



FORM PER PROGETTI BANDO DOTTORATO XXXIV CICLO

1. Project title

Anatomy of an oceanic megatransform: geochemical variability of the oceanic lithosphere of the Doldrums Fracture Zone (7-8°N, Mid Atlantic Ridge)

2. Proposer

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3. Research Unit

Surname	Name	Institution
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Ligi	Marco	Istituto Scienze Marine (ISMAR), CNR, Bologna, Italy

4. Key words

(Max. 5 – at least 2)

Mantle peridotite, gabbros, transform faults, isotopes, trace elements
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5. Abstract

(Max. 1.500 characters with spaces)

This project consists of an international cotutela PhD, co-supervised by Prof. A. Stracke (Münster University). This PhD develops in the framework of an international project led by M. Ligi (ISMAR) willing to study the evolution of a large-offset transform offsetting the equatorial Mid Atlantic Ridge (MAR), i.e., the Doldrums Transform (7-8°N). In particular, the PhD project will focus on the geochemical variability of mantle peridotites collected in an upcoming cruise (October 2019) with the R/V Strakhov. Working periods in Pavia, Münster and ISMAR, and the participation to the upcoming oceanographic expedition will merge field-based observations with a detailed petrological characterization of the rocks. The PhD project is articulated in three working packages including a textural characterization, a detailed *in-situ* geochemical study using EMPA, LA-ICP-MS and SIMS; and a determination of the Nd-Hf-Sr-Pb isotopic compositions of mineral separates. The results will be then compared to the compositions of the associated basalts and gabbros with the ultimate aim to understand the heterogeneity of the sub-ridge mantle and how this affected the development of this large transform domain. The easy access to different analytical techniques and the unique sample suite, partly already available, guarantee high scientific impact of the results. The PhD student will interact with different working teams and is expected to work in 4 to 6 months per year in the Münster University as requirement in this international cotutela.