

# Oceanic core complexes along the Parece Vela Rift

# Kyoko Okino[1]; Yasuhiko Ohara[2]

[1] ORI; [2] Hydrographic and Oceanographic Dept.of Japan

<http://ofgs.ori.u-tokyo.ac.jp/~okino/index.html>

The Parece Vela Basin is an extinct backarc basin that was formed between late Oligocene to Miocene. The seafloor is characterized by chaotic topography called oceanic core complexes. An oceanic core complex is the structure where the lower crust and mantle materials are exposed along long-lived detachment fault under the extensional field. The structure is usually accompanied by unique morphological character, a domed high with flow-line parallel corrugations, which is called as megamullion. Many oceanic core complexes were reported on- and off-axis areas of the slow-spreading Mid-Atlantic Ridge and the similar exposure of mantle materials were found in ultraslow spreading ridges although they are not always accompanied by corrugated surfaces. The melt-starved, tectonic dominant ridge process occupies not negligible areas of world ridges and important for understanding the structure and heterogeneity of oceanic lithosphere. Along the extinct spreading axis of the Parece Vela Basin, the Parece Vela Rift, some megamullions were found. The largest one called the Godzilla Mullion is located at 16-40N and extends about 120 km in the flow-line direction. It is arealy ten times as large as a typical megamullion in the Mid-Atlantic Ridge. Mantle peridotites were recovered over 120km full length of the corrugated surface. The corrugated surface shows long wavelength duration along the flow-line, which may indicate the multiple detachments. Magnetic anomalies in this are is very weak and complicated due to the proximity to the magnetic equator and the highly segmented topography, making it difficult to identify the magnetic lineations. Our recent survey and data compilation reveal the magnetic lineation pattern and their ages in some part of the central Parece Vela Rift. The full-spreading rate is estimated as 70-80mm/yr that is categorized in to intermediate spreading systems. Intermediate spreading ridges in general show large varieties in their morphological and structural features mainly depending on the thermal structure. The anomalously deep rift valley of the remnant rift and many oceanic core complexes indicate that the Parece Vela Basin was formed under the melt-starved, tectonic dominant extension. Our magnetic results also show the asymmetry of the spreading rate over the oceanic core complexes. A megamullion located at 18N is a 50km long high with corrugated surface, where the spreading rate is three times as fast as the rate in the counterpart. It means that about 75% of the seafloor spreading occurred as the mantle/lower crust exposure along the detachment fault. Another example of the melt-starved, intermediate spreading is in the Australian Antarctic Discordance in the Southeast Indian Ridge, where we also found the large asymmetry over the oceanic core complexes.