Hung Ming CHEUNG (Steven)

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EDUCATION

Ph.D., Atmospheric Sciences, Seoul National University, Republic of Korea **08/2022**

Thesis: Medium-range forecast for tropical cyclone tracks over the western North Pacific: Track-pattern-based model and artificial neural network model

M.Sc., Earth System Sciences, The Chinese University of Hong Kong, Hong Kong **08/2010**

B.Sc., Physics/Computer Science, The University of Hong Kong, Hong Kong **08/2009**

RESEARCH EXPERIENCE

Research Professor **06/2024–Present**

Department of Climate and Energy Systems Engineering, Ewha Womans University, Republic of Korea

P. I.: Prof. Chang-Hoi HO

- Developing short-term forecasting model for typhoon activities

Postdoctoral Researcher **08/2022–04/2024**

School of Energy and Environment, City University of Hong Kong, Hong Kong

P. I.: Prof. Jung-Eun CHU

- Examined tropical cyclone genesis using reanalysis datasets
- Investigated future extratropical transition events in a high-resolution Earth system model (CESM)
- Assisted P.I. in grant writing

Research Assistant **06–08/2022**

Department of Geography, The University of Hong Kong, Hong Kong

P. I.: Dr. Nicky Y. F. LAM

- Installed WRF, CMAQ, and required libraries on high-performance computing systems
- Performed WRF-CMAQ simulations that included nudging and tropical cyclone bogussing

Ph.D. Candidate **2018–2022**

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

Advisor: Prof. Chang-Hoi HO

- Developed statistical-dynamical models for tropical cyclone track forecast in the medium range with machine learning methods
- Analyzed the spatial distribution of typhoon- and monsoon-induced rainfall with reanalysis data

Research Assistant **2012–2014**

School of Energy and Environment, City University of Hong Kong, Hong Kong

P. I.: Dr. Nicky Y. F. LAM

- Ran WRF-CMAQ model, analyzed model output or observation for air quality studies
- Collaborated with an external client to develop an air quality forecasting system in China
- Analyzed future sea level in East Asia using CMIP5 dataset for an external client
- Gave a shell script and WRF tutorial to the research team

PUBLICATION

Peer-reviewed:

- **Cheung, H. M**., and J.-E. Chu*, 2023: Global increase in destructive potential of extratropical transition events in response to greenhouse warming. *npj Clim. Atmos. Sci.*, 137.
- **Cheung, H. M**., C.-H. Ho*, and M. Chang, 2022: Hybrid neural network models for postprocessing medium-range forecasts of tropical cyclone track over the western North Pacific. *Artif. Intell. Earth Syst.*, 1, e210003.
- Lam, Y. F.*, and **H. M. Cheung**, 2022: Investigation of Policy Relevant Background (PRB) Ozone in East Asia. *Atmosphere*, 13, 723.
- **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. *Wea. Forecasting*, 36, 1505–1518.
- **Cheung, H.M.**, C.-H. Ho*, J.-G. Jhun, D.-S. R. Park, and S. Yang, 2018: Tropical cyclone signals on rainfall distribution during strong vs. weak Changma/Baiu years. *Clim. Dyn.*, 51, 2311–2320.
- Lam, Y. F.*, **H. M. Cheung**, and C. C. Ying, 2018. Impact of tropical cyclone track change on regional air quality. *Sci. Total Environ*., 610,1347–55.
- Chan, K. L., A. Hartl., Y. F. Lam, P. H. Xie*, W. Q. Liu, **H. M. Cheung**, J. Lampel, D. Pöhler, A. Li, J. Xu, H. J. Zhou, Z. Ning, and M. O. Wenig, 2015: Observations of tropospheric NO2 using ground based MAX-DOAS and OMI measurements during the Shanghai World Expo 2010, *Atmos. Environ.*, 119, 45–58.
- Kuhlmann, G.*, Y. F. Lam*, **H. M. Cheung**, A. Hartl, J. C. H. Fung, P. W. Chan, and M. O. Wenig, 2015: Development of a custom OMI NO2 data product for evaluating biases in a regional chemistry transport model, *Atmos. Chem. Phys.*, 15, 5627–5644.
- Kuhlmann, G., A. Hartl, **H. M. Cheung**, Y. F. Lam*, and M. O. Wenig, 2013: A novel gridding algorithm to create regional trace gas maps from satellite observations. *Atmos. Meas. Tech.*, 7, 451–467.

CONFERENCE/WORKSHOP PRESENTATION

European Geosciences Union General Assembly (Vienna, Austria) **04/2023**

- *Increasing destructive potential of extratropical transition events in response to higher CO_2 concentration in global climate model*

Korean Meteorological Society Fall Meeting (Virtual) **10/2020**

- *Development of a track-pattern-based medium-range tropical cyclone forecasting system for the western North Pacific*

The 4th Korea-Taiwan Typhoon Expert Workshop (Jeju, Republic of Korea) **12/2019**

- *Development of a track-pattern-based medium-range tropical cyclone forecasting system for East Asia*

Korean Meteorological Society Spring Meeting (Daegu, Republic of Korea) **04/2019**

- *Development of a track pattern-based medium-range tropical cyclone forecasting system in South Korea*

Korean Meteorological Society Spring Meeting (Seoul, Republic of Korea) **04/2018**

- *Tropical cyclone signals on rainfall distribution during strong vs. weak Changma/Baiu years*

European Geosciences Union General Assembly (Vienna, Austria) **04/2018**

- *Tropical cyclone signals on rainfall distribution during strong vs. weak Changma/Baiu years*

Asia Oceania Geosciences Society Annual Meeting (Beijing, China) **08/2016**

- *Tropical cyclone-induced rainfall variability under the influence of East Asian Summer Monsoon*

Korean Meteorological Society Spring Meeting (Busan, Republic of Korea) **04/2016**

- *The relationship between East Asian Summer Monsoon and tropical cyclone-induced precipitation in East Asia*

INVITED TALK

National Institute of Meteorological Sciences, Korea Meteorological Administration, Republic of Korea (Virtual) **10/2022**

- *Medium-range forecast of tropical cyclone track over the western North Pacific: track-pattern-based model and artificial neural network model*

Department of Geography, The University of Hong Kong, Hong Kong (Virtual) **05/2021**

- *Development of a track-pattern-based medium-range tropical cyclone forecasting system for the western North Pacific*

AWARDS

SNU Global Scholarship (full tuition) 2015–2018

REVIEWER ACTIVITIES

- Journal of Climate, Artificial Intelligence for the Earth Systems (American Meteorological Society)
- Atmosphere, Climate, Journal of Marine Science and Engineering, Applied Sciences (MDPI)
- International Journal of Climatology (Wiley-Blackwell)

SKILLS

- Programming languages: Python, NCL, FORTRAN, MATLAB, GrADS, IDL, C++, LabVIEW
- Unix shell: Bash and C shell
- Deep learning API: Keras, Tensorflow
- Numerical model: WRF, CMAQ, CESM
- File manipulation tool: cdo, nco, wgrib2

- Language: Cantonese, Mandarin (fluent); English (fluent); Korean (basic)