

Chemostratigraphy Concept as Applied to Some Volcanostratigraphic Units at Cappadocia, Central Anatolia, Turkey

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Chemostratigraphy - applying quantitative mineralogy-petrology-geochemistry techniques to complex sedimentary and/or volcanic sequences - is a useful tool for addressing many difficult-to-solve geologic problems, particularly local and regional correlations of units. With the advancement of modern analytical instrumentations and techniques (morphological, mineralogical, chemical), it is becoming more feasible to apply such chemostratigraphic methods on a more routine basis. For example, the stratigraphy of the Cappadocia region is complex and some of the volcanostratigraphic units are very important. Therefore, the correct application of chemostratigraphy can be an excellent tool to solve stratigraphic and mineralogical-geochemical problems. In the study area, the generalized stratigraphic column of the Cappadocia volcanostratigraphic units include, from older to younger, Kavak, Akdag, Zelve, Lower Damsa unit, Sarimaden, Upper Damsa unit, Topuzdag, Cemilkoy, Tahar, Gordeles, Sofular, Kizilkaya, Incesu, and Valibaba. The original maps and the general stratigraphy of the area were initially made by Pasquare in 1970's, and he visited the area in 2007 and together with Dogan and his team checked the details of mapping. Dogan and Dogan have been working on this area for the past 15 years; however no attempt had been made to quantitatively correlate these units. In this research, we first compiled all previous data, mostly major element and some trace element data, to establish the compositions of the main stratigraphic units. Next, we used high resolution electron microscopy, inductively coupled plasma-mass spectroscopy, and powder x-ray diffraction to further characterize some of the units. Work in progress will involve using more complete geochemical data including trace and rare elements and stable isotopic data for correlation and extrapolation of these units.