The OpenQuake-Engine: a software for global scale seismic risk assessment

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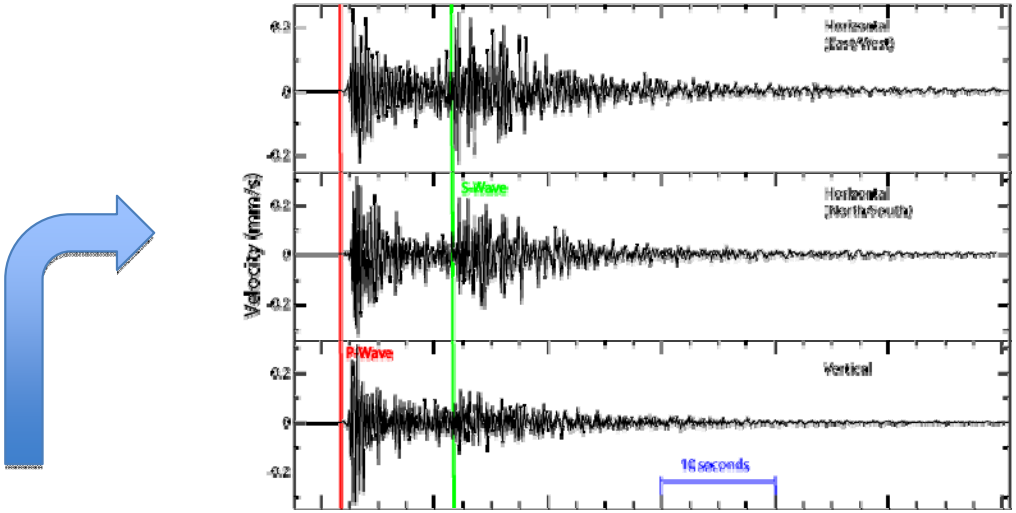
working together to assess risk

