UCHIDA, Takaya

A Physical Oceanographer with a flair of data science

Office Address

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Languages

- Native: Japanese, English
- Conversational: French
- Elementary: Russian

Education

Doctor of Philosophy, Physical Oceanography   October 2019
Columbia University in the City of New York, USA

Master of Philosophy, Physical Oceanography   February 2018
Columbia University in the City of New York, USA

Master of Arts, Physical Oceanography   May 2016
Columbia University in the City of New York, USA

Bachelor of Engineering, Environmental Engineering   March 2014
The University of Tokyo, Japan

Research Experience

Assistant Research Scientist, Physical Oceanography   November 2022 - present
Center for Ocean-Atmospheric Prediction Studies, USA

MOPGA Postdoctoral Fellow, Physical Oceanography   October 2019 - September 2022
Institut des Géosciences de l'Environnement, CNRS, France

Submitted

- **Uchida, T.**, Q. Jamet, A. Poje, N. Wienders & W. Dewar. (In rev.). Wavelet-based wavenumber spectral estimate of eddy kinetic energy: Application to the North Atlantic. *J. Adv. Model. Earth Syst*. doi:10.31223/X5036Q;

- Deremble, B., **T. Uchida**, W. Dewar & R. Samelson. (In rev.). Eddy-mean flow interaction with the Multiple Scale Quasi-Geostrophic Model. *J. Adv. Model. Earth Syst*.;

- Chassignet, E., X. Xu, A. Bozec & **T. Uchida**. (In rev.) Impact of the New England seamount chain on the Gulf Stream pathway and variability. *J. Phys. Ocean*.

Published

- **Uchida, T.**, Q. Jamet, A. Poje, N. Wienders, W. Dewar & B. Deremble. (Accepted). Wavelet-based wavenumber spectral estimate of eddy kinetic energy: Idealized quasi-geostrophic flow. *J. Adv. Model. Earth Syst*. doi:10.1029/2022MS003399;

- **Uchida, T.**, D. Balwada, Q. Jamet, W. Dewar, B. Deremble, T. Penduff & J. Le Sommer. (2023). Cautionary tales from the mesoscale eddy transport tensor. *Ocean Model*. doi:10.1016/j.ocemod.2023.102172;

- **Uchida, T.**, J. Le Sommer, C. Stern, R. Abernathey, C. Holdgraf, A. Albert, L. Brodeau, E. Chassignet, X. Xu, J. Gula, G. Roullet, N. Koldunov, S. Danilov, Q. Wang, D. Menemenlis, C. Bricaud, B. Arbic, J. Shriver, F. Qiao, B. Xiao, A. Biastoch, R. Schubert, B. Fox-Kemper, W. Dewar & A. Wallcraft. (2022). Cloud-based framework for inter-comparing submesoscale permitting realistic ocean models. *Geosci. Model. Dev.* doi:10.5194/gmd-15-5829-2022;

- **Uchida, T.**, Q. Jamet, W. Dewar, J. Le Sommer, T. Penduff & D. Balwada. (2022). Diagnosing the thickness-weighted averaged eddy-mean flow interaction from an eddying North Atlantic ensemble: The Eliassen-Palm flux. *J. Adv. Model. Earth Syst*. doi:10.1029/2021MS002866;

- **Uchida, T.**, B. Deremble & S. Popinet. (2022). Deterministic model of the eddy dynamics for a midlatitude ocean model. *J. Phys. Ocean*. doi:10.1175/JPO-D-21-0217.1;

- **Uchida, T.**, Q. Jamet, A. Poje & W. Dewar. (2021). An ensemble-based eddy and spectral analysis, with application to the Gulf Stream. *J. Adv. Model. Earth Syst*. doi:10.1029/2021MS002692;

- Khatri, H., S. Griffies, **T. Uchida**, H. Wang, & D. Menemenlis. (2021). Role of mixed-layer instabilities in the seasonal evolution of eddy kinetic energy spectra in a global submesoscale permitting simulation. *Geophys. Res. Let*. doi:10.1029/2021GL094777;

- **Uchida, T.**, B. Deremble & T. Penduff. (2021). The seasonal variability of the ocean energy cycle from a quasi-geostrophic double gyre ensemble. *Fluids*. doi:10.3390/fluids6060206;

