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Observed Impact of the South Asian Summer Monsoon on the Local Atmospheric Properties in the Himalayas

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outh Asian summer monsoon (SASM) is the most important climate system in Asia. With the observation data from the campaign HEST2006 (Himalayan Exchange between the Surface and Troposphere 2006) and the large-scale grid data, the SASM impact on the local atmospheric properties in the Himalayas, such as the radiation, temperature, humidity and wind, is analyzed. The SASM experienced one active and one break periods during the campaign HEST2006. The atmospheric properties exhibit different behaviors corresponding to the SASM active and break periods. The radiation fluxes are greater in the SASM break period than those in the active period; the air temperature is lower, but the soil temperature is higher in the SASM break period than in the active period; the humidity is lower in the SASM break period than in the active period; the wind is stronger in the SASM break period than in the active period. Further discussion leads to a possible impact of SASM on the atmospheric properties in the Himalayan region. The modification of radiation conditions by the background cloud amounts, in the different synoptic situations accompanied with the SASM break and active periods, could be the cause of the different behaviors of the atmospheric properties in the two SASM periods