



Understanding the scale of flood risk

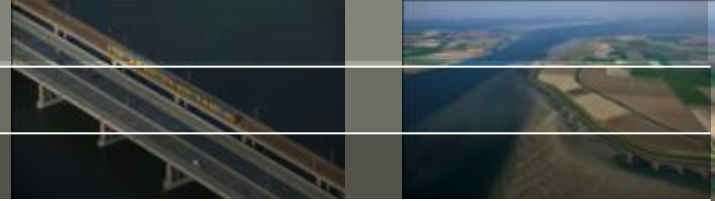
Size matters!

Understanding Risk 2012 – Flood risks across spatial scales

Hessel Winsemius, Deltares

Jaap Kwadijk, Deltares

In this presentation

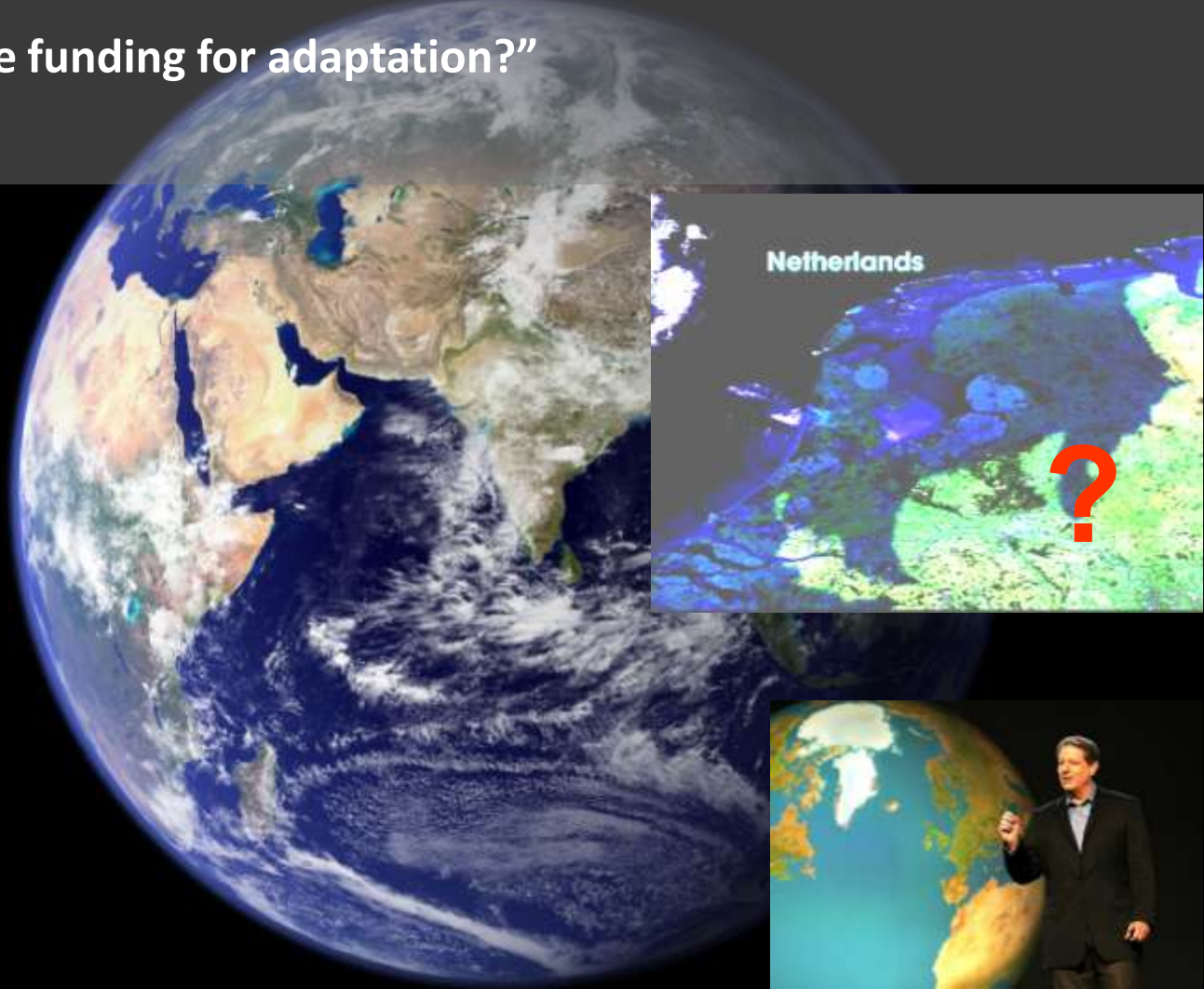


- Which information useful at which spatial scale?
- Do we have something to establish risk estimates at these scales
- Does size matter in our calculations?

