David P. Keller

GEOMAR Helmholtz Centre for Ocean Research Kiel
Marine Biogeochemical Modelling Department
Düsternbrooker Weg 20
24105 Kiel – Germany

Email: dkeller@geomar.de
Phone: +49 (0)431 600 4290
Web: https://www.geomar.de/en/mitarbeiter/fb2/bm/dkeller/
ORCID: https://orcid.org/0000-0002-7546-4614

Research Interests

Past, present, and future Earth system modelling with a focus on feedbacks between biogeochemical cycles and the climate. Model-based assessments of proposed climate engineering methods, especially those focusing on carbon dioxide removal (negative emissions). Marine ecosystems and biogeochemistry.

Education

2010 Ph.D. in Marine, Estuarine, and Environmental Science [specialization in biological oceanography] University of Maryland, College Park, MD

2001 B.Sc. with a double major in Marine Biology and Biological Oceanography Millersville University, Millersville, PA

Professional Background

2015- GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
Scientist in the Marine Biogeochemical Modelling department
(non-permanent staff; supported by external [grant] funding)

2010-2015 GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
Research Fellowship in the Marine Biogeochemical Modelling department

2004-2010 University of Maryland Center for Environmental Science, Horn Point Laboratory, Cambridge, MD
Graduate Research Assistant for Dr. Raleigh R. Hood

Teaching

Winter Semester 2012/13 2014/15 2016/17 2018/19	*Instructor*	MNF-klim-302/ MNF-bioc-357 *How to make and keep a habitable planet - biogeochemistry-climate feedbacks and astrobiology* GEOMAR/Kiel University Climate Physics and Biological Oceanography M.Sc. Programs
Spring 2010	*Graduate Teaching Assistant*	MEES 661 *Physics of Estuarine and Marine Environments* University of Maryland, MEES Program
Fall 2009	*Graduate Teaching Assistant*	MEES 621 *Biological Oceanography* University of Maryland, MEES Program

Supervisory Experience

Current Graduate Students

2016 – present Jiajun Wu – Ph.D. candidate
Topic: *The carbon dioxide removal potential of macroalgae when combined with novel storage methods*

2018 – present Miriam Tivig - Ph.D. candidate
Topic: *Improving the representation of biogeochemical cycling along the land-ocean continuum in Earth system models*

2019 – present Makcim De Sisto – M.Sc. student
Topic: *Assessing the CO_2 mitigation potential of a combine Ocean Alkalization and Direct Air Capture (DAC) treatment under low and high emission scenarios*

Past Graduate Students

2018 Fabian Reith – Ph.D. awarded by the Faculty of Mathematics and Natural Sciences at the University of Kiel.
Thesis: *A novel view on ocean carbon sequestration by CO_2 direct injection*

2016 Nadine Mengis - Ph.D. awarded by the Faculty of Mathematics and Natural Sciences at Kiel University.
Thesis: *Towards a comprehensive, comparative assessment of Climate Engineering schemes -Metrics, Indicators and Uncertainties*

2016 Jiajun Wu – M.Sc. in Biological Oceanography (GEOMAR/ Kiel University)
Thesis: *Photochemical degradation and the global cycling of marine biologically refractory dissolved organic matter evaluated with the University of Victoria Earth System Climate Model*

2015 Anja Sendelbeck - M.Sc. in Climate Physics (GEOMAR/ Kiel University)

Thesis: *Model-based assessment of impacts and side-effects of climate engineering by albedo enhancement*

2014 Tronje Kemena – M.Sc. in Climate Physics (GEOMAR/ Kiel University)
Thesis: *Impact of the carbon cycle on the development of a Snowball Earth*

2013 Annika Eisele – M.Sc. in biological oceanography (Lund University in cooperation with GEOMAR/ Kiel University)
Thesis: *Evaluation of modeling ecosystem seasonality in the University of Victoria Earth System Climate Model*

