

General Awareness

Geography

Structure of the Atmosphere

Layer	Altitude Range	Key Characteristics	Importance
Troposphere	0 – 12 km	<ul style="list-style-type: none"> - Weather phenomena occur here - Contains 75% of total atmospheric mass - Temperature decreases with height (6.5°C/km) 	<ul style="list-style-type: none"> - Life exists here - Aircraft fly in lower troposphere
Stratosphere	12 – 50 km	<ul style="list-style-type: none"> - Contains Ozone layer - Temperature increases with height due to ozone absorption 	<ul style="list-style-type: none"> - Protects Earth from UV radiation - Ideal for jet aircraft
Mesosphere	50 – 80 km	<ul style="list-style-type: none"> - Coldest layer - Temperature decreases with height - Meteors burn here 	<ul style="list-style-type: none"> - Protects Earth from meteors
Thermosphere	80 – 500 km	<ul style="list-style-type: none"> - Temperature increases rapidly - Auroras occur - Space shuttles orbit here 	<ul style="list-style-type: none"> - Radio communication is possible due to ionosphere
Exosphere	500 km & beyond	<ul style="list-style-type: none"> - Outer most layer - Very thin gases - Gradually merges with space 	<ul style="list-style-type: none"> - Contains hydrogen and helium

Composition of Atmosphere (by Volume)

Gas	Percentage (%)	Role
Nitrogen (N ₂)	78.08%	Maintains pressure & dilutes oxygen
Oxygen (O ₂)	20.95%	Essential for respiration
Argon (Ar)	0.93%	Inert gas
Carbon Dioxide (CO ₂)	0.04%	Controls Earth's temperature (greenhouse effect)
Others (Ne, He, CH ₄ , etc.)	Trace	Affect climate, radio signals, etc.
Water Vapour	0–4% (variable)	Responsible for weather processes

Atmospheric Pressure Zones

Zone	Latitude Range	Pressure Type	Winds Associated
Equatorial Low	0°	Low Pressure	Trade Winds
Subtropical High	30° N/S	High Pressure	Westerlies
Subpolar Low	60° N/S	Low Pressure	Polar Easterlies
Polar High	90° N/S	High Pressure	Polar Winds

Atmospheric Phenomena & Instruments

Phenomenon / Term	Definition / Tool	Notes
Barometer	Measures atmospheric pressure	Mercury or aneroid
Hygrometer	Measures humidity	Used in weather stations
Rain Gauge	Measures rainfall	Simple cylinder type
Ozone Layer	Absorbs UV rays	Found in Stratosphere
Greenhouse Effect	Warming of Earth due to gases	CO ₂ , CH ₄ , H ₂ O are key gases
Aurora	Light display in polar skies	Occurs in Thermosphere
Ionosphere	Reflects radio waves	Part of Thermosphere

Temperature-Related Terms

Term	Meaning	Effect
Inversion of Temperature	Temperature increases with height	Found in winter/nights/valleys
Albedo	Reflectivity of Earth's surface	Snow = high albedo, forests = low
Isotherm	Line joining places with same temperature	Used in climate maps

Water in the Atmosphere

Concept	Definition / Description	Important Facts & SSC Points
---------	--------------------------	------------------------------

