TEMPORAL AND SPATIAL VARIABILITY OF

CLIMATE CHANGE OVER NEPAL (1976 - 2005)

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Practical Action has taken reasonable efforts to verify the information provided in this publication, however the authors are solely responsible for the views expressed.

Preface

There is no doubt that, climate of Nepal has changed affecting the bio-physical and socio-economic sectors. Rainfall has become erratic and the overall temperature is increasing despite negative trends in some of the pocket areas. The climate change over Nepal is in temporal and spatial dimensions. As Nepal is a highly vulnerable country, there are more likely adverse impacts of climate change in the coming days. Therefore, adaptation to climate change must be a priority for the country. However, without understanding the changing climate, adaptation planning will not be effective due to the diverse climatic variation in Nepal. For effective adaptation planning, specific climate change scenarios and their specific impacts are imperative to understand.

Climate change adaptation is one of the major programmes of Practical Action in Nepal. Since 2004, the organisation has been launching awareness programmes on climate change and pilot adaptation projects in the field. Our experiences show that the climate change is impacting at the grassroots level, therefore localised information on climate change and its impacts are important. This publication is a step to understand the specific climate trends in Nepal based on the observed meteorological data for the period 1976 - 2005 which was obtained from the Department of Hydrology and Meteorology (DHM). I hope the information presented in this publication will help understand Nepal's past climate trend and draw lessons for adaptation although a need for future climate and impacts scenarios is crucial which may be different from the past trends. In this regard, I would like to thank the DHM, Government of Nepal (GoN) for sharing the data required for this study. Special thanks are to Mr. Suresh Marahatta and Mr. Bhawani S. Dangol from Society of Hydrologists and Meteorologists (SOHAM) for analysing the data and preparing the report. Thanks are also due to Professor Dr. Bidur P. Upadhyaya, then Chairperson of SOHAM, Mr. Jagat Bhushal, then General Secretary of SOHAM and Mr. Saraju Baidya, Senior Divisional Meteorologists of DHM for their technical supports to the study team. Sincere thanks are also due to Dr. Madan Lal Shrestha who reviewed this report technically.

Last but not the least, thanks to Mr. Gehendra Bahadur Gurung, Team Leader of Reducing Vulnerability Programme for conceptualising and materialising the study, Upendra Shrestha, Fundraising and Communications Manager and Shradha Giri, Communications Officer from Practical Action Nepal Office for rigorously working on language and structure of the report and bringing physically to this shape.

Achyut Luitel
Country Director

Executive Summary

Climate change refers to a significant change in precipitation, temperature and other climatic parameters observed over time in a specific area which significantly affects the biophysical and socioeconomic circumstances. A comprehensive study of temperature and precipitation of Nepal was conducted to see the signs of climate change across geographical areas and over seasons. Monthly precipitation data from 166 stations and monthly temperature records from 44 stations for the period of 30 years (1976-2005) over Nepal were considered in this study. Through the use of these data, temporal and spatial variations of precipitation and temperature were analysed. Climatic maps were prepared for various ecological zones and for the whole of Nepal.

There is a large spatial variation in annual rainfall over Nepal ranging from less than 150 mm to more than 5,000 mm. As per the observed data, Nepal receives the highest monthly precipitation in July and the lowest in November. The analysis shows that 79.6 per cent annual precipitation occurs during monsoon season whereas 4.2, 3.5 and 12.7 per cent, occur during post monsoon, winter and pre monsoon seasons respectively. The annual precipitation pattern is dominated by Monsoon. The winter precipitation was found highest in far western development region and lowest in the southern parts of central and eastern development regions. The windward and leeward sites of the mountains have been found to be the highest and the lowest precipitation sites respectively. Three highest annual precipitation pockets were observed in 1) Kaski area in western development region 2) Sindhupalchowk area in central development region and 3) Sankhuwasabha area in eastern development region. Similarly, two significant lowest annual precipitation pockets were observed over Manang and Mustang Districts of western development region. The highest and the lowest annual precipitation sites were found to be Lumle in Kaski District and Lomanthang in Mustang District with average annual precipitation of 5,403 mm and 144 mm respectively over the 30 years period. The mid western and far western development regions were found to be comparatively drier.

The eastern, central, western and far western development regions represented a positive trend in annual precipitation while most of the mid western development region observed a decreasing annual precipitation trend.

Pre-monsoon rainfall in most of the eastern, central and western development regions are increasing trend, while mid western and far western development regions observed a decreasing trend for the same season. The highest increasing trend for the pre monsoon rainfall was observed in and around Myagdi and Kaski Districts in the western development region; Sindhupalchowk District in the central development region and Sankhuwasabha in the eastern development region. However, some small pocket areas in these regions showed a decreasing trend i.e., areas around Dhankuta, Dolakha, Ramechhap and Tanahu Districts. The north western part of the country observed the largest decreasing trend in pre monsoon rainfall.

The increasing rainfall trend in monsoon season was mainly in eastern, central, western and far western development regions while most of the areas in mid western development region represented a decreasing trend. The largest decreasing trend was observed in Dolakha and Solukhumbu Districts despite their location in central and eastern development regions respectively.

Post monsoon rainfall in most of the mid western development region and the southern parts of eastern, central and western development regions are in increasing trend while in far western development region and most of the northern parts of the country observed a decreasing trend.

The Winter season depicted an increasing rainfall trend almost all over the country over the period. However, some areas in the northern parts of mid western and eastern development regions and some

isolated pocket areas observed high increasing rainfall trend in winter. Sankhuwasabha, Taplejung and Achham Districts represented the highest increasing trend in comparison to other places.

The extreme rainfall distribution is quite different from the annual or seasonal distribution of precipitation. Siwalik and the tarai belt received the highest 24 hour rainfall, which generally get less total seasonal rainfall. The inter annual variations of precipitation are very large which makes some years too wet and some years too dry resulting in no significant trend of precipitation over the years.

A general increasing trend in temperature has been found over Nepal. The maximum temperature was found to be increasing at a greater rate (0.05° C/year) than the minimum temperature (0.03° C /year). A decreasing trend was found in maximum temperature in tarai region during winter season. Mean annual maximum temperature in tarai belt reached above 30° C which gradually decreased towards North. In Siwalik range, the mean maximum temperature varied between 26° to 30° C. The mean maximum temperature ranged between 22° to 26° C in the middle hills regions and reached below 22° C in the high hills and the Himalayas or the mountains.

The spatial pattern of mean maximum annual temperature is in increasing trend almost in the entire country except in a few isolated places such as Sankhuwasabha, Sunsari, Nawalparasi, Banke and Bardia Districts. Annual maximum temperature trend was observed to be lower in the southern parts (high altitude) and higher in the northern parts of the country (The area in and around Dhankuta, Dadeldhura and Okhaldhunga Districts have higher increasing trend in annual maximum temperature.

The mean minimum temperature varied between above 18° C in the tarai to less than 6° C in the north western parts of the country. The annual mean minimum temperature is in decreasing trend in northern parts and large portion of mid western and far western development regions: while most of the southern parts of the country observed an increasing trend. Doti, Sankhuwasabha and northern parts of Nuwakot Districts represented decreasing trend in annual minimum temperature whereas increasing trend was observed in areas around Lamjung, southern parts of Nuwakot, Chitwan and Dhanusa Districts.

The spatial variation of the annual mean temperature is in increasing trend almost in the entire country except few isolated places in Sankhuwasabha, Doti and northern parts of Nuwakot districts. Dhankuta and Lamjung Districts observed the largest increasing annual mean temperature trend. Maximum temperature is in increasing trend in large magnitude than the minimum temperature in most of the places and almost all the seasons. The rate of temperature increase has been observed high in northern parts of the country than in the southern parts. Most of the stations depicted increasing trend in temperature in post monsoon and only few stations observed decreasing trends compared to rest of the seasons. All seasons observed a general decreasing trend in minimum temperature in the northern mountainous regions and increasing trend in the southern hilly and plain regions of the country. Some pocket areas showed high increasing or decreasing trends of temperature compared to other regions.

Acronyms

AOGCM	Atmosphere Ocean Coupled General Circulation Model
CBS	Central Bureau of Statistics
DHM	Department of Hydrology and Meteorology
GCM	General Circulation Model
GIS	Geographical Information System
GHG	Greenhouse Gases
GoN	Government of Nepal
MoPE	Ministry of Population and Environment
IPCC	Intergovernmental Panel on Climate Change
ITCZ	Inter Tropical Convergence Zone
OECD	Organization for Economic Co-operation and Development
SOHAM-Nepal	Society of Hydrologists and Meteorologist-Nepal
SRES	Special Report on Emission Scenario
UNFCCC	United Nations Framework Convention on Climate Change
masl	meter above sea level
AR4	Fourth Assessment Report of the IPCC

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1 GENERAL INFORMATION

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1.1. Introduction

During the past few decades the world has been experiencing significant increase in global temperature resulting into climate change. Scientists are now confident that this rapid rate of increase in temperature is due to human induced factors that is emission and accumulation of GHG in the earth's atmosphere. From 1906 to 2005 the global average surface temperature increased by 0.74 [0.56 to 0.92]° C. The linear warming trend over the 50 years from 1956 to 2005 was 0.13 [0.10 to 0.16]°C per decade is nearly twice that for the 100 years from 1906 to 2005 (IPCC 2007). IPCC has also projected that by 1990 global average surface temperature will increase by 1.8 - 4.0° C. It is expected that the impacts would be drastic if strenuous efforts are not taken to limit GHG emission. The immediate consequence of this phenomenon is the observed aberration in the climatic pattern and frequent occurrence of extreme climatic events.

Climate change is happening and it is affecting every corner of the world. However, there is more general information available on climate change and its impacts. The information lacks at local and specific level regarding the extent and pattern of change in precipitation and temperature, the locations of high or low trend, and pattern of climate variables. These information are essential for implementing effective measures to help the poor communities to cope and adapt to impacts of climate change.

The climate change in general and changes in rainfall and temperature in particular, have profound effect on farming and water resources. Local communities have observed increased unpredicted floods, landslides, heavy soil erosions, river cuttings and droughts as major hazards. Due to these changes, water availability and agricultural productivity have been significantly affected. The communities are adapting through some hazard mitigation measures against the adverse impacts of climate changes based on their local knowledge and persistent practices.

1.2. Objective of the study

The main objective of this study was "to identify the climate extremities and the specific ecological zones or sites of Nepal that have extreme events." Based on this overall objective following specific objectives were developed:

- Identify areas with high increasing and decreasing trends in temperature
- Identify areas with high increasing and decreasing trends in precipitation
- Identify areas with significant monthly and seasonal shift in temperature and precipitation
- Identify areas with the highest rainfall intensity and the driest seasons
- Identify areas with the highest and the lowest temperature extremities
- Assess the data for general climate trend in Nepal

1.3. Methodology

Monthly rainfall (166 stations) and monthly temperature (44 stations) data for the period of 30 years (1976-2005) for the whole country were obtained from DHM. Out of 166 stations, 34 have both temperature and rainfall data, 132 have rainfall only and 10 stations with only temperature data. The geographical and regional (development) distribution of the stations are given below.

S. No.	Geographical Region	Altitude range (masl)	No. of stations for temperature	No. of stations for rainfall
1	Tarai	60-200	11	30
2	Shiwalik	200-1000	9	47
3	Middle hills	1000-2500	22	80
4	High hills	2500-4000	2	9
5	Mountain	>4000	0	0
		Total	44	166

Table 1.1: Geographical distribution of meteorological stations used for the study

S. No.	Development Region	Temperature	Rainfall
1	Eastern	10	39
2	Central	13	53
3	Western	11	38
4	Mid western	7	21
5	Far western	3	15
	Total	44	166

Table 1.2: Regional distribution of meteorological stations used for the study

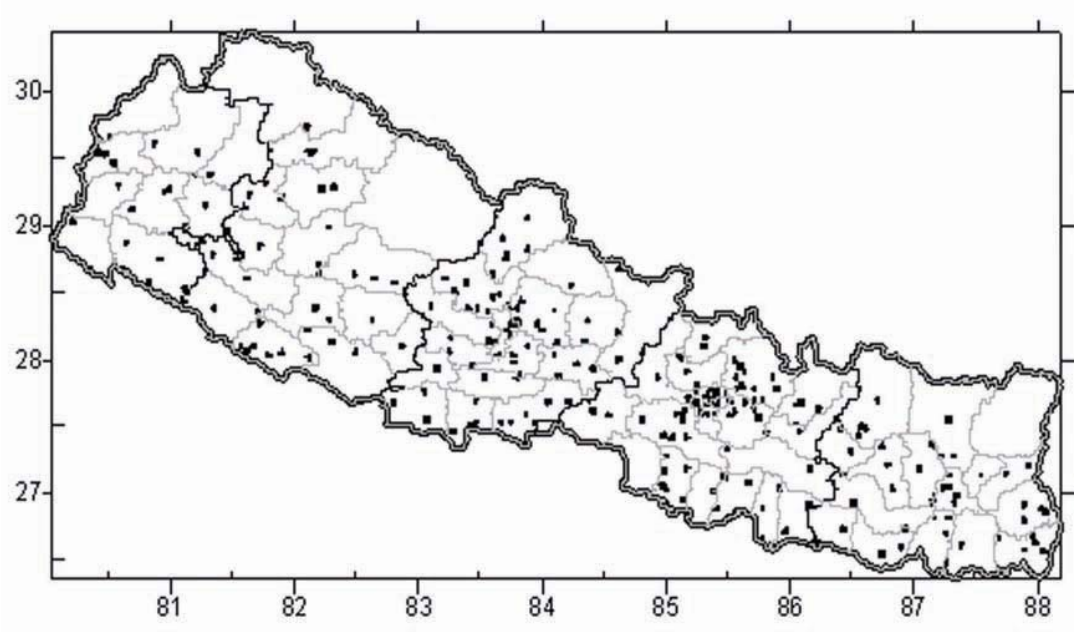

Figure 1.1: Meteorological stations considered for the study

The obtained data were thoroughly checked and screened. The trends of temporal and spatial variations of rainfall and temperature were analysed using linear regression. A time series analysis was done to understand the past rainfall pattern to help future projections and planning using the past and present data. Among many components of time series, secular trend method was used to comprehend the general tendency of the time series data to increase or decrease or stagnate during a long period of time. Least square curve fitting technique was used to fit linear trend in the data. The linear trend between the time series data (y) and time (t) is given in the equation below.

$y = a + bt$

Where
y = temperature or rainfall
t = time (year)
"a" and "b" are the constants estimated by the principle of least squares

The annual, monthly and seasonal mean rainfall and mean temperature were analysed and their trends were studied.

The frequency analysis of 24 hours extreme rainfall for the various return periods was analysed using Gumbel Extreme Value Type I (GEVI) method. The parameters of the distribution were estimated by Method of Moments (MOM). Chow (1951) has shown that many frequency analysis can be reduced to the form,

$X_T = \mu + \sigma^- * K_T$

Where,
X_T is frequency return period
K_T is the frequency factor,
σ^- is standard deviation and
μ is mean value.

Microsoft excel was used to analyse rainfall and temperature data and Surfer programme was used to present the information over ecological regions and development zones.

1.4. Limitations

There are limited number of meteorological stations in the high mountains compared to tarai, lower hills and middle hills. Therefore, the information for the high mountains presented in this report is based on information obtained from the limited number of stations.

2 DESCRIPTION OF THE STUDY AREA

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2.1. Topography

Nepal is a landlocked and mountainous country with a total land area of 147,181 sq. km. located between China in north and India in east, west and south. Nepal is located between latitude of 26º 22′ to 30º 27′ north and longitude of 80º 04′ to 88º 12′ east. The country looks roughly rectangular with a length of about 885 km from east to west and a width of 130 to 260 km from south to north. The elevation of the country ranges from 60 masl in the south to 8,848 m in the north. Eight of the world's fourteen peaks above 8,000 masl are in Nepal including the world's highest peak - the Mt. Everest or the Sagarmatha.

The country is divided into three broad ecological zones, i) tarai, an extension of Indo-Gangetic plain in the south, ii) hills and valleys in the middle, and iii) the lofty Himalayas in the north. The mountains, hill and tarai regions are home to 7, 46 and 47 per cent of Nepal's population respectively (CBS, 2004). The tarai is a low lying plain, highly vulnerable to flood during monsoon. Northwards, a series of complex valleys breaks up the simple pattern of parallel hill ranges out of which the valley of Kathmandu is the capital city. Further to the north rise the Himalayas.

2.2. Physiography

Nepal is divided into five major physiographic regions: tarai plain, Siwalik hills, middle hills, high hills and high mountains (consisting of the main Himalayas and inner Himalayan valleys). Figure 2.1 depicts the physiographic map of the country.

Tarai: tarai in Nepal is the northern limit of Indo Gangetic plain which extends nearly 800 km from east to west and 30 to 40 km north to south with elevation ranging from 60 to 200 masl. It is generally flat with minor relief caused by river channel shifting and down warping of the basin.

Siwalik: Commonly known as Churia hills abruptly rises from tarai and ends with the beginning of the middle hills range. The elevation of the Siwalik ranges from 200 to 1,500 masl. The Siwalik which covers nearly 13 per cent of the total area of the country is generally characterised by low terraces and alluvial fan with steep topography. The region is very much prone to landslides, mass wasting and debris flow which contributes significant amount of sediment load to major rivers in Nepal.

Middle hills: Middle hills are also known as the Mahabharata range. The elevation of middle hills ranges from 1,000 to 2,500 masl and extends throughout the length of the country. In many places the range is intersected by antecedent rivers such as the Koshi, the Gandaki, the Karnali and the Mahakali. These rivers are the source of water originating from north of this range which drain to the south. It is the first great barrier to the monsoon winds that produces heavy precipitations on its southern slope due to orographic effects.

High hills: This region lies further north of middle hills whose elevation ranges from 2,200 to 4,000 masl. It has an average width of 50 km and extends from east to west in the form of a strip. The high hills, consisting of low hills, river valleys and tectonic basins exhibit a mature landform. This region has cool temperate climate.

Mountains or the Himalayas: The hills of high mountains rise slowly to the north and make up the snow capped high Himalayas. The elevation ranges from 4,000 to 8,848 masl. The main north-south flowing rivers originating from northern side of the Himalaya have dissected this range forming some of the deepest gorges in the world – 5,791 m deep gorge in the Kali Gandaki valley. The region is mostly occupied by glaciers, snow peaks, rocky slopes, talus and colluvial deposits. It has an extremely rugged terrain with steep slopes and deep valleys.

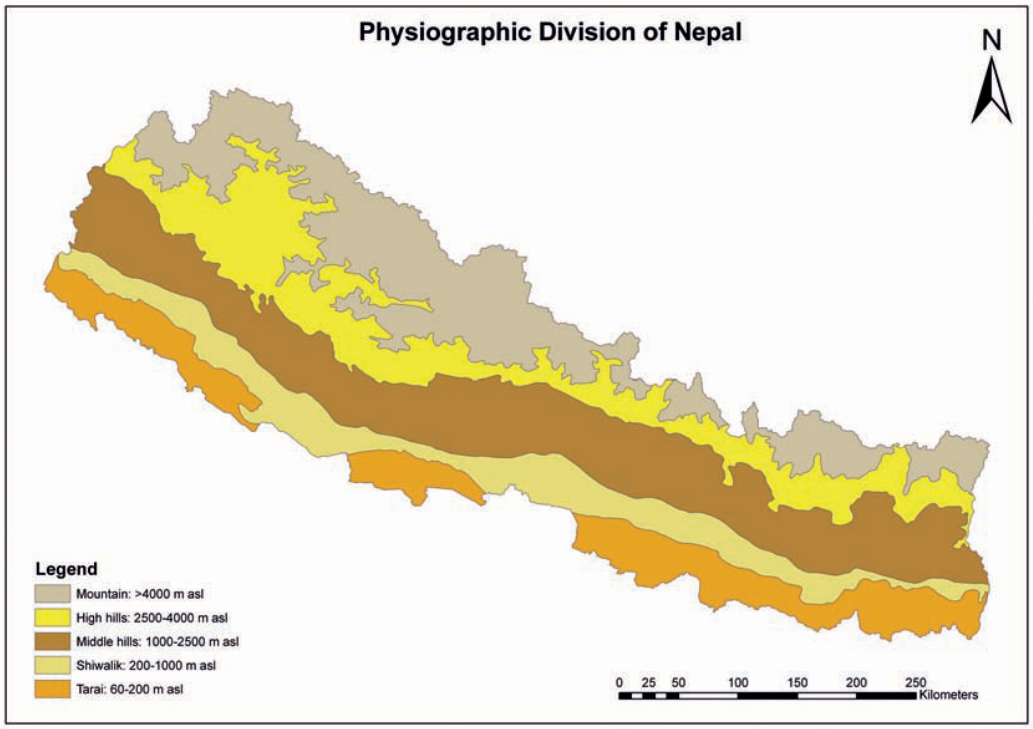

Figure 2.1: Physiographic regions of Nepal

2.3. Climate

Globally, Nepal falls within subtropical climate zone. However, due to unique physiographic and topographic feature, it possesses enormous climatic and ecological diversity within a north-south span of about 130-260 km. The climate types range from sub tropical in the tarai to arctic in the high Himalayas. The remarkable differences in climatic conditions are primarily related to the range of altitude within a short north-south distance. The presence of the east-west extending Himalayan massifs in the north and the monsoonal alteration of wet and dry seasons greatly contribute to local variations in climate.

The annual mean precipitation is found to be 1,857.6 mm in Nepal. But owing to the great topographic variations, it ranges from more than 5,000 mm along the southern slopes of the Annapurna range in western development region of the country to less than 150 mm in the north of the Annapurna range near the Tibetan plateau.

In general, the onset and retreat of easterly monsoon is associated with the change in the direction of seasonal winds and the northward and southward shift of the Inter Tropical Convergence Zone (ITCZ). Nepal receives heavy precipitation when the position of ITCZ is close to the foothills of the Himalaya. Precipitation is also heavy when the monsoon trough formed over Bay of Bengal passes through the country. There is a marked variation of amount of monsoon precipitation from east to west and from south to north. Generally, eastern Nepal receives first monsoon rainfall and slowly moves towards west. The contribution of the monsoon precipitation is substantially high in eastern part of the country compared to western part. Precipitation also varies significantly from place to place both in local scale as well as in macro scale due to extreme topographic variation. The approaching monsoon winds are first intercepted by foothills of Churia range where intensive rainfall occurs. The rainfall increases with

altitude on the windward side, and sharply decreases in the leeward side. Lumle (1,642 masl) lying south (windward side) of the Annapurna range in Centre of Nepal Himalayas receives over 5,000 mm of annual rainfall, whereas Lomanthang (3,705 masl) lying North (leeward side) of the same range receives only about 144 mm of rainfall per year. The monsoon precipitation occurs in the form of snow in the higher altitude which plays a vital role in nourishing the glaciers in the high mountains.

Nepal experiences the monsoon rainfall from June to September when most of the days are cloudy with heavy rainfall and incessant rains are common during these months. About 80 per cent of the annual precipitation in the country falls between June to September under the influence of the monsoon circulation system. The amount of precipitation varies considerably from place to place because of topographic variations. The amount of monsoon rain generally declines from east to west. Although the success of farming is almost dependent on the timely arrival of the monsoon, it periodically causes problems such as landslides, debris flow and flash floods in the hills and foothills, floods, debris and cutting of land in plains which destroy human lives, livestock, farmlands and properties. Conversely, when prolonged monsoon break takes place severe drought resulting to famine often occurs.

The period from October to November is considered as a post monsoon season which is a period of transition from summer to winter. During October the country receives a few spell of post monsoon thundershowers similar in character to the pre monsoon one. The winter months, December to February, are dry with clear sky. However, few spells of rain do occur during these months. The winter rain decreases in amount from west to east direction. During March to May the country experiences pre monsoon thundershowers. The pre monsoon rainfall activities are more frequent in the hilly regions than in the tarai.

The winter precipitation is caused by the westerly wind. The associated systems are commonly known as western disturbances which have their origin over Mediterranean Sea. The lows formed here are steered and swept eastwards by the westerly aloft. These disturbances bring snow and rain during winter season, most significantly in northwestern part of the country. Winter precipitation contributes significantly to the annual total precipitation in Nepal's northwest region. It plays a major role in the mass balance of glaciers in western Nepal while playing a secondary role in the glaciers of eastern and central Nepal (Seko and Takahashi 1991). Although the winter precipitation is not as impressive in volume or intensity as the monsoon precipitation, it is of vital importance in generating lean flow for agriculture and other uses. Most of the winter precipitation in the mountain falls as snow and nourishes snowfields and glaciers which melts and generates water during dry season between February and April.

The onset of monsoon in early June checks the increase in daily temperature, so the maximum temperature of the year is usually in May or early June. Temperature starts decreasing from October and reaches the minimum of the year in December or January. The altitude is the most influencing factor over temperature in Nepal with decreasing from south to north as the altitude increases. The hottest part of the country is in the tarai belt, where extreme maximum temperature reaches more than 45° C. The highest temperature ever recorded in the country during the studied period is 46.4° C observed in Dhangadi, far western tarai, in June 1995.

3 RESULTS AND DISCUSSIONS

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3.1. Rainfall

The analysis made from the observations of 30 years rainfall and temperature data of Nepal for the period from 1976 to 2005 are described below by geographical regions and different seasons of the year.

Nepal's precipitation is affected by two major air movements. The highest rain occurs when monsoon comes from the Bay of Bengal. The western disturbances during the winter season affects mostly the western parts of the country and results in snowfall in the high mountains and the Himalayas.

The interaction of the complex topography with monsoon and westerly weather systems results in to variation in spatial distribution of rainfall. The windward side of the mountains receives more rainfall while the leeward side receives less.

The mean annual rainfall of Nepal was found to be 1,857.6 mm with the highest annual rainfall site recorded in Lumle of Kaski District with mean annual rainfall of 5,402.8 mm. The lowest rainfall site is recorded in Lomanthang of Mustang District with mean annual rainfall of 143.6 mm. Both of these highest and lowest rainfall sites of the country are in Annapurna area.

The three highest rainfall pocket areas - southern slope of Makalu range in eastern development region, Jugal range in central development region and south of the Annapurna range in western development region were observed in the country. Similarly, two lowest rainfall pocket areas - Manang and Mustang, were observed at the leeward side of the Annapurna range. The summary of annual, monthly and seasonal rainfall is given in Annex 1.

Monsoon season (June - September) received an average of 79.58 per cent of the total annual rain. The post monsoon (October - November), winter (December - February) and pre monsoon (March - May) seasons received 4.25, 3.49 and 12.68 per cent of the total annual rain respectively during 1976 to 2005

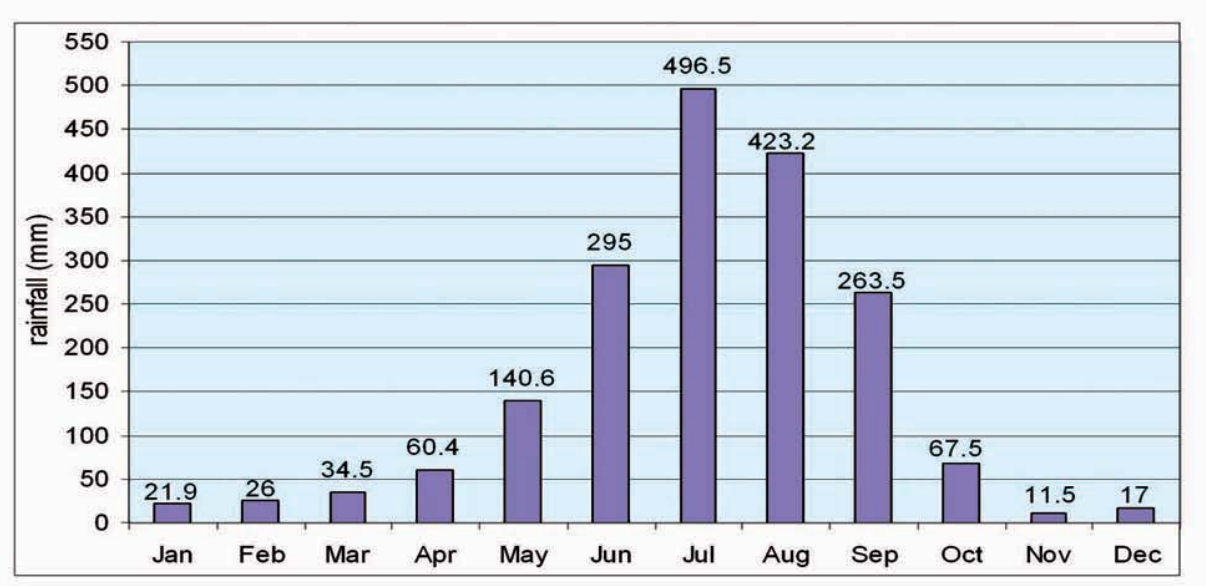

Figure 3.1: Nepal monthly rainfall distribution (average of 1976 - 2005)

3.1.1 Annual rainfall

The average annual rainfall varies from less than 150 mm to above 5,000 mm. Since monsoon is the largest contributor of total annual rainfall, the spatial distribution of annual total rainfall (Figure 3.2) follows the spatial pattern of monsoon rainfall.

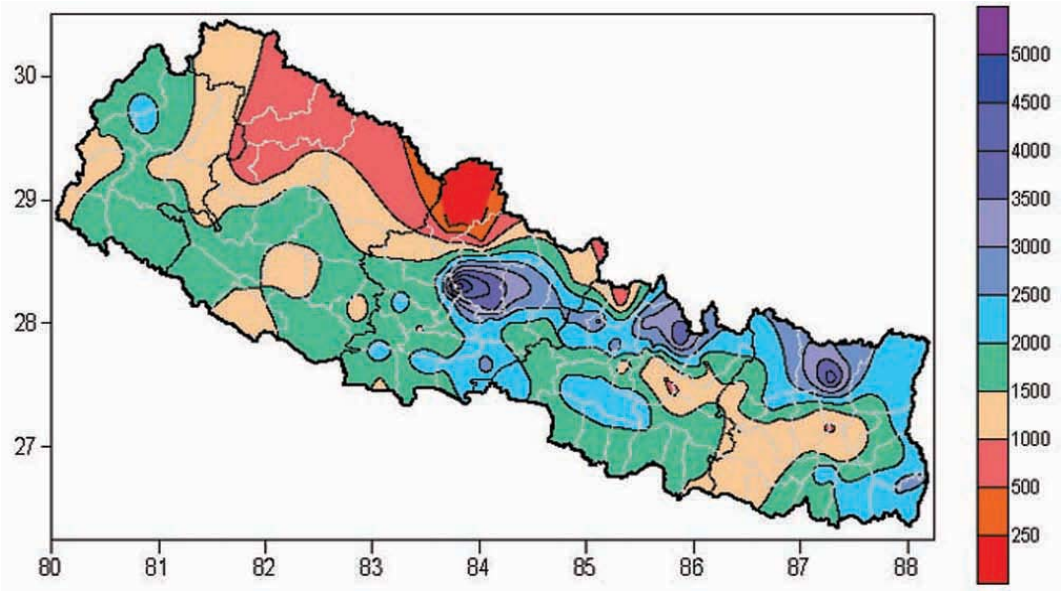

Figure 3.2: Annual mean rainfall pattern (mm)

3.1.2. Pre Monsoon Rainfall

During March to May, the country experiences occasional pre monsoon thunder showers and hailstorms activity associated with thermal convection due to increase in solar insolation combined with the orographic effect. Pre monsoon season received 12.68 per cent of the total annual rainfall which is the second highest rainfall season after monsoon recorded during the study period.

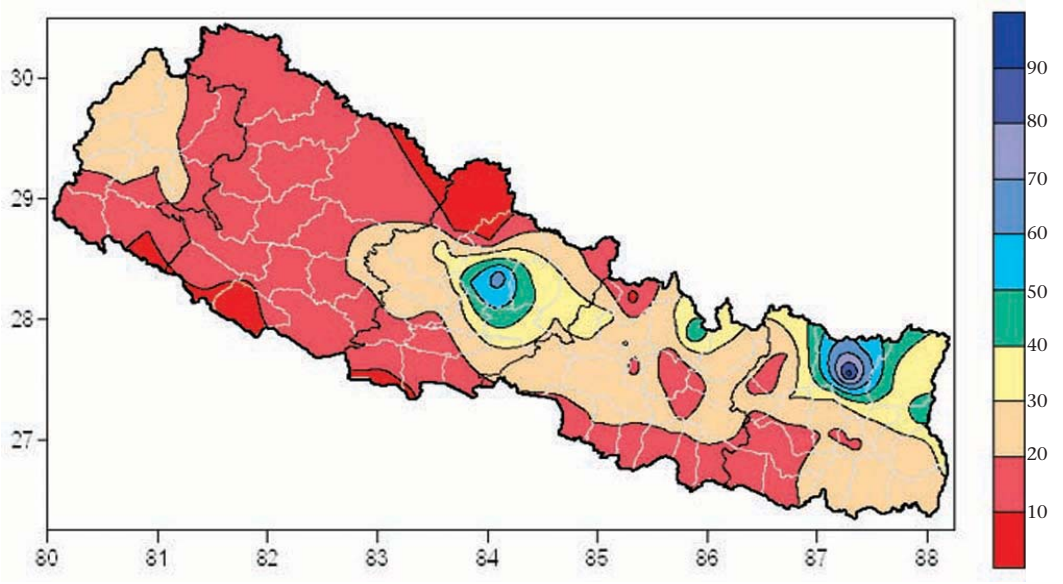

Figure 3.3: Pre monsoon mean rainfall pattern (mm)

The rainfall varied from less than 100 mm to over 900 mm in this season (Figure 3.3). There are mainly three high rainfall pocket areas for this season - Kaski, Rasuwa and Sankhuwasabha Districts. These districts lies in the windward side of the Annapurna, the Jugal and the Makalu range respectively. The mid western and far western development regions are comparatively drier than the rest of the regions during pre monsoon season.

3.1.3. Monsoon Rainfall

Monsoon normally starts from the second week of June (10 June) and retreats in the fourth week of September (23 September). Monsoon is the wettest season and is the main source of rainfall in Nepal. Monsoon season contributes on an average 79.58 per cent of the total annual rainfall of the country. The effect of monsoon is prominent in the eastern half of the country (Figure 3.4). The western half especially the northern parts of mid western development region are generally drier compared to the eastern half. Like in pre monsoon season, the high rainfall pocket areas in monsoon season are Kaski, Rasuwa and Sankhuwasabha Districts. The driest regions - Mustang and Dolpa receive less than 150 mm while the wettest region Kaski receives more than 4,500 mm of rainfall during the monsoon season.

