



**British  
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

**Applied geoscience for our  
changing Earth**

# **The collaborative Soil App and advances in augmented reality visualization**

**Barry Rawlins, Wayne Shelley,  
Rob Pedley & Russell Lawley**  
Soil Science, British Geological Survey

**email: [bgr@bgs.ac.uk](mailto:bgr@bgs.ac.uk)**

**GSP Workshop, FAO Rome, 20-23 March 2012**

# Why develop a Soil App?

- Increased, **portable access to soil data** (land managers, researchers, policymakers)
- Large data providers: increased use of data
- Users easily add their own data
- Time-saving: identify questions based on local information
- Augmented reality – “paint a map onto the landscape”



# Outline: Developing the Soil App

1. History: openGeoscience and the iGeology App
2. Developing a UK Soil App (NERC) - MySoil
3. An EU-wide Soil App (JRC)
4. A collaborative, global Soil App?
5. Augmented reality approaches



# OpenGeoscience Initiative



- Free, open-access **web portal** providing geological information for personal use, research, education and restricted commercial uses
- Resources:
  - geological maps of Great Britain
  - > 50,000 geological images
  - access to databases, metadata, search tools
  - open research archive (papers and reports)
  - software
  - educational resources

How to enhance delivery? **The iGeology App**



# iGeology App

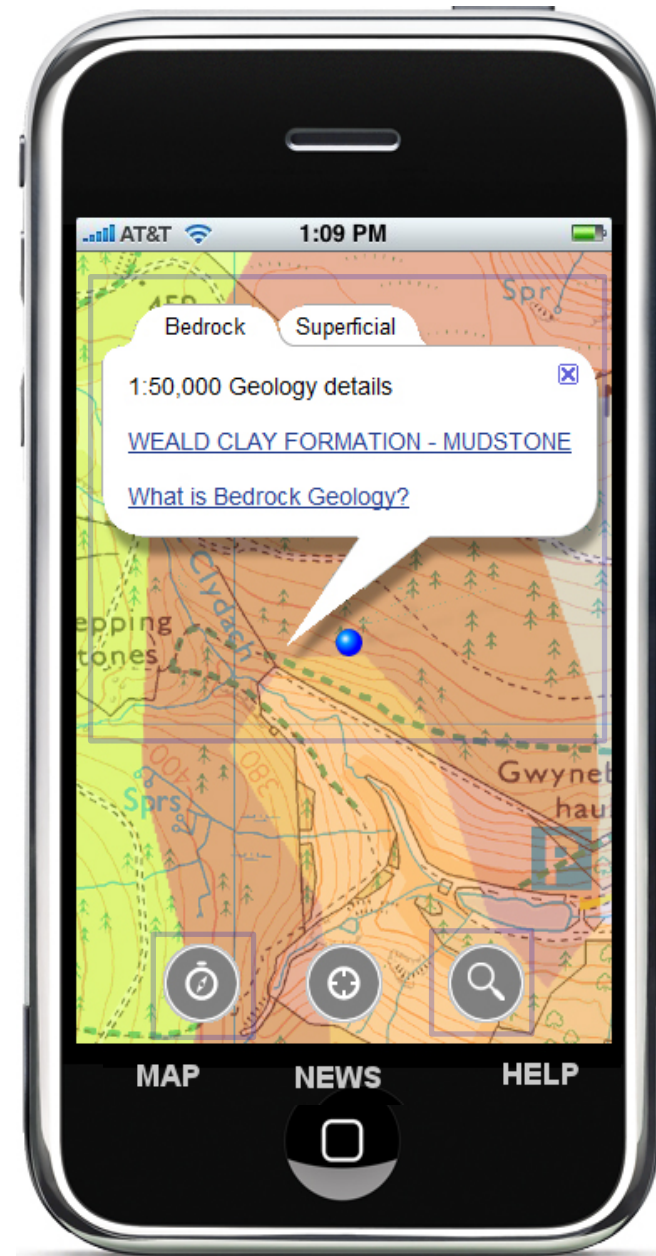
Geological survey: map dissemination via the web

