

PERSONAL INFORMATION

Pierpaolo Falco



Born in Naples (ITALY) on July the 22<sup>nd</sup> 1969

CURRENT POSITION

Associate Professor in Oceanography and Atmospheric Physics at Marche Polytechnic University

EDUCATION

- PhD in Marine Science and Engineering (University of Naples Federico II): Thesis title: "Lagrangian Correntometry in the Southern Ocean"; February 2007
- Graduated in Nautical Disciplines at the Parthenope University of Naples (formerly Naval University Institute). Thesis in Physical Oceanography entitled: "Study of the dispersion of passive tracers in the Tyrrhenian Sea through the simulation of Lagrangian trajectories" July 1995

PROFESSIONAL TRAINING

- June 1996- July 2003: scholarship first and then research fellow at the Department of Sciences for the Environment, today Department of Sciences and Technologists, of the Parthenope University of Naples;
- August 2003- February 2005: researcher at the Institute of Marine Sciences - Ancona Fishing Section of the CNR;
- March 2005 - February 2006: research fellow at the Department of Marine Sciences, today Department of Life and Environmental Sciences, Polytechnic University of Marche, Ancona
- March 2006 - October 2006: project collaboration at the Institute of Marine Sciences - Ancona Fishing Section of the CNR.
- from November 2006 to 09/30/2017 in service as assistant professor at the Parthenope University of Naples, Department of Science and Technology (previously at the Department of Environmental Sciences)
- from October 2017 to November 2020 in service as associate professor at the Parthenope University of Naples, Department of Science and Technology
- from November 2020 to date in service as associate professor at the Department of Life and Environmental Sciences, Polytechnic University of Marche, Ancona

**Teaching activity**

From academic year 2006-2007 to date: Teaching activity in bachelor's, master's degree, and doctoral university courses of the Parthenope University of Naples and of the Marche Polytechnic University of Ancona.

The course topics are related to physical oceanography (general and coastal), polar oceanography, climatology, and climate risk.

**Participation in Oceanographic Campaigns in Mediterranean Sea**

More than 30 periods of embark on research vessels of different size and in different areas of the Mediterranean Sea.

**Antarctic expeditions, study area: Southern Ocean and Ross Sea**

- XVI mission, period 02/12 / 1999-11 / 01/2000, PI of the research group, Italian Base M.Zucchelli;
- XXI mission, on-board period 30/12 / 2006-27 / 02/2007, R/V Italice
- XXVII mission, on-board period 11/01/2012 - 24/02/2012, R/V Italice
- XXVIII mission, on-board period 03/01 / 2013-19 / 01/2013, PI of research group, Korean polar / oceanographic ship Aron
- XXIX mission, on-board period 28/12 / 2014-28 / 02/2015, R/V Italice
- XXXI mission, on-board period 15/01/2015 - 23/02/2016, R/V Italice
- XXXII mission, on-board n period 29/01/2016 - 24/02/2017, R/V Italice, PI of the MORSEa project and Research Unit Leader of the CELEBER project
- XXXIV mission, on-board period 5/02 / 2019-23 / 03/2109, R/V Araon (South-Korea), PI of research group
- XXXV mission, on-board period 5/01 / 2020-19 / 02/2020, R/V Laura Bassi, PI of two scientific projects (MORSEa and ESTRO)
- XXXVI mission, on-board period 24/12 /2020-10/02/2021, R/V Laura Bassi, Scientific Leader
- XXXVII mission, on-board period 04/01/2022 -12/02/2022, R/V Laura Bassi, Scientific Leader

**Research interests:**

- Study of water mass formation and variability on the Ross Sea continental shelf and export in the Southern Ocean; study of the ACC dynamics mainly in the Pacific Sector of the Southern Ocean.
- Study of marine currents, at different spatial scales, with a Eulerian and Lagrangian approach.
- Use of HF radar for the measurement of the surface current field in the coastal area.
- Collection (from research vessels and moorings) and analysis of the main physical parameters to characterize the structure and dynamics of the water masses.

**Relevant positions held** (other than Institutional position e.g., Scientific Committees, Boards, Program leadership, Community representation):

- P.I. of the “PhySical and bioGeochemical traciNg of wATer masses at source areas and export gates in the Ross Sea and impact on the SoUtheRn OcEan (SIGNATURE)” project started on May 2022 currently on going.
- P.I. of the Italian “Marine Observatory of the Ross Sea (MORSEa)” project from 2017 to 2020.
- Research Unit leader of the “Effect of the eaSTern inflow of water on the ROss Sea salinity field variability (ESTRO)” project from December 2019 to December 2022.

