

Heat flow distribution seaward of Japan Trench off Sanriku

Masataka Kinoshita[1]; Makoto Yamano[2]; Shusaku Goto[3]; Keiko Fujino[4]; Hiromi Fujimoto[5]

[1] JAMSTEC; [2] ERI, Univ. Tokyo; [3] AVL, Kyoto Univ.; [4] Earth Resources Eng., Kyushu Univ.; [5] RCPEV, Graduate School of Sci., Tohoku Univ.

It was reported that high heat flow was observed at some stations on the Pacific plate seaward of the Japan Trench. Along a parallel of 38.75N, heat flow values higher than 70 mW/m² were obtained on the seaward trench slope and the outer swell by surveys made in 1996 and 1997. To investigate this anomaly in more detail, we conducted heat flow measurements along the same line on the KH-05-03 cruise of R/V Hakuho-maru in October, 2005. 14 heat flow values were obtained at 6 stations using an ordinary deep-sea heat flow probe and a piston corer equipped with small temperature recorders.

The new data range from 50 to 90 mW/m², confirming the existence of high heat flow in this area. Combined with the previous results, they revealed that the heat flow distribution along the survey line is complicated: heat flow is normal (around 50 mW/m²) at some stations, while it is high (higher than about 70 mW/m²) at other stations. This heat flow anomaly is observed over the area where the Pacific plate is being bent near the trench, indicating that the anomaly may be associated with the deformation of the subducting plate. It is also possible that intraplate volcanism recently found seaward of the Japan Trench has provided heat sources for the anomaly. We need to make more measurements along a different line and/or on the Pacific plate without deformation for examining these hypotheses.