**2011:** versatile GIS application, geology data direct to smartphones

*“Users explore rocks where they stand”* – tap to interrogate

Driven by interoperable web services. Self-service, web-based delivery mechanism

Formats: Android, iPhone, iPad





# iGeology downloads:

70 000 in 2011,  
56 countries

Allows providers to  
map user downloads

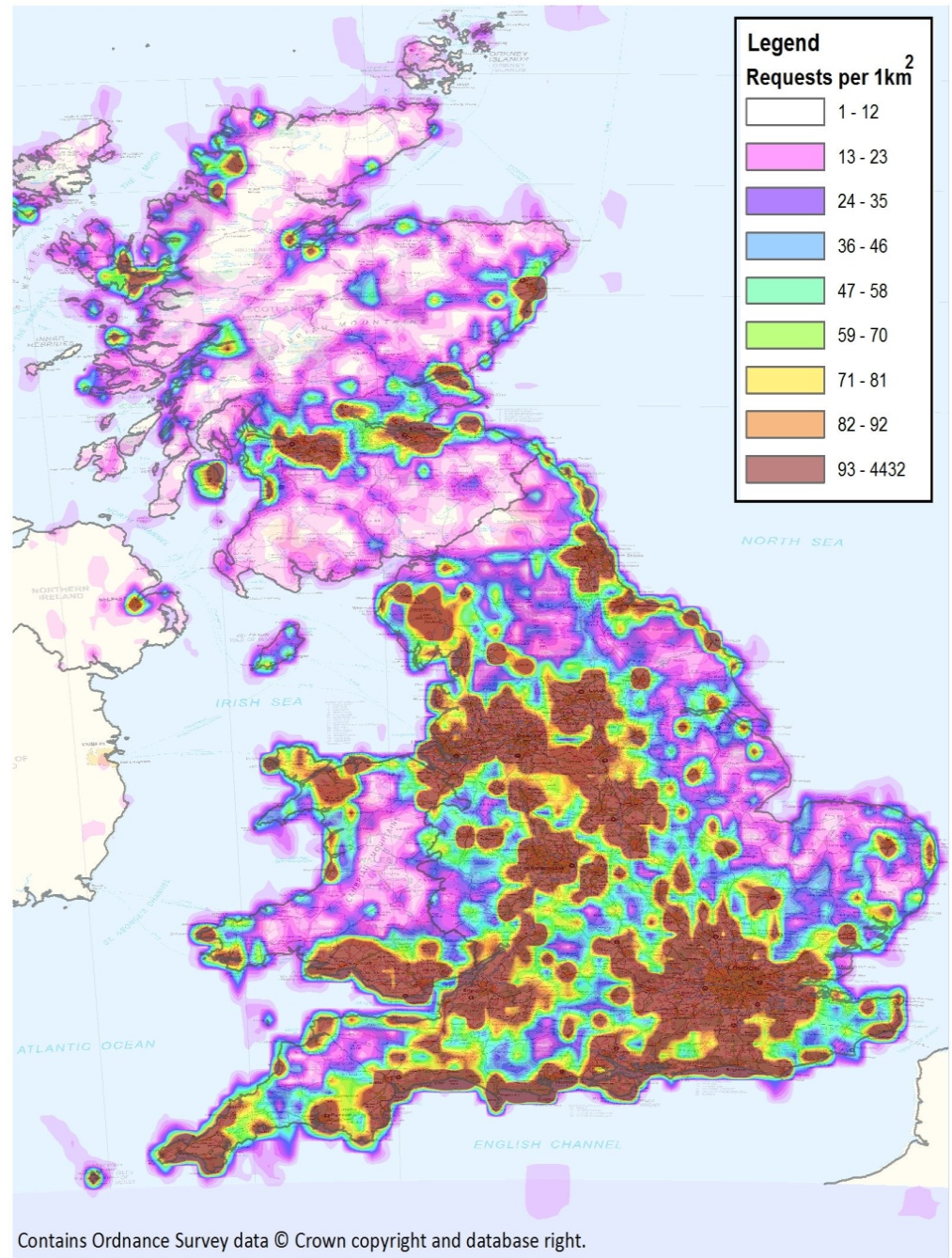
iGeology best

Community Favourite

Mobile App at ESRI

International Conf  
(July 2011)

