Curriculum Vitae

OREGON STATE UNIVERSITY
College of Earth, Ocean, and Atmospheric Sciences

June 21, 2022

ANDREAS SCHMITTNER
Professor

EDUCATION

Ph.D., Physics, University Bern, Switzerland, 1999
Department of Climate and Environmental Physics, Institute of Physics
Dissertation Title: On the Large-Scale Atmospheric Hydrological Cycle and its Influence on the Global Ocean Circulation.
Diploma, Physics, University Bremen, Germany, 1996

ACADEMIC POSITIONS

Professor, College of Earth, Ocean, and Atmospheric Sciences, OSU, 2017-present
Associate Professor, College of Earth, Ocean, and Atm. Sciences, OSU, 2011-2017
Affiliated Faculty, Environmental Arts and Humanities, OSU, 2013-present
Assistant Professor, College of Oceanic and Atmospheric Sciences, OSU, 2005-2011
Postdoctoral Scholar, Institute of Geosciences, University Kiel, Germany, 2003-2005
Postdoctoral Scholar, Max-Planck-Institute for Biogeochemistry, Jena, Germany, 2002-2003
Lecturer, Department of Physics and Astronomy, University of Victoria, Canada, 2001-2002
Postdoctoral Scholar, School of Earth and Ocean Sciences, University of Victoria, Canada, 1999-2002

HONORS AND AWARDS

2006 Early Career Award, Ocean Sciences Section of the American Geophysical Union

FIELDS OF SPECIALIZATION

Earth System Modeling, Climate Dynamics, Climate Change, Paleoclimate, Paleoceanography, Ocean Circulation, Marine Ecosystem and Biogeochemical Cycles

PROFESSIONAL ACTIVITIES

Professional Organizations

American Geophysical Union (AGU)
American Meteorological Society (AMS)
European Geosciences Union (EGU)

Conference Session Chair, Workshop Convener, etc.

Workshop Convener “Final OC3 meeting: New knowledge and more questions about the ocean during the last deglaciation”, San Francisco, USA, Dec 14, 2019.
Conference Session Chair “Deep-Ocean Circulation Changes and Their Impacts”, AGU Fall Meeting, San Francisco, Dec. 9, 2019.
Workshop Convener “Ocean Circulation and Carbon Cycling During the Last Deglaciation: Global Syntheses of Carbon Isotope Data”, Cambridge, UK, Sept 6-9, 2018.
Workshop Convener “Ocean Circulation and Carbon Cycling During the Last Deglaciation: Regional Syntheses of Carbon Isotope Data”, Corvallis, Oregon, June 27-29, 2017.

Organizing Committee Member "Connecting Paleo and Modern Oceanographic Data to Understand AMOC over Decades to Centuries", Boulder, Colorado, May 23-25, 2016.
Workshop Convener "Deglacial Deep Ocean Circulation and Biogeochemical Cycling", Bern, Switzerland, Sep. 30 - Oct. 3, 2014.
Workshop Convener "PMIP Ocean Workshop 2013", Corvallis, Dec. 4-6, 2013.
Conference Session Chair "Nitrogen Cycle in the Ocean, Past and Present", AGU Fall Meeting, San Francisco, Dec. 2010.
Conference Session Chair "Dynamics and Impact of the Meridional Overturning Circulation", AGU Ocean Sciences Meeting, Portland OR, July 2010.
Conference Session Chair at MOCA 2009 Joint Assembly of IAPSO (International Association of Physical Sciences of the Ocean), IACS (International Association of Cryospheric Sciences), IAAS (International Association of Atmospheric Sciences), "Rapid Climate Change", Montreal QE, Canada, July 2009.
Conference Session Chair "Short-Term Climate Variability in the Context of Long-Term Paleoclimate Change", AGU Fall Meeting, San Francisco, USA, December 2008.
Conference Session Chair "Feedbacks Between Marine Biogeochemical Cycles and Climate", at the AGU Ocean Sciences Meeting, Honolulu, USA, February 2006.
Conference Session Chair "Past and Future Changes of Thermohaline Circulation", AGU Fall Meeting, San Francisco, USA, December 2005.
Workshop Convenor at the University Kiel, "Pliocene Closure of the Panama Gateway and its Effect on Ocean Circulation, Climate and Evolution", Kiel, Germany, June 2004.

Committees, Commissions and Boards

PalMod German Climate Modeling Initiative, Scientific Advisory Board (Chair), https://www.palmod.de/.
Ocean Circulation and Carbon Cycling (OC3) Chair, OC3 is a PAGES (Past Global Changes) Working Group, http://www.pages-igbp.org/workinggroups/oc3, 2014-present
Investigating Past Ocean Dynamics (IPODS) Co-chair, IPODS is an INQUA (International Quaternary Association) International Focus Group, 2014-2019
Local organizing committee, 3rd PAGES Open Science Meeting, Corvallis, July 8-11, 2009
CLIVAR/PAGES (Climate Variability and Predictability/Past Global Changes) Intersection Panel (2004-2011)

PUBLICATIONS

H-index: Thompson Reuters Web of Science 38, Google Scholar 47 (35 last 5 years)
Total citations: Thompson 7,240, Google Scholar 11,819

Names of students or post-doctoral advisees are underlined.

Refereed Papers

1. Mulitza, S., T. Bickert, H. C. Bostock, C. M. Chiessi, B. Donner, A. Govin, N. Harada, E. Huang, H. Johnstone, H. Kuhnert, M. Langner, F. Lamy, L. Lembke-Jene, L. Lisiecki, J. Lynch-Stieglitz, L. Max, M. Mohtadi, G. Mollenhauer, J. Muglia, D. Nürnberg, A. Paul, C. Rühlemann, J. Repschläger, R. Saraswat, A. Schmittner, E. L. Sikes, R. F. Spielhagen, and R. Tiedemann (2021) World Atlas of late Quaternary Foraminiferal Oxygen and

Carbon Isotope Ratios, *Earth System Science Data,*14, 2553–2611, doi: 10.5194/essd-14-2553-2022.

2. Kwon, E. Y., A. Timmermann, B. J. Tipple, and A. Schmittner (2022) Projected reversal of the oceanic stable carbon isotope ratio depth gradient with continued anthropogenic carbon emissions *Nature Communications Earth & Environment,* 3, 62, doi: 10.1038/s43247-022-00388-8.
3. Repschläger, J., N. Zhao, D. Rand, L. Lisiecki, J. Muglia, S. Mulitza, A. Schmittner, O. Cartapanis, H. Bauch, R. Schiebel, and G. Haug (2021) Active North Atlantic Deepwater Formation during Heinrich Stadial 1 *Quaternary Science Reviews,* 270, 107145, doi: 10.1016/j.quascirev.2021.107145.
4. Wilmes, S.-B., J. A. M. Green, and A. Schmittner (2021) Enhanced vertical mixing in the glacial ocean inferred from sedimentary carbon isotopes *Communications Earth & Environment,* 2, 166, doi: 10.1038/s43247-021-00239-y.
5. Somes, C., A. Dale, K. Wallmann, F. Scholz, W. Yao, A. Oschlies, J. Muglia, A. Schmittner, and E. Achterberg (2021) Constraining global marine iron source and scavenging fluxes with GEOTRACES dissolved iron measurements in an ocean biogeochemical model *Glob Biogeoch Cy,* 35, (8), doi: 10.1029/2021GB006948.
6. Muglia, J., and A. Schmittner (2021) Carbon Isotope Constraints on Glacial Atlantic Meridional Overturning: Strength vs Depth *Quat Sci Rev*, 257, 106844, doi: 10.1016/j.quascirev.2021.106844.
7. Cliff, E., S. Khatiwala, and A. Schmittner (2021) Glacial deep ocean deoxygenation driven by biologically mediated air–sea disequilibrium, *Nat Geosci, 14*, 43-50, doi: 10.1038/s41561-020-00667-z.
8. Walczak, M. H., A. C. Mix, E. A. Cowan, S. Fallon, L. Keith Fifield, J. Alder, J. Du, B. Haley, T. Hobern, J. Padman, S. K. Praetorius, A. Schmittner, J. S. Stoner, and S. D. Zellers (2020) Phasing of millennial-scale climate variability in the Pacific and Atlantic Oceans, *Science*, eaba7096, doi: 10.1126/science.aba7096.
9. Mengis, N., D. P. Keller, A. MacDougall, M. Eby, N. Wright, K. J. Meissner, A. Oschlies, A. Schmittner, H. D. Matthews, and K. Zickfeld (2020) Evaluation of the University of Victoria Earth System Climate Model version 2.10 (UVic ESCM 2.10), *Geosci. Model Dev., 13,* 4183–4204, https://doi.org/10.5194/gmd-13-4183-2020.
10. Khider, D., J. Emile-Geay, N. P. McKay, Y. Gil, D. Garijo, V. Ratnakar, M. Alonso-Garcia, S. Bertrand, O. Bothe, P. Brewer, A. Bunn, M. Chevalier, L. Comas-Bru, A. Csank, E. Dassié, K. DeLong, T. Felis, P. Francus, A. Frappier, W. Gray, S. Goring, L. Jonkers, M. Kahle, D. Kaufman, N. M. Kehrwald, B. Martrat, H. McGregor, J. Richey, A. Schmittner, N. Scroxton, E. Sutherland, K. Thirumalai, K. Allen, F. Arnaud, Y. Axford, T. T. Barrows, L. Bazin, S. E. Pilaar Birch, E. Bradley, J. Bregy, E. Capron, O. Cartapanis, H. W. Chiang, K. Cobb, M. Debret, R. Dommain, J. Du, K. Dyez, S. Emerick, M. P. Erb, G. Falster, W. Finsinger, D. Fortier, N. Gauthier, S. George, E. Grimm, J. Hertzberg, F. Hibbert, A. Hillman, W. Hobbs, M. Huber, A. L. C. Hughes, S. Jaccard, J. Ruan, M. Kienast, B. Konecky, G. Le Roux, V. Lyubchich, V. F. Novello, L. Olaka, J. W. Partin, C. Pearce, S. J. Phipps, C. Pignol, N. Piotrowska, M. S. Poli, A. Prokopenko, F. Schwanck, C. Stepanek, G. E. A. Swann, R. Telford, E. Thomas, Z. Thomas, S. Truebe, L. von Gunten, A. Waite, N. Weitzel, B. Wilhelm, J. Williams, J. J.