- Research Unit leader of the “Pelagic ecosystem monitoring of the key species of Middle Trophic Level in the Ross Sea Marine Protected Area (ROSSKRILL)” project from 2019 to 2022.
- Research Unit leader of the “Effects of CDW on glacial ice melt and Fe amount in the western Ross Sea (Celeber)” project from 2016 to 2018.
- Member of The Ross Sea Working Group of the SOOS.
- Member of the Scientific Committee of the Ross Sea Conference (July 2023)
- **Participation in projects**

Participation in more than 20 projects, between national and international, with different roles, from participation as a researcher to the scientific responsibility of research unit and projects.

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## Publications

1. Melissa M Bowen, Denise Fernandez, Arnold L Gordon, Bruce Huber, Pasquale Castagno, Pierpaolo Falco, Giorgio Budillon, Kathryn L Gunn, Aitana Forcen-Vazquez, "Tides regulate the flow and density of Antarctic Bottom Water from the western Ross Sea," SCIENTIFIC REPORTS,1,3873, 2023
2. A. I. Ferola;Y. Cotroneo;P. Wadhams;G. Fusco;P.;G. Budillon;and G. Aulicino "The Role of the Pacific-Antarctic Ridge in Establishing the Northward Extent of Antarctic Sea-Ice", GEOPHYSICAL RESEARCH LETTERS, <https://dx.doi.org/10.1029/2023GL104373>, 2023
3. Celentano P.;Falco P.;Memmola F.;Zambianchi E. "Surface connectivity between different areas of the Mediterranean Sea derived from drifter data", JOURNAL OF MARINE SYSTEMS, <https://dx.doi.org/10.1016/j.jmarsys.2022.103854>, 2023
4. Maurizio Azzaro;Antonietta Specchiulli;Giovanna Maimone;Filippo Azzaro;Angelina Lo Giudice;Maria Papale;Rosabrina La Ferla;Rodolfo Paranhos;Anderson Souza Cabral;Alessandro Ciro Rappazzo;Monia Renzi;Pasquale Castagno;Pierpaolo;Paola Rivarò;Gabriella Caruso "Trophic and Microbial Patterns in the Ross Sea Area (Antarctica): Spatial Variability during the Summer Season", JOURNAL OF MARINE SCIENCE AND ENGINEERING, <https://dx.doi.org/10.3390/jmse10111666>, 2022
5. Naomi Krauzig;Enrico Zambianchi;Pierpaolo Pieter Groenemeijer;Karina von Schuckmann in "Copernicus Ocean State Report, issue 6", JOURNAL OF OPERATIONAL OCEANOGRAPHY, <https://dx.doi.org/10.1080/1755876x.2022.2095169>, 2022
6. Salvi G.;Anderson J. B.;Bertoli M.;Castagno P.;Falco P.;Ferneti M.;Montagna P.;Taviani M. "Recent Ostracod Fauna of the Western Ross Sea (Antarctica): A Poorly Known Ingredient of Polar Carbonate Factories", MINERALS, <https://dx.doi.org/10.3390/min12080937>, 2022
7. Lorente, P.;Aguiar, E.;Bendoni, M.;Berta, M.;Brandini, C.;Caceres-Euse, A.;Capodici, F.;Cianelli, D.;Ciraolo, G.;Corgnati, L.;Dadic, V.;Doronzo, B.;Drago, A.;Dumas, D.;Falco, P., ..... Zambianchi, E.;Cardin, V. "Coastal high-frequency radars in the Mediterranean - Part 1: Status of operations and a framework for future development", OCEAN SCIENCE, <https://dx.doi.org/10.5194/os-18-761-2022>, 2022
8. Reyes, E.;Aguiar, E.;Bendoni, M.;Berta, M.;Brandini, C.;Caceres-Euse, A.;Capodici, F.;Cardin, V.;Cianelli, D.;Ciraolo, G.;Corgnati, L.;Dadic, V.;Doronzo, B.;Drago, A.;Dumas, D.;Falco, P.; ..... Zambianchi, E.;Orfila, A. "Coastal high-frequency radars in the Mediterranean - Part 2: Applications in support of science priorities and societal needs", OCEAN SCIENCE, <https://dx.doi.org/10.5194/os-18-797-2022>, 2022
9. Rivarò P.;Vivado D.;Castagno P.;Falco P.;Zambianchi E.;Ianni C. "Carbonate system data tracing freshwater inflow into the Ross Sea through the eastern gate and along the Ross Ice Shelf (Antarctica)", FRONTIERS IN MARINE SCIENCE, <https://dx.doi.org/10.3389/fmars.2022.957060>, 2022
10. Cotroneo, Y.;Celentano, P.;Aulicino, G.;Perilli, A.;Olita, A.;Falco;Sorgente, R.;Ribotti, A.;Budillon, G.;Fusco, G.;Pessini, F. "Connectivity Analysis Applied to Mesoscale Eddies in the Western Mediterranean Basin", REMOTE SENSING, <https://dx.doi.org/10.3390/rs13214228>, 2021
11. Saviano S.;Esposito G.;Di Lemma R.;De Ruggiero P.;Zambianchi E.;Pierini S.;Falco P.; Buonocore B.;Cianelli D.;Uttieri M. "Wind direction data from a coastal HF radar system in the gulf of naples (Central Mediterranean Sea)", REMOTE SENSING, <https://dx.doi.org/10.3390/rs13071333>, 2021
12. Bowen M. M.;Fernandez D.;Forcen-Vazquez A.;Gordon A. L.;Huber B.;Castagno P.;Falco P. "The role of tides in bottom water export from the western Ross Sea", SCIENTIFIC REPORTS, <https://dx.doi.org/10.1038/s41598-021-81793-5>, 2021
13. Rivarò P.;Vivado D.;Falco P.;Ianni C." Hplc-dad purification and characterization of meta-cresol-purple for spectrophotometric seawater ph measurements", WATER, <https://dx.doi.org/10.3390/w13213030>, 2021
14. Martorelli E.;Bosman A.;Casalbore D.;Chiocci F.;Conte A. M.;Di Bella L.;Ercilla G.;Falcini F.;Falco P.;Frezza V.;Gaglianone G.;Giaccio B.;Mancini M. "Mid-to-late Holocene upper slope contourite deposits off Capo Vaticano (Mediterranean Sea): Hi", gh-resolution record of contourite cyclicity, bottom current variability and sandy facies", MARINE GEOLOGY, <https://dx.doi.org/10.1016/j.margeo.2020.106372>, 2021
15. Rivarò P.;Ardini F.;Vivado D.;Cabella R.;Castagno P.;Mangoni O.;Falco P. "Potential sources of particulate iron

