

# *Curriculum Vitae*

**Pierre-Marie R. G. Poulain**

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, Belgium

Citizenship: Belgian.

## ***Education***

Ph.D. in Oceanography, University of California San Diego, 1989. Dissertation: Surface circulation phenomena off Baja California as deduced from satellite-tracked drifters, Scripps Institution of Oceanography, 124 pp. Advisor: Prof. P. P. Niiler.

Licence Complémentaire en Océanologie (M.S. in Oceanography), Université de Liège, 1984.

Agrégation de l'Enseignement Supérieur Secondaire (High School Teaching Certificate), Université de Liège, 1983.

Licence en Sciences Physiques (B.S. in Physics), Université de Liège, 1982. Undergraduate dissertation: Modélisation des couches superficielles de l'océan : application à l'étude de la thermocline dans la baie de Calvi, Université de Liège, 135 pp. Advisor: Prof. J. C. J. Nihoul.

## ***Chronology of Professional History***

Principal Scientist, NATO STO CMRE, La Spezia, Italy, 2018-present.

Research Director, Department of Oceanography, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Trieste, Italy, 2017-present.

Senior Scientist, Department of Oceanography, Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, Trieste, Italy, 2000-2017.

Assistant Professor of Oceanography, Naval Postgraduate School, Monterey, USA, 1996-2000.

Scientist in Applied Oceanography Group, SACLANT Undersea Research Centre, La Spezia, Italy, 1992-1995.

Postdoctoral Associate in Physical Oceanography, University of Miami, USA, 1989-1991.

## ***Teaching Activities (1996-present)***

*Courses taught at the Naval Postgraduate School, Monterey, California (1996-1999)*

Remote Sensing of the Atmosphere and Ocean, Sound in the Ocean, Air/ocean Remote Sensing for USW and multidisciplinary Curricula, Descriptive Physical Oceanography.

*Lectures given at Italian Universities*

Course "Physics of the Oceans" of Diploma Programme, Abdus Salam International Centre for Theoretical Physics, Trieste, 2008-2018.

Course “Physical Oceanography” of School of Doctorate - Environmental and Industrial Fluid Mechanics, University of Trieste, 2006-2008

Seminars in Oceanography for the “*Corso di Master in Scienze Ambientali*”, University of Bologna, Ravenna, Academic year 2002-2003.

Seminars in Oceanography for the “*corso integrato di Geofisica Ambientale ed Oceanografia del Corso di Laurea in Scienze Ambientali*”, University of Trieste, Academic year 2000-2001.

Course “*Tecniche di telerilevamento da terra e dal satellite (radar, misure nell’infrarosso, seawifs, scatterometro) e le misure lagrangiane con i flottanti seguiti dal satellite*”, University C’ à Foscari, Venice, Academic year 2001-2002.

### ***Recent Research Grants (2015-current)***

Argo-Italy V (Jan 2015 – Dec 2015): Italian Ministry of Instruction, University and Research (€852,489).

Circulation and water mass properties in the Northeastern Levantine (May 2015 – Dec 2017): Office of Naval Research (\$270,000).

Monitoring the Oceans and Climate Change with Argo (Jun 2015 - May 2020): EU EASME (DG MARE) (€160,651).

Argo-Italy VI (Jan 2016 – Dec 2016): Italian Ministry of Instruction, University and Research (€950,000).

Argo-Italy VII (Jan 2017 – Dec 2017): Italian Ministry of Instruction, University and Research (€950,000).

Monitoring of the Eastern Levantine with Mobile Autonomous Systems (Oct 2017 – Sep 2019): Italian Ministry of Foreign Affairs (€100,000).

Argo-Italy VIII (Jan 2018 – Dec 2018): Italian Ministry of Instruction, University and Research (€950,000).

Argo-Italy IX (Jan 2019 – Dec 2019): Italian Ministry of Instruction, University and Research (€1.000,000).

Lagrangian Measurements in the Eastern Alboran Sea (Apr 2018 – Mar 2021): Office of Naval Research (\$159,069).

Internal tides and frontal subduction (Aug 2020 – Jul 2022): Office of Naval Research (\$235,137).

Ambient noise characterization using Lagrangian platforms (Sep 2021 – Aug 2024): Office of Naval Research (\$545,925).

### ***Research Interests***

Ocean circulation, mesoscale eddies, circulation and water mass properties in semi-enclosed seas; strait and coastal dynamics; Remote sensing (coastal radars and satellites) and autonomous measurement techniques (drifters, floats, gliders).

