

***Remote Sensing Derived Data Products & Technical Tutorials***

**Pre-Existing RS-Derived Data Products**

[FEWSNet Data Portal](https://earlywarning.usgs.gov/fews)

[FAO Hand-In-Hand Geospatial Platform](https://data.apps.fao.org/?lang=en)

[NASA EarthData portal](https://www.earthdata.nasa.gov/learn/find-data) centralizing information about multiple products (and raw data sources) broken down by topic area, including the [Fire Information for Resource Management](https://firms.modaps.eosdis.nasa.gov/) (FIRMS) website, which provides near-real-time global information on incidences of large fires, and [Nighttime Lights,](https://www.earthdata.nasa.gov/learn/backgrounders/nighttime-lights) which provides data and explainers on analyzing nighttime light intensity. The [IMPACT](https://impact.earthdata.nasa.gov/) page also showcases tools and use cases for earth observation.

[Geofolio](https://geofolio.org/) – create free factsheets on environmental data for a defined geographic area

AidData’s [GeoQuery](https://www.aiddata.org/geo) extracts spatial statistics from open-source data, and provides other associated tools and geospatial data.

[UNOSAT Products](https://unosat.org/) - imagery-derived information in disasters and humanitarian emergencies

[NASA Disasters Program](https://appliedsciences.nasa.gov/what-we-do/disasters/practitioner-resources) - Provides viewable and downloadable datasets for many useful earth indicators, such as soil moisture, nighttime lights, and more.

[Open Topography](https://portal.opentopography.org/datasets) - high-resolution topography datasets. Predominantly USA datasets but includes datasets from many other countries.

[Global Surface Water Explorer](https://global-surface-water.appspot.com/) - provides detailed data, statistics, and charts of surface water across the globe. Provides an interactive map that enables users to zoom into particular regions and view timelapses and other visualizations, as well as ability to download underlying datasets.

Many other derived data products can be found hosted on platforms like Google Earth Engine.

**Technical Tutorials**

These tutorials are more detailed on technical steps and processes than the [case studies](https://mercycorpsemea.sharepoint.com/:w:/s/PaQHQ/EUFj_Xo9cP5Ks48lMbOBCKsB5pb0HjHRdy4lv666chasYA?e=mQOibd) and are intended to get RAAM users started with exploring the wide variety of resources accessible online. Note that different tutorials often use different platforms for loading and processing data - RAAM users will need to choose a platform based on the available skillsets in their team and any cost considerations. The science of RS is changing fast, and users might find some broken links or outdated references.

[Digitizing boundaries using QGIS tutorial](https://kcubeconsulting.com/blog/field-digitization-using-qgis/#:~:text=Digitizing%20Field%20Boundaries%3A&text=Open%20QGIS%20software%2C%20select%20'Layer,and%20destination%20of%20the%20shapefile.) – Useful for learning how to create GIS data of program locations (if the program does not already have it!

### Manual Analysis

[Remote Sensing for Humanitarian Practitioners](https://www.humanitarianlibrary.org/resource/remote-sensing-humanitarian-practitioners) – While several years old, this guide is very useful for introducing users to basic skills you will need to analyze imagery manually, and which will be useful for subsequent technical tutorials. Note that the discussion of private imagery sourcing and prices is very out of date – if you need very high resolution imagery for your project, you should consult with technical experts.

Topical guides for manual imagery analysis:

* [Guidance on organizing observable structures](https://www.humanitarianlibrary.org/resource/satellite-imagery-interpretation-guide-displaced-population-camps) in imagery of IDP/refugee camps into categories according to the UN cluster system.
* [Guidance on using imagery to assess wind damage](https://hhi.harvard.edu/publications/imagery-interpretation-guide-assessing-wind-disaster-damage) to structures – includes a template tool for recording the assessment results
* [Guidance on identifying manmade and natural landscape features](https://hhi.harvard.edu/publications/satellite-imagery-interpretation-guide-landscape-features) using imagery of Somalia, particularly helpful for users analyzing the Horn of Africa
* [Guidance on identifying intentional burning of dwellings as part of conflict](https://hhi.harvard.edu/publications/satellite-imagery-interpretation-guide-intentional-burning), using the example of tukuls in East and Central Africa.

### Indices & Models

* [Calculating soil fertility in QGIS](https://mercycorpsemea.sharepoint.com/sites/PaQHQ/Shared%20Documents/Forms/AllItems.aspx?FolderCTID=0x012000FEE305C888083B40938C162823939A6C&id=%2Fsites%2FPaQHQ%2FShared%20Documents%2FMEL%2FReduced%20Access%20Analytics%20Methods%20%28RAAM%29%20%2D%20BHA%20Grant%2F4%5F%20Implementation%2FDeliverable%202%5F%20Toolkit%2FMethod%204%20%2D%20Remote%20Sensing%2Fv3%20drafts%2FIN%20REVISIONS%2FSoil%20Organic%20Carbon%20Index%20FINAL%2007%2E29%2E2021%2Epdf&viewid=1a5c6944%2Df8be%2D4816%2Dac10%2D377b85c86640&parent=%2Fsites%2FPaQHQ%2FShared%20Documents%2FMEL%2FReduced%20Access%20Analytics%20Methods%20%28RAAM%29%20%2D%20BHA%20Grant%2F4%5F%20Implementation%2FDeliverable%202%5F%20Toolkit%2FMethod%204%20%2D%20Remote%20Sensing%2Fv3%20drafts%2FIN%20REVISIONS) – Step-by-step no-code tutorial using QGIS to calculate the Soil Organic Carbon Index, a proxy indicator for soil fertility and health.
* [NASA ARSET training on Humanitarian Applications of Earth Observation](https://appliedsciences.nasa.gov/get-involved/training/english/arset-humanitarian-applications-using-nasa-earth-observations) - This expert-led series provides walkthrough demonstrations on methods to assess urban damage, and analyze changes within and around refugee settlements, specifically monitoring for settlement growth, population change, agricultural/vegetation change around settlements, and climate hazards. It uses various platforms and data sources.
* [Awesome Spectral Indices](https://github.com/awesome-spectral-indices/awesome-spectral-indices?tab=readme-ov-file) - This repository collects academic literature and ready-to-use code into an easy reference spot for analysts to review the wide variety of indices that can be calculated from RS data, and identify.
* [Changes in vegetation indices over time in Google Earth Engine](https://www.geospatialecology.com/intro_rs_lab6/)
* Spatial Thoughts’ [Google Earth Engine for Water Resources Management](https://spatialthoughts.com/courses/gee-for-water-resources-management/) - Spatial Thoughts has a number of great modules on both QGIS and GEE that might help users to develop RS applications, including this one that covers applications such as mapping of landcover, surface water, floods, and droughts.
* [Geo4Dev training](https://www.geo4.dev/training) on some models and indicators such as crop type and deforestation.
* [Quick calculation of indices in Google Earth Engine](https://www.geodose.com/2022/10/how-to-calculate-various-spectral-indices-gee-quick.html#google_vignette) - Tutorial showing quick methods for calculating a variety of indicators like NDVI, Bare Soil Index, NDWI, etc.
* [List of ESRI Case Studies and associated tutorials](https://www.esri.com/en-us/arcgis/products/imagery-remote-sensing/resources)
* [Extracting statistics on nighttime lights](https://www.youtube.com/watch?v=gjdlJ4NxOek) – Code-based step-by-step tutorial for calculating statistics on nighttime lights with Google Earth Engine.