

SEARCHING FOR CURRENT INTERNATIONAL GEOSCIENCE LITERATURE

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Abstract -- Keeping up with the literature, efficiently finding the most relevant literature, and conducting comprehensive geoscience literature searches in today's changing world of publication and accessibility is challenging. How well do the geoscience information tools meet this challenge? A comparison study of two geoscience databases, one science database and one Internet search engine looked at the geographic coverage, subject content, source material indexed, formats included, and currency of each in an attempt to be better able to recommend information tools to researchers. The databases included in the study were: GeoRef, produced by the American Geological Institute and GEOBASE, produced by Elsevier; Science Citation Index Expanded, produced by the Institute for Scientific Information; and Scirus a comprehensive science-specific Internet search engine.

INTRODUCTION

A year ago I presented a paper looking at bibliographic access to the international geological literature published before 1900 (Scott, 2003). This year I am looking at the other end of time, the international geological literature published after 2000, a century later. As opposed to limited electronic access to the older literature, we have several means of electronic access to current literature and information. The question to be answered is: "Where to start to look for geoscience information about some place outside North America?" I examined the two geoscience databases, GeoRef and GEOBASE, as well as looking at the ISI Science Citation Index Expanded and one Internet search engine, Scirus, that is described as designed for science. I used two tests in comparing the databases: international serial coverage and international subject coverage.

DATABASES

First some information about the two geoscience databases, GeoRef and GEOBASE. The GeoRef database is produced by the American Geological Institute. It "provides access to the geoscience literature of the world. GeoRef is the most comprehensive database in the geosciences and continues to grow by more than 80,000 references a year. The database contains over 2.4 million references" (GeoRef Information Services, 2004). GeoRef staff scans over 3000 journals to locate geoscience articles. A selected list of 99 journals is given priority for indexing.

The GEOBASE database is produced by Elsevier. From the description on their web page: "GEOBASE is a unique multidisciplinary database supplying bibliographic information and abstracts for development studies, the Earth sciences, ecology, geomechanics, human geography, and oceanography. The database provides current coverage of over 1,800 journals and archive coverage of several thousand additional titles. GEOBASE is unequalled in its coverage of the international literature. GEOBASE contains over 1 million records from 1980, with 76,000 records added annually" (GEOBASE, 2004).

A comparison of the serial lists for these two databases indicates 923 titles are indexed by both. Of GeoRef's 99 priority titles, 85 are also indexed in GEOBASE. The titles of the serials included in GEOBASE but not in GeoRef were examined to determine their subject orientation. Most of the titles were not geology but economics, social science, agriculture, biology or other. GEOBASE's description indicates it includes more than the geosciences.

There is another database that many researchers use, the ISI Science Citation Index Expanded. This database indexes 5,300 major journals across 164 scientific disciplines. It is therefore more inter-disciplinary than either GeoRef or GEOBASE.

The Internet search engine/database I have included in this paper is Scirus. As described on the Scirus web page: "Scirus is the most comprehensive science-specific search engine on the Internet. Driven by the latest search engine technology, Scirus searches over 167 million science-specific web pages. In addition to web pages, Scirus indexes several special sources:

- 14.6 million MEDLINE citations
- 5.5 million ScienceDirect full-text articles
- 1.2 million patents from the USPTO
- 261,000 e-prints on ArXiv.org
- 5,352 BioMed Central full-text articles
- 10,600 NASA technical reports
- 14,878 full text articles from Project Euclid (Scirus, 2004)

This is owned by Elsevier and is available free on the Internet. There is an advanced search screen and you can limit your searches to either journals or web sites or both.

I included Scirus in this study because we often hear that the web is replacing the need for library research. Usually Google is mentioned but I chose Scirus because of the ability to also search some journals and its focus on science. A different paper another year might compare search engines for geoscience research.

INTERNATIONAL SERIAL COVERAGE

The first test was to see how well the database indexed serials published outside North America. I selected 81 international serials representing about 32 countries and currently received by the Orton Memorial Library of Geology at The Ohio State University. The list of titles is included as an appendix. The ISSN was used to search both GeoRef and GEOBASE to determine current coverage. Of the 81 titles, all 81 are covered by GeoRef with 51 being unique to GeoRef. GEOBASE included 29 of the serial titles and ISI included 13 of the titles. Scirus did not include any of the 81 titles.

