where D_D is the dry deposition (dimension $ML^{-2}T^{-1}$), v_d is a deposition velocity (LT^{-1}), and c_a is the ambient atmospheric concentration (ML^{-3}). v_d depends on the many factors noted in the previous section. The most basic approach is to use a constant value of v_d for each compound (AES, MOE, RCDM-3). Various degrees of sophistication can be achieved by including a functional dependence of v_d on time of day (ASTRAP, ENAMAP-1, MEP, UMACID); on season (ASTRAP, ENAMAP-1, MEP, UMACID); on stability (ENAMAP-1); or on land-use (ENAMAP-1, UMACID).

Wet deposition is treated in a similar manner, but the removal rate coefficient may have a number of formulations. The AES model selects a value of the scavenging ratio W (dimensionless) for SO_2 and for SO_4^{2-}, and wet deposition is determined as

$$D_W = W\ p\ c_a$$

where D_W is the wet deposition ($ML^{-2}T^{-1}$) and p is the precipitation rate (LT^{-1}).

The ASTRAP model uses a fractional depletion f such that

$$D_W = f\ M_1$$

where f is proportional to the half power of precipitation rate and M_1 is the mass transferred to a grid square during a time step.

The ENAMAP-1, MEP, MOE, and UMACID models use scavenging rate coefficients which are functions of precipitation rate, viz: