Introduction to spatial data

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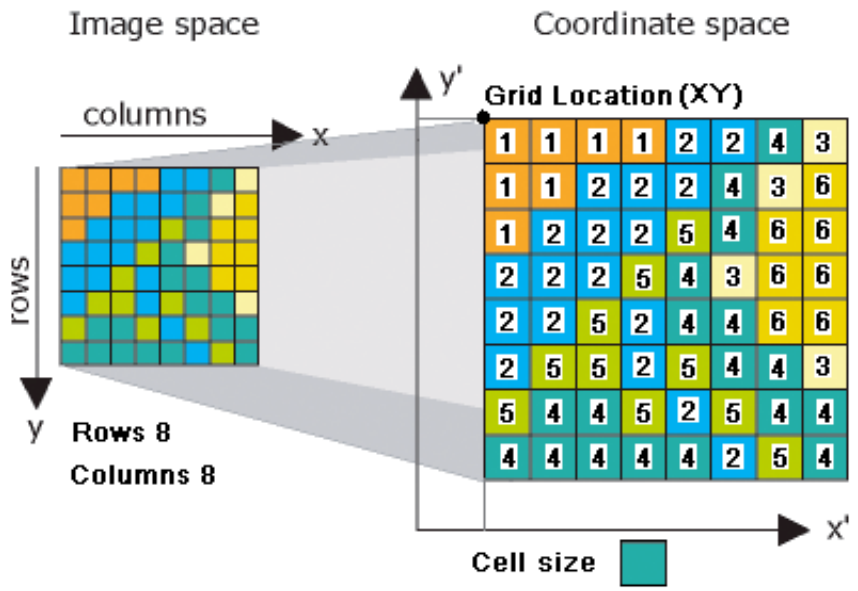
Copernicus Sentinel data for
Mariposa County, 2015-2017

What is **raster data**?

- A grid of values.

