2008 Fall Meeting
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Cite abstracts as **Author(s) (2008), Title, *Eos Trans. AGU,* *89*(53), Fall Meet. Suppl., Abstract xxxxx-xx**

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HR: 0800h
AN: **DI21A-1727**
TI: Mantle Anisotropy Beneath the Hawaiian Islands from Measurements of Shear-wave Splitting: Results from the PLUME Ocean-Bottom and Land Seismograph Deployments
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AB: The fieldwork component of the Hawaiian PLUME (Plume-Lithosphere Undersea Melt Experiment) project consisted of two consecutive one-year deployments of ocean-bottom seismometer (OBS) and land stations, respectively offshore and on the Hawaiian Islands. Thirty-five OBSs were deployed in the first year in a relatively dense array around the modern locus of the Hawaiian hotspot; in the second year, 38 OBSs were deployed over an area extending from

west of Kauai to east of Hawaii. Ten portable land stations were operated for a period spanning both OBS deployments. We have analyzed SKS phases recorded by both OBS and land stations for anisotropy-induced shear-wave splitting. Splitting measurements were typically made in the frequency band 0.05-0.1 Hz in order to minimize tilt-generated noise at the low-frequency end and microseismic noise at the high end. Only events with $M_W \geq 6$ yielded measurements with adequate precision. Data quality is such that there are about 5 events per station that yield good splitting measurements. Splitting parameters were measured using the stacking technique of Wolfe and Silver [1998]. The geographical distribution of fast-polarization azimuths does not show an obvious signature of a localized center of mantle upwelling and divergence. Fast azimuths are predominantly parallel to the fossil spreading direction (~75°), with a smaller number parallel to the present-day direction of absolute plate motion (-58°). Measured delay times are typically about 1 s or less, although some stations display larger splitting times of 1-2 s. The variability in the delay times across the different stations may indicate differences in either the degree of anisotropy or thickness of the anisotropic lithosphere. Some well- constrained null measurements may provide constraints on the amount of heating and deformation of the lithosphere due to interaction with upwelling mantle.
DE: 7208 Mantle (1212, 1213, 8124)
DE: 7218 Lithosphere (1236)
DE: 8137 Hotspots, large igneous provinces, and flood basalt volcanism
SC: Study of the Earth's Deep Interior [DI]
MN: 2008 Fall Meeting

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