Investigating the flood risk reduction potential of soft coasts and vegetated shorelines. The EU FAST project is zooming in.

Mindert de Vries, Deltares

FAST Project core team

Why focus on foreshores?

Sandy, muddy and vegetated foreshores contribute to the reduction of floodrisk by providing ecosystem services.

- Attenuation of waves
- Accumulation of sediment

Meanwhile many other services are produced

Zuidgors – Westerschelde

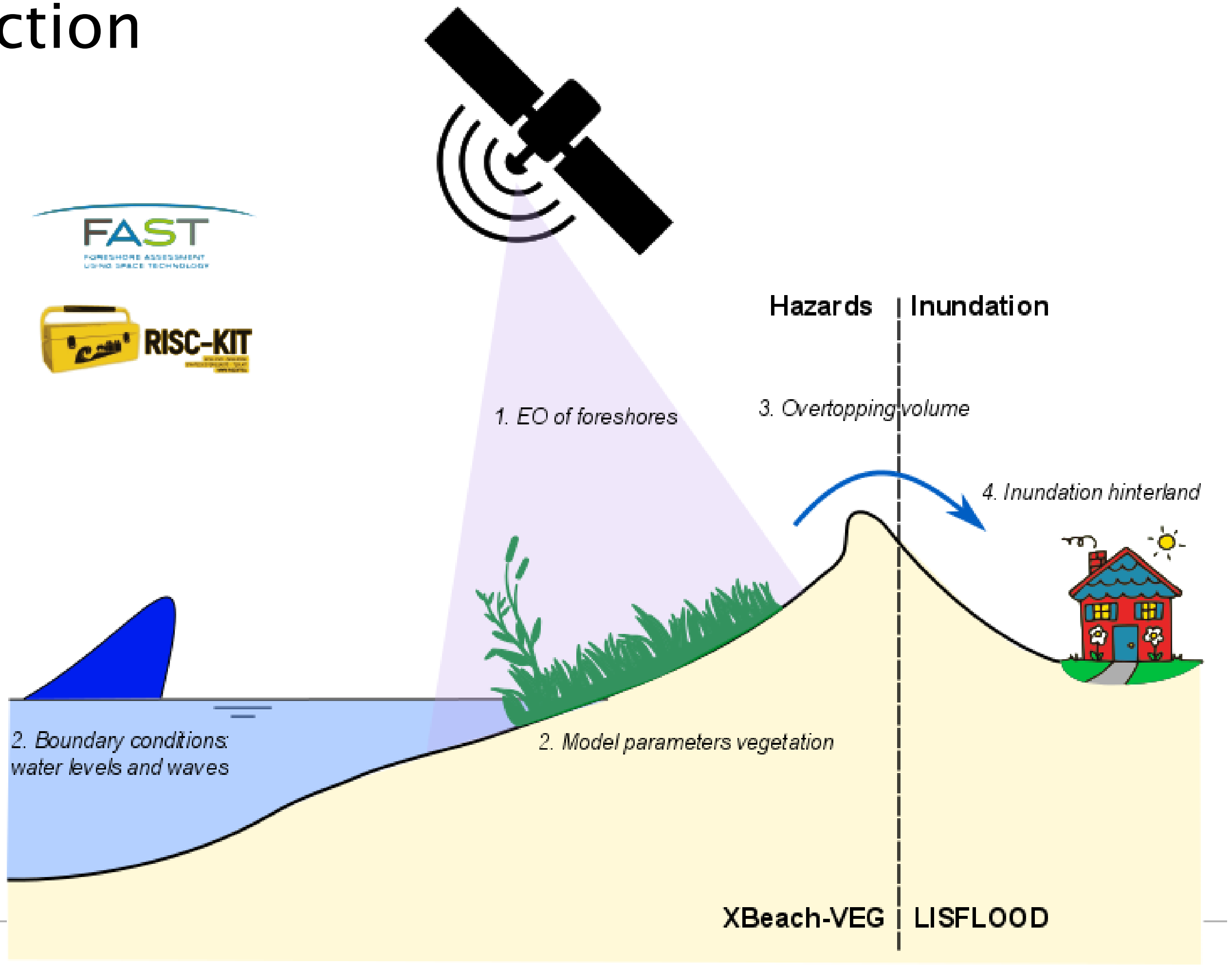
Objectives and Product

The main objectives of the FAST project are:

"To develop a new GMES/Copernicus downstream service by developing open source products based on Sentinel data

"To gain from EO-data spatial information on foreshore and floodplain characteristics, such as morphology, sediment characteristics and vegetation properties"

FAST has developed data and modelling services to support cost-effective, nature-based shoreline protection



Ground truthing for Earth Observation data

Deltares

The Science behind

Deltares Dashboard Topics Communities Projects Others Search

OpenEarth

The Science behind the MI-SAFE tool

Created by Gerrit Hendriksen, last modified by Jasper Dijkstra on 31-03-2017

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 607131.

Introduction

The MI-SAFE software and webviewer are developed under the EU funded FP7 project FAST (Foreshore Assessmen
locations anywhere in the world. The MI-SAFE viewer is thus based on global datasets made available via open spati
with XBeach for a range of different types of vegetated foreshores and a range of exposure to waves and tides. The re
give a first estimate of the potential risk reduction that coastal vegetation has to offer with respect to specific coastal flo

For background information about the viewer, the project and all the partners involved, please visit our website - http://

FAST products and services

...the products and services generated by FAST

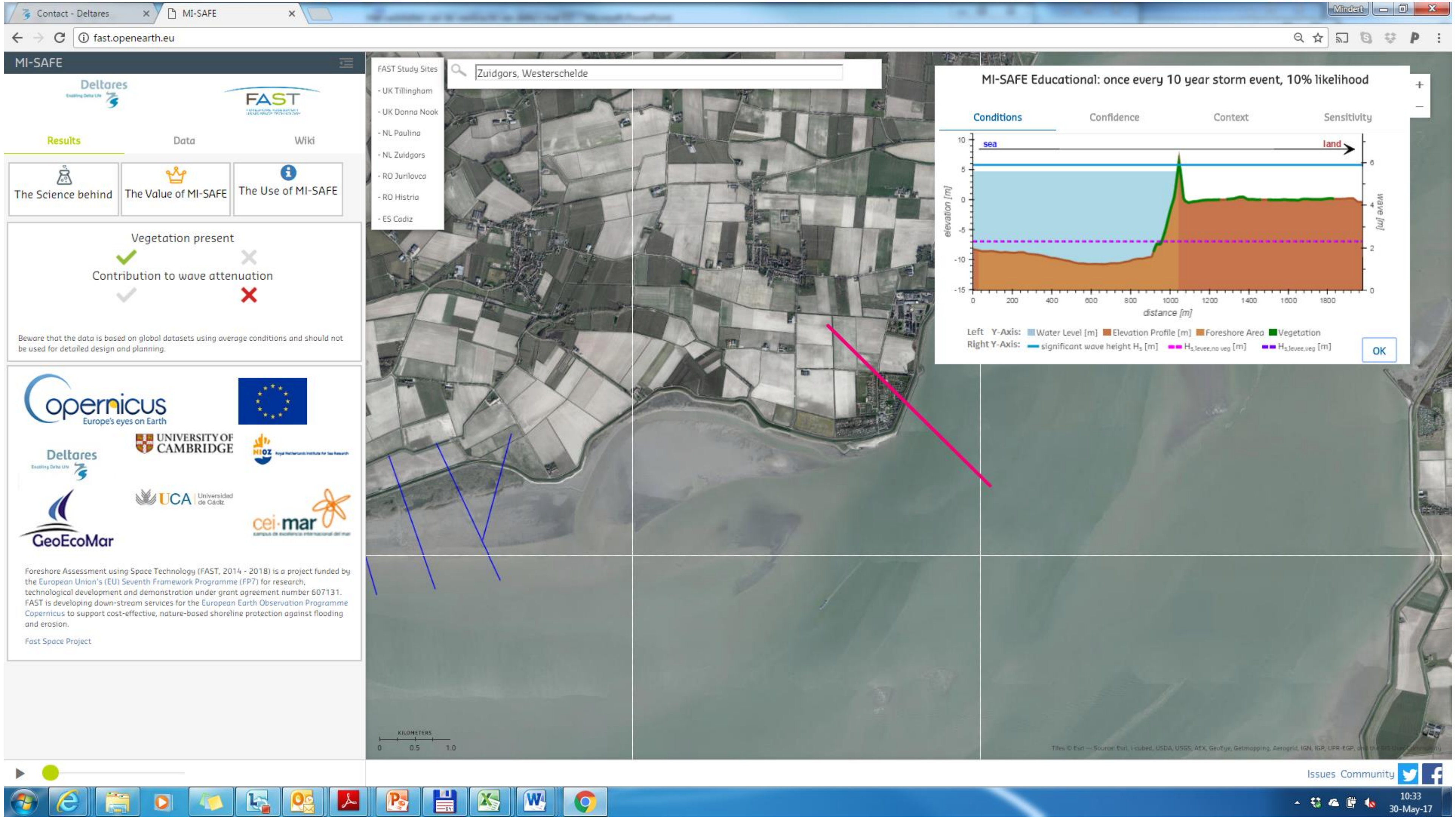
- **MI-SAFE viewer**
- **New world wide map layers**
- **Open Data Structure**
- **Open Source Modeling**
- **Community**

