

CURRICULUM VITAE

YOUNG-HA KIM

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EMPLOYMENT **Research Professor**

- Research Institute of Basic Sciences, Seoul National University, South Korea (July 2023 – present) / *Weather and Climate Dynamics Lab.*

Postdoctoral Researcher

- Institute for Atmosphere and Environment, Goethe University Frankfurt am Main, Germany (May 2018 – May 2023) / Research group: *Theory of Atmospheric Dynamics and Climate*
- Severe Storm Research Center, Ewha Womans University, South Korea (Mar. 2016 – Apr. 2018) / *Atmospheric Dynamics Group*
- Department of Atmospheric Sciences, Yonsei University, South Korea (Sep. 2014 – Feb. 2016) / *Lab. for Atmospheric Dynamics*

EDUCATION **Ph. D. in Atmospheric Sciences** (Mar. 2008 – Aug. 2014)

- Department of Atmospheric Sciences, Yonsei University, South Korea
- Advisor: Prof. Hye-Yeong Chun
- Thesis title: *Equatorial planetary and gravity waves in the stratosphere and their contribution to the QBO*

M. Sc. in Atmospheric Sciences (Mar. 2006 – Feb. 2008)

- Department of Atmospheric Sciences, Yonsei University, South Korea
- Advisor: Prof. Hye-Yeong Chun
- Thesis title: *Characteristics of mesospheric gravity waves in Korean Peninsula and the effects of the secondary waves*

B. Sc. in Atmospheric Sciences (Mar. 2002 – Feb. 2006)

- Department of Atmospheric Sciences, Yonsei University, South Korea

HONORS / AWARDS

- American Meteorological Society (AMS) Editor's Award for Journal of the Atmospheric Sciences (2025)
 - WMO Professor Mariolopoulos Trust Fund Award (2018)
 - European Geosciences Union (EGU) Outstanding Student Poster (OSP) Awards (2014)
 - Korean Meteorological Society Excellent Dissertation Awards (2014)
 - Graduate School of Yonsei University Dissertation Awards (2014)
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RESEARCH PROJECTS

- (PI) *Large-Scale Atmospheric Gravity Waves Emitted from Mesoscale Convective Systems: Generation and Propagation* [NRF, 2023–present]
- *Role of the Middle Atmosphere in Climate (ROMIC-II)* [BMBF, 2020–2023]
- *Multiscale Dynamics of Gravity Waves (MS-GWaves)* [DFG, 2018–2020]
- (PI) *Investigation of the Quasi-Biennial Oscillation Effect on the Midlatitude Climate over Asia* [NRF, 2015–2017]

BMBF: Federal Ministry of Education and Research of Germany

DFG: German Research Foundation

NRF: National Research Foundation of Korea

OTHER RESEARCH ACTIVITIES

Associate Editor

- *Journal of the Atmospheric Sciences* (American Meteorological Society)

Stratosphere-Troposphere Processes And Their Role in Climate (SPARC) activities

- **SPARC QBO initiative (QBOi)** – *Towards Improving the Quasi-Biennial Oscillation in Global Climate Models*
(coordinators: S. Osprey, N. Butchart, K. Hamilton, and J. Anstey)
2014 – present: contributor / author of
 - *Butchart et al. (2018); Bushell et al. (2022); Stockdale et al. (2022); Holt et al. (2022); Anstey et al. (2022); Smith et al. (2022)*
 - **SPARC Reanalysis Intercomparison Project (S-RIP)**
(coordinators: M. Fujiwara, G. Manney, L. Gray, and J. Wright)
2014 – present: contributor / author of
 - *Kim et al. (2019); Kim and Chun (2015b)*
 - *Chap. 8: Tropical Tropopause Layer / Chap. 9: Quasi-Biennial Oscillation* in S-RIP Report (*Fujiwara et al., 2022*)
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**RESEARCH
INTERESTS**

- Atmospheric wave dynamics
 - Wave–mean-flow interaction in the large-scale circulation
 - Synoptic-scale and mesoscale interaction
 - Middle atmosphere dynamics and their role in climate/seasonal predictions
 - Quasi-biennial oscillation (QBO) variability
 - Whole atmosphere modeling
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PUBLICATIONS **International Journal Articles**

