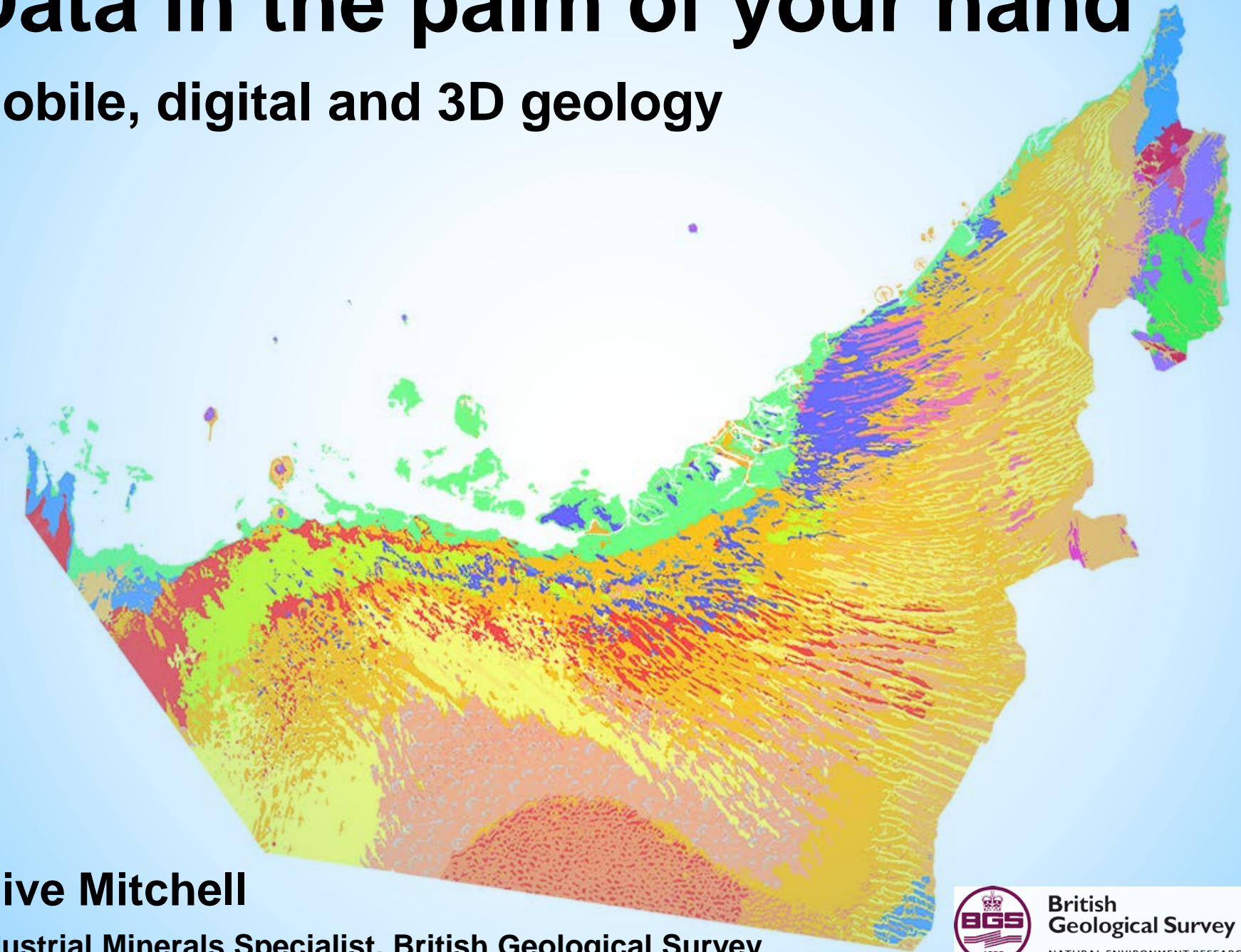


# Data in the palm of your hand

Mobile, digital and 3D geology



**Clive Mitchell**

Industrial Minerals Specialist, British Geological Survey



British  
Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

# Outline of presentation

- British Geological Survey
- Mapping then & now
- Digital maps
- Free data
- Apps
- Conclusions

# British Geological Survey



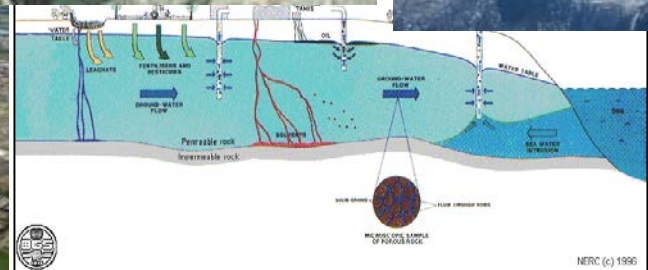
- World leading national geological survey, founded 1835, UK custodian of geoscience information
- Independent not-for-profit public sector research establishment, funded by Government & external income
- 640 staff based in Keyworth, Edinburgh Wallingford, Cardiff, Belfast & London



# The need for geoscience data

# Geology underpins our economy:

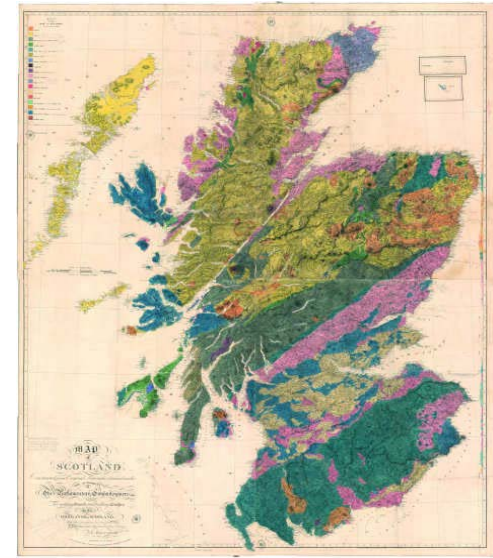
- Energy
  - Mineral resources
  - Land use & agriculture
  - Water supply
  - Development & planning
  - Tourism & landscape heritage
- 



# Mapping Since 1815



Geological Survey of Scotland, Inchnadamph.



