

PyCAMA report generated by tropl2-proc

tropl2-proc

2024-12-07 (04:01)

1 Short Introduction

1.1 The list of parameters

You may want to keep the list given in table 1 at hand when viewing the results.

2 Definitions

The averages shown here are *unweighed* averages:

$$\bar{x} = \frac{1}{N} \sum_{i=1}^N x_i \quad (1)$$

with N the number of observations in the dataset.

The spread of the measurements is indicated with the variance $V(x)$, or rather the standard deviation $\sigma(x) = \sqrt{V(x)}$.

$$V(x) = \frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2 \quad (2)$$

We also report the more robust statistics median, minimum, maximum, various percentiles and inter quartile range.

The median m is the value of parameter x for which half of the observations of x is smaller than m :

$$P(x \leq m) = P(x \geq m) = \int_{-\infty}^m f(x) dx = \frac{1}{2} \quad (3)$$

with $f(x)$ the probability density function.

The median is a special case of a percentile. Instead of 1/2 in equation 3, other threshold values can be used. We report results for 1 %, 5 %, 10 %, 15.9 %, 25 %, 75 %, 84.1 %, 90 %, 95 % and 99 %. The inter quartile range is the difference between the 75 % and 25 % percentiles. Similarly the minimum and maximum values correspond to the 0 % and 100 % percentiles respectively.

For normally distributed parameters the mean and median are the same, while the $\mu \pm \sigma$ values and the 15.9 % and 84.1 % percentiles coincide.

To get a measure for the relation of one variable $x_{(k)}$ with another $x_{(l)}$, we calculate the covariance matrix C_{kl} .

$$C_{kl} = C(x_{(k)}, x_{(l)}) = \frac{1}{N-1} \sum_{i=1}^N (x_{(k),i} - \bar{x}_{(k)})(x_{(l),i} - \bar{x}_{(l)}) \quad (4)$$

Rather than a dimensionally dependent covariance, it is often easier to interpret a correlation matrix R_{kl} , a matrix of Pearson's r coefficients:

$$R_{kl} = R(x_{(k)}, x_{(l)}) = \frac{C_{kl}}{\sqrt{C_{kk}C_{ll}}} = \frac{C_{kl}}{\sqrt{V(x_k)V(x_l)}} \quad (5)$$

The diagonal elements of the covariance matrix are the variances of the elements, $V(x_{(k)}) = C_{kk}$ and obviously $R_{kk} = 1$.

Table 1: Parameterlist and basic statistics for the analysis

Variable	mean $\pm \sigma$	Count	Mode	IQR	Median	Minimum	Maximum
qa value [1]	0.611 ± 0.422	18284768	0.995	0.840	1.000	0.0	1.000
sulfurdioxide total vertical column [DU]	$(3.597 \pm 136.292) \times 10^{-2}$	18284768	0.235	0.416	8.218×10^{-3}	-168	493
sulfurdioxide total vertical column precision [DU]	0.546 ± 0.942	18284768	0.197	0.341	0.314	3.164×10^{-2}	50.3
sulfurdioxide slant column density corrected [DU]	$(1.507 \pm 35.180) \times 10^{-2}$	18284768	0.250	0.344	7.834×10^{-3}	-15.3	289
sulfurdioxide slant column density cobra [DU]	$(1.493 \pm 33.520) \times 10^{-2}$	18284768	0.250	0.344	7.834×10^{-3}	-15.3	48.8
sulfurdioxide slant column density cobra precision [DU]	0.273 ± 0.115	18284768	0.213	0.105	0.236	8.368×10^{-2}	22.0
sulfurdioxide slant column density window1 [DU]	$(7.854 \pm 63.632) \times 10^{-2}$	18284768	7.500×10^{-2}	0.716	8.180×10^{-2}	-62.8	77.7
sulfurdioxide slant column density window1 precision [DU]	0.273 ± 0.115	18284768	0.213	0.105	0.236	8.368×10^{-2}	22.0
sulfurdioxide slant column density corrected win1 [DU]	$(2.646 \pm 62.298) \times 10^{-2}$	18284768	2.500×10^{-2}	0.692	1.574×10^{-2}	-62.8	77.6
background so2 slant column offset window1 [DU]	$(-5.208 \pm 14.092) \times 10^{-2}$	18284768	-0.140	0.173	-8.910×10^{-2}	-1.40	4.91
sulfurdioxide slant column density window2 [DU]	0.883 ± 8.656	18284768	0.750	10.8	0.801	-1.980×10^3	679
sulfurdioxide slant column density window2 precision [DU]	7.79 ± 2.22	18284768	6.97	2.54	7.43	2.21	520
sulfurdioxide slant column density corrected win2 [DU]	0.287 ± 8.519	18284768	0.250	10.7	0.290	-1.979×10^3	678
background so2 slant column offset window2 [DU]	-0.595 ± 1.998	18284768	0.750	2.49	-0.213	-12.1	10.3
sulfurdioxide slant column density window3 [DU]	-2.56 ± 23.45	18284768	-3.92	29.0	-2.97	-1.285×10^3	245
sulfurdioxide slant column density window3 precision [DU]	26.9 ± 12.9	18284768	21.5	10.1	23.5	9.30	397
sulfurdioxide slant column density corrected win3 [DU]	1.34 ± 22.59	18284768	0.560	27.8	1.39	-1.287×10^3	242
background so2 slant column offset window3 [DU]	3.90 ± 6.63	18284768	1.68	9.82	3.64	-25.2	24.6
sulfurdioxide slant column cobra flag [1]	1.98 ± 0.21	18284768	1.67	0.0	2.00	0.0	2.00
integrated so2 profile apriori [DU]	$(3.602 \pm 9.203) \times 10^{-2}$	18284768	1.800×10^{-2}	2.334×10^{-2}	1.851×10^{-2}	1.013×10^{-4}	3.87
fitted radiance shift [nm]	$(-3.755 \pm 24.758) \times 10^{-4}$	18284768	-5.000×10^{-4}	1.688×10^{-3}	-4.365×10^{-4}	-9.431×10^{-2}	5.513×10^{-2}
fitted radiance squeeze [1]	$(-4.924 \pm 17.695) \times 10^{-5}$	18284768	-3.000×10^{-5}	2.099×10^{-4}	-4.211×10^{-5}	-1.623×10^{-2}	2.412×10^{-2}
fitted root mean square [1]	$(1.202 \pm 0.470) \times 10^{-3}$	18284768	9.750×10^{-4}	4.366×10^{-4}	1.072×10^{-3}	2.995×10^{-4}	7.517×10^{-2}
sulfurdioxide total air mass factor polluted [1]	0.932 ± 0.621	18284768	0.620	0.645	0.764	5.000×10^{-2}	3.40
sulfurdioxide total air mass factor polluted precision [1]	0.154 ± 0.191	18284768	3.500×10^{-2}	0.167	8.113×10^{-2}	2.500×10^{-3}	1.74
sulfurdioxide clear air mass factor polluted [1]	0.786 ± 0.521	18284768	0.500	0.400	0.664	2.175×10^{-2}	3.42
number of spectral points in retrieval [1]	73.4 ± 0.5	18284768	73.0	1.000	73.0	52.0	74.0

Table 2: Percentile ranges

Variable	1 %	5 %	10 %	15.9 %	25 %	75 %	84.1 %	90 %	95 %	99 %
qa value [1]	0.0	0.0	2.000×10^{-2}	6.000×10^{-2}	0.160	1.000	1.000	1.000	1.000	1.000
sulfurdioxide total vertical column [DU]	-2.66	-0.891	-0.525	-0.345	-0.196	0.220	0.379	0.577	0.993	3.14
sulfurdioxide total vertical column precision [DU]	7.155×10^{-2}	9.924×10^{-2}	0.125	0.153	0.195	0.536	0.747	1.04	1.69	4.35
sulfurdioxide slant column density corrected [DU]	-0.783	-0.455	-0.333	-0.251	-0.163	0.181	0.273	0.362	0.498	0.903
sulfurdioxide slant column density cobra [DU]	-0.783	-0.455	-0.333	-0.251	-0.163	0.181	0.273	0.362	0.498	0.903
sulfurdioxide slant column density cobra precision [DU]	0.143	0.166	0.179	0.189	0.202	0.307	0.364	0.417	0.491	0.690
sulfurdioxide slant column density window1 [DU]	-1.56	-0.903	-0.646	-0.469	-0.280	0.436	0.618	0.790	1.04	1.74
sulfurdioxide slant column density window1 precision [DU]	0.143	0.166	0.179	0.189	0.202	0.307	0.364	0.417	0.491	0.690
sulfurdioxide slant column density corrected win1 [DU]	-1.52	-0.907	-0.669	-0.505	-0.328	0.364	0.547	0.722	0.987	1.73
background so2 slant column offset window1 [DU]	-0.302	-0.231	-0.197	-0.169	-0.143	3.016×10^{-2}	9.273×10^{-2}	0.147	0.212	0.349
sulfurdioxide slant column density window2 [DU]	-19.6	-12.9	-9.69	-7.29	-4.60	6.24	8.98	11.5	14.9	22.6
sulfurdioxide slant column density window2 precision [DU]	4.23	4.98	5.44	5.83	6.31	8.85	9.73	10.6	11.9	14.4
sulfurdioxide slant column density corrected win2 [DU]	-20.4	-13.4	-10.2	-7.74	-5.06	5.62	8.29	10.7	14.0	21.1
background so2 slant column offset window2 [DU]	-6.65	-4.36	-3.13	-2.43	-1.70	0.791	1.08	1.33	1.75	3.46
sulfurdioxide slant column density window3 [DU]	-61.2	-40.1	-30.8	-24.2	-17.1	11.9	19.7	26.9	36.6	55.5
sulfurdioxide slant column density window3 precision [DU]	13.3	15.2	16.6	17.9	19.5	29.6	34.3	39.6	50.8	81.7
sulfurdioxide slant column density corrected win3 [DU]	-56.4	-35.6	-26.2	-19.6	-12.5	15.4	22.6	29.1	38.2	56.6
background so2 slant column offset window3 [DU]	-9.85	-6.76	-4.76	-3.01	-0.926	8.89	11.2	13.0	14.9	17.5
sulfurdioxide slant column cobra flag [1]	0.0	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
integrated so2 profile apriori [DU]	9.527×10^{-4}	3.125×10^{-3}	5.053×10^{-3}	6.988×10^{-3}	9.736×10^{-3}	3.308×10^{-2}	4.311×10^{-2}	5.763×10^{-2}	0.109	0.357
fitted radiance shift [nm]	-7.846×10^{-3}	-3.928×10^{-3}	-2.575×10^{-3}	-1.847×10^{-3}	-1.264×10^{-3}	4.239×10^{-4}	1.099×10^{-3}	1.956×10^{-3}	3.456×10^{-3}	7.570×10^{-3}
fitted radiance squeeze [1]	-5.273×10^{-4}	-3.422×10^{-4}	-2.631×10^{-4}	-2.085×10^{-4}	-1.504×10^{-4}	5.939×10^{-5}	1.096×10^{-4}	1.552×10^{-4}	2.193×10^{-4}	3.705×10^{-4}
fitted root mean square [1]	5.979×10^{-4}	7.201×10^{-4}	7.895×10^{-4}	8.441×10^{-4}	9.101×10^{-4}	1.347×10^{-3}	1.574×10^{-3}	1.802×10^{-3}	2.120×10^{-3}	2.924×10^{-3}
sulfurdioxide total air mass factor polluted [1]	7.921×10^{-2}	0.208	0.318	0.408	0.511	1.16	1.50	1.89	2.33	2.84
sulfurdioxide total air mass factor polluted precision [1]	9.673×10^{-3}	1.744×10^{-2}	2.326×10^{-2}	2.839×10^{-2}	3.590×10^{-2}	0.203	0.280	0.368	0.511	0.964
sulfurdioxide clear air mass factor polluted [1]	0.175	0.291	0.364	0.423	0.489	0.888	1.03	1.19	2.13	2.97
number of spectral points in retrieval [1]	73.0	73.0	73.0	73.0	73.0	74.0	74.0	74.0	74.0	74.0

Table 3: Parameterlist and basic statistics for the analysis for observations in the northern hemisphere

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.722 ± 0.389	6293715	0.650	1.000	0.0	1.000	0.350	1.000
sulfurdioxide total vertical column [DU]	$(6.988 \pm 202.465) \times 10^{-2}$	6293715	0.596	1.630×10^{-2}	-168	493	-0.275	0.321
sulfurdioxide total vertical column precision [DU]	0.811 ± 1.341	6293715	0.561	0.417	5.716×10^{-2}	50.3	0.269	0.830
sulfurdioxide slant column density corrected [DU]	$(2.463 \pm 40.349) \times 10^{-2}$	6293715	0.399	1.211×10^{-2}	-8.55	48.2	-0.185	0.214
sulfurdioxide slant column density cobra [DU]	$(2.451 \pm 39.746) \times 10^{-2}$	6293715	0.399	1.211×10^{-2}	-8.55	17.3	-0.185	0.214
sulfurdioxide slant column density cobra precision [DU]	0.319 ± 0.138	6293715	0.155	0.279	9.876×10^{-2}	6.46	0.225	0.380
sulfurdioxide slant column density window1 [DU]	0.142 ± 0.728	6293715	0.796	0.142	-11.1	46.0	-0.257	0.539
sulfurdioxide slant column density window1 precision [DU]	0.319 ± 0.138	6293715	0.155	0.279	9.876×10^{-2}	6.46	0.225	0.380
sulfurdioxide slant column density corrected win1 [DU]	$(4.403 \pm 72.643) \times 10^{-2}$	6293715	0.790	2.218×10^{-2}	-10.6	46.3	-0.367	0.423
background so2 slant column offset window1 [DU]	$(-9.835 \pm 11.998) \times 10^{-2}$	6293715	0.103	-0.112	-1.25	2.64	-0.164	-6.167×10^{-2}
sulfurdioxide slant column density window2 [DU]	1.26 ± 9.75	6293715	12.4	0.993	-298	530	-5.07	7.28
sulfurdioxide slant column density window2 precision [DU]	8.80 ± 2.29	6293715	2.88	8.49	2.53	270	7.21	10.1
sulfurdioxide slant column density corrected win2 [DU]	0.304 ± 9.525	6293715	12.1	0.296	-303	525	-5.76	6.35
background so2 slant column offset window2 [DU]	-0.960 ± 2.432	6293715	2.97	-0.103	-12.1	9.68	-2.27	0.698
sulfurdioxide slant column density window3 [DU]	-4.22 ± 26.36	6293715	33.2	-3.68	-198	178	-20.5	12.7
sulfurdioxide slant column density window3 precision [DU]	30.1 ± 12.6	6293715	10.2	27.2	9.75	235	23.1	33.3
sulfurdioxide slant column density corrected win3 [DU]	0.851 ± 25.843	6293715	32.6	1.11	-189	177	-15.2	17.4
background so2 slant column offset window3 [DU]	5.07 ± 5.27	6293715	8.24	3.98	-19.1	24.6	1.00	9.24
sulfurdioxide slant column cobra flag [1]	1.97 ± 0.25	6293715	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(6.610 \pm 14.670) \times 10^{-2}$	6293715	3.852×10^{-2}	2.859×10^{-2}	9.106×10^{-4}	3.87	1.663×10^{-2}	5.514×10^{-2}
fitted radiance shift [nm]	$(-1.340 \pm 24.931) \times 10^{-4}$	6293715	1.725×10^{-3}	-1.694×10^{-4}	-3.481×10^{-2}	3.508×10^{-2}	-1.019×10^{-3}	7.063×10^{-4}
fitted radiance squeeze [1]	$(-1.042 \pm 18.525) \times 10^{-5}$	6293715	2.161×10^{-4}	-8.698×10^{-6}	-2.236×10^{-3}	9.347×10^{-3}	-1.173×10^{-4}	9.880×10^{-5}
fitted root mean square [1]	$(1.387 \pm 0.566) \times 10^{-3}$	6293715	6.349×10^{-4}	1.219×10^{-3}	3.658×10^{-4}	2.217×10^{-2}	1.006×10^{-3}	1.641×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.700 ± 0.362	6293715	0.488	0.680	5.000×10^{-2}	2.83	0.430	0.918
sulfurdioxide total air mass factor polluted precision [1]	$(8.917 \pm 11.493) \times 10^{-2}$	6293715	7.562×10^{-2}	4.904×10^{-2}	2.500×10^{-3}	1.70	3.017×10^{-2}	0.106
sulfurdioxide clear air mass factor polluted [1]	0.642 ± 0.260	6293715	0.398	0.655	2.175×10^{-2}	2.13	0.439	0.837
number of spectral points in retrieval [1]	73.5 ± 0.5	6293715	1.000	73.0	52.0	74.0	73.0	74.0

Table 4: Parameterlist and basic statistics for the analysis for observations in the southern hemisphere

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.553 ± 0.428	11991053	0.890	0.490	0.0	1.000	0.110	1.000
sulfurdioxide total vertical column [DU]	$(1.817 \pm 82.465) \times 10^{-2}$	11991053	0.348	5.762×10^{-3}	-66.2	304	-0.166	0.181
sulfurdioxide total vertical column precision [DU]	0.408 ± 0.595	11991053	0.278	0.272	3.164×10^{-2}	34.8	0.162	0.441
sulfurdioxide slant column density corrected [DU]	$(1.006 \pm 32.125) \times 10^{-2}$	11991053	0.320	5.998×10^{-3}	-15.3	289	-0.153	0.167
sulfurdioxide slant column density cobra [DU]	$(9.902 \pm 297.227) \times 10^{-3}$	11991053	0.320	5.998×10^{-3}	-15.3	48.8	-0.153	0.167
sulfurdioxide slant column density cobra precision [DU]	0.248 ± 0.092	11991053	7.476×10^{-2}	0.223	8.368×10^{-2}	22.0	0.195	0.270
sulfurdioxide slant column density window1 [DU]	$(4.504 \pm 57.988) \times 10^{-2}$	11991053	0.677	5.488×10^{-2}	-62.8	77.7	-0.290	0.387
sulfurdioxide slant column density window1 precision [DU]	0.248 ± 0.092	11991053	7.476×10^{-2}	0.223	8.368×10^{-2}	22.0	0.195	0.270
sulfurdioxide slant column density corrected win1 [DU]	$(1.724 \pm 56.088) \times 10^{-2}$	11991053	0.649	1.297×10^{-2}	-62.8	77.6	-0.311	0.338
background so2 slant column offset window1 [DU]	$(-2.780 \pm 14.496) \times 10^{-2}$	11991053	0.203	-6.274×10^{-2}	-1.40	4.91	-0.134	6.877×10^{-2}
sulfurdioxide slant column density window2 [DU]	0.682 ± 8.012	11991053	10.2	0.718	-1.980×10^3	679	-4.39	5.78
sulfurdioxide slant column density window2 precision [DU]	7.26 ± 1.99	11991053	2.10	6.99	2.21	520	6.02	8.12
sulfurdioxide slant column density corrected win2 [DU]	0.279 ± 7.941	11991053	10.0	0.288	-1.979×10^3	678	-4.73	5.29
background so2 slant column offset window2 [DU]	-0.404 ± 1.695	11991053	2.41	-0.268	-7.26	10.3	-1.57	0.845
sulfurdioxide slant column density window3 [DU]	-1.68 ± 21.72	11991053	27.2	-2.66	-1.285×10^3	245	-15.7	11.5
sulfurdioxide slant column density window3 precision [DU]	25.2 ± 12.7	11991053	8.04	21.8	9.30	397	18.4	26.5
sulfurdioxide slant column density corrected win3 [DU]	1.60 ± 20.67	11991053	25.7	1.50	-1.287×10^3	242	-11.3	14.5
background so2 slant column offset window3 [DU]	3.29 ± 7.16	11991053	11.3	3.37	-25.2	22.7	-2.57	8.70
sulfurdioxide slant column cobra flag [1]	1.98 ± 0.18	11991053	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(2.024 \pm 2.992) \times 10^{-2}$	11991053	1.827×10^{-2}	1.472×10^{-2}	1.013×10^{-4}	1.72	7.542×10^{-3}	2.582×10^{-2}
fitted radiance shift [nm]	$(-5.023 \pm 24.571) \times 10^{-4}$	11991053	1.603×10^{-3}	-5.665×10^{-4}	-9.431×10^{-2}	5.513×10^{-2}	-1.359×10^{-3}	2.447×10^{-4}
fitted radiance squeeze [1]	$(-6.962 \pm 16.890) \times 10^{-5}$	11991053	2.048×10^{-4}	-5.860×10^{-5}	-1.623×10^{-2}	2.412×10^{-2}	-1.658×10^{-4}	3.894×10^{-5}
fitted root mean square [1]	$(1.105 \pm 0.375) \times 10^{-3}$	11991053	3.416×10^{-4}	1.017×10^{-3}	2.995×10^{-4}	7.517×10^{-2}	8.780×10^{-4}	1.220×10^{-3}
sulfurdioxide total air mass factor polluted [1]	1.05 ± 0.69	11991053	0.852	0.827	5.000×10^{-2}	3.40	0.553	1.41
sulfurdioxide total air mass factor polluted precision [1]	0.188 ± 0.212	11991053	0.214	0.122	4.538×10^{-3}	1.74	4.003×10^{-2}	0.254
sulfurdioxide clear air mass factor polluted [1]	0.862 ± 0.601	11991053	0.437	0.669	0.117	3.42	0.506	0.943
number of spectral points in retrieval [1]	73.4 ± 0.5	11991053	1.000	73.0	52.0	74.0	73.0	74.0

Table 5: Parameterlist and basic statistics for the analysis for observations over water

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.658 ± 0.413	13190258	0.780	1.000	0.0	1.000	0.220	1.000
sulfurdioxide total vertical column [DU]	$(2.451 \pm 102.507) \times 10^{-2}$	13190258	0.433	8.682×10^{-3}	-141	331	-0.206	0.227
sulfurdioxide total vertical column precision [DU]	0.507 ± 0.750	13190258	0.303	0.319	4.372×10^{-2}	36.3	0.215	0.518
sulfurdioxide slant column density corrected [DU]	$(1.232 \pm 29.815) \times 10^{-2}$	13190258	0.331	7.307×10^{-3}	-7.07	52.6	-0.157	0.174
sulfurdioxide slant column density cobra [DU]	$(1.231 \pm 29.722) \times 10^{-2}$	13190258	0.331	7.307×10^{-3}	-7.07	48.8	-0.157	0.174
sulfurdioxide slant column density cobra precision [DU]	0.259 ± 0.101	13190258	8.476×10^{-2}	0.229	8.763×10^{-2}	22.0	0.199	0.284
sulfurdioxide slant column density window1 [DU]	0.103 ± 0.585	13190258	0.679	0.105	-26.0	77.7	-0.237	0.443
sulfurdioxide slant column density window1 precision [DU]	0.259 ± 0.101	13190258	8.476×10^{-2}	0.229	8.763×10^{-2}	22.0	0.199	0.284
sulfurdioxide slant column density corrected win1 [DU]	$(3.570 \pm 57.576) \times 10^{-2}$	13190258	0.664	2.813×10^{-2}	-26.0	77.6	-0.302	0.362
background so2 slant column offset window1 [DU]	$(-6.749 \pm 12.461) \times 10^{-2}$	13190258	0.151	-9.498×10^{-2}	-1.40	4.91	-0.146	4.896×10^{-3}
sulfurdioxide slant column density window2 [DU]	0.573 ± 8.358	13190258	10.6	0.520	-747	679	-4.78	5.83
sulfurdioxide slant column density window2 precision [DU]	7.62 ± 2.04	13190258	2.37	7.33	2.21	520	6.26	8.62
sulfurdioxide slant column density corrected win2 [DU]	0.134 ± 8.268	13190258	10.5	0.146	-747	678	-5.12	5.39
background so2 slant column offset window2 [DU]	-0.440 ± 1.875	13190258	2.33	-9.040×10^{-2}	-12.1	10.3	-1.50	0.833
sulfurdioxide slant column density window3 [DU]	0.311 ± 22.934	13190258	28.9	-0.342	-1.285×10^3	166	-14.3	14.6
sulfurdioxide slant column density window3 precision [DU]	26.5 ± 12.2	13190258	9.08	23.4	9.30	397	19.8	28.9
sulfurdioxide slant column density corrected win3 [DU]	3.11 ± 21.98	13190258	27.7	2.73	-1.287×10^3	169	-10.8	16.8
background so2 slant column offset window3 [DU]	2.80 ± 5.90	13190258	8.51	2.80	-25.2	24.6	-1.35	7.16
sulfurdioxide slant column cobra flag [1]	1.99 ± 0.14	13190258	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(2.684 \pm 4.234) \times 10^{-2}$	13190258	1.967×10^{-2}	1.904×10^{-2}	7.654×10^{-4}	3.16	1.133×10^{-2}	3.100×10^{-2}
fitted radiance shift [nm]	$(-3.029 \pm 24.132) \times 10^{-4}$	13190258	1.753×10^{-3}	-3.361×10^{-4}	-9.431×10^{-2}	3.803×10^{-2}	-1.210×10^{-3}	5.429×10^{-4}
fitted radiance squeeze [1]	$(-3.770 \pm 16.424) \times 10^{-5}$	13190258	1.964×10^{-4}	-3.161×10^{-5}	-1.314×10^{-2}	2.412×10^{-2}	-1.324×10^{-4}	6.398×10^{-5}
fitted root mean square [1]	$(1.143 \pm 0.418) \times 10^{-3}$	13190258	3.623×10^{-4}	1.036×10^{-3}	3.508×10^{-4}	5.532×10^{-2}	8.914×10^{-4}	1.254×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.824 ± 0.451	13190258	0.520	0.744	5.000×10^{-2}	2.69	0.513	1.03
sulfurdioxide total air mass factor polluted precision [1]	0.129 ± 0.137	13190258	0.145	6.894×10^{-2}	2.500×10^{-3}	1.63	3.616×10^{-2}	0.181
sulfurdioxide clear air mass factor polluted [1]	0.668 ± 0.238	13190258	0.331	0.642	4.398×10^{-2}	3.06	0.488	0.820
number of spectral points in retrieval [1]	73.4 ± 0.5	13190258	1.000	73.0	70.0	74.0	73.0	74.0

Table 6: Parameterlist and basic statistics for the analysis for observations over land

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.478 ± 0.421	4541494	0.930	0.340	0.0	1.000	7.000×10^{-2}	1.000
sulfurdioxide total vertical column [DU]	$(5.937 \pm 184.586) \times 10^{-2}$	4541494	0.345	6.561×10^{-3}	-168	493	-0.160	0.185
sulfurdioxide total vertical column precision [DU]	0.608 ± 1.221	4541494	0.462	0.271	3.164×10^{-2}	49.1	0.131	0.593
sulfurdioxide slant column density corrected [DU]	$(2.087 \pm 44.088) \times 10^{-2}$	4541494	0.383	8.822×10^{-3}	-15.3	77.1	-0.181	0.202
sulfurdioxide slant column density cobra [DU]	$(2.046 \pm 41.602) \times 10^{-2}$	4541494	0.383	8.822×10^{-3}	-15.3	32.6	-0.181	0.202
sulfurdioxide slant column density cobra precision [DU]	0.307 ± 0.137	4541494	0.145	0.268	8.368×10^{-2}	15.5	0.215	0.361
sulfurdioxide slant column density window1 [DU]	$(6.720 \pm 7487.418) \times 10^{-4}$	4541494	0.818	-4.468×10^{-3}	-62.8	58.8	-0.418	0.400
sulfurdioxide slant column density window1 precision [DU]	0.307 ± 0.137	4541494	0.145	0.268	8.368×10^{-2}	15.5	0.215	0.361
sulfurdioxide slant column density corrected win1 [DU]	$(-4.707 \pm 728.868) \times 10^{-3}$	4541494	0.773	-2.812×10^{-2}	-62.8	58.9	-0.409	0.363
background so2 slant column offset window1 [DU]	$(-5.379 \pm 172.420) \times 10^{-3}$	4541494	0.256	-5.969×10^{-2}	-1.25	2.64	-0.132	0.123
sulfurdioxide slant column density window2 [DU]	1.72 ± 9.29	4541494	11.3	1.64	-1.980×10^3	638	-4.02	7.33
sulfurdioxide slant column density window2 precision [DU]	8.17 ± 2.57	4541494	3.01	7.70	2.33	500	6.42	9.43
sulfurdioxide slant column density corrected win2 [DU]	0.727 ± 9.087	4541494	11.1	0.721	-1.979×10^3	640	-4.80	6.25
background so2 slant column offset window2 [DU]	-0.991 ± 2.188	4541494	3.01	-0.630	-11.9	10.3	-2.38	0.633
sulfurdioxide slant column density window3 [DU]	-10.2 ± 22.9	4541494	27.3	-9.80	-428	245	-23.6	3.75
sulfurdioxide slant column density window3 precision [DU]	27.3 ± 14.3	4541494	12.3	23.7	9.75	235	18.5	30.8
sulfurdioxide slant column density corrected win3 [DU]	-3.12 ± 23.29	4541494	27.9	-1.97	-432	242	-16.5	11.5
background so2 slant column offset window3 [DU]	7.06 ± 7.53	4541494	12.8	8.81	-22.5	24.6	0.719	13.5
sulfurdioxide slant column cobra flag [1]	1.95 ± 0.32	4541494	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(5.266 \pm 13.831) \times 10^{-2}$	4541494	3.845×10^{-2}	1.359×10^{-2}	1.013×10^{-4}	3.85	4.221×10^{-3}	4.268×10^{-2}
fitted radiance shift [nm]	$(-5.961 \pm 25.605) \times 10^{-4}$	4541494	1.371×10^{-3}	-6.916×10^{-4}	-5.130×10^{-2}	5.513×10^{-2}	-1.356×10^{-3}	1.530×10^{-5}
fitted radiance squeeze [1]	$(-8.596 \pm 20.366) \times 10^{-5}$	4541494	2.437×10^{-4}	-8.289×10^{-5}	-1.623×10^{-2}	1.854×10^{-2}	-2.065×10^{-4}	3.720×10^{-5}
fitted root mean square [1]	$(1.356 \pm 0.548) \times 10^{-3}$	4541494	5.990×10^{-4}	1.215×10^{-3}	2.995×10^{-4}	7.517×10^{-2}	9.880×10^{-4}	1.587×10^{-3}
sulfurdioxide total air mass factor polluted [1]	1.27 ± 0.88	4541494	1.59	0.973	5.000×10^{-2}	3.40	0.522	2.11
sulfurdioxide total air mass factor polluted precision [1]	0.232 ± 0.285	4541494	0.250	0.133	2.500×10^{-3}	1.74	3.588×10^{-2}	0.286
sulfurdioxide clear air mass factor polluted [1]	1.15 ± 0.86	4541494	1.12	0.830	2.229×10^{-2}	3.42	0.516	1.63
number of spectral points in retrieval [1]	73.4 ± 0.5	4541494	1.000	73.0	52.0	74.0	73.0	74.0

3 Granule outlines

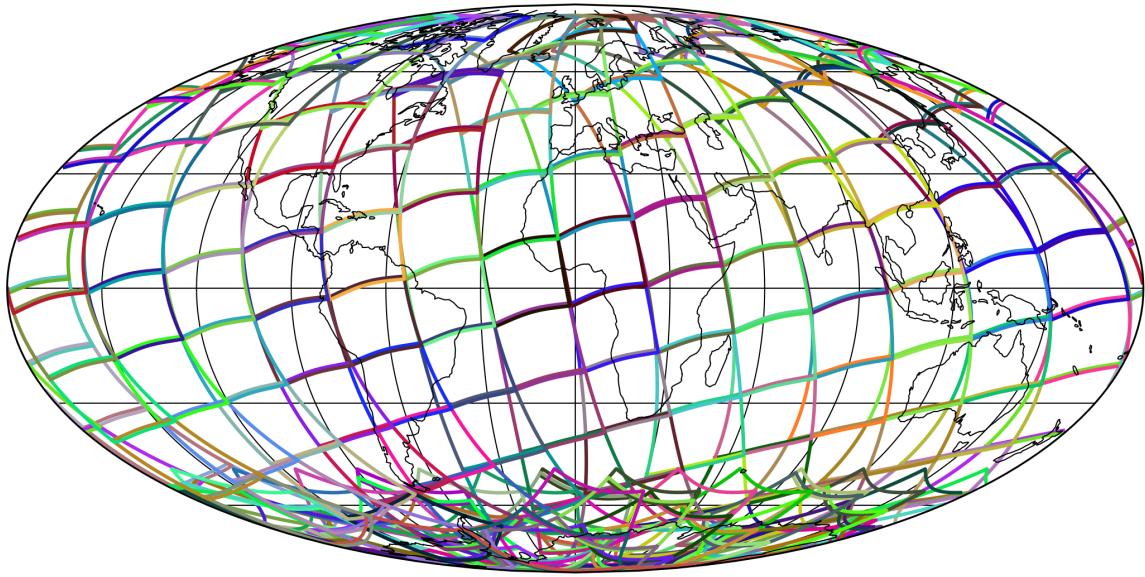


Figure 1: Outline of the granules.

