

Supplementary Material 2

Table SM2. Chemical species in biogenic emission inventory.

Variable	Description	Unit
TFLAG	Time flag for model outputs.	<YYYYDDD,HHMMSS>
ISOP	Isoprene (C ₅ H ₈).	mol/s
TERP	Total terpenes.	mol/s
PAR	Paraffinic hydrocarbons (alkanes).	mol/s
XYL	Xylenes (C ₈ H ₁₀).	mol/s
OLE	Olefins.	mol/s
NR	Nitrate radical (NO ₃).	mol/s
MEOH	Methanol (CH ₃ OH).	mol/s
CH ₄	Methane (CH ₄).	mol/s
NH ₃	Ammonia (NH ₃).	mol/s
NO	Nitric oxide (NO).	mol/s
ALD2	Acetaldehyde (C ₂ H ₄ O).	mol/s
ETOH	Ethanol (C ₂ H ₅ OH).	mol/s
FORM	Formaldehyde (CH ₂ O).	mol/s
ALDX	Aldehydes.	mol/s
TOL	Toluene (C ₇ H ₈).	mol/s
IOLE	Isoprene oxide.	mol/s
CO	Carbon monoxide (CO).	mol/s
ETHA	Ethoxyethane (C ₂ H ₆ O).	mol/s
ETH	Ethene (ethylene) (C ₂ H ₄).	mol/s
ETHY	Ethylene (C ₂ H ₄).	mol/s
PRPA	Propane (C ₃ H ₈).	mol/s
BENZ	Benzene (C ₆ H ₆).	mol/s
ACET	Acetone (C ₃ H ₆ O).	mol/s
KET	Ketones.	mol/s
AACD	Acetic acid.	mol/s
FACD	Formic acid.	mol/s
HCN	Hydrogen cyanide (HCN).	mol/s
ISPD	Isoprene peroxy radicals.	mol/s
N ₂ O	Nitrous oxide (N ₂ O).	mol/s
SQT	Squalene.	mol/s
TRS	Total reduced sulfur.	mol/s
CH ₃ BR	Methyl bromide (CH ₃ Br).	mol/s
CH ₃ CL	Methyl chloride (CH ₃ Cl).	mol/s
CH ₃ I	Methyl iodide (CH ₃ I).	mol/s

Table SM2. Chemical species in industrial emission inventory.

Variable	Description	Unit
TFLAG	Time flag for model outputs.	<YYYYDDD,HHMMSS>
ACET	Acetone (C ₃ H ₆ O).	moles/s
ACROLEIN	Acrolein (C ₃ H ₄ O).	moles/s
ALD2	Acetaldehyde (C ₂ H ₄ O).	moles/s
ALD2_PRIMARY	Primary acetaldehyde (C ₂ H ₄ O).	moles/s
BENZ	Benzene (C ₆ H ₆).	moles/s
BUTADIENE13	1,3-Butadiene (C ₄ H ₆).	moles/s
CH4	Methane (CH ₄).	moles/s
CH4_INV	Inventory methane (CH ₄).	g/s
ETH	Ethene (ethylene) (C ₂ H ₄).	moles/s
ETHA	Ethoxyethane (C ₂ H ₆ O).	moles/s
ETHY	Ethylene (C ₂ H ₄).	moles/s
ETOH	Ethanol (C ₂ H ₅ OH).	moles/s
FORM	Formaldehyde (CH ₂ O).	moles/s
FORM_PRIMARY	Primary formaldehyde (CH ₂ O).	moles/s
ISO	Isoprene (C ₅ H ₈).	moles/s
KET	Ketones.	moles/s
MEOH	Methanol (CH ₃ OH).	moles/s
NAPH	Naphthalene (C ₁₀ H ₈).	moles/s
PAL	Particulate Aliphatic Carbon.	g/s
PCA	Particulate Carboxylic Acid.	g/s
PCL	Particulate Chloride (Cl).	g/s
PEC	Particulate Elemental Carbon.	g/s
PFE	Particulate Fe.	g/s
PK	Particulate Potassium (K).	g/s
PMG	Particulate Mg.	g/s
PMN	Particulate Mn.	g/s
PNA	Particulate Na.	g/s
PNH4	Particulate Ammonium (NH ₄).	g/s
PNO3	Particulate Nitrate (NO ₃).	g/s
PRPA	Propane (C ₃ H ₈).	moles/s
PSI	Particulate Si.	g/s
PSO4	Particulate Sulfate (SO ₄).	g/s
PTI	Particulate Ti.	g/s
TOL	Toluene (C ₇ H ₈).	moles/s
XYLMN	Xylene (C ₈ H ₁₀).	moles/s
CO	Carbon Monoxide (CO).	moles/s
SO2	Sulfur Dioxide (SO ₂).	moles/s

VOC_INV	Inventory volatile organic compounds (VOCs).	moles/s
PMC	Particulate Matter Carbon.	g/s
NO	Nitric Oxide (NO).	moles/s
NO2	Nitrogen Dioxide (NO2).	moles/s

Table SM2. Chemical species in biomass burning emission inventory.

