Prof. Dr. Martin Visbeck

Academic Education and Employment

1982 - 1989 Diploma Physical Oceanography, CAU/IfM Kiel
1989 - 1993 Ph. D. Physical Oceanography; CAU/IfM Kiel
1994 - 1995 NOAA C&GC Postdoctoral fellow at MIT, Cambridge, USA
1995 - 2004 Associate Research Scientist, Lamont-Doherty Earth Observatory, USA
1997 - 1999 Storke-Doherty Lecturer, DEES, Columbia University, USA
1999 - 2004 Associate Professor, Columbia University, USA
2003 Tenure, Columbia University, USA
since 2004 Adjunct Senior Research Scientist, Lamont-Doherty Earth Observatory
since 2004 Full Professor, Research Division Ocean Circulation und Climate Dynamics, (former Leibniz Institute of Marine Sciences, Kiel) Helmholtz Centre for Ocean Research Kiel (GEOMAR) and University of Kiel.

Areas of research

- The role of the ocean in interannual to centennial climate variability
- Variability of regional ocean circulation
- Deep water formation in subpolar regions
- Lateral exchanges by mesoscale eddy processes
- Sustained global ocean observations
- The North Atlantic Oscillation and its impacts on the ocean
- Tropical Atlantic Climate Variability
- Antarctic Bottom Water formation
- Ocean circulation configurations during past climates
- ADCP observations in the open ocean and in coastal environments
- Dynamics of oxygen minimum zones
- Integrated Marine sciences: Ocean sustainability

Institutional Functions

- since 2004 Head of Research Unit Physical Oceanography
- 2007-2011 Deputy Director, IFM-GEOMAR

Functions the following national/international organisations:

International:

- 2011-2012	Member of the ICSU Transition Team, the interim governing body of the new global sustainability initiative Future Earth
- 2007-present	International CLIVAR Scientific Steering Group (co-chair since 2008)
- 2006-present	IOC working group Advisory Body of Experts on the Law of the Sea
- 2005-2009	Member in GEO (Group on Earth Observations) science and technology
- 1999-present	NOAA-OAR/OGP Climate observing system council
- 2009-2010	Member of the post OCEANOBS'09 Integrated Framework for Sustained Ocean Observations - Task Team
- 2008-2009	Chair of program committee, and German national representative for third World Climate Conference WCC-3 (WMO)
- 2008-2009	Member Science and Innovation Strategic Board (NERC, UK)
- 2005-2009	Member RAPID Steering Group (NERC, UK)
- 2004-2005	COPES Task Force WCRP
- 2000-2006	International CLIVAR Atlantic Sector Implementation Panel (chair)
- 1999-2004	US-CLIVAR Atlantic Sector Implementation Panel (co-chair with J. Hurrell)
- 1998-2004	NOAA-OGP Global and Climate Change advisory panel, USA

Germany:

- 2013 - present	Chair, DFG German Committee Future Earth
- 2007 - present	Speaker, CAU Kiel, Excellence Cluster "The Future Ocean"
- 2007 - 2012	Member, DFG Senatskommission für Ozeanographie
- 2008 - 2012	Member, DFG Fachkomission für Atmosphären-/Meeresforschung
- 2009 - 2012	CoChair, DFG/BMBF Nationalkommitte für Global Change Forschung
- 2006 - 2009	Member, Steering group "Mittelgroße Forschungsschiffe" der Bund-Länder-Arbeitsgruppe "Deutsche Forschungsflotte"

Narrative:

Prof. Visbeck received his PhD from Kiel University in Physical Oceanography on research about deep ocean convection in 1993. During a postdoctoral fellowship at MIT his research interest focused on the interaction between ocean eddies and deep convection regions and their respective heat and density transports. As a Research Scientist at LDEO and Associate Professor at Columbia University, New York, his interest shifted to more general aspects of the ocean's role in the climate system including work on the North Atlantic Oscillation and Deep Water formation off Antarctica. Since October 2004 he has held the chair in Physical Oceanography at the Leibniz Institute of Marine Sciences at the University in Kiel.

