GGOS Days 2025

framed at the IAG2025 Scientific Assembly

Rimini, Italy

3 – 5 September 2025

https://geodesy.science/event/ggos-days-2025/

Reporting achievements and current challenges faced by colleagues working towards the GGOS Strategic Plan goals.

4 August 2025

Contents

Introduction

GGOS is the Global Geodetic Observing System of the International Association of Geodesy (IAG). GGOS was established with the main objective of integrating and optimising the data analysis resources, procedures and dissemination of results carried out by the different components of the IAG, namely the IAG Services, Commissions, Inter-Commission Committees (ICC) and dedicated projects. Essentially, GGOS works with the IAG Services to provide unique, mutually consistent, and easily accessible geodetic products and the relevant geodetic constants for science and society. GGOS works in concert with Commissions, ICCs and dedicated projects concerning new developments, and it keeps all IAG components informed of the work in GGOS. Thus, GGOS serves as a clearinghouse for geodetic information expertise, provides an integrating framework for all IAG Components, and acts as a central interface between science and society.

Each year, the GGOS Executive Committee organises the GGOS Days to update the IAG and GGOS communities on recent achievements and current challenges faced by the various colleagues involved in achieving the goals of the GGOS Strategic Plan. Although participation in the GGOS Days has increased considerably in recent years, particularly online, we have decided to hold the GGOS Days 2025 embedded in the IAG2025 Scientific Assembly this year in order to reach and inform more colleagues about the GGOS activities. The IAG2025 Scientific Assembly takes pace in Rimini, Italy, from 1 to 5 September 2025.

Topics

GGOS hosts the following symposia at the IAG2025 Scientific Assembly:

Symposium G06: Global Geodetic Observing System
Conveners: Laura Sánchez, José Rodriguez, Detlef Angermann

Symposium G11 - Geodesy for Society: Data Management, Policy Networking and Public Engagement
Conveners: Martin Sehnal, Szabolcs Rózsa

H03 Geodetic Monitoring for Geohazards
Conveners: Tim Melbourne, Laura Sánchez, Jean-Mathieu Nocquet

Symposium J01 - Geodetic Space Weather Research
Conveners: Michael Schmidt, Ehsan Forootan, Fabricio Dos Santos Prol, Ningbo Wang, Andrés Calabia Aibar

Symposium J02 - Artificial Intelligence and Machine Learning in Geodesy
Conveners: Benedikt Soja, Maria Kaselimi

Symposium J03 - Geohazard Monitoring through Geodesy
Conveners: Tim Melbourne, Susanna Ebmeier, Jean-Mathieu Nocquet, Masayuki Kano, Michaela Ravanelli

Participation, registration and venue

The GGOS Days 2025 are fully integrated into the IAG2025 Scientific Assembly and will take place at the same venue. Following the IAG2025 Scientific Assembly format, participation in the GGOS Days 2025 is only possible in person and is open only to registered IAG2025 Scientific Assembly participants. Further details on participation, registration, the venue, travel information, etc. can be found at https://eventi.unibo.it/iag2025.

GGOS Governing Board and GGOS Science Panel meeting

A joint meeting of the **GGOS Governing Board and the GGOS Science Panel is scheduled on 4 September 18:00 – 20:00, in Lavatoio Room**, to present progress related to the GGOS Implementation Plan and discuss key issues for its continuation. Participation in this meeting is by invitation only. Online participation will be possible. The agenda for this meeting will be distributed separately.

Daily Programme

The Symposia hosted by GGOS at the IAG2025 Scientific Assembly are scheduled to take place from 3 to 5 September 2025. The schedule is as follows:

	Wed 03-09-2025	Thu 04-09-2025		Fri 05-09-2025		
09:00-10:30	J01: FA GSWR Lavatoio Room	G06: GGOS-BNO Borgo Room	J03: FA GHZD Lavatoio Room	G06: GGOS Regional/ G11: Outreach Borgo Room	J03: FA GHZD Parco Room	J02: FA AI4G Lavatoio Room
Coffee break						
11:00-12:30	J01: FA GSWR Lavatoio Room	G06: GGOS-BNO/ GGOS Regional Borgo Room	J02: FA AI4G Lavatoio Room	G11: Outreach Borgo Room	J03: FA GHZD Parco Room	J02: FA AI4G Lavatoio Room
Lunch break						
14:00-15:00				Plenary H03: FA GHZD Anfiteatro Room		
15:30-17:00	G06: GGOS-BPS Borgo Room	G06: GGOS Borgo Room				
Coffee break						
17:30-19:00	Posters: J01: FA GSWR G06: GGOS Ground Floor	Posters: G11: Outreach J02: FA AI4G J03: FA GHZD Ground Floor	18:00- 20:00 GGOS Governing Board and GGOS Science Panel meeting Lavatoio Room			
19:00-20:00						

GGOS-BPS: GGOS Bureau of Products and Standards
GGOS-BNO: GGOS Bureau of Networks and Observations
FA GSWR: GGOS Focus Area Geodetic Space Weather Research
FA GHZD: GGOS Focus Area Geohazards Monitoring
FA AI4G: GGOS Focus Area Artificial Intelligence for Geodesy

Oral presentations

The following is a chronological list of the GGOS Days 2025 programme:

Wednesday 3 September 2025, 09:00 – 10:30

Lavatoio Room - J01: Geodetic Space Weather Research

09:00 – 09:15 Simultaneous multiplicative column-normalized method with time propagation (4DSMART+) for 4-D tomography of topside ionosphere and plasmasphere | *Tatjana Gerzen, Michael Schmidt and David Minkwitz*

09:15 – 09:30 A Novel Method for Enhancing Thermospheric Mass Density Empirical Model | *Yu Guo, Fei Guo and Xiaohong Zhang*

09:30 – 09:45 Developing Earth Upper Atmosphere Forecast Tools | *Ehsan Forootan, Saeed Farzaneh and Michael Schmidt*

09:45 – 10:00 Impact of the Geomagnetic Storm in May 2024 on ALOS-2/PALSAR-2 Imageries and GNSS TEC in Japan | *Masato Furuya and Ihsan Muafiry*

