Lorenzo Marzini

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Current position:
Collaboratore di Ricerca at IFAC-CNR (Sesto Fiorentino, Italy)

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Education & Research

12/2023-02/2024 **Collaboratore di Ricerca, Istituto di Fisica Applicata "Nello Carrara" IFAC-CNR**
Project "Sistemi spettroscopici portatili per i beni culturali, ambiente e industria"

03/2023-06/2023 **PhD visiting student in HAFL (Bern, Switzerland) Erasmus for Traineeship winner**
Numerical simulations of physically based slope stability models, hydraulic conductivity tests, rainfall experiments, root pullout tests, code in R

10/2020-11/2023 **PhD student with fellow, University of Siena, DSFTA, Geomatic Lab**
Research topic: Study of the effect of vegetation on slope stability and shallow landslides development

08/2020-11/2020 **Research Fellow, University of Siena, DSFTA, Geomatic lab**
Research topic: Geomorphological, geo-technical and landslide monitoring study in the Mt. Amiata area (Southern Tuscany, Italy)

08/2019-08/2020 **Research Fellow, University of Siena, DSFTA, Geomatic Lab**
Research topic: Geomorphological, geo-technical and landslide monitoring study in Tuscany, Italy

2015-2019 **M. Sc. in Geosciences and Geology applied (LM 74), University of Siena**
Thesis title: "Survey and study of the relationships between shallow landslides and under-ground and below-ground vegetation features". 110/110 with honor.

2011-2015 **B. Sc in Environmental and Natural sciences (L 32), University of Siena**
Thesis title: "Organic versus conventional viticulture: agronomic properties and soil geochemical outlines". 110/110 with honor.

2007-2011 **High school leaving qualification in Chemistry, ITIS Tito Sarrocchi, Siena**
90/100

Work Experience

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06/2017-
08/2017

Trainee, GEOGRAPHIKE SRL
Photointerpretation technician and database analyst (ESRI, ARCGIS)

03/2017-
06/2017

Photointerpretation technician, GEOGRAPHIKE SRL
Photointerpretation technician and database analyst (ESRI, ARCGIS)

05/2016-
05/2016

Photointerpretation technician, EGIS SYSTEM SRL
Photointerpretation technician and database analyst (ESRI, ARCGIS)

11/2014-
02/2015

Trainee, University of Siena, DSFTA, Environmental Geochemistry Unit
Soil and root samples analysis with spectrometry X-Ray Fluorescence (XRF)

Publications

1. Amaddii, M.; Rosatti, G.; Zugliani, D.; **Marzini, L.**; Disperati, L. *Modelling stony debris flows involving culverted streams: the Abbadia San Salvatore case (Mt. Amiata, Italy)*. Rendiconti Online Società Geologica Italiana, Volume 61, 2023. DOI: https://doi.org/10.3301/ROL.2023.55

2. **Marzini, L.**, D'Addario, E., Papasidero, M. P., Chianucci, F., Disperati, L. *Influence of Root Reinforcement Towards Shallow Landslides Occurrence: the Garfagnana (Northern Tuscany, Italy) Case Study*. Geosciences, 2023, 13(11), 326. DOI: https://doi.org/10.3390/geosciences13110326

3. **Marzini, L.**; Ciofini, D.; Agresti, J.; Ciaccheri, L.; D'Addario, E.; Disperati, L.; Siano, S.; Osticioli, I. *Exploring the Potential of Portable Spectroscopic Techniques for the Biochemical Characterization of Roots* in Shallow Landslides. *Forests* 2023, *14*, 825. (***Editor's Choice Article in the 2023 Series***). DOI: https://doi.org/10.3390/f14040825

4. Amaddii, M.; Rosatti, G.; Zugliani, D.; **Marzini, L.**; Disperati, L. *Back-Analysis of the Abbadia San Salvatore (Mt. Amiata, Italy) Debris Flow of 27–28 July 2019: An Integrated Multidisciplinary Approach to a Challenging Case Study*. Geosciences 2022, 12, 385. DOI: https://doi.org/10.3390/geosciences12100385

International conference communications

Marzini, L., D' Addario, E., Cohen, D., Schwarz, M., Disperati, L. "*Comparison between SlideforMAP and SHALSTAB shallow landslides susceptibility models: the Garfagnana (Northern Tuscany, Italy) case study*". World Landslide Forum 6, Florence, 14-17/11/2023

Pattela, T.V., D' Addario, E., **Marzini, L.**, Amaddii, M., Disperati, L. "*Monitoring landslide instability: a case study of Mount Amiata volcanic complex, Italy*". World Landslide Forum 6, Florence, 14-17/11/2023

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D' Addario, E., Oliveira, E., D' Eramo, E., **Marzini, L.**, Amaddii, M., Giusti, R., Manetti, F., Disperati, L. "*Data-driven susceptibility assessment integrating predisposing factors derived from engineering geological mapping*". World Landslide Forum 6, Florence, 14-17/11/2023

Amaddii, M., Rosatti, G., Zugliani, D., **Marzini, L.**, and Disperati, L. "*Back-analysis of the Abbadia San Salvatore (Mt. Amiata, Italy) debris flow of July 27-28, 2019 using the WEEZARD system*". 10th IAG International Conference on Geomorphology, Coimbra, Portugal, 12-16/09/2022

