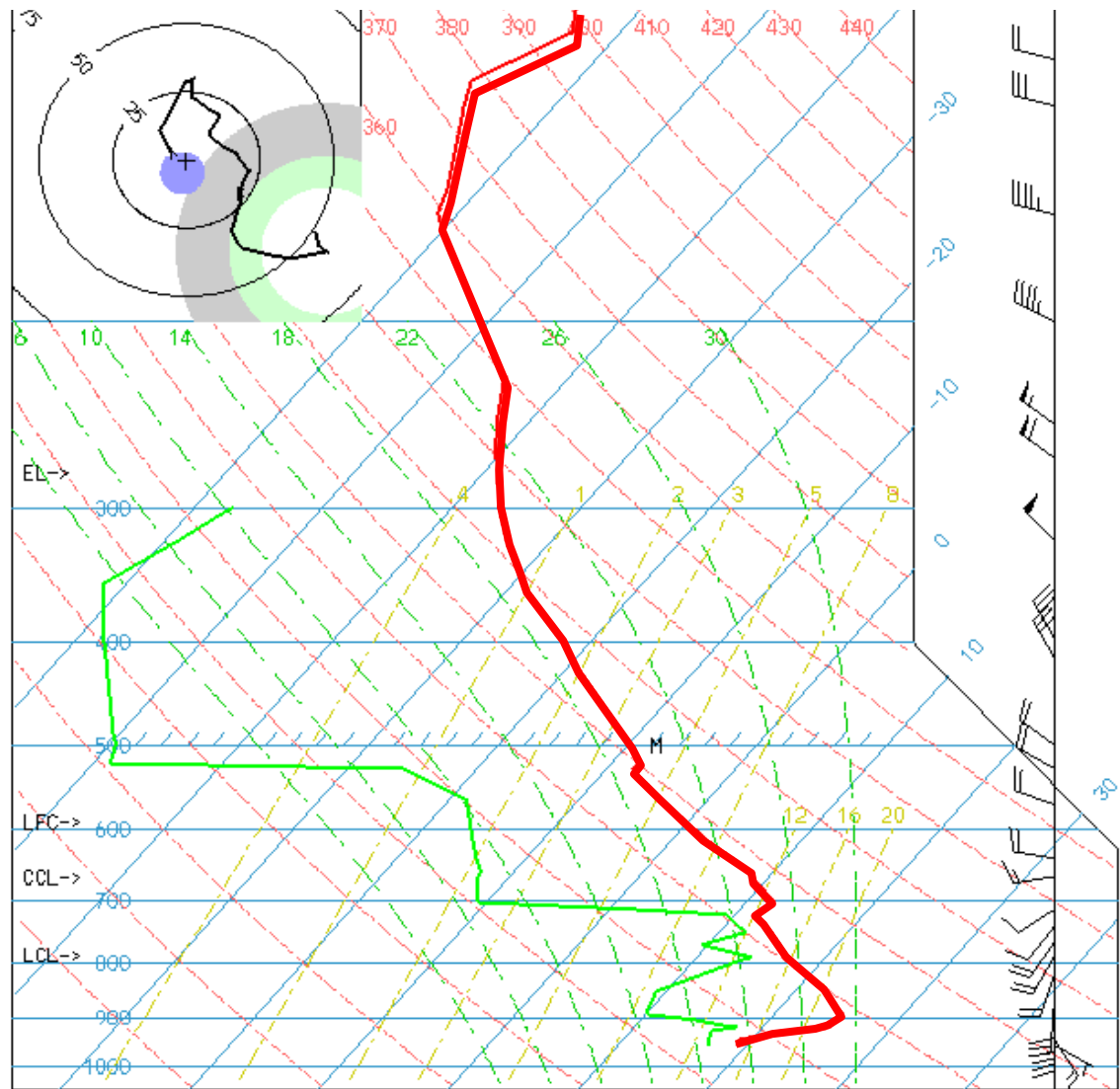


Skew-T Lop P Diagrams



Lat = 46.77 , Lon = -100.77

Upper Air Observations

- Most Operational Soundings Are Made By Radiosondes



Radiosondes Measurements

- Temperature
- Relative Humidity
- Wind Direction
and Speed
- Pressure
- Height



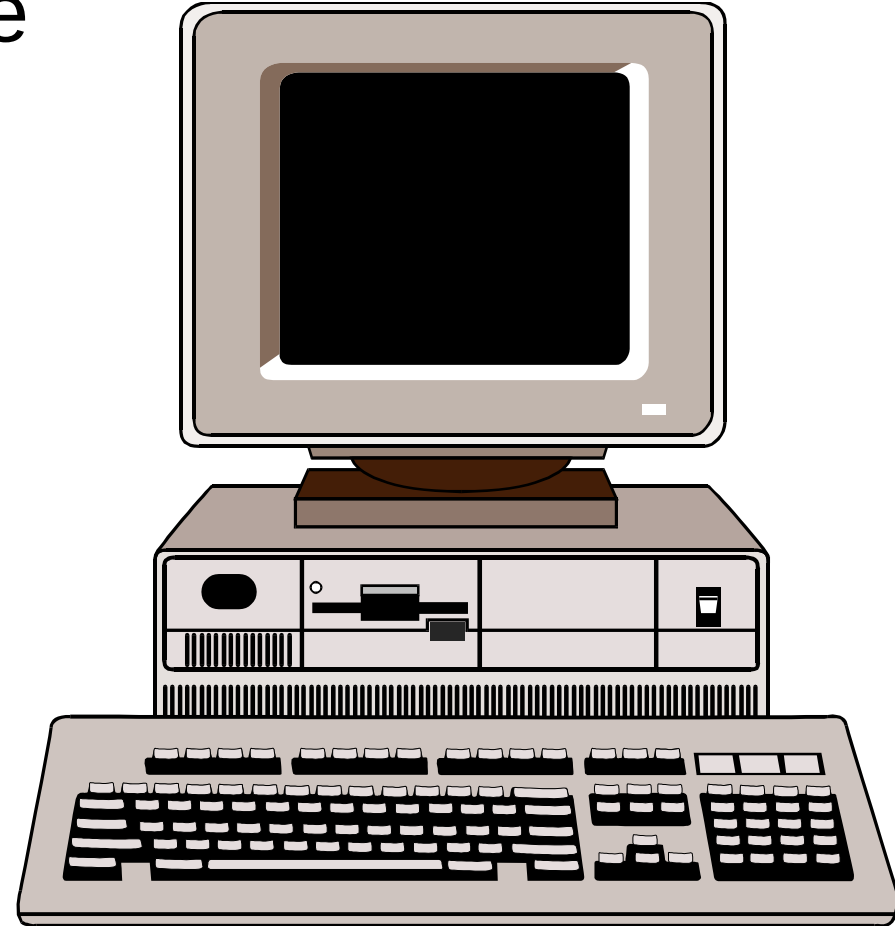
Radiosonde Data is Plotted on Charts

- Manual Analysis has Plotting Done by Hand
- Computational Analysis Performed Graphically