Projects and Funding

Third-party Funding

2019 (Sept. start)
Source: European Union Horizon 2020 Programme
Type: Large consortium-based research project
Role: Work Package 5 leader
Title: *Our common future ocean in the Earth system – quantifying coupled cycles of carbon, oxygen, and nutrients for determining and achieving safe operating spaces with respect to tipping points (COMFORT)*
Total project amount: € 8,179,000

2016-present
Source: DFG (German Research Foundation)
Type: Research project
PI: David Keller; Co-PI: Nico Bauer (Potsdam Institute for Climate Impact Research, PIK)
Title: *Carbon Dioxide Removal Model Intercomparison Assessment (CDR-MIA)*
A project within the 2nd phase of the German Research Foundation Priority Program 1689 (SPP 1689) - Climate engineering: risks, challenges, opportunities?
Amount: € 305,910

2015
Source: DFG (German Research Foundation)
Type: Workshop funding
Lead: David Keller
Title: *First Annual Carbon Dioxide Removal Model Intercomparison Project (CDRMIP) Workshop*
Amount: € 8,300

Projects without Funding

2015-present
Title: *The Carbon Dioxide Removal Model Intercomparison Project (CDRMIP)*
PIs: David Keller, Andrew Lenton, Vivian Scott, and Naomi Vaughan

Website: https://www.kiel-earth-institute.de/CDR_Model_Intercomparison_Project.html

- A World Climate Research Program (WCRP) endorsed project contributing to the 6th Coupled Model Intercomparison Project (CMIP6)

Projects Participated in while on a Research Fellowship (2010-2015)

2013-2016 SPP 1689 - (1st phase) Climate engineering: risks, challenges, opportunities? [German Research Foundation Priority Program 1689] – *associated scientist in the ComparCE project*

2012-2015 SFB 754 - Climate-Biogeochemistry Interactions in the Tropical Ocean – *core support staff scientist for projects B1 and A7*

Projects Participated in while a PhD Candidate

2007-2010 BITMAX II - Bio-physical Interactions in the Turbidity Maximum II [US National Science Foundation grant OCE-0453905] – *graduate research assistant for R. R. Hood*

2004-2007 DOMINO - Dissolved Organic Matter in the Ocean [US National Science Foundation grant OCE-221825] – *graduate research assistant for R. R. Hood*

Submitted Proposals

EU Horizon 2020 proposal for call H2020-LC-CLA-2018-2019-2020; topic LC-CLA-02
Title: *Ocean Negative Emission Technologies - analyzing the feasibility, risks, and co-benefits of ocean-based negative emission technologies for stabilizing the climate (OceanNETs)*
Role: Coordinator
Requested funding: € 7,000,000

Professional Society Membership

Association for the Sciences of Limnology and Oceanography (ASLO)
American Geophysical Union (AGU)
European Geosciences Union (EGU)

Editor/Reviewer

Academic Editor

PLOS ONE (Channel – Responding to Climate Change)
Frontiers in Climate - Negative Emission Technologies Editorial Board

Grant and Funding Evaluation

USA National Science Foundation
The European Science Foundation - Research Foundation Flanders' (ESF-FWO)
European Union Horizon 2020 Program

Reviewer for International Journals and Books

Nature Climate Change
Geophysical Research Letters
Journal of Geophysical Research – Biogeosciences
Environment, Development, and Sustainability
Environmental Research Letters
Earth's Future
Journal of Marine Systems
Deep-Sea Research II
Journal of Plankton Research
Marine Ecology Progress Series
Geoscientific Model Development
SpringerNature (book reviews)

Other Professional Activities

Contributing author for the upcoming **IPCC AR6 report** – Chapter 4 section on the climate response to carbon dioxide removal; Chapter 5 section on ocean-based carbon dioxide removal methods

Convener of the session: The Earth System and Carbon Dioxide Removal. Climate Engineering Conference 2017, Berlin, Germany.

Co-convener of the session: Negative Emissions: Staying Below 2°C. AGU 2016 Fall meeting. San Francisco, USA.

