Tectonics

Supporting Information for

Mantle flow and deforming continents: From India-Asia convergence to Pacific subduction

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Introduction

- This file contains figures S1 to S8 called in the main text of the paper. These supplementary figures show
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    - A comparison of these trajectories at the scale of the Mediterranean with SKS anisotropy (S2)
    - Comparison of SKS fast splitting directions with SL2013sv anisotropy at 200 and 100 km (S3)
    - Comparison of two sets of seismic anisotropy data: SKS fast splitting directions with SL2013sv anisotropy 25km below the LAB within two models of lithospheric thickness (S4)
    - Comparison of seismic anisotropy at different depths with that 25 km below LAB on top of lithospheric thickness (S5 and S6)
    - Comparison of S-wave seismic anisotropy at 100 km and 200 km on top of lithospheric thickness and with long-term kinematic trajectories (S7)
    - Comparison of principal horizontal stress (s_{Hmax}) directions from the World Stress Map with S-wave seismic anisotropy (S8).

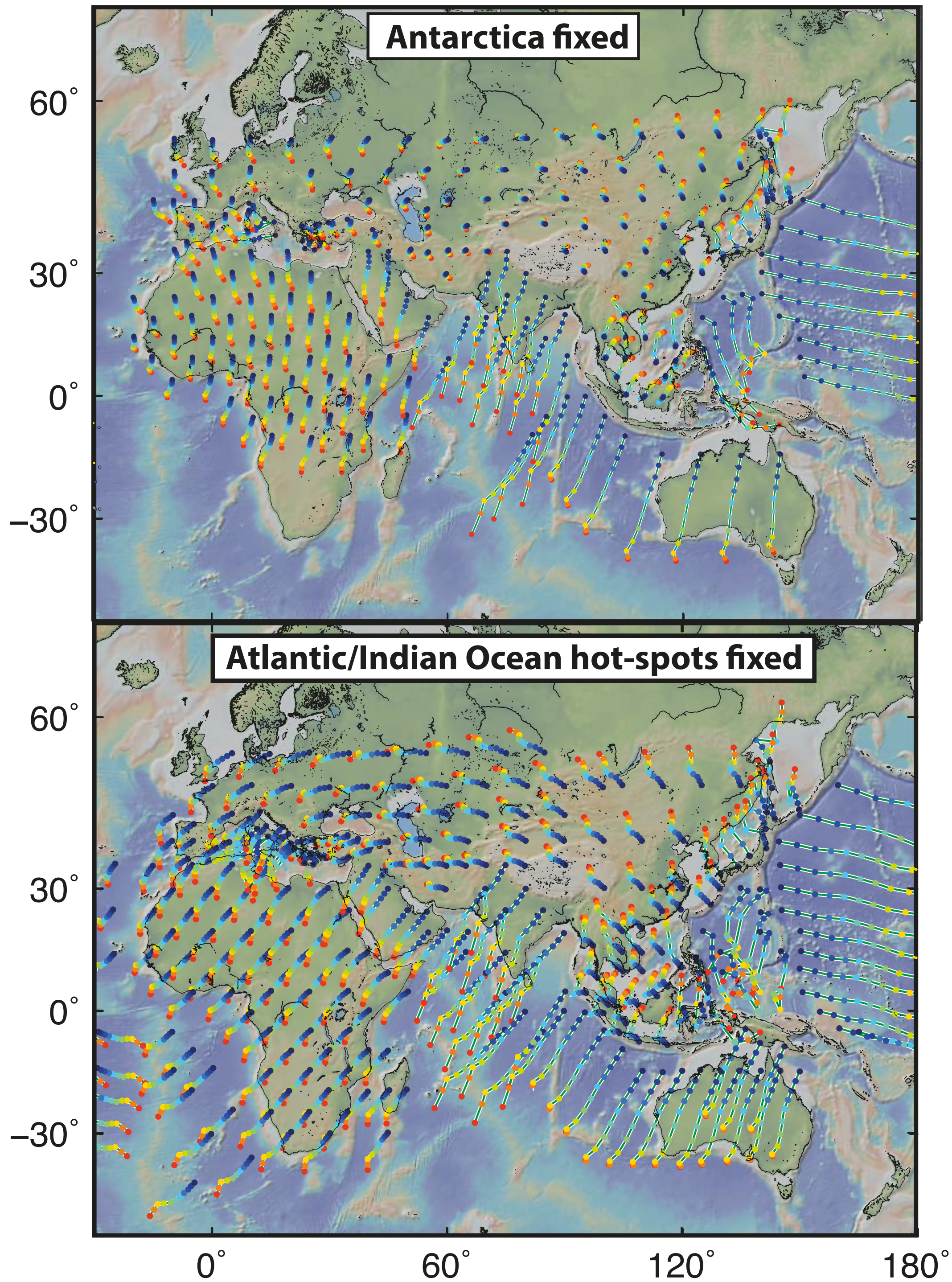

Figure S1. Kinematic trajectories since 50 Ma showing the long-term flow at the surface in two reference frames (Antarctica fixed and Indian ocean/Atlantic Ocean hot spots fixed). The trajectories were built with G-Plates (www.gplates.org) (Boyden et al., 2011) and plotted with GMT (Wessel and Smith, 1991; Wessel et al., 2013). The kinematic model is based on Seton et al. (2012) with local modifications in the Mediterranean and East Asia from Jolivet et al. (1991; 1994; 2003) and Menant et al. (2016).

