GeoScienceWorld

The Earth's Best Science From One Single Source

Overview and User Guide

GeoScienceWorld.org
gswinfo@geoscienceworld.org
1.800.341.1851

1750 Tysons Blvd.
Suite 1500
McLean, VA 22102

Reinvesting in Science.
Sustaining Nonprofit Research Publishing.

GeoScienceWorld

GSW’s Nonprofit Mission

Provide comprehensive resources for research and communications in the Earth Sciences

Disseminate society content globally in diverse forms and formats

Support the sustainability of societies and libraries and respond to the needs to authors and researchers

Participating Publishers

The Palynological Society AASP 1967

American Association of Petroleum Geologists UPN "Veteran" Student Chapter

AEG Environmental Engineering Geologists

Cambridge University Press

CIM ICM The Canadian Institute of Mining, Metallurgy and Petroleum

Canadian Science Publishing

Schweizerbart Science publishers

CSPG Canada's Energy Geoscientists

Clay Minerals Society

Cushman Foundation for Foraminiferal Research, Inc. 1950

EEGS Environmental and Engineering Geophysical Society

European Association of Geochemistry

The Geological Society of America®

The Geological Society

GSSA Geological Society of South Africa

Micropaleontology Press

SGF Société Géologique de France *Des géologues au service de la société*

Mineralogical Association of Canada / Association Minéralogique du Canada

Mineralogical Society of America 1916 2016 American Mineralogist Centennial

Mineralogical Society

Paleontological Society

SSA Seismological Society *of* America Est 1906

1926 SEPM Society for Sedimentary Geology

Società Geologica Italiana 1881 Mente et Malleo

Society of Economic Geologists Founded 1920

SEG Society of Exploration Geophysicists

Soil Science Society of America

University of Wyoming

User Guide

Split Screen Article View

- Browseable images scroll independently of text
- Images have view large or download for PPT options
- Tab structure for supplements, TOC, references, GeoRef content
- PDF view and standard view options also available

Split Screen Article View

GeoScienceWorld Journals Books GeoRef Publishers OpenGeoSci Citation Manager Help GeoScienceWorld Staff Institution Sign In

Economic Geology

Search... This Journal

Advanced Search

Archive Current Issue About Journal About Society SEG Member Sign In

RESEARCH ARTICLE | JUNE 01, 2012

Geochemical Evolution of the Banded Iron Formation-Hosted High-Grade Iron Ore System in the Koolyanobbing Greenstone Belt, Western Australia*

Thomas Angerer; Steffen G. Hagemann; Leonid V. Danyushevsky

Economic Geology (2012) 107 (4): 599-644.
https://doi.org/10.2113/econgeo.107.4.599 Article history

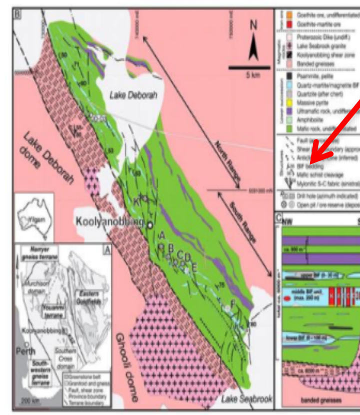
Standard View PDF Cite Share Tools

Abstract

The banded iron formation (BIF)-hosted iron ore deposits in the lower greenstone succession of the Koolyanobbing greenstone belt, 50 km north of Southern Cross in Western Australia, are a ~200 Mt high-grade Fe (>58%) pre-mining resource and represents one of the most important iron ore districts in the Yilgarn craton. Four hypogene alteration (ore-forming) stages and one supergene upgrading event took place: (1) During ore stage 1, LREE-depleted, transition metal-enriched, Mg-Fe (±Ca) carbonates replaced quartz in BIFs. The deposit-scale alteration was most likely induced by devolatilization of sea-floor-altered, Ca-Si-depleted mafic rocks in the vicinity of the BIF during early regional (syn-D_1), very low to low-grade metamorphism and was most strongly developed on reactivated BIF-basalt contacts. (2) Ore stage 2 involved the formation of patchy magnetite ore by a syn-D_2 to -D_4 dissolution of early carbonate. Enrichment of Fe_2O_{3total} in magnetite iron ore was by a factor of 2 to 2.4, and compatible trace elements in magnetite, such as Ga, V, and Al, were immobile. A subdeposit-scale ferroan talc-footprint proximal to magnetite iron ore in the largest deposit (K deposit) was associated with ore stage 2 and resulted from dissolution of magnesite due to reaction with silica in the BIF under greenschist facies conditions and potentially high fluid/rock ratio. (3) Magnetite growth, during ore stage 3, forming granular magnetite-martite ore is related to a subsequent hydrothermal event, occurring locally throughout the belt, especially in D_{2b} faults. (4) Ore stage 4 was associated with Fe-Ca-P-(L)REE-Y-enriched hydrothermal fluids, possibly from a magmatic source such as the postmetamorphic Lake Seabrook granite that crops out about 10 km west of the Koolyanobbing deposits and at the southern margin of the greenstone belt. These Ca-enriched fluids interacted with distal metamorphosed mafic rock and influenced the BIF-ore system in a small number of deposits. They were channelled through regional D_4 faults and caused specularite-

Figures & Tables Contents GeoRef References Related

Fig. 1



View large Download slide

Geologic map of the Koolyanobbing greenstone belt: (A) insert showing the Yilgarn craton (KSZ = Koolyanobbing shear zone), (B) simplified geologic map of the Koolyanobbing greenstone belt, and (C) lithostratigraphic column of the lower greenstone succession (Cassidy et al., 2006) in the Koolyanobbing greenstone belt.

