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Seismic hazard status and mitigation actions in Guadeloupe and Martinique, French West Indies

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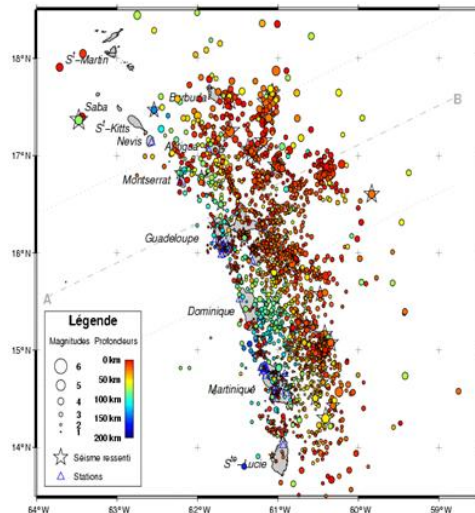
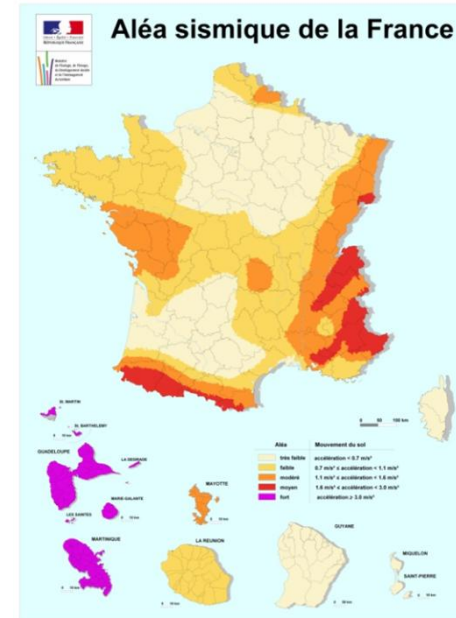
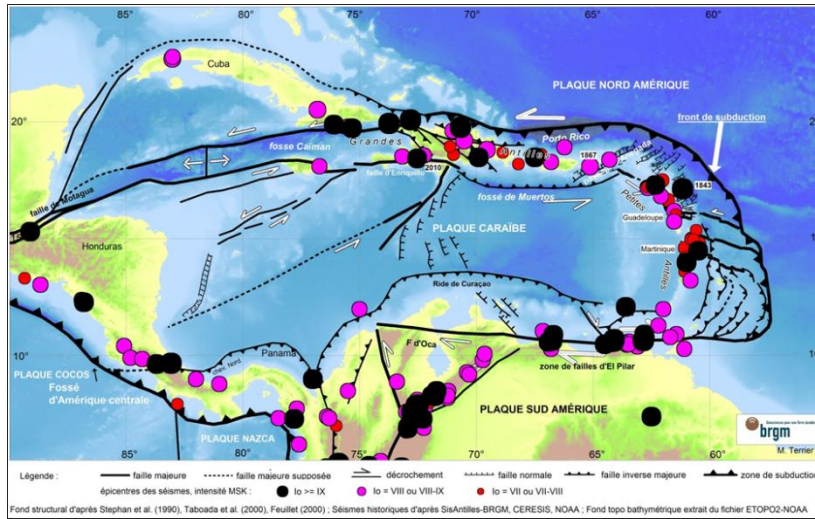


Seismic hazard status and mitigation actions in Guadeloupe and Martinique, French West Indies

J.C. Audru (spk), M. Belvaux, M. Bengoubou-Valerius, D. Bertil, J.M. Mompelat, and A. Roullé



