Olivier MARCHAL

Senior Scientist
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Woods Hole Oceanographic Institution
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EDUCATION (all degrees with distinction when applicable*)

2006	Habilitation Thesis	Meteorology & Physical Oceanography	French Ministry of Education
1996	Doctoral Thesis*	Meteorology, Oceanography, Environment	University P. & M. Curie, Paris
1991	Master Degree*	Modeling of Marine Environment	University of Liège
1990	Master Degree*	Oceanography	University of Liège
1988	Bachelor Degree*	Physical Geography	University of Brussels

PROFESSIONAL APPOINTMENTS

10/2016–present	Woods Hole Oceanographic Institution	Senior Scientist
05/2009–09/2016	Woods Hole Oceanographic Institution	Associate Scientist with Tenure
07/2005–04/2009	Woods Hole Oceanographic Institution	Associate Scientist without Tenure
05/2001–06/2005	Woods Hole Oceanographic Institution	Assistant Scientist
05/1996–03/2001	Physics Institute, University of Bern	Postdoctoral Scholar

OTHER APPOINTMENTS & CRUISE PARTICIPATION

10/1991–04/1996	Centre des Faibles Radioactivités (CNRS/CEA)	Ph.D Student
10/1990–12/1990	Laboratoire de Physique et Chimie Marines (CNRS)	Graduate Student
1987–1988	R/V *Belgica* (surveys in the North Sea; total 1 month)	Undergraduate Student

RESEARCH INTERESTS

· Ocean circulation with emphasis on its low frequency variability
· Application of inverse methods to (palaeo-)oceanography
· Transport of chemical constituents in the ocean
· Geophysical fluid dynamics

SYNERGISTIC ACTIVITIES

2014–2015	Guest Editor for *Progress in Oceanography*
2010–2015	Associate Editor of *Paleoceanography*
2010–2015	Member of the Scientific Steering Committee of GEOTRACES
2010–2013	Member of the Editorial Advisory Panel for *Nature Communications*
2010–2011	Geology & Geophysics Department Representative of Climate Initiative at WHOI
2008–2011	Member of Summer Student/Minority Fellowship Selection Committee at WHOI
2004–2008	Member of SCOR/IMAGES Working Group 123 on *Past Ocean Circulation*
2003–2009	Co-organizer and co-chairman of Session *Changes in Ocean Circulation: Data & Models* at General Assemblies of European Geosciences Union
2003–2009	Invited Participant at GEOTRACES Workshops (3)
11/2005	Invited Participant at Post-ESH Planning Workshop, NSF
2003–2004	Scientific Expert of Steering Committee of SCOR/IMAGES

PRODUCTS

2015 Computer Code of an Inverse Advective Model of the Ocean Mixed Layer, NCDC, NOAA, available at https://www.ncdc.noaa.gov/paleo/study/19300

2008 Computer Code of an Inverse Atlantic Abyssal Circulation Model, NCDC, NOAA, available at http://www.ncdc.noaa.gov/paleo/softlib/softlib.html

EDUCATIONAL ACTIVITIES (MIT–WHOI Graduate Joint Program)

2015–present	Co-instructor of course *Geological Oceanography* (with L. Giosan, D. Lizarralde, & A. Soule)
2009–present	Co-instructor of course *Computational Geophysical Modeling* (with J. Lin)
2001–present	Co-instructor of course *Topics in Paleoceanography* (with A. Condron)
2013–2018	Co-advisor of PhD candidate Paul Lerner (with Phoebe Lam)
2006–2011	Co-advisor of PhD candidate Andrea Burke (with Laura Robinson)
2015–2019	Member of Thesis Committee for Christopher Kinsley (main advisor: David McGee)
2014–2016	Member of Thesis Committee for Ning Zhao (main advisor: Lloyd Keigwin)
2014–2016	Member of Thesis Committee for Daniel Amrhein (main advisor: Carl Wunsch)
2008–2012	Member of Thesis Committee for Holly Dail (main advisor: Carl Wunsch)
2005–2008	Member of Thesis Committee for Sharon Hoffmann (main advisor: Jerry McManus)
2003–2006	Member of Thesis Committee for Mea Cook (main advisor: Lloyd Keigwin)
2003–2006	Member of Thesis Committee for David Lund (main advisor: William Curry)

EDUCATIONAL ACTIVITIES (others)

02/2018	Rapporteur of PhD thesis of Guillaume Le Gland (U. Western Brittany, France)
05–07/2017	Advisor of Guest Student Andrea D'Souza (Manipal Institute of Technology, India)
09–12/2013	Advisor of Guest Student Sarah Shipley (U. McGill, Canada)
2004–2009	Co-advisor of PhD candidate Andrés Antico from U. McGill (advisor: Lawrence Mysak)
2005–2006	Co-advisor of NOAA Climate & Global Change post-doctoral fellow Peter Huybers
07/2002	Summer Student Fellow Lecture Series, Woods Hole Oceanographic Institution (1 lecture)
10/2001	Lectures (8) for PhD course *Quaternary Climate Records & Climate Models*, U. Svalbard
1998–2000	Teacher of laboratory classes of *Physics* (undergraduate level), Physics Institute, U. Bern

