

CV (Curriculum Vitae) of **Christoph Heinze**

Contact:

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Research interests:

- Marine biogeochemistry
- Prognostic 3-D simulations of marine biogeochemical cycles
- Quantification of the global carbon cycle
- Feedback processes between climate and biogeochemical cycles
- Understanding, interpretation, and simulation of the climatic paleo-record

Academic degrees:

Habilitation (1999, Thesis: “Das marine Sediment als Klimazeuge und Komponente des Klimasystems – eine Modellstudie [The marine sediment as a climate record and component of the climate system - a model study]“).

PhD (1990, Thesis: “Zur Erniedrigung des atmosphärischen Kohlendioxidgehalts durch den Weltozean während der letzten Eiszeit [On the reduction of the atmospheric carbon dioxide concentration by the world ocean during the last glaciation]“).

Diploma (1987, Thesis: “Diskussion der Tiefenwassererneuerung im Europäischen Nordmeer und im Eurasischen Becken unter Zuhilfenahme anthropogener Spurenstoffe [Discussion of the deep water renewal in the Nordic Seas and the Eurasian Basin by use of anthropogenic tracers]“).

Present position:

Professor in chemical oceanography at the Geophysical Institute of the University of Bergen (*Universitetet i Bergen*), Norway.

Leader of the Research Group 4 “Biogeochemical Cycles” at the Bjerknes Centre for Climate Research, Bergen, Norway.

Project director (“co-ordinator”) of the EU FP6 *Integrated Project* CARBOOCEAN – Marine carbon sources and sinks assessment.

Professional data:

Leader of the group “Modelle und Daten (Model & Data)” at the Max Planck Institute for Meteorology, Hamburg, Germany, 2003.

Senior scientist at the National Environmental Research Institute (*Danmarks Miljøundersøgelser*, Department of Marine Ecology), Roskilde, Denmark, 2001-2003.

Senior researcher at the Max Planck Institute for Meteorology, Hamburg, 1994-2000 (co-ordinator of the working group on paleoclimate issues in 2000).

Visiting research scientist at the Lamont Doherty Earth Observatory of Columbia University, Geochemistry Department, Palisades, New York, USA, 11/1994-4/1995.

Post-doctoral researcher at the University of Hamburg (Institute for Oceanography), 1991-1993.

PhD student at the Max Planck Institute for Meteorology and the University of Hamburg (Institute for Oceanography), 1987-1990.

Student in physical oceanography at the University of Hamburg, optional subjects meteorology and geology, voluntary courses in numerical mathematics, chemistry (including laboratory course), and hydrobiology, 1979-1987.

Publications:

Peer reviewed literature:

Submitted (revised version in work): Heinze, C., I. Kriest, and E. Maier-Reimer, Age modeling in synthetic sediment cores for data assimilation of the marine paleo-record into climate models, submitted to *Paleoceanography*.

Submitted (revised version sent in): Ilyina, T., R.E. Zeebe, E. Maier-Reimer, and C. Heinze, Early Detection of Ocean Acidification Effects on Marine Calcification, submitted to *Global Biogeochemical Cycles*.

Denman, K.L., G. Brasseur, A. Chidthaisong, P. Ciais, P.M. Cox, R.E. Dickinson, D. Hauglustaine, C. Heinze, E. Holland, D. Jacob, U. Lohmann, S. Ramachandran, P.L. da Silva Dias, S.C. Wofsy, and X. Zhang, 2007, Couplings Between Changes in the Climate System and Biogeochemistry. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor und H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom und New York, NY, USA.

Gehlen, M., L. Bopp, N. Emprin, O. Aumont, C. Heinze, and O. Ragueneau, 2006, Reconciling surface ocean productivity, export fluxes and sediment composition in a global biogeochemical ocean model, *Biogeosciences*, 3, 521–537.

Heinze, C., M. Gehlen, and C. Land, 2006, On the potential of ^{230}Th , ^{231}Pa , and ^{10}Be for marine rain ratio determinations - a modeling study. *Global Biogeochemical Cycles*, 20, GB2018, doi:10.1029/2005GB002595.