Fig. 2

Images scroll separately from text

Split Screen Book View


GeoScienceWorld Journals Books GeoRef Publishers OpenGeoSci Citation Manager Help GeoScienceWorld Staff Institution Sign In

Books

Search... All Books

Advanced Search

All Books By Publisher

BOOK CHAPTER

Tectonic Processes and Metallogeny along the Tethyan Mountain Ranges of the Middle East and South Asia (Oman, Himalaya, Karakoram, Tibet, Myanmar, Thailand, Malaysia)

By: Michael P. Searle; Laurence J. Robb; Nicholas J. Gardiner;

DOI: https://doi.org/10.5382/SP.19.12

Published: January 01, 2016

Chapter PDF Cite Share Tools

†

Corresponding author: e-mail, mike.searle@earth.ox.ac.uk

*

Present address: Centre for Exploration Targeting-Curtin Node, Department of Applied Geology, Western Australian School of Mines, Curtin University, Perth, WA 6102, Australia.

Abstract

The genesis of mineral deposits has been widely linked to specific tectonic settings, but has less frequently been linked to tectonic processes. Understanding processes of oceanic and continental collision tectonics is crucial to understanding key factors leading to the genesis of magmatic-, metamorphic-, hydrothermal-, and sedimentary-related mineral deposits. Geologic studies of most ore deposits typically focus on the final stages of concentration and emplacement. The ultimate source (mantle, lower crust, upper crust) of mineral deposits in many cases remains more cryptic. Uniquely, along the Tethyan collision zones of Asia, every stage of the convergence process can be studied from the initial oceanic settings where ophiolite complexes were formed, through subduction zone and island-arc settings with ultrahigh- to high-pressure metamorphism, to the continental collision settings of the Himalaya, and advanced, long-lived collisional settings such as Afghanistan, the Karakoram Ranges, and the Tibetan plateau. The India-Asia collision closed the intervening Neotethys ocean at ~50 Ma and resulted in the formation of the Himalayan mountain ranges, and increased crustal thickening, metamorphism, deformation, and uplift of the Karakoram-Hindu Kush ranges, Tibetan plateau, and older collision zones across central Asia. Metallogenesis in oceanic crust (hydrothermal Cu-Au; Fe, Mn nodules) and mantle (Cr, Ni, Pt) can be deduced from ophiolite complexes preserved around the Arabia/India-Asia collision (Oman, Ladakh, South Tibet, Myanmar, Andaman Islands). Tectonic-metallogenic processes in island arcs and ancient subduction complexes (VMS Cu-Zn-Pb) can be deduced from studies in the Dras-Kohistan arc (Pakistan) and

Figures & Tables Contents GeoRef References Related

Fig. 1.

View large Download slide

Digital elevation model of the Middle East and Asia, showing the major tectonic features.

Fig. 2.

