



**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Applied geoscience for our
changing Earth

The next generation of open environmental information

New digital technologies and delivery
methods used by the BGS

Keith Westhead, Head of Knowledge Exchange, BGS

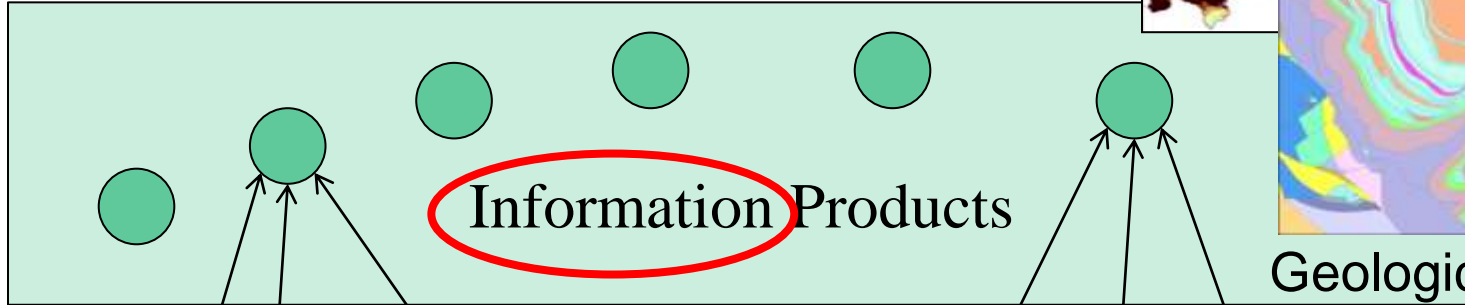
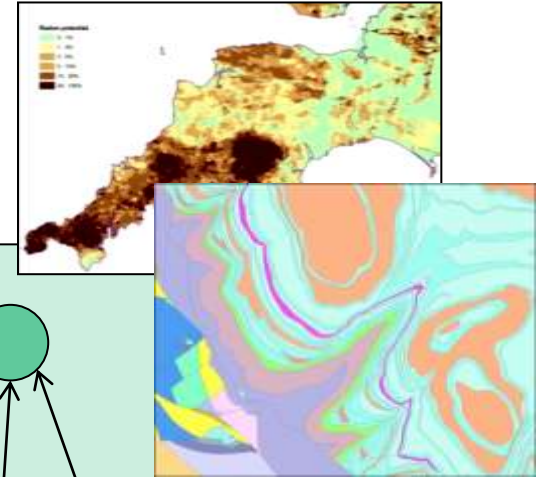
Introduction - key questions on 'openness'

- What do we mean by 'data' & 'information'?
- What do we mean by 'open'?
- What is behind the drive for it?
- How is it done?
- What is BGS doing?
- What are the opportunities, e.g., in education?



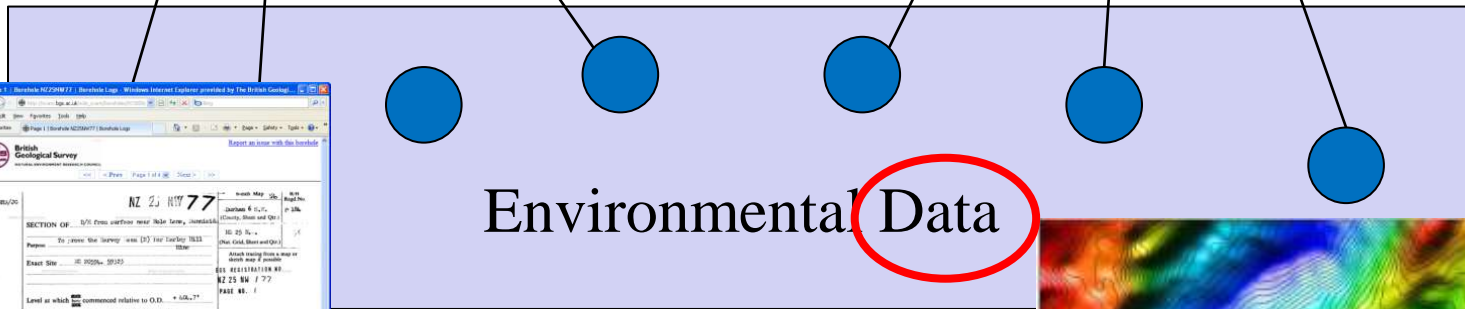
'Digital materials'

Radon potential



Geological map

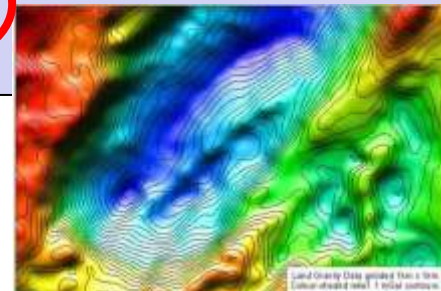
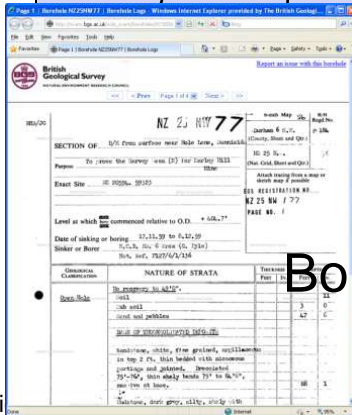
Interpretation ('adding value')



