EARTH SCIENCE INFORMATION SYSTEMS AND SERVICES

Describes some of the important geological information systems and services of the world.

1. INTRODUCTION

Scientists are well aware of explosive growth of literature in all branches of science and technology. It was said that the amount of scientific literature is doubling approximately in every ten to fifteen years. In the field of earth science, the number of periodical articles published during 1960 and 1970 has been estimated at 91,000 and 158,000 respectively (1). GeoRef data base has about 600,000 items in 1980 with an annual growth rate of 50,000. Naturally earth scientists are extremely anxious that they may be unaware of the work done previously or being done currently by fellow scientists. There is every possibility of missing the work of others.

The access to earth science literature is difficult due to complexity of sources and the varied forms in which information appears, such as periodical articles, conference proceedings, field reports, laboratory reports, theses, maps, films, imagery, etc. Moreover, the subject itself is a composition of fundamental natural sciences and their branches and directly affects their new developments. That is why earth science investigation requires information from a number of different disciplines. So, relevant information cannot be obtained from a small and easily specified set of documents. Geoscience Documentation in 1969 published a list of 1,500 current serial titles primarily concerned with earth science. The Bibliography and Index to Geology scans about 4,200 serial titles to maintain a comprehensive world record of earth science literature.

2. COMPUTERISED DATA BASE

To cope up with the increasing volume of literature effectively, the concept of computerised data base emerged in early 1960s. A 'data base' is a set of documents or files bearing a relationship to one another, logically belonging together and capable of being used as an entity. The procedures developed to organise data bases, to provide access to them, and to develop products from them for the user can be called an 'information system'. If the computer is used to provide access, to maintain the files, or to produce output then it can be called a 'computer based information system' (2). The system is able to handle extremely large files efficiently by providing multiple access points through on-line or off-line.

A bibliographic data base maintains descriptive information about documents. Each document is stored with necessary bibliographic descriptions like title, author, serial number, volume & number, date, page and sometimes abstract. The subject content of the document is represented by some descriptors selected generally from a thesaurus.

3. EARTH SCIENCE DATA BASES

A number of earth science data bases with international/national coverage or confined to a specific field of interest provide a wide range of information services like indexing and abstracting, SDI, bibliography, retrospective search, state-of-the-art-review, translation, referral, document supply, etc. to cater to the needs of the earth scientists. Some data bases provide machine-readable files in the form of magnetic tape on licensing or leasing agreement. Most of the data bases publish hard copy publications corresponding to the data base.

Some of the important systems & services in the field are given below:

DIPAK NAG
Insdoc Trainee 1980-82
Insdoc
New Delhi-110012.
Asian Information Centre for Geotechnical Engineering (AGE)

This computerised data base in Bangkok deals with the literature on all phases of geotechnical engineering research and projects which are relevant to Asia. The publication corresponding to the data base is the AGE Digest. It also publishes the AGE Geotechnical Engineering Abstracts (biannual), AGE Current Awareness Service (Quarterly) and AGE Holding List of Research/Technical/Special Reports. The Centre offers SDI, referral, retrospective search and reprographic services.

Australian Earth Science Information System (AESIS)

This computer-readable data base is maintained by Australian Mineral Foundation, Glenside and covers periodical literature, reports, maps, theses, open-file reports, unpublished materials, etc. related to Australian geology. Publication corresponding to the data base is AESIS Quarterly. Annual cumulation is available in microfiche. On-line retrospective search, bibliographic and referral services are also offered.

Canadian Centre for Geoscience Data (CCGD)

This computerised data base is maintained by the Dept. of Energy, Mines and Resources, Govt. of Canada, Ottawa. CCGD is responsible for the development and operation of national information system for Canadian geoscience. The corresponding publication to the data base is Canadian Index to Geoscience Data (bimonthly). This index is derived from the decentralised indexing efforts of the provincial and federal government agencies. It covers reports, periodical literature, maps and theses and indexed according to a thesaurus developed by the Centre. Retrospective search and referral services are offered by the Centre.

Computerised Library of Analysed Igneous Rocks (CLAIR)

This computer-readable data base is maintained by the University of Melbourne and covers the worldwide literature on chemical analysis of igneous rocks. There is no publication corresponding to the data base. The file is available for purchase. Retrospective search and data services are offered.

Geo Abstracts


It offers literature search and referral services.

Geoarchive

This computer-readable data base is produced by Geosystems, London and covers international geoscience literature since 1969. Data is selectively extracted from the literature on mineral and production of petroleum reserves, stratigraphic names, new minerals, names of new taxa. The corresponding publications to the data base are (i) Geotitles Weekly - a current awareness service arranged by subject (ii) Bibliography of Vertebrate Palaeontology (Quarterly) (iii) Geocom Bulletin (bimonthly) - abstracts and news about geomatics and geoscience methodology (iv) Geotitles Reportirum-computer output microform (COM) cumulated index to Geotitles Weekly since 1969. Entries are indexed according to Geosaurus thesaurus. The Geoarchive can be accessed in three ways (i) through Lockheed/DIALOG, either on-line or in batch mode (ii) through Geo Archive profile, both retrospective and current (iii) through lease of the Geoarchive magnetic tapes. Translation, current awareness and retrospective search services are offered by Geosystems.

