



Mapping active faults in the Sea of Galilee, Israel – a multi-disciplinary approach

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The Sea of Galilee is a morphotectonic depression lying along the northern section of the southern Dead Sea fault strike-slip plate boundary. As such the area is prone to both large and small-scale earthquakes. While the overall general deep tectonic regime has been studied and debated, little is known about the young, potentially active faults crosscutting the lake. The presence of gas-charged and fine-grained sediments in the subsurface of the lake prevents the penetration of acoustic signals resulting in acoustic blanking and loss of the signal. Hence high-resolution geophysical data are lacking. An international study is currently underway with the aim of mapping out potentially active faults. The first stage of this multidisciplinary approach includes a) a high-resolution Chirp seismic survey within the lake to detect areas with and without acoustic penetration; b) sampling of water and gas from springs located around the lake with the purpose of geochemically characterizing the seeping fluids, their origin and migration pathways from depth; and c) the deployment of a network of 12 seismic stations positioned around the lake to monitor the local seismic activity and locate the most active regions. This combination of data sources will help to locate the best candidates for regions of active faulting. The second stage of the project will include the use of additional geophysical methods that are not affected by gas or fine-grained sediments in order to target the specific areas of suspected faults within the lake. An overview of the project, as well as initial results, will be presented.