RIESGOS

**MULTI-RISK ANALYSIS AND
INFORMATION SYSTEM COMPONENTS**
FOR THE ANDES REGION

Simulating extreme multi-hazard events with decentralized Web-processing services: Towards a better understanding of cascading impact

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EGU

**Photography
encouraged**

DLR   GFZ Helmholtz-Zentrum POTSDAM   AWI   TUM   52north exploring horizons   geomer GEOINTELLIGENCE AND BEYOND   EOMAP   plan + risk   DIALOGIK

Objectives

- Multi-hazard and risk analysis in particular by simulating hypothetical future high-impact events (e.g. earthquakes, tsunamis, etc.) and their consequences

- Design and development of an interoperable distributed software architecture → based on the OGC Web Processing Service (WPS)

- Cover the full range of multi-hazard and risk related data acquisition and simulation services

- Assist local authorities and decision makers to explore factors influencing the risk in their specific multi-hazard environments

Objectives

- Event stories
  - Chile and Peru: Earthquake and tsunami
  - Peru: Heavy rain and river flooding
  - Ecuador: Volcano instability, lahar event and subsequent flooding via temporary river blockage
- Web-based demonstrator platform integrating decentralized OGC Web Processing Service instances into multi-hazard and risk scenarios is being developed

Approach

HAZARD SCENARIOS	MULTI-RISK ASSESSMENT	INFORMATION SYSTEM COMPONENTS	
	Research	Development	
▪ Earthquakes	▪ Exposure models	▪ System architecture	Application
▪ Landslides	▪ Vulnerability assessment	▪ Web services	
▪ Volcanoes	▪ Cascading effects	▪ Scenario-based demonstrator	
▪ Floods	▪ Multi-risk analysis		
▪ Tsunamis			

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Showcase: Chile

Earthquake   Tsunami   Exposure   Vulnerability   Critical Infrastructure

Multi-Risk Scenario integration
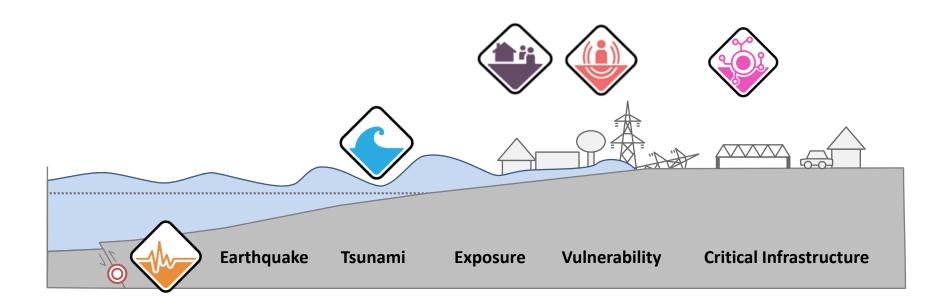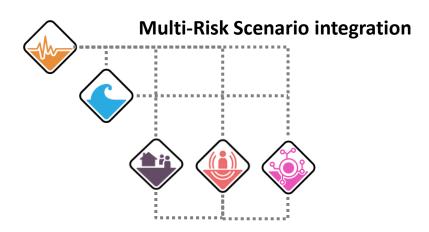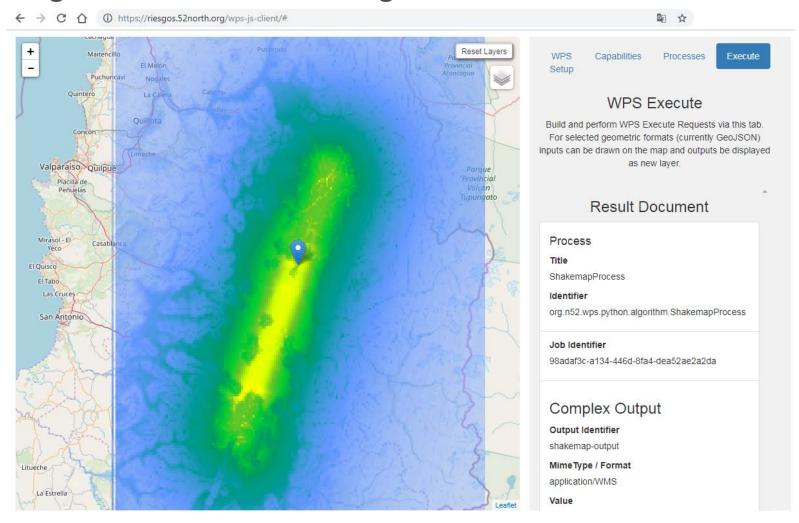
Showcase: Chile – Web services

