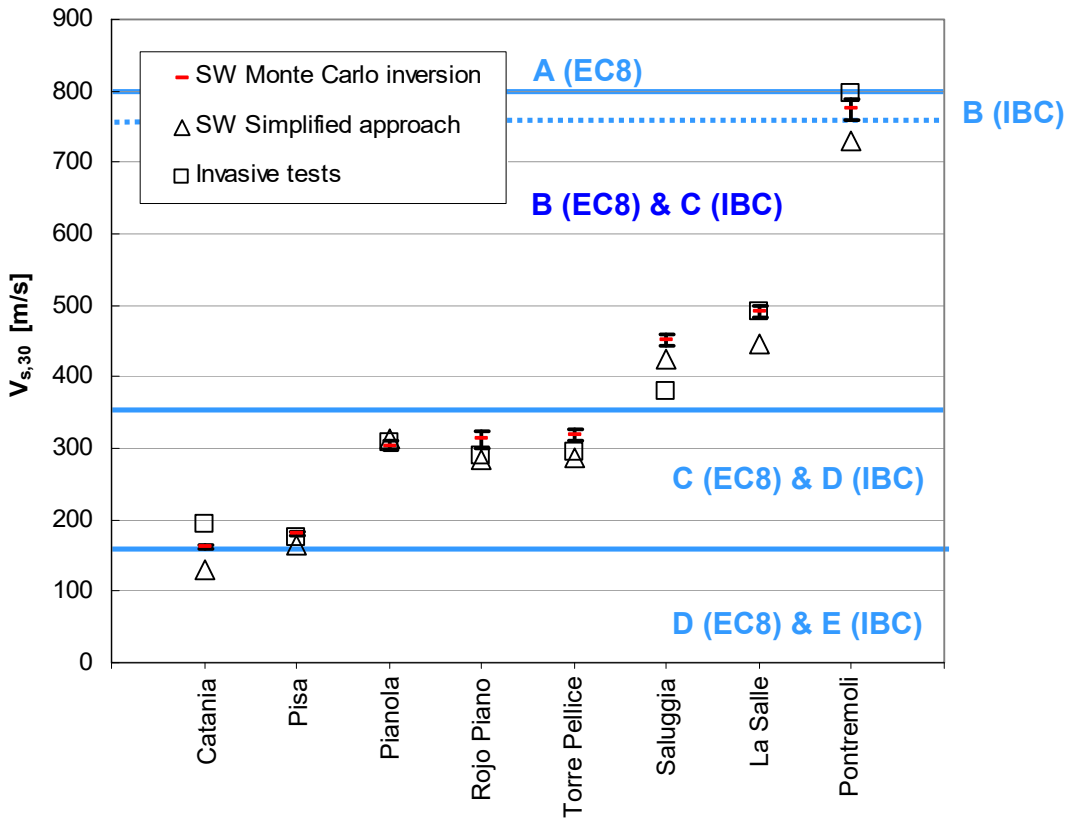
**Research theme:** Seismic site characterization.

Surface wave tests for seismic site characterization and local seismic site response analyses.

**Participants:** Cesare Comina.

**Brief description:** The research is carried out in collaboration with the Politecnico di Torino. The study focused on the assessment of surface wave tests for the evaluation of the local seismic response. In particular the aim is to evaluate the integration of information from active and passive surface waves data in order to allow the reconstruction of the shear wave velocity profile in depth without losing resolution in shallower layers. Differences obtained from noninvasive testing and invasive tests for seismic characterization are also evaluated. Moreover global search methods for the inversion problem have been applied in order to evaluate the uncertainty arising from the use of surface wave tests for local amplification study; the results obtained allow to critically determine the reliability of the method with respect both to the evaluation of average parameters of the soil stratigraphy required by the regulations (Vs, 30) and for a rigorous assessment of the amplification and the seismic response spectra.

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**Research products:**

• “RELIABILITY OF COMBINED ACTIVE AND PASSIVE SURFACE WAVE METHODS ” Foti S., Comina C. and Boiero D. (2007) Rivista Italiana di Geotecnica, anno XLI, n°2, pp 39 - 47, Patron Editore, ISSN 0577-1405.

• “NON UNIQUENESS IN SURFACE WAVE INVERSION AND CONSEQUENCES ON SEISMIC SITE RESPONSE ANALYSES” S. Foti, C.Comina, Boiero D. and Socco L.V. (2009) in Soil Dynamics and Earthquake Engineering, Volume 29, Issue 6, Pages 982-993. ISSN: 0267- 7261.

• “SEISMIC CHARACTERIZATION OF SHALLOW BEDROCK SITES WITH MULTIMODAL MONTECARLO INVERSION OF SURFACE WAVEDATA” Bergamo P., C. Comina, Foti S. and Maraschini M. (2011) in Soil Dyn Earthquake Eng, Vol 31, Issue 3, Pages 530–534. doi:10.1016/j.soildyn.2010.10.006.

• “RELIABILITY OF VS,30 EVALUATION FROM SURFACE WAVES TESTS” C.Comina, Foti S., Boiero D. and Socco L.V. (2011) in Journal of Geotechnical and Geoenvironmental Engineering - Vol 137, Issue 6, pp. 557-632, http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0000452.

• “INVERSION UNCERTAINTY IN SURFACE WAVE ANALYSIS” C. Comina, S. Foti, L.V. Socco Geo-Congress 2012, State of the art and Practice in Geotechnical Engineering, Okland CA, march 25-29.

• “UNCERTAINTY ASSESMENT IN SURFACE WAVE TESTS FOR SITE RESPONSE STUDIES” Foti S., Boiero D., Comina C. and Socco L.V. (2007) proceedings of the 4th Int. Conf. Earthquake Geotechnical Engineering, Sallonicco, 25-28 June 2007. (vol. CD-rom). ISBN/ISSN: 978-1- 4020-5892-9. Edited by K.R. Pitilakis. DORDRECHT: Springer (NETHERLANDS). Referente del gruppo: Cesare Comina