CRISTINA TOTARO
Tenure-Track Researcher SSD GEO/10, S.C. 04/A4, University of Messina.

General qualifications

- 2006 - Degree in PHYSICS, course of Geophysics and Environmental Physics, University of Messina;
- 2011 - Ph.D. in Geophysics for Environment and Territory, University of Messina;
- 2013 – External Post-doc at Lamont-Doherty Earth Observatory, Columbia University, NY;
- 2018 - National Scientific Qualification as Associate Professor (research field: Geophysics);
- 2025 - National Scientific Qualification as Full Professor (research field: Geophysics)

Main research fields

- Development of advanced methods of seismic tomography and earthquake location for fault detection and the characterization of crust and upper mantle structure;
- Analysis and construction of crustal velocity models;
- Focal mechanisms computation performed both by traditional techniques based on use of P-onset polarities and by methods based on broadband waveform inversion;
- Focal mechanism computation by applying techniques based on P-onset polarities and also waveform inversion methodologies;
- Seismogenic stress fields and active fault dynamics computation;
- Analysis of seismicity and seismogenic mechanisms, in particular in the southern Italy area;
- Comparative analyses of seismological, geological and geophysical information for the comprehension of seismotectonic processes;
- Simulation of seismic ground shaking by analytical methods for hazard and seismic risk estimates.

Bibliometric Parameters (SCOPUS, June 2023)

- Papers: 36
- Citations: 806
- h-index: 15

Main national and international cooperation

- Lamont-Doherty Earth Observatory, Columbia University (NY)
- Institute of Petroleum Geology and Geophysics, Novosibirsk (Russia)
- Università di Malta (Dipartimento di Fisica)
- Universidad de Granada (Spain)
- Institut Cartogràfic i Geològic de Catalunya, Barcelona (Spain)
- Universidad de Atacama (Cile)
- Università degli Studi di Palermo
- Istituto Nazionale di Geofisica e Vulcanologia – Sezione di Catania
- Istituto di Geologia Ambientale e Geoingegneria del Consiglio Nazionale delle Ricerche
- Centro Interuniversitario per l'Analisi Sismotettonica Tridimensionale con applicazioni Territoriali (CRUST)

Teaching activities

- A.Y. 2025/2026 Holder of the course "Active and Passive Seismology", (GEO/10, 6 CFU, 54h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2025/2026 Holder of the course "Geophysics", (GEO/10, 6 CFU, 36h) for the Bachelor's Degree in Marine and Terrestrial Environmental Sciences, University of Messina;
- A.Y. 2025/2026 – Teaching unit "Introduction to Seismology" (12h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;

- A.Y. 2024/2025 Holder of the course "Active and Passive Seismology", (GEO/10, 6 CFU, 54h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2024/2025 Holder of the course "Geophysics", (GEO/10, 6 CFU, 36h) for the Bachelor's Degree in Marine and Terrestrial Environmental Sciences, University of Messina;
- A.Y. 2024/2025 – Teaching unit "Introduction to Seismology" (8h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2023/2024. Formal appointment conferred by the Universidad de Atacama (Chile) to deliver lectures on Seismology within the PhD programme in Astronomy and Planetary Sciences;
- 19/12/2023 – Seminar entitled "Tomographic approach for crustal and sub-crustal imaging: case studies in southern Italy" within the PhD programme in Astronomy and Planetary Sciences, Universidad de Atacama, Chile;
- A.Y. 2023/2024 Holder of the course "Geophysics", (6 CFU, 36h) for the Bachelor's Degree in Marine and Terrestrial Environmental Sciences, University of Messina;
- A.Y. 2023/2024 Holder of the course "Active and Passive Seismology", (6 CFU, 60h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2023/2024 – Teaching unit "Introduction to Seismology" for the Master's Degree in Geophysical Sciences for Seismic Risk (8h);
- A.Y. 2022/2023 Holder of the course "Active and Passive Seismology", (6 CFU, 60h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2022/2023 – Teaching unit "Introduction to Seismology" for the Master's Degree in Geophysical Sciences for Seismic Risk (8h);
- A.Y. 2021/2022 Holder of the course "Active and Passive Seismology", (6 CFU, 60h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2021/2022 – Teaching unit "Introduction to Seismology" for the Master's Degree in Geophysical Sciences for Seismic Risk (8h);
- A.Y. 2020/2021 Holder of the course "Active and Passive Seismology", (6 CFU, 60h) for the Master's Degree in Geophysical Sciences for Seismic Risk, University of Messina;
- A.Y. 2020/2021 – Teaching unit "Introduction to Seismology" for the Master's Degree in Geophysical Sciences for Seismic Risk (30h);
- A.Y. 2019/2020 – Teaching unit "Tools for Active and Passive Seismology" (GEO/10, 4 CFU, 32h) for the Master's Degree in Geophysical Sciences for Seismic Risk;
- A.Y. 2017/2018 – Lecture series of 8 hours (1 CFU) on "Structure and Physical Properties of the Earth's Crust" within the course "Elements of Earth Physics" (SSD GEO/10) for the Bachelor's Degree in Physics, University of Messina;
- Member of various Examination Committees for the Bachelor's Degree programmes in Physics and Analysis and Management of Natural and Anthropogenic Risks, and for the Master's Degree programme in Sciences and Logistics of Maritime and Air Transport.

