

Water, salinity levels in Hunter linked to climate

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Climate change and land management practices could be affecting the total amount of groundwater and surface water in the Hunter Valley, and also increasing levels of salinity.

This is the view of researchers from The Australian National University and Southern Cross University who are currently researching the interaction between surface water, groundwater and salinity in the Wybong and Wollombi catchments.

These findings will assist land holders and natural resource managers to evaluate their programs, and ensure water quality and quantity in the region remain at acceptable levels.

“Traditionally salinity monitoring involves the measure of input and outputs of salts from catchments,” explains lead researcher Dr Ben Macdonald from the Fenner School of Environment and Society at ANU. “We’ve found that since 2000, the long term daily flow out of the Wybong Catchment has reduced from 83 megalitres per day to under 20 megalitres per day. This is in part due to the long drought that has occurred in the region since the turn of the century. We are now investigating how surface water yields have decreased in relation to seasonal rainfall.

“There has been an increase in stream salinity because the saline ground water inputs are not diluted due to reduced stream flows,” Dr Macdonald explains. “This study has found that landscape weathering, and the

dissolving of rocks and soils, are important sources of salts. These salts are contributing to salinisation of some Hunter landscapes. Importantly, increased temperatures and changed rainfall regime due to climate change and land management practices could increase weathering rates and affect salinisation.”

The scientists are concerned about the continuing effects of over extraction of ground water, as they’ve found that some sources are very old. They’ve also found that fresh stream and alluvial ground waters often raft on top of saline waters. “These waters must be carefully managed to prevent intrusions of these saline waters into the fresh water resources,” Dr Macdonald says. “We’re developing a ground and surface water model for the assessment of ground water trends to help water users in the Hunter ensure the sustainability of their water.”

An important outcome of this research is the understanding of the surface and ground water interactions and the factors that are controlling salinity. The research has been funded by the Australian Research Council and the NSW Salt Action Program via the Hunter - Central Rivers Catchment Management Authority. The NSW Department of Water and Energy has also been providing data and knowledge to the research.

Source: Australian National University

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