Conference organizer: 1st Carbon Dioxide Removal Model Intercomparison Workshop (CDR-MIP) Workshop. (2016) Institute for Advanced Sustainability Studies (IASS) Potsdam, Germany.

Co-convener of the session: Understanding Carbon-Cycle and Climate Feedbacks of Carbon Dioxide Removal Methods. Climate Engineering Conference 2014, Berlin, Germany.

Publications

Reith, F., W. Koeve, **D. P. Keller**, J. Getzlaff, and A. Oschlies (*submitted*) Meeting climate targets by direct CO_2 injections: What price would the ocean have to pay? *Earth System Dynamics.*

Mengis, N., **D. P. Keller**, W. Rickels, M. Quaas, and A. Oschlies (2019), Climate Engineering-induced changes in correlations between Earth system variables - Implications for appropriate indicator selection. *Climatic Change*. doi: 10.1007/s10584-019-02389-7

Kvale, K. F., K. Turner, **D. P. Keller**, and K. Meissner (2018), Asymmetric dynamical ocean responses in warming icehouse and cooling greenhouse climates. *Environmental Research Letters*, 13 (12). Art.Nr. 125011. doi: 10.1088/1748-9326/aaedc3

Keller, D. P. (2018), Marine Climate Engineering. In: *Handbook on Marine Environment Protection: Science, Impacts and Sustainable Management*. , ed. by Salomon, M. and Markus, T.. Springer International Publishing, Berlin, Germany, pp. 261-276. ISBN 978-3-319-60154-0, doi: 10.1007/978-3-319-60156-4

Keller, D. P., A. Lenton, E. W. Littleton, A. Oschlies, V. Scott, and N. E. Vaughan (2018), The Effects of Carbon Dioxide Removal on the Carbon Cycle. *Current Climate Change Reports*, 4 (3). pp. 250-265. doi: 10.1007/s40641-018-0104-3

Lenton, A., R. J. Matear, **D. P. Keller**, V. Scott, and N. E. Vaughan (2018), Assessing Carbon Dioxide Removal Through Global and Regional Ocean Alkalization under High and Low Emission Pathways. *Earth System Dynamics*, 9 . pp. 339-357. doi: 10.5194/esd-9-339-2018

Keller, D. P. , A. Lenton, V. Scott, N. E. Vaughan, N. Bauer, D. Ji, C. D. Jones, B. Kravitz, H. Muri, and K. Zickfeld (2018), The Carbon Dioxide Removal Model Intercomparison Project (CDRMIP): rationale and experimental protocol for CMIP6. *Geoscientific Model Development*, 11 . pp. 1133-1160. doi: 10.5194/gmd-11-1133-2018

Rickels, W., F. Reith, **D. P. Keller**, A. Oschlies, and M. Quaas (2018), Integrated Assessment of Carbon Dioxide Removal. *Earth's Future*, 6 (3). pp. 565-582. doi: 10.1002/2017EF000724

Mengis, N., **D. P. Keller**, and A. Oschlies (2018), Systematic Correlation Matrix Evaluation (SCoMaE) – a bottom–up, science-led approach to identifying

indicators. *Earth System Dynamics*, 9 (1). pp. 15-31. doi: 10.5194/esd-9-15-2018

Feng, Y., W. Koeve, **D. P. Keller**, and A. Oschlies (2017), Model-based Assessment of the CO_2 Sequestration Potential of Coastal Ocean Alkalinization. *Earth's Future*, 5 (12). pp. 1252-1266. doi: 10.1002/2017EF000659

Lenton, A., **D. P. Keller**, and P. Pfister (2017), How Will Earth Respond to Plans for Carbon Dioxide Removal? *Eos: Earth & Space Science News*, 98 . doi: 10.1029/2017EO068385

Oschlies, A., H. Held, **D. P. Keller**, K. Keller, N. Mengis, M. Quaas, W. Rickels, and H. Schmidt (2017), Indicators and metrics for the assessment of climate engineering. *Earth's Future*, 5 (1). pp. 49-58. doi: 10.1002/2016EF000449.

