



## BOOKS

"Outdoor Navigation with GPS"	by Stephan Hinch	2nd edition	ISBN 978-089997-445-3	Wilderness Press
"GPS Made Easy"	by Lawrence Letham	4th Edition	ISBN 0-89886-823-8	The Mountaineers Books
"GPS Land Navigation"	by Michael Ferguson		ISBN 0-9652202-5-7	Glassford Publishing
"The Ultimate Guide to Wilderness Navigation"	by Scottie Barnes, Cliff Jacobson, James Churchill		ISBN 1-58574-490-5	The Lyons Press
"GPS Outdoors – A Practical Guide for Outdoor Enthusiasts"	by Russell Helms		ISBN 0-89732-967-8	Menasha Ridge Press
"Wilderness Navigation – NOLS"	by Darran Wells		ISBN 978-0-8117-3212-3	Stackpole Books
"Wilderness Navigation"	by Bob Burns & Mike Burns	2nd Edition	ISBN 0-89886-953-6	The Mountaineers Books
"Staying Found – The Complete Map & Compass Handbook"	by Jane Flemming	3rd Edition	ISBN 0-89886-785-1	The Mountaineers Books
"Be an Expert with Map & Compass"	by Bjorn Kjellstrom		ISBN 0-02-029265-1	Wiley Publishing
"Basic Essentials – Map & Compass"	by Cliff Jacobson		ISBN 0-7627-4016-7	Falcon Guide



## WEBSITES

[www.NatGeoMaps.com](http://www.NatGeoMaps.com)  
[www.topo.com](http://www.topo.com)  
[www.suunto.com](http://www.suunto.com)  
[www.USGS.gov](http://www.USGS.gov)  
[www.magellangps.com](http://www.magellangps.com)  
[www.garmin.com](http://www.garmin.com)  
[www.silvacompass.com](http://www.silvacompass.com)  
[www.brunton.com/catalog.php?cat=4](http://www.brunton.com/catalog.php?cat=4)



## USGS RESOURCES

### FACT SHEETS • AVAILABLE ON THE USGS WEBSITE

Map Scales :: FS-015-02  
 Finding Your Way with Map & Compass :: FS-035-01  
 Map Projections :: FS-087—99  
 Single-edition Quadrangle Maps :: FS-094-98  
 The Universal Transverse Mercator (UTM) Grid :: FS-077-01

### BOOKLETS

Topographic Maps Symbols  
 Topographic Mapping  
 USGS Maps



## GRID TOOLS

**UNIVERSAL TRANSVERSE MERCATOR (UTM) Grid Reader** by ESIC USGS,  
 Scales included: 1:24k, 1:25k, 1:250k, 1:50k, 1:100k  
**BROOK RANGE :: ALL IN ONE MAP TOOL**  
 Scales included: 1:24k, 1:25k, 1:250k, 1:50k, 1:100k



## GLOSSARY

**BEARING** :: The direction from your current position to your destination

**DATUM SHIFT** :: this shift occurs due to the change in shape of the spheroid used to define the datum. This NAD shift amounts to about 210 meters for the conterminous United States.

**DIGITAL ELEVATION MODEL (DEM)** :: A set of data of regularly spaced elevation values based on horizontal geographic coordinates.

**DIGITAL RASTER GRAPHIC (DRG)** :: An electronic map that is based a scanned graphic image that has it pixel coordinate values converted to geographic coordinate values. DRG's are scanned at 250 dpi and are stored as a TIFF file format.

**GREENWICH MEAN TIME (GMT)** :: The time as measured from Greenwich England or 0 degrees Longitude.

**HEADING** :: Your current direction of travel

**LATITUDE/LONGITUDE** :: A spherical coordinate system divides the world up into lines of latitude and longitude. Latitudes (Parallels) run parallel to the equator and measure the distance north or south of the equator. Longitudes (Meridians) run from the north pole to south pole and are measure the distance east or west of Greenwich England (Prime Meridian). Coordinates are measured in degrees minutes seconds, degrees decimal minutes and decimal degrees.

**MAGNETIC DECLINATION** :: The difference in degrees or mils between True North (North Pole) and Magnetic North. Can be either East Declination or West Declination depending on your location.



## GLOSSARY (cont')

- MAP DATUM** :: The two most important horizontal datums in the US are NAD27 and WGS84/NAD83. An elliptical model (spheroid) of the Earth that is used to measure both horizontal and vertical coordinates.
- MILITARY GRID REFERENCE SYSTEM (MGRS)** :: A grid system that is similar to UTM and is used by the military. It replaces the first two numbers of both the Easting and Northing with letters which are assigned to 100km by 100km squares.
- NAD27** :: North American Datum of 1927 based on the Clarke 1866 spheroid. Used as the datum on most large scale USGS quads.
- NAD83** :: North American Datum of 1983 based on the GRS 80 spheroid. A newer version of the NAD datum, used on some of the newer versions of the large scale USGS quads. Almost identical to the WGS84 datum.
- RASTER GRAPHIC MAP** :: A software map that is generated using digital scans of paper maps.
- ROUTE** :: A series of sequential waypoints to allow you to navigate to your destination.
- TRACKS** :: a series of bread crumb coordinates that your GPS will record to keep as a record of your exact path of travel.
- UNIVERSAL POLAR STEROGRAPHIC GRID (UPS)** :: A grid system that is similar to UTM and is used above 84 degrees North Latitude (Arctic) and below 80 South Latitude (Antarctic).
- UNIVERSAL TIME COORDINATED (UTC)** :: GPS time as maintained by the satellites and converted to UTC time by the GPS receiver, basically Greenwich Mean Time. UTC time can be converted into Standard time by using the correct UTC offset in your GPS receiver.
- UNIVERSAL TRANSVERSE MERCATOR GRID (UTM)** :: A rectangular grid system that divides the world up into 60 zones that are 6 degrees of longitude wide. These coordinates are relative to the equator and a zone meridian and are called Eastings & Northings. This coordinate system is used between 84 degrees North and 80 degrees South Latitude.
- VECTOR GRAPHIC MAP** :: A software map in which all features (roads, rivers, topographic contours) are stored as a series of straight lines (vectors).
- WAYPOINT** :: A set of geographic coordinates that describe a specific location on earth. Most common coordinates are Lat/Lon & UTM.
- WGS84** :: World Geodetic System of 1984, the default datum for GPS units. Almost identical to the NAD83 datum.
- WIDE AREA AUGMENTATION SYSTEM (WAAS)** :: A method to improve the accuracy of civilian GPS units. It uses additional satellites as well as 25 ground stations to measure GPS errors and broadcast these corrections to WAAS enabled GPS units. There are currently two geostationary WAAS satellites located over the Pacific and Atlantic oceans.