PARTIAL LIST OF COLLABORATORS & CO-AUTHORS

Alain Colin de Verdière	Université de Bretagne Occidentale, France
William Curry	Bermuda Institute of Ocean Sciences, Bermuda
Louisa Bradtmiller	Macalaster College, USA
Roger François	University of British Columbia, Canada
Geoffrey Gebbie	Woods Hole Oceanographic Institution, USA
Gideon Henderson	University of Oxford, United Kingdom
Charles Jackson	University of Texas at Austin, USA
Phoebe Lam	University of California at Santa Cruz, USA
Jerry McManus	University of Columbia, U.S.A.
Lawrence Mysak	University of McGill, Canada
Johan Nilsson	University of Stockholm, Sweden
Jonas Nycander	University of Stockholm, Sweden
André Paul	University of Bremen, Germany
Jan Scholten	Marine Environment Laboratories, Monaco, France
Thomas Stocker	University of Bern, Switzerland
Claire Waelbroeck	Laboratoire des Sciences du Climat & Environnement, France
John Whitehead	Woods Hole Oceanographic Institution, USA
Carl Wunsch	Harvard University, USA

PUBLICATIONS IN REFEREED JOURNALS & MONOGRAPHS (* advised or co-advised)

P45 Lerner P.*, Marchal O., Lam P., Gardner W., Richardson M.-J., and Mishonov A., A model study of the relative influences of scavenging and circulation on ^{230}Th and ^{231}Pa in the western North Atlantic, *Deep-Sea Research I*, submitted

P44 Marchal O., On material transport by shelfbreak eddies, *Journal of Physical Oceanography*, 49, 607-630, 2019

P43 Amrhein D.*, Wunsch C., Marchal O., and Forget G., A global glacial ocean state estimate constrained by upper-ocean temperature proxies, *Journal of Climate*, 31, 8059-8079, 2018

P42 Lerner P.*, Marchal O., Lam P., and Solow A. Effects of particle composition on thorium scavenging in the North Atlantic, *Geochimica et Cosmochimica Acta*, 233, 115–134, 2018

P41 Zhao N.*, Marchal O., Keigwin L., Amrhein D., and Gebbie G., A synthesis of deglacial deep-sea radiocarbon records and a test of their consistency with modern ocean ventilation, *Paleoceanography* (now *Paleoceanography & Paleoclimatology*), 33, 128–151, 2018

P40 Osman M.*, Das S., Marchal O., and Evans M., Methanesulfonic acid (MSA) migration in polar ice: Data synthesis and theory, *The Cryosphere*, 11, 2439–2462, 2017

P39 Lerner P.*, Marchal O., Lam P., Buesseler K., and Charette M., Kinetics of thorium and particle cycling along the U.S. GEOTRACES North Atlantic transect, *Deep-Sea Research I*, 125, 106–128, 2017

P38 Lerner P.*, Marchal O., Lam P., Anderson R., Buesseler K., Charette M., Edwards R., Hayes C., Huang K.-F., Lu Y., and Robinson L., Testing models of thorium and particle scavenging in the ocean using data from station GT11-22 of the U.S. GEOTRACES North Atlantic Section, *Deep-Sea Research I*, 113, 57-79, 2016

P37 Marchal O., Waelbroeck C., and Colin de Verdière A., On the movements of the North Atlantic Subpolar Front in the pre-instrumental past, *Journal of Climate*, 29, 1545-1571, 2016

P36 Amrhein D.*, Gebbie G., Marchal O., and Wunsch C., Inferring surface water equilibrium calcite δ^{18}O during the last deglacial period from benthic foraminiferal δ^{18}O records: Implications for ocean circulation, *Paleoceanography*, 30, doi:10.1002/2014PA002743, 2015

P35 Henderson G. and Marchal O., Recommendations for future measurement and modeling of particles in GEOTRACES and other ocean biogeochemistry programmes, *Progress in Oceanography*, 133, 73-78, 2015

P34 Lam P. and Marchal O., Insights into particle cycling from thorium and particle data, *Annual Reviews in Marine Science*, 7, 159-184, 2015

P33 Marchal O., On the observability of oceanic gyres, *Journal of Physical Oceanography*, 44, 2498–2523, 2014

P32 Marchal O. and Lam P., What can paired measurements of Th isotope activity and particle concentration tell us about particle cycling in the ocean ?, *Geochimica et Cosmochimica Acta*, 90, 126–148, 2012

P31 Marchal O., Whitehead J. A., and Jensen A., Penetration of a salinity front into a rotating basin: Laboratory experiments and a simple theory, *Journal of Marine Research*, 69, 603–645, 2011

P30 Burke A.*, Marchal O., Bradtmiller L., McManus J., and François, R., Application of an inverse method to interpret ^{231}Pa/^{230}Th observations from marine sediments, *Paleoceanography*, 26, PA1212, doi:10.1029/2010PA002022, 2011

P29 Jackson C., Marchal O., Liu Y., Lu S., and Thompson W., A box-model test of the freshwater forcing hypothesis of abrupt climate change and the physics of governing ocean stability, *Paleoceanography*, 25, PA4222, doi:10.1029/2010PA001936, 2010

P28 Antico A.*, Marchal O., Mysak L., and Vimeux F., Meridional moisture flux in the atmosphere and deuterium excess in polar ice: Insight from a zonally averaged ocean-atmosphere model, *Journal of Climate*, **23**, 4841–4855, 2010

P27 Antico A.*, Marchal O., and Mysak L., Time-dependent response of a zonally averaged ocean-atmosphere-sea ice model to Milankovitch forcing, *Climate Dynamics*, **34**, 763-779, 2010

P26 Marchal O., Extratropical Rossby waves in the presence of buoyancy mixing, *Journal of Physical Oceanography*, **39**, 2910–2925, 2009

P25 Marchal O. and Curry W. B., On the abyssal circulation in the glacial Atlantic, *Journal of Physical Oceanography*, **38**, 2014–2037, 2008

P24 Lynch-Stieglitz J., Adkins J. F., Curry W. B., Dokken T., Hall I. R., Herguera J. C., Hirschi J. J.-M., Ivanova E. V., Kissel C., Marchal O., Marchitto T. M., McCave I. N., McManus J. F., Mulitza S., Ninnemann U., Peeters F., Yu E.-F., and Zhan R., Atlantic meridional overturning circulation during the Last Glacial Maximum, *Science*, 316, 66–69, 2007

