

**CURRICULUM VITAE****CHAI, FEI (柴扉)****Personal and Business Data:**

School of Marine Sciences	Telephone: (207) 581-4317
5706 Aubert Hall	Fax: (207) 581-4388
University of Maine	E-mail: fchai@maine.edu
Orono, ME 04469-5706, USA	<a href="http://www.umaine.edu/marine/">http://www.umaine.edu/marine/</a>

**Present Positions:**

Professor, School of Marine Sciences, University of Maine  
Cooperating Professor, Climate Change Institute, University of Maine

**Education:**

Ph.D.	1995	Duke University (Ph.D. advisor: Prof. Richard T. Barber)
M.A.	1991	Princeton University (M. A. advisor: Prof. S. George Philander)
M.S.	1987	Shandong College of Oceanology (now: Ocean University of China)
B.S.	1984	Shandong College of Oceanology (now: Ocean University of China)

**Professional Experience:**

2008 -	Professor, School of Marine Sciences, University of Maine
2008 -	Adjunct Professor, Climate Change Institute, University of Maine
2012 - 2015	Director, School of Marine Sciences, University of Maine
2002 - 2008	Associate Professor (tenured), School of Marine Sciences, UMaine
2002 - 2008	Adjunct Associate Professor, Climate Change Institute, UMaine
10/02 - 3/03	Visiting Professor, Nagoya University, Japan
1996 - 2001	Assistant Professor, School of Marine Sciences, University of Maine
5/99 - 8/99	Visiting Professor, Hong Kong University of Science & Technology
1994 - 1996	Research Assistant Professor, Department of Oceanography, UMaine
1991 - 1994	Graduate Research Assistant, School of the Environment, Duke Univ.
1992 - 1993	Summer Intern, North Carolina Supercomputing Center
1988 - 1990	Research Assistant, AOS Program, Princeton University

**Editorial Board:**

Associate Editor: Biogeosciences (2011 – present)  
Associate Editor: Journal of Oceanography (2010 – 2015)  
Associate Editor: Acta Oceanologica Sinica (2002 – present)  
Guest Editor: Ocean Dynamics (2015)  
Guest Editor: Oceanography in China (13) - South China Sea Circulation Modeling and Observations (2001)

**Reviewer and panel member for:**

Journal of Geophysical Research  
Deep Sea Research  
Journal of Marine Systems  
Geophysical Research Letters  
Limnology and Oceanography  
Global Biogeochemical Cycles  
Chemical Oceanography  
Marine Chemistry  
Nature Geosciences  
Proceedings of the National Academy of Sciences (PNAS)  
Progress in Oceanography  
Journal of Marine Research  
Science in China  
Science  
Ocean Dynamics  
National Aeronautics and Space Administration (NASA)  
National Oceanic and Atmospheric Administration (NOAA)  
National Science Foundation of China (NSFC)  
National Science Foundation (NSF)  
National Oceanographic Partnership Program (NOPP)  
U.S. Environmental Protection Agency (U.S. EPA)  
Rhode Island Sea Grant  
DIACES Symposium Application Review Committee  
External Review Member for PMEL/NOAA  
NERACOOS Board Member  
Academic Committee Member for the State Key Laboratory of Marine Environmental Science (MEL), Xiamen University, China  
International Advisory Committee Member for the State Key Laboratory in Marine Pollution (SKLMP) in Hong Kong  
Overseas Evaluation Member for Chinese Academy of Sciences, China.  
Member of the Organizing Committee for Ocean Sciences Meeting (OSM) 2014.  
Program Advisory Committee for Ocean Observatories Initiative (OOI)  
Education Task Team for Consortium for Ocean Leadership (COL)  
Membership Committee for the Consortium for Ocean Leadership (COL)  
Member of the Executive Council of Global Ocean Acidification Observing Network (GOA-ON)  
Review Panel member for NOAA Knauss Marine Policy Fellowship  
Session Co-conveners for Third International Symposium Effects of Climate Change on the World's Oceans in Santos (Brazil), March 2015.  
Session Co-conveners for PICES 2015 Annual Meeting in Qingdao, October 2015  
The review team member for the University of Kiel "Collaborative Research Center (CRC) 754 – Climate and Biogeochemistry Interactions in the Tropical Oceans", September 2015.

**Research Interests:**

- Developing and testing physical-biogeochemical models for the Pacific Ocean and coastal seas, with focus on the upwelling regions such as the equatorial Pacific, the coast of Peru, California Coastal Upwelling, the Gulf of Maine, the China Seas, and polar regions.
- Studying the nutrient transport from the interior ocean to the surface by the ocean circulation and mixing processes, and their impacts on carbon cycle;
- Linking nutrient and plankton dynamics with living marine resources and fisheries;
- Studying the role of iron in global productivity and carbon cycle;
- Use models to investigate past, present, and future climate variability;
- Using state-of-the-art supercomputing power for the large-scale and coastal ocean models;
- Investigating anthropogenic impacts on global and coastal environment;
- Forecasting responses of marine ecosystems and carbon cycle to El Nino and other climatic strong events.

**Thesis advisor and postdoctoral-scholar sponsors:**

Li Xu (former M.S. student, now in computer science)

Lawrance Klein (former M.S. student, now with NOAA)

Yi Xu (former Ph.D. student, now with NOAA)

Jeremy Winn (former M.S. student, now in environmental science)

Artur Palacz (former Ph.D student, now at Danish Technical University)

Carrie Armbrrecht (former M.S. student, now science teacher in Maine)

Mingshun Jiang (former postdoc, now at Harbor Branch Oceanographic Institution)

Lei Shi (former postdoc, research associate, now at NOAA)

Masahiko Fujii (former postdoc, now at Hokkaido University in Japan)

Guimei Liu (former postdoc, now at State Oceanic Administration of China)

Lionel Pawlowski (postdoc, now at Laboratoire Biologie Halieutique)

Peng Xiu (former postdoc, research scientist, now at the South China Sea Institute of Oceanography)

Shivanesh Rao (former postdoc, now at CSIRO)

QianQian Liu (current postdoc at University of Maine)

Jiexin Xu (current postdoc at University of Maine)

Ango Xu (current Ph.D. student at University of Maine)

Alice Ren (current Ph.D. student at University of Maine)

I advise about 4 to 5 undergraduate students a year, including Capstone projects.

