$$\frac{\partial H}{\partial t} + \frac{\partial (Hu)}{\partial x} = Q$$

$$\frac{\partial (Hu)}{\partial t} = -\underbrace{\frac{\partial (Huu)}{\partial x}}_{\text{Advection}} - \underbrace{gH\frac{\partial \eta}{\partial x}}_{\text{Pressure}} - \underbrace{C_B\,|u|\,u}_{\text{Friction}} + \underbrace{\frac{\partial}{\partial x}(HA_H\frac{\partial u}{\partial x}}_{\text{Dispersion}} + \tau_x$$