

List of Acronyms and Abbreviations

#	number
(NH ₄) ₂ SO ₄	ammonium sulfate
μCB-IV	Micro Carbon Bond IV mechanism
μg/m ³	micrograms per cubic meter
μm	micrometer
σ _g	geometric standard deviation of particle diameters
σ _z	standard deviation of the vertical dispersion of a Gaussian plume
Δx	horizontal grid spacing
2-D	two-dimensional
3-D	three-dimensional
ACARS	Aircraft Communications Addressing and Reporting System
AER	Atmospheric and Environmental Research
AGL	above ground level
AIM	Aerosol Inorganics Model
Al	aluminum
AR	Arkansas
ARL	Air Resource Laboratory
As	Arsenic
ATAD	Atmospheric Transport and Dispersion Model
Avg.	Average
b _{abs}	light absorption coefficient
BBNP	Big Bend National Park
BC	Boundary Conditions
BEIS	Biogenic Emissions Inventory System
b _{ext}	light extinction coefficient
BIBE	Big Bend National Park
Bndy.Cond.	Boundary Conditions
Br	Bromine
BRAVO	Big Bend Regional Aerosol and Visibility Observational Study
b _{scat}	light scattering coefficient
C	Celsius
Ca ⁺⁺	calcium ion
Ca ²⁺	calcium ion
CAPITA MC	CAPITA Monte Carlo Model
CAPITA	Center for Air Pollution Impact and Trend Analysis
CARB	carbonyls
CASTNET	Clean Air Status and Trends Network
CDT	Central Daylight Time
CEM	continuous emissions monitoring
CIRA	Cooperative Institute for Research in the Atmosphere
Cl ⁻	chlorine ion
CMAQ	Community Multi-Scale Air Quality Model
CMB	Chemical Mass Balance

CMC	CAPITA Monte Carlo Model
CO	carbon monoxide
Coef.	Coefficient
Cr	Chromium
CST	Central Standard Time
CSU	Colorado State University
Cu	Copper
D/D ₀	ratio of wet diameter to dry diameter
D ₅₀	50 th percentile of particle diameters
D _{aero}	aerodynamic diameter
d _g	mass median diameter
DRH	deliquescence relative humidity
E	East
E1	Elemental carbon fraction evolved by TOR at 550 C in He & O ₂
E2	Elemental carbon fraction evolved by TOR at 550-700 C in He & O ₂
E3	Elemental carbon fraction evolved by TOR at 700-800 C in He & O ₂
EC	elemental carbon (used interchangeably with LAC)
EDAS	ETA Data Assimilation System
EOF	empirical orthogonal function
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
EPS	equal probability surface
Err.	Error
ETA	a weather forecast model
ETL	NOAA's Environmental Technology Laboratory
f(RH)	function of relative humidity relating wet scattering to dry scattering
FDDA	four dimensional data assimilation
Fe	iron
FMBR	Forward Mass Balance Regression
FNL	final run data archive of GDAS model
FSL	Forecast Systems Laboratory
Ft.	Fort
GDAS	Global Data Assimilation System
GMT	Greenwich Mean Time (same as UTC)
GOCART	Global Ozone Chemistry Aerosol Radiation Transport
GTS	North American Global Telecommunications Service
H	Hydrogen
HCP	high conditional probability
He	Helium
HIP	high incremental probability
HNO ₃	nitric acid
hr	hour
HRT	high concentration residence time
HSC	high concentration source contribution function
HYSPLIT	HYbrid Single-Particle Lagrangian Integrated Trajectory Model
IC	ion chromatography

