



Rocco De Marco

Nationality: Italian **Date of birth:** 04/07/1975 **Phone number:** (+39) 071207881

Email address: rocco.demarco@cnr

Website: <https://www.irbim.cnr.it/personale-utente/de-marco-rocco/>

Work: C/O IRBIM Largo Fiera della Pesca, 2, 60125 Ancona (Italy)

SUMMARY

about me

Computer Science graduate with extensive experience in scientific data analysis, signal processing, and the development of intelligent underwater monitoring systems. He has contributed to the design of AI-based acoustic devices for cetacean detection and deterrence. Active in oceanographic research, he serves as member of the Data Working Group and IT Lead for the onboard datacenter of the R/V *Gaia Blu*, and has held key roles in multidisciplinary marine campaigns.

WORK EXPERIENCE

Consiglio Nazionale delle Ricerche – Italy

Country: Italy

Member of the Data Working Group – R/V Gaia Blu (CNR)

[14/02/2025 – Current]

Appointed as a member of the Data Working Group for the CNR's oceanographic research vessel *Gaia Blu*, contributing to the coordination and standardization of data acquisition, processing, and archiving protocols across multidisciplinary campaigns. Since April 2025, I have also served as IT Lead for the onboard datacenter, overseeing its infrastructure, maintenance, and integration with national research networks. These activities support the vessel's scientific mission and ensure compliance with FAIR data principles.

Istituto per le Risorse Biologiche e le Biotecnologie Marine del CNR – Ancona, Italy

City: Ancona | Country: Italy

Data Analyst & Software developer

[31/08/2019 – Current]

At the CNR Institute for Marine Biological Resources and Biotechnologies (IRBIM), I analyzed large-scale biogeochemical, oceanographic, and microbiological datasets. With expertise in signal processing, I conducted advanced studies on the acoustic analysis of dolphin vocalizations.

I contributed to the publication of over 25 peer-reviewed scientific articles, serving as first or second author in many of them.

From 2019 to 2024, I was responsible for the institute's computational services, including internal training activities such as courses on data normalization, and the use of R and QGIS for scientific data analysis and geospatial processing.

Chief Scientist – PER24 Oceanographic Campaign, R/V Gaia Blu

[11/10/2024 – 28/10/2024]

Led the 18-day *Pollutants' Environmental Research 2024* (PER24) campaign aboard the R/V *Gaia Blu*, focusing on the assessment of human-induced impacts on marine ecosystems in the Adriatic Sea. Oversaw multidisciplinary operations including sediment coring, biogeochemical and microbiological sampling, and hydrological profiling. The campaign involved collaboration among multiple national research institutes and universities, and aimed to reconstruct the Anthropocene through marine sediment analysis.

 **Università Politecnica delle Marche** – Ancona, Italy

City: Ancona | Country: Italy

Academic advisor

[21/12/2021 – 30/11/2024]

Tutoring activities were carried out for Master's students enrolled in the Computer and Automation Engineering program at Università Politecnica delle Marche, as a complementary initiative to the Life DELFI project – *Lowering Fishing Interactions* (LIFE18NAT/IT/000942) and the PNRR project, Mission 4 Component 2 Investment 1.4, NextGenerationEU.

In this context, more than 10 graduate students were trained in the development of an intelligent device for the acoustic detection of dolphin presence, designed to function as an interactive acoustic deterrent.

 **Istituto di Scienze Marine del CNR** – Ancona, Italy

City: Ancona | Country: Italy

Data analyst/Software developer/Marine Mammals Observer

[31/10/2010 – 30/08/2019]

Since 2012, I have participated in numerous oceanographic research cruises and worked in the Oil & Gas sector as a Marine Mammal Observer. In 2014, I developed the *Dolphin Detector*, an acoustic monitoring system for cetacean presence, which was successfully deployed across multiple offshore oil platforms.

I have conducted extensive computational analyses in both biological and geochemical domains, with expertise in spatial databases and cartographic production.

I have also delivered internal training courses on cybersecurity and scientific software applications, including R, PostGIS, QGIS, Python, and MATLAB.

