Jeong-Hun Kim (Ph. D.)

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EDUCATION

08/2023 **Ph.D.**, Department of Atmospheric Science, Kongju National University, Republic of Korea (Advisor: Prof. Maeng-Ki Kim)
- *Thesis title*: Impact of the Arctic/High-latitude Climate Variability on the Extreme Events in East Asia.

02/2019 **M.S.**, Department of Atmospheric Science, Kongju National University, Republic of Korea (Advisor: Prof. Maeng-Ki Kim)
- *Thesis title*: Impact of Arctic Sea Ice Concentration on Interannual Variability of PM_{10} Concentration in the Korean Peninsula during winter season.

02/2017 **B.S.**, Department of Atmospheric Science, Kongju National University, Republic of Korea
- *Thesis title*: Influence of the Indian Ocean Dipole Mode on the Atmospheric Circulation and the Korean Peninsula Temperature.

RESEARCH INTEREST

- Climate Change, Climate Dynamics, Climate Variability, Rossby Wave Dynamics, Teleconnection, Extreme Events, Heat wave, Cold surge, Air Pollution, Arctic Climate, Sub-seasonal prediction, Data Analysis, Global Climate Model

RESEARCH EXPERIENCES

2025.05. – current **Project Researcher,** Research Center for Advanced Science and Technology (RCAST), The University of Tokyo, Japan (Supervisor: Prof. Yu Kosaka)
- Research topics:

- Impact of the Mid-high-latitude Atmospheric Teleconnection on the Extreme Events in East Asia.

2023.09. – 2025. 04. **Postdoctoral Researcher,** Earth Environment Research Center, Kongju National University, Republic of Korea (Supervisor: Prof. Joowan Kim, Prof. Eun-Chul Chang, and Prof. Maeng-Ki Kim)

- Research topics:

- Teleconnection mechanism between the Arctic/high-latitude climate variability and mid-latitude extreme events (heatwaves, drought, cold surges, and air pollution).

2019.02. –2023.08. **Research Assistant**, Dept. of Atmospheric Science, Kongju National University, Republic of Korea (Advisor: Prof. Maeng-Ki Kim)

- Research topics:
  - Teleconnection mechanism of the severe PM_{10} pollution in South Korea.
  - Changes in the mechanism of heat waves in East Asia using reanalysis and CMIP6 scenario dataset.

2019.04. –2023.02. **Research Associate**, Division of Atmospheric Sciences, Korea Polar Research Institute (KOPRI) (Supervisor: Dr. Seong-Joong Kim)

- Research topics:
  - Relationship between the Arctic/high-latitude climate variability and the mid-latitude extreme events (heat waves, cold waves, and severe air pollution).

2017.03. –2019.02. **Research Assistant**, Department of Atmospheric Science, Kongju National University, Republic of Korea (Advisor: Prof. Maeng-Ki Kim)

- Research topics:
  - Relationship between the Arctic Sea ice concentration and PM_{10} concentration in South Korea.
  - Changes in the mechanism of heat waves in South Korea using reanalysis and CMIP5 scenario dataset.

PUBLICATIONS (International)

1. S. Lee, J.-H. Kim, M.-K. Kim, S.-H. Lee, C.-H. Kim (2025) Synergistic effects of synoptic and quasi-biweekly timescale atmospheric circulation patterns on PM2.5 concentration in South Korea. *Atmospheric Environment*, 121122. https://doi.org/10.1016/j.atmosenv.2025.121122
2. **J.-H. Kim**, S.-H. Nam, M.-K. Kim*, R. Serrano-Notivoli, E. Tejedor (2024). The 2022 record-high heat waves over southwestern Europe and their underlying mechanism. *Weather and Climate Extremes, 46*, 100729.

https://doi.org/10.1016/j.wace.2024.100729

3. Y.-H. Lee, S.-W. Yeh*, **J.-H. Kim**, & M.-K. Kim (2024). The role of the North Atlantic Ocean on the increase in East Asia's spring extreme hot day occurrences across the early 2000s. *Scientific Reports*, 14, 9872.