### ***Latest refereed Journal Papers (2021-present; 26 publications):***

Menna M., Martellucci R., Reale M., Cossarini G., Salon S., Notarstefano G., Mauri E., Poulain P.-M., Gallo A., Solidoro C. A case study of impacts of an extreme weather system on the Mediterranean Sea circulation features: Mediane Apollo (2021) (2023) Scientific Reports, 13 (1), art. no. 3870

- Poulain P.-M., Centurioni L., Brandini C., Taddei S., Berta M., Menna M. Relative dispersion and kinematic properties of the coastal submesoscale circulation in the southeastern Ligurian Sea (2023) *Ocean Science*, 19 (6), pp. 1617 - 1631
- Poulain P.-M., Menna M., Mauri E., Pirro A., Hayes D.R., Gildor H. Drifter observations of surface currents in the Cyprus Gyre (2023) *Frontiers in Marine Science*, 10, art. no. 1266040
- Ballard M.S., Sagers J.D., Poulain P.-M., Mackinnon J., Lucas A.J., Sanchez-Rios A. Out-of-plane arrivals recorded by drifting hydrophones during the Northern Ocean Rapid Surface Evolution Experiment (2023) *Journal of the Acoustical Society of America*, 154 (5), pp. 2757 – 2768
- Esposito G., Donnet S., Berta M., Shcherbina A.Y., Freilich M., Centurioni L., D’Asaro E.A., Farrar J.T., Johnston T.M.S., Mahadevan A., Özgökmen T., Pascual A., Poulain P.-M., Ruiz S., Tarry D.R., Griffa A. Inertial Oscillations and Frontal Processes in an Alboran Sea Jet: Effects on Divergence and Vertical Transport (2023) *Journal of Geophysical Research: Oceans*, 128 (3), art. no. e2022JC019004
- Kubin E., Menna M., Mauri E., Notarstefano G., Mieruch S., Poulain P.-M. Heat content and temperature trends in the Mediterranean Sea as derived from Argo float data (2023) *Frontiers in Marine Science*, 10, art. no. 1271638
- Oddo P., Poulain P.M., Falchetti S., Storto A., Zappa G. Internal tides in the central Mediterranean Sea: observational evidence and numerical studies (2023) *Ocean Dynamics*, 73 (3-4), pp. 145 - 163
- Poulain, P.-M., Oddo, P., Pennucci, G., Lewis, C., Sliwka, J., Duda, T. F., Drago, A. Observations of internal tidal dynamics Southwest of Malta in the central Mediterranean Sea (2023) *Continental Shelf Research*, Volume 254, 104922.
- Cutolo, E., Pascual, A., Ruiz, S., Shaun Johnston, T.M., Freilich, M., Mahadevan, A., Shcherbina, A., Poulain, P.-M., Özgökmen, T., Centurioni, L.R., Rudnick, D.L., D’Asaro, E. Diagnosing Frontal Dynamics From Observations Using a Variational Approach (2022) *Journal of Geophysical Research: Oceans*, 127 (11), art. no. e2021JC018336
- Tarry, D.R., Ruiz, S., Johnston, T.M.S., Poulain, P.-M., Özgökmen, T., Centurioni, L.R., Berta, M., Esposito, G., Farrar, J.T., Mahadevan, A., Pascual, A. Drifter Observations Reveal Intense Vertical Velocity in a Surface Ocean Front (2022) *Geophysical Research Letters*, 49 (18), art. no. e2022GL098969
- Pirro, A., Mauri, E., Gerin, R., Martellucci, R., Zuppelli, P., Poulain, P.M. New Insights on the Formation and Breaking Mechanism of Convective Cyclonic Cones in the South Adriatic Pit during Winter 2018 (2022) *Journal of Physical Oceanography*, 52 (9), pp. 2049-2068.
- Taillandier, V., D’Ortenzio, F., Prieur, L., Conan, P., Coppola, L., Cornec, M., Dumas, F., Durrieu de Madron, X., Fach, B., Fourier, M., Gentil, M., Hayes, D., Husrevoglu, S., Legoff, H., Le Ster, L., Örek, H., Ozer, T., Poulain, P.M., Pujo-Pay, M., Ribera d’Alcalà, M., Salihoglu, B., Testor, P., Velaoras, D., Wagener, T., Wimart-Rousseau, C. Sources of the Levantine Intermediate Water in Winter 2019 (2022) *Journal of Geophysical Research: Oceans*, 127 (6), art. no. e2021JC017506
- Menna, M., Gačić, M., Martellucci, R., Notarstefano, G., Fedele, G., Mauri, E., Gerin, R., Poulain, P.-M. Climatic, Decadal, and Interannual Variability in the Upper Layer of the Mediterranean Sea Using Remotely Sensed and In-Situ Data (2022) *Remote Sensing*, 14 (6), art. no. 1322
- Fedele, G., Mauri, E., Notarstefano, G., Poulain, P.M. Characterization of the Atlantic Water and Levantine Intermediate Water in the Mediterranean Sea using 20 years of Argo data (2022) *Ocean Science*, 18 (1), pp. 129-142.
- Poulain, P.-M., Centurioni, L., Özgökmen, T. Comparing the Currents Measured by CARTHE, CODE and SVP Drifters as a Function of Wind and Wave Conditions in the Southwestern Mediterranean Sea (2022) *Sensors*, 22 (1), art. no. 353
- Poulain, P.-M., Centurioni, L., Özgökmen, T., Tarry, D., Pascual, A., Ruiz, S., Mauri, E., Menna, M., Notarstefano, G. On the structure and kinematics of an Algerian eddy in the southwestern mediterranean sea (2021) *Remote Sensing*, 13 (15), art. no. 3039
- Esposito, G., Berta, M., Centurioni, L., Johnston, T.M.S., Lodise, J., Özgökmen, T., Poulain, P.-M., Griffa, A. Submesoscale Vorticity and Divergence in the Alboran Sea: Scale and Depth Dependence (2021) *Frontiers in Marine Science*, 8, art. no. 678304, .

