

## Geophysical-petrological studies of the Chile triple junction and their significance: MIRAI research cruise MR-1806Leg2

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The Chile triple junction (CTJ) is a unique place where a spreading center of mid-ocean ridge is subducting near the Taitao peninsula. Around CTJ, presence of high heat flow on the continental slope (Cande et al., 1987, *J. Geophys. Res.*) and near-trench young granitic rocks on the Taitao peninsula (Anma and Orihashi, 2013, *Geochem. J.*) suggests the thermal and petrological impact of subducting ridge on the continental side. The tectonic history of the southeast Pacific since early Cenozoic to the present suggests that ridge subduction continuously occurred along the Chile trench, which migrated northward (Cande and Leslie, 1986, *J. Geophys. Res.*), which can contribute to growth of the continental crust (Iwamori, 2000, *EPSL*).

In January 2019, the MR18-06 cruise Leg 2 was conducted at the Chile Triple Junction, as a part of 'EPIC' expedition by using R.V Mirai of JAMSTEC. During the leg, we completed 4 SCS lines, 6 piston coring, 6 heat flow measurements, 2 dredges, and underway geophysics observations, as well as deployment of 13 OBSs. The primary object of heat flow measurement at CTJ is to better constrain the thermal regime around CTJ by adding new data right above CTJ. The key question is whether CTJ is thermally dominated by ridge activity (magmatic, tectonic, and/or hydrothermal) or by subduction initiation (tectonic thickening, accretion, and/or erosion). The ultimate goal is to model the temperature at the plate interface from the heat flow and other data, and to infer how the thermal regime at CTJ contributes the seismogenic behavior at the M<sub>9</sub> megathrust zone.

Our preliminary analysis shows high and variable heat flow around CTJ. It is generally consistent with previous heat flow along line 751 (Cande et al., 1987). With SCS and piston core data, a reasonable thermal model can be constructed around CTJ. (Acknowledgment) we thank the Hydrographic Department of Chile (SHOA), for allowing to enter the Chilean EEZ and territory for our survey.

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