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## The use of products from ground-based GNSS observations in meteorological nowcasting

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**Abstract.** Convective rainfall is often focalized in areas of moisture convergence. A close relationship between precipitation and fast variations of vertically-integrated water vapour (IWV) has been found in numerous cases. Therefore, continuous monitoring of atmospheric humidity and its spatial distribution is crucial to the operational forecaster for a proper nowcasting of heavy rainfall events.

The microwave signals continuously broadcasted by the Global Navigation Satellite Systems (GNSS) satellites are influenced by the water vapour as they travel through the atmosphere. Estimates of IWV retrieved from ground-based GNSS observations may, then, constitute a source of information on the horizontal distribution and the time evolution of atmospheric humidity. At the Spanish Meteorological Agency (AEMET), a near-real-time map of IWV estimates retrieved from ground GNSS measurements in the Iberian Peninsula and West Mediterranean region is operationally built and presented to the forecaster. The maps are generated every 15 minutes following a one-dimensional variational assimilation scheme with the previous map as the background state.

A case study is presented in order to illustrate some strengths and weaknesses of the product, to assess the potential benefit of using GNSS products in nowcasting and to define the steps to be done in order to make use of the full potential of the method.

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