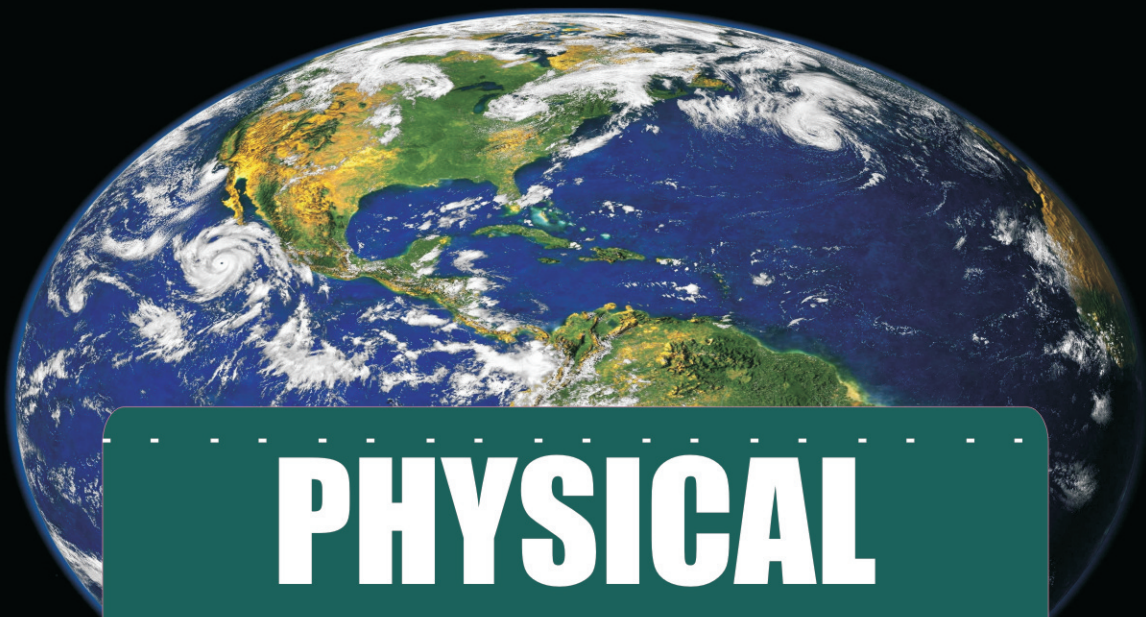


GS SCORE

Prelims 2016

REVISION NOTES



**PHYSICAL
GEOGRAPHY**

For Civil Services Examination

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PHYSICAL GEOGRAPHY TERMINOLOGIES

TERMINOLOGIES ASSOCIATED WITH OCEANOGRAPHY

Oceanography	: It is the study of the world ocean, including aspects of biology, chemistry, physics, geology, meteorology, and astronomy, among many others.
Oceans	: Oceans form a single, large, continuous body of water encircling all the landmass of the earth. They account for four-fifth of the Southern Hemisphere and three fifth of the Northern Hemisphere. They contain 97.2 percent of the world's total water.
Hydrosphere	: It includes all liquid and frozen surface waters, groundwater held in soil and rock, and atmospheric water vapour.
Continental Shelf	: The submerged margins of continental mass extending from the shore to the first prominent break are slope usually at a depth of about 120m.
Continental Slope	: The slope that extends from a continental shelf down to the ocean deep is the continental slope. Its slope varies from 2° to 5° (70 m per km.)
Abyssal Plains	: Flat, cold, sediment covered ocean floor, between the continental slopes and the oceanic ridges at a depth of 3700 to 3500 m are known as abyssal plains.
Submarine Ridges	: Submarine ridges are mountain ranges, a few hundred kilometre wide and hundreds and often thousands of kilometre in length on the floors of oceans. Running for a total length of 75,000 km, these ridges form the largest mountain systems on earth.
Ocean Trenches	: Trench is a narrow elongated depression of the deep ocean-floor oriented parallel to the trend of continent or an island arc.
Submarine Canyon	: It is a deep, V-shaped valley running roughly perpendicular to the shoreline and cutting across the edge of the continental shelf and slope.
Guyot	: A guyot is an isolated underwater volcanic mountain (seamount), with a flat top over 200 m (660 ft) below the surface of the sea.
Ocean Deeps	: Long, narrow steep sided and flat floored depressions in the oceans are known as ocean deeps.
Abyssal Hill	: It is a hill on the slope of a mid-ocean ridge about 100m high and lineated parallel to the ridge crest, formed by faulting of the basaltic oceanic crust as it moves out of the rift valley.
Mid-Ocean Ridge	: It is an undersea mountain chain where new ocean floor is produced; a divergent plate boundary.
Salinity	: Number of grams of salt per thousand grams of sea water, usually expressed in parts per thousand.

