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Professional positions:

- 2023 – **Associate Professor** in the School of Earth and Environmental Sciences,
current Seoul National University (SNU), Seoul, South Korea
- 2018 – **Assistant Professor** in the School of Earth and Environmental Sciences,
2023 Seoul National University (SNU), Seoul, South Korea
- 2015 – **Research Scientist II** at Aviation Weather Center (NOAA/NWS/NCEP/AWC),
2018 affiliated with Colorado State University/Cooperative Institute for Research in
 Atmosphere (CSU/CIRA), Kansas City, MO, USA.
- 2013 – **NASA Postdoctoral Program (NPP) fellow** at NASA Ames Research Center,
2015 Moffett Field, CA, USA.
- 2011 – **Postdoctoral researcher** at Natural Science Institute in Yonsei University, Seoul,
2013 South Korea.
- 2003 – **Commissioned officer (lieutenant) as a weather forecaster** at the 73rd Weather
2006 Group in the Republic of Korea Air Force (ROKAF), South Korea.

Education:

- 2011.08 **Ph.D.** in Atmospheric Science
“A study on aviation turbulence over Korea and East Asia”
Department of Atmospheric Sciences, Yonsei University, Seoul, South Korea
- 2006.08 **M.S.** in Atmospheric and Environmental Sciences
*“Case study on mechanisms and orographic effect for the Springtime downslope
windstorm over the Yeongdong region”*
Department of Atmospheric and Environmental Sciences, Gangneung-wonju National
University, Gangneung, South Korea.
- 2003.02 **B.Sc.** in Environmental and Atmospheric Sciences
Department of Environmental and Atmospheric Sciences, Pukyong National
University, Busan, South Korea.

Professional research and science fields:

Turbulence, synoptic-, meso-, and micro-scale meteorology, ensemble weather forecast, numerical weather prediction model, aviation meteorology, mountain meteorology, gravity waves, downslope windstorm, deep convection, upper-level jet/frontal systems, sea fog, low ceiling and visibility, subgrid-scale (physical) parameterizations: planetary boundary layer (PBL), gravity wave drag, microphysics, and radiation, data assimilation, modeling of flight trajectory, impact of climate change on aviation, aviation impact to environment (Contrail).

Professional memberships:

Member in American Meteorological Society (AMS), American Geosciences Union (AGU), American Institute of Aeronautics and Astronautics (AIAA), European Geosciences Union (EGU), Asia Oceania Geosciences Society (AOGS), and Korean Meteorological Society (KMS).

Peer-review for scientific journals:

American Meteorological Society (AMS) journals: Bulletin of American Meteorological Society (BAMS), Journal of Applied Meteorology and Climatology (JAMC), Monthly Weather Review (MWR), Journal of Atmospheric Science (JAS), and Weather and Forecasting (WF), Environmental Research Letters (ERL), Journal of Geophysical Research (JGR), Geophysical Research Letter (GRL), Quarterly Journal of Royal Meteorological Society (QJRMS), Atmospheric Research (AR), Atmospheric Environment (AE), Pure and Applied Geophysics (PAAG), Advances in Atmospheric Sciences (AAS), Asian-Pacific Journal of Atmospheric Sciences (APJAS), Atmosphere (MDPI), Atmosphere (KMS), and others.

Funding sources and Awards:

- 2023.10 **Principle Investigator (PI)** for “Wind Shear Guidance Module (WSGM) for the Next Weather Launch Commit Criterion at Naro Space Center in Korea”, funded by the Korean Aerospace Research Institute (KARI) project: Approximately \$250,000 for 1.5 years (2022.10 – 2025.03).
- 2023.03 **Co-Principle Investigator (PI)** for “Analyses of Heavy Rainfall Events (HREs) induced by orographic effects”, funded by the Korean Meteorological Administration (KMA)’s R&D project for the development of the proactive prediction systems on high-impact weather: Approximately \$2,400,000 for 4 years and 9 months (2023.03 – 2027.12).
- 2022.04 **Principle Investigator (PI)** for “The development of aviation weather prediction and post-processing algorithms for airport and airspace”, funded by the KMA’s R&D project for the Next Air traffic management (ATM) Reinforcement And Enhancement (NARAE)-weather: Approximately \$6,100,000 for 4 years and 9-months (2022.04 – 2026.12).

