Taitao ophiolite: a collided segment of a mid-oceanic ridge

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The Pliocene Taitao ophiolite exposed near the Chile triple junction has an E-MORB composition and is attributed to obduction of an oceanic floor or fore-arc igneous activity. The rocks of Chile ridge are known to become enriched along segments near to the South American continent and therefore, it is difficult to judge its origin from the composition. To elucidate the origin of the ophiolite, we mapped this area in detail.

The Taitao ophiolite consists of, from the lowest part in the south, harzburgite, massive and layered gabbro, sheeted dike complex and sequence of pillow lavas and sediments. These sequences generally strike east-west and dip toward north. Though, there was no outcrop that indicate contact relationships with the host rocks, we confirmed that fault between Cabo Raper pluton in the south and ophiolite suggested elsewhere does exist but inside the harzburgite. There was no positive evidence in outcrops that indicate contact metamorphism. We also confirmed that observed internal contacts of the ophiolite sequence are of primary and not fault contacts as reported elsewhere. There was no structural gap observed across internal contacts.

Our field observation indicates that the Taitao ophiolite exposes a section of collided oceanic ridge. Westward dipping paleoslope deduced from slumping structures, asymmetry in sheeted dike complex suggests that it is western side of the ridge now exposed.