Williams, M. Winstrup, N. Zhao, and Y. Zhou, 2019, PaCTS v1.0: A Crowdsourced Reporting Standard for Paleoclimate Data, *Paleoceanography and Paleoclimatology, 35, 1570-1596,* doi: 10.1029/2019PA003632.

11. Davis, C. V., J. F. Ontiveros-Cuadras, C. Benitez-Nelson, A. Schmittner, E. J. Tappa, E. Osborne, and R. C. Thunell, 2019, Ongoing increase in Eastern Tropical North Pacific denitrification as interpreted through the Santa Barbara Basin sedimentary $\delta^{15}N$ record, *Paleoceanography and Paleoclimatology, PALO20782,* doi: 10.1029/2019PA003578.
12. Wilmes, S.-B., A. Schmittner, and J. A. M. Green, 2019, Glacial ice sheet extent effects on modeled tidal mixing and the global overturning circulation, *Paleoceanography and Paleoclimatology,* doi: 10.1029/2019PA003644.
13. Lacerra M., D. C. Lund, G. Gebbie, D. W. Oppo, J. Yu, A. Schmittner and N. Umling, 2019, Less remineralized carbon in the intermediate depth South Atlantic during Heinrich Stadial 1, *Paleoceanography and Paleoclimatology,* doi: 10.1029/2018PA003537.
14. Gottschalk, J., G. Battaglia, H. Fischer, T. L. Fröhlicher, S. L. Jaccard, A. Jeltsch-Thömmes, F. Joos, P. Köhler, K. J. Meissner, L. Menviel, C. Nehrbass-Ahles, J. Schmitt, A. Schmittner, L. C. Skinner and T. F. Stocker, 2019, Mechanisms of millennial-scale atmospheric CO_2 change in numerical model simulations *Quat. Sci. Rev.*, 220, 30-74, doi: 10.1016/j.quascirev.2019.05.013.
15. Khatiwala, S., A. Schmittner and J. Muglia, 2019, Air-sea disequilibrium enhances ocean carbon storage during glacial periods, *Science Advances*, 5(6), doi: 10.1126/sciadv.aaw498.
16. Muschitiello, F., W. J. D'Andrea, A. Schmittner, T. J. Heaton, M. L. Balascio, N. deRoberts, M. W. Caffee, T. E. Woodruff, K. C. Welten, L. C. Skinner, M. H. Simon, T. M. Dokken, 2019, Deep-water circulation changes lead North Atlantic climate during deglaciation, *Nature Communications*, 10(1), 1272, doi: 10.1038/s41467-019-09237-3.
17. Thibodeau, B., C. Not, A. Schmittner, D. Noone, C. Tabor, J. Zhang, and Z. Liu (2018) Last century warming over the Canadian Atlantic shelves linked to weak Atlantic Meridional Overturning Circulation, *Earth and Planet. Sci. Let.*, 496, 47-56, doi:10.1029/2018GL080083.
18. Muglia, J., Skinner, L., and A. Schmittner (2018) Weak overturning circulation and high Southern Ocean nutrient utilization maximized glacial ocean carbon, *Earth and Planet. Sci. Let.*, 496, 47-56, doi:10.1016/j.epsl.2018.05.038.
19. Muglia, J., Somes, C. J., Nickelsen, L., and A. Schmittner (2017) Combined Effects of Atmospheric and Seafloor Iron Fluxes to the Glacial Ocean, Paleoceanography, 32(11), 1204-1218, doi:10.1002/2016PA003077.
20. Lacerra, M., D. C. Lund, J. Yu, and A. Schmittner (2017) Carbon storage in the mid-depth Atlantic during millennial-scale climate events, Paleoceanography, 32, 780-795, doi:10.1002/2016PA003081.
21. Schmittner, A., H. C. Bostock, O. Cartapanis, W. B. Curry, H. L. Filipsson, E. D. Galbraith, J. Gottschalk, J. C. Herguera, S. Jaccard, L. E. Lisiecki, D. C. Lund, G. Martínez-Méndez, J. Lynch-Stieglitz, A. Mackensen, E. Michel, A. C. Mix, D. W. Oppo, C. D. Peterson, E. L. Sikes, H. J. Spero, and C. Waelbroeck (2017) Calibration of the

Carbon Isotope Composition ($\delta^{13}C$) of Epibenthic Foraminifera, Paleoceanography, 32(6), 512-530, doi:10.1002/2016PA003072.

22. Somes, C. J., Schmittner, A., Muglia, J. and A. Oschlies (2017) A three-dimensional model of the marine nitrogen cycle during the Last Glacial Maximum constrained by sedimentary isotopes, Frontiers in Marine Science, 4, 108, doi:10.3389/fmars.2017.00108.
23. Ullman, D. J. and A. Schmittner (2017) A cloud feedback emulator (CFE, version 1.0) for an intermediate complexity model, Geoscientific Model Development, 10, 945-958, doi:10.5194/gmd-10-945-2017.
24. Bakker, P., Schmittner, A., Lenaerts, J. T. M., Abe-Ouchi, A., Bi, D., van den Broeke, M. R., Chan, W.-L., Beadling, R. L., Marsland, S. J., Mernild, S. H., Saenko, O. A., Swingedouw, D., Sullivan, A. and J. Jin (2016) Fate of the Atlantic Meridional Overturning Circulation - Strong decline under continued warming and Greenland melting, Geophysical Research Letters, 43(23), 12,252-12,260, doi:10.1002/2016GL070457. Selected EOS Research Spotlight and US CLIVAR Research Highlight.
25. Bakker, P., Clark, P. U., Golledge, N. R., Schmittner, A., and M. E. Weber (2016) Centennial-scale Holocene climate variations amplified by Antarctic Ice Sheet discharge, Nature, 541, 72–76, doi:10.1038/nature20582.
26. Hertzberg, J. E., Lund, D. C., Schmittner, A. and A. L. Skrivanek (2016) Evidence for a Biological Pump Driver of Atmospheric CO2 Rise during Heinrich Stadial 1, Geophysical Research Letters, 43(23), 12,242-12,251, doi:10.1002/2016GL070723.
27. Schmittner, A., and C. J. Somes, 2016, Complementary Constraints from Carbon (^{13}C) and Nitrogen (^{15}N) Isotopes on the Efficiency of the Glacial Ocean's Soft-Tissue Biological Pump, Paleoceanography, 31, doi:10.1002/2015PA002905.
28. Muglia, J., and Schmittner, A., 2015, Glacial Atlantic overturning increased by wind stress in climate models, Geophysical Research Letters, 42, doi:10.1002/2015GL064583.
29. Buizert, C., and Schmittner, A., 2015, Southern Ocean Control of Glacial AMOC Stability and Dansgaard-Oeschger Interstadial Duration, Paleoceanography, 30, doi:10.1002/2015PA002795.
30. Green, J. A. M., and Schmittner, A., 2015, Climatic Consequences of a Pine Island Glacier Collapse, Journal of Climate, 28, 9221-9234, doi:10.1175/JCLI-D-15-0110.1.
31. Kvale, K. F., Meissner, K. J., Keller, D. P., Eby, M., and Schmittner, A., 2015, Explicit planktic calcifiers in the University of Victoria Earth System Climate Model, Version 2.9, Atm.-Ocean, 53:3, 332-350, doi:10.1080/07055900.2015.1049112.
32. Lund, D., Tessin, A., Hoffman, J., Schmittner, A., 2015, Southwest Atlantic water mass evolution during the last deglaciation, Paleoceanogr., 30, doi:10.1002/2014PA002657.
33. Schmittner, A., Green, J. A. M., and Wilmes, S.-B. (2015) Glacial Ocean Overturning Intensified by Tidal Mixing in a Global Circulation Model, *Geophysical Research Letters*, 42(10), 4014-4022, doi:10.1002/2015GL063561.
34. Schmittner, A., and Lund, D. C., 2015, Early deglacial Atlantic overturning decline and its role in atmospheric CO_2 rise inferred from carbon isotopes ($\delta^{13}C$), *Climate of the Past*, 11, 135-152.