- OGC Web Processing Services
  - EQ Event Simulation (GFZ)
    - Query of simulated earthquake events based on input parameters, e.g. bounding box
  - EQ ground motion forecasting (GFZ)
    - Creation of shakemaps for given earthquake event
  - EQ TS hazard interaction service (AWI)
    - Query of simulated earthquake events based on input parameters, e.g. bounding box
  - TS physical simulation service (AWI)
    - Creation of isochrones and inundation files (rasters) for given earthquake event
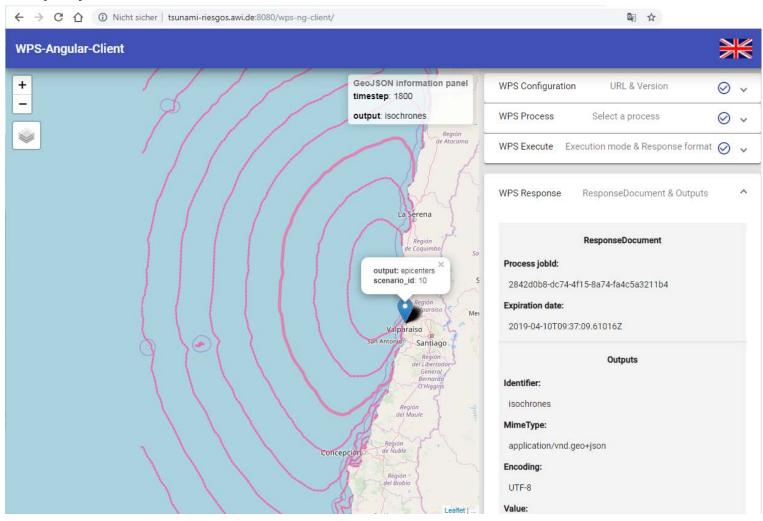
Showcase: Chile – Web clients
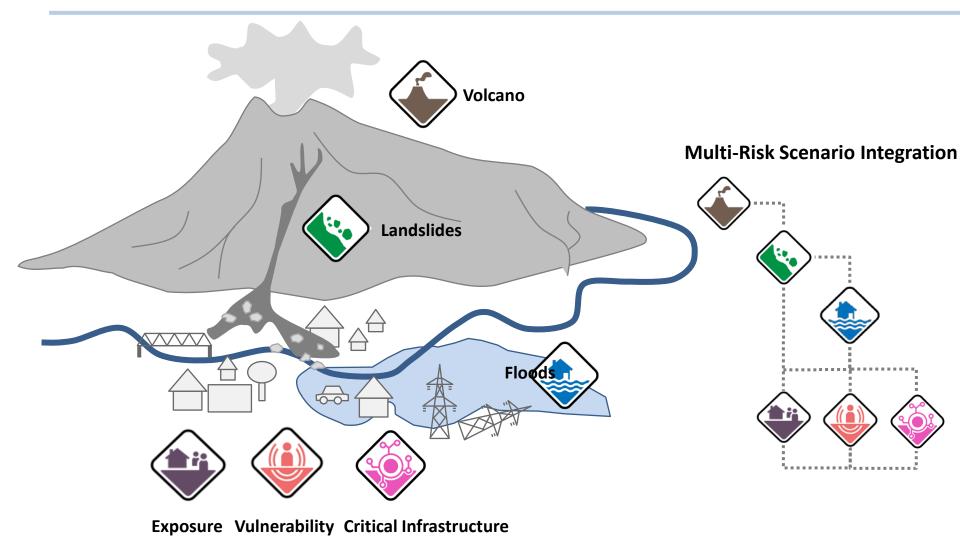
- EQ ground motion forecasting

Showcase: Chile – Web clients

- TS physical simulation service

Showcase: Ecuador

Volcano

Landslides

Floods

Multi-Risk Scenario Integration

Exposure   Vulnerability   Critical Infrastructure

Further Information

http://www.riesgos.de