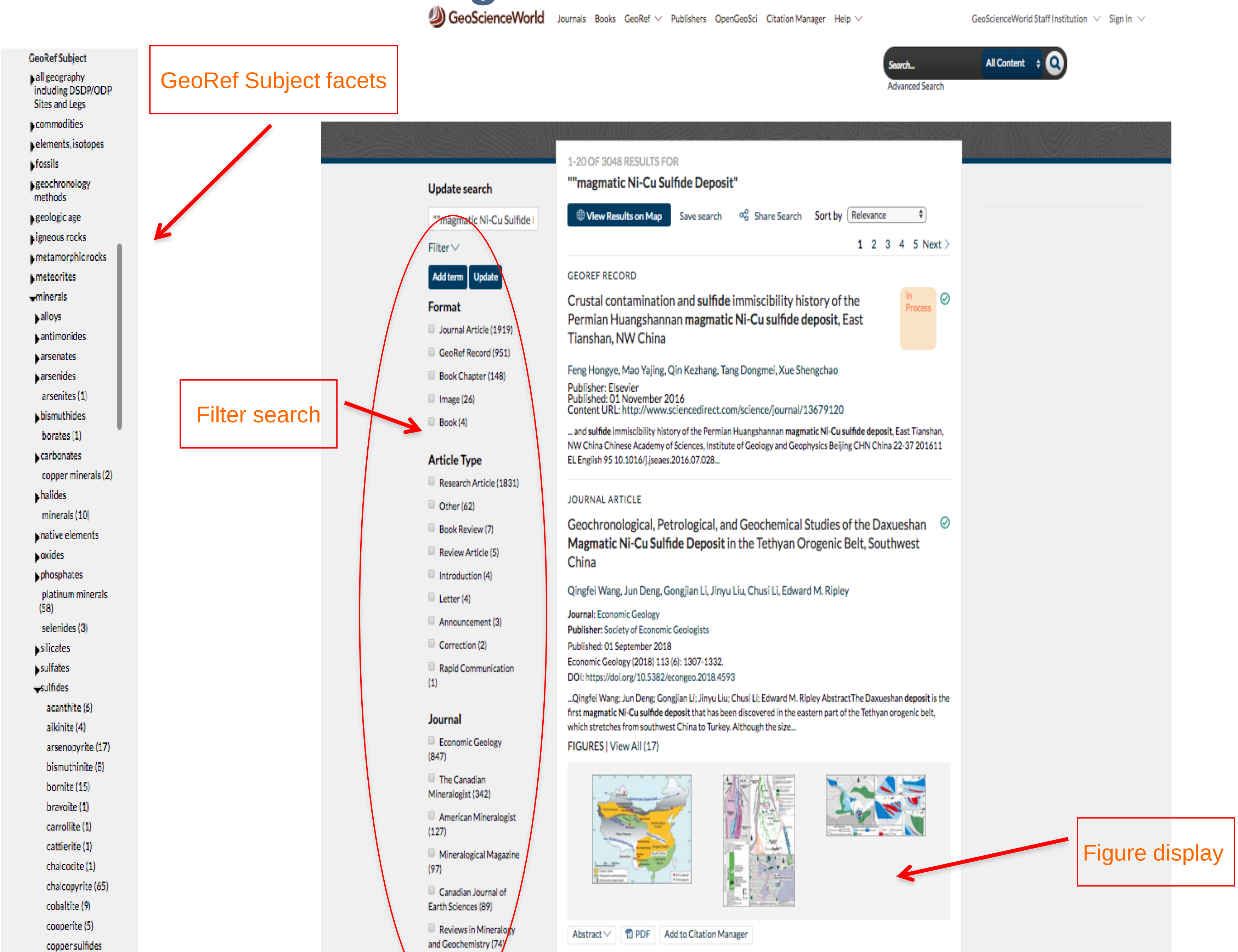
MODEL A MODEL B

And text scrolls separately from images.

Search Results

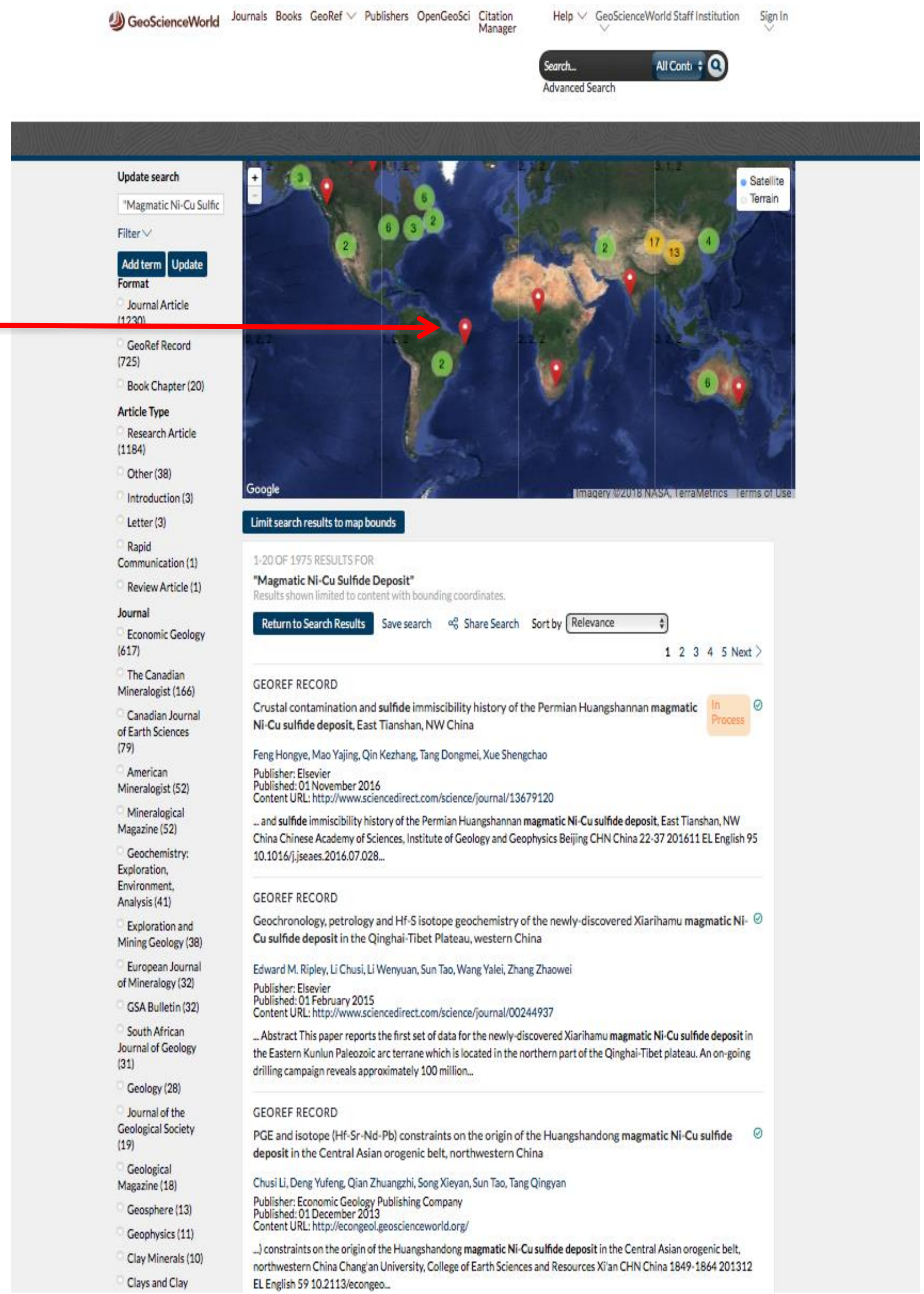
- Figure display for scanning content (like a visual abstract)
- Links for abstract, supplements, and PDF
- Modify search to narrow results
- Content type facet
- Journal Facet
- Subject facet that utilizes the GeoRef keywords and the hierarchy of broader and narrower terms from the thesaurus
- Easily explore 100s of subject facets
- Time based Facets called out broadly by Era and Period or more narrowly with Epoch and Age