P23 Marchal O., Jackson C., Nilsson J., Paul A., and Stocker T. F., Buoyancy-driven flow and nature of vertical mixing in a zonally-averaged model, *Geophysical Monograph*, Ocean Circulation: Mechanisms and Impacts, vol. 173, Shmittner A., Chiang J., and Hemming S. (eds.), 33–52, 2007

P22 Marchal O., François R., and Scholten J. Contribution of ^{230}Th measurements to the estimation of the abyssal circulation, *Deep-Sea Research*, **54**, 557–585, 2007 (erratum: 54, 1448–1450, 2007)

P21 Huybers P.*, Gebbie G., and Marchal O., Can paleoceanographic tracers constrain meridional circulation rates?, *Journal of Physical Oceanography*, **37**, 394–407, 2007

P20 Marchal O. Particle transport in horizontal convection: Implications for the Sandström theorem, *Tellus*, **59A**, 141-154, 2007

P19 Marchal O. Optimal estimation of atmospheric ^{14}C production over the Holocene: Paleoclimate implications, *Climate Dynamics*, **24**, 71-88, 2005

P18 Marchal O. and Nycander J. Nonuniform upwelling in a shallow-water model of the Antarctic Bottom Water in the Brazil Basin, *Journal of Physical Oceanography*, **34**, 2492-2513, 2004

P17 Hughen K., Lehman S., Southon J., Overpeck J., Marchal O., Herring C., and Turnbull J. ^{14}C activity and global carbon cycle over the past 50,000 years, *Science*, **303**, 202-207, 2004

P16 Marchal O. and Chappellaz, J. Sur les variations pré-industrielles du CO_2 et CH_4 atmosphériques, *Comptes-Rendus de l'Académie des Sciences*, **336**, 691-699, 2004 (invited)

P15 Marchal O., Cacho I., Stocker T. F., Grimalt J. O., Calvo E., Martrat B., Shackleton N., Vautravers M., Cortijo E., van Kreveld S., Andersson C., Koç N., Chapman M., Sbaffi L., Duplessy J.-C., Sarnthein M., Turon J.-L., Duprat J., and Jansen E. Apparent long-term cooling of the sea surface in the northeast Atlantic and Mediterranean during the Holocene. *Quaternary Science Reviews*, **21**, 455-483, 2002

P14 Plattner G.-K., Joos F., Stocker T. F., and Marchal O. Feedback mechanisms and sensitivities of ocean carbon uptake under global warming, *Tellus*, **53B**, 564-592, 2001

P13 Marchal O., Stocker T. F., and Muscheler R. Atmospheric radiocarbon during the Younger Dryas: Production, ventilation, or both? *Earth and Planetary Science Letters*, **185**, 383–395, 2001

P12 Marchal O., François R., Stocker T. F., and Joos F. Ocean thermohaline circulation and sedimentary ^{231}Pa/^{230}Th ratio, *Paleoceanography*, **15**, 625–641, 2000

P11 Stocker T. F. and Marchal O. Abrupt climate change in the computer: Is it real? *Proceedings of the US National Academy of Sciences*, **97**, 1362–1365, 2000

P10 Masson V., Braconnot P., Jouzel J., de Noblet N., Cheddadi R., and Marchal O. Simulation of intense monsoons under glacial conditions. *Geophysical Research Letters*, **27**, 1747–1750, 2000

P9 Marchal O., Stocker T. F., and Joos F. Physical and biogeochemical responses to freshwater-induced thermohaline variability in a zonally averaged ocean model, *Geophysical Monograph*, Mechanisms of Global Climate Change at Millennial Time Scales, vol. 112, Clark P. U., Webb R.S., and Keigwin L. D. (eds), Washington DC, 263–284, 1999

P8 Broecker W. S., Lynch-Stieglitz J., Archer D., Hofmann M., Maier-Reimer E., Marchal O., Stocker T. F., and Gruber N. How strong is the Harvardton-Bear constraint ? *Global Biogeochemical Cycles*, **13**, 817–820, 1999

P7 Schulte S., Rostek F., Bard E., Rullkötter J., and Marchal O. Variations of oxygen-minimum and primary productivity recorded in sediments of the Arabian Sea. *Earth and Planetary Science Letters*, **173**, 205–221, 1999

P6 Marchal O., Stocker T. F., Joos F., Indermühle A., Blunier T., and Tschumi J. Modelling the concentration of atmospheric CO_2 during the Younger Dryas climate event. *Climate Dynamics*, **15**, 341–354, 1999

P5 Vidal L., Schneider R. R., Marchal O., Bickert T., Stocker T. F., and Wefer G. Link between the North and South Atlantic during the Heinrich events of the last glacial period. *Climate Dynamics*, **15**, 909–919, 1999

P4 Joos F., Plattner G.-K., Stocker T. F., Marchal O., and Schmittner A. Global warming and marine carbon cycle feedbacks on future atmospheric CO_2. *Science*, **284**, 464–467, 1999

P3 Marchal O., Stocker T. F., and Joos F. Impact of oceanic reorganizations on the ocean carbon cycle and atmospheric carbon dioxide content. *Paleoceanography*, **13**, 225–244, 1998

P2 Marchal O., Stocker T. F., and Joos F. A latitude-depth, circulation-biogeochemical ocean model for paleoclimate studies. Development and sensitivities. *Tellus*, **50B**, 290–316, 1998