D'Addario, E., Pattela, T.V., **Marzini, L.**, Lombardi, G., Amaddii, M., and Disperati, L. "*Dismantling a volcanic edifice by deep-seated landslides: the case of the eastern Monte Amiata (Italy)*" 10th IAG International Conference on Geomorphology, Coimbra, Portugal, 12-16/09/2022

Pattela, T.V., Disperati, L., **Marzini, L.**, Amaddii, M., Lombardi, G., D'Addario, E., Rappuoli, D. (2022). *Integrated monitoring approaches for slow-moving landslides on the Eastern slope of the Mt. Amiata (Tuscany, Italy)*. GIT 2022, Fondi

Amaddii, M., Rosatti, G., Zugliani, D., **Marzini, L.**, Disperati, L. *Modellazione numerica della colata detritica del 27-28 luglio 2019 presso Abbadia San Salvatore (M. Amiata, Italia) e valutazione delle opere di rischio*. GIT 2022, Fondi

Marzini, L., D'Addario, E., Papasidero, M.P., Amaddii, M., Disperati, L., Chianucci, F. (2022). *Investigating the relationships among vegetation characters, saturated hydraulic conductivity and surface morphology at catchment scale by integrating new field data and morphometric analysis*. EGU General Assembly 2022, Vienna, Austria

Pattela, T.V., Disperati, L., **Marzini, L.**, Amaddii, M., Lombardi, G., Rappuoli, D. (2022). *Monitoring slope instability integrating InSAR, GNSS, Total Station and Levelling: a case study in the Eastern slope of the Mt. Amiata volcanic complex, Italy*. EGU General Assembly 2022, Vienna, Austria

D'Addario, E., Disperati, L., Lombardi, G., **Marzini, L.** (2022). *The Rock Mass Quality Index (RQI): a quantitative tool for the quality evaluation of near-surface rock masses*. EGU General Assembly 2022, Vienna, Austria

Marzini, L., Amaddii, M., Papasidero, M.P., D'Addario, E., Disperati, L., & Chianucci, F. (2021). *Relationships between vegetation characters and saturated hydraulic conductivity at catchment scale*. BeGEO Scientists 2021, Napoli

Disperati, L.; D'Addario, E.; Lombardi, G.; Mammoliti, E.; **Marzini, L.**; Papasidero, M. P.; Amaddii, M. *The new engineering geological map (carta litotecnica) of Tuscany (Italy)*. ICA 2021, Firenze

Disperati, L., D'Addario, E., Papasidero, M.P., Pignatiello, M., **Marzini, L.**, Amaddii, M., et al. (2020). *Assessment of slope deposits depth at regional scale by means of morphometric clustering and multi-linear regression: a comparison*. EGU General Assembly 2020, Vienna, Austria

Marzini, L., D'Addario, E., Disperati, L., & Chianucci, F. (2019). *Relationships between vegetation cover characters and shallow landslides*. EGU General Assembly 2019, Vienna, Austria

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Projects

PRIN 2020 "*Mapping seismic site effects at regional and national scale*" (Prot. 2020MMCPER)

"Foglio di pericolosità geologica n. 249 Massa Carrara" Progetto CARG ISPRA Disposizione n.281/DG del 28/7/2022

Accordo di Collaborazione Scientifica tra l'Unione Dei Comuni Amiata Val D'Orcia e l'Università degli Studi di Siena per lo "*Studio dei movimenti gravitativi in atto nell'area di Via Remedi, presso Abbadia San Salvatore*"

Convenzione "*Misura multitemporale di superficie e caratterizzazione geologico tecnica preliminare dei movimenti gravitativi dell'area di Via Remedi (Abbadia San Salvatore)*"

"*Studi geologico-tecnici e geomorfologici sui movimenti gravitativi che interessano il versante nord orientale del Monte Amiata ed implementazione di sistema di monitoraggio in tempo reale*"

Banca dati Litotecnica (BD_Litec) Regione Toscana
Link http://www502.regione.toscana.it/geoscopio/litotecnica.html

Additional training

- 6th Raman Workshop (7-9 June 2023), ETH Zurich, Campus Hönggerberg
- Google Earth Engine Summer School (6-10 September 2021), Florence

Instrumentation Skills

Raman portable spectrometer @1064nm

Agilent Cary 630 FTIR portable spectrometer

LIBS (laser excitation SSD QS Nd:YAG @1064 nm)

X-Ray Fluorescence (@1064 nm)

Leica® and TOPCON® GNSS systems

TOPCON® Total Station

APR Pilot (A1-A3)

Slake Durability Test A130

Schmidt Hammer (N & Live type)

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Computer skills and competencies

O.S.	Windows
Prog. Languages	Python, R, MATLAB
Misc. Programs	Spectragriph, OriginLAB, LEICA® Infinity, TOPCON® Suite, Google Earth Engine
Languages	Italian (mother tongue), English (B2)

Consapevole delle sanzioni penali alle quali il sottoscritto incorre per dichiarazioni mendaci.

30/11/2023 [redacted]