Search Results Page



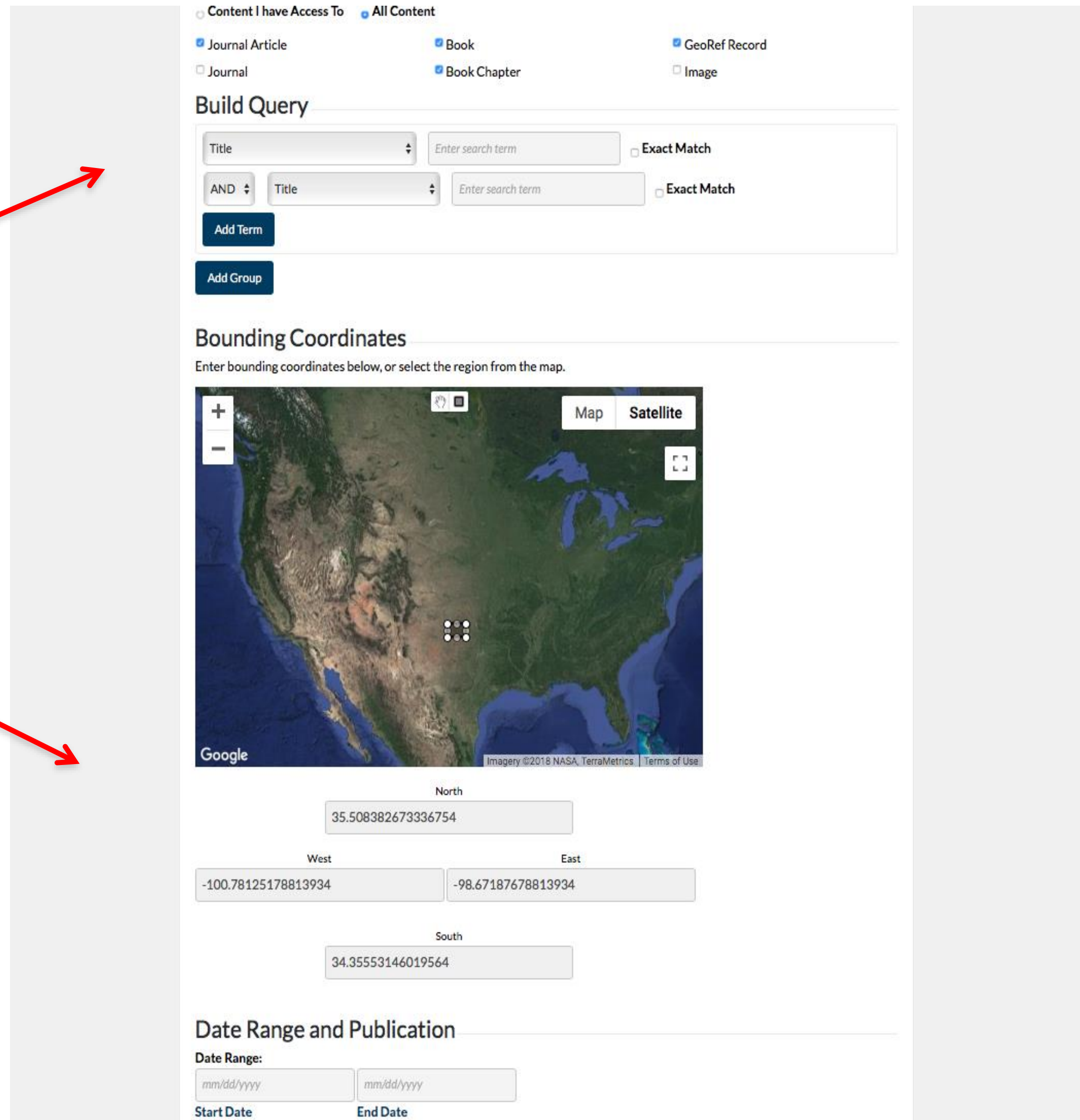
Map View
Search Results

Limit search by geographic location.
Click on pins for article title.

