



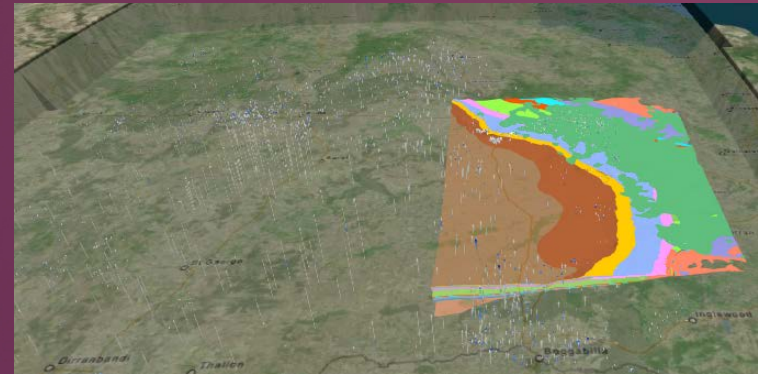
# Groundwater Projects

Sue Vink, University Queensland

Water Chemistry Atlas  
Water Use

# A WATER CHEMISTRY ATLAS FOR CSG FIELDS

## *DISCOVERING UTILITY BEYOND MONITORING*



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# Objectives Phase 1

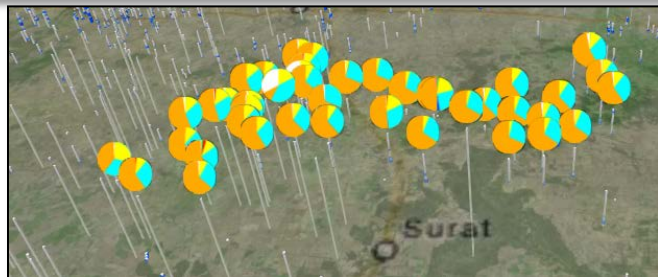
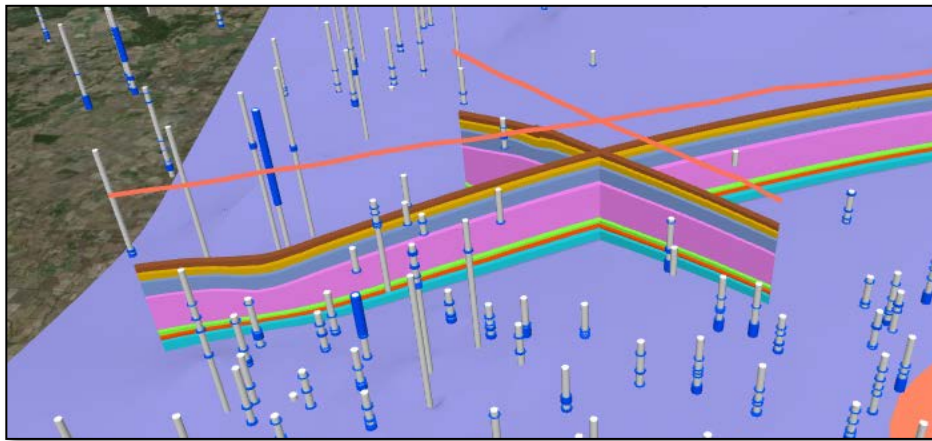
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To develop a water chemistry atlas for the Surat and Bowen Basins that can:

- Provide a temporal record of changes in groundwater chemistry and geological models as new data becomes available.
- Include a suite of tools that can be used to interrogate disparate datasets
- Be accessible to specialist and non-specialist groups
- Interpretative tools/data for company groundwater managers

Video at [http://3dwa.metadata.net/new\\_video.html](http://3dwa.metadata.net/new_video.html)

