Upper Cretaceous Stratigraphy and Volcanism in the İğneada region, Pontides, NW Turkey

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The Pontide Upper Cretaceous magmatic arc can be traced for over 1000 km along the southern Black Sea coast from Georgia to Bulgaria. The arc extrusive sequence is well-exposed in the İğneada region in Thrace close to the Bulgarian border. The Upper Cretaceous sequence in İğneada region overlies the schists and phyllites of Strandja Massif with an unconformity. It has a thickness of over 700 meters and consists at the base of Cenomanian shallow marine sandy limestone, which pass up into pelagic limestone, marl and volcanogenic siltstone with Turonian planktonic foraminifera, including Marginotruncana pseudolinneana, Marginotruncana marginata, Whitenella sp., Whitenella praehelvetica, Muricohedbergella sp. This indicates that the arc volcanism in the region started in the Turonian. The pelagic limestone, marl, and calcareous siltstone series passes up into a volcanic-volcaniclastic sequence of andesitic tuff, lapilli-stone, agglomerate, andesitic and basaltic-andesitic lava flows. The volcaniclastic rocks are intercalated with lava flows and with rare pelagic limestone and shale beds. Although it is disrupted by several faults, the volcanic sequence can be traced from older to younger along the coast of İğneada. The sequence starts with andesitic volcaniclastic rocks and lava flows, and changes to basaltic-andesitic and then, again to andesitic rocks. The ocean floor alteration, which is found in all volcaniclastic and volcanic rock samples, and the intercalated pelagic limestones show that the rocks were deposited in deep submarine conditions in an intra-arc to fore-arc environment. Campanian (80.6 ±1.5 Ma) U-Pb zircon ages, which are obtained from the andesitic tuffs at the base of the volcanic-volcaniclastic sequence, indicate a continued magmatism from Turonian to Campanian.