

Geospatial Data

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Geospatial Data

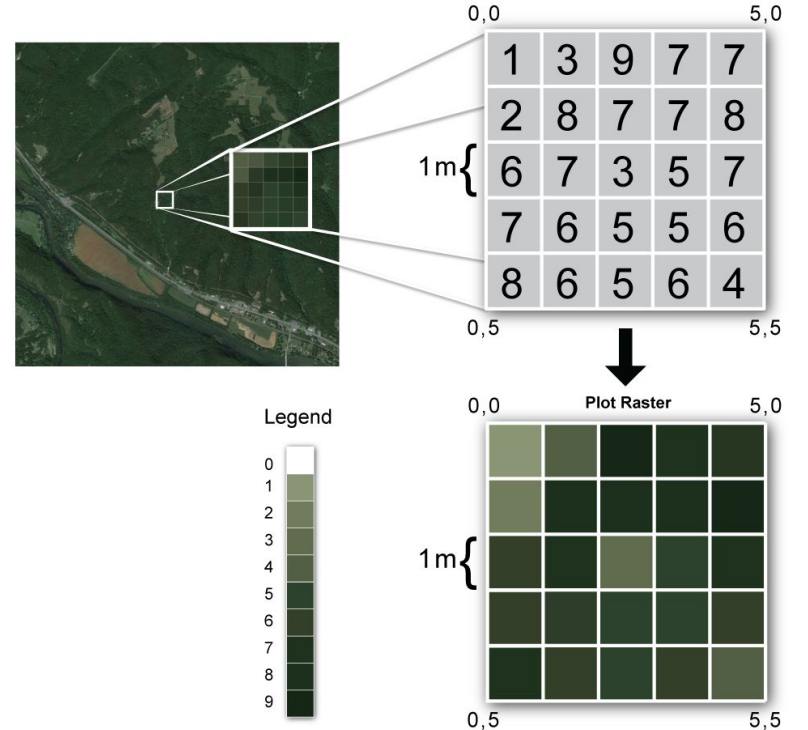
- Spatial data / Geographic data
- Represents features or objects on the Earth's surface

