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Last updates: 04/05/2021

Education

MIT/WHOI Joint Program, Massachusetts, Ph.D. in Physical Oceanography	June, 2011
MIT/WHOI Joint Program, Massachusetts, M.S. in Physical Oceanography	March, 2008
Peking University, China, M.S. in Atmospheric Sciences	June, 2005
Lanzhou University, China, B.S. in Meteorology	June, 2002

Research Interests

Satellite Oceanography, Geophysical fluid dynamics, small-scale ocean dynamics, upper ocean circulation, ocean's role in the climate system

Professional Experience

Jet Propulsion Laboratory	
Scientist	November, 2015 – present
Deputy Project Scientist for PO.DAAC	October, 2020 – present
Lead scientist and task manager, SWOT postlaunch oceanography in-situ CalVal	September, 2020 – present
Postdoc scholar, Scripps Institution of Oceanography	January, 2013 – November, 2015
Postdoc investigator, Woods Hole Oceanographic Institution	June, 2011 – December, 2012
Research Assistant, MIT/WHOI Joint Program	September, 2005 – June, 2011
Research Assistant, Peking University	September, 2002 – June, 2005

Journal Articles submitted and in prep

35. **Wang, J**., and coauthors (2021): Reconstructing the near inertial oscillation from the future Wind and Current Mission (WaCM). (in prep)

34. **Wang, J.,** 2021: A plausible way of separating balanced motions and internal waves: combine sea surface height and sea surface velocity. (JGR, in prep)

33. **Wang, J**., L-L Fu, 2021: A note on the sea surface height, steric height, and bottom pressure (JPO, in prep)

32. H. S. Torres, P. Klein, E. D'Asaro, J. Wang, A. Thompson, L. Siegelman, D. Menemenlis, E. Rodriguez, (2021): Dynamical regimes of submesoscales and internal gravity waves in the California Current System, (JGR, submitted)

31. M. Archer, Z. Li, J. Wang, L. L. Fu, 2021: A multi-scale data assimilation system in support of the SWOT satellite mission, Part II: Performance evaluation with independent in-situ observations, (JGR Oceans, submitted)

30. Z. Li, M. Archer, J. Wang, L. L. Fu, 2021: A multi-scale data assimilation system in support of the SWOT satellite mission, Part I: A four-dimensional algorithm and implementation, (JGR Oceans, submitted)

29. **J. Wang**, L-L Fu, B. Haines, and coauthors, 2021: On the development of SWOT in-situ Calibration/Validation of the short-wavelength ocean topography, (JTECH, submitted)

Published Peer-reviewed Journal Articles

H-index=12 (Web of Science), H-Index=13 (google scholar), h10-Index=16 (google scholar)

2020

28. Su Z., H. Torres, P. Klein, A. F. Thompson, L. Siegelman, J. Wang, D. Menemenlis, C. Hill, 2020: High-Frequency Submesoscale Motions Enhance the Upward Vertical Heat Transport in the Global Ocean, Journal of Geophysical Research: Oceans, doi: 10.1029/2020JC016544

27. Qiu B., S. Chen, P. Klein, H. Torres, J. Wang, L-L. Fu, D. Menemenlis, 2020: Reconstructing Upper Ocean Vertical Velocity Field from Sea Surface Height in the Presence of Unbalanced Motion, Journal of Physical Oceanography, doi:10.1175/JPO-D-19-0172.1

26. Mazloff, M., S. Gille, B. Cornulle, J. Wang, 2020: The Importance of Remote Forcing for Regional Modeling of Internal Waves, Journal of Geophysical Research: Oceans, doi:10.1029/2019JC015623

2019

25. Li, Z., J. Wang, L.L. Fu, 2019; An Observing System Simulation Experiment for Ocean State Estimation to Assess the Performance of the SWOT Mission: Part 1—A Twin Experiment, Journal of Geophysical Research: Oceans, DOI: 10.1029/2018JC014869