# Data Capture

- BGS has 15+ years' experience in developing and deploying field-based digital data capture systems
- BGS-SIGMA software ([www.bgs.ac.uk/research/sigma](http://www.bgs.ac.uk/research/sigma)) allows for collection of point-based field locations with links to all observations such as photographs, sketches, structural measurements etc...
- The system allows for collection of digital line work and to generate polygons as required. This is developed on top of ESRI's ArcGIS software with a relational database built in MS Access.





# Data delivery

- BGS produces GIS applications, web applications, mobile apps and web services for data delivery
- Web map viewers for spatial data. e.g. GeoIndex ([www.bgs.ac.uk/geoindex](http://www.bgs.ac.uk/geoindex)) map-based data index.
- Our geological spatial datasets are available via web and in geoportal applications and within GIS software.
- Mobile apps deliver maps and spatial information to a range of tablets and smartphones e.g. iGeology app ([www.bgs.ac.uk/igeology](http://www.bgs.ac.uk/igeology))





# DiGMapGB

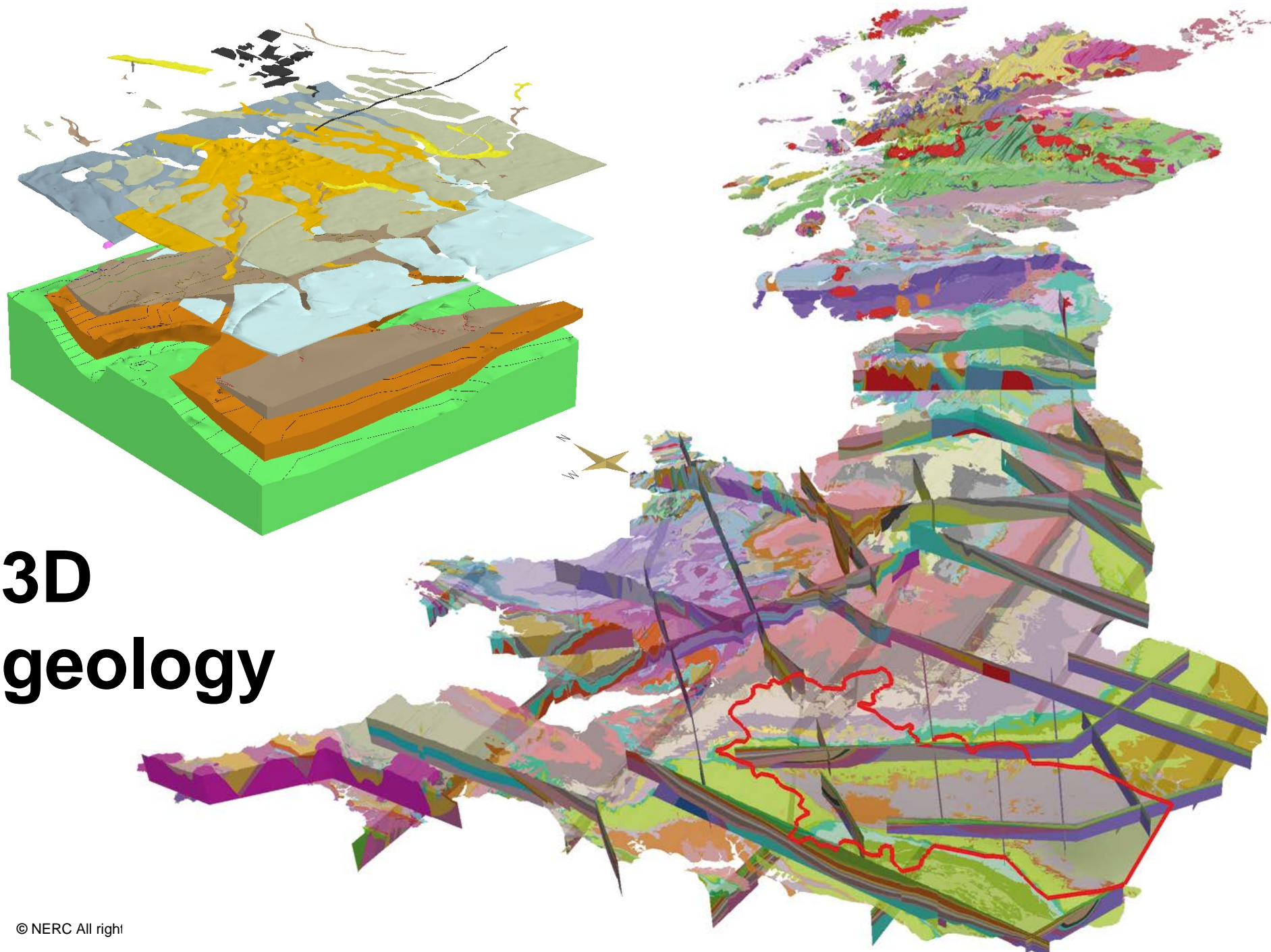
Digital Geological Map of GB  
- 1:10 000 to 1:625 000 scale

