



Andrea Di Martino

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Languages

Italian

Native speaker

English

Advanced (C1)

Hard skills

- Stratigraphy
- Facies Analysis
- Physics
- Ground Motion Simulation
- Artificial Intelligence
- Data Analysis

Soft skills

- Scientific communication
- Scientific writing
- Presentation Skills
- Teamwork
- Adaptability
- Problem Solving

Operating systems:

- Microsoft Windows
- Linux
- MacOS

Programming languages

- Python
- Matlab
- C++

Frameworks/Software:

- ArcGIS & QGIS
- Schlumberger Petrel
- CAD & Rhinoceros 3D
- Geopsy
- LSR 2D
- Grilla
- GitHub
- Microsoft Office

Experience

POSTDOCTORAL RESEARCHER

- **BiGeA, Geology Department | University of Bologna, Italy** *04/2024 to Current*
- My current research focuses on the development of high-resolution stratigraphic models using an integrated approach that combines geology, geophysics, and computational methods. This work includes multi-proxy facies analysis through the interpretation of sediment cores and CPT/CPTU tests; data acquisition and analysis to evaluate seismic site conditions and perform advanced 2D/3D stratigraphic-based ground motion simulations. The work also includes Quaternary mapping in lowland areas and the development of deep neural network models for facies analysis and for predicting 3D shear wave velocity patterns.

VISITING SCIENTIST

- **DPRI, Disaster Prevention Research Institute | Kyoto University, Japan** *06-07/2023*
- Reconstruction of the Late Quaternary paleovalley in Ibaraki Prefecture, Japan, using an integrated approach that combines geology and surface-wave geophysics. Development of a neural network to map shear wave velocities in 3D and compare the resulting model with stratigraphic data.
- **U.S. Geological Survey | Pasadena & Moffett Field, California U.S.A.** *03-09/2022*
- Testing new procedure to evaluate seismic site conditions by combining geophysical and geological approach at multiple sites along the San Andreas Fault, Southern California. Evaluation of geology and local seismic response at various mountain sites in the Sierra Nevada for dam safety analysis.

RESEARCH SCIENCE INTERNSHIP

- **British Geological Survey, Shallow Geohazards and Risks | Nottingham, UK** *07-09/2018*
- **INGV Bologna | Bologna, Italy** *03-08/2016*

Education

- **Ph.D. | Geosciences** *04/2024*
- University of Bologna, Italy**
- High-resolution stratigraphic reconstruction of the Adriatic paleovalley systems in Pescara and Manfredonia. Developed a stratigraphic-based model for 2D ground response analysis to assess seismic amplification driven by complex paleovalley systems. Designed state-of-the-art deep learning algorithms to improve sedimentary facies prediction.
- **Master of Science | Geological and Earth Sciences** *03/2020*
- University of Bologna, Italy** Score: 110/110 cum laude
- **Bachelor of Science | Geology** *12/2017*
- University of Bologna, Italy**

Award

- Awarded as "Top 10 scientist" in Mathematical, Physical, Chemical, and Geological Sciences by the Academy of Sciences of Bologna Institute in 2024.
- Winner of the competitive JSPS Postdoctoral Fellowship, granted by the Japan Society for the Promotion of Science.
- Recipient of the 'Aldo Neri' Scholarship for student research

Project Participation

- 2026- 2024 : International Collaborative Research - DPRI-KU/USGS
Comparative study of influences on site response in Japan, U.S., and Italy: the effect of shallow subsurface stratigraphy on site amplification using machine learning
- 2025 - 2023 : PRIN 2022 - Research Projects of National Relevance - 2022PMEN2K
Refining the sequence stratigraphic model through high-resolution onshore-offshore correlation (ON/OFF): The late Quaternary succession of the PoAdriatic system
- 2024 - 2020 : CARG Project - Geologic and geothematic cartography - Sheet 184 : Mirandola
- 2024 - 2022 : International Collaborative Research - DPRI-KU/USGS
Development of site response analysis methods including the influence of directionality caused by the 2D/3D subsurface structure
- 2023 - 2019 : PRIN 2017 - Research Projects of National Relevance - 2017ASZAKJ
The Po-Adriatic Source-to-Sink system (PASS): from modern sedimentary processes to millennial - scale stratigraphic architecture

