

Activity Field D – SWATH D: Providing seismological data for the SPP 4D-MB - A dense seismological station network in the Central and Eastern Alps

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This proposal (SWATH D) focuses on the provision of seismic data from a dense seismic network in the Central and Eastern Alps. This dense deployment of 153 stations will complement the larger-scale AlpArray network (“backbone”). SWATH D will provide high-resolution images from the surface into the upper mantle. SWATH D focuses on a key area of the Alps where e.g. the hypothesized flip in polarity is suggested to occur, and where TRANSALP has imaged a jump in the Moho. The data created in this project will be used directly by ca. 20 individual proposals of the SPP, and data products derived from it will contribute to an additional 15 proposals. **SWATH D** is thus an important link within the SPP 4D-MB and the international AlpArray community and **a scientific service to a majority of the proposals within the SPP community.**

The following images describe the location of SWATH D (red box) relevant to several key questions of 4DMB (Fig. 1) and shows the planned distribution of the 153 stations of SWATH D (Fig. 2).

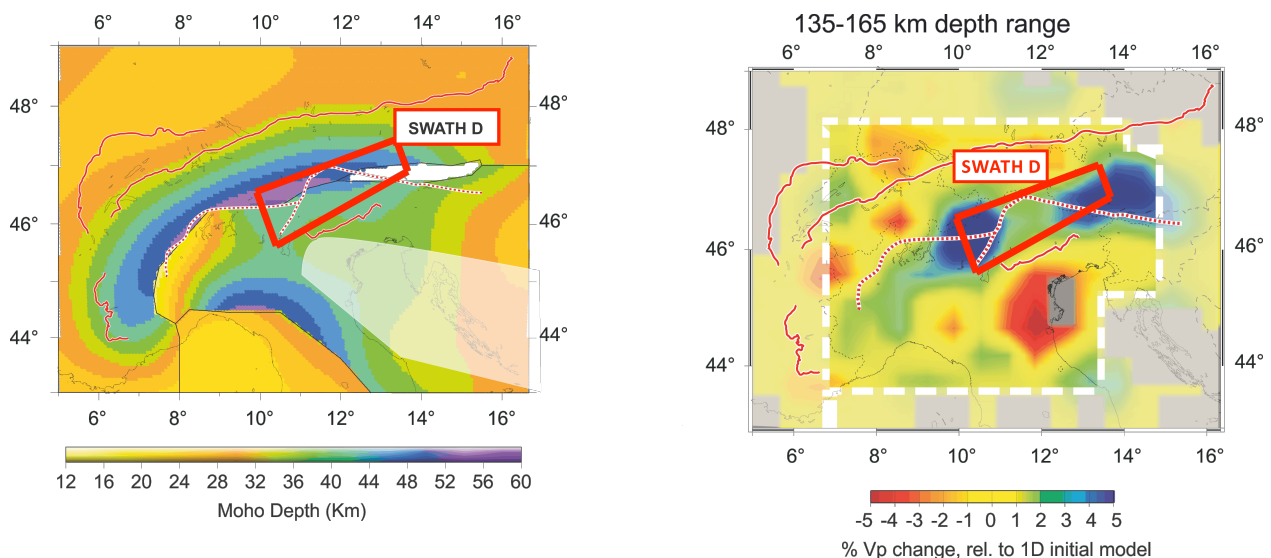


Fig. 1: Structure of crust, Moho and upper mantle in the Alps and location of SWATH D. (Left) Moho depth map (Spada et al. 2013). White indicates a lack of a detectable Moho. Mayor fault systems are shown as dashed lines. The red box indicates the location of SWATH D. **(Right)** Tomographic P-velocity depth slice between 135 and 165 km depth (after Lippitsch et al. 2003). The red box indicates the planned location of SWATH D, covering the two slabs and the suggested gap between them.

