Duo Chan

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I have a background in statistics as well as dynamics of ocean and atmosphere. I use statistical models and physical simulations to reconstruct climate variability and understand underlying dynamics. My currently work is on improving the quality and interpretation of historical sea surface temperature data.

Education

2015- **Ph.D. Candidate** in Atmospheric, Ocean, and Climate Sciences, Harvard University
Thesis: Combining statistical, physical, and historical methods to improve the quality and interpretations of historical sea surface temperature data
Advisor: Peter Huybers, Professor

2013-15 **M.S.** in Meteorology, Nanjing University, China

2009-13 **B.S.** in Applied Meteorology and **Minor** in Finance, Nanjing University, China

Awards & Media Exposure

2020 Harvard Horizons Fellow
2019 Harvard GSAS professional development award
2019 NPR: How much hotter are the oceans? (link)
2016 Yale Climate Connections: 2015's key climate science research advances (link)
2015-16 William Benjamin and Jill Kowal Graduate Aid Fund in Environmental Studies

Publications

Manuscripts Under Review

* co-first author

- Dai C., **Chan D*.**, Huybers P., & Pillai, N. Late 19th-century navigational uncertainties and their influence on sea surface temperature estimates. *Revision submitted to Annals of Applied Statistics.*
- **Chan D.,** & Huybers P. Systematic differences in bucket sea surface temperatures caused by misclassification of engine room intake measurements. *Under review in Journal of Climate*.
- **Chan D.,** Cobb A., Vargas L., Battisti D., & Huybers P. Summertime temperature variability increases with local warming in mid-latitude regions. *Under review in Geophysical Research Letter.*
- **Chan D.,** Vecchi G., Yang W. & Huybers P. Corrected sea surface temperatures improve prediction of Atlantic Hurricane activity. *In prep.*

Selected Publications

1. **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.

2. **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.

Additional Published Research

3. **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.
4. 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. *Journal of Climate*, 29(6), 2109-2122.
5. 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. *Geophysical Research Letters*, 43(6), 2792-2800.
6. **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.
7. **Chan, D.**, & Wu, Q. (2015). Significant anthropogenic-induced changes of climate classes since 1950. *Scientific Reports*. 5. 13487.
8. **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.

Teaching Experience

Teaching Assistant: Responsibilities included developing new class materials, leading class discussions, grading all assignments, and meeting with students individually.

1. **Weather, Water, and Climate** (Winter, 2020). Perry School, ~10 7th grades (Public school outreach)
2. **Climate change debate** (Spring, 2019). Harvard college, 28 undergraduates
3. **Paleoclimate as prologue** (Fall, 2016). Harvard EPS, 3 undergraduates and 6 graduates
4. **General Circulation of the Atmosphere** (Fall, 2014). Nanjing University, ~5 UG and ~30 G

Conferences and Presentations

Invited Talks

- Climate detective: Combining statistical, physical, and historical methods to improve historical sea surface temperature data (Harvard Horizon, 2020)
- Correcting datasets leads to more homogeneous early-twentieth-century sea surface warming (Fudan University, 2019; Nanjing University, 2019)

Conference Talks

- 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 East Asian jet stream (15th AOGS Meeting, 2018)

Posters

- Improved SSTs better predict multi-decadal variability of Atlantic TC count (AGU, 2019)
- 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)
- Is 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)

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