NOAA/Atlantic Oceanographic and Meteorological Laboratory (AOML)
4301 Rickenbacker Causeway
Miami, FL, 33149, USA
dongmin.kim@noaa.gov

Dongmin Kim, Ph.D.

Assistant Scientist

University of Miami / Cooperative Institute for Marine and Atmospheric Studies (CIMAS)
&
National Oceanic and Atmospheric Administration (NOAA) / Atlantic Oceanographic and Meteorological Laboratory (AOML)

RESEARCH AREA

- ***Modulation of the Atlantic Meridional Overturning Circulation (AMOC) and its impacts on the climate variations using GCMs:***

- Impacts of the Atlantic Multidecadal Oscillation (AMO) on the El Niño activity and diversity
- Change in the pathway of AMOC and its impact on global atmospheric circulation

- ***Physical mechanism of U.S. tornadogenesis in multi-timescales:***

- Underlying physical mechanism of the relationship between MJO and U.S. tornadogenesis
- Spatiotemporal variation of U.S. tornadogenesis in decadal timescales

- ***Development of Earth System Model (ESM) with carbon and nitrogen cycle:***

- Development of the parameterization for the terrestrial carbon cycle in ESMs
- Impact of ocean-atmospheric interaction on the terrestrial carbon & hydrological cycles

EDUCATION

- Ph. D. in Urban and Environmental Engineering, UNIST, Aug, 2017
- B.S. in Atmospheric Environmental Science, Pukyong National University, Feb, 2010

Scientific Experience and Awards

- Postdoc researcher, 2018/08- Present, UM-CIMAS/NOAA-AOML
- Best PhD Dissertation Award, Korean Meteorological Society, 2017
- Visiting Scientist at NASA Goddard Space Flight Center, Maryland, USA, June-August. 2013
- University of Maryland Baltimore County (UMBC) Internship program, GMAO, Goddard Space Flight Center at NASA, Greenbelt, Maryland, USA, July-August 2010
- Global Work Experience program at Bureau of meteorology, Melbourne, Australia, funding by New University for Regional Innovation program (NURI), January. 2008

COMPUTER SKILLS

- O.S: Linux, Windows
- Program language: Fortran 9.0, Perl language, C++, NCL, Matlab
- Visualization tool: GrADS, NCL, IDL
- Office program: MS Excel, MS PPT and MS word

MODELING EXPERIENCES

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- Community Earth System Model (CESM): Convective parameterization and tropical storms simulation
- Community Land Model version 4(CLM4): Improvement of soil biogeochemical parameterization
- Goddard Earth Observing System Model version 5 (GEOS-5): Convective parameterization and tropical storms simulation
- Weather Research and Forecasting Model (WRF): Tropical storms simulation and urban canopy model
- WRF with chemical modules (WRF-CHEM): Roles of urban surface on change of local circulation and dispersion of atmospheric pollutants

PUBLICATIONS (SCI)