Salinity Gradient	: It is change in salinity with depth, expressed in parts per thousand per foot.
Saltation	: A term used to describe the movement of a particle being transported by wind or water which is too heavy to remain in suspension. The particle is rolled forward by the current, generates lift and rises, loses the forward momentum supplying the lift and settles to the floor, where the process is repeated. The size of the particles which can be saltated depends upon the velocity of the current and its density, e.g., water will saltate larger particles than air at the same velocity.
Waves	: Waves are oscillatory movements that result in the rise and fall of water surface.
Tides	: The rise and fall of the ocean water at a particular place are called tides. Interval between two high tides or low tides is exactly 12 hours 25 minutes. Tides are produced as a result of gravitational pull of the moon and the Sun on the earth. The highest tides in the world occur in the Bay of Fundy in Nova Scotia, Canada with the tidal bulge 15-16 m. Because there are two high tides and two low tides every day (roughly a 24 hour period); then a tide must come in within about a six hour period. As a rough estimate, the tide rises about 240 cm an hour (1,440 cm divided by 6 hours).
Spring tide	: When the sun and the moon are in a line as on a new moon or a full moon day both of them pull together at the same time in the same direction. This combined pull produces an extra large tide. It is called a spring tide.
Neap tides	: Neap tides occur when the Sun and Moon are at right angles to one another as seen from Earth.
Ocean current	: The ocean current are horizontal flow of a mass of waters in a fairly defined direction over great distances. They are like stream of water flowing through the main body of the ocean in a regular pattern. Ocean currents with higher speed are called stream and currents with lower speed are called drift.
Sediment	: These are Solid particles or masses of particles that originate from the weathering of rocks and are transported, suspended in, or deposited by air, water or ice, or by other natural agents such as chemical precipitation and organic secretion.
Terrigenous Sediments	: These are sediments derived from the land and transported to the ocean by flowing water, wind, glacier, and sea waves.
Biogenous Sediments	: They consist mainly of materials of marine organic like shells and skeletons of marine animals and plants.
Hydrogenous sediments	: They are minerals that have precipitated directly from sea water, consisting of minerals that crystallize from sea water.
Cosmogenous Sediments	: These sediments have extra-terrestrial origin. These particles enter the earth's high atmosphere as blazing meteors.
Beach	: It is (a) A gently sloping zone of unconsolidated material, typically with a slightly concave profile, extending landward from the low-water line to the place where there is a definite change in material or physiographic form (such as a cliff) or to the line of permanent vegetation (usually the effective limit of the highest storm waves); a shore of a body of water, formed and washed by waves or tides, usually covered by sand or gravel. (b) the relatively thick and temporary

	accumulation of loose water-borne material (usually well-sorted sand and pebbles) accompanied by mud, cobbles, boulders, and smoothed rock and shell fragments, that is in active transit along, or deposited on, the shore zone between the limits of low water and high water.
Backshore	: The upper or inner, usually dry, zone of the shore or beach, lying between the high-water line of mean spring tides and the upper limit of shore-zone processes; acted upon by waves or covered by water only during exceptionally severe storms or unusually high tides. It is essentially horizontal or slopes gently landward, and is divided from the foreshore by the crest of the most seaward berm.
Scarp	: It is an almost vertical slope along the beach caused by erosion by wave action. It may vary in height from a few inches to several feet, depending on wave action and the nature and composition of the beach.
Seawall	: It is a vertical, wall-like coastal-engineering structure built parallel to the beach or duneline and usually located at the back of the beach or the seaward edge of the dune.
Mean High Water	: It is the average height of all of the high waters recorded at a given place over a 19-year period.
Mean Low Water	: It is the average height of all of the low waters recorded at a given place over a 19-year period.
Mean Sea Level	: It is the average height of the surface of the sea at a given place for all stages of the tide over a 19-year period.
Lagoon	: It is a shallow body of water, as a pond or lake, usually connected to the sea.
Littoral Drift	: It is the sedimentary material moved in the littoral zone under the influence of waves and currents.
Littoral Transport	: It is the movement of littoral drift in the littoral zone by waves and currents. Includes movement parallel (longshore transport) and perpendicular (on/offshore transport) to the shore.
Nekton	: It is the aggregate of actively swimming animals in a body of water ranging from microscopic organisms to whales.
Plankton	: It is the aggregate of small plant and animal organisms that float or drift in great numbers in fresh or salt water.
Sea Cave	: It is formed as wave action by hollowing out the cliff.
Sea Cliff	: It is steep slope produced when waves erode and undercut rock.
Sand Bar	: It is a long underwater ridge formed by sand deposited offshore.
Sea Arch	: It is formed when sea caves on either side of a headland join.
Sea Stack	: It is column of rock remaining after the collapse of a sea arch.
Sonar	: It is a measuring instrument that sends out an acoustic pulse in water and measures distances in terms of the time for the echo of the pulse to return.

Sublittoral	: It is the Benthic zone from the low-tide line to the seaward edge of the continental shelf; the subtidal zone.
Submergent Coastline	: It is a landform formed when sea level rises or when land sinks.
Thermocline	: It is a distinctive temperature transition zone that separates an upper layer that is mixed by wind (the epilimnion) and a colder, deep layer that is not mixed (the hypolimnion).
Tombolo	: It is a ridge of sand that connects an island to the mainland or to another island.
Tsunamis	: It is a giant wave caused by an earthquake on the ocean floor.
Wave-Built Terrace	: It is an extension to a wave-cut terrace formed by erosional material deposited offshore.
Wave-Cut Terrace	: It is a level surface formed by wave erosion of coastal bedrock beneath the surf zone, may be visible at low tide.
Emergent Coastline	: It is a Coastline that results from either a drop of sea level or an uplifting of the land.
Coral Reef	: Coral is a marine polyp capable of secreting calcium carbonate to build an external skeleton. The term is often used to describe the coral fossils which build the reef from limestone's of sedimentary formations.
Fringing Reefs	: A coral reef, which is attached to the shore, either as a continuous wave washed erosion platform or separated from the coastline by shallow lagoon. Beyond its seawards margin the ocean water deepens rapidly.
Barrier Reef	: This is an elongated accumulation of corals lying at low tide level parallel to the coast, but separated by a wide and deep lagoon or strait.
Atoll	: Atoll is a ring – shaped island that encircles a central lagoon. Atolls are mainly found in the Pacific Ocean – the Fiji atolls, Lakshadweep, Maldives.
Coral bleaching	: Coral bleaching is the loss of zooxanthellae through either expulsion or loss of algal pigmentation. Coral bleaching is a generalized stress response of corals and can be caused by a number of biotic and abiotic factors.
Blue Mud	: These are the sediments derived from rocks containing Iron Sulphide and decomposed organic content.
Red mud	: These are the sediments derived from rocks containing Iron Oxide.
Green Mud	: These are the color of blue mud changes into green due to reaction with sea water. It contains silicates of potassium and glauconites.
Coral Mud	: These are derived from coral reefs located on continental shelf.
Neretic Matter	: It contains skeletons of marine organisms and plant remains. These include shells of molluscs, skeletons of radiolarians and spicules of sponges, calcareous and siliceous plant remains.
Pelagic Matter	: It consists of matter derived from algae and they are generally referred to as ooze.