35. Schmittner, A., and Egbert, G. D., 2014, An improved parameterization of tidal mixing for ocean models, *Geoscientific Model Development*, 7, 211-224, doi:10.5194/gmd-7-211-2014.
36. Schmittner, A., Gruber, N., Mix, A. C., Key, R. M., Tagliabue, A., and Westberry, T. K., 2013, Biology and air-sea gas exchange controls on the distribution of carbon isotope ratios ($\delta^{13}C$) in the ocean, *Biogeosciences*, 10, 5793-5816, doi:10.5194/bgd-10-5793-2013.
37. Somes, C. J., Oschlies, A., and Schmittner, A., 2013, Isotopic constraints on the pre-industrial oceanic nitrogen budget, *Biogeosciences*, 10, 5889-5910, doi:10.5194/bgd-10-5889-2013.
38. Galbraith, E. D., Kienast, M., Albuquerque, A. L., Altabet, M., Batista, F., Bianchi, D., Calvert, S. E., Contreras Quintana, S., Crosta, X., De Pol Holz, R., Dubois, N., Etourneau, J., Francois, R., Hsu, T.-C., Ivanochko, T., Jaccard, S. L., Kao, S.-J., Kiefer, T., Kienast, S., Lehmann, M. F., Martinez, P., McCarthy, M., Meckler, A. N., Mix, A. C., Mobius, J., Pedersen, T. F., Quan, T. M., Robinson, R. S., Ryabenko, E., Schmittner, A., Schneider, R., Schneider-Mor, A., Shigemitsu, M., Sinclair, D., Somes, C., Studer, A. S., Tesdal, J.-E., Thunell, R., and Yang, J.-Y. T., 2013, The acceleration of oceanic denitrification during deglacial warming, *Nature Geosc*., 6, 579–584, doi:10.1038/ngeo1832.
39. Robinson, R. S., Kienast, M., Luiza Albuquerque, A., Altabet, M., Contreras, S., De Pol Holz, R., Dubois, N., Francois, R., Galbraith, E., Hsu, T.-C., Ivanochko, T., Jaccard, S., Kao, S.-J., Kiefer, T., Kienast, S., Lehmann, M., Martinez, P., McCarthy, M., Möbius, J., Pedersen, T., Quan, T. M., Ryabenko, E., Schmittner, A., Schneider, R., Schneider-Mor, A., Shigemitsu, M., Sinclair, D., Somes, C., Studer, A., Thunell, R., and Yang, J.-Y., 2012, A review of nitrogen isotopic alteration in marine sediments, *Paleoceanography*, 27, PA4203, 10.1029/2012PA002321.
40. Ahn, J., Brook, E. J., Schmittner, A., and Kreutz, K., 2012, Abrupt change in atmospheric CO2 during the last ice age, *Geophys. Res. Lett*. 39, L18711, doi:10.1029/2012GL53018.
41. Schmittner, A., Urban N. M., Shakun, J. D., Mahowald, N. M., Clark, P. U., Bartlein, P. J., Mix, A. C., and Rosell-Melé, A., 2012, Response to Comment on "Climate Sensitivity Estimated From Temperature Reconstructions of the Last Glacial Maximum", *Science,* 337, 1294, doi: 10.1126/science.1221634.
42. Pinsonneault, A. J., Matthews, H. D., Galbraith, E. D., and A. Schmittner, 2012, Calcium carbonate production response to future ocean warming and acidification, *Biogeosciences*, 9, 2351-2364, doi:10.5194/bg-9-2351-2012.
43. Ross, A., Matthews, H. D., Schmittner, A., and Kothavala, Z., 2012, Assessing the Effects of Ocean Diffusivity and Climate Sensitivity on the Rate of Global Climate Change, *Tellus B*, 64, 17733, doi:10.3402/tellusb.v64i0.17733.
44. Shakun, J. D., Clark, P. U., He, F., Marcott, S. A., Mix, A. C., Liu, Z., Otto-Bliesner, B., Schmittner, A., and Bard, E., 2011, Global warming preceded by increasing carbon dioxide concentrations during the last deglaciation, *Nature,* 484, 49-54, doi:10.1038/nature10915.

45. Zhang, X., Prange, M., Steph, S., Butzin, M., Krebs, U., Lunt, D. J., Nisancioglu, K. H., Park, W., Schmittner, A., Schneider, B., Schulz, M., 2012, Changes in equatorial Pacific thermocline depth in response to Panamanian Seaway closure: Insights from a multi-model study, *Earth and Planet. Sci. Lett.,* 317-318, 76-84, doi:10.1016/j.epsl.2011.11.028.

46. Schmittner, A., Urban N. M., Shakun, J. D., Mahowald, N. M., Clark, P. U., Bartlein, P. J., Mix, A. C., and Rosell-Melé, A., 2011, Climate Sensitivity Estimated From Temperature Reconstructions of the Last Glacial Maximum, *Science,* 334, 1385-1388, doi: 10.1126/science.1203513.

47. Marcott, S. A., Clark, P. U., Padman, L., Klinkhammer, G. P., Springer, S., Liu, Z., Otto-Bliesner, B. L., Carlson, A. E., Ungerer, A., Padman, J., He, F., Cheng, J. and Schmittner, A., 2011, Ice-shelf collapse from subsurface warming as a trigger for Heinrich events, *Proc. Nat. Acad. Sci.,* 108 (33), 13415-13419, doi:10.1073/pnas.1104772108.

48. Zickfeld, K., Eby, M., Matthews, H. D., Schmittner, A., and Weaver, A. J., 2011, Nonlinearity of carbon cycle feedbacks, *J. Climate,* 24, 4255–4275, doi: 10.1175/2011JCLI3898.1.

49. Schmittner, A., Silva, T. A. M., Fraedrich, K., Kirk, E., and Lunkeit, F., Effects of mountains and ice sheets on global ocean circulation, 2011, *J. Climate,* 24*,* 2814-2829, doi:10.1175/2010JCLI3982.1.

50. Alder, C. J., Hostetler, S. W., Pollard, D., and Schmittner, A., 2011, Evaluation of a present-day climate simulation with a new couled atmosphere-ocean model GENMOM, Geosci, Model Dev., 4, 69-83, doi:10.5194/gmd-4-69-2011.

51. Goes, M., Urban, N. M., Tonkonojenkov, R., Haran, M., Schmittner, A., Keller, K., 2010, What is the skill of ocean tracers in reducing uncertainties about ocean diapycnal mixing and projections of the Atlantic Meridional Overturning Circulation, *J. Geophys. Res.,* 115, C12006, doi:10.1029/2010JC006407.

52. Somes, C. J., Schmittner, A., and Altabet, M., 2010, Nitrogen isotope simulations confirm the importance of atmospheric iron deposition for nitrogen fixation across the Pacific ocean, *Geophys. Res. Lett.,* 37, L23605, doi:10.1029/2010GL044537.

