From the soil sample jar to society: an example of collating and sharing scientific data

Hannah Mikkonen, *Ian Thomas*, Paul Bentley, Andrew Barker,

Suzie Reichman

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Overview

1. "Enabling" Research

2. Background Soil Survey Dataset

3. Enrichment

4. eResearch as "Glueware"

5. An Archetype

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Enabling Research

- Research capability at RMIT University

- Limited duration projects

- Not business-as-usual ITS

- Focus on skills transfer

- Increasing research impact

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Enabling Research

- eResearch (Research Capability Unit)

- The researchers

- Data providers

- Information Technology Services (ITS)

- The software developers

- The funding bodies and industry partners

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Enabling Research

- Inevitable tensions

- Obstacles in the project

- Cross disciplinary barriers and challenges

- Sustaining versus disruption innovation

- lifecycle of development

RMIT UNIVERSITY https://sites.google.com/site/eresearchinnovation/

Clayton Christensen
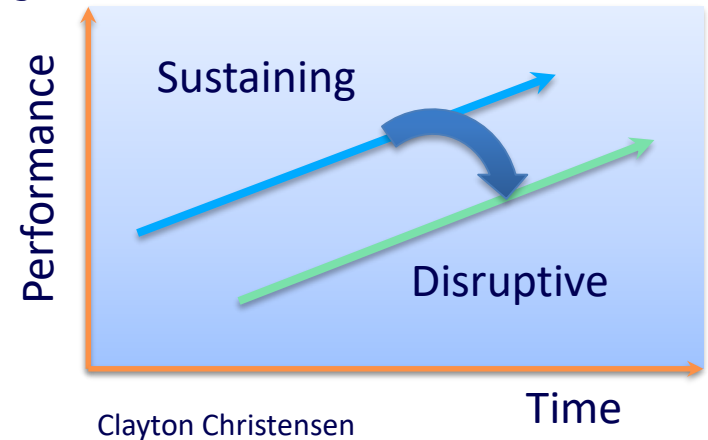
# Background Soil Survey Dataset

Objectives

- provide a **statistical summary** of expected background metal/element concentrations in Victorian soils

- **improve our understanding** of the distribution and variability of background metals/element concentrations

- **identify elements** that are naturally enriched, at concentrations in exceedance of current guidance criteria

- **identify geochemical and environmental indicators** of natural enrichment

- provide **improved methods** (using geochemical indices and composition ratios) for distinguishing natural enrichment from added contamination

- **provide a framework** for assessing background metal/element concentrations during environmental site assessment works

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Background Soil Survey Dataset

Collation of data into a database → Data screening-Removal of contaminated samples → Verification of screening process → Improved understanding of background concentrations

Deliverables from this work include:

1. **A publicly available database and interactive map** presenting background soil concentrations for soil across Victoria

2. **Methods for determining background concentrations** of elements in Victorian soils (e.g. geochemical indices)

3. **Greater understanding** of relationships between elements concentrations in soil and soil forming factors

4. **Identification of environmental and geochemical indicators** of natural enrichment of metals and Fluoride in soils
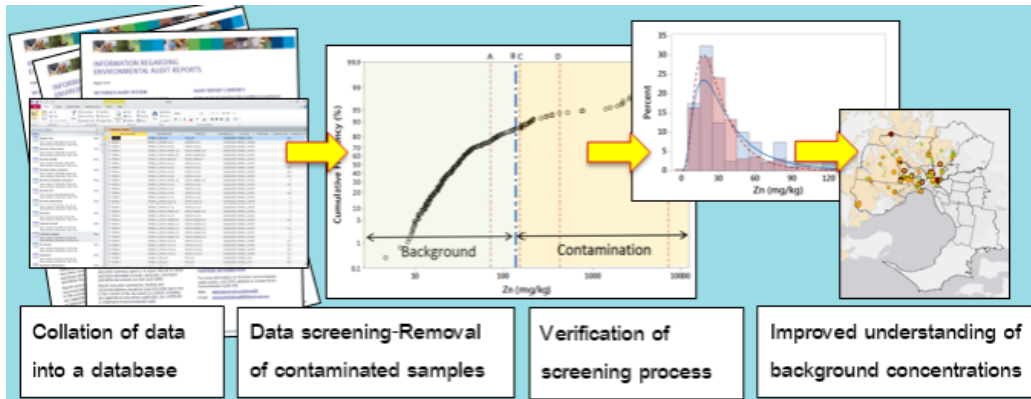
Enrichment

