

# Domain-specific vocabulary discovery in Australia

By Nicholas Car  
For eResearch 2025

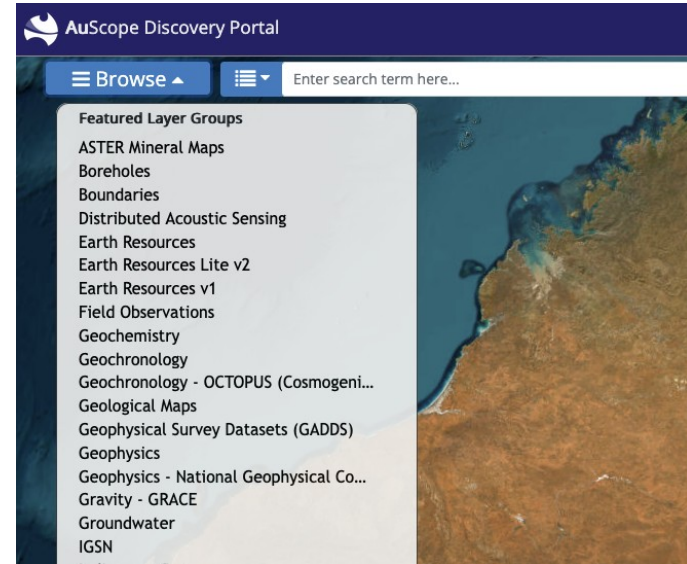
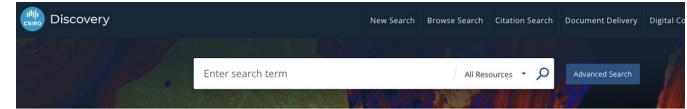


# Outline

1. Resources vocabs in Australia
  1. And Internationally
2. Discovery enhancement attempts
3. VocSearch
4. Future work

# Resources vocabs in Australia

- Originally research agencies - CSIRO etc.
  - Now the systems are gone
- Background use - AuScope Portals
- RVA, since 2015??
- GA since 2015



# Enviro & Resources vocabs in Australia

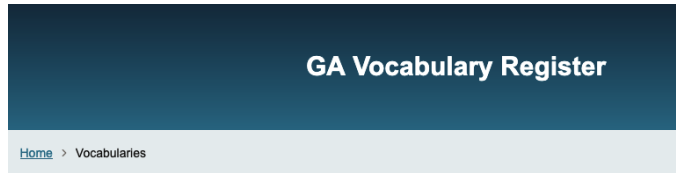
- Originally research agencies - CSIRO etc.
  - Now the systems are gone
- Background use - AuScope Portals
- RVA, since 2015??
- GA since 2015
- Geological Surveys since 2018
  - GA, GSWA, GSSA, GSQ and soon NTGS



## Vocabularies

All the vocabularies used by MER: both MER authored and others.

Vocab ↑	Custodian ↑	Derivation Mode ↑	Status ↑
Distribution Formats	The Geological Survey of South Australia	-	stable
MER Document Types	The Geological Survey of South Australia	-	stable
MER Fields of Research Codes	The Geological Survey of South Australia	subsetting-and-extension	experimental
MER Stakeholder Types	The Geological Survey of South Australia	-	stable



## Vocabularies

Item	preferred label	type	Publisher	status	qualified derivati
<a href="#">Geoscience Australia Profile of QUDT Units</a>	Geoscience Australia Profile of QUDT Units	Concept Scheme	Geoscience Australia		
<a href="#">Borehole Geology - Construction Material</a>	Borehole Geology - Construction Material	Concept Scheme	Geoscience Australia		

# Enviro & Resources vocabs in Australia

## ● Internationally

- Many semantic vocab initiatives since ~2010
  - BGS, USGS, SWEET, BRGM
  - CGI
  - EU
  - ICS
- Recent, large-scale work
  - DDE
  - EarthPortal

## CGI Vocabularies Register

This is the static register (index) of CGI's vocabularies whose purpose is to present the  
For machine-readable versions of this vocabulary list, see the [Alternate Profiles](#) page.

