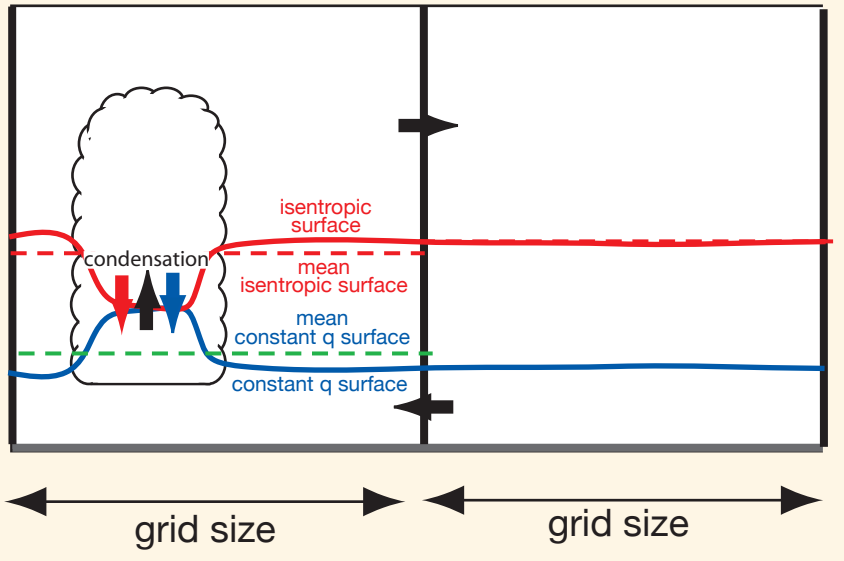
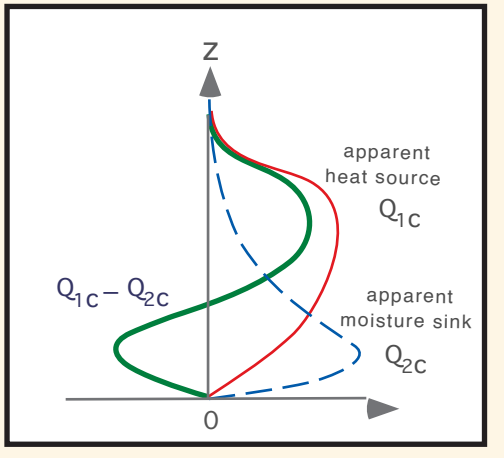
Similarly, when water-vapor mixing ratio q is used for both vertical coordinate and Ψ,

$$\left(\frac{\partial}{\partial t}\right)\overline{\rho^*} = -\overline{\nabla\cdot(\rho^*\mathbf{v})} - \frac{\partial}{\partial\theta}\overline{\rho^*\dot{q}}$$

$\overline{(\ )}$: average with respect to horizontal area along a **constant q** surface,

ρ^* : **pseudo-density in the q** coordinate system

$\dot{q}$ *inside the cloud is recognized at a lower level.*