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Contribution of subaqueous paleoseismology to paleoseismic datasets: Examples from the Euro-Mediterranean Region

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Besides on-fault paleoseismic trenching techniques, subaqueous paleoseismology have been getting popular in the recent years to contribute paleoseismic data sets. In the regions having high-seismic activity and on-fault paleoseismic trenching is not applicable (e.g., blind reverse/trust faults and offshore faults), subaqueous paleoseismology becomes highly crucial. In moderate-seismicity regions, even though the earthquakes of M$\sim$6 can cause significant damages and loss of life, they usually generate non-distinct surface ruptures, which again limit the application of on-fault trenching. Moreover, recent subaqueous (lacustrine and marine) sedimentary records can provide more precisely dated and longer paleoseismic data. However, sedimentary traces of past earthquakes in lacustrine and marine records can be very similar to the sedimentary events of climatic origin. For this reason, subaqueous paleoseismology needs temporal validation by using information from historical seismicity records and paleoseismic trenches. In this study, I present examples of subaqueous paleoseismological applications from Euro-Mediterranean region. The lacustrine sedimentary records from the central Europe (e.g., France and Switzerland), which is a low-moderate seismicity region, reveal short-to-moderate length paleoseismic records (i.e. 1000-3000 year long). The North Anatolian Fault (NAF) and the Dead Sea Fault (DSF) are the two main source of high seismic activity in Euro-Mediterranean region. Subaqueous paleoseismicity studies from the Marmara Sea and several lakes on the NAF provide short-to-moderate length paleoseismic records, while the studies from DSF can go $\sim$50 kyr back in time.