

Section 16-1

The Air Around You



The Atmosphere

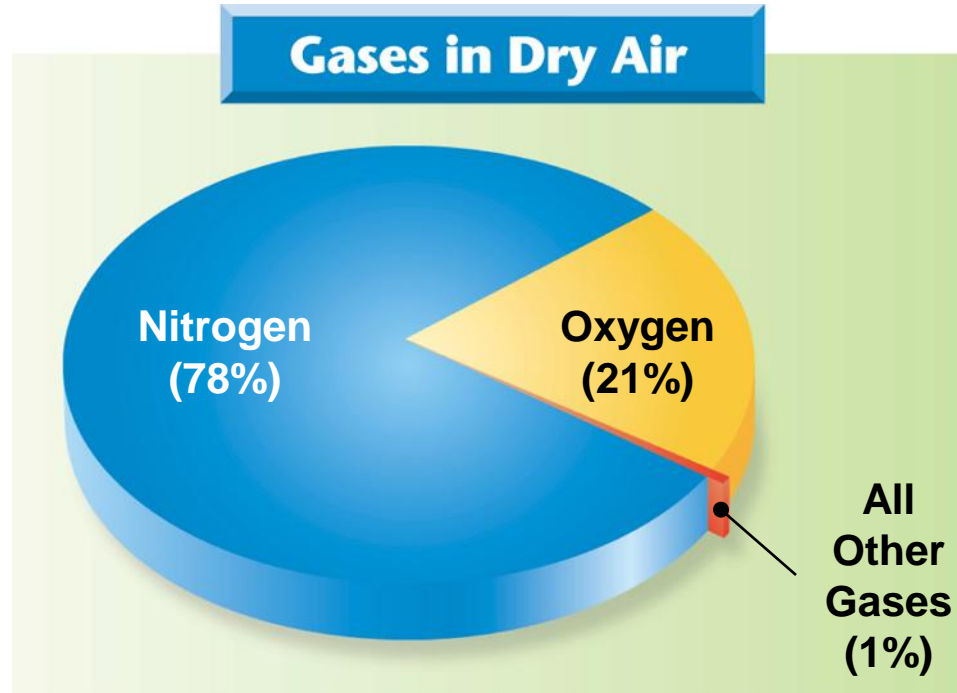
With a partner, make a list of everything in the sky.

Now draw a staircase with four steps. Suppose that with each step, you are higher in the sky.

Place each item on your list on the stair step where you think it would be in the sky. For example, rain clouds might be on the first step.

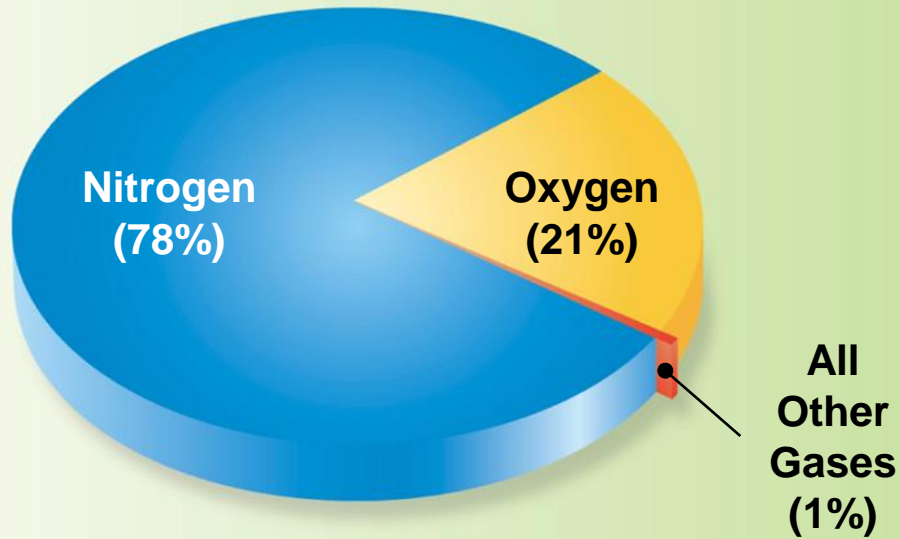


Gases in Dry Air



The Atmosphere

Gases in Dry Air



Other Gases	Percentage by Volume
Argon	0.093
Carbon Dioxide	0.036
Neon	0.0018
Helium	0.00052
Methane	0.00015
Krypton	0.00011
Hydrogen	0.00005



Section 16-2

Air Quality

Two types of particles:

- **Natural:** wind, waves, forest fires, volcanoes, etc.
- **Human made:** burning wood or coal, farming, construction, etc.

