

Supplementary Table 1. $std_{rel,med}$ of AOD, std_{med} of Angstrom exponent and r of both, for the Alaska (top table) and Canada (bottom) phases.

Alaska	std_{rel} or std							r						
	cons.	1 km	3 km	6 km	10 km	20 km	35.2 km	cons.	1 km	3 km	6 km	10 km	20 km	35.2 km
AOD at 354 nm	0.2% (0.0%-0.5%)	0.3% (0.0%-0.7%)	0.6% (0.3%-1.2%)	0.8% (0.4%-1.6%)	1.0% (0.5%-2.0%)	1.2% (0.7%-3.4%)	1.5% (1.0%-4.2%)	1.00	1.00	1.00	0.99	0.98	0.95	0.95
AOD at 380 nm	0.3% (0.0%-0.7%)	0.3% (0.0%-0.8%)	0.7% (0.3%-1.4%)	1.1% (0.5%-2.0%)	1.3% (0.7%-2.6%)	1.9% (1.1%-3.8%)	2.8% (1.5%-5.6%)	1.00	1.00	1.00	0.99	0.98	0.92	0.89
AOD at 451 nm	0.3% (0.0%-0.7%)	0.3% (0.0%-0.8%)	0.7% (0.3%-1.5%)	1.1% (0.5%-2.2%)	1.4% (0.8%-2.8%)	2.1% (1.1%-4.5%)	3.1% (1.6%-6.0%)	1.00	1.00	1.00	0.99	0.98	0.95	0.92
AOD at 499 nm	0.3% (0.0%-0.7%)	0.3% (0.0%-0.8%)	0.8% (0.3%-1.3%)	1.2% (0.5%-2.2%)	1.3% (0.7%-2.3%)	1.9% (1.0%-3.1%)	2.5% (1.5%-5.3%)	1.00	1.00	1.00	0.99	0.98	0.95	0.92
AOD at 520 nm	0.3% (0.0%-0.8%)	0.4% (0.0%-0.9%)	0.7% (0.3%-1.6%)	1.2% (0.6%-2.5%)	1.5% (0.8%-3.1%)	2.2% (1.2%-4.8%)	3.2% (1.6%-6.3%)	1.00	1.00	0.99	0.98	0.96	0.91	0.88
AOD at 606 nm	0.3% (0.0%-0.7%)	0.4% (0.0%-0.8%)	0.7% (0.3%-1.5%)	1.2% (0.5%-2.4%)	1.5% (0.7%-2.6%)	2.1% (1.1%-4.5%)	2.9% (1.6%-6.3%)	1.00	1.00	0.99	0.98	0.97	0.92	0.89
AOD at 675 nm	0.3% (0.0%-0.8%)	0.4% (0.0%-0.9%)	0.8% (0.3%-1.7%)	1.3% (0.6%-2.7%)	1.6% (0.8%-2.9%)	2.4% (1.2%-5.1%)	3.2% (1.8%-7.2%)	1.00	1.00	0.99	0.97	0.96	0.90	0.86
AOD at 779 nm	0.4% (0.0%-0.9%)	0.4% (0.2%-1.0%)	0.9% (0.4%-1.9%)	1.3% (0.6%-2.8%)	1.7% (0.8%-3.3%)	2.6% (1.3%-6.6%)	3.5% (1.8%-7.4%)	1.00	1.00	0.98	0.96	0.93	0.84	0.81
AOD at 865 nm	0.4% (0.0%-1.1%)	0.5% (0.2%-1.2%)	0.9% (0.4%-2.3%)	1.5% (0.7%-3.7%)	2.0% (0.9%-4.4%)	3.0% (1.4%-7.6%)	4.2% (2.0%-8.2%)	1.00	0.99	0.98	0.95	0.92	0.83	0.77
AOD at 1019 nm	0.5% (0.0%-1.3%)	1.0% (0.2%-1.3%)	1.7% (0.4%-2.8%)	2.4% (0.7%-4.5%)	2.9% (0.9%-5.6%)	4.4% (1.5%-10.2%)	6.0% (2.0%-10.2%)	1.00	0.99	0.96	0.93	0.89	0.76	0.70