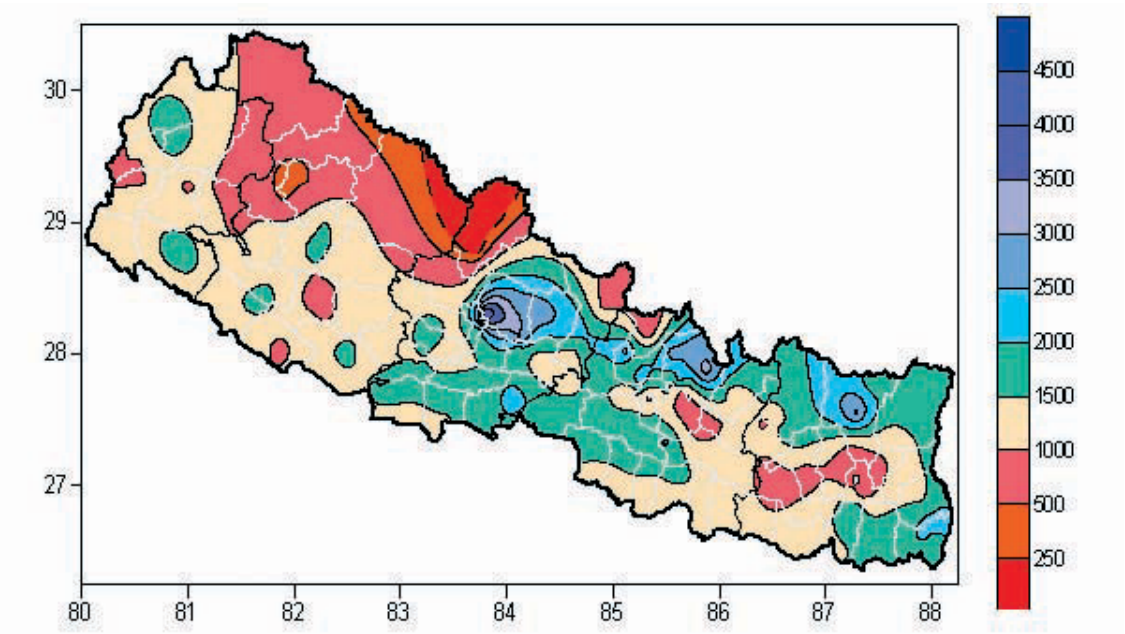

Figure 3.4: Monsoon mean rainfall pattern (mm)

3.1.4. Post Monsoon Rainfall

October and November is the post monsoon season. During this season, the country receives an average of 4.25 per cent of the total annual rainfall. The character of the rain is similar to the pre monsoon rain. November receives the lowest rainfall of the year. The spatial distribution of rainfall is similar to the pre monsoon and monsoon seasons with low rainfall ranging from less than 25 mm in the western half of the country and to over 250 mm in the eastern half of the country (Figure 3.5).

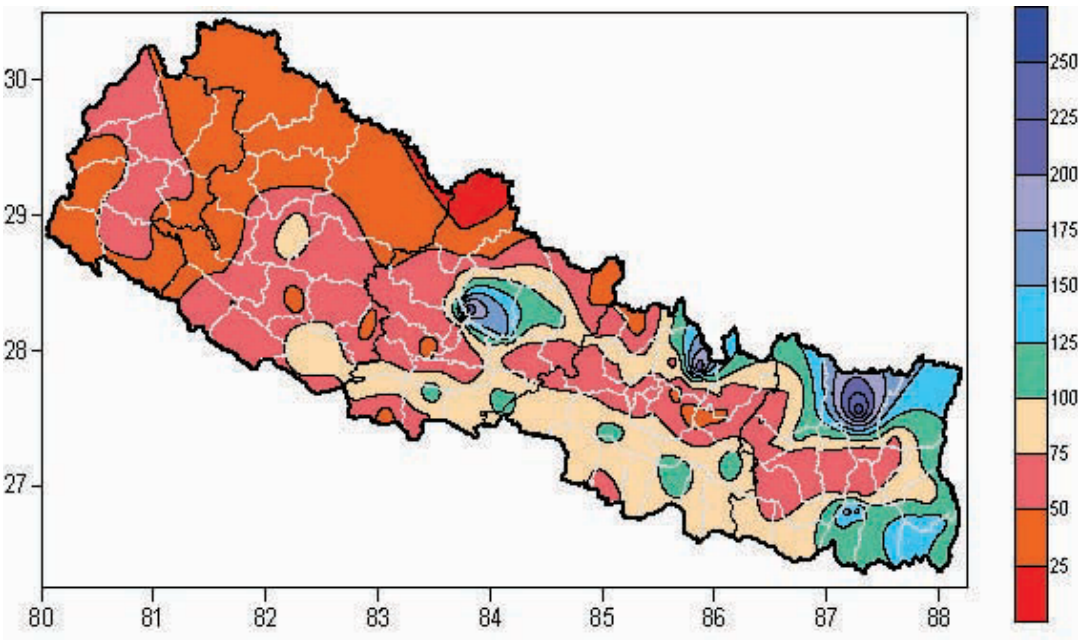

Figure 3.5: Post monsoon mean rainfall pattern (mm)

3.1.5. Winter Rainfall

Winter (December - February) is the driest season contributing 3.49 per cent of the total annual rainfall. The western disturbances results in most of the winter rainfall in the country. The winter rain is high in far western development region (Figure 3.6) and low in southern parts of central and eastern development regions. The prominent high and low precipitation pocket areas observed in the other seasons remained the same in this season as well. The rainfall during this season varied between less than 20 mm to over 180 mm.

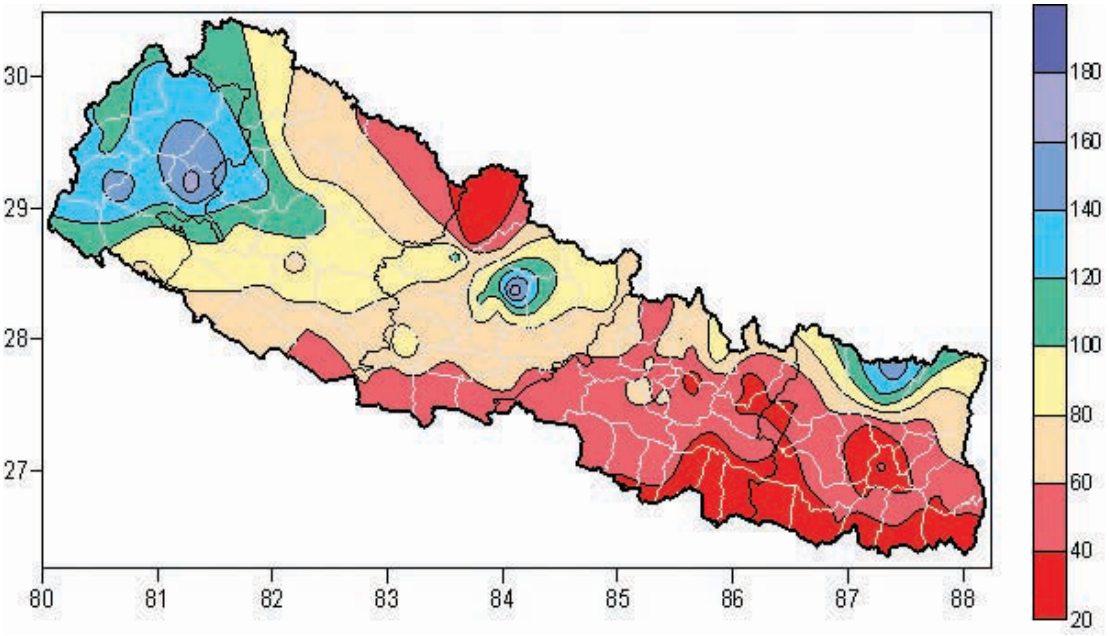

Figure 3.6: Winter mean rainfall pattern (mm)

3.1.6. Extreme Rainfall

Large amount of rainfall within a short period causes flash floods, massive landslides, soil erosion and sedimentation in hilly and mountainous regions and inundate the plain areas. The spatial distribution of highest 24 hour rainfall (Figure 3.7) provides useful information of the flood and landslide prone zones. The extreme rainfall distribution is different from the annual or seasonal distribution. Siwalik and the tarai belt which generally receive less total seasonal rainfall received the highest 24 hour rainfall. Maximum and minimum 24 hour extreme rainfalls were found in Hariharpur Gadi, Sindhuli (482.2 mm) on 20 July 1993 and Lomanthang, Mustang (51 mm) on 20 October 2005 respectively. The highest extreme rainfall was found mainly in the foothills of Mahabharata and Siwalik in central development region and in foothills of Siwalik in western development region. These regions are therefore prone to landslide, flash flood and inundation especially, the tarai of central and western development regions compared to other regions.

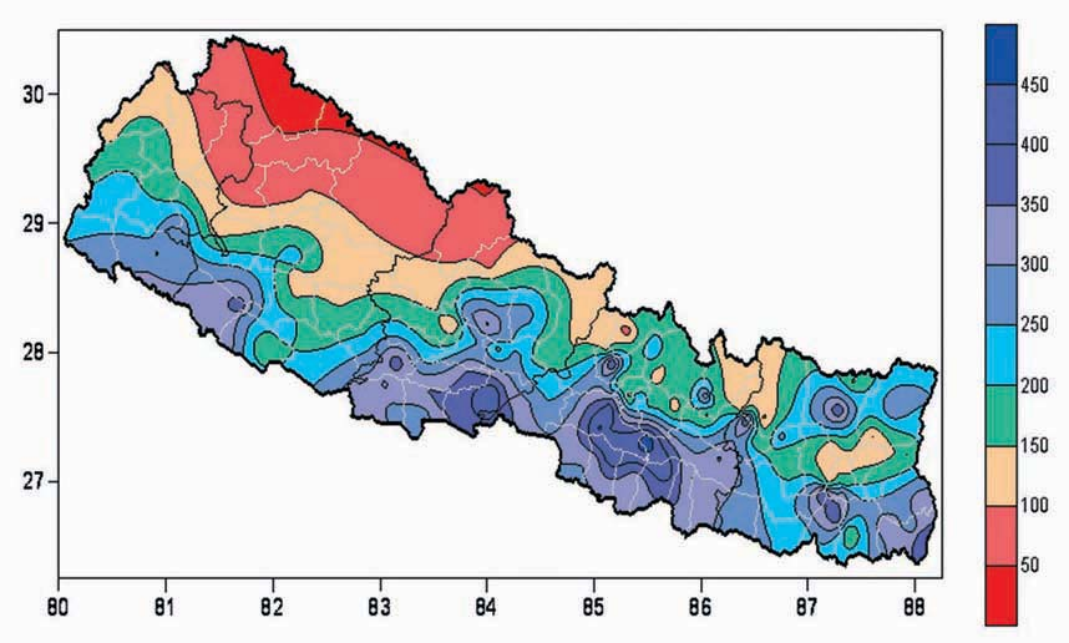

Figure 3.7: 24 hours highest rainfall pattern (mm)

3.2. Rainfall Trend

The precipitation is highly variable spatially and temporally. The Fourth Assessment Report (AR4) of IPCC revealed a significant increase in precipitation in eastern parts of North and South America, northern Europe and northern and central Asia. Increasing drought has been observed in the Sahel, the Mediterranean, southern Africa and parts of southern Asia. More intense and longer droughts have been observed over wider areas globally since the 1970s, particularly in the tropics and subtropics. Higher temperatures and decreased precipitation have contributed to increased drought. This study attempts to identify such changes in precipitation pattern over Nepal. Inter annual variation of rainfall in Nepal is so large that no significant trend was observed over the years. The average annual rainfall trends of the country was nearly 4 mm/year over the period. The summary of rainfall trend is presented in Annex 2.

3.2.1. Annual Rainfall Trend

Overall, eastern, central, western and far western development regions illustrated positive trend in annual rainfall (Figure 3.8). Some small pocket areas observed over 40 mm/year increase in annual

precipitation. However, most of the mid western development region showed decreasing annual rainfall trend. The region in and around Dolakha District observed the largest decreasing trend of up to 40 mm/year despite its location in central development region where overall trend is positive.

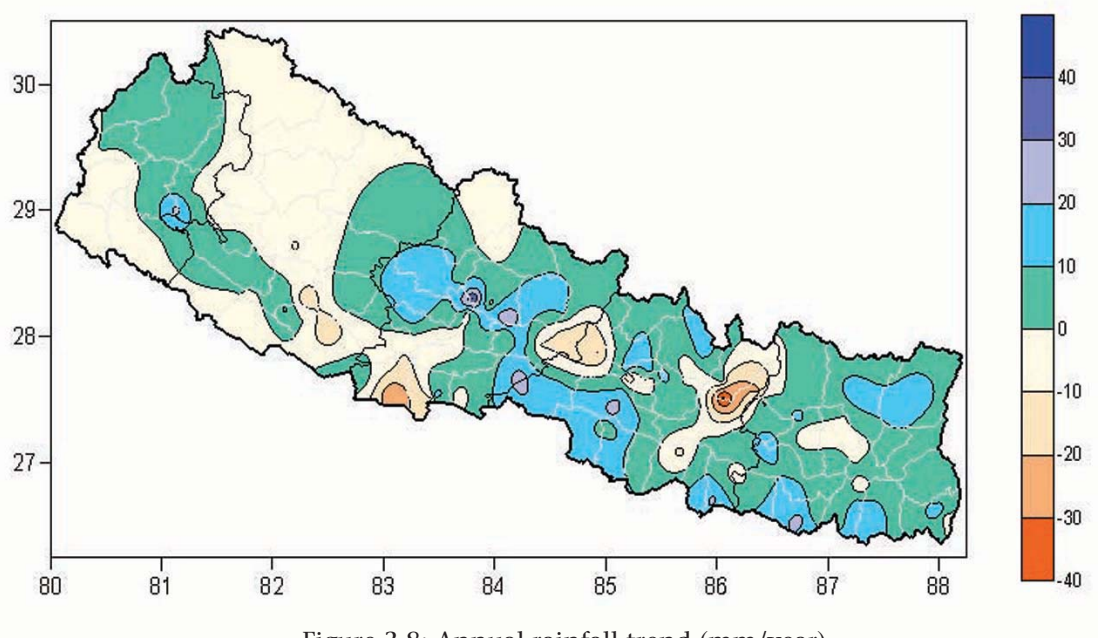

Figure 3.8: Annual rainfall trend (mm/year)

3.2.2. Pre Monsoon Trend

In pre monsoon season, most of the eastern, central and western development regions illustrated increasing trend in rainfall, over 9 mm/year (Figure 3.9). The highest increasing trend was observed in and around Myagdi, Kaski, Sindhupalchowk and Sankhuwasabha Districts. However, there are some small pocket areas in these regions which showed decreasing trend. The areas around Dhankuta, Dolakha, Ramechhap and Tanahu Districts showed a decreasing trend. The mid western and far western development regions showed decreasing trend of up to 4 mm/year. Most of the areas in northwestern parts of the country showed mostly high decreasing trend in precipitation during this season.

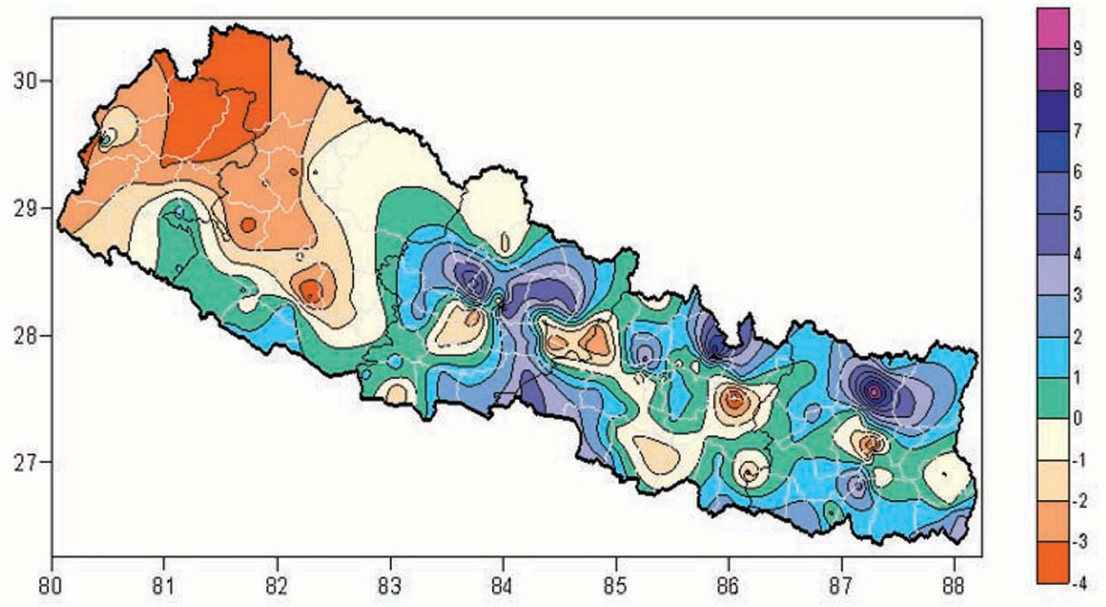

Figure 3.9: Pre-monsoon rainfall trend (mm/year)

3.2.3. Monsoon trend

The overall rainfall trend in monsoon season was observed to be mainly increasing in eastern, central, western and far western development regions reaching up to over 30 mm/year (Figure 3.10). However, most of the areas in mid western region illustrated a decreasing trend in rainfall up to 30 mm/year resulting in an overall decreasing trend. The largest decreasing trend was observed in areas around Dolakha and Solukhumbu Districts during monsoon season. The overall monsoon trend of the country is 3 mm/year.

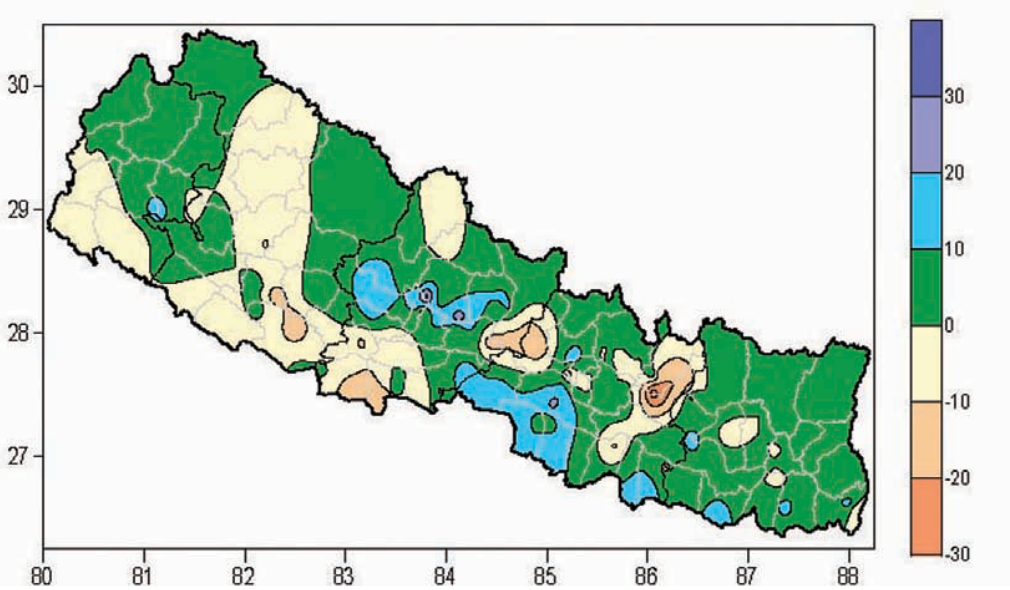

Figure 3.10: Monsoon rainfall trend (mm/year)

3.2.4. Post Monsoon Trend

Post monsoon showed mixed results. Most of the mid western development region and the southern parts of eastern, central and western development regions illustrated an increasing trend in rainfall (Figure 3.11) up to over 4 mm/year. Far western development region and most of the northern parts of the country observed decreasing trend up to 7 mm/year. Sankhuwasabha area which depicted the highest increasing rainfall trend in pre monsoon season observed the highest decreasing rainfall trend in the post monsoon season.

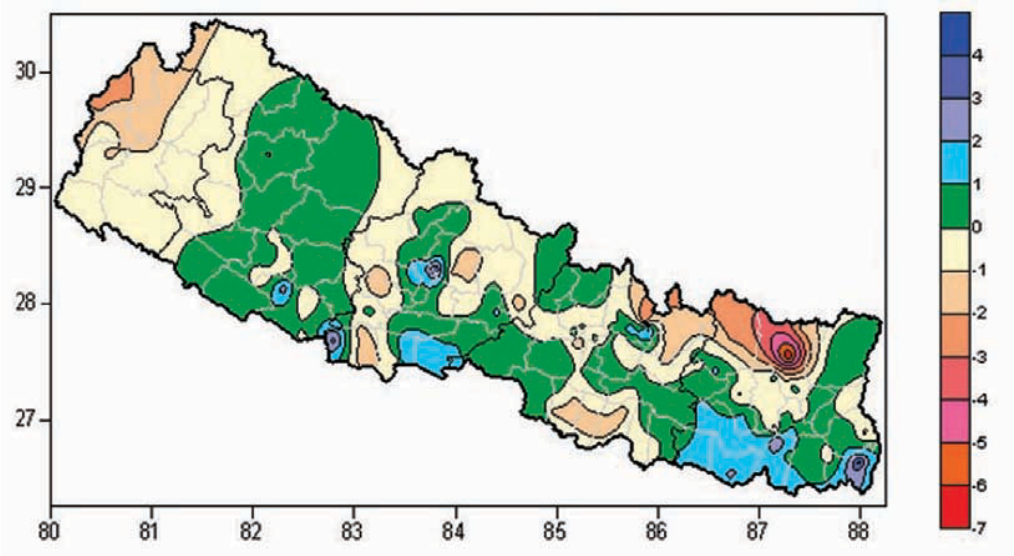

Figure 3.11: Post monsoon rainfall trend (mm/year)

3.2.5. Winter Trend

The winter season represented increasing rainfall trend almost over the entire country (Figure 3.12) up to over 2.8 mm/year. Some areas in the northern parts of mid western and eastern development regions and some isolated pocket areas however observed decreasing trend. Sankhuwasabha, Taplejung and Achham areas recorded the highest increasing trend in comparison to other places during this season.

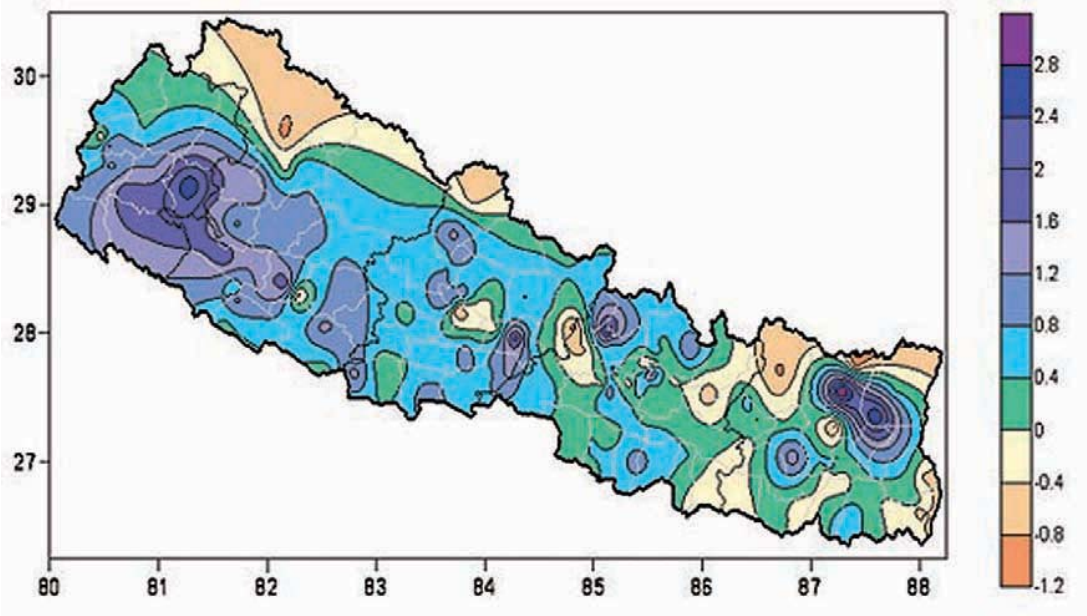

Figure 3.12: Winter rainfall trend (mm/year)

Table 3.1: Areas with high increasing and high decreasing trends of rainfall

Seasons	High increasing trend areas	High decreasing trend areas
Pre monsoon	Myagdi, Kaski, Sindhupalchowk, Sankhuwasabha	Dhankuta, Dolakha, Ramechhap, Tanahu, Salyan, Bajhang, Baitadi
Monsoon	Kaski, Makawanpur	Dolakha, Solukhumbu, Kapilbastu, Dang, Dhading, Tanahun
Post monsoon	Kaski, Kapilbastu, Jhapa, Sunsari	Sankhuwasabha, Sindhupalchowk, Solukhumbu
Winter	Sankhuwasabha, Taplejung, Nuwakot, Achham, Doti, Tanahu	Dhankuta, Dhading, Solukhumbu, Parbat
Annual	Kaski, Makawanpur	Dolakha, Kapilbastu, Dang, Solukhumbu, Dhading

3.2.6. Frequency Analysis of Extreme Rainfall

The frequency analysis of maximum 24 hour rainfall was carried out by Gumbel distribution method. The summary of extreme rainfall is provided in Annex 3. The 2, 5, 10, 15, 20, 25, 50 and 100 years return period for extreme rainfalls are presented in Annex 4. The extreme rainfall distribution was found quite different from the annual or seasonal distribution or trends. Foothills of the Siwalik and the Mahabharata have received the highest intensive rainfalls. The southern parts of central and western development regions are receiving more intensive rainfalls compared to other areas. The highest intensive rainfall expected once in 100 years return period is equal to or exceeding 523.2 mm in the Hetauda (Makawanpur) area and 61.6 mm in Lomanthang (Mustang) area. Figures 3.13 - 3.16 show the maximum 24 hour rainfall for the return periods of 10, 20, 50 and 100 years.

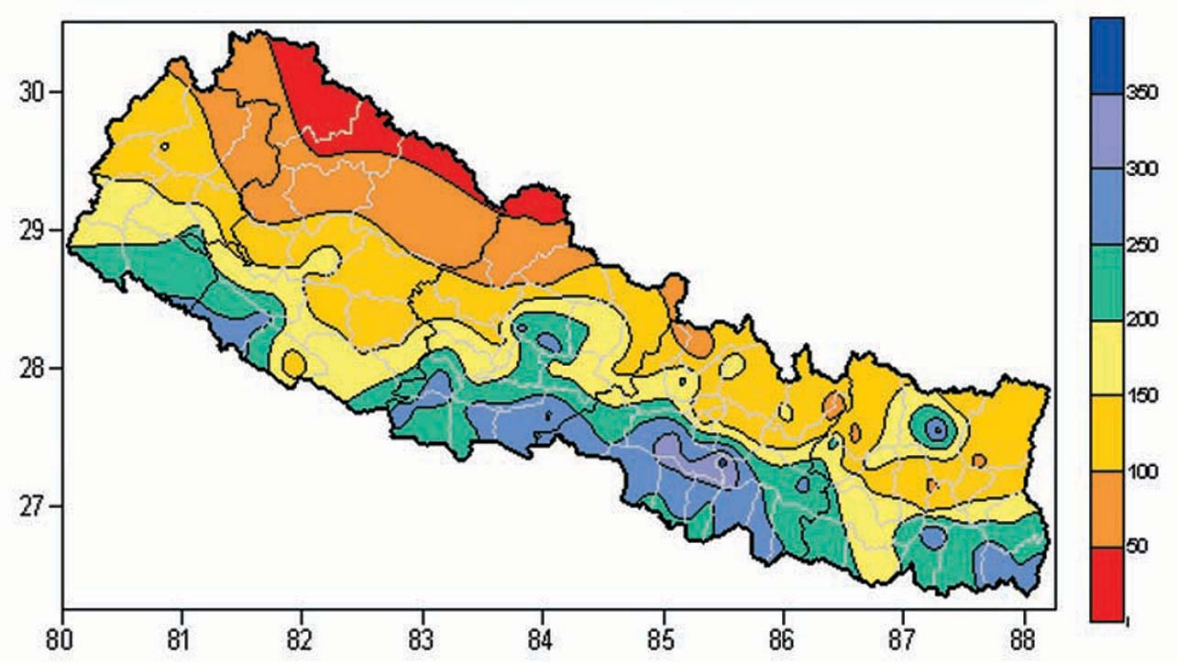

Figure 3.13: Extreme rainfall (mm) in 10 years return period

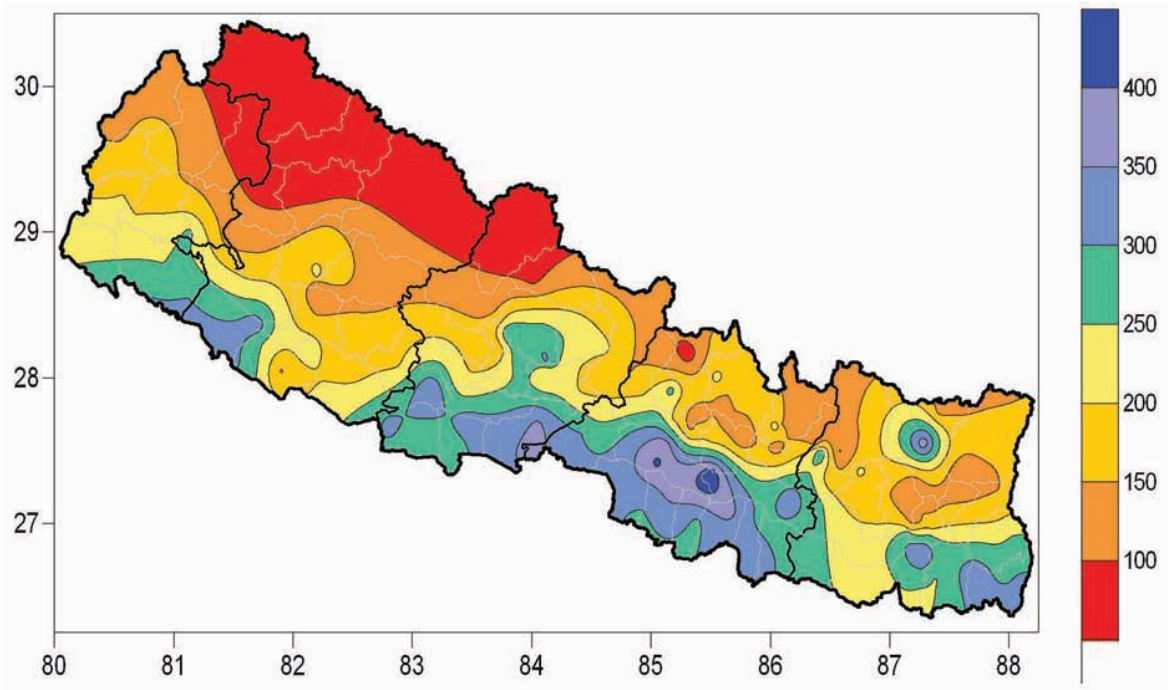

Figure 3.14: Extreme rainfall (mm) in 20 years return period

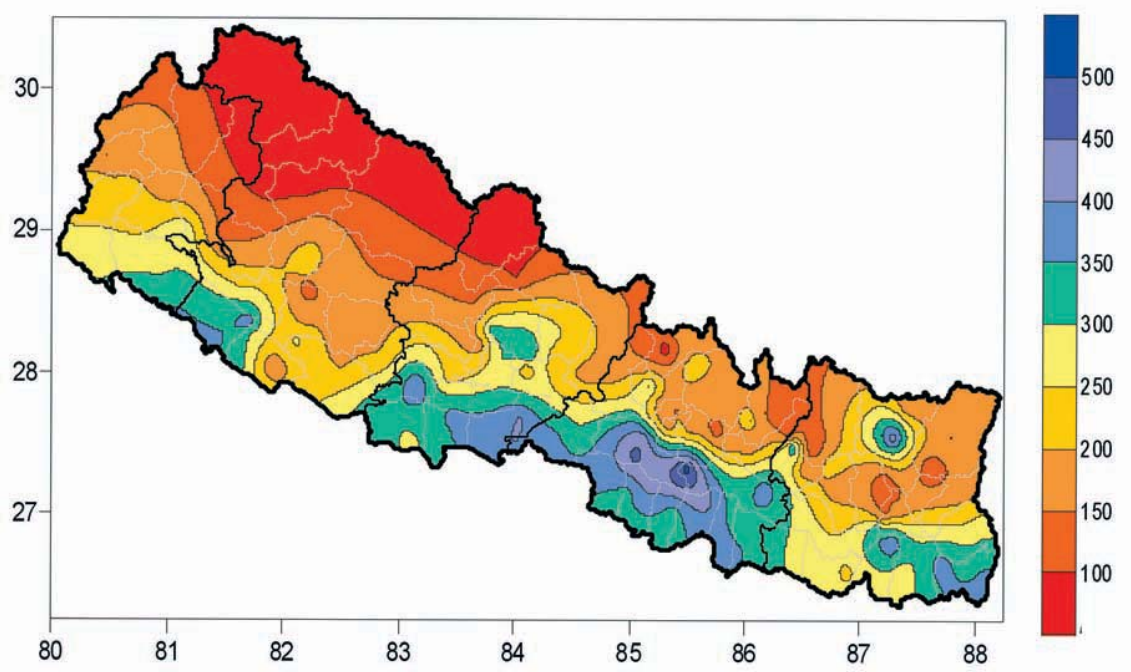

Figure 3.15: Extreme rainfall (mm) in 50 years return period

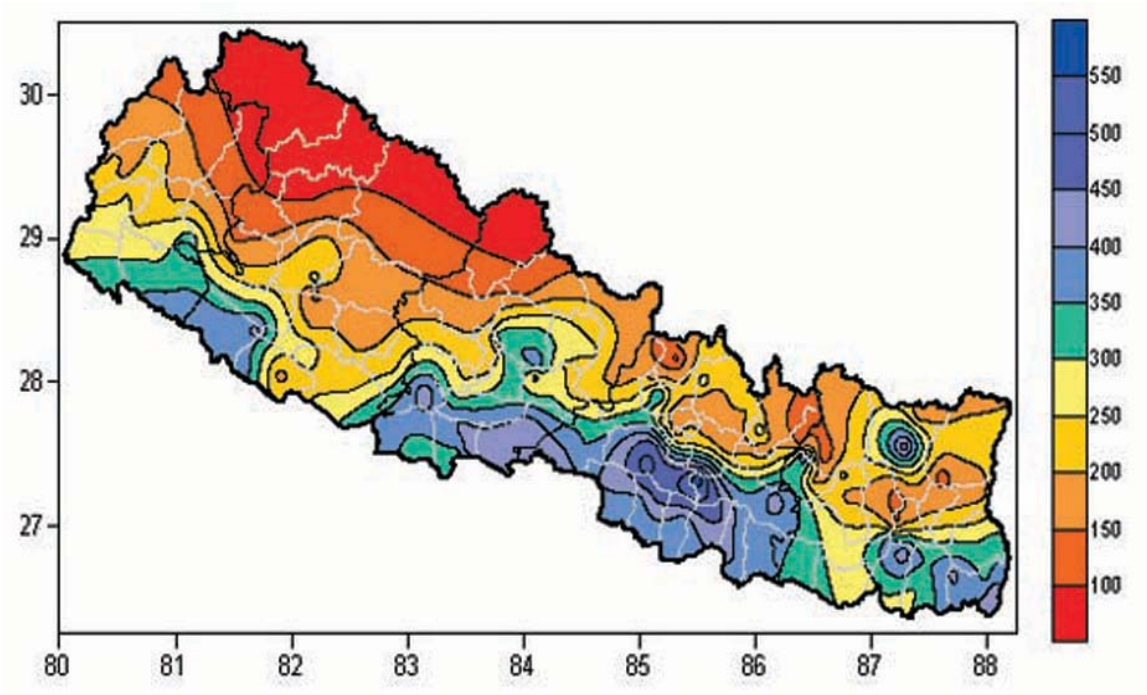

Figure 3.16: Extreme rainfall (mm) in 100 years return period

3.3. Temperature

In Nepal, temperature is lowest during winter (December - January) and increases as spring advances due to increase in solar insolation. However, the arrival of monsoon rain checks the increase in temperature making generally May or early June the hottest months. The temperature starts decreasing from October and reaches the minimum in December or January. Temperature is directly related to season and altitude of the location. The hottest part of the country is the southern tarai belt and the coldest part lies in the high mountain or the Himalayas in the north.