P1 Marchal O., Monfray P., and Bates N. Spring-summer imbalance of dissolved inorganic carbon in the mixed layer of the northwestern Sargasso Sea. *Tellus*, **48B**, 115–134, 1996

OTHER PUBLICATIONS

10. Marchal O., and Curry W. C., *On the abyssal circulation in the Atlantic basin at the Last Glacial Maximum*, PAGES News, vol. 16, No. 3, 6–8, 2008

9. Lynch-Stieglitz J., Hirschi J., Marchal O., and Ninneman U., *Prospects for reconstructing the Atlantic meridional overturning from cross-basin density estimates*, PAGES News, Vol. 16, No. 1, 28–29, 2008

8. Marchal O., François R., and Scholten J., *Deep Ocean Waters Don't Run Still*, Oceanus, May 4, 2007 (available at http://www.whoi.edu/oceanus/view/index.do)

7. Jackson C., Liu Y., and Marchal O. *Can models of abrupt climate change be tested from sea level reconstructions?*, PAGES News, vol. 14, No. 2, 24–26, 2006

6. Stocker T. F. and Marchal O. *Recent progress in paleoclimate modeling: Climate models of reduced complexity*, PAGES News, vol. 9, No. 1, 4–7, 2001

5. Marchal O. *Seasonal cycle of CO_2 in the ocean euphotic zone - A study in the Sargasso Sea*, Ph.D. thesis (in French), Université Paris VI, France, 315 pp., 1996

4. Marchal O. *Formulation of the absorption of radiant energy in the upper oceanic layers - Effect of spectral resolution on their physical structure*, Master degree thesis (in French), Université de Liège, Belgium, 149 pp., 1991

3. Marchal O. *Interpretation of the intrinsic color of coastal turbid waters - Use of a semi-empirical model of spectral reflectance to study their nonconformity to the usual algorithms of the Coastal Zone Color Scanner*, Master degree thesis (in French), Université de Liège, Belgium, 115 pp., 1990

2. Marchal O. *Interpretation of the colour spectra of coastal waters in terms of their phytoplankton concentrations*, in 'Progress in Belgian Oceanographic Research 1989', Proceedings of the North Sea Symposium, Ghent, 14th February 1989 (Pichot G., ed.), 31–54, 1989

1. Marchal O. *Interpretation of the color spectra of marine and estuarine waters in function of their optically active compounds*, Diploma thesis (in French), Université Libre de Bruxelles, Belgium, 256 pp., 1988

CONFERENCE ABSTRACTS (* presenter)

A81 Marchal O.*, Lam P., Lee J.-M., and Amaral V., *Estimation of particle cycling rates from the inversion of tracer data: The approach*, Presentation at the EXPORTS Science Meeting, Williamsburg (VA), USA, May 2019

A80 Lee J.-M., Lam P.*, Marchal O., and Amaral V., *Lithogenic particles as tracers of aggregation and disaggregation - Preliminary results*, Presentation at the EXPORTS Science Meeting, Williamsburg (VA), USA, May 2019

A79 Ning Z. and Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *On the estimation of deglacial changes in ocean ventilation from a global compilation of deep-sea radiocarbon records*, Geophysical Research Abstracts, vol. 21, EGU2019-3562, 2019

A79 Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *On shelf-ocean exchange by shelbreak eddies*, Geophysical Research Abstracts, vol. 21, EGU2019-3564, 2019

A78 Lerner P., Marchal O.*, Lam P., Gardner W., Richardson M.-J., and Mishonov A., General Assembly of the European Geosciences Union, Vienna, Austria: *The influence of the Deep Western Boundary Current on ^{231}Pa and ^{230}Th in the Northwest Atlantic*, Geophysical Research Abstracts, vol. 21, EGU2019-11460, 2019

A77 Zhao N. and Marchal O.*, OC3-IPODS Workshop, University of Cambridge, U.K.: *Synthesis and preliminary analysis of deep-ocean radiocarbon records for the last deglaciation*, OC3-IPODS Workshop, September 6–9, 2018

A76 Zhao N.*, Oppo D. Marchal O., Howe J., Huang K.-F., Blusztajn J., and Keigwin L., OC3-IPODS Workshop, University of Cambridge, U.K.: *On the North Atlantic deep ventilation during the Last Glacial Maximum and the Younger Dryas*, OC3-IPODS Workshop, September 6–9, 2018

A75 Zhao N.*, Keigwin L., Marchal O., and Haug G., Goldschmidt Conference, Boston, U.S.A.: *Deep ocean ventilation in the North Atlantic during the Younger Dryas*, Goldschmidt Conference Abstracts, Geochimica et Cosmochimica Acta, 2018

A74 Lerner P.*, Marchal O., and Lam P., Goldschmidt Conference, Boston, U.S.A.: *The influence of the Deep Western Boundary Current on $^{231}Pa/^{230}Th$ in the Middle Atlantic Bight*, Goldschmidt Conference Abstracts, Geochimica et Cosmochimica Acta, 2018

A73 Osman M.*, Das S., Marchal O., and Evans M., General Assembly of the European Geosciences Union, Vienna, Austria: *Post-depositional migration and signal reconstruction of methanesulfonic acid (MSA) in polar ice cores*, Geophysical Research Abstracts, vol. 19, EGU2017-11500, 2017

A72 Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *A model study of sediment transport across the shelf break*, Geophysical Research Abstracts, vol. 19, EGU2017-5169, 2017

A71 Lerner P.*, Lam, P. and Marchal O., Goldschmidt Conference, Paris, France: *On the effect of particle composition on thorium scavenging in the North Atlantic*, Goldschmidt Conference Abstracts, Geochimica et Cosmochimica Acta, 2017