Between 2010 and 2012, I served as IT Manager for the Ancona branch of the institute, overseeing infrastructure reorganization and the establishment of a local data center.

 **Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia (CNISM)** – Roma, Italy

City: Roma | Country: Italy

IT Manager

[31/08/2009 – 30/10/2010]

Served as IT Infrastructure Manager for the CNISM Consortium, overseeing the organization and maintenance of core IT services, including server management, document handling systems, and decentralized infrastructure. Acted as technical advisor to the President of the Consortium.

This role was carried out under a secondment granted by the National Research Council of Italy (CNR).

 **Università degli Studi di Camerino** – Camerino, Italy

City: Camerino | Country: Italy

Adjunct Lecturer

[30/09/2007 – 30/07/2008]

Taught the courses *Programming Techniques I* and *Programming Techniques II* within the Bachelor's Degree in Physics, specialization in Technologies for Innovation, at the University of Camerino.

 **Istituto Nazionale per la Fisica della Materia** – Camerino, Italy

City: Camerino | Country: Italy

IT Manager & software developer

[01/11/2001 – 30/08/2009]

Served as IT Infrastructure Manager for the Central Adriatic Scientific Grouping (SGD) of INFN, and as system manager and hardware/software developer for the Research Unit (UDR) in Camerino.

Responsible for the GRID Sibilla computational infrastructure and acted as IT coordinator for several international scientific conferences, including NCS 2005, FED 2006, SCALA, XAFS 14, and QCCQI.

 **Istituto Gamma** – Chieti, Italy

City: Chieti | Country: Italy

Professional Training Lecturer

[31/05/2000 – 30/08/2001]

Delivered lectures as part of the *Master in Web Design* program and provided multi-level IT training to both public and private sector participants. Served as an ECDL (European Computer Driving Licence) examiner.

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

EDUCATION & TRAINING

Certifications

STCW (Standards of Training, Certification and Watchkeeping for Seafarers) courses: Personal Survival Techniques, Elementary First AID, Personal Safety and Social Responsibilities, Fire Prevention and Fire Fighting - 2025

BOSIET (Basic Offshore Safety Induction and Emergency Training) - 2024

BLS-D (Basic Life Support and Defibrillation) operator course - 2020

MMO (Marine Mammals Observer) - JNCC - 2014

Education

Degree in Computer Science (CC26), University of Camerino, 2006

Preliminary English Test (PET), University of Cambridge, 2002

European Computer Driving Licence (ECDL), AICA, 2001

2025

De Marco R., Di Nardo F., Rongoni A., Screpanti L., Scaradozzi D. - Real-Time Dolphin Whistle Detection on Raspberry Pi Zero 2 W with a TFLite Convolutional Neural Network - (2025) *Robotics*, 14 (5), art. no. 67 - DOI: 10.3390/robotics14050067

Di Nardo F., De Marco R., Li Veli D., Screpanti L., Castagna B., Lucchetti A., Scaradozzi D. - Multiclass CNN Approach for Automatic Classification of Dolphin Vocalizations - (2025) *Sensors*, 25 (8), art. no. 2499 - DOI: 10.3390/s25082499

Di Nardo F., De Marco R., Li Veli D., Screpanti L., Castagna B., Novelli G., Lucchetti A., Scaradozzi D. - High-Accuracy Detection of Bottlenose Dolphin Whistle Using AI - (2025) 2025 33rd Mediterranean Conference on Control and Automation, MED 2025, pp. 275 - 279 - DOI: 10.1109/MED64031.2025.11073517

Di Nardo F., De Marco R., Veli D.L., Screpanti L., Castagna B., Lucchetti A., Scaradozzi D. - Towards Automated Dolphin Vocalization Recognition: A Preliminary CNN-Based Study - (2025) 2025 33rd Mediterranean Conference on Control and Automation, MED 2025, pp. 280 - 285 - DOI: 10.1109/MED64031.2025.11073240

