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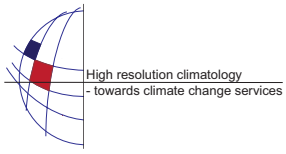

The (ir)relevance of improvements in meteorological forecasts for hydrology

F Pappenberger

European Centre for Medium Range Weather Forecasts, Reading, United Kingdom (florian.pappenberger@ecmwf.int, +44-(0)118-9869450)

Numerical Weather Prediction (NWP) models have undergone huge developments over the past decades. For example: Model physics has been changed; resolution increased; data assimilation systems have been further developed; new data sources have been integrated; and uncertainty in the initial conditions and parameterization has been quantified and its representation improved. The impact of these changes has been well documented and research shows that the quality and skill of NWP forecasts in general has significantly increased over the last decades. For example, the rank probability skill score for temperature (T850) has risen by about 0.2-0.3 for the ensemble as well as the high-resolution deterministic forecasts of ECMWF. ECMWF EPS forecasts have gained about 2.5 to 4 days in lead time over the last 15 years while the deterministic forecasts gained about 1.5-2 days in lead time. Precipitation forecasts, which are of particular significance for hydrologists, average an increase in lead time of about 1 day every 10 years in Europe for the ECMWF forecasts.
In this presentation I investigate how relevant these changes are to hydrological forecasting: Do skill scores published by NWP centres such as ECMWF provide meaningful information? What is the role of NWP verification for hydro-meteorological forecasting? Can we see an improvement in the prediction of extreme hydro-meteorological events? Which improvements in the hydro-meteorological forecasting chain are the most (ir)relevant ones?