EMS Annual Meeting Abstracts
Vol. 16, EMS2019-387-1, 2019

Exploring operational numerical weather models capabilities for hydrological applications in Basque Country.

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Most National and Regional Meteorological Services maintain operational mesoscale numerical prediction systems adapted to the particular characteristics of their own territory. One of the basic purposes by which these systems are operational is that they are a main source of numerical weather forecast data on one hand for internal weather forecast purposes and on the other, with the appropriate post-processing, because there becomes essential for the automatic or semi-automatic forecast products provision for different users. Among the main destinations of this type of products we consider the Hydrological Services that use them in different operational areas and particularly as input data of hydrological analysis and prediction systems at different spatio-temporal scales.

The orography configuration and rivers characteristics of the Basque Country, among other factors, favor the occurrence of flooding events. This paper analyzes the behavior of different numerical weather models used in Euskalmet (Basque Meteorology Agency) focusing on the needs of Basque Water Agency (URA). URA needs such numerical information for different hydrological calculations including flood analysis and forecast.

Two real episodes corresponding to two representative weather-type situations for the Basque Country are studied, such as a northwest storms event and a quasi-stationary active frontal system case. For these two events, we present a detailed analysis of different simulations performed with the local area operational forecast systems, including validation against surface data for the Basque Country river basins. With the ultimate goal of improving the capabilities in the operational application of limited area numerical weather prediction taking in mind the hydrological purposes, and particularly the prevention of flooding events in the Basque Country.