GEM

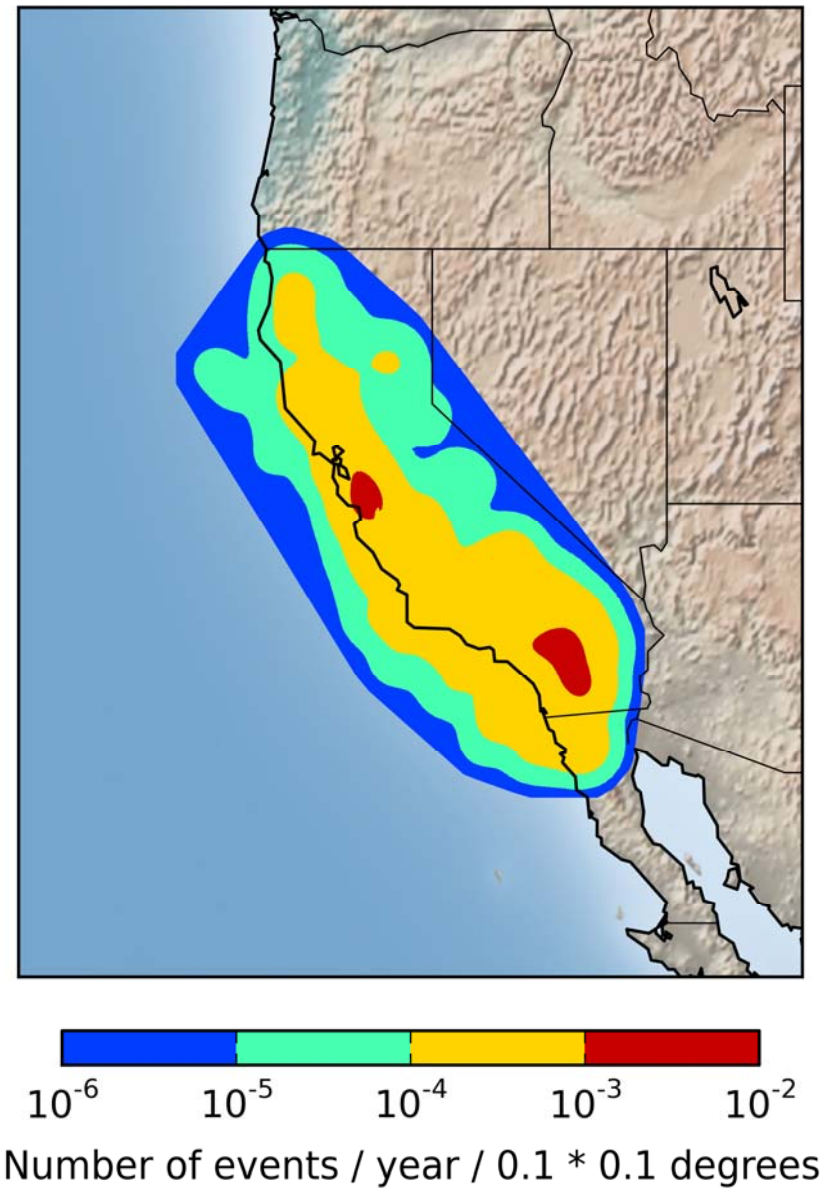
GLOBAL EARTHQUAKE MODEL

Calculating seismic risk



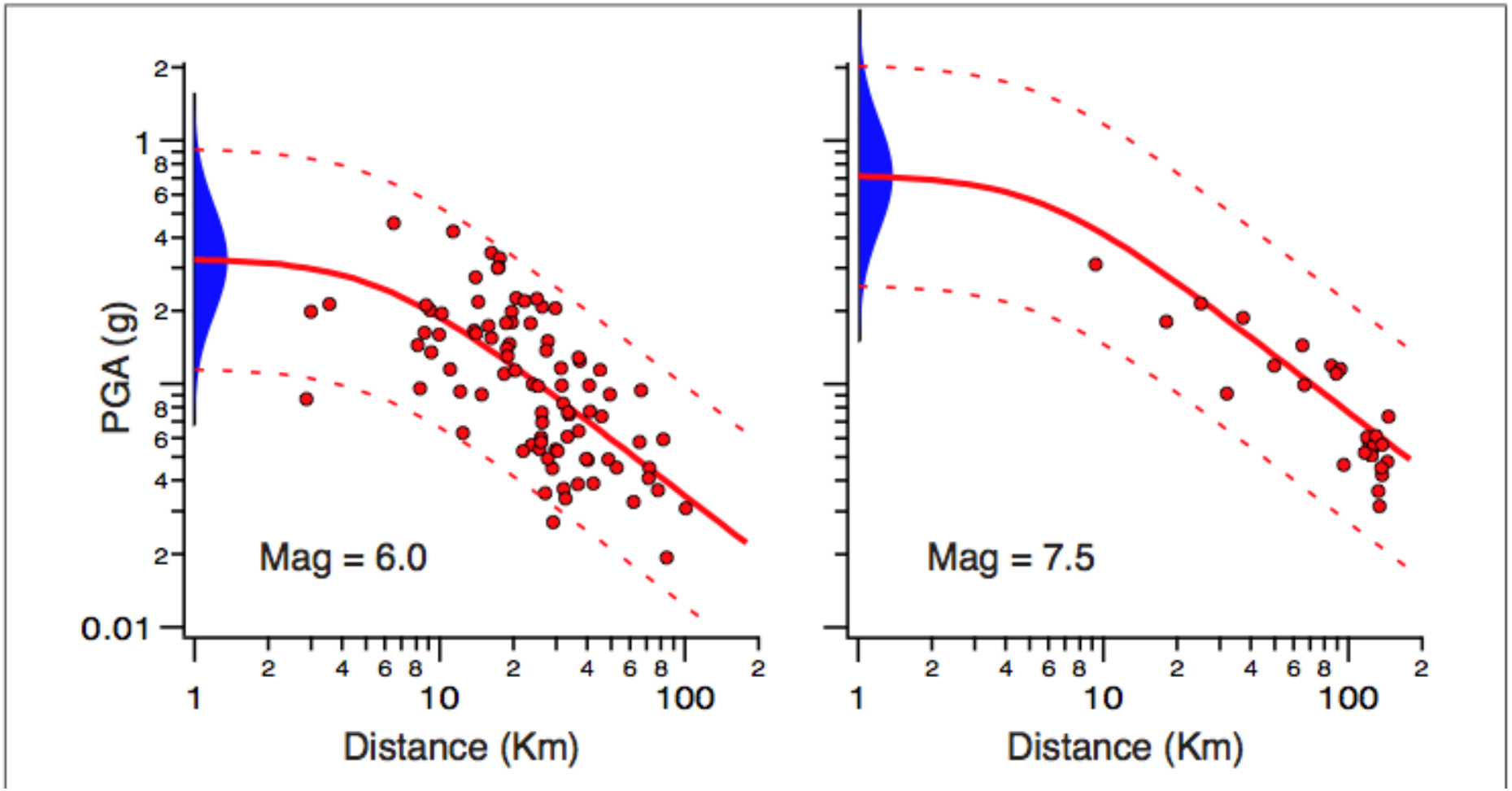
Input for a seismic risk calculation

- Seismic source model



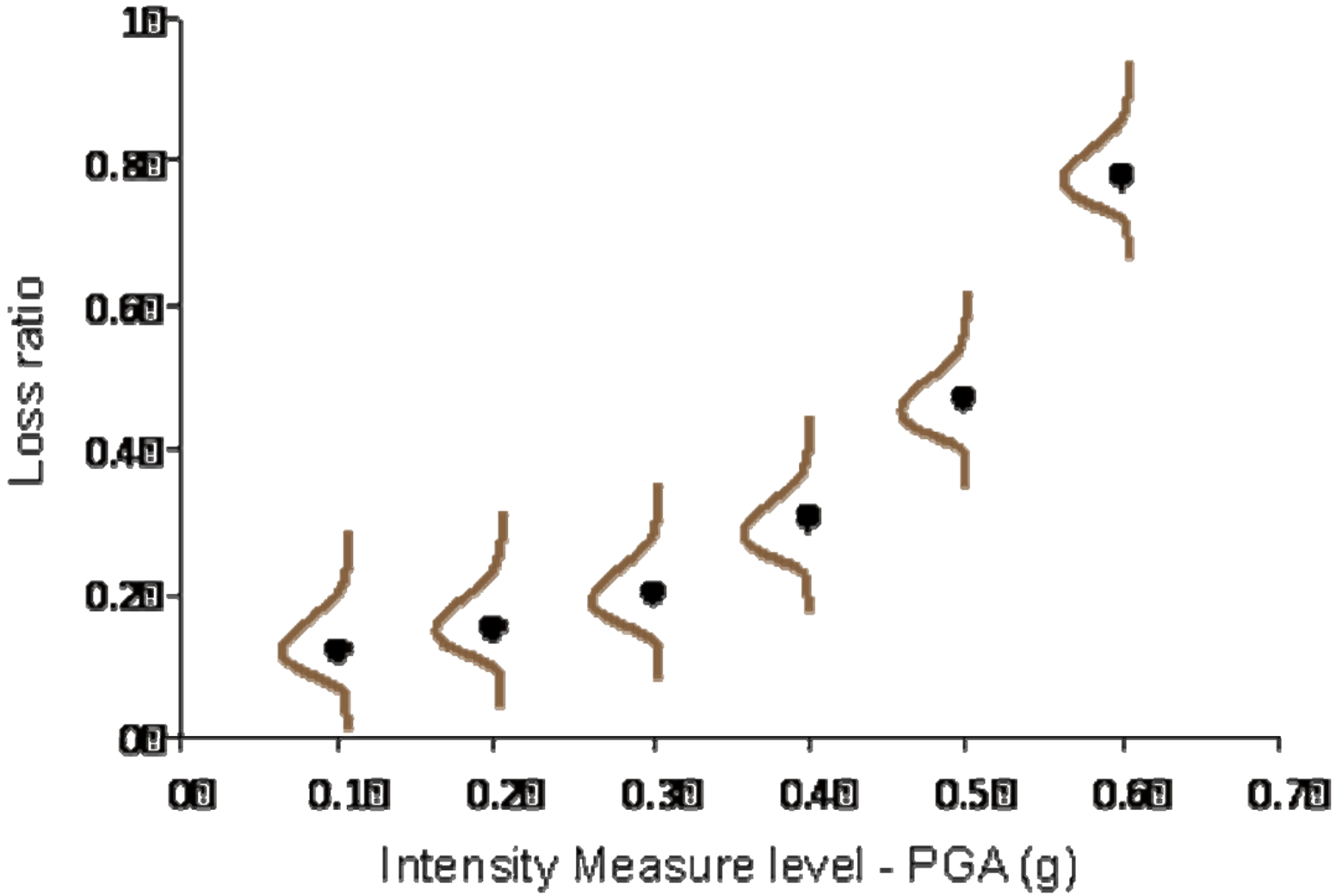
