

Fluctuation in Flow Velocity and Temperature of Hydrothermal Fluids at Suiyo Seamount, Izu-Bonin Arc

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We deployed a deep-sea fluid monitoring system, Medusa/Gemini, at Suiyo Seamount, Izu-Bonin Arc, Japan, in August 2001. The Medusa/Gemini is an instrument designed by a team lead by A.Schultz and monitors the flow rates and temperature of effluent flowing out of a cased seafloor borehole. We deployed three Gemini#3, #4 and #5 and recovered #3 and #5 by ROV-Hakuyo 2000. We recovered Gemini#4 using submersible-Shinkai2000, 23 days after the deployment. G3 was set up on two borehole sites with high temperatures of about 300 Celsius degrees for an hour. Gemini#5 was set up on the borehole with temperature of several tens of degrees for 9 hours. Gemini#4 was recorded flow rate, fluid temperature and seawater temperature for 23 days on the borehole site. Power spectrum analysis on this data shows clear periodicity. Flow rate and fluid temperature of Geminis shows wide variation with several peaks. Fluctuations in the fluid velocities show strong correlation with that of temperature for all Geminis. It suggests that the fluid is driven by buoyancy.