# SHUWEN TAN

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## EDUCATION

**Ph.D., Physical Oceanography** *September 2014 - September 2020*
Institute of Oceanology, Chinese Academy of Sciences (IOCAS), Qingdao, China
& University of Chinese Academy of Sciences (UCAS), Beijing, China
**B.S., Marine Science** *September 2010 - July 2014*
Ocean University of China, Qingdao, China

## RESEARCH INTERESTS

- Theory and application of the rotating internal hydraulics
- Flow–topography interaction in the deep ocean & in a changing climate
  *(e.g., flow hydraulics, internal wave, instability, turbulent mixing)*
- Data-driven analysis & machine learning for interpreting physics from the accumulating mass of ocean data

## RESEARCH EXPERIENCE

**Postdoctoral Fellow** *April 2021 - Ongoing*
*Supervised by Dr. Andreas Thurnherr*
*GO-SHIP Postdoctoral fellow at Lamont-Doherty Earth Observatory, USA*

- "Decadal changes in stratification of the abyssal oceans and implications for hydraulic control of abyssal channel flow"
- "Clustering & interpreting Bottom Boundary Layer families using a hierarchical approach & machine learning"

**Graduate Research Assistant** *September 2015 - September 2020*
*Supervised by Dr. Dongliang Yuan*
*Key Laboratory of Ocean Circulation and Waves, IOCAS, China*

- Assisted with cruise planning and instruments preparation
- Served on cruises and assisted with collection of field measurements
- Participated in proposal and report writing for collaborative projects and trained master's students

**Guest student** *September 2017 - September 2019*
*Supervised by Dr. Larry Pratt*
*Physical Oceanography Department, Woods Hole Oceanographic Institution, USA*

- Audited nine graduate courses
- Audited Geophysical Fluid Dynamics Program, WHOI, summer 2019
- Conducted projects: "Hydraulics and mixing in the deep branch of the Indonesian Throughflow" and "Hydraulic control and adjustment in a channel+plateau system"

**Guest student** *April 2019 - May 2019*
*Multiscale Ocean Dynamics Group, Scripps Institution of Oceanography, UC San Diego, USA*

- Collaborated on the "Samoan Passage Project" with Dr. Gunnar Voet, Dr. Matthew Alford, etc.

## TEACHING EXPERIENCE

**Co-mentor of an undergraduate** *summer 2021 - Ongoing*
*LEDO, Columbia University in the City of New York, USA*

· "Different flavors of bottom boundary layer stratification profiles".

**Teaching Assistant of Graduate Summer School Course** *summer 2017*
*University of Chinese Academy of Sciences, Beijing, China*

· "Up-to-data Ocean Thermohaline Processes" by Dr. William Dewar and Dr. Dongliang Yuan
Led discussion sessions. Graded exams.

**Teaching Assistant of Graduate Course** *spring 2016, 2017*
*University of Chinese Academy of Sciences, Beijing, China*

· "Dynamic Processes of the Tropical Ocean Circulation" by Dr. Fan Wang, Dr. Dongliang Yuan, and Dr. Yan Du
Assisted with writing the class notes and syllabus. Led tutorial sessions. Graded and prepared answer keys for homework and exams.

## FIELD EXPERIENCE

**R/V Kexue** *31 days, August–October 2015*

· Participated in mooring deployment and recovery. Assisted with surface drifters deployment, CTD, LADCP and XCTD operation. Demonstrated shipboard processing of CTD and ADCP data.

**R/V Tianshi I** *day trip, October 2013*

· Collected water samples and organized CTD survey with other students.

## TECHNICAL SKILLS

**Data Analysis and Modeling Experience**

- Collected and analyzed in-situ physical oceanographic data (eg. CTD, SADCP, LADCP, Mooring)
- Analyzed large climate & ocean model datasets
- Developed a linear reduced gravity model for planetary ocean wave studies
- Implemented a one–layer, nonlinear, nonhydrostatic model for hydraulic adjustments

**Scientific Programming**

- Python, MATLAB, Fortran, LaTeX

## SEMINAR AND CONFERENCE PRESENTATIONS

**Tan, S.**, L.J. Pratt, et al., (2020), Hydraulic control and wave adjustment in a channel+plateau system: Deep Western Boundary Current passing through the Samoan Passage. **Poster**, AGU Fall Meeting, virtual.

