

Luwei Yang

Physical Oceanographer

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Research Interests

My research interests lie in the ocean dynamics. I am particularly interested in the interaction of the ocean circulation across a range of scales and its role in global ocean and climate.

Education

2015–2019 Ph.D. in Quantitative Marine Science, University of Tasmania, Hobart, Australia.

Thesis Title: The impact of lee waves on the Southern Ocean Circulation and its sensitivity to wind stress (available upon request)

Supervisors: Dr. Maxim Nikurashin, Prof. Andrew McC. Hogg, and Dr. Bernadette M. Sloyan

2011–2015 B.Sc. in Marine Science, Ocean University of China, Qingdao, China.

Thesis Title: Volume Transport through straits around the South China Sea Based on Results of a Numerical Model

Supervisor: Prof. Jian Lan

Professional Experience

2020–present Postdoctoral researcher, Department of Atmospheric & Oceanic Sciences, UCLA, Los Angeles, California, United States.

Supervisors: Prof. James C. McWilliams, Dr. Roy Barkan, and Dr. Kaushik Srinivasan

Selected Honours and Awards

2021 Travel grant for attending the Physical Oceanography Dissertations Symposium (PODS) XI

2017 Bursary (€1000) for attending 2017 Summer School on the Fluid Dynamics of Sustainability and the Environment (FDSE)

2017 Travel scholarship (AUD2000), CSIRO-UTAS Joint Program in Quantitative Marine Science

2017 Student Oral Presentation Honourable Mention, AMOS/MSNZ Conference & ANZ Climate Forum

2015–2018 QMS Base Scholarship & QMS Top-up Scholarship (AUD30849.00 per annum)

2015 The Award for Excellent Graduates in the class of 2015, Ocean University of China

2014 National Scholarship (CNY8000), Ministry of Education of China

2014 Outstanding Student Award, Ocean University of China

2014 First Class Scholarship Award, Ocean University of China

Teaching Experience

- 2017–2019 Marking: Dynamical Oceanography (KSM310)
Coordinators: Dr. Maxim Nikurashin, Prof. Neil Holbrook, Prof. Nathan Bindoff
Institute for Marine and Antarctic Studies, University of Tasmania
- 2016 Marking: Advanced Oceanography (KSA306)
Coordinator: Dr. Maxim Nikurashin
Institute for Marine and Antarctic Studies, University of Tasmania
- 2016 Demonstrating and marking: Our Changing Climate (KGA320)
Coordinator: Prof. Neil Holbrook
Institute for Marine and Antarctic Studies, University of Tasmania

Field Experience

- May–June 2016 CTD watch stander, Leg 2, 35 days, *Monitoring Ocean Change and Variability along 170°W from the ice edge to the equator*, R/V Investigator.
GO-SHIP P15S Hydrographic Section, Wellington (NZ) - Lautoka (Fiji), South Pacific
Chief Scientist: Susan Wijffels (CSIRO Oceans and Atmosphere, WHOI)

Research Experience

- 2013–2014 *Group leader*, Student project: The optimization of the Chinese Antarctic expedition routes in ice zones and an analysis of suitable time and locations for observations, Student Research Development Program at Ocean University of China (OUC-SRDP).

Summer and Winter Schools

- May 2019 Student, *Advanced Ocean Modelling Summer School 2019*, Lake Pedder, Tasmania, Australia.
- July 2017 Student, *2017 Summer School on the Fluid Dynamics of Sustainability and the Environment (FDSE)*, Ecole Polytechnique, Palaiseau, France.
- June 2017 Student, *Australian Research Council's Centre of Excellence for Climate System Science (ARCCSS) 2017 winter school*, UNSW, Sydney, Australia.

Services and Outreach

- 2020–present *Reviewer*, Journal of Physical Oceanography, Journal of Geophysical Research Oceans, Journal of Fluid Mechanics
- June 2018 *Volunteer*, 22nd Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD)
- November 2018 *Session Chair*, ARC Centre of Excellence for Climate Extremes Annual Workshop 2018
- 2018 *UTAS PhD student representative*, the *Early Career Researcher (ECR) Committee member* for ARC Centre of Excellence for Climate Extremes.
- June, July 2018 *Volunteer*, IMAS Work Experience program.

Designed and delivered lectures (1 hour) on ‘How do we study oceans? - Research in Physical Oceanography’ for two groups of high school students across Australia;

Demonstrated and engaged in a lab experiment with high school students on ‘Ocean gyres (Western Intensification phenomenon)’ using a rotating tank (Weather in a Tank Apparatus).

19 May 2018 *Volunteer*, Marine Debris Clean-ups at Charlotte Cove, Tasmania, Australia.

Clean-up and categorization of marine plastics from local beaches;

D’Entrecasteaux and Huon Collaboration project;

Organizer: NRM South, South Hobart, Tasmania, Australia.

May, December 2018 *Volunteer*, Young Antarctic Scientists program.

Technical session, 13 December. Engaged in an outdoor practical session, in which year 4 students at Clarendon Vale Primary School observed and learned how to fly a drone.

Biogeochemical oceanography session, 13 December. Coordinated a group activity in which year 4 students at Clarendon Vale Primary School used baking soda and vinegar to blow the balloons with CO₂.

Physical Oceanography session, 16 May. Engaged in a lecture and an experiment, in which oil, water, honey, vinegar are slowly added into and settled in a tube, aiming to deliver the idea that ‘ocean has layers’, with year 4 students at Clarendon Vale Primary School.