Heinze, C., 2006, The long-term oceanic Si cycle and the role of opal sediment. In: The silicon cycle - human perturbations and impacts on aquatic systems. SCOPE 66. Chicago, IL 60628, USA: Island Press 2006. ISBN 1-59726-114-9. p. 229-243.

Heinze, C. and N. Dittert, 2005, Impact of paleocirculations on the silicon redistribution in the world ocean, *Marine Geology*, 214, 201-203.

Skjelvan, I., A. Olsen, L.G. Anderson, R.G.J. Bellerby, E. Falck, Y. Kasajima, C. Kivimäe, A. Omar, F. Rey, K.A. Olsson, T. Johannessen, and C. Heinze, 2005, A Review of the Inorganic Carbon Cycle of the Nordic Seas and Barents Sea, in: The Nordic Seas - An integrated perspective, H. Drange, T. Dokken, T. Furevik, R. Gerdes and W. Berger, eds., *AGU Geophysical Monograph*, 158, 157-175.

Heinze, C., 2004, Simulating oceanic CaCO_3 export production in the greenhouse, *Geophysical Research Letters*, 31, L16308, doi:10.1029/2004GL020613.

Heinze, C., A. Hupe, E. Maier-Reimer, N. Dittert, and O. Ragueneau, 2003, Sensitivity of the marine biospheric Si cycle for biogeochemical parameter variations, *Global Biogeochemical Cycles*, 17, No. 3, 1086, doi:10.1029/2002GB001943

Gehlen, M., C. Heinze, E. Maier-Reimer, and C. I. Measures, 2003, Coupled Al-Si geochemistry in an ocean general circulation model: A tool for the validation of oceanic dust deposition? *Global Biogeochemical Cycles*, 17, No. 1, 1028, doi:10.1029/2001GB001549.

Heinze, C., 2002, Assessing the importance of the Southern Ocean for natural atmospheric pCO_2 variations with a global biogeochemical general circulation model, *Deep-Sea Research II*, 49, 3105-3125.

Winguth, A. M. E., C. Heinze, J. E. Kutzbach, E. Maier-Reimer, U. Mikolajewicz, D. Rowley, A. Rees, and A. M. Ziegler, 2002, Simulated warm polar currents during the middle Permian, *Paleoceanography*, 17, No. 4, 1057, doi:10.1029/2001PA000646.

Dittert, N., M. Diepenbroek, C. Heinze, and O. Ragueneau, 2002, Managing (pale-) oceanographic data sets using the PANGAEA information system: The SINOPS example, *Computers & Geosciences*, 28, 789-798.

Heinze, C., 2002, Das marine Sediment als Klimazeuge und Komponente des Klimasystems - eine Modellstudie, Habilitationsschrift (habilitation thesis), Fachbereich Geowissenschaften, Universität Hamburg, GCA-Verlag, Serie Forschen und Wissen - Physik, ISBN 3-89863-084-6, Herdecke, Germany, 124 p.

Heinze, C., 2001, Towards the time dependent modeling of sediment core data on a global basis, *Geophysical Research Letters*, 28, 4211-4214.

Ragueneau, O., P. Tréguer, A. Leynaert, R. F. Anderson, M. A. Brzezinski, D. J.

