



Terrafirma: Flood Theme

ESA Workshop – Frascati

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December 1, 2010

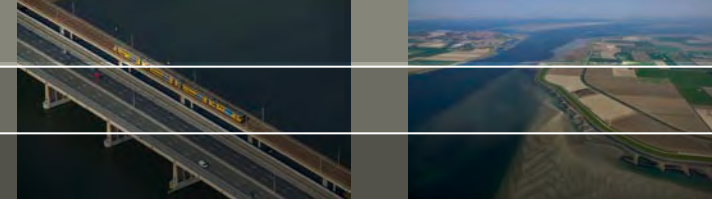


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- Rationale of flood theme
- Examples of PSI
- Flood theme products
- Cases in flood theme

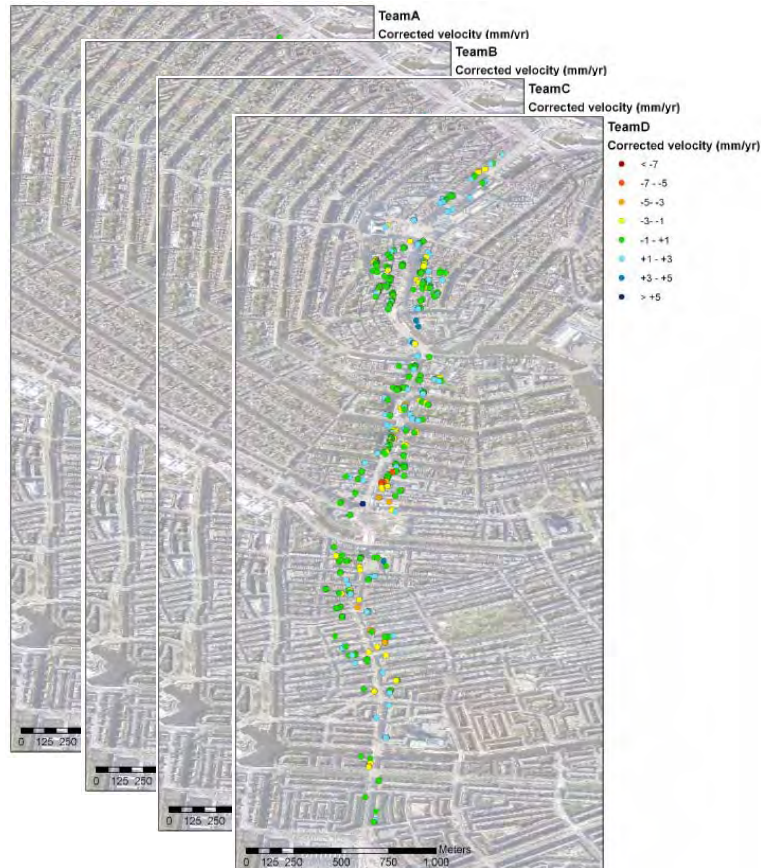


Earlier stages of Terrafirma



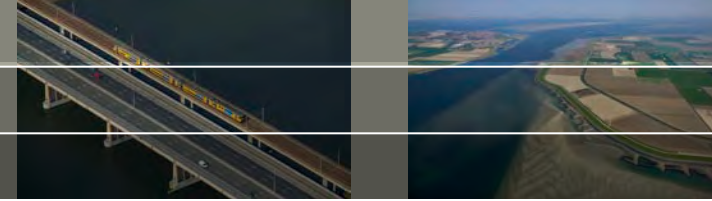
Focus on:

- Validation
- Cities



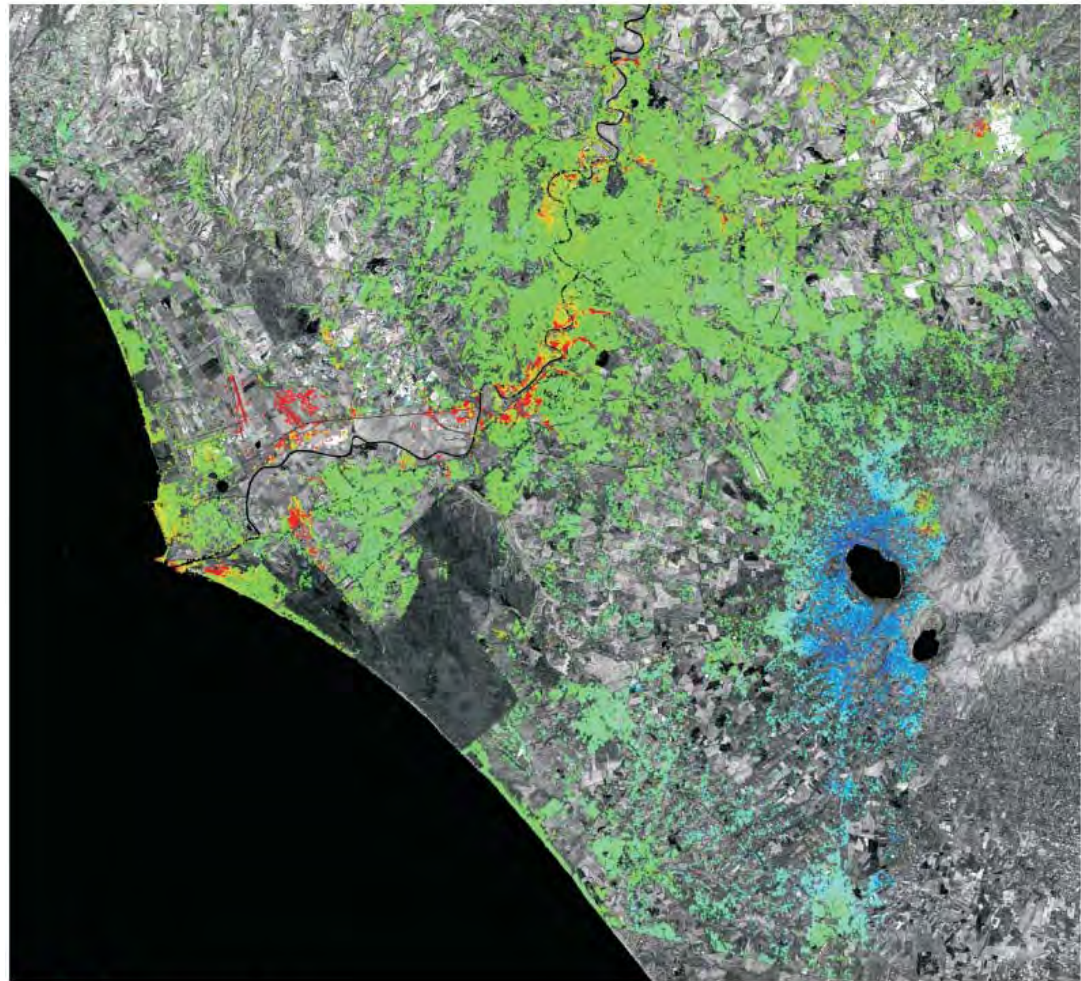
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Earlier stages of Terrafirma

