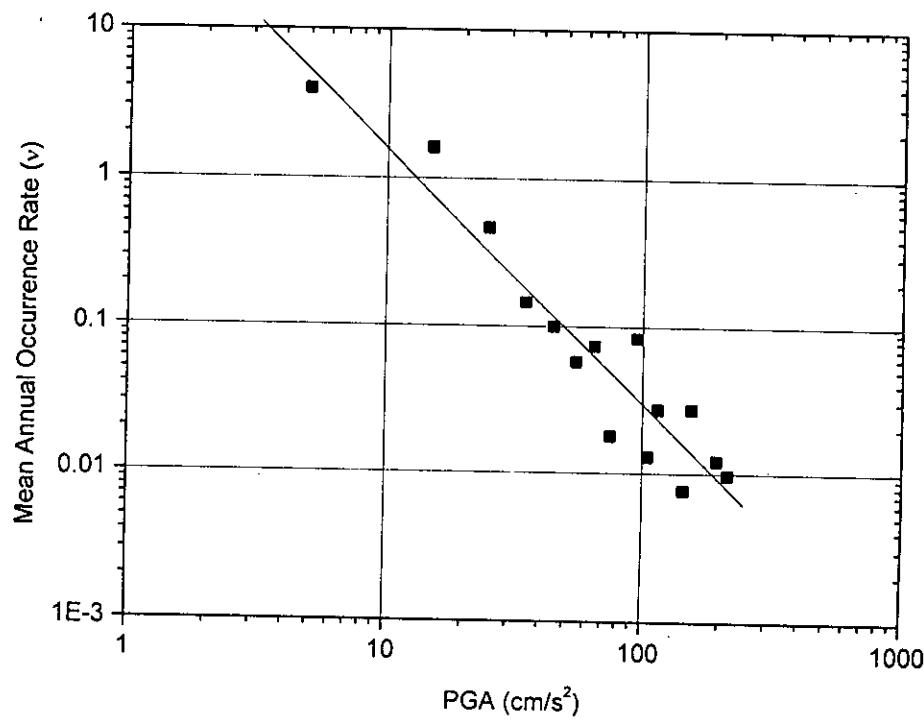
Fig. 4.5 PGA versus mean occurrence rate for Sylhet (91.80°E and 24.85°N)

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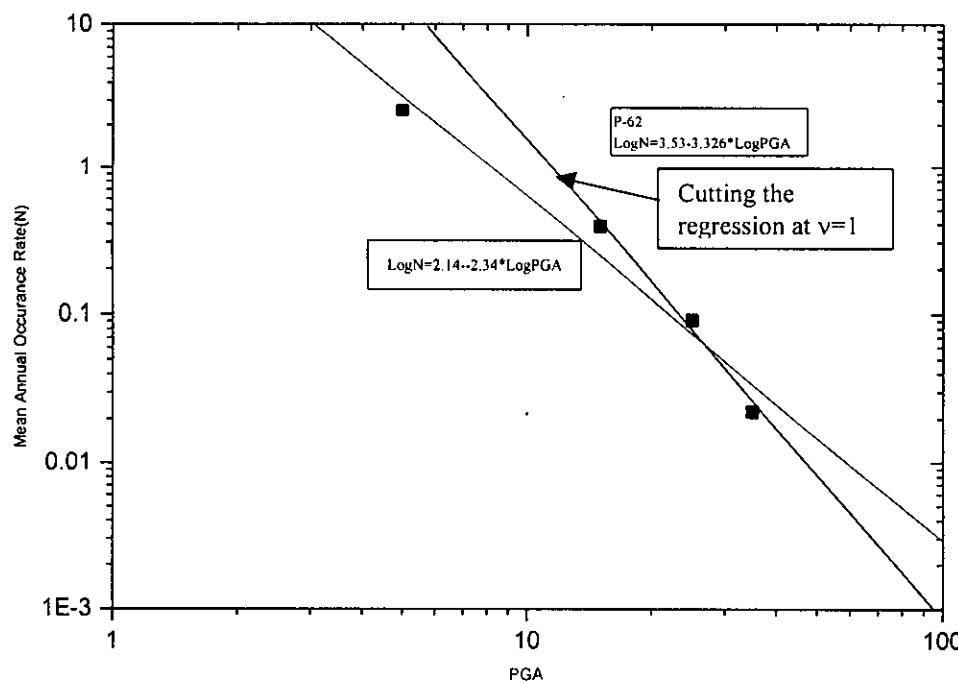
Fig. 4.6 PGA versus mean occurrence rate for a site
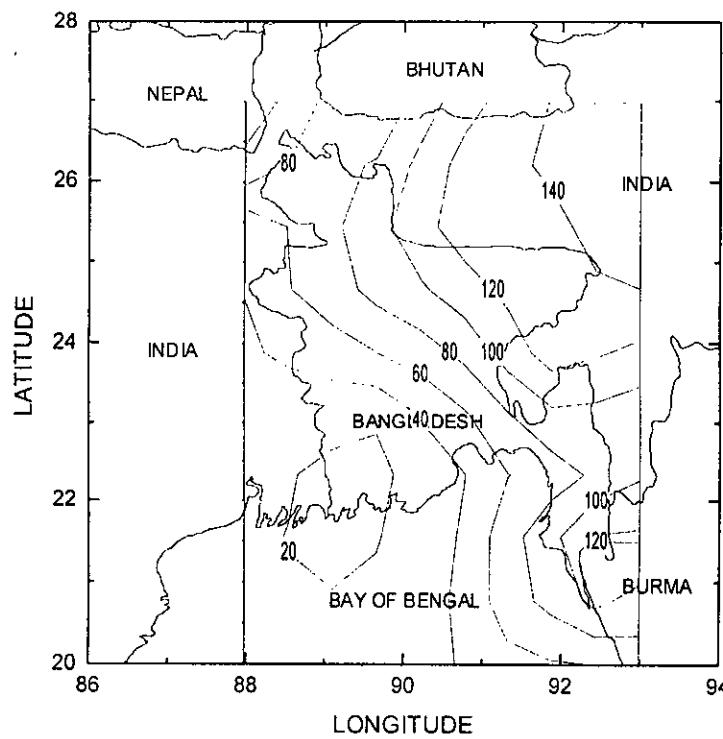
Fig. 4.7 Seismic map of Bangladesh and surrounding area showing 50
    year ground surface acceleration based on the attenuation law
    of Duggal (1989)

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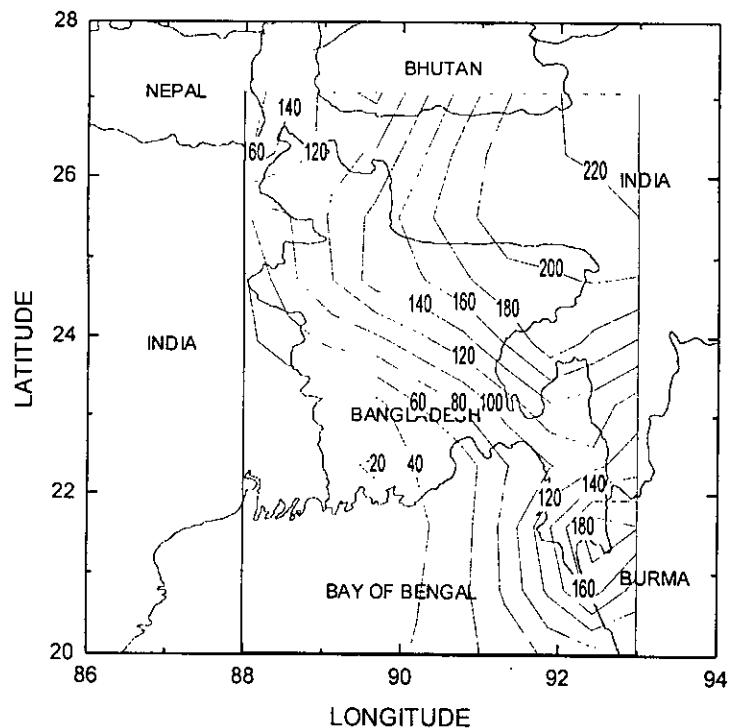
Fig. 4.8 Seismic map of Bangladesh and surrounding area showing 100 year ground surface acceleration based on the attenuation law of Duggal (1989)
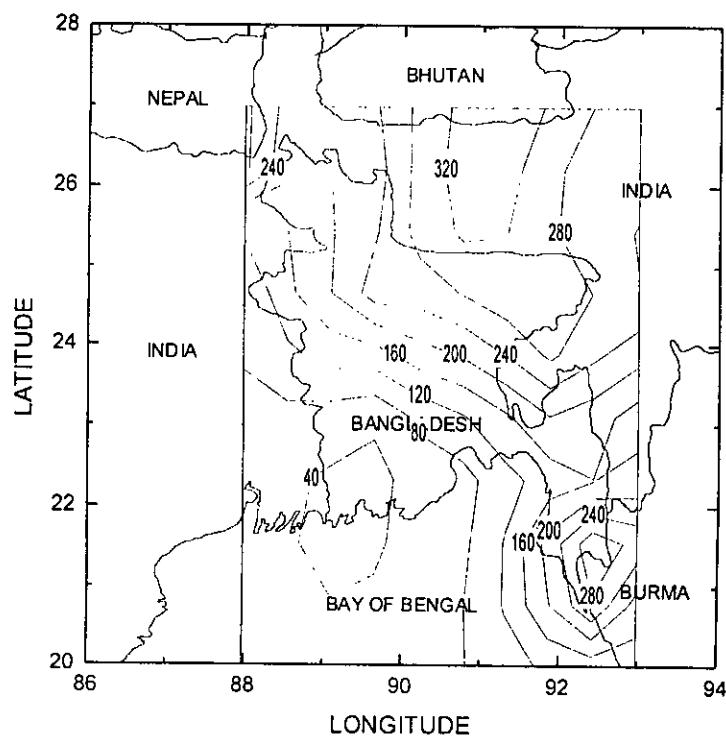
Fig. 4.9 Seismic map of Bangladesh and surrounding area showing 200 year ground surface acceleration based on the attenuation law of Duggal (1989)

85
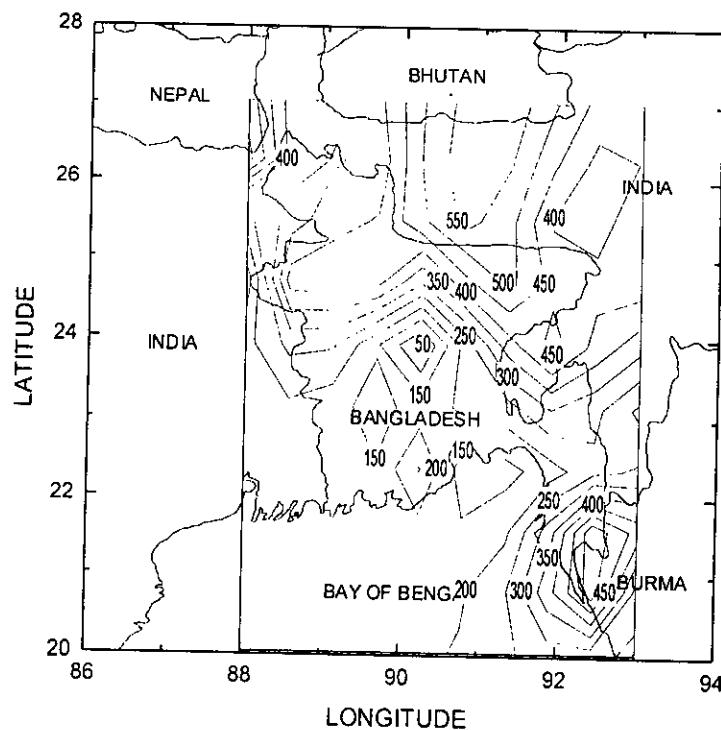
Fig. 4.10 Seismic map of Bangladesh and surrounding area for a 10% probability of exceedance in an economic life of 50 year based on the attenuation law of Duggal (1989)
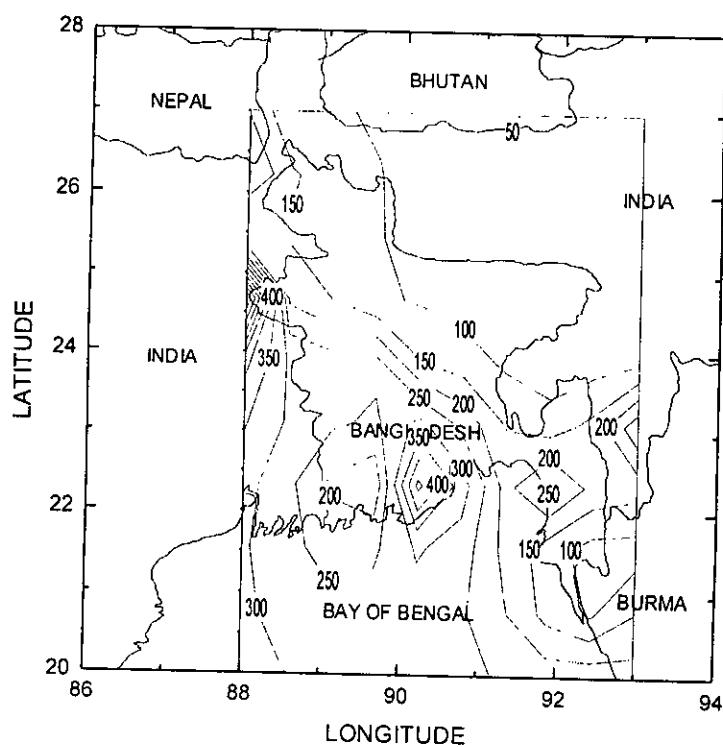
Fig. 4.11 Seismic map of Bangladesh and surrounding area in terms of return period in years for PGA$\geq$150 cm/s^2 based on the attenuation law of Duggal (1989)
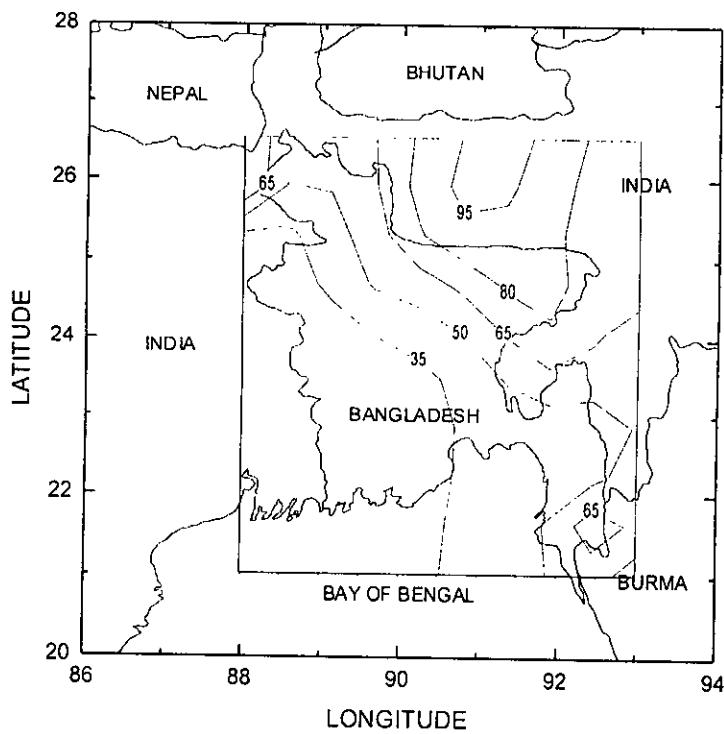
Fig. 4.12 Seismic map of Bangladesh and surrounding area
showing 50 year ground surface acceleration based on
the attenuation law of McGuire (1978)
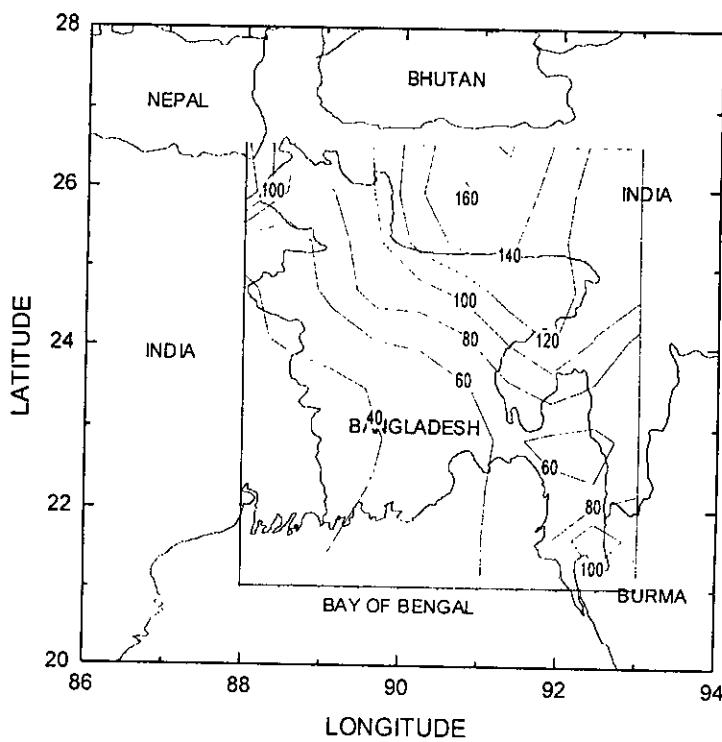
Fig. 4.13 Seismic map of Bangladesh and surrounding area
showing 100 year ground surface acceleration based
on the attenuation law of McGuire (1978)

87
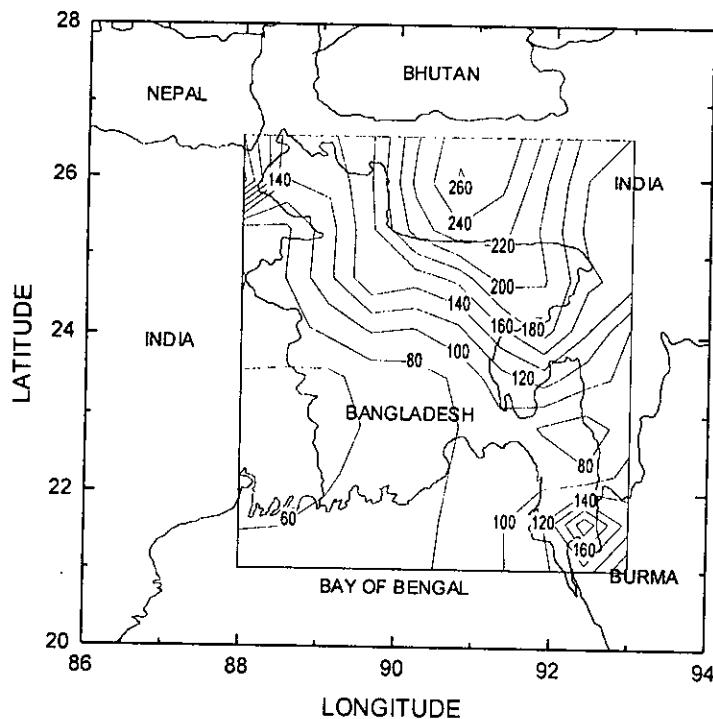
Fig. 4.14 Seismic map of Bangladesh and surrounding area
showing 200 year ground surface acceleration based on
the attenuation law of McGuire (1978)
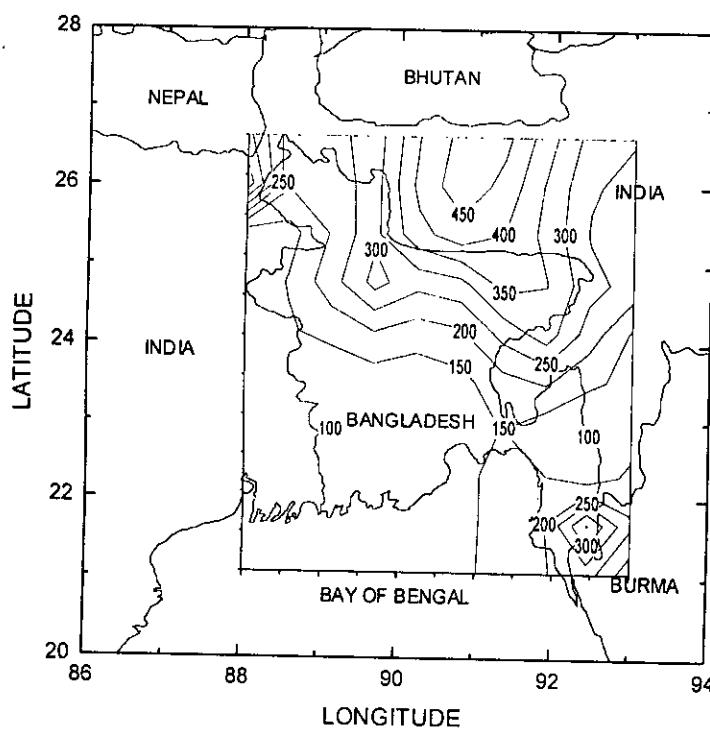
Fig. 4.15 Seismic map of Bangladesh and surrounding area for a
10% probability of exceedance in an economic life of 50
year based on the attenuation law of McGuire (1978)
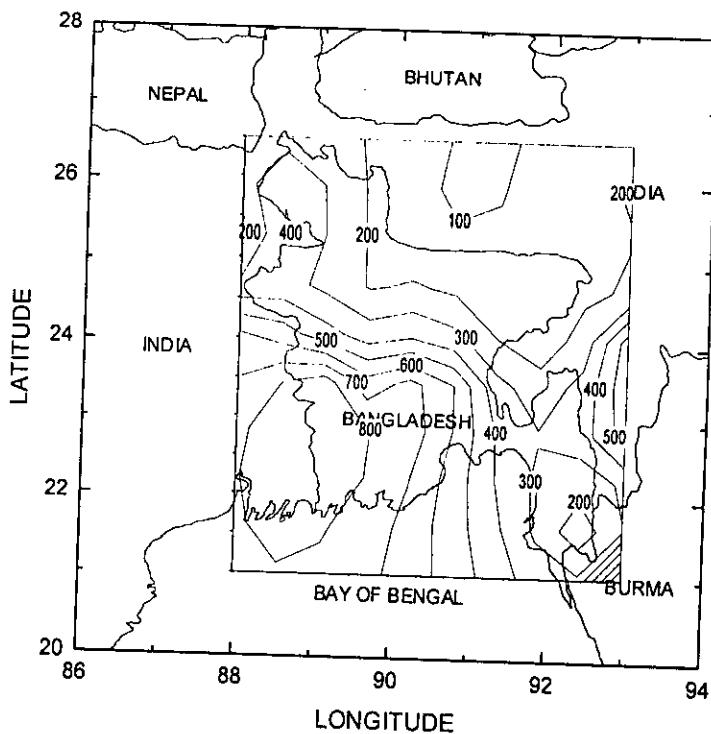
Fig. 4.16 Seismic map of Bangladesh and surrounding area in terms of return period in years for PGA$\geq$150 cm/s² based on the attenuation law of McGuire (1978)
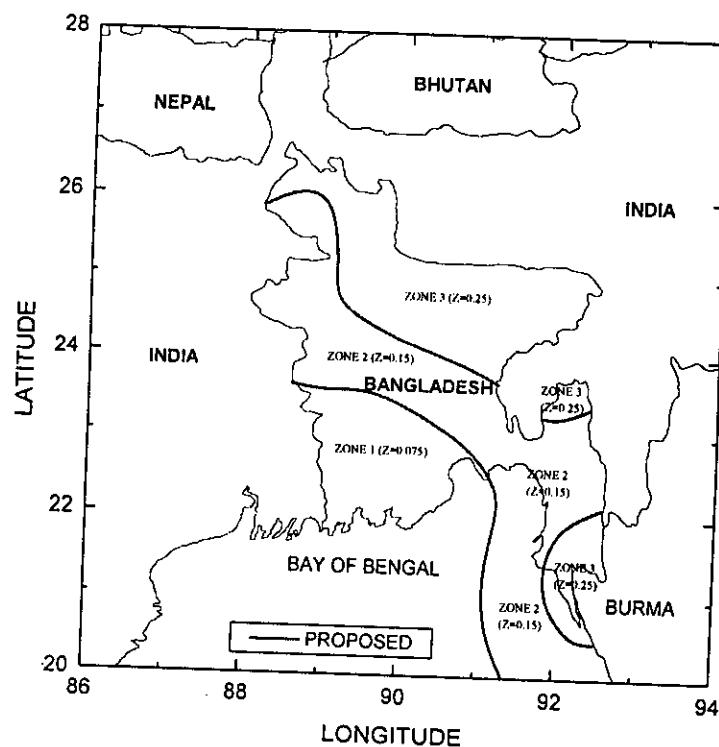
Fig.4.17 Proposed seismic zoning map of Bangladesh

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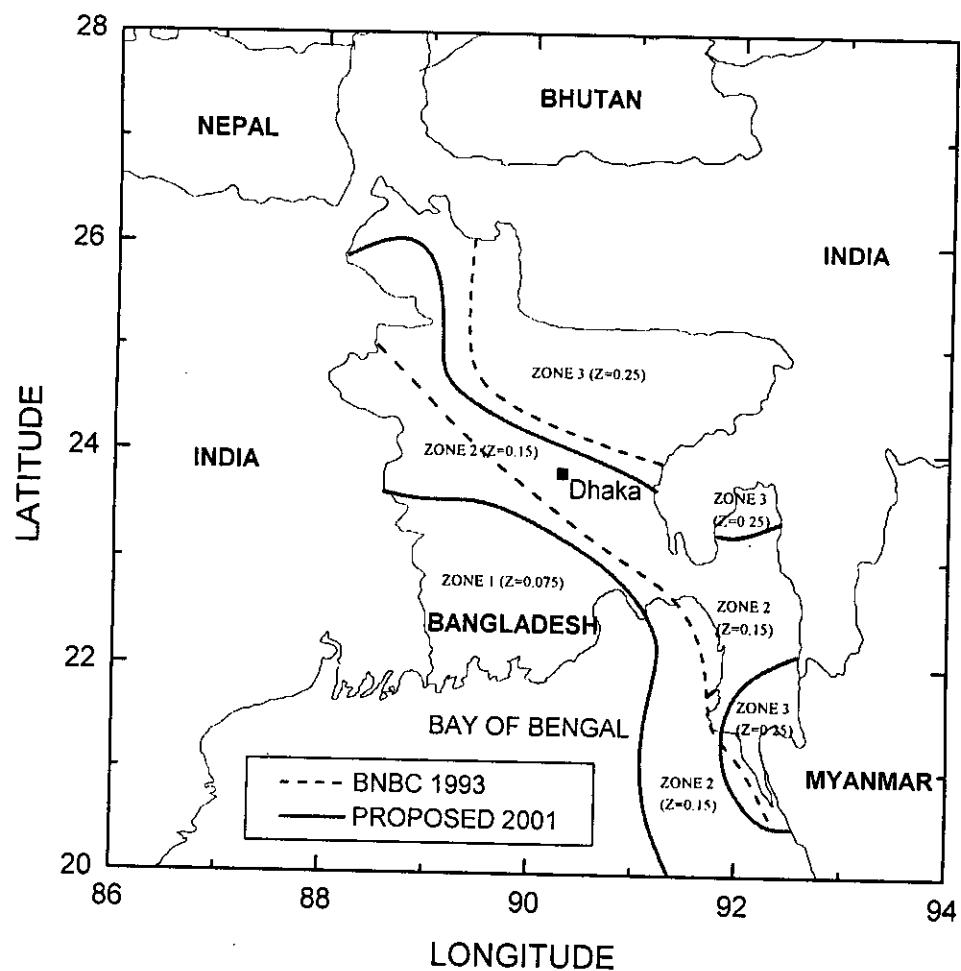
Fig. 4.18 Comparison between seismic zoning map of BNBC
1993 and proposed seismic zoning map

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUDING REMARKS

An earthquake catalogue forms a valuable input for seismic hazard assessment and microzonation studies, and represents a work, which can never be definitely closed. However the type of information assembled in this study is characterised by an appreciable degree of reliability, completeness and homogeneity, allows one confidently to use the catalogue obtained towards a study of seismicity in Bangladesh and adjoining region. The present work supersedes all the previous catalogues for references to earthquakes in Bangladesh and adjoining region. The database created in this work lays the foundation for a new philosophy of dealing with the seismicity studies in the study area.

Using the simple catalogue based model, the seismic hazard at 42 points in Bangladesh is estimated. The seismic hazard maps are presented as contour maps in terms of horizontal Peak Ground Acceleration (PGA) based on 50, 100, 200 years return period and 10% probability of exceedance in a design life of 50 years. A return period seismic hazard map for PGA$\geq$150 cm/s^2 is also presented. In addition expected Ms values for 34 points are estimated for 50, 100 and 200 years return period

By comparing the seismic base shear coefficients with the values of the hazard maps, a new seismic zoning map for short period structures are proposed based on the 200 year PGA. Similar to the BNBC 1993 seismic zoning map, the proposed map has three seismic zones. The proposed seismic zoning map recommends to consider Bandarban, Nilphamari, Panchogarh, and significant part of Bogra, Cox'sbazar, Khagrachari, Rangamati and Rangpur under Zone 3. Also it recommends to consider Faridpur, Kustia, Natore, Rajshahi, Sandwip and Noakhali to Zone 2. These areas have been assigned low seismicity in the seismic zoning map of BNBC 1993.

The findings of this study shows that considerable seismic hazard exists for major parts of the country. Based on the 1991 Census data and proposed seismic zoning map, about 42 million people, representing one third of the total population live in Zone 3 (38% area), i.e. areas which may be classified as "liable to severe damage", another 52 million (i.e. approx. 46% of the population) live in Zone 2 (39% area), i.e. areas "liable to moderate damage" and the rest 19 million population live in Zone 1 (23% area), i.e. areas "liable to slight damage".

It is of interest to mention that every 10 to 15 year, while more data on earthquakes are accumulated and seismological understanding improved, these maps should be renewed. A review of these maps shows that considerable seismic hazard exists for major parts of the country. Measures for overall disaster mitigation must, therefore, include recognition of earthquakes as a major natural hazard.

Due to the lack of a seismotectonic map in the region under consideration, in order to make a probabilistic (source based) hazard analysis, a catalogue-based earthquake hazard mapping is used. This scenario is very common for many developing countries and this methodology will benefit many who are most affected by earthquake disasters. These seismic hazard maps are addressed to a broad range of users, including high-level government officials, administrators, civil engineers, architects, earth scientists, seismologists, planners, technical experts and researchers in all these disciplines. The findings of this research should be an integral part of the whole process of economic and social development in Bangladesh and adjoining region.

5.2 RECOMMENDATIONS

Due to the importance of the knowledge of historical seismicity (pre-1865) in the seismic hazard evaluation, it is imperative to undertake a complete review of the historical information available for the study area. Specific recommendations are as follows:

1. A more refined assessment of the seismic risk in various parts of the country should be undertaken. This would include

   (a) Review of the large volume of historical records stored in India Office Library in London to extract data related to pre-1865 earthquakes.

(b) Analyses of available information related to post-1865 earthquakes to identify their sources and mechanism.

(c) Development of appropriate attenuation laws.

2. Reviewing and updating the building code of practice on the basis of above studies.

3. Study of regional tectonics with particular emphasis to locate active faults.

4. Determination of fault plane solution for the important earthquakes in the region.

5. Installation of seismic observatories and instrumentation of selected new structures to acquire strong motion data.

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APPENDIX A

EARTHQUAKE CATALOGUE

YR	MNH	DY	H	MIN	S	.	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1869	1	10	-	-	-	-	9270	2470	30	-		-	-	750	-	-	9	-	-	Cachar.ID	OLD,MIL,TS,MS
1885	7	14	-	-	-		9010	2400	45	-		-	-	-	-	-	9	-	-	Bogra.BD	MIL,MDS,MS
1897	6	12	11	5	-		9100	2600	60	870		800	-	870	-	-	12	-	-	Shillong.ID	MIL,HKG,TS,MS
1900	5	2	-	-	-		8950	2640	-	.		-	-	-	-	-	3	-	-	Coochbehar.ID	SR
1906	5	12	5.	50	-		9200	2800	-	.		-	-	-	-	-	-	-	-	-	TR2
1906	8	31	14	58	-		9500	2100	-	-		-	-	-	-	-	-	-	-	-	TR2
1906	9	29	5	8	42		8850	2330	-	-		-	-	550	-	-	7	-	-	Calcutta.ID	MDS
1906	12	6	12	14	48		8850	2330	-	-		-	-	-	-	-	4	-	-	Calcutta.ID	MDS
1909	2	17	-	-	-		8700	2700	-	-		-	-	500	-	-	-	-	-	-	TS
1910	4	9	9	27	-		9300	2200	-	-		-	-	-	-	-	-	-	-	-	TR3
1910	8	13	21	19	-		9000	2800	-	-		-	-	-	-	-	7	-	-	BU	TR3
1911	12	7	-	-	-		8800	2300	-	-		-	-	500	-	-	-	-	-	-	TS
1915	11	14	-	-	-		9270	2640	-	.		-	-	500	-	-	6	-	-	Gauhati.ID	TS
1918	7	8	10	22	7		9173	2422	9	760		730	-	-	-	-	9	76	-	Balisera Valley.BD	GR,ISS,MST,TS
1920	8	15	6	59	8		9320	2220	-	-		-	-	600	-	-	3	-	-	Chittagong.BD	TS,HKG
1921	3	21	10	26	30		9320	2220	-	-		-	-	-	-	-	-	-	-	Chin Hills.MR	HKG,ISETR
1923	6	22	12	6	4		9400	2270	-	.		-	-	550	-	-	-	-	-	-	TS
1923	8	10	15	58	6		9340	2260	-	590	[1]	-	-	600	-	-	-	33	-	Chin Hills.MR	ISS,TS,ISETR
1923	9	9	22	3	43		9100	2525	60	710		700	-	-	-	-	8	78	-	Gauhati.ID	GR,ISS,DUDA,TS,HKG
1924	1	10	-	-	.		9280	2450	-	-		-	-	750	-	-	-	-	-	-	PAPER
1924	1	30	0	5	24		9300	2500	-	570	[1]	-	-	600	-	-	-	21	-	Sylhet.BD	ISS,TS,ISETR
1924	9	2	2	3	0		9500	2300	-	-		-	-	550	-	-	-	-	-	Sagaing.MR	TS,ISETR
1926	8	18	23	58	48		9450	2450	-	-		-	-	-	-	-	-	-	-	MR-ID	SEASEE,ISETR
1926	9	8	15	49	30		9500	2300	-	-		-	-	-	-	-	-	-	-	Sagaing.MR	ISETR
1926	10	18	23	58	48		9450	2450	-	-		-	-	550	-	-	-	-	-	-	TS
1926	10	23	14	30	18		9300	2500	-	550	[1]	-	-	550	-	-	-	14	-	Sylhet.BD	GR,ISS,TS
1927	2	13	3	33	20		9350	2550	-	-		-	-	-	-	-	-	-	-	Shillong.ID	HKG
1927	3	15	16	56	32		9500	2450	130	650		660	-	650	-	-	-	-	-	MR-ID	GR,TS,ISETR
1927	5	20	10	51	0		9450	2450	-	-		-	-	550	-	-	-	-	-	MR-ID	TS,ISETR
1927	8	25	22	56	38		9000	2200	-	560	[1]	-	-	-	-	-	-	16	-	Offshore.BD	ISS,ISETR
1928	2	6	0	23	12		9100	2800	-	-		-	-	-	-	-	-	-	-	BU-CH	HKG
1928	10	12	7	26	9		9500	2300	-	-		-	-	-	-	-	-	-	-	Sagaing.MR	SEASEE
1928	11	15	15	34	56		9350	2550	-	-		-	-	-	-	-	-	-	-	Shillong.ID	HKG,ISETR
1930	7	2	21	3	42		9000	2550	60	710		700	-	710	-	-	9	148	-	Dhubri.ID	GR,ISS,DUDA,TS,GEE,HKG
1930	7	3	0	19	5		9020	2580	-	578	[1]	-	-	550	-	-	-	25	-	Dhubri.ID	ISS,TS,ISETR
1930	7	3	6	1	21		9020	2580	-	500	[1]	-	-	-	-	-	-	5	-	Dhubri.ID	ISS,ISETR
1930	7	4	18	54	44		9020	2580	-	475	[1]	-	-	550	-	-	-	3	-	Dhubri.ID	ISS,TS,ISETR
1930	7	4	21	34	0		9020	2580	-	508	[1]	-	-	550	-	-	-	6	-	Dhubri.ID	ISS,TS,ISETR
1930	7	8	4	32	24		9080	2580	-	538	[1]	-	-	550	-	-	-	11	-	Dhubri.ID	TS,ISS,ISETR
1930	7	8	9	43	0		9080	2580	-	546	[1]	-	-	550	-	-	-	13	-	Dhubri.ID	TS,ISS,ISETR
1930	7	11	7	6	34		9380	2500	-	574	[1]	-	-	550	-	-	-	23	-	Sylhet.BD	TS,ISS,ISETR
1930	7	13	14	0	12		9080	2580	-	569	[1]	-	-	550	-	-	-	21	-	Dhubri.ID	TS,ISS,ISETR
1930	9	22	14	19	11		9400	2500	-	625		640	-	600	-	-	7	-	-	Gauhati.ID	GR,TS
1931	2	7	15	3	14		9020	2580	-	-		-	-	-	-	-	-	-	-	Dhubri.ID	HKG,ISETR
1932	3	6	0	17	56		9250	2550	-	560		600	-	500	-	-	-	13	-	Shillong.ID	GR,ISS,TS
1932	3	24	16	8	36		9000	2500	-	560		600	-	550	-	-	5	18	-	Mymensingh.BD	GR,ISS,TS
1932	3	27	8	44	40		9200	2450	-	560		600	-	550	-	-	-	19	-	ID-BD	GR,ISS,TS,ISETR
1932	11	9	18	30	9		9200	2650	-	560		600	-	550	-	-	-	22	-	Gauhati.ID	GR,ISS,TS,ISETR
1933	3	6	13	5	35		9050	2600	-	560		600	-	580	-	-	6	26	-	Dhubri.ID	GR,ISS,TS
1933	3	26	-	-	-		9050	2570	-	-		-	-	-	-	-	-	-	-	Dhubri.ID	ISETR
1934	1	15	8	43	18		8650	2650	33	830		770	-	-	-	-	10	-	-	Madhubani.ID	GR,DUDA,TS
1934	1	16	4	59	22		8600	2800	-	-		-	-	560	-	-	-	-	-	NP-CH	TS,ISETR

