ATM 400 Sep 4 2008
Assignment #2
Due: Thurs Sep 11

Please show all your work.

1. A meridional sea level pressure (SLP) gradient of +(3 hPa)/(100 km) is present over the North Atlantic. A ship in the North Atlantic traveling due north at 15 km/h records an SLP increase of 4 hPa in a 3-h period. What is the SLP change recorded on an island that the ship is passing? Give your answer in hPa/6h.

2. Show mathematically that the geostrophic wind is nondivergent.

3. Show, using appropriate assumptions, that the geostrophic approximation generally is not valid in (a) the Tropics and (b) the vicinity of shortwave troughs and ridges.