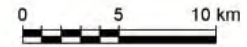


Focus on:

- Validation
- Cities



 Rome, ITALY



Flood theme rationale

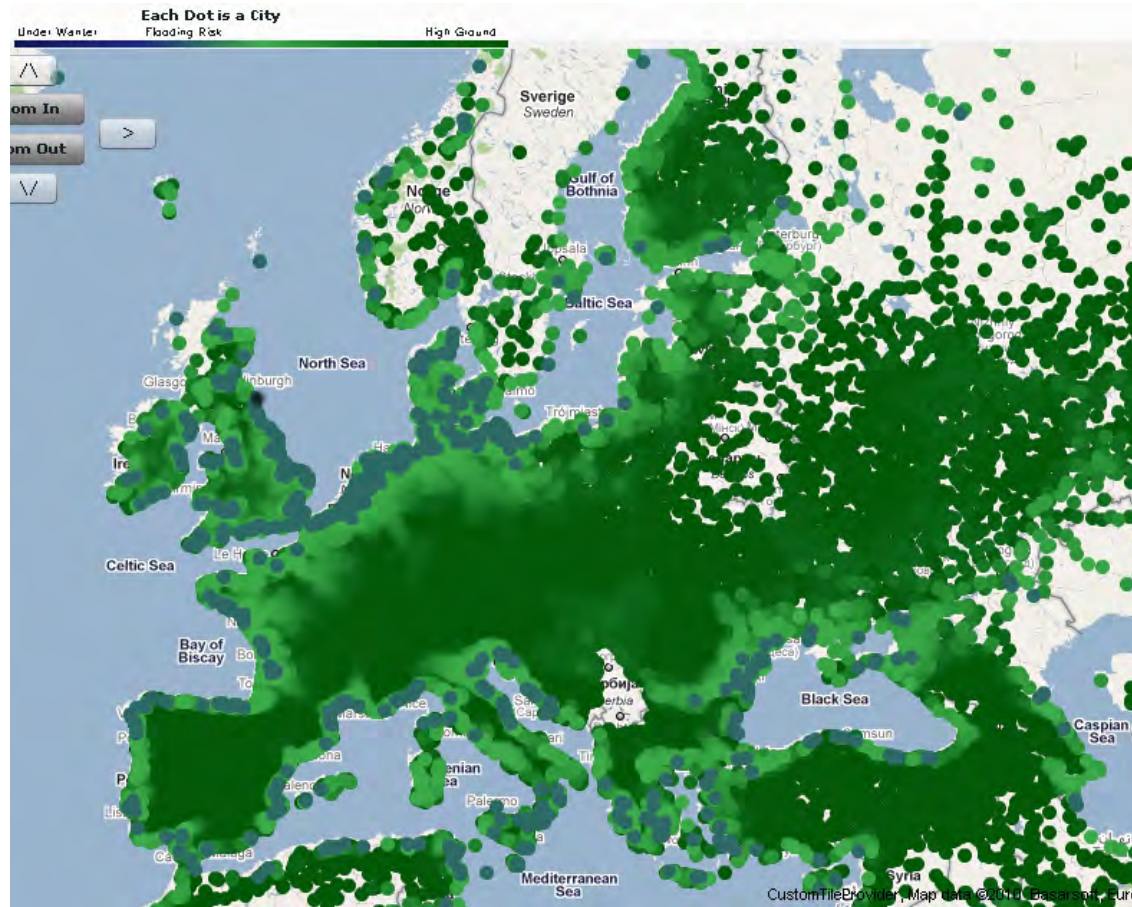


Flooding is one of the most devastating geohazards
(damages and lives lost)



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Flood theme rationale

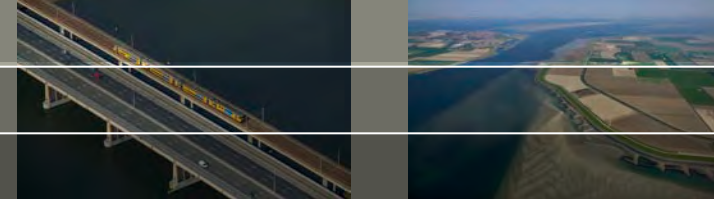


Especially in coastal lowland areas, groundlevel is subsiding at a pace faster than sea level rises



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EU Flood Directive



EU Flood Directive (2007):

- > Assess risk of flooding along coastlines and water courses
- > Access of public to this information

Issues to be covered by Terrafirma:

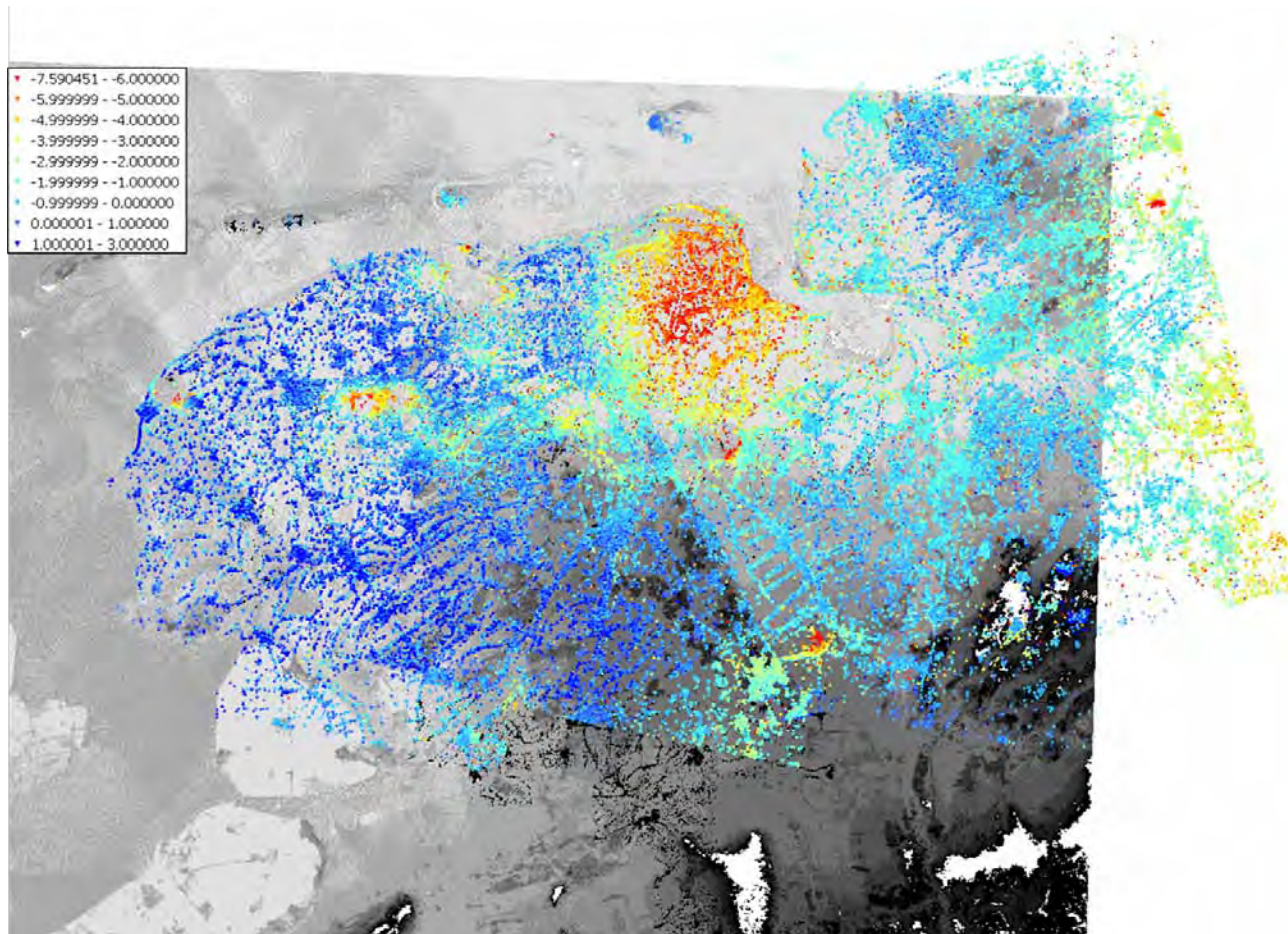
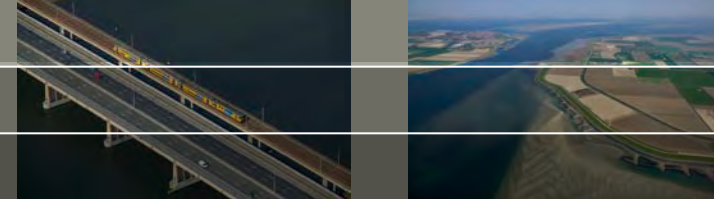
- > Entire area at risk has to be mapped
- > Special attention to linear flood defence structures over long distances