- Hur, I., C. Yoo, S.-W. Yeh, Y.-H. Kim, and K.-H. Seo, 2024: Processes Driving the Intermodel Spread of the Southern Hemisphere Hadley Circulation Expansion in CMIP6 Models. *Journal of Geophysical Research: Atmospheres*, 129, e2024JD041726, doi:10.1029/2024JD041726.
- Voelker, G. S., G. Bölöni, Y.-H. Kim, G. Zängl, and U. Achatz, 2024: MS-GWaM: A Three-Dimensional Transient Gravity Wave Parametrization for Atmospheric Models. *Journal of the Atmospheric Sciences*, 81, 1181-1200, doi:10.1175/JAS-D-23-0153.1.
- Lott, F., R. Rani, C. McLandress, A. Podglajen, A. Bushell, M. Bramberger, H.-K. Lee, J. Alexander, J. Anstey, H.-Y. Chun, A. Hertzog, N. Butchart, Y.-H. Kim, Y. Kawatani, B. Legras, E. Manzini, H. Naoe, S. Osprey, R. Plougonven, H. Pohlmann, J. H. Richter, J. Scinocca, J. García-Serrano, F. Serva, T. Stockdale, S. Versick, S. Watanabe, and K. Yoshida, 2024: Comparison between non-orographic gravity-wave parameterizations used in QBOi models and Strateole 2 constant-level balloons. *Quarterly Journal of the Royal Meteorological Society*, 150, 3721-3736, doi:10.1002/QJ.4793.
- Listowski, C., C. C. Stephan, A. L. Pichon, A. Hauchecorne, Y.-H. Kim, U. Achatz, and G. Bölöni, 2024: Stratospheric Gravity Waves Impact on Infrasound Transmission Losses Across the International Monitoring System. *Pure and Applied Geophysics*, doi:10.1007/S00024-024-03467-3.
- Kim, Y.-H., G. S. Voelker, G. Bölöni, G. Zängl, and U. Achatz, 2024: Crucial role of obliquely propagating gravity waves in the quasi-biennial oscillation dynamics. *Atmospheric Chemistry and Physics*, 24, 3297-3308, doi:10.5194/ACP-24-3297-2024.
- Oh, S.-G., S.-W. Son, Y.-H. Kim, C. Park, J. Ko, K. Shin, J.-H. Ha, and H. Lee, 2024: Deep learning model for heavy rainfall nowcasting in South Korea. *Weather and Climate Extremes*, 44, 100652, doi:10.1016/J.WACE.2024.100652.
- Achatz, U., Y.-H. Kim, and G. S. Voelker, 2023: Multi-scale dynamics of the interaction between waves and mean flows: From nonlinear WKB theory to gravity-wave parameterizations in weather and climate models. *Journal*

of Mathematical Physics, 64, 111101, doi:10.1063/5.0165180.

