Kwun Yip Fung (Samuel)

Postdoctoral Associate in Cooperative Institute For Marine And Atmospheric Studies (CIMAS) of Rosenstiel School of Marine and Atmospheric Science (RSMAS) in the University of Miami;
Hurricane Research Division, Atlantic Oceanographic and Meteorological Laboratory (AOML), National Oceanic and Atmospheric Administration (NOAA)

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Education

The University of Texas at Austin — *Texas, US*
Ph.D., Geological Sciences, GPA: 3.99/4.00 — *2018 – 2023*
Dissertation: "Improved urban extreme weather simulation by capturing urban heterogeneity"

The Chinese University of Hong Kong — *Hong Kong*
M.Phil., Earth and Atmospheric Sciences — *2016 – 2018*
Thesis: "Comparing the anthropogenic heat and global warming impacts on extreme rainfall in Southern China Pearl River Delta based on dynamical downscaling"

The Chinese University of Hong Kong — *Hong Kong*
B.Sc., Earth System Science, First Class Honours, GPA 3.71/4.00 — *2012 – 2016*
Thesis: "The importance of aerosol-phase radical-radical reactions on the heterogeneous OH oxidation of organic aerosols"

Publication

- **Fung K. Y.**, Yang, Z.-L., & Niyogi, D. (2022). Improving the local climate zone classification with building height, imperviousness, and machine learning for urban models. *Computational Urban Science, 2*(1). doi: 10.1007/s43762-022-00046-x
- Hu, C., Tam, C., Li, X., Huang, K., Ren, C., **Fung, K. Y.**, & Wang, Z. (2023). Mega-city Development Impact on hourly extreme rainfall over the South China Greater Bay Area under near-future climate warming. *Urban Climate, 48*, 101389. doi:10.1016/j.uclim.2022.101389
- **Fung, K. Y.**, Tam, C.-Y., Lee, T. C., & Wang, Z. (2021). Comparing the Influence of Global Warming and Urban Anthropogenic Heat on Extreme Precipitation in Urbanized Pearl River Delta Area Based on Dynamical Downscaling. *Journal of Geophysical Research: Atmospheres, 126*(21). doi: 10.1029/2021JD035047
- Hu, C., **Fung, K. Y.**, Tam, C.-Y., & Wang, Z. (2021). Urbanization Impacts on Pearl River Delta Extreme Rainfall Sensitivity to Land Cover Change Versus Anthropogenic Heat. *Earth And Space Science*, *8*(3). doi: 10.1029/2020ea001536

Research Experience

The University of Texas at Austin | Department of Geological Sciences — *Texas, US*
Graduate Student Researcher in Zong-Liang Yang and Dev Niyogi groups — *Sep 2018 – Present*
- Analyzing the performance of multiple machine learning algorithms and urban auxiliary datasets in generating Local Climate Zone (LCZ) maps
- Studying the performance of implementing the LCZ classification scheme into the Weather and Research Forecasting model (WRF) in different weather conditions
- Studying the impact of urban overheating mitigation strategies on social equity
- Investigating antecedence soil condition on Hurricane rainfall
- Investigating urbanization impacts on tornadoes

Purdue University | Department of Agronomy — *Indiana, US*
Summer Visitor in Dev Niyogi group — *Jun 2019 – Aug 2019*
- Generated LCZ map for Austin area using SAGA GIS
- Incorporated LCZ schemes into Noah and Noah-MP land surface model in WRF

The Chinese University of Hong Kong | Earth and Atmospheric Sciences — *Hong Kong*
Master's Student in Chi Yung Francis Tam group — *Aug 2016 – Aug 2018*
- Used urban-WRF to downscale a global circulation model (GFDL-ESM2M)
- Analyzed the mechanisms (e.g. 2m temperature, CAPE, circulation)
- Presented results in various international conferences (AGU, AOGS – EGU)

The Chinese University of Hong Kong | Earth System Science Programme — *Hong Kong*
Undergraduate Researcher in Man Nin Chan group — *Sep 2015 – Jul 2016*

- Improved a kinetic molecular model (KMGAP) by importing radical chemistry
- Captured realistic physical and chemical properties change of aerosols during heterogeneous OH oxidation

Hong Kong Observatory — *Hong Kong*
Research Intern in Development Division — *Jun 2015 – Jul 2015*

- Performed statistical analysis to investigate the relationship between different global meteorological conditions (geopotential height, temperature, NAO, etc.) with Hong Kong reservoirs' yield

Scholarships and Fellowships

2020 – 2023	Future Investigators in NASA Earth and Space Science and Technology (FINESST) fellowship
2021	Brundrett Memorial EPS Fellowship | The University of Texas at Austin
2016	Chung Chi College Class Scholarship | The Chinese University of Hong Kong
2014, 2017	Talent Development Scholarship | The Government of the HKSAR

Awards and Achievements

2022	Second Place in American Meteorological Society Annual Meeting Oral Presentation
2021	Second Place in Student Research Symposium Oral Presentation | The University of Texas at Austin
2020	Outstanding Teaching Assistant Award | The University of Texas at Austin
2017	Outstanding Student Paper Award | American Geophysical Union
2015, 2016	Dean's Honours List | The Chinese University of Hong Kong