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1934	6	2	5	54	29	9500	2450	130	650	-	660	-	650	-	-	-	-	-	MR-ID	GR,TS,ISETR
1935	3	21	0	4	2	8950	2425	80	625	-	640	-	-	-	-	-	41	-	Kustia.BD	GR,ISS,ISETR
1935	4	23	16	45	41	9475	2400	110	625	-	640	-	600	-	-	-	-	-	Chin Hills MR	GR,TS,ISETR
1936	2	11	4	48	0	8700	2750	50	560	-	600	-	-	-	-	-	-	-	Bhajpur.NP	GR,ISETR
1936	2	11	20	7	27	9200	2650	-	528	[1]	-	-	-	-	-	-	9	-	Mangaldai.ID	ISS,ISETR
1936	5	30	7	8	38	9050	2570	-	542	[1]	-	-	-	-	-	-	12	-	Meghalaya.ID	ISS,ISETR
1936	6	9	-	-	-	8700	2750	-	-		-	-	-	-	-	-	-	-	Himalaya.ID	ISETR
1936	6	18	14	56	27	9030	2660	-	583	[1]	-	-	550	-	-	-	28	-	Coochbehar.ID	ISS,TS,ISETR
1936	9	7	2	30	49	8700	2750	-	550	[1]	-	-	510	-	-	-	14	-	Himalaya.ID	ISS,TS,ISETR
1937	3	9	20	19	14	9200	2700	-	550	[1]	-	-	550			-	14		BU	ISS,TS
1937	3	21	16	12	2	9400	2550	-	616	[1]	-	-	550	-	.	6	55	.	Jalpaiguri. ID	ISS,TS
1937	3	31	10	36	6	9050	2800	-	-		-	-	-	-	-	-	-	-	Kulakangri.BU	HKG,ISETR
1937	9	9	23	37	27	9470	2490	-	-		-	-	550	-	-	-	-	-	MR-ID	TS,ISETR
1938	1	29	4	13	8	8700	2700	-	550		600	-	600	-	-	-	30	-	ID-NP	GR,ISS,TS,ISETR
1938	2	26	12	10	43	9050	2800	-	550	[1]	-	-	550	-	-	-	14	-	Himalaya.ID	ISS,TS,ISETR
1938	4	13	1	10	17	9100	2600	-	546	[1]	-	-	-	-	-	-	13	-	Assam.ID	ISS,ISETR
1938	4	14	1	16	35	9500	2350	130	675		675	-	-	-	-	-	-	-	Mandalay.MR	GR,ISETR
1938	5	6	3	41	8	9500	2450	100	575		610	-	550	-	-	-	-	-	MR-ID	GR,TS,ISETR
1938	8	16	4	27	50	9425	2350	60	720		700	-	-	-	-	-	-	-	Chin Hills.MR	GR,DUDA,ISETR
1939	5	27	3	45	44	9400	2450	75	675		675	-	675	-	-	7	-	-	Imphal.ID	GR,TS,SEASEE,ISETR
1939	6	19	21	56	40	9400	2350	-	560		600	-	-	-	-	-	-	-	Chin Hills.MR	GR,ISETR
1940	2	13	11	46	28	9200	2700	-	556	[1]	-	-	550	-	-	7	16	-	Gauhati. ID	ISS,TS
1940	5	11	21	0	20	9425	2375	80	650		660	-	600	-	-	-	-	-	Chin Hills.MR	GR,TS,ISETR
1940	8	2	3	3	59	9050	2800	-	533	[1]	-	-	550	-	-	-	10	-		ISS,TS
1941	1	21	12	41	48	9200	2700	100	675		-	-	675	-	-	8	102	-	Shillong. ID	GR,ISS,TS
1941	1	27	2	30	16	9250	2650	180	650		660	-	650	-	-	5	50	-	Gauhati. ID	GR,ISS,TS
1941	5	22	1	0	32	9300	2750	-	560		600	-	-	-	-	5	23	-	Gauhati. ID	GR,ISS
1941	9	6	3	17	47	9200	2700	-	522	[1]	-	-	550	-	-	-	8	-	ID-BU	ISS,TS,ISETR
1942	2	21	21	46	52	9030	2400	-	573	[1]	-	-	-	-	-	7	23	-	Faridpur. BD	ISS
1942	5	15	14	8	36	9030	2400	-	-		-	-	-	-	-	6	-	-		HKG,SEASEE
1943	2	8	21	5	24	9200	2700	-	550	[1]	-	-	550	-	-	3	14	-	Jalaphahar. ID	ISS,TS
1943	10	23	17	23	16	9300	2600	60	720		700	-	720	-	-	8	132	-	Jorhat. ID	GR,ISS,DUDA,TS
1944	12	24	14	46	40	9220	2470	-	580	[1]	-	-	600	-	-	-	26	-	ID-BD	ISS,TS,ISETR
1945	5	19	5	2	53	9090	2510	-	553	[1]	-	-	600	-	-	-	15	-	ID-BD	ISS,TS,ISETR
1946	3	16	14	15	8	9260	2640	-	553	[1]	-	-	600	-	-	-	15	-	Assam.ID	ISS,TS,ISETR
1947	3	8	14	33	5	9470	2490	-	-		-	-	550	-	-	-	-	-		TS
1947	5	8	-	-	-	9480	2380	-	-		-	-	-	-	-	-	-	-	Sagaing.MR	ISETR
1947	8	23	4	34	14	9480	2380	-	-		-	-	-	-	-	-	-	-	Sagaing.MR	SEASEE,ISETR
1947	8	23	14	1	22	9480	2380	-	-		-	-	-	-	-	-	-	-	Sagaing.MR	SEASEE,ISETR
1947	11	29	17	56	4	9190	2790	-	567	[1]	-	-	550	-	-	3	20	-	BU	ISS,TS,ISETR
1948	2	4	-	-	-	9480	2380	32	-		-	-	-	-	-	-	-	-	Sagaing.MR	ISETR
1948	3	1	16	50	5	9400	2680	-	-		-	-	550	-	-	-	-	-		TS
1948	3	7	-	-	-	9400	2680	-	-		-	-	-	-	-	-	-	-	Dergaon.ID	ISETR
1948	5	8	18	45	0	9500	2400	65	-		-	-	-	-	-	-	-	-		TM
1948	9	28	21	36	53	9400	2300	100	-		-	-	-	-	-	-	-	-	Sagaing.MR	TM,ISETR
1948	10	7	1	18	32	9190	2790	-	559	[1]	-	-	550	-	-	-	17	-		ISS
1948	11	28	21	43	7	9400	2680	-	622	[1]	-	-	600	-	-	-	62	-	Dergaon.ID	ISS ,ISETR
1948	12	7	-	-	-	9090	2510	-	-		-	-	-	-	-	-	-	-	BD	SETR
1949	7	15	10	59	58	9500	2500	-	-		-	-	-	-	-	-	-	-		SEASEE
1949	7	15	11	0	3	9300	2400	-	574	[1]	-	-	600	-	-	-	23	-	Mizoram.ID	ISS,ISETR
1949	11	13	5	27	0	9500	2100	-	-		-	-	-	-	-	-	-	-	Pegu.MR	SEASEE,ISETR
1949	12	10	19	37	14	8900	2600	-	580	[1]	-	-	600	-	-	6	26	-	Dhubri. ID;Saidpur.BD	ISS,TS,ISETR

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms	Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1950	2	26	3	35	48	9050	2800	-	-		-	600	-	-	-	-	-	Tibet.CH	TS,ISETR
1950	8	15	21	42	14	9300	2500	-	650 [1]	-	-	-	-	-	6	106	-	Bagdogra. ID	ISS
1950	8	15*	21	42	26	9300	2500	-	-		-	-	-	-	-	-	-	Imphal.ID	ISS,ISETR
1950	8	16	12	38	27	9190	2790	-	580 [1]	-	-	550	-	-	5	27	-	Gauhati. ID	ISS,TS
1950	8	16	17	51	37	9190	2790	-	640 [1]	-	-	670	-	-	6	89	-	Gauhati. ID	ISS,TS
1950	8	17	23	56	34	9190	2790	-	-		-	600	-	-	6	-	-	ID-CH	TS,HKG,ISETR
1950	8	26	6	33	6	9500	2680	-	-		-	650	-	-	-	-	-	Sibsagar.ID	HKG,ISETR
1950	9	11	0	18	22	9500	2680	-	-		-	600	-	-	-	-	-	Sibsagar.ID	TS,ISETR
1950	9	25	12	25	28	9300	2400	-	-		-	-	-	-	-	-	-	Mizoram.ID	HKG,ISETR
1950	10	29	2	18	31	9470	2780	-	-		-	550	-	-	-	-	-	-	TS
1950	11	12	-	-	-	9500	2680	-	- -		-	-	-	-	-	-	-	Sibsagar.ID	ISETR
1950	11	12	21	30	27	9480	2770	-	-		-	550	-	-	-	-	-	-	TS
1950	11	18	0	44	10	9460	2770	-	-		-	670	-	-	-	-	-	-	TS
1950	12	24	22	35	20	9170	2440	-	-		-	630	-	-	-	-	-	-	TS
1951	4	7	20	29	12	9050	2590	-	590 [1]	-	-	680	-	-	6	32	-	Shillong. ID	ISS,TS
1951	7	9	9	3	51	9500	2100	-	-		-	-	-	-	-	-	-	Mandalay.MR	HKG,ISETR
1951	10	1	23	59	37	9410	2230	-	-		-	-	-	-	-	-	-	Chin Hills.MR	HKG,ISETR
1952	1	15	2	31	38	9450	2380	96	-		-	600	-	-	6	-	-	MR	TS,HKG
1952	4	30	1	49	0	9450	2550	-	-		-	600	-	-	-	-	-	Nagaland.ID	TS,ISETR
1952	7	26	14	26	35	9500	200	-	-		-	-	-	-	-	-	-	-	SEASEE
1952	8	25	1	44	48	9400	2800	-	-		-	600	-	-	-	-	-	Arunachal.ID	TS,ISETR
1952	11	7	4	33	57	9400	2550	-	533 [1]	-	-	600	-	-	5	10	-	Imphal. ID	ISS,TS
1953	1	27	13	55	36	9500	2220	-	-		-	-	-	-	-	-	-	-	HKG
1954	2	23	6	40	32	9170	2780	33	630			-			-	110	-	BU	ROT,ISS ,TS,ISETR
1954	3	21	23	42	0	9500	2450	180	740	-	-	-	-	-	-	-	-	-	SEASEE
1954	12	13	20	38	50	9300	2700	-	-		-	-	-	-	-	-	-	-	HKG
1955	1	14	7	44	42	9400	2490	100	-		-	-	-	-	-	-	-	-	HKG
1955	3	15	8	13	23	9300	2380	-	-		-	-	-	-	-	-	-	-	HKG
1955	4	17	3	49	32	9000	2650	-	-		-	450	-	-	-	-	-	-	HKG
1955	8	15	16	44	7	9500	2700	-	-		-	-	-	-	-	-	-	-	HKG
1955	8	29	16	4	56	9050	2600	-	-		-	420	-	-	-	-	-	-	HKG
1955	9	8	4	45	26	9500	2500	150	-		-	560	-	-	-	-	-	-	HKG
1955	9	20	20	21	13	9000	2750	-	-		-	560	-	-	-	-	-	-	HKG
1955	11	23	2	33	47	9000	2650	-	-		-	510	-	-	-	-	-	ID-BD	ISS,ISETR
1955	12	14	10	51	45	9270	2160	33	650	-	-	-	-	-	-	169	-	Arakan.MR	ROT,ISS,ISETR
1956	1	21	17	35	34	9350	2350	33	610	-	-	-	-	-	-	-	-	Mizoram.ID	ROT,ISS,ISETR
1956	2	29	20	51	19	9420	2340	60	640	-	-	-	-	-	-	-	-	Chin Hills.MR	ROT,ISETR
1956	2	29	21	25	59	9420	2340	33	600	-	-	-	-	-	-	-	-	Chin Hills.MR	ROT,ISETR
1956	3	3	10	13	48	9420	2310	55	590	-	-	-	-	-	-	-	-	Chin Hills.MR	ROT,ISETR
1956	3	14	16	39	-	9080	2520	-	-		-	500	-	-	-	-	-	ID-BD	ISS,ISETR
1956	5	4	-	-	-	8700	2420	-	-		-	-	-	-	-	-	-	Dumka.ID	ISETR
1956	6	12	3	12	26	9090	2480	64	600 [1]	-	-	600	-	-	-	39	-	Mymensingh.BD	ISS,TS,HKG,ISETR
1956	6	12	15	1	26	9395	2262	-	643 [1]	-	-	-	-	-	-	96	-	-	ISS
1956	7	12	15	1	26	9400	2260	100	630	-	-	-	-	-	-	-	-	Chin Hlls.MR	ROT,ISETR
1956	8	7	0	29	53	9350	2250	150	-		-	-	-	-	-	-	-	-	HKG
1956	9	19	23	47	48	9480	2390	150	630	-	-	-	-	-	3	-	-	Chittagong.BD	ROT
1956	10	11	15	41	2	9450	2500	150	-		-	-	-	-	-	-	-	Manipur.ID	HKG
1956	12	5	-	-	-	9050	2500	-	-		-	-	-	-	-	-	-	ID-BD	HKG,ISETR
1956	12	30	21	59	6	9450	2400	-	-		-	500	-	-	-	-	-	Sagaing.MR	HKG,ISETR
1956	12	31	21	59	13	9400	2300	-	-		-	520	-	-	-	-	-	-	SEASEE
1957	1	7	19	30	2	9380	2440	41	696 [1]	-	-	720	-	-	-	283	-	-	ISS,TS
1957	5	28	5	51	38	9500	2540	61	600	-	-	-	-	-	-	-	-	MR-ID	ROT,ISETR
1957	7	1	19	30	22	9380	2440	80	680	-	-	-	-	-	-	-	-	-	ROT

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms	Mb	Md	M	MI	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1957	7	8	0	33	6	9450	2400	-	-	-	-	-	-	-	-	-	-		HKG
1957	10	12	0	7	42	9500	2500	-	-	-	-	-	-	-	-	-	-		HKG
1957	10	21	14	49	12	9500	2700	-	-	-	-	-	-	-	-	-	-		HKG
1957	11	29	21	34	20	9220	2550	-	-	-	-	-	-	-	-	-	-		HKG
1957	12	12	20	5	10	9300	2450	-	-	-	-	550	-	-	-	-	-		TS,HKG
1957	12	16	13	11	30	9000	2400	-	-	-	-	-	-	-	-	-	-		HKG
1958	1	4	8	27	53	9200	2700	-	-	-	-	550	-	-	-	-	-		TS,HKG
1958	2	9	9	31	9	9086	2493	36	617	[1]	-	500	-	-	-	56	-	Mymensingh.BD	ISS,TS,ISETR
1958	2	13	0	11	37	9250	2760	-	-	-	-	550	-	-	-	-	-	.	TS
1958	3	22	10	11	33	9380	2350	51	640	-	-	-	-	-	5	171	-	Silchar.ID	ROT,ISS,TS
1958	5	24	20	6	54	9500	2700	-	-	-	-	-	-	-	-	-	-	-	HKG
1958	7	13	15	28	0	9400	2450	-	-	-	-	-	-	-	-	-	-	-	HKG
1958	10	16	11	52	30	9450	2300	-	-	-	-	-	-	-	-	-	-	-	HKG
1959	4	9	17	8	33	9470	2570	-	-	-	-	510	-	-	-	-	-	MR-ID	HKG,ISETR
1959	4	13	18	32	5	9330	2200	80	590	-	-	-	-	-	-	67	-	Chin Hills.MR	ROT,ISS,ISETR
1959	5	24	11	28	19	9030	2590	-	-	-	-	-	-	-	-	-	-	Dhubri.ID	HKG,ISETR
1959	5	25	19	20	48	9400	2700	-	-	-	-	-	-	-	-	-	-	-	HKG
1959	6	7	8	33	24	9400	2400	-	-	-	-	540	-	-	-	-	-	-	TS
1959	7	24	16	17	47	9500	2410	160	610	-	-	-	-	-	-	-	-	Sagaing.MR	ROT,ISETR
1959	9	22	6	3	48	9100	2800	-	-	-	-	-	-	-	-	-	-	-	HKG
1959	11	2	5	9	42	9300	2800	-	-	-	-	500	-	-	-	-	-	-	TS
1959	11	2	13	15	37	9238	2151	30	624	[1]	-	500	-	-	-	64	-	MR-BD	ISS,ISETR
1959	12	2	7	43	55	9450	2150	150	-	-	-	-	-	-	-	-	-	Magwe.MR	HKG,ISETR
1959	12	3	14	0	24	9500	2400	-	-	-	-	-	-	-	-	-	-	-	HKG
1959	12	15	7	9	45	8800	2700	-	-	-	-	-	-	-	5	-	-	-	HKG
1959	12	27	9	31	6	9500	2800	-	-	-	-	-	-	-	-	-	-	-	HKG
1960	1	4	3	57	3	9000	2600	-	-	-	-	-	-	-	-	-	-	-	HKG
1960	1	6	18	45	8	9500	2350	-	-	-	-	-	-	-	-	-	-	-	HKG
1960	2	29	8	34	30	9450	2350	-	-	-	-	-	-	-	-	-	-	-	HKG
1960	5	6	13	59	4	9400	2200	100	-	-	-	-	-	-	-	-	-	-	HKG
1960	5	9	14	36	27	8950	2550	-	-	-	-	-	-	-	-	-	-	-	HKG
1960	5	26	20	5	7	9300	2700	33	560	-	-	-	-	-	3	129	-	Sylhet.BD	ROT,ISS,TS
1960	7	29	10	42	43	9050	2650	33	560	-	-	650	-	-	-	-	-	BU	ROT,ISS,TS,ISETR
1960	8	21	3	29	12	8860	2640	29	-	-	-	550	-	-	-	-	-	-	TS
1960	8	24	19	27	53	9490	2455	105	636	[1]	-	-	-	-	-	82	-	MR-ID	ISS,ISETR
1960	8	27	12	31	2	9000	2700	-	-	-	-	-	-	..	-	-	-	-	HKG
1960	10	1	3	0	47	9460	2350	2	-	-	-	-	-	-	-	-	-	-	HKG
1960	11	2	16	31	53	9384	2349	79	-	-	-	-	-	-	-	-	-	MR-ID	ISS,ISETR
1960	11	15	9	5	59	9432	2365	56	-	-	-	-	-	-	-	-	-	Sagaing.MR	ISS,ISETR
1960	11	16	9	6	1	9300	2300	-	-	-	-	-	-	-	-	-	-	-	HKG
1961	4	13	4	25	58	9470	2300	25	-	-	-	-	-	-	-	-	-	-	HKG
1961	6	14	0	41	13	9480	2450	62	560	-	-	525	-	-	-	95	-	MR-ID	ROT,ISS,TS,SEASEE,ISETR
1961	8	5	19	0	20	9390	2180	50	-	-	-	-	-	-	-	-	-	-	HKG
1961	9	29	22	36	30	8700	2800	100	-	-	-	550	-	-	5	-	-	-	TS,HKG
1961	10	18	15	31	18	9460	2310	69	-	-	-	-	-	-	-	-	-	-	HKG
1961	11	6	7	59	6	9190	2670	37	-	-	-	550	-	-	-	-	-	-	TS
1961	12	11	9	52	16	9460	2330	83	-	-	-	-	-	-	-	-	-	-	HKG
1961	12	25	11	19	10	9040	2700	33	-	-	-	550	-	-	-	-	-	-	TS
1962	2	19	11	11	7	9460	2220	33	-	-	-	-	-	-	-	-	-	-	HKG
1962	5	19	21	28	40	9220	2670	15	-	-	-	-	-	-	-	-	-	-	HKG
1962	10	30	16	13	26	9330	2660	33	-	-	-	550	-	-	-	-	-	-	TS,HKG
1962	11	30	16	2	6	9480	2430	98	-	-	-	-	-	-	-	-	-	-	HKG

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1962	12	18	3	51	0	9390	2380	124	-		-	.	-	-	-	-	-	-		HKG
1963	2	22	1	32	30	8710	2720	-	-		-	.	525	-	.	-	-			TS
1963	3	2	2	45	37	9220	2380	36	-		420	.	-	-	-	-	-			SEASEE
1963	6	19	10	47	25	9210	2500	51	620		590	-	-	-	-	-	-	-	Sylhet.BD	ROT,TS,SEASEE,ISETR
1963	6	21	15	26	30	9209	2490	53	640		570	-	-	-	-	7	120	-	Kailashahr.ID	ROT,ISS,TS,SEASEE
1963	9	2	22	25	52	9000	2620	220	560			-	-	-	-	-	-	-	Dhubri.ID	ROT,ISETR
1963	9	28	6	0	25	9450	2290	108	590		560	-	-	-	-	-	-	-	Sagaing.MR	ROT,SEASEE,ISETR
1963	10	21	49	36	25	9470	2190	115	-		-	-	-	-	-	-	-	-		SEASEE
1964	1	22	15	58	47	9360	2240	88	544	()	610	-	600	-	-	-	153	-	MR-ID	ROT,ISC,MOS,SHL,USCGS,ISETR
1964	2	1	11	28	19	8778	2730	33	442	()	480	-	-	-	-	-	20	.	NP	ISC,USCGS,ISETR
1964	2	18	3	48	36	9110	2750	30*	449	()	530	-	560	-	-	-	67	.	BU	ROT,ISC,MOS,USCGS,TS,ISETR
1964	2	18	4	26	34	9430	2500	-	-		-	-	540	-	-	-	-	-		TS
1964	2	27	15	10	48	9440	2170	102	545	()	640	-	650	-	-	-	212	-	Mandalay.MR	ROT,ISC,MOS,SHL,USCGS,ISETR
1964	3	20	19	0	53	9440	2360	86	465	()	500	-	560	-	-	-	52	-	MR-ID	ROT,ISC,MOS,SHL,USCGS,ISETR
1964	3	27	23	3	42	8930	2720	29	456	()	500	-	-	-	-	-	46	-	BU	ROT,ISC,MOS,USCGS,GS,ISETR
1964	4	13	3	20	5	9020	2760	52*	473	()	520	-	600	-	-	-	53	-	BU	ROT,ISC,MOS,USCGS,ISETR
1964	4	15	16	35	58	8800	2170	36*	468	()	520	-	560	-	-	7	80	-	Calcutta.ID	ROT,ISC,QUE,MOS,USCGS,SHL,ISETR
1964	6	3				9500	2600					-							MR-ID	ISETR
1964	6	9	12	33	22	8790	2150	0	390	[1]	-	-	-	-	-	-	9	-	ID	ISC,SHL
1964	6	13	17	35	58	9400	2300	61	449	()	520	-	600	-	-	-	108	-	MR-ID	ROT,ISC,MOS,USCGS,SHL,ISETR
1964	7	12				9450	2700					.							Sagaing.MR	ISETR
1964	7	13	10	58	48	9470	2370	117	492	()	540	-	600	-	-	-	138	-	MR-ID	ROT,ISC,USCGS,MOS,SHL,GS,ISETR
1964	8	17	14	42	54	9418	2432	158	438	()	480	-	-	-	-	-	24	-	MR-ID	ISC,USCGS,ISETR
1964	8	30	2	35	8	8830	2760	21	456	()	510	-	560	-	-	-	78	-	Sikkim.BU	ROT,ISC,SHL,MOS,USCGS,TS,ISETR
1964	8	30	5	12	32	8852	2790	33	377	[1]	-	.	-	-	.	-	6	-	Sikkim .BU	ISC,ISETR
1964	9	1	13	22	37	9230	2720	33	472	()	550	-	600	630	630	-	148	630	ID-CH	ROT,ISC,SHL,USCGS,MOS,TS,ISETR
1964	10	4	20	55	38	9440	2600	-	372	[1]	-	-	-	-	-	-	5	-	MR-ID	NDI,ISETR
1964	10	6	2	55	0	9450	2790	413	422	()	450*	-	-	-	-	-	11	-	E.ID	ISC,USCGS,ISETR
1964	10	13	10	36	56	9120	2400	-	399	[1]	-	-	-	-	-	-	12	-	ID-BD	ISC,NDI,ISETR
1964	10	21				9370	2800	37				-	590						ID-CH	ISETR
1964	10	25	15	40	7	8860	2790	0	434	()	-	-	-	-	.	-	9	-	Sikkim	ISC,NDI,ISETR
1964	12	1	15	10	24	9446	2118	104	390	[1]	-	-	-	-	.	-	9	-	MR	ISC,ISETR
1965	1	12	13	32	24	8800	2760	23	529	()	580	-	650	-	-	-	151	-	NP	ROT,ISC,PEK,QUE,USCGS,SHL,MOS,TS,ISETR
1965	1	12	13	55	20	8770	2730	33*	454	()	520	-	560	-	-	-	52	-	NP	ROT,ISC,PEK,USCGS,ISETR
1965	1	18	8	17	38	9380	2500	-	-		-	-	590	-	-	-	-	-		PAPER
1965	1	22	2	41	35	9450	2010	76	454	[2]	480	-	560	-	-	-	37	-	MR-CH	ROT,ISC,ISETR
1965	2	18	4	26	34	9430	2500	36	479	()	540	-	600	-	-	-	122	-	ID-CH	ROT,ISC,ISETR
1965	2	25	10	34	7	9464	2363	94	471	()	520	-	-	-	-	-	98	-	MR-ID	ISC,PEK,USCGS,MOS,SHL
1965	3	27	20	45	51	8990	2730	33	360	[1]	-	-	-	-	-	-	7	-	BU	ISC
1965	4	11	22	33	7	9233	2682	70	465	()	490	-	510	-	-	-	50	-	E.ID	ISC,USCGS,TS,ISETR
1965	6	1	4	32	45	9490	2020	57	477	()	520	-	600	-	-	-	124	-	MR;MR-CH	ROT,ISC,GS
1965	6	18	8	17	38	9380	2500	46	464	()	520	-	600	680	680	-	105	680	MR-ID;ID-CH (Arakan Yoma)	ROT,ISC,GS,TS,ISETR
1965	7	5	23	41	39	9480	2120	65*	427	[2]	440	-	-	-	-	-	29	-	MR	ISC,USCGS,NDI,ISETR
1965	8	4	15	27	1	8830	2350	-	343	[2]	-	-	-	-	-	-	2	-	ID-BD	NDI
1965	9	30	8	48	27	9400	2500	-	356	[2]	-	-	-	-	-	-	3	-	MR-ID	NDI
1965	11	6	16	4	59	9170	2710	40	404	()	430	-	-	-	-	-	9	-	BU	USCGS
1965	11	6				9160	2720	33				-	480						BU	ISETR
1965	12	5	22	1	28	9450	2330	13	467	()	500	-	560	-	-	-	82	-	MR-ID	ROT,ISC,USCGS,ISETR
1965	12	9	20	26	4	9250	2750	22	478	()	520	-	560	-	-	-	86	-	ID-CH	ROT,ISC,PEK,USCGS,TS,ISETR
1965	12	9	20	26	17	9250	2670	25*	440	()	500	-	-	-	-	-	20	-	E.ID	ISC,USCGS
1965	12	15	4	43	47	9447	2200	109	480	[2]	520	-	530	-	-	-	121	-	MR	ISC,PEK,USCGS,MOS
1965	12	17	22	46	11	9450	2200	114	474	[2]	510	-	-	-	-	-	10	-	MR	USCGS

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC NS	RMK LOCATION	REFERENCES
1965	12	25	4	43	47	9460	2220	-	488	[2]	530	·	-	-	-	- - -	-	TS
1966	2	24	0	16	41	9144	2635	47	435	( )	470	-	510			66	Eastern ID	ISC,USCGS,TS,ISETR
1966	2	24				9100	2600	59				-	510			59	Assam.ID	ISETR
1966	3	23	22	52	25	9004	2591	20	415	( )	440*	-				10	ID-BD	ISC,USCGS,NDI
1966	4	23	4	17	26	9047	2590	45	447	[2]	470*	-	510			21	ID-BD	ISC,USCGS,TS,ISETR
1966	5	6	0	8	31	9280	2210	43	406	[2]	410*	-	410			29	ID-BD	ISC,USCGS,NDI,ISETR
1966	5	29	15	3	52	9480	2370	89	390	[1]		-				9	MR-ID	ISC,USCGS
1966	6	5	8	29	27	9350	2460	45	397	( )	420	-	410			23	MR-ID	ISC,USCGS,ISETR
1966	6	26	10	56	11	9284	2614	74	441	( )	480	-	500			26	Eastern ID	ISC,USCGS,TS
1966	7	5				9240	2750	77				-	480				Assam.ID	ISETR
1966	9	25	1	23	34	9484	2468	79	391	( )	420	-	420			13	MR-ID	ISC,USCGS,ISETR
1966	9	26	5	10	58	9260	2750	33				-	560				MR-ID	TS,ISETR
1966	9	26				9270	2760	33				-	420				Nowgong.Assam.ID	ISETR
1966	10	2	4	31	49	9481	2441	75	460	[2]	490	-	520			46	MR-ID	ISC,USCGS,TS,ISETR
1966	10	18	20	34	37	9487	2428	86	457	( )	490	-	520			50	MR-ID	ISC,USCGS,ISETR
1966	10	22	3	3	24	9428	2304	72	481	( )	510	-	530			115	MR-ID	ISC,USCGS,TS,ISETR
1966	10	27	17	32	59	9372	2384	38	445	( )	430	-				15	MR-ID	ISC,USCGS
1966	12	15	2	8	3	9443	2151	84	507	( )	540	·	570			165	MR	ISC,USCGS,MOS,QUE,ISETR
1967	1	4	11	26	46	9419	2355	54	438	( )	490	-	540			51	MR-ID	ISC,USCGS,GS,TS,ISETR
1967	1	13	14	4	30	9472	2394	84	417	( )	480	-	440			42	MR-ID	ISC,USCGS,ISETR
1967	1	30	7	9	31	9054	2540	55	451	( )	500*	-				31	ID-BD	ISC,USCGS,ISETR
1967	2	8	17	17	48	9380	2313	51	432	( )	490	-	510			81	MR-ID	ISC,USCGS,TS,ISETR
1967	2	15	5	57	31	9399	2033	51	491	( )	540	-	550			164	MR	ISC,USCGS,QUE,ISETR
1967	2	25	11	56	11	9252	2738	33	447	[2]	470	-				27	ID-CH	ISC,USCGS
1967	4	15	0	19	43	9500	2404	0	416	( )	470	-				8	MR	ISC,NDI
1967	4	23	20	18	52	9495	2476	53	412	( )	460	-	480			28	MR-ID	ISC,USCGS,ISETR
1967	6	17	13	14	5	9468	2305	122	453	( )	450*	-	450			14	MR-ID	ISC,USCGS,ISETR
1967	6	26	12	28	5	9480	2350	7	408	( )	479*	-	470			12	MR-ID	ISC,USCGS,ISETR
1967	7	7	22	56	31	9214	2787	33	454	[2]	480	-	490			36	ID-CH	ISC,USCGS,ISETR
1967	7	16	7	44	14	8734	2284	90	390	[1]		-				9	ID	ISC,NDI
1967	8	27	11	11	57	9427	2320	66	413	( )	470	-	450			16	MR-ID	ISC,USCGS,ISETR
1967	9	6	1	43	30	9190	2400	18*	440	( )	490	-	500			68	ID-BD	ISC,USCGS,TS
1967	9	13	19	37	2	8700	2700		481	[2]	520	·				1	NP	LAO
1967	9	15	10	32	44	9186	2742	19	518	( )	580	·	580			211	BU	ISC,MOS,USCGS,TS,ISETR
1967	10	18	0	55	8	9489	2338	58	427	( )	460	-	480			33	MR-ID	ISC,USCGS,ISETR
1967	11	10	6	4	7	9175	2546	59*	439	( )	470	-	440			26	ID-BD	ISC,USCGS,ISETR
1967	11	14	0	4	17	9161	2405	24	451	( )	490	-	510			57	ID-BD	ISC,USCGS,GS,TS,ISETR
1967	12	10	18	43	34	9488	2249	153	482	( )	500	-	500			95	MR	ISC,USCGS,ISETR
1968	1	18	19	57	6	9320	2364	75	413	( )	470*	·	470			13	MR-ID	ISC,USCGS,ISETR
1968	4	13	23	31	30	9500	2451	119	450	( )	470	·	470			24	MR	ISC,USCGS,ISETR
1968	5	2	0	26	2	9228	2623	51	432	( )	460	-	480			50	Eastern ID	ISC,USCGS,ISETR
1968	5	3	13	23	35	8660	2300					-	560					TS
1968	6	12	4	29	22	9194	2483	39	474	( )	530	·	530			117	ID-BD	ISC,USCGS,GS,TS,ISETR
1968	8	9	2	24	54	9423	2528	45	427	( )	460	-				22	MR-ID	ISC,USCGS,ISETR
1968	8	9	2	25	23	9150	2520	33	343	[1]		-				2	ID-BD	QUE
1968	8	18	14	18	58	9062	2642	22	457	( )	510	-	520			98	Eastern ID	ISC,MOS,USCGS,GS,TS,ISETR
1968	10	28	17	48	30	8603	2757	37	447	( )	490	-				28	NP	ISC,USCGS
1968	11	18	8	49	3	9290	2690	51	404	( )	430	-	400			19	Eastern ID	ISC,USCGS,ISETR
1968	12	27	14	38	12	9161	2412	27	457	( )	510	-	520			87	ID-BD (Shillong)	ISC,USCGS,MOS,TS,ISETR
1969	1	25	23	34	28	9240	2289	49	467	( )	520	-	520			118	ID-BD	ISC,MOS,USCGS,TS,ISETR
1969	2	7	9	25	38	9414	2746	33	433	( )		·				14	Eastern ID	ISC,USCGS,ISETR
1969	2	22	20	37	5	9236	2654	38	429	( )	480	-				42	Eastern ID (Shilong)	ISC,MOS,USCGS,ISETR

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC NS	RMK LOCATION	REFERENCES
1969	2	22				9300	2680					-	500				Nowgong.Assam.ID	ISETR
1969	2	26	20	37	7	9240	2660	38				-	500					TS
1969	4	22	9	6	58	9262	2315	35	404	[1]		-				14	ID-BD	ISC,USCGS,ISETR
1969	5	3				8660	2300					-	570				Jamshedpur, ID	ISETR
1969	6	1	8	35	24	9177	2572	33	454	[2]	480	-	500			60	ID-BD (Shillong)	ISC,USCGS,MOS,TS,ISETR
1969	6	30	8	51	54	9271	2693	44	467	{2}	500	-	510			64	Eastern ID	ISC,MOS,USCGS,TS,ISETR
1969	8	10	5	2	5	9468	2181	76	460	[2]	490		490			23	Sagaing,MR	ISC,USCGS,ISETR
1969	9	30	23	13	35	9480	2520	50	446	( )	480	-	540			50	MR-ID	ISC,USCGS,MOS,TS,ISETR
1969	10	17	1	25	12	9470	2309	124	564	( )	610	-				296	MR-ID	ISC,USCGS,MOS,ISETR
1969	10	29	22	24	22	9438	2361	70	446	( )	460*	-				20	MR-ID	ISC,USCGS,ISETR
1969	11	5	20	25	14	9024	2766	13	450	( )	500	-	500			54	BU	ISC,USCGS,MOS,ISETR
1969	11	5	20	29	14	9020	2770					-	500					TS
1969	11	11	5	50	1	9180	2660	33	461	( )	450	-	450			22	Gauhati.Assam.ID	ISC,USCGS,ISETR
1969	12	19	14	41	19	9364	2443	57	434	( )	480	-	470			24	MR-ID	ISC,MOS,USCGS,ISETR
1970	2	19	7	10	2	9400	2740	52				-	550					CS
1970	2	19	7	10	2	9396	2740	12	490	( )	540	-	550			190	Dibrugarh.Assam.ID	ISC,USCGS,SHL,MOS,ISETR
1970	3	13	18	24	53	9399	2491	59	439	( )	480	-	490			52	Imphal, ID	ISC,USCGS,MOS,ISETR
1970	4	7	14	30	28	9350	2010		356	[1]		-				3	MR	HFS
1970	5	9	10	33	59	9410	2400					-	500					TS
1970	5	29	10	33	59	9406	2396	49	466	( )	510	-	500			154	Assam.ID	ISC,USCGS,MOS,ISETR
1970	7	7	4	13	39	9464	2434	95	421	( )	440	-	420			17	MR-ID	ISC,USCGS,ISETR
1970	7	25	1	35	26	8858	2572	32	470	( )	510	-	520			103	ID-BD	ISC,QUE,MOS,SHL,USCGS,TS,ISETR
1970	8	13	7	0	42	9387	2462	42	421	( )	470	-	470			72	MR-ID	ISC,USCGS,SHL,MOS,ISETR
1970	8	28	1	24	7	9155	2478	39	452	( )	490	-	490			60	ID-BD	ISC,USCGS,SHL,ISETR
1970	10	14	16	51	38	9420	2183	68	438	( )	470	-				76	MR	ISC,USCGS,MOS
1970	12	1	19	17	53	9350	2130	0	401	( )		-				19	MR	ISC,HFS,MOS
1971	2	2	7	59	56	9166	2371	37	497	( )	540	-	540			141	ID-BD	ISC,MOS,NEIS,QUE,TS,CS,ISETR
1971	4	21	9	15	25	9210	2620	33	420	[2]	430	-	430			17	Assam.ID	ISC,NEIS,ISETR
1971	5	17	8	43	21	9482	2434	163	447	[2]	470	-	470			40	MR-ID	ISC,MOS,NEIS,ISETR
1971	6	16	20	6	13	9431	2378	18	440	[2]	460	-	460			17	MR-ID	ISC,NEIS,ISETR
1971	6	26	2	16	37	9478	2460	74	467	[2]	500	-	520			112	MR-ID	ISC,MOS,NEIS,TS,CS
1971	7	17	15	0	56	9315	2641	52	497	( )	540	-	530			212	Assam.ID	ISC,MOS,NEIS,SHL,TS,CS,ISETR
1971	10	31	15	54	48	9065	2618	33	447	[2]	470	-	460			26	Assam.ID	ISC,NEIS,ISETR
1971	11	11	4	40	58	9388	2144	55	474	( )	500	-	480			68	MR	ISC,MOS,NEIS,ISETR
1971	12	4	8	38	0	8795	2793	29	419	( )	520	-	500			46	NP	ISC,MOS,NEIS,ISETR
1971	12	29	22	27	4	9473	2517	46	507	( )	560	-	550			200	MR-ID	ISC,MOS,NEIS,ISETR
1972	3	7	16	46	25	9495	2330	141	420	[2]	430	-	430			17	MR-ID	ISC,NEIS,ISETR
1972	3	26	6	10	40	9350	2579	88	426	[2]	440	-	430			22	MR-ID	ISC,MOS,NEIS
1972	4	1	21	34	46	9483	2294	155	426	[2]	440	-				24	MR	ISC,CNSK
1972	5	10	12	48	44	9458	2137	84	460	[2]	490	-	480			42	MR	ISC,MOS,NEIS,ISETR
1972	5	12	3	4	1	9440	2600	0	382	[1]		-				7	Eastern ID	ISC,CNSK
1972	7	11	20	46	13	9460	2424	61	376	( )	460	-	460			41	MR-ID	ISC,NEIS,ISETR
1972	8	21	14	4	34	8801	2733	33	426	( )	450	-	510			53	Sikkim,ID	ISC,MOS,NEIS,ISETR
1972	8	21	14	23	56	9390	2360	45	390	[1]		-				9	MR-ID	ISC,NEIS,ISETR
1972	8	21	14	4	34	8801	2733	33	433	( )	450	-	480			53	Sikkim,ID	ISC,ISETR
1972	11	6	10	56	14	8840	2688	59	426	( )	440	-	480			61	ID-BD	ISC,MOS,NEIS,ISETR
1972	12	14	5	41	46	9389	2651	0	402	[1]		-				13	Eastern ID	ISC,CNSK
1972	12	18	11	20	32	9435	2125	75	336	( )	500	-	530			69	MR	ISC,MOS,NEIS,ISETR
1973	2	10	4	25	29	9453	2443	67	427	( )	430	-	440			23	MR-ID	ISC,HFS2,NEIS,ISETR
1973	5	23	1	57	54	9490	2460	62	413	[2]	420	-	420			13	MR-ID	ISC,HFS2,NEIS,ISETR
1973	5	31	23	39	52	9352	2431	1	526	( )	580	-	590			313	MR-ID	ISC,HFS2,MOS,NEIS,ISETR
1973	7	3	23	18	58	9485	2420	0	454	[2]	480	-	520			14	MR-ID	ISC,HFS2,HFS1,NEIS,MOS

