

The EA/Defra Flood and Coastal Erosion Risk R&D Programme (FCERM) and Estuary Research Programme (ERP)

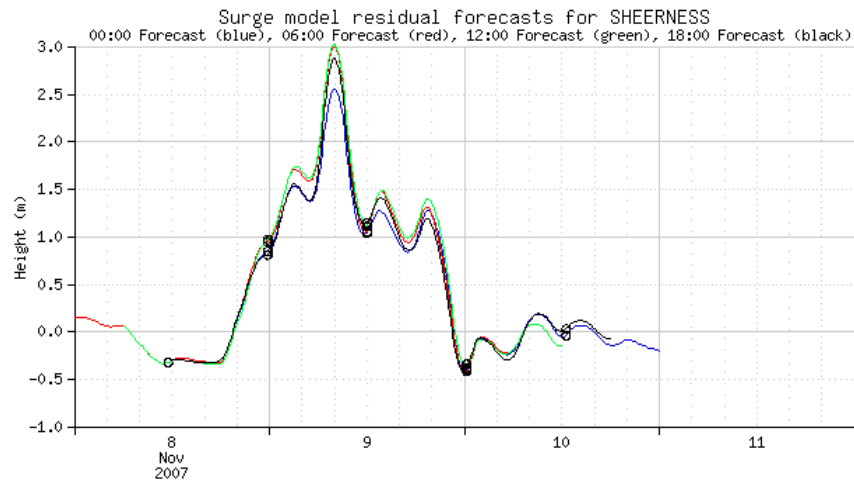
Stefan Laeger (Environment Agency)

Context / Drivers

- Recent Floods!
- 5m people/£200bn property at risk
- EA is Operator and Regulator
- Coastal Overview (England)
- EU Directives: Floods, WFD, Habitats



Current forecast
Surge model forecasts



East Coast Storm Surge Nov 07



Additional responsibilities: Coastal overview (England)

- Lead for all sea flooding risk
- Fund and oversee coastal erosion works
- Ensure that sustainable Shoreline Management Plans are in place
- Work with LPAs to ensure flood and coastal erosion works are properly planned, prioritised, completed and maintained
- Ensure that third party defences are sustainable



EA/Defra FCERM R&D Programme

- Underpins our investment in FRM and Coastal Erosion by **providing the key evidence** required to:
 - Manage Flood and Coastal Erosion risk
 - Develop policy and strategy
 - Optimally and efficiently manage assets
 - Prepare for and manage flood incidents effectively
- **Addresses arising challenges** (e.g. climate change) through user-oriented, mainly applied research and delivery to end-users



EA/Defra FCERM R&D Programme

- **Established 2000, rev. 2005**
- **Serves all Operating Authorities**
- **4 Themes**
 - Strategy and Policy Development (SPD)
 - Modelling and Risk (MAR)
 - Sustainable Asset Management (SAM)
 - Incident Management and Community Engagement (IMC)

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An Independent Review of the Defra/EA Research and Development Joint Programme in Flood and Coastal Erosion Risk Management



 ENVIRONMENT AGENCY

 **defra**
Department for Environment
Food and Rural Affairs

Sustainable Asset Management

- Design, build, maintenance, management of (coastal) defences
- Best practice design guidance for engineering structures
- Condition assessment
- Channel and floodplain maintenance practices
- Environmental impact of flood risk management



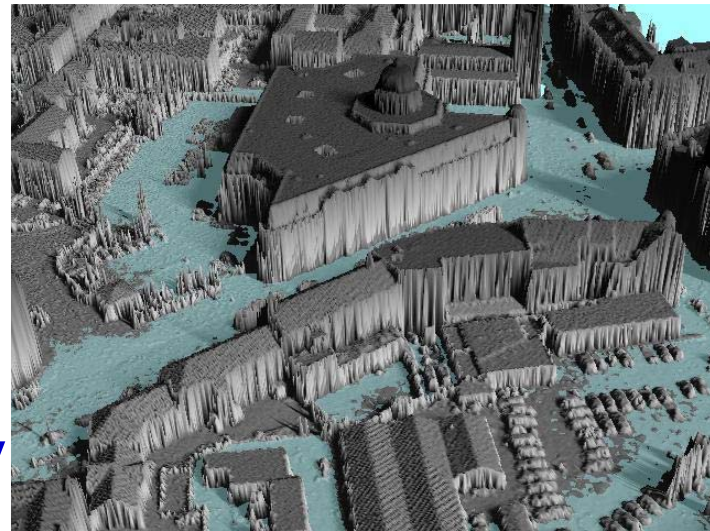
Incident Management and Community Engagement (IMC)

