

## AUDITORIUM (09.00–10.45)

### S04. BEHIND THE SCENES: ADVANCED METHODOLOGIES TO UNRAVEL THE ARCHITECTURE, DYNAMICS AND TIMESCALES OF VOLCANIC PLUMBING SYSTEMS

Conveners: *Simone Costa (UniPI), Maurizio Petrelli (UniPG), Marisa Giuffrida (UniCT), Gabriele Lanzafame (UniCT), Andrea Cannata (UniCT)*

#### 09.00–09.15

Determining the state of activity of transcrustal magmatic systems and their volcanoes

*Guido Giordano, Luca Caricchi*

#### 09.15–09.45

[KEYNOTE] Magma recharge and mush disruption control basaltic paroxysmal eruptions: the summer 2019 eruptions at Stromboli volcano (Italy)

*Chiara Maria Petrone, Silvio Mollo, Ralf Gertisser, Yannick Buret, Piergiorgio Scarlato, Elisabetta Del Bello, Daniele Andronico, Ben Ellis, Alessio Pontesilli, Gianfilippo De Astis*

#### 09.45–10.00

Thermal and SO<sub>2</sub> measurements reveal shallow magmatic dynamics at Stromboli volcano.

*Marco Laiola, Dario Delle Donne, Marcello Bitetto, Diego Coppola, Giorgio Lacanna, Marco Pistolesi, Alessandro Aiuppa, Maurizio Ripepe*

#### 10.00–10.15

Image-assisted analysis for unraveling textural and chemical features of volcanic rocks: A case study from the 2019 paroxysmal eruptions of Stromboli

*Roberto Visalli, Marisa Giuffrida, Marco Viccaro*

#### 10.15–10.30

Kinetic crystallization of a high-K basalt melt undercooled in laboratory: Implications for the modeling of open-conduit dynamics at Stromboli (Aeolian Islands, Italy)

*Fabio Colle, Simone Costa, Matteo Masotta, Silvio Mollo, Patrizia Landi, Alessio Pontesilli, Stefano Peres, Thomas Griffiths, Lucia Mancini*

#### 10.30–10.45

Long-term precursors to large explosive eruptions of Vesuvius: evidence from the opening phase of the Avellino Plinian eruption

*Alessia Falasconi, Raffaello Cioni, Chiara Maria Petrone, Roberto Sulpizio*

## AULA1 (09.00–10.45)

### S01. VOLCANO GEOLOGY, STRATIGRAPHY, CHRONOLOGY AND PALEOMAGNETISM TO UNRAVEL THE ERUPTIVE BEHAVIOR AND RELATED HAZARDS

Conveners: *Gilda Risica (UniFI), Arianna Beatrice Malaguti (UniURB), Gino González (UniBA), Federico Lucchi, (UniBO)*

#### 09.00–09.15

The activity of Italian volcanoes represented in ancient maps and frescoes from Middle Age to Renaissance

*Roberto Scandone, Lisetta Giacomelli*

## 09.15–09.30

Timescale of emplacement and rheomorphism of the Green Tuff ignimbrite (Pantelleria, Italy): a multidisciplinary approach

*Alex Scarani, Carmela Federica Faranda, Alessandro Vona, Guido Giordano, Claudia Romano, Fabio Speranza, Silvio Giuseppe Rotolo*

## 09.30–09.45

The crucial role of the Cyclopean Islands (Acitrezza, Catania) to deepen the early stage of Mt. Etna volcanism

*Rosa Anna Corsaro, Stefano Branca, Gianfranco Di Vincenzo, Lucia Miraglia*

## 09.45–10.00

Paleomagnetic dating of prehistoric flank eruptions from the SE lower slopes of Etna volcano

*Andrea Magli, Stefano Branca, Fabio Speranza, Guido Giordano, Mauro Coltelli, Arianna Beatrice Malaguti*

## 10.00–10.15

The chronicle of a small crater collapse at Stromboli: volcanological relevance of the 19 May 2021 ash cloud deposit

*Giuseppe Re, Massimo Pompilio, Paola Del Carlo, Alessio Di Roberto*

## 10.15–10.30

Resumption of the sustained column during the post-Plinian phase of the 79 AD Vesuvius eruption