GMES-services on Subsidence: Terrafirma and SubCoast

- Deriving indicators of environmental and economic impact of subsidence
- Assessing risks of subsidence:
 - > Relative sea-level rise
 - > Water defence and flooding
 - > Impact maps: erosion, ecology and groundwater
 - > Forecasts and assessments
- Coordinated provision of data
- Build a user federation and service delivery model



Recent developments in PSI

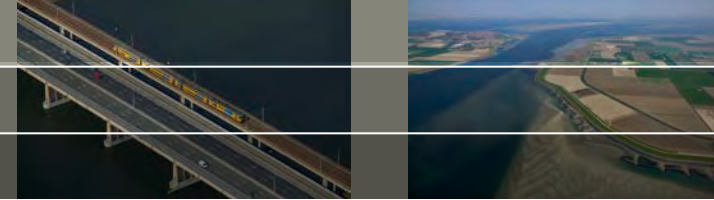


Courtesy TU Delft

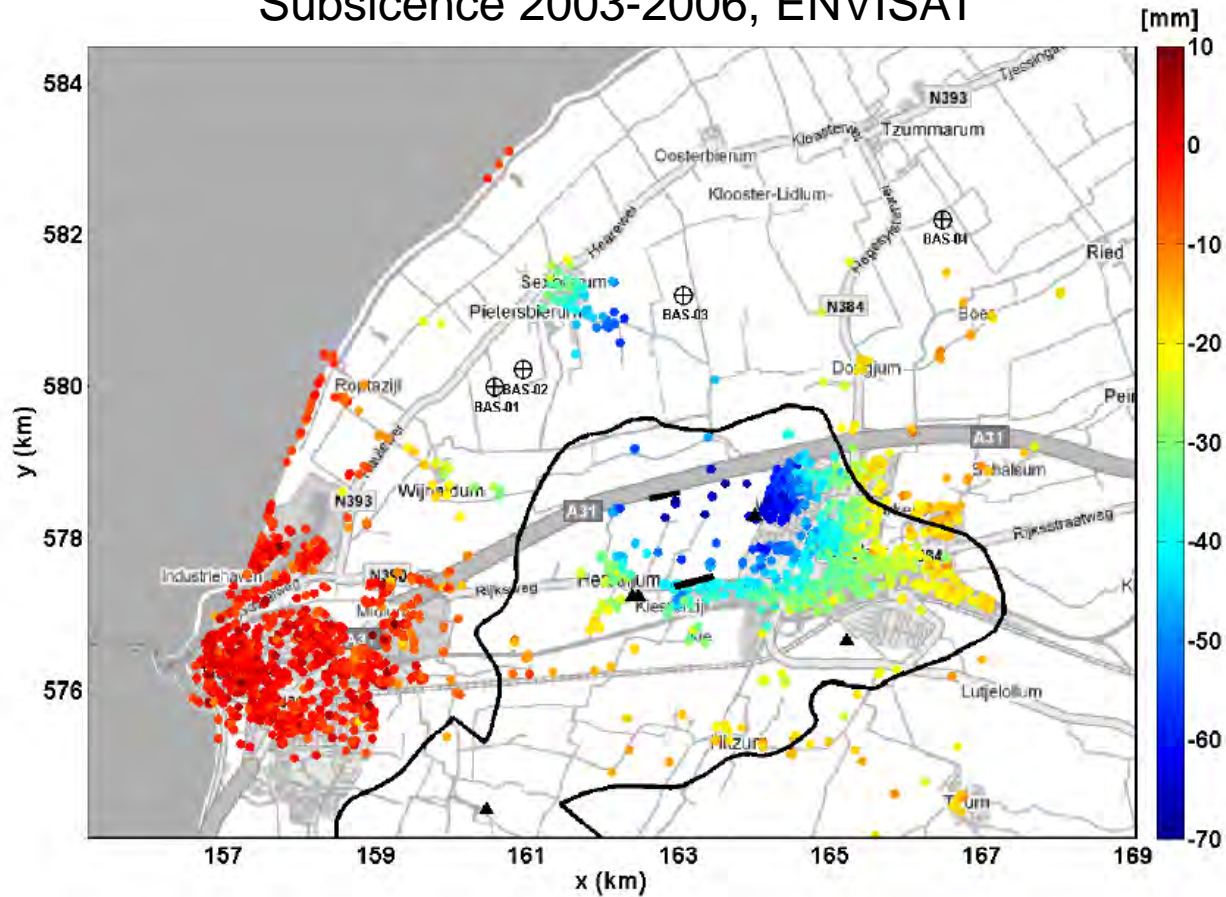
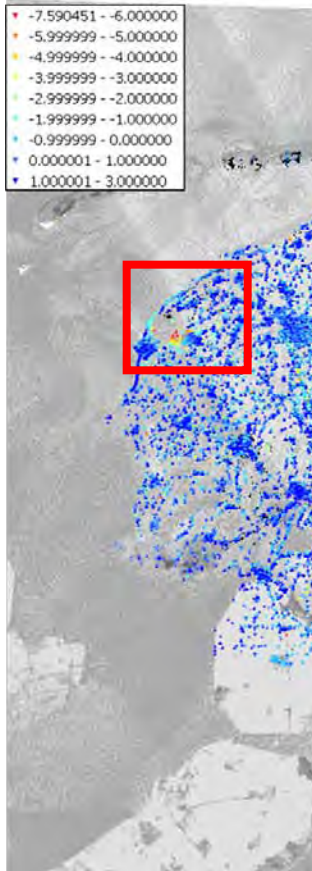


