

Tools

<p>Title of tool: FloodRanger</p>							
<p>Keywords: FloodRanger; flood risk assessment; climate change; decision making; visualisation; gaming; stakeholder engagement.</p>							
<p>Audience: Development and planning policy makers and decision makers who have no specialist background in flood management; a wide range of flood risk management stakeholders as a demonstration, visualisation and educational tool</p>							
<p>Level of expertise required to use the tool: Some training needed</p>							
<p>Messages in the ESPACE strategy where the tool can be applied:</p>	1.	2. X	3. X	4.	5.	6.X	7.
	8.X	9.	10.X	11. X	12.	13.	14.
<p>Sentences linking the tool to relevant strategy messages:</p> <p>2. FloodRanger demonstrates the need to take account of changing climate risks over the whole of the decision 'lifetime'.</p> <p>3. FloodRanger allows planners to evaluate the effectiveness of adaptation policies and measures to manage risks to acceptable levels.</p> <p>6. FloodRanger translates technical and scientific outputs into a practical demonstration tool.</p> <p>8. FloodRanger can be used to identify spatial planning policies and measures to manage risks.</p> <p>10. FloodRanger visualises/demonstrates clearly to stakeholders the consequences of the adaptation policies and measures, and the consequences of failure to adapt.</p> <p>11. FloodRanger encourages planners to develop ambitious long-term solutions, by illustrating the long-term consequences of decisions.</p>							
<p>Photo/diagram/map:</p> <p>Screen from FloodRanger</p> 				<p>Overview: FloodRanger is an educational tool about managing flood defences along rivers and coasts. It explains the concepts of climate change impacts on flooding through a gaming environment. FloodRanger Pro presents externally derived flood risk results, such as for the Thames Estuary. FloodRanger World can be populated with terrain, climate, and options data for any location, and also includes a water resource gaming element. It provides an excellent tool for demonstrating challenges and options.</p>			



Description:

FloodRanger

FloodRanger is a tool to demonstrate the issues surrounding flood risk management in a changing climate. The software was originally developed as part of the Foresight programme in the UK (funded by the Office of Science and Technology).

The tool is aimed at people with no specialist background in flood management but who have an interest in gaining a better understanding of the interplay of the factors that will affect future flood risk – for example, people involved in development and planning, education and infrastructure management. It uses climate change scenarios taken from the UK Met Office and a virtual terrain. This creates a gaming environment, which simulates the pressures of decision making with an uncertain future, and demonstrates the consequences of the options chosen over a significant timescale. It has been described as a scientific version of the popular SimCity software.

The objective of the game is to defend urban areas and sites of special scientific interest while creating jobs and houses and maintaining economic growth. The players must decide the location and types of development and defences. At each step, economic growth and flood damages are calculated, so players can adapt their strategies as the future unfolds.

FloodRanger Pro

FloodRanger Professional is an advanced version of the original game. It is a visualisation and strategic option exploration tool, and can assist with option appraisal and stakeholder engagement. It was developed through the ESPACE project, and is able to import Thames Estuary flood risk data. It allows non-modellers to view outputs of potentially complicated modelling and risk assessment calculations in an intuitive and visually appealing software product. This version has minimal user interaction, and is mainly a demonstration tool.

FloodRanger World

This new version was also developed through the ESPACE project. This uses the gaming environment of the original version, and links this with project-specific information. This open version can therefore be populated with digital elevation data, climate change data and a range of options to create an interactive tool representing a specific area. This enables flood risk managers and other stakeholders to be able to assess, and to communicate to others, the positive and negative impacts of proposed development. It also includes a new water resources element, adding into the equation issues related to managing water supply and demand in parallel with economic growth and climate change. Our ESPACE partners, WSRL and LfU, with whom we worked to develop the decision testing tool (see Tools: Decision Testing Tool), showed us that model outputs could be used in a very effective way to assist in stakeholder engagement.

This version has been set up with a Thames Estuary 2100 dataset for use with stakeholders to demonstrate the challenges of flood risk management in the Thames Estuary.

Author: Mike Steel, Environment Agency

Further information:

ESPACE Decision Making Framework and Tools Phase 2 Piloting report

Foresight website – Flood and Coastal Defence