Hydrology and Earth System Sciences
An Interactive Open Access Journal of the European Geosciences Union










Hydrol. Earth Syst. Sci., 13, 141-153, 2009
www.hydrol-earth-syst-sci.net/13/141/2009/


# The european flood alert system EFAS – Part 2: Statistical skill assessment of probabilistic and deterministic operational forecasts

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Abstract. Since 2005 the European Flood Alert System (EFAS) has been producing probabilistic hydrological forecasts in pre-operational mode at the Joint Research Centre (JRC) of the European Commission. EFAS aims at increasing preparedness for floods in trans-national European river basins by providing medium-range deterministic and probabilistic flood forecasting information, from 3 to 10 days in advance, to national hydro-meteorological services.

This paper is Part 2 of a study presenting the development and skill assessment of EFAS. In Part 1, the scientific approach adopted in the development of the system has been presented, as well as its basic principles and forecast products. In the present article, two years of existing operational EFAS forecasts are statistically assessed and the skill of EFAS forecasts is analysed with several skill scores. The analysis is based on the comparison of threshold exceedances between proxy-observed and forecasted discharges. Skill is assessed both with and without taking into account the persistence of the forecasted signal during consecutive forecasts.

Skill assessment approaches are mostly adopted from meteorology and the analysis also compares probabilistic and deterministic aspects of EFAS. Furthermore, the utility of different skill scores is discussed and their strengths and shortcomings illustrated. The analysis shows the benefit of incorporating past forecasts in the probability analysis, for medium-range forecasts, which effectively increases the skill of the forecasts.

Final Revised Paper (PDF, 3959 KB) Discussion Paper (HESSD)

Citation: Bartholmes, J. C., Thielen, J., Ramos, M. H., and Gentilini, S.: The european flood alert system EFAS – Part 2: Statistical skill assessment of probabilistic and deterministic operational forecasts, Hydrol. Earth Syst. Sci., 13, 141-153, 2009. Bibtex EndNote Reference Manager