- A dataset in search of a wider audience

- Researchers have collaborators

- Engagement with the community

- Differing levels of tech expertise

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Enrichment

1. DOI becomes link to website (not data directly)

2. Analytics

3. A website as data

4. Visualisation

5. Make "production"

6. Beginning of a discussion…

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Enrichment

1. Specific visualisations

2. Summary statistics

3. Raw data download

4. Background descriptions, licensing and acknowledgments

5. Feedback forms

Contents

- Background
- Soil Explorer Map
- Data Table
- Download Soil Database
- Published Articles
- How to Cite this Website
- Contact Form

Research Lead:

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Project Partners:

HAZWASTEfund

ACLCA Australian Contaminated Land Consultants Association

Dashboard Interface:

CDM Smith
listen. think. deliver.

Map Filters

Region
Greater Melbourne

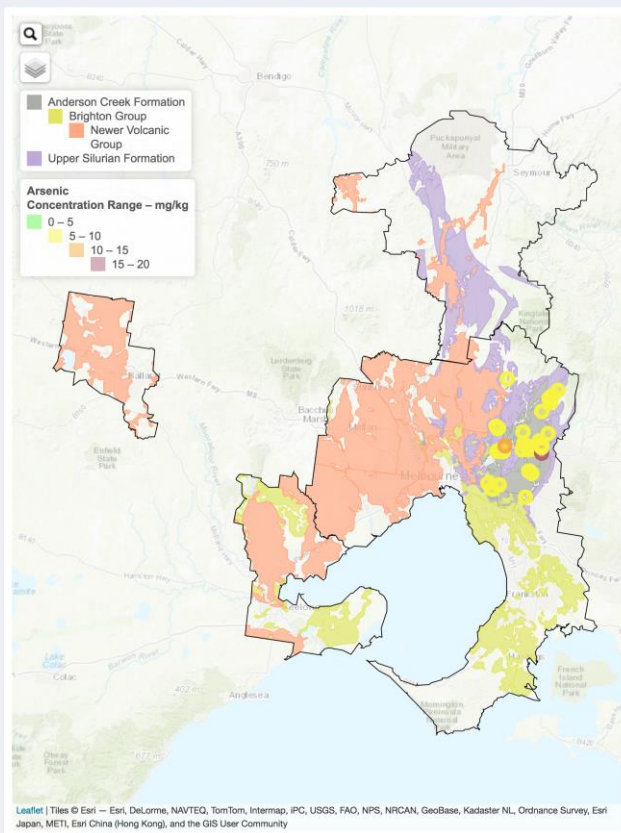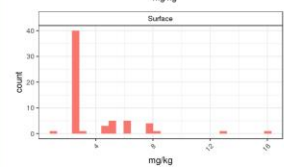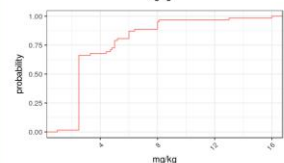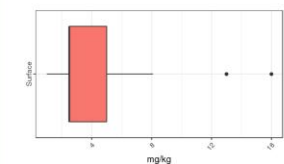Element / parameter
Arsenic

Depth
Surface

Parent Material
Anderson Creek Formation

62 results available for the filter selection

Summary Table

Area Name	Summary	Surface
Greater Melbourne	Count	62
Greater Melbourne	Typical Limit of Reporting	<5
Greater Melbourne	Min.	<5
Greater Melbourne	1st Qu.	<5
Greater Melbourne	Median	<5
Greater Melbourne	Mean	<5
Greater Melbourne	3rd Qu.	5
Greater Melbourne	Upper Whisker of Boxplot	10
Greater Melbourne	Max.	16
Greater Melbourne	PDF	pdf

