

Homework 6

1. A mid-latitude cyclone is associated with the disturbance height in the lower troposphere

$$z' = -Ze^{-(x^2+y^2)/2L^2}$$

where $Z = 200$ m, $L = 1000$ km, y is measured from 43°N , and the boundary layer has an eddy diffusivity of 10 m²/s. Calculate the maximum vertical velocity atop the boundary layer. Draw a 3D plot of the geopotential associated with the disturbance from the exercise above.

2. Draw a plot of the Ekman Spiral.