



Man or climate? Holocene soil erosion in Greece. The Phlious Basin, NE-Peloponnese

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The NE-Peloponnese, Greece, is known for its long history of human activity and its early settlements. Within the Basin of Phlious, close to the famous site of Mycenae, agriculture has already started during the 7th millennium BC, which – by the way at first was indirectly indicated by OSL age data of colluvia - and in the meantime also is evidenced by archaeological finds (M. Maran, personal communication). The consequence of the early human impact is the present absence of any soil cover on the slopes, due to intensive soil erosion in the past. The corresponding sediments of soil erosion can be found today as colluvia and alluvia at the foot of slope and within the basin. These sediments represent an excellent natural archive for reconstructing soil erosion if one can decode their age.

Optical Stimulated Luminescence (OSL) dating techniques are favourable for sediment dating, where the last exposure of the mineral grains to daylight can be dated, thus the last reworking of the sediment. Various studies on sediments from different environmental settings have shown the broad and successful application of luminescence dating techniques. Nevertheless, sediments like colluvia and alluvia are often not well bleached, which would result in an age overestimation. Thus, the detection of insufficiently bleached sediments is a necessary requirement in luminescence dating. This requirement can be fulfilled with coarse-grain single aliquot (SA) dating techniques, where the variation of small aliquots is used to check for an insufficient bleaching.

To reconstruct the history of soil erosion, the stratigraphy of the basin was investigated. Therefore, 19 boreholes were drilled down to a depth of 15 m and 5 pits were excavated along a 2 km transect through the basin. For OSL dating 43 samples were

taken to establish a high resolution chronology. Results of the investigation show a high variability of erosion rates. These data are compared with known climatic information and with data of cultural activities of the area. Based on this information, the question will be discussed, if man or climate is responsible for the variability of soil erosion, an indication of environmental change within the Holocene.