

## Thermal effect of the petit spot volcanism on the old oceanic plate

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Recent heat flow measurements on the seaward slope and outer rise of the Japan Trench revealed the existence of high heat flow, higher than the reliable heat flow values measured in the old ocean basins. It indicates that the thermal structure of the topmost part of the plate is anomalous in this area. One of possible causes of this anomaly is the thermal effect of intra-plate volcanism called 'petit spot'. The 'petit spot' volcanism was found through discovery of young volcanic rocks on the seaward slope of Japan trench and on the Pacific plate 600km away from the trench (Hirano et al., 2006). Heat flow measurement is a useful tool for investigation of thermal effect of this intra-plate volcanism and the spatial and temporal extents of its activity. Integrated research on the 'petit spot' volcanism, consisting of heat flow measurement, electromagnetic survey, seismic survey and petrological and geochemical studies, has been extensively conducted (Baba et al., 2007).

In the 'petit spot volcanism area', only four heat flow data had previously been obtained on the KR04-08 and KR05-10 cruises. We conducted a heat flow survey on the KR07-06 cruise in May, 2007, aiming to investigate the extent of the thermal effect of the 'petit spot'. Measurements were made along a 1000 km long, WNW-ESE traverse line and 17 new values were obtained at 8 stations. At most stations, heat flow is 50 to 70 mW/ m<sup>2</sup>, slightly higher than the typical value for ocean basins older than 100 m.y. (about 50 mW/ m<sup>2</sup>). In the area around the sites where young volcanic rocks were collected, heat flow seems to be relatively high, about 70 mW/ m<sup>2</sup>, which may reflect the thermal influence of magma intrusion. It is, however, not as high as the anomalous values reported on the seaward slope of the Japan Trench (70 to 90 mW/ m<sup>2</sup>). In contrast, extremely low heat flow, 20 mW/ m<sup>2</sup>, was measured in the vicinity of the Yukawa Knoll, which was formed by the 'petit spot volcanism'. It might result from some kind of fluid flow activity such as hydrothermal circulation in this area. We should conduct more dense heat flow measurements to evaluate the thermal effect of the 'petit spot volcanic activity'.