Of the 81 titles, GeoRef (including the GeoRef Preview database) was over a year behind for only 7 titles. The conclusion to this part of the study is that GeoRef has more international serial coverage and with the GeoRef Preview database is fairly up-to-date.

INTERNATIONAL SUBJECT SEARCHES

My other test for comparing the international coverage is actual searches. These are simple searches not taking into account the differences in the various search engines. The results of three searches are analyzed here.

First search: keyword phrase “tropical glaciers” from 1999 to date

GEOBASE – 13 hits, 3 unique
GeoRef – 11 hits, 5 unique
ISI Science Citation Index Expanded – 27 hits, 15 unique
Scirus – 21 hits for journals, 14 unique and 392 web sites

Some observations about the results: Scirus is searching the full text of the article including the references. One of the hits was in the title of a reference, in some other cases the term appeared only once in the text. For GeoRef, three of the five unique hits were abstracts of GSA meeting papers, the other two were in international journals not covered by GEOBASE. For GEOBASE, the three unique hits are in GeoRef but the search term “tropical glaciers” did not pick them up – a difference in search engines and indexing. Of the 15 unique hits in the ISI Science Citation Index Expanded, five hits are recent (2003-2004) citations to AGU journals that have not been indexed in GeoRef. Also ISI for recent years is searching the full text therefore picking up the term that might not be in the title, abstract or index terms in GeoRef or GEOBASE. ISI database also includes other science journals, for example, *Atmospheric Chemistry and Physics*.

Second search: geological maps of Spain published after 2001.

GEOBASE – 13 hits, 5 unique
GeoRef – 1 hit
ISI Science Citation Index Expanded – 4 hits, 1 unique
Scirus – 44 hits, 43 unique

Observations about the results: Scirus is picking up the term “geological map” from figure captions providing access to maps that might not be assigned a subject heading of geological maps during database indexing. Also the most recent Elsevier journals are searchable as soon as they are published online. Seven of the hits in GEOBASE are also in GeoRef but were not picked up by the simple search strategy used. Of the five unique hits in GEOBASE, three are in international journals covered by GeoRef but references are not in GeoRef or GeoRef Previews even through references from later issues of the same journal are there.

Third search: McMurdo Dry Valleys and limited to publication year 2004.

GEOBASE – 16 hits, none unique, all were also in ISI, only 4 are duplicates of GeoRef hits.

GeoRef (and GeoRef Preview) – 12 hits, 5 unique
ISI Science Citation Index Expanded – 38 hits, 20 unique

Scirus – 13 hits, 6 unique

Observations about these search results – again the fact that ISI is a multidiscipline science database is evident, many of the ISI hits are in journals such as *Cellular and Molecular Biology*, *Polar Biology*, *Aquatic Geochemistry*, and *JGR-Atmospheres*. GEOBASE and ISI are finding articles on climate, soils, water chemistry, and bacteria, not topics usually included in GeoRef.

CONCLUSIONS AND POSSIBLE RESEARCH DIRECTIONS

1. GeoRef includes more foreign geoscience journals than GEOBASE. Does GeoRef include all geoscience journals published in the world? I do not know but this limited study indicates to me that GeoRef probably includes the major serials from most countries. GeoRef includes many scientific reports such as publications of state and national agencies. GEOBASE includes only a few of these.
2. GEOBASE is more interdisciplinary with the social sciences and business. It is worldwide in coverage but not comprehensive.
3. ISI Science Citation Index Expanded is interdisciplinary with all sciences but limited in the number of geoscience journals included.
4. Scirus is very current for selected journals and provides references to some web sites.
5. For comprehensive research, multiple databases will have to be consulted.
6. There is still a need for the reference interview and bibliographic instruction. Information is there; we just need to guide people to the proper place to start looking, teach them good search techniques and how to evaluate the results.
7. There are some new players coming that we need to watch and evaluate, such as Scopus, Google Scholar, and the development of the semantic web.

REFERENCES

GEOBASE, 2004,
http://www.elsevier.com/wps/find/bibliographicdatabasedescription.cws_home/422597/description#description, Elsevier (Accessed October 25, 2004).

GeoRef Information Services, 2004,
<http://www.agiweb.org/georef/index.html>, American Geological Institute (Accessed October 25, 2004).

