

Main Contents

- The Science of Geography
- Scope/Coverage of Geography
- Branches of Geography
- The Meaning, Components, and Uses of Maps
- Conventional Signs and Symbols
- Types of Maps
- Uses of Maps
- Determining Position on Maps
- Map Enlargement and Reduction
- Methods of Showing Relief on a Map
- The Five Key Components of GIS
- Gathering and Representing Data for GIS
- GIS Data Analysis

The Science of Geography

❖ *Meaning of Geography*

The definition of geography has evolved over time, from ancient Greek scholars to modern-day geographers. While the definitions vary, they share common themes about the relationship between people and the Earth. Here are some of the most significant definitions:

- **Eratosthenes (276-196 BC):** Geography is the description of the earth.
- **Alexander von Humboldt (1845):** Geography is "a synthesizing discipline to connect the general with the particular through measurement, mapping, and a regional emphasis."
- **E.A. Acreman (1953):** Geography is "nothing less than an understanding of the vast interacting system between human beings and their environment on the earth's surface."
- **Richard Hartshorne (1959):** Geography is "a science that is meant to provide accurate, orderly, and rational description and interpretation of the variable character of the earth's surface."
- **M. Yeates (1968):** Geography is "a science concerned with the rational development and testing of theories that explain and predict the spatial distribution and location of various characteristics on the surface of the earth."
- **Martin Kenzer (1989):** Geography is "concerned with the locational or spatial variation in both physical and human phenomena at the earth's surface."
- **Gregg Wassmansdorf (1995):** Geography is "the study of the patterns and processes of human-built and environmental (natural) landscapes, where the landscapes comprise real (objective) and perceived (subjective) space."

- **Modern Definition:** Geography is the study of the environment of the earth's surface and the relationship of humans to this environment, which includes both physical and cultural geographic features.

❖ *Scope/Coverage of Geography*

Scope refers to the extent of interest or focus of a particular subject. In geography, the scope is very broad, encompassing much more than just locations. The scope of geography is generally considered to be the **geo-sphere**.

The **geo-sphere** is made up of five interacting sub-spheres:

- i. **Lithosphere:** The solid, outer part of the earth, consisting of the crust and upper mantle.
- ii. **Hydrosphere:** All the water on the earth's surface, such as oceans, lakes, rivers, and ice.
- iii. **Atmosphere (specifically the Troposphere):** The layer of gases surrounding the earth, with a focus on the lowest layer where weather occurs.
- iv. **Biosphere:** The parts of Earth where life exists, including all living organisms.
- v. **Anthroposphere:** The part of the environment that is made or modified by humans for use in human activities and settlement.

Major Areas of Geographic Focus:

- ✓ The Earth, its position in the universe, and its movements (rotation and revolution).
- ✓ The different physical features that make up the Earth's surface, the forces that create and change them, and their spatial variations over time.
- ✓ The relationships between human beings and their natural environment, including their interdependence and impact on each other.
- ✓ The conditions of the lower atmosphere, resulting weather and climatic conditions, and their spatial distribution.
- ✓ The materials that make up the Earth and its diverse landforms.
- ✓ The major economic activities of humans and their impacts on the environment.

❖ *Branches of Geography*

The discipline of geography is primarily divided into two main branches: **Physical Geography** and **Human Geography**.

A. Physical Geography

This branch studies the distribution of the natural features of the world, such as climate, landforms, soils, vegetation, and drainage systems. It also considers the causes, effects, and interactions of these features.

Specialized Fields in Physical Geography:

- **Climatology:** Studies the factors that create climate, as well as the variation, distribution, causes, and effects of climate.
- **Geomorphology:** Studies the distribution of landforms (e.g., mountains, plains, valleys) and the processes (forces) that shape them.
- **Soil Geography:** Studies the distribution of different soil types and their characteristics across the earth's surface.
- **Biogeography:** Studies the distribution of plants and animals in relation to their environments.
- **Oceanography:** Studies the world's oceans, including the location, causes, and effects of currents, waves, and tides.

B. Human Geography

This branch studies the distribution and influence of human aspects of our world, including cultures, populations, settlements, economic activities, and political systems.

Specialized Fields in Human Geography:

- **Cultural Geography:** Studies the distribution and interactions of cultures, including peoples' beliefs, customs, and their movement and expansion across the earth.
- **Population Geography:** Studies the distribution, growth, density, and structure of human populations.
- **Economic Geography:** Studies the spatial distribution of the production, consumption, and exchange of goods and services, and the factors affecting these patterns.
- **Political Geography:** Studies the spatial distribution of political systems and the ways people use them to exercise power and make decisions.
- **Urban Geography:** Studies the development, characteristics, and functions of towns, cities, and other urban centers.
- **Historical Geography:** Studies the geography of the past and how places or regions have changed over time.

Geographic Inquiry Skills and Techniques

❖ *The Meaning, Components, and Uses of Maps*

A map is a simplified, diminished, and flattened representation of all or part of the Earth's surface, as if viewed from directly above (a bird's-eye view). It is a two-dimensional, scaled-down version of the real world on a flat surface like paper, a board, or a screen.

Main Features of Maps:

- **Representation:** Represents all or part of the Earth's surface (e.g., a city, a country, or the entire world).
- **Two-Dimensional:** Presented on a flat, or plane, surface.
- **Bird's-Eye View:** Shows the Earth's surface as if seen from directly above.
- **Scaled Down:** All maps are smaller than the area they represent, using a consistent ratio to maintain proportions.
- **Scaled Proportion:** Features on a map have the same relative proportions as they do in reality (e.g., a larger mountain is depicted as larger on the map).
- **Simplified:** Maps are generalized and do not show every single feature of the landscape.
- **Symbolic:** Uses universally or conventionally accepted symbols to represent natural (e.g., mountains, rivers) and man-made (e.g., roads, buildings) features.

Basic Components (Elements) of Maps

A complete map includes several key components that provide context and allow for proper interpretation. These are often found in the map's margin and are known as **Marginal**

Information.

- ✓ **Title:** Tells you the map's theme and the geographic area it represents (e.g., "Political Map of Europe," "Vegetation Zones of California").
- ✓ **Scale:** Indicates the relationship between distances on the map and corresponding distances on the ground.

- ✓ **Direction / Orientation (North Arrow):** Shows which direction is north on the map, allowing you to determine other directions.
- ✓ **Legend / Key:** Explains the meaning of all the signs, symbols, and colors used on the map.
- ✓ **Date:** The year the map was published or last updated, which helps assess whether the information is current.
- ✓ **Author / Publisher:** Identifies the copyright owner, the organization that prepared the map, and the place of publication.
- ✓ **Grid System (e.g., Latitude & Longitude):** Lines that allow for the precise identification of locations.
- ✓ **Type of Projection:** Tells the kind of projection used to transfer the Earth's curved surface onto a flat map.
- ✓ **Magnetic Declination (Variation):** Shows the angular difference between True North (geographic North Pole) and Magnetic North (where a compass needle points).
- ✓ **Source:** Indicates where the mapmaker got the data used to create the map, helping to assess its reliability.



Conventional Signs and Symbols

These are signs and symbols agreed upon by map-makers worldwide to represent features consistently. They help make maps universally understandable. Good symbols should be uniform, easy to read, and consistent in size and orientation. **Examples:**

- **Cities and Towns:** Indicated by dots, circles, or patches of shading.
- **Water Bodies:** Often printed in blue (rivers, lakes, oceans).
- **Political Boundaries:** Shown by dotted or solid lines.

	Land		Hospital
	Water		Police
	Mountains		Fire Station
	Forest		Small Town
	City		Park
	River		Road