MI-SAFE is online (fast.openearth.eu)

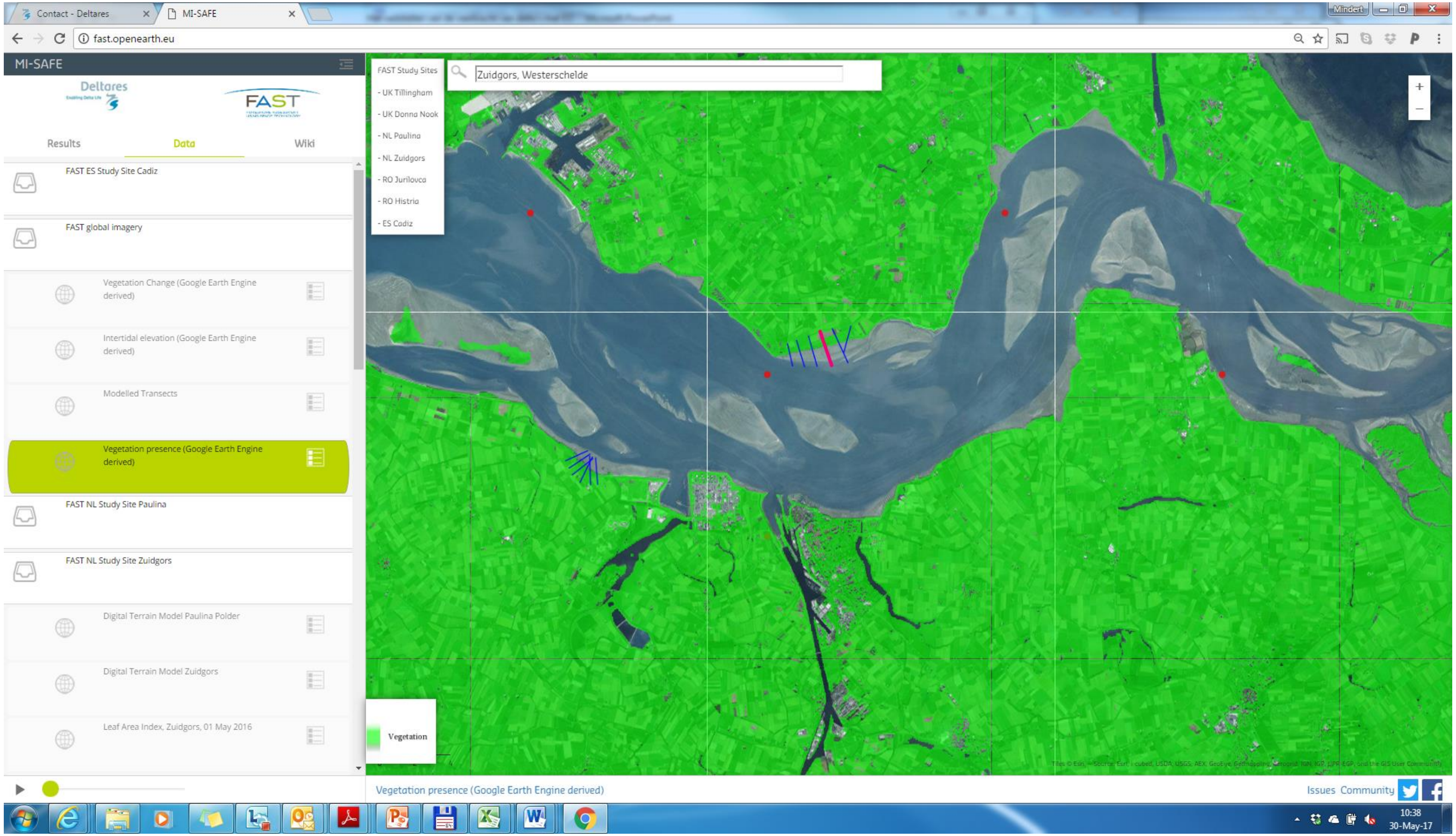
The MI-SAFE viewer helps to visualize generated products and services

- Maps
  - Per study site in high resolution
  - World wide
- Results of calculations
  - Per study site in high detail
  - Worldwide but less precize
- Wiki
  - The science behind the data

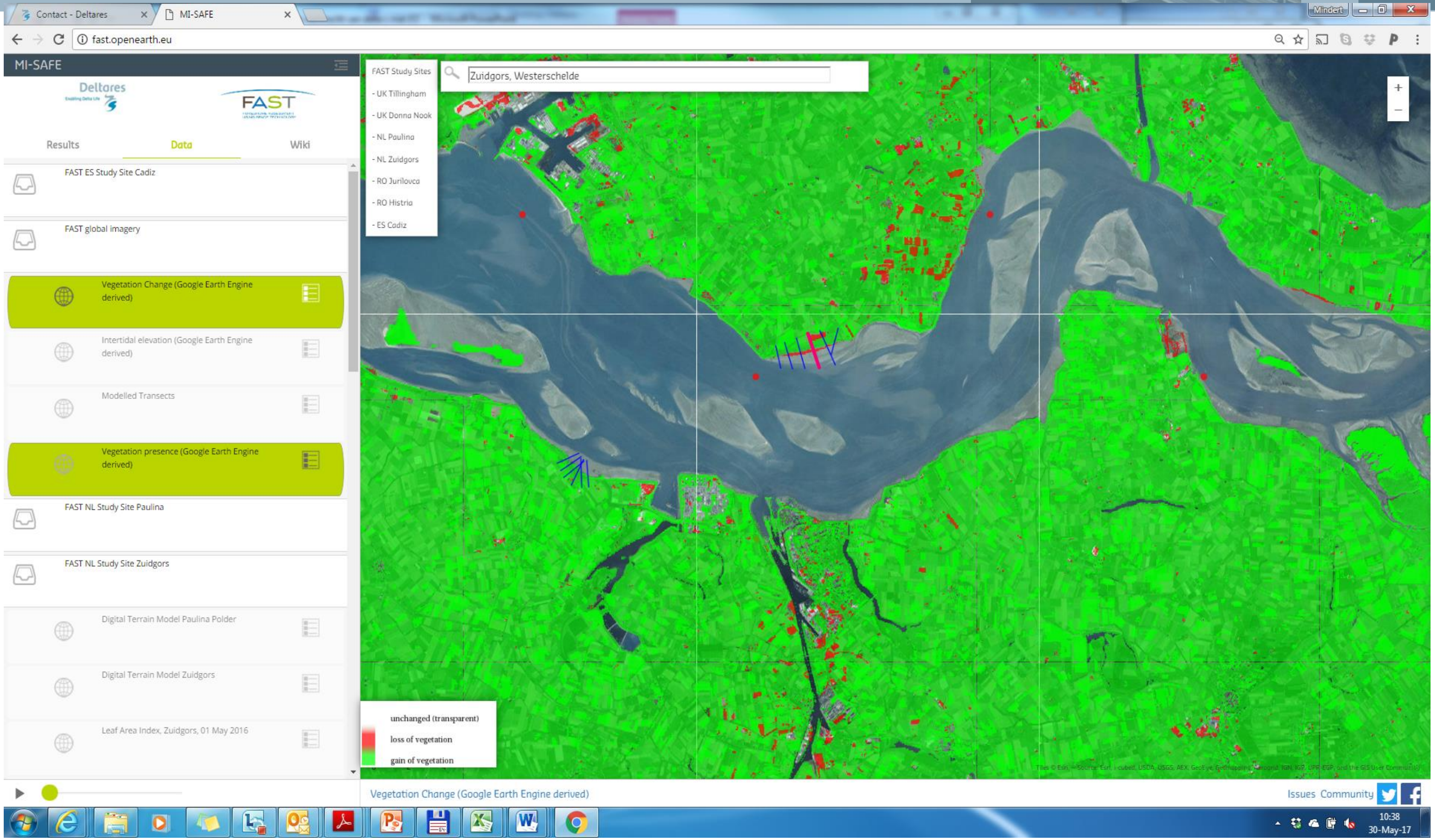
Any location on the world's coasts...