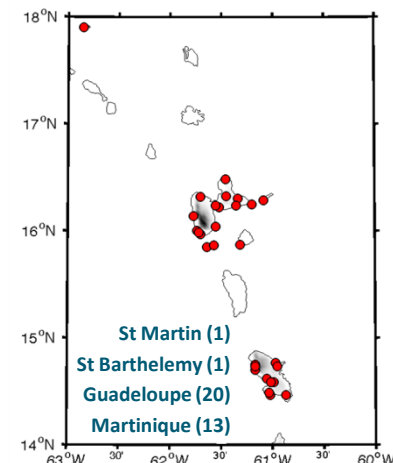
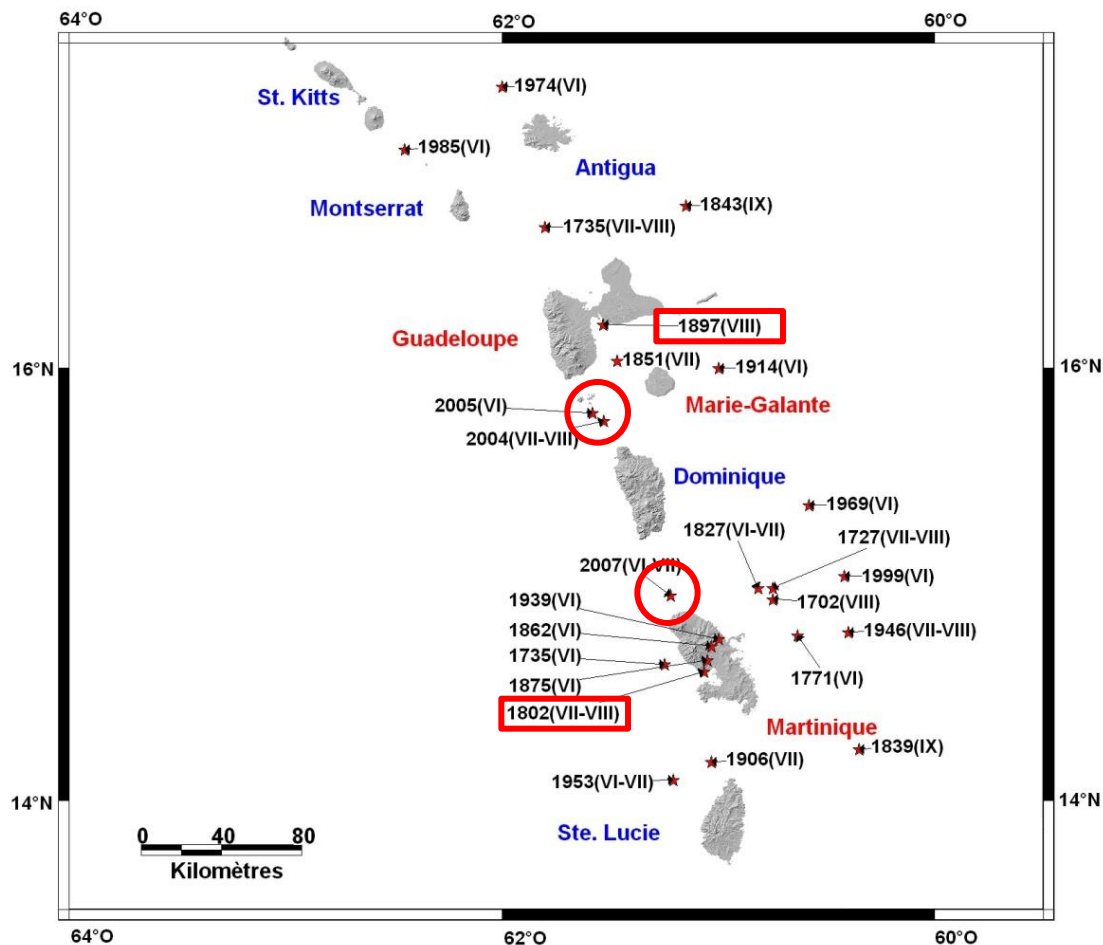
The FWI tectonic framework



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- > France is divided into 5 zones for building codes
- > The highest French level is attributed to the FWI
- > The $PGA \geq 0,3g$ for a 475 yr-return period