**Courses taught at the University of Maine**

“Marine System Modeling” (graduate course, 10 student enrolled every another year)

“Marine Science Seminar” (required graduate course, about 15 students enrolled every year)

“Oceans and Climate Change” (required undergraduate course, about 40 to 50 students enrolled every year)

**Research Cruise Experience:**

Participant on 10 cruises, a total of 173 days at sea.

East China Sea:	1983,	14 days
Yellow Sea:	1986,	10 days
Equatorial Pacific:	1992,	30 days
Gulf of Maine:	1994,	3 days
Arabian Sea:	1995,	32 days
Gulf of Maine:	1995,	3 days
Equatorial Pacific:	1996,	40 days
Gulf of Maine:	1996,	2 days
Pearl River Estuary:	1999,	8 days
Equatorial Pacific:	2004,	31 days

**Current Research Grants (4 ongoing projects with a total amount of \$1.25 millions):**

- NSF: Multi-scale modeling: assessing the role of eastern boundary upwelling regions and their ecosystems on climate variability using a fully coupled model. 06/2010-05/2016.
- NASA (Interdisciplinary Science Team): Impacts of population growth on the San Francisco Bay and Delta ecosystem. 4/1/2014 – 3/31/2017.
- NOAA: Integrated Rapid-Response Observations and Ocean Ensemble Optimization to Improve Storm Intensity Forecasts in the Northeast U.S. 10/2013 – 09/2016.
- NSF: MRI Track 1: Acquisition of High Performance Computing to Model Coastal Responses to a Changing Environment. 8/1/2015 – 7/31/2018.

**I had 15 completed research projects during past six years with a total amount of \$3.0 millions.**

**I have two pending proposals with a total request of \$500K.**

**Peer Reviewed Publications (a total of 119) (my h-index is 34 on Google Scholar):**

- [119] Gomes, Helga do Rosario, Sergio deRada, Joaquim I. Goes, John Kindle, and Fei Chai (accepted): Examining Features of Enhanced Phytoplankton Biomass in the Bay of Bengal Using a Coupled Physical-Biological Model. *Journal of Geophysical Research – Oceans*.
- [118] Nosal, Andrew, Yi Chao, John D. Farrara, **Fei Chai**, Phillip A. Hastings (2016): Ofaction Contributes to Pelagic Navigation in a Coastal Shark. PLoS ONE 11(1): e0143758. doi:10.1371/journal.pone.0143758.
- [117] Huang, K., S. Derada, H. Xue, P. Xiu, **F. Chai**, Qiang Xie, and Dongxiao Wang (2015): A 1/8 coupled biochemical-physical Indian Ocean Regional Model: Physical results and validation. *Ocean Dynamics*, DOI 1.1007/s10236-01500860-8.
- [116] Weber, E., Y. Chao, **F. Chai**, S. McClatchie (2015): Transport Patterns of Pacific Sardine *Sardinops sagax* Eggs and Larvae in the California Current System. *Deep Sea Research 1*, doi:10.1016/j.dsr.2015.02.012.
- [115] Xu, Y., K.A. Rose, **F. Chai**, F. P. Chavez, and P. Ayon (2015): Does spatial variation in environmental conditions affect recruitment? A study using a 3-D model of Peruvian anchovy. *Progress in Oceanography*, 2015, doi:10.1016/j.pocean.2015.04.013
- [114] Gehlen, M., R. Barciela, L. Bertino, P. Brasseur, M. Butenschon, **F. Chai**, A. Crise, Y. Drillet, D. Ford, D. Lavoie, C. Perruche, A. Samuelsen, E. Simon (2015): Building the capacity for forecasting marine biogeochemistry and ecosystems. *Journal of Operational Oceanography*, Vol. 7., No. 3, 171-190.
- [113] Zhang, W., **F. Chai**, H. Xue, and Q. Ni (2015): Dynamical processes within an anticyclonic eddy revealed from Argo floats. *Geophysical Research Letter*, 42, 10.1002/2015GL063120.
- [112] Mobley, C., **F. Chai**, P. Xiu, and L. Sundman (2015): Impact of improved light calculations on predicted phytoplankton growth and heating in an idealized upwelling-downwelling channel geometry. *Journal of Geophysical Research – Oceans*, 120, doi:10.1002/2014JC010588.
- [111] Ma, W., **F. Chai**, P. Xiu, H. Xue, and J. Tian (2014): Simulation of export production and biological pump structure in the South China Sea. *Geo-Mar Lett* (2014) 34:541-554. DOI 10.1007/s0036-014-0384-0.
- [110] Xiu, P. and **F. Chai** (2014): Variability of oceanic carbon cycle in the North Pacific from seasonal to decadal scales. *Journal of Geophysical Research – Oceans*. 10.1002/2013JC009505.
- [109] Zhang, W., **F. Chai**, H.S. Hong, and H. Xue (2014): Volume transport through the Taiwan Strait and the effect of synoptic events. *Continental Shelf Research* 88 (2014) 117-125.
- [108] Chen, G., P. Xiu, and **F. Chai** (2014): Physical and biological controls on the summer chlorophyll bloom to the east of Vietnam. *Journal of Oceanography*, 70 (3), 323-328.
- [107] Wang, Y., H. Xue, **F. Chai**, Y. Chao, and J. Farrara (2014): A model study of the Copper River plume and its effects on the northern Gulf of Alaska. *Ocean Dynamics*, 64:241-258. DOI 10.1007/s10236-013-0684-3.
- [106] Y. Shu, H. Xue, D. Wang, **F. Chai**, Q. Xie, J. Yao, and J. Xiao (2014): Meridional overturning circulation in the South China Sea envisioned from the high resolution

