cemap

Deep Report for IDEA

BETA

Manual

Shanghai Jiao Tong University

August, 2023

1 INTRODUCTION

Academic publications have observed human civilization's progress and advancement. In today's world, where a brilliant concept is the cornerstone of academic research, out-of-the-box, and interdisciplinary scientific study can garner more attention from science funders, industry, and the public. However, most researchers take a long time to present new ideas. For one thing, the quantity of scholarly publications is growing at an exponential rate, making it difficult for an independent researcher to fully comprehend these studies. Furthermore, scholars frequently focus on their specialized but confined domains, making it difficult to identify underlying relationships beyond their known areas.

Supported by the DDE International Big Science Program, we construct DeepReport, which cannot only reduce the pressure on researchers to read papers but also guide and inspire researchers to discover new knowledge, new ideas, and new methods. It is the only system that can summarize the literature in all fields. Our system (available at https://idea.acemap.cn) has assisted researchers in the fields of artificial intelligence, COVID-19, and GeoScience boosted the process of scientific research workers' knowledge acquisition, and improved scientific research efficiency to a certain extent.

2. NAVIGATION PORTAL

Our system is available at https://idea.acemap.cn.

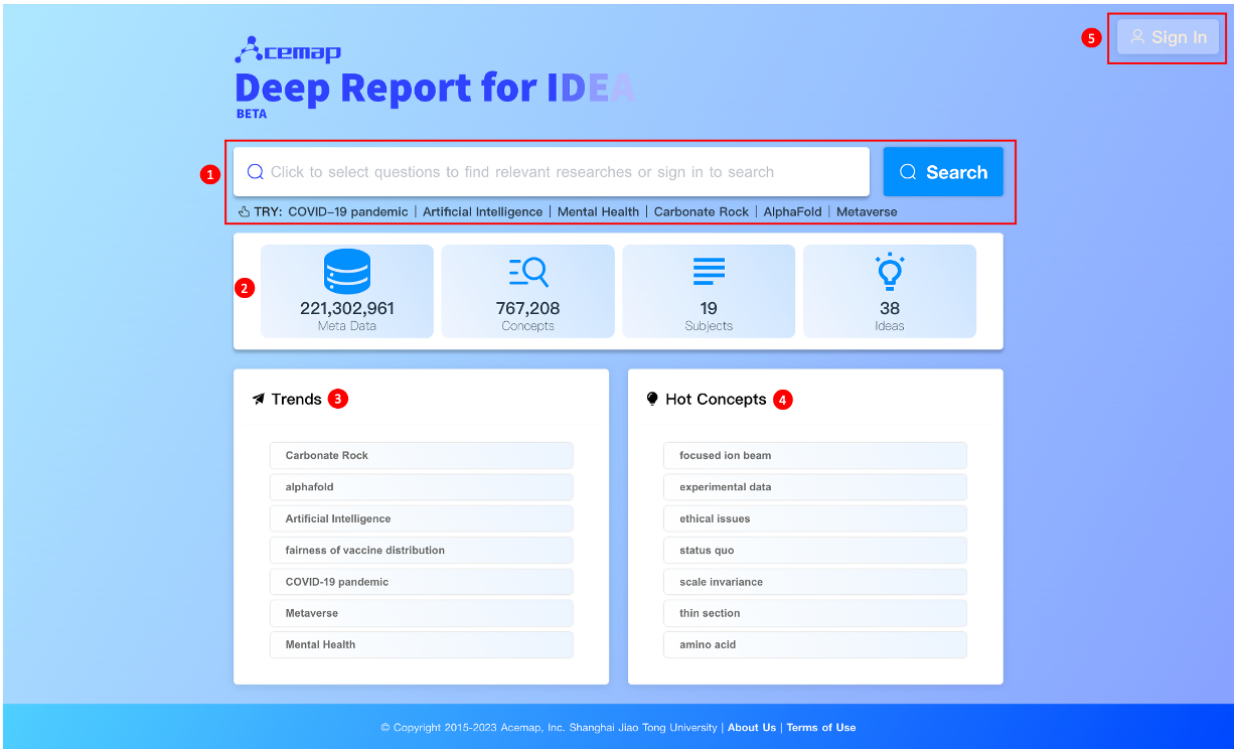


Figure 1 System home page

① **Search bar:** Click to select questions or enter keywords, phrases, or questions to find relevant research.

