

Hydrothermal deposits may be created as a result of either ultramafic rock-seawater or basalt-seawater reactions. Previous studies of slow-spreading ridges indicate that in addition to basalts ultramafic rocks often make up a significant proportion of the upper oceanic crust. These ultramafic rocks are partially to completely serpentinized, indicating that reaction of hydrothermal fluids with upper mantle lithologies is a common process. The present project aims to sample the serpentinized ultramafic-hosted hydrothermal systems in the Logatchev field region directly south of the Fifteen-Twenty Fracture Zone at the Mid-Atlantic Ridge. The occurrence of both high- and low-temperature ultramafic-hosted systems leads to pronounced differences in the secondary mineralogy when compared to basalt-hosted hydrothermal systems. Our main aims are to study the mineralogical, geochemical and isotopic composition of bulk and clay samples to quantify the chemical changes related to serpentinization. From this we hope to better define the significance of reactions between seawater and lower crust/upper mantle in global lithosphere-seawater exchange.

To achieve these aims we will have a ship-based sampling of the Mid Atlantic Ridge between 14°45'N and 15°05'N using the RV Meteor from 15.1. to 13.2.2004 (M60/3).