Finanziato dall'Unione europea NextGenerationEU

Ministero dell'Università e della Ricerca

Italiadomani

CNR ISAC

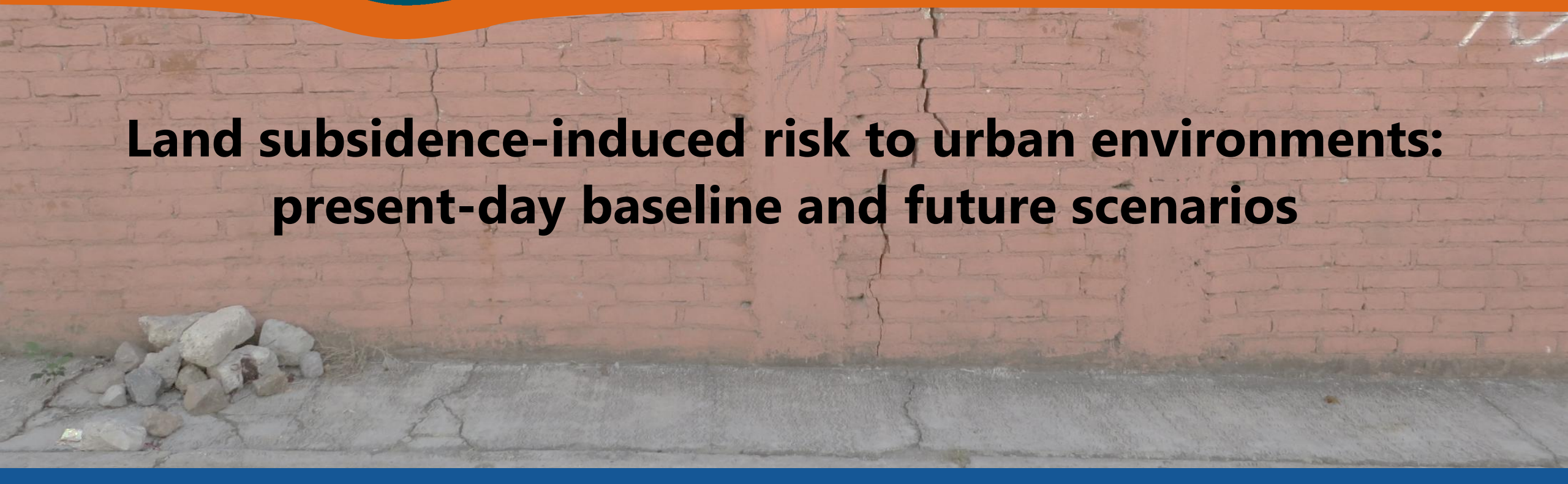
IUSS Scuola Universitaria Superiore Pavia

Università degli Studi di Padova

SubRISK+

FINAL WORKSHOP

27th February 2026, h. 11:00-16:00 CET



Land subsidence-induced risk to urban environments: present-day baseline and future scenarios

SubRISK+

Enhancing our understanding of Subsidence RISK induced by groundwater exploitation towards sustainable urban development

THE PROJECT

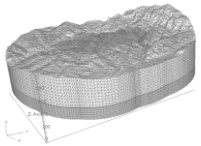
Nov. 2023 – Feb. 2026

Finanziato dall'Unione europea NextGenerationEU

Ministero dell'Università e della Ricerca
Direzione Generale della Ricerca
Ufficio III

Italian Ministry of University and Research (MUR)'s "**PRIN 2022 PNRR" Call** to fund Research Projects of Significant National Interest (PRIN) in the framework of the National Recovery and Resilience Plan (PNRR)

GOALS



1) Exploit EO data to develop **value-added mapping products depicting the risk to urban infrastructure** (private/public buildings, transport networks) caused by overexploitation of groundwater resources and induced land subsidence, **that can be embedded into risk management and mitigation workflows**

2) Develop **innovative and physics-based numerical models** to interpret spatial distribution and time evolution of available EO data. **3D transient groundwater flow models coupled to geomechanical models** will enable quantifying the effects of groundwater usage to land subsidence/uplift

3) Further advance the knowledge on **subsidence-induced socio-economic impacts**, and **identify how human and climate change drivers can influence risk in the next decades** (i.e. 2050 and 2100)

