METEOROLOGY PART I

YOUR WINGS EXIST, ALL YOU HAVE TO DO IS FLY.

THE ATMOSPHERE

- Composed of:
  - **78% Nitrogen**
  - **21% Oxygen**
  - **1% Other gases**
    - CO_2
    - Argon
    - *Water Vapour*
    - Several other gases

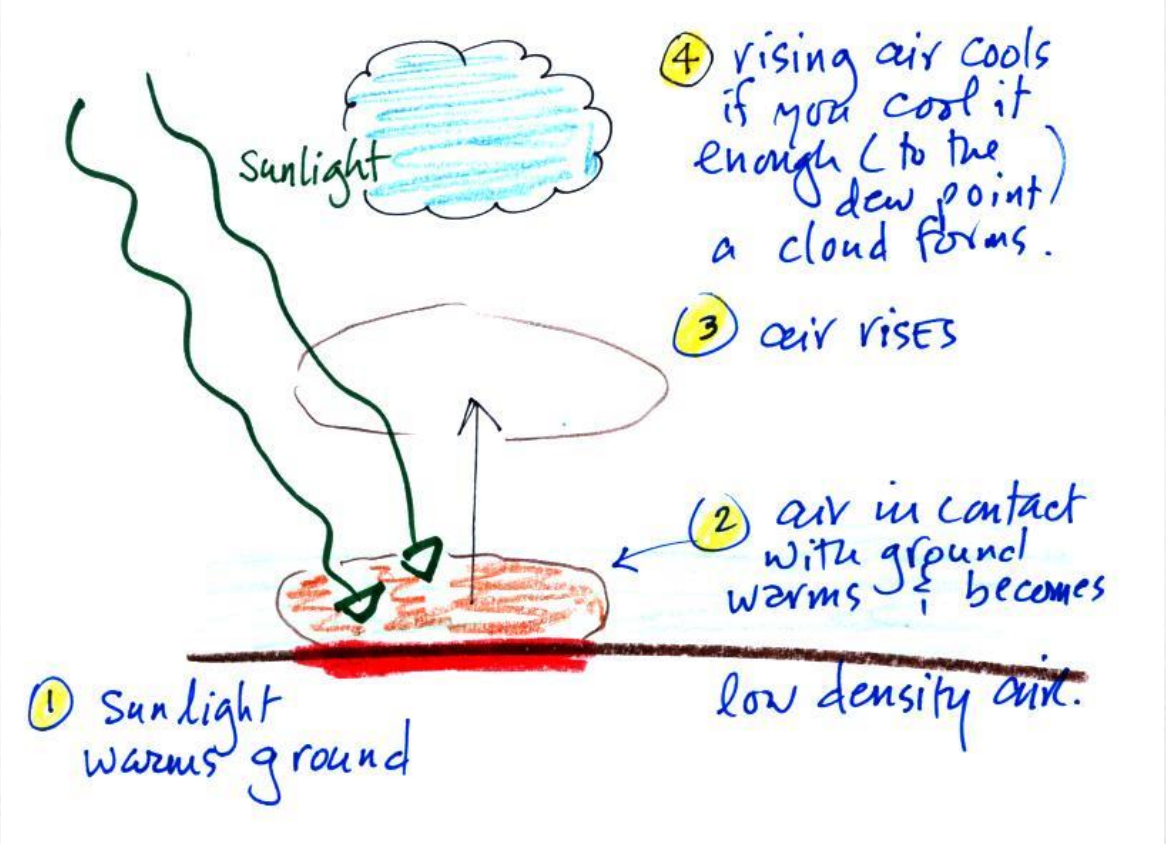
WATER VAPOUR

- Definition: The ***gaseous*** phase of water

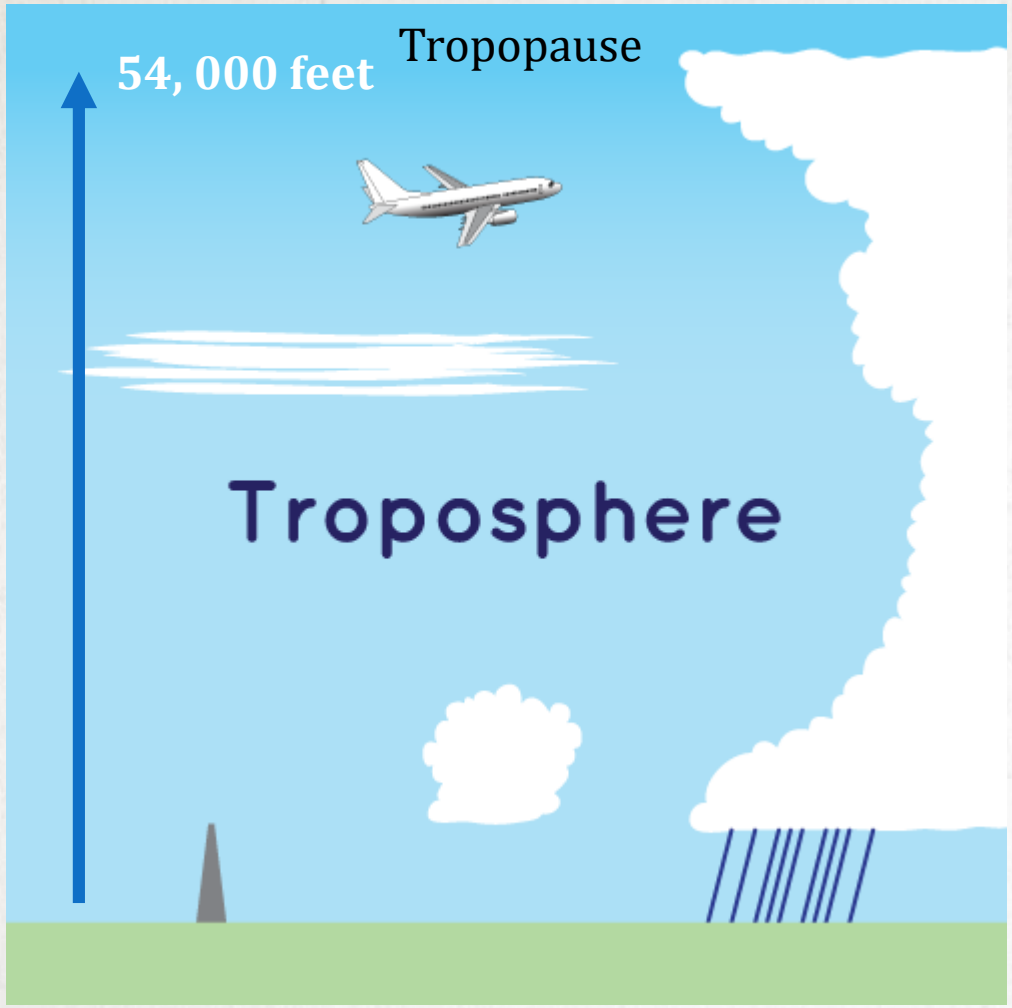
<u>Most important component of the air</u>