Users **feedback**



# Access to NERC data – via the SoilApp

Two NERC institutes in the UK:

British Geological Survey

Centre for Ecology and Hydrology

Differing data on the UK landscape relating to soil properties

- parent material, soil geochemistry, soil texture
- Countryside survey (monitoring), land cover data

Combine data in a Soil Portal ➡ Soil App



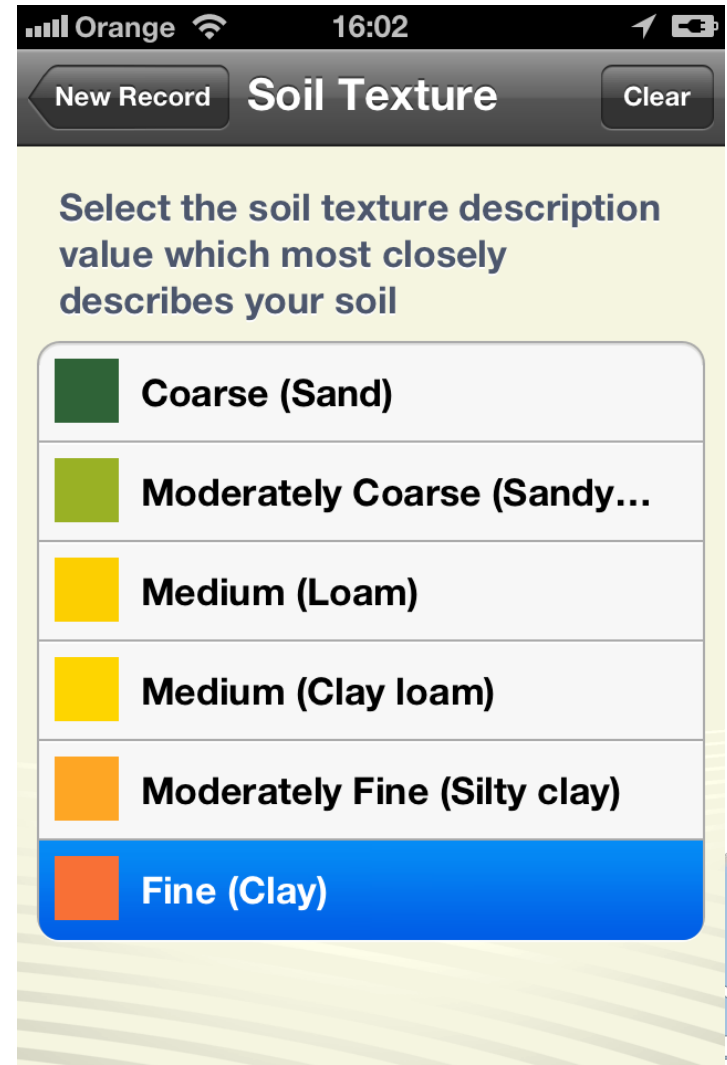
# Addition of data directly by users: **YourSoil** an extra button on the Soil App

Major advantage of **portable**,  
GPS use

Upload data to the database

Images (soil profiles),  
observations (e.g. erosion)  
soil data (?) ...schools,  
land managers

Proliferation of soil information



The screenshot shows a mobile app interface for 'Soil Texture'. At the top, there's a status bar with 'Orange' carrier, signal strength, Wi-Fi, and time '16:02'. Below the status bar is a dark header with a 'New Record' button, the title 'Soil Texture', and a 'Clear' button. The main content area has a light yellow background with the instruction: 'Select the soil texture description value which most closely describes your soil'. Below this is a list of six options, each with a colored square and text: 'Coarse (Sand)' (dark green), 'Moderately Coarse (Sandy...)' (light green), 'Medium (Loam)' (yellow), 'Medium (Clay loam)' (light yellow), 'Moderately Fine (Silty clay)' (orange), and 'Fine (Clay)' (red). The 'Fine (Clay)' option is highlighted with a blue background.

