



Imaging the Variscan suture and deformation at the KTB deep drilling site, Germany

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The upper crust of the KTB (Kontinentales Tiefbohrprogramm) area in Southeastern Germany is a focal point for the Earth Science community due to the huge amount of information collected throughout the last thirty years. In this study we explore the crustal structure of the KTB area through the application of the receiver function (RF) technique to a new data set recorded by 9 temporary seismic stations and 1 permanent station. We aim to unravel the seismic structure and compare our results with previous information from the reflection profiles collected during the initial site investigations. Vs-depth profiles for stations located on the same geological units, display common features and show shallow S-wave velocities typical of the outcropping geological units (i.e. sedimentary basin, granites, metamorphic rocks). At around 10 km depth we observe a strong velocity increase. For the stations located in the center of the area, this variation is weaker, which we assume to be the signature of the main tectonic suture in the area (i.e. the Saxothuringian-Moldanubian suture), along an West-to-East extended region, may be due to the presence of the allochthonous klippe trapped between the main crustal terrains that came in touch during the Variscan orogeny. We detect strong anisotropy within the upper crust, testifying the deformation recorded during the Variscan orogeny, and compare our results with direct information from the deep drill site.