- 2022.04 **Principle Investigator (PI)** for “Development of Low-Level of Aviation Weather Hazard Modeling Optimized at Airport”, funded by the National Institute for Meteorological Sciences (NIMS) of the KMA: Approximately \$400,000 for 2 years and 8-months (2022.04 – 2024.12).
- 2022.04 **Principle Investigator (PI)** for “Analysis of generation mechanism and development of forecast guidance for regional HREs in Korea”, funded by the NIMS of the KMA: Approximately \$370,000 for 2 years and 8-months (2022.04 – 2024.12).
- 2021.04 **Principle Investigator (PI)** for “Aircraft Icing and Turbulence Prediction Systems in Korea”, funded by the Republic Of Korean Air-Force (ROKAF): Approximately \$80,000 for 6-months (2021.07 – 2021.12).
- 2020.06 **Principle Investigator (PI)** for “the Development of Numerical Weather Prediction-based Aviation Weather Forecasting system for icing and convection”, funded by the KMA’s R&D See-At project (KMI2020-01910): Approximately \$848,000 for 2.5 yrs (2020.06 – 2022.12).
- 2020.05 **Principle Investigator (PI)** for “the Development of Sea Fog forecasting system using Machine Learning and Artificial Intelligence (AI) techniques: generation mechanism of formation, evolution, and dissipation of the sea fog in Korea”, funded by the Korea Hydrographic and Oceanographic Agency (KHOA): Approximately \$50,000 for 8-months (2020.05 – 2020.12).
- 2020.04 **Principle Investigator (PI)** for “the Development of Aviation Weather Hazards III”, funded by the NIMS of the KMA: Approximately \$150,000 for 8-months (2020.04 – 2020.11).
- 2019.08 **Principle Investigator (PI)** for “the Investigation of Icing Detection Algorithm using Satellite Data”, funded by the National Research Foundation (NRF) of Korea via the Brain Pool (BP) program: Approximately \$80,000 for 6-months (2019.08 – 2020.01).
- 2019.06 **Principle Investigator (PI)** for “the study on non-convective turbulence related to gravity waves near jet/frontal system and mountain”, funded by the NRF via the Basic Science Research Program (NRF-2019R111A2A01060035): Approximately \$500,000 for 5-yrs (2019.06 – 2024.05).
- 2017.07 **Subject-Matter Expert (SME)** for a granted project, “NOAA AWC/AWT World Area Forecast System Research and Transition Support”, sponsored by Aviation Weather Research Program (AWRP) in the Federal Aviation Administration (FAA) (DTFACT-17-X-80002): \$205,000 for 1-yr (2017.07 – 2018.06).
- 2016.05 **Visiting Scientist** for “Probabilistic forecasts for aviation turbulence”, sponsored by the National Center for Atmospheric Research/Research Application Laboratory (NCAR/RAL), CO, USA: \$2,000 grant for travel.

