Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08098, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08098
EGU General Assembly 2008

Major and trace-element characterization of single shards from tephra layers in the astronomically-tuned KC01B sedimentary core (Ionian Basin, eastern Mediterranean)

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Major, trace and rare earth elements obtained with WDS-EPMA and LA-ICP-MS analyses of single glass shards, picked from the astronomically-tuned KC01B sedimentary core (Ionian basin, 36˚15.25'N, 17˚44.34'E), provide a new reference database to characterize, from a geochemical point of view, the distal products of major volcanic events that occurred in the Mediterranean area during the last 1.1 Myr. Our results consider, in detail, the seven most prominent tephra layers out of the 33 layers reported by Lourens et al., 2004 (Paleoceanography 19, PA3010). These tephras punctuate the marine record of core KC01B in a time span ranging from ca 16 ka to 620 ka B.P. (zone Y, X, W, V according to the tephrostratigraphic framework of Keller et al., 1978; Geol. Soc. Am. Bull. 89, 591-604). The ash layer correlated with the Y5 horizon, identified as the distal counterpart of the well known Campanian Ignimbrite eruption, along with the poorly known deposits of X6 tephra have been definitely char-

acterised and recognised as the best chronostratigraphic markers in the area for that time period. The type of approach used in this study aims to give fundamental information on the volcanic sources of glass shards when dealing with tephrostratigraphic studies of ancient successions in distal areas. Analysis of glass shards in terms of trace and rare earth elements provides, in fact, a wide range of data from a single sample, allowing, for example, (1) to detect magmatic evolution of the studied eruption and (2) to recognize chemically different populations of shards within one deposit which may not be easily distinguishable from the electron probe data. Moreover, the high-resolution astronomical tuning of the record allows for a higher and more accurate age definition for the eruptive events, thus making core KC01B an excellent archive for the chronostratigraphic reconstruction of the explosive volcanic activity in the Mediterranean area during the Pleistocene-Holocene.