

Figure 2.1 Relation between saturation vapor pressure, absolute humidity, and temperature.

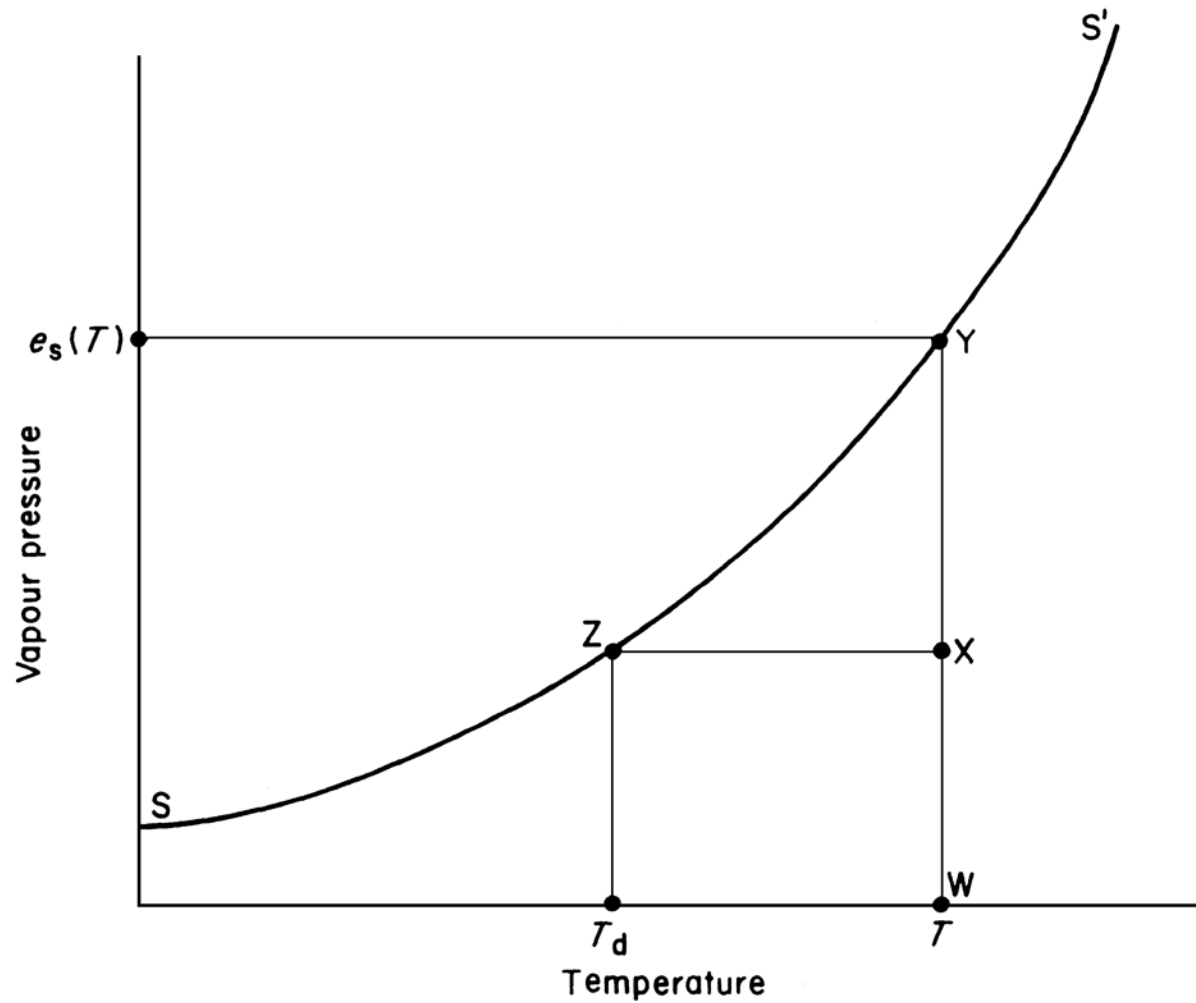


Figure 2.2 Relation between dew point temperature, saturation vapor pressure deficit and relative humidity of an air sample.