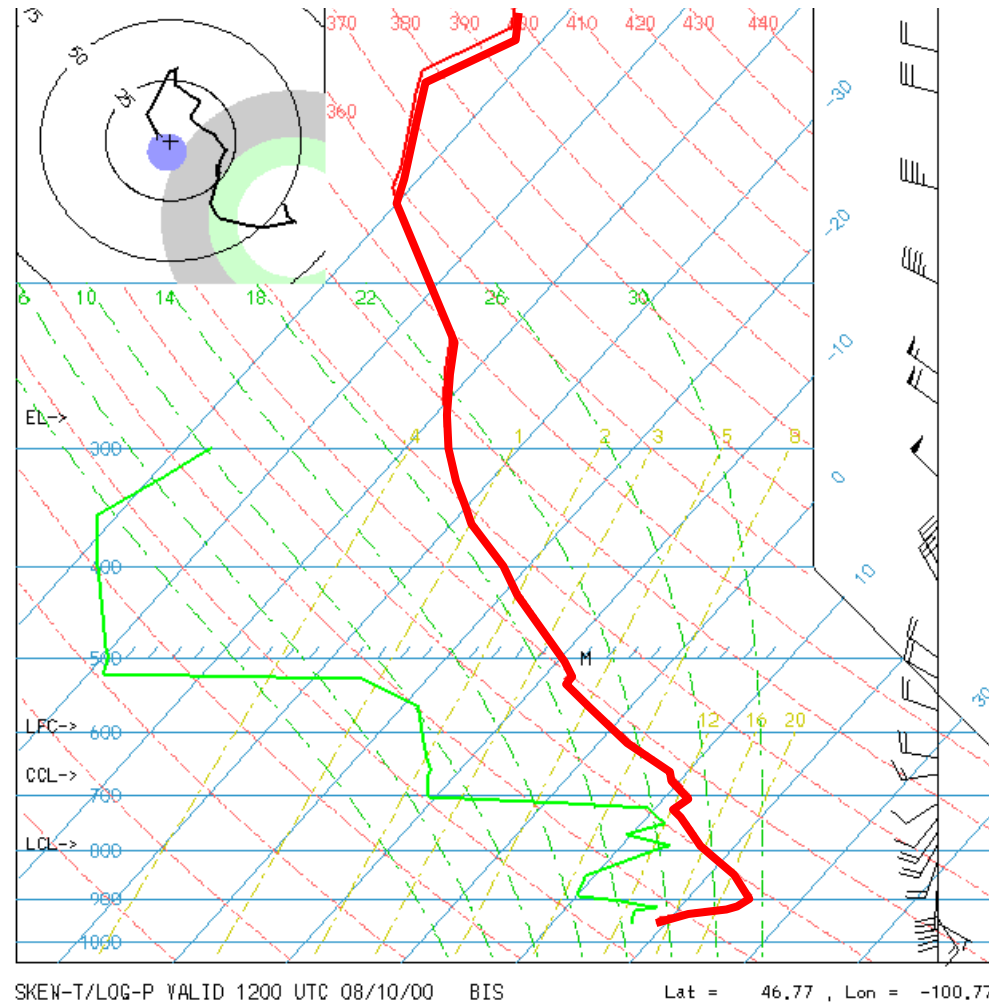
Computer Analysis of Radiosonde Data

- Plotting and analysis is done by computer software.
- Information is coded from transmission/stored data.
- Mandatory Levels
- Significant Levels
 - Significant change in observed properties.

