

Mesosphere and lower thermosphere wind and turbulence observations over Puerto Rico during the Coqui 2 campaign

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As part of the Coqui 2 sounding rocket campaign that was carried out in Puerto Rico in February and March 1998, a series of three rocket launches released the chemical tracer trimethyl aluminum (TMA) to measure the neutral wind profiles and turbulence structure in the mesosphere and lower thermosphere. The first launch was on February 19 when a sodium sudden atom layer was present and the other two launches were on the night of February 24/25 when enhanced gravity wave activity was detected in lidar measurements from the Arecibo Observatory and in ground-based imager data. The TMA trails were released on the upleg and downleg portion of each of the flights covering the altitude range from 85 to 150 km, thus providing measurements of the horizontal neutral wind velocities, as well as the gradients in the winds along a north/south direction. Large winds and wind shears were found between 95 and 110 km, which is a common feature of the wind profile at midlatitudes. The talk will focus on the turbulent structure information obtained from the trails in combination with the measurements of O density profiles from on-board photometers, and the relation to the large winds and wind shears will be examined.