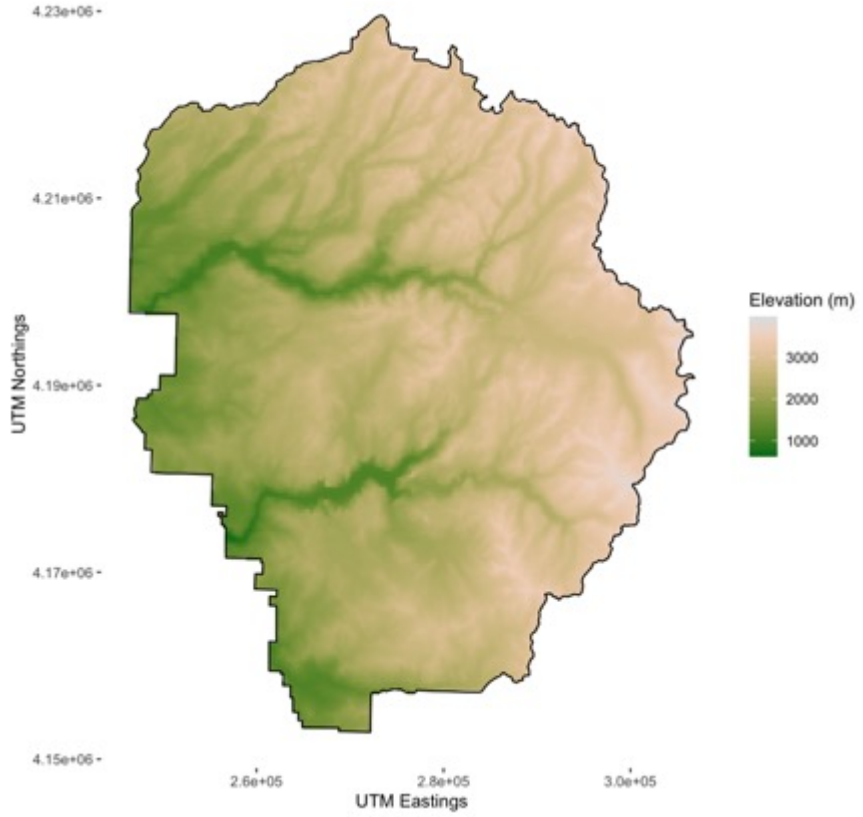


ArcGIS Raster Basics

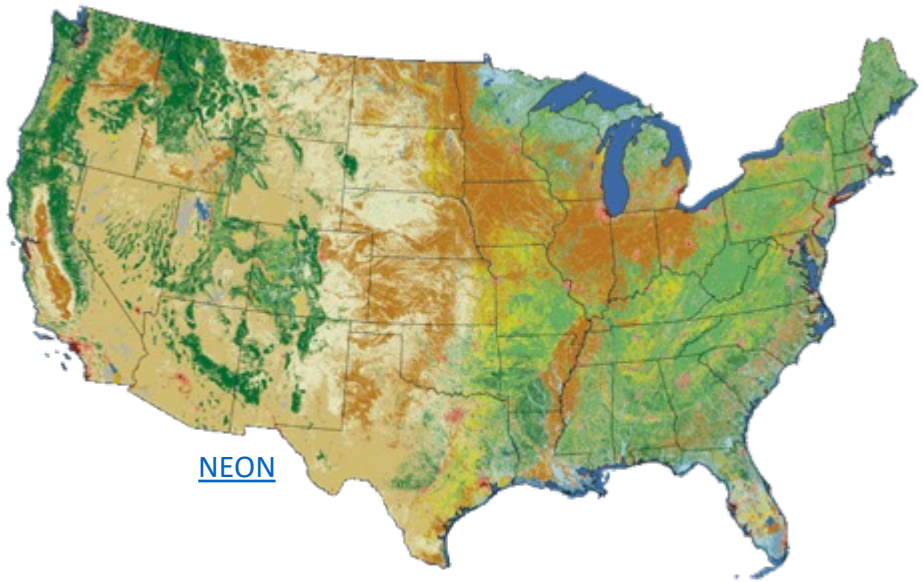
What is **raster data**?

- A grid of values.