Smog (photochemical smog) is formed by reactions with pollutants, light, and chemicals in the air.

Acid rain forms when rain mixes with nitrogen oxides and sulfur oxides.

Section 16-3

Air Pressure



Air Pressure

Working with a partner, hold a flat sheet of paper and a crumpled ball of paper at the same height.

Drop them at the same time. Have your partner record which object lands on the floor first. Repeat this exercise three times.

Why does the crumpled ball always land before the flat sheet of paper?



Density:

- The amount of mass in a given volume.

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Pressure:

- The force pushing on an area or surface.



Two kinds of barometers:

1. Mercury

- A glass tube open at the bottom and partially filled with mercury.

2. Aneroid

- “without liquid” using an airtight metal chamber.



Units of air pressure –

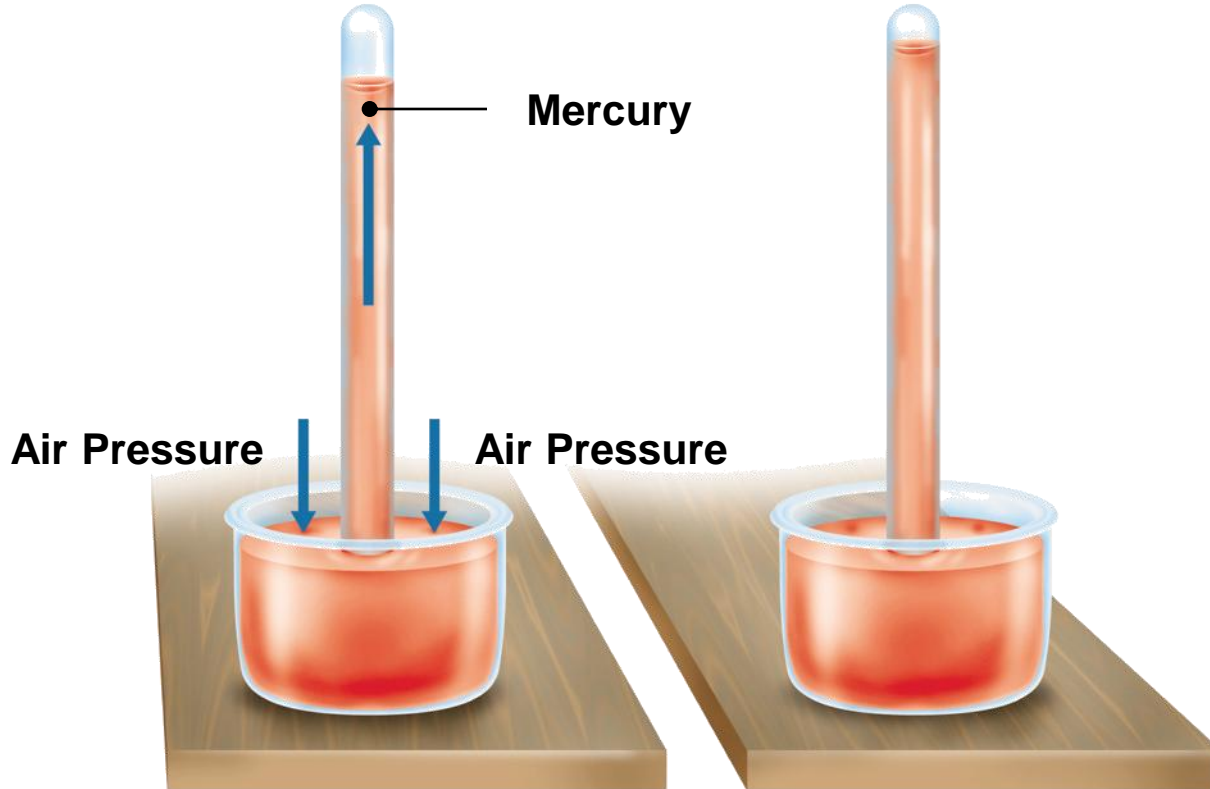
- **Inches for general public weather reports.**
- **Millibars on National Weather Service maps.**

One inch of mercury \approx 33.87 millibars.

