Wave Gliders Collect Live Ocean Data from Hawaiiâ€™s Kilauea Volcano Lava Flow

Two Wave Gliders (autonomous ocean robots) of Liquid Robotics are deployed to capture live ocean data close to where lava is flowing into the ocean from Hawaii's Kilauea Volcano. By using this unmanned technology, scientists have the rare opportunity to study the effects of the lava entering the ocean, the plume it creates and the interactions of the lava and seawater directly from the surface of the ocean. Very few volcanic eruptions and lava flows have ever been monitored in real time from the ocean before.

Over the next three weeks, the Wave Gliders will operate a precise zigzag course, approximately 300m from the lava flow plume, collecting rare subsurface, surface and atmospheric data. Working with top researchers from the University of Hawaii at Hilo, Massachusetts Institute of Technology (MIT), and the U.S. Geological Survey's Hawaiian Volcano Observatory (USGS-HVO), the Wave Gliders host a wide assortment of sophisticated sensors to measure water temperatures, oxygen levels, pH levels, salinity, turbidity, conductivity and underwater acoustics. The Wave Gliders will stay on station, continuously capturing sustained, high-resolution measurements and imagery throughout the mission.

Two Wave Gliders at Kilauea Plume.

Obtaining measurements in a safe way

“The effect of this massive lava flow entering the ocean is dramatic and amazing, but at the same time somewhat mysterious" said Roger Hine, CTO and co-founder of Liquid Robotics. “Detailed measurements of the ocean plume and the ecosystems it impacts are now possible and safe to obtain with unmanned systems like our Wave Gliders. This is an opportunity of a lifetime to deploy our ocean robots to help advance science.”

By using an unmanned ocean robot vs. sending a research ship, researchers can collect scientific data on this rare volcanic event without risk to humans. This point was made upon arrival of the first Wave Glider at the lava flow location, surface water temperatures measured above 120F/49C. Conditions dangerous for humans, less so for ocean robots.

Oceanographic conditions

“The plume of hot, sediment-laden water generated by the lava flowing into the ocean spreads out, impacting surrounding ecosystems and permitted boaters operating in the area,” said Dr. Steve Colbert, University of Hawai'i at Hilo. “We don't know how far and how deep that plume extends, or how it changes with oceanographic conditions or changes in the flow of lava. The Wave Gliders provide us the opportunity to answer these important questions.”

Data collected by the Wave Gliders will also help scientists observe in real time the impact of volcanic eruptions and lava flows on marine life (coral reefs and fish populations) and air quality affecting the Hawaiian islands. As a Company with roots on Hawaii island and a dedication to care for the environment and Hawaii's communities, understanding the quality of the lava haze (laze) generated by Kilauea is of great importance.

https://www.hydro-international.com/content/news/wave-gliders-collect-live-ocean-data-from-hawaii-s-kilauea-volcano-lava-flow