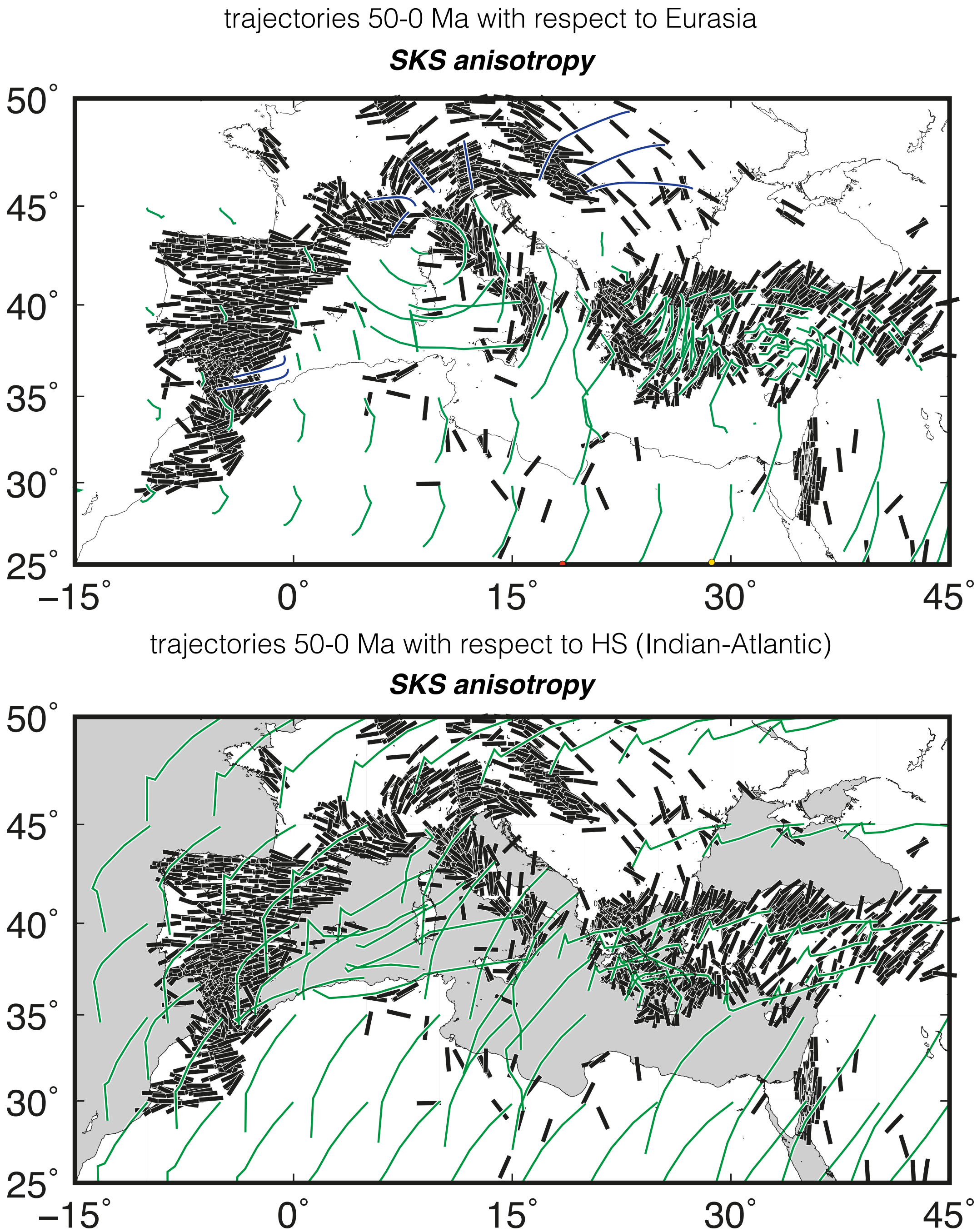

Figure S2: Kinematic trajectories since 50 Ma showing the long-term flow at the surface in two reference frames (Eurasia fixed and Indian ocean/Atlantic Ocean fixed) compared with SKS-wave splitting anisotropy for the Mediterranean region. The trajectories were built with G-Plates (www.gplates.org) (Boyden et al., 2011) and plotted with GMT (Wessel and Smith, 1991; Wessel et al., 2013). The kinematic model is based on Seton et al. (2012) with local modifications in the Mediterranean and East Asia from Jolivet et al. (1991; 1994; 2003) and Menant et al. (2016).