Scirus, 2004, “About us”,
<http://www.scirus.com/srsapp/aboutus/>, Elsevier (Accessed October 25, 2004).

Geoscience Information Society Proceedings, 2004, v. 34, p. 105-108.

APPENDIX – SERIAL LIST

- Acta geodaetica et geophysica Hungarica
 Acta geologica polonica
 Acta palaeontologica Polonica
 Alcheringa
 Anuarul Institutului de Geologie si Geofizica
 Australian journal of earth sciences
 Australian journal of mineralogy
 Berichte der Deutschen mineralogischen gesellschaft
 Beringeria
 Boletim (Instituto Geologico (Sao Paulo, Brazil))
 Boletim de geociencias da Petrobras
 Boletin (Univ. Nac. Autonoma de Mexico. Inst de Geologia)
 Boletin de la Real Soc Espanola de Hist Nat. Sec geologica
 Bulletin - Geological Survey of Canada
 Bulletin - Geological Survey of Western Australia
 Bulletin (Council for Geoscience (South Africa))
 Bulletin (Norges geologiske undersokelse)
 Bulletin de la Societe geologique de France
 Bulletin of the Geological Society of Denmark
 Chemie der Erde : Beitrage zur chemischen Mineralogie, ...
 Chishitsu chosa kenkyu hokoku/ Bull. Geol Survey of Japan
 Chishitsu Chosajo hokoku/ Report Geol. Survey of Japan
 Coloquios de paleontologia
 Cuadernos de geologia iberica
 Daiyonki kenkyu = The quaternary research
 Di qiu xue bao = Acta geoscientia sinica
 Di zhi xue bao = Acta geologica Sinica
 Earthwise / British Geological Survey
 Eclogae geologicae Helvetiae
 Eiszeitalter und Gegenwart
 Estudios geologicos
 Folia Quaternaria / Polska Akademia Nauk
 Freiburger Forschungshefte. [Reihe] C
 GeoArabia
 Geologica Bavarica
 Geologica Belgica
 Geological quarterly
 Geologisches Jahrbuch. Reihe A:
 Geologisches Jahrbuch. Reihe B: Regionale Geologie Ausland
 Geologisches Jahrbuch. Reihe D: Mineralogie, Petr...
 GFF
 Grasteinen/NGU, Norges geologiske undersoke
 Gu sheng wu xue bao = Acta palaeontologica Sinica
 Huo shan di zhi yu kuang chan = Volcanology & mineral resources
 Israel journal of earth sciences
 Izvestiya. Physics of the solid earth
 Journal of African earth sciences
 Journal of the Geological Society of India
 Kuang chuang di zhi = Mineral deposits
 Meddelelser om Gronland. Geoscience
 Memoir (Council for Geoscience (South Africa))
 Memoir (Geological Survey (Namibia))
 Memoirs of the Fukui Prefectural Dinosaur Museum
 Memoirs of the Geological Survey of Belgium
 Memorie descrittive della carta geologica d'Italia
 MESA journal / issued by the Geological Survey of South Australia
 Munchner geowissenschaftliche Abhandlunger. Reihe A,
 Neues Jahrbuch fur Mineralogie. Abhandlunge
 Neues Jahrbuch fur Mineralogie. Monatshefte
 Newsletters on stratigraphy
 Periodico di mineralogia
 Professional paper / Geological Survey of Belgium
 Quarterly notes/Geological Survey of New South Wales
 Revista del Museo Argentino de Ciencias Naturales
 Revista do Instituto Geologico
 Sbornik vedeckych praci. Rada hornicko-geologicka. Doklady...
 Scientific technical report (GeoForschungsZentrum Potsdam)
 Scottish journal of geology
 SGU series C. Research papers = Forskningsrapporter
 South African journal of geology
 Special paper (Geologian tutkimuskeskus (Finland))
 Studia geologica Polonica
 Terra Antarctica
 The Mercian geologist
 The Palaeobotanist
 Tutkimusraportti / Geologian tutkimuskeskus = Rep of Invest.
 Zeitschrift fur geologische Wissenschaften
 Zeitschrift fur Geomorphologie. Annals of geomorphology
 Zeitschrift fur Geomorphologie. Supplementband
 Zeitschrift fur Gletscherkunde und Glazialgeologie
 Zentralblatt fur Geologie und Palaontologie. Teil I: