WEDNESDAY PLENARY SPEAKER

Professor Lucy Marshall

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Probabilistic Thinking in Environmental Modelling and Leadership

Uncertainty is not merely a measurement error in environmental forecasting; it is a quantifiable signal that guides inference and decision-making. Research in Bayesian inference and uncertainty quantification shows how meaning can be drawn from incomplete data, how beliefs evolve as new evidence emerges and how credible decisions can be made even when systems are complex and variable. These ideas are familiar in environmental science and hydrology, where changing conditions and imperfect observations are the norm. The same principles offer a powerful lens for leadership. In organisational settings where choices often precede complete certainty, embracing uncertainty can create room for better questions, broader perspectives and more adaptive strategies. This keynote explores the parallels between probabilistic reasoning in scientific practice and decision-making in human systems, highlighting how a scientific mindset can support teams through ambiguity, foster cultures that treat uncertainty as a catalyst for discovery and guide leaders toward thoughtful, resilient approaches to change.