Major Ocean Currents		
Agulhas Current	Indian	Warm
Alaska Current	North Pacific	Warm
Benguela Current	South Atlantic	Warm/Cool
Brazil Current	South Atlantic	Warm
California Current	North Pacific	Cool
Canaries Current	North Atlantic	Cool
East Australian Current	South Pacific	Warm
Equatorial Current	Pacific	Warm
Gulf Stream	North Atlantic	Warm
Humboldt (Peru) Current	South Pacific	Cool
Kuroshio (Japan) Current	North Pacific	Warm
Labrador Current	North Atlantic	Cool
North Atlantic Drift	North Atlantic	Warm
North Pacific Drift	North Pacific	Warm
Oyashio (Kamchatka) Current	North Pacific	Cool
West Australian Current	Indian	Cool
West Wind Drift	South Pacific	Cool

TERMINOLOGIES ASSOCIATED WITH CLIMATOLOGY

Climatology	: Climatology is the science studying climates and their influence on other components of the environment.
Atmosphere	: It is the envelope of air surrounding the earth. The most abundant among its constituents are nitrogen and oxygen.
Troposphere	: It is the layer of the atmosphere extending from the earth's surface up to the tropopause (about 10 km above the ground). It is 18 km at Equator and 13 km at poles. All weather phenomena are confined to troposphere.
Tropopause	: It is the boundary between the troposphere and the stratosphere.
Stratosphere	: It is the layer of the atmosphere above the troposphere and below the mesosphere (between 10 km and 50 km), generally characterized by an increase in temperature with height. It has ozone layer which absorbs ultraviolet rays.
Stratopause	: It is the boundary between the stratosphere and the mesosphere.

Mesosphere	: It is the atmospheric layer between the stratosphere and the thermosphere, located at an average elevation between 50 and 80 km above the earth's surface.
Exosphere	: This is the uppermost layer of the atmosphere extending beyond the ionosphere.
Absolute humidity	: It is the amount of water vapour present in a unit volume of air; usually expressed as gram per cubic meter.
Adiabatic	: This term refers to changes taking place in the pressure and temperature of a gas, air for example, when heat is neither added nor taken from it. Adiabatic cooling refers to the fall in temperature of air when it is rising upwards. Likewise when descending, the air is adiabatically warmed up. This cooling and warming is a result of uplift or descent of air. The adiabatic rate is different from the lapse rate which refers to the fall in the temperature of air which is stable, that is in the latter case air neither ascends nor descends but temperature is measured at varying heights within a stable air column. Diabetic rate varies according to the moisture content of air. Dry air-cools comparatively more rapidly when subjected to uplift than does wet or saturated air.
Advection	: It is the transfer of heat through horizontal movement of air.
Temperature Inversion	: It is the condition when the temperature is found to be increasing instead of decreasing with height.
Advection Inversion	: When the warm air passes over a cold water surface it leads to advection inversion of temperature.
Frontal Inversion	: When differing air masses are brought together by converging movements, the warmer air being relatively higher tends to overlies the colder and denser air below in a horizontal layer leads to frontal inversion.
Convection	: It is the transmission of heat from one part of a liquid or gas to another by movement of the particles themselves.
Convection current	: Due to instability in air some vertical motions in the atmosphere are set up which are more or less in the form of currents.
Conduction	: Conduction is a process in which heat is transferred directly through matter from a point of high temperature to a point of low temperature by molecular impact without overall movement of the matter itself.
Radiation	: The process by which a body emits radiant energy (energy received from the sun). It causes loss of heat, and therefore, leads to cooling.
Insolation (incoming solar radiation)	: The amount of solar energy reaching the earth's surface per unit time per sq. cm. Insolation is measured with the help of Pyranometer.
Albedo	: It is the proportion of solar radiation on a non-luminous body which the latter reflects. In other words, it is the reflective quality of a surface.
Planetary winds	: The general distribution of winds throughout the lower atmosphere is known as planetary winds. Confined within some latitudinal belts, these winds blow rather regularly throughout the year and are basically controlled by the latitudinal pressure belts. The main planetary winds are (i) the North-east and the South-east Trade winds (ii) the Temperate Westerlies and (iii) the Polar Easterlies, which blow from the polar high pressure area to the temperate low pressure area.

