HING ONG

Curriculum Vitae Updated on July 24, 2025

https://hingong.github.io/

EDUCATION

PhD University at Albany, State University of NY, Atmospheric Sciences 2020
Dissertation: "The significance of the nontraditional Coriolis terms in tropical large-scale dynamics"

MS National Taiwan University, Atmospheric Sciences 2016
Thesis: "Effects of artificial local compensation of convective mass flux in the cumulus parameterization"

BS National Taiwan University, Atmospheric Sciences 2014

PUBLICATIONS

Peer-Reviewed Publications in Atmospheric Sciences

2025 **Ong, H.**, Scale analysis for the Madden–Julian oscillation. *Q. J. R. Meteorol. Soc.* (Early View).

2025 **Ong, H.**, & Yang, D., Westward- or eastward-propagating Rossby waves: Schematic illustrations. *J. Atmos. Sci.* (Early Online Release).

2024 **Ong, H.**, & Yang, D, Vapor kinetic energy for the detection and understanding of atmospheric rivers. *Nat. Commun.*, *15*, 9428.

2022 **Ong, H.**, & Yang, D., The compressional beta effect and convective system propagation. *J. Atmos. Sci.*, *79*(8), 2031–2040.

2021 Skamarock, W. C., **Ong, H.**, & Klemp, J. B., A fully compressible nonhydrostatic deep-atmosphere equations solver for MPAS. *Mon. Weather Rev.*, *149*(2), 571–583.

2020 **Ong, H.**, Comments on "On the structure and formation of UTLS PV dipole/jetlets in tropical cyclones by convective momentum surges". *Mon. Weather Rev.*, *148*(11), 4693–4695.

2020 **Ong, H.**, & Roundy, P. E., The compressional beta effect: Analytical solution, numerical benchmark, and data analysis. *J. Atmos. Sci.*, *77*(11), 3721–3732.

2020 **Ong, H.**, & Roundy, P. E., Nontraditional hypsometric equation. *Q. J. R. Meteorol. Soc.*, *146*(727), 700–706.

2019 **Ong, H.**, & Roundy, P. E., Linear effects of nontraditional Coriolis terms on intertropical convergence zone forced large-scale flow. *Q. J. R. Meteorol. Soc.*, *145*(723), 2445–2453.

2017 **Ong, H.**, Wu, C. M., & Kuo, H. C., Effects of artificial local compensation of convective mass flux in the cumulus parameterization. *J. Adv. Model. Earth Syst.*, *9*(4), 1811–1827.

In-Preparation Works in Atmospheric Sciences

2025 **Ong, H.**, Jung C., Wang J., Kotamarthi V. R., & Sever G., Surface temperature and energy fluxes in a dynamical downscaling simulation. Draft.

2025 **Ong, H.**, Hughes, O., Herrington, A., Jablonovski, C., Lauritzen, P. H., & Yang, D., ITCZ and the nontraditional Coriolis terms. Abstract.

Peer-Reviewed Publication in Linguistics

2025 **Ong, H.**, Functional aspiration in Taiwanese. *Taiwan Journal of Linguistics*, *23*(2), 51–81.

HONORS AND AWARDS

2020 **Climate and Global Change Postdoctoral Fellowship**, NOAA (declined)

2019 **Government Scholarship to Study Abroad**, Ministry of Education, Taiwan

RESEARCH EXPERIENCE

Independent Researcher 2025 to current
- Coordinated cross-institutional atmospheric model development
- Collaborated with CESM developers at NCAR
- Collaborated with E3SM developers at Univ. of Michigan
- Formulated a minimal model for the Madden–Julian oscillation
- Derived nontraditional Coriolis effects on atmospheric turbulence
- Adapted the dynamics of CLUBB atmospheric turbulence model
- Adapted the model interface of CAM, MPAS, and CLUBB
- Conducted sensitivity simulations of Coriolis effects in CAM

Postdoctoral Appointee, Argonne National Laboratory 2023 to 2025
- Performed climate dynamical downscaling with WRF model
- Evaluated the surface fluxes of the model against observations
- Conducted sensitivity simulations of land models in WRF
- Managed petabytes of data storage

Postdoctoral Scholar, University of California, Davis 2020 to 2023
- Adapted the dynamics of SAM atmospheric model.

