

Environmental and Water Resources Engineering Seminar Series Presents:

Thursday, October 29, 2026 from 3:30–4:30 pm in ECJ 1.324

Zoom Link: <https://utexas.zoom.us/j/84804724445>

Atmospheric Water: Thermodynamic Challenges and Future Outlook

Dr. Andrew Fix

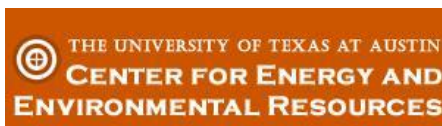
Assistant Professor at the University of Texas at Austin

Abstract

Atmospheric water is available throughout the globe, even in arid climates. However, basic technologies, like refrigeration-driven “dew harvesting” cannot always produce water in these climates. Furthermore, some cutting-edge technologies, like membrane separations, rely primarily on electrical energy input, while other technologies, like sorbent-based water harvesting, can largely leverage heat input to drive the cycle, including solar heat, waste heat, or other “free” sources of heat. Furthermore, by extracting water from the atmosphere, we must wonder whether this will impact the environment. In this talk, I will explore three overarching questions, motivated by my prior/ongoing research as well as recent efforts by other teams: (1) how can we compare the energy/thermodynamic performance of different water harvesting technologies on a fair basis? (2) What water harvesting technology is best, from an energy perspective? And (3) Will atmospheric water harvesting damage the environment?

Background

Dr. Andrew Fix is an Assistant Professor at the University of Texas at Austin. He received his PhD in Mechanical Engineering from Purdue University where his PhD research at the Center for High Performance Buildings focused on the development and demonstration of high-efficiency membrane-based air conditioning technologies. His research group at UT focuses more broadly on a wide range of water vapor separation technologies and applications, including membrane-based HVAC technologies, liquid desiccant dehumidification, refrigeration-based atmospheric water generation, energy storage, vapor compression heat pumps, and more. He has published 27 peer-reviewed journal and conference papers and currently holds two patents in the general area of water vapor membrane separations.



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