



## **A new tectonic map of the Iranian plateau based on aeromagnetic identification of magmatic arcs and ophiolite belts.**

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The Iranian plateau is one of the most complex geodynamic settings within the Alpine belt. The PaleoThetys and NeoThetys ocean subduction are responsible for the formation several magmatic arcs and sedimentary basin zones within the plateau. These zones are separated from each other by thrust faults that display the ancient suture zones and ophiolite belts. The known magmatic arcs like Urmia Dokhtar Magmatic Arc (UDMA) and unknown magmatic arcs, which are covered by sediments, are tracked by aeromagnetic data. We assumed igneous and ophiolite rocks have highest magnetic susceptibility values in contrast to the lowest magnetic susceptibility values in sedimentary and metamorphic rocks.

In this study, an averaged susceptibility map is estimated by using the radially averaged power spectrum method. The high averaged susceptibility values show a number of steep and gentle lineaments in correlation with magmatic arcs and ophiolites trends, and low average susceptibility values correlate with sedimentary basins. The results show good correlation in the regions with high average susceptibility at the known occurrences of Magmatic-Ophiolite Arcs (MOA). On the other hand, the regions with low average susceptibility coincide with well-known sedimentary basins like Zagros, Makran, KopehDagh, Tabas and other less known small basins. We identify two hitherto unknown parallel MOAs in eastern Iran and the SE part of UDMA indicating a steeply dipping ( $>60^\circ$  dip) palaeo subduction zone. In contrast, shallow palaeo subduction ( $<20^\circ$  dip) is indicated for NeoTethys in the NW part of UDMA and in the Sabzevar-Kavir MOA.