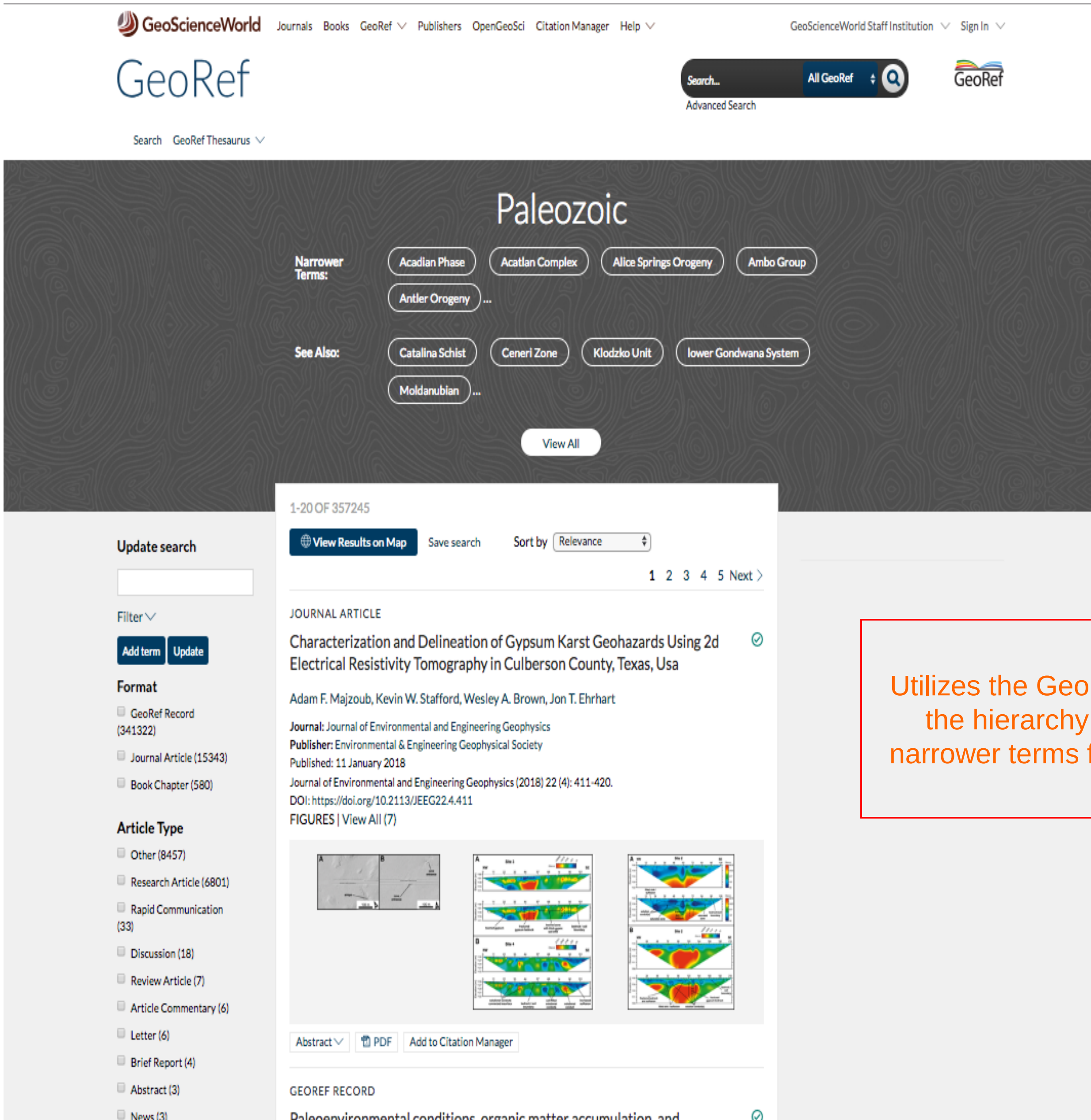


Advanced Search

Build query by location, date range, DOI, publication, GeoRef category



GeoRef Thesaurus



Utilizes the GeoRef keywords and the hierarchy of broader and narrower terms from the thesaurus

GeoRef Record

GEOREF RECORD

Chemical and structural changes in vitrinites and megaspores from Carboniferous coals during maturation

Laura Zieger, Ralf Littke and Jan Schwarzbauer

Chemical and structural changes in vitrinites and megaspores from Carboniferous coals during maturation
International Journal of Coal Geology (January 2018) 185: 91-102

Index Terms/Descriptors

aliphatic hydrocarbons, alteration, aromatic hydrocarbons, benzene, Carboniferous, Central Europe, chemical properties, chromatograms, coal, Curie point, Europe, FTIR spectra, gas chromatograms, Germany, hydrocarbons, infrared spectra, ion chromatograms, lithotypes, macerals, mass spectra, molecular structure, North Rhine-Westphalia Germany, organic compounds, Paleozoic, phenols, pyrolysis, Ruhr, sedimentary rocks, spectra, spores, thermal maturity, Upper Carboniferous, vitrain, vitrinite, Westphalian, Lembeck Formation

Latitude & Longitude

N51°19'60" - N52°19'60", E07°00'00" - E08°30'00"