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Recent developments in PSI



Subsidence 2003-2006, ENVISAT

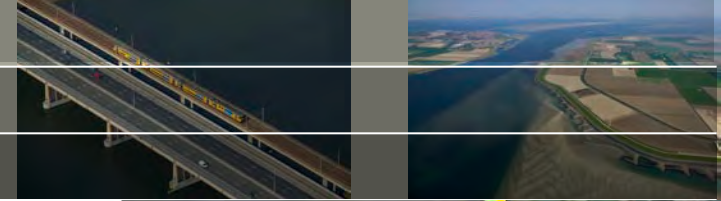


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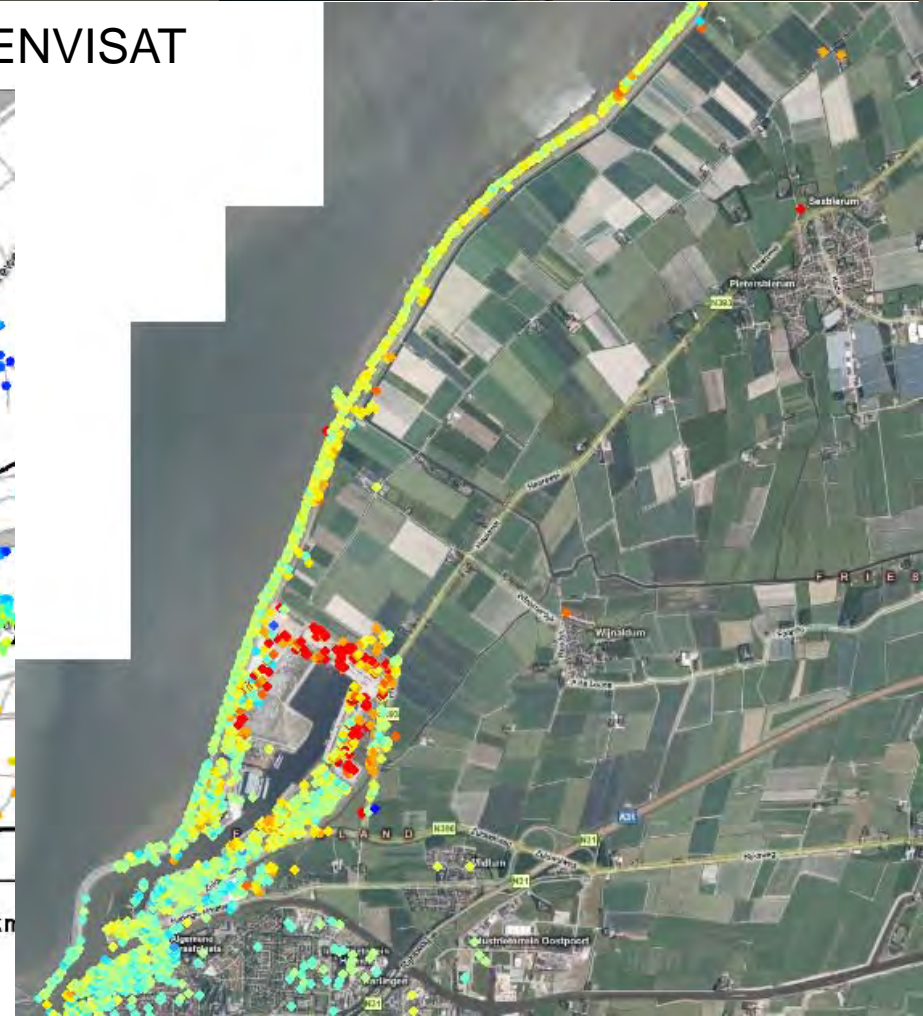
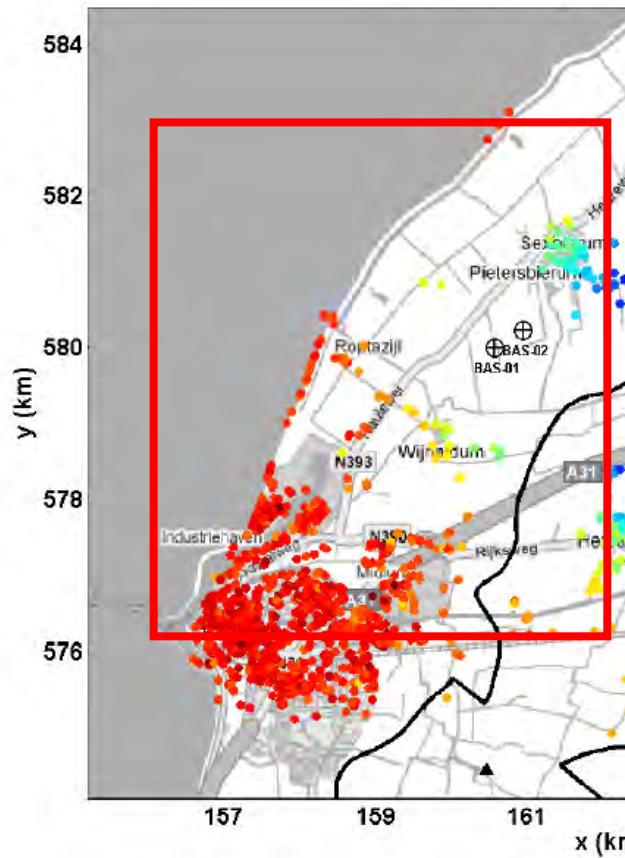
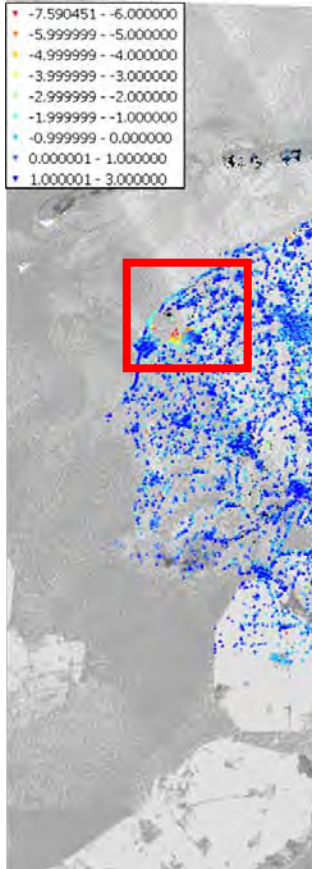


