

Early syn-rift sedimentation and paleoenvironments in the easternmost end of the Corinth rift (Greece): IODP 381 Hole Moo80A.

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The IODP 381 was conducted in 2017 in the Gulf of Corinth (Greece) to obtain high spatial and temporal records of the dynamics of the rifting processes. The present study focuses on the drilled site Moo80A, located in the easternmost end of the Corinth rift (Gulf of Alkyonides). The basal units 3 and 4 of Moo80A provide a precious record of the early rift sedimentation, drainage system evolution and changing environments. This work aims at deciphering the relative impact of tectonics and climate on the early syn-rift sedimentation.

In hole Moo80A, the unit 3 is characterised by terrestrial deposits, and the unit 4 is primarily consists of carbonate-rich sand, silt and mudstones interpreted to represent a shallow saline lake to intermittently subaerial environment. These units devoid of biostratigraphic marker species (microfossils and calcareous nanofossils) are not yet dated. Based on preliminary correlations with the onshore Megara Basin, the studied succession is likely to have been deposited from Pliocene and Lower Pleistocene, and possibly includes Upper Miocene sediments. To provide age constraints we rely on the identification and dating of tephra layers, as well as U-Pb dating of ostracod shells. In association to this dating project, stratigraphy of units 3 and 4 is established, including transitional to abrupt changes of alluvial architectures and environments. Moreover, XRF core scanning enables to track chemical variations of terrigenous inputs, here used for source provenance study, and as a proxy of continental weathering and climate variations.

Both qualitative and quantitative results are used to decipher the sedimentary response to rifted landscape evolution as the result of fault activity, rift flank uplift, Mediterranean climate changes and sea level fluctuations. We propose new paleogeographic reconstructions of river systems across the rifted margin, with special focus on the transitions from fluvial to lacustrine and marine environments.

Keywords : Corinth rift, Alkyonides Gulf, rift initiation, Mediterranean climate, alluvial fan, nearshore to coastal plain, saline to freshwater lake, tephra, XRF scanning, U-Pb dating.