A STUDY OF THUNDERSTORMS IN THE HIMALAYAN RANGE OF NEPAL

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CERTIFICATE

This is to certify that Mr. Sunil Acharya has prepared the dissertation entitled **"A Study of Thunderstorms in the Himalayan Range of Nepal"** to fulfil the partial requirements for the award of the degree of Master of Science in Meteorology. It is the record of the candidate's own work, carried out by him under my supervision and guidance.

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ACCEPTANCE

We hereby recommend that the dissertation prepared by Mr. Sunil Acharya entitled **"A Study of Thunderstorms in the Himalayan Range of Nepal"** has been accepted as partial fulfilment of the requirement for the Master of Science in Meteorology.

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Abstract

Nepal has experienced series of thunderstorm during the pre-monsoon season (April-May). Due to this natural phenomenon, considerable numbers of human lives, livestocks as well as physical properties have been lost every year throughout the country.

Due to the cause of intense heating of land masses during the pre-monsoon period, there is an instability of atmosphere which results to the thunderstorms during this period. Lightning is a major threat during a thunderstorm.

The station of Tribhuvan University, Central Department of Hydrology and Meteorology at Lukla is the major source of the meteorological data such as temperature, pressure, humidity, rainfall, solar radiation, wind speed and direction etc. These data were taken for the study, which was received in 4 minutes interval of time. In this study, five days were chosen for the possible Yes/ No thunderstorm days. Among the selected five days for the study, two days were observed as the severe thunderstorm days and the rest three were not.

In order to predict the thunderstorm potential for a particular day we found that the range of temperature and dew point temperature become high before the period of thunderstorm.

Convective Available Potential Energy (CAPE) values was calculated by using ROAB programme taking the upper air sounding of Siliguri. The CAPE comparison isolated 1, 11 and 12 May with the values of 3, 689 and 93 Joules/ Kg respectively from the non thunderstorm days. CAPE values for the days of 26 April and 13 May were 1436 and 1388 Joule/ Kg respectively. It shows that the greater the CAPE values, the greater potentiality for the occurrence of thunderstorm.

The two thunderstorm days shared what appeared to be identical cloud base heights, 800 m AGL, plus clear morning. Cloud base heights of the non-thunderstorm days were higher and ranged from 1200 to 1800 m AGL. It shows that the lower the cloud base heights, the higher potentiality for the occurrence of thunderstorm. Along this, the clear morning is the mechanism for the prediction of thunderstorm.

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