Hazard mapping in the FWI: main events & French accelerometric network



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> 35 accelerometers

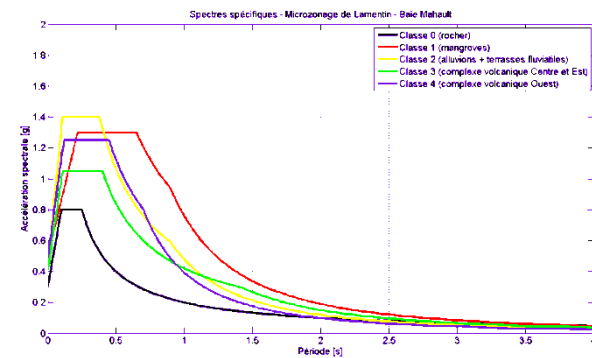
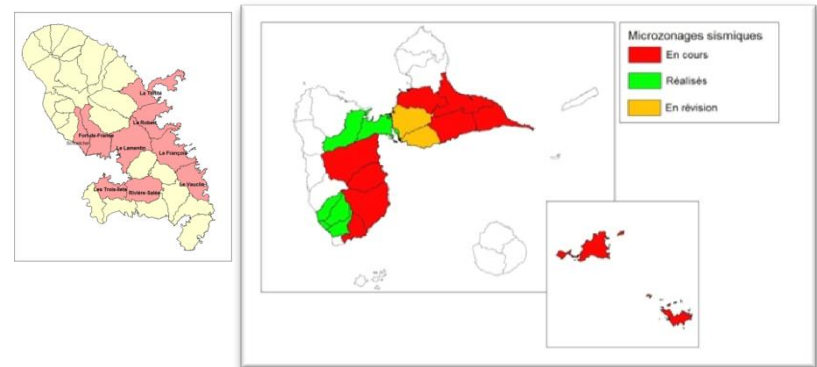
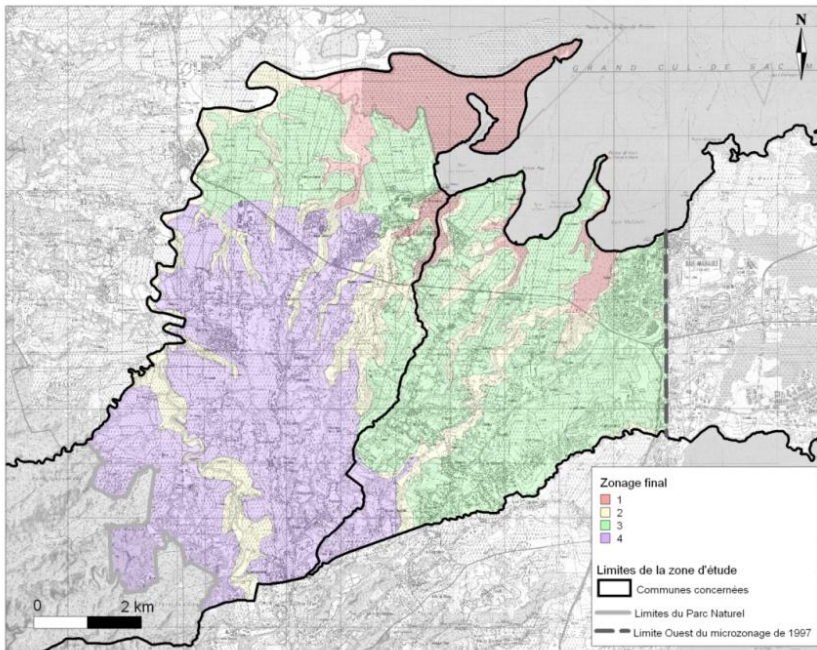
> 35 sismometers

