

An inter-comparison of Kalpana-1 and Meteosat-7 atmospheric motion vectors against radiosonde winds and NWP forecasts during monsoon 2011

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ABSTRACT: Geostationary satellites, Kalpana-1 (74 E) and Meteosat-7 (57.7 E) have overlapping spatial coverage over the Indian region. In this study, the atmospheric motion vectors (AMVs) derived from the above two satellites were compared separately with respect to in situ radiosonde (RS) winds and short-range numerical weather prediction (NWP) forecasts from the National Centre for Medium Range Weather Forecasting's (NCMRWF) T574L64 Global modeling system in terms of statistical parameters viz., speed bias and root mean square vector difference (RMSVD) during the 2011 monsoon. Kalpana-1 AMVs showed high RMSVD with respect to the in situ RS winds and short range NWP forecasts. However, the monsoon features, the low level jet (LLJ) and the tropical easterly jet (TEJ) were clearly depicted in the mean observed AMVs from both the satellites. The high error associated with Kalpana-1 winds compared to that of Meteosat-7 winds could be due to the difference in the spatial resolution of different channels and the algorithm used for deriving the winds.

KEY WORDS atmospheric motion vectors (AMVs); Kalpana-1; Meteosat-7; monsoon; low level jet (LLJ); tropical easterly jet (TEJ)

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