

Curriculum Vitae

MOUTIN Thierry

Born on October 15, 1964, in Grenoble (France)

Married, 3 children

Business address:

Mediterranean Institute of Oceanography (MIO)

CNRS/IRD/AMU (Aix Marseille University)

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Marine Biogeochemistry, carbon and nutrients cycles and the biological carbon pump.

HIGHER EDUCATION

- 2002** HDR (Habilitation to direct research)
- 1992** PhD Montpellier II University, specializing in Energetics: " Contribution to the study of the phosphate cycle in lagoon ecosystems)
- 1989** DEA National of Hydrology (Paris VI, Montpellier) and DEPTN, Diplome of Expert in nuisance Prevention and Treatment from the ESIGEC (University of Savoie, Chambéry)
- 1988** MASTER Sciences and Technics « Air and Water » (Chambéry)
- 1986** DEUG B Sciences of life (Grenoble)
- 1983** Baccalauréat D, biology and life and earth sciences (SVT)

PROFESSIONAL DEVELOPMENT

- 2019** Professor, exceptional class
- 2013** Professor, first class in chemical and biogeochemical oceanography at Aix-Marseille University
- 1998** Training and Mobility of Researchers, Contract ERBFMGECT950013 Norway
- 1994** MCF Lecturer at the Observatoire des Sciences de l'Univers (Centre d'Océanologie de Marseille, COM) of the Université de la Méditerranée (Aix-Marseille II)
- 1992-1993** ATER, Temporary Teaching and Research Associate at the University of Montpellier II
- 1991** 2 months internship (Montréal University, Quebec, Canada)

Distinctions

Special mention of the CHENE trophy in the Ecology Nature Environment Challenge in the Young Researchers category, organized by the Languedoc Roussillon Regional Council and the Mediterranean Environment Agency 1992

Solange Duhamel PhD student was the Winner of the Université de la Méditerranée thesis prize in 2007.

CV
Thierry Moutin
Pr EX, 59 ans
CNU section 37 Meteorology and Oceanography

TEACHING ACTIVITY

I- Teaching field

Chemical oceanography, marine biogeochemistry, water chemistry, carbon and biogenic elements cycles

II- Teaching responsibility

Co-responsible of the Physical and Biogeochemical Oceanographic (OPB) option of the Master in Marine Sciences of Aix-Marseille University
<https://masters.osupytheas.fr/formations/master-mer/oceanographie-physique-et-biogeochimique-opb/>

III- Teaching lectures

Chemistry of natural waters (<https://thierry-moutin.fr/en/teaching/chemistry-of-natural-waters/>)

Chemical oceanography (<https://thierry-moutin.fr/en/teaching/chemical-oceanography-1/>)

Traces elements and tracers (<https://thierry-moutin.fr/en/teaching/traces-elements-and-tracers/>)

Cycles of biogenic element (<https://thierry-moutin.fr/en/teaching/cycles-of-biogenic-elements/>)

Carbon cycle and climate (<https://thierry-moutin.fr/en/teaching/carbone-cycle-and-climate/>)

IV- Distribution to a wide audience

My participation in numerous oceanographic cruises and in various "popularization" activities has given me recognition as an oceanographer (citation in the Wikipedia free encyclopedia "Oceanographie"). I maintain a website on which I provide information for aspiring oceanographers.: <https://thierry-moutin.fr>

Examples of activities :

POMME cruises : http://www.canal-u.tv/video/science_en_cours/pomme_la_mission.211,
Participation in the film showing the progress of one of the four campaigns of the POMME program in the North-East Atlantic. Category: Education, General public. Distribution: CNRS Diffusion Vidéotheque Phototheque (Seen in the Archimède program on the Arte television channel in February 2003 and regularly since).

Creation of the "logbook" for the BOUM oceanographic campaign in collaboration with the OCEANOPOLIS center in Brest, as part of the European SESAME project. This "logbook" is intended for the general public and French schools in particular (https://thierry-moutin.fr/wp-content/uploads/2023/12/Carnet_de_bord_BOUM.pdf).

Interview "What is oceanography?" by the cité de la mer media library in Cherbourg (<https://www.mediathequedelamer.com/wp-content/uploads/dossier-oceanographie.pdf>).

Bonnet, S., T. Moutin and the OUTPACE team. OUTPACE (Oligotrophy to UItra-oligotrophy PACific Experiment). Press conference, IRD Nouméa center, February 17, 2015, Nouméa.

Creation of the OUTPACE oceanographic campaign logbook: https://thierry-moutin.fr/wp-content/uploads/2023/12/Carnet_de_bord_OUTPACE-1.pdf

Interview on NC première in 2015 (<https://vimeo.com/217467373>) and videos presenting the cruise (<https://thierry-moutin.fr/videos/outpace/>).

Presentations of the Oceanography Master's degree and of the OUTPACE oceanographic campaign at **COP 21** in Paris (Pavillon France, December 2015)

March 2020, creation of a youtube channel, first video available "**Context of climate change and the role of the ocean**": https://youtu.be/Zhgh_SpkJE

Public conference "**Climate alteration and the role of the ocean**" as part of the Fête de la Science in October 2022 in downtown Marseille, video: <https://www.youtube.com/watch?v=B5MVWdseCcM>

L'homme, l'océan et le climat" conference organized by Surfrider Europe, Bleu Tomate and OSU Pytheas at the ZOUMAI brasserie in Marseille on Tuesday, December 6, 2022. Thierry Moutin (MIO, AMU) and Karine Leblanc (MIO, CNRS), video: <https://thierry-moutin.fr/2023/10/24/conference-marseille/>