3.3.1. Maximum Temperature Pattern

Altitude is the guidance factor in the spatial variation of temperature. Therefore, the mean maximum temperature pattern follows the topographical variation of the country (Figure 3.17). Mean maximum temperature in tarai belt reached above 30° C which gradually decreased towards north as altitude increased. Over the Siwalik range the maximum temperature varied between 26° to 30° C. The maximum temperature ranged between 22° to 26° C in the middle hills and reached below 22° C in the high hills and high mountains. The summary of mean maximum temperature is provided in Annex 5.

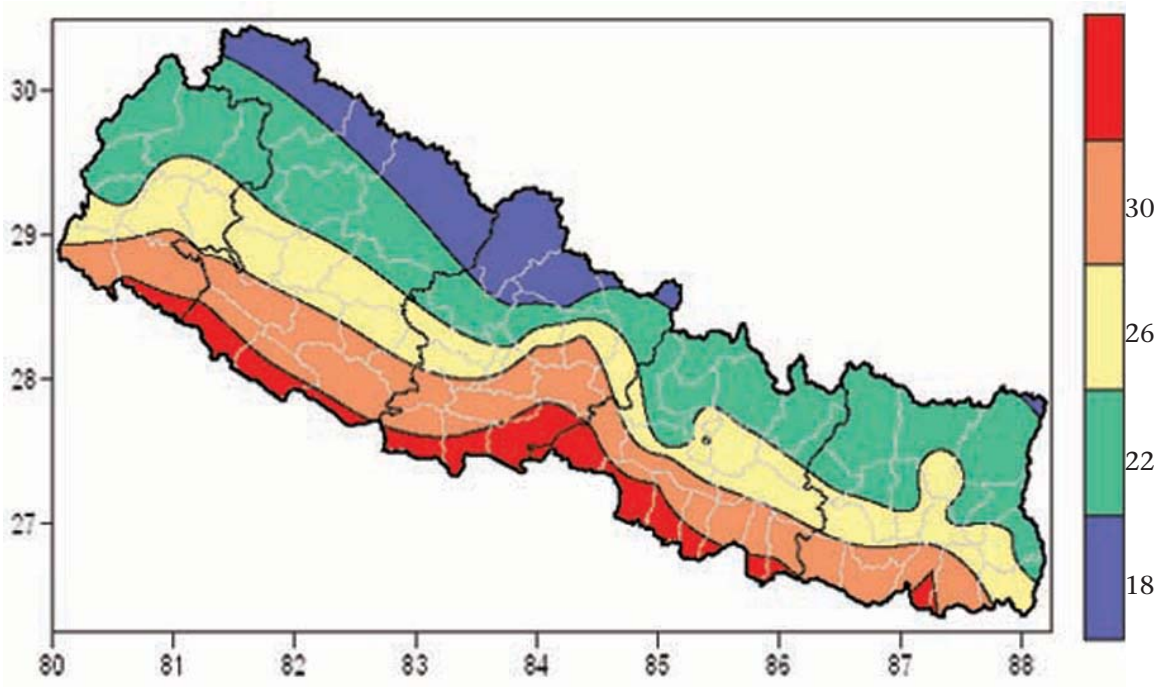

Figure 3.17: Spatial variation of mean maximum temperature (°C)

3.3.2. Minimum Temperature Pattern

Mean minimum temperature pattern is similar to the mean maximum temperature pattern (Figure 3.18). Mean minimum temperature varied between above 18° C in tarai to less than 6° C in the northwestern parts of the country. The summary of mean minimum temperature is provided in Annex 6.

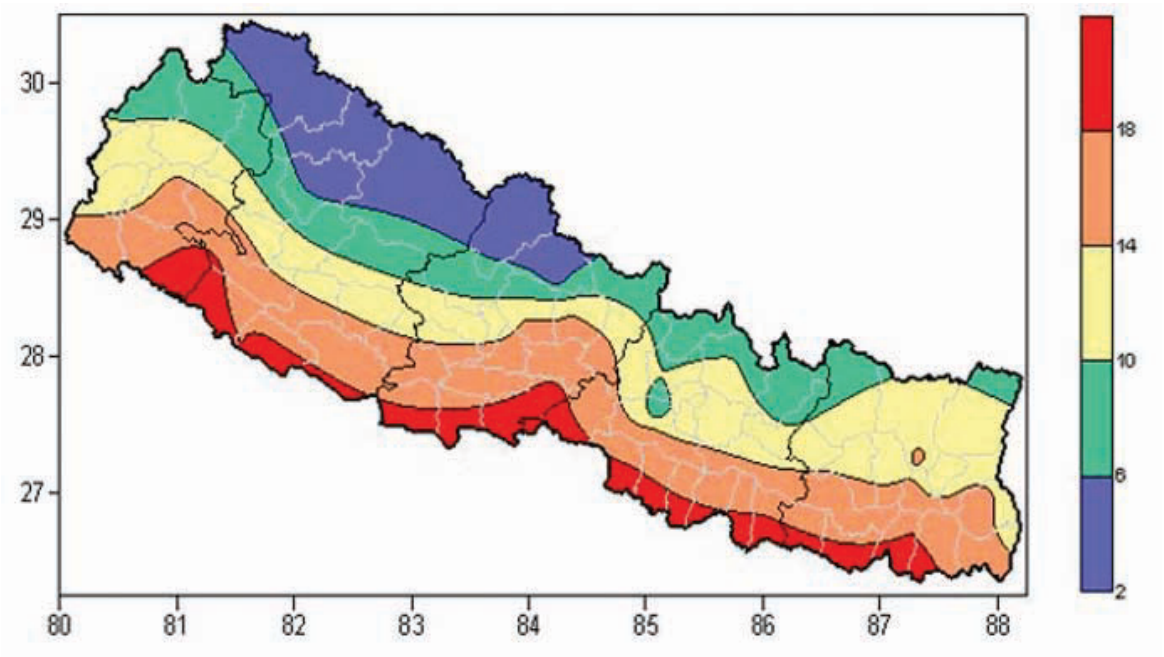

Figure 3.18: Spatial variation of mean minimum temperature (°C)

3.3.3. Mean Temperature Pattern

Mean temperature pattern is similar to the mean maximum and mean minimum temperature pattern (Figure 3.19). Mean temperature varied between above 20° C in tarai and Siwalik to less than 12° C in the northwestern parts of the country. The summary of mean temperature is provided in Annex 7.

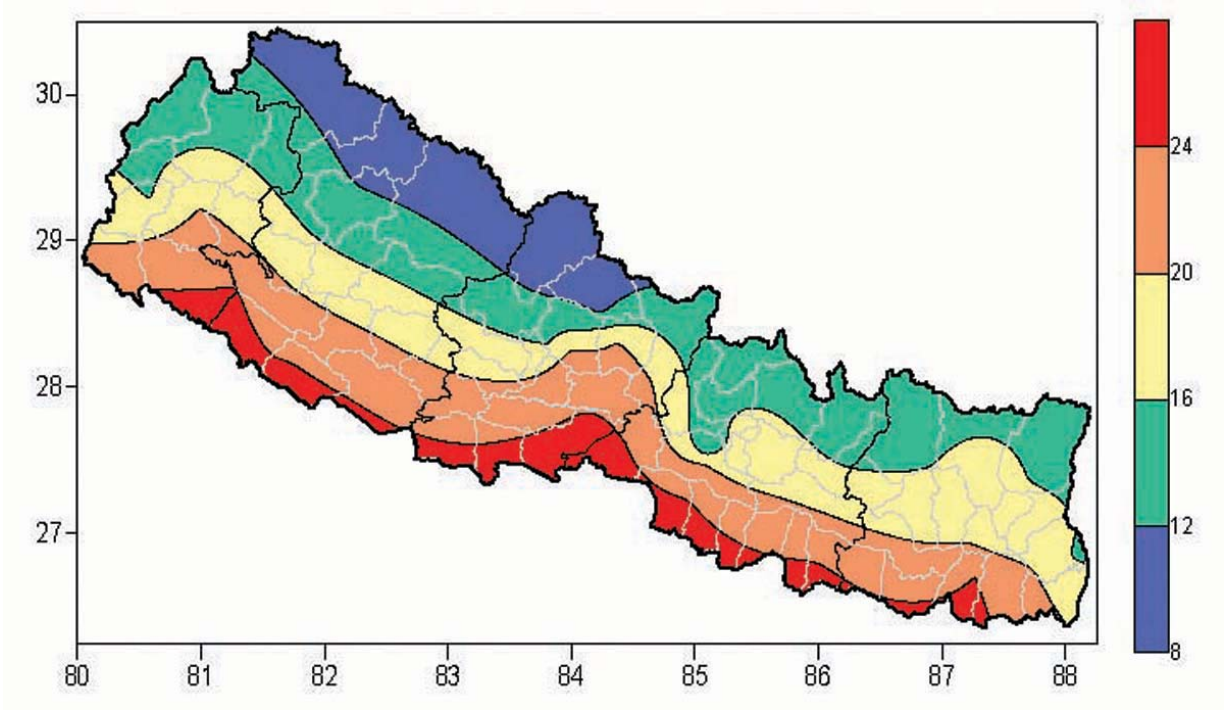

Figure 3.19: Spatial variation of mean temperature (°C)

3.4. Temperature Trend

The IPCC Fourth Assessment Report (IPCC 2007) refers that "warming of the climate system is unequivocal," as is now evidenced by increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. Eleven of the last 12 years (1995-2006) ranked among the 12 warmest years in the instrumental record of global surface temperature since 1850. The updated 100 year linear trend (1906-2005) of 0.74 (0.56 to 0.92)° C is therefore higher than the corresponding trend of 0.6 (0.4 to 0.8)° C for 1901-2000 given in the Third Assessment Report (TAR). The linear warming trend of 0.13 (0.10 to 0.16)° C per decade over the last 50 years is nearly twice that for the last 100 years (AR4). The total temperature increase from 1850-1899 to 2001-2005 is 0.76 (0.57 to 0.95)° C. In Nepal, the temperature is reported to have been increasing and the impacts of warming have already been observed in the Himalayan glaciers. Annual maximum, minimum and mean temperature trends have been studied to identify the spatial pattern and the locations which show high and low increasing and decreasing trends of warming in the country.

3.4.1. Annual Maximum Temperature Trend

The spatial pattern of mean maximum temperature trend is in increasing trend almost in the entire country (Figure 3.20) except in a few isolated places such as in Sankhuwasabha, Sunsari, Banke, Nawalparasi and Bardia Districts. Generally, the trend was observed to be lower in the southern parts (low altitude) and higher in the northern areas (high altitude). The areas around Dhankuta, Dadeldhura and Okhaldhunga depicted high increasing trend of maximum temperature. The summary of maximum temperature trend is provided in Annex 8.

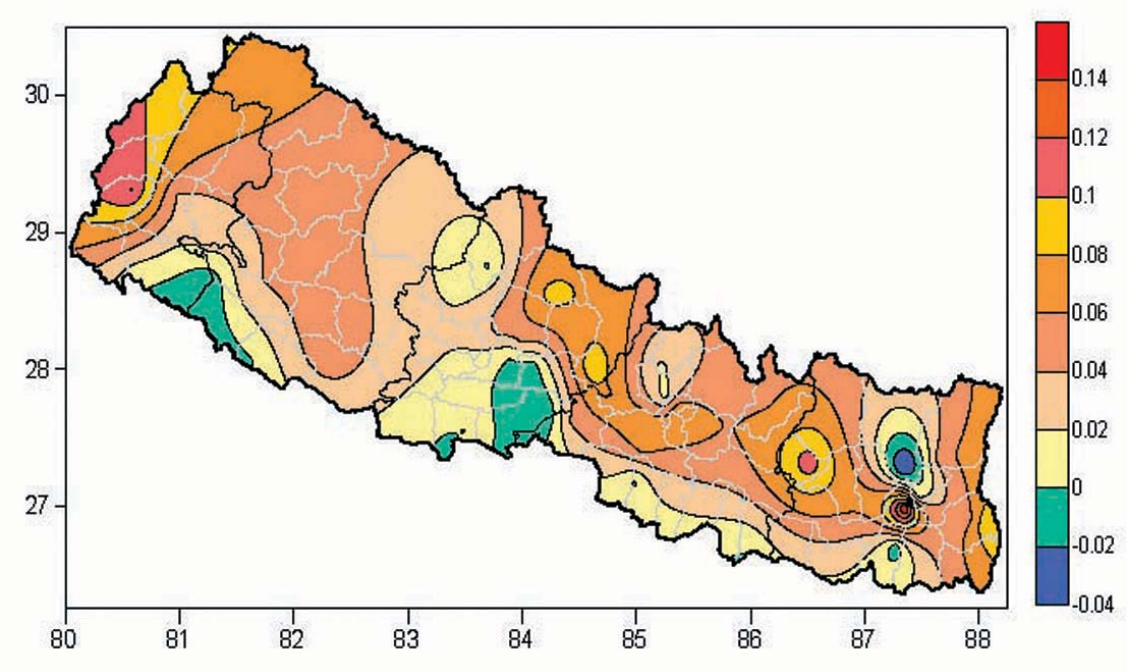

Figure 3.20: Spatial variation of mean maximum temperature trend (°C/year)

3.4.2. Annual Minimum Temperature Trend

The mean minimum temperature is in decreasing trend in northern parts and large portion of mid western and far western development regions (Figure 3.21) which does not show largely the same line to mean maximum temperature trend. Doti, Sankhuwasabha and northern parts of Nuwakot Districts observed large decreasing trend of more than -0.02° C/year. However, most of the southern parts of the country represented increasing trend. High increasing trend was observed around Lamjung, southern parts of Nuwakot, Chitwan and Dhanusa Districts. The summary of minimum temperature trend is presented in Annex 9.

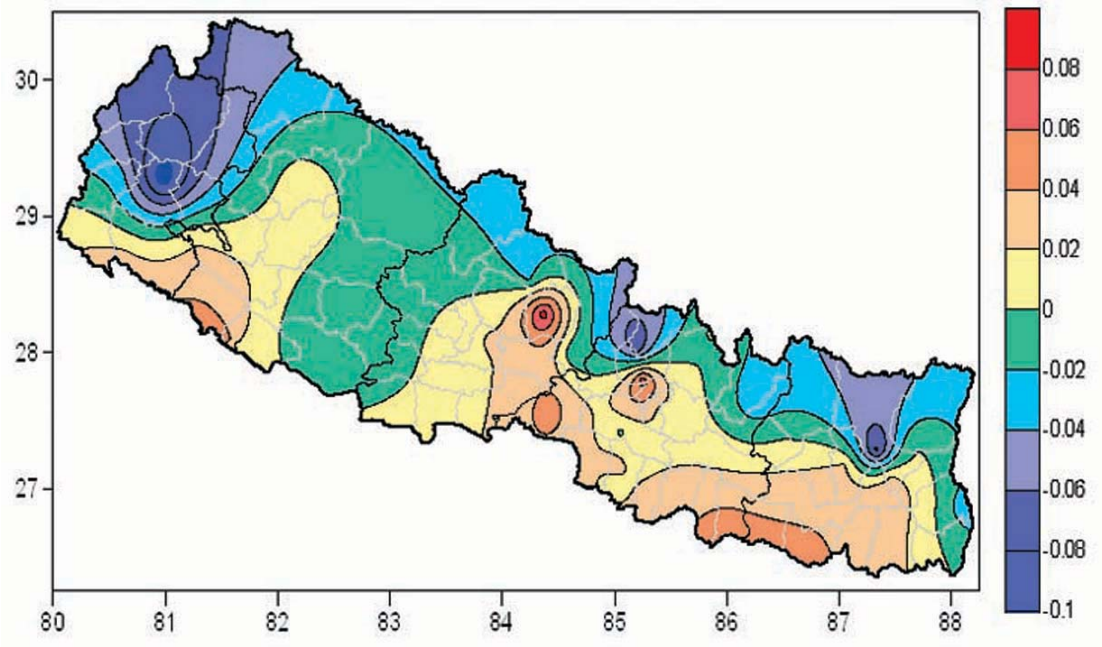

Figure 3.21: Spatial variation of mean minimum temperature trend (°C/year)

3.4.3. Annual Mean Temperature Trend

Annual mean temperature is the average of maximum and minimum temperatures. Spatial variation of the annual mean temperature trend is in increasing trend almost in the entire country barring few isolated places like Sankhuwasabha, Doti and northern parts of Nuwakot Districts. The trend varied roughly between -0.06° C to over 0.08° C per year over Nepal. Dhankuta and Lamjung areas represented the highest increasing trend of mean temperature with values more than 0.08° C/year and 0.06° C/year respectively (Figure 3.22). The summary of mean temperature trend is provided in Annex 10.

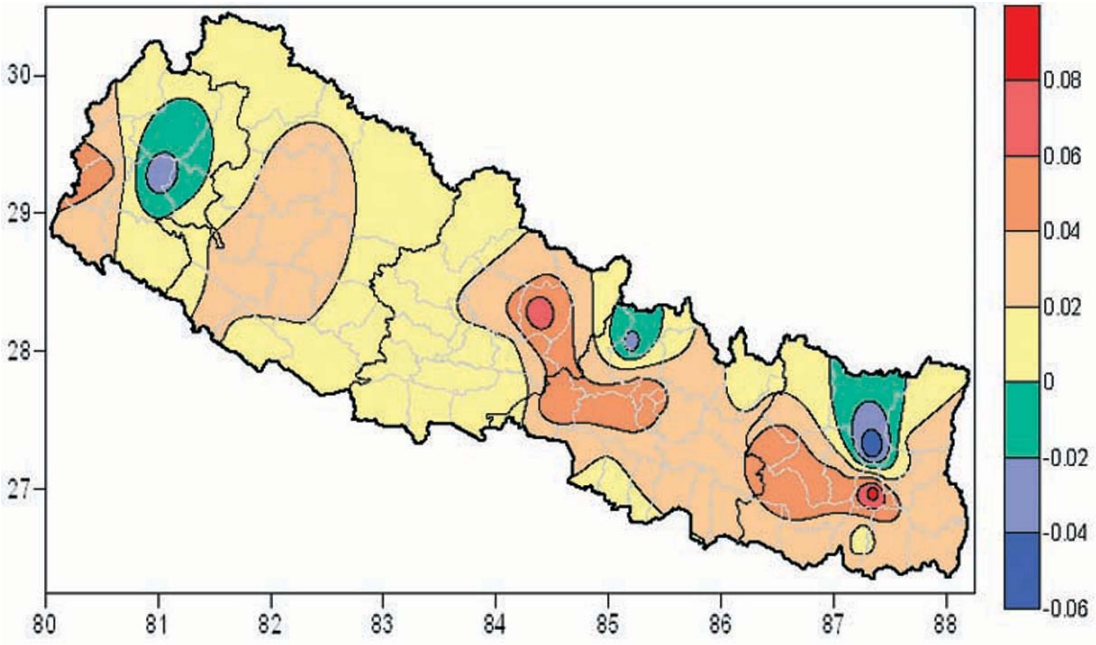

Figure 3.22: Spatial variation of annual mean temperature trend (°C/year)

Table 3.2: Districts with high increasing and decreasing trends in annual temperature

Annual temperature	High increasing trend	High decreasing trend
Maximum	Dhankuta, Dadeldhura and Okhaldhunga	Sankhuwasabha, Sunsari, Nawalparasi, Banke, Bardia
Minimum	Lamjung, southern parts of Nuwakot, Chitwan and Dhanusa	Doti, Sankhuwasabha and northern parts of Nuwakot
Mean	Dhankuta and Lamjung	Sankhuwasabha, Doti and northern parts of Nuwakotz

3.5. Seasonal Temperature Trend

The general pattern of spatial variation of temperature trends varied slightly from season to season, though the overall pattern is similar. Trend in maximum, minimum and mean temperature pattern are described below.

3.5.1. Seasonal Maximum Temperature Trend

Maximum temperature is in increasing trend in most places during all the seasons (Figure 3.23-3.26). The trend is in large magnitude. Similarly, significant decreasing trend was observed in tarai region during winter season. The reason for this decreasing trend in maximum temperature in winter season is due to the cold wave and resulting foggy conditions during winter months (December and January) along the northern stretch of Gangetic plain including the tarai region of Nepal. This fog episode has become more prominent and persistent during the last decade or so. Warming has been observed more in the north than in the south of the country. The post monsoon season represented high increasing trends with low decreasing trends compared to the rest of the seasons. The regions with high increasing and decreasing trends are depicted in Table 3.3.

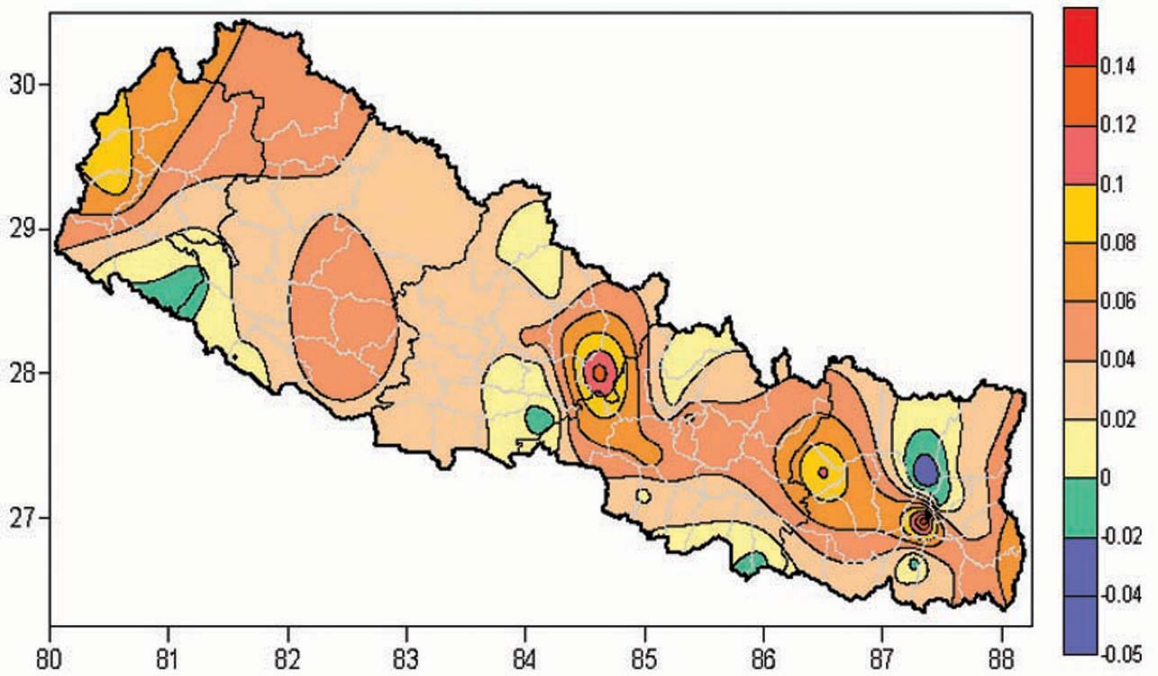

Figure 3.23: Spatial variation of monsoon maximum temperature trend (°C/year)

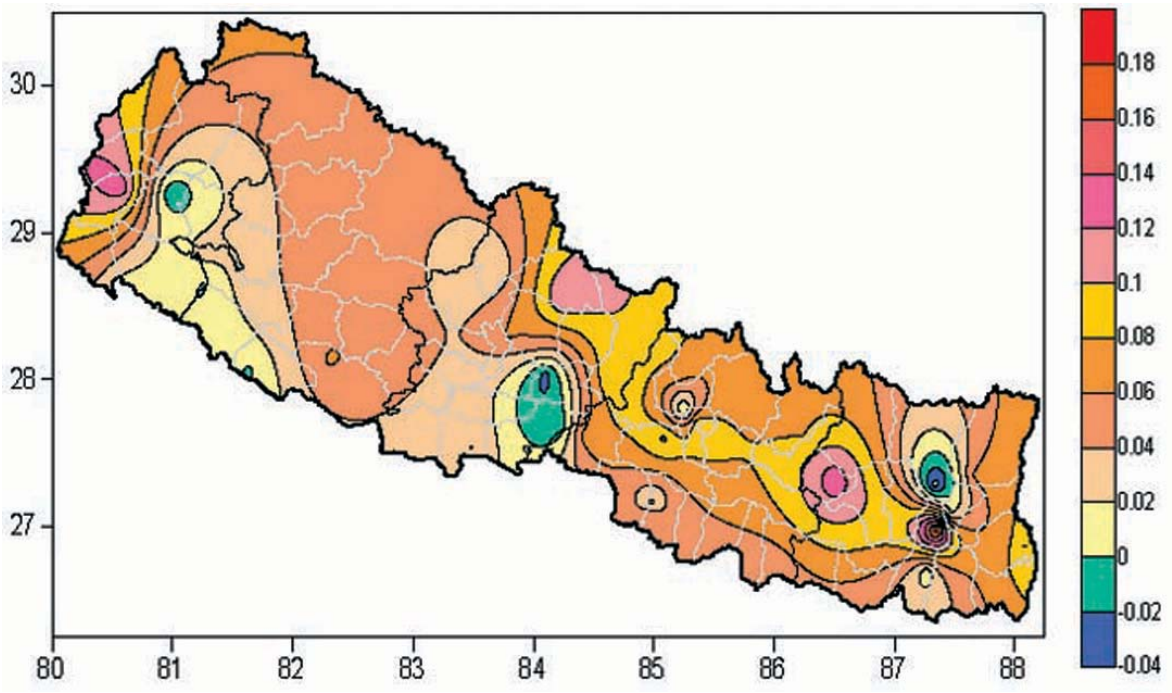

Figure 3.24: Spatial variation of post monsoon maximum temperature trend (°C/year)

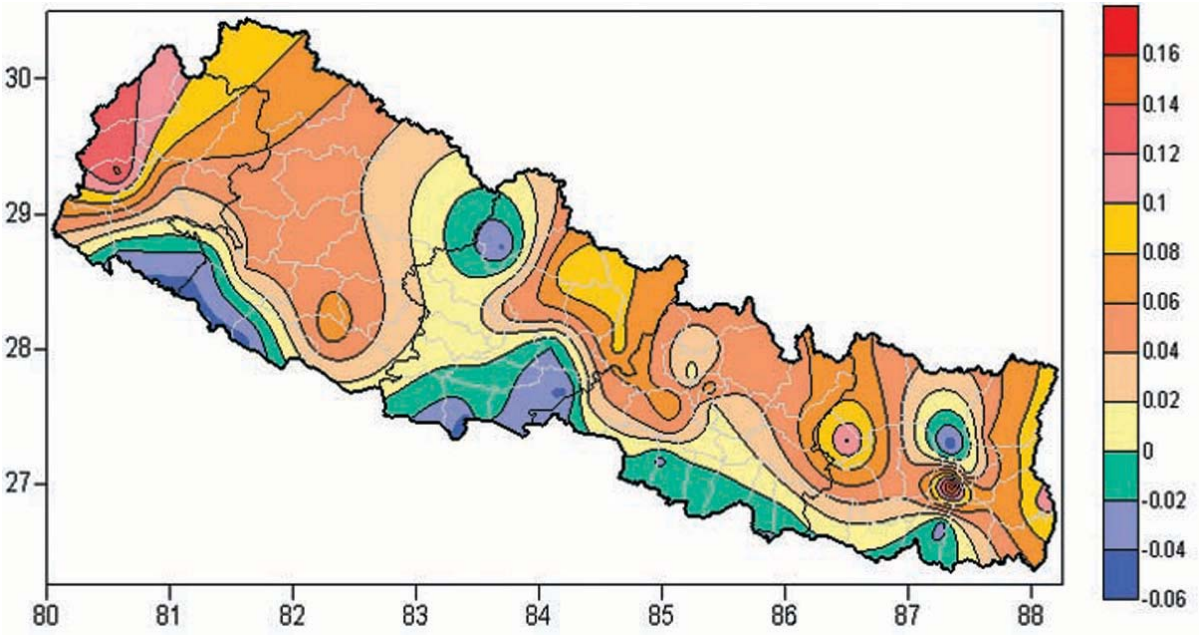

Figure 3.25: Spatial variation of winter maximum temperature trend (°C/year)

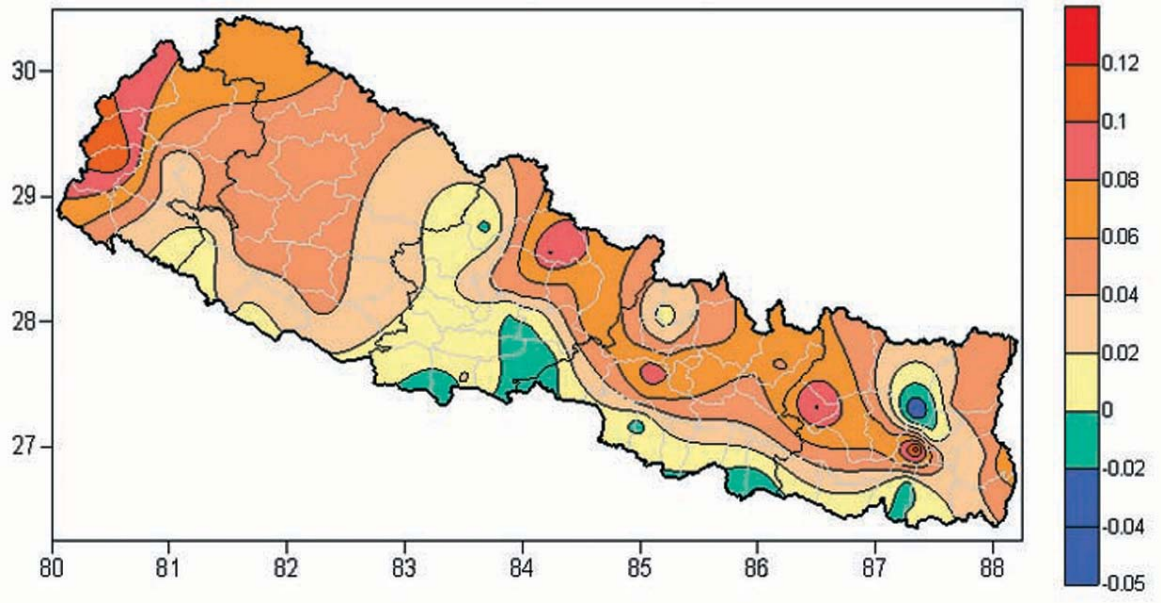

Figure 3.26: Spatial variation of pre monsoon maximum temperature trend (°C/year)

Table 3.3: Areas (in and around) with high increasing and decreasing maximum temperature trends in different seasons

Seasons	High increasing trend districts/ areas	High decreasing trend districts /areas
Pre monsoon	Dhankuta, Dadeldhura, Manang, Okhaldhunga	Sankhuwasabha,
Monsoon	Dhankuta, Gorkha, Okhald-hunga,	Sankhuwasabha
Post monsoon	Dhankuta, Okhaldhunga, Dadeldhura, Manang,	Sankhuwasabha, Tanahu, Doti, Nawalparasi
Winter	Dhankuta, Dadeldhura, Okhald-hunga, Ilam	Sankhuwasabha, Banke, Rupandehi, Nawal-parasi, Mustang, Bardia, Kailali

3.5.2. Seasonal Minimum Temperature Trend

All seasons observed a general decreasing trend in minimum temperature in the northern mountainous regions of the country and an increasing trend in the southern hilly and plain regions (Figure 3.27-3.30). In mid western region, the trend is largely positive in monsoon which gradually becomes negative as the winter comes. The negative trend reached maximum during winter and then gradually decreased in the value and the trend in the monsoon season. The minimum temperature trend varied between around -0.14° C during pre and post monsoon seasons to slightly above 0.1° C in monsoon season. The regions with high increasing and decreasing trends are in given Table 3.4.