Charts

Anderson Creek Formation
Brighton Group
Newer Volcanic Group
Upper Silurian Formation

Arsenic
Concentration Range – mg/kg
- 0 – 5
- 5 – 10
- 10 – 15
- 15 – 20

Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ, TomTom, Intermap, iPC, USGS, FAO, NPS, NRCAN, GeoBase, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

Table Filters

▼ Reset Table Filters (show all)

Region
Greater Melbourne

Local Government Area (LGA)
Boroondara

Element / parameter
Arsenic

Data Table

Show 20 entries

Region	LGA	Parent Material	Site	Sample Code	Depth Category	Chem Name
Greater Melbourne	Boroondara	Anderson Creek Formation	67211-1	67211-1_B4/0.5	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	67211-1	67211-1_T3/0.5	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	67211-1	67211-1_T4/0.5	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	67211-1	67211-1_T5/0.5	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	67211-1	67211-1_TP3/0.5	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	69048-1	69048-1_BH2-0.4	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	69048-1	69048-1_BH3-0.4	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	69661-1	69661-1_SB01_0.5-0.6	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	69661-1	69661-1_SB07_0.5-0.6	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	72453-1	72453-1_BH13/0.35	Sub-surface	Arsenic
Greater Melbourne	Boroondara	Anderson Creek Formation	72453-1	72453-1_BH20/0.5	Sub-surface	Arsenic

Showing 1 to 11 of 11 entries

eResearch as "Glueware"

- Not practical (or necessary) to build everything from

  scratch

- Use of third party to build

- Agile development, revision control, project tracking

- Time delays

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eResearch as "Glueware"

- Composing existing systems with deploying and

  maintenance processes

- Checklists

- Not building from scratch

- Microservices

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eResearch as "Glueware"

- "Productionisation" of an experimental analytics platform

- ITS is not disruptive

- Not *Not-invented here*

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An Archetype

- Research translation and communication of environmental science using digital platforms

- More researchers with a similar problem to solve

- Lessons

- Enterprise solutions versus bespoke solutions

- Sustainability

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An Archetype

- "Bridging the chasm" – getting innovative solutions into

  production in sustainable way

- Licensing

- Service support

  and maintenance
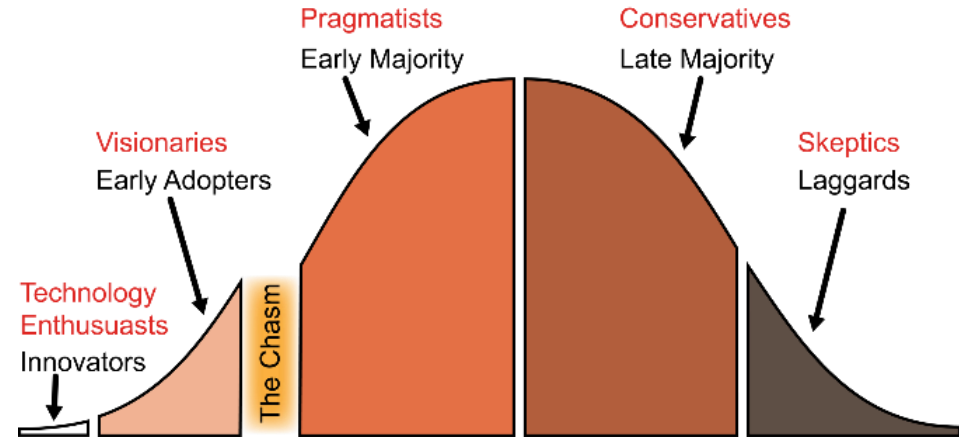
Geoffrey A. Moore

An Archetype

- Proposed Web Project Platform

- Common service delivery

- Maintenance

- Licensing

- Results

Thank you for listening

Questions?

soilexplorer.eres.rmit.edu.au

eResearch@rmit.edu.au