



## **The TomoCH network and surface wave tomography in Europe**

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Dynamics and  $V_s$  models of the European lithosphere are to a large degree limited by the resolution and sensitivity of current tomographic studies. Inadequate data coverage and insufficient sensitivity to  $V_s$  hinder the application of body wave tomographic studies to inversions for shear wave structure, limiting output of such studies to stable  $V_p$  models. However, surface waves are sensitive to  $V_s$  and inversion of dispersion data limits vertical smearing in the resulting model. We measure source/station group and station/station phase dispersion curves for fundamental mode Rayleigh and Love waves from waveform data recorded by numerous seismic stations now operating in and around Switzerland: the Swiss Digital Seismic Network (SDSNet), a dense permanent array including 29 STS-2 broadband seismometers with a station spacing of approximately 40-50 km, and the 7 temporary STS-2 broadband seismometers of the TomoCH (Tomography of Confederatio Helvetica), installed peripherally to Switzerland. We merge our new observations with data previously collected and/or measured in European and global studies, including the MIDSEA experiment. The resulting amalgamated database has path coverage sufficiently dense to allow high resolution tomographic mapping of group velocity perturbations in central, western, and southern Europe. Additionally, we invert fundamental mode Rayleigh wave phase dispersion data for local 1-D  $V_s$  models between station couples in the central Alps and adjacent basins. Group velocity maps and  $V_s$  profiles generated during this study should benefit a comprehensive lithospheric model of Europe by adding constraints on  $V_s$ , supplied by dense high quality surface wave measurements in and around the central Alps.