AOD at 1241 nm	0.4% (0.0%-1.0%)	0.5% (0.2%-1.1%)	0.8% (0.4%-2.1%)	1.2% (0.6%-3.3%)	1.4% (0.7%-3.4%)	2.4% (1.1%-5.9%)	3.3% (1.4%-8.4%)	1.00	0.99	0.97	0.92	0.90	0.76	0.72
AOD at 1559 nm	1.0% (0.3%-2.6%)	1.0% (0.4%-2.7%)	1.7% (0.8%-4.9%)	2.4% (1.1%-7.2%)	2.8% (1.3%-9.4%)	4.0% (1.7%-15.6%)	4.7% (2.4%-13.5%)	0.99	0.98	0.92	0.84	0.81	0.66	0.58
AOD at 2139 nm	0.6% (0.0%-2.2%)	0.7% (0.3%-2.2%)	1.3% (0.6%-4.8%)	2.0% (0.8%-8.0%)	2.3% (0.9%-10.3%)	3.5% (1.4%-16.7%)	3.9% (2.0%-16.0%)	0.99	0.98	0.90	0.77	0.75	0.58	0.47
Column A at 354 nm	0.017 (0.0-0.1)	0.030 (0.0-0.1)	0.048 (0.0-0.1)	0.057 (0.0-0.1)	0.054 (0.0-0.1)	0.058 (0.0-0.1)	0.059 (0.0-0.1)	0.97	0.97	0.97	0.96	0.94	0.92	0.92
Column A at 380 nm	0.016 (0.0-0.1)	0.028 (0.0-0.1)	0.045 (0.0-0.1)	0.053 (0.0-0.1)	0.051 (0.0-0.1)	0.054 (0.0-0.1)	0.056 (0.0-0.1)	0.98	0.97	0.97	0.96	0.94	0.92	0.92
Column A at 451 nm	0.014 (0.0-0.1)	0.023 (0.0-0.1)	0.038 (0.0-0.1)	0.045 (0.0-0.1)	0.043 (0.0-0.1)	0.047 (0.0-0.1)	0.049 (0.0-0.1)	0.98	0.98	0.98	0.96	0.94	0.92	0.92
Column A at 499 nm	0.012 (0.0-0.1)	0.020 (0.0-0.1)	0.034 (0.0-0.1)	0.041 (0.0-0.1)	0.038 (0.0-0.1)	0.042 (0.0-0.1)	0.045 (0.0-0.1)	0.98	0.98	0.98	0.96	0.94	0.91	0.92
Column A at 520 nm	0.012 (0.0-0.1)	0.019 (0.0-0.1)	0.033 (0.0-0.1)	0.039 (0.0-0.1)	0.036 (0.0-0.1)	0.040 (0.0-0.1)	0.043 (0.0-0.1)	0.98	0.98	0.98	0.96	0.94	0.91	0.91
Column A at 606 nm	0.010 (0.0-0.0)	0.016 (0.0-0.0)	0.027 (0.0-0.0)	0.033 (0.0-0.0)	0.030 (0.0-0.1)	0.034 (0.0-0.1)	0.036 (0.0-0.1)	0.99	0.98	0.98	0.96	0.94	0.91	0.91
Column A at 675 nm	0.009 (0.0-0.0)	0.014 (0.0-0.0)	0.023 (0.0-0.0)	0.028 (0.0-0.0)	0.026 (0.0-0.0)	0.030 (0.0-0.1)	0.030 (0.0-0.1)	0.99	0.99	0.98	0.95	0.94	0.90	0.90
Column A at 779 nm	0.008 (0.0-0.0)	0.011 (0.0-0.0)	0.017 (0.0-0.0)	0.022 (0.0-0.0)	0.020 (0.0-0.0)	0.025 (0.0-0.1)	0.024 (0.0-0.1)	0.99	0.99	0.98	0.95	0.93	0.89	0.88