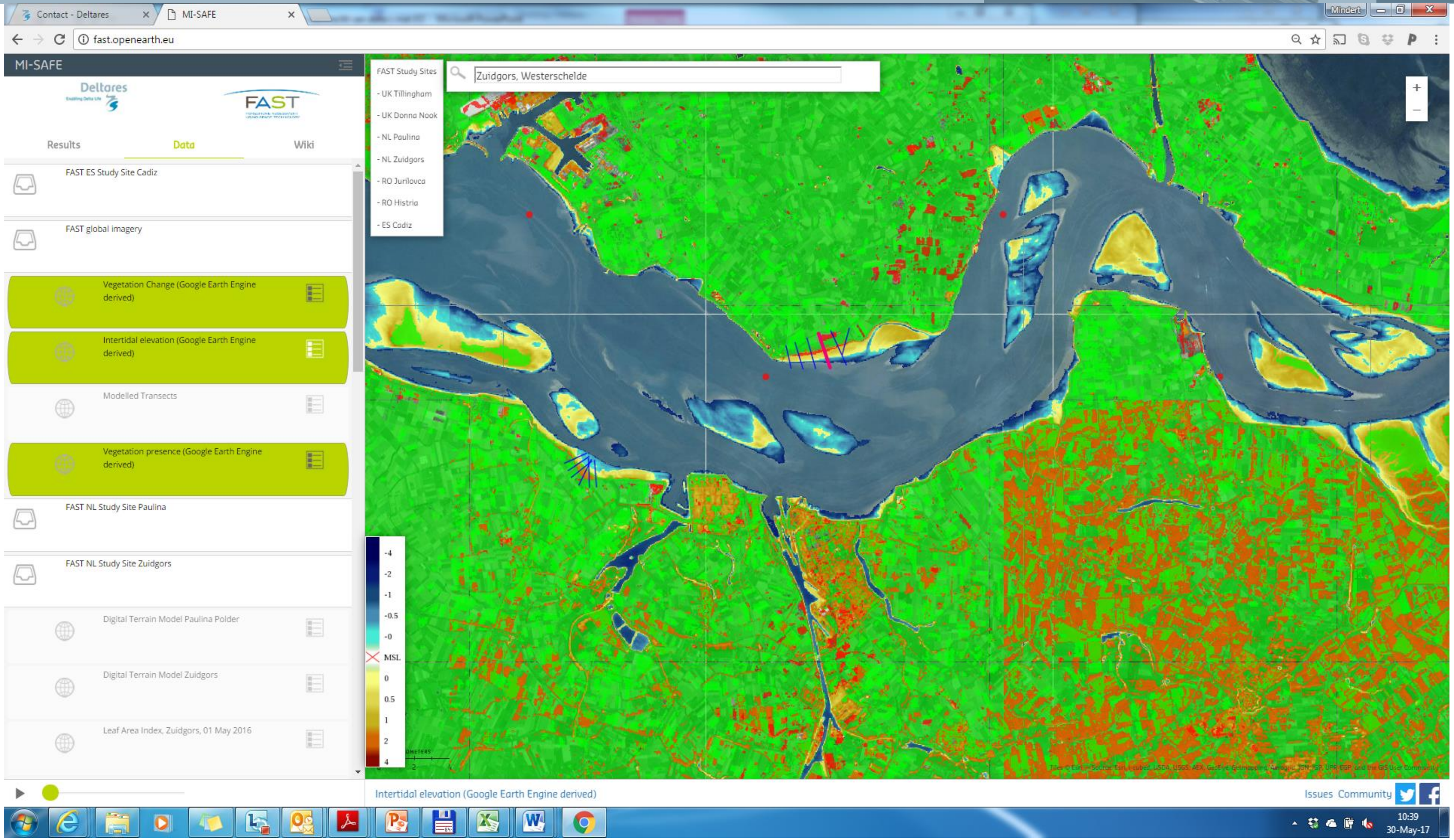
Vegetation map (Sentinel 2016), world



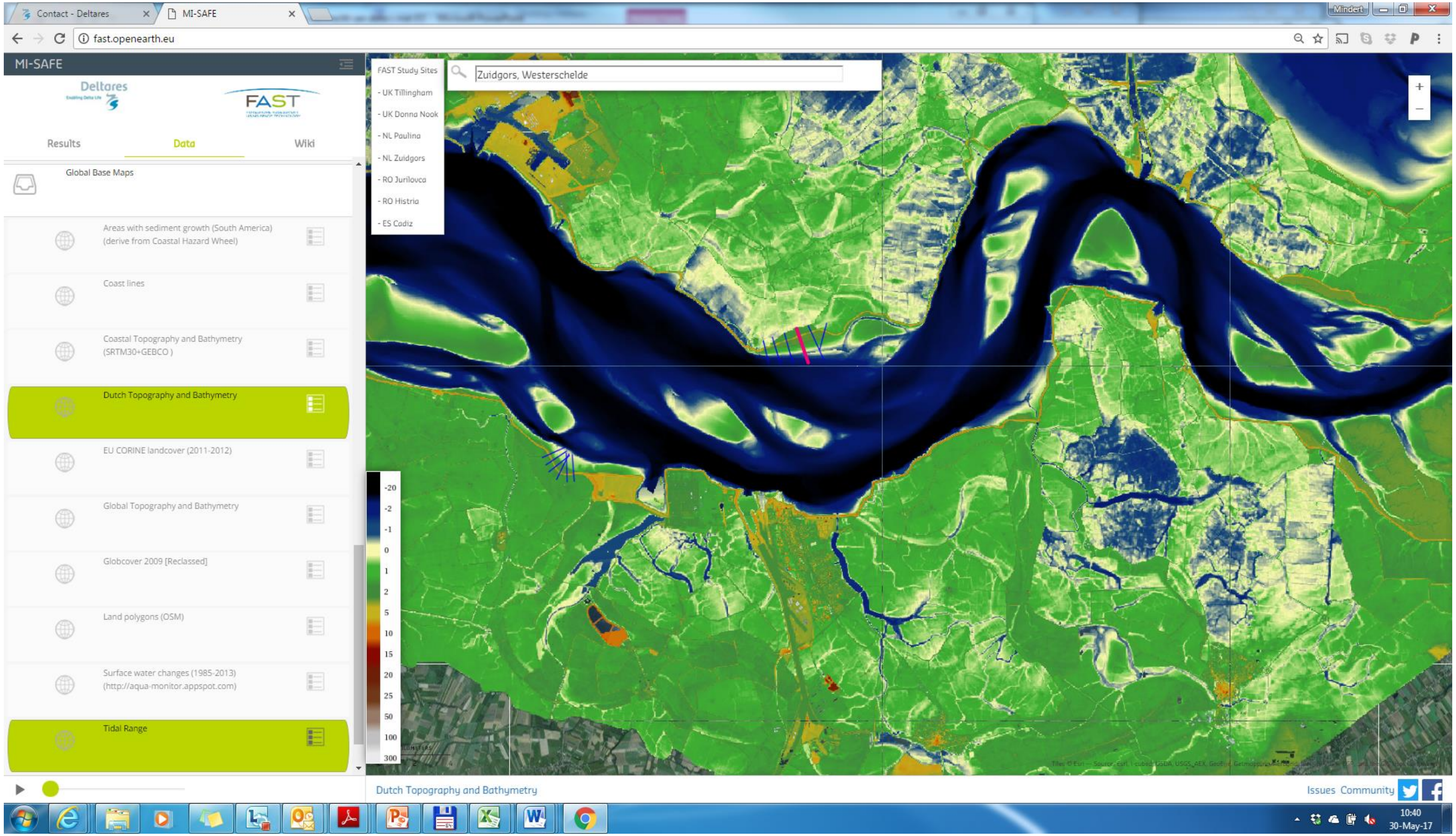
Vegetation change map (1996-2016), world



