5 Of Earth's Surface

Earth

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Earth is the third planet from the Sun and the only astronomical object known to harbor life. This is enabled by Earth being an ocean world, the only one in the Solar System sustaining liquid surface water. Almost all of Earth's water is contained in its global ocean, covering 70.8% of Earth's crust. The remaining 29.2% of Earth's crust is land, most of which is located in the form of continental landmasses within Earth's land hemisphere. Most of Earth's land is at least somewhat humid and covered by vegetation, while large ice sheets at Earth's polar deserts retain more water than Earth's groundwater, lakes, rivers, and atmospheric water combined. Earth's crust consists of slowly moving tectonic plates, which interact to produce mountain ranges, volcanoes, and earthquakes. Earth has a liquid...

Earth's energy budget

Earth's energy budget (or Earth's energy balance) is the balance between the energy that Earth receives from the Sun and the energy the Earth loses back

Earth's energy budget (or Earth's energy balance) is the balance between the energy that Earth receives from the Sun and the energy the Earth loses back into outer space. Smaller energy sources, such as Earth's internal heat, are taken into consideration, but make a tiny contribution compared to solar energy. The energy budget also takes into account how energy moves through the climate system. The Sun heats the equatorial tropics more than the polar regions. Therefore, the amount of solar irradiance received by a certain region is unevenly distributed. As the energy seeks equilibrium across the planet, it drives interactions in Earth's climate system, i.e., Earth's water, ice, atmosphere, rocky crust, and all living things. The result is Earth's climate.

Earth's energy budget depends on many...

Earth's magnetic field

Earth's magnetic field, also known as the geomagnetic field, is the magnetic field that extends from Earth's interior out into space, where it interacts

Earth's magnetic field, also known as the geomagnetic field, is the magnetic field that extends from Earth's interior out into space, where it interacts with the solar wind, a stream of charged particles emanating from the Sun. The magnetic field is generated by electric currents due to the motion of convection currents of a mixture of molten iron and nickel in Earth's outer core: these convection currents are caused by heat escaping from the core, a natural process called a geodynamo.

The magnitude of Earth's magnetic field at its surface ranges from 25 to 65 ?T (0.25 to 0.65 G). As an approximation, it is represented by a field of a magnetic dipole currently tilted at an angle of about 11° with respect to Earth's rotational axis, as if there were an enormous bar magnet placed at that...

Surface rupture

ground surface when an earthquake rupture along a fault affects the Earth's surface. Surface rupture is opposed by buried rupture, where there is no displacement

In seismology, surface rupture (or ground rupture, or ground displacement) is the visible offset of the ground surface when an earthquake rupture along a fault affects the Earth's surface. Surface rupture is opposed by buried rupture, where there is no displacement at ground level. This is a major risk to any structure that is built across a fault zone that may be active, in addition to any risk from ground shaking. Surface rupture entails vertical or horizontal movement, on either side of a ruptured fault. Surface rupture can affect large areas of land.

Figure of the Earth

of the Earth. The simplest model for the shape of the entire Earth is a sphere. The Earth's radius is the distance from Earth's center to its surface

In geodesy, the figure of the Earth is the size and shape used to model planet Earth. The kind of figure depends on application, including the precision needed for the model. A spherical Earth is a well-known historical approximation that is satisfactory for geography, astronomy and many other purposes. Several models with greater accuracy (including ellipsoid) have been developed so that coordinate systems can serve the precise needs of navigation, surveying, cadastre, land use, and various other concerns.

Earth's orbit

time Earth has traveled 940 million km (584 million mi). Ignoring the influence of other Solar System bodies, Earth's orbit, also called Earth's revolution

Earth orbits the Sun at an average distance of 149.60 million km (92.96 million mi), or 8.317 light-minutes, in a counterclockwise direction as viewed from above the Northern Hemisphere. One complete orbit takes 365.256 days (1 sidereal year), during which time Earth has traveled 940 million km (584 million mi). Ignoring the influence of other Solar System bodies, Earth's orbit, also called Earth's revolution, is an ellipse with the Earth–Sun barycenter as one focus with a current eccentricity of 0.0167. Since this value is close to zero, the center of the orbit is relatively close to the center of the Sun (relative to the size of the orbit).

As seen from Earth, the planet's orbital prograde motion makes the Sun appear to move with respect to other stars at a rate of about 1° eastward per solar...

Earth radius

originate within the Earth. Gravitational attraction from the Moon or Sun can cause the Earth's surface at a given point to vary by tenths of a meter over a

Earth radius (denoted as R? or RE) is the distance from the center of Earth to a point on or near its surface. Approximating the figure of Earth by an Earth spheroid (an oblate ellipsoid), the radius ranges from a maximum (equatorial radius, denoted a) of about 6,378 km (3,963 mi) to a minimum (polar radius, denoted b) of nearly 6,357 km (3,950 mi).

A globally-average value is usually considered to be 6,371 kilometres (3,959 mi) with a 0.3% variability (±10 km) for the following reasons.

The International Union of Geodesy and Geophysics (IUGG) provides three reference values: the mean radius (R1) of three radii measured at two equator points and a pole; the authalic radius, which is the radius of a sphere with the same surface area (R2); and the volumetric radius, which is the radius of a sphere...

Surface gravity

expressed as a multiple of the Earth's standard surface gravity, which is equal to g = 9.80665 m/s2 In astrophysics, the surface gravity may be expressed

The surface gravity, g, of an astronomical object is the gravitational acceleration experienced at its surface at the equator, including the effects of rotation. The surface gravity may be thought of as the acceleration due to gravity experienced by a hypothetical test particle which is very close to the object's surface and which, in order not to disturb the system, has negligible mass. For objects where the surface is deep in the atmosphere and the radius not known, the surface gravity is given at the 1 bar pressure level in the atmosphere.

Surface gravity is measured in units of acceleration, which, in the SI system, are meters per second squared. It may also be expressed as a multiple of the Earth's standard surface gravity, which is equal to

In astrophysics, the surface gravity may be...

Earth's mantle

67% of the mass of Earth. It has a thickness of 2,900 kilometers (1,800 mi) making up about 46% of Earth's radius and 84% of Earth's volume. It is predominantly

Earth's mantle is a layer of silicate rock between the crust and the outer core. It has a mass of 4.01×1024 kg (8.84×1024 lb) and makes up 67% of the mass of Earth. It has a thickness of 2,900 kilometers (1,800 mi) making up about 46% of Earth's radius and 84% of Earth's volume. It is predominantly solid but, on geologic time scales, it behaves as a viscous fluid, sometimes described as having the consistency of caramel. Partial melting of the mantle at mid-ocean ridges produces oceanic crust, and partial melting of the mantle at subduction zones produces continental crust.

Gravity of Earth

Earth's surface, the acceleration due to gravity, accurate to 2 significant figures, is 9.8 m/s2 (32 ft/s2). This means that, ignoring the effects of

The gravity of Earth, denoted by g, is the net acceleration that is imparted to objects due to the combined effect of gravitation (from mass distribution within Earth) and the centrifugal force (from the Earth's rotation).

It is a vector quantity, whose direction coincides with a plumb bob and strength or magnitude is given by the norm

g

=

?

g

?

{\displaystyle g=\|{\mathit {\mathbf {g} }}\|}

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In SI units, this acceleration is expressed in metres per second squared (in symbols, m/s2 or m·s?2) or equivalently in newtons per kilogram (N/kg or N·kg?1). Near Earth's surface, the acceleration due to gravity, accurate to 2 significant figures, is 9.8 m/s2...

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