

ERTH 465
Inclass Exercise 7: Dines Compensation
Due Tuesday 24 October 2017 (50 pts)

Answer in complete sentences. Show all work.

On a given day, a trough in the westerlies is progressing across the United States.

At the inflection point on the eastern side of the trough, the net divergence in the layer from the Level of Non-divergence (LND) to the tropopause was $2.78 \times 10^{-5} \text{ s}^{-1}$. The LND was at the 500 mb level and, on this day, the tropopause was approximately located at the 300 mb level.

At the inflection point, the 500 mb height was 546 dm and the 300 mb height was 943 dm. Assume that the vertical velocity at the tropopause was 0.

1. Before proceeding, sketch the pattern described above schematically. (10 pts)
2. Determine the vertical velocity at the LND in cm s^{-1} . (40 pts)