



Australian Government  
Bureau of Meteorology

# Groundwater Dependent Ecosystems Atlas



In many parts of Australia, there is increasing pressure on groundwater resources from activities like agriculture, mining, urban and commercial developments. Groundwater-dependent ecosystems are vulnerable to these pressures, so understanding them better is essential for their management.

## What is the Groundwater Dependent Ecosystems Atlas?

Groundwater plays an important role in sustaining aquatic and terrestrial ecosystems, such as springs, wetlands, rivers and forests. For example it can sustain stream flows during low rainfall periods. Understanding these groundwater-dependent ecosystems (GDEs) is essential for groundwater management and planning, along with managing the ecosystems themselves.

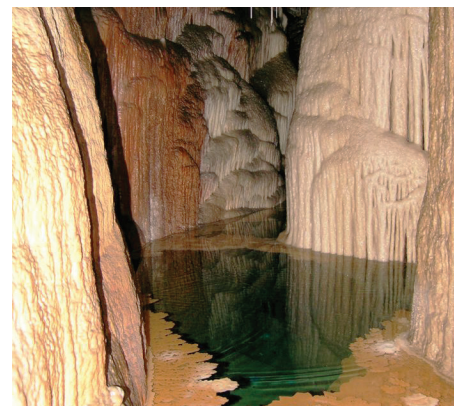
The Groundwater Dependent Ecosystems Atlas (GDE Atlas) was developed as a national dataset to inform groundwater planning and management. It is the first and only national inventory of Australian GDEs.

The web-based mapping application allows you to visualise, analyse and download GDE information for an area of interest without needing specialised software.

The Atlas contains information about three types of ecosystems:

- **Aquatic ecosystems** that rely on the surface expression of groundwater—including surface water ecosystems which may have a groundwater component, such as rivers, wetlands and springs. Marine and estuarine ecosystems can also be groundwater dependent, but these are not mapped in the Atlas.
- **Terrestrial ecosystems** that rely on the subsurface presence of groundwater—including vegetation ecosystems such as forests and riparian vegetation.
- **Subterranean ecosystems**—including cave and aquifer ecosystems.

The Atlas also includes the national inflow-dependent landscapes layer, which is derived from remotely sensed data. It indicates the likelihood that a landscape is accessing water in addition to rainfall. The additional water source may be soil moisture, surface water, or groundwater.



**Left:** Aquatic GDE—groundwater-fed Bitter Springs, Northern Territory. Picture: Merryn Coutts

**Centre:** Terrestrial GDE—old river gum at Pockingningar Claypan, East Murchison, Western Australia. Picture: Department of Water, WA

**Right:** Subterranean GDE—rimstone pool in the vadose (unsaturated) zone, Mole Creek cave system, Tasmania. Picture: Ian Houshold



## What are the benefits of the GDE Atlas?

The GDE Atlas ensures that nationally consistent GDE data is freely available online so better informed decisions can be made to manage these vital groundwater-dependent resources. In many parts of Australia there is increasing pressure on groundwater resources from activities including agriculture, mining, urban and commercial developments. GDEs can be degraded by the modification of flow regimes and salinisation or pollution of groundwater as a result of these activities.

The GDE Atlas provides access to GDE data to ensure that these ecosystems are considered in water resource management decisions.

## How does the GDE Atlas work?

To explore the GDE dataset, you can pan and zoom using the interactive map, view and query the data, or download it for further analysis. You can view GDE data alongside contextual datasets, such as the locations of bores and groundwater management areas. It also has a powerful search function so you can build complex searches. Supporting information and extensive help functions are also available.

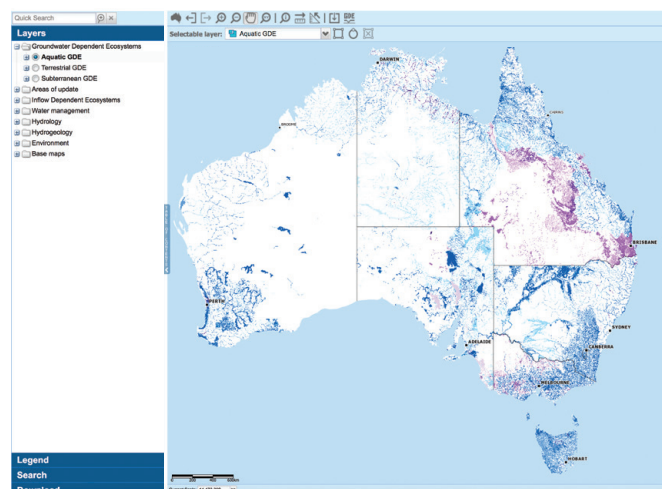
## What is the Bureau's role?

The Bureau of Meteorology is building a comprehensive and reliable picture of Australia's water resources to support policy and planning. It collates and manages water data and information as part of its water information role and responsibilities under the *Water Act 2007*. The GDE Atlas was initially developed by CSIRO, Jacobs and the Bureau of Meteorology, with funding from the National Water Commission and significant support from State and Territory water agencies. The GDE Atlas is now maintained by the Bureau of Meteorology and updated with new data from State and Territory water agencies.

## Who can use the GDE Atlas?

The GDE Atlas is available on the Bureau of Meteorology's website and anyone can use it—government agencies, policymakers, researchers, industry and local communities. For example, a consultant or water manager assessing the potential cumulative impact of a development, such as coal seam gas, mining or construction, could use the Atlas to locate GDEs in the area for an environmental impact assessment. Similarly, a natural resource manager could access the data needed to integrate ecosystem groundwater requirements into basin or aquifer water resource and land-use management plans.

The GDE Atlas also is also an important resource for researchers. For example, a researcher could use the data to model the impact of groundwater salinity on wetlands.



Screenshot of the GDE Atlas showing aquatic GDEs (rivers, wetlands and springs).

**FIND OUT MORE**

For more information about the Groundwater Dependent Ecosystems Atlas, visit [www.bom.gov.au/water/groundwater/gde](http://www.bom.gov.au/water/groundwater/gde)



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