4. **J.-H. Kim**, M.-K. Kim*, S.-J. Kim, J.-H. Kim, S.-W. Yeh, S.-H. Lee, & Y. Lee (2023). Arctic/North Atlantic Atmospheric Variability causes Severe PM10 events in South Korea. *Science of the Total Environment*, 914, 169714. https://doi.org/10.1016/j.scitotenv.2023.169714

5. **J.-H. Kim**, S.-J. Kim*, J.-H. Kim, M. Hayashi, & M.-K. Kim* (2022). East Asian heatwaves driven by Arctic-Siberian warming. *Scientific Reports*, 12, 18025. https://doi.org/10.1038/s41598-022-22628-9

6. **J.-H. Kim**, S.-J. Kim, D. Youn, M.-K. Kim*, J.-H. Kim, J. Kim, & E. Noh (2021). Impact of North Atlantic-East Asian teleconnections on extremely high January PM10 cases in Korea. *Environmental Pollution*, 290, 118051. https://doi.org/10.1016/j.envpol.2021.118051

7. **J.-H. Kim,** M.-K. Kim*, C.-H. Ho, R. J. Park, M. J. Kim, J. Lim, S.-J. Kim, & C.-K. Song (2019). Possible link between Arctic sea ice and January PM10 concentrations in South Korea. *MDPI Atmosphere*, 10(10), 619. https://doi.org/10.3390/atmos10100619

8. M.-K. Kim*, J.-S. Oh, C.-K. Park, S.-K. Min, K.-O. Boo, & **J.-H. Kim** (2019). Possible impact of the diabatic heating over the Indian subcontinent on heat waves in South Korea. *International Journal of Climatology*, 39(3), 1166-1180. https://doi.org/10.1002/joc.5869

PUBLICATIONS (Domestic; South Korea)

1. [In Korean] J.S. Son, U-S. Noh, M.-J. Hong, **J.-H. Kim**, Y.-J. An, M.-K. Kim. (2025). Analysis of abrupt changes in the Arctic water budget as drivers of wintertime Arctic amplification. *Journal of Climate Change Research, 16(4)*, 729-738. https://doi.org/10.15531/KSCCR.2025.16.4.729

2. [In Korean] J.-M. Hyun, M.-K. Kim*, **J.-H. Kim**, J. Sang, & S.-H. Lee (2024). Synoptic Patterns Associated with Regional Differences in Long-term Episodes of Extremely High PM2.5 Concentrations: A Focus on the Central Region of South Korea. *Journal of Korean Society for Atmospheric Environment, 40(5)*, 491-513. https://doi.org/10.5572/KOSAE.2024.40.5.491

3. [In Korean] Y. Lee, **J.-H. Kim**, S.-M. Nam, M.-A. Lee, J.-S. Lee, & M.-K. Kim* (2023).

Contribution of Teleconnection Indices to the Interannual Variability of Winter Temperature and Precipitation in East Asia. *Journal of Climate Research*, 18(2), 85-95. http://dx.doi.org/10.14383/cri.2023.18.2.85

4. [In Korean] S.-H. Nam, J.-Y. Baek, Y. S. Wook, **J.-H. Kim**, J.-S. Oh, & M.-K. Kim* (2022). Causes of January Mean Temperature change in Korea during the Period before and after Regime Shift. *Journal of Climate Research*, 17(3), 187-198. http://dx.doi.org/10.14383/cri.2022.17.3.187

5. [In Korean] **J.-H. Kim**, E. Noh, & M.-K. Kim* (2021). The Relationship between the Arctic Oscillation and Heatwaves on the Korean Peninsula. *The Korean Journal of Quaternary Research*, 33(1-2), 25-35.

6. [In Korean] S.-J. Kim*, **J.-H. Kim**, S.-Y. Jun, M.-K. Kim, & S. Lee (2021). Review on the impact of Arctic Amplification on winter cold surges over East Asia. *The Korean Journal of Quaternary Research*, 33(1-2), 1-23.