Intertidal elevation map (2000–2016), world

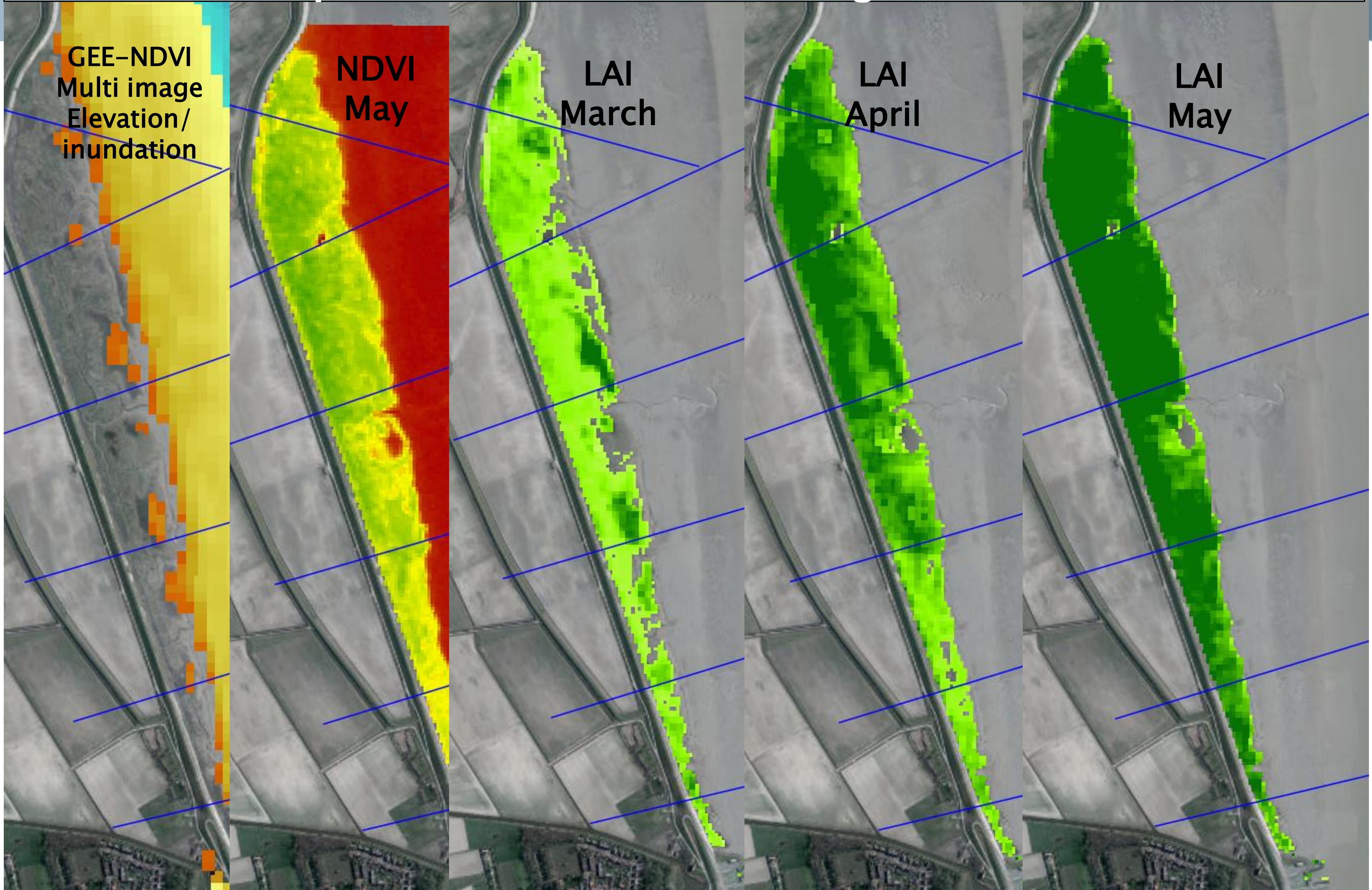


Dutch detailed elevation and bathymetry maps



Zooming in on study sites with SENTINEL

Temporal data of LAI for Zuidgors (10m, 2m, NIOZ)



