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Zonation and Prediction of Land Subsidence (Case Study-Kerman, Iran)

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ABSTRACT

Drought and Immethodical ground water withdrawal in recent years has caused numerous problems such as subsidence due to falling of subsurface water table, the reduction of water quality, etc. in cities across the world. This research as a case study deals with harmful effects of subsurface water withdrawal in the city of Kerman and practical monitoring of the subsidence and makes prediction of land subsidence. The artificial neural network has been used for modeling the monitored results and prediction of future subsidence. A surveying network with more than 500 installed benchmarks in an area of 334 square kilometer has been used to measure the subsidence of the city area. Benchmarks were installed in the beginning of 2004 and were monitored at the end of 2004, 2006, and 2007. For modeling, extra data were obtained from Iranian Surveying Organization for the years before 2004. The resulting model showed that, the subsidence varies between zero and 15cm per year in different parts of the City, which depends on the subsurface-layered soils, their compressibility, and the manner of subsurface water withdrawal.

KEYWORDS

Land Subsidence Zonation, Subsurface Water Withdrawal, Artificial Neural Network, Subsidence Prediction

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