



61<sup>st</sup>

**NMGS**  
ANNUAL INTERNATIONAL  
CONFERENCE & EXHIBITION



# Deep-time Digital Earth (DDE) GeoGPT

*Platform demonstrations*

 **GeoGPT**



Deep-time  
Digital Earth





Get data, models, code; make  
your own models; display  
your own work

Wherever you are, even on a  
basic laptop!

Build expertise  
confidence: PARC

Economic  
development

Education, capacity  
building

World leading  
research

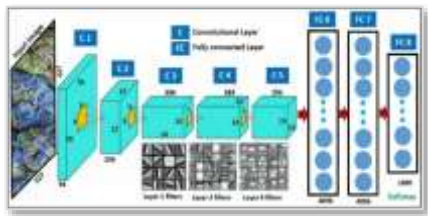
Revenue for your  
organisation



**GeoGPT**

# Major Advancements in AI

AlexNet (Hinton, 2012)

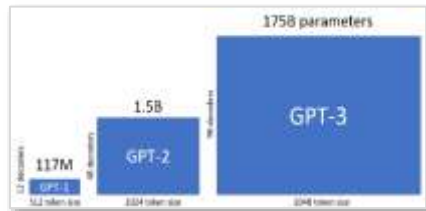


Generative Adversarial Nets (Bengio, 2014)



AlphaGo (DeepMind, 2015)

GPT-1/2/3 (OpenAI, 2018-2020)



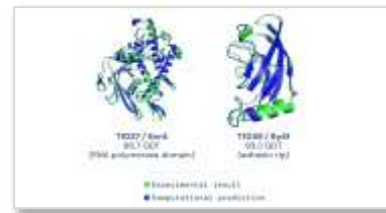
Bert (Google 2018)

Transformer (Google Brain, 2017)



DALL-E (OpenAI, 2021)  
Imagen (Google, 2022)

AlphaFold2 (DeepMind, 2021)



ChatGPT (OpenAI, 2022)

Claude3 (Anthropic, 2024.3)

Possesses powerful capabilities for inference and generalization, with a 200K-token context window.

Sora (OpenAI, 2024.2)

A landmark in text-to-video GenAI models, powered by Diffusion Transformer (DiT).

Gemini (Google, 2023.12)

A multimodal foundation model with a 32K-token context window; was upgraded to Gemini 1.5 in February 2024, with a context window limit of 1 million tokens.

GPT-4 (OpenAI, 2023.3)

LLaMA (Meta, 2023.2&7)

An open-source LLM that promoted the establishment of an open ecosystem for foundation models.



# Key Capabilities of LLMs for Scientific Discovery

- **Accessing and analyzing scientific literature.** Can LLM suggest relevant research papers, extract key information, and summarize insights for researchers?
- **Concept clarification.** Is LLM capable of explaining and providing definitions for scientific terms, concepts, and principles, helping researchers better understand the subject matter?
- **Data analysis.** Can LLM process, analyze, and visualize large datasets from experiments, simulations, and field observations, and uncover non-obvious trends and relationships in complex data?
- **Methodology guidance.** Could LLM help researchers choose the right experimental/computational methods and statistical tests for their research by analyzing prior literature or running simulations on synthetic data?
- **Prediction.** Is LLM able to analyze prior experimental data to make predictions on new hypothetical scenarios and experiments (e.g., in-context few-shot learning), allowing for a focus on the most promising avenues?
- **Code development.** Could LLM assist in developing code for data analysis, simulations, and machine learning across a wide range of scientific applications by generating code from natural language descriptions or suggesting code snippets from a library of prior code?
- **Hypothesis generation.** By connecting disparate pieces of information across subfields, can LLM come up with novel hypotheses (e.g., compounds, proteins, materials, etc.) for researchers to test in their lab, expanding the scope of their research?

*Microsoft Research AI4Science, Microsoft Azure Quantum. The Impact of Large Language Models on Scientific Discovery: a Preliminary Study using GPT-4, Nov 2023.*

# History of GeoGPT Development

- *2/2023*: Several distinguished geoscience and AI scientists from DDE proposed to develop GeoGPT.
- *3/2023*: Yunqi Academy of Engineering, in response to the DDE's mission of sharing global geoscience knowledge and transform geoscience research, took the lead in developing GeoGPT. Transition of the GeoGPT project to Zhejiang Lab in *9/2023*.
- *7/2023*: DDE invited 129 students/scholars to participation in data collection and annotation.
- *9/2023*: DDE invited over 400 hundreds of Geoscientists to participate in GeoGPT annotation, eventually forming about 89,000 QA pairs.
  
- *4/2023*: Started exploring LLaMA-1-13B for GeoGPT.
- *12/2023*: First version of GeoGPT ready for testing (LLaMA-2, Qwen-1, INF-66B from Fudan).
- *4/2024*: Three agents (Image-to-Table conversion, PDF parsing for Question Answering and Extraction, Echart Visualization) ready for testing. Demo at EGU-24.
- *5/2024*: Completed the first version of RAG (retrieval augmented generation).
- *6/2024*: Upgraded foundational models: LLaMA-3, Qwen-2.
- *7/2024*: Included Mistral as one of the foundational models.



Has a chatbot, but does much more

Create your own agent: commercialise it; download the model to run on your computer

My Agents [+ Create Agent](#)

- Taxonomy Assistant**  
Assist palynologist in identification of spores in species level, based on the spores genera/species covered in Mike Stephenson's...  
Creator: Professor Mike Stephenson
- Taxonomy Assistant 2.1**  
Assist palynologist in identification of palynomorphs in genera level, for most genera in the 《Genera File of Fossil Spores and...  
Creator: Professor Mike Stephenson
- Yishan Cloud Trails (YCT)**  
Bird Migration Assistant: Mastering the Secrets of the Avian World, Safeguarding Their Survival and Reproduction.  
Creator: Jiangxi Normal University
- Assessment Assistant**  
Assist in identifying and evaluating the risks of international seabed mining area development.  
Creator: Second Institute Of Oceanography, MNR
- Yishan Cloud Rest (YCR)**  
The Poyang Lake Basin Research Assistant (YCR) is a multidisciplinary intelligent Q&A system focused on the Shan-Jiang-Hu Project, ...  
Creator: Jiangxi Normal University
- Mineral Analysis and Forecast...**  
An intelligent assistant specifically designed for geological mineral exploration, equipped with capabilities in data fusion, target area...  
Creator: State Key Laboratory of Geological Processes...
- Igneous Rock Scientist Assistant**  
Assisting scientists in researching deep Earth material evolution, the growth of continental crust, and mineralization mechanisms.  
Creator: Professor Tao Wang's Team from the Institute...
- Deep-Ocean Organism...**  
High-precision recognition of 106 taxonomically labeled deep-ocean biological morphological species, covering spanning corals, echinoder...  
Creator: Second Institute Of Oceanography, MNR



**Free!**

**50,000 users in 140 countries**

And there are many other tools.....



