$$\int \overline{\Phi}_s \frac{\partial}{\partial t} \left[\overline{\rho}^{(d)} \overline{\widehat{m}}^{(H_2O)} \right] dz - \overline{F}_{net}^{(H_2O)} \overline{\Phi}_s = \Delta \widehat{\mathcal{I}}_{\partial m^{(H_2O)}/\partial t}^{(\Phi)}$$