United Nations Educational, Scientific and Cultural Organization · Intergovernmental Hydrological Programme · UNESCO Land Subsidence International Initiative

Newsletter of the Unesco Land Subsidence International Initiative

Vol.35, March 2023

In a few weeks we will meet in TISOLS! Look at the website: https://www.tisols.org/

Special Issue

Water Security Special Issue

Call for papers all for Abstracts - Water Security | ScienceDirect.com by Elsevier

Groundwater and Land Subsidence: A Chronic Water Security Challenge

Guest Editors: Ariel Dinar, University of California, Riverside, USA Upmanu Lall, Columbia University, New York, USA

Evidence from around the world suggests an a-priori direct link between continuous groundwater over-pumping and land subsidence. Impact of Groundwater-induced (GW) Land Subsidence (LS) affects humans, infrastructure, and the environment. While many papers have been published on different aspects of GW and LS, still the links between GW pumping, LS rates and the social, physical and economic impacts are not clear and well defined.

The purpose of this special issue is to address gaps in knowledge of the various disciplines dealing with different aspects of the interaction between GW and LS. We seek contributions from different disciplines, including sociology, hydrology, engineering, economics, political science, and others.

Papers should not exceed approximately 4000 words (not including references and abstract).

Papers can be submitted as review articles, which will summarize the current state of understanding on a topic selected from the list below, offering a critical evaluation of the literature, and highlight important issues and trends in that area. Papers can also be synthesis articles that make a sincere effort to capture the key questions, identify the gaps in our knowledge today, and suggest new approaches or ideas to address a certain topic.

For more information see the Guide for Authors.

Papers should address any of the following topics

1. Impact of GW management or historical extraction on LS, covering one or more of:

a. Managed recharge

b. Regulated pumping

c. GW institutions role

2. Impact of GW-induced LS on human livelihood and economic activity
3. Impact of GW-induced LS on flood risk in coastal regions
4. Impact of GW-induced LS on health of affected population
5. GW-LS impacts on environmental amenities
6. Data needs for appropriate LS mapping, impact analysis and attribution to GW dynamics
7. Economic assessment of GW-induced LS
8. Distributional impacts of LS on rich and poor people
9. LS impact on flood risk in coastal cities
10. Climate driven GW dynamics and their effect on LS outcomes

Overview articles that discuss the many dimensions of the issues above with reference to a specific region or for a cross-setting analysis are especially welcome.

The selection process will consist of two stage evaluation. To be considered please submit a 1-page abstract. Following a preliminary review of the abstracts, authors of accepted abstracts will be invited to submit their papers. Submitted papers are subject to peer review, following the journal review process.

Timeline

Abstracts due: 7th May 2023

Invitation to submit a full paper: 17th July 2023

Full papers due: 18th December 2023

Special Issue ready for publication: June 2024

Please send your abstract to Ariel Dinar by 7th May 2023 at: adinar@ucr.edu, clearly marked: WASEC GW LS Abstract Submission – (Author surname).

New Literature

General

Ploutarchos Tzampoglou et al.,

Selected Worldwide Cases of Land Subsidence Due to Groundwater Withdrawal

March 2023, Water 15(6):1094; DOI: 10.3390/w15061094

https://www.researchgate.net/publication/369213110_Selected_Worldwide_Cases_of_Land_Subsidence_Due_to_Groundwater_Withdrawal/figures?lo=1

Rafael Jan Pablo Schmitt, Philip Simon Johannes Minderhoud

Data, knowledge and modeling challenges for science-informed management of river deltas.

(Preprint) https://eartharxiv.org/repository/view/5163/

Algeria, Cheria Basin

Loubna Hamdi et al.,

Ground Surface Deformation Analysis Integrating InSAR and GPS Data in the Karstic Terrain of Cheria Basin, Algeria

https://www.researchgate.net/publication/369105151_Ground_Surface_Deformation_Analysis_Integrating_InSAR_and_GPS_Data_in_the_Karstic_Terrain_of_Cheria_Basin_Algeria

Egypt, Norther Coast

Kamhawy, A.M.O., Hassan, H.M. & ElKosery, H.M. Reappraisal of tsunami hazard for the Northern Coastal of Egypt considering sea level rise and delta subsidence scenarios. Arab J Geosci 16, 220 (2023). https://doi.org/10.1007/s12517-023-11304-5

India, Chandigarh

Arjuman Rafiq Reshi et al.,

Estimating Land Subsidence and Gravimetric Anomaly Induced by Aquifer Overexploitation in the Chandigarh Tri-City Region, India by Coupling Remote Sensing with a Deep Learning Neural Network Model

https://www.researchgate.net/publication/369370959_Estimating_Land_Subsidence_and_Gravimetric_Anomaly_Induced_by_Aquifer_Overexploitation_in_the_Chandigarh_Tri-City_Region_India_by_Coupling_Remote_Sensing_with_a_Deep_Learning_Neural_Network_Model

