



## **Geophysical techniques in the historical center of Venice (Italy): preliminary results from HVSR and multichannel analysis of surface waves**

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This presentation aims to outline the preliminary findings related to an extensive seismic survey conducted in the historical center of Venice, Italy. The survey was conducted via noninvasive and low-cost seismic techniques based on surface waves analysis and microtremor methods, mainly using single station horizontal to vertical spectral ratio techniques (HVSR) and multichannel analysis of surface waves in passive (ReMI) and active (MASW) configurations. The importance and the fragility of the cultural heritage of Venice, coupled with its peculiar geological and geotechnical characteristics, stress the importance of a good knowledge of its geological architecture and seismic characteristics as an opportunity to improve restoration and conservation planning. Even if Venice is located in a relatively low seismic hazard zone, a local characterization of soil resonance frequencies and surficial shear waves velocities could improve the planning of engineering interventions, furnishing important information on possible local effects related to seismic amplification and possible coupling within buildings and soil resonance frequencies. In the specific we collected more than 50 HVSR single station noise measurements and several passive and active multichannel analysis of surface waves located in the historical center. In this work we report the characteristics of the conducted seismic surveys (instrumentation, sampling geometry, etc.) and the preliminary findings of our analysis. Moreover, we discuss briefly the practical issues, mainly of logistic nature, of conducting this kind of surveys in a peculiar and crowded historical center as represented by Venice urban contest.

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