

$$\frac{\partial \rho}{\partial t} + \frac{\partial (\rho V)}{\partial z} = 0 \quad (1)$$

$$\frac{\partial V}{\partial t} + V \frac{\partial V}{\partial z} + \frac{1}{\rho} \frac{\partial p}{\partial z} + g - \frac{f_{vis}}{\rho} = 0 \quad (2)$$

$$\frac{\partial (\rho e)}{\partial t} + \frac{\partial (\rho V e)}{\partial z} - \frac{\partial p}{\partial t} = Q \quad (3)$$