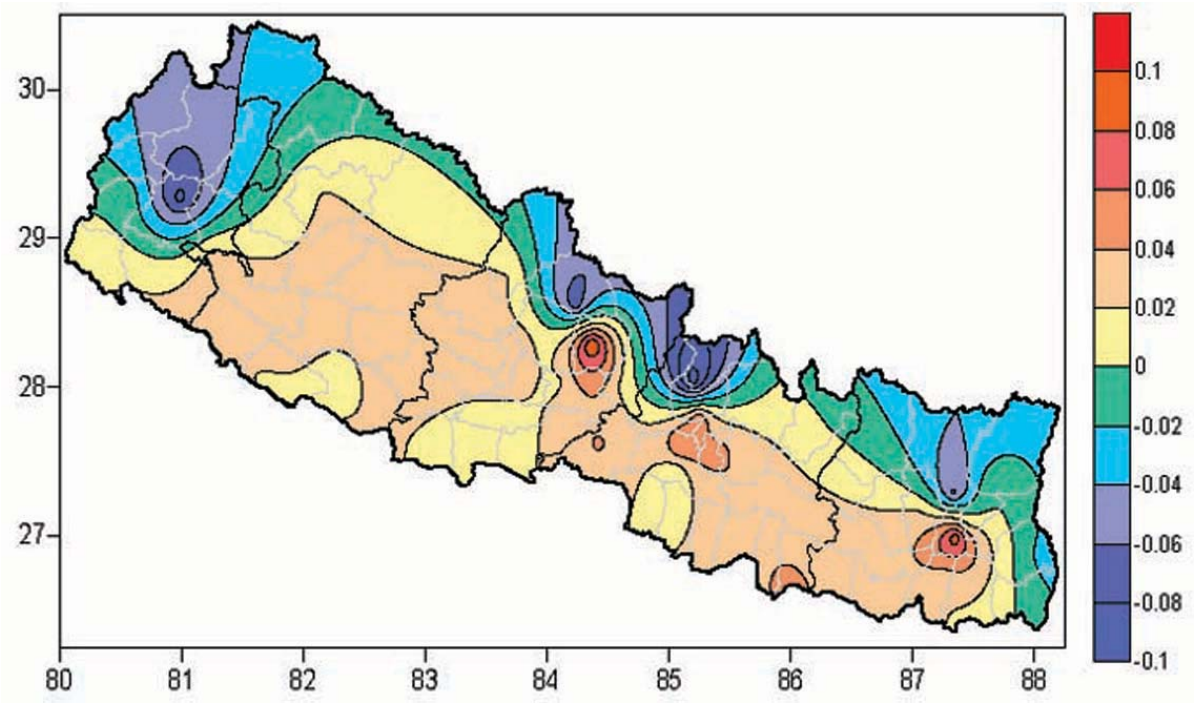

Figure 3.27: Spatial variation of mean monsoon minimum temperature trend (°C/year)

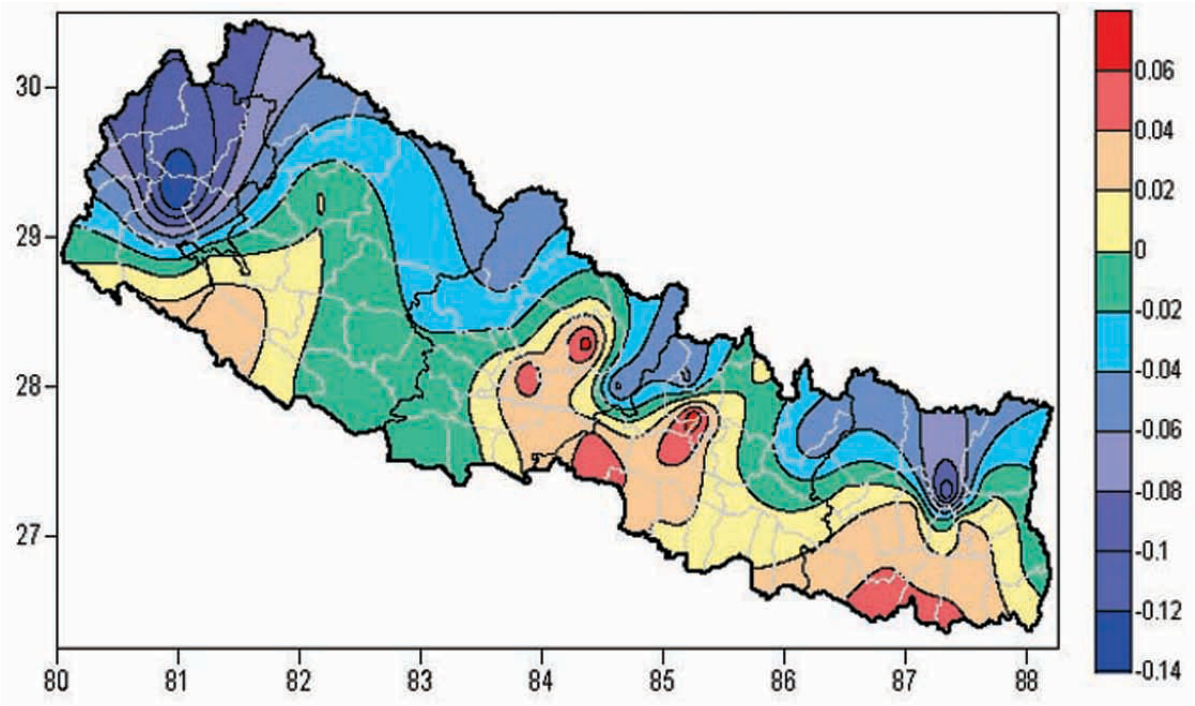

Figure 3.28: Spatial variation of mean post monsoon minimum temperature trend (°C/year)

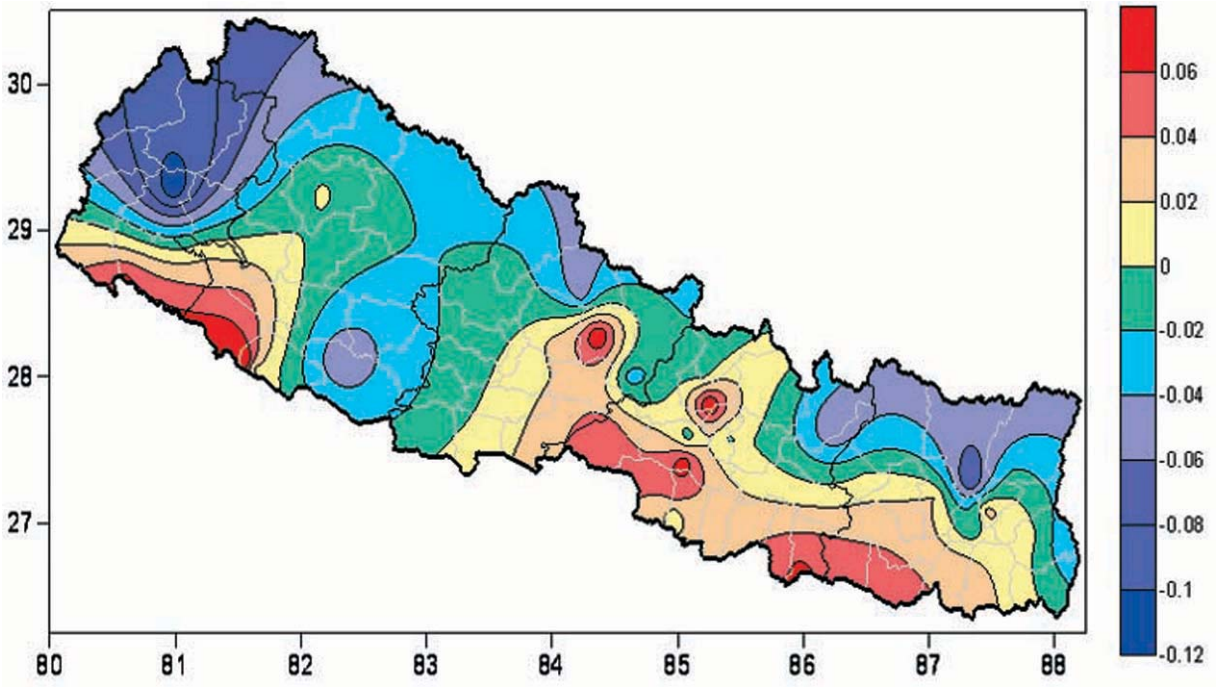

Figure 3.29: Spatial variation of mean winter minimum temperature trend (°C/year)

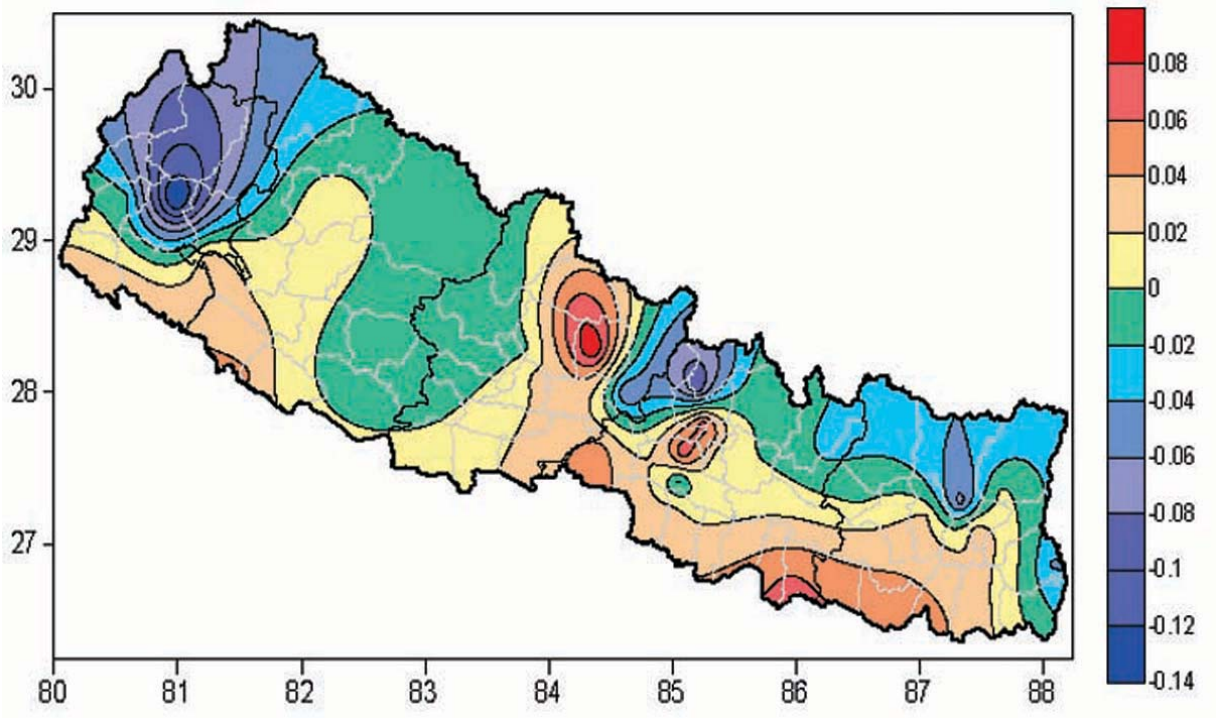

Figure 3.30: Spatial variation of mean pre monsoon minimum temperature trend (°C/year)

Table 3.4: Regions (in and around) with high increasing and decreasing minimum temperature trend in different seasons

Seasons	High increasing trend districts/areas	High decreasing trend districts/areas
Pre monsoon	Lamjung, Manang, Dhanusa	Doti, Nuwakot, Sankhuwasabha
Monsoon	Lamjung, Dhankuta	Doti, Manang, Nuwakot, Sankhuwasabha
Post monsoon	Southern Nuwakot, Lamjung, Makawanpur, Syangja, Morang	Doti, Sankhuwasabha, Gorkha, northern Nuwakot
Winter	Southern Nuwakot, , Lamjung, Banke, Makawanpur, Kailali, Dhanusa	Doti, Sankhuwasabha, Dolakha, northern Dang, Dadeldhura, Manang

3.5.3 Seasonal mean temperature trend

The mean temperature is in general widespread increasing trend in the country (Figure 3.31-3.34). Decreasing trend was however observed in few pocket areas in the northern areas of eastern, central and far western development regions. The regions with high increasing and decreasing trends in seasonal mean temperature are presented in Table 3.5.

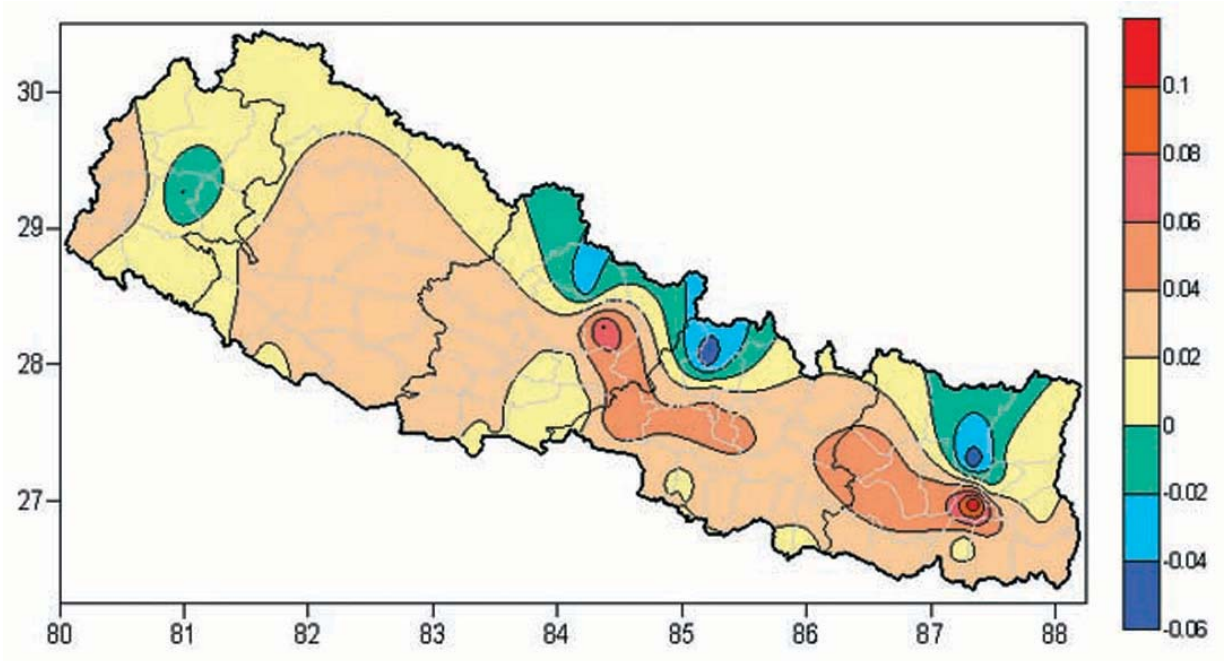

Figure 3.31: Spatial variation of mean monsoon mean temperature trend (°C/year)

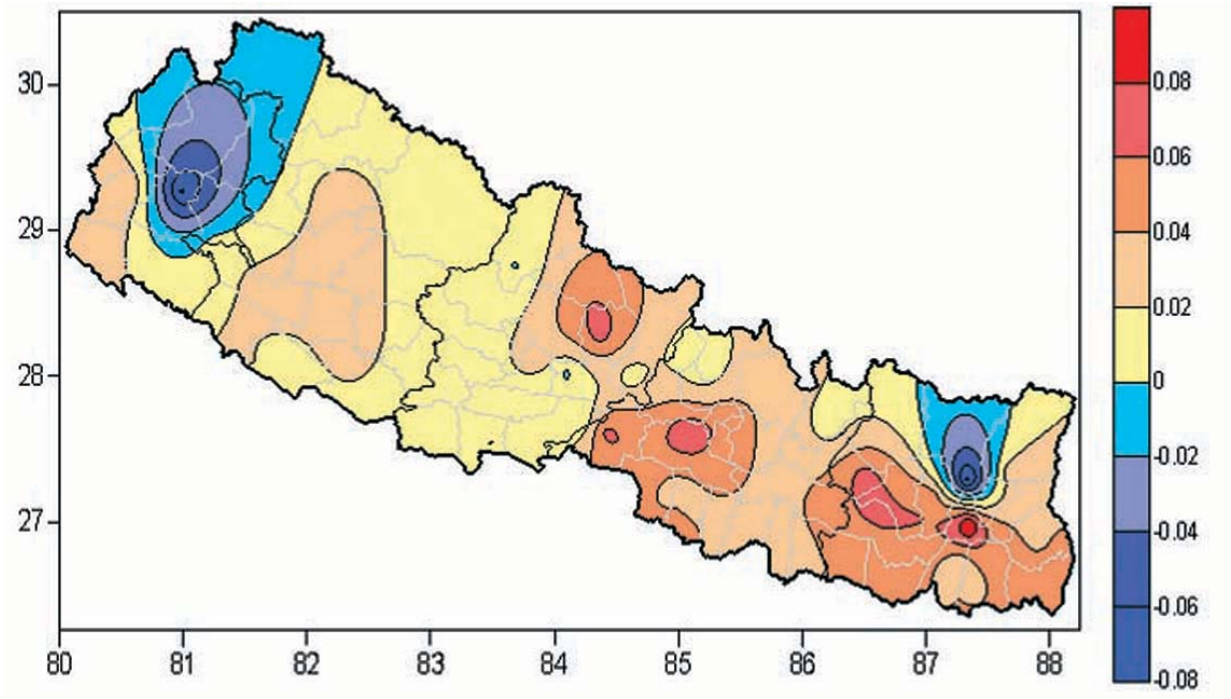

Figure 3.32: Spatial variation of mean post monsoon mean temperature trend (°C/year)

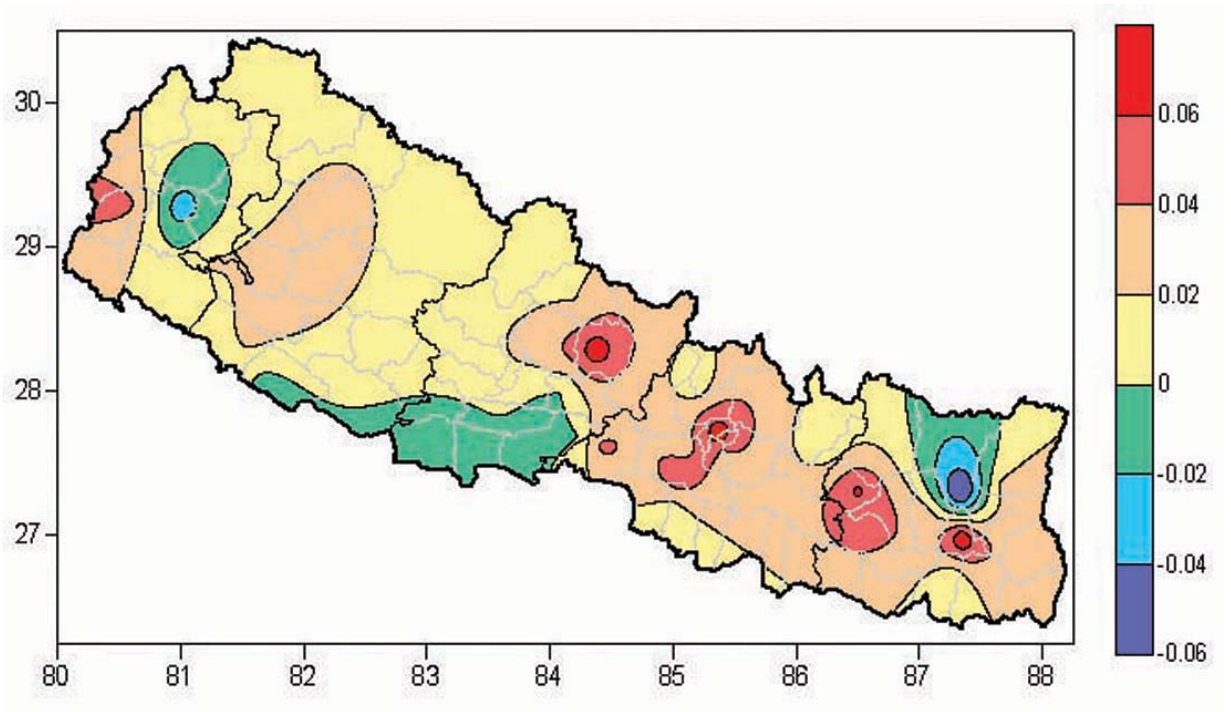

Figure 3.33: Spatial variation of mean winter mean temperature trend (°C/year)

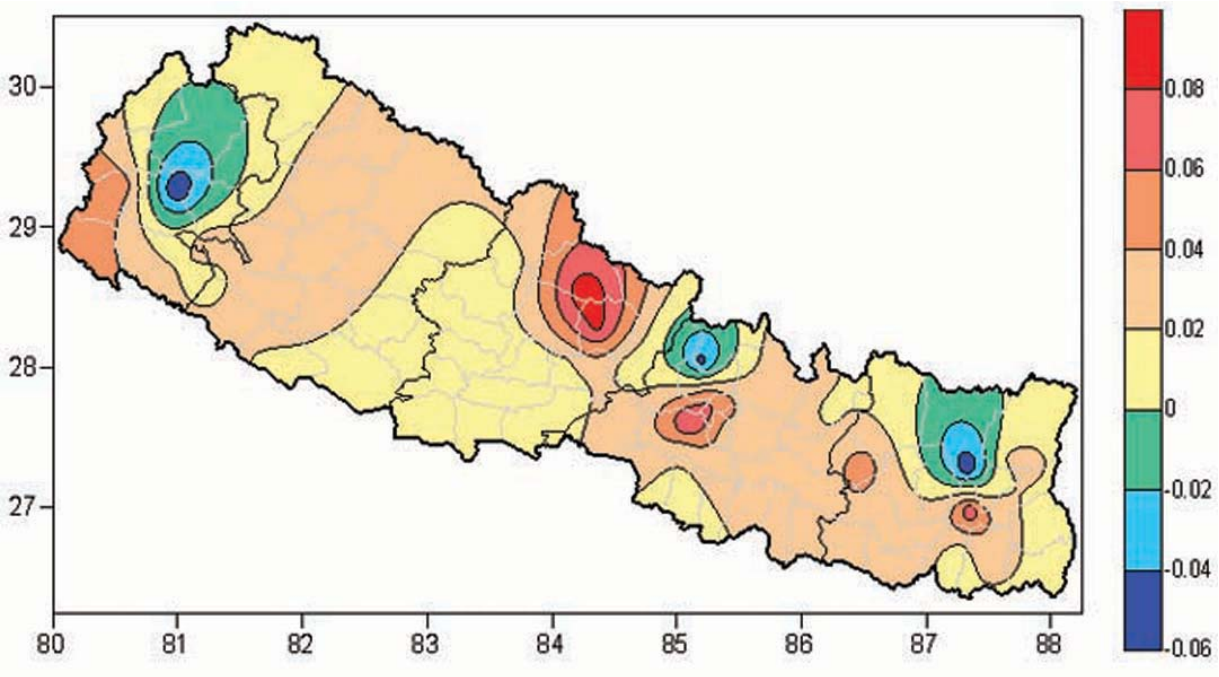

Figure 3.34: Spatial variation of mean pre monsoon mean temperature trend (°C/year)

Table 3.5: Regions (in and around) with high increasing and decreasing mean temperature trend for different seasons

Seasons	High increasing trend districts/areas	High decreasing trend districts/areas
Pre monsoon	Manang, Lamjung, Makawanpur, Dhankuta, Kathmandu valley	Doti, Sankhuwasabha, northern Nuwakot
Monsoon	Dhankuta, Lamjung, Makawanpur, Okhaldhunga	Sankhuwasabha, northern Nuwakot
Post monsoon	Dhankuta, Makawanpur, Lamjung, Okhaldhunga, Chitwan, Kathmandu valley, Manang, Bhojpur	Doti, Sankhuwasabha
Winter	Dhankuta, Lamjung, Kathmandu valley, Okhaldhunga, Makawanpur	Doti, Sankhuwasabha

In summary, there is a general increasing trend in temperature over the country. The maximum temperature is increasing at faster rate than the minimum temperature. Decreasing trend was observed in minimum temperature mostly in the northern parts of the country. In contrary, increasing trend in maximum temperature was most prominent in these northern areas. Decreasing trend in maximum temperature over tarai region during winter season is most interesting which could be attributed to the incidents of foggy condition in December and January during the last decade or so.

4 CONCLUSIONS AND RECOMMENDATIONS

4 CONCLUSIONS AND RECOMMENDATIONS

4.1. Conclusions

The country received highest precipitation in July and lowest in November. Highest and lowest annual precipitations were recorded at Lumle, Kaski (5,402.8 mm) and Lomanthang, Mustang (143.6 mm) respectively. Three highest rainfall pocket areas were observed at the windward sides of the mountains - southern slope of The Makalu range, The Jugal range and The Annapurna range. Two lowest rainfall pocket areas were observed at leeward side of high mountain - Manang and Mustang areas. During the study period, the country received 79.6, 4.2, 3.5 and 12.7 per cent of the total annual rainfall during monsoon, post monsoon, winter and pre monsoon seasons respectively. The spatial distribution of annual rainfall follows the spatial pattern of monsoon rainfall as the monsoon rainfall dominates the annual rainfall.

The spatial distribution of rainfall during post monsoon is similar to pre monsoon and monsoon seasons. However, winter rainfall pattern is different. Winter rain is high in far western development region and low in southern parts of central and eastern development regions. The extreme rainfall distribution is quite different from the annual and seasonal distribution. Siwalik and the tarai belt which generally receive less total seasonal rainfall compared to the middle hills received the highest 24 hour rainfall. These regions are therefore prone to landslides, flash floods and inundation. Especially, the southern parts of central and western development regions are more prone to such hazards compared to other regions as these regions get high total annual rainfall and the Churia hills in the regions are getting more intensive rainfalls.

Inter annual variation of rainfall is so large that no significant trend like in temperature could be observed. Pre monsoon rainfall in most of the eastern, central and western development regions are in increasing trend, while in mid western and far western development regions are in decreasing trend. In pre monsoon rainfall, the highest increasing trend was observed in and around Myagdi, Kaski, Sindhupalchowk and Sankhuwasabha Districts. However, some small pocket areas like Dhankuta, Dolakha, Ramechhap and Tanahu observed a decreasing trend in pre monsoon rainfall. The north western parts of the country represented the largest decreasing trend in precipitation in pre monsoon season. The rainfall trend in monsoon season was observed to be mainly increasing in eastern, central, western and far western development regions while most of the areas in mid western development region depicted decreasing trend. The largest decreasing trend was observed in Dolakha and Solukhumbu areas despite their locations in central and eastern development regions. Post monsoon rainfall in most of the mid western and the southern parts of eastern, central and western regions are in increasing trend while in far western region and most of the northern parts of the country observed a decreasing trend. Rainfall during winter season is in increasing trend in almost all over the country. Sankhuwasabha, Taplejung and Achham Districts represented the highest increasing trend of winter rainfall in comparison to other places. Some areas in northern parts of mid western and eastern development regions and some isolated pocket areas however observed decreasing winter rainfall trend. The eastern, central, western and far western development regions illustrated positive trend in annual rainfall while most of the mid western development region showed a decreasing annual rainfall trend.

The extreme rainfall distribution was found different from the annual or seasonal distribution. Foothills of Siwalik and Mahabharata received the highest 24 hour rainfall.

The mean maximum annual temperature in the tarai belt reached above 30°C which gradually decreased towards north as the altitude increased. Over the Siwalik range the mean maximum temperature varied between 26° to 30° C. It ranged between 22° to 26° C in the middle hills region and reached below 22° C in the high mountains. The mean minimum temperature pattern is similar to the mean maximum temperature pattern. Mean minimum temperature varied between above 18° C in the tarai to less than 6° C in the north western parts of the country. Mean temperature pattern is also similar to the mean maximum and mean minimum temperature pattern.

The mean maximum annual temperature is in increasing trend in almost in the entire country except in a few isolated places such as in Sankhuwasabha, Sunsari, Nawalparasi, Banke, and Bardia. Mean annual maximum temperature trend was observed to be low in southern parts (low altitude) and high in northern parts (high altitude) of the country. The regions in and around Dhankuta, Dadeldhura and Okhaldhunga Districts have high increasing trend in mean maximum annual temperature. The mean minimum annual temperature is in decreasing trend in northern parts and large portion of mid western and far western development regions of the country while most of the southern parts of the country observed increasing trend. Doti, Sankhuwasabha and northern parts of Nuwakot Districts represented the high decreasing trend in mean minimum annual temperature. Large increasing trend in mean minimum annual temperature was observed in Lamjung, southern parts of Nuwakot, Chitwan and Dhanusa Districts. Spatial variation of the annual mean temperature showed an increasing trend in almost in the entire country. Dhankuta and Lamjung Districts observed the largest increasing mean annual temperature trend.

The general pattern of spatial variation of temperature varied slightly from season to season, though the overall pattern is similar. Maximum temperature is in increasing trend in large magnitude than the minimum temperature in almost all the seasons. Warming has been observed more in the northern regions than in the southern regions of the country. Post monsoon season observed large increasing trend of temperature compared to the rest of the seasons. All the seasons depicted a general decreasing trend in minimum temperature in the northern mountainous regions and increasing trend in the southern hilly and plain regions of the country.

In Nepal, the mean temperature in general is in increasing trend. Decreasing trend was observed in few pocket areas in the northern parts of eastern, central and far western development regions. In summary, there was a general increasing trend in over all temperature. The maximum temperature was increasing at a greater rate than the minimum temperature. Decreasing trend in maximum temperature was found over tarai region during winter season.

4.2. Recommendations

Climate change is a reality. The Fourth Assessment Report of IPCC convinced that the current global climate change is largely due to anthropogenic activities which will have more adverse impacts on earth ecology and livelihoods of the people, especially the poor. This study illustrates an overall increasing trend in temperature in Nepal. A slight increasing trend was observed in rainfall with more extremities seasonally and spatially which is likely to increase the adverse impacts currently faced by the communities.

Based on this study following recommendations have been made:

- The past observed climate data showed that Nepal's climate trends are not uniform. Some seasons and some regions are observing higher deviation of the climate from their normal climates. Such regions and the seasons are more vulnerable to impacts of climate change. Therefore, such regions and seasons should get adequate attention while developing adaptation to climate change programmes and activities.

- Studies are required on the impacts of these deviations on bio physical and socio economic aspects with focus on the regions and the seasons with high deviations from the normal climate pattern. To enhance the adaptation process, future scenarios of climate and its impacts should also be projected with updated technologies and methodologies.

- Such study need to be carried out periodically as the climate and the climate change are dynamics which should be monitored regularly.

- Awareness of the local communities should be raised on climate change, its impacts and possible adaptation measures.

- In this study, the high mountain region was not adequately represented as there are limited numbers of meteorological stations. Good distribution of meteorological station networks is necessary at the higher altitude areas to bring forth precise results of the climate data analysis.

- More studies on Nepal's climate change are required at local level as the generalised information is not applicable for local level adaptation. The complex topography and microclimates in Nepal makes understanding climate change more complicated. Therefore, further studies are required on climate science as there are opposite trends in temperature within a short geographic region which is important to understand

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S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Premonsoon
1	101	KAKERPAKHA	41.5	52.8	56.1	50.4	128.1	248.5	471.9	394.6	217.7	50.7	7.7	22.2	1724.1	1334.3	58.4	116.0	224.5
2	102	BAITADI	42.7	59.5	59.0	54.7	122.7	196.4	318.2	272.9	164.8	40.9	9.0	31.2	1392.3	952.2	49.9	135.1	236.4
3	103	PATAN (WEST)	39.7	48.2	49.4	54.3	104.4	175.5	329.5	294.9	152.2	27.6	7.6	23.7	1290.6	952.1	35.2	112.3	208.2
4	104	DADELDHURA	46.1	64.7	60.9	57.5	89.5	173.5	324.0	302.0	183.1	34.0	8.1	27.4	1371.3	982.7	42.2	139.3	208.0
5	108	SATBANJH	46.7	57.1	62.6	64.6	121.2	211.5	378.3	370.4	198.6	36.2	9.0	27.5	1591.6	1158.9	45.1	131.3	248.4
6	201	PIPALKOT	44.7	57.2	63.3	61.5	132.0	315.9	614.7	573.6	295.5	47.8	10.3	27.4	2256.3	1799.7	54.9	124.7	256.9
7	202	CHAINPUR (WEST)	52.5	69.1	63.8	53.3	77.7	177.1	384.8	389.3	208.1	38.2	10.6	27.7	1559.8	1169.5	48.8	148.4	194.7
8	203	SILGADHI (DOTI)	47.9	61.2	50.2	49.5	99.6	187.0	299.4	257.8	189.1	51.4	8.5	28.1	1333.1	932.7	59.9	136.2	199.4
9	205	KATAI	40.1	52.7	52.7	47.3	113.2	288.6	417.7	392.3	245.5	32.8	9.5	22.0	1725.8	1359.6	42.4	113.8	213.1
10	206	ASARA Ghat	45.6	48.9	41.9	33.6	94.0	188.3	293.4	262.3	127.3	29.7	9.7	24.3	1199.1	871.4	39.4	117.8	169.5
11	207	TIKAPUR	38.5	29.6	17.8	15.9	73.3		487.8	461.6	269.1	41.2	3.9	17.5	1731.9	1435.8	45.1	86.0	106.9
12	208	SANDEPANI	32.4	30.2	18.4	19.2	63.0	256.5	548.2	545.8	304.3	47.2	3.9	23.5	1914.8	1684.2	52.9	85.7	100.6
13	212	SITAPUR	33.6	30.2	14.2	15.5	61.3	210.0	445.2	429.3		38.3	8.1	14.8	1552.9	1334.5	46.4	78.6	91.0
14	214	KOLA Gaun	53.4	65.3	45.6	40.4	113.9	266.9	477.9	441.2	245.9	43.4	11.9	31.9	1837.7	1431.8	55.3	149.2	199.9
15	217	MANGALSEN	61.1	72.7	57.3	43.2	103.0	199.8	328.5	304.6	175.2	41.7	10.6	30.8	1428.9	1010.1	52.3	168.5	200.1
16	303	JUMLA	30.6	41.4	59.4	48.5	58.2	76.0	182.6	176.7	96.3	31.1	11.5	16.5	827.2	524.2	42.6	89.1	168.1
17	304	GUTHI CHAUR	24.8	31.5	46.3	49.7	74.1	136.9	285.4	258.9	115.5	28.7	12.5	16.2	1091.8	783.3	41.2	71.1	170.1
18	306	GAM SHREE NAGAR	23.8	32.0	41.6	35.5	46.7	73.7	202.6	190.7	100.3	20.6	8.4	17.3	794.1	567.3	29.8	73.1	123.7
19	308	NAGMA	46.2	60.6	62.0	51.5	63.1	79.0	124.7	126.5	78.3	34.8	12.3	21.4	760.2	408.4	47.1	127.8	176.6
20	402	DAILEKH	36.4	42.8	41.0	33.1	105.8	229.1	494.5	494.9	253.9	35.8	8.6	17.5	1774.5	1462.4	44.3	95.5	181.4
21	404	JAJARKOT	28.5	38.6	40.8	41.3	73.5	267.6	515.0	558.9	288.9	70.5	16.5	24.9	1974.6	1625.1	87.5	92.0	155.7
22	406	SURKHET (BIRENDRA NAGAR)	36.0	39.9	25.1	31.2	87.1	251.7	460.7	423.9	190.5	38.8	9.5	20.7	1615.2	1326.8	48.3	96.4	143.5
23	412	NAUBASTA	26.3	21.5	10.8	11.7	45.5	187.3	449.4	361.4	206.9	54.7	7.4	13.9	1400.3	1208.1	62.1	63.3	68.0
24	413	Shyano Shree (Chepang)	32.8	30.7	14.5	17.3	84.2	291.9	634.4	590.7	273.5	65.2	11.8	12.5	1993.7	1790.5	77.0	79.2	116.2
25	414	BAIJAPUR	20.8	28.4	24.2	27.3	44.4	151.0	323.2	255.0	140.9	38.2	18.0	20.8	1116.8	879.2	56.1	70.2	96.0
26	416	NEPALGUNJ (REG. OFF)	25.4	25.0	15.9	17.1	66.2	196.5	424.5	332.3	229.3	54.2	5.1	13.8	1396.7	1181.3	59.5	64.2	99.1
27	418	MAINA GAUN (D.BAS)	53.9	42.1	52.5	58.2	83.8	234.9	496.0	478.0	269.1	62.2	16.5	27.1	1940.4	1541.8	79.3	119.9	195.7
28	504	LIBANG GAUN	31.6	42.2	38.6	52.3	104.6	294.1	418.7	419.9	266.7	49.3	12.7	19.5	1765.1	1399.4	62.1	91.9	195.5
29	505	BIJUWARTAR	24.8	26.3	27.7	37.7	86.9	229.5	327.6	285.4	171.7	36.4	9.4	15.3	1279.7	1014.3	45.8	66.4	152.4
30	507	NAYABASTI (DANG)	26.8	25.7	21.2	22.2	91.1	275.5	493.0	452.1	299.2	46.5	13.9	19.1	1805.3	1519.8	60.5	71.6	134.5
31	508	TULSIPUR	23.3	21.5	15.3	20.0	87.0	279.2	441.9	412.5	277.1	78.4	10.0	15.0	1690.4	1415.2	88.4	61.2	122.8

