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ASSESSMENT OF THE 2016 FLOOD EVENT ON THE SEINE AND LOIRE RIVER BASINS USING ENSEMBLE FORECASTS

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Abstract:

From 28 to 31 May 2016, a heavy rainfall event reached the northern part of France. The episode was persistent and followed by additional rainfall that lasted until 3 June. The high amounts of rainfall led to severe flooding in northern France, mainly over the Upper and Middle Seine river basin and in several tributaries of the Middle Loire river basin. The peak flow at the Seine River in Paris (6.10 m) was reached in the early hours of 4 June. It was estimated to be the highest level in nearly 35 years (it is estimated that the 1982 flood reached 6.18 m). It caused flooded banks and forced landmarks located close to the river (such as the Louvre and the Orsay museums) to shut down. According to Météo-France, May 2016 was the rainiest month of May in northeast France since 1959. In Paris, a total point rainfall accumulation was observed at 178.6 mm, which is a record for this month since 1873, when measurements started. June was also an active month with several record breaking events. Rainfall accumulations over June-May were 1.5 above normal in the Central and Val de Loire region, as well as on the northern and eastern country borders. In Île-de-France (Paris and its surrounding area), these totals were even up to 3 times the average at some rain gauge locations. This study aims at evaluating the performance of ensemble forecasts when precipitation ensembles are used as input to the operational hydrological model GRP for flood alert. We provide a brief overview of the 2016 flood event in France and present the re-forecasts of the flood event using the PEARP rainfall ensembles from Météo-France as input to the hydrological model. We also discuss the role of uncertainties from precipitation forcing and initial conditions, as well as the influence of data assimilation on the results.

Keywords:
Ensemble forecasting, May-June 2016 floods, Seine and Loire river basins

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