Fanelli M., Illuminati S., Annibaldi A., De Marco R., Cerotti C., Girolametti F., Ajdini B., Truzzi C., Frapiccini E., Gallerani A., Tramontana M., Baldelli G., Spagnoli F. - Mercury historical signature in the Central and Southern Adriatic Sea sediment cores - (2025) *Estuarine, Coastal and Shelf Science*, 314, art. no. 109144 - DOI: 10.1016/j.ecss.2025.109144

2024

Frapiccini E., De Marco R., Grilli F., Marini M., Annibaldi A., Prezioso E., Tramontana M., Spagnoli F. - Anthropogenic contribution, transport, and accumulation of Polycyclic Aromatic Hydrocarbons in sediments of the continental shelf and slope in the Mediterranean Sea - (2024) *Chemosphere*, 352, art. no. 141285 - DOI: 10.1016/j.chemosphere.2024.141285

Azzurro E., Bonanomi S., Chiappi M., De Marco R., Luna G.M., Cella M., Guicciardi S., Tiralongo F., Bonifazi A., Strafella P. - Uncovering unmet demand and key insights for the invasive blue crab (*Callinectes sapidus*) market before and after the Italian outbreak: Implications for policymakers and industry stakeholders - (2024) *Marine Policy*, 167, art. no. 106295 - DOI: 10.1016/j.marpol.2024.106295

Scaradozzi D., De Marco R., Li Veli D., Lucchetti A., Screpanti L., Di Nardo F. - Convolutional Neural Networks for Enhancing Detection of Dolphin Whistles in a Dense Acoustic Environment - (2024) *IEEE Access*, 12, pp. 127141 - 127148 - DOI: 10.1109/ACCESS.2024.3454815

Scaradozzi D., De Marco R., Di Nardo F., Li Veli D., Costa D., Screpanti L., Lucchetti A. - Cost-Effective Architectures For Underwater Sound-Recording Systems - (2024) *Proceedings of the International Offshore and Polar Engineering Conference*, 1, pp. 1736 - 1740 - <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85200768940&partnerID=40&md5=fb52b3e11805f51b2dbf9ea0e88d577c>

2023

Petetta A., Herrmann B., Veli D.L., Virgili M., De Marco R., Lucchetti A. - Every animal matters! Evaluating the selectivity of a Mediterranean bottom trawl fishery from a species community perspective - (2023) *PLoS ONE*, 18 (3 March), art. no. e0283362 - DOI: 10.1371/journal.pone.0283362

De Marco R., Di Nardo F., Lucchetti A., Virgili M., Petetta A., Li Veli D., Screpanti L., Bartolucci V., Scaradozzi D. - The Development of a Low-Cost Hydrophone for Passive Acoustic Monitoring of Dolphin's Vocalizations - (2023) Remote Sensing, 15 (7), art. no. 1946 - DOI: 10.3390/rs15071946

A. Rostami M., Frontalini F., Armynot du Châtelet E., Francescangeli F., Alves Martins M.V., De Marco R., Dinelli E., Tramontana M., Dyer L.A., Abraham R., Bout-Roumazeilles V., Delattre M., Spagnoli F. - Understanding the Distributions of Benthic Foraminifera in the Adriatic Sea with Gradient Forest and Structural Equation Models - (2023) Applied Sciences, 13 (2), art. no. 794 - DOI: 10.3390/app13020794

Di Nardo F., De Marco R., Lucchetti A., Scaradozzi D. - A WAV file dataset of bottlenose dolphin whistles, clicks, and pulse sounds during trawling interactions - (2023) Scientific Data, 10 (1), art. no. 650 - DOI: 10.1038/s41597-023-02547-8

2022

Cordone A., D'Errico G., Magliulo M., Bolinesi F., Selci M., Basili M., de Marco R., Saggiomo M., Rivaro P., Giovannelli D., Mangoni O. - Bacterioplankton Diversity and Distribution in Relation to Phytoplankton Community Structure in the Ross Sea Surface Waters - (2022) Frontiers in Microbiology, 13, art. no. 722900 - DOI: 10.3389/fmicb.2022.722900