A70 Lerner P., Marchal O.*, and Lam P., General Assembly of the European Geosciences Union, Vienna, Austria: *Influence of particle composition on thorium cycling along the U.S. GEOTRACES North Atlantic section*, Geophysical Research Abstracts, vol. 19, EGU2017-5095, 2017

A69 Lerner P.*, Marchal O., and Lam P., The Royal Society, Biological and Climatic Impacts of Ocean Trace Chemistry, London, UK: *Apparent rates of thorium and particle cycling at different ocean boundaries along the US GEOTRACES North Atlantic Section*, December 2015

A68 Osman M.*, Marchal O., Guo W., Das S., and Evans M., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Post-depositional migration and preservation of methanesulfonic acid (MSA) in polar ice cores*, Abstract C13C-0839, 2015

A67 Lerner P.*, Lam P., and Marchal O., Goldschmidt Conference, Prague, Czech Republic: *Contrasting rates of thorium and particle cycling in different oceanographic environments along the U.S. GEOTRACES North Atlantic Section*, Goldschmidt Conference Abstracts, Geochimica et Cosmochimica Acta, 2015

A66 Marchal O.*, Waelbroeck C., and Colin de Verdiére A., General Assembly of the European Geosciences Union, Vienna, Austria: *Variability of the North Atlantic during Past Climate Change: Inference fron Scarce and Inaccurate Data*, Geophysical Research Abstracts, vol. 17, EGU2015-6580, 2015

A65 Lerner P.*, Marchal O., Lam P., Buesseler K., Charette M., Hayes C., Huang K.-F., and Lu Y., Goldschmidt Conference, Sacramento, U.S.A.: *Testing models of chemical scavenging using Th and particle data from GEOTRACES*, Goldschmidt Conference Abstracts, Geochimica et Cosmochimica Acta, 2014

A64 Marchal O.*, Colin de Verdiére A., and Wunsch C., General Assembly of the European Geosciences Union, Vienna, Austria: *On the role of long baroclinic Rossby waves in ocean state estimation*, Geophysical Research Abstracts, vol. 15, EGU2013-5945-3, 2013

A63 Paul A.*, Krandick A., Gebbie G., Marchal O., Dutkiewicz S., Losch M., Kurahashi-Nakamura T., and Tharammal T., General Assembly of the European Geosciences Union, Vienna, Austria: *Combined simulation of carbon and oxygen isotopes in a global ocean model*, Geophysical Research Abstracts, vol. 15, EGU2013-5643, 2013

A62 Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *A Rauch-Tung-Striebel smoother for the interpretation of long time series of ocean observations*, Geophysical Research Abstracts, vol. 14, EGU2012-9774, 2012

A61 Marchal O.* and Lam P., 3rd GEOTRACES Data-Model Synergy Workshop, Barcelona, Spain: *What can paired measurements of Th isotope activity and particle concentration tell us about particle cycling in the ocean?*, November 2011

A60 Marchal O.*, Whitehead J., and Jensen, A., General Assembly of the European Geosciences Union, Vienna, Austria: *Laboratory experiments of freshwater discharge into the ocean*, Geophysical Research Abstracts, vol. 12, EGU2010-5590, 2010

A59 Burke A., Marchal O.*, Bradtmiller L., McManus J., and François R., 2nd GEOTRACES Data-Model Synergy Workshop, Paris, France: *Application of an inverse method to interpret $^{231}Pa/^{230}Th$ observations from marine sediments*, December 2009 (INVITED)

A58 Marchal O.*, Workshop 'Data Assimilation', Program PAGES ('Past Global Changes'), Vienna, Austria: *Interpretation of tracer observations from marine sediments: Effects of data and model uncertainties*, April 2009 (INVITED)

A57 Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *Extratropical Rossby waves in the presence of buoyancy mixing*, Geophysical Research Abstracts, vol. 11, EGU2009-5711, 2009

A56 Marchal O.* and Curry W. B., Fall Meeting of the American Geophysical Union, San Francisco, USA: *On the abyssal circulation in the Atlantic Basin at the Last Glacial Maximum*, EOS Trans. AGU, 89(53), Fall Meet. Suppl., Abstract PP13D-06, 2008 (INVITED)

A55 Marchal O.*, Fall Meeting of the American Geophysical Union, San Francisco, USA: *Extratropical Rossby waves in the presence of vertical buoyancy mixing*, EOS Trans. AGU, 89(53), Fall Meet. Suppl., Abstract OS51B-1253, 2008

A54 Lu S.*, Jackson C., Marchal O., Thompson W., and Stocker T. F., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Consistent observational and numerical modeling support for ice sheet forcing of DOI event 8*, EOS Trans. AGU, 89(53), Fall Meet. Suppl., Abstract PP21C-1438, 2008

A53 Marchal O.* and Curry W., Workshop 'Reconstruction of the glacial deep ocean circulation', Center for Marine Environmental Sciences (MARUM), University of Bremen, Germany: *On the abyssal circulation in the Atlantic Ocean during the Last Glacial Maximum*, November 2008 (INVITED)

A52 Marchal O., Sandström Symposium, Department of Meteorology, University of Stockholm, Sweden: *Particle transport in horizontal convection*, November 2008 (INVITED)

A51 Burke A.*, Marchal O., and McManus J., Goldschmidt Conference, Vancouver, Canada: *Application of an inverse method to interpret $^{231}Pa/^{230}Th$ observations from marine sediments*, Goldschmidt Conference Abstracts, Geochimica et Cosmochimica Acta, vol. 72, No 12S (July 2008), 2008

A50 Marchal O.* and Burke A., General Assembly of the European Geosciences Union, Vienna, Austria: *Testing paleoceanographic hypotheses using inverse methods: Application to $^{231}Pa/^{230}Th$ data for the Heinrich Event 1*, Geophysical Research Abstracts, vol. 10, EGU2008-A-2654, 2008 (INVITED)