Computational Skills

Microsoft Word, Microsoft Powerpoint, Microsoft Excel, Inkscape, Mendeley, IPython Notebook, GitHub, L^AT_EX, MacOS, Unix/Linux, Windows, High Performance Computing (HPC) system (Raijin operated by National Computational Infrastructure in Australia), netCDF operators

Programming Languages

Fortran understood, modified and compiled MOM6 source code

MATLAB coding and plotting

Python coding and plotting

Publications

[4] **Yang, L.**, M. Nikurashin, A.M. Hogg, and B.M. Sloyan, 2021: Impacts of lee waves on the sensitivity of the Southern Ocean circulation to winds. In prep.

[3] Barkan R., K. Srinivasan, **L. Yang**, J.C. McWilliams, J. Gula, and C. Vic, 2021: Oceanic mesoscale eddy depletion catalyzed by internal waves. *Geophysical Research Letters*, **48**, [10.1029/2021GL094376](https://doi.org/10.1029/2021GL094376).

[2] **Yang, L.**, M. Nikurashin, A.M. Hogg, and B.M. Sloyan, 2021: The impact of lee waves on the Southern Ocean circulation. *Journal of Physical Oceanography*, **51**, 2933-2950, doi: [10.1175/JPO-D-20-0263.1](https://doi.org/10.1175/JPO-D-20-0263.1).

[1] **Yang, L.**, M. Nikurashin, A.M. Hogg, and B.M. Sloyan, 2018: Energy Loss from Transient Eddies due to Lee Wave Generation in the Southern Ocean. *Journal of Physical Oceanography*, **48**, 2867–2885, doi: [10.1175/JPO-D-18-0077.1](https://doi.org/10.1175/JPO-D-18-0077.1).

Presentations

- [17] Barkan, R., K. Srinivasan, **L. Yang**, J. C. McWilliams, J. Gula, C. Vic. Oceanic Mesoscale Eddy Depletion Catalyzed by Internal Waves. *Ocean Sciences Meeting 2022, PS11, The dynamics of interacting internal waves and (sub)mesoscale flows*, Virtual, 28 February - 4 March 2022.
- [16] **Yang, L.**, R. Barkan, K. Srinivasan, and J. C. McWilliams. On the propagation of wind-generated near-inertial waves: the importance of submesoscale currents. *Ocean Sciences Meeting 2022, PS11, The dynamics of interacting internal waves and (sub)mesoscale flows*, Virtual, 28 February - 4 March 2022.
- [15] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The impact of lee waves on the Southern Ocean circulation and its response to changes in wind stress (invited talk). *Physical Oceanography Dissertations Symposium (PODS) XI*, Lihue, Kaua'i, Hawaii, United States, 17-21 October 2021.
- [14] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The impact of lee waves on the Southern Ocean circulation and its response to changes in wind stress. *Polar Oceans seminar, British Antarctic Survey*, Zoom, 4 November 2020.
- [13] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The impact of lee waves on the response of the Southern Ocean circulation to changes in wind stress. *Second California Geophysical Fluid Dynamics (CalGFD) Meeting*, Zoom, 20-21 August 2020.
- [12] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. Impacts of Lee Waves on the Southern Ocean Circulation and its Sensitivity to Wind Stress. *Ocean Sciences Meeting 2020*, PS14A-2817, San Diego, California, United States, 16-21 February 2020 (poster).
- [11] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. Impacts of Lee Waves on the Southern Ocean Circulation and its Sensitivity to Wind Stress. *22nd Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD), Idealized Model Approaches to the Atmosphere and Ocean Circulation 7.2*, Portland, Maine, United States, 24-28 June 2019.
- [10] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. Impacts of Lee Waves on the Southern Ocean Circulation and its Sensitivity to Wind Stress. *The Australian Meteorological and Oceanographic Society Annual Meeting and the International Conference on Tropical Meteorology and Oceanography (AMOS-ICTMO 2019)*, Darwin, Australia, 11-14 June 2019 (poster).
- [9] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Impacts of Bottom Drag on the Sensitivity of the Southern Ocean Circulation to the Changing Wind. *2018 Consortium for Ocean Sea Ice Modelling in Australia (COSIMA) workshop*, Canberra, Australia, 7-8 May 2018.
- [8] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *2018 Ocean Sciences Meeting*, PO12A-04, Portland, Oregon, United States, 11-16 February 2018.
- [7] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Impacts of Bottom Drag on the Sensitivity of the Southern Ocean Circulation to the Changing Wind. *Joint AMOS National Conference and the International Conference on Southern Hemisphere Meteorology and Oceanography (AMOS-ICSHMO 2018)*, Sydney, Australia, 5-9 February 2018.
- [6] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *Australian Research Council's Centre of Excellence for Climate System Science (ARCCSS) 2017 Workshop*, Canberra, Australia, 30 October - 2 November 2017.
- [5] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *21st Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD) and the 19th Conference on Middle Atmosphere, Mesoscale Ocean Dynamics 13.2*, Portland, Oregon, United States, 26-30 June 2017.

- [4] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *AMOS/MSNZ Conference & ANZ Climate Forum 2017*, Canberra, Australia, 7-10 February 2017.
- [3] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *CSIRO-UTAS PhD Program, Quantitative Marine Science Symposium*, Hobart, Australia, 28 November 2016.
- [2] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *Australian Research Council's Centre of Excellence for Climate System Science (ARCCSS) 2016 Workshop*, Lorne, Australia, 21 - 24 November 2016 (poster).
- [1] **Yang, L.**, M. Nikurashin, A. M. Hogg, and B. M. Sloyan. The Role of Lee Waves for Dissipation of Transient Eddies in the Southern Ocean. *University of Tasmania 10th Graduate Research Conference*, Hobart, Australia, 1-2 September 2016 (poster).

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