12.1 Map Projections and Distance Metrics

May 9, 2019

1 Chapter 12. Geographic Data

Geographic data is any data that is associated with a location on Earth. For example, the percentage of people in each state who voted for a presidential candidate is an example of geographic data, as are the locations of earthquake epicenters. In this chapter, we will discuss techniques for analyzing and visualizing geographic data.

2 12.1 Map Projections and Distance Metrics

2.1 Longitude and Latitude

The Earth is split into Northern and Southern Hemispheres by the equator and into Eastern and Western Hemispheres by the prime meridian. Locations on the surface of the earth are specified by two angles: the **latitude** and **longitude**. The latitude measures the angle above (or below) the equator and ranges from $-90°$ to $90°$ (or 90°S to 90°N). The longitude measures the angle to the east or to the west of the prime meridian. It ranges from $-180°$ to $180°$ (or 180°W to 180°E).

So, for example, the city of New Orleans in the United States, which is in the Northern and Western Hemispheres, can be described by the longitude and latitude coordinates $(-90°, 40°)$.