Reith, F., **D. P. Keller**, and A. Oschlies (2016), Revisiting ocean carbon sequestration by direct injection: A global carbon budget perspective. *Earth System Dynamics*, 7 . pp. 797-812. doi: 10.5194/esd-7-797-2016

Partanen, A. I., **D. P. Keller**, H. Korhonen, and D. H. Matthews (2016), Impacts of sea spray geoengineering on ocean biogeochemistry. *Geophysical Research Letters*, 43 (14). pp. 7600-7608. doi: 10.1002/2016GL070111

Feng, E. Y., **D. P. Keller**, W. Koeve, and A. Oschlies (2016), Could artificial ocean alkalinization protect tropical coral ecosystems from ocean acidification? *Environmental Research Letters*, 11 (7). doi: 10.1088/1748-9326/11/7/074008

Keller, D. P. , I. Kriest, W. Koeve, and A. Oschlies (2016), Southern Ocean biological impacts on global ocean oxygen. *Geophysical Research Letters*, 43 (12). pp. 6469-6477. doi: 10.1002/2016GL069630.

Mengis, N., T. Martin , **D. P. Keller,** and A. Oschlies (2016), Assessing climate impacts and risks of ocean albedo modification in the Arctic. *Journal of Geophysical Research - Oceans,* 121 (5). pp. 3044-3057. doi: 10.1002/2015JC011433.

Mengis, N., **D. P. Keller**, M. Eby, and A. Oschlies (2015), Uncertainty in the response of transpiration to CO_2 and implications for climate change, *Environmental Research Letters* 10 (9). 094001. doi: 10.1088/1748-9326/10/9/094001

Kvale, K. F., K. J. Meissner, and **D. P. Keller** (2015), Potential increasing dominance of heterotrophy in the global ocean, *Environmental Research Letters*, 10(7). 074009, doi: 10.1088/1748-9326/10/7/074009

Kvale, K. F. , K. J. Meissner, **D. P. Keller**, M. Eby and A. Schmittner (2015), Explicit Planktic Calcifiers in the University of Victoria Earth System Climate

Model, Version 2.9, *Atmosphere-Ocean*, doi: 10.1080/07055900.2015.1049112

Nickelsen, L., **D. P. Keller**, and A. Oschlies (2015), A dynamic marine iron cycle module coupled to the University of Victoria Earth System Model: the Kiel Marine Biogeochemical Model 2 for UVic 2.9, *Geoscientific Model Development*, *8*(5), 1357–1381, doi: 10.5194/gmd-8-1357-2015

Keller, D. P., D. Y. Lee, and R. R. Hood (2014) Turbidity maximum entrapment of phytoplankton in the Chesapeake Bay. *Estuaries and Coasts*. 37(2), 279-298. doi: 10.1007/s/122237-013-9692-2

Keller, D. P., E. Y. Feng, and A. Oschlies (2014), Potential climate engineering effectiveness and side effects during a high carbon dioxide-emission scenario, *Nature Communications*. 5, 1–11, doi: 10.1038/ncomms4304

Keller, D. P. and R. R. Hood (2013) Comparative simulations of dissolved organic matter cycling in idealized oceanic, coastal, and estuarine surface waters. *Journal of Marine Systems*. doi: 10.1016/j.jmarsys.2012.01.002

Keller, D. P., A. Oschlies, and M. Eby (2012) A new marine ecosystem model for the University of Victoria Earth system climate model. *Geoscientific Model Development.* 5, 1195-1220. doi: 10.5194/gmd-5-1195-2012

Lee, D. Y., **D. P. Keller**, and R. R. Hood (2012) Community metabolism and energy transfer in the Chesapeake Bay estuarine turbidity maximum. *Marine Ecology Progress Series.* 449, 65-82. doi: 10.3354/meps09543

Keller, D. P., and R. R. Hood (2011) Modeling the seasonal autochthonous sources of dissolved organic carbon and nitrogen in the upper Chesapeake Bay. *Ecological Modelling*. 222 (5), 1139-1162. doi: 10.1016/j.ecolmodel.2010.12.014

Presentations

Keller, D. P., A. Lenton, E. W. Littleton, A. Oschlies, V. Scott, and N. E. Vaughan (2018) The Effects of Carbon Dioxide Removal on the Carbon Cycle. International Conference on Negative CO_2 Emissions. Gothenburg, Sweden.

