Skew-T Lop P Diagrams





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 tansmission/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

$$\Gamma_{\rm d} = \frac{\rm dT}{\rm dz} = -9.8^{\circ} \rm C \, km^{-1}$$

• 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.







Mixing Ratio



Dew Point Temp.

