

Maps for Geoscience Librarians

An Introduction

What is a map? A 2-dimensional representation of the 3-dimensional surface of the Earth or other astronomical body.

What do Maps Show & How are they Used?

Map Properties

- Scale
- Projection
- Reference (Coordinate) System
 - Latitude – Longitude – Distance East & West and North & South of a reference line, measured as an angle. Reference Lines agreed to be Greenwich (Prime) Meridian in 1884 and the equator. Older maps may have another meridian (U.S. Capitol in Washington, D.C.). Older Michelin & French Government maps use a Paris Meridian.
 - Universal Transverse Mercator – divides the World up into 60 Zones. Coordinates are measured in meters north & south of the Equator and meters East & West of a line down the middle of each zone.
 - X Y Z – Distance from a central point in X & Y direction, plus the distance along the line (Z direction). The central point could be the center of the earth. Z would be the altitude of the feature above the center of the Earth.
 - State Plane Coordinate System – extremely accurate system that measures location from a given reference line (baseline). Some states have multiple reference lines. Sometimes used as the preferred projection for statewide data on state GIS web sites.
- Map Datum – The mathematical model that defines the size and shape of the Earth and the coordinate systems used to map features on the Earth. US uses NAD 1927 (on early U.S. topographic maps); NAD 1983 (all North America maps) & World Geodetic System (WGS).

Sources of Maps

- Commercial Vendors
 - Omni Map - <http://www.omnimap.com>
 - Eastview Cartographic - <http://www.cartographic.com/>
- U.S. or Country Geological Surveys – geologic maps & publications.
 - USGS Publications Warehouse - <http://pubs.er.usgs.gov/>
 - National Geologic Map Database http://ngmdb.usgs.gov/ngmdb/nqm_catalog.ora.html
 - EROS Data Center Earth Explorer (for aerial photographs & images) - <https://earthexplorer.usgs.gov/>
 - USGS Maps Published: topographic, land use, relief, vegetation, geology, natural hazards, aerial photography - <https://www.usgs.gov/products/maps/overview>
 - Canadian Geospatial Data – GeoGratis <http://geogratis.gc.ca/geogratis/en/search>
- State Geological Surveys (see the American Association of State Geologists web site at: <http://www.stategeologists.org>)
- Geological Surveys Database - <https://statesurveys.americangeosciences.org/vufind/>

- Federal Depository Library Program (non-Geologic Maps)
 - Environmental Protection Agency – collects & publishes data related to hazards (toxic waste sites & toxic release) and their impacts on the environment.
 - Natural Resources Conservation Service – soil maps & data
 - National Oceanic & Atmospheric Administration – Nautical & Aeronautical Charts.
 - National Geospatial Intelligence Agency – aeronautical charts, foreign topographic maps & maps for defense agencies.
 - Army Corps of Engineers – maps of reservoirs & rivers.
 - Bureau of Land Management – land and mineral rights ownership (western U.S.).
 - U.S. Forest Service – maps of national forests (including topographic maps).
 - Federal Emergency Management Agency – flood insurance rate maps & floodplain maps.
 - National Park Service – maps of national parks & monuments.
 - Fish & Wildlife Service - maps of wildlife refuges and wildlife habitat.
- State Geological Surveys – geologic maps & publications.
- State Environmental Agencies – water resources and environmental issues.
- Local Government Agencies – tax assessment; land use, zoning & planning; transportation.

Future Trends – Spatial Data or Maps?

Internet Reference Resources

Geographic Names Information System (GNIS) - <http://geonames.usgs.gov/pls/qnispublic>

USGS National Geologic Map Database – http://ngmdb.usgs.gov/ngmdb/ngmdb_home.html

U.S. Gazetteer - <https://www.census.gov/geo/maps-data/data/gazetteer.html> (download only).

GeoNet World Place Names Server - <http://geonames.nga.mil/gns/html/>

Shtetl Seeker - <http://www.jewishgen.org/Communities/>

Geological Surveys Database - <https://statesurveys.americangeosciences.org/vufind/>

Print Reference Resources

American Society of Civil Engineers, 1994. *Glossary of the Mapping Sciences*. New York, N.Y.: The Society 581 pages.

Kollen, Christine, Shawa, Wangyal, and Larsgaard, Mary L., 2010. *Cartographic Citations :A Style Guide*. Chicago : Map and Geography Round Table, American Library Association. 23 pages. Mail a check made out to the American Library Association to Kate Dougherty, Mullins Library, Room 223D, 365 N. McIlroy Ave., Fayetteville, AR 72701

Hansen, Wallace R., ed., 1991. *Suggestions to Authors of the Reports of the United States Geological Survey*. 7th ed. [Reston, Va.?]: U.S. Geological Survey; Washington, DC: Government Printing Office. 289 pages. Note: Pages 234-241 deal with references. Also: http://www.nwrc.usgs.gov/lib/lib_sta.htm

United States. Defense Mapping Agency, 1973. *Glossary of Mapping, Charting, and Geodetic Terms*. 3rd ed. Washington, D.C.: Government Printing Office. 281 pages.