The third dimension of the ultramafic-hosted Logatchev-1 hydrothermal field: sulfide formation, evolution, and fluid flow in the subseafloor.

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The overall goal of this project is, to establish the subseafloor extent and variability of hydrothermal mineralization in an ultramafic environment. We will use the remotely operated Rockdrill 2 of the British Geological Survey to sample 15 m long cores from the active Logatchev-1 hydrothermal field located at 14°45'N on the Mid-Atlantic Ridge. Geochemical, mineralogical, and isotopic investigations of hydrothermal precipitates and mineralized rocks will help to answer the following main scientific questions: 1. What is the size and vertical extent of mineralization and what are possible zonation patterns at depth? 2. What distinguishes the smoking crater environment from typical mound-style sulfide deposits? 3. What is the nature of mixing/cooling processes in the shallow subsurface and how do these processes influence the vent fluids and possibly the faunal assemblages? (in cooperation with other working groups) 4. What is the influence of episodic hydrothermal activity and remobilization processes on the metal budget and distribution within this deposit?