Abstract

Chemical and structural changes occurring in kerogen upon thermal alteration are identified and analysed based on a set of naturally matured Carboniferous coals from the Ruhr Basin (Germany). For this purpose, handpicked vitrinite from eleven samples comprising a maturity range from 0.55 to 2.86% VR (sub r) was analysed using attenuated total reflectance infrared spectroscopy (ATR FT-IR) and Curie Point pyrolysis gas chromatography/mass spectroscopy (CP-Py-GC/MS) at two pyrolysis temperatures. Additionally, reflectance mu FT-IR was used to assess variations in the proportions of functional groups in megaspores from five oil mature coal samples. Infrared spectra of the vitrinites show a clear decrease in aliphatic CH (sub x) absorbance in favour of aromatic CH absorbance, pointing out an increase in aromaticity with increasing maturity. Spectra of megaspores are dominated by the absorbance of the aliphatic CH (sub x) stretching region and reveal the loss of C=O groups with increasing maturity, while the degree of aromaticity (gamma CH/nu CH (sub x)) increases slowly compared to that of the vitrinite spectra. Vitrinites pyrolysed at 590 degrees C show higher yields in aliphatic hydrocarbons than those pyrolysed at 764 degrees C, while at the higher pyrolysis temperature the yields in aromatic compounds, including phenols and sulphur-containing aromatics are higher. The aromatic fraction of the pyrolysates, in particular the relative amount of polyaromatics increases upon maturation, while the henolic fraction decreases in favour of benzenes. Major processes leading to these structural and chemical changes in vitrinites and megaspores are defunctionalisation of oxygen-containing groups, the loss of aliphatic compounds and the formation of monoaromatic molecules. These prevail over the condensation of aromatic ring-structures, which is, however, evidenced by increasing proportions of polyaromatic fractions in the pyrolysed vitrinites.

ISSN: 0166-5162

Serial Title: International Journal of Coal Geology

Serial Volume: 185

Title: Chemical and structural changes in vitrinites and megaspores from Carboniferous coals during maturation

Author(s): Zieger, Laura; Littke, Ralf; Schwarzbauer, Jan

Affiliation: Rheinisch-Westfaelische Technische Hochschule Aachen, Institute of Geology and Geochemistry of Petroleum and Coal, Aachen, Germany

Pages: 91-102

Published: 20180102

Text Language: English

Publisher: Elsevier, Amsterdam, Netherlands

References: 73

DOI: 10.1016/j.coal.2017.10.007

Accession Number: 2018-014300

Categories: Petrology of coalGeneral geochemistry

Document Type: Serial

Bibliographic Level: Analytic

Illustration Description: illus. incl. 4 tables

Latitude & Longitude(s): N51°19'60" - N52°19'60", E07°00'00" - E08°30'00"

Country of Publication: Netherlands

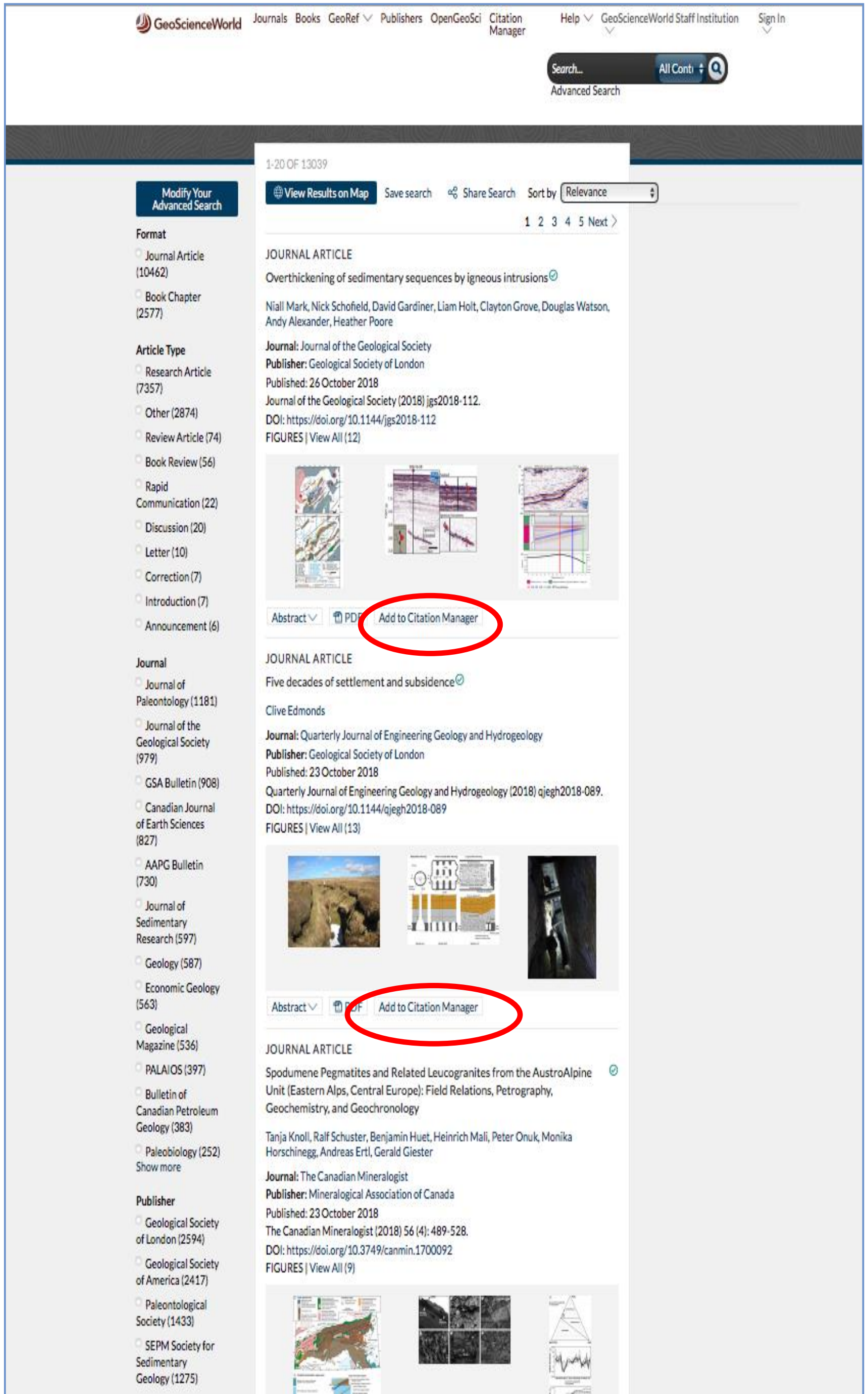
Secondary Affiliation: GeoRef, Copyright 2018, American Geosciences Institute. Reference includes data from CAPCAS, Elsevier Scientific Publishers, Amsterdam, Netherlands