53. Somes, C. J., Schmittner, A., Mix, A., Letelier, R., Galbraith, E., Lehmann, M., Altabet, M., Montoya, J., Bourbonnais, A., and Eby, M., 2010, Simulating the global distribution of nitrogen isotopes in the ocean. *Global Biogeochem. Cycles,* 24, GB4019, doi:10.1029/2009GB003767.

54. Schmittner, A., N. M. Urban, K. Keller, and D. Matthews, 2009, Using tracer observations to reduce the uncertainty of ocean diapycnal mixing and climate–carbon cycle projections, *Global Biogeochem. Cycles*, 23, GB4009, doi:10.1029/2008GB003421.

55. Sarnthein, M., G. Bartoli, M. Prange, A. Schmittner, B. Schneider, M. Weinelt, N. Andersen, and D. Garbe-Schonberg, 2009, Mid-Pliocene shifts in ocean overturning circulation and the onset of Quaternary-style climates, *Clim. Past*, 5, 269-283.

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business-as-usual CO_2 emission scenario until year 4000 AD, *Glob. Biogeochem. Cycles,* 22, GB1013, doi:10.1029/2007GB002953.

57. Oschlies, A., K. G. Schulz, U. Riebesell, and A. Schmittner, 2008, Simulated 21st century's increase in oceanic suboxia by CO_2-enhanced biotic carbon export, *Global Biogeochem. Cycles,* 22, GB4008, doi:10.1029/2007GB003147.
58. Schmittner, A., E. D. Galbraith, 2008, Glacial greenhouse gas fluctuations controlled by ocean circulation changes, *Nature*, 456, 373-376, doi:10.1038/nature07531.
59. Schmittner, A., E. J. Brook and J. Ahn, 2007, Impact of the ocean's overturning circulation on atmospheric CO_2, in *Ocean Circulation: Mechanisms and Impacts*, AGU Geophys. Monograph, vol. 173, edited by Schmittner, A., J. Chiang, and S. Hemming, pp. 315-334, American Geophysical Union.
60. Schneider, B., M. Latif, and A. Schmittner, 2007, Evaluation of different methods to assess model projections of the future evolution of the Atlantic meridional overturning circulation, *J. Climate,* 20, 2121-2132.
61. Schmittner, A., E. D. Galbraith, S. W. Hostetler, T. F. Pedersen, and R. Zhang, 2007, Large fluctuations of dissolved oxygen in the Indian and Pacific oceans during Dansgaard-Oeschger oscillations caused by variations of North Atlantic Deep Water subduction, *Paleoceanogr.,* 22, PA3207, doi: 10.1029/ 2006PA001384.
62. Clark, P. U., S. W. Hostetler, N. G. Pisias, A. Schmittner, and K. J. Meissner, 2007, Mechanisms for a ~7-kyr climate and sea-level oscillation during marine isotope stage 3, in *Ocean Circulation: Mechanisms and Impacts*, AGU Geophys. Monograph, vol. 173, edited by Schmittner, A., J. Chiang, and S. Hemming, pp. 209-246, American Geophysical Union.
63. Schneider, B. and A. Schmittner, 2006, Simulating the impact of the Panamanian seaway closure on ocean circulation, marine productivity and nutrient cycling, *Earth and Planet. Sci. Let.,* 246, 367–380.
64. Kösters, F., R. H. Käse, A. Schmittner and P. Herrmann, 2005, The effect of Denmark Strait Overflow on the Atlantic Meridional Overturning Circulation, *Geophysical Research Letters,* 32**,** L04602, doi:10.1029/2004GL022112.
65. Schmittner, A., 2005: Decline of the marine ecosystem caused by a reduction in the Atlantic overturning circulation, *Nature*, 434, 628-633.
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Other Publications

1. Schmittner, A. (2018) Introduction to Climate Science, Open Oregon State, https://open.oregonstate.education/climatechange/
2. Schmittner, A. (2017) Introduction to Climate Science, Open Oregon State, http://library.open.oregonstate.edu/climatechange/.
3. Schmittner, A. The smoking gun for Atlantic overturning circulation changes, *Science,* 353 (6298), 445-446, doi:10.1126/science.aag3156. (1)
4. Schmittner, A., P. Bakker, R. L. Beadling, J. T. M. Lenaerts, S. Mernild, O. Saenko, and D. Swingedouw (2016) Greenland Ice Sheet melting influence on the North Atlantic, *US CLIVAR Variations,* 14 (2), Spring 2016, https://usclivar.org/newsletter/newsletters.
5. Schmittner, A., Jaccard, S. L., Mix, A. C., and Sikes, E. L. (2015) Deglacial Ocean Circulation and Carbon Cycling, Inaugual OC3 Workshop, Bern Switzerland, 1-3 October 2014, Workshop Reports, PAGES Magazin, 23 (1).
6. Skinner, L. and Schmittner, A. (2014) IPODS: Investigating Past Ocean Dynamics Workshop Report, Quaternary Research 21 (435), 9-10.
7. Schmittner, A., Harrison, S. P., Carlson, A. E., Mix, A. C., Kageyama, M., Kucera, M., PMIP (2014) Ocean – Understanding changes since the Last Glacial Maximum, PAGES Magazine, 22 (1).
8. I was contributing author to Ciais, P., C. Sabine, G. Bala, L. Bopp, V. Brovkin, J. Canadell, A. Chhabra, R. DeFries, J. Galloway, M. Heimann, C. Jones, C. Le Quéré, R.B. Myneni, S. Piao and P. Thornton, 2013: Carbon and Other Biogeochemical Cycles. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
9. Rosell, A., and A. Schmittner (2012) La sensibilitad del clima al dióxido de carbono, in Investigación y Ciencia, Spanish edition of Scientific American, December, nr 435, 14-15.
10. Schmittner, A. (2012) Marine nutrient cycling – How will the ocean's capacity of biological carbon pumping change?, in "Paired Perspectives on Global Change", PAGES News, vol. 20, Nr. 1, edited by N. R. Bondre and T. Kiefer, Past Global Changes. http://www.pages-igbp.org/products/2011-03-28-16-23-06/522-pages-news-vol-20-no1

11. Schmittner, A. (2012) Ice Age Lessons for Future Climate Change, in The Long View, vol. 9, Oregon State Bar Sustainable Future Section. http://osbsustainablefutures.files.wordpress.com/2010/04/entire-issue-1q122.pdf
12. I have been contributing author to chapters 8 (Randall et al. 2007: Climate Models and Their Evaluation) and 10 (Meehl et al. 2007: Global Climate Projections) of Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. The IPCC was awarded the Nobel Peace Prize in 2007.
13. Schmittner, A., J. C. H. Chiang, and S. R. Hemming, 2007, Introduction: The Ocean's Meridional Overturning Circulation, in *Ocean Circulation: Mechanisms and Impacts*, AGU Geophys. Monograph, vol. 173, edited by Schmittner, A., J. Chiang, and S. Hemming, pp. 315-334, American Geophysical Union.
14. Schmittner, A., M. Sarnthein, H. Kinkel, G. Bartoli, T. Bickert, M. Crucifix, D. Crudeli, J. Groeneveld, F. Kösters, U. Mikolajewicz, C. Millo, J. Reimer, P. Schäfer, D. Schmidt, B. Schneider, M. Schulz, S. Steph, R. Tiedemann, M. Weinelt and M. Zuvela, 2004: Global impact of the Panamanian seaway closure, *EOS,* 85**,** 526. (1)

Invited Seminars (since 2012)

1. 2022, Jun. 8, Gordon Research Conference on Ocean Mixing, Mount Holyoke College, MA, "Tidal Mixing in the Glacial Ocean"
2. 2020, Feb. 8, University of Southern California, Earth Sciences Department "Glacial Ocean Carbon and Oxygen: Biological Pump or Disequilibrium?"
3. 2016, May 24, Paleo AMOC Workshop, Boulder, CO, "AMOC Effects on the Carbon Cycle and Atmospheric CO_2"
4. 2016, Feb. 3, Massachusetts Institute of Technology, Earth, Atmospheric and Planetary Sciences, Sack Lunch Seminar, "Complementary Constraints from Carbon (13-C) and Nitrogen (15-N) Isotopes on the Efficiency of the Glacial Ocean's Biological Pump"
5. 2015, Jul. 24, RAPID – US AMOC International Science Meeting, "Using Carbon Isotopes (^{13}C) to Reconstruct AMOC Changes During the Last Deglaciation?"
6. 2015, Apr. 15, Conservation Biology Institute, Corvallis, "Was the Early Deglacial CO_2 Rise Caused by a Reduction of the Atlantic Meridional Overturning Circulation (AMOC)?"
7. 2015, Mar. 19, Leopoldina Symposium "Deglacial changes in ocean dynamics and atmospheric CO_2", Halle, Germany, "Was the Early Deglacial CO_2 Rise Caused by a Reduction of the Atlantic Meridional Overturning Circulation (AMOC)?"
8. 2014, Apr 15, Ocean Carbon and Biogeochemistry, North Atlantic Planning Workshop,
9. 2014, Jun 6, Gordon Research Conference, Ocean Global Change Biology, Waterville Valley, NH, "Modeling Biogeochemical Consequences of Ocean Circulation Changes".
10. 2013, May 22, Lamont Doherty Earth Observatory, Columbia University, Symposium: Climate Change: Recent Discoveries and Future Challenges, "Climate Sensitivity Estimates from Paleoclimate (LGM) Data".

