

Data in the palm of your hand

Mobile, digital and 3D geology



Clive Mitchell

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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

William Smith's 1815 map

“A Delineation of the Strata of England and Wales with part of Scotland”

This was the ‘map that changed the world’ & helped shape the economic and scientific development of Britain, coinciding with the industrial revolution.

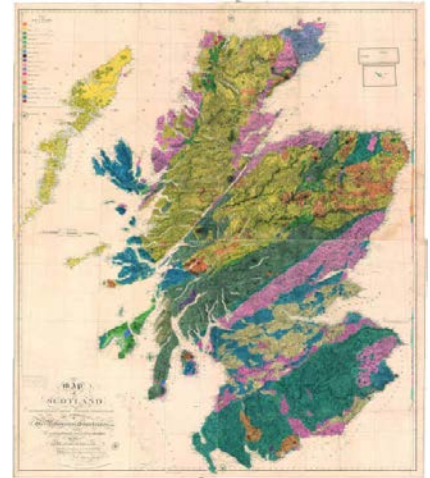
It came in 6 panels, in total 8 feet long and 6 feet wide!



Mapping Since 1815



Geological Survey of Scotland staff, Inchnadamph, Highlands (sometime in the 1880's)



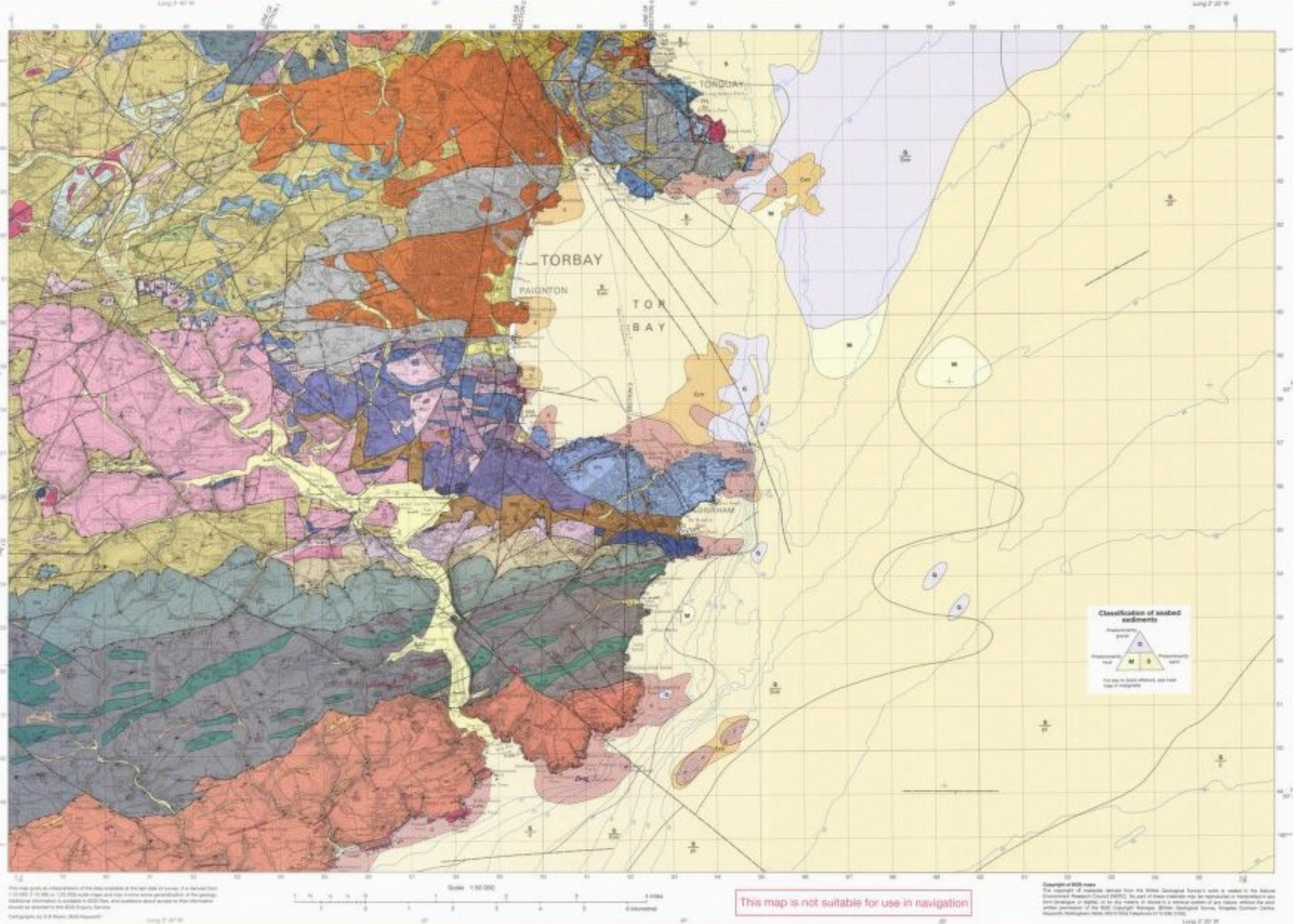
Data capture & delivery

- BGS captures geological information as digital data (points, lines & polygons) in the field using rugged tablets with BGS-SIGMA software
- This is developed on top of ESRI's ArcGIS software with a relational database built in MS Access
- Geospatial data delivered by the BGS website via map viewers, downloadable GIS datasets & mobile apps
- All for free & available via **OpenGeoscience**:

<http://www.bgs.ac.uk/opengeoscience/>



BGS geologist using field tablet



BGS 1:50,000 geological map for Torquay

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]".

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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!