Input for a seismic risk calculation

- Ground motion model



Input for a seismic risk calculation

- Vulnerability model



Input for a seismic risk calculation

- Exposure model

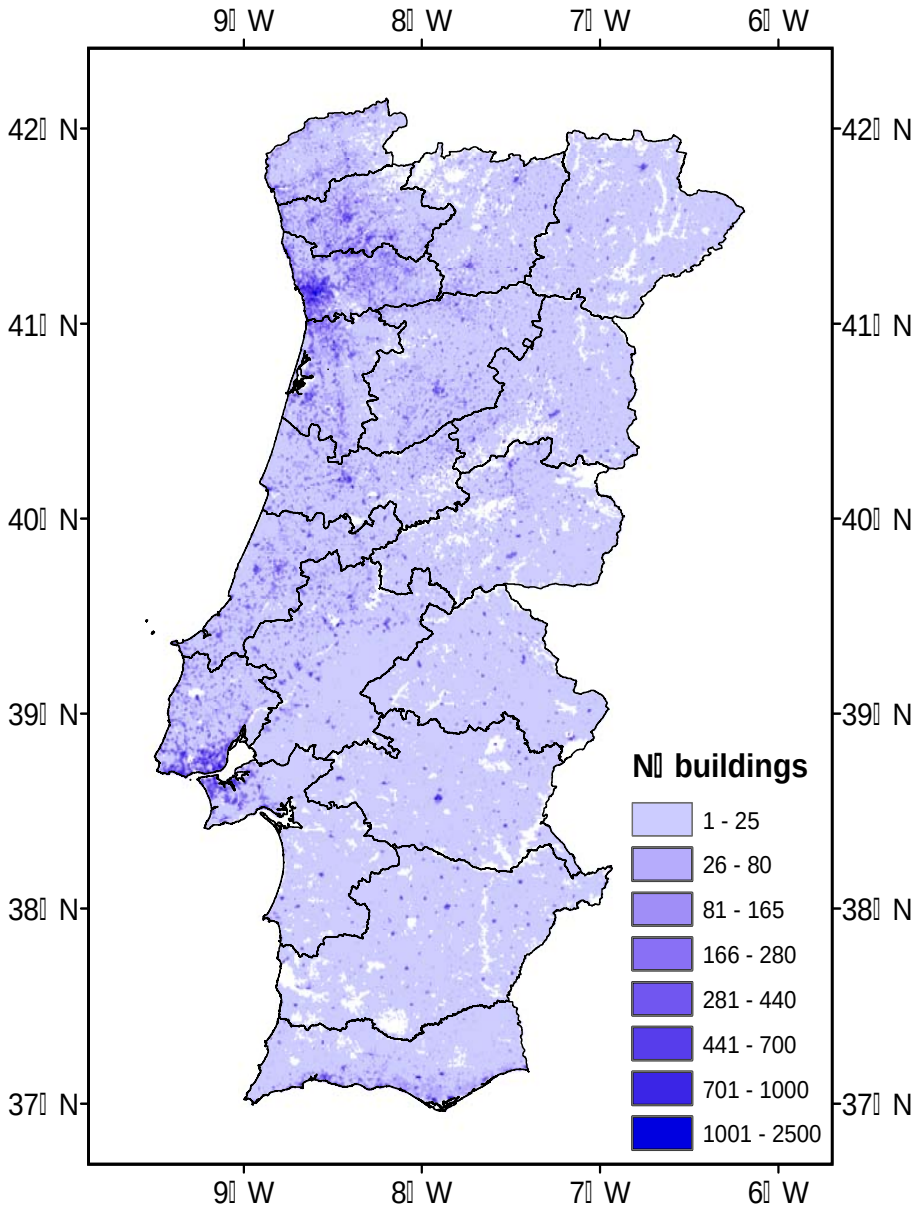
Location of assets

Taxonomy (Vulnerability class)