Information level 1: Global Scale

“Which country is more exposed? (Overview safe investment areas)”

“How to distribute funding for adaptation?”



Source:



Information level 2: region / country

Moving to the system level

Insurance: “How high should my premium be?”

Re-insurance: “How much cover should I buy this year?”

Multi-nationals: “Which demand-supply chains are vulnerable?”

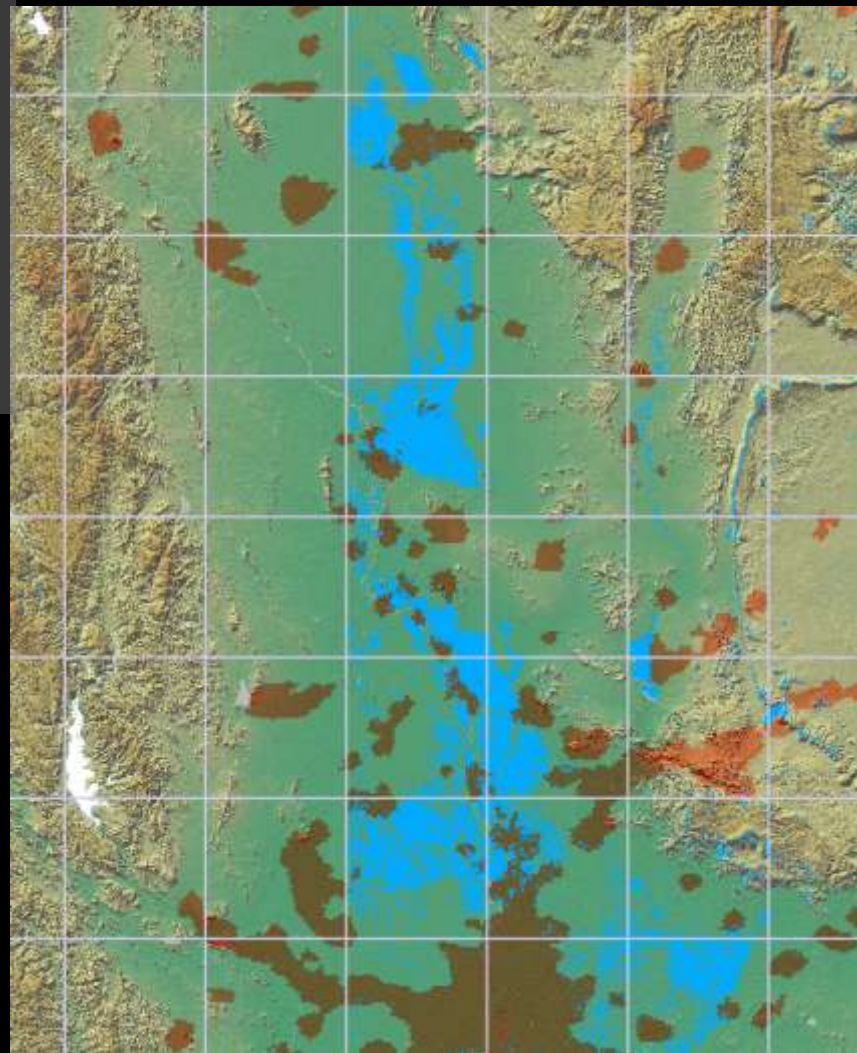
Government: “Where and how much money should be invested in flood protection along the river?”



Flooded



Urban



Thailand 2011



Information needs 3: local

Moving to the asset-level

Disaster-management: “which evacuation routes?
Where temporary levees?”

Investors: “Where and how much money should
be invested in flood protection of specific insured
objects?”