7. [In Korean] Y.-J. Kim, C.-M. Woo, S.-M. Jin, **J.-H. Kim**, J. Sang, Y. Lee, & M.-K. Kim* (2021). Change in the impacts of Teleconnection Patterns on December Temperature in Korea during the Period before and after Regime Shift. *Journal of Climate Research*, 16(2), 133-146. http://dx.doi.org/10.14383/cri.2021.16.2.133

8. [In Korean] Y.-J. An, J.-J. Won, J.-H. No, **J.-H. Kim** & M.-K. Kim* (2020). Regime Shift of Cold Winter Temperature in Korea. *Journal of Climate Research*, 15(2), 105-118. http://dx.doi.org/10.14383/cri.2020.15.2.105

UNDER REVIEW

1. (*In revision*) [In Korean] U-Seung Noh, Jin-Seon Son, Min-Ji Hong, **Jeong-Hun Kim**, Maeng-Ki Kim. Changes in the Winter Water Vapor Budget Before and After the Regime Shift in the Arctic
2. (*In revision*) **Jeong-Hun Kim**, Joowan Kim, Maeng-Ki Kim, Jiwoo Lee, Yu Kosaka. Performance Evaluation of CMIP6 Models on the Arctic-Siberian Plain Teleconnection Affecting the East Asian Heat Waves.

SKILL & ACTIVITIES

Tools:	Python, NCL, Fortran, GrADS
Models:	LBM (Linear baroclinic model) v2.3, CESM1.2.2, CESM2
Scientific Memberships:	AGU, EGU, AOGS, KGU, JpGU, KMS, KSCCR, KOSAE

INTERNATIONAL CONFERENCES

1. [Oral] **Jeong-Hun Kim**, Maeng-Ki Kim, Seong-Joong Kim, Joo-Hong Kim, Joowan Kim, Michiya Hayashi, Jiwoo Lee, Yu Kosaka. (2025. 07.) Arctic-Siberian Plain Warming and Its Role in East Asian Heat Waves: Mechanisms and CMIP6 Evaluation. *BACO-25, Busan, Korea*
2. [Oral] Seong-Joong Kim, Hyesun Choi, Eui-Seok Chung, **Jeong-Hun Kim**, Baek-Min Kim, Joo-Hong Kim, Sang-Yun Jun. Two faces of polar climate change and their influences on midlatitudes. *BACO-25, Busan, Korea*
3. [Poster] Jeong-Hun Kim, Maeng-Ki Kim, Joowan Kim, Jiwoo Lee, Yu Kosaka. (2025. 07.) Performance Evaluation of CMIP6 Models on the Arctic-Siberian Plain Warming Affecting the East Asian Heat Waves. *International Workshop "Mid-latitude Atmosphere-Ocean-Ecosystem Interactions: Processes, Predictability, and Habitability", 2025, Fukuoka, Japan*
4. [Poster] **Jeong-Hun Kim**, Joowan Kim, Jiwoo Lee, Maeng-Ki Kim. (2024. 12.) Performance Evaluation of CMIP6 Models on the Arctic-Siberian Plain Warming Affecting the East Asian Heat Waves. *American Geophysical Union (AGU) Fall Meeting.*
5. [Poster] Seyeong Lee, **Jeong-Hun Kim**, Maeng-Ki Kim, Sang-Hyun Lee. (2024. 12.) Synergy effect of the synoptic and Quasi-bi-weekly time-scale (high and low frequency) atmospheric circulation pattern on the high PM2.5 concentration in