10:00 – 10:15 Thermospheric Responses following the May 2024 Geomagnetic Storm from CASSIOPE GNSS-Based Non-Gravitational Accelerations | *Andres Calabia, Myrto Tzamali, Shuanggen Jin, María Dolores Rodríguez and Luis del Peral*

10:15 – 10:30 Improved GRACE-FO orbit determination during intense geomagnetic storms using onboard accelerometer measurement | *Haonan She, Guanwen Huang, Manuel Hernández-Pajares, German Olivares-Pulido, Le Wang and Zitong Zhu*

Wednesday 3 September 2025, 11:00 – 12:30

Lavatoio Room - J01: Geodetic Space Weather Research

11:00 – 11:15 Retrieval and Validation of Ionospheric Indices for Ship-based Monitoring over the Arctic | *Maximilian Semmling, Hiroatsu Sato, Martin Kriegel, Friederike Fohlmeister, Yaqi Jin, Mainul Hoque and Jens Berdermann*

11:15 – 11:30 Ionospheric data assimilation using sysnthetic LEO-POD, LEO-PNT and ground-based sTEC | *Lucas Schreiter, Andreas Brack and Harald Schuh*

11:30 – 11:45 Detecting Traveling Ionospheric Disturbances originated from seismic and non-seismic events using space geodetic techniques | *M. Mahdi Alizadeh, Daniel Abdollahi, Harald Schuh and Lung Chih Tsai*

11:45 – 12:00 Gradient Ionospheric Index Modeling Using Ground and LEO based GNSS Observations | *Ningbo Wang, Zhiyao Li and Zishen Li*

12:00 – 12:15 Modelling and Forecasting of the Electron Density Distribution Within the Ionosphere | *Michael Schmidt, Claudia Borries, Tatjana Gerzen and Lucas Schreiter*

12:15 – 12:30 Using DORIS for extracting ionospheric information at satellite altimetry observation points | *Ke Zhang, Michael Schmidt and Denise Dettmering*

Wednesday 3 September 2025, 14:00 – 15:30

Borgo Room - G06 Global Geodetic Observing System: Standardization, integration and optimization of geodetic products

14:00 – 14:15 The ESA Genesis mission: tasks and challenges for the scientific community (solicited) | *Johannes Böhm and Urs Hugentobler*

14:15 – 14:30 Consistent, constrained or AI supported – application of system modelling approaches for improved geodetic data processing, signal separation, and prediction (solicited) | *Maik Thomas, Robert Dill, Henryk Dobslaw, Jan Saynisch-Wagner and Roman Sulzbach*

14:30 – 14:45 Recent activities of the ICGEM Service and its contribution to the gravity field related products and their use (solicited) | *E. Sinem Ince, Sven Reissland, Kirsten Elger, Christoph Foerste, Thomas Gruber, Josef Niedermaier, Alex Torkhov and Metehan Uz*

14:45 – 15:00 A new ISO standard on the unique numbering of ground geodetic stations (solicited) | *Thierry Gattacceca and Brice Virly*

15:00 – 15:15 Towards a consistent set of parameters for the definition of a new GRS | *Urs Marti*

15:15 – 15:30 Status and prospects for improvement of IAU and IERS standards related to geodesy with emphasis on Earth rotation | *José M. Ferrándiz, Cheng-Li Huang, Alberto Escapa and Maria Karbon*

Thursday 4 September 2025, 09:00 – 10:30

Borgo Room - G06 Global Geodetic Observing System: Global geodetic infrastructure for Earth System Monitoring

09:00 – 09:15 Integration of Local-Ties to the Global Reference Frame | *Cornelia Eschelbach, Michael Lösler, Rüdiger Haas, Ryan A. Hardy and Ittai Baum*

09:15 – 09:30 Producing Local Tie Vectors via GNSS-VLBI Co-Observation of GNSS Satellites | *Joe Skeens, Johnathan York, Leonid Petrov, Kyle Herrity, Richard Ji-Cathriner and Srinivas Bettadpur*

09:30 – 09:45 Omni-SLR: a compact, low-cost, multi-purpose SLR system for the future expansion of global geodetic network | *Toshimichi Otsubo, Hiroshi Araki, Yusuke Yokota, Kenji Kouno, Mihoko Kobayashi, Takehiro Matsumoto, Yusuke Nakamura, Junichi Nakajima, Haruna Furui, Masaki Honda, Shinobu Kurihara and Yuichi Aoyama*

09:45 – 10:00 DORIS Network status and outlook | *Jérôme Saunier*

10:00 – 10:15 Monitoring VLBI Instrumentation for Accurate Terrestrial Reference Frames | *Karine Le Bail, Masafumi Ishigaki, Tobias Nilsson and Rüdiger Haas*

10:15 – 10:30 Deformation analysis of the 26m HartRAO radio telescope for improved VLBI signal modelling | *Theresa Pfaffinger, Axel Nothnagel, Roelf Botha, Philip Mey, Pieter Stronkhorst, Jonathan Quick, Marisa Nickola and Christoph Holst*

Thursday 4 September 2025, 09:00 – 10:30

Lavatoio Room - J03: Geohazards Monitoring through Geodesy

09:00 – 09:15 Linking microplate motion changes to the seismic cycle | *Giampiero Iaffaldano*

09:15 – 09:30 Geodetic Strain Rates and Seismicity Rates along the Apennines (Italy) | *Riccardo Nucci, Enrico Serpelloni, Licia Faenza, Alexander Garcia and Maria Elina Belardinelli*

09:30 – 09:45 Influence of the 2011 Tohoku-oki earthquake on the strain-rate field around the Noto Peninsula | *Yohei Nozue and Yukitoshi Fukahata*

09:45 – 10:00 Geodetic Contributions to Seismic Hazard Assessment and Insights from the 2022 Düzce Earthquake | *Ilay Farimaz, Seda Ozarpaci, Alpay Ozdemir, Efe Turan Ayruk, Figen Eskikoy, Havva Neslihan Kiray and Cengiz Zabci*

10:00 – 10:15 Quantitative assessment of geological hazard susceptibility zones using integrated multi-parameter ground observations | *Wei Wang, Li Luo, Chanyin Zhang, Hanjiang Wen and Tao Jiang*

