

LWEC FCERM Research

Understanding Risk Theme - ongoing work

Version: 02
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NERC: - Coastal Flooding by Extreme Events BODC
- GRIDSTIX
- A new radar technique for measuring humidity
- A next generation national flood frequency assessment under climate change scenarios
- A study of processes controlling convection over complex terrain (UK-COPS)
- Air-Sea Interaction and Sea-spray in Typhoons (ASIST)
- Catchment change network (CCN): A professional development platform for decision-making for adaptation and uncertain environmental change
- FUSE: Floodplain Underground Sensors- A high-density, wireless, underground Sensor Network to quantify floodplain hydro-ecological interactions
- INSURANCE and WATER: Estimating uncertainty in future flood risk analysis for insurance and re-insurance markets
- Use of PSI for the Enhancement of Vertical Land Movement measurements in the UK
- Changing coastlines: data assimilation for morphodynamic prediction and monitoring
- Coastal Flooding by Extreme Events (CoFEE)
- Project Foster: Flood Organisation Science and Technology Exchange Research (FREE)
- RAPID-RAPIT

EA/ DEFRA: National risk assessment - East coast flooding impact analysis

Welsh Government: Flood advocacy & support service for communities in Wales

ESRC/NERC:
- Increased resilience to Natural Hazards
- IRNHKE Fellows (Community Resilience)

Fourier Spectroscopy Facility: Chilbolton Facility for Atmospheric and Radio Research (CFARR)

EUMETNET: VOS programme - Marine meteorological observations from Voluntary Observing Ships

MoD: Met Office ATDnet system - Long Range Lightning Detection Network

NERC: - Causes of change in European mean and extreme climate over the past 500 years
- HYDROMAL: Hydro-dynamic drivers of malaria transmission hazard in Africa
- Soil Water - Climate Feedbacks in Europe in the 21st Century (SWELTER-21)
- Surface frontal wave dynamics and intense cyclones
- Dynamics of West African weather systems.
- Investigation of the relationship between surface energy budget changes and the climates response
- Predicting 21st century changes in European extreme rainfall based on climateprediction.net simulations
- Dynamics of Oceans & Atmosphere during Greenhouse Climate States
- Vegetation-climate feedbacks under global change.
- Long- range drought prediction and benefits to humanitarian relief

UR1: Characterising and communicating uncertainty
UR2: Multi-scale modelling of all sources of flooding and coastal erosion for multiple users
UR3: Recognising the complexity of receptor response.
UR4: Data acquisition and assimilation.
UR5: Flood and rainfall frequency models.
UR6: Understanding flooding sources and trends in light of environmental change.
UR7: Surface Water Modelling.
UR8: Extending the hydrological record.
UR9: Coastal morphology

NERC: - Tropopause folding, stratospheric intrusions and deep convection
- TEMPEST: Testing and Evaluating Model Predictions of European Storms
- Using Observational Evidence and Process Understanding to Improve Predictions of Extreme Rainfall Change
- Numerical weather prediction of high-impact weather
- Uplands as sentinels of climate change: A study of the amplification of regional climate changes by orographic processes

Department of Agriculture and Rural Development Northern Ireland: Hydrometric Network (Northern Ireland) rivers

EA: -Development of a coastal and estuary management system analysis tool
- WaveNET

NERC: PURE programme

NOAS / NERC: Propagation of uncertainty on impact data through hydrological models

EA/ DEFRA: MDSF2 Modelling and Decision Support Framework for FCRM Planning; Assessing Flood Risk in Pumped Catchments; Improving the FACET Long Term Investment Planning Tool

ESRC: Sustainable flood memories and the development of community resilience to future flood risk

AHRC: Multi-story Water (community engagement)

NERC: - Tropical cyclone activity in the North Atlantic

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EA/ DEFRA: Framework and Tools for Local Flood Risk Assessment; Decentralized Integrated Analysis and Enhancement of Resilience and Awareness Through Flood Risk Collaborative Modelling
FD2619 Testing the case for Economic Blue Corridors.

Scottish Government: Coastal flooding – Translating UK climate projections in to maps of projected flood risk for use by Local Authorities

EA/ DEFRA: Decision Support for Coastal and Estuarine Planning; Improving Modelling Tools for Beach Management through hindcast benchmarking.