CV
Thierry Moutin
Pr EX, 59 ans

CNU section 37 Meteorology and Oceanography

RESEARCH ACTIVITY

I- Research field

The Biological Carbon Pump (BCP) and particularly its control by nutrient availability in the upper ocean

II- Summary of research activity

My research focuses on the role of nutrient availability of biogenic elements in controlling carbon transfer between the surface ocean and the deep ocean (biological pump). I am particularly interested in the interactions between biogeochemical cycles of biogenic elements and ecosystems. The results, currently detailed in 77 publications of rank A journals, and several restricted diffusion reports, are the fruit of teamwork. They have been presented in 52 oral and 28 poster presentations at international conferences. I organized two oceanographic campaigns involving a large part of the French oceanographic community and foreign collaborators (2008 and 2015) with the aim of better understanding the functioning of the biological carbon pump in oligotrophic environments such as the Mediterranean Sea (BOUM) or the tropical southwest Pacific (OUTPACE). The results have been published in two special issues of the journal *Biogeosciences*, comprising around 25 articles.

h-index (web of sciences, 01-2024) : 36 (77 publications)

III- Publications in rank A journals

77 : Wimart-Rousseau C, Wagener T, Álvarez M, Moutin T, Fourrier M, Coppola L, Niclas-Chirurgien L, Raimbault P, D'Ortenzio F, Durrieu de Madron X, Taillandier V, Dumas F, Conan P, Pujo-Pay M and Lefèvre D (2021) Seasonal and Interannual Variability of the CO₂ System in the Eastern Mediterranean Sea: A Case Study in the North Western Levantine Basin. *Front. Mar. Sci.* 8:649246. doi: 10.3389/fmars.2021.649246

76 : Pagès R., M. Baklouti, N. Barrier, M. Ayache, F. Sevault, S. Somot, and T. Moutin. 2020. Projected Effects of Climate-Induced Changes in Hydrodynamics on the Biogeochemistry of the Mediterranean Sea Under the RCP 8.5 Regional Climate Scenario. *Frontiers in Mar. Sci.* 7-957. DOI=10.3389/fmars.2020.563615

75 : Fumenia, A., A. Petrenko, H. Loisel, K. Djaoudi, A. deVerneil, and T. Moutin, « Optical proxy for particulate organic nitrogen from BGC-Argo floats, » *Opt. Express* 28, 21391-21406 (2020). pdf

- 74 : Messié, M., A. Petrenko, A. M. Doglioli, C. Aldebert, E. Martinez, G. Koenig, S. Bonnet, and T. Moutin (2020). The Delayed Island Mass Effect: how islands can remotely trigger blooms in the oligotrophic ocean. *Geophysical Research Letters*, 47(2), <https://doi.org/10.1029/2019GL085282>
- 73 : Pagès, R., M. Baklouti, N. Barrier, C. Richon, J.C. Dutay, T. Moutin. 2020. Changes in rivers inputs during the last decades significantly impacted the biogeochemistry of the eastern Mediterranean basin: A modelling study. *Progress in Oceanography*. Vol. 181, 102242. <https://doi.org/10.1016/j.pocan.2019.102242>
- 72 : Martiny, A.C., M. W. Lomas, W. Fu, P. W. Boyd, Y.-I. L. Chen, G. A. Cutter, M. J. Ellwood, K. Furuya, F. Hashihama, J. Kanda, D. M. Karl, T. Kodama, Q. P. Li, J. Ma, T. Moutin, E. M. S. Woodward, J. K. Moore, Biogeochemical controls of surface ocean phosphate. *Sci. Adv.* 5, eaax0341 (2019).
- 71 : Bouruet-Aubertot, P., Cuypers, Y., Doglioli, A., Caffin, M., Yohia, C., de Verneil, A., Petrenko, A., Lefèvre, D., Le Goff, H., Rougier, G., Picheral, M., and Moutin, T.: Longitudinal contrast in turbulence along a $\sim 19^\circ$ S section in the Pacific and its consequences for biogeochemical fluxes, *Biogeosciences*, 15, 7485-7504, <https://doi.org/10.5194/bg-15-7485-2018>, 2018.
- 70 : Gimenez, A., Baklouti, M., Wagener, T., and Moutin, T.: Diazotrophy as the main driver of the oligotrophy gradient in the western tropical South Pacific Ocean: results from a one-dimensional biogeochemical–physical coupled model, *Biogeosciences*, 15, 6573-6589, <https://doi.org/10.5194/bg-15-6573-2018>, 2018.
- 69 : Wagener, T., Metzl, N., Caffin, M., Fin, J., Helias Nunige, S., Lefevre, D., Lo Monaco, C., Rougier, G., and Moutin, T.: Carbonate system distribution, anthropogenic carbon and acidification in the western tropical South Pacific (OUTPACE 2015 transect), *Biogeosciences*, 15, 5221-5236, <https://doi.org/10.5194/bg-15-5221-2018>, 2018.
- 68 : Guieu, C., S. Bonnet, A. Petrenko, C. Menkes, V. Chavagnac, K. Desboeufs, C. Maes & T. Moutin. Iron from a submarine source impacts the productive layer of the Western Tropical South Pacific (WTSP). *Scientific Reports*, volume 8, Article number: 9075 (2018), [10.1038/s41598-018-27407-z](https://doi.org/10.1038/s41598-018-27407-z)
- 67 : Moutin, T., Wagener, T., Caffin, M., Fumenia, A., Gimenez, A., Baklouti, M., Bouruet-Aubertot, P., Pujo-Pay, M., Leblanc, K., Lefevre, D., Helias Nunige, S., Leblond, N., Grosso, O., and de Verneil, A.: Nutrient availability and the ultimate control of the biological carbon pump in the western tropical South Pacific Ocean, *Biogeosciences*, 15, 2961-2989, <https://doi.org/10.5194/bg-15-2961-2018>, 2018.
- 66 : Van Wambeke, F., Gimenez, A., Duhamel, S., Dupouy, C., Lefevre, D., Pujo-Pay, M., and Moutin, T.: Dynamics and controls of heterotrophic prokaryotic production in the western tropical South Pacific Ocean: links with diazotrophic and photosynthetic activity, *Biogeosciences*, 15, 2669-2689, <https://doi.org/10.5194/bg-15-2669-2018>, 2018.
- 65 : Knapp, A. N., McCabe, K. M., Grosso, O., Leblond, N., Moutin, T., and Bonnet, S.: Distribution and rates of nitrogen fixation in the western tropical South Pacific Ocean constrained by nitrogen isotope budgets, *Biogeosciences*, 15, 2619-2628, <https://doi.org/10.5194/bg-15-2619-2018>, 2018.
- 64 : Caffin, M., Moutin, T., Foster, R. A., Bouruet-Aubertot, P., Doglioli, A. M., Berthelot, H., Guieu, C., Grosso, O., Helias-Nunige, S., Leblond, N., Gimenez, A., Petrenko, A. A., de Verneil, A., and Bonnet, S.: N₂ fixation as a dominant new N source in the western tropical South Pacific Ocean (OUTPACE cruise), *Biogeosciences*, 15, 2565-2585, <https://doi.org/10.5194/bg-15-2565-2018>, 2018.
- 63 : de Verneil, A., Rousselet, L., Doglioli, A. M., Petrenko, A. A., Maes, C., Bouruet-Aubertot, P., and Moutin, T.: OUTPACE long duration stations: physical variability, context of biogeochemical

