

# You-Hyun Baek

## KMA/NIMS AI Meteorological Research Division

### Research Scientist

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## Education

2016.03. ~	<b>Ph.D. Candidate (Completion)</b>	Graduate School of Interdisciplinary Program in Marine Meteorology, Jeju National University, Republic of Korea
2013.08. ~ 2016.02.	<b>M.Sc.</b>	Graduate School of Interdisciplinary Program in Marine Meteorology, Jeju National University, Republic of Korea
2007.03. ~ 2013.08.	<b>B.Sc.</b>	Department of Atmospheric & Environmental Sciences, Gangneung-Wonju National University, Republic of Korea

## Work Experiences

2022.03. ~	<b>Research Scientist</b>	AI Meteorological Research Division, National Institute of Meteorological Sciences, Republic of Korea
2019.01. ~ 2022.02.	<b>Researcher</b>	Typhoon Research Center, Jeju National University, Republic of Korea

## Publications

1. Jung, H., **Baek, Y.-H.**, Moon, I.-J., Lee, J., Sohn, E.-H. (2024). Tropical Cyclone Intensity estimation through Convolutional Neural Network Transfer Learning using Two Geostationary Satellite datasets. *Frontiers in Earth Science*, 11, 1285138.
2. Kim, S., Choi, J., Choi, Y., Lee, S., Stitayuk, A., Park, M., Jeong, S., **Baek, Y.**, and Choi, J. (2023). Explainable AI-Based Interface System for Weather Forecasting Model. In *International Conference on Human-Computer Interaction* (pp. 101-119). Cham: Springer Natural Switzerland.
3. **Baek, Y.-H.**, Moon, I.-J., Im, J., and Lee, J. (2022). A Novel Tropical Cyclone Size Estimation Model Based on a Convolutional Neural Network Using Geostationary Satellite Imagery. *Remote Sensing*, 14(2), 426.
4. **Baek, Y.-H.**, and Moon, I.-J. (2019). The accuracy of satellite-composite GHRSSST and model-reanalysis sea surface temperature data at the seas adjacent to the Korean Peninsula. *Ocean and Polar Research*, 41(4), 213-232.
5. **Baek, Y.-H.**, and Moon, I.-J. (2019). Estimation of satellite-based upper-ocean temperature profile in the western North Pacific and its application to tropical cyclone intensity predictions. *Journal of Coastal Research*, 90(SI), 261-266.

## Awards

1. **Outstanding Contribution to Work Promotion Award**, National Institute of Meteorological Sciences Award for Outstanding Contribution to Work Promotion, *National Institute of Meteorological Sciences (NIMS)*, 21 Dec. 2023.
2. **Best Student Poster Award**, Best Student Poster Award in Physical Oceanography, *The Korean Society of Oceanography*, 25 Oct. 2018.
3. **Encouragement Award**, The 3rd Meteorological Satellite Application Research Contest, *National Meteorological Satellite Center (NMSC)*, 15 Nov. 2017.

## Machine Learning Competition

1. Kim, K.-I., **Baek, Y.-H.**, Kim, D.-H., Moon, I.-J., and Kang, Y.-H. (2021), Numerical Analysis – Development of Power Quality classification model to respond to Power facility failures, Ranked 10 out of 63 teams (**top 15.8%**), *AI Online Contest-National IT Industry Promotion Agency (NIPA)* (21 Jun. – 2 Jul. 2021).

