

Curriculum vitae di *Michela Ravanelli*

Junior Research Director (Chaire Professeur Junior) – Observatoire de la Côte d’Azur - France

Sottosettori ERC primari:

PE10_7 Physics of earth's interior, seismology, geodynamics, PE10_16 Ozone, upper atmosphere, ionosphere, PE10_20 Geohazards

PERSONAL DETAILS

Family name, First name: Ravanelli, Michela

Birthdate: 02/04/1992

Researcher unique identifiers: ORCID-ID: 57202546238; SCOPUS: 57202546238

URL for web site: Personal Website: <https://michelaravanelli.github.io>

– Education and key qualifications

11/2017 – 05/2021 PhD in Infrastructure, Transport and Geomatics (Doctor Europaeus)

DICEA, Sapienza University of Rome, Italy.

Thesis: “An innovative approach for real-time GNSS Ionospheric Seismology: assessment, potentialities, applications and issues.” Supervisor: Mattia Crespi

2015–2017 M.Sc. in Environmental Engineering, 110/110 summa cum laude

Faculty of Civil and Industrial Engineering, Sapienza University of Rome, Italy

2011–2014 B.Sc. in Environmental Engineering, 110/110 summa cum laude,

Faculty of Civil and Industrial Engineering, Sapienza University of Rome, Italy

– Current position

2026 – present Chaire Professeur Junior (Junior Research Director – tenure track position) in Big Data and AI for Earth Sciences | Géoazur, Observatoire de la Côte d’Azur, Université Côte d’Azur, Valbonne, France

– Previous positions

2023 -2025 AXA Research Fund & IOC-UNESCO PostDoc Fellow on Coastal Livelihoods (UN Ocean Decade) | Sapienza University of Rome, Italy.

Project: ALTRUIST (totAL variomeTry foR tsUnamI hazard eStimaTion). Total funded budget: €125,000). Principal Investigator.

2021 – 2023 CNES PostDoc in Solid Earth, Geodesy and Cartography

Institut de Physique du Globe de Paris (IPGP), Université Paris Cité, Paris, France.

Project: Earthquake and Tsunami Risk Estimation by Ionospheric Sounding

2021 PostDoc at Geodesy and Geomatics Division

Sapienza University of Rome, Italy.

Project: GNSS Seismology through the Total Variometric Approach (Horizon 2020 GATHERS project)

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

Publications

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Bibliometric indicators from Scopus: h-index=11, citations number=434

1. Ferrara, F., Ravanelli, M., Bonforte, A., Capparelli, V., Carbone, V., Scollo, S., et al. (2025), Ionospheric disturbances during the 4 December 2015 Mt. Etna eruption., *Earth and Space Science*, 12, e2025EA004214, Doi: 10.1029/2025EA004214.
2. Fuso, F., Ravanelli, M., (2024) Probing the Ionospheric Effects of the 2020 Aegean Sea Earthquake: Leveraging GNSS Observations for Tsunami Early Warning in the Mediterranean, *Journal of Geophysical Research: Space Physics*, 129, e2024JA032946, Doi: 10.1029/2024JA032946.
3. Ravanelli, M.; Constantinou, V.; Liu, H.; Bortnik, J. (2024), Exploring AI progress in GNSS remote sensing: A deep learning based framework for real-time detection of earthquake and tsunami induced ionospheric perturbations, *Radio Science* 59, Doi: 10.1029/2024RS008016.
4. Fuso, F.; Crocetti, L.; Ravanelli, M.; Soja, B. (2024), Machine learning-based detection of TEC signatures related to earthquakes and tsunamis: the 2015 Illapel case study, *GPS Solutions* 28 3 106, Doi: 10.1007/s10291-024-01649-z.
5. Guerra, M.; Cesaroni, C.; Ravanelli, M.; Spogli, L. (2024), Travelling ionospheric disturbances detection: A statistical study of detrending techniques, induced period error and near real-time observables, *Journal of Space Weather and Space Climate* 14 17, Doi: 10.1051/swsc/2024017.
6. Ravanelli, M.; Astafyeva, E.; Munaibari, E.; Rolland, L.; Mikesell, T. D. (2023), Ocean-ionosphere disturbances due to the 15 January 2022 Hunga-Tonga Hunga Ha'apai eruption, *Geophysical Research Letters* 50 10 e2022GL101465, Doi: 10.1029/2022GL101465.
7. Meng, X.; Ravanelli, M.; Komjathy, A.; Verkhoglyadova, O. P. (2022), On the North-South Asymmetry of Co-Seismic Ionospheric Disturbances During the 16 September 2015 Illapel M8. 3 Earthquake, *Geophysical Research Letters* 49 8 e2022GL098090, Doi: 10.1029/2022GL098090.
8. Astafyeva, E.; Maletkii, B.; Mikesell, T. D.; Munaibari, E.; Ravanelli, M.; Coisson, P.; Manta, F.; Rolland, L. (2022), The 15 January 2022 Hunga Tonga eruption history as inferred from ionospheric observations, *Geophysical Research Letters* 49 10 e2022GL098827, Doi: 10.1029/2022GL098827.
9. Ravanelli, M.; Occhipinti, G.; Savastano, G.; Komjathy, A.; Shume, E. B.; Crespi, M. (2021), GNSS total variometric approach: first demonstration of a tool for real-time tsunami genesis estimation, *Scientific reports* 11 1 3114, Doi: 10.1038/s41598-021-82532-6.
10. Savastano, G.; Komjathy, A.; Shume, E.; Vergados, P.; Ravanelli, M.; Verkhoglyadova, O.; Meng, X.; Crespi, M. (2019), Advantages of geostationary satellites for ionospheric anomaly studies: Ionospheric plasma depletion following a rocket launch, *Remote Sensing* 11 14 1734, Doi: 10.3390/rs11141734.
11. Fortunato, M.; Ravanelli, M.; Mazzoni, A. (2019), Real-time geophysical applications with Android GNSS raw measurements, *Remote Sensing* 11 18 2113, Doi: 10.3390/rs11182113.
12. Fratarcangeli, F.; Ravanelli, M.; Mazzoni, A.; Colosimo, G.; Benedetti, E.; Branzanti, M.; Savastano, G.; Verkhoglyadova, O.; Komjathy, A.; Crespi, M. (2019), The variometric approach to real-time high-frequency geodesy, *Rendiconti Lincei. Scienze Fisiche e Naturali* 29 95-108, Doi: 10.1007/s12210-018-0708-5.