- 2016.04 **Subject-Matter Expert (SME)** for a granted project, “World Area Forecast System (WAFS) update”, sponsored by AWRP in the FAA (DTFAWA-12-Z-80005): \$175,500 for 1-yr (2016.06 – 2017.05).
- 2014.10 **Principle Investigator (PI)** for the project of “Weather Modeling for Air-Traffic Management (ATM)” sponsored by the Aeronautics Research Mission Directorate (ARMD)’s High-End Computing (HEC) resources (ARMD-14-5300).
- 2013.04 **Visiting Scientist** for the project of “investigating severe turbulence encounters over the US”, sponsored by the National Center for Atmospheric Research/Research Application Laboratory (NCAR/RAL), CO, USA: \$2,000 grant for travel.
- 2013.02 **NASA Post-doctoral Program (NPP) fellow** for the project of “Improving wind and turbulence forecasts and its application to automated Air-Traffic Management (ATM)” at NASA Ames Research Center, Moffett Field, CA, USA: \$64,000/year grant with \$8,000 travel support per year (2013.03 – 2015.04).
- 2012.11 **The Best Paper Award**, nominated by the Korean Society for Aviation and Aeronautics (KSAA) in KSAA conference, 22-24 Nov. 2012, Korea.
- 2012.03 **Visiting Scientist** for the project of “Development for Korean Turbulence Guidance System” sponsored by the NCAR/RAL, CO, USA: \$4,000 grant for travel.
- 2011.08 **Winner of the Best Student Paper Award**, *15th Conference on Aviation, Range, and Aerospace Meteorology (ARAM) in 92th American Meteorological Society (AMS) annual meeting*, 1-4 Aug. 2011, Los Angeles, CA, USA: \$200 award.
- 2011.02 **Best Paper Award**. Nominated by institute of Earth-Atmosphere-Astronomy in the Brain Korea 21 (BK21) project, 25 Feb. 2011, Korea.
- 2010.01 **Runner-up of the Best Student Paper Award**, *14th Conference on Aviation, Range, and Aerospace Meteorology (ARAM) in 91th American Meteorological Society (AMS) annual meeting*, 18-21 Jan. 2010, Atlanta, GA, USA.

Peer-reviewed Publications:

* Corresponding Author

(2024)

- Kim, E.-T., **J.-H. Kim***, S.-H. Kim, and C. Morcrette, 2024: Operational Aviation Icing Forecast Algorithm for the Korea Meteorological Administration. *Weather and Forecasting*, Weather and Forecasting, 39(3), 501-521, <https://doi.org/10.1175/WAF-D-23-0160.1>.

(2023)

- Li, J., **J.-H. Kim**, B. Sridhar, and Hok K. Ng, 2023: Ames Contrail Simulation Model: Modeling Aviation Induced Contrails and the Computation of Contrail Radiative Forcing Using the Air Traffic Data. NASA Technical Memorandum™, <https://ntrs.nasa.gov/citations/20230014633>.

- Park, Y., and **J.-H. Kim***, 2023: Aviation Convective Index for Deep Convective Area using the Global Unified Model of the Korean Meteorological Administration, Korea: Part 2. Seasonal Optimization and Case Studies, *Atmosphere*, 33(5), 519-530, <https://doi.org/10.14191/Atmos.2023.33.5.519>. (In Korean with English abstract)
- Park, Y., and **J.-H. Kim***, 2023: Aviation Convective Index for Deep Convective Area using the Global Unified Model of the Korean Meteorological Administration, Korea: Part 1. Development and Statistical Evaluation, *Atmosphere*, 33(5), 531-548, <https://doi.org/10.14191/Atmos.2023.33.5.531>. (In Korean with English abstract)
- Lee, Y., S. Kim, Y. Noh, and **J.-H. Kim**, 2023: Deep Learning–Based Summertime Turbulence Intensity Estimation Using Satellite Observations. *J. Atmos. Oceanic Technol.*, **40**, 1433–1448, <https://doi.org/10.1175/JTECH-D-22-0137.1>
- Ko, H.-C., Chun, H.-Y., Sharman, R. D., & **Kim, J.-H.** (2023). Comparison of eddy dissipation rate estimated from operational radiosonde and commercial aircraft observations in the United States. *Journal of Geophysical Research: Atmospheres*, 128, e2023JD039352. <https://doi.org/10.1029/2023JD039352>.
- Kim, S.-H. *, **J.-H. Kim***, H.-Y. Chun, and R. D. Sharman, 2023: Global response of upper-level aviation turbulence from various sources to climate change. *npj Clim Atmos Sci.*, **6**, 92 (2023). <https://doi.org/10.1038/s41612-023-00421-3>
- Lee, J. H., **Kim, J.-H.***, Sharman, R. D., Kim, J., & Son, S.-W. (2023). Climatology of Clear-Air Turbulence in upper troposphere and lower stratosphere in the Northern Hemisphere using ERA5 reanalysis data. *Journal of Geophysical Research: Atmospheres*, 128, e2022JD037679. <https://doi.org/10.1029/2022JD037679>

