

Web Resources Review

Maps and Map Tools

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Maps are a basic means of communication for earth scientists and the world wide web has plenty of useful resources. Some sites allow students to locate topographic maps and aerial photographs of their homes, other sites allow for route planning. Lesson plans and free outline maps are available as are utilities for converting latitude and longitude to UTM coordinates. Still other sites are designed for reference, like on-line atlases and resources providing basic information on map properties. There are even "look up" sources matching USGS topographic and geologic maps to a specific region or subject area. One potential drawback of using on-line maps is that file sizes are often large, resulting in lengthy wait times for modem based computers.

The list provided below does not attempt to be a "best of the best" regarding maps; nonetheless the suggested sites are practical, are well organized, have authentic content, and few, if any, grammatical errors. Many worthy resources do not appear because of space limitations.

The sites reviewed today are archived at "Resources For Earth Science And Geography Instruction" <http://personal.cmich.edu/~franc1m/homepage.htm> and were featured on the weekly "Earth Science Sites of the Week Listserv." To suggest useful sites or to be added to the listserv please contact (Mark.Francek@cmich.edu)

Interactive Mapping Tools			
Site Name	Author	URL	Description and Potential Classroom Applications
Terrafly	Florida International University	http://terrafly.com	Enter a U.S. address or zip code to view aerial images and accompanying topographic maps. Pan in any direction, zoom, switch between geographic and UTM coordinates, and create new frames for multiple image comparisons. Relate imagery to contour properties, scale, and direction.
Maps on Us Mapplanet	Switchboard Inc.	http://www.mapsonus.com	Pinpoint U.S. addresses or get step by step directions along with calculated distances. Introduce map scale and its relationship to detail and area.
	Mapplanet Inc.	www.mapplanet.com Click on "Start Java Applet"	View world time zones, temperatures, and country names. Holding down the right mouse button will tally distance. Show the effects of latitude, altitude, or land-water differences on temperature.
Lesson Plans			
Site Name	Author	URL	Description and Potential Classroom Applications
h i	USGS	http://www.usgs.gov/education/learnweb/wvmaps.html	Designed for a K-12 audience but adaptable for the college level, the site has brief, clear explanations for the use of shaded relief, road, and topographic maps. Several lesson plans are available
Teaching with topographic maps	USGA	http://www.rockyweb.cr.usgs.gov/public/outreach/topoteach.html	Twenty five lessons for elementary level through college include GPS and coordinate systems, locating benchmarks and surveying, comparing coordinate systems, fieldwork, creating profiles, and building map-reading skills for topographic maps and aerial photography.

Outline Maps			
Site Name	Author	URL	Description and Potential Classroom Applications
Map Machine	National Geographic	Http://plasma.nationalgeographic.com/mapmachine/index.html	Need a free blank outline map of any country for classroom reproduction? Options exist for printing the map at small or large scales.
Outline Maps	Houghton Mifflin	http://www.eduplace.com/ss/ssmaps/	More outline maps for regions of the world in a .PDF format.
Atlases			
Site Name	Author	URL	Description and Potential Classroom Applications
Perry-Castanea Library	University of Texas at Austin	http://www.lib.utexas.edu/maps/index.html	One of the most comprehensive map collections in the world. This is an excellent reference for student projects
U.S. Color Landform Atlas	Ray Sterner, Fermi Labs	http://fermi.jhuapl.edu/states/states.html	A reference site for state shaded relief maps, county maps, satellite images, historical 1895 maps, and even an Afghanistan shaded relief map. A good site for correlating landforms to relief.
Paleomap	Scotese Company	http://www.scotese.com	Illustrates plate tectonic development of the ocean basins and continents, as well as the changing distribution of land and sea during the past 1100 million years. Projections of how continents will look in the future will especially interest students.
National Atlas of the U.S.	U.S. Dept. of the Interior	http://nationalatlas.gov/natlas/natlasstart.asp	Select, change, and display different map layers featuring environmental, resource, demographic, economic, social, political, and historical variables. Several map layers can be queried simultaneously.
EPA Environmental Atlas	EPA	http://www.epa.gov/ceisweb1/ceis/home/atlas/nationalatlas/nationalmaps.html	Maps of human impacts on land, water, air, with links to other important collections. Most of the maps are somewhat dated but are still useful.
David Rumsey Collection	Cartography Associates	http://www.davidrumsey.com	Focuses on 18th and 19th century historical maps of the Americas. Over 6000 maps are archived. A resource for viewing how representations of states or regions evolved through time.
Tapestry of Time And Terrain	USGS	http://tapestry.usgs.gov/	Merging topographic and geologic maps of the U.S., this site querying to discover a particular location's physiographic province and bedrock geology.
Surface of the Earth	NOAA	http://www.ngdc.noaa.gov/mgg/image/2minsurface/	Spectacular 2 x 2 minute map of earth bathymetry/topography, this site can assist in linking plate tectonics to underwater and surface landform.

