



Cu-Mo mineralization epochs in NW Iran and their temporal relationship with metallogenic zones of neighboring Lesser Caucasus and Central Iran

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The Tertiary Urumieh–Dokhtar magmatic arc (UDMA) in Iran represents the northeast-ward subduction of the Neo-Tethyan oceanic crust beneath the central Iranian domain during the late Mesozoic-early Cenozoic and coincides with the porphyry copper metallogenic belt, including 3 metallogenic zones in its NW (Ahar-Jolfa), central and SE parts, which host many porphyry copper deposits (PCDs) and prospects. The Ahar-Jolfa metallogenic zone includes the Qaradagh and Sheyvardagh batholiths and many smaller intrusions and includes many porphyry, skarn and vein-type mineralizations. This zone shares many magmatic, geodynamic and mineralization features with the neighboring South Armenian Block (SAB), where the Meghri-Ordubad composite pluton of Eocene-Miocene age hosts many porphyry Cu–Mo deposits. By comparing the measured Re–Os and U–Pb ages of mineralizations in NW Iran [1,2,3,4,5], it can be concluded that porphyry mineralizations have occurred in three epochs of late Eocene (~35 Ma), middle Oligocene (31–25 Ma) and early Miocene (22–20 Ma). Mineralizations here coincide with the third epoch of such mineralizations in SAB, which are associated with Eocene to Miocene intrusions, while the older middle Jurassic-early Cretaceous and upper Cretaceous epochs of SAB [6] have no reported counterparts in Iran. The first epoch of NW Iran postdates all Eocene mineralizations in SAB. The second epoch is coeval with Paragachay and the first-stage of Kadjaran PCDs. The third epoch is younger than all mineralizations in SAB, except the second stage of Kadjaran PCD. These epochs are older than nearly all PCDs and prospects in Central and SE Iran, revealing an old to young trend along the UDMA.

References

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