De Marco R., Di Nardo F., Lucchetti A., Virgili M., Petetta A., Veli D.L., Screpanti L., Bartolucci V., Scaradozzi D. - A low-cost approach in acoustic monitoring of dolphin presence - (2022) 2022 IEEE International Workshop on Metrology for the Sea; Learning to Measure Sea Health Parameters, MetroSea 2022 - Proceedings, pp. 303 - 307 - DOI: 10.1109/MetroSea55331.2022.9950931

2021

Frogia C., Vasapollo C., Virgili M., Bargione G., Petetta A., De Marco R., Lucchetti A. - New records of Albunea carabus (Linnaeus, 1758) (Decapoda: Anomura: Hippoidea) in the Tyrrhenian Sea, with notes on its ecology and distribution in the Italian seas - (2021) European Zoological Journal, 88 (1), pp. 698 - 705 - DOI: 10.1080/24750263.2021.1926564

Spagnoli F., De Marco R., Dinelli E., Frapiccini E., Frontalini F., Giordano P. - Sources and metal pollution of sediments from a coastal area of the central western adriatic sea (Southern Marche region, Italy) - (2021) Applied Sciences, 11 (3), art. no. 1118, pp. 1 - 27 - DOI: 10.3390/app11031118

Fossile E., Sabbatini A., Spagnoli F., Caridi F., Dell'Anno A., de Marco R., Dinelli E., Droghini E., Tramontana M., Negri A. - Sensitivity of foraminiferal-based indices to evaluate the ecological quality status of marine coastal benthic systems: A case study of the Gulf of Manfredonia (southern Adriatic Sea) - (2021) Marine Pollution Bulletin, 163, art. no. 111933 - DOI: 10.1016/j.marpolbul.2020.111933

2020

Basili M., Quero G.M., Giovannelli D., Manini E., Vignaroli C., Avio C.G., De Marco R., Luna G.M. - Major Role of Surrounding Environment in Shaping Biofilm Community Composition on Marine Plastic Debris - (2020) Frontiers in Marine Science, 7, art. no. 262 - DOI: 10.3389/fmars.2020.00262

Vasapollo C., Virgili M., Bargione G., Petetta A., De Marco R., Punzo E., Lucchetti A. - Impact on Macro-Benthic Communities of Hydraulic Dredging for Razor Clam Ensis minor in the Tyrrhenian Sea - (2020) Frontiers in Marine Science, 7, art. no. 14 - DOI: 10.3389/fmars.2020.00014

Rovere M., Mercorella A., Frapiccini E., Funari V., Spagnoli F., Pellegrini C., Bonetti A.S., Veneruso T., Tasseti A.N., Dell'orso M., Mastroianni M., Giuliani G., De Marco R., Fabi G., Ciccone F., Antoncecchi I. - Geochemical and geophysical monitoring of hydrocarbon seepage in the adriatic sea - (2020) *Sensors*, 20 (5), art. no. 1504 - DOI: 10.3390/s20051504

Rovere M., Mercorella A., Spagnoli F., Frapiccini E., Funari V., Pellegrini C., Bonetti A.S., Dell'Orso M., Mastroianni M., Veneruso T., Ciccone F., Antoncecchi I., Tasseti A.N., Giuliani G., de Marco R., Fabi G. - Cost-effective and relocatable monitoring of hydrocarbon seepage in offshore environments - (2020) 2019 IMEKO TC19 International Workshop on Metrology for the Sea: Learning to Measure Sea Health Parameters, MetroSea 2019, pp. 64 - 69

Petetta A., Herrmann B., Virgili M., De Marco R., Canduci G., Li Veli D., Bargione G., Vasapollo C., Lucchetti A. - Estimating selectivity of experimental diamond (T0) and turned mesh (T90) codends in multi-species Mediterranean bottom trawl - (2020) *Mediterranean Marine Science*, 21 (3), pp. 545 - 557 - DOI: 10.12681/mms.22789

2019

Droghini E., Annibaldi A., Prezioso E., Tramontana M., Frapiccini E., De Marco R., Illuminati S., Truzzi C., Spagnoli F. - Mercury content in central and southern adriatic sea sediments in relation to seafloor geochemistry and sedimentology - (2019) *Molecules*, 24 (24), art. no. 4467 - DOI: 10.3390/molecules24244467