

CURRICULUM VITAE

OF

Ping Zhu

Department of Earth & Environment, and

International Hurricane Research Center

Florida International University

EDUCATION

| Degree | Institution | Field | Dates |
|---------------|--|--|--------------|
| Ph.D. | University of Miami, RSMAS | Meteorology & Physical Oceanography | 2002 |
| M.S. | Chinese Academy of Meteorological Sciences, China | Atmospheric Sciences | 1988 |
| B.S. | Nanjing University, China | Atmospheric Sciences | 1985 |

FULL-TIME ACADEMIC EXPERIENCE

| Institution | Rank | Field | Dates |
|--|--|--|--|
| FIU | Professor | Earth & Environment and Extreme Events Institute | 06, 2018 – present |
| FIU | Associate Professor | Earth & Environment and Extreme Events Institute | 08, 2012 – 06, 2018 |
| FIU | Assistant Professor | Earth & Environment and IHRC | 01, 2006 – 08, 2012 |
| National Center for Atmospheric Research University of Washington | Postdoctoral Researcher Postdoctoral Researcher | Climate and Global Dynamics Division Department of Atmospheric Sciences | 08, 2004 – 01, 2006 08, 2002 – 08, 2004 |
| University of Tsukuba, Japan | Visiting Scholar | Institute of Geosciences | 08, 1996 – 08, 1997 |
| Beijing Meteorol. Institute, China | Teacher | Department of Meteorology | 08, 1988 – 08, 1996 |

PART-TIME ACADEMIC EXPERIENCE

| Institution | Rank | Field | Dates |
|---------------------|--------------------|--------------------------------------|---------------------|
| University of Miami | Research Assistant | Meteorol. & Physical Oceanography | 08, 1997 – 08, 2002 |

PUBLICATIONS IN DISCIPLINE

46. **Zhu, P.**, B. Tyner, J. A. Zhang, E. Aligo, S. Gopalakrishnan, F. D. Marks, V. Tallapragada, 2018: Role of eyewall and rainband eddy forcing in tropical cyclone intensification. *Atmos. Chem. Phys.*, in review.
45. Tyner, B., **P. Zhu**, J. A. Zhang, S. Gopalakrishnan, F. Jr. Marks, and V. Tallapragada, 2018: A top-down pathway to secondary eyewall formation in simulated tropical cyclones. *J. Geophys. Res.: Atmospheres*, **123**, 174–197. <https://doi.org/10.1002/2017JD027410>