11. 2013, Apr. 21, Atmospheric and Oceanic Sciences, University of Wisconsin-Madison, "Estimating climate sensitivity and biogeochemical feedbacks using paleo data and models".
12. 2012, Oct 6, Climate Change Forum, Marylhurst University, Oregon, "Climate Models".
13. 2012, Feb 9, Laboratory Energy R&D Working Group (LERDWG) meeting, Department of Energy, Washington DC, "Climate Sensitivity Estimated From Temperature Reconstructions of the Last Glacial Maximum".
14. 2012, Feb 2, Geology Colloquium, Dep. of Geosciences, Oregon State University, "Reconstructing Glacial Ocean Carbon and Nitrogen Cycling Using Isotopes".

TEACHING AND ADVISING

Instructional Summary

Topics I have most commonly taught are climate change and climate modeling. My areas of expertise are climate change, climate modeling, paleoclimate, oceanography, and ocean biogeochemical cycles.

Credit courses taught at OSU

Course No.	Title	Credit Hour	No. of Students	Term/Year
ATS 421/521	Introduction to Climate Modeling	4	15	S22
ATS 201	Climate Science	4	70	S21
ATS 201	Climate Science	4	82	S20
ATS 421/521	Introduction to Climate Modeling	4	17	S19
ATS 201	Climate Science	4	54	S18
ATS 201	Climate Science	4	58	S17
ATS 320	The Changing Climate	3	27	F15
ATS 421/521	Introduction to Climate Modeling	4	9	S15
ATS 320	The Changing Climate	3	37	F14
ATS 320	The Changing Climate	3	42	W14
ATS 421/521	Introduction to Climate Modeling	4	4	S13
ATS 320	Man's Impact on Climate	3	37	S12
ATS 320	Man's Impact on Climate	3	29	S11
OC 599	Introduction to Climate Modeling	4	3	W11
OC 331	Introduction to Oceanography	3	32	W10
OC 669	Introduction to Climate Modeling	3	4	W09
OC 669	Introduction to Climate Modeling	3	3	W07
OC 331	Introduction to Oceanography	3	26	F07

Courses taught at other institutions

University Kiel, Germany, Institute of Geosciences

Course No.	Title	Credit Hour	No. of Students	Term/Year

060598	Time Series Analysis	2	4	F03
060502	Research Seminar: Climate Change and Carbon Cycle	2	12	W03
	Introduction to Paleoclimate Modeling	3	3	W04

University of Victoria, BC, Canada, Department of Physics and Astronomy

Course No.	Title	Credit Hour	No. of Students	Term/Year
PHYS317	Thermodynamics	3	26	F01

Non-Credit courses and workshops

In collaboration with Kari van Zee from the Science and Teachers in Education Partnership (STEP) program at OSU I have organized the following three workshops:

06/29-30/2016 Climate Change and Ocean Acidification: A Workshop for Oregon Educators
08/11/2015 Climate Change: A Workshop for Oregon Educators
08/11/2014 Climate Change and Ocean Acidification: A Workshop for Oregon Educators

These outreach efforts, which were supported by my grants, brought together scientists and teachers in order to improve climate literacy of teachers and students.

Since ~2010 I participate regularly in the weekly informal Quaternary Tea seminar, which is self-organized by paleoclimate students and where ongoing research or literature is discussed.

From 2005 to 2010 I have organized, together with Joe Stoner (COAS) and Ed Brook (Geosciences), the informal literature seminar Paleolit for students and faculty from COAS and Geosciences interested in paleoclimate research. Typically, 10-20 people would participate in these weekly events.

Curriculum development

I developed the course "Introduction to Climate Modeling" from scratch. This course combines the theoretical foundations of climate modeling with hands on programming exercises. Initially taught as a graduate level course it has been adjusted in 2013 to include upper level undergraduate students (slash course) and it has been assigned the course number ATS421/521. This class has become part of the Climate Science option of the Earth Sciences major and is now also taught by Karen Shell.

I have also made major changes and updates to the course "The Changing Climate" a.k.a "Man's Impact on Climate" by changing lectures, introducing a term paper and student presentations, introducing student lecture summaries and discussions. This course has now been transformed into "Climate Science" for which I have written an online textbook (see publications).

Graduate students and undergraduate students and postdoctoral trainees

Post-Doctoral Advisor

Name	Dates
Jithin Kaduvathazham	Summer 2022 –
Eric Mortenson	Winter 2022 –
Juan Muglia	Spring 2017 – 2019
Sophie-Berenice Wilmes	Summer 2016 – Winter 2017
Pepijn Bakker	Summer 2014 – Summer 2016
David J. Ullman	Fall 2013 – Summer 2016
Tiago A. M. Silva	Winter 2007 – Fall 2008

Student Thesis/Dissertation Advisor *(major professor)*

Name	Degree	Date Entered Program	Graduation Date
Mia El Khazen	Ph.D.	Winter 2022	
Nathaniel Fillman	M.S.	Fall 2020	
Juan Muglia	Ph.D.	Fall 2012	Spring 2017
Christopher J. Somes	M.S.	Fall 2006	2009

Student Advisory Committee

Name	Major	Degree	Date Entered Program	Graduation Date
James Andrew Menking	Geology	Ph.D.		
Summer Praetorius	Oceanograpy	Ph.D.		2014
Julia L. Rosen	Geology	Ph.D.	Fall 2006	2014
Logan E. Mitchell	Geology	Ph.D.	Fall 2006	2013
Alexandra Jonko	Atmospheric Sciences	Ph.D.		2012
Maureen H. Davies	Oceanography	Ph.D.	Fall 2006	2011
Jay R. Alder	Geography	M.S.	Fall 2006	2011
Faron S. Anslow	Geology	Ph.D.	Fall 2005	2008

Graduate Council Representative

Name	Major	Degree	Graduation Date
Lisa Bigler	Mathematics	Ph.D.	2022
Lisa Bigler	Mathematics	M.S.	2019
Christopher W. Comiskey	Statistics	Ph.D.	2017
Kathie D. Dello	Environmental Sciences	Ph.D.	2019
Emily A. Caffrey	Radiation Health Physics	Ph.D.	2016
Kathleen M. Moore	Geography	Ph.D.	2015
Evgina V. Chunikhina	Mathematics	M.S.	2014
Kyle M. Champley	Mathematics	Ph.D.	
Patcharee Wongsason	Mathematics	Ph.D.	2014
Torrey A. Johnson	Mathematics	Ph.D.	2012
Carrie A. M. Manore	Mathematics	Ph.D.	2011
Andrew C. Beedlow	Geology	M.S.	2011

William B. Gaeuman	Statistics	Ph.D.	
Thomas K. Bauska	Geology	Ph.D.	2013
Nathan S. Nebergall	Applied Physics	M.S.	2006
Shannon M. Biederman	Mathematics	M.S.	2007
Alison M. Koleszar	Geology	Ph.D.	