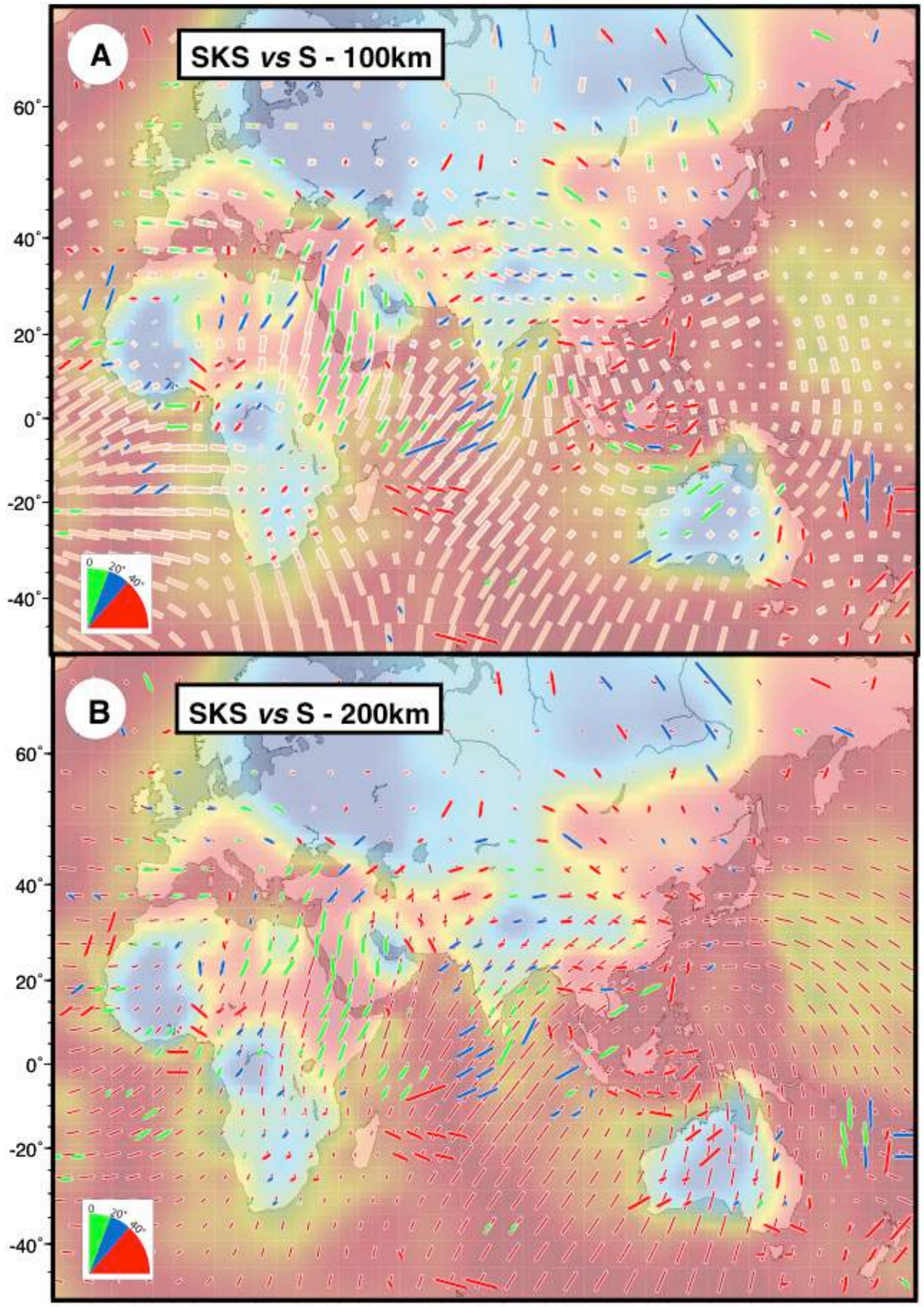

Figure S3: Comparison of SKS fast splitting directions with SL2013sv anisotropy. (A) and (B) comparison of SKS fast splitting directions (colored symbols) and SL2013sv anisotropy at 100 and 200km on top of the lithospheric thickness map of Steinberger and Becker [2016]. Colored symbols represent smoothed SKS fast splitting direction from available data, green for the best fit, blue for intermediate fit and red for poor fit.

