The challenge

Reducing flood risk is now one of the most pressing challenges facing European coastal managers. Sea level rise, changing weather patterns and increasing coastal populations, exacerbate this challenge and necessitate innovative approaches towards coastal management.

Most coastal wetlands provide ecosystem services of 'natural flood defence'. An innovative, sustainable and cost-effective approach for coastal management strategies is the incorporation of natural environments into flood risk management. To incorporate this approach into management schemes we need to know more about the precise mechanisms of energy dissipation by coastal ecosystems; how these processes 'scale up' from individual sites to larger foreshores seaward of coastal defences; and how we can incorporate such information into accessible assessment methods for coastal managers. **FAST** is a multi-disciplinary project that will help understanding of how to include natural ecosystems within flood safety solutions.

Aim

The aim of the **FAST project** is to utilise space-borne data in conjunction with in-situ data to produce new GMES/-Copernicus services for the improvement of flood and erosion risk management strategies in coastal wetlands.

For more information visit **www.fast-space-project.eu**

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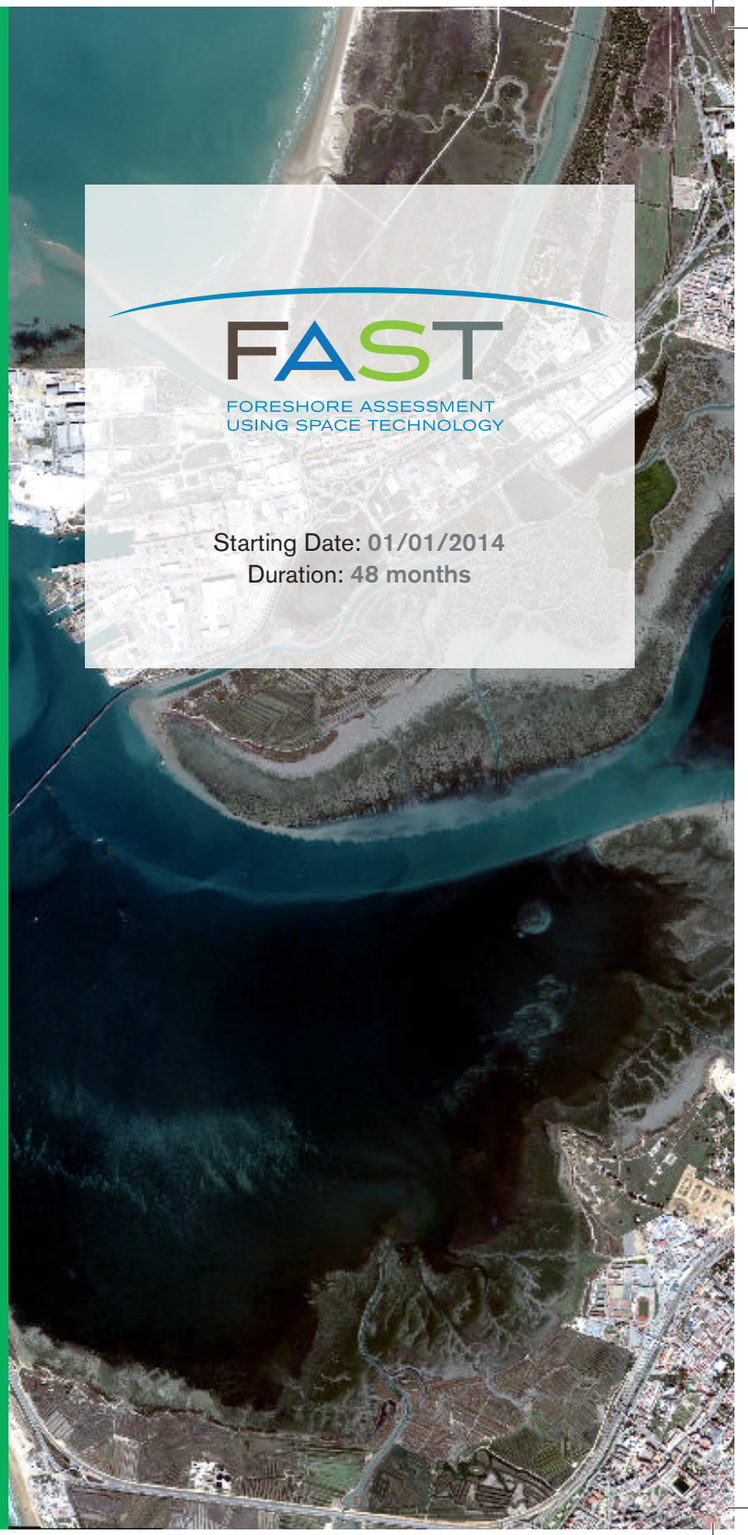