# What you see after registering



# Very comprehensive text tutorials

## GeoGPT

[Video Tutorial](#) [User Manual](#)

### GeoGPT User Manual

GeoGPT Operational User Guide

1. Registration and Login
  - 1.1. Registration
  - 1.2. Login
2. Chat
  - 2.1. Model Switching
  - 2.2. Quick Functions
  - 2.3. Knowledge Base Integration
  - 2.4. Code Execution
  - 2.5. Literature Search
3. Deep Discovery
  - 3.1. Usage Scenarios
  - 3.2. Purpose
  - 3.3. Operating Instructions
  - 3.4. Deeper Discovery
4. My Library
5. Research Tools
  - 5.1. Agent Store
  - 5.2. Extractor
  - 5.3. Reader
  - 5.4. Idea Generator
  - 5.5. Map Chat
  - 5.6. Map Generator
6. More Advanced Tools
  - 6.1. Knowledge Graph
  - 6.2. 3D Earth
7. Teams
8. How to Request Additional Tools

### GeoGPT User Manual

GeoGPT is a non-profit AI system designed to assist geoscientists in research, education, and innovation through transparent, ethical, and responsible AI use.

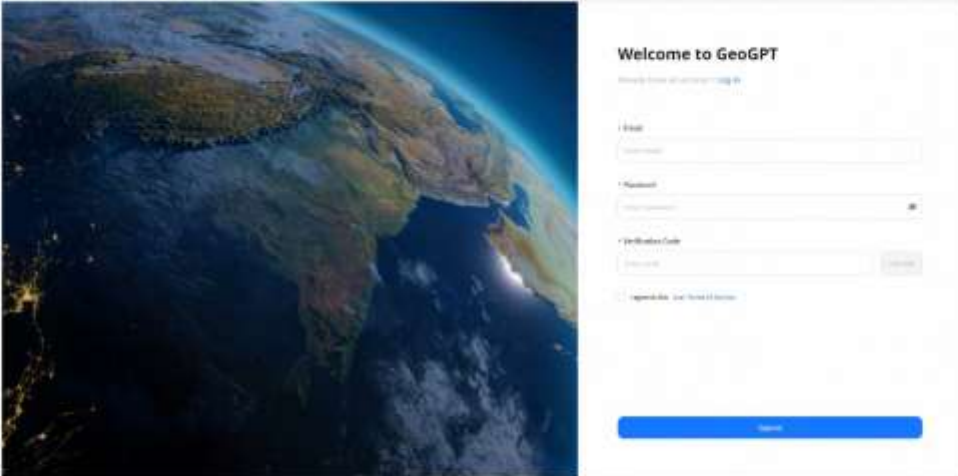
If you have any questions, please feel free to contact us at: [support.geogpt@zhejianglab.org](mailto:support.geogpt@zhejianglab.org)

### GeoGPT Operational User Guide

#### 1. Registration and Login

##### 1.1. Registration

You can register an account with your email address and a verification code.



To register, please go to the Registration page at <https://geogpt-sg.zero2x.org/universal-login/new>, enter your unregistered email address and the initial password for the account, then click **Get Code**. After receiving a verification code from your email box, enter it on the Registration page. Finally, check and agree to the Agreement Terms and click **Submit** to complete your registration.

##### 1.2. Login

Once completing your registration, you can log in the website with one of the following methods:

- Email and Password Login

# Useful video tutorials

The screenshot shows a web browser window with the URL <https://geogpt-sg.zero2x.org/manual?type=video>. The page is titled "GeoGPT" and has a navigation bar with "Video Tutorial" and "User Manual" tabs. A left sidebar contains a search bar with "All" and a list of categories: "My Library", "Research Tools", "Agent Store", "Extractor", "Reader", "Map Chat", and "Plugin". The main content area displays six video tutorial cards in a 2x3 grid. Each card features the GeoGPT logo, a title, a subtitle, and a "Watch" button. The cards are:

- My Library Basic Feature Overview**: Manage Your Content Assets Easily. Status: No Library.
- Agent Store Core Function Explanation**: Agent Store + Building Platform, Everything You Need Is Here. Status: Agent Store.
- Extractor Efficient Operation**: Custom + Table Extraction, Data Organization Made Easy. Status: Extractor.
- Reader Basic Feature Demo**: Document Q&A + Full-Text Translation, Reading Efficiency Score. Status: Reader.
- Map Chat Basic Feature Demo**: Regional Overview + Basic Features, Smarter Geographic Query. Status: Map Chat.
- How to Use the Plugin?**: Full Step-by-Step Guide for Installation + Third-Party Browser Plugin. Status: Plugin.

# Using the chatbot

GeoGPT

K

New Chat

Recent Chat

Describe the geology aro...

Describe the geology of t...

View all...

My Documents

My Datasets

Tools

Agents

During the Paleozoic era, sedimentary rocks such as limestones and sandstones were deposited in ancient seas that covered the area. Later, these sediments were subjected to heat and pressure, transforming them into the metamorphic rocks found today.

In addition to the metamorphic rocks, there are also igneous intrusions in the form of granites and other plutonic rocks. These intrusive bodies were emplaced during the Alpine orogeny and have since been exposed through erosion. The landscape around Grenoble is dominated by steep mountains, deep valleys, and glaciers. Glacial activity during the Quaternary period has played a significant role in shaping the topography, carving out U-shaped valleys and leaving behind moraines and other glacial deposits.

The Isère River, which flows through Grenoble, has also contributed to the geomorphology of the area. It has cut a wide valley, known as the "Grande Chartreuse," and created alluvial deposits along its course.

Overall, the geology around Grenoble is a testament to the dynamic processes that have shaped the Earth's crust over millions of years. The combination of metamorphic, sedimentary, and igneous rocks, along with the influence of glaciation and river erosion, has resulted in a unique and picturesque landscape.



Describe the geology of Nigeria

is generating · •

Stop

Set Dialogue Scope

Send a message...



# More advanced: using agents identification of brachiopods

The screenshot shows the GeoGPT interface. On the left is a sidebar with a 'New Chat' button and a 'Recent Chat' list containing several entries. Below that are sections for 'My Library' and 'Research Tools' with options like 'Agent Store', 'Extractor', 'Reader', and 'Idea Generator'. At the bottom of the sidebar is the user name 'mikepalyno'. The main area has a 'Back' button and a 'Database' icon. A 'Records' button is in the top right. The central text reads 'Welcome to the Taxonomy Assistant' followed by a greeting: 'Hello, I am a taxonomy assistant for brachiopod identification. I was trained based on the Brachiopod volumes (Revised) of the Treatise of Invertebrate Paleontology, edited by the Geological Society of America and the University of Kansas (Williams et al. 1997-2007). Please provide a description of your brachiopod specimen as complete as possible based on your observations. You could provide information about its dimensions, morphology, shell structure, ornamentation and internal characters.' Below this is a prompt: 'Provide a complete description of the brachiopod (morphology, dimensions, shell structure, ornamentation, internal characters).' A text box contains the response: 'Transversely elliptical, low dorsal fold and ventral sulcus commonly developed, rarely shallow sulcus in both valves; teeth strong, dental plates extending as low ridges bounding elongatedly bilobate to broadly cordate muscle field, divided medially by anteriorly elevated adductor ridge; cardinal process typically with large lobate myophore in young stages, less prominent in adult'. A blue cursor icon is at the end of the text box. At the bottom, a disclaimer states: 'All content is generated by GeoGPT. We cannot guarantee the accuracy and completeness of the generated content, and it is for reference only, version:V1.0.0'.