Column A at 865 nm	0.007 (0.0-0.0)	0.009 (0.0-0.0)	0.014 (0.0-0.0)	0.017 (0.0-0.0)	0.016 (0.0-0.1)	0.021 (0.0-0.1)	0.020 (0.0-0.1)	0.99	0.99	0.98	0.94	0.92	0.88	0.86
Column A at 1019 nm	0.005 (0.0-0.0)	0.006 (0.0-0.0)	0.010 (0.0-0.0)	0.012 (0.0-0.0)	0.012 (0.0-0.1)	0.017 (0.0-0.1)	0.016 (0.0-0.1)	1.00	0.99	0.97	0.93	0.91	0.86	0.84
Column A at 1241 nm	0.007 (0.0-0.0)	0.007 (0.0-0.0)	0.010 (0.0-0.0)	0.013 (0.0-0.1)	0.014 (0.0-0.1)	0.019 (0.0-0.1)	0.016 (0.0-0.1)	0.99	0.99	0.96	0.92	0.89	0.85	0.82
Column A at 1559 nm	0.012 (0.0-0.0)	0.014 (0.0-0.0)	0.018 (0.0-0.0)	0.022 (0.0-0.1)	0.023 (0.0-0.1)	0.027 (0.0-0.1)	0.026 (0.0-0.1)	0.99	0.98	0.95	0.92	0.88	0.83	0.79
Column A at 2139 nm	0.018 (0.0-0.1)	0.023 (0.0-0.1)	0.032 (0.0-0.1)	0.037 (0.0-0.1)	0.039 (0.0-0.1)	0.043 (0.0-0.1)	0.040 (0.0-0.1)	0.98	0.97	0.94	0.91	0.86	0.82	0.77

Canada	<i>std_{rel} or std</i>							<i>r</i>						
	cons.	1 km	3 km	6 km	10 km	20 km	35.2 km	cons.	1 km	3 km	6 km	10 km	20 km	35.2 km
AOD at 354 nm	1.7% (0.3%-9.9%)	2.4% (0.5%-11.9%)	4.5% (0.9%-21.5%)	8.1% (1.3%-36.1%)	13.8% (2.0%-50.6%)	16.4% (2.3%-67.5%)	17.7% (2.7%-82.2%)	0.98	0.95	0.85	0.73	0.60	0.37	0.31
AOD at 380 nm	1.7% (0.3%-10.0%)	2.3% (0.5%-12.0%)	4.4% (0.9%-21.7%)	8.2% (1.3%-36.1%)	14.0% (2.0%-50.4%)	16.8% (2.3%-65.9%)	17.7% (2.7%-80.3%)	0.98	0.95	0.84	0.72	0.59	0.37	0.31
AOD at 451 nm	1.8% (0.3%-10.4%)	2.4% (0.5%-12.4%)	4.7% (0.9%-22.4%)	8.6% (1.3%-36.4%)	15.3% (2.1%-50.3%)	17.9% (2.4%-65.0%)	19.0% (2.8%-81.5%)	0.98	0.94	0.83	0.71	0.58	0.36	0.32
AOD at 499 nm	2.1% (0.4%-11.2%)	2.8% (0.6%-12.8%)	5.4% (1.1%-22.8%)	9.3% (1.5%-37.4%)	16.2% (2.4%-50.9%)	19.3% (2.8%-66.0%)	20.9% (3.1%-83.3%)	0.98	0.94	0.83	0.71	0.59	0.37	0.33
AOD at 520 nm	1.7% (0.3%-10.7%)	2.4% (0.5%-12.5%)	4.6% (0.9%-22.4%)	8.7% (1.4%-36.1%)	15.7% (2.0%-49.7%)	18.7% (2.5%-64.5%)	19.1% (2.9%-80.7%)	0.98	0.94	0.83	0.71	0.59	0.37	0.34
