United Nations Educational, Scientific and Cultural Organization

Intergovernmental Hydrological Programme

UNESCO Land Subsidence International Initiative

Newsletter of the Unesco Land Subsidence International Initiative

Vol.43, December 2023

EGU 2024 in Vienna

A message from Claudia Meisina:

We are delighted to bring your attention to session HS8.2.5 " Remote sensing applications to analyse, monitor and model the impacts due to groundwater extraction" (Conveners: Claudia Meisina, Alper Elci, Guadalupe Bru, María Navarro-Hernández, Yueting Li) programmed at the EGU General Assembly 2024 in Vienna - Austria (April 14 to 19, https://www.egu24.eu/).

The session aims to collect contributions on the state of the art and perspectives on the use of Remote sensing products in the framework of the impacts of groundwater extraction (please, find more details at https://meetingorganizer.copernicus.org/EGU24/session/48391). The main topics of interest include (but are not limited to):

• Identification of the impacts of groundwater overexploitation through the use of Remote Sensing data (in particular, InSAR data) , e.g. mapping, monitoring, and predicting ground deformation due to groundwater extraction;

• Innovative methodologies for the hydrogeological characterisation of large-scale overexploited aquifer systems using satellite-based Remote Sensing products (e.g. groundwater storage);

• Development of novel methods for the interpretation of RS products using Artificial Intelligence (AI) techniques;

• Novel methods for unraveling processes of ground movements not related to groundwater extraction (e.g., shallow natural compaction, drainage of urban areas and farmlands, new urbanizations, and hydrocarbon production).

• Assimilation of Remote Sensing data into groundwater flow modelling and geomechanical modelling of aquifer systems to simulate future scenarios as a constraint to limit groundwater withdrawal;

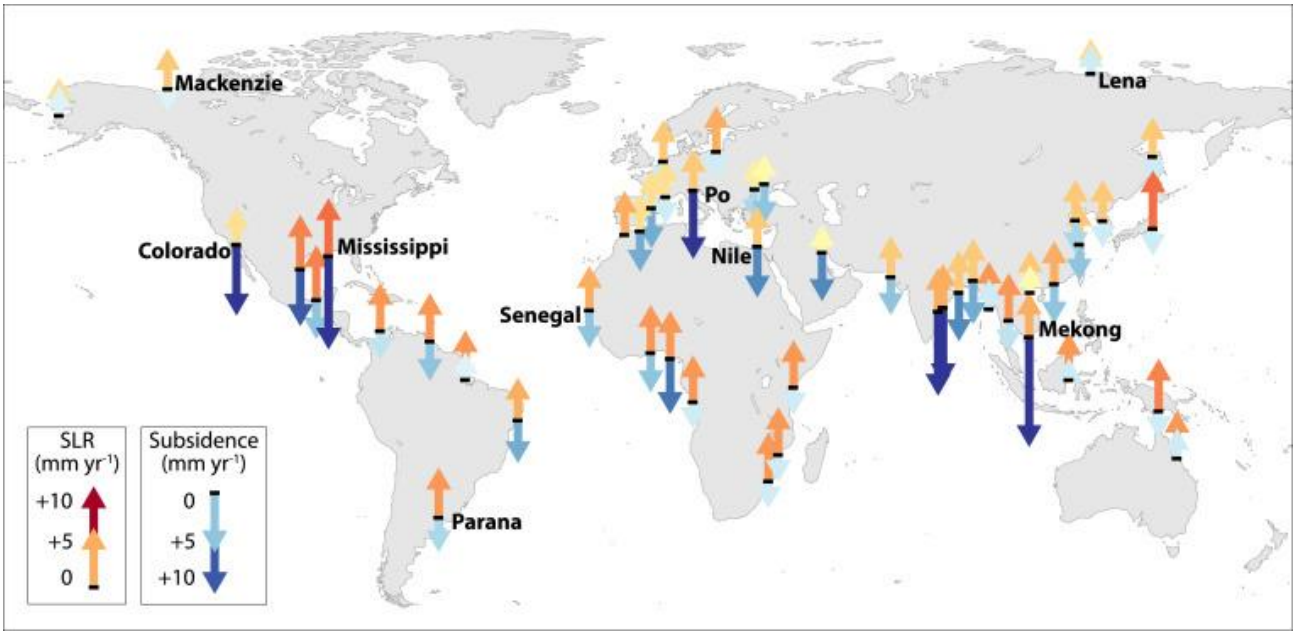
• Past and present experiences of integrating Remote Sensing analysis outcomes into management plans for aquifer systems.

