Coastal flood forecasting – a good practice framework

Project Summary SC140007/S

This report sets out a good practice framework for the development of future coastal flood forecasting systems. It examines the components that typically make up a coastal flood forecasting system, including:

- national forecasts (wave, surge, tide)
- sea-level translation
- wave transformation modelling
- wave overtopping modelling
- the dynamics of beach morphology
- flood inundation modelling
- whole system composition and testing

Each chapter begins by outlining the general modelling and/or analysis options available for a particular component. Guidance is then given on how to evaluate the quality of that component as well as information on the methods supported by the Environment Agency

The report is not a step-by-step manual for modelling. Nor does it address all the complexities and nuances associated with modelling and analysis (it is assumed that the modeller is skilled and has access to other references for detailed guidance). Rather, the guide highlights the most important factors controlling the quality of each modelling component and sets these against criteria on which to score its relative quality (where possible using quantitative tests). In doing so, the guidance encourages the modeller to make decisions and to take action to maximise the quality of the modelling component.

Decision support tool

The good practice framework also provides an approach and tool for the appraisal of the quality of existing and new coastal flood forecasting systems. The decision support tool, which accompanies the good practice guide, can be used to:

- track the scores for each sub-component
- record the evidence why the modeller believes a certain quality score has been achieved

The individual scores are combined within the decision support tool at the component level and used to provide an overall system score. This score provides a means of measuring the relative quality of a coastal flood forecasting system on the basis of:

- how well it represents the local drivers of flood risk
- the sophistication of the underlying technical components
- how well it has been tested and validated

The Environment Agency is still developing the quality requirements and standards required from coastal flood forecasting systems. Once defined, the decision support tool could be updated and refined to be used as a development and investment planning tool.

The good practice framework is a key element of the Environment Agency's review of coastal flood forecasting, which aims to:

- bring greater consistency to the modelling approach across the country
- implement consistency in standards
- develop the capabilities necessary to achieve the aspirations set out in its Flood Incident Management Plan 2015–2020

This summary relates to information from project SC140007, reported in detail in the following output(s):

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