

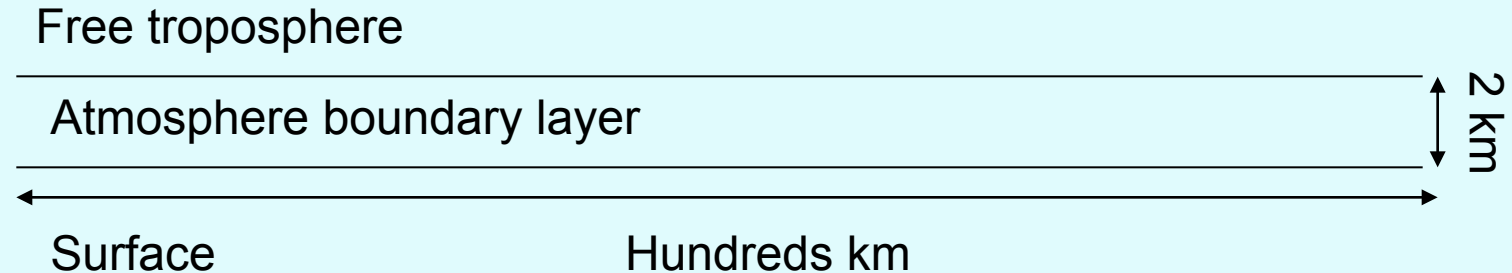
Estimating CO₂ fluxes over a boreal forest from tall tower mixing ratio measurements



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- ❑ Direct measurements (eddy covariance method) gives CO₂ fluxes on rather small spatial scales, typically a few hectares.
- ❑ It is difficult to extrapolate the results to large regions.
- ❑ Measurements of CO₂ concentrations on tall towers allows to estimate CO₂ fluxes from large surface region (50 km x 50 km).

Boundary layer balance method



$$Q = H \frac{\partial C}{\partial t} + W(C - C_T)$$

Q - Flow from the surface

$H \frac{\partial C}{\partial t}$ - Change of CO₂ concentration in atmosphere boundary layer

$W(C - C_T)$ - Exchange with free troposphere

H - Height of atmosphere boundary layer

C, C_T - Concentrations in the boundary layer and troposphere

W - Absolute value of vertical wind speed on the height H , obtained from reanalysis