With this in mind, you may consider submitting an abstract by January 10, 2024, 13:00 CET (https://www.egu24.eu/programme/how_to_submit.html).

We look forward to your participation in the next year's EGU.

New Literature

Deltas, Worldwide



Frances E. Dunn, Jana R. Cox, Murray Scown, Haomiao Du, Annisa Triyanti, Hans Middelkoop, Jaap H. Nienhuis, Philip S.J. Minderhoud,

Sedimentation-enhancing strategies for sustainable deltas: An integrated socio-biophysical framework,

https://doi.org/10.1016/j.oneear.2023.11.009.

(https://www.sciencedirect.com/science/article/pii/S2590332223005456)

Indonesia, Jakarta

Abidin et al., Situating the urban poor in informal settlement within Jakarta's water governance shift to remunicipalisation.

https://doi.org/10.1016/j.geoforum.2023.103920.

(https://www.sciencedirect.com/science/article/pii/S0016718523002464)

Whincup, P., Oktavianus, R. & Egy, C. Jakarta groundwater: victim of its own success. Hydrogeol J (2023). https://doi.org/10.1007/s10040-023-02758-8

Indonesia, Pekalongan

W. L. Hakim, M. F. Fadhillah, B. Kim, S. Park and C. -W. Lee, "Integrating ICOPS Time-Series InSAR Measurement with the Convolutional Neural Network (CNN) and Optimized Hot Spot Analysis (OHSA) to Monitor Land Subsidence in Pekalongan, Indonesia," IGARSS 2023 - 2023 IEEE International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, 2023, pp. 1724-1727, doi: 10.1109/IGARSS52108.2023.10282286.

https://ieeexplore.ieee.org/document/10282286

Italy, Bologna

Zuccarini, A., Giacomelli, S., Severi, P. et al. Long-term spatiotemporal evolution of land subsidence in the urban area of Bologna, Italy. Bull Eng Geol Environ 83, 35 (2024). https://doi.org/10.1007/s10064-023-03517-5

Italy, Northern Mediterranean Basin

Antonio Vecchio et al.,

Sea level rise projections up to 2150 in the northern Mediterranean coasts

https://iopscience.iop.org/article/10.1088/1748-9326/ad127e

Japan

Nakasu, T. Disasters of global interdependences: lessons learned from the worst typhoon disaster in Japan. Environ Dev Sustain (2023). https://doi.org/10.1007/s10668-023-04305-7

Mexico, Mexico City

Nelly L. Ramírez-Serrato et al.,

Assessing the relationship between contributing factors and sinkhole occurrence in Mexico City

https://www.tandfonline.com/doi/full/10.1080/19475705.2023.2296377

Nepal, Kathmandu

Rapid subsidence in the Kathmandu Valley recorded using Sentinel-1 InSAR

https://tandf.figshare.com/articles/journal_contribution/Rapid_subsidence_in_the_Kathmandu_Valley_recorded_using_Sentinel-1_InSAR/24907414

PR China, Beijing

Jishan Xu, Jianbing Peng, Yahong Deng, Haibo An, Zhenjiang Meng, Yan Wang & Zuodong Li (2024) Characteristics, causes and significance of subsurface stress field of Beijing earth fissures group, Geomatics, Natural Hazards and Risk, 15:1, DOI: 10.1080/19475705.2023.2287974

https://www.tandfonline.com/action/showCitFormats?doi=10.1080%2F19475705.2023.2287974

PR China, North China Plain

Jingqi Wang et al.,

Influence of South-to-North Water Diversion on Land Subsidence in North China Plain Revealed by Using Geodetic Measurements

https://www.researchgate.net/publication/377027134_Influence_of_South-to-North_Water_Diversion_on_Land_Subsidence_in_North_China_Plain_Revealed_by_Using_Geodetic_Measurements

PR China, Yellow River Delta

Zhixiong Tang, Rongrong Ning, De Wang, Xinpeng Tian, Xiaoli Bi, Jicai Ning, Zixiang Zhou, Fubin Luo,

Projections of land use/cover change and habitat quality in the model area of Yellow River delta by coupling land subsidence and sea level rise,

Ecological Indicators, Volume 158, 2024,111394,ISSN 1470-160X,

https://doi.org/10.1016/j.ecolind.2023.111394.