- global reanalysis data GLBa0.08, *J. Geophys. Res.*, 119, doi:10.1002/2013JC009583.
- [105] Guo, L., **F. Chai**, P. Xiu, H. Xue, S. Rao, Y. Liu, and F.P. Chavez (2014): Seasonal dynamics of physical and biological processes in the central California Current System: A modeling study. *Ocean Dynamics*, DOI 10.1007/s10236-014-0721-x.
- [104] Fiechter, J., E. N. Curchitser, C. A. Edwards, **F. Chai**, N. L. Goebel and F. P. Chavez (2014): Air-sea CO<sub>2</sub> fluxes in the California Current: Impacts of model resolution and coastal topography DOI: 10.1002/2013GB004683.
- [103] Chu, X., H. Xue, Y. Qi, G. Chen, Q. Mao, D. Wang and **F. Chai** (2014): An exceptional anticyclonic eddy in the South China Sea in 2010. *Journal of Geophysical Research – Oceans*. DOI: 10.1002/2013JC009314
- [102] Xiu, P. **F. Chai**, A.C. Thomas (2014): Remote sensing of phytoplankton blooms induced by natural and artificial iron addition in the Gulf of Alaska. *Remote Sensing of Environment*, 145 (2014) 38-46.
- [101] Xiu, P. and **F. Chai** (2014): Connections between physical, optical and biogeochemical processes in the Pacific Ocean. *Progress in Oceanography*, Vol. 122, page 30-53.
- [100] Lin, P., **F. Chai**, H. Xue, and P. Xiu (2014): Modulation of Decadal Oscillation on Surface Chlorophyll in the Kuroshio Extension. *Journal of Geophysical Research – Oceans*, DOI: 10.1002/2013JC009359.
- [99] Gao, J., H. Xue, **F. Chai**, and M. Shi (2013): Modeling the circulation in the Gulf of Tonkin, South China Sea. *Ocean Dynamics*, DOI 10.1007/s10236-013-0636-y.
- [98] Huff, D., M.M. Yoklavich, M.S. Love, D.L. Watters, **F. Chai**, and S.T. Lindley (2013): Environmental factors that influence the distribution, size, and biotic relationships of the Christmas tree coral *Antipathes dendrochristos* in the Southern California Bight. *Mar Ecol Prog Ser (MEPS)*, Vol. 494, 159-177. doi: 10.3354/meps10591.
- [97] Zhou, K., M. Dai, S. Kao, L. Wang, P. Xiu, **F. Chai**, J. Tian, and Y. Liu (2013): Apparent enhancement of 234<sup>Th</sup>-based particle export associated with anticyclonic eddies. *Earth and Planetary Science Letters* 381, 198-209.
- [96] Ma, W. **F. Chai**, P. Xiu, H. Xue, J. Tian (2013): Modeling the seasonal and inter-annual phytoplankton dynamics in the South China Sea during 1958-2009. *Journal of Oceanography*, 69.527-544. DOI 10.1007/s10872-013-0190-8.
- [95] Schick R.S., J.J. Roberts, S.A. Eckert, P.N. Halpin, H. Bailey, **F. Chai**, L. Shi, and J.S. Clark (2013): Plagic movements of Pacific leatherback turtles (*dermochelys coriacea*) highlight the role of prey and ocean currents. *Movement Ecology*, 2013, 1:11. <http://www.movementecologyjournal.com/content/1/1/11>
- [94] Wang, J., H. Hong, Y. Jiang, **F. Chai** (2013): Summer nitrogenous nutrient transport and its fate in the Taiwan Strait: a coupled physical-biological modeling approach. *Journal of Geophysical Research – Oceans*, Vol. 118, 4184-4200, doi:10.1002/jgrc.20300
- [93] Nan F., H. Xue, **F. Chai**, D. Wang, F. Yu, M. Shi, G. Guo (2013): Weakening of the Kuroshio intrusion into the South China Sea over the past two decades. *Journal of Climate*, Vol. 26, 8097-8110. DOI: 10.1175/JCLI-D-12-00315.1
- [92] Tang, Q.S., Z.D. Chen, K.F. Yu, M. Dai, M. Zhao, C. Ke, T. Wong, **F. Chai**, G. Wei, P. Zhou, L. Chen, J. Su, J. Barry, Y. Wu, K. Gao (2013); The effects of ocean

- acidification on marine organisms and ecosystem (in Chinese). *Chinese Sci Bull (Chinese Version)*, 2013, 58, doi: 10.1360/972010-1640
- [91] Santora, J.A., W.J. Sydeman, M. Messié, **F. Chai**, Yi Chao, S.A. Thompson, B.K. Wells, F.P. Chavez (2013): Triple check: Observations verify structural realism of an ocean ecosystem model. *Geophysical Research Letter*. doi:10.1002/grl.50312.
- [90] Xu, Y., **F. Chai**, K. A. Rose, and F. P. Chavez (2013): Environmental influences on the interannual variation and spatial distribution of Peruvian anchovy population dynamics from 1991 to 2007: a three-dimensional modeling study. *Ecological Modelling*, dx.doi.org/10.1016/j.ecolmodel.2013.01.009.
- [89] Palacz, A.P. and **F. Chai** (2012): Spatial and temporal variability in nutrients and carbon uptake during 2004 and 2005 in the eastern equatorial Pacific Ocean. *Biogeosciences*, 9, 4369-4383.
- [88] Huff, D.D., S.T. Lindley, B.K. Wells, **F. Chai** (2012): Green Sturgeon Distribution in the Pacific Ocean Estimated from Modeled Oceanographic Features and Migration Behavior. *PLoS ONE* 7(9): e45852. doi:10.1371/journal.pone.0045852.
- [87] Xiu, P. and **F. Chai** (2012): Spatial and temporal variability in phytoplankton carbon, chlorophyll, and nitrogen in the North Pacific. *Journal of Geophysical Research* VOL. 117, C11023, doi:10.1029/2012JC008067.
- [86] Xiu, P., **F. Chai**, L. Shi, H. Xue, Y. Chao (2012): Modeling meso-scale eddy field in the Gulf of Alaska. *Deep Sea Research I*, 63, 102-117.
- [85] Nan, F., H. Xue, P. Xiu, **F. Chai**, M. Shi, P. Guo (2011): Oceanic eddy formation and propagation southwest of Taiwan. *Journal of Geophysical Research*. Vol. 116, doi:10.1029/2011JC007386.
- [84] Xiu, P. and **F. Chai** (2011): Modeled biogeochemical responses to mesoscale eddies in the South China Sea. *Journal of Geophysical Research*, doi:10.1029/2010JC006800.
- [83] Palacz, A., H. Xue, C. Armbrecht, C. Zhang, **F. Chai** (2011): Seasonal and interannual changes in the surface chlorophyll of the South China Sea. *Journal of Geophysical Research*, VOL. 116, C09015, doi:10.1029/2011JC007064.
- [82] Nan, F., H. Xue, F. Chai, L. Shi, M. Shi, P. Guo (2011): Identification of Different Types of Kuroshio Intrusion into the South China Sea. *Ocean Dynamics*, 61:1291-1304. doi 10.1007/s10236-011-0426-3.
- [81] Xiu, P., A. Palacz, **F. Chai**, E. Roy, and M. Wells (2011): Iron flux induced by Haida eddies in the Gulf of Alaska. *Geophys. Res. Lett.* VOL 38, L13607, doi:10.1029/2011GL047946.
- [80] Hong, H. **F. Chai**, C. Zhang, B. Huang, Y. Jiang, J. Hu (2011): An overview of physical and biogeochemical processes and ecosystem dynamics in the Taiwan Strait. *Continental Shelf Research* 31 (2011) S3–S12.
- [79] Jiang, Y., **F. Chai**, Z. Wan, H. Hong (2011): Characteristics and mechanisms of the upwelling in the southern Taiwan Strait: a three-dimensional numerical model study. *Journal of Oceanography*, Vol: 67, 6, 699-708 doi: 10.1007/s10872-011-0080-x.
- [78] Song, J., H. Xue, X. Bao, D. Wu, **F. Chai**, L. Shi, Z. Yao, Y. Wang, F. Nan, and K. Wan (2011): A spectral mixture model analysis of the Kuroshio variability and the water exchange between the Kuroshio and the East China Sea. *Chinese J. of Oceanology and Limnology*, 29, 446-459. DOI:10.1007/s00343-011-0114-7.

