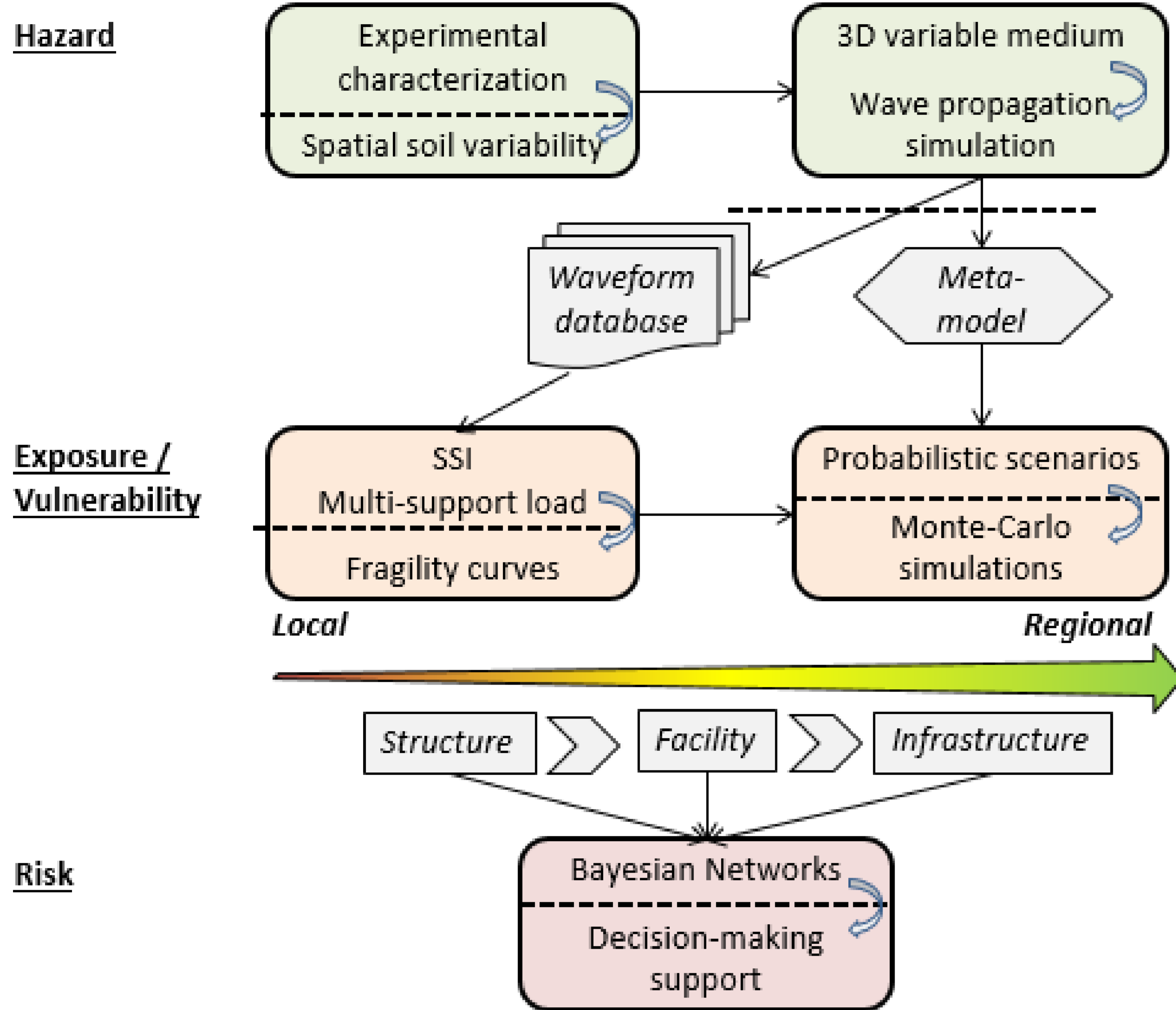


ANR EXAMIN

Evaluation expérimentale et modélisation numérique de la variabilité spatiale du mouvement sismique pour l'analyse du risque sismique d'installations industrielles et infrastructures

