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TITLE: Crustal structure of Shatsky Rise from joint refraction and reflection seismic tomography

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AUTHORS (FIRST NAME, LAST NAME): Jun Korenaga¹, William W. Sager²

INSTITUTIONS (ALL): 1. Yale University, New Haven, CT, United States.

2. Texas A&M University, College Station, TX, United States.

Title of Team:

ABSTRACT BODY: Shatsky Rise in the western Pacific is one of a few gigantic oceanic plateaus in the world, with a surface area of $\sim 4.8 \times 10^5 \text{ km}^2$ (about the same size as California). In contrast to other large oceanic plateaus formed during the Cretaceous Quiet Period, Shatsky Rise formed during the frequent reversals of magnetic polarity, allowing its tectonic environment to be resolved in detail. It was formed at a rapidly spreading ridge-ridge-ridge triple junction, so the effect of lithospheric lid on magma migration is expected to be minimal, thereby facilitating the petrological interpretation of its seismic structure in terms of parental mantle processes. In the summer of 2010, a seismic refraction survey combined with multichannel seismic profiling was conducted across Shatsky Rise. Twenty eight ocean-bottom seismometers were deployed along two crossing perpendicular lines, and all of the instruments were recovered successfully, yielding a large volume of high-quality wide-angle refraction and reflection data, with the source-receiver distance often exceeding 200 km. In this contribution, we present the P-wave velocity structure of the Shatsky Rise crust, which is constructed by joint refraction and reflection travel time tomography, and also discuss its implications for the origin of Shatsky Rise.

KEYWORDS: [3038] MARINE GEOLOGY AND GEOPHYSICS / Oceanic plateaus and microcontinents, [7270] SEISMOLOGY / Tomography, [8137] TECTONOPHYSICS / Hotspots, large igneous provinces, and flood basalt volcanism.

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SPONSOR NAME: Jun Korenaga

Additional Details

Previously Presented Material:

Contact Details

CONTACT (NAME ONLY): Jun Korenaga

CONTACT (E-MAIL ONLY): jun.korenaga@yale.edu
