

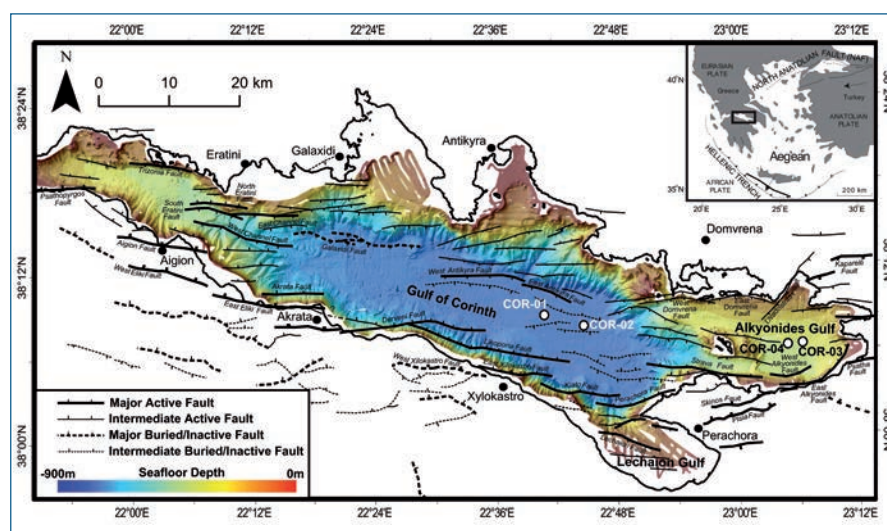
Reports of Workshops

:: IODP Drilling within the Corinth Continental Rift, Greece MagellanPlus Workshop - 11-14 February 2014, Athens (Greece)

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How rifting initiates and evolves to continental breakup and ocean basin formation is a major unanswered Solid Earth-Plate Tectonic question: continental rifting is the first stage of this process. Important insights have been derived from numerical models and from observations at mature, magma-poor passive margins where activity has ceased, but early syn-rift stratigraphy is often difficult to image and sample due to deep burial and tectonic overprinting. The Corinth Rift, Central Greece (*right*), presents an ideal laboratory for the study of continental rifting: it is young and highly active; has a near-complete syn-rift stratigraphic sequence; and has a unique existing geophysical dataset to resolve, at very high temporal and spatial resolution, how faults initiate and link, how strain is distributed over time, and how the landscape responds during the first few million years of continental rifting. The entire interconnected rift system can be resolved and examined on a range of timescales and the Corinth rift lacks magmatism, reducing the number of variables contributing to rift morphology and stratigraphic fill. An international collaborative project, launched in 2011, has integrated all marine geophysical datasets to generate a high-resolution, high-precision fault network and stratigraphic framework of the modern rift axis combined with an equivalent onshore framework. The missing piece of the jigsaw for the Corinth Rift tectonic framework is offshore drilling at key locations to provide a chronology for the entire offshore basin, and incidentally creating a high resolution Quaternary paleoclimatic and paleoenvironmental record.

To support preparation of a proposal to the IODP, a workshop was held on 11-14 February 2014, in Athens, Greece. The workshop was financially supported by the ECORD/ICDP MagellanPlus Workshop Series Programme, the Natural



Fault map of the Corinth Rift system, Greece showing proposed IODP drillsites.

Environment Research Council (UK), and the Hellenic Centre for Marine Research (Greece). 36 participants from six countries, including students and early-career researchers, attended a two-day meeting followed by a one-day field trip to the rift zone and one-day of proposal preparation by a subset of participants. Presentations included keynotes on key global rift questions and modeling techniques of rift processes, and on current knowledge of Corinth Rift chronostratigraphy, fault-basin evolution, sediment flux history and modeling potential, seismology, deep crustal structure and the potential application of drilling to regional hazard assessment. The latest results of the marine data integration project were discussed, alongside regional complementary research projects. A session was devoted to discussion of ocean drilling core analysis techniques to establish a high fidelity chronological and environmental record. An ESO representative provided critical information on mission-specific platform methodologies and constraints for drilling in this environment. Workshop discussions generated the following

primary scientific objectives and potential drill site locations (*above*) framed around the temporal and spatial resolution of processes that could be generated from the Corinth Rift, probably unparalleled worldwide:

- constrain the distribution of tectonic strain in time and space and growth history of a rift-scale normal fault network;
- determine the evolution of a rift-controlled drainage system in time and space including the relative contributions of tectonics and climate;
- establish the timescale of rift segment initiation and maintenance.

The meeting was extremely productive with strong endorsement of the Corinth Rift system as a key target to address global rift problems. As a result of the workshop, a proposal was submitted to IODP on 1 October 2014 for drilling within the Corinth Rift system.

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