- [77] Galindo, H., A. Pfeiffer-Herbert, M.A. McManus, Y. Chao, **F. Chai**, and S.R. Palumbi (2010): Seascape genetics along a steep cline: using genetic patterns to test predictions of marine larval dispersal. *Molecular Ecology* 19, 3692-3707. Doi:10.1111/j.1365-294X.2010.04694.x.
- [76] Strutton, P.G., A.P. Palacz, R.C. Dugdale, **F. Chai**, A. Marchi, A.E. Parker, V. Hogue, F.P. Wilkerson (2010): The impact of equatorial Pacific tropical instability waves on hydrography and nutrients: 2004-2005. *Deep Sea Res. II*, doi:10.1016/j.dsr2.2010.08.015
- [75] Palacz, A., **F. Chai**, R.C. Dugdale, C.I. Measures (2010): Estimating iron and aluminum removal rates in the eastern equatorial Pacific Ocean using a box model approach. *Deep Sea Res. II*, doi:10.1016/j.dsr2.2010.08.012
- [74] Liu, G., H. Li, H. Wang, **F. Chai** (2010): Review on the Ecological Dynamics Studies of Green Tide. *Advances in Earth Science*, Vol. 25, No. 2, Feb. 2010.
- [73] Brzezinski, M.A., S.B. Baines, W.M. Balch, C.P. Beucher, **F. Chai**, R.C. Dugdale, J.W. Krause, M.R. Landry, A. Marchi, C. Measures, D.M. Nelson, A. Parker, A. Poulton, K. Selph, P. Strutton, A. Taylor, B. Twining (2010): Co-limitation of diatoms by iron and silicic acid in the equatorial Pacific. *Deep Sea Res. II*, 58, 493-511, doi:10.1016/j.dsr2.2010.08.005
- [72] Dugdale, R.C., **F. Chai**, R. Feely, C. Measures, A. Parker, F. Wilkerson (2010): The regulation of equatorial Pacific new production and pCO<sub>2</sub> by silicate-limited diatoms. *Deep Sea Res. II*, 58, 477-492.
- [71] Kueh, Mien-Tze, Chung-Hsiung Sui, Kon-Kee, Liu, and **F. Chai** (2010): On the Upper Ocean Thermal Structure in a Western North Pacific Ocean Model: Model Evaluation and Sensitivity Study. *Terr. Atmos. Ocean. Sci.*, Vol. No. 1, 137-162, doi:10.3319/TAO.2009.06.03.01.
- [70] Xiu, P. and **F. Chai** (2010): Modeling the effects of size on patch dynamics of an inert tracer. *Ocean Science*, 6, 1-9.
- [69] Xiu, P., **F. Chai**, L. Shi, H. Xue, Y. Chao (2010): A census of eddy activities in the South China Sea during 1993-2007. *Journal of Geophysical Research*, Vol. 115, C03012, doi:10.1029/2009JC005657.
- [68] Fujii, M. and **F. Chai** (2009): Influences of initial plankton biomass and mixed-layer depths on the outcome of iron-fertilization experiments. *Deep-Sea Research II*, doi:10.1016/j.dsr2.2009.07.007.
- [67] Xiu, P., Y. Liu, G. Li, Q. Xu, Z. Rong, X. Yin, **F. Chai** (2009): Deriving depths of deep chlorophyll maximum and water inherent optical properties: A regional model. *Continental Shelf Research*, 29, 2270-2279.
- [66] Zhang, W-Z, H. Hong, S. Shang, X. Yan, **F. Chai** (2009): Strong southward transport events due to typhoons in the Taiwan Strait. *Journal of Geophysical Research*, 114, C11013, doi:10.1029/2009JC005372.
- [65] Bidigare, R.R., **F. Chai**, M. R. Landry, R. Lukas, C. Hannides, S. J. Christensen, D.M. Karl, L. Shi and Y. Chao (2009): Subtropical ocean ecosystem structure changes forced by North Pacific climate variations. *Journal of Plankton Research*, Vol. 31, No. 10, 1131-1139.
- [64] Fujii, M., **F. Chai**, L. Shi, H. Inoue, and M. Ishii (2009): Seasonal and interannual variability of carbon cycling in western and central tropical-