Elevation of Yosemite National Park



National land cover dataset



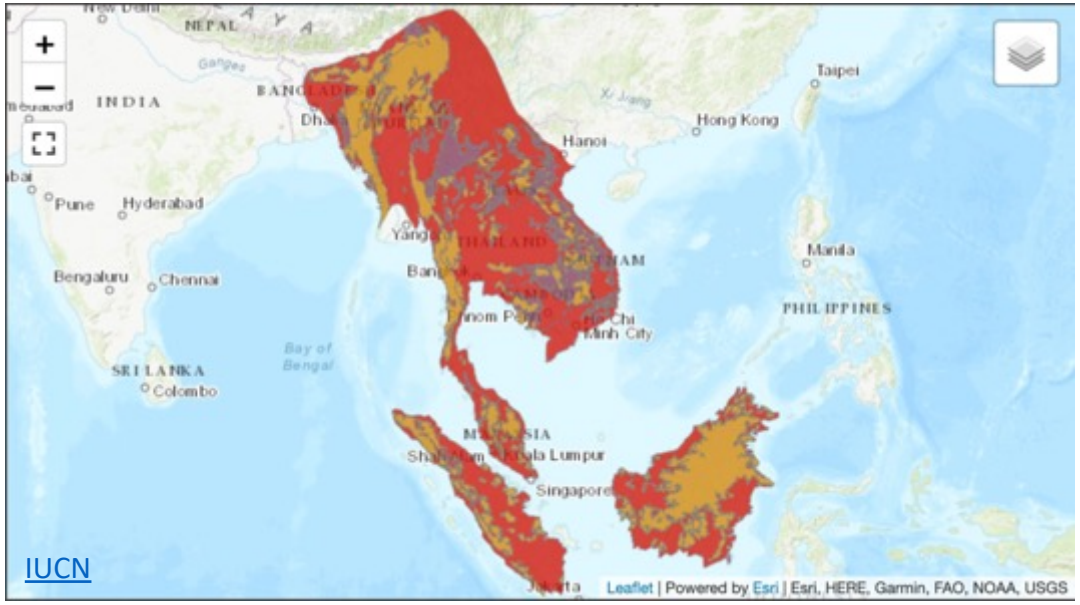
NEON

… as opposed to **vector data**

- Points, lines, and polygons

US NPS