PROPERTIES OF THE ATMOSPHERE

1. Mobility
2. **Expansion** !
3. Compression

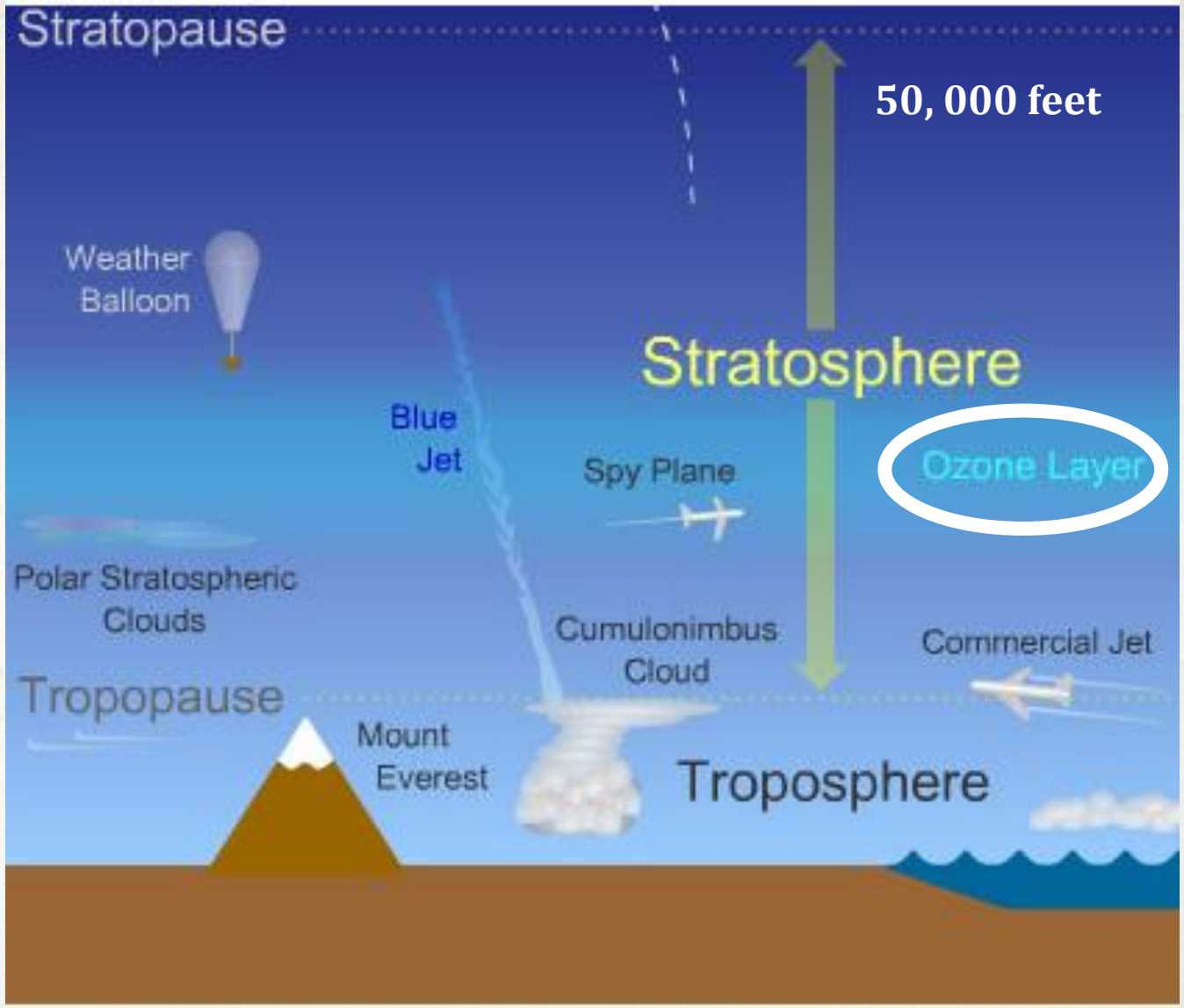


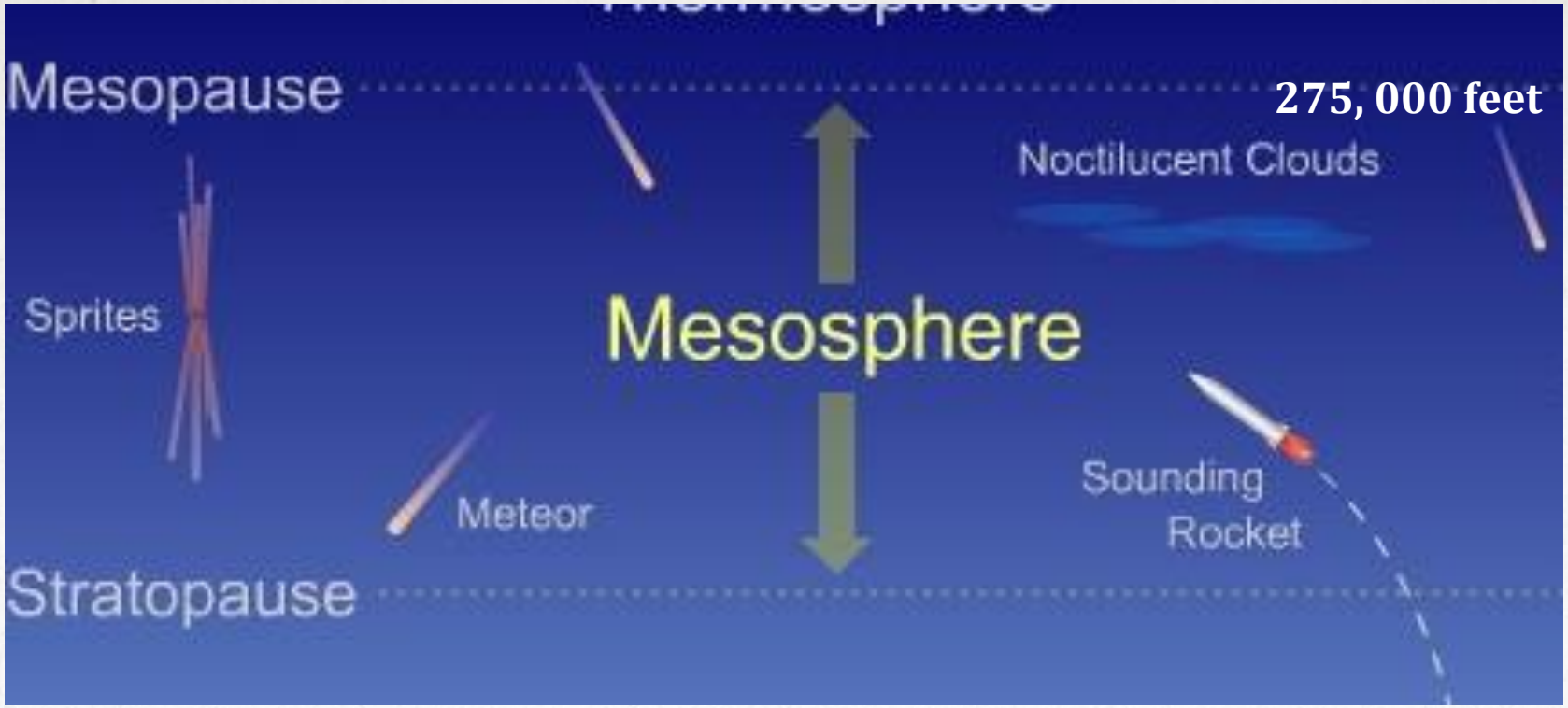
DIVISIONS OF THE ATMOSPHERE



- **Lowest** level of the atmosphere
- Pressure, density and temperature all **decrease** with height