4) Capitalize on EU and Italian infrastructural/research investments in the space and land monitoring sector, by **fastening the risk, impact and scenario assessment methodologies to existing land mapping products/services**, that are standardized, validated and open access to the community

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CONSORTIUM

Project partners

CNR - Institute of Atmospheric Sciences and Climate (CNR-ISAC)
Macro-area IMPEACH - Impacts on Environment, Cultural Heritage and Human Health
Macro-area CAMEO - Climate and Meteorology, Modelling, and Earth Observation
staff: F. Cigna, R. Paranunzio & collaborators: C.A. Farías, M. Lenardón Sanchez, A. Gay

University School for Advanced Studies (IUSS)
Department of Science, Technology and Society
staff: R. Bonì, A. Taramelli, S. Sapio & collaborators: L. Goli Raeisi

University of Padua (UNIPD)
Dept. of Civil, Environmental and Architectural Engineering
staff: P. Teatini & collaborators: C. Zoccarato, F. Gatto, X. Tang

Stakeholders

Arpae Emilia-Romagna
M. Marcaccio, M. Mazzei

Emilia-Romagna Region
P. Severi, I. Pellegrino

Po River District Basin Authority (AdBPo)
B. Bertolo, M. Pancaldi, T. Correa da Mota, M. Guerra