4 themes: bedrock,  
superficial, mass movement,  
artificial

## DiGMapGB-50

1:50 000 product  
(DiGMapGB-50) has 99%  
coverage of GB

10,000 lithological  
descriptions

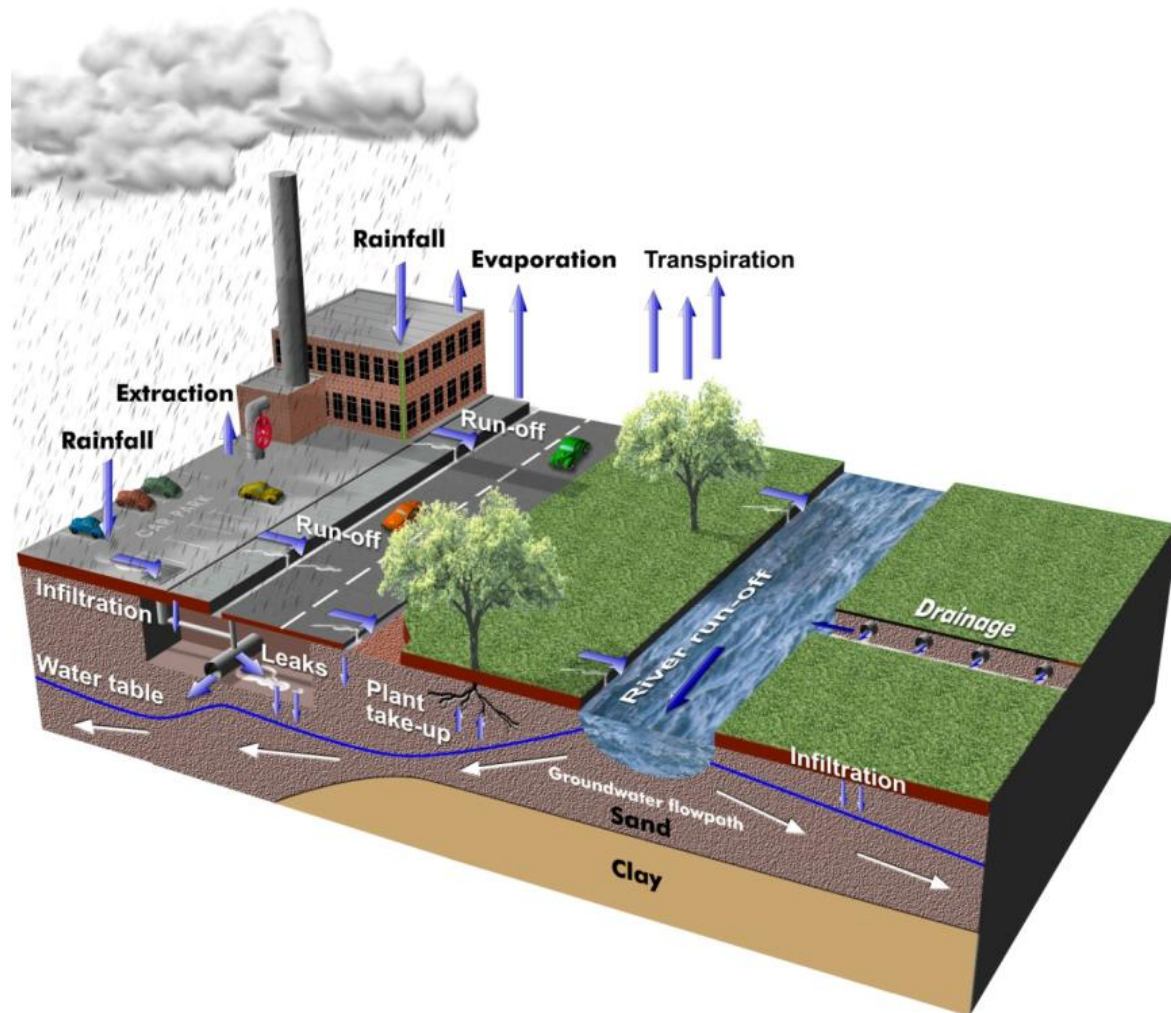


**3D  
geology**



# Modelling the subsurface

- Development & visualisation of conceptual ground model
- Characterisation of ground conditions
- Enable informed decision making





# OpenGeoscience — Free data!

## What is OpenGeoscience?

BGS has a wide range of datasets and wants to increase access to these by publishing as many as possible under OpenGeoscience. OpenGeoscience is a free service where you can view maps, download data, scans, photos and other information. The services available under OpenGeoscience are listed below, and include:

- view geology data through the [Geology of Britain](#) map window and as WMS
- access to over a million borehole scans
- search and download photos from the [GeoScenic](#) geological photo archive

## Terms of use

To encourage the use and re-use of this data we have wherever possible made the data within OpenGeoscience available under the [Open Government Licence](#), subject to the following acknowledgement accompanying the reproduced BGS materials: "Contains British Geological Survey materials ©NERC [year]".

The terms of use for every product under OpenGeoscience are displayed clearly at the top of every page. Please feel free to use our OpenGeoscience logo wherever you use our open data.



OpenGeoscience



## Quick links



## Share this page



« Tell us what you think »



### Maps and viewers

BGS has started to publish its data through map viewers allowing you to pan and zoom to where you live, click on an area of interest and reveal more about the ground beneath your feet.



### Data downloads

A number of GIS datasets are now available to download including some of our core, baseline datasets showing geology, gravity and magnetic data, and hydrogeology data.



### Apps

BGS have created various mobile apps, such as *iGeology* and *mySoil* that allow you to view BGS datasets on a map where ever you are!



### Scans and photos

As part of our continued commitment to putting more information out for open access, BGS has released a number of its digital scan and photo collections on OpenGeoscience, including borehole log scans.



### Data collections

Many of the BGS's most popular databases and vocabularies are available to search and view online.