- **Uchida, T.**, B. Deremble, W. Dewar & T. Penduff. (2021). Diagnosing the Eliassen-Palm flux from a quasi-geostrophic double gyre ensemble. In proceedings of the *EarthCube Annual Meeting*. doi:10.5281/zenodo.5496375. https://earthcube2021.github.io/

ec21_book/notebooks/ec21_uchida_etal/notebooks/TU_05_Diagnosing-the-Eliassen-Palm-flux-from-a-quasi-geostrophic-double-gyre-ensemble.html;

- Jamet, Q., B. Deremble, N. Wienders, **T. Uchida** & W. Dewar. (2021). On wind-driven energetics of subtropical gyres. *J. Adv. Model. Earth Syst*. doi:10.1029/2020MS002329;

- Jones, S., J. Busecke, **T. Uchida** & R. Abernathey. (2020). Vertical regridding and remapping of CMIP6 ocean data in the cloud. In proceedings of the *EarthCube Annual Meeting*. https://github.com/earthcube2020/ec20_jones_etal;

- **Uchida, T.**, D. Balwada , R. Abernathey, G. McKinley, S. Smith & M. Lévy. (2020). The impact of seasonality in eddy iron fluxes on primary production in the Southern Ocean. *Nature Comm*. doi:10.1038/s41467-020-14955-0;

- **Uchida, T.**, D. Balwada, R. Abernathey, G. McKinley, S. Smith & M. Lévy. (2019). The contribution of submesoscale over mesoscale eddy iron transport in the open Southern Ocean. *J. Adv. Model. Earth Syst.* doi:10.1029/2019MS001805;

- **Uchida, T.**, D. Balwada, R. Abernathey, P. Channing, E. Boss & S. Gille. (2019). Southern Ocean Phytoplankton Blooms Observed by Biogeochemical Floats. *J. Geophys. Res.: Oceans*. doi:10.1029/2019JC015355;

- **Uchida, T.**, R. Abernathey & S. Smith. (2017). Seasonality of eddy kinetic energy in an eddy permitting global climate model. *Ocean Model.* doi:10.1016/j.ocemod.2017.08.006.

Honors and Awards

- Co-investigator of the National Science Foundation (NSF) grant 'Novel Ensemble Based North Atlantic Diagnostics' with the reference OCE-2123632;

- Co-investigator of the 'Assessing the Role of forced and internal Variability for the Ocean and climate Response in a changing climate' (ARVOR) project funded for duration of 2022 - 2024 by the French Les Enveloppes Fluides et l'Environnement (LEFE) program;

- Attendee of Les Houches Summer School on Fundamental Aspects of Turbulent Flows in Climate Dynamics, which took place during August 2017 at l'École de Physique des Houches, France;

- Scholarship from the Heiwa Nakajima Foundation, a private foundation in Japan, from September 2014 - August 2016.

Technical Skills

- Proficient in compiling and running numerical models in Basilisk and Fortran, with experience using the MITgcm. Also moderately expertise in tuning and running the Darwin biogeochemical model;

- Proficient in big-data analysis and has continued contributing to the development of Python open-source software such as:

     1. `xrft`: doi:10.5281/zenodo.1402635. https://xrft.readthedocs.io/en/latest/);
     2. `xwavelet`: doi:10.5281/zenodo.6984380. https://github.com/roxyboy/xwavelet);
     3. `xgcm`: doi:10.5281/zenodo.4821276. https://xgcm.readthedocs.io/en/latest/);

  available via Github, `pip` and `conda-forge`, and has contributed to the implementation of Pangeo Forge for cloud-based computational analyses (doi:10.5281/zenodo.6762536);

- Moderate understanding of machine learning with experience using `scikit-learn`.

Service Activity

- Reviewed manuscripts for the *Journal of Physical Oceanography*, *Journal of Advances in Modeling Earth Systems*, *Journal of Geophysical Research: Oceans*, *Geophysical Research Letters*, *Nature Communications*, *Ocean Modelling*, *Climate Dynamics*, *Journal of Marine Systems*, *Biogeosciences*, *Geoscientific Model Development*, *Frontiers in Marine Science* and *Journal of Limnology and Oceanology*;

- Served as a reviewer for the Wallenberg Academy Fellowship awarded by the Knut and Alice Wallenberg Foundation in Sweden, and the BIENVENÜE Call 2021 (H2020-MSCA-COFUND-2019) managed by the Regional Council of Brittany, France.