sampling, and evaluation of sampling strategy, *Biogeosciences*, 15, 2125-2147, <https://doi.org/10.5194/bg-15-2125-2018>, 2018.

62 : de Verneil, A., Rousselet, L., Doglioli, A. M., Petrenko, A. A., and Moutin, T. : The fate of a southwest Pacific bloom : gauging the impact of submesoscale vs. mesoscale circulation on biological gradients in the subtropics, *Biogeosciences*, 14, 3471-3486, <https://doi.org/10.5194/bg-14-3471-2017>, 2017.

61 : Moutin, T., Doglioli, A. M., de Verneil, A., and Bonnet, S. : Preface : The Oligotrophy to the UTRa-oligotrophy PACific Experiment (OUTPACE cruise, 18 February to 3 April 2015), *Biogeosciences*, 14, 3207-3220, <https://doi.org/10.5194/bg-14-3207-2017>, 2017.

60 : Bonnet, S., M. Caffin, H. Berthelot and Moutin, T. Hotspot of N₂ fixation in the western tropical South Pacific pleads for a spatial decoupling between N₂ fixation and denitrification. www.pnas.org/cgi/doi/10.1073/pnas.1619514114, 2017.

59 : Bonnet, S., Moutin, T., Rodier, M., Grisoni, J.-M., Louis, F., Folcher, E., Bourgeois, B., Boré, J.-M., and Renaud, A. : Introduction to the project VAHINE : VAriability of vertical and troPHic transfer of diazotroph derived N in the south wEst Pacific, *Biogeosciences*, 13, 2803-2814, doi:10.5194/bg-13-2803-2016, 2016.

58 : Gimenez, A., Baklouti, M., Bonnet, S., and Moutin, T. : Biogeochemical fluxes and fate of diazotroph-derived nitrogen in the food web after a phosphate enrichment : modeling of the VAHINE mesocosms experiment, *Biogeosciences*, 13, 5103-5120, doi:10.5194/bg-13-5103-2016.

57 : Berman-Frank, I., Spungin, D., Rahav, E., Van Wambeke, F., Turk-Kubo, K., and Moutin, T. : Dynamics of transparent exopolymer particles (TEP) during the VAHINE mesocosm experiment in the New Caledonian lagoon, *Biogeosciences*, 13, 3793-3805, doi:10.5194/bg-13-3793-2016, 2016.

56 : Knapp, A. N., Fawcett, S. E., Martínez-García, A., Leblond, N., Moutin, T., and Bonnet, S. : Nitrogen isotopic evidence for a shift from nitrate- to diazotroph-fueled export production in the VAHINE mesocosm experiments, *Biogeosciences*, 13, 4645-4657, doi:10.5194/bg-13-4645-2016, 2016.

55 : Van Wambeke, F., Pfreundt, U., Barani, A., Berthelot, H., Moutin, T., Rodier, M., Hess, W. R., and Bonnet, S. : Heterotrophic bacterial production and metabolic balance during the VAHINE mesocosm experiment in the New Caledonia lagoon, *Biogeosciences*, 13, 3187-3202, doi:10.5194/bg-13-3187-2016, 2016.

54 : Berthelot H., S. Bonnet, M. Camps, O. Grosso and T. Moutin. Assessment of the dinitrogen released as ammonium and dissolved organic nitrogen by unicellular and filamentous marine diazotrophic cyanobacteria grown in culture. *Front. Mar. Sci.*, 2(80), 2015.

53 : Guyennon, A., Baklouti, M., Diaz, F., Palmieri, J., Beuvier, J., Lebaupin-Brossier, C., Arsouze, T., Béranger, K., Dutay, J.-C., and Moutin, T. : New insights into the organic carbon export in the Mediterranean Sea from 3-D modeling, *Biogeosciences*, 12, 7025-7046, doi:10.5194/bg-12-7025-2015, 2015.

