

## CURRICULUM VITAE: *Chidong Zhang*

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### EDUCATION:

1989 Ph.D. Meteorology, The Pennsylvania State University  
1985 M.S. Meteorology, University of Utah  
1982 B.S. Meteorology, Peking University

### PROFESSIONAL OCCUPATION:

2016 -	Supervisory Oceanographer and Leader of the Ocean Climate Research Division	NOAA Pacific Marine Environmental Laboratory
2016 -	Affiliate Professor	University of Washington
2004-2017	Professor	University of Miami
2000-2004	Associate Professor	University of Miami
1997-2000	Research Associate Professor	University of Miami
1992-1996	Research Assistant Professor	University of Washington
1991-1992	Postdoctoral Visitor	University of Washington
1989-1991	Research Associate	The Pennsylvania State University

### AWARD AND HONOR:

2020 Fellow, American Geophysical Union  
2018 Scientific and Technological Activities Commission Award, American Meteorological Society  
2016 Editor's Citation for Excellence in Refereeing, Review of Geophysics  
2014 Fellow, American Meteorological Society  
2001 Graduate Student Appreciation Award, University of Miami  
1999 Editor's Citation for Excellence in Refereeing, Journal of Geophysical Research-Oceans  
1991 NOAA Global and Climate Change Postdoctoral Fellowship

### PROFESSIONAL ASSOCIATION:

1994 - Member, American Geophysical Union  
1989 - Member, American Meteorological Society

### FIELD PROGRAM EXPERIENCE:

Chief Scientist, Dynamics of the Madden-Julian Oscillation (DYNAMO), October 2011 – March 2012, Indian Ocean  
Guest Participant, Saharan Air Layer Experiment (SALEX), September 2006, Barbados  
PI, Eastern Pacific Investigation on Climate (EPIC2001), September 2001, Huatulco, Mexico  
Postdoctoral Participant, Tropical Ocean Global Atmosphere (TOGA) Couple Ocean Atmosphere Response Experiment (COARE), December 1992 - February 1993, Honiara, Solomon Islands.

### PROFESSIONAL SERVICE

Executive Committee of the US CLIVAR Science Steering Committee, 2020-2022.  
AMS Nomination committee, 2020-2022  
Editor, Scientific Online Letters on the Atmosphere (SOLA), 2019 -  
Organizing Committee for 2020 NCAR Summer Colloquium on Subseasonal-to-Seasonal Science, 2019-2020  
Organization Committee for the NOAA Climate Program Office (CPO) Earth System Science and

Modeling (ESSM) Division Strategic Planning Workshop, November 2018  
 Organization Committee for the US Clivar Workshop on Tropical Convection and Air-Sea Interaction, 2018-2019  
 US TPOS2020 Executive Committee, 2018  
 Co-Chair, Organizing Committee of AMS Peter Webster Symposium, January 9, 2018  
 Chair, AMS Award Nomination Committee, 2017  
 Co-Chair, Science Steering Committee of Years of the Maritime Continent (YMC), 2015-  
 Organizing Committee of Workshop on Intraseasonal Processes and Prediction in the Maritime Continent, Singapore, 11-13 April 2016  
 US Steering Committee of International Indian Ocean Expedition 2 (IIOPE-2), 2015-2020  
 Organizing Committee of the 2<sup>nd</sup> International Workshop on Years of the Maritime Continent, BMKG, Jakarta, November 24-26, 2015.  
 AMS Awards Nomination Committee, 2015-2020.  
 Editorial Advisory Board of Mathematics of Climate and Weather Forecasting, 2015 – 2020  
 Review Panel for NOAA Earth System Laboratory, Physical Science Division, May 12-14, 2015  
 Guest Editor, Journal of the Meteorological Society of Japan, 2015 -  
 Organizing Committee of BIRS workshop on Stochasticity and Organization of Tropical Convection, the Banff Centre, Banff, Alberta, Canada, April 27 - May 1, 2015  
 Chair, Organizing Committee of the 1<sup>st</sup> International Workshop on Years of the Maritime Continent, Center for Climate Research Singapore, January 27-30, 2015.  
 National Academy of Sciences Committee on Developing a U.S. Research Agenda to Advance Subseasonal to Seasonal Forecasting, 2014-2016.  
 Editor, Journal of Geophysical Research – Atmosphere, 2013 – 2020.  
 Co-Chair, Symposium on Prediction of the Madden-Julian Oscillation, AMS Annual Meeting, Austin, TX, January 10, 2013.  
 Council of the American Meteorological Society, 2012 – 2015  
 Organizing Committee of AMS Michio Yanai Symposium, January 27, 2011  
 Organizing Committee of 2011 NCAR ASP Summer Colloquium on African Weather and Climate, July 25 – August 5, 2011  
 ARM MJO Investigation Experiment (AMIE) Science Steering Committee, 2010 - 2013  
 Chair, Dynamics of the MJO (DYNAMO) Science Steering Committee, 2010 – 2013  
 Cooperative Indian Ocean Experiment on Intraseasonal Variability in the Year 2011 (CINDY2011) International Science Steering Committee, 2010 – 2013  
 WWRP/WCRP YOTC MJO Task Force, 2010 – 2012  
 Review Panel of National Research Council, 2009 - 2011  
 US CLIVAR MJO Working Group, 2006 – 2009  
 Chair, Organizing Committee of NCAR/TIIME Summer Retreat on Tropical Convection and Weather Climate Interface, July 2006, Boulder, CO  
 Associate Editor, Journal of Climate, 2005 – 2019  
 AMS Committee on Hurricanes and Tropical Meteorology, 2004 – 2007  
 International CLIVAR's Atlantic Implementation Panel (AIP), 2004 – 2007  
 International Science Working Group of North American Monsoon Experiment (NAME), 2001 – 2005  
 Chair, Organizing Committee of MJO-ENSO workshop, 2000, Princeton, NJ  
 AMS Max Eaton Award committee, 1997