Irmela Zentner, Cécile Cornou, Florent de Martin, Eleni Koufoudi, Elias El Haber, Pierre Gehl, Pierre Sochala, Afifa Imtiaz, Kristel Meza-Fajardo, Emmanuel Chaljub, Emeline Maufray, Georges Devésá, Gloria Senfaute, Bertrand Guillier, Marc Wathélet

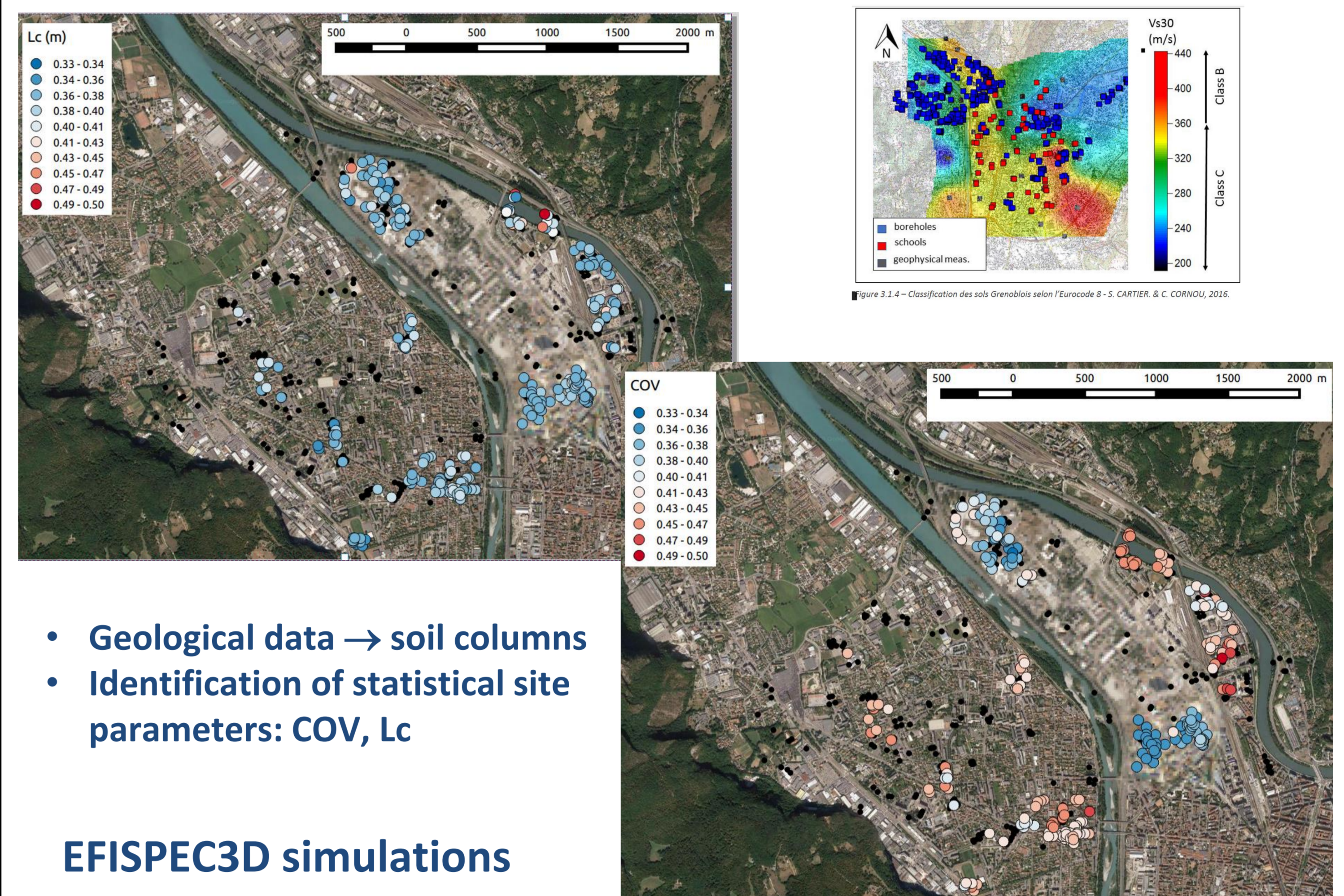
Project overview



Numerical simulation of wave propagation in Grenoble basin

Site characterization

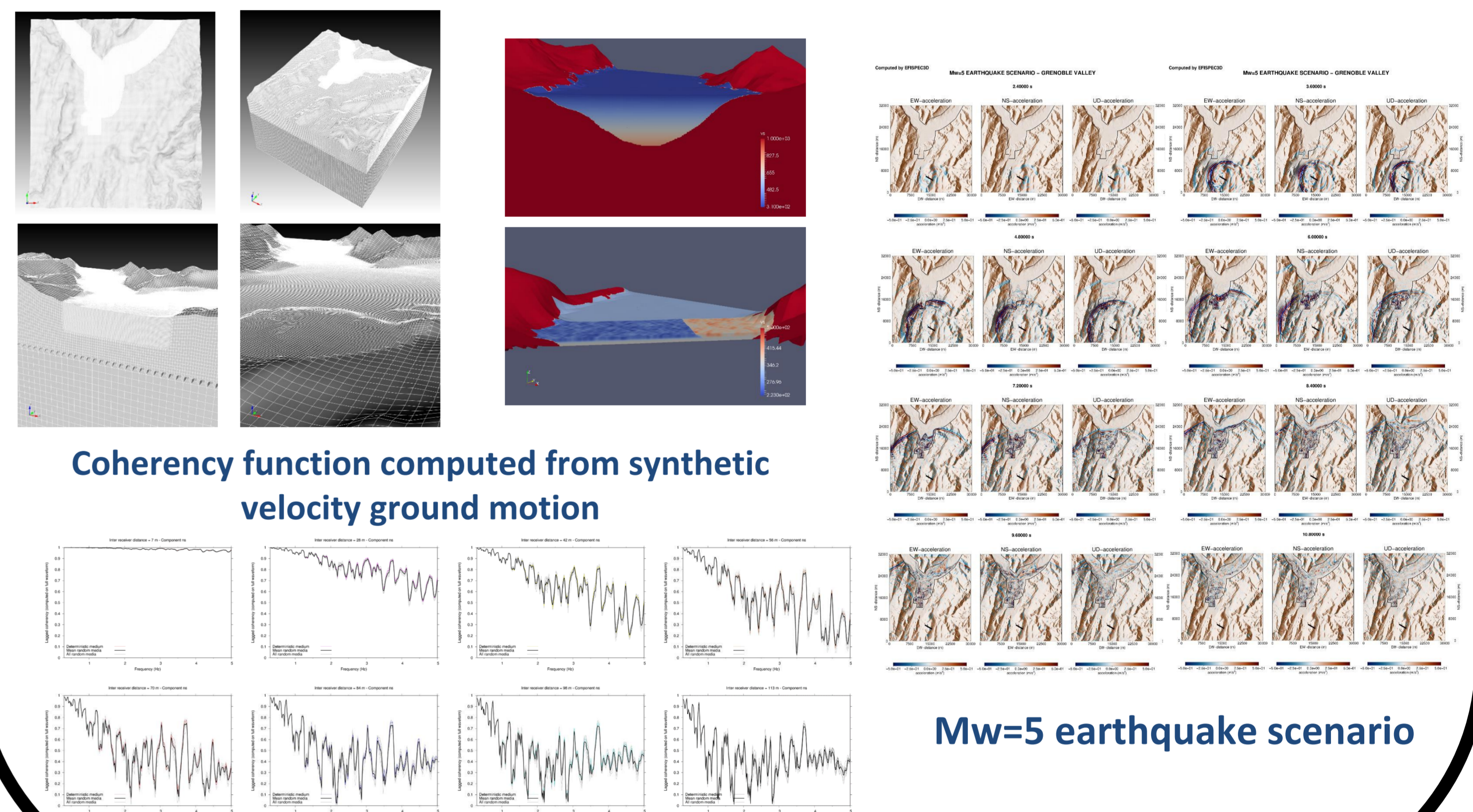
Small- and large-scale variability



