



Initial results from MARMARA SuperSITE

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MARSite Project was initiated in November 2012 under the EC/FP-7 framework as an initiative towards establishment of new directions in seismic hazard assessment through focused earth observation in Marmara Region. Within MARSite, collection of the first comprehensive data set of fluids composition around the Sea of Marmara has been accomplished and first insight in the geochemical features of the fluids are expelled from tectonic structures around the Sea of Marmara. GPS time series and velocity fields are periodically updated and a project proposal has been prepared for Supersite initiative to take SAR data and integrate the results with in-situ data sets, which is accepted by the scientific committee of GEOSS. In the meantime, special focus was given to develop the processing algorithms, starting from low level atmospheric correction to high level modeling routines. Considerable progress has been made in the novel design of a multiparameter borehole system consisting of very wide dynamic range and stable borehole (VBB) broad band seismic sensor also incorporating 3-D strain meter, tilt meter, and temperature and local hydrostatic pressure measuring devices. Borehole and surface array locations and borehole bedrock depth of 137 m has been identified. A modeling scheme for the scenario earthquake simulation has been set up in order to realize processing of real-time high-rate GPS data and simulating of scenario earthquakes. The probability of occurrence for the fault segmentation in the Marmara region were calculated using the Poisson, BPT and BPT with a stress interaction models for time intervals of 5-10-30 and 50 years. High resolution seismic reflection and multibeam data in the easternmost Cinarcik basin obtained during the cruise MARMARA 2013 carried out onboard the CNR R/V Urania ship provided information on diffuse gravitational failures. An in situ multi-parameter observational system for landslide monitoring, including displacement, rainfall and seismic shaking measurements, has been prepared by INERIS to be set up on the field to be also set up as an early warning system prototype to be progressively parameterized and tested on near to real time condition. Slip rate on the Main Marmara Fault from 3D seismic data has been estimated and extremely young age of the North Anatolian Fault in the Sea of Marmara has been determined. Seismic risk study for IGDAS Natural Gas Network including pipelines and its components has been carried out with several earthquake scenarios in Marmara Sea. An automatic shut-off algorithm has been developed for the automatic shut-off of the gas flow at the IGDAS district regulators during an extreme event. All the European and international initiatives and projects that could have links with MARsite were identified as the initial step for the integration of data management practices and coordination with ongoing research infrastructures. EPOS and EMSO are considered to be crucial links that could provide sustainability of MARsite's developments beyond the project's lifetime. Concerning EMSO, Marmara is one of the nodes of the research infrastructure, in which a permanent installation at sea is being integrated with land-based networks. In the context of EPOS, MARsite will be a thematic core service. In addition, the data collection and dissemination in MARsite is carried out according to the data management principles of EMSO and EPOS. Dissemination activities reached a certain level of maturity through the release of Public Annual Report, quarterly newsletter, ID card and poster, social media interaction, dedicated web sites, videos and several conferences and workshops participated, such as GEO European Projects' Workshop, Supersites Coordination Workshop and GEO-X Plenary & Geneva Ministerial Summit .