Initial Measurements from Chicago's First Long-Term Urban Flux Site

CROCUS Measurement Strategy Team

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Surface turbulent fluxes are conventionally obtained in natural ecosystems and rarely in urban areas like Chicago.

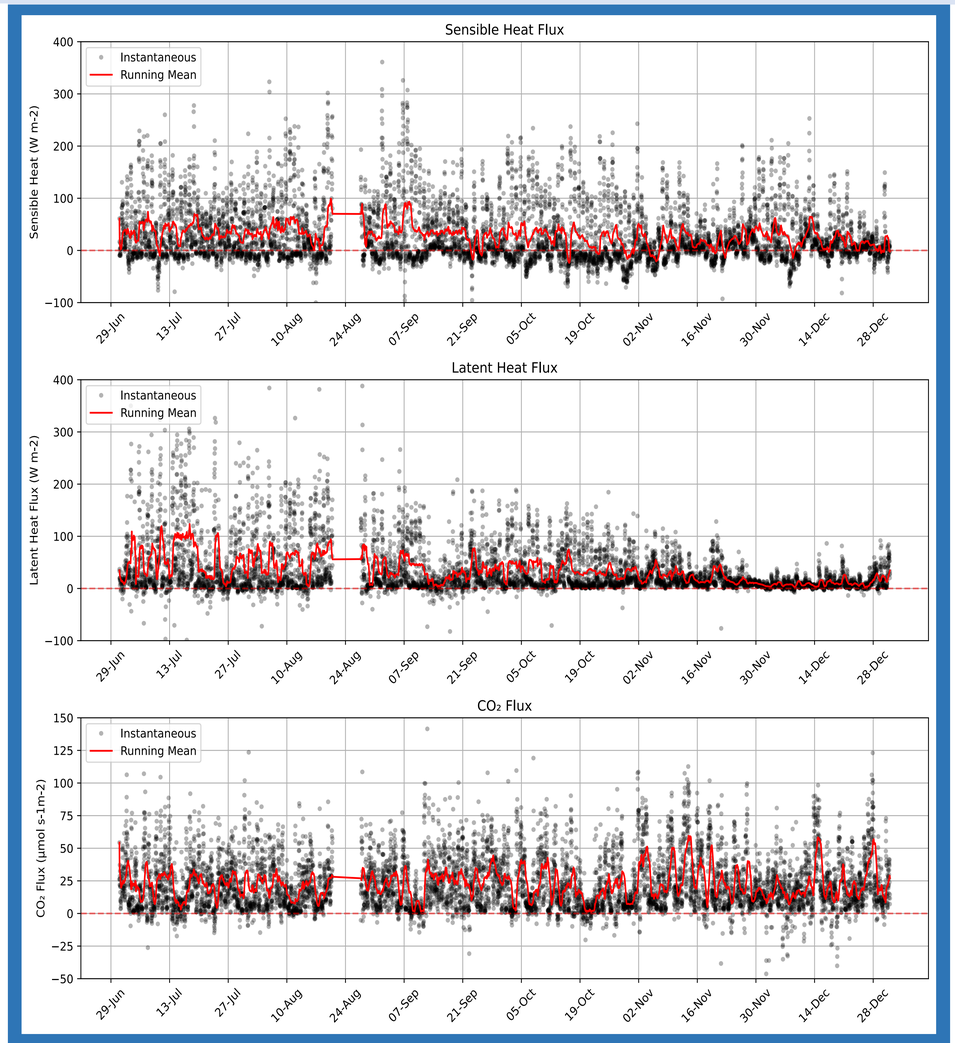
AmeriFlux Site US-CU1

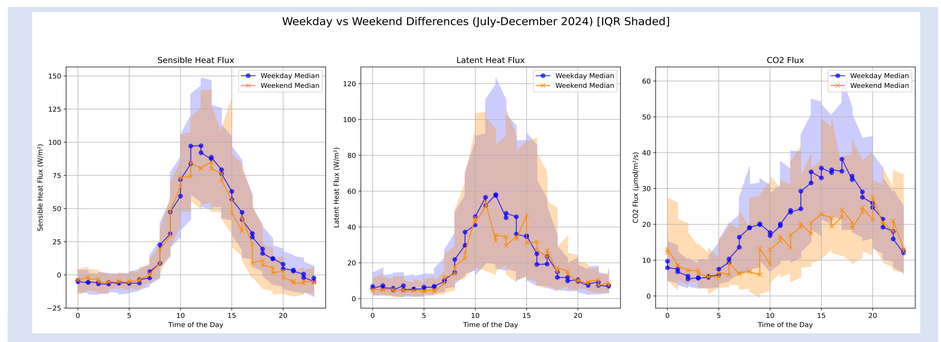
- 10-meter tower at UIC Greenhouse
- METEK Sonic anemometer for 3D winds
- LI-COR infrared gas analyzer for H_2O and CO_2 concentrations
- Waggle node for real-time data collection

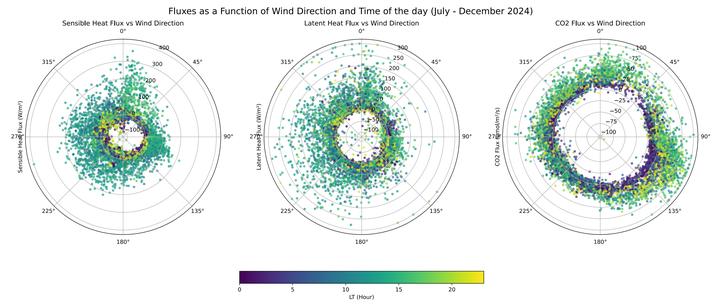


Instrument Location and ~ 90% Fetch Area









Summary

- Primary variables: CO_2, Sensible and latent Heat fluxes.
- Continuous measurements since July 2024: 20 Hz Winds with 30-min averaging intervals.
- Location: University of Illinois Chicago (UIC), Chicago Urban.
- Two more sites at NEIU and CSU are set to deploy in Feb-March 2025.

- Only **CO_2 flux** shows a clear weekday /weekend difference, potentially due to increased anthropogenic CO_2 emissions during weekdays.
- **Wind direction** significantly affects CO_2 fluxes, suggesting heterogeneity of CO_2 sources in the Chicago urban area.

Download Dataset

[1] Raut, B., Pal, S., Muradyan, P., Tuftedal, M., O'Brien, J., Sullivan, R., Grover, M., Jackson, R., Berkelhammer, M., & Collis, S. (2024). CROCUS Urban Fluxes of CO_2, H_2O, and Turbulence at University of Illinois Chicago. ESS-DIVE. [doi:10.15485/2473253].

[2] Pal, S., Raut, B., Muradyan, P., Tuftedal, M., O'Brien, J., Sullivan, R., Grover, M., Jackson, R., Berkelhammer, M., & Collis, S. (2024). CROCUS High-Frequency Measurements of CO_2, H_2O, Wind, and Temperature at University of Illinois Chicago. ESS-DIVE. [doi:10.15485/2473255].

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