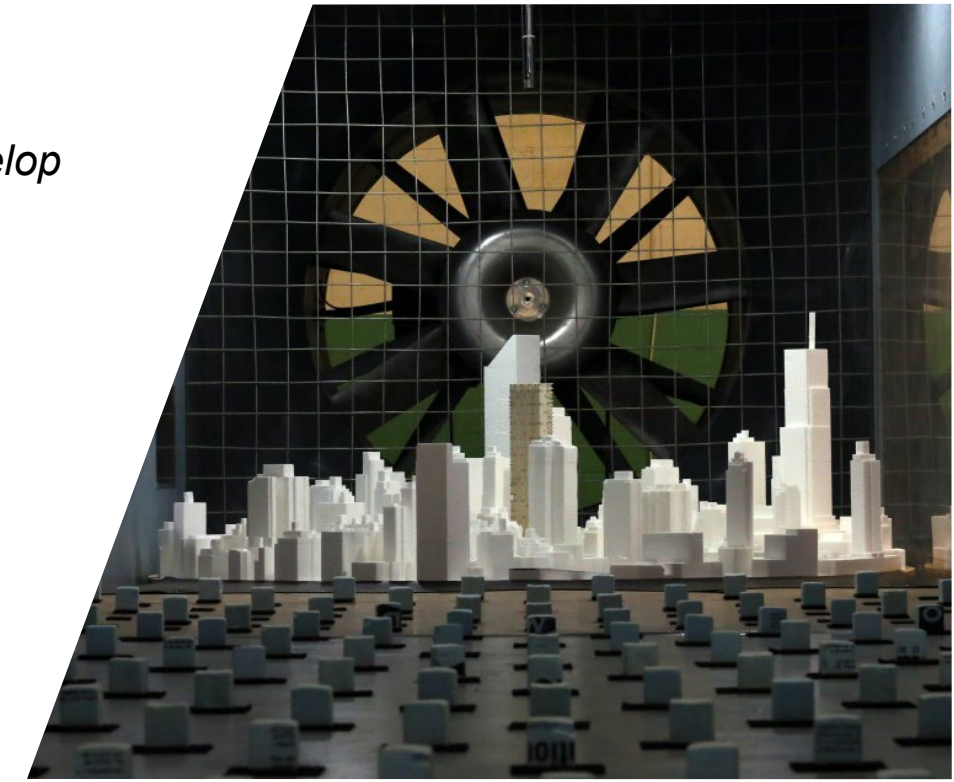
UNHaRMED

Accounting for society's influence on future disaster risk and how to develop proactive risk management strategies through integrated dynamic risk assessments

RAF 2019

Holger R Maier/ The University of Adelaide

Graeme Riddell, Hedwig van Delden, Roel Vanhout, James Daniell, Sofanit Araya, Aaron Zecchin, Graeme Dandy, Jeff Newman



THE UNIVERSITY of ADELAIDE

RIKS

risklayer
analysing and managing catastrophe risk

bushfire&natural HAZARDSCRC

Australian Government
Department of Industry, Innovation and Science

Business Cooperative Research Centres Programme

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Two driving principles

Prevention is better than cure

"Better to build a fence at the top of a cliff, than park an ambulance at the bottom"

Helen Clark 2015 Sendai

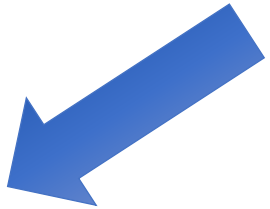
Tomorrow’s risk is built today

Tomorrow’s risk is being built today. We must therefore move away from risk assessments that show risk at a single point in the present and move instead towards risk assessments that can guide decision makers towards a resilient future.

Global Facility for Disaster Reduction and Recovery (2016)

Future
RISK

Things we generally **can** control



Future RISK

- Land use planning
- Land management
- Building codes
- Structural measures
- Community education

Things we generally **cannot** control

- Climate change
- Population growth
- Global economy
- Technological disruption

Future RISK

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HOW DO WE **QUANTIFY** IMPACTS?

HOW DO WE OBTAIN **EVIDENCE / DATA** TO SUPPORT DECISION-MAKING?

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Unified Natural Hazard Risk Mitigation Exploratory Decision support system