52 : Berthelot, H., T. Moutin, S. L'Helguen, K. Leblanc, S. Hélias, O. Grosso, N. Leblond, B. Charrière, and S. Bonnet. Dinitrogen fixation and dissolved organic nitrogen fueled primary production and particulate export during the VAHINE mesocosms experiment (New Caledonia lagoon). *Biogeosciences*, 12, 4099–4112, 2015. doi:10.5194/bg-12-4099-2015.

- 51 : Talarmin, A., Van Wambeke, F., Lebaron, P., and Moutin, T. : Vertical partitioning of phosphate uptake among picoplankton groups in the low Pi Mediterranean Sea, *Biogeosciences*, 12, 1237-1247, doi:10.5194/bg-12-1237-2015, 2015.
- 50 : Bonnet, S., J. Dekaezemacker, R. Hamersley, T. Moutin, O. Grosso and D. G. Capone. Aphotic N₂ Fixation in the Eastern Tropical South Pacific Ocean. *PLoS ONE* 8(12): e81265. doi:10.1371/journal.pone.0081265, 2013.
- 49 : Dekaezemacker, J., S. Bonnet, O. Grosso, T. Moutin, M. Bressac and D. G. Capone. Evidence of active dinitrogen fixation in surface waters of the eastern tropical South Pacific during El Nino and La Nina events and evaluation of its potential nutrient controls, *Global Biogeochem. Cycles*, 27, doi:10.1002/gbc.20063, 2013.
- 48 : Puig, P., Durrieu de Madron, X., Salat, J., Schroeder, K., Martín, J., Karageorgis, A.P., Palanques, A., Roullier, F., Lopez-Jurado, J.L., Emelianov, M., Moutin, T., and L. Houpert. 2013. Thick bottom nepheloid layers in the western Mediterranean generated by deep dense shelf water cascading. *Prog. Oceanogr.* 111, 1-23, 2013.
- 47 : Moutin, T., Van Wambeke, F., and Prieur, L. : Introduction to the Biogeochemistry from the Oligotrophic to the Ultraoligotrophic Mediterranean (BOUM) experiment, *Biogeosciences*, 9, 3817-3825, doi:10.5194/bg-9-3817-2012, 2012.
- 46 : Moutin, T. and Prieur, L. : Influence of anticyclonic eddies on the Biogeochemistry from the Oligotrophic to the Ultraoligotrophic Mediterranean (BOUM cruise), *Biogeosciences*, 9, 3827-3855, doi:10.5194/bg-9-3827-2012, 2012.
- 45 : Talarmin, A., F. Van Wambeke, S. Duhamel, P. Catala, T. Moutin, and P. Lebaron. 2011. Improved methodology to measure taxon-specific phosphate uptake in live and unfiltered samples. *Limnol. Oceanogr. Methods* 9:443-453 (2011) | DOI : 10.4319/lom.2011.9.443.
- 44 : Dall'Olmo, G., Boss, E., Behrenfeld, M. J., Westberry, T. K., Courties, C., Prieur, L., Pujo-Pay, M., Hardman-Mountford, N., and Moutin, T. : Inferring phytoplankton carbon and eco-physiological rates from diel cycles of spectral particulate beam-attenuation coefficient, *Biogeosciences*, 8, 3423-3439, doi:10.5194/bg-8-3423-2011, 2011.
- 43 : Bonnet, S., Grosso, O., and T. Moutin. 2011. Planktonic dinitrogen fixation along a longitudinal gradient across the Mediterranean Sea during the stratified period (BOUM cruise), *Biogeosciences*, 8, 2257-2267, doi:10.5194/bg-8-2257-2011.
- 42 : Loisel, H., Vantrepotte, V., Norkvist, K., Mériaux, X., Kheireddine, M., Ras, J., Pujo-Pay, M., Combet, Y., Leblanc, K., Dall'Olmo, G., Mauriac, R., Dessailly, D., and Moutin, T. : Characterization of the bio-optical anomaly and diurnal variability of particulate matter, as seen from scattering and backscattering coefficients, in ultra-oligotrophic eddies of the Mediterranean Sea, *Biogeosciences*, 8, 3295-3317, doi:10.5194/bg-8-3295-2011, 2011.
- 41 : Pendorf, K. J., Tanaka, T., Pujo-Pay, M., Lagaria, A., Courties, C., Conan, P., Oriol, L., Sofen, L. E., Moutin, T., and Van Mooy, B. A. S. : Gradients in intact polar diacylglycerolipids across the Mediterranean Sea are related to phosphate availability, *Biogeosciences*, 8, 3733-3745, doi:10.5194/bg-8-3733-2011.
- 40 : Christaki, U., Van Wambeke, F., Lefevre, D., Lagaria, A., Prieur, L., Pujo-Pay, M., Grattepanche, J.-D., Colombet, J., Psarra, S., Dolan, J. R., Sime-Ngando, T., Conan, P., Weinbauer, M. G., and T. Moutin. 2011. Microbial food webs and metabolic state across oligotrophic waters of the Mediterranean Sea during summer, *Biogeosciences*, 8, 1839-1852, doi:10.5194/bg-8-1839-2011.

39 : Mauriac, R., Moutin, T., and M. Baklouti. 2011. Accumulation of DOC in Low Phosphate Low Chlorophyll (LPLC) area : is it related to higher production under high N:P ratio ?, *Biogeosciences*, 8, 933-950, doi:10.5194/bg-8-933-2011.