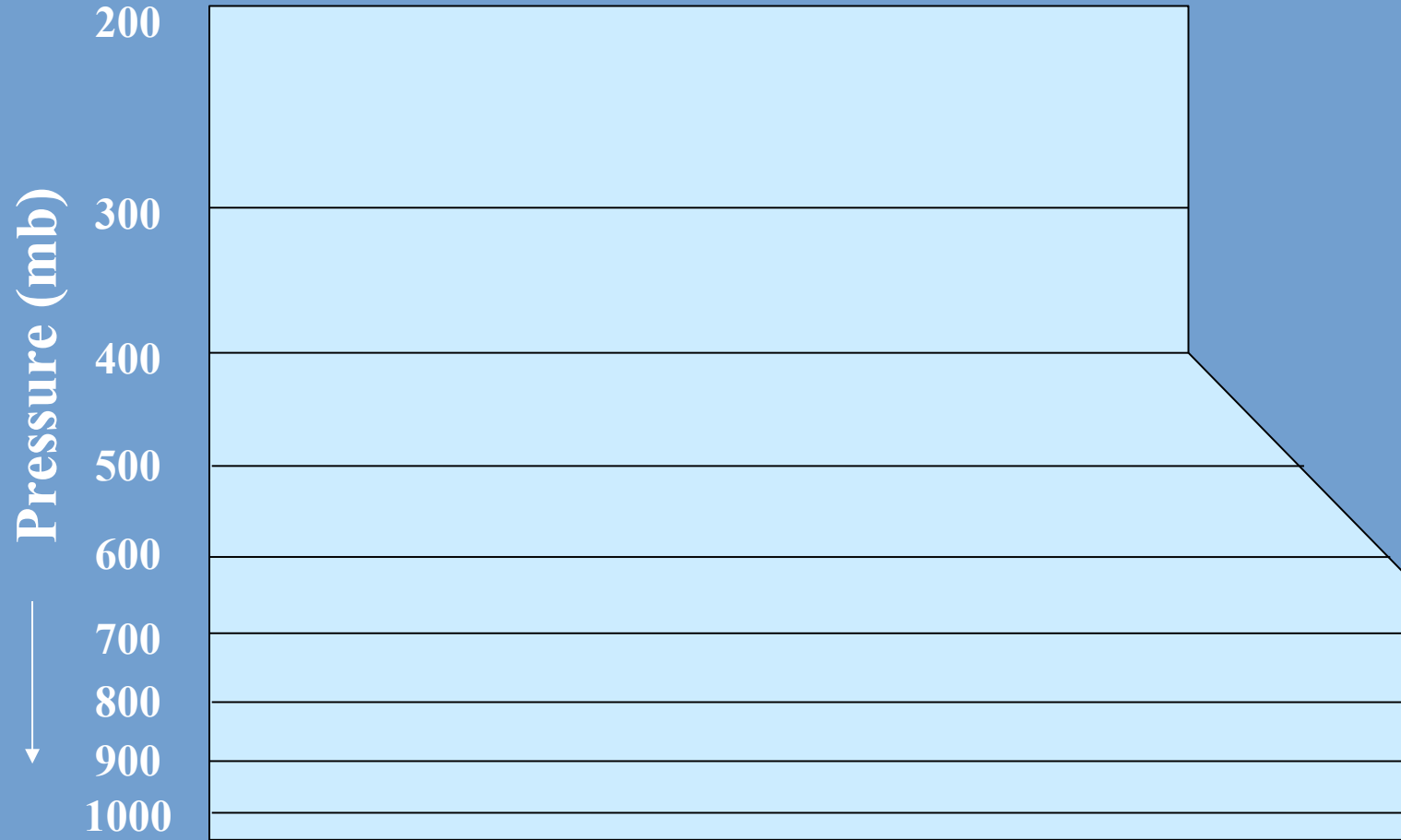


Skew T Log p Diagram

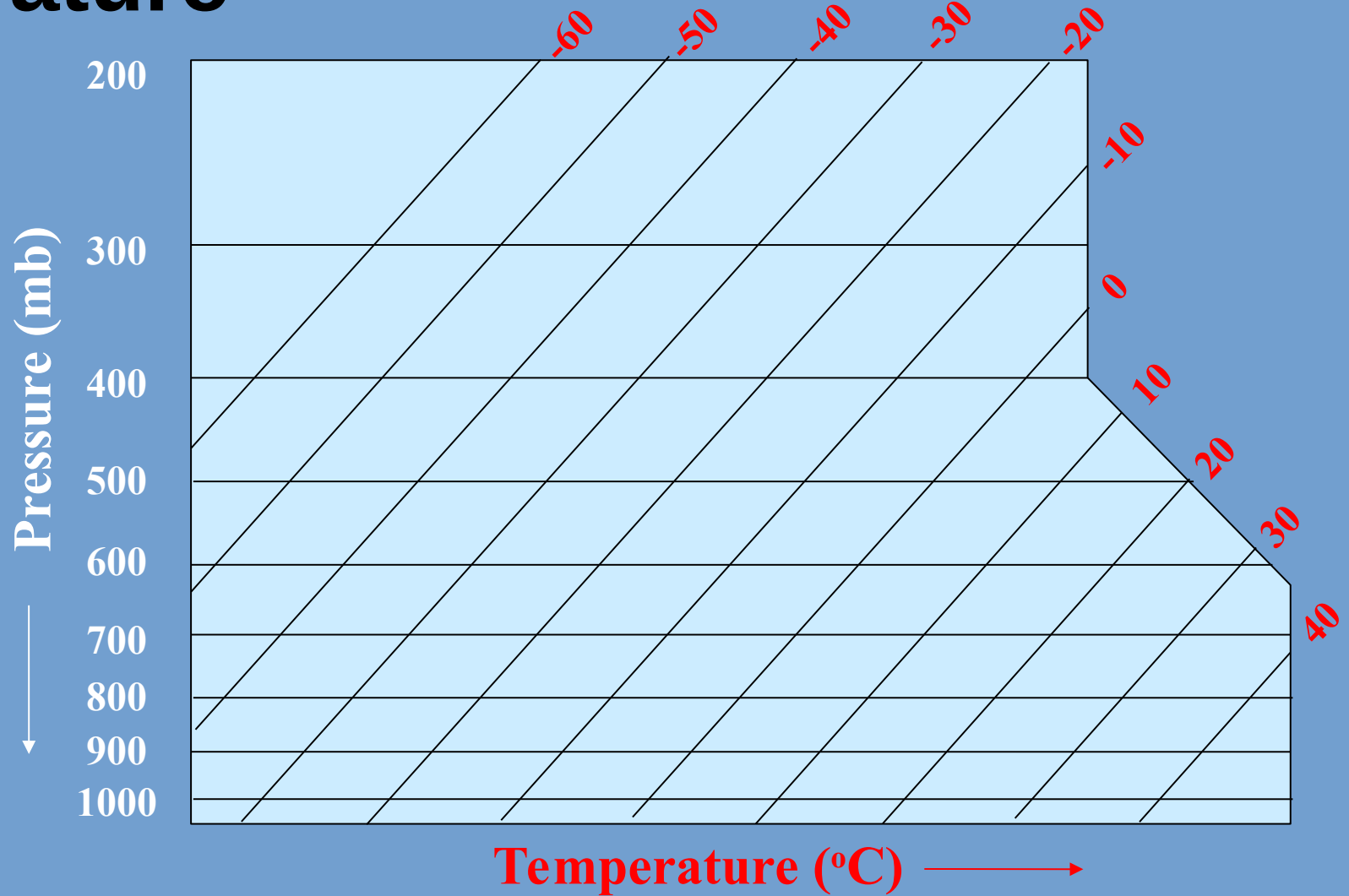
- Coordinates
 - Pressure Decreases Logarithmically
 - Temperature Skewed @ 45° Angle
 - Easier to Identify Stable Layers



