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Relationship between ridge segmentation and Moho transition zone structure from 3D multichannel seismic data collected over the fast-spreading East Pacific Rise at 9°50'N

***Aghaei, O**

omid.aghaei@Dal.Ca

Earth Sciences, Dalhousie University, Halifax, NS, Canada

Nedimovic, M R

mladen@dal.ca

Earth Sciences, Dalhousie University, Halifax, NS, Canada

Canales, J

jpcales@whoi.edu

Woods Hole Oceanographic Institution, Woods Hole, MA, USA

Carton, H D

hcarton@ldeo.columbia.edu

Lamont-Doherty Earth Observatory, Palisades, NY, USA

Carbotte, S M

carbotte@ldeo.columbia.edu

Lamont-Doherty Earth Observatory, Palisades, NY, USA

Mutter, J C

jcm7@columbia.edu

Lamont-Doherty Earth Observatory, Palisades, NY, USA

We present stack and migrated stack volumes of a fast-spreading center produced from the high-resolution 3D multichannel seismic (MCS) data collected in summer of 2008 over the East Pacific Rise (EPR) at 9°50'N during cruise MGL0812. These volumes give us new insight into the 3D structure of the lower crust and Moho Transition Zone (MTZ) along and across the ridge axis, and how this structure relates to the ridge segmentation at the spreading axis. The area of 3D coverage is between 9°38'N and 9°58'N (~1000 km²) where the documented eruptions of 1990-91 and 2005-06 occurred. This high-resolution survey has a nominal bin size of 6.25 m in cross-axis direction and 37.5 m in along-axis direction. The prestack processing sequence applied to data includes 1D and 2D filtering to remove low-frequency cable noise, offset-dependent spherical divergence correction to compensate for geometrical spreading, surface-consistent amplitude correction to balance abnormally high/low shot and channel amplitudes, trace editing, velocity analysis, normal moveout (NMO), and CMP mute of stretched far offset arrivals. The poststack processing includes seafloor multiple mute to reduce migration noise and poststack time migration. We also will apply primary multiple removal and prestack time migration to the data and compare the results to the migrated stack volume. The poststack and prestack migrated volumes will then be used to detail Moho seismic signature variations and their relationship to ridge

segmentation, crustal age, bathymetry, and magmatism. We anticipate that the results will also provide insight into the mantle upwelling pattern, which is actively debated for the study area.

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