- Anstey, J. A., I. R. Simpson, J. H. Richter, H. Naoe, M. Taguchi, F. Serva, L. J. Gray, N. Butchart, K. Hamilton, S. Osprey, O. Bellprat, P. Braesicke, A. C. Bushell, C. Cagnazzo, C.-C. Chen, H.-Y. Chun, R. R. Garcia, L. Holt, Y. Kawatani, T. Kerzenmacher, Y.-H. Kim, F. Lott, C. McLandress, J. Scinocca, T. N. Stockdale, S. Versick, S. Watanabe, K. Yoshida, and S. Yukimoto, 2022: Teleconnections of the Quasi-Biennial Oscillation in a multi-model ensemble of QBO-resolving models. *Quarterly Journal of the Royal Meteorological Society*, 148, 1568-1592, doi:10.1002/QJ.4048.
- Stockdale, T. N., Y.-H. Kim, J. A. Anstey, F. M. Palmeiro, N. Butchart, A. A. Scaife, M. Andrews, A. C. Bushell, M. Dobrynin, J. Garcia-Serrano, K. Hamilton, Y. Kawatani, F. Lott, C. McLandress, H. Naoe, S. Osprey, H. Pohlmann, J. Scinocca, S. Watanabe, K. Yoshida, and S. Yukimoto, 2022: Prediction of the quasi-biennial oscillation with a multi-model ensemble of QBO-resolving models. *Quarterly Journal of the Royal Meteorological Society*, 148, 1519-1540, doi:10.1002/QJ.3919.
- Holt, L. A., F. Lott, R. R. Garcia, G. N. Kiladis, Y.-M. Cheng, J. A. Anstey, P. Braesicke, A. C. Bushell, N. Butchart, C. Cagnazzo, C.-C. Chen, H.-Y. Chun, Y. Kawatani, T. Kerzenmacher, Y.-H. Kim, C. McLandress, H. Naoe, S. Osprey, J. H. Richter, A. A. Scaife, J. Scinocca, F. Serva, S. Versick, S. Watanabe, K. Yoshida, and S. Yukimoto, 2022: An evaluation of tropical waves and wave forcing of the QBO in the QBOi models. *Quarterly Journal of the Royal Meteorological Society*, 148, 1541-1567, doi:10.1002/QJ.3827.
- Bushell, A. C., J. A. Anstey, N. Butchart, Y. Kawatani, S. M. Osprey, J. H. Richter, F. Serva, P. Braesicke, C. Cagnazzo, C.-C. Chen, H.-Y. Chun, R. R. Garcia, L. J. Gray, K. Hamilton, T. Kerzenmacher, Y.-H. Kim, F. Lott, C. McLandress, H. Naoe, J. Scinocca, A. K. Smith, T. N. Stockdale, S. Versick, S. Watanabe, K. Yoshida, and S. Yukimoto, 2022: Evaluation of the Quasi-Biennial Oscillation in global climate models for the SPARC QBO-initiative. *Quarterly Journal of the Royal Meteorological Society*, 148, 1459-1489, doi:10.1002/QJ.3765.
- Smith, A. K., L. A. Holt, R. R. Garcia, J. A. Anstey, F. Serva, N. Butchart, S. Osprey, A. C. Bushell, Y. Kawatani, Y.-H. Kim, F. Lott, P. Braesicke, C. Cagnazzo, C.-C. Chen, H.-Y. Chun, L. Gray, T. Kerzenmacher, H. Naoe, J. Richter, S. Versick, V. Schenzinger, S. Watanabe, and K. Yoshida, 2022: The equatorial stratospheric semiannual oscillation and time-mean winds in QBOi models. *Quarterly Journal of the Royal Meteorological Society*, 148, 1593-1609, doi:10.1002/QJ.3690.
- Polichtchouk, I., N. Wedi, and Y.-H. Kim, 2022: Resolved gravity waves in the tropical stratosphere: Impact of horizontal resolution and deep convection