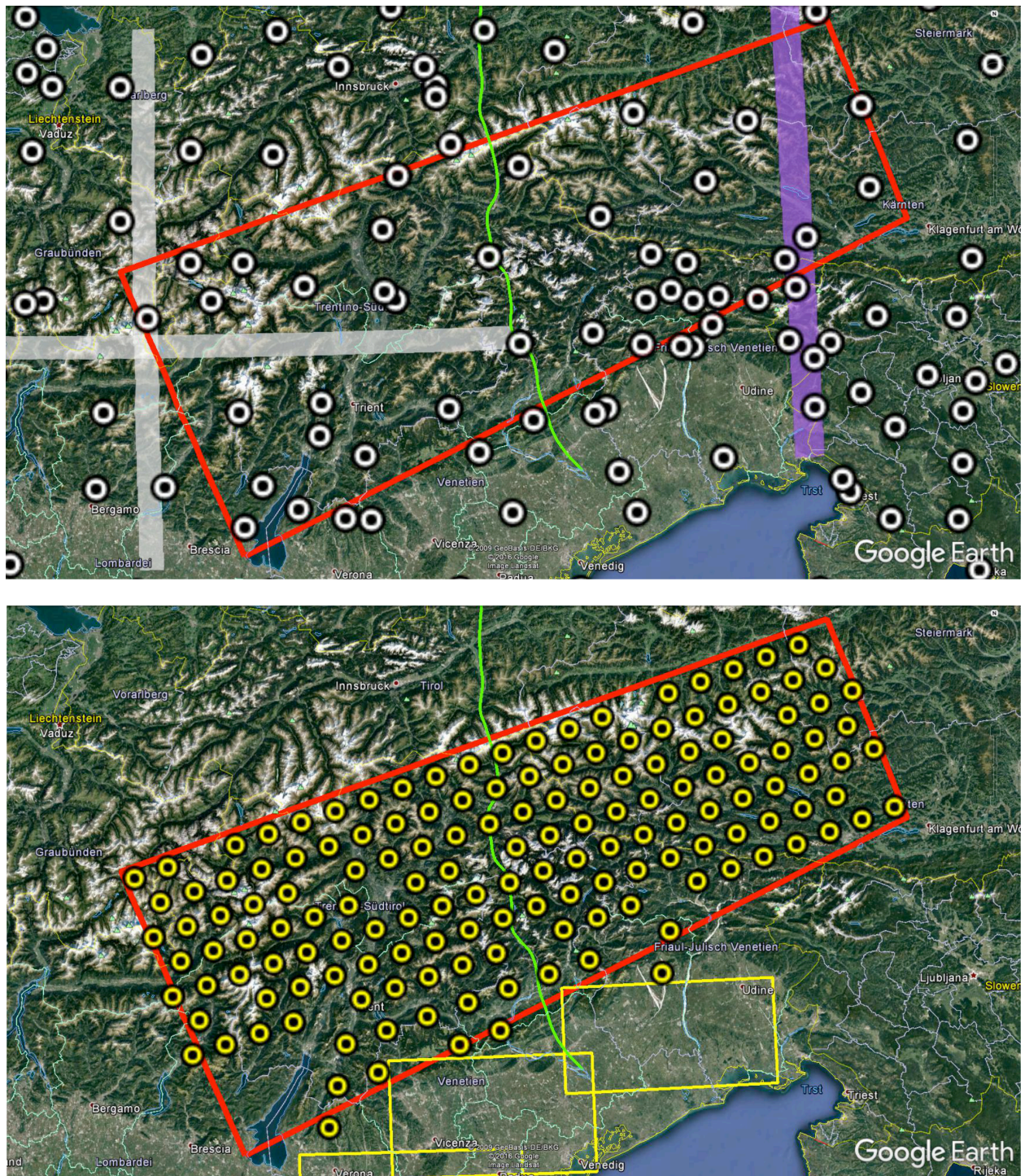


Fig. 2: Station distributions – (Top) International AlpArray network with all broadband seismometers. White Circles - permanent national stations & AlpArray network stations including DSEBRA stations, SPP-proposal DSEBRA by Friederich et al.. Purple Line - passive seismic profile EASI – Czech-Austria-Swiss profile (two lines 12 km apart, 2015-2016 <https://imgw.univie.ac.at/forschung/geophysik/projekte/easi/>), Green Line – active + passive seismic experiment TRANSALP (TRANSALP 2002, 2006; Lüschen et al. 2004). White Lines – proposed passive profiles by Levander et al. (2017-2018, proposal submitted to NSF-USA in summer 2016). The area of SWATH D is given as a red box. **(Bottom) Station distribution within SWATH D (red box).** The area covered by the stations (yellow circles, 153 stations) is ca. 120 x 315 km with an average station spacing of 15 km. For reference, the track of TRANSALP is shown.