4 Input data monitoring

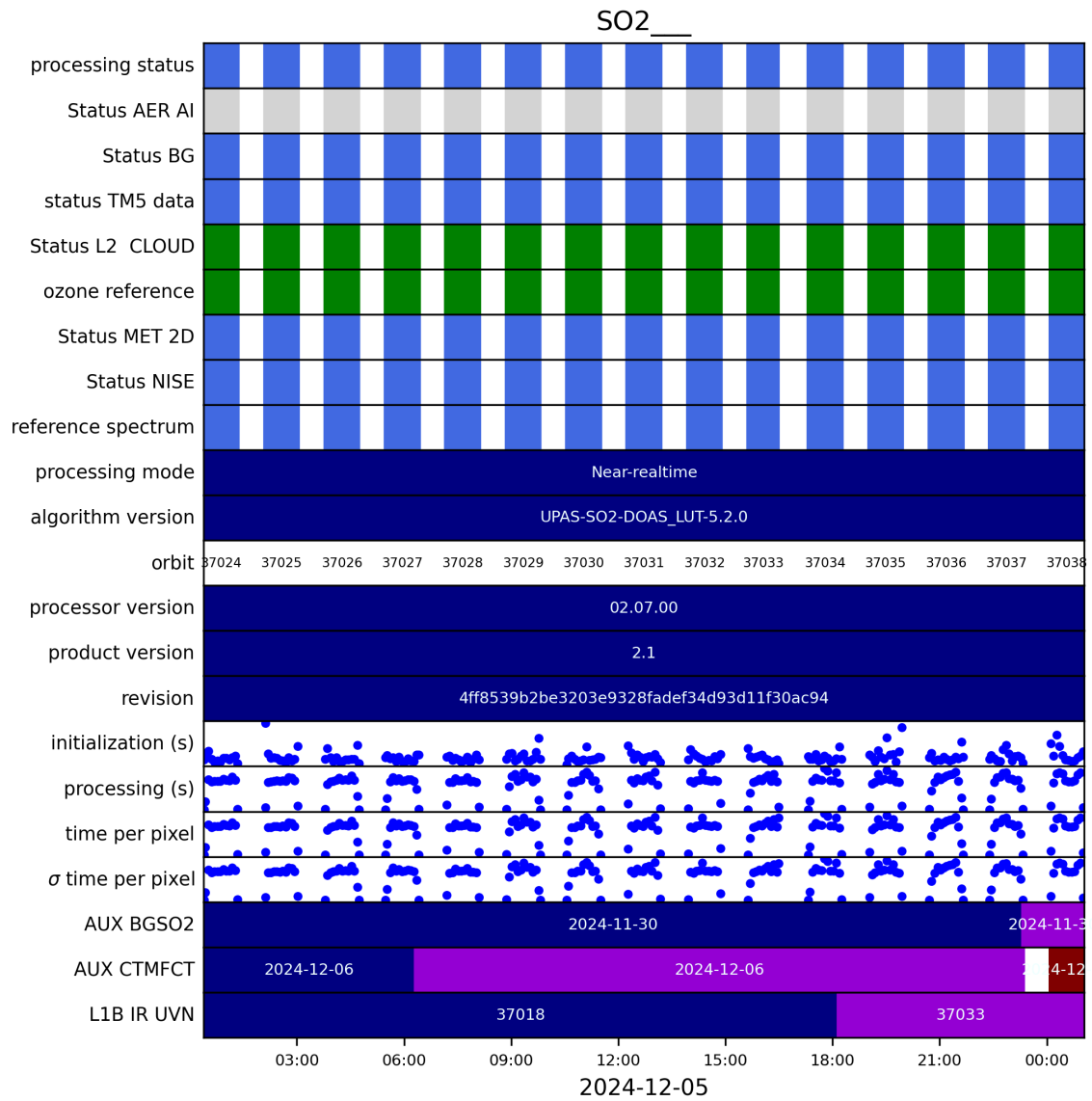


Figure 2: Input data per granule

5 Warnings and errors

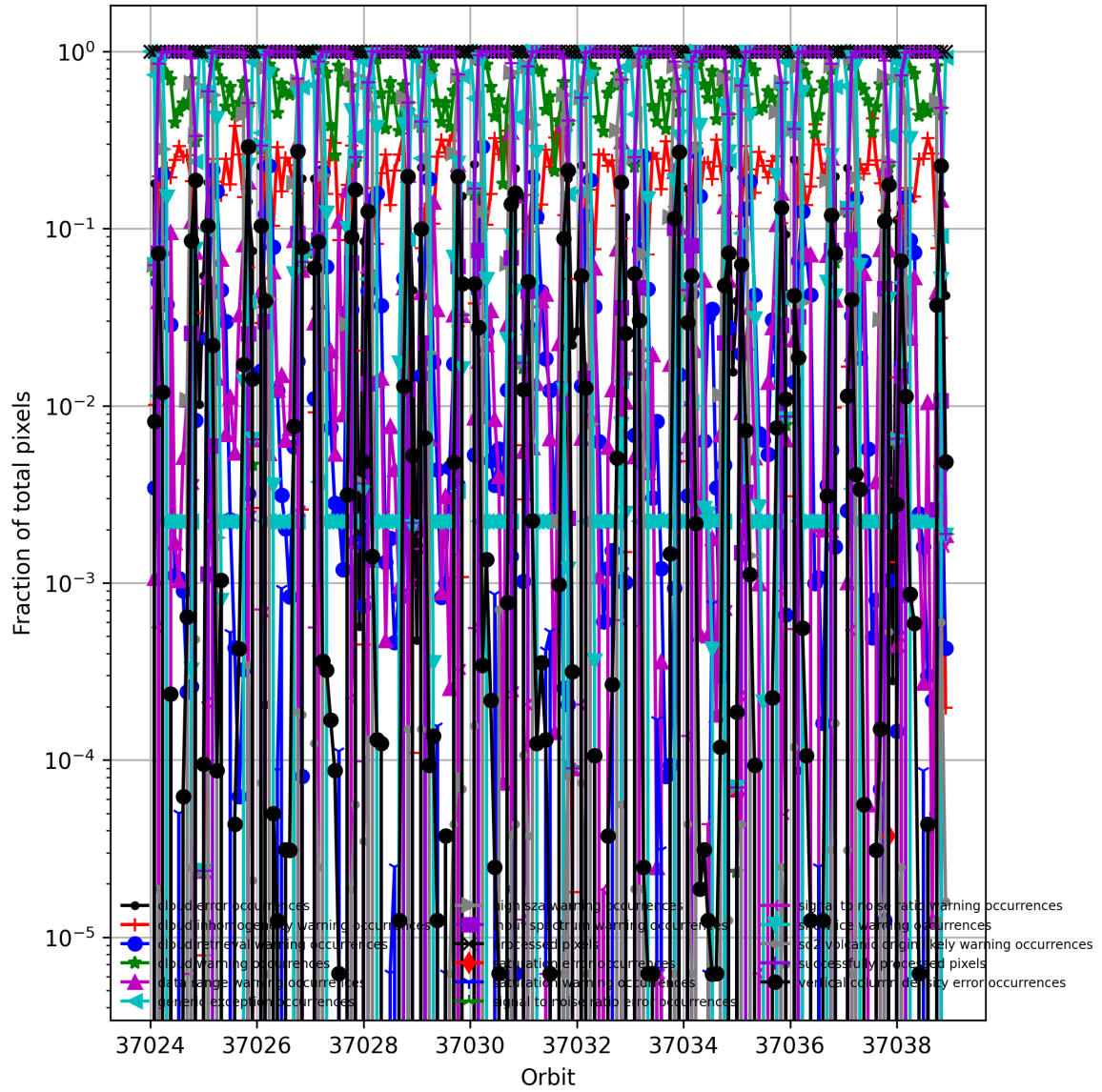


Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

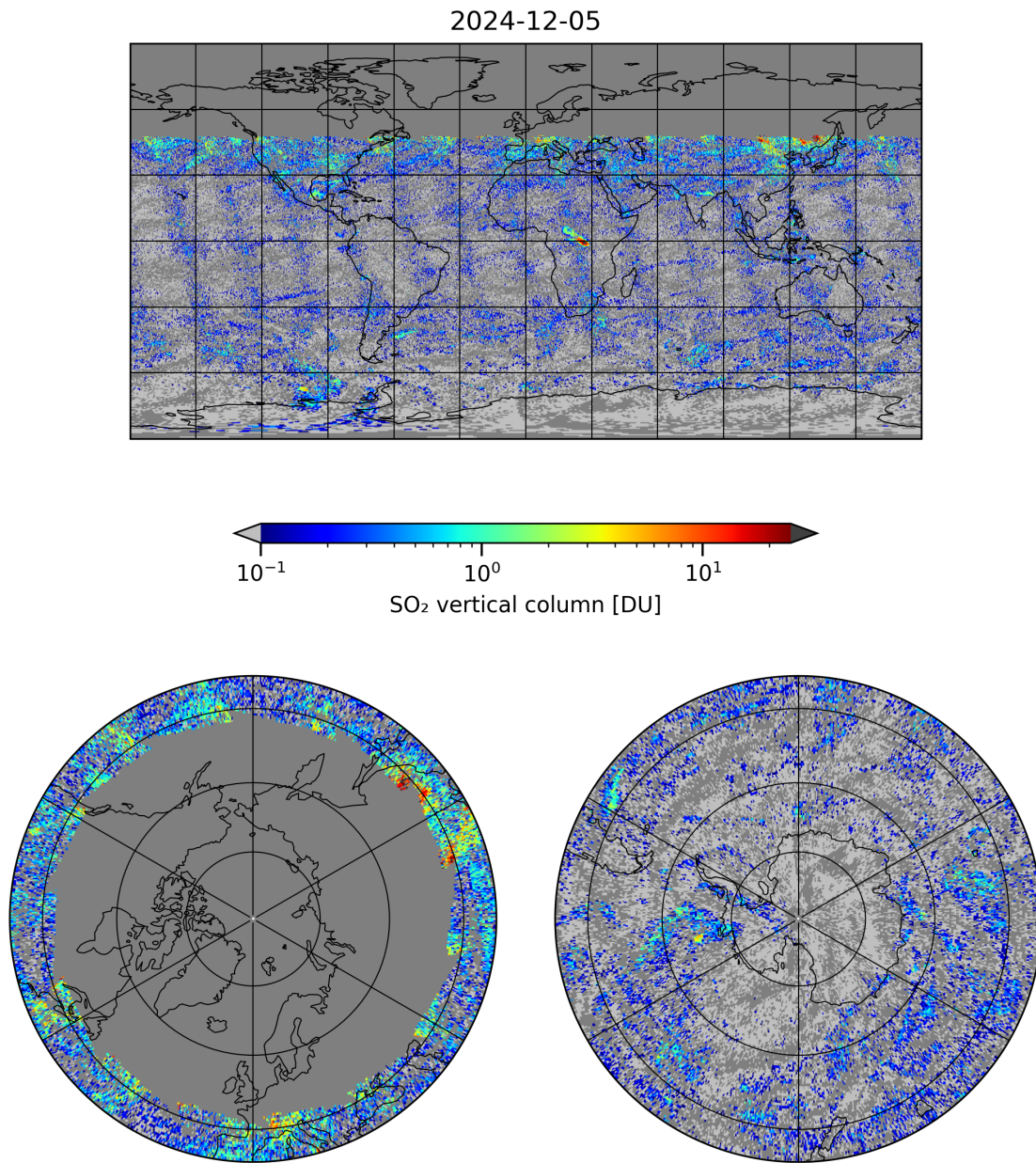


Figure 4: Map of “SO₂ vertical column” for 2024-12-05 to 2024-12-06

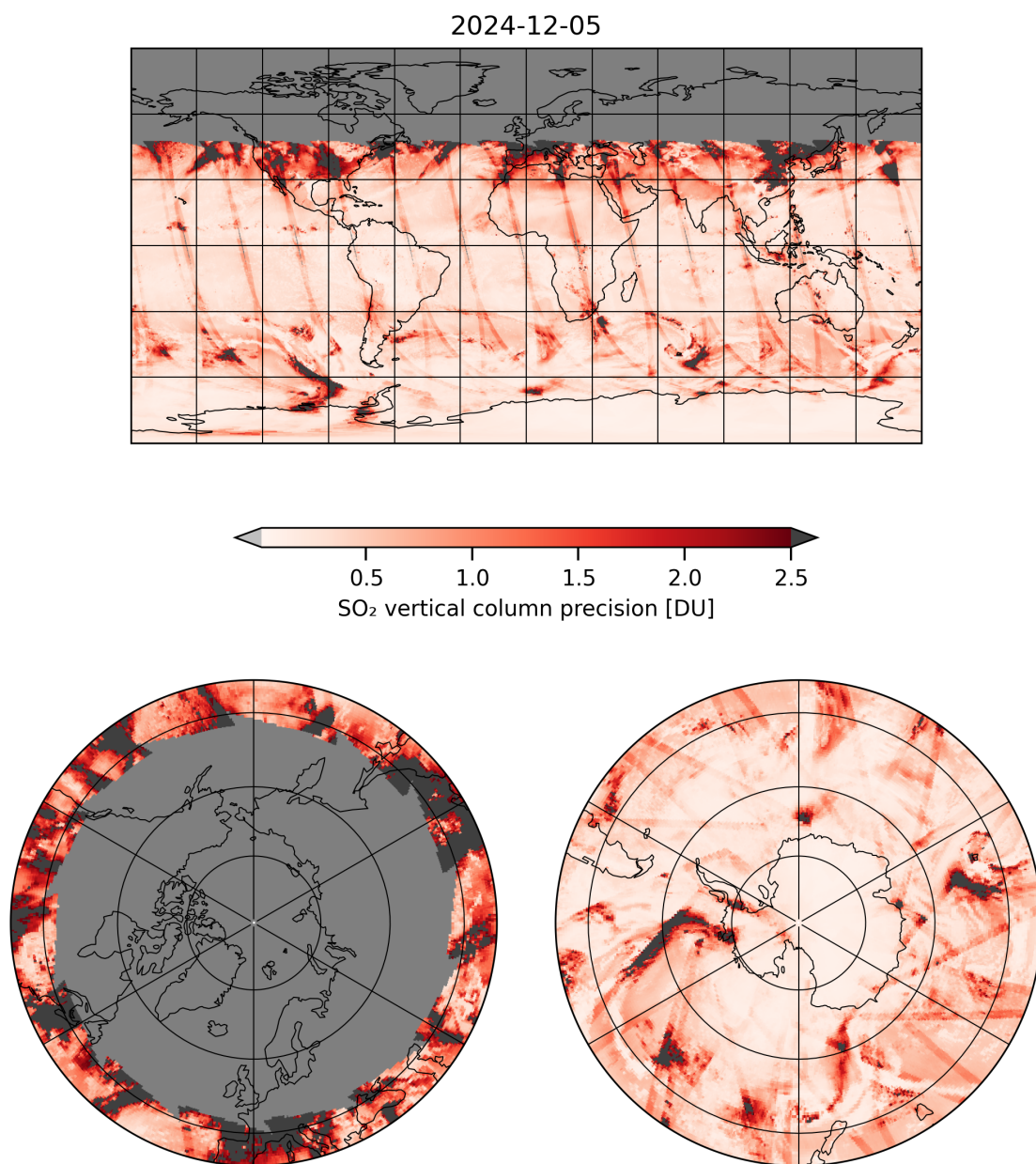


Figure 5: Map of “SO₂ vertical column precision” for 2024-12-05 to 2024-12-06

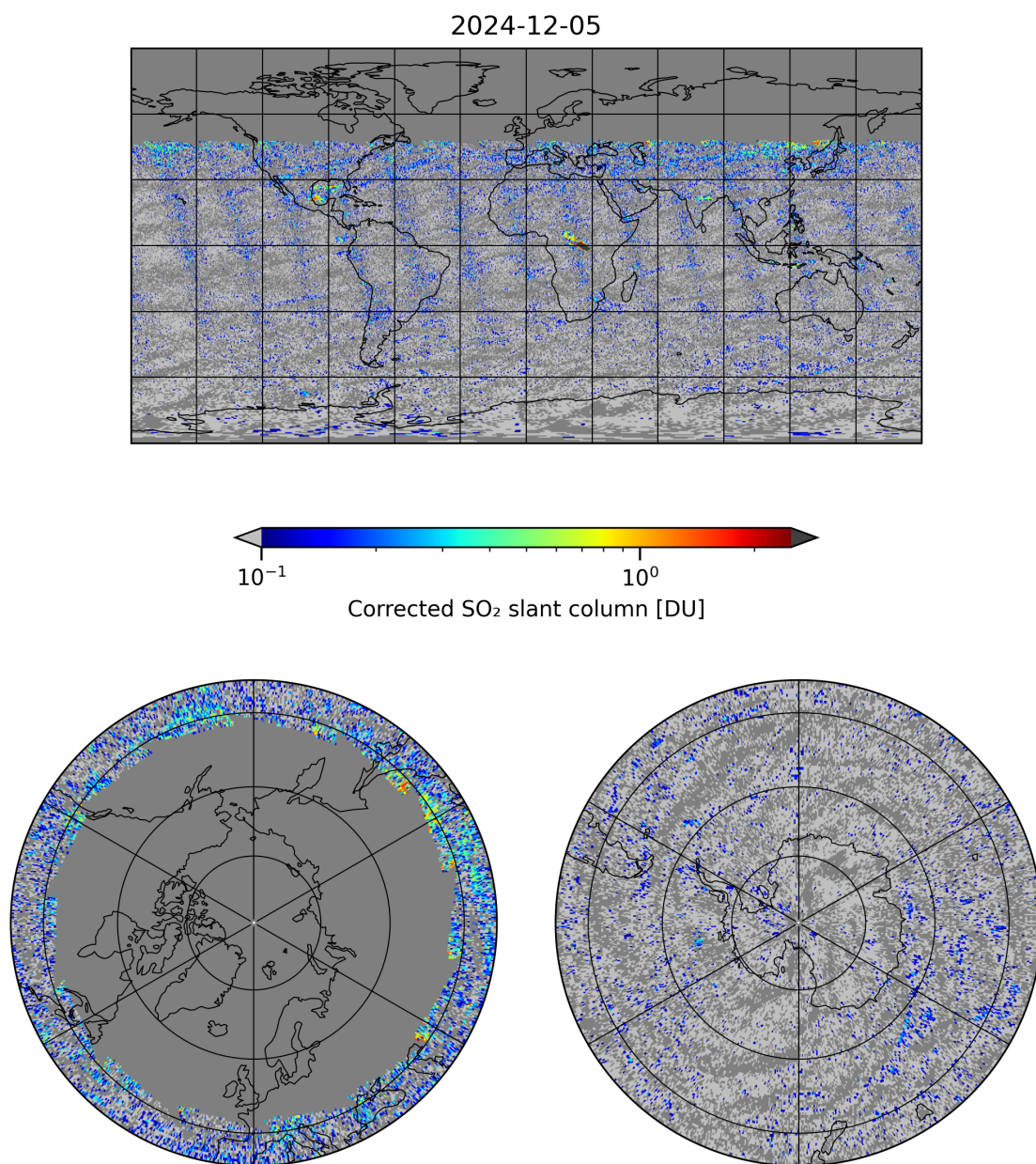


Figure 6: Map of “Corrected SO₂ slant column” for 2024-12-05 to 2024-12-06

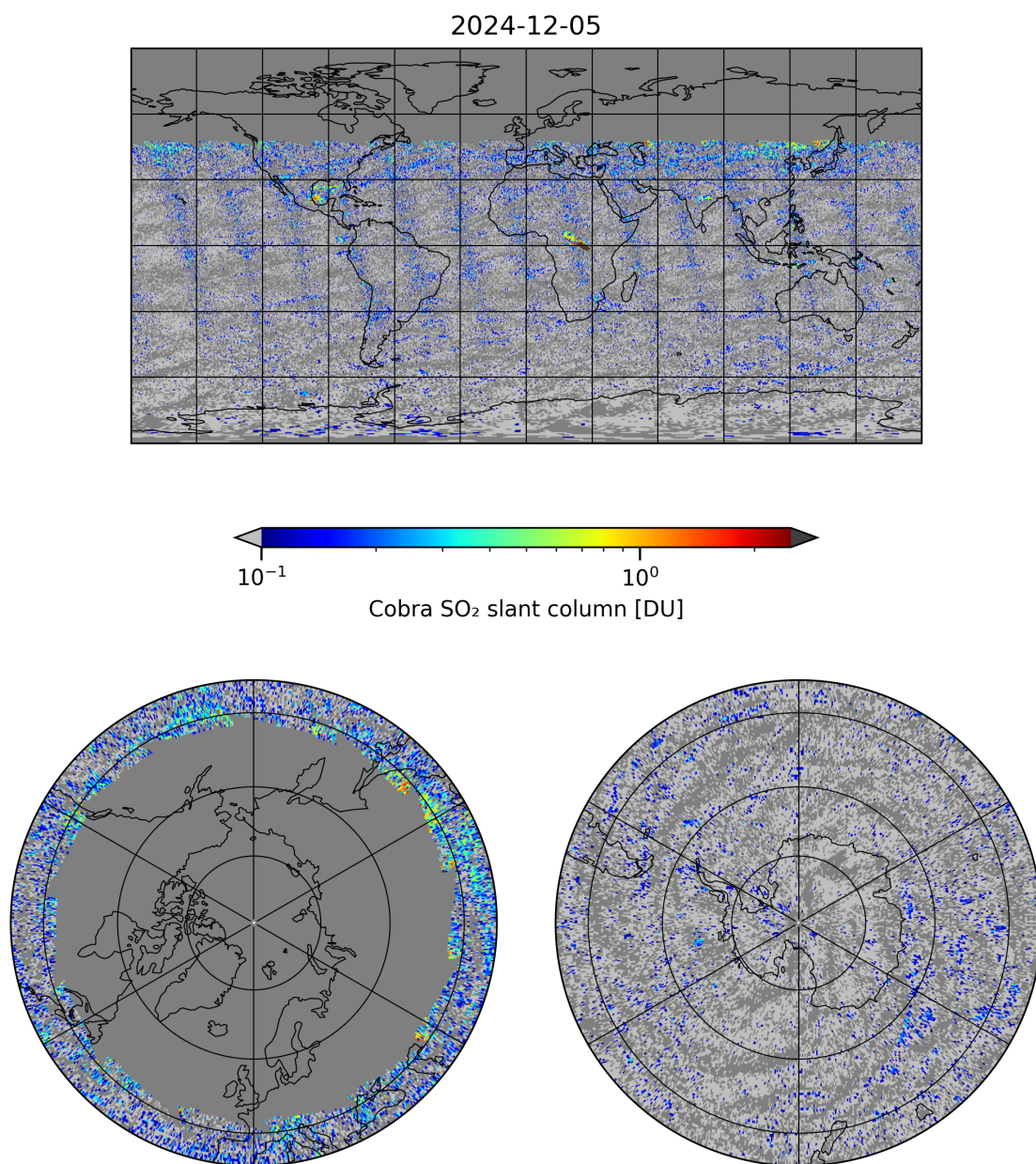


Figure 7: Map of “Cobra SO₂ slant column” for 2024-12-05 to 2024-12-06

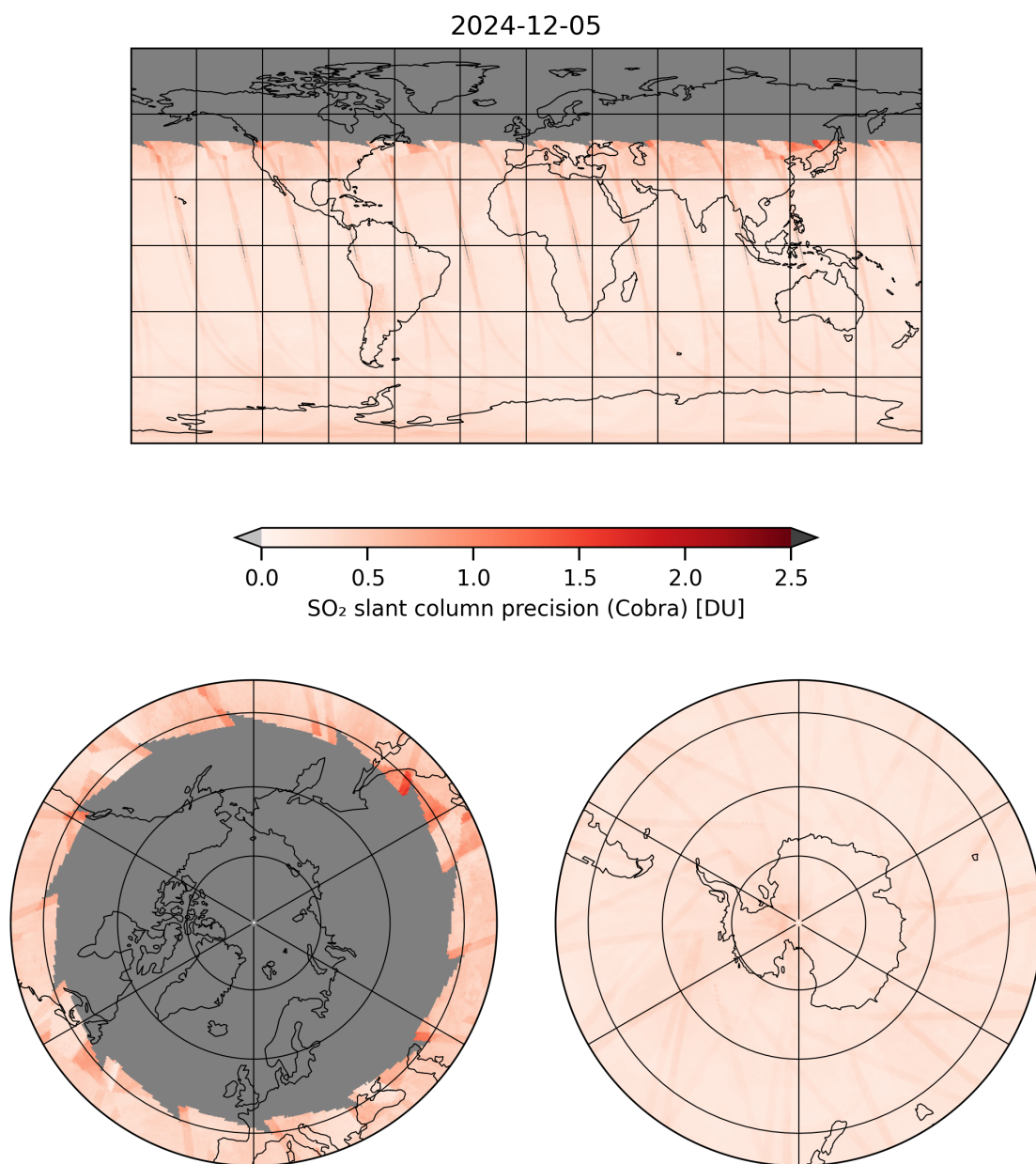


Figure 8: Map of “SO₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06

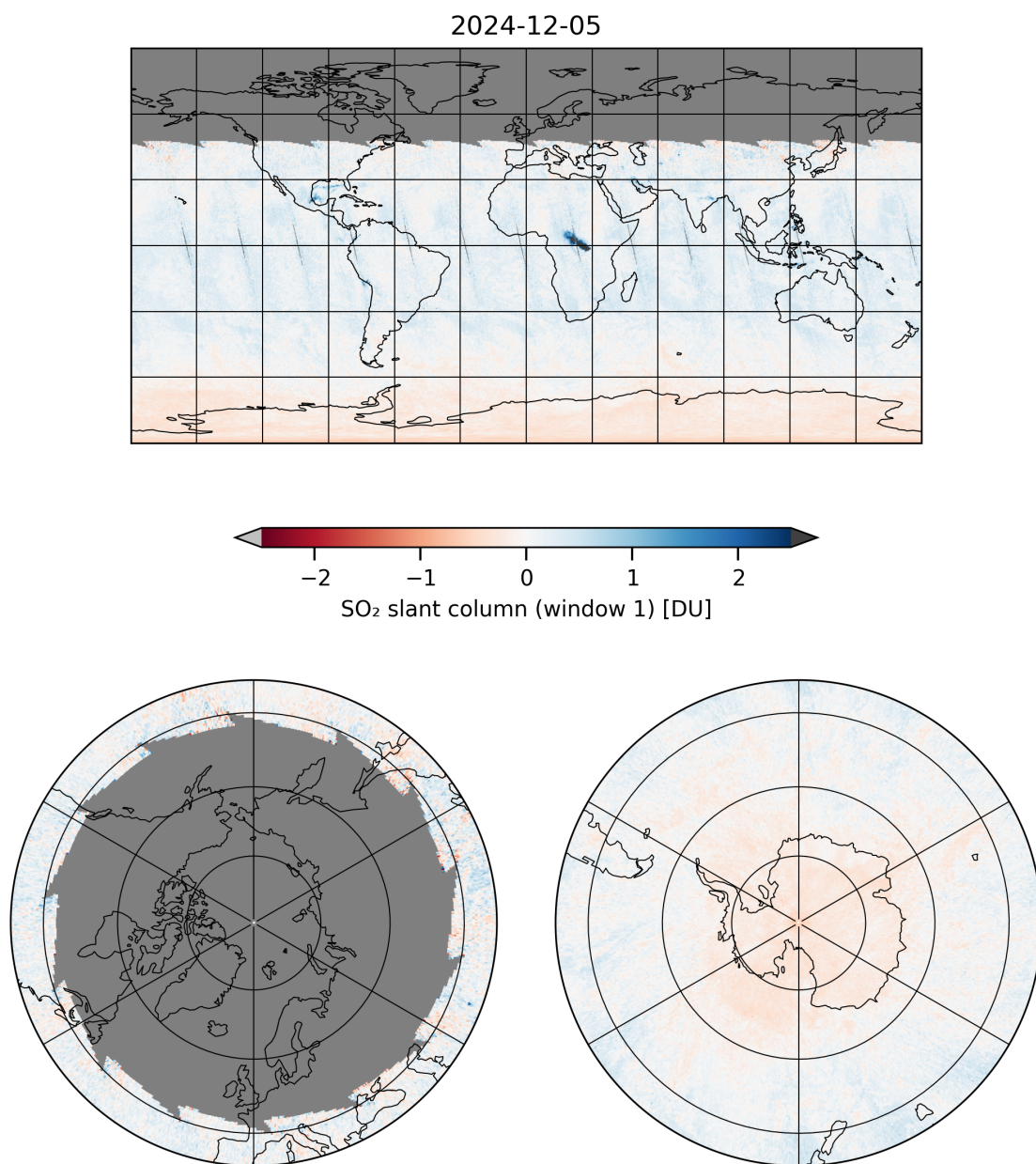


Figure 9: Map of “SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06

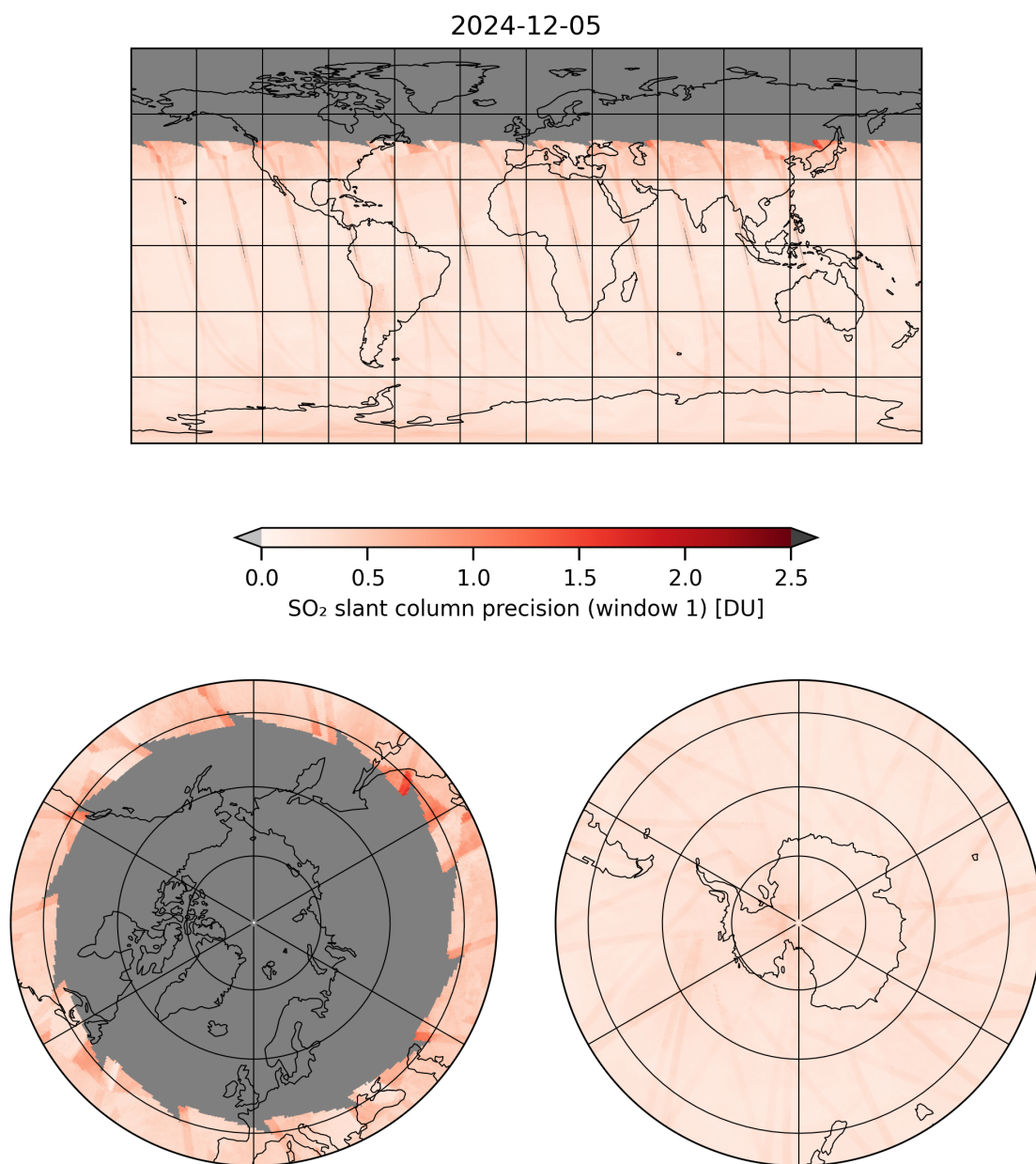


Figure 10: Map of “SO₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06

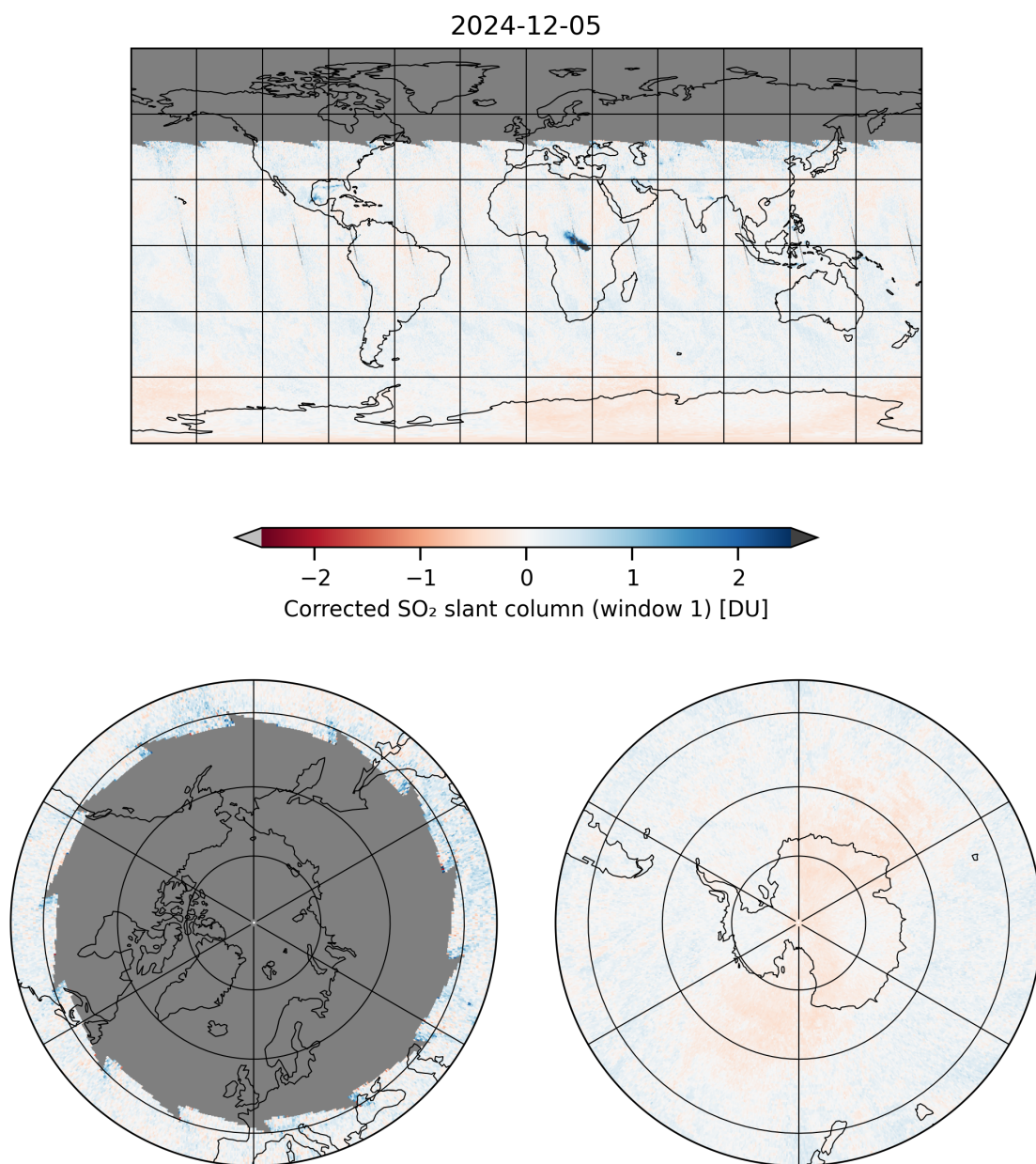


Figure 11: Map of “Corrected SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06

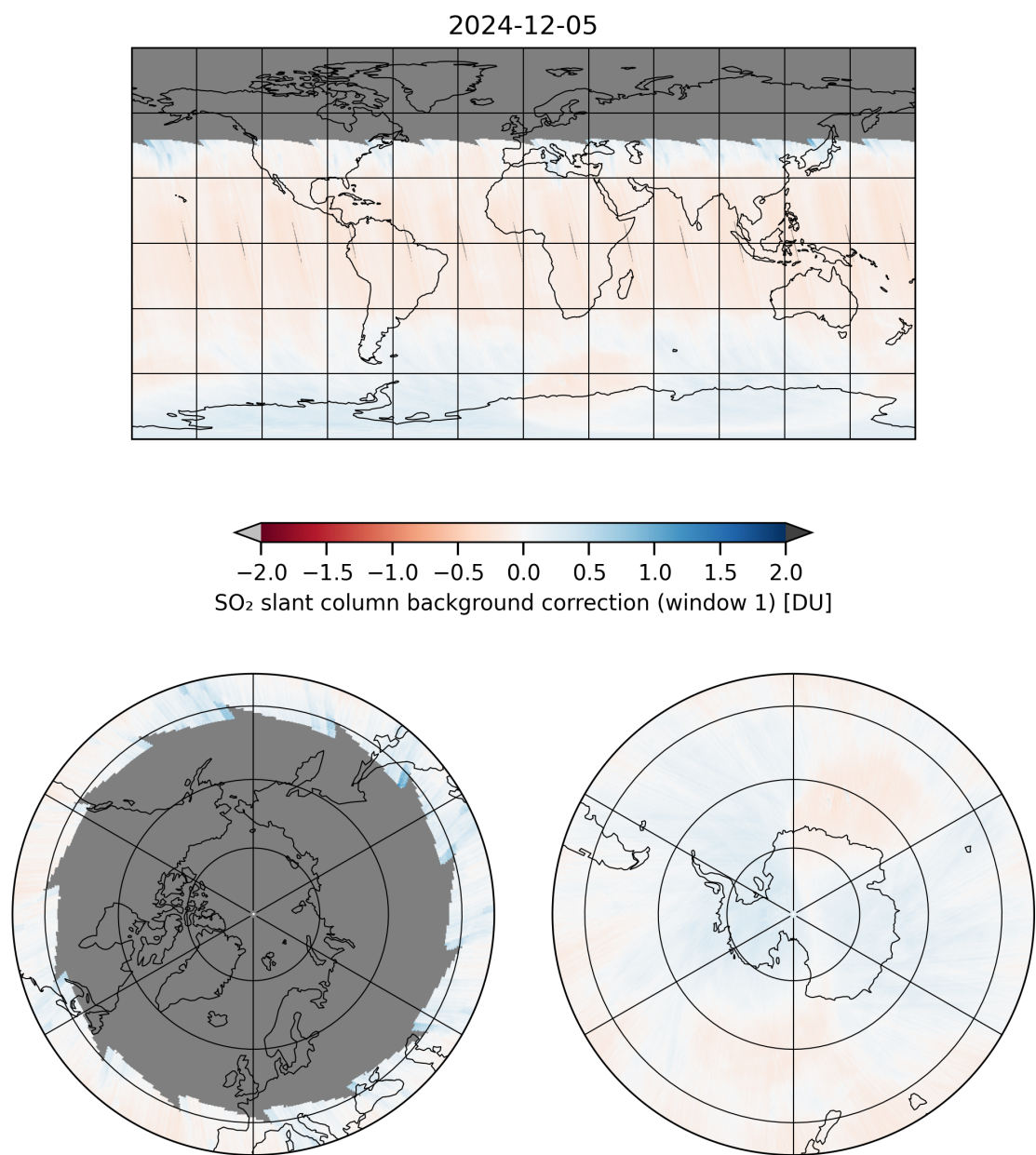


Figure 12: Map of “SO₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06

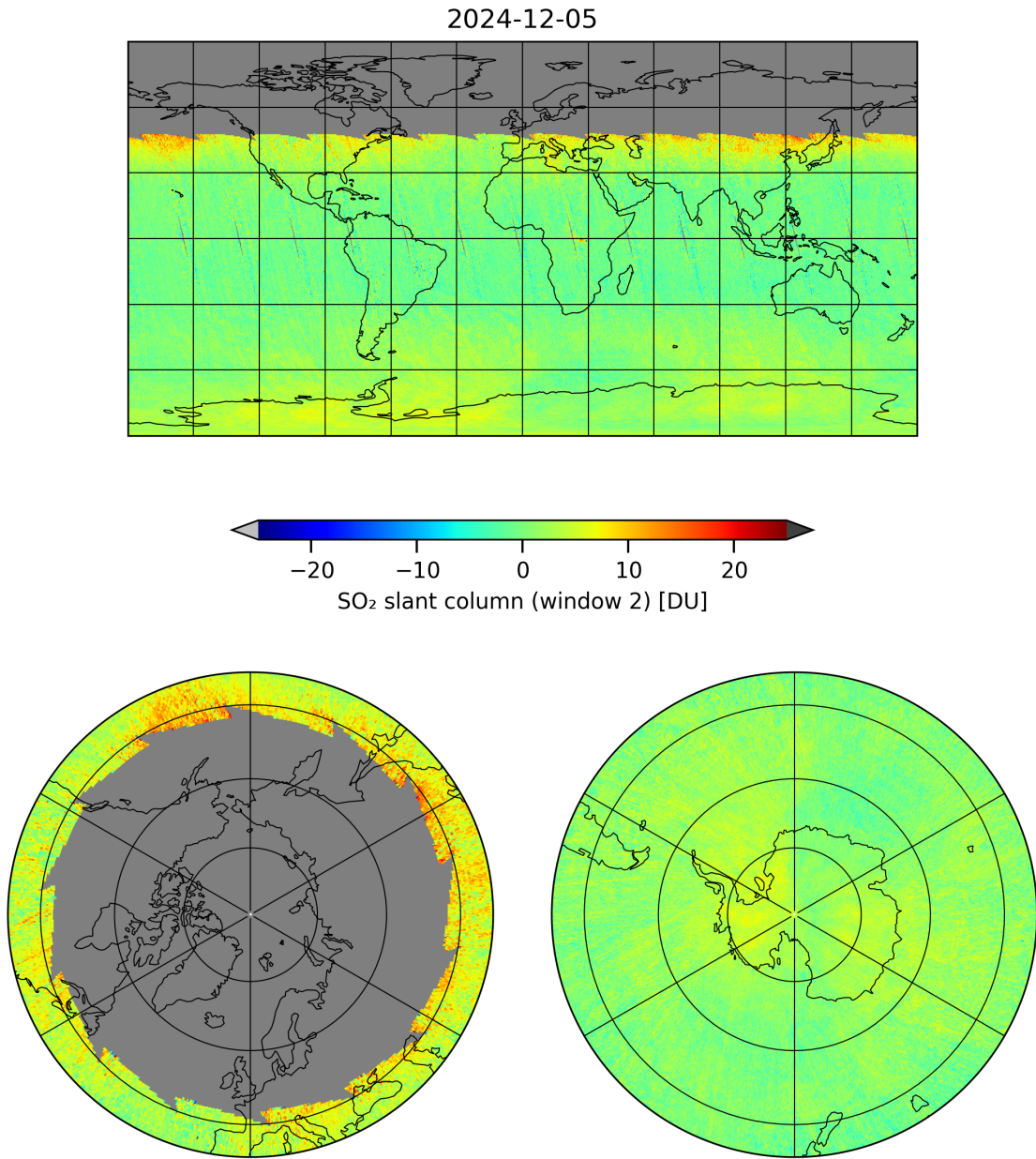


Figure 13: Map of “SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06

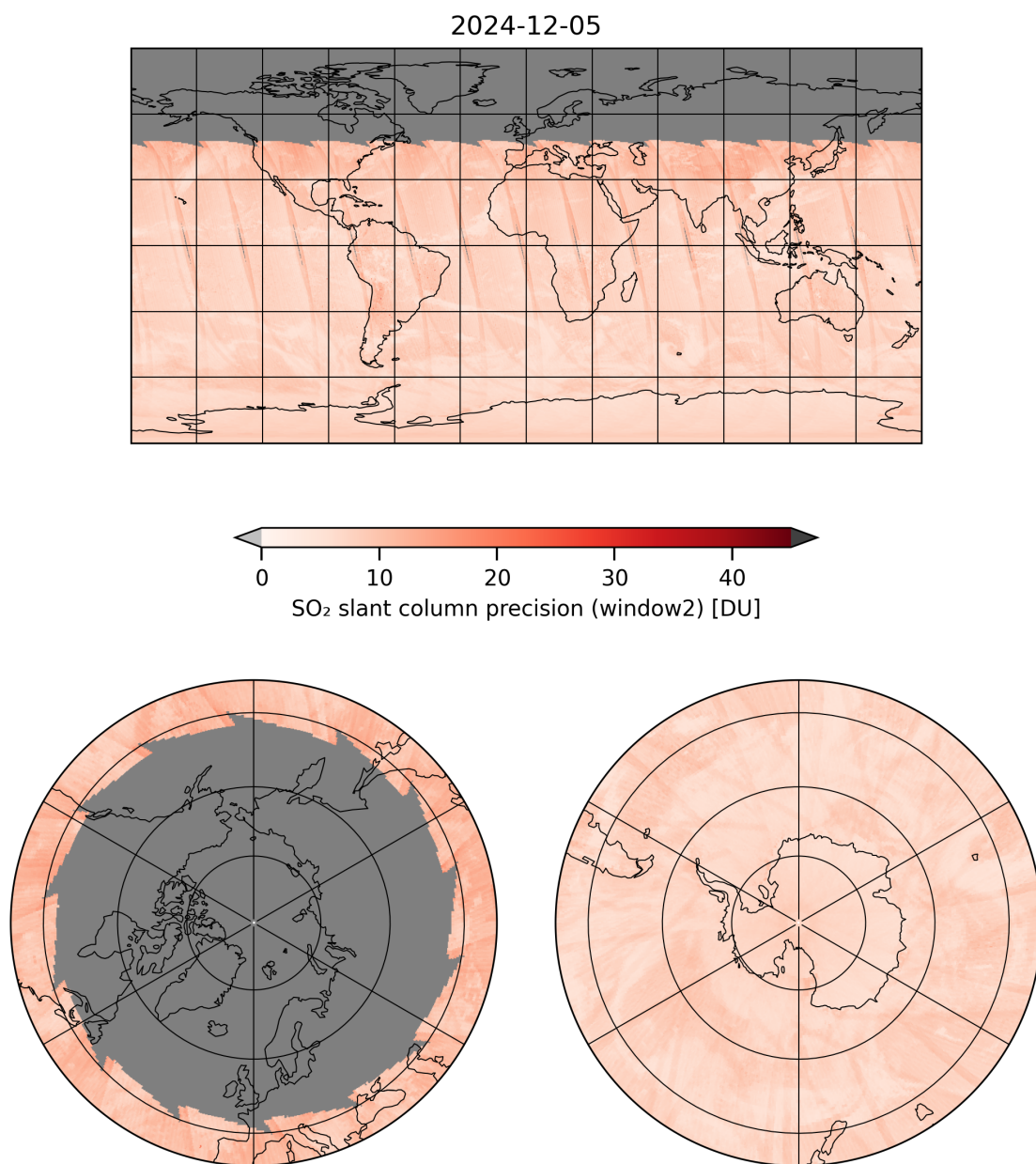


Figure 14: Map of “SO₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06

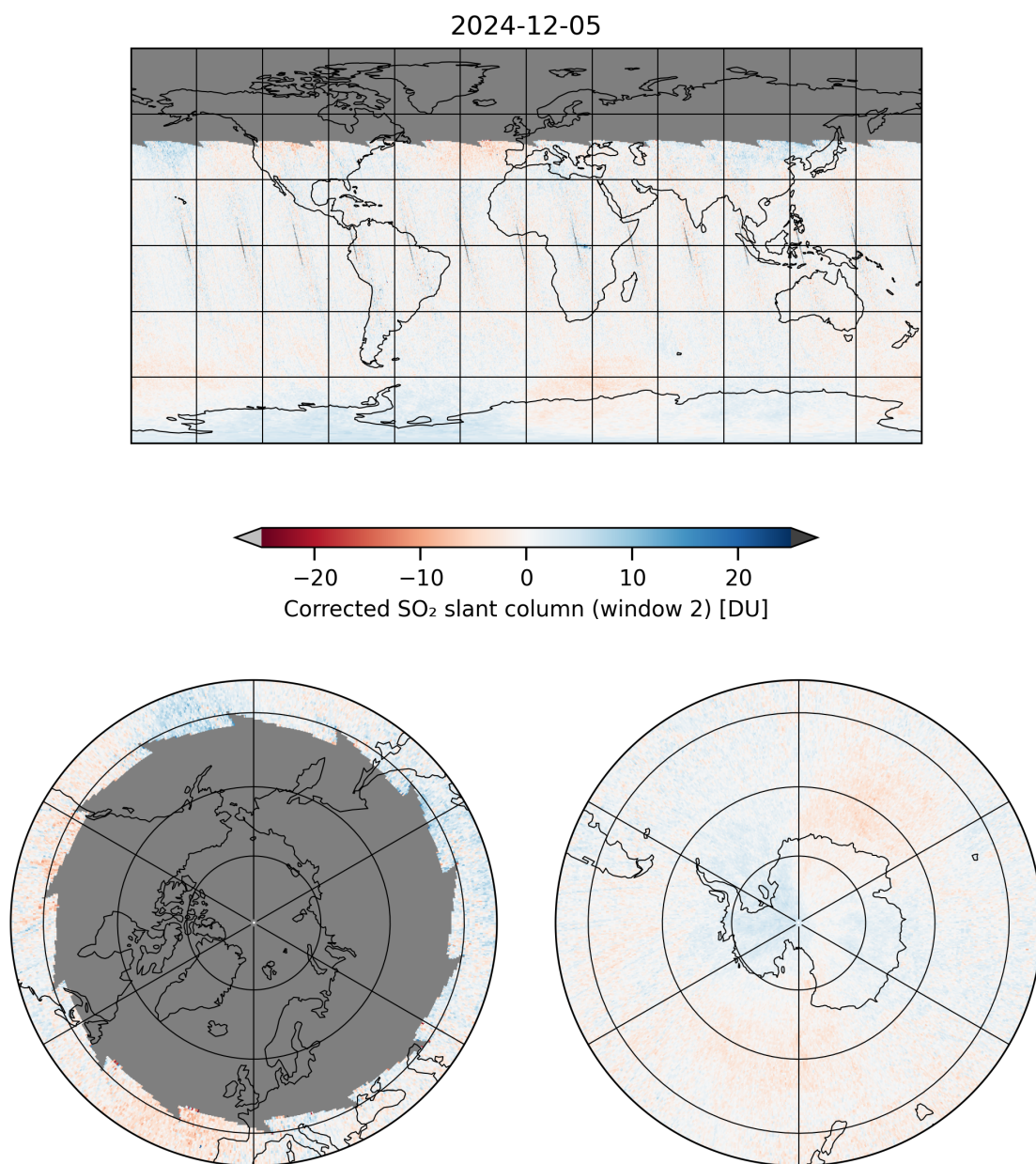


Figure 15: Map of “Corrected SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06

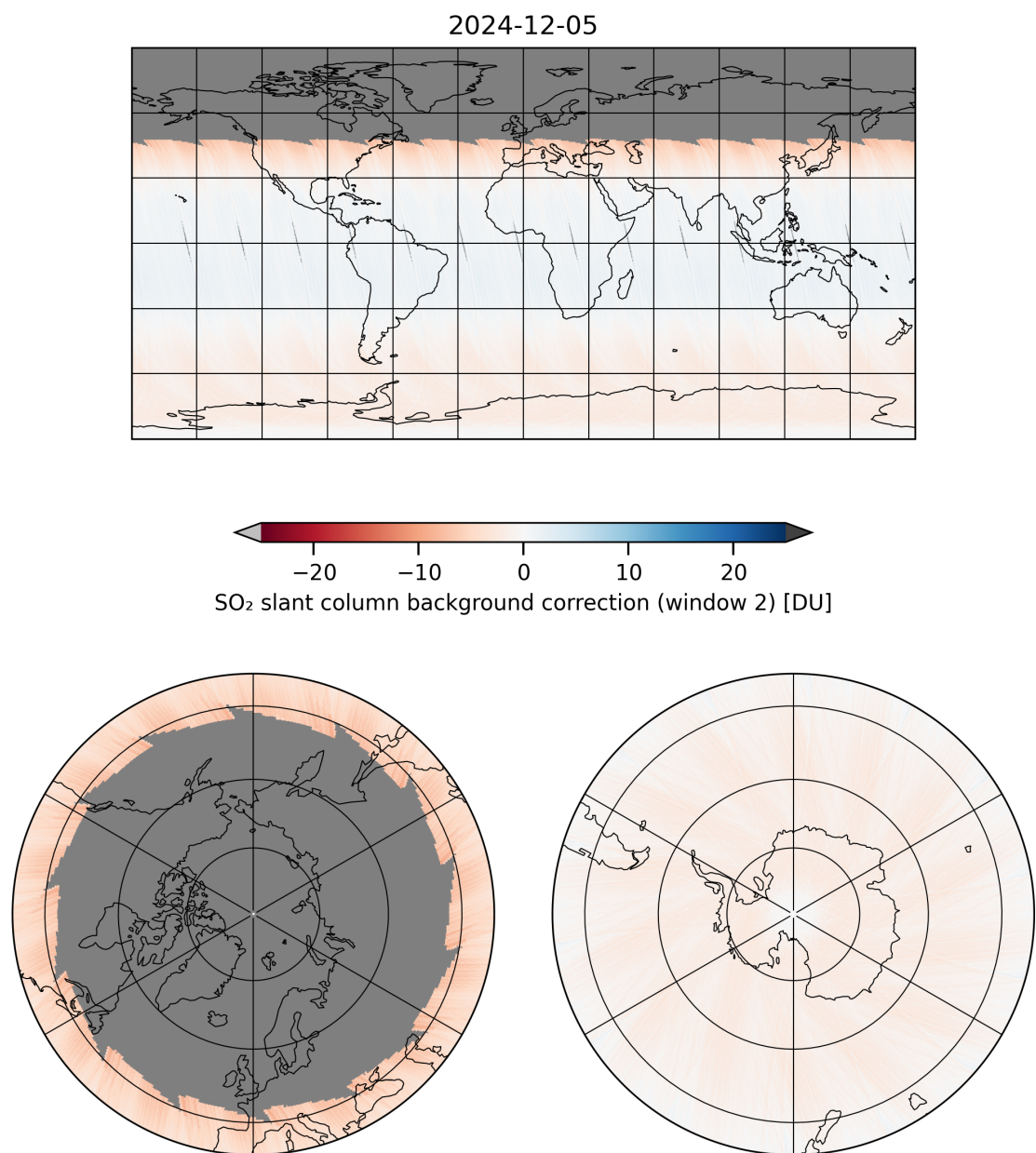


Figure 16: Map of “SO₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06

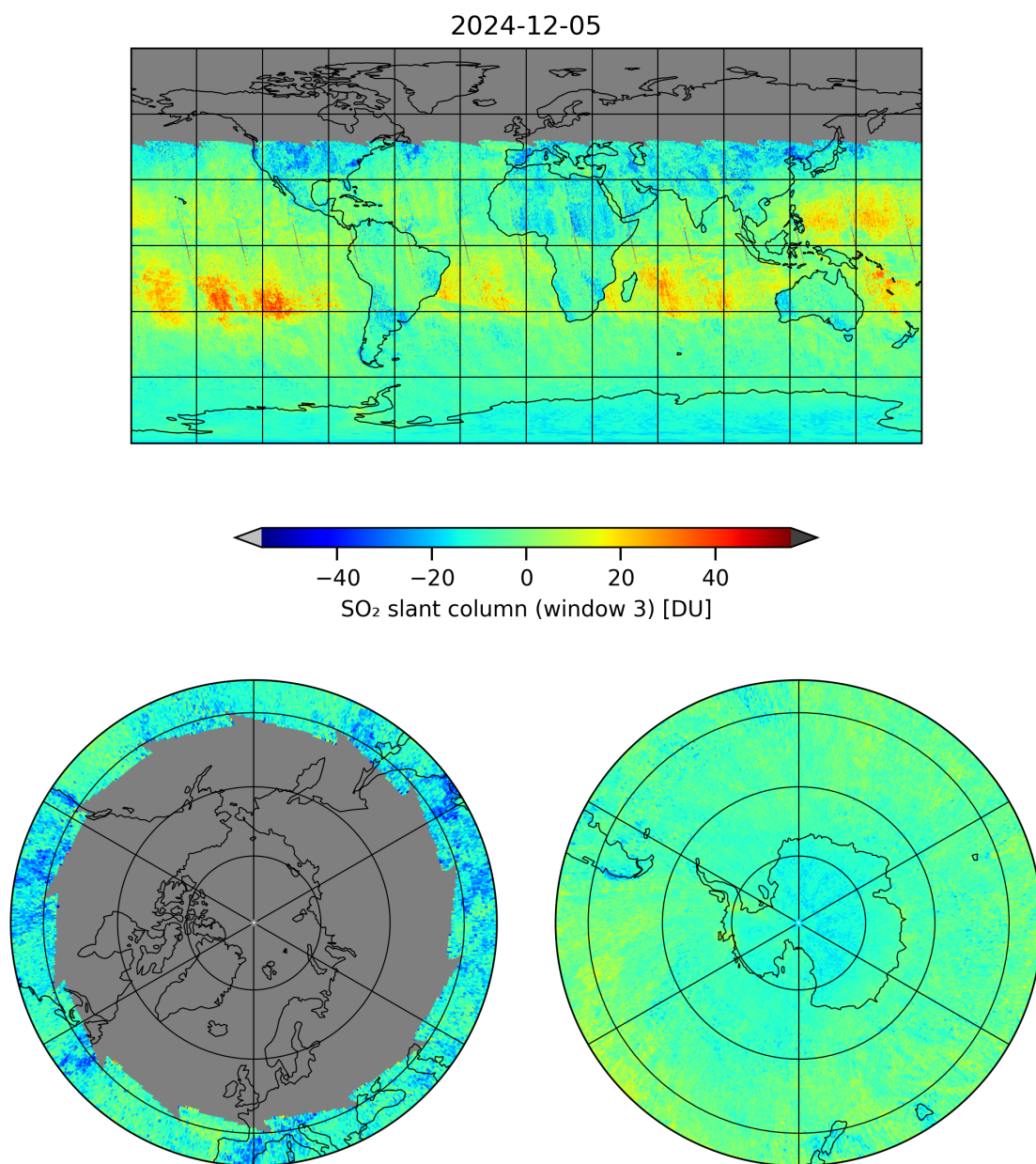


Figure 17: Map of “SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06

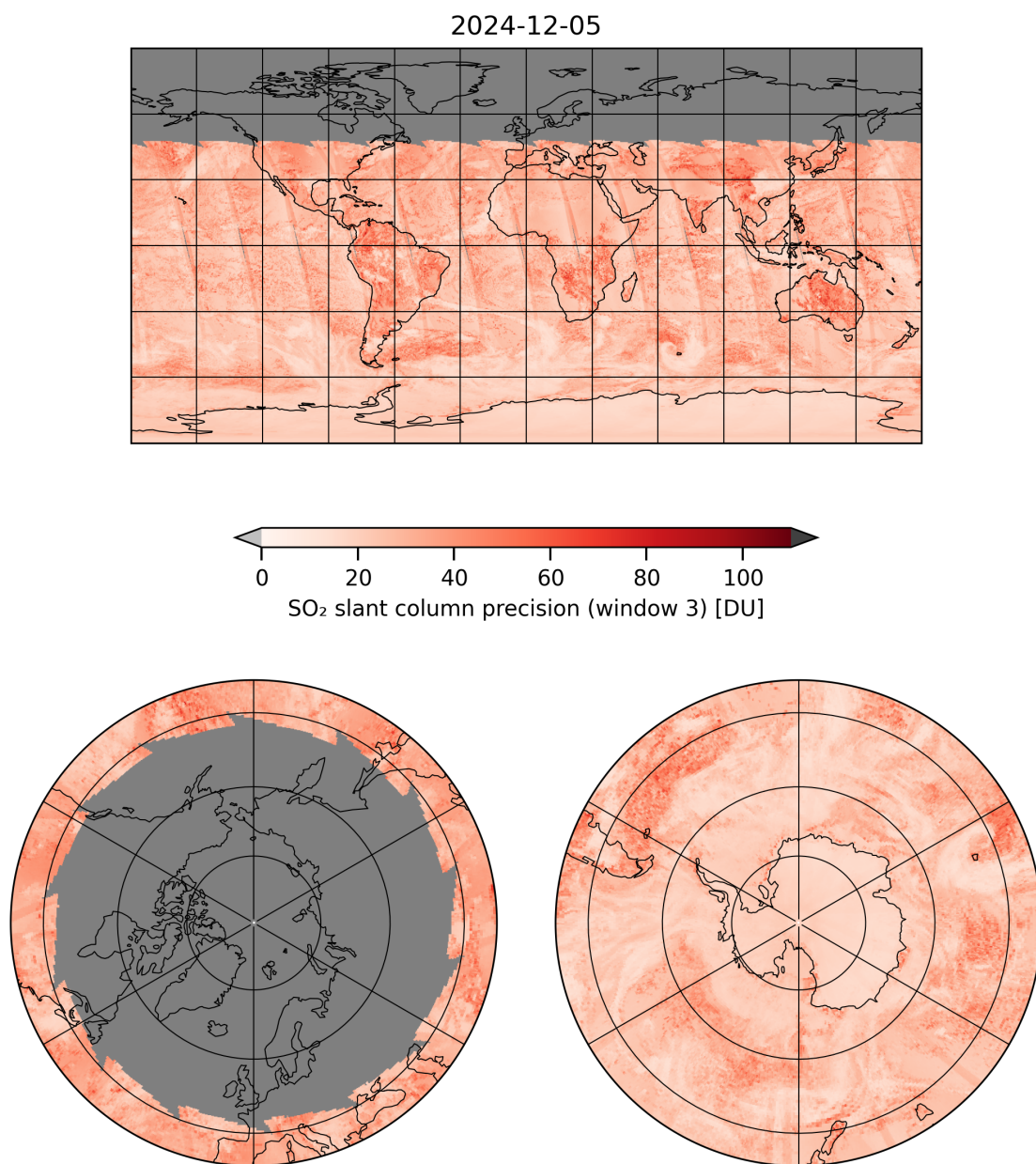


Figure 18: Map of “SO₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06

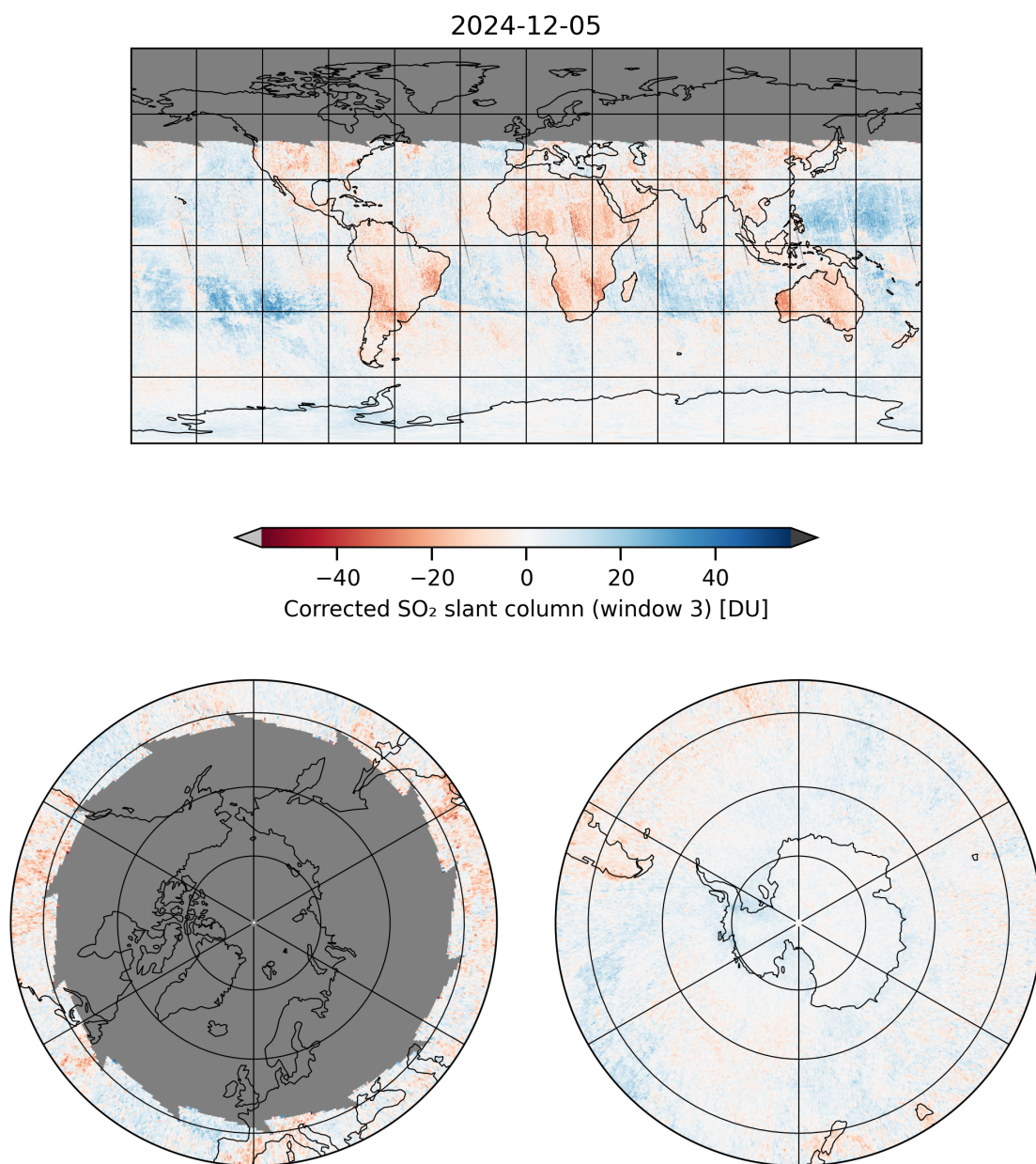


Figure 19: Map of “Corrected SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06