- parametrization. *Quarterly Journal of the Royal Meteorological Society*, 148, 233-251, doi:10.1002/QJ.4202.
- Kim, Y.-H., and U. Achatz, 2021: Interaction Between Stratospheric Kelvin Waves and Gravity Waves in the Easterly QBO Phase. *Geophysical Research Letters*, 48, e2021GL095226, doi:10.1029/2021GL095226.
- Kim, Y.-H., G. Bölöni, S. Borchert, H.-Y. Chun, and U. Achatz, 2021: Toward transient subgrid-scale gravity wave representation in atmospheric models. Part II: Wave intermittency simulated with convective sources. *Journal of the Atmospheric Sciences*, 78, 1339-1357, doi:10.1175/JAS-D-20-0066.1.
- Bölöni, G., Y.-H. Kim, S. Borchert, and U. Achatz, 2021: Toward transient subgrid-scale gravity wave representation in atmospheric models. Part I: Propagation model including nondissipative wave-mean-flow interactions. *Journal of the Atmospheric Sciences*, 78, 1317-1338, doi:10.1175/JAS-D-20-0065.1.
- Chun, H.-Y., B.-G. Song, S.-W. Shin, and Y.-H. Kim, 2019: Gravity waves associated with jet/front systems. Part I: Diagnostics and their correlations with GWs revealed in high-resolution global analysis data. *Asia-Pacific Journal of Atmospheric Sciences*, 55, 589-608, doi:10.1007/S13143-019-00104-1.
- Kim, Y.-H., G. N. Kiladis, J. R. Albers, J. Dias, M. Fujiwara, J. A. Anstey, I.-S. Song, C. J. Wright, Y. Kawatani, F. Lott, and C. Yoo, 2019: Comparison of equatorial wave activity in the tropical tropopause layer and stratosphere represented in reanalyses. *Atmospheric Chemistry and Physics*, 19, 10027-10050, doi:10.5194/ACP-19-10027-2019.
- Koo, J.-H., T. Choi, H. Lee, J. Kim, D. H. Ahn, J. Kim, Y.-H. Kim, C. Yoo, H. Hong, K.-J. Moon, and Y. G. Lee, 2018: Total ozone characteristics associated with regional meteorology in West Antarctica. *Atmospheric Environment*, 195, 78-88, doi:10.1016/J.ATMOSENV.2018.09.056.
- Yoo, J.-H., T. Choi, H.-Y. Chun, Y.-H. Kim, I.-S. Song, and B.-G. Song, 2018: Inertia-gravity waves revealed in radiosonde data at Jang Bogo Station, Antarctica (74°37'S, 164°13'E): 1. Characteristics, energy, and momentum flux. *Journal of Geophysical Research*, 123, 13305-13331, doi:10.1029/2018JD029164.
- Kang, M.-J., H.-Y. Chun, Y.-H. Kim, P. Preusse, and M. Ern, 2018: Momentum flux of convective gravity waves derived from an offline gravity wave parameterization. Part II: Impacts on the quasi-biennial oscillation. *Journal of the Atmospheric Sciences*, 75, 3753-3775, doi:10.1175/JAS-D-18-0094.1.
- Yoo, C., N. C. Johnson, C.-H. Chang, S. B. Feldstein, and Y.-H. Kim, 2018: Subseasonal prediction of wintertime East Asian temperature based on atmospheric teleconnections. *Journal of Climate*, 31, 9351-9366, doi:10.1175/JCLI-D-17-0811.1.

- Song, I.-S., H.-Y. Chun, G. Jee, S.-Y. Kim, J. Kim, Y.-H. Kim, and M. A. Taylor, 2018: Dynamic initialization for whole atmospheric global modeling. *Journal of Advances in Modeling Earth Systems*, 10, 2096-2120, doi:10.1029/2017MS001213.
- Choi, H.-J., J.-Y. Han, M.-S. Koo, H.-Y. Chun, Y.-H. Kim, and S.-Y. Hong, 2018: Effects of non-orographic gravity wave drag on seasonal and medium-range predictions in a global forecast model. *Asia-Pacific Journal of Atmospheric Sciences*, 54, 385-402, doi:10.1007/S13143-018-0023-1.
- Butchart, N., J. A. Anstey, K. Hamilton, S. Osprey, C. McLandress, A. C. Bushell, Y. Kawatani, Y.-H. Kim, F. Lott, J. Scinocca, T. N. Stockdale, M. Andrews, O. Bellprat, P. Braesicke, C. Cagnazzo, C.-C. Chen, H.-Y. Chun, M. Dobrynin, R. R. Garcia, J. Garcia-Serrano, L. J. Gray, L. Holt, T. Kerzenmacher, H. Naoe, H. Pohlmann, J. H. Richter, A. A. Scaife, V. Schenzinger, F. Serva, S. Versick, S. Watanabe, K. Yoshida, and S. Yukimoto, 2018: Overview of experiment design and comparison of models participating in phase 1 of the SPARC Quasi-Biennial Oscillation initiative (QBOi). *Geoscientific Model Development*, 11, 1009-1032, doi:10.5194/GMD-11-1009-2018.
- Kang, M.-J., H.-Y. Chun, and Y.-H. Kim, 2017: Momentum flux of convective gravity waves derived from an offline gravity wave parameterization. Part I: Spatiotemporal variations at source level. *Journal of the Atmospheric Sciences*, 74, 3167-3189, doi:10.1175/JAS-D-17-0053.1.
- Song, I.-S., C. Lee, J.-H. Kim, G. Jee, Y.-H. Kim, H.-J. Choi, H.-Y. Chun, and Y. H. Kim, 2017: Meteor radar observations of vertically propagating low-frequency inertia-gravity waves near the southern polar mesopause region. *Journal of Geophysical Research*, 122, 4777-4800, doi:10.1002/2016JA022978.
- Kim, Y.-H., H.-Y. Chun, S.-H. Park, I.-S. Song, and H.-J. Choi, 2016: Characteristics of gravity waves generated in the jet-front system in a baroclinic instability simulation. *Atmospheric Chemistry and Physics*, 16, 4799-4815, doi:10.5194/ACP-16-4799-2016.
- Kim, Y.-H., and H.-Y. Chun, 2015: Momentum forcing of the quasi-biennial oscillation by equatorial waves in recent reanalyses. *Atmospheric Chemistry and Physics*, 15, 6577-6587, doi:10.5194/ACP-15-6577-2015.
- Kim, Y.-H., and H.-Y. Chun, 2015: Contributions of equatorial wave modes and parameterized gravity waves to the tropical QBO in HadGEM2. *Journal of Geophysical Research*, 120, 1065-1090, doi:10.1002/2014JD022174.
- Kim, Y.-H., A. C. Bushell, D. R. Jackson, and H.-Y. Chun, 2013: Impacts of introducing a convective gravity-wave parameterization upon the QBO in the Met Office Unified Model. *Geophysical Research Letters*, 40, 1873-1877, doi:10.1002/GRL.50353.

