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### ***Education and Academic Background***

- 1978 Dr. in Geological Sciences, *University of Torino (Italy)*  
*Thesis "Geology and petrography of the Internal Zone of the Grand Saint Bernard Nappe between Val de Rhêmes and Valgrisenche (Aosta Valley)"*  
*Advisors: E. Callegari, G. Elter*
- 1979 Fulbright Scholar at the Department of Geology, *University of New Mexico, USA*. Specializing in Igneous Petrology under the supervision of Prof. A.M. Kudo
- 1980-1982 Visiting Professor at the *Universidad Nacional Autonoma de Costa Rica* (Italy-Costa Rica Technical Cooperation Programme), promoting research and training in the field of Volcanology, Igneous Petrology and Economic Geology.  
*Project leader: Prof. L. Casertano*
- 1983 Habilitation in Research, Consiglio Nazionale delle Ricerche (CNR)
- 1984-1987 CNR-NATO postdoctoral Fellowships at the *University of New Mexico, USA* .

- 1987-1994            Lecturer in Science (Earth & Planetary Sciences), *G. Peano Technical Institute*, Turin (Italy)
- 1994-2001            Lecturer and Researcher, Volcanology and Igneous Petrology "Facoltà di Scienze Matematiche, Fisiche e Naturali, Corso di Laurea in Scienze Geologiche", *University of Torino (Italy)*.
- 2001-2004            Senior Lecturer and Researcher, Volcanology and Igneous Petrology "Facoltà di Scienze Matematiche, Fisiche e Naturali, Corso di Laurea in Scienze Geologiche", *University of Torino (Italy)*.

**Current Positions** "Professore Aggregato" (Adjunct Professor) in Volcanology, "Dipartimento di Scienze della Terra, Corso di Laurea in Scienze Geologiche", *University of Torino (Italy)*.

Visiting Professor in Volcanology, Institute for Geothermal Sciences, Graduate School of Sciences, *Kyoto University, Beppu (Japan)*

### **Awards & Distinctions**

U.S.- Italy Fulbright Commission: Fulbright Scholarship for continuing higher education (1979).

Selected Junior Member of the Technical Cooperation Programme between Italy and Costa Rica (1980-1982).

Consiglio Nazionale delle Ricerche (Research Prizes 1984 and 1987 for excellence in research within the CNR-NATO Programme)

'Silver Evoluon' as Advisor of students who won the "Italy Philips Prize for young Investigators" (1984 and 1987).

### **Membership of Professional Bodies**

European Union of Geosciences  
 "American Geophysical Union"  
 Società Italiana di Mineralogia e Petrologia  
 Associazione Italiana di Vulcanologia  
 Enhanced Geothermal Systems Association  
 Ordine Nazionale dei Geologi

### **Refereeing scientific journals and books**

I review 5-10 manuscripts per year for scientific journals such as *Geology*, *Geophysical Research Letters*, *Journal of Geophysical Research*, *Gcube*, *Journal of Volcanology and Geothermal Research*, *Annals of Geophysics*, *Geological Society of London*, *Periodico di Mineralogia*, *Acta Vulcanologica*, *Journal of Environmental Radioactivity*. I also reviewed parts of books of the *Geological Society of London*, and *Springer Press*.

## **Grant reviewer for Grant awarding institutions**

National Science Foundation (USA)  
Ministry for Universities, Scientific and Technological Research (Italy)  
Université Franco Italienne (Italian Commission).

## **Institutional Responsibilities (at the University of Torino)**

- 1996 (since) Member of the Council of the Doctorate School in Earth Sciences
- 1996-1998 Representative of the Department of Earth Sciences in the EU TEMPUS Project (trans European mobility scheme for university studies)
- 1998-2004 Representative of Earth Science researchers at the Faculty of Science
- 2002-2008 Member of the Commission for Student Orientation & Counseling (Faculty of Science)
- 2011-2014 Member of Research Commission at the Department of Earth Sciences (first established in 2011)
- 2010-2015 Council Member of the Center "NatRisk" UniTO for research on natural hazards since its foundation (<http://www.natrisk.org/homepage.asp?l=1>)

## **Research Funding**

Ministry for Universities, Scientific and Technological Research (Italy) "Alpine, HP to UHP metamorphism and Oligocene magmatism in the Western Alps: a contribution to the understanding of the continental crust-upper mantle interaction during subduction processes" MIUR COFIN (Joint Project). Project leader: Prof. A. Peccerillo. I am coordinating research on post-collisional volcanic and intrusive rocks (2010-on going).