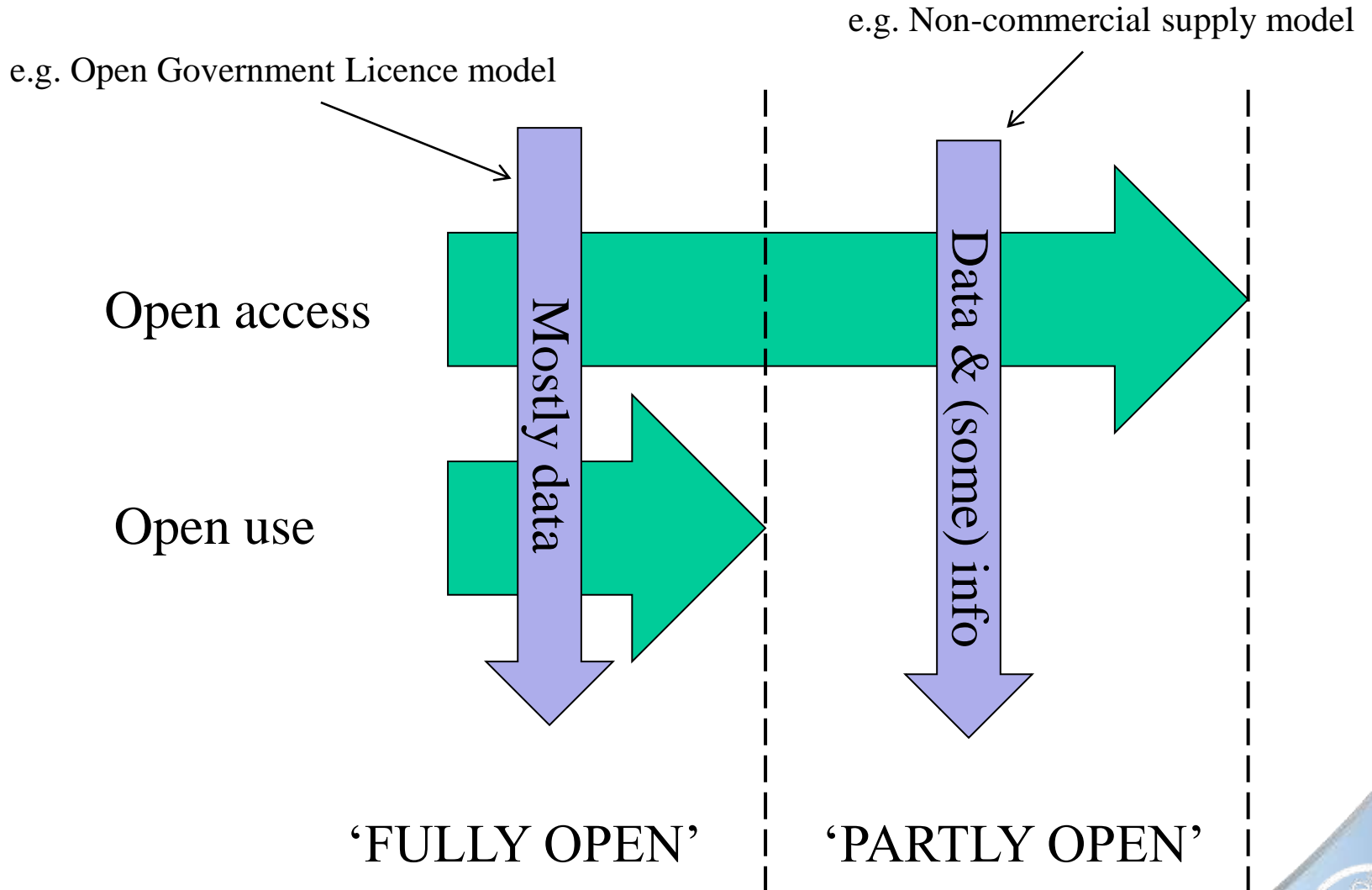
Environmental Data

Borehole records

Gravity data



What is 'Open'?

