

Extended Abstract

Track: SE (Sustainable Environment, Bio-innovations for Climate Action)

Spatio-temporal variability in Precipitation, Land Surface Temperature and Relative Humidity in the Eastern Himalaya during 2001-2019

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The scientific community has widely reported the impacts of climate change on the Eastern Himalaya. Compared with traditional methods to investigate climatological patterns over mountainous regions with limited meteorological observations, satellite-based estimates provide much more information to aid in understanding the spatio-temporal distribution and variability, especially on the Eastern Himalayan region, where Precipitation, Land Surface Temperature (LST) and Relative Humidity (RH) has been insufficiently documented so far. Precipitation, LST and RH are important variables for assessing climate change and related environmental impacts observed in recent decades. The continuous monitoring of these variables using satellite sensors has the advantage of global coverage, including topographically complex regions. To qualify and quantify these effects, long-term Precipitation, LST and RH observations, acquired by the TRMM, MODIS and AIRS, respectively from 2001 to 2019, were used in this study to investigate the inter-annual variability, long-term trend and their changing mechanism. Following observation were made: **(a)** The decreasing trend of precipitation was observed during the monsoon season (June, July, August) at the rate of -0.09 mm/day, as revealed by TRMM data sets. The seasonal trend of precipitation is shown in Fig. 1. Some basic features was detected, such as dry years like 2006 and 2009 and wet years like 2004 and 2010, **(b)** LST was found to be increasing throughout the year. The LST during monsoon season shows a decreasing trend with a trend of 0.02°C yr⁻¹ while LST in the winter, spring and summer season shows increasing trend is depicted in Fig. 2 and **(c)** The relative humidity is decreasing over the study period. In general, this article provides important insights into the spatiotemporal dynamics of Precipitation, LST and RH in the EH since 2001 and helps to reveal the impact of climate change on eco environmental conservation.

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