

Simulation	Description	Simulation period
RefBase	Reference run with uniform reaction probabilities for IEPOX and isoprene glyoxal $\gamma_{\text{IEPOX}} = 1.0 \times 10^{-3}$ , $\gamma_{\text{IGYOXAL}} = 2.9 \times 10^{-3}$ (see Sect. 2.1.1), partitioning precursor $\Delta H_{\text{vap}}$ and $p_0^*$ (298.15 K) given in Table 1	Whole year 2012
RefVBS	ECHAM–HAM simulation with VBS approach and pseudo-chemistry (see Sect. 2.1.2)	June, July, August 2012
$\Delta H_{30}$	Like RefBase, but with same $\Delta H_{\text{vap}} = 30 \text{ kJ mol}^{-1}$ for all compounds	June, July, August 2012
EVA	Like RefBase, but with $\Delta H_{\text{vap}}$ and $p_0^*$ derived with EVAPORATION (Compernelle et al., 2011) instead of Nannoolal et al. (2008) method	Whole year 2012
$\gamma_{\text{pH}}$	Like RefBase, but with $\gamma_{\text{IEPOX}} = f(\text{pH})$	June, July, August 2012
HshiftIEP	Additional reaction in JAM3 (Reaction R24)	June, July, August 2012
HshiftLC5	Additional reaction in JAM3 (Reaction R25)	June, July, August 2012
DECAY	LISOPOOHOH in-particle decay	June, July, August 2012
JPHOT	SOA photolysis with $J_{\text{SOA}} = 0.004 \% J_{\text{NO}_2}$	June, July, August 2012