

**Thierry HUCK** <thuck(at)univ-brest.fr>  
French, 38 years old, English fluent



Laboratoire de Physique des Océans  
(UMR 6523 CNRS IFREMER IRD UBO)  
Université de Bretagne Occidentale, UFR Sciences F.308  
6 avenue Le Gorgeu, CS 93837, 29238 Brest Cedex 3, FRANCE  
Tel.: +33 298-016510 - Fax: +33 298-016468  
WWW: <http://www.ifremer.fr/lpo/thuck/>

**Research scientist investigating the role of the ocean circulation in climate variations,  
Ph.D. in Physical Oceanography, French Engineering Diploma in Marine Environment and Naval  
Architecture.**

## RECENT OCCUPATIONS

- Since Jan.2000 : Research scientist at the French National Center for Scientific Research ([CNRS](#)). Focused on the variability of the large-scale ocean circulation through observations ([Ovide](#) repeated hydrographic section), theory (basin modes) and models: stability and variability of the thermohaline circulation, conceptual and simplified climate models, investigation of the mechanisms responsible for climate variability over the North Atlantic in the CLimate VARIability and Predictability ([CLIVAR](#)) international framework and the French Program in Climate Dynamic Studies ([PNEDC](#), LEFE).  
*Laboratoire de Physique des Océans, Brest, France.*
  - Chief scientist for the Ovide 2004 cruise aboard French R/V Thalassa, and CTD chief operator for the Ovide 2002 (Thalassa) and 2006 (German R/V Meriam) cruises: repeated hydrographic section between Portugal and Greenland.
  - Teaching of General Oceanography classes for last year engineering school ISEN (2000-2008), and PhD classes on the General Ocean Circulation (UBO).
  - Supervision of 2 PhD students (O. Arzel, 2000-2004; F. Sévellec, 2003-2007), 2 postdocs and several Masters.
- Sept.1998-Dec.1999: Research associate (Pr. Geoffrey Vallis). Simplified coupled ocean-atmosphere modeling and investigation of climate decadal variability mechanisms, participation in the Mesoscale Experiments in the Southern Ocean (MESO) project.  
*Geophysical Fluid Dynamics Laboratory, Princeton University, Program in Atmospheric and Oceanic Sciences, Princeton, NJ, USA.*
- Sept.1997-Sept.1998: Postdoctoral researcher with Pr. Geoffrey Vallis. Analysis of the robustness of the interdecadal variability in ocean models forced by quasiconstant surface buoyancy fluxes: eddy-resolving simulations, wind-forcing, bottom topography.  
*Institute of Marine Sciences, University of California, Santa Cruz, CA, USA.*
- Feb.1997-Sept.1997: Temporary research and teaching assistant (ATER). Courses of applied mathematics for third year university student in physics. Large-scale ocean circulation and climate related research.  
*Laboratoire de Physique des Océans, Université de Bretagne Occidentale, Brest, France.*
- Oct.1996-Jan.1997: Last months of Ph.D. thesis scholarship: writing of thesis dissertation and research projects within the french contribution to the CLIVAR program, submission of related papers, research on the decadal oscillations mechanism in ocean thermohaline circulation models forced by constant surface buoyancy flux.  
*Laboratoire de Physique des Océans, Université de Bretagne Occidentale, Brest, France.*
- Jan.1995-Sept.1996: Research assistant with Pr. Andrew Weaver, as a compulsory french national service abroad ("cooperation"): simplified models of the ocean thermohaline circulation, comparison of momentum dissipation parameterizations, analysis of decadal variability in ocean models under constant flux forcing.