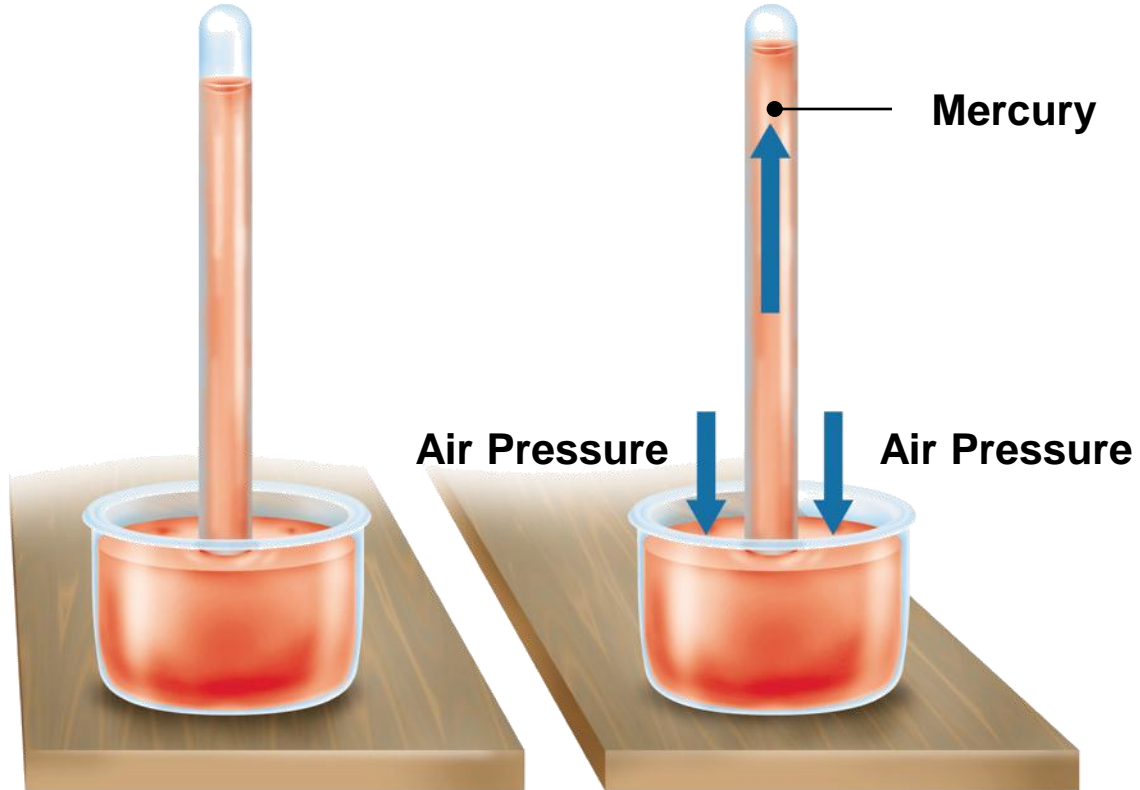
So, 30 inches \approx 1,016 millibars.



