Eleonora Amato

Curriculum Vitae

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Personal Information

First name	Eleonora
Last name	Amato
Place and Date of birth	Palermo (Italy), 25 June 1996
Nationality	Italian

URL

- *Linkedin*: `https://it.linkedin.com/in/eleonora-amato-950274197`
- *Google Scholar*: `https://scholar.google.com/citations?user=epmnj4kAAAAJ&hl=it&oi=ao`
- *Orcid*: `https://orcid.org/0000-0002-4244-3972`

Bibliometric Indicators

SCOPUS	documents 13, h-index 8, citations 125
Google Scholar	documents 30, h-index 8, citations 140, i10-index 7

Current position

RESEARCHER at INGV - National Institute of Geophysics and Volcanology, Etna Volcano Observatory, Catania, Italy

Research interests

I work at the Etna Observatory of the INGV in Catania (INGV-OE) within the Laboratory of Technologies for Volcanology (TechnoLab). I have developed skills and methodologies for complex fluids modelling and geophysical monitoring of active volcanic areas from space. In particular, I designed and implemented models based on artificial intelligence techniques for the analysis of satellite images for monitoring volcanic areas. Furthermore, I have developed physical-mathematical models, via cloud computing, to describe the evolution in space and time of volcanic phenomena and monitor their relative danger. The results obtained were presented at various national and international conferences and published in numerous scientific articles in the following scientific fields:

- *Artificial Intelligence*: I have studied artificial intelligence techniques, ranging from machine to deep learning, applying various automatic models. I have developed machine learning models for the mapping

of lava fields, supervised [A9, A6, A5, A2, B14, B6, B4, B3] and unsupervised [A4, A1, B4, B3], to classify input data and map the lava fields with respect to the background. I have also developed deep learning models for the detection of thermal anomalies in volcanic areas, using deep convolutional neural networks. I applied transfer leaning and ensemble learning techniques to improve the performance of the models described [A8]. I also developed best fitting and non-linear regression statistical models for estimating the areal extents of emplaced lava flows [A2, B4]. I am currently studying and extending the field of applicability of emulators, models that combine computational fluid dynamics and artificial intelligence to improve the simulation of complex fluids. In particular, the chosen neural network learns from numerical simulations to reproduce the trend in time and space of a complex fluid such as lava, faithfully reproducing its physical characteristics, improving the results of the numerical models and extending their functionality [A9, B15, B14, B13].

- *Satellite data processing*: I analyzed different types of satellite data to study the emplacement of lava fields and their evolution as a function of time and physico-chemical properties of the spectral response of basic (basaltic), intermediate (andesitic) and acidic (rhyolitic) lava. In particular, I used data from different space agencies (NASA, ESA, ..) at different spatial and temporal resolution, to exploit the relative advantages. To this end, I have processed time series of large quantities of satellite images with high temporal and spectral resolution for the study of volcanic activity [A7, A6, A4, A3, B4]. I applied best fitting statistical models that exploit the radiant power and the relative effusive rate to estimate the areal extensions and volumes of lava fields and volcanic deposits [A2, B6, B4, B3]. I also analyzed satellite data at high spatial resolution for the mapping of lava fields and the study of their emplacement [A5, A2, A1, B5, B3, B2] and I developed physical-mathematical models for the evolution of complex fluids flows in space and time, varying initial and boundary conditions [A9, B14, B13].

- *Volcanic hazard monitoring*: I have developed a variety of algorithms based on analytical and automatic techniques for monitoring volcanic activity [A4, A3], detecting thermal anomalies [A8, A1], mapping products emitted by volcanic activity [A5, A2, B6] and the analysis of the spectral response of lava [A7], applicable to several volcanoes around the world. Currently, I am working on the development of physical-mathematical models, varying the initial and boundary conditions, to study the evolution of lava fields in space and time [A9, B14, B13]. Models like these can be applied to monitor the progress of a complex fluid and its relative emplacement, giving indications on the spatial and temporal evolution.

All these studies was developed using Python, MatLab and JavaScript programming languages, via cloud computing platforms.

