

Mesosphere and lower thermosphere dynamics over South America using multi-static specular meteor radar configurations

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In the equatorial valley-region the interplay of neutral and plasma forces is difficult to separate given the Earth's magnetic field geometry. In addition, this region has been difficult to observe with both ground- and satellite-based instruments. However, from the observations available, mainly radar echoes, the region shows a significant structure in both time and space. Such structure points towards the influence of waves from lower altitudes that either propagate directly vertically, or indirectly via the E-region dynamo. In this work, we present the preliminary results of mesosphere and lower thermospheric dynamics over South America obtained with a newly developed and installed spread-spectrum multi-static radar network called SIMONE, i.e., SIMONE Piura, SIMONE Jicamarca, and SIMONE Argentina, i.e., between the geographic equator and magnetic equator, under the magnetic equator, and south of the magnetic equator, respectively. SIMONE allows the estimation of horizontal wind fields with horizontal and vertical resolutions of a few tens of kilometers and a few hundreds of meters, respectively.

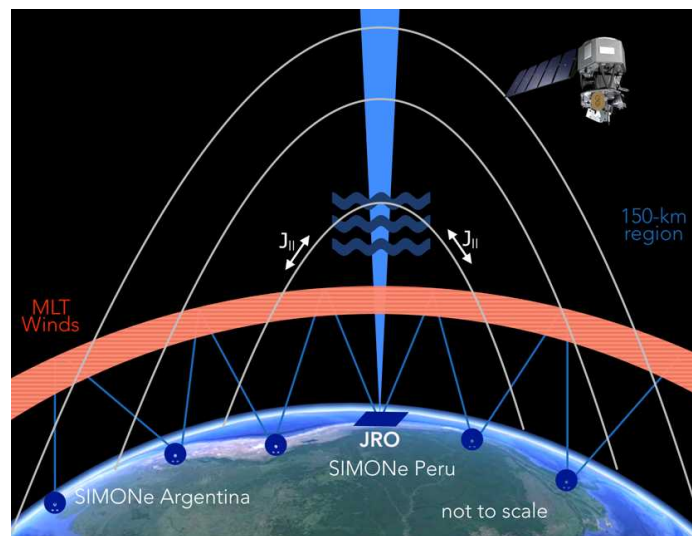


Figure 1. Sketch of low-latitude valley region and their connection to MLT winds.