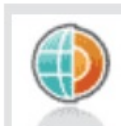
Scans and photos

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



DiGMapGB

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

4 themes: bedrock,
superficial, mass movement,
artificial

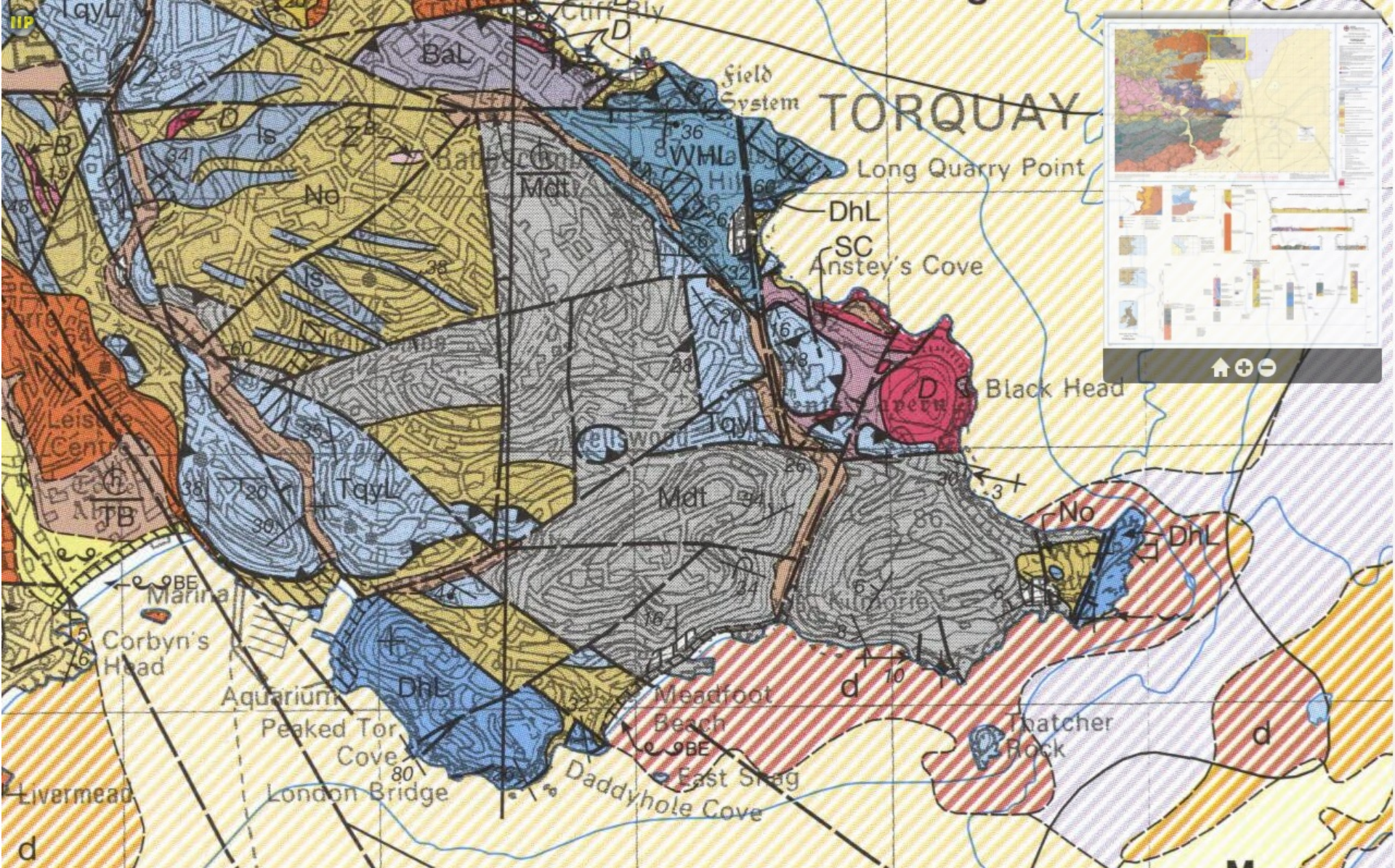
DiGMapGB-50

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

10,000 lithological
descriptions

What is available for you?

- BGS maps portal – over 6000 high-resolution maps & sections can be viewed online including historic maps
- Geology of Britain viewer – scale, query
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
- Apps:
 - iGeology (iOS & Android)
 - iGeology 3D (Android)
 - *mySoil* (iOS & Android)
 - *myVolcano* (iOS)



BGS Maps Portal

Maximum extent of view of 1:50,000 geological map for Torquay



Surface
Geology



3D
Models