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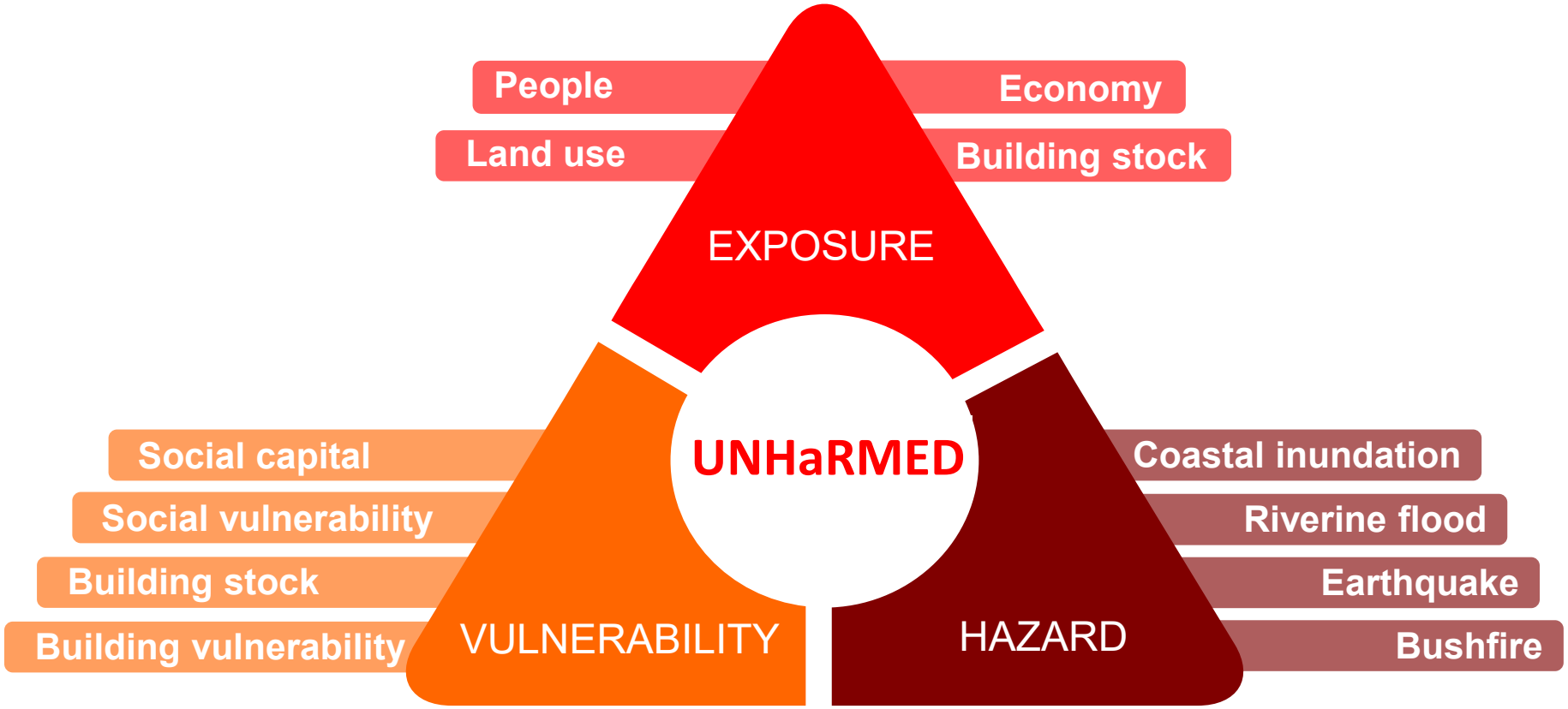
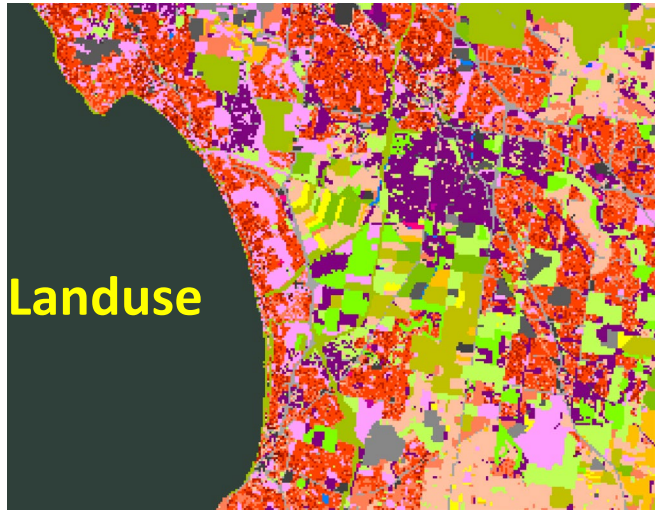
HOW DO WE **QUANTIFY** IMPACTS?

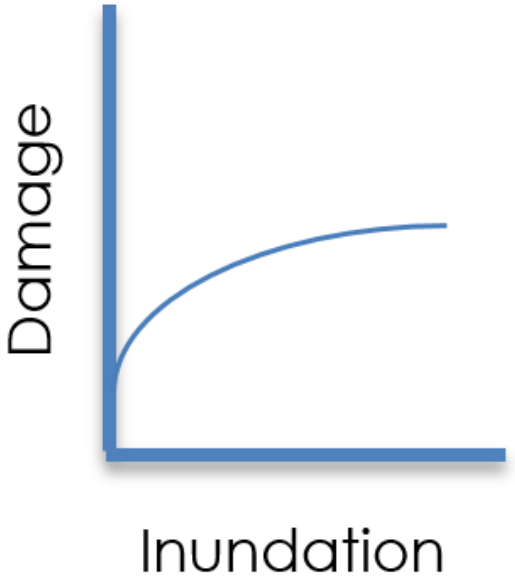
HOW DO WE OBTAIN **EVIDENCE / DATA** TO SUPPORT DECISION-MAKING?

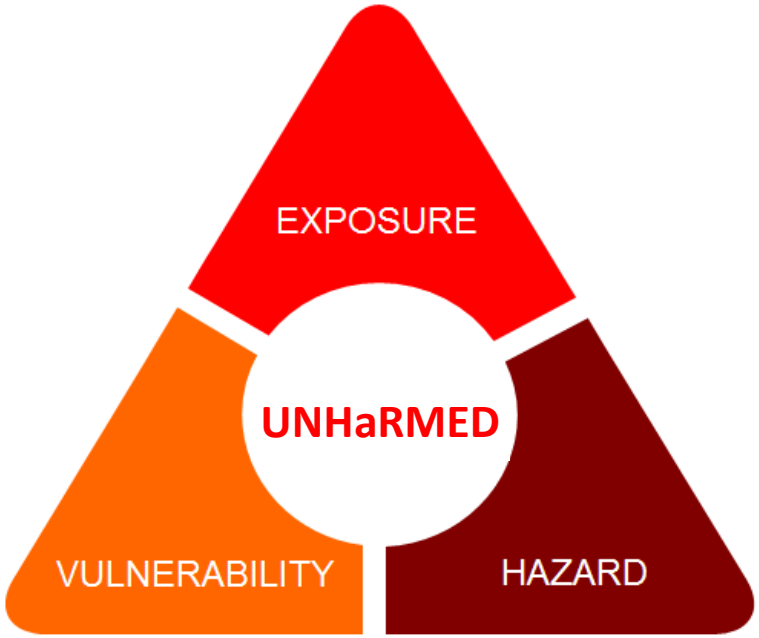
We can assess how risk will change and what risk reduction portfolios are most effective in different plausible future worlds using a “policy wind tunnel”


People
Economy
Land use
Building stock
EXPOSURE
UNHaRMED
Social capital
Social vulnerability
Building stock
Building vulnerability
VULNERABILITY
HAZARD
Coastal inundation
Riverine flood
Earthquake
Bushfire