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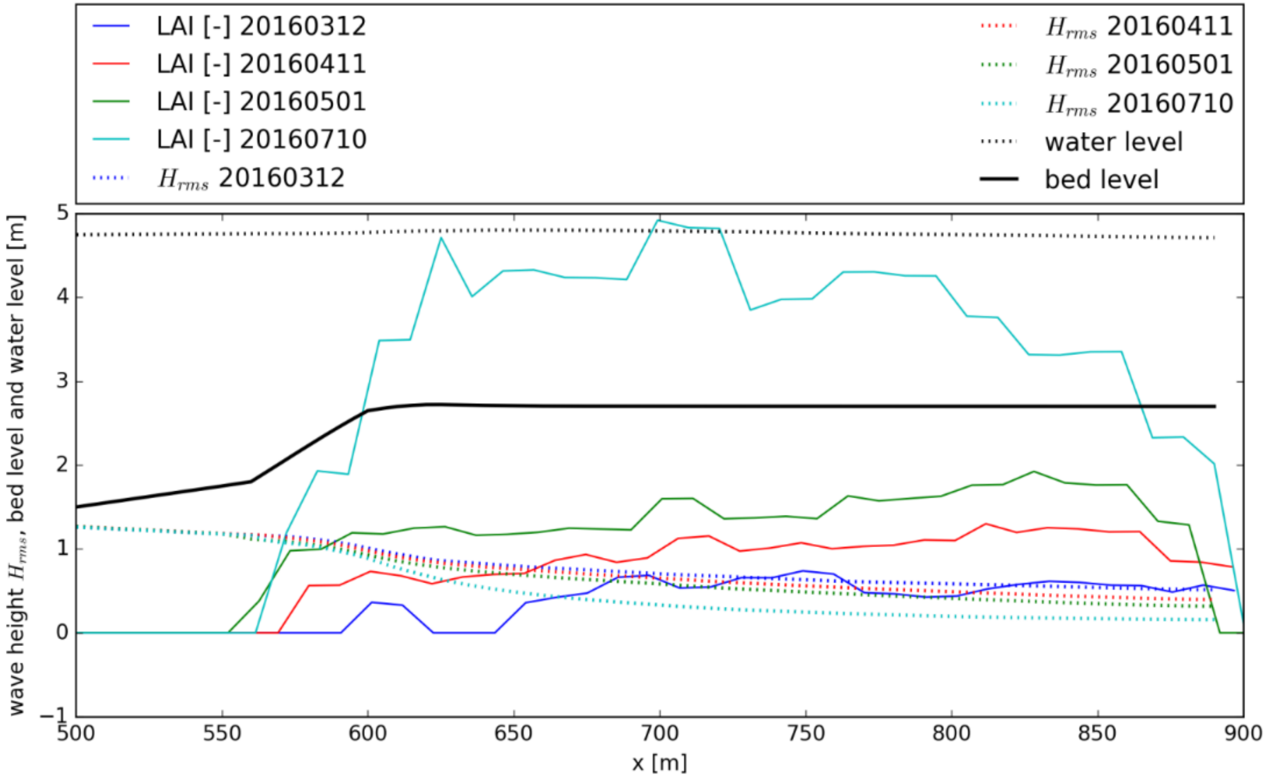
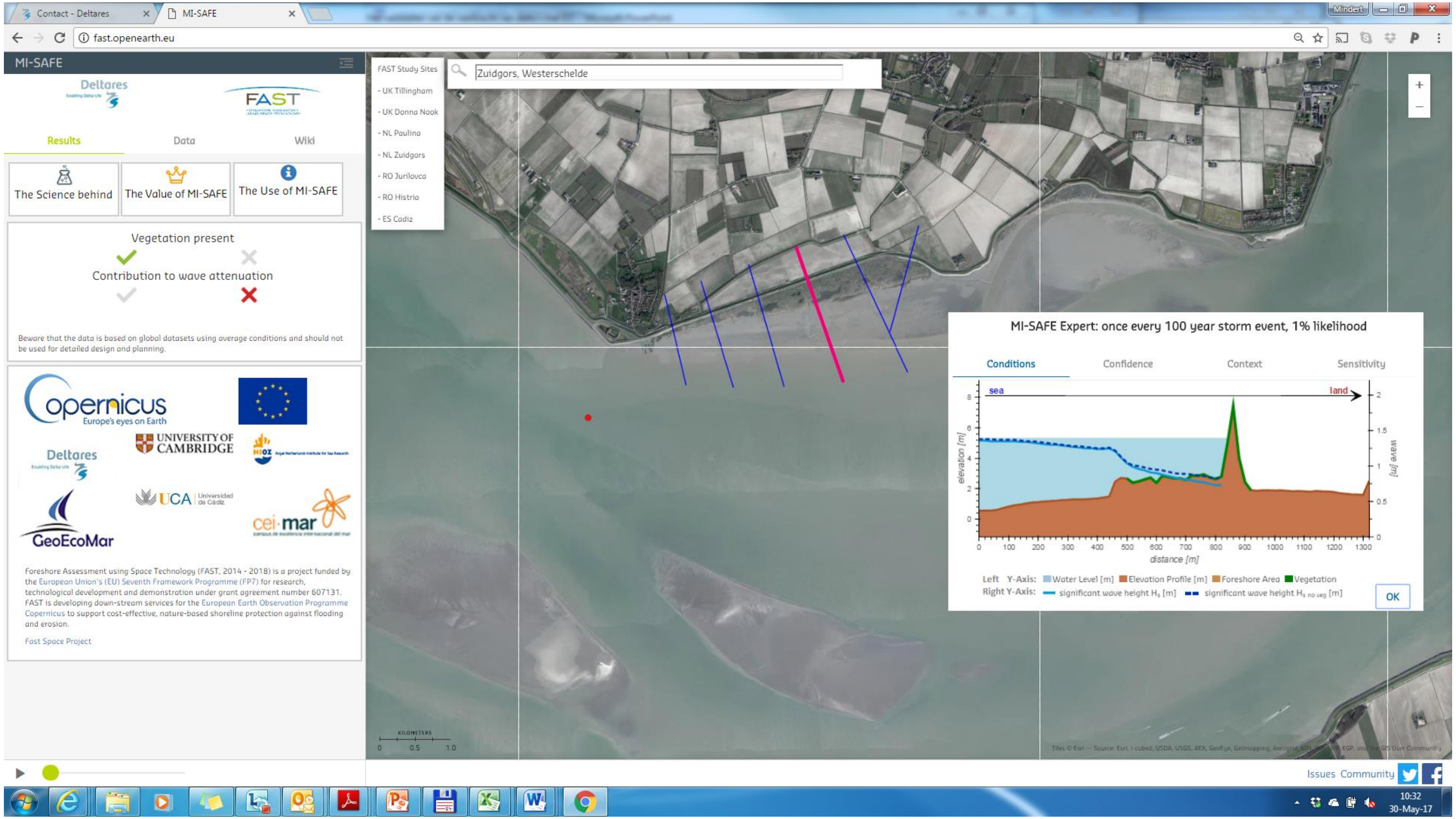
Testing model sensitivity to LAI variability



Zuidgors study site



Impact of vegetation on storm events

MI-SAFE Expert: once every 100 year storm event, 1% likelihood

Conditions | Confidence | Context | **Sensitivity**

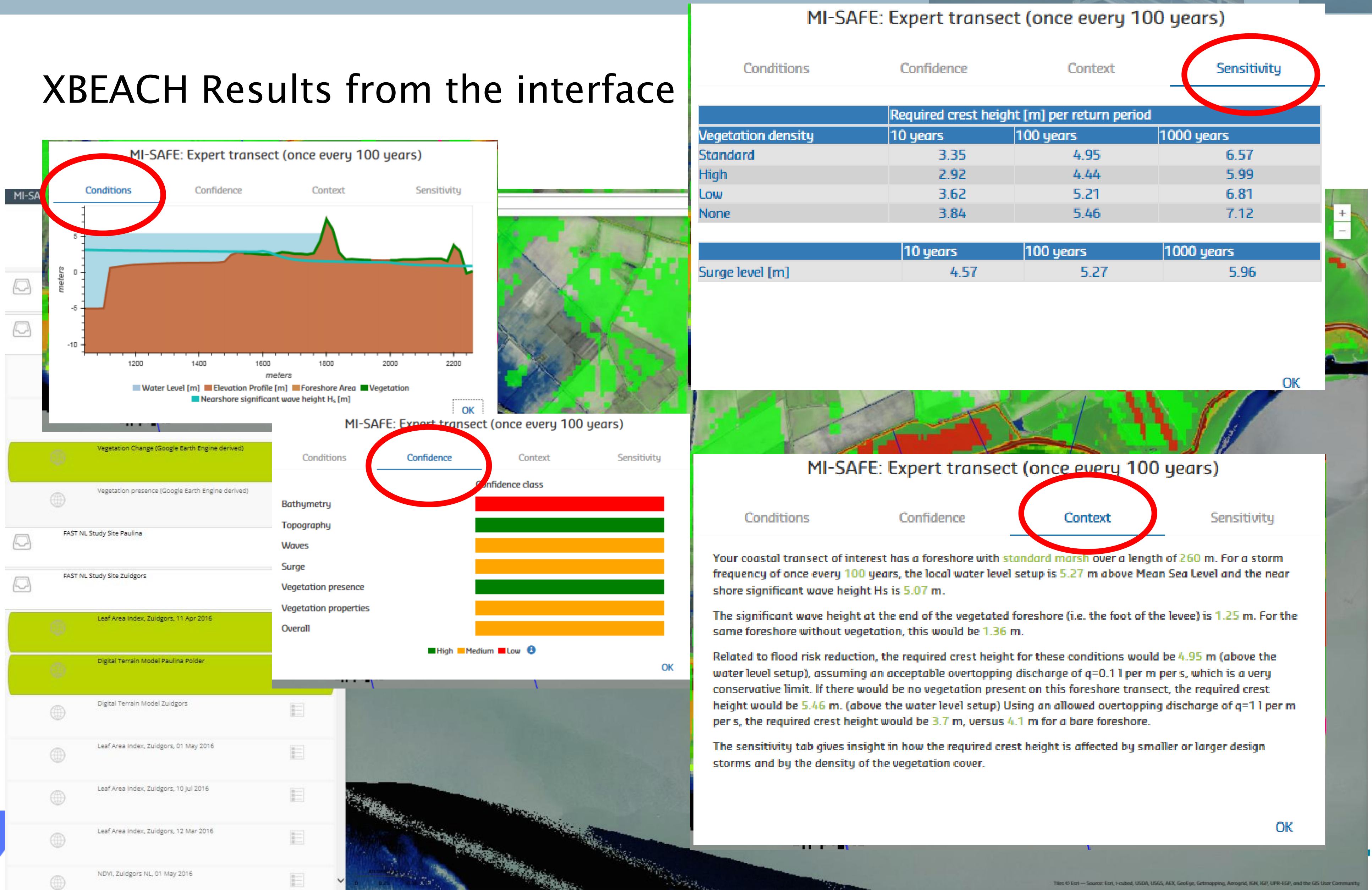
	Required sea defence crest height [m] per return period		
Vegetation density	10 years (10%)	100 years (1%)	1000 years (0.1%)
Standard	2.53	3.94	5.41
High	2.05	3.39	4.72
Low	2.82	4.27	5.73
None	3.08	4.58	6.1