- Water vapor is present causing "weather"
- Top layer is called the **tropopause.**

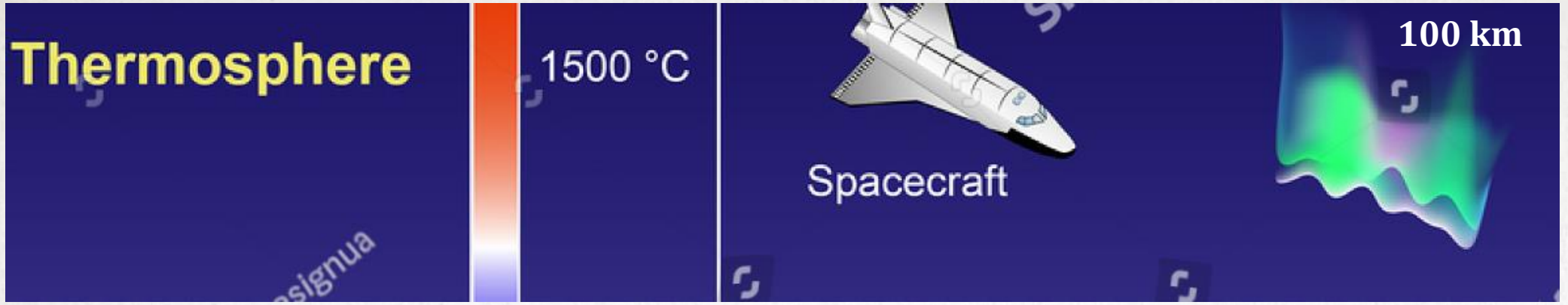
- **Second** level of the atmosphere
- Pressure **decreases** with height
- Temperature **increases** with height
- Top layer is called the **stratopause.**





