



Ensemble forecasting of tidal surges

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The overtopping of flood defences by coastal storm surges constitutes a significant threat to life and property. Like all forecasts, tidal surge predictions have an associated uncertainty, but this is not directly evaluated by most current operational systems. The dominant source of this uncertainty is thought to be uncertainty in the driving atmospheric forecast of conditions at the sea surface.

We describe a demonstration system, developed under contract for the United Kingdom Environment Agency, in which a barotropic storm surge model is forced with the 24 atmospheric forecasts which are produced by the MOGREPS regional ensemble prediction system. This allows direct estimation of the uncertainty associated with a specific event, and the probability of trigger water levels being exceeded within a specified time period. The system runs out to 36 hours twice per day, producing standard deviations of order 5-10 cm between ensemble members by the end of each run. The presentation will include sample results and preliminary evaluation against tidal gauge data.