

Development of long-term heat flow monitoring systems on the sea floor

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Since 1990, several types of long-term heat flow monitoring system have been developed. They were deployed, for up to one year, in active margins such as hydrothermal areas in spreading centers and cold seepage related to subduction. A probe type system is designed for use in sedimented environments, a thermal blanket type is for bare rocks, a cable type is expected to monitor the time and spatial temperature distribution in diffuse hydrothermal sites, and a moored system can monitor the vertical temperature profile of hydrothermal plumes.

Semi-diurnal temperature variations are commonly observed, which result from ocean or earth tides. These can be used to derive thermal diffusivities precisely. Heat flux from hydrothermal vents were determined as a function of time.