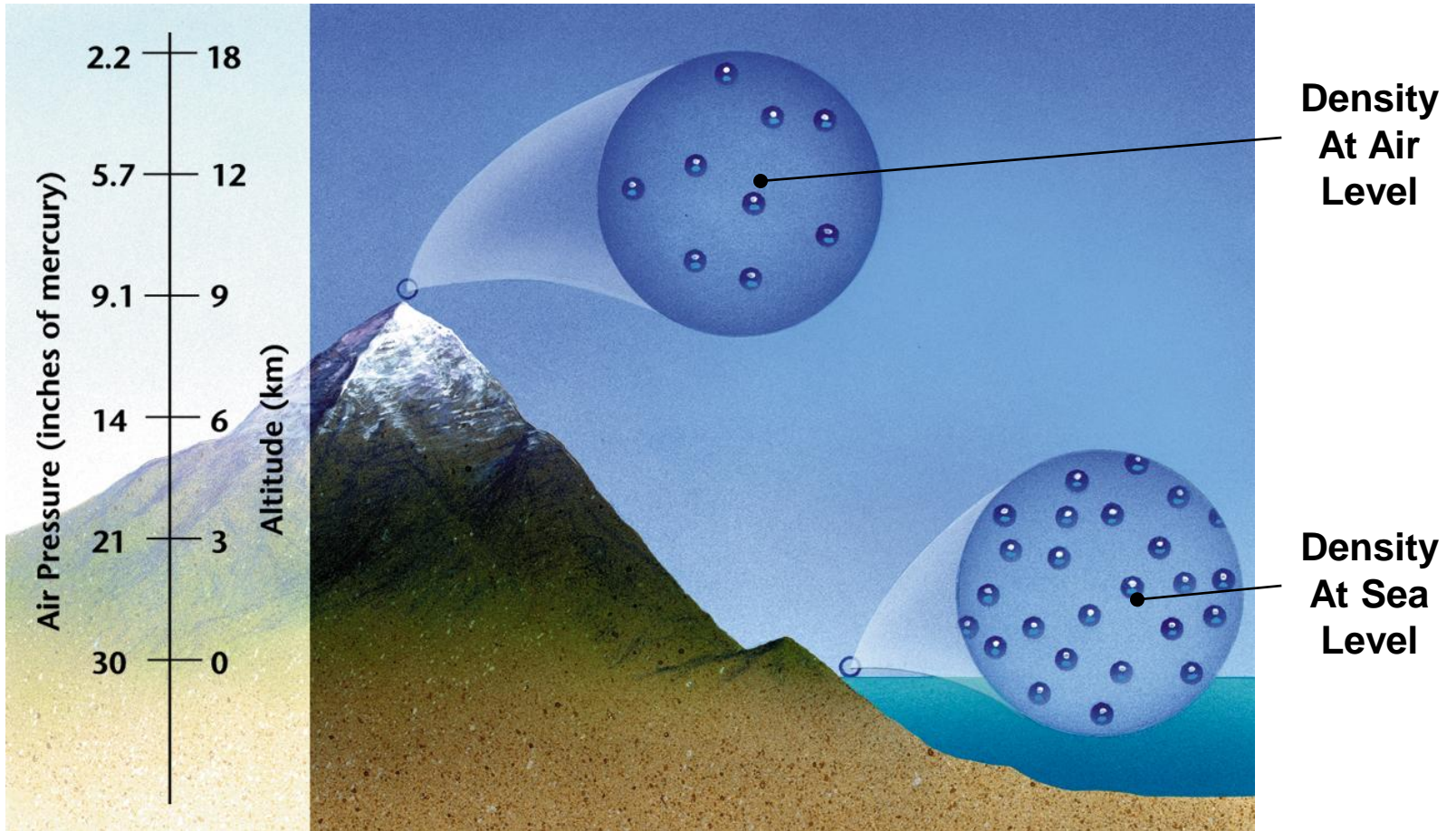
Air Pressure



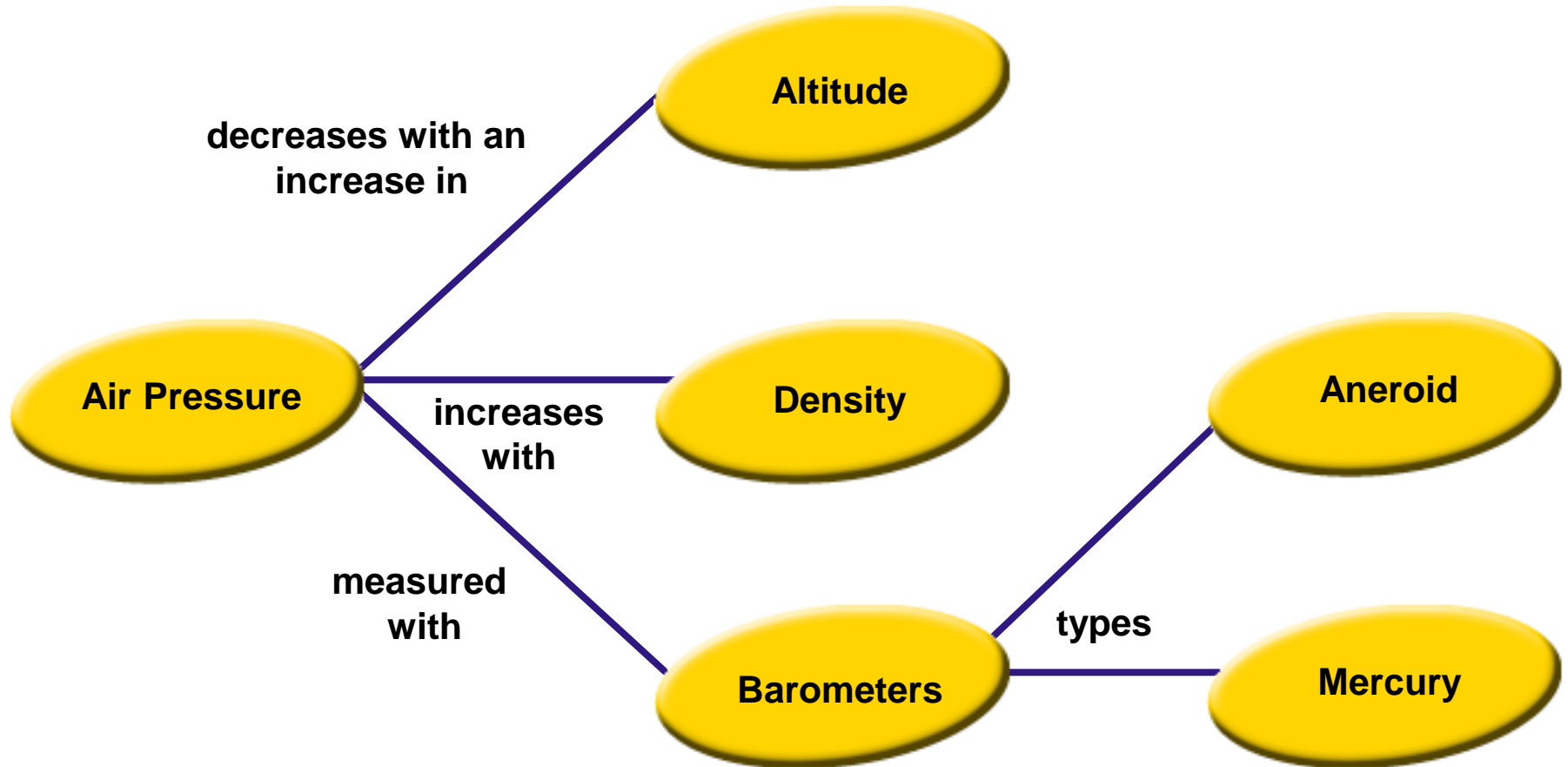
Air Pressure