Trade winds	: Trade winds blow in a belt lying between 5°N-30°N in the northern hemisphere and 5°S-30°S in the southern hemisphere. From the equator ward side of the Sub-tropical highs in the Northern hemisphere air flows towards the Equatorial low but it is deflected right according to Ferrell's law and as a result instead of blowing as northerly wind, it bends westward to become North-east trade winds. In the Southern hemisphere winds originating from the Sub-tropical high pressure and blowing towards the Equatorial low pressure are similarly deflected westward to become the prevailing South-east trades.
Horse Latitudes	: These are the subtropical belts that lie between the latitudes 25° and 35° South and North. They coincide with the sub-tropical high-pressure belts.
The Westerlies	: The Westerly winds blow across latitudes 35°-60° of both hemispheres. The air streams flowing pole wards from the Sub-tropical high pressure areas deflects eastward in the Northern hemisphere to form South-westerlies. Similar winds in the Southern hemisphere are known as North-westerlies.
The Polar easterlies	: The Polar easterlies blow from the Polar high pressure area to the Temperate low pressure area. On their equator ward journey they are deflected westward to become North easterlies in the Northern hemisphere and South easterlies in the Southern hemisphere.
Monsoon winds	: The type of wind system in which there is a complete or almost complete reversal of prevailing direction from season to season is known as the monsoon winds.
Land breeze	: It is a common local wind that affects only coastal area. During the night the land becomes very much cooler than the sea as land is quickly chilled than the sea. The air adjacent to the surface is also chilled with the result that there is a marked high pressure over land. Thus the cooler, heavier, denser air over the land flows towards the sea and land breeze occurs.
Sea breeze	: Unlike land breeze it blows the opposite way from the sea to the land. During the day land becomes quickly heated compared to sea with the result there is a marked low pressure over the land. Thus air is drawn into the land from the comparatively high pressure area of the adjacent seas or oceans. The southerly sea breeze in summer is highly welcome in Kolkata.
Brickfielder	: Blows from the desert of Australia in Summers (Dec., Jan.)
Chili	: A hot dry wind which blows southerly from the Sahara desert to the Mediterranean sea through Tunisia.
Karaburn	: (Tarim Basin of China) – Blows from March to July. Hazy weather, helps in loess deposits of China.
Khamsin	: Hot wind Blows for 50 days (April to June) in Egypt.
Loo	: Blow in the months of May and June in North West India.
Sirocco	: (Algeria) Blows from the Sahara desert towards Malta and Sicily – April to July. It becomes hot and humid.
Zonda	: (Argentina and Uruguay) – A warm and dry wind.

Fohn (Foehn, Fon)	: Blows northwards from the Alps in the upper Rhine Valley.
Chinook (Snow and Ice-eater)	: Blows in U.S.A. (Colorado, Wyoming, Montana, N. Dakota, Oregon and Washington) and in Canada (Alberta, Manitoba, Mackenzie). Period December to April. Warm and dry. It melts the winter snow and ice.
Andhi (Dust Storm)	: Blows in May and June in North West India.
Air stability and instability	: Tendency of air in a particular region to rise upwards. If the temperature of a given parcel of air is higher than the temperature of surrounding air, it tends to rise upwards and this condition is called instability. On the other hand, an air parcel with a temperature lower than or equal to that of the surrounding air tends to descend or stay at its original position. This is called air stability and the concerned parcel of air is called stable air.
Aurora Australis and Borealis	: The light phenomena seen in the sky at night in the higher latitudes of the southern and northern hemisphere respectively. Aurora comprises an electrical discharge and is usually accompanied by a magnetic storm.
Barometer	: It is an instrument used for measuring pressure. A self-recording barometer giving a continuous record of pressure conditions in the form of a line graph is called a barograph and the graph thus provided is called a barogram.
Cloud	: A mass of tiny water droplets or ice crystals formed by condensation of water vapour in the atmosphere.
Cirrus Clouds	: Cirrus are short, detached, hair-like clouds found at high altitudes. These delicate clouds are wispy with a silky sheen or look like tufts of hair. In the day time, they are whiter than any other cloud in the sky. While the sun is setting or rising, they may take on the colours of the sunset.
Cirrostratus clouds	: It is the transparent, whitish veil clouds with a fibrous (hair-like) or smooth appearance.
Cirrocumulus clouds	: These are lots of small white clouds - called cloudlets - grouped together at high levels. Composed almost entirely from ice crystals, the little cloudlets are regularly spaced, often arranged as ripples in the sky. They are relatively rare, and unlike altocumulus clouds, never have any shading.
Cirrostratus clouds	: Cirrostratus are transparent high clouds covering large areas of the sky. They sometimes produce white or coloured rings, spots or arcs of light around the sun or moon that are known as halo phenomena.
Altostratus clouds	: Altostratus are large mid-level thin grey or blue coloured clouds. Usually composed of a mixture of water droplets and ice crystals
Nimbostratus clouds	: These are dark grey or bluish grey featureless layers of clouds, thick enough to block out the sun. These mid-level clouds are often accompanied by continuous heavy rain or snow and cover most of the sky.
Stratus Clouds	: Stratus clouds are very low-level grey layers or patches of clouds with fuzzy edges. They are the lowest clouds and sometimes appear at ground level in the form of mist or fog.

