

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: **B21A-0320**
TI: **New observations of the magmatic segmentation of the East Pacific Rise from Siquieros to Clipperton from a multi-streamer seismic reflection imaging study**
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AB: In summer 2008, we collected the first multi-streamer 3D seismic reflection dataset of the new national seismic imaging facility, the R/V Marcus G. Langseth, during cruise MGL0812. Our survey included a primary 3D grid extending from 9°57' to 9°42' centered on the EPR ISS "bull's eye" site at 9°50' and 3 parallel along axis lines extending from ~10°05' N to 9°40N. The central along-axis line was extended to encompass the entire length of the ridge from Clipperton to Siquieros fracture zones to facilitate regional studies of magmatic segmentation along the full length of this first order ridge segment. Multibeam bathymetry data were collected simultaneously with the seismic data using the 1°x1° beam EM120 available on the Langseth providing high quality bathymetry extending 30-40 km to either side of the axis north of 8°50'N. In this presentation we present preliminary results focused on axial segmentation from Siquieros to Clipperton. The data reveal fine-scale segmentation of the axial magma lens coincident with the volcanic segmentation of the ridge axis evident in the seafloor morphology. Each volcanic segment is associated with a discrete melt lens, ~5-10 km long, and, in several cases, defined by diffractions from the lens edges. Adjacent lenses differ in reflection strength, depth, and dip. At the discontinuities, lenses are offset from one another and overlap forming shingled lenses in along-axis view and multiple lenses in cross-axis view. These magma lens discontinuities correspond with offsets in the axial summit trough and changes in the volcanic morphology of the axial high, and point to a similar lifespan for these structures. The segmentation of the axial magma body observed in our new data is also apparent in early seismic reflection data collected with the R/V Conrad over 20 years ago, indicating persistent segmentation through the two volcanic eruptions that have occurred in this region since this time.
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