- DeMaster, R. C. Dugdale, J. Dymond, G. Fischer, R. François, C. Heinze, E. Maier-Reimer, V. Martin-Jézéquel, D. M. Nelson, and B. Quéguiner, 2000, A review of the Si cycle in the modern ocean: recent progress and missing gaps in the application of biogenic opal as a paleoproductivity tracer, *Global and Planetary Change*, 26, 317-365.
- Heinze, C., E. Maier-Reimer, A. M. E. Winguth, and D. Archer, 1999, A global oceanic sediment model for long-term climate studies, *Global Biogeochemical Cycles*, 13, 221-250.
- Henderson, G. M., C. Heinze, R. F. Anderson, and A. M. E. Winguth, 1999, Global distribution of the ^{230}Th flux to ocean sediments constrained by GCM modelling, *Deep-Sea Research I*, 46, 1861-1893.
- Heinze, C., E. Maier-Reimer, and P. Schlosser, 1998, Transient tracers in a global OGCM - source functions and simulated distributions, *Journal of Geophysical Research*, 103 (C8), 15903-15922.
- Broecker, W. S., S. Peacock, S. Walker, R. Weiss, E. Fahrbach, M. Schroeder, U. Mikolajewicz, C. Heinze, R. Key, T.-H. Peng und S. Rubin, 1998, How much deep water is formed in the Southern Ocean? *Journal of Geophysical Research*, 103 (C8), 15833-15844.
- Heinze, C., and T. J. Crowley, 1997, Sedimentary response to ocean gateway circulation changes, *Paleoceanography*, 12, 742-754.
- Drijfhout, S., C. Heinze, M. Latif, and E. Maier-Reimer, 1996, Mean circulation and internal variability in an ocean primitive equation model, *Journal of Physical Oceanography*, 26, 559-580.
- Heinze, C., and W. S. Broecker, 1995, Closing-off the Southern Ocean surface, *Paleoceanography*, 10, 49-58.
- Heinze, C., and K. Hasselmann, 1993, Inverse multi-parameter modelling of paleoclimate carbon cycle indices, *Quaternary Research*, 40, 281-296.
- Heinze, C., 1993, Glacial ocean carbon cycle modelling, in: Carbon cycling in the glacial ocean: Constraints on the ocean's role in global change, R. Zahn, M. A. Kaminski, L. Labeyrie und T. F. Pedersen, eds., Proceedings Volume, NATO ARW Fellhorst September 17-19, 1992, Kluwer Academic Publishers, 15-37.
- M. Lautenschlager, U. Mikolajewicz, E. Maier-Reimer, and C. Heinze, 1992, Application of ocean models for the interpretation of atmospheric general circulation model experiments on the climate of the last glacial maximum, *Paleoceanography*, 7, 769-782.
- Heinze, C., E. Maier-Reimer, and K. Winn, 1991, Glacial pCO₂ reduction by the World Ocean - experiments with the Hamburg Carbon Cycle Model, *Paleoceanography*, 6, 395-430.
- Heinze, C., P. Schlosser, K. P. Koltermann, and J. Meincke, 1990, A tracer study of the deep water renewal in the European Polar Seas, *Deep-Sea Research*, 37(a), 1425-1453.

Heinze, C., 1990, Zur Erniedrigung des atmosphärischen Kohlendioxidgehalts durch den Weltozean während der letzten Eiszeit, Doktorarbeit (PhD thesis), Universität Hamburg, Max-Planck-Institut für Meteorologie, *Examensarbeit* (series, ISSN 0938-5177), Nr. 3, Hamburg, 180 p.

Heinze, C., 1986, Diskussion der Tiefenwassererneuerung im Europäischen Nordmeer und im Eurasischen Becken unter Zuhilfenahme anthropogener Spurenstoffe, Diplomarbeit (master thesis), Fachbereich Geowissenschaften, Universität Hamburg, 124 p.

Selected further publications:

Scientific texts (without peer review):

Dittert, N., D. C. E. Bakker, J. Bendtsen, L. Corrin, M. Gehlen, C. Heinze, E. Maier-Reimer, P. Michalopoulos, K. Soetaert, and R. Tol, 2005, Integrated Data Sets of the EU FP5 Research Project ORFOIS: Origin and fate of biogenic particle fluxes in the ocean and their interactions with the atmospheric CO₂ concentration as well as the marine sediment (Vol. 1): *WDC-MARE Reports 2005* (0002), ISSN 1611-6577 2005. 54 S.

Heinze, C., and N. Dittert, 2000, Combining a data base of observations with a global biogeochemical ocean model for an improved quantification of the marine silicon cycle, in: *EurOCEAN 2000, The European Conference on Marine Science and Ocean Technology, Project Synopses, Vol. I: Marine processes, ecosystems, and interactions*, EUR 19359, 293-298.

Dittert, N., A. Leynaert, O. Ragueneau, and C. Heinze, 2001, Hunting and gathering silicon data to tackle climate forecasting, *EOS Trans.*, AGU, 82(9), S. 113 und 117.