Air Pressure



Air Pressure

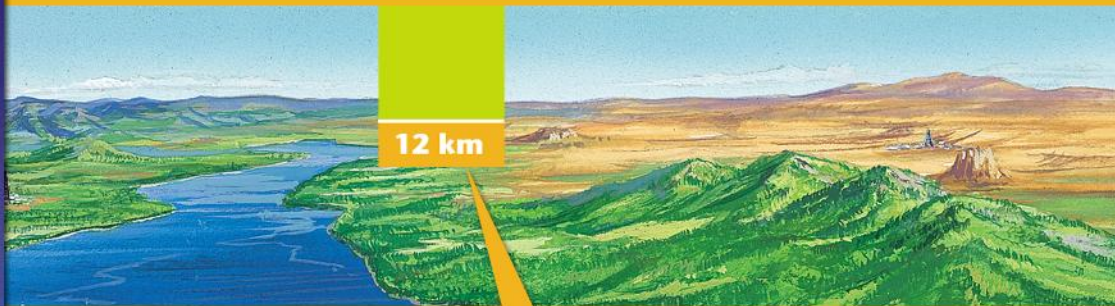
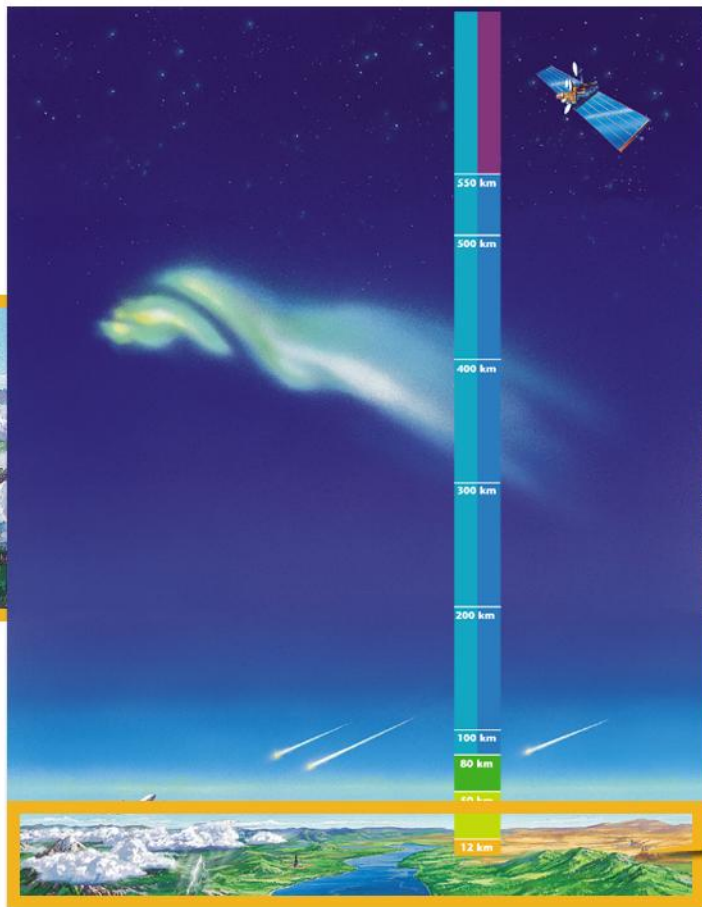