(2022)

- Kim, J., and **J.-H. Kim***, 2022: Retrieval and quality assessment of atmospheric wind from the aircraft-based observation near Incheon International Airport, Korea. *Atmosphere*, 32(4), 323-340, <https://doi.org/10.14191/Atmos.2022.32.4.323>. (In Korean with English abstract)
- Tsai, C.-L., K. Kim, Y.-C. Liou, **J.-H. Kim**, and G. Lee, 2022: Orographic-Induced Strong Wind Associated with a Low-Pressure System under Clear-Air Condition During ICE-POP 2018. *J. Geophys. Res-Atmos.*, 127, e2021JD036428.
- Kim, S.-H., J. Kim, **J.-H. Kim***, and H.-Y. Chun, 2022: Characteristics of the Derived Energy Dissipation Rate using the 1-Hz Commercial Aircraft Quick Access Recorder (QAR) Data. *Atmos. Meas. Tech.*, **15**, 2277-2298, <https://doi.org/10.5194/amt-15-2277-2022>.
- Park, J.-R., **J.-H. Kim***, Y. Shin, S.-H. Kim, H.-Y. Chun, W. Jang, C.-L. Tsai, and G. Lee, 2022: A Numerical Simulation of Strong Windstorm Event in the Taebaek Mountain Region during the ICE-POP 2018. *Atmos. Res.*, **272**, 106158, <https://doi.org/10.1016/j.atmosres.2022.106158>.

- Shin, Y., **J.-H. Kim***, H.-Y. Chun, W. Jang, and S.-W. Son, 2022: Classification of Synoptic Patterns for Downslope Windstorms in Korea using the Self-Organizing Map. *J. Geophys. Res-Atmos.*, **127**, e2021JD035867, <https://doi.org/10.1029/2021JD035867>.
- Lee, D.-B., H.-Y. Chun, S.-H. Kim, R. D. Sharman, and **J.-H. Kim**, 2022: Development and evaluation of Global Korean Aviation Turbulence Forecast Systems with outputs of an Operational Numerical Weather Prediction Model and In Situ Flight Turbulence Observation Data. *Weather Forecast.*, **37(3)**, 371-392, <https://doi.org/10.1175/WAF-D-21-0095.1>.

(2021)

- Park, C., S.-W. Son, J. Kim, E.-C. Chang, **J.-H. Kim**, E. Jo, D.-H. Cha and S. Jeong, 2021: Diverse synoptic weather patterns of warm-season heavy rainfall events in South Korea. *Mon. Wea. Rev.* <https://doi.org/10.1175/MWR-D-20-0388.1>.
- Kim, S.-H., H.-Y. Chun, D.-B. Lee, **J.-H. Kim**, and R. D. Sharman, 2021: Improving Numerical Weather Prediction-based Near-Cloud Aviation Turbulence Forecasts by Diagnosing Convective Gravity Wave Breaking. *Wea. Forecasting*, **36**, 1735-175.
- Kim, J., **J.-H. Kim***, and R. D. Sharman, **2021**: Characteristics of Energy Dissipation Rate observed from the High-Frequency Sonic Anemometer at Boseong, South Korea. *MDPI Atmosphere*. 2021. 12. no.7: 837, <https://doi.org/10.3390/atmos12070837>.
- Lee, E., **J.-H. Kim***, Heo, K.-Y., and Cho, Y.-K. Advection Fog over the Eastern Yellow Sea: WRF Simulation and Its Verification by Satellite and In Situ Observations. *Remote Sens.* **2021**, **13**, 1480. 0. <https://doi.org/10.3390/rs13081480>.
- Park, C., S.-W. Son, and **J.-H. Kim**, **2021**: Role of baroclinic trough in triggering vertical motion during summertime heavy rainfall events in Korea. *Journal of Atmospheric Science*. 2021. <https://doi.org/10.1175/JAS-D-20-0216.1>.
- **Kim, J.-H.***, Park, J.-R., Kim, S.-H., Kim, J., Lee, E., Baek, S., Lee, G., **2021**: A Detection of Convectively Induced Turbulence Using In Situ Aircraft and Radar Spectral Width Data, *Remote Sensing (RS)*, **13(4)**, 726. <https://doi.org/10.3390/rs13040726>

