

Earth as a cosmic matter

1. Solar system (Sun, planets, satellites, comets, meteoric matter, planetary dust – part of a galaxy – Milky way)
2. Shape and dimensions of Earth – scientific arguments (Kopernik's heliocentric system, Keplerian code of celestial entities, Newton's gravitational theory)
3. Geoid, spheroid, Earth movements (around axis, around the Sun)
4. Consequences of globular shape of Earth (unequal amount of solar radiation, zonality)
5. Consequences of Earth's rotation around axis (astral day – 23h 56min 4s, solar day – 24 hrs. – the Sun reaches the highest position in the sky twice a day)
6. Consequences of Earth's revolving around the Sun (seasons, perpendicular axis to plain of its rotation? ($66^{\circ}30'$), transition of day/night length)
7. Equinox (21.3, 23.9), solstice (21.6., 21.12.), eclipse of the Sun/Moon, perihelion (3.1.), aphelion (4.7.)
8. Zone time (24 time zones, each 15° , Slovakia = CET, summer – EET)

Homework: explanation of time shift (movement) through date line (date boundary) westwards and eastwards

Keywords

solar system, Kopernik, Kepler, Newton, geoid, spheroid, Earth movements, solar radiation, zonality, rotation, equinox, solstice, eclipse, perihelion, aphelion, zone time, CET, tidal power plant

Earth's surface and map – essentials of cartography

1. Definition of cartography, map and globe
2. Geographic coordinates (latitude, longitude) – grid reference
3. Map symbols, generalization
4. Principles (rectangular projection to topographic screen)
5. Map scale (principle) – measuring distances
6. Contours / cross-sections
7. Relations between radius (semidiameter) of Earth (6371 km) and globe (rate)
8. Maps of small, medium, large scales (1:1000000, 1:200000, 1:10000) and map plans

Keywords

cartography, map, globe, latitude, longitude, projection, map scale, topography, contours