- **Third** level of the atmosphere
- Temperature **decreases** with height
- Top layer is called the **mesopause.**

EARTH

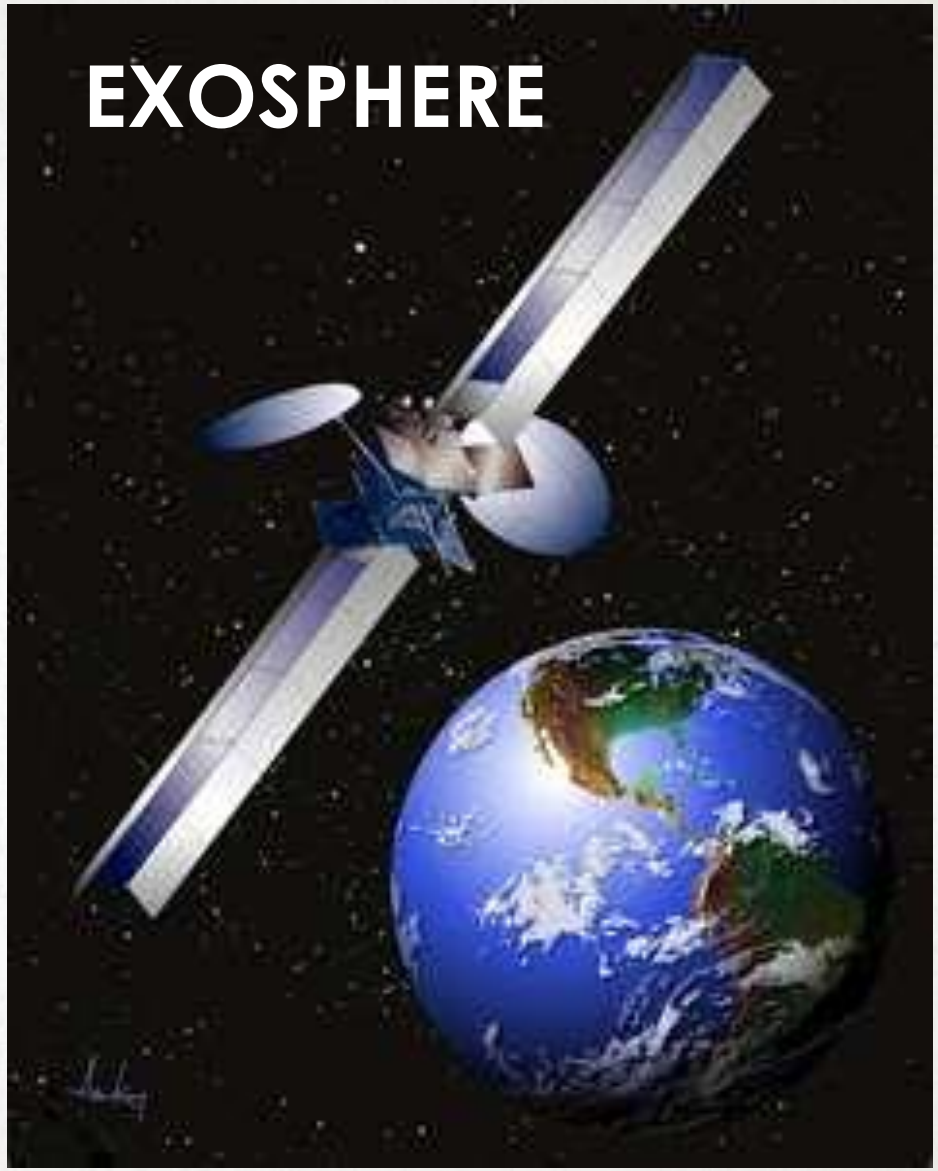


- **Fourth** level of the atmosphere

- Temperature **increases** with height

EARTH

- **Fifth** level of the atmosphere
- Pressure **decreases** rapidly creating a vacuum
- 500 km above the earth's surface



QUESTION TIME

The layer of cloud that includes the ozone layer?

A) Troposphere

B) Stratosphere

C) Mesosphere

D) Exosphere

ICAO STANDARD ATMOSPHERE

Pilots flying in North America assume the following conditions:

1. The air is a perfectly **dry gas**
2. A mean sea level pressure of **29.92 " Hg** or 1013.25 hPa
3. A mean sea level **temperature of 15°C**
4. The rate of decrease of temperature with altitude is **1.98 °C per 1000 feet**

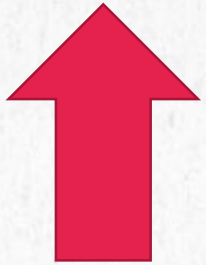
WIND

- Definition: *the horizontal movement of air caused by pressure differences*
- Wind speed is measured in ***knots***.

