



Galicia3D seismic volume: Connections between the western termination of the S reflector and eastern termination of the Peridotite Ridge

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In June thru September, 2013, a 3D reflection and a long offset seismic experiment were conducted at the Galicia rifted margin by investigators from the US, UK, Germany, and Spain. The 3D multichannel experiment covered 64 km by 20 km (1280 km²), using the RV Marcus Langseth. Four streamers 6 km long were deployed at 12.5 m hydrophone channel spacing. The streamers were 200 m apart. Two airgun arrays, each 3300 cu in, were fired alternately every 37.5 m, to collectively yield a 400 m wide sail line consisting of 8 CMP lines at 50 m spacing.

We draw attention to the region from the Peridotite Ridge, PR, (on the west) and the western terminus of the S reflector (on the east). The S reflector is generally thought to separate continental crust and pre- and syn-rift sediment above, and serpentinized upper mantle below. In 2D and 3D seismic reflection data, the S reflector is very bright, generally horizontal, and is terminated very abruptly at the western end. The latter is particularly clear in the 3D volume. It is about 10-15 km wide between the end of the S reflector and the midpoint of the PR. In this interval, there appear to be fault bounded blocks that may be either continental crust or pre- or syn-rift sediments.

The PR is a virtually straight, N-S ridge, without apparent fault offsets. The crest of the PR is at about 4800 mbsl at the S extent and is at 6070 mbsl at the N extent of the 3D volume. The crest is approximately linear in map view or N-S extent. Both sides, East and West of the PR, appear to show landslides and other mass wasting during the late stage of the syn-rifting interval. The PR rarely shows internal seismic structure in 2D and 3D. Most importantly, under the basin to the east of the PR there are substantially more recognizable structures connecting the S reflector and the PR. These were much less interpretable in previous 2D seismic profiles.