Appendix A

Useful Constants and Parameters

Gravitational constant	$G = 6.673 \times 10^{-11}\,\mathrm{N\,m^2\,kg^{-2}}$
Gravity at sea level	$g_0 = 9.81\,\mathrm{m\,s^{-2}}$
Mean radius of Earth	$a = 6.37 \times 10^6\,\mathrm{m}$
Earth's angular speed of rotation	$\Omega = 7.292 \times 10^{-5}\,\mathrm{rad\,s^{-1}}$
Universal gas constant	$R^* = 8.314 \times 10^3\,\mathrm{J\,K^{-1}\,kmol^{-1}}$
Gas constant for dry air	$R = 287\,\mathrm{J\,K^{-1}\,kg^{-1}}$
Specific heat of dry air at constant pressure	$c_p = 1004\,\mathrm{J\,K^{-1}\,kg^{-1}}$
Specific heat of dry air at constant volume	$c_v = 717\,\mathrm{J\,K^{-1}\,kg^{-1}}$
Ratio of specific heats	$\gamma = c_p/c_v = 1.4$
Molecular weight of water	$m_v = 18.016\,\mathrm{kg\,kmol^{-1}}$
Latent heat of condensation at 0°C	$L_c = 2.5 \times 10^6\,\mathrm{J\,kg^{-1}}$
Mass of Earth	$M = 5.988 \times 10^{24}\,\mathrm{kg}$
Standard sea-level pressure	$p_0 = 1013.25\,\mathrm{hPa}$
Standard sea-level temperature	$T_0 = 288.15\,\mathrm{K}$
Standard sea-level density	$\rho_0 = 1.225\,\mathrm{kg\,m^{-3}}$