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1973	7	4				9250	2720	26				-	520						ID-CH	ISETR
1973	7	4	21	4	46	9486	2360	126	460	( )	500	-	520				111		MR-ID	ISC,HFS2,HFS1,NEIS,MOS,ISETR
1973	7	12				9500	2420	135				-	440						MR	ISETR
1973	7	27	20	23	49	9449	2327	60	483	( )	540	-	530				211		MR-ID	ISC,HFS2,MOS,NEIS,ISETR
1973	9	11				9250	2700	54				-	480						Himalaya,ID	ISETR
1973	10	9	4	1	47	9360	2769	33	460	[2]	490	-	480				17		Eastern ID	ISC,HFS2,ISETR
1973	10	30	2	45	1	9329	2097	37	447	[2]	470	-	490				45		MR	ISC,HFS2,MOS,NEIS,ISETR
1973	10	31	12	6	48	9250	2520	33	420	[2]	430	-					11		ID-BD	ISC,HFS1
1973	11	2	12	9	55	9170	2572	21	443	( )	460	-	480				90		ID-BD	ISC,HFS2,HFS1,NEIS,MOS,ISETR
1973	12	4	12	48	50	9408	2265	63	433	[2]	450	-	460				53		MR	ISC,HFS2,HFS1,NEIS,MOS,ISETR
1973	12	26	1	42	20	9338	2243	31	454	[2]	480	-	510				81		MR-ID	ISC,HFS2,MOS,NEIS,ISETR
1974	1	1	13	53	31	9410	2390	285	406	[2]	410	-					32		MR-ID	ISC,HFS2,HFS1
1974	1	7	5	18	25	9472	2343	108	462	( )	470	-	490				80		MR-ID	ISC,HFS2,HFS1,NEIS,MOS,ISETR
1974	1	20	20	5	17	9290	2280	20	457	( )	490	-	480				119		ID-BD	ISC,MOS,HFS2,NEIS,HFS1,ISETR
1974	1	23	22	11	21	9450	2540	0	447	[2]	470	-					4		MR-ID	ISC,HFS1
1974	1	25	22	57	36	9160	2610	0	460	[2]	490	-					6		Eastern ID	ISC,HFS1
1974	1	28	14	17	31	9324	2590	51	386	[2]	380	-	380				10		Assam,ID	ISC,NEIS,ISETR
1974	2	19	20	25	53	8980	2680	33	377	[1]							6		ID-BD	ISC
1974	3	5	3	12	17	9480	2310	0	382	[1]	460	-					7		MR-ID	ISC,HFS1
1974	3	24	14	16	1	8600	2766	20	508	( )	540	-	480				299		NP	ISC,HFS1,HFS2,NEIS,MOS,ISETR
1974	3	24	16	17	35	8601	2763	3	448	[2]	470	-					81		NP	ISC,HFS1,HFS2,NEIS,MOS
1974	4	5	3	46	30	9368	2133	47	454	( )	500	-	500				87		MR	ISC,MOS,HFS2,HFS1,NEIS,ISETR
1974	4	5	10	28	58	9400	2160	0	460	[2]	490	-					10		MR-ID	ISC,HFS2,HFS1
1974	4	25	18	4	17	8830	2380	33	404	[1]							14		ID-BD	ISC
1974	5	15	3	51	21	9191	2566	34	433	[2]	450	-	450				62		ID-BD	ISC,MOS,HFS2,NEIS,HFS1,ISETR
1974	6	22	18	10	53	9354	2579	50	447	[2]	470	-					11		Eastern ID	ISC,HFS1
1974	6	22	18	48	51	9390	2230	150	392	[2]	390	-	390				14		MR-ID	ISC,NEIS,HFS1,ISETR
1974	7	9	7	17	13	9232	2734	53	440	[2]	460	-	460				20		ID-CH	ISC,HFS2,NEIS,HFS1,ISETR
1974	7	23	3	6	31	9330	2200	35	447	[2]	470	-	440				37		MR-ID	ISC,NEIS,HFS2,MOS,HFS1,ISETR
1974	8	30	20	2	46	9462	2297	107	433	[2]	450	-	450				29		MR	ISC,NEIS,ISETR
1974	9	21	6	27	42	9104	2563	27	395	( )	470	-	470				43		ID-BD	ISC,NEIS,MOS,NDI,ISETR
1974	9	21	17	53	37	9463	2414	109	402	( )	460	-	480				45		MR-ID	ISC,HFS2,NEIS,HFS1,ISETR
1974	12	7	13	55	4	9369	2388	78	433	( )	470	-	480				64		MR-ID	ISC,MOS,HFS2,NEIS,ISETR
1975	1	13	3	45	17	9450	2510	33	426	[2]	440	-					8		MR-ID	ISC
1975	1	17	15	9	39	9404	2279	16	398	( )	450	-	460				33		MR-ID	ISC,HFS1,HFS2,NEIS,ISETR
1975	1	23	1	37	43	8837	2744	33	433	[2]	450	-	480				33		Sikkim,ID	ISC,MOS,HFS2,NEIS,ISETR
1975	2	6	6	39	49	8770	2795	63	447	[2]	470	-	470				17		NP	ISC,HFS1,HFS2,NEIS,ISETR
1975	3	3	2	14	53	9450	2235	61	349	( )	450	-	440				26		MR	ISC,HFS2,NEIS,ISETR
1975	3	3	19	24	23	9350	2411	42	427	( )	480	-	500				86		MR-ID	ISC,HFS1,MOS,HFS2,NEIS,ISETR
1975	4	24	1	35	51	8704	2744	26	460	[2]	490	-	510				94		NP	ISC,MOS,NEIS,HFS2,ISETR
1975	5	21	3	16	18	9409	2386	51	476	( )	530	-	530				255		MR-ID	ISC,MOS,NEIS,HFS2,HFS1,ISETR
1975	6	23	10	29	28	9327	2671	65	494	[2]	540	-					22		Eastern ID	ISC,HFS1,HFS2
1975	6	24	15	38	28	8750	2774	33	425	( )	480	-	520				62		NP	ISC,NEIS,MOS,HFS2,ISETR
1975	6	28	21	32	3	9489	2264	137	461	( )	480	-	510				71		MR	ISC,MOS,HFS2,NEIS,ISETR
1975	7	8	12	5	-	9440	2200	60				-	650	670	670	7		670	Shillong,ID	GBG
1975	7	8	12	4	38	9462	2142	112	528	[2]	590	-	650				486		MR	ISC,HFS2,JMA,MOS,HFS1,NEIS,ISETR
1975	7	8	19	36	45	9480	2137	114	420	[2]	430	-	460				19		MR	ISC,HFS2,NEIS,HFS1,ISETR
1975	7	9	11	30	33	9482	2160	118	512	( )	480	-	480				75		MR	ISC,HFS2,NEIS,ISETR
1975	9	6	1	55	24	9350	2020	37	454	[2]	480	-					9		MR	ISC,HFS1,ISETR
1975	9	17	3	0	18	9422	2229	69	453	( )	470	-					106		MR	ISC,MOS,HFS1,NEIS,HFS2,ISETR
1975	10	21	7	10	52	9434	2292	52	460	[2]	490	-	480				22		MR	ISC,HFS2,NEIS,ISETR
1975	10	24	17	44	16	8620	2690	33	413	[2]	420	-	420				11		ID-NP	ISC,NEIS,HFS1,ISETR

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC NS	RMK LOCATION	REFERENCES
1975	11	19	14	1	25	9485	2155	115	423	( )	450	-	440			30	MR	ISC,HFS1,HFS2,NEIS,ISETR
1975	11	21	13	49	28	8650	2700	0	460	[2]	490	-				28	ID-NP	ISC,NEIS,HFS1,ISETR
1975	12	13	22	35	44	9427	2362	62	471	( )	520	-	440			158	MR-ID	ISC,MOS,HFS2,NEIS,ISETR
1976	1	18	14	3	10	9090	2350	33	404	[1]		-				14	BD	ISC,NEIS
1976	2	1	15	38	42	9345	2445	48	353	( )	400	-	400			12	MR-ID	ISC,NEIS,HFS1,ISETR
1976	3	11	0	32	41	9210	2660		447	[2]	470	-				19	Eastern ID	ISC,HFS1,HFS2
1976	3	16	4	56	0	9290	2480	95	386	[2]	380	-				14	ID-BD	ISC,HFS2,NEIS
1976	3	18	7	26	17	9398	2434	56	308	( )		-				9	MR-ID	ISC
1976	3	30	6	48	11	9438	2431	55	397	( )	440	-	460			17	MR-ID	ISC,HFS2,NEIS,ISETR
1976	4	1	11	47	14	9080	2450	81	393	[1]		-				10	BD	ISC
1976	6	23	15	38	43	8862	2118	50	465	( )	500	-	530			127	Bay-Bengal	ISC,MOS,NEIS,HFS2,HFS1,ISETR
1976	6	30	23	15	15	9470	2280	94	399	[2]	400	-	400			9	MR	ISC,NEIS,HFS1,ISETR
1976	8	1	13	32	52	9460	2110	107	382	[1]		-				7	MR	ISC
1976	9	24				9500	2400	164				-	460				MR	ISETR
1976	12	6	16	13	10	9454	2426	66	437	( )	470	-	470			35	MR-ID	ISC,NEIS,HFS1,MOS,ISETR
1976	12	12	21	15	23	9150	2620	15	386	[1]		-				8	MR-ID	ISC
1976	12	15	4	35	12	9461	2310	103	476	( )	490	-	500			119	MR-ID	ISC,MOS,NEIS,ISETR
1976	12	17	10	21	48	9244	2774	33	447	[2]	470	-	470			6	ID-CH	ISC,NEIS,ISETR
1977	1	5	14	11	1	9360	2540	-				-	550			-	-	PAPER
1977	1	17	16	14	12	9050	2640	33	460	[2]	490	-				14	Eastern ID	ISC,NEIS,HFS1
1977	2	6	16	53	58	9295	2433	37	447	[2]	470	-	470			71	ID-BD	ISC,MOS,NEIS,HFS1,ISETR
1977	2	21	18	55	55	9460	2150	273	372	[1]		-				5	MR	ISC
1977	5	12	12	20	0	9296	2168	39	506	( )	540	-	540			347	MR	ISC,HFS1,MOS,NEIS,ISETR
1977	6	5	19	21	37	8843	2607	17	437	( )	470	-	480			49	ID-BD	ISC,NEIS,ISETR
1977	7	10	9	48	17	9310	2660	0	454	[2]	480	-				5	Eastern ID	ISC,HFS1
1977	7	31	23	59	23	9394	2021	62	447	( )	470	-	450			63	MR	ISC,MOS,NEIS,HFS1,ISETR
1977	9	8	14	2	34	9220	2500	33				-					ID-BD	ISC
1977	10	13	11	32	9	9330	2347	61	471	( )	520	-	520			231	MR-ID	ISC,MOS,HFS1,ISETR
1977	11	13	21	2	32	9300	2651	52	474	[2]	510	-	500			51	Kohima,ID	ISC,MOS,NEIS,ISETR
1977	11	29	1	53	48	9470	2173	109	413	[2]	420	-	440			17	MR	ISC,NEIS,HFS1,ISETR
1977	12	23	21	0	27	9231	2371	33	415	( )	510	-	510			32	ID-BD	ISC,NEIS,HFS1,ISETR
1978	2	3	23	46	42	9470	2300	92	458	[2]	510		510			156	MR-ID	ISC,HFS,MOS,NEIS,ISETR
1978	2	9	5	36	1	9476	2393	86	434	[2]	480		490			69	MR-ID	ISC,HFS,NEIS,ISETR
1978	2	11	14	45	44	9474	2431	88	430				470			50	MR-ID	ISC,HFS,MOS,NEIS,ISETR
1978	2	22	9	7	31	9413	2330	83	442	[2]	490		500			57	MR-ID	ISC,HFS,MOS,NEIS,ISETR
1978	2	23	23	18	34	9470	2308	113	480		500		510			197	MR-ID	Rajiv ISC,HFS,MOS,NEIS,ISETR
1978	3	18	18	41	1	9300	2438	61	411	[2]	450		460			24	ID-BD	ISC,HFS,NAO,NEIS,ISETR
1978	3	28	10	25	0	9454	2446	53	411	[2]	450		430			26	MR-ID	ISC,NAO,HFS,NEIS,ISETR
1978	3	28	12	37	40	9274	2315	33	434	[2]	480		480			21	ID-BD	ISC,NEIS,ISETR
1978	3	31	19	20	21	9450	2540	33	420				460			84	MR-ID	ISC,NEIS,MOS,ISETR
1978	4	7	23	32	36	9238	2280	49	411	[2]	450		460			22	ID-BD	ISC,NAO,NEIS,HFS,ISETR
1978	4	19	17	1	46	9268	2767	51	450				490			105	ID-CH	ISC,HFS,NEIS,MOS,ISETR
1978	4	19	18	58	41	9259	2765	33	411	[2]	450		460			18	ID-CH	ISC,HFS,NAO,NEIS,ISETR
1978	4	27	10	18	42	9464	2369	61	411	[2]	450		450			16	MR-ID	ISC,NEIS,ISETR
1978	6	10	11	18	19	9465	2288	113	411	[2]	450		450			23	MR	ISC,HFS,NAO,NEIS,ISETR
1978	7	3	11	4	44	9460	2313	54	396	[2]	430					18	MR-ID	ISC,NEIS
1978	7	23	10	17	19	9463	2289	149	419	[2]	460		470			25	MR	ISC,NAO,NEIS,ISETR
1978	9	3	19	59	12	9250	2360	33	355	[1]						9	ID-BD	ISC
1978	9	18	19	30	0	9467	2269	111	396	[2]	430					11	MR	ISC,HFS,NAO,NEIS
1978	9	22	4	54	8	9471	2372	102	411	[2]	450					8	MR-ID	ISC,HFS
1978	9	29	8	59	28	9475	2143	96	404	[2]	440		450			51	MR	ISC,HFS,NEIS,NAO,ISETR
1978	10	10	18	14	45	9369	2437	49	419	[2]	460		470			36	MR-ID	ISC,NAO,NEIS,HFS,ISETR

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms.		Mb	Md	M	MI	Mw	ITSC	NS	RMK LOCATION	REFERENCES
1978	10	14	18	48	49	8730	2770	27	434	[2]	480						24	NP	ISC,NAO
1978	10	20	17	21	47	9468	2418	98	480		480						87	MR-ID	ISC,HFS,NAO,MOS,NEIS,ISETR
1978	10	27	17	3	29	9453	2221	116	419	[2]	460						16	MR	ISC
1978	11	18	13	24	31	9260	2650	55	404	[2]	440		440				14	Gauhati,ID	ISC,NEIS,ISETR
1978	12	8	3	42	26	9490	2280	107	380	[2]	410		440				8	MR	ISC,NEIS,ISETR
1978	12	14	4	11	5	9370	2270	75	396	[2]	430						7	MR-ID	ISC
1978	12	29	8	53	22	9285	2347	33	400		470		480				68	ID-BD	ISC,NAO,NEIS,MOS,ISETR
1978	12	30	23	33	23	9417	2481	33	411	[2]	450		460				15	MR-ID	ISC,NAO,HFS,NEIS,ISETR
1979	1	1	18	51	11	9369	2089	61	470		530		530				236	MR	ISC,MOS,NEIS,PEK,ISETR
1979	1	9	2	39	56	9250	2496	64	396	[2]	430		440				12	ID-BD	ISC,NEIS,ISETR
1979	1	13	3	27	16	9189	2739	33	400		440		450				37	BU	ISC,NEIS,MOS,ISETR
1979	1	28	6	6	38	9102	2487	42	400		490		490			3	52	Shillong.ID-BD	ISC,MOS,NEIS,ISETR
1979	2	26	6	54	56	9123	2600	53	396	[2]	430		420				16	Gauhati,ID	ISC,NEIS,ISETR
1979	3	3	12	25	45	9452	2448	89	419	[2]	460		470				57	MR-ID	ISC,MOS,NEIS,ISETR
1979	3	4	17	40	15	9350	2460	33	419	[2]	460		460				50	MR-ID	ISC,NEIS,PEK,ISETR
1979	3	25	3	48	12	9410	2230	81	404	[2]	440		450				9	MR	ISC,NEIS,ISETR
1979	3	28	13	16	43	9482	2461	71	396	[2]	430		450				15	MR	ISC,NEIS,ISETR
1979	4	2	1	16	47	9070	2646	33	404	[2]	440						11	Eastern-ID	ISC
1979	4	10	17	29	27	9462	2494	33	388	[2]	420						8	MR-ID	ISC
1979	4	11	16	8	13	8884	2598	33	427	[2]	470		480				29	ID-BD	ISC,NEIS,ISETR
1979	4	18	8	4	23	9400	2419	74	388	[2]	420		430				21	MR-ID	ISC,NEIS,ISETR
1979	5	12	6	10	8	9243	2395	27	400		460		470				71	ID-BD	ISC,MOS,NEIS,ISETR
1979	5	19	18	23	44	9279	2231	61	411	[2]	450						6	ID-BD	ISC
1979	5	29	0	39	52	9474	2450	82	460		520		530				290	MR-ID	ISC,MOS,NEIS,ISETR
1979	5	30	11	6	26	9469	2213	126	396	[2]	430		440				92	MR	ISC,MOS,NEIS,ISETR
1979	6	19	16	29	8	8748	2674	2	460		520		510				223	ID-NP	ISC,PEK,NEIS,MOS,ISETR
1979	7	5	11	49	51	8610	2770	0	346	[1]							7	NP	ISC
1979	7	29	14	15	59	9181	2681	68	411	[2]	450		460			3	78	Gauhati.Assam ID	ISC,MOS,NEIS,ISETR
1979	8	11	20	32	8	9493	2420	113	390		500		500				212	MR-ID	ISC,MOS,NEIS,PEK,ISETR
1979	10	9	17	27	44	9500	2180	138	373	[2]	400		440				20	MR	ISC,NEIS,ISETR
1979	10	17	1	44	22	8760	2800	33	419	[2]	460						12	NP	ISC
1979	10	19	15	13	24	9435	2304	91	419	[2]	460		480				38	MR-ID	ISC,NEIS,PEK,ISETR
1979	11	7	6	42	53	9395	2210	80	404	[2]	440		450				22	MR-ID	ISC,NEIS,ISETR
1979	11	16	19	17	27	8870	2790	39	419	[2]	460		460				20	Sikkim.ID	ISC,NEIS,ISETR
1979	12	3	7	24	50	9490	2440	0	404	[2]	440						8	MR-ID	ISC
1980	1	16	0	54	29	8819	2086	33	411	[2]	450						18	Bay of Bengal	ISC
1980	2	8	1	20	22	9359	2127	58	419	[2]	460						40	MR	ISC,NEIS
1980	2	23	17	28	9	9461	2337	86	396	[2]	430						11	MR-ID	ISC,NEIS
1980	3	28	16	15	4	9469	2387	97	420		480						76	MR-ID	ISC,MOS,NEIS,PEK
1980	4	4	8	19	23	9376	2129	64	390		520						162	MR	ISC,MOS,NEIS,PEK
1980	5	6	22	23	20	9412	2230	167	388	[2]	420						12	MR	ISC,NEIS
1980	5	20	13	19	52	9420	2372	83	540		480					3	98	Shillong.MR-ID	ISC,MOS,NEIS,PEK,NDI
1980	6	11	5	25	15	9031	2580	69	400		490		480			3	39	ID-BD	ISC,MOS,NEIS,NDI,Kundu
1980	7	16	20	55	28	9479	2251	33	419	[2]	460						26	MR	ISC,NEIS
1980	7	17	10	7	29	9370	2250	77	411	[2]	450						10	MR-ID	ISC
1980	8	12	16	44	2	9462	2480	52	442	[2]	490						19	MR-ID	ISC,NEIS
1980	8	18	14	17	4	9495	2665	57	411	[2]	450						9	Eastern ID	ISC
1980	8	28	3	33	35	9491	2190	122	404	[2]	440						35	MR	ISC,NEIS
1980	10	23	12	51	55	9500	2258	127	410		450						26	MR	ISC,NEIS
1980	10	30	5	29	41	9150	2390	30	440		460					2	27	ID-BD	ISC,NEIS,NDI
1980	11	10	16	37	50	9150	2680	33	341	[1]						2	6	Eastern ID	ISC,NDI
1980	11	20	18	14	11	9392	2274	30	510		520						239	MR-ID	ISC,MOS,NEIS,PEK

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms	Mb	Md	M	Ml	Mw	ITSC	NS	RMK LOCATION	REFERENCES
1980	11	19	19	0	45	8880	2740	1	610	600					4	436	Sikkim.ID	ISC,NEIS,MOS,PEK,NDI
1980	12	1	20	33	27	9094	2206	33	427 [2]	470						5	BD	ISC
1980	12	22	4	36	8	8960	2670	33	404 [2]	440						15	ID-BD	ISC,NEIS
1980	12	31	2	32	58	9359	2108	64	460	480						78	MR	ISC,NEIS
1981	2	9	15	49	22	8976	2720	16	450	490						101	MR	ISC,PEK,NEIS,MOS
1981	2	28	1	58	22	9366	2603	40	434 [2]	480						63	Eastern ID	ISC,MOS,NEIS
1981	3	7	22	16	15	9490	2470	81	396 [2]	430						9	MR-ID	ISC
1981	3	19	13	52	44	9048	2629	0	434 [2]	480						7	Eastern ID	ISC
1981	3	26	2	47	10	8910	2230	0	442 [2]	490						12	BD	ISC
1981	5	1	4	8	10	9456	2294	98	410	480						198	MR	ISC,MOS,NEIS,PEK
1981	5	6	15	32	37	9387	2247	76	404 [2]	440						33	MR-ID	ISC,PEK,NEIS
1981	5	6	19	8	47	9320	2370	33	396 [2]	430						17	MR-ID	ISC
1981	6	17	11	12	56	9368	2372	67	396 [2]	430						19	MR-ID	ISC,NEIS,PEK
1981	6	21	9	51	3	8710	2720	33	373 [2]	400					3	7	Teplejung.NP	ISC,WEL,NDI
1981	7	15	11	52	24	9426	2259	101	396 [2]	430						12	MR	ISC,NEIS
1981	7	18	9	0	38	9465	2479	81	427 [2]	470						69	MR-ID	ISC,PEK,NEIS
1981	7	30	21	12	59	9468	2295	113	419 [2]	460						10	MR	ISC,NEIS
1981	8	3	14	58	18	9340	2070	39	419 [2]	460						12	MR	ISC,NEIS
1981	8	23	1	24	39	9491	2468	91	411 [2]	450						38	MR-ID	ISC,NEIS
1981	8	23	9	30	0	9443	2289	90	450	480						162	MR	ISC,MOS,NEIS,PEK
1981	10	9	5	23	5	9444	2367	117	419 [2]	460						28	MR-ID	ISC,NEIS,PEK
1981	11	20	11	14	55	9076	2171	33	380 [2]	410						7	BD	ISC,NEIS
1981	11	21	1	52	21	9323	2270	44	430	480						140	MR-ID	ISC,MOS,NEIS,PEK
1981	12	9	10	52	58	9251	2750	33	411 [2]	450						10	ID-CH	ISC,NEIS
1982	1	3	11	37	43	9435	2469	85	419 [2]	460						29	MR-ID	ISC,NEIS,PEK
1982	1	11	20	53	1	9206	2470	40	400	490						100	ID-BD	ISC,MOS,NEIS,PEK
1982	1	21	8	18	51	9453	2095	92	373 [2]	400						11	MR	ISC,NEIS
1982	1	24	11	35	40	9467	2141	120	490	530						276	MR	ISC,MOS,NEIS,PEK
1982	1	28	7	18	8	9089	2547	33	360	440						19	ID-BD	ISC,NEIS,PEK
1982	2	12	16	0	5	9466	2190	122	411 [2]	450						46	MR	ISC,BKK,PEK,NEIS
1982	2	26	0	5	48	9062	2579	49	419 [2]	460						25	ID-BD	ISC,PEK,NEIS
1982	2	26	8	14	1	9230	2630	33	419 [2]	460						22	Eastern ID	ISC,NEIS
1982	2	26	16	52	39	9480	2407	140	388 [2]	420						10	MR-ID	ISC
1982	4	3	7	55	55	9442	2235	99	427 [2]	470						82	MR	ISC,MOS,PEK,NEIS
1982	4	6	5	44	54	9447	2435	102	411 [2]	450						24	MR-ID	ISC,PEK,NEIS
1982	5	13	12	38	5	9470	2278	143	373 [2]	400						12	MR	ISC
1982	5	17	23	17	52	9499	2534	95	411 [2]	450						33	MR-ID	ISC,PEK,NEIS
1982	5	22	9	2	27	9396	2410	76	411 [2]	450						57	MR-ID	ISC,NEIS
1982	6	1	2	49	12	9472	2465	79	404 [2]	440						52	MR-ID	ISC,NEIS,PEK
1982	6	10	16	10	42	9461	2447	107	334 [1]							5	MR-ID	ISC
1982	6	20	15	29	20	8997	2624	33	360	450						31	ID-BD	ISC,PEK,NEIS
1982	6	25	4	42	21	9440	2310	102	380 [2]	410						12	MR-ID	ISC,NEIS
1982	7	5	6	13	37	9053	2599	33	373 [1]							15	ID-BD	ISC,NEIS
1982	7	6	6	13	32	9031	2588	8	410	500	510					161	ID-BD	ISC,MOS,NEIS,PEK,Kundu
1982	7	13	22	55	56	9500	2450	0	346 [1]							7	MR	ISC
1982	8	18	18	1	8	8926	2704	51	419 [2]	460						35	BU	ISC,PEK,NEIS
1982	8	21	4	26	25	9223	2516	51	419 [2]	460						58	ID-BD	ISC,MOS,NEIS,PEK
1982	8	31	10	42	46	9146	2538	32	450	500						105	ID-BD	ISC,NEIS,MOS,PEK
1982	9	21	12	38	28	9127	2515	43	442 [2]	490					3	42	ID-BD	ISC,NEIS,PEK,NDI
1982	10	7	1	52	30	9440	2342	102	419 [2]	460						62	MR-ID	ISC,MOS,NEIS,PEK
1982	10	7	21	18	37	9460	2414	33	341 [1]							6	MR-ID	ISC
1982	11	14	9	46	10	9457	2206	105	411 [2]	450			380	380		16	380 MR	ISC,NEIS,BKK