*Giulia Chiominto, Claudio Scarpati, Annamaria Perrotta, Lorenzo Fedele, Ileana Santangelo*

## 10.30–10.45

Stratigraphy, lithofacies variations and transport and emplacement mechanisms of the most destructive PDC of the 79 AD Vesuvius eruption

*Ileana Santangelo, Claudio Scarpati, Annamaria Perrotta, Lorenzo Fedele, Giulia Chiominto*

## AULA 2 (09.00–10.45)

### **S16. VOLCANIC HAZARD AND RISK: COMMUNICATION, INFORMATION AND TRAINING DURING QUIESCENCE, UNREST AND ERUPTION TIMES**

Conveners: *Rosella Nave (INGV-OV), Vincenza Maiolino (INGV-OE), Sara Barsotti (IMO), Marco Neri (INGV-OE), Chiara Cristiani (DPC)*

## 09.00–09.15

Emergent tools to promote understanding of natural hazards

*Danilo Reitano, Susanna Falsaperla*

## 09.15–09.30

Immersive Virtual Reality: a novel approach for geological exploration in volcanic areas

*Elena Russo, Fabio Luca Bonali, Alessandro Tibaldi, Noemi Corti, Federico Pasquaré Mariotto, Ugo Becciani, Fabio Vitello*

## 09.30–09.45

Promoting interest in geological sites among the public via a field guide and virtual reality of Aci Castello and Aci Trezza (Sicily)

*Joshua Brown, Massimo Cantarero, Domenico Catalano, Rosa Anna Corsaro, Emanuela De Beni*

09.45–10.00

Elica, takes children through reading into the world of science and conscious technology  
*Massimo Cantarero, Emanuela De Beni, Maria Pia Basso*

10.00–10.15

Scientific communication and outreach in the schools: a strategy for the better comprehension of natural risks  
*Vincenza Maiolino, Gruppo di lavoro informazione e divulgazione*

10.15–10.30

Experiential learning exercises in small communities: the example of the elementary school of Vulcano Island, Italy  
*Costanza Bonadonna*

10.30–10.45

An on-line form to promote citizen science: INGV, Osservatorio Vesuviano web form experience  
*Rosa Nappi, Rosella Nave, Giovanni Scarpato*

## AUDITORIUM (11.15–13.30)

### [Continua] **S04. BEHIND THE SCENES: ADVANCED METHODOLOGIES TO UNRAVEL THE ARCHITECTURE, DYNAMICS AND TIMESCALES OF VOLCANIC PLUMBING SYSTEMS**

Conveners: *Simone Costa (UniPI), Maurizio Petrelli (UniPG), Marisa Giuffrida (UniCT), Gabriele Lanzafame (UniCT), Andrea Cannata (UniCT)*

11.15–11.30

New insights into the recent magma dynamics under Campi Flegrei caldera (Italy) from petrological and geochemical evidence  
*Gianmarco Buono, Antonio Paonita, Lucia Pappalardo, Stefano Caliro, Anna Tramelli, Giovanni Chiodini*

11.30–11.45

A data driven approach based on mineral chemistry unveils magma dynamics of long-lasting, low-intensity volcanic activity  
*Simone Costa, Luca Caricchi, Marco Pistolesi, Anna Gioncada, Matteo Masotta, Costanza Bonadonna, Mauro Rosi*

11.45–12.00

Physical constraints and magma dynamics of Mt. Etna rift systems  
*Pier Paolo Giacomoni, Matteo Masotta, Simone Costa, Gabriele Lanzafame, Eleonora Braschi*

12.00–12.15

Quantifying magma ascent velocity at basaltic volcanoes and its role on determining the explosivity of eruptions  
*Francesco Zuccarello, Federica Schiavi, Marco Viccaro*

12.15–12.30

Relating eruptive dynamics to mineral chemistry variability during the February-March 2021 sequence of lava fountains (South-East Crater, Mt. Etna)  
*Alessandro Musu, Rosa Anna Corsaro, Oliver Higgins, Corin Jorgenson, Maurizio Petrelli, Luca Caricchi*

