

Position: **Associate Professor**
Name of Firm: **Department of Earth, Environmental and Life Sciences (DISTAV) - University of Genoa, Italy**
Name of Staff: **Massimo Verdoya**
Profession: **Scientist/Lecturer**
Date of Birth: **28th April, 1960**
Nationality: **Italian**

Membership of Societies/Institutions:

2016– Board of Directors of the International Geothermal Association (IGA)
2015– Vice-Chairman of the International Heat Flow Commission
2003-2015 Board of the International Heat Flow Commission of the IASPEI (International Association of Seismology and Physics of the Earth Interior).
2002– Member of the Italian Geothermal Union (UGI)
1990 National Group of Solid Earth Geophysics GNGTS (Italy)

Key Qualifications:

Thermal modeling of lithospheric geodynamical processes, analytical and numerical simulations of heat and groundwater transfer (finite differences and finite elements), with special reference to hydrothermal reservoirs, geophysical data interpretation for geothermal exploration, determinations of thermo-physical properties of rocks and soils (thermal conductivity and diffusivity), gamma-ray spectrometry for the assessment of heat-producing radionuclides.

Education:

- 1992 PhD in Geophysics, University of Genoa, Italy.
 - 1985 MSc in Geological Sciences (full marks and honors), at the University of Genoa, Italy.
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Employment Records:

From: 1993
To: present
Employer: University of Genoa
Position Held: Professor of Solid Earth Geophysics

Research fields:

- terrestrial heat-flow density
- thermal properties of rocks
- thermal modeling of lithospheric geodynamical processes
- natural radioactivity;
- climate change inferred from underground temperature logs.
- geophysical exploration of geothermal fields
- applied geothermics;

Teching:

- Physical Geothermics (since 1997)
 - Solid Earth Geophysics (since 2001)
 - Geothermal Prospecting (2002-2007)
 - Geodynamics and Seismotectonics (2003-2008)
 - Marine Geophysics (since 2014)
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Scientific Collaborations

- Geological Survey of Finland, Helsinki (Finland)
- Czech Academy of Sciences, Praga (Czech Rep.)
- Carleton Geoscience Centre, Ottawa (Canada)
- Hungarian Academy of Sciences, Budapest (Hungary)
- Centre Géologique et Géophysique, Université de Montpellier (France)
- National Industrial Research Institute, Nagoya (Japan)
- National Institute of Advanced Industrial Science and Technology (AIST) Higashi Tsukuba, (Japan)
- Centro de Geofísica de Évora - Universidade de Évora, Évora (Portugal)
- Laboratoire de Physique du Globe, Rabat (Morocco)
- Institut de Physique du Globe de Paris, Paris (France)
- Laboratoire Gîtes Minéraux, Hydrogéologie, Environnement, Université de Oujda (Morocco)

Main Funded Projects

- 1990 -1992 - EUROPEAN GEOTRAVERSE-EGT (RU member)
- 1997 - MURST ex 40% : Struttura , dinamica ed evoluzione della litosfera (RU member)
- 1997-1998 - EUROPROBE-SVEKALAPKO (European Science Foundation) (RU member)
- 2001-2002 - IGCP Project No.428 Title: Past Climate Change Inferred from Borehole Temperatures (UNESCO) (PI)
- 2002 - TRANSALP (RU member)
- 2004 PRIN - Sismicità, campo di stress e reologia della litosfera nel sistema Tirreno-Appennino Settentrionale. (RU member)
- 2002-2003 - MIUR PNRA - WITRA: Interpretazione di dati geofisici delle traverse lungo il Wilkes Basin (RU member)
- 2002-2003 - MIUR PNRA - TIMM: Tectonics and Interior of Mt Melbourne Area: una finestra sulla neotettonica del West Antarctic rift e sul vulcanismo attivo lungo la catena Transantartica (RU member)
- 2004-2006 - Italy-Morocco Scientific and Technologic Cooperation Program, project n. 11: Evaluation des potentialités énergétiques des réservoirs hydrothermaux du Maroc septentrional et modélisation mathématique du transfert d'eau et de chaleur- (Ministero Affari Esteri) (PI)
- 2008 PRIN - Risorse geotermiche del basamento mesozoico del bacino padano: circolazione idrica e trasporto di calore (PI)
- 2011-2012 -MIUR PNRA - BABOC: International Aereogeophysical Exploration Under the East Antarctic Ice Sheet: the Northern Wilkes Subglacial Basin (RU member)

Organisation

- 2018 Co-convener of symposium "The Earth's thermal state from geophysics and geochemistry European Geoscience Union General Assembly 2018, Vienna, Austria
- 2017 Co-convener of symposium "The Earth's thermal state and heat budget of crustal metamorphism" European Geoscience Union General Assembly 2017, Vienna, Austria

- 2016 Co-convenor of symposium "Measurement, processing and interpretation of the Earth's thermal state: new developments and impact on the geo-community", European Geosciences Union General Assembly 2016, Vienna, Austria
- 2015 Convenor of symposium "Subsurface Thermal Evaluation - Resources and Signals" 26th General Assembly of the International Union of Geodesy and Geophysics, Pague, Czech Republic
- 2015 Convenor of symposium "Lithosphere Heat Flow and its Relationships with Tectonics, Seismicity and Crustal Fluid Circulation", 26th General Assembly of the International Union of Geodesy and Geophysics, Pague, Czech Republic
- 2008 Supervisor of the IMAGEEN scholarship program (Italy, France, Spain, Morocco and Tunisia Cooperation Program)
- 2000 Scientific Committee of the International Symposium e "Geothermics at the Turn of the Century", 3-7 April, 2000. Evora (Portugal).