## **PUBLICATIONS**

Kim, J.-E., and C. Zhang (2020): Core dynamics of the MJO. *J. Atmos. Sci.*, 78(1), 229–248.  
 Zhang, C., Á. F. Adames, B. Khouider, B. Wang, D. Yang, 2020: Four Theories of the Madden-Julian Oscillation. *Rev. Geophys.* p.e2019RG000685..

- Jiang, X., Á.F. Adames, D. Kim, E. D. Maloney, H. Lin, H. Kim, C. Zhang, C. A. DeMott, and N. P. Klingaman, 2020: Fifty Years of Research on the Madden-Julian Oscillation: Recent Progress, Challenges, and Perspectives. *Journal of Geophysical Research: Atmospheres*, e2019JD030911
- Yoneyama, K., & Zhang, C. (2020). Years of the Maritime Continent. *Geophysical Research Letters*, 47, e2020GL087182. <https://doi.org/>
- Wei, Y., Pu, Z. and Zhang, C., 2020: Diurnal Cycle of Precipitation over the Maritime Continent under Modulation of MJO: Perspectives from Cloud-Permitting Scale Simulations. *Journal of Geophysical Research: Atmospheres*, p.e2020JD032529.
- Chen, G., Ling, J., Li, C., Zhang, Y. and Zhang, C., 2020: Barrier Effect of the Indo-Pacific Maritime Continent on MJO Propagation in Observations and CMIP5 Models. *Journal of Climate*, 33, 5173-5193. <https://doi.org/10.1175/JCLI-D-19-0771.1>
- Hagos, S., Foltz, G.R., Zhang, C., Thompson, E., Seo, H., Chen, S., Capotondi, A., Reed, K.A., DeMott, C. and Protat, A., 2020. Atmospheric Convection and Air-Sea Interactions over the Tropical Oceans: Scientific Progress, Challenges and Opportunities. *Bulletin of the American Meteorological Society*, 101(3), pp.E253-E258
- Roxy, M. K., P. Dasgupta, M.J. McPhaden, T. Suematsu, C. Zhang, and D. Kim, 2019: Twofold expansion of the Indo-Pacific warm pool warps the MJO life cycle, *Nature*, 575(7784), pp.647-651.
- Subramanian, A.C. M.A. Balmaseda, R. Chattopadhyay, L. Centurioni, B.D. Cornuelle, C. DeMott, T.M, Hamill, H.Hendon, I.Hoteit, M.Flatau, Y.Fujii, S.T. Gille, A.Kumar, J.-H. Lee, A.J. Lucas, M. Matsueda, A. Mahadevan, S.H. Nam, S. Paturi, S.G. Penny, A.Rydbeck, R. Sun, A. Tandon, Y. Takaya, R.E. Todd, F. Vitart, D.Yuan, C. Zhang, 2019: Ocean observations to improve our understanding, modeling, and forecasting of subseasonal-to-seasonal variability. *Front. Mar. Sci.* 6:427.
- Meinig, C., E.F. Burger, N. Cohen, E.D. Cokelet, M.F. Cronin, J.N. Cross, S. De Halleux, R. Jenkins, A.T. Jessup, C.W. Mordy, N. Lawrence-Slavas, A. J. Sutton, D. Zhang, C. Zhang, 2019: Public Private Partnerships to Advance Regional Ocean Observing Capabilities: A Sailable and NOAA-PMEL Case Study and Future Considerations to Expand to Global Scale Observing. *Front. Mar. Sci.* 6:448.
- Hagos, S., Zhang, C., Leung, L.R., Burleyson, C.D. and Balaguru, K., 2019. A Zonal Migration of Monsoon Moisture Flux Convergence and the Strength of Madden-Julian Oscillation Events. *Geophysical Research Letters*, 46(14), pp.8554-8562.
- Zelinsky, R.C., C. Zhang, and C. Liu, 2019: The Relationship Between the ITCZ and MJO Initiation over the Indian Ocean. *J. Atmos. Sci.*, 76, 2275-2294.