## 12.30–12.45

Novel insights into dynamics and timescales of volcanic processes from magma storage at deep crustal levels to eruption: the contribution of synchrotron X-ray diffraction, radiography and computed microtomography

*Barbara Bonechi, Margherita Polacci, Vincenzo Stagno, Fabio Arzilli, Giuseppe La Spina, Rostislav Hrubciak, Cristina Perinelli, Mario Gaeta, Mike Burton*

## 12.45–13.00

Constraining models of magma ascent with ground deformation data: an application to Etna eruptions

*Emanuele Caruso, Antonio Costa, Giovanni Macedonio, Alessandro Bonaccorso, Gilda Currenti*

## 13.00–13.15

The Marsili plumbing system and its magmatic evolution

*Emanuela Gennaro, Gianluca Iezzi, Luca Cocchi, Guido Ventura*

## 13.15–13.30

Pre-eruptive magmatic processes leading to the 1650 CE explosive eruption at the Kolumbo submarine volcano, Greece

*Filippo Mastroianni, Iacopo Fantozzi, Alessandro Bragagni, Chiara Maria Petrone, Georgios E. Vougioukalakis, Eleonora Braschi, Lorella Francalanci*

## AULA 1 (11.15–12.30)

[Continua] **S01. VOLCANO GEOLOGY, STRATIGRAPHY, CHRONOLOGY AND PALEOMAGNETISM TO UNRAVEL THE ERUPTIVE BEHAVIOR AND RELATED HAZARDS**

Conveners: *Gilda Risica (UniFI), Arianna Beatrice Malaguti (UniURB), Gino González (UniBA), Federico Lucchi, (UniBO)*

## 11.15–11.30

Deadly thermal impact of detached ash cloud surges in 79CE at Herculaneum: a new hazard scenario at Vesuvius Volcano.

*Alessandra Pensa, Guido Giordano, Sveva Corrado, Pier Paolo Petrone*

## 11.30–11.45

Stratigraphy and eruptive dynamics of the Neapolitan Yellow Tuff, Campi Flegrei, Italy

*Gino Gonzalez, Roberto Sulpizio, Antonio Costa, Federico Lucchi, Roberto Isaia, Biagio Giaccio, Jacopo Natale, Daniela Mele, Lorenzo Monaco*

## 11.45–12.00

The Campanian Ignimbrite of southern Italy: a fissure eruption or caldera-forming event?

*Giuseppe De Natale, Christopher R.J. Kilburn, Giuseppe Rolandi, Claudia Troise, Renato Somma, Alessandro Fedele, Gianfranco Di Vincenzo, Roberto Rolandi, Judith Woo*

## 12.00–12.15

A new morphology-based classification scheme for intermediate to silicic lava flows: application to the Central Andean Volcanic Zone

*Jose Pablo Sepulveda, Raffaello Cioni, Alvaro Aravena*

## 12.15–12.30

New insights on the intimate structure of natural volcanic aggregates through X-ray micro-tomography

*Pietro Gabellini, Raffaello Cioni, Eduardo Rossi, Costanza Bonadonna, Marco Pistolesi, Lukas Baumgartner, Benita Putlitz*

## AULA 1 (12.30–13.30)

### **S10. PROXIMAL AND DISTAL VOLCANIC MONITORING USING REMOTE SENSING SYSTEMS: NOVEL PRACTICES, APPLICATIONS AND INTEGRATIONS**

Conveners: *Stefano Corradini (INGV-ONT), Gaetana Ganci (INGV-OE), Luca Merucci (INGV-ONT), Giuseppe Salerno (INGV-OE), Letizia Spampinato (INGV-OE)*

#### 12.30–12.45

Remote sensing of volcanic clouds: the legacy of Prof. Frank Silvio Marzano

*Simona Scollo, Costanza Bonadonna, Stefano Corradini, Luigi Mereu, Maurizio Ripepe*

#### 12.45–13.00

Spatio-temporal evolution of SO<sub>2</sub> fluxes detected from a network of two ultraviolet cameras, and insights on the magma degassing (Stromboli Volcano, Sicily)

