United Nations Educational, Scientific and Cultural Organization

Intergovernmental Hydrological Programme

UNESCO Land Subsidence International Initiative

Newsletter of the Unesco Land Subsidence International Initiative

Vol.50, July 2024

Please, send your comments and suggestions to John.Lambert@deltares.nl

New Literature

Coastal Cities

Laura Pedretti et al.,

A comprehensive database of land subsidence in 143 major coastal cities around the world: an overview of the issues, causes and future challenges.

https://www.frontiersin.org/journals/earth-science/articles/10.3389/feart.2024.1351581/abstract

Arabia (Arabian Peninsula)

Mohammed O. Altayyar, Shoaib Ali, Albert Larson, Thomas Boving, Leon Thiem, Ali S. Akanda,

Quantifying Groundwater Depletion in Arabian Peninsula Transboundary Aquifer Systems: Understanding Natural and Anthropogenic Drivers,

https://www.sciencedirect.com/science/article/abs/pii/S2352801X24002169

Australia, Gippsland shore

McInnes Kathleen L. (2024) Climate change, sea-level rise and the Gippsland shoreline. Proceedings of the Royal Society of Victoria 136, RS24001.

https://doi.org/10.1071/RS24001

Brazil, Recife

Wendson de Oliveira Souza et al.,

Analysis of Urbanization-Induced Land Subsidence in the City of Recife (Brazil) Using Persistent Scatterer SAR Interferometry

https://www.mdpi.com/2072-4292/16/14/2592

Greece

M. Foumelis, J. M. Delgado Blasco, E. Papageorgiou, F. Pacini and P. Bally, "Nationwide Monitoring of Surface Motion Dynamics in Greece Exploiting Sentinel-1 Archive and EO Platform Capabilities," 2024 IEEE Mediterranean and Middle-East Geoscience and Remote Sensing Symposium (M2GARSS), Oran, Algeria, 2024, pp. 414-418, doi: 10.1109/M2GARSS57310.2024.10537327.

https://ieeexplore.ieee.org/document/10537327

Indonesia, Bogor

ANALISIS PENURUNAN MUKA TANAH (LAND SUBSIDENCE) KOTA BOGOR DENGAN TEKNIK DINSAR (DIFFERENTIAL INTERFEROMETRIC SYNTHETIC APERTURE RADAR)

With Abstract in English

https://repository.ipb.ac.id/bitstream/handle/123456789/153310/fulltext_F4401201044_b963c87614804d3492bb8aec956f440f.pdf?sequence=2&isAllowed=y

Indonesia, Central Java

Kurnia Adillah et al.,

Assessing Tidal Flooding Vulnerability in the Coastal Region of Central Java Using Remote Sensing Approach

https://www.researchgate.net/publication/382346178_Assessing_Tidal_Flooding_Vulnerability_in_the_Coastal_Region_of_Central_Java_Using_Remote_Sensing_Approach/references

Indonesia, Jakarta

Harintaka et al.,

Current land subsidence in Jakarta: a multi-track SBAS InSAR analysis during 2017–2022 using C-band SAR data

DOI: 10.1080/10106049.2024.2364726

https://www.researchgate.net/publication/381927245_Current_land_subsidence_in_Jakarta_a_multi-track_SBAS_InSAR_analysis_during_2017-2022_using_C-band_SAR_data

Iran, Aliabad Plain

Rajabi, A.M., Edalat, A., Abolghasemi, Y. et al. Using neural network modeling to improve the detection accuracy of land subsidence due to groundwater withdrawal. J. Mt. Sci. 21, 2320–2333 (2024). https://doi.org/10.1007/s11629-023-8470-2

Iran, Kabodarahang Plain

Mohammad Mohammadhasani etal.,

Radar Interferometry for Sustainable Groundwater Use: Detecting Subsidence and Sinkholes in Kabodarahang Plain

https://www.researchgate.net/publication/382231829_Radar_Interferometry_for_Sustainable_Groundwater_Use_Detecting_Subsidence_and_Sinkholes_in_Kabodarahang_Plain