Heinze, C., A. Leynaert, E. Maier-Reimer, O. Ragueneau, P. Tréguer, and T. J. Crowley, 1998, Silicon cycling in the world ocean: the controls for opal preservation in the sediment as derived from observations and modelling "SINOPS". In: *Third European Marine Science And Technology Conference, Lisbon, 23.-27. Mai 1998, PROJECT SYNOPSES, Volume I: Marine Systems*, K.-G. Barthel, H. Barth, M. Bohle-Carbonell, C. Fragakis, E. Lipiatou, P. Martin, G. Ollier und M. Weydert, Hrsg., European Commission, EUR 18220 EN, 255-264.

Heinze, C., and E. Maier-Reimer, 1997, Do transient tracers really help to improve ocean general circulation models? *International WOCE Newsletter*, 25. February 1997, p. 22 and p. 38-40.

Heinze, C., 1996, A steady state estimate of the cycling of silica and carbon by use of an Ocean General Circulation Model. *OPALEO, Minutes of the first workshop on the use of opal as a paleo-productivity proxy*, Brest, June 1996, 218-222.

Heinze, C., 1992, A primitive equation model study of the European Polar Seas, *International Council for the Exploration of the Sea*, C.M.1992/C:21, 10 S.

Heinze, C., 1991, Variability of the ocean carbon cycle - A modelling approach towards

an explanation of the glacial pCO₂ reduction in the atmosphere, in: Climate and global change, J. C. Duplessy, A. Pons und R. Fantechi, Hrsg., Commission of the European Communities, Proceedings of the European School of Climatology and Natural Hazards, Arles, April 1990, 337-341.

Heinze, C., 1987, Arctic and subarctic basin interchange - results from tracer measurements and modeling, ICES 1987 Symp/No. 95, ICES SYMPOSIUM 1987, Santander, International Council for the Exploration of the Sea, 18 p.

Heinze, C., P. Schlosser, and K. P. Koltermann, 1986, Deep water renewal in the European Polar Seas as derived from a multi-tracer approach, International Council for the Exploration of the Sea, C.M.1986/C:17, 14 p.

Selcted abstracts and extended abstracts:

Heinze, C., 2008, Is the present ocean carbon data base sufficient for calibrating prognostic models? *Geophysical Research Abstracts*, Vol. 10, EGU2008-A-05400, SRef-ID: 1607-7962/gra/EGU2008-A-05400, EGU General Assembly 2008, European Geosciences Union.

Bernard, C., C. Heinze, and H. Dürr, 2008, Contribution of riverine nutrients to the biogeochemistry of the global ocean, *Geophysical Research Abstracts*, Vol. 10, EGU2008-A-09374, SRef-ID: 1607-7962/gra/EGU2008-A-09374, EGU General Assembly 2008, European Geosciences Union.

Segschneider, J., L. Bopp, C. Heinze, F. Joos, and T. Froehlicher, 2008, Reducing uncertainties of oceanic CO₂ uptake: A multi model approach, *Geophysical Research Abstracts*, Vol. 10, EGU2008-A-08048, SRef-ID: 1607-7962/gra/EGU2008-A-08048, EGU General Assembly 2008, European Geosciences Union.

Volbers, A., C. Heinze, B. Pfeil, H. Høiland, H. De Baar, and the CARBOOCEAN Consortium, The CARBOOCEAN Integrated Project: Europe's motor for a marine carbon sources and sinks assessment, *Geophysical Research Abstracts*, Vol. 10, EGU2008-A-12068, SRef-ID: 1607-7962/gra/EGU2008-A-12068, EGU General Assembly 2008, European Geosciences Union.

Heinze, C., 2007, Carbon cycling at high latitudes – an early warning system for changes in oceanic CO₂ uptake and carbonate saturation, extended abstract for keynote talk, in *Program&Abstracts* für open science conference *Polar Dynamics: Monitoring, Understanding, and Prediction*, 29.-31. August 2007, Bergen, Norwegen, S. 27-28.

