

DANNI DU

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Research Interests

Tropical climate variability; subseasonal forecasts; air-sea interaction; Madden-Julian Oscillation; Indian Summer Monsoon; machine learning

Education

Department of Atmospheric and Oceanic Sciences, University of Colorado, Boulder (PhD)

Aug. 2019 - Present

Advisors: Aneesh Subramanian and Weiqing Han

Accumulated GPA: 3.979/4.0 (42 credits)

Selected graduate courses taken:

Machine learning (A); Chaotic dynamics (A); Atmospheric thermodynamics and dynamics (A); Introduction to physical oceanography (A); Dynamics of ocean and atmosphere (A); Advanced ocean dynamics (A).

Department of Hydraulic Engineering, Tsinghua University (BS)

Aug. 2015 – July 2019

Publications

ORCID: <https://orcid.org/0000-0001-9080-9409>

Published:

Du, D., Subramanian, A. C., Han, W., Wei, H. H., Sarojini, B. B., Balmaseda, M., & Vitart, F. (2023). Assessing the Impact of Ocean In Situ Observations on MJO Propagation Across the Maritime Continent in ECMWF Subseasonal Forecasts. *Journal of Advances in Modeling Earth Systems*, 15(2), e2022MS003044.

Du, D., Subramanian, A. C., Han, W., Chapman, W. E., Weiss, J. B., & Bradley, E. (2023). Increase in MJO Predictability Under Global Warming. *Nature Climate Change*, <https://doi.org/10.1038/s41558-023-01885-0>.

Du, D., Subramanian, A. C., Han, W., Ninad, U., & Runge, J. (accepted, 2024). Causal Analysis Discovers an Enhanced Impact of Tropical Western Pacific on Indian Summer Monsoon Subseasonal Anomalies. *Geophysical Research Letters*.

Wei, H.-H., C. Subramanian, A., Karnauskas, K.B., **Du, D.**, Balmaseda, M.A., B. Sarojini, B., Vitart, F., DeMott, C.A. & Mazloff, M.R. (2023), The role of in-situ ocean data assimilation in ECMWF subseasonal forecasts of SST and MLD over the tropical Pacific Ocean. *Quarterly Journal of the Royal Meteorological Society*.

Work in Progress:

Du, D., Subramanian, A. C., Han, W., Hackert, E., Molod, A., & Lim, Y.-K. Assessing the Impact of Sea Surface Salinity Assimilation on Subseasonal Forecasts in NASA GEOS-S2S v2 Model.

Other Research Experiences

Investigating the Predictability of the North Atlantic Summer Weather Types and Their Relation to the Precipitation over Europe

NCAR ASP summer school | July, 2021 – Aug, 2021

Mentors: Angel Munoz and Andrew Robertson from IRI

Validation of Daily Sea Surface Winds in the Tropical Pacific Region

Scripps Institution of Oceanography | undergrad student intern | Jul, 2018 - Oct, 2018

Mentors: Shang-Ping Xie and Shineng Hu from SIO

Honors and Awards

The 2nd place of student oral presentation at the 11th MJO symposium at AMS, 2023

US CLIVAR travel support for WCRP Open Science Conference at Kigali, 2023

Travel grant from CU Boulder, 2023

Selected to attend the NCAR ASP summer colloquium “the sciences of S2S predictions”, 2021

ATOC fellowship, CU Boulder, 2020 and 2022

Academic Excellence Award, Tsinghua University, 2018

Academic Progress Award, Tsinghua University, 2017

Services

Reviewer of QJRMS and Climate Dynamics

Mentor for a REU student on the topic of Tropical Instability Waves, 2021

Teaching Assistant for Introduction to Oceanography, 2019

Conferences, Workshops and Seminars

American Geophysical Union Meeting, 2023 (poster presentation: Assessing the Impact of Sea Surface Salinity Assimilation on Madden-Julian Oscillation Forecasts in the NASA GEOS-S2S-v2 model; poster presentation: Enhanced Impact of Tropical Western Pacific on Indian Summer Monsoon Subseasonal Anomalies Discovered by Using a Causal Discovery Method)

WWRP/WCRP S2S Summit at Reading, 2023 (poster presentation: Increase in MJO Predictability Under Global Warming)

American Meteorological Society Meeting, 2023 (oral presentation: Increase in MJO Predictability Under Global Warming)

Invited Seminar at University of Tokyo, 2022 (Increase in MJO Predictability Under Global Warming)

Joint workshop of the OceanPredict OS-Eval & CP-TT including SynObs kick-off at Tsukuba, Japan, 2022 (oral presentation: Assessing the Impact of Ocean In Situ Observations on MJO Propagation Across the Maritime Continent in ECMWF Subseasonal Forecasts)

Eastern Pacific Ocean Conference, 2022 (oral presentation: A Potential Pathway for the Eastern Tropical Pacific low-frequency SST Anomalies to Modulate the Indian Summer Monsoon Subseasonal Anomalies)

Invited talk at S2S webinar on ocean, 2022 (Assessing the Impact of Ocean In Situ Observations on MJO Propagation Across the Maritime Continent in ECMWF Subseasonal Forecasts)

Ocean Sciences Meeting, 2022 (oral presentation: Assessing the Impact of Ocean In Situ Observations on MJO Propagation Across the Maritime Continent in ECMWF Subseasonal Forecasts)

Skills

Fluent in Python and Linux

Processing CMIP6 model outputs with large ensembles

Setting up CESM2 experiments

Setting up AGCM experiments such as ECHAM

Running ROMS

Building machine learning models