IMPROVE European Training Network

Final Conference

July, 16-17, 2025 - Rome, INGV Headquarters

www.improve-etn.eu

The Marie Sklodowska-Curie European Training Network “Innovative Multi-disciplinary European Research training network on VolcanoEs” (MSCA-ETN IMPROVE) is a project funded by the European Commission under the Horizon 2020 Framework Programme.

IMPROVE is a multi-disciplinary network of European Research Institutes and Small-Medium Enterprises. In IMPROVE, 15 Early Stage Researchers are trained to innovative research in volcano science extending across the academia-industry bridge, and including cooperative work, leadership skills, and independent thinking. Two volcanic areas provide ideal cases for relevant scientific advance and training-through-research: Mount Etna in Sicily, one of the most monitored volcanoes in the world and the place where to extend our understanding of active volcano dynamics; and the Krafla caldera in Iceland, site of a large geothermal circulation system largely exploited for energy production, and of a shallow

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Graphic design P. Pantani

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PROGRAM: KRAFLA - July 16

9:00 - 9:30	Welcome and registration
9:30 - 9:45	Welcome by the IMPROVE Coordinator and the INGV President
	Chair: Patricia Fehrentz
9:45 - 10:00	Intro talk on Krafla (Magnus Tumi Gudmundsson, Univ. of Iceland)
10:00 - 10:25	Reflection seismic imaging at Krafla volcano using local earthquakes (Regina Maaß)
10:25 - 10:55	Coffee Break
10:55 - 11:20	Multi-scale imaging and monitoring of Krafla volcano, N-E Iceland (Elisabeth Glück)
11:20 - 11:45	Shallow crustal density distribution and its evolution at the Krafla volcanic system (Ana Martinez Garcia)
11:45 - 12:10	Crustal deformation modelling in the Krafla area based on realistic Earth properties (Yilin Yang)
12:10 - 12:35	Subsurface mass modelling at Theistareykir geothermal field, Iceland, using hybrid gravimetry (Beatrice Giuliante)
	Chair: Regina Maass
12:35 - 13:00	Thermal response of a geothermal system to intrusion and rifting events: The Krafla fires in 1975-1984 (Patricia Fehrentz)
13:00 - 14:15	Lunch
14:15 - 14:45	Guided visit to the HP-HT Laboratories of INGV
15:00 - 15:25	Evolution of permeability in Krafla's geothermal field and associated seismo-acoustic patterns (Roberto Davoli)
15:25 - 15:50	Geochemical prospecting and geothermal circulation modelling at Krafla (Giulio Bini)
15:50 - 16:15	Numerical simulations of the evolution of the shallow magmatic body at Krafla (Gabriel Girela Arjona)
16:15 - 16:45	Coffee Break
16:45 - 17:15	Perspectives and challenges for further academia-industry cooperation on high-T geothermal energy (Bjarni Palsson, Landswirkjun)
	Chair: Maurice Weber, Joseph Carthy
17:15 - 18:00	General discussion on Krafla
20:00	Social dinner

PROGRAM: ETNA - July 17

9:30 - 9:45	Welcome
	Chair: Elisabeth Glück
9:45 - 10:00	Intro talk on Etna (Giuseppe Puglisi, INGV - CT)
10:00 - 10:25	At the origin of the Etna dynamics: insight on the volcano behavior by integrating in-situ and satellite-based measurements (Alejandra Vásquez Castillo)
10:25 - 10:50	Implications for non-fluid driven triggering of volcanic high-frequency tremor on Mount Etna (Maurice Weber)
10:50 - 11:20	Coffee Break
11:20 - 11:45	Active degassing of mafic magmas from remote multispectral observations (Clothilde Biensan)
	Chair: Beatrice Giuliante
11:45-12:10	Machine learning driven analysis of volcanic datasets (Joseph Carthy)
12:10 - 12:35	Linking intrusion dynamics to surface displacement using analogue models (Andrew Mitchell)
12:35 - 13:00	Numerical simulations of magma and rock dynamics and definition of ground deformation patterns diagnostic of deep magmatic movements at Mount Etna (Owen McCluskey)
13:00 - 14:15	Lunch
14:15 - 14:45	Guided visit to the INGV Seismic Control Room
15:00 - 15:30	WS-T-TAB Automated gas-steam ratio measurement system: An example of cooperation between accademia and industry in the development of new measurement systems in the earth sciences (Leonardo Coppo, West Systems s.r.l.)
	Chair: Roberto Davoli, Yilin Yang
15:30 - 16:15	General discussion on Etna
16:15 - 16:45	Coffee Break
	Chair: Paolo Papale
16:45 - 17:00	External Advisory Board
17:00 - 17:20	Concluding remarks & Farewell

POSTERS BY EACH EARLY CAREER RESEARCHER, ILLUSTRATING THEIR SCIENTIFIC ACHIEVEMENTS, WILL BE ON DISPLAY FOR THE ENTIRE DURATION OF THE CONFERENCE