His current research is concerned with ocean and climate variability and change with particular emphasis on the circulation of the Subpolar North Atlantic, climate-biogeochemical interactions in the tropical ocean, observations of ocean circulation and mixing using modern robotic platforms including profiling floats and gliders, and development of ocean observatories for long-term observations in the water column. He has served on several national and international committees. He is Speaker of the Kiel Cluster of Excellence 'The Future Ocean' which is advancing integrated marine sciences.

Publications:

Martin Visbeck is the author of more than 70 publications most of which in peer-reviewed scientific journals,

Schott, F., **M. Visbeck** and J. Fischer, 1993: Observations of vertical currents and convection in the central Greenland Sea during winter 1988/89. *J. Geophys. Res*., 98, 14401-14421.

Fischer, J. and **M. Visbeck**, 1993: Deep velocity profiling with self-contained ADCPs, *J. Atmosph. and Oceanic Technol.*, 10, 764-773.

Visbeck, M., J. Fischer and F. Schott, 1995: Preconditioning the Greenland Sea for Deep Convection: Ice formation and ice drift. *J. Geophys. Res*., 100, 18.489-18.502, 1995.

Visbeck, M., J. Marshall and H. Jones, 1996: Dynamics of isolated convective regions in the ocean. *J. Phys. Oceanogr.*, 26, 1721-1734.

Visbeck, M., J. Marshall, T. Haine and M. Spall, 1997: Specification of eddy transfer coefficients in coarse resolution ocean circulation models. *J. Phys. Oceanogr*., 27, 381-402.

Houghton, R. and **M. Visbeck**, 1998: Upwelling and convergence in the Middle Atlantic Bight shelfbreak front. *Geophys. Res. Lett*., 25, 2765 2768.

Visbeck, M., H. Cullen, G. Krahmann, N. Naik, 1998: An ocean model's response to North Atlantic Oscillation like wind forcing. *Geophys. Res. Lett*., 25, 4521 4524.

Peacock, S., **M. Visbeck** and W. Broecker, 1999: Deep water formation rates inferred from global tracer distributions: An inverse approach. Inverse Methods in Global Biogeochemical Cycles. Kasibhatla et al. (Eds), *AGU monograph*, 185-195.

Khatiwala, S. and **M. Visbeck**, 2000: An estimate of the eddy-induced circulation in the Labrador Sea., *Geophys. Res. Lett.*, 27, 2277-2280.

Hazeleger, W., **M. Visbeck**, M. Cane, A. Karspeck and N. Naik, 2001: Decadal upper ocean temperature variability in the tropical subtropical Pacific. *J. Geophys. Res.*, 106, 8971-8988.

Gordon, A., **M. Visbeck** and B. Huber, 2001: Export of Weddell Sea Deep and Bottom Water. *J. Geophys. Res.*, 106, 9005-9017.

Hurrell, J.W., Y. Kushnir, and **M. Visbeck**, 2001: The North Atlantic Oscillation. *Science,* 291, No. 5504, 603-605.

Visbeck, M., J.W. Hurrell L. Polvani, and H.M. Cullen, 2001: The North Atlantic Oscillation: Past, present, and future. *PNAS,* 98 (23), 12876-12877.

Orsi, A., S. Jacobs, A. Gordon and **M. Visbeck**, 2001: Cooling and ventilating the abyssal ocean. *Geophys. Res. Lett.*, 28, 2923-2926.

Keeling, R. F. and **M. Visbeck**, 2001: Antarctic stratification and glacial CO2. *Nature*, 412, 605-606.

Marshall, J., Y. Kushnir, D. Battisti, P. Chang, A. Czaja, R. Dickson, J. Hurrell, M. McCartney, R. Saravanan and **M. Visbeck**, 2001: North Atlantic Climate Variability: Phenomena, Impacts and Mechanisms. *International Journal of Climatology*, 21, 1863-1898.