- subtropical Pacific: a Physical-Biogeochemical Modeling Study. *Journal of Oceanography*, Vol. 65, pp. 689-701.
- [63] **Chai, F.** G. Liu, H. Xue, L. Shi, Y. Chao, C-T Tseng, W-C Chou, and K-K Liu (2009): Seasonal and Interannual Variability of Carbon Cycle in South China Sea: a Three-Dimensional Physical-Biogeochemical Modeling Study. *Journal of Oceanography*, Vol. 65, pp. 703 to 720.
- [62] Liu, G. and **F. Chai** (2009): Seasonal and interannual variability of primary and export production in the South China Sea: A three-dimensional physical-biogeochemical model study. *ICES Journal of Marine Science*, 66, 420-431.
- [61] Liu, G. and **F. Chai** (2009): Seasonal and interannual variation of physical and biological processes during 1994-2001 in the Sea of Japan/East Sea: a three-dimensional physical-biogeochemical modeling study. *Journal of Marine Systems*, Vol. 78, 265-277.
- [60] Polovina, J. J., **F. Chai**, E. A. Howell, D. R. Kobayashi, L. Shi, and Y. Chao (2008): Ecosystem dynamics at a productivity gradient: a study of the lower trophic dynamics around the northern atolls in the Hawaiian Archipelago. *Progress in Oceanography*, 77, 217-224.
- [59] Friedrichs M.A.M, M-E Carr, R. T. Barber, M. Scardi, D. Antoine, R. A. Armstrong, I. Asanuma, M. J. Behrenfeld, E.T. Buitenhuis, **F. Chai**, J. R. Christian, A.M. Ciotti, S. C. Doney, M. Dowell, J. Dunne, B. Gentili, W. Gregg, N. Hoepffner, J. Ishizaka, T. Kameda, I. Lima, J. Marra, F. Mélin, J. Moore, A. Morel, R. T. O'Malley, J. O'Reilly, V. S. Saba, M. Schmeltz, T. J. Smyth, J. Tjiputra, K. Waters, T. K. Westberry, A. Winguth (2008): Assessing the Uncertainties of Model Estimates of Primary Productivity in the Tropical Pacific Ocean. *Journal of Marine Systems*, doi:10.1016/j.marsys.2008.05.010.
- [58] Buesseler, K. O., S. C. Doney, D. M. Karl, P. W. Boyd, K. Caldeira, **F. Chai**, K. H. Coale, H. J. W. de Baar, P. G. Falkowski, K. S. Johnson, R. S. Lampitt, A. F. Michaels, S. W. A. Naqvi, V. Smetacek, S. Takeda, A. J. Watson (2008): Ocean Iron Fertilization--Moving Forward in a Sea of Uncertainty. *Science*, 11 January 2008: Vol. 319, No. 5860, p. 162 . DOI: 10.1126/science.1154305.
- [57] Alexander, M., A. Capotondi, A. Miller, **F. Chai**, R. Brodeur, and C. Deser (2008), Decadal variability in the northeast Pacific in a physical-ecosystem model: Role of mixed layer depth and trophic interactions. *Journal of Geophysical Research* 113, C02017, doi:10.1029/2007JC004359.
- [56] Fujii, M., E. Boss, and **F. Chai** (2007): The value of adding optics to ecosystem models: a case study. *Biogeosciences* 4, 1585-1631.
- [55] Friedrichs, M.A.M., J. A. Dusenberry, L. A. Anderson, R. Armstrong, **F. Chai**, J. R. Christian, S. C. Doney, J. Dunne, M. Fujii, R. Hood, D. McGillicuddy, J. K. Moore, M. Schartau, Y. H. Spitz, J. D. Wiggert (2007): Assessment of skill and portability in regional marine biogeochemical models: the role of multiple planktonic groups. *Journal of Geophysical Research*, 112, C08001, doi:10.1029/2006JC003852.
- [54] Pfeiffer-Hoyt, A. S., M.A. McManus, P.T. Raimondi, Y. Chao, and **F. Chai** (2007): Dispersal of barnacle larvae along the central California coast: A modeling study. *Limnol. Oceanogr.*, 52(4), 2007, 1559-1569.

- [53] **Chai, F.**, M-S Jiang, Y. Chao, R.C. Dugdale, F. Chavez, and R.T. Barber (2007): Modeling Responses of Diatom Productivity and Biogenic Silica Export to Iron Enrichment in the Equatorial Pacific Ocean. *Global Biogeochemical Cycle*, Vol. 21, GB3S90, doi:10.1029/2006GB002804.
- [52] Dugdale, R.C., F.P. Wilkerson, **F. Chai**, and R. Feely (2007): Size fractionated nitrogen uptake measurements in the Equatorial Pacific and confirmation of the low Si-HNLC condition. *Global Biogeochemical Cycles*, Vol. 21, No. 2, GB2005, 10.1029/2006GB002722.
- [51] Zhang, W.Z., H.S. Hong, S.P. Shang, D.W. Chen, and **F. Chai** (2007): A two-way nested coupled tide-surge model for the Taiwan Strait. *Continental Shelf Research*, doi: 10.1016/j.csr.2007.01.018.
- [50] Fujii, M. and **F. Chai** (2007): Modeling carbon and silicon cycling in the equatorial Pacific. *Deep Sea Res. II* 54, 496-520.
- [49] Fujii, M., Y. Yamanaka, Y. Nojiri, M.J. Kishi, and **F. Chai** (2007): Comparison of seasonal characteristics in biogeochemistry among the subarctic North Pacific stations described with a NEMURO-based marine ecosystem model. *Ecological Modeling*, 202 (2007) 52-67. doi:10.1016/j.ecolmodel.2006.02.
- [48] Hood, R.R., E.A. Laws, R.A. Armstrong, N.R. Bates, C.W. Brown, C.A. Carlson, **F. Chai**, S.C. Doney, P.G. Falkowski, R.A. Feely, M.A. Friedrichs, M.L. Landry, J.K. Moore, D.M. Nelson, T.L. Richardson, B. Salihoglu, M. Schartau, D.A. Toole, J.D. Wiggert (2006): Pelagic functional group modeling: Progress, challenges and prospects. *Deep-Sea Res. II*, Vol. 53, 459-512.
- [47] McKinley, G.A., T. Takahashi, E. Buitenhuis, **F. Chai**, J. R. Christian, S. C. Doney, M.-S. Jiang, C. Le Quere, I. Lima, K. Lindsay, J.K. Moore, R. Murtugudde, L. Shi, P. Wetzel (2006): North Pacific carbon cycle response to climate variability on seasonal to decadal timescales. *Journal of Geophysical Research*, Vol. 111, C07S06, doi:10.1029/2005JC003173.
- [46] Jiang, M-S and **F. Chai** (2006): Physical control on the seasonal cycle of surface pCO<sub>2</sub> in the equatorial Pacific. *Geophys. Res. Lett.*, Vol. 33, doi:10.1029/2006GL027195.
- [45] Ning, X., F. Chai, and Q. Hao (2006): Hypereutrophication in the Ngau Mei Hoi Bay, Hong Kong. *Journal of Coastal Research* 22(6), 1565-1572.
- [44] Miller, A. J., A. J. Gabric, J. R. Moisan, **F. Chai**, D. J. Neilson, D. W. Pierce, and E. Di Lorenzo (2006): Global Change and Oceanic Primary Productivity: Effects of Ocean-Atmosphere-Biological Feedbacks. In “*Global Climate Change and Response of the Carbon Cycle in the Equatorial Pacific and Indian Oceans and Adjacent Land Masses*”, Edited By Hodaka Kawahata and Yoshio Awaya, Elsevier Oceanography Series 73.
- [43] Jiang, M-S and **F. Chai** (2005): Physical and biological controls on the latitudinal asymmetry of surface nutrients and pCO<sub>2</sub> in the central and eastern equatorial Pacific. *Journal of Geophysical Research*, 110, C06007, doi:10.1029/2004JC002715.
- [42] Fujii, M. and **F. Chai** (2005): Effects of biogenic silica dissolution on silicon cycling and export production. *Geophys. Res. Lett.*, Vol. 32, doi:10.1029/2004GL022054.

