$$\frac{\partial}{\partial t} \int \rho^{(d)} \left\{ \left[m^{(d)} + m_{t=t^n}^{(H_2O)} \right] (K + \Phi_s) + c_p^{(d)} T + m^{(H_2O)} c_p^{(d)} T + F_{net}^{(wv)} L_{s,00} + F_{net}^{(liq)} L_{f,00} \right\} dz$$
$$- \Delta \mathcal{I}_{m^{(H_2O)}} = F_{net}^{(wv)} L_{s,00} + F_{net}^{(liq)} L_{f,00} + F^{(turb,rad)}. \quad (111)$$