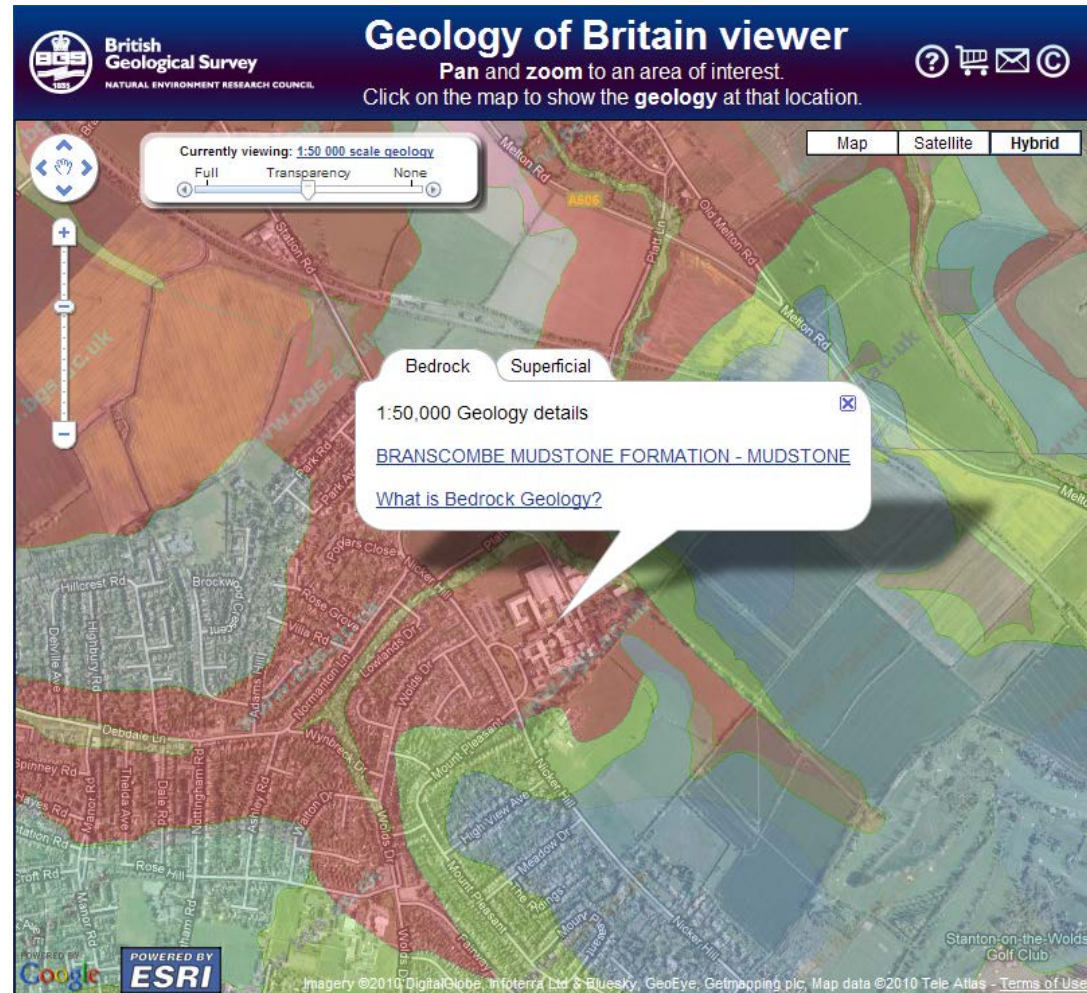
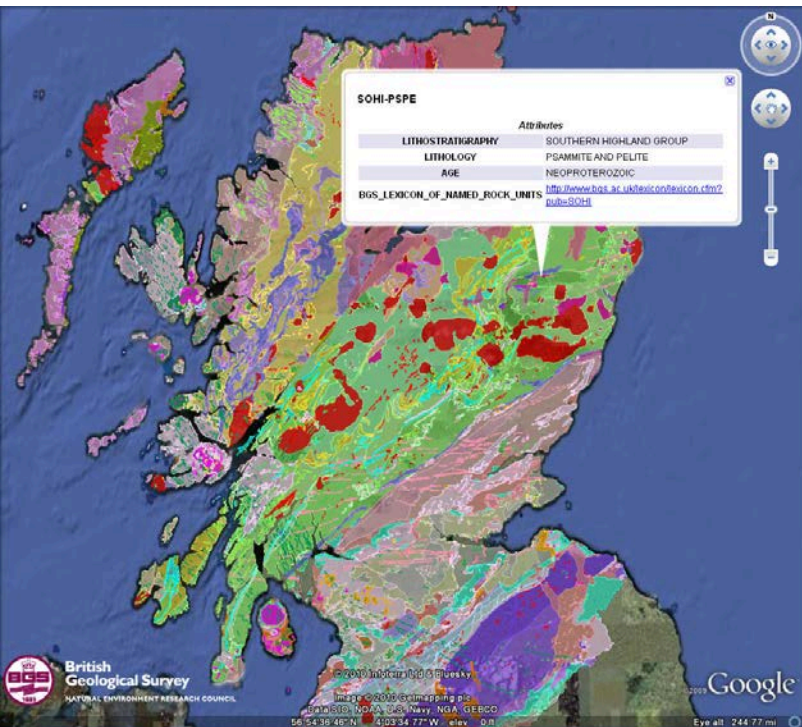


### Web services

BGS are making more of its information accessible through web services and [linked data](#) to encourage developers to use and innovate it within their own systems.