Work experience

2024 - in progress **RTD TEMPORAL RESEARCHER CONTRACT**
full time, at Istituto Nazionale di Geofisica e Vulcanologia (INGV), Etna Volcano Observatory, Catania
Research topic: Development of artificial intelligence techniques for monitoring volcanic hazards from space

Teaching activity

2021 - 2025 **Volcanic Hazards course**
Lecturer of "Other Ability" (3 CFU, ∼30 hours) "Technologies for Forecasting Volcanic Hazards" organized by the Master's Degree in "Automation Engineering and Control of Complex Systems" (LM25) at University of Catania carried out at the INGV Etna Volcano Observatory
a.y. 2021-2022, 2022-2023, 2023-2024, 2024-2025

Academic experiences

2020 - 2024 **PhD**

Cycle XXXVI, Mathematics and Computational Sciences
at Istituto Nazionale di Geofisica e Vulcanologia (INGV), Osservatorio Etneo, Sezione di Catania
University of Palermo, Italy, consortium: Palermo-Catania-Messina
Department of Mathematics and Computer Science
Thesis Title: Enhancing Computational Fluid Dynamics with Artificial Intelligence: AI-based Smoothed Particle Hydrodynamics (SPH) Emulator for Lava Flow Modeling (SSD MAT/07)
PhD coordinator: Prof.ssa Maria Carmela Lombardo (DMI UNIPA)
Tutor: Prof.ssa Gaetana Gambino (DMI UNIPA)
Co-Tutor: Dr. Ciro Del Negro (INGV-OE)
GPA: Excellent cum Laude, March 2024

2018 - 2020 **MASTER'S DEGREE**

University of Palermo, Italy
Department of Mathematics and Computer Science
Master's Degree in Mathematics (LM-40)
Thesis Title: Models of Neural Networks for description of Visual Hallucinations's Patterns (SSD MAT/07)
Mentor: Professor Maria Carmela Lombardo
GPA: 110/110 cum Laude, July 2020

2020 **Internship**

Associazione PALERMOSCIENZA, Italy
Manifestazione Scientifica Esperienza InSegna
Scientific Reporting
Duration: 30 hours

2014 - 2017 **BACHELOR'S DEGREE**

University of Palermo, Italy
Department of Mathematics and Computer Science
Bachelor's Degree in Mathematics (L-35)
Thesis Title: Non-Parametric Statistical Models for the study of Environmental Big Data through Curves (SSD SECS-S/01)
Mentor: Dr Antonino Abbruzzo
GPA: 108/110, March 2018

2017 **Internship**

Engineering Ingegneria Informatica S.p.A., Italy
Application of mathematical techniques and tools to the analysis of data acquired by submarine sensors
Duration: 72 hours

2014 **HIGH SCHOOL DIPLOMA**

Scientific High School "Ernesto Basile", Palermo, Italy
GPA: 98/100, June 2014

Training courses

2024/08 **A2 Course - UAS Remote Pilot Open Category [UAS-OPEN-A2-COURSE]**

DAC European Union Aviation Safety Agency (EASA)
Learning Zone - EUROCONTROL Aviation Learning Centre

2024/06 **A1/A3 Course and Examination (with drone flying license) - UAS Remote Pilot Open Category - [UAS-OPEN-A1+A3]**

DAC European Union Aviation Safety Agency (EASA)
Learning Zone - EUROCONTROL Aviation Learning Centre

2022/01 **Deep Learning**
Professor Giovanni Maria Farinella
Department of Mathematics and Computer Science
Master's Degree in Computer Science - LM18
University of Catania, Italy

2021/12 **Fisica del Vulcanismo**
Professor Andrea Cannata
Department of Biological, Geological, and Environmental Sciences
Master's Degree Course in Geophysical Sciences - LM79
University of Catania, Italy

2021/09 **Introduction and Access to Global Air Quality Forecasting Data and Tools**
NASA ARSET - Applied Remote SEnsing Training Program

2021/06 **Using Google Earth Engine for Land Monitoring Applications**
NASA ARSET - Applied Remote SEnsing Training Program

2021/05 **Satellite Observations and Tools for Fire Risk, Detection, and Analysis**
NASA ARSET - Applied Remote SEnsing Training Program

2021/05 **Implicit Explicit Methods for Evolutionary Partial Differential Equations**
Professor Sebastiano Boscarino
Department of Mathematics and Computer Science
University of Catania, Italy

2021/05 **Volcanic Hazards - Systems engineering approaches applied to satellite-driven modeling strategy for quantifying volcanic hazards**
Organizers: Dr Claudia Corradino (INGV), Prof M. Bucolo (UNICT)
Istituto Nazionale di Geofisica e Vulcanologia (INGV-OE)
Master's Degree in Automation Engineering and Control of Complex Systems - DIEEI UNICT
University of Catania, Italy