Partners

FAST is a small consortium of five institutions from four European countries:

Deltares (PROJECT LEADER)

UCam University of Cambridge

GeoEcoMar National Institute for Marine Geology and Geo-Ecology

NIOZ Royal Netherlands Institute for Sea Research

UCA Universidad de Cádiz

FAST partners are experts in the field of:

- **Coastal and civil engineering**
- **Building with nature**
- **Ecology**
- **Climate change**
- **Remote sensing**
- **Data management and GIS**
- **Business and economics**

Deltares
Enabling Delta Life

UNIVERSITY OF CAMBRIDGE

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Technology

Satellite images

Making use of the coverage of the ambitious European Earth Observation Programme Copernicus (www.copernicus.eu),

FAST will develop new services useful to European society based on products retrieved from Sentinel and other available satellites. **FAST** will develop links between satellite data, vegetation properties and sediment stability and create a business case and services around them.

Field work

Eight field sites on four EU countries have been selected to investigate the links between biophysical properties of coastal foreshores, wave-attenuation and foreshore stability indicators.

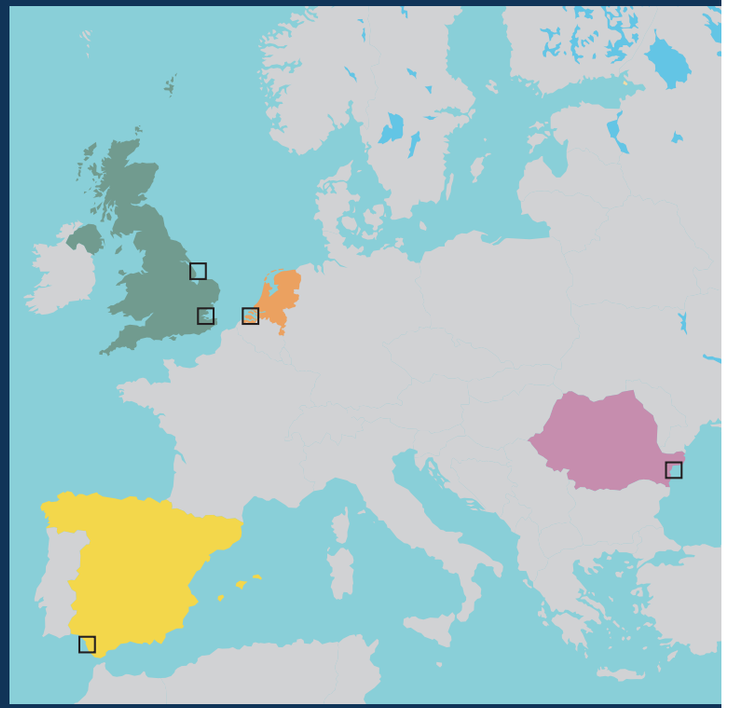
[Spain] Cadiz Bay. This site is within a shallow coastal bay (3.7 m spring tidal range). The fringes of the bay are highly urbanised. Tidal flats dominated by seagrasses are found in front of salt marshes. Main wave source is wind.

[The Netherlands] Westerschelde. Estuarine fringing marshes are fronted by an extensive, gently sloping intertidal mudflat (4.7 m tidal range). Saltmarshes are either net accreting or net eroding.

[UK] Tillingham and Donna Nook. Open coast areas of marsh fronted by extensive, gently sloping mud- and sand flats (5.7 m and 7.5 m tidal range respectively). Tillingham marshes have been eroding throughout the past 50 years, whereas Donna Nook ones have been accreting over the past 20 years. Both sites have a high degree of wave exposure.

[Romania] Danube Delta Biosphere Reserve coast. Sandy barrier beaches at the interface between the Danube River and the Black Sea (< 0.1 m tidal range) with constant erosion during the past decades under the impact of storm waves.

The combination of satellite images and fieldwork will allow near real time estimates of both the stability and the wave dissipation of coastal wetlands.



End-users and MI-SAFE tool development

A key aspect of **FAST** is the involvement of end-users during the design, development and validation of the software. The end-user groups include different sectors such as government agencies, SMEs and nongovernmental organizations.
Interaction with end-users will help to produce pertinent services, ensuring their demand and continuity after the project is finished.