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Influence of atmospheric circulations on summer hydro-climate in Nepal

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The socio-economy of Nepal is closely linked with the reliability of the summer hydro-climate. Summer monsoon gives seventy to eighty percent of annual precipitation which generally lies from June to September.
Precipitation station data of Nepal as well as reanalysis data of u-wind, v-wind, specific humidity and geo-potential height from National center for environmental prediction (NCEP/NCAR) about 30 years were used for this study to explore the relationship of summertime hydroclimatology with circulation characteristics. Along with precipitation variability, percentage break- up of summer precipitation for different region over Nepal was examined. Precipitation trend show increasing with comparable amplitude with interannual variability along western, central and eastern Nepal. The spectral analysis suggests significant oscillation exist near three years per cycle.
Composite analysis of zonal and meridional winds explain that the meridional wind is much stronger with northwestward propagation from Bay of Bengal. Inflow and out flow of moisture transport from southern edge and northern edge seems to be comparable with summer precipitation although the out flow is weak, having the complex topography in the region. Statistically significant association of correlation is noticed between El Nino-Southern Oscillation and summer precipitation.