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TranSCorBe Project: A high-resolution seismic-passive profile to study the variation of the crustal and upper mantle structures under the Betic mountain ranges

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The goal of this project is to study the crustal and upper mantle structures under the Betic mountain ranges and their variations between the different geological domains. We deployed 50 broadband and short period seismic stations during 18 months following two profiles. We collect teleseismic events to perform a high-resolution P-to-S and S-to-P receiver function analysis. The main profile (TranSCorBe), of 160 km length, starts near the coast in Mazarrón (Murcia) and follows a NW-SE direction, crossing the Cazorla mountain range. It probes, from south to north, the Alboran domain (metamorphic rocks), the External zones (sedimentary rocks) and the Variscan terrains of the Iberian Massif. The spacing between stations is around 3-4 km. This inter-station distance allows us mapping with high accuracy the variations of the crust and upper mantle discontinuities in the Betic Range and their transition to the Iberian Massif. A second profile (HiRe II) with a larger spacing between seismic stations, is a continuation of a previously installed HiRe I profile, a NS profile starting near the Mediterranean coast in Adra (Almería) through Sierra Nevada Mountains. HiRe II profile prolongs HiRe I profile until the Variscan intersecting with TranSCorBe profile near Cazorla.