HOTPLUME

IMPROVING UNDERSTANDING OF DEEP-OCEAN HYDROTHERMAL FLOWS AND THEIR INVOLVEMENT IN BIOGEOCHEMICAL CYCLES AND MINERAL RESOURCES

The objective of the HOTPLUME project is to improve understanding of the spatial and temporal dynamics of deep hydrothermal systems and determine the importance of hydrothermal gases relating to mineral resources and to what extent they are involved in major biogeochemical cycles.

Over the past decade, the need for a tool to explore vast distances of the deep oceans has led to the development of autonomous undersea platforms such as AUVs. Combined with appropriate in-situ chemical sensors, they are able not only to detect the presence of hydrothermal activity with considerable precision but also to measure the flows within rising and steady-state hydrothermal plumes and map the distribution of gases within the plume.

HOTPLUME will involve equipping AUVs with an in-situ mass spectrometer to quantify gas concentrations and flow and determine the chemical, physical and potentially biological processes controlling the behaviour and future of the gases dissolved in the plumes.

The resulting temporal and spatial high resolution data will be used to better understand the role of hydrothermal systems in biogeochemical cycles.

Partner

Research center

Ifremer, Brest [Project Developer]

Funder

- Agence Nationale de la Recherche

Labelisation

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545 K€