



Travel-time residuals of core phases recorded on the AlpArray seismic network

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The AlpArray Seismic Network is a large, temporary network of broadband seismometers ranging from the river Main in Germany into the Apennines in Italy and from the Massif Central in France to the Pannonian Basin in Hungary, including a network of ocean-bottom seismometers in the Ligurian sea. As part of the multinational AlpArray initiative, it is by far the largest collaborative seismic network in Europe to date, including more than 600 stations. Due to rigorous installation quality requirements, many of its temporary seismometers have even a lower noise level than surrounding permanent stations.

Most of the studies in the AlpArray initiative focus on the crust and lithosphere so far, using ambient noise and local earthquakes. Earthquakes in teleseismic distance are relatively few and mainly concentrated on eastern back-azimuths in Asia. To study the transition zone and the lower mantle, body waves from distant earthquakes in all azimuths would be needed. The dense network allows to use more exotic phases, like PKIKP and PKP. Recording a similar phase on a dense network allows to map the core-response part of the waveform into the source time function and exploit the remaining residual for waveform tomography of the deep mantle. As a first step, we show waveforms and travel-time residuals of core phases recorded along several important transects and show the residual travel-times after crustal correction.