(2018-2020)

- **Kim, J.-H.***, D. Kim, D.-B. Lee, H.-Y. Chun, R. D. Sharman, P. D. Williams, and Y.-J. Kim, **2020**: Impact of climate variabilities on trans-oceanic flight times and emissions during strong NAO and ENSO phases, *Environmental Research Letters (ERL)*, **15**, 105017.
- Beck, J., J. Brown, J. Dudhia, D. Gill, T. Hertnecky, J. Klemp, W. Wang, C. Williams, M. Hu, E. James, J. Kenyon, T. Smirnova, and **J.-H. Kim**, **2020**: An Evaluation of a Hybrid, Terrain-Following Vertical Coordinate in the WRF-based RAP and HRRR Models, *Weather and Forecasting (WAF)*, **35(3)**, 1081–1096.

- Kim, S.-H., Chun, H.-Y., **J.-H. Kim**, Sharman, R. D., and Strahan, M., **2020**: Retrieval of eddy dissipation rate from derived equivalent vertical gust included in Aircraft Meteorological Data Relay (AMDAR), *Atmos. Meas. Tech. (AMT)*, **13**, 1373–1385.
- Lee, D.-B., H.-Y. Chun, and **J.-H. Kim**, **2020**: Evaluation of Multi-Model-Based Ensemble Forecasts for Clear-Air Turbulence, *Weather and Forecasting (WAF)*, **35(2)**, 507-521.
- **Kim, J.-H.***, R. D. Sharman, S. Benjamin, J. Brown, S.-H. Park, and J. Klemp, **2019**: Improvement of Mountain Wave Turbulence Forecast in the NOAA's Rapid Refresh (RAP) Model with Hybrid Vertical Coordinate System, *Weather and Forecasting (WAF)*, **34(6)**, 773-780.
- S.-H. Park, J. Klemp, and **J.-H. Kim**, **2019**: Hybrid Mass Coordinate in WRF-ARW and its Impact on Upper-Level Turbulence Forecasting, *Monthly Weather Review (MWR)*, **147(3)**, 971-985, <https://doi.org/10.1175/MWR-D-18-0334.1>.
- **Kim, J.-H.***, R. D. Sharman, M. Strahan, J. W. Scheck, C. Bartholomew, J. C. H. Cheung, P. Buchanan, N. Gait, **2018**: Improvement of Non-convective Turbulence Forecast for the World Area Forecast System (WAFS), *Bulletin of the American Meteorological Society (BAMS)*, **99(11)**, 2295-2311.

(17 other publications before 2018 in SNU)

- Chun, H.-Y., **J.-H. Kim***, D. Lee, S. Kim, M. Strahan, B. Pettegrew, P. Gill, P. Williams, U., and R. S. Schumann, J. Tenenbaum, Y. Lee, H. Choi, I. Song, Y. Park, 2017: Research Collaborations for Better Predictions of Aviation Weather Hazards, *Bulletin of the American Meteorological Society (BAMS)*, doi:10.1175/BAMS-D-17-0010.1.
- **Kim, J.-H.***, W. N. Chan, and B. Sridhar, 2016: Application of Aviation Turbulence Information to Air-Traffic Management (ATM), in *Aviation Turbulence: Processes, Detection, Prediction*, edited by R. Sharman and T. Lane, pp. 481–500, Springer International Publishing, Cham.
- Park, S.-H., **J.-H. Kim***, R. D. Sharman, and J. B. Klemp, 2016: Update of Upper-Level Turbulence Forecast by Reducing Unphysical Components of Topography in the Numerical Weather Prediction Model, *Geophysical Research Letters*, doi:10.1002/2016GL069446.
- **Kim, J.-H.***, W. N. Chan, B. Sridhar, R. D. Sharman, P. D. Williams, and M. Strahan, 2016: Impact of the North Atlantic Oscillation on Transatlantic Flight Routes and Clear-Air Turbulence. *Journal of Applied Meteorology and Climatology*, **55(3)**, 763-771.
- **Kim, J.-H.**, W. N. Chan, B. Sridhar, and R. D. Sharman, 2015: Combined Winds and Turbulence Prediction System for Automated Air-Traffic Management Applications. *Journal of Applied Meteorology and Climatology*, **54(4)**, 766-784.
- **Kim, J.-H.***, H.-Y. Chun, R. D. Sharman, and S. B. Trier, 2014: The Role of Vertical Shear on Aviation Turbulence within Cirrus Bands of a Simulated Western Pacific Cyclone. *Monthly Weather Review*,