- Li, T., Wang, L., Peng, M., Wang, B., Zhang, C., Lau, W. and Kuo, H.C., 2018. A paper on the tropical intraseasonal oscillation published in 1963 in a Chinese journal. *Bulletin of the American Meteorological Society*, 99(9), pp.1765-1779.
- Ling, J., C. Zhang, R. Joyce, P.-P. Xie, and G. Chen, 2019: Possible Role of the Diurnal Cycle in Land Convection in the Barrier Effect on the MJO by the Maritime Continent. *Geophys. Res. Ltr.*, 46, 3001–3011
- Kim, J.-E., C. Zhang, G.N. Kiladis, P. Bechtold, 2018: Heating and Moistening of the MJO during DYNAMO in ECMWF Reforecasts, *J. Atmos. Sci.*, 75(5), pp.1429-1452.
- Zhang, C. and Zhang, B., 2018. QBO-MJO Connection. *Journal of Geophysical Research: Atmospheres*, 123(6), pp.2957-2967.
- Li, X., M.A. Janiga, S. Wang, W.-K. Tao, A. Rowe, W. Xu, C. Liu, T. Matsui, and C. Zhang, 2018: Evolution of precipitation structure during November DYNAMO MJO event: Cloud-resolving model intercomparison and cross-validation using radar observations. *J. Geophys. Res.*, 123 (7), 3530–3555.

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- Ling, J., C. Zhang, S. Wang, and C. Li, 2017: A New Interpretation of the Ability of Global Models to Simulate the MJO. *Ltr. Geophys. Res.* 44, doi:10.1002/2017GL073891.
- Zhang, C. and J. Ling, 2017: Barrier Effect of the Indo-Pacific Maritime Continent on the MJO: Perspectives from Tracking MJO Precipitation. *J. Climate*, 30, 3439-3459.
- Zhang, C. and Yoneyama, K., 2017. CINDY/DYNAMO field campaign: Advancing our understanding of MJO initiation. In *The Global Monsoon System: Research and Forecast* (pp. 339-348).
- Ling, J., C. Li, T. Li, X. Jia, B. Khouider, E. Maloney, F. Vitart, Z. Xiao, and C. Zhang, 2017: Challenges and Opportunities in MJO Studies. *BAMS*, BAMS (2016)
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- Zhang, C., 2016: MJO and Extreme Weather/Climate Events, in *Dynamics and Predictability of Global and Regional High-Impact Weather and Climate Events*. J. Li, R. Swinbank, H. Volkert, and R. Grotjahn, Eds, Cambridge University Press, 2, p.294
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- Zhang, C., 2013: Madden-Julian Oscillation: Bridging Weather and Climate. *Bull. Amer. Met. Soc.*, **94**, 1849–1870.
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- Zhang, C., J. Gottschalck, E.D. Maloney, M.W. Moncrieff, F. Vitart, D.E. Waliser, B. Wang, M.C. Wheeler, 2013: Cracking the MJO Nut. *Geophys. Res. Ltr.*, **40**, 1223–1230. DOI: 10.1002/grl.50244.
- Ling, J., and C. Zhang, 2013: Diabatic heating profiles in recent global reanalyses. *J. Clim.*, **26**, 3307-3325.
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- Reid, J. S., Xian, P., Hyer, E. J., Flatau, M. K., Ramirez, E. M., Turk, F. J., Sampson, C. R., Zhang, C., Fukada, E. M., and Maloney, E. D., 2012: Multi-scale meteorological conceptual analysis of observed active fire hotspot activity and smoke optical depth in the Maritime Continent, *Atmos. Chem. Phys.*, **12**, 2117-2147, doi:10.5194/acp-12-2117-2012.