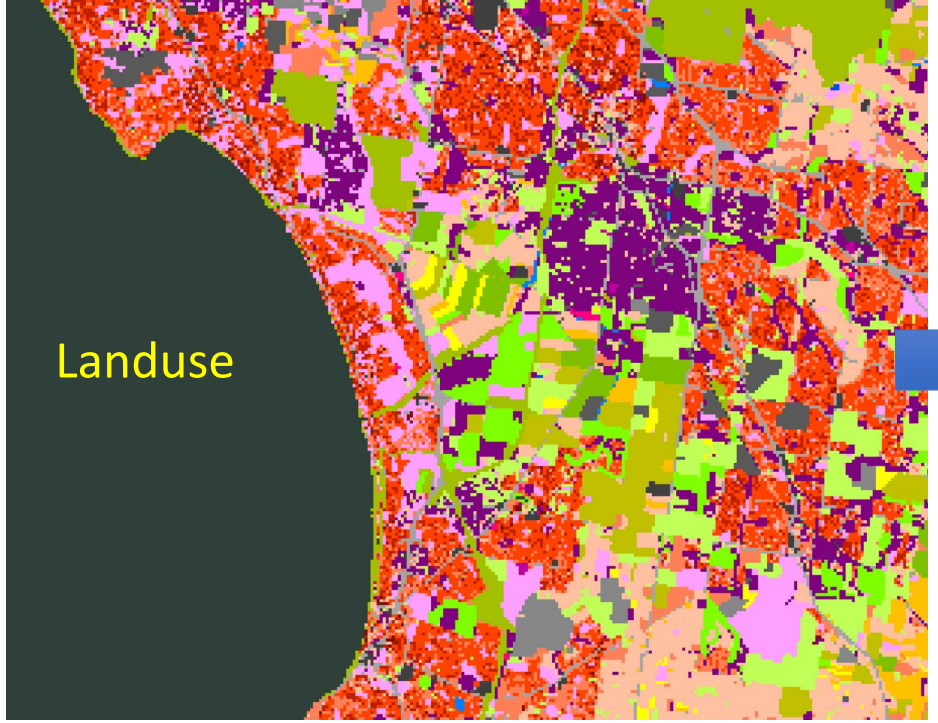

Landuse

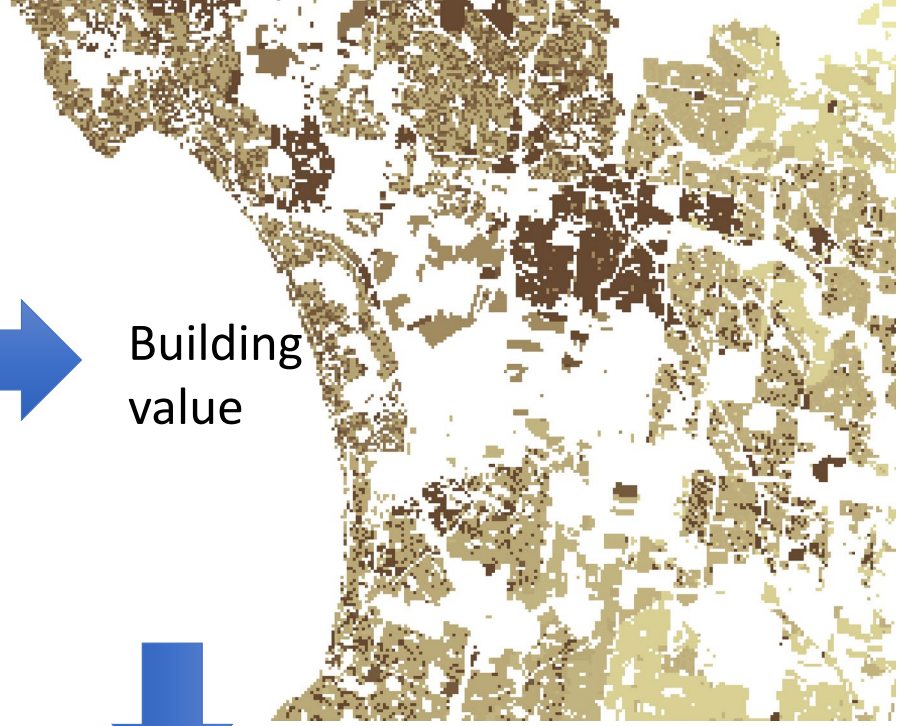
Building
value


Damage
Inundation

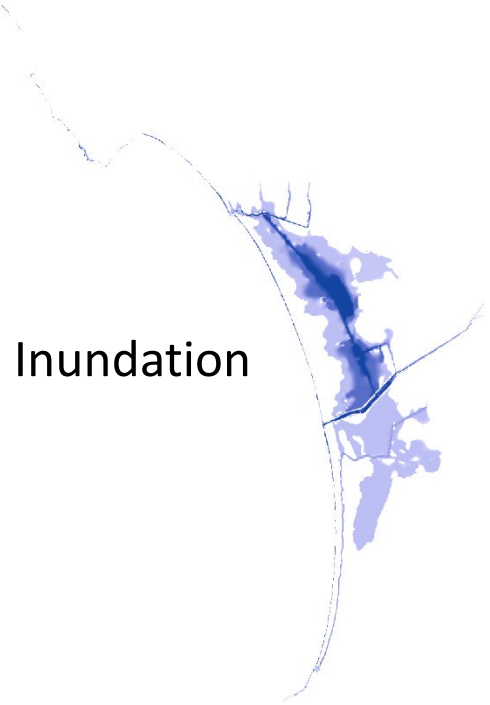

EXPOSURE
UNHaRMED
VULNERABILITY
HAZARD

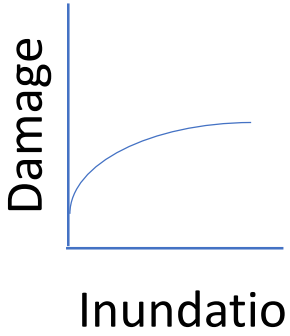
Inundation