10:15 – 10:30 Geodetic Analysis of Afterslip Following the 6 February 2023 Kahramanmaras Earthquake Sequence | *Efe Turan Ayruk, Seda Ozarpaci, Muhammed Turgut, Ilay Farimaz, Mehmet Kokum, Roger Bilham and Ugur Dogan*

Thursday 4 September 2025, 11:00 – 12:30

Borgo Room - G06 Global Geodetic Observing System: Global geodetic infrastructure for Earth System Monitoring

11:00 – 11:15 New VLBI sites in China and cross-border VGOS deployment (solicited) | *Fengchun Shu*

11:15 – 11:30 The Geodetic Reference System for the Americas (SIRGAS): efforts to maintain and enhance Geodetic Infrastructure (solicited) | *María Virginia Mackern, Ezequiel Antokoletz, Gustavo Caubarrere, Sandra Bolanos, José Antonio Tarrío, Mauricio Varela, Gabriel Guimaraes, Hermann Drewes, Laura Sánchez and Demian Gómez*

Borgo Room - G06 Global Geodetic Observing System: Enhancement of GGOS collaboration at regional level

11:30 – 11:45 GGOS Africa: Advancing Regional Geodetic Collaboration and Capacity (solicited) | *Aletha de Witt*

11:45 – 12:00 GGOS IberAtlantic: Strengthening geodetic cooperation across the Iberian-Atlantic region | *Esther Azcue, José Manuel Ferrandiz, Javier González García, Clara Lázaro, Luisa Magalhães, Mariana Moreira, Paulo Patrício, Antonio Pazos, Helena Ribeiro, Manuel Sánchez Piedra and Isabel Vigo*

12:00 – 12:15 GGOS D-A-CH – A regional framework for research on the integration of geodetic observing systems | *Hansjoerg Kutterer*

12:15 – 12:30 GGOS Japan -Platform for enhancing country -level geodetic collaboration- | *Basara Miyahara, Yusuke Yokota, Shinobu Kurihara, Shun-Ichi Watanabe, Masafumi Ishigaki, Takehiro Matsumoto, Naofumi Takamatsu, Yuichi Aoyama, Koji Matsuo and Toshimichi Otsubo*

Thursday 4 September 2025, 11:00 – 12:30

Lavatoio Room - J02: Artificial Intelligence and Machine Learning in Geodesy: Decoding Earth's Dynamics: Machine Learning Frontiers in EOP and Gravity Field Assessment

11:00 – 11:15 Ultra short-term predictions of UT1−UTC using Intensive sessions in a machine-learning framework | *Arnab Laha, Matthias Schartner, Benedikt Soja, Sigrid Böhm, Johannes Böhm, Nagarajan Balasubramanian and Onkar Dikshit*

11:15 – 11:30 Artificial Intelligence-Based Downscaling of Terrestrial Water Storage Grids from Simulated NGGM and MAGIC Data | *Gilberto Goracci, Ilias Daras and Nicolas Longepe*

11:30 – 11:45 Investigation of Machine Learning Techniques for Obtaining Line-of-Sight Gravity Difference from GRACE-FO Intersatellite Ranging Data | *Daisy Bergin, Marvin Bredlau and Matthias Weigelt*

Lavatoio Room - J02: Artificial Intelligence and Machine Learning in Geodesy: AI for Deformation Analysis and GNSS Remote Sensing: Earth, Atmosphere and Natural Hazards

11:45 – 12:00 AI-Enhanced IoT System for Monitoring and Analyzing Land Subsidence in Central Taiwan | *Wei-Chia Hung, Yi-An Chen, Shao-Hung Lin and Guan-Zhong Lin*

12:00 – 12:15 Investigating deep learning models to predict short-term future landslide behavior using multi-temporal InSAR | *Sumit Pandey, Vipin Kumar Maurya, Shivika Saxena, Ashutosh Tiwari, Shivam Chawla, Chandrakant Ojha and Ramji Dwivedi*

12:15 – 12:30 AIDA++: An AI-Driven Platform for Integrated Geodetic and Earth Observation Data Analysis in Hydrology and Land Deformation | *Mehdi Joud*

Thursday 4 September 2025, 15:30 – 17:00

Borgo Room - G06 Global Geodetic Observing System: Contribution of geodesy to Earth observations

15:30 – 15:50 Essential Geodetic Variables (EGVs) – Status and Roadmap towards Implementation (solicited) | *Thomas Gruber, Detlef Angermann and Laura Sánchez*

15:50 – 16:10 The Rationalization of the Essential Climate Variables (solicited) | *Andreas Güntner, Peter Thorne, Stephan Bojinski, Carlo Buontempo, Sarah Connors, C. García Izquierdo, Isabelle Gärtner-Roer, Martin Herold, Stefan Kern, Belén Martín Míguez, Katrin Schroeder and Blair Trewin*

16:10 – 16:30 Gauging and Weighting the Earth System as a Whole to Uncover the Dynamics of Climate Change (solicited) | *Alexandre Couhert, Adrian Banos-Garcia, Suzanne Blondel, Alice Chapiron, Marie Cherrier, Pierre Exertier, Pascal Gegout, Théo Gravalon, Sabine Houry, Hugo Lecomte, Jean-Michel Lemoine, Flavien Mercier, Benoit Meyssignac, John Moyard, Maya Nocet-Binois, Maxime Rousselet, Alvaro Santamaria and Eléonore Saquet*

16:30 – 16:45 Contribution of IAS Pilot Service to the Global Geodetic Observing System (highlighted) | *Xiaoli Deng, C.K. Shum, Jérôme Benveniste and Stefano Vignudelli*

16:45 – 17:00 Proceedings of the GGOS Committee on Performance Simulations and Architectural Trade-Offs (GGOS-PLATO) (highlighted) | *Alexander Kehm, Benjamin Männel, Hanane Ait-Lakbir, Mathis Bloßfeld, Johannes Böhm, Ingrid Fausk, Susanne Glaser, Lisa Kern, Tomasz Kur, Jürgen Müller, Joanna Najder, Shrishail Raut, Anton Reinhold, Matthias Schartner, Patrick Schreiner, David Schunck, Manuela Seitz, Benedikt Soja, Krzysztof Sósnica, Daniela Thaller, Helene Wolf and Mingyue Zhang*