Types of geospatial data

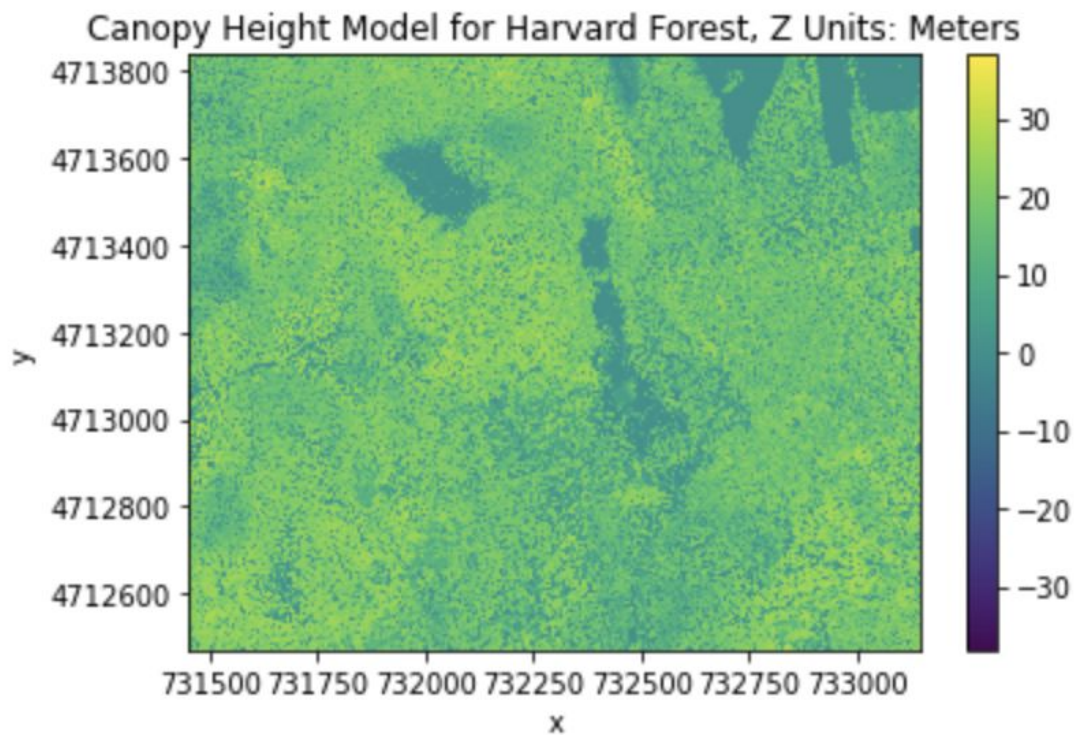
- Raster Data
- Vector Data

Raster Data

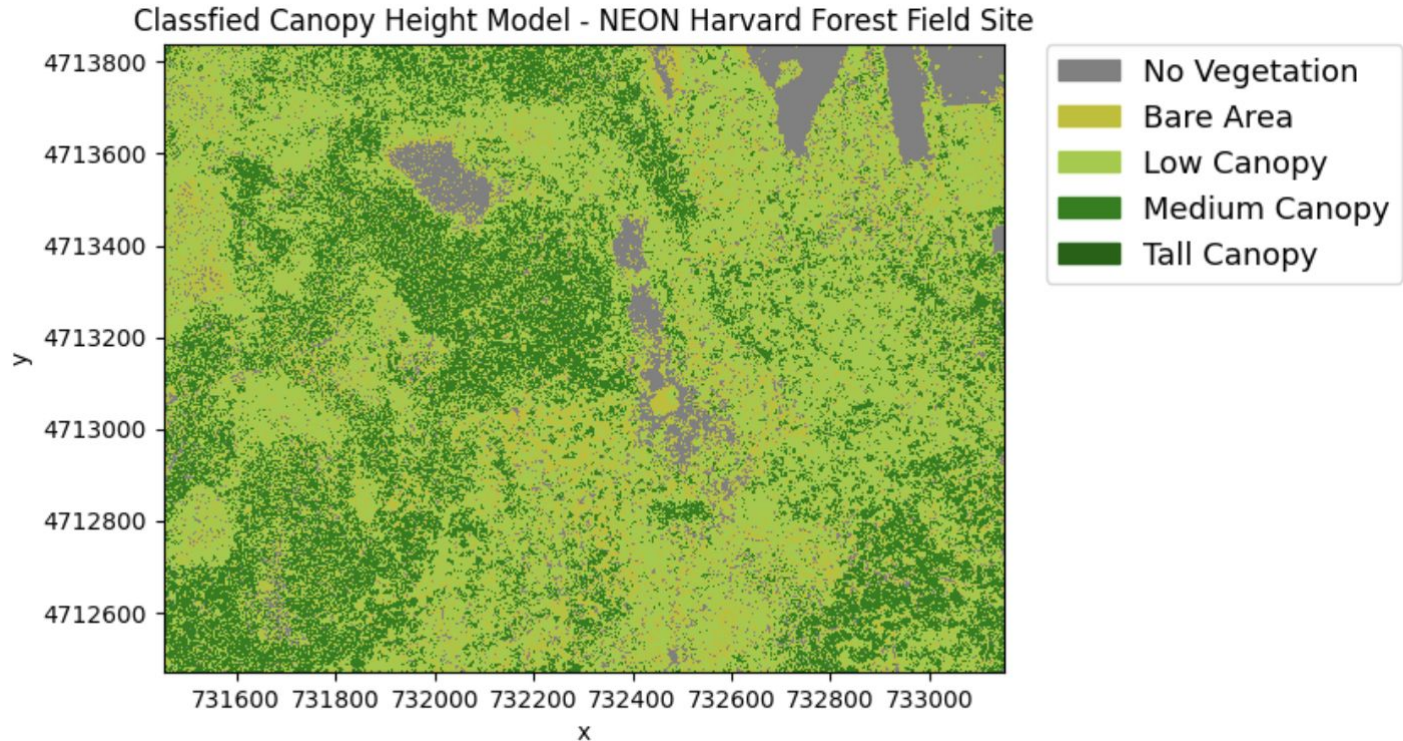
- Stored as a grid of values which are rendered as pixels.
- Each pixel value represents an area on the Earth's surface.
- Continuous or Categorical