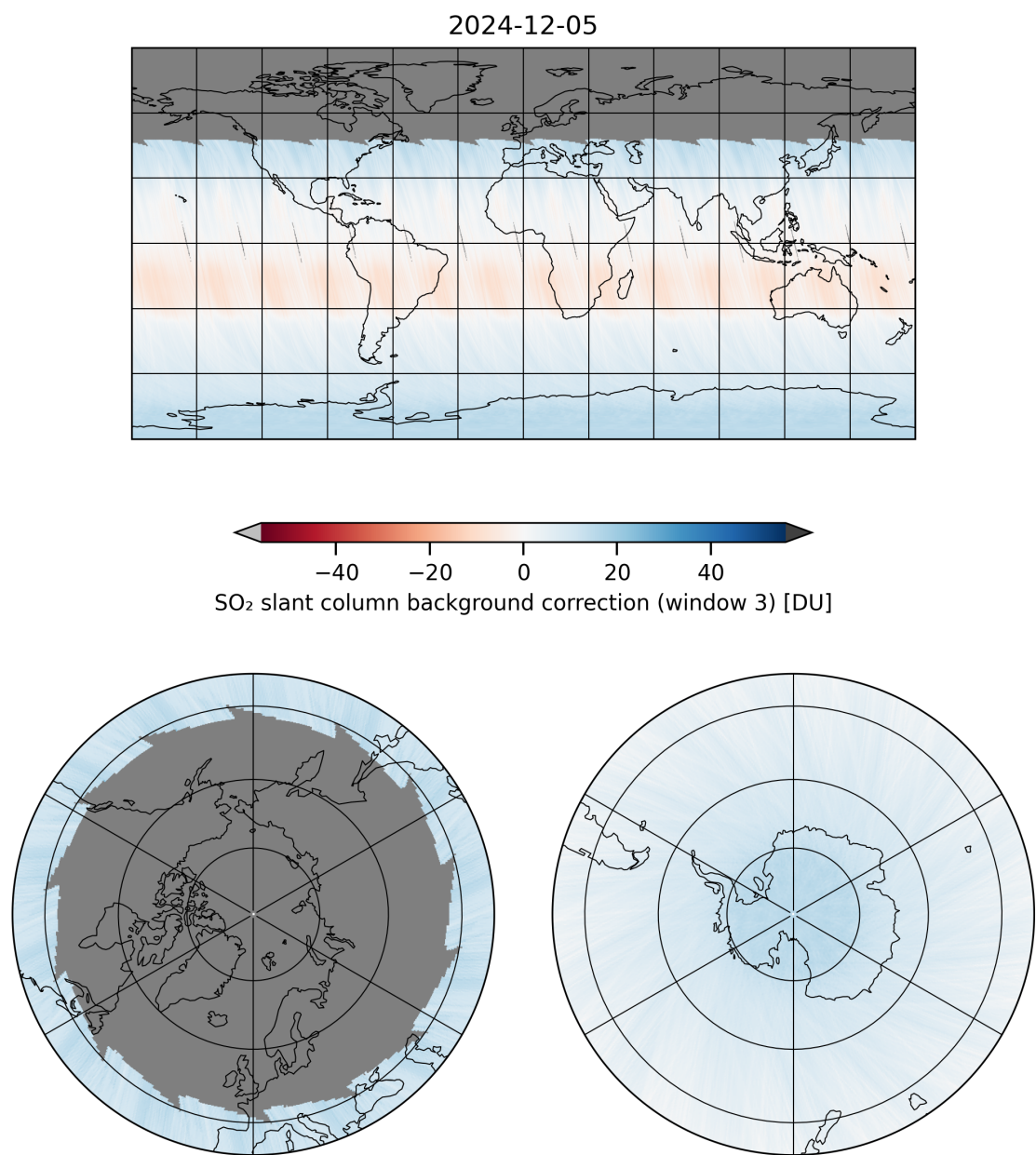


Figure 20: Map of “SO₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06

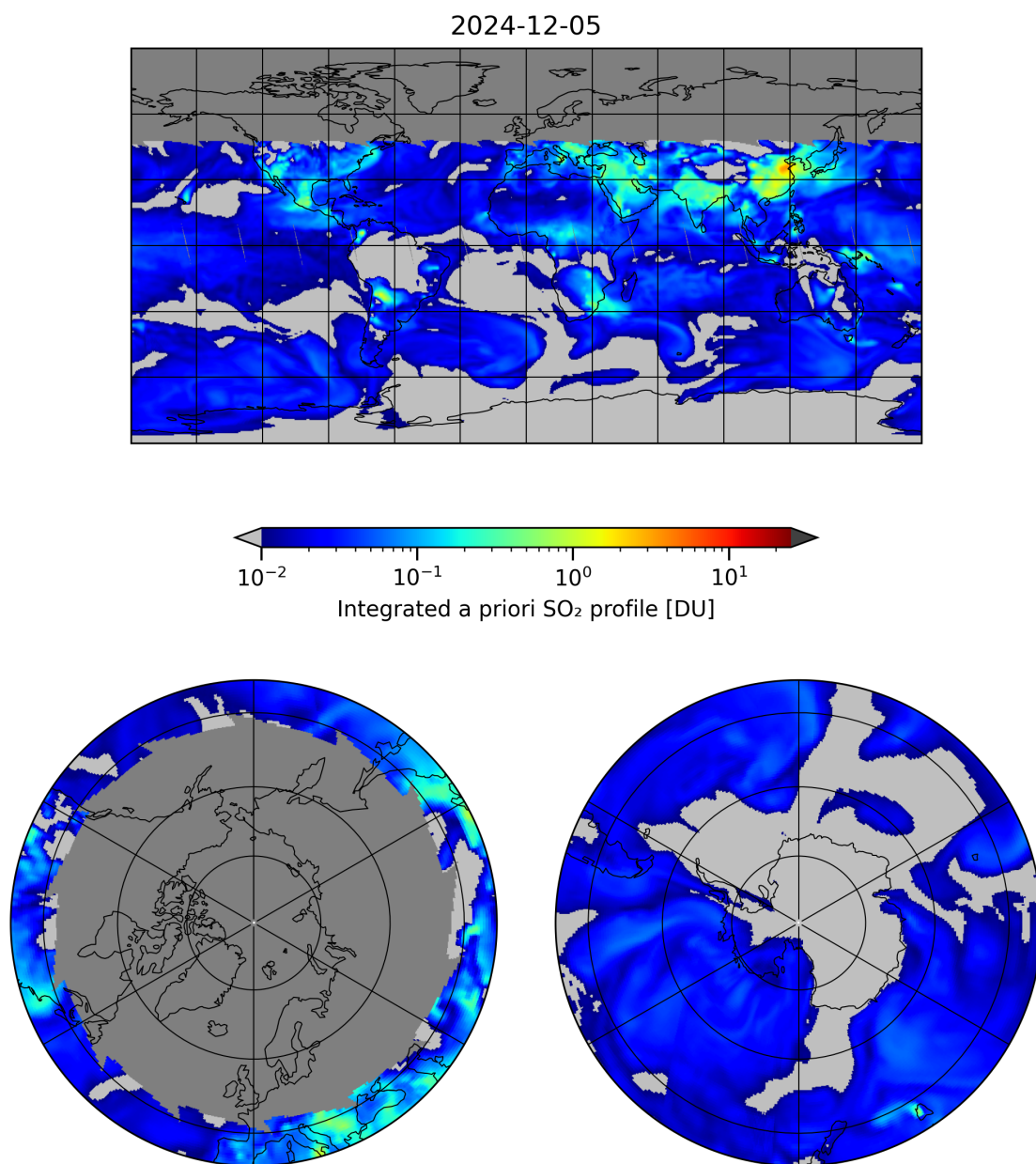


Figure 21: Map of “Integrated a priori SO₂ profile” for 2024-12-05 to 2024-12-06

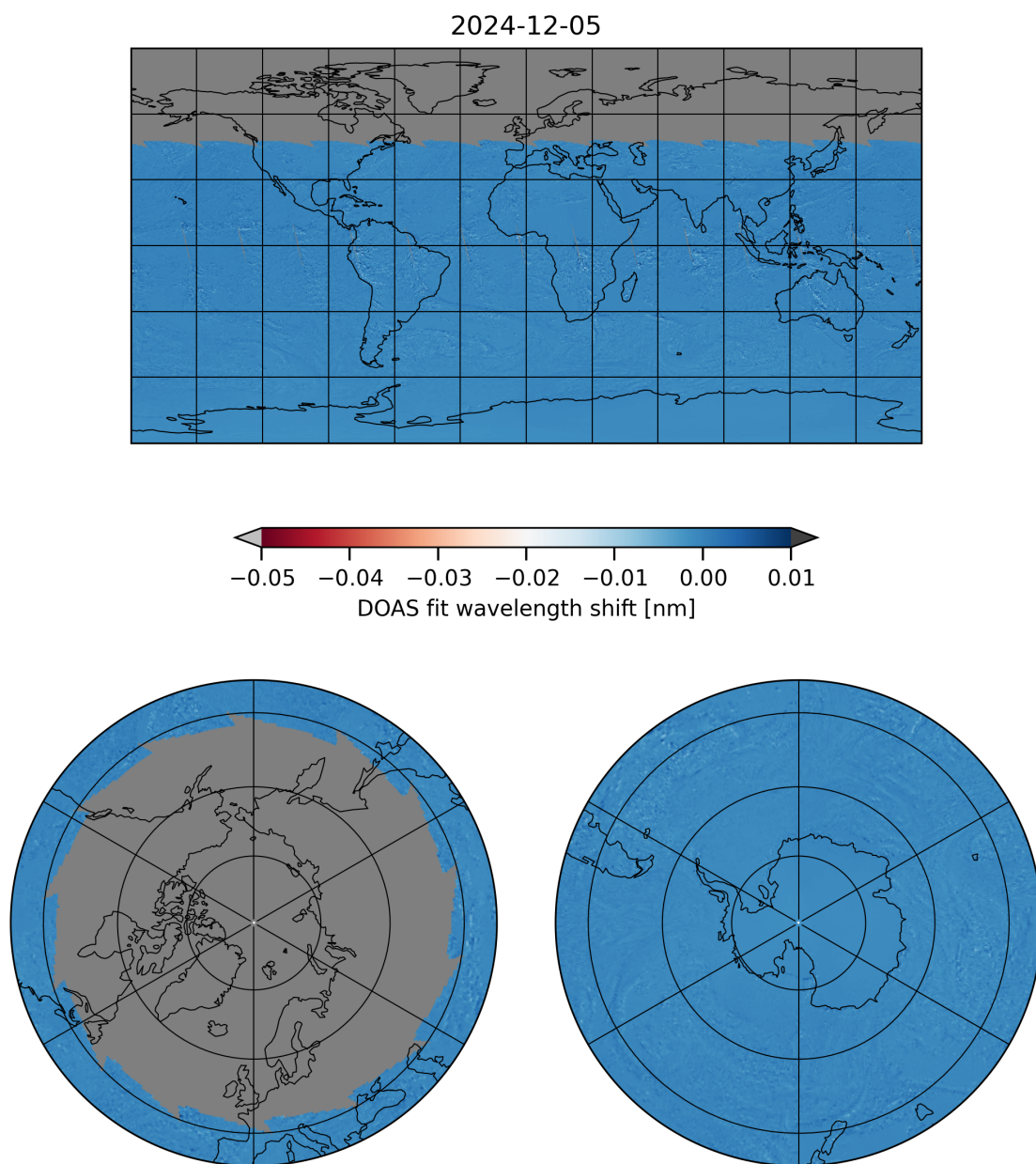


Figure 22: Map of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06

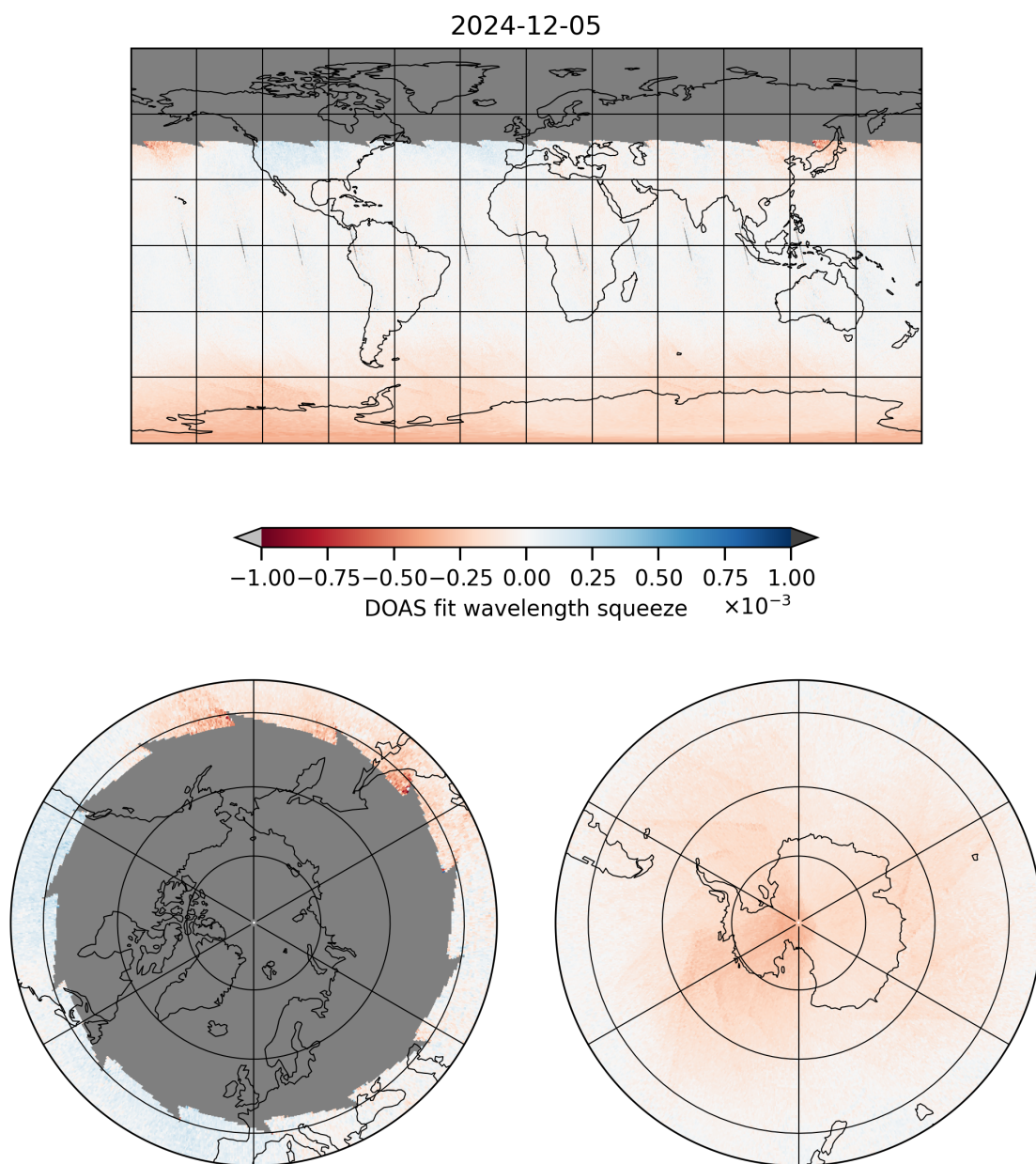


Figure 23: Map of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06

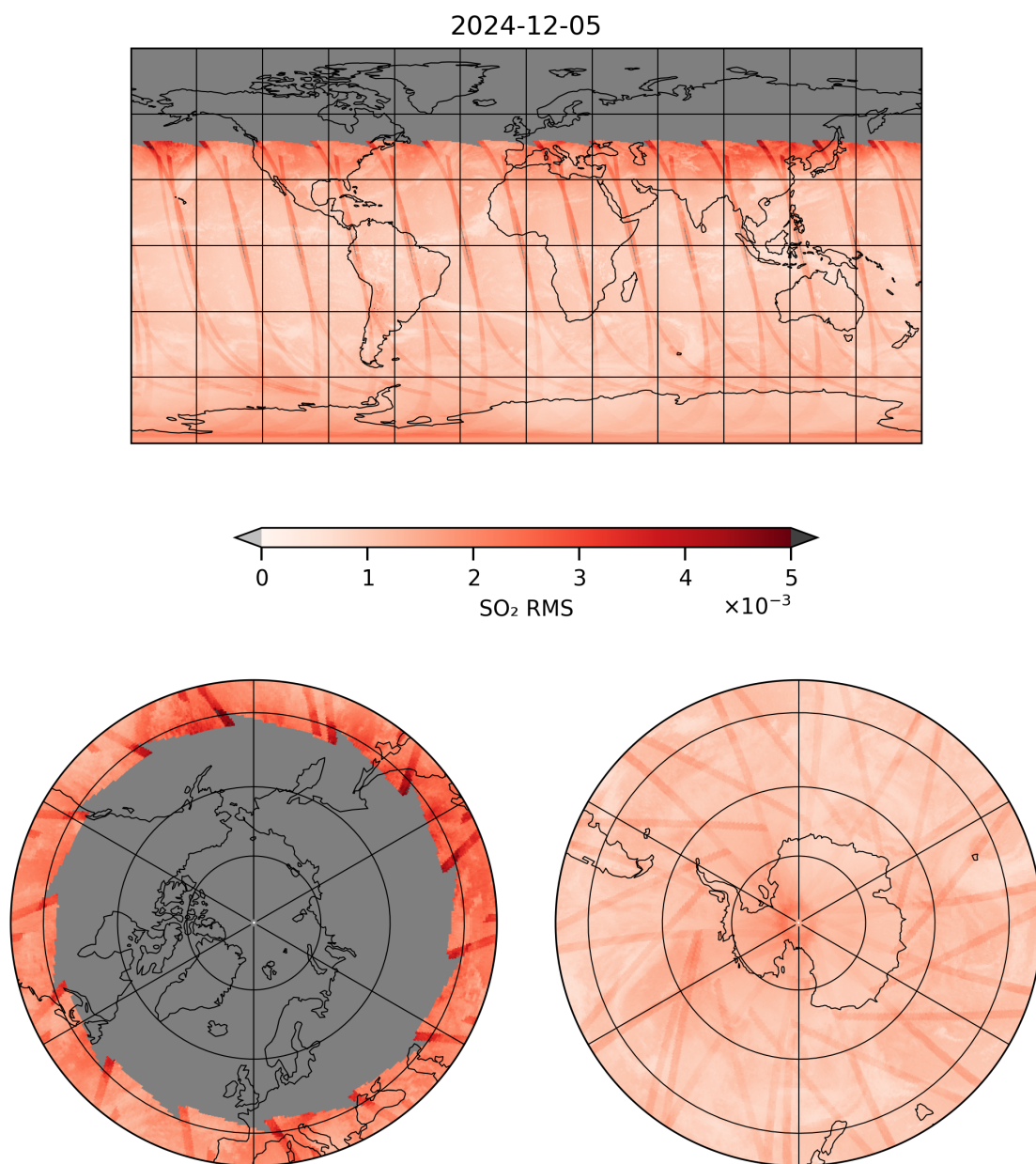


Figure 24: Map of “SO₂ RMS” for 2024-12-05 to 2024-12-06

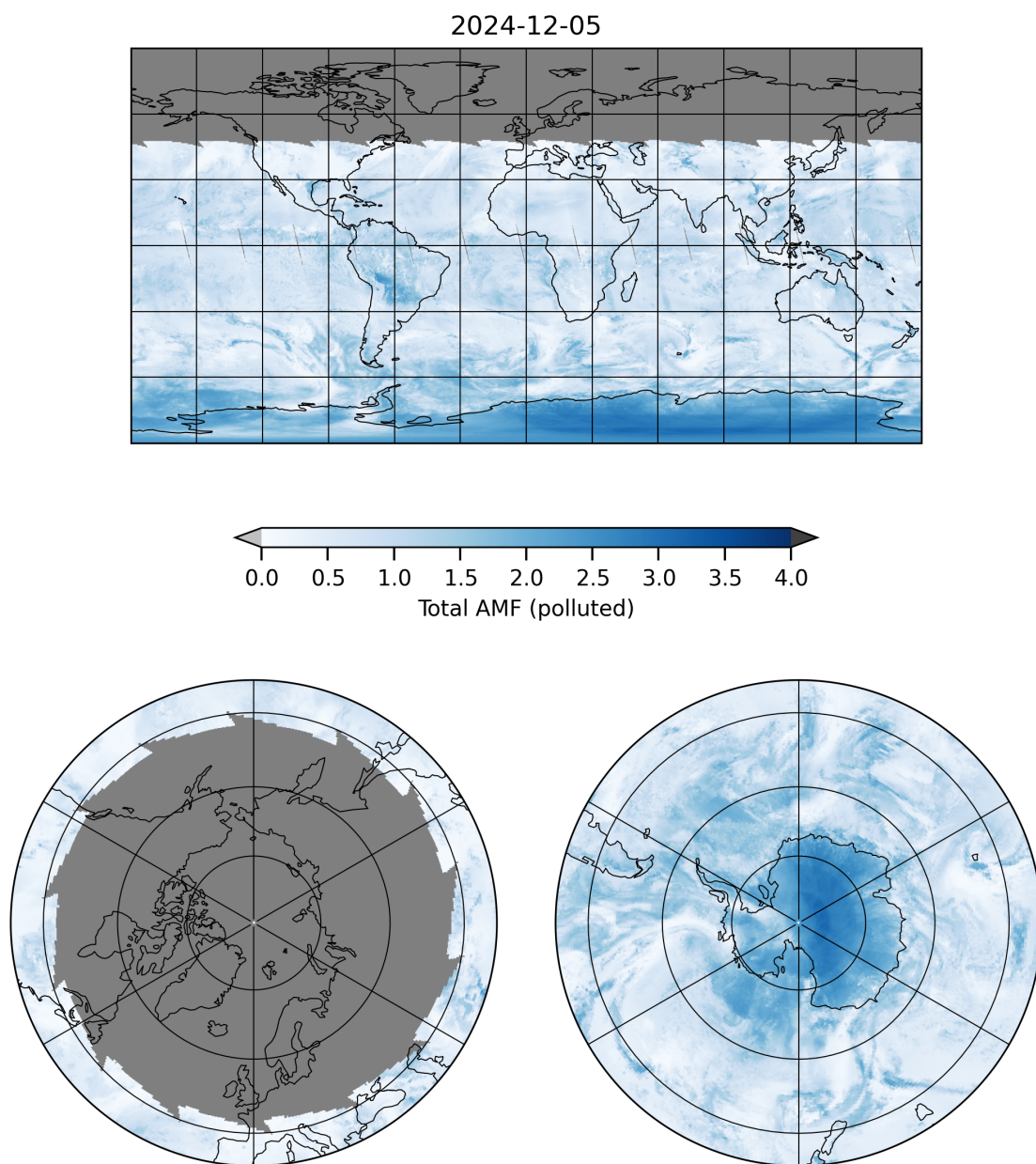


Figure 25: Map of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06

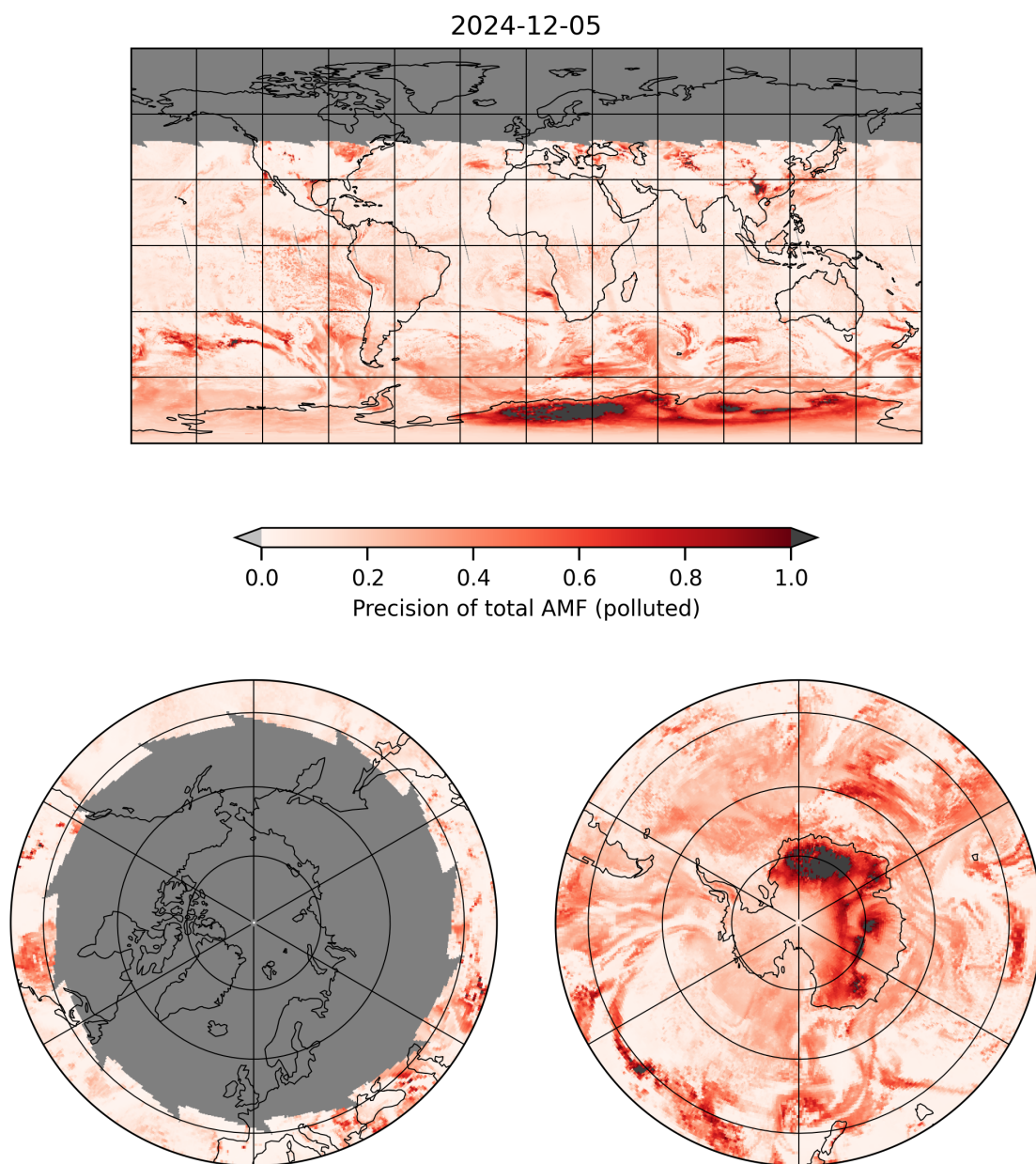


Figure 26: Map of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06

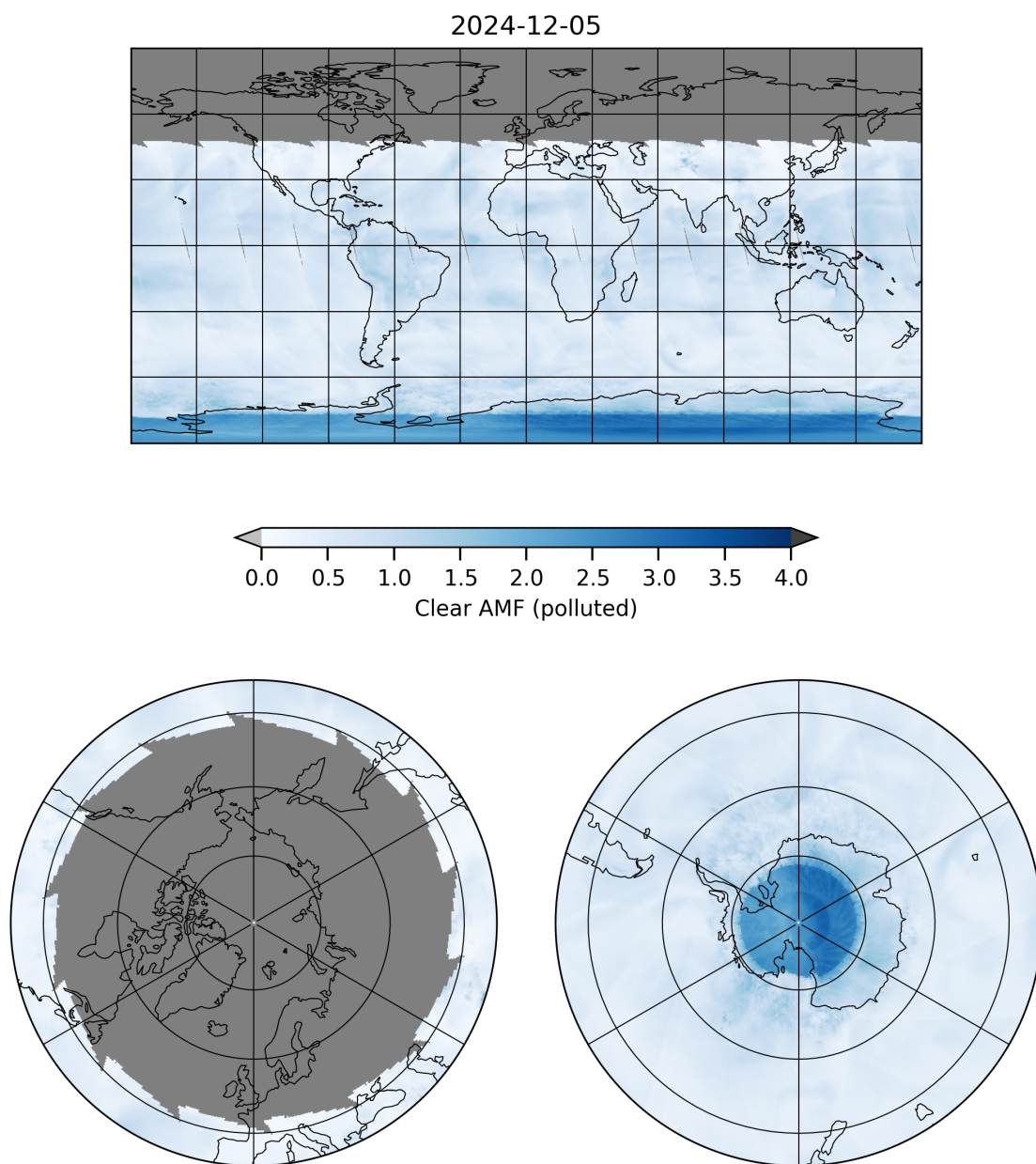


Figure 27: Map of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06

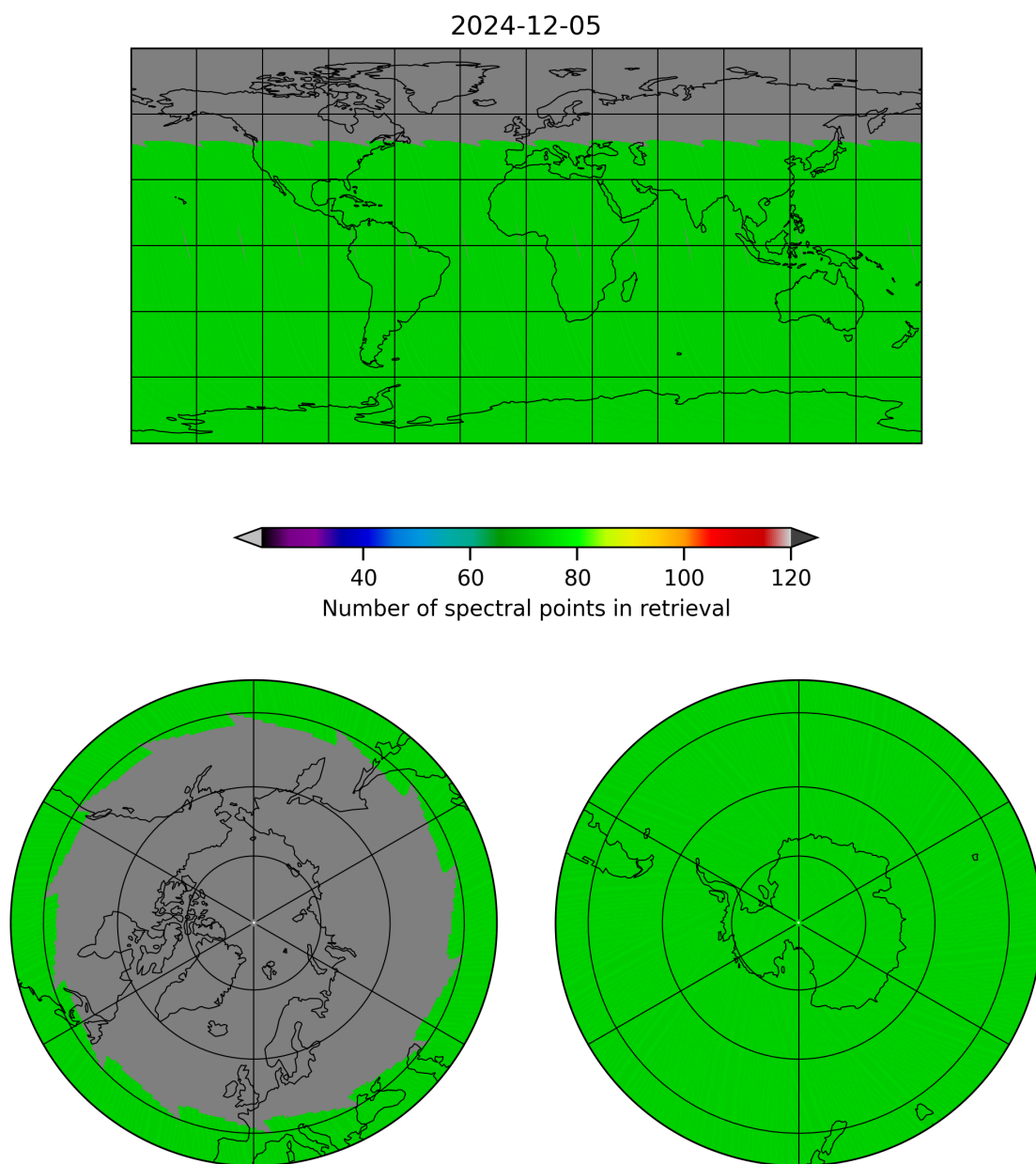


Figure 28: Map of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06

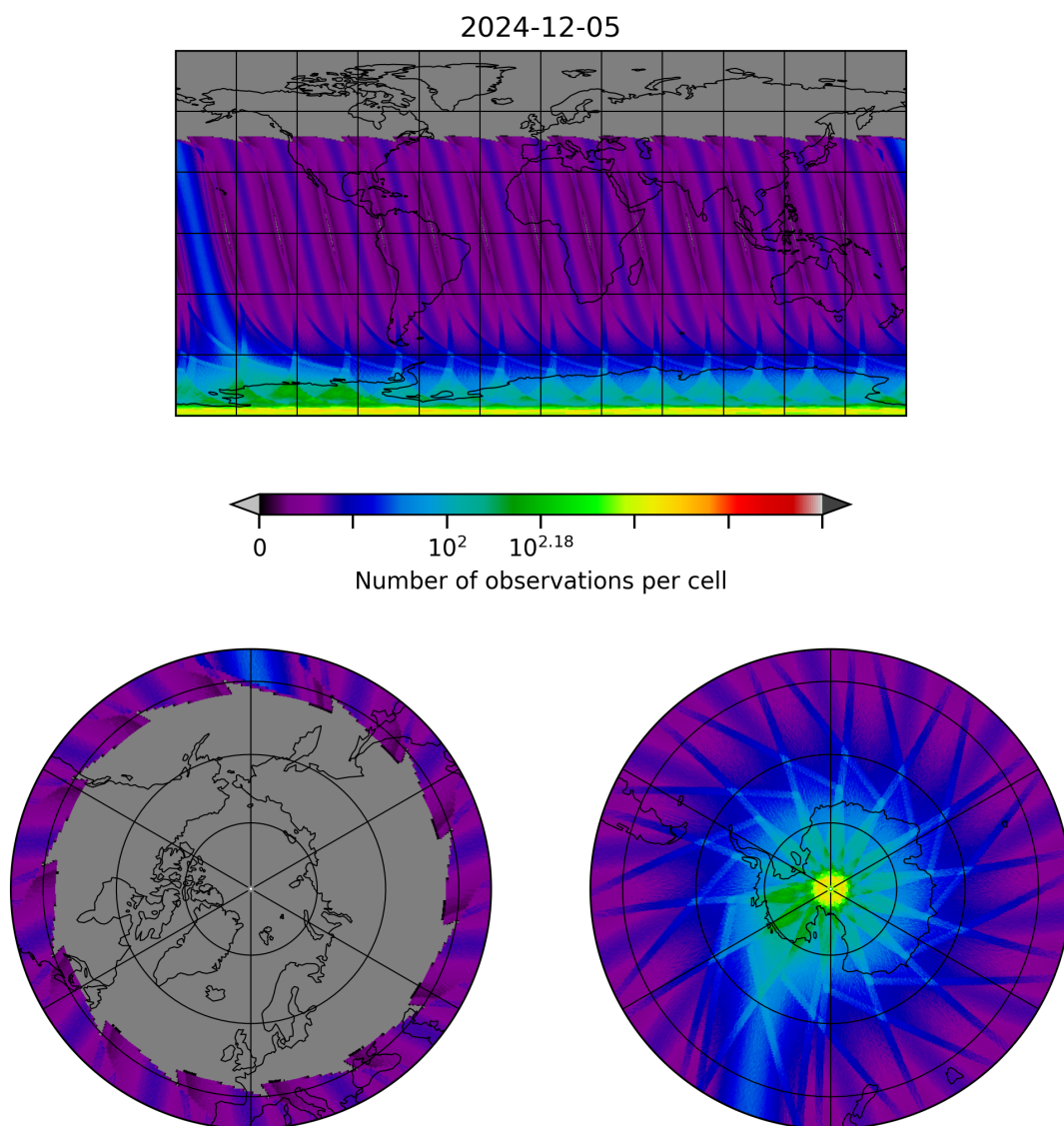


Figure 29: Map of the number of observations for 2024-12-05 to 2024-12-06

7 Zonal average

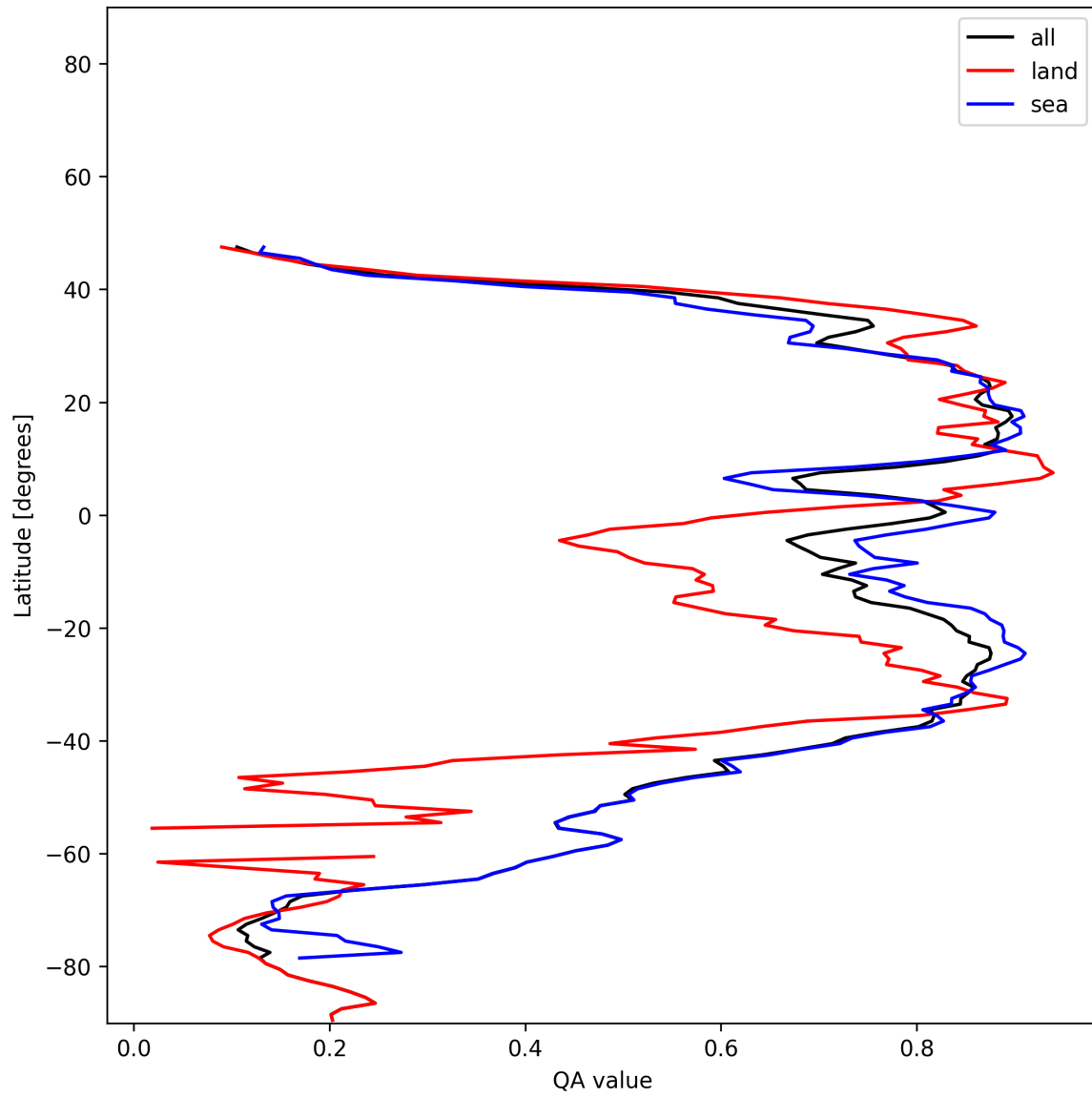


Figure 30: Zonal average of “QA value” for 2024-12-05 to 2024-12-06.

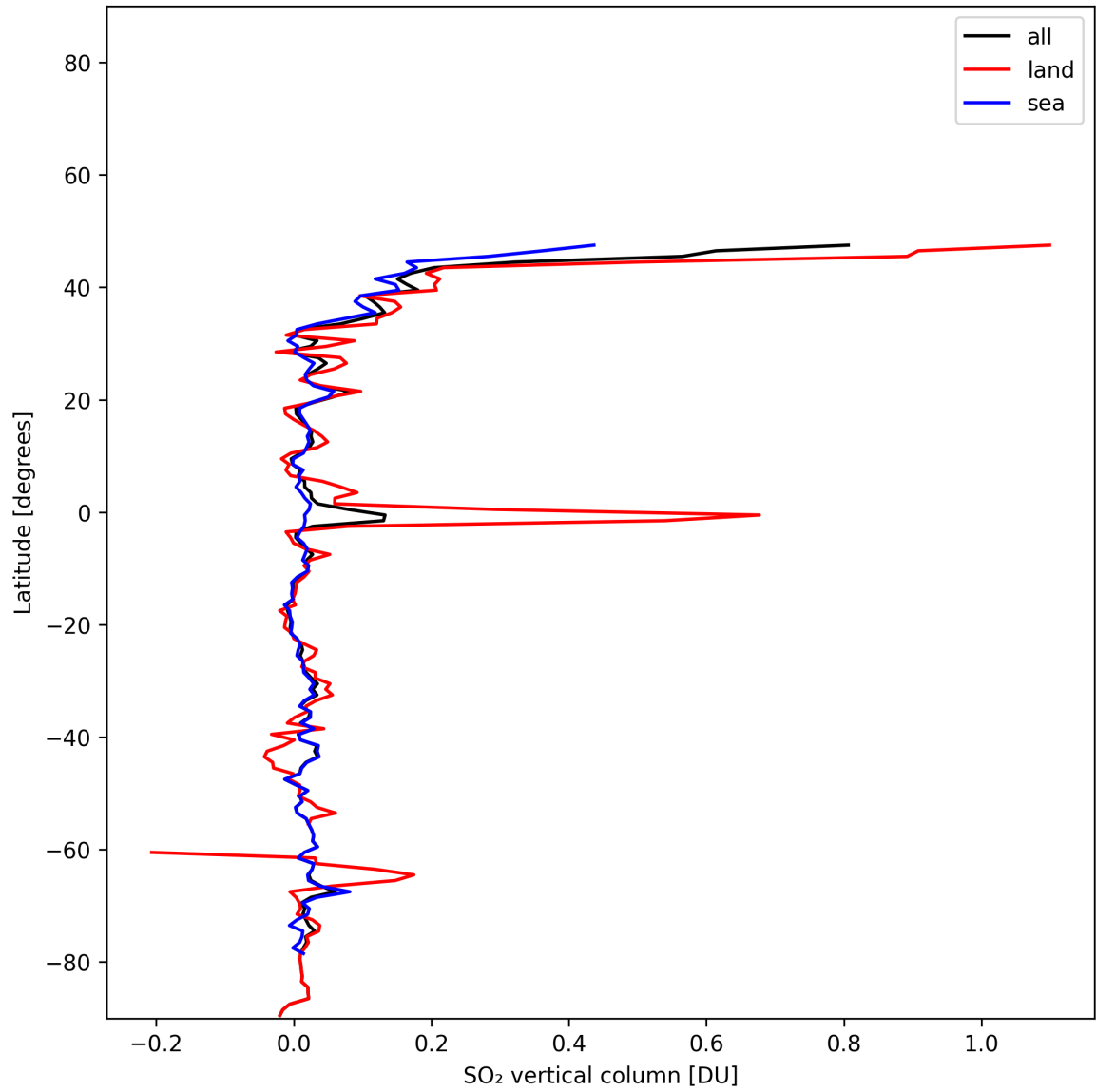


Figure 31: Zonal average of “SO₂ vertical column” for 2024-12-05 to 2024-12-06.