# OpenGeoscience: Free data from the BGS

# Geology of Britain viewer

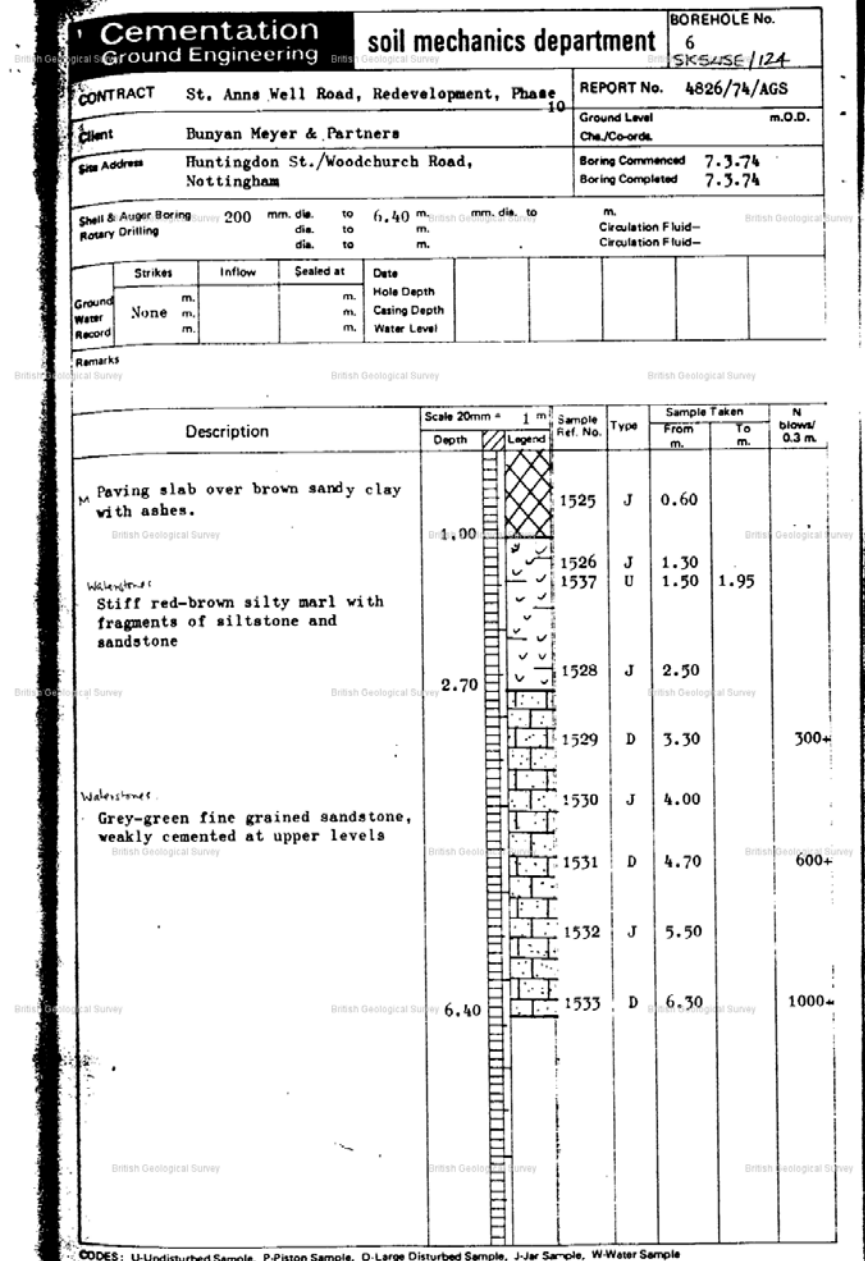
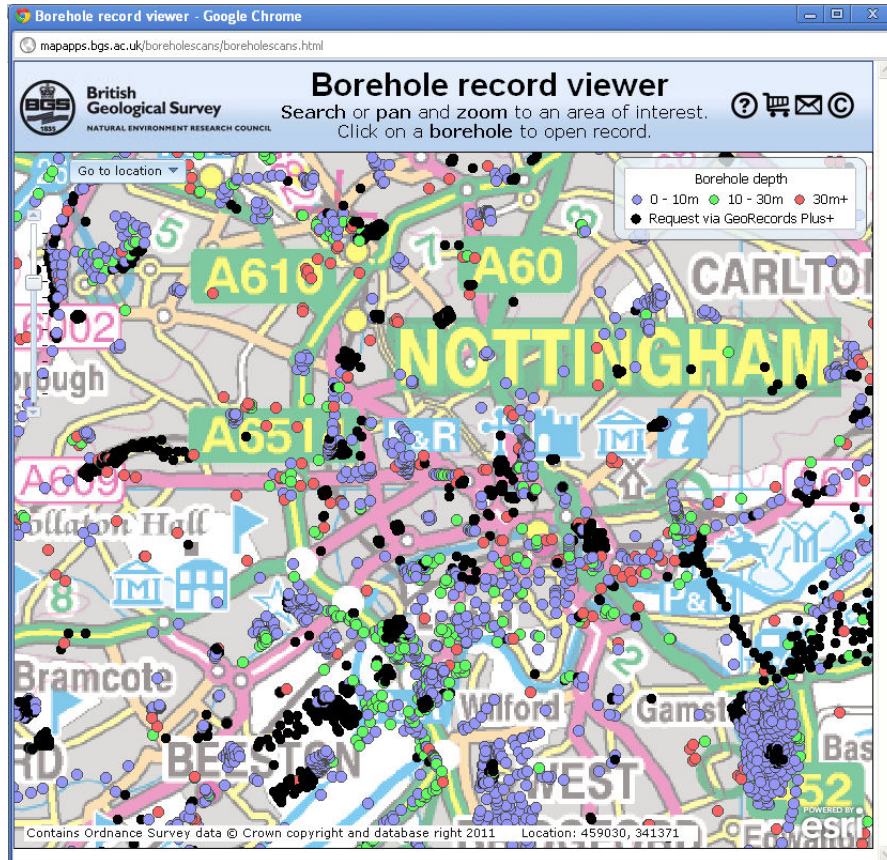


Data also available as a WMS:

[http://maps.bgs.ac.uk/ArcGIS/services/BGS\\_Detailed\\_Geology/MapServer/WMSServer?](http://maps.bgs.ac.uk/ArcGIS/services/BGS_Detailed_Geology/MapServer/WMSServer?)



# Borehole logs





# Data visualisation

- BGS is a world leader in geoscience visualisation.
- GeoVisionary ([www.virtalis.com/geovisionary](http://www.virtalis.com/geovisionary)) is world leading system for visualisation and interpretation of geoscience data in a virtual reality environment.
- Our 3D apps ([www.bgs.ac.uk/iGeology/3d.html](http://www.bgs.ac.uk/iGeology/3d.html)) enable users to explore landscape in 3D above and below surface. Augmented reality mode superimposes maps on to the device's camera view, painting the map onto the user's view of their surroundings.



