Geophysical Research Abstracts, Vol. 9, 11409, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-11409

Potential of shallow lake systems to trace environmental changes caused by earthquakes

U. Avsar (1), X. Boÿs (1), A. Hubert-Ferrari (1), N. Fagel (2)

(1) Seismology Department, Royal Observatory of Belgium, Brussels 1180, Belgium, (2) Clays and Paleoclimate Research Unit, Geology Department, University of Liege, Liege 4000, Belgium

Modern lake environments are studied as valuable data sources to trace environmental conditions of recent past. Some large lakes like the Dead Sea located along the Dead Sea Fault contain well-preserved paleoseismic records. We focus here on an other large strike-slip fault, the North Anatolian Fault (NAF) in Turkey. Through this fault is not the locus of large lakes comparable to the Dead Sea, we attempt to get a paleoseismic record from several shallow lakes located along the NAF. Within the scope of an EC-Marie Curie Excellence Grant Project entitled "Understanding the irregularity of seismic cycles: a case study in Turkey", five shallow lakes (Ladik, Boraboy, Zinav, Göllüköy, and Asagitepecik), which are located the eastern NAF, will be investigated. Three destructive earthquakes took place in 1939 (Ms=7.9), 1942 (Ms=7.1) and 1943 (Ms=7.3) in that area. The finger-prints of these earthquakes are investigated in these five shallow lakes, in order to access potential environmental changes related to the earthquakes in each lakes. Approximately one-meter long gravity cores were taken from all lakes. We measured several parameters (e.g physical, mineralogical and geochemical proxies) to trace the effects of the last earthquake sequence. Measurements reflecting the physical properties of the sediment include magnetic susceptibility, water content, bulk density, electrical resistivity, p-wave velocity. Mineralogical and geochemical properties are constrained using X-ray diffraction, loss-on-ignition, total organic/inorganic carbon, atomic carbon/nitrogen, and organic carbon isotope ratios. The validity of the results is assessed with multivariate statistical methods. Here, we present results obtained from Ladik and Boraboy lakes. Longer cores will be collected during summer 2007 to get a long-term record of past earthquake activity. This research is complementary to conventional paleoseismological researches using trench-

ing.