

# Curriculum Vitae

## PERSONAL INFORMATION

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## RESEARCH INTERESTS

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Numerical modeling of ocean circulation; Data assimilation into ocean models by using advanced data assimilation tools; Physical-biological coastal processes; Coastal and open ocean dynamics; Tracking oil spill trajectory by numerical models; Processing and analyzing large data set using advanced statistical tools; Influence of bottom topography to ocean circulations.

## EDUCATION

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2006-2011 **Ph.D in Physical Oceanography**  
Department of Marine Science, the University of Southern Mississippi  
(USM), Stennis Space Center, MS, USA  
2003-2006 **M.S. in Physical Oceanography**  
Ocean University of China / First Institute of Oceanography, Qingdao, P.  
R. China  
1999-2003 **B.S. in Physical Oceanography**  
Ocean University of China, Qingdao, P. R. China

## WORK EXPERIENCE

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2014-now **Post-doctoral Research Scholar**, Harbor Branch Oceanographic Institute,  
Florida Atlantic University, FL  
Supervisor: Prof. Mingshun Jiang

- 2011-2014 **Post-doctoral Research Scholar**, Ocean Circulation Group, College of Marine Science, University of South Florida, FL  
Supervisor: Prof. Robert H. Weisberg
- 2006-2011 **Research Assistant**, Department of Marine Science, the University of Southern Mississippi (USM), Stennis Space Center, MS  
Supervisor: Prof. Dmitri Nechaev

## PUBLICATIONS

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- Pan, C., Weisberg, R. H., Zheng, L., Liu, Y., Merz, C. R., 2014. Ensemble assimilation of High-Frequency Radar observations into the Finite Volume Coastal Ocean Model, to be submitted.
- Pan, C., Zheng, L., Weisberg, R. H., Liu, Y., Lembke, C. E., 2014. Comparisons of different ensemble schemes for glider data Assimilation on West Florida Shelf. *Ocean Modelling* 81, 13-24.
- Pan, C., Yaremchuk, M., Nechaev, D., 2011. Variational assimilation of glider data in the Monterey Bay. *Journal of Marine Research* 69 (2-3), 331-346.
- Yaremchuk, M., Nechaev, D., Pan, C., 2011. A hybrid background error covariance model for assimilating glider data into a coastal ocean model. *Monthly Weather Review* 139(6), 1879-1890.
- Pan, C, Nechaev, D., and Panteleev, G., 2009. A preliminary study of the influence of regional winds on Bering Strait transport. *OCEANS 2009, MTS/IEEE Biloxi-Marine Technology for Our Future: Global and Local Challenges*. IEEE, 1-3.
- Pan, C., Yu, F., Zhang, Z.X., Guo, J.S., 2007. Application of LOESS four-dimensional objective analysis to the China Sea. *Advances in Marine Science* 25 (2), 149-159.

## NUMERICAL SKILL

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- Numerical Models: 3 years of application of Finite Volume Coastal Ocean Model (FVCOM).  
3 years of application of Navy Coastal Ocean Model (NCOM).  
1 year of application of Princeton Ocean Model (POM).
- Data Assimilation: 3 years of 3 dimensional variational data assimilation (3D-VAR) for Ph.D..  
2 years of Ensemble Kalman Filter (EnKF) / Ensemble Optimal Interpolation (EnOI) for Post-Doctoral Research.
- Atmospheric Model: 3 years of application of Coupled Ocean and Atmospheric Mesoscale Prediction System (COAMPS).
- Matlab: 12 years of Matlab programming experience starting from bachelor study.

Fortran: 12 years of Fortran programming experience starting from bachelor study.  
Surfer: 9 years of Surfer application for oceanic data graphics starting from graduate study.  
Linux: 5 years of experience on Linux for NCOM and FVCOM programming.  
ODV (ocean data view): 10 years of ODV application on oceanic data graphics.  
GMT (the Generic Mapping Tools): 6 year of GMT application on oceanic data graphics.

## RESEARCH EXPERIENCE

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1. Simulate regional circulation around West Florida Shelf using Finite Volume Coastal Ocean Model (FVCOM) nesting with Global HYCOM. This is a project funded by BP/Deep-C Consortium. In this study, we examine the local upwelling events caused by wind and topography on April 20 – May 4 in 2010, which corresponds to the initial stage of the Deepwater Horizon oil spill in the Gulf of Mexico. We found that the model alone is not enough to resolve the local upwelling events in detail, hence, we assimilate Slocum glider and High Frequency Radar observations into the FVCOM. The assimilation part of the project is accomplished and the next step is to simulate and analyze the impact of the upwelling events to the fate of surface oil. This step is still ongoing. The assimilation scheme being used in this study is the ensemble Kalman Filter (EnKF) (2011-now).
2. Investigate the interaction between Monterey Bay Eddy, California Current and California Undercurrent by apply a 3-dimensional variational data assimilation (3D-VAR) into Navy Coastal Ocean Model (NCOM). In this study, temperature and salinity profiles observed by Spray and Slocum gliders in the Monterey Bay in August 2003 are assimilated into NCOM model in the framework of a 3D-VAR scheme with a hybrid background error covariance (BEC) representation. The NCOM model with 3D-VAR system is able to mimic the local dynamical features, including onshore-offshore translation of the Monterey Bay Eddy during upwelling and relaxation events, coastal upwelling and respective upwelling filaments, the appearance of California Undercurrent (2007-2011).
3. Determine the role of the wind in the Chukchi and Bering Sea in the controlling transport through the Bering Strait by calculating primary EOFs of wind time series (2006-2007).

## CONFERENCES PRESENTATIONS/ABSTRACTS

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- Weisberg, R. H., Pan, C., Zheng L., 2013. Initial Results from the Assimilation of Glider Observations in the WFS Coastal Ocean Circulation Model. Deep-C “All Hands” September Meeting .
- Pan, C., 2011. Variational assimilation of glider data in the Monterey Bay. Graduate Student Research Symposium of the University of Southern Mississippi.
- Pan, C., Yaremchuk, M., Nechaev, D., 2010. Application of a 3-dimensional variational data assimilation system in the Monterey Bay. Mississippi Academy of Sciences (MAS) Annual Meeting. **Reward: Best oral presentation in Marine Science Division.**
- Yaremchuk, M., Nechaev, D., Pan, C., 2010. 3DVAR analysis of glider data with a hybrid covariance model. EGU General Assembly Conference.
- Pan, C., Nechaev, D., Panteleev, G., 2009. A preliminary study of the influence of regional winds on Bering Strait transport. Oceans 2009, MTS/IEEE Biloxi – Marine Technology for Our Future: Global and Local Challenges.
- Pan, C., Nechaev, D., Panteleev, G., 2009. Preliminary study of the influence of regional winds on Bering Strait transport. Mississippi Academy of Sciences (MAS) Annual Meeting. **Reward: Student poster second place.**

## CRUISES

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- April 2011, joined a cruise in Hawaii for 33 days with NDBC ship, obtaining temperature, salinity, currents by CTD, ADCP for modeling studies.
- May 2004, joined a cruise in South China Sea for 15 days with “Yan Ping II” ship, obtained temperature, salinity, currents by CTD, ADCP, Low-ADCP.
- Nov 2003, joined a cruise in East China Sea for 19 days with “Dong Fang Hong” ship, obtained temperature, salinity, currents by CTD, ADCP.