$$
\begin{aligned}
\frac{\partial u}{\partial t} - fv &= -g\frac{\partial h}{\partial x} \\
\frac{\partial v}{\partial t} + fu &= -g\frac{\partial h}{\partial y} \\
\frac{\partial h}{\partial t} + H\nabla\cdot\boldsymbol{v} &= Q = \alpha\nabla\cdot\boldsymbol{v}
\end{aligned}
$$