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

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Context / Drivers

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

Project FD2119
Estuaries Research Programme Phase 2
Final dissemination March 2008
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 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