A49 Marchal O.*, Colin de Verdière A., and Winsor P., General Assembly of the European Geosciences Union, Vienna, Austria: *Adjustment of a fluid layer to surface buoyancy forcing on the β-plane: An overlooked problem*, Geophysical Research Abstracts, vol. 10, EGU2008-A-1503, 2008

A48 Marchal O.* and Curry W., General Assembly of the European Geosciences Union, Vienna, Austria: *Interpretation of marine sediment data as an inverse problem*, Geophysical Research Abstracts, vol. 10, EGU2008-A-1452, 2008 (INVITED)

A47 Marchal O.*, Jackson C., Nilsson J., Paul A., and Stocker T. F., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Relaxation oscillations as a mechamism of abrupt climate change*, EOS Trans. AGU, 88(52), Fall Meet. Suppl., Abstract PP41C-0695, 2007

A46 Lu S.*, Jackson C., Marchal O., Liu Y., Thompson W., and Stocker T. F., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Freshwater forcing hypothesis of abrupt climate change*, EOS Trans. AGU, 88(52), Fall Meet. Suppl., Abstract PP41C-0683, 2007

A45 Burke A., Marchal O.*, and François R., Fall Meeting of the American Geophysical Union, San Francisco, USA: *North Atlantic abyssal circulation during Heinrich Event 1*, EOS Trans. AGU, 88(52), Fall Meet. Suppl., Abstract PP11C-07, 2007

A44 Marchal O.*, François R., and Scholten J., GEOTRACES Data-Model Synergy Workshop, Delmenhorst, Germany: *An inverse method to combine radiochemical measurements and a circulation model: Application to the North Atlantic*, September 2007 (INVITED)

A43 Marchal O.*, François R., and Scholten J., Gordon Research Conference on Chemical Oceanography, Tilton, USA: *Contribution of existing ^{230}Th data to the estimation of the abyssal circulation in the North Atlantic*, August 2007 (INVITED)

A42 Marchal O.*, Research Conference of the European Science Foundation on Ocean Controls in Abrupt Climate Change, Obergürgl, Austria: *Application of inverse methods to paleoceanography: Combining noisy data with imperfect models*, May 2007 (INVITED)

A41 Curry W., Marchal O.*, Wunsch C., and Huybers P, General Assembly of the European Geosciences Union, Vienna, Austria: *Atlantic ocean circulation during the Last Glacial Maximum: What do we know?*, Geophysical Research Abstracts, vol. 9, 01566, 2007

A40 Marchal O.*, Jackson C., Nilsson J., Paul A., and Stocker T. F., General Assembly of the European Geosciences Union, Vienna, Austria: *Millennial-scale climate variability: Insight from the theory of nonlinear vibrations*, Geophysical Research Abstracts, vol. 9, 01556, 2007 (INVITED)

A39 Marchal O.*, Curry W., Burke A., Huybers P., and Wunsch C., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Inverse modeling of the glacial ocean: A progress report*, EOS Trans. AGU, 87(52), Fall Meet. Suppl., Abstract PP34A-04, 2006

A38 Marchal O.* and François R., General Assembly of the European Geosciences Union, Vienna, Austria: *Influence of thorium-230 measurements on the estimation of the abyssal circulation*, Geophysical Research Abstracts, vol. 8, 04665, 2006

A37 Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *A new look at an old problem: The Sandström theorem*, Geophysical Research Abstracts, vol. 8, 04388, 2006

A36 Liu Y.*, Jackson C., Marchal O., and Stocker T. F., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Exploration of the mechanism explaining the emergence of unforced millennial scale variability in the Bern Climate model under glacial boundary conditions*, EOS Trans. AGU, 86(52), Fall Meet. Suppl., Abstract OS41A-0595, 2006

A35 Marchal O., Jackson C., and Liu Y.*, Fall Meeting of the American Geophysical Union, San Francisco, USA: *Paleoclimate implications of uncertainties in processes governing vertical mixing in the ocean*, EOS Trans. AGU, 86(52), Fall Meet. Suppl., Abstract OS33D-08, 2005

A34 Marchal O.*, General Assembly of the European Geosciences Union, Vienna, Austria: *A formal analysis of the Sandström theorem*, Geophysical Research Abstracts, vol. 7, 08380, 2005

A33 Schlitzer R.*, Marchal O., and Siddall M., General Assembly of the European Geosciences Union, Vienna, Austria: *Pa/Th as paleo-circulation proxy: Separating the effects of particle scavenging and circulation*, Geophysical Research Abstracts, vol. 7, 02389, 2005

A32 Marchal O.*, Paleocean Circulation Workshop of SCOR/IMAGES, Atlanta, USA: *On the inference of the paleocirculation from Pa-231 and Th-230*, March 2005 (INVITED)

A31 Marchal O.*, Fall Meeting of the American Geophysical Union, San Francisco, USA: *Effects of surface freshwater fluxes on the ocean general circulation: A theoretical perspective*, EOS Trans. AGU, 85(47), Fall Meet. Suppl., Abstract PP22A-06, 2004

A30 Gulden L. E.*, Jackson C., Marchal O., and Stocker T. F., Fall Meeting of the American Geophysical Union, San Francisco, USA: *A model perspective of factors influencing the stability characteristics of the North Atlantic meridional overturning circulation during the last glacial cycle*, EOS Trans. AGU, 85(47), Fall Meet. Suppl., Abstract PP31A-0888, 2004

A29 Keigwin L. D.* and Marchal O., Fall Meeting of the American Geophysical Union, San Francisco, USA: *Glacial ventilation of the North Pacific*, EOS Trans. AGU, 85(47), Fall Meet. Suppl., Abstract PP24A-03, 2004

