



## **Afar Dallol Drilling – ONset of sedimentary processes in an active rift basin (ADD-ON): *Scientific drilling targets in the Afar (Ethiopia)***

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Since the early days of the continental drift theory, the Afar triangle developed into an ideal field laboratory where the onset of continental and future oceanic rifting can be studied in detail. The Danakil Depression is the northern portion of the Afar triangle, bordered to the west by the Ethiopian Plateau and to the East by the Danakil Horst, and characterised by active rifting since Oligocene times. Seismo-stratigraphic interpretations based on industrial seismic sections, core and borehole data evidence the presence of Pleistocene evaporite units to a depth of about 900 m below the Dallol salt pan (central Danakil Depression, northern Afar). However, to date no sub-salt sedimentary core records have been available from the central part of the rift basin filled with likely more than 1.5 km of sediments.

The ADD-ON drilling project aims to get access to the sub-salt sedimentary archives of the Danakil basin. The overall goal is to understand sedimentary facies evolution in an active rift setting paced by global environmental fluctuations and their interplay with volcano-tectonic events. Having future access to scientific core records will give new insights into (1) the mechanical understanding of intermittent and incipient basin dynamics in an initial extensive continental rift basin: from rifting towards the development of passive margins, (2) East African climatic changes and Hominin evolution, (3) the limits of the deep biosphere in extreme hypersaline and high-temperature environments below the salt deposits, (4) natural fluid flow in an active geothermal system, and (5) monitoring of active faults, earthquakes and volcanic events in remote areas. Moreover, deep scientific drilling in Afar will be necessary in the rapid assessment of geothermal potential, the quest for ground water resources and advanced Potash exploitation.