



An Analytical Data Base on Eastern Mediterranean volcanic Rocks – a Tool for archaeological Stratigraphy

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The products of volcanic eruptions provide chronological information for stratigraphies, archaeological as well as geological ones. Particularly large scale explosive eruptions contribute widespread tephra-fans that can be used for that purpose. Other eruption products like lumpy pumice were distributed further naturally by sea currents over large distances or even by human activities like trading as an abrasive from antiquity to present days. A piece of pumice can be deposited at any time, but gives at least a maximum age mark for the respective stratum. First basic demand for such a chronological use of volcanic products is the reliable distinction of eruption events in the interesting region. INAA offers the determination of a highly suitable set of elements that allow this distinction by comparison of the distribution patterns of at least 25 elements, in particular, As, Ba, Ce, Co, Cr, Cs, Eu, Fe, Hf, K, La, Lu, Mn, Na, Nd, Rb, Sb, Sm, Ta, Tb, Th, U, Yb, Zn, and Zr. In the framework of the special research program SCIEM2000 of the Austrian Academy of Science, a database has been set up comprising presently 22 eruptions from the Southern Hellenic island arc including Milos, Santorini, Kos, Giali, and Nisyros, as well as the Mt. Pelato pumices from Lipari (Italy) and a selection of Cappadokian tuffs (Turkey). The time frame ranges from ca. 3500 years BP to about 11 My BP. Several hundred of archaeological finds of pumice from excavation sites around the Eastern Mediterranean Region have already been identified successfully in cooperation with the respective archaeological institutions.