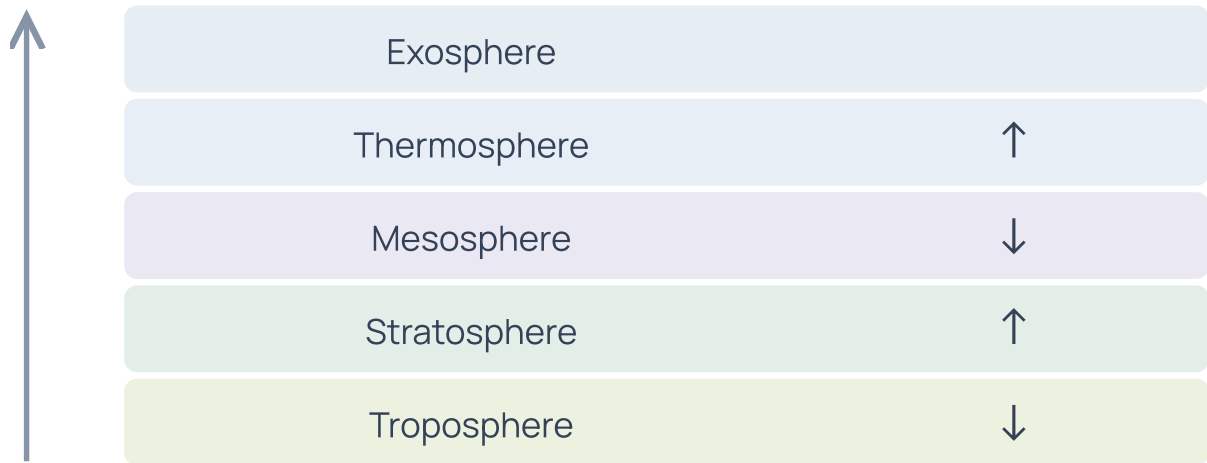


Atmospheric layers and temperature trends

Follow the vertical profile from the ground upward

• Earth’s atmosphere by altitude



Upward: greater altitude · Arrows: temperature trend

General temperature trends through the atmosphere

01 1 • Troposphere

- Lowest layer; contains most atmospheric water vapour and everyday weather.
- Its upper boundary, the tropopause, varies in height with location and season.
- Temperature generally falls with height.



02 2 • Stratosphere

- Contains the ozone-rich region that absorbs much solar ultraviolet radiation.
- This temperature structure suppresses strong vertical mixing.
- Temperature generally rises with height because of this absorption.



03 3 • Mesosphere

- Temperature falls again with increasing height.
- Many meteors ablate as they interact with atmospheric particles here.
- Its upper boundary, the mesopause, is the coldest atmospheric region.



04 4 • Thermosphere

- Absorption of high-energy solar radiation raises kinetic temperature.
- It overlaps much of the ionosphere; the two are defined by different properties.
- Very thin air means high temperature does not imply ordinary intense felt heat.



05 5 • Exosphere

- Outermost, extremely rarefied atmospheric region.
- There is a gradual transition into space, not a solid upper wall.
- Particles are widely separated and collisions are infrequent.

REMEMBER Temperature trend upward: fall → rise → fall → rise; the mesopause is the coldest region.