

# Oceanography Seminar

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### “Phosphorus dynamics during lava-seawater interaction”

Phosphorus (P) is an inescapable requirement for life on Earth – essential for building nucleotides, membranes and energy stores within all cells. The distribution of P (largely in the form of phosphate) in the global oceans has a huge impact on primary productivity and hence the marine food web overall. One of the biggest abiotic sinks of marine phosphate occurs along mid-ocean ridges through scavenging by iron oxy-hydroxides that are formed during hydrothermal circulation. This process also occurs during lava-seawater interaction in the upper water column – where there is a more direct and immediate impact to primary production – but has not been studied before now. During the 2018 eruption of Kīlauea volcano, lava poured into the sea for approximately 2 months, creating 3.5 km<sup>2</sup> of new land area. Three days after lava began entering the ocean, satellite observations of the upper water column revealed high levels of chlorophyll a along flow lines leading away from the ocean entry site, into waters that are normally oligotrophic and host very low primary productivity.

An oceanographic expedition was conducted during July 13-17, 2018, to investigate. This presentation will combine field data from the oceanographic expedition to Kīlauea’s ocean entry along with experimental data in order to provide a more in-depth look at the conjoined dynamics of P and Fe during lava-seawater interaction, with an attempt to separate biotic and abiotic controls on phosphorus sinks.

**Thursday December 12<sup>th</sup>, 2019 3:00p.m. MSB 114**