# More advanced: using agents identification of fossil pollen

The screenshot displays the GeoGPT web interface. On the left is a sidebar with navigation options: 'New Chat', 'Recent Chat' (with a list of previous queries), 'My Library', 'Research Tools' (including Agent Store, Extractor, Reader, and Idea Generator), and a user profile for 'mikepalyno'. The main area is titled 'Welcome to the Taxonomy Assistant' and contains a message: 'As a palynological taxonomy assistant, I will guide you on how to identify palaeopalynological genera step by step. Typically, the palynologist begins by observing wall or germination character, but also can note the general shape, ornamentation and other features.' Below this is a large text input field with the prompt: 'Type a prompt: palynomorph characters'. The input field contains the text 'Pollen; grouped in tetrads; inaperturate; exine reticulate'. A 'Send' button is visible to the right of the input field. At the bottom, a disclaimer reads: 'All content is generated by GeoGPT. We cannot guarantee the accuracy and completeness of the generated content, and it is for reference only, version/V1.0.0'.

# Map functions in GeoGPT

# Prompt engineering

**Exercise 1: Use the GeoGPT chatbot to investigate the geology of your hometown.**

# Exercise 2: Create your own library LLM

The screenshot displays the GeoGPT web interface. On the left is a sidebar with the following items: 'New Chat' (a blue button), 'Recent Chat', 'My Library', 'Research Tools' (a dropdown menu), 'Agent Store', 'Extractor', 'Reader', 'KG Builder', 'Idea Generator', 'Map Chat', and 'Map Generator' (marked as BETA). At the bottom of the sidebar is a 'Download the extension' button and the user's name 'mikepalyno'. The main area features a notification banner at the top: 'Deep & Deeper Discovery integrated - simpler operations, enhanced deep search and high-quality reports.' Below this is a large heading 'Hi, I am GeoGPT' and a paragraph: 'GeoGPT is a non-profit exploratory research project for geoscience, with the goal of offering geoscientists innovative capabilities and tools augmented by AI.' A text input field contains the placeholder 'Send a message. enter "/" to select a skill, or "?" for a preset prompt.' Below the input field are two buttons: 'GeoGPT-R1-Preview' and 'Deep Discovery'. At the bottom of the main area is a row of skill buttons: 'Literature Reading', 'Image Recognition' (with a sub-link 'Supports Geological Maps'), 'Translation', 'Academic Search', and 'Code'.



# Deep-time Digital Earth

# Some of DDE's founding members



# Why is African geodata so important?

## Natural resources

- transform resource wealth into sustainable economic development that benefits all
- With appropriate controls can also conserve and enhance the natural environment in line with the sustainable development goals.

## As demand rises for energy and critical raw materials:

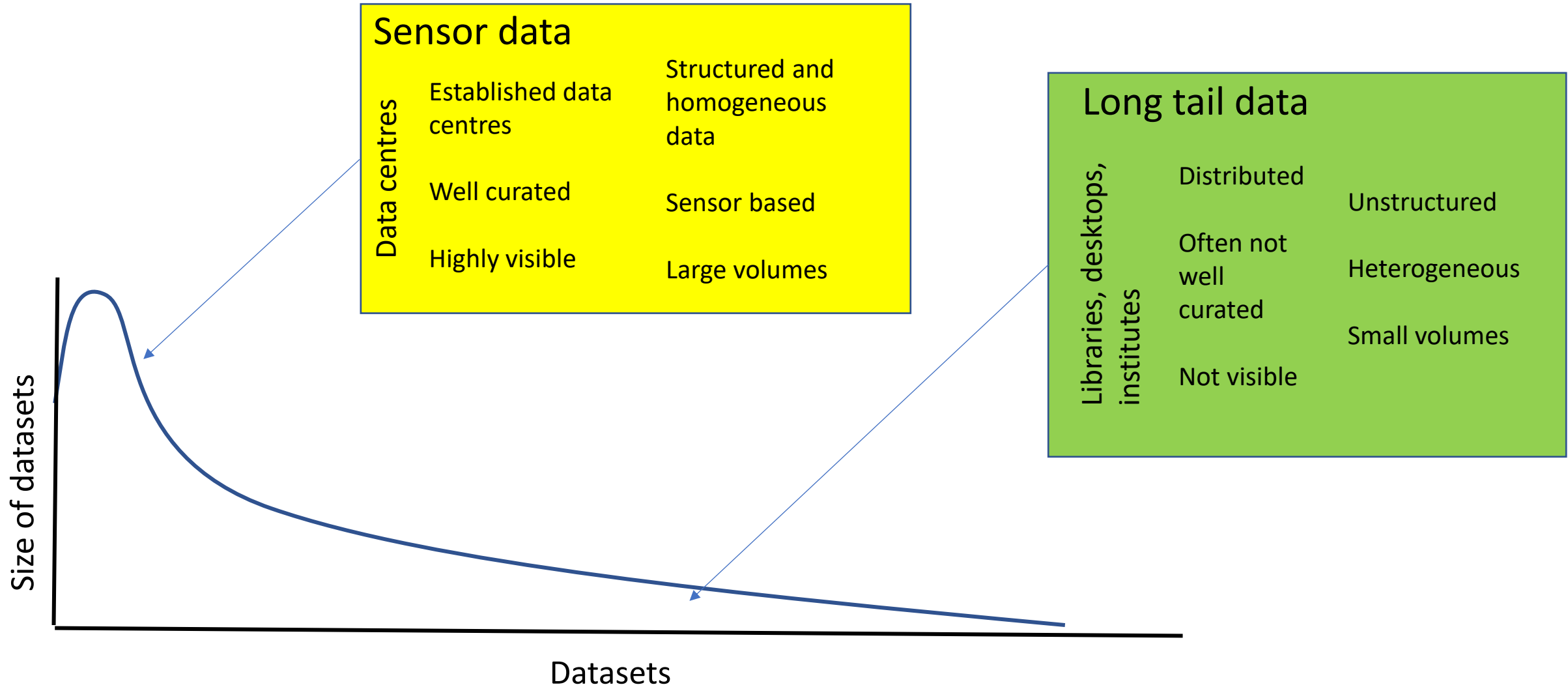
- African nations are aiming at inward investment to develop local industry from mining to energy to manufacturing to high value service industries
- also to get the best out of the resources that African nations choose to export