**Geovisionary virtual field work: 3D visualisation suite at BGS**

# iGeology



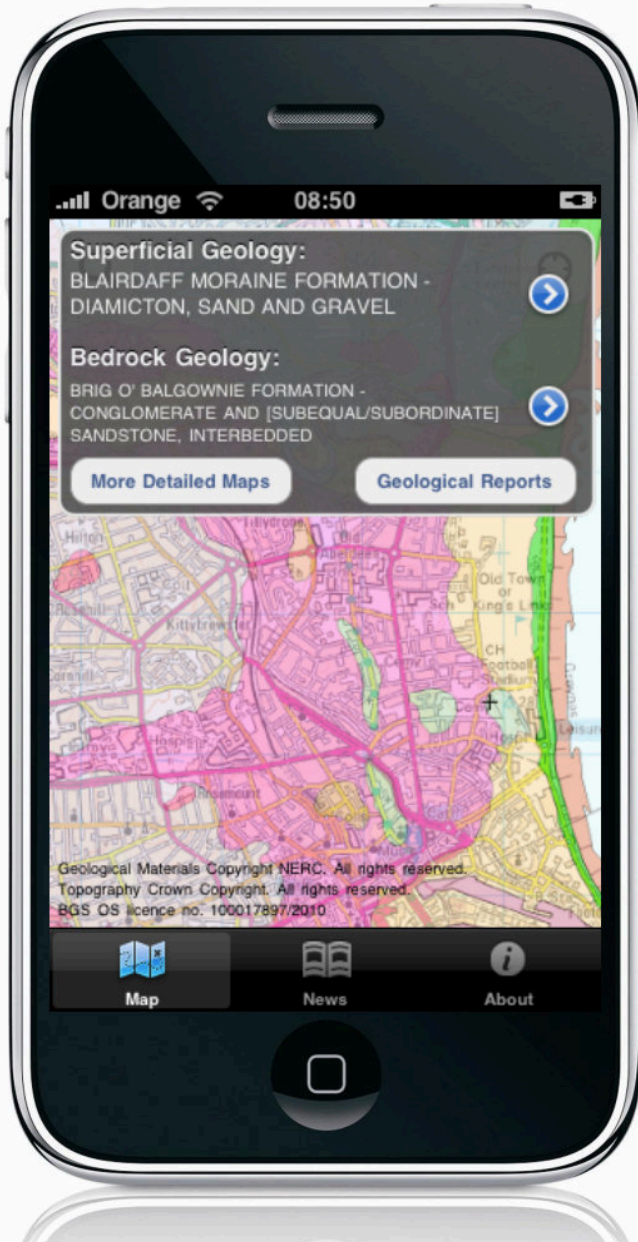
**Free iOS and Android App.**

**Allows access to the equivalent of  
500 geology maps.**

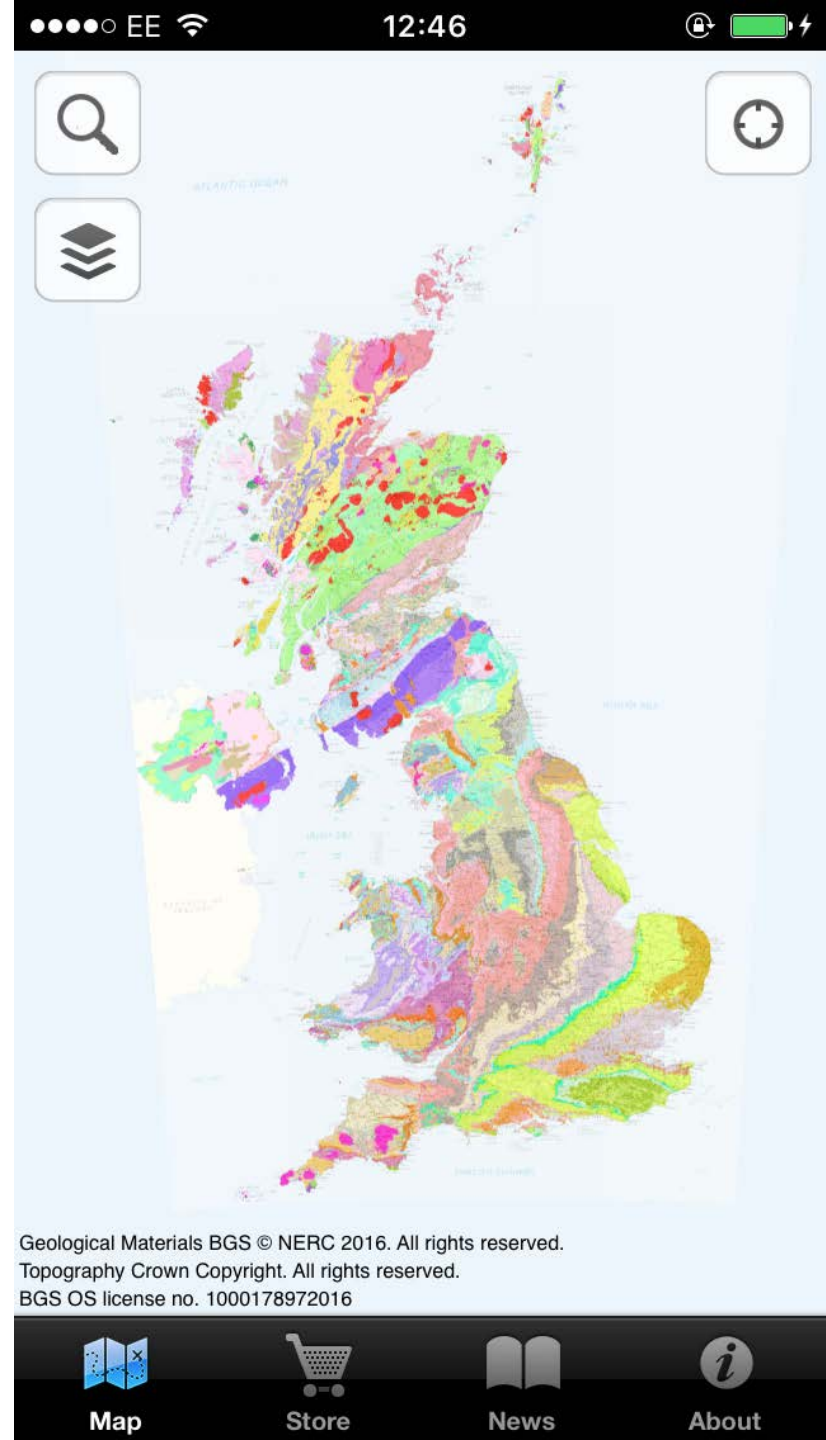
**iGeology for iOS developed and  
maintained in-house.**

Android version outsourced, but now  
maintained in-house

**Driven by interoperable web services  
to provide a self service, web-based  
delivery mechanism**







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ENVIRONMENT  
RESEARCH COUNCIL