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Recent developments in PSI



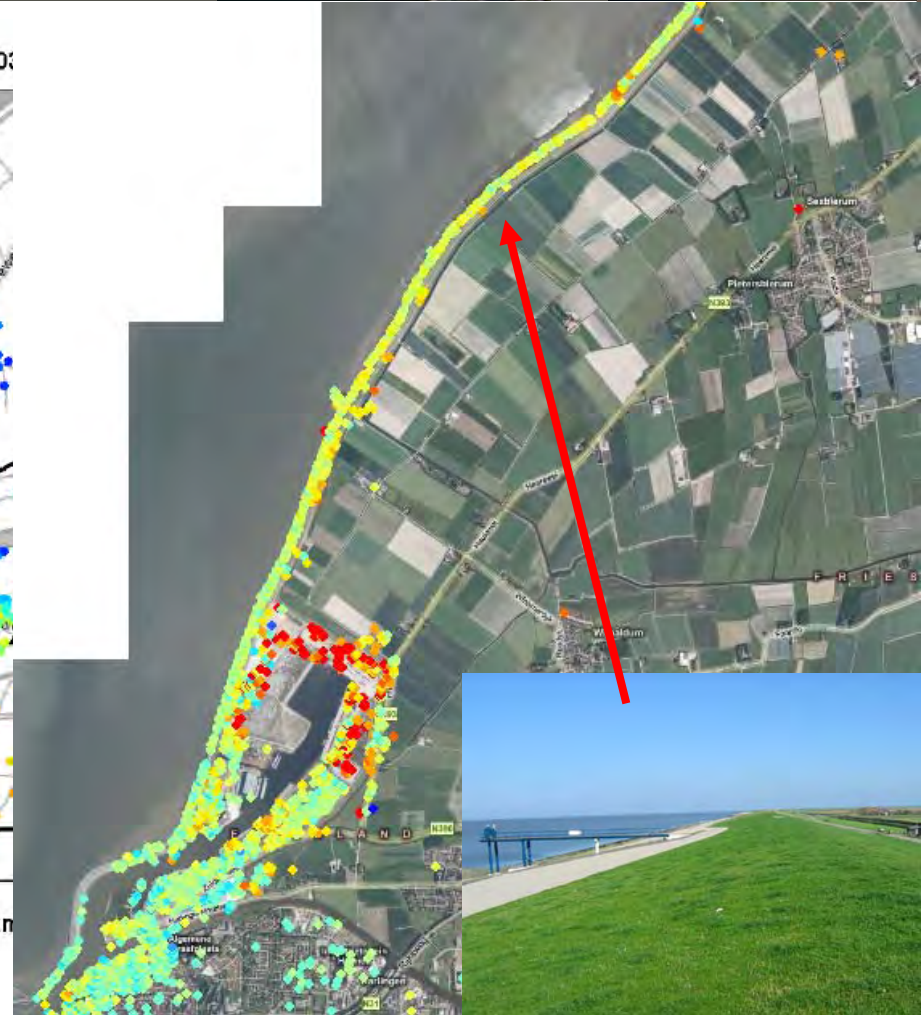
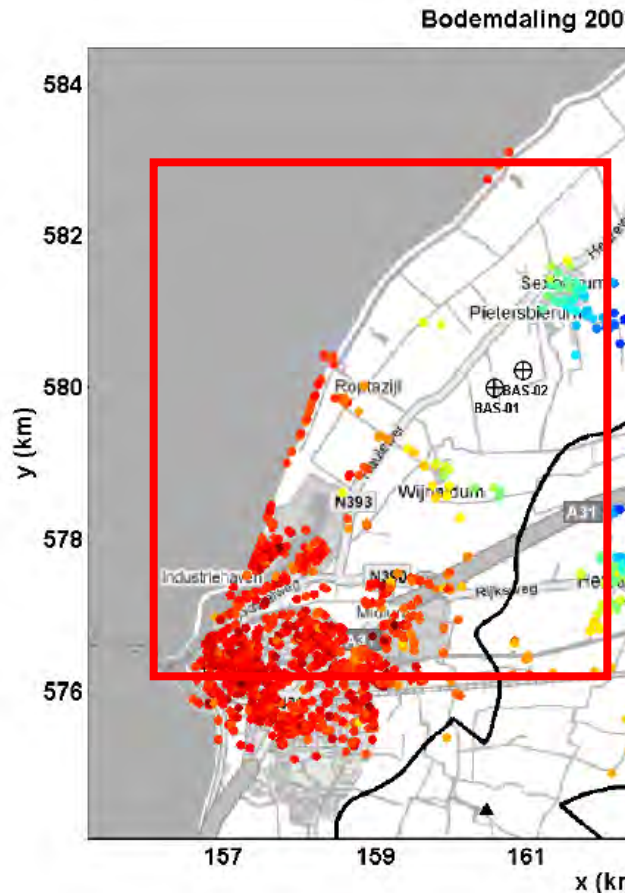
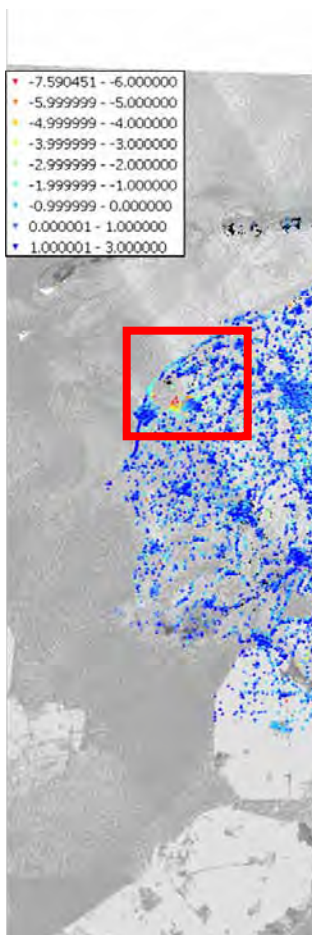
Subsidence 2003-2006, ENVISAT