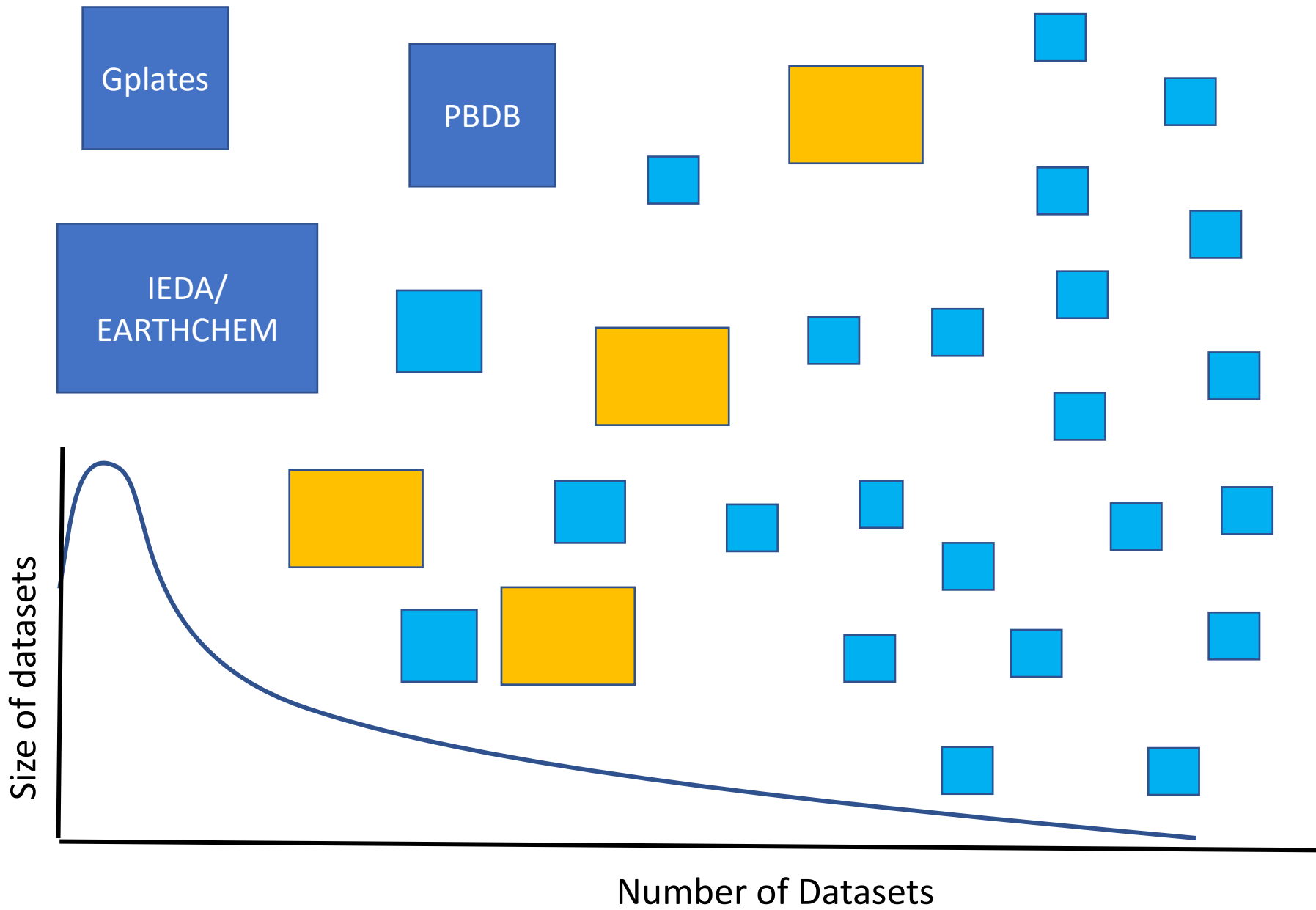
Flow of accessible geodata is key to local and inward foreign investment: getting the best out of resources



What is DDE's main aim?

# DDE is about fixing the long tail

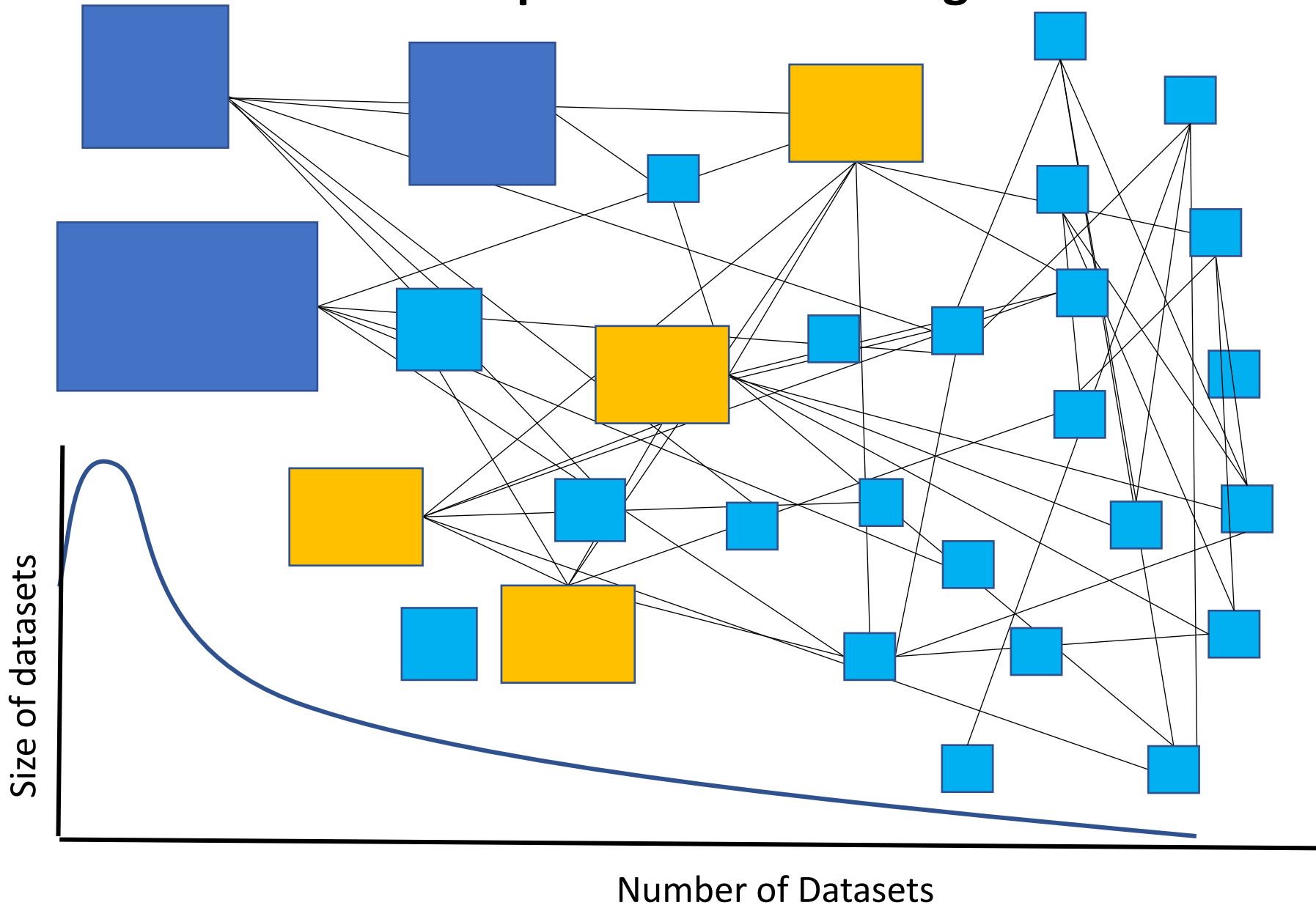




## The geoscience data landscape:

- Some centralised systems (national, IEDA)
- Geological Surveys
- Industry
- Academia (publications)
- Academia (grey)

## DDE provides the 'wiring'



**Linking geological datasets to harness their full potential:**

- Deployment of Open Science, Open APIs
- Standards, ontologies
- Deployment of ML and AI
- Building communities
- Use cases, beyond academia and industry

It's too difficult: you'll never do it

# Health science and big data: they did it!

The screenshot shows the JBJS website interface. At the top, the logo 'JBJS' is in a red box next to the title 'The Journal of Bone and Joint Surgery'. Below this is a navigation bar with links for 'Home', 'Current Issue', 'All Issues', 'Browse by:', and 'CME'. The main content area displays 'The Journal of Bone & Joint Surgery, Volume 46, Issue 2' and 'Journal Contents | March 01, 1964'. The featured article is 'Walking Patterns of Normal Men' with a 'FREE' tag, authored by M. PAT MURRAY, A. BERNARD DROUGHT, and ROSS C. KORY. A 'View Disclosures and Other Information' link is present, along with a disclaimer about the journal's affiliation with Marquette University. A 'text A A A' accessibility option is visible at the bottom right of the article preview.

