

## DISCOVER-AQ P-3B Aerosol Parameters

Sensor	Measurement	Parameter	Unit	Description
Radiance Research PSAP	Aerosol Optical Properties	Abs470tot	Mm-1	Total Absorption at 470 nm
Radiance Research PSAP	Aerosol Optical Properties	Abs532tot	Mm-1	Total Absorption at 532 nm
Radiance Research PSAP	Aerosol Optical Properties	Abs660tot	Mm-1	Total Absorption at 660 nm
Radiance Research PSAP	Aerosol Optical Properties	LLOD_Flag	unitless	Detection Limit Flag indicating lower limit of detection is reached
TSI-3562 Nephelometers	Aerosol Optical Properties	Scat450tot	Mm-1	Total Scatter at 450 nm
TSI-3562 Nephelometers	Aerosol Optical Properties	Scat550tot	Mm-1	Total Scatter at 550 nm
TSI-3562 Nephelometers	Aerosol Optical Properties	Scat700tot	Mm-1	Total Scatter at 700 nm
TSI-3562 Nephelometers	Aerosol Optical Properties	Scat450sub	Mm-1	Submicron Scattering at 450 nm
TSI-3562 Nephelometers	Aerosol Optical Properties	Scat550sub	Mm-1	Submicron Scattering at 550 nm
TSI-3562 Nephelometers	Aerosol Optical Properties	Scat700sub	Mm-1	Submicron Scattering at 700 nm
fRH instrument	Aerosol Optical Properties	RHamb	%	Ambient Relative Humidity from the P-3B
fRH instrument	Aerosol Optical Properties	RHdry	%	Relative Humidity from the TSI-3563 Nephelometer (dry)
fRH instrument	Aerosol Optical Properties	RHwet	%	Relative Humidity from the TSI-3563 Nephelometer (humidified)
TSI-3563 Nephelometers	Aerosol Optical Properties	SCdry	Mm-1	Dry (RH<45%) Scattering Measured with the TSI-3563 Nephelometer at 550nm
TSI-3563 Nephelometers	Aerosol Optical Properties	SCwet	Mm-1	Wet (RH~80%) Scattering Measured with the TSI-3563 Nephelometer at 550nm
derived	Aerosol Optical Properties	gamma	unitless	parameter used to calculate the hygroscopic growth function
derived	Aerosol Optical Properties	fRH_80_20	unitless	increase in aerosol scattering due to relative humidity (computed at 20% and 80%)
derived	Aerosol Optical Properties	SCamb	Mm-1	estimated aerosol scattering at ambient RH
derived	Aerosol Optical Properties	EXTamb532	Mm-1	Ambient Total Aerosol Extinction at 532 nm
TSI-3563 Nephelometers & RR PSAP	Aerosol Optical Properties	EXTdry532	Mm-1	Dry Total Aerosol Extinction at 532 nm
derived	Aerosol Optical Properties	SCamb532	Mm-1	Ambient Total Aerosol Scattering at 532 nm
TSI-3563 Nephelometers	Aerosol Optical Properties	SCdry532	Mm-1	Dry Total Aerosol Scattering at 532 nm
Radiance Research PSAP	Aerosol Optical Properties	ABSdry532	Mm-1	Dry Total Aerosol Absorption at 532 nm
derived	Aerosol Optical Properties	AEscatBR	unitless	Angstrom Exponent of Scattering at 450 and 700 nm