- [41] Fujii, M., N. Yoshie, Y. Yamanaka, and **F. Chai** (2005): Simulated biogeochemical responses to iron enrichments in three high nutrient, low chlorophyll (HNLC) regions. *Progress in Oceanography*, doi:10/1016/j.pocean.2005.02.017.
- [40] Shang, S.L., C.Y. Zhang, H.S. Hong, **F. Chai**, and S.P. Shang (2004): Short-term variability of chlorophyll associated with upwelling events in the Taiwan Strait region during southeast monsoon of 1998. *Deep Sea Res. II*, 51, 1113-1128.
- [39] Jiang, M-S and **F. Chai** (2004): Iron and silicate regulation on new and export production in the equatorial Pacific: A physical-biological model study. *Geophys. Res. Lett.*, Vol. 31, doi: 10.1029/2003GL018598.
- [38] deYoung, B., M. Heath, F. Werner, **F. Chai**, B. Megrey, and P. Monfray (2004): Challenges of Modelling Ocean Basin Ecosystems. *Science*, Vol. 304, 1463-1467.
- [37] Ning, X., **F. Chai**, H. Xue, Y. Cai, C. Liu, and J. Shi (2004): Physical-biological oceanographic coupling influencing phytoplankton and primary production in the South China Sea. *Journal of Geophysical Research*, Vol. 109, C10005, doi:10.1029/2004JC002365.
- [36] Miller, A., **F. Chai**, S. Chiba, J. Moisan, and D. Neilson (2004): Decadal-Scale Climate and Ecosystem Interactions in the North Pacific Ocean. *Journal of Oceanography*, Vol. 60, pp. 163-188.
- [35] Dugdale, R.C., M. Lyle, F.P. Wilkerson, **F. Chai**, R.T. Barber, T-H Peng, and A.G. Wischmeyer (2004): The Influence of Equatorial Diatom Processes on Si Deposition and Atmospheric CO<sub>2</sub> Cycles at Glacial/Interglacial Time Scales. *Paleoceanography*, Vol. 19, PA3001, doi:10.1029/2003PA000929.
- [34] Xue, H., **F. Chai**, N. Pettigrew, M. Shi, J. Xu, and D. Xu (2004): Kuroshio Intrusion and the Circulation in the Northern South China Sea. *Journal of Geophysical Research*, Vol. 109, C02017, doi:10.1029/2002JC001724.
- [33] Sandweiss, D., K. A. Maasch, **F. Chai**, C. F. Andrus, and E. J. Reitz (2004): Archaeological Evidence for Multi-decadal Natural Climatic Variability and Ancient Andean Fisheries. *Quaternary Research*, 61, 330-334.
- [32] Chu, S., S. Elliott, M. Maltrud, and **F. Chai** (2004): Southern Ocean Iron Enrichments Simulated in a Global, Eddy Permitting GCM. Environmental Sciences and Environmental Computing (ESEC)" Vol II. Editor: Paolo Zannetti, An electronic book published and distributed by TheEnviroComp Institute (www.envirocomp.org).
- [31] **Chai, F.**, M. Jiang, R.T. Barber, R.C. Dugdale, and Y. Chao (2003): Interdecadal Variation of the Transition Zone Chlorophyll Front, A Physical-Biological Model Simulation between 1960 and 1990. *Journal of Oceanography*, Vol. 59, 461-475.
- [30] Lehodey, P., **F. Chai**, and J. Hampton (2003): Modelling climate-related variability of tuna populations from a coupled ocean-biogeochemical-populations dynamics model. *Fisheries Oceanography*, Vol. 12, 45, 483-494.
- [29] Jiang, M-S, **F. Chai**, R.T. Barber, R.C. Dugdale, F. Wilkerson, and T-H Peng (2003). A nitrate and silicate budget in the Equatorial Pacific Ocean: A coupled biological-physical model study. *Deep Sea Res. II*, Vol. 50 (22-26), 2971-2996.
- [28] Miller, A.J., M.A. Alexander, G.J. Boer, **F. Chai**, K. Deman, D.J. Erickson, R. Frouin, A.J. Gabric, E.A. Laws, M.R. Lewis, Z. Liu, R. Murtugudde, S. Nakamoto, D.J. Neilson, J.R. Norris, J.C. Ohlmann, R. Perry, N. Schnerider, K. Shell, and A. Timmermann (2003): Potential Feedbacks Between Pacific Ocean Ecosystems and