	10 years (10%)	100 years (1%)	1000 years (0.1%)
Surge level [m]	4.57	5.27	5.96
Offshore wave height [m]	5.9	7.1	8.3
Peak period [s]	10.7	11.8	12.7

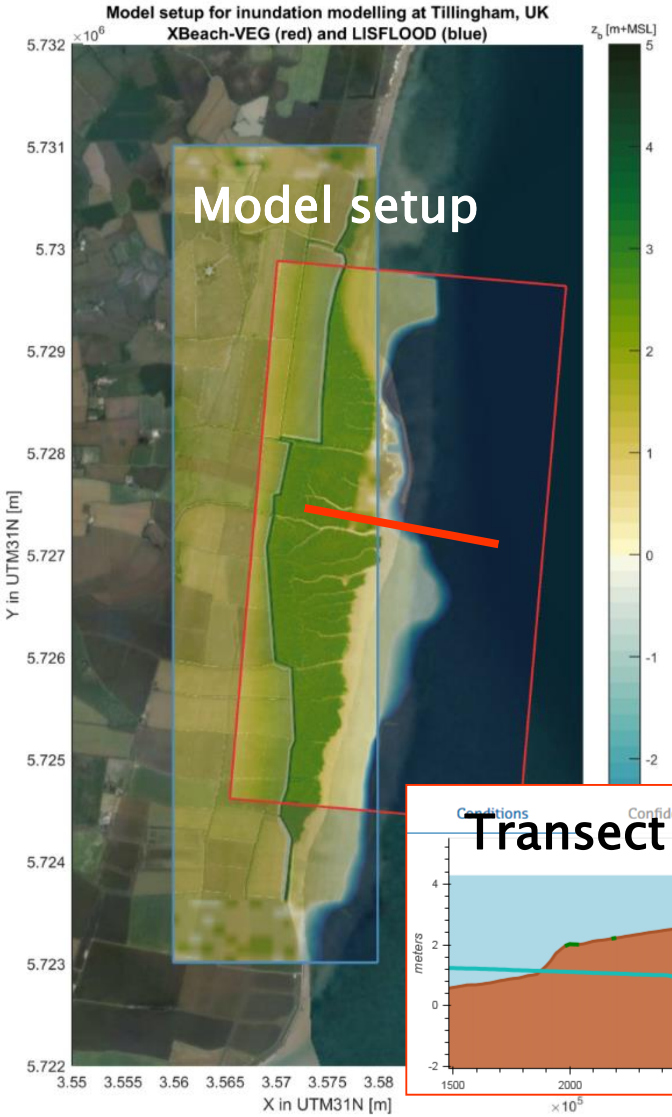
OK

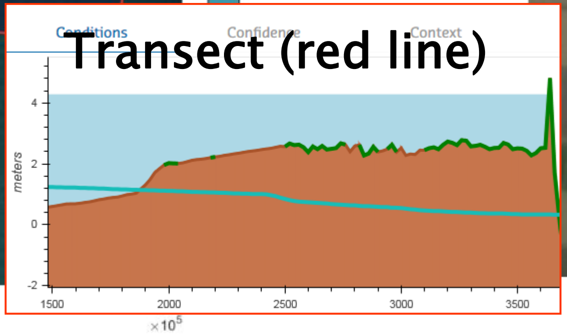
Zooming in for study sites

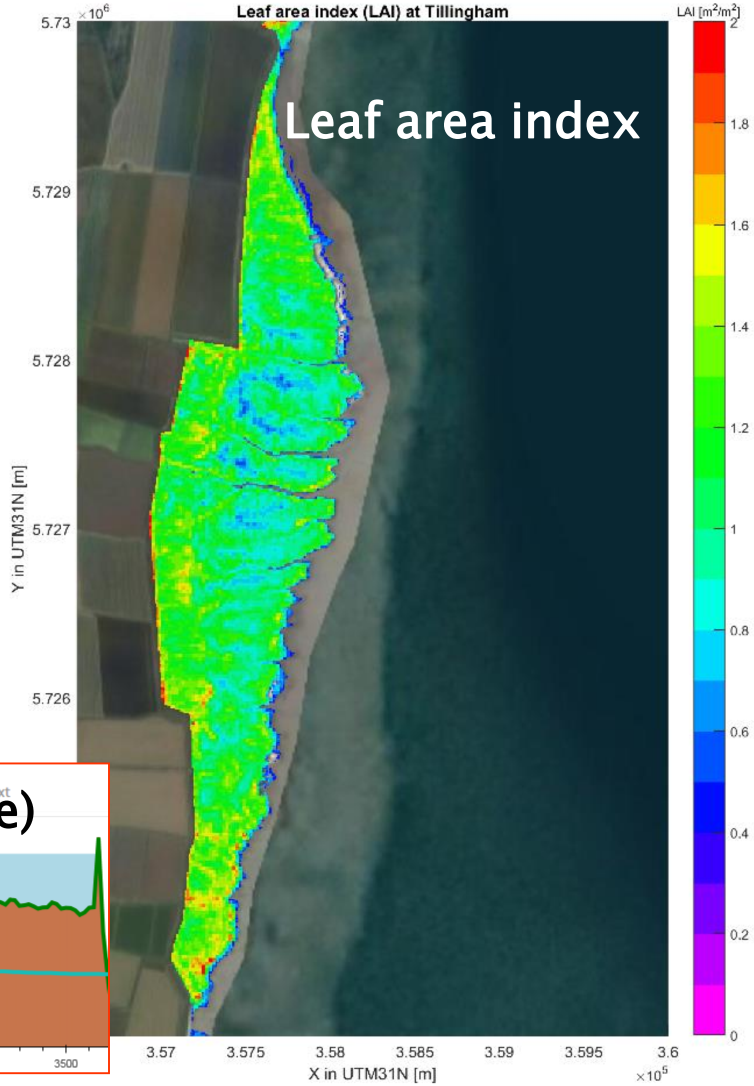