Section 16-4

Layers of the Atmosphere



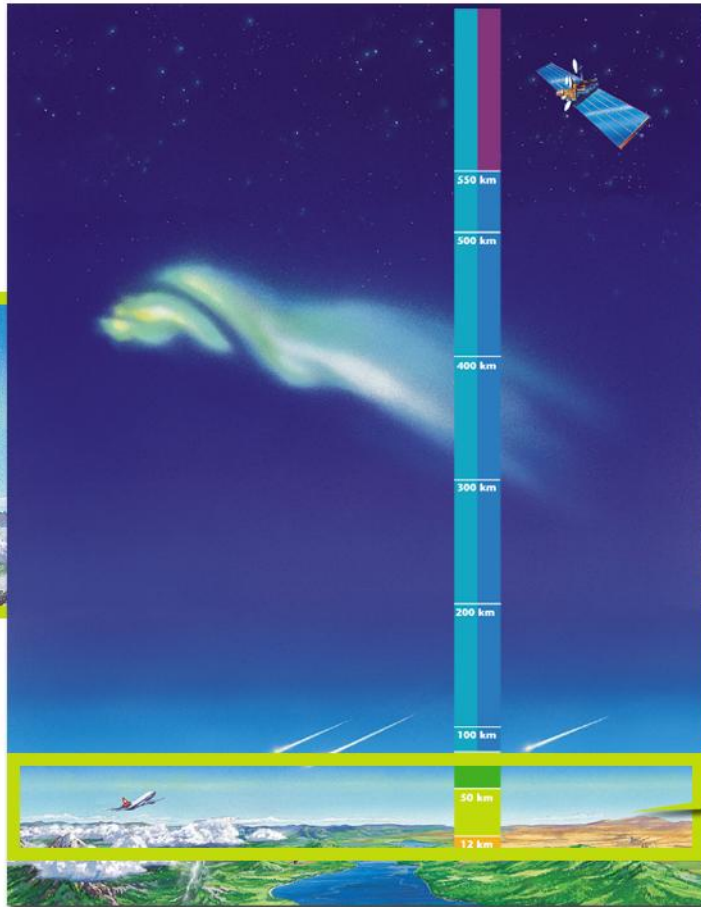
The Atmosphere



**Troposphere
0 to 12 km**



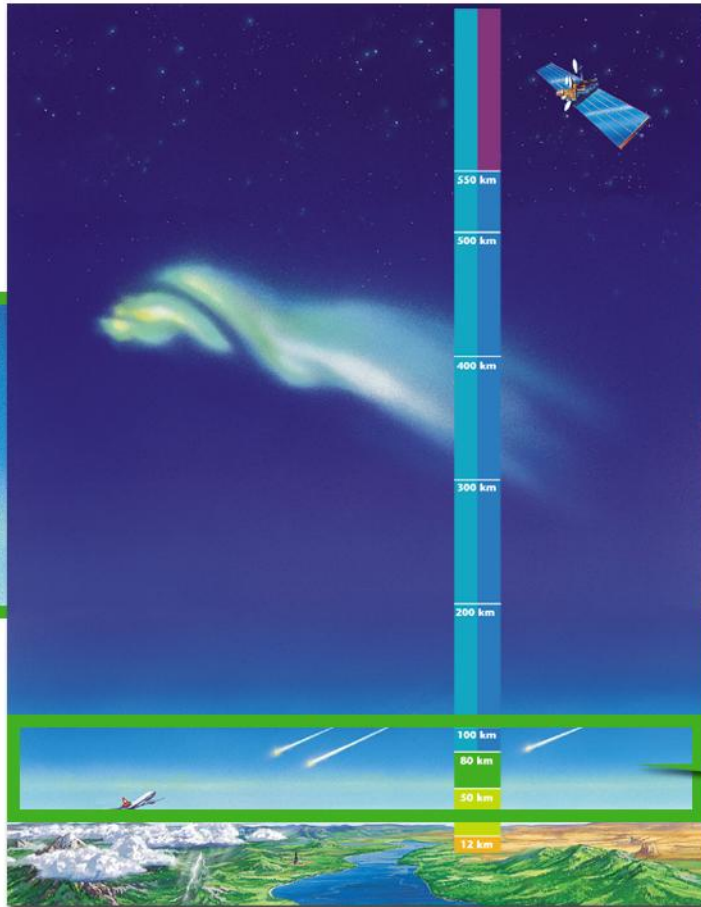
The Atmosphere



**Stratosphere
12 to 50 km**



