Duo Chan

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Education

2015-21 **Ph.D.** in Earth and Planetary Sciences, Harvard University (Advisor: Peter Huybers)
2013-15 **M.S.** in Meteorology, Nanjing University, China
2009-13 **B.S.** in Applied Meteorology and **Minor** in Finance, Nanjing University, China

Appointments

July 2021 Postdoctoral Fellow, Physical Oceanography Department, WHOI

Awards and Honors

2021 Weston Howland Jr. Postdoctoral **Fellow**, WHOI
2021 High Meadows Environmental Institute Environmental **Fellow**, Princeton (Declined)
2021 Outstanding Student Oral Presentation, 101st AMS
2020 Harvard Horizons **Fellow**
2019 Harvard GSAS professional development award
2015-16 William Benjamin and Jill Kowal Graduate Aid Fund in Environmental Studies

Professional Service

Reviewer: *Journal of Climate, Geophysical Research Letter, Climate Dynamics, Earth and Space Science, 2021 NOAA Small Business Innovation Research Funding Opportunity*
Organizer: Harvard ClimaTea seminar (2017)
Mentoring and Advising: National Collegiate Research Conference (2021), Sarah King (2020-present), David Ma (Summer, 2020), Alexandria Berry (2018--19)

Publications

Manuscripts under review or in prep.

18. **Chan D.,** Rigden A., Proctor J., & Huybers P. Why continental summertime monthly temperature variance increase in some models but not others? Submitted to *Earth' Future.*

17. **Chan D.,** & Huybers P. Combining global and groupwise corrections towards a better estimate of historical sea surface temperatures. In prep.

16. Proctor J., Rigden A., **Chan D.,** & Huybers P. Soil moisture measurements improve prediction of crop yields and reduce projected climate change damages. In prep.

15. Rigden A., Proctor J., **Chan D.,** & Huybers P. Solar-induced fluorescence improves estimation of global crop productivity by identifying the critical growing season. In prep.

Peer-reviewed publication (* co-first author)

14. **Chan D.,** Vecchi G., Yang W. & Huybers P (2021). Improved simulation of 19th- and 20th-century North Atlantic hurricane frequency after correcting historical sea surface temperatures. *Science Advances*. 7(26), eabg6931.

13. **Chan D.,** & Huybers P (2021). Correcting sea surface temperature observations removes World War II warm anomaly. *Journal of Climate,* 34(11), 4585-4602.

12. **Chan D.** (2021). Combining statistical, physical, and historical evidence to improve historical sea surface temperature records. *Harvard Data Science Review*. 3(1), doi: 10.1162/99608f92.edcee38f

11. Dai C., **Chan D*.**, Huybers P., & Pillai, N. (2021). Late 19th-century navigational uncertainties and their influence on sea surface temperature estimates. *Annals of Applied Statistics,* 15(1): 22-40.

10. **Chan D.,** & Huybers P. (2020). Systematic differences in bucket sea surface temperatures caused by misclassification of engine room intake measurements. *Journal of Climate*. 33(18), 7735–7753

9. **Chan D.,** Cobb A., Vargas L., Battisti D., & Huybers P. (2020). Summertime temperature variability increases with local warming in mid-latitude regions. *Geophysical Research Letters*, e2020GL087624.

8. **Chan D.,** Zhang, Y., Wu Q., & Dai X. (2020). Quantifying the dynamics of the interannual variabilities of the wintertime East Asian Jet Core. *Climate Dynamics*, 54(3), 2447-2463.

7. **Chan D.,** Kent E., Berry D. & Huybers P. (2019). Correcting datasets leads to more homogeneous early 20th century sea surface warming. *Nature*, 571, 393-397. (Selected media coverage: *NPR*)

6. **Chan D.** & Huybers P. (2019). Systematic differences in bucket sea surface temperature measurements amongst nations identified using a linear-mixed-effect method. *Journal of Climate*, 32(5), 2569-2589.

5. Hu, C., Wu, Q., Yang, S., Yao, Y., **Chan, D.**, Li, Z., & Deng, K. (2016). A linkage observed between austral autumn Antarctic Oscillation and preceding Southern Ocean SST anomalies. *J. Clim*, 29(6), 2109-2122.

