

# Suqin Duan

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## Education and Training

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- 2019 – Present **Princeton University**  
Program in Atmospheric and Oceanic Sciences  
**NOAA Geophysical Fluid Dynamics Laboratory**  
**Postdoctoral Research Associate**  
Advisor: Prof. Stephan Fueglistaler  
**Postdoctoral Research Affiliate**  
Host: Dr. Kirsten Findell
- 2013 – 2019 **Tsinghua University**  
Dept. of Earth System Science  
**Ph.D.**  
Advisor: Prof. Jonathon Wright
- 2015 – 2018 **University of California, Berkeley**  
Dept. of Earth and Planetary Science  
**Visiting Student Researcher**  
Advisor: Prof. David Romps  
**Guest Affiliate**
- 2009 – 2013 **Sun Yat-sen University**  
Dept. of Atmospheric Science, double major in English  
**B.S., Graduate with honors**

## Selected Research Projects

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- **Where and when does land surface get drier and affect surface air?**
  - Analyzed land surface drying with climate change based on CMIP5 and CMIP6 model outputs.
  - Established a unified framework to summarize soil moisture change and its impact across heterogeneous land surface.
- **Temperature distribution change and heatwaves**
  - Compared spatial patterns of mean-state and extreme hot-day warming based on CMIP5 model outputs.
  - Identified three regimes of temperature distribution change according to surface properties (dry/moist land and ocean).
  - Investigated changes in underlying surface energy fluxes and possible mechanisms.
- **Comparing convection over land and ocean in a global cloud resolving model**
  - Analyzed large dataset (2 TB/variable/10 days) from a top-notch global high resolution model ( $\sim 3 \text{ km} \times 3 \text{ km} \times 15 \text{ min}$ ).
  - Compared convective triggering and precipitation over land and ocean.
- **Utility of stable water isotopes to constrain simulations of tropical convection**
  - Built an analytical model to simulate stable water isotopes in cumulus convective processes and compared simulations with satellite observations.
  - Examined how cloudy air–dry air mixing and re-evaporation of raindrops will affect stable water isotopes, aiming to reversely deduce information for mixing and re-evaporation processes.
  - Challenged traditional views and suggested new directions to apply water isotope in atmospheric convection studies.
- **Rapid intensification of tropical cyclones**
  - Analyzed integrated best track observations of tropical cyclones (IBTrACS) in 6 ocean basins.
  - Interpolated environmental variables from JRA55 reanalysis data onto the tropical cyclone tracks and analyzed how large scale environment factors affect tropical cyclones and their rapid intensification.

## Publications

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- Duan, S. Q., Findell, K. L., & Fueglistaler, S. A. (2021). **When does land surface get drier and feedback to surface air temperature?** *Geophysical Research Letters*, to submit. (Preprint available upon request).
- Duan, S. Q., Findell, K. L., & Wright, J. S. (2020). **Three regimes of temperature distribution change over dry land, moist land, and oceanic surfaces.** *Geophysical Research Letters*, 47, e2020GL090997.
- Duan, S. Q., Wright, J. S., & Romps, D. M. (2018). **On the utility (or futility) of using stable water isotopes to constrain the bulk properties of tropical convection.** *Journal of Advances in Modeling Earth Systems*, 10, 516–529.

others:

- Ph.D. thesis: 2019: On using stable water isotopes to better constrain convective simulation.
- B.S. thesis: 2013: Teleconnections between East Asian and North American summer monsoons.
- Double major thesis: 2013: Chinese university students' interpretations of feminism in contemporary China.
- Suqin Duan, 2011: Analysis of windspeed variation and urban wind energy potential in Guangdong Province. Collection of Excellent Undergraduate Research in Sun Yat-sen University (in Chinese).

## Communication and Leadership

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- **Coordinator and cohost** of a climate-dynamics Saturday online seminar that gather students and scholars in various institutions to share work and/or read fundamental literature together. (2020)
- **Built and managed website** for a multi-institutional NSF project PIRE-Cirrus. (2019)
- **Teaching assistant** for two courses in Tsinghua University. (2014)
- Attended **Tsinghua-Imperial Global Fellows Programme: Climate Change and Energy** in London as a Tsinghua fellow to carry out collaborative case projects with fellows from Imperial College London. (2017 summer)
- Attended **Fluid Dynamics of Sustainability and Environment Summer School** in University of Cambridge to study and conduct experiments with attendees from around the world. (2016 summer)
- Attended course **Entrepreneurship** held by Tsinghua and Facebook and completed mimic start-up group project. (2018 spring)
- **Selected conference presentations:**
  - **Suqin Duan** and David Romps: **Warming warms the warmest worst**. (Talk, AGU 2018 Fall Meeting, D.C.)
  - **Suqin Duan**, David Romps, and Jonathon Wright: **Sensitivity of atmospheric water isotopes to entrainment and precipitation efficiency**. (Talk, AGU 2016 Fall Meeting, San Francisco; AOGS 13th Annual Meeting, 2016, Beijing; Poster, Graduate Climate Conference 2015, MIT-Woods Hole)
  - **Suqin Duan** and Jonathon Wright: **Variations of rapid and sustained-rapid intensification of tropical cyclones in a changing climate**. (Talk, Graduate Global Change Forum of China, 2014, Beijing; Poster, AOGS 11th Annual Meeting, 2014, Sapporo)

## Skills

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- **Programming and software:** Python (and relevant libraries), Latex, basic Linux, basic Github usage, basic Fortran, general office software
- **Language:** Chinese (native), English (proficient)
- **Hobbies:** Chinese classical dance, ballet, jogging

## Awards

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- ShenYunGang Oceanography Scholarship in Tsinghua University (2016)
- Joint-Supervision PhD Fellowship from China Scholarship Council (2015)
- Tsinghua University Scholarship for Excellent Students (2014-2015)
- Excellent Graduate of Sun Yat-sen University (2013)
- Scholarship from CT Environmental Group Limited (2011)
- Sun Yat-sen University Scholarship for Excellent Students (2010-2013)
- Award for Excellent Volunteers in 2010 Asian Games Guangzhou (2010)
- 7th and 8th Art China Youth Art Competition Beijing, first-rank award in dance category (2016, 2017)