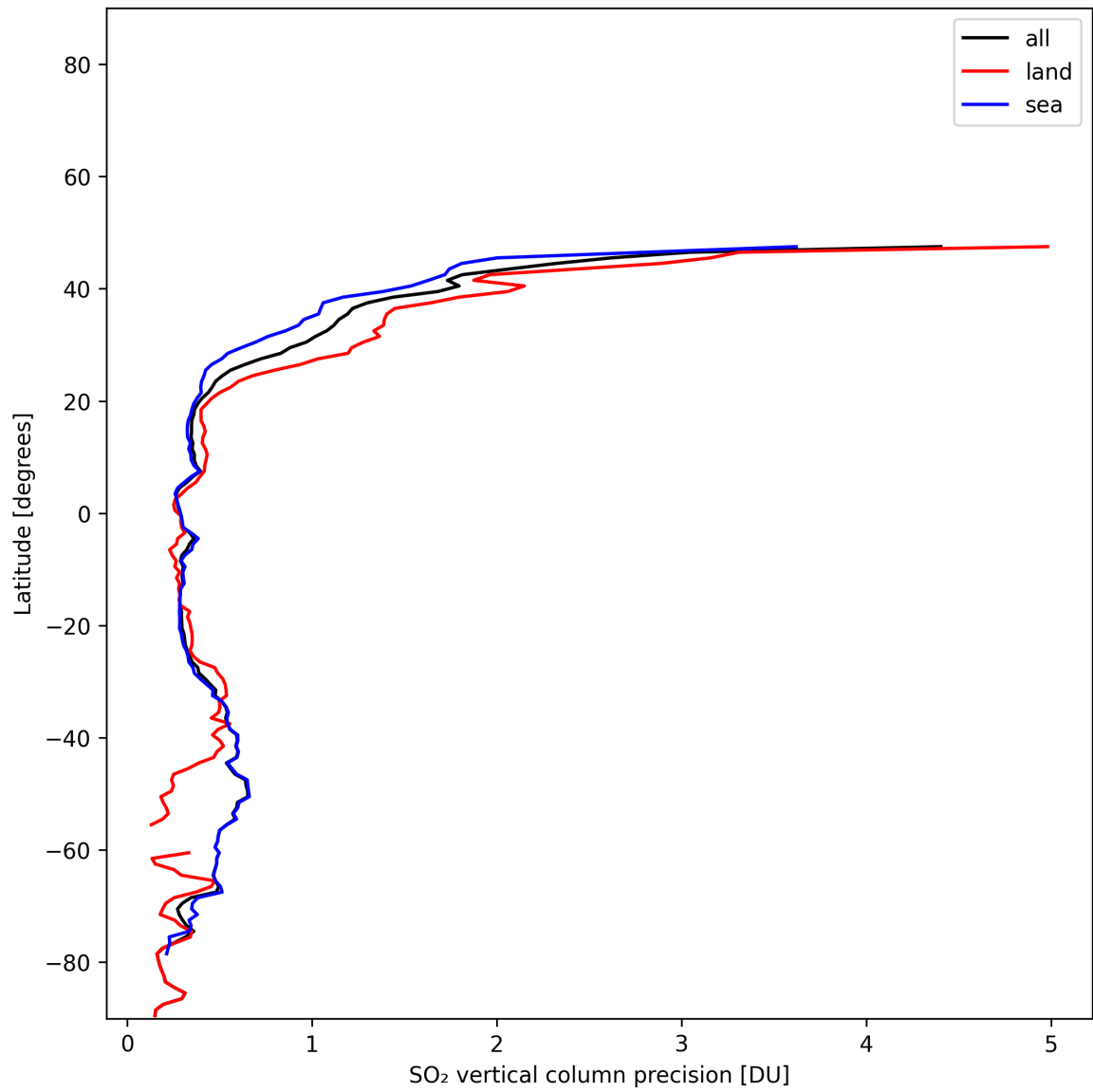


Figure 32: Zonal average of “SO₂ vertical column precision” for 2024-12-05 to 2024-12-06.

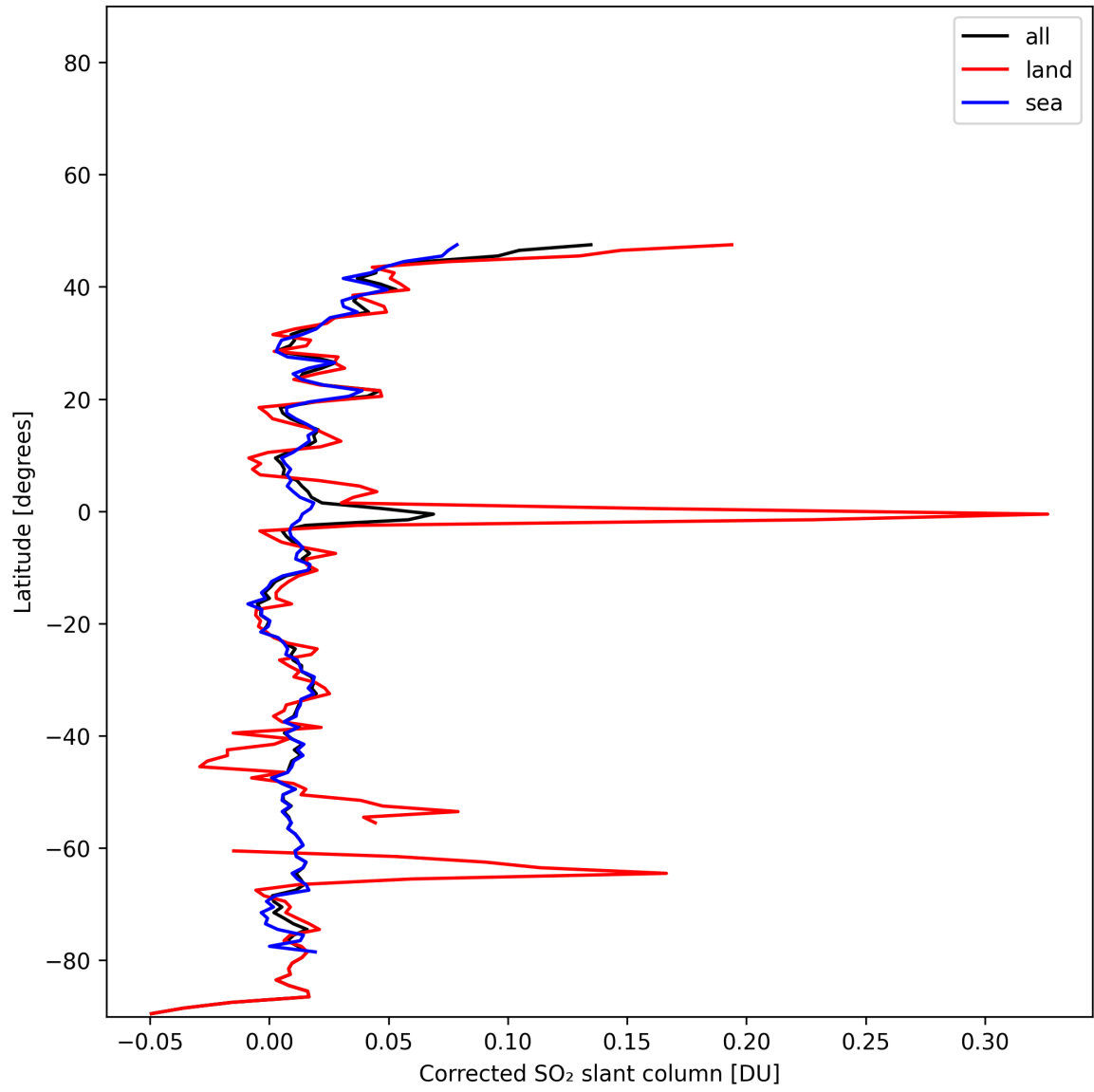


Figure 33: Zonal average of “Corrected SO₂ slant column” for 2024-12-05 to 2024-12-06.

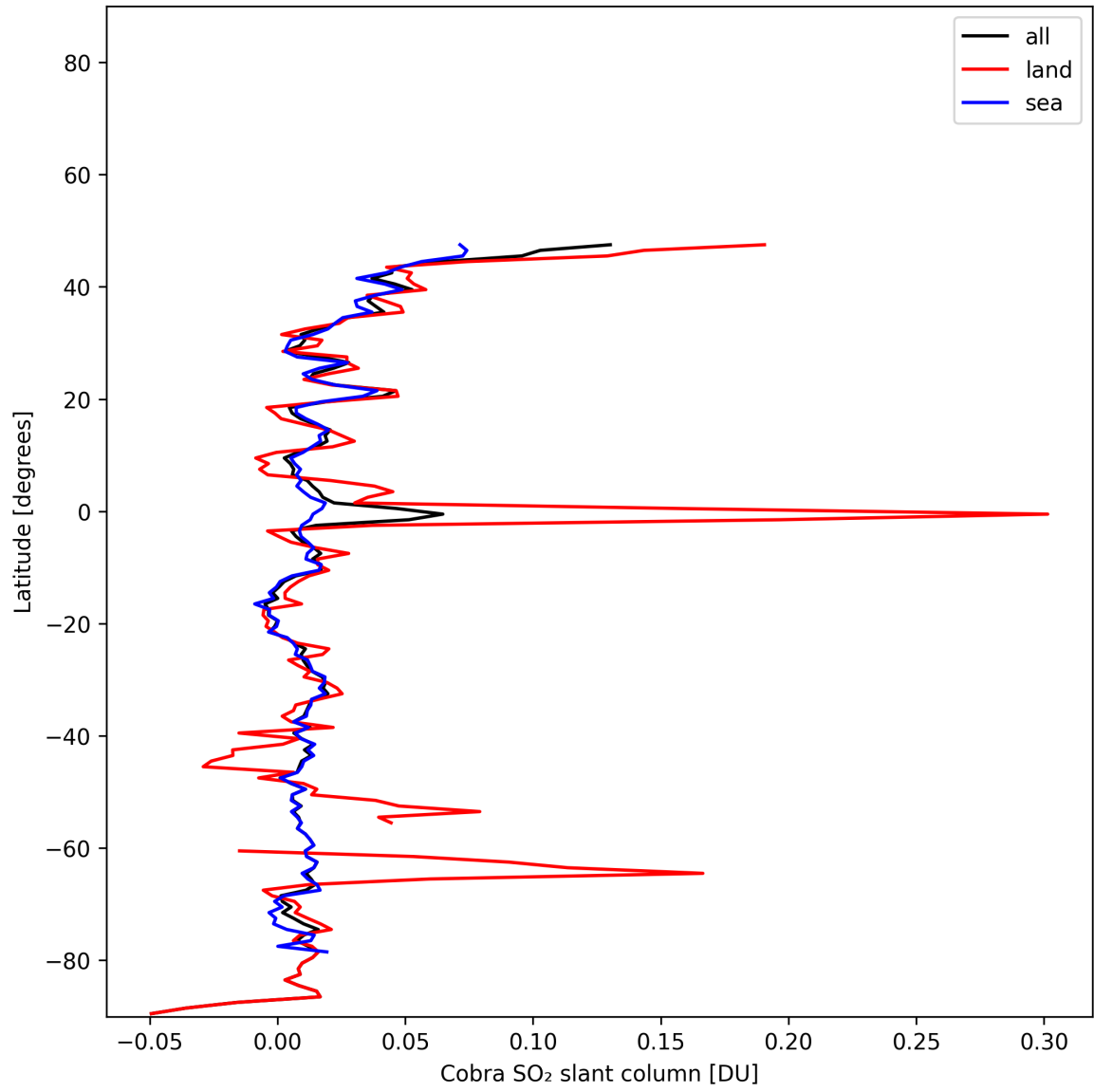


Figure 34: Zonal average of “Cobra SO₂ slant column” for 2024-12-05 to 2024-12-06.

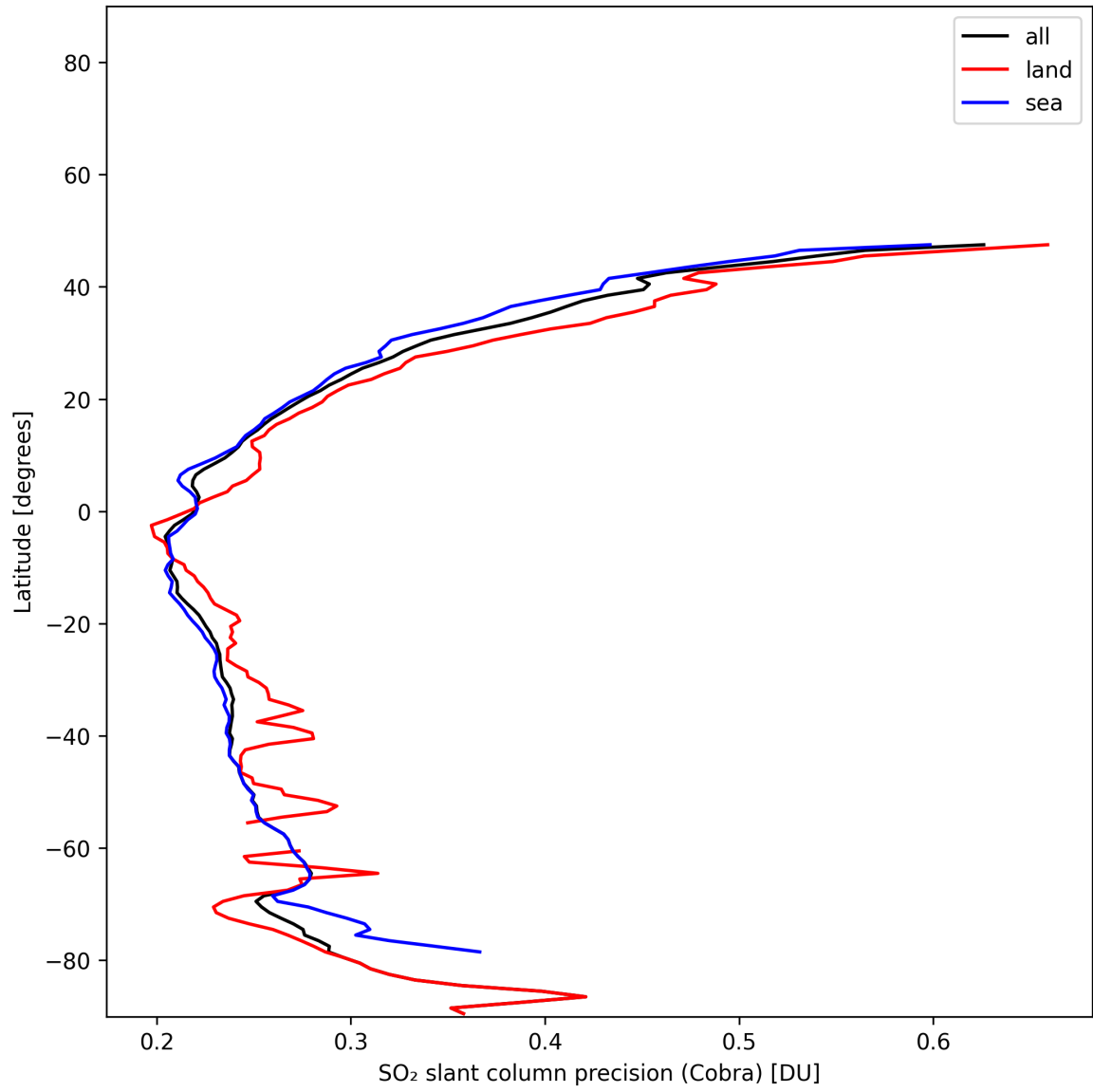


Figure 35: Zonal average of “SO₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06.

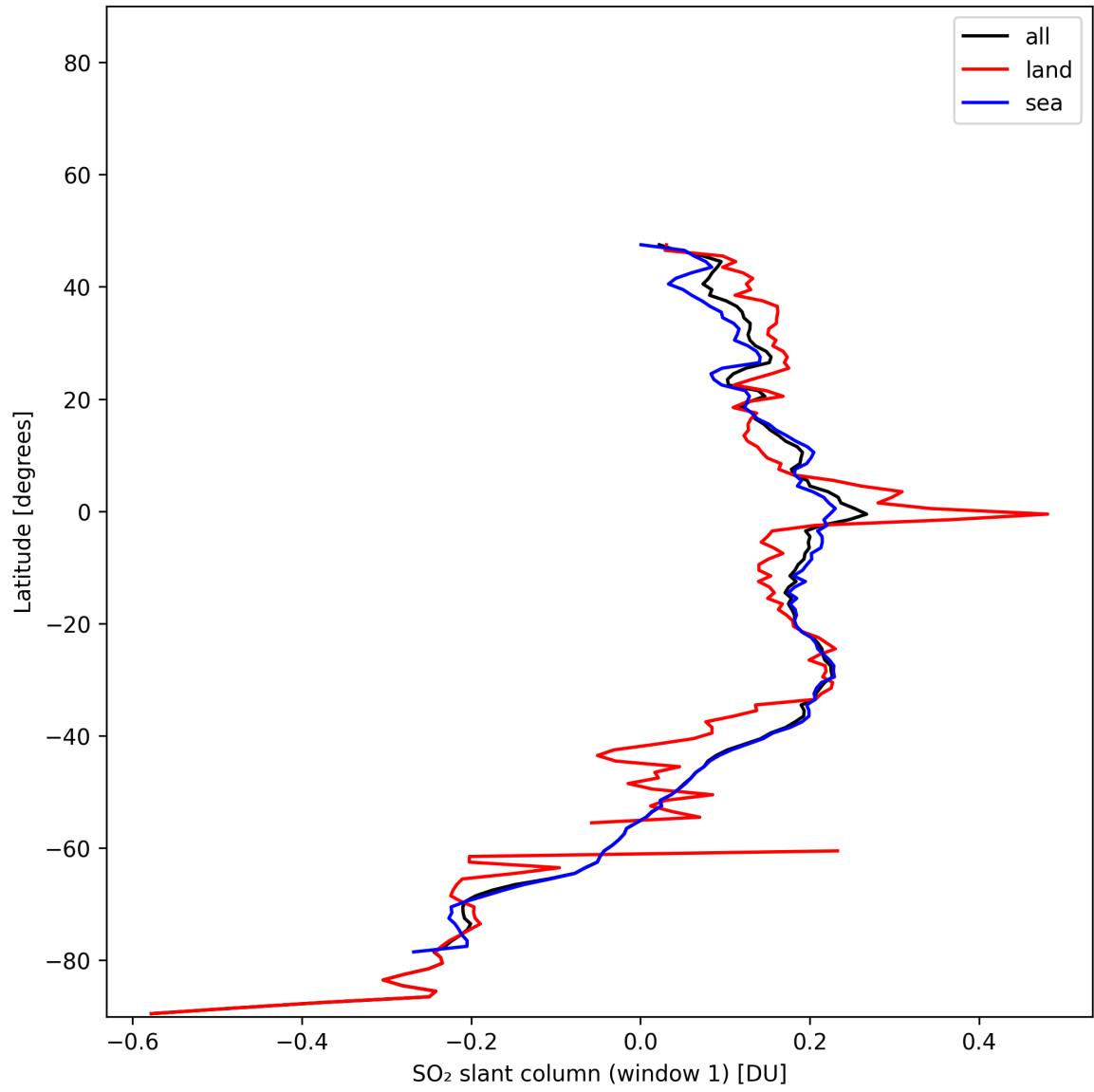


Figure 36: Zonal average of “SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06.

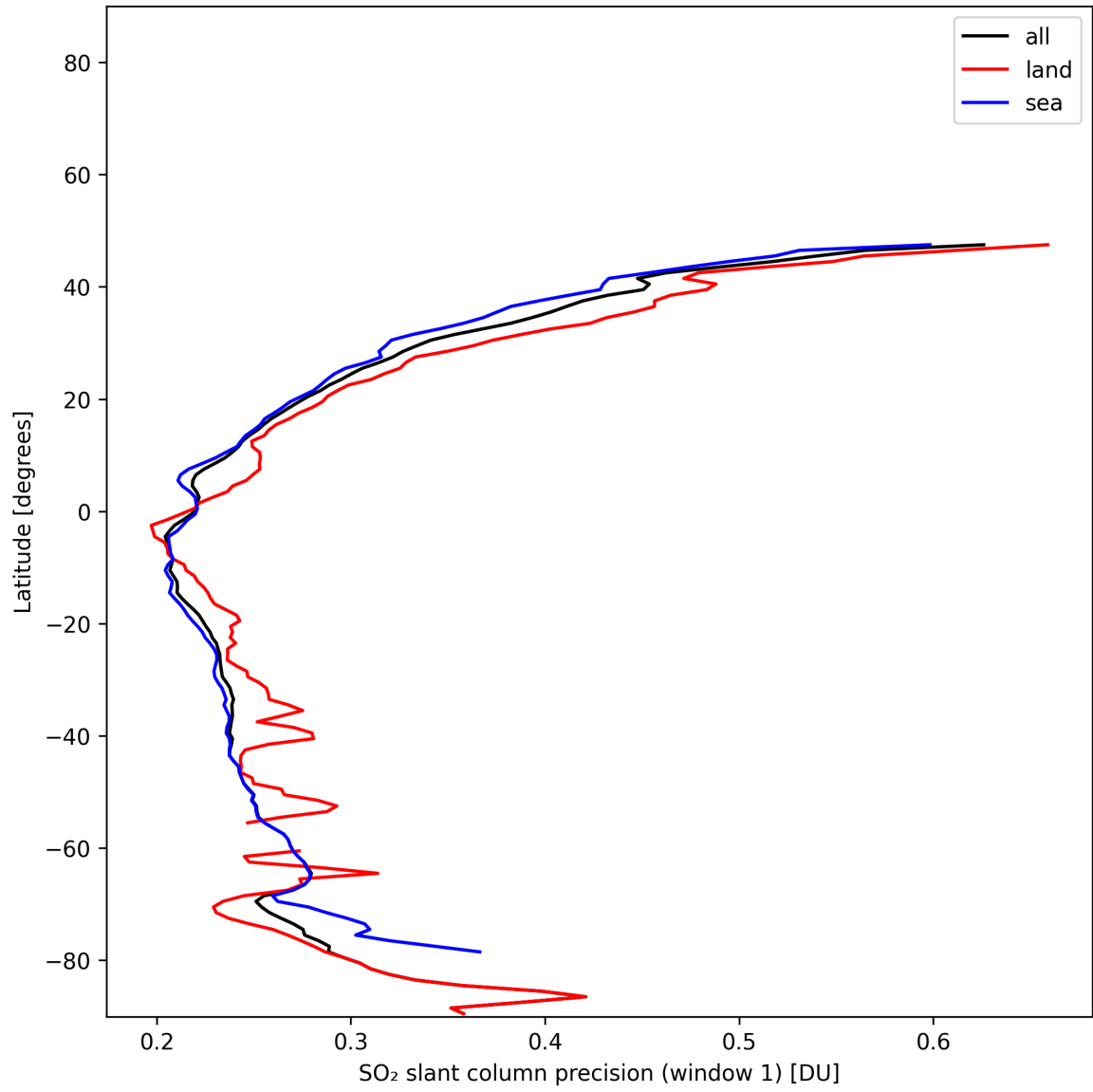


Figure 37: Zonal average of “SO₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06.

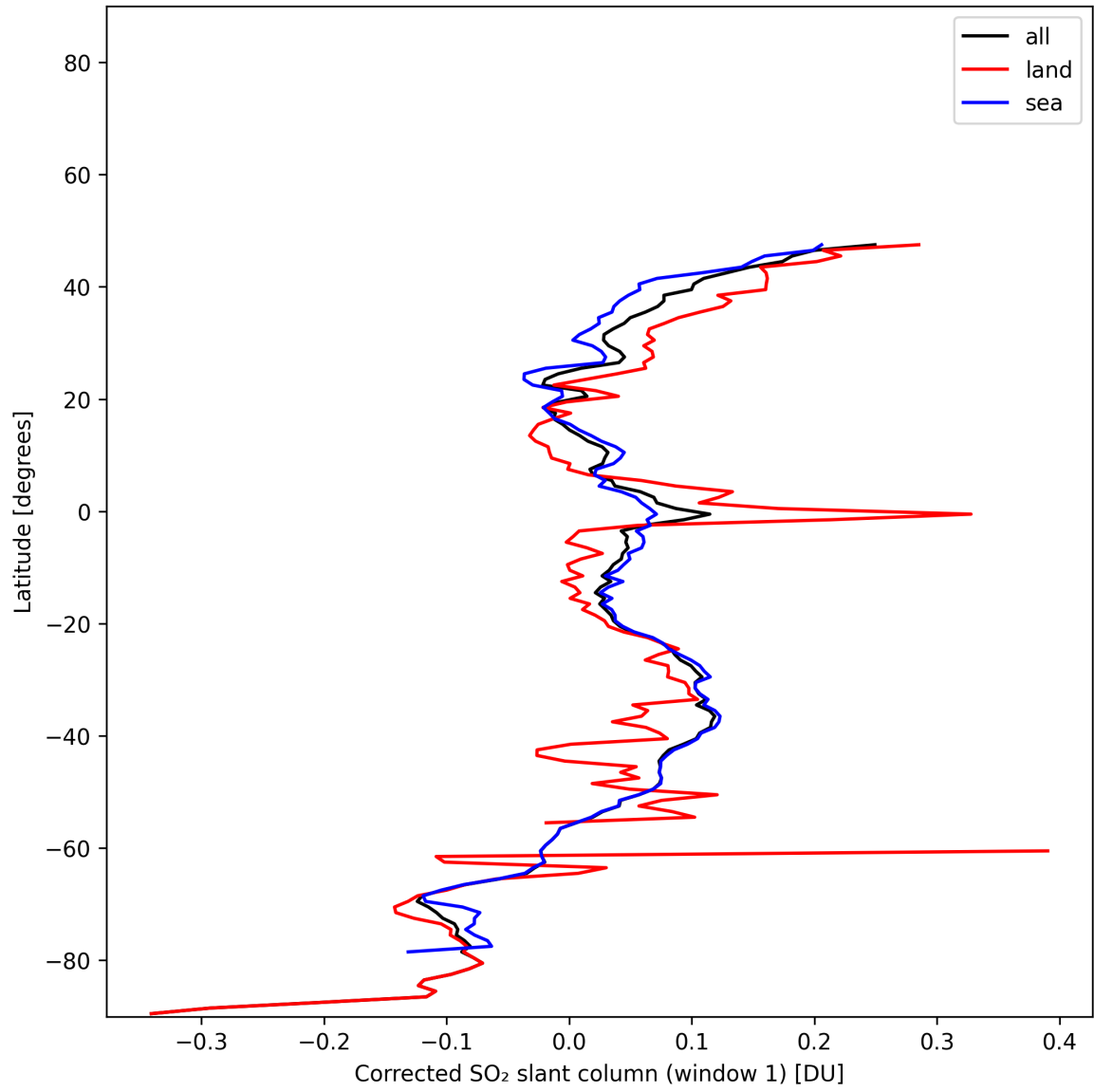


Figure 38: Zonal average of “Corrected SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06.

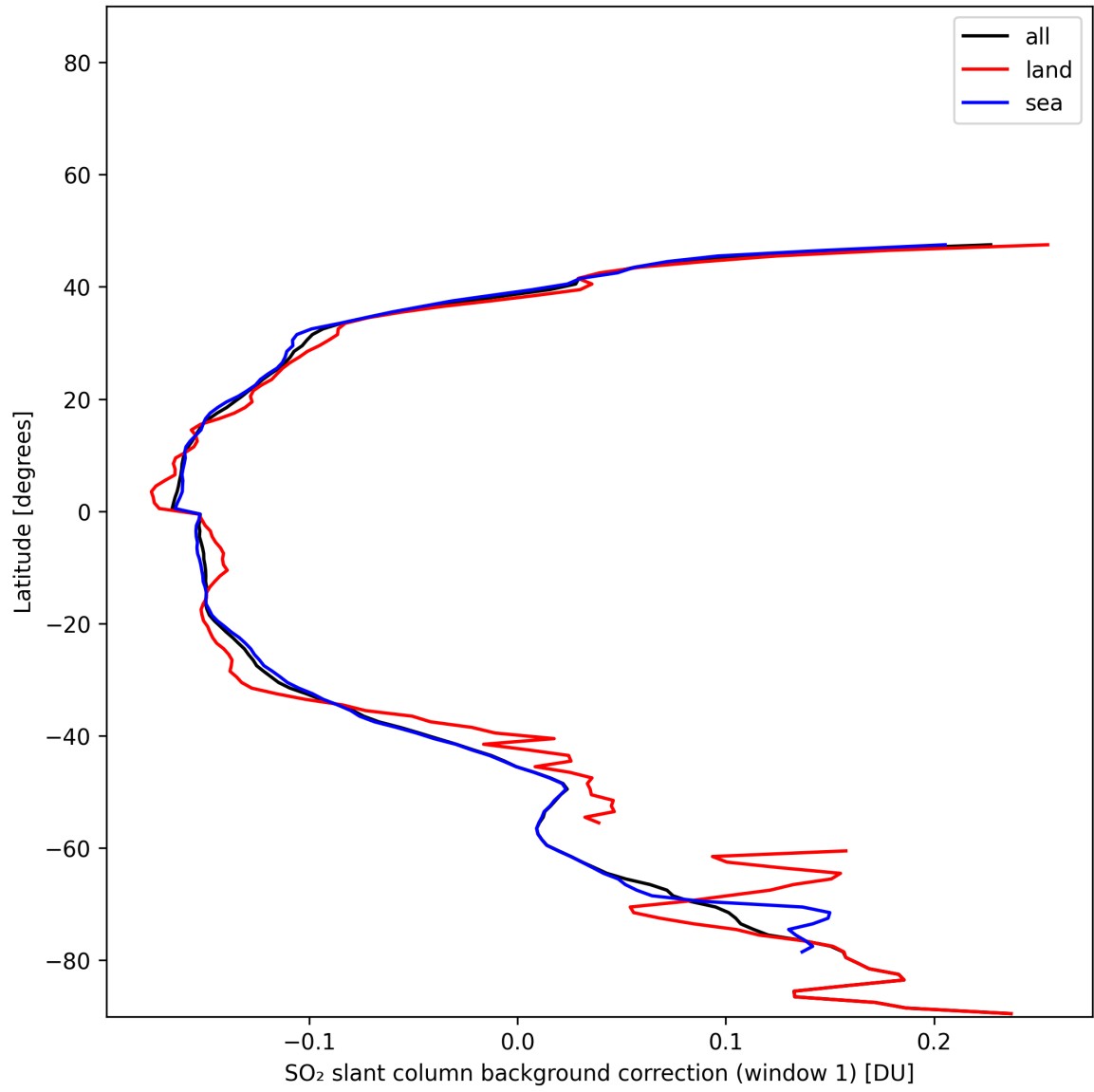


Figure 39: Zonal average of “SO₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06.

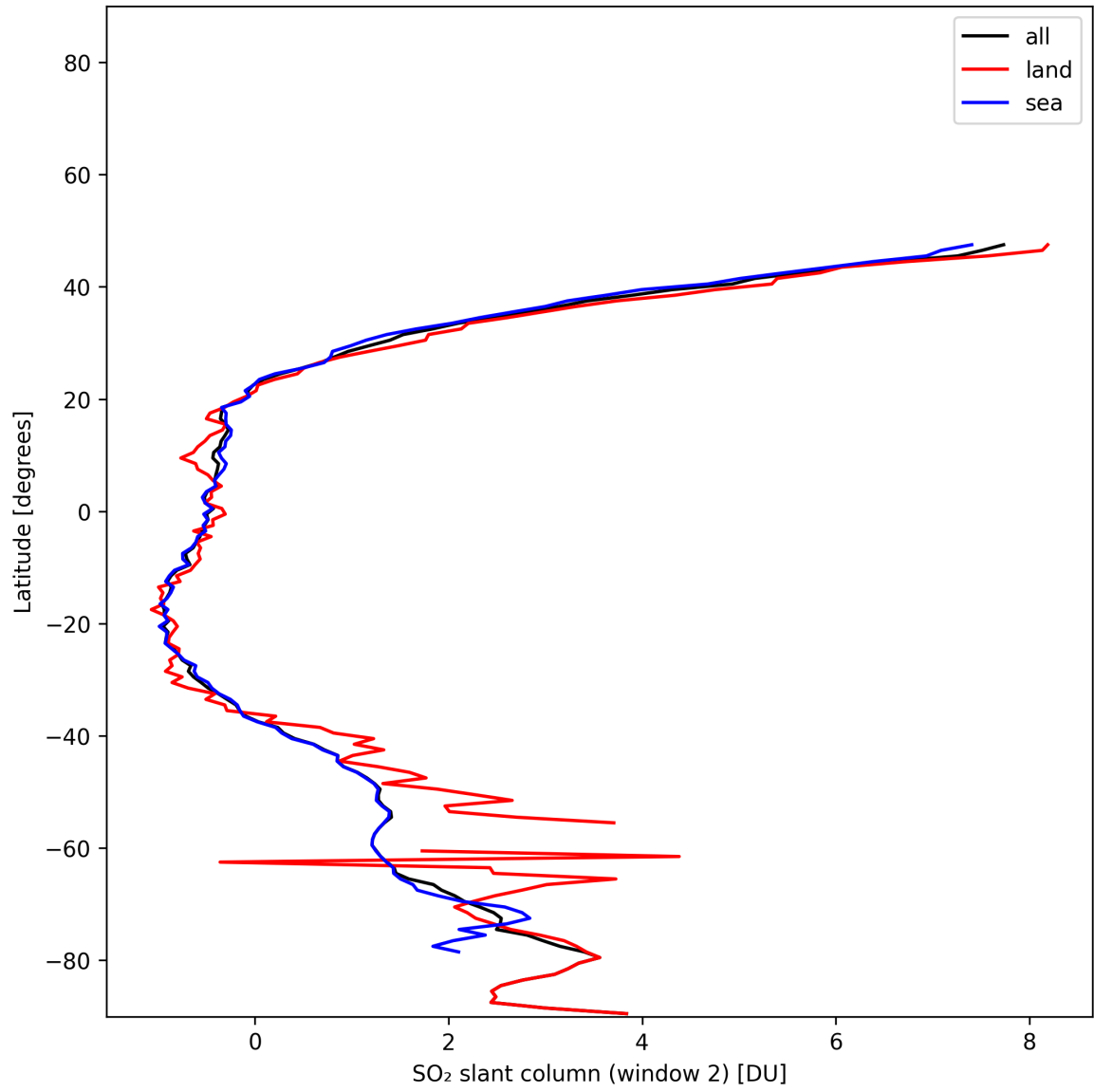


Figure 40: Zonal average of “SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06.

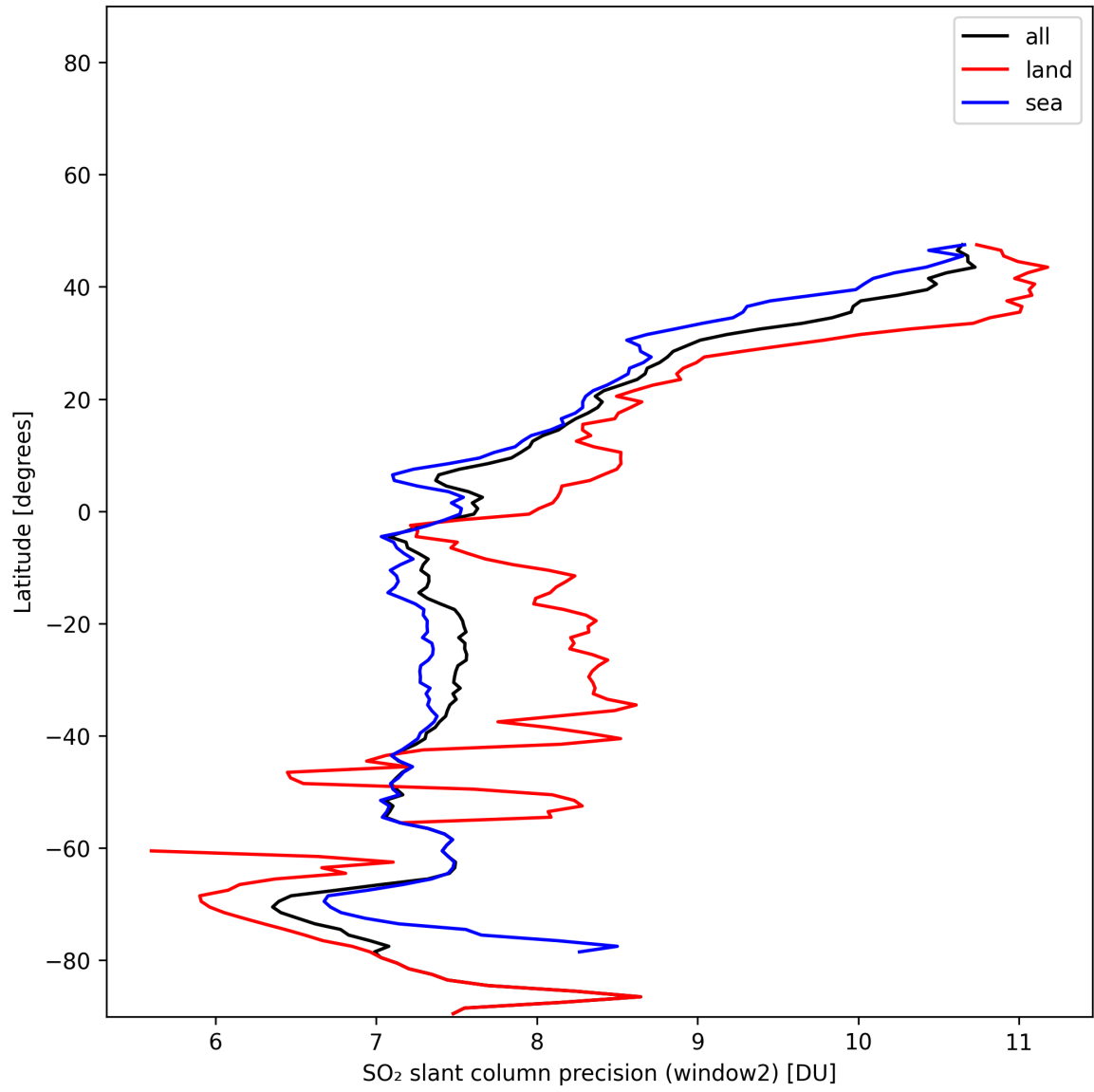


Figure 41: Zonal average of “SO₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06.

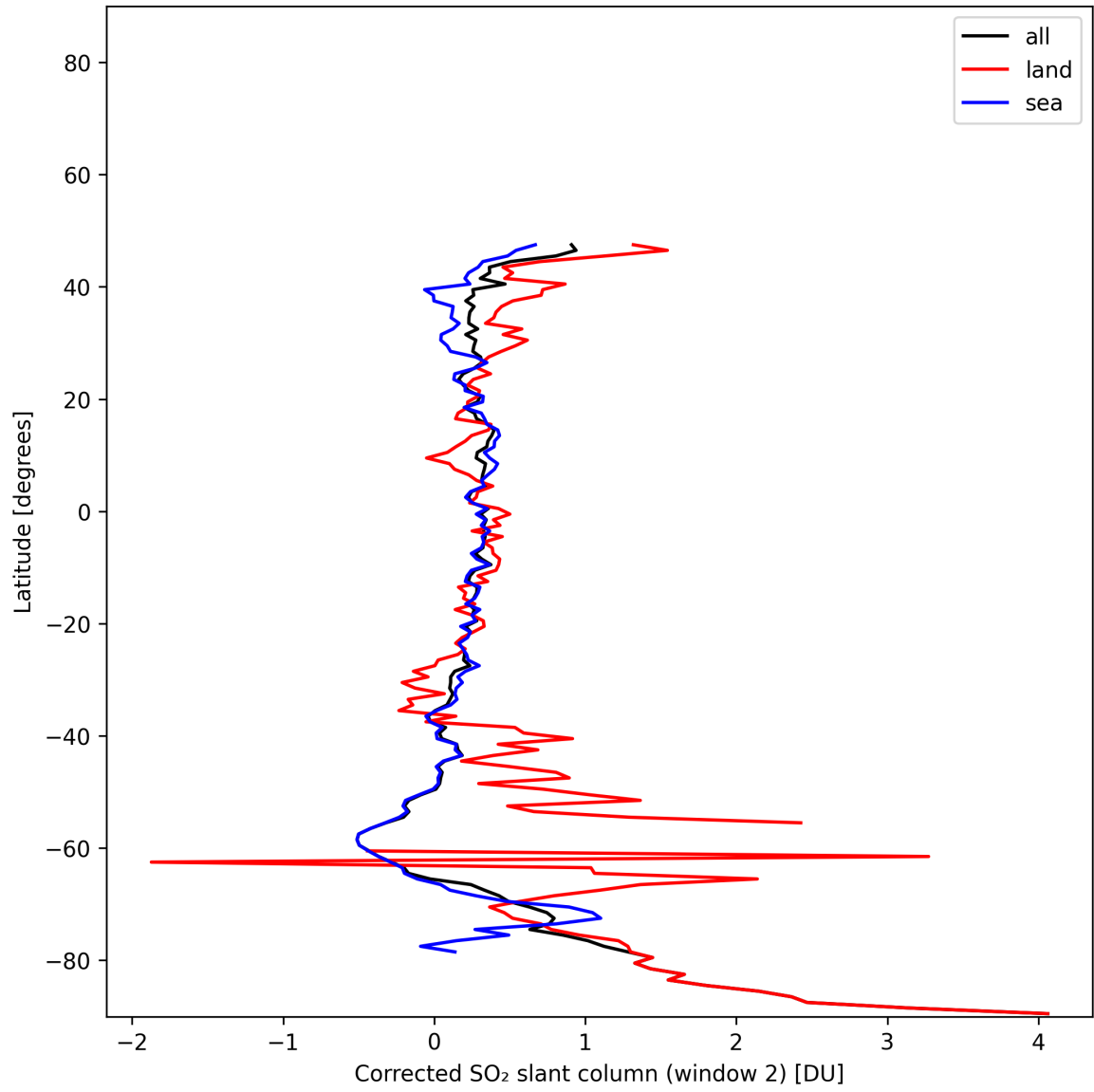


Figure 42: Zonal average of “Corrected SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06.

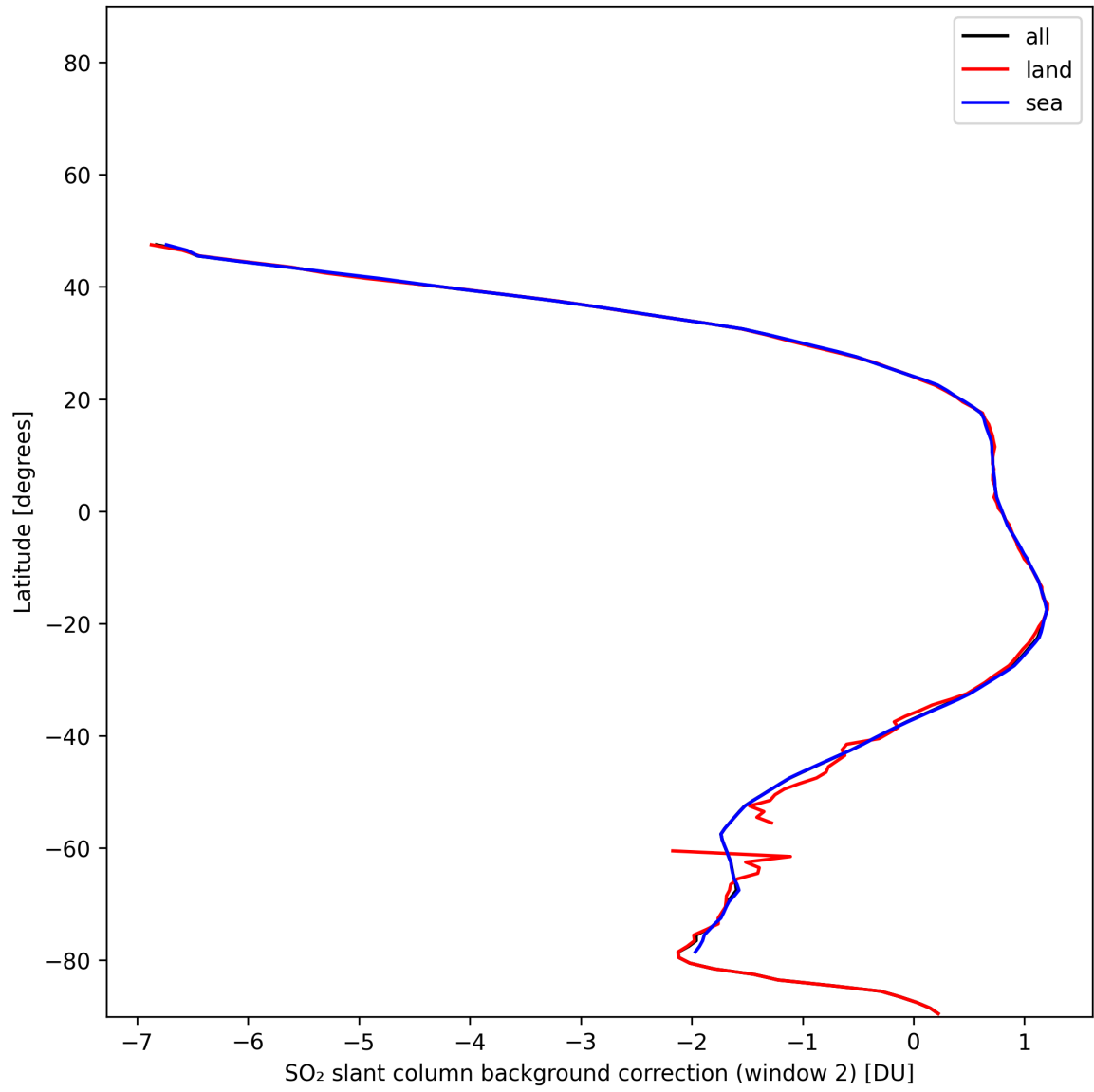


Figure 43: Zonal average of “SO₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06.