Companies: “Should I protect this asset? Or
should I buy insurance?”



Large scale: use global data and models

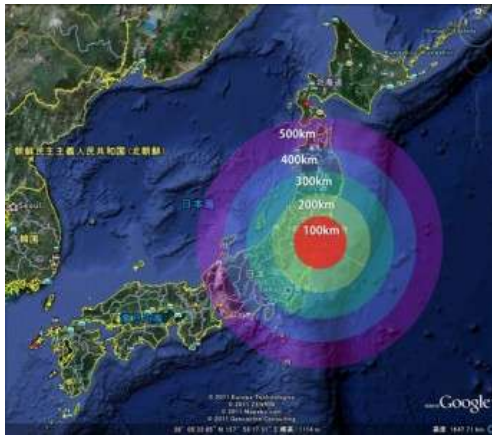
- Infrastructure to apply global hydrological models
- To progress to risk: use globally available information e.g.
 - Freely available elevation
 - Open Street Maps (**session on OSM: Thursday 14.00, Training C**)
- More on this in presentations of mr. Jongman and mr. Hall
- **No information on local system behaviour (dikes, control, reservoirs)**



Regional scale: Domino effects

Flood protection

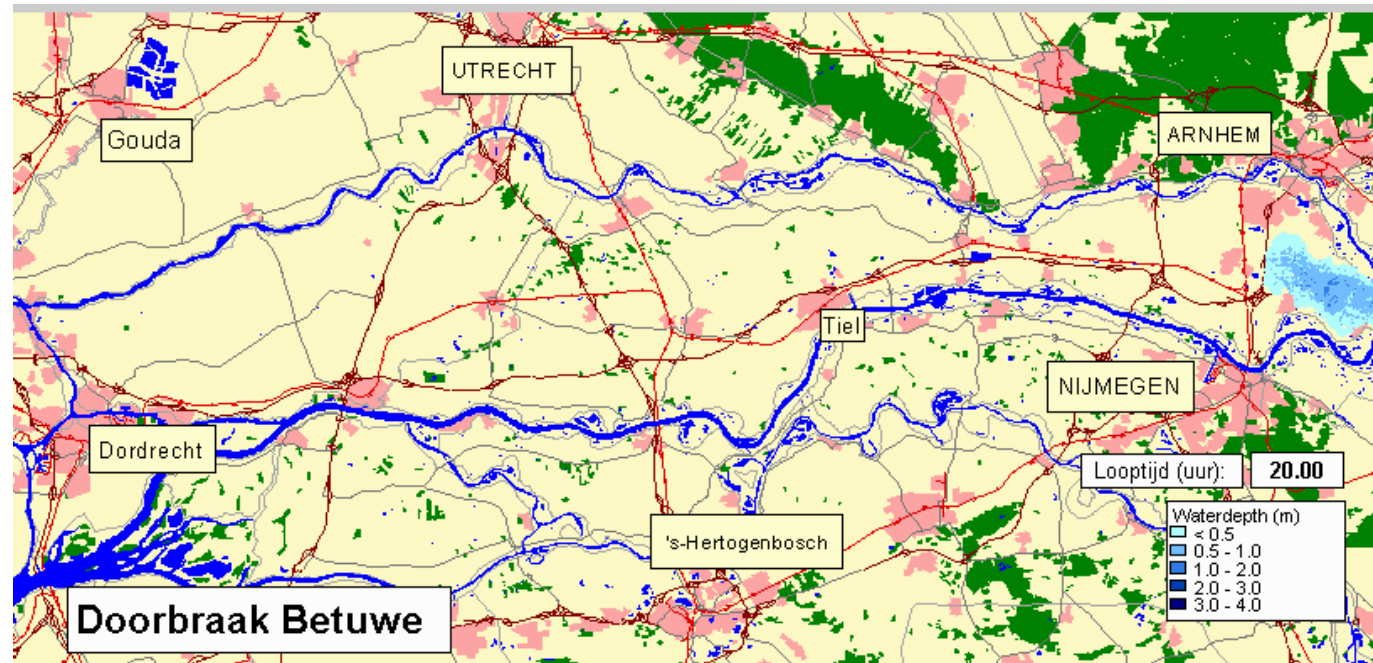
- **What are in my region of interest the most stressful events?**
 - **having high flows + high storm surge**
 - **probability?**