24. F. d'Ovidio, A. Pascual, J. Wang, A. Doglioli, Z. Jing, S. Moreau, G. Gregori, S. Swart, S. Speich, F. Cyr, B. Legresy, Y. Chao, L. L. Fu, R. A. Morrow, 2019: Frontiers in fine scale in-situ studies: opportunities during the SWOT fast sampling phase, Frontiers, DOI: 10.3389/fmars.2019.00168

23. Rosemary M., L.L. Fu, F. Ardhuin, M. Benkiran, B. Chapron, E. Cosme, F. d'Ovidio, J. T. Farrar, S. T. Gille, G. Lapeyre, P.-Y. Le Traon, A. Pascual, A. Ponte, B. Qiu, N. Rascle, R. Samelson, C. Ubelmann, J. Wang, E. D. Zaron. 2019: Global observations of fine-scale ocean surface topography with the Surface Water and Ocean Topography (SWOT) Mission, Frontier, DOI:10.3389/fmars.2019.00232

22. Zhao, Z., J. Wang, D. Menemenlis, L. Fu, S. Chen, and B. Qiu, 2019: Decomposition of the Multimodal Multidirectional M2 Internal Tide Field. J. Atmos. Oceanic Technol.,36, 1157–1173, https://doi.org/10.1175/JTECH-D-19-0022.1

21. Torres H., P. Klein, L. Siegelman, B. Qiu, S. Chen, C. Ubelmann, J. Wang, D. Menemenlis, L.-L. Fu, 2019: Diagnosing ocean-wave-turbulence interactions from space. Doi: 10.1029/2019GL083675, GRL

20. Wang, J. Lee-Lueng Fu, H. S. Torres, S. Chen, B. Qiu, D. Menemenlis, 2019: On the spatial scales to be resolved by the surface water and ocean topography Ka-band Radar interferometer, J. Atmos. Oceanic Technol., doi:10.1175/JTECH-D-18-0119.1

19. Wang, J., Lee-Lueng Fu, 2019: On the long-wavelength validation of the SWOT KaRIn measurement, J. Atmos. Oceanic Technol, 10.1175/JTECH-D-18-0148.1

18. L. D. Talley, I. Rosso, I. Kamenkovich, M. E. Mazloff, J. Wang, E. Boss, A. R. Gray, K. S. Johnson, R. Key, S. C. Riser, N. L. Williams, and J.L. Sarmiento, 2019, Southern Ocean biogeochemical float deployment strategies, with example from the Greenwich Meridian line (GO-SHIP A12), Journal of Geophysical Research: Oceans, doi:10.1029/2018JC014059

2018

17. Torres, H., P. Klein, D. Menemenlis, B. Qiu, Z. Su, J. Wang, S. Chen, Lee-Lueng Fu, 2018, Partitioning ocean motions into balanced motions and internal gravity waves from space, JGR, doi: 10.1029/2018JC014438

16. V. Tamsitt, R. P. Abernathey, M. R. Mazloff, J. Wang, and L. D. Talley, 2018: Transformation of deep water masses along Lagrangian upwelling pathways in the Southern Ocean, Journal of Geophysical Research: Oceans, 10.1002/2017JC013409.

15. Qiu, B., S. Chen, P. Klein, J. Wang, H. Torres, L.-L. Fu, and D. Menemenlis, 2018: Seasonality in Transition Scale from Balanced to Unbalanced Motions in the World Ocean. J Phys Oceanogr, doi:10.1175/JPO-D-17-0169.1.

14. Su, Z., J. Wang, P. Klein, A. F. Thompson, and D. Menemenlis, 2018: Ocean submesoscales as a key component of the global heat budget. Nature Communications, 9, 775, doi:10.1038/s41467-018-02983-w.

13. Tamsitt, V. and Coauthors, 2018: Spiraling pathways of global deep waters to the surface of the Southern Ocean. Nat Commun, 8, 172, doi:10.1038/s41467-017-00197-0.

12. Sebille, E. van and Coauthors, 2018: Lagrangian ocean analysis: fundamentals and practices. Ocean Model, doi:10.1016/j.ocemod.2017.11.008.