YR	MNH	DY	H	MIN	S	LON	LAT.	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1982	11	18	6	2	27	9175	2638	0	434	[2]	480						24		Eastern ID	ISC,NEIS,PEK
1982	11	26	13	26	29	9487	2778	29	440		510						143		Eastern ID	ISC,NEIS,MOS,PEK
1982	12	11	20	55	33	9448	2452	66	420		480						111		MR-ID	ISC,MOS,NEIS,PEK,NDI
1982	12	12	1	18	45	9470	2480	0	434	[2]	480						7		MR-ID	ISC
1982	12	30	8	37	16	9169	2601	61	442	[2]	490						139		Eastern ID	ISC,MOS,NEIS,PEK
1982	12	30	12	29	28	9166	2625	33	419	[2]	460						33		Eastern ID	ISC,NEIS,PEK
1983	1	1	1	52	57	9410	2390	33	380	[2]	410						7		MR-ID	ISC
1983	1	3	11	28	15	9445	2423	84	450		510						167		MR-ID	ISC,MOS,NEIS,PEK,BKK
1983	1	5	5	51	8	9347	2336	41	395	[1]							28		MR-ID	ISC,NEIS,PEK
1983	1	29	17	52	15	9424	2401	90	404	[2]	440						21		MR-ID	ISC,NEIS
1983	2	2	20	44	7	9287	2690	42	450		520					2	134		Eastern ID	ISC,NEIS,MOS,PEK
1983	2	5	1	31	57	9455	2394	140	373	[2}	400						8		MR-ID	ISC
1983	3	6	14	21	23	9400	2360	33	355	[1]							9		MR-ID	ISC
1983	4	1	4	24	6	9369	2186	67	404	[2]	440			450	450		21	450	MR	ISC,NEIS,BKK
1983	4	13	19	58	18	9360	2480	33	346	{1]							7		MR-ID	ISC
1983	4	13	20	14	4	9341	2560	33	427	[2]	470						8		Eastern ID	ISC
1983	4	13	21	7	22	9448	2286	120	419	[2}	460			440	440	2	86	440	MR	ISC,MOS,PEK,NEIS,BKK,NDI
1983	4	17	23	16	34	9436	2203	93	440		510			480	480		232	480	MR	ISC,MOS,PEK,NEIS,BKK
1983	5	7	10	24	18	9476	2289	99	419	[2]	460						17		MR	ISC
1983	6	26	2	31	19	9387	2306	81	450	[2]	500			470	470		31	470	MR-ID	ISC,NEIS,BKK
1983	7	23	7	28	35	9125	2537	59	420		470						37		ID-BD	ISC,PEK,NDI
1983	8	1	17	17	20	9401	2720	33	341	[1]							6		Eastern ID	ISC
1983	8	10	15	44	47	8656	2680	33	362	[1]							11		NP-ID	ISC
1983	8	21	8	31	16	9443	2273	124	434	[2]	480						45		MR	ISC,NEIS,BKK
1983	8	30	10	39	27	9467	2504	60	570		570					4	429		MR-ID	ISC,BKK,MOS,NEIS,PEK,HRVD,NDI
1983	9	7	22	24	26	9420	2389	92	330		390					2	23		MR-ID	ISC,NEIS,PEK,NDI
1983	9	18	17	27	41	9479	2305	61	434	[2]	480						29		MR-ID	ISC,NEIS,PEK,BKK
1983	9 ·	20	5	54	32	9334	2590	0	341	[1]							6		Eastern ID	ISC
1983	9	22	23	51	57	9309	2058	43	419	[2]	460						10		MR	ISC,NEIS,BKK
1983	9	24	14	16	37	9452	2616	0	341	[1]							6		Eastern ID	ISC
1983	10	21	8	44	47	9438	2200	96	480		530						294		MR	ISC,MOS,PEK,NEIS,BKK,HRVD
1983	10	21	23	32	25	9442	2489	71	434	[2]	480						121		MR-ID	ISC,MOS,NEIS,PEK,
1983	10	25	2	12	36	8843	2445	33	334	[1]							5		ID-BD	ISC
1983	11	6	14	58	56	9440	2485	91	362	[1]							11		MR-ID	ISC
1983	11	17	21	20	13	9173	2515	42	404	[2]	440						13		ID-BD	ISC
1983	12	5	6	16	33	9426	2269	0	388	[2]	420						10		MR	ISC
1983	12	23	19	35	44	8791	2590	33	396	[2]	430						10		N-ID	ISC,NEIS
1984	1	7	3	34	34	9449	2154	116	411	[2]	450						19		MR	ISC
1984	1	20	7	53	54	9447	2400	110	404	[2]	440						31		MR-ID	ISC,PEK,NEIS
1984	1	25	23	49	45	8610	2749	12	419	[2]	460						36		NP	ISC,NEIS,PEK
1984	1	27	7	38	28	9422	2443	139	334	[1]							5		MR-ID	ISC
1984	1	31	11	48	20	9348	2602	0	334	[1]							5		Eastern ID	ISC
1984	2	5	10	3	51	9471	2272	93	427	[2]	470						20		MR	ISC
1984	2	12	3	5	40	9421	2419	82	388	[2]	420						7		MR-ID	ISC
1984	2	19	9	29	51	9479	2499	50	450	[2]	500						35		MR-ID	ISC,NEIS,PEK
1984	2	22	9	55	43	9410	2400	116	351	[1]							8		MR-ID	ISC
1984	2	22	12	21	13	9473	2466	137	346	[1]							7		MR-ID	ISC
1984	2	28	23	50	37	9457	2218	96	427	[2]	470						20		MR	ISC,NEIS
1984	3	5	21	26	43	9462	2452	67	460		520						307		MR-ID	ISC,MOS,NEIS,PEK,HRVD
1984	3	21	23	6	24	9330	2676	15	430		500						104		Eastern ID	ISC,MOS,NEIS,PEK
1984	3	22	17	14	49	9427	2439	33	341	[1]							6		MR-ID	ISC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1984	3	26	1	37	14	9165	2353	48	375	[1]							16		ID-BD	ISC,PEK
1984	5	6	15	19	11	9353	2422	32	580		570		570			3	480		MR-ID	ISC,NEIS,MOS,PEK,HRVD,SHL
1984	5	7	0	7	35	9284	2400	33	341	[1]							6		ID-BD	ISC
1984	5	7	9	17	55	9457	2487	89	404	[2]	440						47		MR-ID	ISC,PEK,NEIS
1984	5	9	4	11	4	9439	2030	71	460		490						193		MR	ISC,MOS,NEIS,PEK
1984	5	16	18	29	25	9496	2472	119	404	[2]	440						28		MR-ID	ISC,NEIS
1984	5	21	9	59	5	9151	2366	13	470		520						189		ID-BD	ISC,MOS,PEK,NEIS
1984	6	9	23	7	50	9261	2691	72	350		450						21		Eastern ID	ISC,NEIS,PEK
1984	6	22	6	42	31	9435	2294	132	380	[2]	410						13		MR	ISC
1984	7	4	11	55	48	9328	2603	0	341	[1]							6		Eastern ID	ISC
1984	7	4	13	29	24	9270	2580	33	419	[2]	460						16		ID-BD	ISC
1984	7	5	22	46	19	9482	2481	79	434	[2]	480						10		MR-ID	ISC
1984	7	7	22	39	1	9433	2481	74	411	[2]	450						40		MR-ID	ISC,PEK,NEIS
1984	7	14	11	29	47	9286	2164	33	362	[1]							11		MR-BD	ISC
1984	7	26	11	26	18	9130	2710	150	359	[1]							10		BU	ISC
1984	8	5	1	7	39	9432	2347	80	434	[2]	480						30		MR-ID	ISC,PEK,NEIS
1984	8	25	0	55	24	9298	2780	33	334	[1]							5		ID-CH	ISC
1984	9	16	1	26	1	9358	2465	36	460		480						73		MR-ID	ISC,NEIS,MOS,PEK
1984	9	22	9	10	30	9215	2649	29	490		520						178		Eastern ID	ISC,MOS,NEIS,PEK
1984	9	28	18	21	8	9434	2304	55	404	[2]	440						10		MR-ID	ISC
1984	9	30	21	35	25	9151	2544	34	450	[2]	500						53		ID-BD	ISC,NEIS,PEK
1984	10	3	21	46	1	9344	2537	59	419	[2]	460						30		Eastern ID	ISC,NEIS,PEK
1984	10	18	19	47	30	9450	2403	117	411	[2]	450						12		MR-ID	ISC,PEK,NEIS
1984	11	1	21	10	10	9464	2224	117	404	[2]	440						34		MR-BD	ISC,NEIS,PEK
1984	11	13	1	41	59	9418	2404	77	300		420						15		MR-ID	ISC,NEIS,PEK
1984	11	15	21	9	4	9272	2672	84	360		460					2	50		Eastern ID	ISC,NEIS,PEK
1984	11	23	16	7	14	9434	2016	33	388	[2]	420			370	370		15	370	MR-BD	ISC,BKK
1984	12	8	23	47	2	9484	2433	107	396	[2]	430						20		MR-ID	ISC,PEK,NEIS
1984	12	26	21	35	43	9310	2107	45	396	[2]	430						17		MR-BD	ISC,NEIS
1984	12	30	23	33	35	9285	2466	4	570		550			540	540	8	310	540	ID-BD	ISC,MOS,NDI,PEK,NEIS,HRVD,AGR
1985	1	7	16	13	5	9196	2714	12	490		540		560				283		BU	Kundu,ISC,NEIC,MOS,PEK
1985	1	7	20	14	45	9177	2720	33	370		460						23		BU	ISC,NEIC,PEK
1985	1	11	20	39	28	9190	2713	33	419	[2]	460						38		BU	ISC,MOS
1985	1	21	12	57	18	9438	2470	94	434	[2]	480						45		MR-ID	ISC,NEIC,PEK
1985	1	25	20	58	20	9452	2332	107	550		470						50		MR-ID	ISC,PEK,NEIC
1985	2	3	2	40	14	9454	2542	62	390		460						60		MR-ID	ISC,MOS,NEIC,PEK
1985	3	4	23	46	14	9460	2370	99	396	[2]	430						16		MR-ID	ISC
1985	3	5	10	10	58	9408	2772	52	490		430						17		Eastern ID	ISC,NEIC,PEK
1985	4	2	19	48	2	9446	2431	97	320		430						12		MR-ID	ISC,NEIC,PEK
1985	4	17	21	52	49	9020	2565	22	430		460						84		ID-BD	ISC,NEIC,PEK,MOS
1985	5	10	10	21	13	9427	2204	87	396	[2]	430						11		MR	ISC
1985	5	25	0	28	19	8848	2760	33	370		460						14		Sikkim.ID	ISC,PEK
1985	7	2	6	15	36	9480	2470	0	334	[1]							5		MR-ID	ISC,PEK
1985	10	2	16	33	50	8973	2719	45	410		440						40		BU	ISC,NEIC,PEK
1985	10	12	18	22	37	9252	2711	14	490		530						259		BU	ISC,MOS,NEIC,PEK
1985	10	12	19	35	7	9262	2719	10	419	[2]	460						24		BU	ISC,NEIC
1985	10	25	19	59	3	9248	2720	33	442	[2]	490						37		BU	ISC,NEIC
1985	10	31	15	26	8	9251	2710	18	460		480						96		BU	ISC,MOS,NEIC,PEK
1985	11	3	3	57	52	9152	2361	9	450		470						122		ID-BD	ISC,MOS,NEIC,PEK
1985	11	8	1	0	37	9396	2265	47	411	[2]	450						33		MR-ID	ISC,PEK,NEIC
1985	11	9	15	55	55	9461	2126	108	388	[2]	420						24		MR	ISC,NEIC
1985	11	26	17	19	16	9470	2510	33	404	[2]	440						12		MR-ID	ISC,NEIC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK LOCATION	REFERENCES
1985	12	22	21	35	14	9324	2410	52	460		470						92	MR-ID	ISC,PEK,NEIC
1985	12	26	18	4	26	9207	2709	11	400		480						88	BU	ISC,NEIC,PEK,MOS
1986	1	2	9	32	14	9263	2249	28	420		470						46	ID-BD	ISC,NEIC
1986	1	7	20	20	0	8843	2740	41	400		470						41	Sikkim,ID	ISC,PEK,NEIC
1986	1	8	19	4	18	9396	2338	82	419	[2]	460						28	MR-ID	ISC,PEK,NEIC
1986	1	17	5	31	30	9430	2275	62	427	[2]	470						20	MR	ISC,NEIC
1986	2	2	0	13	51	8645	2792	33	411	[2]	450						28	NP	ISC
1986	2	8	0	28	54	9300	2387	30	500		520		520				287	MR-ID	ISC,MOS,PEK,NEIC,HRVD
1986	2	8	22	0	57	9386	2206	76	388	[2]	420						37	MR-ID	ISC,NEIC,PEK
1986	2	13	13	9	43	9462	2152	122	427	[2]	470						35	MR	ISC,NEIC,PEK
1986	2	19	17	34	23	9113	2510	7	490		520		530				293	ID-BD	ISC,MOS,NEIC,HRVD
1986	2	27	17	56	7	9410	2050	33	346	[1]							7	MR	ISC,NEIC
1986	3	13	9	45	7	9470	2440	33	380	[2]	410						7	MR-ID	ISC
1986	4	26	0	25	58	9451	2285	102	442	[2]	490						225	MR	ISC,PEK,NEIC,MOS,HRVD
1986	5	9	23	2	27	9446	2164	97	442	[2]	490						201	MR	ISC,NEIC,MOS,PEK
1986	7	16	6	37	49	9160	2760	33	411	[2]	450						10	BU	ISC
1986	7	26	20	24	50	9419	2371	38	490		520						280	MR-ID	ISC,MOS,NEIC,PEK,HRVD
1986	7	30	4	38	22	9409	2472	69	375	[1]							16	MR-ID	ISC,NEIC
1986	9	10	7	50	26	9214	2538	47	450		530		520			2	279	ID-BD	ISC,NEIC,PEK,MOS,NDI
1986	9	30	0	1	57	9402	2341	72	396	[2]	430						33	MR-ID	ISC,NEIC,PEK
1986	10	14	14	3	2	9197	2503	33	419	[2]	460						20	ID-BD	ISC,NEIC,PEK
1986	10	25	21	25	30	8826	2612	33	390	[1]							24	ID-BD	ISC,PEK,NEIC
1986	11	8	18	24	33	9221	2717	48	380		430						21	ID-CH	ISC,NEIC,PEK
1986	11	22	13	7	3	9480	2530	65	404	[2]	440						16	MR-ID	ISC,NEIC
1986	12	31	15	49	53	9291	2647	46	460		510						77	Eastern ID	ISC,PEK,NEIC
1987	1	24	10	34	26	9269	2763	24	460		500						137	ID-CH	ISC,MOS,NDI,NEIC,PEK
1987	2	7	4	39	39	9475	2368	107	427	[2]	470						28	MR-ID	ISC,PEK,NEIC
1987	2	13	19	20	16	9408	2310	47	420		470						54	MR-ID	ISC,NEIC,PEK
1987	2	15	19	26	29	9483	2425	109	427	[2]	470						80	MR-ID	ISC,NEIC,PEK,NDI
1987	4	23	18	45	22	9390	2330	33	411	[2]	450						6	MR-ID	ISC,PEK
1987	4	25	22	13	47	8846	2530	10	351	[1]							8	ID-BD	ISC
1987	4	29	0	15	28	9370	2260	48	458	[2]	510						11	MR-ID	ISC,NEIC,PEK
1987	4	29	5	15	35	9464	2407	107	450	[2]	500						179	MR-ID	ISC,MOS,NEIC,PEK
1987	5	18	1	53	51	9421	2523	53	590		570						591	MR-ID	ISC,PEK,NEIC,MOS,HRVD
1987	5	25	16	4	45	9410	2334	33	373	[2]	400						15	MR-ID	ISC,NEIC
1987	5	30	15	21	41	9458	2270	111	411	[2]	450						39	MR	ISC,NEIC,PEK
1987	6	4	18	10	24	9470	2000	33	355	[1]							9	MR	ISC,NEIC
1987	6	10	3	15	42	9439	2360	33	427	[2]	470						21	MR-ID	ISC,NEIC
1987	6	11	17	29	27	9359	2615	62	404	[2]	440						33	Eastern ID	ISC,NEIC,PEK
1987	6	14	7	19	17	9474	2115	113	400		460						100	MR	ISC,PEK,NEIC
1987	7	16	2	19	15	9230	2360	33	396	[2]	430						14	ID-BD	ISC,NEIC
1987	7	16	23	55	24	9240	2120	33	396	[2]	430						8	MR-BD	ISC
1987	7	17	21	12	31	9268	2776	9	470		470		480				47	ID-CH	ISC,NEIC,PEK
1987	8	24	9	24	40	9441	2305	86	460		510						285	MR-ID	ISC,MOS,NEIC,PEK,HRVD
1987	9	3	0	52	56	9385	2126	60	420		490						127	MR	ISC,NEIC,PEK,MOS
1987	9	5	8	41	8	9381	2384	76	434	[2]	480						24	MR-ID	ISC,NEIC,PEK
1987	9	6	23	38	54	9341	2664	58	430		520		510				213	Eastern ID	ISC,NEIC,MOS,PEK
1987	9	13	21	4	51	9280	2730	33	370		440						9	ID-CH	ISC,PEK
1987	9	26	13	7	26	9430	2192	103	380	[2]	410						28	MR	ISC,NEIC,PEK
1987	9	28	13	1	10	9490	2370	100	427	[2]	470						8	MR-ID	ISC
1987	10	15	16	22	48	9276	2738	27	410		490						49	ID-CH	ISC,PEK,NEIC
1987	10	22	21	23	56	8900	2707	19	450		420						29	BU	ISC,PEK,NEIC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1987	11	15	15	13	23	9338	2652	53	396	[2]	430						27		Eastern ID	ISC,NEIC,PEK
1987	11	25	19	20	40	8617	2770	33	411	[2]	450						24		NP	ISC,PEK,NEIC
1987	11	28	22	17	15	9479	2009	70	434	[2]	480						46		MR	ISC,NEIC,PEK
1987	12	1	8	50	41	9322	2633	59	390		490						74		Eastern ID	ISC,NEIC,PEK
1987	12	6	23	29	44	8852	2700	42	362	[1]							11		Sikkim.ID	ISC
1987	12	11	6	39	40	9092	2604	57	430		460						31		Eastern ID	ISC,PEK,NEIC
1988	1	19	11	23	51	8880	2780	33	396	[2]	430						11		Sikkim.ID	ISC
1988	1	20	7	10	16	9370	2340	92	396	[2]	430						13		MR-ID	ISC,NEIC
1988	2	6	14	50	45	9156	2467	33	580		580		580		felt throughe		496		ID-BD	ISC,BJI,HRVD,MOS,NEIC
1988	2	12	5	51	38	9390	2510	33	404	[2]	440						13		Eastern ID	ISC,NEIC
1988	2	15	2	19	34	9393	2153	73	419	[2]	460						37		MR	ISC,NEIC,BJI
1988	2	17	1	1	57	9299	2673	46	411	[2]	450						22		Eastern ID	ISC,NEIC
1988	2	17	6	30	8	9211	2711	2	450		480		480	540	540		82	540	ID-CH	ISC,BJI,NEIC
1988	2	17	17	52	14	9440	2430	111	442	[2]	490						11		MR-ID	ISC
1988	2	24	14	7	29	9408	2333	72	434	[2]	480			440	440		41	440	MR-ID	ISC,NEIC,BJI
1988	2	28	5	55	49	9156	2472	22	419	[2]	460			480	480		35	480	ID-BD	ISC,BJI,NEIC
1988	3	27	5	56	30	8842	2710	70	380	[2]	410						16		Sikkim.ID	ISC
1988	4	18	5	18	36	9388	2490	60	396	[2]	430						28		MR-ID	ISC,NEIC
1988	4	20	6	40	26	8672	2702	55	490		540						366		NP	ISC,BJI,MOS,NEIC
1988	4	25	16	4	4	8654	2690	79	427	[2]	470						43		NP-ID	ISC,BJI,NEIC
1988	4	30	3	27	51	9160	2590	33	388	[2]	420					2	9		ID-BD	ISC,NEIC,NDI
1988	5	7	5	29	44	8970	2470	33	355	[1]							9		BD	ISC
1988	5	10	7	16	16	9088	2532	33	404	[2]	440						16		ID-BD	ISC,NEIC
1988	5	12	2	45	1	9320	2250	57	365	[2]	390						12		MR-ID	ISC,NEIC
1988	5	26	16	30	6	8861	2745	42	427	[2]	470						45		Sikkim.ID	ISC,NEIC
1988	5	28	7	46	53	8980	2100	33	427	[2]	470						11		Bay of Bengal	ISC
1988	5	28	23	13	12	8970	2800	33	382	[1]							19		BU	ISC
1988	6	9	20	35	36	9440	2170	33	341	[1]							6		MR	ISC
1988	6	28	2	30	19	9498	2010	98	427	[2]	470						62		MR	ISC,NEIC,BJI
1988	6	28	20	52	57	9480	2470	139	411	[2]	450						14		MR-ID	ISC,NEIC
1988	7	3	8	19	19	9426	2207	83	450		520						272		MR	ISC,NEIC,BJI,MOS,HRVD
1988	7	6	10	43	15	9360	2260	84	373	[2]	400						10		MR-ID	ISC
1988	7	11	5	53	45	9390	2250	33	404	[2]	440						16		MR-ID	ISC,NEIC
1988	7	19	6	55	36	9450	2350	128	388	[2]	420						14		MR-ID	ISC
1988	8	1	15	22	28	9500	2100	127	396	[2]	430						18		MR	ISC,NEIC
1988	8	6	0	36	26	9515	2513	100	710		660					6	854		MR-ID	ISC,BJI,NEIC,MOS,HRVD,NDI
1988	8	6	6	21	42	9499	2534	86	410		460						77		MR-ID	ISC,NEIC,BJI
1988	8	7	23	23	13	9490	2510	107	388	[2]	420						15		MR-ID	ISC,NEIC
1988	8	12	0	9	0	9450	2530	144	365	[2]	390						7		MR-ID	ISC
1988	8	20	23	9	10	8663	2672	65	660		640					8	707		NP-ID	ISC,MOS,NEIC,BJI,HRVD,NDI
1988	8	20	23	38	56	8670	2690	38	380	[1]							18		NP-ID	ISC
1988	8	22	11	34	35	8674	2661	33	396	[2]	430						25		NP-ID	ISC,NEIC
1988	8	24	9	55	34	8644	2677	41	410		470						38		NP-ID	ISC,NEIC
1988	8	29	12	12	17	8750	2639	33	411	[2]	450						17		NP-ID	ISC
1988	9	1	22	4	11	8653	2680	33	411	[2]	450						25		NP-ID	ISC,NEIC
1988	9	2	6	35	34	8648	2656	33	396	[2]	430						34		NP-ID	ISC,NEIC
1988	9	4	8	1	58	9175	2630	7	410		440			390	390		26	390	Eastern ID	ISC,NEIC,BJI
1988	9	4	10	21	11	9498	2510	86	396	[2]	430						28		MR-ID	ISC,NEIC
1988	9	12	3	46	1	9408	2079	46	430		450						116		MR	ISC,NEIC,BJI,MOS
1988	9	27	19	10	10	8837	2719	28	460		500		500				203		Sikkim.ID	ISC,BJI,NEIC,MOS
1988	10	9	22	5	1	9472	2468	46	380		450						51		MR-ID	ISC,NEIC,BJI
1988	10	22	4	0	44	9380	2400	33	351	[1]							8		MR-ID	ISC,NEIC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1988	10	23	11	43	9	9441	2030	66	470		510						317		MR	ISC,BJI,MOS,NEIC,HRVD
1988	11	14	1	36	57	9240	2440	33	351	[1]							8		ID-BD	ISC
1988	11	22	1	21	3	9440	2430	94	351	[1]							8		MR-ID	ISC,NEIC
1988	11	23	14	47	31	9500	2420	118	346	[1]							7		MR-ID	ISC
1988	11	27	7	12	42	9370	2350	33	404	[2]	440						11		MR-ID	ISC,NEIC
1988	11	30	3	9	43	9456	2409	83	400		480			500	500		69	500	MR-ID	ISC,BJI,NEIC
1988	12	5	6	17	40	9396	2098	72	404	[2]	440						38		MR-ID	ISC,BJI,NEIC
1988	12	10	15	24	31	8668	2638	33	394	[1]							27		NP-ID	ISC,NEIC
1988	12	13	6	29	17	8797	2714	52	404	[2]	440			410	410		49	410	NP	ISC,BJI,NEIC
1988	12	20	9	45	44	9112	2766	39	460		490		500				103		BU	ISC,BJI,NEIC,MOS
1988	12	23	14	18	39	8897	2380	33	359	[1]							10		ID-BD	ISC,NEIC
1988	12	24	13	32	22	8800	2690	41	404	[2]	440						14		NP-ID	ISC
1988	12	27	2	56	2	8786	2798	38	460		460						63		NP	ISC,BJI,NEIC
1988	12	27	18	15	53	9474	2325	123	458	[2]	510						190		MR-ID	ISC,NEIC,MOS,BJI
1988	12	29	17	21	51	9334	2474	79	396	[2]	430			380	380		43	380	MR-ID	ISC,BJI
1988	12	30	10	49	35	9392	2242	65	419	[2]	460			430	430		56	430	MR-ID	ISC,NEIC,BJI
1989	1	6	13	31	58	9161	2510	10	346	[1]							7		ID-BD	ISC,NEIC
1989	1	10	19	21	51	9290	2460	33	388	[2]	420						12		ID-BD	ISC,NEIC
1989	1	16	10	49	27	9220	2420	33	346	[1]							7		ID-BD	ISC,NEIC
1989	1	22	19	41	11	9426	2472	73	365	[2]	390						30		MR-ID	ISC,NEIC,BJI
1989	1	27	16	14	52	9495	2532	93	388	[2]	420						14		MR-ID	ISC,NEIC
1989	2	14	15	52	46	8920	2350	33	380	[2]	410						8		BD	ISC
1989	2	28	0	26	41	9264	2710	42	427	[2]	470						83		ID-CH	ISC,BJI,MOS,NEIC
1989	3	8	20	2	7	9277	2693	59	420		510		510				186		Eastern ID	ISC,MOS,BJI,NEIC
1989	3	13	13	6	46	9200	2266	31	380	[2]	410						29		ID-BD	ISC,NEIC
1989	4	2	4	12	11	9390	2370	81	355	[1]							9		MR-ID	ISC
1989	4	3	19	39	32	9466	2515	58	480		530						401		MR-ID	ISC,NEIC,BJI,MOS,HRVD
1989	4	13	7	25	33	9243	2440	10	510		500						247		ID-BD	ISC,BJI,MOS,NEIC,HRVD
1989	4	23	7	8	23	9290	2280	33	351	[1]							8		ID-BD	ISC,NEIC
1989	4	24	18	11	43	9484	2438	119	419	[2]	460						26		MR-ID	ISC,NEIC
1989	4	29	12	55	17	9158	2560	33	396	[2]	430						12		ID-BD	ISC,NEIC
1989	5	6	7	26	49	9370	2380	10	351	[1]							8		MR-ID	ISC,NEIC
1989	5	9	16	17	18	9250	2290	105	365	[2]	390						9		ID-BD	ISC,NEIC
1989	5	10	23	20	34	8720	2770	33	341	[1]							6		NP	ISC
1989	5	22	19	24	31	8786	2738	4	500		500						146		NP	ISC,NEIC,BJI,MOS
1989	5	31	17	24	48	9430	2250	110	404	[2]	440						19		MR-ID	ISC,BJI,NEIC
1989	6	11	13	42	46	9070	2639	50	460		450		460				57		Eastern ID	ISC,NEIC,BJI
1989	6	12	0	4	10	8978	2183	6	510		570		610			Felt from CHT t	568		BD	ISC,NEIC,BJI,HRVD,MOS
1989	6	13	13	59	40	9360	2220	33	346	[1]							7		MR-ID	ISC
1989	6	15	20	8	51	9500	2350	33	355	[1]							9		MR-ID	ISC,NEIC
1989	6	22	22	4	19	9290	2320	33	346	[1]							7		ID-BD	ISC
1989	6	25	9	50	2	9360	2160	63	411	[2]	450						13		MR-ID	ISC,NEIC
1989	6	28	12	8	32	9437	2379	66	480		490						227		MR-ID	ISC,BJI,MOS,NEIC
1989	6	28	12	37	0	9413	2380	83	382					400	400		19	400	MR-ID	ISC,NEIC,BJI
1989	7	10	14	46	55	9437	2353	72	430		440						95		MR-ID	ISC,BJI,MOS,NEIC
1989	7	15	0	9	15	9454	2279	96	460		540						475		MR	ISC,MOS,BJI,NEIC,HRVD
1989	7	15	22	33	52	9450	2370	33	380	[2]	410						17		MR-ID	ISC
1989	7	25	0	31	48	9255	2760	33	419	[2]	460						10		ID-CH	ISC
1989	7	30	13	17	25	9403	2446	33	411	[2]	450								MR-ID	NEIC
1989	7	30	18	32	1	9400	2400	109	357	[2]	380						13		MR-ID	ISC
1989	8	3	8	56	10	9390	2460	111	388	[2]	420						9		MR-ID	ISC
1989	8	3	11	10	10	9270	2690	33	404	[2]	440						8		Eastern ID	ISC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK LOCATION	REFERENCES
1989	8	9	16	1	25	9455	2451	80	458	[2]	510						73	MR-ID	ISC,NEIC,BJI
1989	9	19	17	7	42	9265	2688	25	450		460						58	Eastern ID	ISC,BJI,NEIC
1989	9	24	10	55	20	9495	2069	128	460		540						397	MR	ISC,MOS,BJI,NEIC,HRVD
1989	9	25	2	9	10	9437	2269	113	365	[2]	390						16	MR	ISC,NEIC
1989	10	16	11	39	8	9488	2510	33	373	[2]	400						11	MR-ID	ISC
1989	11	11	5	4	28	9430	2110	95	373	[2]	400						11	MR	ISC,NEIC
1989	12	2	19	44	27	9382	2121	49	460		520						256	MR	ISC,MOS,NEIC,BJI,HRVD
1989	12	3	10	58	19	9371	2119	47	434	[2]	480						67	MR	ISC,NEIC,BJI
1989	12	8	0	4	27	9380	2119	59	450		460						400	MR	ISC,MOS,NEIC,BJI,HRVD
1989	12	8	2	47	53	9368	2111	55	396	[2]	430						24	MR	ISC,NEIC,BJI
1989	12	9	11	32	28	9458	2288	114	434	[2]	480						56	MR	ISC,NEIC,BJI
1989	12	29	15	51	7	9457	2470	85	404	[2]	440						35	MR-ID	ISC,BJI,NEIC
1989	12	29	21	26	10	9427	2410	99	388	[2]	420						16	MR-ID	ISC,BJI,NEIC
1989	12	31	12	44	38	9430	2263	56	404	[2]	440						21	MR	ISC,BJI,NEIC
1990	1	9	2	29	22	8811	2815	35	430		570						358	Tibet	ISC,BJI,MOS,NEIC
1990	1	10	6	11	6	9451	2247	118	434	[2]	480						27	MR	ISC,NEIC,BJI
1990	1	10	6	37	55	9463	2446	87	460		530						265	MR-ID	ISC,MOS,BJI,NEIC
1990	1	10	23	1	22	8667	2652	66	404	[2]	440						33	NP-ID	ISC,BJI,NEIC
1990	2	5	2	6	48	9241	2485	33	396	[2]	430						18	ID-BD	ISC,NEIC
1990	2	11	12	16	21	9330	2310	33	355	[1]							9	MR-ID	ISC
1990	2	12	6	32	57	9390	2370	162	346	[1]							7	MR-ID	ISC
1990	2	15	6	46	35	9330	2320	33	334	[1]							5	MR-ID	ISC
1990	2	16	20	29	37	9410	2290	33	362	[1]							11	MR	ISC,NEIC
1990	2	22	22	7	0	9313	2490	52	427	[2]	470						28	MR-ID	ISC,BJI,NEIC
1990	2	26	1	31	25	9420	2530	51	434	[2]	480						19	MR-ID	ISC,NEIC
1990	2	26	6	20	14	9401	2302	93	380	[2]	410						18	MR-ID	ISC,NEIC
1990	3	15	15	19	47	9430	2370	151	388	[2]	420						8	MR-ID	ISC
1990	3	23	19	2	1	9430	2450	86	365	[1]							12	MR-ID	ISC
1990	4	5	1	4	32	9330	2250	33	351	[1]							8	MR-ID	ISC
1990	4	8	15	15	21	9435	2385	82	419	[2]	460						50	MR-ID	ISC,NEIC,BJI
1990	4	26	1	14	47	9457	2401	85	410		460			410	410	112	410	MR-ID	ISC,BJI,NEIC
1990	5	14	4	28	23	9262	2278	26	396	[2]	430						28	MR-ID	ISC,NEIC
1990	5	19	2	18	57	9093	2540	33	362	[1]							11	MR-ID	ISC,NEIC
1990	6	4	21	40	25	9450	2364	85	396	[2]	430						50	MR-ID	ISC,NEIC,BJI
1990	6	14	15	28	21	9400	2498	58	410		450						61	MR-ID	ISC,BJI,NEIC
1990	6	24	2	17	3	9370	2340	33	341	[1]							6	MR-ID	ISC
1990	6	24	2	35	16	9410	2300	89	388	[2]	420						16	MR-ID	ISC,NEIC
1990	6	30	2	28	13	9380	2360	155	388	[2]	420						14	MR-ID	ISC,NEIC
1990	7	5	14	20	56	9430	2340	97	380	[2]	410						14	MR-ID	ISC,NEIC
1990	7	13	3	24	7	9444	2364	114	396	[2]	430						41	MR-ID	ISC,NEIC
1990	8	2	19	8	58	9465	2267	132	419	[2]	460						60	MR	ISC,NEIC,BJI
1990	8	12	5	51	9	9320	2480	33	351	[1]							8	MR-ID	ISC
1990	8	29	2	41	34	9274	2718	25	420		490		480				117	ID-CH	ISC,BJI,NEIC,MOS
1990	9	2	6	29	26	9267	2658	57	465	[2]	520			390	390	222	390	Eastern ID	ISC,MOS,BJI,NEIC
1990	10	3	10	7	22	9430	2320	77	380	[2]	410						14	MR-ID	ISC,NEIC
1990	10	11	14	42	3	9244	2123	41	388	[2]	420						28	MR-BD	ISC,BJI,NEIC
1990	10	20	13	30	22	9410	2430	127	351	[1]							8	MR-ID	ISC
1990	10	26	2	11	6	9489	2560	68	383	[1]							20	MR-ID	ISC,NEIC
1990	10	29	11	32	55	9244	2647	37	390		480	490	400	400	2	52	400	Gauhati.Eastern ID	ISC,NEIC,BJI,NDI
1990	10	29	12	6	28	8910	2760	33	351	[1]							8	BU	ISC
1990	11	10	9	53	1	9484	2540	102	404	[2]	440						12	MR-ID	ISC
1990	11	15	3	28	25	9300	2381	26	520		490		490	480	480	132	480	MR-ID	ISC,MOS,BJI,NEIC

YR	MNH	DY	H	MIN	S	LQN	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1990	11	28	14	37	9	9302	2590	33	368	[1]							13		Eastern ID	ISC,NEIC
1990	11	29	10	20	33	9464	2437	82	442	[2]	490						51		MR-ID	ISC,NEIC,BJI
1990	12	10	11	56	58	9440	2340	79	365	[2]	390						13		MR-ID	ISC,NEIC
1990	12	11	18	38	56	9230	2780	33	396	[2]	430						10		ID-CH	ISC,NEIC
1990	12	28	8	11	2	9380	2297	49	419	[2]	460						27		MR-ID	ISC,NEIC
1990	12	31	12	18	46	9380	2270	33	346	[1]							7		MR-ID	ISC
1990	12	29	19	24	12	9259	2668	27	420		490		500				61		Eastern India	ISC,NEIC,BJI
1991	1	4	15	50	18	9380	2370	115	346	[1]							7		MR-ID	ISC
1991	1	20	11	36	2	9440	2330	33	351	[1]							8		MR-ID	ISC
1991	1	23	14	3	51	9250	2440	33	396	[2]	430						12		ID-BD	ISC,NEIC
1991	1	25	18	21	29	9380	2290	33	346	[1]							7		MR-ID	ISC
1991	1	27	10	8	49	9430	2350	160	346	[1]							7		MR-ID	ISC
1991	1	31	12	9	8	9329	2381	33	411	[2]	450						12		MR-ID	ISC,NEIC
1991	2	2	0	15	40	9117	2551	25	390		500			450	450		89	450	ID-BD	ISC,MOS,BJI(4.5b,4.3s),NEIC
1991	2	2	11	35	46	9470	2072	115	404	[2]	440						20		MR	ISC,NEIC
1991	2	3	13	22	10	9167	2550	19	380	[2]	410						13		ID-BD	ISC,NEIC
1991	2	22	4	11	58	9350	2320	33	346	[1]							7		MR-ID	ISC,NEIC
1991	3	11	4	51	40	9420	2190	33	357	[2]	380						7		MR	ISC
1991	3	11	10	24	39	9470	2580	33	450	[2]	500						10		MR-ID	ISC
1991	4	9	22	59	10	9296	2641	50	411	[2]	450						54		Eastern ID	ISC,BJI,NEIC
1991	4	13	4	58	31	9252	2670	56	388	[2]	420						14		Eastern ID	ISC,NEIC
1991	4	15	16	3	3	9400	2409	33	375	[1]							16		MR-ID	ISC,NEIC
1991	4	19	19	20	56	9400	2670	33	346	[1]							7		Eastern ID	ISC
1991	4	26	9	15	52	8967	2081	33	427	[2]	470						58		Bay of Bengal	ISC,NEIC,BJI
1991	5	8	11	41	20	9300	2320	33	346	[1]							7		ID-BD	ISC
1991	5	11	2	15	22	9368	2426	44	450		500					I=III MM	267		MR-ID (Assam-Mizoram)	ISC,HRVD,BJI,NEIC,MOS,NDI
1991	5	26	0	48	7	9430	2210	171	357	[2]	380						9		MR	ISC
1991	5	28	20	4	46	9490	2530	115	388	[2]	420						11		MR-ID	ISC,NEIC
1991	6	8	18	59	58	9037	2630	33	373	[2]	400						13		Eastern ID	ISC
1991	6	23	10	4	2	9319	2659	46	440		540						404		Eastern ID	ISC,MOS,NEIC,BJI
1991	6	25	20	34	58	9402	2152	58	400		500						208		MR	ISC,MOS,NEIC,BJI
1991	7	1	4	56	29	9410	2130	85	380	[2]	410						13		MR	ISC,NEIC
1991	7	2	9	4	30	9218	2630	33	359	[1]							10		Eastern ID	ISC,NEIC
1991	7	2	18	29	45	9370	2370	33	359	[1]							10		MR-ID	ISC,NEIC
1991	7	4	18	50	43	9430	2300	33	346	[1]							7		MR	ISC
1991	7	9	11	14	47	9448	2213	130	396	[2]	430						27		MR	ISC,BJI,NEIC
1991	7	13	4	26	12	9220	2390	33	346	[1]							7		ID-BD	ISC
1991	7	24	9	27	0	9360	2147	33	396	[2]	430						16		MR	ISC,NEIC
1991	7	24	19	36	0	9439	2227	91	396	[2]	430						29		MR	ISC,BJI,NEIC
1991	8	7	11	36	29	8866	2527	10	420		470						35		ID-BD	ISC,BJI,NEIC
1991	8	8	12	34	26	9430	2290	182	334	[2]	350						6		MR	ISC
1991	8	10	13	0	15	9051	2440	33	388	[2]	420						16		BD	ISC,NEIC
1991	8	19	22	28	41	9070	2680	10	346	[1]							7		Eastern ID	ISC
1991	8	22	3	53	44	9118	2529	45	427	[2]	470		440	440		=II MM	43	440	ID-BD (Shillong)	ISC,NEIC,BJI(4.5b)
1991	9	2	17	20	37	9047	2450	78	411	[2]	450						25		BD	ISC,NEIC
1991	9	7	3	0	27	9389	2415	64	427	[2]	470						45		MR-ID	ISC,BJI,NEIC
1991	9	19	4	23	58	9214	2623	33	419	[2]	460					I=V MM	40		Eastern ID(Assam)	ISC,NEIC,BJI
1991	9	25	19	26	50	8840	2670	33	341	[1]							6		ID-BD	ISC,NEIC
1991	9	26	5	4	49	9030	2560	33	434	[2]	480						8		ID-BD	ISC
1991	9	30	18	35	46	9442	2274	88	434	[2]	480								MR	ISC,MOS,BJI,NEIC
1991	10	26	17	55	0	8976	2030	10	368	[1]							13		Bay of Bengal	ISC
1991	10	30	13	13	57	8860	2600	33	346	[1]							7		ID-BD	ISC,NEIC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC	NS	RMK LOCATION	REFERENCES
1991	11	7	13	31	2	9350	2260	33	355	[1]							9	MR-ID	ISC,NEIC
1991	11	9	11	28	23	9430	2270	107	419	[2]	460						11	MR	ISC,NEIC
1991	11	11	13	42	46	9286	2614	33	396	[2]	430						20	Eastern ID	ISC,NEIC
1991	11	15	1	13	19	9260	2100	82	419	[2]	460						9	MR-BD	ISC,NEIC
1991	11	17	3	39	34	9474	2350	91	404	[2]	440						12	MR-ID	ISC,NEIC
1991	11	17	5	17	5	9318	2468	60	427	[2]	470						23	MR-ID	ISC,NEIC
1991	12	4	3	27	24	9391	2397	65	442	[2]	490						267	MR-ID	ISC,MOS,BJI,NEIC,HRVD
1991	12	4	4	30	15	9350	2360	33	349	[2]	370						6	MR-ID	ISC
1991	12	4	5	1	48	9325	2550	33	351	[1]							8	Eastern ID	ISC
1991	12	7	11	19	14	9380	2290	79	434	[2]	480						10	MR-ID	ISC
1991	12	7	13	57	39	9383	2400	52	450		510						262	MR-ID	ISC,MOS,BJI,NEIC
1991	12	9	21	26	55	9200	2140	33	355	[1]							9	MR-BD	ISC,NEIC
1991	12	14	7	4	57	9458	2374	94	404	[2]	440						48	MR-ID	ISC,NEIC,BJI
1991	12	20	2	6	5	9312	2469	39	490		530					I=V MM	315	MR-ID (Imphal-Manipur)	ISC,MOS,NEIC,HRVD
1991	12	21	19	52	45	8796	2779	65	427	[2]	470						94	NP	ISC,MOS,BJI,NEIC
1992	1	10	2	46	12	9260	2490	85	357	[2]	380						9	IID-BD	ISC
1992	1	5	2	14	17	9449	2150	99	396	[2]	430						37	MR	ISC,NEIC,BJI
1992	1	5	3	26	56	9240	2340	33	334	[1]							5	ID-BD	ISC
1992	1	6	13	20	20	9350	2380	33	346	[1]							7	MR-ID	ISC,NEIC
1992	1	9	13	8	30	9410	2340	33	351	[1]							8	MR-ID	ISC,NEIC
1992	1	13	18	36	33	9250	2442	45	419	[2]	460			400	400	400	38	ID-BD	ISC,NEIC,BJI(4.3b)
1992	1	16	23	8	58	9470	2190	10	411	[2]	450						7	MR	ISC
1992	1	28	3.	1	38	9480	2110	123	334	[2]	350						8	MR	ISC,NEIC
1992	1	30	14	2	54	9400	2280	33	346	[1]							7	MR	ISC
1992	1	30	17	54	20	9360	2270	74	380	[2]	410						12	MR-ID	ISC,NEIC
1992	2	1	4	52	25	9090	2348	33	349	[2]	370						12	BD	ISC,NEIC
1992	2	7	23	45	40	9320	2320	33	355	[1]							9	MR-ID	ISC
1992	2	13	20	1	36	9270	2380	33	341	[1]							6	ID-BD	ISC
1992	2	15	18	51	10	9370	2010	33	357	[2]	380						9	MR	ISC,NEIC
1992	2	16	19	35	13	9390	2240	33	351	[1]							8	MR-ID	ISC
1992	2	25	1	57	26	9220	2520	33	411	[2]	450						10	ID-BD	ISC,NEIC
1992	3	1	15	37	23	9456	2340	74	411	[2]	450						41	MR-ID	ISC,NEIC,BJI
1992	3	8	11	25	35	9460	2310	93	411	[2]	450						18	MR-ID	ISC,NEIC
1992	3	24	2	2	22	9430	2320	123	427	[2]	470						17	MR-ID	ISC,NEIC
1992	3	25	22	59	41	9210	2700	96	373	[2]	400						12	ID-CH	ISC
1992	3	26	8	40	45	9360	2400	33	351	[1]							8	MR-ID	ISC,NEIC
1992	3	27	0	5	18	9459	2087	82	473	[2]	530						395	MR	ISC,BJI,NEIC,MOS,HRVD
1992	3	27	7	53	44	9410	2060	57	396	[2]	430						18	MR	ISC,NEIC
1992	4	1	13	41	2	8697	2734	22	419	[2]	460			430	430	430	40	NP	ISC,NEICBJI(4.1b),MOS
1992	4	2	10	7	56	8780	2800	33	380	[2]	410						12	NP	ISC
1992	4	15	1	32	11	9493	2427	131	489	[2]	550						499	MR-ID	ISC,MOS,BJI,NEIC,HRVD
1992	4	15	17	28	54	9050	2530	33	396	[2]	430						8	ID-BD	ISC
1992	4	20	18	50	27	9211	2699	33	411	[2]	450			460	460	460	43	Eastern ID	ISC,NEIC,BJI(4.7b,3.9s)
1992	4	20	19	22	55	9120	2660	14	396	[2]	430						12	Eastern ID	ISC,NEIC
1992	4	26	0	53	45	9400	2350	108	419	[2]	460						8	MR-ID	ISC
1992	5	3	21	11	29	9110	2390	33	388	[2]	420						7	ID-BD	ISC,NEIC
1992	5	9	12	59	28	9396	2374	56	396	[2]	430						39	MR-ID	ISC,NEIC,BJI
1992	5	11	14	43	26	8930	2690	33	365	[2]	390						8	ID-BD	ISC
1992	5	27	2	47	9	9420	2250	33	419	[2]	460						8	MR	ISC,NEIC
1992	5	28	9	53	18	9206	2314	7	404	[2]	440						21	ID-BD	ISC,NEIC
1992	5	28	14	8	14	9453	2275	100	411	[2]	450						69	MR	ISC,NEIC,BJI
1992	6	4	19	44	46	9360	2420	81	357	[2]	380						12	MR-ID	ISC,NEIC