### GeoSciML Vocabularies

#### Collection of terms

[Alteration Type](#)  
[Borehole Drilling Method](#)  
[Composition Category](#)  
[Compound Material Constituent Part](#)  
[Consolidation Degree](#)  
[Contact Type](#)

#### Concept Schemes

[v2016.01](#)  
[v2016.01](#)  
[v2016.01](#)  
[v2016.01](#)  
[v2016.01](#)  
[v2016.01](#)

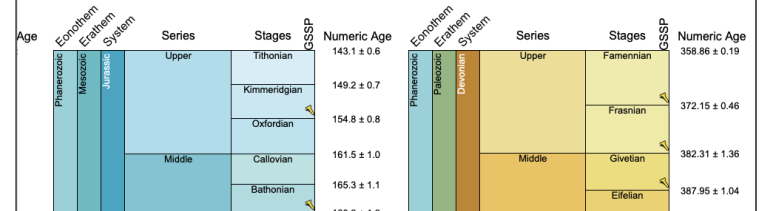
## International Chronostratigraphic Chart

This page contains the latest version of the International Chronostratigraphic Chart (v2024-12) which visually presents the time periods and hierarchy of stratigraphic names of Earth's geological history. It is available in multiple languages.

If you are looking for older versions or other supporting material, please see the [Supplementary Chart Information](#) page.

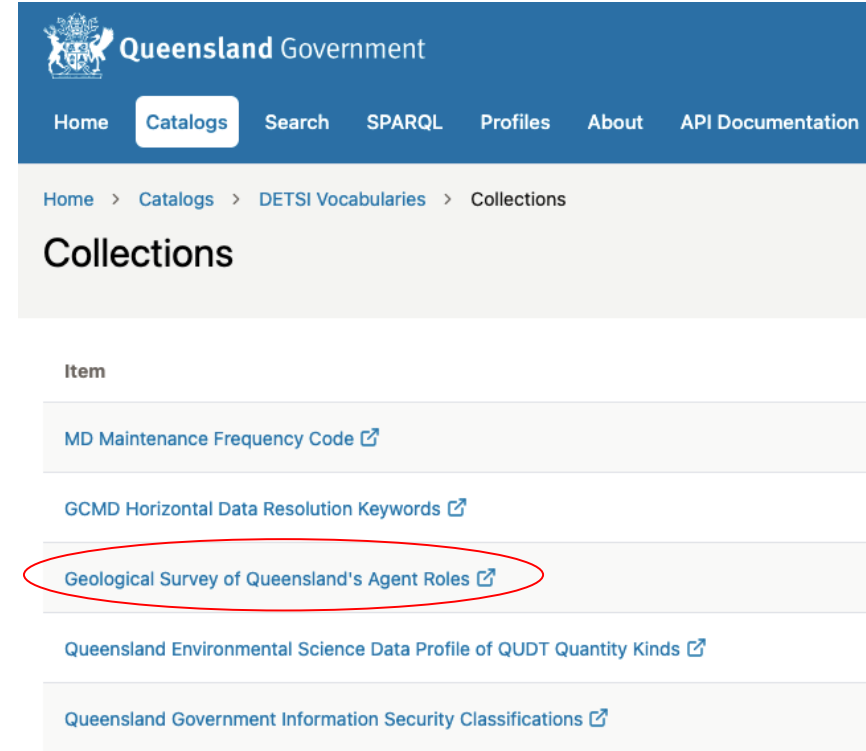
Language:  Scaling:  Column headings:

Download:



# Enviro & Resources vocabs in Australia

- Future
  - A few more Geological Surveys
  - Other agencies entering this domain
    - e.g. Qld Science
  - Universities



Queensland Government

Home Catalogs Search SPARQL Profiles About API Documentation

Home > Catalogs > DETSI Vocabularies > Collections

## Collections

Item

- [MD Maintenance Frequency Code](#)
- [GCMD Horizontal Data Resolution Keywords](#)
- [Geological Survey of Queensland's Agent Roles](#)
- [Queensland Environmental Science Data Profile of QUDT Quantity Kinds](#)
- [Queensland Government Information Security Classifications](#)

