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Assimilation of GPS-RO atmospheric profile data: A case study of a Mediterranean Low Pressure System

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The impacts of assimilation of GPS-RO data in numerical simulations of a Mediterranean low pressure system are evaluated. In 20 March 2007, a deep low-pressure centre formed over the Mediterranean Sea near western Anatolia and later affected a large area of the central and eastern Mediterranean region downstream. The system is simulated using the WRF-ARW model initialized with GFS analysis data. Then, using the WRF-VAR 3DVAR system, COSMIC (Constellation Observing System for Meteorology, Ionosphere & Climate) post-processed data are assimilated to the same initial and boundary conditions and additional forecast experiments are carried out. Improvements in these forecasts with the assimilated GPS-RO data are observed and suggest benefits of assimilating GPS-RO data in addition to the traditional observations assimilated by the GFS system.