Italy, Po River Plain

Teatini, P., Da Lio, C., Zoccarato, C., Tosi, L. (2024). Natural Compaction of Sediments. In: Chaussard, E., Jones, C., Chen, J.A., Donnellan, A. (eds) Remote Sensing for Characterization of Geohazards and Natural Resources. Springer Remote Sensing/Photogrammetry. Springer, Cham. https://doi.org/10.1007/978-3-031-59306-2_19

Japan, East Coast

ChiSan Tsai et al.,

The effects of land subsidence and its mitigating measures on shallow groundwater salinization in the low-lying coastal plain of East Japan

https://www.researchgate.net/publication/381491707_The_effects_of_land_subsidence_and_its_mitigating_measures_on_shallow_groundwater_salinization_in_the_low-lying_coastal_plain_of_East_Japan

Mexico, Mexico City

Cabral-Cano, E., Solano-Rojas, D., Fernández-Torres, E.A., Salazar-Tlaczani, L. (2024). Land Subsidence Hazards: A Case Study of Mexico City. In: Chaussard, E., Jones, C., Chen, J.A., Donnellan, A. (eds) Remote Sensing for Characterization of Geohazards and Natural Resources. Springer Remote Sensing/Photogrammetry. Springer, Cham. https://doi.org/10.1007/978-3-031-59306-2_15

Pakistan, Baluchistan

Nasrullah, Kian, L.I., Khan, S. et al. Land subsidence resulting from reservoir overexploitation and karez collapse in Mastung and Quetta districts, Baluchistan, Pakistan. Environ Earth Sci 83, 455 (2024). https://doi.org/10.1007/s12665-024-11774-0

PR China, Shanghai

Hishammuddin, M.A.H.B., Wang, J., Wu, F. et al. Scenario spatial planning evaluation model for subsidence-economic resilience environment in geohazard prone-coastal megacities: urban underground space (UUS) development in Shanghai by year 2035. Environ Earth Sci 83, 456 (2024). https://doi.org/10.1007/s12665-024-11763-3

Taiwan, Taipei City

Ajay Saraswat et al.,

Evaluation of groundwater-caused deformation patterns in a metropolitan area using time series InSAR and retrieval of vertical and east-west displacement: a case study in Taipei City

https://www.researchgate.net/publication/382218836_Evaluation_of_groundwater-caused_deformation_patterns_in_a_metropolitan_area_using_time_series_InSAR_and_retrieval_of_vertical_and_east-west_displacement_a_case_study_in_Taipei_City/references

USA, Virginia

Brendan M. Foster et al.,

Characterization of the Water Resources of the Pamunkey River Watershed in Virginia—A Review of Water Science, Management, and Traditional Ecological Knowledge

USGS, Scientific Investigations Report 2024-5024

Prepared in cooperation with The Pamunkey Indian Tribe

https://pubs.usgs.gov/publication/sir20245024

Mining

Brazil,

Jose Mantovani et al.,

An Assessment of Ground Subsidence from Rock Salt Mining in Maceió (Northeast Brazil) from 2019 to 2023 Using Remotely Sensed Data

https://www.researchgate.net/publication/382255106_An_Assessment_of_Ground_Subsidence_from_Rock_Salt_Mining_in_Maceio_Northeast_Brazil_from_2019_to_2023_Using_Remotely_Sensed_Data/references

PR China, Anning (Yunnan)

Kangtai Chang et al.,

Prediction of Surface Subsidence in Mining Areas Based on Ascending-Descending Orbits Small Baseline Subset InSAR and Neural Network Optimization Models

https://www.mdpi.com/1424-8220/24/15/4770

Seminar

https://www.youtube.com/watch?v=D6-FMN8Xi5U&ab_channel=DinasSumberDayaAirProvinsiDKIJakarta

Special Issue

A special issue of **Applied Sciences** (ISSN 2076-3417). This special issue belongs to the section "Civil Engineering".

