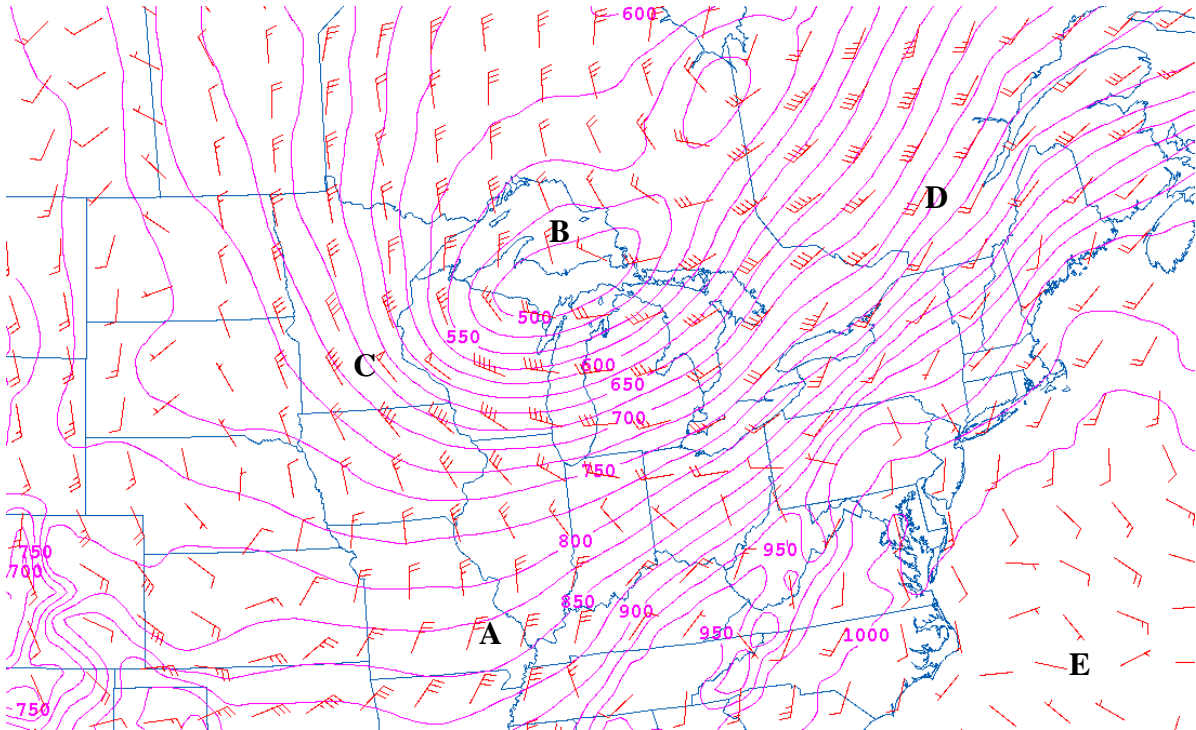


Name: _____

MEA 443 WEATHER ANALYSIS AND FORECASTING, Fall 2011
Quiz 6, 29 September 2011

1.) The plot below shows pressure and wind on the 296 K isentropic surface. For the points A-E listed below, assuming that the system speed is small relative to the wind speed, indicate the most likely vertical motion at each point (rising, sinking, or weak).

A: _____ B: _____ C: _____ D: _____ E: _____



2.) A major winter storm is about to impact the Raleigh area! You have decided to conduct an analysis of the 296 K isentropic surface to help you forecast precipitation amounts. You have concluded diabatic contributions to the vertical motion are relatively small. The storm is moving towards the east at 10 m/s. The wind speed and direction on the isentropic surface over Raleigh is 12 m/s from the east. The change in pressure between Raleigh and a location 1000 km to the east is +20 hpa. Calculate omega (a) neglecting storm motion and (b) including the storm motion contribution in the calculation. Does each of your calculations suggest ascent or subsidence? Show all work, and express your answer in units of Pa/s. Recall:

$$\omega \approx (\vec{v} - \vec{c}) \cdot \nabla_{\theta} p + \frac{\partial p}{\partial \theta} \frac{d\theta}{dt}$$

a.

b.

3.) True/False: Mark T or F.

- _____ 1. The stratosphere is characterized by high values of PV, indicative of high static stability relative to the troposphere.
- _____ 2. Temperature is conserved along a line of constant PV, assuming adiabatic and frictionless flow.