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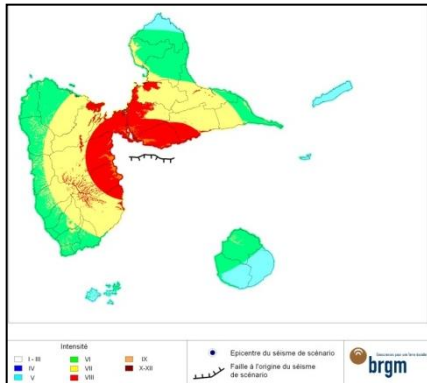
Hazard mapping in the FWI: seismic microzonation

- Geophysical investigations (SASW and H/V), cross-sections, boreholes, geotechnical synthesis, Eurocodes transcription, site effects → microzonation

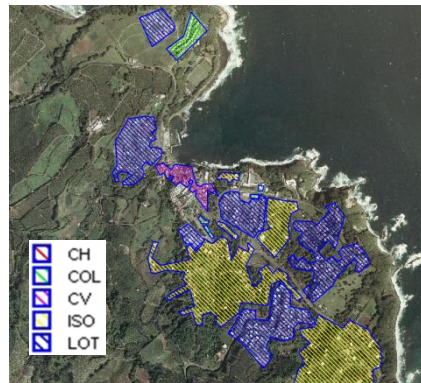


Risk mapping in the FWI: damage scenarios

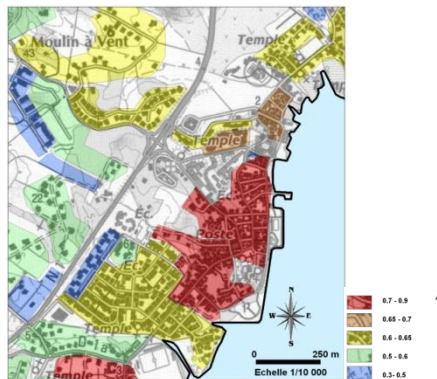
- > numerical simulation of the earthquake induced damage in a specific territory



