

Project 5 - Nationally consistent approaches to mapping groundwater dependent ecosystems

Location: The project will be based at a location TBC.

Required area of expertise/background: An Honours or MSc degree in Hydrogeology with a good understanding of spatial analysis

Project: Groundwater plays an important role in sustaining aquatic and terrestrial ecosystems, such as springs, wetlands, rivers and vegetation. Understanding these groundwater dependent ecosystems (GDEs) is essential for groundwater management and planning. The Bureau of Meteorology's GDE Atlas is a national inventory of Australian mapped GDEs that supports these activities. The Atlas also contains a remote-sensing derived national Inflow Dependence (ID) layer that shows landscapes that are likely to be using water in addition to rainfall (e.g. groundwater, soil water), which can be used to indicate the presence of GDEs.

The nationally-consistent GDE and ID datasets in the GDE Atlas were produced from 2008-12. New regional GDE mapping has recently been added to the GDE Atlas for areas in Queensland, NSW, Victoria and NT, which use a variety of mapping approaches.

Many new mapping techniques have been developed in recent years e.g. analysis of satellite imagery, GIS analysis based on conceptual models, etc. However, it is unclear which methods are the most accurate and under which conditions e.g. different climates, scales, types of landscapes. In addition, CSIRO in collaboration with the Bureau have developed the Australian Water Resources Assessment (AWRA-L) model, which could potentially be used as an input to improve GDE and ID mapping.

The proposed project would develop GDE and IDE mapping to improve the GDE Atlas including infilling data poor areas and improving accuracy of mapping.

2017 RTP full time RTP Stipend Rates* (\$26,682). Approximate annual top-up amount: \$10,000

Principal Supervisor:

[Prof Craig Simmons](#) - (NCGRT academic supervisors are currently being sought – to be finalised and formalised)

Co Supervisors:

[Dr Elisabetta Carrara](#) - Manager - Groundwater Unit, Bureau of Meteorology

[Eloise Nation](#) – Senior Hydrogeologist, Groundwater Unit, Bureau of Meteorology