Visbeck, M., 2002: Deep velocity profiling using lowered Acoustic Doppler Current Profiler: Bottom track and inverse solutions. *J. Atmosph. Oceanic Technol*., 19, 794-807.

Visbeck, M., 2002: The Ocean's Role in Atlantic Climate Variability, *Science*, 297, 2223-2224.

Hall, A. and **M. Visbeck**, 2002: Synchronous Variability in the Southern Hemisphere Atmosphere, Sea Ice, and Ocean Resulting from the Annular Mode. *J. Clim*ate, 15, 3043-3057.

Visbeck, M., E. Chassignet, R. Curry, T. Delworth, B. Dickson and G. Krahmann, 2003: The Ocean's Response to North Atlantic Oscillation Variability, in "The North Atlantic Oscillation" edited by J.W. Hurrell, Y. Kushnir, G. Ottersen and M. Visbeck (Eds), *Geophysical Monograph Series*, 134, 113-146.

Hurrell, J.W., Y. Kushnir, G. Ottersen and **M. Visbeck**, 2003: An Overview of the North Atlantic Oscillation, in "The North Atlantic Oscillation" edited by J.W. Hurrell, Y. Kushnir, G. Ottersen and M. Visbeck (Eds), *Geophysical Monograph Series*, 134, 1-36.

Krahmann, G. and **M. Visbeck**, 2003: Arctic Ocean sea ice response to Northern Annular Mode-like wind forcing. *Geophysical Research Letters*, 30(15): 1793, doi:10.1029/2003GL017354.

Krahmann, G., **M. Visbeck**, et al., 2003: The Labrador Sea Deep Convection Experiment data collection, *Geochemistry Geophysics Geosystems*, 4, (10), 1091, doi:10.1029/2003GC000536. 2003.

Garabato, A. C. N., K. L. Polzin, B. A. King, K. J. Heywood and **M. Visbeck**, 2004: Widespread Intense Turbulent Mixing in the Southern Ocean, *Science*, 303, 210-213.

Gordon, A. L.; E. Zambianchi; A. Orsi, Alejandro; **M. Visbeck**; C. Giulivi.; T. Whitworth III; G. Spezie, 2004: Energetic plumes over the western Ross Sea continental slope. *Geophys. Res. Lett.*, Vol. 31, No. 21, L21302 10.1029/2004GL020785.

Hurrell, J.W., **M. Visbeck**, A. Busalacchi, R. A. Clarke, T.L. Delworth, R. R. Dickson, W.E. Johns, K.P. Koltermann, Y. Kushnir, D. Marshall, C. Mauritzen, M.S. McCartney, A. Piola, C. Reason, G. Reverdin, F. Schott, R. Sutton, I. Wainer, and D. Wright , 2006: Atlantic Climate Variability and Predictability: A CLIVAR perspective. *J. Climate*, 19, 5100-5121.

Visbeck, M., 2008: From climate assessment to climate services. *Nature Geoscience*, 1, 1-2.

Böning, C.W., A. Dispert, **M. Visbeck**, S. Rintoul and F.U. Schwarzkopf, 2008: The response of the Antarctic Circumpolar Current to recent climate change. *Nature Geoscience*, 1, 864-869.

Visbeck, M., 2009: A Station-Based Southern Annular Mode Index from 1884 to 2005. *J. Climate*, 22, 940–950.

Visbeck, M., A. Turnherr, 2009: High-Resolution Velocity and Hydrographic Observations of the Drygalski Trough Gravity Plume. *Deep Sea Res. II*, 56, 835-842.