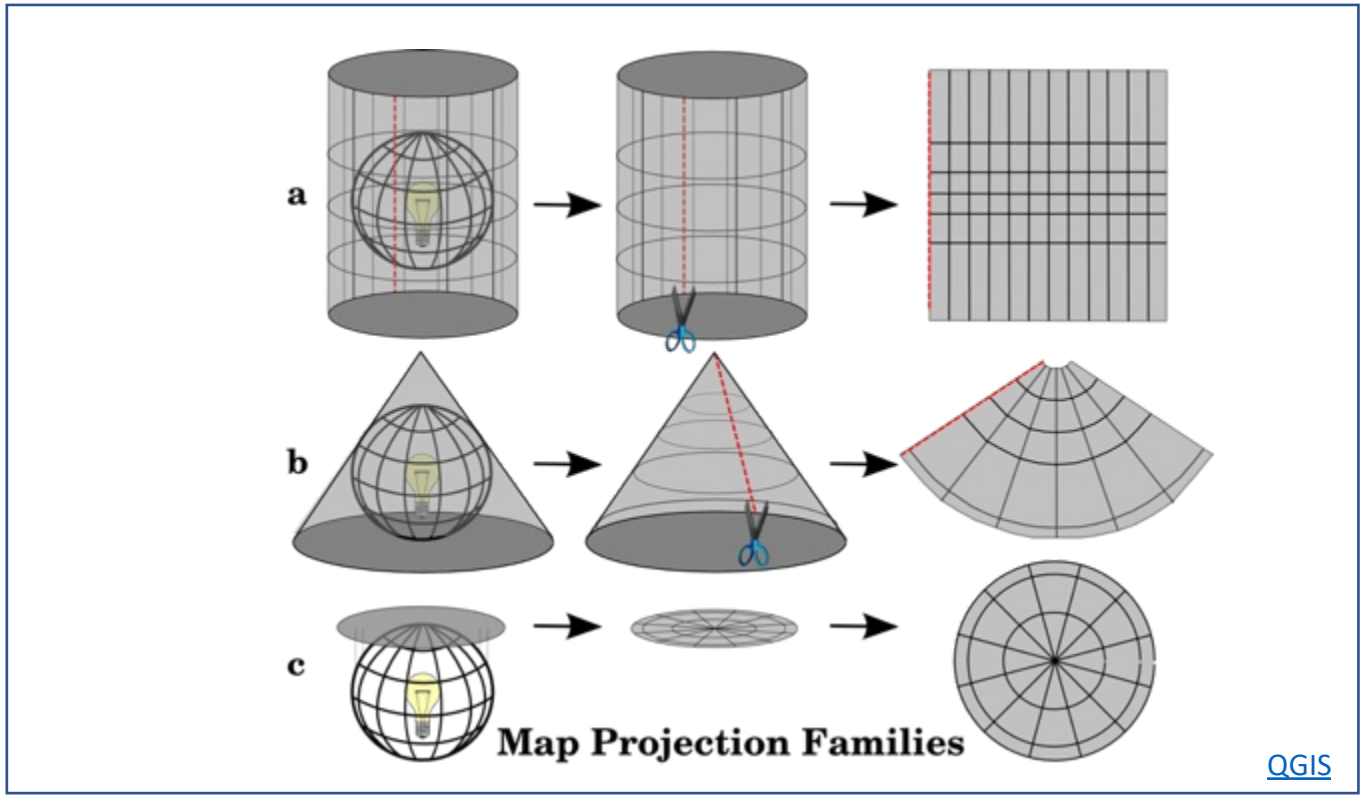
Geographic range of Sun Bear



IUCN

Coordinate reference system

- Mathematical “flattening” of earth’s surface to 2 dimensions
- Many ways to do this!
- Pros and cons to every way