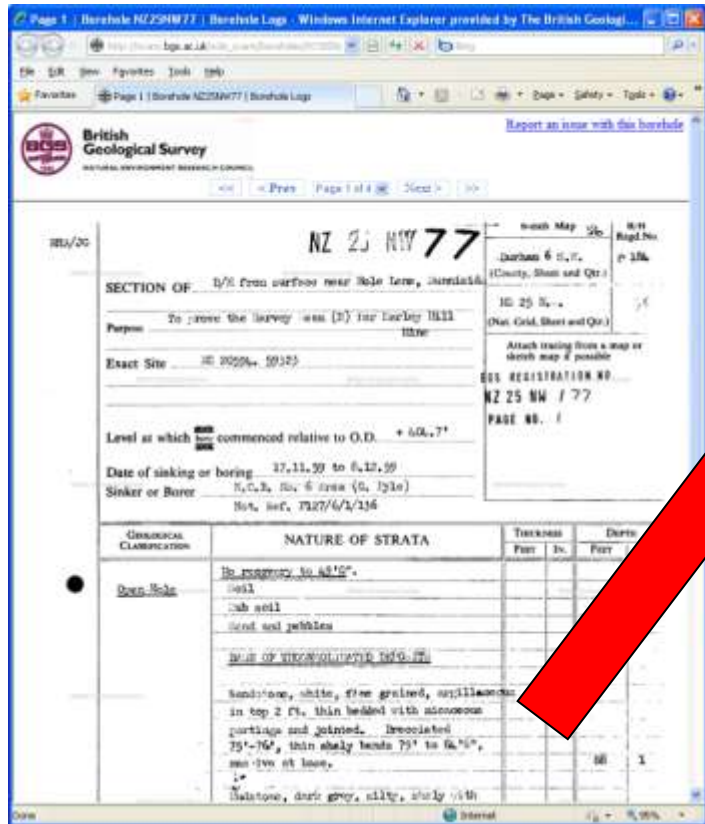


Introduction - trends

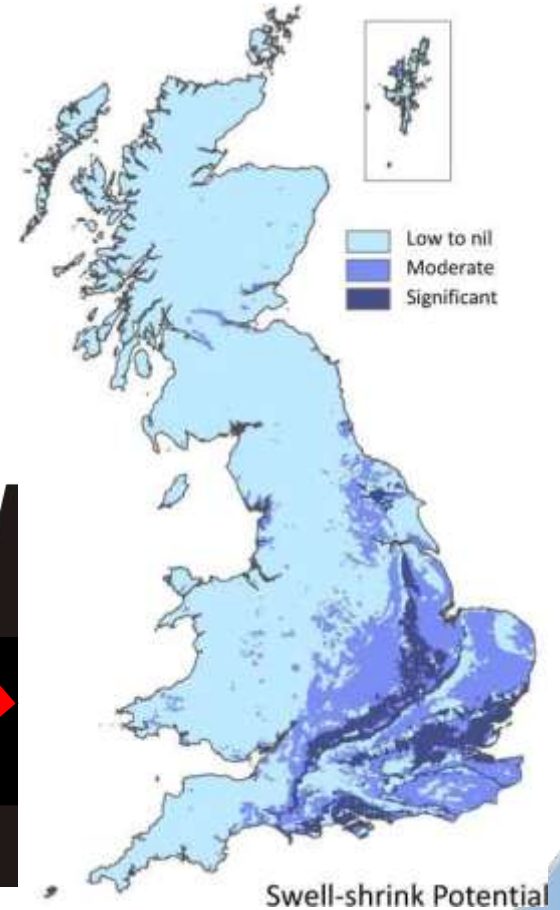
- Go back 20 years = paper information (products), underlying data largely inaccessible
- Go back 10 years = desktop GIS information, data still largely inaccessible
- Now = web GIS information, data becoming open
- In <10? years = open & collaborative web of products and data?



Balance: Open Access v Charging



Social benefit & Economic Growth



FREE

FEE

'Freemium' business model



The drive for openness....why?

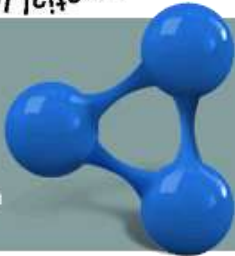


Open Data
White Paper
Unleashing the Potential

#opendata
@uktransparency
@cabinetofficeuk

data.gov.uk

Working with UK
Public Sector
information and data



Policy Pull



Technology pull



Solutions pull
(better answers)

‘Provider push’



The new NERC Licensing & Charging policy

- Environmental Data: fully open*
- Information Products: 'openness' dependent on use:
 - Largely fully open* for academic/teaching use
 - Restricted (by charging) for commercial use
- *subject to 'reasonable' supply controls
- Aim is to increase impact for wider society of NERC data and information

<http://www.nerc.ac.uk/research/sites/data/charges.asp>



BGS OpenGeoscience



- One-stop-shop for fully open environmental data
- Increasing amounts of ‘baseline’ information products (e.g. DiGMapGB-50 as view service)
- Open Government Licence



