REMOTE SENSING AND STRUCTURAL ANALYSIS OF JABAL WAQF AS SUWWAN METEORITE IMPACT. M. Khirfan[1], T. Kenkmann[2], E. Salameh[1], Y. Omary[1], and W.U. Reimold[1] , [1]University of Jordan, jubeiha 11942, Faculty of Science, Jordan (khmaria@hotmail.com); [2]Museum of Natural History (Mineralogy), Humboldt University, Invalidenstrasse 43, 10115 Berlin, Germany.

A large meteorite impact structure has recently been discovered in the Middle East, in Jordan [1], at Jabal Waqf as Suwwan (meaning in Arabic: Mountain of Standing Chert Layers) (Fig. 1). This is the only known impact structure between India and the Mediterranean Sea. Jabal Waqf as Suwwan measures about 6 km in diameter. Its central uplift of ca. 900 m diameter is extremely well exposed and provides a view through the entire stratigraphic sequence. The structure is formed in Lower Cretaceous and early Paleogene strata. Since the original regional mapping of Jordan by the German Mission in the 1960s. the structure had been known as a cryptoexplosion structure. Initial ground-based investigation resulted in findings of many sites with shatter cones in sandstone and limestone, confirming the impact origin. In addition, limited shock metamorphic deformation in quartz has been reported [1,2].

The current study involves thorough investigation of available remote sensing data (Landsat TM 5, aerial photographs) of the area. We will report at the conference lineament and drainage pattern analysis for the impact structure and the region surrounding it. A digital elevation model as well as aspect and slope analyses will be reported.

At present detailed lithological and structural mapping of the entire impact structure, but particularly of the central uplift structure, is carried out, and the results will also feature in our presentation. The discussion of the structural data will focus on the formation mechanisms for central uplift structures of large, complex impact structures, and draw on comparison with Upheaval Dome, formed likes Jabal Waqf as Suwwan entirely in sedimentary target rocks.

References: [1] Salameh E., Khoury H. and Schneider W. 2006. Jebel Waqf as Suwan, Jordan: a possible impact crater- a first approach. Zeitschrift der deutschen Gesellschaft fur Geowissenschaften, 157, 1-8. [2] Salameh, E. et al., Meteoritics and Planetary Science, in press.

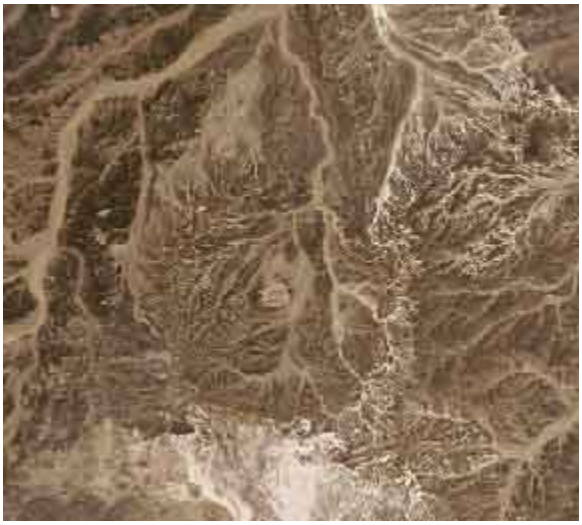

Fig.1 Satellite image of the circular Jabal Waqf as Suwwan structure.

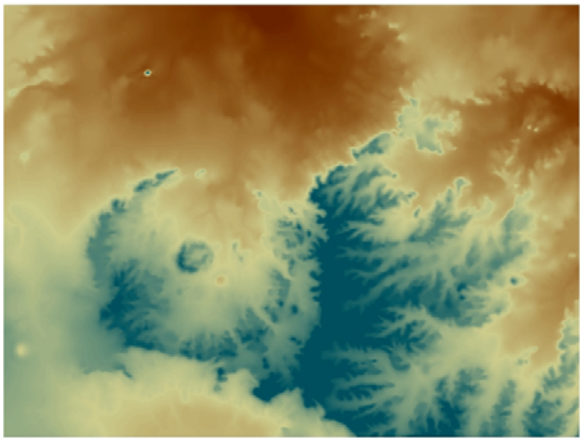

Fig.2 DEM image of the Jabal Waqf as Suwwan structure. The crater structure is about 6 km in diameter.

Fig. 3 Photograph of the southern part of the central uplift. The central uplift consists of tilted and bent blocks of various sizes.

Fig. 4 Shatter Cone within the Upper Cretaceous chert layer. Shatter cones are particularly frequent in the outer region of the central uplift.