Cumulonimbus clouds	: These are heavy and dense low-level clouds, extending high into the sky in towers, plumes or mountain shaped peaks. Commonly known as thunderclouds.
Cumulus clouds	: These are detached cauliflower shaped clouds usually spotted in fair weather.
Stratocumulus Clouds	: These are low-level clumps or patches of cloud varying in colour from bright white to dark grey.
Condensation	: The process by which a substance changes from vapour to liquid.
Condensation Nuclei	: Microscopic particles having an affinity for water these serve as the nuclei for the formation of raindrops. The presence of these particles in the atmosphere is necessary for condensation to occur.
Precipitation	: Precipitation is the term given to rain, drizzle, dew, hail, snow and other forms of moisture from the atmosphere which reaches the ground.
Convective Precipitation	: The convective precipitation occur in the areas of intense heat and abundant supply of moisture.
Orographic Precipitation	: The type of precipitation resulting from a vertical uplift of an air stream by the topographic barrier (mountains).
Cyclonic or Frontal Precipitation	: Cyclonic precipitation occurs when deep and extensive air masses converge and move upward which lead to their adiabatic cooling.
Rain	: Rain is defined as being water droplets of 0.5mm or greater.
Drizzle	: Droplets smaller than half a millimeter are classified as drizzle.
Eclipse	: Partial or full obstruction of the moon when the earth comes between the sun and the moon is called lunar eclipse. It occurs usually on the day of the full moon. A partial or complete obstruction of the sun because of the presence of the moon between the sun and the full moon. A partial or complete obstruction of the sun because of the presence of the moon between the sun and the earth is called the solar eclipse and it occurs on the day of the new moon, that is, on the day the moon is not visible.
Ecliptic	: The apparent track of the sun throughout the year as a result of the motion of the earth around it. The plane of the ecliptic is the plane passing through this path and is coincident with the plane of the earth's orbit.
Equinox	: The time of the year when the sun appears vertically overhead at noon at the equator and days and nights are equal on all points on the earth surface.
Fog	: A dense mass of small water drops or smoke or dust particles in the lower layers of the atmosphere.
Air mass	: It is a mass of air, more or less homogeneous in character, in terms of temperature, pressure and humidity conditions. It develops generally over large surface areas having almost uniform characteristics in terms of temperature, pressure and humidity conditions.
Front	: It is the line of separation at the earth's surface between cold and warm air masses. Like the air masses, the fronts can be cold and warm.

Anticyclones	: Anticyclones or high pressure systems are atmospheric circulations that rotate anti-clockwise in the Southern Hemisphere. Anticyclones are areas of higher pressure and are generally associated with lighter winds and fine and settled conditions.
Mid-latitude cyclones	: Mid-latitude cyclones or low pressure systems are atmospheric circulations that rotate clockwise in the Southern Hemisphere (anti-clockwise in the Northern Hemisphere). Cyclones are areas of lower pressure and generally associated with stronger winds, unsettled conditions, cloudiness and rainfall.
Tropical cyclones	: Tropical cyclones, which are called hurricanes in the Northern Hemisphere, are intense low pressure systems which form over warm ocean waters at low latitudes. Tropical cyclones are associated with strong winds, torrential rain and storm surges (in coastal areas). Tropical cyclones can cause extensive damage as a result of the strong wind, and flooding (caused by either heavy rainfall or ocean storm surges).
El Niño	: El Niño is a climate cycle in the Pacific Ocean with a global impact on weather patterns. The cycle begins when warm water in the western tropical Pacific Ocean shifts eastward along the equator toward the coast of South America. Normally, this warm water pools near Indonesia and the Philippines. During an El Niño, the Pacific's warmest surface waters sit offshore of northwestern South America.
La Nina	: La Niña is the positive phase of the El Niño Southern Oscillation and is associated with cooler than average sea surface temperatures in the central and eastern tropical Pacific Ocean.
Weather	: Condition of the atmosphere at a certain time or over a certain period of time, as described by meteorological phenomena, including temperature, atmospheric pressure and humidity.
Willy-Willy	: Tropical cyclone in the Pacific near the east coast of Australia.
Global Heat Budget	: The global heat budget is the balance between incoming and outgoing solar radiation. Incoming solar energy varies at different times of year and for different locations across the globe.
Greenhouse Effect	: The greenhouse effect is a natural physical process where certain trace gasses in the atmosphere, known as greenhouse gasses, warm the earth. The enhanced greenhouse effect refers to the addition of more heat trapping gases to the atmosphere. The extra greenhouse gases are not 'natural' in origin, and are primarily due to the burning of fossil fuels (coal, oil and natural gas), with smaller contributions from land use changes, such as land clearing. The increased concentrations of greenhouse gases in the atmosphere are contributing to a warming of the earth's surface.
Greenhouse Gas (GHG)	: Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride.