Open Government Licence
for public sector information

delivered by
A The National Archives



OpenGeoscience

Data collection search



e.g. Rock Collections



e.g. Linked data

Mobile Apps



iGeology



Map viewers



e.g. DiGMapGB-50

Scans & photos



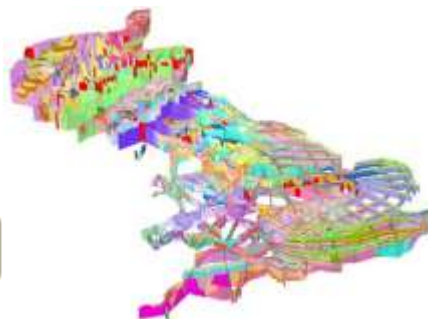
e.g. Core photos

Web services



KML

e.g. Earthquake & geological maps



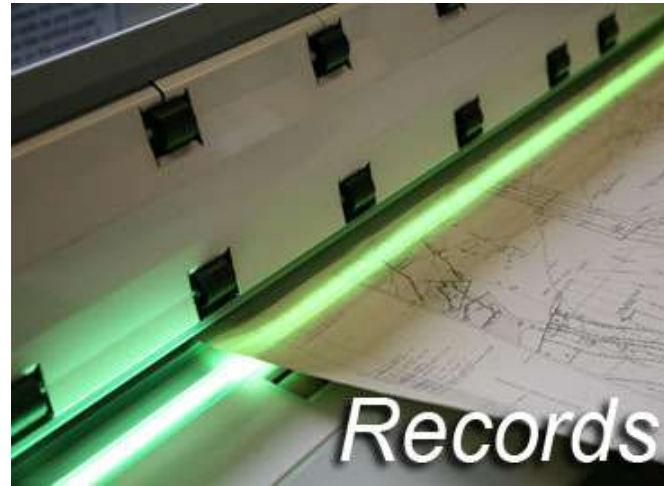
Downloadable data



National Geoscience Data Centre

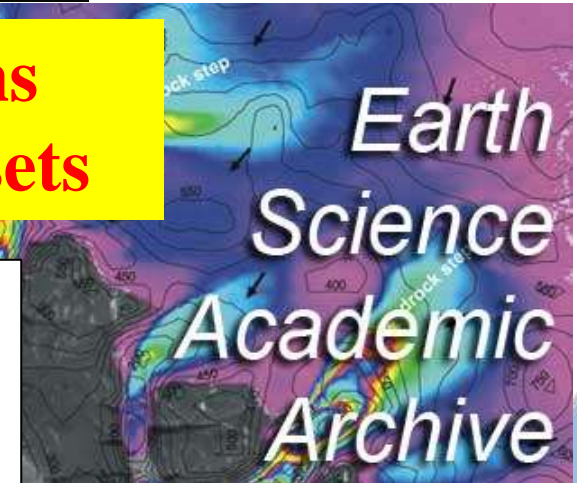


*Digital
Data*



Records

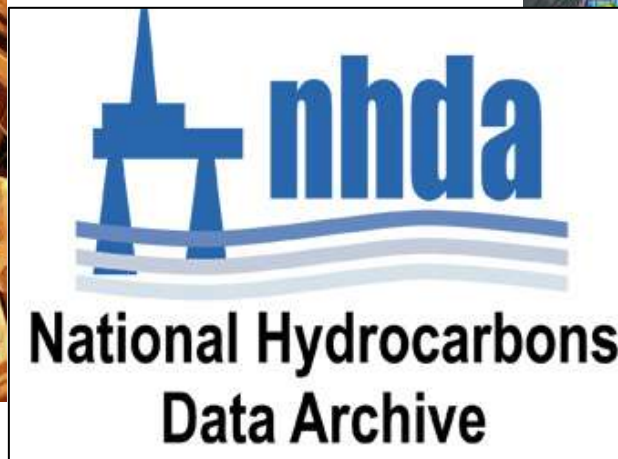
14 million items
400 digital datasets



*Earth
Science
Academic
Archive*



*Materials
Collections*



**National Hydrocarbons
Data Archive**



The power of open access

http://mapapps.bgs.ac.uk/ - Borehole record viewer - Windows Internet Explorer provided by BGS Keyworth

British Geological Survey
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Borehole record viewer

Search or pan and zoom to an area of interest.
Click on a borehole to open record.

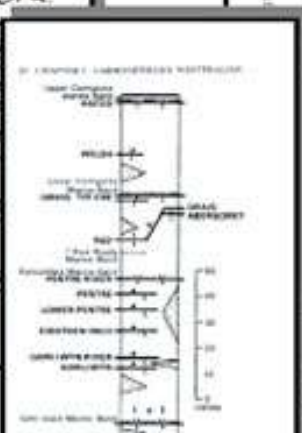
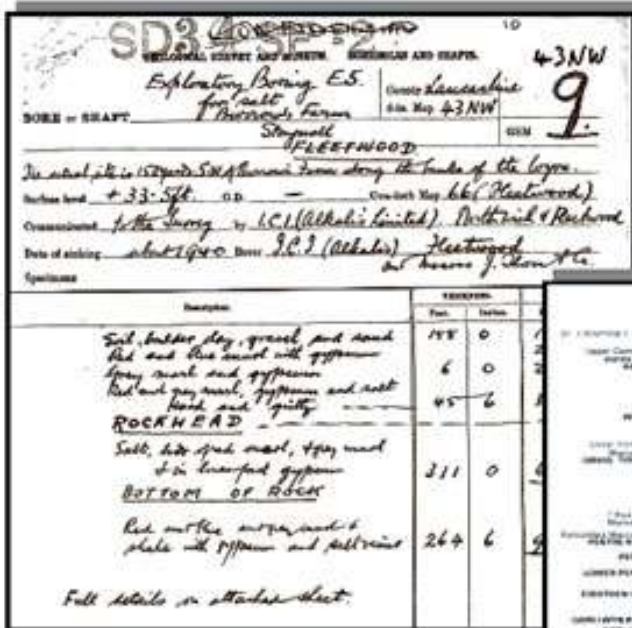
Go to location ▾

Borehole depth
 ● 0 - 10m ● 10 - 30m ● 30m+
 ● Request via GeoRecords Plus+

SK63SW35 Hill Top Farm
 SK63SW28
 SK63SW29
 SK63SW124
 SK63SW31
 SK63SW30
 SK63SW33
 SK63SW34
 SK63SW129
 SK63SW36 field Farm

Depth	Remarks	Strata
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1.70 - 1.75
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9.95 - 10.00