Assmann, K. M., C. Heinze, M. Bentsen, H. Drange, and K. Sturm, 2007, Excess carbon in an isopycnic ocean carbon cycle model, *Geophysical Research Abstracts*, Vol. 9, 03579, 2007, SRef-ID: 1607-7962/gra/EGU2007-A-03579, European Geosciences Union 2007.

Ilyina, T., R. Zeebe, E. Maier-Reimer, and C. Heinze, 2007, Modeling Early Signs of Ocean Acidification Effects on Marine Calcification, *Geophysical Research Abstracts*, Vol. 9, 06096, 2007, SRef-ID: 1607-7962/gra/EGU2007-A-06096, European Geosciences Union 2007.

Sturm, K., P. Friedlingstein, M. Bentsen, C. Heinze, and K. Assmann, 2007, Modelling the terrestrial carbon cycle: sensitivity to climate forcing and model formulation, *Geophysical Research Abstracts*, Vol. 9, 05769, 2007, SRef-ID: 1607-7962/gra/EGU2007-A-05769, European Geosciences Union 2007.

Heinze, C., 2006, Modelling the marine sediment record - a blueprint for identifying the cause for the glacial-interglacial pCO₂ variation, *Geophysical Research Abstracts*, Vol. 8, 04949, 2006, SRef-ID: 1607-7962/gra/EGU06-A-04949, European Geosciences Union 2006.

Heinze, C., M. Gehlen, and C. Land, 2006, Could one monitor the effects of ocean acidification through radionuclides? 2006, *Geophysical Research Abstracts*, Vol. 8, 04589, 2006, SRef-ID: 1607-7962/gra/EGU06-A-04589, European Geosciences Union 2006.

Heinze, C., B. Pfeil, L. Bopp, F. Joos, T. Froelicher, I. Totterdell, S. Liddicoat, J. Segschneider, and E. Maier-Reimer, 2006, Performance assessment of carbon cycle climate models using field observations, *Geophysical Research Abstracts*, Vol. 8, 04350, SRef-ID: 1607-7962/gra/EGU06-A-04350, European Geosciences Union 2006.

Heinze, C., and M. Gehlen, 2004, Modeling ²³⁰Th, ²³¹Pa, and ¹⁰Be in the ocean: Particle species dependent scavenging and its potential for rain ratio determinations, AGU Ocean Sciences Meeting, 26.01.2004 - 30.01.2004., *EOS, Transactions*, American Geophysical Union, vol. 84, No. 3; 2004 Abstract No. OS32K-0.

Heinze, C. und G. Henderson, 1997, Oceanic particle fluxes as constrained by ²³⁰Th and ²³¹Pa - a model study. In: Fifth International Carbon Dioxide Conference, Cairns, Australia, extended abstracts, CSIRO Division of Atmospheric Research, 225-226.

Heinze, C., 1989, Glacial pCO₂ reduction and the deep sea record – experiments with the Hamburg carbon cycle model. In: Extended abstracts of papers presented at the Third International Conference on Analysis and Evaluation of Atmospheric CO₂ Data Present And Past, Environmental Pollution Monitoring And Research Programme No. 59, WMO, 9-14.

Outreach and vertical dissemination:

Heinze, C., 2007, CARBOOCEAN – how much CO₂ does the ocean take up? *Meta*, No. 3/2007, NOTUR – the Norwegian metacenter for computational science, p. 4-7.

Volbers, A. und C. Heinze, 2007, Havet tar opp en firedel av våre CO₂-utslipp, *Klima*, Norwegian magazine for climate research (CICERO, Oslo), 4-2007, 35-37.

Heinze, C. und A. Volbers, 2007, CARBOOCEAN "Marine sources and sinks assessment", *The Parliament Magazine*, 257, 26. November 2007, S. 49.

Heinze, C., 2006, CARBOOCEAN Marine sources and sinks assessment - An EU FP6 Integrated Project, *IMBER update* 2006(3), 5-7.