Friday 5 September 2025, 09:00 – 10:30

Parco Room - J03: Geohazards Monitoring through Geodesy

09:00 – 09:15 Mediterranean submarine volcano unrests and detectability through NGGM/MAGIC | *Carla Braitenberg, Angelo De Min, Teresa Trua, Michael Marani, Gerardo Maurizio and Federico Bernardini*

09:15 – 09:30 GNSS-enhanced Earthquake & Tsunami Early Warning, Tonga Pilot Project | *Timothy Melbourne, John Labrecque and Viliami Folau*

09:30 – 09:45 GNSS-Derived Ionospheric Total Electron Content (TEC) Data to Enhance Tsunami Early Warning Systems in the Mediterranean Sea | *Federica Fuso and Michela Ravanelli*

09:45 – 10:00 Integrated Geodetic Processing for long-term land motion monitoring | *Freek van Leijen, Hans van der Marel and Ramon Hanssen*

10:00 – 10:15 Origin of Pre-Earthquake Common Mode Error in High-Rate Position Estimates Before the 2011 Great East Japan (Tohoku) Earthquake | *Jeffrey Freymueller, Athina Peidou and Paul Ries*

10:15 – 10:30 Probabilistic Flood Monitoring Using Normalized SAR Time Series Data for Dynamic Inundation Mapping | *Liangyu Ta, Chen Yu and Zhenhong Li*

Friday 5 September 2025, 09:00 – 10:30

Borgo Room - G06 Global Geodetic Observing System: Enhancement of GGOS collaboration at regional level

09:00 – 09:15 Construction of regional millimeter-level nonlinear epoch reference frame in China | *Yamin Dang, Yingyan Cheng, Yuanxi Yang, Qiang Yang, Xiaoqing Wang and Tao Jiang*

09:15 – 09:30 Geodesy in Australia | *Anna Riddell, Lisa Hall and Ryan Ruddick*

09:30 – 09:45 Advancing the Accessibility and Quality of GNSS Data and Products through EPOS-GNSS (solicited) | *Rui Fernandes, Carine Bruyninx, Luis Carvalho, Paul Crocker, Gael Janex, Juliette Legrand, Jean-Luc Menut, Anne Socquet and Mathilde Vergnolle*

Borgo Room - G11 Geodesy for society: Data management, policy networking and public engagement: Data Management, Dissemination of Results, and Stakeholder Networking

09:45 - 10:00 FAIR GNSS data and metadata: lessons learned and way forward | *Ivana Ivánová, Ryan Ruddick and Roger Fraser*

10:00 - 10:15 CDDIS Archive – Collections, Operational Support, and Users | *Justine Woo, Taylor Yates, Colin McLaughlin, Nathan Pollack and Anna Kelley*

10:15 - 10:30 The Global Geodetic Observing System: Facilitating Opportunities for Strategic Outreach, Collaboration, and Engagement with External Stakeholders | *Allison B. Craddock, Richard S. Gross, Martin Sehnal, José C. Rodríguez, Detlef Angermann, Laura Sánchez and Anna Riddell*

Friday 5 September 2025, 09:00 – 10:30

Lavatoio Room - J02: Artificial Intelligence and Machine Learning in Geodesy: AI for Deformation Analysis and GNSS Remote Sensing: Earth, Atmosphere and Natural Hazards

09:00 – 09:15 Detection of GNSS-TEC signatures related to seismic events through Machine Learning | *Federica Fuso, Laura Crocetti, Michela Ravanelli and Benedikt Soja*

09:15 – 09:30 Ionospheric Slant TEC Modeling Based on GNSS Data with Machine Learning | *Arno Rüegg, Shuyin Mao and Benedikt Soja*

09:30 – 09:45 A Deep Learning-Based Precipitation Nowcasting Model Fusing GNSS-PWV and Radar Echo Observations | *Mengjie Liu, Weixing Zhang, Yidong Lou, Xingping Dong, Zhenyi Zhang and Xiaohong Zhang*

09:45 – 10:00 Empirical Hybrid Physics and Deep Learning Model for the Vertical Correction of Atmospheric Integrated Water Vapor | *Peng Yuan and Zhiguo Deng*

10:00 – 10:15 Slant tropospheric models based on machine learning | *Zhenyi Zhang and Benedikt Soja*

10:15 – 10:30 GNSS ambiguity validation through machine learning | *Jianghui Geng and Jiang Guo*

Friday 5 September 2025, 11:00 – 12:30

Parco Room - J03: Geohazards Monitoring through Geodesy

11:00 – 11:15 L-band SAR-based nationwide land deformation monitoring in Japan: application of ALOS-2/-4 satellites | *Tomokazu Kobayashi, Masayoshi Ishimoto, Yuji Himematsu, Akihisa Hattori, Misa Ichimura, Masahiro Nakashima, Haruka Ueshiba, Momo Tanaka and Basara Miyahara*

11:15 – 11:30 Daily Monitoring of Slow Slip Events Using GNSS | *Jean-Mathieu Nocquet and Javier Ojeda*

11:30 – 11:45 Geodetic Evidence of Land Subsidence induced by Aquifer Compaction in Jakarta from GNSS-Extensometers and InSAR | *Alexandru Mihai Lapadat, Heri Andreas, Dhota Pradipta and Ramon Hanssen*

11:45 – 12:00 Automatic Detection of Turning Points for Partial Trend Analysis in InSAR Deformation Time Series: EGMS Ortho Products | *Rasoul Eskandari and Marco Scaioni*

12:00 – 12:15 Natural hazards monitoring, understanding and warning by GNSS | *Shuanggen Jin*

12:15 – 12:30 Infrastructure Damage Risk Assessment due to Land Subsidence in the Joshimath town of Uttarakhand: Using advanced MT-InSAR Remote Sensing Technique | *Shivam Chawla and Chandrakanta Ojha*

Friday 5 September 2025, 11:00 – 12:30

Borgo Room - G11 Geodesy for society: Data management, policy networking and public engagement: Communication, Education and Outreach in Geodesy

11:00 - 11:15 Making Geodesy Visible: IAG & GGOS Efforts to Communicate Geodetic Science | *Martin Sehnal, Laura Sánchez, Detlef Angermann, Szabolcs Rózsa, Daniela Thaller and Riccardo Barzaghi*