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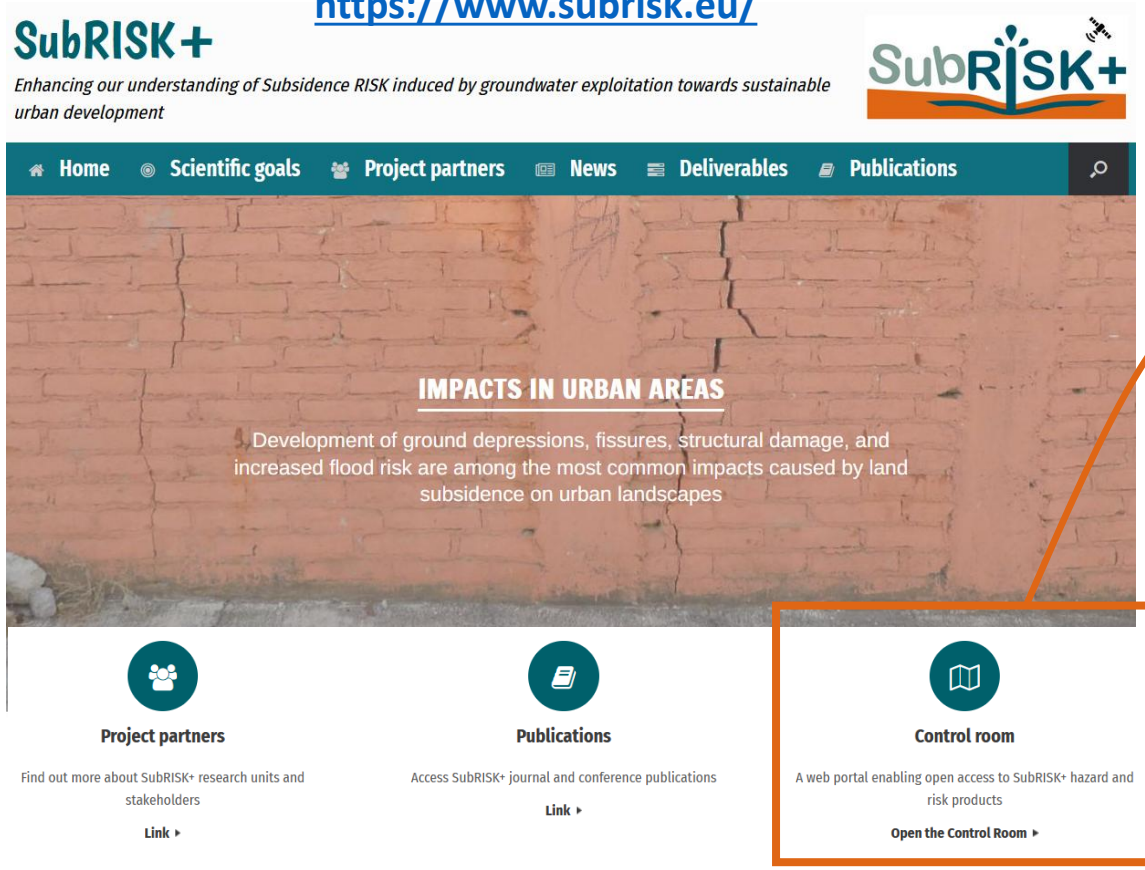
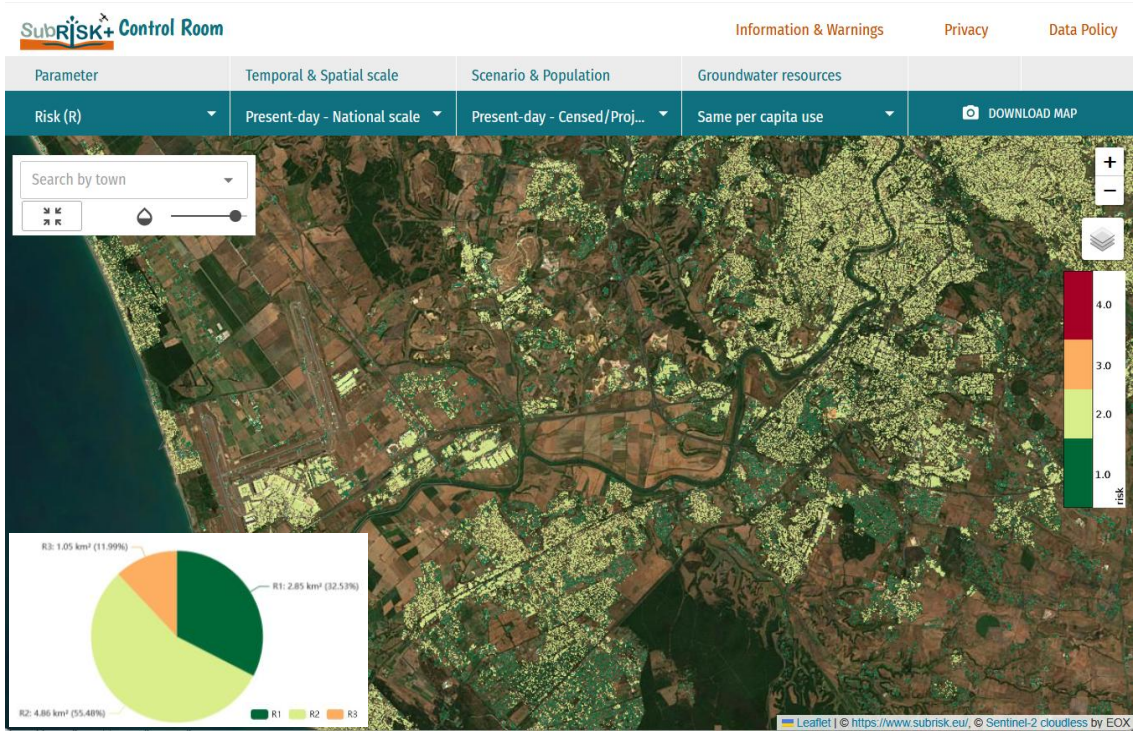
WEBSITE

https://www.subrisk.eu/





'Control Room' https://controlroom.subrisk.eu/

A web portal enabling the investigation of future subsidence risk and impacts by modifying climate, demographic and behavioral factors involved in groundwater availability and exploitation rates

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Objectives

→ Stimulate the scientific discussion on methods and perspectives on using satellite InSAR and other geospatial data on urban settlements, geology, hydrogeology and population to **gather insights into land subsidence-induced risk to urban infrastructure** and the resulting socio-economic impacts

→ **Share experiences on implementing risk assessment workflows and advanced modeling** in major cities and countries of Europe and beyond

→ Present **SubRISK+ project methodologies and key results** to the scientific community