② **Statistics:** Presents relevant data of Deep Report, including paper collection volume, number of concepts, number of covered subjects, and the count of generated good ideas.

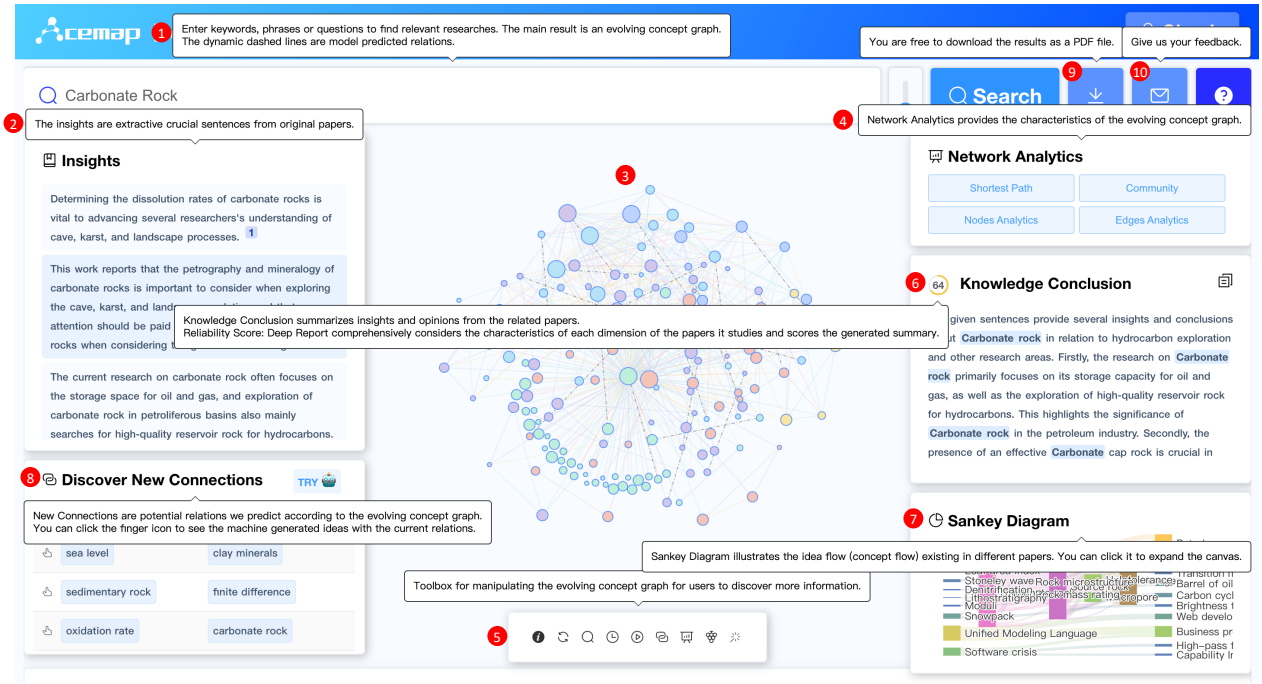
③ **Trends:** Displays the top-K most popular queries across all fields.

