A case of severe weather over the western Mediterranean: satellite observation and numerical simulations

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On 26 September 2006, a strong mesoscale storm, with some resemblance to a polar low, hit Italy. This event is investigated from an observational and numerical point of view. AMSU (Advanced Microwave Sounding Unit) satellite observations show strong precipitation over eastern Italy early in the day that followed the reinforcement of a strastospheric intrusion upstream. A more detailed description of the intrusion is provided by fine scale PV fields obtained by the MIMOSA ('Modele Isentropique de transport Mesoechelle de l'Ozone Stratosphérique par Advection') model. Besides, a numerical simulation is conducted with the French research model Méso-NH. Two initial and coupling fields set (ECMWF and ARPEGE analyses) are used to run Méso-NH to investigate the case study. Three interactively 2-way nested domains are used with horizontal mesh sizes of 32 and 8 km by a mass-flux convection scheme, whereas for the inner grid with mesh size of 2 km, convection is assumed to be explicitly resolved. The case is validated against both infrared and microwave satellite observations by using the so-called model-to-satellite approach.