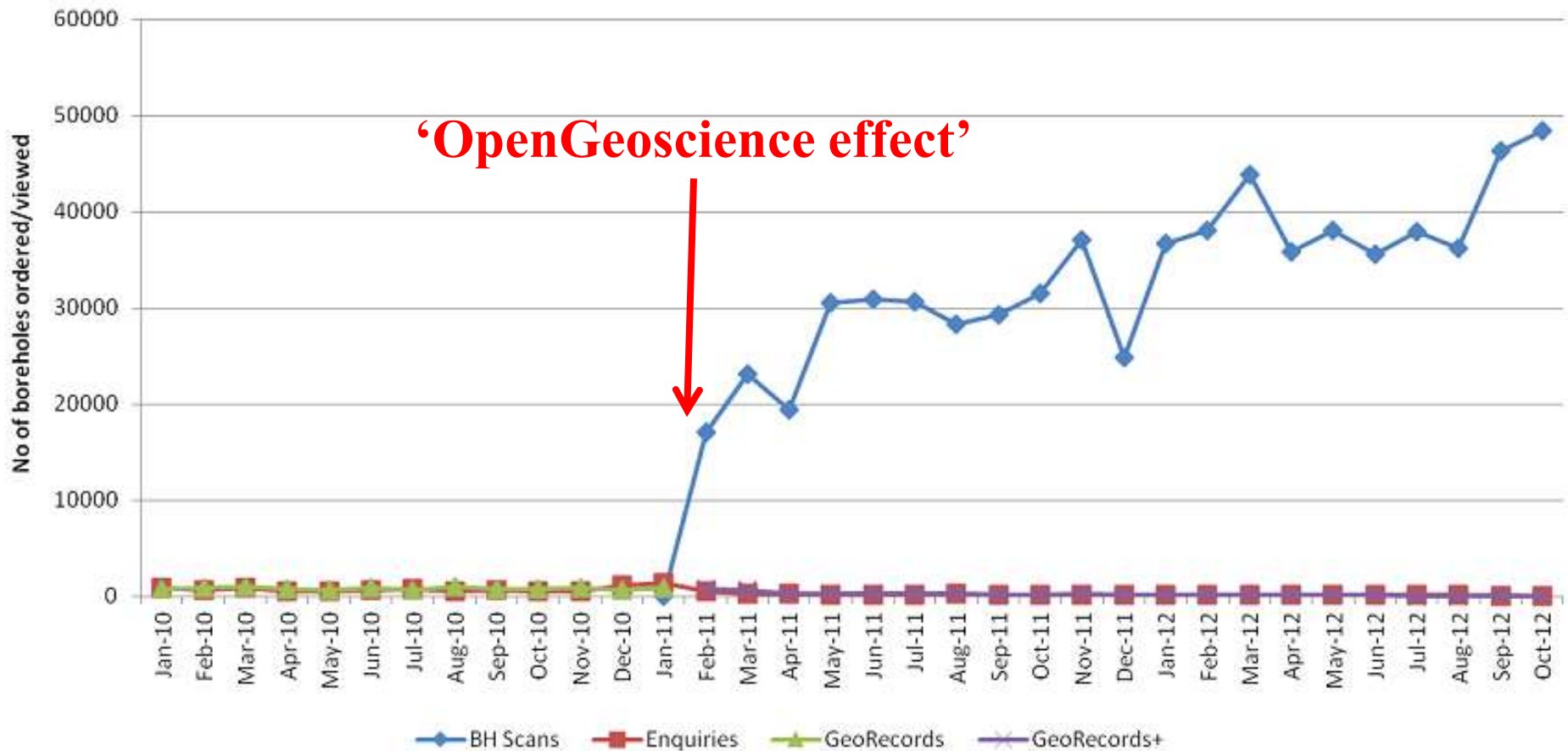
2012 Location: 462088, 332300



Borehole scan access increased to 30,000 boreholes per month since made freely available. Under previous cost recovery manual fulfilment, 1,500 boreholes per month were accessed.



Borehole scan views vs GeoRecords+ orders



OpenGeoscience map services for baseline Information Products

http://mapapps.bgs.ac.uk/ - Geology of Britain viewer | British Geological Survey (BGS) - Windows Internet Explorer pro...

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Geology of Britain viewer

Viewer for 1: 625 000 and 1:50 000 scale digital geological maps
Click on the map to view a description of the geology

Full Transparency None

Switch Basemap Go to Location 1:625 000 geology key

Bedrock geology Superficial deposits

1:625 000 scale bedrock geology

description: West Walton Formation, Ampthill Clay Formation And Kimmeridge Clay Formation (Undifferentiated) - Mu. Sedimentary Bedrock formed approximately 146 to 159 million years ago in the Jurassic Period. Local environment previously dominated by shallow seas.

Setting: shallow seas. These rocks were formed in shallow seas with mainly siliciclastic sediments (comprising of fragments or clasts of silicate minerals)

0 20 40km

POWERED BY **esri**

Done Internet 100%

50k views p/a



Mobile Apps – iGeology 2D & 3D

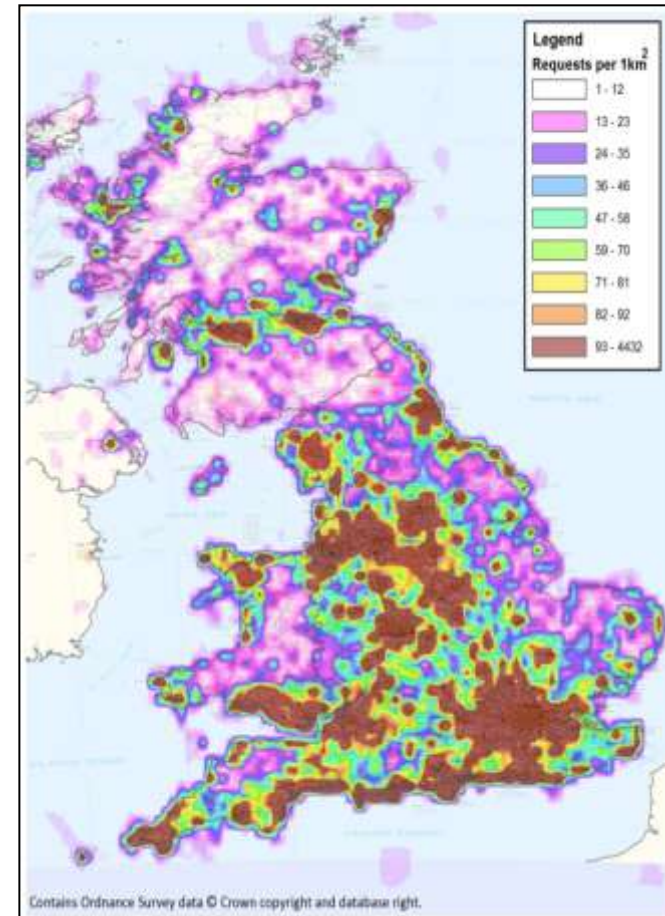


Paper geology map sales down
to a few thousand per year.
iGeology 100,000+ downloads
in 18 months



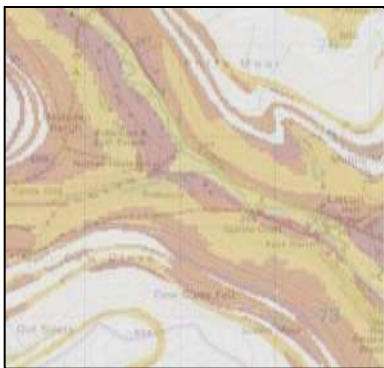
Apps for citizen science & crowdsourcing

- mySoil App released by BGS and Centre for Ecology & Hydrology (NERC) – June 2012