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC NS	RMK LOCATION	REFERENCES
1992	6	8	2	39	19	9420	2340	116	419	[2]	460					16	MR-ID	ISC,NEIC
1992	6	13	22	44	7	9320	2180	56	411	[2]	450					14	MR	ISC,NEIC
1992	6	14	11	12	38	9280	2710	33	342	[2]	360					8	ID-CH	ISC,NEIC
1992	6	14	14	19	5	9360	2270	70	380	[2]	410					14	MR-ID	ISC,NEIC
1992	6	14	15	8	40	9240	2620	10	351	[1]						8	Eastern ID	ISC
1992	6	15	3	57	39	9490	2300	74	380	[2]	410					11	MR	ISC,NEIC
1992	6	15	22	10	35	9350	2340	33·	365	[2]	390					8	MR-ID	ISC
1992	6	17	7	21	32	9480	2420	33	346	[1]						7	MR-ID	ISC,NEIC
1992	6	22	20	13	45	9340	2480	33	346	[1]						7	MR-ID	ISC
1992	7	2	1	21	48	9410	2450	21	346	[1]						7	MR-ID	ISC,RRLJ
1992	7	2	7	34	13	9382	2539	178	290	[4]		220					Eastern ID	RRLJ
1992	7	2	22	10	26	9480	2450	144	349	[2]	370					15	MR-ID	ISC,RRLJ,NEIC
1992	7	6	8	48	53	9326	2696	20	353	[4]		280					Eastern ID	RRLJ
1992	7	6	9	21	40	9098	2571	20	343	[4]		270					ID-BD	RRLJ
1992	7	6	15	44	54	9346	2524	138	332	[4]		260					Eastern ID	RRLJ
1992	7	6	16	40	4	9458	2611	20	385	[4]		310					Eastern ID	RRLJ
1992	7	7	16	56	13	9319	2362	10	349	[2]	370					11	MR-ID	ISC,RRLJ
1992	7	7	21	25	48	9344	2427	22	395	[4]	·	320					MR-ID	RRLJ
1992	7	8	3	58	48	9075	2672	20	364	[4]		290					Eastern ID	RRLJ
1992	7	8	10	9	48	9368	2106	37	470		540					348	MR	ISC,MOS,BJI,NEIC,RRLJ,HRVD
1992	7	9	2	9	24	9322	2270	10	419	[2]	460					14	MR-ID	ISC,RRLJ
1992	7	9	21	34	2	9002	2105	29	480		520					319	BD	ISC,MOS,BJI,NEIC,HRVD
1992	7	10	15	26	5	9403	2606	21	364	[4]		290					Eastern ID	RRLJ
1992	7	11	5	52	48	9421	2616	18	395	[4]		320					Eastern ID	RRLJ
1992	7	14	17	26	8	9344	2361	20	404	[2]	440					13	MR-ID	ISC,RRLJ
1992	7	15	16	33	15	9320	2430	21	355	[1]						9	MR-ID	ISC,RRLJ
1992	7	18	5	6	28	9351	2798	20	406	[4]		330					Eastern ID	RRLJ
1992	7	20	4	47	45	9480	2420	20	355	[1]						9	MR-ID	ISC,RRLJ
1992	7	20	14	17	55	9367	2685	20	343	[4]		270					Eastern ID	RRLJ
1992	7	30	9	14	23	9239	2660	33	373	[2]	400					10	Eastern ID	ISC,NEIC
1992	8	8	12	7	49	9190	2540	50	388	[2]	420					15	ID-BD	ISC,NEIC
1992	8	19	13	48	41	9239	2160	33	365	[1]						12	MR-BD	ISC,NEIC
1992	8	21	21	57	29	9350	2260	25	400		430					22	MR-ID	ISC,NEIC
1992	8	30	23	44	44	9460	2510	130	326	[2]	340					8	MR-ID	ISC
1992	9	4	4	1	19	9450	2350	33	346	[1]						7	MR-ID	ISC,NEIC
1992	9	21	12	17	21	9305	2334	44	410		470					91	MR-ID	ISC,MOS,NEIC,BJI
1992	10	1	0	8	48	9410	2010	33	346	[1]						7	MR	ISC
1992	10	1	8	49	42	9168	2697	20	353	[4]		280					Eastern ID	RRLJ
1992	10	1	8	51	29	9155	2698	21	343	[4]		270					Eastern ID	RRLJ
1992	10	3	2	56	28	9246	2632	27	353	[4]		280					Eastern ID	RRLJ
1992	10	3	6	52	49	9202	2789	20	417	[4]		340					ID-CH	RRLJ
1992	10	4	5	13	59	9462	2570	20	354	[4]		290					MR-ID	RRLJ
1992	10	4	15	20	9	9494	2010	89	411	[2]	450					72	MR	ISC,MOS,NEIC,BJI,RRLJ
1992	10	4	16	29	27	9490	2438	20	417	[4]		340					MR-ID	RRLJ
1992	10	4	21	18	59	9440	2460	60	396	[2]	430					11	MR-ID	ISC,NEIC
1992	10	5	23	1	8	9460	2420	20	404	[2]	440					10	MR-ID	ISC,RRLJ
1992	10	6	5	31	6	9311	2501	135	395	[4]		320					Eastern ID	RRLJ
1992	10	6	11	47	29	9447	2492	26	385	[4]		310					MR-ID	RRLJ
1992	10	7	0	50	21	9430	2540	21	341	[1]						6	MR-ID	ISC,RRLJ
1992	10	7	23	39	33	9497	2440	33	355	[1]						9	MR-ID	ISC
1992	10	13	16	34	38	9261	2640	21	311	[4]		240					Eastern ID	RRLJ
1992	10	14	1	23	23	9309	2696	24	343	[4]		270					Eastern ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1992	10	15	21	32	25	9247	2654	21	353	[4]		280							Eastern ID	RRLJ
1992	10	16	19	9	37	9113	2545	20	374	[4]		300							ID-BD	RRLJ
1992	10	17	2	8	39	9481	2517	20	459	[4]		380							MR-ID	RRLJ
1992	10	17	23	40	14	9304	2532	20	427	[4]		350							Eastern ID	RRLJ
1992	10	18	18	39	4	9174	2703	22	417	[4]		340							BU	RRLJ
1992	10	18	19	20	22	9257	2662	23	364	[4]		290							Eastern ID	RRLJ
1992	10	20	22	2	31	9232	2713	44	385	[4]		310							ID-CH	RRLJ
1992	10	21	1	0	31	9162	2518	22	279	[4]		210							ID-BD	RRLJ
1992	10	22	2	0	4	9453	2540	22	385	[4]	·	310							MR-ID	RRLJ
1992	10	22	12	37	14	9178	2540	23	351	[1]						8			ID-BD	ISC,RRLJ
1992	10	22	14	15	22	9205	2424	26	438	[4]		360							ID-BD	RRLJ
1992	10	22	14	19	55	9283	2728	20	406	[4]		330							ID-CH	RRLJ
1992	10	22	17	52	57	9291	2740	20	385	[4]		310							ID-CH	RRLJ
1992	10	24	8	58	48	8650	2680	20	355	[1]						9			NP-ID	ISC,RRLJ
1992	10	24	13	36	23	9472	2419	33	427	[4]		350							MR-ID	RRLJ
1992	10	24	15	19	43	9420	2360	124	380	[2]	410					11			MR-ID	ISC,NEIC,RRLJ
1992	10	24	20	24	8	8906	2741	20	438	[4]		360							BU	RRLJ
1992	10	25	1	35	49	9099	2770	20	406	[4]		330							BU	RRLJ
1992	10	25	9	52	30	9071	2756	20	353	[4]		280							BU	RRLJ
1992	10	25	16	16	11	9470	2510	20	380	[2]	410					8			MR-ID	ISC,RRLJ
1992	10	25	16	38	54	9037	2564	21	290	[4]		220							ID-BD	RRLJ
1992	10	25	21	24	32	9062	2721	20	364	[4]		290							BU	RRLJ
1992	10	29	4	28	6	9191	2532	20	448	[4]		370							ID-BD	RRLJ
1992	10	29	7	40	58	9205	2532	44	417	[4]		340							ID-BD	RRLJ
1992	10	30	9	36	54	9110	2558	20	406	[4]		330							ID-BD	RRLJ
1992	10	30	15	27	44	9450	2534	15	406	[4]		330							MR-ID	RRLJ
1992	10	30	18	42	5	9173	2720	20	417	[4]		340							BU	RRLJ
1992	10	31	1	56	0	9340	2720	21	404	[2]	440					13			Eastern ID	ISC,RRLJ,NEIC
1992	11	11	5	27	31	9280	2765	67	411	[2]	450			340	340	29	340		ID-CH	ISC,BJI(4.6b,4.6s),NEIC
1992	11	22	4	17	46	9170	2480	33	326	[2]	340					8			ID-BD	ISC,RRLJ
1992	11	22	11	42	45	9432	2033	58	440		530					351			MR	ISC,MOS,BJI,NEIC,RRLJ,HRVD
1992	11	23	21	23	34	9420	2020	33	346	[1]						7			MR	ISC,NEIC
1992	12	1	5	43	48	9258	2654	21	438	[4]		360							Eastern ID	RRLJ
1992	12	10	0	23	35	8974	2192	12	491	[4]		410							BD	RRLJ
1992	12	12	14	20	57	9139	2548	41	420		500					146			ID-BD	ISC,BJI,MOS,NEIC
1992	12	13	15	6	42	9321	2488	21	395	[4]		320							MR-ID	RRLJ
1992	12	15	19	15	56	9444	2764	20	417	[4]		340							Eastern ID	RRLJ
1992	12	15	21	21	5	9424	2504	21	448	[4]		370							MR-ID	RRLJ
1992	12	16	14	38	31	9260	2340	33	365	[2]	390					9			ID-BD	ISC,NEIC
1992	12	22	0	19	25	9470	2450	103	349	[2]	370					16			MR-ID	ISC,NEIC
1992	12	26	12	2	2	9480	2100	124	380	[2]	410					12			MR	ISC,NEIC
1993	1	1	0	50	29	9331	2517	12	364	[4]		290				4			Rampur,ID	RRLJ
1993	1	1	3	50	14	9161	2616	13	343	[4]		270				5			Assam.ID	RRLJ
1993	1	1	13	12	40	9416	2786	8	364	[4]		290				5			Arunachal Prodesh,ID	RRLJ
1993	1	1	23	49	49	9469	2298	115	404	[2]	440		-	-	-	43	-		MR-ID	ISC,NEIC,BJI
1993	1	1	23	49	51	9469	2298	44	480	[4]		400				11			MR	RRLJ
1993	1	2	10	37	55	9126	2595	10	427	[4]		350				10			Assam.ID	RRLJ
1993	1	2	14	59	21	9437	2495	19	406	[4]		330				5			Manipur,ID	RRLJ
1993	1	2	23	51	2	9446	2570	14	395	[4]		320				6			Nagaland,ID	RRLJ
1993	1	3	9	3	12	9370	2450	33	346	[1]	-		-	-	-	7	-		MR-ID	ISC
1993	1	3	9	3	13	9391	2523	21	469	[4]		390				14			Manipur,ID	RRLJ
1993	1	3	16	42	48	9276	2535	54	512	[4]		430				4			Meghalaya,ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1993	1	6	13	8	58	9212	2736	11	332	[4]		260					7		Arunachal Prodesh,ID	RRLJ
1993	1	6	17	31	25	9263	2718	20	300	[4]		230					5		Arunachal Prodesh,ID	RRLJ
1993	1	6	21	52	23	9319	2618	31	269	[4]		200					5		Assam,ID	RRLJ
1993	1	7	2	51	52	9245	2656	21	395	[4]		320					6		Assam,ID	RRLJ
1993	1	7	10	23	20	9159	2556	19	374	[4]		300					4		Meghalaya,ID	RRLJ
1993	1	8	7	21	24	9362	2402	45	469	[4]		390					6		MR-ID	RRLJ
1993	1	9	1	33	38	9480	2340	33	295	[2]	300		.	.	.		7	-	MR-ID	ISC
1993	1	9	5	11	51	9307	2646	44	364	[4]		290					6		Assam,ID	RRLJ
1993	1	11	22	15	54	9406	2518	20	395	[4]		320					4		Manipur,ID	RRLJ
1993	1	13	23	8	16	9186	2594	20	385	[4]		310					4		Meghalaya,ID	RRLJ
1993	1	14	21	27	20	9397	2791	8	417	[4]		340					5		Arunachal Prodesh,ID	RRLJ
1993	1	20	16	2	31	9078	2575	25	395	[4]		320					8		Meghalaya,ID	RRLJ
1993	1	20	16	6	23	9078	2556	11	353	[4]		280					5		Meghalaya,ID	RRLJ
1993	1	20	17	10	32	9113	2572	12	353	[4]		280					5		Meghalaya,ID	RRLJ
1993	1	21	12	37	57	9425	2393	66	501	[4]		420					9		MR-ID	RRLJ
1993	1	22	6	48	9	9434	2537		364	[4]		290					4		Manipur,ID	RRLJ
1993	1	22	16	47	33	9432	2500	45	428	[4]		360					6		Manipur,ID	RRLJ
1993	1	24	12	55	32	9483	2481	107	406	[4]		330					5		MR	RRLJ
1993	1	25	5	36	31	9117	2584	11	448	[4]		370					7		Assam,ID	RRLJ
1993	1	25	5	58	52	9250	2731	15	406	[4]		330					6		Arunachal Prodesh,ID	RRLJ
1993	1	27	0	39	6	9387	2413	49	411	[2]	450	410	-	360	360	24	360		MR-ID	ISC,NEIC,BJI,RRLJ
1993	1	27	8	7	48	9320	2648	45	417	[4]		340					9		Assam,ID	RRLJ
1993	1	30	6	11	15	9017	2669	27	480	[4]		400					6		Assam,ID	RRLJ
1993	1	30	7	27	53	9287	2760	26	406	[4]		330					6		Arunachal Prodesh,ID	RRLJ
1993	1	30	17	9	51	9297	2652	39	343	[4]		270					6		Assam,ID	RRLJ
1993	1	31	4	16	39	9215	2743	30	385	[4]		310					7		Arunachal Prodesh,ID	RRLJ
1993	1	31	18	24	57	9359	2460	20	427	[4]		350					7		Manipur,ID	RRLJ
1993	2	3	16	20	23	9266	2466	8	438	[4]		360					6		Assam,ID	RRLJ
1993	2	3	18	21	14	9173	2517	15	380	[4]		305					7		Assam,ID	RRLJ
1993	2	3	18	52	40	9476	2774	30	374	[4]		300					6		Arunachal Prodesh,ID	RRLJ
1993	2	3	22	52	57	9286	2481	46	406	[4]		330					5		Manipur,ID	RRLJ
1993	2	4	3	23	23	9440	2300	139	342	[2]	360	370	-	.	.	.	8	-	MR-ID	ISC,NEIC,RRLJ
1993	2	4	21	43	2	9456	2669	10	335	[4]		263					4		Assam,ID	RRLJ
1993	2	5	4	8	11	9156	2581	5	396	[4]		321					4		Meghalaya,ID	RRLJ
1993	2	5	19	53	58	9334	2504	92	417	[4]		340					12		Monipur,ID	RRLJ
1993	2	6	22	1	51	9391	2169	168	385	[4]		310					8		MR	RRLJ
1993	2	7	7	16	2	9416	2523	40	374	[4]		300					10		Manipur,ID	RRLJ
1993	2	7	13	2	45	9490	2180	124	365	[2]	390		.	.	.		12	-	MR	ISC,NEIC
1993	2	7	13	2	48	9468	2154	65	480	[4]		400					20		MR	RRLJ
1993	2	8	12	25	18	9315	2542	37	377	[4]		303					5		Assam,ID	RRLJ
1993	2	8	14	40	47	9442	2584	32	432	[4]		355					16		Nagaland,ID	RRLJ
1993	2	8	14	44	9	9447	2572	44	453	[4]		374					16		Nagaland,ID	RRLJ
1993	2	8	20	23	7	9178	2674		332	[4]		260					7		Assam,ID	RRLJ
1993	2	10	13	4	37	9106	2654	24	364	[4]		290					4		Assam,ID	RRLJ
1993	2	11	21	38	38	9112	2594	20	353	[4]		280					6		Assam,ID	RRLJ
1993	2	12	3	32	52	9238	2520	18	381	[4]		307					6		Meghalaya,ID	RRLJ
1993	2	12	10	35	57	9437	2586	25	440	[4]		362					20		Nagaland,ID	RRLJ
1993	2	12	11	21	59	9470	2635	17	424	[4]		347					7		West Bengal,ID	RRLJ
1993	2	12	12	44	20	9252	2371	16	501	[4]		420					14		Mizoram,ID	RRLJ
1993	2	12	12	53	58	9236	2633	25	311	[4]		241					8		Assam,ID	RRLJ
1993	2	12	22	1	26	9377	2376	109	441	[4]		363					13		MR	RRLJ
1993	2	13	4	40	54	9157	2328	45	435	[4]		357					4		Tripura,ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1993	2	13	4	42	7	9129	2576		324	[4]		252					6		Meghalaya,ID	RRLJ
1993	2	13	7	36	28	9436	2593	21	428	[4]		351					15		Nagaland,ID	RRLJ
1993	2	13	11	30	27	9279	2439	11	449	[4]		371					7		Mizoram,ID	RRLJ
1993	2	13	18	10	40	9077	2603	15	361	[4]		287					8		Assam.ID	RRLJ
1993	2	14	1	4	53	9159	2566	17	353	[4]		280					10		Meghalaya,ID	RRLJ
1993	2	14	8	47	30	9381	2483	15	346	[4]		273					5		Manipur,ID	RRLJ
1993	2	14	16	48	29	9500	2253	33	410		450		-	480	480	-	44	480	MR	ISC,BJI,NEIC
1993	2	14	22	47	19	9448	2588	21	337	[4]		265					12		Nagaland,ID	RRLJ
1993	2	15	14	29	41	8751	2589	30	450		490	490	-	450	450	-	96	450	N.ID	ISC,RRLJ,BJI,MOS,NEIC
1993	2	17	2	28	22	9460	2290	119	388	[2]	420	400	-	-	-	-	14	-	MR	ISC,NEIC,RRLJ
1993	2	21	20	43	9	9350	2300	20	448	[4]	-	370	-	-	-	-	6	-	MR-ID	ISC,RRLJ
1993	2	23	13	45	13	9416	2438	18	406	[4]	-	330	-	-	-	-	-	-	MR-ID	RRLJ
1993	2	24	20	43	45	9407	2325	23	459	[4]	-	380	-	-	-	-	-	-	MR-ID	RRLJ
1993	2	26	17	9	8	9370	2390	26	469	[4]	-	390	-	-	-	-	7	-	MR-ID	ISC,RRLJ
1993	2	27	21	15	23	9431	2500	25	374	[4]	-	300	-	-	-	-	-	-	MR-ID	RRLJ
1993	2	27	22	15	30	9455	2546	21	395	[4]	-	320	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	4	7	29	28	9338	2451	21	438	[4]	-	360	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	5	23	19	30	9490	2460	130	359	[1]	-	-	-	-	-	-	10	-	MR-ID	ISC,RRLJ
1993	3	11	5	12	56	9383	2390	20	491	[4]	-	410	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	12	9	59	58	9427	2552	28	448	[4]	-	370	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	14	22	59	22	9366	2489	27	374	[4]	-	300	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	16	14	51	11	9331	2459	26	417	[4]	-	340	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	18	13	9	14	9444	2597	27	417	[4]	-	340	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	18	20	4	56	9420	2551	20	417	[4]	-	340	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	18	23	0	44	9414	2393	77	419	[2]	460	450	-	-	-	5	133	-	Shilong.ID	ISC,MOS,RRLJ,NEIC,BJI
1993	3	22	2	20	26	9431	2536	28	427	[4]	-	350	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	22	22	1	22	9360	2440	122	388	[2]	420	360	-	-	-	-	9	-	MR-ID	ISC,RRLJ
1993	3	22	23	22	46	9360	2450	28	427	[4]	-	350	-	-	-	-	5	-	MR-ID	ISC,RRLJ
1993	3	23	18	40	49	8917	2714	35	417		-	340	-	-	-	-	-	-	BU	RRLJ
1993	3	24	14	24	11	9360	2050	58	373	[2]	400	-	-	-	-	-	10	-	MR	ISC,NEIC
1993	3	25	16	38	27	9330	2408	22	427	[4]	-	350	-	-	-	-	-	-	MR-ID	RRLJ
1993	3	27	9	42	59	9500	2464	109	442	[2]	490	480	-	-	-	-	203	-	MR	ISC,MOS,RRLJ,NEIC,BJI
1993	3	28	22	6	50	9193	2722	26	395	[4]	-	320	-	-	-	-	-	-	BU	RRLJ
1993	3	31	22	37	54	9367	2414	20	448	[4]	-	370	-	-	-	-	-	-	MR-ID	RRLJ
1993	4	1	16	30	10	9446	2321	91	473	[2]	530		-	-	-	-	396	-	MR-ID	ISC,MOS,BJI,NEIC,HRVD
1993	4	1	18	41	36	9445	2315	97	419	[2]	460		-	-	-	-	123	-	MR-ID	ISC,MOS,NEIC,BJI
1993	4	1	19	40	40	9360	2430	33	357	[2]	380		-	-	-	-	10	-	MR-ID	ISC
1993	4	4	0	21	20	9360	2360	140	342	[2]	360		-	-	-	-	7	-	MR-ID	ISC
1993	4	11	5	34	29	9420	2401	79	411	[2]	450		-	-	-	-	82	-	MR-ID	ISC,MOS,NEIC,BJI
1993	4	11	23	55	1	9360	2320	120	342	[2]	360		-	-	-	-	8	-	MR-ID	ISC
1993	4	13	14	29	46	9490	2550	160	346	[1]	-		-	-	-	-	7	-	MR-ID	ISC
1993	4	13	15	59	37	9422	2234	90	427	[2]	470		-	-	-	-	78	-	MR	ISC,NEIC,BJI
1993	4	14	6	18	18	9490	2480	121	396	[2]	430		-	-	-	-	16	-	MR-ID	ISC,NEIC
1993	4	28	18	40	2	9120	2742	36	438	[4]	-	360	-	-	-	-	-	-	BU	RRLJ
1993	4	29	3	33	32	9190	2710	45	417	[4]	-	340	-	-	-	-	-	-	BU	RRLJ
1993	5	1	9	7	10	9481	2491	53	438	[4]	-	360	-	-	-	-	-	-	MR-ID	RRLJ
1993	5	2	15	1	4	9490	2400	20	438	[4]	-	360	-	-	-	-	11	-	MR-ID	ISC,RRLJ
1993	5	3	5	37	26	9422	2472	27	395	[4]	-	320	-	-	-	-	-	-	MR-ID	RRLJ
1993	5	3	7	23	14	9424	2443	19	459	[4]	-	380	-	-	-	-	-	-	MR-ID	RRLJ
1993	5	3	14	26	58	9371	2319	40	374	[4]	-	300	-	-	-	-	-	-	MR-ID	RRLJ
1993	5	4	15	18	54	9377	2365	21	385	[4]	-	310	-	-	-	-	-	-	MR-ID	RRLJ
1993	5	6	20	45	7	9416	2515	184	374	[4]	-	300	-	-	-	-	-	-	MR-ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1993	5	11	12	5	4	9430	2230	97	404	[2]	440		-	-	-	-	8	-	MR	ISC
1993	5	14	2	39	16	9479	2049	38	420		440		-	-	-	-	58	-	MR	ISC,BJI,NEIC
1993	5	15	16	26	55	9421	2584	21	459	[4]	-	380	-	-	-	-	-	-	MR-ID	RRLJ
1993	5	15	22	56	31	9310	2470	26	459	[4]	-	370	-	-	-	-	8	-	MR-ID	ISC,RRLJ
1993	5	16	2	47	18	9217	2729	27	336	[4]		264	-				9		Arunachal Prodesh,ID	RRLJ
1993	5	16	19	54	1	9285	2440	27	380	[4]		305	-				5		Assam.ID	RRLJ
1993	5	17	0	22	22	9250	2605	20	346	[4]		273	-				6		Assam.ID	RRLJ
1993	5	21	4	22	9	9489	2769	21	398	[4]		322	-				5		Arunachal Prodesh,ID	RRLJ
1993	5	22	22	6	8	9299	2437		334	[1]							5		Mizoram,ID	RRLJ
1993	5	23	9	52	28	9373	2541	22	313	[4]		242					4		Nagaland,ID	RRLJ
1993	5	24	1	28	52	9440	2489		362	[4]		288					4		Manipur,ID	RRLJ
1993	5	26	8	47	16	9255	2549	23	330	[4]		258					5		Meghalaya,ID	RRLJ
1993	5	27	8	9	31	9432	2617	19	352	[4]		279					5		Nagaland,ID	RRLJ
1993	5	27	17	50	35	9360	2191	54	410		470		-	-	-	-	86	-	MR	ISC,NEIC,BJI
1993	5	27	17	50	39	9339	2162	44	488	[4]		408					16		MR	RRLJ
1993	5	28	14	20	32	9308	2644	25	483	[4].		403					11		Assam.ID	RRLJ
1993	6	1	22	44	14	9460	2450	49	355	[1]	-		340	-	-	-	9	-	MR-ID	ISC,RRLJ
1993	6	3	7	30	34	9247	2623	15	385	[4]		310					5		Assam.ID	RRLJ
1993	6	8	10	16	53	9290	2708	20	431	[4]		354					4		Arunachal Prodesh,ID	RRLJ
1993	6	9	6	14	59	9217	2651	29	398	[4]		322					6		Assam.ID	RRLJ
1993	6	17	2	47	13	9460	2568		430	[4]		353					12		Nagaland,ID	RRLJ
1993	6	17	2	47	15	9480	2575	116	-			-	-	-	-	-	-	-	MR-ID	RRLJ
1993	6	17	2	47	17	9460	2524	22	-			-	-	-	-	-	-	-	MR-ID	RRLJ
1993	6	18	22	46	21	9273	2721	25	351	[1]							8		Arunachal Prodesh,ID	RRLJ
1993	6	21	18	47	44	9439	2756	21	3.9	[4]		315					6		Assam.ID	RRLJ
1993	6	23	7	24	50	9483	2722	22	408	[4]		332					5		Assam.ID	RRLJ
1993	6	23	17	19	29	9261	2743	32	490	[4]		409					12		Arunachal Prodesh,ID	RRLJ
1993	6	24	7	31	21	9279	2529	20	326	[1]							4		Meghalaya,ID	RRLJ
1993	6	24	7	36	28	9281	2691	10	406	[4]		330					5		Assam.ID	RRLJ
1993	6	24	21	59	15	9458	2343	111	380	[2]	410		-	-	-	-	34	-	MR-ID	ISC,NEIC,BJI
1993	6	25	5	44	23	9410	2536	40	364	[4]	-	290	-	-	-	-	-	-	MR-ID	RRLJ
1993	6	25	5	44	23	9410	2536	40	363	[4]		289					6		Manipur,ID	RRLJ
1993	6	26	22	59	18	9260	2733		399	[4]		323					4		Arunachal Prodesh,ID	RRLJ
1993	6	28	13	38	34	9450	2739	15	468	[4]		389					4		Arunachal Prodesh,ID	RRLJ
1993	6	28	18	40	2	9116	2742	36	437	[4]		359					5		BU	RRLJ
1993	6	29	3	33	34	9201	2708	45	413	[4]		337					5		BU	RRLJ
1993	6	30	10	23	7	9490	2430	33	351	[1]	-		-	-	-	-	8	-	MR-ID	ISC
1993	7	2	13	59	27	9287	2642	23	309	[4]		238					6		Assam.ID	RRLJ
1993	7	4	4	25	59	9056	2537	12	340	[4]		268					5		Meghalaya,ID	RRLJ
1993	7	4	14	31	19	9302	2560		416	[4]		340					6		Assam.ID	RRLJ
1993	7	6	8	44	45	9494	2675	20	337	[4]		265					4		Nagaland,ID	RRLJ
1993	7	7	20	8	14	9181	2554	13	324	[4]		252					5		Meghalaya,ID	RRLJ
1993	7	8	5	9	45	9356	2380	74	404	[2]	440		-	-	-	-	12	-	MR-ID	ISC
1993	7	8	5	9	48	9354	2425	15	448	[4]		370					8		Manipur,ID	RRLJ
1993	7	8	14	18	5	9100	2554	5	302	[4]		232					5		Meghalaya,ID	RRLJ
1993	7	8	15	0	12	9299	2553	30	326	[4]		254					4		Assam.ID	RRLJ
1993	7	9	19	15	15	9367	2523	10	399	[4]		323					6		Manipur,ID	RRLJ
1993	7	10	19	52	40	9465	2548	47	429	[4]		352					6		Nagaland,ID	RRLJ
1993	7	11	23	14	51	9254	2651	32	304	[4]		234					5		Assam.ID	RRLJ
1993	7	12	13	20	27	9269	2669	38	323	[4]		252					8		Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS		RMK LOCATION	REFERENCES
1993 7	13	7	29	15	9402	2326	48	481	[4]			401					5		MR .	RRLJ
1993 7	14	1	23	52	9414	2372	45	283	[4]			214					9		MR	RRLJ
1993 7	14	4	49	36	9390	2310	59	390			470		-	430	430	-	86	430	MR-ID	ISC,NEIC,BJI,RRLJ
1993 7	14	4	49	40	9380	2309	71	480	[4]			400					19		MR	RRLJ
1993 7	14	12	27	25	9200	2790	22	334	[1]		-		330			-	5		ID-CH	ISC,RRLJ
1993 7	15	14	41	8	9223	2732	22	334	[1]								5		Arunachal Prodesh,ID	RRLJ
1993 7	15	21	13	2	9211	2609		237	[4]			170					4		Assam,ID	RRLJ
1993 7	15	22	25	31	9313	2630	44	321	[4]			250					5		Assam,ID	RRLJ
1993 7	16	10	44	25	9380	2380	3	406	[4]		-	330	-	-	-	-	8	-	MR-ID	ISC,RRLJ
1993 7	17	2	25	21	8879	2638	47	437	[4]			359					6		ID-BD	RRLJ
1993 7	17	22	25	58	9221	2594	22	334	[1]								5		Meghalaya,ID	RRLJ
1993 7	18	11	13	59	9204	2549	19	284	[4]			215					6		Meghalaya,ID	RRLJ
1993 7	18	17	37	19	9107	2518	17	321	[4]			250					5		BD	RRLJ
1993 7	18	23	36	18	9179	2554	5	395	[4]		-	320	-	-	-	-	-	-	ID-BD	RRLJ
1993 7	18	23	36	21	9191	2571	12	385	[4]			310					11		Meghalaya,ID	RRLJ
1993 7	19	11	9	6	9260	2695	27	395	[4]		-	320	-	-	-	-	-	-	E.ID	RRLJ
1993 7	19	13	24	24	9130	2547	7	321	[4]			250					5		Meghalaya,ID	RRLJ
1993 7	19	15	44	39	9468	2508	13	329	[4]			257					6		Manipur,ID	RRLJ
1993 7	20	10	19	34	9279	2650	7	237	[4]			170					6		Assam,ID	RRLJ
1993 7	21	10	37	14	9123	2652	37	371	[4]			297					9		Assam,ID	RRLJ
1993 7	22	2	0	13	9214	2431	20	438	[4]			360					4		Tripura,ID	RRLJ
1993 7	22	23	32	49	9289	2509	42	438	[4]			360					9		Assam,ID	RRLJ
1993 7	23	21	29	18	9089	2544	20	385	[4]		-	310	-	-	-	-	-	-	ID-BD	RRLJ
1993 7	23	23	26	51	9413	2310	8	427	[4]			350					10		MR	RRLJ
1993 7	23	23	38	44	9300	2778	22	374	[4]		-	300	-	-	-	-	-	-	E.ID	RRLJ
1993 7	24	0	55	52	9392	2020	34	396	[4]			321					4		MR	RRLJ
1993 7	24	12	7	9	9364	2524	28	374	[4]		-	300	-	-	-	-	-	-	E.ID	RRLJ
1993 7	25	4	13	39	9499	2510	29	395	[4]		-	320	-	-	-	-	-	-	MR-ID	RRLJ
1993 7	25	11	32	47	9065	2681		385	[4]			310					12		Assam,ID	RRLJ
1993 7	25	16	33	46	9248	2639	39	320	[4]			249					7		Assam,ID	RRLJ
1993 7	26	2	31	42	9445	2410	45	438	[4]		-	360	-	-	-	-	7	-	MR-ID	RRLJ
1993 7	26	2	50	55	8874	2644	45	438	[4]		-	360	-	-	-	-	5	-	ID-BD	RRLJ
1993 7	26	22	13	12	9415	2259	28	448	[4]			370					5		MR	RRLJ
1993 7	26	22	13	14	9403	2294	-	406	[4]		-	330	-	-	-	-	-	-	MR	RRLJ
1993 7	27	14	49	26	9144	2629	15	353	[4]			280					7		Assam,ID	RRLJ
1993 7	27	18	20	17	9295	2670	43	253	[4]			185					5		Assam,ID	RRLJ
1993 7	27	19	50	31	9404	2666	15	306	[4]			235					5		Assam,ID	RRLJ
1993 7	27	20	11	43	9495	2753	14	374	[4]			205					5		Assam,ID	RRLJ
1993 7	28	9	41	57	9212	2462	34	374	[4]		-	300	-	-	-	-	6	-	ID-BD	RRLJ
1993 7	28	18	10	30	9139	2702	5	417	[4]		-	340	-	-	-	-	8	-	BU	RRLJ
1993 7	30	10	18	8	9188	2758	30	344	[4]			271					7		Arunachal Prodesh,ID	RRLJ
1993 7	31	19	29	24	9187	2730	71	396	[2]		430	403	-	410	410	-	29	410	BU	ISC,NEIC,RRLJ
1993 7	31	19	33	42	9447	2770	15	351	[4]			278					5		Arunachal Prodesh,ID	RRLJ
1993 8	1	19	17	5	9045	2615	10	426	[4]			349					8		Assam,ID	RRLJ
1993 8	1	20	15	23	9349	2500	22	459	[4]			380					9		Manipur,ID	RRLJ
1993 8	1	20	15	31	9220	2630	33	355	[1]		-		-	-	-	-	9	-	E.ID	ISC
1993 8	1	20	27	33	9258	2648	46	389	[4]			314					13		Assam,ID	RRLJ
1993 8	2	10	40	45	9354	2351	21	438	[4]			360					4		MR-ID	RRLJ
1993 8	2	13	54	10	9101	2533	14	389	[4]			314					7		Meghalaya,ID	RRLJ
1993 8	2	14	41	46	9364	2284	79	411	[2]		450		-	-	-	-	18	-	MR-ID	ISC,NEIC,BJI
1993 8	2	14	41	48	9382	2307	51	491	[4]			410					17		MR	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1993	8	3	0	22	14	9133	2727	22	418	[4]		341					8		BU	RRLJ
1993	8	3	2	36	41	9482	2759	12	381	[4]		306					5		Assam.ID	RRLJ
1993	8	3	4	15	18	9349	2634	18	364	[4]		290					8		Assam.ID	RRLJ
1993	8	6	6	49	2	9408	2340	104	396	[2]	430		-	-	-	-	15	-	MR-ID	ISC
1993	8	6	6	49	8	9392	2380	47	469	[4]		390					15		MR-ID	RRLJ
1993	8	6	18	3	45	9305	2636	30	359	[4]		286					6		Assam.ID	RRLJ
1993	8	6	22	34	32	9178	2712		374	[4]		300					7		BU	RRLJ
1993	8	6	23	17	52	9162	2704	17	401	[4]		325					8		BU	RRLJ
1993	8	7	16	6	7	9442	2541	15	353	[4]		280					5		Manipur,ID	RRLJ
1993	8	7	19	3	57	9279	2633	39	306	[4]		235					8		Assam,ID	RRLJ
1993	8	9	22	46	57	9267	2654	37	278	[4]		209					7		Assam.ID	RRLJ
1993	8	10	0	8	31	8800	2773		438	[4]		360					5		BU	RRLJ
1993	8	10	14	9	13	9263	2679	36	335	[4]		263					6		Assam.ID	RRLJ
1993	8	12	1	13	2	9245	2788	27	376	[4]		302					4		Arunachal Prodesh,ID	RRLJ
1993	8	13	4	33	11	9318	2620	44	343	[4]		270					8		Assam.ID	RRLJ
1993	8	14	5	31	45	9407	2276	25	438	[4]		360					10		MR	RRLJ
1993	8	14	5	31	35	9440	2190	33	334	[2]	350		-	-	-	-	8	-	MR	ISC
1993	8	14	20	7	45	9406	2755		406	[4]		330					9		Assam.ID	RRLJ
1993	8	15	11	23	34	9624	2699	7	417	[4]		340					6		MR	RRLJ
1993	8	15	14	3	36	9336	2446	12	427	[4]		350					9		Manipur,ID	RRLJ
1993	8	17	10	38	9	9257	2669	24	256	[4]		188					5		Assam.ID	RRLJ
1993	8	17	17	40	52	9450	2282	65	480	[4]		400					10		MR	RRLJ
1993	8	17	18	53	47	9422	2569	105	353	[4]		280					8		Nagaland,ID	RRLJ
1993	8	18	20	17	51	9309	2608	29	421	[4]		344					15		Assam.ID	RRLJ
1993	8	21	6	54	15	8774	2491	27	455	[4]		376					4		Bihar,ID	RRLJ
1993	8	22	14	40	0	9066	2574	46	459	[4]		380					6		Meghalaya,ID	RRLJ
1993	8	22	22	3	45	9105	2538	20	343	[4]		270					6		Meghalaya,ID	RRLJ
1993	8	25	2	36	56	9470	2507		300	[4]		230					6		MR-ID	RRLJ
1993	8	26	7	37	50	9367	2409		406	[4]		330					7		Manipur,ID	RRLJ
1993	8	26	12	33	56	9243	2734		406	[4]		330					10		Arunachal Prodesh,ID	RRLJ
1993	9	1	19	52	3	9107	2573	15	356	[4]		283					5		Meghalaya,ID	RRLJ
1993	9	2	19	42	25	9436	2380	45	468	[4]		389					4		MR	RRLJ
1993	9	5	6	5	55	8727	2733	32	420		450	483	-	-	-	-	50	-	NP	ISC,NEIC,BJI,RRLJ
1993	9	5	7	14	44	9484	2494	11	416	[4]		339					6		MR	RRLJ
1993	9	6	3	57	36	9248	2636	19	408	[4]		332					5		Assam.ID	RRLJ
1993	9	6	20	14	5	9427	2349	92	419	[2]	460		-	-	-	-	84	-	MR-ID	ISC,NEIC,BJI,MOS
1993	9	6	20	14	7	9425	2349	45	544	[4]		461					18		MR	RRLJ
1993	9	7	11	48	39	9420	2536	10	417	[4]	-	340	-	-	-	-	7	-	MR-ID	RRLJ
1993	9	7	18	57	52	9391	2388		404	[4]		328							Manipur,ID	RRLJ
1993	9	8	22	17	29	9462	2522	12	332	[4]	-	260	-	-	-	-	7	-	MR-ID	RRLJ
1993	9	9	9	11	15	9057	2600	18	395	[4]	-	320	-	-	-	-	-	-	E.ID	RRLJ
1993	9	10	0	42	37	9262	2681	27	258	[4]	-	190	-	-	-	-	-	-	E.ID	RRLJ
1993	9	10	11	40	30	9236	2284	43	300	[4]	-	230	-	-	-	-	4	-	ID-BD	RRLJ
1993	9	11	8	47	44	9485	2516	61	448	[4]		370					8		MR	RRLJ
1993	9	13	11	42	29	9423	2533	20	427	[4]	-	350	-	-	-	-	10	-	MR-ID	RRLJ
1993	9	13	16	35	11	9254	2711	27	378	[4]		304					5		Arunachal Prodesh,ID	RRLJ
1993	9	14	5	43	59	9477	2544	97	448	[4]	-	370	-	-	-	-	13	-	MR-ID	RRLJ
1993	9	14	21	16	4	9387	2750	26	353	[4]	-	280	-	-	-	-	7	-	E.ID	RRLJ
1993	9	14	22	24	38	9430	2370	44	448	[4]	-	370	-	-	-	-	8	-	MR-ID	ISC,RRLJ
1993	9	14	22	24	46	9423	2436	43	438	[4]		360					14		Manipur,ID	RRLJ
1993	9	15	12	51	52	9337	2682	8	386	[4]		311					6		Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Mf	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1993	9	16	14	0	52	9426	2490	82	364	[4]	-	290	-	-	-	-	11	-	MR-ID	RRLJ
1993	9	16	16	55	47	9377	2391	63	385	[4]		310					10		MR-ID	RRLJ
1993	9	16	17	51	28	9386	2425	45	427	[4]		350					9		Manipur,ID	RRLJ
1993	9	17	2	26	27	9403	2383	-	469	[4]	-	390	-	-	-	-	-	-	MR-ID	RRLJ
1993	9	17	12	2	32	9368	2429	9	395	[4]	-	320	-	-	-	-	8	-	MR-ID	RRLJ
1993	9	17	14	30	3	9441	2592	20	374	[4]	-	300	-	-	-	-	5	-	MR-ID	RRLJ
1993	9	18	9	41	54	9113	2562	8	406	[4]		330					5		Meghalaya,ID	RRLJ
1993	9	19	21	0	1	9500	2490	130	349	[2]	370		-	300	300	-	11	300	MR	ISC,RRLJ
1993	9	19	21	0	6	9473	2519	98	374	[4]		300					13		Manipur,ID	RRLJ
1993	9	20	7	40	57	9281	2794	41	419	[2]	460		-	420	420	-	38	420	ID-CH	ISC,NEIC,RRLJ
1993	9	20	7	40	58	9275	2755	33	501	[4]		420					13		Arunachal Prodesh,ID	RRLJ
1993	9	20	7	47	53	9277	2742	8	398	[4]	-	322	-	320	320	-	9	320	Arunachal Prodesh,ID	RRLJ
1993	9	20	13	34	53	9366	2428	7	427	[4]		350					8		Manipur,ID	RRLJ
1993	9	21	22	23	29	9278	2701	14	321	[4]	-	250	-	-	-	-	-	-	ID-CH	RRLJ
1993	9	21	22	23	29	9278	2791	14	319	[4]		248					5		Arunachal Prodesh,ID	RRLJ
1993	9	22	9	6	32	9278	2704		321	[4]		250					5		Assam.ID	RRLJ
1993	9	22	17	4	39	9430	2574	16	321	[4]	-	250	-	250	250	-	7	250	MR-ID	RRLJ
1993	9	23	13	23	37	9116	2547	12	439	[4]		361					8		Meghalaya,ID	RRLJ
1993	9	23	22	32	27	9407	2546	22	417	[4]		340					8		Manipur,ID	RRLJ
1993	9	23	23	14	4	9279	2659		351	[4]		278					7		Assam.ID	RRLJ
1993	9	24	1	2	51	9408	2590	24	426	[4]		349					6		Manipur,ID	RRLJ
1993	9	26	14	53	19	9098	2585	11	395	[4]		320					7		Meghalaya,ID	RRLJ
1993	9	26	15	9	58	9439	2532	37	406	[4]		330					11		Manipur,ID	RRLJ
1993	9	26	15	10	7	9420	2580	37	406	[4]	-	330	-	330	330	-	5	330	MR-ID	ISC,RRLJ
1993	9	26	15	49	35	9081	2409	-	438	[4]	-	360	-	360	360	-	13	360	BD	RRLJ
1993	9	27	8	36	27	9263	2659	38	353	[4]		280					5		Assam.ID	RRLJ
1993	9	28	5	28	57	9078	2594	19	438	[4]		360					8		Meghalaya,ID	RRLJ
1993	9	28	20	23	34	9341	2494	33	432	[4]		355					8		Manipur,ID	RRLJ
1993	9	29	19	10	21	9430	2540	20	364	[4]		290					4		Manipur,ID	RRLJ
1993	9	30	22	38	52	9133	2545	16	353	[4]		280					7		Meghalaya,ID	RRLJ
1993	9	30	23	1	43	9200	2246		491	[4]		410					7		BD	RRLJ
1993	10	1	3	47	40	9464	2425	45	425	[4]		348					5		MR	RRLJ
1993	10	2	8	16	27	9321	2635	29	314	[4]		243					7		Assam.ID	RRLJ
1993	10	2	13	19	37	8884	2603		426	[4]		349					5		West Bengal,ID	RRLJ
1993	10	2	21	59	27	9292	2792	13	411	[4]		335					8		Arunachal Prodesh,ID	RRLJ
1993	10	2	23	19	25	9416	2443		449	[4]		371					8		Manipur,ID	RRLJ
1993	10	4	7	24	51	9416	2408	41	465	[4]		386					5		Manipur,ID	RRLJ
1993	10	5	11	3	54	9421	2450	45	405	[4]		329					5		Manipur,ID	RRLJ
1993	10	8	4	38	25	8979	2610	44	427	[4]		350					7		Assam.ID	RRLJ
1993	10	8	18	39	33	9479	2503	16	459	[4]		380					6		MR-ID	RRLJ
1993	10	9	4	48	12	9242	2653		317	[4]		246					4		Assam.ID	RRLJ
1993	10	9	19	18	26	9499	2591	25	406	[4]		330					10		Nagaland,ID	RRLJ
1993	10	10	5	24	42	9440	2370	108	357	[2]	380		-	-	-	-	7	-	MR-ID	ISC
1993	10	10	5	24	48	9420	2413	19	469	[4]		390					5		Manipur,ID	RRLJ
1993	10	10	17	56	36	9094	2568	6	376	[4]		302					5		Meghalaya,ID	RRLJ
1993	10	11	7	18	27	9193	2560	15	408	[4]		332					11		Meghalaya Felt	RRLJ
1993	10	12	2	50	39	9085	2505	38	409	[4]		333					4		BD	RRLJ
1993	10	13	6	16	28	9052	2609	15	408	[4]		332					4		Assam.ID	RRLJ
1993	10	19	18	35	11	9168	2554		353	[4]		280					6		Meghalaya,ID	RRLJ
1993	10	20	18	53	36	9479	2585	95	420	[4]		343					5		Nagaland,ID	RRLJ
1993	10	21	18	47	42	9152	2238		459	[4]		380					4		Bay of Bengal	RRLJ
1993	10	24	1	35	39	8946	2778	45	491	[4]		410					8		BU	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC NS		RMK LOCATION	REFERENCES
1993	10	24	22	53	59	9291	2685	23	310	[4]		240					7		Assam.ID	RRLJ
1993	10	27	21	12	13	9329	2615	38	374	[4]		300					7		Assam.ID	RRLJ
1993	10	28	10	42	26	9271	2642	24	269	[4]		200					6		Assam.ID	RRLJ
1993	11	1	8	1	13	9184	2745	25	290	[4]		220					6		Arunachal Prodesh,ID	RRLJ
1993	11	1	16	44	10	9451	2475	21	393	[4]		318					7		MR-ID	RRLJ
1993	11	2	0	4	54	9189	2669	18	317	[4]		246					6		Assam.ID	RRLJ
1993	11	2	17	14	15	9119	2694	35	381	[4]		307					6		BU	RRLJ
1993	11	2	18	58	1	9188	2727	26	394	[4]		319					10		BU	RRLJ
1993	11	3	0	31	32	9147	2560	10	438	[4]		360					8		Meghalaya,ID	RRLJ
1993	11	4	21	1	50	9325	2664	33	343	[4]		270					8		Assam.ID	RRLJ
1993	11	6	18	15	49	9238	2650		351	[4]		278					6		Assam.ID	RRLJ
1993	11	7	15	45	36	8758	2742	19	469	[4]		390					5		NP	RRLJ
1993	11	7	16	22	48	9441	2431	45	395	[4]		320					8		MR	RRLJ
1993	11	7	17	35	12	9296	2393	25	427	[4]		350					6		Mizoram,ID	RRLJ
1993	11	8	21	29	4	8988	2693		406	[4]		330					6		BU	RRLJ
1993	11	8	22	37	11	9288	2611	19	374	[4]		300					5		Assam.ID	RRLJ
1993	11	9	6	20	42	9392	2750	13	387	[4]		312					6		Arunachal Prodesh.ID	RRLJ
1993	11	9	6	20	46	9380	2640	33	341	[1]	-		-	-	-	-	6	-	E.ID	ISC
1993	11	9	20	2	42	9140	2570	11	332	[4]		260					6		Meghalaya,ID	RRLJ
1993	11	9	23	17	36	9346	2661	31	291	[4]		221					7		Assam.ID	RRLJ
1993	11	11	12	0	10	9194	2543	30	374	[4]		300					7		Meghalaya Felt	RRLJ
1993	11	12	19	34	38	9377	2541	19	394	[4]		319					7		Nagaland,ID	RRLJ
1993	11	13	15	42	30	9413	2546	22	427	[4]		350					9		Manipur,ID	RRLJ
1993	11	17	19	26	12	9478	2450	114	372	[2]	400		-	-	-	-	15	-	MR-ID	ISC,NEIC
1993	11	19	11	59	46	9289	2621	21	357	[4]		284					6		Assam.ID	RRLJ
1993	11	21	6	53	42	9294	2646	30	406	[4]		330					6		Assam.ID	RRLJ
1993	11	21	26	43	4	9258	2634	48	406	[4]		330					6		Assam Felt	RRLJ
1993	11	23	19	0	42	9299	2670	48	410	[4]		334					6		Assam.ID	RRLJ
1993	11	23	23	5	30	9415	2434	33	417	[4]		340					7		Manipur,ID	RRLJ
1993	11	24	17	55	51	9289	2740	20	371	[4]		297					6		Arunachal Prodesh.ID	RRLJ
1993	11	24	20	9	47	9407	2472	21	459	[4]		380					6		Manipur,ID	RRLJ
1993	11	24	20	9	43	9430	2440	33	355	[1]	-		-	-	-	-	9	-	MR-ID	ISC
1993	11	25	12	58	54	9224	2745	19	364	[4]		290					6		Arunachal Prodesh.ID	RRLJ
1993	11	26	4	20	50	9020	2580	46	369	[4]		295					4		Meghalaya,ID	RRLJ
1993	11	26	18	4	7	9294	2420	33	373	[2]	400		-	-	-	-	13	-	ID-BD	ISC
1993	11	26	18	4	11	9296	2462	29	469	[4]		390					11		Assam.ID	RRLJ
1993	11	29	17	36	1	9187	2724		427	[4]		350					6		BU	RRLJ
1993	11	30	4	16	9	9351	2464	16	448	[4]		370					4		Manipur,ID	RRLJ
1993	12	1	20	18	31	9300	2780	33	385	[4]	-	310	-	-	-	-	6	-	ID-CH	ISC,RRLJ
1993	12	1	20	19	50	9207	2540	14	343	[4]		270					5		Meghalaya,ID	RRLJ
1993	12	1	20	20	50	9341	2784	10	343	[4]		270					6		Arunachal Prodesh.ID	RRLJ
1993	12	2	22	4	48	9454	2329	24	499	[4]		418					8		MR	RRLJ
1993	12	3	9	30	45	9254	2739	19	369	[4]		295					7		Arunachal Prodesh.ID	RRLJ
1993	12	3	20	18	50	9203	2551	43	420	[4]		343					8		Meghalaya.ID	RRLJ
1993	12	3	23	26	38	9470	2554	20	343	[4]		270					6		Manipur,ID	RRLJ
1993	12	5	4	42	33	9220	2370	33	349	[2]	370		-	-	-	-	7	-	ID-BD	ISC
1993	12	5	23	0	43	9435	2642	11	300	[4]		230					6		Nagaland,ID	RRLJ
1993	12	6	5	32	9	9422	2469	59	501	[4]		420					7		Manipur,ID	RRLJ
1993	12	8	17	24	19	9364	2746	23	326	[4]		254					6		Arunachal Prodesh,ID	RRLJ
1993	12	9	21	40	59	9346	2640	21	330	[4]		258					8		Assam.ID	RRLJ
1993	12	11	23	43	31	9336	2606		427	[4]		350					6		Assam.ID	RRLJ
1993	12	12	6	19	20	9499	2476	6	387	[4]		312					5		MR	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1993	12	12	15	4	11	9228	2649	44	445	[4]		367						14		Assam.ID	RRLJ
1993	12	12	16	28	14	9412	2530	21	385	[4]		310						8		Manipur,ID	RRLJ
1993	12	12	23	34	18	9204	2729	30	430		480		-	-	-	-	-	96	-	ID-CH	ISC,NEIC,BJI
1993	12	12	23	34	20	9205	2701	23	541	[4]		458						15		BU Felt	RRLJ
1993	12	12	23	41	54	9210	2734	17	443	[4]		365						12		ID-BU	RRLJ
1993	12	13	0	0	24	9205	2727	29	354	[4]		281						6		BU	RRLJ
1993	12	13	0	47	10	9223	2733	14	306	[4]		235						7		Arunachal Prodesh,ID	RRLJ
1993	12	13	1	22	32	9421	2290		427	[4]		350						5		MR	RRLJ
1993	12	13	3	39	47	9191	2742	26	349	[4]		276						6		BU	RRLJ
1993	12	13	7	34	11	9191	2710	8	441	[4]		363						12		BU	RRLJ
1993	12	13	17	24	29	9162	2539	17	448	[4]		370						8		Meghalaya Felt	RRLJ
1993	12	14	2	27	50	8668	2788	48	512	[4]		430						12		NP	RRLJ
1993	12	15	1	2	50	9410	2330	133	373	[2]	400	409	-	-	-	-	-	9	-	MR-ID	ISC,NEIC,RRLJ
1993	12	15	19	7	27	9436	2349	31	426	[4]		349						9		MR	RRLJ
1993	12	15	22	48	44	9238	2505	42	359	[4]		286						6		ID-BD	RRLJ
1993	12	16	1	7	50	9319	2651	42	354	[4]		281						8		Assam.ID	RRLJ
1993	12	16	17	59	29	9312	2456	7	386	[4]		311						10		Manipur,ID	RRLJ
1993	12	18	12	55	38	9280	2615	46	422	[4]		345						14		Assam.ID	RRLJ
1993	12	18	15	4	51	9433	2393	66	395	[4]		320						8		MR	RRLJ
1993	12	18	18	21	49	9370	2619	31	430	[4]		353						10		Assam.ID	RRLJ
1993	12	18	19	45	4	9341	2410		380	[4]		305						4		Manipur.ID	RRLJ
1993	12	20	18	36	42	9390	2250	86	388	[2]	420	440	-	-	-	-	-	16	-	MR-ID	ISC,NEIC,RRLJ
1993	12	20	22	51	48	9329	2622	12	300	[4]		230						5		Assam.ID	RRLJ
1993	12	21	6	17	58	9305	2652		321	[4]		250						4		Assam.ID	RRLJ
1993	12	22	4	9	52	9490	2500	113	349	[2]	370	365	-	-	-	-	-	11	-	MR-ID	ISC,NEIC,RRLJ
1993	12	22	10	6	34	9463	2486	46	386	[4]		311						7		Manipur.ID	RRLJ
1993	12	22	11	14	54	9360	2790	33	341	[1]	-		-	-	-	-	-	6	-	E.ID	ISC
1993	12	22	11	54	33	9298	2635	20	353	[4]		280						8		Assam.ID	RRLJ
1993	12	22	18	45	44	9215	2689	6	470	[4]		391						6		ID-BU	RRLJ
1993	12	22	19	4	17	9212	2736	16	373	[4]		299						8		Arunachal Prodesh.ID	RRLJ
1993	12	23	18	58	57	9186	2716	31	337	[4]		265						6		BU	RRLJ
1993	12	24	5	28	45	9386	2496	26	403	[4]		327						5		Manipur.ID	RRLJ
1993	12	24	7	28	29	9380	2523	28	387	[4]		312						7		Manipur.ID	RRLJ
1993	12	25	4	20	34	9308	2618	37	300	[4]		230						5		Assam.ID	RRLJ
1993	12	25	8	51	23	9352	2580	29	346	[4]		273						8		Assam.ID	RRLJ
1993	12	25	10	28	11	9232	2629	45	336	[4]		264						6		Assam.ID	RRLJ
1993	12	25	18	54	42	9274	2655	38	281	[4]		212						6		Assam.ID	RRLJ
1993	12	26	12	40	13	9495	2503	19	438	[4]		360						14		MR	RRLJ
1993	12	26	14	16	3	9296	2651	30	309	[4]		238						8		Assam.ID	RRLJ
1993	12	26	16	19	1	9257	2648	35	307	[4]		236						10		Assam.ID	RRLJ
1993	12	28	3	43	12	9146	2754	20	480	[4]		400						7		BU	RRLJ
1993	12	28	23	49	47	9332	2646	43	427	[4]		350						11		Assam.ID	RRLJ
1993	12	29	23	36	3	9218	2531	17	482	[4]		402						4		Meghalaya Felt	RRLJ
1993	12	30	10	18	1	8767	2730	28	380	[2]	410		-	-	-	-	-	15	-	NP	ISC
1993	12	30	10	18	4	9013	2200	45	480	[4]		400						4		BD	RRLJ
1993	12	31	16	34	57	9342	2775	8	412	[4]		336						12		Arunachal Prodesh.ID	RRLJ
1994	1	1	10	39	4	9407	2433	40	448	[4]	-	370	-	-	-	-	-	11	-	Manipur.ID	RRLJ
1994	1	1	23	24	40	9478	2496	58	438	[4]	-	360	-	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	1	1	12	34	46	9320	2240	48	459	[4]	-	380	-	-	-	-	-	4	-	MR	RRLJ
1994	1	2	13	20	50	9300	2770	29	427	[4]	-	350	-	-	-	-	-	6	-	ID-CH	ISC,RRLJ
1994	1	2	17	7	32	9386	2480	19	374	[4]	-	300	-	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	1	3	11	51	5	9268	2646	27	332	[4]	-	260	-	-	-	-	-	6	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS		RMK LOCATION	REFERENCES
1994	1	4	3	3	36	9062	2583	4	406	[4]	-	330	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1994	1	4	6	5	0	9282	2678	5	237	[4]	-	170	-	-	-	-	5	-	Assam.ID	RRLJ
1994	1	4	6	39	39	9321	2785	7	353	[4]	-	280	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	1	4	21	17	17	9173	2592	19	385	[4]	-	310	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	1	5	0	3	47	9296	2617	18	406	[4]	-	330	-	-	-	-	6	-	Assam.ID	RRLJ
1994	1	5	19	2	39	9029	2575	41	374	[4]	-	300	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	1	6	3	27	26	9434	2498	6	406	[4]	-	330	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	1	6	6	35	6	9311	2631	37	258	[4]	-	190	-	-	-	-	6	-	Assam.ID	RRLJ
1994	1	6	21	12	39	9222	2682	45	459	[4]	-	380	-	-	-	-	9	-	Assam.ID	RRLJ
1994	1	7	0	21	43	9276	2481	9	385	[4]	-	310	-	-	-	-	2	-	Assam.ID	RRLJ
1994	1	7	14	2	0	9246	2722	6	321	[4]	-	250	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	1	8	21	44	17	9036	2534	17	459	[4]	-	380	-	-	-	-	9	-	Meghalaya Felt	RRLJ
1994	1	9	1	44	24	9275	2720	50	364	[4]	-	290	-	-	-	-	9	-	Arunachal Prodesh.ID	RRLJ
1994	1	9	16	20	8	9334	2620	19	427	[4]	-	350	-	-	-	-	7	-	Assam.ID	RRLJ
1994	1	10	11	37	46	9253	2545	10	364	[4]	-	290	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	1	11	19	1	18	9245	2541	16	247	[4]	-	180	-	-	-	-	4	-	Meghalaya.ID	RRLJ
1994	1	12	14	53	3	9353	2519	20	334	[1]	-	-	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	1	13	8	23	0	9331	2663	17	247	[4]	-	180	-	-	-	-	6	-	Assam.ID	RRLJ
1994	1	13	14	14	14	9009	2609	24	353	[4]	-	280	-	-	-	-	5	-	Assam.ID	RRLJ
1994	1	13	18	41	10	9224	2299	30	417	[4]	-	340	-	-	-	-	5	-	BD	RRLJ
1994	1	14	0	6	48	9435	2405	23	491	[4]	-	410	-	-	-	-	7	-	MR	RRLJ
1994	1	14	2	32	8	9456	2472	157	427	[4]	-	350	-	-	-	-	4	-	MR-ID	RRLJ
1994	1	15	16	4	4	9212	2665	23	374	[4]	-	300	-	-	-	-	4	-	Assam.ID	RRLJ
1994	1	16	14	22	39	8914	2640	33	365	[2]	390	400	-	410	410	-	14	410	ID-BD	ISC,NEIC,BJI,RRLJ
1994	1	18	5	35	45	9488	2426	10	406	[4]	-	330	-	-	-	-	4	-	MR	RRLJ
1994	1	18	20	17	24	9313	2603	17	279	[4]	-	210	-	-	-	-	7	-	MR	RRLJ
1994	1	19	7	15	15	9273	2494	30	395	[4]	-	320	-	-	-	-	6	-	Assam.ID	RRLJ
1994	1	20	23	30	46	9340	2490	70	404	[2]	440	410	-	-	-	-	11	-	MR-ID	ISC ,NEIC,RRLJ
1994	1	22	21	47	8	9359	2191	20	469	[4]	-	390	-	-	-	-	10	-	MR	RRLJ
1994	1	24	17	55	22	9324	2628	12	300	[4]	-	230	-	-	-	-	4	-	Assam.ID	RRLJ
1994	1	26	0	56	59	9236	2630	24	300	[4]	-	230	-	-	-	-	5	-	Assam.ID	RRLJ
1994	1	26	2	12	36	8908	2625	45	459	[4]	-	380	-	-	-	-	7	-	BD	RRLJ
1994	1	26	6	6	33	9260	2662	10	290	[4]	-	220	-	-	-	-	6	-	Assam.ID	RRLJ
1994	1	26	16	38	11	9305	2627	34	279	[4]	-	210	-	-	-	-	6	-	Assam.ID	RRLJ
1994	1	27	10	56	52	9136	2484	38	448	[4]	-	370	-	-	-	-	10	-	BD	RRLJ
1994	1	29	10	1	53	9048	2668	-	469	[4]	-	390	-	-	-	-	8	-	Assam.ID	RRLJ
1994	1	29	18	28	38	9471	2444	128	396	[2]	430	430	-	-	-	-	21	-	MR-ID	ISC ,NEIC,BJI,RRLJ
1994	1	31	14	1	0	9284	2608	24	321	[4]	-	250	-	-	-	-	4	-	Assam.ID	RRLJ
1994	1	31	22	33	33	9441	2393	90	480	[4]	-	400	-	-	-	-	9	-	MR	RRLJ
1994	2	3	6	0	45	9349	2390	41	469	[4]	-	390	-	-	-	-	8	-	MR-ID	RRLJ
1994	2	3	7	48	26	9380	2360	45	406	[4]	-	330	-	-	-	-	5	-	MR	RRLJ
1994	2	3	18	32	16	9201	2561	14	395	[4]	-	320	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	2	4	19	15	57	9105	2468	32	438	[4]	-	360	-	-	-	-	8	-	BD	RRLJ
1994	2	6	1	35	54	9421	2367	45	469	[4]	-	390	-	-	-	-	11	-	MR	RRLJ
1994	2	6	5	11	11	9268	2671	54	374	[4]	-	300	-	-	-	-	8	-	Assam.ID	RRLJ
1994	2	7	3	18	59	9303	2630	8	237	[4]	-	170	-	-	-	-	4	-	Assam.ID	RRLJ
1994	2	8	16	31	11	9397	2492	63	522	[4]	-	440	-	-	-	-	6	-	MR	RRLJ
1994	2	9	1	45	25	9296	2739	49	406	[4]	-	330	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	2	10	1	25	53	9117	2563	27	385	[4]	-	310	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	2	10	22	57	45	9232	2738	23	395	[4]	-	320	-	-	-	-	11	-	Arunachal Prodesh.ID	RRLJ
1994	2	11	21	22	24	9425	2440	45	417	[4]	-	340	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	2	12	10	3	52	9469	2678	11	417	[4]	-	340	-	-	-	-	11	-	Nagaland.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	2	13	8	55	5	9421	2387	15	395	[4]	-	320	-	-	-	-	9	-	MR	RRLJ
1994	2	14	7	57	49	9363	2531	10	395	[4]	-	320	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	2	14	16	57	25	9430	2467	26	480	[4]	-	400	-	-	-	-	7	-	MR-ID	ISC,RRLJ
1994	2	14	17	13	46	9493	2495	22	417	[4]	-	340	-	-	-	-	14	-	MR	RRLJ
1994	2	15	2	35	27	9398	2440	37	438	[4]	-	360	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	2	17	1	41	34	9329	2544	16	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1994	2	19	16	1	23	9295	2696	12	321	[4]	-	250	-	-	-	-	5	-	Assam.ID	RRLJ
1994	2	20	0	18	10	9148	2676	36	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	2	20	10	2	25	9391	2523	20	448	[4]	-	370	-	-	-	-	13	-	Manipur.ID	RRLJ
1994	2	20	18	22	27	9364	2679	39	353	[4]	-	280	-	-	-	-	10	-	Assam.ID	RRLJ
1994	2	21	0	54	59	9205	2714	22	417	[4]	-	340	-	-	-	-	10	-	BU	RRLJ
1994	2	21	20	38	37	9200	2482	23	406	[4]	-	330	-	-	-	-	8	-	BD	RRLJ
1994	2	23	9	32	4	9212	2726	25	459	[4]	-	380	-	-	-	-	14	-	Arunachal Prodesh.ID	RRLJ
1994	2	23	15	21	46	9135	2569	10	417	[4]	-	340	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1994	2	23	21	1	53	9444	2350	45	417	[4]	-	340	-	-	-	-	6	-	MR	RRLJ
1994	2	25	14	1	41	9435	2535	12	448	[4]	-	370	-	-	-	-	16	-	Manipur.ID	RRLJ
1994	2	27	9	49	51	9288	2775	18	343	[4]	-	270	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	3	2	8	28	46	9165	2624	10	385	[4]	-	310	-	-	-	-	5	-	Assam.ID	RRLJ
1994	3	2	8	49	8	9228	2492	19	448	[4]	-	370	-	-	-	-	12	-	ID-BD	RRLJ
1994	3	3	3	11	17	9183	2542	34	438	[4]	-	360	-	-	-	-	9	-	Meghalaya.ID	RRLJ
1994	3	4	13	46	55	9277	2631	36	258	[4]	-	190	-	-	-	-	5	-	Assam.ID	RRLJ
1994	3	4	21	39	17	9386	2364	36	427	[4]	-	350	-	-	-	-	14	-	MR	RRLJ
1994	3	4	22	4	31	9422	2316	46	427	[4]	-	350	-	-	-	-	10	-	MR	RRLJ
1994	3	4	22	19	56	9328	2634	26	237	[4]	-	170	-	-	-	-	6	-	Assam.ID	RRLJ
1994	3	5	16	51	2	9466	2456	39	385	[4]	-	310	-	-	-	-	6	-	MR-ID	RRLJ
1994	3	5	20	44	24	9444	2498	13	491	[4]	-	410	-	-	-	-	12	-	Manipur.ID	RRLJ
1994	3	6	8	19	8	9439	2499	17	406	[4]	-	330	-	-	-	-	11	-	Manipur.ID	RRLJ
1994	3	6	21	0	17	9475	2509	7	374	[4]	-	300	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	3	7	19	50	36	9176	2490	16	374	[4]	-	300	-	-	-	-	8	-	BD	RRLJ
1994	3	8	17	33	39	9298	2358	21	469	[4]	-	390	-	-	-	-	8	-	MR	RRLJ
1994	3	11	6	23	31	9256	2206	45	522	[4]	-	440	-	-	-	-	11	-	BD	RRLJ
1994	3	11	6	23	35	9328	2215	68	420		450	-		490	490	-	90	490	MR-ID	ISC,BJI,NEIC,MOS
1994	3	12	9	29	53	9331	2673	6	321	[4]	-	250	-	-	-	-	6	-	Assam.ID	RRLJ
1994	3	12	11	59	39	9418	2503	33	374	[4]	-	300	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	3	12	17	14	23	9450	2410	117	353	[4]	-	280	-	-	-	-	10	-	MR	RRLJ
1994	3	12	18	10	43	9355	2261	33	427	[4]	-	350	-	-	-	-	9	-	MR	RRLJ
1994	3	14	18	39	16	9451	2255	41	448	[4]	-	370	-	-	-	-	11	-	MR	RRLJ
1994	3	15	1	28	29	9185	2559	7	385	[4]	-	310	-	-	-	-	7	-	Meghalaya.ID	RRLJ
1994	3	15	5	59	41	9474	2549	97	459	[4]	-	380	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	3	16	3	6	27	9097	2549	9	395	[4]	-	320	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1994	3	16	16	36	34	9266	2679	39	311	[4]	-	240	-	-	-	-	8	-	Assam.ID	RRLJ
1994	3	18	18	4	12	9270	2646	46	427	[4]	-	350	-	-	-	-	14	-	Assam.ID	RRLJ
1994	3	19	12	45	1	9263	2748	20	385	[4]	-	310	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	3	20	17	25	2	9333	2327	45	469	[4]	-	390	-	-	-	-	10	-	Mizoram.ID	RRLJ
1994	3	21	17	32	56	9036	2578	20	374	[4]	-	300	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	3	21	23	49	49	9288	2627	48	290	[4]	-	220	-	-	-	-	6	-	Assam.ID	RRLJ
1994	3	22	16	25	58	9279	2691	45	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	3	24	13	51	32	9127	2622	48	396	[2]	430	410	-	410	410	-	26	410	E.ID	ISC,BJI,NEIC,RRLJ
1994	3	26	11	5	58	9271	2633	13	332	[4]	-	260	-	-	-	-	5	-	Assam.ID	RRLJ
1994	3	26	13	9	13	9120	2579	15	427	[4]	-	350	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1994	3	28	12	59	39	9363	2516	11	459	[4]	-	380	-	-	-	-	12	-	Manipur.ID	RRLJ
1994	3	28	14	49	43	9064	2556	45	385	[4]	-	310	-	-	-	-	8	-	Meghalaya.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	MI	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	3	31	7	33	5	9119	2559	19	406	[4]	-	330	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1994	3	31	20	30	59	9153	2553	5	300	[4]	-	230	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	4	2	4	59	44	9240	2629	14	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	4	3	17	9	38	9400	2558	23	448	[4]	-	370	-	-	-	-	12	-	Nagaland.ID	RRLJ
1994	4	4	1	32	12	9087	2581	10	448	[4]	-	370	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	4	5	12	21	41	9352	2638	32	374	[4]	-	300	-	-	-	-	12	-	Assam.ID	RRLJ
1994	4	5	15	45	26	9252	2641	20	374	[4]	-	300	-	-	-	-	12	-	Assam.ID	RRLJ
1994	4	5	19	0	38	9300	2389	27	395	[4]	-	320	-	-	-	-	12	-	Mizoram.ID	RRLJ
1994	4	6	1	53	22	9371	2607	28	406	[4]	-	330	-	-	-	-	12	-	Assam.ID	RRLJ
1994	4	7	3	23	0	9171	2602	39	469	[4]	-	390	-	-	-	-	12	-	Assam.ID	RRLJ
1994	4	9	11	19	32	9481	2463	102	440		510	480	-	-	-	-	218	-	MR-ID	ISC,MOS,NEIC,BJI,RRLJ
1994	4	10	6	25	8	9287	2746	11	427	[4]	-	350	-	-	-	-	13	-	Arunachal Prodesh.ID	RRLJ
1994	4	10	10	14	50	9288	2744	14	385	[4]	-	310	-	-	-	-	12	-	Arunachal Prodesh.ID	RRLJ
1994	4	10	12	18	58	9289	2749	16	374	[4]	-	300	-	-	-	-	12	-	Arunachal Prodesh.ID	RRLJ
1994	4	11	1	14	2	9244	2763	38	385	[4]	-	310	-	-	-	-	11	-	Arunachal Prodesh.ID	RRLJ
1994	4	14	9	21	27	9417	2517	21	417	[4]	-	340	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	4	14	13	11	50	9354	2453	18	417	[4]	-	340	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	4	15	14	28	50	9048	2607	45	427	[2]	470	-		430	430	-	26	430	E.ID	ISC,NEIC,BJI,RRLJ
1994	4	17	18	51	18	9051	2611	15	385	[4]	-	310	-	-	-	-	5	-	Assam.ID	RRLJ
1994	4	18	14	40	59	9290	2622	59	404	[2]	440	410	-	370	370	-	12	370	E.ID	ISC,NEIC,BJI,RRLJ
1994	4	21	3	35	55	9322	2208	45	459	[4]	-	380	-	-	-	-	5	-	MR	RRLJ
1994	4	21	3	41	58	9430	2380	243	365	[2]	390		-	-	-	-	15	-	MR-ID	ISC
1994	4	21	3	42	1	9292	2336	15	480	[4]	-	400	-	-	-	-	5	-	Mizoram.ID	RRLJ
1994	4	24	8	44	33	9321	2430	32	411	[2]	450	390	-	-	-	-	22	-	MR-ID	ISC,RRLJ
1994	4	25	22	49	45	9420	2460	32	448	[4]	-	370	-	-	-	-	8	-	MR-ID	ISC,RRLJ
1994	4	26	3	8	36	9143	2739	5	332	[4]	-	260	-	-	-	-	6	-	BU	RRLJ
1994	4	26	19	7	14	8991	2626	45	406	[4]	-	330	-	-	-	-	6	-	Assam.ID	RRLJ
1994	4	28	11	25	35	9279	2676	14	374	[4]	-	300	-	-	-	-	7	-	Assam.ID	RRLJ
1994	4	28	17	33	19	9413	2537	22	427	[4]	-	350	-	-	-	-	12	-	Manipur.ID	RRLJ
1994	4	29	1	48	14	9274	2662	29	237	[4]	-	170	-	-	-	-	8	-	Assam.ID	RRLJ
1994	4	30	1	55	13	9358	2712	11	300	[4]	-	230	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	4	30	9	1	54	9450	2690	39	469	[4]	-	390	-	-	-	-	4	-	E.ID	ISC,RRLJ
1994	4	30	11	34	5	9363	2509	18	374	[4]	-	300	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	4	30	13	11	27	9282	2666	26	269	[4]	-	200	-	-	-	-	10	-	Assam.ID	RRLJ
1994	4	30	22	27	8	9235	2668	32	364	[4]	-	290	-	-	-	-	11	-	Assam.ID	RRLJ
1994	4	30	22	28	57	9233	2668	27	364	[4]	-	290	-	-	-	-	12	-	Assam.ID	RRLJ
1994	5	1	13	3	5	9320	2420	180	365	[2]	390	380	-	-	-	-	13	-	MR-ID	ISC,RRLJ
1994	5	2	8	58	6	9432	2470	58	480	[4]	-	400	-	-	-	-	14	-	Manipur.ID	RRLJ
1994	5	3	3	21	39	9218	2672	25	353	[4]	-	280	-	-	-	-	8	-	Assam.ID	RRLJ
1994	5	4	13	53	5	9266	2693	38	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1994	5	4	16	39	47	9012	2548	19	427	[4]	-	350	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	5	5	10	43	1	9444	2478	59	410		500	480	-	-	-	-	122	-	MR-ID	ISC,MOS,NEIC,BJI,RRLJ
1994	5	5	13	37	59	9420	2521	114	438	[4]	-	360	-	-	-	-	16	-	Manipur.ID	RRLJ
1994	5	5	23	45	6	9373	2646	21	364	[4]	-	290	-	-	-	-	14	-	Assam.ID	RRLJ
1994	5	6	1	42	36	9397	2657	13	406	[4]	-	330	-	-	-	-	10	-	Assam.ID	RRLJ
1994	5	6	6	24	2	9150	2570	9	364	[4]	-	290	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	5	6	11	21	22	9489	2658	36	438	[4]	-	360	-	-	-	-	9	-	Nagaland.ID	RRLJ
1994	5	6	17	52	40	9361	2640	33	388	[2]	420	400	-	-	-	-	29	-	E.ID	ISC,NEIC,RRLJ
1994	5	6	18	9	39	9347	2641	40	448	[4]	-	370	-	-	-	-	9	-	Assam.ID	RRLJ
1994	5	6	22	24	57	9481	2529	20	374	[4]	-	300	-	-	-	-	6	-	MR-ID	RRLJ
1994	5	7	17	35	41	9330	2653	26	269	[4]	-	200	-	-	-	-	7	-	Assam.ID	RRLJ
1994	5	8	15	15	44	9392	2378	27	438	[4]	-	360	-	-	-	-	8	-	MR	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	5	8	16	3	38	9303	2654	7	311	[4]	-	240	-	-	-	-	8	-	Assam.ID	RRLJ
1994	5	8	21	19	23	9414	2326	7	385	[4]	-	320	-	-	-	-	5	-	MR	RRLJ
1994	5	10	1	27	40	9467	2476	24	459	[4]	-	380	-	-	-	-	10	-	Manipur.ID	RRLJ
1994	5	13	1	58	39	9263	2692	21	417	[4]	-	340	-	-	-	-	10	-	Assam.ID	RRLJ
1994	5	13	13	0	43	9255	2701	45	353	[4]	-	280	-	-	-	-	9	-	Arunachal Prodesh.ID	RRLJ
1994	5	13	16	46	34	9197	2734	20	300	[4]	-	230	-	-	-	-	6	-	BU	RRLJ
1994	5	14	5	34	36	9171	2568	22	406	[4]	-	330	-	-	-	-	12	-	Meghalaya.ID	RRLJ
1994	5	14	23	45	45	9308	2646	29	279	[4]	-	210	-	-	-	-	6	-	Assam.ID	RRLJ
1994	5	15	6	45	47	9250	2687	27	311	[4]	-	240	-	-	-	-	5	-	Assam.ID	RRLJ
1994	5	15	14	20	43	9319	2472	8	448	[4]	-	370	-	-	-	-	13	-	Manipur.ID	RRLJ
1994	5	16	9	15	9	9218	2671	31	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	5	16	19	2	11	9434	2357	32	480	[4]	-	400	-	-	-	-	14	-	MR	RRLJ
1994	5	16	21	15	41	9065	2367	20	427	[4]	-	350	-	-	-	-	6	-	BD	RRLJ
1994	5	17	9	3	3	9457	2553	28	607	[4]	-	520	-	-	-	-	10	-	Nagaland.ID	RRLJ
1994	5	17	20	4	56	9344	2781	31	343	[4]	-	270	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	5	17	22	44	51	9447	2485	19	438	[4]	-	360	-	-	-	-	15	-	Manipur.ID	RRLJ
1994	5	19	3	46	32	9494	2589	157	417	[4]	-	340	-	-	-	-	14	-	Nagaland.ID	RRLJ
1994	5	19	19	32	37	9288	2251	41	427	[4]	-	350	-	-	-	-	8	-	Mizoram.ID	RRLJ
1994	5	19	22	29	52	9254	2716	40	386	[4]	-	310	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1994	5	21	17	42	21	9326	2647	7	237	[4]	-	170	-	-	-	-	8	-	Assam.ID	RRLJ
1994	5	22	14	53	36	9337	2519	32	417	[4]	-	340	-	-	-	-	12	-	Assam.ID	RRLJ
1994	5	22	18	11	30	9478	2509	45	417	[4]	-	340	-	-	-	-	8	-	Manipur.ID	RRLJ
1994	5	23	18	1	6	8855	2768	26	438	[4]	-	360	-	-	-	-	12	-	Sikkim.ID	RRLJ
1994	5	24	4	58	3	9493	2750	25	364	[4]	-	290	-	-	-	-	8	-	Assam.ID	RRLJ
1994	5	25	0	39	7	9284	2718	13	290	[4]	-	220	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	5	25	7	38	53	8793	2760	51	419	[2]	460	480	-	410	410	-	18	410	NP	ISC,BJI,NEIC,RRLJ
1994	5	25	14	34	9	9021	2624	15	417	[4]	-	340	-	-	-	-	10	-	Assam.ID	RRLJ
1994	5	25	17	43	37	9371	2587	39	343	[4]	-	270	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	5	26	10	14	36	9226	2655	32	311	[4]	-	240	-	-	-	-	10	-	Assam.ID	RRLJ
1994	5	28	3	33	24	9365	2554	16	480	[4]	-	400	-	-	-	-	11	-	Nagaland.ID	RRLJ
1994	5	28	6	54	27	9496	2665	24	406	[4]	-	330	-	-	-	-	13	-	Nagaland.ID	RRLJ
1994	5	28	7	12	26	9410	2450	69	411	[2]	450	440	-	400	400	-	22	400	MR-ID	ISC,NEIC,BJI,RRLJ
1994	5	29	8	10	25	9227	2611	19	258	[4]	-	190	-	-	-	-	8	-	Assam.ID	RRLJ
1994	5	29	14	11	51	9418	2054	40	610		610	590	-	-	-		725	-	MR	ISC,BJI,NEIC,MOS,HRV,RRLJ
1994	5	29	14	35	57	9415	2053	63	419	[2]	460	470	-	-	-	-	42	-	MR	ISC,NEIC,MOS,BJI,RRLJ
1994	5	29	14	53	0	9416	2060	46	411	[2]	450	510	-	-	-	-	43	-	MR	ISC,MOS,NEIC,BJI,RRLJ
1994	5	29	15	8	15	9420	2070	62	380	[2]	410	480	-	-	-	-	17	-	MR	ISC,NEIC,RRLJ
1994	5	29	21	18	43	9489	2593	123	491	[4]	-	410	-	-	-	-	12	-	Nagaland.ID	RRLJ
1994	5	30	0	8	4	9482	2704	14	417	[4]	-	340	-	-	-	-	6	-	Assam.ID	RRLJ
1994	5	30	5	6	21	9262	2705	16	364	[4]	-	290	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1994	5	30	8	36	14	9265	2674	44	406	[4]	-	330	-	-	-	-	11	-	Assam.ID	RRLJ
1994	6	1	2	15	22	9296	2300	33	396	[2]	430	400	-	-	-	-	18	-	ID-BD	ISC,NEIC,RRLJ
1994	6	1	20	54	27	9297	2640	40	385	[4]	-	310	-	-	-	-	16	-	Assam.ID	RRLJ
1994	6	1	23	53	50	9427	2769	33	385	[4]	-	310	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	6	2	13	26	9	9490	2519	100	396	[2]	430	360	-	380	380	-	34	380	MR-ID	ISC,NEIC,BJI,RRLJ
1994	6	3	19	52	9	9386	2768	16	406	[4]	-	330	-	-	-	-	4	-	Arunachal Prodesh.ID	RRLJ
1994	6	4	2	7	41	9308	2645	40	417	[4]	-	340	-	-	-	-	13	-	Assam.ID	RRLJ
1994	6	4	15	37	38	9127	2691	7	364	[4]	-	290	-	-	-	-	4	-	BU	RRLJ
1994	6	4	17	35	7	9267	2624	23	290	[4]	-	220	-	-	-	-	5	-	Assam.ID	RRLJ
1994	6	6	2	21	47	9348	2513	21	427	[4]	-	350	-	-	-	-	8	-	Manipur.ID	RRLJ
1994	6	6	13	56	45	9307	2588	34	395	[4]	-	320	-	-	-	-	7	-	Assam.ID	RRLJ
1994	6	8	16	57	20	9237	2577	16	406	[4]	-	330	-	-	-	-	13	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Mi	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	6	8	20	28	48	9431	2453	45	385	[4]	-	310	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	6	9	6	0	19	9142	2570	16	448	[4]	-	370	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1994	6	9	9	5	56	9135	2740	34	353	{4}	-	280	-	-	-	-	5	-	BU	RRLJ
1994	6	9	18	33	55	9452	2591	20	353	[4]	-	280	-	-	-	-	5	-	Nagaland.ID	RRLJ
1994	6	9	22	53	6	9219	2430	53	396	[2]	430	420	-	-	-	-	23	-	ID-BD	ISC,NEIC,RRLJ
1994	6	10	0	47	18	9218	2737	19	374	{4}	-	300	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	6	11	20	48	14	9271	2703	11	353	[4]	-	280	-	-	-	-	12	-	Arunachal Prodesh.ID	RRLJ
1994	6	12	6	41	37	9244	2652	60	364	[4]	-	290	-	-	-	-	7	-	Assam.ID	RRLJ
1994	6	13	4	49	11	9135	2727	14	459	[4]	-	380	-	-	-	-	13	-	BU	RRLJ
1994	6	14	10	4	50	9017	2771	53	480	[4]	-	400	-	-	-	-	13	-	BU	RRLJ
1994	6	14	16	6	59	9342	2401	45	448	[4]	-	370	-	-	-	-	11	-	ID-MR	RRLJ
1994	6	15	9	12	1	9435	2796	23	353	[4]	-	280	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	6	15	14	43	38	9552	2670	91	343	[4]	-	270	-	-	-	-	12	-	MR	RRLJ
1994	6	15	22	16	13	9406	2063	72	411	[2]	450	430	-	-	-	-	26	-	MR	ISC,BJI,NEIC,RRLJ
1994	6	16	23	17	4	9333	2160	9	438	[4]	-	360	-	-	-	-	10	-	MR	RRLJ
1994	6	18	1	23	8	9467	2443	39	406	[4]	-	330	-	-	-	-	5	-	MR	RRLJ
1994	6	18	3	37	31	9426	2527	17	406	{4}	-	330	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	6	18	14	56	7	9251	2776	11	395	[4]	-	320	-	-	-	-	16	-	Arunachal Prodesh.ID	RRLJ
1994	6	19	2	5	6	9309	2490	38	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ
1994	6	20	0	33	57	9344	2640	46	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1994	6	22	8	3	44	9230	2633	37	394	[4]	-	290	-	-	-	-	8	-	Assam.ID	RRLJ
1994	6	22	13	44	31	9188	2384	25	427	[4]	-	350	-	-	-	-	10	-	Tripura.ID	RRLJ
1994	6	23	23	4	23	9234	2499	34	459	[4]	-	380	-	-	-	-	12	-	ID-BD	RRLJ
1994	6	24	9	44	38	9499	2461	44	395	[4]	-	320	-	-	-	-	7	-	MR	RRLJ
1994	6	24	20	55	51	9354	2628	42	395	[4]	-	320	-	-	-	-	9	-	Assam.ID	RRLJ
1994	6	25	8	32	47	8615	2768	41	586	[4]	-	500	-	-	-	-	14	-	NP	RRLJ
1994	6	25	8	38	46	9494	2527	126	448	[4]	-	370	-	-	-	-	13	-	MR	RRLJ
1994	6	25	13	57	9	9429	2627	43	395	[4]	-	320	-	-	-	-	13	-	Nagaland.ID	RRLJ
1994	6	26	12	23	28	9335	2457	27	417	[4]	-	340	-	-	-	-	10	-	MR	RRLJ
1994	6	26	13	33	5	9211	2622	16	374	[4]	-	300	-	-	-	-	11	-	Assam.ID	RRLJ
1994	6	26	14	5	25	9225	2614	22	321	[4]	-	250	-	-	-	-	8	-	Assam.ID	RRLJ
1994	6	26	20	34	26	9289	2679	13	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	6	28	4	6	36	9420	2210	136	349	[2]	370	410	-	-	-	-	16	-	MR	ISC,RRLJ
1994	6	28	12	32	34	9258	2665	24	406	[4]	-	330	-	-	-	-	17	-	Assam.ID	RRLJ
1994	6	29	9	27	51	9316	2609	13	290	[4]	-	220	-	-	-	-	8	-	Assam.ID	RRLJ
1994	7	1	1	48	37	9427	2742	20	374	[4]	-	300	-	-	-	-	7	-	Assam.ID	RRLJ
1994	7	1	3	5	2	9302	2606	21	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	7	1	8	42	8	9279	2652	29	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	7	1	13	52	4	9231	2634	48	353	[4]	-	280	-	-	-	-	10	-	Assam.ID	RRLJ
1994	7	2	16	22	22	9481	2452	36	417	[4]	-	340	-	-	-	-	9	-	MR	RRLJ
1994	7	2	22	37	10	9311	2647	38	395	[4]	-	320	-	-	-	:	6	-	Assam.ID	RRLJ
1994	7	3	1	7	30	9152	2724	8	406	[4]	-	330	-	-	-	-	10	-	BU	RRLJ
1994	7	3	19	5	15	9232	2634	33	364	[4]	-	290	-	-	-	-	7	-	Assam.ID	RRLJ
1994	7	4	4	26	24	9314	2620	13	332	[4]	-	260	-	-	-	-	4	-	Assam.ID	RRLJ
1994	7	4	7	18	51	9244	2624	19	343	[4]	-	270	-	-	-	-	7	-	Assam.ID	RRLJ
1994	7	4	14	15	14	9321	2631	30	343	[4]	-	270	-	-	-	-	10	-	Assam.ID	RRLJ
1994	7	6	1	9	15	9266	2709	20	332	[4]	-	260	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	7	6	1	30	28	9268	2657	32	332	[4]	-	260	-	-	-	-	9	-	Assam.ID	RRLJ
1994	7	6	12	38	27	9473	2595	123	406	[4]	-	330	-	-	-	-	17	-	Nagaland.ID	RRLJ
1994	7	6	15	29	58	9414	2364	45	459	[4]	-	380	-	-	-	-	8	-	MR	RRLJ
1994	7	6	18	16	35	9407	2426	53	448	[4]	-	370	-	-	-	-	8	-	Manipur.ID	RRLJ
1994	7	7	3	8	30	9246	2765	14	417	[4]	-	340	-	-	-	-	13	-	Arunachal Prodesh.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	6	8	20	28	48	9431	2453	45	385	[4]	-	310	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	6	9	6	0	19	9142	2570	16	448	[4]	-	370	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1994	6	9	9	5	56	9135	2740	34	353	[4]	-	280	-	-	-	-	5	-	BU	RRLJ
1994	6	9	18	33	55	9452	2591	20	353	[4]	-	280	-	-	-	-	5	-	Nagaland.ID	RRLJ
1994	6	9	22	53	6	9219	2430	53	396	[2]	430	420	-	-	-	-	23	-	ID-BD	ISC,NEIC,RRLJ
1994	6	10	0	47	18	9218	2737	19	374	[4]	-	300	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	6	11	20	48	14	9271	2703	11	353	[4]	-	280	-	-	-	-	12	-	Arunachal Prodesh.ID	RRLJ
1994	6	12	6	41	37	9244	2652	60	364	[4]	-	290	-	-	-	-	7	-	Assam.ID	RRLJ
1994	6	13	4	49	11	9135	2727	14	459	[4]	-	380	-	-	-	-	13	-	BU	RRLJ
1994	6	14	10	4	50	9017	2771	53	480	[4]	-	400	-	-	-	-	13	-	BU	RRLJ
1994	6	14	16	6	59	9342	2401	45	448	[4]	-	370	-	-	-	-	11	-	ID-MR	RRLJ
1994	6	15	9	12	1	9435	2796	23	353	[4]	-	280	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	6	15	14	43	38	9552	2670	91	343	[4]	-	270	-	-	-	-	12	-	MR	RRLJ
1994	6	15	22	16	13	9406	2063	72	411	[2]	450	430	-	-	-	-	26	-	MR	ISC,BJI,NEIC,RRLJ
1994	6	16	23	17	4	9333	2160	9	438	[4]	-	360	-	-	-	-	10	-	MR	RRLJ
1994	6	18	1	23	8	9467	2443	39	406	[4]	-	330	-	-	-	-	5	-	MR	RRLJ
1994	6	18	3	37	31	9426	2527	17	406	[4]	-	330	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	6	18	14	56	7	9251	2776	11	395	[4]	-	320	-	-	-	-	16	-	Arunachal Prodesh.ID	RRLJ
1994	6	19	2	5	6	9309	2490	38	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ
1994	6	20	0	33	57	9344	2640	46	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1994	6	22	8	3	44	9230	2633	37	394	[4]	-	290	-	-	-	-	8	-	Assam.ID	RRLJ
1994	6	22	13	44	31	9188	2384	25	427	[4]	-	350	-	-	-	-	10	-	Tripura.ID	RRLJ
1994	6	23	23	4	23	9234	2499	34	459	[4]	-	380	-	-	-	-	12	-	ID-BD	RRLJ
1994	6	24	9	44	38	9499	2461	44	395	[4]	-	320	-	-	-	-	7	-	MR	RRLJ
1994	6	24	20	55	51	9354	2628	42	395	[4]	-	320	-	-	-	-	9	-	Assam.ID	RRLJ
1994	6	25	8	32	47	8615	2768	41	586	[4]	-	500	-	-	-	-	14	-	NP	RRLJ
1994	6	25	8	38	46	9494	2527	126	448	[4]	-	370	-	-	-	-	13	-	MR	RRLJ
1994	6	25	13	57	9	9429	2627	43	395	[4]	-	320	-	-	-	-	13	-	Nagaland.ID	RRLJ
1994	6	26	12	23	28	9335	2457	27	417	[4]	-	340	-	-	-	-	10	-	MR	RRLJ
1994	6	26	13	33	5	9211	2622	16	374	[4]	-	300	-	-	-	-	11	-	Assam.ID	RRLJ
1994	6	26	14	5	25	9225	2614	22	321	[4]	-	250	-	-	-	-	8	-	Assam.ID	RRLJ
1994	6	26	20	34	26	9289	2679	13	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	6	28	4	6	36	9420	2210	136	349	[2]	370	410	-	-	-	-	16	-	MR	ISC,RRLJ
1994	6	28	12	32	34	9258	2665	24	406	[4]	-	330	-	-	-	-	17	-	Assam.ID	RRLJ
1994	6	29	9	27	51	9316	2609	13	290	[4]	-	220	-	-	-	-	8	-	Assam.ID	RRLJ
1994	7	1	1	48	37	9427	2742	20	374	[4]	-	300	-	-	-	-	7	-	Assam.ID	RRLJ
1994	7	1	3	5	2	9302	2606	21	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	7	1	8	42	8	9279	2652	29	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	7	1	13	52	4	9231	2634	48	353	[4]	-	280	-	-	-	-	10	-	Assam.ID	RRLJ
1994	7	2	16	22	22	9481	2452	36	417	[4]	-	340	-	-	-	-	9	-	MR	RRLJ
1994	7	2	22	37	10	9311	2647	38	395	[4]	-	320	-	-	-	-	6	-	Assam.ID	RRLJ
1994	7	3	1	7	30	9152	2724	8	406	[4]	-	330	-	-	-	-	10	-	BU	RRLJ
1994	7	3	19	5	15	9232	2634	33	364	[4]	-	290	-	-	-	-	7	-	Assam.ID	RRLJ
1994	7	4	4	26	24	9314	2620	13	332	[4]	-	260	-	-	-	-	4	-	Assam.ID	RRLJ
1994	7	4	7	18	51	9244	2624	19	343	[4]	-	270	-	-	-	-	7	-	Assam.ID	RRLJ
1994	7	4	14	15	14	9321	2631	30	343	[4]	-	270	-	-	-	-	10	-	Assam.ID	RRLJ
1994	7	6	1	9	15	9266	2709	20	332	[4]	-	260	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	7	6	1	30	28	9268	2657	32	332	[4]	-	260	-	-	-	-	9	-	Assam.ID	RRLJ
1994	7	6	12	38	27	9473	2595	123	406	[4]	-	330	-	-	-	-	17	-	Nagaland.ID	RRLJ
1994	7	6	15	29	58	9414	2364	45	459	[4]	-	380	-	-	-	-	8	-	MR	RRLJ
1994	7	6	18	16	35	9407	2426	53	448	[4]	-	370	-	-	-	-	8	-	Manipur.ID	RRLJ
1994	7	7	3	8	30	9246	2765	14	417	[4]	-	340	-	-	-	-	13	-	Arunachal Prodesh.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS		RMK LOCATION	REFERENCES
1994	8	7	2	6	59	9286	2199	16	501	[4]	-	420	-	-	-	-	-	6	-	MR	RRLJ
1994	8	8	23	43	54	9418	2488	21	448	[4]	-	370	-	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	8	9	3	35	31	9452	2475	12	427	[4]	-	350	-	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	8	9	18	33	55	9412	2462	45	459	[4]	-	380	-	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	8	10	0	49	13	9457	2484	19	374	[4]	-	300	-	-	-	-	-	10	-	Manipur.ID	RRLJ
1994	8	10	18	5	57	9187	2566	6	395	[4]	-	320	-	-	-	-	-	9	-	Meghalaya.ID	RRLJ
1994	8	10	18	21	24	9050	2532	9	459	[4]	-	380	-	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1994	8	11	12	12	16	9095	2532	21	417	[4]	-	340	-	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1994	8	11	16	29	5	9340	2432	8	427	[4]	-	350	-	-	-	-	-	11	-	Manipur.ID	RRLJ
1994	8	11	20	41	1	9333	2493	13	427	[4]	-	350	-	-	-	-	-	10	-	Manipur.ID	RRLJ
1994	8	12	0	15	25	9399	2377	25	501	[4]	-	420	-	-	-	-	-	8	-	MR	RRLJ
1994	8	12	4	58	38	9394	2324	48	459	[4]	-	380	-	-	-	-	-	6	-	MR	RRLJ
1994	8	12	17	18	2	8835	2428	12	459	[4]	-	380	-	-	-	-	-	8	-	West Bengal	RRLJ
1994	8	14	7	6	11	9259	2666	6	374	[4]	-	300	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	8	14	10	8	12	9199	2548	25	395	[4]	-	320	-	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	8	14	16	20	18	9007	2452	20	427	[4]	-	350	-	-	-	-	-	5	-	BD	RRLJ
1994	8	15	16	56	13	9423	2366	45	427	[4]	-	350	-	-	-	-	-	4	-	MR	RRLJ
1994	8	15	17	26	52	9445	2424	26	438	[4]	-	360	-	-	-	-	-	5	-	MR	RRLJ
1994	8	16	19	54	18	9326	2638	39	363	[4]	-	290	-	-	-	-	-	12	-	Assam.ID	RRLJ
1994	8	16	19	59	8	8699	2684	-	501	[4]	-	420	-	-	-	-	-	14	-	NP	RRLJ
1994	8	17	10	10	36	9481	2540	33	406	[4]	-	330	-	-	-	-	-	6	-	MR-ID	RRLJ
1994	8	17	14	44	52	9241	2377	-	427	[4]	-	350	-	-	-	-	-	7	-	Mizoram.ID	RRLJ
1994	8	17	19	53	8	9230	2368	21	491	[4]	-	410	-	-	-	-	-	14	-	ID-BD	RRLJ
1994	8	17	20	21	44	9283	2795	36	353	[4]	-	280	-	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	8	17	21	41	29	9051	2491	45	438	[4]	-	360	-	-	-	-	-	7	-	BD	RRLJ
1994	8	18	20	59	25	9257	2679	24	332	[4]	-	260	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	8	20	22	58	41	9254	2708	42	343	[4]	-	270	-	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1994	8	21	1	18	23	9334	2649	15	290	[4]	-	220	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	8	21	4	59	56	9306	2645	37	247	[4]	-	180	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	8	21	5	7	41	9274	2649	38	311	[4]	-	240	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	8	21	18	48	35	9311	2542	39	343	[4]	-	270	-	-	-	-	-	7	-	Assam.ID	RRLJ
1994	8	22	15	52	58	9305	2651	22	226	[4]	-	160	-	-	-	-	-	5	-	Assam.ID	RRLJ
1994	8	25	7	40	50	9073	2642	9	374	[4]	-	300	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	8	25	10	42	48	9282	2660	32	343	[4]	-	270	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	8	25	14	18	8	9419	2509	17	427	[4]	-	350	-	-	-	-	-	4	-	Manipur.ID	RRLJ
1994	8	26	12	54	7	9011	2714	45	480	[4]	-	400	-	-	-	-	-	9	-	BU	RRLJ
1994	8	26	17	27	23	9342	2641	30	395	[4]	-	320	-	-	-	-	-	11	-	Assam.ID	RRLJ
1994	8	27	11	20	37	9300	2623	14	343	[4]	-	270	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	8	28	15	40	38	9313	2537	32	374	[4]	-	300	-	-	-	-	-	12	-	Assam.ID	RRLJ
1994	8	28	15	42	1	9346	2555	17	385	[4]	-	310	-	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	8	28	16	17	35	9350	2554	20	385	[4]	-	310	-	-	-	-	-	7	-	Nagaland.ID	RRLJ
1994	8	28	17	28	48	9452	2481	16	417	[4]	-	340	-	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	8	29	11	58	58	9219	2688	30	448	[4]	-	370	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	8	29	12	8	51	9218	2791	21	438	[4]	-	360	-	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1994	8	29	19	46	25	9488	2480	45	406	[4]	-	330	-	-	-	-	-	9	-	MR-ID	RRLJ
1994	9	1	19	0	31	9346	2533	29	406	[4]	-	330	-	-	-	-	-	6	-	Nagaland.ID	RRLJ
1994	9	2	16	51	38	9333	2686	33	406	[4]	-	330	-	-	-	-	-	12	-	Assam.ID	RRLJ
1994	9	3	15	46	16	9459	2483	92	512	[4]	-	430	-	-	-	-	-	31	-	Manipur.ID	RRLJ
1994	9	4	4	22	25	9398	2498	10	459	[4]	-	380	-	-	-	-	-	12	-	Manipur.ID	RRLJ
1994	9	4	6	2	23	9407	2487	11	385	[4]	-	310	-	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	9	5	0	14	7	9390	2356	16	480	[4]	-	400	-	-	-	-	-	6	-	MR	RRLJ
1994	9	5	8	20	39	9172	2574	7	385	[4]	-	310	-	-	-	-	-	10	-	Meghalaya.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	9	5	14	56	34	9355	2500	32	438	[4]	-	360	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	9	5	21	51	39	9282	2667	33	311	[4]	-	240	-	-	-	-	6	·	Assam.ID	RRLJ
1994	9	6	15	17	12	9303	2667	44	491	[4]	-	410	-	-	-	-	12	-	Assam.ID	RRLJ
1994	9	6	15	36	5	9329	2658	20	279	[4]	-	210	-	-	-	-	4	·	Assam.ID	RRLJ
1994	9	6	19	48	11	9255	2736	13	395	[4]	-	320	-	-	-	-	6	·	Arunachal Prodesh.ID	RRLJ
1994	9	7	0	8	17	9136	2644	7	417	[4]	-	340	-	-	-	-	9	·	Assam.ID	RRLJ
1994	9	7	3	11	43	9227	2770	10	406	[4]	-	330	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1994	9	7	3	14	54	9203	2446	15	406	[4]	-	330	-	-	-	-	8	-	BD	RRLJ
1994	9	7	9	18	11	9157	2506	30	459	[4]	-	380	-	-	-	-	9	-	BD	RRLJ
1994	9	7	12	5	59	9246	2719	22	364	[4]	-	290	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	9	8	8	17	43	9400	2537	26	406	[4]	-	330	-	-	-	-	12	·	Manipur.ID	RRLJ
1994	9	9	14	38	29	9274	2735	25	448	[4]	-	370	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1994	9	14	19	26	41	9419	2445	41	469	[4]	-	390	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	9	15	0	32	36	9289	2658	5	395	[4]	-	320	-	-	-	-	4	-	Assam.ID	RRLJ
1994	9	15	7	39	36	9167	2568	18	385	[4]	-	310	-	-	-	-	7	·	Meghalaya.ID	RRLJ
1994	9	15	12	34	26	9156	2469	11	459	[4]	-	380	-	-	-	-	7	-	BD	RRLJ
1994	9	15	15	43	41	9022	2577	10	469	[4]	-	390	-	-	-	-	8	·	Meghalaya.ID	RRLJ
1994	9	16	8	39	19	9469	2573	23	374	[4]	-	300	-	-	-	-	6	·	Nagaland.ID	RRLJ
1994	9	17	8	41	37	9209	2348	40	480	[4]	-	400	-	-	-	-	10	-	BD	RRLJ
1994	9	19	7	29	11	9377	2413	32	459	[4]	-	380	-	-	-	-	6	·	Manipur.ID	RRLJ
1994	9	19	18	5	40	9468	2533	17	385	[4]	-	310	-	-	-	-	6	·	Manipur.ID	RRLJ
1994	9	21	3	39	9	9339	2640	46	501	[4]	-	420	-	-	-	-	13	-	Assam.ID	RRLJ
1994	9	22	5	11	22	9331	2460	19	427	[4]	-	350	-	-	-	-	7	·	Manipur.ID	RRLJ
1994	9	22	17	27	0	9230	2641	18	427	[4]	-	350	-	-	-	-	9	·	Assam.ID	RRLJ
1994	9	23	4	3	51	9405	2185	11	501	[4]	-	420	-	-	-	-	7	-	MR	RRLJ
1994	9	23	4	13	48	9368	2162	19	522	[4]	-	440	-	-	-	-	10	-	MR	RRLJ
1994	9	23	10	28	44	9314	2634	46	353	[4]	-	280	-	-	-	-	10	·	Assam.ID	RRLJ
1994	9	23	16	47	8	9272	2496	28	395	[4]	-	320	-	-	-	-	6	·	Assam.ID	RRLJ
1994	9	26	11	0	16	9451	2525	45	448	[4]	-	370	-	-	-	-	5	·	Manipur.ID	RRLJ
1994	9	26	16	40	6	9347	2641	8	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	9	26	17	40	21	9335	2637	27	331	[4]	-	260	-	-	-	-	6	-	Assam.ID	RRLJ
1994	9	27	5	28	44	9434	2517	6	395	[4]	-	320	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	9	27	13	35	10	9418	2571	7	343	[4]	-	270	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	9	27	17	24	41	9414	2342	27	417	[4]	-	340	-	-	-	-	6	-	MR	RRLJ
1994	9	28	4	4	33	9084	2536	9	480	[4]	-	400	-	-	-	-	9	-	Meghalaya.ID	RRLJ
1994	9	28	16	46	2	9491	2257	35	351	[1]	-	-	-	-	-	-	8	-	MR	RRLJ
1994	9	29	18	4	37	9229	2739	16	427	[4]	-	350	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1994	9	29	18	30	36	9318	2640	38	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1994	10	1	0	54	29	9305	2648	39	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	10	2	3	57	9	9349	2477	18	448	[4]	-	370	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	10	3	4	35	8	9312	2676	25	374	[4]	-	300	-	-	-	-	8	-	Assam.ID	RRLJ
1994	10	5	3	46	59	9319	2641	37	342	[4]	-	270	-	-	-	-	5	-	Assam.ID	RRLJ
1994	10	7	14	10	31	9460	2578	18	417	[4]	-	340	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	10	7	19	36	43	9315	2320	9	417	[4]	-	340	-	-	-	-	6	-	Mizoram.ID	RRLJ
1994	10	8	7	24	29	9476	2462	29	459	[4]	-	380	-	-	-	-	6	-	MR-ID	RRLJ
1994	10	8	9	9	45	9127	2553	45	448	[4]	-	370	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	10	8	15	44	57	9268	2462	24	406	[4]	-	330	-	-	-	-	5	-	Assam.ID	RRLJ
1994	10	8	21	15	40	9162	2562	14	374	[4]	-	300	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1994	10	12	8	59	5	9207	2737	34	364	[4]	-	290	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	10	12	21	27	34	9364	2435	5	469	[4]	-	390	-	-	-	-	7	-	Manipur.ID	RRLJ
1994	10	13	17	43	41	9051	2275	45	533	[4]	-	450	-	-	-	-	6	-	BD	RRLJ
1994	10	15	22	59	28	9263	2698	36	427	[4]	-	350	-	-	-	-	6	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms	.	Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	10	16	4	45	3	9486	2664	12	427	[4]	-	350	-	-	-	-	7	-	Nagaland.ID	RRLJ
1994	10	16	17	25	29	9260	2699	44	427	[4]	-	350	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1994	10	17	22	25	58	9107	2542	29	469	[4]	-	390	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1994	10	18	3	15	28	9286	2726	12	417	[4]	-	340	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1994	10	18	14	17	7	9427	2378	26	501	[4]	-	420	-	-	-	-	6	-	MR	RRLJ
1994	10	18	17	0	3	9426	2420	46	522	[4]	-	440	-	-	-	-	12	-	Manipur.ID	RRLJ
1994	10	18	20	45	1	9412	2411	45	554	[4]	-	470	-	-	-	-	13	-	Manipur.ID	RRLJ
1994	10	19	11	40	4	9500	2496	20	385	[4]	-	310	-	-	-	-	5	-	MR	RRLJ
1994	10	20	15	4	23	9294	2489	5	406	[4]	-	330	-	-	-	-	5	-	Assam.ID	RRLJ
1994	10	21	1	14	27	9361	2516	9	374	[4]	-	300	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	10	21	4	48	6	9226	2271	16	501	[4]	-	420	-	-	-	-	8	-	BD	RRLJ
1994	10	21	12	13	9	9082	2589	38	469	[4]	-	390	-	-	-	-	12	-	Meghalaya.ID	RRLJ
1994	10	23	14	11	18	9242	2787	26	385	[4]	-	310	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	10	24	10	43	31	9300	2644	34	406	[4]	-	330	-	-	-	-	8	-	Assam.ID	RRLJ
1994	10	24	15	55	20	9237	2678	43	353	[4]	-	280	-	-	-	-	5	-	Assam.ID	RRLJ
1994	10	25	7	29	6	9228	2699	20	543	[4]	-	460	-	-	-	-	15	-	Assam.ID	RRLJ
1994	10	25	9	3	27	9226	2688	7	522	[4]	-	440	-	-	-	-	12	-	Assam.ID	RRLJ
1994	10	25	13	9	16	9405	2793	23	459	[4]	-	380	-	-	-	-	15	-	Arunachal Prodesh.ID	RRLJ
1994	10	25	20	54	16	9236	2644	25	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1994	10	26	18	30	23	9337	2640	41	290	[4]	-	220	-	-	-	-	6	-	Assam.ID	RRLJ
1994	10	26	18	59	37	9334	2637	41	290	[4]	-	220	-	-	-	-	7	-	Assam.ID	RRLJ
1994	10	28	23	38	17	9271	2628	14	374	[4]	-	300	-	-	-	-	5	-	Assam.ID	RRLJ
1994	10	31	5	2	20	9378	2781	35	417	[4]	-	340	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1994	11	1	3	38	51	9272	2682	19	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	1	7	15	29	9226	2720	19	364	[4]	-	290	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	11	3	8	57	51	9328	2764	24	395	[4]	-	320	-	-	-	-	11	-	Arunachal Prodesh.ID	RRLJ
1994	11	6	4	42	50	9437	2444	-	501	[4]	-	420	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	11	6	21	11	38	9298	2685	10	374	[4]	-	300	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	8	5	32	33	9293	2692	7	374	[4]	-	300	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	8	19	14	30	9387	2479	35	374	[4]	-	300	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	11	8	22	25	37	9421	2493	18	438	[4]	-	360	-	-	-	-	8	-	Manipur.ID	RRLJ
1994	11	9	3	45	7	9482	2362	45	512	[4]	-	430	-	-	-	-	6	-	MR	RRLJ
1994	11	9	16	13	56	9318	2779	17	.364	[4]	-	290	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	11	9	22	45	22	9236	2635	34	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	14	11	5	59	9245	2633	24	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	14	13	45	42	9248	2669	40	321	[4]	-	250	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	15	4	51	52	9248	2641	37	385	[4]	-	310	-	-	-	-	10	-	Assam.ID	RRLJ
1994	11	16	1	59	32	9276	2683	17	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	16	20	12	34	9275	2488	8	353	[4]	-	280	-	-	-	-	5	-	Assam.ID	RRLJ
1994	11	17	1	12	6	9188	2548	22	395	[4]	-	320	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1994	11	17	4	9	50	9264	2617	35	395	[4]	-	320	-	-	-	-	10	-	Assam.ID	RRLJ
1994	11	17	18	38	40	9298	2485	7	406	[4]	-	330	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	19	7	9	48	9431	2474	22	438	[4]	-	360	-	-	-	-	12	-	Manipur.ID	RRLJ
1994	11	20	21	25	25	9489	2266	23	543	[4]	-	460	-	-	-	-	4	-	MR	RRLJ
1994	11	21	1	12	37	8959	2701	45	533	[4]	-	450	-	-	-	-	6	-	BU	RRLJ
1994	11	21	10	16	37	9251	2284	13	417	[4]	-	340	-	-	-	-	5	-	ID-BD	RRLJ
1994	11	21	13	27	16	9232	2311	35	438	[4]	-	360	-	-	-	-	5	-	Mizoram.ID	RRLJ
1994	11	21	17	11	41	9320	2638	26	258	[4]	-	190	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	21	20	30	51	9217	2715	20	417	[4]	-	340	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	11	22	12	59	20	9218	2747	8	385	[4]	-	310	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	11	23	13	55	44	9301	2621	26	438	[4]	-	360	-	-	-	-	11	-	Assam.ID	RRLJ
1994	11	23	15	51	50	9279	2659	35	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb.	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1994	11	23	23	43	1	9369	2654	11	321	[4]	-	250	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	24	5	40	12	9486	2752	18	448	[4]	-	370	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	25	4	5	31	9287	2658	21	374	[4]	-	300	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	11	25	5	14	23	9444	2441	45	533	[4]	-	450	-	-	-	-	-	8	-	MR-ID	RRLJ
1994	11	25	21	2	12	9344	2160	34	554	[4]	-	470	-	-	-	-	-	21	-	MR	RRLJ
1994	11	26	2	16	7	9352	2531	23	406	[4]	-	330	-	-	-	-	-	10	-	Nagaland.ID	RRLJ
1994	11	27	2	50	14	9281	2760	44	406	[4]	-	330	-	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1994	11	28	0	38	21	9138	2509	33	417	[4]	-	340	-	-	-	-	-	5	-	ID-BD	RRLJ
1994	11	28	18	44	27	9265	2639	33	311	[4]	-	240	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	29	4	4	30	9269	2708	37	395	[4]	-	320	-	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	11	29	9	37	42	9260	2713	38	406	[4]	-	330	-	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	11	29	17	43	37	9030	2569	25	406	[4]	-	330	-	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	11	30	1	1	53	9296	2657	26	321	[4]	-	250	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	30	3	2	48	9326	2654	9	311	[4]	-	240	-	-	-	-	-	7	-	Assam.ID	RRLJ
1994	11	30	10	29	43	9296	2658	23	321	[4]	-	250	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	11	30	19	52	1	9390	2551	20	343	[4]	-	270	-	-	-	-	-	5	-	Manipur.ID	RRLJ
1994	12	1	10	48	12	9356	2466	25	448	[4]	-	370	-	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	12	1	13	12	53	9425	2459	31	406	[4]	-	330	-	-	-	-	-	6	-	Manipur.ID	RRLJ
1994	12	2	16	50	52	9176	2568	10	353	[4]	-	280	-	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1994	12	2	17	4	38	9209	2570	19	374	[4]	-	300	-	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1994	12	3	17	59	44	9468	2451	122	417	[4]	-	340	-	-	-	-	-	15	-	MR-ID	RRLJ
1994	12	4	6	26	50	9001	2648	45	427	[4]	-	350	-	-	-	-	-	7	-	Assam.ID	RRLJ
1994	12	4	7	53	13	9417	2526	26	406	[4]	-	330	-	-	-	-	-	9	-	Manipur.ID	RRLJ
1994	12	5	12	13	17	9324	2648	48	385	[4]	-	310	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	12	6	21	28	5	8889	2539	19	501	[4]	-	420	-	-	-	-	-	6	-	BD	RRLJ
1994	12	7	8	3	12	9099	2644	15	395	[4]	-	320	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	12	7	16	42	33	9245	2424	29	417	[4]	-	340	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	12	3	17	54	9156	2616	21	438	[4]	-	360	-	-	-	-	-	10	~-	Assam.ID	RRLJ
1994	12	17	1	54	20	9282	2627	22	364	[4]	-	290	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	17	23	54	6	9301	2630	27	343	[4]	-	270	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	20	17	3	37	9408	2561	15	417	[4]	-	340	-	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	12	21	23	8	12	9248	2798	17	438	[4]	-	360	-	-	-	-	-	8	-	CH	RRLJ
1994	12	22	0	48	13	9291	2581	14	374	[4]	-	300	-	-	-	-	-	8	-	Assam.ID	RRLJ
1994	12	22	1	13	23	9351	2356	25	459	[4]	-	380	-	-	-	-	-	6	-	MR	RRLJ
1994	12	22	4	32	46	9065	2591	9	406	[4]	-	330	-	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	12	22	14	46	13	9146	2579	11	364	[4]	-	290	-	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	12	23	12	18	6	9100	2643	25	406	[4]	-	330	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	23	16	55	24	9451	2557	20	427	[4]	-	350	-	-	-	-	-	8	-	Nagaland.ID	RRLJ
1994	12	23	22	16	53	9420	2591	31	374	[4]	-	300	-	-	-	-	-	6	-	Nagaland.ID	RRLJ
1994	12	26	1	55	24	9283	2636	13	321	[4]	-	250	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	27	16	2	26	9299	2503	24	374	[4]	-	300	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	28	12	59	41	9262	2660	48	332	[4]	-	260	-	-	-	-	-	7	-	Assam.ID	RRLJ
1994	12	29	23	39	30	9483	2493	43	438	[4]	-	360	-	-	-	-	-	6	-	MR-ID	RRLJ
1994	12	30	13	7	30	9098	2569	11	374	[4]	-	300	-	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1994	12	30	21	11	25	9292	2766	11	385	[4]	-	310	-	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1994	12	30	11	47	32	9322	2565	20	374	[4]	-	300	-	-	-	-	-	6	-	Assam.ID	RRLJ
1994	12	31	22	15	51	9365	2569	16	343	[4]	-	270	-	-	-	-	-	6	-	Nagaland.ID	RRLJ
1994	12	31	23	25	23	9307	2645	39	364	[4]	-	290	-	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	1	19	56	13	8771	2794	58	411	[2]	450	450	-	-	-	-	-	34	-	NP	RRLJ
1995	1	3	23	15	11	9210	2613	47	385	[4]	-	310	-	-	-	-	-	10	-	Assam.ID	RRLJ
1995	1	4	14	40	3	9345	2412	12	427	[4]	-	350	-	-	-	-	-	8	-	MR-ID	RRLJ
1995	1	5	18	29	7	9182	2628	21	406	[4]	-	330	-	-	-	:	-	6	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	1	8	13	34	34	9292	2636	20	269	[4]	-	200	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	9	5	34	16	9272	2633	33	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	9	8	57	13	9325	2663	17	290	[4]	-	220	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	9	12	53	49	9314	2651	44	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	10	1	31	51	9408	2484	6	406	[4]	-	330	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	1	10	1	46	43	9407	2583	45	364	[4]	-	290	-	-	-	-	6	-	Nagaland.ID	RRLJ
1995	1	10	3	14	45	9483	2545	45	438	[4]	-	360	-	-	-	-	6	-	MR-ID	RRLJ
1995	1	11	12	9	47	9317	2650	14	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	12	3	39	18	9311	2652	41	353	[4]	-	280	-	-	-	-	8	-	Assam.ID	RRLJ
1995	1	12	4	24	0	9408	2517	22	406	[4]	-	330	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	1	12	8	56	31	9460	2481	20	406	[4]	-	330	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	1	12	15	14	39	9261	2688	9	279	[4]	-	210	-	-	-	-	4	-	Assam.ID	RRLJ
1995	1	13	2	22	31	9351	2534	30	417	[4]	-	340	-	-	-	-	9	-	Nagaland.ID	RRLJ
1995	1	14	12	8	44	8985	2496	47	480	[4]	-	400	-	-	-	-	8	-	BD	RRLJ
1995	1	14	15	14	15	9234	2726	14	395	[4]	-	320	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1995	1	14	18	51	1	9440	2233	93	396	[2]	430	380	-	-	-	-	37	-	MR	ISC,EIDC,NEIC,RRLJ
1995	1	15	15	4	2	9351	2512	23	395	[4]	-	320	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	1	16	17	11	54	9229	2627	19	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	17	11	18	23	9363	2414	60	419	[2]	460	450	-	-	-	-	62	-	MR-ID	ISC,NEIC,EIDC,RRLJ
1995	1	18	0	51	16	9330	2669	33	438	[4]	-	360	-	-	-	-	9	-	Assam.ID	RRLJ
1995	1	19	7	43	9	9476	2496	39	427	[4]	-	350	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	1	19	16	12	1	9308	2663	21	321	[4]	-	250	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	19	21	43	52	8712	2730	24	-			-	-	170	170	-	8	170	NP	ISC,NEIC
1995	1	20	21	12	13	9234	2708	51	491	[4]	-	410	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1995	1	20	23	50	55	9359	2480	11	427	[4]	-	350	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	1	20	23	56	16	9438	2360	45	491	[4]	-	410	-	-	-	-	7	-	MR	RRLJ
1995	1	21	8	9	56	9488	2577	36	448	[4]	-	370	-	-	-	-	10	-	Nagaland.ID	RRLJ
1995	1	21	9	31	49	9097	2555	36	459	[4]	-	380	-	-	-	-	14	-	Meghalaya.ID	RRLJ
1995	1	21	22	46	35	9218	2564	17	385	[4]	-	310	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	22	14	24	49	9322	2649	47	385	[4]	-	310	-	-	-	-	10	-	Assam.ID	RRLJ
1995	1	23	13	28	11	9434	2374	53	448	[4]	-	370	-	-	-	-	8	-	MR	RRLJ
1995	1	26	11	28	28	9324	2512	43	395	[4]	-	320	-	-	-	-	8	-	Assam.ID	RRLJ
1995	1	27	19	27	7	9430	2400	64	372	[2]	400	410	-	-	-	-	26	-	MR-ID	ISC,EIDC,NEIC,RRLJ
1995	1	28	2	6	41	9302	2574	35	374	[4]	-	300	-	-	-	-	10	-	Assam.ID	RRLJ
1995	1	28	20	42	59	9276	2704	-	300	[4]	-	230	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1995	1	29	20	28	57	9313	2593	23	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	29	20	52	23	8606	2670	62	396	[2]	430	440	-	-	-	-	18	-	NP-ID	ISC,NEIC,RRLJ
1995	1	29	22	41	22	9330	2632	22	332	[4]	-	260	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	30	4	17	0	9395	2632	22	332	[4]	-	260	-	-	-	-	6	-	MR	RRLJ
1995	1	30	10	59	4	9318	2632	24	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1995	1	30	17	43	13	9436	2481	16	438	[4]	-	360	-	-	-	-	10	-	Manipur.ID	RRLJ
1995	1	30	20	12	52	9246	2645	44	353	[4]	-	280	-	-	-	-	8	-	Assam.ID	RRLJ
1995	1	31	14	13	13	9472	2498	26	427	[4]	-	350	-	-	-	-	15	-	Manipur.ID	RRLJ
1995	2	1	7	59	1	9213	2723	18	385	[4]	-	310	-	-	-	-	8	-	Arunachal Prodesh.ID	RRLJ
1995	2	1	10	26	10	9292	2624	42	343	[4]	-	270	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	1	15	57	53	9435	2416	151	417	[4]	-	340	-	-	-	-	12	-	MR-ID	RRLJ
1995	2	1	19	37	20	9278	2632	41	300	[4]	-	230	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	1	21	56	40	9227	2528	24	374	[4]	-	300	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	2	2	0	46	57	9230	2700	22	374	[4]	-	300	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	2	13	5	38	9310	2646	23	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1995	2	2	13	57	46	9075	2626	12	374	[4]	-	300	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	3	0	3	24	9376	2542	31	459	[4]	-	380	-	-	-	-	6	-	Meghalaya.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Mi	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	2	3	16	40	45	9334	2654	46	438	.[4]	-	360	-	-	-	-	15	-	Assam.ID	RRLJ
1995	2	4	4	21	30	9281	2667	39	332	[4]	-	260	-	-	-	-	6	-	Assam.ID	RRLJ
1995	2	4	12	9	59	9335	2623	15	300	[4]	-	230	-	-	-	-	6	-	Assam.ID	RRLJ
1995	2	4	13	9	40	9260	2516	41	406	[4]	-	330	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	2	5	0	14	23	9303	2655	45	469	[4]	-	390	-	-	-	-	12	-	Assam.ID	RRLJ
1995	2	5	3	35	37	9201	2567	15	374	[4]	-	300	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	2	5	14	58	59	9279	2645	29	321	[4]	-	250	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	6	13	7	30	9223	2521	43	406	[4]	-	330	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1995	2	6	16	58	32	9411	2294	-	501	[4]	-	420	-	-	-	-	15	-	MR	RRLJ
1995	2	6	19	52	23	9491	2498	100	385	[4]	-	310	-	-	-	-	8	-	MR	RRLJ
1995	2	7	19	27	56	9297	2678	42	321	[4]	-	250	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	8	1	48	17	9256	2664	49	353	[4]	-	280	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	8	16	31	10	9493	2503	65	533	[4]	-	450	-	-	-	-	19	-	MR	RRLJ
1995	2	10	1	35	35	9313	2607	17	406	[4]	-	330	-	-	-	-	5	-	Assam.ID	RRLJ
1995	2	10	21	49	54	9498	2611	33	417	[4]	-	340	-	-	-	-	9	-	Nagaland.ID	RRLJ
1995	2	11	10	6	14	9461	2343	45	427	[4]	-	350	-	-	-	-	6	-	MR	RRLJ
1995	2	14	14	46	23	9489	2509	34	438	[4]	-	360	-	-	-	-	15	-	MR	RRLJ
1995	2	14	15	40	5	9150	2660	22	438	[4]	-	360	-	-	-	-	10	-	Assam.ID	RRLJ
1995	2	16	17	23	38	9207	2551	37	395	[4]	-	320	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	2	17	2	44	25	9239	2771	24	554	[4]	-	470	-	-	-	-	29	-	Arunachal Prodesh.ID	RRLJ
1995	2	17	16	40	45	9238	2760	42	364	[4]	-	290	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1995	2	18	17	37	20	9397	2408	54	491	[4]	-	410	-	-	-	-	11	-	Manipur.ID	RRLJ
1995	2	21	19	29	46	9102	2545	22	395	[4]	-	320	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1995	2	22	1	47	50	9109	2600	24	427	[4]	-	350	-	-	-	-	12	-	Meghalaya.ID	RRLJ
1995	2	23	23	21	1	9292	2611	37	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ
1995	2	24	15	36	11	9144	2564	14	353	[4]	-	280	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1995	2	24	21	14	49	9382	2468	84	427	[4]	-	350	-	-	-	-	12	-	Manipur.ID	RRLJ
1995	2	25	9	12	41	9454	2468	22	448	[4]	-	370	-	-	-	-	5	-	MR-ID	RRLJ
1995	2	26	15	17	55	9166	2038	33	349	[2]	370		-	-	-	-	30	-	BAY	ISC,NEIC,EIDC
1995	2	26	20	52	5	9325	2657	21	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1995	2	27	15	55	29	9320	2648	9	274	[4]	-	300	-	-	-	-	6	-	Assam.ID	RRLJ
1995	3	1	20	47	30	9108	2578	27	274	[4]	-	300	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	3	4	6	1	50	9224	2769	39	427	[4]	-	350	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1995	3	5	16	16	57	9334	2656	24	427	[4]	-	350	-	-	-	-	8	-	Assam.ID	RRLJ
1995	3	6	11	53	39	9001	2647	6	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ
1995	3	6	23	43	27	9358	2052	36	404	[2]	440	430	-	-	-	-	34	-	MR	ISC,NEIC,EIDC,RRLJ
1995	3	7	15	18	3	9104	2534	19	343	[4]	-	270	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1995	3	9	12	44	31	9248	2709	27	406	[4]	-	330	-	-	-	-	16	-	Arunachal Prodesh.ID	RRLJ
1995	3	11	12	23	17	9451	2410	114	388	[2]	420	380	-	-	-	-	24	-	MR-ID	ISC,NEIC,EIDC,RRLJ
1995	3	12	17	13	52	9303	2579	22	438	[4]	-	360	-	-	-	-	8	-	Assam.ID	RRLJ
1995	3	13	9	5	23	9463	2261	150	459	[4]	-	380	-	-	-	-	19	-	MR	RRLJ
1995	3	13	9	52	6	9399	2774	17	353	[4]	-	280	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1995	3	13	21	53	25	9421	2476	23	417	[4]	-	340	-	-	-	-	10	-	Manipur.ID	RRLJ
1995	3	14	6	17	2	9341	2642	31	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1995	3	14	9	48	41	9282	2646	34	332	[4]	-	260	-	-	-	-	7	-	Assam.ID	RRLJ
1995	3	14	10	25	2	9398	2453	45	427	[4]	-	350	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	3	14	16	32	23	9278	2632	22	364	[4]	-	290	-	-	-	-	5	-	Assam.ID	RRLJ
1995	3	15	9	7	4	9245	2687	28	395	[4]	-	320	-	-	-	-	11	-	Assam.ID	RRLJ
1995	3	16	11	16	49	9326	2675	50	364	[4]	-	290	-	-	-	-	8	-	Assam.ID	RRLJ
1995	3	16	18	35	44	9283	2650	33	364	[4]	-	290	-	-	-	-	12	-	Assam.ID	RRLJ
1995	3	18	4	2	53	9447	2345	36	480	[4]	-	400	-	-	-	-	12	-	MR	RRLJ
1995	3	19	14	45	45	9321	2633	40	395	[4]	-	320	-	-	-	-	8	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	3	20	3	12	38	9420	.2250	107	365	[2]	390	380	-	-	-	-	24	-	MR	ISC,NEIC,EIDC,RRLJ
1995	3	21	3	11	49	9215	2682	11	374	[4]	-	300	-	-	-	-	7	-	Assam.ID	RRLJ
1995	3	21	19	4	56	9483	2494	23	406	[4]	-	330	-	-	-	-	6	-	MR	RRLJ
1995	3	22	14	5	17	9471	2496	8	395	[4]	-	320	-	-	-	-	6	-	MR-ID	RRLJ
1995	3	22	18	38	26	9184	2570	24	385	[4]	-	310	-	-	-	-	7	-	Meghalaya.ID	RRLJ
1995	3	24	8	12	46	8748	2790	21	480	[4]	-	400	-	-	-	-	6	-	NP	RRLJ
1995	3	25	3	10	43	9468	2620	22	491	[4]	-	410	-	-	-	-	8	-	Nagaland.ID	RRLJ
1995	3	26	18	22	38	9256	2763	23	522	[4]	-	440	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1995	3	29	2	46	25	9423	2460	49	404	[2]	440	430	-	-	-	-	69	-	MR-ID	ISC,MOS,NEIC,EIDC,RRLJ
1995	4	3	1	59	8	9180	2600	33	365	[2]	390	410	-	-	-	-	15	-	ID-BD	ISC,RRLJ
1995	4	3	8	49	38	9086	2607	16	480	[4]	-	400	-	-	-	-	13	-	Assam.ID	RRLJ
1995	4	6	3	37	39	9343	2443	33	448	[4]	-	370	-	-	-	-	9	-	Manipur.ID	RRLJ
1995	4	9	7	5	31	9325	2627	23	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1995	4	9	10	16	43	9471	2452	72	370		440	430	-	370	370	-	50	370	MR-ID	ISC,BJI,NEIC,EIDC,RRLJ
1995	4	9	10	16	42	9464	2463	45	512	[4]	-	430	-	-	-	-	12	-	MR-ID	RRLJ
1995	4	9	14	15	4	9447	2389	36	469	[4]	-	390	-	-	-	-	10	-	MR	RRLJ
1995	4	10	9	34	31	9460	2450	43	404	[2]	440	460	-	-	-	-	25	-	MR-ID	ISC,NEIC,EIDC,RRLJ
1995	4	11	23	13	41	9188	2431	20	417	[4]	-	340	-	-	-	-	6	-	BD	RRLJ
1995	4	12	18	2	52	9282	2688	44	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ
1995	4	12	23	58	34	9042	2599	45	427	[4]	-	350	-	-	-	-	6	-	Assam.ID	RRLJ
1995	4	13	10	46	40	9271	2650	41	374	[4]	-	300	-	-	-	-	6	-	Assam.ID	RRLJ
1995	4	17	15	2	7	9287	2584	41	364	[4]	-	290	-	-	-	-	4	-	Assam.ID	RRLJ
1995	4	18	3	16	4	9035	2552	42	512	[4]	-	430	-	-	-	-	13	-	Meghalaya.ID	RRLJ
1995	4	21	14	16	14	9099	2569	19	406	[4]	-	330	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1995	4	21	22	1	1	9470	2470	39	404	[2]	440	340	-	370	370	-	15	370	MR-ID	ISC,EIDC,NEIC,RRLJ
1995	4	22	13	3	5	9235	2711	51	427	[4]	-	350	-	-	-	-	6	-	Arunachal Prodesh.ID	RRLJ
1995	4	23	11	56	0	9486	2489	18	406	[4]	-	330	-	-	-	-	4	-	MR	RRLJ
1995	4	24	0	18	31	9244	2712	37	417	[4]	-	340	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1995	4	24	5	38	23	9272	2688	28	385	[4]	-	310	-	-	-	-	7	-	Assam.ID	RRLJ
1995	4	24	7	40	0	9214	2685	41	343	[4]	-	270	-	-	-	-	4	-	Assam.ID	RRLJ
1995	4	25	20	39	42	9260	2656	15	395	[4]	-	320	-	-	-	-	8	-	Assam.ID	RRLJ
1995	4	29	1	55	56	9310	2514	31	427	[4]	-	350	-	-	-	-	8	-	Assam.ID	RRLJ
1995	4	29	22	46	3	9294	2633	44	438	[4]	-	360	-	-	-	-	6	-	Assam.ID	RRLJ
1995	5	3	13	52	4	9404	2533	23	395	[4]	-	320	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	5	5	9	6	39	9455	2484	20	417	[4]	-	340	-	-	-	-	5	-	Manipur.ID	RRLJ
1995	5	5	13	1	33	9127	2567	14	353	[4]	-	280	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1995	5	5	22	2	12	9087	2588	15	427	[4]	-	350	-	-	-	-	13	-	Meghalaya.ID	RRLJ
1995	5	6	2	45	52	9457	2506	20	395	[4]	-	320	-	-	-	-	5	-	Manipur.ID	RRLJ
1995	5	6	10	23	59	9491	2613	6	385	[4]	-	310	-	-	-	-	5	-	Nagaland.ID	RRLJ
1995	5	6	13	5	23	9485	2520	12	406	[4]	-	330	-	-	-	-	6	-	MR	RRLJ
1995	5	6	13	6	57	8760	2720	33	362	[1]	-	-	-	-	-	-	11	-	NP	ISC
1995	5	6	14	36	38	9281	2677	7	290	[4]	-	220	-	-	-	-	5	-	Assam.ID	RRLJ
1995	5	8	9	18	44	9244	2775	16	448	[4]	-	370	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1995	5	8	17	54	52	9026	2717	11	459	[4]	-	380	-	-	-	-	8	-	ID-BU	RRLJ
1995	5	9	9	54	22	9487	2514	91	617	[4]	-	530	-	-	-	-	25	-	MR	RRLJ
1995	5	9	11	30	19	9080	2610	33	411	[2]	450	420	-	-	-	-	16	-	E.ID	ISC,RRLJ
1995	5	10	0	51	20	9434	2466	115	438	[4]	-	360	-	-	-	-	17	-	Manipur.ID	RRLJ
1995	5	11	9	2	51	9427	2440	52	480	[4]	-	400	-	-	-	-	10	-	MR-ID	RRLJ
1995	5	12	8	38	52	9251	2689	21	385	[4]	-	310	-	-	-	-	5	-	Assam.ID	RRLJ
1995	5	12	11	28	50	9237	2619	12	353	[4]	-	280	-	-	-	-	5	-	Assam.ID	RRLJ
1995	5	13	6	35	14	9462	2286	65	607	[4]	-	520	-	-	-	-	19	-	MR	RRLJ
1995	5	20	0	3	37	9305	2681	24	427	[4]	-	350	-	-	-	-	8	-	Assam.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	5	20	8	54	7	9461	2629	26	427	[4]	-	350	-	-	-	-	4	-	Nagaland.ID	RRLJ
1995	5	23	20	26	35	9490	2487	45	417	[4]	-	340	-	-	-	-	5	-	MR	RRLJ
1995	5	23	22	6	33	9308	2630	33	385	[4]	-	310	-	-	-	-	5	-	Assam.ID	RRLJ
1995	5	27	14	31	45	9203	2522	39	385	[4]	-	310	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1995	5	27	22	28	5	9307	2624	32	343	[4]	-	270	-	-	-	-	6	-	Assam.ID	RRLJ
1995	5	27	23	10	5	9250	2606	25	395	[4]	-	320	-	-	-	-	5	-	Assam.ID	RRLJ
1995	5	28	23	20	55	9435	2377	45	459	[4]	-	380	-	-	-	-	6	-	MR	RRLJ
1995	6	1	20	54	22	9201	2574	38	406	[4]	-	330	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1995	6	5	2	39	39	9460	2415	45	406	[4]	-	330	-	-	-	-	5	-	MR	RRLJ
1995	6	5	19	15	57	9306	2630	33	427	[4]	-	350	-	-	-	-	7	-	Assam.ID	RRLJ
1995	6	6	20	3	16	9266	2513	27	374	[4]	-	300	-	-	-	-	5	-	Assam.ID	RRLJ
1995	6	7	3	34	18	9472	2523	115	438	[4]	-	360	-	-	-	-	14	-	MR-ID	RRLJ
1995	6	7	17	27	22	9408	2371	86	380		440	400	-	470	470	-	41	470	MR-ID	ISC,NEIC,BJI,EIDC,RRLJ
1995	6	7	18	47	33	9246	2630	17	406	[4]	-	330	-	-	-	-	11	-	Assam.ID	RRLJ
1995	6	8	7	11	12	9461	2453	51	427	[4]	-	350	-	-	-	-	8	-	MR-ID	RRLJ
1995	6	8	12	40	42	9087	2598	16	385	[4]	-	310	-	-	-	-	6	-	Assam.ID	RRLJ
1995	6	9	9	21	5	9124	2502	37	459	[4]	-	380	-	-	-	-	17	-	BD	RRLJ
1995	6	9	22	54	42	9346	2518	23	438	[4]	-	360	-	-	-	-	9	-	Manipur.ID	RRLJ
1995	6	12	16	6	55	8978	2708	57	448	[4]	-	370	-	-	-	-	9	-	BU	RRLJ
1995	6	12	23	44	13	9477	2516	39	469	[4]	-	390	-	-	-	-	9	-	MR-ID	RRLJ
1995	6	13	4	29	2	9112	2542	19	364	[4]	-	290	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	6	14	3	28	42	9228	2625	23	427	[4]	-	350	-	-	-	-	11	-	Assam.ID	RRLJ
1995	6	15	0	48	52	9449	2216	10	480	[4]	-	400	-	-	-	-	8	-	MR	RRLJ
1995	6	17	11	55	14	9153	2553	18	395	[4]	-	320	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1995	6	17	21	9	21	9414	2314	36	390		490	430	-	410	410	-	150	410	MR-ID	ISC,BJI,NEIC,MOS,EIDC,RRLJ
1995	6	17	22	26	6	9489	2492	45	417	[4]	-	340	-	-	-	-	6	-	MR	RRLJ
1995	6	20	10	1	27	9347	2291	47	448	[4]	-	370	-	-	-	-	5	-	MR	RRLJ
1995	6	21	20	21	15	9424	2523	16	438	[4]	-	360	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	6	24	23	58	44	9228	2658	18	385	[4]	-	310	-	-	-	-	4	-	Assam.ID	RRLJ
1995	6	26	7	21	4	9466	2363	120	411	[2]	450	420	-	-	-	-	34	-	MR-ID	ISC,NEIC,BJI,EIDC,RRLJ
1995	6	27	5	48	38	9393	2543	37	469	[4]	-	390	-	-	-	-	11	-	Manipur.ID	RRLJ
1995	6	28	10	47	33	9320	2664	7	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1995	6	28	19	34	37	9279	2646	27	353	[4]	-	280	-	-	-	-	9	-	Assam.ID	RRLJ
1995	7	3	0	59	46	9233	2724	19	380		460	430	-	390	390	-	88	390	ID-CH	ISC,BJI,NEIC,MOS,EIDC,RRLJ
1995	7	3	1	32	58	9250	2719	25	395	[4]	-	320	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1995	7	5	9	33	41	9370	2310	84	396	[2]	430	370	-	-	-	-	19	-	MR-ID	ISC,EIDC,NEIC,RRLJ
1995	7	6	13	44	37	9056	2530	45	480	[4]	-	400	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1995	7	8	16	13	20	9308	2630	37	480	[4]	-	400	-	-	-	-	7	-	Assam.ID	RRLJ
1995	7	10	16	49	3	9217	2428	45	501	[4]	-	420	-	-	-	-	4	-	Tripura.ID	RRLJ
1995	7	11	19	28	42	9460	2430	165	388	[2]	420			420	420	-	18	420	MR-ID	ISC,EIDC,NEIC
1995	7	12	19	28	42	9313	2749	23	469	[4]	-	390	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1995	7	15	16	50	18	9364	2251	65	406	[4]	-	330	-	-	-	-	6	-	MR	RRLJ
1995	7	15	20	28	50	9377	2257	15	427	[4]	-	350	-	-	-	-	4	-	Arunachal Prodesh.ID	RRLJ
1995	7	17	10	57	58	9292	2465	5	427	[4]	-	350	-	-	-	-	4	-	Assam.ID	RRLJ
1995	7	17	19	37	42	9118	2567	28	406	[4]	-	330	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1995	7	19	2	53	21	9368	2511	41	417	[4]	-	340	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	7	20	20	6	47	9226	2308	27	400		420	400	-	410	410	-	31	410	ID-BD	ISC,NEIC,BJI,EIDC,RRLJ
1995	7	21	12	56	44	9433	2504	20	427	[4]	-	350	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	7	23	13	5	41	9454	2642	31	406	[4]	-	330	-	-	-	-	4	-	Nagaland.ID	RRLJ
1995	7	24	14	7	54	9313	2645	24	332	[4]	-	260	-	-	-	-	5	-	Assam.ID	RRLJ
1995	7	24	22	35	19	9328	2554	17	385	[4]	-	310	-	-	-	-	6	-	Assam.ID	RRLJ
1995	7	25	10	8	8	9339	2474	30	448	[4]	-	370	-	-	-	-	4	-	Manipur.ID	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	7	25	14	43	9	9396	2533	37	406	[4]	-	330	-	-	-	-	12	-	Manipur.ID	RRLJ
1995	7	25	15	20	22	9472	2533	45	427	[4]	-	350	-	-	-	-	6	-	MR-ID	RRLJ
1995	7	25	21	41	43	9269	2573	31	343	[4]	-	270	-	-	-	-	7	-	Assam.ID	RRLJ
1995	7	27	13	55	0	9243	2741	14	406	[4]	-	330	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1995	7	28	20	37	10	9180	2569	14	353	[4]	-	280	-	-	-	-	11	-	Meghalaya.ID	RRLJ
1995	7	29	10	45	11	9063	2591	11	395	[4]	-	320	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	7	29	20	1	3	9360	2320	61	404	[2]	440	380	-	-	-	-	26	-	MR-ID	ISC,EIDC,RRLJ
1995	7	30	2	1	44	9456	2296	112	404	[2]	440	450	-	-	-	-	66	-	MR	ISC,MOS,NEIC,EIDC,BJI,RRLJ
1995	7	30	12	54	16	9270	2700	88	388	[2]	420	410	-	-	-	-	28	-	ID-CH	ISC,EIDC,NEIC,RRLJ
1995	7	30	16	44	54	9465	2544	34	448	[4]	-	370	-	-	-	-	12	-	Manipur.ID	RRLJ
1995	7	30	17	52	3	9310	2618	23	353	[4]	-	280	-	-	-	-	5	-	Assam.ID	RRLJ
1995	7	31	11	56	55	9473	2513	30	438	[4]	-	360	-	-	-	-	10	-	Manipur.ID	RRLJ
1995	7	31	14	56	31	9219	2585	40	364	[4]	-	290	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1995	7	31	23	4	12	9393	2382	39	480	[4]	-	400	-	-	-	-	16	-	MR	RRLJ
1995	8	3	0	18	8	9426	2406	-	406	[4]	-	330	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	8	3	2	54	38	9321	2646	29	374	[4]	-	300	-	-	-	-	6	-	Assam.ID	RRLJ
1995	8	3	15	3	46	9113	2575	8	364	[4]	-	290	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1995	8	3	15	36	37	9310	2498	19	374	[4]	-	300	-	-	-	-	9	-	Assam.ID	RRLJ
1995	8	4	2	12	16	9310	2697	46	364	[4]	-	290	-	-	-	-	5	-	Assam.ID	RRLJ
1995	8	4	2	30	33	9491	2452	83	395	[4]	-	320	-	-	-	-	12	-	MR-ID	RRLJ
1995	8	4	17	9	34	9291	2662	24	311	[4]	-	240	-	-	-	-	6	-	Assam.ID	RRLJ
1995	8	5	14	28	22	9180	2560	17	385	[4]	-	310	-	-	-	-	10	-	Meghalaya.ID	RRLJ
1995	8	5	14	45	43	9095	2520	15	417	[4]	-	340	-	-	-	-	11	-	ID-BD	RRLJ
1995	8	6	11	52	2	9292	2637	35	332	[4]	-	260	-	-	-	-	6	-	Assam.ID	RRLJ
1995	8	7	2	52	48	9277	2638	14	406	[4]	-	330	-	-	-	-	8	-	Assam.ID	RRLJ
1995	8	8	3	4	2	9273	2642	12	448	[4]	-	370	-	-	-	-	15	-	Assam.ID	RRLJ
1995	8	8	16	52	50	9007	2610	55	404	[2]	440	430	-	370	370	-	35	370	E.ID	ISC,NEIC,EIDC,BJI,RRLJ
1995	8	9	18	8	4	9227	2798	8	438	[4]	-	360	-	-	-	-	8	-	CH	RRLJ
1995	8	11	19	4	41	9232	2546	25	427	[4]	-	350	-	-	-	-	13	-	Meghalaya.ID	RRLJ
1995	8	12	5	44	31	9342	2423	17	427	[4]	-	350	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	8	13	22	15	49	9453	2441	81	400		430	440	-	430	430	-	69	430	MR-ID	ISC,EIDC,NEIC,BJI,RRLJ
1995	8	14	6	43	6	9495	2567	18	459	[4]	-	380	-	-	-	-	14	-	Nagaland.ID	RRLJ
1995	8	15	18	16	38	9441	2356	27	417	[4]	-	340	-	-	-	-	6	-	MR	RRLJ
1995	8	17	2	46	7	9448	2653	15	427	[4]	-	350	-	-	-	-	5	-	Nagaland.ID	RRLJ
1995	8	17	8	1	24	9351	2499	25	427	[4]	-	350	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	8	18	9	4	6	9263	2659	38	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1995	8	18	13	52	29	9407	2779	11	406	[4]	-	330	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1995	8	21	17	38	40	9288	2645	28	343	[4]	-	270	-	-	-	-	8	-	Assam.ID	RRLJ
1995	8	21	18	2	8	9435	2445	25	469	[4]	-	390	-	-	-	-	5	-	Manipur.ID	RRLJ
1995	8	27	17	17	3	9164	2644	19	406	[4]	-	330	-	-	-	-	6	-	Assam.ID	RRLJ
1995	8	28	11	15	53	9417	2450	25	406	[4]	-	330	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	8	28	14	31	29	9291	2590	21	406	[4]	-	330	-	-	-	-	8	-	Assam.ID	RRLJ
1995	8	31	16	57	59	9414	2524	20	395	[4]	-	320	-	-	-	-	5	-	Manipur.ID	RRLJ
1995	9	1	12	54	52	9272	2593	43	427	[4]	-	350	-	-	-	-	6	-	Assam.ID	RRLJ
1995	9	4	1	44	6	9393	2783	33	388	[2]	420	490	-	390	390	-	29	390	E.ID	ISC,BJI,EIDC,RRLJ
1995	9	8	5	42	31	9492	2522	9	448	[4]	-	370	-	-	-	-	6	-	MR	RRLJ
1995	9	9	18	22	38	9357	2152	65	388	[2]	420	370	-	370	370	-	27	370	MR	ISC,NEIC,BJI,EIDC
1995	9	11	20	18	3	9040	2380	33	359	[1]	-		-	-	-	-	10	-	BD	ISC
1995	9	13	21	39	11	9010	2260	33	346	[1]	-		-	-	-	-	7	-	BD	ISC
1995	9	14	12	19	26	9177	2660	16	427	[4]	-	350	-	-	-	-	5	-	Assam.ID	RRLJ
1995	9	20	9	32	53	8810	2680	84	380	[2]	410		-	-	-	-	17	-	ID-BD	ISC,EIDC
1995	9	26	13	16	7	9385	2296	40	427	[4]	-	350	-	-	-	-	5	-	MR	RRLJ

