

# Reference questions in the geosciences

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# Topical questions

General questions about dinosaurs, earthquakes, volcanoes and natural disasters, geologic timescale, etc.

These questions are fairly easily answered with encyclopedias and some of the excellent web resources at government agencies such as the USGS, NOAA and others.

*Tip:* Soils information is usually found with the agricultural literature.

Be prepared to help find images.

- USGS collections – EROS, etc.
- EGU collection - [Imageo](#)
- Smithsonian - Minerals Gallery, etc.

Kolob Canyon  
Credit: Siddhant  
Gupta  
(distributed via  
imageo.egu.eu)



<https://imageo.egu.eu/view/15331/>

# What is this rock/fossil/mineral???

## Identification

People frequently want help identifying a rock or a fossil.



Be prepared to refer to **experts**.

- State geologist or climatologist
  - Assoc. of American State Geologists
  - American Association of State Climatologists
- State geological or water survey
- Nearest natural history museum
- Nearest department of geology



# Questions about specific events

Information about *specific* eruptions, hurricanes, tornado outbreaks and other natural disasters.

“I need information about the tsunami that struck Japan that had that nuclear reactor.”

Standard reference sources such as encyclopedias plus **news resources** are helpful as are the relevant government agency sites (USGS, NOAA, etc.).

The United Nations is a good source for international data.

- EM-DAT (international disasters database)

Be prepared for questions about extremes – biggest, costliest, coldest...

- Insurance Information Institute is a good source.

# Geology of [place]



**Place-based questions** tend to be more challenging.

“I need a book or map of the geology of XYZ location”

- Places can be described in multiple ways.  
e.g., Constantinople or Istanbul?  
e.g., Napa Valley or central Calif.?
- Issues related to scale - the level of detail desired may not exist.

Subject search in library catalog:

“Geology – [location]” or

“Groundwater – [location]”

*Tip:* Older works are still useful – geology does not change quickly!

*Tip:* Availability of information on the geology of regions outside of the U.S. is quite variable.

# Name that place!



## Location names

An important part of the reference interview is to determine the extent of the location (a specific parcel, town, county, state, etc.) and the names associated with it.

For example, how many names can you think of that describe the place known as New Orleans?

Names might be based on the:

- Region
- Political unit (county, town, etc.)
- Physical feature (valley, mountain range, river basin)
- Topographic quadrangle name  
*Tip: various scales may have different names*  
*Tip: look up names at USGS*

Also consult the GNIS at [usgs.gov](https://www.usgs.gov/gNIS)  
(Geographic Names Information System)

(*NOT* the same as [geonames.org!](https://www.geonames.org/))

# Names for New Orleans?



New Orleans

Louisiana

Gulf coast, southern U.S.

Mississippi delta

Lake Pontchartrain

Orleans county

Orleans parish

Variant Name	
Big Easy	<a href="#">Citation</a>
Crescent City	<a href="#">Citation</a>
NOLA	<a href="#">Citation</a>
Nawlins	<a href="#">Citation</a>
Neu Orleans	<a href="#">Citation</a>
Neuva Orleans	<a href="#">Citation</a>
Nieuw Orleans	<a href="#">Citation</a>
Nouvelle Orleans	<a href="#">Citation</a>
Nueva Orleans	<a href="#">Citation</a>

## Counties

Sequence	County	Code	State	Code	Country
1	Orleans	071	Louisiana	22	US

## Coordinates (One point per USGS topographic map containing the feature, NAD83)

Sequence	Latitude(DEC)	Longitude(DEC)	Latitude(DMS)	Longitude(DMS)	Map Name
1	29.9546482	-90.0750720	29°57'17"N	090°04'30"W	New Orleans East
2	29.9188157	-89.9928474	29°55'08"N	089°59'34"W	Chalmette
3	29.9415933	-90.1272957	29°56'30"N	090°07'38"W	New Orleans West
4	30.0124244	-90.0647939	30°00'45"N	090°03'53"W	Spanish Fort
5	30.0460342	-89.9597907	30°02'46"N	089°57'35"W	Little Woods

GNIS  
data

Census Code	Census Class Code	GSA Code
55000	P1	1690

# Tips for finding geologic maps

Names for geologic maps vary a great deal because the geology is drawn on top of other maps. Sometimes the name will be the same as the name of the base map but not always. *Once you have various names, you can search for maps using those names.*

Be aware that a geologic map of the appropriate scale may not exist.

*Tip:* If you need a geologic map, look for a book on the geology of the region. Most will contain a geologic map as well.

