

Seasonal variation in the western himalayan basin

[Life](#)



2. 1 THE STUDY AREA

Beas River

In this survey, Beas Basin located in western Himalaya has been selected. Two sites viz. Manali and Bhunter were being selected for appraisal of the part of different constituent i. e. snow/ice melt overflow, rainfall overflow and land H₂O overflow to Beas River. Study was besides conducted for the Parvati River at Bhunter site. Beas River originate from the eastern inclines of Rohtang base on balls of Himalayas at an lift of 3900 m and flows in about north-south way up to Larji, where it takes a about right angle bend and flows towards west up to the Bhunter. The length of the river up to the Bhunter is 80 kilometer. The catchment of the Beas basin up to Bhunter is 3384 kilometer² out of which merely 780 kilometers² is under lasting snow. Largely the catchment country comprises of hasty inclines and the stones are chiefly au naturel. The basin height varies from 1600 m near Bhunter to more than 6000 m near Beo-Toibba.

Parvati is one of the major feeder which join the Beas River at Bhunter. It rises from Mantalai glacier at an height of about 5200 m ASL. Mantalai glacier is located on the western incline of the great Himalayan ranges. The basin lies between 31° 50' to N and 77° 5' to E. It drains an country of about

Km². The Parvati River basin is a hilly and cragged piece of land with altitude runing from 1096 to 6250 metres (Figure). The basin presents an interact mosaic of mountain scopes, hills and vales. The mountain inclines in

the basin are covered with woods and hayfields. The vales are interspersed with legion watercourses like Malana nal, Tos Nal, Kasol Nal etc. fall in the Parvati River from left and right Bankss. Some of the of import scopes of the basin are Chandrakhari Dhar, Sharkandi Dhar, Rorung Dhar, Phagachi Dhar, Rajthathi Dhar, and Ori Dhar.

Western Himalaya:

Western Himalaya stretches for approximately between in the E and in the West embracing an country of about sq kilometer. The mean height ranges between 600 to 6900 metre above average sea degree (Fig) . The outstanding characteristics include the snow clothed extremums, `` U '' shaped vale, truncated goads with snow-off facies, aretes, horn, pyramidal and conelike extremums, serrated cresta of ridges, corries, glacial troughs both ancestor and consequent, knife-edged precipice, smooth stone and steep head-walls. Dhauladhar, Pir-Panjaj, Great Himalaya and Zanskar are the chief mountain scopes of the country (Fig.) . The Dhauladhar scope bases in all stateliness over the Kangra vale while the Pir-Panjaj, Great Himalaya and Zanskar ranges bases land over Chamba, Lahul and Spiti and Kinnaur. The low scopes of Siwalik autumn in the south-western portion.

From south to north four good defined tectonic-cum-physiographic belts with distinguishable geological formations have been recognized in the Himachal Himalaya as the outer or bomber Himalaya, Lesser Himalaya, Great Himalaya and Tibetan or Tethys Himalaya.

Outer Himalaya is situated in the southern most portion and it has an mean tallness of 600 m the average sea degree. This late Tertiary sedimentary belt fundamentally forms series of drops with steep inclines on the southern side.

Lesser Himalaya, caught between the outer Himalaya in the South and Greater Himalaya in the North has an mean lift of 4000 m to 5000 m above average sea degree. The two major scopes viz. Dhauladhar and Pir-Panjaj, tendency in NW-SE waies, (about parallel to the regional tendency of the stone formation) constitute the chief H₂O divide of the part (Figure-western Himalaya) .