The screenshot shows the Guardian website. At the top, there's a 'Support The Guardian' banner with 'Contribute' and 'Subscribe' buttons. The main navigation bar includes 'News', 'Opinion', 'Sport', 'Culture', 'Lifestyle', and 'More'. Below the navigation, there's a search bar and a list of categories like 'UK Election 2019', 'World Business', 'Football', 'Environment', 'UK politics', 'Education', 'Society', 'Science', 'Tech', 'Global development', 'Cities', and 'Obituaries'. The featured article is 'Patients' illnesses could soon be diagnosed by AI, NHS leaders say' with a yellow warning box stating 'This article is more than 2 years old'.

- 1950s and 60s health data often held in separate clinics and health centres
- Health informatics hugely improved by better data access
- Huge benefits to patients

The screenshot shows the PubMed.gov search results page. The header includes the 'PubMed' logo, 'US National Library of Medicine National Institutes of Health', a search bar with 'PubMed' entered, and an 'Advanced' search option. Below the search bar, the 'Format: Abstract' dropdown is visible. The search results show a paper from 'N Engl J Med. 1991 Dec 19;325(25):1767-73.' with the title 'The diagnostic performance of computer programs for the interpretation of electrocardiograms.' The authors listed are 'Willems JL<sup>1</sup>, Abreu-Lima C, Arnaud P, van Bommel JH, Brohet C, Degani R, Denis B, Gehring J, Graham I, van Herpen G, et al.' There is a collapsed 'Author information' section, and the first author's affiliation is listed as '1 Division of Medical Informatics, University of Leuven, Belgium.' A 'Send to' link is visible on the right side.

# Geoscience doing OK but must do better

- Earth Science machine learning and AI moving ahead but with big, structured data
- Access to long tail geoscience data more difficult

## REVIEW SUMMARY

### GEOPHYSICS

## Machine learning for data-driven discovery in solid Earth geoscience

Karianne J. Bergen, Paul A. Johnson, Maarten V. de Hoop, Gregory C. Beroza\*



## PERSPECTIVE

<https://doi.org/10.1038/s41586-019-0912-1>

## Deep learning and process understanding for data-driven Earth system science

Markus Reichstein<sup>1,2\*</sup>, Gastau Camps-Valls<sup>3</sup>, Björn Stevens<sup>4</sup>, Martin Jung<sup>1</sup>, Joachim Denzler<sup>2,5</sup>, Nuno Carvalhais<sup>1,6</sup> & Prabhat<sup>7</sup>

What can DDE do?

# Mapping the world beneath our feet

The construction of a uniform and seamless digital geological map of the world at a scale 1:5M

Learn More



Search Data Search DataExpo

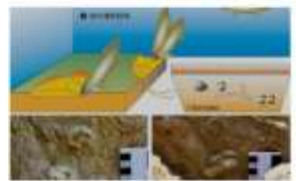
Data List My Collects

Filters Reset

- Subject
- Geology(1013)
  - Geological Resources and Geological Engineering(316)
  - Atmospheric Science(113)
  - Geography(20)
  - Geophysics(18)
  - Remote sensing science and technology(1)
  - Planetary Geology(1)
  - other(13)

Spatial

Datasets 1479 Recommended



**The Biological and Sedimentary Mysteries Behin...**  
Trace fossils are the remains or relics left by organisms during their life activities in geological history. This paper...  
Repository  
Ruoying Fan | Updated Dec.06,2023 | 2365 3



**Global Basic Landform Units**  
Global Basic Landform Units (GBLU) represent vectorized polygons that depict landform boundaries at a global se...  
Repository Dem  
Guanan Tang | Updated Dec.09,2023 | 305 3



**Clay minerals**



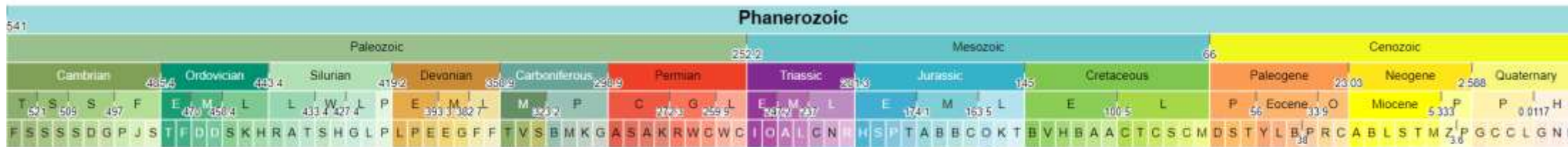


**Discipline** Cases

- Paleogeography
- Paleoclimate
- Sedimentology
- Geomorphology
- Igneous petrology
- Geophysic
- Paleontology
- Mineralogy
- Tectonics
- Geological Mappi...
- Stratigraphy

8.8k views on Earth

Navigation: Home, Zoom (+/-), North Arrow



**Paleogeography**

search Data

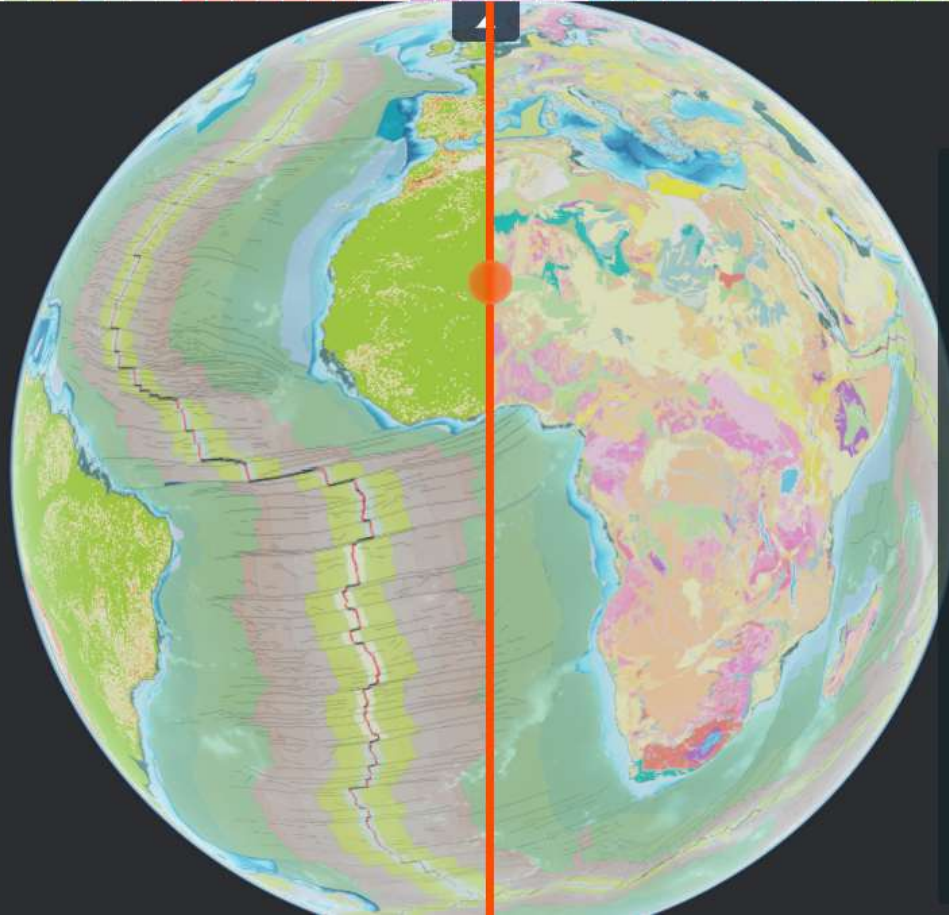
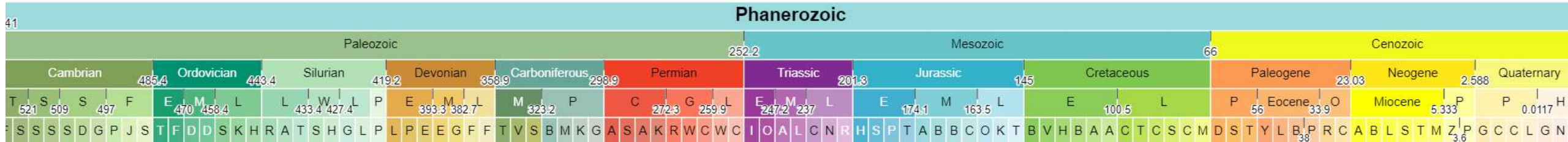
0 - 0 Ma Bound 112 Data