*Tip:* Search subject: *geology* – *[place]* + keyword: *map*

## Tools:

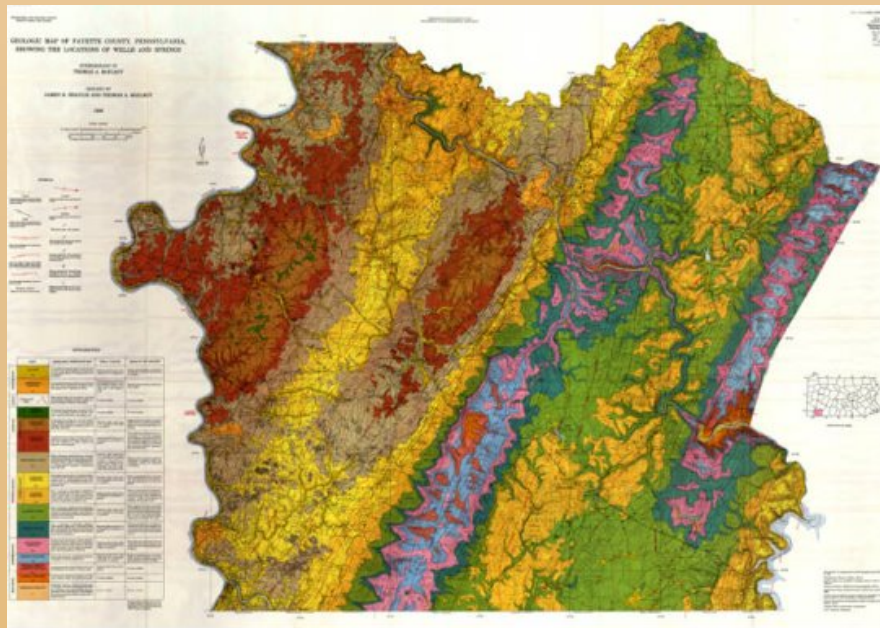
- National Geologic Map database
- Geologic Guidebooks of North America database (AGI)
- GeoRef, Geobase, etc. (*fee-based*)
- WorldCAT
- National Map ([nationalmap.gov](http://nationalmap.gov))
- National atlases contain thematic maps, such as geology
- Governmental resources at all levels



# More about geologic maps



Be aware that most geologic maps will require a key to explain colors.



Different types of geologic maps – surficial, bedrock, structural, or economic.

**Onondaga Limestone**  
**Stratigraphic range: Eifelian-Givetian**  
 ~392–383 Ma

PreЄЄЄSDCPTJKPgN

**Type** Geological formation  
**Sub-units** Seneca, Moorehouse, Nedrow, Edgecliff  
**Underlies** Hamilton Group and Marcellus Formation  
**Overlies** Helderberg Group, Old Port Formation, Oriskany Sandstone, and Schoharie Formation

**Lithology**  
**Primary** Limestone

**Location**  
**Region** Maryland, New York, and Ohio  
**Country** United States  
**Extent** Appalachian Basin of eastern North America

**Type section**  
**Named for** Onondaga, NY

Location of the Onondaga limestone outcrop in New York State, USA and Ontario, Canada

U.S. Geologic Names Lexicon (Geolex) - compilation of names and descriptions of geologic units.

## Geologic Unit: Onondaga

### Usage:

Onondaga Formation (VA,PA\*)  
 Onondaga Limestone (PA\*,NY\*,NJ\*,MD\*,VA\*,WV\*)  
 Onondaga Group (PA,OH,WV)

### Subunits:

(alphabetical): Babcock Hill (NY), Buttermilk Falls (PA), Clarence (PA,NY\*), Edgecliff (PA,NY\*), Moorehouse (PA,NY\*), Nedrow (PA,NY\*), Selingsgrove Limestone (PA), Seneca (NY\*), and Springfield Center (NY) Members of Onondaga Limestone or Formation; Clarence Chert (PA), Columbus Limestone (OH,PA,WV), Delaware Limestone, Edgecliff Limestone (PA), Moorehouse Limestone (PA) Needmore Shale (PA), Newton Hamilton Formation (PA), and Selingsgrove Limestone (PA) of Onondaga Group

### Geologic age:

Middle Devonian\*

### Type section, locality, area and/or origin of name:

Type area: Onondaga Co., NY (Hall, 1839).

### AAPG geologic province:

Appalachian basin\*

# Known item queries



Looking for a specific publication or resource.

“I’m looking for the book about the Mount St. Helens eruption that the USGS published. It was over 400 pages....”



