Types of Projections

Conic
Cylindrical
Planar
Pseudocylindrical
Conic Projection

In flattened form a conic projection produces a roughly semicircular map with the area below the apex of the cone at its center. When the central point is either of Earth's poles, parallels appear as concentric arcs and meridians as straight lines radiating from the center.

Usually used for maps of countries or continents in the middle latitudes (30-60 degrees)
Cylindrical Projection

A cylindrical projection is a type of map in which a cylinder is wrapped around a sphere (the globe), and the details of the globe are projected onto the cylindrical surface. Then, the cylinder is unwrapped into a flat surface, yielding a rectangular-shaped map.

Generally used for navigation, but this map is very distorted at the poles. Very Northern Hemisphere oriented.
Planar projections are the subset of 3D graphical projections constructed by linearly mapping points in three-dimensional space to points on a two-dimensional projection plane.

Generally used for polar maps. Focused on a central point. Outside edge is distorted
Pseudo-cylindrical maps combine many cylindrical maps together. This reduces distortion. Each cylinder is focused on a particular latitude line.

Generally used to show world phenomenon or movement – quite accurate because it is computer generated.
Famous Map Projections

Mercator
Winkel-Tripel
Sinusoidal
Goode’s Interrupted Homolosine
Robinson
Mollweide
The Mercator projection is a cylindrical map projection presented by the Flemish geographer and cartographer Gerardus Mercator in 1569.

This map accurately shows the true distance and the shapes of landmasses, but as you move away from the equator the size and distance is distorted. THIS MAP IS USED FOR NAVIGATION
The Winkel tripel projection (Winkel III), a modified azimuthal map projection of the world, is one of three projections proposed by Oswald Winkel in 1921. It provides a good balance between the size and shape of land areas. The Winkle map distorts the shape of the earth.
Sinusoidal Projection

The sinusoidal projection is a pseudocylindrical equal-area map projection, sometimes called the Sanson–Flamsteed or the Mercator equal-area projection.

Scale is constant along the Equator, and east–west scale is constant throughout the map. Therefore the length of each parallel on the map is proportional to the cosine of the latitude, as it is on the globe. Each is shown on the map as longer than the central meridian, whereas on the globe all are the same length.
Goode’s Interrupted Homolosine

The Goode homolosine projection (or interrupted Goode’s homolosine projection) is a pseudo-cylindrical, equal-area, composite map projection used for world maps. Normally it is presented with multiple interruptions. Its equal-area property makes it useful for presenting spatial distribution of phenomena.

This map shows the true size and shape of Earth's landmasses, but the distances are mainly distorted. Another problem is obviously the “holes” in the map.
Robinson Projection

The Robinson projection is a map projection of a world map which shows the entire world at once. It was specifically created in an attempt to find a good compromise to the problem of readily showing the whole globe as a flat image. This is the projection used by NGS.

Robinson- minor distortion, the eastern and western sizes and shapes are accurate, and the outlines of continents are similar to a globe. However, the polar areas are flattened.
Mollweide Projection

The Mollweide projection is an equal-area, pseudo-cylindrical map projection generally used for global maps of the world or night sky. It is also known as the Babinet projection, homalographic projection, homolographic projection, and elliptical projection.

Direction and shape are good at the Equator to about latitude 40° 44' N and S. Scale is also true along those latitudes. Distortion of direction, shape and distance increase with distance from these latitudes. It is used primarily for showing global data distributions.
Types of Maps

- Topographic
- Great Circle
- Economic Activity
- Proportional Symbol
- Aerial
- Dot Distribution
- Population Density
- Road
- Flow line
- Cartogram
- Political
- Choropleth
- Isoline
- Physical
Topographic Map

A topographic map is a type of map characterized by large-scale detail and quantitative representation of relief, usually using contour lines. The areas within the contour line have the same elevation.
Longitude is the angular distance between a point on any meridian and the prime meridian at Greenwich. The time at Greenwich is called Greenwich Mean Time (GMT). As you move west from Greenwich, every 15-degree section or time zone is an hour earlier than GMT, while each time zone to the east is an hour later. There are exceptions – North Korea for example has its own time zone.
Great Circle Map

A great circle track is the shortest distance between two points on the surface of a sphere; the Earth isn't exactly spherical, but the formulas for a sphere are simpler and are often accurate enough for navigation.
Economic Activity Map

Economic or resource maps feature the type of natural resources or economic activity that dominates an area. Cartographers use symbols to show the locations of natural resources or economic activities.

Economic Activity

INDUSTRY
- Food processing
- Vegetable oil processing
- Sugar refining
- Coffee processing
- Footwear and clothing

AGRICULTURE
- Coffee
- Cotton

Map showing economic activities and locations of coffee and cotton production.
Proportional Symbol Map

The proportional symbol map is a widely-used form of thematic mapping. In this technique, the cartographer selects a symbol and alters its size based on the data values.
Aerial Map

Photographs and other images of the Earth taken from the air and from space show a great deal about the planet's landforms, vegetation, and resources. Aerial and satellite images, known as remotely sensed images, permit accurate mapping of land cover and make landscape features understandable on regional, continental, and even global scales.
Dot Distribution Map

A dot distribution map is a map type that uses a dot symbol to show the presence of a feature or phenomenon. Dot maps rely on a visual scatter to show spatial pattern.
Density Map

Density is classified into certain intervals and shown through differing colors. The darkest color represents the most density. Most commonly used for population.
Road Map

Exactly what it sounds like. Maps that show roads. Most have other features such as rivers, lakes, forests, national landmarks, and entertainment areas.
Flow Line Map

Flow-line maps show movement. Arrows usually show the direction of travel.
Cartogram

A cartogram is a map in which some thematic mapping variable – such as travel time, population, or Gross National Product – is substituted for land area or distance. The geometry or space of the map is distorted in order to convey the information of this alternate variable.
Political maps are designed to show governmental boundaries of countries, states and counties. They can also indicate the location of major cities, and they usually include significant bodies of water.
A choropleth is a thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed on the map, such as life expectancy, infant mortality rates or per-capita income.
Mental Maps

Based on what a person knows about a place. Usually hand drawn and not usually to scale, contains the personal feelings and knowledge a person has of a place.
An isoline map is a map with continuous lines joining points of the same value. Examples would be equal elevation (contour lines), temperature (isotherms), barometric pressure (isobars), wind speed (isotachs), wind direction (isogon), wind shear (isoshear), etc.

So – on this map – all the dark pink areas including Guangzhou and Beijing have the same crustal thickness – 30.
Physical maps often include much of the same data found on a political map, but their primary purpose is to show landforms like deserts, mountains and plains. Their topography style (or relief) presents an overall better picture of the local terrain.