Institutional Responsibilities

- 2024 – present. Departmental Representative for activities and services directed at students with disabilities and specific learning disorders (DSA).
- 2023 – present. Member, representing the University of Messina, of the Advisory Board of the Inter-University Centre for Three-Dimensional Seismotectonic Analysis with Territorial Applications (CRUST). Administrative headquarters: University of Chieti-Pescara. The Centre comprises the following Universities: Bologna, Catania, Chieti-Pescara, Ferrara, Messina, Milano, Milano Bicocca, Napoli, Pavia, Perugia, Roma Tre, and Salerno.

- From 02/11/2021 to 16/10/2024. Departmental Representative for orientation and tutoring activities, with specific reference to the disciplinary field of Earth Sciences.
- 2020 – present. Member of the Equal Teacher/Student Commission University of Messina.

Scientific Publications on international "ISI Web of Science JCR" journals

- M. A. Alddoum Adam, **Totaro C.**, Presti D., Scolaro S., De Siena L., (2026). *Seismic attenuation and scattering tomography reveal lithospheric complexity and fluid signatures across the Southern Apennines – Northern Calabrian boundary (South Italy)*. Geophysical Journal International, https://doi.org/10.1093/gji/ggag111
- Mancuso T., Cesca S., Grigoli. F., Presti D., **Totaro C**, Orecchio B., (2026). *High-Resolution Analysis of the 2025 Offshore Seismic Sequence in the Aeolian Archipelago (Southern Tyrrhenian Sea, Italy).* Geophysical Journal International, doi:10.1093/gji/ggaf532
- Mancuso T., Scolaro S., **Totaro C.** Orecchio B. (2025). *Assessing Double-Couple Moment Tensor Reliability of Recently Developed Bayesian Inversion Algorithms.* Bulletin of the Seismological Society of America, DOI: 10.1785/0120250017
- **Totaro C.**, Aloisi M., Ferlito C., Orecchio B., Presti D., Scolaro S., (2024). *3D seismic velocity models from local earthquake tomography furnish new insights on the Mount Etna volcano (Southern Italy)*. Scientific Reports, 14, 28469 (2024). https://doi.org/10.1038/s41598-024-74349-w.
- Billi A., Corbi F., Cuffaro M., Orecchio B., Palano M., Presti D., **Totaro C**., (2024). *Seismic slip channeling along the East Anatolian Fault illuminates long-term supercycle behavior*. Nature Communications, 15(1), 8921, 10.1038/s41467-024-53234-0.
- Scolaro S., Batlló, J., Orecchio, B., Presti, D., Stich, D., **Totaro C.**, (2024). *Modern approaches for historical seismograms: moment tensor inversion of the 1947 Squillace Basin Earthquake (South Italy)*. Seismological Research Letters, doi: 10.1785/0220230423 (First Online: 08 Apr 2024).
- Palano M., Billi A., Conti A., Cuffaro M., Orecchio B., Presti D., Scolaro S., Sparacino F., **Totaro C**., (2023). *The intra-orogenic normal Lakes Fault (Sila, Calabria, southern Italy): new insights from geodetic and seismological data.* Italian Journal of Geosciences, 142, 3, 384-397, https://doi.org/10.3301/IJG.2023.18.
- Billi A., Cuffaro M., Orecchio B., Palano M., Presti D., **Totaro C**., (2023). *Retracing the Africa–Eurasia nascent convergent boundary in the western Mediterranean based on earthquake and GNSS data*. Earth and Planetary Science Letters, p. 1-15, ISSN: 0012-821X, https://doi.org/10.1016/j.epsl.2022.117906.
- Orecchio B., Presti D., Scolaro S., **Totaro C.,** (2023). *Seismic deformation in the Adriatic Sea region.* Journal of Geodynamics, p. 1-10, ISSN: 0264-3707, https://doi.org/10.1016/j.jog.2022.101956.
- **Totaro C.,** Aloisi M., Ferlito C., Orecchio B., Presti D., Scolaro S., 2022. *New insights on the active degassing system of the Lipari–Vulcano complex (South Italy) inferred from Local Earthquake Tomography*. Scientific Reports, 12(1), 1-10, https://doi.org/10.1038/s41598-022-21921-x.
- Cirillo D., **Totaro C.**, Lavecchia G., Orecchio B., De Nardis R., Presti D., Ferrarini F., Bello S., Brozzetti F., 2022. *Structural complexities and tectonic barriers controlling recent seismic activity*