Economic value of assets

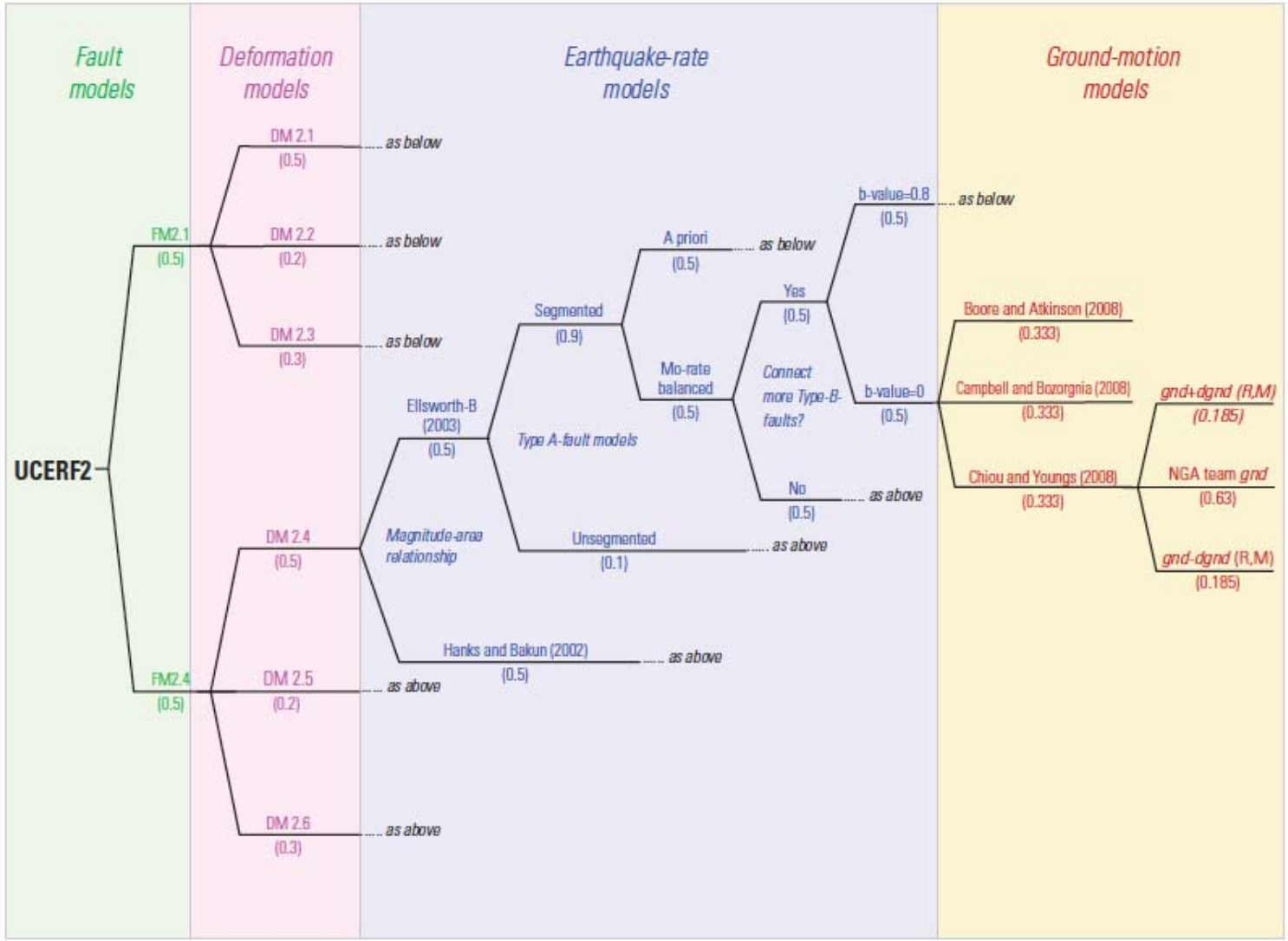
Area of assets

Number of assets



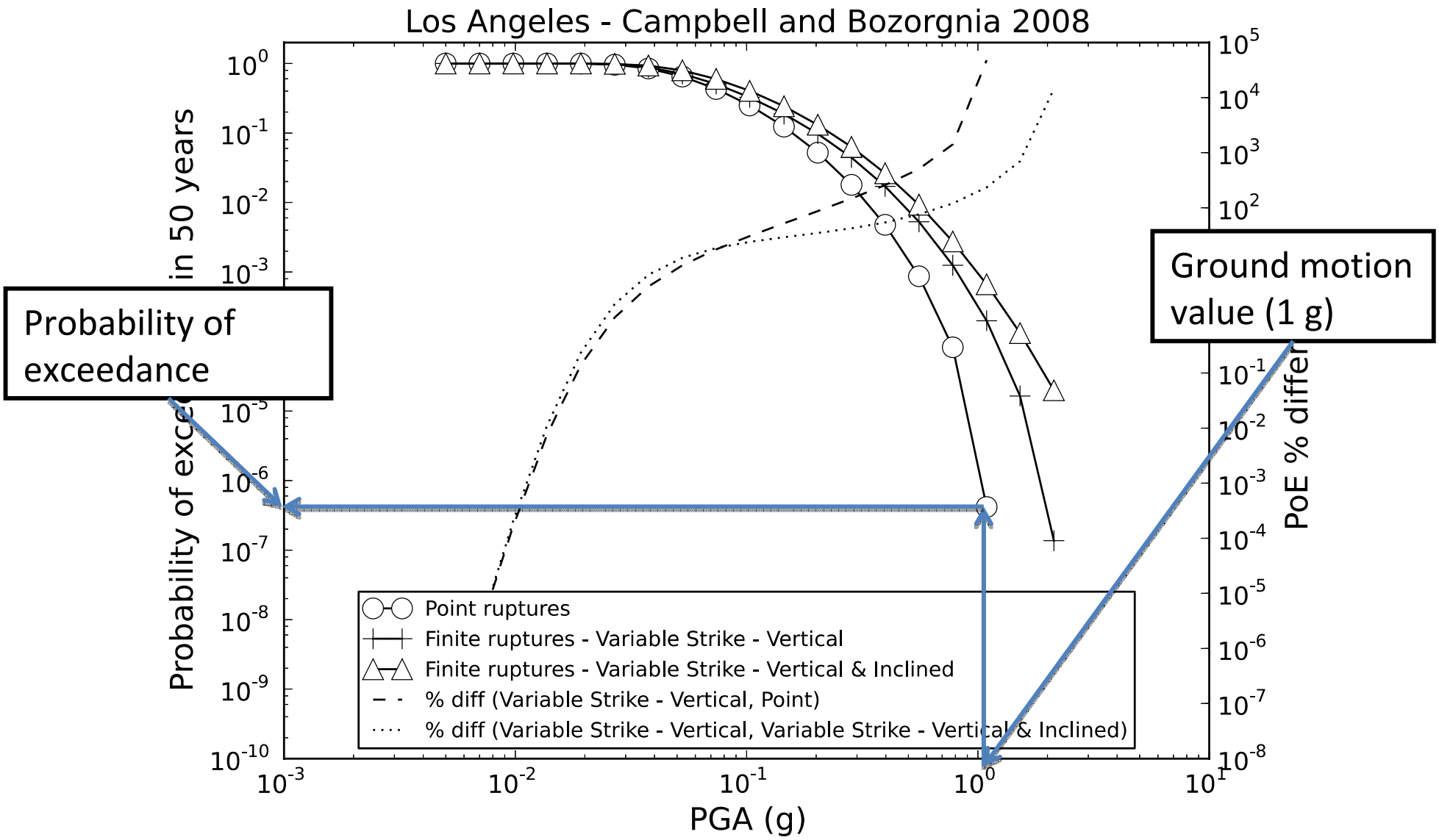
Input for a seismic risk calculation

- Epistemic uncertainties



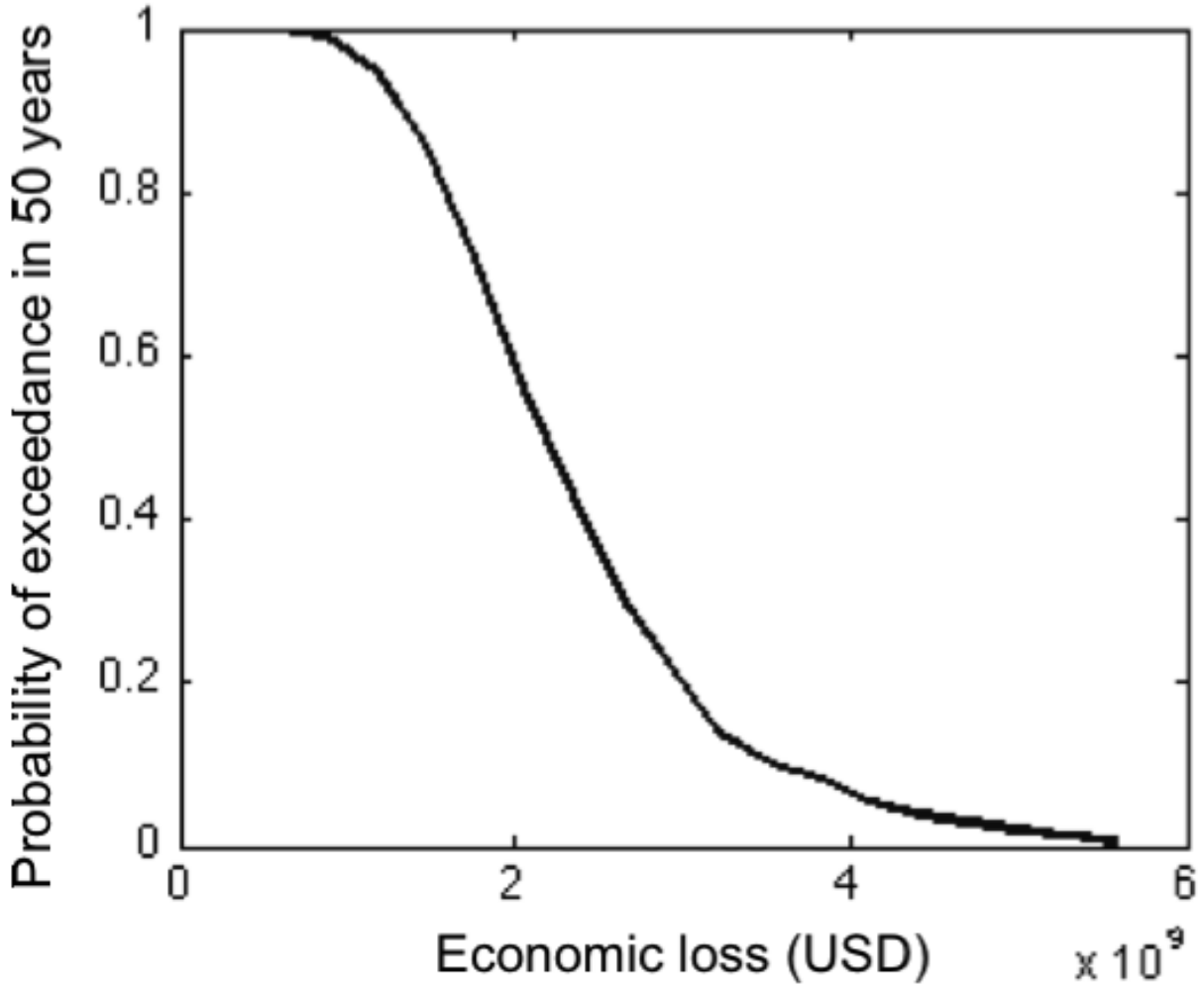
Hazard and risk results

- Hazard curves



