

## InterRidge Theoretical Institute 2019

# Hydrothermalism in 4D: current challenges and emerging issues



**Location:** Banyuls-sur-mer, France

**Date:** 18-21 November 2019

### Scope and goals

This 4<sup>th</sup> Theoretical Institute InterRidge will build on the current scientific momentum and emerging themes related to hydrothermal systems and how they interact with other oceanic components. New challenges have been raised on the links between tectonic complexities and magmatic-hydrothermal processes, hydrothermal contribution to global ocean budgets (e.g. heat, carbon, iron), the dynamics and mechanisms of long-range interactions of vent systems as well as their role on deep-sea ecosystem functions and responses to global change.

Building an integrated vision of hydrothermal processes over space and time, on which quantitative approaches and predictive models should be based, is of crucial needed. Beyond the opportunity to exchange on new technologies, interdisciplinary challenges (including capacity building and methods/tools sharing across disciplines), the Theoretical Institute aims to contribute to setting up the scene for the next decade plan, underlining critical knowledge gaps and perspectives for the current research momentum. Methodology and knowledge needs for biodiversity, mineral resource assessments and environmental impact monitoring will also be considered.

The ultimate goal of this Theoretical Institute is to draft a position paper that will help bringing together ideas, concepts, expertise and know-how and that will help strengthening the fundamental frame and develop strategies to fill remaining gaps, while ensuring that the growing community of scientists interested in vent systems has access to suitable basic knowledge.

### Organization

This 4<sup>th</sup> Theoretical Institute of InterRidge proposes a set of lectures in the first day (November, 18) followed by four workshop sessions in the next two days (November, 19-20). The last day (November, 21) will be dedicated to writing sessions and wrap up. The sessions will include keynotes, short talks and discussions. A young-scientist poster session will be organized with a best-poster award selection.

The **lectures/seminars** (30/45 min + discussion) open to all participants, lecture are targeting young scientists and will address crossed methodological and theoretical issues at the forefront of current research. Lectures will propose syntheses of recent works on key themes accessible from different disciplinary background, the proposed themes will bridge methodological and theoretical advancement on key issues.

**Workshop sessions** will be organized on a series of emerging themes or transversal hot topics, with a specific attention to processes driving the spatial and temporal variability. Keynotes will present the state of the art from geoscience and ecology-biology perspectives and will be complemented by short talks to initiate discussions.

## **Provisional agenda**

### **Day 1 – 18/11/2019**

- 9:00-9:30** Welcome
- 9:30 – 10:30** Lecture: Hydrothermal vent geodiversity: seafloor and sub-seafloor processes (tbc)
- 10:30 – 11:30** Lecture: Vent microbiomes with combined NGS and experimental approaches (C. Vetriani, Rutgers University)
- 11:30 – 12:30** Lecture: Ecosystem dynamics: repeated observation and time-series (U. M. Matabos, Ifremer)
- 12:30 – 14:00** Lunch
- 14:00 – 15:00** Lecture: Connectivity and larval dispersal: metapopulation approach (L. Mullineaux, WHOI)
- 15:00 – 16:00** Lecture: Hydrothermal vent mineralization (tbc)
- 16:00 – 17:00** Lecture: Aging oceanic crust and seafloor alteration (tbc)
- 19:00** Ice-breaker at the public aquarium in Banyuls

### **Day 2 – 19/11/2019**

- 9:30 – 12:30** Session ‘Export of vent-derived chemicals: from near-vent reactivity to long-range transport’  
Keynote: Mustafa Yücel (METU)
- 12:30 – 14:00** Lunch
- 14:00 – 17:00** Session ‘Chemosynthetic carbon: drivers of productivity at active and inactive vents’  
Keynote: Mirjam Perner (GEOMAR)
- 18:00 – 20:00** Poster session – wine tasting

### **Day 3 – 20/11/2019**

- 9:30 – 12:30** Session ‘Basin scale distribution of hydrothermally-driven processes from ridges to subduction zones’ Keynotes: N. Seama (Kobe U., Japan) (tbc), L. Mullineaux (WHOI)
- 12:30 – 14:00** Lunch
- 14:00 – 17:00** Session ‘Massive Sulfide deposition, alteration and biological diversity’ Keynotes: Shingo Kato and Sven Petersen (tbc)
- 19:00** Conference dinner

### **Day 4 – 21/11/2019**

- 9:30 – 12:30** Writing sessions in small groups
- 12:30 – 14:00** Lunch
- 14:00 – 16:00** Wrapping up
- 18:00** Optional – visit of wine cellars in Banyuls