in the Pollino area (Calabria–Lucania, southern Italy) – constraints from stress inversion and 3D fault model building. Solid Earth, 13, 205–228, https://doi.org/10.5194/se-13-205-2022.

- Neri G., Orecchio B., Presti D., Scolaro S., **Totaro C.**, 2021. *Recent Seismicity in the Area of the Major, 1908 Messina Straits Earthquake, South Italy.* Frontiers In Earth Science, vol. 9, p. 1-16, ISSN: 2296-6463, doi: 10.3389/feart.2021.667501
- Orecchio B., Neri G., Presti D., Scolaro S., **Totaro C.**, 2021. *Seismic deformation styles in the upper and lower plate domains of the Calabrian subduction zone, south Italy.* Journal of Geodynamics, vol. 145, p. 1-12, ISSN: 0264-3707, doi: 10.1016/j.jog.2021.101847
- Orecchio B., Scolaro S., Batlló J., Neri G., Presti D., Stich D., **Totaro C.**, 2021 *New results for the 1968 Belice seismic sequence (South Italy): solving the long-lasting ambiguity on causative source*. Seismological Research Letters, 92(4), 2364–2381, 10.1785/0220200277.
- Neri G., Orecchio B., Scolaro S., **Totaro C.**, 2020. *Major Earthquakes of Southern Calabria, Italy, Into the Regional Geodynamic Context*, Frontiers in Earth Science, 8:579846, doi: 10.3389/feart.2020.579846.
- De Ritis R., Pepe F., Orecchio B., Casalbore D., Bosman A., Chiappini M., Chiocci F., Corradino M., Nicolich R., Martorelli E., Monaco C., Presti D., **Totaro C.**, 2019. *Magmatism along lateral slab-edges: insights from the Diamante-Enotrio-Ovidio Volcanic-Intrusive Complex (Southern Tyrrhenian Sea)*, Tectonics, 38(8), 2581-2605, doi: 10.1029/2019TC005533.
- Presti D., **Totaro C.**, Neri G., Orecchio B., 2019. *New earthquake data in the Calabrian subduction zone, Italy, suggest revision of the presumed dynamics in the upper part of the subducting slab*, Seismological Research Letters, 90(5), 1994-2004, doi: 10.1785/0220190024.
- Scolaro S., Pino P., D'Amico S., Orecchio B., Presti D., Torre A., **Totaro C.**, Farrugia D., Neri G., 2018. *Ambient noise measurements for preliminary microzoning studies in the city of Messina, Sicily*, Annals of Geophysics, doi: 10.4401/ag-7711.
- Pino P., D'Amico S., Orecchio B., Presti D., Scolaro S., Torre A., **Totaro C.**, Farrugia D., Neri G., 2018. *Integration of geological and geophysical data for reevaluation of local seismic hazard and geological structure: The case study of Rometta, Sicily (Italy)*, Annals of Geophysics, doi: 10.4401/ag-7710.
- Presti D., Neri G., Orecchio B., Scolaro S., **Totaro C.**, 2017. *The 1905 Calabria, Southern Italy, Earthquake: Hypocenter Location, Causative Process, and Stress Changes Induced in the Area of the 1908 Messina Straits Earthquake*, Bulletin of Seismological Society of America, 107, 2613-2623, ISSN: 0037-1106, doi: 10.1785/0120170094.
- Orecchio B., Aloisi M., Cannavò F., Palano M., Presti D., Pulvirenti F., **Totaro C.**, Siligato G., Neri G., 2017. *Present-day kinematics and deformation processes in the southern Tyrrhenian region: new insights on the northern Sicily extensional belt*, Italian Journal of Geosciences, 136, 3, 418-433, doi: 10.3301/IJG.2017.01;
- **Totaro C.**, Kukarina E., Koulakov I., Neri G., Orecchio B., Presti D., 2017. *Seismotomographic detection of major structural discontinuity in northern Sicily,* Italian Journal of Geosciences, 136, 3, 389-398, doi: 10.3301/IJG.2016.14;
- Brozzetti F., Cirillo D., De Nardis R.; Cardinali M., Lavecchia G., Orecchio B., Presti D., **Totaro C.**, 2017. *Newly identified active faults in the Pollino Seismic Gap, Southern Italy, and their seismotectonic significance*, Journal of Structural Geology, 94, 13-31, http://dx.doi.org/10.1016/j.jsg.2016.10.005;