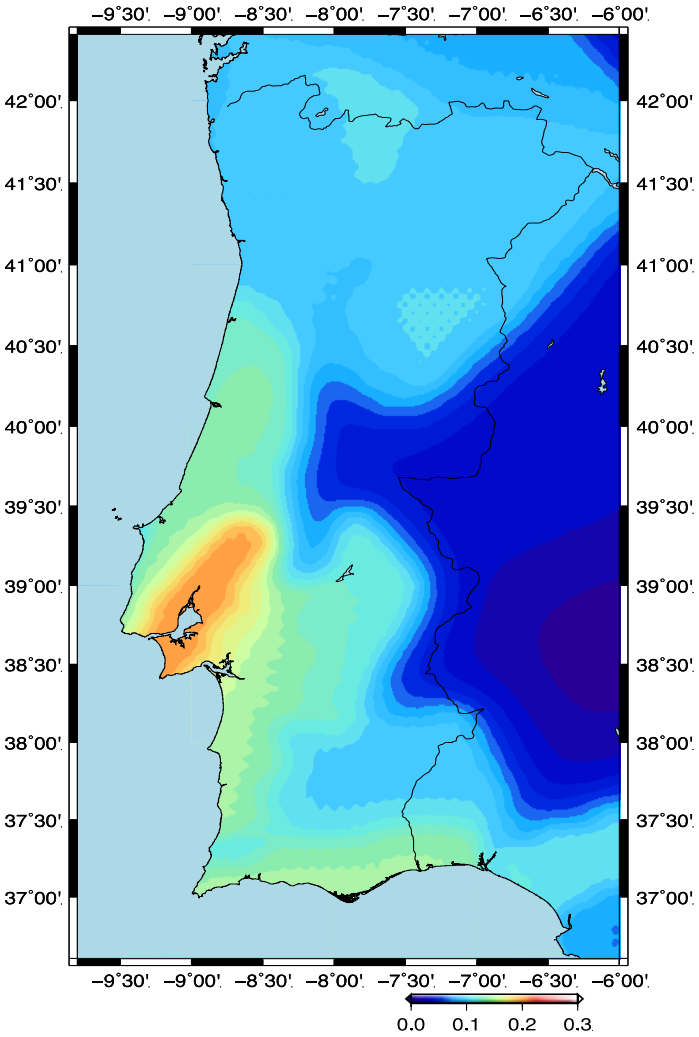
Hazard and risk results

- Loss curves

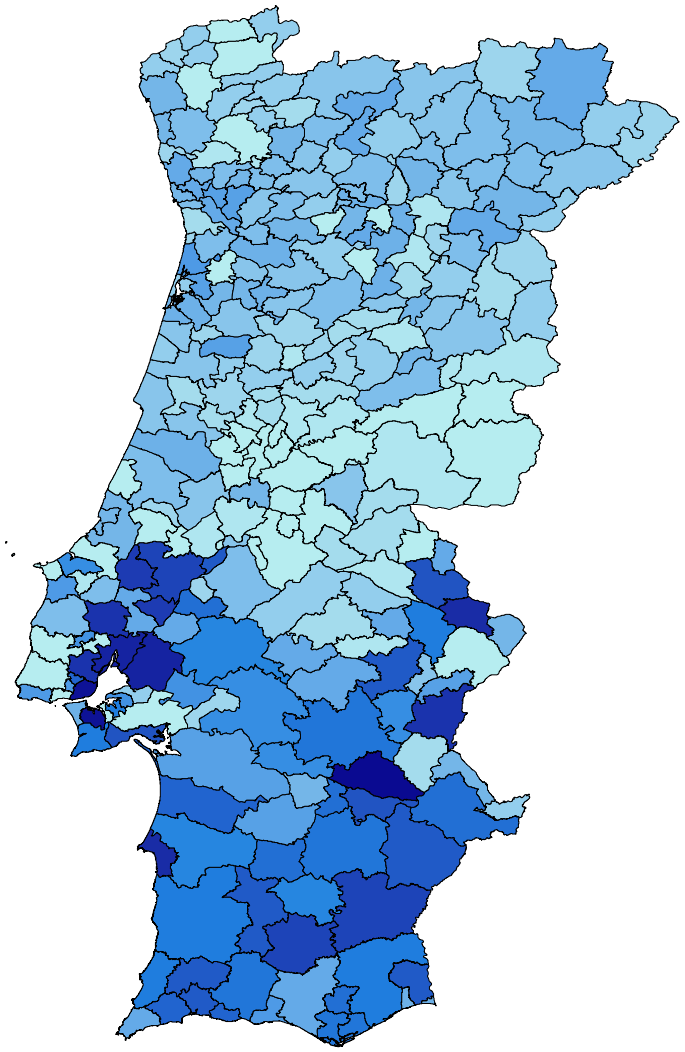


Hazard and risk results

- Hazard and Loss maps



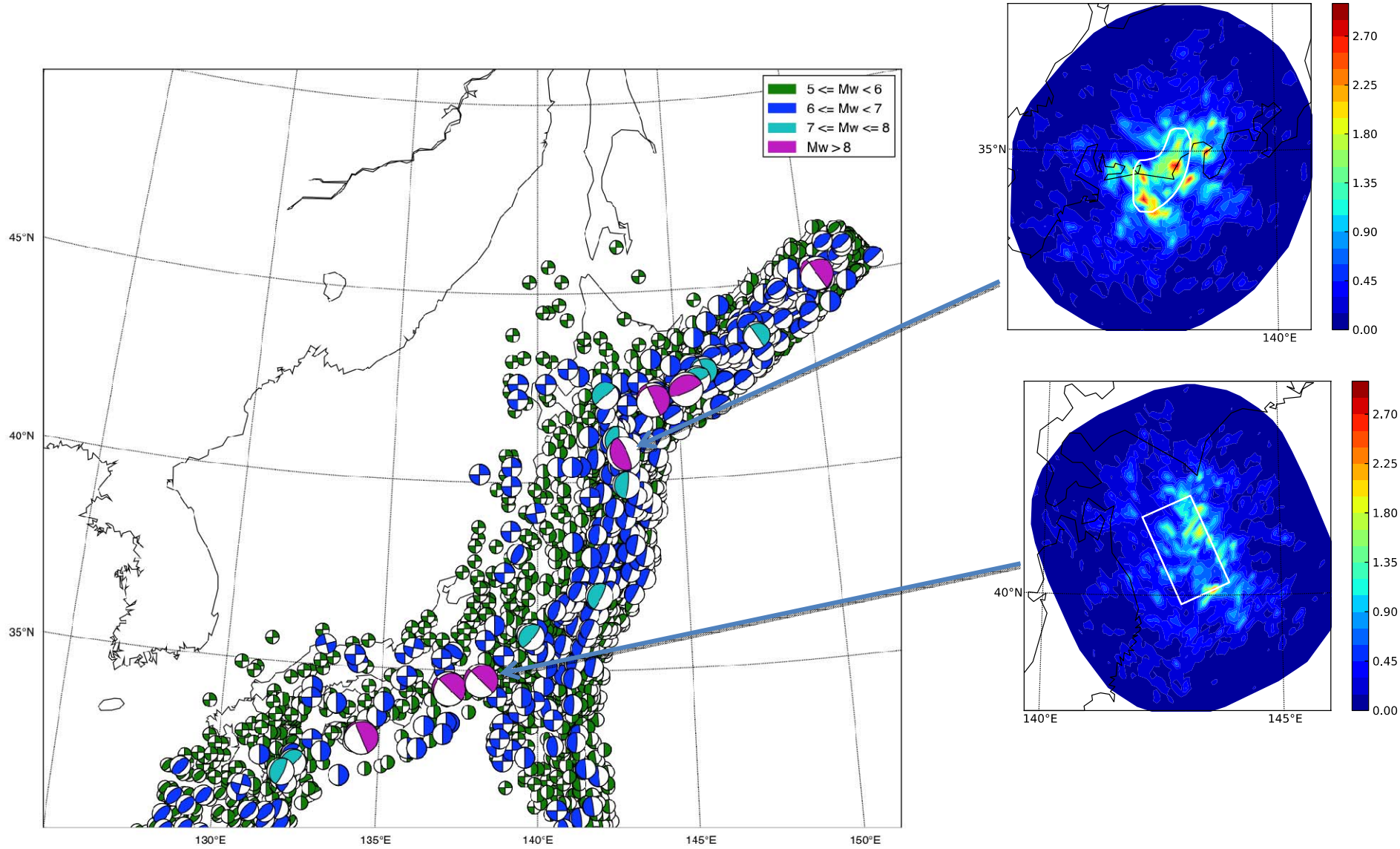
Peak ground acceleration corresponding to 10 % probability of exceedance in 50 years