38 : Crombet, Y., Leblanc, K., Quéguiner, B., Moutin, T., Rimmelin, P., Ras, J., Claustre, H., Leblond, N., Oriol, L., and Pujo-Pay, M. 2011. Deep silicon maxima in the stratified oligotrophic Mediterranean Sea, *Biogeosciences*, 8, 459-475, doi:10.5194/bg-8-459-2011.

37 : Pujo-Pay, M., Conan, P., Oriol, L., Cornet-Barthaux, V., Falco, C., Ghiglione, J.-F., Goyet, C., Moutin, T., and Prieur, L. 2011. Integrated survey of elemental stoichiometry (C, N, P) from the western to eastern Mediterranean Sea, *Biogeosciences*, 8, 883-899, doi:10.5194/bg-8-883-2011.

36 : Duhamel S., K.M. Björkman, F. Van Wambeke, T. Moutin, D.M. Karl. 2011. Characterization of alkaline phosphatase activity in the North and South Pacific Subtropical Gyres : Implications for phosphorus cycling. *Limnol. Oceanogr.* 56 : 1244-1254.

35 : Durrieu de Madron, X, C. Guieu , R. Sempere, P. Conan, D. Cossa, F. D'Ortenzio, C. Estournel, F. Gazeau, C. Rabouille, L. Stemann, S. Bonnet, F. Diaz, P. Koubbi, O. Radakovitch, M. Babin, M. Baklouti, C. Bancon-Montigny, S. Belviso, N. Bensoussan, B. Bonsangm, I. Bouloubassi, C. Brunet, J.-F. Cadiou, F. Carlotti, M. Chami, S. Charmasson, B. Charriere, J. Dachs, D. Doxaran, J.-C. Dutay, F. Elbaz-Poulichet, M. Eleaume, F. Eyrolles, C. Fernandez, S. Fowler, P. Francour, J.C. Gaertner, R. Galzin, S. Gasparini, J.-F. Ghiglione, J.-L. Gonzalez, C. Goyet, L. Guidi, K. Guizien, L.-E. Heimburger, S.H.M. Jacquet, W.H. Jeffrey, F. Joux, P. Le Hir, K. Leblanc, D. Lefevre, C. Lejeusne, R. Leme, M.-D. Loye-Pilot, M. Mallet, L. Mejanelle, F. Melin, C. Mellon, B. Merigot, P.-L. Merle, C. Migon, W.L. Miller, L. Mortier, B. Mostajir, L. Mousseau, T. Moutin, J. Para, T. Perez, A. Petrenko, J.-C. Poggiale, L. Prieur, M. Pujo-Pay, Pulido-Villena, P. Raimbault, A.P. Rees, C. Ridame, J.-F. Rontani, D. Ruiz Pino, M.A. Sicre, V. Taillandier, C. Tamburini, T. Tanaka, I. Taupier-Letage , M. Tedetti, P. Testor, H. Thebault, B. Thouvenin, F. Touratier, J. Tronczynski, C. Ulses, F. Van Wambeke, V. Vantrepotte , S. Vaz, R. Verney. Marine ecosystems responses to climatic and anthropogenic forcings in the Mediterranean. 2011. *Progress in Oceanography*.

34 : Westberry, T.K., G. Dall'Olmo, E. Boss, M. J. Behrenfeld, and T. Moutin. 2010. Coherence of particulate beam attenuation and backscattering coefficients in diverse open ocean environments. *Optics Express*, Vol. 18, Issue 15, pp. 15419-15425. doi:10.1364/OE.18.015419.

33 : Van Mooy, B.A.S., H.F. Fredricks, B.E. Pedler, S.T. Dyhrman, D.M. Karl, M. Koblizek, M.W. Lomas, T.J. Mincer, L.R. Moore, T. Moutin, M.S. Rappe, and E.A. Webb, Phytoplankton in the ocean use non-phosphorus lipids in response to phosphorus scarcity, *Nature* 458, 69-72 doi:10.1038/nature07659.

32 : Duhamel, S., & T. Moutin. Carbon and phosphate incorporation rates of microbial assemblages in contrasting environments in the Southeast Pacific. *Marine Ecological Progress Series* 375, 53-64. doi:10.3354/meps07765.

31 : Moutin, T., Karl, D. M., Duhamel, S., Rimmelin, P., Raimbault, P., Van Mooy, B. A. S., and H. Claustre. 2008. Phosphate availability and the ultimate control of new nitrogen input by nitrogen fixation in the tropical Pacific Ocean, *Biogeosciences*, 5, 95-109.

30 : Van Mooy, B. A. S., Moutin, T., Duhamel, S., Rimmelin, P., and F. Van Wambeke. 2008. Phospholipid synthesis rates in the eastern subtropical South Pacific Ocean, *Biogeosciences*, 5, 133-139.

29 : Van Wambeke, F., I. Obernosterer, T. Moutin, S. Duhamel, O. Ulloa, and H. Claustre. 2008. Heterotrophic bacterial production in the eastern South Pacific: longitudinal trends and coupling with primary production, *Biogeosciences*, 5, 157-169.

