Homework 7 - Ocean Currents

1. A modern container ship with a mass of 100,000 metric tons moves with a speed of 20 knots from Los Angeles port southward. What is the Coriolis force on the vessel at a latitude of 30°N, at the equator, and at the southern latitude of 20°S!

2. A stormy wind of B=10 strength on the Beaufort scale on 40°S latitude covering an area of A=10km² drags the water in westerly direction. Calculate the drag force the wind is exerting on the water.

3. Calculate the Ekman mass transport $M_{Ek}$ at a very stormy day with the wind stress reaching values of $\tau_D = 10^4 \text{ N/m}^2$ at the southern latitude of 50°S. Calculate the wind velocity dragging the water and give the corresponding wind speed on the Beaufort scale.