in surface and deep waters of the terra nova bay (Ross sea, Antarctica)", WATER, <https://dx.doi.org/10.3390/w12123517>, 2020

16. Krauzig N; Falco P.;Zambianchi E. "Contrasting surface warming of a marginal basin due to large-scale climatic patterns and local forcing", SCIENTIFIC REPORTS, <https://dx.doi.org/10.1038/s41598-020-74758-7>, 2020
17. Celentano P.; Falco P.;Zambianchi E. "Surface connection between the Ionian Sea and different areas of the Mediterranean derived from drifter data", DEEP-SEA RESEARCH PART I-OCEANOGRAPHIC RESEARCH PAPERS, <https://dx.doi.org/10.1016/j.dsr.2020.103431>, 2020
18. von Schuckmann K;Le Traon P;-Y;Smith N;Pascual A;Djavidnia S;Gattuso J;-P;Gregoire M;Nolan G;Aaboe S;Fanjul E;A;Aouf L;Aznar R;Badewien T;H;Behrens A;Berta M;Bertino L;Blackford J;Bolzon G;Borile F;Bretagnon M;Brewin R;J W;Canu D;Cessi P;Ciavatta S;Chapron B;Trang Chau T;T;Chevallier F;Chtirkova B;Ciliberti S;Clark J;R;Clementi E;Combot C;Comerma E;Conchon A;Coppini G;Corgnati L;Cossarini G;Cravatte S;de Alfonso M;de Boyer Montegut C;De Lera Fern ez C;de los Santos F;J;Denvil-Sommer A;de Pascual Collar A;Dias Nunes P;A L;Di Biagio V;Drudi M;Embury O;Falco P ... .. Zunino S." Copernicus Marine Service Ocean State Report, Issue 4, <https://dx.doi.org/10.1080/1755876X.2020.1785097>, 2020
19. Menna M.;Cotroneo Y.;Falco P.;Zambianchi E.;Di Lemma R.;Poulain P. -M.;Fusco G.;Budillon G. " Response of the Pacific Sector of the Southern Ocean to wind stress variability from 1995 to 2017", JOURNAL OF GEOPHYSICAL RESEARCH. OCEANS, <https://dx.doi.org/10.1029/2019JC015696>, 2020
20. Silvano A., Foppert A., Rintoul S.R., Holland P.R., Tamura T., Kimura N., Castagno P., Falco P., Budillon G., Haumann A, Naveira Garabato A., Macdonald A. "Recovery of Antarctic Bottom Water formed in the Ross Sea driven by anomalous climate forcing", Accepted on Nature Geoscience. 2020
21. Bagagliani L., Falco P., Zambianchi E. "Eddy Detection in HF Radar-Derived Surface Currents in the Gulf of Naples", REMOTE SENSING, vol. 12, ISSN: 2072-4292, doi: 10.3390/rs12010097, 2020
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23. Castagno P., Capozzi V., DiTullio G. R., Falco P., Fusco G., Rintoul S. R., Spezie G., Budillon G. "Rebound of shelf water salinity in the Ross Sea". NATURE COMMUNICATIONS, vol. 10, p. 5441-5446, ISSN:2041-1723, doi: 10.1038/s41467-019-13083-8, 2019
24. Rivaro P., Ianni C., Raimondi L., Manno C., Sandrini S., Castagno P., Cotroneo Y., Falco P.," Analysis of Physical and Biogeochemical Control Mechanisms on Summertime Surface Carbonate System Variability in theWestern Ross Sea (Antarctica) using in Situ and Satellite Data", Remote Sensing, 11, 238; doi:10.3390/rs11030238, 2019
25. Zambianchi E., Trani M., Falco P., "Lagrangian transport of marine litter in the Mediterranean Sea", Frontiers in Environmental Sceinces, 5, 5, 2017
26. Castagno P., Falco P., Budillon G., Dinniman M., Spezie G., "Temporal variability of the Circumpolar Deep Water inflow onto the Ross Sea continental shelf", Journal of Marine System, 166, 37-49, 2017
