Radionuclide profiles and recent earthquakes history of Lake Hazar Pull-apart basin (East Anatolian Fault, Turkey)

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In Turkey, the continuous Pull-apart sediment records constitute powerful chronometers for tracking environmental perturbations such as earthquakes. In South-east Turkey, the East Anatolian Fault (EAF) is a major strike-slip fault along which large earthquakes (Ms > 7) occurred in the 19^{e} century. According to chronicles, the seismicity of this area has been minimal for most of the last century; the latest surface rupturing earthquakes may be the Ms = 7.1 in AD 1874 and the Ms = 6.7 in AD 1875. The EAF consists of two large surface rupturing segments interrupted by a pull-apart basin at Lake Hazar (the Sincik/Lake Hazar and the Lake Hazar/Palu segments). In this geological context, the present project seeks to assess: 1) the recent sedimentation rates of Lake Hazar main Pull-apart system located on the EAF; 2) the occurrence of recent past earthquakes along the EAF. For these purposes, we use a diverse array of complementary techniques involving sediment coring, and radionuclide profiles of sediment cores. Here, we present the first results obtained within the framework of a EU-project focusing on the "*seismic cycles"* in Turkey («*Understanding the irregularity of seismic cycles: A case study in Turkey*»). We present ^{210}Pb and ^{137} Cs age models obtained from a series of short sediment cores. The radionuclide profiles are utilized for both, annual sediment rates estimates, and for tracking the historic earthquakes. The correlation between several cores and the comparison between radionuclide profiles and preliminary sedimentological data shows that sedimentary structures induced by the last AD 1874 and 1875 earthquakes can be detected by ultra-high resolution X-ray radiographies. However, our results show the presence of an additional hypothetic event in the early 20^{e} century. These first results will be further utilized for tracking past earthquakes in longer Lake Hazar sediment time series.