



Airborne laser scanner measurements for the detection of sinkholes and their changes

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The Dead Sea Transform (DST) is a system of left-lateral strike-slip faults that accommodates the relative motion between the African and Arabian plates. Furthermore the water level of the Dead Sea is sinking rapidly at an average of one meter per year. Because of this the salt lake has already lost one third of its surface and along the parched shores are formed daily new sinkholes that are up to 20 meters deep. About 1000 of these sudden incident sinkholes have formed in the meanwhile the shoreline of the Dead Sea. They represent danger both to life and property, disrupt life in the area, and aversely affect building and development.

During the measurement campaign for the Dead Sea Integrated Research Project (DESIRE) 2007 the coastal area was flown to the south of Ein Gedi also with a laser mirror scanner constructed by RIEGL to detect relevant sinkholes. The airborne survey area covers a surface of approximately 20 by 4 km. The data acquisition was done by flights in North-South direction in 20 strips with an overlap of 50 percent. For the data analysis focused on the software TopPIT of Trimble Geospatial was used.

The aim of the airborne survey was the calculation of a digital terrain model (DTM) but also the creation of an inventory of existing sinkholes, that can be used to detect temporal changes by comparison with future recordings. Moreover, the efficiency of the method used should be demonstrated as an appropriate procedure compared with traditional field data collection.