## **OCEANOGRAPHIC EDUCATION**

- Oct.1992-Dec.1994: Ph.D. thesis with Pr. Alain Colin de Verdière about the modelisation of the thermohaline circulation: development of simplified models based on planetary geostrophic equations with linear friction, in idealized geometry.  
*Laboratoire de Physique des Océans, Université de Bretagne Occidentale, Brest, France.*
- Oct.1991-Sept.1992: Diplôme d'Études Approfondies (M.Sc. level or first year graduate school) in Physical Oceanography, Université de Bretagne Occidentale, Brest, France. Honors: "Bien"; Rank: 1st of class. including a 3 months training period with Dr. Herlé Mercier about the analysis of the Romanche fracture zone hydrography: water masses from the Atlantic, hydraulic control, rate of topography-induced mixing.  
*Laboratoire de Physique des Océans, IFREMER, Brest, France.*

## **OTHER OCEANOGRAPHIC EXPERIENCE**

- June-July 2006: CTD chief operator and sampling aboard the German Research Vessel Maria S. Meriam for the third Ovide cruise from Lisbon to Greenland and Faroe.
- June-July 2004: Chief scientist for the French Research Vessel Thalassa cruise Ovide 2 realizing a hydrographic transect between Greenland and Portugal and currentmeter moorings deployment along the Greenland slope.
- June-July 2002: CTD operator and sampling aboard the French Research Vessel Thalassa cruise Ovide 1, a hydrographic transect between Greenland and Portugal.
- Jul.1997: NATO Advanced Study Institute "Modeling the earth's climate and its variability", 4 weeks, Les Houches, France.
- Apr.1997: European Geophysical Society annual meeting 1997, Vienna, Austria.
- Jul.1996: Summer School in Climate Modeling, organized by NCAR (J. Kiel, J. McWilliams) 2 weeks, Scripps Institution of Oceanography, San Diego.
- Jan.-Apr.1996: "Atmosphere-Ocean System" graduate course with Pr. Inez Fung, School of Earth and Ocean Sciences, University of Victoria, Victoria, Canada.
- May96: Canadian Meteorological and Oceanographic Society annual congress, May 27th-May 30th 1996, Toronto, ONT, Canada.
- Oct.1995: Climate Variability Group workshop, University of Victoria, October 20th 1995, Victoria, BC, Canada.
- May95: Canadian Meteorological and Oceanographic Society annual congress, May 29th-June 2nd 1995, Kelowna, BC, Canada.
- Feb.1995: NATO Advanced Study Institute on Decadal Climate Variability: Dynamics and Predictability. February 13th-24th 1995, Les Houches, France.
- June1994: Environmental Dynamics Summer School: The general circulation of the ocean, 2 weeks, Venice, Italy.
- Jan.-Mar.1993: CTD chief operator of a watch aboard the french research vessel Marion Dufresne CIVA1 cruise for WOCE 30°Est section across the Antarctic Circumpolar Current; plus water salinity measurements onboard during the last month. 3 months.
- Sept.1992: Geophysical and Environmental Fluid Dynamics Summer School, 2 weeks, Department of Applied Mathematics and Theoretical Physics, Cambridge, England.

## **TEACHING EXPERIENCE**

- 2001-2008: General Oceanography for last year engineering school students.  
*ISEN, Brest, France.*

- 2001, 2003: The ocean general circulation: forcing, stability, variability (master and graduate level).  
*Université de Bretagne Occidentale, Brest, France.*
- 1997: Applied mathematics for physicist, third year university level (96 hr).  
Teaching and research associate (ATER), *Université de Bretagne Occidentale, Brest, France.*
- 1994: 10 lectures for a general oceanography course at the Naval College, *Brest, France.*
- 1993: Teaching assistant for 'Numerical methods in oceanography' graduate course,  
*Université de Bretagne Occidentale, Brest, France.*

