

Supplemental materials for:

Classifying aerosol type using in situ surface spectral aerosol optical properties

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Table S5. Median optical property values at 24 monitoring stations in the NOAA Federated Network, both filtered ($\sigma_{sp} > 1 \text{ Mm}^{-1}$ and $\sigma_{sp} > 0.5 \text{ Mm}^{-1}$) values and non-filtered

Station	# data points filtered (unfiltered)	SAE (lq, uq) Filtered	AAE (lq, uq) Filtered	SAE (lq, uq) Unfiltered	AAE (lq, uq) Unfiltered	σ_{sp} (Mm^{-1}) Filtered	σ_{sp} (Mm^{-1}) Filtered	σ_{sp} (Mm^{-1}) Un-filtered	σ_{sp} (Mm^{-1}) Un-filtered
ALT	1648 (6266)	1.27 (1.05, 1.43)	0.86 (0.79, 0.95)	1.18 (0.81, 1.45)	0.85 (0.65, 1.00)	9.69 (8.16, 12.11)	0.75 (0.63, 0.90)	3.44 (1.31, 7.85)	0.17 (0.06, 0.53)
AMY	8914 (8933)	1.57	1.22	1.57	1.22	107.72	8.72	107.50	8.70

		(1.36, 1.75)	(0.94, 1.42)	(1.36, 1.75)	(0.94, 1.42)	(61.81, 189.54)	(5.53, 13.44)	(61.69, 189.2)	(5.51, 13.44)
APP	15547 (16201)	2.11 (1.94, 2.26)	1.20 (0.87, 1.48)	2.10 (1.93, 2.26)	1.21 (0.87, 1.48)	24.46 (14.59, 38.17)	2.13 (1.38, 3.19)	23.58 (13.53, 37.33)	2.06 (1.3, 3.13)
ARN	8237 (8605)	1.37 (0.97, 1.70)	1.32 (1.16, 1.50)	1.34 (0.90, 1.68)	1.31 (1.14, 1.49)	26.10 (16.7, 40.73)	3.15 (1.83, 5.04)	25.89 (16.50, 40.28)	3.03 (1.64, 4.91)
BEO	5775 (9397)	1.87 (1.44, 2.07)	1.31 (1.05, 1.55)	1.75 (1.09, 2.04)	1.34 (1.07, 1.59)	22.64 (11.52, 40.04)	1.94 (1.07, 3.21)	9.55 (2.61, 27.8)	0.89 (0.25, 2.34)
BND	15257 (15523)	2.01 (1.84, 2.17)	1.15 (0.93, 1.34)	2.01 (1.84, 2.17)	1.15 (0.92, 1.34)	33.06 (19.90, 55.14)	2.69 (1.58, 4.17)	32.58 (19.45, 54.67)	2.65 (1.53, 4.13)
BRW	2612 (16574)	1.17 (0.78, 1.52)	0.99 (0.89, 1.10)	1.00 (0.54, 1.50)	0.87 (0.51, 1.06)	10.47 (7.87, 15.97)	0.73 (0.60, 1.00)	6.05 (2.62, 10.89)	0.18 (0.06, 0.36)
CPR	5744 (14314)	0.28 (0.17, 0.54)	2.00 (1.16, 2.65)	0.31 (0.19, 0.52)	1.38 (0.89, 2.35)	35.32 (24.33, 50.22)	1.01 (0.71, 1.5)	21.15 (14.63, 34.03)	0.37 (0.14, 0.84)
CPT	3158 (12599)	0.67 (0.34, 1.14)	1.12 (0.97, 1.31)	0.22 (0.05, 0.59)	1.15 (0.81, 1.57)	21.31 (13.76, 29.79)	1.14 (0.73, 2.45)	17.27 (11.6, 24.74)	0.17 (0.04, 0.51)
FKB	5543 (5593)	1.80 (1.59, 1.95)	1.07 (0.98, 1.16)	1.80 (1.59, 1.95)	1.07 (0.98, 1.16)	32.37 (18.12, 57.77)	5.75 (3.17, 9.96)	32.24 (17.98, 57.81)	5.7 (3.10, 9.90)
GRW	7960 (1419)	-0.12 (-0.34, 0.19)	0.62 (0.31, 0.85)	-0.13 (-0.36, 0.16)	0.51 (0.10, 0.80)	30.73 (19.37, 47.42)	0.84 (0.64, 1.29)	25.96 (16.4, 41.30)	0.56 (0.36, 0.90)
GSN	10731 (10998)	1.51 (1.29, 1.70)	1.21 (1.03, 1.34)	1.51 (1.28, 1.70)	1.21 (1.02, 1.34)	61.85 (37.92, 106.47)	4.59 (2.70, 7.40)	60.45 (36.37, 104.95)	4.49 (2.59, 7.32)
KPS	8923 (8923)	2.06 (1.90, 2.19)	1.39 (1.24, 1.60)	2.06 (1.90, 2.19)	1.39 (1.24, 1.60)	45.11 (25.27, 90.90)	6.27 (3.61, 12.02)	45.11 (25.27, 90.90)	6.27 (3.61, 12.02)
LLN	8294 (12333)	1.94 (1.82, 2.08)	1.11 (0.97, 1.25)	1.90 (1.70, 2.07)	1.10 (0.93, 1.25)	24.02 (11.81, 40.00)	2.39 (1.20, 4.56)	12.09 (3.07, 33.97)	1.23 (0.31, 3.27)
MLO	2351 (17174)	1.40 (0.85, 1.76)	1.42 (1.08, 1.89)	1.45 (0.67, 1.95)	1.25 (0.35, 1.99)	9.38 (4.88, 18.39)	0.85 (0.64, 1.19)	2.03 (0.71, 7.36)	0.1 (0.01, 0.3)
NIM	4527 (4530)	0.32	1.66	0.32	1.66	91.02	9.25	91.02	9.25