AOD at 606 nm	1.8% (0.3%-11.2%)	2.5% (0.5%-12.9%)	4.9% (0.9%-22.4%)	9.1% (1.4%-36.2%)	15.6% (2.1%-49.0%)	20.5% (2.6%-63.8%)	21.6% (2.8%-79.0%)	0.97	0.93	0.82	0.71	0.58	0.37	0.34
AOD at 675 nm	2.0% (0.4%-11.1%)	2.6% (0.6%-12.9%)	5.1% (1.1%-22.5%)	9.1% (1.6%-35.3%)	15.6% (2.4%-47.9%)	21.3% (2.8%-62.8%)	22.1% (3.3%-75.7%)	0.97	0.93	0.81	0.71	0.58	0.37	0.36
AOD at 779 nm	2.0% (0.4%-11.4%)	2.6% (0.6%-12.8%)	5.6% (1.0%-22.4%)	9.6% (1.4%-35.3%)	15.9% (2.2%-47.1%)	22.5% (2.6%-60.7%)	23.3% (3.1%-71.2%)	0.96	0.92	0.80	0.70	0.58	0.38	0.37
AOD at 865 nm	1.8% (0.4%-10.9%)	2.4% (0.6%-12.5%)	5.0% (1.0%-21.8%)	8.9% (1.3%-34.1%)	15.5% (2.0%-44.8%)	22.1% (2.4%-57.8%)	22.9% (2.8%-66.5%)	0.95	0.90	0.79	0.69	0.58	0.40	0.39
AOD at 1019 nm	2.0% (0.4%-11.2%)	2.6% (0.6%-12.3%)	5.4% (1.1%-21.8%)	9.7% (1.4%-34.3%)	16.0% (2.2%-45.0%)	23.7% (2.5%-56.7%)	23.2% (3.0%-65.2%)	0.94	0.87	0.75	0.67	0.56	0.40	0.40
AOD at 1241 nm	1.6% (0.3%-10.2%)	2.0% (0.5%-10.4%)	4.2% (0.8%-19.4%)	7.4% (1.1%-29.8%)	14.5% (1.6%-41.1%)	19.5% (1.8%-54.0%)	21.2% (2.1%-57.8%)	0.90	0.81	0.67	0.59	0.49	0.36	0.35
AOD at 1559 nm	3.0% (0.6%-12.2%)	3.6% (1.1%-12.6%)	6.7% (1.7%-21.0%)	10.6% (1.9%-30.1%)	16.1% (2.6%-40.0%)	21.2% (3.1%-56.1%)	21.8% (3.5%-56.6%)	0.86	0.73	0.57	0.49	0.42	0.35	0.33
AOD at 2139 nm	2.5% (0.6%-10.8%)	3.0% (0.9%-10.1%)	5.1% (1.5%-17.8%)	8.5% (2.0%-29.0%)	13.2% (2.7%-40.2%)	17.9% (3.0%-61.2%)	20.4% (3.4%-69.1%)	0.81	0.65	0.46	0.37	0.30	0.24	0.23
Column A at 354 nm	0.013 (0.0-0.1)	0.015 (0.0-0.1)	0.025 (0.0-0.1)	0.042 (0.0-0.1)	0.063 (0.0-0.2)	0.095 (0.0-0.2)	0.105 (0.0-0.2)	0.98	0.96	0.93	0.89	0.85	0.71	0.64
Column A at 380 nm	0.012 (0.0-0.0)	0.014 (0.0-0.0)	0.023 (0.0-0.1)	0.041 (0.0-0.1)	0.063 (0.0-0.2)	0.101 (0.0-0.2)	0.099 (0.0-0.2)	0.98	0.96	0.93	0.87	0.83	0.67	0.59