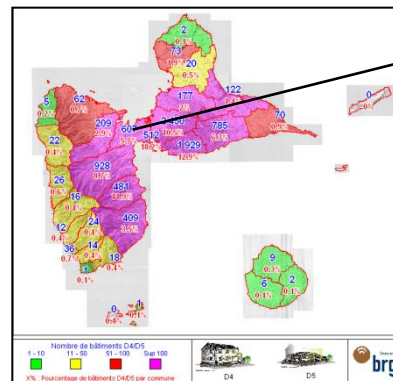
Regional & local hazard



Building inventory

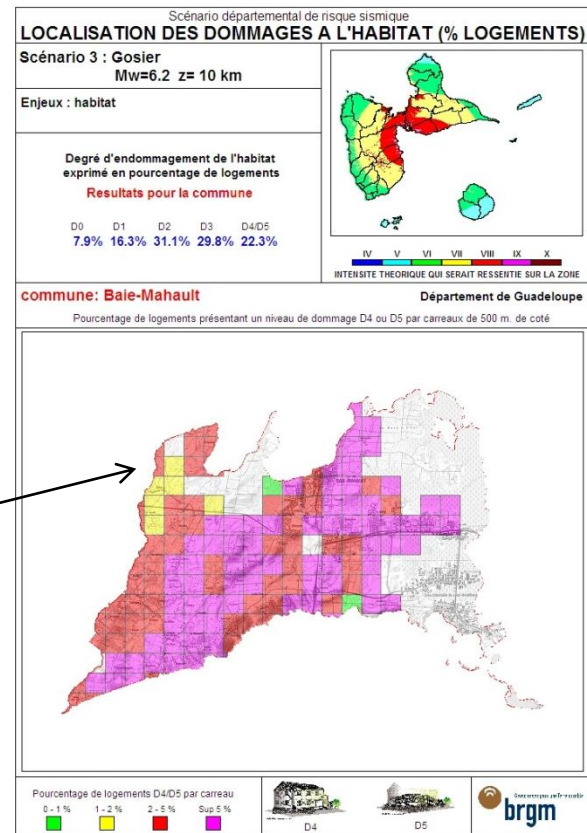


Vulnerability index



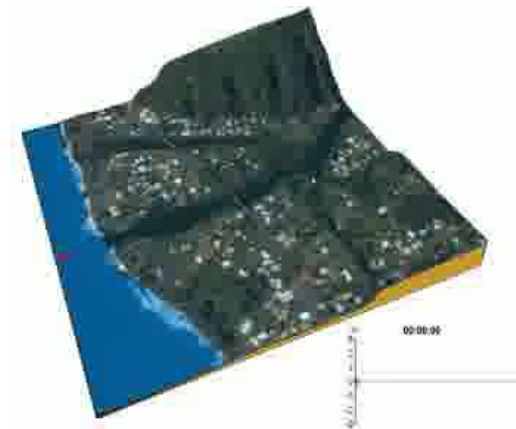
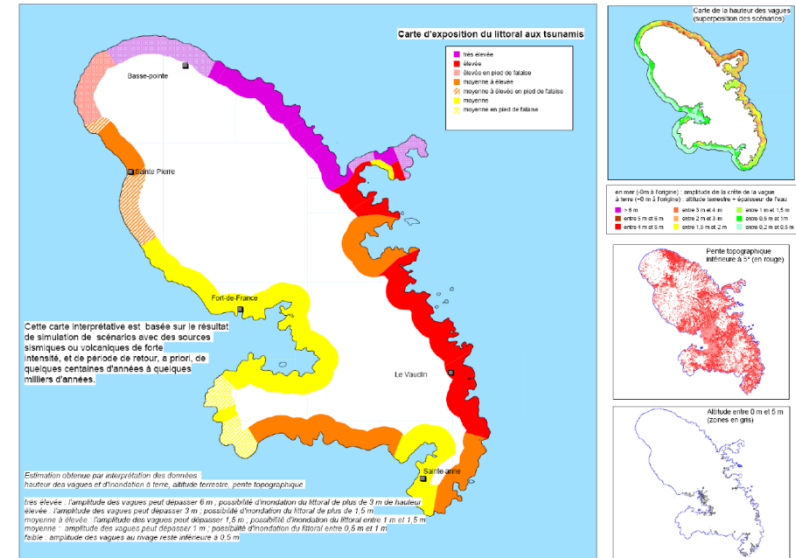
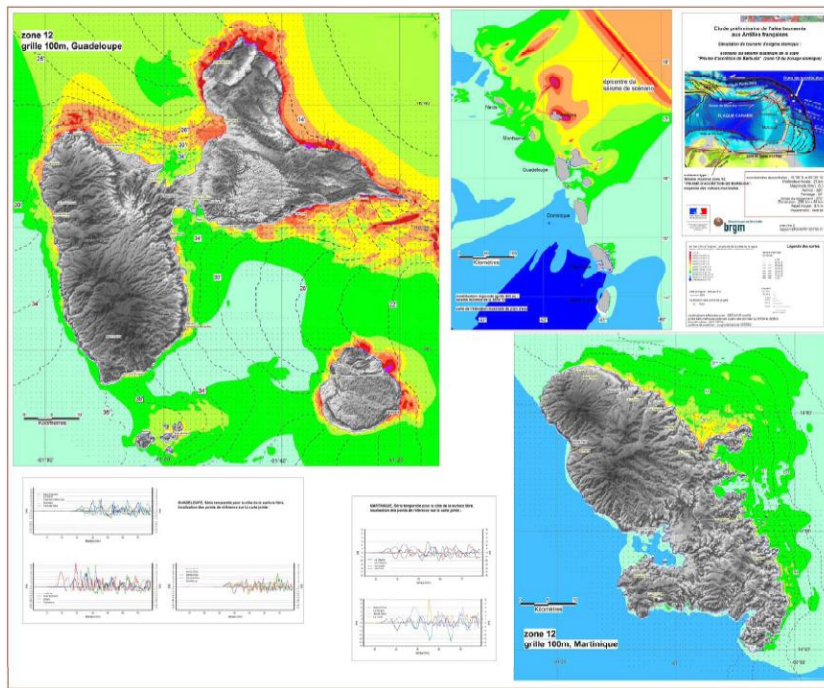
Damage simulation