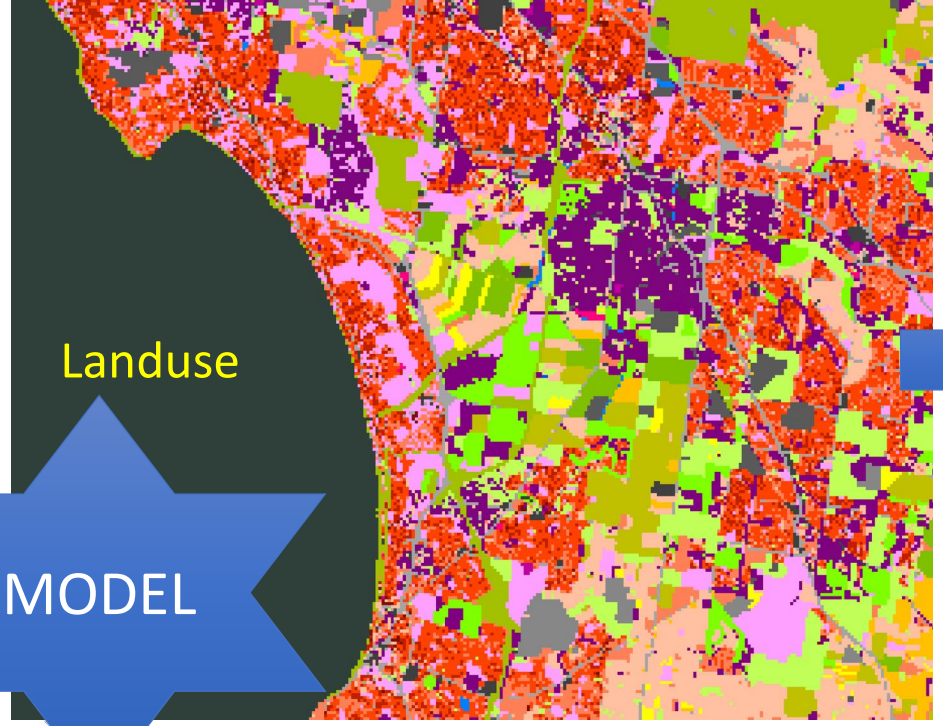




Building vulnerability curves

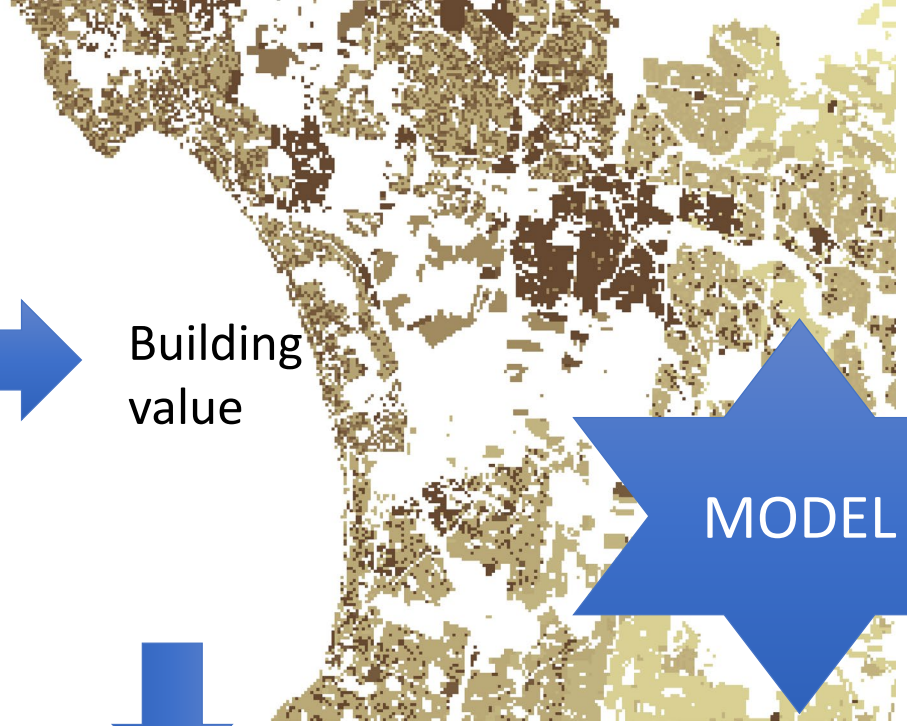






MODEL

Building value



MODEL

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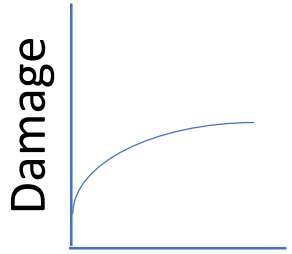
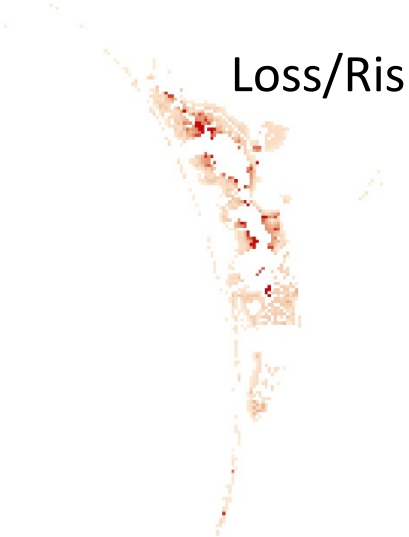