Dipartimento della Protezione Civile (Italian Government) Project DEVnet (Project leader: Prof. M. Ripepe). Partnership with the University of Florence, Department of Earth Sciences. I am coordinating our research group in "Radon and CO<sub>2</sub> emissions at Stromboli volcano associated to thermal anomalies: experimenting new monitoring techniques" (2010-2011).

Istituto Nazionale di Geofisica e Vulcanologia-Dipartimento della Protezione Civile (Italian Government) Project V2-PAROXYSM. In charge of real-time radon monitoring at Stromboli volcano (2007-2010)

Dipartimento della Protezione Civile (Italian Government) Project DEVnet (Project leader: Prof. M. Ripepe). Partnership with the University of Florence, Department of Earth Sciences. Coordinating our research group in "Monitoring radon gas at active Volcanoes" and "Thermal monitoring of Etna and Stromboli" (2009-in progress).

Istituto Nazionale di Geofisica e Vulcanologia-Dipartimento della Protezione Civile (Italian Government) Project Project V2- Monitoring and research activity at Stromboli

and Panarea" In charge of radon monitoring and petrological research at Stromboli volcano (2005-2007)

Istituto Nazionale di Geofisica e Vulcanologia-Dipartimento della Protezione Civile (Italian Government) ""Evaluating magmatic processes by laboratory experiments, physical modeling and field measurements". In charge of petrological research on Vesuvian and Strombolian magmas (2002-2005).

European Commission - Training & Mobility of Researchers (TMR) Ultramafic ejecta and associated near-primary melts from Mount Vesuvius: new insights on its feeding system and inferences on the source-region of Vesuvian magmas (2001-2003)

Ministry for Universities, Scientific and Technological Research (Italy)"Structural and petrologic analysis of current and fossil hydrothermal systems in Central and Western Alps: environmental issues and geoeconomic resources" MIUR COFIN Project leader: Prof. P. Rossetti. My task was to work on post-collisional volcanic rocks of the Cover Series of the Sesia Zone (2001-2003).

European Commission - Training & Mobility of Researchers (TMR) Mafic and Ultramafic ejecta from Mount Vesuvius (1998-1999).

## ***Teaching***

Since my appointment in 1998 to the academic staff of Torino University, I have taught several courses in Volcanology, Igneous Petrology and Geochemistry. In 1998-2004 I have been primarily teaching the Volcanology course at graduate level (including field classes in volcanic areas). Following major changes in the "curricula" offered at our institution, I have been teaching basic courses in Volcanology and Geochemistry at undergraduate level (Level 3), and a Igneous Petrology course at graduate level ("Magmatic processes and Volcanism"). Since 2011, I teach Volcanology and Seismic and Volcanic Risk to graduate students. I also taught, at the Doctoral School in Earth Sciences of the University of Torino, the following courses (dedicated to PhD students): Heat flux and Geothermal Fields, Geochemistry of Hydrothermal Fluids, The use of radon progeny isotopes in Earth Sciences (2011, 2012, 2013, respectively).

## ***Inter-Institutional Collaborative Projects (Education & Research)***

2002-in progress. Institut de Physique du Globe de Paris - Thermal monitoring at Piton de la Founaise, one PhD student (2002-2005) – Observatoire de Guadeloupe Island. Collaborative ERASMUS project involving two of my students in performing geochemical monitoring at the "Soufriere" volcano as part of a M.Sc. thesis work (2011-2012). Current activities are on radon measurements and techniques.

1998-in progress. Istituto Nazionale di Fisica Nucleare (INFN), Italy: Radon and U/Th isotope measurements (3 M.Sc. theses one PhD thesis).

