Geophysical Research Abstracts,
Vol. 11, EGU2009-50-6, 2009
EGU General Assembly 2009

Salt karst and tectonics: sinkholes development along tension cracks between parallel strike-slip faults, Dead Sea, Jordan

Dr Closson (1) and Prof Dr Eng Abou Karaki (2)

(1) Royal Military Academy, Signal and Image Centre, Brussels, Belgium (damien.closson@yahoo.fr, +32 2 742 64 72), (2) University of Jordan, Environmental & Applied Geology Dept., Amman, Jordan (naja@ju.edu.jo)

This work deals with the tectonic interpretation of an alignment of more than 300 sinkholes stretching along the Jordanian coast of the Dead Sea, Ghor Al Haditha area. Its dimensions are six kilometers long and six hundred meters width. Sinkholes appeared during the last decades as a consequence of the very rapid lake level lowering. The linear shape was inferred from ground collapses inventories carried out between 1991 and 2008. The lineament is replaced and analyzed in its structural setting at regional and local scales. Its direction (N 24 E) is sub-parallel to the ones displayed by many focal mechanisms, especially the one associated to the 23rd April 1979 earthquake (Mb = 5.1; N 20 E +- 5 deg), which is representative of all focal mechanisms calculated on a fault plane compatible with the direction of the Jordan - Dead Sea Transform fault system for the east coast of the Dead Sea.

The alignment of sinkholes is constituted by thirteen minor linear segments separated by so many empty spaces. Their geometric organization suggests the existence of a rotational effect caused by stress between two parallel strike-slip faults. Four minor linear units present an en-echelon arrangement from which one can deduce the presence of a local extensional stress field. In this context, sinkholes locations provide information of subsurface discontinuities interpreted as hidden fractures. In a close future, such results could support the work of engineers in the development of new tourist resorts.