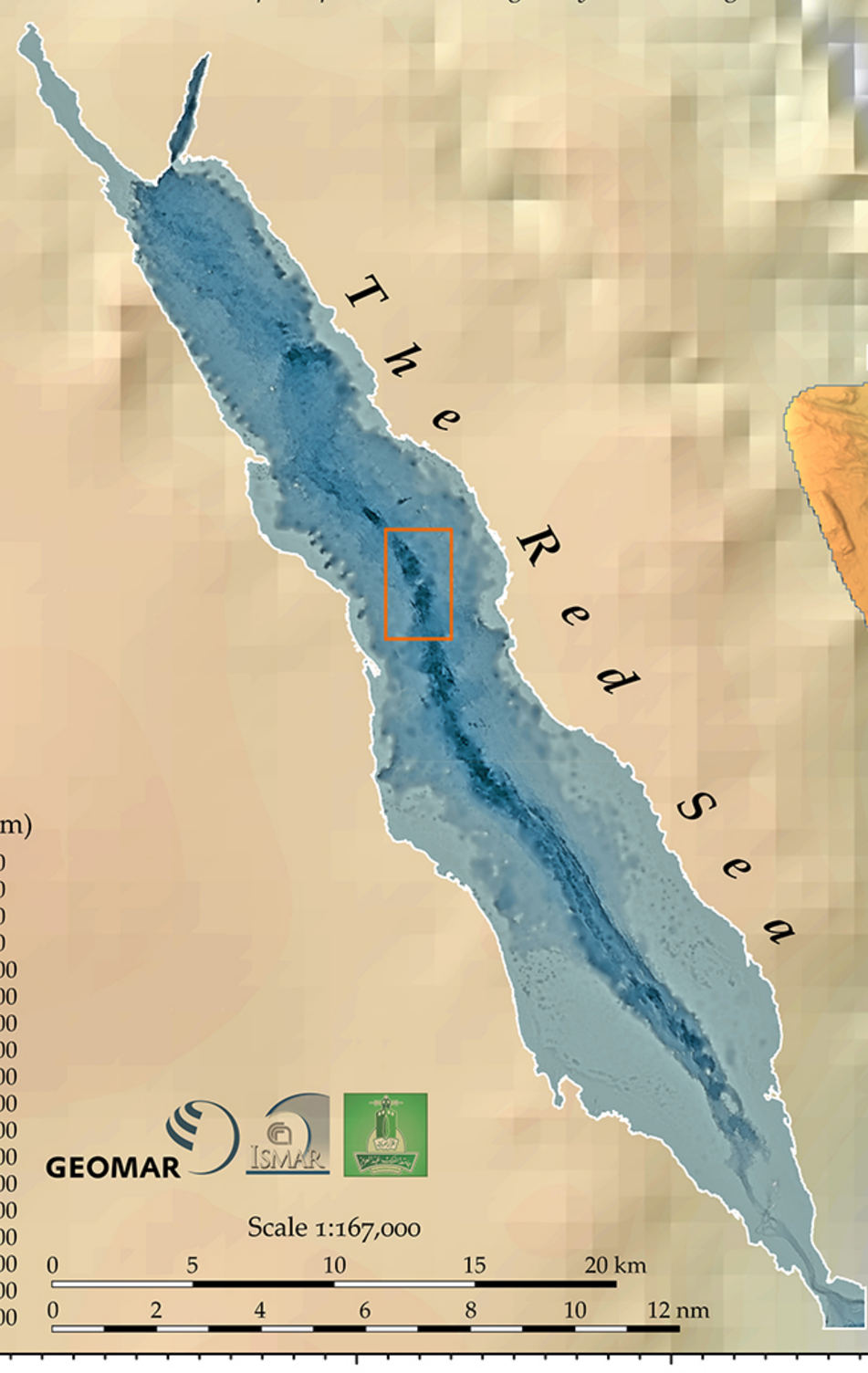
A New Bathymetric Chart of the Red Sea Rift

Thetis - Hadarba - Hatiba Trough

Hatiba Mons & Submarine Namakiers

This new, high-resolution (grid-cell size 30m) bathymetry map shows the Thetis-Hadarba-Hatiba Trough in the Red Sea Rift (orange box in the overview map), which is the result of rifting of the Nubian and Arabian continental plates. The most dominant structure in this trough is Hatiba Mons in the centre of this map. This large submarine volcano measures up to 14km in diameter, rises up to 1000m above the surrounding seafloor and has a maximum age of 800000 years. Multibeam backscatter data and surface morphology suggest that the Hatiba Mons has been recently active. Also the Thetis and Hadarba basins, north of Hatiba Mons display high volcanic activity. The southern Hatiba Deep is deeper and appears volcanically less active. Large submarine namakiers (salt glaciers) slowly move into the rift valley from the sides, overflowing volcanœs, faults and ridges and completely burying the graben under hundreds of meters thick salt and sediments in the Inter-Trough Zones north and south of the Thetis-Hadarba-Hatiba Trough. The map is based on combined data from three research expeditions between 2005 and 2012: Urania RS05, Poseidon P408 and Pelagia 64PE350/351. Expedition RS05 was funded by the European Unions „EUROMARGINS" project and the data were provided by the National Research Council and the Institute of Marine Sciences, Bologna (Italy). The P408 and 64PE350/351 data were recorded in the framework of „The Jeddah Transect" project between the King Abdulaziz University, Jeddah (Kingdom of Saudi Arabia) and GEOMAR Helmholtz Centre for Ocean Research Kiel (Germany). The map is projected on low-resolution background bathymetry from the General Bathymetric Chart of the Oceans (GEBCO). The map was produced and designed by Dr. Nico Augustin, GEOMAR.



Inter-Trough Zone
NE-Thetis
Thetis Dome
Thetis Deep
Eastern Thetis Namakier
W-Thetis-Hadarba Namakier Flow Front
Hadarba Deep
E-Basin
W-Basin
Eastern Hadarba Namakier
SW-Hadarba Namakier
Hatiba Mons
N-Basin
S-Basin
Hatiba Deep
SE-Hatiba Namakier Flow Front
Inter-Trough Zone

Depth (m)
600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300

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Scale 1:167,000
0 5 10 15 20 km
0 2 4 6 8 10 12 nm

22.9°N 22.8°N 22.7°N 22.6°N 22.5°N 22.4°N 22.3°N 22.2°N 22.1°N 22°N 21.9°N 21.8°N 21.7°N 21.6°N
37.6°E 37.7°E 37.8°E 37.9°E 38°E 38.1°E