

## Report on the AIQUA 2013 Summer School "The impact of volcanic eruptions on landscape, environment and human settlements (multidisciplinary perspectives: geological, archaeological and biological)"

Mauro A. Di Vito<sup>1</sup>, Giovanni Zanchetta<sup>2</sup>, Sandro de Vita<sup>1</sup>, Paola Romano<sup>3</sup>, Pierfrancesco Talamo<sup>4</sup>

<sup>1</sup> Istituto Nazionale di Geofisica e Vulcanologia, sezione di Napoli Osservatorio Vesuviano, Naples, Italy

<sup>2</sup> Dipartimento di Scienze della Terra, Università degli studi di Pisa, Italy

<sup>3</sup> Dipartimento di Scienze della Terra, Università degli Studi Federico II di Napoli, Italy

<sup>4</sup> Soprintendenza Speciale per i Beni Archeologici di Napoli e Pompei, Naples, Italy

*Corresponding author:* M.A. Di Vito <[mauro.divito@ov.ingv.it](mailto:mauro.divito@ov.ingv.it)>

**ABSTRACT:** A brief summary of the activities carried out during the AIQUA 2013 Summer School held from the 27<sup>th</sup> to 31<sup>st</sup> May 2013 at the Vesuvius Observatory. The course provided an opportunity for students and researchers from different academic backgrounds to present and discuss topics of great scientific and human interest concerning the impact of volcanic eruptions on people and the landscape, starting from actual examples in the vicinity of Naples.

**Keywords:** Volcanology, Archaeology, Climate, Botany, Palaeontology, Pedology.

The AIQUA 2013 Summer School, held at the Vesuvius Observatory (Naples headquarters of the INGV) from 27<sup>th</sup> to 31<sup>st</sup> March 2013, received an encouraging level of participation in terms of both subscribers and speakers. Notwithstanding the economic difficulties that affect young people in particular, twenty-seven enrolled: young researchers, PhD students and undergraduates from the length of Italy, and one from Switzerland. The speakers, all

research workers of international standing who took part with enthusiasm and without remuneration, provided classes of high educational and scientific calibre. The texts of these lessons, in the form of short scientific articles, were published in a journal entitled *Miscellanea* (Di Vito et al., 2013) and distributed beforehand to teachers and students; they may be found online at [www.ingv.it](http://www.ingv.it). This collection, thanks to keen participation from all the speakers and



Fig. 1 - Field trip – Avella stop. Mauro Di Vito is discussing the impact of past eruptions on the landscape.

Lecturer	Title
Mauro A. Di Vito	A geological perspective on the study of human responses to volcanic activity: examples in Campania
Mauro A. Di Vito	<i>Somma Vesuvius: history of eruptions and their territorial impact</i>
Roberto Isaia	Tephrostratigraphy of Phlegraean Fields volcanism during the last 15 ka
Sandro de Vita	Structural geology and volcanological evolution of the Isle of Ischia
Monica Piochi, Angela Mormone	Petrology and isotopic geochemistry in tephrostratigraphical correlations: examples from Neapolitan volcanoes
Daniela Giampaola, Giuliana Boenzi	Effects on human life of volcanic activity: archaeological evidence from central Naples
Adele Bertini	Role of volcanic activity in Quaternary climate change
Vincenzo Amato	Holocene climatic variations: examples of morpho-sedimentary change inferred from the archaeo-tephro-stratigraphic record of Campania (41°N, south Italy)
Biagio Giaccio	Chronology and ecological factors regarding the Middle Palaeolithic – Upper Palaeolithic transition in Europe in the light of the Campanian Ignimbrite eruption (39 ka)
Giovanni Zanchetta	Syneruptive and intereruptive debris-flow on the Campanian Apennines: a geological perspective
Fabio Terribile	Genesis, evolution and properties of volcanic soils in the Campanian countryside
Gaetano Di Pasquale	Transformations of wooded and grass-covered landscapes in Campania: information from the study of wood and charcoal in natural and anthropic contexts
Filippo Terrasi	The importance of <sup>14</sup> C dating in chronostratigraphy and palaeoenvironmental work
Giovanni Zanchetta	Continental isotope-based palaeoclimatology and the climatic evolution of the Mediterranean
Christophe Morhange	Holocene relative sea level changes: an insight from volcanological and archaeological data
Aldo Cinque	Geomorphological evolution of the Sorrento Peninsula valleys after the Vesuvian eruption of AD 79
Aldo Marturano	Pompeii and the insula of the Chaste Lovers: natural phenomena, transformations of the terrain and interactions with the manmade environment
Elda Russo Ermolli	Pollen analysis: an important tool for reconstructing palaeolandscapes and palaeoclimates
Pierfrancesco Talamo	Campanian cultural sequence and volcanic events from the Neolithic until the end of the Bronze Age
Paola Romano	Reconstructing ancient coastlines in Naples from geological and geomorphological evidence
Elena Laforgia	Impact of volcanic eruptions in the area north of Naples: new data from recent excavations
Costanza Gialanella	Effects on human life of volcanic activity: the archaeological evidence from the Isle of Ischia
Valentino Di Donato	Palaeontology's contribution to the understanding of archaeological contexts: methods and Campanian case-studies
Laura Sadori	Using plant micro-remains for reconstructing palaeoenvironments and evaluating the effects of human activity: the lakes of Lazio
Marco Pacciarelli	Exceptional development of settlements from Neolithic to Iron Age on soils of volcanic origin in Tyrrhenian Calabria