11:15 - 11:30 Strengthening the Future of Geodesy: Empowering Early Career Scientists | *Julia Azumi Koch, Rebekka Steffen, Anna Klos, Rebecca McGirr, Anna Riddell, Artur Fischer, Michela Ravanelli, Pierre Sakic, Franck E. Ghomsi and Öykü Koç*

11:30 - 11:45 Telling Geodesy stories for maximum impact | *Anna Riddell*

11:45 - 12:00 Building India's Geodetic Future at NCG-IIT Kanpur | *Onkar Dikshit, Nagarajan Balasubramanian, Sujata Dhar, Jagadish Boodala, Arnab Laha, Shivangi Singh, Ratnesh Kushwaha, Vikash Kumar, Rashmi Malik, Shilpi Chakraborty, Vipul Sharma, Revathi Nagarajan, Sushant Shekhar, Somalin Nath, Drishti Agarwal and Anuradha Sharma*

12:00 - 12:15 Geo-understanding your land: didactic experiences | *Paola Salmona*

12:15 - 12:30 How to see from far away: Engaging Young Minds in Geodesy and Environmental Awareness through Remote Sensing | *Sabina Mammadova, Saba Gachpaz and Matteo Bozzano*

Friday 5 September 2025, 11:00 – 12:30

Lavatoio Room - J02: Artificial Intelligence and Machine Learning in Geodesy: Geodetic machine learning: Theoretical challenges and opportunities for geodesy

11:00 – 11:15 Full-scale validation of LSTM Neural Networks for Sea Level Forecasting: Case Study in Saronikos Gulf, Greece | *Nestoras Papadopoulos and Vassilis Gikas*

11:15 – 11:30 Laplacian deep ensembles: a new probabilistic machine learning approach for geodetic applications | *Mostafa Kiani Shahvandi*

11:30 – 11:45 Global Ionospheric Forecasting with Uncertainty Quantification using Deep Ensembles and Monte Carlo Sampling | *Shuyin Mao, Junyang Gou and Benedikt Soja*

11:45 – 12:00 A Deep Learning Approach for Real-Time Detection of Ionospheric Perturbations Induced by Earthquakes and Tsunamis in GNSS-TEC observations | *Michela Ravanelli, Valentino Constantinou, Hamlin Liu and Jacob Bortnik*

12:00 – 12:15 Accelerating geodetic models via Neural Networks: A case study of NRLMSISE and IRI | *Volodymyr Kashyn and Vasyl Choliy*

12:15 – 12:30 Smartphone precise positioning in complex urban areas using a novel deep-learning approach | *M. Mahdi Alizadeh, Amir Hossein Pourmina and Harald Schuh*

Friday 5 September 2025, 14:00 – 15:00

Anfiteatro Room - H03 Geodetic Monitoring for Geohazards

14:00 – 14:20 Strain Localization and Inelastic Deformation of Inland Japan and Their Implications for Seismic Hazard | *Takeshi Sagiya, Angela Meneses-Gutierrez and Ai Tamaoki*

14:20 – 14:40 Synergy of GNSS, InSAR and Seismic data for monitoring of Santorini Volcano (Greece): Insights from Past and Ongoing Volcanic Unrest | *Stylianos Bitharis,*

Michael Foumelis, Costas Papazachos, Christos Pikridas, Elisa Trasatti, Elena Papageorgiou, Chrisa Ventouzi and Charalampos Kkallas

14:40 – 15:00 Exploring ALTRUIST: harnessing GNSS towards the Enhancement of Tsunami Early Warning Systems | *Michela Ravanelli, Elvira Astafyeva and Mattia Crespi*

Poster presentations

Wednesday 3 September 2025, 17:30 – 19:00

Ground Floor

G06 Global Geodetic Observing System: Contribution of geodesy to Earth observations

GGOS: The Global Geodetic Observing System of the International Association of Geodesy | *Laura Sánchez, Anna Riddell, José C. Rodríguez, Detlef Angermann, Martin Sehnal, Martin Lidberg, Thomas Gruber, Benedikt Soja, Michael Schmidt, Timothy Melbourne, Richard S. Gross, Jose M. Ferrandiz, Allison Craddock, Basara Miyahara, Georgios Vergos and Claudia Tocho*

GGOS Focus Area on Geodetic Space Weather Research – Current Status | *Michael Schmidt and Ehsan Forootan*

Status and plans of the International DORIS Service | *Laurent Soudarin, Guilhem Moreaux, Frank Lemoine, Cécile Manfredi, Jérôme Saunier, Mathis Bloßfeld, Hugues Capdeville, Anna Kelley, Laura Sánchez, Ernst Schrama, Patrick Schreiner, Petr Štěpánek, Maria Tsakiri, Ningbo Wang and Karine Le Bail*

Repro3 - Preliminary results of reprocessing available GNSS stations in Greece | *Dimitrios Anastasiou, Xanthos Papanikolaou, Kostas Raptakis and Maria Tsakiri*

The Role of AI in Modern Geodesy: Insights from GGOS Focus Area AI4G | *Benedikt Soja, Maria Kaselimi, Milad Asgarimehr, Sadegh Modiri, Mohammad Ali Sharifi,* Santiago Belda, Lei Liu, Mohammad Omidalizarandi and Justyna Śliwińska-Bronowicz

G06 Global Geodetic Observing System: Global geodetic infrastructure for Earth System Monitoring

FocusPOD: A POD and Geodesy SW Package | *Carlos Fernandez Martin, Jaime Fernandez Sanchez, Javier Berzosa Molina, Luning Bao Cheng and Miguel Angel Muñoz de la Torre*

The Hartebeesthoek Terrestrial Laser Scanning Project – Towards a VLBI delay calibration model *Axel Nothnagel and Theresa Pfaffinger*

Strengthening Africa's Geodetic Infrastructure: Progress, Challenges, and Strategic Planning | *Aletha de Witt*

Detection, Mitigation and Recovery of Barometric Errors in Legacy SLR Data | *Van Husson, Christopher Szwec and Austin Gerrety*

