$$\frac{\partial h^*}{\partial t^*} + \frac{\partial U^*}{\partial x} + \frac{\partial V^*}{\partial y} + bh^*T \tag{1}$$

$$\frac{1}{T}\frac{\partial U^*}{\partial t^*} + aU^* + \frac{T}{h_0 g}\frac{\partial h^*}{\partial x} - fV^* \tag{2}$$

$$\frac{1}{T}\frac{\partial V^*}{\partial t^*} + aV^* + \frac{T}{h_0 g}\frac{\partial h^*}{\partial y} - fU^* \tag{3}$$

$$T = \sqrt{\frac{2h_0}{g}} \tag{4}$$