## Presentations

1. Ha, J.-H., **Baek, Y.-H.**, and Lee, H. (2024). AI Nowcasting model in Korea Meteorological Administration and its applications for natural disaster management, *12<sup>th</sup> FG-AI4NDM meeting (13-15 Mar. 2024)*
2. **Baek, Y.-H.**, Lee, H., Lee, J.-R., Won, S., and Kim, S.-H. (2024). Development of a Machine Learning-based Tropical Cyclone Track Prediction Scheme over the western North Pacific, *American Meteorological Society (AMS) Annual Meeting (28 Jan. - 1 Feb. 2024)*
3. Kim, B., **Baek, Y.-H.**, Shin, H., Ko, S.-W., Lee, H., Kim, S.-H., Han, C., Kim, S., Choe, M., Park, H.-M., and Shin, K. (2023). Machine Learning Method on Similar Weather Event Retrieval Using Infrared Imagery of SITS Data, *American Geophysical Union (AGU) Fall Meeting (11-15 Dec. 2023)*
4. **Baek, Y.-H.**, Lee, H., Lee, J.-R., Won, S., and Kim, S.-H. (2023). Development of a Machine Learning-based Tropical Cyclone Track Prediction Scheme over the western North Pacific, *American Geophysical Union (AGU) Fall Meeting (11-15 Dec. 2023)*
5. Jung, H.-Y., **Baek, Y.-H.**, Moon, I.-J., and Kim, D.-H. (2023). Tropical Cyclone Intensity Estimation through CNN Transfer Learning of GK2A and COMS, *Spring Meeting of GeoAI Data Society (GAIDAS) (27-29 Jun. 2023)*.
6. **Baek, Y.-H.**, Lee, H., Lee, J.-R., and Won, S. (2022). Development of RNN-LSTM-based Tropical Cyclone Track Prediction Scheme over the western North Pacific, *Autumn Meeting of GeoAI Data Society (GAIDAS) (16-18 Nov. 2022)*.
7. **Baek, Y.-H.**, Lee, H., Lee, J.-R., and Won, S. (2022). Development of RNN-LSTM-based Tropical Cyclone Track Prediction Scheme over the western North Pacific, *Autumn Meeting of Korean Meteorological Society (KMS) (19-21 Oct. 2022)*.
8. Jung, H.-Y., Moon, I.-J., **Baek, Y.-H.**, Im, J., Lee, J., Park, J.-D. (2022). Estimation of Tropical Cyclone Intensity Based on Deep Learning and Transfer Learning Using Geostationary Satellite Images, *Autumn Meeting of Korean Meteorological Society (KMS) (19-21 Oct. 2022)*.
9. Jung, H.-Y., Moon, I.-J., **Baek, Y.-H.**, Im, J., Lee, J., Park, J.-D., and Kim, D.-H. (2022). Estimation of Typhoon intensity based on Deep Learning and Transfer Learning Using Geostationary Satellite Images, *The 3rd Korea Geoscience Union (KGU) Annual Meeting (17-19 Aug. 2022)*.
10. Jung, H.-Y., Moon, I.-J., **Baek, Y.-H.**, Im, J., Lee, J., and Park, J.-D. (2022). Estimation of TCs intensity from GK2A imagery using AI transfer learning technique, *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (2-4 Jun. 2022)*.
11. **Baek, Y.-H.**, Moon, I.-J., Im, J., and Lee, J. (2021). Development of an integrated model for estimating Tropical Cyclone Intensity and Size based on Deep Learning using Geostationary Satellite Imagery, *The Korean Society of Oceanography Conference (4-5 Nov. 2021)*.
12. **Baek, Y.-H.**, Moon, I.-J., Im, J., and Lee, J. (2021). Tropical Cyclone size estimation model based on Artificial Intelligence using Geostationary Satellite Imagery, *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (13-14 May 2021)*.