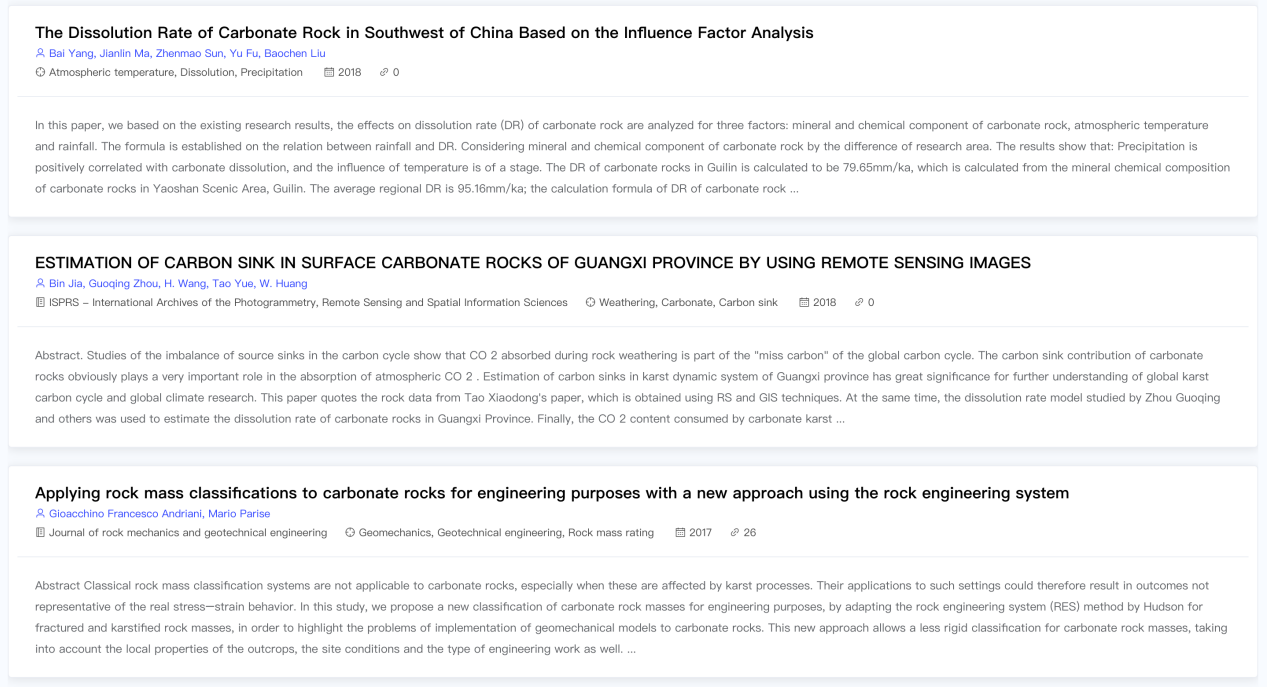
④ **Hot Concepts**: Presents the top-K most popular concepts employed for idea generation.

⑤ **Sign In:** Sign In to explore more features!

3 RESULT PAGE

3.1 Overview





The Dissolution Rate of Carbonate Rock in Southwest of China Based on the Influence Factor Analysis

Bai Yang, Jianlin Ma, Zhenmao Sun, Yu Fu, Baochen Liu

Atmospheric temperature, Dissolution, Precipitation 2018 0

In this paper, we based on the existing research results, the effects on dissolution rate (DR) of carbonate rock are analyzed for three factors: mineral and chemical component of carbonate rock, atmospheric temperature and rainfall. The formula is established on the relation between rainfall and DR. Considering mineral and chemical component of carbonate rock by the difference of research area. The results show that: Precipitation is positively correlated with carbonate dissolution, and the influence of temperature is of a stage. The DR of carbonate rocks in Guilin is calculated to be 79.65mm/ka, which is calculated from the mineral chemical composition of carbonate rocks in Yaoshan Scenic Area, Guilin. The average regional DR is 95.16mm/ka; the calculation formula of DR of carbonate rock ...