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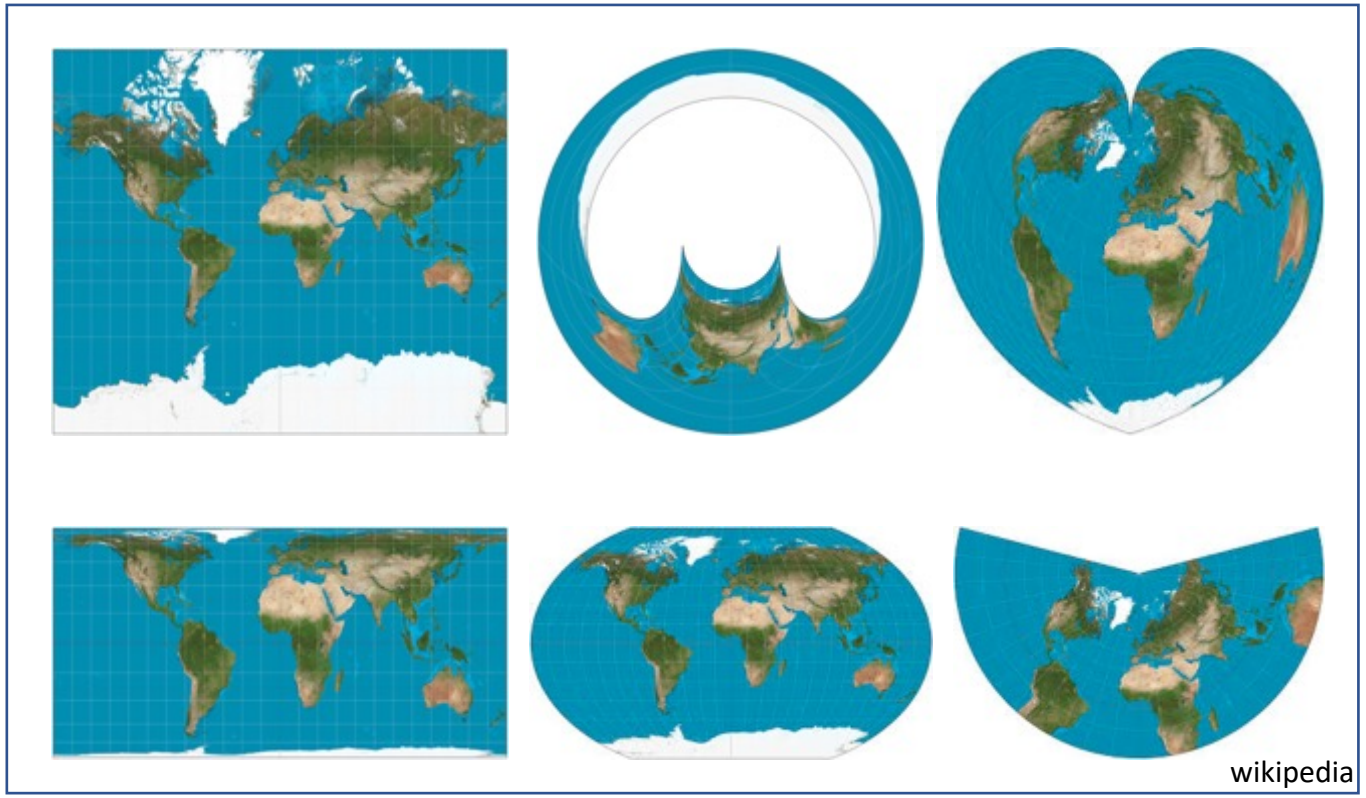
