$$\mathrm{Bu} = \left(\frac{\mathrm{Ro}}{\mathrm{Fr}}\right)^2$$

$$\frac{D}{Dt}\left(\frac{\vec{\omega}_a \cdot \nabla\theta}{\rho}\right) = 0$$

$$\frac{D}{Dt}\oint \vec{v} \cdot d\vec{r}$$

$$q = \beta y + \left[\nabla^2 + \frac{\partial}{\partial z}\left(\frac{f_0^2}{N^2}\frac{\partial}{\partial z}\right)\right]\psi$$

$$\mathrm{APE} = \frac{R p_S^{-\kappa}}{2}\int_0^{p_S} p^{\kappa-1}\left(-g\frac{\partial\overline{\theta}}{\partial p}\right)\overline{\theta}$$

$$\sigma \sim \frac{U}{L_d} = \Lambda\frac{f_0}{N}$$

$$C = \oint \vec{v} \cdot d\vec{l}$$

$$\frac{D}{Dt}(\zeta + f) = -(\zeta + f)\left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y}\right) + \left(\frac{\partial u}{\partial z}\frac{\partial w}{\partial y} - \frac{\partial v}{\partial z}\frac{\partial w}{\partial x}\right) + \frac{1}{\rho^2}\left(\frac{\partial \rho}{\partial x}\frac{\partial p}{\partial y} - \frac{\partial \rho}{\partial y}\frac{\partial p}{\partial x}\right)$$

$$\vec{\omega} = \nabla \times \vec{v}$$

$$\frac{\partial \rho}{\partial t} + \frac{\partial \rho u}{\partial x} + \frac{\partial \rho v}{\partial y} + \frac{\partial \rho w}{\partial z} = 0$$

$$(U - c)\left(\tilde{\psi}_{yy} - k^2\tilde{\psi}\right) + (\beta - U_{yy})\tilde{\psi} = 0$$