

Minhee Chang

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EDUCATION

Seoul National University, School of Earth and Environmental Sciences, Seoul, Korea

Ph.D. in Atmospheric Science (a Master-PhD combined course)

August 2020

Thesis title: ‘Evolution of deep convection associated with tropical cyclogenesis over the western North Pacific’

B.S. in Earth Science

February 2013

Thesis title: ‘Long-term change in global cloud top height observed from two satellite sensors: MISR and MODIS’

PROFESSIONAL EXPERIENCES

Seoul National University, the Environmental Planning Institute/Climate Tech Center, Seoul, Korea

Postdoctoral Researcher

Mar 2024–Present

Korea Institute of Science and Technology, Seoul, Korea

Postdoctoral Researcher

August 2022–Feb 2024

Seoul National University, the Research Institute of Basic Sciences, Seoul, Korea

Postdoctoral Researcher

September 2020–July 2022

Chonnam National University, Department of Earth Science Education, Gwangju, Korea

Adjunct faculty (lecturer) “Atmospheric Science”

September 2021–February 2022

Prof. Roger K. Smith’s group, Meteorological Institute, University of Munich, Germany

Visiting Graduate Student “NRF-DAAD Summer Institute Program”

Summer 2015

Seoul National University, School of Earth and Environmental Sciences, Seoul, Korea

Teaching Assistant “Lab Class of Atmospheric Science”

Spring 2014

RESEARCH INTERESTS

Compound weather and climate extreme events, decadal variability, Atlantic meridional overturning circulation. tropical cyclogenesis, tropical deep convection, tropical-extratropical interaction, tropical cyclone risk and hazard, machine learning and Artificial Intelligence.

PUBLICATIONS **Corresponding Author*

Kim, H.-A., C.-H. Ho*, M. Chang, and J. Kim, 2026: Emergence of autumn rainy season in Korea due to tropical cyclone influence. *Atmos Res*, **327**, 108340, <https://doi.org/10.1016/j.atmosres.2025.108340>.

- Ju, J., D.-S. R. Park*, D. Kim, **M. Chang**, C.-K. Park, J.-S. Kug, and D. Youn, 2025: Mechanisms behind Seasonal Differences in the Recent Interdecadal Change in Tropical Cyclone Genesis Frequency over the Western North Pacific. *J Clim*, **38**, 3787–3800, <https://doi.org/10.1175/JCLI-D-24-0604.1>.
- Park, D.-S. R., C.-G. Lee, **M. Chang**, and T.-W. Park, 2024: Summer and Autumn Tropical Cyclone Activity over Korea Responds in Opposite Ways to ENSO Phases. *Journal of the Korean earth science society*, **45**, 511–518, <https://doi.org/10.5467/JKESS.2024.45.6.511>.
- Jung, J., **M. Chang***, E.-H. Lee, & M.-K. Sung, 2024: Verification of Tropical Cyclogenesis Forecasts of the Korean Integrated Model for 2020–21. *Weather Forecast*, **39**, 1247–1259. <https://doi.org/10.1175/WAF-D-23-0175.1>
- Ho, C.-H.*, D. Hyeon, **M. Chang**, G. McFarquhar and S. H. Won, 2024: Geostationary satellite-derived positioning of tropical cyclone center using artificial intelligence algorithms over the western North Pacific. *BAMS*, <https://doi.org/10.1175/BAMS-D-23-0130.1>.
- Sung, M.-K.*, S.-I. An*, J. Shin, J.-H. Park, Y.-M. Yang, H.-J. Kim, & **M. Chang**, 2023: Ocean fronts as decadal thermostats modulating continental warming hiatus. *Nature Communications*, **14**(1), 7777. <https://doi.org/10.1038/s41467-023-43686-1>.
- Chang, M.**, C.-H. Ho*, J. Ho, and E.-J. Cha, 2023: Centennial analysis in tropical cyclone-induced precipitation in Korea. *Weather Clim Extrem*, **39**, <https://doi.org/10.1016/j.wace.2023.100549>.
- Kim, D., D.-S. R. Park*, **M. Chang**, D.-H. Cha, and M. Lee, 2023: Reanalyzing the Relationship of Tropical Cyclone Frequency and Intensity Affecting South Korea with the Pacific Decadal Oscillation. *J Clim*, **36**, 2847–2855, <https://doi.org/10.1175/JCLI-D-22-0302.1>.
- Rajasree, V.P.M., X. Cao, H. Ramsay, K. M. Núñez Ocasio, G. Kilroy, G. R. Alvey, **M. Chang**, C. C. Nam, H. Fudeyasu, H.-F. Teng, and H. Yu, 2023: Tropical cyclogenesis: controlling factors and physical mechanisms. *Online published. Tropical Cyclone Research and Review*. <https://doi.org/10.1016/j.tcr.2023.09.004>.
- Cheung, H. M., C.-H. Ho*, and **M. Chang**, 2022: Hybrid Neural Network Models for Postprocessing Medium-Range Forecasts of Tropical Cyclone Tracks over the Western North Pacific. *Artificial Intelligence for the Earth Systems*, **1**, 1–17, <https://doi.org/10.1175/AIES-D-21-0003.1>.
- Park, T., C. Lee, **M. Chang***, and D.-S. R. Park, 2022: Regional characteristics of hot days and tropical nights in the Honam area, South Korea. *Atmospheric Science Letters*, **23**, e1086, <https://doi.org/10.1002/asl.1086>.
- Kilroy, G., H. Zhu, **M. Chang**, and R. K. Smith*, 2022: Application of the rotating-convection paradigm for tropical cyclones to interpreting medicanes: An example. *Tropical Cyclone Research and Review*, **11**, 131–145, <https://doi.org/10.1016/j.tcr.2022.09.001>.
- Chang, M.**, D.-S. R. Park*, D. Kim, and T.-W. Park, 2022: A Possible Relation of Pacific Decadal Oscillation with Weakened Tropical Cyclone Activity over South Korea. *Journal of the Korean earth science society*, **43**, 23–29, <https://doi.org/10.5467/JKESS.2022.43.1.23>. (Domestic, with English Abstract)
- Chang, M.**, D.-S. R. Park*, and C.-H. Ho, 2021: Possible Cause of Seasonal Inhomogeneity in Interdecadal Changes of Tropical Cyclone Genesis Frequency over the Western North Pacific. *J Clim*, **34**, 635–642, <https://doi.org/10.1175/JCLI-D-20-0268.1>.
- Park, C.-K., **M. Chang**, C.-H. Ho*, K.-J. Ha, J. Kim, and B.-J. Sohn, 2021: Two Types of Diurnal Variations in Heavy Rainfall during July over Korea. *Adv Atmos Sci*, **38**, 2201–2211, <https://doi.org/10.1007/s00376-021-1178-8>.
- Cheung, H. M., C.-H. Ho*, **M. Chang**, D. Kim, J. Kim, and W. Choi, 2021: Development of a track-pattern-based medium-range tropical cyclone forecasting system for the western North Pacific. *Weather Forecast*, **36**, 1505–1518, <https://doi.org/10.1175/WAF-D-20-0102.1>.