44. Katz, J., and **P. Zhu**, 2017: Evaluation of surface layer flux parameterization using in-situ observations, *Atmospheric Research*, **194**, 150-163.
<https://doi.org/10.1016/j.atmosres.2017.04.025>
43. Gao, C., and **P. Zhu**, 2016: Vortex Rossby wave propagation in baroclinic tropical-cyclone-like vortices, *Geophys. Res. Lett.*, **43**, 12,578-12,589, doi:10.1002/2016GL071662.
42. **Zhu, P.**, Y. Wang, S. S. Chen, M. Curcic, †**C. Gao**, 2015: Impact of storm-induced cooling of sea surface temperature on large turbulent eddies and vertical turbulent transport in the atmospheric boundary layer of Hurricane Isaac, *J. Geophys. Res. - Oceans*, **121**, 861-876, doi:10.1002/2015JC011320.
41. **Zhu, P.**, Z.-D. Zhu, S. Gopalakrishnan, R. Black2, F. D. Marks, V. Tallapragada, J. A. Zhang, X. Zhang, C. Gao, 2015: Impact of sub-grid scale processes on eyewall replacement cycle of tropical cyclones in HWRF System, *Geophys. Res. Lett.*, **42**, 10,027-10,036, doi:10.1002/2015GL066436.
40. **Zhu, P.**, 2015: On the mass-flux representation of vertical transport in moist convection, *J. Atmos. Sci.*, **72**, 4445-4468, doi:http://dx.doi.org/10.1175/JAS-D-14-0332.1.
39. Ghate, V., M. A. Miller, **P. Zhu**, 2015: Differences between nonprecipitating tropical and trade wind marine shallow cumuli, *Mon Wea. Rev.*, **114**, 681-701, doi:http://dx.doi.org/10.1175/MWR-D-15-0110.1.
38. Li Z.-J., P. Zuidema, **P. Zhu**, and M. Hugh, 2015: The sensitivity of simulated shallow cumulus convection and cold pools to microphysics. *J. Atmos. Sci.*, **72**, 3340-3355, doi:http://dx.doi.org/10.1175/JAS-D-14-0099.1.
37. Romero, I. C., O. Tamay, S. Snyder, P. Schwing, B. J. O'Malley, F. J. Beron-Vera, M. J. Olascoaga, **P. Zhu**, E. Ryan, S. S. Chen, D. L. Wetzel, D. Hollander, S. A. Murawski, 2015: Tracking the Hercules 265 marine gas well blowout in the Gulf of Mexico, *J. Geophys. Res. - Oceans*, **121**, 706-724, doi:10.1002/2015JC011037.
36. Zhu, Z.-D., and **P. Zhu**, 2015: Sensitivity of eyewall replacement cycle to model physics, vortex structure, and background winds, *J. Geophys. Res.- Atmos.*, **120**, 590-622, doi:10.1002/2014JD022056.
35. Tamay M. O., F. J. Beron-Vera, Darek Bogucki, S.S. Chen, C. Dawson, W. Dewar, A. Griffa, B. K. Haus, A. C. Haza, H. Huntley, M. Iskandarani, G. Jacobs, B. Jagers, A.D. Kirwan, N. Laxague, B. Lipphart, J. MacMahan, A. J. Mariano, J. Olascoaga, G. Novelli, A. C. Poje, A.J.H.M. Reniers, J. M. Restrepo, B. Rosenheim, E H. Ryan, C. Smith, A. Soloviev, S. Venkataramani, G-C. Zha, **P. Zhu**, 2014: Research overview of the Consortium for Advanced Research on Transport of Hydrocarbon in the Environment (CARTHE), *2014 International Oil Spill Conference proceeding*, May 2014, Vol. 2014, No. 1, pp. 544-560.
34. Zhu, Z.-D., and **P. Zhu**, 2014: The role of outer rainband convection in governing the eyewall replacement cycle in numerical simulations of tropical cyclones, *J. Geophys. Res.- Atmos.*, **119**, 8049–8072, doi:10.1002/2014JD021899.
33. Varble A., E. J. Zipser, A. M. Fridlind, **P. Zhu**, A. S. Ackerman, J.-P. Chaboureau, J. Fan, A. Hill, B. Shipway, and C. Williams, 2014: Evaluation of cloud-resolving and limited area model intercomparison simulations using TWP-ICE observations. Part 2: Rain microphysics, *J. Geophys. Res.- Atmosphere*, **119**, 13,919-13,945, doi:10.1002/2013JD021372.
32. Varble, A., E. J. Zipser, A. M. Fridlind, **P. Zhu**, A. S. Ackerman, J.-P. Chaboureau, S. Collis, J. Fan, A. Hill, and B. Shipway, 2014: Evaluation of cloud-resolving and limited area model intercomparison simulations using TWP-ICE observations. Part 1: Deep convective updraft properties, *J. Geophys. Res.-Atmos.*, **119**, 13,891-13,918, doi:10.1002/2013JD021371.
31. Li Z.-J., P. Zuidema, and **P. Zhu**, 2014: Simulated convective invigoration processes at trade-wind cumulus cold pool boundaries. *J Atmos. Sci.*, **71**, 2823-2841. doi:10.1175/JAS-D-13-0184.1.
30. **Zhu, P.**, and J. Furst, 2013: On the parameterization of surface momentum transport via drag coefficient in low wind conditions. *Geophys. Res. Lett.*, **40**, 2824-2828, doi:10.1002/grl.50518.

