

Geological settings and future ore potential of the Ordubad region, Nakhchivan (Naxçivan), Azerbaijan, Lesser Caucasus

Regional Context

- The Ordubad Contract Area (OCA) is located in the Azerbaijan sector of the Zangezur-Ordubad metallogenic belt of the Southernmost part of the Lesser Caucasus (Figure 1, Moritz et al., 2016).
- The OCA is dominated by Oligo-Miocene Meghri-Ordubad pluton (MOP) and coeval volcanic units related to the collision and post-collision of the African–Arabian and Eurasian plates.
- Previous work has demonstrated that the MOP magmatic suites display strong “Porphyry-fertile” signatures (Loucks, 2021; Andrews et al, 2020).

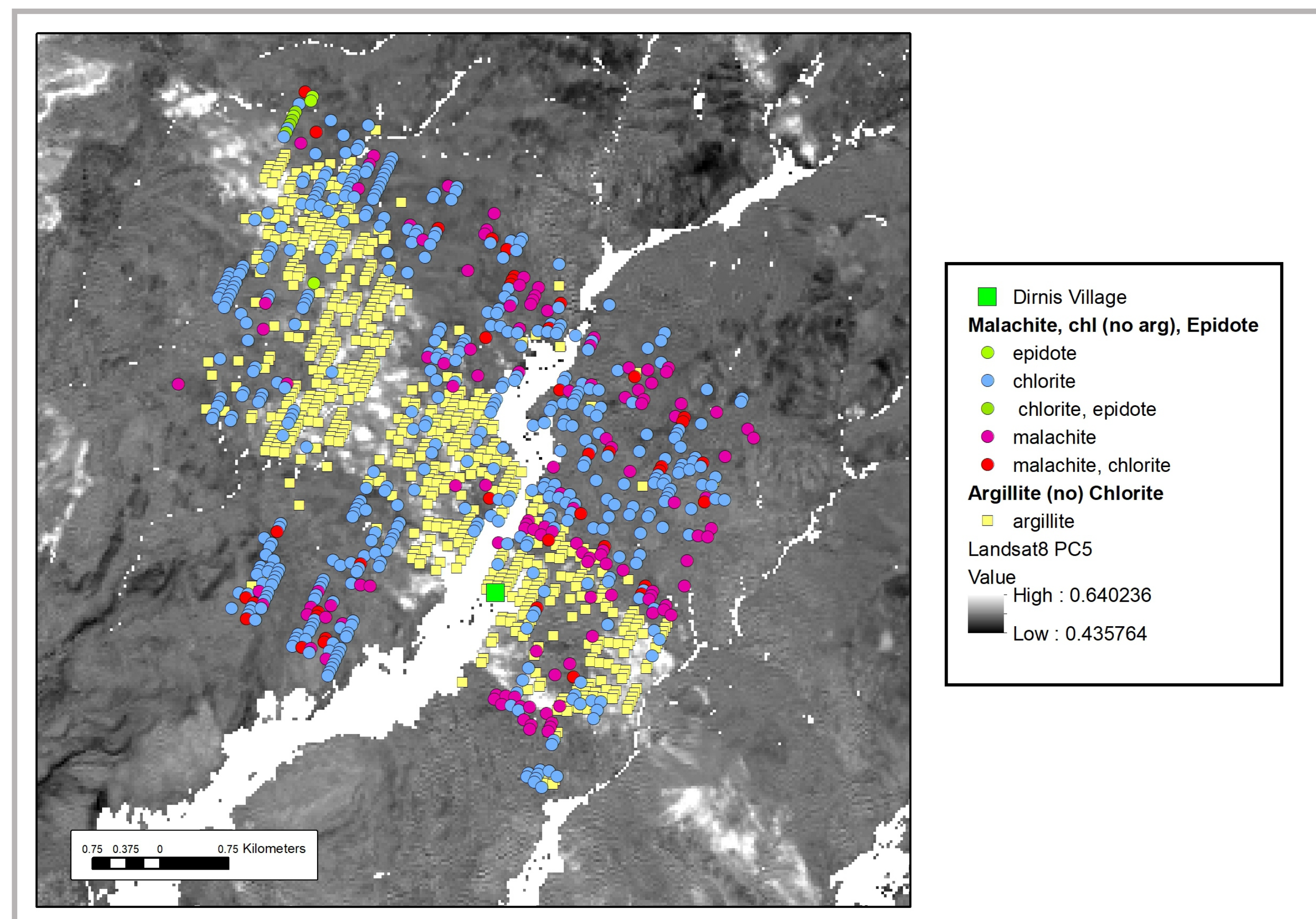
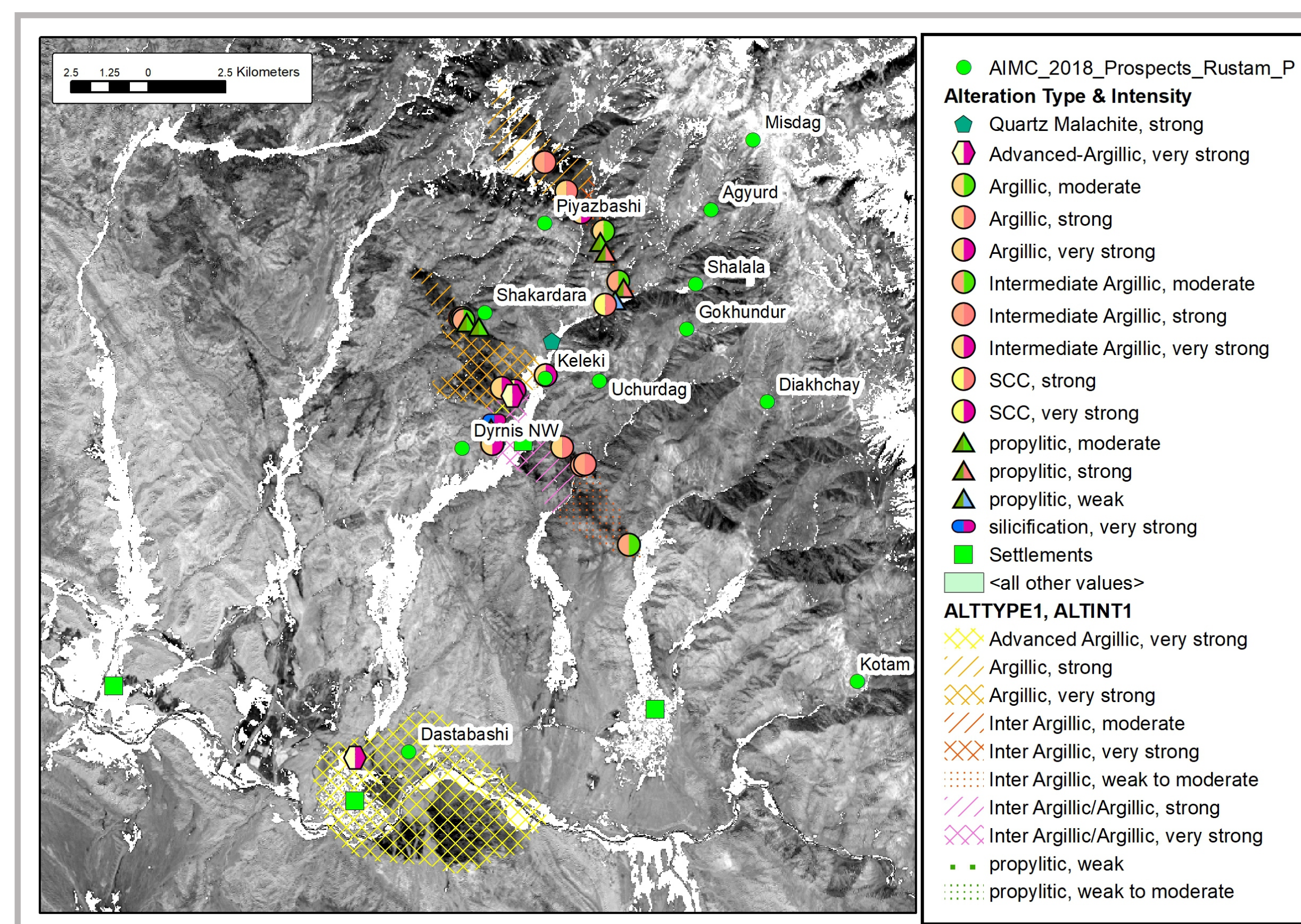
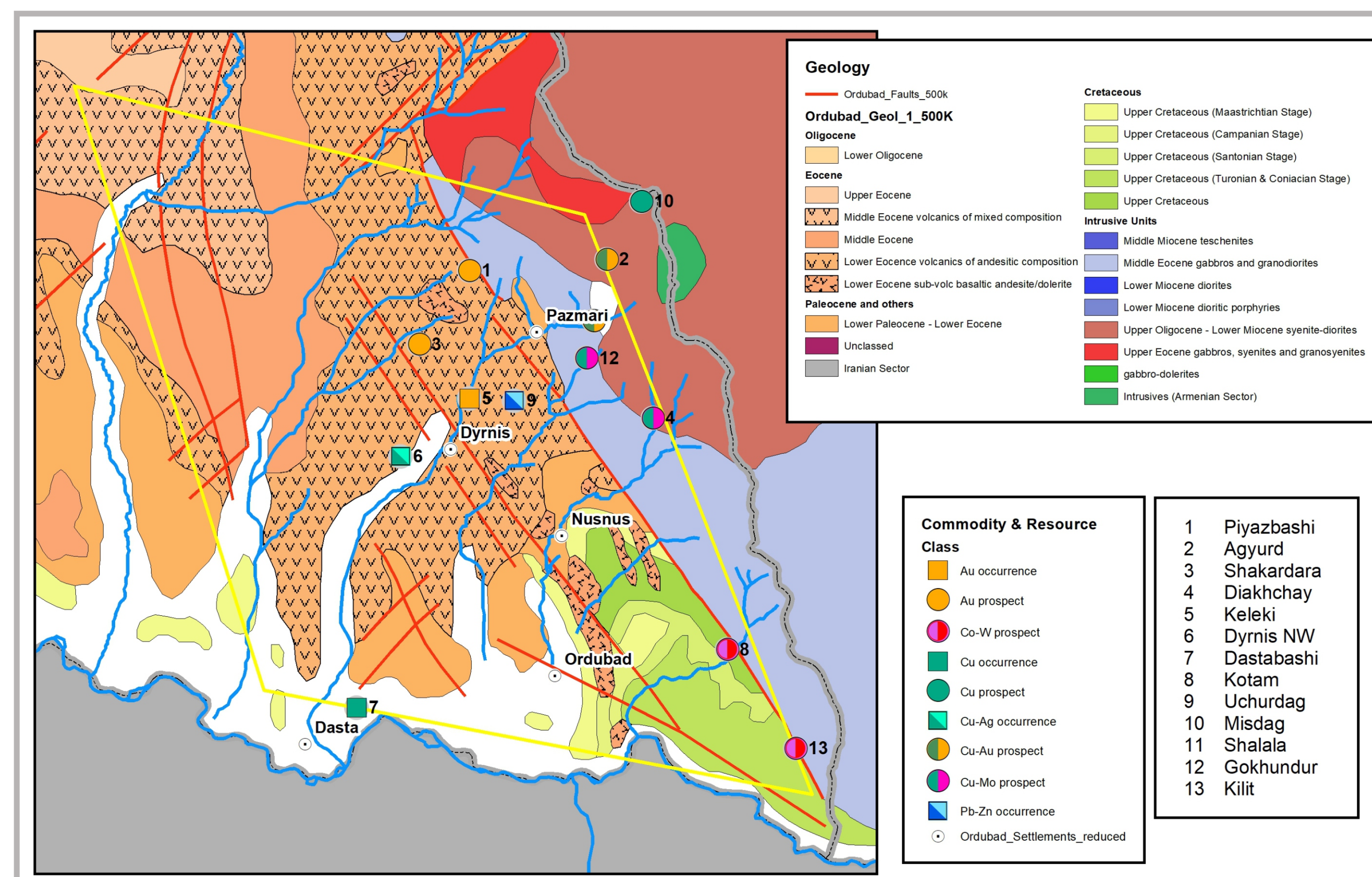


