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ASTERICS (= Geophysical Studies near the Ascension Transform: Evolution of Ridge Segmentation and Crustal Structure) - Segment A0/A1

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The ASTERICS project investigates the crustal and upper mantle structure in the area of the Ascension Transform (AT) at the Mid-Atlantic-Ridge (MAR). The AT is a "double transform fault" consisting of two parallel transform fault/fracture zone systems sandwiching a very short segment. The project investigates the tectonics and structure of the double transform as well as the segments south of it. Here four spreading segments can be identified. Segment A1 is formed by a typical axial ridge with a distinct graben. To the South segment A2 continues with an intermediate shaped seafloor topography, while the segment A3, is marked by a well-defined axial high. Subject of this poster are seismic models derived 1.) from data collected along a 200 km long wide–angle seismic profile (OBS), which has been recorded along the center of the SAFZ and 2.) from data collected along a 85 km long profile across the well pronounced MAR of segment A1. Slightly offset to the East an axial ridge like graben is observed between the two transforms at the western end of the AT. The velocity model derived from a first arrival tomography after Korenaga et al. (2000) of the MAR in segment A1 shows a high of the mantle 15 km east of the axial graben. A tongue of reduced velocities (6-6.5 km/s) indents from West underneath it. Together with the elevated seafloor on the Eastern flank of this MAR segment this setting forms the typical structure expected with Inside-Corner-Highs (ICH) and Outside-Corners (OC). From available bathymetry no corrugated surface has been identified, arguing for a young stage of development.