South Korea. *American Geophysical Union (AGU) Fall Meeting.*

6. [Poster] **Jeong-Hun Kim**, Maeng-Ki Kim, Seong-Joong Kim, Joo-Hong Kim, Sang-Wook, Yeh, Sang-Hyun Lee, Youngseok Lee. (2024. 06.) Arctic/North Atlantic origin teleconnection causes Extreme PM_{10} Events in South Korea. *Asia Oceania Geosciences Society (AOGS) Annual Meeting*.
7. [Poster] **Jeong-Hun Kim**, So-Hyun, Nam, Maeng-Ki Kim (2024. 04.) Understanding the 2022 Heat Wave Mechanism in the Iberian Peninsula. *European Geosciences Union (EGU) General Assembly*.
8. [Poster] **Jeong-Hun Kim**, So-Hyun, Nam, Maeng-Ki Kim (2023. 12.) Mechanism of the Extreme Heat Waves in the Iberian Peninsula in 2022. *American Geophysical Union (AGU) Fall Meeting*.
9. [Oral] **Jeong-Hun Kim**, Seong-Joong Kim, Joo-Hong Kim, Michiya Hayashi, Maeng-Ki Kim (2023. 08.) The Arctic-Siberian Plain Warming causes the East Asian Heat Waves. *Asia Oceania Geosciences Society (AOGS) Annual Meeting*.
10. [Oral] **Jeong-Hun Kim**, Seong-Joong Kim, Joo-Hong Kim, Michiya Hayashi, Maeng-Ki Kim (2023. 04.) The Arctic-Siberian Plain warming drives the heat waves in East Asia. *European Geosciences Union (EGU) General Assembly*.
11. [Oral] **Jeong-Hun Kim**, Seong-Joong Kim, Joo-Hong Kim, Michiya Hayashi, Maeng-Ki Kim (2022. 12.) Impact of Arctic-Siberian warming on East Asian heatwaves. *American Geophysical Union (AGU) Fall Meeting*.
12. [Poster] **Jeong-Hun Kim**, Seong-Joong Kim, Daeok Youn, Maeng-Ki Kim, Joo-Hong Kim, Joowan Kim, El Noh (2021. 12.) Teleconnection between North Atlantic and East Asia on Extremely High PM_{10} Cases in January in South Korea. *American Geophysical Union (AGU) Fall Meeting*.
13. [Poster] **Jeong-Hun Kim**, Maeng-Ki Kim, Chang-Hoi Ho, Rokjin J. Park, Minjoong J. Kim, Jaehyun Lim, Seong-Joong Kim, Chang-Keun Song (2021. 09.) Possible Link Between Barents-Kara Sea Ice and PM10 concentration in South Korea during January. *Korea Polar Research Institute (KOPRI) The 26th International Symposium on Polar Sciences*.
14. [Poster] **Jeong-Hun Kim**, Maeng-Ki Kim, Seong-Joong Kim, Joo-Hong Kim, Sang-Yoon Jun (2020. 12.) The North Atlantic-Eurasian Teleconnection associated with Summer Heatwaves in East Asia. *American Geophysical Union (AGU) Fall Meeting*.
15. [Poster] **Jeong-Hun Kim**, Maeng-Ki Kim, Seong-Joong Kim (2020. 07.) Relationship Between Arctic Sea Ice and Heatwaves in the Korean Peninsula. *Asia Oceania Geosciences Society (AOGS) Annual Meeting. (Canceled by COVID-19)*

16. [Poster] **Jeong-Hun Kim**, Maeng-Ki Kim, Chang-Hoi Ho, Rokjin J. Park, Minjoong J. Kim, Cheol-Soo Lim, Seong-Joong Kim (2019. 12.) Relationship between Arctic Sea Ice amount and PM_{10} Concentration in South Korea on January. *American Geophysical Union (AGU) Fall Meeting*.

17. [Poster] Ji-Seon Oh, Maeng-Ki Kim, Dae-Geun Yu, Jeong Sang, **Jeong-Hun Kim** (2019. 12.) Heatwave mechanism in South Korea and its performance evaluation in CMIP5 models. *American Geophysical Union (AGU) Fall Meeting*.

18. [Poster] **Jeong-Hun Kim**, Maeng-Ki Kim, Ji-Seon Oh, Cheol-Kyu Park, Seung-Ki Min, Kyung-On Boo (2019. 04.) Possible impact of the diabatic heating over the Indian subcontinent on heat waves in South Korea. *European Geosciences Union (EGU) General Assembly*.

19. [Poster] **Jeong-Hun Kim**, Meang-Ki Kim, Chang-Hoi Ho, Rokjin J. Park, Minjoong J. Kim, Cheol-Soo Lim (2018. 12.) Strong impact of Northern Hemisphere Atmospheric Circulation on Interannual Variability of PM_{10} Concentration in South Korea during winter season. *American Geophysical Union (AGU) Fall Meeting.*

20. [Poster] Maeng-Ki Kim, Ji-Seon Oh, Cheol-Kyu Park, Seung-Ki Min, Kyung-On Boo, **Jeong-Hun Kim** (2018. 04.) Impact of the Tibetan Plateau sensible heat on heat waves in South Korea. *European Geosciences Union (EGU) General Assembly.*