

PERSONAL INFORMATION

Nathalie Verbrugge



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Sex F | Date of birth 27/04/1974 | Nationality French

WORK EXPERIENCE

Since 2023

Head of the "In situ & Composites" Department of the Environmental Business Unit, CLS.

In situ data (temperature, salinity and currents), data fusion techniques 2D and 3D, mean dynamic topography,

- Human Management
- Business development, prospection & proposal management
- Technical & scientific supervision
- Project leader

Since 2018

Scientist Executive in the "In situ & Composites" Department of the Environmental Business Unit, CLS.

Involved in different European projects (proposals, budget, partners negotiation, development and studies, project leader):

Copernicus Marine Service – Insitu TAC:

- In charge of the CLS response and deliveries for the TAC Insitu (Thematic Assembly Center – Ifremer is project leader) of Copernicus Marine Service - CLS expertise: In situ observations of surface current drifters and ocean temperature and salinity profiles.
- "Product quality" coordinator
- "Ocean currents product and associated Service Evolution" coordinator.

In charge of data service contracts: Validation/qualification of observed in situ temperature and salinity data by comparison with altimetry (Argo international program) and operational delivery of in situ validated data.

ESA Projects:

- 2020-2021: Project manager for the **Digital Twin Ocean precursor** project – Novel Deep Learning approach to forecast Marine Heatwaves.
- 2022-2024: Project manager for the **CareHeat** project – 4D marine heatwaves reconstruction with Machine learning approach.

Continuous expertise work: on a multi-observations composite 3D physical ocean product (**TAC multi-observations of Copernicus Marine Service** [MOB-TAC]) and the expertise on the quality of the temperature and salinity in-situ profiles. Product quality coordinator for the MOB-TAC.

Since 2012

Scientist Executive in the "In situ & Composites" Department of the Environmental Business Unit, CLS.

Expertise on the quality of the temperature and salinity in-situ profiles, validation/analysis of the content of the remote (SST) and in-situ datasets. Works done for the French Research Institute for Exploitation of the Sea (Ifremer) and the French Operational Oceanography Centre (Mercator-Ocean)

Expertise on the validation of the ocean models (scope of development of a Fisheries and Environment Monitoring Center in Indonesia). Responsible of the technical specifications, monitoring and qualification of the software developments, test review, project documentation.

Expertise Eddies&Fronts (SHOM, APMB (Fisheries Ministry Vietnam)

Training: April 2013: 15-day training session in Vietnam on oceanographic topics / May-July 2014: 8-week training session of 3 Indonesian trainees

Expertise on a multi-observations composite 3D physical ocean product and responsible of the quality of this product in the frame of the Copernicus Marine Environment Monitoring Service (upgrade, production, validation, project documentation).

From 2009 to 2012 **Scientist Executive in the Operational Oceanography Department of the Space Oceanography Division (DOS), CLS**

Oceanographic studies (improvement of the atmospheric forcings for the Mercator-Ocean ocean models, ocean currents quarterly bulletin for some fisheries customers, development of an improved methodology for estimating the thermocline.

Expertise on the quality of the temperature and salinity in-situ profiles, validation/analysis of the content of in-situ delayed-mode datasets. Works done for the French Research Institute for Exploitation of the Sea (Ifremer) and the French Operational Oceanography Centre (Mercator-Ocean)

Eddies&Fronts expertise (SHOM).

From 2001 to 2009 **Scientist Executive in the Operational Oceanography Department of the Space Oceanography Division (DOS), CLS. Sub-contractor Mercator-Océan.**

The post is part of a team working on the Mercator ocean forecast project. It consists on the development of the Mercator re-analyses validation tools as well as the real-time validation of the different Mercator operational configurations from in-situ temperature and salinity observations, and other remote datasets.

Editing of the specifications and setup of a real-time validation for different MERCATOR operational configurations.

Editor-in-chief and participation in the writing of the scientific MERCATOR Newsletter.

