$$
\begin{aligned}
\frac{d\varepsilon}{dt} &= -g\frac{K}{\theta_0}\frac{\partial(\theta+\theta_0)}{\partial z} + K\left\{\left(\frac{\partial u}{\partial z}+\frac{\partial w}{\partial x}\right)^2 + 2\left[\left(\frac{\partial u}{\partial z}\right)^2 + \left(\frac{\partial w}{\partial x}\right)^2\right]\right\} \\
&\quad -0.2\frac{\varepsilon^{\frac{3}{2}}}{l} + \frac{\partial}{\partial x}\left(K\frac{\partial \varepsilon}{\partial x}\right) + \frac{1}{\rho_0}\frac{\partial}{\partial z}\left(\rho_0 K\frac{\partial \varepsilon}{\partial z}\right), \\
K &= 0.2\sqrt{\varepsilon}\max(\Delta z, z), \\
Q_{dis} &= 0.2\frac{\varepsilon^{\frac{3}{2}}}{l c_p}
\end{aligned}
$$