

Homework 4

1. Show that for the weak pressure gradient, the gradient wind reduces to the geostrophic wind in the case of regular anticyclone and to the inertia circle in the case of anomalous anticyclone.
2. What is the maximum Rossby number ($Ro = U/fR$) at which the gradient wind differs by less than 10 % from the geostrophic wind for cyclonic flow? Calculate both velocities in that case for the cyclone of radius 500 km. Assume $f = 10^{-4}$ 1/s.