2008 Fall Meeting
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HR: 0800h
AN: **B21A-0323**
TI: Deep reflection structure imaged by the 2008 3D seismic reflection Survey at the RIDGE- 2000 East Pacific Rise Integrated Studies Site
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AB: The first multi-source and multi-streamer 3D seismic reflection experiment carried out using academic resources was done aboard the *R/V Marcus G. Langseth* in Summer 2008 during cruise MGL0812. The targeted area was the RIDGE-2000 Integrated Studies Site at the East Pacific Rise. Our primary 3D survey grid extends from about 9° 57'N to 9° 42'N, with a smaller grid just to the south covering approximately from 9° 40'N to 9° 37.5'N. Additionally, about 1 and 0.5 km wide across-ridge-axis swaths of data were collected at 9° 36'N and 9°30'N respectively, as well as an along-ridge-axis swath about 1 km wide and extending from 10° 05'N to 9° 40'N. We here focus on a preliminary analysis of the reflection structure imaged within the lower crust and uppermost mantle. Moho reflection arrivals are imaged through much of the investigated area. The character of Moho reflection events varies from simple, single reflection wavelet to more complex arrivals indicating spatial changes in structure within the Moho transition zone. Particularly strong Moho reflections are observed in the southern half of the main 3D grid. In places, Moho reflection event appears to extend across the ridge axis potentially suggesting "zero-age" Moho development. Weak Moho arrivals are found at the north end of the main 3D box and within the smaller box to the south. Most notable place lacking Moho reflections is the Lamont seamount area where Moho is not observed on either side of the ridge axis, although the area lacking Moho reflections is wider on the western ridge flank. Further south, along the across-ridge-axis swaths, Moho reflections again become more pronounced. A suit of what mostly appear to be reflection events is recognized between the AMC and Moho. Many of them do not appear to be multiples, and their origin is not well understood. Possible origins for these events include: lower boundary of the AMC, S-converted waves, and lower crustal melt lenses. Along sections of the two 3D grids, possible subhorizontal, low signal-to-noise ratio mantle reflections are identified 1-2 s after the Moho reflection. Arrivals potentially originating from lower crustal melt sills, zero-age Moho, and mantle reflections are all of critical importance for understanding fast spreading centers. In the years to follow, we will put significant effort to analyze the identified arrivals in order to determine their origin and find where they fit within the crustal accretionary puzzle.
DE: 3025 Marine seismics (0935, 7294)
DE: 3035 Midocean ridge processes
SC: Biogeosciences [B]
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