

Integrated 2D and 3D geochemical modelling of the Sari Gunay epithermal gold deposit applied in complementary drilling

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The world class Sari Gunay epithermal gold deposit is located in the northwest of Iran. Surface exploration carried out by the Rio Tinto Mining and Exploration Limited in 2000 successfully delineated a well-defined and zoned gold soil anomalies of 1300 x 400m over the Sari Gunay. Subsequent initial drill testing of these anomalies identified a significant gold resource at Sari Gunay deposit with outlying areas of sub-economic gold mineralisation. In this research first the analytical results of soil samples were processed by additive index method to identify a combination of geochemical anomalies associated with gold mineralization. Other exploration layers controlling gold mineralization (i.e., sercite and silica hydrothermal alterations, NE-SE linear structures, brecciated dacitic and host rocks and ground magnetic signatures) were integrated with favourable additive index geochemical anomalies by fuzzy logic to identify zones of high potential gold mineralization. Then, the available drilling information was used to model and identify various economic gold mineralized zones at depth. Finally, the surface gold potential areas were then linked to different levels of subsurface economic gold mineralized zones to design complementary drillings to increase the resource and reduce the uncertainties in average grade estimation.

Additive Index, 2D and 3D modeling, Epithermal
Gold, Sari Gunay, Iran