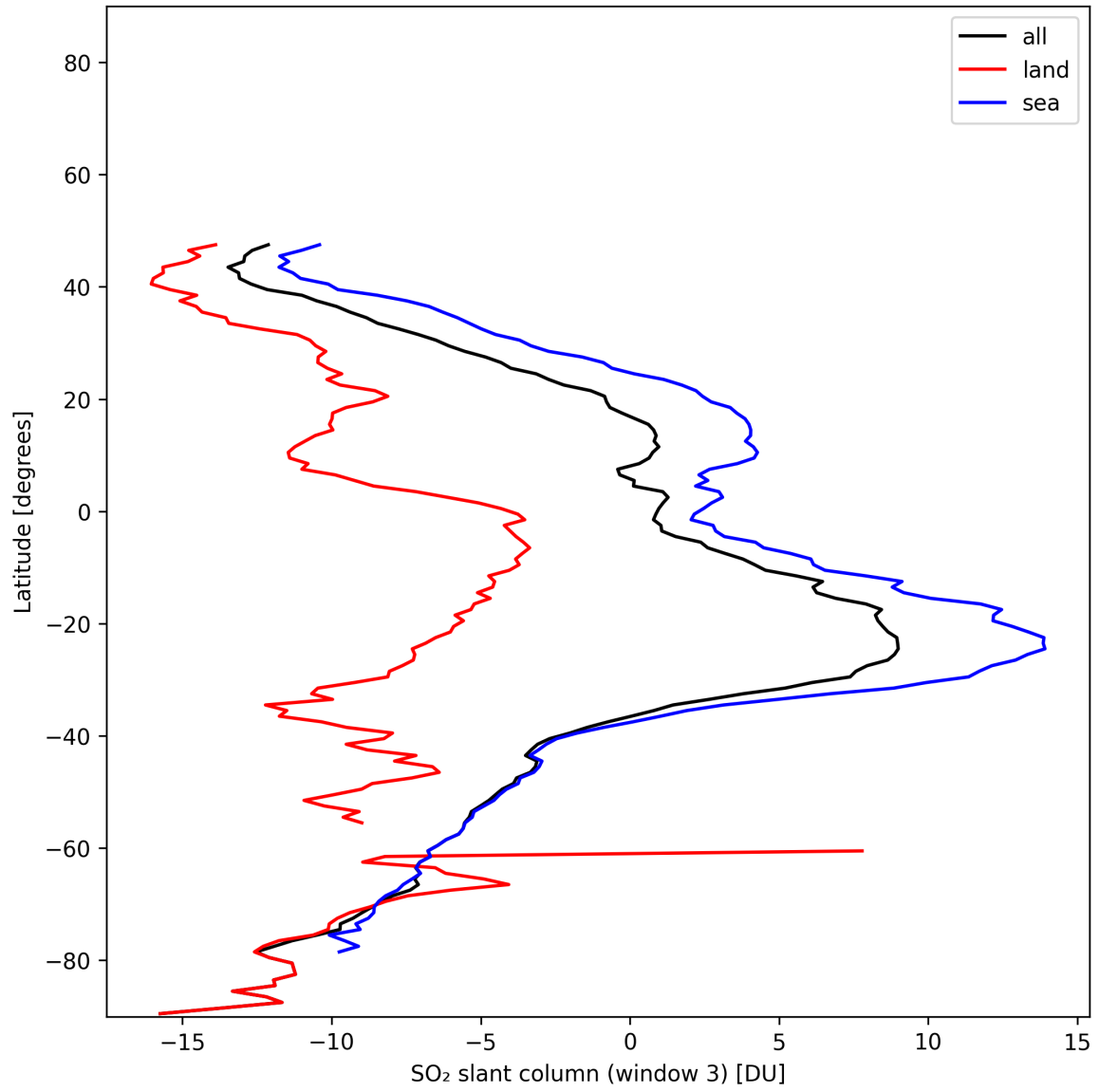


Figure 44: Zonal average of “SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06.

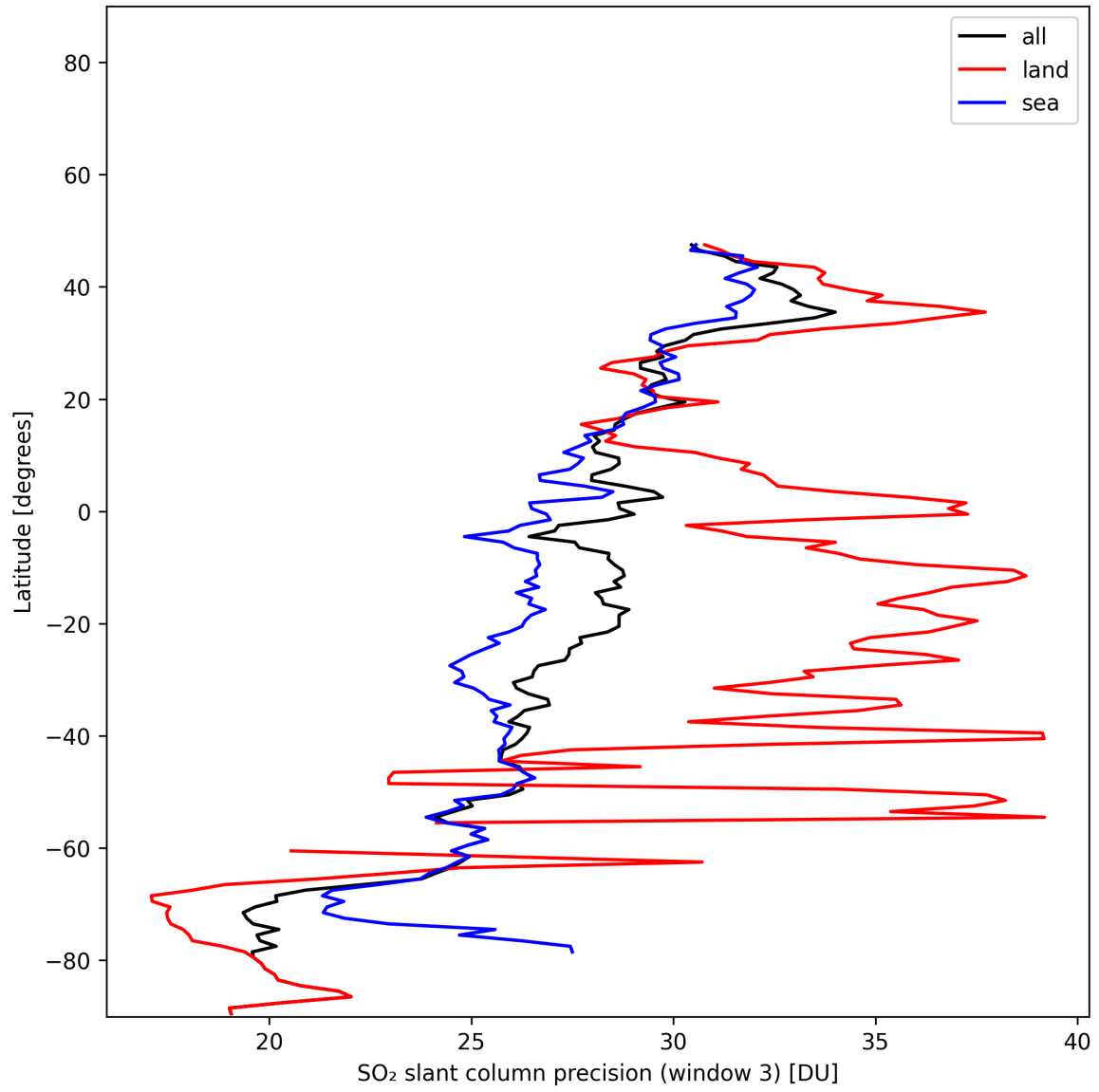


Figure 45: Zonal average of “SO₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06.

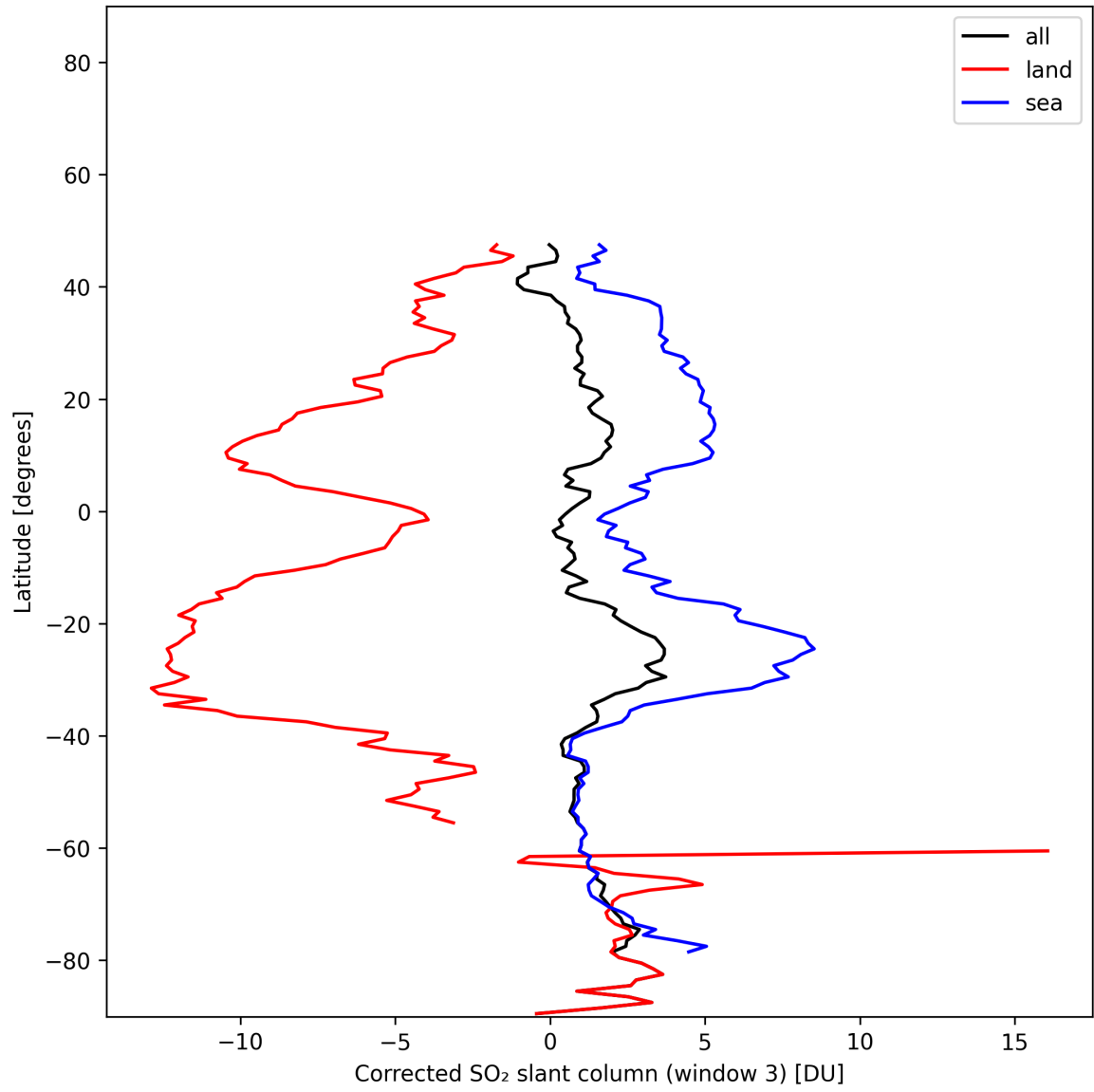


Figure 46: Zonal average of “Corrected SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06.

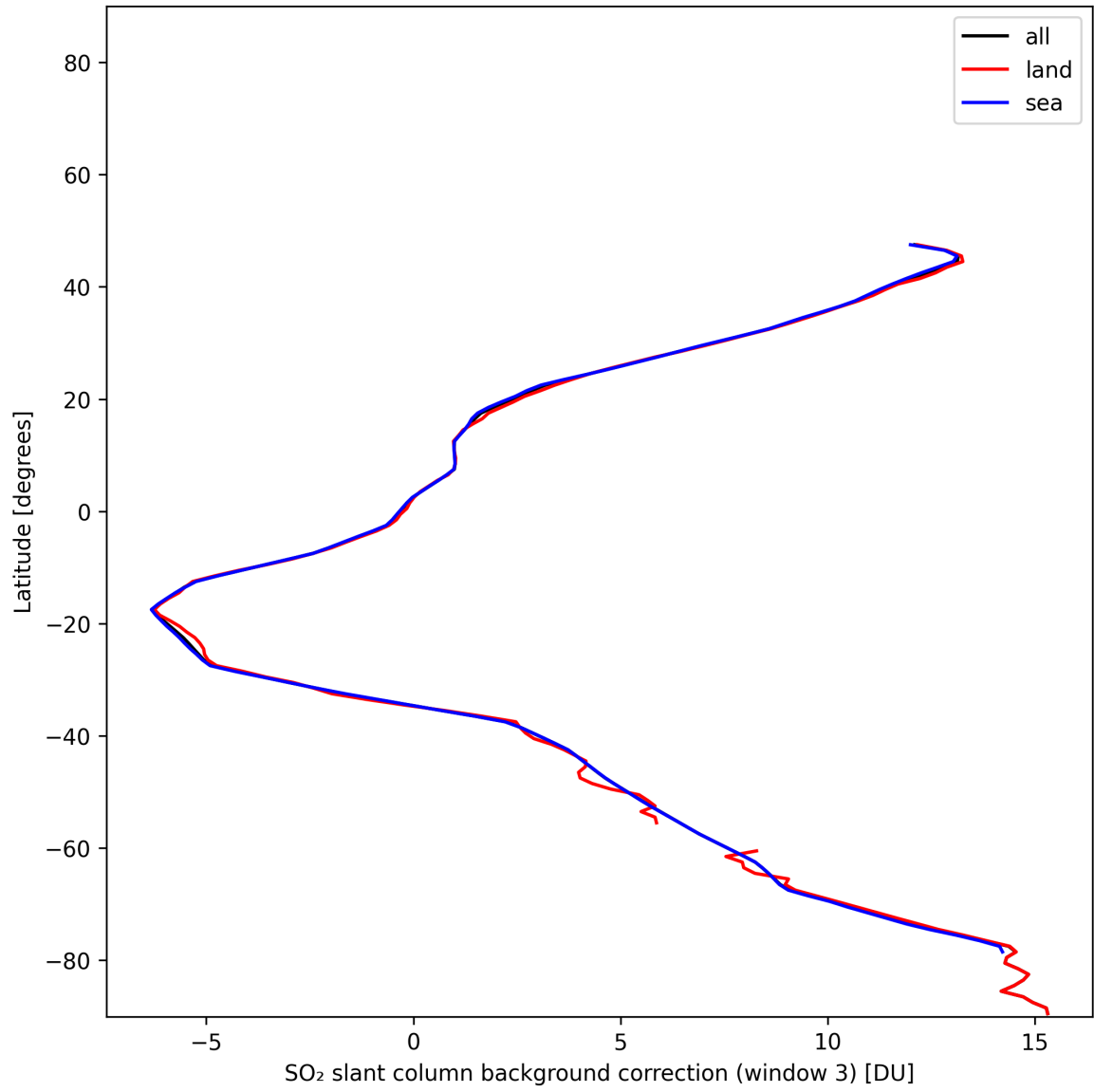


Figure 47: Zonal average of “SO₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06.

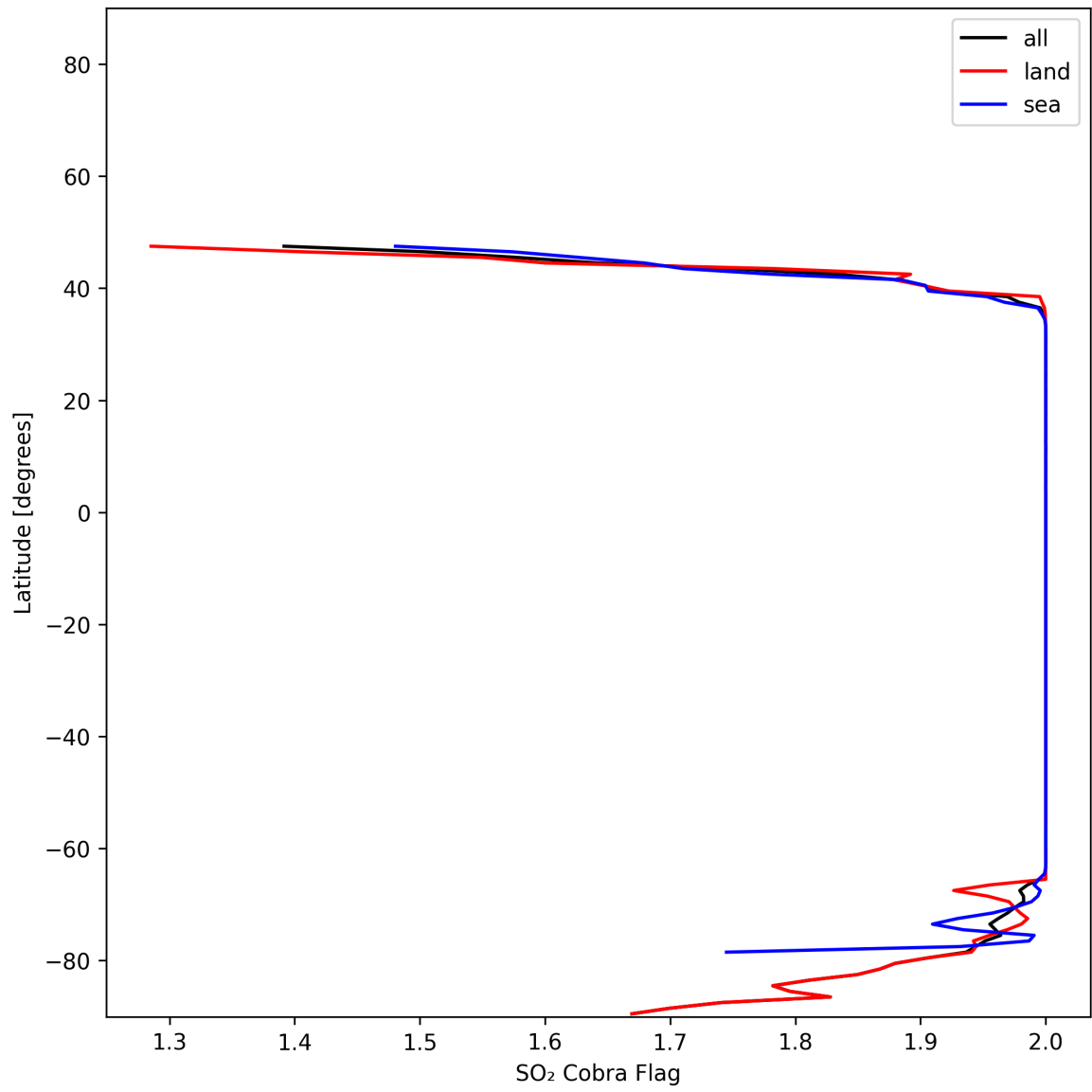


Figure 48: Zonal average of “SO₂ Cobra Flag” for 2024-12-05 to 2024-12-06.

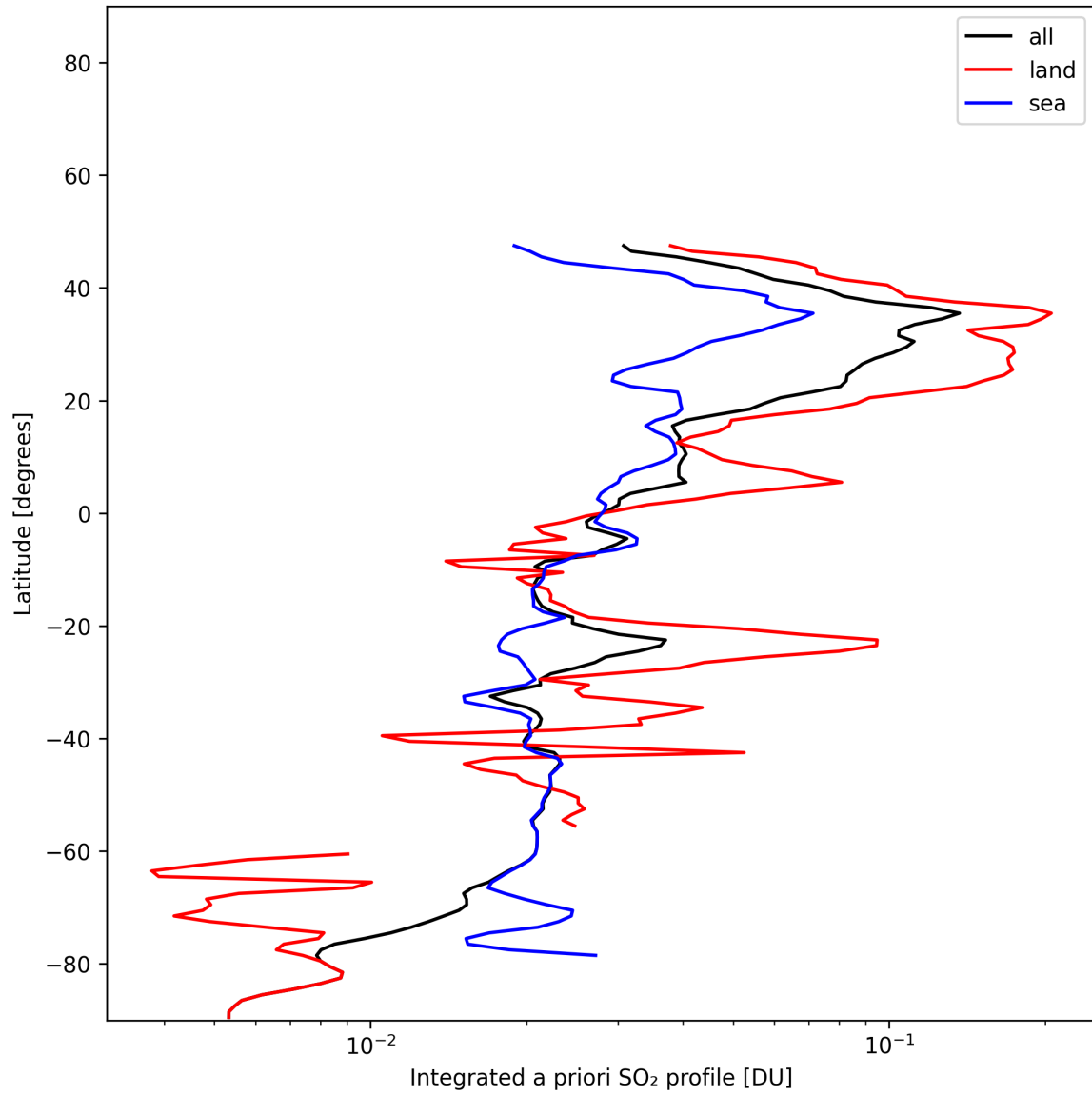


Figure 49: Zonal average of “Integrated a priori SO₂ profile” for 2024-12-05 to 2024-12-06.

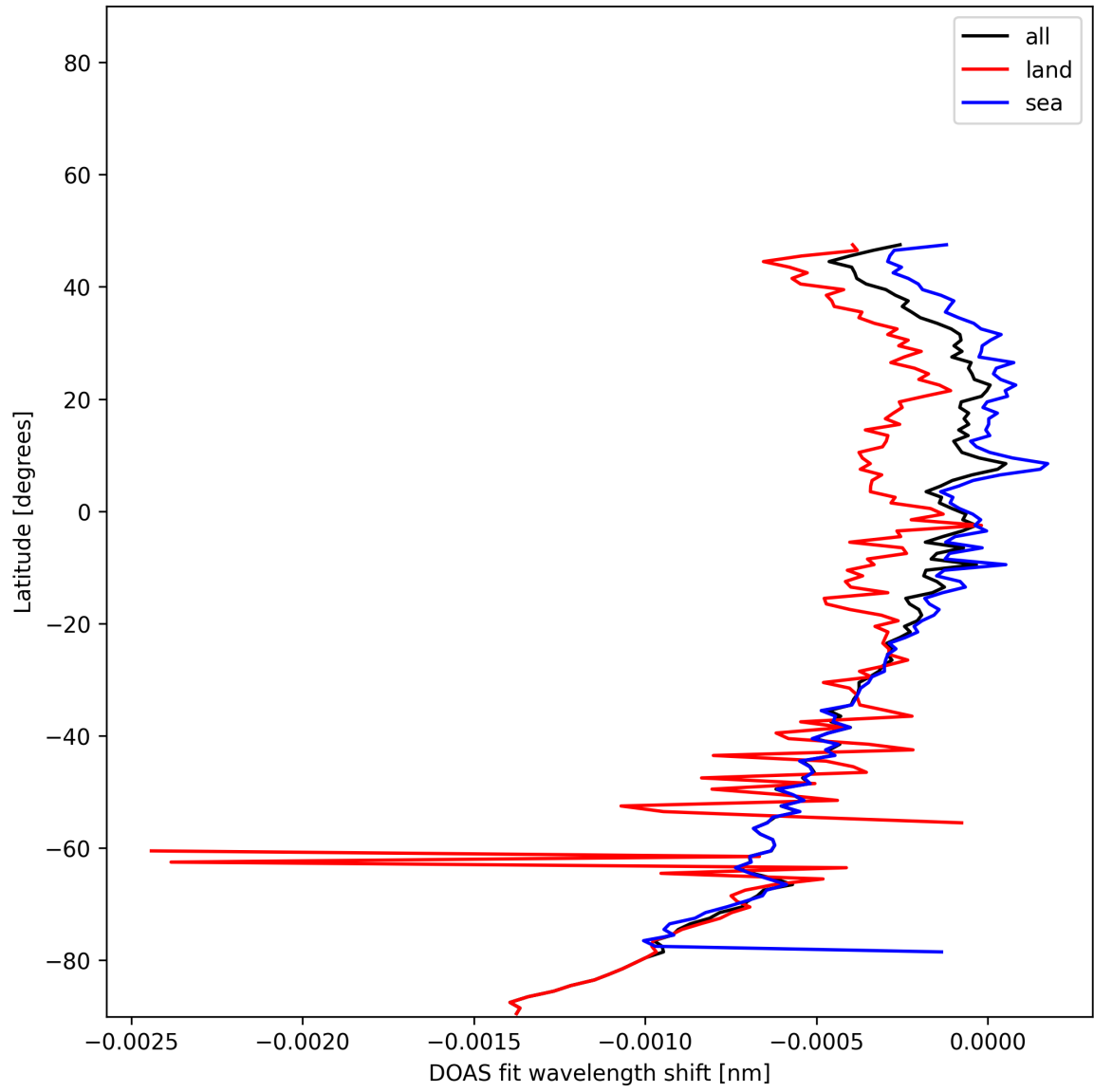


Figure 50: Zonal average of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06.

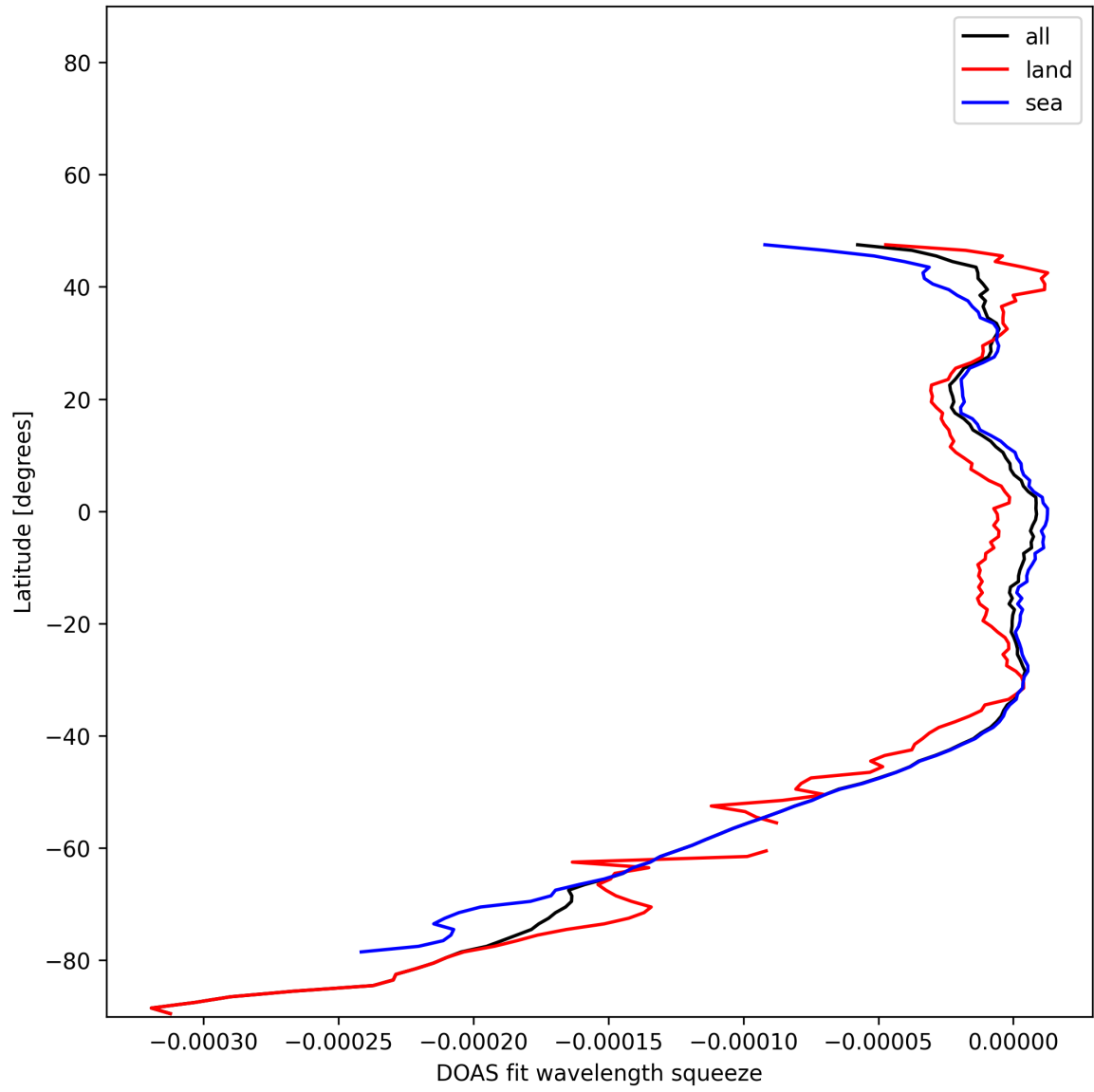


Figure 51: Zonal average of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06.

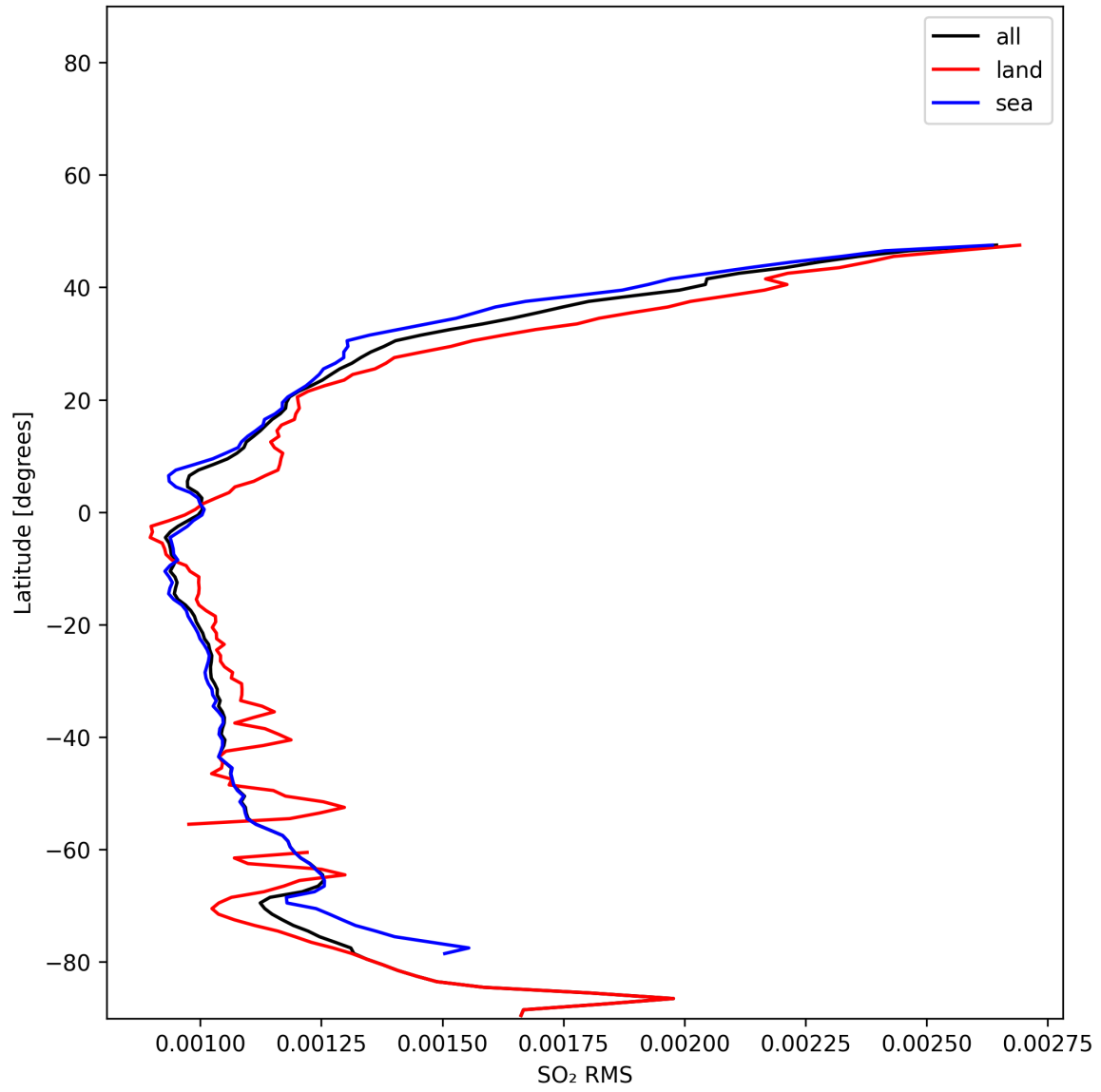


Figure 52: Zonal average of “SO₂ RMS” for 2024-12-05 to 2024-12-06.

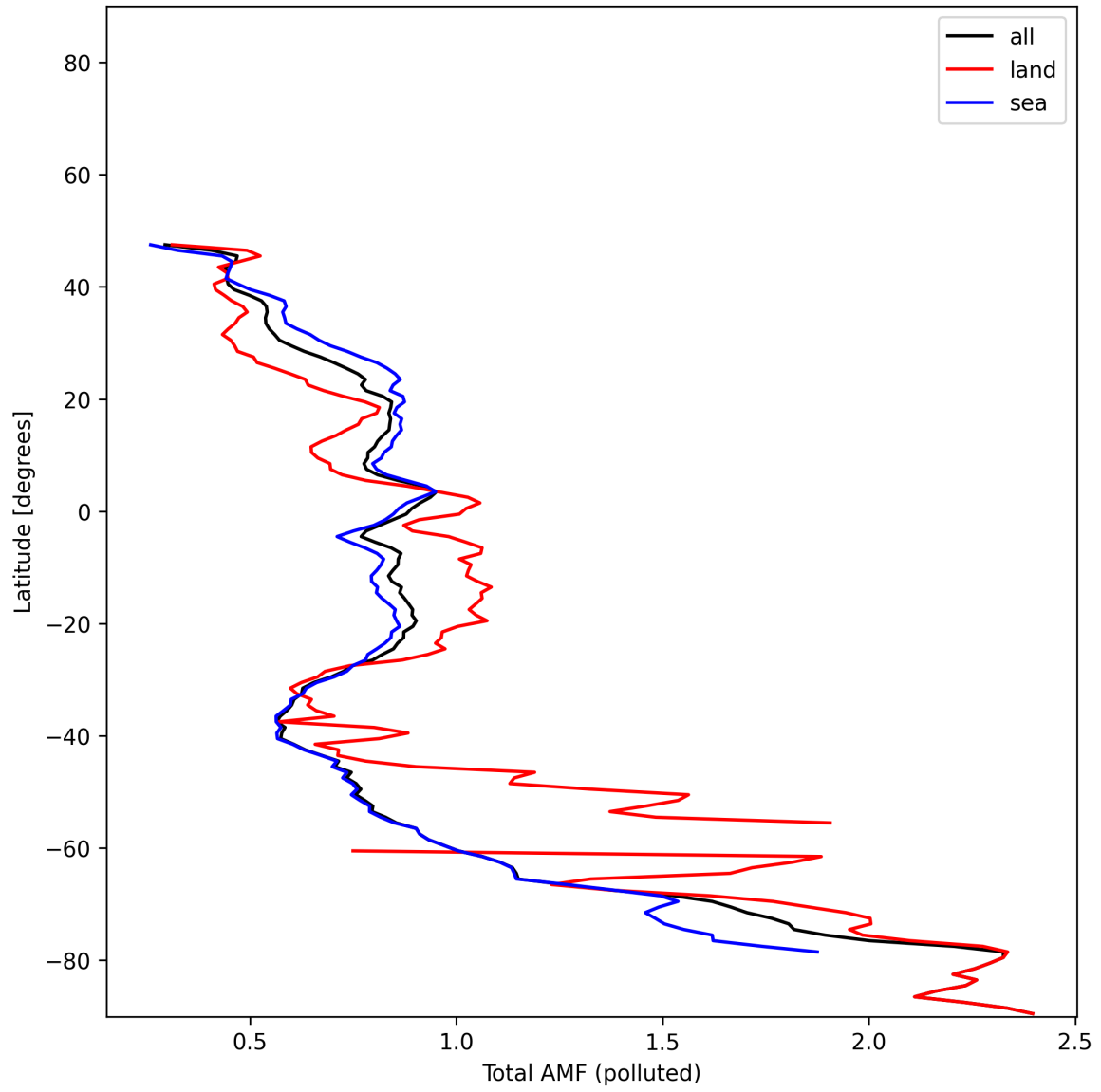


Figure 53: Zonal average of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06.

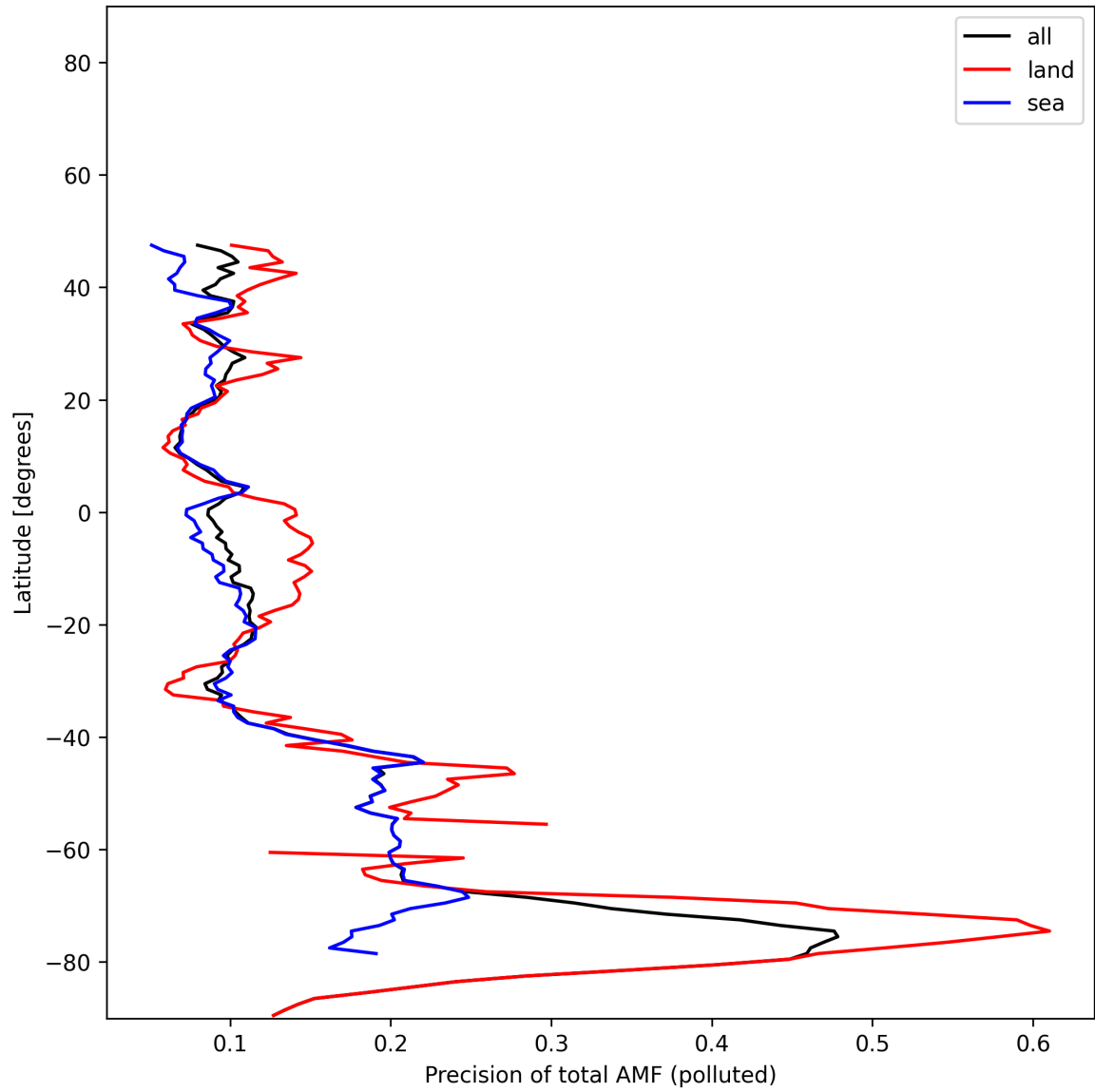


Figure 54: Zonal average of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06.

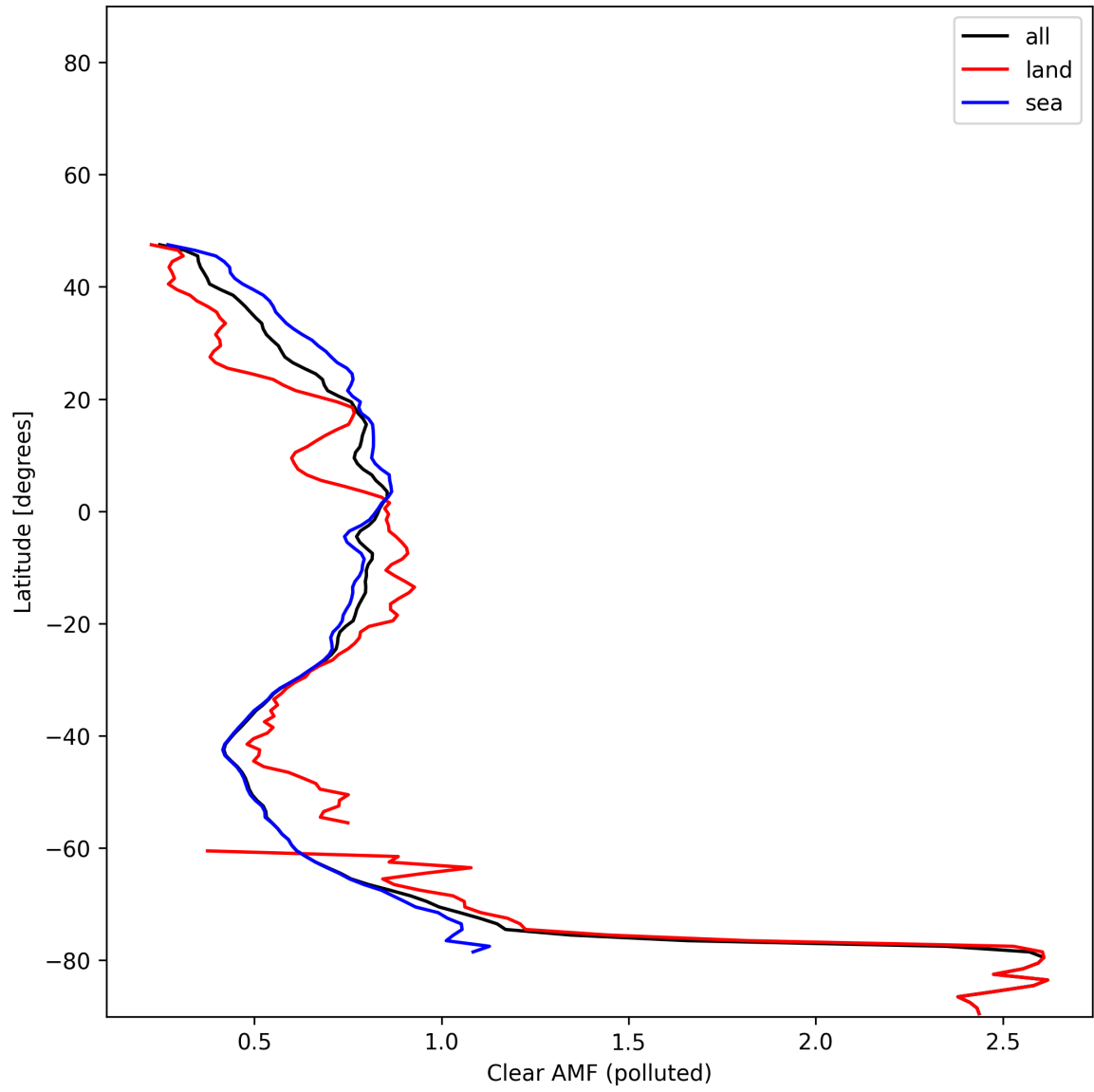


Figure 55: Zonal average of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06.

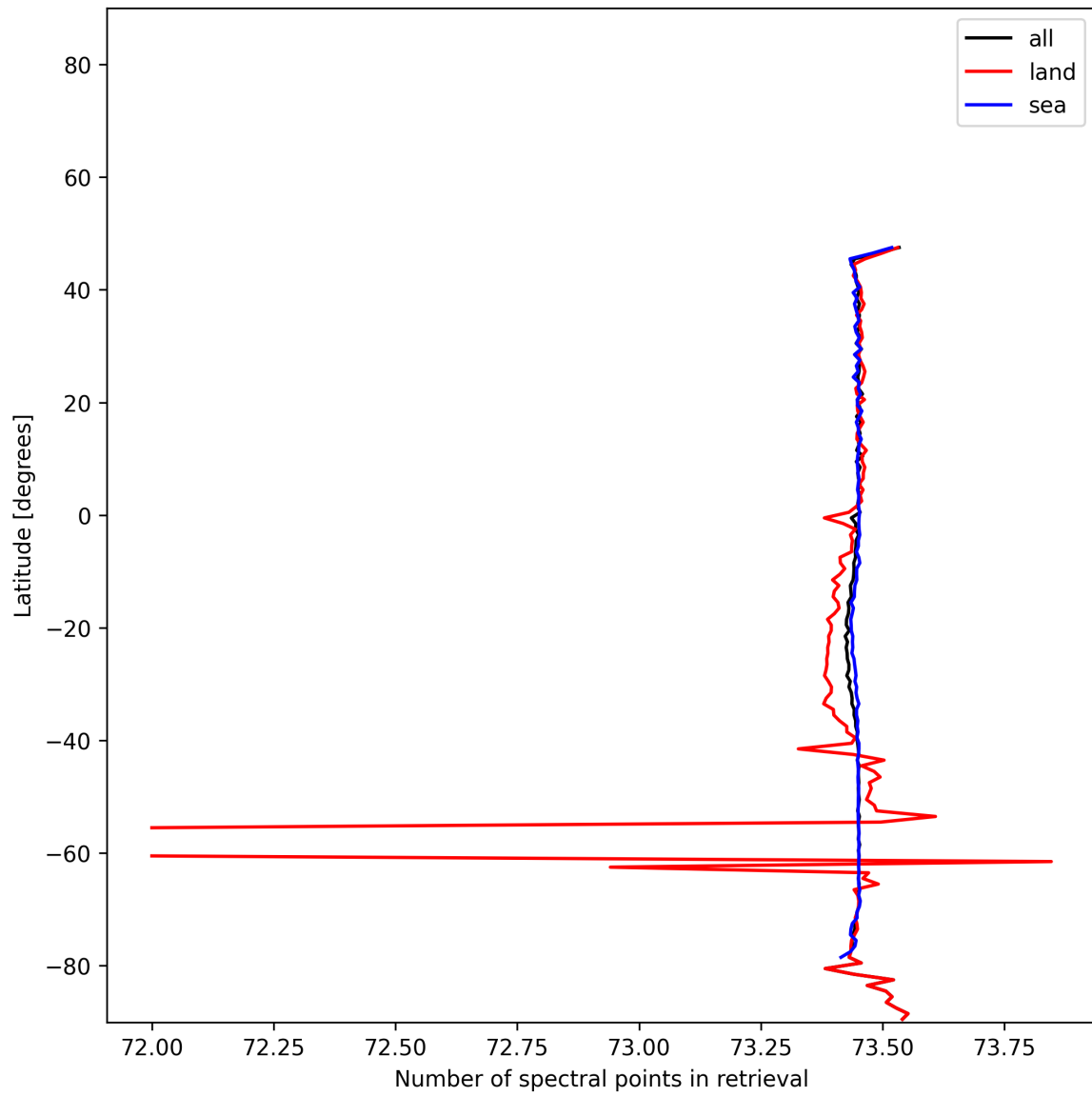


Figure 56: Zonal average of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06.