## ENGINEERING EDUCATION AND EXPERIENCE

- Sept.1988-Jun.1991: Engineer Diploma at the National Engineering School in Advanced Technologies ([Ecole Nationale Supérieure de Techniques Avancées](#), *Paris, France*) Specialty in marine environment and naval architecture (hydrodynamics and fluid mechanics; also a broad general knowledge in computer science, numerical and theoretical mathematics, mechanics, electronic and engineering).
- 3 years involvement in the school project for the design and building of a [catamaran](#) competing for the sailing speed record, as the vice-president of the association (with a \$500,000 budget), but also for research and numerical development in the computation of wing-profiles lift and drag using finite element methods.
- Oct.1990-Jun.1991: training period at Sedco Forex, Schlumberger (*Montrouge, France*) about semi-submersible oil-rig stability for a Marine Operations Manual upgrade.
- Jul.-Sept.1990: Summer courses in mechanics, fluid mechanics and philosophy, *Ole Miss University, Oxford, Mississippi, USA.*
- Jan.-Mar.1989: training period in the computer center of the French Institute for Marine Research (IFREMER, Brest, France): numerical cartography from multi-beam sonar data using cubic splines functions.
- Sept.1986-Jun.1988: scientific preparatory school for engineering school entry examination consisting mainly in mathematics, physics and chemistry.  
*Lycée Faidherbe, Lille, France.*
- Jun.86: French Baccalaureate C (Science). Honors: "Bien".  
*Lycée Jean Perrin, Lille, France.*

## CONTRIBUTIONS TO RESEARCH

### - Publications (peer review) -

- Sévellec, F., T. Huck, M. Ben Jelloul, and J. Vialard, 2008: Non-normal multidecadal response of the thermohaline circulation induced by optimal surface salinity perturbations. *Journal of Physical Oceanography*, submitted.
- Sévellec, F., T. Huck, M. Ben Jelloul, N. Grima, J. Vialard, and A. Weaver, 2007: Optimal surface salinity perturbations of the meridional overturning and heat transport in a global ocean general circulation model. *Journal of Physical Oceanography*, in press.
- Sévellec, F., M. Ben Jelloul, and T. Huck, 2007: Optimal surface salinity perturbation influencing the thermohaline circulation. *Journal of Physical Oceanography*, **37**, 2789-2808.
- Arzel, O., A. Colin de Verdière, and T. Huck, 2007: On the origin of interdecadal oscillations in a coupled ocean-atmosphere model. *Tellus A*, **59**, 367-383.
- Arzel, O., T. Huck and A. Colin de Verdière, 2006: The different nature of the interdecadal variability of the thermohaline circulation under mixed and flux boundary conditions. *Journal of Physical Oceanography*, **36**, 1703-1718.
- Cabanes, C., T. Huck, and A. Colin de Verdière, 2006: Contributions of wind forcing and surface heating to interannual sea level variations in the Atlantic Ocean. *Journal of Physical Oceanography*, **36**, 1739-1750.

- Sévellec, F., T. Huck, and M. Ben Jelloul, 2006: On the mechanism of centennial thermohaline oscillations. *Journal of Marine Research*, **64**, 355-392.
- Ben Jelloul, M., and T. Huck, 2005: Low-frequency basin modes in a two-layer quasi-geostrophic model in the presence of a mean gyre flow. *Journal of Physical Oceanography*, **35**, 2167-2186.
- Arzel, O., and T. Huck, 2003: Decadal oscillations in a simplified coupled model due to unstable interactions between zonal winds and ocean gyres. *Dynamics of Atmospheres and Oceans*, **37**, 245-270.
- Ben Jelloul, M., and T. Huck, 2003: Basin modes interactions and selection by the mean flow in a reduced-gravity quasigeostrophic model. *Journal of Physical Oceanography*, **33**, 2320-2332.
- Czaja, A., A. W. Robertson, and T. Huck, 2002: The role of Atlantic ocean-atmosphere coupling in affecting North Atlantic Oscillation variability. In: *The North Atlantic Oscillation: climatic significance and environmental impact*, J. W. Hurrell, Y. Kushnir, G. Ottersen, and M. Visbeck Eds., *AGU Geophysical Monograph Series*, **134**, 147-172.
- Huck, T., and G. K. Vallis, 2001: Linear stability analysis of the three-dimensional thermally-driven ocean circulation: application to interdecadal oscillations. *Tellus*, **53A**, 526-545.
- Huck, T., G. K. Vallis, and A. Colin de Verdière, 2001: On the robustness of the interdecadal modes of the thermohaline circulation. *Journal of Climate*, **14**, 940-963.
- Colin de Verdière, A., and T. Huck, 2000: A two degree of freedom dynamical system for interdecadal oscillations of the ocean-atmosphere. *Journal of Climate*, **13**, 2801-2817.
- Colin de Verdière, A., and T. Huck, 1999: Baroclinic instability: A wavemaker for oceanic interdecadal variability. *Journal of Physical Oceanography*, **29**, 865-892.
- Huck, T., A. Colin de Verdière, and A. J. Weaver, 1999: Decadal variability of the thermohaline circulation in ocean models. *Journal of Physical Oceanography*, **29**, 893-910.
- Huck, T., A. J. Weaver, and A. Colin de Verdière, 1999: On the influence of the parameterization of lateral boundary layers on the thermohaline circulation in coarse-resolution ocean models. *Journal of Marine Research*, **47**, 387-426.
- Huck, T., 1997: Modeling the large-scale ocean thermohaline circulation: analysis of its interdecadal variability. *Ph. D. thesis dissertation, Université de Bretagne Occidentale, Brest, France*, 250 p.

