SORBONNE UNIVERSITÉ
CRÉATEURS DE FUTURS DEPUIS 1257

Laboratoire d'Océanographie et du Climat
Expérimentations et approches Numériques

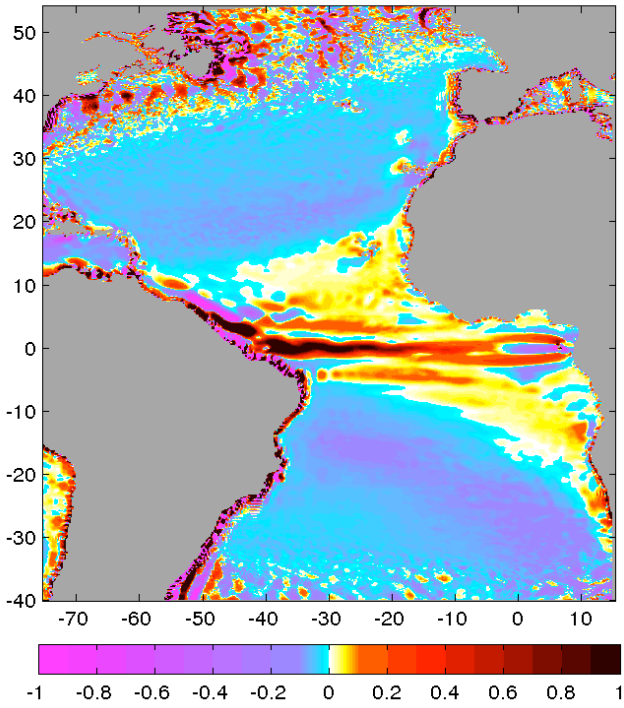
The LOCEAN-IPSL Laboratory seeks applicants for a PhD position:

Assessment and reconstruction of the large-scale vertical velocities field of the global open ocean thermocline

Subject :

The ocean vertical velocity cannot be directly measured by actual sensors, yet it is one of the most fundamental quantities for understanding the ocean functioning, in all aspects ranging from physics to biochemistry and biology. It remains one of the longest-term observational unknown. We hence propose to use recent evidences of the high degree of validity of the linear vorticity equilibrium (LVB), at large spatio-temporal scales, in order to work at a project of reconstruction of the global thermocline vertical velocity field ***w***(x,y,z). In a first part, OGCM simulations will serve as reference for a systematic identification and rationalization of the degree and regions of validity of the LVB and accuracy of the reconstructed ***w***. Errors in the reconstruction will be interpreted in the light of geophysical fluid dynamics equations.

The second part will be devoted to reconstruction from observations. The candidate will generate estimates of w(z) using ARGO-derived current climatology and satellite measurements of sea surface height and wind stress, as upper boundary conditions. Divergence from current-meters measurements, and biogeochemical tracers distribution climatologies could provide ways of validating the results in some specific areas.



Time-mean ***w*** at 100m depth in a DRAKKAR OGCM Atlantic simulation (m/day))

Advisor:
Dr. Alban Lazar, LOCEAN-IPSL, Sorbonne University, Paris
Co-advisors:
Dr. Rémi Tailleux, Associate Professor, Department of Meteorology, University of Reading,
Dr. Diana Ruiz-Pino and Dr G. Madec, LOCEAN-IPSL, Sorbonne University, Paris
Dr A. Colin de Verdière, LOPS, Université de Bretagne Occidentale

Conditions:
The candidate shall have a Master in physical oceanography or meteorology.
Position is for 3 years. Salary is about €1700 before tax (1400 net, including health insurance). University and transportation fees are low.
Benefits: free university health care, free sports and arts classes, free science and language classes

Bibliography :
Colin de Verdière, A. and M. Ollitrault, 2016. Gray, A. R., and S. C. Riser, 2014. Ndoye, S., P. Estrade, and A. Lazar, 2011 (Master thesis). Roquet, F., Wunsch, C., & Madec, G., 2011. Wunsch, C., 2011

Applications will be considered until *Mai 15, 2020*
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