More advanced PSI processing
Courtesy Hansje Brinker



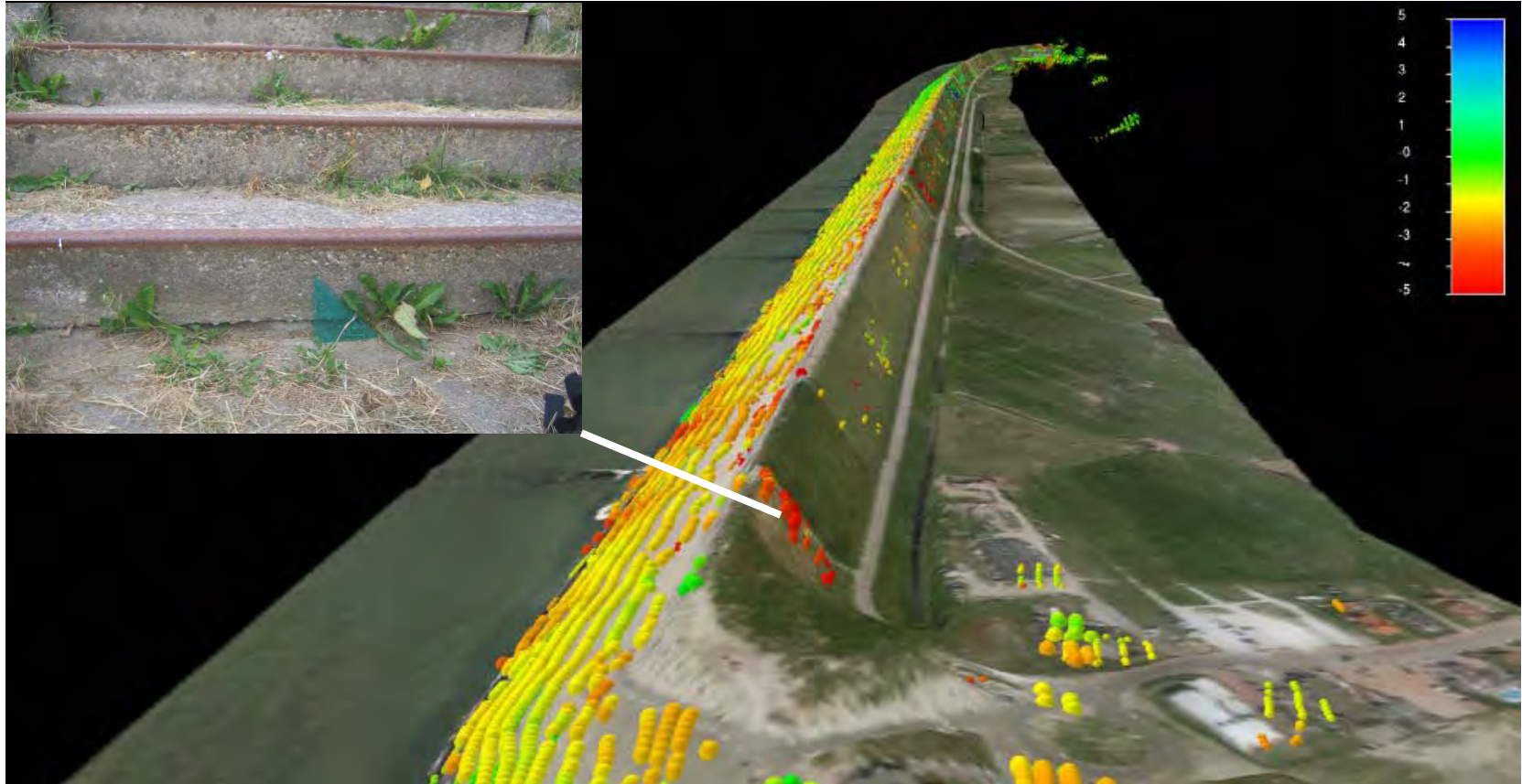
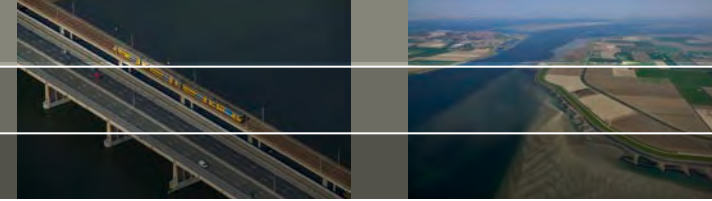
Recent developments in PSI



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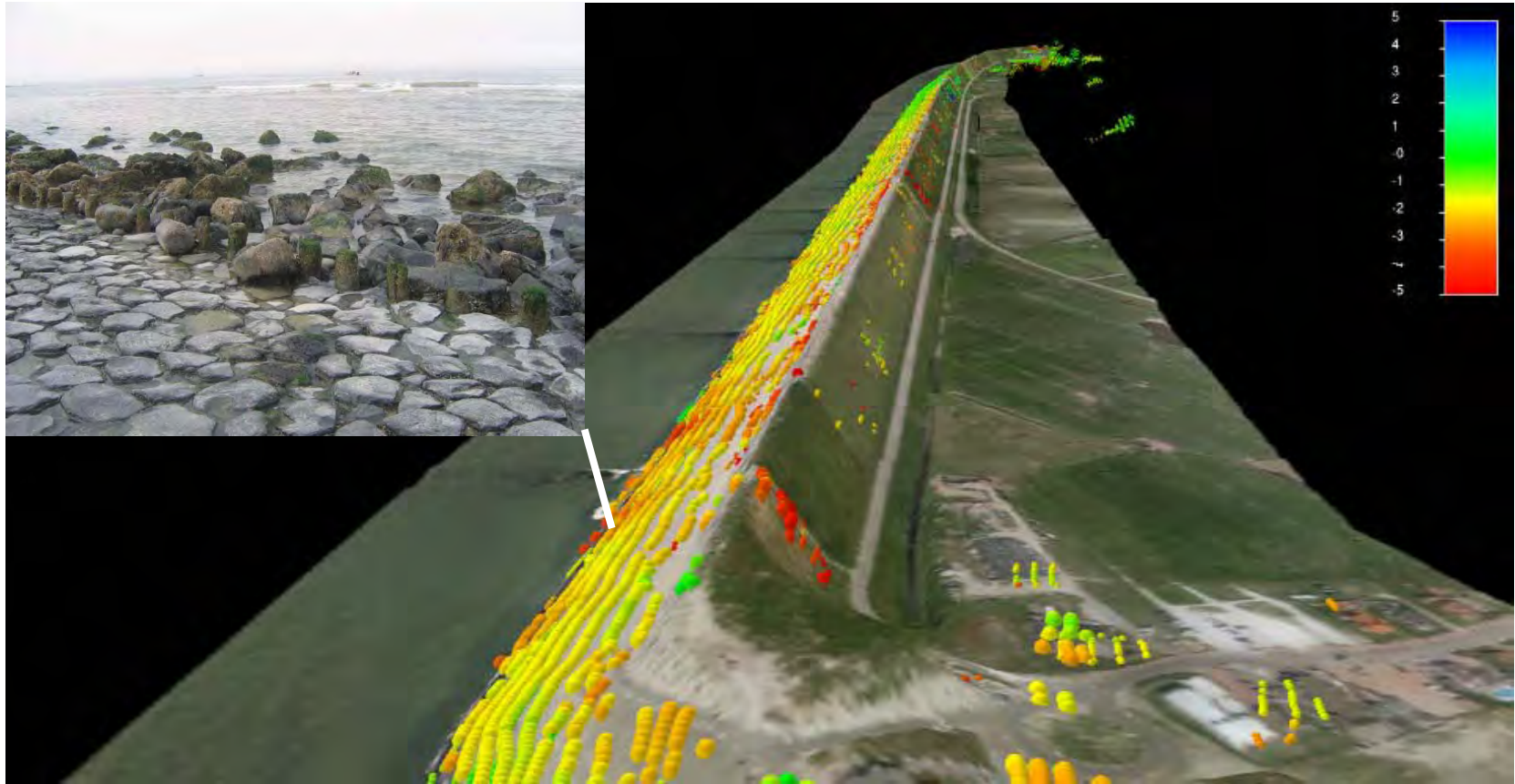
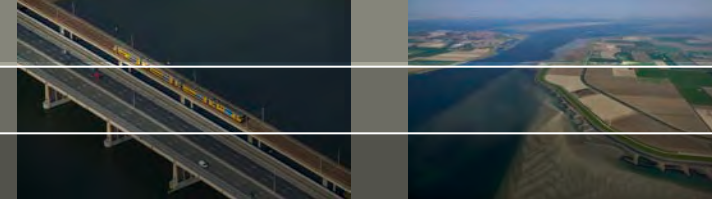
Another example (1)