- Choi, W., C.-H. Ho*, J. Jung, **M. Chang**, and K.-J. Ha, 2021: Synoptic conditions controlling the seasonal onset and days of heatwaves over Korea. *Clim Dyn*, **57**, 3045–3053, <https://doi.org/10.1007/s00382-021-05853-2>.
- Ho, C.-H.*, J.-W. Heo, **M. Chang**, W. Choi, J. Kim, S.-W. Kim, and H.-R. Oh, 2021: Regulatory measures significantly reduced air-pollutant concentrations in Seoul, Korea. *Atmos Pollut Res*, **12**, 101098, <https://doi.org/10.1016/j.apr.2021.101098>.
- Chang, M.**, C.-H. Ho*, J. C. L. Chan, M. S. Park, S. W. Son, and J. Kim, 2019: The Tropical Transition in the Western North Pacific: The Case of Tropical Cyclone Peipah (2007). *Journal of Geophysical Research: Atmospheres*, **124**, 5151–5165, <https://doi.org/10.1029/2018JD029446>.
- Chang, M.**, C.-H. Ho, M. S. Park*, J. Kim, and M. Ahn, 2017: Multiday evolution of convective bursts during western North Pacific tropical cyclone development and nondevelopment using geostationary satellite measurements. *Journal of Geophysical Research: Atmospheres*, **122**, 1635–1649, <https://doi.org/10.1002/2016JD025535>.

PATENT

- Ho, C.-H., H. M. Cheung, and **M. Chang**, 2024: System and method for predicting medium-range track of tropical cyclone. Republic of Korea, Patent No.: 1026267580000. <https://doi.org/10.8080/1020210110678>.

