Anantha Aiyyer

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Education

2003	PhD	Atmospheric Science	State University of New York, Albany
	Committee: John Molinari, Lance Bosart, Lloyd Shapiro, Daniel Keyser, Arthur Loesch		
1998	MS	Atmospheric Science	State University of New York, Albany
	Committee: John Molinari, Daniel Keyser		
1994	MSc	Physics	Indian Institute of Technology, Kharagpur
1992	BSc	Physics	Indian Institute of Technology, Kharagpur

Employment

2024 – present	Professor Department of Marine, Earth and Atmospheric Sciences, North Carolina State University
2012 – 2024	Associate Professor Department of Marine, Earth and Atmospheric Sciences, North Carolina State University
2006 – 2012	Assistant Professor Department of Marine, Earth and Atmospheric Sciences, North Carolina State University
2003 – 2006	Research Associate *PI: Chris Thorncroft* State University of New York, Albany

Notable Recognition

2011	LeRoy and Elva Martin Award For Teaching Effectiveness: NCSU
2009	National Science Foundation Faculty Early Career (CAREER) Proposal
2004	Narayan R. Ghokale Award for Outstanding Research: SUNY Albany
1998	Max A. Eaton Prize: American Meteorological Society.

Editorial Boards and Selected Professional Service

2023 – present	Editor, Geophysical Research Letters
2021 – 2023	Associate Editor, Geophysical Research Letters
2018 – 2022	Leader, Early Career Geoscience Faculty Workshop
2016	Co-Chair, Committee of Visitors, National Science Foundation
2003 – present	Reviewer: J. Atmos. Sc., Mon. Wea. Rev., J. Clim., Q. J. Roy. Met. Soc., Clim. Dyn., Geo. Res. Letts.
2006 – present	Proposal reviewer: NSF, NOAA
2014 – present	NSF GRFP review panel member

2006 CMAQ Peer Review, Environmental Protection Agency, Research Triangle Park, North Carolina

Federally funded projects (PI and co-PI)

NSF Origin and Structure of the Monsoon Onset Vortex [**587, 816$**]

NSF Understanding the Changing Climatology, Organizing Patterns and Source Attribution of Hazards of Floods over the Southcentral and Southeast US [**$673, 418**]

NASA Dynamics Of Long-lived Easterly Waves [**$442,196**]

NASA Investigation of the Interaction Between Kelvin Waves and Easterly Waves Using CYGNSS Data [**$334,484**]

NASA Multiscale interactions between the MJO, equatorial waves, and the diurnal cycle over the Maritime Continent [**$383,431**]

NSF Origin, Storm track Dynamics and Convective Feedback of African Easterly Waves [**$481,728**]

NSF US-India International Workshop: Collaborative Science, Research, and Education in Air Quality Measurements, Modeling and Analysis [**$39,996**]

NSF CAREER: Dynamics of African Easterly Waves: Integrating phenomenological studies and Mathematical Instruction in Atmospheric Science [**$556,607**]

NOAA Improving Prediction of Severe Winds, Convection and Heavy Precipitation in the Southeastern United States [**$375,000**]

US DOE High-Resolution Modeling to Assess Tropical Cyclone Activity in Future Climate Regimes [**$649,649**]

Technical Skills

Models Weather and Climate modeling of various complexities and process based diagnostics

Data analysis Extensive experience in modeled and observed data including reanalysis/reforecast products, data formats (netcdf, hdf), CMIP outputs, satellite remote sensing data

Coding Extensive experience in Linux, modern FORTRAN, NCL, Python

Publications

37. Hasan, M., S. M. Larson, K. McMonigal, W. A. Robinson, and A. Aiyyer (2024). Hemisphere-Dependent Impacts of ENSO and Atmospheric Eddies on Hadley Circulation. J. Climate, 37, 6533–6548, https://doi.org/10.1175/JCLI-D-24-0112.1.
36. Dhavale S., and A. Aiyyer (2023). The Impact of the Madden-Julian Oscillation on the Formation of the Arabian Sea Monsoon Onset Vortex. Geophysical Research Letters, 50, e2023GL104156. https://doi.org/10.1029/2023GL104156
35. Aiyyer, A., and Schreck, C. (2023). Surface wind speeds and enthalpy fluxes during tropical cyclone formation from easterly waves: A CYGNSS view. Geophysical Research Letters, 50, e2022GL100823. https://doi.org/10.1029/2022GL100823