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- Ray, P., C. Zhang, M.W. Moncrieff, J. Dudhia, J.M. Caron, L.R. Leung, and C. Bruyere, 2010: Role of the atmospheric mean state on the initiation of the Madden-Julian Oscillation in a tropical channel model. *Clim. Dyn.*, 35, DOI 10.1007/s00382-010-0859-2.
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## BOOK CHAPTERS

- Yoneyama, K., and C. Zhang (2020): Years of the Maritime Continent (YMC): A multi-year field campaign in the largest archipelago on earth. Chapter 31 in *The Multi-*



- Scale Global Monsoon System*, C.-P. Chang (ed.), World Scientific Publishing Company. 399 - 406.
- Yang, D., A. Adame, C. Zhang, B. Wang, and B. Khouider (2020): A Review of MJO Theories. Chapter 19 in *The Multi-Scale Global Monsoon System*, C.-P. Chang (ed.), World Scientific Publishing Company. Accepted.
- Kim, D., E. Maloney, and C. Zhang (2020): MJO propagation over the Maritime Continent. Chapter 21 in *The Multi-Scale Global Monsoon System*, C.-P. Chang (ed.), World Scientific Publishing Company. Accepted.
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#### INVITED TALKS

- "Progress in Understanding Physical Processes and Dynamics of the MJO", Ninth Symposium on the Madden-Julian Oscillation and Sub-Seasonal Monsoon Variability, AMS 101st Annual Meeting, January 14, 2021.
- "Emerging Challenge to the MJO Study: The Barrier Effect of the Maritime Continent", International Workshop on Weather and Climate Variabilities and their Mechanisms, Beijing, 7 - 8 August 2019.
- "YMC Update", MJO Task Force meeting, Singapore, July 31, 2019.
- "Indo-Pacific Maritime Continent: Challenges and Opportunities", Australian Meteorological and Oceanic Society Annual Meeting and International Conference on Tropical Meteorology and Oceanography, Darwin, Australia, 14 – 19 June 2019
- "Indo-Pacific Maritime Continent: A Hot Spot of Global Weather-Climate". International Symposium on Global Climate and Environmental Changes. Beijing, May 25-26, 2019.
- "Years of the Maritime Continent". Planning Workshop for Integrated Scientific experiment of the South China Sea Monsoon. ZhuHai, 4-8 March 2019.
- "MJO-QBO Connection: Knowns and Unknowns", 2018 AGU Fall Meeting, Washington, DC, 10-14 December 2018
- "David Raymond's Insights into the ITCZ", David Raymon Symposium, 2018 Annual Meeting of the American Meteorological Society, Austin, TX, 11 January 2018
- "From DYNAMO to YMC – Issues of MJO initiation and propagation", Institute of Atmospheric Science, Chinese Academy of Science, Beijing, China, 1 September 2017
- "Monsoon Shallow Circulation", International Workshop on the Asian Monsoon in a Warmer World, Chengjiang, China, 20-23 August 2017
- "Five Years After: What Have We Learned from DYNAMO?", Fifth Symposium on Prediction of the Madden-Julian Oscillation: Processes, Prediction, and Impact, AMS annual meeting, Seattle, WA, January 22-26, 2017
- "DYNAMO and Beyond", Robert A. Houze, Jr. Symposium, AMS annual meeting, Seattle, WA,

