

## Developments in imaging European lithospheric structure: a review of recent results, and prospects from the AlpArray initiative

Andrea Morelli<sup>1</sup>,

<sup>1</sup> Sezione di Bologna, Istituto Nazionale di Geofisica e Vulcanologia, 40123 Bologna, Italy, [andrea.morelli@ingv.it](mailto:andrea.morelli@ingv.it)

Seismic methods hold primary importance for reconstructing the structure of the lithosphere. Ever-increasing computational power allows today for realistic simulation of complex wave propagation, and detailed inversion of the full seismic waveform. Such modern evolutions of classical approaches — based on earthquake and active-source data — have been complemented in the past decade by the burgeoning use of ambient seismic noise-based cross-correlation and auto-correlation methods. On a parallel path, availability of seismic data has never been so abundant, thanks to projects such as the European AlpArray — a collaborative field project involving 52 institutions from 18 countries — now counting approximately 600 broadband stations in the wide Alpine region. AlpArray — currently in the deployment stage — is already producing significant developments of our knowledge of the structure of the European continent. As a consequence, we derive better and better resolved pictures of deep earth structure, and of its variation with time, e.g., in earthquake zones, volcanoes, and zones of anthropic activity. I will present recent developments, results, and perspectives along these lines, with a focus on ongoing activities in Italy and Europe.

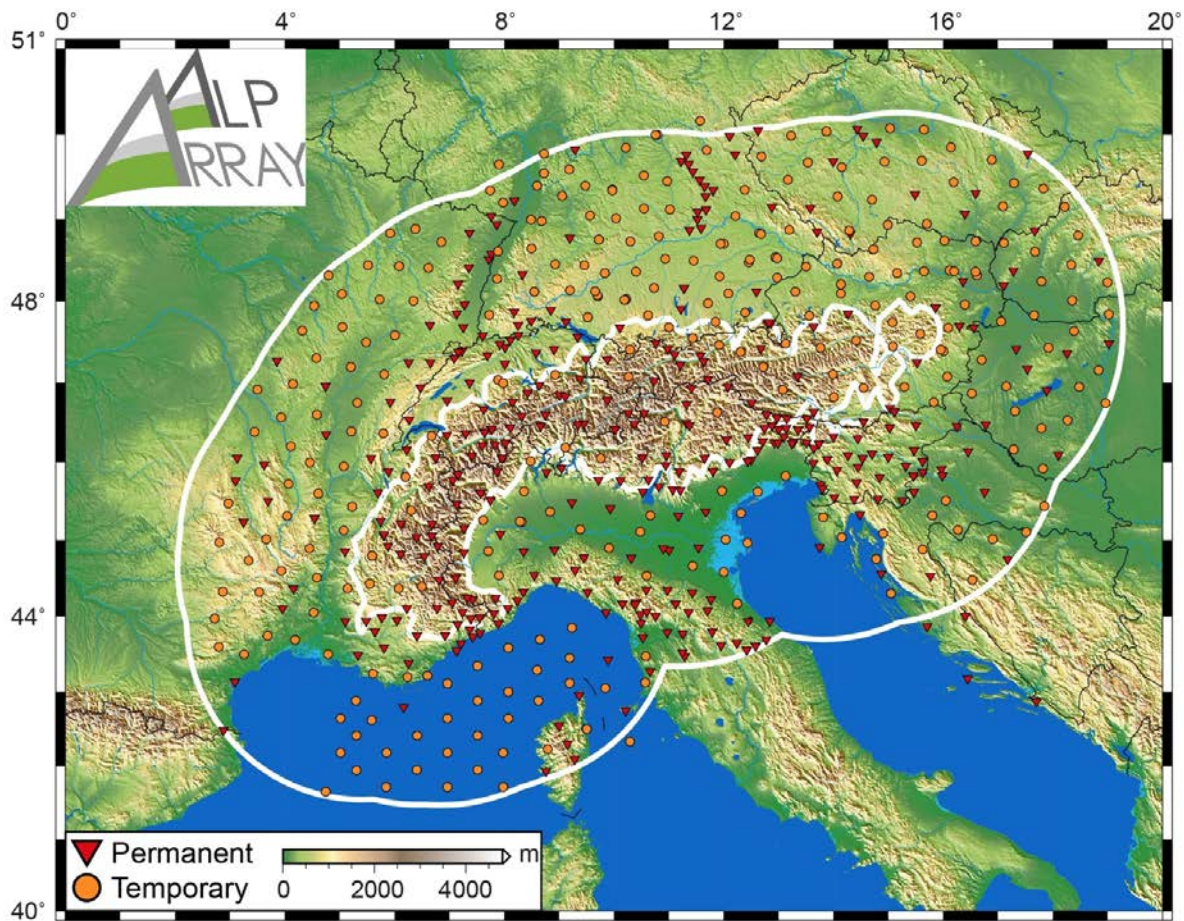


Figure credit: <http://www.alparray.ethz.ch>, downloaded on June 25, 2018