Economic Loss

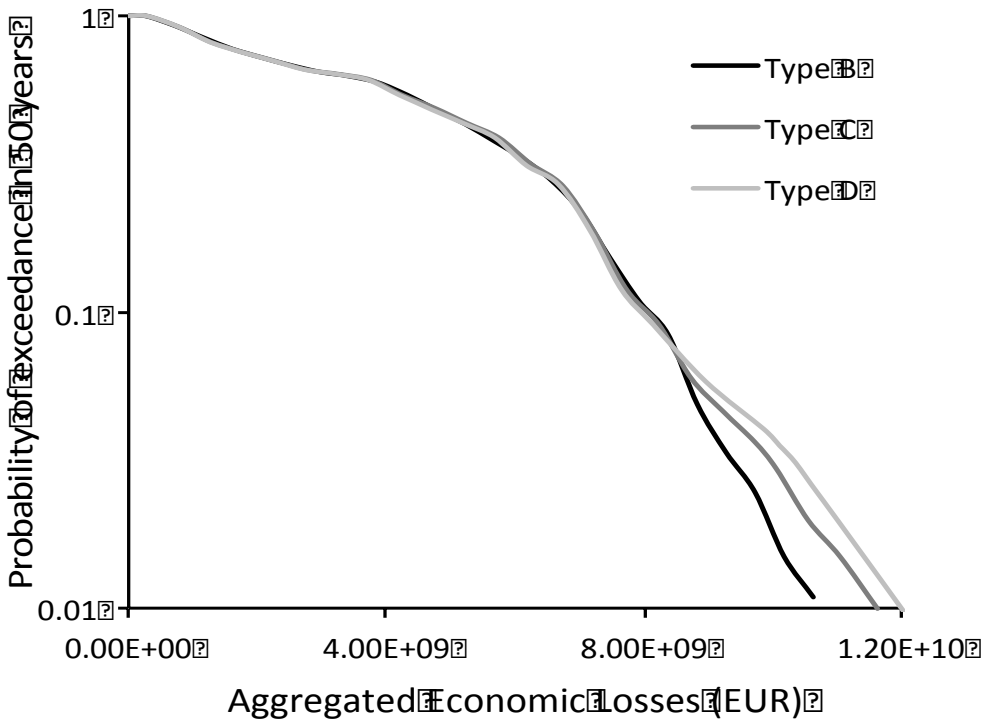
Hazard and risk results

- Synthetic seismicity catalogs and ground motion fields



Hazard and risk results

- Loss curves from synthetic catalog



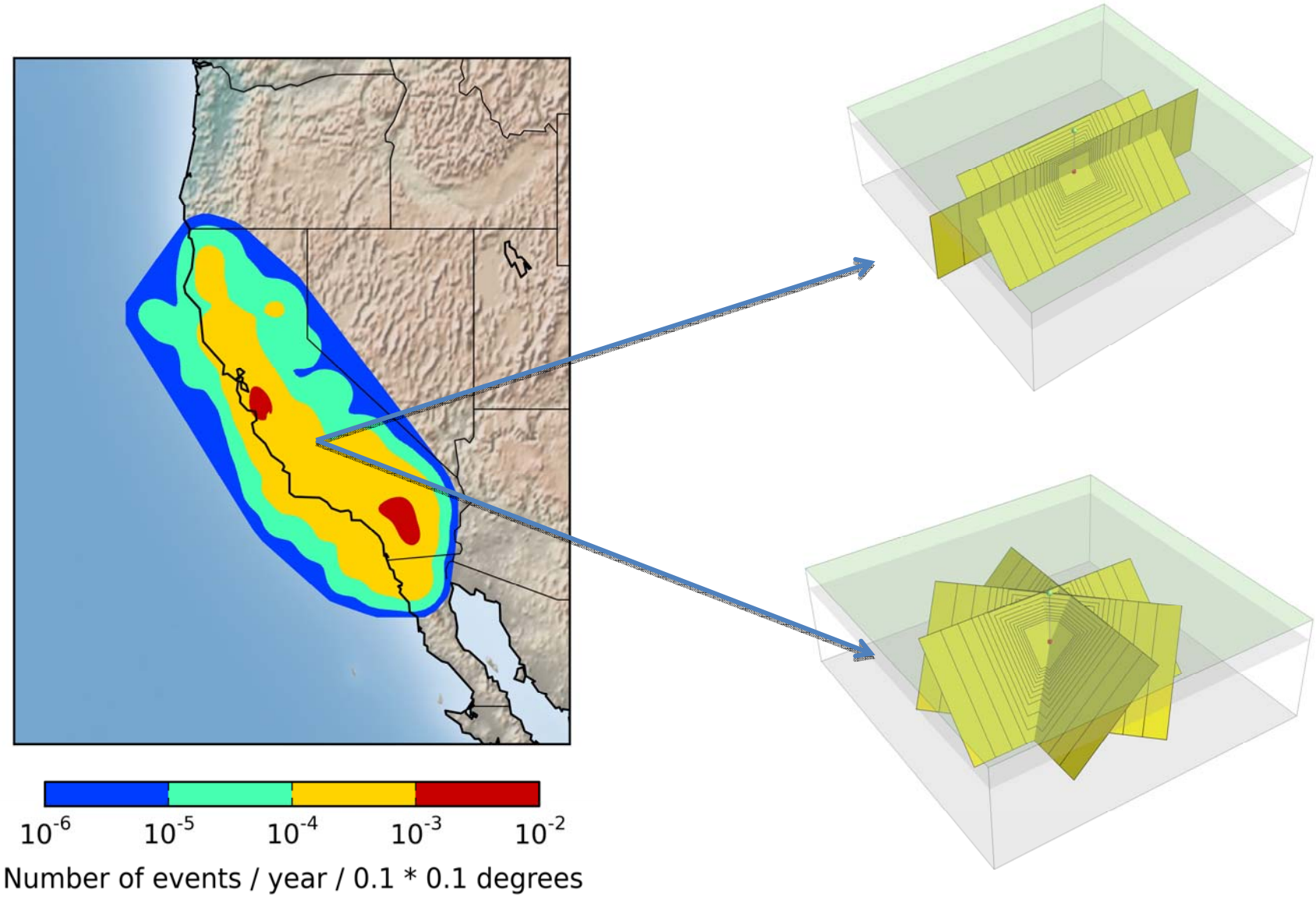
B – Aggregated losses considering the ground motion variability;

C – Aggregated losses considering the ground motion variability and spatial correlation of the intra-event residuals;

D – Aggregated losses considering the ground motion variability, spatial correlation of the intra-event residuals and vulnerability correlation;