YR	MNH	DY	H	MIN	S	LON	LAT	DEP	Ms		Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	9	28	10	51	34	9337	2634	25	385	[4]	-	310	-	-	-	-	6	-	Assam.ID	RRLJ
1995	9	29	6	34	13	9273	2649	32	343	[4]	-	270	-	-	-	-	8	-	Assam.ID	RRLJ
1995	9	29	9	47	55	9262	2750	33	404	[2]	440	380	-	-	-	-	27	-	ID-CH	ISC,EIDC,NEIC,RRLJ
1995	10	3	18	24	9	9407	2183	19	438	[4]	-	360	-	-	-	-	4	-	MR	RRLJ
1995	10	10	18	21	23	9331	2695	18	364	[4]	-	290	-	-	-	-	5	-	Assam.ID	RRLJ
1995	10	10	22	56	54	9298	2689	23	406	[4]	-	330	-	-	-	-	5	-	Assam.ID	RRLJ
1995	10	12	3	19	54	9270	2360	6	341	[1]	-		-	-	-	-	6	-	ID-BD	ISC
1995	10	13	23	28	52	9192	2428	29	427	[4]	-	350	-	-	-	-	5	-	BD	RRLJ
1995	10	13	23	40	25	9155	2432	32	417	[4]	-	340	-	-	-	-	4	-	BD	RRLJ
1995	10	17	13	18	5	9063	2549	18	374	[4]	-	300	-	-	-	-	8	-	Meghalaya.ID	RRLJ
1995	10	19	16	39	58	9116	2544	20	374	[4]	-	300	-	-	-	-	5	-	Meghalaya.ID	RRLJ
1995	10	19	22	42	34	9440	2270	87	396	[2]	430	480	-	-	-	-	30	-	MR	ISC,NEIC,BJI,EIDC,RRLJ
1995	10	20	2	31	54	8986	2470	33	365	[1]	-		-	-	-.	-	12	-	BD	ISC
1995	10	21	19	0	47	9500	2160	33	388	[2]	420		-	-	-	-	17	-	MR	ISC,NEIC,EIDC
1995	10	23	22	46	55	9235	2584	8	670	[4]	-	580	-	-	-	-	20	-	CH	RRLJ
1995	10	24	17	43	27	9247	2593	5	355	[1]	-		-	-	-	-	9	-	CH	ISC,NEIC,EIDC
1995	10	25	11	46	58	9416	2478	6	334	[2]	350		-	-	-	-	8	-	Manipur.ID	RRLJ
1995	10	28	13	32	3	9447	2741	29	406	[4]	-	330	-	-	-	-	5	-	Assam.ID	RRLJ
1995	10	29	14	11	1	9321	2507	40	395	[4]	-	320	-	-	-	-	7	-	Assam.ID	RRLJ
1995	10	30	16	13	43	9190	2653	20	364	[4]	-	290	-	-	-	-	5	-	Assam.ID	RRLJ
1995	11	1	1	29	11	9238	2690	6	374	[4]	-	300	-	-	-	-	6	-	Assam.ID	RRLJ
1995	11	1	2	26	27	9116	2482	43	427	[4]	-	350	-	-	-	-	7	-	BD	RRLJ
1995	11	5	13	31	41	9150	2590	100	351	[1]	-		-	-	-	-	8	-	ID-BD	ISC
1995	11	7	14	10	16	9302	2647	38	342	[4]	-	270	-	-	-	-	5	-	Assam.ID	RRLJ
1995	11	8	10	12	20	9188	2571	14	448	[4]	-	370	-	-	-	-	7	-	Meghalaya.ID	RRLJ
1995	11	11	20	45	29	9338	2648	12	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1995	11	16	1	44	56	9478	2510	45	438	[4]	-	360	-	-	-	-	6	-	MR-ID	RRLJ
1995	11	16	7	40	57	9178	2436	171	351	[1]	-		-	-	-	-	8	-	ID-BD	ISC
1995	11	18	3	41	39	9310	2390	33	388	[2]	420	450	-	-	-	-	13	-	MR-ID	ISC,NEIC,RRLJ
1995	11	19	4	50	0	9321	2597	32	364	[4]	-	290	-	-	-	-	5	-	Assam.ID	RRLJ
1995	11	19	5	14	42	8883	2683	45	522	[4]	-	440	-	-	-	-	13	-	West Bengal	RRLJ
1995	11	19	12	32	28	9233	2638	13	385	[4]	-	310	-	-	-	-	8	-	Assam.ID	RRLJ
1995	11	25	18	17	2	9394	2510	14	395	[4]	-	320	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	11	25	22	27	36	9380	2514	19	406	[4]	-	330	-	-	-	-	9	-	Manipur.ID	RRLJ
1995	11	28	7	29	11	8850	2750	67	365	[1]	-		-	-	-	-	12	-	SK.ID	ISC
1995	11	28	9	13	55	9059	2595	13	395	[4]	-	320	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1995	11	29	2	15	35	9270	2535	18	406	[4]	-	330	-	-	-	-	4	-	Meghalaya.ID	RRLJ
1995	11	30	5	25	42	9088	2712	8	374	[4]	-	300	-	-	-	-	5	-	BU	RRLJ
1995	11	30	12	36	22	9240	2633	16	459	[4]	-	380	-	-	-	-	9	-	Assam.ID	RRLJ
1995	12	1	2	28	41	9190	2430	20	430		400	410	-	-	-	-	19	-	ID-BD	ISC,NEIC,EIDC,RRLJ
1995	12	1	20	9	21	9214	2623	54	396	[2]	430	410	-	440	440	-	51	440	E.ID	ISC,NEIC,EIDC,RRLJ
1995	12	1	23	27	2	9450	2450	69	365	[2]	390	390	-	-	-	-	9	-	MR-ID	ISC,NEIC,EIDC,RRLJ
1995	12	2	19	2	27	9214	2711	21	364	[4]	-	290	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1995	12	4	17	54	56	9197	2725	52	411	[2]	450	420	-	-	-	-	59	-	BU	ISC,EIDC,NEIC,RRLJ
1995	12	5	0	39	0	9286	2606	22	438	[4]	-	360	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	6	0	14	3	9310	2260	104	373	[2]	400	380	-	-	-	-	12	-	MR-ID	ISC,NEIC,EIDC,RRLJ
1995	12	6	0	50	35	9154	2476	47	380	[2]	410	410	-	380	380	-	34	380	ID-BD	ISC,BJI,NEIC,EIDC,RRLJ
1995	12	8	2	42	48	9079	2579	20	427	[4]	-	350	-	-	-	-	6	-	Meghalaya.ID	RRLJ
1995	12	9	18	14	45	9394	2406	45	459	[4]	-	380	-	-	-	-	6	-	MR-ID	RRLJ
1995	12	10	16	19	1	9275	2498	16	395	[4]	-	320	-	-	-	-	4	-	Assam.ID	RRLJ
1995	12	10	18	56	8	9249	2734	20	385	[4]	-	310	-	-	-	-	5	-	Arunachal Prodesh.ID	RRLJ
1995	12	11	6	25	44	9278	2510	19	395	[4]	-	320	-	-	-	-	8	-	Assam.ID	RRLJ