11. Wang, J., L.-L. Fu, B. Qiu, D. Menemenlis, J. T. Farrar, Y. Chao, A. Thompson, and M. Flexas, 2018: An observing system simulation experiment for the calibration and validation of the Surface Water and Ocean Topography sea surface height measurement using in-situ platforms. J. Atmos. Oceanic Technol., doi:10.1175/JTECH-D- 17-0076.1.

2016

10. Wang, J., M. R. Mazloff, and S. T. Gille, 2016: The effect of the Kerguelen Plateau on the ocean circulation. doi:10.1175/jpo-d-15-0216.1.

2015

9. LaCasce J., J. Wang, 2015: Estimating Subsurface Velocities from Surface Fields with Idealized Stratification. J Phys Oceanogr, 45, 2424–2435, doi:10.1175/JPO-D-14-0206.1.

8. Wang, T., Y. Du, W. Zhuang, J. Wang (2015), Connection of Sea Level Variability between Tropical Western Pacific and Southern Indian Ocean during Recent Two Decades. Science China-D.

2014

7. Liu, L., Peng, S., Wang, J., & Huang, R. X. (2014). Retrieving density and velocity fields of the ocean's interior from surface data. Journal of Geophysical Research: Oceans, 119, 8512–8529, doi:10.1002/2014JC010221.

6. Wang, J., M. R. Mazloff, S. T. Gille (2014), Pathways of Agulhas Waters poleward of 29S, Journal of Geophysical Research - Oceans, doi:10.1002/2014JC010049

2013

5. Wang, J., G. Flierl, J. LaCasce, J. McClean, A. Mahadevan (2013), Reconstructing the ocean's interior from surface data, J. Phys. Oceanogr., 43, 16111626, doi:10.1175/JPO-D-12-0204.1

4. Wang, J., M. Spall, G. Flierl, P. Malanotte-Rizzoli (2013), Nonlinear radiating instabilities of an eastern boundary current, J. Phys. Oceanogr., 43(7), 14391452, doi:10.1175/JPO-D-12-0174.1.

2012

3. Wang, J., M. Spall, G. Flierl, P. Malanotte-Rizzoli (2012), A new mechanism for the generation of quasi-zonal jets in the ocean, Geophysical Research Letters, 39, L10601, doi:10.1029/2012GL051861

Pre-2011

2. Wang, J., W.H. Qian, and X. Zhang (2007), Relationship between the tropical cyclone genesis over the Northwest Pacific and sea surface temperature anomalies. Progress in Natural Sciences, 17(11): 69-73.

1. Wang, J., and W.H. Qian (2005), Statistical analysis of tropical cyclone impact on the China mainland during the last half century. Chinese Journal of Geophysics, 48(5): 1069-1077.

Non-referred publications

7. J. Wang, 2021: User guide of the ECCO-based Pre-SWOT numerical simulations – version 1, PO.DAAC

6. J. Wang and coauthors, 2020: SWOT Pre-launch field campaign 2019-2020 in-situ data - version 1, PO.DAAC

5. Gille S. and coauthors, 2018: Open Code Policy for NASA Space Science: A perspective from NASA-supported ocean modeling and ocean data analysis, white paper in response to "Call for White Papers: Best Practices for a Future Open Code Policy for NASA Space Science".

4. Wang, J. L. Fu, B. Qiu, T. Farrar, D. Menemenlis (2016), An Observing System Simulation Experiment (OSSE) on the design of an in-situ observing system for the CalVal of SWOT SSH measurement, SWOT white paper, Jet Propulsion Laboratory, Caltech.

3. Wang, J., M. Spall, J. Pedlosky, I. Kamenkovich (2014). On the generation of zonal jets by radiating instability and small-scale stochastic wind forcing, in zonal jets (edited by B. Galperin et al.), (book chapter).

2. Wang, J., Instabilities of an Eastern Boundary Current with and without Large-scale Flow Influence, Ph.D. thesis, MIT/WHOI Joint Program in Physical Oceanography, 2011.

1. Wang, J., On the warm bias along the South-West African Coast in coupled models: An oceanic perspective, M.S. thesis, MIT/WHOI Joint Program in Physical Oceanography, 2008.