Hondsbossche and Pettemer Zeewering in the Netherlands
Courtesy Hansje Brinker



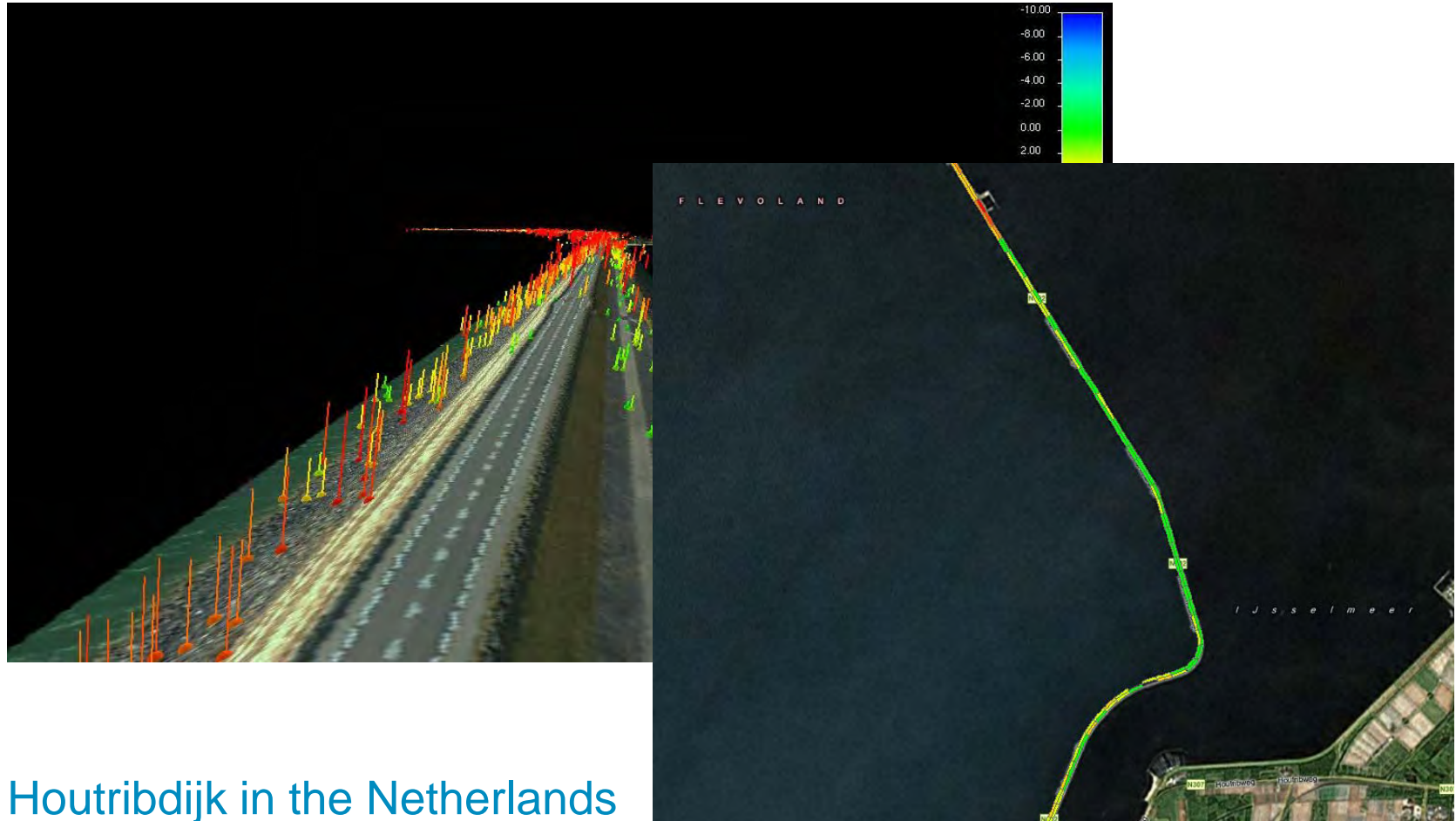
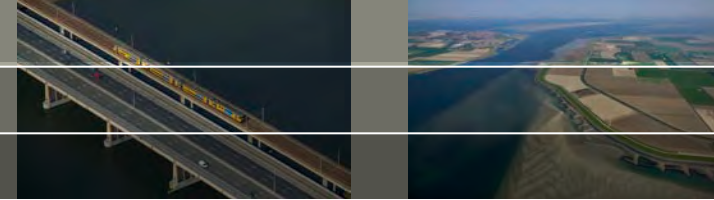
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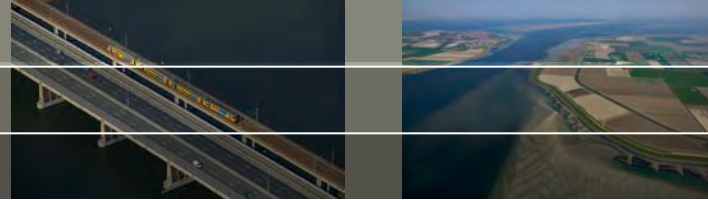
Another example (2)



Houtribdijk in the Netherlands
Courtesy Hansje Brinker



Flood theme products



Flood plain PSI standard/
wide area product (FSW)