		(0.14, 0.64)	(1.46, 1.22)	(0.14, 0.64)	(1.46, 1.22)	(50.67, 185.24)	(5.68, 16.05)	(50.67, 185.24)	(5.68, 16.05)
PGH	4079 (4172)	0.75 (0.53, 0.92)	1.03 (0.88, 1.22)	0.76 (0.52, 0.93)	1.03 (0.88, 1.22)	126.31 (66.48, 232.01)	8.14 (4.52, 126.31)	122.96 (63.02, 229.36)	7.95 (4.30, 15.79)
PVC	4990 (7300)	2.15 (1.64, 2.50)	0.99 (0.68, 1.25)	1.84 (1.21, 2.38)	0.94 (0.60, 1.24)	16.08 (10.19, 27.87)	1.10 (0.75, 1.82)	16.16 (9.86, 28.80)	1.41 (0.42, 16.16)
PYE	481 (3856)	0.98 (0.53, 1.29)	0.50 (0.30, 1.52)	0.88 (0.46, 1.53)	0.17 (-0.47, 0.56)	40.00 (26.59, 59.97)	0.69 (0.58, 1.00)	22.98 (11.87, 40.04)	0.18 (0.07, 0.33)
SGP	14610 (15430)	1.77 (1.43, 2.06)	1.30 (1.05, 1.51)	1.77 (1.42, 2.06)	1.30 (1.05, 1.52)	26.75 (16.06, 42.27)	2.31 (1.41, 3.42)	25.48 (14.70, 41.09)	2.21 (1.27, 3.33)
SPL	8509 (14562)	1.69 (1.24, 2.03)	1.37 (1.22, 1.51)	1.71 (1.26, 2.05)	1.34 (1.18, 1.48)	11.50 (7.79, 17.70)	0.93 (0.69, 1.35)	7.03 (3.05, 12.94)	1.01 (0.33, 7.03)
SUM	462 (16558)	1.93 (1.62, 2.07)	1.04 (0.93, 1.16)	1.89 (1.36, 2.31)	0.92 (0.57, 1.18)	8.06 (6.27, 11.58)	0.64 (0.55, 0.81)	0.7 (0.24, 1.73)	0.06 (0.02, 0.13)
THD	5283 (11229)	0.96 (0.62, 1.43)	1.43 (1.14, 1.70)	0.86 (0.53, 1.36)	1.31 (0.91, 1.65)	21.51 (13.09, 34.56)	0.94 (0.68, 1.4)	14.78 (8.23, 25.37)	0.47 (0.25, 0.90)
WLG	6494 (6569)	1.10 (0.72, 1.35)	1.37 (1.22, 1.54)	1.10 (0.72, 1.35)	1.37 (1.22, 1.54)	42.19 (20.08, 101.06)	3.01 (1.67, 6.16)	41.52 (19.71, 100.22)	2.95 (1.64, 6.07)

Table S6. Classifications of trajectory clusters at each station

Station Name	Trajectory Cluster Number	Trajectory Cluster Classification
ALT	1	Remote Marine
ALT	2	Continental Arctic
AMY	1	Continental Polluted
AMY	2	Continental Polluted

AMY	3	Marine Polluted
APP	1	Continental Polluted
APP	2	Continental Polluted
ARN	1	Continental Polluted
ARN	2	Marine Polluted
ARN	3	Marine Polluted
BEO	1	Continental Polluted
BEO	2	Continental Polluted
BND	1	Continental Polluted
BND	2	Continental Polluted
BRW	1	Remote Marine
BRW	2	Continental Arctic
CPR	1	Remote Marine
CPR	2	Remote Marine
CPR	3	Remote Marine
CPR	4	Remote Marine
CPR	5	Polluted Marine
CPT	1	Remote Marine
CPT	2	Remote Marine
FKB	1	Continental Polluted
FKB	2	Continental Polluted
GRW	1	Remote Marine
GRW	2	Remote Marine
GSN	1	Continental Polluted
GSN	2	Polluted Marine
KPS	1	Continental Polluted
KPS	2	Continental Polluted
LLN	1	Continental Polluted

LLN	2	Continental Polluted
MLO	1	Polluted Marine
MLO	2	Polluted Marine
MLO	3	Polluted Marine
NIM	1	Continental Dust/Polluted
NIM	2	Continental Dust
NIM	3	Continental Dust
PGH	1	Continental Dust/Polluted
PGH	2	Continental Dust/Polluted
PYE	1	Remote Marine
PYE	2	Remote Marine
PYE	3	Remote Marine
PVC	1	Continental Polluted
PVC	2	Continental Polluted
PVC	3	Polluted Marine
SGP	1	Continental Polluted
SGP	2	Continental Polluted
SPL	1	Continental Polluted
SPL	2	Continental Polluted
SUM	1	Continental Arctic
SUM	2	Continental Arctic
THD	1	Remote Marine
THD	2	Marine Polluted
THD	3	Marine Polluted
WLG	1	Continental Dust
WLG	2	Continental Dust/Polluted
WLG	3	Continental Polluted
WLG	4	Continental Dust