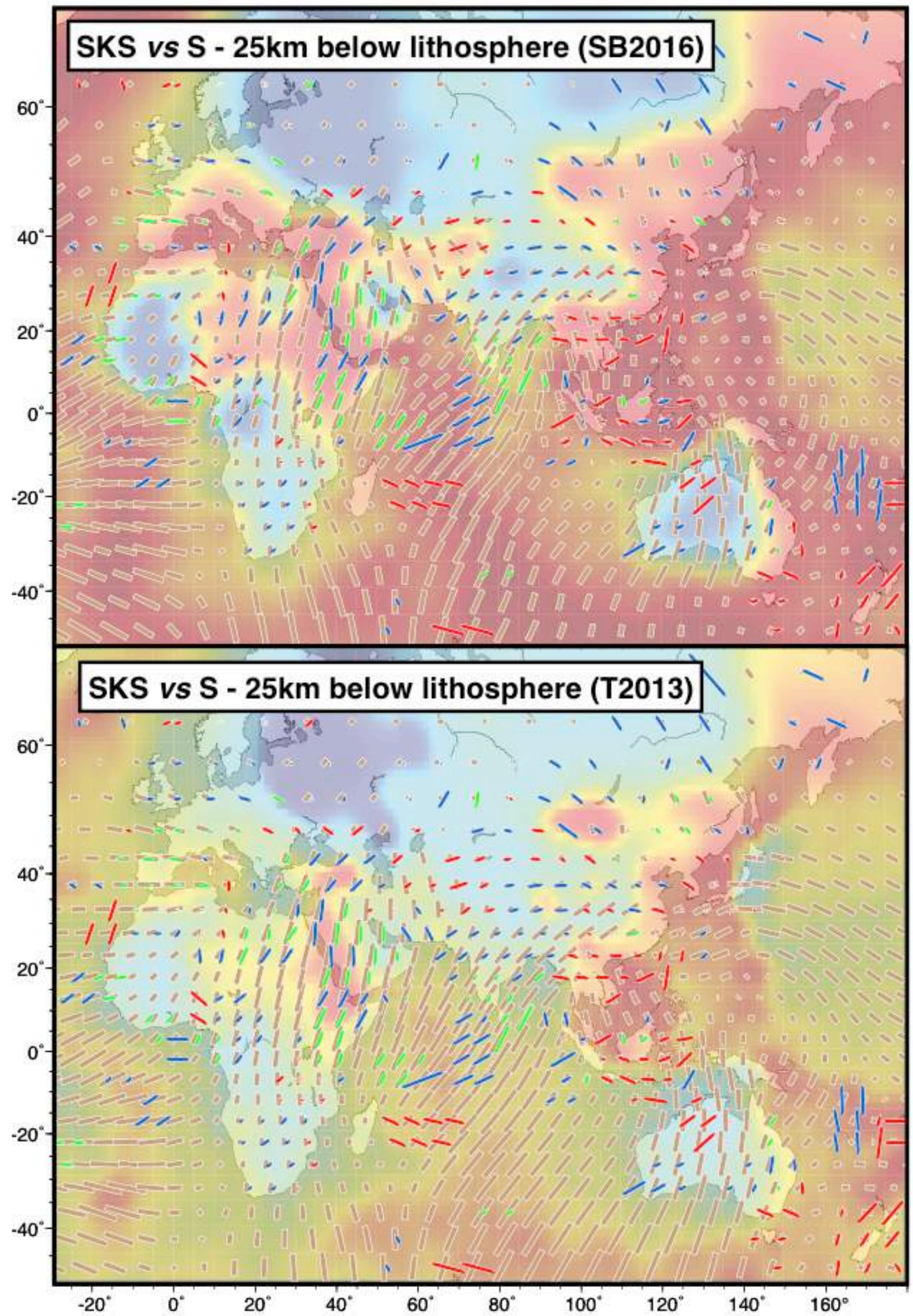

Figure S4: comparison of two sets of seismic anisotropy data: SKS fast splitting directions (colored symbols) on top of SL2013sv anisotropy [*Schaeffer and Lebedev*, 2013] 25km below the LAB with two models of lithospheric thickness : SB2016 [*Steinberger and Becker*, 2016] and T2013 [*Tesauro et al.*, 2013]. Green, blue, and red symbols represent the quality of the match (from best to poorest).