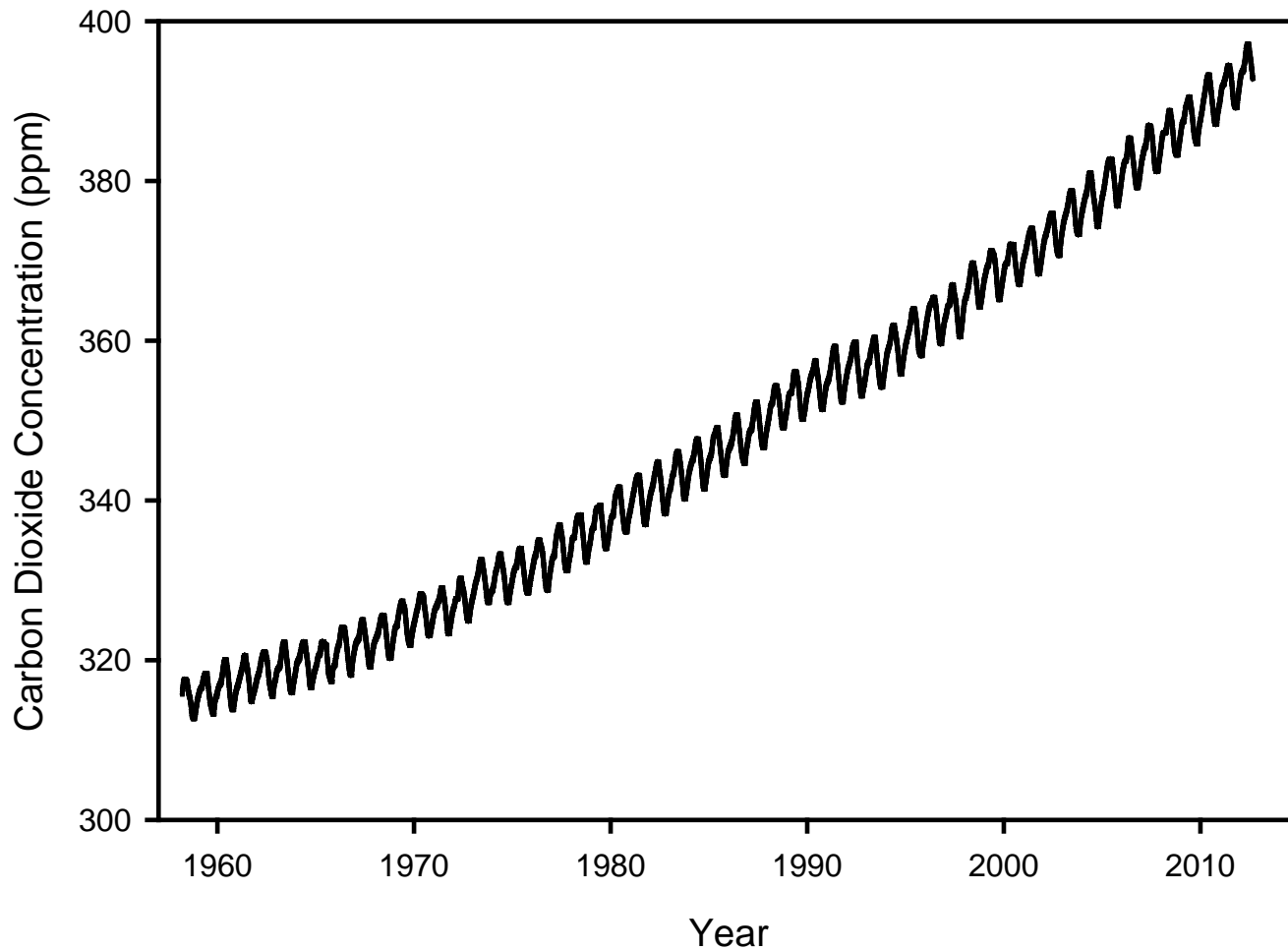


Figure 2.3 The increase in atmospheric concentration of CO<sub>2</sub> measured at Mauna Loa, Hawaii since 1958. Data are the mole fraction of CO<sub>2</sub> in dry air (data from CDIAC, courtesy of Dr. Pieter Tans, NOAA/ESRL and Dr. Ralph Keeling, Scripps Institution of Oceanography).