Pressure



Temperature



Dry Adiabats

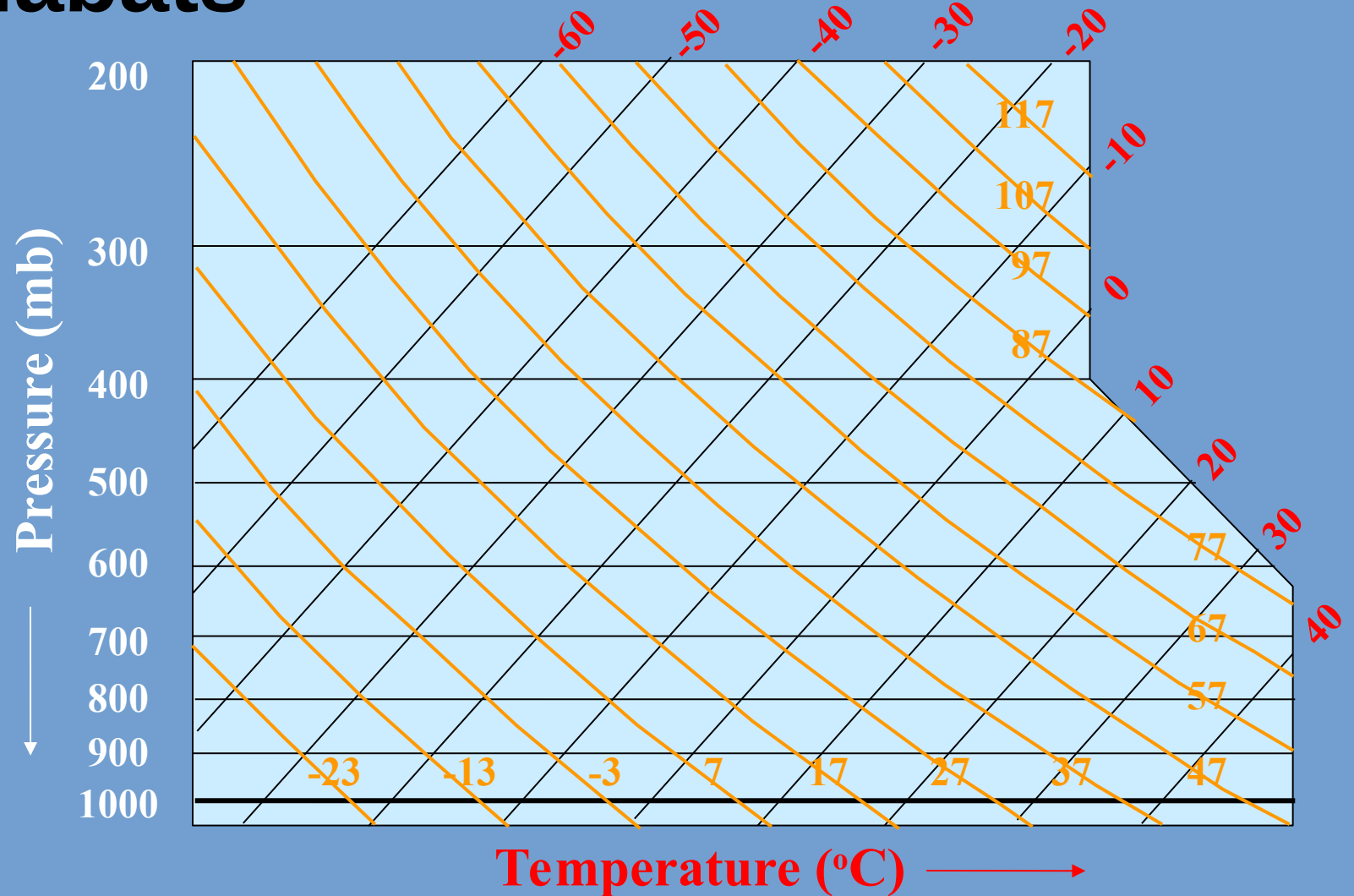
- Dry Adiabatic Lapse Rate

$$\Gamma_d = \frac{dT}{dz} = -9.8^\circ \text{C km}^{-1}$$