Contributions to NASA missions

- Team member of the SWOT project scientist (led by Lee-Lueng Fu)
    a. Study the upper ocean dynamics using the 1/48-deg MITgcm global simulation with 2PB output
    b. Develop a 3DVar assimilation system for SWOT data assimilation led by Z. Li.
    c. Execution lead of the SWOT oceanography in-situ CalVal report to project scientist and manager
        i. Lead the design and implement the post-launch oceanography campaign with multiple institutions
        ii. Manage postlaunch campaign team
- Development team for the future WaCM mission (led by Ernesto Rodriguez) through JPL/Caltech President's and Chair's Research and Development Fund.
    a. Lead a study on separating waves and eddies using synthetic sea surface height and sea surface velocity measurements

Community Services

- Panel member, US CLIVAR POS (The Phenomena, Observations, and Synthesis Panel)
- Member of the steering committee for the SWOT Adopt-A-Cross-Over international CLIVAR consortium
- Session co-Chair, Ocean Surface Topography Science Team (OSTST) (2019, 2020)
- Session Chair, SWOT Science Team meeting (2017)
- NASA PO-ROSES review panel
- Reviewer for Science, Journal of Physical Oceanography, Journal of Geophysical Research – Oceans, Ocean Dynamics, Marine Ecology Progress Series, Frontiers, Ocean Modeling, Scientific Reports, Acta Physica Sinica, Geoscience and Remote Sensing Letters, Pure and Applied Geophysics, Geoscience and Remote Sensing Letters

Field/Teaching Experience

- SWOT prelaunch field campaign, mooring deployment near the SWOT California Current CalVal site, September, 2019
- Line-W cruise with chief scientist John Toole; did CTD watch, oxygen and salt sampling, mooring recovery and deployment, August, 2012
- Teaching assistant for the class "Environment and Development of Western China", 2003
- Participated the summer project "Weather and Climate of Southern Gansu Province" along the border of Gansu Province and Tibet Plateau, 2001

Honors and Awards

- JPL Voyager Award, 2018, 2020
- Outstanding Student Paper Award, AGU Fall Meeting, San Francisco, CA, 2010
- Wusi scholarship, Peking University, 2003-2004
- Award for Excellent Social Contribution, Peking University, 2003-2004
- Guanghua Fellowship, Peking University, 2002-2003

Workshop/Meeting Participation

- Wang J., L.-L. Fu, F. d'Ovidio, 2020: AGU Fall Meeting Town Hall: SWOT Invites the Science Community to Join the Postlaunch in Situ Field Campaigns (town hall organizer)

