
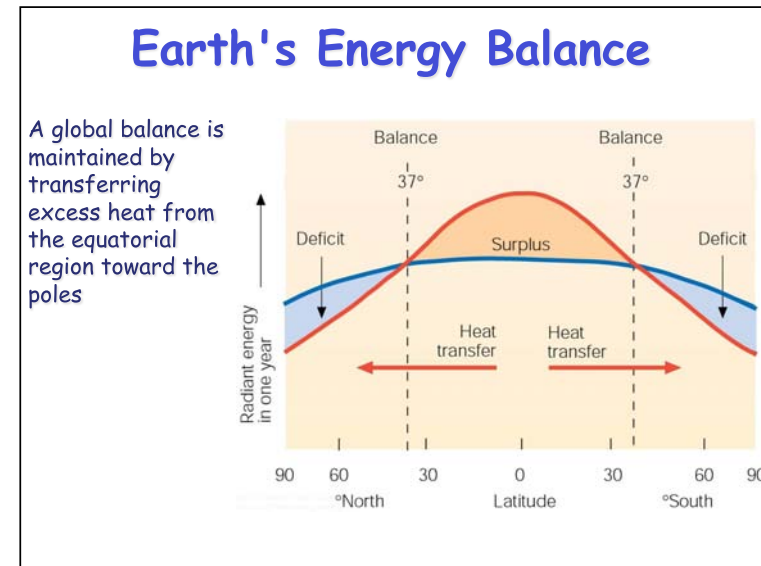
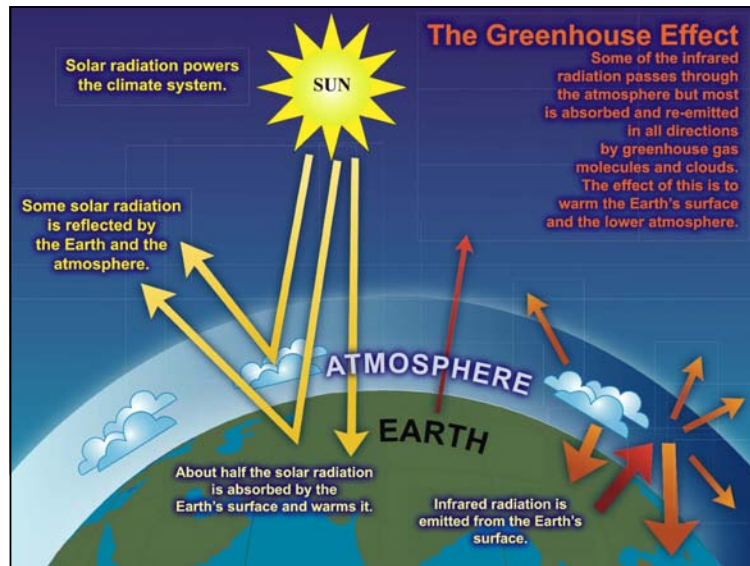
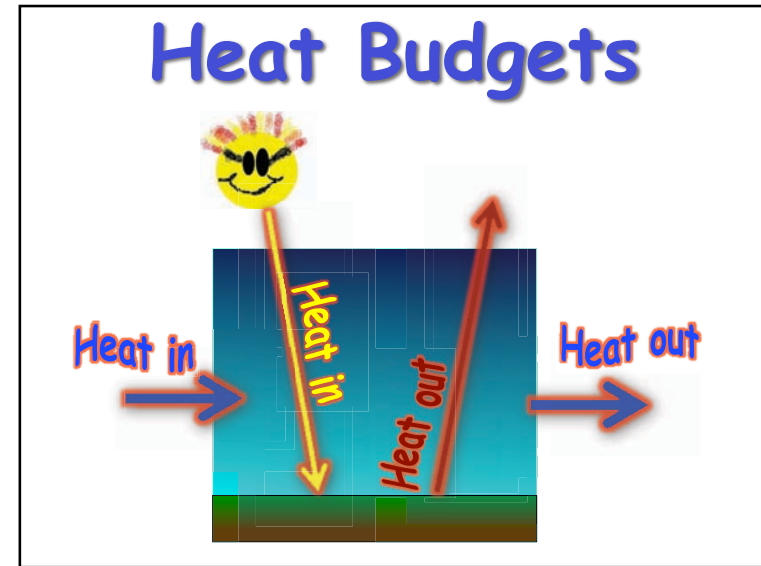


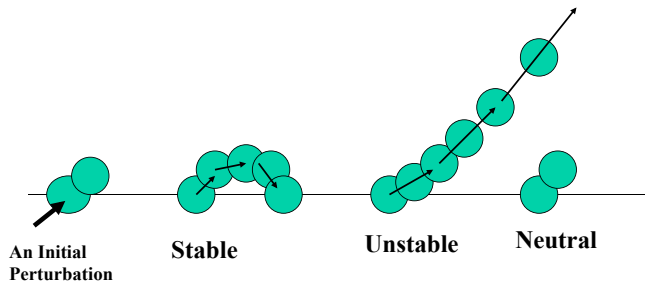
Ever Wonder Why?



- Day is warmer than night?
- Summer is warmer than winter?
- Miami is warmer than Minneapolis?



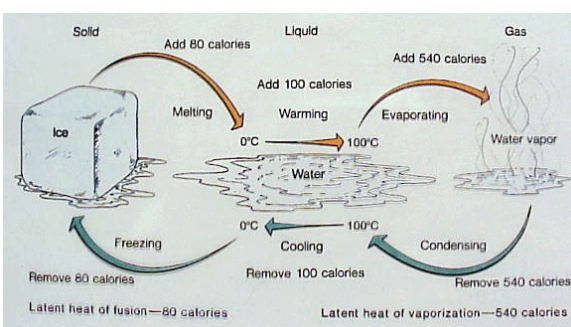
Stability in the atmosphere



If an air parcel is displaced from its original height it can:

- Return to its original height - **Stable**
- Accelerate upward because it is buoyant - **Unstable**
- Stay at the place to which it was displaced - **Neutral**

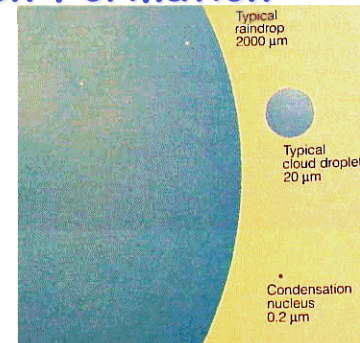
"Latent" (hidden) Energy associated with phase changes



Latent heat of fusion—80 calories Latent heat of vaporization—540 calories

Precipitation Formation

How many 20 μm cloud drops does it take to make a single 2000 μm rain drop?


$$V_{\text{raindrop}}/V_{\text{cloud-drop}} = \left(\frac{r_{\text{raindrop}}}{r_{\text{cloud-drop}}}\right)^3 = (100)^3 \approx 1 \text{ million!}$$


How does precipitation form from tiny cloud drops?

1. Warm rain processes (collision and coalescence)
2. Ice crystal growth as droplets evaporate
3. "Ice multiplication"

Forces Acting on the Air

- Pressure gradient force (pushing)
- Gravity (falling)
- Friction (rubbing against the surface)
- "Apparent" forces
 - The Coriolis Force
 - Centrifugal Force



$$\sum \vec{F} = m\vec{a}$$