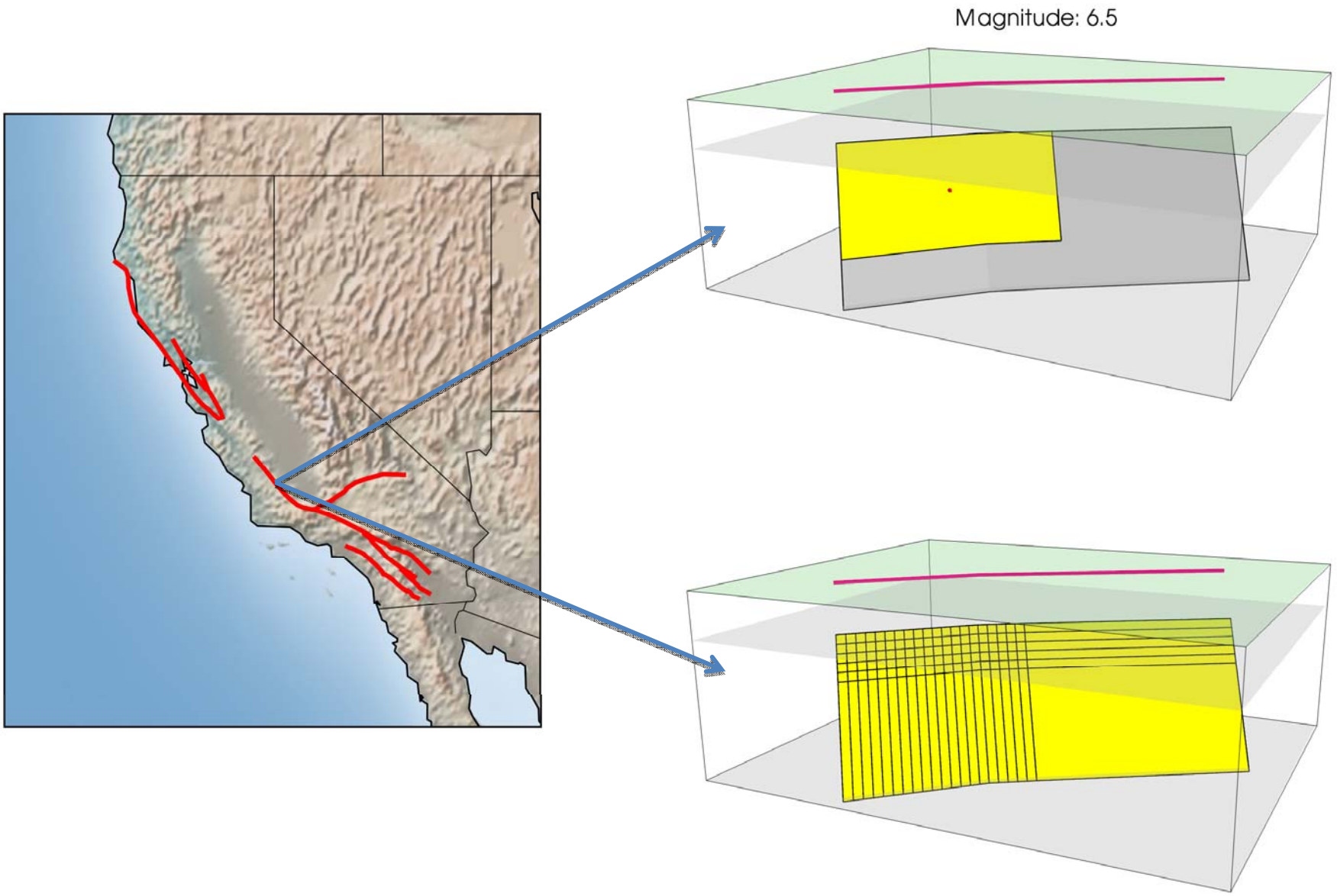
Modeling seismic risk

- Simulating earthquake ruptures

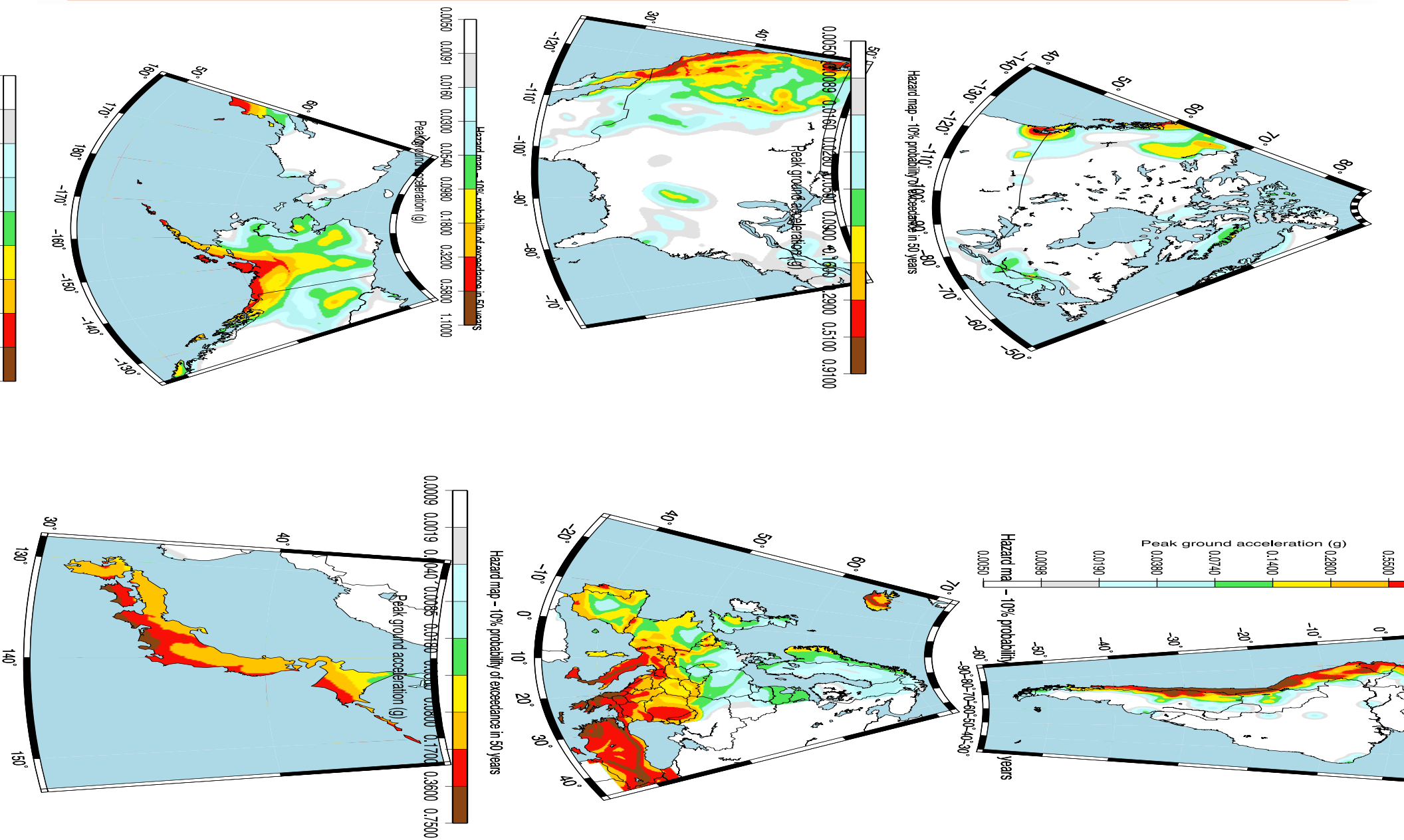


Modeling seismic risk

- Simulating earthquake ruptures



Towards a global seismic hazard/risk model



