

Mesospheric turbulence studies using rocket and MST radar over low latitude: campaign of July 2004

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Details of the coordinated rocket and MST radar campaign for mesospheric turbulence studies carried out during July 19-27, 2004 are presented. One RH-300 MK II rocket instrumented with a Langmuir probe and spherical probe was launched from SHAR (13.7°N, 80.2°E) at 1142 h (IST) on July 23, 2004, when strong mesospheric echoes were observed by the MST radar at Gadanki (13.5°N, 79.2°E). Also as a part of the campaign, one RH-200 rocket was launched from SHAR within an hour of the RH-300 rocket flight for measurements of winds by radar tracking of metallic chaff.

The Langmuir probe detected electron density irregularities with scale sizes in the range of 1m to a few km in the altitude ranges of 67.5-71 km, 74.9-78 km and 84-89 km during the rocket ascent. MST radar detected strong echoes in the height region of 73-77 km and relatively weak ones around 68 km. Winds obtained by chaff release experiment indicates strong shear in the zonal flow around 75 km. The turbulence parameters obtained from rocket borne Langmuir probe and MST radar data are compared.