*Dario Delle Donne, Eleonora Lo Coco, Marcello Bitetto, Francesco Paolo La Monica, Giorgio Lacanna, Joao Lages, Maurizio Ripepe, Giancarlo Tamburello, Alessandro Aiuppa*

#### 13.00–13.15

Integrating Ground-based and Satellite Volcano Monitoring techniques applied to gas emissions from fumarole vents and from the ground at La fossa Caldera (Vulcano, Aeolian Islands, Italy)

*Iole Serena Diliberto, Giuseppe Bilotta, Annalisa Cappello, Roberto D'Aleo, Vincenzo Francofonte, Andrea Mastroli, Giuseppe Passafiume, Gaetana Ganci*

#### 13.15–13.30

Integrating mineralogical and geomorphological analyses: a first application to the highly active hydrothermal discharge area of Pisciarelli in the Campi Flegrei volcanic field (Italy)

*Teresa Caputo, Angela Mormone, Ermanno Marino, Giuseppina Balassone, Monica Piochi*

## AULA 2 (11.15–12.00)

### **[Continua] S16. VOLCANIC HAZARD AND RISK: COMMUNICATION, INFORMATION AND TRAINING DURING QUIESCENCE, UNREST AND ERUPTION TIMES**

Conveners: *Rosella Nave (INGV-OV), Vincenza Maiolino (INGV-OE), Sara Barsotti (IMO), Marco Neri (INGV-OE), Chiara Cristiani (DPC)*

#### 11.15–11.30

Visualizing design thinking for volcanic risk communication

*Jorge E. Romero, Francisca Vergara-Pinto*

#### 11.30–11.45

Communicating volcanic hazard during the 2021 Fagradalsfjall eruption in Iceland: from science to operations

*Sara Barsotti, Michelle Maree Parks, Melissa Anne Pfeffer, Bergrún Arna Óladóttir, Gro B.M. Pedersen, Kristín Jónsdóttir, Björn Oddsson*

#### 11.45–12.00

General discussion

## AULA 2 (12.00–13.30)

### **S07. TOWARDS A MULTIDISCIPLINARY APPROACH TO UNDERSTAND THE ORIGIN AND DYNAMICS OF PAROXYSMS AT BASALTIC VOLCANOES**

Conveners: *Ida Di Carlo (ISTO), Massimo Pompilio (INGV-PI), Michel Pichavant (ISTO), Nolwenn Le Gall (UCL)*

#### 12.00–12.15

Volcanic gas constraints on the trigger mechanisms and incubation timescales of basaltic paroxysms

*Alessandro Aiuppa, Marcello Bitetto, Dario Delle Donne, Francesco La Monica, Giovanni Lo Bue Trisciuzzi, Giancarlo Tamburello*

#### 12.15–12.30

Pre-explosive ground deformations induced by normal Strombolian and paroxysmal activities at Stromboli volcano

*Ayumu Ishikawa, Takeshi Nishimura, Giorgio Lacanna, Hiroshi Aoyama, Ryohei Kawaguchi, Eisuke Fujita, Taishi Yamada, Takahiro Miwa, Maurizio Ripepe*

#### 12.30–12.45

The 19 July 2020 eruption at Stromboli: insights into the magmatic system feeding high-energy activity at an open-conduit basaltic volcano

*Marija Voloschina, Nicole Métrich, Antonella Bertagnini, Paola Marianelli, Alessandro Aiuppa, Maurizio Ripepe, Marco Pistolesi*

#### 12.45–13.00

The 2019 basaltic Vulcanian eruptions of Stromboli

*Guido Giordano, Alessandro Vona, Alessandro Frontoni, Teresa Oreade Grillo, Riccardo Russo, Gerardo Carrasco Nunez, Gianfilippo De Astis*

#### 13.00–13.15

Precursors of paroxysmal activity at Stromboli volcano through machine learning applied to seismo-acoustic features

*Flora Giudicepietro, Sonia Calvari, Luca D'Auria, Federico Di Traglia, Giovanni Macedonio, Teresa Caputo, Walter De Cesare, Gaetana Ganci, Marcello Martini, Massimo Orazi*