1. Lee, S., Lopez, H., **Kim, D**., Wittenberg, A. T., and Kumar, A.,2021: A Seasonal Probabilistic Outlook for Tornadoes (SPOTter) in the Contiguous U.S. Based on the Leading Patterns of Large-Scale Atmospheric Anomalies, Mon. Wea. Rev., https://doi.org/10.1175/MWR-D-20-0223.1
2. Kim, G., J. Lee, M.-I. Lee and **D. Kim**, 2021: Impacts of urbanization on atmospheric circulation and aerosol transport in a coastal environment simulated by the WRF-Chem coupled with urban canopy model, Atmos. Env., https://doi.org/10.1016/j.atmosenv.2021.118253
3. Kim, D., S.-K Lee, H. Lopez, G. R. Foltz, V. Misra, and A. Kumar, 2020: On the role of Pacific - Atlantic SST contrast and associated Caribbean Sea Convection in August-October U.S. regional rainfall variability, Geophys. Res. Lett., https://doi.org/10.1029/2020GL087736
4. **Kim D.,** S.-K. Lee, and H. Lopez, 2020: Madden-Julian Oscillation-induced suppression of northeast Pacific convection increases U.S. tornadogenesis J. Clim., 33, 4927–4939, https://doi.org/10.1175/JCLI-D-19-0992.1
5. **Kim D.,** S.-K. Lee, H. Lopez, and M. Goes, 2020: Pacific control of the Atlantic Multidecadal Oscillation - El Niño relationship, J. Climate, 33, 4273–4291, https://doi.org/10.1175/JCLI-D-19-0398.1
6. Lee S.-K, **Kim D.,** G. R. Foltz, and H. Lopez, 2020: Pantropical response to global warming and the emergence of a La Niña-like mean state trend. Geophys. Res. Lett., 47, e2019GL086497. https://doi.org/10.1029/2019GL086497
7. Seo E., M.-I. Lee, **D. Kim**, Y.-K. Lim, S.D. Schurbert, and K.-M. Kim, 2019: Interannual variation of tropical cyclones simulated by GEOS-5 AGCM with modified convection scheme. Int. J. Climatol.,DOI: 10.1002/joc.6058
8. **Kim D.,** M. Lee, and E. Seo, 2019: Improvement of Soil Respiration Parameterization in a Dynamic Global Vegetation Model and Its Impact on the Simulation of Terrestrial Carbon Fluxes. J. Climate, 0, https://doi.org/10.1175/JCLI-D-18-0018.1
9. **Kim D.,** M. -I. Lee, S. -J. Jeong, J. Im, D. H. Cha, and S. Lee, 2018: Intercomparison of Terrestrial Carbon Fluxes and Carbon Use Efficiency Simulated by CMIP5 Earth System Models Asia-Pacific J Atmos Sci , 54,145, https://doi.org/10.1007/s13143-017-0066-8

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10. Lee, S., **D. Kim (co-first author)**, J. Im, M. -I. Lee, and Y. -G. Park, 2017: CO2 concentration and its spatiotemporal variation in the troposphere using multi-sensor satellite data, carbon tracker, and aircraft observations, GISci. Remote Sensing,54, 592-613, http://dx.doi.org/10.1080/15481603.2017.1317120.
11. Shin, S.-H., O.-Y. Kim, **D. Kim**, and M.-I. Lee, 2017: Cloud Radiative Effects and Changes Simulated by the Coupled Model Intercomparison Project Phase 5 Models. Adv. Atmos. Sci., 34(7), 859–876, doi: 10.1007/s00376-017-6089-3
12. Truong, S. C. H., M. -I. Lee, G. Kim, **D. Kim**, J.-H. Park, S.-D. Choi, and G. Cho, 2016: Accidental benzene release risk assessment in an urban area using an atmospheric dispersion model. Atmos. Environ., 144,146-159, 10.1016/j.atmosenv.2016.08.075.
13. Park, M.-S., M.-I. Lee, **D. Kim**, D.-H. Cha, M. M. Bell, and R. L. Elsberry, 2016: Land-Based Convection Effects on Formation of Tropical Cyclone Mekkhala (2008). Mon. Wea. Rev., https://doi.org/10.1175/MWR-D-16-0167.1
14. Lee, M.-I., H.-S. Kang, D. Kim, **D. Kim**, H. Kim, and D. Kang, 2014: Validation of the Experimental Hindcasts Produced by the GloSea4 Seasonal Prediction System. Asia-Pacific J. Atmos. Sci., 50(3), 307-326, DOI:10.1007/s13143-014-0019-4
15. **Kim, D**., M.-I. Lee, H.-M. Kim, and S. D. Schubert, 2014: The Modulation of Tropical Storm Activity in the Western North Pacific by the Madden-Julian Oscillation in the GEOS-5 AGCM Experiments. Atmos. Sci. Let. 15, 335–341 DOI:10.1002/asl2.509
16. Kim, H.-M, M.-I. Lee, P.J. Webster, **D. Kim**, and J.-H. Yoo, 2013: A physical Basis for the Probabilistic Prediction of the Accumulated Tropical Cyclone Kinetic Energy in the Western North Pacific. J. Clim., 26, 7981-7991, doi: http://dx.doi.org/10.1175/JCLI-D-12-00679.1
17. Kim, D., M.-I. Lee**, D. Kim**, S. D. Schubert, D.E. Waliser, B. Tian, 2013: Representation of tropical subseasonal variability of precipitation in global reanalysis products. Clim Dyn, 43, 517–534, DOI 10.1007/s00382-013-1890-x
18. Lee, M. -I., S. D. Schubert. and **D. Kim**., 2011: Representation of Tropical Storms in the Northwestern Pacific by the Modern-Era Retrospective Analysis for Research and Applications. Asia-Pacific J. Atmos. Sci., 47(3), 245-253, 2011 DOI:10.1007/s13143-011-0013-z