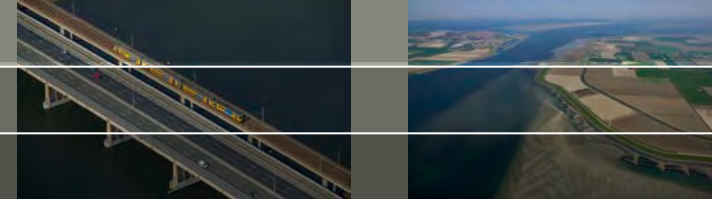
Flood plain subsidence
mapping product (FSM)

Flood defence monitoring
product (FDM)

Advanced subsidence
modelling product (FAM)



Flood theme end users



Flood plain PSI standard/
wide area product (FSW)

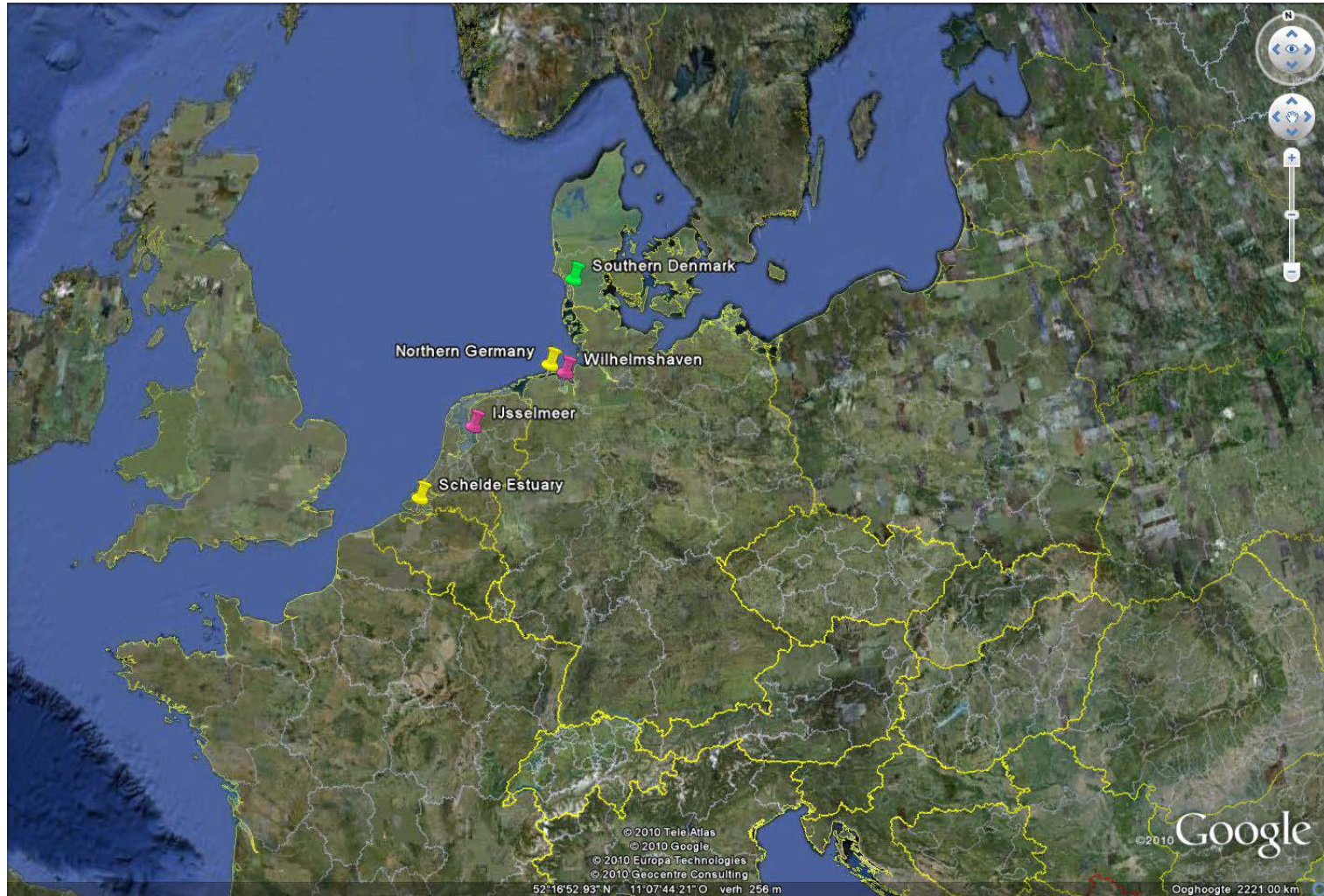
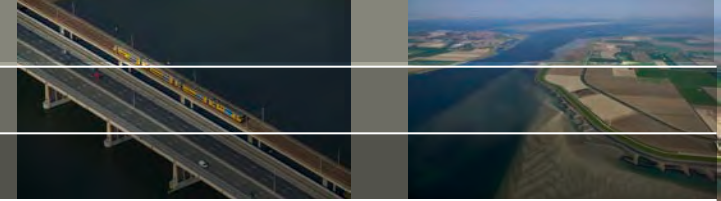
Flood plain subsidence
mapping product (FSM)

- > RTD-Institutes/National Agencies
- > Engineering Consultants
- > European Agencies
- > Water Management Authorities

Flood defence monitoring
product (FDM)

Advanced subsidence
modelling product

Case locations



Examples of FSW - Northern Germany



Examples of FSW – Schelde Estuary



Examples of FSM – South Denmark

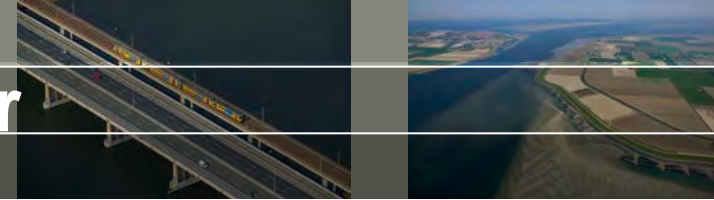


- ERS and ENVISAT
- Ascending and descending
- PSI for identification of subsiding areas



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Examples of FDM - IJsselmeer

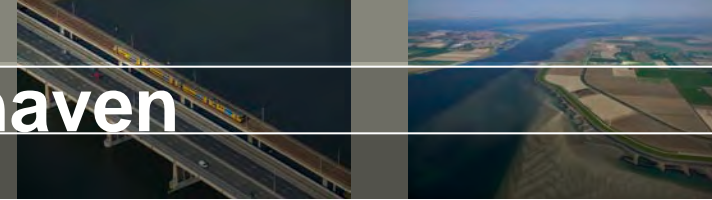


- ENVISAT and Terrasar-X
- Ascending (Friesland) and descending
- Assess current state of levees
- Aid in design phase of enforcements
- Prioritize in construction work



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Examples of FDM - Wilhelmshaven



- ENVISAT and Terrasar-X
- Ascending and descending
- Identify weak and soft layers in subsurface
- Reduce building risk

