Covering the bases – baseline geochemistry of South Australia's cover

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GEOLOGICAL SURVEY OF South Australia

SOUTH AUSTRALIA

Government of South Australia

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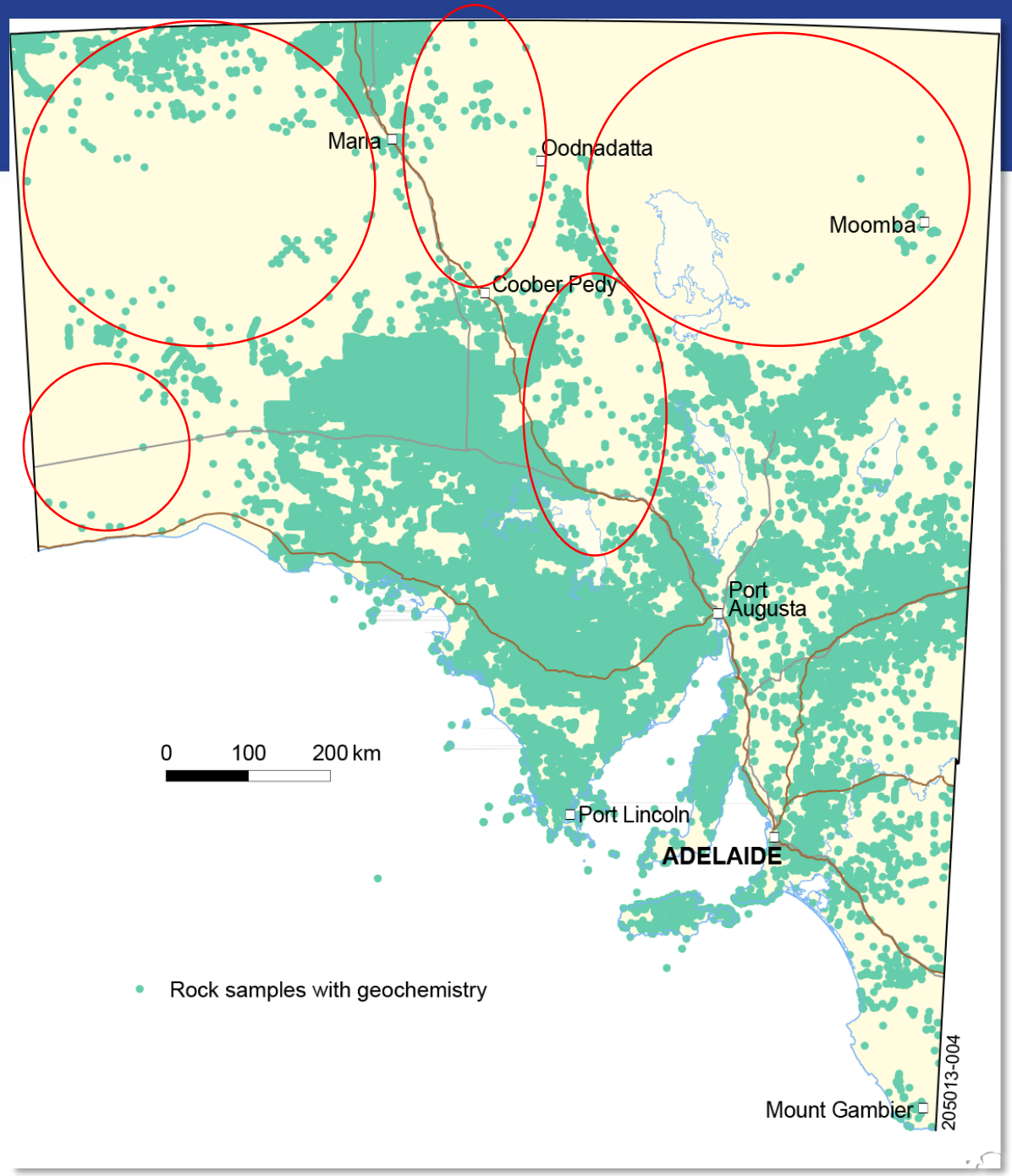
Characterising South Australia's Cover

- 'Characterising South Australia's Cover' one of 4 key teams at the Geological Survey of South Australia
- Key area of focus will be:
  - Providing new and updated data compilations
  - Lead with innovative geoscience products
- Ensure that stakeholders will be able to explore with improved confidence and vigour in some of the most underexplored regions of the state.