ACADEMIC CONTRIBUTIONS

- | | |
|---|-------------|
| Tenth International Workshop on Tropical Cyclones (IWTC-10) | 2022 |
| Participated as a member of working group (Topic 4.1) | |
| The World Climate Research Programme (WCRP) Climate Research Forum | 2021 |
| Participated as a speaker representing early career scientists | |

RESEARCH PROJECT

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|---|--------------------------|
| Development of prediction system for tropical cyclone formation using an artificial intelligence algorithm (<i>Principle Investigator</i>) | |
| Funded by National Research Foundation of Korea | June 2021–May 2024 |
| Tropical cyclone predictability assessment from the Korean Integrated Model (KIM) System | |
| Funded by Korean Meteorological Agency | April 2021–December 2021 |
| Development on the tropical cyclone objective analysis, prediction, assessment system and their guidance | |
| Funded by Korean Meteorological Agency | May 2020–December 2022 |
| Technical development of vulnerability assessment for extreme climate | |
| Funded by the Korean Ministry of Environment | May 2015–June 2020 |
| Fundamental research to develop medium-range prediction system for tropical cyclone activity | |
| Funded by Korean Meteorological Agency | April 2018–December 2019 |

HONORS AND AWARDS

Global Research Travel Grant from Center for Women in Science, Engineering, and Technology* (*Replaced as a publication fee support due to COVID-19)	August 2020
Best Student Poster Award in AOGS annual meeting	August 2019
Kim's scholarship from SNU alumni union	Spring 2015/ Spring 2014/ Fall 2013
BK 21 (PLUS) graduate fellowship	Spring and Fall 2014/ Fall 2013
Baek's scholarship from SNU development fund	Spring and Fall 2012
SNU scholarship for the dean's list	Spring 2012/ Spring and Fall 2011
SNU scholarship of student labor	Spring 2011
National scholarship for natural sciences	Spring 2010/Spring 2009

COMPUTER LANGUAGES

Python, IDL and some experience in Fortran.

SELECTED CONFERENCE PRESENTATIONS

Chang M. and C.-H. Ho, Relative importance among various-scale attributes affecting tropical cyclogenesis revealed using machine learning algorithm, *International Conference of Women Scientists and Engineers Shaping the Future (BIEN2021)*, Virtual Meeting, August 2021.

Chang M. and C.-H. Ho, Machine Learning Investigation on the Relative Importance among Various Attributes Affecting Tropical Cyclogenesis, *Poster presentation at the 34th Conference on Hurricanes and Tropical Meteorology, American Meteorological Society*, Virtual Meeting, May 2021.

Chang M., C.-H. Ho, J. C. L. Chan, M.-S. Park, S.-W. Son, and J. Kim, Tropical-Extratropical Interaction During the Formation of TC Peipah (2007) over the Western North Pacific, *Oral presentation at the 34th Conference on Hurricanes and Tropical Meteorology, American Meteorological Society*, Virtual Meeting, May 2021.

Chang M., C.-H. Ho, J. C. L. Chan, M.-S. Park, S.-W. Son, and J. Kim, Tropical-extratropical Interaction Associated with Tropical Cyclone Formation in the Western North Pacific: A Case Study of Peipah (2007), *Poster presentation delivered at the AOGS Annual Meeting 2019, Asia Oceania Geoscience Society*, Singapore, July, 2019.

Chang M., C.-H. Ho, J. C. L. Chan, M.-S. Park, S.-W. Son, and J. Kim, Extra-tropical influence on the formation of tropical cyclone in the western North Pacific: A case study of Peipah (2007), *Oral presentation at the EGU General Assembly 2019, Copernicus Meetings*, Vienna, April 2019.

Chang M., C.-H. Ho, J. C. L. Chan, M.-S. Park, S.-W. Son, and J. Kim, A case study on the extratropical influence on tropical cyclone Peipah (2007) formation over the western North Pacific, *Oral presentation at the 21th SNU-Hokkaido Univ. Joint Symposium 2018, Hokkaido University*, Sapporo, November, 2018.

Chang M. and C.-H. Ho, Comparison of multiday convective-environmental evolutions between TC developing vs. non-developing disturbances over the western North Pacific, *Oral presentation at the*

33rd Conference on Hurricanes and Tropical Meteorology, American Meteorological Society, Ponte Vedra Beach, FL, April 2018.

Chang, M., C.-H. Ho, M.-S. Park, A case study on the stratospheric influence during tropical cyclone Peipah (2007) formation over the western North Pacific, *Poster presentation at the International Conference of Women Scientists and Engineers Shaping the Future (BIEN2017), The Association of Korean Woman Scientists and Engineers, Seoul, August, 2017.*

Chang M. and C.-H. Ho, Lower stratospheric influence on the formation of typhoon Peipah (2007) over the western North Pacific, *Poster presentations at the Asian Conference on Meteorology, Korean Meteorological Society, Busan, October, 2017.*

Chang, M., C.-H. Ho, and M.-S. Park, Comparison on multi-day convective-environmental evolution between developing and nondeveloping disturbances, *Poster presentation at the International Conference on Mesoscale Convective System and High Impact Weather XI, Pukyong National University, Busan, April, 2016.*

Chang, M., C.-H. Ho, M.-S. Park, Multi-day convective-environmental evolution prior to tropical cyclone formation from geostationary satellite measurements, *Oral presentation at the EGU General Assembly 2016, Copernicus Meetings, Vienna, April, 2016.*