Humidity	Amount of water vapor present in the air	Measured by hygrometer or psychrometer
Absolute Humidity	Actual amount (grams) of water vapor in 1 cubic meter of air	Unit: g/m ³
Relative Humidity (RH)	% of moisture in the air compared to its capacity at that temperature	$RH = (\text{Actual humidity} / \text{Saturation humidity}) \times 100$
Dew Point	Temperature at which air becomes saturated and dew begins to form	If RH = 100%, dew forms
Evaporation	Process by which liquid water turns into vapor	Faster in high temperature, wind, and low humidity
Condensation	Process by which water vapor turns into liquid	Forms dew, fog, clouds, etc.
Precipitation	Any form of water that falls from clouds to Earth	Includes rain, snow, hail, sleet
Clouds	Mass of condensed water vapor floating in the atmosphere	Formed by condensation of moist air
Types of Clouds	1. Cirrus – high, feathery, no rain 2. Cumulus – puffy, fair weather 3. Stratus – layered, can bring drizzle 4. Nimbus – rain-bearing	“Nimbus” = precipitation clouds like nimbostratus
Rainfall Types	1. Convictional – due to surface heating 2. Orographic – due to mountains 3. Cyclonic (Frontal) – due to meeting of hot & cold air masses	India gets monsoonal & orographic rainfall
Fog	Condensed water vapor near Earth's surface	Reduces visibility; common in winter
Mist	Lighter than fog; visibility more than 1 km	Occurs in slightly humid conditions
Dew	Water droplets formed by condensation on cool surfaces	Common on grass during early morning
Frost	Frozen dew due to below-zero temperatures	Common in winter in temperate zones
Hail	Frozen raindrops that form during thunderstorms	Spherical ice pellets; damaging to crops
Snow	Ice crystals formed when temperature is below freezing	Common in high altitudes and poles
Transpiration	Release of water vapor from plants	Combined with evaporation = Evapotranspiration
Hydrological Cycle	Continuous circulation of water through evaporation, condensation, precipitation, and collection	Also called water cycle ; crucial for life
Latent Heat of Vaporization	Energy absorbed to convert water to vapor without temperature change	Important for cloud formation and rainfall

Wind System

Concept / Term	Definition / Description	Key SSC Notes / Examples
Wind	Horizontal movement of air from high pressure to low pressure	Measured by anemometer (speed) and wind vane (direction)
Cause of Wind	Uneven heating of Earth's surface creates pressure differences	Influenced by temperature , Coriolis force , and Friction
Pressure Gradient Force	Force that moves air from high to low pressure	Stronger gradient = faster winds
Coriolis Effect	Deflection of winds due to Earth's rotation	Right in Northern Hemisphere, left in Southern
Frictional Force	Resistance near Earth's surface, reduces wind speed	Stronger near ground level
Geostrophic Wind	Winds parallel to isobars due to balance of Coriolis & pressure gradient	Found at higher altitudes
Types of Winds	1. Permanent (Planetary) 2. Periodic 3. Local	Classified based on duration and cause

Permanent (Planetary) Winds

Wind Type	Direction & Region	Important Facts
Trade Winds	Blow from subtropical high (30°) to equatorial low (0°) NE in NH, SE in SH	Important for monsoon formation in India
Westerlies	From 30° to 60° latitudes	Carry temperate cyclones; stronger in SH
Polar Easterlies	From polar high (90°) to subpolar low (60°)	Very cold and dry winds

Periodic Winds

Wind Type	Cause	Key Examples
Monsoon Winds	Seasonal reversal due to differential heating of land and sea	SW Monsoon in India (June–Sept); NE Monsoon (Oct–Dec)
Land Breeze	Land cools faster at night → wind blows sea-ward	Nighttime phenomenon
Sea Breeze	Sea cools slower → wind blows landward in daytime	Cools coastal areas during day
Mountain Breeze	Cooler, heavier air flows down at night	Seen in hilly areas at night
Valley Breeze	Warm air rises from valley during day	Opposite of mountain breeze

Local Winds (Important for MCQs)

Name	Region	Nature / Effect
Loo	India, North-West plains	Hot, dry summer wind (May–June)
Chinook	USA-Canada (Rockies)	Warm, dry wind — melts snow
Foehn	Europe (Alps)	Warm wind — snow-melting, similar to Chinook
Harmattan	West Africa	Dry and dusty northeast trade wind
Mistral	France (Rhône Valley)	Cold wind from Alps to Mediterranean
Sirocco	North Africa to Southern Europe	Hot, dry, dusty wind from Sahara
Nor'easter	Eastern USA	Cold and stormy wind with rain/snow