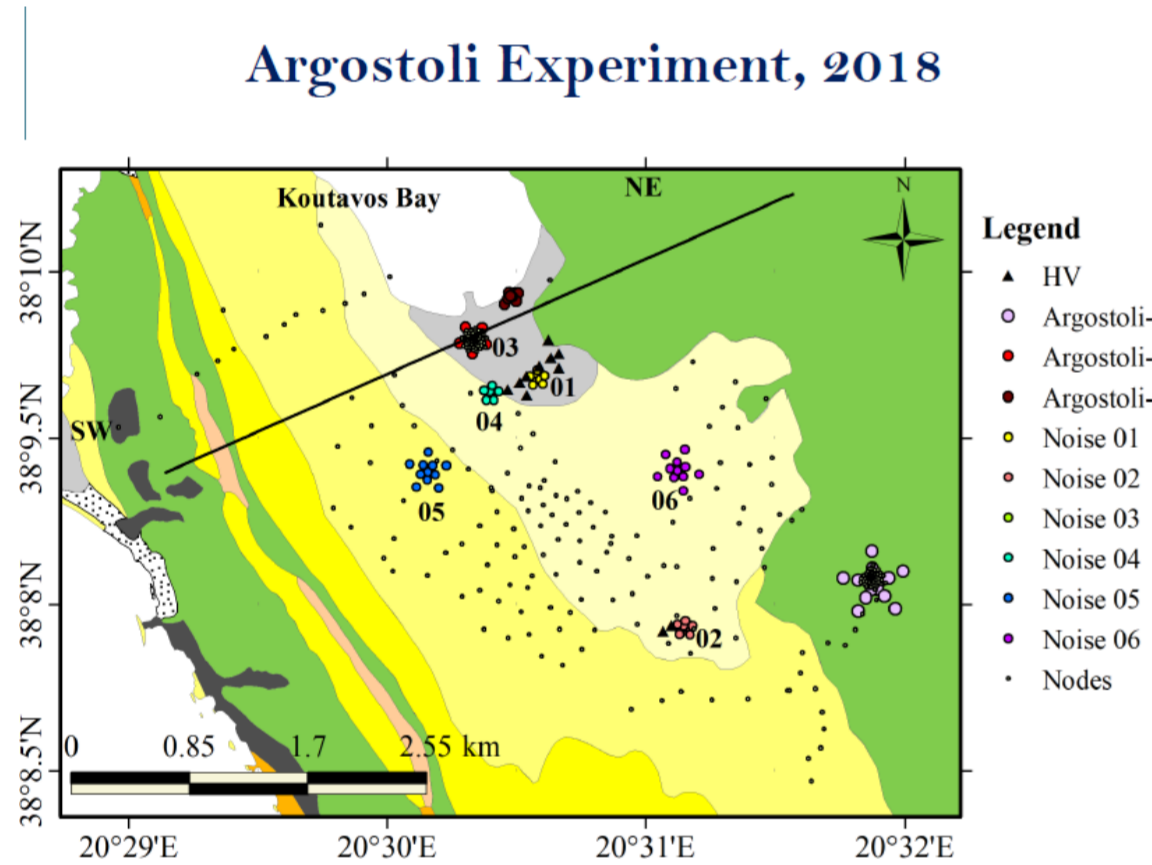
EFISPEC3D simulations

Mesh valid up to 5 Hz
Vs min = 200 m/s
~3 M of spectral elements

Velocity structure with gradient
Random medium properties over the first 50 m of the basin