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Speakers

Dr **F. Cigna**
CNR-ISAC, Italy

Prof **L. Ohenhen**
Univ. California, USA

Prof **M. Shirzaei**
Virginia Tech, USA

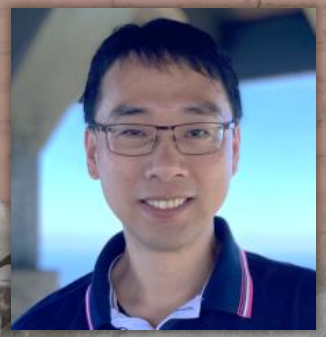
Prof **M. Motagh**
GFZ, Germany

Dr **R. Bonì**
IUSS Pavia, Italy

Dr **A. Greuter**
HGSD, USA

Dr **A. Novellino**
BGS, UK

Prof **P. Teatini**
UNIPD, Italy



Prof **S.-J. Wang**
NCU, Taiwan

Prof **L. Zhu**
CNU, China

Dr **T. Candela**
TNO, The Netherlands

Dr **R. Paranunzio**
CNR-ISAC, Italy

Prof **Prof L. Huning**
California State Univ., USA

Dr **D. Al-Halbouni**
Univ. Leipzig, Germany

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Programme

11:10 – 12:10 Differential land subsidence-induced risk

11:10 *Present-day differential land subsidence risk in the metropolitan cities of Italy*
Dr **Francesca Cigna** | CNR-ISAC, Rome, Italy

11:25 *Urban land subsidence and differential settlement hazards to infrastructure across major U.S. cities*
Prof **Leonard Ohenhen** | University of California, Irvine, California, USA

11:40 *Beyond measuring coastal subsidence: Bridging observation, attribution, and risk for resilient infrastructure and communities*
Prof **Manoochehr Shirzaei** | Virginia Tech, Blacksburg, Virginia, USA

11:55 *From aquifers to salt to coal: Some lessons on land subsidence and its socio-environmental impacts*
Prof **Mahdi Motagh** | GFZ Helmholtz Centre for Geosciences, Potsdam, Germany

12:10 – 12:55 Mapping, understanding and socio-economic and environmental impacts of land subsidence

12:10 *Investigating land subsidence drivers and socio-economic exposure to differential land subsidence in the Emilia-Romagna Region, Italy*
Dr **Roberta Bonì** | IUSS, Pavia, Italy

12:25 *Flood risk and financial impacts of projected subsidence in the Spring Creek watershed, Southeast Texas, USA*
Dr **Ashley Greuter** | Harris-Galveston Subsidence District, Friendswood, Texas, USA

12:40 *The future of sinking coastal cities in Java*
Dr **Alessandro Novellino** | British Geological Survey, Keyworth, UK

12:55 – 14:00 *Lunch break*

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Programme

14:00 – 15:00 Land subsidence modeling

14:00 *Assimilation of piezometric records and InSAR data to model land subsidence in Bologna, Italy*
Prof **Pietro Teatini** | UNIPD, Padua, Italy

14:15 *The importance of hydrogeological models in land subsidence simulations*
Prof **Shih-Jung Wang** | National Central University, Taoyuan City, Taiwan

14:30 *Integrating neural network, InSAR and field measurements to model land subsidence evolution in the Beijing plain*
Prof **Lin Zhu** | Capital Normal University, Beijing, China

14:45 *Subsidence and building damage: A model chain*
Dr **Thibault Candela** | TNO, Utrecht, The Netherlands

15:00 – 15:45 Land subsidence future scenarios

15:00 *Projected land subsidence risk under climate change and groundwater withdrawal scenarios in the metropolitan cities of Italy*
Dr **Roberta Paranunzio** | CNR-ISAC, Rome, Italy

15:15 *Land subsidence drivers, interactions, and cascading impacts: Opportunities and insights*
Prof **Laurie S. Huning** | California State University, Long Beach, California, USA

15:30 *Subsidence & sinkholes: Perspectives and current research at Uni Leipzig*
Dr **Djamil Al-Halbouni** | University of Leipzig, Leipzig, Germany

15:45 – 16:00 Closing remarks

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Useful information

WORKSHOP MATERIALS

Presentation slides and/or reference papers will be shared via SubRISK+ project website: www.subrisk.eu/final-workshop

RECORDINGS

Recordings of the event will become available to the participants within Microsoft Teams

CERTIFICATES

This event will issue attendance certificates to all participants