

Martina Monaco, M.Sc., Ph.D. Candidate

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EXPERIENCE & SKILLS

GEOPHYSICS PhD CANDIDATE & TEACHING ASSISTANT — Jan 2021 - current

University of Florida — Gainesville, FL

- Developed, tested, and optimized 2D and 3D C++-based computational models of the deep Earth on the HiPerGator supercomputer
- Expanded the capabilities of the ASPECT codebase for mantle convection by generating a novel application in the "*chemical_heterogeneity.cc*" plugin
- Created a collection of Python scripts for data visualization, quality control, multivariate analysis, and regression machine learning, successfully enhancing data analysis and predictive modeling skills on large heterogeneous datasets
- Proven proficiency in bash scripting and with Github, VSCode, and Paraview
- Authored research papers for peer-reviewed journals and delivered compelling presentations at major international conferences and symposia
- Teaching assistant to GLY1102 & ESC1000 (Introduction to Earth Sciences): grading, office hours, tutoring, proctoring

GEOLOGY GRADUATE RESEARCH INTERN — Jun 2020 - Nov 2020

University of Florida — Gainesville, FL

- Developed computational models of the Andean subduction zone to assess the impact of slab properties on subduction patterns
- Wrote scientific code in Python for data visualization, QC, and analysis
- Authored an original Master's thesis which introduced novel numerical modeling techniques in the Department
- Gained proficiency in writing technical reports and theses and presenting results to academics and experienced professionals

PETROLEUM GEOLOGY INTERN — Apr 2017 - Jul 2017

GEPlan Consulting s.r.l. — Ferrara, Italy

- Performed in-depth analysis of a hydrocarbon discovery onshore Italy in order to evaluate the viability of its development
- Reconstructed the 3-D architecture of a Jurassic carbonate platform in Petrel using seismic and well data
- Created a data-driven geological model using Petrel and completed reservoir volumetrics and mapping using Neura Map to quantify the economic potential of the discovery

EDUCATION & OUTREACH

GEOPHYSICS, PhD — Jan 2021 - current

4.0/4.0 GPA

University of Florida, Department of Geology — Gainesville, FL

- *Project*: computational numerical modeling of the Hawaiian mantle plume, its ascent dynamics, and its relationship with mantle seismic discontinuities — Advisor: Prof. Juliane Dannberg.
- *Main topics*: Geophysics, Geodynamics, Numerical (Computational) Modeling (C++), Data Analysis (Python), Seismology.

- *Outreach*: invited Earth Science lecturer in public schools under the “Scientist in every Florida school” program.
- *Certificates*: University of Oslo, “Earth and planetary mineralogy and dynamics (GEO-DEEP 9200)”, 5 ECTS (Visiting PhD student).

EXPLORATION GEOLOGY, MSc — Oct 2017 - Dec 2020

110/110 *Summa Cum Laude*

Sapienza University — Rome, Italy

- *Thesis*: “Subduction dynamics and role of mantle flow in Central South America: a 2D numerical modeling through ASPECT” — Advisor: Prof. Carlo Doglioni.
- *Main topics*: Geophysics, Seismic Interpretation, Geodynamics, Oil & Gas Exploration, Stratigraphy.
- *Outreach*: College tutor in physical sciences, calculus 1, and writing. Scientific and college-prep tutoring to high school students in public schools.

GEOLOGICAL SCIENCES, BSc — Sept 2013 - Oct 2017

University of Bologna — Bologna, Italy

- *Thesis*: “The Bagnolo Mesozoic carbonate platform: characteristics and extension as inferred from well data” — Advisors: Prof. Alberto Riva (UniFe) and Prof. Rossella Capozzi (UniBo).
- *Main topics*: Geology, Geophysics, Structural Geology, Stratigraphy.

SELECTED PUBLICATIONS

- Monaco M., Dannberg J., Gassmoeller R., Pugh S., 2022: *Linking geodynamic models of basalt segregation in mantle plumes to the X-Discontinuity observed beneath hotspots*, *JGR Solid Earth*, <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2022JB025036>
- Monaco M., Dannberg J., Gassmoeller R., Pugh S., 2022: *Recycled basaltic material in mantle plumes explains the appearance of the X-discontinuity in the upper mantle beneath the Hawaiian hotspot: 2D geodynamic numerical models*, American Geophysical Union Fall Meeting 2022, Chicago, IL, USA
- Monaco M., Dannberg J., Gassmoeller R., Pugh S., 2022: *Recycled basaltic material in mantle plumes explains the appearance of the X-discontinuity in the upper mantle: 2D geodynamic numerical models*, Ada Lovelace Workshop, Hévíz, Hungary, 2022
- Monaco M., Dannberg J., Gassmoeller R., 2021: *The Segregation of Recycled Basaltic Material Within Mantle Plumes Explains the Detection of the X-Discontinuity Beneath Hotspots: 2D Geodynamic Simulations*, American Geophysical Union Fall Meeting 2021, New Orleans, LA, USA

LANGUAGES

- Italian (native)
- English (full proficiency)
- Spanish (full proficiency)
- French (basic-lower intermediate)
- Norwegian (basic)