

Latent heat

→ evaporation, condensation, sublimation

latent heat of fusion $L \approx 333.6 \text{ kJ/kg}$

~~Q~~ $Q = L \cdot m$

$$C = \frac{Q}{\Delta T}$$

$$F_e = \rho L C_e v (q_a - q_0)$$

Surface heat balance:

$$(1 - \alpha) F_r + F_L - \epsilon_L \sigma T_0^4 + F_s + F_e + k_0 \left(\frac{\partial T}{\partial z} \right)_0 = 0$$

F_r : incoming and αF_r reflected short wave rad

I_0 : radiativ flux into interior

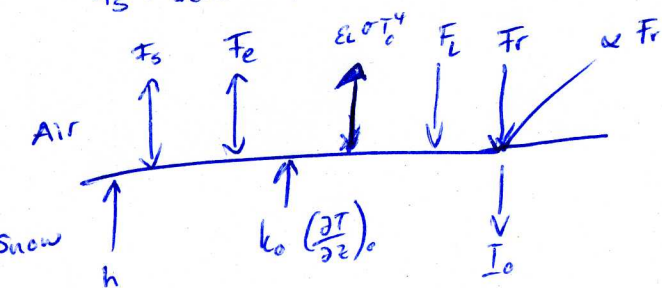
F_L : incoming longwave rad.

$k_0 \left(\frac{\partial T}{\partial z} \right)_0$ conductive heat flux

F_s : sensible/turbulent heat flux

$\epsilon_L \sigma T_0^4$: outgoing LW rad.

F_e : latent heat of evaporation flux



earth rad energy balance

$$(1 - \alpha) S = \sigma \epsilon T^4$$