

Seafloor fabric of the Mesozoic Pacific Plate

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We present the seafloor fabric map of the Mesozoic Pacific Plate that was made on basis of swath bathymetric data. Swath bathymetric data can reveal seafloor fabric on not only young plates, but also on the old plates. We are mapping seafloor tectonic fabric to expose the tectonic history of the Mesozoic Pacific Plate. Seafloor fabric is especially indispensable to expose the tectonic history of the Cretaceous Quiet Zone.

We used the swath data collected in the research cruises on R/V KAIREI, R/V OKOSUKA, R/V MIRAI, and R/V Hakuho-maru with swath data obtained from the institutions of other countries. We mapped abyssal hills, fracture zones, abandoned spreading centers, seamounts, knolls, and faults due to subduction of the Pacific Plate.

Most of the abyssal hills are parallel to magnetic anomaly lineations. Some curved abyssal hills, which are traces of propagating rifts, were discovered. We also found elongated hills, which strike is parallel to the seafloor spreading. They were traces of non-transform discontinuity.

Two fracture zones, which are Kashima and Nosappu fracture zones, are the remarkable topographic features in the studied area. The topographic expression of the Kashima Fracture Zones is elongated scarps, which height is about 500 m. The width of the fracture zone is about 35 km. The topographic feature of the Nosappu Fracture Zone north of 37 40 N is two linear troughs with linear ridges. The height of the western trough is become smaller to south. The height of the northern part of the trough is about 700 m and that of the southern part is 200 m. The width of the NFZ is about 30 km at 38 20 N.

There are many knolls in the study area. The diameter of the knolls is about 10 km. The height of the knolls is about 500 m. Several knolls are aligned with the direction of seafloor spreading.