1998-in progress. Istituto Nazionale di Vulcanologia, Italy : Radon monitoring at Somma-Vesuvius (1998-2000). Radon and CO2 monitoring at Stromboli volcano.

2002-in progress. University of Firenze, Geophysical Laboratory: Radon and thermal monitoring at Stromboli.

2006- in progress. Universidad de Costa Rica, Escuela Centroamericana de Geología. Two M.Sc. theses and one PhD thesis been carried on the geology of the Guayabo Caldera (that includes Miravalle Volcano, NE Costa Rica).

2007-in progress. Osservatorio Astronomico di Torino (Istituto Nazionale di Astrofisica, INAF). Collaborative projects to verify the "real" occurrence of classified impact structures in Southern-Central Sahara (Project coordinator M. Di Martino, INAF Torino).

2014-in progress. Institute for Geothermal Science, University of Kyoto, Japan. Research on Strombolian eruptions and radon surveys at Nakadake volcano, Aso Caldera).

## **Professional Experience**

1998-present Coordinator of the Research Unit in the field of Volcanology at the University of Turin. Current projects, financed by the National Institute for Geophysics and Volcanology (INGV) together with the Ministry of Civil Defense of Italy, are focussed on the geochemistry of magmas and fluids of active volcanoes.

1994-1997 Scientific Coordinator of a geological-environmental project (University of Turin-Municipal Administration of the city of Turin) in evaluating the environmental risk associated with industrial waste disposal sites located along the southern bank of the Stura River (North-Eastern sector of the city of Turin, Italy). The project involved a systematic geochemical study on the dispersion of heavy metals along the basin, together with the assessment of environmental hazards due to potential flooding.

1992-1994 Consultant of the Municipal Administrations of Rhêmes Saint George and Rhêmes Nothre Dame (Comunità Montana Gran Paradiso, Aosta Valley) in assessing environmental risks for potential slope instabilities, avalanches, and flooding. Providing decision support for land management and moderate urban development oriented toward the integration of tourism and agricultural activities.

1993 Consultant, within a group of professionals, for assessing environmental impacts and slope instabilities associated with "open pit mining" for several sites in South-Central Sardinia (Italy).

1988-1992 Consultant of the *Regione Autonoma Valle d'Aosta* for a large scale mapping project (including hazard assessment) in South-Western Aosta Valley (Western Italian Alps).

1988 Lecturer in Geothermics at the *Centre de Perfectionnement Professionnel et Technique* (International Labour Organization, United Nations), Turin, Italy.

- 1983-present Scientific consultant of the Italian newspaper "LA STAMPA" of Turin in divulging Earth Sciences.
- 1984-1985 Scientific consultant of RAI (National Radio and TV) for the Radio Programme "Appuntamento con la Scienza" ("Meeting with the Sciences").
- 1982-1983 Dirección de Geología Minas y Hidrocarburos, Ministerio de Industria, Energía y Minas, Costa Rica. Geologist part of the Italy-Costa Rica Technica Cooperation Programme in proposing development projects on the mineral potential of the region, and Cooperating with *U.N. Revolving Fund for Natural Resources Exploration (UNPD)* in promoting the geoeconomic development of the Costa Rican Gold Belt.
- 1979 *Superior Oil Co.*, Tucson/Arizona, USA. Field geologist mapping and prospecting Mo-Au targets in South-Central New Mexico (Sierra Blanca Igneous Complex). Project leader and Manager: Hugo T. Dummett