Regional scale: Domino effects

Flood protection

- What are in my region of interest the interesting events?
 - Domino effect: if one dike breaches, then perhaps the next one as well



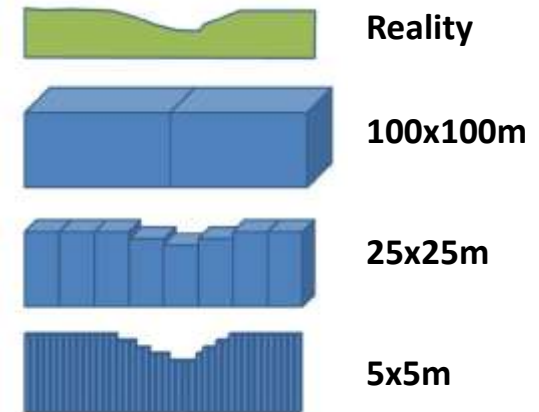
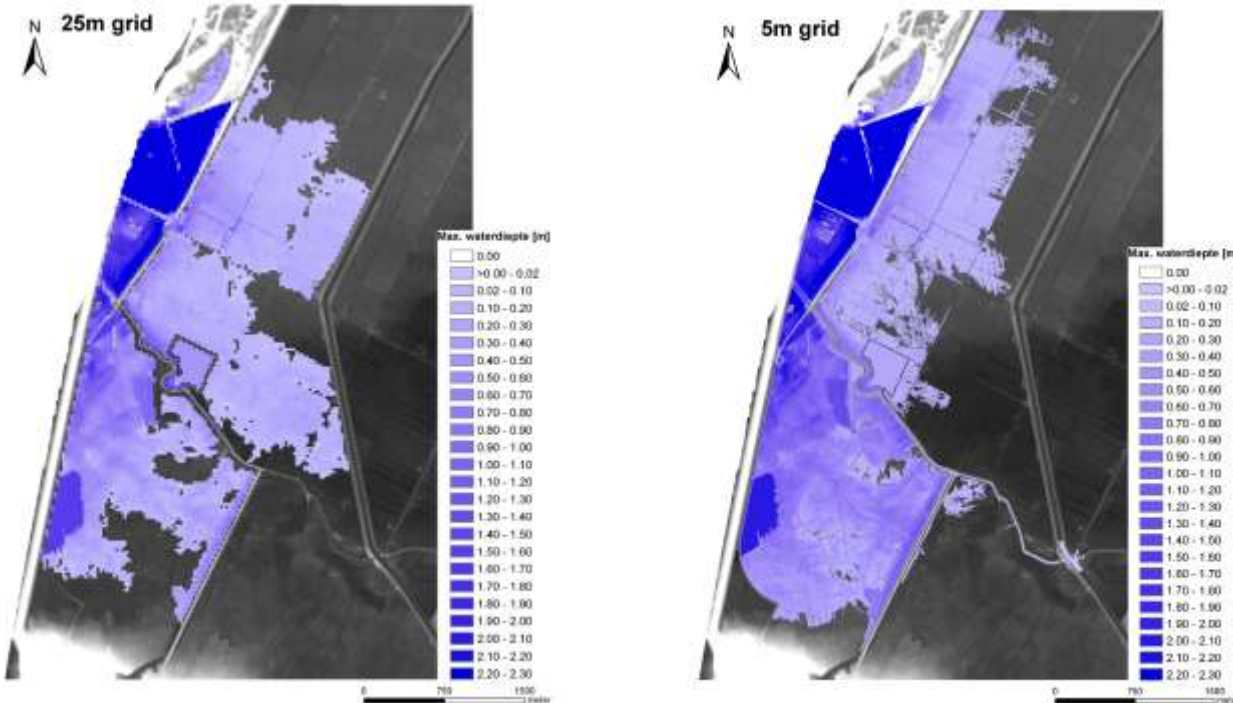
Local scale: does size matter?????

Doorbraak

“Is my asset under threat?”