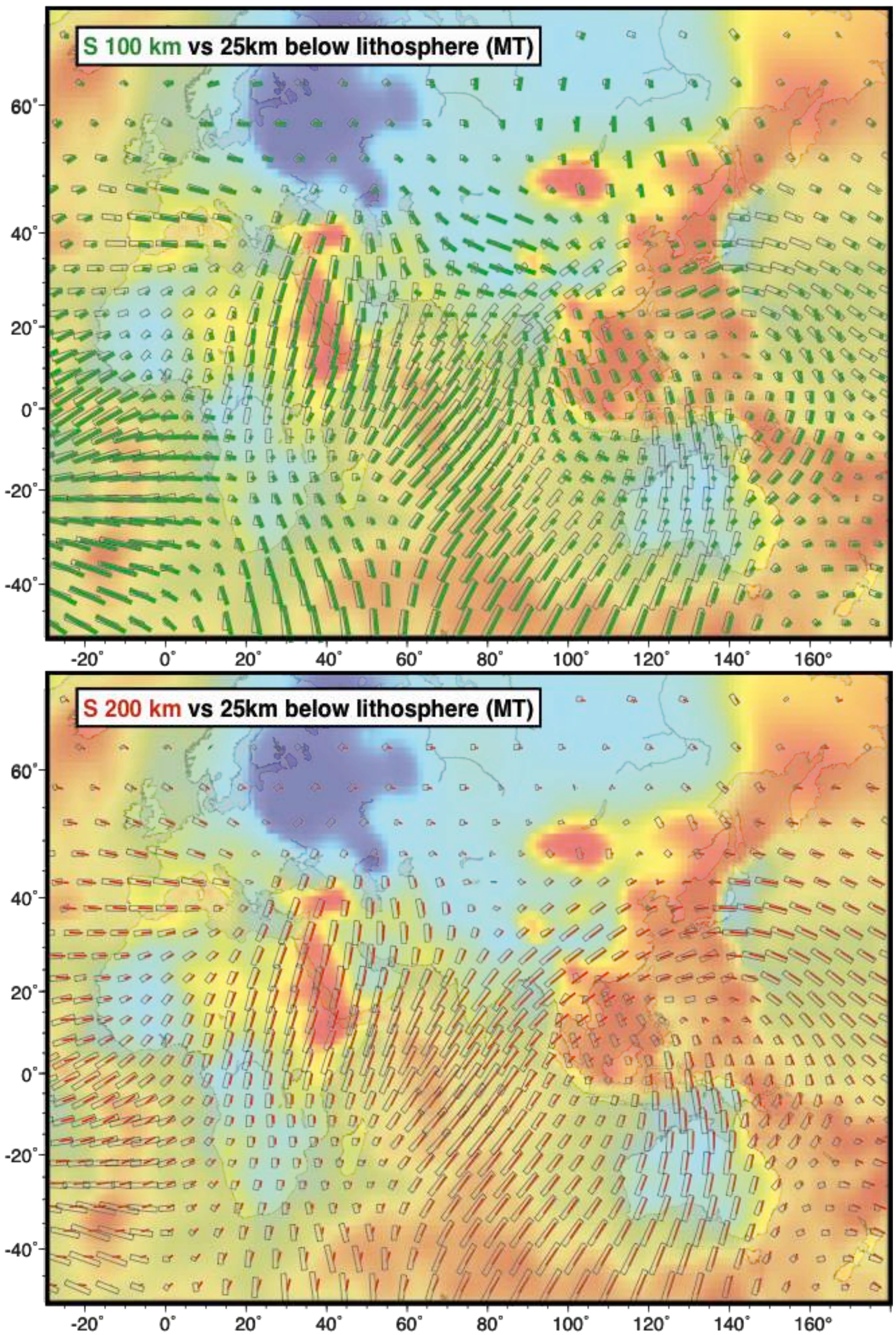

Figure S5: Comparison of seismic anisotropy [*Schaeffer and Lebedev*, 2013] at different depths with that 25 km below LAB with the Tesauro et al.'s model of lithospheric thickness [*Tesauro et al.*, 2013]. Upper: 100 km versus 25 km below LAB. Lower: 200 km versus 25 km below LAB.

