

Hydrothermal alteration mapping for geochemical exploration in the Zaviyeh 1:100000 sheet, using aster data

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The study area is located in Zaviyeh 1:100000 sheet which contains parts of the Markazi, Tehran and Qom provinces. From the perspective of geological zoning of Iran, this area is located in a part of the Urmia Dokhtar magmatic belt. The rocks and geological formations in study area are related to the Cenozoic period and older rocks are not seen in this area. Due to the special geological features of the region, there are mineral potentials (metallic and non-metallic) that can be traced by semi-detailed explorations. A combined remote sensing techniques and field studies was performed to distinguish and map geometric location of argillic, propylitic and phyllic alterations associated with copper porphyry deposits. In this research color composite ratio images methods applied to Aster data as a tool for mapping alteration associated with porphyry copper deposits. Color composite ratio images are produced by combining three ratio images in blue, green, and red. Figure 1 shows ratios 4/5, 9/8, 5+7/6 in RGB, respectively. In this image argillic alteration is seen as red color, propylitic alteration is seen as green color and phyllic alteration is seen as blue color. These data provide important information for alteration mapping and mineral exploration in porphyry copper systems.

Fig. 1: Aster ratio image (bands 4/5, 9/8, 5+7/6 in RGB)

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