Some equations you may (or may not!) find useful:

$$-\frac{\partial \rho u}{\partial x} - \frac{\partial \rho v}{\partial y} - \frac{\partial \rho w}{\partial z} = \frac{\partial \rho}{\partial t}$$

$$dQ = dW + dI$$

$$p = \rho R_d T, R_d = 287 \text{ J kg}^{-1} \text{ K}^{-1}$$

$$T_v = (1 + .61q)T$$

$$\theta = T_v(\frac{1000}{p})^{\frac{R_d}{C_p}}, C_p = 1010 \text{ J kg}^{-1} \text{ K}^{-1}$$

$$\frac{\partial \theta}{\partial t} = -u\frac{\partial \theta}{\partial x} - v\frac{\partial \theta}{\partial y} - w\frac{\partial \theta}{\partial z} + S_\theta$$

$$\frac{dp}{dz} = -\rho g$$

$$\Delta z = \frac{\Delta p}{p}\frac{R_d T}{g}, g = 9.8 \text{ m s}^{-2}$$

$$z_2 - z_1 = \ln(\frac{p_1}{p_2})\frac{R_d T}{g}$$

$$\frac{\partial \vec{V}}{\partial t} = -\vec{V} \cdot \nabla \vec{V} - \frac{1}{\rho}\nabla p - 2\Omega \times \vec{V} - g\hat{k} + F_r$$

$$f = 2\Omega \sin\phi = 2 \times 7.27 \times 10^{-5} \sin\phi$$

$$V_g = -\frac{1}{\rho f}\frac{dp}{dn} = -\frac{g}{f}\frac{dZ_p}{dn}$$

$$\text{cyclonic: } fV + \frac{V^2}{R} = -\frac{1}{\rho}\frac{dp}{dn} = -\frac{g}{f}\frac{dZ_p}{dn}$$

$$\text{anticyclonic: } fV - \frac{V^2}{R} = -\frac{1}{\rho}\frac{dp}{dn} = -\frac{g}{f}\frac{dZ_p}{dn}$$

$$\frac{V^2}{R} = -\frac{1}{\rho}\frac{dp}{dn} = -\frac{g}{f}\frac{dZ_p}{dn}$$

$$V_T = V_{g1} - V_{g2} = \frac{g}{f}(\frac{d\Delta Z_p}{dn}) = \frac{R_d}{f}\frac{\Delta p}{p}\frac{dT}{dn}$$

$$1 \text{ mb} = 1 \text{ hPa} = 100 \text{ Pa}$$

$$K = {}^\circ C + 273.15$$

$$1 \text{ nautical mile} = 1852 \text{ m}$$