Teaching Experience

The University of Texas at Austin — *Texas, US*
Climate: Past, Present, Future — *(Lead Teaching Assitant) Jan 2020 – May 2020*, *(Teaching Assitant) Jan 2019 – May 2019*

- Coordinateded among different teaching assistants
- Prepared teaching materials (PowerPoints, Experiments, and Assignments)

Physical Geology — *(Teaching Assitant) Sep 2019 – Dec 2019*

- Introduced different types of rocks and minerals, tectonics, and hydrology
- Hosted regular office hours to address students' questions

The Chinese University of Hong Kong — *Hong Kong*
Tropical Meteorology — *(Teaching Assitant) Jan 2017 – May 2017*

- This course was a co-teaching course for both graduate undergraduate students
- Introduced the phenomena and motions in the tropical troposphere (e.g. ITCZ, ENSO, MJO, cyclones, and monsoons)
- Introduced methods to examine tropical atmospheric phenomena (e.g. Hovmöller diagram)

Global Environmental Change — *(Teaching Assitant) Sep 2016 – Dec 2016*

- Introduced the science and mechanisms behind the global warming issue
- Discussed global warming skeptics with students
- Designed materials and introduced how to analyze atmospheric data using NCL

Service

Computational Urban Science Journal — *(Reviewer) Aug 2022 – Now*

- Reviewed 2 manuscripts

Water Resources Research Journal — *(Reviewer) Sep 2022 – Now*

- Reviewed 2 manuscript

The University of Texas at Austin — *Texas, US*
Water, Climate, and Energy seminar series — *(Coordinator) Sep 2022 – Now*

- Coordinate weekly seminar meetings

Presentations

- "Significance of using building height and imperviousness information in improving LCZ classification", *International Association for Urban Climate Meeting* (virtual), Aug 2022 (Poster)
- "Importance of Urban Characterization in Capturing Urban Sprawl and Heterogeneity on Hurricane Harvey

Precipitation", *Asia Oceania Geosciences Society Annual Meeting* (virtual), Aug 2022 (Poster)

- "Advancing the Local Climate Zones Classification method in Austin for Understanding Urban Extreme Weather", *Jackson School Student Research Symposium*, Mar 2022 (Poster)
- "Improved Houston Weather Simulation by Implementing the WUDAPT Local Climate Zone Urban Classification Scheme in WRF", *American Meteorological Society Annual Meeting* (virtual), Jan 2022 (Oral) [**Awarded Second place in Conference on Climate Variability and Change Oral Presentation**]
- "Evaluating the Brown Ocean Effect Using Land Surface Model and Satellite-Based Soil Moisture Products during a Hurricane Event", *American Meteorological Society Annual Meeting* (virtual), Jan 2022 (Poster)
- "Advancing the Local Climate Zones Classification method in Austin for Understanding Urban Extreme Weather", *American Geophysical Union Fall Meeting* (hybrid), New Orleans, LA, Dec 2021 (Poster)
- "Testing different dataset and machine learning methods accuracy in producing the Austin Local Climate Zone", *Jackson School Student Research Symposium*, Feb 2021 (Poster) [**Awarded Second place in Late Career Ph.D. session Poster Presentation**]
- "Impact of implementing the Local Climate Zone urban classification scheme in WRF on weather simulations in Houston", *American Geophysical Union Fall Meeting* (virtual), Dec 2020 (Oral)
- "Using Landsat imageries to construct recent high-resolution urban land use land cover dataset for urban modeling", *Jackson School Student Research Symposium*, Feb 2020 (Poster)
- "Comparing the urbanization and global warming impacts on extreme rainfall characteristics in Southern China Pearl River Delta megacity based on dynamical downscaling", *Jackson School Student Research Symposium*, Feb 2019 (Poster)
- "Comparing the urbanization and global warming impacts on extreme rainfall characteristics in Southern China Pearl River Delta megacity based on dynamical downscaling", *American Geophysical Union Fall Meeting*, Washington, DC, Dec 2018 (eLightning Poster, Invited)
- "Comparing the urbanization and global warming impacts on extreme rainfall characteristics in Southern China Pearl River Delta megacity based on dynamical downscaling", *New Dimensions for Natural Hazards in Asia: An AOGS-EGY Joint Conference*, Tagaytay, Philippines, Feb 2018 (Poster)
- "Comparing the urbanization and global warming impacts on extreme rainfall characteristics in Southern China Pearl River Delta megacity based on dynamical downscaling", *American Geophysical Union Fall Meeting*, New Orleans, LA, Dec 2017 (Poster) [**Awarded Outstanding Student Paper Award in Natural Hazard session**]
- "Comparing the urbanization and global warming impacts on extreme rainfall characteristics in Southern China PRD megacity based on dynamical downscaling", *International Workshop on Tropical-subtropical Weather, Climate and Oceans*, Guangzhou, China, Nov 2017, (Oral, Substitute Invited)
- "The Effect of Urbanization on Extreme Precipitation in Pearl River Delta (PRD) Region: Downscaling GFDL-ESM2M by WRF", *Workshop of Urban Meteorology*, Hong Kong, Jun 2017 (Oral)