

Bending-related topographic structures of the subducting Pacific plate in the Northwestern Pacific Ocean

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Prolonged topographic structures associated with bending of the subducting Pacific plate along the trenches of the western margin were investigated using multibeam bathymetric data, accompanying reidentification of magnetic anomaly lineations on the Pacific plate to reveal controlling factors for strikes of bending-related topographic structures. The newly compiled bathymetric map demonstrates that most of bending-related topographic structures exist in the oceanward trench slopes within 100 km from trench axes. The bending-related topographic structures are developed parallel to the trench axis or inherited seafloor spreading fabric. Seafloor spreading fabric were reactivated instead of forming new trench parallel structures in the area where it strikes at an angle less than 30 to a trench axis. The topographic expression of bending-related structures is classified into two types according to whether new structures develop parallel to the trench axis or inherited seafloor spreading fabric reactivates. That of reactivated structures is characterized by half-graben or narrow ridge topography. That of newly formed structures is characterized by a horst and graben topography.

Keywords: bending-related topographic structures, seafloor spreading fabric, Pacific Plate