$$\frac{\partial u}{\partial t} - \frac{2\Omega}{a} yv = \frac{\partial \phi}{\partial x} - \varepsilon u$$
$$\frac{\partial v}{\partial t} + \frac{2\Omega}{a} yu = \frac{\partial \phi}{\partial y} - \varepsilon v$$
$$\frac{\partial \phi}{\partial t} + c^2 \left(\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} \right) = -Q - \varepsilon \phi$$

(x, y)	eastward, northward coordinate
t	time
(u, v)	horizontal velocity
ϕ	geopotential
Ω	rotation rate of earth
c	buoyancy (gravity) wave speed (~ 60)m/s
Q	heating rate
a	radius of the earth (~ 6400km)
ε	dissipation coefficient ($0.1c/L_{\mathrm{er}}$)
L_{er}	equatorial radius of deformation $\equiv \sqrt{ca/2\Omega} \sim O(1300\mathrm{km})$