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# Geologic and Tectonic units in the Iranian Plateau from present and future satellite missions

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The objective of this work is to investigate the geologic and tectonic units in the Iranian plateau in relation to the information that can be obtained from the gravity field observed from space. The objective requires to collect seismologic tomography, seismicity, geodetic observations of crustal movements, a database of active faults, active seismic investigations of sediment depths, heat flow measurements and to use this information as a constraint for gravity inversion with the present available satellite-derived gravity field. The gravity field correlated to the topography defines blocks of the plateau, which indicates varying crustal rigidity (Pivetta and Braitenberg, 2020). We find that mechanisms of vertical growth are tied to crustal thickening, coherently identified from the gravity field, seismic tomography and isostasy. Persistent high density crustal blocks are identified for instance SE of Isfahan, which require further investigation and validation, also in relation to magmatism. The study is embedded in a major project addressing the “Intraplate deformation, magmatism and topographic evolution of a diffuse collisional belt: Insights into the geodynamics of the Arabia-Eurasia collisional zones” financed by the Italian Ministry (PRIN 2017). When defining the density structure and its uncertainties, the question appears, what improvements on the knowledge of the structure, seismic faults, and on the block-structure can be expected from future gravity missions, with a payload of quantum gradiometers and atom-clocks in a multi satellite configuration. The geophysical sensitivity to quantum gravimetry in space is of interest to the MOCAST+ ASI project, a follower project of the MOCASS ASI project, in which the geophysical sensitivity of the quantum gradiometer payload has been studied (Pivetta et al., 2021).

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