

UNIVERSE AND SPACE VOCABULARY

Solar System structure, scale, and change over time

Astronomical Unit (AU)

nebular model of accretion

Copernicus – solar system

Kepler – elliptical orbits in planes

Galileo – optical telescopes

order: mvem(a)jsun + 3 planetoids

terrestrial vs. gas giant planets

Big Bang Theory, sequence of formation of universe and solar system.

Cosmic background radiation

Einstein – light and time

Doppler Effect

Big Bang Theory

red shift expansion

H and He formation

cosmology

blue shift contraction

Universe and Milky Way Galaxy

astronomy

galaxy size

galaxy type – spiral, elliptical, irregular

Newton - gravity

Hubble – red shift, expansion, HST

light years and parsecs

telescopes – optical, radio, X-ray, arrays

visible matter and dark matter

Planet and star movement in our skies

constellations

north star (Polaris)

parallax

Sun composition, size, life span

electromagnetic spectrum, UV, VIS light

nuclear fusion H to He

solar (ion) wind

Sun layers: core, convective zone, radiative zone,

photosphere, chromosphere, corona, sun spots

Asteroids (and comets)

asteroid belt

crater

meteor vs. meteorite

asteroids vs. comets

mass extinctions

Stars

life cycles

cepheid star

white dwarf

Hertzsprung-Russel diagram

main sequence

yellow star

color, temperature, brightness

neutron star

nuclear fusion into larger

binary stars

nova and supernova

elements depends on star

black hole

red giant

size

blue star

super giant

BIOGEOCHEMICAL CYCLES VOCABULARY

Elements – H, O, C, N

Carbon/Oxygen cycle – photosynthesis, respiration, carbon dioxide, glucose, carbohydrates, fats, digestion, decomposers, combustion

Reservoirs – hydrosphere, atmosphere, lithosphere, biosphere

Nitrogen cycle – fixation, legume and bacteria symbiosis, uptake, denitrification, amino acids, proteins, DNA, RNA, ammonia, nitrates, nitrites

Water cycle – evaporation, condensation, precipitation, transpiration, surface runoff, groundwater

ATMOSPHERE AND OCEAN VOCABULARY

Sun energy – nuclear fusion, electromagnetic spectrum, VIS, UV, solar wind

atmosphere layers – temperature gradients, troposphere, stratosphere, mesosphere, thermosphere, exosphere, ionosphere

atmosphere development – 1) H and He removed by solar wind 2) CO₂ rich from volcanic outgassing 3) current N₂ and O₂ rich from biological activity (Gaia Hypothesis)

atmosphere composition – N₂, O₂, Ar, CO₂

air movement – air masses, Coriolis Effect, trade winds, high and low pressure, density, convection, diffusion, temperature, fronts, precipitation, global wind belts, doldrums, westerlies, easterlies, sea breeze, land breeze

climate – temperature and precipitation, latitudinal belts for deserts and rainforests, elevation, orographic lifting and rain shadow, nearness of water body, earth tilt and seasons, Mediterranean

weather – temperature and isotherms, air pressure by barometer and isobars, cold front, warm front, occluded front, humidity, relative humidity, dew point, condensation on aerosols/dust, dew point, precipitation, hurricanes, typhoons, cyclones

ozone – ozone hole, Antarctica, CFCs, UV light

clouds – stratus, cumulus, cirrus, nimbus

greenhouse effect – absorption, reflection, albedo, water, CO₂, methane

global warming – carbon dioxide, methane, CFCs

atmospheric pollution – ozone, allergens, nitrates (NO_x), sulphates (SO_x), acid rain, temperature inversion

temperature – F scale, C scale, K scale, absolute zero, heat energy, conduction, convection

ocean water properties – temperature, salinity, density, NaCl, solvent, solutes, dissolved gases

ocean layers - thermocline, halocline, intertidal zone, photic zone, neritic zone, open ocean, bathypelagic, abyssopelagic, hadalpelagic

ocean deep currents – density, temperature, salinity, upwelling

ocean surface currents – wind, Coriolis Effect

hazards – storms, hurricanes, tornadoes, tsunamis, avalanches, flooding, rip tides, rogue waves

EARTH PROCESSES VOCABULARY

ocean floor topography – rifts, mid ocean ridges, magnetic striping, abyssal plain, trenches, continental shelf, guyot, hot spots

earth layers – crust, lithosphere, asthenosphere, mantle, outer core, inner core, Fe, Ni

mantle convection currents - U, Th, and K radioactivity, nuclear fission

plate tectonics – Pangaea, 7 major plates, continental drift, mid ocean ridges, subduction, trenches

plate boundaries – convergent, divergent, transform, rifts, folded mountains

earthquakes – focus, epicenter, P wave, S wave, surface wave, seismograph, Richter scale, San Andreas Fault, Calaveras-Hayward Fault

volcanoes – shield, strato, composite, ash, pumice, cinders, caldera, underwater heat vents, Ring of Fire

rock cycle – minerals, crystals, magma, intrusive igneous rock, extrusive igneous rock, metamorphic rock, sediments, sedimentary rock, fossils in sedimentary rock, cementation and compaction, superposition, chemical weathering, physical weathering, frost/ice wedging, erosion,

geologic time – Precambrian, Paleozoic, Mesozoic, Cenozoic, eras, epochs, periods, extinction events, mantle plume, asteroids, snowball earth, atmosphere development, ice ages, evolution