Borehole
Scans



Earthquake
Timeline

Surface Geology

- ☐ Superficial only
- ☐ Bedrock only
- ☒ Bedrock and Superficial

Visible geology:
1:50 000 scale

Geology
Key

[More on digital geology](#)



Go to
Location

Switch
Basemap

100% 0%

Geology Transparency

Grid Ref: 294059, 63698

☒ Bedrock geology ☐ Superficial deposits

1:50 000 scale bedrock geology description:
Torbay Breccia Formation - Breccia And Sandstone, Interbedded. Sedimentary Bedrock formed approximately 271 to 299 million years ago in the Permian Period. Local environment previously dominated by hot deserts.

Setting: hot deserts. These rocks were formed in mainly hot dry environments where potential evaporation was greater than precipitation; often characterised by dunes, loess and evaporites.

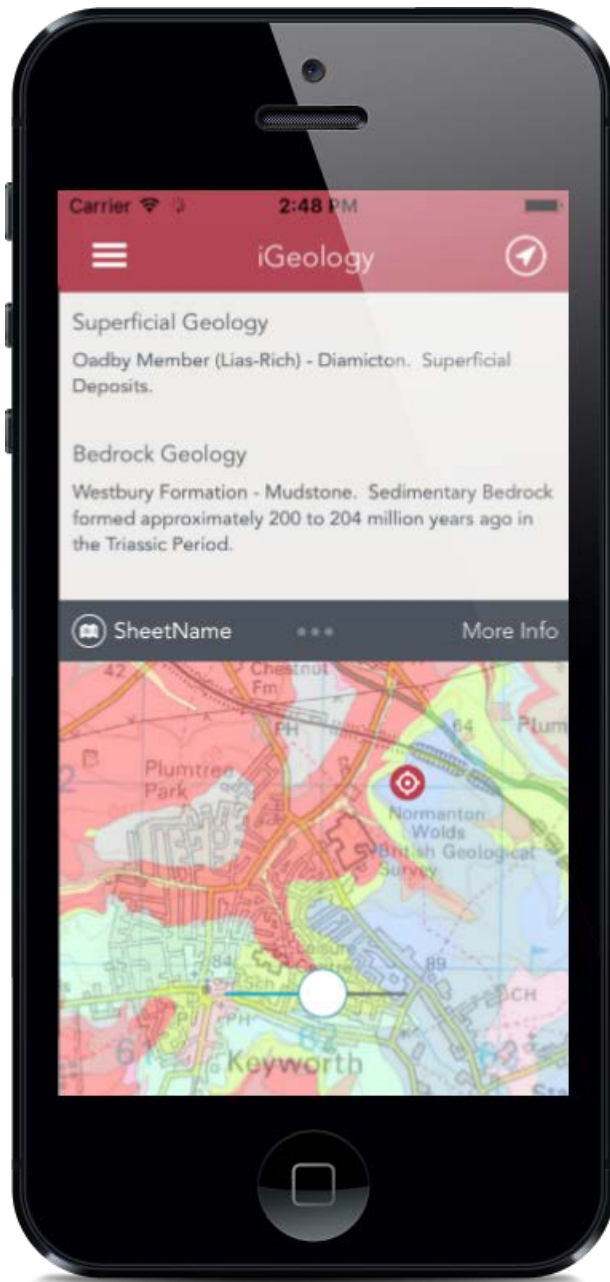
[Further details](#)