## Doctorates

### ***Research Students supervised***

- O. Medeot (1998; cotutored with E. Callegari) "Petrology of Tertiary volcanic rocks of the Cover Series of the Sesia Zone (Western Italian Alps).
- M. Laiolo (2004) "Studio petrologico, geochimico ed isotopico di noduli femici ed ultrafemici ritrovati nelle lave Vesuviane e Stromboliane: problematiche riguardanti la natura e la genesi dei magmi Circum-Mediterranei".
- D. Coppola (2006, cotutored with D. Rothery, the Open University U.K.) "Analisi termica delle colate recenti del Piton de la Fournaise (La Réunion): applicazioni della termografia da terreno e monitoraggio termico satellitare".
- S. Bertolino (2008) "Syneruptive Rheological Parameters of Arenal Andesite and Stromboli Basalt: Inferences on the eruptive processes".
- A. Mercuri (2008; cotutored with G. Malagnini of INGV) "Terremoti dell'Appennino Centrale e risposta sismica di un generico sito su roccia. Relazione tra eventi ed emissioni di Radon".
- D. Piscopo (2010; cotutored with D. Coppola) "Stromboli MODIS thermal anomalies during Strombolian activity".
- T. Taticchi (2014, cotutored with G. Alvarado, Universidad de Costa Rica) "Petrogenesi delle lave della caldera di Guayabo: vulcano Miravalles, Costa Rica"
- L. Sogno-Fortuna (2014) "I corpi intrusivi del Biellese Sud-Occidentale in rapporto con la struttura profonda ed il gradiente geotermico dell'area pedemontana".

## **Recent and Significant Publications**

### **Parts of Books (fully refereed )**

CIGOLINI C., Laiolo M., Coppola D. (2015). Revisiting the last major eruptions of Stromboli volcano: inferences on the role of volatiles during magma storage and decompression. In Zellmer, G. F., Edmonds, M. & Straub, S. M. (eds) *The Role of Volatiles in the Genesis, Evolution and Eruption of Arc Magmas*. Geological Society, London, Special Publications, 410, <http://dx.doi.org/10.1144/SP410.3> (in press).

CIGOLINI C., Laiolo M., Bertolino S. (2008). Probing Stromboli Volcano from the Mantle to Paroxysmal Eruptions. In: G. Zellmer & C. Annen Eds. "Dynamics of Crustal Magma Transfer, Storage, and Differentiation – integrating geochemical and geophysical constraints" Geological Society London 304, pp. 33-70.

Federico C, Brusca L, Carapezza M. L, CIGOLINI C., Inguaggiato S, Rizzo A, Rowet. (2008). Geochemical prediction of the incoming 2002-'03 Stromboli eruption: variations in CO<sub>2</sub> and Rn emissions and helium and carbon isotopes. In: S. CALVARI, S. INGUAGGIATO, G. PUGLISI, M. RIPEPE, M. ROSI ED. *Learning from Stromboli and its 2002-03 eruptive crisis*, Geophysical Monograph,. WASHINGTON D.C.: American Geophysical Union (UNITED STATES), v. 182, 117-128 (ISBN 978-0-87590-447-4).

Coppola D., Staudacher Th., CIGOLINI C. (2005). The May–July 2003 eruption at Piton de la Fournaise (La Réunion): Volume, effusion rates, and emplacement mechanisms inferred from thermal imaging and global positioning system (GPS) survey. In Manga, M., and Ventura, G., eds., *Kinematics and dynamics of lava flows*. Geological Society of America Special Paper 396, p. 103–124.

### **Refereed contributions to Journals**

CIGOLINI C., Laiolo M., Coppola D. (2015). The LVD signals during the early-mid stages of the L'Aquila seismic sequence and the radon signature of some aftershocks of moderate magnitude. *Journal of Environmental Radioactivity*, 139, 56-65

Coppola, D., Laiolo, M., CIGOLINI C., Delle Donne, D., Ripepe, M., Cigolini C. (2014) Hot-spot detection and characterization of strombolian activity from MODIS infrared data. *Int. Journal of Remote Sensing*, 35/9, 3403-3426.

CIGOLINI C., M. Laiolo, G. Ulivieri, D. Coppola, M. Ripepe (2013) Radon mapping, automatic measurements and extremely high <sup>222</sup>Rn emissions during the 2002–2007 eruptive scenarios at Stromboli volcano, *J. Volcanol. Geotherm. Res.* (ISSN:0377-0273), 264, 49-65.

Coppola D., M. Laiolo, D. Piscopo, CIGOLINI C. (2013) Rheological control on the radiant density of active lava flows and domes, *J. Volcanol. Geotherm. Res.* (ISSN:0377-0273), 249, 39-48.

CIGOLINI C., M. Laiolo, D. Coppola, G. Ulivieri (2013) Preliminary radon measurements at Villarrica volcano, Chile, *JOURNAL OF SOUTH AMERICAN EARTH SCIENCES* (ISSN:0895-9811), 46, 1-8.