13. **Baek, Y.-H.**, Moon, I.-J., Kim, D.-H., Ham, Y.-G., and Kim, J.-H. (2020). Application of various Artificial Intelligence techniques for El Nino Prediction, *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (22-23 Jul. 2020)*.
14. **Baek, Y.-H.**, and Moon, I.-J. (2020). Accuracy of satellite composite and model reanalysis daily SST at the seas adjacent to the Korean Peninsular, *The 16th Japan-Korea Joint Seminar on Ocean Sciences (20-21 Jan. 2020)*.
15. **Baek, Y.-H.**, and Moon, I.-J. (2019). Accuracy of Satellite Composite and Model Reanalysis Daily SST at the Seas Adjacent to the Korean Peninsular, *The Korean Society of Oceanography Conference (31 Oct. – 1 Nov. 2019)*.
16. **Baek, Y.-H.**, Moon, I.-J., and Kim, D.-H. (2019). Accuracy of Satellite Composite and Model Reanalysis Daily SST at the Seas Adjacent to the Korean Peninsular, *The 2nd Korea Geoscience Union (KGU) Annual Meeting (3-5 Jul. 2019)*.
17. **Baek, Y.-H.**, and Moon, I.-J. (2019). Estimation of the satellite-based upper-ocean temperature profile in the western North Pacific for the application to tropical cyclone intensity predictions, *International Workshop on Tropical Cyclone-Ocean Interaction in the Northwest Pacific (TCOI) (19-21 Jun. 2019)*.
18. **Baek, Y.-H.**, and Moon, I.-J. (2019). An increase of super-typhoon and northward extension of their passages in western-North Pacific, *The 20th Pacific-Asian Marginal Seas (PAMS) Meeting (18-22 Mar. 2019)*.
19. **Baek, Y.-H.**, Moon, I.-J., Chung, C.-Y., and Mo H.-S. (2018). Method for estimating ocean temperature profile based on satellite products, *14th Pan Ocean Remote Sensing Conference (PORSEC) (4-7 Nov. 2018)*.
20. Ko, E.-B., Moon, I.-J., and **Baek, Y.-H.** (2018). Factors determining the intensity of Tropical Cyclone landfall on the Korean Peninsula: via typhoon-ocean couple numerical model, *The Korean Society of Oceanography Conference (25-26 Oct. 2018)*.
21. **Baek, Y.-H.**, and Moon, I.-J. (2018). An Increase of Super-Typhoon and Northward Extension of Their Passages in the Western-North Pacific, *15th Annual Meeting Asia Oceania Geosciences Society (AOGS) (3-8 Jun. 2018)*.
22. **Baek, Y.-H.**, Moon, I.-J., Chung, C.-Y., and Mo H.-S. (2018). Development of upper-ocean temperature profile calculation algorithm using sea surface height anomaly (SSHA) data, *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (24-25 May 2018)*.
23. **Baek, Y.-H.**, Moon, I.-J., Chung, C.-Y., Baek, S.-K., and Mo H.-S. (2017). Development of a satellite-based upper ocean temperature profile calculation algorithm in the northwestern Pacific, *Autumn Meeting of Korean Meteorological Society (KMS) (25-27 Oct. 2017)*.
24. **Baek, Y.-H.**, and Moon, I.-J. (2017). Accuracy of Satellite Composite and Model Reanalysis Daily SST at the Seas Adjacent to the Korean Peninsular, *14th Annual Meeting Asia Oceania Geosciences Society (AOGS) (6-11 Aug. 2017)*.
25. **Baek, Y.-H.**, and Moon, I.-J. (2017). Accuracy of Satellite Composite and Model Reanalysis Daily SST at the Seas Adjacent to the Korean Peninsular, *The 19th Pacific-Asian Marginal Seas (PAMS) Meeting (12-13 Apr. 2017)*.
26. **Baek, Y.-H.**, Moon, I.-J., Chung, C.-Y., Baek, S.-K., and Mo H.-S. (2016). Evaluation of COMS-derived SST via GTS drifting Buoy SSTs, *Autumn Meeting of Korean Meteorological Society (KMS) (31 Oct. - 2 Nov. 2016)*.
27. **Baek, Y.-H.**, Moon, I.-J., and Kim, D.-H. (2015). Diurnal variations of sea surface temperature around the Korean peninsular, *Asian conference on Meteorology (ACM) (26-27 Oct. 2015)*.
28. **Baek, Y.-H.**, and Moon, I.-J. (2015). Characteristics of Diurnal variation in Sea Surface Temperature around the Korean Peninsular, *Autumn Meeting of Korean Meteorological Society (KMS) (12-14 Oct. 2015)*.
29. **Baek, Y.-H.**, and Moon, I.-J. (2015). Characteristics of Diurnal variation in Sea Surface Temperature (SST) around the Korean Peninsular, *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (21-23 May 2015)*.
30. Lee, S.-Y., Moon, I.-J., and **Baek, Y.-H.** (2015). Verification of Satellite-derived SST (Level-2) data in the northwestern Pacific, *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (21-23 May 2015)*.

31. **Baek, Y.-H.**, and Moon, I.-J. (2014). Validations of daily SST grid data around the Korean peninsula, 2014 *The Korean Association of Ocean Science and Technology Societies (KAOSTS) Joint Conference (22-23 May 2014)*.
32. **Baek, Y.-H.**, and Moon, I.-J. (2014). Verification of satellite- and numerical model- derived SST around the Korean Peninsula, *Spring Meeting of Korean Meteorological Society (KMS) (8-9 May 2014)*.