

SIO 217B Atmospheric and Climate Sciences II

Exercise #16

1. Download the files containing Z_{500} , u_{500} , and v_{500} for 1993 March 14 00Z. Calculate planetary vorticity as a function of latitude. For more convenient numbers, multiply vorticity by 10^5 . Plot contours of planetary vorticity overlaid by wind vectors in the domain 20-50°N, 270-310°E using intervals of 1 (actually $1 \times 10^{-5} \text{ s}^{-1}$). Add contours of geopotential height using intervals of 6 dkm.
2. a) Download the file containing ζ_{500} and divide by 10 to convert to units of 10^{-5} s^{-1} . Add relative vorticity to planetary vorticity to obtain absolute vorticity η_{500} . Plot contours of η_{500} overlaid by wind vectors in the domain 20-50°N, 270-310°E using intervals of 5 (actually $5 \times 10^{-5} \text{ s}^{-1}$). Add contours of geopotential height using intervals of 6 dkm.
b) How much of the domain is subject to inertial instability?