

Projects

AquaWatch Phase 0

AquaWatch Phase 0, a 12-month scoping study exploring the use of satellite technology and a network of ground-based sensors to monitor the quality of Australia's inland waterways, reservoirs and coastal environments, commenced in September.

Natural events such as toxic algal blooms, the contamination of drinking water, and excess runoff from irrigation all present a significant influence to the health of our inland and coastal waters. Having real-time data about these events and our waterways supports water managers in monitoring and managing water quality.

Data gathered from space provides critical insights about water quality, however, currently available Earth observation satellites only provide 60-70% coverage for major Australian water bodies. And while the quality of some inland waterways is monitored directly by testing, this data isn't routinely combined with satellite data. To fill this gap, AquaWatch aims to complement existing systems and build a comprehensive national monitoring system using an extensive network of ground-based sensors placed throughout Australia's rivers and waterways. These sensors would work together with purpose-designed Earth observation satellites to deliver real-time updates, predictive analytics and forecast warnings to water managers.

During the initial scoping phase, CSIRO and SmartSat are collaborating with partners from the research sector, government agencies and industry including the University of Queensland, UNSW Canberra, Curtin University, Frontier SI, Water Research Australia and SatDek.



“These sensors would work together with purpose-designed Earth observation satellites to deliver real-time updates, predictive analytics and forecast warnings to water managers.”

Resilient Emergency and Search and Rescue (SAR) Communications

A collaboration between NASA Goddard Space Flight Centre (GSFC) and SmartSat will advance distress-related communications and navigation technology benefitting the U.S. and Australia.

SmartSat partners involved in the project include University of South Australia, Safety from Space, Myriota, Black Art Technologies, Flinders University, and the Australian Maritime Safety Authority.

Specifically, the SmartSat research team, led by Safety from Space's Co-Founder Dr Mark Rice, will propose new designs for the waveform of the 406 MHz signal sent by beacons through the Cospas-Sarsat network. These new designs will further modernize second-generation beacons, taking advantage of encoding techniques not available when the Cospas-Sarsat network was developed in the 1970s. This will enable possibilities for new initiatives for users, emergency management professionals and first responders

The NASA's Search and Rescue office is led by mission manager Lisa Mazzuca. Future phases of the SmartSat collaboration could support exploration initiatives like the Artemis missions, which will return humans to the Moon for the first time since Apollo. NASA will equip Artemis astronauts with second-generation beacons for use in the event of egress from capsule after splashdown or a launch abort scenario. The Search and Rescue team is working to extend beacon services to the lunar surface with the LunaNet communications and navigation architecture.