- 28 : Bonnet, S., Guieu, C., Bruyant, F., Prášil, O., Van Wambeke, F., Raimbault, P., Grob, C., Moutin, T., Gorbunov, M. Y., Zehr, J. P., Masquelier, S. M., Garczarek, L., and H. Claustre. 2008. Nutrients limitation of primary productivity in the Southeast Pacific (BIO SOPE cruise), *Biogeosciences*, 5, 215-225.
- 27 : Van Wambeke, F. S. Bonnet, T. Moutin, P. Raimbault, G. Alarcón, and C. Guieu. 2008. Factors limiting heterotrophic bacterial production in the southern Pacific Ocean, *Biogeosciences*, 5, 833-845.
- 26 : Duhamel, S., Moutin, T., Van Wambeke, F., Van Mooy, B., Rimmelin, P., Raimbault, P., and H. Claustre. Growth and specific P-uptake rates of bacterial and phytoplanktonic communities in the Southeast Pacific (BIO SOPE cruise). 2007. *Biogeosciences*, 4, 941-956, 2007.
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- Gimenez, A., M. Baklouti & T. Moutin. The biological carbon pump in the Western Tropical South Pacific from a 1D physical-biogeochemical coupled model (OUTPACE Cruise). Goldschmidt conference, 13-18 August, Paris. France.
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- Moutin, T., Prieur L., F. Van Wambeke & the BOUM team. The BOUM (Biogeochemistry from the Oligotrophic to the Ultraoligotrophic Mediterranean) onboard the R/V L'Atalante. IMBER Open Science Conference: Future Oceans, 23-27 June 2014, Bergen, Norway.
- Moutin, T., Prieur L., & F. Van Wambeke. The BOUM experiment (Biogeochemistry from the Oligotrophic to the Ultraoligotrophic Mediterranean) SESAME Final Scientific Conference, 4-8 April 2011, Athens, Greece.
- Mauriac, R., Baklouti, M., & T. Moutin, Modeling the coupling of carbon and nutrients in the upper Mediterranean Sea : preliminary results from the BOUM cruise. Ocean Sciences meeting, 22-26 February 2010, Portland, USA.
- Bonnet, S., Grosso, O., Raimbault, P., & T. Moutin, Is Nitrogen Fixation a Major Biogeochemical Process in the Mediterranean Sea during the stratification Period? Ocean Sciences meeting, 22-26 February 2010, Portland, USA.
- Popendorf, K., Tanaka, T., Van Wambeke, F., Pujo-Pay, M., Courties, C., Moutin, T., & B. Van Mooy, Phospholipid production and turnover in a nutrient addition microcosm experiment in the Mediterranean. Ocean Sciences meeting, 22-26 February 2010, Portland, USA.
- Psarra, S., Lagaria, A., Lefevre, D., Van Wambeke, F., Christaki, U., Courties, C., Pujo-Pay, M., Oriol, L., Tanaka, T., & T. Moutin, Microbial community responses and trophic shifts (autotrophy vs. heterotrophy) upon addition of limiting nutrients -N. vs. P. - in oligotrophic Mediterranean surface waters: the BOUM microcosm experiments. Ocean Sciences meeting, 22-26 February 2010, Portland, USA.
- Moutin, T., F. Van Wambeke & L. Prieur. The Mediterranean sea as a typical Low-P Low Chlorophyll (LPLC) area : overview and preliminary results of the BOUM experiment. IMBER IMBIZO II, 10-14 Oct 2010, Heraklion, Greece.
- Crombet, Y. K. Leblanc, B. Queguiner & T. Moutin. Silicon cycle in the Mediterranean sea : occurrence of deep biogenic silica maxima in oligotrophic regions of the eastern basin (BOUM cruise). ASLO meeting. 25-30 janvier 2009, Nice, France.
- Bonnet, S. C. Guieu, F. Bruyant, M.Y. Gorbunov, P. Raimbault, O. Prasil, F. Van Wambeke, T. Moutin, S. Blain, C. Grob, L. Garczarek, S. Duhamel, D. Vaultot, O. Ulloa. Colimitation in a gradient of trophic regimes in the south east Pacific ocean: responses from microcosm experiments. ASLO meeting, June 19-24, 2005. Santiago de Compostela, Spain.
- Van Mooy, B., A.H. Devol, H.F. Fredricks, L.R. Moore, T. Moutin, G. Rocap, E.A. Webb. Glycolipid membranes relieve marine picocyanobacteria of a major requirement for phosphate. ASLO meeting, June 19-24, 2005. Santiago de Compostela, Spain.
- Moutin, T., F. Van Wambeke, C. Fernandez, P. Rimmelin, N. Leblond, C. Guieu, R. Sempere, L. Memery. Coupling carbon and phosphate cycles in the photic zone of the north eastern Atlantic ocean. EGS, Nice, 7-11 avril 2003.
- Van Den Broeck, N., T. Moutin, M. Rodier & A. Le Bouteiller. Does phosphate availability control the carbon cycle in the photic zone of the South Western Pacific Ocean ? EGS, Nice, 7-11 avril 2003.
- Claustre, H., J. Ras, M. Babin, P. Raimbault, T. Moutin, O. Prasil. Seasonal and local variations of the water column photosynthetic cross section in the north east Atlantic (39N-44N, 17-21W). EGS, Nice, 7-11 avril 2003.
- Blain, S., C. Guieu, H. Claustre, K. Leblanc, T. Moutin, B. Quéguiner, G. Sarthou. Availability of iron for phytoplankton growth in the north-east Atlantic. EGS, Nice, 7-11 avril 2003.
- Leblanc, K., B. Queguiner, S. Blain, C. Guieu & T. Moutin. Si cycle in the north eastern Atlantic ocean during the POMME Experiment (March-April 2001), evidence of co-limitation of phytoplankton growth by the availability of silicon, iron and other nutrients. Ocean Sciences Meeting, February 11-15th 2002, Honolulu, Hawaii.
- Blain, S., C. Guieu, H. Claustre, K. Leblanc, T. Moutin, S. Newman, B. Queguiner, G. Sarthou, P. Treguer. Evidence for iron limitation in the north east Atlantic (Azore-Portugal). IGPB, 2001. Amsterdam, Pays Bas.
- Van de Broeck, N., T. Moutin & A. Le Bouteiller. Rôle du phosphore dans le contrôle des efflorescences de *Trichodesmium*: conséquences sur le cycle biogéochimique du carbone. Arcachon UOF 2001, 18e forum des jeunes océanographes.
- Moutin, T., Van Wambeke F., Thingstad T.F., Sempere R., Garcia N., Rimmelin P., Raimbault P., Marie D., Queguiner B., Leblanc K., Dolan J. & H. Claustre. Phosphate as a key factor controlling production and