ESTIMATION OF CARBON SINK IN SURFACE CARBONATE ROCKS OF GUANGXI PROVINCE BY USING REMOTE SENSING IMAGES

Bin Jia, Guoqing Zhou, H. Wang, Tao Yue, W. Huang

ISPRS – International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences Weathering, Carbonate, Carbon sink 2018 0

Abstract. Studies of the imbalance of source sinks in the carbon cycle show that CO 2 absorbed during rock weathering is part of the "miss carbon" of the global carbon cycle. The carbon sink contribution of carbonate rocks obviously plays a very important role in the absorption of atmospheric CO 2 . Estimation of carbon sinks in karst dynamic system of Guangxi province has great significance for further understanding of global karst carbon cycle and global climate research. This paper quotes the rock data from Tao Xiaodong's paper, which is obtained using RS and GIS techniques. At the same time, the dissolution rate model studied by Zhou Guoqing and others was used to estimate the dissolution rate of carbonate rocks in Guangxi Province. Finally, the CO 2 content consumed by carbonate karst ...

Applying rock mass classifications to carbonate rocks for engineering purposes with a new approach using the rock engineering system

Gioacchino Francesco Andriani, Mario Parise

Journal of rock mechanics and geotechnical engineering Geomechanics, Geotechnical engineering, Rock mass rating 2017 26

Abstract Classical rock mass classification systems are not applicable to carbonate rocks, especially when these are affected by karst processes. Their applications to such settings could therefore result in outcomes not representative of the real stress–strain behavior. In this study, we propose a new classification of carbonate rock masses for engineering purposes, by adapting the rock engineering system (RES) method by Hudson for fractured and karstified rock masses, in order to highlight the problems of implementation of geomechanical models to carbonate rocks. This new approach allows a less rigid classification for carbonate rock masses, taking into account the local properties of the outcrops, the site conditions and the type of engineering work as well. ...

Figure 3 Search results-2

Figure 2 and 3 shows the result page of DeepReport, which contains 10 modules, we will give detailed descriptions in the following parts.

3.2 Search bar

The search bar (①) accepts keywords, phrases, and sentences of any length. The more comprehensive your input, the more precise the results. The main outcome is an evolving concept co-occurrence graph (③), with dynamic dashed lines representing model-predicted relations.

3.3 Insights box

The insights box (②) displays essential views and insights from the author's original papers. Each insight is represented by colored blocks, which can be clicked to quickly navigate to the relevant papers and explore detailed article content.

3.4 Knowledge Conclusion box

The knowledge conclusion box (⑥) presents conceptual statements automatically generated by the machine based on the literature and concept network. These statements, although not present in the original text, are highly correlated and may introduce new perspectives summarized by the machine. The system provides text credibility assessment scores, which are determined through an inspired approach considering various factors such as the source of input data, dissertation agencies, authors, references, and more. The contents of the input from authoritative institutions, conference journals, and high-KQI (knowledge Quantitative Index) receive higher scores. It's important to note that the generation of summary content requires substantial computing resources, and the quality of the output text is directly proportional to the computing resources used. In the front-end interface, users may experience a brief wait while the related texts are generated.

3.5 Sankey Diagram box

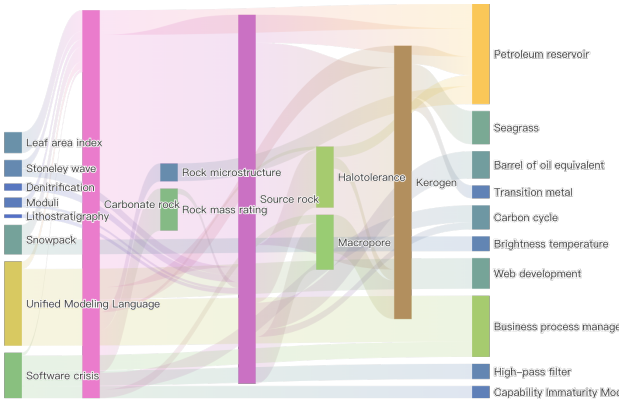


Figure 4 Sankey Diagram

The Sankey Diagram box (⑦), as depicted in Figure 4, visualizes the flow of ideas (conceptual flow) among different papers. This diagram provides insights into the evolution of concepts within the academic reference network of a specific field. It aids in understanding how ideas have changed and transformed over time.

