



Newsletter of the Unesco Land Subsidence International Initiative

Vol. 26, May 2022

TISOLS

TISOLS is scheduled for 17-21 april 2023

The symposium is organised under the auspices of the Unesco IHP Land Subsidence International Initiative. This group has endeavoured to improve and disseminate knowledge on land subsidence since the 1970s, through International Symposia on Land Subsidence, collaborative projects and publications.

Land subsidence, or land-level lowering, is a major problem that threatens the viability and sustainable economic development for millions of people throughout the world, especially in (but not restricted to) highly urbanized coastal areas. It is often a result of overexploitation of groundwater resources. The total costs globally amount up to many billions of dollars annually.

Venue

TISOLS2023 will be held from 17 – 21 April 2023 at the Aula of the Delft University of Technology in Delft in combination with a Subsidence Day in the historical city of Gouda. The city of Delft is well known for its Delft Blue pottery and the cheese from Gouda is world famous. However, both cities are also located in the heart of the subsiding Dutch coastal plain. Subsidence has made the Netherlands to what it is today; a water-rich country which is one third below sea level. The Netherlands are still subsiding, causing damage to infrastructure and buildings. On top of that, land subsidence is worrisome for an already low-lying country that has to cope with sea-level rise.

Call for abstracts: (open until September 1st, 2022)

<https://www.tisols.org/120823/wiki/576406/call-for-abstracts>



United Nations
Convention to Combat
Desertification

Groundwater management means management of groundwater sub-basins to provide for multiple long-term benefits without resulting in or aggravating conditions that cause significant economic, social, or environmental impacts, such as long-term overdraft, land subsidence, or damage to ecosystems

Advantages / Benefits

Ground water generally does not get polluted Since bore well is closed, no risk of getting contaminated

Since it is closed no danger of children or animals falling into it

Temperature of deep water remains stable

It feels cool in summer and warm in winter

Since bore wells are deep, chances of water remaining available in summer are higher

Who's involved

Local water councils

Farmers

Non-governmental organization (NGOs)s

Farmers

Information sources

<http://re.indiaenvironmentportal.org.in/files/Indigenous%20water%20conservation...>

<https://www.unccd.int/land-and-life/drought/toolbox/groundwater-management-and-conservation>

New Literature

Australia

Yuanjin Pan, Hao Ding, Jiangtao Li, C.K. Shum, Rishav Mallick, Jiashuang Jiao, Mengkui Li, Yu Zhang,

Transient hydrology-induced elastic deformation and land subsidence in Australia constrained by contemporary geodetic measurements,

Earth and Planetary Science Letters, Volume 588, 2022, 117556, ISSN 0012-821X,

<https://doi.org/10.1016/j.epsl.2022.117556>.

(<https://www.sciencedirect.com/science/article/pii/S0012821X22001923>)

Indonesia, Bandung

Irwan Gumilar; Hasanuddin Z. Abidin et al.,

Land Subsidence in Bandung Basin and its Possible Caused Factors

<https://schlr.cnki.net/en/Detail/index/journal/SJESAD8D164BEB2E7F11C2033AA5A5F37DCC>

Indonesia, North Coast west Java

Dian N. Handiani, Aida Heriati & Wina A. Gunawan (2022) Comparison of coastal vulnerability assessment for Subang Regency in North Coast West Java-Indonesia, Geomatics, Natural Hazards and Risk, 13:1, 1178-1206, DOI: 10.1080/19475705.2022.2066573

<https://www.tandfonline.com/doi/full/10.1080/19475705.2022.2066573>

Indonesia, Semarang

Lo, W.; Purnomo, S.N.; Dewanto, B.G.; Sarah, D.; Sumiyanto Integration of Numerical Models and InSAR Techniques to Assess Land Subsidence Due to Excessive Groundwater Abstraction in the Coastal and Lowland Regions of Semarang City.

https://www.academia.edu/79777525/Integration_of_Numerical_Models_and_InSAR_Techniques_to_Assess_Land_Subsidence_Due_to_Excessive_Groundwater_Abstraction_in_the_Coastal_and_Lowland_Regions_of_Semarang_City

Iran, Ardabil Plain

Aalipour, M., Malekmohammadi, B. & Ghorbani, Z. Mapping land subsidence susceptibility due to groundwater decline using fuzzy pixel-based models. Arab J Geosci 15, 1014 (2022).

