

Integrated (gravity-magnetic) geophysical modeling of Makran Subduction zone

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Makran subduction zone extends ~1000 km between SE Iran to SW Pakistan in E-W direction and from 24°N inside the Oman Sea to the JazMurian and Mashkel depressions in N-S direction. The Makran is a unique subduction zone in terms of its very low subducting angle, wide accretionary prism, and a large distance of 400-600 km between its volcanic arc and deformational front. In this study, we present a new crustal and lithospheric density model for the Makran subduction zone by applying an integrated geophysical modeling method along a N-S profile centered at 60.5°E latitude along the IASBS seismic profile. We model density and thermal structure of the crust and lithosphere by integrating seismological data, gravity, geoid, absolute topographic elevation data while assuming local isostatic equilibrium to reduce non-uniqueness of the geophysical modeling. The calculation is performed using a finite element technique which links the different equation of states.

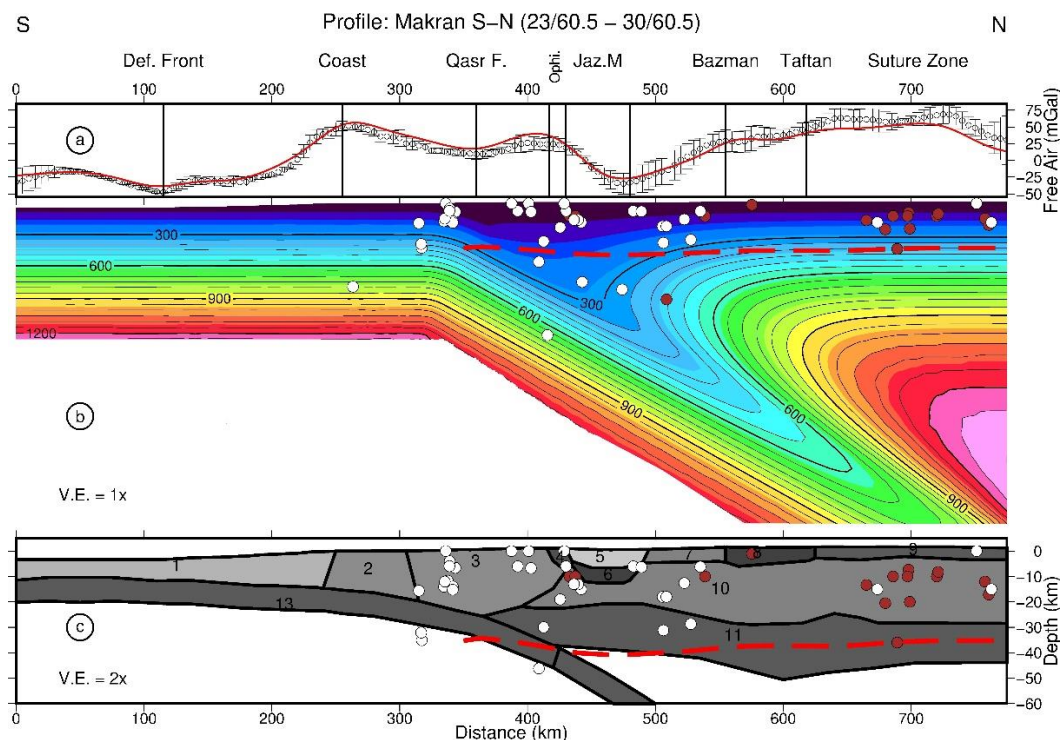


Fig. 1. a, Gravity Signal. b, Thermal modelling of the lithosphere. c, Crustal Density Structure

Related Publications to the project:

Khaledzadeh M., Ghods A., Zeyen H. and Abbasi, M. (2020) Determination of Thrust Zone in Makran Subduction Using Thermal Modelling, 19th Iranian Geophysics Conference, Tehran, Iran. (Submitted)

Conferences:

Khaledzadeh M., Ghods A., Zeyen H. and Abbasi, M. (2019) Integrated geophysical modeling of the Makran subduction zone, 3rd TRIGGER International Conference, Zanjan, Iran.