3.6 Network Analytics box

Network Analytics box ④ provides detailed characteristics of the evolving concept graph ③, including nodes and edges analytics shown in Figure 5. Toolbox ⑤ enables users to manipulate the evolving concept graph, empowering them to uncover additional information and insights.

Nodes Analytics

Name	Degree	Degree Centrality	Betweenness	Clustering	Group
carbonate rock	147	0.90740	0.86661	0.02721	
source rock	26	0.16049	0.04900	0.22461	
carbon dioxide	24	0.14814	0.07145	0.16666	
sedimentary rock	23	0.14197	0.01041	0.26877	
organic matter	21	0.12962	0.01257	0.32857	
clastic rock	20	0.12345	0.00629	0.30526	
compressive strength	18	0.11111	0.00566	0.21568	
carbon source	17	0.10493	0.00770	0.36764	
pore system	15	0.09259	0.00243	0.29523	
carbon sink	15	0.09259	0.00460	0.30476	
crude oil	14	0.08641	0.01481	0.30769	

Figure 5 Node Analytics

3.7 New Relation box

The evolving concept co-occurrence graph ③ and the New Relation box ⑧ both provide predictions and analysis of future hotspots and potential knowledge intersections. The primary objective is to identify different concepts that may co-occur in the future. The emergence of new knowledge is indicated by new edges, represented by black dotted lines in the middle graph. Additionally, we have incorporated internet quotation relationships within this concept. The evolving concept co-occurrence graph enables the expression of potential new knowledge in natural language, allowing for the generation of text descriptions for any new concept that arises.

3.8 Paper List

The paper list shown in Figure 3 provides highly cited papers related to users' input.By clicking on these papers, users can access the AceMap official website (https://www.acemap.cn) to explore further details and information.

3.9 Others

We also provide a report download option ⑨ for users to freely download results as a PDF file. Additionally, we offer a feedback service (⑩) and you are welcome to share your valuable input and suggestions with us. .