Stramma, L., **M. Visbeck**, P. Brandt, T. Tanhua, and D. Wallace, 2010: Deoxygenation in the oxygen minimum zone of the eastern tropical North Atlantic, *Geophys. Res. Lett.*, 36, L20607, doi: 10.1029/2009GL039593

Gordon, A. L., B. Huber, D. McKee und **M. Visbeck**, 2010: A seasonal cycle in the export of bottom water from the Weddell Sea. *Nature Geoscience*, 3 (8). pp. 551-556. ISSN 1752-0894

Brandt, P., V. Hormann, A. Körtzinger, **M. Visbeck**, G. Krahmann, L. Stramma, R. Lumpkin, and C. Schmid, 2010: Changes in the Ventilation of the Oxygen Minimum Zone of the Tropical North Atlantic. *J. Phys. Oceanogr*, 40 (8). pp. 1784-1801. ISSN 0022-3670

Maltrud, M., S. Peacock, and **M. Visbeck**, 2010: On the possible long-term fate of oil released in the Deepwater Horizon incident, estimated using ensembles of dye release simulations. *Environmental Research Letters*, 5 (3). 035301. ISSN 1748-9326

Fischer, J., **M. Visbeck**, R.J. Zantopp, and N. Nunes, 2010: Interannual to decadal variability of outflow from the Labrador Sea. *Geophys. Res. Let.* 37 . L24610. doi: 10.1029/2010GL045321

Brandt, P., Hormann, V., Körtzinger, A., **M. Visbeck**, Krahmann, G., Stramma, L., Lumpkin, R. und Schmid, C., 2010: Changes in the Ventilation of the Oxygen Minimum Zone of the Tropical North Atlantic. *Journal of Physical Oceanography*, 40 (8). pp. 1784-1801. DOI 10.1175/2010JPO4301.1

Patara, L., **M. Visbeck**, Masina, S., Krahmann, G. und Vichi, M., 2011: Marine biogeochemical responses to the North Atlantic Oscillation in a coupled climate model. *Journal of Geophysical Research*, 116 (C7). C07023. DOI 10.1029/2010JC006785.

Wu, L., Jing, Z., Riser, S. and **M. Visbeck,** 2011: Seasonal and spatial variations of Southern Ocean diapycnal mixing from Argo profiling floats. *Nature Geoscience, 4 (6)*. pp. 363-366. DOI 10.1038/ngeo1156.

Keeling, R. F., **M. Visbeck**, 2011: On the linkage between Antarctic surface-water stratification and global deepwater temperature. *Journal of Climate*, 24 (14). pp. 3345-3557. DOI 10.1175/2011JCLI3642.1 .

Stramma, L., Prince, E. D., Schmidtko, S., Luo, J., Hoolihan, J. P., **M. Visbeck**, Wallace, D. W. R., Brandt, P. und Körtzinger, A., 2012: Expansion of oxygen minimum zones may reduce available habitat for tropical pelagic fishes Nature Climate Change, 2 (1). pp. 33-37. DOI 10.1038/NCLIMATE1304.

Banyte, D., Tanhua, T., **Visbeck, M**., Wallace, D. W. R., Karstensen, J., Krahmann, G., Schneider, A., Stramma, L.und Dengler, M. (2012) Diapycnal diffusivity at the upper boundary of the tropical North Atlantic oxygen minimum zone. Journal of Geophysical Research - Oceans, 117 (C9). C09016. DOI 10.1029/2011JC007762.

Wu, L., Cai, W., Zhang, L., Nakamura, H., Timmermann, A., Joyce, T., McPhaden, M. J., Alexander, M., Qiu, B., **Visbeck, M**., Chang, P. und Giese, B. (2012) Enhanced warming over the global subtropical western boundary currents. Nature Climate Change, 2 . pp. 161-166. DOI 10.1038/NCLIMATE1353.

Zenk, W. und **Visbeck, M.** (2012) Structure and Evolution of the Abyssal Jet in the Vema Channel of the South Atlantic. Deep-Sea Research Part II-Topical Studies in Oceanography . DOI 10.1016/j.dsr2.2012.07.033.