Current Surface Geochemistry Database

- All sample points – calcrete
- Also in database – vegetation, lag, stream sediments etc
- Lack of data – where cover assumed ‘too thick’
- If GSSA can’t confidently show data for these areas – how do we attract stakeholders to be interested?

→ Image – Data from March 2018



National Geochemical Survey of Australia

- de Caritat & Lech 2006, GA & CRCLEME
- Final Product - National Geochemical Atlas of Australia

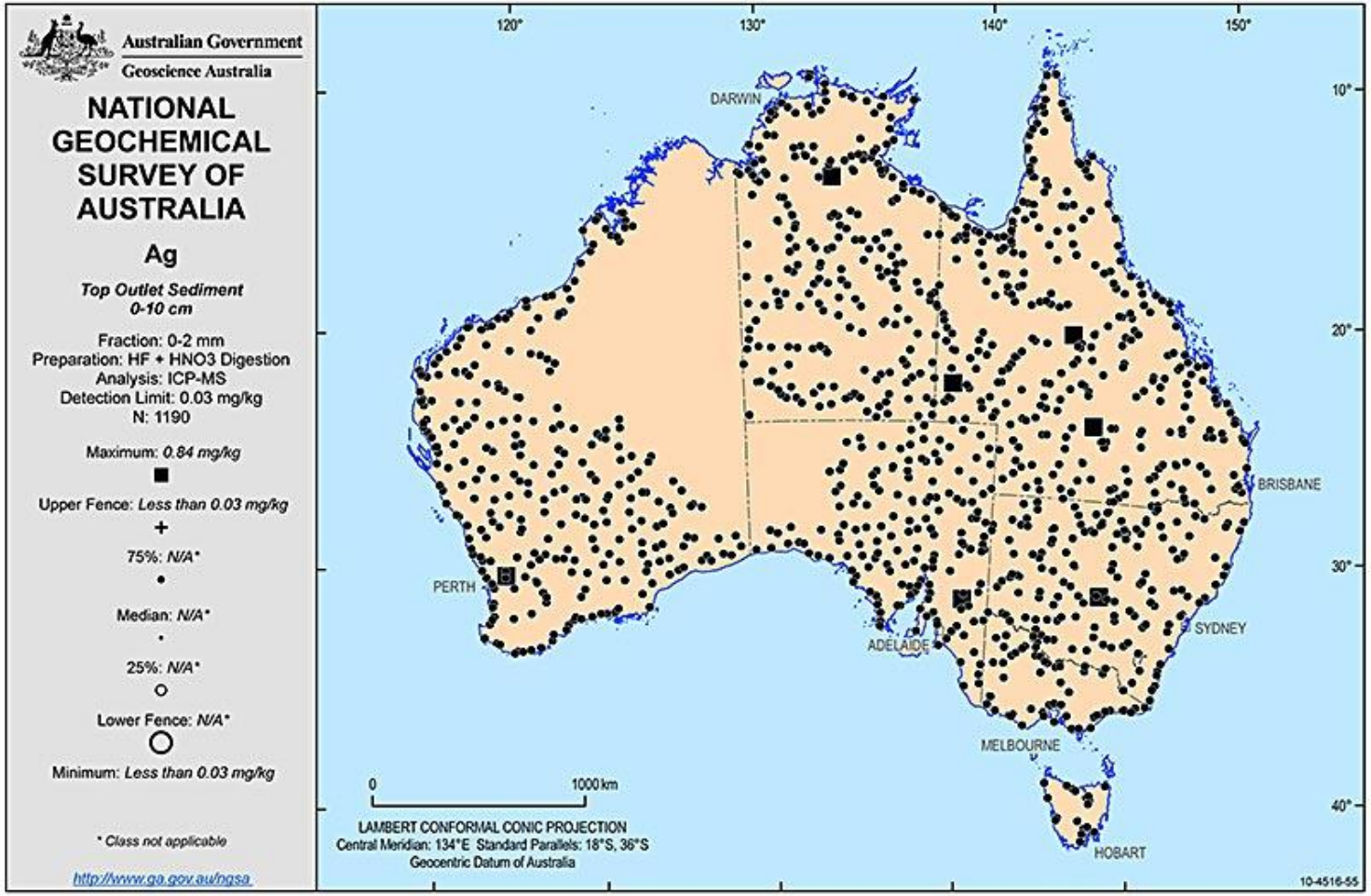
➢ Caritat P de, Cooper M, Lech M, McPherson A and Thun C 2009. *National Geochemical Survey of Australia: Sample Preparation Manual*. Geoscience Australia Record, 2009/08, 28 pp.