DataSet DataAtom

- Early Cambrian (middle Terreneuvian, 530...)
- Early Cambrian (late Terreneuvian, 525 Ma)
- Early/Middle Cambrian boundary (520 Ma)

1/12





**Legend**

**Global basic landform units (GBLU) secondary level**

- Low-altitude Plain
- Middle-altitude Plain
- High-altitude Plain
- Highest-altitude Plain
- Low-altitude Hill
- Middle-altitude Hill
- High-altitude Hill
- Highest-altitude Hill
- Low-altitude Low-relief Mountain

- Deep time geology
- Profile Map
- Digital Outcrop
- Scenario



Please enter name or

Longitude

Latitude

Countries or regions

China Croatia

Czech Republic France

Germany Italy Namibia

Uses of outcrops

Research outcrops

Practice outcrops

Interesting outcrops

Types of outcrops

General outcrops

Special event outcrops

Global stratotype sections and points (GSSPs)

Geological ages

Quaternary Neogene

Paleogene Cretaceous

Jurassic Triassic

















Categories of rocks

Sedimentary rocks

Magmatic rocks

Metamorphic rocks

|   |  |   |  |   |   |   |   |
|---|--|---|--|---|---|---|---|
|    | <p><b>1. VFT01-Muhuahe</b></p> <p>Address: Muhuahe, Inner Mongo...</p> <p>Contributor(s) Shunli...<br/>Institution(s) China ...</p> <p>Meandering r...</p> |    | <p><b>2. VFT01-Xishaliangduanbi</b></p> <p>Address: Tianchenghe, Inner Mo...</p> <p>Contributor(s) Shunli...<br/>Institution(s) China ...</p> <p>Braided rive...</p> |    | <p><b>3. VFT01-Tianchenghe</b></p> <p>Address: Tianchenghe, Inner Mo...</p> <p>Contributor(s) Shunli...<br/>Institution(s) China ...</p> <p>Braided rive...</p> |    | <p><b>4. VFT04-Xiguayuancun</b></p> <p>Address: Luanping, Hebei, China</p> <p>Contributor(s) Chua...<br/>Institution(s) Resear...</p> <p>Shamed depo...</p> |
|    | <p><b>5. VFT04-Sangyuan</b></p> <p>Address: Luanping, Hebei, China</p> <p>Contributor(s) Chua...<br/>Institution(s) Resear...</p> <p>Fan delta, S...</p>   |    | <p><b>6. VFT04-Xiyuancun</b></p> <p>Address: Luanping, Hebei, China</p> <p>Contributor(s) Chua...<br/>Institution(s) Resear...</p> <p>Alluvial fan...</p>            |    | <p><b>7. VFT05-Yaojiazhan</b></p> <p>Address: Changchun, Jilin, China</p> <p>Contributor(s) Youfe...<br/>Institution(s) Jilin Uni...</p> <p>Lacustrine f...</p> |    | <p><b>8. VFT06-Palougou-1</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Carbonate pl...</p>   |
|   | <p><b>9. VFT06-Palougou-2</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Carbonate pl...</p>  |   | <p><b>10. VFT06-Palougou-3</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Delta facies</p>              |   | <p><b>11. VFT06-Palougou-4</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Delta facies</p>         |   | <p><b>12. VFT06-Palougou-5</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Neritic shel...</p>  |
|  | <p><b>13. VFT06-Palougou-6</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Neritic shel...</p> |  | <p><b>14. VFT06-Palougou-7</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Delta facies</p>              |  | <p><b>15. VFT06-Palougou-8</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Delta facies</p>         |  | <p><b>16. VFT06-Palougou-9</b></p> <p>Address: Baode, Shanxi, China</p> <p>Contributor(s) Longy...<br/>Institution(s) China ...</p> <p>Fluvial faci...</p>  |

Search Model Search

Models List My Collects

Models 59

Recommended



Read Excel file

This component is used to read excel format files. The file needs to be mounted on the data source page first.

others | Updated Dec.01,2023 | 168



Inverse Distance Weighting (IDW)

IDW is a spatial interpolation method that estimates unknown values based on the weighted average of known values, wit...

others | Updated Dec.04,2023 | 74



Row filtering



Tools List

My Collects

Tools 3

Recommended ▾



### Earth Explorer

Earth Explorer provides a visual interface with the integration of multidisciplinary geological data, three-dimensional digi...

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### Deep Shovel

The DeepShovel system is an all-in-one, multimodal geoscience literature information mining platform. It facilitates expe...

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### DataExpo

Geoscience DataExpo is a one-stop scientific data service platform for scientists around the world. Geoscience DataExpo...

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☆ 10





# Mineral Potential Explorer

A Cloud Spatial Data Analysis Platform for Mineral Resource Researchers



Lat: 0°00 N Lon: 0°00 E 1000 km



### Mineral Potential Explorer

With the support of the DDE platform, mineral resource researchers developed a set of spatial analysis tools and workflow models that run in the cloud. These models have helped researchers create

162



### DDE-Outcrop3D

The DDE-Outcrop3D Group aims to build an open access online platform based on digital outcrops, to provide new tools for field geology. We hope to...

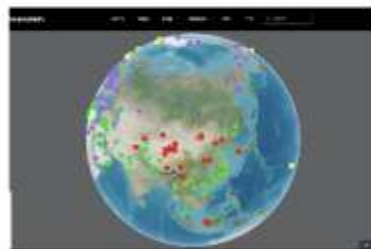
619



### Global Layer

Global layer is an easy-to-use interactive digital geological mapping platform. Based on 1.5 million Global Geological Map Database, Asian Magmat...

532



### Paleogeography Platform

The mission of the Paleogeography Platform is to create a comprehensive paleogeographic reconstruction platform that seamlessly integrate...