- **Totaro C.**, Orecchio B., Presti D., Scolaro S., Neri G., 2016. *Seismogenic stress field estimation in the Calabrian Arc region (south Italy) from a Bayesian approach*, Geophysical Research Letters, 43, 8960–8969, doi:10.100 2/2016GL070107;
- **Totaro C.**, Seeber L., Waldhauser F., Steckler M., Gervasi A., Guerra I., Orecchio B., Presti D., 2015. *An intense earthquake swarm in the southernmost Apennines: fault architecture from high-resolution hypocenters and focal mechanisms,* Bulletin of Seismological Society of America, 105, 6, 3121–3128, doi: 10.1785/0120150074.
- Palano M., Schiavone D., Loddo M., Neri M., Presti D., Quarto R., **Totaro C.**, Neri G 2015. *Active upper crust deformation pattern along the southern edge of the Tyrrhenian subduction zone (NE Sicily): Insights from a multidisciplinary approach,* Tectonophysics, 657, 205-218, doi: http://dx.doi.org/10.1016/j.tecto.2015.07.005.
- Orecchio B., Presti D., **Totaro C.**, D'Amico S., Neri G., 2015. *Investigating slab edge kinematics through seismological data: the northern boundary of the Ionian subduction system (south Italy),* Journal of Geodynamics, Vol. 88, pp. 23-35, doi: http://dx.doi.org/10.1016/j.jog.2015.04.003;
- Orecchio B., Presti D., **Totaro C.**, Neri G., 2014. *What earthquakes say concerning residual subduction and STEP dynamics in the Calabrian Arc region, south Italy*, Geophysical Journal International, Vol. 199, pp. 1929-1942, doi: 10.1093/gji/ggu373;
- **Totaro C.**, Koulakov I., Orecchio B., Presti D., 2014. *Detailed crustal structure in the area of the southern Apennines-Calabrian Arc border from local earthquake tomograph*y, Journal of Geodynamics, Vol. 82, pp. 87-97, doi:10.1016/j.jog.2014.07.004;
- **Totaro C.**, Presti D., Billi A., Gervasi A., Orecchio B., Guerra I. Neri G., 2013. *The ongoing seismic sequence at the Pollino Mountains, Italy*, Seismological Research Letters, Vol. 84, 6, pp. 955-962, doi: 10.1785/0220120194;
- Presti D., Billi A., Orecchio B., **Totaro C**., Faccenna C., Neri G., 2013. *Earthquake focal mechanisms, seismogenic stress, and seismotectonics of the Calabrian Arc, Italy*, Tectonophysics, http://dx.doi.org/10.1016/j.tecto.2013.01.030;
- Neri G., Marotta A.M., Orecchio B., Presti D., **Totaro C**., Barzaghi R., Borghi A., 2012. *How lithospheric subduction changes along the Calabrian Arc in southern Italy: geophysical evidences*, International Journal Earth Sciences, DOI 10.1007/s00531-012-0762-7;
- Orecchio B., Presti D., **Totaro C**. (corresponding author), Guerra I., Neri G., 2011. *Imaging the velocity structure of the Calabrian Arc region (South Italy) through the integration of different seismological data*, invited paper, Bollettino di Geofisica Teorica ed Applicata, vol. 52, n. 4, pp. 625-638, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, DOI 10.4430/bgta0023;
- Neri G., Orecchio B., **Totaro C**., Falcone G., Presti D., 2009. *Subduction Beneath Southern Italy Close to Ending: Results from Seismic Tomography*, Seismological Research Letters, Vol. 80, 1, pp. 63-70, doi: 10.1785/gssrl.80.1.63.