Internships directed

Name	Major	Degree	Dates
Elija Stahr (REU: Research Experience for Undergraduates Program)	Mathematics	B.S.	Summer 2022
Danil Thorstenson	Climate Science	B.S.	2019
Even Powers (REU)	Physics	B.S.	Summer 2019
Nadia Cohen (REU)	Physics	B.S.	Summer 2018
Schmitty Smith (REU)		B.S.	Summer 2018
Kai Pak	Applied Physics	M.S.	Summer 2017
Allison Ho (REU)	Physics	B.S.	Summer 2016
Matthew Laffin	Earth Sciences	B.S.	Spring 2016
Victoria Nelson			Summer 2015
Lisa K. Akers			2015
Emma Gleeman (REU)	Geology	B.S.	Summer 2015
Aaron Rachels (REU)	Geology	B.S.	Summer 2015
Catherine Wielgasz (REU)	Environmental Chemistry	B.S.	Summer 2014
Sundeep Kaur (IDES: Increasing Diversity in Earth Sciences Program)	Civil Engineering		2011-2013
Melissa Breeden (REU)	Oceanic and Atmospheric Sciences	B.S.	2012
Alexis Hoffman (REU)	Physics	B.S.	Summer 2009
Christopher J. Somes	Physics	B.S.	Summer 2006

Evaluation of External Theses

2019 Levke Caesar (Ph.D.) Potsdam University, Germany
2019 Soren Borg Nielsen (Ph.D.) University of Copenhagen, Denmark

Participation in teaching development programs

05/04/2021 12:00-3:30, ECampus Faculty Forum 2021
https://ecampus.oregonstate.edu/faculty/forum/
01/30/2014 10:00-10:50 am, Teaching and Learning Symposium, Vicki Tolar Burton: "Improving your Research Assignments: Tools and Tips for Reading, Writing, and Critical Thinking", Memorial Union, OSU.
04/08/2012 Meeting with Vicki Tolar Burton from the Center for Teaching and Learning to discuss writing assessments.

04/23/2012 “Baccalaureate Core workshop for Synthesis Courses”, Center for Teaching and Learning, OSU.
11/03/2009 “Engaging Learners Through a Living Course” hosted by OSU’s Center for Teaching and Learning.

Guest Lectures:

1. 2014, Apr. 18, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103), Oregon State University.
2. 2013, Jul. 30, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103), Oregon State University.
3. 2013, May. 8, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103, Barth/Duncan), Oregon State University.
4. 2012, Jul. 30, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103, Wright/Duncan), Oregon State University.
5. 2012, Apr. 19, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103, Wright/Duncan), Oregon State University.
6. 2011, Apr. 15, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103, Wright/Duncan), Oregon State University.
7. 2010, Apr. 16, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103, Wright/Duncan), Oregon State University.
8. 2009, Jul. 16, “Climate & Paleoclimate Modeling”, Guest lecture in the Research Experience for Undergraduates (REU) program seminar series, COAS, OSU.
9. 2009, Apr. 17, “Paleoceanography and Climate Change”, Guest lecture in the undergraduate course “Exploring the Deep: Geography of the World's Oceans” (OC103, Wright/Duncan), OSU.
10. 2009, Mar. 3, “Paleoclimate Application of a Climate-Carbon Cycle Model: An Oceanic Mechanism for Glacial Greenhouse Gas Fluctuations”, Guest lecture in the graduate course “Ocean Carbon Cycles” (OC669-2, Collier/Hales), OSU.
11. 2003, Jan 9, Lecture at the Friedrich-Schiller-Universität, Jena, Germany: “Biophysikalische Wechselwirkungen zwischen Landbiosphäre und Atmosphäre (Biophysical Interactions Between Landbiota and Atmosphere) as part of the course “Biogeochemische Kreisläufe im globalen Klimasystem (Biogeochemical Cycles in the global Climate System)”, by M. Heimann.
12. 2002, Nov. 11, Lecture at the Friedrich-Schiller-Universität, Jena, Germany: “Einleitung, globale Energiebilanz, Energiebilanzmodell I (Introduction, Global Energy Balance, Energy Balance Model I)”, as part of the course “Biogeochemische Kreisläufe im

globalen Klimasystem (Biogeochemical Cycles in the global Climate System)", by M. Heimann.

13. 2001, May 28, Lecture "Climate Change" as part of course EOS 340 "Atmospheric Sciences", by A. J. Weaver, University of Victoria, Canada.

RESEARCH

Funded Proposals

Title	Role	Agency	Duration	Amount
Investigating Antarctic Ice Sheet-Ocean-Carbon Cycle Interactions During the Last Deglaciation	PI	NSF	09/21-08/24	772,265
Collaborative Research: Mixing and the Meridional Overturning Circulation in the Modern and Glacial Ocean	PI	NSF	05/21-05/24	612,636
Modeling the Ocean Distribution of Neodymium Isotopes: Testing the Bottom-Up Hypothesis	PI	NSF	08/20-07/23	599,881
NSFGEO-NERC: Quantifying the Modern and Glacial Ocean's Carbon Cycle Including Isotopes	PI	NSF & NERC	09/19-08/22	431,527
The Biological Pump During the Last Glacial Maximum and Early Deglaciation	PI	NSF	09/16-08/19	497,913
Collaborative Research: Assessing the Impact of Tidal Mixing on the Meridional Overturning Circulation of the Last Glacial Maximum	PI	NSF	02/16-01/18	275,964
Effects of Acidification and Warming on Long-Term Ocean Carbon Cycling Constrained by Observations	PI	NSF	07/14-06/15	259,788
Modeling Effects of Greenland Ice Sheet Melting on AMOC Variability and Predictability	PI	NOAA	09/13-08/17	364,686
Quantifying the Effect of the Lunar Nodal Tide on North Pacific Climate Variability	PI	NSF	03/13-02/17	234,761
Estimating Climate Sensitivity from Temperature Reconstructions of the Last Glacial Maximum	PI	NSF	05/12-04/17	345,345
Working Group Proposal: Ocean Circulation and Carbon Cycle (OC3)	PI	PAGES	2014-2016	15,000
International Focus Group: Investigating Past Ocean Dynamics (IPODS; PI Skinner)	Co-PI	INQUA	2014	8,000 (Euros)
INQUA PMIP Ocean Workshop Skills	PI	INQUA	12/13	4,000

Enhancement Activity: Techniques for Ocean Model Evaluation				(Euros)
PAGES PMIP Ocean Workshop	PI	PAGES	12/13	7,000
Collaborative Research: Assessing Climate Model Simulations of Last Glacial Maximum Ocean Circulation with Carbon Isotopes	PI	NSF	09/12-08/15	95,391
Data-Model Synthesis: Gulf of Alaska Sea-Surface Paleotemperature, Freshwater Input, and the Dynamics of Deglacial Climate Variability (PI Mix)	Co-PI	NSF	06/12-05/14	549,263
Reconstructing Glacial Nitrogen and Carbon Cycling Using Isotopes	PI	NSF	08/11-07/14	508,466
Atmospheric CO_2 and Abrupt Climate Change (PI Ahn)	Co-PI	NSF	01/10-12/12	448,074
Ocean Circulation, Oxygen and Nutrient Cycles During the Last Glacial Period	PI	NSF	08/07-07/11	363,481
PALEOVAR - Past climate variability: Understanding mechanisms and interactions with the mean state (PI Pisias)	Co-PI	NSF	06/06-05/12	470,932 (Schmittner part)
Impact of ocean gateways on climate, ocean circulation and chemistry, and the distribution of biota in model simulations	PI	DFG	10/03-09/05	150,000 EUR

Major Seagoing Expeditions

2008 RV Wecoma 30 day cruise Hawaii - Equatorial Pacific 140°W (Chief Scientist J. Moum)

SERVICE ACTIVITIES

University Service

University Committees

2015/2016 Graduate Council
2014/2015 Graduate Council
2013/2014 Graduate Council

CEOAS Committees

Year	Committee
2021/2022	Search Committee Geography Instructor Climate Justice
2020/2021	Promotion and Tenure Committee
2018/2019	Search Committee Director of Research Computing
2018/2019	Peer-Review of Teaching Committee
2017/2018	Peer-Review of Teaching Committee

2016/2017	Peer-Review of Teaching Committee
2016/2017	Search Committee Remote Sensing and Ocean Circulation
2015/2016	Search Committee Remote Sensing and Ocean Circulation
2015/2016	Search Committee Cartography and Geovisual Analytics
2015/2016	Search Committee Geospatial Analytics, Climate Change Adaptation, and Coastal Processes
2015/2016	Graduate Programs Committee
2014/2015	Graduate Programs Committee
2013	Strategic Planning and Hiring Committee
2013	Ad Hoc Faculty Search/Evaluation Committee D. Noone (Chair)
2012/2013	College Seminar Committee
2012/2013	Faculty Hiring Committee (Alternate)
2011/2012	High Latitude Faculty Hiring Committee
2011/2012	Peer Review of Teaching Committee
2011/2012	College Seminar Committee
2010/2011	Deans Advisory Committee
2008/2009	Frontiers of Science Seminar Series Committee
2007/2008	Frontiers of Science Seminar Series Committee
2005/2006	Peer Review of Teaching Committee

PROFESSIONAL SERVICE

Panel Participation for Funding Agencies

2019 NSF Panel: Marine Geology and Geophysics (MG&G) Program.
2019 NSF Panel: Earth Cube Program.
2013 NSF Panel: Past Perspectives on Climate Change (P2C2) Program.
2008 NSF Panel: P2C2 Program.