8 Histograms

The definitions of the parameters given in this section can be found in section 2.

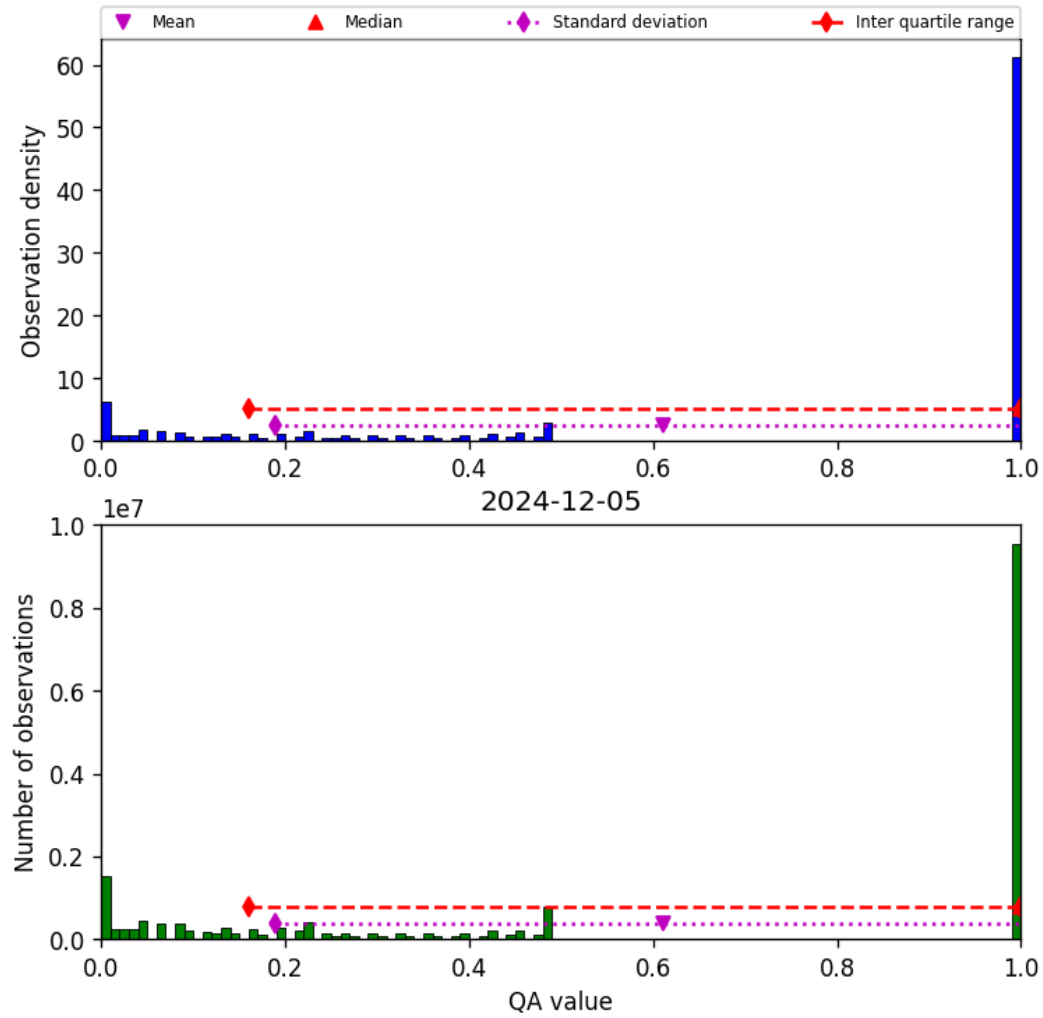


Figure 57: Histogram of “QA value” for 2024-12-05 to 2024-12-06

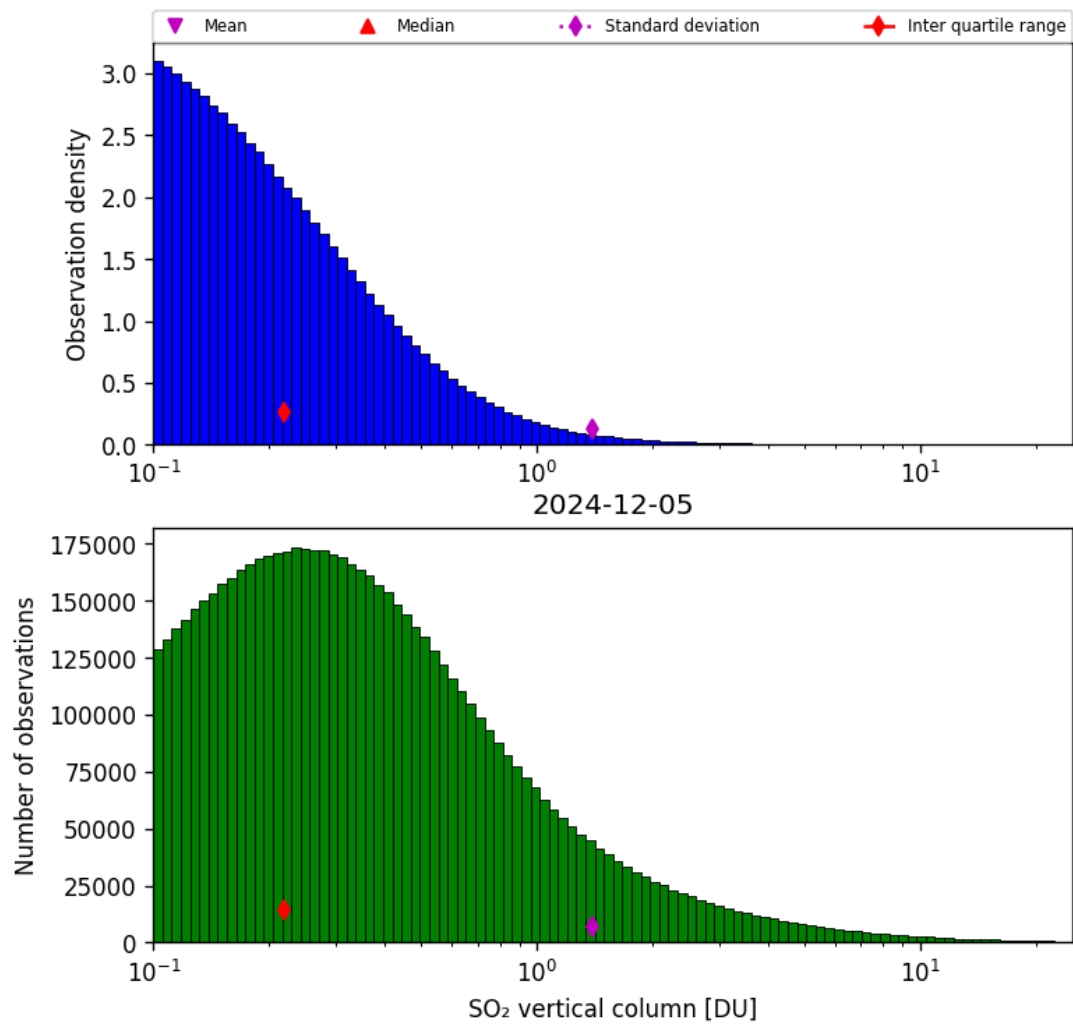


Figure 58: Histogram of “SO₂ vertical column” for 2024-12-05 to 2024-12-06

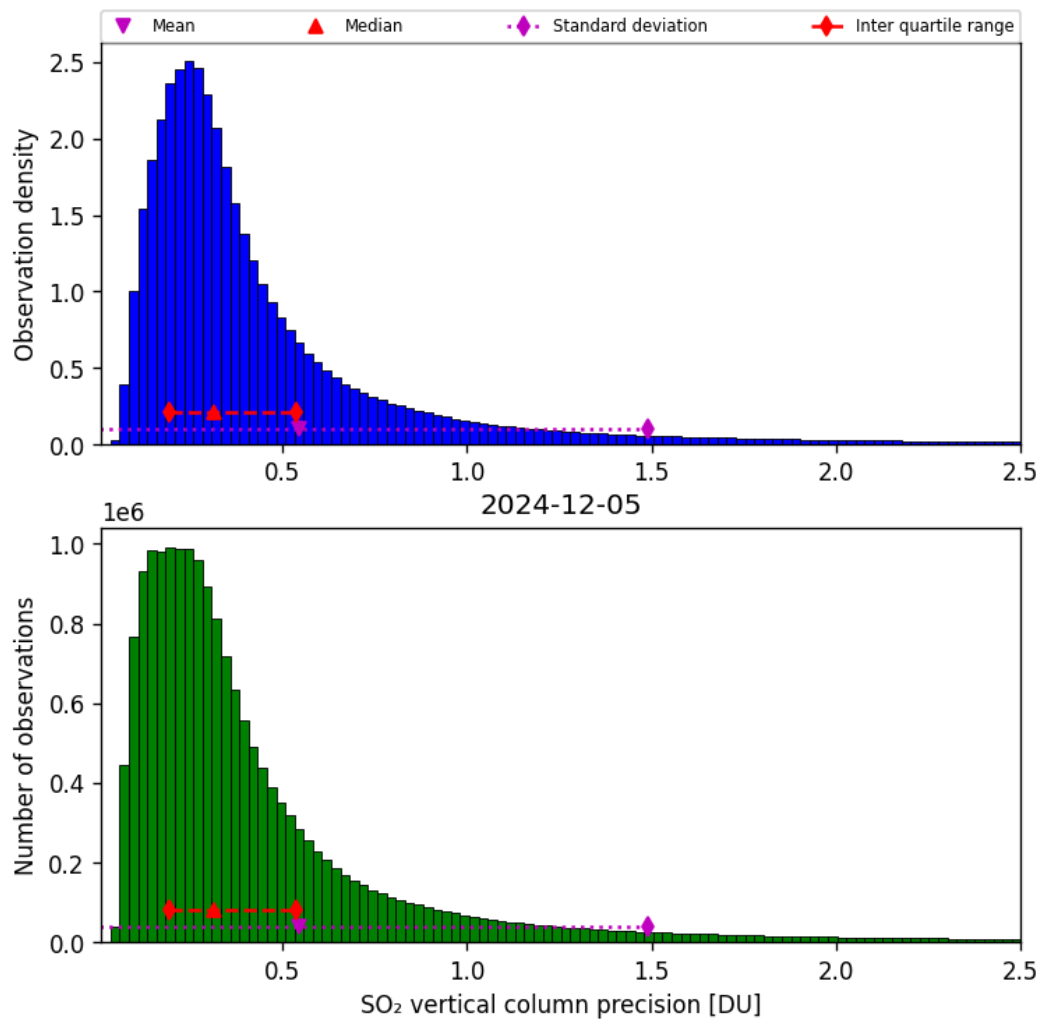


Figure 59: Histogram of “SO₂ vertical column precision” for 2024-12-05 to 2024-12-06

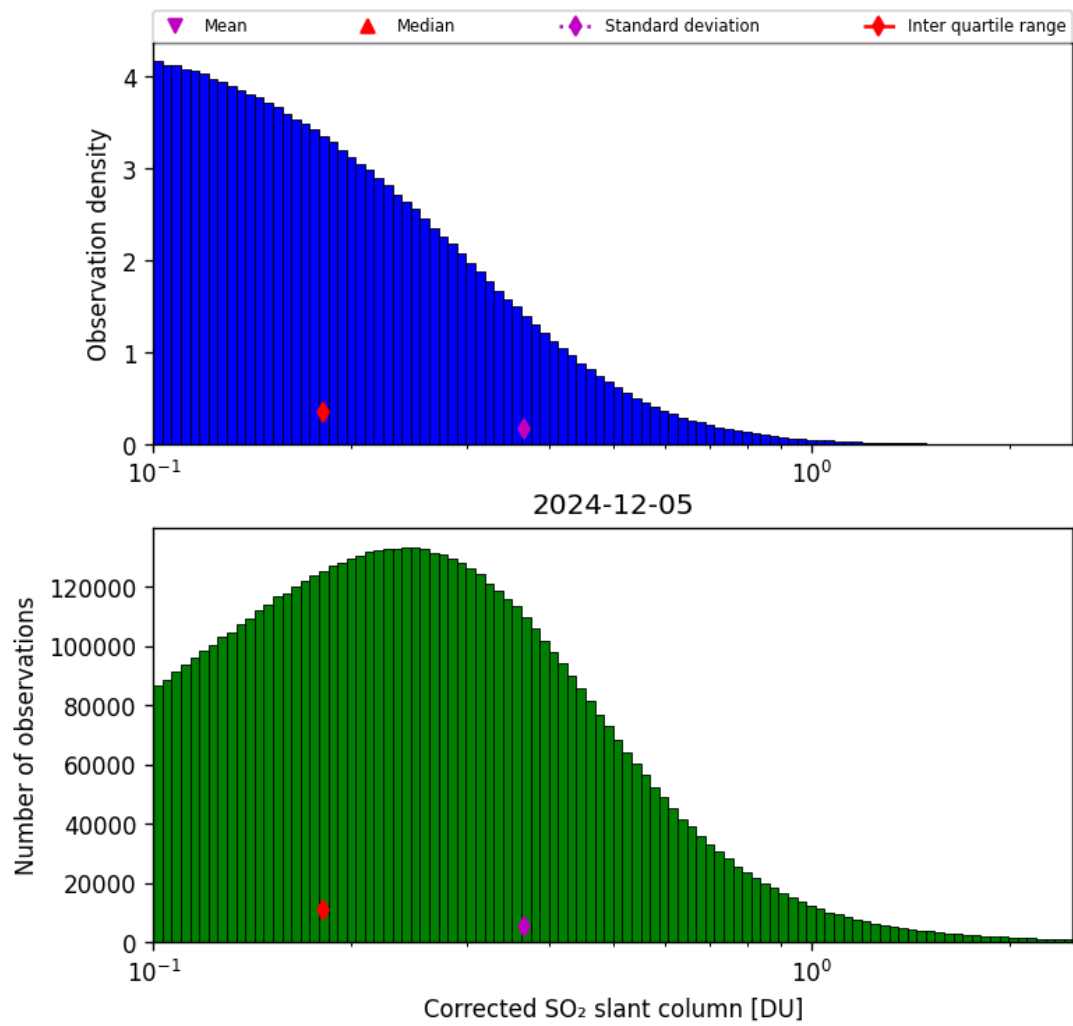


Figure 60: Histogram of “Corrected SO₂ slant column” for 2024-12-05 to 2024-12-06

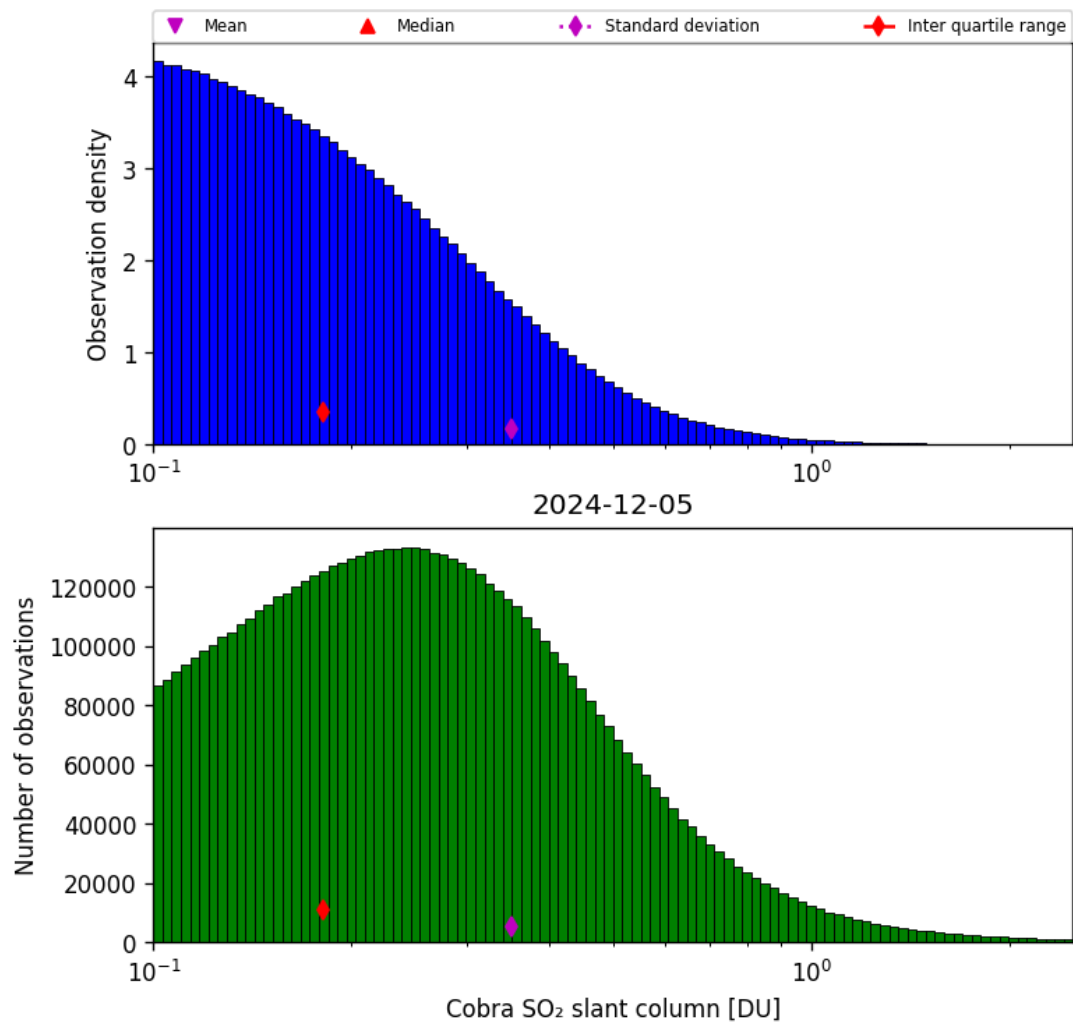


Figure 61: Histogram of “Cobra SO₂ slant column” for 2024-12-05 to 2024-12-06

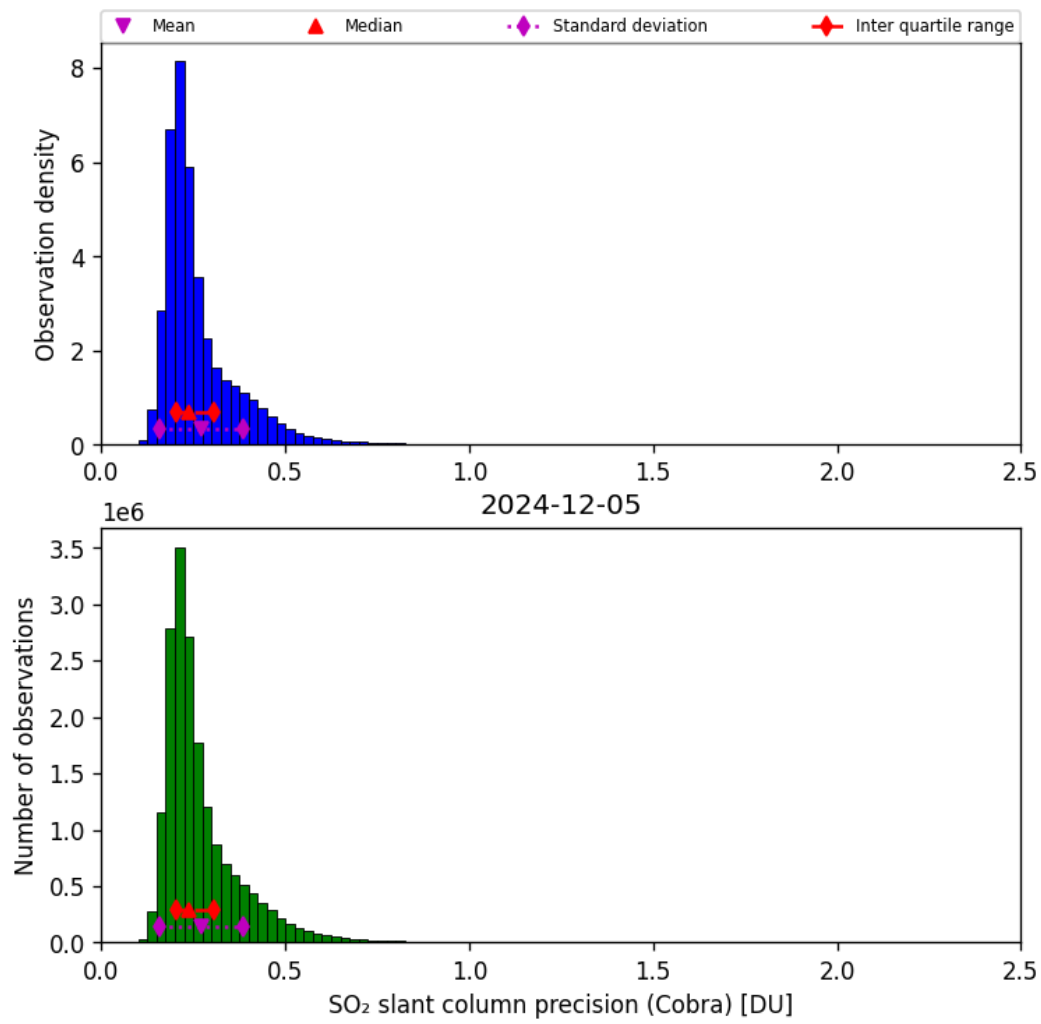


Figure 62: Histogram of “SO₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06

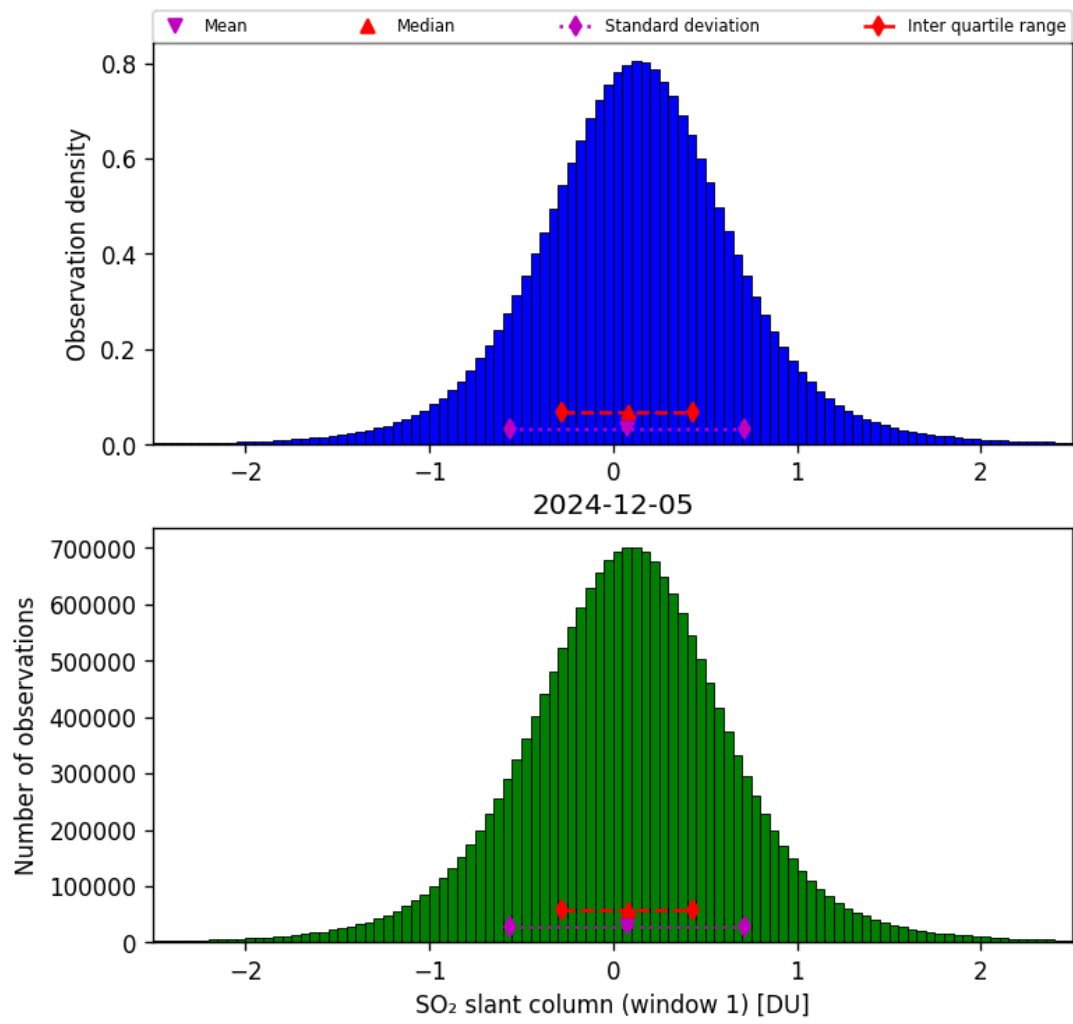


Figure 63: Histogram of “SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06

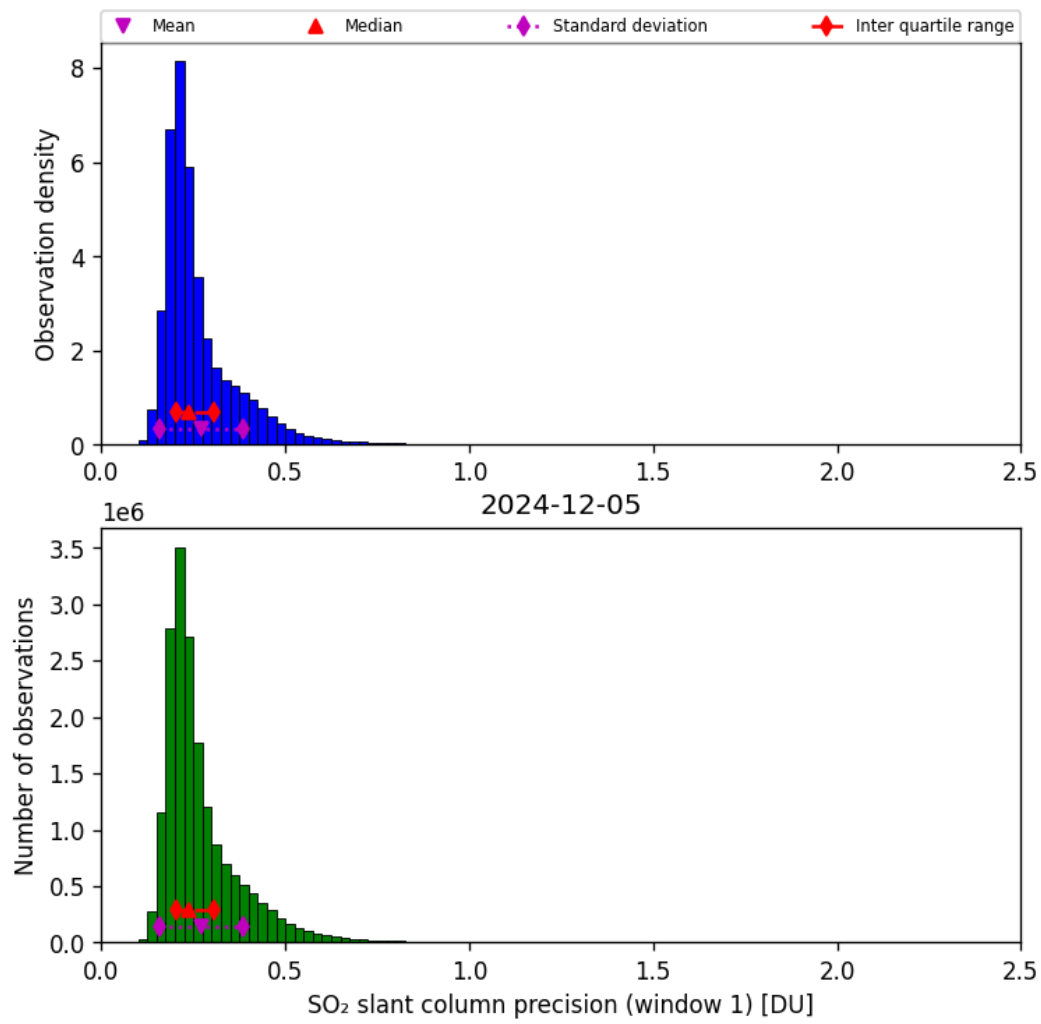


Figure 64: Histogram of “SO₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06

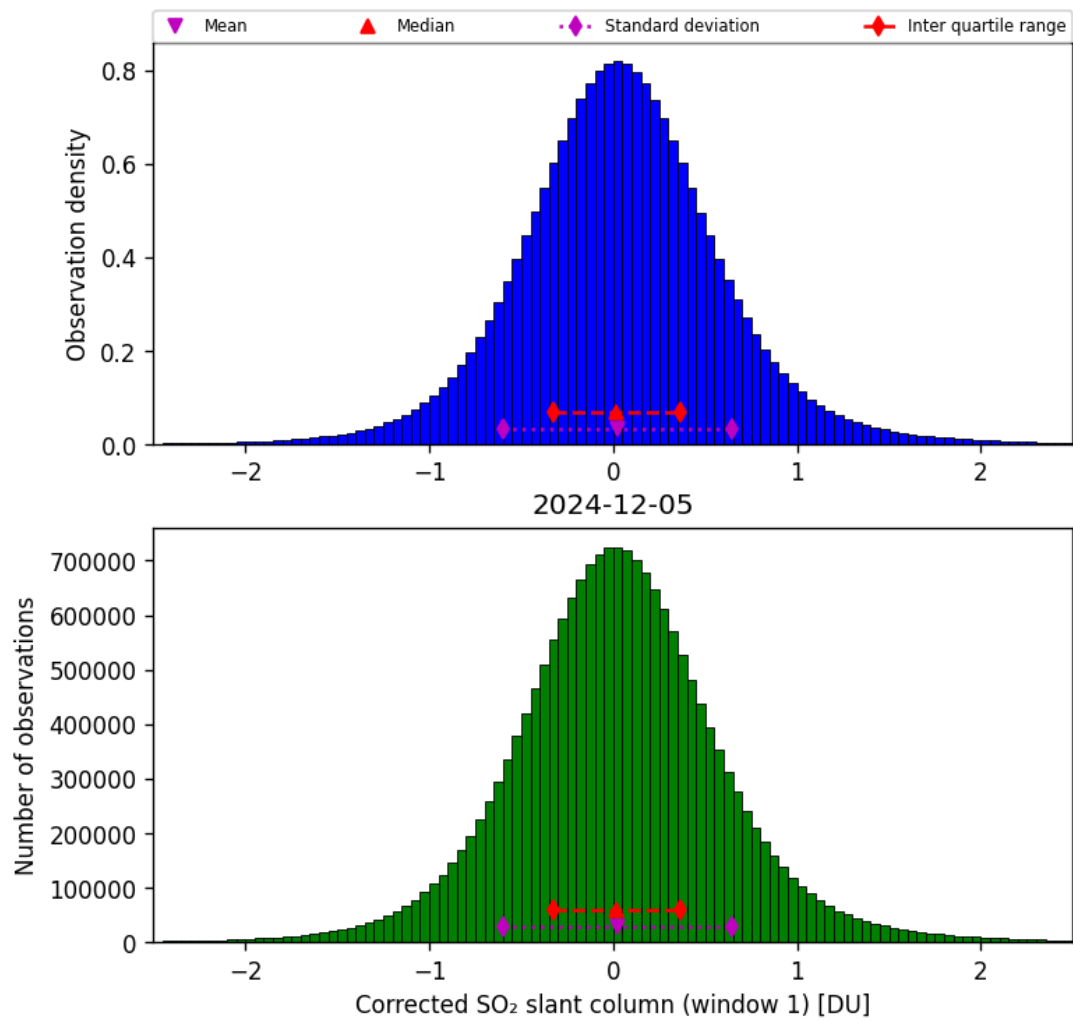


Figure 65: Histogram of “Corrected SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06

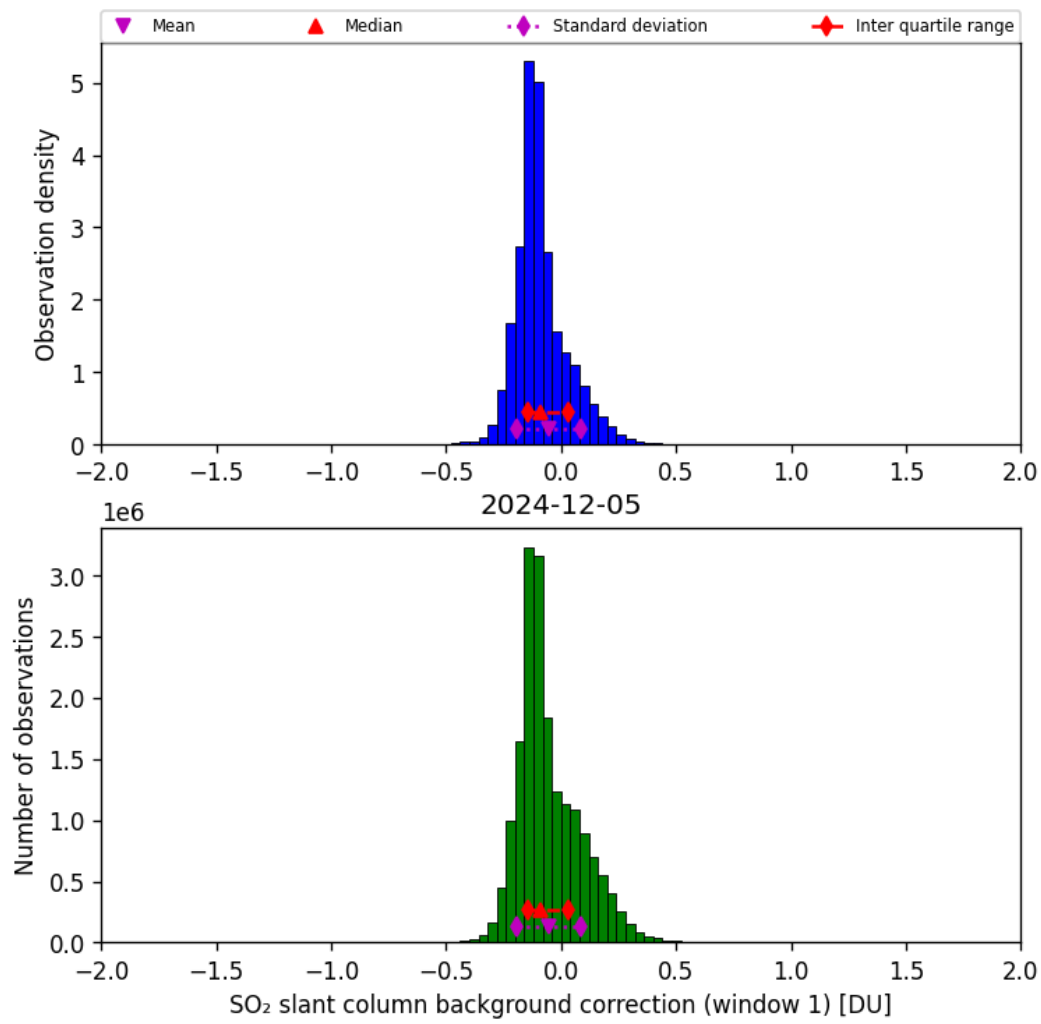


Figure 66: Histogram of “SO₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06

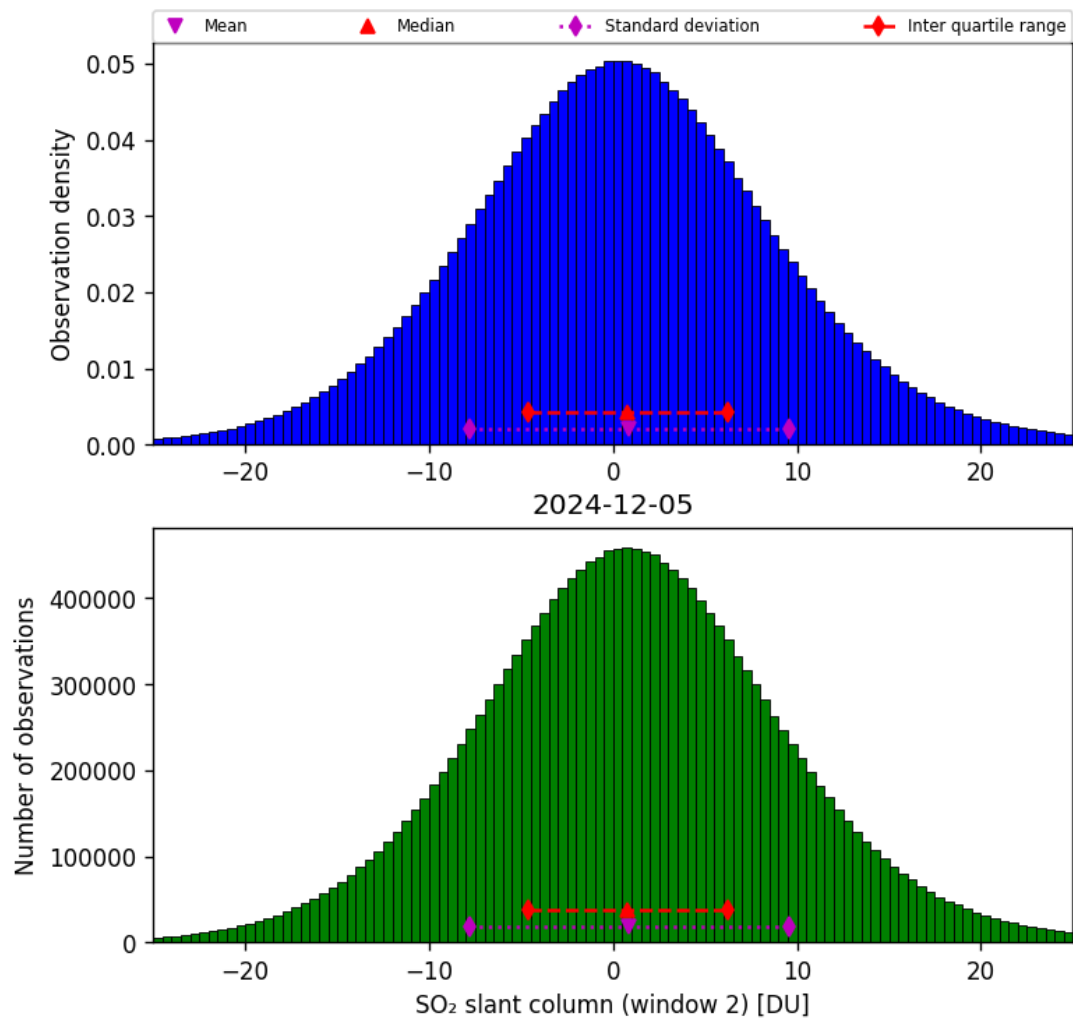


Figure 67: Histogram of “SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06

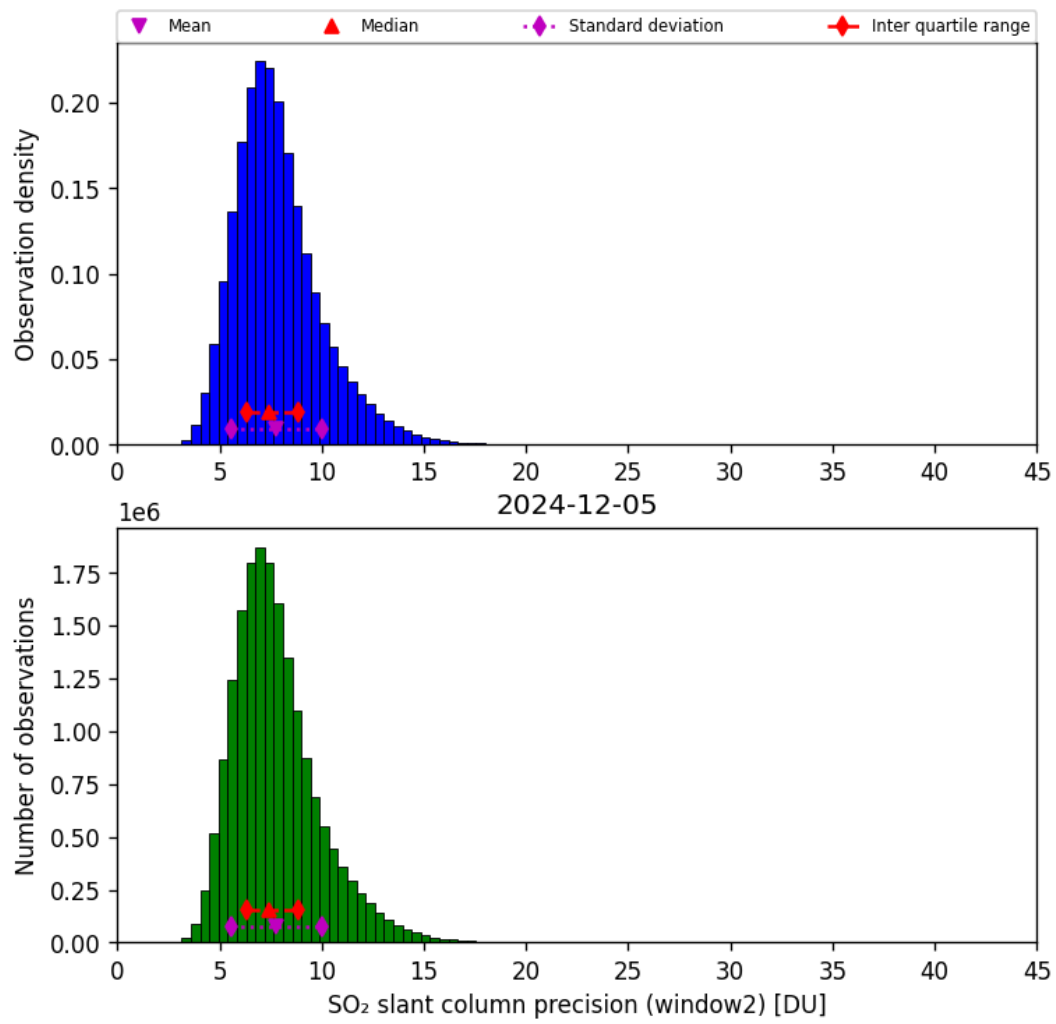


Figure 68: Histogram of “SO₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06

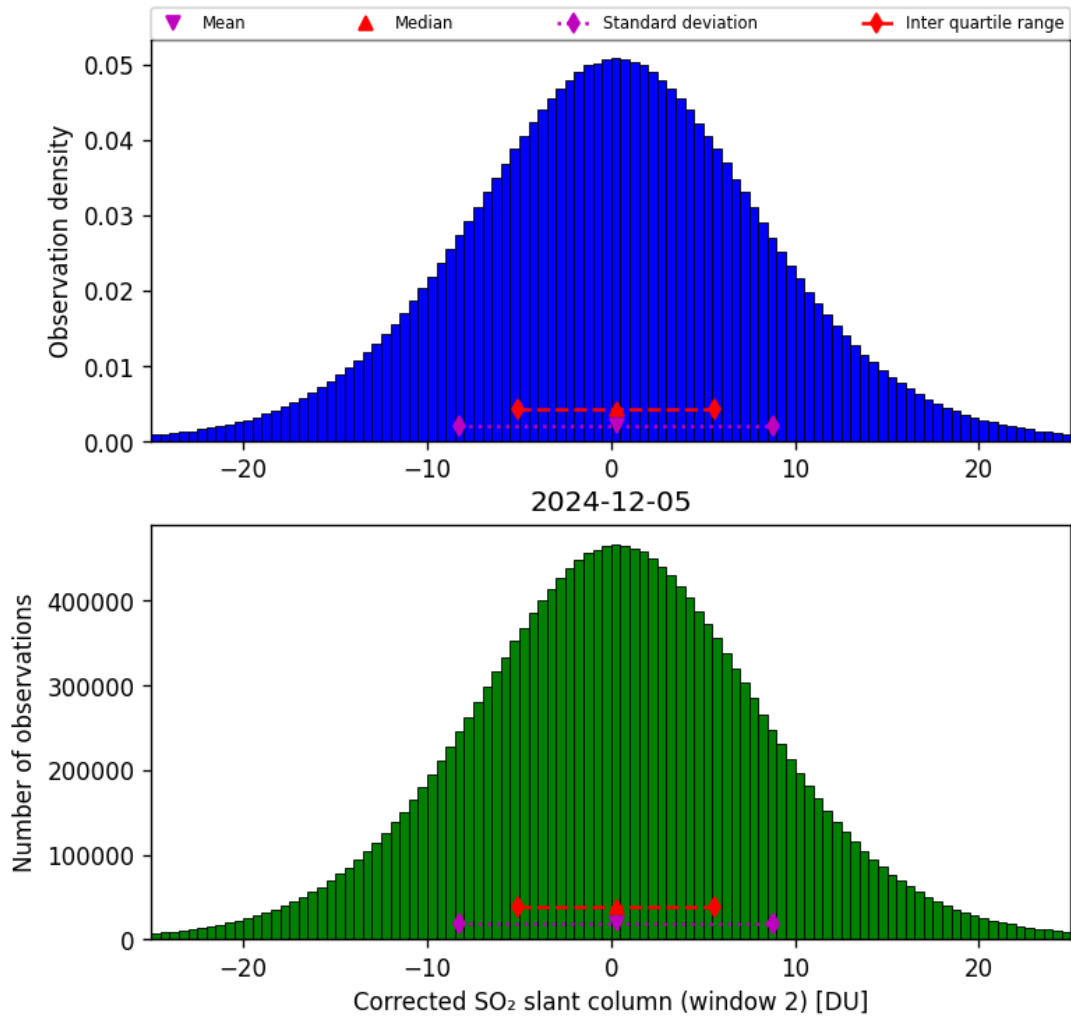


Figure 69: Histogram of “Corrected SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06

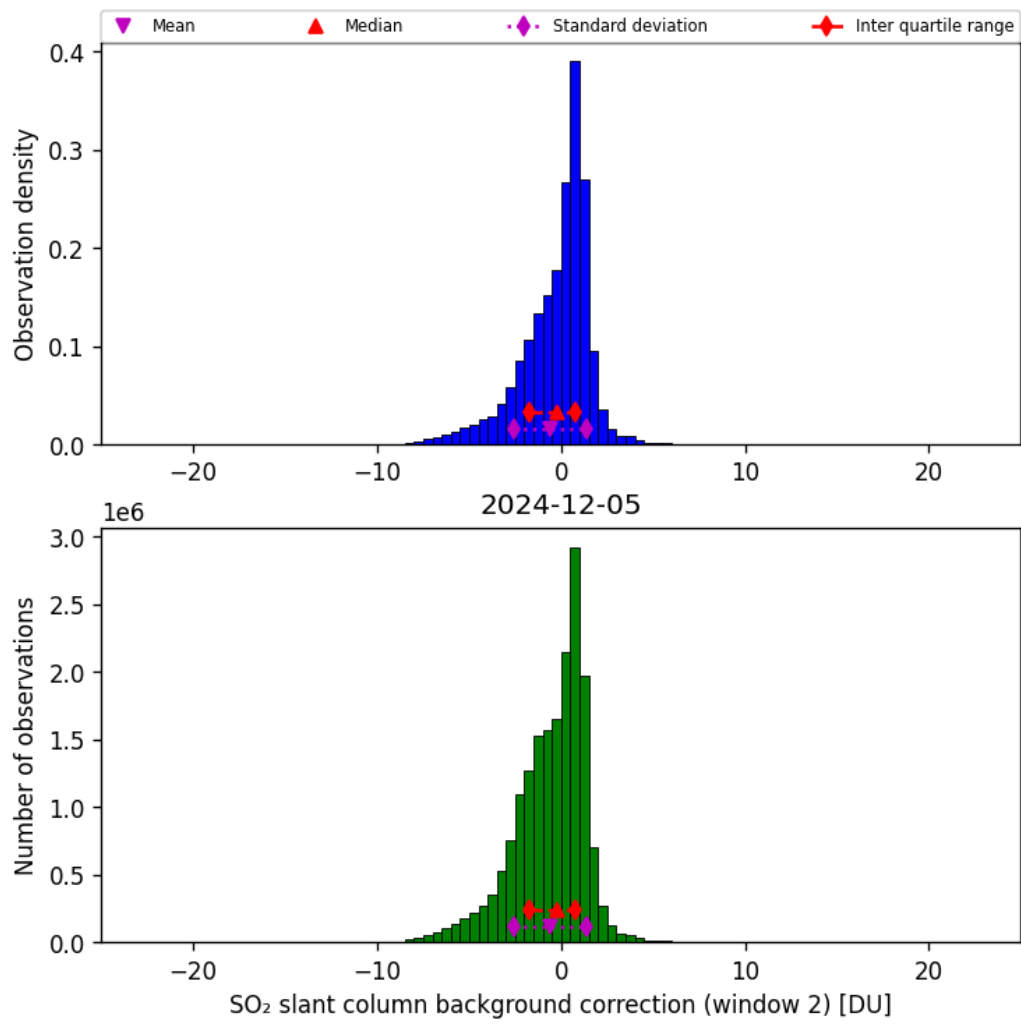


Figure 70: Histogram of “SO₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06