- Real time flood events – rainfall detection, flood forecasting, warning, response, recovery
- Work on weather radar, links with Met Office.
- Probabilistic forecasting and warning
- Social analyses of flood warning and response



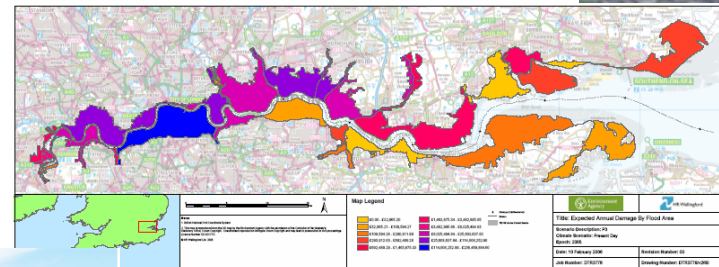
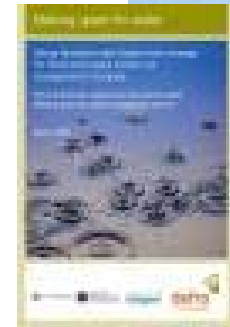
Modelling and Risk (MAR)

- Improving knowledge and process understanding
- Developing methods, models and assessment tools
- Integrating impact assessment and system models
- **Overall aim:** to aid decision making and address uncertainty



Collaborations

- Making Space for Water
- Thames Estuary 2100
- Met Office
- CIRIA
- Research Councils
- FRMRC - EPSRC
- FREE - NERC
- Floodsite
- CRUE ERANet
- Other EA Science Progs



The Estuary Research Programme (ERP)

- Unprecedented environmental, commercial and legislative pressures on estuaries
- Limited understanding how estuaries may evolve/respond to natural/anthropogenic changes
- Established in 1998 as a three phased 10yr R & D programme

Purpose

- To enable estuary managers, planners and regulators to make informed decisions
- To develop an Estuary Management System (EMS) containing physical, ecological, social, economic factors



Coastal overview (England)

Robust science is needed

- Geomorphology
 - Understanding and managing erosion processes
- Mapping and modelling
 - Large scale coastal/estuarine erosion and small scale beach erosion



The Estuary Research Programme (ERP)

- **FD1006** - Scoping Study – 10 year research plan to ultimately deliver s an EMS

Phase 1(completed):

- **FD1401** - The Estuarine Morphology and Processes Holistic Assessment SYStem project (EMPHASYS)
- Produced a guide to the prediction of morphological change in estuaries - Estuary Impact Assessment System (EIAS) mk1
- **FD2110** - Produced training materials and an estuaries database to raise awareness
- **FD2115** – Review of ERP phase & research plan for ERP phase 2



The Estuary Research Programme (ERP)

Phase 2 (nearly completed):

- **FD1905** - Estuary Processes (EstProc)
- **FD2116** - Review of Geo-morphological Concepts
- **FD2107** - Hybrid estuary model development
- **FD2117** - Estuary Simulators Development (EstSim)
- **FD2119** – Develop/disseminate the enhanced EIAS, scope out need/requirements for ERP Phase 3 programme.

ERP Phase 3 (Start in 2009-10)



The Estuary Research Programme (ERP)

Associated projects:

- **FD2002 – Future Coast**
 - Produced behavioural statements for coasts and estuaries
 - Geomorphological manual for assessing future shoreline behaviour under unconstrained and managed scenarios
- **FD2308 – Joint Probability**
 - Mapped dependence between variables relevant to flood risk
 - River flow and surge
 - Wave height and sea level
 - Rainfall and sea level
 - Wind sea and swell
 - Developed a simpler desktop and a more sophisticated analytical approach



Objectives of FD2119

- Consult interested stakeholders
- Scope and deliver an Enhanced Estuary Impact Assessment System (EIAS)
- Scope out ERP phase 3
 - Integrated Estuary Management System (EMS) & associated tools
- Disseminate the outcomes of ERP phase 2 projects and provide training



Consultation

- **Aim:** To assess needs of Operating Authorities, flood mgt industry, other organisation in estuary management
- **Findings:**
 - Improved confidence to enable better decision making and planning
 - Improved certainty in the results of estuary predictions (and possible range)
 - Easy access to information
 - Need for training

