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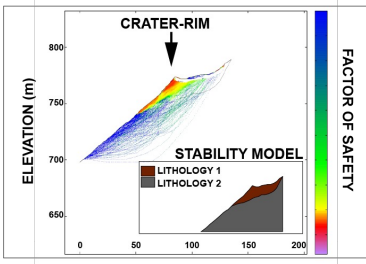

International school on Hot Rock Avalanches

"Experimental, analytical and numerical approach to volcanic rock failure and deposit-derived PDCs formation"

Rome, 3–6 June 2024

Aim: Deposit-derived pyroclastic density currents (PDCs) result from the collapse of glowing volcanic materials and lava flows, generating small-volume avalanches that are potentially dangerous to communities living near volcanoes and to tourists. Whether resulting from the collapse of the crater rim or the failure of hot deposits on the flanks of volcanic cones, deposit-derived PDCs often arise from the remobilisation of proximal, poorly welded volcaniclastic agglutinates. To improve the hazard assessment associated with these phenomena, it is therefore necessary to improve the understanding of hot rock failure, considering the role and effect of various predisposing factors (i.e. lithological features; topographic variations) and triggers (i.e. slope overloading, magma thrust). All these aspects, if well understood, can be effectively monitored using advanced analytical techniques and appropriate numerical modelling to anticipate hot rock failure and the development of glowing avalanches. Students will be introduced to an integrated approach involving experimental, analytical and numerical methods to understand the phenomena underlying the failure of glowing volcanoclastites. Emphasis will be placed on experimental studies of welding processes and the relationship between porosity and welding rate. Basic principles of failure mechanisms of volcanic rocks and estimation of their mechanical properties are presented. In addition, basic concepts of slope stability analysis are introduced, with particular emphasis on slopes composed of volcaniclastic deposits and lava rocks, taking into account mechanical heterogeneities.

Official contact: federico.ditraglia@ingv.it

Organization: The course is structured with concise theoretical and practical lectures. Participants will have the opportunity to visit the Experimental Volcanology laboratories at Roma Tre University. Practical demonstrations will illustrate methods for assessing the mechanical properties of rocks, specifically focusing on volcanic rocks. Additionally, software applications for evaluating slope stability in volcanic regions will be demonstrated.
Target: The target of the school will be primarily PhD students and Early Career Scientists, especially those with background in volcanology, engineering geology, slope stability analysis. Alternatively - if available - graduates and undergraduates in geological/geophysical and similar disciplines. Maximum number of participants: 25
When: 3–6 June 2024
Where: Department of Science, Roma Tre University – L.go S.L. Murialdo 1 (https://maps.app.goo.gl/9Thpp9DsbE1BD53J7)
Fees and registration: There is no registration fee. Room and board at the expense of the participants. Insurance coverage from the host institution requested.
Registration: Application form to be completed on the Associazione Italiana di Vulcanologia (AIV) website: https://www.aivulc.it/iscrizioniav-international_school_on_hot_rock_avalanches__application_form/365_507/it/
Application deadline: 8th Apr 2024; **Participant selection**: 22th Apr 2024; **Confirmation and program**: 30th Apr 2024

Organizing commitee:

Federico Di Traglia, INGV- OV (federico.ditraglia@ingv.it)

Emanuele Intrieri, Università degli Studi di Firenze (emanuele.intrieri@unifi.it)

Claudia Romano, Università degli Studi "Roma Tre" - (claudia.romano@uniroma3.it)

Alessandro Vona, Università degli Studi "Roma Tre" (alessandro.vona@uniroma3.it)

Danilo Di Genova, CNR-ISSMC (danilo.digenova@cnr.it)

Piano Nazionale di Ripresa e Resilienza Missione 4 - Componente 2. Titolo del progetto: "Causes and consequences of deposit-derived pyroclastic density currents" (P20222BP7J). **Codice CUP:** *F53D23012340001.*
Soggetto attuatore: DIPARTIMENTO DI SCIENZE, UNIVERSITA' *DEGLI STUDI ROMA TRE,* Viale G. Marconi, 446, CAP *00146*

Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
ROMA TRE UNIVERSITÀ DEGLI STUDI SCIENZE Dipartimento di Eccellenza
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA
UNIVERSITÀ DEGLI STUDI FIRENZE DST DIPARTIMENTO DI SCIENZE DELLA TERRA ECCELLENZA 2023-2027
Da un secolo, oltre.
AIV Associazione Italiana di Vulcanologia