Reports and strategy papers:

Hoepffner, N., M. D. Dowell, M. Edwards, M., S. Fonda-Umani, D. R. Green, B. Greenaway, B. Hansen, C. Heinze, J.-M. Leppänen, E. Lippiatou, et al., 2006, Marine and Coastal Dimension of Climate Change in Europe, A report to the European Water Directors, Institute for Environment and Sustainability. Ispra, Italien: UR 22554 EN, European Commission - Joint Research Centre 2006. 117 p.

Heinze, C., mit Beiträgen von E. Jansen, O. Ragueneau, C.M.G. van den Berg, and A. J. Watson, 1999, (2.) The Global Carbon Balance, in: Air-sea and sea-ice interactions, Scientific report of an EC marine science and technology workshop held in Brussels, 7. und 8. Januar 1999, W. Ost und E. Lippiatou, EUR 18638, 2-4.

Technical reports:

Heinze, C., and E. Maier-Reimer, 1999, The Hamburg Oceanic Carbon Cycle Circulation Model Version ``HAMOCC2s'' for long time integrations. Deutsches Klimarechenzentrum (German Climate Computing Center), *Technical Report* series, No. 20, 71 p.

Heinze, C., and E. Maier-Reimer, 1992, The Hamburg Oceanic Carbon Cycle Circulation Model (Cycle 1), Deutsches Klimarechenzentrum (German Climate Computing Center), *Technical Report* series, No. 5, 32 p.

Lecture text:

Heinze, C., 2000, Modelling of marine biogeochemical cycles“, course at the University of Hamburg, Institute for Marine Chemistry and Biogeochemistry, WS2000/2001, 139 p.

Projects and attraction of external funding:

Co-ordination of international research projects:

CARBOOCEAN "Marine carbon sources and sinks assessment", EU FP6 *Integrated Project*, 2005-2009, 35 partners (50 groups from Europe, USA, Canada, and Morocco), <http://www.carboocean.org/>.

ORFOIS "Origin and fate of biogenic particle fluxes in the ocean and their interaction with the atmospheric CO₂ concentration as well as the marine sediment", EU FP5 RTD Project, 2001-2004, 8 partners (Europe), <http://orfois.pangaea.de/>.

SINOPS "Silicon cycling in the world ocean: the controls for opal preservation in the sediment as derived from observations and modelling", EU MAST-III research project, 2 partners (France, Germany), 1997-2000 (*co-ordinator in charge*).

Further projects:

EPOCA (European project on ocean acidification), large collaborative project, co-ordinator: J.-P. Gattuso, project duration 4 years, member of the scientific steering committee.

COCOS, COOrdination action Carbon Observation System, project for feeding European carbon data sets into GEOSS and for data synthesis, co-ordinator: H. Dolman, project duration 3 years.

CARBOSEASON (calibration of marine and terrestrial carbon cycle models through the seasonal cycle signal), Norwegian Research Council, NORKLIMA Programme, 2 partners, co-ordination: C. Heinze, project duration: 4 years.

PERMASOM (process studies on soil organic carbon in permafrost areas), Norwegian Research Council, NORKLIMA Programme, co-ordination: D. Rasse, project duration: 2 years, expected start in first half of 2008.

Climate of Norway and the Arctic in the 21st Century - NorClim -, Norwegian Research Council, NORKLIMA Programme, co-ordination: H. Drange, project duration: 4 years (2007-2010).

Eur-Oceans (European network of excellence for ocean ecosystems analysis), EU FP6 Network of Excellence, co-ordination: P. Tréguer and L. Legendre, project duration: 4 years (2005-2008).

CarboSchools+ (European network of regional projects for school partnerships on climate change research), EU FP7 Science-and-Society project, outreach projects targeted at secondary schools, European Commission, FP6 and FP7, project duration: 3 years (2008-2010).

Bjerknes SFF (Norwegian Research Centre of Excellence), Bjerknes Centre for Climate Research, Norwegian Research Council, several smaller internal projects and one PhD student position for 18 months.

Si-WEBS (Natural and anthropogenic modifications of the Si cycle along the land-ocean continuum: Worldwide Ecological, Biogeochemical and Socio-economical consequences), EU FP5 Research and Training Network, co-ordinator: O. Ragueneau, project duration: 4 years (2003-2006).

