

Nathanael Wong

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Department of Earth and Planetary Sciences, Harvard University
20 Oxford Street, Cambridge MA 02138

Research Interests: Tropical Meteorology and Dynamics, Climate Modelling, Maritime Continent

Education

- 2019 -- ?? **Harvard University**, Singapore
PhD. Earth and Planetary Sciences
Advisor: Professor Kuang Zhiming
EPS Merit Award 2019
- 2015 -- 2019 **Nanyang Technological University**, Singapore
BSc. Environmental Earth Systems Science, cGPA 4.74
w. Second Major in Physics, Minor in Mathematics
CN Yang Scholars Program
Nanyang Scholarship
- 2018 **California Institute of Technology**, California
Visiting Student Researcher
Advisor: Professor Tapio Schneider
Visiting Undergraduate Research Program
- 2007 -- 2012 **Raffles Institution**, Singapore
Singapore-Cambridge GCE Advanced Level, 5 Distinctions

Publications

- Chen, S., **Wong, N. Z.**, Ma, D., Chan, P. W., & Kuang, Z. (2021, 9). Dependence of Precipitation on Precipitable Water Vapor Over the Maritime Continent and Implications to the Madden-Julian Oscillation. *Geophysical Research Letters*, 48 (17). doi: 10.1029/2021GL094648
- Wong, N. Z.**, Feng, L., & Hill, E. M. (2019, 12). GPS-based slip models of one Mw 7.2 and twenty moderate earthquakes along the Sumatran plate boundary. *Geoscience Letters*, 6(1), 8. doi: 10.1186/s40562-019-0138-y

In Review (draft copies may be requested)

Wong, N. Z., Kuang, Z; **The Effect of Different Implementations of the Weak Temperature Gradient Approximation in Cloud Resolving Models**; Submitted to *Geophysical Research Letters*.

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CV (caa Aug 25, 2023)

In Preparation (draft copies may be requested)

Wong, N. Z., Feng, L., & Hill, E. M.; **Surface temperature T_s is not a good approximation for water-vapour-weighted mean temperature T_m** ; In preparation for *Geophysical Research Letters*.

Wong, N. Z., Feng, L., & Hill, E. M.; **The multiscale temporal variability of precipitable water in Singapore as observed using a GPS-derived proxy**; In preparation for *Journal of Climate*.

Conference and Workshop Proceedings / Abstracts

Center for Climate Research Singapore Seminar Series, Singapore, Aug 16, 2023

“Bridging the Gap between the theory of the Weak Temperature Gradient and its potential applications to modelling the islands of Southeast Asia”

Authors: **Wong, N. Z.,** Kuang, Z.

Asia-Oceania Geosciences Society Annual Meeting, Singapore, Jul 30-Aug 4, 2023

AS32-A021: “Bridging the Gap Between Implementing and Understanding the Weak Temperature Gradient Approximation in Cloud Resolving Models.”

Authors: **Wong, N. Z.,** Kuang, Z.

Asia-Oceania Geosciences Society Annual Meeting, Singapore, Jul 30-Aug 4, 2023

AS34-A021: “Modelling the Climatology of Tropical Islands of Different Sizes Using the Weak Temperature Gradient Approximation.”

Authors: **Wong, N. Z.,** Kuang, Z.

10th Northeast Tropical Workshop, Albany NY, Jun 5-7, 2023

Convection and Tropical Dynamics: “Bridging the Gap Between Implementing and Understanding the Weak Temperature Gradient Approximation in Cloud Resolving Models.”

Authors: **Wong, N. Z.,** Kuang, Z.

JuliaEO, Global Workshop on Earth Observation with Julia 2023, Terceira, Jan 9-13, 2023

(*invited*) Hands-on session 1.2: Retrieving satellite and reanalysis data from EO servers

Authors: **Wong, N. Z.** and Barth, A.

American Geophysical Union Annual Meeting, Chicago, Dec 12-16, 2022

A26A-06: “An Analysis of WTG Schemes in 3D-Cloud Resolving Models”

Authors: **Wong, N. Z.,** Kuang, Z.

Kerry Emanuel Symposium, Cambridge, MA, Jun 21-22, 2022

The inherent instability of the Weak Temperature Gradient Approximation

Authors: **Wong, N. Z.,** Kuang, Z.

American Geophysical Union Annual Meeting, San Francisco, Dec 9-13, 2019

A11U-2849: “Converting GNSS Zenith Wet Delays to Precipitable Water: Investigating the Mean and Variability of the Water-Vapor-Weighted Mean Temperature (T_m) using Reanalysis Data.”

Authors: **Wong, N. Z.,** Feng, L. and Hill, E. M.

Asia-Oceania Geosciences Society Annual Meeting, Singapore, Jul 29-Aug 2, 2019

AS28-A021: “Using GPS-derived Precipitable Water to Monitor Meteorological Events in Singapore.”

Authors: **Wong, N. Z.,** Feng, L. and Hill, E. M.

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American Geophysical Union Annual Meeting, Washington DC, Dec 10-14, 2018
A43O-3339: “Investigating the characteristics and dynamics of rainfall in Singapore using a GPS-derived proxy to precipitable water.”
Authors: **Wong, N. Z.**, Feng, L. and Hill, E. M.

American Geophysical Union Annual Meeting, New Orleans, LA, Dec 11-15, 2017
G43A-0918: “A catalog of coseismic uniform-slip models of geodetically unstudied earthquakes along the Sumatran plate boundary.”
Authors: **Wong, N. Z.**, Feng, L. and Hill, E. M.

Scholarships and Awards

2022	NUS Development Grant
2019	EPS Merit Award
2015 -- 2019	CN Yang Scholars Program <i>NTU scholarship program emphasizing interdisciplinary research and problem-solving skills in science and engineering</i>
2015 -- 2019	Nanyang Scholarship <i>NTU's premier undergraduate scholarship</i>

Technical Skills

Programming: Julia, Python, MATLAB, GMT (Generic Mapping Tool), R

Functional: LaTeX, Microsoft Office

Languages: English (Native), Chinese (Basic)

Climate Models: Isca, System of Atmospheric Modelling (SAM), Community Earth System Model (CESM)

Teaching Experience

2023 Fall	APMTH 115: Mathematical Modelling <i>Official Teaching Assistant</i> <ul style="list-style-type: none">• Preparation for section with students• Grading of homeworks, and projects
2022 Fall	E-PSCI 50: The Fluid Earth: Oceans, Atmosphere, Climate, and Environment <i>Official Teaching Assistant</i> <ul style="list-style-type: none">• Preparation for section with students• Creation and preparation of homeworks and projects• Grading of homeworks
2022 Spring	Sci 5 An Introduction to Computation for Contemporary Science <i>Official Teaching Assistant</i> <ul style="list-style-type: none">• Preparation for section with students• Creation and preparation of homeworks and projects• Grading of homeworks

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- 2021 Fall **EPS 208 Physics of Climate**
- 2020 Fall *Official Teaching Assistant*
- Preparation for section with students
 - Grading
- 2018 Spring **ES0001 Physical Environments of Singapore**
- Official Teaching Assistant*
- Prepared for lab sessions
 - Guided groups of students on field trips
 - Facilitated submission of quality fieldwork notebooks
- 2017 Fall **ES2001 Computing in Environmental Earth Systems Science**
- Volunteer Teaching Assistant*
- Assisted in guiding students during lab and tutorial sessions
 - Helped to clarify uncertainties in the lecture after hours
 - Offered advice for student projects