Figure 1 (above). Position of the Ordubad contract area in the Southern Lesser Caucasus

Figure 2 (right). Geological map of the OCA showing the distribution of known mineral deposits.

Figure 3 (right). Location of key alteration samples determined using petrography and PXRD. Extent of alteration mapped using multispectral analysis of Landsat8 imagery.

Figure 4 (below). Distribution of altered samples from the AIMC chip sampling program.



The Dyrnis “White-rock” Alteration Zone

- The central area of OCA is dominated by a lithologically and structurally constrained zone of intermediate to advanced argillic alteration. Chip sampling and WR geochemistry demonstrates significant elemental anomalies (figures 3, 4 & 5)

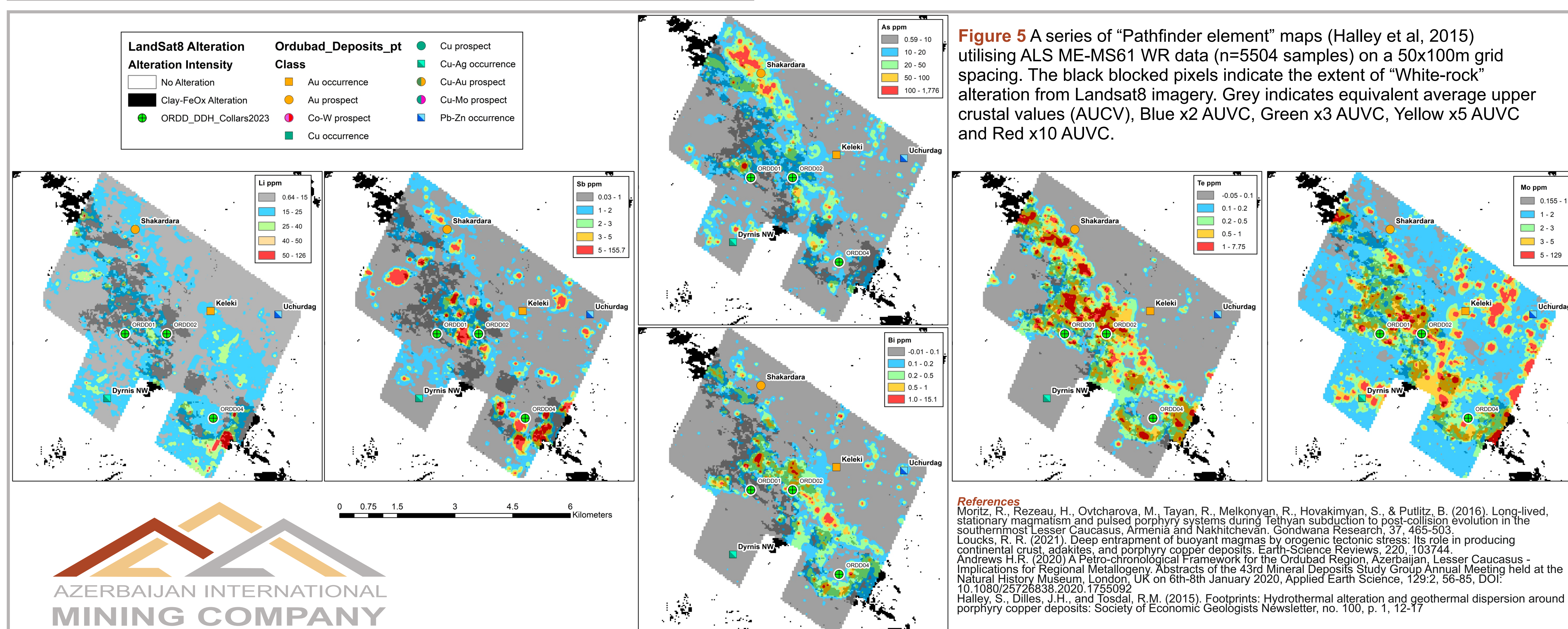


Figure 5 A series of “Pathfinder element” maps (Halley et al, 2015) utilising ALS ME-MS61 WR data (n=5504 samples) on a 50x100m grid spacing. The black blocked pixels indicate the extent of “White-rock” alteration from Landsat8 imagery. Grey indicates equivalent average upper crustal values (AUCV), Blue x2 AUCV, Green x3 AUCV, Yellow x5 AUCV and Red x10 AUCV.

References
Moritz, R., Rezeau, H., Ovtcharova, M., Tayan, R., Melkonyan, R., Hovakimyan, S., & Puttitz, B. (2016). Long-lived, stationary magmatism and pulsed porphyry systems during Tethyan subduction to post-collision evolution in the southernmost Lesser Caucasus, Armenia and Nakhichevan. *Gondwana Research*, 37, 465-503.
Loucks, R. R. (2021). Deep entrapment of buoyant magmas by orogenic tectonic stress: Its role in producing continental crust, adakites, and porphyry copper deposits. *Earth-Science Reviews*, 220, 103744.
Andrews, H. R. (2020). A Petro-chronological Framework for the Ordubad Region, Azerbaijan, Lesser Caucasus - Implications for Regional Metallogeny. Abstracts of the 43rd Mineral Deposits Study Group Annual Meeting held at the Natural History Museum, London, UK on 6th-8th January 2020. *Applied Earth Science*, 129(2), 56-85, DOI: 10.1080/25726838.2020.1755092
Halley, S., Dilles, J.H., and Tosdal, R.M. (2015). Footprints: Hydrothermal alteration and geothermal dispersion around porphyry copper deposits: *Society of Economic Geologists Newsletter*, no. 100, p. 1, 12-17