

Problems on Chapter 14: Barotropic Rossby Waves

- Q 14.1:** Find the phase speed on a β -plane at 60°N of a (barotropic) Rossby wave with north-south wavelength 2500 km and west-east wavelength 10,000 km in a basic westerly wind of 12 m s^{-1} .
- Q 14.2:** Find the wavelength of stationary barotropic Rossby waves with phase lines orientated N-S for basic westerly winds of 10 m s^{-1} , 15 m s^{-1} and 20 m s^{-1} for a latitude of 35°N . How do these numbers compare with the length of the latitude circle (i.e. roughly how many waves can be fitted round a latitude circle)?
- Q 14.3:** For the 15 m s^{-1} basic wind and same latitude circle as in the previous question, investigate if the x-wavelength of stationary barotropic Rossby waves can be made into an integral fraction of the length of the latitude circle by an appropriate choice of L_y .