CURRICULUM VITAE

Personal Profile

Dr. Ye Liu
FoUo (Research & Development, oceanography)
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Educational Background

1999-2003 B.S.: Mathematics and Applied Mathematics, Hebei University of Science and Technology.

2003-2006 M.S.: Physical oceanography, Institute of Oceanology, Chinese Academy of Sciences, China.

The M.S. thesis: *Application of the oceanic composites' dielectric property to the ocean remote sensing*

2006-2009 Ph.D: Geophysical fluid dynamics, Institute of Atmospheric Physics, Chinese Academy of Sciences (CAS), China.

The Ph.D thesis: *Application of recursive filter to the ocean data assimilation*

Research interests

Data assimilation method
Physical and biogeochemical numerical modelling
Biogeochemical cycles
Climate change

Professional Career

Employment:

2014 ~ present project leader at SMHI
2012 ~ present research scientist at SMHI (permanent)
2010 ~ 2012 Postdoc at SMHI.
2009~ 2010 Research Scientist at National Marine Environmental Forecasting Center, State Oceanic Administration, China.

Others:

2017.7 visiting scientist at Hong Kong University of Science and Technology
2007-2008 Graduate Student Visitor at Danish meteorological institute.
2006-2009 Research Assistant, Institute of Atmospheric Physics, CAS.
2003-2006 Research Assistant, Institute of Oceanology, CAS.

Recent major achievements

***At SMHI*:**

Developed the ***first*** biogeochemical reanalysis system for the Baltic Monitoring Forecasting Centre (BAL MFC).

Updated the operational forecast system with advanced data assimilation method at SMHI.

Firstly assimilated the oxygen and nutrient profiles into model to improve the biogeochemical simulation in the Nordic region.

Constructed the first biogeochemical reanalysis dataset for the Baltic Sea, then reproduce the BIO dataset with the updated reanalysis system (updated model and data assimilation method, observations, time-scale) which has been delivered to the CMEMS as the ***unique*** Baltic BIO reanalysis product.

Produced the long time-scale Baltic PHY reanalysis product based on NEMO and LSEIK for CMEMS (V4), which is used to replace the old BAL PHY RAN product.

Evaluated the impact of the satellite SST observation for long time scale forecast in the Baltic Sea, especially for the SST-related variables forecast.

Involved in the BAL MFC Annual Activity Report (AAR).

Did the ***first*** Baltic nutrient transports and budget analysis using 3D coupled physical and biogeochemical dynamic model.

Awarded project fund from Swedish Space board(**PI**, Grant no. 172/13, 2849000SEK, 2014)

***Others*:**

Updated IAP OVALS data assimilation system using recursive filter, which significantly improved the calculation efficiency of the OVALS system.

Implemented the updated OVALS data assimilation system at:

NEMFC, DMI and

Institute of Atmospheric environment, the General staff of the Chinese People's Liberation Army.

Recent research projects

2016-2019: Copernicus biogeochemical reanalysis of the Baltic Sea funded by EU-FP7

2014-2018: Assimilating SLA and SST in an operational ocean forecasting mode for the North Sea and Baltic Sea using satellite observations and different methodologies founded by Swedish Space board (**PI**).

2015: Cyanobacteria life cycles and nitrogen fixation in historical reconstructions and future climate scenarios (1850-2100) of the Baltic Sea" funded by Swedish Research Council.

2014-2016: Estimating nitrogen fixation in past and future climates of the Baltic Sea by Swedish Research Council.

2013-2014: Reanalysis of the Baltic Sea (Myocean2) funded by EU-FP7.

2013: Standard analysis of the Baltic Sea with NEMO founded by EU-FP7(**PI**).

2010-2012: Impact of changing climate on circulation and biogeochemical cycles of the integrated North Sea and Baltic Sea system funded by the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS).

Miscellaneous

- Specially invited expert of CETC Ocean Information and Technology Co., Ltd.
- Member of Copernicus Marine Environment Monitoring Service (CMEMS, http://marine.copernicus.eu/) biogeochemical data assimilation expert group which has two members in the Baltic region.
- Member of the data assimilation group of Baltic Monitoring Forecasting Centre.
- Member of CMEMS Baltic PQ (product quality) group.
- The chief ocean data assimilation expert at SMHI.