- Also Constant Potential Temperature

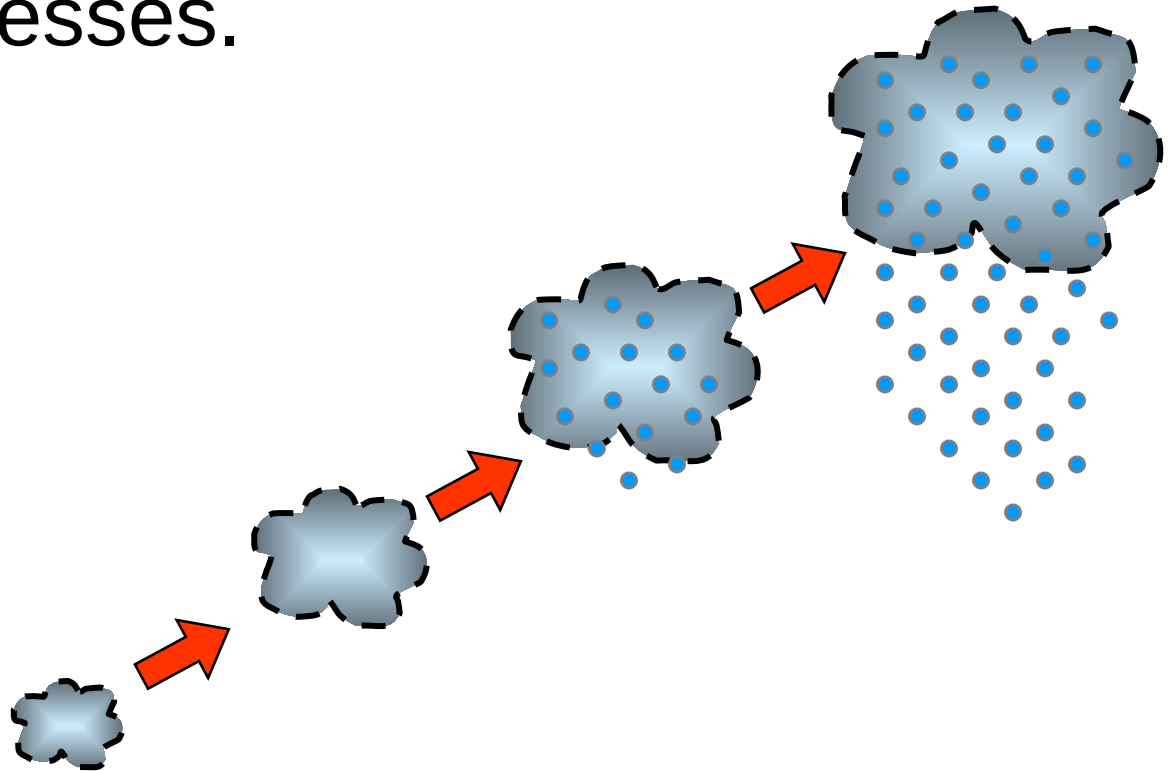
$$\theta = T \left(\frac{1000}{P} \right)^{.286}$$