Courses & Certifications

- Image Log Analysis Workshop – Task Fronterra, Aberdeen
- Global Warming Science – Massachusetts Institute of Technology (MIT)
- The Science of the Solar System – California Institute of Technology (CalTech)

Key Talks & Presentations

- Looking at Subsurface Through Deep Learning: an Artificial Intelligence Approach to Sediment Core Analysis. | International Association of Sedimentologists (IAS), Aberdeen (UK), 2024.
- Influence of buried geometries on ground response analysis: the case of the Pescara paleovalley system. | Seismological Society of America (SSA), Anchorage (Alaska, USA), 2024.
- Reconstructing subsoil through microtremor mapping; stratigraphic significance of mHVSr measurements. | World Conference on Earthquake Engineering (WCEE2024), Milan (Italy), 2024.
- mHVSr-Based 3D Modeling of a Late Quaternary Paleovalley System from Italy: Influence of Internal Facies Architecture on Resonance Frequencies and Shear Wave Velocities. | Seismological Society of America (SSA), San Juan (Puerto Rico), 2023.

Publications

- Di Martino, A., Sgattoni, G., Purri, F., Amorosi, A. (2024). Seismic Amplification of Late Quaternary Paleovalley Systems: 2D Seismic Response Analysis of the Pescara Paleovalley (Central Italy). *Engineering Geology*, 341, 107697. DOI: 10.1016/j.enggeo.2024.107697
- Di Martino, A., Carlini, G., Castellani, G., Remondini, D., Amorosi, A. (2023). Sediment Core Analysis Using Artificial Intelligence. *Scientific Reports*, 13, 20409. DOI: 10.1038/s41598-023-47546-2
- Di Martino, A., Sgattoni, G., Di Paola, G., Berti, M., Amorosi, A. (2023). Reconstructing Late Quaternary Paleovalley Systems of Italy Through mHVSr: A Tool for Seismic Hazard Assessment in Modern Coastal Lowlands. *Earth and Space Science*, 10, e2023EA003112. DOI: 10.1029/2023EA003112
- Amorosi, A., Bruno, L., Caldara, M., Campo, B., Cau, S., De Santis, V., Di Martino, A., Hong, W., Lucci, G., Pellegrini, C., Rossi, V., Sammartino, I., Vaiani, S.C., 2023. Late Quaternary sedimentary record of estuarine incised-valley filling and interfluvial flooding: The Manfredonia paleovalley system (southern Italy). *Marine and Petroleum Geology* 147, 105975. DOI: 10.1016/j.marpetgeo.2022.105975
- Campo, B., Barbieri, G., Di Martino, A., Hong, W., Scarponi, D., Vaiani, S.C., Amorosi, A., 2022. Late Pleistocene to Holocene glacio-eustatic history as recorded in the Pescara paleovalley system (Central Italy, Adriatic basin). *Marine and Petroleum Geology* 145, 105908. DOI: 10.1016/j.marpetgeo.2022.105908

- Amorosi, A., Bruno, L., Campo, B., Di Martino, A., Sammartino, I. (2021). Patterns of Geochemical Variability Across Weakly Developed Paleosol Profiles and Their Role as Regional Stratigraphic Markers (Upper Pleistocene, Po Plain). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 574, 110413. DOI: 10.1016/j.palaeo.2021.110413
- Bruno, L., Campo, B., Di Martino, A., Hong, W., Amorosi, A. (2019). Peat Layer Accumulation and Post-Burial Deformation During the Mid-Late Holocene in the Po Coastal Plain (Northern Italy). *Basin Research*, 31, 621–639. DOI: 10.1111/bre.12339