Globale ozeanische Simulation von Strömungsfeld und Kohlenstoffkreislauf im jüngeren Paläozoikum, Deutsche Forschungsgemeinschaft, Schwerpunkt "Evolution des Systems Erde während des jüngeren Paläozoikums im Spiegel der Sediment-Geochemie", co-ordinator: W. Buggisch, 1 post-doctoral researcher position for 2 years (1999).

Assimilation von Paläoklimadaten in das Hamburger Ozeanmodell zur Rekonstruktion des Ozeanzustands während des letzten glazialen Maximums, German IGBP-PAGES project, Deutsche Forschungsgemeinschaft, 1 post-doctoral researcher position and 1 PhD position for 2 years (1993).

General advancement of science:

Lead author of the 4th IPCC Assessment Report, Working Group I, chapter 7 “Couplings Between Changes in the Climate System and Biogeochemistry”, 2004-2007 (the total IPCC work was awarded with the Nobel peace price in 2007).

Associate editor of the scientific EGU journal *Biogeosciences* since 2004.

Scientific advisor for the project “Developing a Trial Monitoring Strategy for pH in UK Marine Waters” (ME2109), funding agency: DEFRA (Department for Environment, Food and Rural Affairs, UK), since 2006.

Member of the scientific advisory board of project PEACE (Role of pelagic calcification and export of carbonate production in climate change), co-ordinator L. Chou, Brussels, Belgium, funding agency: Belgian Science Policy Office, since 2005.

Member of the Numerical Experimentation Group of the *World Ocean Circulation Experiment* (“WOCE-NEG”), 1990-1993.

Referee for project proposals (among others for National Science Foundation – USA; National Institute for Air Research – Norway; chair for review of SOPRAN – German contribution to IGBP/SOLAS, BMBF).

Referee for peer reviewed scientific journals (among others for *Journal of Geophysical Research*, *Nature*, and *Deep-Sea Research*).

Organisation of international conferences:

“**Polar Dynamics: Monitoring, Understanding, and Prediction**”, Open Science Conference, 29-31 August 2007 Bergen, Norway, member of the Local Committee.

“**The GHG Cycle in the Northern Hemisphere**”, Open Science Conference, 18 November 2006, Sissi-Lassithi, Crete, Greece, member of the Scientific Committee.

“**37th International Liège Colloquium on Ocean Dynamics**”, Gas transfer at water surfaces, 2-6 May 2005, Liège, Belgium, member of the International Scientific Committee.

Invited presentations at international conferences, meetings, and seminars:

“**The oceanic carbon sink – processes, time scales, and impacts**“, *GIFT-Workshop (Geophysical Information For Teachers)* at the forthcoming EGU General Assembly 2008, title, Vienna, Austria, 13-15 April 2008.

“Was there a higher glacial rain ratio CaCO₃:POC than today?”, Workshop *“Modelling the response of marine ecosystems to increasing levels of CO₂”*, 12-14 February 2007, AMEMR (Advances in Marine Ecosystem Modelling Research) symposium funded by the UK Natural Environment Research Council organized by Plymouth Marine Laboratory, Plymouth, UK.

“The changing oceanic carbon sink in a warming high CO₂ world”, EU International Symposium on IPCC and EC Research *“Future climate, impact, and responses – The IPCC 4th Assessment Report & EC Integrated Climate Research”*, 19-20 November 2007, Brussels, Belgium.

“Carbon cycling at high latitudes – an early warning system for changes in oceanic CO₂ uptake and carbonate saturation” (keynote), Open science conference *“Polar Dynamics: Monitoring, Understanding, and Prediction”*, 29-31 August 2007, Bergen, Norway.

“Ocean biogeochemical feedbacks to climate change and rising atmospheric CO₂ concentrations”, seminar at *Worldwide Universities Network*, Bergen, 19 March 2007, video seminar which was transmitted to 16 universities in Europe and North America including a discussion after the presentation.

“CARBOOCEAN – the European contribution to a global marine sources and sinks assessment”, 4th EU-Japan Workshop on Climate Change Research, 12-13 March 2007, Brussels, Belgium, European Commission.