➢ Caritat P de, Cooper M, Pappas W, Thun C and Webber E 2010. *National Geochemical Survey of Australia: Analytical Methods Manual*. Geoscience Australia Record 2010/15, 22 pp.

➢ Caritat P de and Cooper M 2011a. *National Geochemical Survey of Australia: Data Quality Assessment*. Geoscience Australia Record 2011/21, 478 pp.

➢ Caritat P de and Cooper M 2011b. *National Geochemical Survey of Australia: The Geochemical Atlas of Australia*. Geoscience Australia Record 2011/20, 557 pp.

➢ Caritat P de, Cooper M, Jaireth S and Bastrakov E 2011. *National Geochemical Survey of Australia: Preliminary Implications for Energy and Mineral Exploration*. Geoscience Australia Record, 2011/29, 84pp.

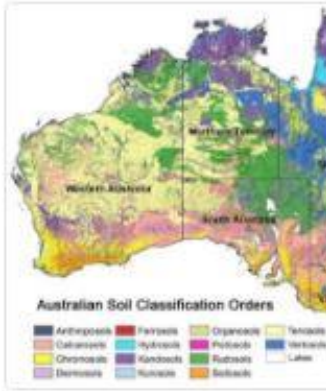


http://www.ga.gov.au/__data/assets/image/0010/13402/Ag-Total-TOS-course-55.jpg, April 2018

Other Surveys (Around Australia & Globally)

R.A. Viscarr
@raphvr

Updating a n
spectroscopy
machine lear
CATENA:
authors.elsev



8:02 AM - 21 Feb 2018

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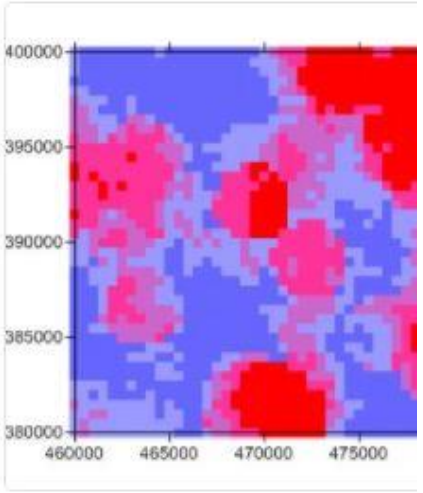
1 16

Murray Lark
@GeostatLark

Using multifractals
anomalies in the s
@GSNIMinGeo @
Reay. Free to acce
@GeoSurveyNI @

authors.elsevier.co



8:42 PM - 20 Mar 2018

It is also available from th
gsi.ie/en-ie/programm ...

databases, and use a geology r
create a contoured map.