470



### Earth Explorer

The DDE Earth Explorer is a comprehensive digital earth system that can facilitate online retrieval of multidisciplinary datasets, visualization of...

162



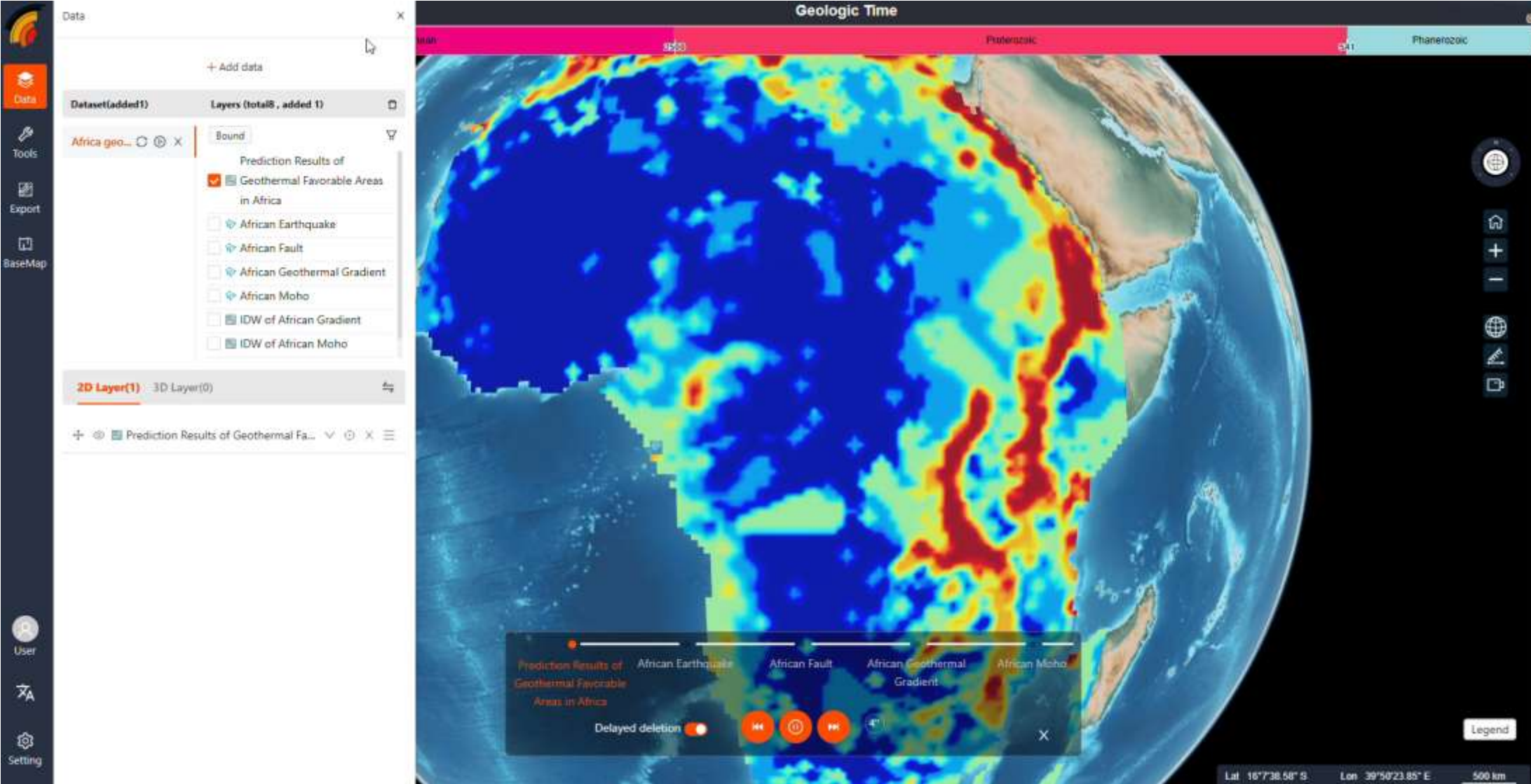
### Geomorphology

Geomorphology Platform is specifically designed for scientific researchers, integrating vast data, knowledge, and plug-in analysis tools. Our...

