EMS Annual Meeting Abstracts
Vol. 15, EMS2018-798, 2018

Local extreme precipitation warnings for Belgium

Edouard Goudenhoofdt, Maarten Reyniers, Hans Van De Vyver, and Laurent Delobbe
Royal Meteorological Institute, Uccle, Belgium (edouard.goudenhoofdt@meteo.be)

Weather radars provide reflectivity measurements of precipitation at high spatial and temporal resolutions. These measurements are taken at a given height and are prone to various type of errors and uncertainties. Therefore a careful processing is performed to obtain reliable surface rainfall estimations. The radar estimation is then combined with rain gauge measurements using robust methods. The Belgian operational product is based on the combination of several radars and two regional rain gauge networks. This rainfall composite product is available every 10 minutes and with a typical delay of 5 minutes. A nowcast product up to 2 hours is provided by the INCA system using extrapolation of the composite based on area tracking.

Two warning products have been developed based on the observed and forecasted precipitation for the previous and next 2 hours, respectively. Warnings are made for rainfall accumulation durations of 10 minutes, 30 minutes, 1 hour and 3 hours. Each warning consists in the maximum precipitation accumulation during the 2 hours, the corresponding return period and the relative time associated. The return periods are provided by a spatial extreme value model based on high resolution rain gauges with long measurement records. The hydrological services of the Brussels and Walloon regions of Belgium use this product to support the prevention of flash floods. A recent case study will be presented to highlight the performance and the characteristics of the two warning products. The potential of a 12-year radar-based dataset to derive an extreme value model has also been evaluated.