

EGU2020-6592

<https://doi.org/10.5194/egusphere-egu2020-6592>

EGU General Assembly 2020

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## One dimensional numerical modeling of land subsidence caused by seasonal groundwater level fluctuations in Kawajima, Japan

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Land subsidence caused by seasonal fluctuation of groundwater level caused by agricultural groundwater use was numerically simulated in this study. In the study area, Kawajima, Saitama prefecture, Japan, the hydraulic head has been gradually increasing over time with seasonal fluctuations and the subsurface formations have repeated expansion and compaction. However, the land subsidence progressed because the compaction included the plastic deformation. In this study, vertically one-dimensional model to numerically simulate coupled groundwater flow and soil deformation in Kawajima was developed with modified cam-clay model. Because of the lack of subsurface information, it was difficult to set the physical properties such that the simulated subsidence and the observed subsidence are satisfactorily close to each other. This study applied a genetic algorithm in order to search the set of underground physical properties. The improved set of underground physical properties succeeded to reproduce the observed land subsidence in Kawajima.

**How to cite:** Akitaya, K. and Aichi, M.: One dimensional numerical modeling of land subsidence caused by seasonal groundwater level fluctuations in Kawajima, Japan, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-6592, <https://doi.org/10.5194/egusphere-egu2020-6592>, 2020