[What is Bedrock Geology?](#)

[To purchase detailed geological reports for this area, try our GeoReports service](#)

0 0.3 0.6km

iGeology



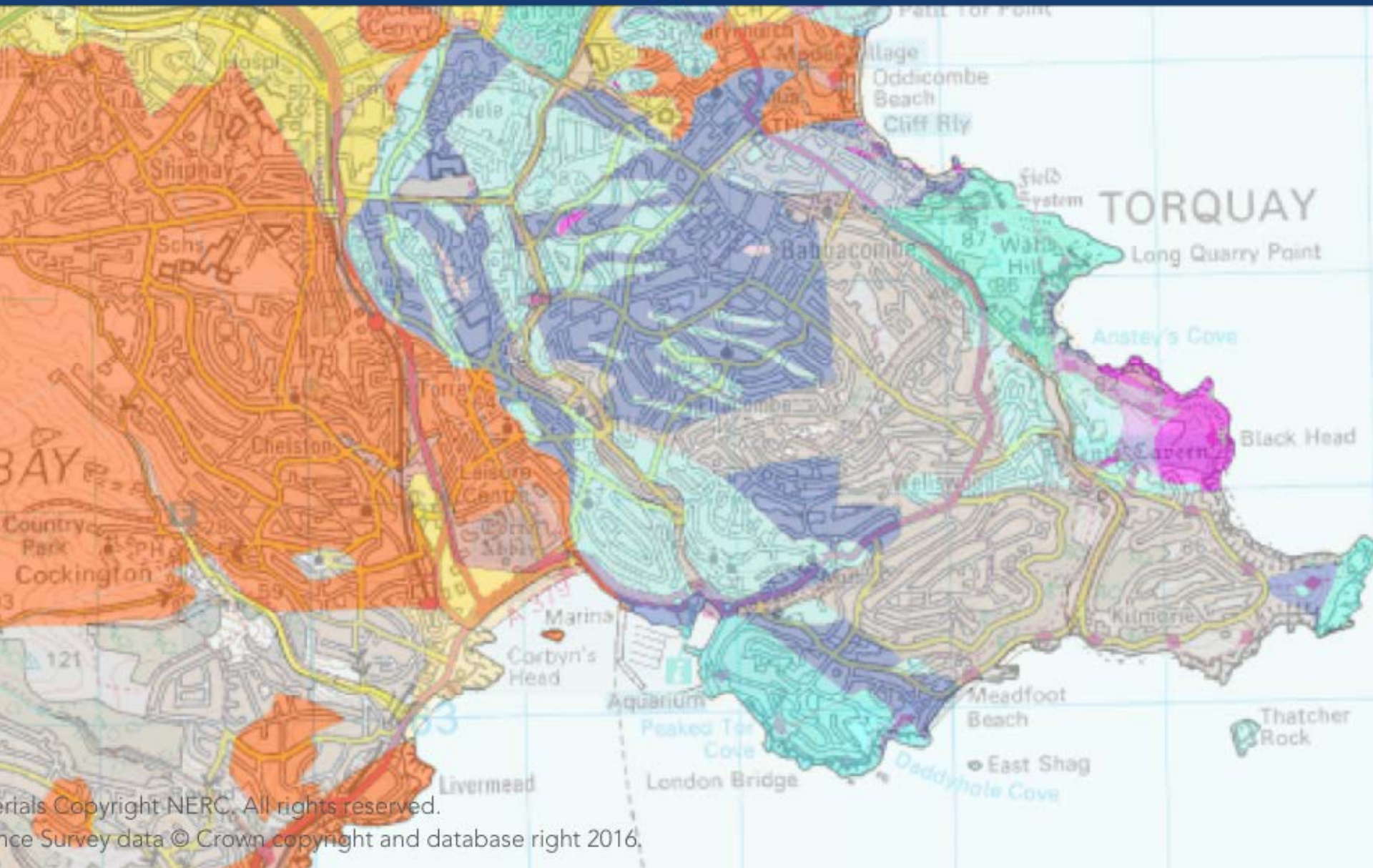
Free iOS and Android App.