- Lehmann, C. I., Y.-H. Kim, P. Preusse, H.-Y. Chun, M. Ern, and S.-Y. Kim, 2012: Consistency between Fourier transform and small-volume few-wave decomposition for spectral and spatial variability of gravity waves above a typhoon. *Atmospheric Measurement Techniques*, 5, 1637-1651, doi:10.5194/AMT-5-1637-2012.
- Kim, Y.-H., H.-Y. Chun, P. Preusse, M. Ern, and S.-Y. Kim, 2012: Gravity wave reflection and its influence on the consistency of temperature- and wind-based momentum fluxes simulated above Typhoon Ewiniar. *Atmospheric Chemistry and Physics*, 12, 10787-10795, doi:10.5194/ACP-12-10787-2012.
- Chun, H.-Y., Y.-H. Kim, H.-J. Choi, and J.-Y. Kim, 2011: Influence of gravity waves in the tropical upwelling: WACCM simulations. *Journal of the Atmospheric Sciences*, 68, 2599-2612, doi:10.1175/JAS-D-11-022.1.
- Kim, Y.-H., and H.-Y. Chun, 2009: Effects of the basic-state wind on secondary waves generated by the breaking of gravity waves in the mesosphere. *Asia-Pacific Journal of Atmospheric Sciences*, 45, 91-100.
- Chun, H.-Y., and Y.-H. Kim, 2008: Secondary waves generated by breaking of convective gravity waves in the mesosphere and their influence in the wave momentum flux. *Journal of Geophysical Research*, 113, D23107, doi:10.1029/2008JD009792.
- Chun, H.-Y., J.-S. Goh, and Y.-H. Kim, 2007: Characteristics of inertio-gravity waves revealed in rawinsonde data observed in Korea during 20 August to 5 September 2002. *Journal of Geophysical Research*, 112, D16108, doi:10.1029/2006JD008348.

Domestic Journal Articles (in Korean)

- Kim, D.-K., Y.-H. Kim, and C. Yoo, 2019: Predictability of northern hemisphere teleconnection patterns in GloSea5 hindcast experiments up to 6 weeks. *Atmosphere (KMS)*, 29, 295-309, doi:10.14191/ATMOS.2019.29.3.295.

Reports

- Tegtmeier, S., K. Krüger, T. Birner, N. Davis, S. Davis, M. Fujiwara, C. Homeyer, Y.-H. Kim, G. Manney, E. Nishimoto, M. Nützel, R. Pilch Kedzierski, F. Ploeger, X. Sun, J. Wang, T. Wang, and J. Wright, 2021: Chap. 8: Tropical Tropopause Layer. In *SPARC Reanalysis Intercomparison Project (S-RIP) Final Report*, doi:10.17874/800dee57d13.
- Anstey, J. A., L. J. Gray, M. Fujiwara, I. Ivanciu, Y. Kawatani, G. Kiladis, Y.-H. Kim, P. Martineau, V. Schenzinger, S. Tegtmeier, and C. Wright, 2021: Chap. 9: Quasi-Biennial Oscillation. In *SPARC Reanalysis Intercomparison*

Project (S-RIP) Final Report, doi:10.17874/800dee57d13.