Distance Calculators and Map Conversion Utilities

Site Name	Author	URL	Description and Potential Classroom Applications
Great Circle Distance Calculator	Andrew Gray	http://wmwr.mercury.demon.co.uk/dist/dodist.html	Enter the coordinates of a specified location and a distance value appears calculating the great circle distance. This is a fine starting point for discussing map projections and distortion, plus comparing road distance with great circle distance.
Latitude-Longitude Conversion	Directions Magazine	http://www.directionsmag.com/latlong.asp	Convert decimal degree to degree minutes for latitude or vice versa.
GSRUG	Geodetic Surv. Div.	http://www.geod.nrcan.gc.ca:80/site/index_e/products_e/software_e/gsrug_e/gsrug_e.html	Computes either Universal Transverse Mercator (UTM) coordinates from the geographic latitude and longitude of a point or performs the reverse conversion.

Map Properties

Site Name	Author	URL	Description and Potential Classroom Applications
National Mapping Program Factsheets	USGS	http://mac.usgs.gov/mac/isb/pubs/publists/ftsht.html	Over 50 fact sheets are available that introduce topics like GPS, UTM, map projections, map accuracy standards, digital elevation models, digital raster graphics, digital line graphics, and more .
Topographic Maps Illustrating Physiographic Features	USGS	http://rockyweb.cr.usgs.gov/public/outreach/featureindex.html	Indexes the names and locations of topographic maps that illustrate landforms associated with coasts, escarpments, glaciation (alpine and continental), tectonics, solution, rivers, volcanic, wind and more. The index is also organized by state.
Landforms on Topographic maps	Susan Slaymaker	http://www.csus.edu/indiv/s/slaymaker/Geol10L/landforms.htm	Shows classic examples of landforms depicted on topographic maps like landforms expressed through geologic structures, igneous activity, mass movement, streams, underground water, glaciers, wind, waves and currents
Topographic Map Symbols	Susan Slaymaker	http://www.csus.edu/indiv/s/slaymaker/Geol10L/topomap.htm	A site showing examples of topographic map symbols, including cultural features like roads and boundaries as well as natural features like streams and vegetation types.
Measuring Strike and Dip	University of Calgary	http://roxy.geo.ucalgary.ca/glgy203/images/sd.htm	A reference site depicting graphic rich, straightforward directions for determining strike and dip.

GIS Map Data

Site Name	Author	URL	Description and Potential Classroom Applications
National Geologic Map Database	USGS	http://ngmdb.usgs.gov/	A searchable database is available that tells how to access maps, reports, and data related to geology, hazards, earth resources, geophysics, geochemistry, geochronology, paleontology, and marine geology
USGS Geospatial Data	USGS	http://mapping.usgs.gov/www/products/status.html	A searchable database is available that tells how to access maps, reports, and data related to geology, hazards, earth resources, geophysics, geochemistry, geochronology, paleontology, and marine geology
GIS Data Depot	ThinkBurst Media	http://www.gisdatadepot.com/catalog/US/index.html	A commercial site for free GIS data including 24K, 25K, 63K, 100k AND 250k scale USGS DRGs.