

# Mantle, water and life: the ultramafic-hosted Rainbow hydrothermal field

10<sup>th</sup> - 12<sup>nd</sup> June 2015 - Lyon, France

<http://rainbow2015.univ-lyon1.fr>

The Rainbow massif, located at 36°14'N along the mid-Atlantic ridge (MAR), is one of the most spectacular expressions of the interplay between magmatic, tectonic, hydrothermal, and biological processes at slow-spreading ridges. It hosts the Rainbow hydrothermal field that is rooted in deep-seated rocks (gabbroic and mantle rocks) most probably exhumed along a detachment fault now thought to be inactive. A great amount of work has been conducted at the Rainbow site in recent years. However, to fully understand the functioning of the hydrothermal system, direct observation and sampling of the subsurface are still required and can be achieved only by drilling.

To promote and develop a drilling proposal, we organize a 3-days MagellanPlus workshop in Lyon, with the following goals:

- (1) to synthesize existing data and our knowledge of processes occurring at Rainbow and other high-T and low-T peridotite-hosted sites, such as Logachev, Ashadze, Semenov, or Lost City.
- (2) to identify remaining scientific questions regarding the functioning of these systems, i.e. nature of the heat source, composition of the lithosphere involved in fluid-rock reactions, controls on fluid composition and fluid paths, nature and origin of organic compounds, extent of the deep biosphere.
- (3) to plan a coordinated research effort in the coming years, that integrates the role of ocean drilling in advancing our understanding of the Rainbow hydrothermal system, that could become the high-T reference site for ultramafic-dominated settings.
- (4) to discuss the drilling strategy (e.g. location of target sites, multiple shallow holes versus a deep hole, seabed rock drill...) and the relevance of a long term monitoring of boreholes with a particular attention to the environmental impact issues for the ecosystem.

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The number of participants is limited to 35. To submit an expression of interest, please pre-register on <http://rainbow2015.univ-lyon1.fr> before March 15st 2015.