142(8), 2794-2813.

- **Kim, J.-H.**, and H.-Y. Chun, 2012: Development of the Korean Aviation Turbulence Guidance (KTG) System using the operational Unified Model (UM) of the Korea Meteorological Administration (KMA) and pilot reports (PIREPs), *Journal of Korean Society for Aeronautical Science and Flight Operation*, **20(4)**, 76-83. (In Korean with English abstract)
- **Kim, J.-H.**, and H.-Y. Chun, 2012: A numerical simulation of convectively induced turbulence (CIT) above deep convection. *Journal of Applied Meteorology and Climatology*, **51**, 1180-1200.
- Min, J.-S., **J.-H. Kim**, and H.-Y. Chun, 2012: A Numerical Study on Clear-Air Turbulence Events Occurred over South Korea. *Atmosphere*, **22(3)**, 321-330. (In Korean with English abstract)
- **Kim, J.-H.**, H.-Y. Chun, R. D. Sharman, and T. L. Keller, 2011: Evaluations of upper-level turbulence diagnostics performance using the Graphical Turbulence Guidance (GTG) system and pilot reports (PIREPs) over East Asia. *Journal of Applied Meteorology and Climatology*, **50**, 1936-1951.
- **Kim, J.-H.**, and H.-Y. Chun, 2011: Development of the Korean mid- and upper-level aviation turbulence guidance (KTG) system using the regional unified model. *Atmosphere*, **21(4)**, 497-506. (In Korean with English abstract)
- **Kim, J.-H.**, and H.-Y. Chun, 2011: Statistics and possible sources of aviation turbulence over South Korea. *Journal of Applied Meteorology and Climatology*, **50**, 311-324.
- Min, J.-S., H.-Y. Chun, and **J.-H. Kim**, 2011: An investigation of synoptic condition for clear-air turbulence (CAT) events occurred over South Korea. *Atmosphere*, **21(1)**, 69-83. (In Korean with English abstract)
- **Kim, J.-H.**, and H.-Y. Chun, 2010: A numerical study of clear-air turbulence (CAT) encounters over South Korea on 2 April 2007. *Journal of Applied Meteorology and Climatology*, **49**, 2381-2403.
- **Kim, J.-H.**, H.-Y. Chun, W. Jang, and R. Sharman, 2009: A study of forecast system for clear-air turbulence in Korea. Part II: Graphical Turbulence Guidance (GTG) system. *Atmosphere*, **19(3)**, 269-287. (In Korean with English abstract)
- Jang, W., H.-Y. Chun, and **J.-H. Kim**, 2009: A study of forecast system for clear-air turbulence in Korea. Part I: Korean Integrated Turbulence Forecasting Algorithm (KITFA), *Atmosphere*, **19(3)**, 255-268. (In Korean with English abstract)
- **Kim, J.-H.**, and I.-U. Chung, 2006: Study on mechanisms and orographic effect for the springtime downslope windstorm over the Yeongdong region. *Atmosphere*, **16(2)**, 67-83. (In Korean with English abstract)