Continuous Raster Data



Categorical Raster Data



Raster Data

Advantages

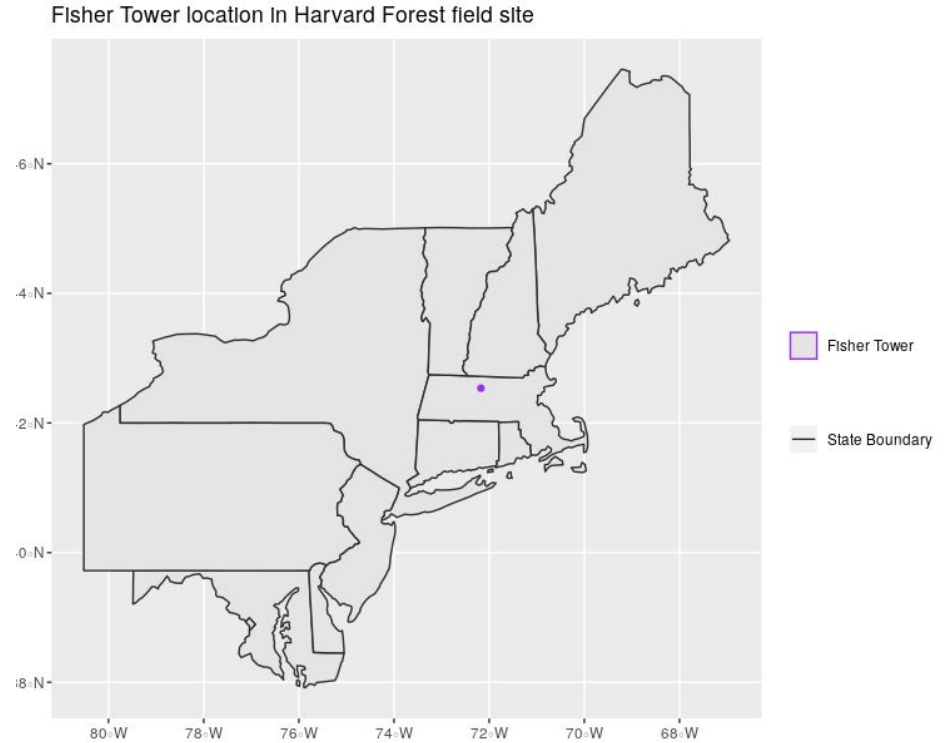
- Represent continuous surfaces
- High level of detail
- Unweighted data
- Fast cell-by-cell calculations

Disadvantages

- Large file sizes
- Difficult to represent complex information

Vector Data

- Represents specific features on the Earth's surface, and assign attributes to those features.
- Point, line, or polygon



Vector Data Object Types

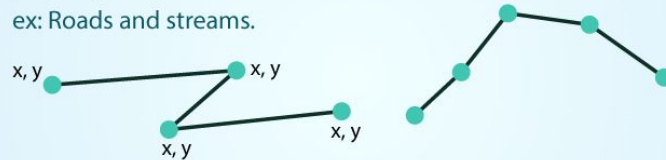
POINTS: Individual x, y locations.

ex: Center point of plot locations, tower locations, sampling locations.



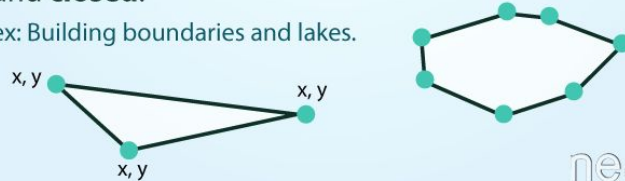
LINES: Composed of many (at least 2) vertices, or points, that are connected.

ex: Roads and streams.



POLYGONS: 3 or more vertices that are connected and **closed**.

ex: Building boundaries and lakes.



