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## Research engineer in scientific calculation and mathematical modelling

### Skills

*Geophysical fluid dynamics:* ocean and atmospheric circulation and climatology

*Numerical modelling:* NEMO, Apecosm, Ichthyop, Osmose, Eco3M, LPJml.

*Mathematics:* statistical analysis, algorithmics, data processing.

*Computing:* Python, NCL, Matlab, R, Fortran, Java, C/C++, Linux/Unix.

*Languages:* French (mother tongue), English (fluent), German and Dutch (notions).

### Professional experience

*Since April 2017: Research engineer in numerical modelling applied to the study of marine ecosystems.* IRD, UMR-Marbec (Sète, France).

*2015-2017: Research engineer in scientific calculation and mathematical modelling* for the Laboratory of Excellence OT-Med (Aix en Provence, France).

*2014-2015 : Research and teaching assistant at the Mediterranean institute of Oceanography* (Marseille, France).

*2014 (3 months) : Research fellow at the University of Cape Town* (South Africa). Supervisors: J. Deshayes (LPO), A.M Treguier (LPO) and C. Cassou (Cerfacs).

*2010-2013: Research fellow at LPO Ifremer* (Brest, France). Supervisors: A.M. Treguier (LPO), C. Cassou (Cerfacs) and J. Deshayes (LPO) on the PhD subject « Variability of ocean circulation in the North-Atlantic in relation with atmospheric weather regimes ».

*2010 (6 months): Research assistant at Massachusetts Institute of Technology* (Boston, USA). Supervision: Professor J. Marshall and D. Ferreira.

*2009 (3 months): Junior surveyor for Boskalis* (Papendrecht, Pays-Bas) on the Nassau (Bahamas) harbor extension project.

*2007-2008 (160 hours): Guide at Oceanopolis* (Brest, France), one of the largest French aquarium dedicated to the marine flora and fauna.

### Training

*2013: PhD in Physical Oceanography* of the “Université de Bretagne Occidentale” (Brest, France). With honors.

*2010: Engineering degree in “Hydrography-Cartography”* (FIG-OHI-ACI cat. A) of the “ENSTA-Bretagne” (ex-ENSIETA, Brest, France).

*2010: Master degree in « Physics of the oceans and of the atmosphere »* of the “Université de Bretagne Occidentale”. With honors.

## Summer school

06/2011: « Alpine Summer School: On Regional Climate Dynamics in the Mediterranean and beyond: An Earth System perspective », Valsavarenche (Italy).

## Publications

**Barrier, N.**, A.A. Petrenko, Y. Ourmières, 2016: Strong intrusions of the Northern Mediterranean Current on the eastern Gulf of Lion: insights from in-situ observations and high resolution numerical modelling. *Ocean Dynamics*, 1-15.

**Barrier, N.**, Treguier, A.M., Cassou, C. and Deshayes, J., 2014: Influence des régimes de temps atmosphériques sur la circulation océanique de l'Atlantique Nord. *La Météorologie*, 87, 38-44.

**Barrier, N.**, Deshayes, J., Treguier, A.M. and Cassou, C., 2014: Heat budget in the North Atlantic subpolar gyre: Impacts of atmospheric weather regimes on the 1995 warming event. *Progress in Physical Oceanography*, 130, 75,90.

Treguer P., E. Goberville, **N. Barrier**, S. L'Helguen, P. Morin, P. Rimelin-Maury, M. Czamanski, E. Grosstefan, T. Cariou, 2014: Interannual variability of physical and chemical parameters of coastal waters of western Europe during winter in relation with river inputs and climate variability. *Journal of Marine Systems*, 139, 79-90.

**Barrier, N.**, Cassou, C., Deshayes, J., and Treguier, A.M., 2014: Response of north Atlantic ocean circulation to atmospheric weather regimes. *Journal of Physical Oceanography*, 44:179-201.

**Barrier N.**, A.M. Treguier, C. Cassou, and J. Deshayes, 2012: Impact of the winter north-atlantic weather regimes on subtropical sea-surface height variability. *Climate Dynamics*.

Hill, C., D. Ferreira, J.-M. Campin, J. Marshall, R. Abernathey and **N. Barrier**, 2012: Controlling spurious diapycnal mixing in eddy resolving height-coordinate ocean models - insights from virtual deliberate tracer release experiments. *Ocean Modelling*, 45-46, 14-26.

## Scientific communications

04/2012 : « Impact of winter weather regimes on North-Atlantic Ocean Circulation ». Session orale à l'EGU, Vienne (Autriche).

04/2012 : « Impact of opening of the Central America Seaway on climate in a coupled atmosphere-ocean-sea-ice model ». Poster à l'EGU, Vienne (Autriche).

01/2011 : « Weather regimes impact on North-Atlantic Ocean circulation in a 1/2 North Atlantic configuration with closed boundaries ». Session orale au meeting Drakkar, Grenoble (France).

07/2011 : « A basin-scale statistical-dynamical downscaling to estimate the response of the Atlantic Meridional Overturning Circulation to climate change ». Poster au meeting RAPID, Bristol (Angleterre).