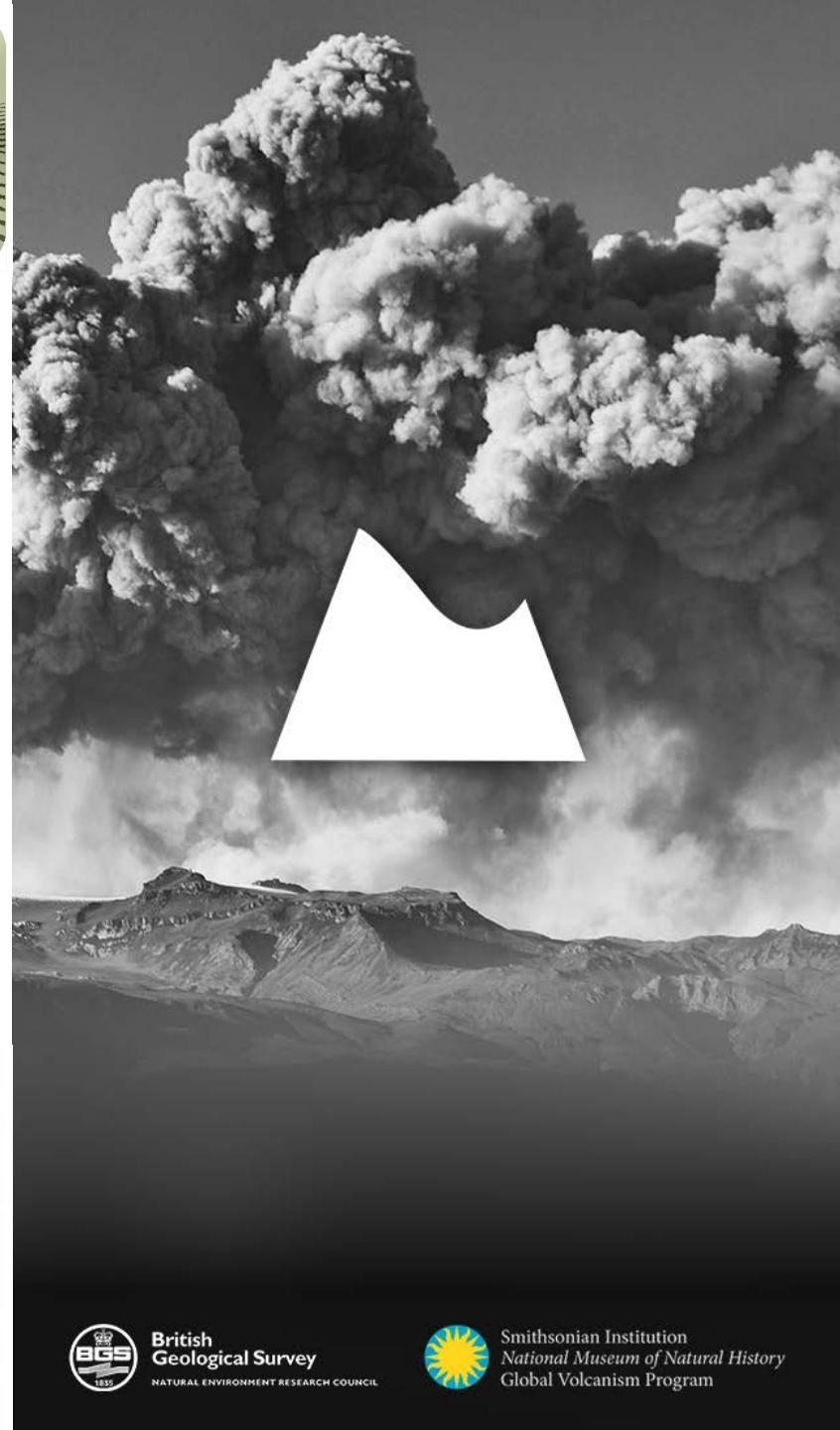
# mySoil



DOWNLOAD



MYVOLCANO



British  
Geological Survey  
NATURAL ENVIRONMENT RESEARCH COUNCIL



Smithsonian Institution  
National Museum of Natural History  
Global Volcanism Program





mGeology

English

العربية

# mGeology app

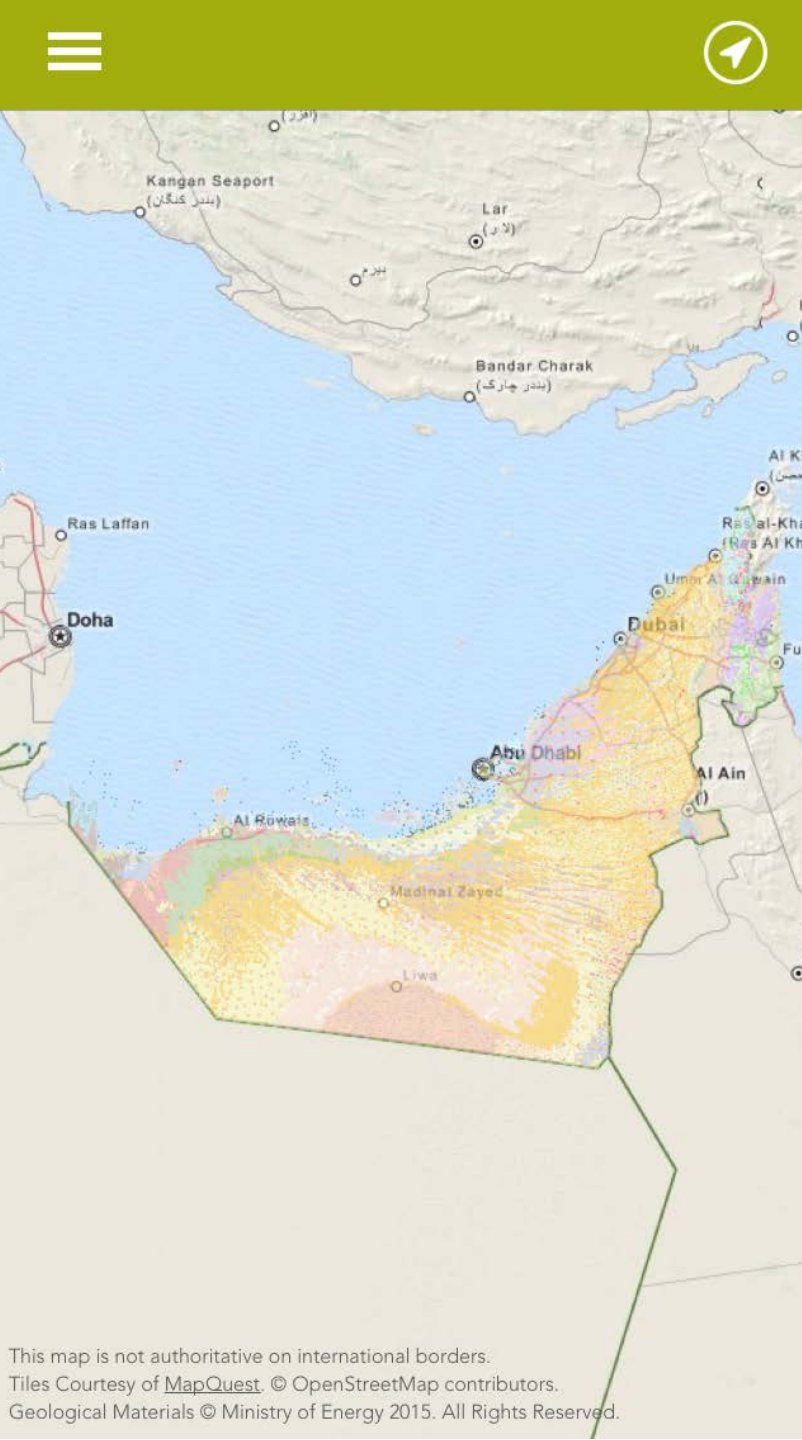
mGeology - free app that puts the geology of the UAE at your fingertips!