VEERING AND BACKING

Veering

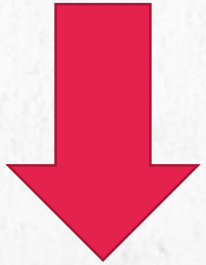
- Clockwise



- **Height**
- **Velocity**

Backing

- Counter-clockwise



- **Height**
- **Velocity**

QUESTION TIME

As altitude increases, the wind will normally:

A) Veer, then back

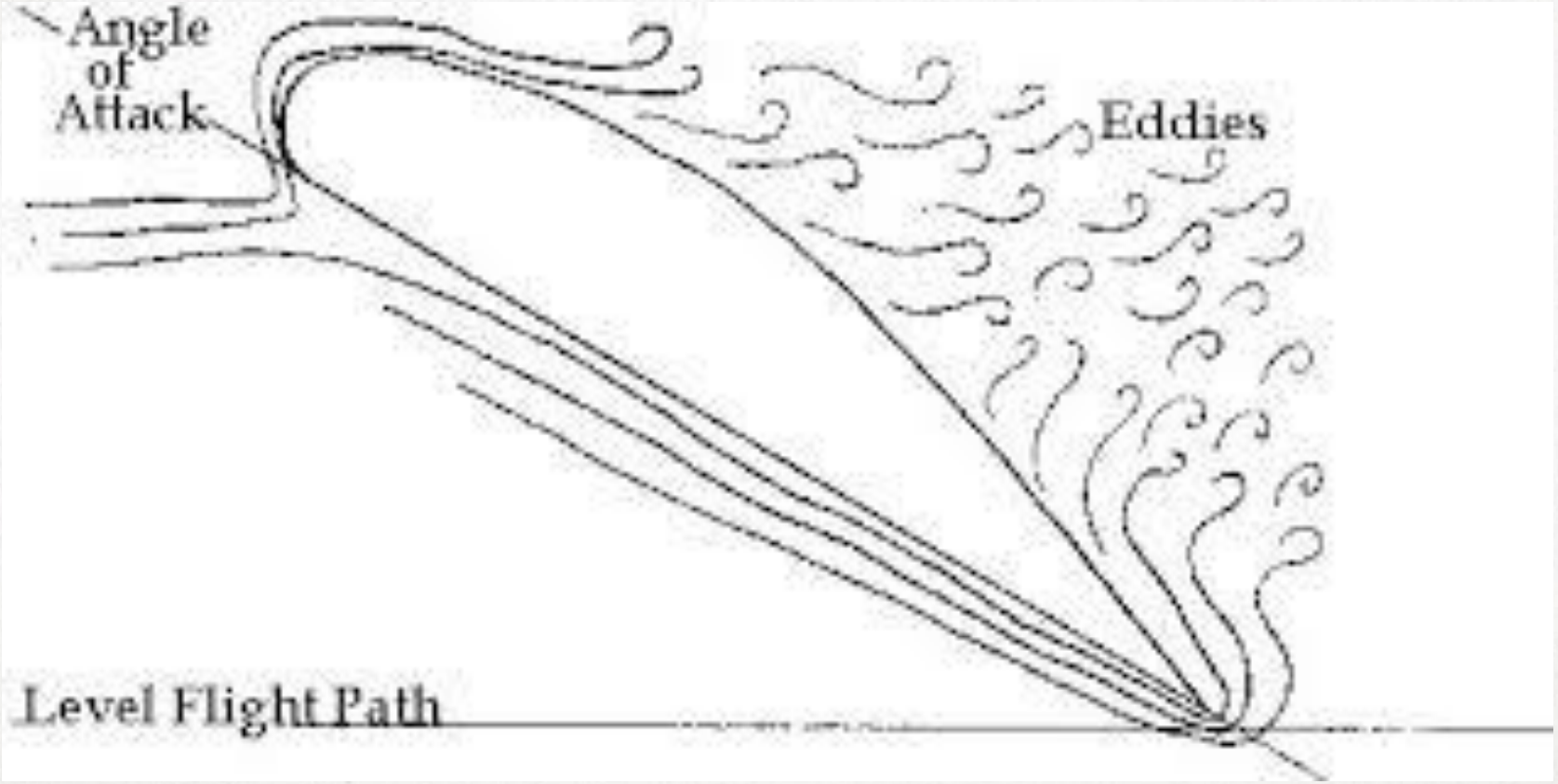
B) Back, then veer

C) Veer and increase

D) Back decrease

GUST & SQUALL