4. Wu, Q., Cheng, L., **Chan, D.**, Yao, Y., Hu, H., & Yao, Y. (2016). Suppressed mid-latitude summer atmospheric warming by Arctic sea ice loss during 1979–2012. *GRL*, 43(6), 2792-2800.

3. **Chan, D.**, Wu, Q., Jiang, G., & Dai, X. (2016). Projected shifts in Köppen climate zones over China and their temporal evolution in CMIP5 multi-model simulations. *Advances in Atmospheric Sciences*, 3(33), 283-293.

2. **Chan, D.**, & Wu, Q. (2015). Significant anthropogenic-induced changes of climate classes since 1950. *Scientific Reports*. 5. 13487. (Selected media coverage: *Yale Climate Connections*)

1. **Chan, D.**, & Wu, Q. (2015). Attributing observed SST trends and sub-continental land warming to anthropogenic forcing during 1979–2005. *Journal of Climate*, 28, 3152–3170.

Ph.D. Thesis: Combining statistical, physical, and historical methods to improve the quality and interpretations of historical sea surface temperature data.

Conferences and Presentations

Invited Talks

- Combining statistical, physical, and historical methods to improve historical sea surface temperature data *(Yale University, Oct. 2020， Princeton University, Nov. 2020, U.K. National Oceanography Centre, Mar. 2021, Nanjing University, 2021)*
- Applying statistical methods to climate reconstructions -- Late 19th-century navigational errors and their influence on sea surface temperatures *(Virtual Joint Statistical Meeting, 2020)*
- Climate detective: Combining statistical, physical, and historical methods to improve historical sea surface

temperature data *(Harvard Horizons, 2020, postponed to 2021 due to COVID19)*

- Correcting datasets leads to more homogeneous early-twentieth-century sea surface warming *(Fudan University, 2019; Nanjing University, 2019)*

Conference Talks

- Improved simulation of 19th and 20th-century hurricane frequency after correcting historical sea surface temperatures *(AMS, 2021)*
- Correcting sea surface temperature observations removes World War II warm anomaly *(AGU, 2020)*
- Correcting datasets leads to more homogeneous early-twentieth-century sea surface warming *(International meeting on statistical climatology, 2019; CLIMAR5 Workshop on Advances in Marine Climatology, 2019)*
- Remote control of surface soil moisture on projections of summertime mid-latitude land temperature variability *(ACDC, 10-year reunion, 2019; EGU, 2018)*
- On the dynamics of the interannual variability of the East Asian jet *(15th AOGS Meeting, 2018)*

Posters

- Improved SSTs better predict multi-decadal variability of Atlantic TC count *(AGU, 2019; AMS, 2020)*
- Correcting datasets leads to more homogeneous early-twentieth-century sea surface warming *(AGU 2018; Frontiers in Oceanic, Atmospheric, and Cryospheric Boundary Layers, KITP, 2018; AGU 2017)*
- Are the diurnal cycles of sea surface temperature increasing since the 1970s? *(AGU, 2016)*
- Significant anthropogenic-induced changes of climate classes since 1950 *(AGU, 2014)*
- Attribution of observed SST trends and sub-continental land warming to anthropogenic forcing during 1979-2005 *(AGU, 2013)*
- Inter-annual variability in the position and strength of the East Asian jet stream and its relation to large-scale circulation *(EGU, 2013)*

Teaching Experience

Teaching Assistant: Responsibilities included developing new class materials, preparing and giving lectures, leading class discussions, grading all assignments, and meeting with students individually. I have an average Harvard course evaluation score (Q-score) of 4.6 out of 5.0.

1. **Paleoclimate as prologue** (Spring, 2021). Harvard EPS, 4 undergrads (UGs) and 5 grads (Gs)
2. **Weather, Water, and Climate** (Winter, 2019-20). Perry School, ~10 7th grades (Public school outreach)
3. **Climate change debate** (Spring, 2019). Harvard college, 28 UGs
4. **Paleoclimate as prologue** (Fall, 2016). Harvard EPS, 3 UGs and 6 Gs
5. **General Circulation of the Atmosphere** (Fall, 2014). Nanjing University, ~5 UGs and ~30 Gs

Summer Schools

2019 Ecole Polytechnique: Fluid Dynamics of Sustainability and the Environment,
2017 University of Bergen: Advanced Climate Dynamics Courses
2017 Beijing University: Climate, Weather, Pollution & Health Consequences

2016 Chicago University: Rossbypalooza