The northern belt of the Great Himalaya, with its extremums surging highs of 5000 m to 6000 m (amsl) , is characterized by hasty scarps and perpendicular walled gorgeous vales with toppling and frothing rivers. The eastern extension of the Great Himalaya commences from Nanga Parbat in the West. The Pir-Panjaj articulations this scope (Great Himalaya) near Deo-Tibba (5540 m) . Chandra-Bhaga (Lahaul and Spiti) vale, with heavy snow bound countries, lies between these two scopes. The rugged topography of the country therefore houses maximal glaciers, which range in length from 3 to 35 kilometer. The Satluj river forms a narrow and deep gorge and cuts across the Great Himalayan scope. This scope acts as a great H₂O divide between the Spiti and Beas drainage systems. The most critical base on ballss of this scope are located near Darang (5, 548 m) , Kangra (5, 248 m) , and Rohtang (4, 043) and are on the Pir-Panjaj Range.

To the E of Great Himalaya is the Zanskar scope that separates the Tibetan basin (term basin denoting here as a geomorphic entity) from Himachal

Himalaya. The Tibetan basin is connected with the Satluj basin of Himachal through base on passes of Sholarung and Gumarang situated on the Zaskar scope. The river Satluj cuts this scope through a gorge at Shipki (6, 570 m). The Satluj basin is rugged in nature and snow edge and the vale crosses the Great Himalayan ranges near China boundary line and Kalpa (Kinnaur). The general height scope from 4, 500-6, 500 m, of which the Kinner Kailash (6473) forms the highest extremum. The intricate mosaic forms of hills, mountains and vales all over the province is the feature of the survey country. There is general addition in lift from West to east and south to north.

2. 2 Geology of the Himachal Himalaya

Geological Survey of India initiated about the geological surveys of Himachal Himalaya every bit early as 1860. Medlicott (1864) ; McMohan (1877, 1895) ; Oldham (1887, 1893) , Hayden (1904) ; Diener (1912) ; Pilgrim and West (1928) and Auden (1934) are the few innovator workers of this part. The important part to the geology of Himalaya in subsequent old ages have been added by Wadia (1931) ; Gansser (1964, 1977) ; Heim and Gansser (1975) ; Fuchs (1967, 1975) and others. The recent work by Bhargava (1972a, 1975, 1977b, 1979) ; Srikantia and Bhargava (1974, 1976) , Gupta and Kumar (1975) , Srikantia (1981, 1982) , Sorkhabi. , 1996, Fuchs. , 1981 is an effort to ease out some of the jobs of Himalaya, but most important work chiefly on jobs related to biostratigraphy, lithology, construction and tectonics has been carried out by Valdiya (1970, 1973) ; Bhattacharya and Niyogi (1971) ; Kumar (1971, 1978a, 1979) ; Kumar and Pande (1972) ; Sinha (1975, 1977, 1978) ; Viridi (1976) ; Fuchs and Sinha <https://assignbuster.com/seasonal-variation-in-the-western-himalayan-basin/>

(1978) , Thakur (1980, 1981) ; Thakur et al. , (1991) ; Pande (1991) .

The geological set up of the Himachal Pradesh is taken after Thakur et. al. , (1991) (Fig) .

2. 3 CLIMATE AND SEASONAL VARIATION IN THE STUDY BASIN

The climate is characterized by a short period of mild summer with a well terrible long winter. It has humid, sub-tropical climate in the southern low land countries, temperate in the Lesser Himalayan vales and cool (sub-alpine) in higher mountains. Snow-falls occur upto a tallness of 1, 300 m during the winters whereas above 4, 000 m the countries are under lasting snow screen.

The survey country experiences a terrible winter season characterized by the happening of heavy snowfall (Fig. Snowfall Variation figure of the basin) at higher heights. India Meteorological Department (IMD) has categorised the whole twelvemonth into four season under Indian conditions. January to March is classs under winter season, April to June as summer season, July to September in monsoon season and October to December is Chactgarized as fall season (post monsoon months) . Seasonal fluctuation in footings of month may change ± 15 yearss.

1) Summer Season AMJ (April? June) Climate

In summer season, temperature starts to increase in Himalayan part similar to the other parts of India. Intensity of increasing the temperature is less as comparison to kick and peninsular India. April to June months are considered as summer months in Himalayan part. These 3 months are considered as

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theodolite period between winter and monsoon season. Weather in Himalayan part sometimes influenced by electrical storms associated with rain during the summer season.

