IET Travel Award Report

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Event: American Geophysical Union (AGU) Fall Meeting 2025

Location: Ernest N. Morial Convention Center, New Orleans, USA

At the AGU Fall Meeting 2025

Event background

The American Geophysical Union (AGU) Fall Meeting is an annual international conference that brings together Earth and space scientists. The meeting attracts over 25,000 participants from more than 100 countries and provides a platform for advancing interdisciplinary research, engineering innovation, and science communication that address global sustainability challenges.

Research contributions

I presented two research abstracts at the conference (listed below) on sustainable infrastructure planning, equitable energy transitions, and food and nutrition security. Part of this work has been published in *Nature Communications* (https://doi.org/10.1038/s41467-025-59738-7).

- Equitable low-carbon transition via multisector infrastructure planning
- Designing multisector systems for climate-resilient nutrition and food security

These presentations facilitated discussion on modelling approaches, data requirements, and the application of integrated system models, including coupling with artificial intelligence algorithms, for infrastructure planning, as well as potential directions for future research.

Professional and academic engagement

Participation enabled the exchange of ideas with leading researchers working in hydrology, water resources, artificial intelligence, and infrastructure development. I contributed to

sessions organised by the AGU Hydrology section (https://connect.agu.org/hydrology/) and the Multisector Dynamics (MSD) community (https://multisectordynamics.org/) and engaged in discussions on sustainable multisector infrastructure systems and climate adaptation. Sessions attended included, for example, *Multisector Dynamics: Advances in Modeling Adaptive Human Systems*; *Leveraging Digital Twins, AI, and Other Emerging Technologies to Support Management and Governance of Coupled Human-Water Systems*; and the town hall on *The 100 Next Questions for Water-Energy-Food Nexus Research and Policy*. I also attended career development and networking events, including the town hall on *Strategies to Navigate Early-Career Paths*. These interactions provided opportunities to explore postdoctoral and fellowship options aligned with my research expertise and informed potential future academic and research pathways.

Impact on research and career development

Attending the conference supported engagement with international research communities relevant to sustainable infrastructure and climate science. It contributed to:

- Strengthening my professional and interdisciplinary network
- Sharing my research that informs sustainable development
- Exploring academic and research career pathways
- Exchanging perspectives on global sustainability challenges

Sustainable travel considerations

Sustainability was considered in planning and undertaking the trip. Air travel was unavoidable due to the long-distance nature of the journey, but flight routes were chosen to reduce overall travel impacts where possible. Walking and public transport were used for local travel, with taxis used only for airport transfers when public transport was unavailable. Conference materials were accessed digitally, and printing was avoided to reduce waste.

Summary

Attending the AGU Fall Meeting 2025, supported by the IET Travel Award, allowed me to disseminate my research on multisector water-energy infrastructure system planning and climate resilience, engage with relevant research communities, and strengthen my academic network. I am grateful to the IET for enabling this participation, which contributed to advancing my research and career development, as well as interdisciplinary engineering science for sustainability.