



Figure 1. (left) Map of study region showing anomalous region of slow upper mantle (shaded), and directions of mantle strain inferred from seismic anisotropy (arrows). Two distinct anisotropic layers are shown for the continent (top, grey; bottom, white), one for the ocean (based on spreading direction). The schematic cross section AA' shows strain directions and hypothesized locations of Hales (H) and Lehmann (L) seismic discontinuities. (Right) Shear wave velocity at 130 km depth for North America (from van der Lee and Nolet, 1997) suggest that low velocity region may extend into the oceanic lithosphere.