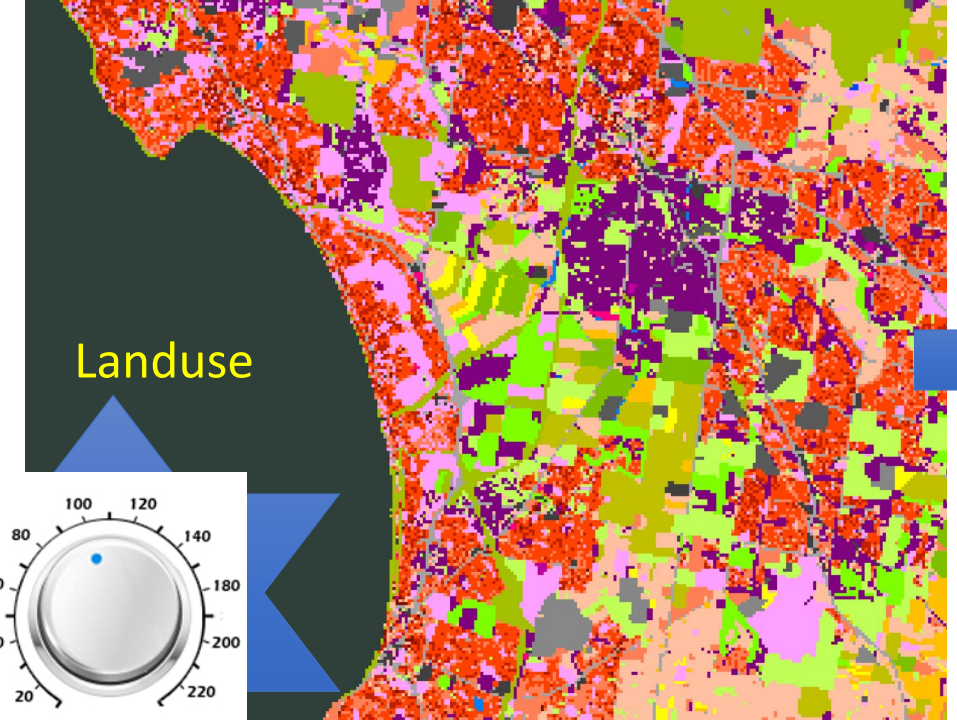
Inundation

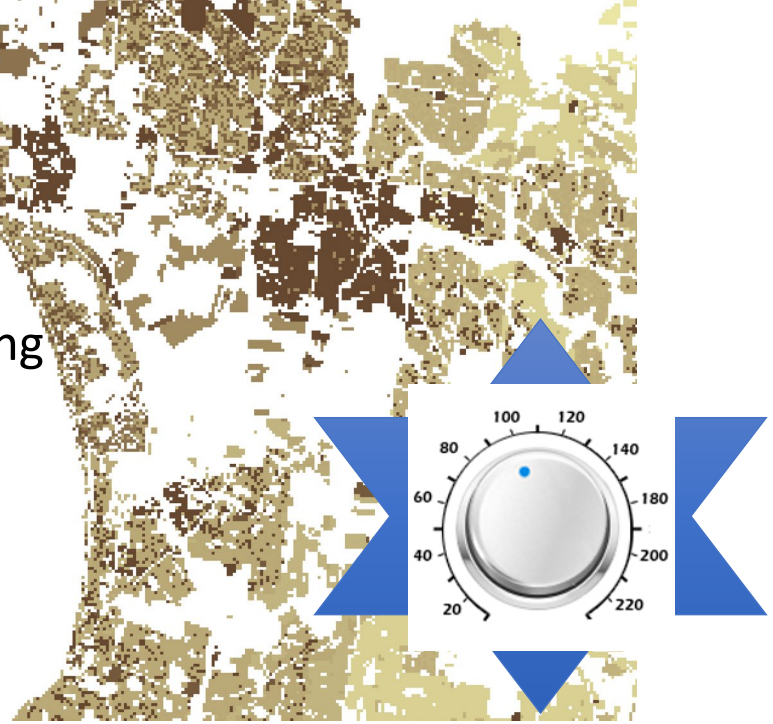
MODEL

MODEL

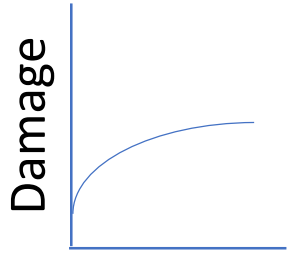
Loss/Risk

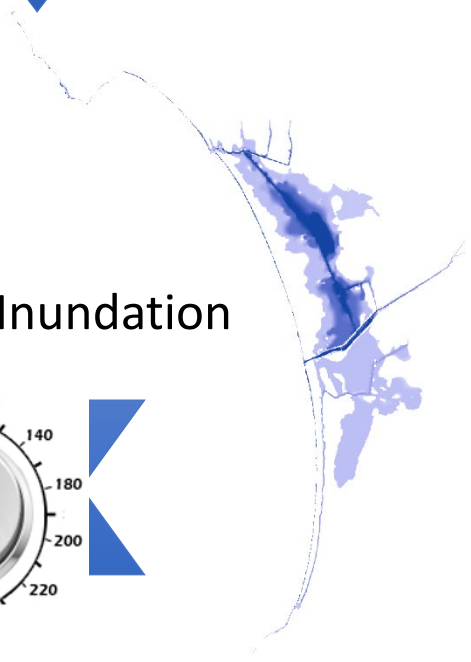


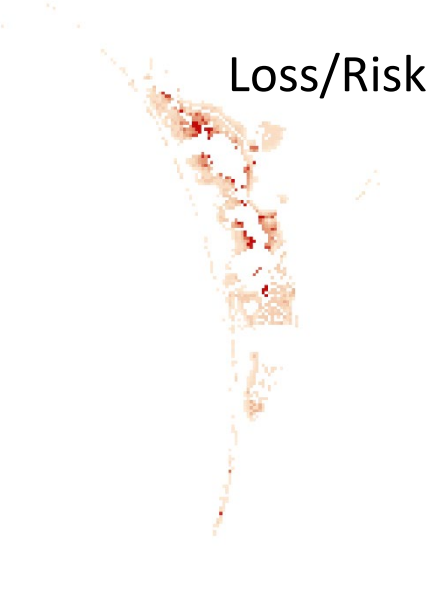


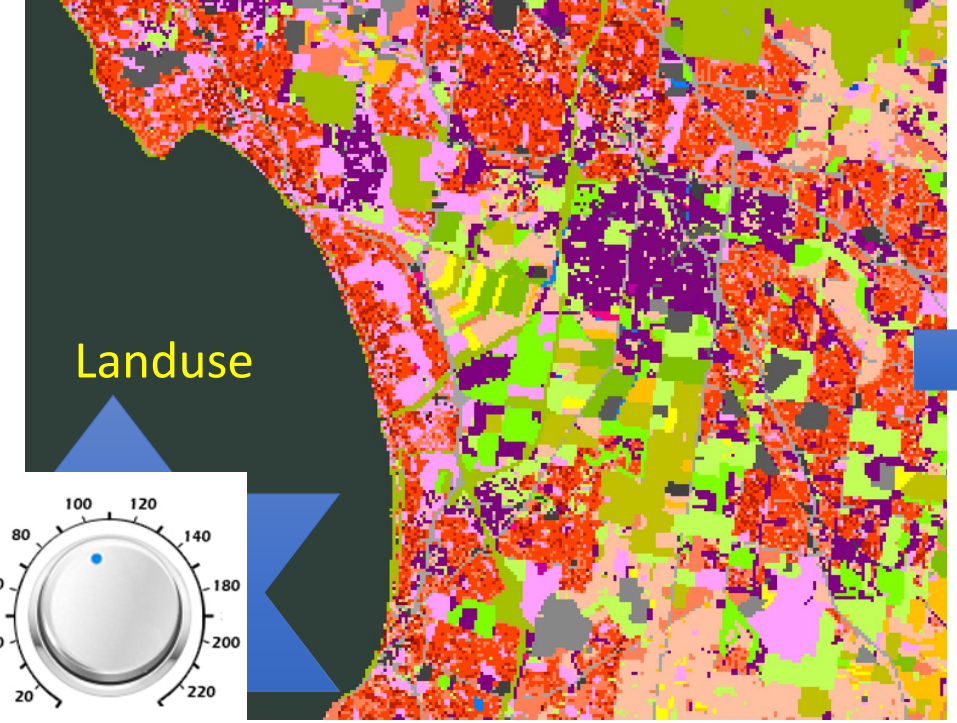