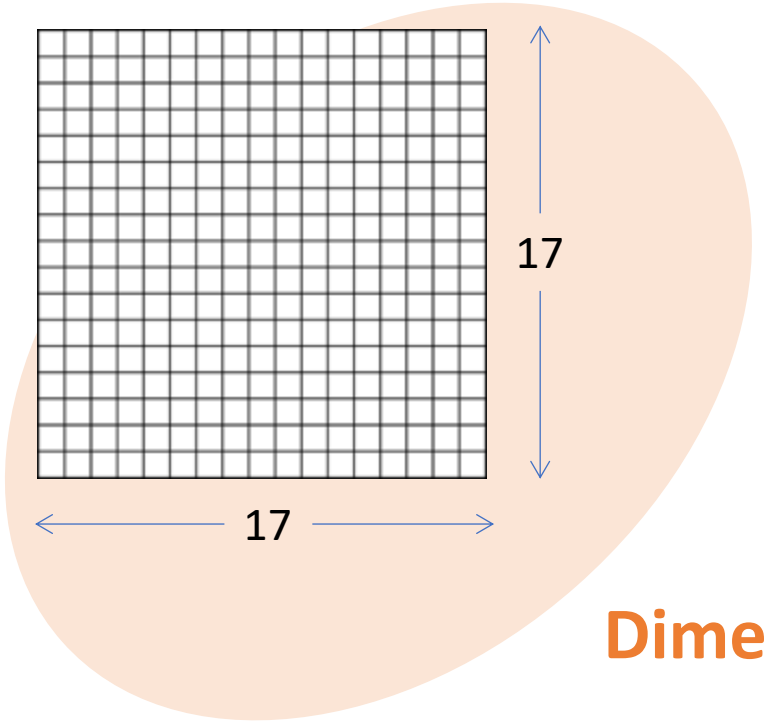
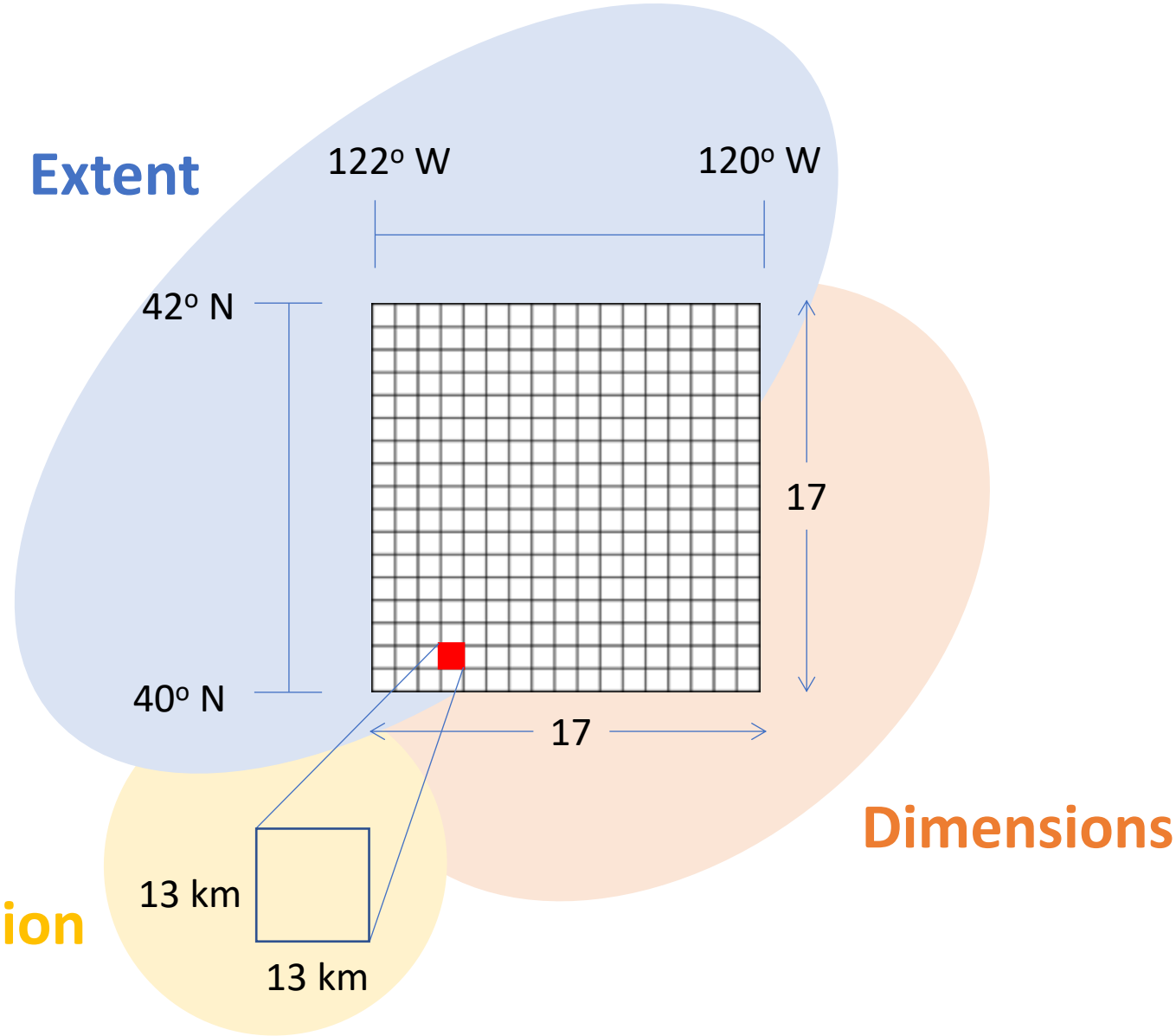


