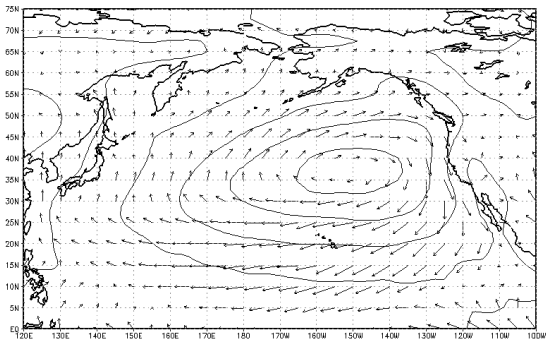
Geog C139 Homework 4 **Due: Fri 1 April**

1. Holton 1.11. Hint: combine equations 1.12a,b to form a prognostic equation for v.

2. Holton 2.2. Hint: Use the thermodynamic equation, and expand out to express the local rate of change in terms of the advection.

3. The figure below shows sea level pressure contours and surface wind vectors associated with a stationary eddy over the North Pacific for a particular month.



   a. Is the pressure feature over the North Pacific a high or low? Explain why, using the geostrophic relationship.
   b. Note that there is significant cross-isobaric flow associated with this feature. What does this tell you about the horizontal divergence (i.e. $\nabla.\mathbf{v}$ computed only for horizontal components) in the core of the eddy? Given your answer, how is mass continuity satisfied?

4. Holton 3.10