

Yu Cheng

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SUMMARY

- Self-motivated climate modeler with extensive knowledge of atmospheric science and physical oceanography, proficient in processing and analyzing large datasets using open-source softwares.
- Creative problem-solver with effective communication skills, studied Agulhas leakage variability using a pioneering high-resolution global climate model, resulting in 3 peer-reviewed publications.
- Resilient team player that thrives under pressure, as evidenced by winning multiple titles in badminton competitions since college.

SKILLS

- Data Analysis - Python: pandas, statsmodels, numpy, scipy, xarray, jupyter-notebook, scikit-learn; Matlab, SQL, R, CDO (climate data operators), NCL (NCAR command language)
- Data Visualization - Python: matplotlib, cartopy, bokeh; NCL, Matlab
- General programming - Python, Fortran, UNIX shell, \LaTeX , Git, Docker, Node.js, Vim

PROFESSIONAL EXPERIENCE

RSMAS, University of Miami, Miami, Florida, USA

Research Assistant

Aug 2012 – May 2018

- Studied Agulhas leakage, the inter-basin exchange between the Indian and South Atlantic ocean, its variability and regional climate impacts, using a pioneering high-resolution global coupled climate model with ocean eddy-resolving capability.
- Developed a strategy to quantify Agulhas leakage in the model by releasing and tracking over 10^6 virtual particles, resulting in 2 peer-reviewed articles, and 2 oral presentations at international conferences.
- Designed experiments to test sensitivity of Agulhas leakage to Southern Hemisphere westerlies in a coupled system.
- Evaluated and analyzed model outputs (10^2 Tb) from multiple simulations using techniques such as filtering, cross-spectral analysis, cross-correlation and empirical orthogonal functions.
- Analyzed Agulhas leakage time-series using Python tools including pandas, numpy, scipy, and statsmodels, developed a bootstrapping significance test for linear regression between different climate indices.

Consortium for Climate Change Study, Academia Sinica, Taipei, Taiwan

Research Assistant

Sep 2011 – Jul 2012

- Collaborated with staffs to develop shell scripts to systematically archive and manage the Coupled Model Inter-comparison Project Phase 5 (CMIP5) model outputs to local servers.
- Processed climate model outputs, such as removing seasonal cycle, calculating anomalies, and climatology mean, using Fortran and CDO.
- Analyzed changes of the circumpolar waveguide in a warming climate. Results were presented at WCRP Workshop on CMIP5 Climate Model Analyses 2012.

PROJECTS

Automated pipeline to visualize satellite observed ocean surface conditions

Fall 2013

- Coordinated with two research cruises to create an automated pipeline to visualize near-realtime ocean surface conditions using both MODIS satellite observations and RTOFS ocean forecasts.
- The python-written pipeline downloads data in the *netcdf* format from government websites, plot the data using NCL, and update the plots to a shared dropbox folder, accessible by the chief scientists onboard.

Visualizing leakage particle pathways

Fall 2014

- Created a movie to show when and where millions of virtual particles, tagged with volume transports, cross a control section, the GoodHope line. By summing up the crossing particles at each timestep, we generated a Agulhas leakage time series at daily resolution.

EDUCATION

RSMAS, University of Miami, Miami, Florida, USA

Ph.D. in Meteorology and Physical Oceanography

Aug 2012 – May 2018

- Thesis: Agulhas leakage variability and its climate implications in a coupled system
- Focus: Climate modeling, large-scale ocean circulation, Lagrangian particle tracking, climate change

National Taiwan University, Taipei, Taiwan

B.S. in Atmospheric Sciences

Sep 2006 – Jun 2010

- Relevant courses: Applied Mathematics I (Linear Algebra) and II (Ordinary Differential Equations), Statistic for Atmospheric Sciences, Applied Statistics, Scientific Computing (Fortran and Matlab)

MOOC courses

Sep 2017 – Present

- Machine Learning (Coursera), MySQL bootcamp (Udemy), Machine learning with Python track (Datacamp), Parallel Computing with Dask (Datacamp)

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