Yu Gao

Updated October 25, 2023

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Education

University of Miami — Miami, FL
Ph.D. in Meteorology and Physical Oceanography — August 2016 – January 2022

Ocean University of China — Qingdao, China
Bachelor's Degree in Marine Science — August 2012 – June 2016

Peer-reviewed Publications

SWOT Data Assimilation with Correlated Error Reduction: Fitting Model and Error Together
Yu Gao, Sarah T. Gille, Bruce D. Cornuelle, Matthew R. Mazloff (In preparation)

Response of Mixed Layer Depth Variability to Ocean Eddies and Atmospheric Noise in the Southern Ocean
Yu Gao, Igor Kamenkovich, and Benjamin Kirtman (In preparation)

Origins of mesoscale mixed-layer depth variability in the Southern Ocean
Yu Gao, Igor Kamenkovich, and Natalie Perlin
Ocean Science, 19, 615-627, 2023. DOI: 10.5194/os-19-615-2023

Oceanic Advection Controls Mesoscale Mixed Layer Heat Budget and Air–Sea Heat Exchange in the Southern Ocean
Yu Gao, Igor Kamenkovich, Natalie Perlin and Benjamin Kirtman
Journal of Physical Oceanography, 52(4), 537-555, 2022a. DOI: 10.1175/JPO-D-21-0063.1

A study of mesoscale air–sea interaction in the Southern Ocean with a regional coupled model
Yu Gao, Igor Kamenkovich, Natalie Perlin and Benjamin Kirtman
Ocean Modelling 153, 101660, 2020. DOI: 10.1016/j.ocemod.2020.101660

Data Publications

Data for Origins of Mixed Layer Depth Variability in the Southern Ocean
Gao, Y., Kamenkovich, I., and Perlin, N.
University of Miami Libraries [data set], 2022b. DOI: 10.17604/0BKF-P943

Oceanic Advection Controls Mesoscale Mixed Layer Heat Budget and Air-sea Heat Exchange in the Southern Ocean

Gao, Y., Kamenkovich, I., Perlin, N., and Kirtman, B.
University of Miami Libraries [data set], 2021. DOI: 10.17604/94qh-6m66

Research Experience

Ocean State Estimation in the California Current System
Postdoctoral Scholar, UC San Diego February 2022 – Present
Developed Python-based statistical models for SWOT Sea Surface Height satellite data, bridged observational gaps, and generated California Current state estimates using state-of-the-art data assimilation techniques.
Applied artificial intelligence filters (such as U-net) to reduce the noise level of the altimetry product in the California Coastal region.

Mesoscale Air-Sea Interaction and Mixed Layer Variability in the Southern Ocean
Research Assistant, Univ. of Miami August 2016 – January 2022
Modeled and analyzed mesoscale heat budget and air-sea interactions using regional air-sea coupled model. Interpreted data from Community Climate System Model (CCSM). Published three peer-reviewed papers.

Modeling the Annual Variation of Cold Water Masses in Bohai and Yellow Sea
Undergraduate Student, Ocean Univ. of China September 2015 – June 2016
Modeled water masses using FVCOM and analyzed coastal processes. Quantified the impact of freshwater input on water mass distribution.

Teaching Experience

MSC 302 Physical Oceanography Laboratory
Teaching Assistant, University of Miami Spring 2019

MSC/ATM 220 Climate and Global Change
Teaching Assistant, University of Miami Fall 2019

Invited Talks

Mesoscale air-sea Interaction and Mixed Layer Variability in the Southern Ocean,
JPL Center for Climate Sciences seminar, Pasadena, CA October 2023

SWOT Data Assimilation With Correlated Error Reduction,
NASA-MPOWIR Speaker Series, JPL, Pasadena, CA November 2022

Oral Presentations

Origins of Mesoscale Mixed Layer Variability in the Southern Ocean,
Ocean Sciences Meeting 2022, Online Feb-Mar 2022
Role of Mesoscale Currents in Ocean Mixed Layer Heat Budget,
Ocean Sciences Meeting 2020, San Diego, CA, USA Feb 2020

Poster Presentations

SWOT Data Assimilation with Correlated Error Reduction: Fitting Model and Error Together,

SWOT Science Team Meeting, Toulouse, France Sept 2022

Origins of Mesoscale Mixed Layer Variability in the Southern Ocean,
US CLIVAR Workshop, Denver, CO, USA Mar 2023

SWOT Data Assimilation With Correlated Error Reduction,
AGU Fall Meeting, Chicago, IL, USA, Dec 2022

Role of Mesoscale Currents in Ocean Mixed Layer Heat Budget and Air-Sea Coupling,
AGU Fall Meeting, Online Dec 2020

Professional Development

The Pattullo Conference by MPOWIR, Warrenton, VA, USA Sept 24 - 27, 2023

NASA's Earth Observations Summer School, Using Satellite Observations to Advance Climate Models
Pasadena, CA, USA Aug 16, 17 and 21 - 25, 2023

Unifying Innovations in Forecasting Capabilities Workshop
Boulder, CO, USA July 24, 2023 - July 28, 2023

San Diego Supercomputer Center, Summer Institute 2022, Supercomputing and Data Science
San Diego, CA, August 5 - 9, 2022

SWOT Science Team Meeting, Chapel Hill, NC, USA Jun 2022

RSMAS's Informatics Group:
Member-led discussion on Aitificial Intelligence (AI) in Oceanography and Atmospheric Sciences
Jan 2021 - Jan 2022

AMS Short Course: Machine Learning in Python for Environmental Science Apr 2021

AMS Short Course: Python for Climate and Meteorology Mar 2021

Annual RSMAS Writing Workshop with Dallas Murphy,
Miami, FL, USA and Virtual Dec 2020 - Jan 2021

Skills

Programming Languages, Softwares, and Models: Python, Fortran, Git, Cloud Computing (JPL-CMDA, PO.DAAC), LaTeX, NetCDF, ROMS, FVCOM, CCSM

Languages: English (fluent), Chinese (native)

Professional Services

Referee for:
National Science Foundation
Ocean Sciences (eISSN: OS 1812-0792, OSD 1812-0822)

Memberships

American Geophysical Union (AGU), American Meteorological Society (AMS)