Peer Review

I mainly peer-reviewed manuscripts for the scientific journals: Journal of Geophysical Research-ocean, Ocean Science, Ocean Dynamics, Tellus-A and so on.

Scientific Publications

20. **Liu Y.** and L. Axell Multi-year consistent reanalysis of physical and biogeochemical variables in the Baltic Sea during the period 1993-2016, 2018 (To be submitted to JGR-ocean).

19. **Liu Y** and L. Axell. Reconstruction of temperature and salinity using data assimilation in the Baltic Sea during the period 1993-2016, 2018, (to be submitted to ocean modelling).

18. **Liu Y.,** Xie J.P., Liu Z.Q. Gan J.P. and Zhu J.: Assimilating temperature and salinity into a coupled estuary and shelf modelling system, 2018 (To be submitted to JGR).

17. **Liu Y**. and Fu W.W. Assimilating high-resolution sea surface temperature improves ocean forecast in the Baltic Sea. 2018 (Submitted to ocean science, in review)

16. Robinson H., L. Axell, A. Höglund, C. Dieterich, F. Fransner, M. Gröger, **Y. Liu**, P. Pemberton, S. Schimanke, H. Andersson, and et al. 2018 Nemo-Nordic: A NEMO based ocean model for Baltic & North Seas, research and operational applications. (Submitted to Geoscientific Model Development, minor revison).

15. Meier M. H.E., K. Eilola, E. Almroth-Rosell, S. Schimanke, M. Kniebusch, A. Höglund, P. Pemberton, **Y. Liu**, G. Väli, and S. Saraiva: 2018 Disentangling the impact of nutrient load and climate changes on Baltic Sea hypoxia and eutrophication since 1850. (Submitted to Climate Dynamics, minor revison)

14. Dieterich C, S. Wang, S. Schimanke, M. Gröger, B. Klein, R. Hordoir, P. Samuelsson, **Y. Liu**, L. Axell, A. Höoglund, and H. E. M. Meier. Surface Heat Budget over the North Sea in Climate Change Simulations. (Submitted to Climate Dynamics, 2018, in revison).

13. **Liu Ye.**, H.E. Markus Meier, Eilola Kari. 2017. Nutrient transport in the Baltic Sea - results from a 30-year physical-biogeochemical reanalysis. Biogeosciences, 14, 2113-2131.

12. Simona Simoncelli, S. Masina, L. Axell, **Y. Liu**, S. Salon, G. Cossarini, L. Bertino, J. Xie, A. Samuelsen, B. Levier, G. Reffray, E. O'Dea, R. McEwan, T. Kristiansen. 2016, MyOcean regional reanalysis: overview of reanalysis system and main results. Mercator ocean Journa, 43-62.

11. Axell Lars and **Liu Ye,** 2016: Application of 3-D ensemble variational data assimilation to a Baltic Sea reanalysis 1989-2013. Tellus A, **68**, 24220, http://dx.doi.org/10.3402/tellusa.v68.24220.

10. **Liu Ye**, H.E. Markus Meier, Eilola Kari. 2014. Improving multi-annual high-resolution modelling of biogeochemical cycling in the Baltic Sea by using data assimilation. Tellus A, 66, 24908, http://dx.doi.org/10.3402/tellusa.v66.24908.

9. **Liu Ye**, H.E. Markus Meier, Axell Lars. 2013. Reanalyzing temperature and salinity on decadal time scales using the Ensemble Optimal Interpolation data assimilation method and a 3D ocean circulation model of the Baltic Sea. Journal of Geophysical research: ocean, 118, 5536–5554, doi:10.1002/jgrc.20384.

8**. Liu Ye**, Zhao Yanling. 2011. Assimilation of temperature and salinity using isotropic and anisotropic recursive filter in Tropic Pacific. Acta oceanologica sinica, 30, 15-23.

7. **Liu Ye** and Yan Changxiang, 2010. Application of a recursive filter to a three dimensional variational ocean data assimilation system. Advance of Atmospheric Sciences, 27(2), 293-302.