YR	MNH	DY	H.	MIN	S	LON	LAT	DEP	Ms	[ ]	Mb	Md	M	Ml	Mw	ITSC	NS	RMK	LOCATION	REFERENCES
1995	12	12	15	44	25	9319	2483	18	406	[4]	-	330	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	12	13	20	26	45	9332	2482	23	448	[4]	-	370	-	-	-	-	10	-	Manipur.ID	RRLJ
1995	12	14	0	1	26	9292	2597	18	427	[4]	-	350	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	15	22	23	25	9250	2190	33	359	[1]	-		-	-	-	-	10	-	MR-BD	ISC,NEIC
1995	12	16	2	21	4	9299	2599	23	364	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	16	4	17	41	9400	2430	57	469	[4]	-	390	-	-	-	-	14	-	MR-ID	ISC,RRLJ
1995	12	18	23	45	46	9296	2457	39	448	[4]	-	370	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	18	23	47	20	8620	2730	33	359	[1]	-		-	-	-	-	10	-	NP	ISC
1995	12	19	17	24	52	9460	2210	150	512	[4]	-	430	-	-	-	-	14	-	MR	ISC,RRLJ
1995	12	20	18	50	10	9473	2444	20	395	[4]	-	320	-	-	-	-	6	-	MR	RRLJ
1995	12	20	20	8	29	9221	2570	24	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	20	20	29	28	9208	2712	34	417	[4]	-	340	-	-	-	-	7	-	Arunachal Prodesh.ID	RRLJ
1995	12	21	1	2	15	9241	2642	17	353	[4]	-	280	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	21	16	17	15	9323	2470	8	427	[4]	-	350	-	-	-	-	6	-	Manipur.ID	RRLJ
1995	12	22	14	7	21	9233	2470	37	427	[4]	-	350	-	-	-	-	5	-	Assam.ID	RRLJ
1995	12	24	19	2	7	8626	2754	26	380	[2]	410	430	-	410	410	-	32	410	NP	ISC,EIDC,NEIC,RRLJ
1995	12	25	9	45	29	9340	2280	150	362	[1]	-		-	-	-	-	11	-	MR-ID	ISC
1995	12	25	21	51	4	9382	2435	84	438	[4]	-	360	-	-	-	-	7	-	Manipur.ID	RRLJ
1995	12	26	20	20	16	9304	2639	45	354	[4]	-	290	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	27	14	32	15	9220	2760	33	349	[2]	370	390	-	-	-	-	18	-	ID-CH	ISC,NEIC,RRLJ
1995	12	28	20	36	57	9242	2724	55	406	[4]	-	330	-	-	-	-	10	-	Arunachal Prodesh.ID	RRLJ
1995	12	29	15	50	46	9160	2663	44	448	[4]	-	370	-	-	-	-	6	-	Assam.ID	RRLJ
1995	12	29	22	25	14	8760	2710	31	365	[1]	-		-	-	-	-	12	-	NP	ISC,NEIC
1995	12	30	15	28	25	9385	2288	46	448	[4]	-	370	-	-	-	-	10	-	MR	RRLJ
1995	12	30	15	47	15	9394	2536	25	406	[4]	-	330	-	-	-	-	8	-	Manipur.ID	RRLJ
1995	12	31	7	3	38	9434	2583	19	459	[4]	-	380	-	-	-	-	10	-	Nagaland.ID	RRLJ