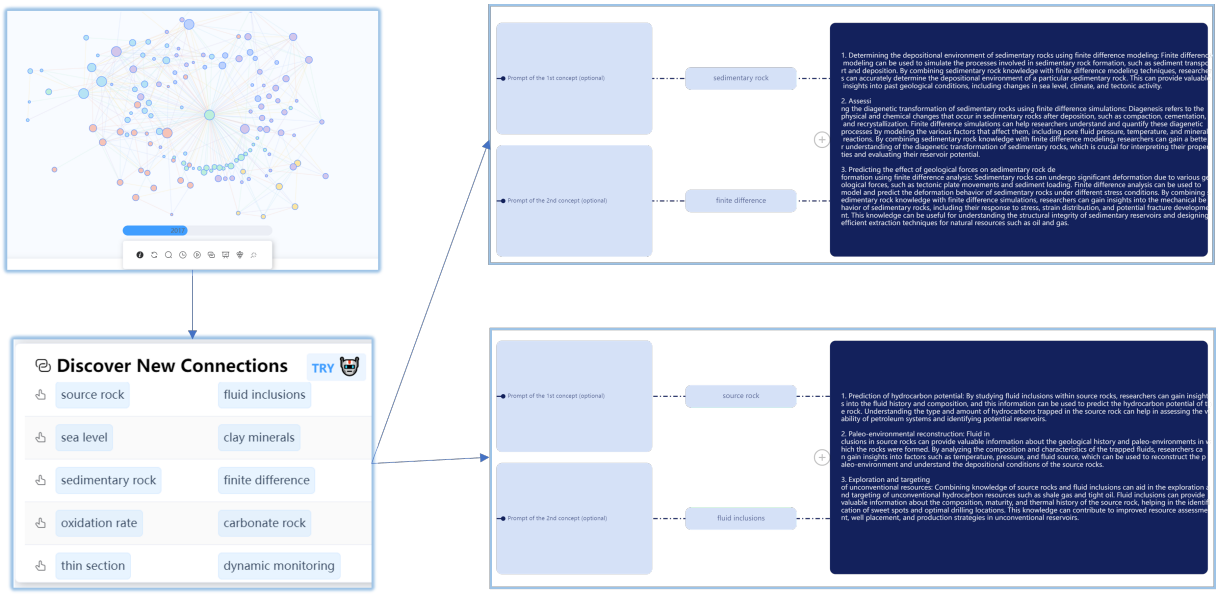
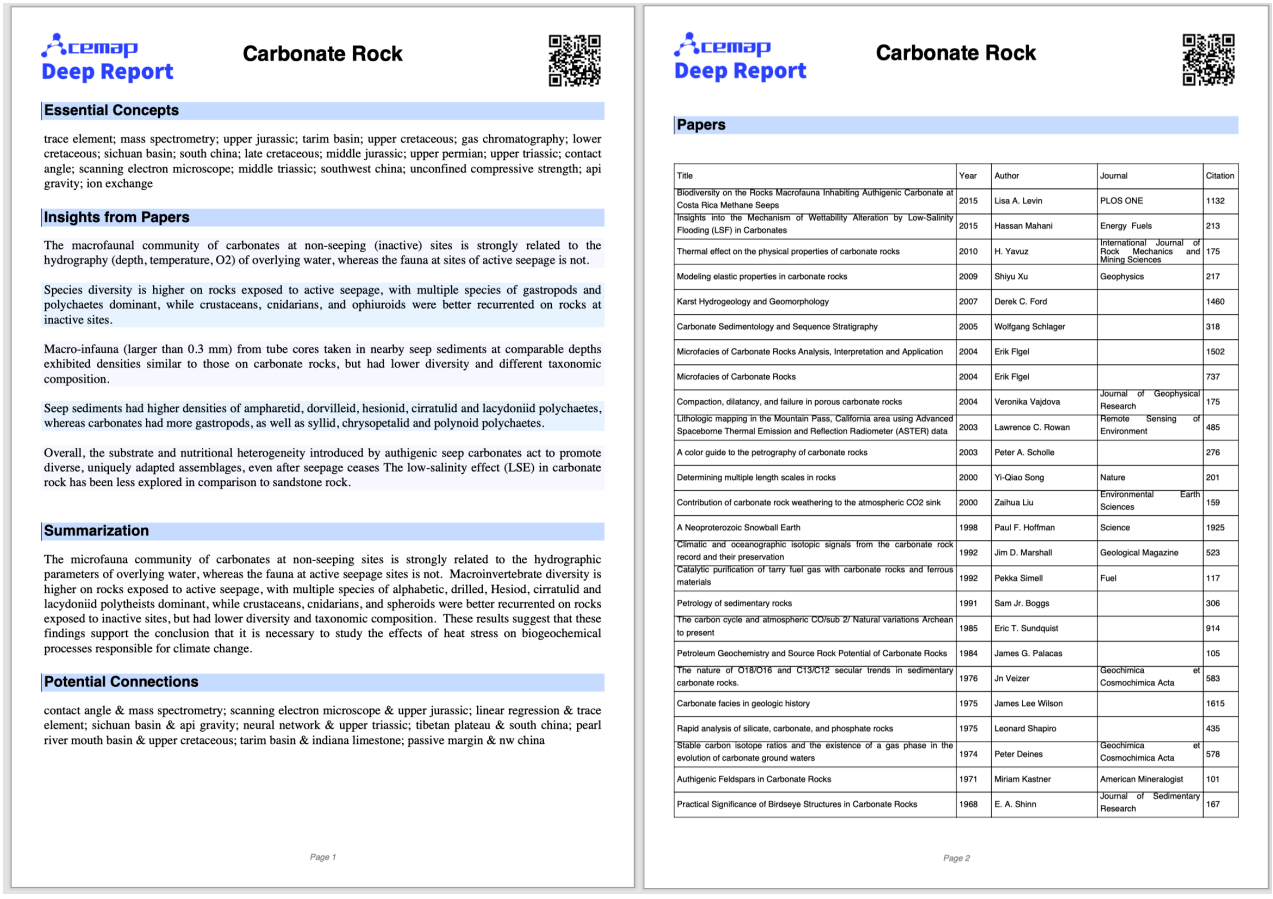