- January 22-26, 2017
- “The Indo-Pacific Maritime Continent and Its Role in Global Weather-Climate”, Climate Challenge, Forum, Pusan National University, Busan, June 29, 2016
- “Intraseasonal Oscillation and its impacts II: Impact on monsoons and extreme events”, Asian-Pacific Climate Center S2S Training Program, Busan, June 28, 2016
- “Intraseasonal Oscillation and its impacts I: Characteristics of ISO, mechanism, and understanding its predictability”, Asian-Pacific Climate Center S2S Training Program, Busan, June 27, 2016
- “Indo-Pacific Maritime Continent: The Crux of Global Weather-Climate”, The Environmental Fluid Dynamics Laboratory, University of Notre Dame, South Bend, IN, April 5, 2016
- “Role of the Indo-Pacific Maritime Continent (Malay Archipelago) in the Earth System”, School of Atmospheric Sciences, Sun Yat-Sen University, Guangzhou, March 10, 2016.
- “Madden-Julian Oscillation: Problems, Challenges, and Progress”, AMS Annual Meeting, January 11, 2016.
- “MJO Impact on Global Weather and Climate”, National Hurricane Center, Miami, FL, April 8, 2014.
- “CINDY/DYNAMO/AMIE/LASP Field Campaign: A Biennial Report”, AMS 31st Conference on Hurricanes and Tropical Meteorology, 31 March-4 April 2014, San Diego, CA
- “Moisture Processes in the Madden-Julian Oscillation”, AGU Annual Meeting, Session of Grand challenges in moist process feedback in the climate system, San Francisco, CA, December 11 – 15, 2013.
- “The CINDY-DYNAMO Field Campaign 2011-12”, IWM-V, Macao, China, October 28 – October 28 – 31, 2013
- “Convective initiation of the MJO”, Atmosphere and Cryosphere Assembly 2013, 8-12 July 2013, Davos, Switzerland
- “Out of the Indian Ocean: Initiation and Global Impact of the Madden-Julian Oscillation”, ECMWF, June, 2013
- “Global Impact of the MJO on Weather and Climate”, National Taiwan University, 17 May 2013
- “Tropospheric Moisture: The Crux of the MJO?”, ICGPSRO2013, Taipei, Taiwan, 14-16 May 2013
- “MJO Initiation: Large-Scale Diagnostics, Field Observations, and Numerical Modeling”, Academia Sinica, Taipei, Taiwan, 13 May 2013.
- “The 2011-12 CINDY/DYNAMO Indian Ocean Field Campaign”, EGU, April 8-12, 2013
- “Madden-Julian Oscillation: Its Potential Vorticity vs. Gill-Model Interpretations”, EGU, April 8-12, 2013
- “Processes of MJO initiation over the Indian Ocean”, CAWCR Annual Workshop, Melbourne, 12-15 November, 2012.
- “Preliminary thoughts from the CINDY/DYNAMO field campaign”, AOGS-AGU (WPGM) Joint Assembly, Singapore, 13-17 August, 2012
- “MJO and Weather/Climate Extremes”, ICDM 2012 Workshop on “Dynamics and Predictability of High-impact Weather and Climate Events”, Kuming, China, 6 - 9 August 2012.
- “DYNAMO Field Campaign”, 2012 NCAR ASP Summer Colloquium “The Weather-Climate Intersection: Advances And Challenges”, June 4-22, 2012, Boulder
- “DYNAMO Field Campaign”, 11<sup>th</sup> Annual AMS Student Conference, New Orleans, LA January 21-22, 2012
- “A strategy of isolating climatic effects of aerosol on precipitation from other weather and climate factors”, IUGG 2011 General Assembly, Melbourne, Australia, 28 June - 7 July 2011.
- “A PV View of the MJO and Equatorial Waves”, IUGG 2011 General Assembly, Melbourne, Australia, 28 June - 7 July 2011
- “DYNAMO”, NOAA Climate Board, May 17, 2011

