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Investigate the active faults and sinkholes along the eastern shores of the Dead Sea by using Electromagnetic radiation (EMR).

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The Dead Sea is a hypersaline terminal lake with a surface area in 2004 is approximately 634 km2 and its border is approximately 148 km. It located among Jordan, Israel and Palestine. A large parts of the Dead Sea area characterize as a highly karstic and fractured rock formations that are genetically connected with faults and karstic routes extending from the land into the sea, and the prevailing seaward-sloping rock strata.

This study expected to assist a major objective in terms of the submarine groundwater discharge, which are very useful for controlling the discharge to the Dead Sea. The major objective is to locate and evaluate the areas of submarine ground-water discharge along the eastern coast of the Dead Sea.

The electromagnetic radiation (EMR) is the technique was used in this study. The principle of this method is the energy release from the fault and fractured activities. This method was used to localize the active faults, fractured zones and the non-opened sinkholes along the Dead Sea shoreline. These are considered as zones of weakness of the groundwater discharge at the Dead Sea area.

The result from this method showed that there are many active faults, fractured zones and non-opened sinkholes at the study areas. At South Sweimah area the profile was started at coordinates 31˚ 41′ 28.18″ N and 35˚ 34′ 38.87″ E. Many fractured zones were observed along this profile. A main highly fractured zone was observed at a distance between 790 and 1500 m to the north of the starting point. Another one was

between 880 and 1000 m to the north of the starting point. A few sinkholes were observed between distances of about 890 m and 1265 m to the north of the starting point. A main sinkhole was recognized at a distance of 2718 to 2730 m to the north of the starting point.

The second EMR profile was carried out in Zara - Zarka Ma'in area. It is started at coordinate of 31˚ 34′ 43.83″ N and 35˚ 33′ 99.2″ E. The radiation start after about 50-60 m to the north of the starting point where the active fault start and then after about 80 m to the north of the starting point another active small faults were observed. As well non-opened sinkhole was found at a distance of about 2305-2310 m to the north of the starting point. An active faults and fractured zone also were recognized at the distance from about 2285 m to about 2320 m to the north of the starting point.

The third EMR profile was carried out in Al-Mujeb area the southern part of the Dead Sea at the coordinate 31˚ 28′ 39.92″ N and 35˚ 34′ 25.40″ E.. In Mujeb area the EMR results showed many fractured zones along the profile. The main features were at distances between 550 and 565 m and between 1148 and 1155 m to north of the starting point. A sinkhole was recognized at a distance between 140 and 150 m to the north of the starting point. As well a large fractured and faulted zone was observed between 1275 and 1380 m north of starting point.