Performed spectral analysis to model simulation data.
Formulated the prognostic equation of vapor kinetic energy.
Analyzed MERRA2 and ERA5 reanalysis data.

Student Researcher, University at Albany, State University of NY 2017 to 2020
Formulated a numerical idealized circulation model.
Analyzed rawinsonde and ERA-Interim reanalysis data.
Derived analytical equatorial wave solutions.
Developed a benchmarking test for model dynamics.
Adapted the dynamics of MPAS atmospheric model.

Research Assistant, National Taiwan University 2016 to 2017
Participated in a scientific planning group in a field experiment.
Composed a progress report.

Student Researcher, National Taiwan University 2014 to 2016
Formulated a cumulus parameterization scheme.
Adapted the dynamics and physics of WRF atmospheric model.

TEACHING EXPERIENCE

STEM Teacher, Seattle Taiwanese Language Association 2023 to 2025
Designed STEM activities for K-to-11 students in Taiwanese Taigi
Delivered STEM activities at Taiwanese Language Summer Camps

Teaching Assistant, University at Albany, State University of NY 2018 to 2020
Applications of Subseasonal to Seasonal Dynamics
Ocean Science
Water and Climate Change
Atmospheric Dynamics

Teaching Assistant, National Taiwan University 2014 to 2016
Lab. of Synoptic Meteorology (*de facto* Lecturer)
Fluid Mechanics
Program and Scientific Computing

PROFESSIONAL SERVICE

Peer-Reviewed Articles for:
Journal of Atmospheric Sciences
Geophysical Research Letters
Monthly Weather Review
Journal of Geophysical Research: Atmospheres
Journal of Climate

Coordinated Seminar Series for:

2022 Winter Atmospheric Science Seminar, University of California, Davis

Panel-Reviewed STEM Education Materials for:

教育部國家教育研究院「臺灣台語新詞、專有名詞及學術名詞對譯審譯組」
(Taiwanese Taigi New Words, Proper Nouns, and Academic Nouns Translation Panel, National Academy for Educational Research, Ministry of Education, Taiwan)

INVITED LECTURES (SELECTED)

2025 "Revisiting tropical dynamics: New insights on the MJO and double-ITCZ bias"
Physical Sciences Lab., NOAA, Boulder, CO, Jun 12.
Dept. of Atmospheric and Climate Science, Univ. of Washington, Seattle, WA, Jun 23

2025 "ITCZ and the nontraditional Coriolis terms"
CESM Workshop, Boulder, CO, Jun 9.
Climate & Global Dynamics Lab., NCAR, Boulder, CO, Feb 5.

2024 "Pressure perturbation in mesoscale meteorology"
Dept. of Geography and Meteorology, Valparaiso Univ., Valparaiso, IN, Mar 25.

2022 "Káng 風 soat 雨 ōe 大氣" (Talk about wind, rain, and atmosphere)
Sè-kài Tâi-oân Bûn-hòa Lūn-tôa^{n} (World Taiwanese Culture Forum), Online, Nov 12.
Delivered in Taiwanese Taigi.

2021 "The nontraditional Coriolis terms and convective system propagation"
Geophysical Fluid Dynamics Lab., NOAA, Princeton, NJ, Sep 23.

2020 "The significance of the nontraditional Coriolis terms in tropical large-scale dynamics"
Research Center for Environmental Changes, Academia Sinica, Taipei, Taiwan, Jan 10.
Dept. of Atmospheric Sciences, National Taiwan Univ., Taipei, Taiwan, Jan 9.

2019 "The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,"
Dept. of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA, Oct 30.
Mesoscale and Microscale Meteorology Lab., NCAR, Boulder, CO, Jul 25.

LANGUAGES

English: Professionally proficient

Taiwanese Taigi: Native (my official name since Dec 2021, Hing Ong)

Chinese Mandarin: Native (my official name until Dec 2021, Heng Wang)

OUTSTANDING SKILLS

Model Formulation: using partial differential equations.

Model Development: using Fortran, Matlab, or Python

Data Analysis: using Fortran, Matlab, NCL, Python, or Grads

RESEARCH INTERESTS

Geophysical Fluid Dynamics

Earth System Modeling