Keller, D. P. (2018) The Potential and Risks of Negative Emissions: An Earth System Modelling Perspective. Workshop on The Morality and Policy of Negative Emissions for Climate Change Mitigation. Frankfurt, Germany. *Invited presentation.*

Keller, D. P. (2018) Climate responses on overshoot and CDR. Workshop on Terrestrial CO_2 Removal: Potentials and tradeoffs in the SDG context. Potsdam, Germany. *Invited presentation.*

Keller, D. P. (2017) The effects of carbon dioxide removal on the carbon cycle and climate. University of Hamburg Seminar Series. Hamburg, Germany. *Invited presentation.*

Andrew Lenton, **David P. Keller** [presenter], Naomi Vaughan, Vivian Scott, Roland Séférian, Jerry Tjiputra, Patrik Pfister, Katsumi Matsumoto, et al. (2017) Climate Reversibility: Initial Results from CDR-MIP C1 Experiment. Climate Engineering Conference 2017. Berlin, Germany.

Keller, D. P. (2017) Side Effects of Solar Radiation Management. Climate engineering regulation and liability workshop. Kiel, Germany. *Invited presentation.*

Keller, D. P. (2016) What is climate engineering and should it be considered as an option for dealing with climate change? Studentischen Meteorologen-Tagung Seminar. Kiel, Germany.

Keller, D. P. (2016) The scope of CDR to recover the 1.5 °C budget. SPP 1689 Workshop on 1.5° C Target and Climate Engineering. Kiel Institute for the World Economy, Kiel, Germany. *Invited presentation.*

Keller, D., Nickelsen, L., Floegel, S. and Sijp, W. (2015) UVic Model Marine Biogeochemistry Configurations at Kiel, plus a Cretaceous Configuration. University of Victoria Earth System Climate Model (UVIC ESCM) Development Workshop, University of Victoria, Canada. *Invited presentation.*

Keller, D. P. (2015) Investigating the Uncertainty of Simulated Climate Engineering. Climate Engineering Research Symposium. Berlin, Germany. *Invited presentation.*

Keller, D., Kriest, I., Koeve, W. and Oschlies, A. (2015) Southern Ocean Biological Impacts on Global Ocean Oxygen. Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research Seminar, Bremerhaven, Germany. *Invited presentation.*

Keller, D., Reith, F., Feng, Y., Mengis, N. and Oschlies, A. (2015) An Earth System model evaluation of multiple climate engineering approaches. Seminar, University of Victoria, 06.05.2015, Victoria, Canada. *Invited presentation.*

Keller, D., Reith, F., Feng, Y. and Oschlies, A. (2014) Modelling the marine impacts of proposed methods to prevent climate change or mitigate its effects. IMBER Open Science Conference FUTURE OCEAN., Bergen, Norway.

Keller, D. (2014) Toolkit Against Climate Change: Mitigation, Adaptation, and Climate Engineering. Overview of Carbon Dioxide Reduction (CDR) and Solar Radiation Management (SRM) Methods. Interdisciplinary Summer School on Climate Engineering. Heidelberg, Germany.

Keller, D. and Scott, V. (2014) Introduction to Understanding Carbon-cycle and Climate Feedbacks of Carbon Dioxide Removal Methods. Climate Engineering Conference 2014. Berlin, Germany.

Keller, D. P. (2014) Modelling Climate Engineering with an Earth system model of intermediate complexity (UVic). SPP 1689 Ph.D. Modelling Workshop. Hamburg, Germany. *Invited presentation.*

Keller, D. P., Feng, Y. and A. Oschlies (2013) Climate engineering is unlikely to prevent disruptive climate change if CO_2 emissions remain high. GEOMAR FB2 Seminar. Kiel, Germany.