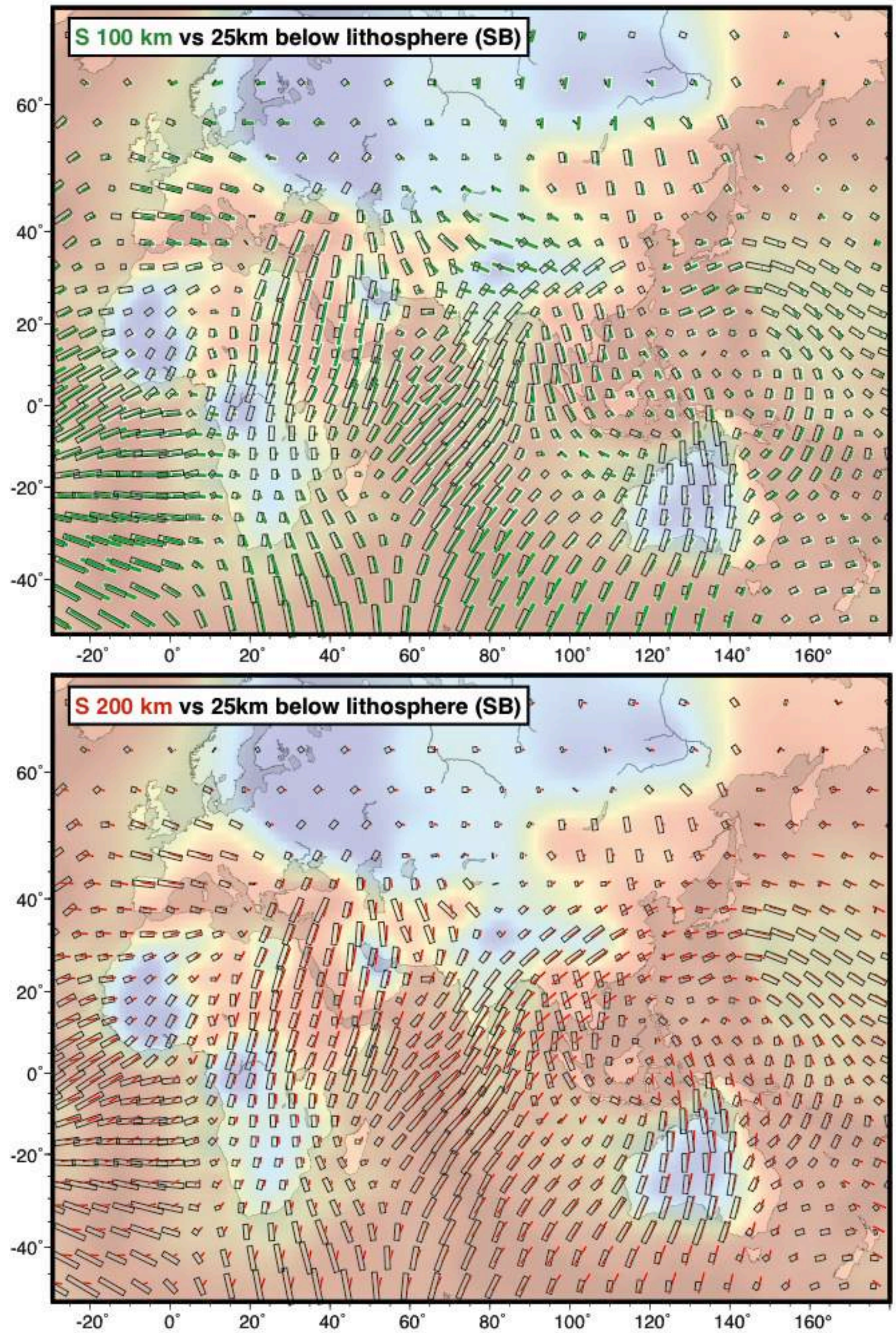

Figure S6: Comparison of seismic anisotropy [*Schaeffer and Lebedev*, 2013] at different depths with that 25 km below LAB with the Steinberger and Becker's model of lithospheric thickness [*Steinberger and Becker*, 2016]. Upper: 100 km versus 25 km below LAB. Lower: 200 km versus 25 km below LAB.