IL	Illinois
IMPROVE	Interagency Monitoring of Protected Visual Environments
iPPCH	perfluoro-iso-propylcyclo-hexane
ISOP	biogenic organics
ISORROPIA	a thermodynamic equilibrium model
K	Kelvin
K	Potassium
K ⁺	Potassium Ion
K-Bar	monitoring location within Big Bend National Park
Km	Kilometer
LA	Louisiana
LAC	light absorbing carbon (used interchangeably with EC)
LBJ	Lyndon Baines Johnson
LRT	low concentration residence time
LSC	low concentration source contribution function
m	meter
m ² /g	square meters per gram
MARS-A	a thermodynamic model used in REMSAD
MDL	minimum detection limit
MDRH	mutual deliquescence relative humidity
Mg	magnesium
Mg/yr	megagrams per year
Mg ²⁺	magnesium ion
MISS	Mississippi
mL	milliliter
mm	millimeter
Mm ⁻¹	inverse megameters
MM5	Fifth-Generation Penn State/NCAR Mesoscale Model
Mn	Manganese
MO	Missouri
MOUDI	Micro-Orifice Uniform-Deposit Impactor
MRF	Medium Range Forecast model
MS	Mississippi
Mtns.	Mountains
Mts.	Mountains
MW	Megawatt
N	North
Na	sodium
Na ⁺	sodium ion
NaCl	sodium chloride (salt)
NaNO ₃	sodium nitrate
NCAR	National Center for Atmospheric Research
NCDC	National Climatic Data Center
NCEP	National Center for Environmental Prediction
NE	Northeast
NEI	National Emission Inventory

ng/m ³	nanograms per cubic meter
NH ₃	ammonia
NH ₄ ⁺	ammonium ion
NHS	National Historic Site
Ni	Nickel
NO ₂	nitrogen dioxide
NO ₃ ⁻	nitrate ion
NOAA	National Oceanic and Atmospheric Administration
NO _x	nitrogen oxides
NP	National Park
NPS	National Park Service
NWS	National Weather Service
O	Oxygen
O1	Organic carbon fraction evolved by TOR up to 120 C in He
O2	Organic carbon fraction evolved by TOR at 120-250 C in He
O ₂	Oxygen
O3	Organic carbon fraction evolved by TOR at 250-450 C in He
O4	Organic carbon fraction evolved by TOR at 450-550 C in He
Obs	observed
OC	Organic Carbon
ocPDCH	Perfluoro-1,2-dimethylcyclohexane
OLS	ordinary least squares regression
OMC	organic mass calculated using carbon measurement
OMH	organic mass calculated using hydrogen measurement
OP	Pyrolyzed organic carbon
ORT	overall residence time
OSC	overall source contribution function
Pb	Lead
PDCB	1,1,2,2,3,4-hexafluoro-3,4-bis(trifluoro-methyl) cyclobutane
PESA	proton elastic scattering analysis
PIXE	Proton Induced X-ray Emission
PM ₁₀	particulate matter with diameter less than 10 μm
PM _{2.5}	particulate matter with diameter less than 2.5 μm
PMF	Positive Matrix Factorization
ppq	parts per quintillion
pred	predicted
PROFEPA	Procuraduria Federal de Proteccion al Ambiente
PTCH	Perfluoro-1,3,5-trimethylcyclohexane
PVC	poly vinyl chloride
R	Spearman rank correlation coefficient
R ²	coefficient of determination
RASS	Radio Acoustic Sounding System
READY	Realtime Applications and Display system
REMSAD	Regional Modeling System for Aerosols and Deposition
RH	relative humidity
Ri	Richardson Number

RMS	root mean square
RMSE	root mean square error
S	South
S	Sulfur
S*3	Sulfur multiplied by 3 to be equivalent to sulfate ion
SD	Standard Deviation
Se	Selenium
SE	Southeast
Si	Silicon
SMOKE	Sparse Matrix Operator Kernel Emissions
SO ₂	sulfur dioxide
SO ₄ ²⁻	sulfate ion
SSI	Spectral Statistical Interpolation
SVD	singular value decomposition
TCEQ	Texas Commission on Environmental Quality
TDMA	tandem differential mobility analyzer
TES	total elemental sulfur
Tg/yr	terragrams per year
Ti	Titanium
TOR	thermal optical reflectance
TrMB	Trajectory Mass Balance
TX	Texas
U.S.	United States
UNMIX	a receptor model
URG	University Research Glassware
USEPA	United State Environmental Protection Agency (EPA)
UTC	Coordinated Universal Time (same as GMT)
V	Vanadium
VIF	Variance Inflation Factor
VOC	Volatile Organic Carbon
W	West
XRF	x-ray florescence
z	height
Zn	Zinc