Indonesia, Jakarta

Kusumanto, Yanti et al.,

ACM as a pathway to mitigate Jakarta's flood impacts in a changing climate

(ACM stands for: Adaptive Collaborative Management)

https://dspace.library.uu.nl/handle/1874/427352

Indonesia, Jakarta

Rahmawati Fitria et al.,

The causal loop diagram model of flood management system based on eco-drainage concept

March 2023Sustinere Journal of Environment and Sustainability 6(3):185-196

https://www.researchgate.net/publication/369539837_The_causal_loop_diagram_model_of_flood_management_system_based_on_eco-drainage_concept

Indonesia, Semarang

Wahyu Luqmanul Hakim et al.,

InSAR time-series analysis and susceptibility mapping for land subsidence in Semarang, Indonesia using convolutional neural network and support vector regression.

https://www.sciencedirect.com/science/article/abs/pii/S0034425723000044?dgcid=rss_sd_all

Iran, Varamin Plain

Mojtaba Zangeneh et al.,

Developing a decision-making model for improving the groundwater balance to control land subsidence

https://econpapers.repec.org/article/caajnlswr/v_3a18_3ay_3a2023_3ai_3a1_3aid_3a57-2022-swr.htm

Mexico, Mexico City

Mohammad Khorrami et al.,

Groundwater Volume Loss in Mexico City Constrained by InSAR and GRACE Observations and Mechanical Models

DOI: 10.1029/2022GL101962

https://www.researchgate.net/publication/369093022_Groundwater_Volume_Loss_in_Mexico_City_Constrained_by_InSAR_and_GRACE_Observations_and_Mechanical_Models

Pakistan, Gwadar City

Bokhari, Rida et al.,

Land subsidence analysis using synthetic aperture radar data

https://www.diva-portal.org/smash/record.jsf?aq2=%5B%5B%5D%5D&c=9&af=%5B%5D&searchType=LIST_LATEST&sortOrder2=title_sort_asc&query=&language=en&pid=diva2%3A1744936&aq=%5B%5B%5D%5D&sf=all&aqe=%5B%5D&sortOrder=author_sort_asc&onlyFullText=false&noOfRows=50&dswid=3079

PR China, Bohai Bay

Li, X., Li, Y. Study on land subsidence characteristics and deformation evolution mechanism in Caofeidian New Area, Bohai Bay. Bull Eng Geol Environ 82, 96 (2023). https://doi.org/10.1007/s10064-023-03121-7

PR China, Tianjin

Xiao Yu et al.,

Land Subsidence in Tianjin, China: Before and after the South-to-North Water Diversion

https://www.mdpi.com/2072-4292/15/6/1647

PR China, Yellow River Delta

Rongrong NING et al.,

Analysis of Ground Settlement in the Yellow River Delta and Projection of Seawater Inundation

http://www.adearth.ac.cn/EN/10.11867/j.issn.1001-8166.2023.006

Taiwan, Yunlin County

Ku, CY., Liu, CY. Modeling of land subsidence using GIS-based artificial neural network in Yunlin County, Taiwan. Sci Rep 13, 4090 (2023). https://doi.org/10.1038/s41598-023-31390-5

https://www.nature.com/articles/s41598-023-31390-5

Vietnam, Ho Chi Minh City

The subsidence prediction due to load characteristics of underground structures in soft soil in Ho Chi Minh City

The article presents predicting land subsidence in the influence of external load such as pile foundation, increased load due to construction or change of transport infrastructure to twin tunnels to analytical and numerical methods.

https://tapchixaydung.vn/the-subsidence-prediction-due-to-load-characteristics-of-underground-structures-in-soft-soil-in-ho-chi-minh-city-20201224000015968.html

Mapping

Japan

New map of Japan shows shifts in ground surface

https://www3.nhk.or.jp/nhkworld/en/news/20230329_10/

Peat

Indonesia, Riau

Sigit Sutikno et al.,

Water Management for Integrated Peatland Restoration in Pulau Tebing Tinggi PHU, Riau

https://link.springer.com/chapter/10.1007/978-981-99-0906-3_9

Malaysia, Serawak

Hasimah Mos et al.,

Differences in CO2 Emissions on a Bare-Drained Peat Area in Sarawak, Malaysia, Based on Different Measurement Techniques

https://www.mdpi.com/2077-0472/13/3/622/htm

Youtube

Spain, Alicante

https://www.youtube.com/watch?v=Rszts1LS_0k&ab_channel=UA-Universitatd%27Alacant%2FUniversidaddeAlicante