#### **- Internal publications -**

- Branellec P., A. Billant, and T. Huck, 2006: Campagne Ovide 2004 - Rapport de données CTD-O2. Rapport interne IFREMER DRO/DOPS/LPO/06-01, 304 p., Février 2006.
- Huck, T., 2005: Le Gulf Stream et son rôle sur le climat. In: Catalogue de l'exposition "Si le Gulf Stream s'arrêtait ?", Musée Maritime de l'Ile de Tatihou, Saint-Vaast-la-Hougue, France, 65-67.
- Bresch, D., T. Huck, and M. Sy, 2002: Circulation thermohaline et équations planétaires géostrophiques : propriétés physiques, numériques et mathématiques. *Annales Mathématiques Blaise Pascal*, **9**, 181-212.
- Huck, T., A. J. Weaver, and A. Colin de Verdière, 1996: The effect of different parameterizations and boundary conditions applied to the momentum equations in coarse-resolution thermohaline circulation models. *Laboratoire de Physique des Océans internal publication*.
- Huck, T., 1992: Étude des masses d'eau et de leur mélange dans la zone de fracture Romanche. *Université de Bretagne Occidentale and IFREMER, Brest, France*.
- Huck, T., 1991: Sedco 710 Marine Operations Manual, revision 1. *Sedco Forex, Schlumberger, Montrouge, France*, 500 pp.
- Huck, T., and J. L. Donnet, 1990: Optimisation de profils portants. *Ecole Nationale Supérieure de Techniques Avancées, Paris, France*.

#### **- Talks/Seminars/Posters -**

- 26 March 2001: Unstable modes of the ocean circulation. *EGS 2001, Nice, France*.
- 30 Nov. 2000: Decadal oscillations in a simplified coupled model due to unstable interactions