Book Chapters

13. Hohensinn, R.; Aichinger-Rosenberger, M.; Wareyka-Glaner, M.; Ravanelli, M. (2024), Natural hazard monitoring with global navigation satellite systems (GNSS), *Space geodesy for environmental monitoring* 1-123, Doi: 10.1016/bs.agph.2024.06.002.
14. Savastano, G.; Ravanelli, M. (2019), Real-time monitoring of ionospheric irregularities and tec perturbations, *Satellites Missions and Technologies for Geosciences*, Doi: 10.5772/intechopen.90036.

Selected Conference Proceedings

15. Constantinou, V.; Ravanelli, M.; Liu, H.; Bortnik, J. (2023), Deep learning driven detection of tsunami related internal GravityWaves: a path towards open-ocean natural hazards detection, *Proceedings of the IEEE/CVF International Conference on Computer Vision* 3748-3753.
16. Ravanelli, M.; Crespi, M.; Foster, J. (2020), Tides detection from ship-based GNSS receiver: First test on 2010 maule tsunami, *IGARSS 2020-2020 IEEE international geoscience and remote sensing symposium* 6846-6849, Doi: 10.1109/IGARSS39084.2020.9324549.

Publication lists reflect the progression of Michela Ravanelli's career, from contributing to key papers, to leading research, and ultimately achieving scientific independence. Research topics (numbers in square brackets refer to publications):

- GNSS seismology and ionospheric sounding (real-time variometric approaches) [12, 10, 9, 16, 14]
- Geodesy and Earth observation for geohazards [8, 6, 2, 1, 13]

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- Geophysical applications, including modelling and statistical studies [7, 5,11]
- Artificial intelligence applications in satellite geodesy and geophysics [15, 3, 4]

Peer recognition

Personal Awards

- 2024 Best Oral Presentation, GeoAI Workshop, Trento (Italy).
- 2023 Young Scientist Award, URSI General Assembly, Sapporo (Japan).
- 2022 AUTEc Prize for best PhD thesis in Geodesy and Geomatics (XXXIII cycle), Italian University Association of Topography and Cartography, Genova.
- 2021 Copernicus Prize Italy, Copernicus Masters (ESA/ASI), winner as part of the GENUINE team.
- 2020 2nd place, Farming by Satellite Prize, European GNSS Agency (GSA/EUSPA), as part of the GENUINE team.
- 2017 Young Author Award, Italian Society for Photogrammetry and Topography (SIFET), Ragusa.
- 2017 Excellent Student Award a.y. 2015/2016, Sapienza University of Rome, Reserved to the 2.5% best Sapienza students of all disciplines.

Acknowledgements

- 2025 Italian qualification for associate professor in 08/A4 section (Geomatics/Geodesy).
- 2024 French qualification for associate professor in CNU sections 35, 36, 37, 60.
- 2019-2020 Nominated "Subject Expert" (Cultura della materia) DICEA-Sapienza University of Rome, Positioning and Geomatics courses, (ICAR / 06 – Topography and Cartography).
- 2019-2021 Selected for Google Geo For Good Summit 2019, 2020, 2021.
- 2020 Selected for Regularization Methods for Machine Learning course University of Genova.
- 2019 Selected for Google Get Ahead Program Google, Virtual program.
- 2018 Selected for ESA Academy for Earth Observation Satellite System Design Training course ESA-ESOC, Belgium.
- 2017 Honours Programme - M.Sc in Environmental Engineering a.y. 2015/2016, Sapienza University of Rome.