Focus on a damaged area



Hazard mapping in the FWI: regional tsunami evaluation

- Compilation of several simulations and scenarios, based on earthquakes and huge aerial landslides that have occurred throughout the region



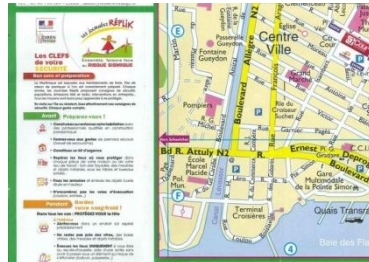
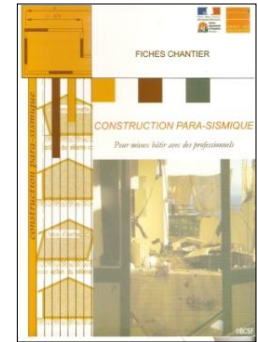
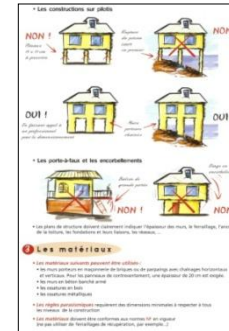
Hazard mapping in the FWI: diagnosis of schools

- > With partners, seismic diagnosis of all primary schools and kindergartens (schools belong to municipalities in France)
- > A classification into 3 groups:
 - G1: Earthquake resistant, possibly with some minor work to be performed
 - G2 : The retrofit/strengthening is fiscally sustainable
 - G3 : Reconstruction fiscally better than retrofit/strengthening
- > With partners, current diagnosis of private schools/highschools
- > Goal: reinforcement and retrofit/destruction



Public information and preparedness in the FWI:

- > Group of partners: annual information and preparedness campaign (all year + November)
- > Targets residents (adults, pupils), employees, construction professionals, tourists
- > Several original actions, symposiums

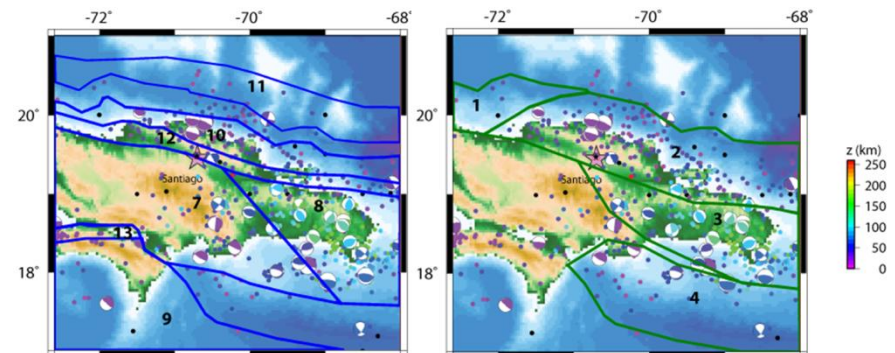
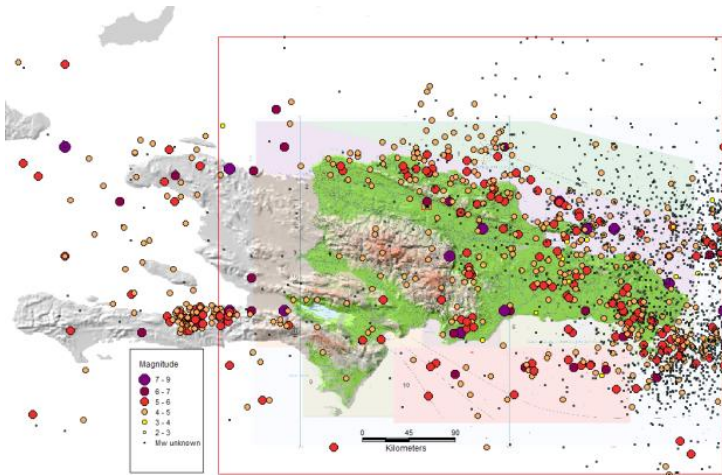