EDUCATION AND TRAINING

From 2001 to 2022 **Several trainings:** technical languages (fortran, python), english, personal development, project leader

From 1997 to 2001 **Physical Oceanography Thesis: "Contribution of horizontal advection to recent sea surface temperature variability in the North Atlantic Ocean"**

Paul Sabatier University (UPS) – LEGOS/OMP - Toulouse III

From 1996 to 1997 **DEA Ocean, Atmosphere, Biosphere**

Paul Sabatier University (UPS) – Toulouse III - France

From 1995 to 1996 **"Maîtrise de Physique" (Earth Sciences option)**

Université des Sciences & Technologies de Lille - Lille I University - France

PERSONAL SKILLS

Mother tongue(s) French

Other language(s) English: Good Technical level (reading, writing, speaking)
Spanish: Basic (school-level knowledge)

Management skills Response to calls for tenders
Project management
Supervision of subcontractors
Ability to mobilize a team around common goals
Team manager

Thematic knowledges	Deep knowledge in physical oceanography, in-situ and satellite observations of the ocean. Basic knowledge in oceanic modelisation.
Communication skills	Participation in project and scientific meetings (oral presentation & posters) Training experience given on oceanography Project documentations
Technical skills	OS [Linux, Windows], Languages [Python, Fortran, IDL], scripts [Bash shell, NCO] Data analysis (Basic statistics, more advanced algorithms (optimal interpolation, filtering, principal modes decomposition, spectral analysis,...), basic knowledge of deep and machine learning) Knowledge of operational IT project management (design, development, qualification (QT, QO), software deployment, JIRA, interface with dev ops, management of evolutions and maintenance in operational condition)
Driving licence	Yes (B)

ADDITIONAL INFORMATION

Publications

Buongiorno Nardelli, B., Guinehut, S., Verbrugge, N., Cotroneo, Y., & Zambianchi, E. (2017). Southern Ocean mixed layer seasonal and interannual variations from combined satellite and in situ data. *Journal of Geophysical Research: Oceans*, 122, 10042-10060. <https://doi.org/10.1002/2017JC013314>.

Drevillon M., R. Bourdalle-Badie, C. Deval, Y. Drillet, J.-M. Lellouche, E. Rémy, B. Tranchant, M. Benkiran, E. Greiner, S. Guinehut, N. Verbrugge, G. Garric, C.-E. Testut, M. Laborie, L. Nouel, P. Bahurel, C. Bricaud, L. Crosnier, E. Dombrowsky, E. Durand, N. Ferry, F. Hernandez, O. Legalloudec, F. Messal & L. Parent, 2008: The GODAE/Mercator-Ocean global ocean forecasting system: results, applications and prospects, *Journal of Operational Oceanography*, Vol1, n°1, ISSN1755-876X.

Drevillon M., Y. Drillet, G. Garric, J.-M. Lellouche, E. Rémy, C. Deval, R. Bourdallé-Badie, B. Tranchant, M. Laborie, N. Ferry, E. Durand, O. Legalloudec, P. Bahurel, E. Greiner, S. Guinehut, M. Benkiran, N. Verbrugge, E. Dombrowsky, C.-E. Testut, L. Nouel, F. Messal, 2006: The GODAE/Mercator global ocean forecasting system: results, applications and prospects, *Proceedings of the World Maritime technology conference*.

Verbrugge N., & G. Reverdin, 2003: Contribution of Horizontal Advection to the Inter-annual Variability of Sea Surface Temperature in the North Atlantic. *J. Phys. Oceanogr.*, 33 (5), 964 - 978.

Verbrugge N., 2002: Characteristics of water masses: re-analyses data compared with in situ observations. *Mercator Newsletter*, n° 6, July 2002, 1 - 7.

Verbrugge N. & G. Reverdin, 2002: Contribution of horizontal advection to the inter-annual variability of sea surface temperature in the North Atlantic. To be published in *J. of Phys. Oceanogr.*

Verbrugge N. & E. Greiner, 2002: In situ : premières confrontations systématiques. *Lettre Trimestrielle Mercator*, n° 4, janvier 2002, 11 - 16.

Verbrugge N., 2002 : Masses d'eau caractéristiques : la ré-analyse confrontée aux observations in situ. *Lettre Trimestrielle Mercator*, n° 6, juillet 2002, 1 - 7.

Reverdin G., N. Verbrugge, & H. Valdimarsson, 1999: Upper ocean variability between Iceland and Newfoundland 1993 - 1998. *J. Geophys. Res.*, 104, 29, 599-29, 611.