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Mantle structure beneath the Alboran Sea from shear wave splitting

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We evaluate global circulation models in the context of seismic anistropy as inferred from *SKS/SKKS* splitting observations for the Alboran Sea. Using instantaneous velocity fields from 3-D flow models with additional mantle density, we calculate the predicted anisotropy, fast polarization direction (FPD), and *SKS* delay times in order to explain the complex tectonic and geologic history of the Alboran Sea region. Slab rollback, delamination, and convective removal processes have been invoked to explain the synorogenic extension and recently published splitting measurements show north-east trending FPD across the Iberian margin with a rotation to the southeast that follows the curve of the Gibraltar arc, suggested as supporting west-directed slab rollback. Our new measurements from 39 stations in southern Spain and Morocco substantiate published estimates in southern Spain, but we find a rotation in azimuth and reduced delay times across the High Atlas Mountains. Our preliminary results show that density models which include a ENE trending structure which curves southward around the Gibraltar arc, plus a stiff continental keel beneath Africa, produce splitting orientations and delay times that best match the observations.