**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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iGeology map for Torquay



Superficial Geology

Head - Clay, Silt, Sand And Gravel. Superficial Deposits formed up to 3 million years ago in the Quaternary Period.

Bedrock Geology

Torbay Breccia Formation - Breccia And Sandstone, Interbedded. Sedimentary Bedrock formed approximately 271 to 299 million years ago in the Permian Period.

GEOHAZARDS



MORE INFO



Queried geology for Riviera Centre

(from www.bgs.ac.uk/lexicon)

iGeology 3D – augmented reality



NATURAL
ENVIRONMENT
RESEARCH COUNCIL



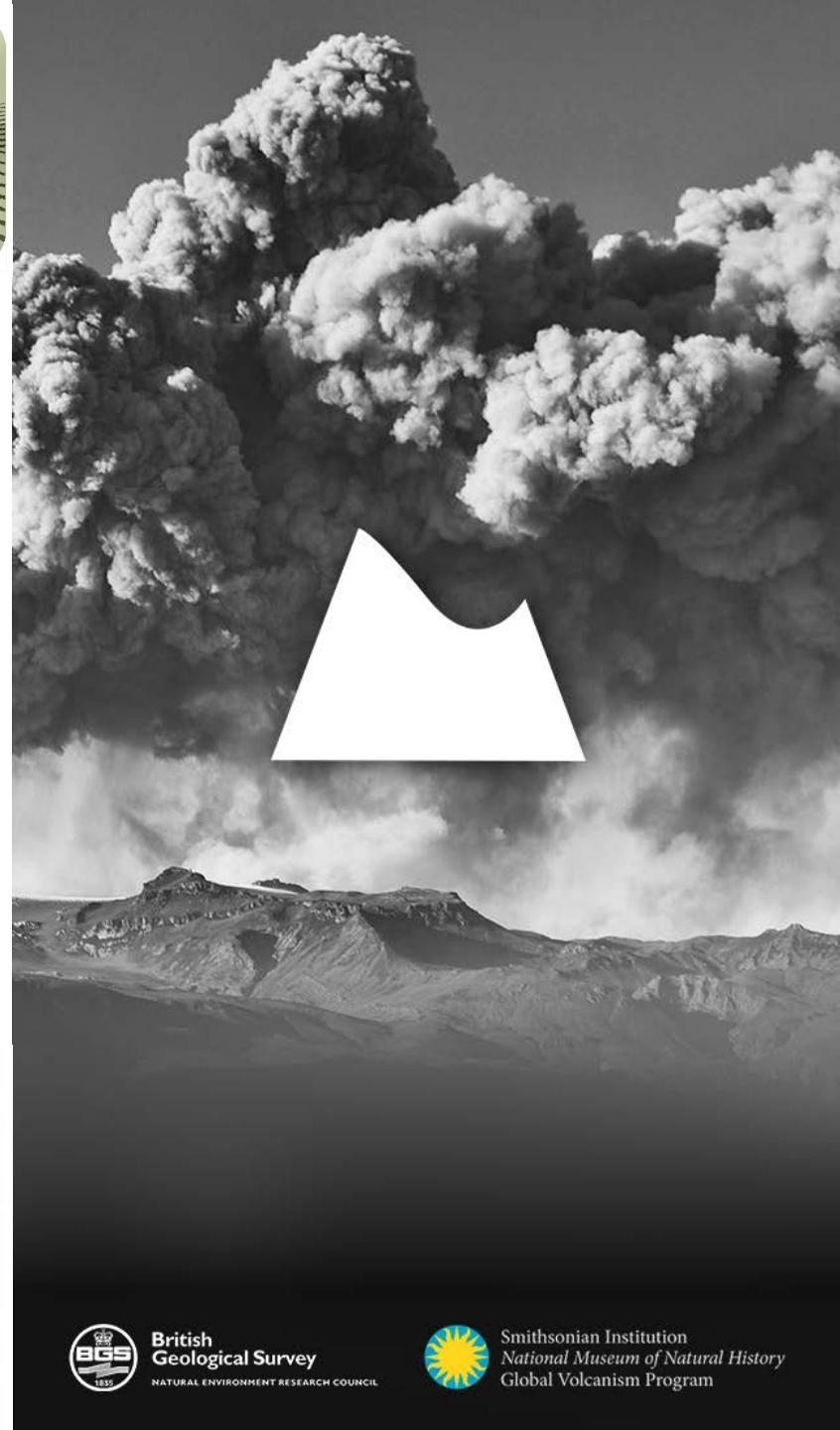
mySoil



DOWNLOAD



MYVOLCANO

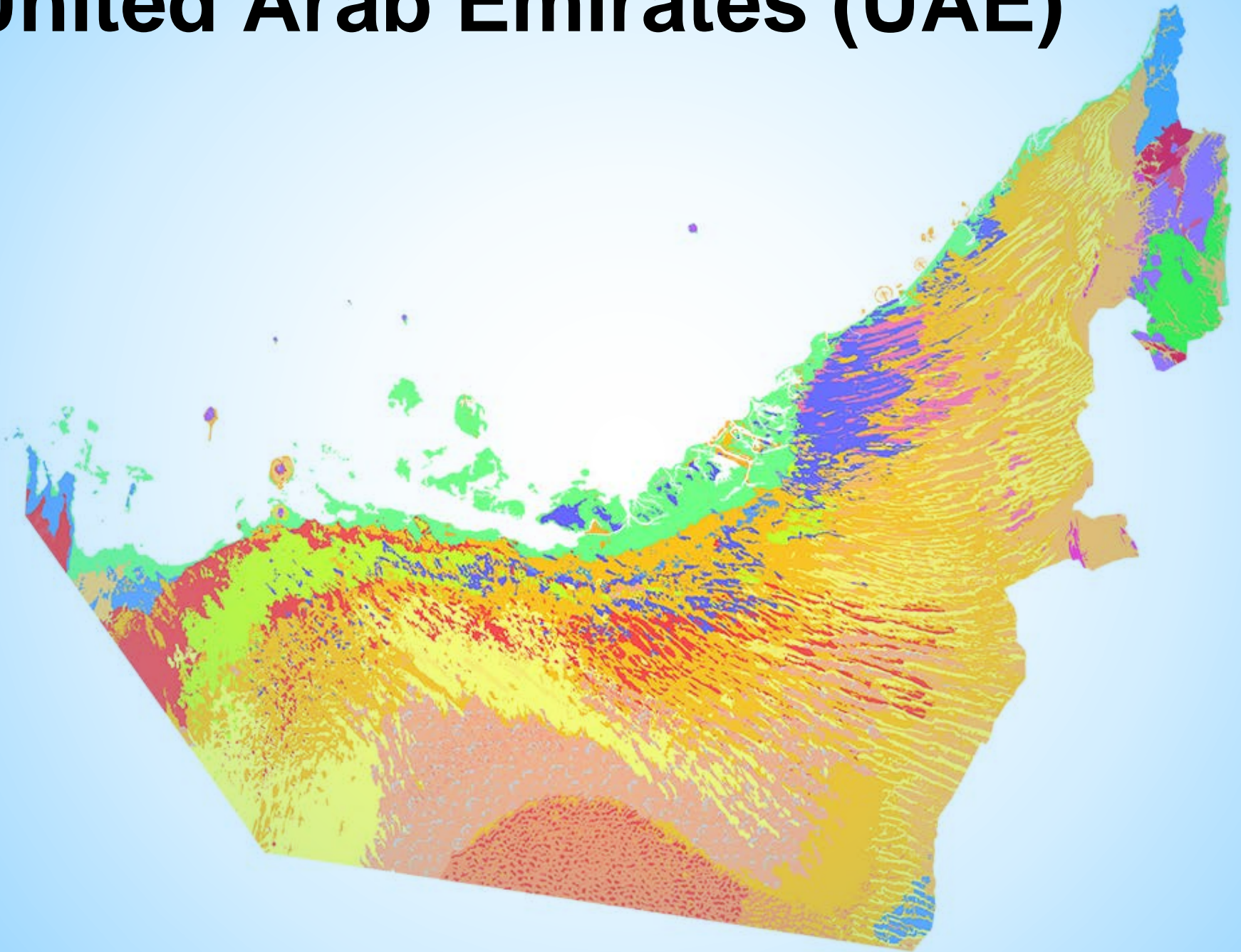


British
Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL



Smithsonian Institution
National Museum of Natural History
Global Volcanism Program