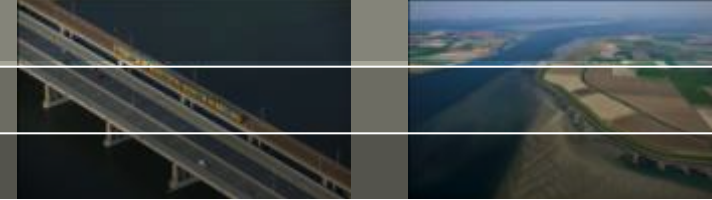
Local scale: size does matter!!!

Find the 10 differences



Flooding along Dutch coast risk. End-user: Disaster management, (Re-)insurance

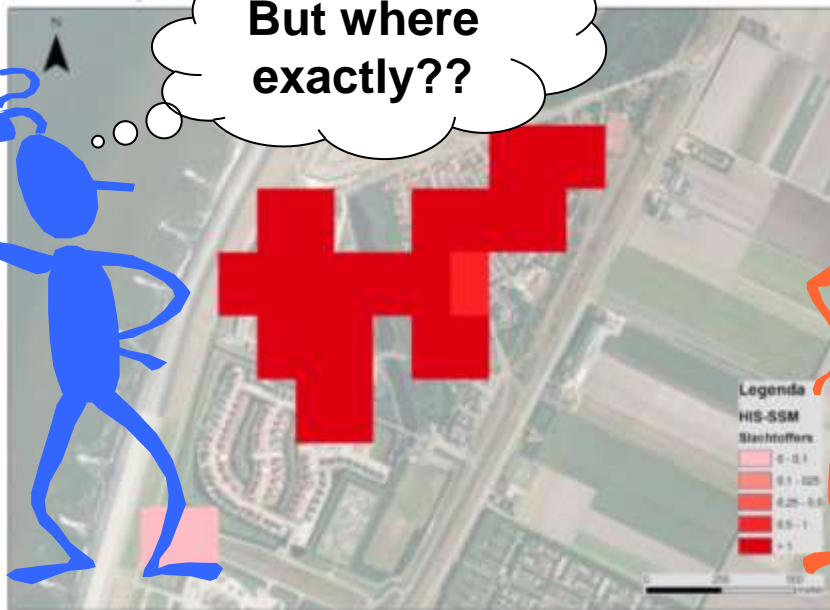
Local scale: size matters



Traditional (100m)

- Difficult to attribute to specific locations/assets/inhabitants
- So where to invest in better protection / housing?

But where exactly??



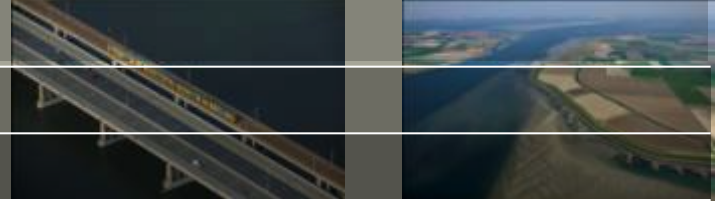
3D_i (5 meter)

- Much more accurate risk estimates in space
- More accurate designs of levees

This house is under risk!!



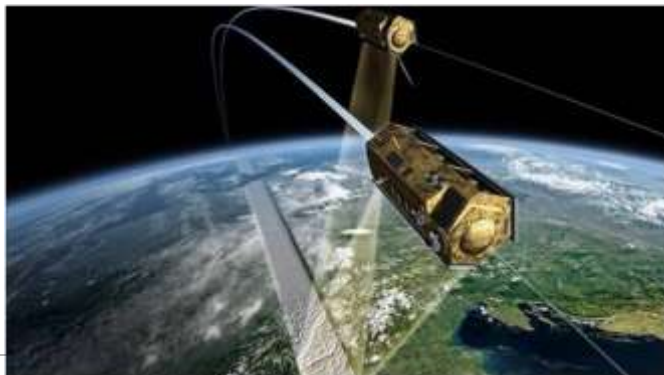
Conclusions



We try to provide flood risk information at all spatial scales

- Large-scale
 - based on **free, global data**
 - applicable everywhere
- Regional scale:
 - Take into account **system behaviour**
- Local scale:
 - **Size matters!**
 - Software available to utilize very high resolution data

Wrap-up



Thank you!