Column A at 451 nm	0.010 (0.0-0.0)	0.011 (0.0-0.0)	0.020 (0.0-0.1)	0.038 (0.0-0.1)	0.062 (0.0-0.2)	0.094 (0.0-0.2)	0.087 (0.0-0.2)	0.98	0.96	0.92	0.84	0.77	0.57	0.44
Column A at 499 nm	0.008 (0.0-0.0)	0.011 (0.0-0.0)	0.019 (0.0-0.1)	0.037 (0.0-0.1)	0.062 (0.0-0.2)	0.091 (0.0-0.2)	0.077 (0.0-0.2)	0.98	0.96	0.92	0.83	0.75	0.52	0.37
Column A at 520 nm	0.008 (0.0-0.0)	0.010 (0.0-0.0)	0.019 (0.0-0.1)	0.037 (0.0-0.1)	0.061 (0.0-0.2)	0.087 (0.0-0.2)	0.074 (0.0-0.3)	0.98	0.96	0.92	0.83	0.74	0.51	0.34
Column A at 606 nm	0.008 (0.0-0.0)	0.011 (0.0-0.0)	0.018 (0.0-0.1)	0.037 (0.0-0.1)	0.066 (0.0-0.2)	0.090 (0.0-0.2)	0.076 (0.0-0.3)	0.98	0.96	0.92	0.83	0.72	0.48	0.32
Column A at 675 nm	0.009 (0.0-0.0)	0.011 (0.0-0.0)	0.020 (0.0-0.1)	0.039 (0.0-0.1)	0.068 (0.0-0.2)	0.095 (0.0-0.2)	0.079 (0.0-0.3)	0.98	0.96	0.92	0.83	0.72	0.49	0.35
Column A at 779 nm	0.011 (0.0-0.0)	0.013 (0.0-0.1)	0.023 (0.0-0.1)	0.045 (0.0-0.2)	0.071 (0.0-0.2)	0.098 (0.0-0.3)	0.080 (0.0-0.3)	0.98	0.96	0.92	0.84	0.73	0.52	0.43
Column A at 865 nm	0.012 (0.0-0.1)	0.015 (0.0-0.1)	0.025 (0.0-0.1)	0.049 (0.0-0.2)	0.077 (0.0-0.3)	0.105 (0.0-0.3)	0.086 (0.0-0.4)	0.98	0.96	0.93	0.85	0.74	0.55	0.48
Column A at 1019 nm	0.015 (0.0-0.1)	0.019 (0.0-0.1)	0.030 (0.0-0.1)	0.058 (0.0-0.2)	0.089 (0.0-0.3)	0.123 (0.0-0.3)	0.102 (0.0-0.4)	0.98	0.96	0.93	0.86	0.76	0.59	0.56
Column A at 1241 nm	0.019 (0.0-0.1)	0.024 (0.0-0.1)	0.037 (0.0-0.1)	0.069 (0.0-0.2)	0.108 (0.0-0.3)	0.147 (0.0-0.3)	0.126 (0.0-0.4)	0.98	0.97	0.93	0.88	0.78	0.64	0.62
Column A at 1559 nm	0.023 (0.0-0.1)	0.030 (0.0-0.1)	0.047 (0.0-0.1)	0.081 (0.0-0.2)	0.126 (0.0-0.3)	0.170 (0.0-0.4)	0.155 (0.0-0.4)	0.98	0.97	0.94	0.89	0.80	0.67	0.68
Column A at 2139 nm	0.029 (0.0-0.1)	0.037 (0.0-0.1)	0.060 (0.0-0.2)	0.103 (0.0-0.3)	0.154 (0.0-0.4)	0.209 (0.1-0.5)	0.206 (0.1-0.5)	0.98	0.97	0.94	0.90	0.82	0.71	0.72

The std_{rel} and std values at the 16th and 84th percentiles are given in the parentheses, below the median value.