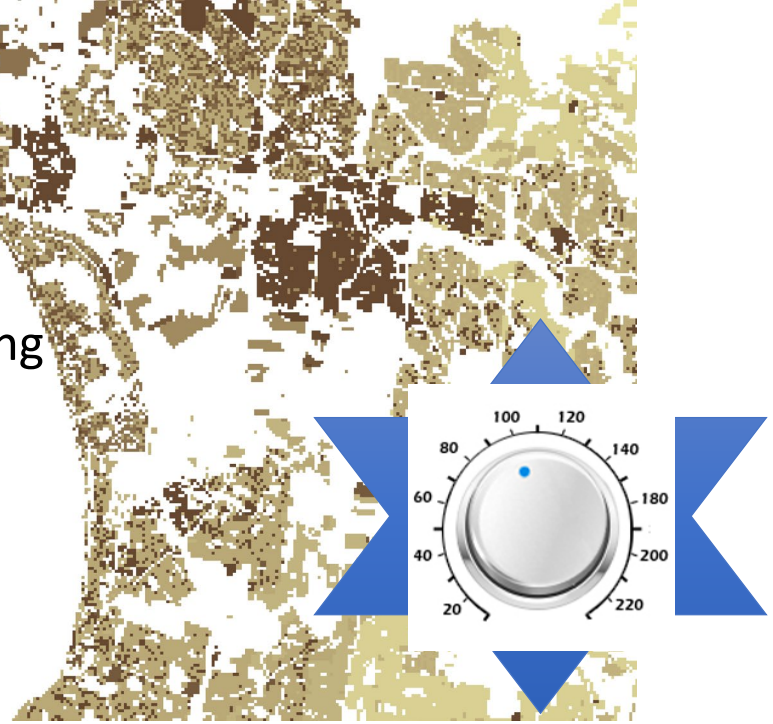
Building vulnerability curves











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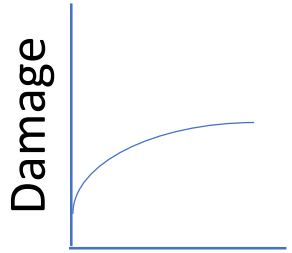
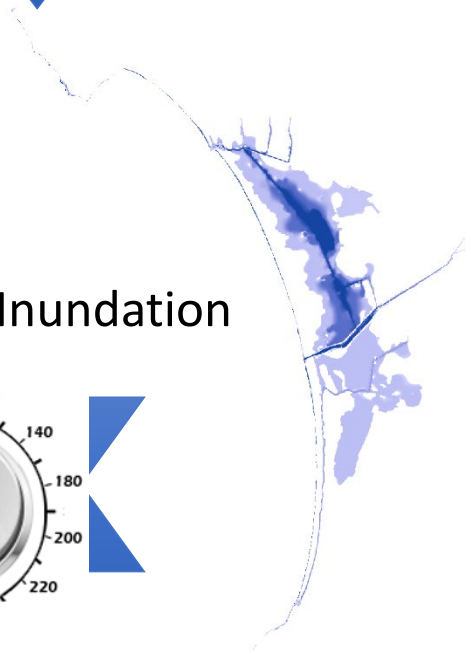
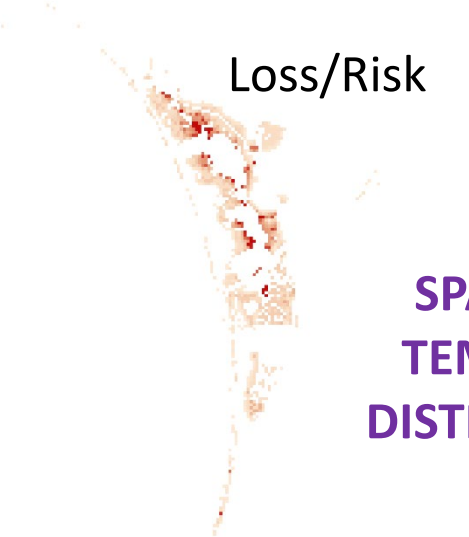
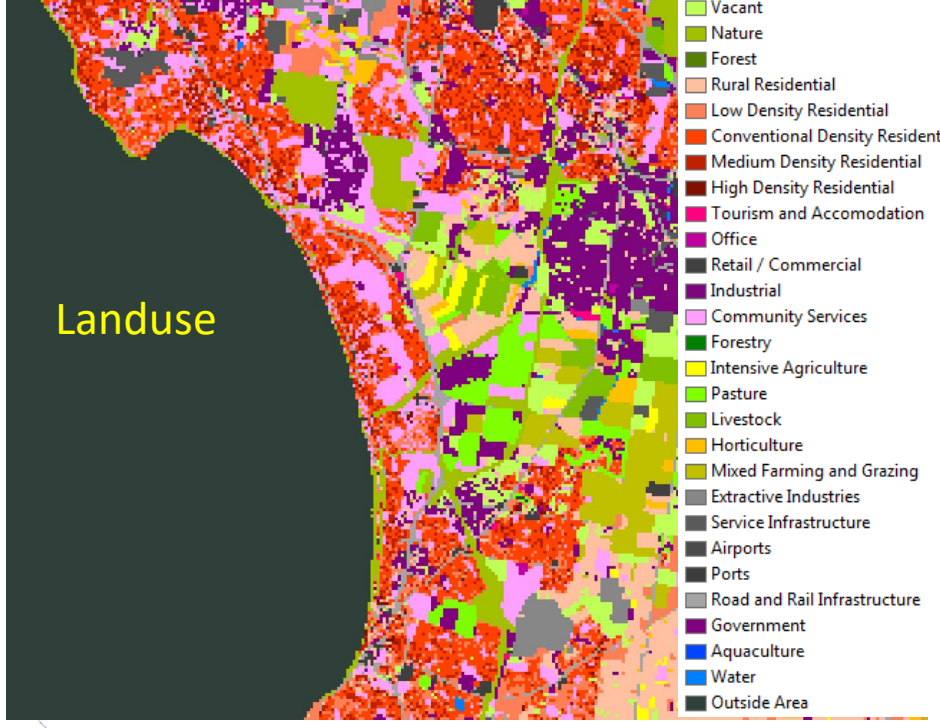