2021/05 **Machine Learning**
Professor Giovanni Maria Farinella
Department of Mathematics and Computer Science
Master's Degree in Computer Science - LM18
University of Catania, Italy

2021/02 **Remote Sensing Image Acquisition, Analysis and Applications**
Dr. John Richards, Emeritus Professor UNSW
UNSW Sydney (The University of New South Wales)
IEEE Geoscience and Remote Sensing Society
Coursera Online

2021/01 **Machine Learning**
Prof. Andrew Ng, Associate Professor
Computer Science Department, Stanford University
Coursera Online

School attended

2022/09 **CVC training school 2022**
Convective and Volcanic Clouds detection, monitoring and modeling

2022/06 **EBRAINS Brain Simulation School 2022**
European Brain ReseArch INfrastructureS

2021/09 **CVC training school 2021**
Convective and Volcanic Clouds detection, monitoring and modeling

2021/07 **TAI4ES Summer School 2021**
Trustworthy Artificial Intelligence for Environmental Science

Certificates held

2024 **UAS drone flight license level A1-A3**
DAC European Union Aviation Safety Agency (EASA)

Databases

2023 **SqueezeNet_Dataset_TransferLearning [Data set]**
Amato, E., Corradino, C., Torrisi, F., and Del Negro, C. (2023). SqueezeNet_Dataset_TransferLearning [Data set]. Zenodo. `https://doi.org/10.5281/zenodo.7944343`

Supervision of internships, degree theses and doctoral theses

2022 **Lilian Hébrard**
Internship included in the study plan of the MSc course in Ecole Et Observatoire Des Sciences De La Terre at the Université de Strasbourg (France), "Spectral analysis of Etna volcanic rocks using satellite images".

Organization of scientific meetings

- 2025 - Session NH2.3/GMPV9.6 "Technologies for Forecasting Volcanic Hazards: Enhancing Risk Mitigation through Observations and Models" EGU General Assembly, Vienna, Austria, 27 April - 02 May 2025
- 2025 - Convener of session Theme 1 "Seismicity, Volcanoes, Data and Models", AGLC Young Researcher Workshop, preceding the 43° GNGTS Conference, online
- 2024 - Convener of session 417 "Forecasting volcanic hazards: new technologies and probabilistic multi-source and multi-hazard assessment combining HPC and field data", COV12, La Antigua, Guatemala, 11-17 February 2024
- 2023 - Convener of session GMPV9.2 "Advances in volcanic hazard monitoring and modeling", EGU General Assembly, Vienna, Austria, 23-28 April 2023
- 2022 - Convener of session V51D e V52B "Volcano Hazard Monitoring Using Statistical Methods and Artificial Intelligence", AGU Fall Meeting, Chicago, USA, 12-16 December 2022
- 2021 - Convener of session V33C e V35E "Volcano Hazard Monitoring From Space Using Statistical Methods and Machine Learning", AGU Fall Meeting, New Orleans, USA, 13-17 December 2021

Organization of dissemination events

- 2023 - Activities at the exhibits in "INGV National Space Day"

Positions of reviewer, editor or associate editor of scientific journals

2020 - today **Reviewer for the following international scientific journals**
IGARSS long abstracts, Nonlinear Engineering: Modeling and Application, Remote Sensing Applications: Society and Environment, Il Nuovo Cimento

Participation in research projects

- 2023 - 2027 INGV research program funded by MUR: ROSE (Reinforcement of the Observational Systems of the Earth) (OB.FU. 1215.010).

- 2023 - 2025 INGV institutional project financed by MUR: Pianeta Dinamico VT_ORME (ObseRvation, Measurement and modeling of Eruptive processes) (OB.FU. 1020.010).

- 2020 - 2024 Strategic project of the INGV Volcanoes department: FIRST (ForecastIng eRuptive activity at Stromboli volcano: Timing, eruptive style, size, intensity, and duration) (OB.FU. 9999.601).

- 2012 - 2024 International research program: ATHOS (Advanced Tools and metHods for cOmputational fluid dynamicsS) - Coordinated by TechnoLab, Etna Volcano Observatory (EVO) (OB.FU. 867.010).

Participation in monitoring activities at INGV

2020 - today

Collaboration with the Volcanic Hazard Functional Unit (UFPV) of the Etna Observatory (OE) of the INGV for satellite monitoring activities of thermal anomalies associated with Sicilian active volcanoes and for the drafting of the OE's weekly bulletins on the state of activities of Etna and Stromboli.