- between zonal winds and ocean gyres, T. Huck and O. Arzel.  
*AGU Chapman conference "The North Atlantic Oscillation", University of Vigo, Orense, Spain.*
- 26 Jan. 2000: On the influence of surface boundary conditions on idealized eddy-permitting ocean simulations, T. Huck and G. Vallis. *Ocean Sciences 2000, San Antonio, USA.*
  - 17 Sept. 1999: Interdecadal variability of the thermohaline circulation in ocean models: mechanism, robustness.  
*Lamont Doherty Earth Observatory, Columbia University, New York.*
  - 29 July 1999: Interdecadal variability in simple coupled models.  
*International Union of Geodesy and Geophysics, Birmingham, UK.*
  - 22 June 1999: Interdecadal variability of the thermohaline circulation in ocean models: mechanism, robustness.  
*NASA Goddard Space Flight Center, Lab. for Hydrospheric Processes, Greenbelt, MD.*
  - 10 March 1999: Interdecadal variability of the thermohaline circulation in ocean models: mechanism, robustness and comparison to observations.  
*GFDL lunchtime seminar, Princeton, NJ.*
  - 15 May 1998: Interdecadal variability of the thermohaline circulation: robustness to mesoscale turbulence and atmospheric forcing.  
*Laboratoire de Physique des Océans Seminar, IFREMER, Brest, France.*
  - 22 April 1998: Internal decadal modes of the thermohaline circulation: robustness to high resolution and realistic forcing.  
*European Geophysical Society annual meeting, Nice, France.*
  - 9 Feb. 1998: Interdecadal variability in ocean models: Robustness to eddy-resolving simulations and realistic coupling.  
*Ocean Science meeting, San Diego, CA.*
  - 28 Jan. 1998: Interdecadal variability of the ocean circulation.  
*Institute of Marine Sciences seminar, University of California, Santa Cruz, CA.*
  - 12 Dec. 1997: Interdecadal variability of the thermohaline circulation: a purely oceanic mechanism driven by baroclinic instability.  
*AGU fall meeting, San Francisco, CA.*
  - 24 July 1997: Inter-decadal variability of the thermohaline circulation: a purely oceanic mechanism driven by baroclinic instability?  
*"Modeling the Earth's climate and variability" NATO ASI, Les Houches, France.*
  - 16 June 1997: Decadal variability of the ocean circulation.  
*LODYC-IPSL seminars, Université Pierre et Marie Curie, Paris, France.*
  - 22 April 1997: The effect of momentum dissipation parameterizations in coarse resolution thermohaline circulation models.  
*EGS annual meeting, Vienna, Austria.*
  - 25 April 1997: Decadal variability of the thermohaline circulation in ocean models.  
*European Geophysical Society annual meeting, Vienna, Austria.*
  - 30 May 1996: Decadal variability in simplified models of the buoyancy driven ocean circulation.  
*Canadian Meteorological and Oceanographic Society annual congress, Toronto, Canada.*
  - 14 Nov. 1995: The role of momentum dissipation in coarse-resolution models of the thermally driven ocean circulation.  
*Center for Earth and Ocean Research annual research workshop, Victoria, BC, Canada.*
  - 20 Oct. 1995: Decadal variability in simplified models of the thermally driven ocean circulation: sensitivity to sub-grid scale parameterizations.  
*Climate Variability Group workshop, University of Victoria, Victoria, BC, Canada.*
  - 31 May 1995: The effect of momentum dissipation parameterizations in thermohaline circulation models using the Planetary Geostrophic equations.  
*Canadian Meteorological and Oceanographic Society annual congress, Kelowna, BC, Canada.*
  - 10 March 1995: On a thermohaline circulation model using planetary geostrophic equations with Rayleigh friction.  
*School of Earth and Ocean Sciences, University of Victoria, Victoria, BC, Canada.*

## HOBBIES

- Diving instructor (CMAS \*\*, MF1 #9106 FFESSM), regular swimmer and freediver.
- Skipper of sailing boats for cruises and races ('sailing master' diploma).
- First-aid certifications (AFPS 1992, SST 2007), radio and motor-boats french licenses.

## REFERENCES

- Pr. Alain Colin de Verdière, Ph.D. advisor <acolindv(at)univ-brest.fr>  
Laboratoire de Physique des Océans  
Université de Bretagne Occidentale  
UFR Sciences, B. P. 809, 29285 Brest cedex, France  
Tel: (+33) 298-016224 - Fax: (+33) 298-016468
  - Dr. Herlé Mercier <herle(at)ifremer.fr>  
Laboratoire de Physique des Océans  
IFREMER, BP 70, 29280 Plouzané, France  
Tel: (+33) 298-224286 - Fax: (+33) 298-224496
  - Pr. Geoffrey Vallis <gkv(at)gfdl.gov>  
GFDL / Princeton University AOS  
Forrestal campus, Route 1  
Princeton, NJ 08542, USA  
Tel: (609) 452-6528 - Fax: (609) 987-5063
  - Pr. Andrew J. Weaver <weaver(at)ocean.seos.uvic.ca>  
School of Earth and Ocean Sciences  
University of Victoria, P. O. Box 3055  
Victoria, BC, V8W 3P6, Canada  
Tel: (250) 472-4001 - Fax: (250) 472-4004
  - Dr. Jérôme Paillet <paillet(at)shom.fr>  
Centre Militaire d'Océanographie  
Service Hydrographique et Océanographique de la Marine  
B. P. 426, 29275 Brest cedex, France  
Tel: (+33) 298-221793 - Fax: (+33) 298-221864
- 

updated 14mar2008