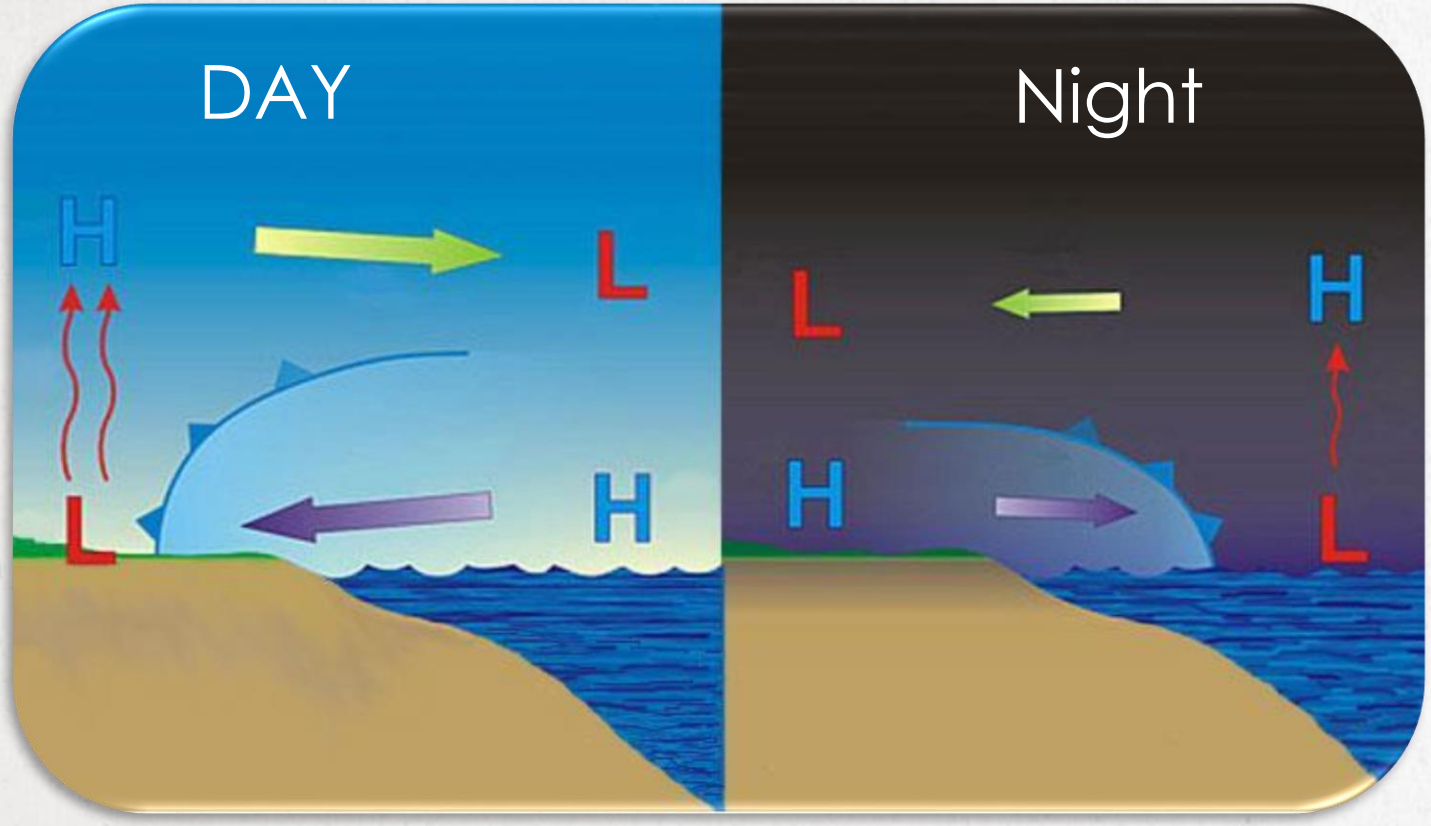
EDDIES

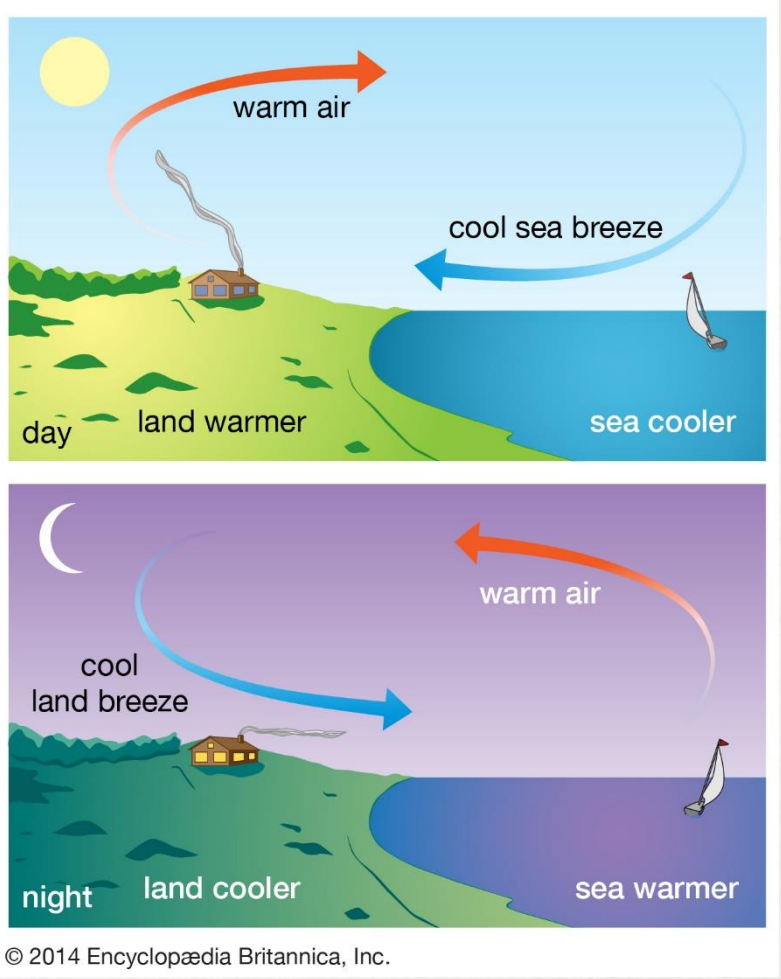


WIND SHEAR

- **https://www.youtube.com/watch?v=l3SDtn3w_rc**

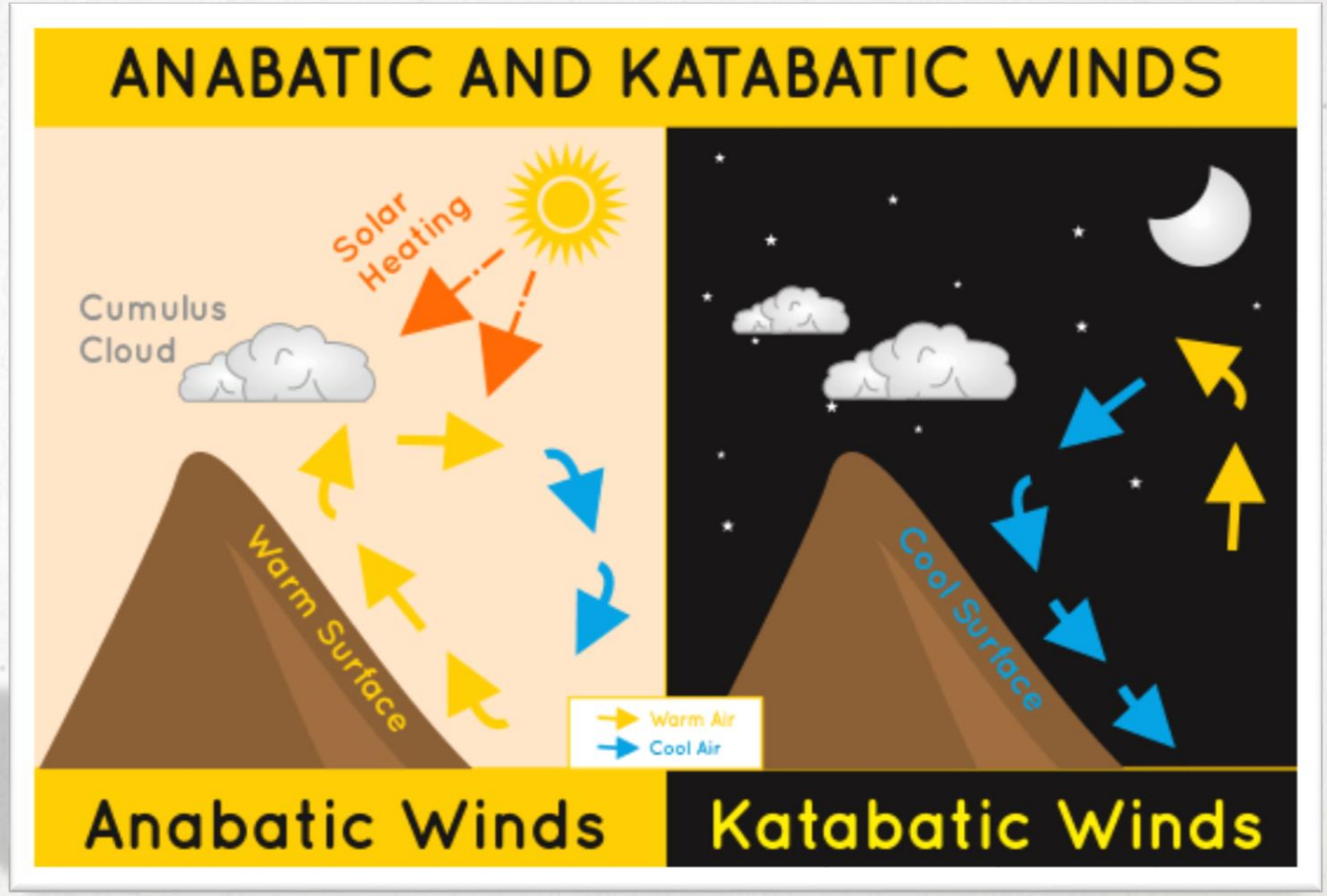
SURFACE WINDS