Aerosols	: These are small particles or liquid droplets in the atmosphere that can absorb or reflect sunlight depending on their composition.
Black Carbon Aerosol	: Black carbon (BC) is the most strongly light-absorbing component of particulate matter (PM), and is formed by the incomplete combustion of fossil fuels, biofuels, and biomass. It is emitted directly into the atmosphere in the form of fine particles (PM _{2.5}).
Carbon Dioxide	: It is a naturally occurring gas, and also a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes. It is the principal human caused greenhouse gas that affects the Earth's radiative balance. It is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential of 1.
Ozone	: Ozone, the triatomic form of oxygen (O ₃), is a gaseous atmospheric constituent. In the troposphere, it is created by photochemical reactions involving gases resulting both from natural sources and from human activities (photochemical smog). In high concentrations, tropospheric ozone can be harmful to a wide range of living organisms. Tropospheric ozone acts as a greenhouse gas. In the stratosphere, ozone is created by the interaction between solar ultraviolet radiation and molecular oxygen (O ₂). Stratospheric ozone plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric ozone, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet (UV-) B radiation.
Carbon Footprint	: The total amount of greenhouse gases that are emitted into the atmosphere each year by a person, family, building, organization, or company. A person's carbon footprint includes greenhouse gas emissions from fuel that an individual burns directly, such as by heating a home or riding in a car. It also includes greenhouse gases that come from producing the goods or services that the individual uses, including emissions from power plants that make electricity, factories that make products, and landfills where trash gets sent.
Carbon Capture and Sequestration	: Carbon capture and sequestration (CCS) is a set of technologies that can greatly reduce carbon dioxide emissions from new and existing coal- and gas-fired power plants, industrial processes, and other stationary sources of carbon dioxide. It is a three-step process that includes capture of carbon dioxide from power plants or industrial sources; transport of the captured and compressed carbon dioxide (usually in pipelines); and underground injection and geologic sequestration, or permanent storage, of that carbon dioxide in rock formations that contain tiny openings or pores that trap and hold the carbon dioxide.
Climate Change	: Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.
Heat Island	: An urban area characterized by temperatures higher than those of the surrounding non-urban area. As urban areas develop, buildings, roads, and other infrastructure replace open land and vegetation. These surfaces absorb more solar energy, which can create higher temperatures in urban areas.

TERMINOLOGIES ASSOCIATED WITH GEOMORPHOLOGY

Geomorphology	: It is the study of the character and origin of landforms, such as mountains, valleys, etc.
Lithosphere	: The rocky, solid portion of the earth's crust, from the top of Mount Everest to the bottom of Mariana trench, is called as lithosphere. Lithosphere also includes the solid portion of the upper layer of the mantle.
Crust	: It is the Earth's surface or the outer shell, composed of solid rock and is having thickness in between 0 to 100 kilometres.
Oceanic crust	: It is the part of the Earth's surface that lies below the oceans. Oceanic crust is denser than the continental crust and hence generally lies below sea level.
Continental crust	: It is the layer varying in thickness from 20 to 45 mi and composed mainly of granite. It forms a number of distinct landforms : the continents.
Mantle	: It is the layer within the earth's interior lying beneath the crust and above the core. This extends from beneath the core and goes deep down to 2,900 km inside the earth. This layer is mostly solid state.
Lower mantle	: It is the layer with a thickness of about 1,420 mi; its slow-moving currents, called convection currents, are caused by temperature variations.
Upper mantle	: It is the layer of hard rock nearly 390 miles thick; it is made up of the asthenosphere and the base of the lithosphere.
Asthenosphere	: It is the layer of the upper mantle with a thickness of 125 mi; it is composed of molten rock, on top of which the lithospheric plates slide.
Core	: It is the innermost part of the interior of the earth is the core, lying beneath the mantle and extends deep down to approximately 6,300 km inside the earth.
Outer core	: It is composed of molten metal, it is 1,130 mi thick; the magnetic field is caused by electric currents circulating inside the outer core.
Inner core	: It is composed of iron and nickel, it is subject to so much pressure that it remains in a solid state in spite of temperatures higher than 9,000°F; its diameter is 1,000 mi.
Mohorovicic discontinuity:	It is the Zone that separates the Earth's crust from the asthenosphere.
Gutenberg discontinuity	: It is the Zone separating the lower mantle from the core; it is located at a depth of about 1,800 mi.
Tectonic Plate	: It consists of the two sub-layers of the earth's crust (lithosphere) that move, float, and sometimes fracture and whose interaction causes continental drift, earthquakes, volcanoes, mountains, and oceanic trenches.
Major Plates	: The seven major plates are the African plate, Antarctic plate, Eurasian plate, Indo-Australian plate, North American plate, Pacific plate and South American plate.
Plate tectonics	: It is the theory that states that the earth's crust is broken into about fragments (plates,) which move in relation to one another, shifting continents, forming new ocean crust, and causing volcanic eruptions.

Convergent plate boundaries	: It is the boundary at which plates collide, triggering either subduction or folding, which results in the creation of mountains. Convergence collision often leads to the occurrence of : i) explosive type of volcanic eruptions, ii) deep foci earthquake, iii) formation of folded mountains, arcs, festoons, oceanic trenches, etc. Plate collisions are of three types : a) continent-ocean plate collision b) ocean-ocean plate collision c) continent-continent plate collision.
Divergent plate boundaries	: It is the boundary at which plates are moving apart, causing magma to appear, which solidifies to generate a new crust. Divergent Movement results in: i) volcanic activities of fissure flow of basaltic magma, ii) creation of new oceanic crust, iii) formation of submarine mountain ridges and rises, iv) creation of transform faults, v) occurrence of shallow focus earthquake, vi) drifting of oceanic plate, etc. Mountain building is not associated with this type of movement.
Conservative plate boundaries	: It occurs when two plates glide past one another and there is neither creation nor destruction of the crust. It is also known as transform fault.
Subduction	: It is the phenomenon by which an oceanic plate slides under a continental plate or under another oceanic plate, resulting in a trench.
Endogenetic Forces	: These are the forces which originate inside the earth are called endo-genetic forces. These forces cause two types of movements inside the earth : <i>Horizontal movement, and vertical movements.</i>
Diastrophic forces	: These include both vertical and horizontal movements which are caused due to forces deep within the earth. These diastrophic forces operate very slowly and their effects become discernible after thousands and millions of years. These forces are also termed as constructive forces, affect large areas of earth and produce meso-level reliefs such as mountains, Plains, Plateaus, lakes, big faults etc. These diastrophic forces and movements further subdivided in to Epeirogenetic movement and Orogenetic movements.
Folding	: Folding is the bending of rock strata due to compression. Upfolds are called anticlines and downfolds synclines.
Fault	: A crack or fracture in the earth's surface in which there has been movement of one or both sides relative to the other. Movement along the fault can cause earthquakes or, in the process of mountain-building, can release underlying magma and permit it to rise to the surface as a volcanic eruption.
Strike-slip fault	: A nearly vertical fault with side-slipping displacement.
Normal Fault (Tension)	: The faults having mainly vertical movement are called normal faults. A normal faults results in a seep, straight cliff like feature.
Reverse fault (Compression)	: One side of the fault moves upward vertically in comparison to the other side.
Volcanoes	: Volcano is an opening in the crust of the earth, connected by a conduit to an underlying magma chamber from which molten lava, gases, steam and solid materials are ejected. Active volcanoes are erupting currently or have erupted recently. Dormant are those volcanoes which have erupted at least once in human history and are not active now. Extinct volcanoes are those which have not erupted during long human history.