APPENDIX B

REGRESSION COEFFICIENTS

GP15 (Rajiv): LogN=2.613--2.431*logPGA

Gp16 (Rajiv): LogN=2.501-2.178*LogPGA

GP17 (Rajiv): LogN=1.082-1.40*LogPGA

GP18 (Rajiv): Log N= 1.033 - 1.240*Log PGA

Gp19 (Rajiv): LogN=1.066-1.607*LogPGA

PGp20 (Rajiv): LogN=0.94-1.489*LogPGA

GP21 (Rajiv): LogN=1.915-1.721*LogPGA

GP22 (Rajiv): Log N=0.95-1.428*Log PGA

GP23 (Rajiv): LogN=0.068-0.917*LogPGA

GP24 (Rajiv): LogN=1.604-2.054*LogPGA

GP25 (Rajiv): LogN=1.395-1.59*LogPGA

GP26 (Rajiv): LogN=1.815-1.755*LogPGA

Figure showing four plots (GP27, GP28, GP29, GP30 - Rajiv) of Mean Annual Occurrence Rate (N) versus PGA (cm/s²).

GP27 (Rajiv): LogN=1.63-1.567*LogPGA

GP28 (Rajiv): LogN=2.0-1.689*LogPGA

GP29 (Rajiv): LogN=2.549-1.987*LogPGA

GP30 (Rajiv): LogN=1.651-1.559*LogPGA

GP31 (Rajiv): LogN=2.143-1.775*LogPGA

GP32 (Rajiv): LogN=2.39-2.005LogPGA

GP33 (Rajiv): LogN=1.913-1.799*LogPGA

GP34 (Rajiv): LogN=1.549-1.749*LogPGA

Mean Annual Occurence Rate (N)

PGA (cm/s²)

GP1 (McGuire): Log N=1.229-1.672*Log PGA

GP2 (McGuire): Log N=0.86-1.691*Log PGA

GP3 (McGuire): Log N=0.952-1.513*Log PGA

GP4 (McGuire): Log N=0.053-1.31*Log PGA

GP9 (McGuire): LogN=0.191-1.374*LogPGA

Gp10 (McGuire): LogN=1.197-1.913*LogPGA

GP11 (McGuire): LogN=1.587-1.816*LogPGA

GP15 (McGuire): LogN=2.021-2.527*logPGA

Top-left plot: GP16 (McGuire): LogN=3.53-3.326*LogPGA — Mean Annual Occurence Rate (N) vs PGA (cm/s2)

Top-right plot: GP17 (McGuire): LogN=1.095-1.618*LogPGA — Mean Annual Occurence Rate (N) vs PGA (cm/s²)

Bottom-left plot: GP18 (McGuire): Log N=0.833-1.307*Log PGA — Mean Annual Occurence Rate (N) vs PGA (cm/s²)

Bottom-right plot: Gp20 (McGuire): Log N=-.012-1.2*Log PGA — Mean Annual Occurence Rate (N) vs PGA (cm/s²)

GP21 (McGuire): Log N=1.217-1.52*Log PGA

GP22 (McGuire): LogN=0.829-1.629*LogPGA

GP25 (McGuire): LogN=0.964-1.583*LogPGA

GP26 (McGuire): LogN=1.115-1.586*LogPGA

GP31 (McGuire): LogN=1.397-1.575*LogPGA

GP32 (McGuire): LogN=1.828-1.932*LogPGA

GP33 (McGuire): LogN=1.359-1.757*LogPGA

GP34 (McGuire): LogN=1.247-1.772LogPGA

GP27 (McGuire): LogN=0.997-1.377*LogPGA

GP28 (McGuire): LogN=1.308-1.494*LogPGA

GP29 (McGuire): LogN=1.646-1.777*LogPGA

GP30 (McGuire): LogN=1.098-1.388*LogPGA

GP1: LogN=2.077-0.503*M

GP2: LogN=2.238-0.595*M

GP3: LogN=2.443-0.561*M

GP4: LogN=1.625-0.524*M

GP27: LogN=2.7-0.573*M

GP28: LogN=3.05-0.612*M

GP29: LogN=3.06-0.625*M

GP30: LogN=2.54-0.548*M

GP31: LogN=2.94-0.60*M

GP32: LogN=3.23-0.64*M

GP33: LogN=2.86-0.61*M

GP34: LogN=2.58-0.654*M