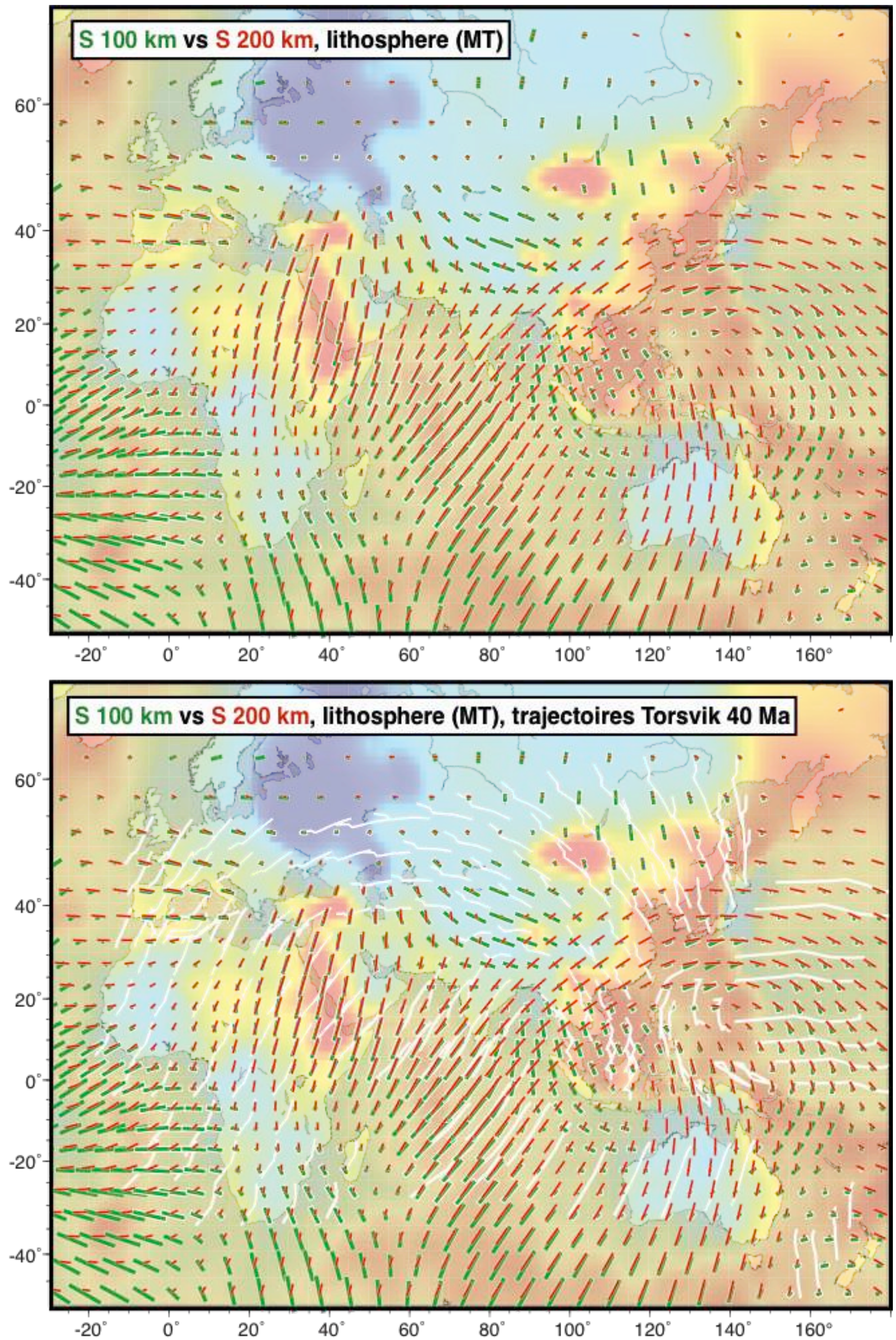

Figure S7: Comparison of seismic anisotropy [*Schaeffer and Lebedev*, 2013] at 100 km and 200 km on top of the Tesauro et al.'s model of lithospheric thickness [*Tesauro et al.*, 2013]. Lower: same as upper with the addition of long-term kinematic trajectories.