Coppola D., CIGOLINI C. (2013) Thermal regimes and effusive trends at Nyamuragira volcano (DRC) from MODIS infrared data, *BULLETIN OF VOLCANOLOGY* (ISSN:0258-8900), 75, 1-15.

Lavagno A., Laiolo M., Gervino G., CIGOLINI C., Coppola D., Piscopo D., Marino C. (2013) Improvements in real time  $^{222}\text{Rn}$  monitoring at Stromboli volcano., *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH. SECTION A, ACCELERATORS, SPECTROMETERS, DETECTORS AND ASSOCIATED EQUIPMENT* (ISSN:0168-9002), 718, 145-147.

CIGOLINI C., Di Martino M., Laiolo M., Coppola D., Rossetti P., Morelli M. (2012) Endogenous and non-impact origin of the Arkenu Circular Structures, al-Kufrah Basin (SE Libya), *METEORITICS & PLANETARY SCIENCE* (ISSN:1945-5100), 47/12, 1-17.

Coppola D., Laiolo M., Piscopo D., CIGOLINI C. (2012) Rheological control on the radiant density of active lava flows and domes, *JOURNAL OF VOLCANOLOGY AND GEOTHERMAL RESEARCH* (ISSN:0377-0273), 249, 39-48

Gervino G., Lavagno A., Laiolo M., CIGOLINI C., Coppola D., Periale L. (2012) Monitoring radon emission anomalies at Stromboli Island as a tracer of eruptive events and "near field" earthquakes, *EPJ WEB OF CONFERENCES* (ISSN:2100-014X), Vol. 24, pp. 50021- 50026.

Laiolo M., CIGOLINI C., Coppola D., Gervino G. (2012) Insights on radon surveys at the Stromboli volcano, *EPJ WEB OF CONFERENCES* (ISSN:2100-014X), Vol. 24, pp. 50071- 50076.

Laiolo M., CIGOLINI C., Coppola D., Piscopo D. (2012) Developments in real-time radon monitoring at Stromboli volcano, *JOURNAL OF ENVIRONMENTAL RADIOACTIVITY* (ISSN:0265-931X), 105, 21-29.

Coppola D., Piscopo D., Laiolo M., CIGOLINI C., Delle Donne D., Ripepe M. (2012) Radiative heat power at Stromboli volcano during 2000-2011: Twelve years of MODIS observations, *JOURNAL OF VOLCANOLOGY AND GEOTHERMAL RESEARCH* (ISSN:0377-0273), 215, 48-60.

Caviglia C., CIGOLINI C., De Luca D. (2011) Il campo geotermico di bassa entalpia di Acqui Terme-Visone, *ACQUE SOTTERRANEE* (ISSN:1828-454X), 124, 13-19.

Coppola D., James M.R., Staudacher T., CIGOLINI C. (2010). A comparison of field- and satellite-derived thermal flux at Piton de la Fournaise: implications for the calculation of lava discharge rate. *Bull. Volcanology*, 72, 341-356

CIGOLINI C. (2010) The dynamics of a double-cell hydrothermal system in triggering seismicity at Somma-Vesuvius: results from a high-resolution radon survey (revisited). *Bull. Volcanology*, 72, 693-704.

CIGOLINI C., Poggi P., Ripepe M., Laiolo M., Ciamberlini C., Delle Donne D., Olivieri G., Coppola D., Lacanna G., Marchetti E., Piscopo D. & Genco R. (2009) Radon surveys and real-time monitoring at Stromboli volcano: Influence of soil temperature, atmospheric pressure and tidal forces on  $^{222}\text{Rn}$  degassing. *J. Volcanol. Geotherm. Res.* 184(3-4): 381-388.



Coppola D., Piscopo D., Staudacher T. & CIGOLINI C. 2009. Lava discharge rate and effusive pattern at Piton de la Fournaise from MODIS data. *J. Volcanol. Geotherm. Res.* 184(1-2): 174-192.