Magma	: It is the molten rock beneath the surface of the earth.
Lava	: Magma which has reached the surface through a volcanic eruption. The term is most commonly applied to streams of liquid rock that flow from a crater or fissure. It also refers to cooled and solidified igneous rock.
Earthquakes	: Earthquakes are vibrations of earth caused by folding and faulting. Most of the earthquakes of the world occur in two belts namely the Circum Pacific and Mid world mountain belts
Seismic Focus	: The point within the earth's crust where an earthquake originates is called the focus.
Epicentre	: The point vertically above the focus on the earth's surface is known as 'epicentre'.
Seismic waves	: These are the waves of energy caused by the sudden breaking of rock within the earth or an explosion. They are the energy that travels through the earth and is recorded on seismographs.
Body waves	: They travel through the interior of the Earth. They follow ray paths refracted by the varying density and stiffness of the Earth's interior which in turn, vary according to temperature, composition, and phase. Body waves are divided as P waves and S waves.
P-waves (primary waves)	: These are compression waves that are longitudinal in nature. These waves can travel through any type of material, and can travel at nearly twice the speed of S waves.
S-waves (secondary waves)	: These are shear waves that transverse in nature. S waves can travel only through solids, as fluids (liquids and gases) do not support shear stresses.
Surface waves	: These are analogous to water waves and travel along the Earth's surface. Because of their low frequency, long duration, and large amplitude, they can be the most destructive type of seismic wave.
Rayleigh waves	: These are surface waves that travel as ripples with motions that are similar to those of waves on the surface of water.
Love waves	: These are surface waves that cause circular shearing of the ground.
Mountain	: A portion of land rising considerably above the surrounding country either as a single eminence (Kilimanjaro) or in range (Himalayas, Rockies, Andes), is known as 'mountain'.
Volcanic mountains	: These form when molten rock from deep inside the Earth erupts through the crust and piles up on itself. The island chain of Hawaii is actually the tops of volcanoes.
Dome Mountains	: When magma pushes the crust up but hardens before erupting onto the surface, it forms so-called dome mountains. Wind and rain pummel the domes, sculpting peaks and valleys. Examples include the Black Hills of South Dakota and the Adirondack Mountains of New York.
Plateau mountains	: These are form as colliding tectonic plates push up the land without folding or faulting. They are then shaped by weathering and erosion.

Plains	: A plain is a broad area of relatively flat land. Plains are one of the major landforms, or types of land, on Earth. They cover more than one-third of the world's land area. Plains exist on every continent. Examples include the Eurasian Plains and the Russian Steppes.
Plateau	: It is the vast expanse of relatively flat land, higher than the surrounding region and bounded by deep valleys with sheer cliffs.
Weathering	: It is physical and chemical changes within the rock materials that take place as a result of its exposure to the subaerial environment.
Physical Weathering	: When rock is broken and disintegrated without any chemical alternation, the process is called as physical weathering. Physical weathering is caused by (i) changes in temperature, (ii) Frost action, (iii) Expansion and contraction of rocks, (iv) Hydration and (v) Plant roots.
Chemical Weathering	: Chemical weathering is mainly brought about by the action of substance dissolved in water. It mainly occurs in the hot and humid climates where heat and moisture are in abundance.
Biological Weathering	: Algae, mosses, lichen and other vegetation retain water on the surface of the rock and the various humus, acids help to decay the rock beneath, which leads to biological weathering.
Mass Wasting	: It is the processes that occur on slopes, under the influence of gravity. Gravity facilitates the down slope transportation of loosened, weathered materials and enables them to move without the aid of water, wind, or ice. However, these agents can act as catalysts for gravity related erosion.
Avalanche	: A large mass of snow and ice at high altitude, sliding down slope on a mountain usually a large amount of rock material is also involved in an avalanche.
Badlands	: Any region where drought and very porous soils occur together, and where erosion by wind and water has resulted in deep ravines and steep hills.
Canyon	: It is a narrow, deep, steep-sided river valley cut in the soft rocks.
Gorge	: It is a narrow and deep valley of a river whose plane passes through its centre and thus bisects it into two hemispheres.
Potholes	: These are cylindrical holes drilled into the bed of a river that vary in depth & diameter from a few centimetres to several metres. They're found in the upper course of a river where it has enough potential energy to erode vertically and its flow is turbulent.
Waterfalls	: When the rock type of the river's channel changes from a resistant rock to a less resistant one (e.g. granite to limestone), the river erodes the less resistant rock faster producing a sudden drop in the gradient of the river with the resistant rock being higher up than the less resistant rock. As the river flows over the resistant rock, it falls onto the less resistant rock, eroding it and creating a greater height difference between the two rock types, producing the waterfall.
Rapids	: These are sections of a river where the gradient of the river bed is relatively steep resulting in an increase in the river's turbulence and velocity. They form where the gradient of the river is steep and the bed is composed mainly of hard rocks.

