Mr. Weikang Kong

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Education

King Abdullah University of Science and Technology (KAUST) (fully funded), Saudi Arabia 08/2025 – Present
M.Sc. in Earth Science and Engineering, GPA: 3.67/4.0 *(Pending)*

University of Reading, UK 09/2024 – 06/2025
B.Sc. in Atmospheric Science, First Class Degree

Nanjing University of Information Science and Technology (NUIST), China 09/2021 – 06/2024
B.Sc. in Atmospheric Science, GPA: 3.704/5.0*; Average Score: 87%*

Research Experience

Hourly Runoff Prediction Using Deep Learning 09/2025 – Present
- Based on global multi-source streamflow data, conducted multiple cross-validation experiments across hydroclimatic regimes to evaluate the model's spatial generalization and transferability.
- Designed a daily-supervised fine-tuning scheme that adapts a multi-timescale LSTM to basins lacking hourly observations, withholding hourly target data from both the training loss and epoch selection; median hourly KGE rose from 0.44 to 0.63 across 8,709 gauges under spatially blocked cross-validation, and median daily KGE from 0.04 to 0.55 on 282 African catchments that have no hourly records at all.

Wind Damage Risk Assessment over Europe (course project) 04/2025 – 06/2025
- Compared the 98th-percentile wind speed in ECMWF and NCEP S2S hindcasts (winters 1999–2010) with the ERA5 climatology, finding ECMWF the closer of the two and NCEP higher with smaller ensemble spread, and spread growing sharply beyond a 10-day lead.
- Estimated windstorm loss potential from ERA5 (1979–2018) with the Klawa–Ulbrich Storm Severity Index, and used the S2S ensemble as alternative plausible weather histories to bound the risk of a Lothar-magnitude event at London, Paris and Hamburg (exceedance probability below 0.1%, 10–20 day lead)
- Delivered the findings as parallel technical and non-specialist reports for an insurance-client scenario, stating confidence levels and limitations explicitly.

Simplified UTCI Calculation Using Symbolic Regression 10/2024 – 06/2025
- Derived the first compact UTCI surrogate for East Asian climates by symbolic regression on ERA5, replacing the standard high-order polynomial with a four-predictor expression cheap enough for large climate ensembles
- Decomposed projected heat stress into temperature (86%), dewpoint (15%), radiation (2%) and wind (−3%), and traced a warm bias in the driving climate model to underestimated wind, neither of which a black-box surrogate permits
- Projected late-century heat stress over China, with very-strong heat-stress days rising from near zero to roughly 39 per year under SSP5-8.5, informing heatwave preparedness and adaptation planning

Machine Learning-Based Weather Modification Assessment 04/2023 – 04/2024
- Applied ConvLSTM to convective cloud prediction using Fengyun-4A satellite and radar data

Desert-oasis Convergence Line and Deep Convection Experiment (DECODE) 06/2022 – 08/2022
- Maintained Doppler LiDARs, microwave radiometer, and eddy covariance systems; processed data in Python
- Conducted radiosonde operations and storm-chasing; observed convergence lines, gust fronts, horizontal convective rolls, and multiple supercells.
- Our Storm chasing video: DECODE experiment

Academic Papers

1. **Kong, W.**, and K. M. R. Hunt: Simplifying Universal Thermal Climate Index Calculations with Symbolic Regression: Analyzing Extreme Heatwaves in China. *J. Appl. Meteor. Climatol.*, accepted (first and corresponding author)
2. Meng, Z., and Coauthors, 2024: Desert–Oasis Convergence Line and Deep Convection Experiment (DECODE). *Bull. Amer. Meteor. Soc.*, **105**, E2355–E2384, https://doi.org/10.1175/BAMS-D-23-0222.1. (as coauthor)

Internship Experience

Saudi Aramco Digital & AI Center of Excellence Dept, Dhahran 06/2026 – 08/2026
- Benchmarked the Chronos-T5 and Chronos-2 time-series foundation models in zero-shot and one-shot settings for predictive performance, efficiency, and robustness
- Upgrading aramcoplantbrain from Chronos-T5 to Chronos-2 Large Time Series Model (LTSM)

3rd Saudi Aramco Digital Hackathon 01/2026 – 01/2026
- Lightweight multi-view 3D scene reconstruction

Ecological and Environmental Technology Centre of Henan Province 07/2024 – 08/2024
- Installed, compiled, and ran WRF models on Linux

– Simulated 2024 Zhengzhou precipitation using NCEP reanalysis and static geographic data

Henan Meteorological Service 07/2023 – 08/2023
– Produced weather forecasts and warning signals
– Analyzed Taihang topographic effects on mesoscale convective systems
– Conducted statistical analysis of 20 years of rainstorms; applied Kriging and bilinear interpolation

Summer School

2024 Tsinghua University International Summer School: Earth System Model Development 08/2024
– Practiced deep learning surrogate modeling for atmospheric physics parameterisation
– Explored AI-based approaches for partial differential equations
– Conducted global medium-range weather forecasting using Koopman Neural Operators

First Summer School on Weather Forecasting Science and Technology, NUIST 06/2024

Skills

Programming & AI: MATLAB • Python • PyTorch • LLM • Deep Learning
Scientific Computing: WRF • Linux • HPC • Shell Scripting
Data science & Statistics: Data Engineering • Statistical Analysis • Kriging • Interpolation

Awards

Merit Student (NUIST) 2021–2022; 2022–2023; 2023–2024
First-class Scholarship (NUIST) 2021–2022; 2022–2023; 2024–2025
Second-class Scholarship (NUIST) 2023–2024
Outstanding Graduate (NUIST) 2024–2025
Merit Student Officer (NUIST) 2024–2025