New 1 kHz SLR System of Zimmerwald - Transmit and Receive in the Telescope Coudé | *Pierre Lauber*

First assessment of SWOT DORIS data by the IDS IGN-IPGP/JPL Analysis Center | *Arnaud Pollet, Samuel Nahmani and Willy Bertiger*

Status update of the GGOS Core Site Metsähovi, Finland | *Jyri Näränen, Mirjam Bilker-Koivula, Joona Eskelinen, Hannu Koivula, Ulla Kallio, Antti Laaksonen, Jouni Peltoniemi, Markku Poutanen, Arttu Raja-Halli and Nataliya Zubko*

Progress in the geodetic infrastructure of the IHRF and ITGRF implementation in SIRGAS region: Latin America | *Gabriel N. Guimarães, Ezequiel Antokoletz, Ana Cristina O. C. Matos, Ayelen Pereira, José L. C. Sánchez, Walter H. S. Pina, Agustin R. Gómez, Claudia Tocho and Denizar Blizkow*

IGS ACC Transition from Geoscience Australia to NASA | *Taylor Yates, Salim Masoumi, Tom Herring, Anna Riddell and Rivers Lamb*

GNSS Station Calibration: Experience from the SWEPOS Network | *Tobias Nilsson, Martin Lidberg, Tong Ning, Lotti Jivall, Christina Lilje and Jan Johansson*

Ongoing activities at the GGOS Bureau of Networks and Observations | *José Rodríguez, Martin Lidberg, Alexander Kehm, Benjamin Männel, Roland Pail, C.K. Shum, Roger Fraser, Taylor Yates, Ryan Hippenstiel, Cornelia Eschelbach, Johannes Böhm, Riccardo Barzaghi, Georgios Vergos, Hayo Hase, Dick Behrend, Clément Courde, Toshimichi Otsubo, Allison Craddock, Markus Bradke, Jérôme Saunier, Guilhem Moreaux, Elizabeth Bradshaw, Lesley Rickards and Richard Gross*

International VLBI Service for Geodesy and Astrometry (IVS) – status 2025 | *Lucia McCallum and Benedikt Soja*

Studies of asymmetric thermal deformation of VLBI telescope | *Ulla Kallio, Joona Eskelinen and Nataliya Zubko*

Validation of DSO DORIS processing software using the JASON satellite series | *Georgios Serelis, Dimitrios Anastasiou, Xanthos Papanikolaou, Vangelis Zacharis, Vassiliki Krey and Maria Tsakiri*

Recent Geodetic Infrastructure Improvements in the Satellite Laser Station Riga | *Kalvis Salmins, Janis Kaulins and Stanislav Melkov*

What does a robust global geodesy supply chain look like? | *Liubov Poshyvailo Strube, Samuel Nahmani, José Carlos Rodríguez Pérez and Nicholas James Brown*

The InSAR Designated Target Database; conceptual design and implementation | *Ramon Hanssen, Hans van der Marel, Lennard Huisman and Freek van Leijen*

G06 Global Geodetic Observing System: Standardization, integration and optimization of geodetic products

Role and activities of the GGOS Bureau of Products and Standards | *Detlef Angermann, Thomas Gruber, Michael Gerstl, Robert Heinkelmann, Urs Hugentobler, Laura Sánchez and Peter Steigenberger*

VLBI processing with the Bernese GNSS Software for multi-technique analysis at BKG | *Claudia Flohrer, Facundo Barrera, Rolf Dach, Bingbing Duan, Urs Hugentobler and Daniela Thaller*

Developments in the IHRF CC to generate consistent potential values for the IHRS/IHRF | *George Vergos, Laura Sánchez and Riccardo Barzaghi*

A visual exploration of consistency: case study geodetic VLBI | *Maria Karbon, Santiago Belda, Alberto Escapa and Jose M. Ferrandiz*

Metadata Recommendations for GNSS Data – Key Features and Potential for Broader Applications | *Kirsten Elger*

geodezyx: a versatile python toolbox for geodetic data manipulation with GNSS processing pedagogical features | *Pierre Sakic, Samuel Nahmani and Gustavo B. Mansur*

The ISO Geodetic Register | *Michael Craymer and Larry Hothem*

The IAS2024 coastal sea level dataset and first evaluations | *Fukai Peng, Xiaoli Deng, Yunzhong Shen and Xiao Cheng*

Future development of ICGEM within the SAMDAT Project | *Aleksandr Torkhov, Kirsten Elger, E. Sinem Ince, Thomas Gruber, Christoph Förste, Josef Niedermaier, Sven Reißland and Metehan Uz*

Status of the IERS Conventions Updates | Sharyl Byram, Nicholas Stamatakos, Maria Davis and Christian Bizouard

G06 Global Geodetic Observing System: Enhancement of GGOS collaboration at regional level

Geodesy in India: Current activities and plans | *Ropesh Goyal, Onkar Dikshit, Nagarajan B., Shubha Pandey and Manoranjan Mohanty*

Overview of geodetic infrastructure in South Africa - now and future options | *Roelf Botha, Marisa Nickola and Aletha de Witt*

J01: Geodetic Space Weather Research

Under the Storm: How the G5 Event Shaped Ionospheric Behavior and GNSS Accuracy in May 2024 | *Ahmed Abdelaziz, Zhang Xiaohong and Ren Xiaodong*

Evolution of post-sunset equatorial plasma bubbles: relationships to the equatorial ionospheric anomaly induced by pre-reversal enhancement electric fields | *Lung-Chih Tsai, Shin-Yi Su, Jun-Xian Lv, Harald Schuh, Mohamad Mahdi Alizadeh and Jens Wickert*

Two Types of Plasma Flow Oscillations Observed at Midlatitude Topside Ionosphere | *Shin-Yi Su, Chi-Kwan Chao, Lung-Chih Tsai and Chao Han Liu*

Aiming the mm-level for the ionospheric error on radio signals | Gilles Wautelet and Benoît Hubert

Extracting GNSS ionospheric scintillation factor from multi-sampling interval geodetic receiver data | *Dongsheng Zhao, Longjiang Li and Kefei Zhang*

Negative VTEC with spherical harmonic expansion model under different solar activity conditions | *Qiang Zhang and Qile Zhao*