- Interdecadal Climate Variations. Bulletin of the American Meteorological Society (BAMS), May 2003, 617-633.
- [27] **Chai, F.**, R. C. Dugdale, T-H Peng, F. P. Wilkerson, and R. T. Barber (2002): One Dimensional Ecosystem Model of the Equatorial Pacific Upwelling System, Part I: Model Development and Silicon and Nitrogen Cycle. *Deep-Sea Res. II*, Vol. 49, No. 13-14, 2713-2745.
- [26] Dugdale, R.C., R. T. Barber, **F. Chai**, T.H. Peng, and F.P. Wilkerson (2002): One Dimensional Ecosystem Model of the Equatorial Pacific Upwelling System, Part II: Sensitivity Analysis and Comparison with JGOFS EqPac Data. *Deep-Sea Res. II*, Vol. 49, No. 13-14, 2746-2762.
- [25] Dugdale, R.C., A.G. Wischmeyer, F.K. Wilkerson, R. T. Barber, **F. Chai**, M. Jiang, and T.H. Peng (2002): Source of meridional asymmetry of nutrients to the equatorial upwelling ecosystem and modeling of the impact on ocean-atmosphere CO<sub>2</sub> flux. *Deep-Sea Res. II*, Vol. 49, No. 13-14, 2713-2532.
- [24] Xue, H. and **F. Chai** (2002): Coupled Physical-Biological Model for the Pearl River Estuary: A Phosphate Limited Subtropical Ecosystem. *Proceedings of the 7th International Conference on Estuarine and Coastal Modeling*. 913-928.
- [23] Ning, X., Y. Cai, Z. Liu, and **F. Chai** (2002): Size-fractionated phytoplankton standing stock and primary production in the Bohai Sea during late spring. *Acta Oceanologica Sinica*, 21(3): 423-435.
- [22] Thieler, E.R., O. H. Pilkey, Jr., R. S. Young, D. M. Bush, and **F. Chai** (2002): Reply to Dubois, R.N., 2000: Discussion of Thieler et al. (2000): The Use of Mathematical Models to Predict Beach Behavior for Coastal Engineering: A Critical Review. *Journal of Coastal Research*, 18(1), 194-195.
- [21] Xue, H., **F. Chai**, and J. Xu (Editors) (2001): "Oceanography in China (13) – South China Sea Circulation Modeling and Observations", a special issue of *Acta Oceanologica Sinica*. China Ocean Press. Page 1 – 254.
- [20] **Chai, F.**, H. Xue, and M. Shi (2001): The study of horizontal transport in the Taiwan Strait. *Oceanography in China (13) – South China Sea Circulation Modeling and Observations*. H. Xue, F. Chai, and J. Xu (Editors). Page 168-177. China Ocean Press.
- [19] **Chai, F.**, H. Xue, and M. Shi (2001): Formation and Distribution of Upwelling and Downwelling in the South China Sea. *Oceanography in China (13) - South China Sea Circulation Modeling and Observations*. H. Xue, F. Chai, and J. Xu (Editors). Page 117-128. China Ocean Press.
- [18] **Chai, F.**, H. Xue, and M. Shi (2001): General Circulation and its seasonal variation in the Northern and Central South China Sea. *Oceanography in China (13) – South China Sea Circulation Modeling and Observations*. H. Xue, F. Chai, and J. Xu (Editors). Pag 39-56. China Ocean Press.
- [17] Barber, R.T. and **F. Chai** (2001): Using modeling to design and evaluate transient open ocean iron enrichment for carbon sequestration. *Proceedings of the First National Conference on Carbon Sequestration*, DOC/NETL-2001/1144. Session 6B, paper No. 4. Washington, D.C., May 2001.
- [16] Peng, T-H and **F. Chai** (2001): Modeling the Carbon Cycle in the Equatorial Pacific Ocean. *The Conference Proceeding on Marine Environment, the Past, Present and Future*. C-T Arthur Chen (editor). 240-255.

- [15] Xue, H., **F. Chai**, and N. R. Pettigrew (2000): A model study of the seasonal circulation in the Gulf of Maine: in response to local forcing. *J. Phys. Oceanogr*, Vol. 30, 1111-1135.
- [14] Thieler, E.R., O. H. Pilkey, Jr., R. S. Young, D. M. Bush, and **F. Chai** (2000): The Use of Mathematical Models to Predict Beach Behavior for Coastal Engineering: A Critical Review. *Journal of Coastal Research*, 16(1), 48-70.
- [13] Xue, H., **F. Chai**, N. R. Pettigrew, D. Xu, and M. Shi (2000): Upper Ocean Circulation in the Northern South China Sea. *Proceedings - Second International Ocean and Atmosphere Conference COAA 2000*, 73-78.
- [12] **Chai, F.**, S.T. Lindley, J. R. Toggweiler, and R.T. Barber (1999): Testing the importance of iron and grazing in the maintenance of the high nitrate condition in the Equatorial Pacific Ocean, a physical-biological model study. *In: The Changing Ocean Carbon Cycle*. R.B. Hanson, H.W. Ducklow, & J.G. Field (Editors). International Geosphere-Biosphere Programme (IGBP) Book Series 5. Pp. 156-186. Cambridge University Press.
- [11] **Chai, F.** and H. Xue (1999): The Response of the Equatorial Pacific Western Pacific to a Westerly Wind Burst. *Acta Oceanologica Sinica*, **18**(4), 69-78.
- [10] Peng, T-H and **F. Chai** (1999): Modeling the carbon cycle in the equatorial Pacific Ocean. In: Proceedings of the 2nd International Symposium "CO<sub>2</sub> In The Ocean", Tsubuka, Japan, January 1999, CGER-1037-'99, Center for Global Environmental Research, National Institute for Environmental Studies, Environmental Agency of Japan, p.183-189.
- [9] Busseler, K.O., L. Ball, J.A. Andrews, C. Benitez-Nelson, R. Belostock, **F. Chai**, and Y. Chao (1999): Upper ocean export of particulate organic carbon in the Arabian Sea derived from Thorium-234. *Deep-Sea Res. II*, Vol. **45**, No. 10-11, 2405-2432.
- [8] Ning, X., Z. Liu, Y. Cai, M. Fang, and **F. Chai** (1998): Physicobiological oceanographic remote sensing of the East China Sea: Satellite and in situ observations. *Journal of Geophysical Research*, Vol. **103**, No. C10, 21,623-21,635.
- [7] Landry, M R., R.T. Barber, R.R. Bidigare, **F. Chai**, K.H. Coale, H.G. Dam, M.R. Lewis, S.T. Lindley, J.J. McCarthy, M.R. Roman, D.K. Stoecker, P.G. Verity, J.R. White (1997): Iron and Grazing Constraints on Primary Production in the Central Equatorial Pacific: An EQPAC Synthesis. *Limnol. Oceanog*, Vol. **42**, No.3, 405-418.
- [6] **Chai, F.**, R.T. Barber, and S.T. Lindley (1996): Origin and maintenance of high nutrient condition in the equatorial Pacific. *Deep-Sea Res. II*, Vol. **42**, No. 4-6, 1031-1064.
- [5] Barber, R.T., S.T. Lindley, M. Sanderson, **F. Chai**, J. Newton, C.C. Trees, D.G. Foley, and F. Chavez (1996): Primary production in the equatorial Pacific during 1992. *Deep-Sea Res. II*, Vol. **42**, No. 4-6, 933-969.
- [4] **Chai, F.** (1995): Origin and Maintenance of High Nutrient Condition in the Equatorial Pacific, A Biological-Physical Model Study. Ph.D. dissertation, Duke University, pp170.
- [3] Busseler, K.O., J.A. Andrews, M.C. Hartman, R. Belostock, and **F. Chai** (1995): Regional estimates of the export flux of particulate organic carbon derived from Thorium-234 during the JGOFS EqPac program. *Deep-Sea Res. II*, Vol. **42**, No. 2-3, 777-804.