ADDITIONAL INFORMATION

Other contributions to the research community

Services for international and national associations/commissions

- 2026 – present Junior Member of the Italian Academy of Engineering and Technology - ITATEC.
- 2026 – present EGU ECS Co-Representative for the Geodesy Division.
- 2026 – present Scientific lead for EPOS-GNSS activities at Observatoire de la Côte d’Azur.
- 2025 – present Co-Chair of the Topic Group on AI for Geodetic Enhancements to Tsunami Monitoring and Detection United Nation International Telecommunication Union (ITU).
- 2024 – present Member of EGU Geodesy Division Early Career Scientists.
- 2022 – present Associate Member of the International GNSS Service (IGS).

International Association of Geodesy (IAG) & IAG Global Geodetic Observing System (IAG-GGOS)

- 2026 – present ECS Representative for IAG in the IUGG ECS committee International Union of Geodesy and Geophysics.
- 2026 – present Early Career Scientist (ECS) observer at IAG Executive Committee
- 2024 – present Chair of the Joint Study Group T.49 High-resolution Probing of the Troposphere and Ionosphere of the Inter-Commission Committee on Theory (ICCT)-IAG.
Member of the Joint Study Group T.48 Theoretical foundations of Machine & Deep Learning in Geodesy of the Inter-Commission Committee on Theory (ICCT)-IAG.
- 2024 – present Member of the IAG Early Career Scientist Representatives.
- 2024 – present Member of the GNSS-enhanced Tsunami Early Warning Systems (GeTEWS) for Oceania Global Geodetic Observing System (GGOS).

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Funding

- 2023 - 2025 AXA Research Fund & Intergovernmental Oceanographic Commission of UNESCO (IOCUNESCO), Sapienza University of Rome. One of the 8 global winners of the joint postdoc by the AXA Research Fund and IOC-UNESCO on Coastal Livelihood at Sapienza University of Rome, Italy. Total funded budget: €125,000. Project: ALTRUIST (total variomeTry foR tsUnamI hazard eStimaTion): Principal Investigator.
- 2025 Cassini Senior Programme 2025, France Embassy in Italy. The Cassini Program supports Italian university in building scientific collaborations with French universities and research centers through the organization of joint scientific events. Total funded budget: €1,000. Principal Investigator.
- 2018 Avvio alla Ricerca Sapienza University of Rome. Competitive grant for young researchers of Sapienza University of Rome. Total funded budget: €1,000. Project: Geostationary satellites as a strategic tool for real-time ionospheric monitoring. Principal Investigator.

Visiting PhD student

- 2021 – 1 month Observatoire Sismologique et Volcanique de la Guadeloupe IPGP-Université Paris Cité, Gourbeyre, Guadeloupe.
Description Preliminary visit to assess the condition of existing infrastructure for testing a pilot tsunami early warning system based on GNSS ground motion and TEC data within the GNSS network of the Observatory.
- 2020 – 3 months Planetary and Space Sciences Section of Institut de Physique du Globe de Paris (IPGP) Université Paris Cité, Paris, France.
Description Investigation into the new challenges of real-time GNSS ionospheric seismology, such as developing an innovative methodology to determine the height of the ionospheric layer.
- 2019 – 5 months Ionospheric and Atmospheric Remote Sensing Section NASA Jet Propulsion Laboratory, Pasadena, California, USA.
Description Analysis of ionospheric disturbances induced by the Illapel earthquake (Chile, 2015) and the Ridgecrest seismic sequence (California, 2019).

Supervision/Co-supervision

- 2017 – present Co-supervision of 2 PhD students Federica Fuso (Data Science, Sapienza, 2021–2025) and Federico Ferrara (Space Sciences, Univ. of Trento, 2022–2026); 5 MSc students, 3 BSc students

Peer Review Activities

Journals (non-exhaustive list): Nature Scientific Reports, Journal of Geodesy, GPS Solutions, Nature Communications Earth & Environment, JGR Space Physics, JGR Machine Learning and Computation, JGR Solid Earth, IEEE Transactions on Geoscience and Remote Sensing, IEEE Geoscience and Remote Sensing Letters, IEEE JSTARS, Advances in Space Research, Annales Geophysicae (Copernicus Publications), Space Weather, Remote Sensing.

Associate Editor

Annals of Geophysics.

Conference Organizations

Organizer of the Cassini Day Symposium: Advancing Tsunami Early Warning with GNSS Ionospheric Monitoring, Sapienza School for Advanced Studies (SSAS), June 2026.
Member of the Local Organizing Committee of the IX Hotine-Marussi Symposium of ICCT-IAG Faculty of Civil and Industrial Engineering of Sapienza University of Rome, June, 2018.

Outreach

- 2024-present EGU Geodesy division Blog: Blog Editor.

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- 2025 ECS dinner and of Women in Geodesy social event at 2025 IAG Scientific Assembly in Rimini: Co-organizer.
- 2017-2019 Co-coordinator (50%) of 3 educational projects "Alternanza Scuola Lavoro", Sapienza University of Rome, Projects: Urban Surface Heat Island Analysis Using Google Earth Engine, Development of a Participatory Mapping Application for Abandoned Buildings in the Outskirts of Rome, Generation of an open-source database of classroom interiors.

Languages French (DALF C2 certification), English, Italian (native language).