FRMRC2: WP4.5 Probabilistic coastal modelling

EA/DEFRA: Multiscale Monitoring of Land Use and Flooding

Defra Demonstration Test Catchments (Research Programme)

Scottish Government: Determine the possible impacts of climate change in Scotland on a range of sectors including land use and agriculture. It will focus on identifying and quantifying the uncertainties associated with such impacts

University of York: Distribution trends of BAP bryophytes under climate change regimes.

Defra/ESRC/NERC/AHRC/Scottish Government/Living Wales: NEA/NEA2

EA/ DEFRA: The Ecological Impacts of Flooding – Developing a Methodology

Scottish Government: - As a key regulating Ecosystem Service, flood regulation will be considered as part of an assessment of the current and future capacity to supply a range of ecosystem services (ES) from Scotland's environment

EA/ DEFRA: - Predicting the multiple benefits and trade-offs between diffuse pollution and flood management measures - a case study site will be used to assess the interactions between diffuse pollution, management and flood water storage within reinstated natural flooding features.
Modelling the efficacy, costs and benefits of measures to mitigate diffuse pollution, including parallels and conflicts with policies promoting natural flood management.

EA/ DEFRA: - Schemes with multiple objectives and funders; Solutions for joint funding of surface water schemes

NERC: - Quantifying Uncertainty
- Isolating the Larsen-C Ice Shelf Mass Instability
- Targeting Glacial Retreat and Ice-stream Systems
- Statistical Methods for Characterizing Multivariate Extreme Weather Events
- Inverse Modelling of Antarctica and Global Eustasy
- North Atlantic sea-level variability during the last half-millennium
- Turbulence, Sediment Stratification and Altered Resuspension under Waves (TSSAR Waves)

NERC: - Numerical modelling of Himalayan glacial lake outburst floods
- Projected Responses of Extreme Precipitation and Atmospheric Radiative Energy (PREPARE)
- The oceanic boundary layer beneath ice shelves
- Quaternary West Antarctic Deglaciations
- Dynamics and Predictability of wave propagation and high-impact weather

ESRC: - SEER (multi-objective land use)

ESRC – ESEI (NERC-led/LWEC) Cloud to Cloud (contaminants to water)

EA/ DEFRA: Update of Multi-coloured Manual

BGS: Groundwater Science Programme

NERC: - Modelling stream-aquifer interactions in groundwater-dominated catchments under flood conditions

Scottish Government: Exploring the causes and potential extent of groundwater flooding in Scotland - scoping and screening study

NERC: - The development of structure in coarse-grained river bed sediments: the key to predicting sediment flux
- The influence of glacial-interglacial climatic variations on coarse-grained braided river deposits
- Riparian Vegetation along Urban Rivers: the Role of Alien Species

ESRC Flooding Sandpit: Understanding flooding sources and trends in light of environmental change.

NERC: Centennial-scale relationship of sea-level variability with global temperature and CO2 concentrations

EA/DEFRA: Efficient Methods for Accounting for Future Uncertainty in FCRM Option Appraisal; Landfill and Contaminated Land at Risk from Coastal Erosion; Practicalities for implementing regionalised allowances for climate change on flood flows

Scottish Government: Water balance modelling will be used to underpin the assessment of future flooding risks; Understanding and modelling seasonal shifts in the environment and the implications for flooding and water conservation; Support the development of adaptation strategies by improving understanding of the direction and magnitude of future change using scenario analysis.

NERC: - Cloud System Resolving Modelling of the Tropical Atmosphere

EA/ DEFRA: - Long Term Costing - Methods and Software Modelling (improvements to MDSF2 benefit assessment system); Distributional consequences for flood risk management; FD2657 Economic impact of property level flood protection measures

Met Office: Ice Sheets and Sea Level Rise

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This map shows the UK FCERM Research Strategy areas, under the thematic topic *Understanding Risk*. The work detailed in the boxes in currently ongoing for each of the strategy topic areas. The map has been developed based on information from www.envirobase.info which has been supplemented by information from the Implementation Steering Group members. It also includes feedback from delegates at the 2012 LWEC Annual Event.

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NERC/EA: iCOAST www.icoast.net - improving long-term flood and erosion risk management Uncertainty work planned under WPS.