Dry Adiabats

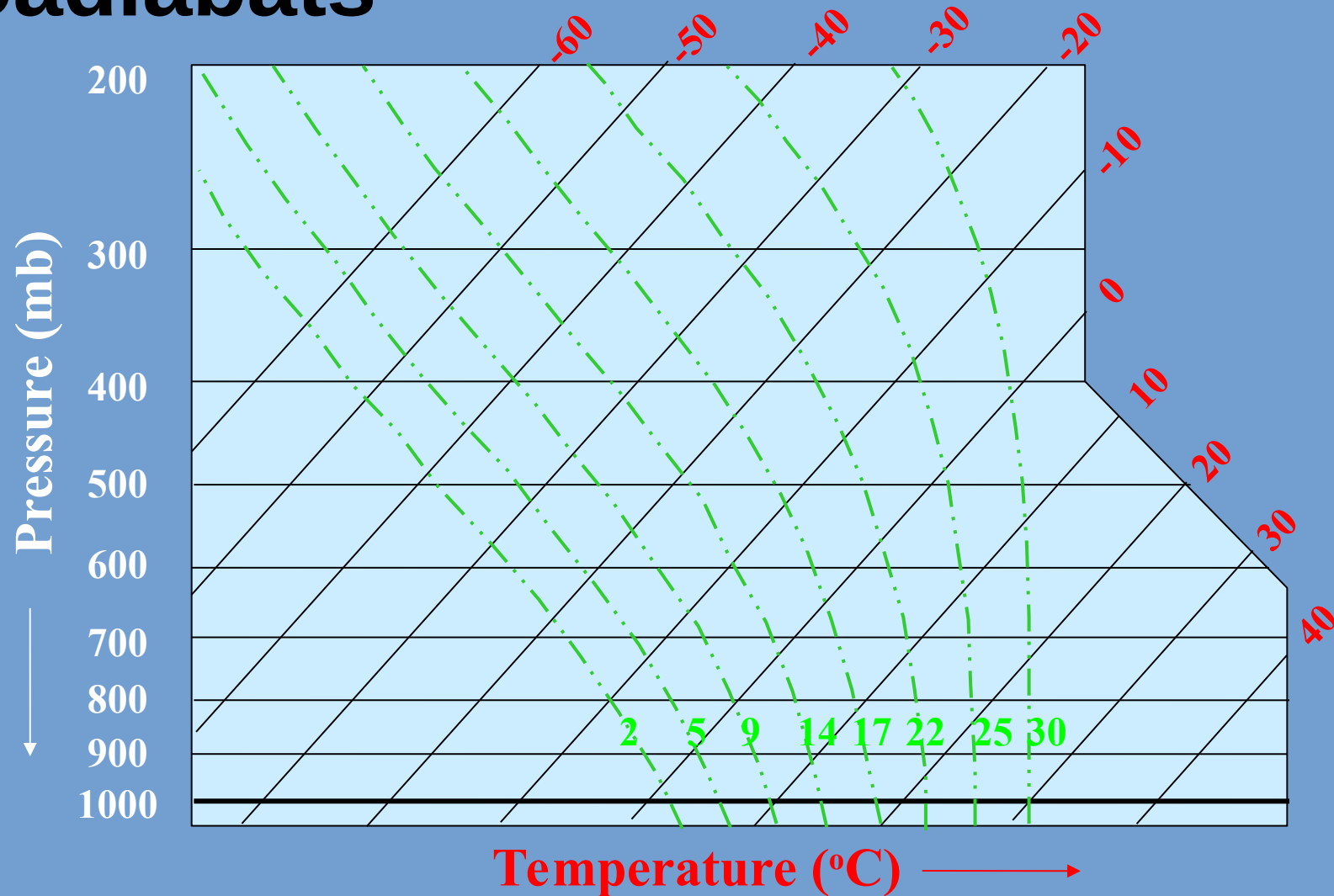


Pseudoadiabats

- Lines of constant saturated adiabatic lapse rate.
- For saturated processes.



Pseudoadiabats



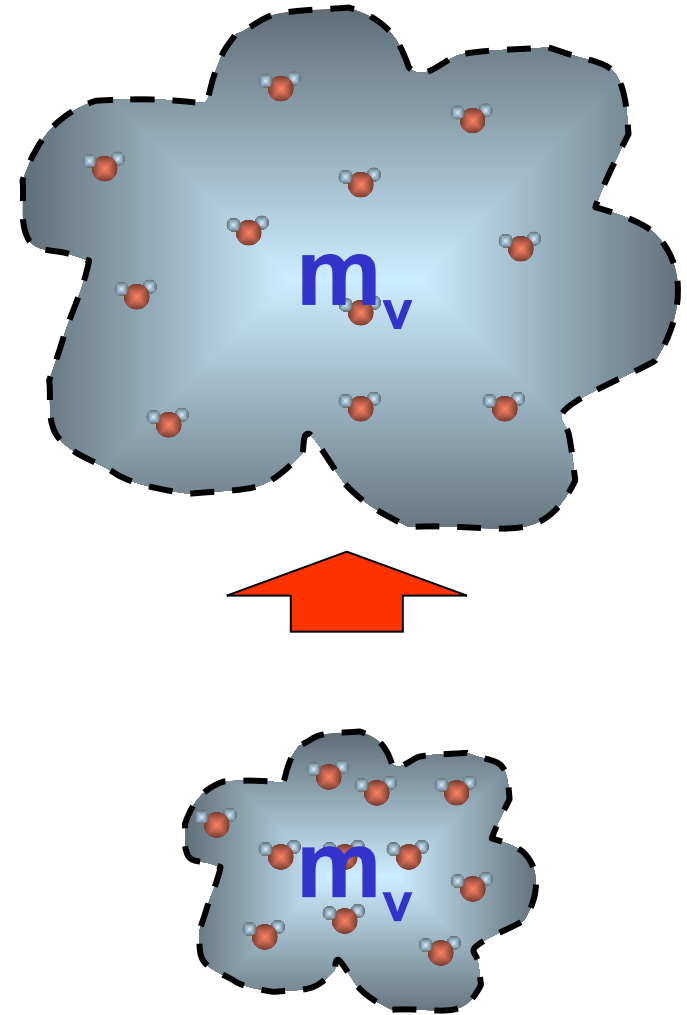
Equivalent Potential Temperature (θ_e)