Update Code: 2018

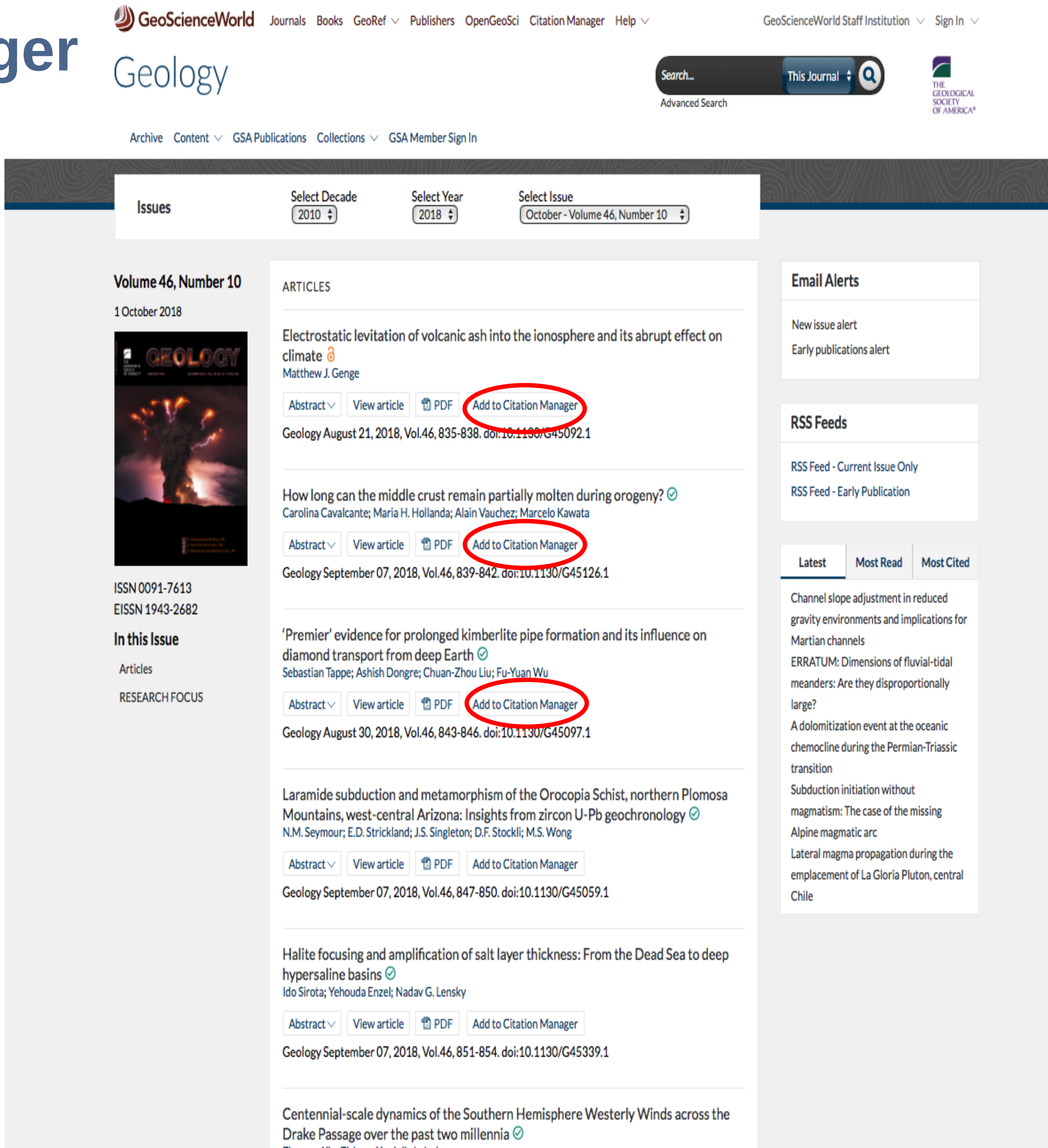
URL: 360 LINK

ISSN: 0166-5162

Citation Manager



Citation Manager



Citation Manager

The contents of the Citation Manager are not saved from session to session. Before exiting the session, select the citations to download and click **Download Selected.**