A28 Marchal O.*, 8th International Conference of Paleoceanography, Biarritz, France: *What drives the ocean meridional overturning circulation?*, Abstract available at http://www.icp8.cnrs.fr/, September 2004 (INVITED)

A27 Marchal O.* and Nycander J., 1st General Assembly of European Geosciences Union, Nice, France: *Comparing a shallow-water model and float data for AABW in the Brazil Basin*, Geophysical Research Abstracts, vol. 6, 03596, 2004

A26 Marchal O.*, 1st General Assembly of European Geosciences Union, Nice, France: *Inverse modeling of the tree-ring C-14 record: Paleoclimate implications*, Geophysical Research Abstracts, vol. 6, 03351, 2004

A25 Marchal O.*, U.S. JGOFS Synthesis & Modeling Project summer meeting, Woods Hole, USA: *Abrupt climate change: A pause*, July 2003 (INVITED)

A24 Marchal O.* and Nycander J., EGS-AGU-EUG Joint Assembly, Nice, France: *Non-uniform diapycnal mixing in a shallow water model of AABW in the Atlantic*, Geophysical Research Abstracts, vol. 5, 06961, 2003

A23 Marchal O.*, Cacho I., Stocker T. F., Grimalt J. O., Calvo E., Martrat B., Shackleton N., Vautravers M., Cortijo E., van Kreveld S., Andersson C., Koç N., Chapman M., Sbaffi L., Duplessy J.-C., Sarnthein M., Turon J.-L., Duprat J., and Jansen E., Goldschmidt Geochemistry Conference, Davos, Switzerland: *Apparent long-term cooling of the sea surface in the northeast Atlantic and Mediterranean during the Holocene*, Goldschmidt Conference Abstracts, Geochimica and Cosmochimica Acta, vol. 66, Suppl. 1, 2002

A22 Marchal O.*, Fall Meeting of the American Geophysical Union, San Francisco, USA: *An inverse method to infer the global ocean paleoventilation from the atmospheric ^{14}C record*, 2001

A21 Marchal O.*, Stocker T. F., and Muscheler R., Gordon Research Conference on Chemical Oceanography, Tilton, USA: *Atmospheric radiocarbon during the Younger Dryas: Production, ventilation, of both?*, August 2001 (INVITED)

A20 Marchal O.*, François R., and Stocker T. F., Workshop of the European Community Projet "Holocene Ocean Instability ?", Louvain-La-Neuve, Belgium: *Can the sediment $^{231}Pa/^{230}Th$ ratio document deep ocean circulation changes ?*, June 2000

A19 Marchal O.*, Stocker T. F., and Joos F., SCOR–IMAGES Workshop "Terminal Millennium Synthesis of Decadal-to-Millennial Climate Records for the Last 80 ka", Trins, Austria : *Millennial scale changes in atmospheric CO_2 and $\Delta^{14}C$ during marine isotopic stages 2–3: A prominent role of the Southern Ocean ?*, February 2000

A18 Marchal O.*, Stocker T. F., and Kralidis G., Swiss Climate Summer School "The Dynamics of the Earth System: Processes and Records of Past Climate Change", Hasliberg, Switzerland: *A model assessment of PO_4 and $\delta^{13}C$ as tracers of North Atlantic Deep Water*, July 1999

A17 Marchal O.*, Stocker T. F., and Joos F., Spring Meeting of the American Geophysical Union, Boston, USA: *On inter-hemispheric climate coupling on the millennial time scales and associated biogeochemical changes*, June 1999

A16 Marchal O.*, Stocker T. F., Joos F., and Kralidis G., Workshop of the European Community Projet "Holocene Ocean Instability ?", Kiel, Germany: *A model assessment of PO_4 and $\delta^{13}C$ as tracers of North Atlantic Deep Water*, May 1999

A15 Marchal O.*, Stocker T. F., Joos F., and Kralidis G., European Union of Geosciences, Symposium on "Holocene and Pleistocene decadal to millennial scale climate variability: the marine record", Strasbourg, France: *A model assessment of deep ocean $\delta^{13}C$ and PO_4 as tracers for North Atlantic Deep Water*, March 1999

A14 Marchal O.*, Stocker T. F., and Joos F., 6$^{\text{th}}$ International Conference on Paleoceanography, Lisbon, Portugal: *Model assessment of carbon-13 to carbon-12 and cadmium to calcium ratios as tracers for deep water mass production*, August 1998

A13 Marchal O.*, Stocker T. F., and Joos F., Joint Meeting of the European Community Projects "North-south climatic connection and carbon cycle over the last 250 kyr" and "Variability of the glacial and interglacial climates and abrupt climatic changes", Wengen, Switzerland: *Thermohaline oscillations and the ocean carbon cycle*, October 1997

A12 Marchal O.*, Stocker T. F., and Joos F., 5$^{\text{th}}$ International CO_2 Conference, Cairns, Australia: *Variability of the ocean carbon cycle during abrupt climate changes as simulated by a zonally-averaged, coupled circulation-biogeochemical model*, September 1997

A11 Marchal O.*, Stocker T. F., and Joos F., Conference of the European Science Foundation on "Paleoclimate modelling and analysis (Quaternary paleoclimate analysis)", Il Ciocco, Italy: *Response of the ocean carbon cycle to glacial meltwater discharges as simulated by a zonally-averaged, coupled circulation-biogeochemical model*, May 1997

A10 Marchal O.*, Stocker T. F., and Joos F., Meeting of the European Community Project "Variability of the glacial and interglacial climates and abrupt climatic changes", Mallorca, Spain: *Response of a zonally-averaged, coupled circulation-biogeochemical ocean model to the discharge of meltwater as constrained for the last deglaciation*, January 1997

