

ATM 211
Ageostrophic Wind Assignment

Name: _____

You have been given two maps. Map #1 is a map of 300-mb height from a GFS analysis for 0000Z on March 2, 2016. Map #2 displays 300-mb height and the **ageostrophic** wind for the same time. *Remember, the wind barbs here only show the ageostrophic component of the wind, NOT the full wind! You'll notice that, in most places, the ageostrophic component of the wind is relatively light, thus proving that geostrophic balance is a good approximation at 300 mb!*

1. At each circle in Map #1, draw the three forces involved in gradient wind balance (PGF, CF, and Centrifugal).

**** Remember that the centrifugal force will be strongest when the curvature is strongest, so there may be some regions where there is no centrifugal force, leaving the flow as simply a balance between PGF and CF!**

2. In Map #2, draw lines representing trough axes and ridge axes (there may be more than one). A trough axis is a dashed line, and a ridge axis is a zigzagged line.

3. On Map #2, draw a **C** in regions where there is convergence of the ageostrophic wind, and a **D** where there is divergence of the ageostrophic wind. Use what you know about convergence and divergence and their relation to trough/ridge axes in the idealized cases we discussed in class.

4. Where, geographically, on Map #2 is the ageostrophic wind the strongest? Why do you think this is the case?

5. Is there a region where the ageostrophic component of the wind is weak, but the geostrophic wind is strong? If so, where? Why is the ageostrophic component so weak there?

6. Where, geographically, on Map #2 would you expect a surface low (cyclone) to be located? Where would you expect a surface high (anticyclone) to be located? Why?