

Marco D'Emidio Curriculum Vitae

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Personal: Born: S.Benedetto del Tronto (AP), Italy, 09/18/1979; Italian citizen; US permanent resident.

Education: **M.Sc. Geology**, University of Rome “La Sapienza”, Rome, Italy – 108/110 – 21/02/2007.

•Thesis Title: “Assetto geologico e paleogeografia del settore compreso tra M. Cucco e Corno di Catria (Appennino Umbro-Marchigiano)”;

Advisor: Santantonio Massimo; Subject: Rilevamento Geologico.

High School Diploma: Liceo Scientifico Statale di Nereto, viale Europa 1, Nereto (TE), Italy – 1998.

Research Activities

Competence and interests

- Multibeam and backscatter processing and analysis
- Mapping and design of geomorphological and habitat maps
- Data management and data processing
- Uncrewed autonomous systems (UXs, AUVs, ASVs)
- Off-shore/On-shore Statistical, spatial, and 2/3D map modeling and analysis
- Interpretation of 2/3D seismic data (on-shore/off-shore)
- Geological survey, petroleum geology, micro/macro-paleontology
- Structural geology, geodynamics, sedimentology, sequential stratigraphy

Work Experience

November 2021 – present

Senior Research Scientist, Hydrographic Science Research Center, University of Southern Mississippi

- Data management for NOAA Ocean Exploration Cooperative Institute / Mesophotic Deep Benthic Communities / Natural Resource Damage Assessment
- Team lead for USM AUV cruises - Eagle Ray, Mola Mola, and Sea Eagle ASV
- Planning research cruises, including logistics, policy and personnel oversight
- Multibeam, Backscatter, Side Scan Sonar, CHIRP, and seismic data processing
- Provide/create maps, figures, and base maps for different purposes
- NOAA MDBC NRDA Sampling Cruises Specialist (Megacorer ops/USBL positioning)
- Co-Mentorship for OECI Ocean Exploration Internship Program (HBCUs)

July 2015 – October 2021

Freelance Consultant and Private Contractor

- University of Southern Mississippi AUV and SSS data acquisition and processing for the Search for Norlindo cruise – AUV Engineering Cruises (new NORBIT MBES system data acquisition)

March 2010 – June 2015

Research Associate, Mississippi Mineral Resources Institute, University of Mississippi

- Project leader for the MMRI-National Institute Underwater Seabed Technology Mapping Center
- Data management and dissemination for ECOGIG Consortium
- NIUST AUV cruises - Eagle Ray and Mola Mola
- Multibeam Sonar, Side Scan Sonar, CHIRP, and seismic data processing
- Provide/create maps, figures, and base maps for different purposes

- Implement and manage Gulf of Mexico Gas Hydrate Research Consortium database and the GIS website

April 2007 – February 2010

Geologist and Geophysicist, GEORES, Rome, Italy

- Acquisition and elaboration of geo-resistivity surveys of shallow subsurface
- Electrical/Electromagnetic Tomography 2/3D
- Multi-Channel Analysis of Surface Waves (MASW)
- 2/3D map modeling for engineering and archeological purposes
- Geophysical Data processing

Teaching Experience

- Tutoring graduate students' master thesis projects, University of Mississippi, including exchange students from the University of Rome "La Sapienza", 2012 to 2015

Teaching Expertise

- Geological mapping, structural geology, digital cartography 2D and 3D, GIS, geologic-structural interpretation of seismic data on/offshore, gas and oil reservoir, sedimentology, micro/macropaleontology, acoustic data processing (MultiBeam Echo Sounder, Backscatter, Side Scan Sonar and CHIRP).

Synergistic Activities

- Participated in over 50 research cruises worldwide both as scientist and chief/co-chief scientist. handling planning, logistics and personnel oversight.
- Data Management working group of the Ocean Exploration Cooperative Institute (OECI), contributing to the development of new guidelines for the archiving and dissemination of AUVs/UxS geophysical data (NCEI).
- Involved in the ECOGIG Gulf Restoration Initiative as a Multibeam/Chirp expert in the AUV's missions.
- Implemented and managed the MC118 database and the design of the MMRI GIS website of the Gulf of Mexico Hydrates Research Consortium (GOMHRC) observatory research site at Woolsey Mound (MC118), Gulf of Mexico.
- Development of the STRC-NIUST (NOAA) Polarity Preserving Chirp project, including design and programming of an "in house" data processing procedure via unconventional techniques. This project involved the team of MMRI/STRC scientists, the NIUST (National Institute of Underwater Seabed Technology) engineering team, and scientists and engineers at GeoAcoustics who built the instrument to specifications for the NIUST AUV.
- Long term relationship and collaboration with the Department of Earth Science, University "La Sapienza" of Rome, involving exchange of graduate students with the University of Mississippi.