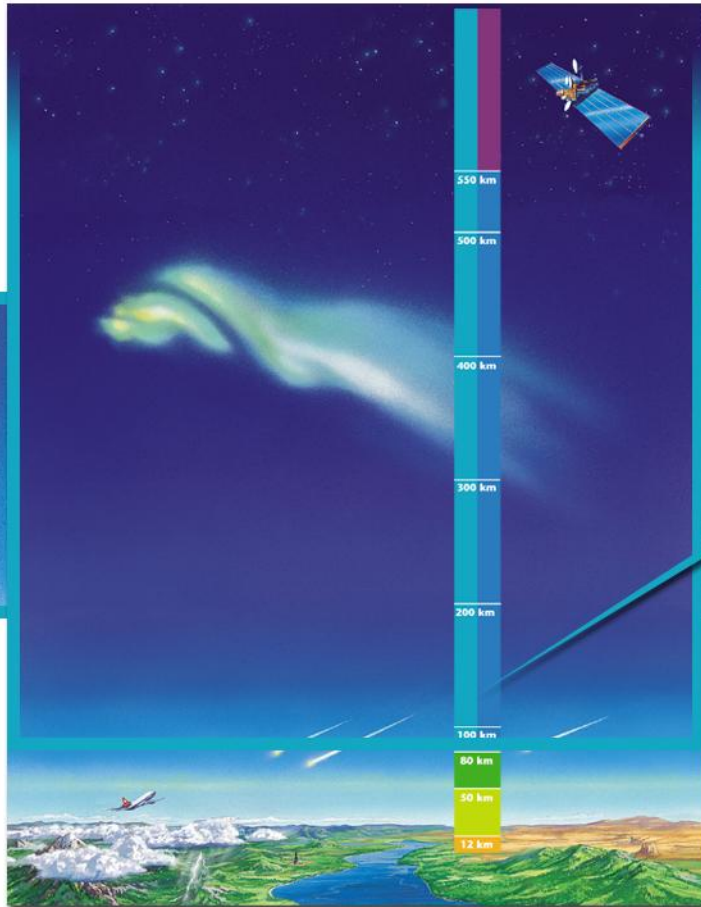
The Atmosphere



**Mesosphere
50 to 80 km**



The Atmosphere



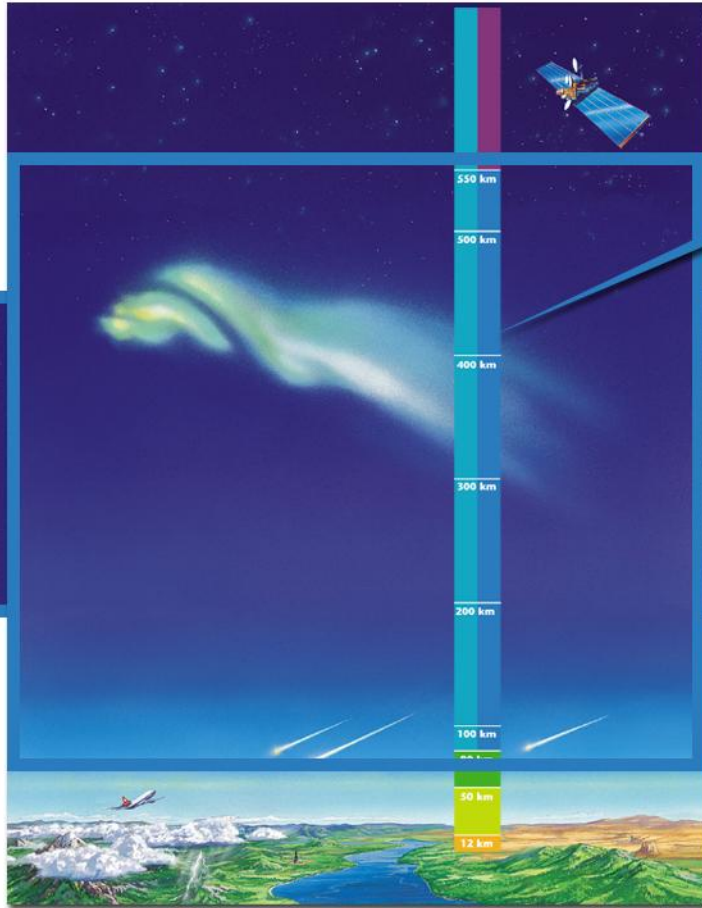
Thermosphere
Above 80 km

100 km

80 km



The Atmosphere

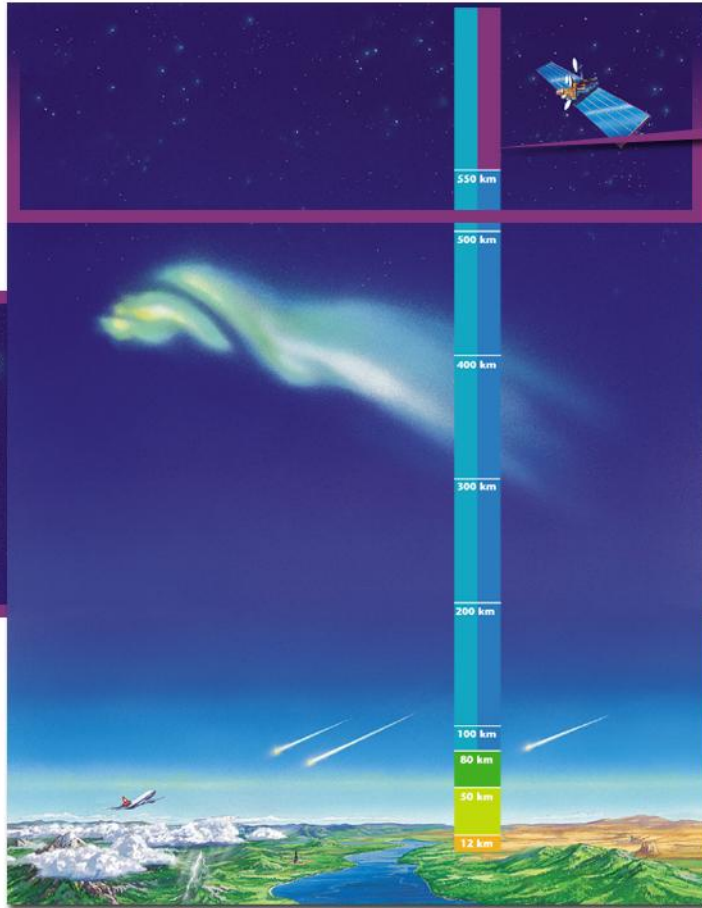


Ionosphere
80 to 550 km

400 km



The Atmosphere



Exosphere
above 550 km



The Atmosphere

Layers of the Atmosphere

Layer	Height
Troposphere	0-12 km
Stratosphere	12-50 km
Mesosphere	50-80 km
Thermosphere	Over 80 km