“Carbon cycling at high latitudes – bottleneck for anthropogenic CO₂ and precursor for ocean acidification”, international symposium *“Polar Environment and Climate: The Challenges”*, European Research in the context of the International Polar Year, 5-6 March 2007, Brussels, Belgium, European Commission.

“Towards Earth system modelling in Bergen – status and vision”, Workshop *“Climate impacts on carbon cycling and greenhouse gas balance in arctic terrestrial ecosystems”*, 27-29 November 2006, organised by BioForsk (Ås, Norway) Svanhovd, Norway/Finmarken.

“Marine biological carbon cycle climate feedbacks - do they matter or not?” (keynote), ASLO Summer Meeting 2005, American Society of Limnology and Oceanography, 19-24 June 2005, Santiago De Compostela, Spain.

“Marine carbon cycle climate feedbacks - magnitude and timescales”, Mini-Conference on *“Vulnerabilities of the Carbon-Climate-Human System”* (IGBP Global Carbon Project, ESSP), 15 June 2005, Paris, France.

“Towards the reconstruction of past biogeochemical cycles: Simulation of the sediment core record in the world ocean with a biogeochemical ocean general circulation model”, 8th International Conference on Paleoceanography, 5-10 September 2004, Biarritz, France.

“Predicting anthropogenic CO₂ uptake by the high latitude oceans - the Bjerknes 1904 paper revisited”, Bjerknes Centenary 2004, open science conference on Climate

Change in High Latitudes, 1-3.September 2004, Bergen, Norway.

“The effect of diatoms and Si on the carbon cycle - studies with a large scale biogeochemical ocean model”, Chapman Conference *“The Role of Diatom Production and Si Flux and Burial in the Regulation of Global Cycles”*, American Geophysical Union, Paroikia, Paros, Greece, 22-26 September 2003.

“The Arctic in the climate system”, Nordic Arctic Research Programme meeting on *“The bioproduction and energy transfer in the Nordic Seas”*, the role of key zooplankters in a system with rapid climate change’, Sandgerdi, Iceland, 31 July – 4 August 2002.

“Simulating the sedimentary response to closure of the central American isthmus”. AGU Fall Meeting, American Geophysical Union, 8-12 December 1997, San Francisco, USA.

“Development of a global 3-D model of Th and Pa in the present and past ocean” (keynote), AGU Fall Meeting, American Geophysical Union, 15-19 December 1996, San Francisco, USA.

“An OGCM study on marine sediment, weathering, and atmospheric CO₂”. XVI. General Assembly of the European Geophysical Society (EGS), 6-10 May 1996, Den Haag, Netherlands.

“Southern Ocean close-off - implications for glacial ocean tracer distributions”, AGU Fall Meeting, American Geophysical Union, 5-10 December 1993, San Francisco, USA.

Supervision of doctoral students and post-docs:

Supervision of PhD student Christophe Bernard (since 2006).

Co-supervision of PhD student Svetlana Militinovich (since 2006).

Co-supervision of PhD student Arne Winguth (Hamburg, including funding attraction for his position) (1994-1997).

Referee/committee member for PhD students: André Wischmeyer (Bremen, 2002), Henning Wehde (Hamburg, 2001), Sara Jutterström (Göteborg, 2006).

Supervision of post-doctoral researchers Karen Assmann (since 2005) and Christophe Sturm (since 2006) (Bergen).

Supervision of post-doctoral researcher Jørgen Bendtsen (Roskilde, 2001-2003).

Supervision of post-doctoral researcher Axel Hupe (Hamburg, 2000).

Personal Data:

- Born 5 April 1958 at Köln, Germany (German citizen)
- High school: *“Hans-Sachs-Gymnasium”* in Nürnberg 1968-77 (*Allg. Hochschulreife*)
- Language skills (active/passive): German (mother tongue), English (fluent/fluent), Norwegian (very good/very good), French (fair/good), Danish (good/very good), Latin
- Conscientious objector (*Kriegsdienstverweigerer*), civil service in Nürnberg, 1978-79.