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Premonsoon
32	509	GHORAHI (MASINA)	25.3	21.4	22.3	22.1	90.2	282.6	494.2	462.7	332.7	86.8	10.5	15.6	1860.0	1572.2	97.6	62.3	134.6
33	510	KOILABAS	18.6	24.8	21.8	22.4	60.2	276.8	491.3	405.4	264.9	50.6	11.3	12.2	1634.5	1413.9	62.0	55.6	104.4
34	511	SALYAN BAZAR	35.4	36.6	29.5	33.3	59.7	144.1	254.5	223.1	141.3	39.1	10.7	16.5	1023.9	763.1	49.8	88.5	122.5
35	512	LUWAMJULA BAZAR	26.7	33.0	33.8	28.6	65.5	154.7	255.9	230.9	153.0	33.0	10.3	22.9	1077.7	794.4	43.7	82.5	127.9
36	513	CHAUR JHARI TAR	29.6	29.5	24.7	32.0	69.5	180.2	332.1	332.8	162.7	44.9	10.8	14.4	1269.2	1007.8	55.7	70.6	124.9
37	601	JOMSOM	7.6	12.0	24.4	20.9	17.0	24.2	38.0	34.4	37.5	23.2	6.4	6.2	245.8	131.7	29.6	26.0	62.3
38	604	THAKMARPHA	7.3	15.3	31.4	29.5	32.9	47.0	67.2	63.4	49.4	34.7	7.0	13.2	402.4	227.6	41.9	35.8	93.5
39	605	BAGLUNG	22.2	25.4	32.1	49.4	147.7	337.8	548.5	457.1	271.7	56.4	18.0	17.4	1974.6	1615.1	74.4	65.6	230.3
40	606	TATOPANI	20.6	27.3	50.7	82.7	169.8	249.8	377.4	374.8	192.3	58.6	10.3	16.8	1641.4	1200.2	68.9	69.9	303.1
41	607	LETE	33.1	55.0	95.4	108.1	121.9	162.4	253.5	248.1	140.5	53.9	16.7	21.8	1308.2	797.9	71.9	109.6	325.7
42	610	GHAMI (MUSTANG)	9.7	8.8	11.2	3.8	6.7	9.1	36.1	38.5	13.0	18.6	2.9	11.0	173.9	97.2	21.5	25.8	23.3
43	612	MUSTANG (LOMANTHANG)	6.9	9.1	4.7	1.6	2.9	6.2	42.5	34.2	8.4	11.6	2.2	9.2	143.6	93.4	13.9	28.1	9.6
44	613	KARKI NETA	28.0	28.2	37.4	72.9	179.2	398.8	672.3	568.4	332.7	62.2	15.0	23.8	2417.2	1972.2	79.2	83.2	289.5
45	614	KUSHMA	25.2	27.4	33.9	73.0	176.6	434.0	693.4	607.9	359.3	75.2	11.7	21.2	2557.3	2094.6	86.9	73.8	283.6
46	619	GHORAPANI	27.4	38.2	47.6	99.3	199.5	398.6	778.2	725.5	412.3	84.6	16.0	17.0	2859.5	2314.5	100.5	82.0	346.0
47	701	RIDI BAZAR	22.9	21.6	22.0	37.6	99.8	262.5	397.2	303.2	198.8	34.5	10.2	20.3	1430.5	1161.7	44.7	64.8	159.3
48	703	BUTWAL	14.0	19.0	27.2	23.1	99.7	392.4	660.4	507.7	405.7	107.4	10.8	18.6	2310.6	2009.5	118.2	52.9	150.0
49	704	BELUWA (GIRWARI)	22.2	15.6	22.3	63.8	170.4	481.1	805.5	571.9	380.6	97.0	7.9	26.0	2644.8	2225.6	104.9	63.7	256.5
50	705	BHAIRHAWA AIRPORT	18.2	16.1	16.2	24.5	77.3	278.0	550.6	375.8	262.5	64.9	8.7	15.2	1708.0	1466.9	73.6	49.5	118.0
51	706	DUMKAULI	20.4	13.5	21.9	61.0	180.5	421.1	664.7	503.7	324.5	90.4	9.6	22.4	2323.5	1913.9	100.0	56.3	263.5
52	707	BHAIRHAWA (AGRIC)	18.2	18.6	18.1	27.4	83.4	299.5	600.0	408.9	284.1	77.6	7.3	17.2	1823.2	1592.7	84.0	54.4	129.2
53	708	PARASI	18.3	18.5	21.5	34.2	95.9	338.9	577.5	425.2	293.3	76.4	5.2	17.9	1922.2	1626.6	81.7	55.3	151.7
54	715	KHANCHIKOT	30.7	35.0	31.8	35.3	106.8	291.2	511.5	397.5	282.9	54.7	14.6	29.2	1833.5	1483.1	69.3	94.9	175.8
55	716	TAULIHAWA	15.5	19.8	16.1	21.9	56.1	209.7	488.1	341.2	223.0	35.8	7.4	10.8	1463.9	1249.6	41.8	46.5	96.8
56	721	PATTHARKOT (WEST)	17.7	17.1	15.4	20.6	87.4	358.4	617.1	555.5	408.7	86.7	9.4	21.0	2235.9	1934.9	98.3	56.3	123.5
57	722	MUSIKOT	21.9	25.0	34.7	65.5	174.4	436.3	578.7	507.1	290.8	50.0	6.7	24.8	2214.6	1812.9	56.8	71.7	274.6
58	723	BHAGWANPUR	22.7	21.4	18.2	23.1	67.8	258.4	583.3	412.5	312.8	72.2	9.1	16.5	1811.2	1567.0	81.3	60.8	110.4
59	801	JAGAT (SETIBAS)	29.1	43.1	64.0	64.4	83.5	175.6	306.9	254.0	151.3	38.4	9.6	15.2	1303.7	895.5	46.4	87.4	211.9
60	802	KHUDI BAZAR	28.4	46.7	79.7	103.7	232.3	538.7	867.6	838.4	490.5	94.6	18.5	23.2	3367.1	2735.2	113.1	99.4	417.6
61	804	POKHARA AIRPORT	24.5	34.0	59.7	130.6	363.5	692.3	964.5	869.4	637.6	149.3	21.0	25.3	3971.6	3163.8	170.2	83.8	553.8

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Premonsoon
62	805	SYANGJA	25.5	31.5	39.8	101.8	273.6	544.9	754.0	620.8	355.6	90.8	10.9	19.3	2879.2	2275.2	101.7	77.0	415.2
63	807	KUNCHHA	22.8	35.1	55.1	100.2	275.8	507.1	630.1	529.0	344.2	80.1	14.0	23.2	2616.9	2010.5	94.1	81.1	431.2
64	808	BANDIPUR	24.3	22.9	35.1	81.7	217.7	326.2	437.5	314.0	190.6	50.7	15.3	28.0	1787.9	1268.4	65.0	74.2	334.6
65	809	GORKHA	22.7	18.7	43.9	79.7	186.0	323.9	444.6	362.5	186.4	43.0	8.1	18.2	1736.7	1317.4	51.9	60.4	295.3
66	810	CHAPKOT	21.2	23.7	29.6	61.2	157.5	337.5	542.2	383.8	240.0	50.0	9.4	22.2	1888.8	1509.7	59.4	67.1	251.3
67	811	MALEPATAN POKHARA)	22.7	34.0	57.5	120.7	332.2	620.0	952.0	820.3	577.9	141.6	19.6	21.4	3760.2	2994.7	161.9	80.4	503.8
68	814	LUMLE	35.3	46.6	62.9	110.5	313.1	877.2		1407.0	846.1	204.8	28.6	24.0	5402.8	4576.9	233.5	105.9	486.5
69	815	KHAIRINI TAR	21.2	25.0	37.5	111.4	327.5	448.3	554.1	438.4	267.3	71.2	17.2	22.5	2363.6	1723.8	85.5	70.2	481.1
70	817	DAMAULI	18.8	24.7	34.5	101.6	248.9	337.9	458.8	307.5	199.9	45.5	5.6	21.1	1782.4	1304.1	50.6	67.2	385.2
71	818	LAMACHAUR	24.7	33.3	68.4	126.0	362.5	780.3		981.1	723.1	161.7	19.9	21.9	4371.3	3550.3	175.9	81.3	565.5
72	820	MANANG BHOT	26.4	22.0	34.0	23.8	29.8	42.9	60.0	78.6	66.5	37.0	13.2	16.8	428.5	233.5	50.1	65.8	89.0
73	823	GHAREDHUNGA	21.0	30.1	63.7	81.5	241.8	508.3	797.9	729.6	410.6	97.6	14.1	22.7	2951.9	2417.7	111.6	76.2	365.3
74	824	SIKLESH	53.0	90.6		192.2	319.8	534.5	898.6	865.1	500.2	110.5	30.7	31.0	3775.7	2798.4	141.2	178.0	654.6
75	902	RAMPUR	18.1	14.6	21.9	55.6	165.3	342.4	573.3	438.3	276.7	77.2	8.8	17.5	2009.6	1630.7	85.9	50.2	242.8
76	903	JHAWANI	17.0	18.8	23.0	60.6	146.7	298.4	542.4	454.8	287.4	78.9	9.3	18.3	1955.6	1583.0	88.2	54.0	230.3
77	904	CHISAPANI GADHI	20.7	20.6	43.0	77.8	170.4	344.1	631.2	487.6	287.8	70.3	7.5	23.2	2183.3	1750.6	77.8	62.6	291.3
78	905	DAMAN	16.8	26.4	33.0	86.2	164.0	277.0	503.6	361.0	211.2	61.6	7.9	17.4	1756.8	1346.7	68.2	60.6	286.2
79	906	HETAUNDA N.F.I	18.3	19.7	23.8	69.5	180.8	372.4	686.6	558.4	374.9	97.2	12.2	16.1	2429.9	1992.3	109.4	54.1	274.1
80	907	AMLEKHGANJ	17.9	13.1	15.0	50.4	134.6	315.8	596.2	471.5	337.9	86.5	8.4	14.5	2061.8	1721.4	94.9	45.5	200.0
81	909	SIMARA AIRPORT	15.3	14.4	18.3	54.1	137.6	264.3	568.7	426.6	265.1	73.2	6.2	13.2	1856.9	1524.6	79.4	42.9	210.0
82	910	NIJGADH	18.4	11.9	22.0	51.7	141.9	294.9	613.8	434.4	345.1	73.8	10.7	13.5	2024.9	1680.7	84.5	43.4	215.6
83	911	PARWANIPUR	14.8	13.0	15.5	34.9	118.7	263.8	468.5	346.1	232.2	64.7	6.1	12.8	1591.1	1310.5	70.7	40.7	169.2
84	912	RAMOLI BAIRIYA	17.5	12.9	16.3	41.1	108.7	225.2	556.2	365.1	229.5	77.5	4.5	11.7	1655.4	1367.0	82.0	42.8	164.4
85	915	MARKHU GAUN	20.9	26.5	35.4	65.6	134.0	239.5	384.4	278.3	187.3	46.9	10.5	23.6	1452.7	1089.5	57.3	71.0	234.9
86	918	BIRGANJ	13.8	16.0	16.5	31.8	119.0	244.5	469.0	347.0	239.2	68.0	7.0	11.9	1569.6	1296.7	75.0	40.8	167.3
87	919	MAKWANPUR GADHI	19.8	15.9	24.7	51.3	155.6	353.5	682.1	551.8	349.8	89.3	13.3	17.8	2337.8	1946.7	102.6	53.2	231.6
88	920	BELUWA	16.1	16.0	19.4	55.6	143.5	294.5	567.1	488.0	314.2	84.0	7.5	12.6	2018.6	1663.9	91.6	44.7	218.5
89	1001	TIMURE	18.8	20.0	49.3	31.6	42.0	100.8	229.2	217.5	144.0	45.3	6.0	13.0	893.4	692.2	51.3	51.8	122.9
90	1002	ARUGHAT D. BAZAR	23.7	31.8	55.8	83.7	205.8	430.2	682.9	644.2	358.5	65.8	14.0	17.9	2614.2	2115.8	79.8	73.4	345.2
91	1004	NUWAKOT	17.4	20.9	32.2	56.2	123.1	309.2	533.1	547.5	271.6	65.4	9.2	15.9	2022.0	1670.8	74.7	53.7	210.2
92	1005	DHADING	21.0	23.6	36.3	74.5	196.5	358.0	512.0	515.3	292.1	42.5	11.7	15.5	2103.2	1677.5	54.2	60.0	305.9
93	1006	GUMTHANG	31.9	39.8	69.7	132.8	276.9	628.8	953.9	974.5	647.5	192.1	31.0	23.1	4003.4	3204.6	223.1	92.8	480.8
94	1007	KAKANI	19.5	25.6	41.3	68.7	202.1	483.8	737.5	753.2	400.7	80.4	9.0	18.1	2864.9	2375.1	89.4	63.2	313.3
95	1008	NAWALPUR	19.4	21.1	35.4	54.6	158.2	381.1	712.4	697.1	348.6	72.4	13.3	17.1	2530.9	2139.2	86.4	57.0	248.1

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Premonsoon
96	1009	CHAUTARA	14.3	21.4	31.6	58.4	150.5	337.9	527.0	545.4	283.7	62.7	9.1	14.7	2082.1	1715.3	71.8	52.2	240.5
97	1015	THANKOT	21.3	26.9	39.2	71.9	147.8	294.3	531.8	475.7	272.0	62.5	12.3	22.2	1986.1	1582.5	74.8	69.2	259.0
98	1017	DUBACHAUR	19.6	25.4	41.1	66.3	168.3	381.6	677.1	660.0	313.0	71.8	10.5	16.3	2455.6	2031.6	82.3	61.3	275.7
99	1018	BAUNEPATI	14.6	20.3	30.9	53.3	131.9	287.3	470.2	467.9	255.6	64.8	9.0	13.5	1816.7	1475.3	73.8	48.5	216.1
100	1020	MANDAN	7.8	8.1	15.7	36.9	82.8	183.8	263.6	238.9	119.9	27.5	7.5	7.2	1020.5	827.8	35.0	23.3	135.5
101	1022	GODAVARI	20.5	22.9	29.4	58.3	127.6	294.1	516.0	450.1	255.5	62.9	9.1	22.1	1869.8	1515.7	71.9	66.9	216.3
102	1023	DOLALGHAT	12.3	15.4	24.0	47.3	104.4	196.7	301.9	261.0	145.2	48.0	6.6	14.6	1177.4	904.8	54.6	42.2	175.7
103	1025	DHAP	13.8	21.7	35.6	55.6	124.9	420.3	779.6	712.4	402.2	56.1	6.8	16.5	2662.7	2330.2	62.9	52.8	216.1
104	1027	BAHRABISE	19.3	27.0	49.6	89.1	205.2	470.7	781.6	778.5	430.8	85.6	9.0	19.4	2965.8	2461.6	94.6	65.7	343.9
105	1028	PACHUWAR GHAT	10.7	13.9	21.9	40.0	97.9	170.1	250.0	198.2	132.5	41.3	3.9	17.6	998.0	750.7	45.2	42.2	159.9
106	1029	KHUMALTAR	16.7	18.0	28.4	53.8	106.4	197.7	311.0	254.7	144.8	50.9	5.9	17.8	1222.0	908.3	56.8	52.4	184.7
107	1030	KATHMANDU AIRPORT	15.9	18.7	33.0	59.2	121.4	255.5	370.8	331.2	183.8	54.5	8.8	15.3	1468.2	1141.4	63.2	50.0	213.6
108	1035	SANKHU	12.1	24.8	26.9	50.8	156.3	307.5	553.9	535.0	280.8	55.1	10.6	12.5	2045.9	1665.8	63.6	49.0	234.0
109	1038	DHUNIBESI	16.4	15.8	28.5	50.0	138.3	256.3	435.4	390.6	219.5	58.1	8.7	17.3	1648.8	1301.7	66.8	50.2	216.8
110	1043	NAGARKOT	19.3	18.1	25.9	55.0	147.5	325.5	473.7	477.9	253.6	65.8	9.1	11.9	1883.7	1527.2	74.9	49.4	231.9
111	1049	KHOPASI (PANAUTI)	18.0	19.3	29.6	54.7	127.7	247.2	357.2	284.0	193.5	59.9	10.7	14.6	1421.4	1085.7	70.6	51.9	212.0
112	1052	BHAKTAPUR	15.4	19.8	30.8	56.0	139.2	247.1	390.1	365.4	175.0	52.1	6.2	16.4	1521.2	1177.6	58.2	50.8	226.0
113	1054	THAMACHIT	18.7	16.1	19.0	20.3	31.4	103.4	191.6	185.0	98.4	25.1	11.4	8.2	697.7	578.4	36.4	43.5	70.7
114	1057	PANSAYAKHOLA	22.2	31.7	42.7	74.9	210.2	483.8	842.9	827.9	472.5	81.4	13.0	17.2	3128.4	2647.6	94.4	72.3	337.0
115	1058	TARKE GHYANG	29.2	35.8	66.6	73.6	150.4	498.6	880.7	871.9	483.4	76.6	20.7	15.3	3304.3	2716.9	97.2	81.5	291.1
116	1059	CHANGU NARAYAN	18.1	22.4	32.4	57.8	158.5	261.8	437.5	423.1	219.0	60.5	9.2	16.0	1716.3	1341.4	69.7	56.5	248.7
117	1060	CHAPA GAUN	18.4	17.9	28.5	49.1	95.3	228.5	398.8	324.4	185.6	45.8	4.9	18.9	1416.1	1137.2	50.7	55.9	172.9
118	1101	NAGDAHA	8.2	14.9	30.0	72.8	149.7	239.5	371.5	288.3	182.4	39.1	11.2	7.4	1440.7	1089.6	51.1	29.2	252.4
119	1102	CHARIKOT	16.1	23.0	40.9	77.2	158.2	313.4	558.8	529.8	263.9	65.7	11.3	16.4	2104.4	1665.9	77.0	56.2	276.3
120	1104	MELUNG	13.2	11.5	27.6	72.0	126.0	229.9	337.7	310.8	156.5	39.5	4.7	13.2	1342.5	1034.9	44.2	38.5	225.6
121	1108	BAHUN TILPUNG	16.6	21.3	32.5	86.0	172.4	309.1	517.1	361.6	282.6	107.0	13.0	17.3	1937.8	1462.7	120.1	54.2	290.8
122	1109	PATTHARKOT (EAST)	13.0	10.4	13.5	51.0	137.8	263.9	571.7	412.4	309.3	112.8	8.6	13.7	1918.2	1557.3	121.4	37.0	202.4
123	1110	TULSI	11.8	11.3	15.5	50.9	139.5	231.6	514.2	390.3	283.0	80.5	6.8	9.1	1744.4	1419.0	87.4	32.2	205.8
124	1111	JANAKPUR AIRPORT	12.6	12.4	10.3	48.0	116.8	223.0	469.9	323.5	187.4	73.0	3.4	10.8	1490.9	1203.7	76.3	35.8	175.1
125	1112	CHISAPANI BAZAR	6.0	8.8	11.6	49.8	111.9	217.3	490.4	321.4	234.7	84.2	6.0	8.7	1531.0	1256.3	90.4	23.5	173.2
126	1115	NEPALTHOK	13.2	11.4	20.6	37.3	75.5	130.5	270.1	162.0	109.9	37.0	5.0	17.8	890.2	672.5	42.0	42.3	133.3
127	1117	HARIHARPUR GADHI VALLEY	14.5	13.4	17.3	59.5	175.2	388.7	745.4	579.9	337.8	86.1	8.3	16.2	2442.1	2051.7	94.4	45.7	251.9
128	1202	CHAURIKHARK	18.3	30.3	27.0	60.1	106.7	321.5	583.1	570.1	297.7	63.6	13.0	14.7	2095.6	1772.4	76.6	64.2	193.8

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Premonsoon
129	1203	PAKARNAS	14.5	14.8	33.2	47.9	98.7	272.0	517.2	504.0	242.6	59.8	13.0	13.1	1819.6	1535.8	72.8	43.1	179.8
130	1204	AISEALUKHARK	20.7	18.7	39.2	71.2	194.0	406.4	597.1	505.4	325.6	89.5	20.2	15.9	2303.8	1834.4	109.7	55.6	304.3
131	1206	OKHALDHUNGA	13.0	13.9	27.8	53.3	151.1	312.9	476.2	402.6	234.0	64.3	12.0	13.9	1775.0	1425.7	76.3	40.9	232.2
132	1207	MANE BHAN-JYANG	12.0	12.8	20.3	45.0	107.9	185.7	299.3	221.7	144.0	38.6	8.1	10.8	1076.2	850.7	46.1	35.6	167.9
133	1210	KURULE GHAT	11.8	11.8	18.0	46.4	85.6	130.3	277.0	189.5	123.3	44.4	11.8	14.7	968.8	728.5	56.2	37.0	150.0
134	1211	KHOTANG BAZAR	20.9	12.0	26.6	43.7	105.1	195.1	328.0	213.6	151.0	48.7	8.8	14.0	1167.4	887.7	59.1	47.7	175.4
135	1216	SIRAHA	14.7	14.3	9.9	42.5	117.6	217.5	440.2	313.0	185.2	71.5	6.7	9.6	1442.5	1155.8	78.1	38.5	170.0
136	1219	SALLERI	13.9	14.9	28.6	49.9	93.7	249.9	458.7	445.4	233.5	55.9	12.9	10.6	1674.0	1390.8	70.0	39.9	172.2
137	1222	DIKTEL	12.2	16.2	22.7	67.3	156.8	272.9	340.1	294.5	184.5	40.8	11.4	15.0	1437.2	1103.7	52.2	44.4	233.8
138	1223	RAJBIRAJ	12.3	11.5	12.2	44.1	120.9	258.0	460.4	300.7	232.6	76.9	7.7	10.5	1563.2	1251.7	86.4	34.3	178.1
139	1224	SIRWA	14.2	17.7	32.4	70.5	135.6	297.1	479.2	450.9	261.5	52.4	14.6	11.2	1821.6	1474.4	67.1	43.6	238.4
140	1226	BARMAJHIYA	11.7	14.4	16.9	53.3	160.3	254.7	519.4	353.2	259.1	90.8	9.9	15.1	1774.6	1391.3	100.6	40.1	229.6
141	1301	NUM	29.9	63.7		292.1	544.7	880.4	917.1	729.9	580.2	231.6	40.5	19.3	4377.8	3107.5	267.5	115.9	939.9
142	1303	CHAINPUR (EAST)	13.9	16.4	37.3	94.6	203.0	223.8	297.0	275.3	202.0	57.6	15.7	10.8	1447.4	998.1	73.3	41.0	335.0
143	1304	PAKHRIBAS	14.9	14.5	25.8	61.0	150.1	261.7	398.1	344.0	194.7	63.4	12.9	12.9	1559.8	1211.0	76.7	42.8	237.0
144	1305	LEGUWA GHAT	5.3	10.2	23.4	78.8	135.9	140.3	185.9	176.5	103.6	37.2	12.2	4.7	897.8	604.4	49.3	20.5	241.2
145	1306	MUNGA	12.4	13.9	23.0	47.0	102.7	182.6	292.7	237.8	137.8	40.6	12.3	10.6	1113.3	850.9	52.9	36.8	172.7
146	1307	DHANKUTA	12.4	15.4	26.1	50.1	103.7	155.0	263.1	178.0	126.9	48.1	14.2	11.4	1004.5	723.0	62.4	39.3	179.9
147	1308	MUL GHAT	11.0	14.0	21.6	49.9	119.1	173.8	296.6	201.2	142.9	48.4	15.1	10.1	1101.5	813.5	63.9	35.1	190.5
148	1309	TRIBENI	12.0	17.4	22.2	61.7	136.3	286.8	472.3	339.5	275.0	63.1	14.5	9.1	1709.7	1373.4	77.7	38.5	220.1
149	1311	DHARAN BAZAR	13.0	19.5	25.8	72.3	170.6	340.9	570.7	502.5	386.1	140.2	15.4	10.8	2289.9	1813.1	155.6	43.3	268.8
150	1312	HARAINCHA	12.8	16.0	13.3	71.2	182.4	328.4	588.5	419.3	310.6	105.3	9.6	13.2	2086.5	1653.0	115.0	42.1	268.0
151	1316	CHATARA	14.1	14.9	24.4	71.6	171.9	323.9	545.5	427.1	351.6	136.2	21.3	11.6	2098.6	1648.0	157.5	39.8	267.9
152	1317	CHEPUWA	47.7	79.0		182.5	266.7	419.0	505.8	475.2	370.7	146.3	40.7	28.1	2705.5	1777.7	187.1	154.6	581.2
153	1319	BIRATNAGAR AIRPORT	12.4	12.7	14.9	54.7	170.9	287.6	552.2	368.0	300.2	95.4	9.8	8.2	1887.1	1508.0	105.2	33.4	240.5
154	1320	TARAHARA	16.5	13.2	20.7	69.6	174.5	295.1	538.2	376.0	294.9	93.8	14.1	13.0	1937.4	1504.2	106.8	42.7	264.8
155	1321	TUMLINGTAR	7.5	7.4	24.7	83.8	172.6	208.8	252.1	227.8	203.9	63.0	13.5	10.6	1283.2	892.7	76.6	26.2	284.9
156	1322	MACHUWAGHAT	13.2	13.0	19.2	50.6	143.3	258.1	366.8	241.2	186.5	49.4	10.4	11.0	1367.6	1060.3	59.9	36.7	213.2
157	1325	DINGLA	15.6	18.0	39.3	87.6	201.6	310.3	439.3	396.2	336.1	93.3	13.9	14.2	1963.4	1481.9	107.2	44.7	328.4
158	1403	LUNGTHUNG	17.3	36.1	60.7	116.1	158.9	332.4	541.7	522.4	344.0	105.8	17.8	13.6	2266.8	1740.5	123.6	67.2	335.7
159	1406	MEMENG JAGAT	22.2	30.1	57.9	144.9	245.9	338.0	517.6	419.3	307.9	99.8	18.4	20.8	2255.1	1582.7	118.2	75.5	448.7
160	1407	ILAM TEA ESTATE	13.6	16.3	24.9	61.6	132.5	295.8	466.7	366.2	229.9	73.4	12.6	10.4	1709.3	1361.5	86.0	40.0	218.9
161	1408	DAMAK	15.6	15.0	24.3	65.2	181.7	379.5	647.2	499.3	355.7	130.7	17.1	10.8	2358.2	1881.6	147.8	39.9	271.1
162	1409	ANARMANI BIRTA	11.2	14.1	25.2	59.0	181.8	416.7	724.7	512.3	340.4	109.4	17.2	11.1	2423.2	1994.1	126.6	36.5	266.0
163	1410	HIMALI GAUN	16.7	21.1	33.9	87.3	170.9	443.2	651.3	478.4	338.4	91.2	17.8	14.5	2364.7	1911.3	109.0	51.6	292.1

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Premonsoon
164	1412	CHANDRA GADHI	10.5	13.0	18.8	68.2	194.8	406.6	729.8	426.0	377.5	97.0	10.6	8.8	2356.6	1933.9	107.6	32.3	281.9
165	1415	SANISCHARE	15.0	18.5	25.7	70.3	204.3	501.3	807.5	542.8	399.7	126.6	23.3	8.6	2739.3	2251.3	149.9	42.5	300.4
166	1420	DOVAN	18.2	20.6	48.0	138.9	205.9	291.7	367.6	294.7	207.1	59.1	10.9	13.6	1681.1	1170.0	70.0	54.0	392.8

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Pre monsoon
1	101	KAKERPAKHA	0.783	0.458	-0.722	-0.571	1.712	2.047	3.506	-3.321	2.917	-1.694	-0.282	-0.706	1.772	5.956	-1.976	0.728	-1.253
2	102	BAITADI	0.379	0.333	-0.849	-0.690	-2.080	0.644	-3.368	-0.823	-0.016	-1.358	-0.116	-1.174	-5.987	-3.564	-1.474	0.219	-3.618
3	103	PATAN (WEST)	0.645	0.348	-1.404	0.002	-1.231	1.027	1.160	-3.616	-0.239	-0.056	-0.215	-0.597	-2.246	-1.668	-0.271	0.756	-2.633
4	104	DADELDHURA	0.927	0.843	-1.244	-1.138	-0.350	1.285	-3.227	-1.468	2.162	-0.944	-0.227	-0.859	-4.667	-1.248	-1.171	0.727	-2.732
5	108	SATBANJH	-0.128	0.428	-1.109	0.723	0.334	4.029	-0.697	2.131	2.810	-0.632	-0.069	-0.706	6.155	8.274	-0.701	-0.475	-0.051
6	201	PIPALKOT	0.659	0.774	-1.169	-0.402	-0.706	0.330	3.855	-0.860	1.850	-0.782	-0.349	-1.335	4.624	5.176	-1.827	-0.355	-2.277
7	202	CHAINPUR (WEST)	1.060	0.657	-1.422	-1.620	-0.765	2.060	3.212	2.105	1.171	-0.569	-0.084	-1.039	5.030	8.906	-0.653	0.855	-3.807
8	203	SILGADHI (DOTI)	1.128	0.819	-1.273	-0.507	-1.179	-0.725	1.687	0.261	2.319	-0.759	-0.152	-0.857	1.131	3.501	-0.911	1.271	-2.959
9	205	KATAI	1.428	1.067	-1.067	0.808	1.597	2.493	4.956	7.254	2.233	-0.080	0.042	-0.436	22.994	16.871	-0.038	2.140	1.337
10	206	ASARA Ghat	0.741	1.061	-0.200	0.043	-1.230	2.046	-2.711	-1.200	-0.324	-0.059	-0.439	-0.362	-2.634	-2.189	-0.498	1.553	-1.387
11	207	TIKAPUR	0.802	0.820	-0.624	-0.078	0.630	1.132	-5.959	0.517	1.989	-0.242	0.069	-0.343	-0.293	1.513	-0.174	1.339	0.034
12	208	SANDEPANI	0.780	1.157	-0.492	-0.097	0.358	0.860	-2.351	-2.112	2.348	-0.070	0.068	-0.669	-5.526	-7.383	-0.276	1.626	-0.231
13	212	SITAPUR	0.708	1.002	-0.503	-0.917	0.672	3.647	-4.230	-2.561	0.791	-0.270	-0.009	-0.571	-3.725	-3.422	-0.278	1.336	-0.748
14	214	KOLA Gaun	1.320	1.186	-1.401	0.004	-0.169	0.522	-2.272	-2.218	2.271	-0.206	-0.207	-0.808	-1.977	-1.697	-0.413	1.823	-1.566
15	217	MANGALSEN	1.613	1.940	-1.264	-0.214	-2.034	1.316	-0.221	-1.684	1.866	-0.573	-0.184	-1.021	-0.508	0.911	-0.757	2.057	-3.010
16	303	JUMLA	0.711	-0.011	-1.910	-0.827	-1.260	-0.186	-1.843	-0.177	0.132	-0.245	-0.099	-0.794	-5.441	-1.061	-0.344	-0.175	-3.852
17	304	GUTHI CHAUR	0.297	0.899	-0.623	0.457	-0.964	1.147	1.305	-0.189	-1.683	0.095	0.697	-0.188	-3.589	-0.343	0.792	0.783	-1.130
18	306	GAM SHREE NAGAR	0.175	-0.358	-1.146	-1.016	-0.515	1.689	-1.140	-2.484	-1.211	0.359	-0.200	-0.936	-7.331	-3.146	0.311	-0.904	-2.677
19	308	NAGMA	1.269	0.954	-1.601	0.310	-0.590	0.664	-1.238	0.880	-0.983	0.185	-0.021	-0.844	-1.015	-0.677	0.164	1.590	-1.881
20	402	DAILEKH	0.238	1.288	-0.384	-1.317	-1.615	2.841	-2.103	1.633	2.517	0.069	-0.546	-0.816	-0.372	3.773	-0.477	0.713	-3.278
21	404	JAJARKOT	0.693	0.768	-0.511	-0.607	-1.751	0.764	-9.727	-0.117	-1.454	0.050	0.708	-0.707	-11.258	-11.517	0.955	1.086	-2.868
22	406	SURKHET (BIRENDRA NAGAR)	0.994	1.260	-0.958	-0.242	-0.099	3.841	0.658	0.347	-0.100	0.019	0.029	-0.541	5.208	4.746	0.048	1.945	-1.298
23	412	NAUBASTA	0.372	0.604	-0.215	-0.317	-0.375	-3.365	-2.325	-2.244	-1.635	-0.201	0.389	-0.146	-9.196	-9.368	0.187	1.319	-0.907
24	413	Shyano Shree (Chepang)	-0.004	0.103	0.293	0.354	0.550	0.328	-3.257	-3.523	1.174	0.075	0.770	-0.122	1.117	-5.278	0.844	0.372	1.207
25	414	BAIJAPUR	0.220	0.262	0.091	0.721	0.406	-0.352	-0.776	-4.155	-4.239	0.692	-0.359	-0.237	-4.889	-8.652	0.332	0.600	1.218
26	416	NEPALGUNJ (REG.OFF)	0.363	0.303	-0.343	0.153	1.317	4.002	-5.075	-0.577	-3.836	0.073	-0.052	-0.578	-5.898	-5.706	0.049	0.272	1.127
27	418	MAINA GAUN (D.BAS)	1.594	0.535	0.540	2.062	1.182	3.175	10.883	5.742	1.092	0.768	0.419	-0.175	19.003	11.012	1.113	2.336	3.593
28	504	LIBANG GAUN	1.169	0.158	-0.358	0.170	-0.812	2.511	-1.231	1.344	1.450	0.639	0.336	-0.354	7.763	4.075	0.975	1.062	-0.999
29	505	BIJUWARTAR	0.518	0.609	-0.327	-0.022	-0.631	-0.147	-0.820	2.734	-2.410	0.339	-0.195	-0.509	-0.765	-0.644	0.145	0.877	-0.980