XBEACH Results from the interface



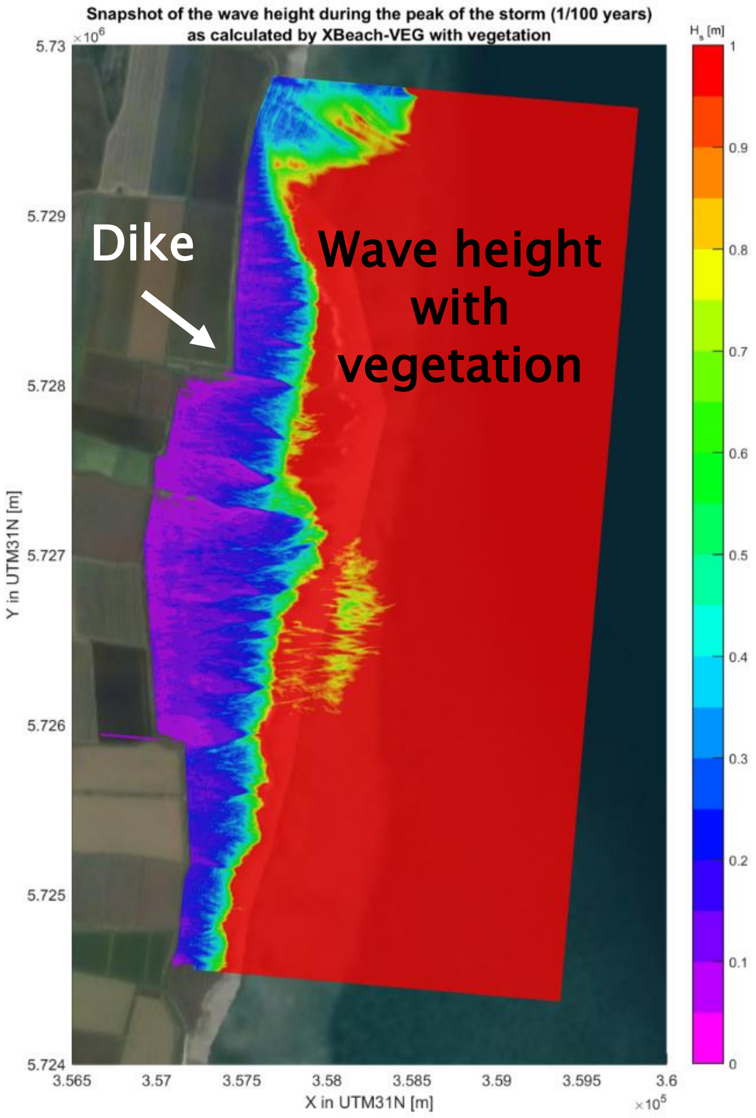
Advanced analysis using 3D modelling

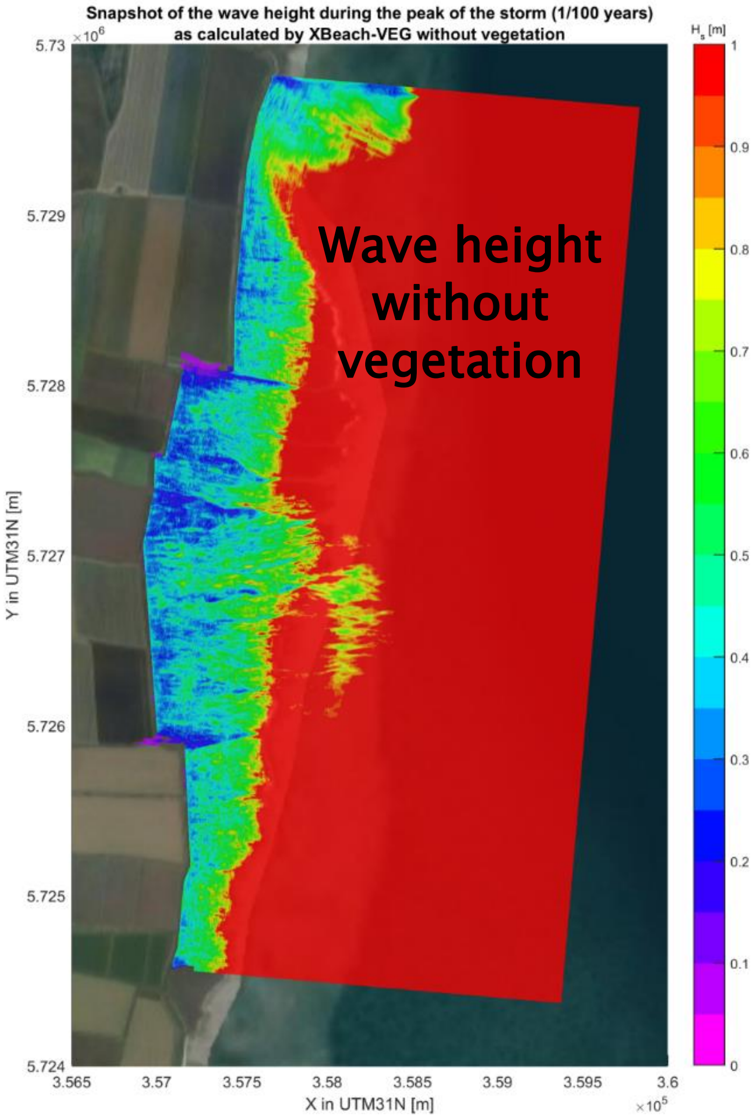




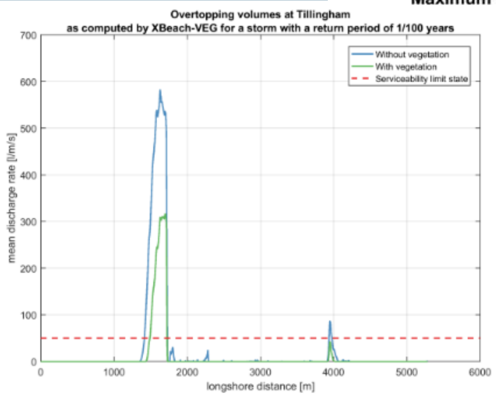


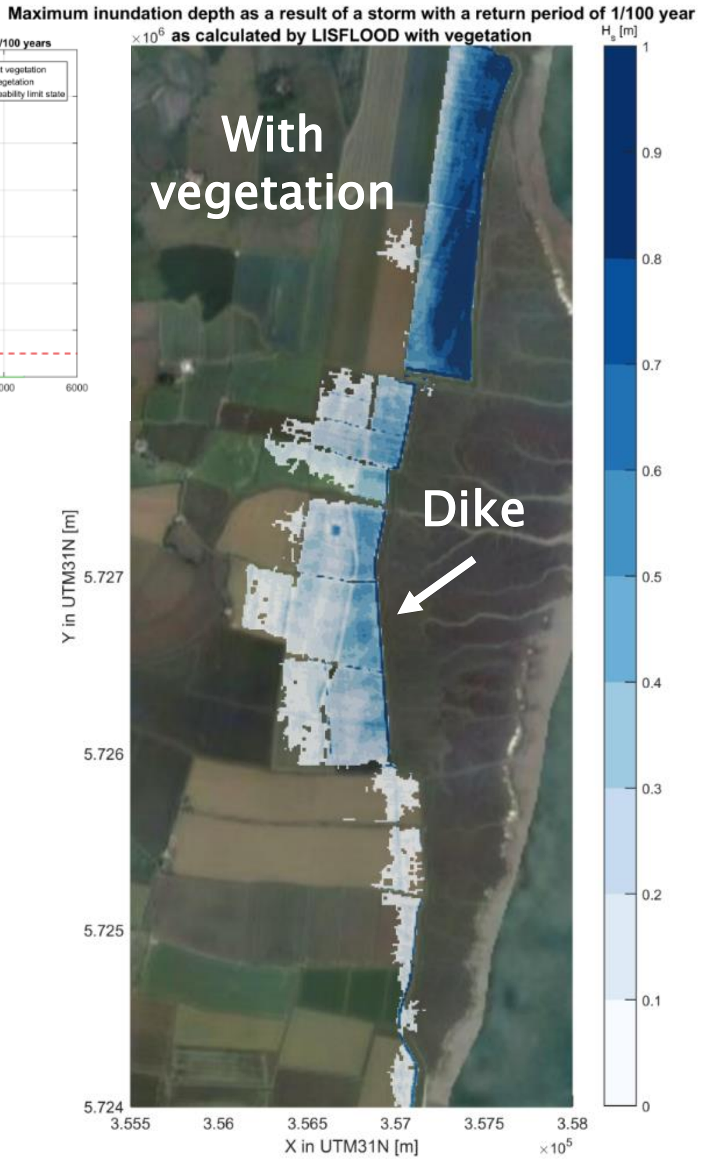
Advanced analysis using 3D modelling (Wave)