Select All / None Remove Selected Download Selected

Discriminating methane sources in ground gas emissions in NW England
Christopher J. Teasdale; Jean A. Hall; John P. Martin; David A. C. Manning
(17 October 2018) qjegh2018-083.
DOI: 10.1144/qjegh2018-083

Detrital Clay Coats, Clay Minerals, and Pyrite: A Modern Shallow-Core Analogue For Ancient and Deeply Buried Estuarine Sandstones
Joshua Griffiths; Richard H. Worden; Luke J. Wooldridge; James E. P. Utley; Robert A. Duller
Journal of Sedimentary Research (23 October 2018) 88 (10): 1205–1237.
DOI: 10.2110/jsr.2018.56

Spodumene Pegmatites and Related Leucogranites from the AustroAlpine Unit (Eastern Alps, Central Europe): Field Relations, Petrography, Geochemistry, and Geochronology
Tanja Knoll; Ralf Schuster; Benjamin Huet; Heinrich Mali; Peter Onuk; Monika Horschinegg; Andreas Ertl; Gerald Giester
The Canadian Mineralogist (23 October 2018) 56 (4): 489–528.
DOI: 10.3749/canmin.1700092

Five decades of settlement and subsidence
Clive Edmonds
(23 October 2018) qjegh2018-089.
DOI: 10.1144/qjegh2018-089

Overthickening of sedimentary sequences by igneous intrusions
Niall Mark; Nick Schofield; David Gardiner; Liam Holt; Clayton Grove; Douglas Watson; Andy Alexander; Heather Poore
(26 October 2018) jgs2018-112.
DOI: 10.1144/jgs2018-112

Select All / None Remove Selected Download Selected

GeoScienceWorld Journals Books GeoRef Publishers OpenGeoSci Citation Manager Help GeoScienceWorld Staff Institution Sign In

All Content

Download Citations

You have 5 citation(s) selected for download. Please select a format:

BibTeX	Bookends	EasyBib
EndNote	Mendeley	Papers
RefManager	RefWorks	RIS (Zotero)

Some citation managers only support certain types of content. Please see the documentation for your selected citation manager format.

Citation Manager

The contents of the Citation Manager are not s
and click **Download Selected.**

Select All / None Remove Selected

Discriminating methane sources in ground gas emissions in NW England
Christopher J. Teasdale; Jean A. Hall; John P. Martin; David A. C. Manning
(17 October 2018) qjegh2018-083.
DOI: 10.1144/qjegh2018-083

Detrital Clay Coats, Clay Minerals, and Pyrite: A Modern Shallow-Core Analogue For Ancient and Deeply Buried Estuarine Sandstones
Joshua Griffiths; Richard H. Worden; Luke J. Wooldridge; James E. P. Utley; Robert A. Duller
Journal of Sedimentary Research (23 October 2018) 88 (10): 1205–1237.
DOI: 10.2110/jsr.2018.56

Spodumene Pegmatites and Related Leucogranites from the AustroAlpine Unit (Eastern Alps, Central Europe): Field Relations, Petrography, Geochemistry, and Geochronology
Tanja Knoll; Ralf Schuster; Benjamin Huet; Heinrich Mali; Peter Onuk; Monika Horschinegg; Andreas Ertl; Gerald Giester
The Canadian Mineralogist (23 October 2018) 56 (4): 489–528.
DOI: 10.3749/canmin.1700092

Five decades of settlement and subsidence
Clive Edmonds
(23 October 2018) qjegh2018-089.
DOI: 10.1144/qjegh2018-089

Overthickening of sedimentary sequences by igneous intrusions
Niall Mark; Nick Schofield; David Gardiner; Liam Holt; Clayton Grove; Douglas Watson; Andy Alexander; Heather Poore
(26 October 2018) jgs2018-112.
DOI: 10.1144/jgs2018-112

Select All / None Remove Selected Download Selected

What librarians are saying . . .

"GeoScienceWorld has grown from a single source of journals from major geoscience societies with a GeoRef search interface to a full-fledged geoscience resource of journals and e-books from both large and small geoscience societies. GeoRef knits the parts together so that users can focus their searches on geoscience information. Other databases of scientific literature do not have both the same breadth and focus." Michael M. Noga, MIT Libraries

"GeoScienceWorld provides small research institutions like mine with cost- effective access to a world-class library of geoscience literature — much more than we could ever afford to subscribe to otherwise. Their journal list is a "Who's Who" of scholarly society publishing in our field and is actively growing. GSW has a strong track record of innovation and responsiveness to user input. Features like their geographic search interface, indexing of figures and tables, and use of mobile vouchers provide new modes of discovery. And the quality and reliability of the GeoRef bibliographic database underpins it all. I can't imagine a serious research program in the earth or environmental sciences being without GSW."
Shaun Hardy, Librarian Department of Terrestrial Magnetism, Carnegie Institution of Washington

"An excellent collection . . . an easy- to-use resource for faculty and students. Highly recommended for academic libraries."
Bonnie J.M. Swoger, Sciences and Technology Librarian at SUNY Geneseo, for Library Journal


GeoScienceWorld
gswinfo@geoscienceworld.org