derived	Aerosol Optical Properties	AEscatBG	unitless	Angstrom Exponent of Scattering at 450 and 550 nm
derived	Aerosol Optical Properties	AEabsBR	unitless	Angstrom Exponent of Absorption at 450 and 700 nm
derived	Aerosol Optical Properties	AEabsBG	unitless	Angstrom Exponent of Absorption at 450 and 550 nm
derived	Aerosol Optical Properties	SSAblue	unitless	Single Scattering Albedo at 450 nm
derived	Aerosol Optical Properties	SSAgrn	unitless	Single Scattering Albedo at 550 nm
derived	Aerosol Optical Properties	SSAred	unitless	Single Scattering Albedo at 700 nm
derived	Aerosol Optical Properties	SSAamb	unitless	Single Scattering Albedo at 550 nm (ambient)
PILs-TOC	Aerosol Chemical Composition	mWSOC	ug m-3	Aerosol Water-Soluble Organic Carbon Mass concentration
PILs-IC	Aerosol Chemical Composition	Chloride	ug m-3	Aerosol Chloride mass concentration
PILs-IC	Aerosol Chemical Composition	Nitrite	ug m-3	Aerosol Nitrite mass concentration
PILs-IC	Aerosol Chemical Composition	Nitrate	ug m-3	Aerosol Nitrate mass concentration
PILs-IC	Aerosol Chemical Composition	Sulfate	ug m-3	Aerosol Sulfate mass concentration
PILs-IC	Aerosol Chemical Composition	Sodium	ug m-3	Aerosol Sodium mass concentration
PILs-IC	Aerosol Chemical Composition	Ammonium	ug m-3	Aerosol Ammonium mass concentration
PILs-IC	Aerosol Chemical Composition	Potassium	ug m-3	Aerosol Potassium mass concentration
PILs-IC	Aerosol Chemical Composition	Magnesium	ug m-3	Aerosol Magnesium mass concentration
PILs-IC	Aerosol Chemical Composition	Calcium	ug m-3	Aerosol Calcium mass concentration
PILs-IC	Aerosol Chemical Composition	Ammonium_Flag	unitless	Indicator of potential high bias in aerosol Ammonium
SP2	Aerosol Chemical Composition	mBC	ng m-3	Aerosol Black Carbon Mass Concentration
TSI Condensation Particle Counters	Aerosol Microphysical Properties	CN>3nm	cm-3	Total CN from TSI-3025 greater than 3 nm
TSI Condensation Particle Counters	Aerosol Microphysical Properties	CN>10nm	cm-3	Total CN from TSI-3010 greater than 10 nm
TSI Condensation Particle Counters	Aerosol Microphysical Properties	nonvolCN>10nm	cm-3	nonvolatile CN from TSI-3010 greater than 10nm
SMPS	Aerosol Microphysical Properties	nSMPS	#/cm3	Integrated Number Density over mobility diameter range from 10 to 300 nm
SMPS	Aerosol Microphysical Properties	sSMPS	um2/cm3	Integrated Surface Area density over mobility diameter range from 10 to 300 nm
SMPS	Aerosol Microphysical Properties	vSMPS	um3/cm3	Integrated Volume density over mobility diameter range from 10 to 300 nm
SMPS	Aerosol Microphysical Properties	SMPSNumSizeDistribution*	#/cm3	48 size bins covering 10 to 300 nm in mobility diameter
UHSAS	Aerosol Microphysical Properties	nUHSAS	#/cm3	Integrated Number Density over optical diameter range from 60 to 945 nm



UHSAS	Aerosol Microphysical Properties	sUHSAS	um <sup>2</sup> /cm <sup>3</sup>	Integrated Surface Area Density over optical diameter range from 60 to 945 nm
UHSAS	Aerosol Microphysical Properties	vUHSAS	um <sup>3</sup> /cm <sup>3</sup>	Integrated Volume Density over optical diameter range from 60 to 945 nm
UHSAS	Aerosol Microphysical Properties	UHSASNumSizeDistribution*		97 size bins covering 60 to 945 nm in optical diameter
OPC/LAS	Aerosol Microphysical Properties	nLAS	#/cm <sup>3</sup>	Integrated Number Density over optical diameter range from 0.1 to 7.3 micron
OPC/LAS	Aerosol Microphysical Properties	sLAS	um <sup>2</sup> /cm <sup>3</sup>	Integrated Surface Area Density over optical diameter range from 0.1 to 7.3 micron
OPC/LAS	Aerosol Microphysical Properties	vLAS	um <sup>3</sup> /cm <sup>3</sup>	Integrated Volume Density over optical diameter range from 0.1 to 7.3 micron
OPC/LAS	Aerosol Microphysical Properties	LASNumSizeDistribution*	#/cm <sup>3</sup>	97 size bins covering 0.1 to 7.3 micron in optical diameter
APS	Aerosol Microphysical Properties	nAPS	#/cm <sup>3</sup>	Integrated Number Density over aerodynamic diameter range from 0.5 to 20 micron
APS	Aerosol Microphysical Properties	sAPS	um <sup>2</sup> /cm <sup>3</sup>	Integrated Surface Area Density over aerodynamic diameter range from 0.5 to 20 micron
APS	Aerosol Microphysical Properties	vAPS	um <sup>3</sup> /cm <sup>3</sup>	Integrated Volume Density over aerodynamic diameter range from 0.5 to 20 micron
APS	Aerosol Microphysical Properties	APSNumSizeDistribution*	#/cm <sup>3</sup>	51 size bins covering 0.5 to 20 micron in aerodynamic diameter

