

## **The Effects of Large-Scale Circulation on Temperature and Precipitation in the Himalayas and Tibetan Plateau**

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The climate of South Asia is highly seasonal, influenced by the tropical monsoon and extratropical circulation modes (Böhner, 2006). The extreme orography of the region further complicates climate studies on the Himalayas and Tibetan Plateau as temperature and precipitation can vary greatly over short distances. The purpose of this study is to explore the connection between seasonal temperature and precipitation anomalies in the Himalayas and Tibetan Plateau to large-scale circulation time series including North Atlantic Oscillation, Atlantic Multidecadal Oscillation, the Indian Ocean Dipole, NINO34 and the Southern Annular Mode. Using gridded datasets provided by the IRI/LDEO Climate Data Library, seasonally significant correlations were found using principal component analysis and regional mapping of these components' correlations with each climate index. Conservative estimates showed that large-scale circulation describes nearly one quarter of temperature variability during the monsoon, dominated by Atlantic Multidecadal Oscillation. Other significant correlations included NINO34 during the post-monsoon (Sep-Nov). Precipitation was much more variable with no obvious controllers in the pre-monsoon season (March-May). Precipitation was highly correlated with NINO34 during the monsoon, North Atlantic Oscillation in winter (Dec-Feb), and the Southern Annular Mode in the post-monsoon. As a preliminary study, this work suggests relationships for further research that may help to better model and predict temperature and precipitation anomalies in the region.