www.miseismantilles.com



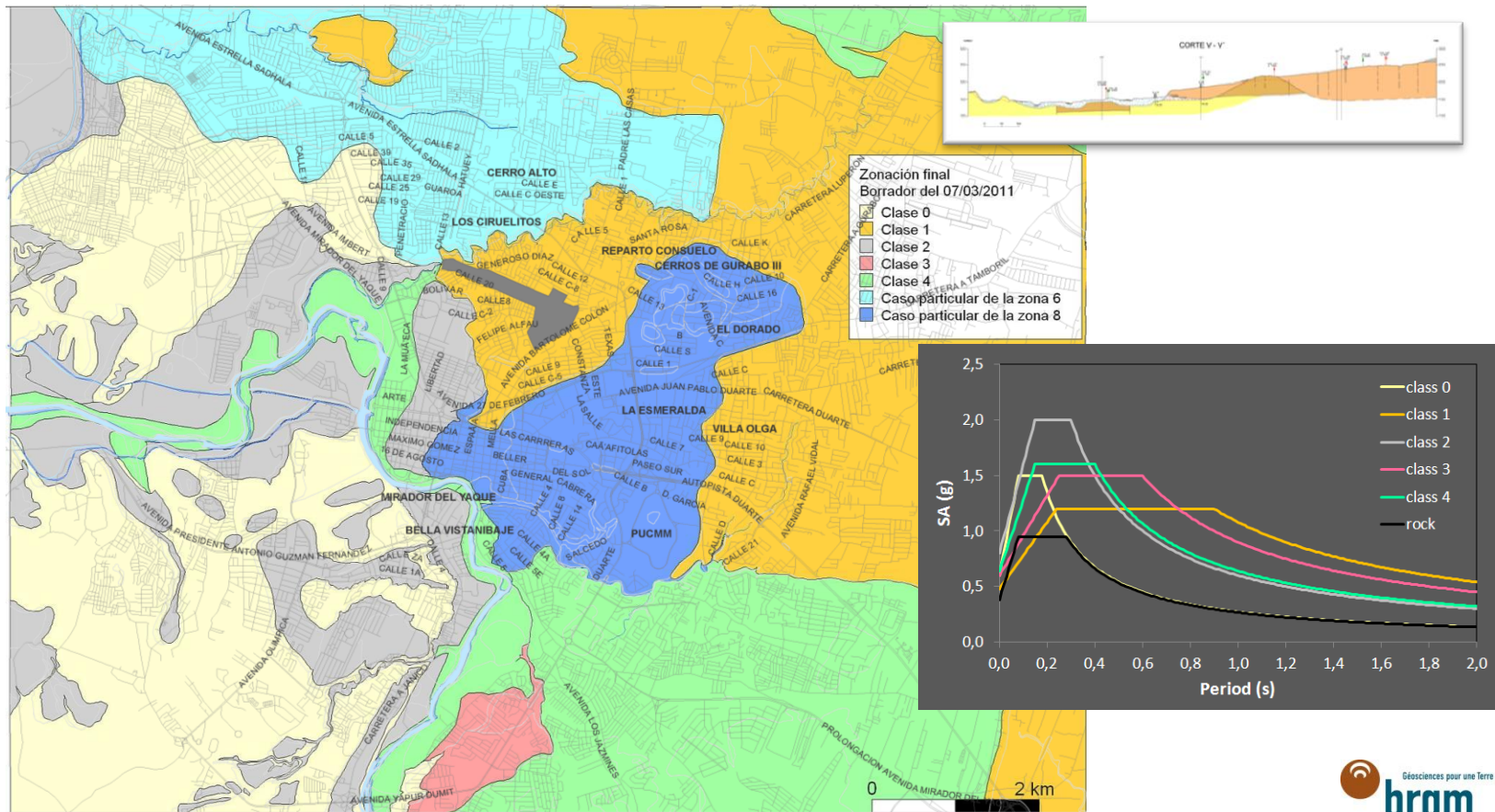
Hazard mapping in Dominican Republic (Santiago): 1/data synthesis