**Quaternary Map of Irel
with GSNI)**

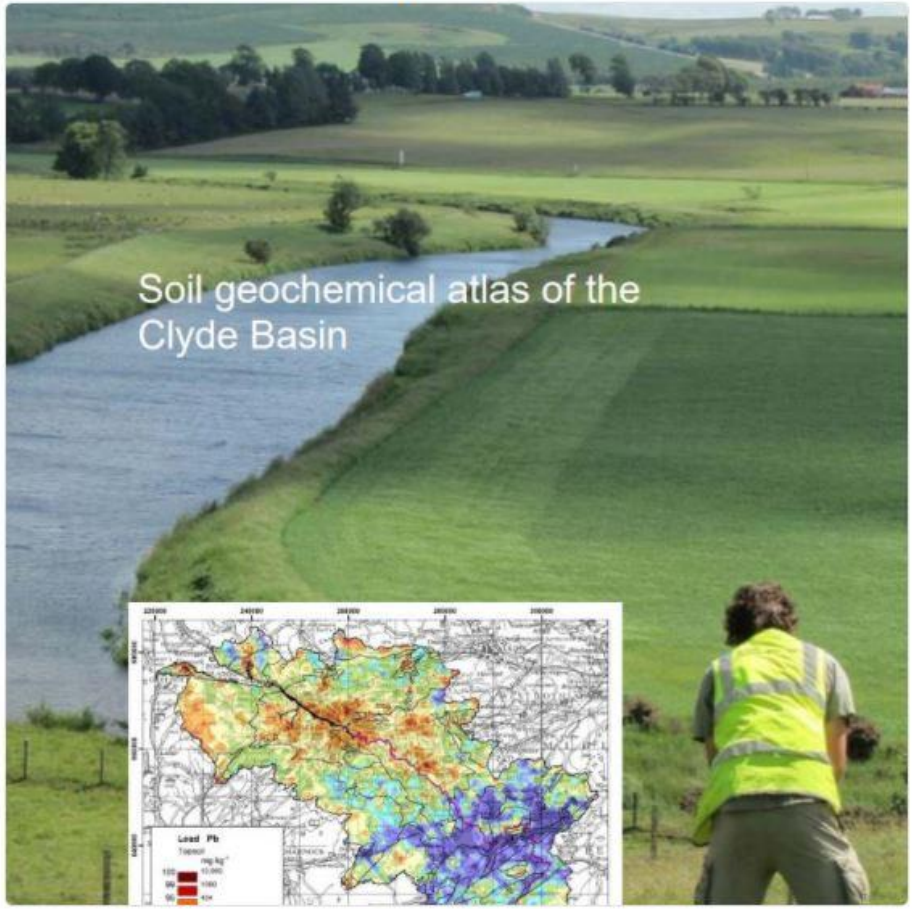
This All-Irelan
map at 1:500,
amalgamatior
from Ireland a
Soil geochemi
data from the
Border projects were used to s
undifferentiated till deposits in
match the till types mapped in
sets was achieved by statistical
Data from the two surveys and
were compiled, homogenized a

4:03 AM - 20 Feb 2018

BGS in Scotland
@BGS_Scotland

Following

Soil geochemical atlas of the Clyde Basin
nora.nerc.ac.uk/id/eprint/5191...



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Other Surveys (Around Au

Skip to Main Content

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Department of **Mines, Industry Regulation and Safety**

Minerals & Mining | Petroleum | Dangerous Goods | Geological Survey | Environment | Sa

Geochemistry (GeoChemExtract)

Home Online Systems Geochemistry (GeoChemExtract)

The GeoChem Extract application provides access to geochemical data generated from samples coll
Australia (GSWA) mapping and mineralisation programs. The data accessed by this application, whic
WACHEM database, are automatically updated every weekday, and made available as comma-separ

Geochemistry (GeoChem Extract)

Access GeoChem Extract

GeoChem Extract allows downloads of geochemistry data for the entire State, a selected map sheet, or any area d
Data from the WACHEM database, as well as public company surface geochemistry, can be queried spatially and

GSWA geochemical datasets include geochemistry for bedrock and regolith. The latter comprise more than 20,000
programs.

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Department of **Mines, Industry Regulation and Safety**

GeoVIEW.WA

Getting Around | Identify Tools | Drawing & Measurement | Maps & Data Sources | Search Tools | Printing & Reports | Help & Feedback

What's New? | Initial Extent | Full Extent | Previous Extent | Next Extent | Pan | Zoom In | Zoom Out — Zoom Tools