Orti L., Di Martino M., Morelli M., CIGOLINI C., Pandeli E., Buzzigoli A. (2008) Non-impact origin of crater-like structures in the Gilf Kebir area (Egypt): Implications for the geology of eastern Sahara. *METEORITICS & PLANETARY SCIENCE*, 43/10, 1629-1639

Piscopo D., Coppola D., CIGOLINI C., Delle Donne D., Di Martino M. (2008). Thermal anomalies at Stromboli Volcano from MODIS data. *Mem. Soc. Astronom. It.*, 12, 60-65.

CIGOLINI C., Laiolo M, Coppola D. (2007). Earthquake-volcano interactions detected from radon degassing at Stromboli (Italy). *EARTH AND PLANETARY SCIENCE LETTERS*. vol. 257, pp. 511-525 ISSN: 0012-821X.

CIGOLINI C. (2007). Petrography and thermobarometry of high-pressure ultramafic ejecta from Mount Vesuvius, Italy: inferences on the deep feeding system. *PERIODICO DI MINERALOGIA*. vol. 76 (2-3), pp. 5-24 (Special Volume in honor of E. Callegari).

Coppola D, Staudacher T, CIGOLINI C. (2007). Field thermal monitoring during the August 2003 eruption at Piton de la Fournaise (La Réunion). *JOURNAL OF GEOPHYSICAL RESEARCH. SOLID EARTH*. vol. 112 (B5) ISSN: 0148-0227. Art. No. B05215

CIGOLINI C., Gervino G., Bonetti R., Conte F., Laiolo M., Coppola D., Manzoni A. (2005). Tracking precursors and degassing by radon monitoring during major eruptions at Stromboli Volcano (Aeolian Islands, Italy). *Geophysical Research Letters*, Art. No. L12308 JUN 24 2005.

Laiolo M., CIGOLINI C. (2006). Mafic and ultramafic xenoliths in San Bartolo lava field: new insights on the ascent and storage of Strombolian magmas. *BULLETIN OF VOLCANOLOGY*. vol. 68 (7-8), 653-670

Callegari E., CIGOLINI C., Medeot O., D'Antonio M. (2004). Petrogenesis of Calc-alkaline and Shoshonitic Post-Collisional Volcanics of the Cover Series of the Sesia Zone, Western Italian Alps. *Geodinamica Acta*, 17: 1-19.

Gervino, G., R. Bonetti, C. CIGOLINI, C. Marino, P. Prati, L. Pruiti, (2004) Environmental Radon Monitoring: Comparing drawbacks and performances of charcoal canisters, a-track and E-PERM detectors in radon monitoring, *Nucl. Instr. Meth. in Phys. Res. S. A*, 518, 452-455,

Gervino G, CIGOLINI C, Lavagno A, Marino C, Prati P, Pruiti L, Zangari G. (2004). Modelling temperature distributions and radon emission at Stromboli Volcano using a non-extensive statistical approach. *PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS* 340 (1-3): 402-409.

CIGOLINI C, Salierno F., G. Gervino, P. Bergese, C. Marino, M. Russo, P. Prati, V. Ariola, R. Bonetti, S. Begnini (2001) – High-resolution radon monitoring and Hydrodynamics at Mount Vesuvius, *Geophysical Research Letters*, 28: 4035-4039.

## **Geological Maps**

Elter G., CIGOLINI C. fra i collaboratori (1987) - Carte Géologique de la Vallée d'Aoste, Echelle 1:100.000. Consiglio Nazionale delle Ricerche, Centro Studi per i Problemi dell'Orogeno Alpi Occidentali, Consiglio Nazionale delle Ricerche, Torino.

CIGOLINI C. (1992 a) - Carta Geologica del Ricoprimento del Gran San Bernardo tra la Valsavarenche e la Val di Rhêmes (Valle d'Aosta), scala I: 20.000. Regione Autonoma Valle d'Aosta.

CIGOLINI C. (1992 b) - Note Illustrative alla Carta Geologica del Ricoprimento del Gran San Bernardo tra la Valsavarenche e la Val di Rhêmes (Valle d'Aosta), scala I: 20.000. Regione Autonoma Valle d'Aosta, 25 pp., 1 Tav. di profili.

**January 9, 2015**

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