Variable	Description	Unit
CO	Carbon Monoxide (CO).	moles/s
NO	Nitric Oxide (NO).	moles/s
NO2	Nitrogen Dioxide (NO2).	moles/s
SO2	Sulfur Dioxide (SO2).	moles/s
NH3	Ammonia (NH3).	moles/s
ECH4	Ethane (C2H6).	moles/s
ACET	Acetone (C3H6O).	moles/s
ALD2	Acetaldehyde (C2H4O).	moles/s
BENZENE	Benzene (C6H6).	moles/s
PAR	Paraffinic hydrocarbons (alkanes).	moles/s
ETHY	Ethylene (C2H4).	moles/s
ETHE	Ethyl ethanoate.	moles/s
ETHA	Ethoxyethane (C2H6O).	moles/s
PRPA	Propane (C3H8).	moles/s
FORM	Formaldehyde (CH2O).	moles/s
GLY	Glycol (C2H6O2).	moles/s
GLYC	Glycerol (C3H8O3).	moles/s
HAC	Acetic Acid (C2H4O2).	moles/s
MGLY	Methylglyoxal (C3H4O2).	moles/s
KET	Ketones.	moles/s
IOLE	Isoprene (C5H8).	moles/s
TOL	Toluene (C7H8).	moles/s
XYL	Xylenes (C8H10).	moles/s
POC	Particulate Organic Carbon.	g/s
PEC	Particulate Elemental Carbon.	g/s
PSO4	Particulate Sulfate (SO4).	g/s
PNO3	Particulate Nitrate (NO3).	g/s
PMOTHR	Particulate Matter Unspecified.	g/s
TFLAG	Time flag for model outputs.	<YYYYDDD,HHMMSS>

Table SM2. Chemical species in vehicular emission inventory.

Variable	Description	Unit
TFLAG	Time flag.	<YYYYDDD,HHMMSS>
ACET	Acetaldehyde.	moles/s
ACROLEIN	Acrolein.	moles/s
ALD2	Acetaldehyde (secondary).	moles/s
ALD2_PRIMARY	Acetaldehyde (primary).	moles/s
ALDX	Aldehydes.	moles/s
BENZ	Benzene.	moles/s
BUTADIENE13	1,3-Butadiene.	moles/s
CH4	Methane.	moles/s
CH4_INV	Inverted methane.	g/s
CL2	Chlorine.	moles/s
CO	Carbon monoxide.	moles/s
CO2_INV	Inverted carbon dioxide.	g/s
ETH	Ethane.	moles/s
ETHA	Ethane (secondary).	moles/s
ETHY	Ethane (primary).	moles/s
ETOH	Ethanol.	moles/s
FORM	Formaldehyde.	moles/s
FORM_PRIMARY	Formaldehyde (primary).	moles/s
HCL	Hydrogen chloride.	moles/s
HONO	Nitrous acid.	moles/s
IOLE	Isoprene oxidation products.	moles/s
ISOP	Isoprene.	moles/s
KET	Ketones.	moles/s
MEOH	Methanol.	moles/s
N2O_INV	Inverted nitrous oxide.	g/s
NAPH	Naphthalene.	moles/s
NH3	Ammonia.	moles/s
NH3_FERT	Ammonia from fertilizer.	moles/s
NO	Nitric oxide.	moles/s
NO2	Nitrogen dioxide.	moles/s
NVOL	Nonvolatile organic compound.	moles/s
OLE	Olefins.	moles/s
PAL	Pals.	g/s
PAR	Paraffins.	moles/s
PCA	Polycyclic aromatic hydrocarbons.	g/s
PCL	Primary organic carbon.	g/s
PEC	Primary elemental carbon.	g/s
PFE	Primary fine elemental carbon.	g/s

PH2O	Water vapor pressure.	g/s
PK	Black carbon.	g/s
PMC	Primary organic matter carbon.	g/s
PMG	Primary organic mass.	g/s
PMN	Primary organic nitrogen.	g/s
PMOTHR	Other primary particulate matter.	g/s
PNA	Primary organic nitrogen aerosol.	g/s
PNCOM	Nonmethane organic aerosol.	g/s
PNH4	Ammonium nitrate.	g/s
PNO3	Nitrate organic aerosol.	g/s
POC	Particulate organic carbon.	g/s
PRPA	PrPA.	moles/s
PSI	Psiloxanes.	g/s
PSO4	Sulfate.	g/s
PTI	Primary transition inorganic aerosol.	g/s
SO2	Sulfur dioxide.	moles/s
SOAALK	Secondary organic aerosol (alkanes).	moles/s
SULF	Sulfates.	moles/s
TERP	Terpenes.	moles/s
TOL	Toluene.	moles/s
UNK	Unknown.	moles/s
UNR	Unresolved.	moles/s
VOC_INV	Inverted volatile organic compound.	g/s
XYLMN	Xylene (methyl ethyl and methyl propyl).	moles/s
PMFINE	Fine particulate matter.	g/s