- [2] Barber, R.T., **F. Chai**, S.T. Lindley, and R.R. Bidigare (1995): Regulation of equatorial primary production. In: *Global Fluxes of Carbon and Related Substances in the Coastal Sea-Ocean-Atmosphere System*, I. Koike (ed.). Science Council of Japan, 283-290.
- [1] Wang, J. Y. and **F. Chai** (1989): Nonlinear interaction between astronomical tides and storm surges at Wusong tidal station. *Chinese J. Oceanogr. Limnol.*, Vol. 7, No. 2, 135-142.

### **Professional Presentations**

On the average I give about ten presentations per year at professional conferences and before professional groups, not counting the ones coauthored but delivered by others. The following is an incomplete list of presentations I gave during the last few years (the titles are not included).

- 12/2015: An invited talk at the Second Institute of Oceanography (SIO)/State Oceanic Administration (SOA) in Hangzhou, China
- 12/2015: An invited talk at the ENSO Workshop in Qingdao, China
- 11/2015: An invited talk in a workshop on ocean acidification in IAEA in Monaco.
- 11/2015: An invited talk in a workshop on developing blue economy during the World Ocean Week (WOW) in Xiamen, China.
- 11/2015: An invited talk at the Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
- 10/2015: Three oral presentations at the PICES (North Pacific Marine Science Organization) 24<sup>th</sup> Annual Meeting, Qingdao, China.
- 10/2015: A keynote lecture for PARE (Population, Activities, Resources, and Environment) at Hokkaido University, Sapporo, Japan.
- 09/2015: An oral presentation at the 57<sup>th</sup> Annual Eastern Pacific Ocean Conference (EPOCE), South Lake Tahoe, California.
- 07/2015: Two lectures at the 3<sup>rd</sup> International Ocean Science Summer School, Guangzhou, China.
- 06/2015: An oral presentation at the 7<sup>th</sup> International Workshop on Modeling the Ocean, Canberra, Australia.
- 06/2015: An invited talk at the School of Energy and Environment, City University of Hong Kong.
- 03/2015: An invited talk at the Maine Maritime Academy, Castine, Maine.
- 03/2015: An oral presentation at the Third International Symposium Effects of Climate Change on the World's Oceans in Santos, Brazil
- 03/2015: An invited talk at Fudan University, Shanghai, China
- 03/2015: An invited talk at State Key Lab of Estuarine and Coastal Research, Eastern China Normal University, Shanghai, China
- 01/2015: An invited presentation at the 2nd Xiamen Symposium on Marine Environmental Sciences, Xiamen, China
- 11/2014: An invited seminar at the University of New England
- 10/2014: An oral presentation at the Ocean Optics 2014, Portland, Maine
- 10/2014: An invited talk at the Global Ocean Summit, Qingdao, China

- 09/2014: An invited seminar at North Carolina State University
- 09/2014: An invited seminar at University of Massachusetts Dartmouth
- 09/2014: An invited seminar at Northeastern University
- 06/2014: An oral presentation at the 6<sup>th</sup> International Workshop on Modeling the Ocean, Halifax, Nova Scotia.
- 05/2014: An invited talk at the Shallow Water Dynamics Workshop in Qingdao, China.
- 04/2014: An invited plenary talk at the 10<sup>th</sup> Cross-Strait Ocean Research Conference, Taiwan.
- 02/2014: One lead oral presentation, and several co-authored oral and poster presentations at the Ocean Sciences Meeting 2014, Hawaii, USA.
- 12/2013: An invited talk at the NOAA Fisheries Lab in San Cruz, USA.
- 11/2013: An invited talk at the World Ocean Week in Xiamen, China.
- 11/2013: An invited talk at the GODAE Ocean View Symposium. Baltimore, USA.
- 06/2013: A talk about UMaine's marine science research and education at Ocean University of China, Qingdao, China.
- 05/2013: An invited talk at the Sanya Institute of Deep-Sea Science and Engineering, Snaya, China.
- 03/2013: A talk about UMaine's marine science research and education at Xiamen University, Xiamen, China.
- 01/2013: An invited talk at Zhejiang University, Hangzhou, China.
- 01/2013: An invited talk at the Graduate School of Tsinghua University in Shen Zhen.
- 07/2012: An invited talk at the Institute of Atmospheric Physics International Summer Symposium, Xining, China.
- 07/2012: Two invited lectures at the International Summer School on ocean modeling and climate change, Qingdao, China.
- 07/2012: An invited lecture at the International Summer School on climate change and ocean health, Xiamen, China.
- 04/2012: Two invited talks in Academia Sinica, Taiwan.
- 04/2012: An invited talk at Tsinghua University, Beijing, China
- 02/2012: Two invited talks at South China Institute of Oceanography, Guangzhou, China.
- 12/2011: Two oral presentations at the AGU Fall Meeting 2011, San Francisco, USA.
- 10/2011: An invited seminar at the USGS, Santa Cruz, USA.
- 10/2011: Frontier lecture on earth system sciences at the Tsinghua University, China.
- 07/2011: Two invited lectures at the 8<sup>th</sup> International Seminar on Climate System and Climate Change (ISCS), Beijing, China
- 07/2011: An invited talk at the State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG), Beijing, China
- 07/2011: An invited lecture at 2<sup>nd</sup> International Ocean Sciences Summer School, Xiamen
- 06/2011: An invited lecture at the International Modeling Training Workshop, Qingdao.
- 03/2011: An invited talk at Woods Hole Oceanography of Institute, Woods Hole, MA.