Other Important Wind-Related Concepts

Term	Explanation	Exam Focus
Jet Streams	High-speed winds in upper troposphere (westerlies)	Affect monsoon onset & aircraft speed
Doldrums	Equatorial low pressure belt (0°) – calm area	Rising air, weak surface winds
Horse Latitudes	Subtropical highs (30° N & S) – calm and dry	Area of descending air
Anemometer	Measures wind speed	Unit: km/h or m/s
Wind Vane	Shows wind direction	Always points <i>into</i> the wind

Major Ocean Currents

Ocean Current Name	Ocean	Coast/Region	Temperature Type	Important Facts for SSC
Gulf Stream	Atlantic	East coast of North America (Florida to Europe)	Warm	Increases temperature of Western Europe; most powerful warm current
Canary Current	Atlantic	West coast of North Africa (Morocco area)	Cold	Causes arid climate in Sahara region
North Atlantic Drift	Atlantic	East coast of Europe (extension of Gulf Stream)	Warm	Moderates climate of Western Europe (UK, France)
Labrador Current	Atlantic	East coast of Canada	Cold	Meets warm Gulf Stream → forms foggy conditions (Grand Banks fishing zone)
Brazil Current	Atlantic	East coast of South America (Brazil)	Warm	Warm counterpart to the cold Benguela current
Benguela Current	Atlantic	West coast of Southern Africa (Namibia)	Cold	Brings cold water → supports desert conditions in coastal regions
South Equatorial Current	Atlantic, Pacific, Indian	Near equator (both hemispheres)	Warm	Driven by trade winds, flows westward
North Equatorial Current	Atlantic & Pacific	5°–20° N latitude	Warm	Moves westward due to easterly winds
Kuroshio (Japan) Current	Pacific	East coast of Japan	Warm	Responsible for warm climate of southern Japan
Oyashio Current	Pacific	North-east coast of Japan & Russia	Cold	Meets Kuroshio → creates rich fishing grounds
California Current	Pacific	West coast of USA	Cold	Brings cold water → causes desert-like climate (e.g. Southern California)
Peru (Humboldt) Current	Pacific	West coast of South America (Peru, Chile)	Cold	Responsible for dry Atacama Desert
East Australian Current	Pacific	East coast of Australia	Warm	Moves warm water from Coral Sea southward
West Australian Current	Indian	West coast of Australia	Cold	Causes desert-like conditions along Australian coast

Agulhas Current	Indian	East coast of Africa (Mozambique to South Africa)	Warm	Strong warm current in Indian Ocean
Mozambique Current	Indian	Channel between Madagascar and Africa	Warm	Joins Agulhas current
West Wind Drift	Southern Ocean	Around Antarctica (all oceans)	Cold	Only current that flows uninterrupted around Earth
Antarctic Circumpolar Current	Southern Ocean	Surrounds Antarctica	Cold	Strongest ocean current globally
Somali Current	Indian	Coast of Somalia	Seasonal (Warm/Cold)	Reverses direction with monsoon – unique feature
Indian Monsoon Current	Indian	Near India during SW monsoon	Warm	Seasonal current, flows westward during monsoon

SSC CGL 2025

Notification OUT !! Vacancies **14582**

आपके Officer बनने की तैयारी, अब हमारी ज़िम्मेदारी!

SSC CGL (Tier 1 & 2)

महापैक के साथ!

जल्दी कीजिए!



7140+ Selections Till date

For Admission/Enquiry Call at : **9205821247**



Test Prime

ALL EXAMS, ONE SUBSCRIPTION.

70,000+
Mock Tests

600+
Exam Covered

Personalised
Report Card

Previous Year
Papers

Unlimited
Re-Attempt

500%
Refund











Abhi Download Karo

[For more study material and quizzes check out SSC CGL Target 150+ Success Series](#)