Deadline for manuscript submissions: 20 January 2025

https://www.mdpi.com/journal/applsci/special_issues/BOBAT04418

Advanced Satellite Remote Sensing for Geohazards

A special issue of Remote Sensing (ISSN 2072-4292). This special issue belongs to the section "Earth Observation Data".

Deadline for manuscript submissions: 30 May 2025

https://www.mdpi.com/journal/remotesensing/special_issues/Y4O98R7TZF

With guest editors a.o. Roberto Tomas and Roberta Boni.

From the Press

Japan

JAXA Launches ALOS-4 Satellite to Revolutionize Disaster Management

Key Features and Applications:

Continuous Monitoring: Unlike optical sensors, radar technology enables ALOS-4 to capture images day and night and through cloud cover. This capability ensures uninterrupted monitoring of disaster-hit areas, providing critical real-time data to response teams.

High-Frequency Observations: ALOS-4 will increase observation frequency from four times a year to once every two weeks for active volcanoes in Japan. This frequent monitoring allows for early detection of abnormal changes, such as unusual volcanic activity, **land subsidence**, or landslides, providing timely warnings to potentially affected populations.

Broad-Swath Coverage: The observation swath has been significantly expanded from 50 km to 200 km while maintaining high resolution. This enhancement allows ALOS-4 to monitor larger areas simultaneously, which is particularly beneficial during large-scale disasters like major earthquakes or multiple volcanic eruptions.

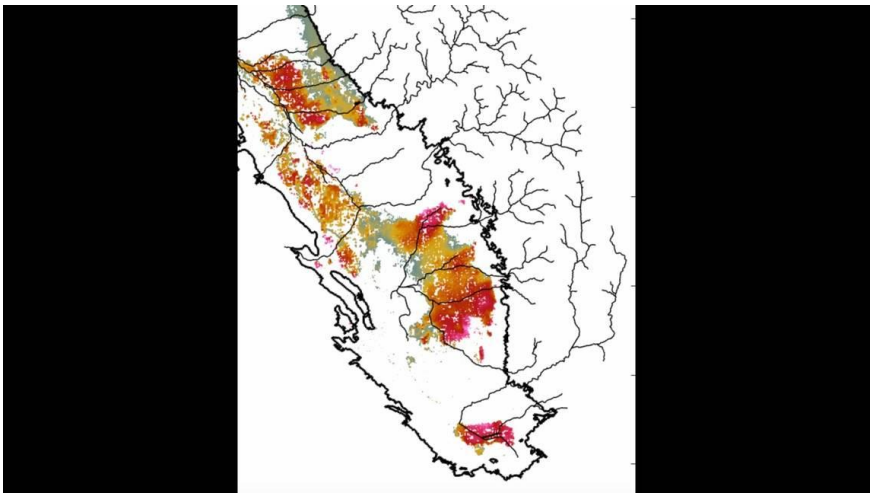
Ground Deformation Monitoring: The radar satellite can measure ground displacement caused by volcanic activity or earthquakes to within a few centimeters. Continuous monitoring of volcanoes can help estimate magma reservoir locations and movements, contributing to a better understanding of volcanic activities.

https://reliefweb.int/report/world/jaxa-launches-alos-4-satellite-revolutionize-disaster-management

USA, California

Stanford study shows where groundwater recharge is uplifting sunken ground in California BY JESSE VAD, SJV WATER

Read more at: https://www.fresnobee.com/news/local/article289853014.html#storylink=cpy



“Groundhog day meets purgatory.” The tale of the sinking Tule subbasin

https://sjvwater.org/groundhog-day-meets-purgatory-the-tale-of-the-sinking-tule-subbasin/