#### 13.15–13.30

General discussion

## AUDITORIUM (15.00–16.00)

### [Continua] **S04. BEHIND THE SCENES: ADVANCED METHODOLOGIES TO UNRAVEL THE ARCHITECTURE, DYNAMICS AND TIMESCALES OF VOLCANIC PLUMBING SYSTEMS**

Conveners: *Simone Costa (UniPI), Maurizio Petrelli (UniPG), Marisa Giuffrida (UniCT) Gabriele Lanzafame (UniCT), Andrea Cannata (UniCT)*

#### 15.00–15.15

Magma mingling and crystal recycling inside a shallow magma chamber during the last phase of magmatic activity at Nisyros volcano (Greece)

*Eleonora Braschi, Francesca Giannetti, Andrea Orlando, George Vougioukalakis, Lorella Francalanci*

15.15 – 15.30

Spatio-temporal reconstruction of the magma plumbing system of Fogo volcano, Cape Verde archipelago  
*Francesco Maria Lo Forte, Alessandro Aiuppa, Silvio G. Rotolo, Vittorio Zanon*

15.30 – 15.45

Modulation of a plumbing system by ice cover fluctuations - The Pleiades volcanic complex, Antarctica  
*Irene Rocchi, Alice Tomassini, Matteo Masotta, Maurizio Petrelli, Mónica Agreda Lopez, Sergio Rocchi*

15.45 – 16.00

Mafic recharge dynamics in Middle Triassic feeding systems of Dolomites (Southern Alps): comparison with active volcanoes  
*Nicolò Nardini, Federico Casetta, Theodoros Ntaflos, Alberto Zanetti, Massimo Coltorti*

## AUDITORIUM (16.00 – 17.00)

### S08. NEW PERSPECTIVES IN DECIPHERING MANTLE GEOCHEMICAL, MINERALOGICAL AND SEISMIC HETEROGENEITIES

Conveners: *Antonio Caracausi (INGV-PA), Jabrane Labidi (IPGP), Giulia Marras (UniRM1), Vincenzo Stagno (UniRM1)*

16.00 – 16.15

New Inferences on Magma Dynamics in Melilitite-Carbonatite Volcanoes: The Case Study of Mt. Vulture (Southern Italy)  
*Gabriele Carnevale, Antonio Caracausi, Silvio Rotolo, Michele Paternoster, Vittorio Zanon*

16.15 – 16.30

The nature of the lithospheric mantle under La Palma (Canary Islands): New data on noble gases and CO<sub>2</sub> isotopes from the 2021 Cumbre Vieja eruption  
*Andres Libardo Sandoval Velasquez, Andrea Luca Rizzo, Federico Casetta, Theodoros Ntaflos, Alessandro Aiuppa, Mar Alonso, Eleazar Padrón, Matthew Pankhurst, Nemesio M. Pérez*

16.30 – 16.45

Multi-stage oxidizing events recorded by peridotite mantle xenoliths from the Hyblean Plateau: evidence from combined measurements of Fe<sup>3+</sup> in spinel, noble gases, and fluid inclusions composition  
*Giulia Marras, Vincenzo Stagno, Giovanni Battista Andreozzi, Antonio Caracausi, Valerio Cerantola, Maria Luce Frezzotti, Michele Zacchigna, Cristina Perinelli*

16.45 – 17.00

Application of synchrotron micro-Mössbauer and micro-FTIR spectroscopy to analyze redox-driven processes recorded by mineral and melt inclusions  
*Giulia Marras, Gabriele Carnevale, Antonio Caracausi, Silvio Rotolo, Vincenzo Stagno*

## AULA1 (15.00 – 17.00)

### [Continua] S10. PROXIMAL AND DISTAL VOLCANIC MONITORING USING REMOTE SENSING SYSTEMS: NOVEL PRACTICES, APPLICATIONS AND INTEGRATIONS

Conveners: *Stefano Corradini (INGV-ONT), Gaetana Ganci (INGV-OE), Luca Merucci (INGV-ONT), Giuseppe Salerno (INGV-OE), Letizia Spampinato (INGV-OE)*

15.00–15.15

Quantifying thermal emission from open vent multicraters system using a multisensory space-based approach: Stromboli and Etna case studies

