

## **Reconstruction of the geodynamic and magmatic evolution of the Somkheto-Karabagh and Pontides Arcs from the Mesozoic to Early Cenozoic across Armenia, Georgia and NE Turkey**

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During the Mesozoic and early Cenozoic the southern margin of the Eurasian continent recorded the closure of the northern Neotethys oceanic domain. The Somkheto-Karabagh and Pontides magmatic arcs in current day Armenia, Georgia and NE Turkey attest for subduction, obduction, and micro-plate accretion events ending with Eurasia-Arabia collision and complete closure of Neotethys oceans.

Three main domains are distinguished in the Lesser Caucasus and NE Anatolia (Figure 1), including from South to North: (1) the South Armenian Block and the Tauride-Anatolide Platform (SAB-TAP), Gondwanian-derived continental terranes; (2) the Sevan-Akera and Ankara-Erzincan suture zones (AESAS) distinguished by the northern limit of ophiolite bodies which were thrust onto the SAB-TAP; and (3) the Eurasian margin, represented by the Eastern Pontides and the Somkheto-Karabagh magmatic arcs. These two belts are in continuation with one another along the Eurasian margin. Their formation is due to the north-dipping Tethyan subduction under the southern Eurasian margin followed by collision. The onset of the north-dipping subduction is not well constrained. However, studies conducted in the Caucasus, Georgia and the Pontides reveal coeval calc-alkaline magmatic activity since the Early or Middle Jurassic. Yet, Cenomanian to Santonian ages have been proposed as well. New observations, radiometric dating, geochemical and isotopic data of magmatic rocks of the Alaverdi district in NE Armenia and the Bolnisi district in SE Georgia (Lesser Caucasus region) complete a comprehensive dataset pertaining to the Eurasian margin from W Azerbaijan, Armenia, Georgia and into NE Turkey. Results obtained range from calc-alkaline to high-k magmatic arc activity during Late Jurassic times (158-148 Ma) in the Alaverdi district and calc-alkaline to shoshonitic magmatic arc activity during Campanian times (83-81 Ma) in the Bolnisi district. This additional insight is key for the unravelling of the evolution of the magmatism occurring there, and subsequently the evolution of subduction dynamics.

In light of the implications of their geochemical characteristics, we can constrain the source and petrogenesis of the subduction-related magmatic rocks.

Considering the complexity of the regional, structural and magmatic evolution along the southern Eurasian margin, our multi-disciplinary approach allows us

to constrain the plate tectonic and geodynamic evolution of the Pontides-Lesser Caucasus segment of the Tethyan belt.

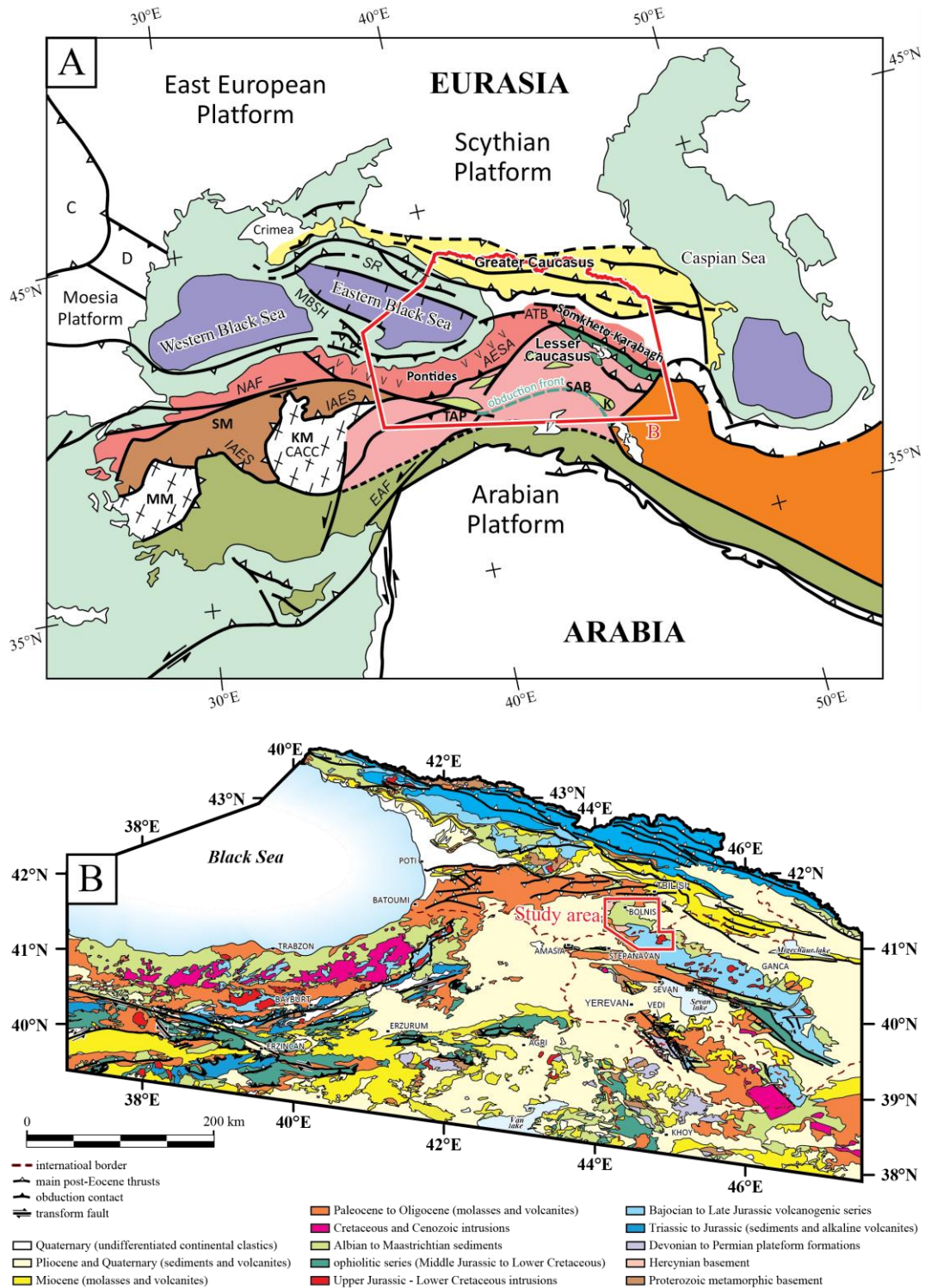


Figure 1. A, sketch structural map of the Middle East and Lesser Caucasus regions, after Sosson et al. (2016), modified. Position of map B is indicated. B, structural map of the Eastern Pontides, Lesser Caucasus and Greater Caucasus, after Hässig et al. (2013) and Gamkrelidze et al. (2013), modified.

## REFERENCES

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