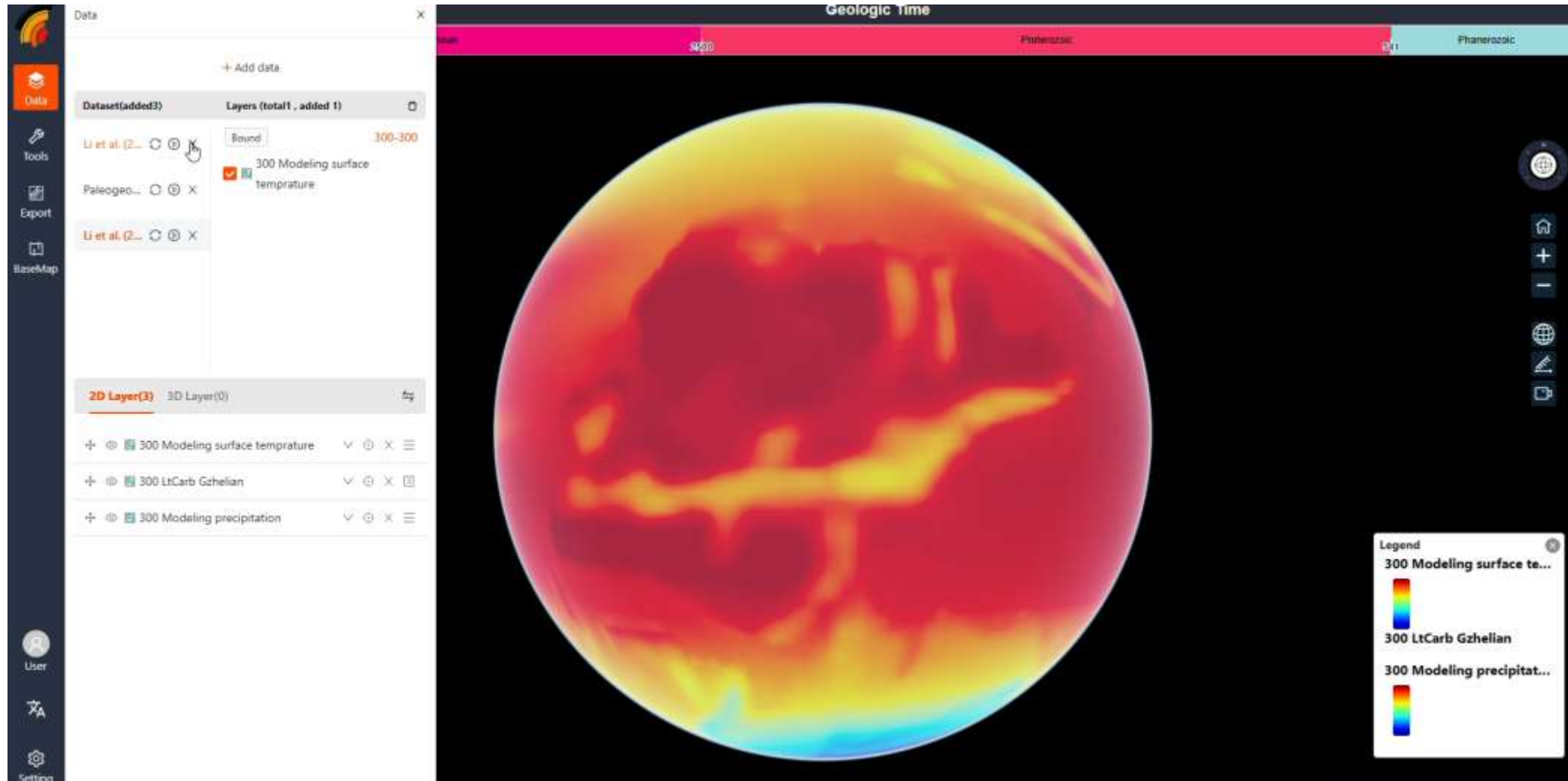
128



# Some African data



# Some simple models: palaeogeography, climate



# Minerals data

The image displays a GIS application interface. At the top, a 'Geologic Time' timeline is visible, with 'Proterozoic' highlighted in pink and 'Phanerozoic' in light blue. The main view is a 3D globe of Earth, showing the Tethyan region. On the left, a 'Data' panel is open, showing a 'Dataset(added 1)' and a 'Layers (total 5, added 0)' list. The layers list includes: Bound, TethysPCD, TethysFaults, TethysStudyArea, TethysMetallogenicMap, and TethysAsterMap. Below the layers list, there are '2D Layer(0)' and '3D Layer(0)' indicators. On the right, a 'Legend' panel is visible, currently empty. At the bottom right, the coordinates 'Lat 55°35'40.28" N Lon 11°30'14.88" E' and a '500 km' scale bar are shown. The interface also features a vertical toolbar on the left with icons for 'Data', 'Tools', 'Export', 'BaseMap', 'User', and 'Setting'.

# Some outcrop models: virtual study unconformities



# Some outcrop models: virtual study fossils

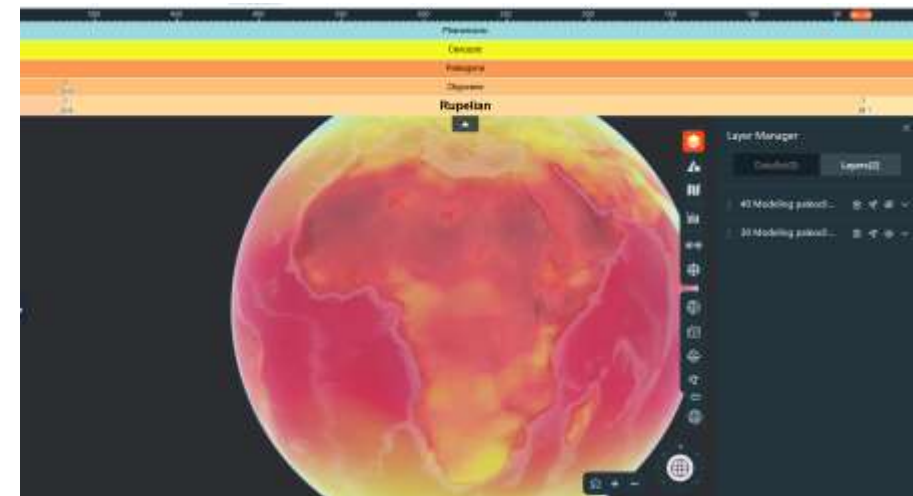


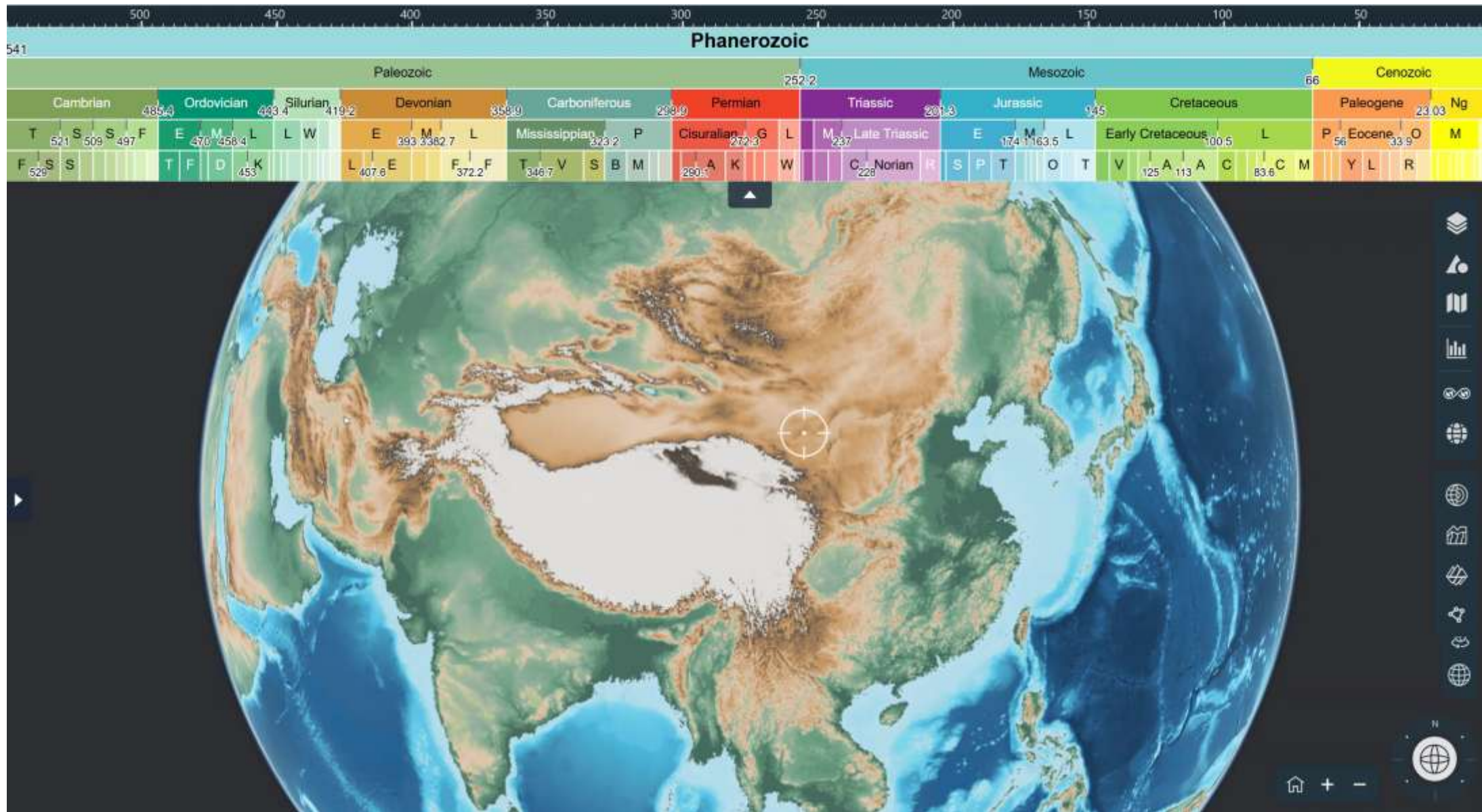
# Some outcrop models: virtual study structure



# Exercise

Build a series of  
palaeotemperature and  
paleogeographic  
visualisations for Africa  
at 30 and 40Ma





My DDE

Questions?