$$\theta(z) = \theta_0 \exp\left(\frac{N^2 z}{g}\right) \tag{1}$$

$$\Pi(z) = 1 + \frac{g^2}{c_p \theta_0 N^2}\left[\exp\left(\frac{-N^2 z}{g} - 1\right)\right] \tag{2}$$

$$p(\Pi) = p_0 \Pi^{c_p/R} \tag{3}$$

where the Schär gravity waves test case uses, $g = 9.81\,\mathrm{m\,s^{-2}}$, $c_p = 1004\,\mathrm{J\,kg^{-1}\,K^{-1}}$, $\theta_0 = 288\,\mathrm{K}$, $N = 1 \times 10^{-2}\,\mathrm{s^{-1}}$, $p_0 = 1000\,\mathrm{hPa}$, $R = 287\,\mathrm{J\,kg^{-1}\,K^{-1}}$