Keller, D. P., Feng, Y. and A. Oschlies (February 2013) Should climate engineering be considered to deal with climate change? An Earth system model evaluation of multiple climate engineering approaches. IMBER IMBIZO III, Goa, India.

Keller, D. P. (2013) The role of modelling in Climate Engineering research. SPP 1689 Ph.D. Workshop. Plön, Germany. *Invited presentation.*

Keller, D. P. and A. Oschlies (Sept. 2011) Global marine biogeochemical modelling and the value of mesocosm data: It's usefulness, problems, and potential. MESOAQUA PhD course/workshop. Kiel, Germany. *Invited presentation*.

Keller, D. P. and R. R. Hood (October 2010) A steady-state comparative simulation of dissolved organic matter cycling in idealized oceanic, coastal, and estuarine surface waters: The role of the planktonic community structure. IMBER IMBIZO II "Integrating biogeochemistry and ecosystems in a changing ocean: Regional comparisons". Crete, Greece.

Keller, D. P. and R. R. Hood (2010) Modeling Dissolved Organic Matter Cycling in Marine Surface Waters. MIT seminar. Massachusetts Institute of Technology (MIT), Cambridge, MA. *Invited presentation.*

Keller, D. P. and R. R. Hood (November 2009) Modeling the Seasonal Cycle of Dissolved Organic Carbon and Nitrogen at Station CB3.3C in the Upper Chesapeake Bay, USA. CERF meeting, Portland, OR.

Keller, D. P. and R. R. Hood (April 2009) Modeling the Seasonal Cycle of Dissolved Organic Carbon and Nitrogen at Station CB3.3C in the Upper Chesapeake Bay, USA. Horn Point Laboratory Student Seminar Series, Cambridge, MD.

Keller, D. P. (January 2009) The Distribution of Phytoplankton in the Upper Chesapeake Bay in the Spring and Fall of 2007 and 2008. BITMAX II workshop, Horn Point Laboratory, Cambridge, MD.

Keller, D. P. and R. R. Hood (October 2008) Elucidating Carbon and Nitrogen Cycling in the Upper Chesapeake Bay. MEES Colloquium, Chesapeake Biological Laboratory, Solomons, MD. *Invited presentation*.

Keller, D. P. (March 2008) The Distribution and Composition of Phytoplankton in the upper Chesapeake Bay during the Spring of 2007. Horn Point Laboratory Student Seminar Series, Cambridge, MD.

Keller, D. P. (December 2007) The Distribution and Composition of Phytoplankton in the upper Chesapeake Bay during the Spring of 2007. BITMAX II workshop, Horn Point Laboratory, Cambridge, MD.

Hood, R. R., **D. P. Keller** (presenter), D. Lee, and B. Crump (November 2007) Primary Production in the Chesapeake Bay ETM: Rates, Sources, and Contributions to Higher Trophic Level Production. ERF meeting, Providence, RI.

Keller, D. P. and R. R. Hood (April 2007) The Role of Wetland and Tidal Marsh Derived DOM in a Model of Estuarine and Coastal DOM Cycling. 10th International Symposium on Wetland Biogeochemistry, Annapolis, MD. *Invited presentation*.

Keller, D. P. and R. R. Hood (February 2007) Modeling Dissolved Organic Carbon and Nitrogen Cycling in Oceanic, Coastal, and Estuarine Surface Waters. ASLO Aquatic Sciences meeting, Santa Fe, NM.

Keller, D. P. and R. R. Hood (November 2006) Modeling Dissolved Organic Carbon and Nitrogen Cycling in Oceanic, Coastal, and Estuarine Surface Waters. DOMINO workshop, Virginia Institute of Marine Science, Gloucester Point, VA.