Computing skills

- Software:** Microsoft Office (excellent), Global Mapper (excellent), Surfer (excellent), Hypack (excellent), Adobe Illustrator (excellent), Adobe PhotoShop (excellent), RockWorks (good), Wise Image Geo edition (good), Didger 7 (excellent), Grapher (good), Voxler (good), ESRI ArcGIS pro (very good), ArcGIS Server (basic), AutoCAD Map 3D (very good), AutoCAD (very good), 3dStudioMax (good), SketchUp Pro (very good),
- Data Processing:** CARIS HIPS & SIPS (excellent), QPS Qimera and FMGT (very good), IHS-Kingdom Suite (excellent), EarthLab (basic)
- Database:** Filemaker Pro (very good), UltraEdit (excellent), Microsoft Access (good), Grass GIS Database (basic)
- ML/coding:** Python and UV (basic)

Languages

- Italian – Excellent – First language
- English – Excellent – Advanced Level course, University of Mississippi (2010)

Publications:

Peer Review Journals

Diercks, A. R., Macelloni, L., **D'Emidio, M.**, Lucker, S., Woolsey, A., & Woolsey, M. U. (2019). High-resolution seismo-acoustic characterization of Green Canyon 600, a perennial hydrocarbon seep in Gulf of Mexico deep water. *Marine Geophysical Research*, 1-14.

Macelloni, L., Lutken, C. B., Ingrassia, M., **D'Emidio, M.**, & Pizzi, M. (2016). Mesoscale biogeophysical characterization of Woolsey Mound (northern Gulf of Mexico), a new attribute of natural marine hydrocarbon seeps architecture. *Marine Geology*, 380, pages 330-344.

Conti, A., **D'Emidio, M.**, L. Macelloni, L., Lutken, C., Asper, V., Woolsey, M., Jarnagin, R., Diercks, A. and Highsmith, R.C., (2016). Morpho-acoustic characterization of natural seepage features at ECOGIG OC26 site. *Deep Sea Research II*, 129, pages.53-65

Martens, C. S., Mendlovitz, H. P., Seim, H., Lapham, L., & **D'Emidio, M.** (2016). Sustained in situ measurements of dissolved oxygen, methane and water transport processes in the benthic boundary layer at MC118, northern Gulf of Mexico. *Deep Sea Research Part II: Topical Studies in Oceanography*, 129, 41-52.

Macelloni, L., Lutken, C. B., Garg, S., Simonetti, A., **D'Emidio, M.**, Wilson, R.M., Sleeper, K., Lapham, L., Lewis, T., Pizzi, M., Knapp, J., Knapp, C., J. Brooks and McGee T.M. (2015). Heat-flow regimes and the hydrate stability zone of a transient, thermogenic, fault-controlled hydrate system (Woolsey Mound northern Gulf of Mexico). *Marine and Petroleum Geology* 59 (2015) 491-504

Wilson R. M., Macelloni L., Simonetti A., Lapham L., Lutken C., Sleeper K., **D'Emidio M.**, Pizzi M., Knapp J., and Chanton J. (2014). Subsurface methane sources and migration pathways within a gas hydrate mound system, Gulf of Mexico. *Geochemistry, Geophysics, Geosystems* 15, no. 1: 89-107.

Macelloni, L., Brunner, C.A., Caruso, S., Lapham, L., Lutken, C., **D'Emidio, M.**, (2013). Spatial distribution of seafloor bio-geological and geochemical processes as proxies of fluid flux regime and evolution of a carbonate/hydrates mound, northern Gulf of Mexico. *Deep-Sea Research I* 74 (2013) 25–38

Falcini F., Khan, N.S., Macelloni, L., Horton, B.P., Lutken, C.B., McKee, K.L., Santoleri, R., Colella, S., Li, C., Volpe, G., **D'Emidio, M.**, Salusti, A., Jerolmack, D.J. (2012). Linking the historic 2011 Mississippi River flood to coastal wetland sedimentation. *Nature Geoscience*, 5 (11), pp. 803-807

Proceedings

Rubim de Assis A, Woolsey M, Macelloni L, Jarnagin R & **D'Emidio, M.** (2023). Integrating a Sonardyne Ranger 2 USBL System in the Autonomous Underwater Vehicle Eagle Ray: Operation and Post-Processing. 1-5. 10.23919/OCEANS52994.2023.10337141. Gulf Coast September 2023

Woolsey, M., Jarnagin, R., Sleeper, K., Macelloni, L., **D'Emidio, M.**, Diercks, A., Asper, V., (2013). Integration of a Polarity-Preserving Chirp Subbottom Profiler into the NIUST AUV Eagle Ray. In Proceedings of the OCEANS 2013 MTS/IEEE San Diego September 23-26.