| Color        | Soil Texture Description     |
|--------------|------------------------------|
| Dark Green   | Coarse (Sand)                |
| Light Green  | Moderately Coarse (Sandy...) |
| Yellow       | Medium (Loam)                |
| Light Yellow | Medium (Clay loam)           |
| Orange       | Moderately Fine (Silty clay) |
| Red          | Fine (Clay)                  |

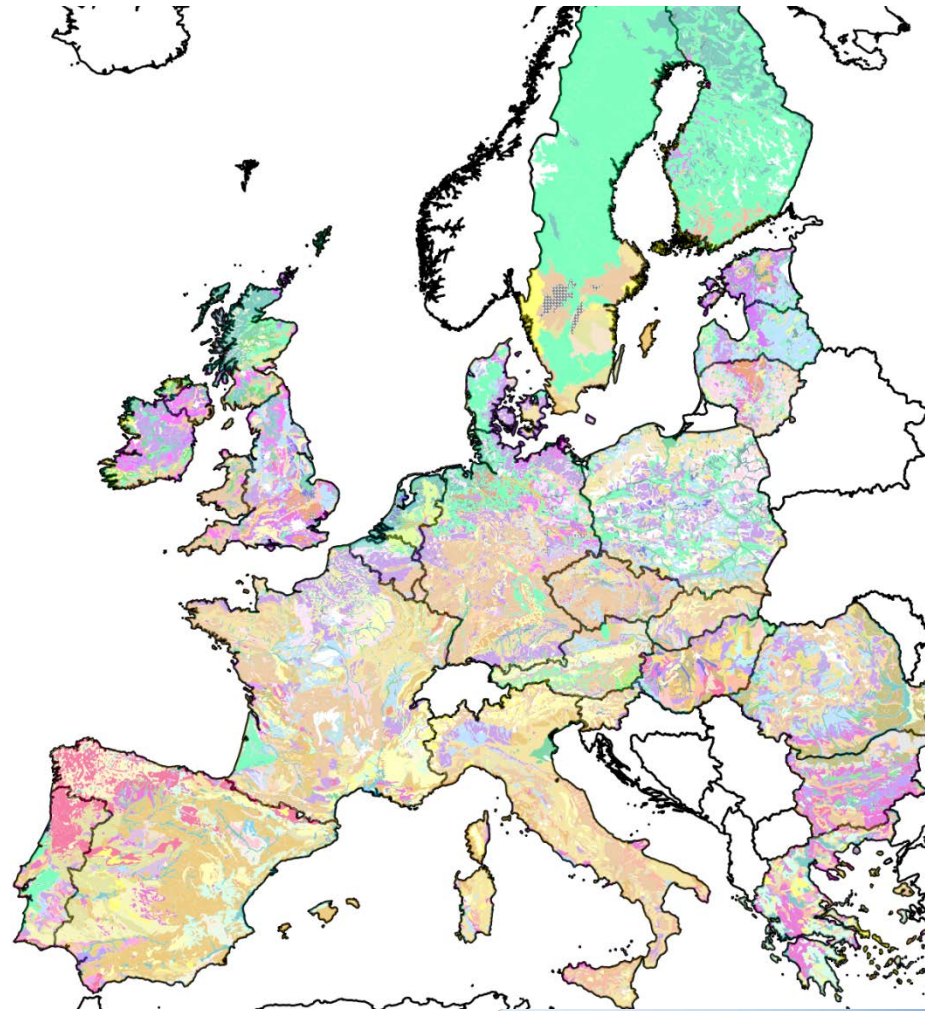


# EU-wide Soil App developed with JRC

**Aim:** develop and deploy the App to display an interactive map of EU-wide soil data (smartphone & tablets)

Map & data resources from research centres using “web services”

iPhone and iPad initially, extend to smartphones (e.g. Android)