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30	507	NAYABASTI (DANG)	0.672	0.516	-0.082	0.971	0.646	2.089	1.652	2.760	-1.235	-0.201	-0.336	-0.489	11.353	5.267	-0.550	0.953	1.536
31	508	TULSIPUR	0.728	0.036	-0.205	0.350	-0.627	-1.279	-0.897	-0.282	-2.009	2.470	0.058	-0.598	-0.963	-4.083	2.528	0.580	-0.415
32	509	GHORAHI (MASINA)	1.055	0.429	0.263	-0.002	-1.288	0.774	-5.811	-6.906	-6.411	-0.981	0.045	-0.381	-20.592	-18.353	-0.893	1.313	-1.027
33	510	KOILABAS	0.899	-0.169	-0.423	0.191	1.121	2.602	-0.134	2.783	-3.765	0.264	-0.277	-0.783	5.211	3.625	-0.073	0.110	0.889
34	511	SALYAN BAZAR	0.878	1.311	-0.346	-0.570	-1.932	1.053	-1.000	2.003	-0.990	0.323	0.127	-0.516	0.340	1.066	0.450	1.894	-2.848
35	512	LUWAMJULA BAZAR	0.059	0.147	-1.230	-0.308	-2.638	-4.356	-7.345	-1.671	-2.077	-0.869	0.038	-1.021	-17.332	-15.450	-0.768	-0.510	-4.176
36	513	CHAUR JHARI TAR	0.730	1.078	-0.565	0.237	-0.401	-0.902	0.674	-0.543	-1.506	-0.216	-0.028	-0.930	-4.547	-2.276	-0.244	0.878	-0.508
37	601	JOMSOM	0.289	0.563	0.183	0.024	-0.080	0.343	-0.240	1.297	-0.547	-0.024	0.026	0.317	2.578	1.244	0.002	1.330	0.128
38	604	THAKMARPHA	0.369	0.350	0.155	0.387	-0.257	-0.141	0.558	0.168	-0.773	0.565	-0.314	0.357	-0.149	-0.283	0.167	1.258	0.265
39	605	BAGLUNG	0.368	0.672	0.956	-1.036	-0.739		2.075	-1.023	-1.871	0.347	1.683	-0.255	9.364	10.206	2.031	1.127	-0.838
40	606	TATOPANI	0.119	0.388	0.721	0.970	3.386	2.100	-0.973	1.852	0.705	0.268	0.015	-0.248	8.684	3.850	0.284	0.817	5.105
41	607	LETE	0.538	0.035	0.959	0.271	2.201	2.568	3.527	3.855	-0.283	0.030	-0.337	-0.228	13.011	9.172	-0.143	0.616	3.547
42	610	GHAMI (MUSTANG)	-0.123	-0.265	-0.228	-0.191	-0.541	-0.157	-0.928	-0.035	-0.192	-0.532	0.106	-0.038	-2.848	-1.384	-0.427	-0.606	-0.848
43	612	MUSTANG (LOMANTHANG)	-0.045	0.257	0.117	-0.123	0.031	-0.466	-1.121	-0.979	-0.380	0.312	0.015	0.160	-2.699	-3.130	0.327	1.478	-0.008
44	613	KARKI NETA	0.421	-0.150	-0.492	-1.551	-0.850	3.943	0.360	-2.072	-4.087	1.817	-0.243	-0.976	-4.025	-1.856	1.574	-0.851	-2.893
45	614	KUSHMA	0.426	0.556	0.551	-0.143	-0.288	5.209	5.981	3.613	1.368	0.655	0.302	-0.545	15.781	16.171	0.957	0.721	0.069
46	619	GHORAPANI	0.350	0.134	1.196	1.617	3.926	4.813	-3.523	3.153	0.156	-0.063	0.451	-0.413	10.484	4.599	0.387	0.376	6.769
47	701	RIDI BAZAR	0.743	0.094	0.416	-0.685	-1.193	0.122	-4.302	1.139	-4.634	0.223	-0.329	-0.580	-8.987	-7.676	-0.106	0.528	-1.462
48	703	BUTWAL	0.391	0.427	1.585	-0.281	0.932	1.666	-7.154	-2.530	0.913	0.927	0.370	-0.518	4.795	0.355	1.297	0.440	2.236
49	704	BELUWA (GIRWARI)	0.385	0.455	0.151	-0.281	2.818	5.367	0.053	4.797	-0.390	0.827	0.120	-0.461	12.040	8.582	0.947	0.726	2.688
50	705	BHAIRHAWA AIRPORT	0.769	0.820	0.032	0.607	2.522	1.625	-5.329	1.650	-1.542	0.083	0.134	-0.339	1.030	-3.597	0.217	1.467	3.161
51	706	DUMKAULI	0.776	0.506	0.280	0.923	3.381	2.560	2.958	8.627	1.112	-0.014	0.237	-0.261	24.545	15.257	0.224	1.320	4.584
52	707	BHAIRHAWA (AGRIC)	0.599	0.599	0.117	0.532	1.829	-0.315	3.099	6.885	-3.171	1.438	0.119	-0.374	14.068	6.396	1.685	1.170	2.468
53	708	PARASI	0.416	0.236	-0.111	0.624	1.704	1.475	-6.170	2.165	-2.966	1.770	-0.133	-0.360	-3.284	-6.148	1.637	0.387	2.216
54	715	KHANCHIKOT	0.508	0.703	0.565	0.900	-1.169	-0.190	-3.001	0.714	-9.270	0.208	0.073	-0.932	-9.797	-11.746	0.281	0.669	0.563
55	716	TAULIHAWA	0.116	0.634	-0.635	-0.592	-0.318	-2.119	-9.487	-0.005	-5.808	-1.275	0.129	-0.545	-28.585	-18.975	-1.596	0.231	-2.075
56	721	PATTHARKOT (WEST)	0.331	0.183	0.395	0.026	0.976	1.205	-6.481	0.891	1.551	-0.308	-0.589	-0.698	-7.107	-1.699	-1.393	0.032	1.397
57	722	MUSIKOT	0.332	-0.362	0.440	-1.058	3.210	8.082	5.751	4.068	-0.851	-1.734	-0.266	-0.076	17.777	17.050	-2.020	0.224	2.592
58	723	BHAGWANPUR	0.712	0.869	-0.407	0.550	1.101	4.751	-7.439	1.042	2.229	3.037	0.260	-0.417	7.596	0.583	3.297	1.371	1.147
59	801	JAGAT (SETIBAS)	1.008	-0.020	-0.275	-0.586	2.542	2.989	3.367	2.500	3.641	2.443	-0.115	-0.642	16.456	12.459	2.444	0.550	1.682

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60	802	KHUDI BAZAR	0.561	0.243	-0.190	0.969	3.530	5.207	4.339	0.333	0.805	0.378	-0.738	-0.295	15.718	10.684	-0.361	0.821	4.562
61	804	POKHARA AIRPORT	0.381	-0.036	0.238	0.837	4.464	2.844	5.767	2.613	0.543	-0.297	-0.099	-0.919	16.336	11.766	-0.396	-0.237	5.540
62	805	SYANGJA	0.312	-0.297	-0.029	-0.363	0.578	5.476	7.266	0.137	0.737	0.060	-0.500	-0.393	12.048	13.616	-0.440	-0.264	0.186
63	807	KUNCHHA	0.215	0.374	-0.307	-0.957	-0.020	5.713	6.142	-1.874	-0.077	0.383	-0.086	-0.382	9.126	9.905	0.297	0.517	-1.283
64	808	BANDIPUR	0.249	0.260	-0.168	-1.560	-1.213	-3.956	-2.033	-6.299	-2.788	1.571	-0.216	-0.183	-10.647	-15.076	1.241	0.524	-2.941
65	809	GORKHA	0.562	0.432	-0.511	1.114	-0.618	-3.001	-2.236	-1.717	-3.918	-1.307	-0.320	-1.151	-15.909	-10.872	-1.613	0.180	-1.669
66	810	CHAPKOT	0.505	0.605	0.557	0.464	-0.224	2.982	0.687	2.045	-3.160	-0.089	0.171	-0.470	1.943	1.174	0.082	0.936	0.263
67	811	MALEPATAN POKHARA)	0.657	0.376	-0.845	0.269	2.706	6.214	14.921	1.542	4.629	-0.104	-0.766	-0.736	29.398	25.978	-0.916	0.291	3.371
68	814	LUMLE	0.429	0.794	0.982	0.359	3.289	9.246	4.650	9.206	9.736	4.786	-0.698	-0.479	42.299	32.837	4.088	1.065	4.630
69	815	KHAIRINI TAR	0.303	0.235	0.720	-0.628	3.732	2.797	2.379	-0.065	-2.119	-0.339	-0.542	-0.705	2.727	0.648	-0.541	-0.153	3.219
70	817	DAMAULI	0.478	1.502	1.101	0.505	1.130	1.540	2.305	4.729	-0.526	-0.185	0.396	-0.263	12.362	8.048	0.147	2.217	2.764
71	818	LAMACHAUR	0.125	-0.222	-0.437	-2.375	1.871	3.230	-1.422	-2.215	0.936	0.299	-0.991	-0.340	-3.980	1.169	-1.250	0.020	-1.350
72	820	MANANG BHOT	0.669	-0.042	-1.150	-0.207	-0.084	-0.715	-0.225	1.389	-0.616	0.255	0.233	-0.240	-3.198	-1.889	0.488	0.681	-1.265
73	823	GHARED-HUNGA	0.268	-0.230	-0.394	0.093	7.380		1.842	0.555	2.344	-0.157	-0.375	-0.195	11.664	10.614	-0.531	0.398	4.520
74	824	SIKLESH	0.184	-0.109	-0.828	1.277	4.011	6.752	-2.722	-0.584	0.184	-0.142	-1.734	-0.334	6.187	3.630	-1.876	0.306	4.461
75	902	RAMPUR	0.398	0.257	0.430	1.037	1.897	3.980	0.427	5.567	0.796	0.654	0.037	-0.496	14.984	10.771	0.691	0.393	3.363
76	903	JHAWANI	0.704	0.335	-0.017	0.246	2.423	2.328	6.654	5.727	-1.192	0.786	-0.033	-0.529	17.433	13.518	0.754	0.754	2.652
77	904	CHISAPANI GADHI	0.710	0.209	-0.434	-1.382	1.465	1.471	13.162	7.496	-3.994	0.505	-0.424	-0.035	18.872	18.135	0.081	1.066	-0.352
78	905	DAMAN	0.151	0.628	0.438	-0.534	-0.897	0.226	7.222	2.322	-2.764	0.613	-0.328	-1.097	5.933	6.723	0.193	-0.077	-0.500
79	906	HETAUNDA N.F.I	0.479	0.301	0.070	-0.045	1.615	1.187	15.411	5.720	0.376	1.023	-0.857	-0.474	24.806	22.694	0.166	0.521	1.640
80	907	AMLEKHGANJ	0.375	0.036	0.103	-1.418	1.318	-0.968	2.672	0.689	-0.236	0.854	-0.401	-0.551	2.475	2.158	0.453	0.054	0.003
81	909	SIMARA AIR-PORT	0.363	0.282	0.241	-1.186	1.193	3.355	4.802	5.047	-1.084	-0.497	0.083	-0.377	12.222	12.120	-0.415	0.431	0.248
82	910	NIJGADH	0.218	0.386	-0.091	-0.519	-0.514	2.466	5.970	3.632	0.976	0.073	-0.658	-0.510	11.101	12.718	-0.585	0.230	-1.124
83	911	PARWANIPUR	0.418	0.249	0.244	-0.297	1.968	4.031	1.669	5.981	-0.137	-1.157	-0.046	-0.408	12.516	11.544	-1.203	0.430	1.916
84	912	RAMOLI BAIRIYA	0.983	0.203	0.185	0.005	-1.904	-0.136	6.650	2.401	-1.974	-1.088	-0.045	-0.356	3.558	5.890	-1.133	0.917	-2.001
85	915	MARKHU GAUN	0.750	0.460	0.261	-0.798	0.339	0.143	6.071	2.706	-3.468	-0.767	0.065	-0.757	5.004	5.451	-0.701	0.766	-0.197
86	918	BIRGANJ	0.188	0.198	0.134	-0.028	3.239	1.923	3.404	3.298	2.896	0.561	0.228	-0.371	15.664	11.814	0.790	0.031	3.345
87	919	MAKWANPUR GADHI	0.654	0.676	0.744	-1.751	3.333	7.141	23.795	17.218	8.541	3.635	-0.499	-0.562	62.379	56.288	3.135	1.023	2.326
88	920	BELUWA	-0.019	0.185	-0.057	-0.300	2.808	3.128	6.318	3.083	-3.365	0.529	-0.438	-0.244	11.627	9.164	0.091	0.090	2.451
89	1001	TIMURE	0.753	0.063	0.308	-0.201	-1.115	-0.291	2.161	4.246	2.826	1.038	-0.222	-0.405	8.763	9.343	0.816	0.584	-1.009
90	1002	ARUGHAT D. BAZAR	-0.174	-0.806	-0.261	-2.823	0.315	0.640	-4.095	-7.689	-1.777	0.680	-0.310	-0.206	-16.506	-12.921	0.370	-0.946	-2.770

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Pre monsoon
91	1004	NUWAKOT	0.739	0.286	0.172	-1.043	3.369	-0.885	-0.156	1.139	3.557	-0.477	-0.148	-0.478	5.695	3.721	-0.625	0.745	2.523
92	1005	DHADING	0.293	-0.441	-0.239	-1.088	-0.556	-1.701	-4.324	-4.956	-5.981	0.364	-0.557	-0.443	-20.329	-16.962	-0.193	-0.383	-2.193
93	1006	GUMTHANG	1.309	0.292	0.113	2.238	5.605	-0.447	0.070	3.145	6.343	-1.621	-1.364	-0.444	15.702	9.111	-2.985	1.215	8.046
94	1007	KAKANI	0.751	0.323	0.743	0.067	3.698	-0.137	8.182	4.556	2.625	0.046	0.010	-0.807	17.772	15.226	0.056	0.507	4.403
95	1008	NAWALPUR	0.680	0.116	-0.003	-1.215	1.865	-0.913	0.839	4.680	-0.623	-0.277	0.246	-0.744	4.669	3.983	-0.010	0.246	0.648
96	1009	CHAUTARA	0.568	-0.280	-0.278	-0.558	0.315	-1.680	-7.497	1.725	-3.204	2.090	-0.359	-0.523	-9.055	-10.110	1.730	0.040	-0.522
97	1015	THANKOT	0.388	0.488	-0.191	-2.383	0.553	-2.277	-1.382	-5.841	-8.181	-2.026	0.083	-1.197	-21.751	-17.044	-1.943	-0.103	-2.022
98	1017	DUBACHAUR	0.948	0.385	0.276	-0.931	1.636	-0.698	-2.336	2.426	-0.434	0.047	-0.263	-0.807	1.205	-1.042	-0.216	0.745	0.981
99	1018	BAUNEPATI	0.563	-0.099	-0.183	-1.247	0.937	-2.701	-2.209	4.797	-0.169	0.385	0.249	-0.799	-0.748	-0.954	0.633	-0.155	-0.494
100	1020	MANDAN	0.451	-0.062	-0.114	-0.509	0.976	-0.916	0.881	2.539	-0.636	-0.442	-0.251	-0.070	4.065	3.968	-0.693	0.374	0.353
101	1022	GODAVARI	0.652	0.178	-0.113	0.137	0.803	-1.632	-0.762	2.087	-4.067	0.242	0.160	-0.705	-2.861	-4.374	0.402	0.618	0.924
102	1023	DOLALGHAT	0.169	0.292	0.100	-0.903	1.159	-0.922	0.191	2.096	-2.799	-0.328	0.133	-0.730	-1.543	-1.434	-0.196	-0.075	0.356
103	1025	DHAP	1.198	0.127	-1.088	-1.199	3.246	-4.089	-2.816	1.118	6.465	0.125	0.024	-1.085	5.240	2.970	0.150	0.211	0.960
104	1027	BAHRABISE	0.688	0.302	0.432	-1.517	2.306	1.200	-6.463	0.762	3.352	2.675	-0.438	-0.494	2.805	-1.149	2.237	0.754	1.221
105	1028	PACHUWAR GHAT	0.194	0.226	-0.193	0.043	1.149	0.733	3.605	0.784	-1.032	-0.728	-0.192	-0.628	3.962	4.090	-0.920	0.044	0.999
106	1029	KHUMALTAR	0.521	0.170	0.627	-0.279	0.898	-0.629	-0.646	0.244	-1.526	-0.375	0.003	-0.828	-1.185	-2.556	-0.372	0.100	0.537
107	1030	KATHMANDU AIRPORT	0.542	0.205	0.620	0.191	0.688	0.250	3.926	3.151	-0.151	-0.019	0.184	-0.507	9.080	7.177	0.165	0.444	1.499
108	1035	SANKHU	0.336	-0.445	0.451	-0.555	0.086	-2.390	1.762	2.030	1.451	-0.471	0.065	-0.409	8.279	2.177	-0.558	-0.398	-0.018
109	1038	DHUNIBESI	0.976	0.370	0.473	0.074	0.109	-0.340	3.867	5.328	0.975	-0.034	0.137	-0.670	11.360	9.830	0.103	0.912	0.656
110	1043	NAGARKOT	1.358	0.556	0.358	-0.866	2.528	-0.966	3.248	5.348	2.624	-0.061	0.237	-0.503	15.446	10.336	0.176	1.574	1.900
111	1049	KHOPASI (PA-NAUTI)	0.368	0.364	0.344	-0.304	1.096	0.080	4.287	2.383	-1.032	-0.205	0.392	-0.642	8.036	6.414	0.187	0.285	1.136
112	1052	BHAKTAPUR	0.576	0.051	0.173	-0.455	-0.280	-1.381	-0.881	1.375	-0.647	-0.317	0.151	-0.282	-1.664	-1.534	-0.166	0.528	-0.562
113	1054	THAMACHIT	-0.784	-1.081	-0.738	-1.681	-2.516	-7.333			-7.126	-2.751	-1.359	-0.852	-53.324	-37.779	-4.110	-2.803	-4.936
114	1057	PANSAYAK-HOLA	0.897	1.276	-0.042	-0.945	3.096	-1.863	3.724	1.227	1.759	0.730	-0.276	-0.335	6.209	1.159	0.454	2.454	1.671
115	1058	TARKE GHYANG	0.415	-0.219	-0.627	-0.609	3.434		14.637	20.888	13.908	0.151	-0.893	-0.809	76.900	61.199	-0.742	-0.409	2.439
116	1059	CHANGU NARAYAN	0.405	0.229	0.247	-0.410	1.493	-0.404	2.727	3.875	0.704	-0.231	0.145	-0.697	8.083	6.901	-0.086	0.151	1.331
117	1060	CHAPA GAUN	0.577	0.059	0.072	-0.504	-0.017	-0.962	2.158	1.447	-4.966	-0.045	-0.133	-0.906	-3.219	-2.322	-0.178	-0.159	-0.449
118	1101	NAGDAHA	0.046	0.156	0.733	-1.389	3.149	-0.631	-5.662	-3.664	-2.669	-1.444	-0.346	-0.177	-12.415	-11.981	-1.964	-0.094	2.494
119	1102	CHARIKOT	0.457	-0.112	0.473	-0.333	0.357	-0.996	3.291	4.011	0.224	-0.351	-0.343	-0.777	6.346	6.529	-0.694	-0.200	0.497
120	1104	MELUNG	-0.123	-0.295	-0.596	-0.515	-3.504	-5.963		-8.422	-8.034	-1.209	-0.084	-0.499	-42.201	-35.377	-1.293	-0.676	-4.615
121	1108	BAHUN TIL-PUNG	0.313	0.457	0.223	0.086	0.281	0.984	3.189	2.101	-1.683	0.881	-0.249	-0.735	8.597	4.867	0.631	0.164	0.590
122	1109	PATTHARKOT (EAST)	0.262	0.097	-0.013	-0.646	-0.174	-2.946	-1.664	-1.725	-5.033	-0.804	-0.428	0.045	-13.029	-11.368	-1.231	0.567	-0.833
123	1110	TULSI	0.469	0.018	-0.010	0.341	1.057	0.755	8.083	2.456	-3.581	1.172	-0.314	-0.225	10.221	7.713	0.858	0.383	1.388

ANNEX 2 Precipitation Trend (contd.)

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Pre monsoon
124	1111	JANAKPUR AIRPORT	0.304	-0.134	-0.082	1.592	0.819		7.219	3.392	-1.651	-0.119	-0.183	-0.600	21.310	19.712	-0.302	-0.286	2.329
125	1112	CHISAPANI BAZAR	0.083	-0.511	-0.122	-1.174	-0.999	-0.386	5.479	-0.258	-5.135	0.149	-0.151	0.011	-6.947	-1.710	0.022	-0.300	-2.296
126	1115	NEPALTHOK	-0.135	0.243	0.210	0.078	-0.352	-0.070	5.345	1.948	-2.168	-0.075	0.214	-0.191	5.047	5.055	0.138	0.154	-0.063
127	1117	HARIHARPUR GADHI VALLEY	0.819	-0.281	-0.081	-0.834	2.085	-2.236	3.739	6.995	-2.190	0.929	0.099	-0.165	8.879	6.308	1.028	0.316	1.171
128	1202	CHAU-RIKHARK	0.124	-0.703	0.305	-0.282	0.529	3.849	-1.337	5.912	0.351	-1.502	-0.607	-0.477	5.024	8.776	-2.109	-0.890	0.552
129	1203	PAKARNAS	0.235	0.022	0.611	-0.180	1.026	-0.538	1.652	6.910	-0.092	1.057	0.212	-0.524	9.456	7.932	1.269	0.014	1.457
130	1204		0.065	0.240	0.260	1.176	1.210	0.972	2.240	6.283	0.031	0.756	-0.402	-0.620	12.212	9.526	0.354	-0.151	2.647
131	1206	OKHALD-HUNGA	0.250	-0.151	0.115	0.367	0.188	-0.349	1.448	5.158	0.179	0.405	0.010	-0.500	7.120	6.437	0.415	-0.215	0.670
132	1207	MANE BHAN-JYANG	0.576	0.011	0.214	0.969	0.097	2.605	4.797	3.888	-0.232	-0.400	0.127	-0.212	10.747	11.058	-0.321	0.533	0.406
133	1210	KURULE GHAT	0.269	0.106	-0.107	0.524	0.569	1.121	7.632	4.263	-0.296	0.674	0.485	-0.538	14.947	13.183	1.158	-0.161	0.986
134	1211	KHOTANG BAZAR	1.349	-0.199	1.031	0.004	0.035	-0.306	0.217	4.834	-2.077	0.911	0.089	0.032	6.187	2.669	1.164	1.497	1.070
135	1216	SIRAHA	0.400	-0.467	0.007	1.256	0.792	5.291	2.457	0.352	-4.093	1.950	-0.531	-0.300	7.115	4.007	1.419	-0.238	2.055
136	1219	SALLERI	0.321	0.058	0.493	-0.203	0.868	-0.672	-3.003	3.484	0.440	-0.375	0.559	-0.737	0.962	0.488	0.321	-0.251	1.158
137	1222	DIKTEL	0.284	-0.249	0.117	0.286	0.984	-1.189	-2.721	-1.570	-5.194	-1.565	0.447	0.146	-10.480	-9.223	-1.118	0.609	-0.005
138	1223	RAJBIRAJ	0.665	-0.499	-0.128	0.483	2.439	4.946	6.533	2.772	-1.109	1.843	-0.393	-0.214	22.274	13.142	2.041	0.092	3.009
139	1224	SIRWA	0.160	0.162	-0.171	-0.432	-0.184	-4.591	-7.332	-2.321	-4.015	0.154	0.453	-0.331	-20.409	-20.041	0.615	0.171	-0.787
140	1226	BARMAJHIYA	0.290	-0.504	-0.882	0.814	-0.367	4.962	1.635	1.185	-2.880	1.432	-0.144	-0.553	2.838	4.679	1.288	-0.368	-0.227
141	1301	NUM	1.312	0.902	1.266	5.496	3.504	-1.204	-0.752	3.836	4.087	-4.607	-1.687	0.115	18.276	5.968	-6.985	3.425	10.266
142	1303	CHAINPUR (EAST)	0.334	0.427	0.164	1.412	0.071	0.649	0.890	2.800	-1.891	0.529	-0.292	-0.318	4.774	2.448	0.236	0.587	1.647
143	1304	PAKHRIBAS	0.517	-0.196	-0.288	1.053	0.114	0.961	-2.084	-0.863	-0.884	0.273	-0.177	-0.415	-1.021	-1.784	0.134	0.352	0.879
144	1305	LEGUWA GHAT	0.074	0.259	-0.539	0.090	-4.644	0.677	-0.566	2.302	-0.603	-0.552	-0.196	-0.207	-5.864	1.663	-0.748	0.225	-4.750
145	1306	MUNGA	0.285	0.001	-0.200	-0.792	-1.147	-2.591	-0.780	1.107	0.018	-0.110	0.197	-0.491	-4.502	-2.246	0.087	-0.064	-2.138
146	1307	DHANKUTA	0.332	-0.105	0.563	-0.081	0.509	-0.345	1.412	2.791	-1.294	-0.374	0.200	-0.275	3.335	2.564	-0.174	0.105	0.992
147	1308	MUL GHAT	0.583	-0.353	0.258	-0.623	-0.666	0.945	1.128	3.393	-0.693	0.830	0.189	-0.304	4.699	5.055	1.139	0.061	-1.031
148	1309	TRIBENI	0.271	-0.410	0.414	1.603	0.150	2.252	1.302	3.252	0.857	-1.737	0.216	-0.187	7.983	7.663	-1.522	-0.204	2.167
149	1311	DHARAN BAZAR	0.591	-0.670	1.185	-0.758	-0.388	-2.097	0.308	-1.323	-3.403	1.530	0.087	-0.362	-9.037	-8.686	1.617	-0.298	0.039
150	1312	HARAINCHA	0.630	0.182	0.259	0.869	0.161	3.922	7.297	2.120	-2.368	1.480	-0.520	-0.412	17.545	11.706	0.960	0.576	1.621
151	1316	CHATARA	0.282	-0.366	1.124	2.368	1.172	-2.857	1.820	-4.261	4.690	2.749	0.268	-0.140	4.944	-0.608	3.017	-0.193	4.664
152	1317	CHEPUWA	0.032	-0.678	-0.688	0.041	1.154	0.632	-1.384	0.938	0.961	-0.670	-1.221	-0.746	0.975	2.670	-1.891	-1.072	0.951
153	1319	BIRATNAGAR AIRPORT	0.712	0.064	-0.402	1.354	0.069	2.321	3.148	2.891	0.160	1.822	-0.573	-0.210	11.356	8.520	1.249	0.676	1.020
154	1320	TARAHARA	0.843	-0.132	0.901	0.348	0.855	2.052	4.807	0.805	0.016	1.004	-0.187	-0.654	11.026	7.680	0.796	0.231	2.104

ANNEX 2 Precipitation Trend (contd.)

S. No.	Index No.	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Monsoon	Post Monsoon	Winter	Pre monsoon
155	1321	TUMLINGTAR	-0.132	-0.220	-0.874	2.102	-0.137	1.840	2.523	0.677	-2.799	-0.437	-0.509	-0.514	0.173	2.241	-0.946	-0.922	0.470
156	1322	MACHU-WAGHAT	0.928	-0.562	0.489	0.309	1.223	0.702	2.210	2.105	1.619	-0.113	-0.026	0.511	9.807	5.191	-0.132	0.894	2.021
157	1325	DINGLA	0.422	0.488	0.055	1.244	-1.697	0.861	-0.050	-0.119	-0.752	0.574	-0.280	-0.489	-0.095	-0.060	0.294	0.166	-0.399
158	1403	LUNGTHUNG	0.285	0.567	0.123	0.297	2.735	-0.356	1.311	6.762	1.924	1.717	-0.701	-0.620	14.045	9.641	1.017	0.379	3.156
159	1406	MEMENG JAGAT	0.949	0.063	-0.029	-0.242	1.179	1.525	-2.091	4.699	-1.165	-0.139	-0.497	-0.261	4.630	2.968	-0.636	0.717	0.908
160	1407	ILAM TEA ESTATE	0.412	-0.209	-0.014	0.313	-1.316	2.952	1.706	4.986	-1.096	0.415	-0.047	-0.167	9.945	10.042	0.368	0.314	-1.018
161	1408	DAMAK	0.818	-0.271	0.562	0.125	0.671	0.420	1.026	0.589	-2.272	0.390	-0.772	-0.472	-0.273	-0.237	-0.383	-0.120	1.358
162	1409	ANARMANI BIRTA	0.392	-0.167	0.130	0.768	0.766	2.313	7.302	6.847	-0.179	4.717	-0.235	-0.866	21.787	16.284	4.482	-0.493	1.664
163	1410	HIMALI GAUN	0.355	-0.661	0.226	-0.287	-0.794	2.005	1.307	3.227	-1.942	-0.600	-0.508	-0.442	1.886	4.597	-1.109	-0.475	-0.855
164	1412	CHANDRA GADHI	0.550	-0.527	0.467	2.361	0.426	3.952	-7.582	5.007	-6.858	1.586	0.204	-0.539	-2.323	-5.447	1.790	-0.380	3.254
165	1415	SANISCHARE	0.470	-0.016	0.547	0.766	-1.666	1.837	2.465	4.294	-2.756	2.515	-0.363	-0.318	7.515	5.840	2.152	0.258	-0.353
166	1420	DOVAN	0.848	0.759	0.663	2.790	0.524	1.787	2.610	1.207	-1.912	0.461	-0.297	0.308	12.022	6.121	0.163	2.838	3.977

ANNEX 3 Precipitation Extreme

S. No.	Index No	Station	Lat.	Long.	Elev.	Rainfall	Year	Month	Day
1	101	KAKERPAKHA	2939	8030	842	144.0	1997	7	8
2	102	BAITADI	2933	8025	1635	150.3	1997	8	11
3	103	PATAN (WEST)	2928	8032	1266	189.8	2005	9	25
4	104	DADELDHURA	2918	8035	1848	216.0	1983	9	12
5	108	SATBANJH	2932	8028	2370	200.5	2005	9	24
6	201	PIPALKOT	2937	8052	1456	192.4	1985	7	5
7	202	CHAINPUR (WEST)	2933	8113	1304	114.4	2000	6	9
8	203	SILGADHI (DOTI)	2916	8059	1360	165.0	2005	9	24
9	205	KATAI	2900	8108	1388	290.7	1983	9	11
10	206	ASARA Ghat	2857	8127	650	127.2	2000	8	25
11	207	TIKAPUR	2832	8107	140	298.9	1978	7	18
12	208	SANDEPANI	2845	8055	195	248.2	1983	9	11
13	212	SITAPUR	2834	8049	152	319.2	1997	8	11
14	214	KOLA Gaun	2907	8041	1304	220.0	1983	9	11
15	217	MANGALSEN	2909	8117	1345	158.1	1999	10	7
16	303	JUMLA	2917	8210	2300	74.7	1981	9	29
17	304	GUTHI CHAUR	2917	8219	3080	97.5	2005	11	2
18	306	GAM SHREE NAGAR	2933	8209	2133	55.4	1987	5	2
19	308	NAGMA	2912	8154	1905	84.0	1982	5	14
20	402	DAILEKH	2851	8143	1402	168.6	2004	10	4
21	404	JAJARKOT	2842	8212	1231	240.7	2000	4	24
22	406	SURKHET (BIRENDRA NAGAR)	2836	8137	720	281.2	1986	7	21
23	412	NAUBASTA	2816	8143	135	281.4	1979	7	25
24	413	Shyano Shree (Chepang)	2821	8142	510	380.1	1981	7	31
25	414	BAIJAPUR	2803	8154	226	155.1	1986	6	25
26	416	NEPALGUNJ (REG.OFF)	2804	8137	144	310.0	1979	7	25
27	418	MAINA GAUN (D.BAS)	2859	8217	2000	140.1	1990	9	2
28	504	LIBANG GAUN	2818	8238	1270	154.3	1999	6	13
29	505	BIJUWARTAR	2806	8252	823	212.2	1999	6	13
30	507	NAYABASTI (DANG)	2813	8207	698	232.1	1985	8	23
31	508	TULSIPUR	2808	8218	725	184.1	1981	9	10
32	509	GHORAHI (MASINA)	2803	8230	725	197.3	1999	6	13
33	510	KOILABAS	2742	8232	320	280.0	1978	7	16
34	511	SALYAN BAZAR	2823	8210	1457	156.8	1999	6	13
35	512	LUWAMJULA BAZAR	2818	8217	885	183.9	2001	8	23
36	513	CHAUR JHARI TAR	2838	8212	910	121.0	1987	6	8
37	601	JOMSOM	2847	8343	2744	87.2	1985	10	10
38	604	THAKMARPHA	2845	8342	2566	86.6	1997	12	10
39	605	BAGLUNG	2816	8336	984	148.3	1999	6	12
40	606	TATOPANI	2829	8339	1243	156.5	2000	5	27
41	607	LETE	2838	8336	2384	112.0	1987	10	20
42	610	GHAMI (MUSTANG)	2903	8353	3465	79.4	1981	9	29
43	612	MUSTANG (LOMANTHANG)	2911	8358	3705	51.0	2005	10	20
44	613	KARKI NETA	2811	8345	1720	185.0	1980	6	9
45	614	KUSHMA	2813	8342	891	106.5	1993	8	2
46	619	GHORAPANI	2824	8344	2742	211.0	1999	6	13
47	701	RIDI BAZAR	2757	8326	442	230.4	1999	6	13
48	703	BUTWAL	2742	8328	205	354.0	1996	7	14
49	704	BELUWA (GIRWARI)	2741	8403	150	445.8	1981	9	29

ANNEX 3 Precipitation Extreme (contd.)