Vector Data

Advantages

- Easily highlight important features
- Multiple attributes about each geometric feature can provide lots of information
- Efficient data storage

Disadvantages

- Potential loss of visual detail
- Potential bias
- Slower calculations

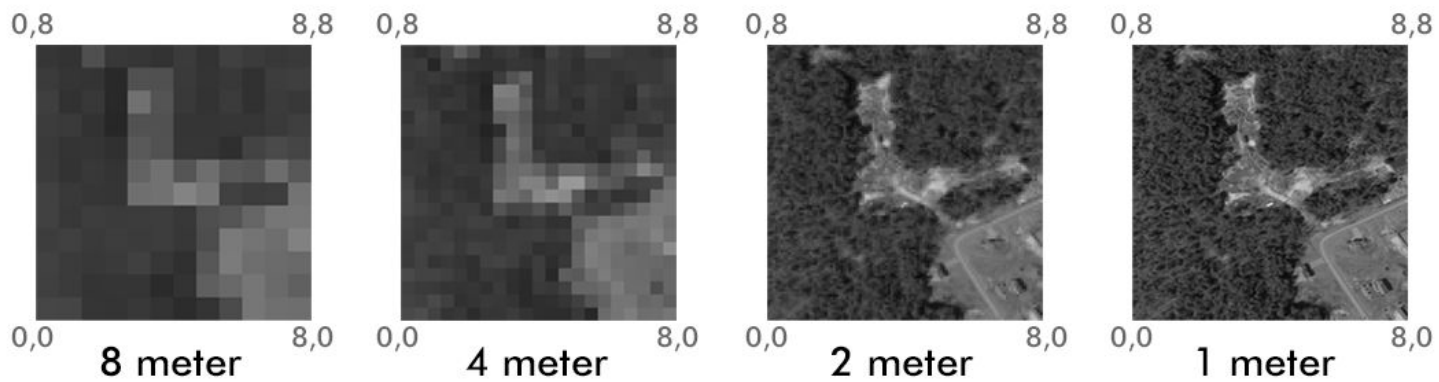
Spatial Information

- Cell size/ resolution
- Values that represent missing data
- Extent
- Number of rows and columns
- Coordinate Reference System (or CRS)

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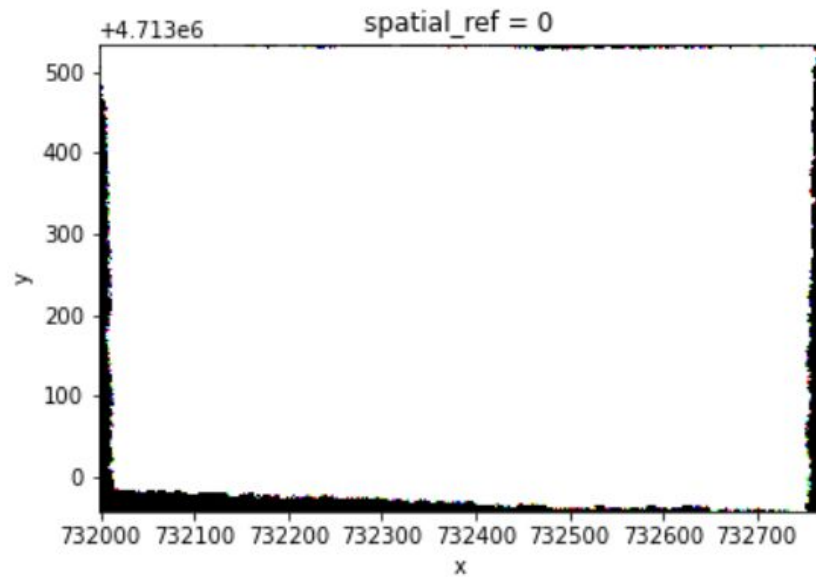
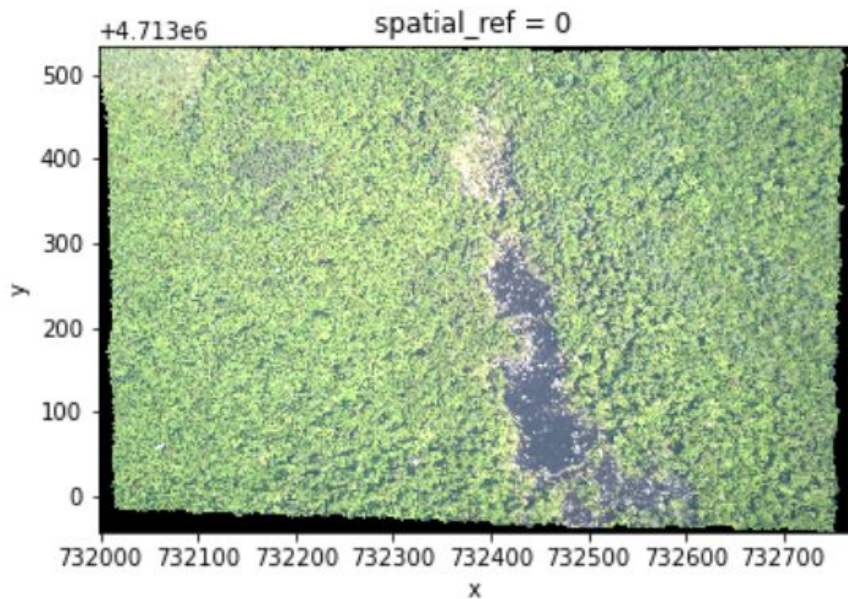
Resolution