Manuscript in preparation and revision

1. H. Lopez, S.-K Lee, **D. Kim,** A, Wittenberg and S.-W Yeh, : Projected Increase in Fast-Growing and Slow-Dissipating El Niño Events in the 21st Century, Submitted
2. S.-K, Lee, H. Lopez, G. Foltz, **D. Kim**, S. Larson, E.-P. Lim, K. Pujiana, D. Volkov, S. Chakravorty and F. Gomez : Java-Sumatra Niño/Niña and associated regional rainfall variability, Submitted
3. **Kim, D.**, S.-K Lee, and H. Lopez: Atlantic Niño/Niña influences on Atlantic tropical cyclone activity and their modulation of the ENSO teleconnection, In preparation

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4. **Kim, D.,** S.-K Lee, and H. Lopez: What caused recent tornadogenesis increase over Southeast U.S.? , In preparation

PRESENTATIONS (International)

1. **Kim, D.,** S.-K Lee, H. Lopez, G. R. Foltz, and C. Wen, Influences of Atlantic zonal mode on Atlantic tropical storm activity and its roles in ENSO-Atlantic tropical storm relationship", WCRP-CLIVAR Workshop, Feb, 2021
2. **Kim, D.,** S.-K Lee, H. Lopez, G. R. Foltz, and C. Wen, Atlantic Niño/Niña influences on Atlantic tropical storm activity and their modulation of the ENSO teleconnection, 2020 AGU fall meeting, Dec, 2020
3. **Kim, D.,** S.-K Lee, H. Lopez, G. R. Foltz, V. Misra and A. Kumar, On the role of Pacific - Atlantic SST contrast and associated Caribbean Sea Convection in August-October U.S. regional rainfall variability ,TRIATLAS/TAV/PIRATA Science Meeting, May, 2020
4. **Kim D.,** S.-K. Lee, H. Lopez, and M. Goes, Pacific control of the Atlantic Multidecadal Oscillation - El Niño relationship, 2020 Ocean Science meeting, San Diego, U.S.A., Feb, 2020
5. **Kim D**., S.-K. Lee, and H. Lopez, Underlying Physical Mechanisms of the Relationship between US Tornado Activity and the Madden Julian Oscillation, 27th IUGG, Montreal, Canada, Jul, 2019
6. **Kim D.,** and M. –I. Lee, Impacts of Climatological Variation on the Production of Soybean over Northeast China, 15th Annual meeting Asia Oceania Geosciences Society, Hawaii, U.S.A, Jul, 2018
7. **Kim D.**, M. -I. Lee, S.-J. Jeong, E. Seo, J. Im, D. H. Cha, and S. Lee, Model Intercomparison of Terrestrial Carbon Fluxes Simulated by CMIP5 Earth System Models and the Sensitivity to the Parameterized Carbon Nitrogen Cycle , 2017, 10th international carbon dioxide conference, Interlaken, Swiss, Aug, 2017
8. **Kim D.**, M.-I. Lee and S.-J. Jeong, Evaluation of Ecosystem-level Carbon Use Efficiency in CMIP5 Earth System Model using Remote Sensing Data, 2015 Asian Conference on Meteorology, Kyoto, Japan, Oct. 2015
9. M.-S. Park, M.-I. Lee, **D. Kim,** D.-H. Cha, Impact of land convection on tropical cyclogenesis, The 3rd international workshop on tropical cyclone landfall process (IWTC-LP), Jeju, South Korea, Dec., 2014

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