(https://www.sciencedirect.com/science/article/pii/S1470160X23015364)

Taiwan, Choushui Rievr Fan

Chun-Wei Huang, Si Ying Yau, Chiao-Ling Kuo, Tsai-Yu Kuan, Si-Yu Lin, Ching-Shih Tsou, Chuen-Fa Ni, Yuan-Chien Lin, Liang-Cheng Chang,

Identifying private pumping wells in a land subsidence area in Taiwan using deep learning technology and street view images,

Journal of Hydrology: Regional Studies, Volume 51, 2024, 101636,ISSN 2214-5818,

https://doi.org/10.1016/j.ejrh.2023.101636.

(https://www.sciencedirect.com/science/article/pii/S2214581823003233)

Turkey, Konya Basin

Osman Orhan et al.,

Spatial and Temporal Patterns of Land Subsidence and Sinkhole Occurrence in the Konya Endorheic Basin, Turkey

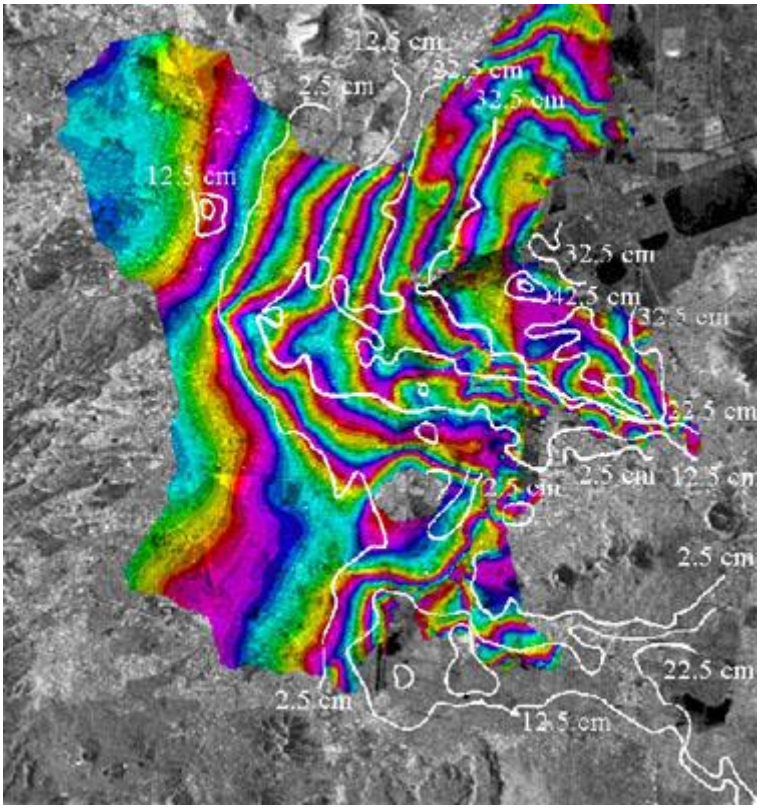
https://www.mdpi.com/2076-3263/14/1/5

USA, San Joaquin Valley

Baranes, H., Dykstra, S.L., Jay, D.A. et al. Sea level rise and the drivers of daily water levels in the Sacramento-San Joaquin Delta. Sci Rep 13, 22454 (2023). https://doi.org/10.1038/s41598-023-49204-z

MAPS

Mexico, Mexico City



https://www.esa.int/ESA_Multimedia/Images/2001/04/Mexico_City_ERS_SAR_interferometric_subsidence_map

Mining

Wojciech T Witkowski et al.,

Impact of mining-induced seismicity on land subsidence occurrence

February 2024Remote Sensing of Environment 301:113934Follow journal

DOI: 10.1016/j.rse.2023.113934

https://www.researchgate.net/publication/376238225_Impact_of_mining-induced_seismicity_on_land_subsidence_occurrence

From the Press

Bangladesh, Dhaka

Dhaka stares down the barrel of water

https://www.thedailystar.net/environment/natural-resources/water-resources/news/dhaka-stares-down-the-barrel-water-3487861

USA, Arizona

https://www.iflscience.com/giant-fissures-are-opening-up-in-us-and-we-have-ourselves-to-blame-72174