27. Falco P., Trani M., Zambianchi E., "Water mass structure and deep mixing processes in the Tyrrhenian Sea: Results from the VECTOR project", Deep Sea Research Part I, 113, p 7-21, 2016
28. Falco P., Buonocore B., Cianelli D., De Luca L., Giordano A., Iermano I., Kalampokis A., Saviano S., Uttieri M., Zambardino G., Zambianchi E., "Dynamics and sea state in the Gulf of Naples: potential use of HF radar data in an operational oceanographic context", Journal of Operational Oceanography,9, s33-s45
29. Ricchi A., Miglietta MM, Falco P., Benetazzo A., Bonaldo A., Bergamasco A., Sclavo M., Carniel S.," On the use of a coupled ocean–atmosphere–wave model during an extreme cold air outbreak over the Adriatic Sea", Atmospheric Research, doi:10.1016/j.atmosres.2015.12.023, 2016
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- Dagneaux Q, Gaggelli J, Guterman P, Mallarino D, Mazzoldi A, Molcard A, Orfila A, Poulain P-M, Quentin C, Tintoré J, Uttieri M, Vetrano A, Zambianchi E, Zervakis V., "Toward an integrated HF radar network in the Mediterranean Sea to improve search and rescue and oil spill response: the TOSCA project experience", *Journal of Operational Oceanography*, 8-2, p 95-107, 2015
32. Cianelli D.; Falco P.; Iermano I.; Mozzilo P; Uttieri M.; Buonocore B.; Zambardino G.; Zambianchi E., "Inshore/offshore water exchange in the Gulf of Naples", *Journal of Marine System*, 145, p 37-52, 2015
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  35. M.Trani, P.Falco, E.Zambianchi e G.B. Salleè, " Aspects of the Antarctic Circumpolar Current dynamics investigated with drifter data", *Progress in Oceanography*, 125, p. 1-15, 2014
  36. Martorelli E.; Bosman A.; Casalbore D.; Chiocci F.; Falcini F.; Falco P.; Fusco G.; Morelli E.; Pierdomenico M., " High-resolution seismic stratigraphy, multibeam bathymetry of the Capo Vaticano region (Tyrrhenian Sea) coupled with oceanographic data: interplay between alongslope bottom currents and downslope processes, *2nd Deep-Water Circulation Congress*, p.10-12, 2014
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  40. Iermano I.; Cianelli D.; Falco P.; Uttieri M.; Zambianchi E.; "Characterizing the coastal dynamics behaviour within the Gulf of Naples using modelling, HF radar and in situ measurements", *EGU General Assembly Conference Abstracts*, 15,, 4587, 2013
  41. Schroeder, K.; Chiggiato, Haza, A.C.; Griffa A; Özgökmen, T.M.; Zanasca P.; Molcard, A.; Borghini, M.; Poulain, P.M.; Gerin, R., Zambianchi E., Falco P., Trees C., "Targeted Lagrangian sampling of submesoscale dispersion at a coastal frontal zone, *Geophysical Research Letters*, 39, 11,, 2012
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  45. Pierini S.; Falco P.; Zambardino G.; McClimans T.A.; Ellingsen I., "A Laboratory Study of Nonlinear Western Boundary Currents, with Application to the Gulf Stream Separation due to Inertial Overshooting", *Journal of Physical Oceanography*, 41, 11, 2063-2079, 2011
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