

# HING ONG

Curriculum Vitae

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He/him

## 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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### Journal Publications

- 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.

## **Journal Papers in Progress**

**Ong, H., & Yang, D.,** One stone, two birds: Using vapor kinetic energy to detect and understand atmospheric rivers. Submitted.

## **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
- 2019 **Poster Presentation Award**, Annual Meeting, AMS
- 2014 **Dean's Award**, College of Science, National Taiwan University

## **INVITED LECTURES (SELECTED)**

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- 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 Hokkien.
- 2021 “Atmospheric rivers: Integrated vapor kinetic energy and preliminary budget analyses,” National Taiwan University, Taipei, Taiwan, Dec 16. Delivered in Taiwanese Hokkien.
- 2021 “The nontraditional Coriolis terms and convective system propagation,” Geophysical Fluid Dynamics Laboratory, Princeton, NJ, Sep 23.
- 2021 “Radiative-convective equilibrium with the nontraditional Coriolis terms,” Department of Atmospheric Science, Colorado State University, Fort Collins, CO, Feb 17.
- 2020 “Is vorticity tilting the primary source of potential vorticity in the eye of a hurricane?” Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan, Dec 22.
- 2020 “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,” Department of Land, Air and Water Resources, University of California, Davis, CA, Feb 24.
- 2020 “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,” Research Center for Environmental Changes, Academia Sinica, Taipei, Taiwan, Jan 10.
- 2020 “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,” Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan, Jan 9.

- 2019 “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,”  
Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of  
Technology, Cambridge, MA, Oct 30.
- 2019 “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,”  
Mesoscale and Microscale Meteorology Laboratory, National Center for Atmospheric  
Research, Boulder, CO, Jul 25.
- 2019 “The significance of the nontraditional Coriolis terms in tropical large-scale dynamics,”  
Central Weather Bureau, Taipei, Taiwan, Jun 20.
- 2018 “Ertel potential vorticity charging and scaling for the nontraditional Coriolis term,”  
Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan, Jun  
26.

## RESEARCH EXPERIENCE

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**Postdoctoral Appointee**, Argonne National Laboratory 2023 to current

Advisor: Rao Kotamarthi

Performed climate dynamical downscaling with WRF model

**Postdoctoral Scholar**, University of California, Davis 2020 to 2023

Advisor: Da Yang

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.

Developed in-line diagnostics for the CAM atmospheric model.

**PhD Researcher**, University at Albany, State University of NY 2017 to 2020

Advisor: Paul E. Roundy

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

Supervisor: Hung-Chi Kuo

Participated in a scientific planning group in a field experiment.

Composed a progress report.

**MS Researcher**, National Taiwan University 2014 to 2016

Advisor: Chien-Ming Wu and Hung-Chi Kuo

Formulated a cumulus parameterization scheme.

Adapted the dynamics and physics of WRF atmospheric model.

## TEACHING EXPERIENCE

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- 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 (Lecturer)  
Fluid Mechanics  
Program and Scientific Computing

## PROFESSIONAL SERVICE

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

## LANGUAGES

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- English:** Professionally proficient
- Chinese Mandarin:** Native (my official name until Dec 2021, Heng Wang)
- Taiwanese Hokkien:** Native (my official name since Dec 2021, Hing Ong)

## 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**