S. No.	Index No	Station	Lat.	Long.	Elev.	Rainfall	Year	Month	Day
50	705	BHAIRHAWA AIRPORT	2731	8326	109	266.5	1998	8	3
51	706	DUMKAULI	2741	8413	154	324.5	2003	7	30
52	707	BHAIRHAWA (AGRIC)	2732	8328	120	332.2	1998	8	3
53	708	PARASI	2732	8340	125	355	1993	9	6
54	715	KHANCHIKOT	2756	8309	1760	380.9	1981	9	28
55	716	TAULIHAWA	2733	8304	94	298.5	1986	7	10
56	721	PATTHARKOT (WEST)	2746	8303	200	296	1987	7	22
57	722	MUSIKOT	2810	8316	1280	207.6	1983	7	17
58	723	BHAGWANPUR	2741	8248	80	341.2	1977	7	18
59	801	JAGAT (SETIBAS)	2822	8454	1334	135.6	1999	7	3
60	802	KHUDI BAZAR	2817	8422	823	281.0	1986	9	28
61	804	POKHARA AIRPORT	2813	8400	827	357.0	2001	8	18
62	805	SYANGJA	2806	8353	868	241.4	1981	6	6
63	807	KUNCHHA	2808	8421	855	215.8	2000	6	24
64	808	BANDIPUR	2756	8425	965	200.2	2003	7	30
65	809	GORKHA	2800	8437	1097	164.0	1999	7	4
66	810	CHAPKOT	2753	8349	460	342.5	1981	9	29
67	811	MALEPATAN POKHARA)	2807	8407	856	288.2	1995	7	27
68	814	LUMLE	2818	8348	1740	295.0	1998	8	18
69	815	KHAIRINI TAR	2802	8406	500	182.0	1995	6	23
70	817	DAMAULI	2758	8417	358	265.0	1981	9	29
71	818	LAMACHAUR	2816	8358	1070	331.0	1978	9	27
72	820	MANANG BHOT	2840	8401	3420	91.5	1987	10	20
73	823	GHAREDHUNGA	2812	8437	1120	182.8	1979	7	24
74	824	SIKLESH	2822	8406	1820	247.2	1996	6	22
75	902	RAMPUR	2737	8425	256	296.3	2003	7	31
76	903	JHAWANI	2735	8432	270	255.0	1979	8	21
77	904	CHISAPANI GADHI	2733	8508	1706	442.5	2002	7	23
78	905	DAMAN	2736	8505	2314	373.2	1993	7	20
79	906	HETAUNDA N.F.I	2725	8503	474	456.8	2003	7	31
80	907	AMLEKHGANJ	2717	8500	396	399.0	1993	7	21
81	909	SIMARA AIRPORT	2710	8459	130	300.3	1987	8	1
82	910	NIJGADH	2711	8510	244	444.6	2004	7	10
83	911	PARWANIPUR	2704	8458	115	320.0	1987	8	1
84	912	RAMOLI BAIRIYA	2701	8523	152	304.0	1978	7	16
85	915	MARKHU GAUN	2737	8509	1530	385.6	1993	7	20
86	918	BIRGANJ	2700	8452	91	282.8	1986	8	24
87	919	MAKWANPUR GADHI	2725	8510	1030	391.4	2004	7	10
88	920	BELUWA	2733	8449	274	304.3	1994	9	10
89	1001	TIMURE	2817	8523	1900	191.2	1990	3	26
90	1002	ARUGHAT D. BAZAR	2803	8449	518	150.0	1979	8	21
91	1004	NUWAKOT	2755	8510	1003	420.3	2001	8	31
92	1005	DHADING	2752	8456	1420	240.0	1981	9	30
93	1006	GUMTHANG	2752	8552	2000	164.4	1985	9	4
94	1007	KAKANI	2748	8515	2064	156.0	1980	6	25
95	1008	NAWALPUR	2748	8537	1592	142.2	1978	7	16
96	1009	CHAUTARA	2747	8543	1660	168.2	2003	4	28
97	1015	THANKOT	2741	8512	1630	300.1	2002	7	23
98	1017	DUBACHAUR	2752	8534	1550	147.8	1999	7	18
99	1018	BAUNEPATI	2747	8534	845	137.5	1978	7	16

ANNEX 3 Precipitation Extreme (contd.)

S. No.	Index No	Station	Lat.	Long.	Elev.	Rainfall	Year	Month	Day
100	1020	MANDAN	2742	8539	1365	175.8	1993	7	21
101	1022	GODAVARI	2735	8524	1400	225.2	2002	7	23
102	1023	DOLALGHAT	2738	8543	710	149.5	2005	8	7
103	1025	DHAP	2755	8538	1240	151	1999	7	3
104	1027	BAHRABISE	2747	8554	1220	166.4	1982	7	29
105	1028	PACHUWAR GHAT	2734	8545	633	131.2	1987	10	20
106	1029	KHUMALTAR	2740	8520	1350	135.4	2002	7	23
107	1030	KATHMANDU AIRPORT	2742	8522	1336	177	2002	7	23
108	1035	SANKHU	2745	8529	1449	179.5	2002	7	23
109	1038	DHUNIBESI	2743	8511	1085	212	1983	5	6
110	1043	NAGARKOT	2742	8531	2163	179.4	1986	7	31
111	1049	KHOPASI (PANAUTI)	2735	8531	1517	192.4	2002	7	23
112	1052	BHAKTAPUR	2740	8525	1330	260	1990	8	12
113	1054	THAMACHIT	2810	8519	1847	80.2	2004	1	24
114	1057	PANSAYAKHOLA	2801	8507	1240	146	1981	6	16
115	1058	TARKE GHYANG	2800	8533	2480	234.9	1992	8	15
116	1059	CHANGU NARAYAN	2742	8525	1543	165.5	2002	7	23
117	1060	CHAPA GAUN	2736	8520	1448	200.5	2002	7	23
118	1101	NAGDAHA	2741	8606	850	190.5	1987	7	1
119	1102	CHARIKOT	2740	8603	1940	336	1980	8	21
120	1104	MELUNG	2731	8603	1536	141.5	1984	9	1
121	1108	BAHUN TILPUNG	2711	8610	1417	355	1984	9	17
122	1109	PATTHARKOT (EAST)	2705	8540	275	437	1993	7	21
123	1110	TULSI	2702	8555	457	296.7	1979	8	21
124	1111	JANAKPUR AIRPORT	2643	8558	90	339.5	2000	6	23
125	1112	CHISAPANI BAZAR	2655	8610	165	315	2004	7	10
126	1115	NEPALTHOK	2727	8549	1098	215	1981	9	30
127	1117	HARIHARPUR GADHI VALLEY	2720	8530	250	482.2	1993	7	20
128	1202	CHAURIKHARK	2742	8643	2619	152.5	2000	7	21
129	1203	PAKARNAS	2726	8634	1982	144	1995	8	13
130	1204	AISEALUKHARK	2721	8645	2143	270	1995	6	17
131	1206	OKHALDHUNGA	2719	8630	1720	170.4	2004	7	10
132	1207	MANE BHANJYANG	2729	8625	1576	420.5	1981	9	30
133	1210	KURULE GHAT	2708	8626	497	273.8	1984	9	17
134	1211	KHOTANG BAZAR	2702	8650	1295	193.3	1979	7	24
135	1216	SIRAHA	2639	8613	102	274.6	2002	7	21
136	1219	SALLERI	2730	8635	2378	90	1993	7	19
137	1222	DIKTEL	2713	8648	1623	158.6	1993	7	21
138	1223	RAJBIRAJ	2633	8645	91	245.4	2002	7	22
139	1224	SIRWA	2733	8623	1662	125.6	1984	9	17
140	1226	BARMAJHIYA	2636	8654	85	205	1987	8	11
141	1301	NUM	2733	8717	1497	394.5	2001	4	22
142	1303	CHAINPUR (EAST)	2717	8720	1329	172.2	1979	8	20
143	1304	PAKHRIBAS	2703	8717	1680	160.6	2002	7	26
144	1305	LEGUWA GHAT	2708	8717	410	120.5	1987	10	20
145	1306	MUNGA	2702	8714	1317	121.5	2005	8	26
146	1307	DHANKUTA	2659	8721	1210	171	1999	6	28
147	1308	MUL GHAT	2656	8720	365	291.3	1984	9	17
148	1309	TRIBENI	2656	8709	143	403	1984	9	17
149	1311	DHARAN BAZAR	2649	8717	444	352	1985	7	28

ANNEX 3 Precipitation Extreme (contd.)

S. No.	Index No	Station	Lat.	Long.	Elev.	Rainfall	Year	Month	Day
150	1312	HARAINCHA	2637	8723	152	152.4	1993	10	12
151	1316	CHATARA	2649	8710	183	348	1976	7	10
152	1317	CHEPUWA	2746	8725	2590	146.2	1987	10	20
153	1319	BIRATNAGAR AIRPORT	2629	8716	72	219.1	1987	8	13
154	1320	TARAHARA	2642	8716	200	377.6	1987	8	11
155	1321	TUMLINGTAR	2717	8713	303	119.4	1987	10	20
156	1322	MACHUWAGHAT	2658	8710	158	170.1	1984	9	17
157	1325	DINGLA	2722	8709	1190	208	1988	8	7
158	1403	LUNGTHUNG	2733	8747	1780	290.5	1989	7	2
159	1406	MEMENG JAGAT	2712	8756	1830	148.5	2002	7	25
160	1407	ILAM TEA ESTATE	2655	8754	1300	273.2	1997	8	10
161	1408	DAMAK	2640	8742	163	330	1984	9	15
162	1409	ANARMANI BIRTA	2638	8759	122	285.5	1984	9	16
163	1410	HIMALI GAUN	2653	8802	1654	320.6	1983	7	15
164	1412	CHANDRA GADHI	2634	8803	120	381	1984	9	16
165	1415	SANISCHARE	2641	8758	168	285	1984	9	16
166	1420	DOVAN	2721	8736	763	97.1	1990	6	10

SN	Index No	Station	Lat.	Long.	Elev.	Return Period							
						2	5	10	15	20	25	50	100
1	101	KAKERPAKHA	2939	8030	842	90.9	111.7	125.4	133.1	138.6	142.7	155.6	168.4
2	102	BAITADI	2933	8025	1635	84.3	113.9	133.5	144.5	152.3	158.2	176.6	194.8
3	103	PATAN (WEST)	2928	8032	1266	83.1	110.0	127.8	137.8	144.8	150.2	166.9	183.4
4	104	DADELDHURA	2918	8035	1848	88.8	132.6	161.7	178.0	189.5	198.3	225.5	252.5
5	108	SATBANJH	2932	8028	2370	88.1	125.5	150.3	164.3	174.1	181.6	204.8	227.9
6	201	PIPALKOT	2937	8052	1456	102.9	132.9	152.8	164.0	171.9	177.9	196.5	215.0
7	202	CHAINPUR (WEST)	2933	8113	1304	73.5	92.5	105.1	112.2	117.2	121.0	132.9	144.6
8	203	SILGADHI (DOTI)	2916	8059	1360	78.0	109.8	130.9	142.8	151.2	157.6	177.4	197.0
9	205	KATAI	2900	8108	1388	120.2	175.3	211.8	232.4	246.8	257.9	292.1	326.1
10	206	ASARA Ghat	2857	8127	650	82.5	102.0	114.9	122.2	127.3	131.2	143.3	155.3
11	207	TIKAPUR	2832	8107	140	139.7	204.6	247.6	271.9	288.8	301.9	342.2	382.2
12	208	SANDEPANI	2845	8055	195	140.6	185.1	214.6	231.2	242.8	251.8	279.4	306.9
13	212	SITAPUR	2834	8049	152	149.5	209.0	248.4	270.6	286.2	298.1	335.1	371.7
14	214	KOLA Gaun	2907	8041	1304	111.7	146.9	170.3	183.5	192.7	199.8	221.7	243.5
15	217	MANGALSEN	2909	8117	1345	93.0	119.9	137.7	147.8	154.8	160.2	176.9	193.5
16	303	JUMLA	2917	8210	2300	44.6	57.9	66.7	71.6	75.1	77.8	86.0	94.2
17	304	GUTHI CHAUR	2917	8219	3080	46.8	63.3	74.2	80.4	84.7	88.0	98.2	108.4
18	306	GAM SHREE NAGAR	2933	8209	2133	38.7	45.0	49.2	51.6	53.3	54.5	58.5	62.4
19	308	NAGMA	2912	8154	1905	49.8	66.3	77.2	83.4	87.7	91.0	101.3	111.4
20	402	DAILEKH	2851	8143	1402	82.7	110.0	128.2	138.4	145.5	151.0	168.0	184.9
21	404	JAJARKOT	2842	8212	1231	113.2	153.5	180.2	195.3	205.8	214.0	239.0	263.9
22	406	SURKHET (BIRENDRA NAGAR)	2836	8137	720	104.3	150.8	181.6	199.0	211.1	220.5	249.4	278.0
23	412	NAUBASTA	2816	8143	135	123.7	179.4	216.3	237.2	251.7	263.0	297.6	331.9
24	413	Shyano Shree (Chepang)	2821	8142	510	155.1	226.2	273.2	299.8	318.4	332.7	376.8	420.6
25	414	BAIJAPUR	2803	8154	226	71.6	100.9	120.3	131.2	138.9	144.8	163.0	181.0
26	416	NEPALGUNJ (REG.OFF)	2804	8137	144	146.3	203.6	241.5	262.9	277.9	289.4	324.9	360.2
27	418	MAINA GAUN (D.BAS)	2859	8217	2000	73.9	111.0	135.7	149.6	159.3	166.8	189.9	212.8
28	504	LIBANG GAUN	2818	8238	1270	92.7	119.1	136.7	146.5	153.5	158.8	175.2	191.5
29	505	BIJUWARTAR	2806	8252	823	99.5	135.1	158.7	172.0	181.3	188.5	210.6	232.6
30	507	NAYABASTI (DANG)	2813	8207	698	120.9	165.5	195.0	211.6	223.3	232.3	259.9	287.4
31	508	TULSIPUR	2808	8218	725	105.4	139.3	161.8	174.4	183.3	190.1	211.2	232.0
32	509	GHORAHI (MASINA)	2803	8230	725	106.7	135.1	154.0	164.6	172.1	177.8	195.4	213.0
33	510	KOILABAS	2742	8232	320	144.8	193.1	225.1	243.2	255.8	265.5	295.5	325.3
34	511	SALYAN BAZAR	2823	8210	1457	80.7	112.1	132.9	144.7	152.9	159.2	178.8	198.1
35	512	LUWAMJULA BAZAR	2818	8217	885	80.3	120.3	146.8	161.7	172.2	180.2	205.0	229.7
36	513	CHAUR JHARI TAR	2838	8212	910	75.4	90.1	99.9	105.4	109.3	112.3	121.4	130.5
37	601	JOMSOM	2847	8343	2744	28.9	50.9	65.5	73.7	79.5	83.9	97.6	111.2

SN	Index No	Station	Lat.	Long.	Elev.	Return Period							
						2	5	10	15	20	25	50	100
38	604	THAKMARPHA	2845	8342	2566	35.8	58.7	73.9	82.5	88.5	93.2	107.4	121.6
39	605	BAGLUNG	2816	8336	984	91.4	124.3	146.1	158.3	166.9	173.5	193.9	214.2
40	606	TATOPANI	2829	8339	1243	63.9	91.8	110.2	120.6	127.9	133.5	150.8	168.0
41	607	LETE	2838	8336	2384	59.2	81.5	96.3	104.7	110.5	115.0	128.9	142.7
42	610	GHAMI (MUSTANG)	2903	8353	3465	26.4	43.4	54.7	61.0	65.5	68.9	79.4	89.9
43	612	MUSTANG (LOMANTHANG)	2911	8358	3705	21.9	32.5	39.6	43.5	46.3	48.5	55.1	61.6
44	613	KARKI NETA	2811	8345	1720	109.9	141.2	161.9	173.6	181.8	188.1	207.5	226.7
45	614	KUSHMA	2813	8342	891	111.0	134.9	150.7	159.7	165.9	170.7	185.6	200.3
46	619	GHORAPANI	2824	8344	2742	97.6	129.9	151.3	163.4	171.9	178.4	198.4	218.4
47	701	RIDI BAZAR	2757	8326	442	105.7	146.6	173.6	188.9	199.6	207.8	233.1	258.3
48	703	BUTWAL	2742	8328	205	155.7	224.4	269.9	295.5	313.5	327.3	369.9	412.2
49	704	BELUWA (GIRWARI)	2741	8403	150	185.8	255.5	301.6	327.6	345.8	359.8	403.1	446.0
50	705	BHAIRHAWA AIRPORT	2731	8326	109	143.6	195.3	229.6	248.9	262.4	272.8	304.9	336.8
51	706	DUMKAULI	2741	8413	154	164.1	223.7	263.1	285.4	300.9	312.9	349.9	386.6
52	707	BHAIRHAWA (AGRIC)	2732	8328	120	157.6	221.3	263.4	287.2	303.8	316.6	356.1	395.3
53	708	PARASI	2732	8340	125	162.8	232.8	279.1	305.2	323.5	337.6	381.0	424.0
54	715	KHANCHIKOT	2756	8309	1760	137.3	217.4	270.5	300.4	321.4	337.5	387.2	436.6
55	716	TAULIHAWA	2733	8304	94	124.2	176.5	211.2	230.7	244.4	255.0	287.4	319.7
56	721	PATTHARKOT (WEST)	2746	8303	200	157.5	218.0	258.0	280.6	296.4	308.6	346.1	383.3
57	722	MUSIKOT	2810	8316	1280	122.3	165.2	193.6	209.6	220.8	229.4	256.0	282.4
58	723	BHAGWANPUR	2741	8248	80	162.9	222.3	261.7	283.9	299.5	311.4	348.3	384.9
59	801	JAGAT (SETIBAS)	2822	8454	1334	60.0	93.8	116.2	128.8	137.6	144.4	165.4	186.2
60	802	KHUDI BAZAR	2817	8422	823	137.8	176.9	202.7	217.3	227.6	235.4	259.7	283.8
61	804	POKHARA AIRPORT	2813	8400	827	184.1	229.0	258.7	275.5	287.2	296.3	324.1	351.8
62	805	SYANGJA	2806	8353	868	146.7	195.4	227.7	245.9	258.7	268.5	298.8	328.8
63	807	KUNCHHA	2808	8421	855	138.4	167.9	187.3	198.3	206.0	211.9	230.2	248.3
64	808	BANDIPUR	2756	8425	965	98.8	135.0	159.0	172.5	182.0	189.3	211.8	234.1
65	809	GORKHA	2800	8437	1097	99.4	127.0	145.3	155.6	162.8	168.4	185.5	202.5
66	810	CHAPKOT	2753	8349	460	133.4	186.1	221.0	240.7	254.5	265.1	297.9	330.3
67	811	MALEPATAN POKHARA)	2807	8407	856	168.7	224.2	260.9	281.6	296.1	307.3	341.7	375.9
68	814	LUMLE	2818	8348	1740	194.6	236.7	264.6	280.3	291.3	299.8	325.9	351.8
69	815	KHAIRINI TAR	2802	8406	500	124.6	154.1	173.6	184.7	192.4	198.3	216.6	234.8
70	817	DAMAULI	2758	8417	358	115.1	160.6	190.7	207.7	219.6	228.8	257.1	285.1
71	818	LAMACHAUR	2816	8358	1070	167.5	212.8	242.9	259.8	271.7	280.8	308.9	336.9
72	820	MANANG BHOT	2840	8401	3420	34.0	55.3	69.3	77.3	82.8	87.1	100.3	113.4
73	823	GHAREDHUNGA	2812	8437	1120	112.4	151.4	177.3	191.8	202.1	209.9	234.1	258.2

SN	Index No	Station	Lat.	Long.	Elev.	Return Period							
						2	5	10	15	20	25	50	100
74	824	SIKLESH	2822	8406	1820	136.3	181.9	212.2	229.2	241.2	250.4	278.8	306.9
75	902	RAMPUR	2737	8425	256	138.1	203.0	245.9	270.1	287.1	300.2	340.4	380.4
76	903	JHAWANI	2735	8432	270	124.3	183.8	223.3	245.5	261.1	273.1	310.1	346.8
77	904	CHISAPANI GADHI	2733	8508	1706	151.6	236.5	292.8	324.5	346.7	363.8	416.6	468.9
78	905	DAMAN	2736	8505	2314	124.5	210.7	267.7	299.9	322.4	339.8	393.2	446.3
79	906	HETAUNDA N.F.I	2725	8503	474	179.2	271.3	332.3	366.7	390.8	409.3	466.5	523.2
80	907	AMLEKHGANJ	2717	8500	396	174.0	247.2	295.7	323.0	342.1	356.9	402.3	447.4
81	909	SIMARA AIRPORT	2710	8459	130	166.6	221.3	257.6	278.0	292.3	303.3	337.3	371.0
82	910	NIJGADH	2711	8510	244	164.1	244.3	297.4	327.3	348.3	364.5	414.2	463.7
83	911	PARWANIPUR	2704	8458	115	140.9	205.3	248.0	272.1	289.0	302.0	342.0	381.7
84	912	RAMOLI BAIRIYA	2701	8523	152	151.3	207.4	244.5	265.5	280.1	291.4	326.3	360.8
85	915	MARKHU GAUN	2737	8509	1530	108.3	178.9	225.7	252.1	270.6	284.8	328.6	372.2
86	918	BIRGANJ	2700	8452	91	145.6	204.2	243.0	264.8	280.1	291.9	328.3	364.4
87	919	MAKWANPUR GADHI	2725	8510	1030	136.6	228.8	289.8	324.2	348.3	366.9	424.0	480.8
88	920	BELUWA	2733	8449	274	149.1	218.6	264.6	290.6	308.8	322.8	365.9	408.7
89	1001	TIMURE	2817	8523	1900	42.0	82.0	108.5	123.4	133.9	142.0	166.8	191.5
90	1002	ARUGHAT D. BAZAR	2803	8449	518	96.6	117.2	130.8	138.5	143.9	148.0	160.8	173.4
91	1004	NUWAKOT	2755	8510	1003	96.9	165.1	210.3	235.8	253.6	267.4	309.7	351.7
92	1005	DHADING	2752	8456	1420	98.3	140.8	168.9	184.7	195.8	204.3	230.7	256.8
93	1006	GUMTHANG	2752	8552	2000	90.8	124.8	147.3	160.0	168.9	175.7	196.9	217.8
94	1007	KAKANI	2748	8515	2064	110.6	135.6	152.2	161.5	168.1	173.1	188.6	204.1
95	1008	NAWALPUR	2748	8537	1592	107.6	122.2	131.9	137.3	141.2	144.1	153.2	162.1
96	1009	CHAUTARA	2747	8543	1660	81.3	109.9	128.9	139.6	147.1	152.8	170.6	188.2
97	1015	THANKOT	2741	8512	1630	93.4	141.1	172.7	190.6	203.0	212.7	242.3	271.7
98	1017	DUBACHAUR	2752	8534	1550	102.0	120.5	132.7	139.6	144.4	148.1	159.6	170.9
99	1018	BAUNEPATI	2747	8534	845	87.1	110.1	125.3	133.9	139.9	144.5	158.8	173.0
100	1020	MANDAN	2742	8539	1365	63.3	93.6	113.6	124.9	132.8	138.9	157.7	176.4
101	1022	GODAVARI	2735	8524	1400	100.3	138.2	163.2	177.4	187.3	194.9	218.4	241.8
102	1023	DOLALGHAT	2738	8543	710	72.0	94.8	109.9	118.4	124.3	128.9	143.1	157.1
103	1025	DHAP	2755	8538	1240	97.4	119.7	134.5	142.8	148.6	153.1	167.0	180.7
104	1027	BAHRABISE	2747	8554	1220	99.7	124.8	141.5	150.8	157.4	162.5	178.0	193.5
105	1028	PACHUWAR GHAT	2734	8545	633	66.0	89.7	105.4	114.3	120.5	125.3	140.0	154.6
106	1029	KHUMALTAR	2740	8520	1350	68.2	94.2	111.4	121.2	128.0	133.2	149.4	165.4
107	1030	KATHMANDU AIRPORT	2742	8522	1336	78.8	104.0	120.8	130.2	136.8	141.9	157.6	173.2
108	1035	SANKHU	2745	8529	1449	80.5	107.3	125.1	135.2	142.2	147.6	164.3	180.8
109	1038	DHUNIBESI	2743	8511	1085	96.3	136.7	163.5	178.6	189.1	197.3	222.3	247.2
110	1043	NAGARKOT	2742	8531	2163	91.1	117.2	134.4	144.1	150.9	156.1	172.3	188.3

SN	Index No	Station	Lat.	Long.	Elev.	Return Period							
						2	5	10	15	20	25	50	100
111	1049	KHOPASI (PANAUTI)	2735	8531	1517	88.2	123.4	146.7	159.9	169.1	176.2	198.0	219.7
112	1052	BHAKTAPUR	2740	8525	1330	75.5	119.4	148.5	164.9	176.4	185.3	212.5	239.6
113	1054	THAMACHIT	2810	8519	1847	21.7	39.3	51.0	57.5	62.1	65.7	76.6	87.5
114	1057	PANSAYAKHOLA	2801	8507	1240	101.4	128.1	145.8	155.7	162.7	168.1	184.7	201.1
115	1058	TARKE GHYANG	2800	8533	2480	103.7	148.7	178.5	195.4	207.2	216.2	244.2	271.9
116	1059	CHANGU NARAYAN	2742	8525	1543	73.5	97.0	112.5	121.2	127.3	132.1	146.6	161.0
117	1060	CHAPA GAUN	2736	8520	1448	94.4	127.8	149.8	162.3	171.0	177.7	198.4	218.9
118	1101	NAGDAHA	2741	8606	850	68.5	99.7	120.4	132.0	140.2	146.4	165.8	185.0
119	1102	CHARIKOT	2740	8603	1940	90.5	143.0	177.7	197.4	211.1	221.7	254.2	286.6
120	1104	MELUNG	2731	8603	1536	52.8	83.4	103.7	115.1	123.1	129.3	148.3	167.1
121	1108	BAHUN TILPUNG	2711	8610	1417	129.5	209.7	262.8	292.7	313.7	329.9	379.6	429.0
122	1109	PATTHARKOT (EAST)	2705	8540	275	140.2	229.3	288.4	321.7	345.0	363.0	418.3	473.3
123	1110	TULSI	2702	8555	457	134.0	195.1	235.5	258.4	274.3	286.6	324.6	362.2
124	1111	JANAKPUR AIRPORT	2643	8558	90	137.2	206.8	252.8	278.8	297.0	311.0	354.1	396.9
125	1112	CHISAPANI BAZAR	2655	8610	165	113.3	180.4	224.8	249.9	267.4	280.9	322.6	363.9
126	1115	NEPALTHOK	2727	8549	1098	87.2	123.9	148.2	161.9	171.5	178.9	201.7	224.4
127	1117	HARIHARPUR GADHI VALLEY	2720	8530	250	185.6	292.2	362.8	402.6	430.5	452.0	518.1	583.8
128	1202	CHAURIKHARK	2742	8643	2619	78.4	106.1	124.3	134.7	141.9	147.5	164.6	181.6
129	1203	PAKARNAS	2726	8634	1982	77.5	98.7	112.8	120.8	126.3	130.6	143.8	156.9
130	1204	AISEALUKHARK	2721	8645	2143	108.8	150.5	178.1	193.7	204.6	213.0	238.9	264.7
131	1206	OKHALDHUNGA	2719	8630	1720	93.6	120.5	138.4	148.4	155.5	160.9	177.6	194.2
132	1207	MANE BHANJYANG	2729	8625	1576	90.2	173.0	227.8	258.7	280.3	297.0	348.4	399.3
133	1210	KURULE GHAT	2708	8626	497	94.5	157.2	198.7	222.1	238.5	251.2	290.1	328.7
134	1211	KHOTANG BAZAR	2702	8650	1295	99.4	136.7	161.3	175.2	185.0	192.5	215.6	238.5
135	1216	SIRAHA	2639	8613	102	134.0	191.1	228.9	250.2	265.2	276.7	312.1	347.3
136	1219	SALLERI	2730	8635	2378	61.1	74.7	83.7	88.7	92.3	95.0	103.5	111.8
137	1222	DIKTEL	2713	8648	1623	76.2	105.1	124.3	135.1	142.7	148.5	166.4	184.3
138	1223	RAJBIRAJ	2633	8645	91	110.4	158.6	190.4	208.4	221.0	230.7	260.6	290.2
139	1224	SIRWA	2733	8623	1662	72.9	94.0	108.0	115.9	121.5	125.7	138.8	151.9
140	1226	BARMAJHIYA	2636	8654	85	130.6	166.3	190.0	203.3	212.7	219.9	242.0	264.0
141	1301	NUM	2733	8717	1497	181.6	262.6	316.3	346.6	367.8	384.1	434.4	484.4
142	1303	CHAINPUR (EAST)	2717	8720	1329	71.5	106.3	129.4	142.4	151.5	158.6	180.2	201.7
143	1304	PAKHRIBAS	2703	8717	1680	88.3	116.4	135.0	145.5	152.9	158.6	176.0	193.3
144	1305	LEGUWA GHAT	2708	8717	410	62.5	85.2	100.2	108.7	114.6	119.2	133.3	147.2
145	1306	MUNGA	2702	8714	1317	64.6	86.6	101.2	109.4	115.2	119.6	133.3	146.8
146	1307	DHANKUTA	2659	8721	1210	87.2	123.0	146.7	160.1	169.5	176.7	198.9	220.9

SN	Index No	Station	Lat.	Long.	Elev.	Return Period							
						2	5	10	15	20	25	50	100
147	1308	MUL GHAT	2656	8720	365	103.7	157.7	193.4	213.5	227.7	238.5	272.0	305.3
148	1309	TRIBENI	2656	8709	143	118.8	181.8	223.5	247.0	263.5	276.2	315.3	354.1
149	1311	DHARAN BAZAR	2649	8717	444	148.7	221.2	269.3	296.4	315.3	329.9	375.0	419.7
150	1312	HARAINCHA	2637	8723	152	143.8	185.1	212.4	227.9	238.7	247.0	272.6	298.1
151	1316	CHATARA	2649	8710	183	151.4	214.7	256.7	280.3	296.9	309.7	349.0	388.0
152	1317	CHEPUWA	2746	8725	2590	64.8	93.0	111.6	122.2	129.5	135.2	152.7	170.1
153	1319	BIRATNAGAR AIRPORT	2629	8716	72	136.6	175.8	201.7	216.4	226.6	234.5	258.9	283.0
154	1320	TARAHARA	2642	8716	200	145.6	209.9	252.5	276.5	293.3	306.3	346.2	385.8
155	1321	TUMLINGTAR	2717	8713	303	69.7	92.4	107.5	115.9	121.9	126.4	140.5	154.5
156	1322	MACHUWAGHAT	2658	8710	158	83.4	119.9	144.1	157.8	167.4	174.7	197.4	219.9
157	1325	DINGLA	2722	8709	1190	102.7	131.5	150.5	161.3	168.8	174.6	192.5	210.2
158	1403	LUNGTHUNG	2733	8747	1780	61.1	106.1	135.8	152.6	164.4	173.5	201.4	229.1
159	1406	MEMENG JAGAT	2712	8756	1830	78.4	108.3	128.1	139.3	147.2	153.2	171.8	190.2
160	1407	ILAM TEA ESTATE	2655	8754	1300	109.7	156.9	188.2	205.9	218.2	227.7	257.1	286.2
161	1408	DAMAK	2640	8742	163	170.5	235.1	277.8	302.0	318.9	331.9	372.0	411.8
162	1409	ANARMANI BIRTA	2638	8759	122	149.5	200.5	234.3	253.3	266.7	276.9	308.6	340.0
163	1410	HIMALI GAUN	2653	8802	1654	134.6	184.8	217.9	236.7	249.8	259.9	291.0	321.9
164	1412	CHANDRA GADHI	2634	8803	120	149.3	221.2	268.8	295.7	314.5	328.9	373.6	417.9
165	1415	SANISCHARE	2641	8758	168	166.3	213.1	244.1	261.6	273.9	283.3	312.4	341.2
166	1420	DOVAN	2721	8736	763	57.3	76.6	89.4	96.6	101.7	105.6	117.6	129.4

S. No.	Index No.	Lat.	Long.	Elev.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Max	Annual Mean Max
1	0104	29°18'	80°35'	1848	13.1	14.5	18.7	23.3	25.5	25.7	23.9	23.4	22.8	21.2	18.0	15.1	26.4	20.4
2	0203	29°16'	80°59'	1360	16.5	18.8	23.3	28.1	30.7	30.7	29.1	28.7	28.0	25.8	21.9	17.9	30.7	25.0
3	0209	28°41'	80°36'	170	20.9	24.4	30.1	35.7	37.4	36.3	33.2	32.7	32.4	31.4	27.8	23.2	38.0	30.4
4	0303	29°17'	82°10'	2300	13.4	14.4	17.8	21.3	24.1	25.8	24.9	24.4	23.9	21.6	18.4	15.7	26.1	20.5
5	0401	28°53'	81°15'	950	17.6	19.9	25.3	30.4	32.2	31.3	28.7	28.5	27.9	26.1	22.7	18.9	31.8	25.8
6	0402	28°51'	81°43'	1402	14.9	17.6	22.7	28.0	29.8	29.7	27.9	27.7	26.5	24.0	20.4	16.6	30.5	23.8
7	0405	28°39'	81°16'	1402	20.0	23.8	29.3	35.0	36.1	34.7	31.7	31.4	31.1	30.2	26.1	21.3	36.2	29.2
8	0406	28°36'	81°37'	720	19.6	22.2	27.4	32.6	34.0	33.0	30.5	30.5	29.8	28.3	24.9	21.0	34.6	27.8
9	0409	28°06'	81°34'	190	21.1	25.0	30.7	36.3	37.5	36.3	33.3	33.1	32.6	31.4	28.3	23.8	37.8	30.8
10	0416	28°04'	81°37'	144	21.1	25.0	30.8	36.5	37.6	36.7	33.2	33.0	32.6	31.6	28.2	23.6	38.1	30.8
11	0508	28°08'	82°18'	725	21.2	23.5	28.6	33.2	34.3	33.1	30.7	30.8	30.3	29.3	26.2	22.6	34.8	28.6
12	0604	28°45'	83°42'	2566	10.3	11.3	14.4	17.5	19.3	21.0	21.2	21.2	19.7	16.9	13.9	11.7	20.9	16.5
13	0705	27°31'	83°26'	109	21.3	25.3	31.3	36.0	36.4	35.3	32.9	33.2	32.7	32.0	28.8	24.1	37.3	30.8
14	0706	27°41'	84°13'	154	22.3	25.7	31.0	35.3	35.3	34.6	32.9	33.3	32.6	31.4	28.1	24.1	36.3	30.6
15	0707	27°32'	83°28'	120	21.8	25.4	31.3	35.8	36.3	35.3	33.0	33.2	32.7	32.3	29.3	24.5	37.0	30.9
16	0802	28°17'	84°22'	823	19.5	21.7	26.2	29.7	30.3	30.6	29.8	30.0	29.2	27.4	24.6	20.7	31.2	26.6
17	0804	28°13'	84°00'	827	19.3	21.8	26.4	29.6	29.8	30.3	29.7	30.0	29.1	27.1	23.9	20.5	31.2	26.5
18	0805	28°06'	83°53'	868	20.0	22.3	26.6	30.1	30.3	31.1	30.7	30.7	30.1	28.3	24.9	21.4	28.5	27.2
19	0814	28°18'	83°48'	1740	13.0	14.8	19.1	22.5	22.9	23.6	23.2	23.4	22.6	20.8	17.7	14.5	24.2	19.8
20	0815	28°02'	84°06'	500	21.2	24.2	29.4	32.7	32.7	33.0	32.2	32.5	31.7	29.5	25.8	22.0	34.0	28.9
21	0816	28°33'	84°14'	2680	9.5	11.0	14.7	18.2	20.1	20.9	20.2	19.9	19.3	17.2	14.4	11.4	19.8	16.4
22	0902	27°37'	84°25'	256	22.5	25.9	31.4	35.5	35.5	34.7	33.0	33.4	32.7	31.6	28.4	24.3	36.6	30.7
23	0905	27°36'	85°05'	2314	12.2	13.3	16.8	19.8	21.1	21.7	21.6	22.0	21.6	20.6	17.2	13.8	22.7	18.5
24	0906	27°25'	85°03'	474	22.2	24.8	29.9	33.3	33.4	32.6	31.4	31.7	31.1	29.5	26.7	23.7	34.4	29.2
25	0909	27°10'	84°59'	130	22.0	25.4	30.7	34.8	34.8	34.2	32.4	32.7	32.3	31.5	28.7	24.5	35.9	30.3
26	0911	27°04'	84°58'	115	22.3	25.5	31.0	35.2	35.3	34.7	32.7	32.9	32.7	32.2	29.5	25.2	36.3	30.8
27	1007	27°48'	85°15'	2064	13.6	15.4	19.6	22.6	22.8	22.7	22.3	22.6	22.0	20.8	18.0	14.9	23.1	19.8
28	1022	27°35'	85°24'	1400	14.6	17.0	21.3	24.8	25.6	25.9	25.1	24.9	24.0	22.2	19.0	15.7	26.4	21.7
29	1029	27°42'	85°22'	1337	17.5	19.6	23.5	26.7	27.5	28.1	27.2	27.4	26.7	25.3	22.4	19.1	28.6	24.3
30	1030	27°42'	85°22'	1337	18.4	20.8	24.8	27.7	28.4	28.7	28.1	28.4	27.7	26.3	23.2	19.8	29.5	25.2
31	1043	27°70'	85°52'	2163	12.7	14.6	18.8	22.3	22.9	23.1	22.5	22.6	22.0	20.4	17.3	14.0	23.1	19.4
32	1057	28°02'	85°12'	1240	12.0	14.2	18.5	21.6	22.4	22.4	22.3	22.4	21.7	19.5	16.2	13.2	21.8	18.9
33	1103	27°38'	86°14'	2003	13.6	15.6	19.2	22.0	23.1	23.9	23.6	23.7	22.9	21.0	17.7	15.1	24.3	20.1
34	1111	26°43'	85°58'	90	22.4	25.7	31.1	34.8	34.6	34.2	32.6	32.7	32.3	31.4	29.1	25.1	35.6	30.5
35	1206	27°19'	86°30'	1720	14.4	16.4	20.4	23.5	24.3	24.5	23.8	24.1	23.3	22.2	19.4	16.0	25.3	21.0
36	1303	27°17'	87°20'	1329	18.5	20.6	25.2	27.8	28.1	28.6	27.7	28.1	27.4	25.8	23.1	19.9	29.2	25.1