Advisory Panel

2014 NOAA National Climatic Data Center, Paleoclimate Branch Advisory Panel, Feb. 19-20.

Strategic Planning

2015 US Climate Variability and Predictability (CLIVAR) Program, US AMOC (Atlantic Meridional Overturning Circulation) Program Chair of Task Team 4 Climate Sensitivity to AMOC: Climate/Ecosystem Impacts and member of the Executive Committee
2014 US AMOC Program Vice-chair of Task Team 4 and member of the Executive Committee
2014 NSF EarthCube Science Committee Member and Chair of Working Group 1 (Use Cases)
2013 CLIVAR Tiger Team: Marine biophysical interactions and the dynamics of upwelling systems

Editor

2020 to current: Climate of the Past, Special Issue: Paleoclimate Modelling Intercomparison Project phase 4 (PMIP4)

Journal Reviews

I've reviewed more than 100 manuscripts for scientific journals. Below follows a list of all journals for which I've reviewed manuscripts during each year since 2005. If multiple manuscripts were reviewed for the same journal the number is given in parenthesis.

Year	Journals	Total #
2020		
2019	Journal of Geophysical Research (1) Journal of Climate (1) Proceedings of the National Academy of Sciences (1) Nature Communications (1) Geophysical Research Letters (1) Paleoceanography and Paleoclimatology (1) Earth and Planetary Sciences Letters (1) Global Biogeochemical Cycles (1) Climate of the Past (1)	9
2018	Earth System Dynamics (1) Climate of the Past (2) Nature (1) Geophysical Research Letters (2) Nature Communications (1) Earth and Planetary Sciences Letters (1) Paleoceanography and Paleoclimatology (1) Geochimica et Cosmochimica Acta (1) Climate Dynamics (1)	11
2017	Journal of Climate Climate Dynamics (4) Paleoceanography (2) Geochimica et Cosmochimica Acta	8
2016	Earth System Science Data Nature Geosciences Science Advances Science Geophysical Research Letters Journal of Climate Climate of the Past Paleoceanography Earth and Planetary Sciences Letters Climate Dynamics Ecosphere Global and Planetary Change Global Biogeochemical Cycles Current Climate Change Reports	14
2015	Arktos Paleoceanography (3) Quaternary Science Reviews Nature Communications (2)	16

	Biogeosciences	
	Nature	
	Geophysical Research Letters (2)	
	Journal of Climate (3)	
	Global Biogeochemical Cycles (2)	
2014	Biogeosciences	12
	Climate Change Letters	
	Climate of the Past	
	Earth and Planetary Sciences Letters	
	Geophysical Research Letters (2)	
	Geoscientific Model Development (2)	
	Global and Planetary Change	
	Nature Geosciences (2)	
	Quaternary Science Reviews	
2013	Climatic Change	10
	Climate of the Past	
	Climate Dynamics (2)	
	Theoretical and Applied Climatology	
	Geochimica et Cosmochimica Acta	
	Paleoceanography	
	Nature Climate Change	
	Environmental Development	
	Nature Geosciences	
2012	Atmospheric Chemistry and Physics	13
	Climate Dynamics	
	Climate of the Past (2)	
	Earth and Planetary Sciences Letters	
	Geophysical Research Letters (2)	
	Journal of Climate	
	Journal of Geophysical Research	
	Paleoceanography	
	Proceedings of the National Academy of Sciences	
	Quaternary Science Reviews	
	Science	
2011	Nature	8
	WIREs Climate Change	
	Global Biogeochemical Cycles	
	Quaternary Science Reviews	
	Geophysical Research Letters	
	Climate of the Past (2)	
	Journal of Climate	
2010	Science	7
	Nature Geosciences	
	Nature	
	Earth and Planetary Sciences Letters	
	Climate of the Past	

	Journal of Climate	
	Global Biogeochemical Cycles	
2009	Nature	7
	Quaternary Science Reviews	
	Climate of the Past	
	Climate Dynamics (2)	
	Journal of Geophysical Research	
	Journal of Climate	
2008	Nature	6
	Science	
	Journal of Climate	
	Geology	
	Global Biogeochemical Cycles	
	Geophysical Research Letters	
2007	Science	6
	Climate Dynamics	
	Journal of Geophysical Research	
	Geophysical Research Letters (2)	
	Journal of Climate	
2006	Geophysical Research Letters (3)	11
	Journal of Geophysical Research	
	Climate Dynamics	
	Nature (2)	
	Journal of Climate (3)	
	Ocean Sciences	
2005	Geophysical Research Letters (4)	8
	Ocean Modelling	
	Global Biogeochemical Cycles	
	Journal of Climate (2)	
Prior to	AGU Geophysical Monograph Series	24
2005	Atmosphere – Ocean (2)	
	Global and Planetary Change	
	Geophysical Research Letters (5)	
	Journal of Physical Oceanography	
	Journal of Climate (8)	
	Journal of Oceanography	
	Quaternary Science Reviews (2)	
	Science (3)	

Proposal Reviews

I've reviewed a total of 77 grant proposals for funding agencies, 57 since 2011. Below follows a list of all funding agencies for which I've reviewed proposals during each year since 2005. If multiple proposals were reviewed the number is given in parenthesis.

Year	Funding Agency	Total #
2020	NSF (6)	6
2019	NSF	1

2018	NSF (3), UK NERC (1)	4
2017	NSF	1
2016	NSF (7), Swiss NSF (1)	8
2015	NSF (9), Swiss NSF (1), Schmidt Ocean Inst. (1)	11
2014	NSF	9
2013	NSF, NSF Panel (~10)	11
2012	NSF (3)	3
2011	NSF (2) NOAA	3
2010	NSF	1
2009	NSF (5) NOAA	6
2008	NASA NSF (6) NSERC	8
2007	NSF (4) Petroleum Research Fund of the American Chem. Soc.	5
2006	NSF (2)	2
2005	NSF (2)	2
Prior to 2005	NERC UK (3)	3

Other Reviews

2013 Book proposal (Springer)
2007 Book proposal (Springer)

Training

2014, Jan. 30, Winter Teaching and Learning Symposium, "Improving your Research Assignments: Tools and Tips for Reading, Writing, and Critical Thinking", Presenter: Vicki Tolar Burton

2012, Oct. 8-9, Communications Training with COMPASS

Public Service

Lecture/talks given

Presentation "Climate Change: Hoax or Apocalypse?", Cape Perpetua Speaker Series, Yachats, Oregon (virtual), Nov. 09, 2020.

Presentation "Current and Future Impacts of Climate Change", OSU, Valley Library, Oct. 26, 2019.

Presentation "Impacts of Climate Change", Habitat for Humanity, Vancouver, WA, Mar. 07, 2019.

Presentations "Weather and Climate Change", Road Scholar, Adobe Resort, Yachats, Oregon, Jan. 23 & 27, 2019.

Presentation "Impacts of Climate Change", Joint Meeting of Engineers for a Sustainable Future and the Sustainable Future Section of the Oregon State Bar, Portland, OR, Nov. 13, 2018.

Presentation "Deep Ocean Circulation: Present, Past and Future" Physics Department Seminar, Portland State University, Nov. 6, 2017

Presentation “The Science of Climate Change” at Climate Change and Ocean Acidification: A Workshop for Oregon Educators, Corvallis, June 29, 2016.

Presentation “Human Influence on Global Climate” at Earth Week Keynotes, OSU, Corvallis, Apr. 18, 2016

Participation in Panel Discussion “The Paris Climate Accord, Now What?” at the Memorial Union, Oregon State University, organized by the Environmental Arts & Humanities Initiative and the Citizenship and Crisis Initiative, Jan. 27, 2016.

Presentation “Climate Science” at Climate Change: A Workshop for Oregon Educators, Corvallis, Aug. 11, 2015.

Presentation “Recent Developments in Climate Science” at Climate Change and Ocean Acidification: A Workshop for Oregon Educators, Corvallis, OR, Aug. 11, 2014.