Figure 6 New Relations box



Deep Report

Carbonate Rock

Essential Concepts

trace element; mass spectrometry; upper jurassic; tarim basin; upper cretaceous; gas chromatography; lower cretaceous; sichuan basin; south china; late cretaceous; middle jurassic; upper permian; upper triassic; contact angle; scanning electron microscope; middle triassic; southwest china; unconfined compressive strength; api gravity; ion exchange

Insights from Papers

The macrofaunal community of carbonates at non-seeping (inactive) sites is strongly related to the hydrography (depth, temperature, O2) of overlying water, whereas the fauna at sites of active seepage is not.

Species diversity is higher on rocks exposed to active seepage, with multiple species of gastropods and polychaetes dominant, while crustaceans, cnidarians, and ophiuroids were better recurrented on rocks at inactive sites.

Macro-infauna (larger than 0.3 mm) from tube cores taken in nearby seep sediments at comparable depths exhibited densities similar to those on carbonate rocks, but had lower diversity and different taxonomic composition.

Seep sediments had higher densities of ampharetid, dorvilleid, hesionid, cirratulid and lacydoniid polychaetes, whereas carbonates had more gastropods, as well as syllid, chrysopetalid and polynoid polychaetes.

Overall, the substrate and nutritional heterogeneity introduced by authigenic seep carbonates act to promote diverse, uniquely adapted assemblages, even after seepage ceases The low-salinity effect (LSE) in carbonate rock has been less explored in comparison to sandstone rock.

Summarization

The microfauna community of carbonates at non-seeping sites is strongly related to the hydrographic parameters of overlying water, whereas the fauna at active seepage sites is not. Macroinvertebrate diversity is higher on rocks exposed to active seepage, with multiple species of alphabetic, drilled, Hesiod, cirratulid and lacydoniid polytheists dominant, while crustaceans, cnidarians, and spheroids were better recurrented on rocks exposed to inactive sites, but had lower diversity and taxonomic composition. These results suggest that these findings support the conclusion that it is necessary to study the effects of heat stress on biogeochemical processes responsible for climate change.

Potential Connections

contact angle & mass spectrometry; scanning electron microscope & upper jurassic; linear regression & trace element; sichuan basin & api gravity; neural network & upper triassic; tibetan plateau & south china; pearl river mouth basin & upper cretaceous; tarim basin & indiana limestone; passive margin & nw china