# Features



equal to 22659

Export All Data | Export Data | CSV

497 Latitude: -26.92

filter | Casing | Facility Role | Strata Log | Stratigraphy

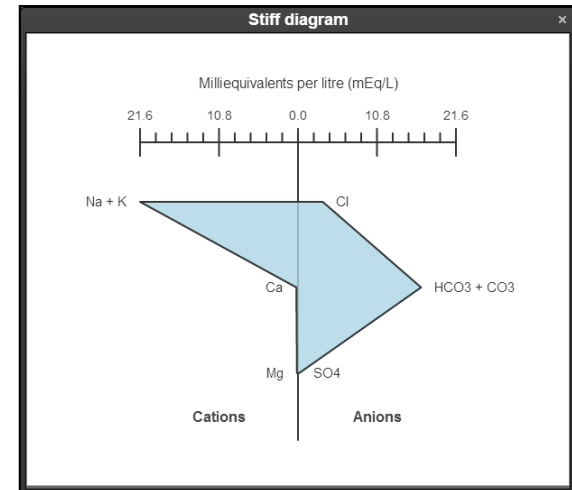
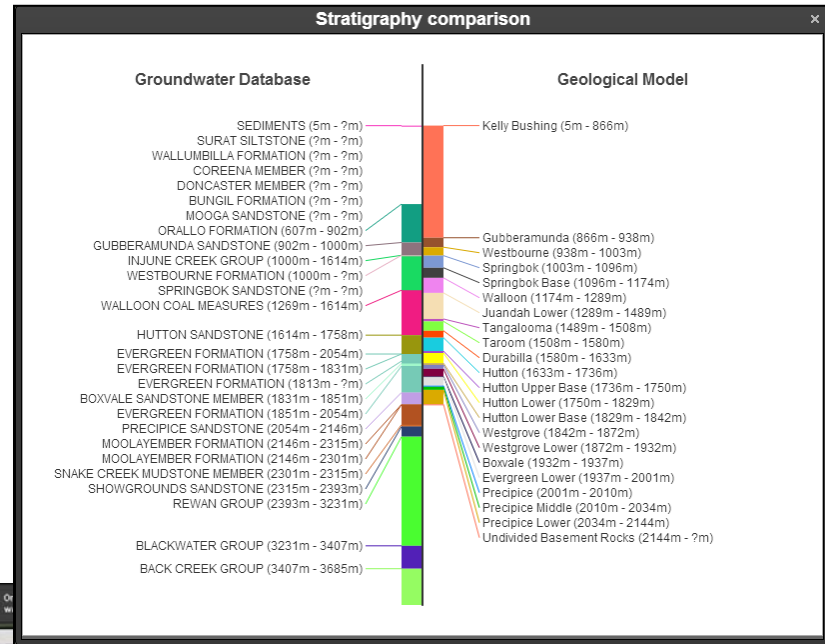
Record: 1  
 Company Name: DME  
 From Depth: 3.6  
 To Depth: 369.4  
 Formation Name: WALLUMBILLA FORMATION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Go to

Compare with model

Metadata - RN 22659

Record	Company Name	From Depth	To Depth	Fo
1	DME	3.6	369.4	
2	DME	370.3	492.3	
3	DME	492.3	634	
4	DME	634	815.3	
5	DME	815.3	951	
6	DME	951	1542.3	
7	DME	951	1095.5	
8	DME	1095.5	1178.1	
9	DME	1178.1	1500.2	
10	DME	1500.2	1542.3	
11	DME	1542.3	1771.8	
12	DME	1771.8	1916	
13	DME	1800.8		



# The Water Atlas Outputs

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An integrated geochemical / hydrodynamic database and geological model accessible through a web browser that utilises 3-dimensional analytical and visualisation tools to facilitate regional and local scale interpretation

A Web-based open source Water Chemistry Atlas with:

- Interpretative layers
  - Validated database of available water chemistry and geological model stratigraphy + search/browse/filter interface
  - Ability to input additional datasets (e.g. water depth, pressure, mineralogy, etc)
  - Security, access protocols
- 
- Connectivity with Company and OGIA portals (as desired)
  - Connectivity with BoM National Groundwater Information System and National Aquifer Framework?
  - Enhanced geochemical and visualisation tools e.g.
    - Contour maps of geochemical properties
    - constituents for different geological formations
  - Tool for verification of assigned formations by “locating” groundwater samples within the geological model
  - Cross-sectional analyses
  - Links with CSG Globe
  - Documentation/User manuals as required

# WATER USE PROJECT

# Water use project overview

Aim: better estimate amount of water extracted by groundwater bores in and around Surat CMA

- Work is being undertaken to independently improve the accuracy of groundwater flow models used by government and the CSG industry

Last year undertook a technical feasibility study

- Concluded it is feasible to use statistical methods to better estimate groundwater extraction
- Development of statistical techniques now being undertaken

At the same time, the study is seeking to collect further data on groundwater extraction rates to improve statistical predictions

- Currently engaging with broad range of water users
- Conducting confidential surveys of water use