Inunda

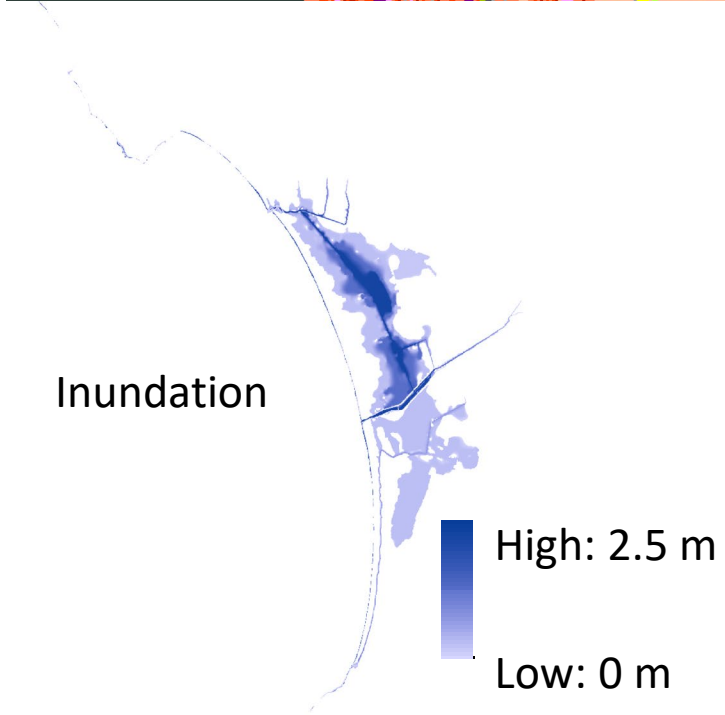


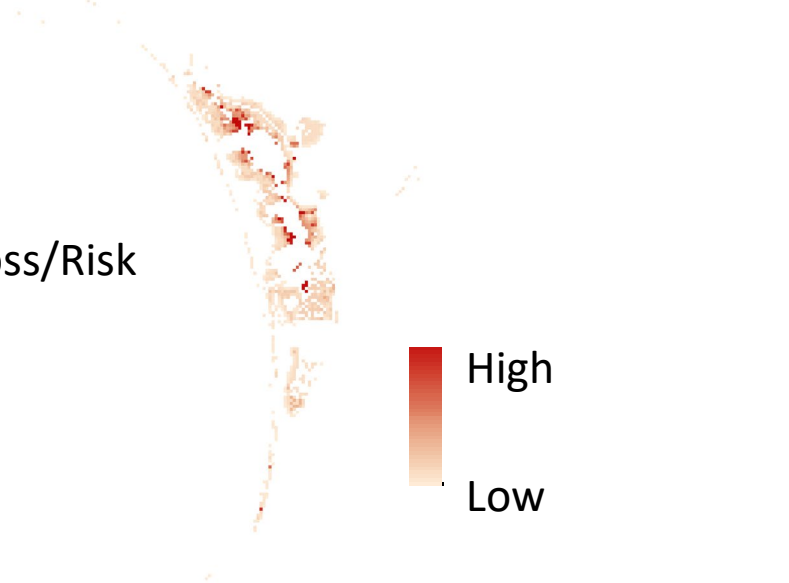
SPATIAL & TEMPORAL DISTRIBUTION


Landuse
Vacant
Nature
Forest
Rural Residential
Low Density Residential
Conventional Density Residential
Medium Density Residential
High Density Residential
Tourism and Accomodation
Office
Retail / Commercial
Industrial
Community Services
Forestry
Intensive Agriculture
Pasture
Livestock
Horticulture
Mixed Farming and Grazing
Extractive Industries
Service Infrastructure
Airports
Ports
Road and Rail Infrastructure
Government
Aquaculture
Water
Outside Area