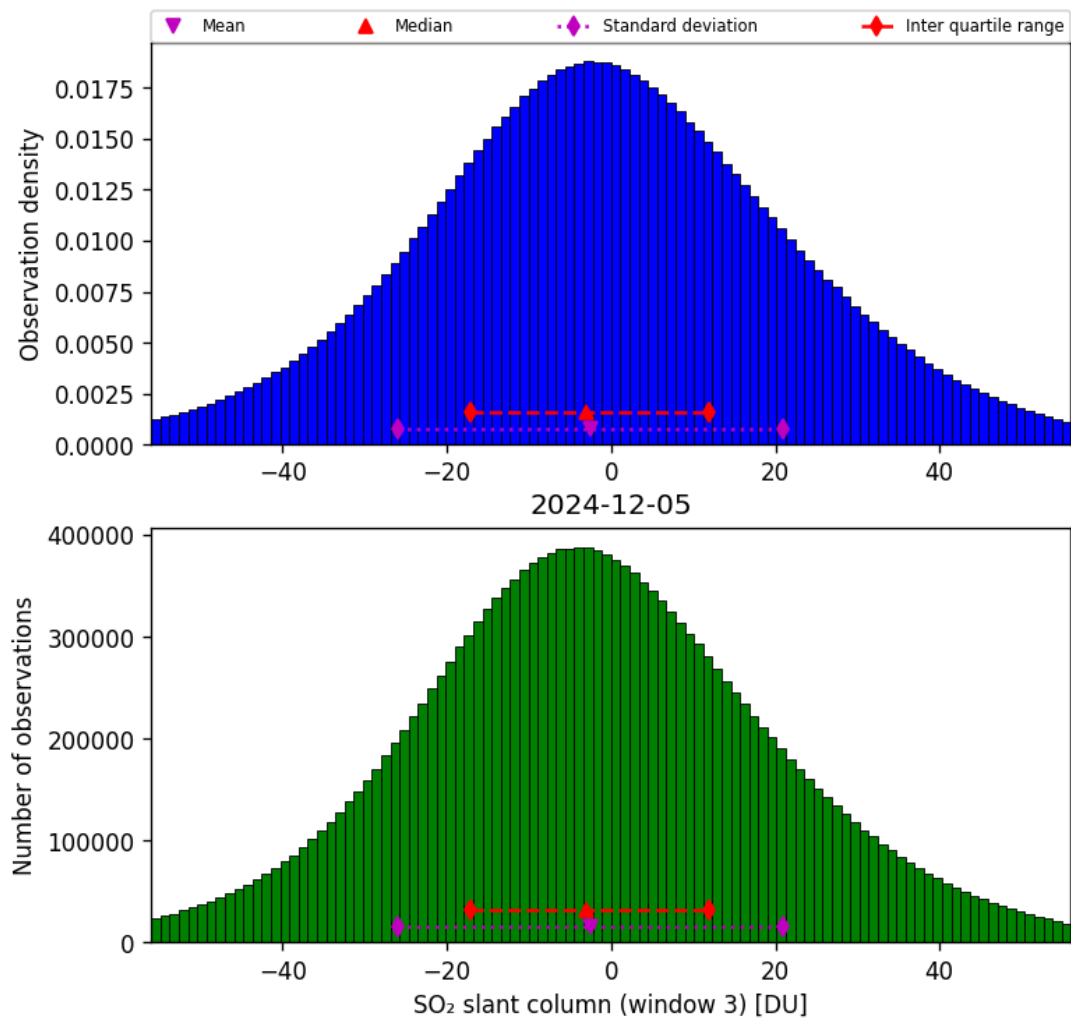


Figure 71: Histogram of “SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06

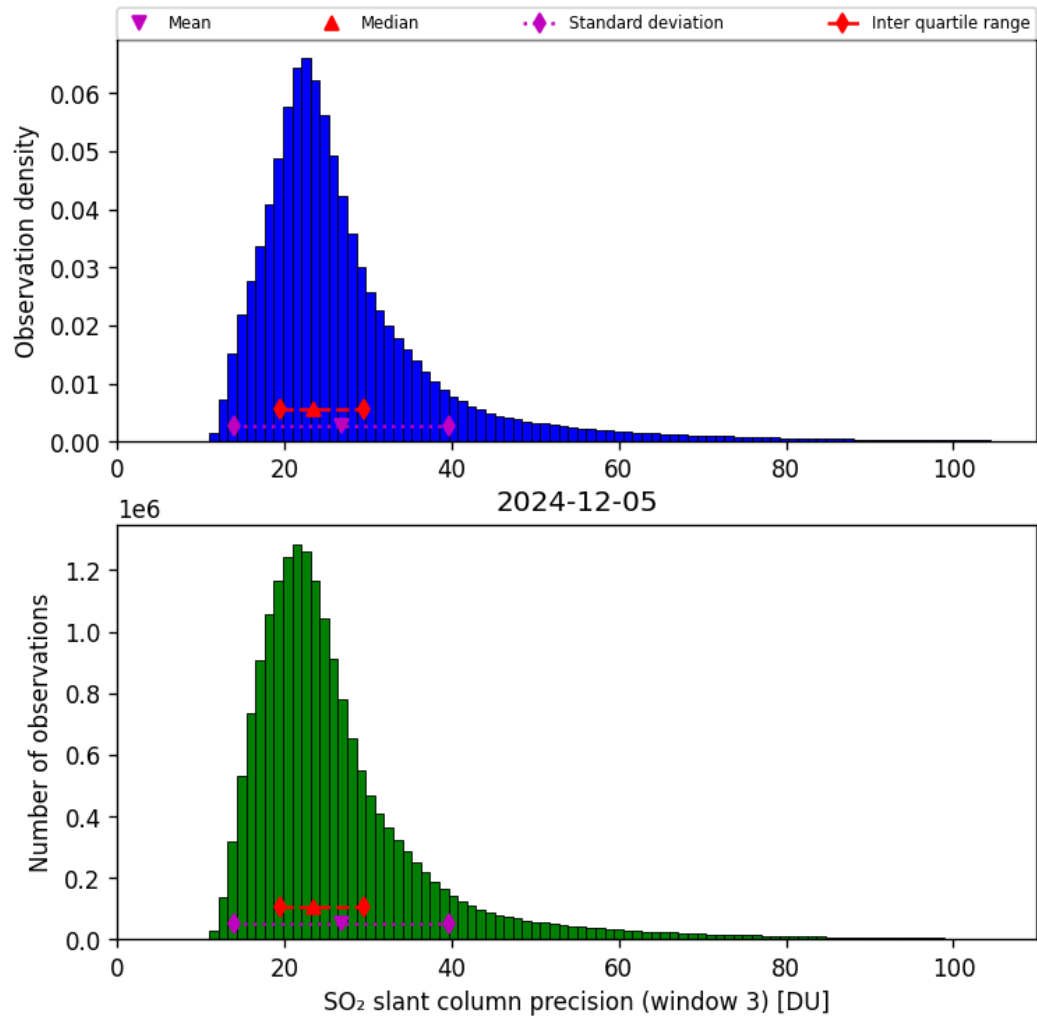


Figure 72: Histogram of “SO₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06

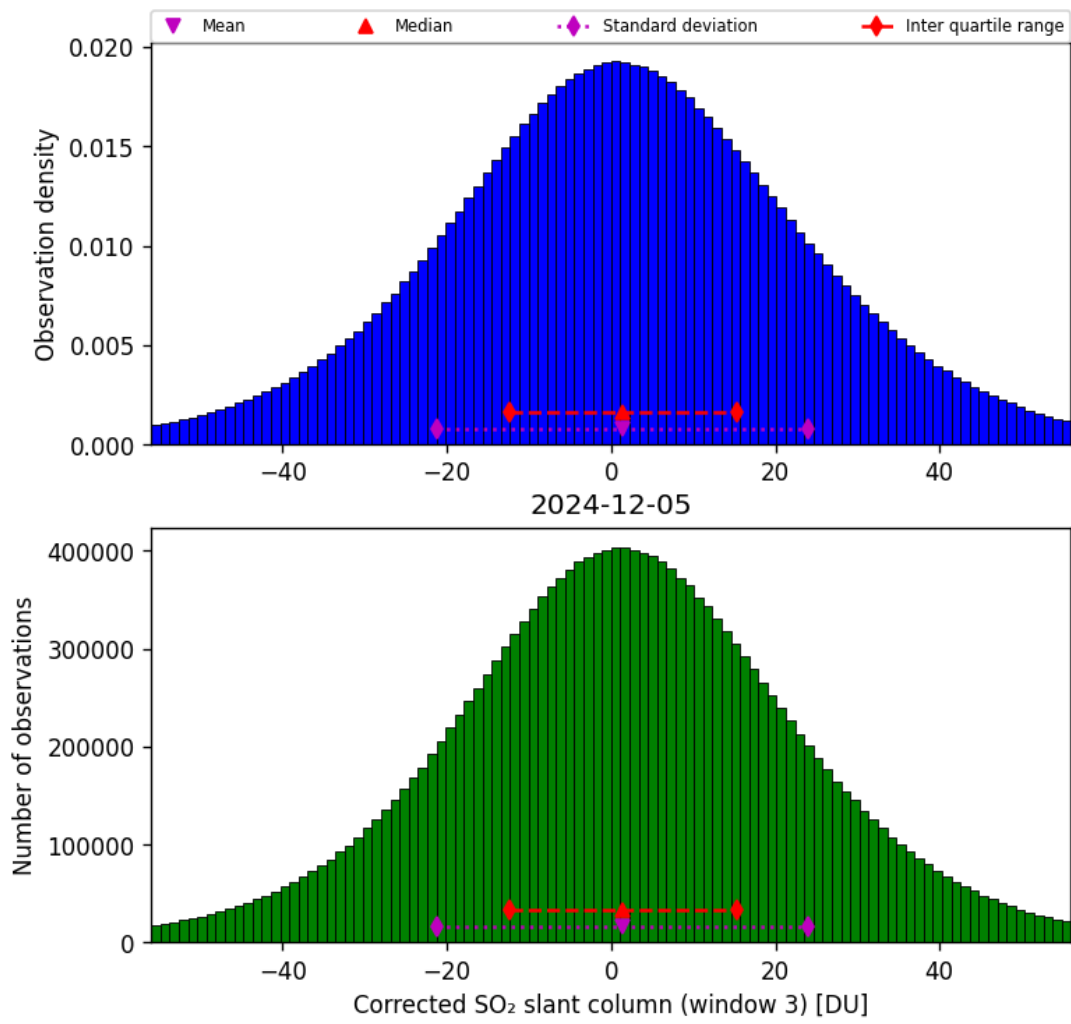


Figure 73: Histogram of “Corrected SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06

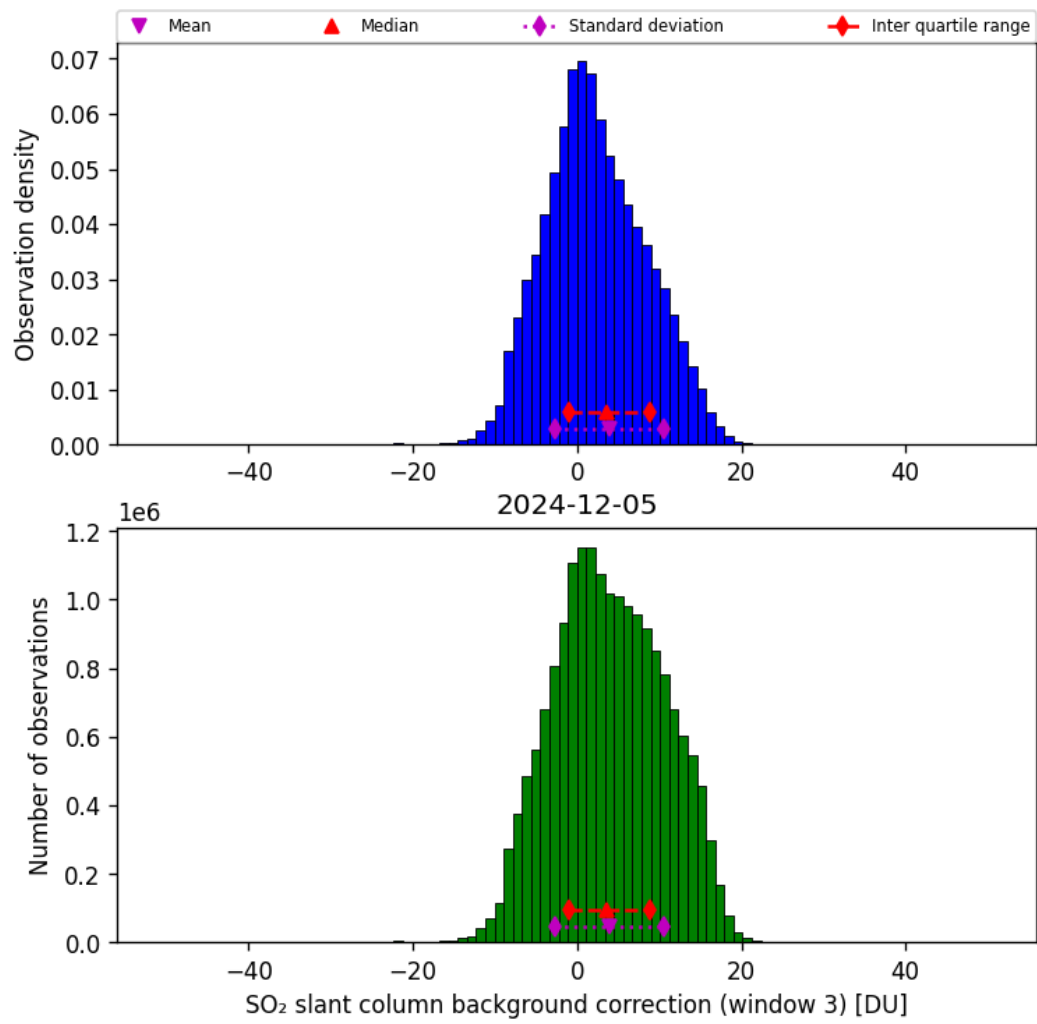


Figure 74: Histogram of “SO₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06

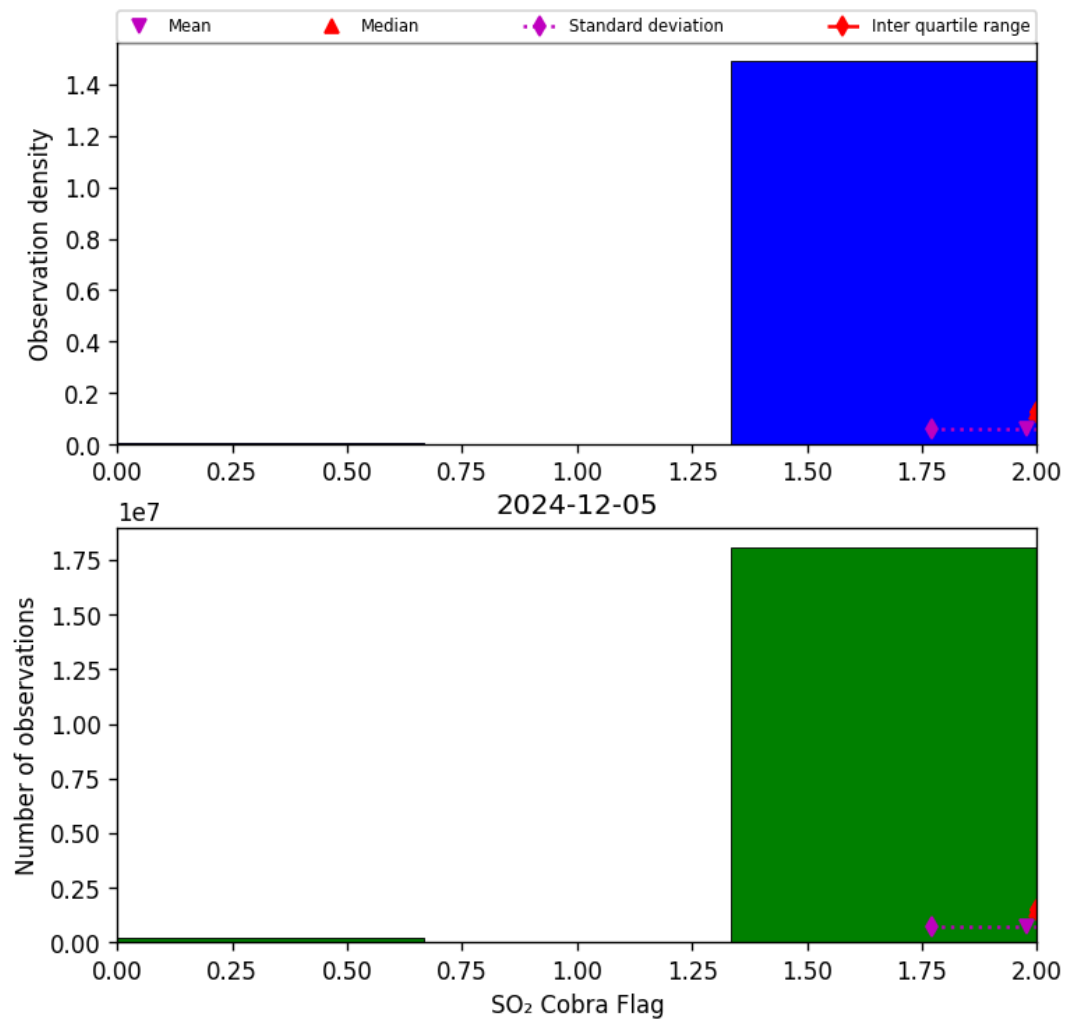


Figure 75: Histogram of “SO₂ Cobra Flag” for 2024-12-05 to 2024-12-06

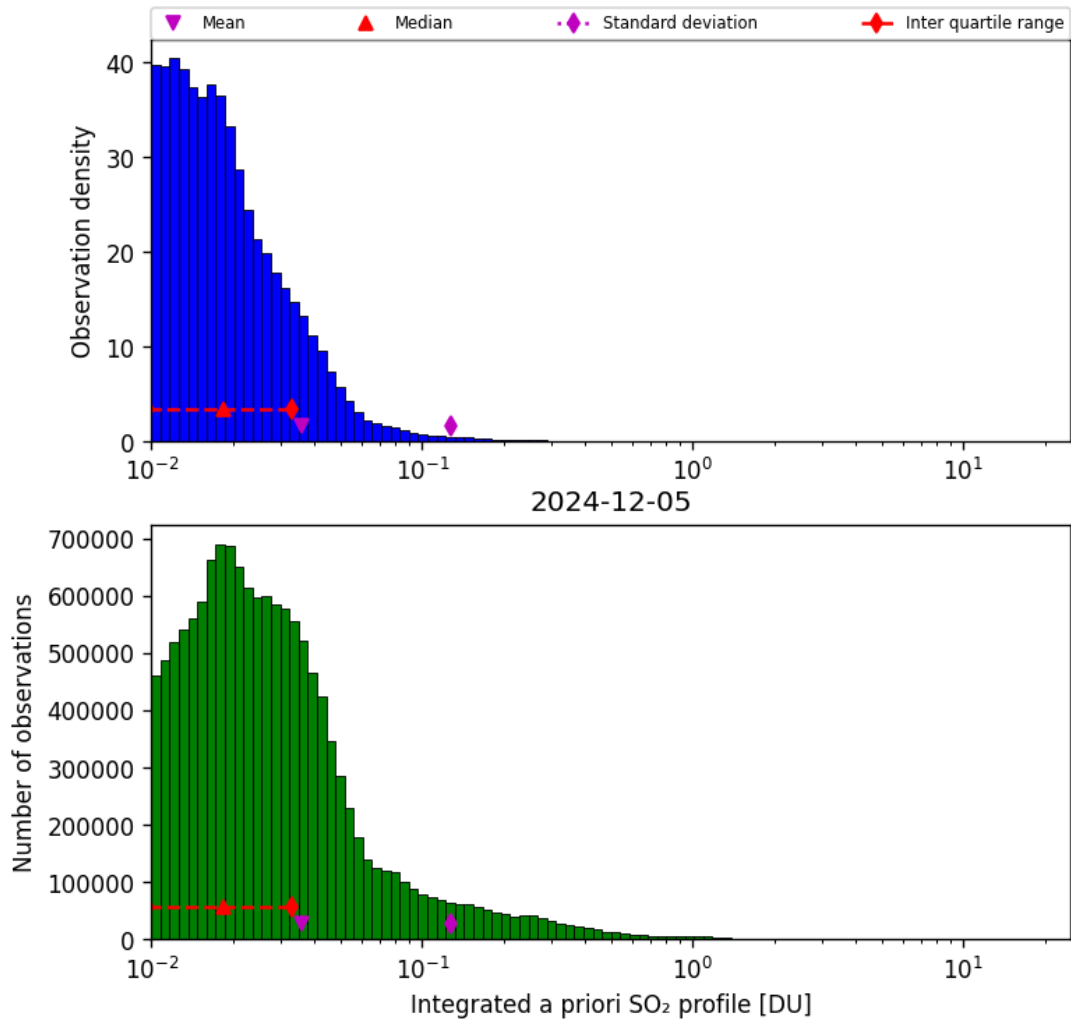


Figure 76: Histogram of “Integrated a priori SO₂ profile” for 2024-12-05 to 2024-12-06

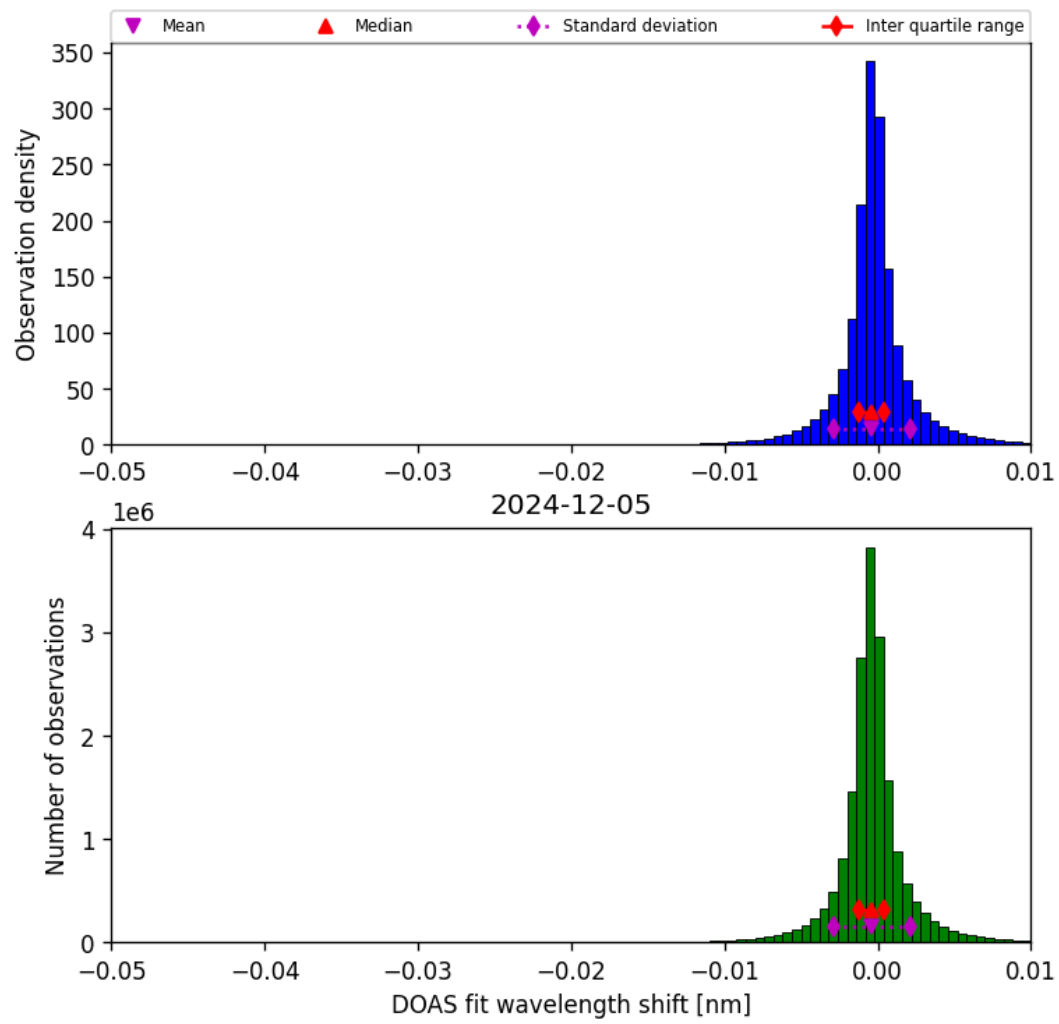


Figure 77: Histogram of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06

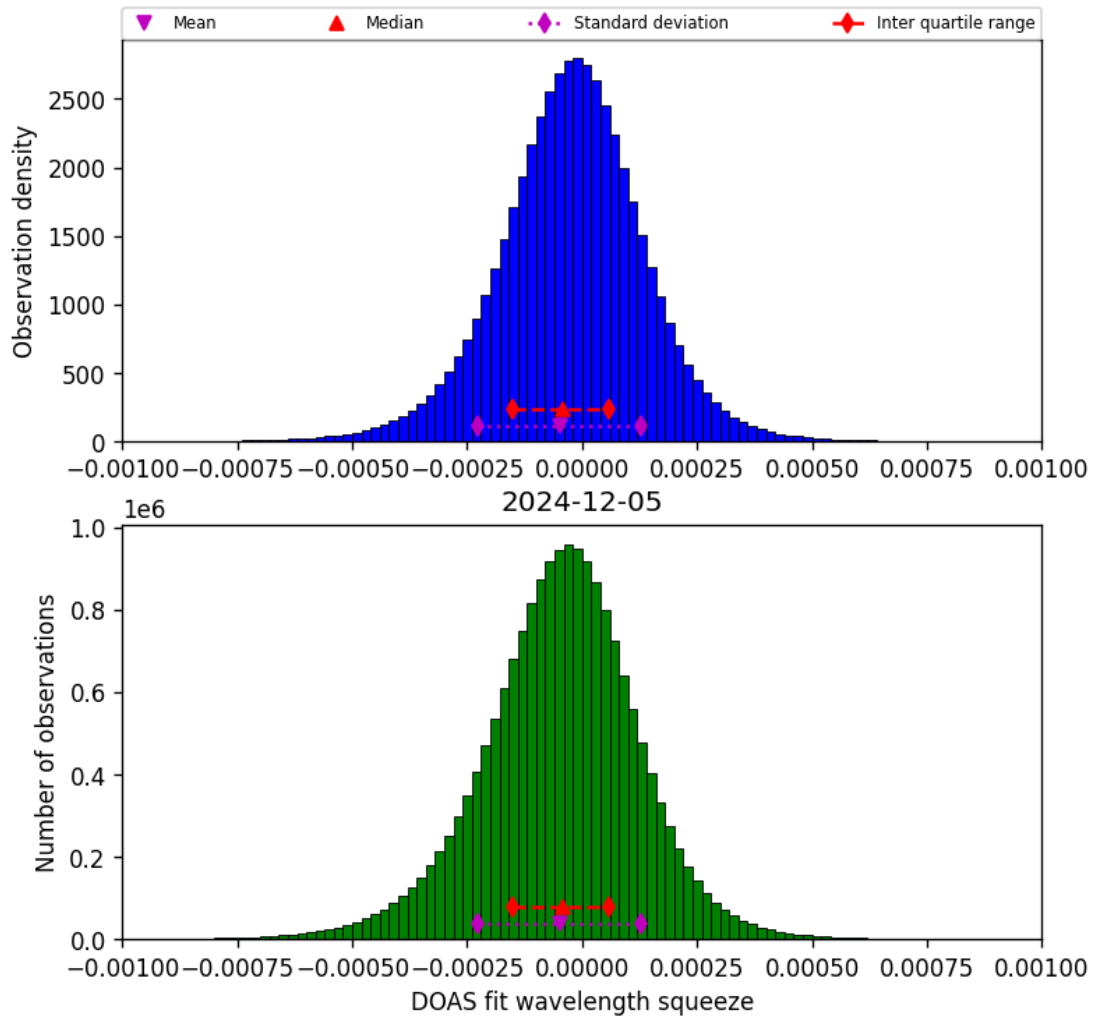


Figure 78: Histogram of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06

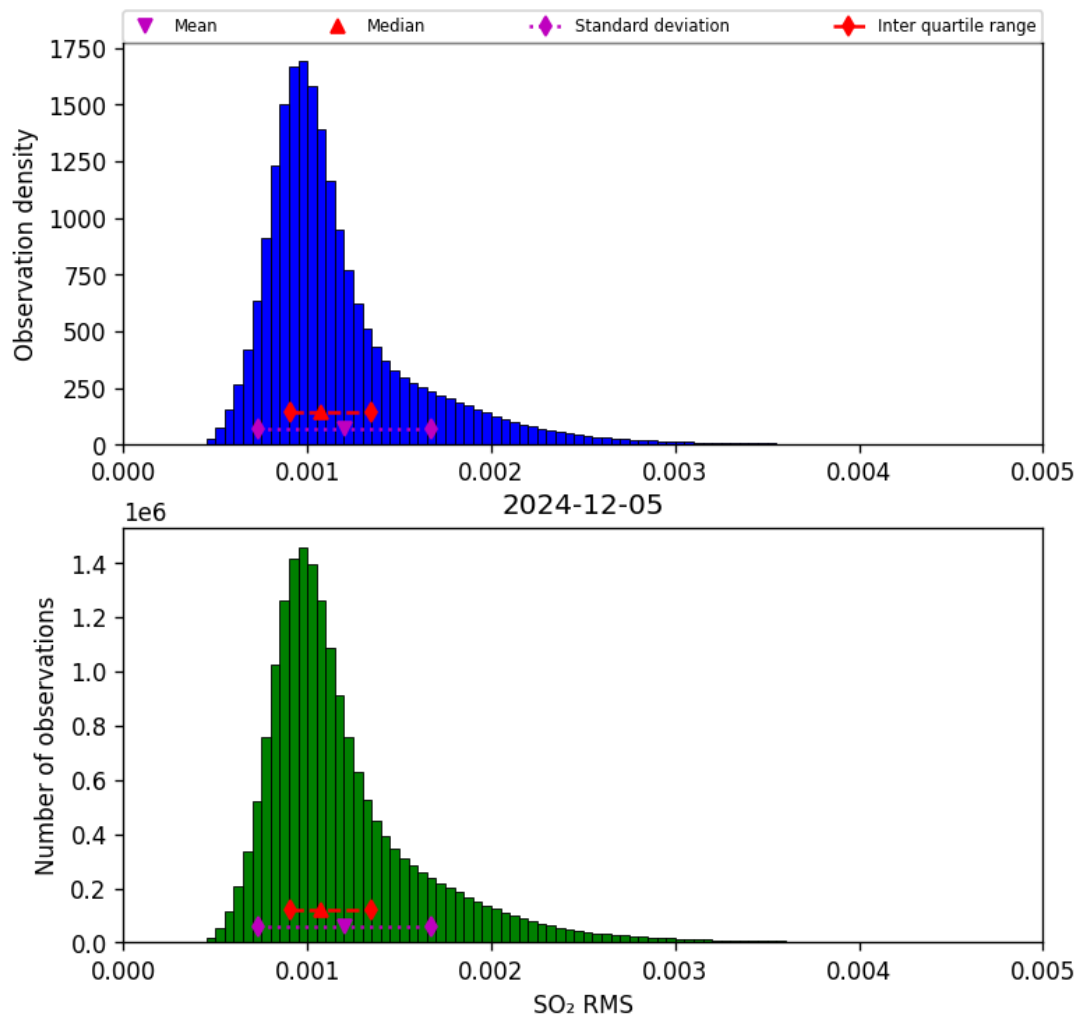


Figure 79: Histogram of “SO₂ RMS” for 2024-12-05 to 2024-12-06

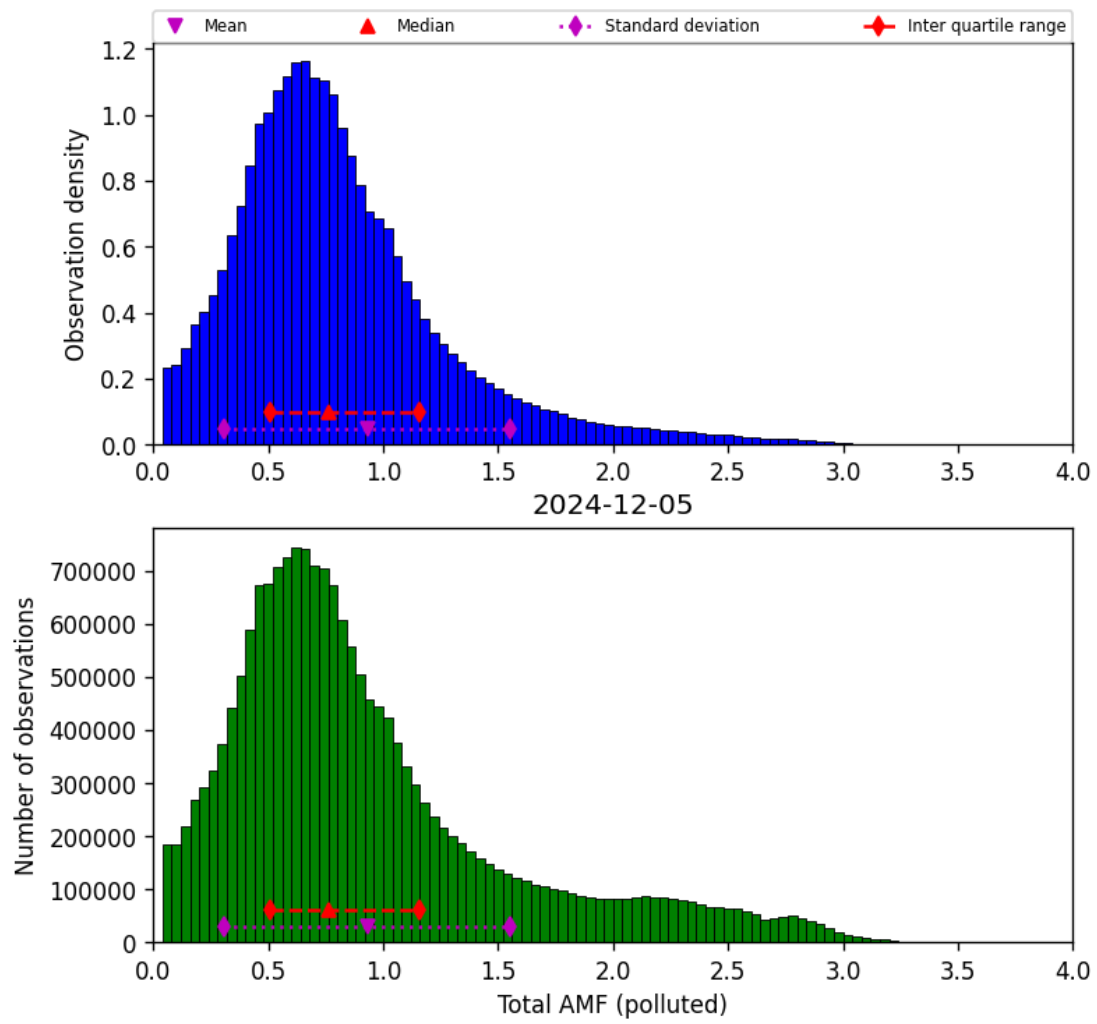


Figure 80: Histogram of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06

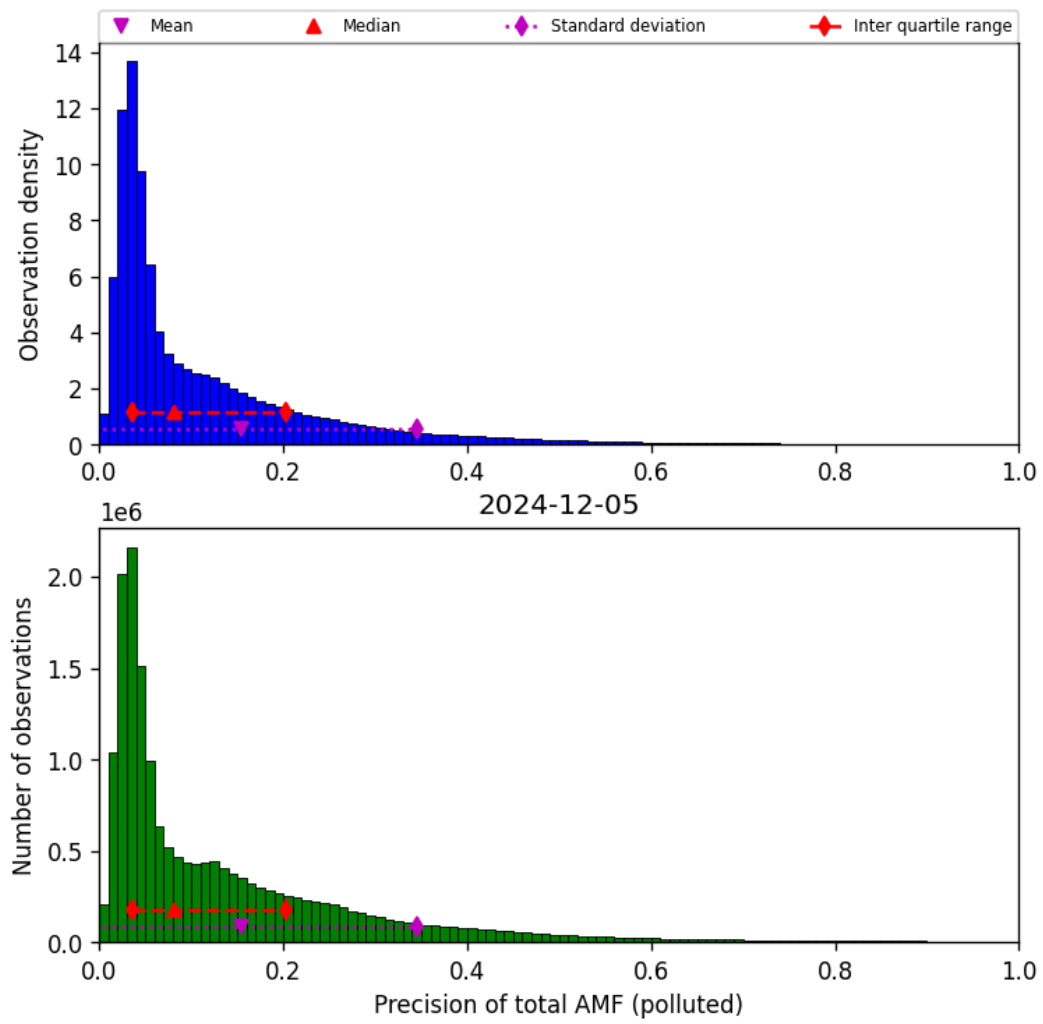


Figure 81: Histogram of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06

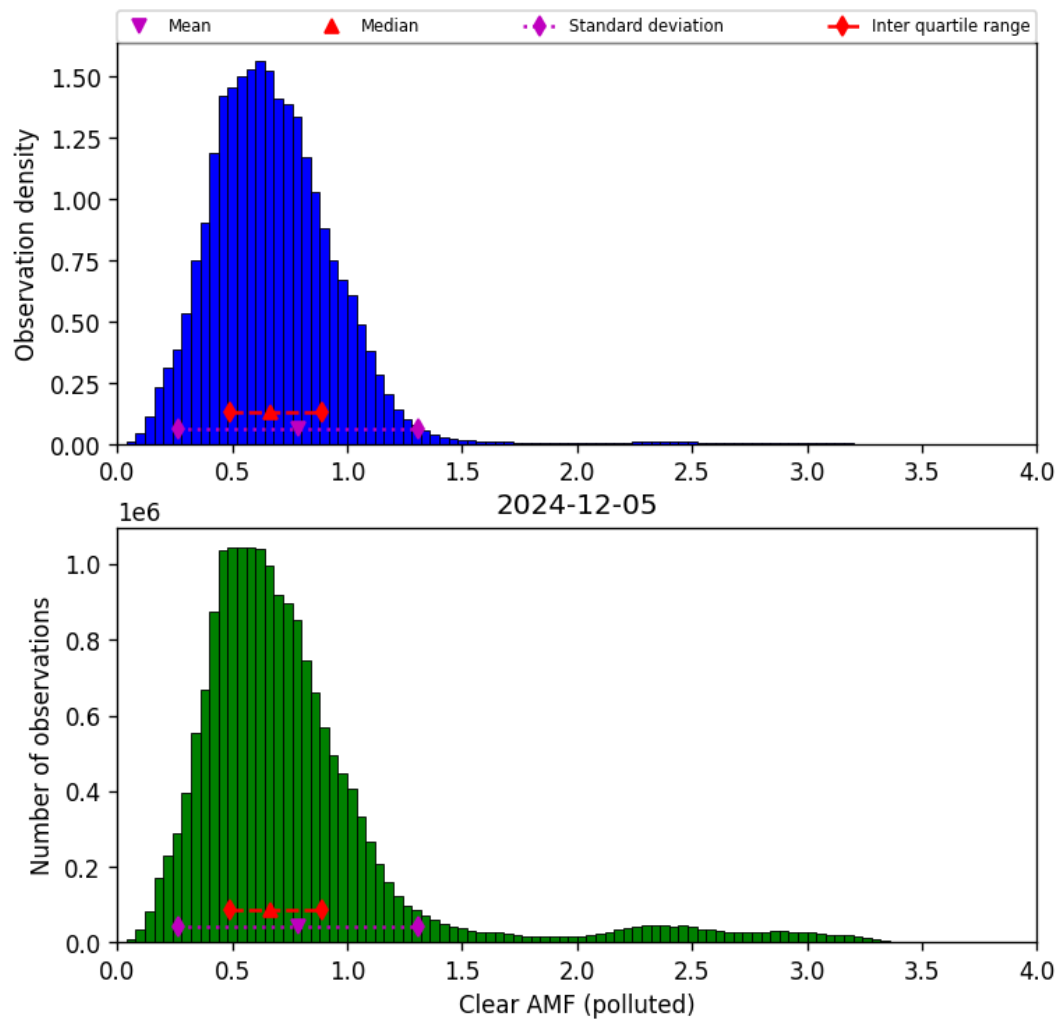


Figure 82: Histogram of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06

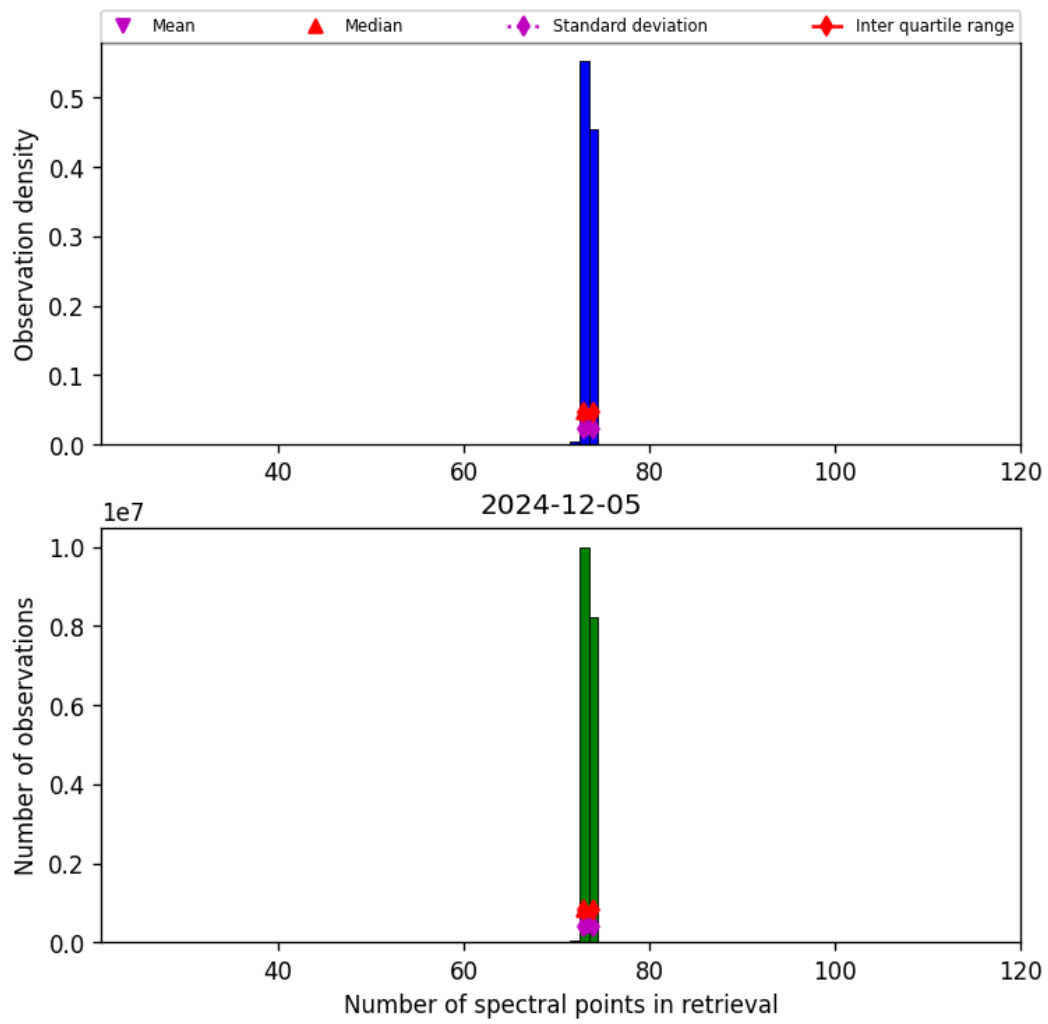


Figure 83: Histogram of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06

9 Along track statistics

The TROPOMI instrument uses different binned detector rows for different viewing directions. In this section statistics are presented for each of the binned rows in the instrument.