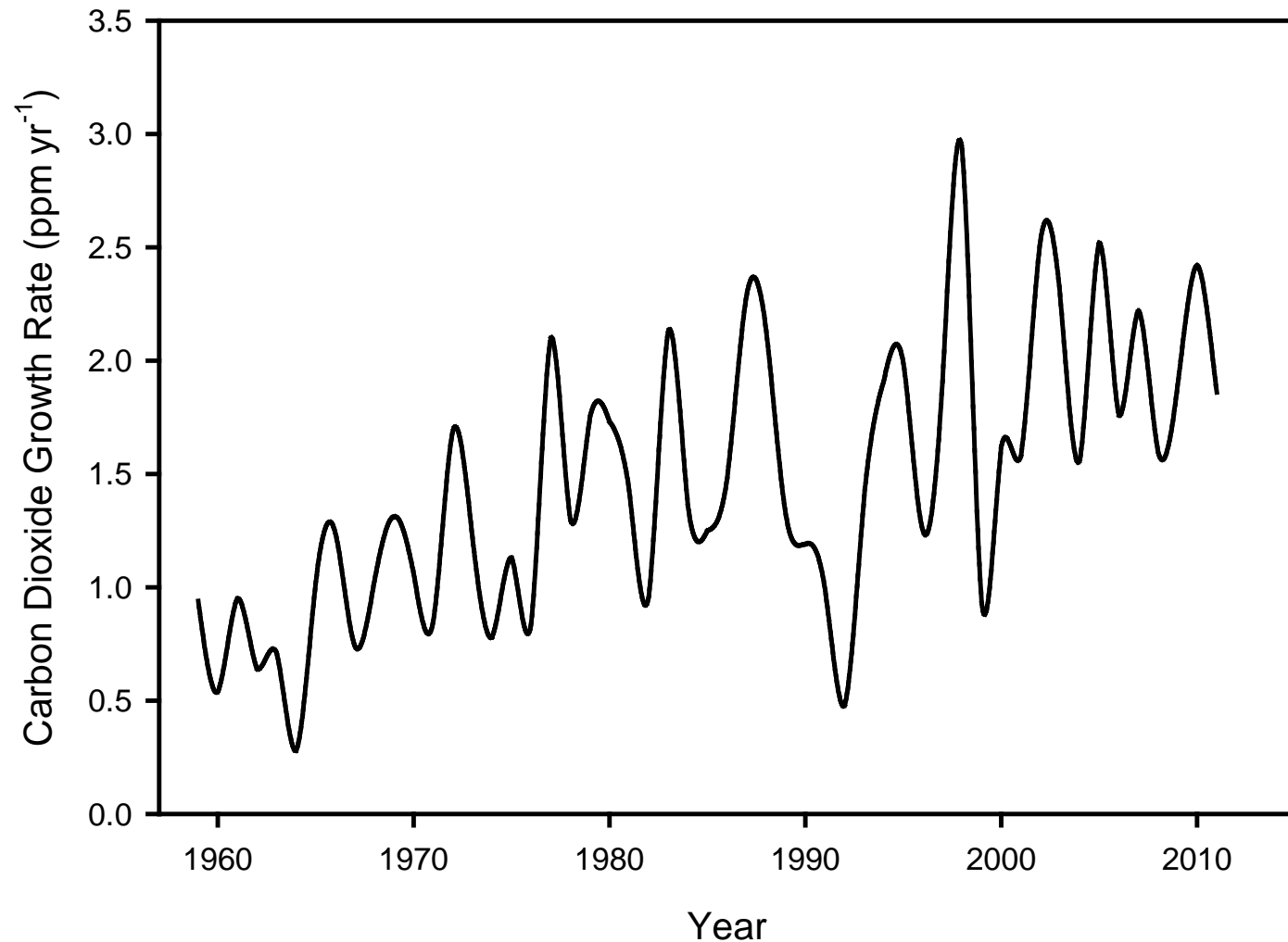


Figure 2.4 The annual rate of increase of CO<sub>2</sub> measured at Mauna Loa, Hawaii since 1958 (data from CDIAC, courtesy of Dr. Pieter Tans, NOAA/ESRL and Dr. Ralph Keeling, Scripps Institution of Oceanography).

Gas	Molecular weight (g)	Density at STP (kg m <sup>-3</sup> )	Percent by volume	Mass concentration (kg m <sup>-3</sup> )
Nitrogen	28.01	1.250	78.09	0.975
Oxygen	32.00	1.429	20.95	0.300
Argon	38.98	1.783	0.93	0.016
Carbon dioxide	44.01	1.977	0.03	0.001
			—	—
Air	29.00	1.292	100.00	1.292

Table 2.1 Composition of dry air

Species	Formula	Concentration ( in 2005)	Trend (%/yr 1995-2005)	Radiative forcing (W m <sup>-2</sup> )
Carbon dioxide	CO <sub>2</sub>	379 ppm	+1.9	1.7
Methane	CH <sub>4</sub>	1774 ppb	decreasing	0.48
Nitrous oxide	N <sub>2</sub> O	319 ppb	+0.3	0.16

Table 2.2 Concentrations (ppm, ppb in 2005), trends (% change 1995-2005), and radiative forcing (W m<sup>-2</sup>) of some important greenhouse gases (from IPCC 2007).

	Relative humidity (%)	Free energy (MPa)
Plant cellular fluid	100 to 98	0 to -3
Ocean water	98	-3
Fresh salami	80	-30
Saturated NaCl	75	-39
Crisp cornflakes	20	-218
Saturated LiCl.H <sub>2</sub> O	11	-299

Table 2.3 Equilibrium relative humidity (at 20°C) and water potential of some common solutions and substances.

Carbon	Oxygen	Hydrogen
$^{12}\text{C}$ 98.89	$^{16}\text{O}$ 99.763	H 99.9844
$^{13}\text{C}$ 1.11	$^{17}\text{O}$ 0.0375	D 0.0156
	$^{18}\text{O}$ 0.1995	

Table 2.4 Abundance (in percent) of stable isotopes of carbon, oxygen and hydrogen