Geochemistry of the basic volcanic rocks from the Late Triassic volcano-sedimentary sequences in the Kocali Complex, SE Turkey

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The Kocali Complex is widely cropped out in SE Turkey and includes pelagic sediments within the volcano-sedimentary sequences. Geochemical characteristics of the basic volcanics have been studied along four stratigraphic sections (Bulam-2, Tarasa, Korun-1 and Korun-2). Radiolarians obtained from the pelagic sediments associated with basic volcanic rocks in these sections indicate that their depositional ages range from middle Carnian to Rhaetian (Late Triassic).

All of the samples from the Tarasa section exhibit hypocrystalline porphyritic texture with plagioclase, pyroxene, olivine and amphibole phenocrysts. They are subalkali basalts which are carrying tholeiitic characteristics. These basaltic rocks display a E-MORB affinity from spider and tectonic environment discrimination diagrams. Magma mixing modeling reveals that they are generated in consequence of the mixture of N-MORB and OIB sources. They weren't affected by the crustal contamination.

Samples from the Bulam-2 section display hypocrystalline porphyritic texture with euhedral plagioclase and anhedral to interstitial pyroxene phenocrysts. Samples from the Korun-1 and 2 sections are aphyric in texture and contain plagioclase, pyroxene and ±olivine microphenocrysts. All of the samples from Bulam-2, Korun-1 and 2 sections are alkali basalts in composition and show the characteristics of an OIB-like sources. They have high LILE, LREE contents and exhibit positive Nb, Ta, Ti anomalies indicating no crustal signatures. Low Y, Yb contents and the partial melting modeling reflect a garnet-bearing mantle source.

Based on these facts, it can be concluded that basic volcanic activity with MORB like and OIB-like characteristics took place in middle Carnian to Rhaetian time interval during advanced rifting stage in the Kocali Complex. All these data reveal that the rift basin generated before Late Triassic in this complex.

Spatial controls on carbon quality along an elevational gradient in Northeastern Puerto Rico

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Understanding the spatial pattern of carbon quality and the controls on those carbon pools in critical zones is a integral component to explicating potential global carbon cycle responses to climate change. We used surface (0-10 cm) and deep (11-30 cm) soil samples and density fractionation (ρ = 1.6g cm^{-3}) methods to quantify total and light fraction soil carbon along an elevational and climatic gradient covering six typical forest types of northeastern Puerto Rico to evaluate the relative influence of measured and modeled variables on the spatial pattern of total and light fraction soil carbon. When stratified by forest type, light fraction carbon (LFC), measured as proportion of whole soil carbon (WSC), decreased significantly with elevation and mean annual precipitation in the surface soils, but not in deeper soil horizons. However, due to the high variability within forest types, there were no significant differences in either LFC:WSC or LFC:whole soil mass (WSM) between forest types. A preliminary multivariate analysis revealed that there were no ubiquitous relationships between light fraction carbon and spatial variables, and that different combinations of climatic, topographic, biologic, and soil chemical properties controlled the spatial pattern of total and light fraction carbon at the different depths. Moreover, the multivariate analysis was able to explain more of the variability in the deep soil horizons than in the surface soil horizons.