Table 1. Topics covered during the AIQUA 2013 Summer school

Field leaders	Field trip
Mauro A. Di Vito, Gianni Zanchetta, Pierfrancesco Talamo, Giuseppe Vecchio, Nicola Castaldo	Monteforte (Distal sequences in the Apennines); Avella (Alluvial fans at the Apennine-Campania Plain junction); S. Paolo Belsito (Reconstruction of huts of the Nola Early Bronze Age village); Cimitile (Early Christian churches and the AD 472 debris-flow)
Mauro A. Di Vito, Sandro de Vita, Pierfrancesco Talamo, Aldo Marturano, Paola Romano, Aldo Cinque, Costanza Gialanella, Maria Paola Guidobaldi, Paola Miniero, Grete Stefani	Pompeii (House of the Chaste Lovers); Herculaneum (the pre-AD 79 coastline); Phlegraean Fields (Baia Castle, Lake Averno and Monte Nuovo); Pozzuoli (Roman marketplace)

Table 2. Field trips held during the AIQUA 2013 Summer school

the professionalism of the INGV editorial staff, was made available online prior to the start of the course and has also been printed, with financial support from the Vesuvius Observatory.

The lessons all shared a common denominator, an emphasis upon how an integrated multidisciplinary approach can enable the reconstruction of the human and territorial impact of extreme events such as volcanic eruptions and related phenomena, and an understanding of how the many peoples who have inhabited the Naples region – of different cultures and modes of social organization – have

reacted to these events. Despite the results obtained by much specialist research in this area, there are still few multidisciplinary studies in which diverse disciplines have worked in close and continuous collaboration.

The field excursions (Figs. 1 and 2) involved concrete examples of recently-studied cases, demonstrating how the concepts explained during the lectures have been applied to resolve problems which posed difficulties for individual specialists – for whom familiarity with the routine application of their own procedures leads to the risk of missing information essential for the comprehension of the



Fig. 2. Field trip – the excursion ended at the Baia Castle in the Western Campi Flegrei.

phenomena observed and their effects on humans and the environment.

The fundamental purpose of the course was to stimulate debate and cooperation between the diverse branches of knowledge involved and initiate the formation of professionals able to meet the new challenges that the humanistic and natural sciences must face in order to make real progress in the understanding of past phenomena and guide an informed and sustainable use of the land. In Tables 1 and 2 the topics covered and relevant speakers are listed – all of whom are warmly thanked for their contribution to the success of this initiative- and the field trips, held during the course.

## REFERENCES

- Di Vito M.A., de Vita S. (eds) 2013. Compendio delle lezioni, scuola estiva AIQUA 2013, l'impatto delle eruzioni vulcaniche sul paesaggio, sull'ambiente e sugli insediamenti umani – approcci multidisciplinari di tipo geologico, archeologico e biologico. Napoli 27 – 31 maggio 2013, Miscellanea INGV, 18:1-136.

*Ms. received: September 6, 2013*

*Final text received: September 6, 2013*