Geological Reference File (GeoReF)

This is a computer-readable merged data base and contains records of the following source data bases (i) Bibliography and Index of North American Geology 1961-70, (ii) Geophysical Abstracts 1966-71; (iii) Bibliography and Index of Geology Exclusive of North America 1965-66. It claims worldwide coverage of all aspects of the geoscience literature since 1961. It is maintained by the American Geological Institute, Virginia. The corresponding publications to the data base are (i) Bibliography and Index to Geology (monthly), (ii) Bibliography and Index to Micropalaeontology (monthly), (iii) GeoReF Serials and KWOC Index - Lists of serials cited since 1967 in microfiche. Entries are indexed according to GeoReF thesaurus. GeoReF can be accessed through SDC, either on-line or batch mode. Retrospective and current file in magnetic tapes can be procured on licence agreement. The Institute offers SDI, bibliographic and retrospective search services.
Geological Science Literature Information Service

(Geowissenschaftlicher Literaturinformationsdienst)

This computerised information system is maintained by Federal Institute for Geosciences and Natural Resources. It is responsible to provide national and international geological literature to the German earth scientists. The system also offers information from the PASCAL earth science file in the German language. It publishes Journal of Geological Science (Zentralblatt für Geologie) - an abstract journal covering articles on geology that appear in German periodicals. On-line retrospective search and SDI services are offered.

Geothermal Resources File (Geotherm)

This computerised file of worldwide literature concerning the geological and hydrological nature of geothermal resources is maintained by the Office of Resource Analysis, V.S.G.S. Machine-readable tapes are available on request.

Japan Information Centre of Science and Technology (JICST File): Earth Science, Mining and Metallurgy.

This computer-readable data base is maintained by JICST, Tokyo and covers worldwide literature. The corresponding publication to the data base is the Current Bibliography on Science and Technology: Earth Science, Mining and Metallurgy (semi-monthly). On-line information retrieval, SDI, translation and reprographic services are offered by the Centre.

Meteorological and Geophysical Abstracts (MGA)

This computer-readable data base is maintained by American Meteorological Society, Boston and covers worldwide literature on meteorology, physical oceanography, surface water hydrology, glaciology and related fields, since 1970. The corresponding publication to the data base is Meteorological and Geophysical Abstracts (monthly). The Data base can be accessed on-line through Lockheed/DIALOG. Retrospective and current files in magnetic tapes can be procured on licence/lease. Referral, retrospective search and bibliographic services are offered.

Oceanic Abstracts

This computer-readable data base covers significant literature from all over the world on all major ocean-related topics since 1964 and is maintained by Data Courier Inc, Louisville.

The corresponding publication to the data base is Oceanic Abstracts (bimonthly) (formerly known as Oceanic Index, Oceanic Citation Journal). The Data base can be accessed on-line by IRS, LIS, SDCs, batch mode by NERAC. Current and back files are commercially available.

PASCAL

This computer-readable data base is maintained by Centre de Documentation Scientifique et Technique du Centre de National de la Recherche Scientifique, Paris. It has several sections with worldwide coverage since 1972. The Centre offers reprographic and translation services. PASCAL 120- Astronomy, Space Physics, Geophysics

The corresponding publication to the data base is Bulletin Signaletique 120- Astronomy, Space Physics, Geophysics (monthly).

PASCAL - 161 - Crystallography

It covers literature on structure of liquid and solid crystallography. The corresponding publication to the data base is Bulletin Signaletique 161 - Crystallography (monthly).

Petroleum Abstracts (TULSA)

This computer-readable data base is maintained by the University of Tulsa. It covers since 1965 world's technical literature relevant to the exploration of gas and oil, geology, geophysics, geochemistry. The corresponding publication to the data base is Petroleum Abstracts (Weekly). Current and back files are available commercially. On-line access to the data base is provided by SDC.

Rock Information System (RKNFSYS)

This computer-readable data base is produced by Geophysical Laboratory of Carnegie Institute, Washington, D.C. It covers literature on Cenozoic volcanic and associated hypabyssal rocks. No publication corresponding to the data base is issued. The Laboratory offers data analysis and bibliographic services.

Rock Mechanics Information Service (RMIS)

This computer-readable data base is maintained by RMIS, London and covers worldwide literature on rock mechanics, soil mechanics, fracture mechanics, engineering geology and related aspects of mining since 1968. The corresponding publication to the data base is Geomechanics Abstracts. The Data base can be accessed on-line or batch mode.
Underground Excavation and Rock Properties Information (UERPIC)

This computer-readable data base is maintained by the Centre for Information and Numerical Data Analysis and Synthesis, Illinois. It covers world literature of mechanical, thermophysical, electrical and magnetic properties of selected rocks and minerals, tunneling and other underground excavation since 1945. No corresponding publication to the data base is issued. The Centre offers bibliographic and retrospective search services.

World Data Centre A (WDC-A): Glaciology

This data base is maintained by the Institute of Arctic and Alpine Research, Colorado. It covers literature on mountain glaciers, glacial geomorphology, snow hydrology, etc. The publication corresponding to the data base is Glaciological Data. The Institute offers data analysis, retrospective search and reprographic services.

Geological Survey of India has been maintaining a data base on Indian geology and allied fields since 1955. The corresponding publications to the data base are Library Bulletin (monthly) and Indian Geoscience Abstract (annual). The library offers SDI, retrospective search, bibliography, translation and reprographic services.

REFERENCES