

# HING ONG

Curriculum Vitae

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## EDUCATION

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<b>PhD</b>	University at Albany, State University of NY, Atmospheric Sciences Dissertation: “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics”	2020
<b>MS</b>	National Taiwan University, Atmospheric Sciences Thesis: “Effects of artificial local compensation of convective mass flux in the cumulus parameterization”	2016
<b>BS</b>	National Taiwan University, Atmospheric Sciences	2014

## PUBLICATIONS

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### 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.*, 82(9), 1903–1910.
- 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-Progress Works in Atmospheric Sciences**

- 2025 **Ong, H.**, The nontraditional Coriolis terms and trade-wind cumuli. Submitted.
- 2025 Zhang, A., Yang, D., **Ong, H.**, & Tan, Z., Understanding the evolution of global atmospheric rivers with vapor kinetic energy framework. Submitted.
- 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**

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- 2020 **Climate and Global Change Postdoctoral Fellowship**, NOAA (declined)
- 2019 **Government Scholarship to Study Abroad**, Ministry of Education, Taiwan

### **RESEARCH EXPERIENCE**

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#### **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 with CAM  
 Conducted sensitivity simulations of Coriolis effects with SAM  
 Conducted sensitivity simulations of Coriolis effects with CLUBB

<b>Postdoctoral Appointee</b> , Argonne National Laboratory 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	2023 to 2025
<b>Postdoctoral Scholar</b> , University of California, Davis 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.	2020 to 2023
<b>Student Researcher</b> , University at Albany, State University of NY 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.	2017 to 2020
<b>Research Assistant</b> , National Taiwan University Participated in a scientific planning group in a field experiment. Composed a progress report.	2016 to 2017
<b>Student Researcher</b> , National Taiwan University Formulated a cumulus parameterization scheme. Adapted the dynamics and physics of WRF atmospheric model.	2014 to 2016

## TEACHING EXPERIENCE

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<b>STEM Teacher</b> , Seattle Taiwanese Language Association Designed STEM activities for K-to-11 students in Taiwanese Taigi Delivered STEM activities at Taiwanese Language Summer Camps	2023 to 2025
<b>Teaching Assistant</b> , University at Albany, State University of NY Applications of Subseasonal to Seasonal Dynamics Ocean Science Water and Climate Change Atmospheric Dynamics	2018 to 2020
<b>Teaching Assistant</b> , National Taiwan University Lab. of Synoptic Meteorology ( <i>de facto</i> Lecturer) Fluid Mechanics Program and Scientific Computing	2014 to 2016

## PROFESSIONAL SERVICE

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### 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)

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- 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 òe 大氣” (Talk about wind, rain, and atmosphere)  
Sè-kài Tâi-oân Bûn-hòa Lûn-tôa<sup>n</sup> (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

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**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

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**Model Formulation:** using partial differential equations.

**Model Development:** using Fortran, Matlab, or Python

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

## RESEARCH INTERESTS

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**Geophysical Fluid Dynamics**

**Earth System Modeling**