# Previous discovery enhancement attempts

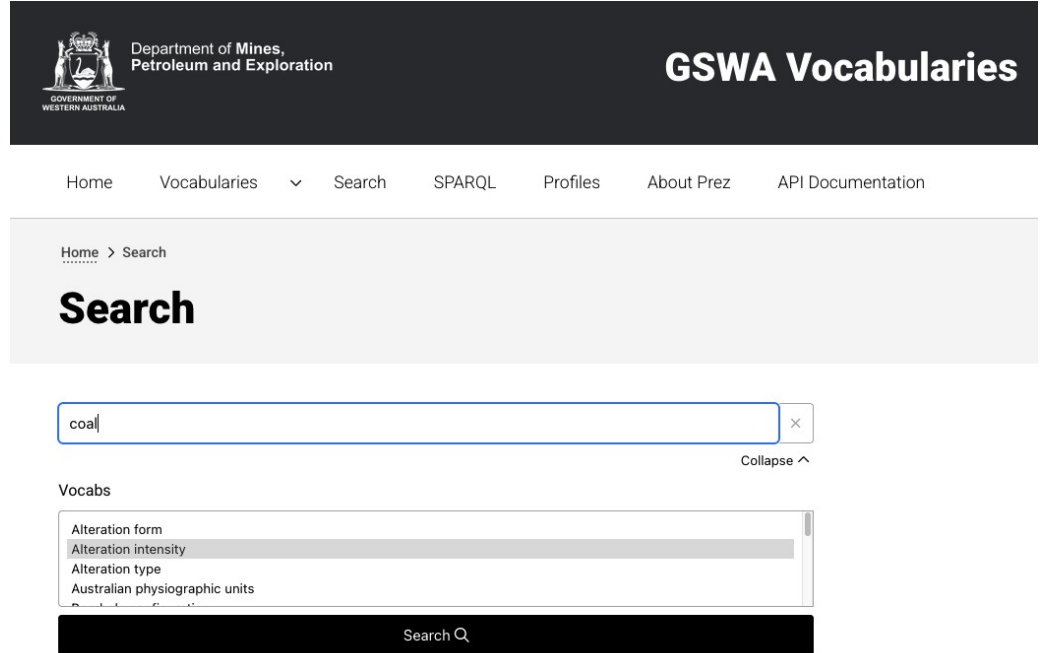
- RVA
  - Centralised listing
  - Free hosting\*
  - Comprehensive & deep search
- CSIRO & AuScope
  - Facilitating other Geological Surveys
- GA
  - Facilitating other Geological Surveys

The screenshot displays the Research Vocabularies Australia website interface. At the top, the logo and navigation links (ABOUT, WIDGET EXPLORER, GET INVOLVED, COM) are visible. A search bar contains the term 'coal'. Below the search bar, the 'Current search' section shows the query 'coal' and a 'Reset search' button. The 'Refine vocabulary search results' section lists various subject categories with checkboxes and counts: Bioregional Assessment Programme (1), CGI Simple Lithology (1), Conceptual Modelling (1), EARTH SCIENCES (8), ENVIRONMENTAL SCIENCES (1), GA Geology (1), and Ga Place Type (1). The main results area shows 'Vocabularies (19)' and 'Concepts, etc. (214)'. It lists several vocabularies, including 'Bioregional Assessment Programme Glossary', 'Tenement Type', and 'Simple Lithology', each with its publisher and specific search results for 'coal'.

\* “research” only

# Previous discovery enhancement attempts

- A tool-based attempt
  - Search on an org's Prez system could access content from other org's systems
  - A maintenance impossibility...



The screenshot displays the GSWA Vocabularies website. At the top left is the logo for the Department of Mines, Petroleum and Exploration, Government of Western Australia. The page title is "GSWA Vocabularies". The navigation menu includes "Home", "Vocabularies", "Search", "SPARQL", "Profiles", "About Prez", and "API Documentation". The breadcrumb trail shows "Home > Search". The main heading is "Search". A search input field contains the text "coal". Below the input field is a "Collapse" button. Under the heading "Vocabs", a dropdown menu is open, showing the following items: "Alteration form", "Alteration intensity", "Alteration type", and "Australian physiographic units". At the bottom of the page is a "Search" button with a magnifying glass icon.

# Discovery enhancement attempts

## ● International initiatives

- EarthPortal
- EU Vocabularies
- DDE



## EU Vocabularies

Publications Office | EU law | European data | EU tenders | EU research results | EU Whoiswho | EU publications

Publications Office > EU Vocabularies

Home | Controlled vocabularies | Models | Business collections | Online tools | Releases | Help

### Search our catalogue

Search in EU Vocabularies

EuroVoc only

[Query Wizard](#) [Flint editor](#) [SPARQL endpoint](#)

### > About EU Vocabularies



#### Reference data catalogue

Browse the catalogue of reference datasets published by the Publications Office



#### Online tools and applications

Discover online solutions to edit, disseminate and interact with your reference data



#### Recent releases and planning

Explore the latest publication of vocabularies and models

EarthPortal | Browse | Mappings | Recommender | Annotator | Landscape | Projects | Login | EN | Support

## Welcome to EarthPortal,

The home of ontologies and semantic artefacts in Earth System, environment and related domains.