Lutken, C., **D'Emidio, M.**, Macelloni, L., Ingrassia, M., Pierdomenico, M., Asper, V., Diercks, A., Woolsey, M., Jarnagin, R., (2013). Challenges in imaging the deep seabed: examples from Gulf of Mexico cold seeps, Transactions of the GCAGS, New Orleans, 2013.

D'Emidio, M., Ingrassia, M., Lutken, C., Macelloni, L., Simonetti, A., Pizzi, M., Lapham, L., Wilson, R., Hsing, P., Fisher, C., (2012). Biogeophysical Classification of Seafloor Seeps at a Carbonate-Hydrate Mound, Northern Gulf of Mexico, GRC "Natural Gas Hydrates System", Ventura, CA, March 18-23, 2012.

Pizzi, M., Macelloni, L., Lutken, C., **D'Emidio, M.**, (2012). Temporal Evolution of MC118 Woolsey Mound seep activity: constraints from analysis of small-scale salt-induced sediment deformation, GRC "Natural Gas Hydrates System", Ventura, CA, March 18-23, 2012.

Macelloni, L., Carrier, O., **D'Emidio, M.**, Gerstoft, P., Simonetti, A., Knapp, C. C., Knapp, J. H., Lutken, C. B., Hardage, B. A., Sleeper, K., (2012). Geophysical Evidence Of Shallow Hydrates Formation And Accumulation at Woolsey Mound, Mississippi Canyon Block 118. 2012 Oceans Science Meeting, (Abstract ID:9539) P.

D'Emidio, M., Ingrassia, M., Lutken, C. B., Macelloni, L., Simonetti, A., Lapham, L. L., Wilson, R. M., Hsing, P., Fisher, C., (2012). Biogeophysical Classification Of Seafloor Seeps At A Carbonate-Hydrate Mound, Northern Gulf of Mexico. 2012 Oceans Science Meeting (Abstract ID:9968) P.

Falcini, F., Li, C., **D'Emidio, M.**, Lutken, C., Macelloni, L., Salusti, A., Jerolmack, D., (2011). Hydrographic and suspended sediment measurements of the Mississippi River plume during the historic 2011 flood: a coupled satellite analysis and boat survey approach to determine an efficiency factor for sediment trapping in the near-shore zone, Abs EP44A-07, American Geophysical Union Fall Meeting, San Fran. CA, 12-16 Dec.

Lutken, C., **D'Emidio, M.**, Falcini, F., Horton, B., Jerolmack, D., Khan, N., Li, C., Macelloni, L., McKee, K., (2011). Connecting the historic 2011 Mississippi River flood to marsh sedimentation on the Delta, Abs B24D-08, American Geophysical Union Fall Meeting, San Fran. CA, 12-16 Dec

Lutken, C., Simonetti, A., Ingrassia, M., Macelloni, L., Knapp, J., Fisher, C., Caruso, S., **D'Emidio, M.**, (2011). Bio-geophysical Classification of Seafloor Seeps at a Carbonate-Hydrate Mound, Northern Gulf of Mexico, AAPG International Conference and Exhibition, Milan, Italy, October 23-27, 2011.

Lutken, C., Macelloni, L., Sleeper, K., **D'Emidio, M.**, McGee, T., Simonetti, A., Knapp, J., Knapp, C., Caruso, S., Chanton, J., Lapham, L., Lodi, M., Ingrassia, M., Higley, P., Brunner, C., Camilli, R., Battista, B., Short, T., Bell, R., Fietzek, P., (2011). New discoveries at Woolsey Mound, MC118, northern Gulf of Mexico, Proceedings of the 7th International Conference on Gas Hydrates (ICGH 2011), Edinburgh, Scotland, United Kingdom, July 17-21, 2011.

Sleeper, K., Bell, R., Short, T., Chanton, J., Wilson, R., **D'Emidio, M.**, Macelloni, L., (2010). The Detection of Elevated Methane Concentration Indicate The Presence of Deep-Water Plumes Northwest of the DWH Site, Abstract OS21G-05 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.