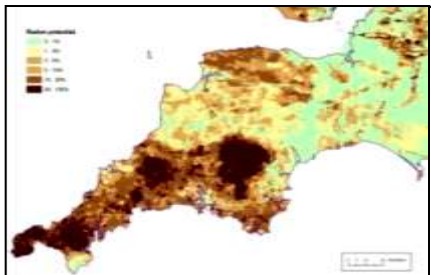


Information Products

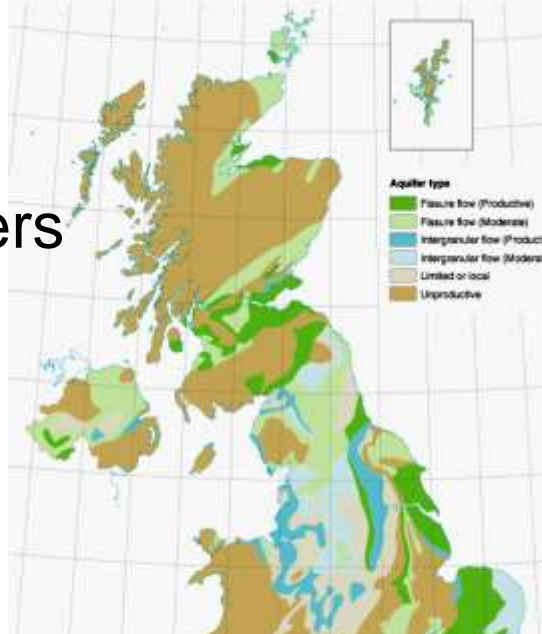
Landslide



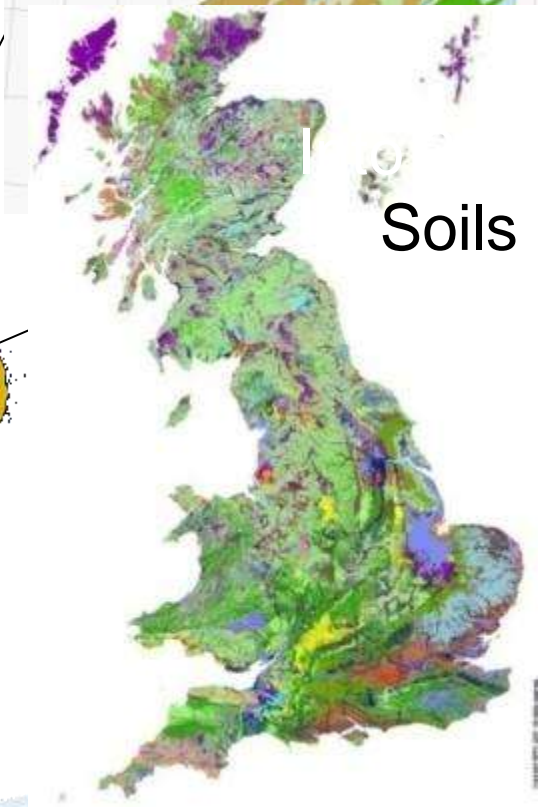
Radon



Aquifers



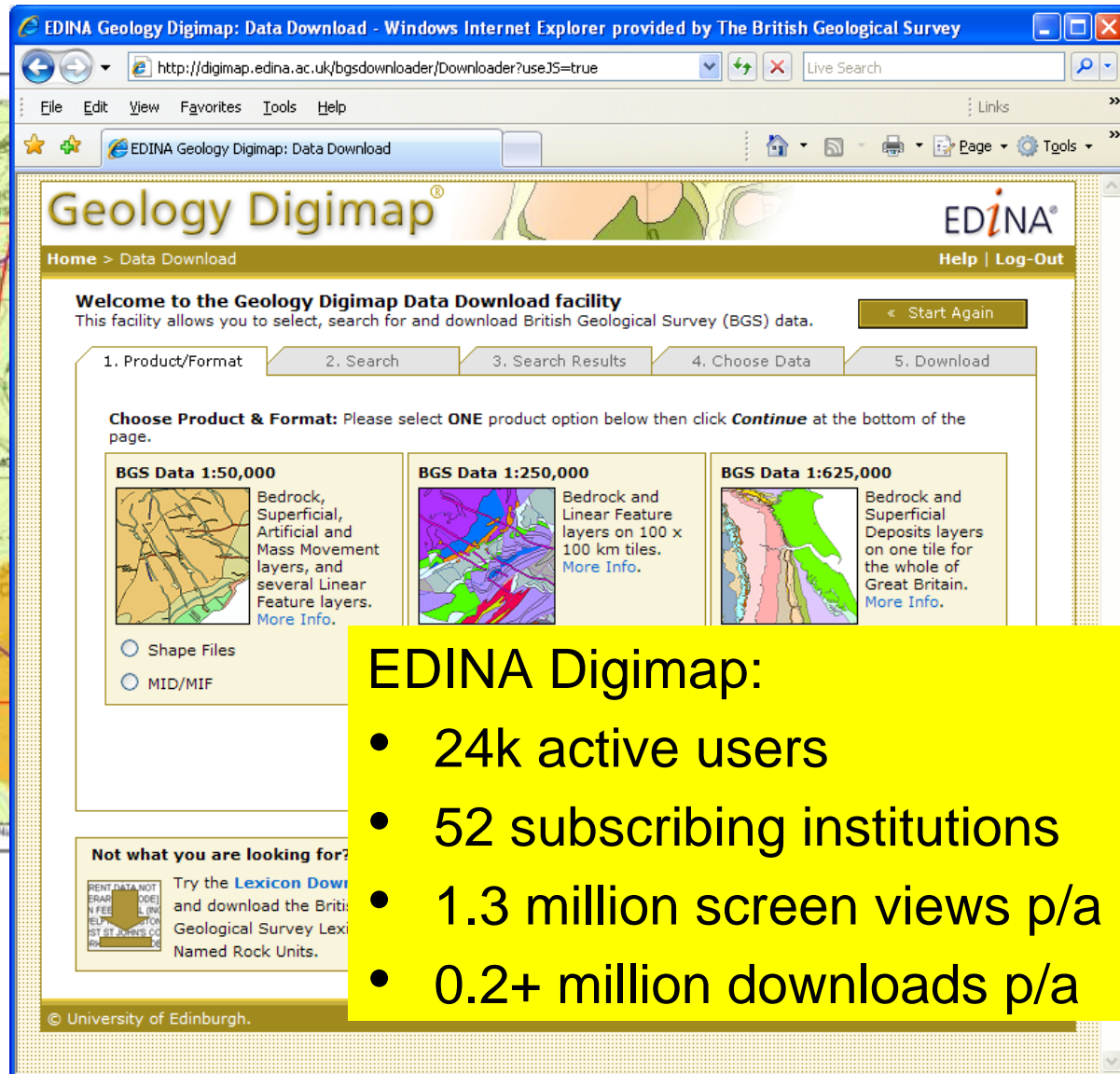
Soils



3D interactive modelling



Partner Web/Information Services



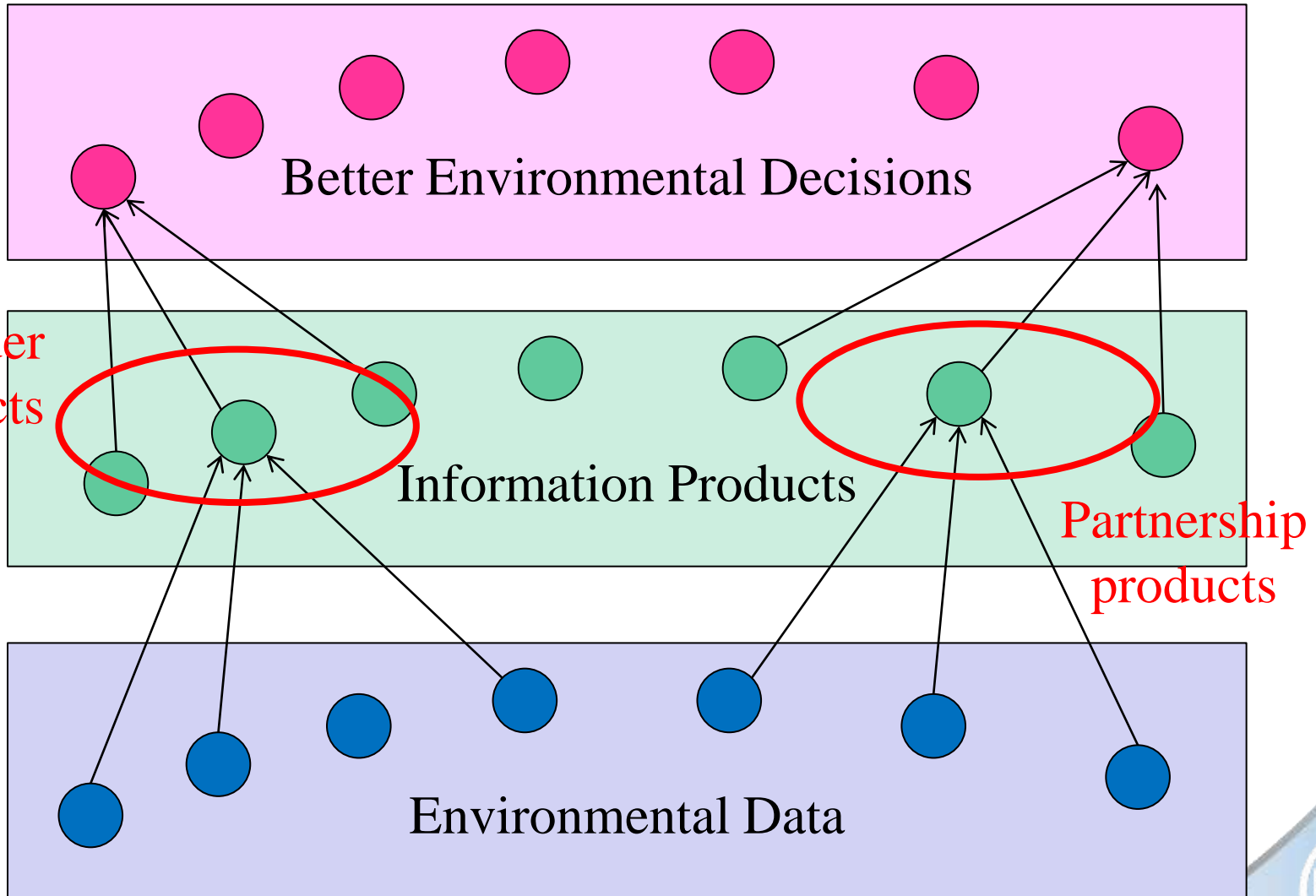
The screenshot shows a web browser window titled "EDINA Geology Digimap: Data Download - Windows Internet Explorer provided by The British Geological Survey". The address bar shows the URL "http://digimap.edina.ac.uk/bgsdownloader/Downloader?useJS=true". The page content includes the "Geology Digimap" logo, navigation links for "Home > Data Download" and "Help | Log-Out", and a welcome message: "Welcome to the Geology Digimap Data Download facility. This facility allows you to select, search for and download British Geological Survey (BGS) data." Below this is a progress bar with five steps: "1. Product/Format", "2. Search", "3. Search Results", "4. Choose Data", and "5. Download". The "Choose Product & Format" section instructs users to select one product option and click "Continue". Three product options are listed: "BGS Data 1:50,000" (Bedrock, Superficial, Artificial and Mass Movement layers, and several Linear Feature layers), "BGS Data 1:250,000" (Bedrock and Linear Feature layers on 100 x 100 km tiles), and "BGS Data 1:625,000" (Bedrock and Superficial Deposits layers on one tile for the whole of Great Britain). Each option includes a small map thumbnail and a "More Info." link. Below the product options, there is a section for "Not what you are looking for?" with a link to the "Lexicon Download" and a note about downloading the British Geological Survey Lexicon Named Rock Units. The footer of the page includes "© University of Edinburgh." and a small logo for the British Geological Survey (BGS) with the year 1835.