A9 Marchal O., Monfray P., and Bates N.*, XXI General Assembly of the International Association for the Physical Sciences of the Ocean, Honolulu, Hawaii: *A diagnostic model of the oceanic carbon cycle at the US JGOFS Bermuda Time-Series site in the Northwestern Sargasso Sea*, August 1995

A8 Marchal O.* and Monfray P., Meeting of the National Program of Climate Study (PNEDC), Garchy, France: *A simple model of the carbon/chlorophyll ratio of phytoplankton in the ocean euphotic zone*, June 95

A7 Marchal O.* and Monfray P., Atelier de Modélisation des Cycles Biogéochimiques Marins (JGOFS-France), Gif-Sur-Yvette, France: *Seasonal cycle of CO_2 and O_2 in the euphotic zone at the US JGOFS station*, November 1994

A6 Marchal O.* and Monfray P., Atelier de Modélisation des Cycles Biogéochimiques Marins (JGOFS-France), Gif-Sur-Yvette, France: *The cycle of dissolved inorganic carbon in the mixed layer at the US JOGFS station in the Sargasso Sea during spring-summer 1989*, December 1993

A5 Marchal O.* and Monfray P., 4^{th} International CO_2 Conference, Carqueiranne, France: *Air-sea fluxes of CO_2 from a prognostic ocean model and experimental data*, September 1993

A4 Marchal O.* and Monfray P., 18^{th} General Assembly of the European Geophysical Society, Wiesbaden, Germany: *Joint use of a prognostic model and in situ data to quantify the air-sea fluxes of CO_2 and O_2: Application at the Bermuda Atlantic Time-Series Study site*, May 1993

A3 Marchal O.* and Monfray P., Atelier de Modélisation des Cycles Biogéochimiques Marins (JGOFS-France), Villefranche-Sur-Mer, France: *Integration of meteorological data and in situ measurements in a 1D model of the oceanic carbon cycle*, January 1993

A2 Marchal O.*, 77^{th} Statutory Meeting of the International Council for the Exploration of the Sea, Hydrographic Committee, Den Haag, The Netherlands: *Interpretation of the colour spectra of coastal waters in function of their phytoplankton concentrations*, October 1989

A1 Marchal O.*, Journée d'Etudes Mer du Nord, Session Océanographie Physique, Ghent, Belgium: *Interpretation of the colour spectra of seawaters in terms of their different components*, February 1989

DEPARTMENTAL TALKS

41. Laboratoire des Sciences de l'Environnement Marin, Brest, February 2018
40. Department of Physical Oceanography, Woods Hole Oceanographic Institution, January 2018
39. Graduate School of Oceanography, University of Rhode Island, March 2015
38. Department of Earth & Planetary Sciences, Harvard University, February 2015
37. Department of Meteorology, University of Stockholm, October 2013
36. Department of Meteorology, University of Stockholm, November 2011
35. Department of Physical Oceanography, Woods Hole Oceanographic Institution, November 2010
34. Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, November 2008
33. Department of Geology & Geophysics, Woods Hole Oceanographic Institution, September 2008
32. Laboratoire d'Océanographie et du Climat, Université Pierre et Marie Curie, Paris, March 2008
31. Department of Physical Oceanography, Woods Hole Oceanographic Institution, June 2007
30. Department of Earth, Atmospheric, and Planetary Sciences, MIT, Boston, March 2007
29. Laboratoire d'Etudes en Géophysique et Océanographie Spatiales, Toulouse, November 2006
28. Division of Ocean & Climate Physics, Lamont-Doherty Earth Observatory, New York, October 2006
27. Department of Geophysical Sciences, University of Chicago, February 2006
26. Center for Atmosphere-Ocean Sciences, Courant Institute of Mathematical Sciences, January 2006
25. Department of Geology and Oceanography, University of Bordeaux, December 2005
24. Institute for Geophysics, University of Texas (Austin), October 2005
23. Center for Nonlinear Dynamics & Department of Physics, University of Texas (Austin), October 2005
22. Center for the Environment, Harvard University, October 2005
21. Department of Environmental Sciences, ETH, Zurich, June 2005
20. Department of Meteorology, University of Stockholm, May 2005
19. Department of Geology and Geophysics, Woods Hole Oceanographic Institution, January 2005
18. Department of Atmospheric and Oceanic Sciences, University of McGill, October 2004
17. Department of Physical Geography, University of Stockholm, April 2004
16. Department of Meteorology, University of Stockholm, April 2004
15. Department of Geology and Geophysics, Woods Hole Oceanographic Institution, April 2004
14. Department of Earth, Atmospheric, and Planetary Sciences, MIT, Boston, April 2003
13. Department of Geology, Brown University, November 2002
12. National Center for Atmospheric Research, Boulder, November 2001
11. Department of Earth, Atmospheric, and Planetary Sciences, MIT, Boston, October 2001

9–10. Woods Hole Oceanographic Institution, March 2000 (2 talks)

8. Climate and Environmental Physics, Physics Institute, University of Bern, December 1999

7. Centre Européen de Recherche & Enseignement de Géosciences de l'Environnement, October 1999
6. Laboratoire de Glaciologie et de Géophysique de l'Environnement, Grenoble, October 1999
5. Woods Hole Oceanographic Institution, June 1999
4. Centre des Faibles Radioactivités, Gif-Sur-Yvette, February 1998
3. Climate and Environmental Physics, Physics Institute, University of Bern, April 1997
2. Climate and Environmental Physics, Physics Institute, University of Bern, February 1996
1. School of Ocean Sciences, Bangor, University of Wales, January 1996