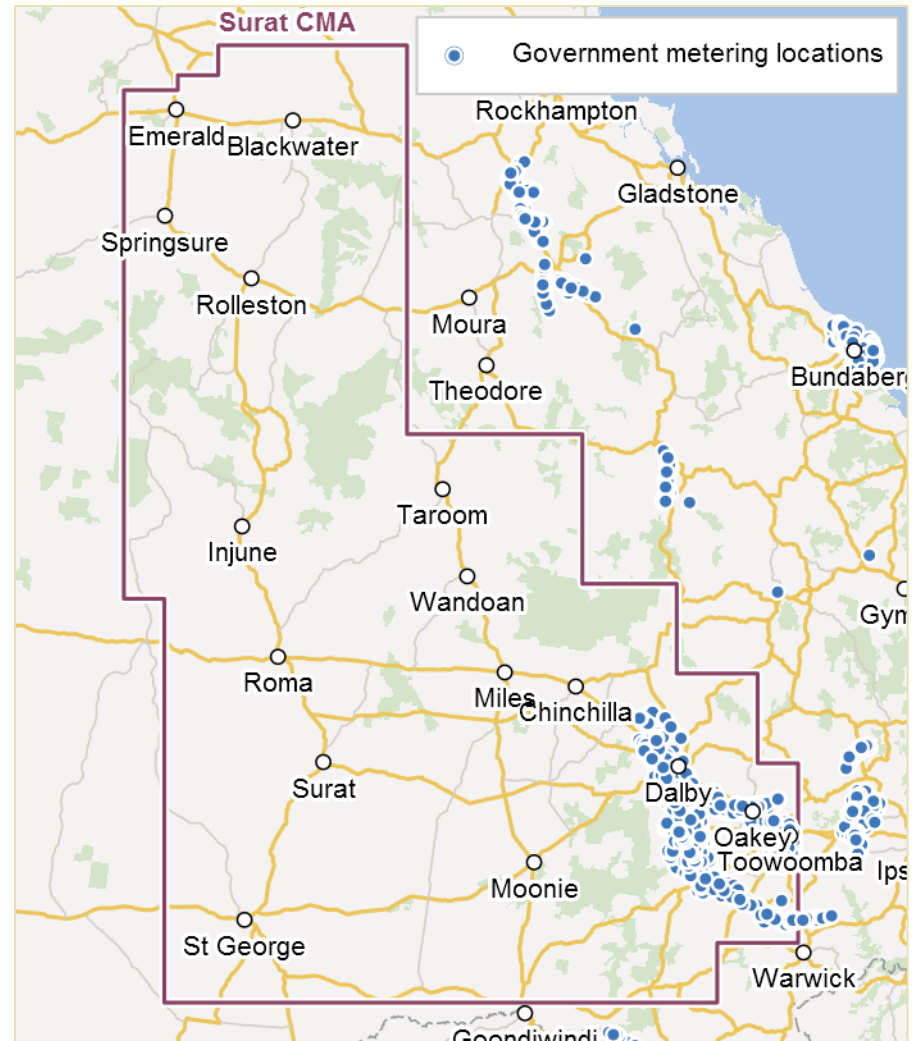
# Where is the study looking to collect data?

In the area of the Surat CMA

In terms of aquifers, focusing mainly on

- Hutton Sandstone
- Gubberamunda Sandstone
- Precipice Sandstone
- Walloon Coal Measures

...though data for other aquifers also very valuable





# Landholder survey


Asks landholders to provide

- Property details
- List of groundwater bores
- Water usage information

Available now

- [Online](#) (search for 'UQ groundwater survey')
- By mail (return postage prepaid)
- By telephone (07 3346 4012)

Survey form for  
Characterisation of current  
groundwater uses in the Surat and  
Bowen Basins

 THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

CRICOS Provider Number 0025B

Important information	UQ USE ONLY
<ul style="list-style-type: none"><li>• Please only complete this survey if you have groundwater bores on your property.</li><li>• This form is designed for landholders with a single property (which may consist of multiple, usually adjoining, land parcels). If you have more than one property, please contact the researchers for additional copies of this form.</li><li>• Please answer the questions below as accurately as possible. Note that not all questions may be applicable to your property.</li><li>• This survey should take between 20 - 30 minutes of your time.</li><li>• Print clearly using BLOCK LETTERS and tick boxes where appropriate.</li><li>• Please return your completed survey form in the included pre-addressed envelope.</li></ul>	Date received ..... Transcriber ..... Transcription date ..... Response ID .....

**1** Contact and general property information

Contact person: ..... Contact number: ..... Email address: .....

Property name: ..... Property address: .....

Property owners: ..... Property size (hectares) ..... Number of inhabitants .....

Please enter the lot and plan details of all parcels of land comprised by your property on the lines below. Please separate the lot and plan by a slash, and multiple parcels by commas, e.g. "362/GL5768, 335/SL3987": .....

**2** Property level water use information

Property type (select as many as applicable):  
 Grazing/non-intensive livestock  Intensive livestock/feedlot  Irrigated cropping  Non-irrigated cropping  Residential only

Other (please specify): .....

What source(s) of water do you use (select as many as applicable)?  
 Groundwater bores  Groundwater springs  River/creek water (including off-stream storage dams)  Dams capturing runoff  Rainwater

Other (please specify): .....

What is the most important source of water for your property (select multiple sources if applicable)?  
 Groundwater bores  Groundwater springs  River/creek water (including off-stream storage dams)  Dams capturing runoff  Rainwater

.....

# Flow metering

## Seeking interested participants

- Temporary
- Solar-powered
- Non-invasive
- Complementary water quality assessment (subject to funding)
- Confidential



# What are the benefits?

## For landholders

- Accurate recording of water use can help landholders plan and manage operations better
- UQ will provide participants with copies of all data collected related to their bores

## For regional groundwater management

- Improved estimates of groundwater use for application in government and industry groundwater flow models

# WATER CHEMISTRY ATLAS

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# WATER USE PROJECT CONTACTS

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