Properties of a raster dataset



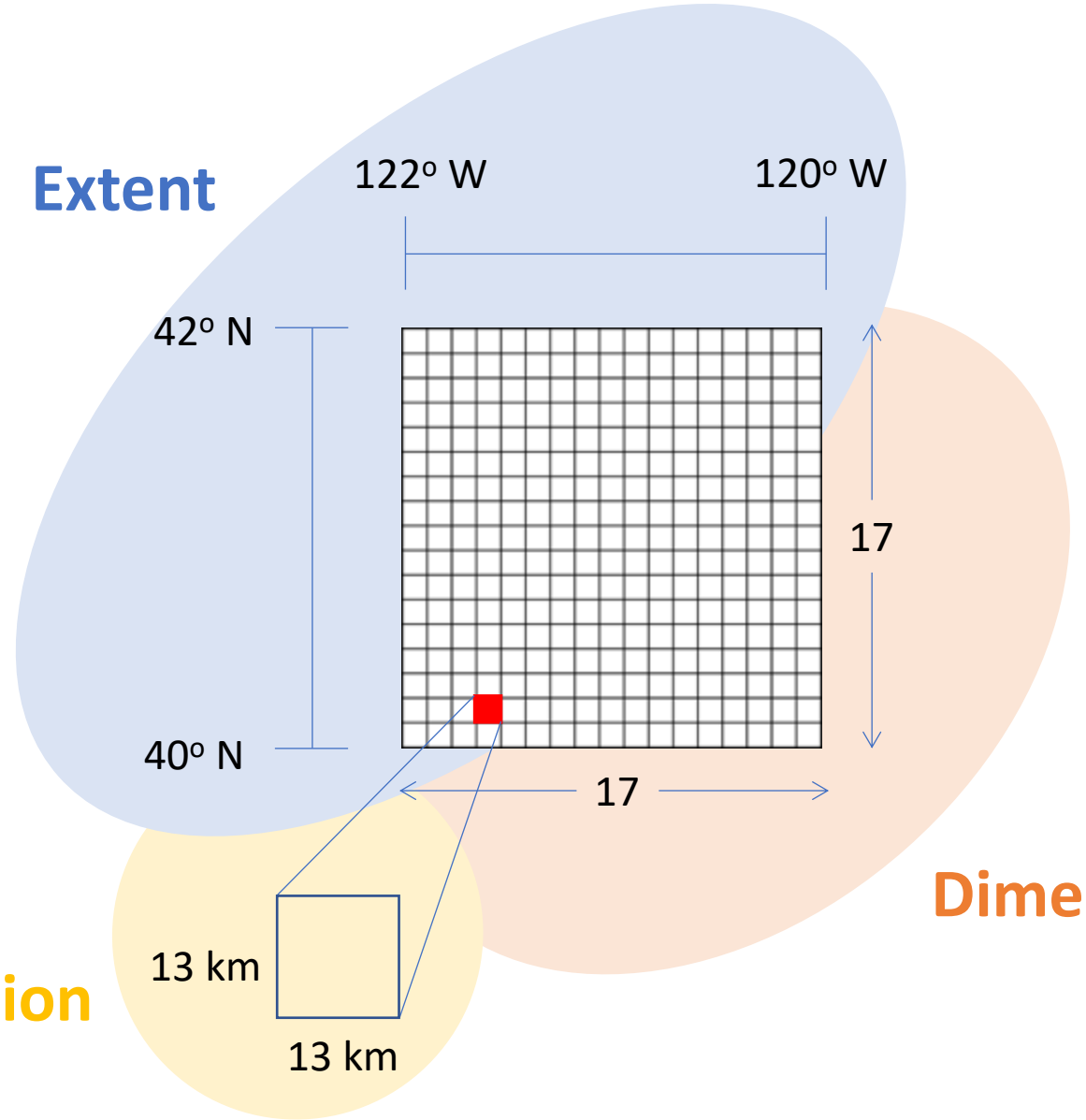
Dimensions

Properties of a raster dataset

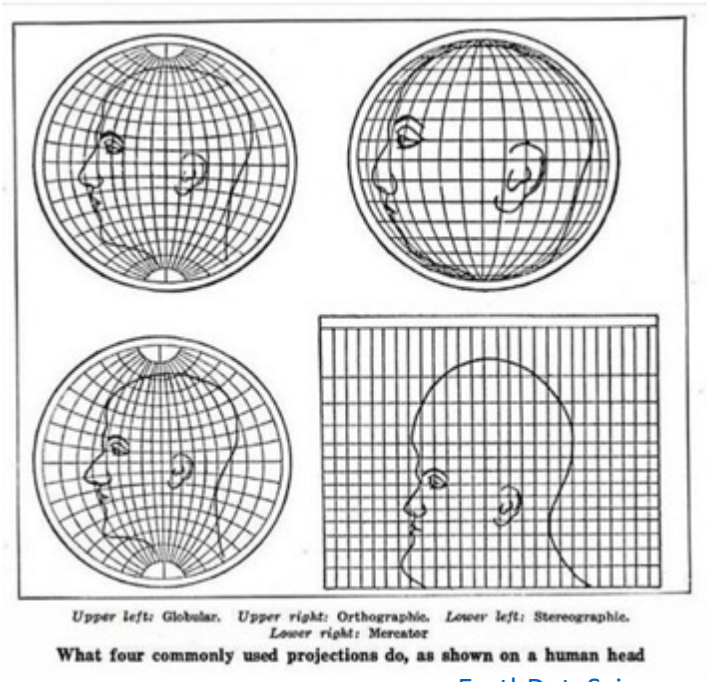


*With any two of these, you can calculate the 3rd.

Properties of a raster dataset



Reference system



Upper left: Globular. *Upper right:* Orthographic. *Lower left:* Stereographic. *Lower right:* Mercator

What four commonly used projections do, as shown on a human head

EarthDataScience

Today we'll learn to:

- Import spatial data into R
- Identify components of spatial datasets
- Perform basic operations with raster and vector data
- Visualize spatial data