- carbon export in the Mediterranean Sea. JGOFS Conference "Ocean Biogeochemistry: A New Paradigm". 13-17 April 2000. Bergen, Norway. Abstract. p. 89.
- Van Wambeke, F., U. Christaki, A. Giannakourou, V., Likousis, T. Moutin & H. Claustre. Phosphorus and carbon limitation of bacterial activities in the Mediterranean Sea. 7th European Marine Microbiology Symposium, scope 6. April 2000, Amsterdam, Netherlands.
- Moutin, T., P. Raimbault & J.C. Poggiale. Primary production in surface waters of the western Mediterranean Sea : Calculation of daily production. Third MTP-II workshop on the Variability of the Mediterranean Sea, Rhodos, Greece, 15-17 October 1998.
- ELISA group, présenté par I. Taupier Letage. The mesoscale dynamics control of the biogeochemical processes in the Algerian Basin. Third MTP-II workshop on the Variability of the Mediterranean Sea, Rhodos, Greece, 15-17 October 1998.
- Moutin, T., C. Albigès & B. Picot. Relationship between external phosphate input and Tot-Psed concentration in two coastal lagoons near Montpellier (Hérault, France). XXV SIL INTERNATIONAL CONGRESS. August, 21-27, 1992 - Barcelona (Spain).
- Bontoux, J., J.Y. Gal, H. El Halouani, T. Moutin & B. Picot. Thermodynamics study of phosphorus decrease in a high rate pond plant. 11th IUPAC conference on chemical thermodynamics. Como, Italy, August 26-31, 1990.

VI- Proofreading, editing, judging and assessment activities

Peer review for the journals : Nature geosciences, Nature scientific reports, Biogeosciences, Journal of Geophysical Research, Limnology & Oceanography, Journal of Marine Systems, Marine Chemistry, Water Research, Marine Ecological Progress Series, Hydrobiologia, Aquatic Microbial Ecology, Deep Sea Research, Estuarine Coastal and Shelf Sciences, Global Biogeochemical Cycles, Geophysical Research Letter, Journal of Marine Research, Journal of Phycology, Progress in Oceanography, Oxford University Press.

Associate Editor for 2 special issues in Biogeosciences

PhD jury : 19

2023. L. Barré, Thèse d'Aix-Marseille Université. Président de Jury.
2023. A. Whiteside, Thèse d'Aix-Marseille Université soutenue à Fidji. Examineur.
- 2023 F. Ezzahara, Thèse d'Aix-Marseille Université. Membre invité.
2022. J. Habib. Thèse de l'Université de Toulouse. Rapporteur.
2021. N. Bock, PhD of of the Graduate School of Arts and Sciences from Columbia University (USA), rapporteur
2020. R. pagès, Thèse d'Aix-Marseille Université. Codirecteur.
- 2020, A. Fumenia. Thèse d'Aix-Marseille Université. Codirecteur.
2018. M Caffin, Thèse d'Aix-Marseille Université. Codirecteur.
2018. A. Gimenez, Thèse d'Aix-Marseille Université. Codirecteur.
2018. K Djaoudi, Thèse d'Aix-Marseille Université. Président de Jury.
2015. H. Berthelot, Thèse d'Aix-Marseille Université. Directeur.
2015. A. Guyennon. Thèse d'Aix-Marseille Université. Président de Jury.
2012. J. Dekaezemaker. Thèse d'Aix-Marseille Université. Président de Jury.
2010. M. Le-Moal. Thèse de l'Université de la Méditerranée. Président de Jury.
2010. A. Talarmin. Thèse de l'Université de la Méditerranée. Examineur (Parrain de thèse).
2007. S. Duhamel. Thèse de l'Université de la Méditerranée. Co-Directeur.
2007. C. Glé. Thèse de l'Université de Bordeaux. Rapporteur.
2003. N. Van Den Broeck. Thèse de l'Université de la Méditerranée. Directeur.
2001. C. Labry. Thèse de l'Université de la Méditerranée. Examineur.

HDR jury : 2

2017. S. Bonnet, HDR d'Aix-Marseille Université. Rapporteur.
2014. F. Diaz, HDR d'Aix-Marseille Université. Examineur.

Evaluation committees

2008-2015. French National Offshore Fleet Committee (CNFH)
2015- French National University Council (CNU), section 37 « Meteorology and Oceanography ». **Vice President** of the section (2019-2023)

Expert NSF (3 reviews of proposals), numerous evaluations for national programmes, ...

Participation in the recruitment panel (MCF at Aix Marseille University, chair of excellence at the UBO (University of Western Brittany)

VII- Supervised PhD

PAGES Rémi (2020). Study of the impact of climate change and terrigenous nutrient inputs on the biogeochemical functioning of the Mediterranean Sea, using coupled physical/biogeochemical modeling. Co-supervision with: Melika Baklouti.

Current job : Post doctorate at the International Arctic Research Center (Fairbanks, Alaska, États-Unis)

FUMENIA Alain (2020). Spatial and temporal dynamics of particulate organic biomass synthesized in an ocean region strongly influenced by atmospheric nitrogen fixation (OUTPACE oceanographic campaign in the southwestern tropical Pacific). Co-supervision with Anne Petrenko.