Honors and awards

- First Prize Best Communication in 110° National Congress SIF (Italian Physics Society) 2024, section 4: Geophysics and environmental physics - *An AI-powered CFD emulator for lava flow modeling.*

- AGLC prize 'Licio Cernobori' associated with the 42° Conference of Gruppo Nazionale di Geofisica della Terra Solida GNGTS, topic 1: Seismicity, Volcanoes, Data and Models - *An AI-based emulator to enhance SPH lava flows simulations.*

- Best Communication in 108° National Congress SIF (Italian Physics Society) 2022, section 4: Geophysics and environmental physics - *Spectral analysis in time and space of lava flows erupted by Etna (Italy), Cumbre Vieja (Spain) and Geldingadalir (Iceland) volcanoes.*

- First Prize Best Communication in 107° National Congress SIF (Italian Physics Society) 2021, section 4: Geophysics and environmental physics - *Machine learning approach for mapping lava flows from space.*

Associations

- IAVCEI member 2024-2028 - International Association of Volcanology and Chemistry of the Earth's Interior

- UMI member 2024-2025 - Italian Mathematical Union

- SIF member 2021-2025 - Italian Physics Society

- EGU member 2024-2025 - European Geosciences Union

- AGU member 2023 - American Geophysical Union

- AGU member 2021 - American Geophysical Union

Language skills

Native language	Italian
Second language	English, C2 level

Computer skills

Programming languages	Advanced (Python, MatLab, JavaScript, C, R)
Word processing	Advanced (Microsoft Word, Latex, OverLeaf)
Data processing	Advanced (Google Earth Engine, Google Colab, RStudio, MatLab, XPPAUT, OriginPro)
Spreadsheets	Advanced (Microsoft Excel)
Web surfing	Advanced
Multimedia	Advanced (Microsoft PowerPoint, ParaView)

Articles Published in JCR journals with Impact Factor

- **[A9] Amato, E.**, Zago, V. and Del Negro, C. (2024). "A physically consistent AI-based SPH emulator for computational fluid dynamics.", Nonlinear Engineering [2024 Journal Impact Factor: 8.3, 2024 Journal Ranking: Q2], 13(1), 20220359. https://doi.org/10.1515/nleng-2022-0359. [Current Google Scholar citations: 4]

- **[A8] Amato, E.**, Corradino, C., Torrisi, F., and Del Negro, C. (2023). "A Deep Convolutional Neural Network for Detecting Volcanic Thermal Anomalies from Satellite Images.", Remote Sensing 15(15) 3718 [2023 Journal Impact Factor: 5.0, 2023 Journal Ranking: Q1]. [Current Google Scholar citations: 14]

- **[A7] Amato, E.**, Corradino, C., Torrisi, F., and Del Negro, C.(2023). "Spectral analysis of lava flows: temporal and physicochemical effects.", Il Nuovo Cimento 46 C (2023) 144 [2023 Journal Impact Factor: 0.3, 2023 Journal Ranking: Q4], doi: 10.1393/ncc/i2023-23144-4. [Current Google Scholar citations: 4]

- **[A6]** Torrisi, F., **Amato, E.**, Corradino, C., Mangiagli, S., and Del Negro, C. (2022). "Characterization of Volcanic Cloud Components Using Machine Learning Techniques and SEVIRI Infrared Images.", Sensors 22(20) 7712 [2022 Journal Impact Factor: 3.9, 2022 Journal Ranking: Q1]. https://doi.org/10.3390/s22207712. [Current Google Scholar citations: 16]

- **[A5]** Corradino, C., **Amato, E.**, Torrisi, F.,and Del Negro, C. (2022) "Data-Driven Random Forest Models for Detecting Volcanic Hot Spots in Sentinel-2 MSI Images.", Remote Sensing 2022, 14, 4370 [2022 Journal Impact Factor: 5.0, 2022 Journal Ranking: Q1]. doi: 10.3390/rs14174370. [Current Google Scholar citations: 17]