Chapter on volumes

- Scolaro S., **Totaro C.**, Presti D., D'Amico S., Neri G., Orecchio B., 2018. *Estimating Stability and Resolution of Waveform Inversion Focal Mechanisms*, in Moment Tensor Solutions A Useful Tool for Seismotectonics, ed. Springer Natural Hazards, doi:10.1007/978-3-319-77359-9_5.

Editorial and Referee activities for ISI International Journals

- Member of the Editorial Board of the journal Geosciences
- Member of the steering committee of the editorial collection The Sharing of Knowledge, published by Messina University Press.

- Guest Editor for the Special Issue "Advanced Sensor Networks/Seismic Networks and Monitoring for Earthquakes and Phenomena Having a Seismic Signature " for the journal Sensor MDPI;
- Referee for the following ISI journals: Physics and Chemistry of the Earth, Journal of Geodynamics, Journal of Volcanology and Geothermal Research, Journal of Geophysical Research – Solid Earth, Lithosphere, Tectonophysics, Annals of Geophysics, Geophysical Research Letters, Frontiers in Earth Sciences, Scientific Reports.

Formal Collaboration to Research Projects

- Progetto P.O. FESR SICILIA 2014/2020 - HCH *Lowcost Geoengineering Check, Ovvero Sistema Multisensoriale A Basso Costo Finalizzato Alla Diagnosi Per La Tutela E Conservazione Del Patrimonio Storico Culturale*;
- Progetto INGV-DPC-S1 2014-2015, "*Base-knowledge improvement for assessing the seismogenic potential of Italy*" finanziato da Istituto Nazionale di Geofisica e Vulcanologia insieme a Dipartimento Nazionale di Protezione Civile;
- Progetto INGV-DPC-S1 2012-2013, "*Miglioramento delle conoscenze sismotettoniche nel settore calabro-lucano (Bacino del Mercure, area del Pollino e Sannio-Beneventano)*", finanziato da Istituto Nazionale di Geofisica e Vulcanologia insieme a Dipartimento Nazionale di Protezione Civile;
- Progetto PO. FESR 2007-2013, Line 4.1.1.1, n.162, "*Attività di sviluppo sperimentale finalizzata alla riduzione del rischio sismico nella Sicilia Orientale*";
- Progetto PRIN 2010-2011 "*Geodinamica attiva e recente dell'Arco Calabro e del complesso di accrezione nel Mar Ionio*", finanziato da Ministero Istruzione Università e Ricerca (MIUR);
- Progetti di Ricerca di Ateneo PRA 2008-2009 " *Indagini sismologiche per la caratterizzazione della struttura crostale nell'area calabro-peloritana*" finanziato da University of Messina;
- Progetto INGV-DPC-S5 2007-2009 "*Test sites per il monitoraggio multidisciplinare di dettaglio*", finanziato da Istituto Nazionale di Geofisica e Vulcanologia insieme a Dipartimento Nazionale di Protezione Civile;
- Progetto INGV-DPC-S1 2007-2009 "*Determinazione del potenziale sismogenetico in Italia per il calcolo della pericolosità sismica*", finanziato da Istituto Nazionale di Geofisica e Vulcanologia insieme a Dipartimento Nazionale di Protezione Civile;
- Progetti di Ricerca di Ateneo PRA 2006-2007 "*Indagini sismotettoniche per la caratterizzazione geodinamica di settori ad elevato rischio sismico e vulcanico in Sicilia*", finanziato da University of Messina;
- Progetto "*Development of an Information System for Natural Risk Management in the Mediterranean: SYNARMA-EXTENSION*", finanziato dalla Comunità Europea nell'ambito del Programma INTERREG III B ARCHIMED 2008;
- Progetto "*Development of an Information System for Natural Risk Management in the Mediterranean: SYNARMA*", finanziato dalla Comunità Europea nell'ambito del Programma INTERREG III B ARCHIMED 2006-2007;
- Progetto PRIN 2005-2007 "*Evoluzione recente del processo di subduzione dell'Arco Calabro: vincoli geologici, sismologici, geochimici e modellazione sperimentale*", finanziato da Ministero Istruzione Università e Ricerca (MIUR).

I undersigned Cristina Totaro, born in Messina on 03.23.1982, living in Via Umberto I 197, Roccalumera (c.a.p. 98027), Messina, Italy, declare that the content of this curriculum corresponds to the truth and authorize the processing of my personal data.

Messina, April 10th, 2026