Referee of international journals:

- Tectonophysics
- Pure and applied Geophysics (Pageoph)
- Journal of Geophysics and Engineering
- Hydrological Sciences Journal
- Journal of Structural Geology
- Global and Planetary Change
- Climate of the Past
- International Journal of Earth Sciences
- Applied Radiation and Isotopes
- Geoderma
- Journal of Geodynamics

Editorial Board:

- 2017 - International Journal of Heat Flow and Applied Geothermics
2015 - Journal of Geodynamics

Publications (Since 2010):

ISI Journals and books

- PASQUALE V., P. CHIOZZI M. VERDOYA, 2010. Tectono-thermal processes and mechanical strength in a recent orogenic belt: The northern Apennines. *J. Geophys. Res.* 115, B03301, vol. 115; 148-227. doi: 10.1029/2009JB006631. IF 3.303 IF
- PASQUALE V., M. VERDOYA P. CHIOZZI, 2010. Evaluation of heat and water flow in porosity permeable horizons. *Bollettino Geofis. Teor. Appl.*, 51, 361-371 IF 0.356
- PASQUALE V., M. VERDOYA, P. CHIOZZI, 2011. Groundwater flow analysis using different geothermal constraints: The case study of Acqui Terme area, northwestern Italy *Journal of Volcanology and Geothermal Research*, 1-2, 38-46. IF 1.978
- PASQUALE V., G. GOLA, P. CHIOZZI AND M. VERDOYA 2011. Thermophysical properties of the Po Basin rocks. *Geophysical Journal International*. 186, 69-81. IF 2.420
- RIMI A., ZARHLOULE Y., BARKAOU A.E., CORREIA A. CARNEIRO J., VERDOYA M., LUCAZEAU F., 2012. Towards a de-carbonized energy system in north-eastern Morocco: Prospective geothermal resource. *Renewable and Sustainable Energy Reviews*. 2207– 2216. IF 5.627
- PASQUALE V., P. CHIOZZI, M. VERDOYA, G. GOLA, 2012. Heat flow in the Western Po Basin and the surrounding orogenic belts. *Geophysical Journal International* 190, 8–22. IF 2.853
- BOCHIOLO M., M. VERDOYA † P. CHIOZZI, V. PASQUALE., 2012. Radiometric surveying for the assessment of

- radiation dose and radon specific exhalation in underground environment. *Journal of Applied Geophysics* 83, 100-106. IF 1.327
- PASQUALE V., P. CHIOZZI M. VERDOYA, 2013. Evidence for convection in the deep carbonate aquifer of the eastern sector of the Po Plain, Italy. *Tectonophysics*, 594 , pp. 1-12 IF(2012) 2.433
- BARKAOU, A.E., CORREIA, A., ZARHLOULE, Y., RIMI, A., CARNEIRO, J., BOUGHRIBA, M., VERDOYA, M., 2013. Reconstruction of remote climate change from borehole temperature measurement in the eastern part of Morocco *Climatic Change*, pp. 1-11 118 (2) , pp. 431-441 IF (2012) 3.634
- BARKAOU A. E., ZARHLOULE, Y. RIMI, A., VERDOYA, M., BOURI, S., 2013. Hydrogeochemical investigations of thermal waters in the northeastern part of Morocco. *Environmental Earth Sciences* DOI 10.1007/s12665-013-2582-x IF (2012) 1.445
- PASQUALE, V., VERDOYA, M., CHIOZZI, P., 2014. Geothermics, Heat Flow in the Lithosphere. *SpringerBriefs in Earth Sciences*, Springer International Publishing, pp. 119
- PASQUALE V., M.VERDOYA, P.CHIOZZI, 2014. Heat flow and geothermal resources in northern Italy. *Renewable and Sustainable Energy Reviews*, 362, 77–285 IF (2012) 5.627
- BARKAOUI A.E., Y. ZARHLOULE, M. VERDOYA, V. PASQUALE, H.LAHRACH, 2014. Progress in understanding the geothermal sedimentary basins in northeastern Morocco. *Journal of African Earth Sciences*, 97, 1–8. IF (2012) 1.229
- PASQUALE V., M.VERDOYA, P.CHIOZZI, 2015. Measurements of rock thermal conductivity with a Transient Divided Bar. *Geothermics* 53:183–189. DOI:10.1016/j.geothermics.2014.05.008 IF 2012 1.740
- CHIOZZI, BARKAOUI A.E., RIMI A., VERDOYA M., ZARHLOULE Y., 2017. A review of surface heat-flow data of the northern Middle Atlas (Morocco). *Journal of Geodynamics* 112, 58–71
- PASQUALE, V., VERDOYA, M., CHIOZZI, P., 2017. Geothermics, Heat Flow in the Lithosphere (Second Edition) . SpringerBriefs in Earth Sciences, Springer International Publishing, pp. 139
- VERDOYA M., CHIOZZI P., 2018. Influence of groundwater flow on the estimation of subsurface thermal parameters. *Int J Earth Sci (Geol Rundsch)*, 107:137–144 IF 2.283.
- CHIOZZI P., VERDOYA M., 2018. Heat-flow anomaly and residual topography in the Mascarene hotspot swell (Indian Ocean) *Int J Earth Sci (Geol Rundsch)*, 107:35-51 IF 2.283
- CERMAK, V., HUANG, S., RAVAT, D. VERDOYA, M. 2018. Editorial to “Heat Flow: Recent Advances”. *Int J Earth Sci (Geol Rundsch)* 107:1–3. IF 2.283