



Monitoring CO2 Fluctuations Over Subsea Volcano Using the OC1250 Sensor

 ANB Sensors

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OVERVIEW

Monitoring pH for CO2 fluctuations over a subsea volcano is critical because volcanic activity can release large amounts of CO2 into surrounding waters, significantly impacting ocean chemistry. pH is a key indicator of changes in CO2 levels, as increased CO2 lowers pH, leading to ocean acidification. By tracking these fluctuations, scientists can better understand the effects of volcanic emissions on marine ecosystems, including coral reefs and biodiversity. This data also helps predict broader environmental changes, such as shifts in ocean circulation and the global carbon cycle.

USE CASE

Accurately monitoring pH and CO2 fluctuations in remote and harsh environments, such as underwater volcanic sites, presents significant challenges. Traditional pH sensors often require frequent recalibration and maintenance, which is impractical in deep-sea conditions.

To overcome these challenges, the OC1250 sensor was integrated into a SeaExplorer glider, providing a robust, calibration-free solution for measuring pH and observing CO2 fluctuations over the subsea volcano. The glider was equipped with a suite of additional sensors, including CTD (conductivity, temperature, depth), DO (dissolved oxygen), pCO2 (partial pressure of CO2), CH4 (methane), and ADCP (acoustic Doppler current profiler), allowing for comprehensive environmental monitoring.

The OC1250 sensor's ability to maintain consistent performance in such extreme conditions, without the need for recalibration, was critical for ensuring accurate and reliable data collection. By autonomously tracking pH and CO2 levels, the sensor provided key insights into the dynamics of volcanic CO2 emissions and their impact on ocean chemistry.

AT A GLANCE

- **Seamless Glider Integration:** ANB pH sensor was successfully integrated into a Seaexplorer glider, providing real-time, data along with other sensors.
- **Monitoring Extreme Environments:** The sensor withstood harsh underwater conditions, delivering measurements of pH fluctuations caused by volcanic CO2 emissions.
- **Supporting Advanced Research:** The deployment enabled continuous, autonomous monitoring, offering valuable insights into CO2 dynamics and acidification patterns around the subsea volcano,

The OC1250 sensor's ability to perform long-term, hands-off monitoring in harsh conditions makes it a powerful tool for studying subsea volcanic activity and its impact on marine ecosystems.