34. Aiyyer, A. and Wade. T. (2021). Acceleration of Tropical Cyclones As a Proxy For Extratropical Interactions: Synoptic-Scale Patterns and Long-Term Trends. Weather Clim. Dynam. Discuss., https://wcd.copernicus.org/preprints/wcd-2021-4/
33. White J. D., Aiyyer, A., and Russell, J. O. H., Aiyyer, A., 2021. The Impact of Orography on the African Easterly Wave Stormtrack. *J. Geophys. Res.*, https://doi.org/10.1029/2020JD033749.
32. Mantripragada, R S. S., Schreck III, C. J. and Aiyyer, A., 2021. Energetics of Interactions between African Easterly Waves and Convectively Coupled Kelvin Waves. *Mon. Wea. Rev.*, 149(11), 3821-3835. https://doi.org/10.1175/MWR-D-21-0003.1.
31. Chalise, D. R., Aiyyer, A., and Sankarasubramanian, A. (2021). Tropical cyclones' contribution to seasonal precipitation and streamflow over the southeastern and southcentral United States. Geophysical Research Letters, 48, e2021GL094738. https://doi.org/10.1029/2021GL094738
30. White J. D. and A. Aiyyer, 2021: African Easterly Waves in an Idealized General Circulation Model: Instability and Wavepacket Diagnostics, Weather Clim. Dynam. Discuss, https://doi.org/10.5194/wcd-2020-47.
29. Russell, J.O. and A. Aiyyer, 2020: The Potential Vorticity Structure and Dynamics of African Easterly Waves. J. Atmos. Sci., 0, https://doi.org/10.1175/JAS-D-19-0019.1.
28. Russell, J. O. H., Aiyyer, A., and White, J. D. 2020. African easterly wave dynamics in convection-permitting simulations: Rotational stratiform instability as a conceptual model. *Journal of Advances in Modeling Earth Systems*, 12, e2019MS001706.
27. Hannah W. and A. Aiyyer 2017: Reduced African Easterly Wave Activity with Quadrupled CO2 in the Super-Parameterized CESM, *J. Clim.*,30, 8253-8274
26. Russell, J. O., A. Aiyyer, J. D. White and W. Hannah 2016:Revisiting the connection between African Easterly Waves and Atlantic tropical cyclogenesis. *Geophys.Res. Lett.*, 44, 587-595.
25. A. Aiyyer, 2015: Recurving Western North Pacific Tropical Cyclones and Mid-Latitude Predictability. *Geophys. Res. Lett.*, 7799-7807.
24. Diaz, M. and A. Aiyyer, 2015: Absolute and Convective Instability of the African Easterly Jet. *J. Atmos. Sc.*, 72., 1805-1826
23. Tyner, B., A. Aiyyer, J. Blaes, and D. R. Hawkins 2015: A Climatological Examination of Sustained Wind Speeds, Wind Gusts and Wind Forecasts for Recent Tropical Cyclones in the Mid-Atlantic Region of the United States. *Wea. Forecasting*, 30, 153-176
22. Diaz, M. and A. Aiyyer, 2013: Genesis of African Easterly Waves by Upstream Energy Dispersion. *J. Atmos. Sc.*, 70, 3492–3512.
21. Mallard, M., G. M. Lackmann and A. Aiyyer, 2013: Atlantic Hurricanes and Climate Change. Part II: Role of Thermodynamic Changes in Decreased Hurricane Frequency. *J. Clim.* 26, 8513–8528
20. Mallard, M., G. M. Lackmann, A. Aiyyer, K. Hill, 2013: Atlantic Hurricanes and Climate Change. Part I: Experimental Design and Isolation of Thermodynamic Effects. *J. Clim.*, 26, 4876-4893.
19. Tyner, B. P. and A. Aiyyer, 2012: Evolution of African Easterly Waves in Isentropic Potential Vorticity Fields. *Mon. Wea. Rev.*, 140, 3634-3652.
18. Aiyyer, A., A. Mekonnen and C. Shreck-III, 2012: Projection of Tropical Cyclones on Wavenumber Frequency Filtered Equatorial Waves. *J. Clim.*, 25, 3653-3658.
17. Schreck, C., J. Molinari and A. Aiyyer, 2012: A Global View of Equatorial Waves and Tropical Cyclogenesis. *Mon. Wea. Rev.*, 140, 774-788.
16. Aiyyer A. and C. Thorncroft, 2011: Interannual to multidecadal variability of vertical shear in the tropics. *J. Clim.*, 24, 2949-2962.
15. Novak. D. R., B. A. Colle and A. R. Aiyyer, 2010: Evolution of Mesoscale Precipitation Band Environments within the Comma Head of Northeast U.S. Cyclones. Mon. Wea. Rev., 138, 2354-2374.
14. N. Meskhidze, L. A. Remer, S. Platnick, R. Negron Juarez, A. M. Lichtenberger, and A. R. Aiyyer (2009), Exploring the differences in cloud properties observed by the Terra and Aqua MODIS sensors, *Atmos. Chem. Phys. Discuss.*, 9, 1489-1520.
13. Galarneau, T. J., Jr., L. F. Bosart, and A. R. Aiyyer, 2008: Closed anticyclones of the subtropics and middle latitudes: A 54-yr climatology (1950-2003) and three case studies. Synoptic-Dynamic