- **[A4]** Calvari, S., Di Traglia, F., Ganci, G., Bruno, V., Ciancitto, F., Di Lieto, B., Gambino, S., Garcia, A., Giudicepietro, F., Inguaggiato, S., Vita, F., Cangemi, M., Inguaggiato, C., Macedonio, G., Mattia, M., Miraglia, L., Nolesini, T., Pompilio, M., Romano, P., Salerno, G. G., Casagli, N., Re, G., Del Carlo, P., Di Roberto, A., Cappello, A., Corradino, C., **Amato, E.**, Torrisi, F., Del Negro, C., Esposito, A. M., De Cesare, W., Caputo, T., Buongiorno, M. F., Musacchio, M., Romaniello, V., Silvestri, M., Marotta, E., Avino, R., Avvisati, G., Belviso, P. (2022). "Multi-parametric study of an eruptive phase comprising unrest, major explosions, crater failure, pyroclastic density currents and lava flows: Stromboli volcano, 1 December 2020–30 June 2021.", Frontiers in Earth Science [2022 Journal Impact Factor: 2.9, 2022 Journal Ranking: Q1], doi: 10.3389/feart.2022.899635. [Current Google Scholar citations: 13]

- **[A3]** Torrisi, F., **Amato, E.**, Corradino, C., and Del Negro, C. (2022). "The FastVRP automatic platform for the thermal monitoring of volcanic activity using VIIRS and SLSTR sensors: FastFRP to monitor volcanic radiative power.", Ann. Geophys [2022 Journal Impact Factor: 1.0, 2022 Journal Ranking: Q3]. https://www.earth-prints.org/handle/2122/16394. [Current Google Scholar citations: 6]

- **[A2] Amato, E.** (2022) "Machine learning and best fit approach to map lava flows from space.", Il Nuovo Cimento 45 C (2022) 80 [2022 Journal Impact Factor: 0.3, 2022 Journal Ranking: Q4]. doi:

10.1393/ncc/i2022-22080-1. [Current Google Scholar citations: 9]

- **[A1]** Corradino, C., **Amato, E.**, Torrisi, F., Calvari, S., and Del Negro, C. (2021) "Classifying Major Explosions and Paroxysms at Stromboli Volcano (Italy) from Space.", Remote Sensing 13(20) 4080 [2021 Journal Impact Factor: 5.3, 2021 Journal Ranking: Q1]. https://doi.org/10.3390/rs13204080. [Current Google Scholar citations: 19]

Other publications

- **[B15]** Zago, V., **Amato, E.**, Del Negro, C., (2024, September). "Potentialities of AI-Based Models for Lagrangian CFD." In 2024 IEEE 8th Forum on Research and Technologies for Society and Industry Innovation (RTSI). [Current Google Scholar citations: 0]

- **[B14]** (Abstract) **Amato, E.**, Zago, V., Del Negro, C. (2024). "Generalizability of AI-based Emulators for CFD Lagrangian methods.", (No. EGU24-563). [Current Google Scholar citations: 0]

- **[B13] Amato, E.** (2024). "Enhancing Computational Fluid Dynamics with Artificial Intelligence: an AI-based Smoothed Particle Hydrodynamics (SPH) Emulator for Lava Flow Modeling.", (Ph.D. thesis), https://iris.unipa.it/handle/10447/624418. [Current Google Scholar citations: 1]

- **[B12] Amato, E.** (2023). "How a CFD Emulator Can Resolve the Boundary Conditions in a Viscous Flow.", IEICE Proceedings Series, 76(B4L-42). [Current Google Scholar citations: 1]

- **[B11]** (Abstract) Del Negro, C., **Amato, E.**, Cariello, S., Corradino, C., Torrisi, F., and Zago, V. (2023). "An Artificial Intelligence-based platform for volcanic hazard monitoring.", (No. EGU23-15945). Copernicus Meetings. [Current Google Scholar citations: 1]

- **[B10]** (Abstract) Zago, V., **Amato, E.**, Cariello, S., Corradino, C., Torrisi, F., and Del Negro, C. (2023). "On Artificial Intelligence-based emulators of physical models to forecast the evolution of lava flows.", (No. EGU23-16305). Copernicus Meetings. [Current Google Scholar citations: 1]

- **[B9]** (Abstract) Corradino, C., Cariello, S., Torrisi, F., **Amato, E.**, Zago, V., and Del Negro, C. (2023). "Deep Learning for volcanic risk assessment.", (No. EGU23-15785). Copernicus Meetings. [Current Google Scholar citations: 0]