**Tan, S.**, L.J. Pratt, D. Yuan, and C. Corvianawatie (2019), Hydraulics and mixing in the deep branch of the Indonesian Throughflow. **Oral**, Woods Hole Oceanographic Institution PO Seminar, Woods Hole, USA.

**Tan, S.**, D. Yuan, and H. Zhou (2018), Significant Cooling in the Deep Philippine Sea during the recent Global Warming Hiatus. **Poster**, AGU Fall Meeting, Washington, D.C., USA.

**Tan, S.**, B. Li and D. Yuan (2016), Interannual Variations of Low Latitude Western Boundary Currents in the Tropical Western Pacific Ocean. **Poster**, CLIVAR Open Science Conference, Qingdao, China.

## PUBLICATIONS

*Peer-reviewed articles*

Zhou, H., H. Liu, **S. Tan**, W. Yang, Y. Li, X. Liu, Q. Ren, and W. K. Dewar, 2021: The Observed North Equatorial Countercurrent in the Far Western Pacific Ocean during the 201416 El Niño. *Journal of Physical Oceanography*, 51 (6).

**Tan, S.**, L.J. Pratt, D. Yuan, C. Corvianawatie, Dewi Surinati, Asep S. Budiman, Ahmad Bayhaqi, 2020: Hydraulics and Mixing of the Deep Overflow in the Lifamatola Passage of the Indonesian Seas. *Journal of Physical Oceanography*, 50, 2797–2814.

Zhang, Z., L.J. Pratt, J. Wang, F. Wang, and **S. Tan**, 2020: Intermediate Intraseasonal Variability in the Western Tropical Pacific Ocean: Meridional Distribution of Equatorial Rossby Waves Influenced by a Tilted Boundary. *Journal of Physical Oceanography*, 50(4), 921–933.

Cusack, J.M., G. Voet, M.H. Alford, J.B. Girton, G.S. Carter, L.J. Pratt, K.A. Pearson-Potts, and **S. Tan**, 2019: Persistent Turbulence in the Samoan Passage. *Journal of Physical Oceanography*, 49(12), 3179–3197

Carter, G.S., G. Voet, M.H. Alford, J.B. Girton, J.B. Mickett, J.M. Klymak, L.J. Pratt, K.A. Pearson-Potts, J.M. Cusack, and **S. Tan**, 2019: A spatial geography of abyssal turbulent mixing in the Samoan Passage. *Oceanography*, 32(4), 194–203.

Girton, J.B., J.B. Mickett, Z. Zhao, M.H. Alford, G. Voet, J.M. Cusack, G.S. Carter, K.A. Pearson-Potts, L.J. Pratt, **S. Tan**, and J.M. Klymak, 2019: Flow–topography interactions in the Samoan Passage. *Oceanography*, 32(4), 184–193.

Pratt, L.J., G. Voet, A. Pacini, **S. Tan**, M.H. Alford, G.S. Carter, J.B. Girton, and D. Menemenlis, 2019: Pacific Abyssal Transport and Mixing: Through the Samoan Passage versus around the Manihiki Plateau. *Journal of Physical Oceanography*, 49, 1577–1592.

**Tan, S.** and Zhou, H., 2018: The observed impacts of the two types of El Niño on the North Equatorial Countercurrent in the Pacific Ocean. *Geophysical Research Letters*, 45, 10,493–10,500.

Yuan, D., X. Li, Z. Wang, Y. Li, J. Wang, Y. Yang, X. Hu, **S. Tan**, H. Zhou, A.K. Wardana, D. Surinati, A. Purwandana, M.F. Azis Ismail, P. Avianto, D. Dirhamsyah, Z. Arifin, and J.v. Storch, 2018: Observed Transport Variations in the Maluku Channel of the Indonesian Seas Associated with Western Boundary Current Changes. *Journal of Physical Oceanography*, 48, 1803–1813.

*Manuscripts under review*

**Tan, S.**, L.J. Pratt, G. Voet, J.M. Cusack,K.R. Helfrich, M.H. Alford, J.B. Girton, G.S. Carter: Hydraulic control of flow in a multi-passage system connecting two basins. *submitted to JFM*