29. **Zhu, P.**, K. Menelaou, and Z.-D. Zhu, 2013: Impact of sub-grid scale vertical turbulent mixing on eyewall asymmetric structures and mesovortices of hurricanes. *Q. J. R. Meteorol. Soc.*, **140**: 416-438, doi:10.1002/qj.2147.
28. Petch, J., A. Hill, L. Davies, A. Fridlind, C. Jakob, Y.-L. Lin, S.-C. Xie, **P. Zhu**, 2013: Evaluation of intercomparisons of four different types of model simulating TWP-ICE. *Q. J. R. Meteorol. Soc.*, **140**: 826-837, doi:10.1002/qj.2192.
27. Wang D.-H., **P. Zhu**, J.-F. Yin, X.-F. Li, W.-K. Tao, 2013: Effects of vertical wind shear, radiation, and ice clouds on precipitation distributions during a landfall of severe tropical storm Bilis (2006). *Terr. Atmos. Oce.*, **24/3**, 383-392, doi:10.3319/TAO.2013.01.11.02(A).
26. Wang, D-H, Y. Liu, **P. Zhu**, J.-F. Yin, X.-F. Li, and W.-K. Tao, 2013: Cloud microphysical budget associated with torrential rainfall during the landfall of severe tropical storm Bilis (2006). *Acta Meteor. Sinica*, **27**, 263-272, doi: 10.1007/s13351-013-0210-z.
25. **Zhu, P.**, J. Dudhia, P. R. Field, K. Wapler, A. Fridlind, A. Varble, E. Zipser, J. Petch, M. Chen, †Z.-D. Zhu, 2012: A limited area model (LAM) intercomparison study of a TWP-ICE active monsoon mesoscale convective event. *J. Geophys. Res.*, VOL. 117, D11208, 21 PP., doi:10.1029/2011JD016447.
24. Zhang A. J., **P. Zhu**, F. J. Masters, R. R. Rogers, and F. D. Marks, 2011: On momentum transport and dissipative heating during hurricane landfalls. *J. Atmos. Sci.*, **68**, 1397-1404. DOI:http://dx.doi.org/10.1175/JAS-D-10-05018.1
23. **Zhu, P.**, B. A. Albrecht, V. P. Ghate, Z.-D., Zhu, 2010: Multiple scale simulations of stratocumulus clouds. *J. Geophys. Res.*, **115**, D23201, doi:10.1029/2010JD014400.
22. **Zhu, P.**, J. A. Zhang, and F. J. Masters, 2010: Wavelet analyses of turbulence in the hurricane surface layer during landfalls. *J. Atmos. Sci.*, **67**, 3793-3805. DOI:http://dx.doi.org/10.1175/2010JAS3437.1
21. **Zhu, P.** and P. Zuidema, 2009: On the use of PDF schemes to parameterize sub-grid clouds. *Geophysical Research Letters*, **36**, L05807, doi:10.1029/2008GL036817.
20. **Zhu, P.**, 2008: Impact of land surface roughness on surface winds during hurricane landfall. *Q. J. R. Meteorol. Soc.*, **134**, 1051-1057. doi:10.1002/qj.265.
19. **Zhu, P.**, 2008: A multiple scale modeling system for coastal hurricane wind damage mitigation. *Natural Hazards*, **47**, 577-591. doi:10.1007/s11069-008-9240-8.
18. **Zhu, P.**, 2008: Simulation and parameterization of the turbulent transport in the hurricane boundary layer by large eddies. *J. Geophys. Res.*, **113**, D17104, doi:10.1029/2007JD009643.
17. **Zhu, P.**, W. Zhao, 2008: Parameterization of continental boundary layer clouds. *J. Geophys. Res.*, **113**, D10201, doi:10.1029/2007JD009315.
16. **Zhu, P.**, J. J. Hack, J. T. Kiehl, and C. S. Bretherton, 2007: Climate sensitivity of tropical and subtropical marine low cloud amount to ENSO and global warming due to doubled CO₂. *J. Geophys. Res.*, **112**, D17108, doi:10.1029/2006JD008174.
15. **Zhu, P.**, J. Hack, J. Kiehl, 2007: Diagnosing cloud feedbacks in general circulation models. *J. Climate*, **20**, 2602-2622, doi:http://dx.doi.org/10.1175/JCLI4140.1.
14. **Zhu, P.**, C. Bretherton, M. Kohler, A. Cheng, A. Chlond, Q. Geng, P. Austin, J.-C. Golaz, G. Lenderink, A. Lock, B. Stevens, 2005: Intercomparison and interpretation of single column model simulations of a nocturnal stratocumulus topped marine boundary layer. *Mon. Wea. Rev.*, **133**, 2741-2758, doi: http://dx.doi.org/10.1175/MWR2997.1.
13. Stevens, B., C.-H., Moeng, A. S. Ackerman, C. Bretherton, A. Chlond, S. De Roode, J. Edwards, J.-C., Golaz, H. Jiang, M. Khairoutdinov, M. P. Kirkpatrick, D. C. Lewellen, A. Lock, F. Muller, D. E. Stevens, E. Whelan, **P. Zhu**, 2005: Evaluation of large-eddy simulations via observations of nocturnal marine stratocumulus. *Mon. Wea. Rev.*, **133**, 1443-1462, doi:http://dx.doi.org/10.1175/MWR2930.1.
12. **Zhu, P.** and C. Bretherton, 2004: A simulation study of shallow moist convection and its impact on the atmospheric boundary layer. *Mon. Wea. Rev.*, **132**, 2391-2409, doi:http://dx.doi.org/10.1175/1520-0493(2004)132<2391:ASSOSM>2.0.CO;2.