Meteorology and Weather Analysis and Forecasting: A Tribute to Fred Sanders, Meteor. Monogr., No. 55, Amer. Meteor. Soc., 349-392.

12. Aiyyer, A. R., and J. Molinari, 2008: MJO and Tropical Cyclogenesis in the Gulf of Mexico and Eastern Pacific: Case Study and Idealized Numerical Modeling. *J. Atmos. Sci.*, 65, 2837-2855.
11. Archambault, H. M., L. F. Bosart, D. Keyser, and A. R. Aiyyer, 2008: Influence of Large-Scale Flow Regimes on Cool-Season Precipitation in the Northeastern United States. *Mon. Wea. Rev.*, 136, 2945-2963.
10. Mekonnen, A., C. D. Thorncroft, A. R. Aiyyer, and G. N. Kiladis, 2008: Convectively coupled Kelvin waves over tropical Africa during the boreal summer: Structure and variability. *J. Clim.*, 21, 6649-6667.
9. Holder, C. T., S. Yuter, A. H. Sobel, and A. R. Aiyyer, 2008:The Mesoscale Characteristics of Tropicalholder Oceanic Precipitation during Kelvin and Mixed Rossby-Gravity Wave Events. *Mon. Wea. Rev.*, 136, 3446-3464.
8. Atallah, E., L. F. Bosart, and A. R. Aiyyer, 2007: Precipitation Distribution Associated with Landfalling Tropical Cyclones over the Eastern United States. *Mon. Wea. Rev.*, 135, 2185-2206.
7. Hopsch, S. B., C. D. Thorncroft, K. Hodges, and A. Aiyyer, 2007: West African Storm Tracks and Their Relationship to Atlantic Tropical Cyclones. *J. Clim.*, 20, 2468-2483.
6. Aiyyer, A., and C. D. Thorncroft, 2006: Climatology of Vertical Wind Shear over the Tropical Atlantic. *J. Clim.*, 19, 2969-2983.
5. Corbosiero, K. L., J. Molinari, A. R. Aiyyer, and M. L. Black, 2006: The Structure and Evolution of Hurricane Elena (1985). Part II: Convective Asymmetries and Evidence for Vortex Rossby Waves. *Mon. Wea. Rev.*, 134, 3073-3091.
4. Mekonnen, A., C. D. Thorncroft, and A. R. Aiyyer, 2006: Analysis of convection and its association with African easterly waves. *J. Clim.*, 19, 5405-5421.
3. Lapenis, A., A. Shivdenko, D. Shepaschenko, S. Nilsson, and A. Aiyyer, 2005: Acclimation of Russian forests to recent changes in climate. *Global Change Biology*, 11, 2090-2102.
2. Nagarajan, B., and A. Aiyyer, 2004: Performance of the ECMWF operational analyses over the tropical Indian ocean. *Mon. Wea. Rev.*, 132, 2275-2282.
1. Aiyyer, A. R., and J. Molinari, 2003: Evolution of Mixed Rossby Gravity Waves in Idealized MJO Environments. , *J. Atmos. Sci.*, 60, 2837-2855.