S. No.	Index No.	Lat.	Long.	Elev.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Max	Annual Mean Max
37	1304	27°05'	87°28'	1680	14.4	16.3	20.5	23.8	24.1	24.0	23.3	23.5	23.0	21.7	19.1	15.9	24.8	20.8
38	1307	26°59'	87°21'	1210	16.2	17.8	21.8	24.8	25.4	25.9	25.5	25.9	25.2	23.4	20.8	17.9	26.6	22.6
39	1319	26°29'	87°16'	72	22.8	25.9	30.9	33.8	33.2	32.8	31.9	32.4	31.9	31.3	29.1	25.4	34.5	30.1
40	1320	26°42'	87°16'	200	22.8	25.6	30.4	33.1	32.9	32.9	32.1	32.5	32.0	31.2	29.1	25.4	33.9	30.0
41	1324	27°11'	87°03'	1595	13.5	15.4	19.8	22.9	23.5	24.1	23.8	24.1	23.3	21.6	18.6	15.1	23.1	20.5
42	1405	27°21'	87°40'	1732	13.6	15.3	19.2	22.2	23.3	24.7	24.5	24.8	23.6	21.7	18.5	15.3	23.5	20.5
43	1407	26°55'	87°54'	1300	16.1	17.9	22.0	24.9	25.2	25.5	24.8	25.2	24.7	23.6	21.2	18.0	25.8	22.4
44	1416	26°52'	88°04'	1678	13.1	14.6	18.6	21.7	22.3	22.8	22.1	22.7	22.1	21.0	18.1	15.0	23.3	19.5

S. No.	Index No.	Lat.	Long.	Elev.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Min	Annual Mean Min
1	0104	29°18'	80°35'	1848	4.0	4.9	8.3	12.4	14.8	16.7	17.2	17.0	15.5	11.8	8.1	5.4	3.4	11.3
2	0203	29°16'	80°59'	1360	6.5	7.9	11.8	15.1	18.1	20.1	20.6	20.6	19.4	15.4	11.0	7.8	6.2	14.5
3	0209	28°41'	80°36'	170	7.2	9.2	13.0	17.4	22.4	25.1	25.8	25.6	24.2	19.0	12.4	8.0	7.4	17.4
4	0303	29°17'	82°10'	2300	-5.1	-3.2	0.1	3.5	7.6	12.9	15.5	15.2	12.2	4.2	-1.6	-4.5	-5.5	4.7
5	0401	28°53'	81°15'	950	8.6	10.8	14.6	19.2	21.7	22.6	22.2	22.0	20.9	17.4	13.5	9.9	8.3	17.0
6	0402	28°51'	81°43'	1402	5.2	7.2	10.9	15.0	17.0	18.4	18.8	18.5	16.6	12.9	9.6	6.5	5.0	13.0
7	0405	28°39'	81°16'	1402	10.6	12.5	16.4	21.1	24.3	25.6	25.1	24.9	24.0	20.4	16.0	12.1	10.5	19.4
8	0406	28°36'	81°37'	720	5.3	7.6	11.7	16.3	20.3	22.8	23.4	23.1	21.4	15.7	10.2	6.2	5.1	15.3
9	0409	28°06'	81°34'	190	7.3	9.4	13.1	18.6	22.9	25.5	26.2	26.0	24.6	19.4	13.2	8.6	7.3	17.9
10	416	28°04'	81°37'	144	9.0	11.5	15.6	20.7	24.6	26.4	26.4	26.3	25.1	20.8	15.0	10.4	8.9	19.3
11	0508	28°08'	82°18'	725	6.9	8.9	13.1	18.4	21.5	23.0	23.2	23.0	21.4	16.9	11.7	8.1	6.7	16.3
12	0604	28°45'	83°42'	2566	-2.0	-0.8	1.9	4.8	7.9	11.4	13.2	13.0	10.6	5.2	1.4	-1.1	-2.1	5.5
13	0705	27°31'	83°26'	109	8.7	10.6	14.5	19.8	23.8	25.6	25.8	25.9	24.6	20.3	14.6	10.2	8.6	18.7
14	0706	27°41'	84°13'	154	8.9	10.7	14.6	19.1	22.9	25.1	25.6	25.6	24.4	20.3	14.8	10.5	8.9	18.5
15	0707	27°32'	83°28'	120	8.7	10.2	13.9	19.1	23.4	25.5	26.0	26.0	24.8	20.5	14.7	10.3	8.6	18.6
16	0802	28°17'	84°22'	823	6.6	8.7	12.5	15.8	18.1	20.3	21.0	21.0	19.5	15.2	11.2	7.5	6.5	14.8
17	0804	28°13'	84°00'	827	6.9	9.0	12.5	15.5	18.3	20.8	21.9	21.9	20.7	16.6	12.0	7.9	6.8	15.3
18	0805	28°06'	83°53'	868	6.1	7.8	11.2	14.2	17.4	20.4	21.7	21.5	20.5	15.9	11.0	6.9	5.4	14.5
19	0814	28°18'	83°48'	1740	4.8	6.3	9.6	12.7	14.3	16.5	17.4	17.3	16.2	12.9	9.4	6.2	4.7	12.0
20	0815	28°02'	84°06'	500	8.1	9.5	12.5	16.4	19.7	22.6	23.9	23.9	22.6	18.7	13.8	9.8	8.1	16.8
21	0816	28°33'	84°14'	2680	-2.4	-0.3	2.9	5.6	7.7	10.1	10.6	10.4	9.7	5.9	2.2	-1.7	-2.3	5.1
22	0902	27°37'	84°25'	256	7.8	9.3	13.1	18.0	22.1	24.5	25.1	25.2	24.0	19.4	13.4	9.1	7.6	17.6
23	0905	27°36'	85°05'	2314	0.8	2.2	5.6	8.9	10.9	12.8	14.0	13.8	12.7	9.4	5.1	2.0	0.8	8.2
24	0906	27°25'	85°03'	474	6.8	8.6	12.6	17.3	20.9	23.1	23.4	23.3	22.2	17.7	12.1	8.2	6.6	16.3
25	0909	27°10'	84°59'	130	7.6	9.3	13.2	18.8	23.0	25.2	25.4	25.4	24.0	19.6	13.8	8.9	7.4	17.8
26	0911	27°04'	84°58'	115	8.4	10.1	14.0	19.2	23.2	25.4	25.9	25.8	24.6	20.5	14.4	9.6	8.1	18.4
27	1007	27°48'	85°15'	2064	3.0	4.7	8.3	11.4	13.5	15.4	16.0	15.8	14.9	11.7	8.0	4.8	2.8	10.6
28	1022	27°35'	85°24'	1400	3.2	4.8	8.6	11.9	14.7	17.6	18.3	18.2	16.7	12.7	8.2	4.5	3.2	11.6
29	1029	27°42'	85°22'	1337	1.4	3.4	6.9	10.7	15.0	18.8	20.2	19.8	18.3	13.0	7.2	2.6	1.2	11.4
30	1030	27°42'	85°22'	1337	2.2	4.2	7.7	11.4	15.6	19.0	20.1	19.9	18.4	13.1	7.7	3.4	2.0	11.9
31	1043	27°70'	85°52'	2163	2.6	4.1	7.4	10.6	12.3	15.2	15.4	15.2	15.3	11.0	6.9	4.1	2.5	10.0
32	1057	29°18'	80°35'	1848	2.1	3.8	6.8	9.9	11.9	13.8	14.4	14.1	13.4	10.8	6.9	3.6	1.7	9.3
33	1103	27°38'	86°14'	2003	-1.2	0.6	3.6	6.9	11.2	15.5	17.0	16.8	15.2	9.2	3.8	0.1	-1.2	8.2
34	1111	26°43'	85°58'	90	9.0	11.0	15.3	20.5	23.8	25.7	26.0	26.3	25.1	21.7	15.8	10.8	9.1	19.3
35	1206	27°19'	86°30'	1720	5.5	7.0	10.7	13.9	15.5	17.4	17.8	17.7	16.6	13.8	10.4	7.1	5.4	12.8
36	1303	27°17'	87°20'	1329	7.5	9.1	12.6	15.4	16.9	19.1	19.5	19.5	18.6	15.5	11.8	8.8	7.3	14.5

ANNEX 6 Minimum Temperature (contd.)

S. No.	Index No.	Lat.	Long.	Elev.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Min	Annual Mean Min
37	1304	27°05'	87°28'	1680	4.9	6.4	9.9	12.8	14.7	17.0	17.5	17.4	16.3	13.2	9.5	6.4	4.8	12.2
38	1307	26°59'	87°21'	1210	7.2	9.0	12.7	15.7	17.4	19.3	19.6	19.6	18.4	15.4	11.9	8.6	7.1	14.6
39	1319	26°29'	87°16'	72	8.9	10.9	15.3	20.2	23.1	25.1	25.5	25.7	24.4	20.8	15.2	10.4	8.8	18.8
40	1320	26°42'	87°16'	200	8.3	10.1	14.1	19.1	22.5	24.6	25.0	25.0	23.8	19.8	14.6	10.0	8.3	18.1
41	1324	27°11'	87°03'	1595	5.0	6.6	10.4	13.7	15.5	17.5	18.0	17.8	16.9	13.8	10.2	6.4	4.5	12.6
42	1405	27°21'	87°40'	1732	4.1	5.7	9.0	11.9	14.4	17.2	17.9	17.6	16.5	12.5	8.5	5.4	3.8	11.7
43	1407	26°55'	87°54'	1300	9.2	10.6	14.2	16.8	18.0	19.7	19.8	20.0	19.1	17.2	14.2	11.0	9.1	15.8
44	1416	26°52'	88°04'	1678	3.8	5.6	9.2	12.5	14.4	16.6	17.1	17.2	15.9	12.8	8.7	5.3	3.8	11.6

S. No.	Index No.	Lat.	Long.	Elev.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Min	Annual Mean Min
1	0104	29°18'	80°35'	1848	4.0	4.9	8.3	12.4	14.8	16.7	17.2	17.0	15.5	11.8	8.1	5.4	3.4	11.3
2	0203	29°16'	80°59'	1360	6.5	7.9	11.8	15.1	18.1	20.1	20.6	20.6	19.4	15.4	11.0	7.8	6.2	14.5
3	0209	28°41'	80°36'	170	7.2	9.2	13.0	17.4	22.4	25.1	25.8	25.6	24.2	19.0	12.4	8.0	7.4	17.4
4	0303	29°17'	82°10'	2300	-5.1	-3.2	0.1	3.5	7.6	12.9	15.5	15.2	12.2	4.2	-1.6	-4.5	-5.5	4.7
5	0401	28°53'	81°15'	950	8.6	10.8	14.6	19.2	21.7	22.6	22.2	22.0	20.9	17.4	13.5	9.9	8.3	17.0
6	0402	28°51'	81°43'	1402	5.2	7.2	10.9	15.0	17.0	18.4	18.8	18.5	16.6	12.9	9.6	6.5	5.0	13.0
7	0405	28°39'	81°16'	1402	10.6	12.5	16.4	21.1	24.3	25.6	25.1	24.9	24.0	20.4	16.0	12.1	10.5	19.4
8	0406	28°36'	81°37'	720	5.3	7.6	11.7	16.3	20.3	22.8	23.4	23.1	21.4	15.7	10.2	6.2	5.1	15.3
9	0409	28°06'	81°34'	190	7.3	9.4	13.1	18.6	22.9	25.5	26.2	26.0	24.6	19.4	13.2	8.6	7.3	17.9
10	416	28°04'	81°37'	144	9.0	11.5	15.6	20.7	24.6	26.4	26.4	26.3	25.1	20.8	15.0	10.4	8.9	19.3
11	0508	28°08'	82°18'	725	6.9	8.9	13.1	18.4	21.5	23.0	23.2	23.0	21.4	16.9	11.7	8.1	6.7	16.3
12	0604	28°45'	83°42'	2566	-2.0	-0.8	1.9	4.8	7.9	11.4	13.2	13.0	10.6	5.2	1.4	-1.1	-2.1	5.5
13	0705	27°31'	83°26'	109	8.7	10.6	14.5	19.8	23.8	25.6	25.8	25.9	24.6	20.3	14.6	10.2	8.6	18.7
14	0706	27°41'	84°13'	154	8.9	10.7	14.6	19.1	22.9	25.1	25.6	25.6	24.4	20.3	14.8	10.5	8.9	18.5
15	0707	27°32'	83°28'	120	8.7	10.2	13.9	19.1	23.4	25.5	26.0	26.0	24.8	20.5	14.7	10.3	8.6	18.6
16	0802	28°17'	84°22'	823	6.6	8.7	12.5	15.8	18.1	20.3	21.0	21.0	19.5	15.2	11.2	7.5	6.5	14.8
17	0804	28°13'	84°00'	827	6.9	9.0	12.5	15.5	18.3	20.8	21.9	21.9	20.7	16.6	12.0	7.9	6.8	15.3
18	0805	28°06'	83°53'	868	6.1	7.8	11.2	14.2	17.4	20.4	21.7	21.5	20.5	15.9	11.0	6.9	5.4	14.5
19	0814	28°18'	83°48'	1740	4.8	6.3	9.6	12.7	14.3	16.5	17.4	17.3	16.2	12.9	9.4	6.2	4.7	12.0
20	0815	28°02'	84°06'	500	8.1	9.5	12.5	16.4	19.7	22.6	23.9	23.9	22.6	18.7	13.8	9.8	8.1	16.8
21	0816	28°33'	84°14'	2680	-2.4	-0.3	2.9	5.6	7.7	10.1	10.6	10.4	9.7	5.9	2.2	-1.7	-2.3	5.1
22	0902	27°37'	84°25'	256	7.8	9.3	13.1	18.0	22.1	24.5	25.1	25.2	24.0	19.4	13.4	9.1	7.6	17.6
23	0905	27°36'	85°05'	2314	0.8	2.2	5.6	8.9	10.9	12.8	14.0	13.8	12.7	9.4	5.1	2.0	0.8	8.2
24	0906	27°25'	85°03'	474	6.8	8.6	12.6	17.3	20.9	23.1	23.4	23.3	22.2	17.7	12.1	8.2	6.6	16.3
25	0909	27°10'	84°59'	130	7.6	9.3	13.2	18.8	23.0	25.2	25.4	25.4	24.0	19.6	13.8	8.9	7.4	17.8
26	0911	27°04'	84°58'	115	8.4	10.1	14.0	19.2	23.2	25.4	25.9	25.8	24.6	20.5	14.4	9.6	8.1	18.4
27	1007	27°48'	85°15'	2064	3.0	4.7	8.3	11.4	13.5	15.4	16.0	15.8	14.9	11.7	8.0	4.8	2.8	10.6
28	1022	27°35'	85°24'	1400	3.2	4.8	8.6	11.9	14.7	17.6	18.3	18.2	16.7	12.7	8.2	4.5	3.2	11.6
29	1029	27°42'	85°22'	1337	1.4	3.4	6.9	10.7	15.0	18.8	20.2	19.8	18.3	13.0	7.2	2.6	1.2	11.4
30	1030	27°42'	85°22'	1337	2.2	4.2	7.7	11.4	15.6	19.0	20.1	19.9	18.4	13.1	7.7	3.4	2.0	11.9
31	1043	27°70'	85°52'	2163	2.6	4.1	7.4	10.6	12.3	15.2	15.4	15.2	15.3	11.0	6.9	4.1	2.5	10.0
32	1057	29°18'	80°35'	1848	2.1	3.8	6.8	9.9	11.9	13.8	14.4	14.1	13.4	10.8	6.9	3.6	1.7	9.3
33	1103	27°38'	86°14'	2003	-1.2	0.6	3.6	6.9	11.2	15.5	17.0	16.8	15.2	9.2	3.8	0.1	-1.2	8.2
34	1111	26°43'	85°58'	90	9.0	11.0	15.3	20.5	23.8	25.7	26.0	26.3	25.1	21.7	15.8	10.8	9.1	19.3
35	1206	27°19'	86°30'	1720	5.5	7.0	10.7	13.9	15.5	17.4	17.8	17.7	16.6	13.8	10.4	7.1	5.4	12.8
36	1303	27°17'	87°20'	1329	7.5	9.1	12.6	15.4	16.9	19.1	19.5	19.5	18.6	15.5	11.8	8.8	7.3	14.5

S. No.	Index No.	Lat.	Long.	Elev.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Min	Annual Mean Min
37	1304	27°05'	87°28'	1680	4.9	6.4	9.9	12.8	14.7	17.0	17.5	17.4	16.3	13.2	9.5	6.4	4.8	12.2
38	1307	26°59'	87°21'	1210	7.2	9.0	12.7	15.7	17.4	19.3	19.6	19.6	18.4	15.4	11.9	8.6	7.1	14.6
39	1319	26°29'	87°16'	72	8.9	10.9	15.3	20.2	23.1	25.1	25.5	25.7	24.4	20.8	15.2	10.4	8.8	18.8
40	1320	26°42'	87°16'	200	8.3	10.1	14.1	19.1	22.5	24.6	25.0	25.0	23.8	19.8	14.6	10.0	8.3	18.1
41	1324	27°11'	87°03'	1595	5.0	6.6	10.4	13.7	15.5	17.5	18.0	17.8	16.9	13.8	10.2	6.4	4.5	12.6
42	1405	27°21'	87°40'	1732	4.1	5.7	9.0	11.9	14.4	17.2	17.9	17.6	16.5	12.5	8.5	5.4	3.8	11.7
43	1407	26°55'	87°54'	1300	9.2	10.6	14.2	16.8	18.0	19.7	19.8	20.0	19.1	17.2	14.2	11.0	9.1	15.8
44	1416	26°52'	88°04'	1678	3.8	5.6	9.2	12.5	14.4	16.6	17.1	17.2	15.9	12.8	8.7	5.3	3.8	11.6

ANNEX 8 Maximum Temperature Trend

S. No.	Index No	Lat.	Long.	Elev.	Annual	Monsoon	Post Monsoon	Winter	Pre Monsoon
1	0104	29°18'	80°35'	1848	0.1207	0.0896	0.1314	0.1425	0.1144
2	0203	29°16'	80°59'	1360	0.0382	0.0439	-0.0159	0.0469	0.0294
3	0209	28°41'	80°36'	170	0.0071	0.0014	0.0154	-0.0310	0.0328
4	0303	29°17'	82°10'	2300	0.0467	0.0392	0.0503	0.0483	0.0542
5	0401	28°53'	81°15'	950	0.0231	0.0109	0.0290	0.0184	0.0405
6	0402	28°51'	81°43'	1402	0.1827	0.2202	0.1438	0.1194	0.2182
7	0405	28°39'	81°16'	1402	-0.0140	-0.0074	-0.0010	-0.0334	0.0032
8	0406	28°36'	81°37'	720	0.0369	0.0297	0.0298	0.0408	0.0483
9	0409	28°06'	81°34'	190	-0.0018	0.0211	0.0096	-0.0439	0.0245
10	0416	28°04'	81°37'	144	-0.0016	0.0047	-0.0044	-0.0445	0.0063
11	0508	28°08'	82°18'	725	0.0555	0.0553	0.0622	0.0731	0.0454
12	0604	28°45'	83°42'	2566	0.0466	0.0206	0.0218	-0.0435	-0.0038
13	0705	27°31'	83°26'	109	-0.0015	0.0206	0.0218	-0.0435	-0.0120
14	0706	27°41'	84°13'	154	-0.0175	-0.0066	-0.0150	-0.0424	-0.0120
15	0707	27°32'	83°28'	120	0.0221	0.0367	0.0417	-0.0048	0.0256
16	0802	28°17'	84°22'	823	0.0662	0.0667	0.0734	0.0734	0.0570
17	0804	28°13'	84°00'	827	0.0452	0.0443	0.0470	0.0459	0.0453
18	0805	28°06'	83°53'	868	0.0018	0.0144	0.0216	0.0100	0.0014
19	0814	28°18'	83°48'	1740	0.0491	0.0357	0.0621	0.0605	0.0499
20	0815	28°02'	84°06'	500	-0.0048	0.0125	-0.0262	-0.0188	0.0060
21	0816	28°33'	84°14'	2680	0.0862	0.0154	0.1177	0.0985	0.1015
22	0902	27°37'	84°25'	256	0.0407	0.0562	0.0665	0.0276	0.0179
23	0905	27°36'	85°05'	2314	0.0772	0.0494	0.1038	0.0722	0.0921
24	0906	27°25'	85°03'	474	0.0661	0.0728	0.0694	0.0551	0.0656
25	0909	27°10'	84°59'	130	-0.0037	0.0112	0.0153	-0.0294	-0.0123
26	0911	27°04'	84°58'	115	0.0174	0.0272	0.0582	-0.0018	0.0101
27	1007	27°48'	85°15'	2064	0.0145	0.0132	0.0004	0.0095	0.0432
28	1022	27°35'	85°24'	1400	0.0676	0.0486	0.0855	0.0150	0.0768
29	1029	27°42'	85°22'	1337	0.0758	0.0657	0.0942	0.0783	0.0763
30	1030	27°42'	85°22'	1337	0.0731	0.0488	0.0817	0.0936	0.0797
31	1043	27°70'	85°52'	2163	0.0473	0.0195	0.0644	0.0565	0.0630
32	1057	28°02'	85°12'	1240	0.0184	0.0076	0.0724	0.0261	0.0087
33	1103	27°38'	86°14'	2003	0.0628	0.0598	0.0783	0.0612	0.0594
34	1111	26°43'	85°58'	90	0.0012	-0.0058	0.0421	-0.0157	-0.0160
35	1206	27°19'	86°30'	1720	0.1119	0.1046	0.1344	0.1222	0.1013
36	1303	27°17'	87°20'	1329	-0.0492	-0.0465	-0.0483	-0.0563	-0.0455
37	1304	27°05'	87°28'	1680	0.0071	-0.0015	0.0207	0.0145	0.0039
38	1307	26°59'	87°21'	1210	0.1648	0.1585	0.1966	0.1787	0.1318
39	1319	26°29'	87°16'	72	0.0138	0.0340	0.0290	-0.0116	0.0002
40	1320	26°42'	87°16'	200	-0.0118	-0.0114	0.0097	-0.0288	-0.0090
41	1324	27°11'	87°03'	1595	0.0530	0.0558	0.0774	0.0339	0.0609
42	1405	27°21'	87°40'	1732	0.0546	0.0327	0.0640	0.0656	0.0474
43	1407	26°55'	87°54'	1300	0.0524	0.0378	0.0668	0.0780	0.0326
44	1416	26°52'	88°04'	1678	0.097	0.0776	0.1003	0.1054	0.0699

ANNEX 9 Minimum Temperature Trend

S. No.	Index No	Lat.	Long.	Elev.	Annual	Monsoon	Post Monsoon	Winter	Pre Monsoon
1	0104	29°18'	80°35'	1848	-0.030	-0.012	-0.058	-0.054	-0.019
2	0203	29°16'	80°59'	1360	-0.115	-0.086	-0.150	-0.113	-0.147
3	0209	28°41'	80°36'	170	0.030	0.019	0.020	0.063	0.037
4	0303	29°17'	82°10'	2300	0.010	0.022	0.001	0.002	0.011
5	0401	28°53'	81°15'	950	0.011	0.027	-0.001	0.010	0.035
6	0402	28°51'	81°43'	1402	-0.070	-0.137	-0.115	-0.053	0.023
7	0405	28°39'	81°16'	1402	0.029	0.031	0.023	0.035	0.023
8	0406	28°36'	81°37'	720	0.024	0.026	0.024	0.036	0.020
9	0409	28°06'	81°34'	190	0.043	0.023	0.033	0.079	0.043
10	0416	28°04'	81°37'	144	0.020	0.019	0.009	0.021	0.028
11	0508	28°08'	82°18'	725	-0.018	0.019	-0.014	-0.056	-0.012
12	0604	28°45'	83°42'	2566	-0.011	0.019	-0.049	-0.013	-0.012
13	0705	27°31'	83°26'	109	0.007	0.014	-0.013	0.010	0.011
14	0706	27°41'	84°13'	154	0.032	0.028	0.022	0.041	0.037
15	0707	27°32'	83°28'	120	0.002	0.007	-0.003	0.007	0.014
16	0802	28°17'	84°22'	823	0.089	0.101	0.072	0.083	0.099
17	0804	28°13'	84°00'	827	0.020	0.016	0.020	0.026	0.024
18	0805	28°06'	83°53'	868	0.023	0.023	0.059	0.015	0.023
19	0814	28°18'	83°48'	1740	0.007	0.029	-0.011	0.003	-0.004
20	0815	28°02'	84°06'	500	0.020	0.017	0.023	0.021	0.022
21	0816	28°33'	84°14'	2680	-0.024	-0.072	-0.003	-0.050	0.074
22	0902	27°37'	84°25'	256	0.051	0.043	0.059	0.059	0.049
23	0905	27°36'	85°05'	2314	0.031	0.059	0.054	-0.011	0.073
24	0906	27°25'	85°03'	474	-0.004	0.000	0.035	0.072	-0.023
25	0909	27°10'	84°59'	130	0.031	0.015	0.031	0.043	0.040
26	0911	27°04'	84°58'	115		0.013	0.015		0.026
27	1007	27°48'	85°15'	2064	0.069	0.052	0.079	0.086	0.067
28	1022	27°35'	85°24'	1400	0.017	0.048	0.008	-0.002	0.001
29	1029	27°42'	85°22'	1337	0.035	0.032	0.034	0.028	0.037
30	1030	27°42'	85°22'	1337	0.036	0.019	0.039	0.055	0.046
31	1043	27°70'	85°52'	2163	0.003	-0.004	0.009	0.009	0.003
32	1057	28°02'	85°12'	1240	-0.077	-0.111	-0.063	-0.014	-0.101
33	1103	27°38'	86°14'	2003	-0.033	0.005	-0.057	-0.058	-0.026
34	1111	26°43'	85°58'	90	0.050	0.042	0.025	0.062	0.068
35	1206	27°19'	86°30'	1720	0.005	0.015	0.002	0.004	-0.005
36	1303	27°17'	87°20'	1329	-0.084	-0.063	-0.122	-0.082	-0.067
37	1304	27°05'	87°28'	1680	0.023	0.014	0.027	0.027	0.031
38	1307	26°59'	87°21'	1210	0.031	0.091	0.008	-0.020	0.017
39	1319	26°29'	87°16'	72	0.032	0.021	0.051	0.032	0.039
40	1320	26°42'	87°16'	200	0.029	0.024	0.028	0.031	0.035
41	1324	27°11'	87°03'	1595	0.020	0.017	0.032	0.020	0.023
42	1405	27°21'	87°40'	1732	-0.002	-0.001	-0.007	-0.018	0.003
43	1407	26°55'	87°54'	1300	-0.004	-0.008	0.006	-0.004	-0.011
44	1416	26°52'	88°04'	1678	-0.027	-0.029	-0.017	-0.038	-0.041

ANNEX 10 Mean Temperature Trend

S. No.	Index No	Lat.	Long.	Elev.	Annual	Monsoon	Post Monsoon	Winter	Pre Monsoon
1	0104	29°18'	80°35'	1848	0.0454	0.0390	0.0368	0.0444	0.0479
2	0203	29°16'	80°59'	1360	-0.0384	-0.0211	-0.0829	-0.0333	-0.0587
3	0209	28°41'	80°36'	170	0.0205	0.0075	0.0178	0.0171	0.0380
4	0303	29°17'	82°10'	2300	0.0283	0.0304	0.0255	0.0254	0.0328
5	0401	28°53'	81°15'	950	0.0192	0.019	0.0139	0.0236	0.0376
6	0402	28°51'	81°43'	1402	0.0553	0.0395	0.0143	0.0334	0.1214
7	0405	28°39'	81°16'	1402	0.0075	0.0113	0.0111	0.0018	0.0081
8	0406	28°36'	81°37'	720	0.0304	0.0277	0.0267	0.0385	0.0342
9	0409	28°06'	81°34'	190	0.0249	0.0244	0.0220	0.0167	0.0330
10	0416	28°04'	81°37'	144	0.0083	0.0119	0.0055	-0.0114	0.0155
11	0508	28°08'	82°18'	725	0.0193	0.0369	0.0240	0.0089	0.0174
12	0604	28°45'	83°42'	2566	0.0063	0.0151	-0.0008	0.0036	0.0120
13	0705	27°31'	83°26'	109	0.0025	0.0174	0.0043	-0.0167	0.0035
14	0706	27°41'	84°13'	154	0.0072	0.0108	0.0036	-0.0006	0.0125
15	0707	27°32'	83°28'	120	0.0085	0.0217	0.0207	-0.0016	0.0192
16	0802	28°17'	84°22'	823	0.0776	0.0827	0.0696	0.0747	0.0844
17	0804	28°13'	84°00'	827	0.0328	0.0299	0.0334	0.0359	0.0347
18	0805	28°06'	83°53'	868	0.0107	0.0196	0.0274	0.0083	0.0127
19	0814	28°18'	83°48'	1740	0.0280	0.0321	0.0253	0.0316	0.0230
20	0815	28°02'	84°06'	500	0.0074	0.0140	-0.0018	0.0013	0.0139
21	0816	28°33'	84°14'	2680	0.0292	-0.0309	0.0575	0.0222	0.0916
22	0902	27°37'	84°25'	256	0.0473	0.0494	0.0647	0.0434	0.0333
23	0905	27°36'	85°05'	2314	0.0584	0.0524	0.0789	0.0302	0.0815
24	0906	27°25'	85°03'	474	0.0367	0.0363	0.0520	0.0593	0.0270
25	0909	27°10'	84°59'	130	0.0135	0.0130	0.0233	0.0067	0.0139
26	0911	27°04'	84°58'	115	0.0150	0.0203	0.0459	0.0094	0.0180
27	1007	27°48'	85°15'	2064	0.0418	0.0326	0.0398	0.0478	0.0549
28	1022	27°35'	85°24'	1400	0.0424	0.0482	0.0469	0.0375	0.0318
29	1029	27°42'	85°22'	1337	0.0553	0.0489	0.0640	0.0529	0.0565
30	1030	27°42'	85°22'	1337	0.0546	0.0340	0.0602	0.0745	0.0627
31	1043	27°70'	85°52'	2163	0.0246	0.0091	0.0369	0.0327	0.0341
32	1057	28°02'	85°12'	1240	-0.0304	-0.0544	0.0048	0.0082	-0.0468
33	1103	27°38'	86°14'	2003	0.0134	0.0325	0.0106	0.0014	0.0170
34	1111	26°43'	85°58'	90	0.0213	0.0144	0.0309	0.0214	0.0238
35	1206	27°19'	86°30'	1720	0.0585	0.0596	0.0683	0.0633	0.0483
36	1303	27°17'	87°20'	1329	-0.0671	-0.0548	-0.0850	-0.0694	-0.0564
37	1304	27°05'	87°28'	1680	0.0149	0.0062	0.0239	0.0211	0.0175
38	1307	26°59'	87°21'	1210	0.0978	0.1247	0.1022	0.0793	0.0745
39	1319	26°29'	87°16'	72	0.0230	0.0274	0.0399	0.0101	0.0195
40	1320	26°42'	87°16'	200	0.0085	0.0063	0.0188	0.0010	0.0129
41	1324	27°11'	87°03'	1595	0.0359	0.0352	0.0505	0.0253	-0.2750
42	1405	27°21'	87°40'	1732	0.0263	0.0145	0.0288	0.0239	0.0250
43	1407	26°55'	87°54'	1300	0.0270	0.0149	0.0356	0.0372	0.0121
44	1416	26°52'	88°04'	1678	0.0380	0.0271	0.0419	0.0342	0.0136

SUMMARY OF TEMPERATURES (1976 - 2005)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Maximum	17.5	19.9	24.6	28.3	29.1	29.1	27.9	28.0	27.4	25.9	22.8	19.3	29.9
Minimum	5.4	7.2	10.8	14.7	17.7	20.1	20.7	20.6	19.3	15.2	10.5	6.7	5.3
Mean	11.4	13.5	17.7	21.5	23.4	24.6	24.3	24.3	23.3	20.6	16.7	13.0	19.5

Trend	Annual	Monsoon	Post Monsoon	Winter	Pre Monsoon
Maximum	0.043	0.04	0.053	0.033	0.043
Minimum	0.007	0.01	0.002	0.008	0.012
Mean	0.025	0.024	0.028	0.022	0.021