<https://doi.org/10.1007/s12517-022-10269-1>

Iran

Romulus-Dumitru Costache et al.,

Stacking state-of-the-art ensemble for flash-flood potential assessment

May 2022 Geocarto International Follow journal

DOI: 10.1080/10106049.2022.2082558

Project: A GIS tool for flash-flood forecast and warnings!

https://www.researchgate.net/publication/360871820_Stacking_state-of-the-art_ensemble_for_flash-flood_potential_assessment

Italy

Davide Festa et al.,

Nation-wide mapping and classification of ground deformation phenomena through the spatial clustering of P-SBAS InSAR measurements: Italy case study

ISPRS Journal of Photogrammetry and Remote Sensing 189(17):1-22

DOI: 10.1016/j.isprsjprs.2022.04.022

https://www.researchgate.net/publication/360428908_Nation-wide_mapping_and_classification_of_ground_deformation_phenomena_through_the_spatial_clustering_of_P-SBAS_InSAR_measurements_Italy_case_study

Mexico

Palma, A.; Rivera, A.; Carmona, R. A Unified Hydrogeological Conceptual Model of the Mexico Basin Aquifer after a Century of Groundwater Exploitation. Water 2022, 14, 1584.

<https://doi.org/10.3390/w14101584>

<https://www.mdpi.com/2073-4441/14/10/1584/htm>

PR China, Beijing

Shuangcheng Zhang et al., Interpretation of the Spatiotemporal Evolution Characteristics of Land Deformation in Beijing during 2003–2020 Using Sentinel, ENVISAT, and Landsat Data

<https://www.mdpi.com/2072-4292/14/9/2242/pdf?version=1651914318>

Bai, Z.; Wang, Y.; Balz, T. Beijing Land Subsidence Revealed Using PS-InSAR with Long Time Series TerraSAR-X SAR Data. Remote Sens. 2022, 14, 2529. <https://doi.org/10.3390/rs14112529>

PR China, Eastern Henan Plain

Zhang, B. et al., Three-Dimensional Hierarchical Hydrogeological Static Modeling for Groundwater Resource Assessment: A Case Study in the Eastern Henan

Plain, China. Water 2022, 14, 1651.

<https://doi.org/10.3390/w14101651>

PR China, Shenzhen Province

Xinya Lei et al., LAND SUBSIDENCE PREDICTION THROUGH MODELING OF TEMPORAL ATTRIBUTE PREDICTION OF KNOWLEDGE GRAPH

https://www.researchgate.net/publication/360693494_LAND_SUBSIDENCE_PREDICTION_THROUGH_MODELING_OF_TEMPORAL_ATTRIBUTE_PREDICTION_OF_KNOWLEDGE_GRAPH

PR China, Yellow River Basin

Zhenjin Li et al.,

Detecting, Monitoring, and Analyzing the Surface Subsidence in the Yellow River Delta (China) Combined with CenterNet Network and SBAS-InSAR

<https://www.hindawi.com/journals/jspec/2022/2672876/>

Romania

Alina Radutu et al.,

Groundwater and Urban Planning Perspective

Water 2022, 14,1627. <https://doi.org/10.3390/w14101627>

Sweden, Uppsala and Gavle

Presented at AGU Conference, Vienna, Austria

Faramarz Nilfouroushan et al.,

Cross-checking of the nationwide Ground Motion Service (GMS) of Sweden with the previous InSAR-based results: Case studies of Uppsala and Gävle Cities

<https://meetingorganizer.copernicus.org/EGU22/EGU22-5293.html>

UAE, Al Ain Region

El Kamali, M., Saibi, H., Abuelgasim, A., Land surface deformation monitoring in the Al-Ain arid region (UAE) using microgravity and SAR interferometry surveys, Environmental Research (2022), doi:

<https://doi.org/10.1016/j.envres.2022.113505>.

Vietnam, Mekong Delta

Dang, A.T.N., Reid, M. & Kumar, L. Assessing potential impacts of sea level rise on mangrove ecosystems in the Mekong Delta, Vietnam. Reg Environ Change 22, 70 (2022).

