Q: What *is* geospatial data?

A: Geospatial data refers to data consisting of, derived from, or relating to data that is directly linked to specific geographical locations (MerriamWebster 2023). Geospatial data can exist in many formats, both spatial and tabular. Spatial data can include categorical vector (point, line, or polygon) or continuous raster (a matrix of gridded cells, also known as pixels, across a surface). Tabular data refers to rows and columns in a database that contain or can be linked to spatial data. Some examples of vector data include: wetland polygons, point locations of sacred sites, and rivers as lines with flow direction information. Some examples of raster data include: imagery (satellite or aerial), digital elevation models, and land cover information.

Q: How is geospatial data created or collected?

A: Geospatial data can be collected in the field with GPS or other handheld units, remotely (e.g., by aircraft or satellites), or created in a computer program. Sometimes, new data can be created through geospatial analyses of existing data. If you don't have a GPS unit, there are ways to collect geospatial information on a mobile device; just search for "free GPS collection app" to find applications available for download to various devices. Two of the most popular are Esri's ArcGIS Field Maps, and QGIS's QField.

Q: Are there any guidelines or standards for creating and using geospatial data?

A: The Federal Geographic Data Committee (FGDC) is "an organized structure of Federal geospatial professionals and constituents that provide executive, managerial, and advisory direction and oversight for geospatial decisions and initiatives across the Federal government". They are the lead entity in the executive branch of government for the development, implementation, and review of policies, practices, and standards relating to geospatial data.

Q: What is metadata?

A: Metadata is commonly called "data about the data". It includes information such as when, where, how, and why information was collected or created. In the case of geospatial data, it also includes details on coordinate systems, geographic extent, spatial accuracy, and use constraints. Some agencies/organizations have created standards, templates, and tools to help users create consistent metadata. For example, the EPA has published a "Procedure for Geospatial Metadata Management".

Q: Are there any publicly-available geospatial data our wetland program could use?

A: Many government organizations supply landscape level geospatial data publicly. These data can be found by searching "free GIS data sources" (see examples below). When locating and utilizing free data sources it is important to understand the way the data was collected, its intended use, and limitations. Sometimes, when using publicly-available data you may end up with an overwhelming amount of information. Utilizing simple data analysis techniques to help focus the use of your data is helpful. Operations such as "select by location", "select by attribute", or "select layer by location" are available within GIS programs such as Esri's ArcGIS and QGIS.

Sample of Publicly-available Data Sources:

USFWS NWI Wetlands Mapper: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

USGS National Map – satellite imagery, elevation data, hydrography data, and more: https://apps.nationalmap.gov/downloader

NRCS Web Soil Survey – Soils data: https://websoilsurvey.nrcs.usda.gov/app/

Google Earth Pro – view various years of aerial imagery, with ground-level view also available.

Additional Resources:

NAWM webinar recording: "Geospatial Tools and Techniques for Tribal Wetland Programs"

Federal Geographic Data Committee's (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM) website: includes publications, learning resources, and tools.

Geospatial Resources at the EPA: includes policies/standards documents, data viewing applications, and additional federal geospatial resources.

BIA Branch of Geospatial Support: provides geospatial software, training and technical assistance to tribes.

National Tribal Geographic Information Support Center (or Tribal GIS): Online videos, hosts an annual conference.

Since 2022, all federally recognized tribes have been eligible to receive Esri licenses and training at no cost through a partnership between Esri and the BIA's Branch of Geospatial Support (BOGS). Learn more at www.bia.gov/service/geospatial-software/obtain-software or email the BIA Geospatial Support Help Desk at geospatial@bia.gov.