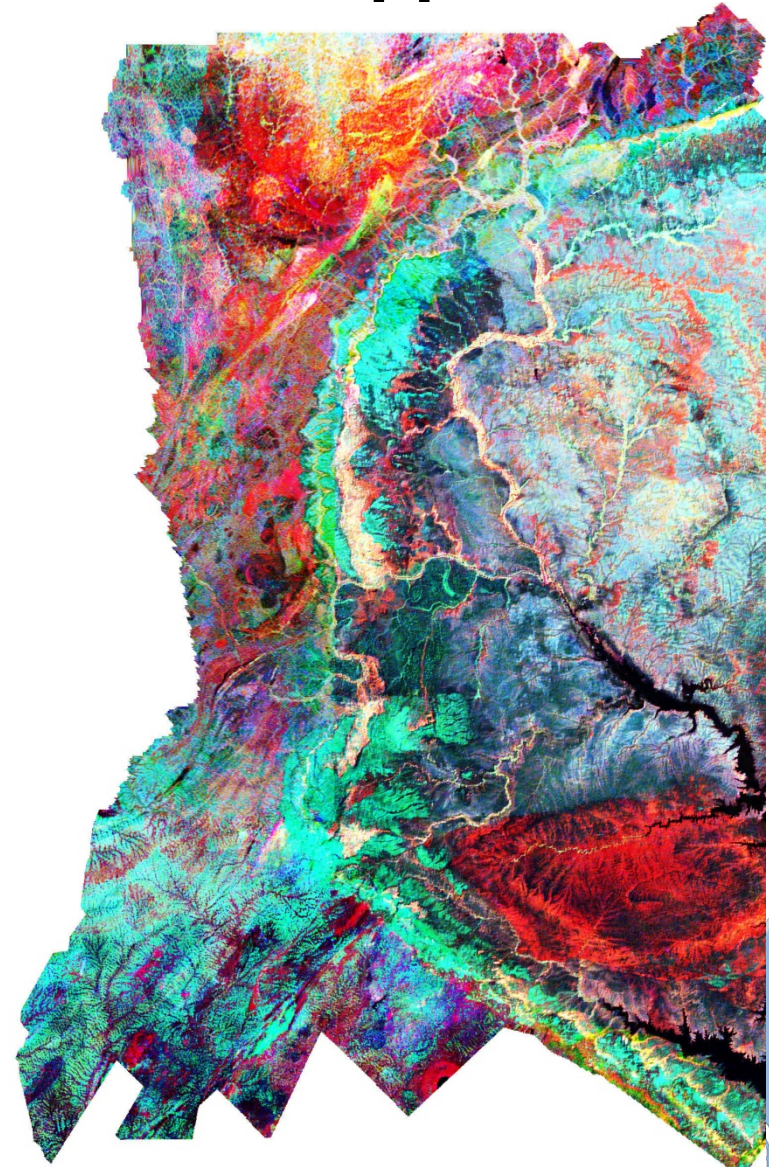
# Developing a collaborative, global soil App

Objective: extend the App to deliver global soil data

**Requirements:** global partners

**Applications:** land managers /farmers have immediate access to soil-related data

Field access to data via 'web-mapping services' (e.g. radiometric data)



3-component airborne radiometric data of Ghana



# ‘Augmented reality’ for soil datasets

“hold up your smartphone device ....the **soil map** is painted onto the landscape in the viewfinder”

Immerse yourself in the data.

- being developed
- to be released  
iGeology App
- addition to the soil App





# Summary

1. **Rapid development** - soil data more accessible
2. Development cost falling & **uptake increasing**
3. Immensely useful for **both public and specialists**
4. **Demonstrable uptake** of information and services  
(via iGeology)
5. **Openness and data required** – benefit to donors
6. Globalisation via collaboration



# THANK YOU