Spatial Information

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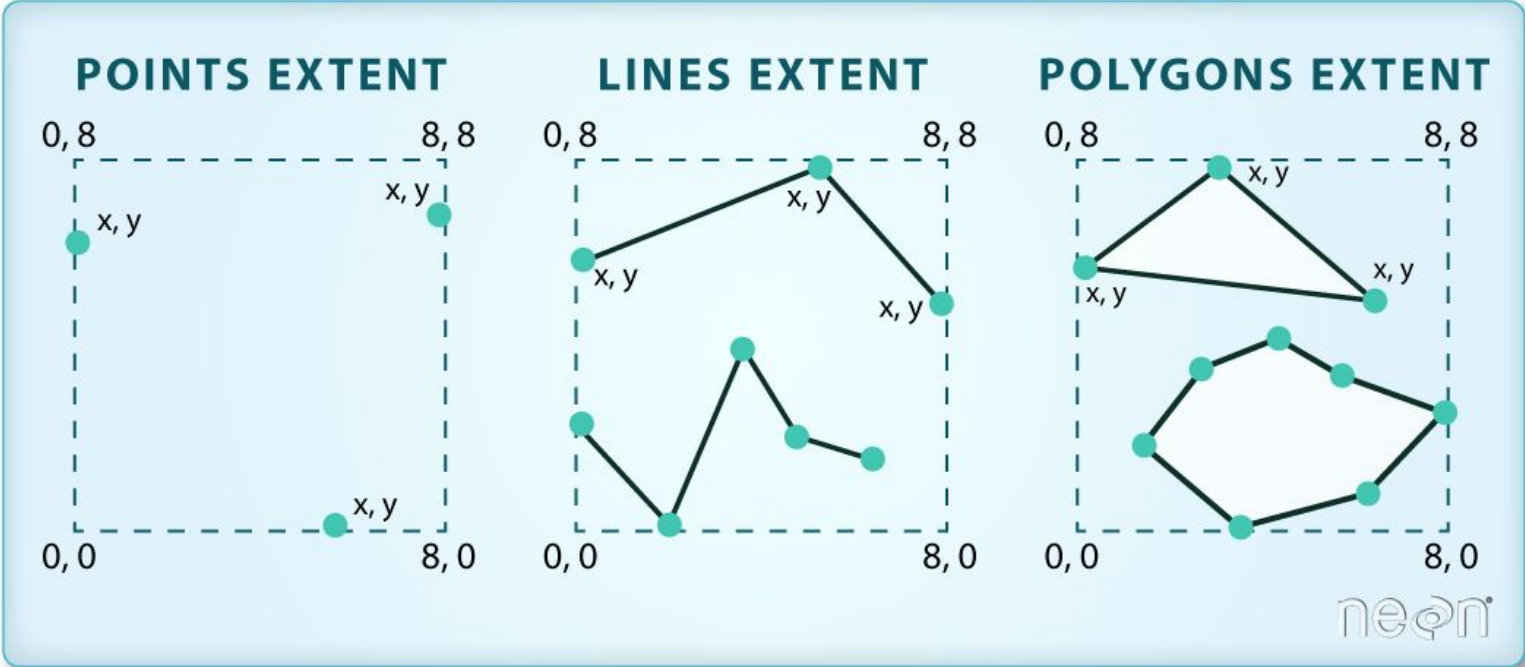
NoDataValue



Spatial Information

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Extent and Dimensions



Spatial Information

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Coordinate Reference System



Coordinate Reference System

Datum: Model of shape of earth

Projection: Mathematically transform earth surface to 2D

Other Attributes: Eg: center of map/
location of poles



The End