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?”
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”

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?
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??????

“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?

3D\(_i\) (5 meter)

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

This house is under risk!!

But where exactly??
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

So can we do this anywhere?

YES, WE CAN.
Thank you!