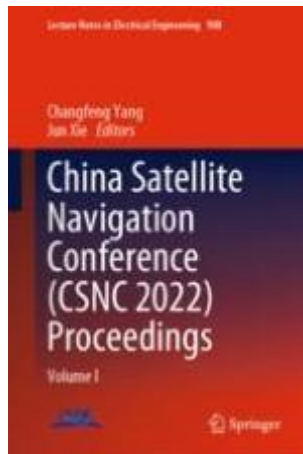
<https://doi.org/10.1007/s10113-022-01925-z>

Conference Papers

Research on GNSS Deformation Monitoring Based on Multi-baseline Solution

Authors: Haonan Wang, Wujiao Dai, Wenkun Yu

Published in: China Satellite Navigation Conference (CSNC 2022) Proceedings



<https://www.springerprofessional.de/en/platform-attitude-measurement-technology-by-single-antenna-navig/20380490>

Mining

PR China,

Hui Shang et al.,

Surface Environmental Evolution Monitoring in Coal Mining Subsidence Area Based on Multi-Source Remote Sensing Data

May 2022 *Frontiers in Earth Science* 10

DOI: 10.3389/feart.2022.790737

https://www.researchgate.net/publication/360597674_Surface_Environmental_Evolution_Monitoring_in_Coal_Mining_Subsidence_Area_Based_on_Multi-Source_Remote_Sensing_Data

Chen, G., Guo, J., Song, Z. et al. Soil water transport and plant water use patterns in subsidence fracture zone due to coal mining using isotopic labeling. *Environ Earth Sci* 81, 310 (2022).

<https://doi.org/10.1007/s12665-022-10421-w>

PR China, Northwest China

Kai Zhang et al.,

Effects of Underground Coal Mining on Soil Spatial Water Content Distribution and Plant Growth Type in Northwest China

<https://pubs.acs.org/doi/10.1021/acsomega.2c01369>

USA

Biden-Harris Administration Releases Draft Guidance, Invites Public Comment on Bipartisan Infrastructure Law Abandoned Mine Land Grant Program

<https://www.doi.gov/pressreleases/biden-harris-administration-releases-draft-guidance-invites-public-comment-bipartisan>

Positions

Iran, UNESCO Chair

CGHA CALLS FOR CONTRIBUTIONS TO DEVELOP THE ANNUAL TRAINING PROGRAM AND FOR PARTICIPATION IN THE DESIGN AND IMPLEMENTATION OF INTERNATIONAL PROJECTS

UNESCO Chair on Coastal Geo-Hazard Analysis (CGHA) invites scientists and researchers from universities and research institutes in public and private sectors to participate in the development of the annual training program, as well as participation in the design and implementation of international projects in the framework of PhD projects and postdoctoral collaborations on the subject of the activities of the UNESCO Chair on CGHA.

UNESCO Chair on Coastal Geo-Hazard Analysis and Research Institute for Earth Sciences welcomes all researchers and those interested in participating in the non-commercial scientific network within the framework of UNESCO's ethical goals and missions in achieving equal access to education, knowledge and technology beyond geographical, religious and gender segregation.

<https://www.preventionweb.net/news/cgha-calls-contributions-develop-annual-training-program-and-participation-design-and>

PhD-thesis



<https://dare.uva.nl/search?identifier=d7d61d1c-ab4e-4d53-be86-0bd6d36abe9d>

Youtube

New Zealand

Subsidence can effectively double expected sea-level rise

<https://www.youtube.com/watch?v=UM70XEI0W-k>

Spain, Alto Guadalentin Basin

ICTP College: Analysis of large-gradient land subsidence in the Alto Guadalentín Basin (Spain) using LiDAR data

https://www.youtube.com/watch?v=oTJXeFX_fz4&ab_channel=ICTPAppliedPhysics

From the Press

Australia, Queensland

Qld farmers unprotected from CSG sinking

<https://www.northernbeachesreview.com.au/story/7747217/qld-farmers-unprotected-from-csg-sinking/>

India, Delhi

Groundwater pumping linked to land subsidence in India's capital

A study of satellite images shows rapid sinking in parts of Delhi between 2014 and 2020

<https://www.nature.com/articles/d44151-022-00048-y>

Japan, Kando River Basin

Implant™ Method adopted as countermeasure against subsidence around the Kando River embankment, Japan