- **[B8]** (Abstract) Del Negro, C., **Amato, E.**, Corradino, C., Torrisi, F., & Ramsey, M. S. (2022, December). "Volcano Hazard Monitoring at Mount Etna Using Multispectral Satellite Imagery and Artificial Intelligence.", In AGU Fall Meeting Abstracts (Vol. 2022, pp. V51D-01). [Current Google Scholar citations: 0]

- **[B7]** (Poster) **Amato, E.**, Corradino, C., Torrisi, F., and Del Negro, C. (2022). "Combined Use of Satellite Data and Machine Learning for Detecting, Measuring, and Monitoring Active Lava Flows at Etna Volcano." Authorea Preprints. [Current Google Scholar citations: 3]

- **[B6]** (Poster) Torrisi, F., Folzani, F., Corradino, C., **Amato, E.**, and Del Negro, C. (2022). "Detecting Volcanic Ash Plume Components from Space using Machine Learning Techniques." Authorea Preprints. [Current Google Scholar citations: 5]

- **[B5]** Del Negro, C., **Amato, E.**, Torrisi, F., Corradino, C., Bucolo, M., and Fortuna, L. (2022, June). "Support Vector Machine for volcano hazard monitoring from space at Mount Etna." In 21st IEEE Mediterranean Electrotechnical Conference (IEEE MELECON), pp. 627-631, IEEE. [Current Google Scholar citations: 3]

- **[B4]** (Astract) Corradino, C., Pious, A., **Amato, E.**, Torrisi, F., Bucolo, M., Fortuna, L., and Del Negro, C., "Assessing the elements at risk in volcanic areas by combining deep convolutional neural network

and multispectral satellite images.", EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-4568, https://doi.org/10.5194/egusphere-egu22-4568, 2022. [Current Google Scholar citations: 1]

- **[B3] Amato, E.**, Corradino, C., Torrisi, F., and Del Negro, C. (2021, October) "Mapping lava flows at Etna Volcano using Google Earth Engine, open-access satellite data, and machine learning." 2021 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME), pp. 1-6, doi: 10.1109/ICECCME52200.2021.9591110. [Current Google Scholar citations: 10]

- **[B2]** Corradino, C., **Amato, E.**, Torrisi, F., and Del Negro, C. (2021, September) "Towards an automatic generalized machine learning approach to map lava flows." 2021 17th International Workshop on Cellular Nanoscale Networks and their Applications (CNNA), pp. 1-4, doi: 10.1109/ CNNA49188.2021.9610813. [Current Google Scholar citations: 10]

- **[B1]** (Abstract) Del Negro, C., Corradino, C., **Amato, E.**, Torrisi, F., and Calvari, S. (2021, April) "Machine learning classifiers for detecting and classifying major explosions and paroxysms at Stromboli volcano (Italy) using radar and optical satellite imagery." In EGU General Assembly Conference Abstracts (pp. EGU21-2496), https://ui.adsabs.harvard.edu/abs/2021EGUGA..23.2496D. [Current Google Scholar citations: 0]

Conference attended

2024/09 **VI conference A. Rittmann 2024**
Amato E., Zago V., Del Negro C. (2024). "An AI-based Lagrangian CFD emulator to model volcanic phenomena." (Oral presentation)

2024/09 **8° IEEE International forum on RTSI - Research and Technologies for Society and Industry 2024**
Zago, V., **Amato, E.**, Del Negro, C. (2024). "Potentialities of AI-based models for Lagrangian CFD."

2024/09 **110° national congress SIF**
Società Italiana di Fisica
Amato E., Zago V., Del Negro C. (2024). "An AI-powered CFD emulator for lava flow modeling." (Oral presentation)

2024/07 **II AMS-UMI International Joint Meeting**
UMI - Unione Matematica Italiana
AMS - American Mathematical Society

2024/06 **II UMI Meeting for doctoral students**
UMI - Unione Matematica Italiana
Amato E., Gambino G., Lombardo M.C., Zago V., Del Negro C. (2024). "Enhancing Computational Fluid Dynamics with Artificial Intelligence: an AI-based Smoothed Particle Hydrodynamics (SPH) Emulator for Lava Flow Modeling." (Oral presentation)

2024/05 **Workshop ESA 2024**
ESA-ECMWF Workshop on Machine Learning for Earth System Observation and Prediction - European Space Agency
Amato E., Zago V., Del Negro C.(2024). "An AI-based Computational Fluid Dynamics Emulator to simulate physical phenomena." (Poster)
Zago V., **Amato E.**, Del Negro C.(2024). "How AI-based emulators can broaden the application horizon of Lagrangian CFD." (Poster)

