



Saba Gachpaz

About me

With experience in Earth Observation, geomatics, and geospatial data analysis, my PhD work focused on using Sentinel-1 and Sentinel-2 imagery to estimate surface and root-zone soil moisture using machine learning, deep learning, and foundation models. I enjoy working with diverse geospatial datasets to identify underlying patterns and apply data-driven methods to real-world environmental challenges.

Work experience

University Teaching Assistant | University of Genova | Genova, Italy

Teaching Assistant, Numerical Cartography and GIS (second consecutive year)

University of Genova, Department of Civil, Chemical, and Environmental Engineering

Sep 2023 – Nov 2023, Sep 2024 – Nov 2024

Intern | GTER innovazione in geomatica, GNSS and GIS | Genova, Italy

Sep 2021 - Jan 2022

Introduction to editing methods in Open-Source GIS environment

Education & Training

PhD student in the National PhD Program in Earth Observation (thesis writing phase) | Sapienza Università di Roma - Dipartimento di Ingegneria Civile, Edile e Ambientale (DICEA) | 01/11/2022 - Current

Research Period | KTH Royal Institute of Technology, Division of Geoinformatics | 20/03/2025 - 31/10/2025 | Stockholm, Sweden

Field of study Field-Scale Soil Moisture Estimation Combining Multi-Modal Sentinel-1 SAR and Sentinel-2 MSI Time Series with Spatio-Temporal Machine Learning Models

Master's Degree; Master of Science (MSc) in Environmental Engineering | Università di Genova, Dipartimento di Ingegneria Civile, Chimica e Ambientale | 20/09/2019 - 22/07/2022 | Genova, Italy

Thesis: Using Sentinel Satellite Images for Spatial and Temporal Land Cover Monitoring of the Paneveggio Natural Park from 2015 to 2022

Master's Degree; Master of Science (MSc) in Natural Resources Engineering-Environment-Environmental Pollution | College of Environment | 23/09/2014 - 18/01/2017 | Karaj, Iran

Bachelor's Degree; Bachelor of Science (BSc) in Natural Resources Engineering – Environment | College of Environment | 23/09/2009 - 21/09/2013 | Karaj, Iran

Skills

Programming (Python, JavaScript, Matlab, R) | Machine Learning (Pandas, NumPy, Scikit-learn) | Deep learning (TensorFlow, PyTorch, Keras; architectures: LSTM) | Remote Sensing & Geospatial Analysis: Google Earth Engine, ArcGIS, QGIS, ERDAS, SNAP, GRASS GIS | 3D Modeling & Photogrammetry: Agisoft Metashape, CloudCompare

Publications

Investigating Correlation between Sentinel-2 Images and Ground-Based Measurements of Soil Moisture

2024. Iacopino, A., Gachpaz, S., Bovolenta, R., Boni, G., Moser, G., Federici, B. Earth Observation: current

challenges and opportunities for environmental monitoring, Volume 3.

Sand and Dust Storm Sources Identification: A Remote Sensing Approach

2020. Raygani, B., Barati, S., Goshtasb, H., Gachpaz, S., Ramezani, J., Sarkheil, H. Journal of Ecological Indicators, Volume 112

Conferences & Seminars

IAG Scientific assembly 2025 Geodesy for changing environment | 01/09/2025 - 05/09/2025 | Rimini

Oral Presentation: "How to see from far away: Engaging young minds in geodesy and environmental awareness through remote sensing", Mammadova, S., Gachpaz, S., Bozzano, M.

European Geosciences Union (EGU) | 27/04/2025 - 02/05/2025 | Vienna

Oral Presentation: "Machine-learning based soil moisture estimation using Sentinel-2 MSI data: Case studies from REMEDHUS (Spain) and SMOSMANIA (France) networks.", Gachpaz, S., Boni, G., Moser, G., Federici, B.

2GG | 15/07/2024 - 16/07/2024 | L'Aquila

Oral presentation: Presentation on two years of PhD research

2GG | 25/09/2023 - 26/09/2023 | Arezzo

Oral presentation: Presentation on first-year PhD research

GEOdaysIT | 12/06/2023 - 14/06/2023 | Bari

Oral presentation: "Investigating the Correlation between Sentinel-2 Multispectral Images and Ground-Based Field Measurements of Soil Moisture (Case Study: Mendatica, Liguria, Italy)", Iacopino, A., Gachpaz, S., Bovolenta, R., Boni, G., Moser, G., Federici, B.

Networks and Memberships

Outreach & Science Communication | Current | Genova

Conduct hands-on activities at scientific high schools, introducing students to remote sensing concepts using RGB imaging (March 2025–Present).

Courses

Geomatics and Earth Surface Modelling | University of Padova

Remote Sensing and Geo-Big Data | University of Sapienza

Theory and Practice of Learning from Data | University of Genova

Processing Tools and Techniques for Digital Elevation Models and Extraction of Parameters for Flood Hazard Analysis | University of Genova

Earth Observation data for Water-Supply Monitoring and Modelling in Mountain Regions | CIMA research foundation

Remote Sensing Analysis: Introduzione Verso l'uso di Tecnologie di Deep Learning | University of Sapienza

Remote and Proximal Sensing for Precision Agriculture | Polytechnic University of Marche

3D modelling by Photogrammetry and Laser Scanning | University of Genova