Geophysical Research Abstracts
Vol. 18, EGU2016-16079, 2016
EGU General Assembly 2016

Multidisciplinary approach for the characterization of a new Late Cretaceous continental arc in the Central Pontides (Northern Turkey)

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In the Central Pontides (Northern Turkey), south of Tosya, a tectonic unit consisting of not-metamorphic volcanic rocks and overlying sedimentary succession is exposed inside a fault-bounded elongated block. It is restrained within a wide shear zone, where the Intra-Pontide suture zone, the Sakarya terrane and the Izmir-Ankara-Erzincan suture zone are juxtaposed as result of strike-slip activity of the North Anatolian shear zone. The volcanic rocks are mainly basalts and basaltic andesites (with their pyroclastic equivalents) associated with a volcaniclastic formation made up of breccias and sandstones that are stratigraphically overlain by a Marly-calcareous turbidite formation. The calcareous nannofossil biostratigraphy points to a late Santonian-middle Campanian age (CC17-CC21 Zones) for the sedimentary succession. The geochemistry of the volcanic rocks reveals an active continental margin setting as evidenced by the enrichment in Th and LREE over HFSE, and the Nb-enriched nature of these lavas relative to N-MORB. As highlighted by the performed arenite petrography, the occurrence of continent-derived clastics in the sedimentary succession supports the hypothesis of a continental arc-derived volcanic succession. Alternative geodynamic reconstructions are proposed, where this tectonic unit could represent a slice derived from the northern continental margin of the Intra- Pontide or Izmir-Ankara-Erzincan oceanic basins.