Menna, M., Gerin, R., Notarstefano, G., Mauri, E., Bussani, A., Pacciaroni, M., Poulain, P.-M. On the Circulation and Thermohaline Properties of the Eastern Mediterranean Sea (2021) *Frontiers in Marine Science*, 8, art. no. 671469

Mihanović, H., Vilibić, I., Šepić, J., Matic, F., Ljubešić, Z., Mauri, E., Gerin, R., Notarstefano, G., Poulain, P.-M. Observation, Preconditioning and Recurrence of Exceptionally High Salinities in the Adriatic Sea (2021) *Frontiers in Marine Science*, 8, art. no. 672210

Bouzaiene, M., Menna, M., Elhmaidi, D., Dilmahamod, A.F., Poulain, P.-M. Spreading of lagrangian particles in the black sea: A comparison between drifters and a high-resolution ocean model (2021) *Remote Sensing*, 13 (13), art. no. 2603

Real, G., Buatois, L., Kinda, G.B., Bordoio, L., Tollefsen, D., van Walree, P., Poulain, P.-M. NARVAL2019: Ocean Acoustic Measurements in the Barents Sea Polar Front (2021) *Proceedings of Meetings on Acoustics*, 44 (1), art. no. 070019

Testor, P., Young, B.D., Rudnick, D.L., Glenn, S., Hayes, D., Lee, C.M., Pattiaratchi, C., Hill, K., Heslop, E., Turpin, V., Alenius, P., Barrera, C., Barth, J.A., Beaird, N., Bécu, G., Bosse, A., Bourrin, F., Brearley, J.A., Chao, Y., Chen, S., Chiggiato, J., Coppola, L., Crout, R., Cummings, J., Curry, B., Curry, R., Davis, R., Desai, K., DiMarco, S., Edwards, C., Fielding, S., Fer, I., Frajka-Williams, E., Gildor, H., Goni, G., Gutierrez, D., Haugan, P., Hebert, D., Heiderich, J., Henson, S., Heywood, K., Hogan, P., Houpert, L., Huh, S., Inall, M.E., Ishii, M., Ito, S.-I., Itoh, S., Jan, S., Kaiser, J., Karstensen, J., Kirkpatrick, B., Klymak, J., Kohut, J., Krahnemann, G., Krug, M., McClatchie, S., Marin, F., Mauri, E., Mehra, A., Meredith, M.P., Meunier, T., Miles, T., Morell, J.M., Mortier, L., Nicholson, S., O'Callaghan, J., O'Conchubhair, D., Oke, P., Pallàs-Sanz, E., Palmer, M., Park, J., Perivoliotis, L., Poulain, P.-M., Perry, R., Queste, B., Rainville, L., Rehm, E., Roughan, M., Rome, N., Ross, T., Ruiz, S., Saba, G., Schaeffer, A., Schönau, M., Schroeder, K., Shimizu, Y., Sloyan, B.M., Smeed, D., Snowden, D., Song, Y., Swart, S., Tenreiro, M., Thompson, A., Tintore, J., Todd, R.E., Toro, C., Venables, H., Wagawa, T., Waterman, S., Watlington, R.A., Wilson, D. Corrigendum: OceanGliders: A Component of the Integrated GOOS (*Frontiers in Marine Science*, (2019), 6, (422), 10.3389/fmars.2019.00422 (2021) *Frontiers in Marine Science*, 8, art. no. 696100

Querin, S., Cosoli, S., Gerin, R., Laurent, C., Malačić, V., Pristov, N., Poulain, P.-M. Multi-platform, high-resolution study of a complex coastal system: The Tosca experiment in the Gulf of Trieste (2021) *Journal of Marine Science and Engineering*, 9 (5), art. no. 469.