Presentation “Recent Developments in Climate Science” at the Passive House Northwest 5th Annual Conference, Portland, OR, Mar. 28, 2014.

Presentation “Paleoclimate Perspectives” at the Climate Club Sandwich Lunch, OSU, Feb. 20, 2013.

Lecture “The Science of Climate Change” at GEAR UP teacher workshop. I organized the teacher workshop together with Kari van Zee from the Scientists and Teachers in Education Partnerships (STEPs) program. June 28, 2012.

Short presentations and answers to five questions about climate change at a public event (Open Forum Portland by the Deep Democracy Institute) at Portland State University on June 1, 2012. http://www.open-forum-portland.net/related-events.html

Public lecture “The Scientific Case for Human Influence on Global Climate: What We Learn From Analyzing ALL the Evidence” by Mote (OSU), Hulbe (PSU), and Schmittner, April 10, 2012, Portland State University. Organized by the American Meteorological Society Oregon Chapter. Video and presentations are available here: http://www.ametsoc.org/chapters/oregon/Minutes/2012/2012_4_10_Meeting/2012_4_10_Minutes.html.

Lecture for high-school students “The Science of Climate Change”, Crescent Valley High-School, Corvallis, Advanced Placement Environmental Science Class, Teacher Pam Cornell, April 5, 2012.

Lecture “Climate Change: Lessons from the Ice Age”, Joint Meeting of the Engineers for a Sustainable Future and the Oregon State Bar Sustainable Future Section, Portland OR, Mar. 13, 2012.

Lecture for high-school students “The Science of Climate Change”, McNary High-School, Keizer, Oregon, Environmental Chemistry, Teacher Emily Parent, Feb. 27, 2012.

Presentation “Climate Sensitivity Estimated from Temperature Reconstructions of the Last Glacial Maximum” at the annual meeting of the Laboratory Energy Research and Development Working Group (LERDWG) of the Department of Energy, Washington DC, Feb. 9, 2012.

Two lectures “The Science of Climate Change” at West Linn High School, West Linn, OR, Nov. 7th, 2011.

Public lecture “Global Ocean Circulation” at Science, Music and Marshmallows event, Philomath OR, August 24th, 2011.

Lecture for high-school students “The Science of Climate Change”, Crescent Valley High-School, Corvallis, Advanced Placement Environmental Science Class, Teacher Pam Cornell, March 16, 2011.

Presentation "The Science of Climate Change", Scientists and Teachers in Education Partnerships (STEPs) workshop, Aug. 11, 2010, OSU.
Lecture for high school students "Klimawandel: Herausforderung für Forschung und Gesellschaft" at Johanneum Gymnasium Herborn, Germany, September 21st, 2009 (Interview).
Public lecture "Climate Change Research" at DaVinci Days, Corvallis OR, Green Pavilion, July 17th, 2009.

Press Conferences

Press conference with Environment Oregon, Salem, 9/18/2013.
Press conference "Past and Future Changes of Thermohaline Circulation" at the American Geophysical Union Fall Meeting in San Francisco, December 7th, 2005

Interviews with the Press

Phone interview with Yuen Yiu, Inside Science News Service, American Institute of Physics, Nov., 8th, 2016. https://www.insidescience.org/news/our-sensitive-planet-look-back-time
E-mail interview with Alister Doyle, Thomson Reuters, 11/5/2012.
Live radio interview with Rob Breakenridge guest host at The Rutherford Show, QR77 Radio, AM770, Alberta, Canada, Nov 30th, 2011.
Interview with Clay Farris, Science Odyssey, kzum.org, 89.3 fm, Lincoln, NE, Nov. 30th, 2011.
E-mail interview with Andy Extance, Simple Climate, http://simpleclimate.wordpress.com/, Nov. 29th, 2011.
Interview with Ray Bowman, The Food and Farm Show, America's Web Radio, Nov. 29th, 2011.
Live radio interview with Lars Larson, The Lars Larson Show, KXL, FM101, Portland, OR, Nov. 28, 2011.
Interview with Dean Kuipers, Los Angeles Times, Nov. 25th, 2011.
Live radio interview with Victoria Taft, The Victoria Taft Show, KPAM.com, AM860, Portland, OR, Nov 25th, 2011.
Interview with Fiona MacRae, Daily Mail, London, Nov 24th, 2011.
Interview with Belen Velasco Conquero, La Razon, Spain, Nov 24th, 2011.
Interview with Sven Titz, Neue Zuricher Zeitung, Nov 23rd, 2011.
Interview with Michael Marshall, New Scientist, Nov 23rd, 2011.
Interview with Jennifer Carpenter, BBC, Nov 23rd, 2011.
Interview with Tim Cross, The Economist, Nov 22nd, 2011.
Interview with Dan Vergano, USA Today, Nov 22nd, 2011.
Interview with Scott Learn, The Oregonian, Nov. 22nd, 2011.
Interview with Ralf Nestler, "Der Tagesspiegel", Redaktion Wissen & Forschen, Berlin, Nov. 21st, 2011.
Interview with Liz Kalaugher, http://environmentalresearchweb.org, Nov. 21st, 2011.
Interview with Lauren Morello, climatewire.net, Nov. 21st, 2011.
Interview with Heather Turner (KEZI 9 News), June 14th, 2011 (Aired at 6 pm, June 14th, 2011).
Interiew with Aaron Barth, Earth Magazine, Sept. 2010.

Interview with Christy George (OPB), May 18th, 2009 (Show aired Sept. 9th, 2009 http://news.opb.org/article/5781-what-climate-change-may-mean-coastal-farms/).
Interview with Nick Houtman (OSU's Terra Magazine), Jan. 13th, 2009 (Article on Climate Modeling appeared in Spring 2009 issue)
Interview with Jenna Borberg, Marine Resource Management, Oregon Sea Grant, Aug. 21st, 2008.
Interview with Ker Than, National Geographic News, Mar. 27th, 2008.
Interview with Alex Smith, "Ecoshock", CFRO Radio, Vancouver, Canada, Mar. 20th, 2008.
Interview with Juliet Eilperin, Washington Post, Feb. 27th, 2008.
Interview with Channel 9 KEZI News, Feb. 26th, 2008
Interview with film crew from History Channel, Sep 21st, 2007

Interview with Boris Bellanger from Science & Vie, France, Nov 13th, 2006
Interview with Rainer Klose from Facts magazine (Switzerland), Aug 15th, 2006
Interview with Judy Scott from COAS Publications/Outreach, Aug 1st, 2006
Email interview with Ute Kehse from "Geo kompakt", July 26th, 2006
Interview with Briavael O'Reilly for MicrobeWorld Radio (www.microbeworld.org) with the American Society for Microbiology, July 12th, 2006
Interview with reporter from Physics Today, February 9th, 2006
Interview with Quirin Schiermeier from Nature. January 2006, Article available at http://0-www.nature.com.oasis.oregonstate.edu/nature /journal/v439/n7074/full/439256a.html
Interview with Elizabeth Katt-Reinders for Earthwatch Radio (http://ewradio.org) "Plankton in Peril" broadcast July/August 2005

Participation in Question and Answer Events

Climate Question-and-Answer Service for Media from AGU Climate Scientists. Nov., 2010.
Teachers Questions on Oceans and Climate. Tele-conference with teachers from central Oregon. Answering questions were Phil Mote, Bob Miller, Ata Suanda and Andreas Schmittner. January 20th, 2010.
Question-and-Answer Service for Media from AGU Climate Scientists. Dec. 7-18, 2009.

Other Outreach Activities

02/23/2013 Salmon Bowl 2013, Science Judge, Salmon Bowl is a competition on ocean science for high school students.
31/07/2013 Letter to the editor of the Oregonian: http://blog.oregonlive.com/myoregon/2013/07/letters_climate_change_oregon.html
I regularly write letters to the editor of the Gazette Times or the Oregonian correcting misleading or scientifically false statements about climate change
Meeting with Arthur Robinson, candidate for congress, to discuss climate change. Sept. 27th, 2010.
Participation in Columbia River Quorum, a workshop bringing together scientists and the humanities in order to better communicate climate change to the public. Mar. 5-8th, 2009
Meetings with staff members of House Representatives Earl Blumernauer (OR), David Wu (OR), Ed Perlmutter (CO), and Senators Gordon Smith (OR) and Ron Wyden (OR) about

climate change legislation. Organized by the Union of Concerned Scientists. Washington DC, June 3rd, 2008.