Cu-Pb contamination, using remote sensing; south of Kashan

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Ghohroud area is situated in the southern part of the Kashan. Rhyodacite, Dacite and andesite of the Eocene have been outcropped in the area that is influenced by the late stage fluids of the Oligo-Miocene granodiorite. Eocene volcanic rocks have been shown porphyry texture and are light-gray in color, whereas granodiorite specified with granular texture as well as crème color. Using principal components analysis (PCA) is a criterion to knowldeging alteration zones [1]. Both standard and selective component applied to distinguish rock type. Geological and remote sensing studies demonstrated argillic, sericitic, propylitic, calc-silicate, iron oxides and silicification alteration zones within Eocene volcanic rocks. Igneous, sedimentary rocks as well as alteration zones show blue-green, red-orange and crème-white in color respectively. Cluster analysis separated samples to Cu-Co-Cd as well as Pn-Zn-As groups, which is correlated to argillic and calc-silicate alteration zones respectively. According to ICP-MS analysis, minimum and maximum of Cu, Pb, Cd, Zn, As and Co range (1.5-459), (1-623), (0-2.97), (14-413), (0.5-21) and (1.5-17) ppm correspondingly. On the basis of the soli standard, there is some Cu-Pb contamination. Combined multiplicative calculation show good correlation with both argillic as well as clac-silicate alterations and Cu-Pb and contamination. Kriging calculation has been documented maximum Cu-Pb anomalies occurred in the southern part of area, on igneous rocks. Field relationship, remote sensing data and geostatic calculation strongly support; granodiorite body has been generated Cu-Pb contamination. Otherwise fluids caused hydrothermal alteration, which enriched those elements.

[1] Loughlin W P (1991), Principal component analysis for alteration mapping; *Photogrammetric Eng. Rem. Sens.* 57, 1163–1169