Current job : Post doctorate at ULCO (Wimereux, France)

CAFFIN Mathieu (2018). Fate of nitrogen fixation and carbon export in the southwestern tropical Pacific Ocean. Co-supervision with Sophie Bonnet.

Current job : after a Post doctorate at the C-MORE (Hawaii, USA), Ingénieur Chercheur - Responsable Équipe Mesure en Milieu Naturel - EDF

GIMENEZ Audrey (2018). Study of the interactions between diazotrophy, nutrient availability and planktonic production in the surface ocean of the tropical Southwest Pacific using a combined observation and modeling approach. Co-supervision with Melika Baklouti.

Current job : Teacher

BERTHELOT Hugo (2015). Nitrogen fixation and fate in the surface ocean: transfer in the planktonic food web and influence on the biogeochemical cycles of nitrogen and carbon.

Current job : Researcher at IFREMER (Brest, France)

GUYENNON Arnaud (2015). Study of organic carbon export at Mediterranean scale using coupled physical-biogeochemical modelling. Co-supervision with Frédéric Diaz and Melika Baklouti.

Current job : Research manager at IRSTEA (Grenoble)

DEKAEZEMACKER Julien (2012). Study of nitrogen fixation in "nitrogen-deficient" environments - Contribution of unicellular diazotrophs and control by nutrient availability. Participation to the supervision.

Current job : 1st Management Systems Manager SUEZ.

TALARMIN Agathe (2010). Specific assimilation and functional diversity of autotrophic and heterotrophic organisms competing for phosphate availability in oligotrophic marine environments and consequences for the coupling of the C and P cycles. Co-supervision with France Van Wabeke and Philippe Lebaron.

Current job : Chercheur au Petroleum Institute (UAE) · Department of Petroleum Geosciences d' Abu Dhabi, laboratoire de Géochimie.

DUHAMEL Solange (2007). Competition between heterotrophic bacteria and primary producers for the limiting nutrient resource in an oligotrophic ocean environment: coupling carbon and phosphate fluxes in relation to functional community structure. Co-supervision with France Van Wambeke.

Winner of the Université de la Méditerranée thesis prize. Current job : Associate Professor in Molecular and Cellular Biology, University of Arizona.

VAN DEN BROECK Nathalie (2003). The role of phosphate in triggering and limiting plankton blooms in the waters of the southwestern tropical Pacific. Assessment of consequences on the biogeochemical carbon cycle. Co-supervision with Alain Herbland
Current job : 1st Vice-President of the PACA Regional Economic, Social and Environmental Council.
Vice President of Surfrider foundation Europe.

LABRY Claire (2001). Phosphorus dynamics and its role as a limiting factor for plankton production in the waters of the South Biscay shelf. Co-supervision with Alain Herbland
Current job : Researcher at IFREMER (Brest)

RIDAME Céline (2001), AMAT Alexandra (2001) and DIAZ Frédéric (2000) Supervision of experiences during their PhD.

VIII- Scientific responsibilities

1999-2003: Scientific coordinator of the LOB (UMR CNRS 6535) "cycle of biogenic elements (C,N,P,Si) in the oceanic photic layer" group. This group comprised 4 researchers, 4 teacher-researchers, 2 technicians and 3 PhD students (1999-2003).

2008-2011: Head of the "Marine biogeochemistry and functional structure of pelagic communities" team at the Laboratoire d'Océanographie Physique et Biogéochimique (LOPB), a group of 34 people: 10 CNRS researchers, 6 teacher-researchers, 6 engineers, 12 PhD students. Team evaluated A+ by AERES. Member of the Management Committee, Laboratory Council and Scientific Council of the LOPB Laboratory.

2008-2012: Scientific project manager for the BOUM (Biogeochemistry from the Oligotrophic to the Ultraoligotrophic Mediterranean) oceanographic campaign, a program co-financed by the LEFE national program CYBER (Cycles Biogéochimiques Environnement et Ressources) and the European program SESAME (Southern European Seas: Assessing and Modelling Ecosystems changes). Mission accredited by the international IMBER program. More than 50 French and foreign researchers took part in the project. A special issue "Interactions between planktonic organisms and the biogeochemical cycles of biogenic elements in the Mediterranean Sea during intense summer stratification: the BOUM experiment" was published in 2012 in the journal "Biogeosciences" (Editor(s): T. Moutin, L. Prieur, C. Jeanthon, and A. V. Borges). It contains 25 articles presenting the results of the BOUM oceanographic campaign : http://www.biogeosciences.net/special_issue82.html
BOUM website : <https://thierry-moutin.fr/en/boum/>

2014-2018: Co-head of the scientific project for the OUTPACE (Oligotrophy to UTRa-oligotrophy PACific Experiment) oceanographic campaign, a program co-financed by the French National Research Agency (ANR), the national LEFE program CYBER (Cycles Biogéochimiques Environnement et Ressources) and the IRD (Action Incitative Sud and GOPS, Grand Observatoire du Pacifique Sud). Over 80 French and foreign researchers involved in the project. OUTPACE web site : <https://thierry-moutin.fr/en/outpace/>
A special issue "Interactions between planktonic organisms and biogeochemical cycles across trophic and N₂ fixation gradients in the western tropical South Pacific Ocean: a multidisciplinary approach (OUTPACE experiment)" is published in the journal "Biogeosciences" (Editor(s): T. Moutin, S. Bonnet, K. Richards, D. G. Capone, and E. Marañón). It contains 26 articles presenting the results of the OUTPACE oceanographic campaign. https://www.biogeosciences.net/special_issue894.html