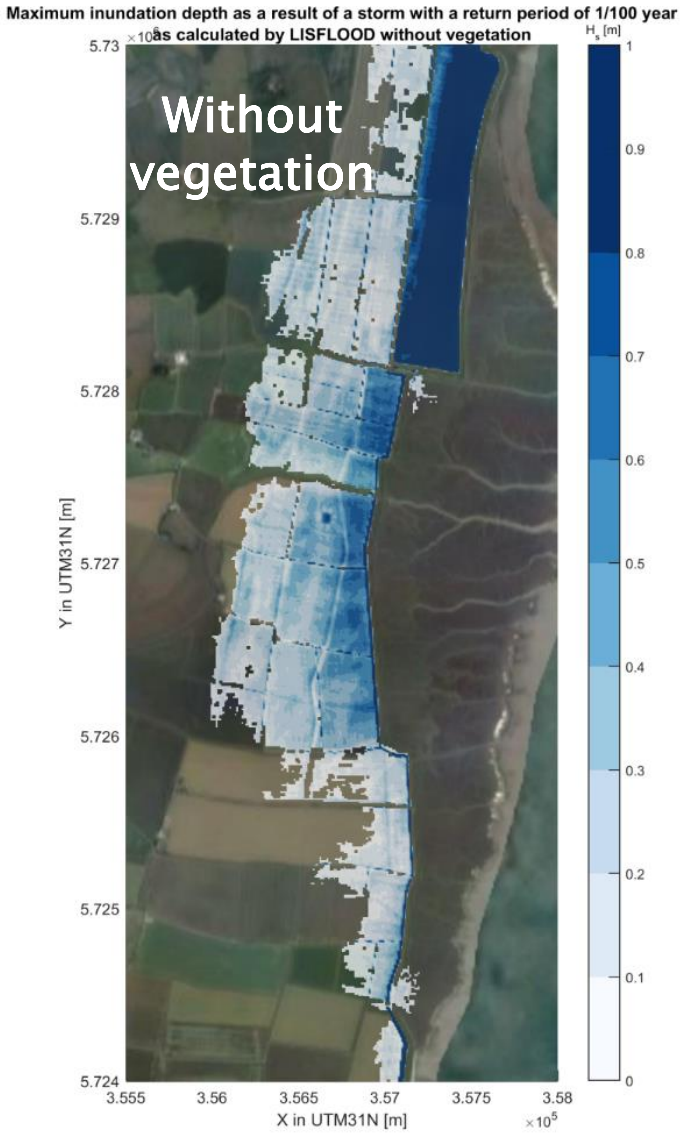




Advanced analysis using 3D modelling (Flooding)





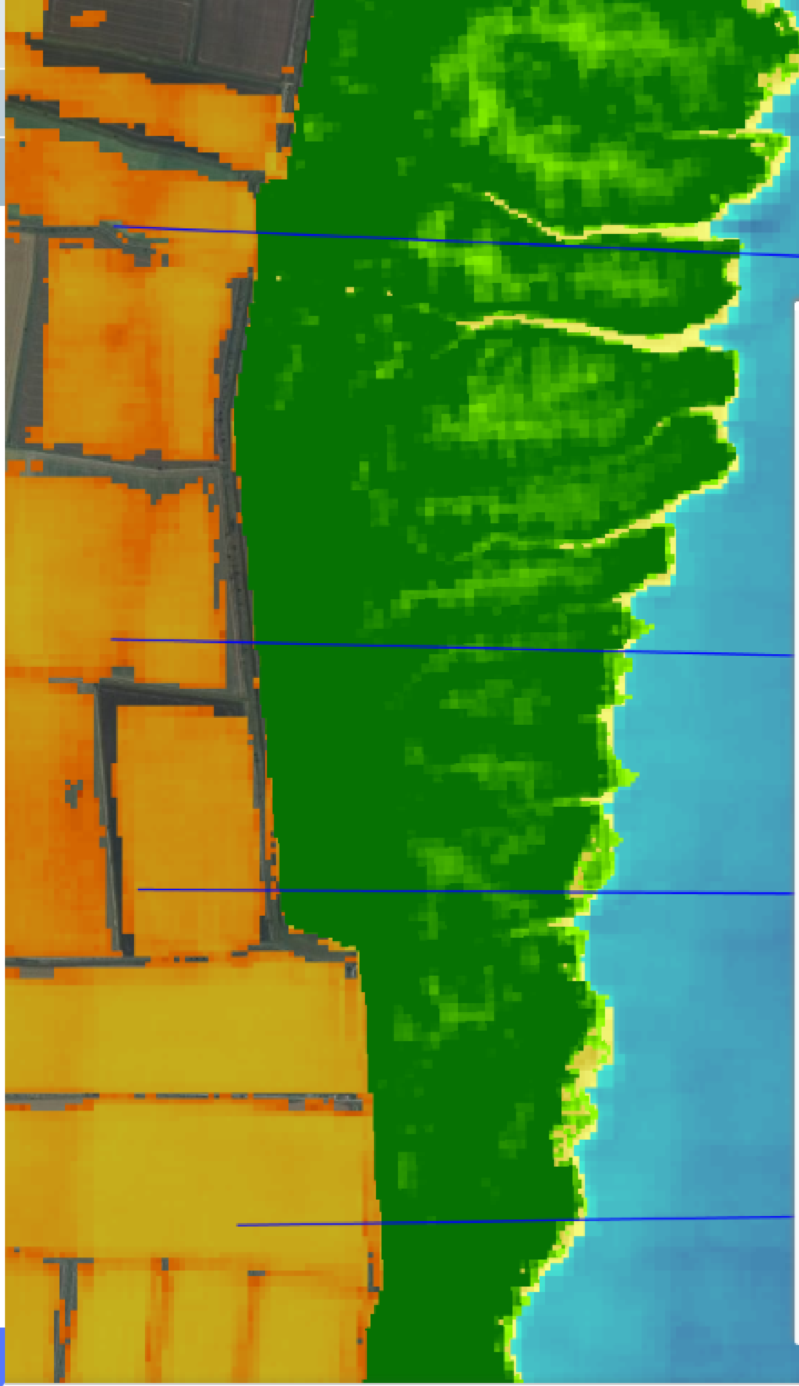


Results show dramatic (50%) reduction in extent and depth of flooded area

FAST
RISC-KIT

res

You could join the community!



Community form

First Name*

Last Name*

Gender* ○ Male ○ Female

Email*

Phone*

Job title

Organisation*

Country*

Question*

Submit

By joining the FAST community we offer the following support services to you related to the MI-SAFE modality:

- The FAST community @MISAFE_services and Facebook is ready for questions and feedback related to the tool, services and other online products;
- The news service will inform you on training opportunities, (advanced) applications and upgrades of products;
- The software support facilities provided by Deltares and the training provided during the international Delft Software Days are available;
- Within certain countries, you can get in touch with national contacts who are familiar with the tool.
- You get access to the RISC-KIT community and to more information and products related to flood risk reduction quantification

CLOSE