*Francesco Massimetti, Diego Coppola, Marco Laiolo, Adele Campus, Corrado Cigolini, Maurizio Ripepe*

15.15–15.30

Integrated use of satellite instruments for real-time monitoring of Etna emissions

*Stefano Corradini, Luca Merucci, Lorenzo Guerrieri, Dario Stelitano*

15.30–15.45

Doppler Radar Monitoring of Mt. Etna Explosive Activity

*Giuseppe Giammello, Marco Firetto Carlino, Mauro Coltelli*

15.45–16.00

Detection and Parametrization of Volcanic Plumes from Visible-Wavelength Images with PlumeTraP: Application to Plumes Associated with the 2018 Sabancaya Eruption, Perú

*Riccardo Simionato, Paul A. Jarvis, Eduardo Rossi, Costanza Bonadonna*

16.00–16.15

A new radar-based statistical parametric model to quantify the mass eruption rate and uncertainty in various wind conditions

*Luigi Mereu, Simona Scollo, Alexander Garcia, Laura Sandri, Costanza Bonadonna, Frank Silvio Marzano*

16.15–16.30

Real-time estimation of Mass Eruption Rates of tephra plumes at Mt. Etna from fixed-pointing Doppler radar

*Frank Donnadieu, Valentin Freret-Lorgeril, Michele Prestifilippo, Mauro Coltelli, Patrick Fréville, Claude Hervier, Simona Scollo, Yannick Guéhenneux, Philippe Cacault*

16.30–16.45

Analysis of high-resolution DEMs from UAS to estimate the distribution of ash-fall out and ballistics from Etna's 2021 paroxysmal events

*Cristina Proietti, Massimo Cantarero, Emanuela De Beni*

16.45–17.00

General discussion

## AULA 2 (15.00–17.00)

### S14. VOLCANIC RISK MANAGEMENT IN INHABITED AREAS

Conveners: *Antonio Colombi (DPC), Chiara Cristiani (DPC), Eugenio Privitera (INGV-OE)*

15.00–15.15

[INVITED] Relative seismic and tsunami risk assessment: the Stromboli Island (UNESCO site, Italy) case study

*Agnese Turchi*



## 15.15 – 15.30

The 2021 eruption in La Palma Island (Canary Islands, Spain): Volcano monitoring, eruptive processes and crisis management  
*Meletlidis Stavros, IGN Volcano Monitoring Group, Directorate General of Security and Emergencies of Canary Government*

## 15.30 – 15.45

Integrating hazard, exposure, vulnerability and resilience for risk and emergency management in a volcanic context: the ADVISE model  
*Costanza Bonadonna, Corine Frischknecht, Scira Menoni, Mauro Rosi, Sebastien Biass, Chris E. Gregg, Ali Asgary, Marco Pistolesi, Antonio Ricciardi, Chiara Cristiani*

## 15.45 – 16.00

Emergency management and risk reduction measures during the Vulcano (Aeolian Islands) unrest 2021-2022  
*Antonio Ricciardi, Antonella Scalzo, Chiara Cristiani, Massimo Durantini, Domenico Fiorito*

## 16.00 – 16.15

Continuous monitoring of soil CO<sub>2</sub> flux and air CO<sub>2</sub> concentration at Vulcano during 2021  
*Sergio Gurrieri, Roberto M.R. Di Martino, Marco Camarda, Vincenzo Francofonte*

## 16.15 – 16.30

Response of the civil protection office of the town of Pozzuoli to the unrest of the Campi Flegrei caldera  
*Mauro Rosi, Annamaria Criscuolo*

## 16.30 – 16.45

Buildings vulnerability under effect of bradyseism phenomena: Campi Flegrei case study  
*Daniela De Gregorio, Francesca Linda Perelli, Stefano Nardone, Giulio Zuccaro*

## 16.45 – 17.00

Approaches at regional and National levels to prevent and mitigate the risk of gas hazards in the inhabited areas of Rome, Ciampino and Fiumicino municipalities (Lazio Region).  
*Antonio Colombi, Giacomo Catalano, †Antonio Gerardi*