

Figure 6. Model of the Hawaiian plume. (a) Model shear-wave splitting due to mantle flow in the asthenosphere (i.e, splitting accumulated over 200-100 km depths) beneath a fast moving (90 km/Myr) lithospheric plate. (b) SWS at the surface including the added effects of fossil LPO, simulated by imposing a lithospheric layer (i.e., $T_p < 1100^{\circ}$ C) with olivine *a* axes preferentially parallel to the black double arrow. Circle denotes radius and location of plume stem, and white curve marks boundary of sheared plume pancake. (c) The results from (b) are displayed as white bars on a bathymetry (http://topex.ucsd.edu/sandwell [*Smith and Sandwell*, 1997], illuminated from the west) map of the Hawaiian Chain. Red bars show predicted splits with fast directions that are within 19° of those measured by *Collins et al.* [2012] (black bars). (d) Perspective view of model plume showing two vertical cross-sections of temperature (red is hot, blue is cool) and the 1360°C isosurface, illuminated from the upper left.