- J. Wang, L.-L. Fu, B. Haines, 2020: Measuring SSH at sub-centimeter level using in-situ platforms in preparation for the SWOT post-launch SSH Calibration and Validation, (virtual presentation) OSTST 2020
- J. Wang, L.-L. Fu, M. Archer, B. Haines, 2020: SWOT and SWOT CalVal, Southern California GFD workshop, 2020 (virtual)
- J. Wang, I. Fenty, 2020: Instructor: Where is global warming, NASA CCS climate summer school, JPL (virtual)
- Wang J., Z. Li, L.-L. Fu, 2020: Multiscale data assimilation for SWOT ocean application, AGU Ocean Sciences Meeting, San Diego
- Wang J., 2020: Introduction to SWOT, AGU Ocean Sciences Meeting, San Diego
- Wang J., 2019: A multiscale data assimilation system for validating sea surface height by the upcoming SWOT mission, Ocean Surface Topography Science Team (OSTST), Chicago
- Wang J., 2019: Instructor: Where is global warming, NASA CCS summer school, Pasadena
- Wang J. 2019: Multiscale Data Assimilation for SWOT Ocean Application, SWOT Science Team Meeting Bordeaux, France
- Wang J., L.-L. Fu, 2018: LL4320 and SWOT, ECCO annual meeting, Austin, TX
- Wang J., L.-L. Fu, 2018: SWOT CalVal in the California Current System (CCS) potential scientific outcomes beyond 1D validation, SWOT workshop, DC
- Wang J., L.-L. Fu, 2018: Introduction to SWOT, COSPAR, Pasadena
- Wang J., L.-L. Fu, 2018: numerical simulations for the SWOT prelaunch planning and postlaunch data assimilation, SWOT workshop before Ocean Sciences meeting, Portland
- Wang J., L.-L. Fu, 2017: The application of the LLC4320 in the SWOT prelaunch activities, ECCO annual meeting, Pasadena
- Wang J. and coauthors, 2017: SWOT ocean in-situ CalVal - An OSSE study, SWOT Science Team meeting, Toulouse, France
- Wang J., 2017: Interior PV for the 3D inversion, , SWOT Science Team meeting, Toulouse, France
- Zhan S., J. Wang, P. Klein, A. F. Thompson, D. Menemenlis, L.L. Fu, Seasonality and intermittency of the ocean dynamics at scales smaller than 100km in the world ocean: A scientific challenge for SWOT, American Geophysical Union Fall meeting, San Francisco, December, 2016
- Wang J., L.L. Fu, SWOT Ocean CalVal, American Geophysical Union Fall meeting, San Francisco, December, 2016
- Wang J., L.L. Fu, SWOT Ocean CalVal, SWOT Science Team meeting, Pasadena, June, 2016.
- Wang J., Inferring 3D mesoscale eddy structure from surface fields, Caltech, April, 2016 (invited).
- Wang J., Simulating tracer spreading using particles - the development of an offline Lagrangian model (Octopus), Future Lagrangian Ocean Modelling workshop, Imperial College, London, September, 2015.
- Wang J., On the reconstruction of ocean dynamics from ocean surface data, JPL, March, 2014.
- Wang J., On the formation of the quasi-zonal striations in the ocean by radiating instabilities of an eastern boundary current, International Space Science Institute, Bern Switzerland, April 2013.
- Wang J., Two lectures about the vertical partition of the horizontal kinetic energy in the ocean, Workshop on the wind-driven circulation in the world ocean, Guangzhou, China, October 2012. (invited)
- Wang, J., Reconstructing the ocean's interior from surface data, WHOI, September 2012; UMASS-Dartmouth (invited), Oct. 2012;
- Wang, J., Radiating instabilities of an eastern boundary current and the formation of the zonal striations in the ocean, University of Rhode Island, April, 2012.
- Wang, J., Nonlinear radiating instabilities of an idealized eastern boundary current with and without large-scale flow influence, Princeton AOS/GFDL seminar, March, 2012. (invited)
- Wang, J., A. Mahadevan, Vertical velocities in an upper ocean front from a Lagrangian perspective, Poster Presentation at the Workshop in Montreal: "Balance, Boundaries and Mixing in the Climate System" September 28-30, 2011
- Wang, J., P. Malanotte-Rizzoli, M. Spall, Influence of a large-scale circulation on an eastern boundary current, Poster Presentation at AGU Annual Fall Meeting, San Francisco, CA, December 12-17, 2010.
- Wang, J., P. Malanotte-Rizzoli, M. Spall, The influence of a large-scale circulation on an eastern boundary current, Oral Presentation at International Meeting of Students in Physical Oceanography (IMSPO), University of Washington, Seattle, WA, September 22-24, 2010.
- Participant of the Workshop on Ocean Mesoscale Eddies, Met Office, Exeter, UK, 27-29 April 2009
- Participant of the 13th Annual CCSM Workshop, Breckenridge, CO, 17-19 June 2008.
- Wang, J., M. Jochum, and P. Malanotte-Rizzoli, An oceanic perspective on the coastal SST bias in climate models, Oral presentation at CGD, NCAR, June 16, 2008
- Wang, J., M. Jochum, and P. Malanotte-Rizzoli, An oceanic perspective on the coastal SST bias in climate models, Poster presentation at the AGU Ocean Sciences Meeting, Orlando, FL, 2-7 March, 2008.

- Wang, J., WH Qian, Comparison of different thermocline definitions over the tropical Pacific, Oral presentation at the conference ”The effects of ocean-atmosphere-land interaction in Asian monsoon region on China climate” Jinan, Shandong, China, Aug 2004.