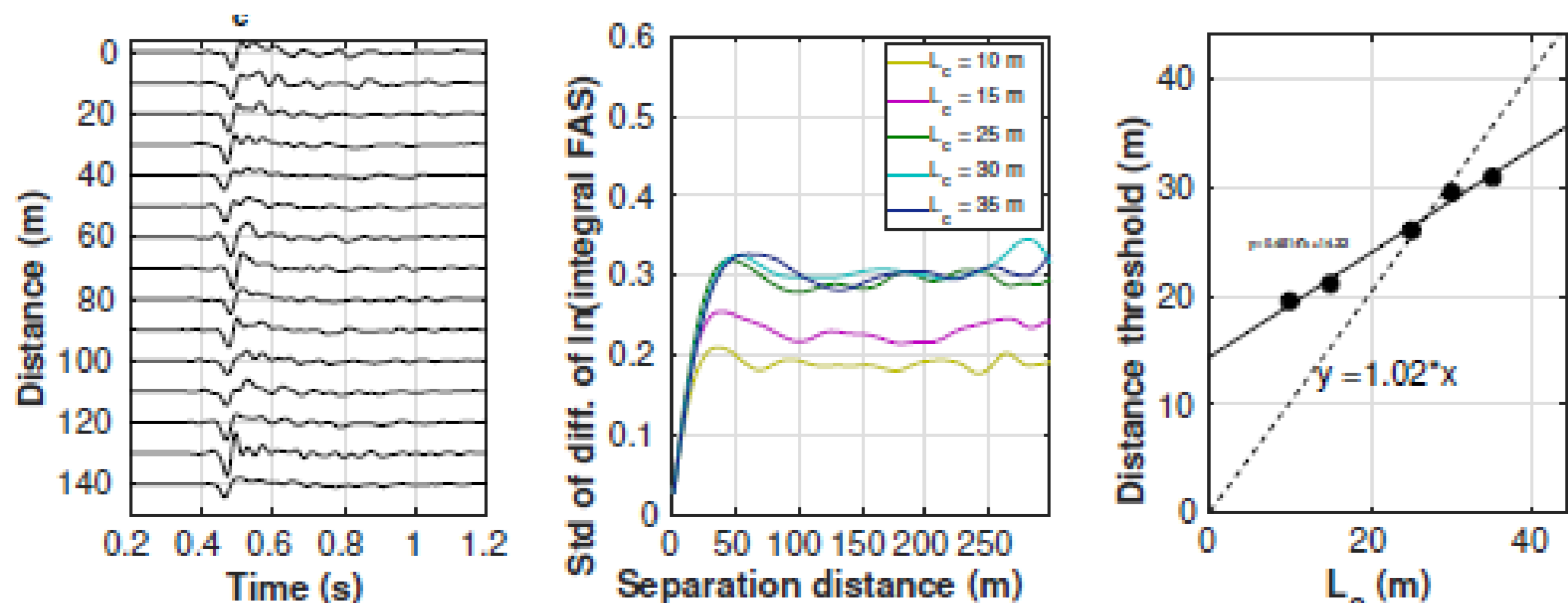
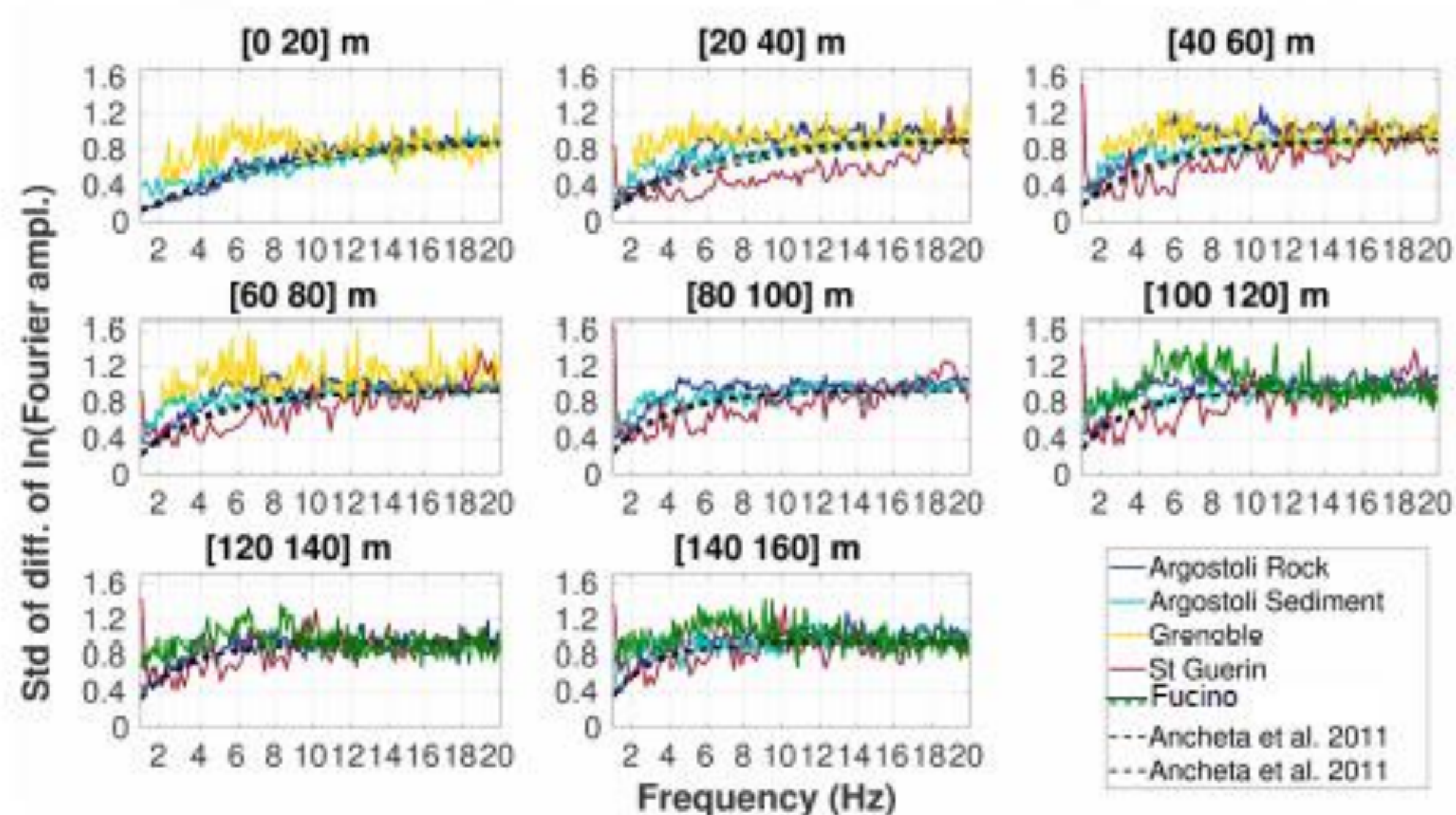
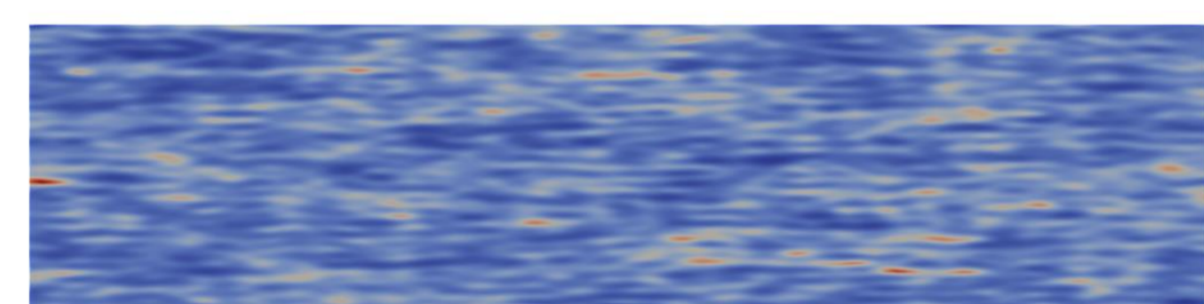
Experimental assessment of spatial variability and numerical tests



- Determine coherency functions from ambient noise
- Evaluate correlation length of local heterogeneities

Analyses of data and parametric analyses for 2D simulation

Array	Site Class	Topography	$V_{s,30}$ (m/sec)	Thickness (m)
Argostoli Soil	Soil	Flat	250	50
Argostoli Rock	Soft Rock	Flat	830	-
Grenoble	Soil	Flat	250	40
Fucino	Soil	Flat	150	20
St. Guérin	Hard Rock	Mountains	~1400	-



What comes next?

- Construction of metamodels for a couple of scenarios (M4,5,6) to represent ground motion for regional risk assessment
- Computation of fragility curves