Page 1

Deep Report

Carbonate Rock

Papers

Title	Year	Author	Journal	Citation
Biodiversity on the Rocks Macrofauna Inhabiting Authigenic Carbonate at Costa Rica Methane Seeps	2015	Lisa A. Levin	PLOS ONE	1132
Insights into the Mechanism of Wettability Alteration by Low-Salinity Flooding (LSF) in Carbonates	2015	Hassan Mahani	Energy Fuels	213
Thermal effect on the physical properties of carbonate rocks	2010	H. Yavuz	International Journal of Rock Mechanics and Mining Sciences	175
Modeling elastic properties in carbonate rocks	2009	Shiyu Xu	Geophysics	217
Karst Hydrogeology and Geomorphology	2007	Derek C. Ford		1460
Carbonate Sedimentology and Sequence Stratigraphy	2005	Wolfgang Schlager		318
Microfacies of Carbonate Rocks Analysis, Interpretation and Application	2004	Erik Flgel		1502
Microfacies of Carbonate Rocks	2004	Erik Flgel		737
Compaction, dilatancy, and failure in porous carbonate rocks	2004	Veronika Vajdova	Journal of Geophysical Research	175
Lithologic mapping in the Mountain Pass, California area using Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data	2003	Lawrence C. Rowan	Remote Sensing of Environment	485
A color guide to the petrography of carbonate rocks	2003	Peter A. Scholle		276
Determining multiple length scales in rocks	2000	Yi-Qiao Song	Nature	201
Contribution of carbonate rock weathering to the atmospheric CO2 sink	2000	Zaihua Liu	Environmental Earth Sciences	159
A Neoproterozoic Snowball Earth	1998	Paul F. Hoffman	Science	1925
Climatic and oceanographic isotopic signals from the carbonate rock record and their preservation	1992	Jim D. Marshall	Geological Magazine	523
Catalytic purification of tarry fuel gas with carbonate rocks and ferrous materials	1992	Pekka Simell	Fuel	117
Petrology of sedimentary rocks	1991	Sam Jr. Boggs		306
The carbon cycle and atmospheric CO/sub 2/ Natural variations Archean to present	1985	Eric T. Sundquist		914
Petroleum Geochemistry and Source Rock Potential of Carbonate Rocks	1984	James G. Palacas		105
The nature of O18/O16 and C13/C12 secular trends in sedimentary carbonate rocks.	1976	Jn Veizer	Geochimica et Cosmochimica Acta	583
Carbonate facies in geologic history	1975	James Lee Wilson		1615
Rapid analysis of silicate, carbonate, and phosphate rocks	1975	Leonard Shapiro		435
Stable carbon isotope ratios and the existence of a gas phase in the evolution of carbonate ground waters	1974	Peter Deines	Geochimica et Cosmochimica Acta	578
Authigenic Feldspars in Carbonate Rocks	1971	Miriam Kastner	American Mineralogist	101
Practical Significance of Birdseye Structures in Carbonate Rocks	1968	E. A. Shinn	Journal of Sedimentary Research	167

Page 2

Figure 7 Report Download

4 PLANS

For guest users, the navigation page only allows access to the demo search feature. To unlock more features, sign in and upgrade your account by following the instructions below.

4.1 Sign In

To access your account, click the "Sign In" button on either the navigation page or the result page. If you don't have an Ace Map account yet, please register for a new account at https://ddescholar-dev.acemap.info/signIn. You can also visit the website directly by clicking the link below the Sign In panel.

4.2 Upgrade

For all registered users, the starting plan is the Free plan. To upgrade to the next level, click the "Upgrade" button on your profile page to join the waiting list. Your request will be reviewed, and if approved, you will be upgraded to the next level. There are three levels available, as described in Figure 5.

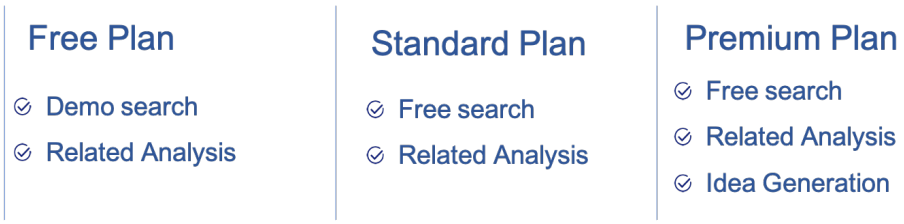


Figure 8 Plans

As a Free plan user, you can access the demo search by clicking on keywords on the navigation page or selecting queries through the search bar. The analysis results can be explored on the result page.

For users with the Standard plan and Premium plan, in addition to the demo search, you can simply type your interested topic in the search bar. Premium plan users have the added benefit of accessing the idea generation feature.

To begin the upgrade process, sign in to your account and click the upgrade button in your user profile. This will add you to the waiting list, and you'll need to await approval.

5 CITE US

Please cite the following work if you find our system helps you in your research:

```
@inproceedings{xu2023exploring,
  title={Exploring and Verbalizing Academic Ideas by Concept Co-occurrence},
  author={Xu, Yi and Sheng, Shuqian and Xue, Bo and Fu, Luoyi and Wang, Xinbing
   and Zhou, Chenghu},
  booktitle={Proceedings of the 61st Annual Meeting of the Association for
   Computational Linguistics (ACL)},
  year={2023
}
```

6 CONTACT US

If you have any questions or comments and suggestions during the use, please send an email to yixu98@sjtu.edu.cn, we will answer you as soon as possible, thank you very much!