United Arab Emirates (UAE)





mGeology

English

العربية

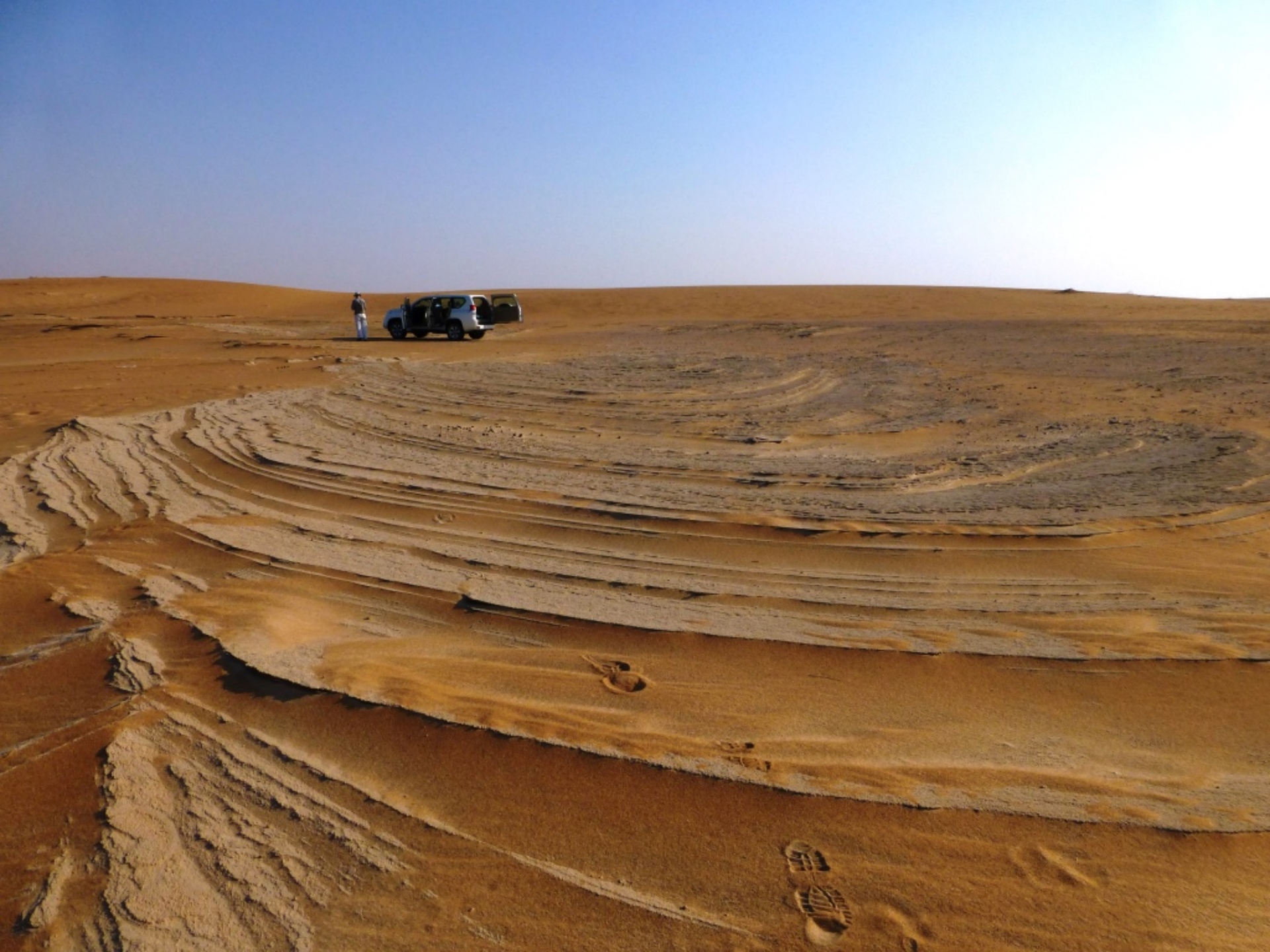
mGeology app

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





Fossil elephant tracks

Miocene limestone pavement, 8 ma
Bid Al Matav'ah, south of Ruwais, UAE



Zeugen

Ghayathi (palaeodune) sandstone with a protective cap
of limestone and gypcrete

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!

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