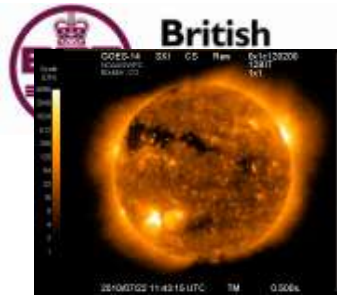
EDINA Digimap:

- 24k active users
- 52 subscribing institutions
- 1.3 million screen views p/a
- 0.2+ million downloads p/a



Benefit of wider sharing





Sur
MENT RE



The Scottish Government
Riaghaltas na h-Alba



 **Cabinet Office**



Government Office for **Science**



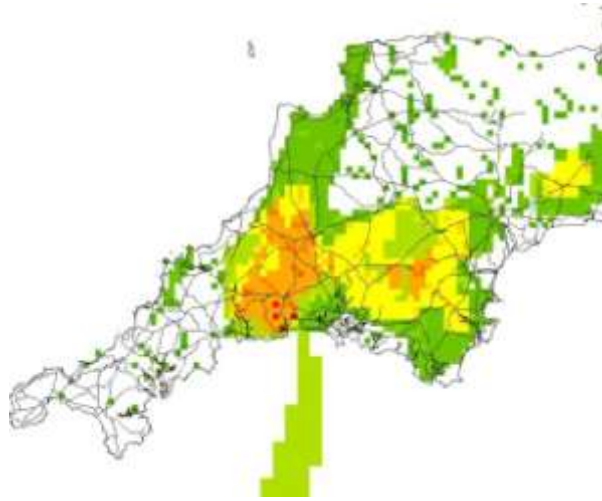
Natural Hazards Partnership



Hazard Impact Model

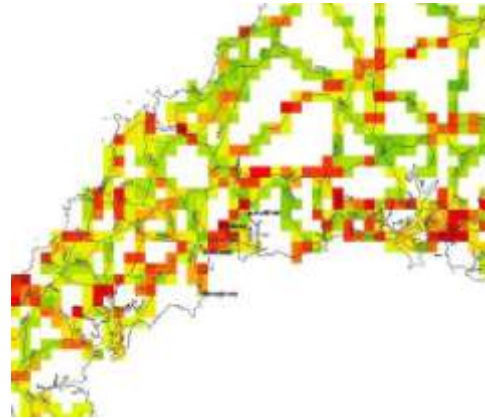
Cornwall Flood 17th Nov 2010

Risk = Hazard x (Vulnerability x Exposure)



Hazard

x



Vulnerability

x



Exposure

Cornwall floods 17th Nov 2010

Western Morning News

45p THURSDAY NOVEMBER 18 2010

VOICE OF THE WESTCOUNTRY SINCE 1860

DEVON

Disney MICKEY THE ANIMATED SERIES CHICKEN LITTLE graphic novel Just £3.49 with the voucher inside today's paper

FLASH FLOODS: WHY NO WARNING?



A firefighter wades through the flooding in the Carrish harbour of Newquay

PICTURE: MIKE THORNTON

Westcountry deluged with torrential rain – Met Office criticised; dozens trapped; 500 homes flooded; rail and roads disrupted; household water warning and more downpours on the way
Full story and pictures: Pages 2, 3, 4 & 5



Landslide cuts off Cornwall as storms hit south west

The main train line into Cornwall has been blocked by a landslide, cutting off the county from the rest of Britain, as storms bring flooding and disruption to large parts of the south west.



Image 1 of 4

Flooding on Station Road in St Blazey, Cornwall Photo: SUZANNE CHAPMAN/APEX



By Andy Bloxham 8:41AM GMT 17 Nov 2010

33 Comments

Drivers were washed into Portloe harbour near Truro while still in their cars and three feet of standing water trapped hundreds of people in their homes in many places.

Traffic on the main routes through mid-Cornwall backed up for several miles, causing long delays to commuters.

The landslip took place at around 6.30am at Lostwithiel and there are currently no trains in or out of the county.

Share:

Tweet

Weather

News » UK News » Road and rail transport » Andy Bloxham »

IN TOPICS



Weather forecast



Latest readers' pictures



Opportunities for users – making the most of what's there

- Likely already to be more 'out there' than you realise
- Understanding providers' delivery policies will help you understand what data and information is available for your use
- Working in partnership with providers will enable you to make the most of what's available



GeoScholar network?

- BGS already offers data and information to HEI sector through Geoscholar (DVD) service
- Potential to expand this online to encompass:
 - Open data and information
 - New communication technologies e.g. mobile (incl. software development)
 - Two-way sharing of data & information
- Will require a new level of partnership between NERC-BGS and educational sector



New teaching directions with open environmental information?

- How the information was derived – data behind it and methods of interpretation
- How this information is handled – GIS and now also web & mobile technologies
- Linking observation (data at a point) to environmental meaning (local to global information)
- Looking across environmental sectors (combining data/information in new ways e.g. Cornwall flooding)
- Exploring information ‘entrepreneurship’ – *opportunity for students to act as ‘infomediaries’ as part of learning experience (e.g. maximising impacts of information on key environmental problems)?*



Summary

- Open data has caught up and overtaken information product supply
- Awareness of how environmental decisions are underpinned by observation and interpretation is increasing
- Rapid progress is now possible if supply models are properly understood and scale of materials already available are fully utilised
- New opportunities for information entrepreneurship (incl. in educational sector) and partnership with more open providers
- = Potential for better environmental decisions