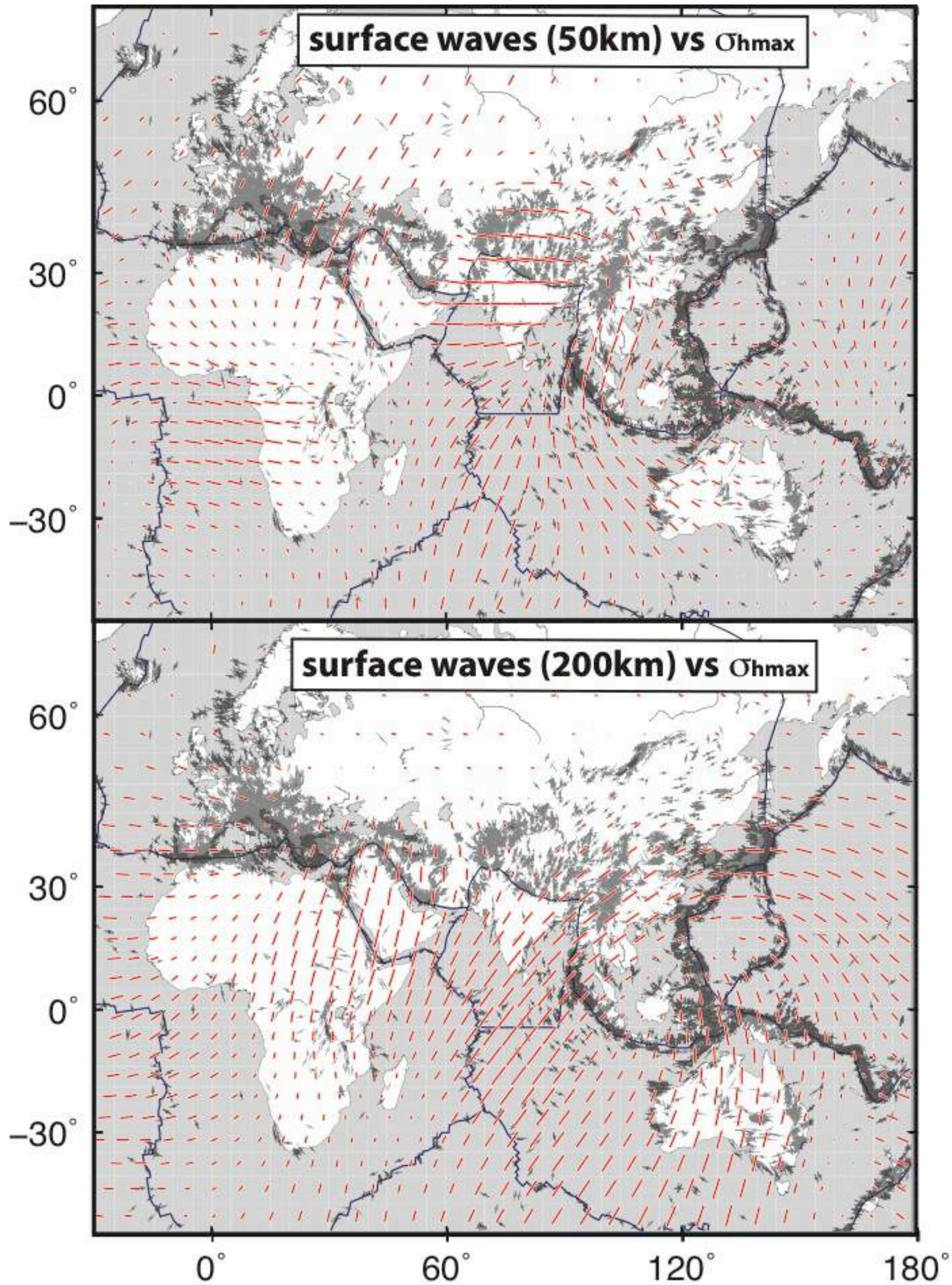

Figure S8: Principal horizontal stress (s_{Hmax}) directions from the World Stress Map [*Zoback*, 1992; *Heidbach et al.*, 2016] and seismic anisotropy [*Schaeffer and Lebedev*, 2013].