CARIOQA Quantum Pathfinder Mission for space weather research | *Manuel Schilling, Liliane Biskupek, Stefanie Bremer and Matthias Weigelt*

Advances on the Topside Ionosphere and Plasmasphere Modelling | *Fabricio Prol*

Research on the combination of real-time global ionospheric maps and its verification in positioning | *Guangxing Wang, Juzheng Fu, Guo Chen and Xing Su*

Crowdsourced Ionospheric delay correction Map-PLUS (CIM-PLUS): Extending Crowdsourcing RTK from precise positioning to ionospheric monitoring | *Hongjin Xu, Ting Zhang, Yunbin Yuan and Xingliang Huo*

Spatio-temporal analysis of Global Ionospheric Maps using multi-channel singular spectrum analysis | *Mahsa Heydari, Hamed Karimi, Siavash Iran-Pour and Urs Hugentobler*

Assimilation of GNSS Data into Deep Learning-Based Forecasting of B-Spline Representation of the Global Ionospheric State | *Murat Durmaz, Engin Tunalı and Michael Schmidt*

Ionospheric irregularities detected from GNSS measurements collected from COSMIC-2 Precise Orbit Determination antennas | *Ayomide Olabode, Lucas Schreiter, Mahdi Alizadeh, Lung-Chih Tsai and Harald Schuh*

Analysis of GPS positioning disturbing periodic radiation bursts in 24th solar cycle | *Janis Balodis, Madara Normand and Ingus Mitrofanovs*

Thursday 4 September 2025, 17:30 – 19:00
Ground Floor

G11 Geodesy for society: Data Management, Dissemination of Results, and Stakeholder Networking

A web-based GIS platform for integrated environmental permitting management and industrial emissions monitoring | *Giada Giglione, Mirco Sturari, Gianni Giantomassi, Eva Savina Malinverni, Jonathan Fratini and Roberto Pierdicca*

Spatial and temporal reference frames for positioning the “Aula della Meridiana” meridian (Genoa, Italy) | *Ilaria Ferrando, Walter Riva and Domenico Sguerso*

rinexmod & autorino: two tools to enable multi-GNSS and near real-time data acquisition and pre-processing | *Pierre Sakic, Patrice Boissier, Jean-Marie Saurel, Cyprien Griot and Diane Pacaud*

Satellite Geodesy related software for academic services | *Xanthos Papanikolaou, Dimitrios Anastasiou, Vangelis Zacharis and Maria Tsakiri*

The IERS Central Bureau: Coordination, Data Management, and Web Services | *Daniela Thaller, Lisa Klemm, Wolfgang Dick, Sonja Geist and Sandra Schneider-Leck*

G11 Geodesy for society: Geodesy at the Intersection of Science and Policy

Authorization of private GNSS CORS -How private GNSS CORS could be utilized for geodetic reference frame, deformation monitoring and wider applications - | *Basara Miyahara, Tokurou Kodama and Michiko Umei*

G11 Geodesy for society: Communication, Education and Outreach in Geodesy

Seeing Geodesy clearly: suitable colours for effective and inclusive visualization | *Rebekka Steffen and Fabio Crameri*

Competence acquisition in education for sustainable development as part of university studies | *Michael Mayer and Hansjörg Kutterer*

Visual Storytelling in Geodesy: Connecting Science with Society | *Martin Sehnal, Riccardo Barzaghi, Laura Sánchez and Detlef Angermann*

The Importance of Communication in Science, with a Focus on VLBI and the RAEGE project | *Esther Azcue, Mariana Moreira, Luis Moura, Clara Pérez Esteban, Santiago Belda and Maria* Karbon

Inspiring the Next Generation: The "Weltvermesserer" Campaign for Geodesy Awareness | *Marlene Rybka and Annette Eicker*

J02: Artificial Intelligence and Machine Learning in Geodesy: Geodetic machine learning: Theoretical challenges and opportunities for geodesy

Physics-Informed Deep Learning for Estimating the Spatial Distribution of Frictional Parameters in Slow Slip Regions | *Rikuto Fukushima, Masayuki Kano, Makiko Ohtani and Kazuto Hirahara*

Velocity Field Clustering Using Objective Weights in a Distance Metric | *Momo Hayashi, Masayuki Kano, Keisuke Yano, Atsushi Takahashi and Yoshikazu Terada*

Sea Level Rise estimation in the Hellenic coastal zone using Tide Gauge records and Machine Learning models | *Anastasia Keramitsi and Stylianos Bitharis*

Evaluating Machine Learning Methods for Downscaling GRACE-Derived LWE | *Anastasia Triantafyllou and Georgios Vergos*

Reconstruction of The Greenland Ice Sheet Mass Variations Using Automated Machine Learning | *Peisi Shang, Xiaoli Su and Zhicai Luo*

Investigation of Neural Network-Based Modelling of Non-Tidal Surface Loading Using VLBI Data | *Shivangi Singh, Johannes Böhm, Hana Krásná, Sigrid Böhm, Onkar Dikshit and Nagarajan Balasubramanian*

Conditional Diffusion Model for Sea level Prediction using SWOT Satellite Altimetry with Uncertainty Quantification | *Saeed Rajabi-Kiasari, Nicole Depeche-Ellmann and Artu Ellmann*

J02: Artificial Intelligence and Machine Learning in Geodesy: AI for Deformation Analysis and GNSS Remote Sensing: Earth, Atmosphere and Natural Hazards

Ionospheric Modeling Based on GNSS and VLBI Data Fusion with Machine Learning | *Arno Rüegg and Benedikt Soja*

Advancing High-Resolution Integrated Water Vapor Retrieval through AI-Driven Models | *Lingke Wang, Duo Wang and Hansjörg Kutterer*

Homogenization of GNSS integrated water vapor time series using statistical machine learning | *Olivier Bock, Emilie Lebarbier and Ninh Khanh Nguyen*

Detection of short-term slow slip signal based on deep learning of the real GNSS displacement time series of southwest Japan | *Yusuke Tanaka, Masayuki Kano, Keisuke Yano and Tatsu Kuwatani*

The potential of using Smartphone GNSS as a Cost-Effective Alternative for Ionospheric Estimation | *Alireza Atabati, Masoud Mashhadi Hossainali, Linda See and Benedikt Soja*

