

EGU2020-13785

<https://doi.org/10.5194/egusphere-egu2020-13785>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



No polarity switch? Continental subduction of European crust below the Eastern Alps imaged by receiver functions

Stefan Mroczek^{1,2}, Frederik Tilmann^{1,2}, Xiaohui Yuan¹, Jan Pleuger², and Ben Heit¹

¹GFZ Potsdam, Potsdam, Germany (mroczek@gfz-potsdam.de)

²Freie Universität Berlin, Berlin, Germany

In the Eastern Alps, teleseismic tomography suggests that there is a switch from European subduction in the west to Adriatic subduction in the east. The dense SWATH-D seismic network is located in the central-eastern Alps between around 10°E and 14.5°E where a change in the dip direction was suggested to occur (e.g. Lippitsch et al. 2003; Mitterbauer et al. 2011). The receiver function method is particularly sensitive to velocity contrasts and so is suited to imaging the interfaces associated with subduction. New receiver function migrations from SWATH-D stations (supplemented by the AlpArray Seismic Network and the EASI profile) show no evidence for Adriatic subduction in the Eastern Alps. Instead, a southward dipping interface [or pair of interfaces with opposite polarity] which we interpreted as subducting European lower crust can be traced below the Eastern Alps to a minimum depth of 120 km along the extent of SWATH-D. This suggests that in the Alps the polarity flip in subduction does not occur or is located east of our study region beyond 14.25°E, much further east than tomography suggests.