

Geoscience Reference Resources

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Reference in the earth sciences is much like other disciplines. Most questions are easily answered using standard library techniques. Re specific terminology, it helps to be familiar with geologic time periods (Eocene, Holocene, etc.) – i.e., know where to find a geologic time scale so you can see how the time periods are organized hierarchically.

It also helps to know a bit about scientific names so you can tell the vertebrates from the invertebrates; a good scientific dictionary or encyclopedia will do the trick. Finally, knowledge of the abbreviations of elements is useful when dealing with mineralogy. Geologists tend to group minerals by type – the silicates, for example.

(Note: The definition of geosciences may vary by institution, sometimes including hydrology, meteorology, oceanography, as well as geology.)

Commonly used databases for geoscience research:

- *GeoRef* – covers North American geology from 1785-date; non-North America. from 1933.
- *GEOBASE* – online from 1980+. Broader subject coverage than GeoRef. Substantial overlap with *GeoRef* on geoscience topics.
- *Web of Science* – subject and citation index to top journals (see also *Google Scholar*, *Scopus*, *Microsoft Academic*, etc.). The geosciences use a mix of formats so look beyond journals.
- *INSPEC* – 1898 to date. Useful for geophysics.
- *SciFinder Scholar* – 1904 to date. Useful for geochemistry.
- *NTRL* – 1964 to date. Free tool to find government technical reports, primarily U.S. (e.g., U.S. Geological Survey; U.S. Bureau of Mines).
- *Water Resources Abstracts* – online from 1967+. It is focused on freshwater resources and historically has a U.S. focus. Use with *Aquatic Sciences and Fisheries Abstracts* for a fuller treatment of water issues.
- *Meteorological and Geostrophysical Abstracts* – online from 1974 to date.
- *Oceanic Abstracts* – online from 1981 to date.

Some free, specialized bibliographic databases include:

- *National Geologic Map Database* and *Geolex* (<http://ngmdb.usgs.gov/>) – the former is an index of geologic maps for U.S. locations; the latter is a database of information about geologic formations.
- *Geologic Guidebooks of North America database* (<https://guidebooks.americangeosciences.org>) – geologic field trips are good sources of detailed local geology information.
- *Cold Database* (<http://coldregions.org>) – covers 1900-2011; good sources of information for many aspects of high latitude information.
- *USGS Publications Warehouse* (<https://pubs.er.usgs.gov/>) – extensive holdings of geoscience (including water) publications; mostly U.S. but also includes some materials for other countries as well as planetary geology.
- *Science.gov* – search engine for U.S. governmental information.

Other useful tools include:

- *GeoRef Thesaurus* – provides broader and narrower terms for geologic formations as well as topical information.
- *Mineral Facts and Problems* – last updated by USGS in 1985, still a classic work on all types of minerals (uses, production, consumption, etc.). Free online.
- *Commodity Information* (<https://www.usgs.gov/centers/nmic/commodity-statistics-and-information>) – Maintained by the USGS, provides mineral facts and statistics. Organized similarly to *Mineral Facts and Problems*.
- *Energy Information Administration* (www.eia.gov) – Data on energy minerals such as coal are collected and reported by the Dept. of Energy.

Types of geoscience reference questions:

Questions in the geosciences generally fall into two categories: topical and place-based.

Topical questions include questions about earthquakes, volcanoes, dinosaurs, etc. These can generally be answered using the many excellent resources at the U.S. Geological Survey and other agencies. Standard resources such as general periodical databases and the online catalog are also fine for locating information.

Place-based questions tend to be more challenging simply because of the variations in how places are described. A location could be described by the nearest town; the county, country, or region it is in; or by the topographic quadrangle map name it appears on. Tools for determining place names include gazetteers as well as:

- *Geographic Names Information System* (<http://geonames.usgs.gov>): Database contains information about physical and cultural geographic features in the United States. Good place to locate 1:24,000 topographic quadrangle names.
- *GEOnet Names Server* (<https://geonames.nga.mil/gns/html/>) Provides access to a database of non-U.S. geographic feature names.
- *Getty Thesaurus of Geographic Names* (<http://www.getty.edu/research/tools/vocabularies/tgn/index.html>) Contains more than one million names and other information about places, including continents, nations, historical places, physical features and cities.

Determine as many names associated with the location as possible, e.g., the country, state, county, even township name; the topographic quadrangle names (1:24,000 scale name is not always the same as the 1:62,500 scale name); and the names of features such as valleys, mountain ranges, river basins, etc. At a minimum, identify one to two political names (e.g., state and county) and the 7.5-minute (aka 1:24,000 scale) topographic quadrangle name (for locations within the U.S.). Use these names to search *GeoRef* and other bibliographic databases.

Online library catalogs and utilities such as *WorldCat* are good places to search for place-based geoscience information. Works on the geology of a place are generally assigned subject headings in the form: **Geology – [place]**.

Remember that you may have to try several ‘place’ names to locate the information you require!

A common type of reference question - Searching for a geologic map

Locating a **geologic map** may seem challenging but it isn't as difficult as you might expect, primarily because it is difficult to discuss the geology of a location without including a map. Many texts on the geology of a region include geologic maps. Rather than limit your search by format, it is better to add the keyword **maps** to your search. If a book has maps in it, the catalog record will usually include that term in the physical description. If the item itself is a map, then term 'maps' will be in the subject heading. A sample search would be:

Geology – [place] in the subject heading AND keyword=maps.

Some libraries may have in their collections an edition of the *Guide to USGS Geologic and Hydrologic Maps*, last updated in 1992. It is an outdated resource but possibly useful in some situations due to the extensiveness of its historic listings. The *National Geologic Map Database* (previously mentioned) is another useful tool.

Another common type of reference question - Searching for items in a series

Series are very common in the earth sciences. Many tend to get cataloged as serials rather than monographs, which makes finding them difficult when they are cited using their monographic form. For example, *The 1980 Eruptions of Mount St. Helens, Washington* is a massive work, published by the U.S. Geological Survey in its Professional Paper series as no.1250. It is a great resource for those interested in that volcano but difficult to find when it is in the online catalog as:

U.S. Geological Survey professional papers, no.1 - to date.