

€ 5 million grant approved for PEARL research project

By Zoran Vojinovic | Photography by NASA Goddard Photo and Video

Location of PEARL case studies

A research consortium of 24 partners led by UNESCO-IHE has been awarded funding for the implementation of its research proposal within the FP7 programme, as part of 'Coasts at threat in Europe: tsunamis and climate-related risks'. Entitled 'Preparing for Extreme And Rare events in coastal regions' (PEARL), the research project will be led by Dr. Zoran Vojinovic.

Research Goals

The impacts of climate change, population growth and urbanization are bringing some of the greatest challenges of our time. One of the most powerful storms in history, Super Typhoon Haiyan, devastated the Philippines in November 2013, killing around 6000 people. The same storm has also had significant impacts in Vietnam and China. The need to respond to such challenges reinvigorates the significance of adaptation for sustainable development.

The main goal of PEARL is to develop adaptive, sociotechnological risk management strategies and measures to protect coastal communities against extreme hydro-meteorological events, minimizing social, economic and environmental impacts and increasing the resilience of coastal communities. PEARL brings together world-leading expertise in hydro-engineering and in risk reduction and management services to pool knowledge and practical experience. The aim is to develop more resilient and adaptive risk management solutions for coastal communities, focusing on present and projected extreme hydro-meteorological events.

The project will examine seven case studies from across the EU and five case studies outside the EU (two case studies from the Caribbean and three from Asia) to develop a holistic risk reduction framework that can facilitate multi-stressor risk assessment, identify risk cascading processes and strengthen risk governance by enabling an active role for key actors.

Jointly executed by 24 partners, this four year research project (2014–2018) will be clustered around seven work packages:

1. understanding formation of vulnerabilities and risk in coastal regions
2. understanding formation of hazards under extreme events
3. holistic and multiple risk assessment
4. flood early warning systems for coastal regions
5. decision support and policy development for strengthening resilience of coastal regions
6. case studies
7. dissemination and communication



More specifically, PEARL aims to progress beyond the state of art in a series of domains. For instance, a holistic risk governance approach will be developed based on co-evolutionary complex systems analysis. The scope of risk assessment will be broadened by incorporating aspects such as social justice and social contracts into the analysis, while investigating issues of risk evolution for the complete socio-technical system of the coastal regions. PEARL will also seek to improve knowledge and understanding of how vulnerabilities and risks form in coastal regions.

New concepts and tools will be developed for strategic and operational planning purposes, event prediction, forecast and early warning technologies to management of critical infrastructures (e.g. ports, drainage systems, flood defences or coastal barriers). Such advances will include:

- improving existing, physically based computational models and developing novel multi-scale concepts and tools for modelling combinations of hazards to coastal areas related to atmospheric conditions, storm surges, waves, pluvial and fluvial processes;
- advancing the technological potential of early warning systems (real-time data assimilation, uncertainty quantification for extreme events, increased computational speed in state-of-the-art modelling tools) in order to achieve sufficient lead times for emergency actions;
- improving the stakeholder engagement process for the purposes of developing risk management roadmaps and supporting this process with novel concepts and tools from both social research and ICT technologies (e.g. collaborative modelling and learning & action alliances platform, agent-based and cellular automata models, and serious gaming);
- adaptive and resilient strategies will also be developed that utilize structural and non-structural measures, implement ecosystems-based approaches and promote active stakeholder participation.

More information:

<http://www.pearl-fp7.eu>

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