D'Ortenzio, F., Taillandier, V., Claustre, H., Coppola, L., Conan, P., Dumas, F., Durrieu du Madron, X., Fourrier, M., Gogou, A., Karageorgis, A., Lefevre, D., Leymarie, E., Oviedo, A., Pavlidou, A., Poteau, A., Poulain, P.M., Prieur, L., Psarra, S., Puyo-Pay, M., Ribera d'Alcalà, M., Schmechtig, C., Terrats, L., Velaoras, D., Wagener, T., Wimart-Rousseau, C. BGC-Argo Floats Observe Nitrate Injection and Spring Phytoplankton Increase in the Surface Layer of Levantine Sea (Eastern Mediterranean) (2021) *Geophysical Research Letters*, 48 (8), art. no. e2020GL091649

Tarry, D.R., Essink, S., Pascual, A., Ruiz, S., Poulain, P.-M., Özgökmen, T., Centurioni, L.R., Farrar, J.T., Shcherbina, A., Mahadevan, A., D'Asaro, E. Frontal Convergence and Vertical Velocity Measured by Drifters in the Alboran Sea (2021) *Journal of Geophysical Research: Oceans*, 126 (4), art. no. e2020JC016614

von Schuckmann, K., Le Traon, P.-Y., Smith, N., Pascual, A., Djavidnia, S., Gattuso, J.-P., Grégoire, M., Aaboe, S., Alari, V., Alexander, B.E., Alonso-Martirena, A., Aydogdu, A., Azzopardi, J., Bajo, M., Barbariol, F., Batistić, M., Behrens, A., Ismail, S.B., Benetazzo, A., Bitetto, I., Borghini, M., Bray, L., Capet, A., Carlucci, R., Chatterjee, S., Chiggiato, J., Ciliberti, S., Cipriano, G., Clementi, E., Cochrane, P., Cossarini, G., D'Andrea, L., Davison, S., Down, E., Drago, A., Druon, J.-N., Engelhard, G., Federico, I., Garić, R., Gauci, A., Gerin, R., Geyer, G., Giesen, R., Good, S., Graham, R., Grégoire, M., Greiner, E., Gundersen, K., Hélaouët, P., Hendricks, S., Heymans, J.J., Holt, J., Hure, M., Juza, M., Kassis, D., Kellett, P., Knol-Kauffman, M., Kountouris, P., Köuts, M., Lagema, P., Lavergne, T., Legeais, J.-F., Traon, P.-Y.L., Libralato, S., Lien, V.S., Lima, L., Lind, S., Liu, Y., Macías, D., Maljutenko, I., Mangin, A., Männik, A., Marinova, V., Martellucci, R., Masnadi, F., Mauri, E., Mayer, M., Menna, M., Meulders, C., Møgster, J.S., Monier, M., Mork, K.A., Müller, M., Nilsen, J.E.Ø., Notarstefano, G., Oviedo, J.L., Palerme, C., Palialexis, A., Panzeri, D., Pardo, S., Peneva, E., Pezzutto, P., Pirro, A., Platt, T., Poulain, P.-M., Prieto, L., Querin, S., Rabenstein, L., Raj, R.P., Raudsepp, U., Reale, M., Renshaw, R., Ricchi, A., Ricker, R., Rikka, S., Ruiz, J., Russo, T., Sanchez, J., Santoleri, R., Sathyendranath, S., Scarcella, G., Schroeder, K., Sparnocchia, S., Spedicato, M.T., Stanev, E., Staneva, J., Stocker, A., Stoffelen, A., Teruzzi, A., Townhill, B., Uiboupin, R., Valcheva, N., Vandenbulcke, L., Vindenes, H., Vrgoč, N., Zupa, W., Wakelin, S. Copernicus Marine Service Ocean State Report, Issue 5 (2021) *Journal of Operational Oceanography*, 14 (S1), pp. 1-185.

*Scopus h-index (Jan 2024): 46*