Building value
High
Low

2015

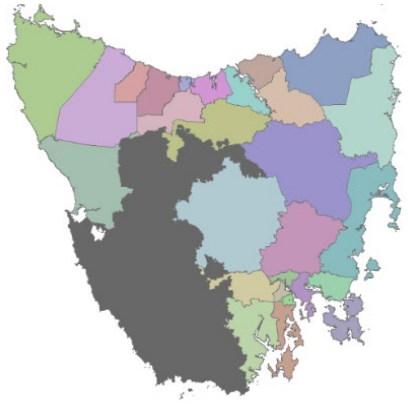

Inundation
High: 2.5 m
Low: 0 m

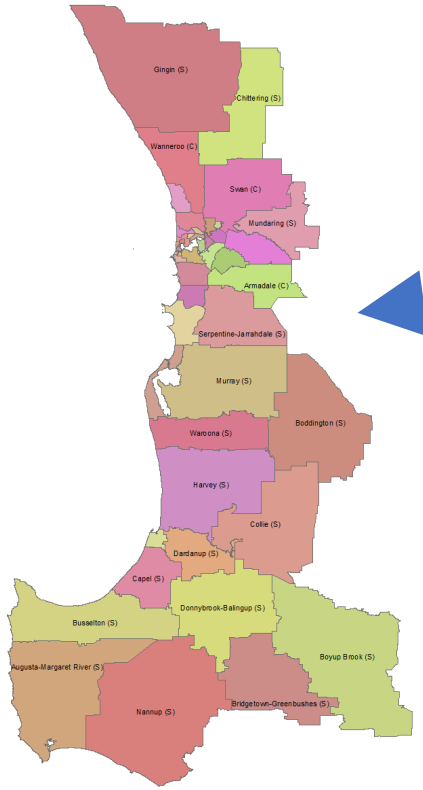

Loss/Risk
High
Low

Melbourne

Adelaide

Tasmania



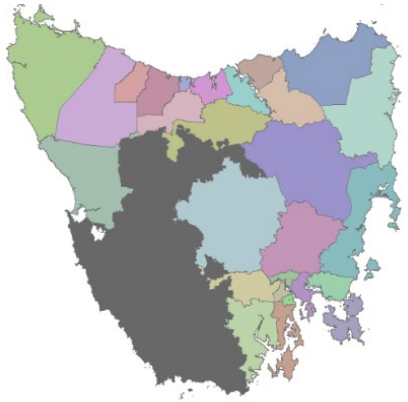


Perth

Melbourne

Adelaide

Tasmania



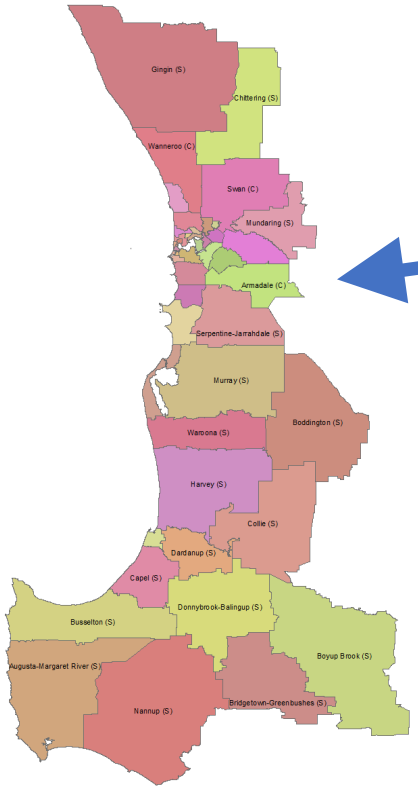
Adelaide

End user training:

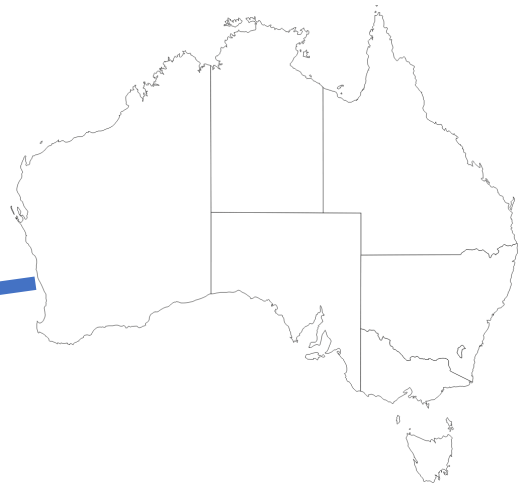
- **2017**

Current Status:

- **DEW Fire**
- **Gawler River Floodplain Management Authority Study (NDRP)**
- **State Scenario Exercise (NDRP)**



Perth



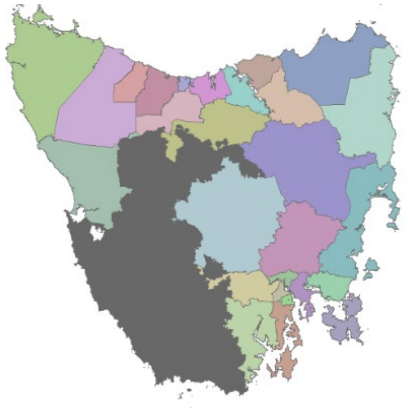
<u>End user training:</u>

- **2019 (Fast Track Funding)**

<u>Current Status:</u>

- **Operationalisation of UNHaRMED (Internal Working Group)**

Tasmania

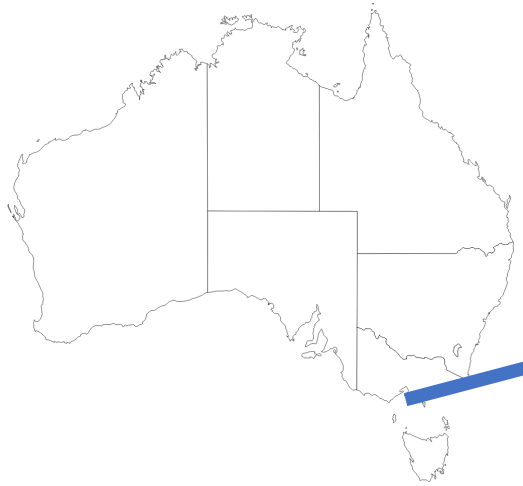


End user training:

- **2019**

Current Status:

- **Operationalisation of UNHaRMED (Prepared Communities Fund)**



Melbourne

End user training:

- **Upcoming (July 2019)**

Current Status:

- **Risk mapping for MFB (MFB)**

Queensland:

- Predictive Investment Modelling System (QFES)

Federal:

- National Resilience Taskforce (Home Affairs)
- Bureau of Meteorology – Heatwave Impact (Physical Environmental Analysis Network)

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A tool for pro-active disaster risk assessment and reduction planning

- Aims:
  - Improve thinking about risk into the future;
  - Better manage and minimise risk;
  - Position organisations to best achieve this and lobby others.

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UNHaRMED

A tool for pro-active disaster risk assessment and reduction planning

- Aims:
  - Improve thinking about risk into the future;
  - Better manage and minimise risk;
  - Position organisations to best achieve this and lobby others.

- Considers:
  - Spatial variability in risk
  - Long-term dynamics and uncertainties of hazard, exposure and vulnerabilities
  - A range of risk-reduction options and their effectiveness

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A tool for pro-active disaster risk assessment and reduction planning

Thank you

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