Earth

Earth is the third planet from the Sun and the only astronomical object known to harbor life. While large volumes of water can be found throughout the Solar System, only Earth sustains liquid surface water. About 71% of Earth's surface is made up of the ocean, dwarfing Earth's polar ice, lakes, and rivers. The remaining 29% of Earth's surface is land, consisting of continents and islands. Earth's surface layer is formed of several slowly moving tectonic plates, interacting to produce mountain ranges, volcanoes, and earthquakes. Earth's liquid outer core generates the magnetic field that shapes Earth's magnetosphere, deflecting destructive solar winds.

Earth's atmosphere consists mostly of nitrogen and oxygen. Greenhouse gases in the atmosphere like carbon dioxide (CO_2) trap a part of the energy from the Sun close to the surface. Water vapor is widely present in the atmosphere and forms clouds that cover most of the planet. More solar energy is received by tropical regions than polar regions and is redistributed by atmospheric and ocean circulation. A region's climate is governed by latitude, but also by elevation and proximity to moderating oceans. In most areas severe weather, such as tropical cyclones, thunderstorms, and heatwaves, occurs and greatly impacts life.

Earth is an ellipsoid with a circumference of about 40,000 km. It is the densest planet in the Solar System. Of the four rocky planets, it is the largest and most massive. Earth is about eight light minutes away from the Sun and orbits it, taking a year (about 365.25 days) to complete one revolution. Earth rotates around its own axis in slightly less than a day (in about 23 hours and 56 minutes). Earth's axis of rotation is tilted with respect to the perpendicular to its orbital plane around the Sun, producing seasons. Earth is orbited by one permanent natural satellite, the Moon, which orbits Earth at 380,000 km (1.3 light seconds) and is roughly a quarter as wide as Earth. The Moon always faces the Earth with the same side through tidal locking and causes tides, stabilizes Earth's axis, and gradually slows its rotation.

Earth, like most other Solar System bodies formed 4.5 billion years ago from gas of the early Solar System. During the first billion years of Earth's history the ocean formed and then life developed within it. Life spread globally and began to affect Earth's atmosphere and surface, leading to the Great Oxidation Event two billion years ago. Humans emerged 300,000 years ago, and have reached a population of almost 8 billion today. Humans depend on Earth's biosphere and natural resources for their survival, but have increasingly impacted Earth's environment. Today, humanity's impact on Earth's climate, soils, waters, and ecosystems is unsustainable, threatening people's lives and causing widespread extinction of other life.[26]