

## 20. Atmosphere – basic features and structure

Meteorology studies short-time atmospheric conditions, i.e. actual conditions of the air.

Climatology studies long-term atmospheric (climatic) conditions, their impacts and importance, etc.

### **Basic characteristics of atmosphere**

- atmosphere is needed for life
- all living organisms would die without it
- atmosphere manages the distribution of *precipitation* on the Earth
- atmosphere manages the distribution of *temperature* on the Earth

### **Composition of atmosphere**

Atmosphere consists of gaseous, liquid and solid particles called *air*.

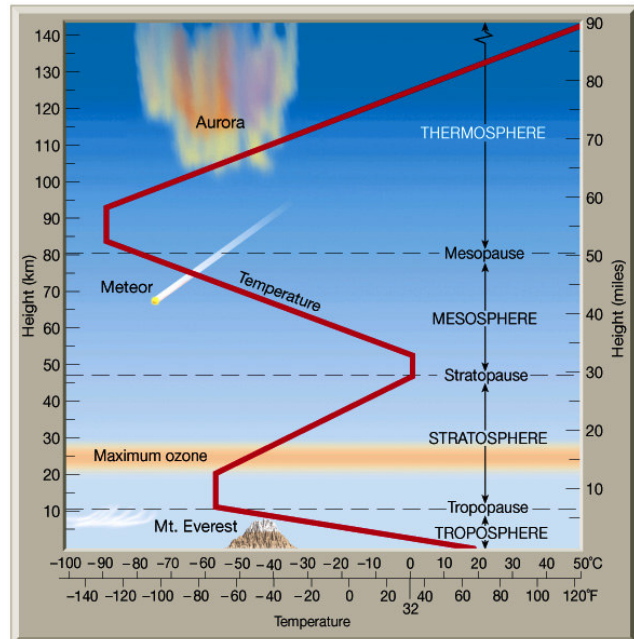
Atmosphere consists of:

- N (70%), O<sub>2</sub> (21%), O<sub>3</sub>, CO<sub>2</sub>, Ar and other gases
- water droplets and ice crystals created by condensation or sublimation of water vapours
- soil, volcanic and cosmic dust, marine salt particles

Atmosphere involves 5 main spheres (segmented according to different physical characteristics and altitude):

- Troposphere – up to 11-12 km of altitude, it changes from equator (17 km) polewards (9 km), it is the most important because of including all the water vapour.
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere

Troposphere is linked with other parts of the Earth by continuous change of energy and matters. Horizontal and vertical transfer of air masses takes place here.



With increasing altitude, air pressure, temperature and air density decreases => 0.6°C/100 m.

### **Keywords**

meteorology, climatology, precipitation, temperature, air, gaseous/liquid/solid particles, water droplets, ice crystals, condensation, sublimation, volcanic/cosmic dust, marine salt, troposphere, air pressure/density