6. **Liu Ye,** Jiang Zhu, Jun She, Shiyu Zhuang, Weiwei Fu, Jidong Gao, 2009. Impacts of assimilating ocean profile observations using a isobath-following recursive filter on ocean forecasting in North Sea/Baltic Sea. Ocean modelling, 30, 75-87.

5. **Liu Ye** and Li Zhi, 2008. Effective AC and DC Responses of Nonlinear Composites at Higher Concentration. Commun. Theor. Phys. 49, 231–234.

4. Wei Enbo and **Liu Ye,** 2007. Application of effective medium approximation theory to ocean remote sensing under wave breaking. Sci China Ser D-Earth Sci. 50, 474-480.

3. **Liu Ye,** Wei Enbo**,** 2007. Application of effective medium approximation theory to ocean remote sensing under wave breaking. Sci China Ser D-Earth Sci. 2, 282-288.(in Chinese)

2**. Liu Ye** , Wei En-Bo , Hong Jie-Li and Ge Yong, 2006. Microwave Backscattering from the Sea Surface with Breaking Waves. Chinese Physics. 15(9), 2175-2179.

1**. Liu Ye**, Liang Fang-Chu, and Shen Hong-Liang, 2005. Effective Response of Nonlinear Composite under External AC and DC Electric Field, Commun. Theor. Phys., 44 , 731-734.

Selected other presentations

Ye Liu and Jiang Zhu: Application of recursive filter to ocean data assimilation. 5th AOGS, Busan, Korea, Jun. 16~20, 2008. (***invited talk***)

Ye Liu, H.E. Markus Meier, Eilola Kari: Improving multi-annual high-resolution modelling of biogeochemical cycling in the Baltic Sea by using data assimilation, Nov 11., XMU, 2014. (***invited talk***)

Ye Liu, H.E. Markus Meier, Eilola Kari: Modeling the Biogeochemical Cycles in the Baltic Sea by Data Assimilation, 14th CAS-TWAS-WMO Forum on Coupled Data Assimilation Symposium, Beijing, 5-8 July 2015. (***invited talk***)

Ye Liu: Improving the high-resolution modelling of biogeochemical cycles in the Baltic Sea by using data assimilation, OCEAN_HK, HKUST, Feb 26-Mar.3, 2017. (***invited talk***)

Ye Liu: Data assimilation for the regional physical and biogeochemical modelling, CETC Ocean Information and Technology Co., Ltd., Beijing, Oct.10, 2016. (***invited talk***)

Jiang Zhu, **Ye Liu**, Jiping Xie: Test and setup methodology for implement data assimilation scheme in the coupled estuary and shelf modelling system: Successful assimilating T and S obs, OCEAN_HK, HKUST, Mar.4-7, 2018. (***invited talk***)

Ye Liu, Axell Lars, H.E. Markus Meier. Reanalyzing physical and biogeochemical variables on long time scales using a 3D ocean circulation model of the Baltic Sea. 8th Baltic Sea Science Congress, St.Petersburg, Russia, Aug. 22-26, 2011

Ye Liu, Markus Meier and Lars Axell: Reanalyzing Temperatures and Salinities on Long Time Scales Using a 3D Ocean Circulation Model of the Baltic Sea, 4th WCRP International Conference on Reanalyses, Maryland, USA; May 7-11, 2012.

Ye Liu. A decadal time scale biogeochemical simulation in the Baltic Sea using EnOI data assimilation, CLIVAR conference, Qingdao, Sep. 18-25, 2016.

Ye Liu: Multi-year consistent reanalysis of physical and biogeochemical variables in the North Sea and Baltic Sea. 5th International Conference on Reanalysis, ROMA, Nov. 11-17, 2017.

Ye Liu Impacts of assimilating the high resolution sea surface temperature on ocean forecast in North/Baltic Sea. EO4Baltic workshop, FMI, Jan. 31, 2017.

Ye Liu, Lars Axell: Reanalysis Development and Production. Copernicus workshop, Helsinki, Mar.20-22, 2017

Las Axell, **Ye Liu**: Ensemble-based data assimilation of observations into NEMO-Nordic, EuroGOOS, Bergen, Norway, Oct. 3-5, 2018.