Jump to a map bookmark... — Regions

Point Identify — Identify

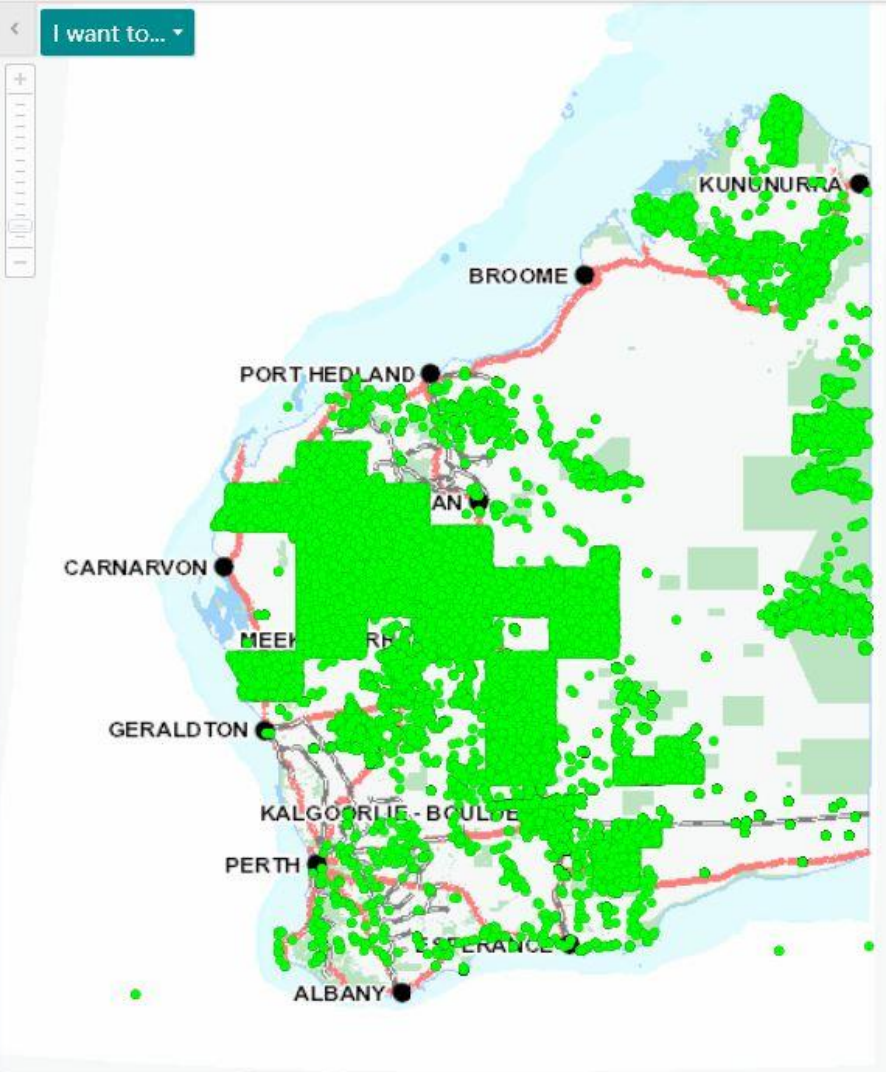
Map Layers

Layer Theme: All Available Layers (default)

- **Geoscience Information**
  - GSWA Geochemistry
- **DMIRS Basemap**
  - Major Town
  - Railway
  - Road
  - Coast
- DEC Managed lands
  - 5(1)(g) Reserve, A
  - 5(1)(g) Reserve, C
  - 5(1)(h) Reserve,
  - 5(1)(h) Reserve, A
  - 5(1)(h) Reserve, C
  - Conservation Park,
  - Conservation Park, A
  - Conservation Park, C
  - Marine Management Area, A
  - Marine Nature Reserve, A
  - Marine Park, A
  - Miscellaneous Reserve,
  - Miscellaneous Reserve, A

Show Layers | Filter...