- The potential temperature a parcel of air would have if all of its water vapor were condensed and the latent heat released warmed only the dry air.
 - A measure of the total energy of a parcel of air.
 - Conserved (or constant) for saturated adiabatic processes.
 - Pseudoadiabats are also lines of constant Equivalent Potential Temperature (θ_e)

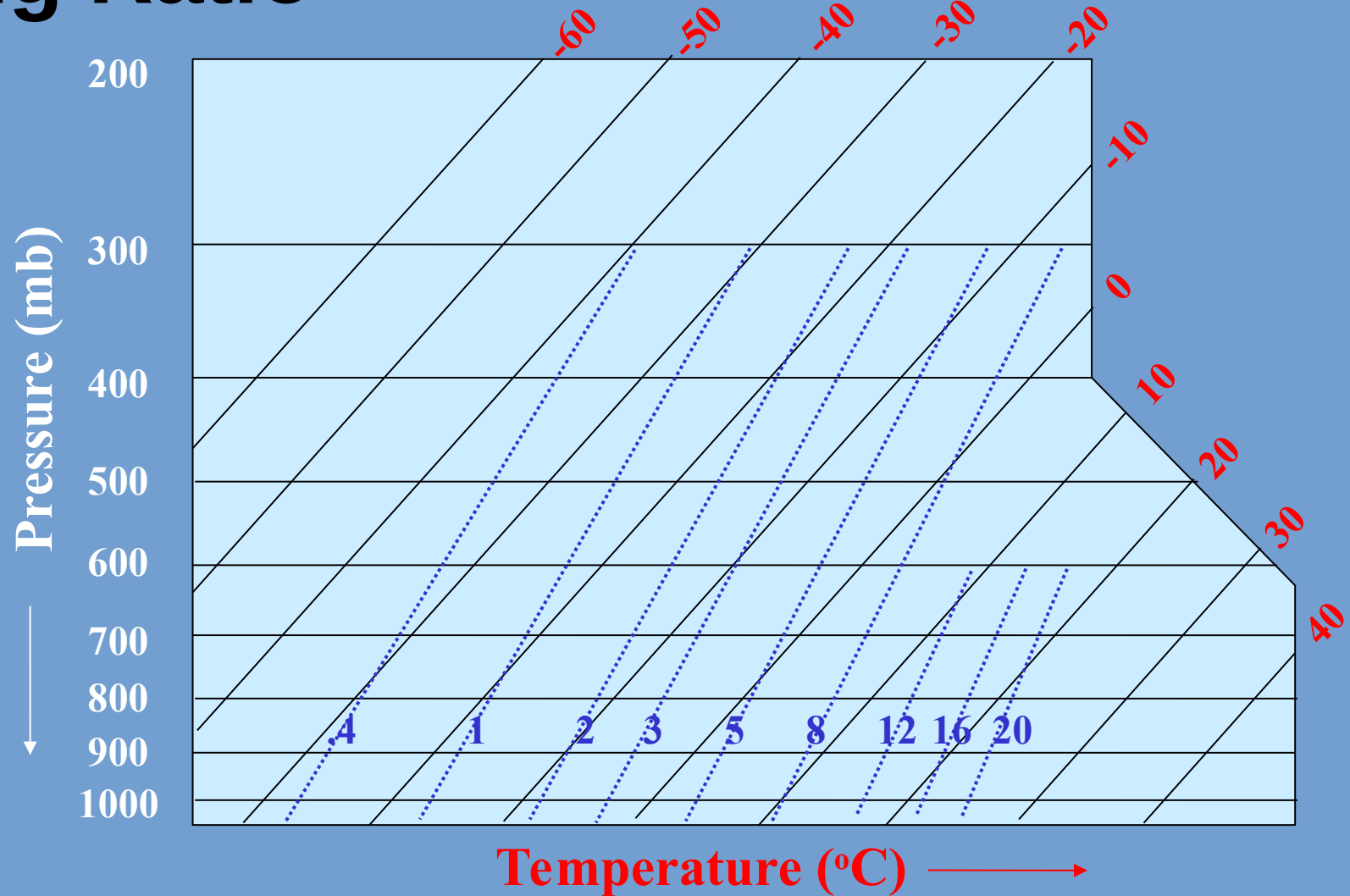
Mixing Ratio

- Conserved (or constant) for dry adiabatic ascent.

$$w = \frac{m_v}{m_d}$$



Mixing Ratio



Dew Point Temp.