- “PV of the MJO and Equatorial Waves”, PAOC, MIT, Boston, MA, 9 May 2011
- “A PV analysis for the MJO”, The Waves and Multiscale Processes in the Tropics Workshop, American Institute of Mathematics, Palo Alto, CA, December 6 – 10, 2010
- “Madden Julian Oscillation and other tropical variability”, Workshop on Evaluation of Reanalyses – Developing an Integrated Earth System Analysis (IESA) Capability, Baltimore, MD, November 1-3, 2010
- “DYNAMO: A Research Program on MJO Initiation”, the 35th Annual Climate Diagnostics and Prediction Workshop, Raleigh, NC, October 4-7, 2010
- “Role of the MJO in ENSO Simulated by CGCMs”, AGU Western Pacific Geophysical Meeting, Taipei, Taiwan, June 21 – 15, 2010
- “Vertical Structures of Tropical Diabatic Heating: Ubiquity of the Leading Modes and its Dynamical Implications”, Courant Institute of Mathematical Sciences. November 18, 2009
- “Simulations of the Madden-Julian Oscillation by Global Climate Models”, International Workshop on Global Change Projection: Modeling, Intercomparison, and Impact Assessment, Yokohama, Japan, February 18-20, 2009.
- “Cross-scale air sea interaction”, European Centre for Medium-Range Weather Forecasts Workshop on Ocean-Atmosphere Interactions measurements, Reading, England, November 10 – 12, 2008.
- “Bimodal Structure in Diabatic Heating Profiles over the Tropical Pacific Region”, 2008 Western Pacific Geophysics Meeting, Cairns, Australia, July 21 – August 1, 2008.
- “MJO and ENSO: A Stochastic Connection between Weather and Climate”, Department of Atmospheric and Geophysical Sciences, State University of New York at Albany, February 24, 2008.
- “Research Issues on Tropical Convection and Two-way Interaction with the Large-scale Flow”, AMS Forum: Climate Change, 17 January 2007
- “The MJO-ENSO Problem”, Department of Earth and Atmospheric Sciences, Cornell University, 29 September 2006
- “The MJO-ENSO Problem”, Workshop on the Organization and Maintenance of Tropical Convection and the Madden Julian Oscillation, Trieste, March 13-17, 2006
- “Shallow meridional circulation in the tropics”, Center for Geophysical Research, University of Costa Rica, San José, 25 May 2005
- “The structure and annual cycle of the MJO”, ECMWF/CLIVAR Workshop on Simulation and Prediction of Intra-Seasonal Variability with Emphasis on the MJO, ECMWF, 3 - 6 November 2003.
- “Role of Radiation in the Large-Scale Circulation in the Western Pacific”, ARM annual meeting, Boulder, April 2003
- “Observed evidence for a dynamic connection between the MJO and ENSO”, European Geophysical Society XXVII General Assembly, Nice, April 2002
- “MJO Theories”, NCAR Summer Colloquium, Boulder, 17 July, 2001.
- “Tropical Coupled Variability”, NCAR Summer Colloquium, Boulder, 13 July, 2001.
- “The MJO-ENSO Problem”, Climate Diagnoses Center, NOAA, Boulder, 25 June, 2001.
- “Scrutinizing ITCZ Theories”, Program of Atmospheric and Oceanic Science, University of Colorado, Boulder, 22 June, 2001.
- “The bimodality of tropical upper-tropospheric water vapor: Observations from in situ and remote sensing measurements”, NASA Goddard Space Flight Center, Grenbelft, 10 May, 2000
- “The Intraseasonal Oscillation in the Atmosphere and the Ocean of the Western Pacific Warm Pool”, College of the Oceanic and Atmospheric Sciences, Corvales, Oregon State University, OR, 8 March 1996
- “Coherence between SST and Atmospheric Variability in the Western Pacific Warm Pool”, the 8th Conference on Air-Sea Interaction, AMS, Atlanta, GA, 28 January - 2 February, 1996.
- “Atmospheric Intraseasonal Variability at the Surface in the Western Pacific Ocean”, NASA Goddard

Space Flight Center, Greenbelt, MD, 18 January 1995.

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**REFeree**

National Science Foundation, United States – Israel Binational Science Foundation, European Commission, National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, Department of Energy, National Research Council, Journal of the Atmospheric Sciences, Journal of Climate, Monthly Weather Review, Bulletin of the American Meteorological Society, Journal of Applied Meteorology, Journal of Physical Oceanography, Journal of Atmospheric and Oceanic Technology, Journal of Geophysical Research-Atmosphere, Journal of Geophysical Research-Ocean, Journal of Advances in Modeling Earth Systems, Geophysical Research Letters, International Journal of Climatology, Quarterly Journal of the Royal Meteorological Society, Geosciences Education Journal, Nature