11. **Zhu, P.** and B. A. Albrecht, 2003: Large eddy simulations of continental shallow cumulus convection. *J. Geophys. Res.*, **108**, D15, 4453, doi:10.1029/202JD003119.
10. **Zhu, P.** and B. A. Albrecht, 2002: A theoretical and observational analysis on the formation of fair-weather cumuli. *J. Atmos. Sci.*, **59**, 1983-2005, doi:http://dx.doi.org/10.1175/1520-0469(2002)059<1983:ATAOAO>2.0.CO;2.
9. **Zhu, P.** and B. A. Albrecht, and J. Gottschalck, 2001: Formation and development of nocturnal boundary layer clouds over the southern Great Plains. *J. Atmos. Sci.*, **58**, 1409-1426, doi:http://dx.doi.org/10.1175/1520-0469(2001)058<1409:FADONB>2.0.CO;2.
8. Wang, Q. and **P. Zhu**, 1995: Analysis of nighttime drainage wind in Heihe region. *J. Meteor. Soc. Japan*, **73**, 1285-1291, doi:http://doi.org/10.2151/jmsj1965.73.6_1285.
7. **Zhu, P.**, X. J. Xu, and X. S. Li, 1992: A numerical study of the second-order turbulent moments in the stable stratified nocturnal boundary layer. *Adv. Atmos. Sci.*, **9**, 201-212, doi:10.1007/BF02657510.
6. **Zhu, P.** and R. B. Jiang, 1995: Numerical study of oscillation phenomena in radiation fog. *Scientia Atmospherica Sinica*, **19**, 234-241.
5. **Zhu, P.** and R. B. Jiang, 1996: Comparing the characteristics of PBL among oasis, desert and gobi. *Meteorological Monthly*, **22**, No.3, 48-50.
4. Wang, Q., **P. Zhu**, B. Z. Wang, and R. B. Jiang, 1995: Study of the characteristics of the low level jets and the nighttime drainage winds in Heihe region. *Plateau Meteorology*, **14(3)**, 257-263.
3. Wang, Q., Z. Yang, S. Chen, B. Z. Wang, and **P. Zhu**, 1995: Analysis of the measuring accuracy for the tethered systems in HEIFE experiment, *Plateau Meteorology*, **14(3)**, 264-269.
2. Jiang, R. B., **P. Zhu**, B. Z. Wang, and Z.Y. Yang, 1995: Analyses of characteristics of turbulence during a mesoscale storm system. *Meteorological Monthly*, **12**, No.4, 11-15.
1. Miao, M. Q., M. Zhao, Y. C. Wang, and **P. Zhu**, 1987: The calculation of the turbulent fluxes in surface boundary layer and the study of several models of wind profiles in the tower layer. *Scientia Atmospherica Sinica*, **11**, 420-429.

Government Report, White Papers

4. Xie, S. C., Y. Zhang, J. Mircocha, M. Zhang, M. Khairoutdinov, F. Zhang, S. Klein, K. Lundquist, M. Simpson, **P. Zhu**: Development of a framework for routine large eddy simulations over ARM SGP site, Department of Energy (DOE), 2016.
3. Min, Q., Y. X. Hu, B. Lin, S. G. Gopalakrishnan, **P. Zhu**, R. Lawrence, S. Harrah: NASA decadal survey for earth science and applications from space: Earth system science theme II. Weather and air quality: Minutes to subseasonal atmospheric dynamics, thermodynamics, chemistry, and their interactions at land and ocean interfaces, NASA DS (ESAS-2017), 2016.
2. Ghate, V. P., and **P. Zhu**: Factors governing turbulence in cloud topped marine boundary layers, Department of Energy (DOE), 2016.
1. Zuidema, P., M.J. Alvarado, C. Chiu, S.P. DeSzoeko, C.W. Fairall, G. Feingold, S.J. Ghan, J.M. Haywood, P. Kollias, E.R. Lewis, G.M. McFarguhar A. McComiskey, D.B. Mechem, J. Redemann, D.M. Romps, D.D. Turner, H. Wang, R. Wood, S.E. Yuter, and **P. Zhu**: Layered Atlantic smoke interactions with clouds (LASIC) science plan, DOE/SC-ARM-14-037, March 2016.