Keller, D. P. and R. R. Hood (November 2006) Modeling Dissolved Organic Carbon and Nitrogen Cycling in Oceanic, Coastal, and Estuarine Surface Waters. Horn Point Laboratory Student Seminar Series, Cambridge, MD.

Keller, D. P. (November 2005) Modeling the Sources, Sinks, and Transformation of Dissolved Organic Nitrogen in Estuarine and Coastal Waters. DOMINO workshop, Virginia Institute of Marine Science, Gloucester Point, VA.

Keller, D. P. and R. R. Hood (October 2005) Modeling the Sources, Sinks, and Transformation of Dissolved Organic Nitrogen in Estuarine and Coastal Waters. ERF meeting, Norfolk, VA.

Posters

Keller, D. P., A. Lenton, V. Scott, and N. E. Vaughan (2016) The Carbon Dioxide Removal Model Intercomparison Project (CDR-MIP) Initial Results and Future Plans. AGU Fall meeting. San Francisco, USA.

Keller, D. P. , I. Kriest, W. Koeve, and A. Oschlies (2014) Investigating the role that the Southern Ocean biological pump plays in determining global ocean oxygen concentrations and deoxygenation. Ocean Sciences Meeting. Honolulu, USA.

Keller, D. P and A. Oschlies (November 2013) Investigating the role that the Southern Ocean biological pump plays in determining global ocean oxygen concentrations and deoxygenation. EUR-Oceans Hot Topics Conference. Gran Canaria, Spain.

Keller, D. P., Feng, Y. and A. Oschlies (February 2013) Should climate engineering be considered to deal with climate change? An Earth system model evaluation of multiple climate engineering approaches. IMBER IMBIZO III, Goa, India.

Keller, D. P. and A. Oschlies (February 2012) Investigating the Net Impact of Ecosystem Seasonality on Biogeochemistry in Climate Change Simulations. Ocean Sciences Meeting, Salt Lake City, Utah.

Keller, D. P. and R. R. Hood (May 2009) The Role of Viruses in a Model of Seasonal Dissolved Organic Matter Cycling at Station CB3.3C in the Chesapeake Bay, USA. SCOR Aquatic Virus Ecology meeting, University of Delaware, Newark, DE.

Keller, D. P. and R. R. Hood (June 2008) Modeling the Transfer of Energy Between Different Trophic Levels in the Chesapeake Bay Estuarine Turbidity Maximum. Advances in Marine Ecosystem Modelling Research (AMEMR) meeting, Plymouth Marine Laboratory, Plymouth, UK.

Keller, D. P. and R. R. Hood (October 2006) Modeling Dissolved Organic Carbon and Nitrogen Cycling in Oceanic, Coastal, and Estuarine Surface Waters. Sustained Indian Ocean Biogeochemical & Ecological Research (SIBER) meeting, National Institute of Oceanography, Goa, India.

Technical Skills

Operating Systems:	Unix/Linux, Microsoft Windows, Apple Mac OS
Programming:	Fortran, Python
Models I run:	UVic Earth System Climate Model, Keller and Hood (2011) biogeochemical ecosystem model
Software:	Matlab, Ferret, Stella, Adobe Creative Suite, Microsoft Office, Subversion (Cornerstone), GIT, CMOR
Additional:	Experience working with NetCDF data, Some experience (6 mo.) working with the Regional Ocean Modeling System (ROMS)

Related Marine Science Experience

2002-2003 Marine Biologist/Manager
Reef Splendor, Hopewell Junction, NY
I was responsible for building and maintaining life support systems, maintaining water quality, propagating corals, and the care of livestock in a 5000 ft^2 saltwater fish and invertebrate wholesale/coral propagation facility. I also trained and supervised staff and sold equipment and provided support to customers concerning all aspects of aquarium keeping.

1998-2002 Team Leader
That Pet Place/That Fish Place, Lancaster, PA
I supervised and trained staff and assisted customers with sales and support of aquarium equipment. I maintained "display" reef aquariums at the store. I also set up and maintained aquariums and ponds at customers' homes.