Meanders	: These are sweeping loops or bends in the middle and lower course of the river caused by rivers developing increased sinuosity downstream.
Ox-bow lake	: It is a crescent-shaped lake formed when the main bend of a meander is cut off and becomes isolated from the main river channel.
Floodplain	: It is the part of the valley floor occasionally flooded by the river. Over time sediment or alluvium builds the elevation of the plain.
Levees	: These are natural embankments produced, ironically, when a river floods. When a river floods, it deposits its load over the flood plain due to a dramatic drop in the river's velocity as friction increases greatly
Delta	: A delta is a low, watery land formed at the mouth of a river. It is formed from the silt, sand and small rocks that flow downstream in the river and are deposited in the delta.
Zeugens (Rock Mushrooms)	: The tabular masses of more resistant rock resting on undercut pillars of softer material are known as zeugens. Zeugens vary in height from less than a meter to about 30 meters.
Yardang	: Yardangs are steep sided undercut overhanging rock ridges separated from one another by long grooves as passage ways cut in desert floors of relatively softer rocks.
Inselbergs	: It is a prominent steep sided hill of solid-rock, rising abruptly from a plain of low relief Inselbergs in desert areas are also known as 'bornhardts'.
Sand Dunes	: A mound or ridge of windblown sand is known as sand dune. They vary in shape, size, height, length and width:
Brachans	: It is a crescent shaped dune; the trips or horns of which point downwind.
Loess	: It is a windblown deposit of fine silt and dust. It is unstratified, permeable, homogenous, calcareous deposit, generally of yellow colour. The loess deposits are found away from the source regions and away from the deserts. Extensive deposits of loess are found in central Asia, Northern China, North European plains, North Africa, Argentina and central U.S.A.
Glaciated Valleys	: It is "U" shaped – the floor is smooth and the sides are vertical.
Hanging Valleys	: It is a tributary glacial valley with the floor 'hanging' above the valley floor of the main glacier Stream to which it flows.
Cirques	: It is a glacially eroded rock basin with a steep headwall and steep sidewalls surrounding an arm chair shaped depression. May be occupied by small lake (tarn).
Glacial Stairways	: They are glaciated benches in glaciated valleys.
Drumlins (Irish)	: These are hill of glacial till moraines, elliptical in shape.
Esker	: Long, narrow ridges, composed of stratified sand, silt, and gravel.
Kame	: Small alluvial cones, or small alluvial deltas.
Erratics (Boulders)	: A large rock fragment that has been transported by ice.

Outwash Plain	: It is formed by the glacio-fluvial material. Accumulation of gravel, sand, silt.
Uvalas	: Through solution and collapse, do lines may coalesce and form uvalas or valley sinks which are depressions up to several kilometers in diameters.
Polje	: It is large depression in a karst region with steep sides and flat floor. It s drained by surface water sources. It is termed as open polje, but if drained by means of shallow holes, it is closed Polje. The Livno Polje (Balkan region) is 64 km long and 5 to 11 km wide.
Caves and Caverns	: It is a natural cavity, chamber which leads beneath the surface of the earth generally in a horizontal or obliquely inclined direction.
Blind Valley	: A type of valley in karst topography. It may be occupied by a stream which disappeared underground as the valley lower end as it approaches and enclosing rock well. Cosequently, the valley looks like a dark valley.
Stalactite	: These are icicles-like forms that hang from the roofs of caves. It is tapering pendent, material descending from a cave ceiling.
Stalagmite	: A columnar concretion ascending from the floor of a cave. It is formed from the precipitation.
Igneous Rocks	: Igneous rocks are called fire rocks as they solidify from a liquid magma as it cools. They are described on two axes: 1) Rocks that are quartz rich (felsic) and magnesium rich (mafic) and 2) fast cooling (small crystals) and slow cooling (large crystals).
Extrusive Rocks	: Extrusive igneous rocks solidify from molten material that flows over the earth's surface (lava). Extrusive igneous rocks typically have a fine-grained texture (individual minerals are not visible unless magnified) because the lava cools rapidly when exposed to the atmosphere, preventing crystal growth. Common extrusive rocks are basalt, andesite, and rhyolite.
Intrusive Rocks	: Intrusive rocks are formed from molten material (magma) that flows and solidifies underground. These rocks usually have a coarse texture (individual minerals are visible without magnification), because the magma cools slowly underground, allowing crystal growth. Common rock types within the intrusive category are granite and diorite.
Metamorphic Rocks	: Metamorphic rocks are any rock types that have been altered by heat, pressure, and/or the chemical action of fluids and gases. Some examples of metamorphic rocks are: Limestone being changed into marble; Shale turning into slate; Granite being changed into gneiss and Sandstone turning into quartzite.
Sedimentary Rocks	: Sedimentary rocks are the types of rocks that are created from deposition of layers upon layers of sediments over time. These types of rocks are formed on the Earth's surface, as well as underwater. The sediments that compose these rocks may be of organic, chemical or mineral origin. Some common sedimentary rocks are shale, sandstone, limestone, and conglomerate.