

Weather Forecast in Agriculture-Agro Advisories

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1(a). Basic aspect of atmosphere, climate, weather

Atmosphere

- Earth(lithosphere,hydrosphere and atmosphere)
- In the absence of atmosphere, the day temperature would be over 95°C and night temperature would be (-) 145°C in the earth and hence no weather and no life
- Atmosphere regulates temperature and light to earth
- Origin of weather to earth

Deep blanket of gases envelop earth

Total mass is 56×10^{14} ton

Nitrogen: 78.08 % (by volume); Oxygen: 20.94% (by volume)

Argon: 0.93% (by volume)

Carbon dioxide: 0.03% (by volume)

Other gases like neon, helium, methane, krypton and hydrogen present at negligible level.

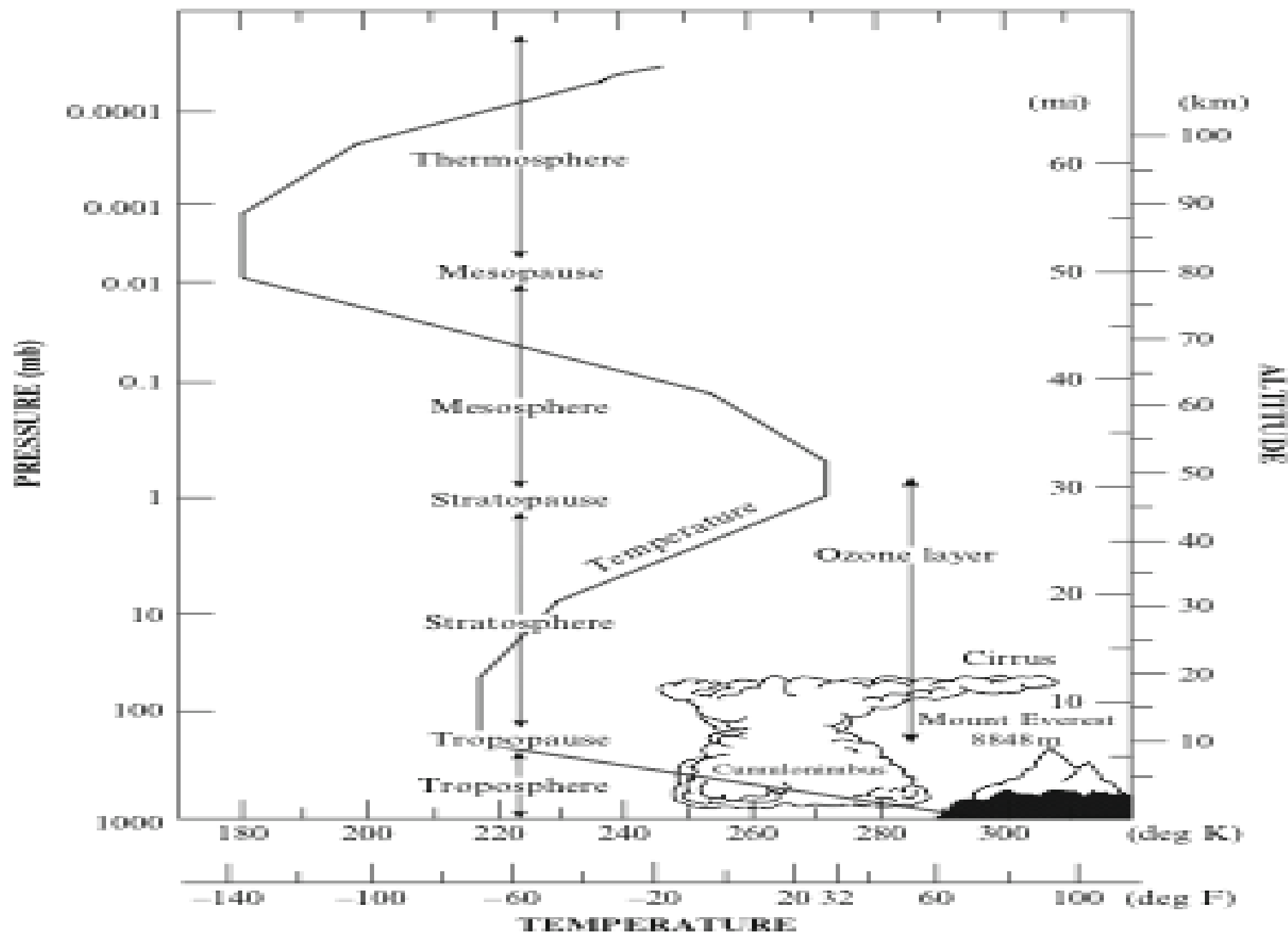
In addition to gases, water vapor and aerosol are present

This composition is constant up to 80 to 100 km

Layers of atmosphere (based on temperature)



Name of the layer	Height from the earth	Properties
Exosphere	Up to 10000km and beyond space	-----
Thermosphere	Up to 400 km(D ,E,F,and G layers)	Density is less, oxygen and nitrogen present, molecular and atoms of oxygen present, temperature increase with height. Temperature up to 980°C
Mesopause		Temperature begin to increase
Mesosphere(Ozonosphere)	Around 80 km from the earth	Temperature decreases to a minimum of (-90°C) around 80 km
Stratopause		Maximum temperature with absorption of UV rays
Stratosphere	50 km from troposphere	Temperature constant up to 20 km. increases up to 50 km
Tropopause		Temperature inversion layer(warm air over cold one - 28°C
Troposphere	16 to 18 km at equator, 8km from poles	75%of total gas, ,water vapour and aerosols,decrease in temp. with height @6.5°/km.This is up to (-)28°C



Weather

Weather refers to state of atmosphere at any given time denoting short day variation in the atmosphere in terms of temperature, pressure, wind moisture, visibility ,etc., Weather is highly variable

Eg., rainy weather, dry weather, windy weather, cold wave, hot wave, foggy weather, misty weather etc.,

Climate(thumb rule)

Average of composite weather of larger region computed from the data of more than 30 years.

Eg.,

Arid climate (when annual rainfall $< 50\%$ of annual PET)

Semi arid climate (when annual rainfall is 50 to 79% of annual PET)

Sub humid climate (when annual rainfall is 80 to 90% of annual PET)-dry/wet

Humid climate (when annual rainfall is 100% to annual PET)

Per humid climate (when annual rainfall $>$ annual PET)