

Mapping, GIS and GPS

Location information enables aid workers to view the extent of disaster damage and plan access routes. It is an assessment tool and assists in response management.

Geographical Information System (GIS) software includes mapping tools and functions to manage and exploit location information.

Global Positioning System (GPS) allows users to determine and record their location with a GPS receiver. This data can be uploaded later to a computer.



Get maps for the emergency

UN sources	Other sources	Paper Maps
OSOCC (OCHA), GDACS, UNOSAT, Logistics Cluster, WFP, Geospatial Info Section, Reliefweb	CIA World Factbook, iMMAP, MapAction, MapToGround, OpenStreetMap	Paper maps (even tourist maps) can be a valuable resource, available at airports etc.

Collect location data in the field

- Check what systems and referencing others are using to enable sharing and coordination.
- GPS units can display coordinates in two basic formats: **geographic** (or latitude, longitude) and **UTM**. UTM is useful for camp layout because it represents a metre square grid.
- Except in extraordinary circumstances, set the **GPS datum to WGS84** for easy sharing.
- Use the GPS to save **waypoints** of places of interest. Write down the waypoint numbers with a description in your notes as you proceed.
- Use **track log** to record your route for later access.
- Some GPS units can download data onto a computer simply with a USB link, and then shared. Others require free or low cost tools like GPS Utility.

Preparatory checks:

- Batteries and spares
- GPS is working and location is correct
- Save waypoints and tracklogs to another device, then clear
- Ensure tracklogs on

Security Considerations:

Security issues can arise with GPS technology. Check with your security officer who may, e.g. advise you not to publish geotagged images on Facebook.

Make your own maps

Professional-level GIS software is powerful but requires training to use. Open-source or free GIS software (e.g. Quantum GIS, ArcGIS Explorer) may also be hard to use without experience and support. Some alternatives to consider are:

Google Earth – tools (place-mark, polygon, path, etc.) can be used to overlay information on a satellite image. GPS data can be imported (as GPX files) and saved as a JPEG screen image or as a KMZ file for distribution and editing. Google Earth can be run without internet access by initially caching (saving) the landscape.

OziExplorer – a moderate cost software package that enables users to ‘geo-reference’ and document an image file – e.g. scanned map or aerial photograph. Once the geo-referencing has been done data can be exchanged between OziExplorer and a GPS unit.

Google My Maps – If signed in you can create a map with documentation and import geo-referenced data including place names and locations defined by coordinates. The maps may be shared and published online.

Steps to exploiting GIS methods in your organisation:

1. Think about how GIS can support your information management strategy (if you don't have one, start there first.)

2. Consider what spatial information you will need:

- Base map data
- Satellite images
- Administrative boundaries, layers and settlement names
- Situational data (collected by you or others)

3. Ask partner organisations what data they collect and can share.

4. Don't select or buy GIS software until you know what you want to do with it. Start with the simplest tools and build know-how as you go along.

5. Beware of investing all GIS expertise in just one staff member.

Additional resources on All In Diary website

Humanitarian Field Guide to GPS Technology, MapToGround 2015 Field Guide for Humanitarian Mapping v2, © MapAction 2011 Geoinformation for Disaster and Risk Management, © JBGIS and UNOOSA 2010

Web links for further information

www.mapaction.org <http://maptoground.cartography.id.au>
 WFP Map Centre: www.wfp.org/aid-professionals/map-centre
 GPS Visualizer conversion tools: www.gpsvisualizer.com
https://www.hotosm.org/mapping_in_activations