2024/04 **EGU 2024**

European Geoscience Union 2023
Amato E., Zago V., Del Negro C. (2024). "Generalizability of AI-based emulators for CFD Lagrangian methods." (Poster)

2024/02 **42° national congress GNGTS 2024**

Gruppo Nazionale di Geofisica della Terra Solida
Amato, E., Zago, V., Del Negro, C. (2024). "An AI-based emulator to enhance SPH lava flows simulations."(Oral presentation)

2023/12 **AGU 2023**

American Geophysical Union Fall Meeting 2023
Amato, E., Zago, V., Del Negro, C., Torrisi, F. (2023). "AI-based emulator for lava flows simulations." (Poster)

2023/09 **NOLTA 2023**

2023 International Symposium on Nonlinear Theory and Its Applications
Amato E. (2023). "How a CFD emulator can resolve the boundary conditions in a viscous flow" (Oral presentation)

2023/09 **109° national congress SIF**

Società Italiana di Fisica
Amato E., Zago V., Del Negro C. (2023). "AI-based emulators for fast simulations of lava flows" (Oral presentation)

2023/06 **SPHERIC Workshop 2023**

17th SPHERIC International Workshop 2023 - Smoothed Particle Hydrodynamics rEsearch and Engineering International Community
Amato, E., Zago, V., Corradino, C., Del Negro, C.(2023). "How AI can speed up SPH simulations" (Oral presentation)

2023/05 **Workshop ESA 2023**

International Workshop on High-Resolution Thermal EO - European Space Agency
Amato, E., Corradino, C., Torrisi, F., Del Negro, C.(2023). "A Deep Convolutional Neural Network for detecting volcanic thermal anomalies from satellite images" (Oral presentation)

2023/04 **EGU 2023**

European Geoscience Union 2023
Zago, V., **Amato, E.**, Cariello, S., Corradino, C., Torrisi, F., Del Negro, C. (2023). "On Artificial Intelligence-based emulators of physical models to forecast the evolution of lava flows" (Poster)

2022/09 **V conference A. Rittmann 2022**

Amato E., Corradino C., Torrisi F., Del Negro C. (2022). "Tracking lava flows during the 2021 Mt. Etna eruptions using Random Forest Machine Learning algorithm" (Oral presentation)

2022/09 **108° national congress SIF**

Società Italiana di Fisica
Amato E., Corradino C., Torrisi F., Del Negro C. (2022). "Spectral analysis in time and space of lava flows erupted by Etna (Italy), Cumbre Vieja (Spain) and Geldingadalir (Iceland) volcanoes" (Oral presentation)

2022/06 **IEEE MELECON 2022**

Mediterranean Electrotechnical Conference
Del Negro C., **Amato E.**, Torrisi F., Corradino C., Bucolo M., Fortuna L. (2022). "Support Vector Machine for volcano hazard monitoring from space at Mount Etna"(Online oral presentation)

2022/05 **LPS 2022 - ESA**

Living Planet Symposium 2022 - European Space Agency
Amato E., Corradino C., Torrisi F., Lombardo M. C., Del Negro C. (2022). "Lava Flow Hazard Monitoring from Space combining Artificial Intelligence and Cloud Computing" (ID: 65438) (Poster)

2022/05 **EGU 2022**

European Geoscience Union 2022
Corradino, C., Pious, A., **Amato, E.**, Torrisi, F., Bucolo, M., Fortuna, L., Del Negro, C., (2022) "Assessing the elements at risk in volcanic areas by combining deep convolutional neural network and multispectral satellite images"

2021/12 **AGU 2021**

American Geophysical Union Fall Meeting 2021
Amato, E., Corradino, C., Torrisi, F., Del Negro, C. (2022). "Combined Use of Satellite Data and Machine Learning for Detecting, Measuring, and Monitoring Active Lava Flows at Etna Volcano." (Online poster)

2021/10 **ICECCME 2021**

The International Conference on Electrical, Computer, Communications and Mechatronics Engineering
Amato, E., Corradino, C., Torrisi, F., Del Negro, C. (2021) "Mapping lava flows at Etna Volcano using Google Earth Engine, open-access satellite data, and machine learning." (Online oral presentation)

2021/09 **17° IEEE International Workshop on CNNA 2021**

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Other information

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Date 03 March 2025

Signature Eleonora Amato