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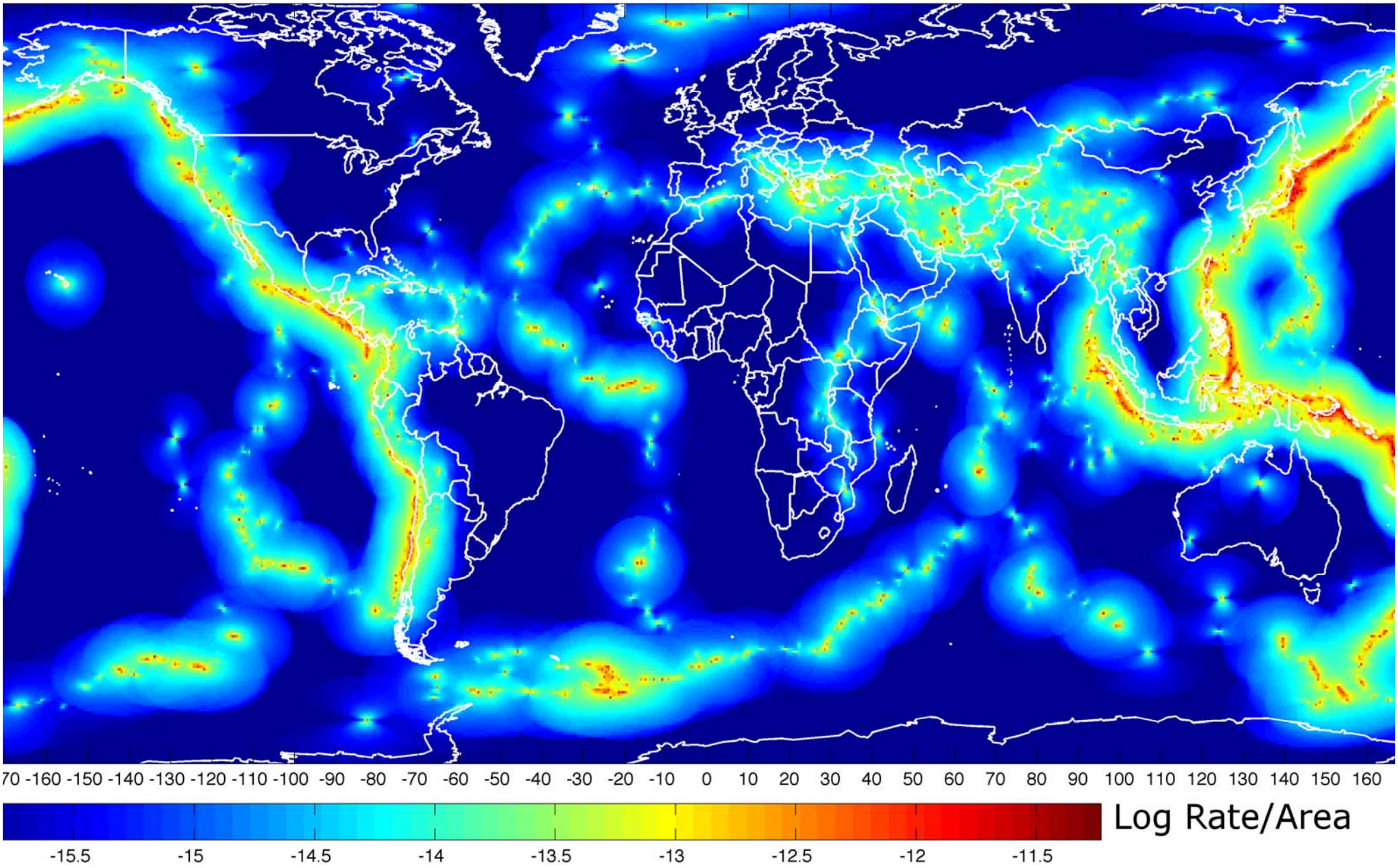
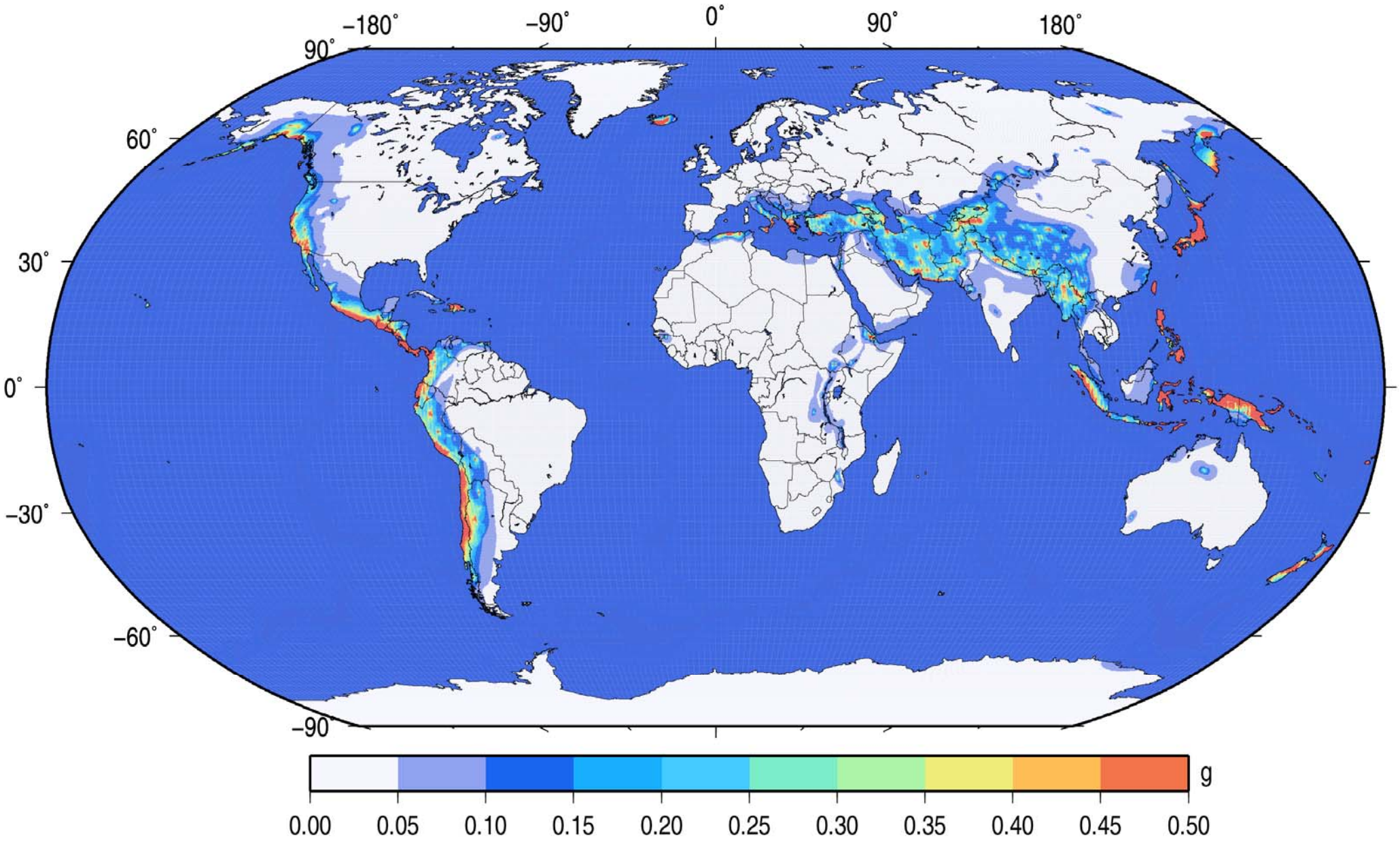


Towards a global seismic hazard/risk model



Peak Ground Acceleration (PGA) with a 10 %
Probability of Being Exceeded in 50 years

THANKS!