Other Publications

2. **Zhu, P.** and B. A. Albrecht, 2002: Formation of fair-weather cumuli. *Bull. Amer. Meteor. Soc.*, **83**, 856-857.
1. **Zhu, P.**, J. Gottschalck, and B. A. Albrecht, 1999: Formation and development of nocturnal boundary layer clouds over land, 13th Symposium on Boundary Layers and Turbulence. Dallas, Texas, pp. 312-315, January 10-15, 1999.

Thesis and Dissertation:

2. **Zhu, P.**, 2002: Evolution of shallow cumulus convection and its parameterization.

Ph.D. Dissertation, RSMAS/MPO, University of Miami.

1. **Zhu, P.**, 1989: Numerical studies of the stable stratified nocturnal boundary layer.
M.S. Thesis, Chinese Academy of Meteorological Science, SMA.

PROFESSIONAL HONORS, PRIZES, FELLOWSHIPS

4. 2009 NSF Early CAREER award
3. 2003-2004 Smith Prize for the most original Ph.D. dissertation by RSMAS, U. of Miami
2. 1996 Visiting Scholar Fellowship, Chinese Education Department
1. 1994 Outstanding College Teacher Award by Beijing High Education Department

TEACHING ACTIVITIES AT FIU

Undergraduate

- | | |
|---|------------------------------|
| 9. MET4400: Meteorological Instrumentation and Observations | 2009, 2011, 2012, 2017 |
| 8. OCE3014: Oceanography | 2010 |
| 7. MET4993: Calculations for the Atmospheric Sciences | 2010, 2013 |
| 6. MET4301: Dynamic Meteorology I | 2006, 2007, 2008, 2009 |
| 5. MET3003: General Meteorology | 2008, 2014, 2015, 2016, 2017 |
| 4. MET3993: Physical Climatology | 2007 |
| 3. IDS 3211C: Global Climate Change: Science, Society, and Solution | 2012, 2013, 2013 (Co-taught) |
| 2. MET4750: Techniques for Earth System Modeling | 2016 |
| 1. MET4910: Meteorology Research | 2017, 2014 |

Graduate

- | | |
|---|--|
| 10. GLY6061: Geoscience Systems (Co-taught) | 2014, 2015, 2016 |
| 9. MET5305: Boundary Layer Meteorology | 2008, 2009, 2010, 2011, 2012, 2013, 2015 |
| 8. MET5311: Dynamic Meteorology I | 2008, 2009 |
| 7. MET5994: Dynamic Meteorology II | 2009 |
| 6. MET5365: Techniques for Earth System Modeling and Research | 2016 |
| 5. GLY5931: Graduate Seminar | 2006, 2007, 2008, 2014 |
| 4. GLY6931: Advanced Graduate Seminar | 2006, 2007, 2008, 2014 |
| 3. GLY6910: Supervised Research | 2007 – 2017 |
| 2. GLY7980: Ph.D. Dissertation | 2012 – 2016 |
| 1. GLY6971: M.S. Thesis | 2008 – 2016 |

New Courses Designed at FIU

11. MET4750: Techniques for Earth System Modeling
10. MET5365: Techniques for Earth System Modeling and Research
9. GLY6061: Geoscience Systems (co-designed)
8. MET4400: Meteorological Instrumentation and Observations
7. MET4993: Calculations for the Atmospheric Sciences
6. MET3993: Physical Climatology (co-designed)
5. MET4301: Dynamic Meteorology I (undergraduate, co-designed)
4. MET5311: Dynamic Meteorology I (graduate, co-designed)
3. MET5994: Dynamic Meteorology II (graduate, co-designed)
2. MET5305: Boundary Layer Meteorology

1. IDS 3211C: Global Climate Change: Science, Society, and Solution (co-designed)