2) Monsoon Season JAS (July-September)

Over the India, monsoon rains begin towards the really terminal of may or the first hebdomad of June over the utmost southern parts of the peninsula and ranges by terminal of June or starting of July in the Himalayan part. It varies from less than 75 yearss over Rajasthan, to more than 120 yearss over the south-western parts of the state lending to about 75 % of the one-year rainfall (IMD 2010) . The parts which receive the largest rainfall are along the west seashore of India and the provinces of Assam and west Bengal in northest India. South west monsoon usually starts over the Kerala seashore. The subsequent advancement of the monsoon may be conveniently traced in the signifier of two subdivisions, viz. , the Arabian Sea subdivision and the Bay of Bengal subdivision. The Arabian Sea subdivision bit by bit advances due norths to Mumbai by 10 June. In the interim, reaching of the Bay of Bengal monsoon over eastern portion is being observed. By mid June the Arabian Sea subdivision spreads over Saurashtra-Kutch and the cardinal parts of the state. Thereafter, the deflected current from the Bay of Bengal and Arabian Sea subdivision of the monsoon tend to unify into a individual current. The staying parts of west Uttar Pradesh, Haryana, Himachal Pradesh, eastern half of the Rajasthan see their first monsoon showers by the first of July.

The monsoon is influenced by planetary and local phenomenon like El Nino, northern hemispheric temperatures, sea surface temperatures, snow cover etc. The monsoonal rainfall oscillates between active enchantments associated with widespread rains over most parts of the state and interruptions with small rainfall activity over the fields and heavy rains across the foothills of the Himalayas. Heavy rainfall in the cragged catchments under ' break' conditions consequences deluging over the fields. However, really uncomfortable conditions due to high humidness and temperatures is the characteristic associated with the Breaks.

SW monsoon current becomes lame and by and large starts retreating from Rajasthan by 1st September and from north-western parts of India by 15 Thursday September. It withdraws from about all parts of the state by 15 Thursday October and is replaced by a northern continental air flow called North-East Monsoon. The withdrawing monsoon air currents cause occasional showers along the east seashore of Tamil Nadu, but rainfall decreases off from coastal parts.

3) Post monsoon OND (October-December)

Post monsoon season is the driest period in the Himalaya. Rivers of cragged part is by and large sustained by base flow during this period. Southern provinces of India viz. Andhra Pradesh, Telungana, Karnataka, Kerala receive good sum of rainfall accounting for approximately 35 % of their one-year sum in these months. (IMD study) . Daily temperature starts falling all over the state. The average temperatures over western Himalaya diminution from approximately 320C to a scope of 15-18⁰ C in the month of November. Less <https://assignbuster.com/seasonal-variation-in-the-western-himalayan-basin/>

humidness and clear sky over the most portion of the North and cardinal India after mid-October are features characteristics of this season (IMD, 2010) .

4) Winter Season JFM (January to March)

January to March months are considered as winter season in India. This season starts in December holding clear skies, low temperature, big daytime fluctuations of temperature. In this season rain is by and large occur over the western Himalayas, the utmost north-eastern parts, Tamil Nadu and Kerala. Precipitation during this season is occurred in signifier of rainfall every bit good as in solid signifier as snow in high height parts. This is governed by the extratropical conditions system of mid-latitude part arising from Caspian sea and traveling eastward. This winter conditions system is known as western perturbations and attack India from the West through Iran, Afgansitan and Pakistan.

Western perturbations and associated trough in westerlies are chief rain bearing system in northern and eastern parts of the state. Precipitation signifier in the Himalaya is based on the height. , In greater Himalaya, snowfall is the lone signifier, snow and rain in the in-between Himalayas and light to chair rain over the outer Himalayas. Average frequency of the precipitation is approximately 5 to 6 each months and lessenings as season progresss towards the terminal.