Many materials in the earth sciences were also issued as part of series, so search by title but also by series.

HathiTrust and Google Books can help verify a citation.

WorldCat is very useful as are the USGS Library or other large academic library catalogs.

# Cataloged as monograph or serial?

Lipman, P. W. & Mullineaux, D. R.  
(Eds.) (1981). [The 1980 Eruptions of Mount St. Helens, Washington.](#) *U.S. Geological Survey Professional Paper*, 1250, 844 p., 1 plate.

Many works in geology are cataloged as part of a serial:

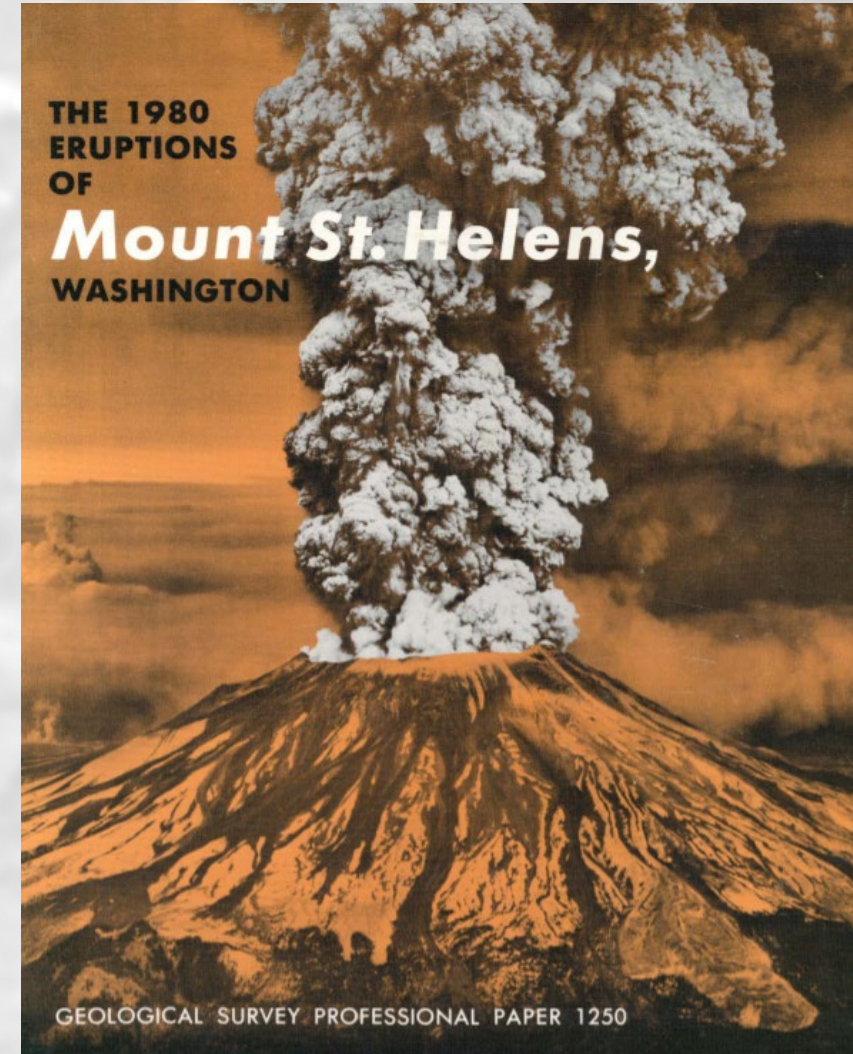
JOURNAL

[Geological Survey professional paper.](#)

[Geological Survey \(U.S.\)](#)

1949-1983

 [Available at Off-Site Storage Library Service Center \(QE 75 .P9\) and other locations](#) >



# Economic questions



Users seeking data on production, consumption or pricing as well as locations of mining activities.

- What is mined in my state? How much? Names of producers?
- Is there a mine under my house?
- Where is fracking happening near me?
- My well ran dry, where should I drill?



Answering these questions usually involves using data collected by the state and federal agencies involved in oversight of these operations.

**National Minerals Information Center** is great for data on non-energy minerals.

**Energy Information Agency** ([eia.doe.gov](http://eia.doe.gov)) is great for energy data.

**Army Corps of Engineers** collects stream gauging data.

# Final tips:

- Federal and state experts exist and you can contact them for aid.
- Consider what agency, level of government or NGO might monitor or report?
- Library guides from other universities can help with finding sources.
- Some questions have legal implications so exercise caution (e.g., boundary disputes, weather conditions at time of accident, etc.).

