FLOODsite Task 8 has produced:
- Guidance for practitioners on selection and application of flood inundation models for flood mapping in the context of flood risk management and flood event management.

The guidance document is intended for:
- Engineers and others undertaking flood inundation modelling.

Where to find the document:
- FLOODsite report T08-09-03 ‘Task 8 – Flood Inundation Modelling: Model Choice and Proper Application’ by Nathalie Asselman et al. is available in the publications section of the website www.floodsite.net.

In Brief

The European Directive on the assessment and management of flood risks obliges the EU Member States to develop flood risk maps. In areas where data on floods are scarce, inundation models are indispensable. In order to obtain reliable flood risk maps it is important that a proper type of inundation model is selected and that the models are applied properly. FLOODsite Task 8 supports flood risk managers in the selection and application of inundation models.

The main purpose of the document is to give guidance to practitioners regarding the appropriate selection and correct application of 1D and 2D models for the purpose of flood inundation modelling.

The document outlines the suite of available model types, from 1D, through quasi-1D, 1D-2D linked and 2D models, providing guidance on the most relevant models for a variety of applications.

Guidance is also provided on the correct application of each model type in terms of data requirements and setting parameters such as 2D cell size.

The resulting knowledge platform allows practitioners to make informed choices on models and identify the most critical parameters for their model. This will in turn lead to improvements in the quality of flood mapping outputs for meeting the main obligations of the Floods Directive.
Model selection

The guidance identifies four main inundation model types as shown in Fig. 2. The guidance is based on tests applying these different model types to pilot sites in order to understand the advantages and disadvantages present in each model type.

Fig 2. Four main model types appraised in Task 8.

Typically, 1D models are used to accurately represent linear features such as channels using detailed cross sections. 2D models are more commonly used to solve problems of flow over broad shallow areas such as flood plains. The guidance document gives the practitioner an understanding of the most appropriate model types for various applications and the way in which 1D and 2D can be linked together to solve channel and floodplain flow problems.

Fig 3 below shows schematically the significant effect on inundation pattern of the 1D and 2D modelling approach. A, B and C represent polders separated by dykes. Low sections of the dykes are given in red and green, green being lower than red. The 1D model will result in flow into C first since the green dyke is lower. However, in the 2D model, inflow near the red dyke causes flow into polder B first as the flood wave takes time to inundate A completely.

Other Reports

FLOODsite has produced a Best Practice Guide, which integrates the results from the whole of the project and translates them in practical terms and guidelines. This guide, which is also available on the FLOODsite website, is aimed at the experts and authorities that are directly involved in the flood management process.

The FLOODsite project

FLOODsite is an interdisciplinary project integrating expertise from physical, environmental and social sciences, as well as spatial planning and management. The project has over 30 research tasks across seven themes, including pilot applications in Belgium, the Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Spain and the UK. The EC has identified FLOODsite as one of its contributions to the European Flood Action Programme.

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