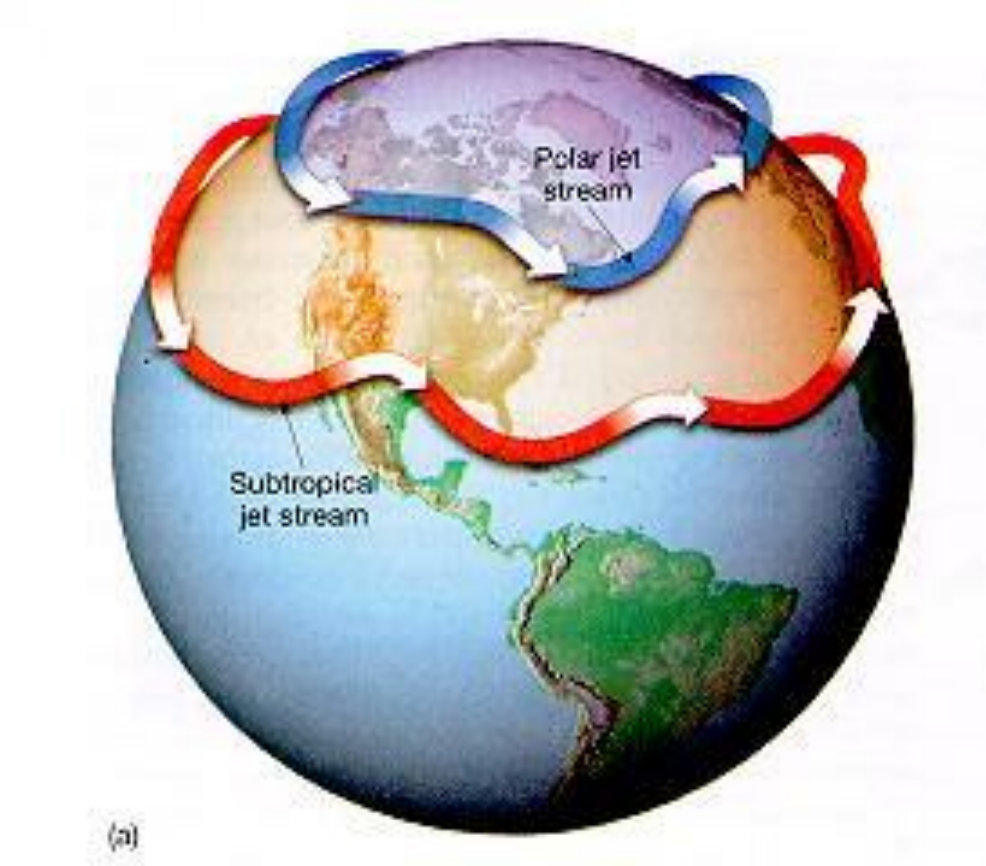


SURFACE WINDS

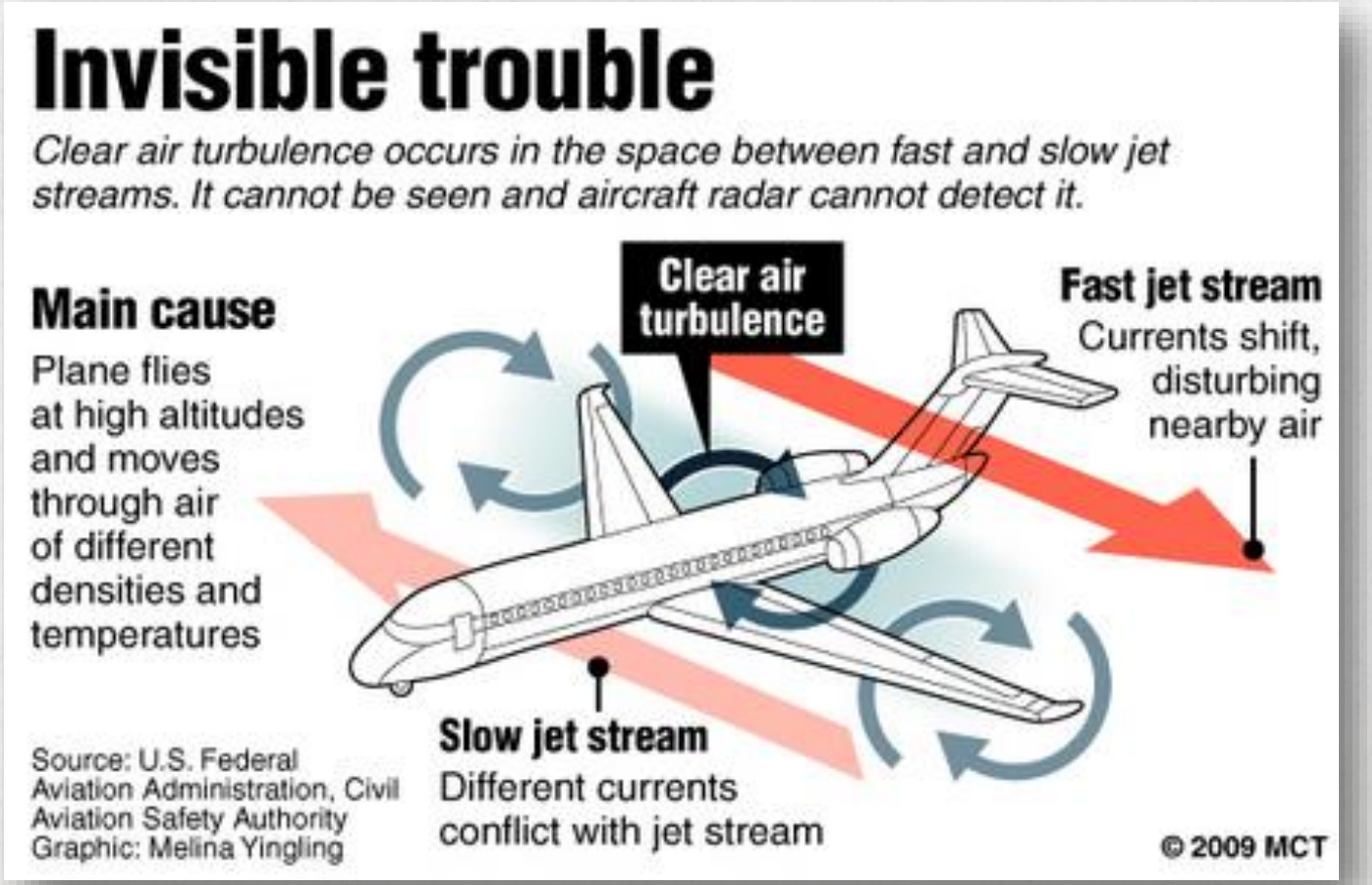
"Ana goes up the hill to throw the Kat down."



JET STREAM



CLEAR AIR TURBULENCE (CAT)



QUESTIONS?