



The assimilation of the rain-rate from satellites: preliminary results of the AEROMET project

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The Mediterranean Basin is often hit by severe meteorological events, that can cause floods and flash floods. The intensity of these storms is both due to the presence of a warm sea, that contributes to feed the storm with high water vapor amounts, and to the complex orography of the region, which intensifies the precipitation over specific areas. The prediction of these events is very challenging, since different spatial and temporal scales are involved.

Numerical Weather Prediction (NWP) models with a high spatial horizontal resolution are able to represent these kinds of events, but without a high precision in space, time and amount. For a better representation of extreme rainfall events, an important role can be played by the information given at the local scale to the NWP models by initial conditions.

Data Assimilation (DA) can be a fundamental instrument to help NWP models to improve their prediction, through the production of better initial conditions. However, DA needs observational data, and there is a lack of meteorological data in open sea, where radar data are not available. In this context, satellite observational data are very interesting because they can provide data both over sea and over land.

The AEROMET (AEROspatial data assimilation for METeorological weather prediction) project aims to study the satellite rain-rate assimilation in the Weather Research and Forecasting (WRF) model to improve the prediction of convective meteorological systems, with a particular focus to systems which originate over the sea. The assimilation method considers a certain rain-rate threshold, which is representative of convective precipitation, avoiding in this way to add an excessive water vapor amount to the model. In this work, we show the preliminary results of the AEROMET project. Examples are presented to show the feasibility of the method and statistics will be shown to quantify its impact on rainfall prediction.

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