Access to Ministry of Energy's full national surface geology (1:100,000 scale).

Displays sabkha & veneer deposits, geological cross sections and photographs.

Apple (IOS) only







Formation

Sabkha

Fujairah Gabbro



Lithology (Rock Type)

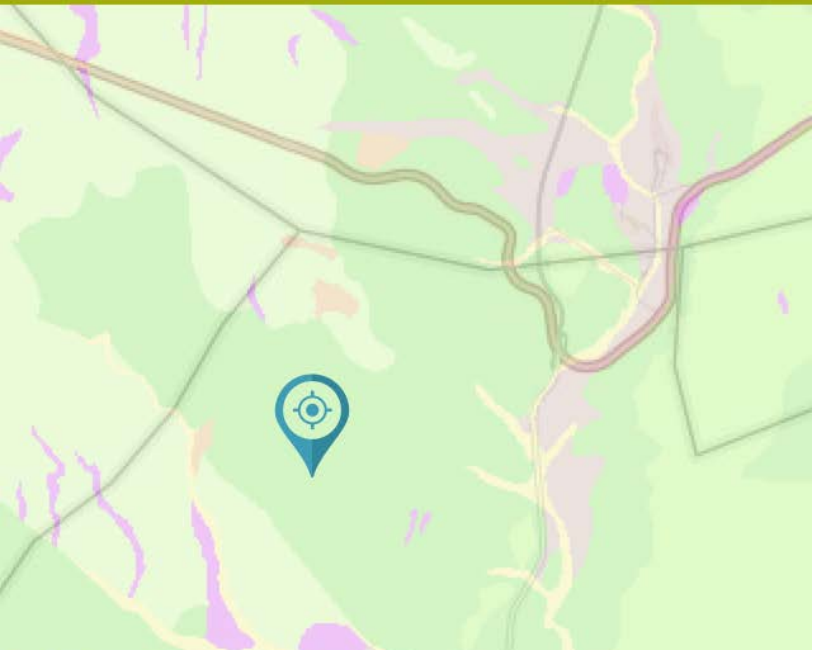
Oman-UAE  
Ophiolite

Veneer



Hatta

More Info



This map is not authoritative on international borders.  
Tiles Courtesy of MapQuest. © OpenStreetMap contributors.  
Geological Materials © Ministry of Energy 2015. All Rights Reserved.



Formation

Sabkha

Alluvial Fan Gravel, Ophiolite



Lithology (Rock Type)

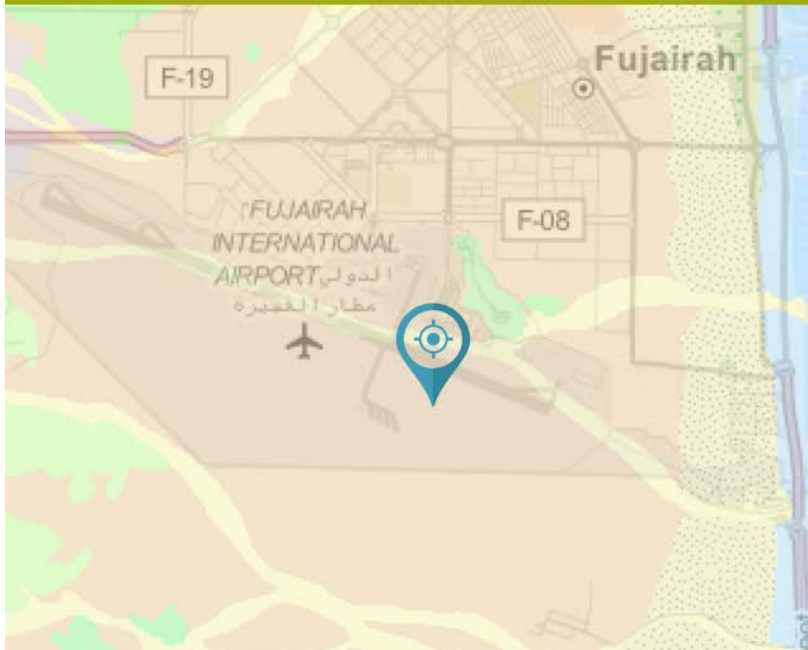
Superficial deposits

Veneer



Al Fujerah

More Info



This map is not authoritative on international borders.  
Tiles Courtesy of MapQuest. © OpenStreetMap contributors.  
Geological Materials © Ministry of Energy 2015. All Rights Reserved.



# Conclusions

- Geological data delivery has come a long way in the last 200 years
- Delivery of geological information, often for free, has become the new normal for users of geoscience data
- Mobile delivery of interactive, often 3D, data and the ability to upload your own data is the future that's is here today!



# Thank you for your attention!

**Clive Mitchell**

Industrial Minerals Specialist, British Geological Survey  
Keyworth, Nottingham, NG12 5GG, United Kingdom (UK)



+44 (0)115 936 3257

[cjmi@bgs.ac.uk](mailto:cjmi@bgs.ac.uk)

[www.bgs.ac.uk](http://www.bgs.ac.uk)

Twitter: @CliveBGS