

Analysis of Rainfall and Extreme Rainfall Events over Himalayas

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The **Himalayas**, form a mountain range in Asia, separating the plains of the Indian subcontinent from the Tibetan Plateau. The Himalayan mountain range runs west-northwest to east-southeast in an arc 2,400 km long. The range varies in width from 350 km in the west (Pakistan) to 150 km in the east (Arunachal Pradesh). spread across India, Nepal, Bhutan and Pakistan. Some of the world's major rivers – the Indus, the Ganges and the Tsangpo-Brahmaputra – rise in the Himalayas,

Rainfall in Himalayan regions shows wide seasonal, regional and sub regional variability. Annual Mean Rainfall steadily increases eastwards from North Pakistan and Kashmir in the west to Arunachal Pradesh in the east. However because of complex orographic features of the Himalayan ranges wide variability within given sub-region is observed, e.g . in Nepal annual rainfall of Pokhara is 3345 mm whereas of Mustang is less than 300 mm. Altitude and relief dependence of rainfall is presented in the paper

Mid Latitude synoptic system known as Western Disturbances cause snow fall in higher ranges and rainfall in lower ranges during winter and Thunderstorm/showers during Pre-monsoon season. About 75% of the annual rainfall in Himalayas except over Kashmir and North Pakistan occurs during monsoon season (June to September) with July and August are the rainiest months. .All major extreme weather events in the form of heavy rainfall, cloud burst, landslides and floods occur during monsoon season. Most of these are caused by interaction of Western Disturbance with monsoon system. Some of the extreme cases are discussed in the paper

Paleo climatic studies and trend analysis of rainfall and temperature data show rise of temperature and decrease in precipitation over western and central Himalayas. High resolution climate projections are required over Himalayan region to manage water resources and agriculture in eco-fragile Himalayan region under changing climate.