OSO 129 visits  
SWEET 83 visits  
EASY\_DATA\_VOCAB 27 visits

Search an ontology or a term (e.g., plant height) >

### Do you want to share an ontology?

Uploading an ontology or another semantic artefact (vocabulary, terminology, thesaurus, ...) is a way of sharing your knowledge with others. By uploading and sharing your ontology to EarthPortal, you can:

- Discover new insights and knowledge by exploring other ontologies or semantic resources in the repository.
- Map your ontology to other relevant ones in the domain and collaborate with other users.
- Precisely describe your ontology with relevant metadata and get a FAIR score for your ontology.
- Contribute to knowledge sharing and semantic interoperability in your domain.
- Get feedback and suggestions from other users who can use and comment on your ontology.

[Submit ontology](#)

[Discover ontologies](#)

### EarthPortal in figures

52 Ontologies | 11K Classes | 74K Individuals | 1K Properties | 5 Projects | 58K Mappings | 66 Users

[See details](#)

Deep Data Platform | Home | About | Products | Science | News & Events | Opportunities | Contact Us

Home / Products / Tools/Services/Platforms / DDE Geo Open Knowledge Graph

## DDE Geo Open Knowledge Graph

2022-10-24

DDE GeoOpenKG

DDE's GeoOpenKG is a one-stop system for opening and sharing geoscience knowledge graphs. Its goal is to allow the sharing of geoscience knowledge accumulated on the DDE Platform with industrial and scientific Platform users and researchers in a simple and orderly way. Shared knowledge graphs can be used to publicize and promote relevant geoscience areas of interest, while at the same time knowledge graphs can be continuously improved, based on feedback and log analysis during construction and use.

The unique feature of GeoOpenKG is that it gathers multi-source knowledge graphs and the official websites of open knowledge graphs commonly used in geoscience now, so that users experience a one-stop process of acquiring geoscience knowledge and avoiding complex



# VocSearch

## ● Motivation

- Find whole vocabs and individual terms for reuse
- Domain-specific
- Allow limiting results to certain publishers, in particular Australian GSeS, GA etc.
- Allow content growth
- “just make it work” - from the user’s POV



## VocSearch

Federated search across vocabularies, collections, and concepts.

🔍 Enter search term...

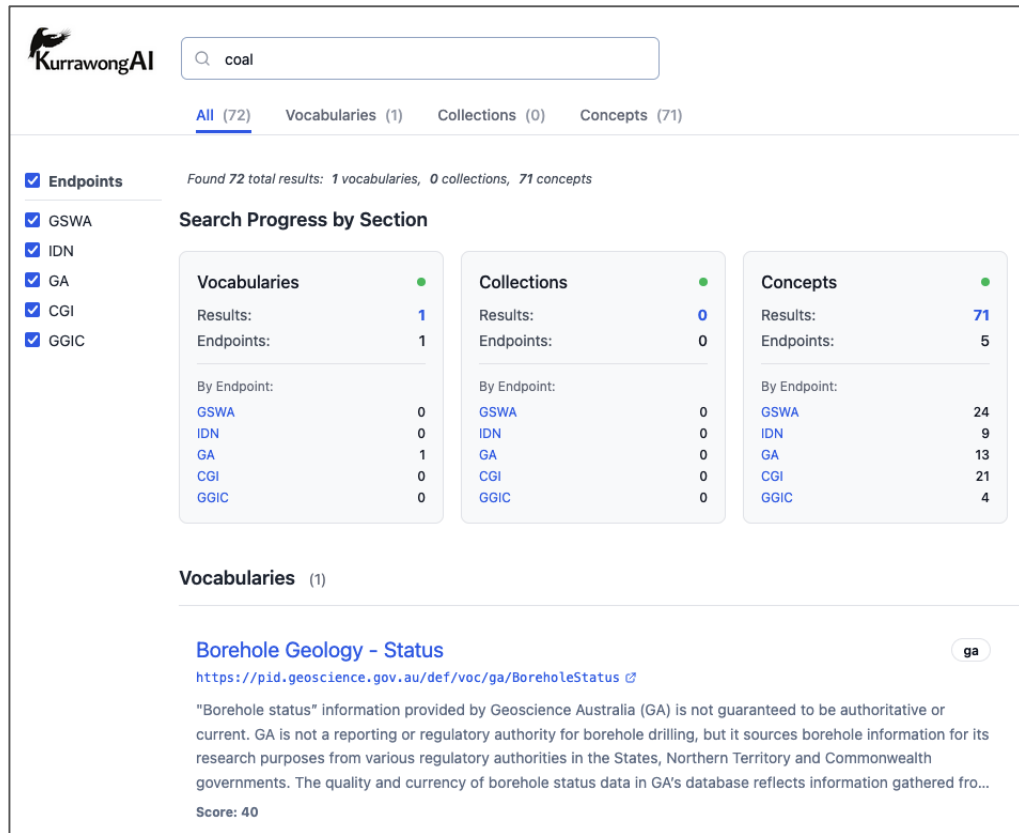


# VocSearch

<https://vocsearch.kurrawong.ai>

For the resources sector:

- What systems should be in scope?
  - RVA, international, non-semantic
- How do we limit results to relevant vocabs?
- How is it maintained?
  - By KAI, through rolling projects?