<https://www.giken.com/en/release/26-may-2022/>

USA, California

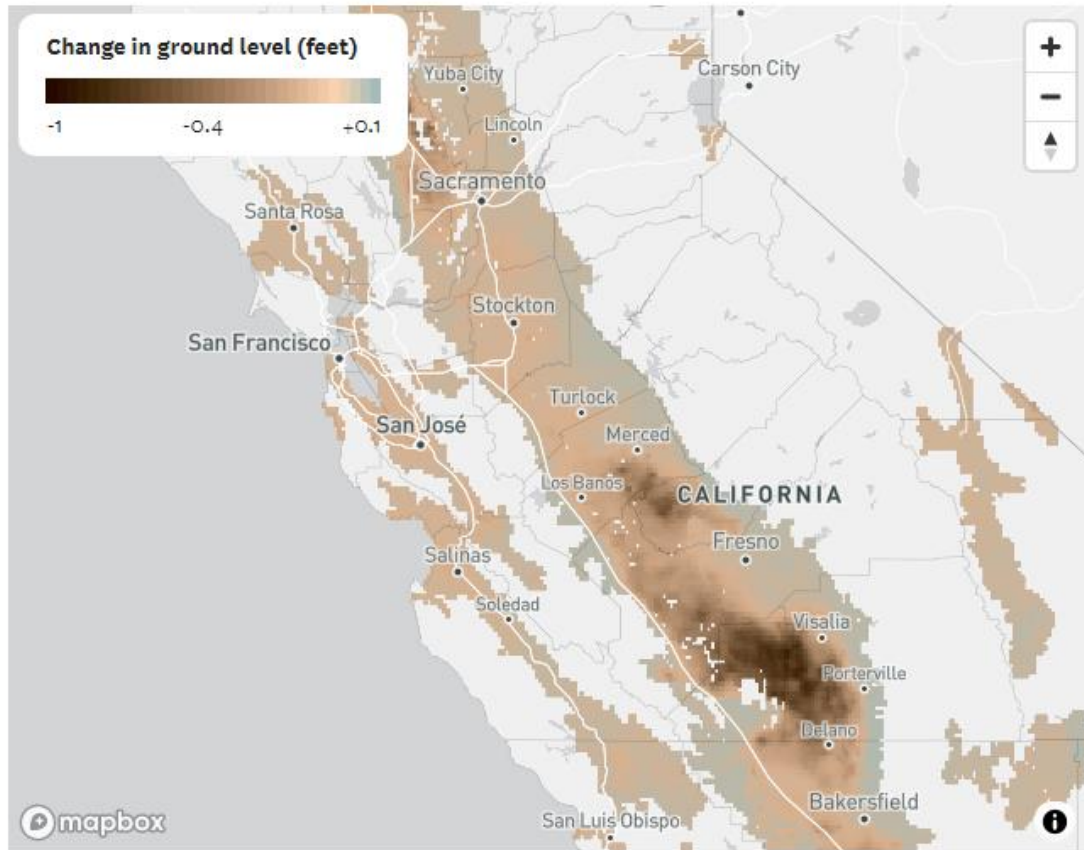
A recent tour of California's Central Valley given by the nonprofit organization Water Education Foundation included a stop at the USGS California Water Science Center's extensometer near Porterville.



<https://www.usgs.gov/centers/california-water-science-center/news/usgs-scientists-explain-how-aquifer-compaction>

Land subsidence in California, October 2020 to September 2021

Hover over or tap on the map to view details



Map: Yoohyun Jung / The Chronicle

Source: CA Department of Water Resources

<https://www.sfchronicle.com/climate/article/California-drought-groundwater-17202022.php>

Wikipedia



Dr. Joseph F. Poland

From Wikipedia, the free encyclopedia

[Jump to navigation](#)[Jump to search](#)

Dr. Joseph Fairfield Poland (1908-1991) was the founding expert in the hydrogeologic field of land subsidence. He committed 50 years of his life to understanding and bringing awareness to the issue. Land subsidence results from over pumping groundwater that leads to compaction of unconsolidated aquifer systems. He pioneered invaluable research on the subject throughout his career at United States Geological Survey (USGS). [1]

Read more: [https://en.wikipedia.org/wiki/Dr. Joseph F. Poland](https://en.wikipedia.org/wiki/Dr._Joseph_F._Poland)