- > Partnership: European Union Fund, Dom. Geological Survey, BRGM, IGME, INYPSA
- > Reworked/unified (Mag) seismological catalogue
- > Zonation model at the surface / at depth
- > PGA map of Santiago (0,33 to 0,43g, RT 475yr)



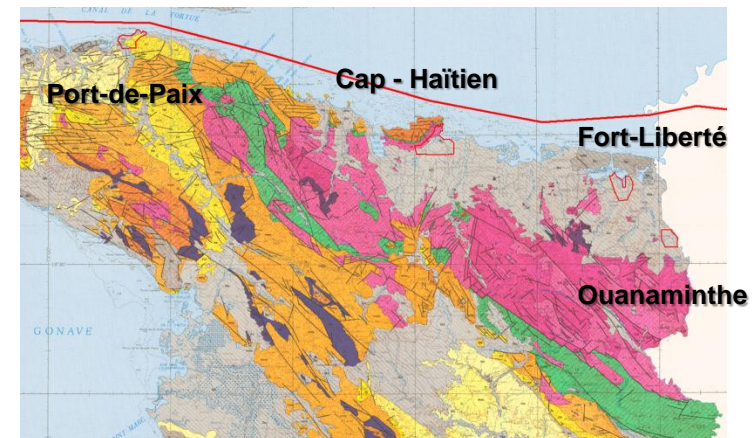
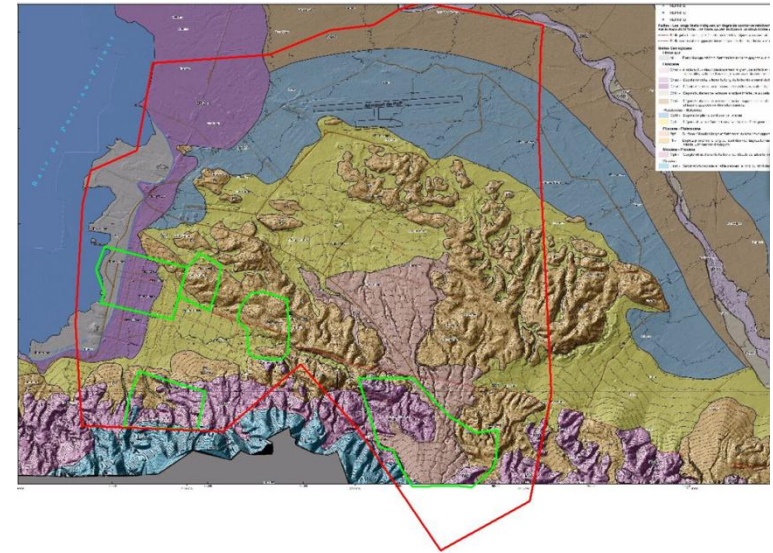
Hazard mapping in Dominican Republic (Santiago): 2/ microzonation map

- > Geotechnical and geophysical synthesis, then microzonation and associated spectras



Hazard mapping in Haiti: microzonation map

- > Partnership UNDP, BRGM, Laboratoire National du Bâtiment et des Travaux Publics and Bureau des Mines et de l'Énergie
- > Study area (80 km², in red) and 5 high resolution sectors (in green) in Port-au-Prince
- > Use and refinement of macrozoning studies done by American teams in 2010 (cf. Earthquake Spectra, special issue, October 2011)
- > Microzonation of 4 more cities scheduled in 2012-2014



**Thank you for your invitation,
for your attention and...
*pa moli!***