The screenshot displays the VocSearch interface for the query 'coal'. The search results are categorized into three sections: Vocabularies (1), Collections (0), and Concepts (71). The 'Concepts' section is expanded, showing a breakdown by endpoint: GSWA (24), IDN (9), GA (13), CGI (21), and GGIC (4). The 'Vocabularies' section shows one result for 'Borehole Geology - Status' with a score of 40. The interface includes a search bar, navigation tabs, and a filter menu on the left.

**Search Progress by Section**

Section	Results	Endpoints
Vocabularies	1	1
Collections	0	0
Concepts	71	5

**By Endpoint:**

Endpoint	Vocabularies	Collections	Concepts
GSWA	0	0	24
IDN	0	0	9
GA	1	0	13
CGI	0	0	21
GGIC	0	0	4

**Vocabularies (1)**

**Borehole Geology - Status** ga  
<https://pid.geoscience.gov.au/def/voc/ga/BoreholeStatus>

"Borehole status" information provided by Geoscience Australia (GA) is not guaranteed to be authoritative or current. GA is not a reporting or regulatory authority for borehole drilling, but it sources borehole information for its research purposes from various regulatory authorities in the States, Northern Territory and Commonwealth governments. The quality and currency of borehole status data in GA's database reflects information gathered fro...

Score: 40

# Future Work

- In Australia:
  - Improved vocab profile adherence
    - See the VocPub poster
- Internationally
  - Request specific technical access to Geological Survey vocabs
    - BGS ✓
    - BRGM ✓
    - DDE ✓
    - USGS ~
- Test with users
  - How will this be arranged?
    - Projects
    - GGIC

## VocPub: Publishing SKOS Vocabularies for People and Machines

Kurrawong.ai — Brisbane, Australia  
(Presented on behalf of the Kurrawong.ai team)



### What is VocPub?

VocPub makes vocabularies more usable, and reusable.

It is a lightweight **specification for publishing SKOS vocabularies** with clarity and consistency. VocPub helps vocabulary publishers ensure that data is **interoperable, reusable, and trustworthy** - by defining clear, machine-readable ways to record provenance, attribution, and version information. Built on **SKOS**, **PROV**, and **schema.org**, VocPub offers a practical shared framework for organisations that need vocabularies to be both FAIR and human-friendly.

Supported for validation and quality assurance by

### In Practice

VocPub underpins projects where consistent vocabulary publishing is essential — from government data initiatives to research infrastructure and industry knowledge graphs.

It's also used within **Kurrawong.ai semantic background repository**, supporting reuse of external vocabularies in local deployments.

### Looking Ahead

As part of ongoing practical support for validation and quality assurance, VocPub includes a SHACL validator via the AGLDWG GitHub or Kurrawong.ai tools site.

### USGS Thesaurus

Explore Outline **Web Services** Check terms Common Geographic Areas FAQ Suggest a Term Term Review Status

#### Purpose

The USGS Thesaurus provides a controlled vocabulary of scientific concepts relevant to the mission and work of the USGS. This controlled vocabulary information and allows people and computers to find collections of information resources that have common characteristics.

#### Content

The USGS Thesaurus is structured as a hierarchy of terms because relationships between concepts are represented. For example, *Sciences* specific type of *Sciences* is *Earth Sciences*. In the USGS Thesaurus, *Sciences* is a broader or parent term to *Earth Sciences*. The USGS Thesaurus categories that are used to group scientific concepts.

#### Sciences

Major educational fields, fields of study, and professional groupings within USGS.

#### Methods

Techniques, methods, procedures, or strategies for research, management, collection, or analysis of scientific information in USGS.

#### Topics

Themes, subjects, and concerns for which USGS information resources are relevant.

#### Product types

General representation of the information in a resource, such as a map or dataset.

#### Time periods

Geologic time periods and seasons of the year.

#### Institutional structures and activities

Activities, processes, and organizational concepts.

# Thanks!

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## **KurrawongAI**

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