Prediction of Ionospheric Irregularities Using Machine Learning Algorithms: A Case Study of the April 2023 Geomagnetic Storm in Greenland | *Sahand Abedpour, Iraj Jazireeyan, Alireza Atabati, Linda See and Benedikt Soja*

Developing Anomaly Detection Model for InSAR time series to detect slow slip events | *Ryunosuke Sakurai and Yohei Kinoshita*

Integrating Feature Augmentation and Graph Reasoning for Topology-Aware Road Extraction in Remote Sensing Images | *Ruiqi Liu, Hua Chen, Qusen Chen, Zhao Li, Jian Wang and Weiping Jiang*

Accuracy Analysis of Error Compensation of BDS Broadcast Ionospheric Model Based on ABC-BP Neural Network | *Xing Su, Jiajun Zeng, Qiang Li, Zhimin Liu, Bin Wang and Guangxing Wang*

J02: Artificial Intelligence and Machine Learning in Geodesy: Decoding Earth's Dynamics: Machine Learning Frontiers in EOP and Gravity Field Assessment

Short-Term Space Object Orbit Prediction Using Physics-Informed Neural Network | *Chunmei Zhao and Haoyue Zhang*

EOP Prediction Using Deep Learning with Diverse Input Datasets | *Sonia Guessoum, Santiago Belda, Sadegh Modiri, Daniela Thaller, Maria Karbon and Jose Manuel Ferrandiz*

Advancing Earth Orientation Parameter Forecasting through Machine Learning: Activities and Insights from the GGOS Joint Study Group 3 (AI4EOP) | *Sadegh Modiri, Justyna Śliwińska-Bronowicz, Santiago Belda, Dimitrios Ampatzidis, Alireza Ardalan, Esther Azcue, Jan Becker, Liliane Biskupek, Sharyl Byram, Maria Davis, Sujata Dhar, Robert Dill, Sonia Guessoum, Dzana Halilovic, Ibnu Nurul Huda, Junyang Gou, Mostafa Kiani Shahvandi, Qiaoli Kong, Tomasz Kur, Arnab Laha, Zhao Li, Marcin Ligas, Wei Miao, Maciej Michalczak, Mariana Santos Moreira, Johnson Oguntuase, Jessica Page, Xanthos Papanikolaou, Aleksander Partyka, Victor Puente, Haibo Que, Shrishail Raut, Ole Roggenbuck, Mohammad Ali Sharifi, Sahayan Shirafkan, Robert Galatiya Suya, David Schunck, Harald Schuh, Yi Shen, Xueqing Xu, Kehao Yu, Danso Sampson Williams, Yuanwei Wu, Jihye Park, Na Wei, Qianxin Wang, Lin Wang, Kailing Yan, Zhongkai Zhang and D. Yao*

J03: Geohazards Monitoring through Geodesy

GNSS Interferometric Imaging for Land Subsidence in Coal Mining Area | *Tianhe Xu and Yunwei Li*

Mapping and modeling ground deformation of last 10 years on Sebei gas field in Qinghai province, China | Y*onghong Zhang, Pengchen Ding and Yonghui Kang*

Innovation-Based Adaptive Kalman Filter for Precise GNSS Co-Seismic Displacement Estimation | *Walid Bouaoula, Hicham Dekkiche, Salem Kahlouche and Mohamed Hamoudi*

Comparisons of different vertical velocity sources: GNSS, InSAR, physical heights. Case study in Central Macedonia, Greece | *Dimitrios Ampatzidis, Antonios Mouratidis, Elisavet Mamagiannou and Georgios Vergos*

Earthquake Precursor Prediction Based on Ionospheric GNSS Total Electron Content and Multi-Input 1-D Convolutional Mixer Model | *Hakan Uyanık, Mehmet Kokum, Erman Şentürk, Mohamed Freeshsh, Salih Ozcelik,* Muhammed Akpınar, Serenay Çelik and Abdulkadir Sengur

GNSS and InSAR observations for landslide monitoring: a case study in the south-eastern Alps | *Lavinia Tunini, David Zuliani, Federico Di Traglia, Lorenzo Borselli, Claudio De Luca, Teresa Nolesini and Francesco Casu*

Tropospheric monitoring and seismic precursors analysis using data from ASI's national GNSS fiducial network | *Ilaria Ferrando, Bianca Federici, Abubakr Khalid Ahmed Albashir, Gabrio Pinnizzotto, Catia Benedetto, Francesco Vespe and Domenico Sguerso*

Analyzing the Effects of Tectonic Movements with Helmert Transformation Parameters | *Pakize Küreç Nehbit*

Detection of co-seismic ionospheric disturbances with machine learning: Case studies from the 2011 Tōhoku and 2015 Illapel Earthquakes | *Marcel Iten, Laura Crocetti, Shuyin Mao, Federica Fuso and Benedikt Soja*

Qualitative assessment of noise in sub-daily kinematic GNSS time series under varying instrumental and tectonic condition | *Cristian Garcia, Benjamin Männel, Jens Wickert and Jonathan Bedford*

A Fusion Framework of 3D Physical Model and InSAR Monitoring for Mining-Induced Deformation Analysis | *Teng Wang, Yunjia Wang, Feng Zhao, Sen Du and José Fernández*

Enhanced Two-Step InSAR Phase Unwrapping Using L2-Norm and Central Difference Information Filtering | *Yansuo Zhang, Shubi Zhang, Yandong Gao, Sen Du, Juan F. Prieto and José Fernández*

Intraplate strain rate variations associated with reservoir triggered seismicity (RTS): a study from Koyna RTS site, Western India | *Himanshu Chaube, Anup Kumar Sutar and Sukanta Roy*

Large-Scale Analysis of GNSS data in the Euro-Mediterranean region for ground deformation measurement | *Letizia Elia, Leonardo Martelli, Adriano Cavaliere, Patrizia Pizzulo, Daniele Randazzo, Paolo Perfetti, Michele Proietto, Antonio Avallone, Nicola D'Agostino, Roberto Devoti, Grazia Pietrantonio and Enrico Serpelloni*

Contact

https://geodesy.science/event/ggos-days-2025/

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