

Warm-core and cold-core systems

Recall that the thickness (ΔZ) between pressure surfaces is proportional to the mean temperature of a layer (\bar{T})

T should really be T_v , virtual temperature, but ignore

$$\Delta Z = \frac{R}{g} \bar{T} \ln \frac{p_{bot}}{p_{top}}$$

where $R = 287 \frac{m^2}{deg s^2}$ is the dry gas constant and $g = 9.8 \frac{m}{s^2}$. p_{bot} is the bottom pressure surface, p_{top} is the top.

Based on this fact:

Warm-core lows (highs) weaken (intensify) with height
Cold-core lows (highs) intensify (weaken) with height.

↑ thickest layer
↓ thinnest layer

