IMDAA regional reanalysis over the Indian monsoon region

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Abstract

Indian Monsoon Data Assimilation and Analysis (IMDAA) is the high resolution (_˜ 12 km), long-term (40 years, 1979-2018, extended to 2020), satellite-era regional reanalysis over the Indian monsoon region, covering the area 30ºE to 120ºE, and 15ºS to 45ºN. IMDAA reanalysis is a result of the collaboration between the National Centre for Medium Range Weather Forecasting (NCMRWF), India and the U. K. Met Office, funded by the National Monsoon Mission (NMM) project of the Indian Ministry of Earth Sciences. The reanalysis was prepared using the 4D-Var data assimilation method and the UKMet Unified Model. This is presently the highest resolution atmospheric reanalysis available for the Indian monsoon region. Conventional and satellite observations from different sources are used, including Indian surface and upper air observations, of which some were not used in any previous global or regional reanalyses. IMDAA used the meteorological observations collated by the European Centre for Medium range Weather Forecasts (ECMWF) for reanalysis as the main dataset. Lateral boundary conditions for the IMDAA runs are provided by ECMWF global reanalysis of ERA-Interim. The hourly and three hourly IMDAA variables are released to the international researchers through the NCMRWF reanalysis portal (https://rds.ncmrwf.gov.in/). This presentation is intended to provide the details of the IMDAA reanalysis, including the observations used and their quality control procedures, data assimilation system, the forecast model, post-processing, and the comparison of various IMDAA estimates during different seasons over India with IMD gridded observations and ERA5 global reanalysis.

Keywords: Reanalysis, Monsoon, IMDAA, ERA5

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