Geophysical Research Abstracts
Vol. 17, EGU2015-5560, 2015
EGU General Assembly 2015

The Eastern Alpine Seismic Investigation (EASI) project

Jaroslava Plomerova (1), Irene Bianchi (2), György Hetényi (3), Helena Munzarova (1), Götz Bokelmann (2), Edi Kissling (3), AlpArray-EASI Working Group (), and AlpArray-EASI Field Team ()

(1) Institute of Geophysics, Academy of Sciences, Prague, Czech Republic (jpl@ig.cas.cz), (2) Faculty of Earth Sciences, Geography and Astronomy, University of Vienna, Austria, (3) Institute of Geophysics, Department of Earth Sciences, ETH Zürich, Switzerland

AlpArray (http://www.seismo.ethz.ch/research/groups/alrt/projects/alparray/) is a large European initiative to study the entire Alpine orogen at high resolution and in 3D with a large variety of methods. The core element of the initiative is an extensive and dense broadband seismological network. In addition, a number of Complementary Experiments will be conducted to focus on targeted problems.

The first implemented AlpArray Complementary Experiment is called Eastern Alpine Seismic Investigation (EASI). The Eastern, “straight“ part of the Alps is home to a number of open questions, e.g., the origin of the hanging lithospheric slab (Adriatic or European?), the nature of the Moho “hole” between the two plates, the anisotropic nature of the lower crust, and the relationship of the Alpine orogen to the adjacent foreland basin and the lithospheric blocks of the Bohemian Massif. Our research methods include tomography, ambient noise analysis and receiver functions, with anisotropy included in all three types of investigations as well as in shear-wave splitting analyses. The depth range of investigations encompasses the crust and the mantle lithosphere, down to the LAB.

In this presentation we detail the design of the experiment. EASI is composed of 55 broadband seismic stations, deployed in a zig-zag pattern on either side of the central longitude line of 13.35°E. The planned north-south distance between stations was 10 km, the distance of each station to either side of the central line was 6 km. We aimed to keep the stations within 1.5 km of the target location, as much as topographic, field and infrastructure condition allowed. The result: with respect to the original deployment plans the closest match is 164m, 10 stations are within 500m, 31 stations are within 1.5km which is also the average match, and the farthest is 4.4km. The overall result remained a very linear and regularly spaced array, spanning 540 km from the Czech-German border to the Adriatic Sea. The highest elevation station is at 1846m, the lowest at sea-level (average: 646m). The achieved geometry leads to a uniform ray coverage at depth considering that the majority of the teleseismic events are coming from North and East directions (e.g. Japan, and Pacific Ocean) and few are arriving from South and West directions (Africa and Atlantic Ocean).