24 Sept 2021

NSSN leads collaboration on water data

Or/NSW boosts research funding to manage scarce water resources

Researchers from the University of Sydney, the Australian National University, UNSW and Macquarie University are part of an $850,000 joint initiative between the Department of Planning Industry and Environment (DPIE) and the NSW Smart Sensing Network (NSSN) that will use new and innovative technology to enhance the state's knowledge of water movement.

DPIE Water's Chief Knowledge Officer Mitchell Isaacs said investing in research and development projects ensures NSW stays at the international forefront of water management.

"Water is a precious and limited resource, so it's important we invest in cutting-edge technology and research to better understand its complexities," Mr Isaacs said.

"We already have a world-class monitoring network, but this project will take it a step further by combining traditional methods with new and innovative technology to give a comprehensive picture of where surface and groundwater is at any given time.

"Improving water data will allow us to enhance policy and management strategies ensuring the best outcomes for community, industry, culture and the environment."

Director of the University of Sydney Nano Inistitute and co-Director of NSSN Professor Benjamin Eggleton said the project is an exciting opportunity for researchers and government to work together to trial new data collection and analysis techniques.

"The NSSN has created a team of leading researchers from the Australian National University, University of Sydney, UNSW and Macquarie University to combine existing

government data with new findings from gravity, quantum and low-cost sensors," Professor Eggleton said. "The project will boost our state's ability to stay resilient in extreme drought conditions."

"Multidisciplinary and cross-institutional collaborations between universities, industry and government is key to delivering clever solutions that will lead to better decision-making and a resilient NSW."

Associate Professor Willem Vervoort from the University of Sydney Institute of Agriculture and School of Life and Environmental Sciences and Director of the ARC Training Centre in Data Analytics for Resources and Environments (DARE) is leading the research stream on evaluating, fusing and modelling the complex water data.

"Rivers are complex systems, and monitoring does not cover all locations and all times; there is uncertainty about total volumes of water within the system," Professor Vervoort said. "Water could be 'lost' from our river systems via evaporation, recharge to groundwater, or other processes."

"We are testing new sensing technologies and novel data science approaches to address some of the major monitoring uncertainties in the river systems." he said.

"Improved understanding of where, how and when we can better monitor water resources will improve decision-making about water sharing and drought-proofing."

The project will also help the NSW Natural Resources Access Regulator (NRAR) to keep a closer eye on water take, ensuring water is taken and used lawfully throughout the state. The research project is expected to produce a prototype research model by December 2021.

Declaration

The project has been funded by the NSW Department of Planning Industry and Environment (DPIE). Project partners include DPIE, the NSW Smart Sensing Network (NSSN), University of Sydney, Australian National University (ANU), University of New South Wales (UNSW) and Macquarie University.

The NSW Smart Sensing Network was founded by the University of Sydney and University of New South Wales in 2016 with the financial backing of the NSW Government. The NSSN brings together academia, industry and government to translate world-class smart-sensing research into compelling solutions.

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