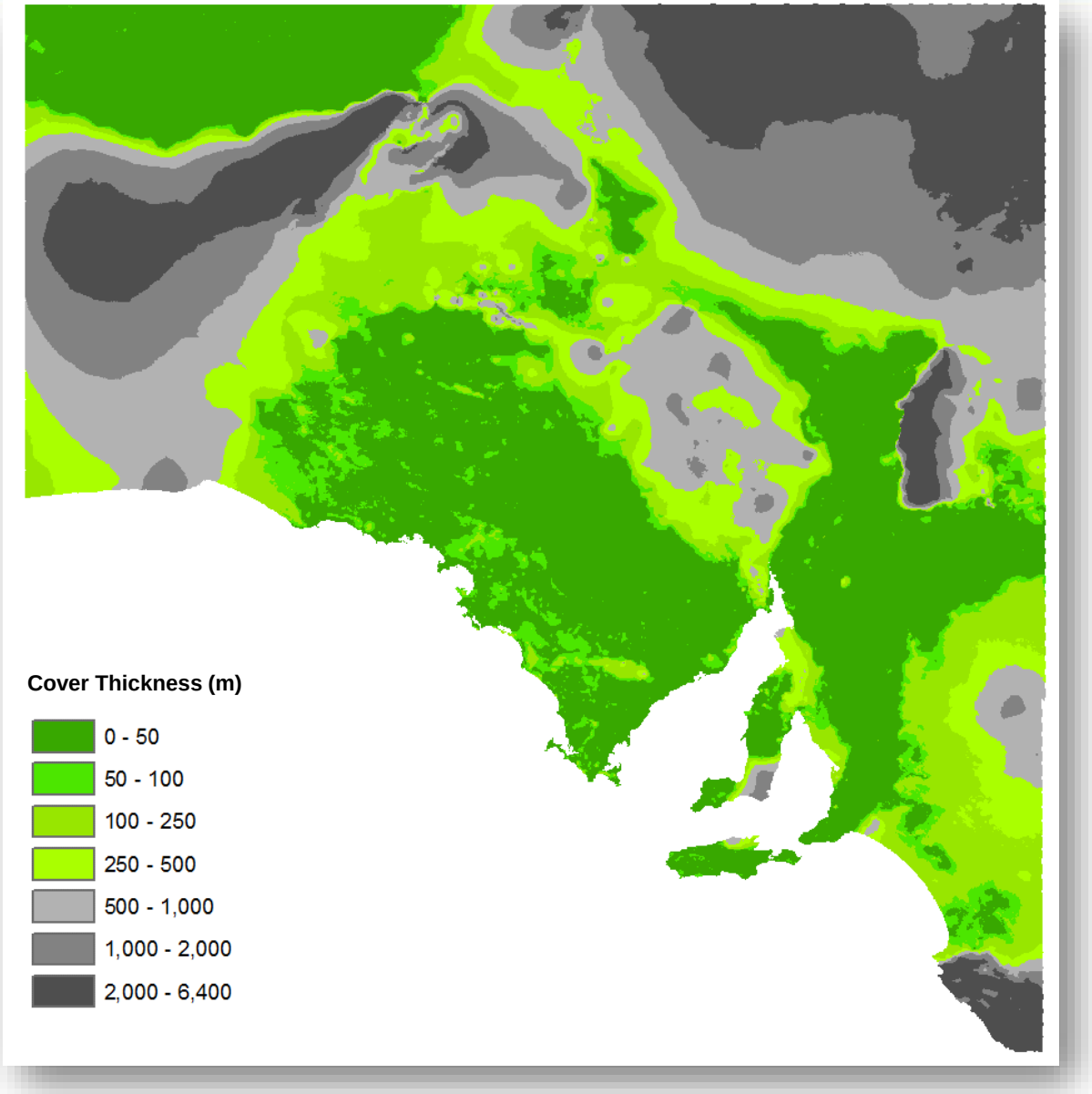
I want to...



250mi / 250km | Lat Long | Scale: 1: 14,057,263

Depth of Cover – Depth to Basement Maps

- 100 m depth – not the end of the geochemical survey program!
- GSSA collaborations test surface geochemistry in areas > 100 m (far west, northeast SA)
  - Coompana Geochemical Survey (2017 – CSIRO)
  - Regional Biogeochemical Survey of the Eucla Basin (2014 – Dunn & Waldron)



Reasons Why We Need Baseline Surface Geochemistry

- Mineral explorers currently use a variety of sampling media (e.g. different soil fractions, lag, biota)
- Previous case studies (e.g. Butt et al. 2005) and geochemical surveys undertaken in SA by CRCLEME and DETCRC
- Easy access to geochemical = assisting mineral explorers in determining:
  - ✓ Appropriate sampling media for exploration programs
  - ✓ Give confidence and assurance to those working in greenfield areas

Reasons Why We Need Baseline Surface Geochemistry 2

Establish baseline geochemistry across all of SA's geological provinces, for each popular sampling media will allow a complete update of the quality and accessibility to surface geochemical

PRECOMPETITIVE DATA & ENVIRONMENTAL REFERENCE

How will we do this?

- Clean up existing data and make it available via SARIG
- Assemble updated state-wide geochemical datasets
  - ✓ Include sampling media type
  - ✓ Individual elements
- A regional geochemistry dataset for many types of sampling media
- Any gaps in this coverage will be prioritised & reconnaissance traverses planned (aligned with MinEx CRC and UNCOVER project work)

Thankyou!

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