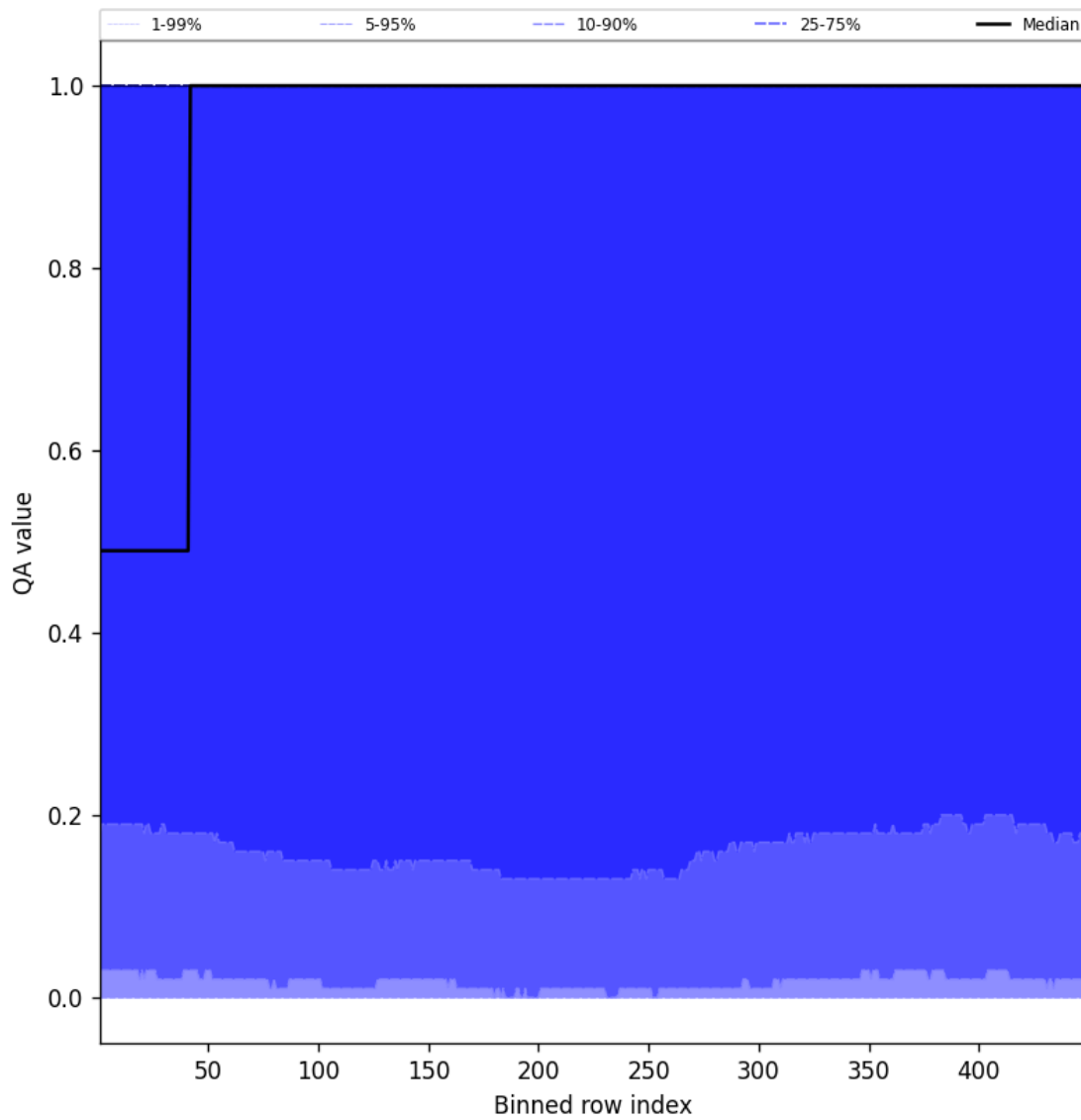


Figure 84: Along track statistics of “QA value” for 2024-12-05 to 2024-12-06

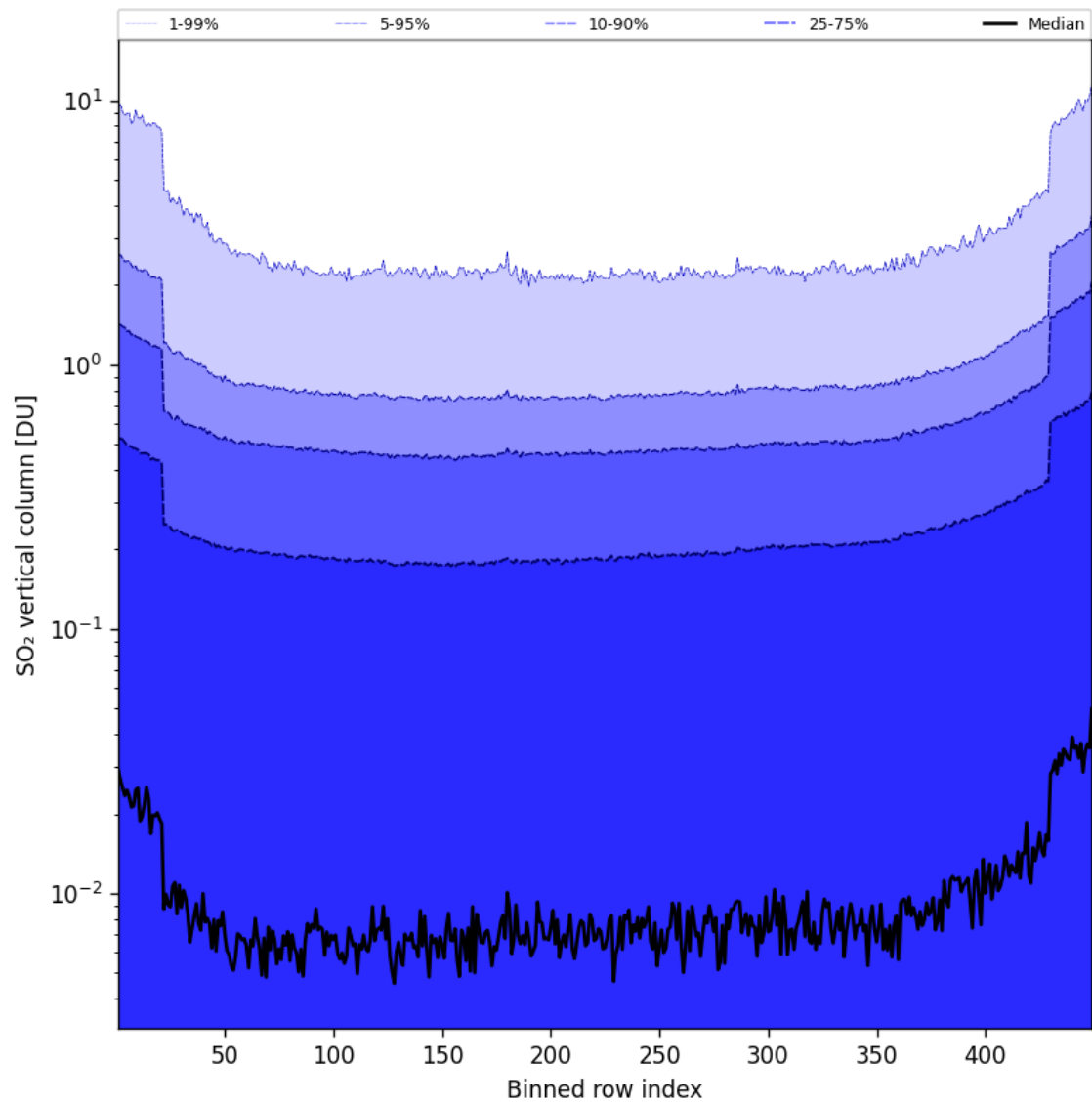


Figure 85: Along track statistics of “SO₂ vertical column” for 2024-12-05 to 2024-12-06

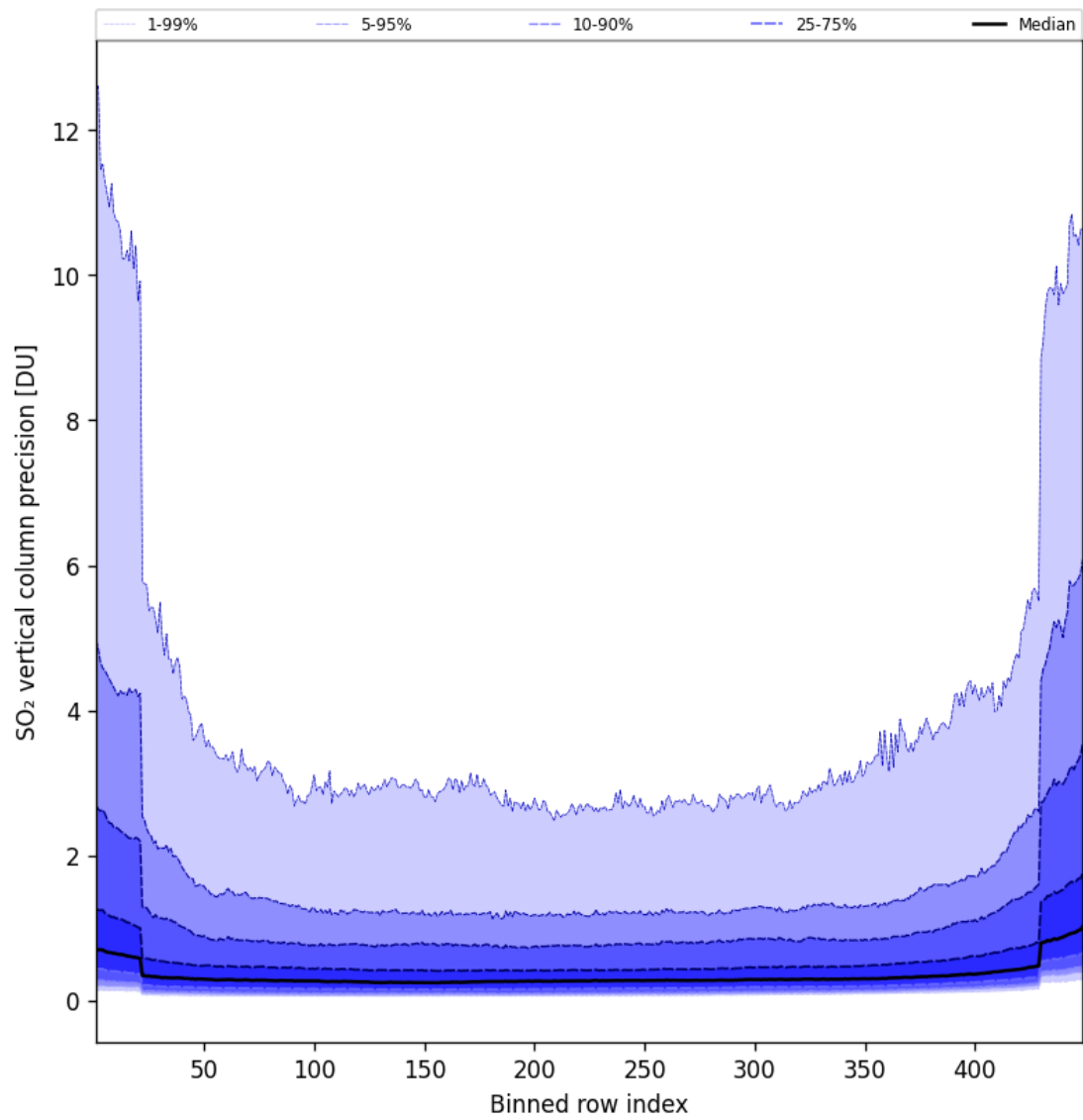


Figure 86: Along track statistics of “SO₂ vertical column precision” for 2024-12-05 to 2024-12-06

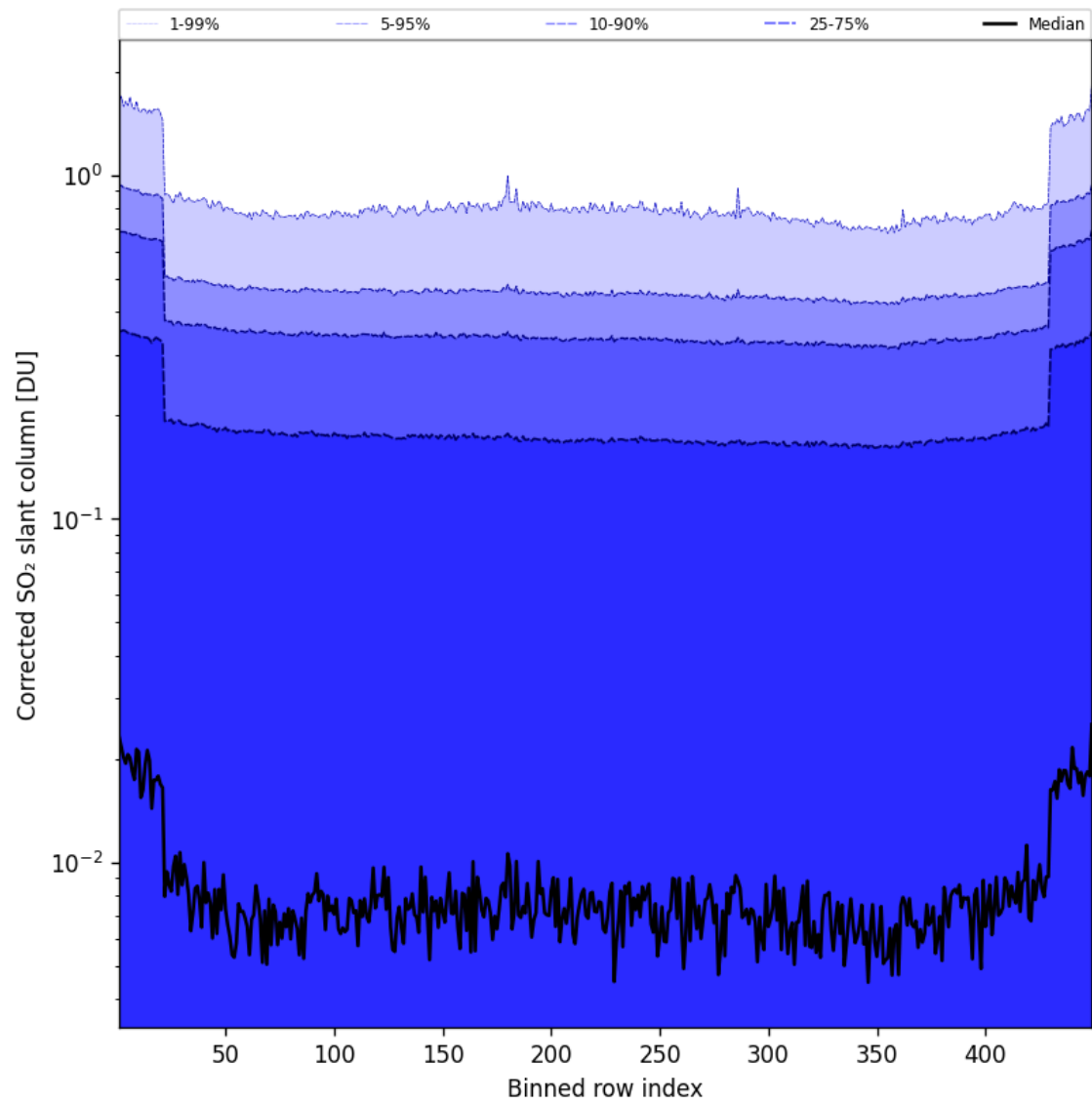


Figure 87: Along track statistics of “Corrected SO₂ slant column” for 2024-12-05 to 2024-12-06

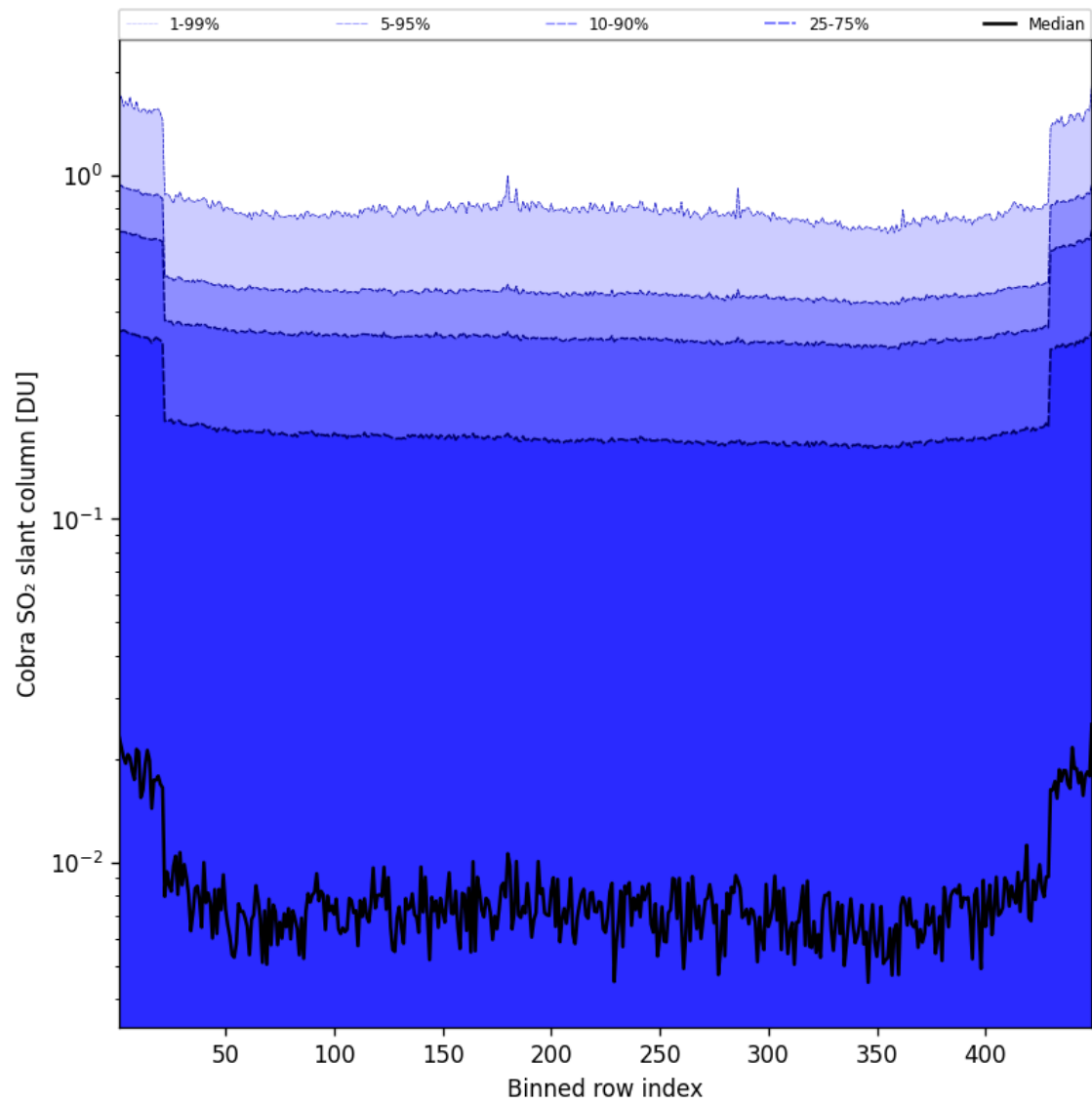


Figure 88: Along track statistics of “Cobra SO₂ slant column” for 2024-12-05 to 2024-12-06

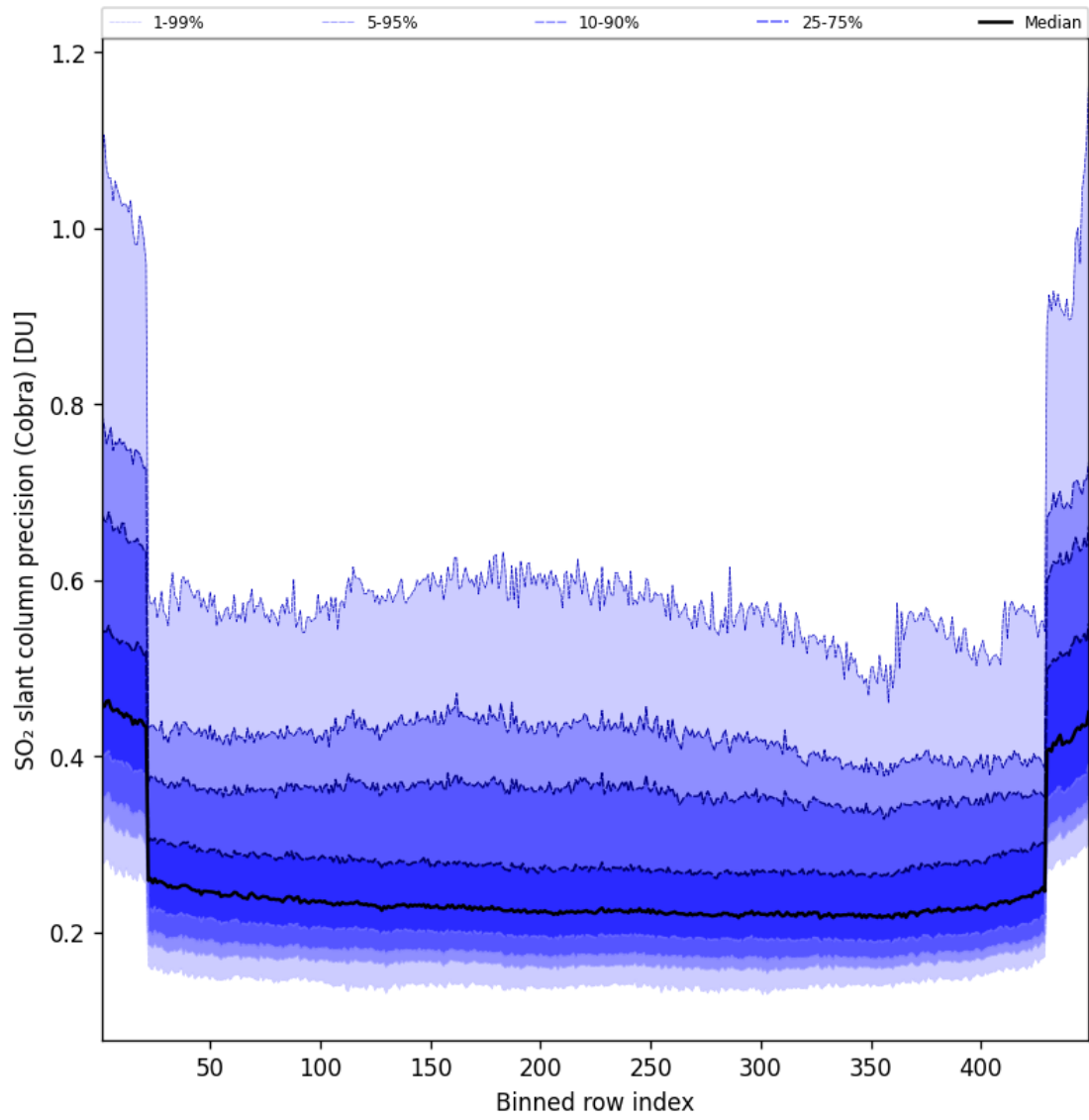


Figure 89: Along track statistics of “SO₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06

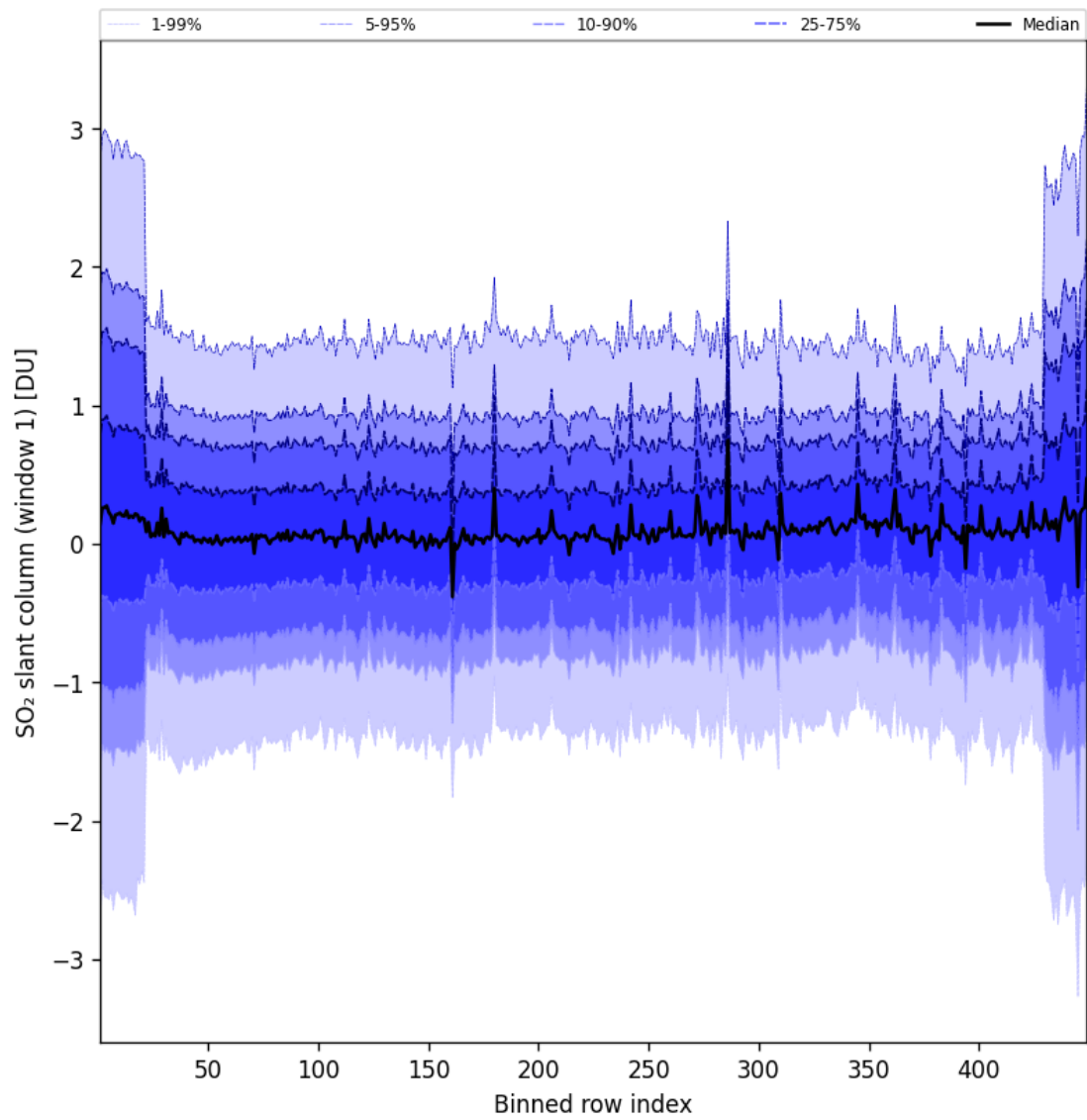


Figure 90: Along track statistics of “SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06

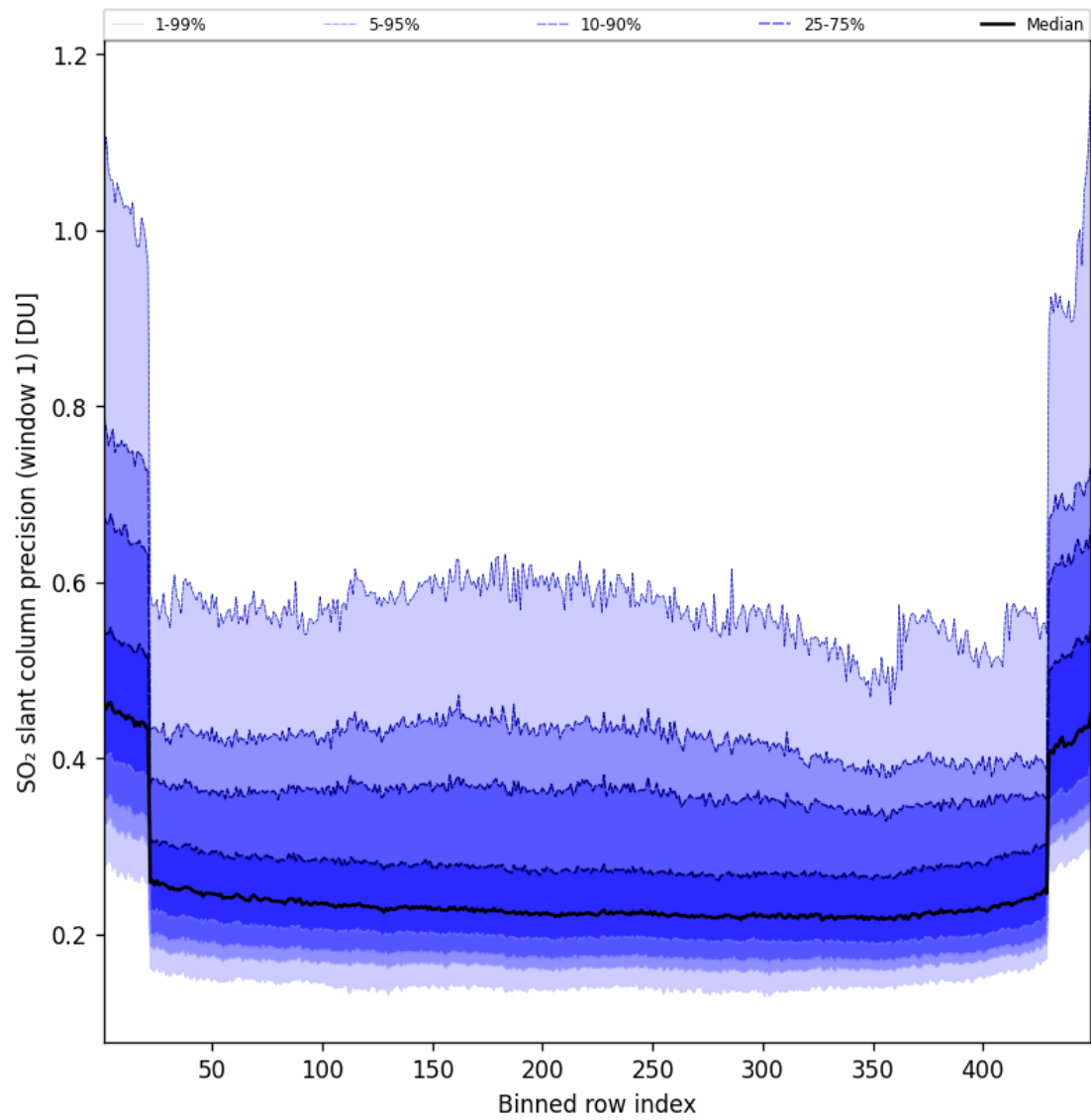


Figure 91: Along track statistics of “SO₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06

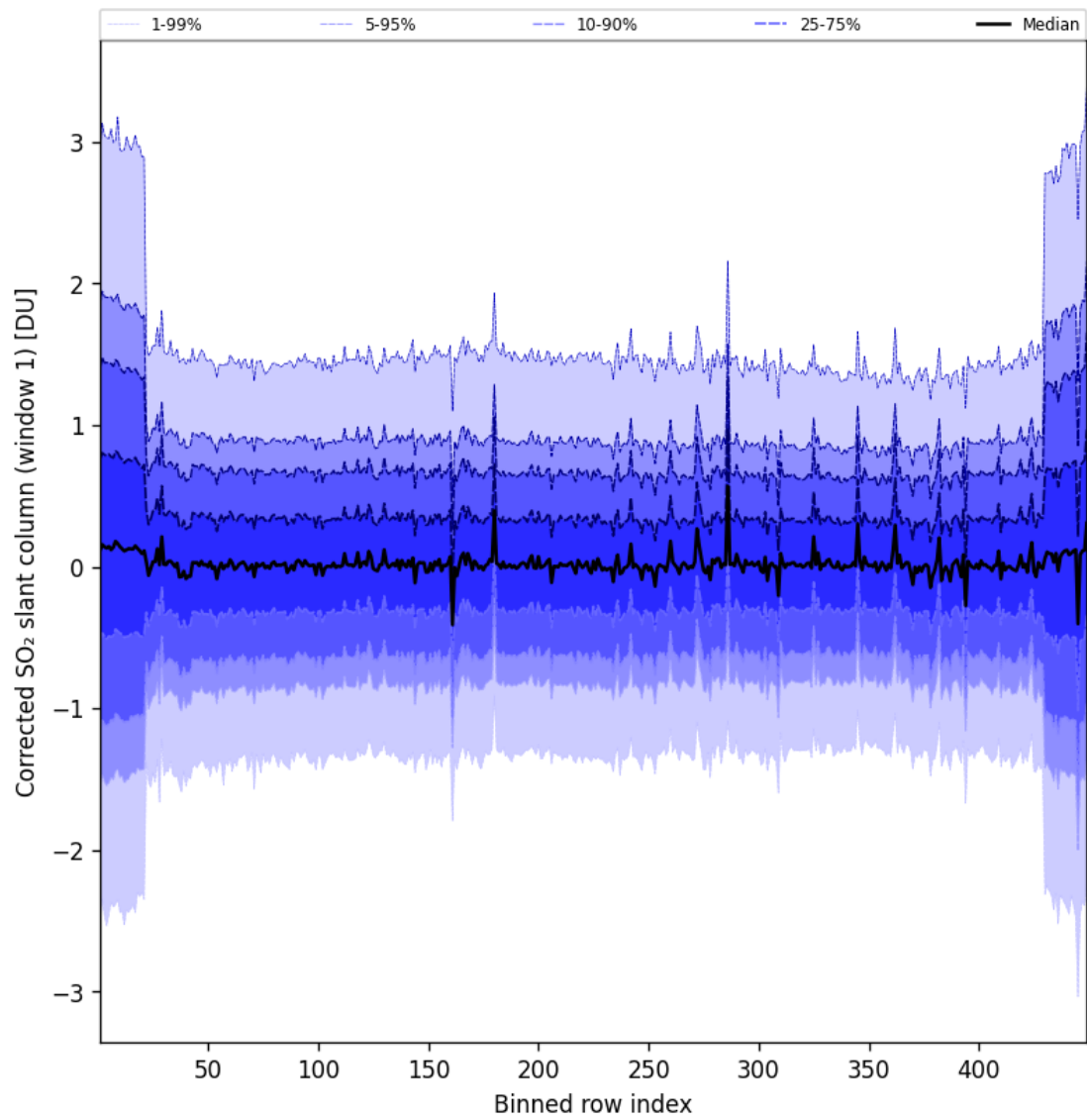


Figure 92: Along track statistics of “Corrected SO₂ slant column (window 1)” for 2024-12-05 to 2024-12-06

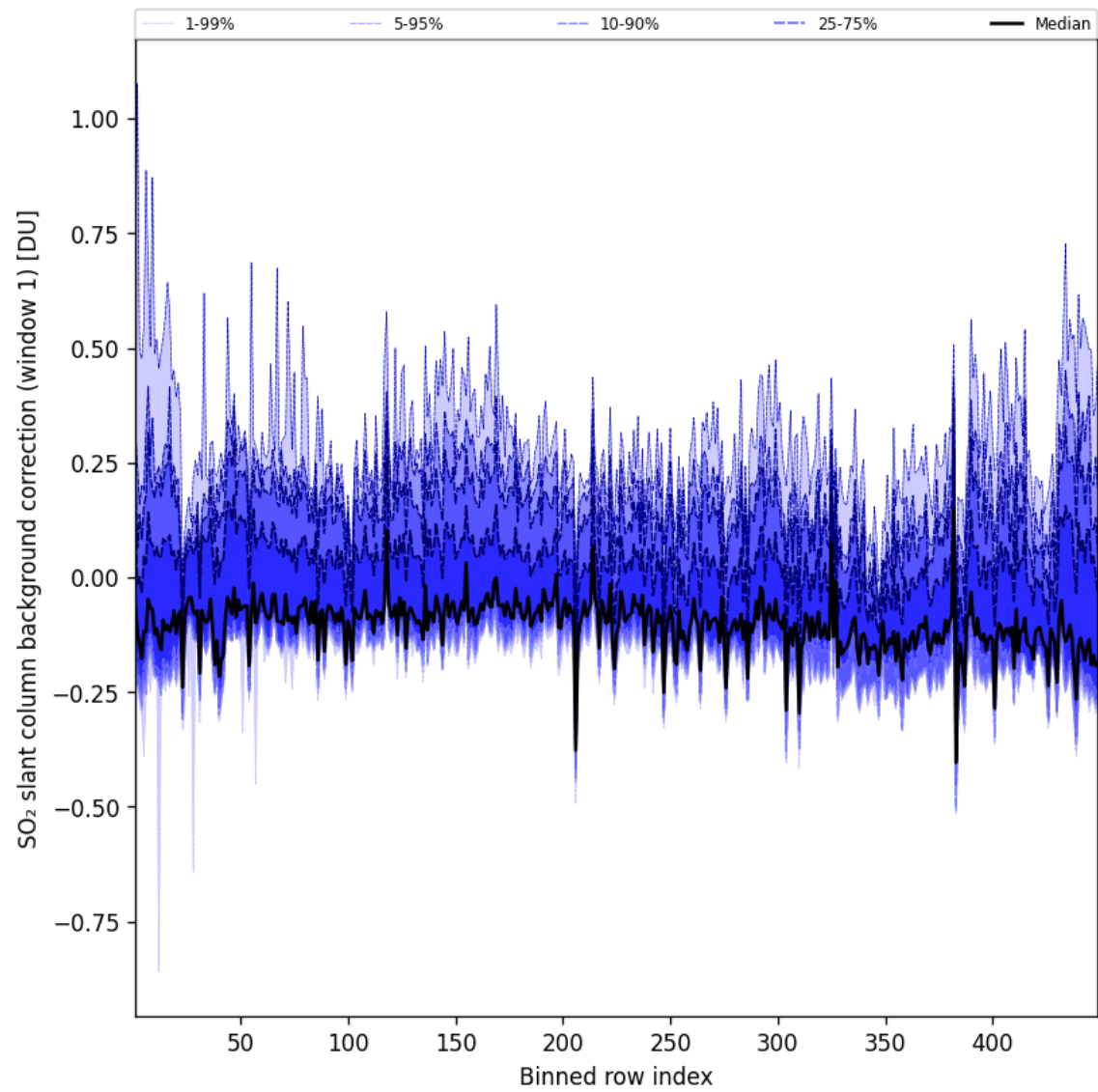


Figure 93: Along track statistics of “SO₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06

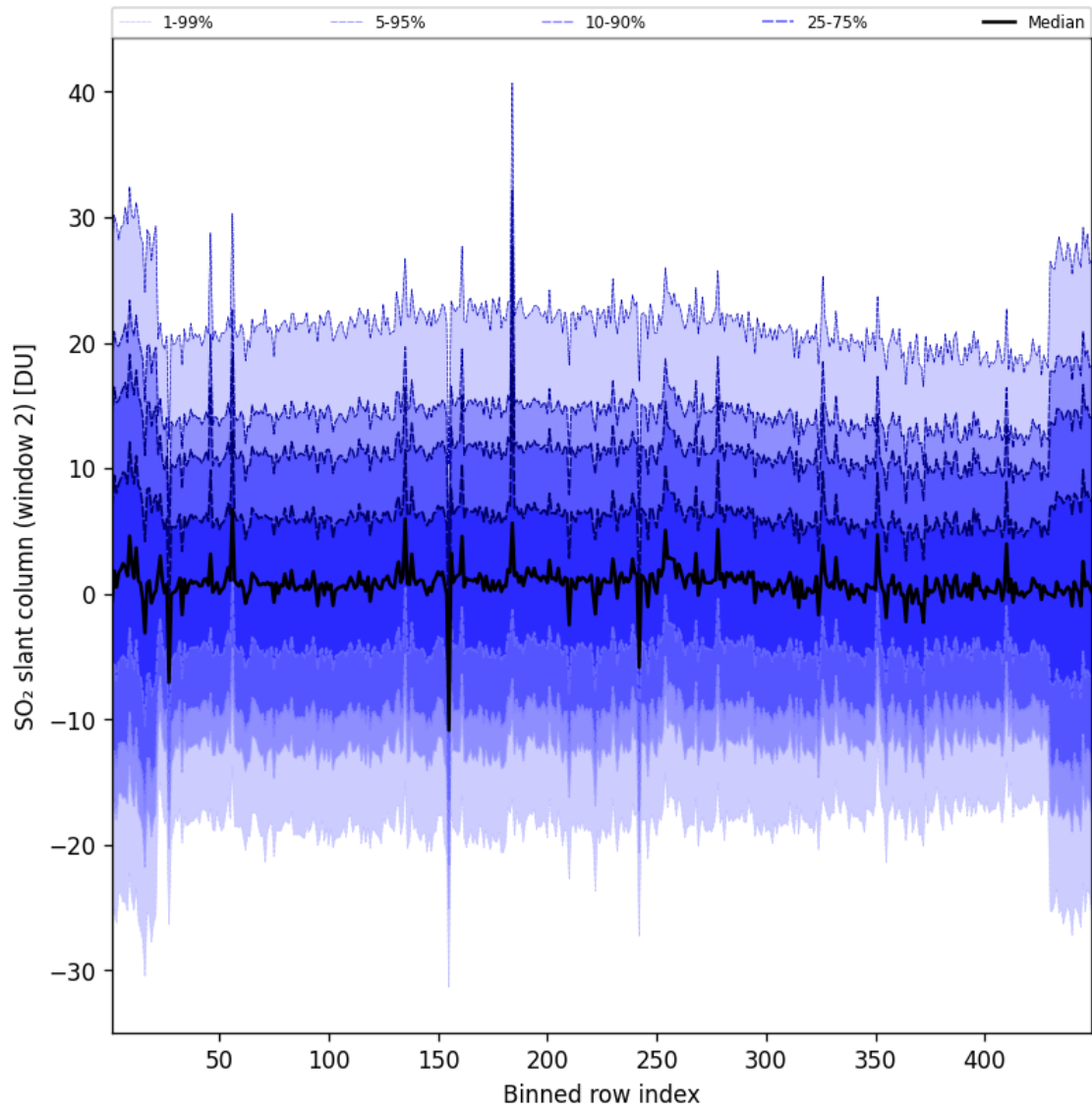


Figure 94: Along track statistics of “SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06

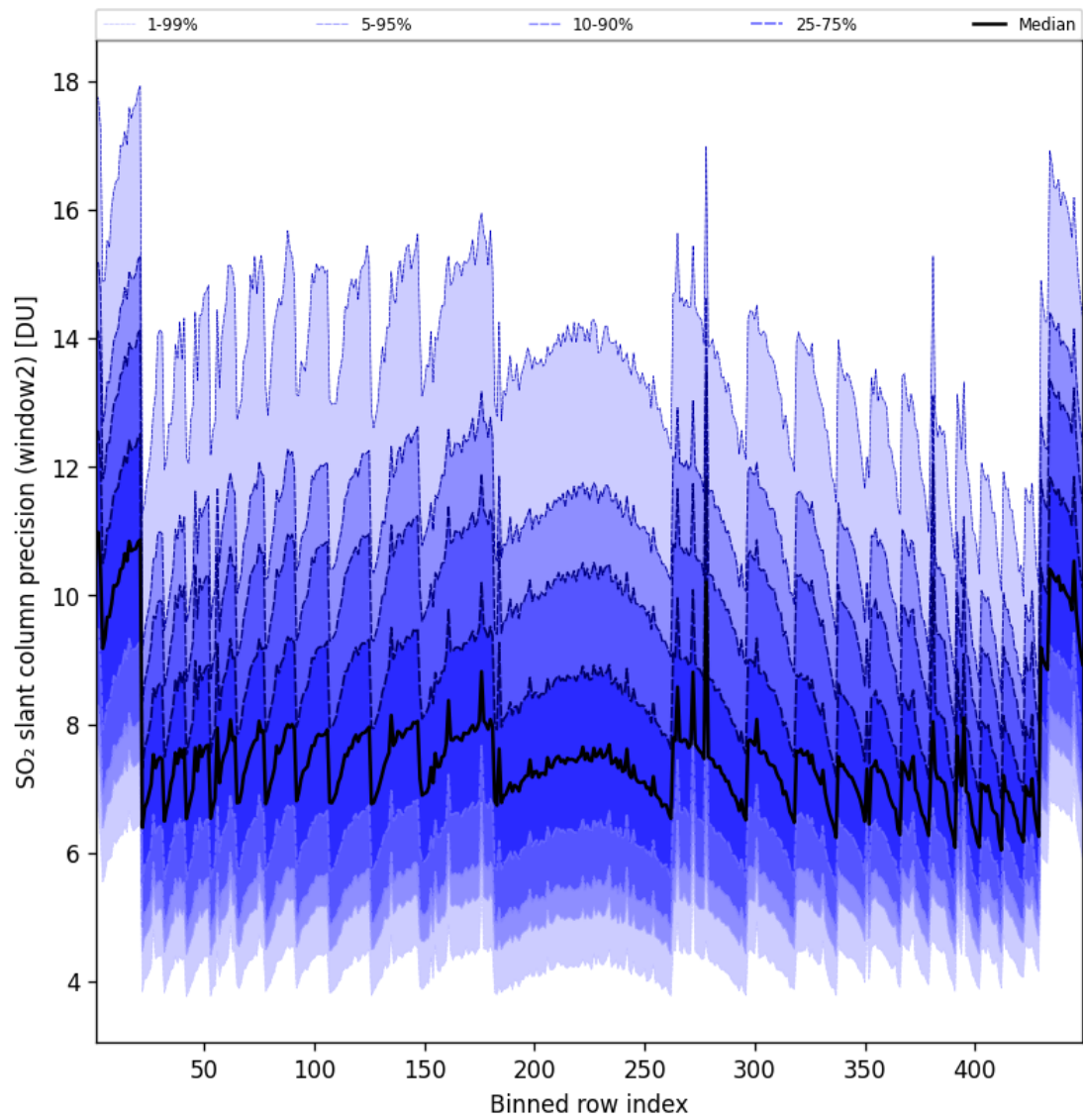


Figure 95: Along track statistics of “SO₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06

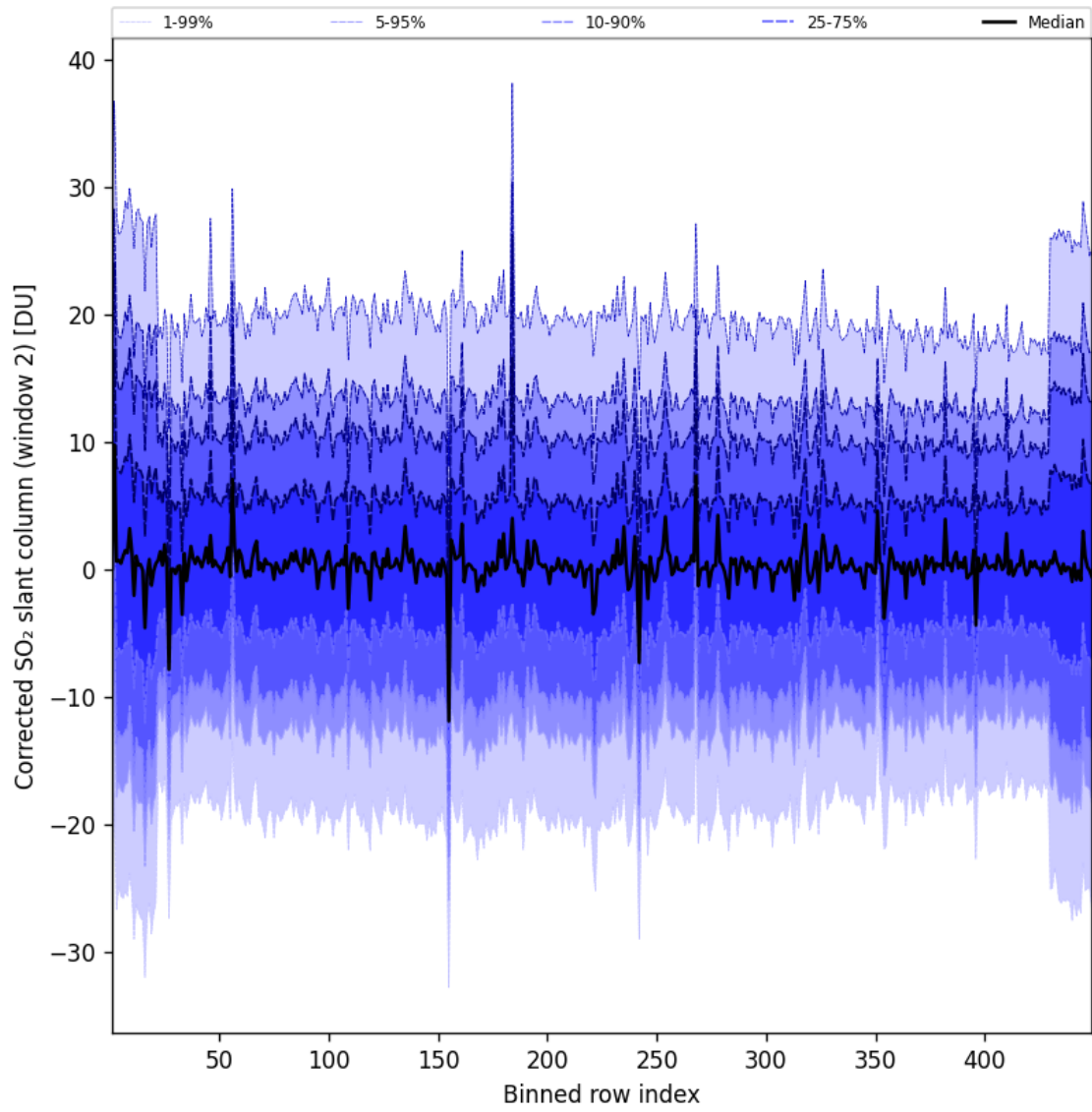


Figure 96: Along track statistics of “Corrected SO₂ slant column (window 2)” for 2024-12-05 to 2024-12-06

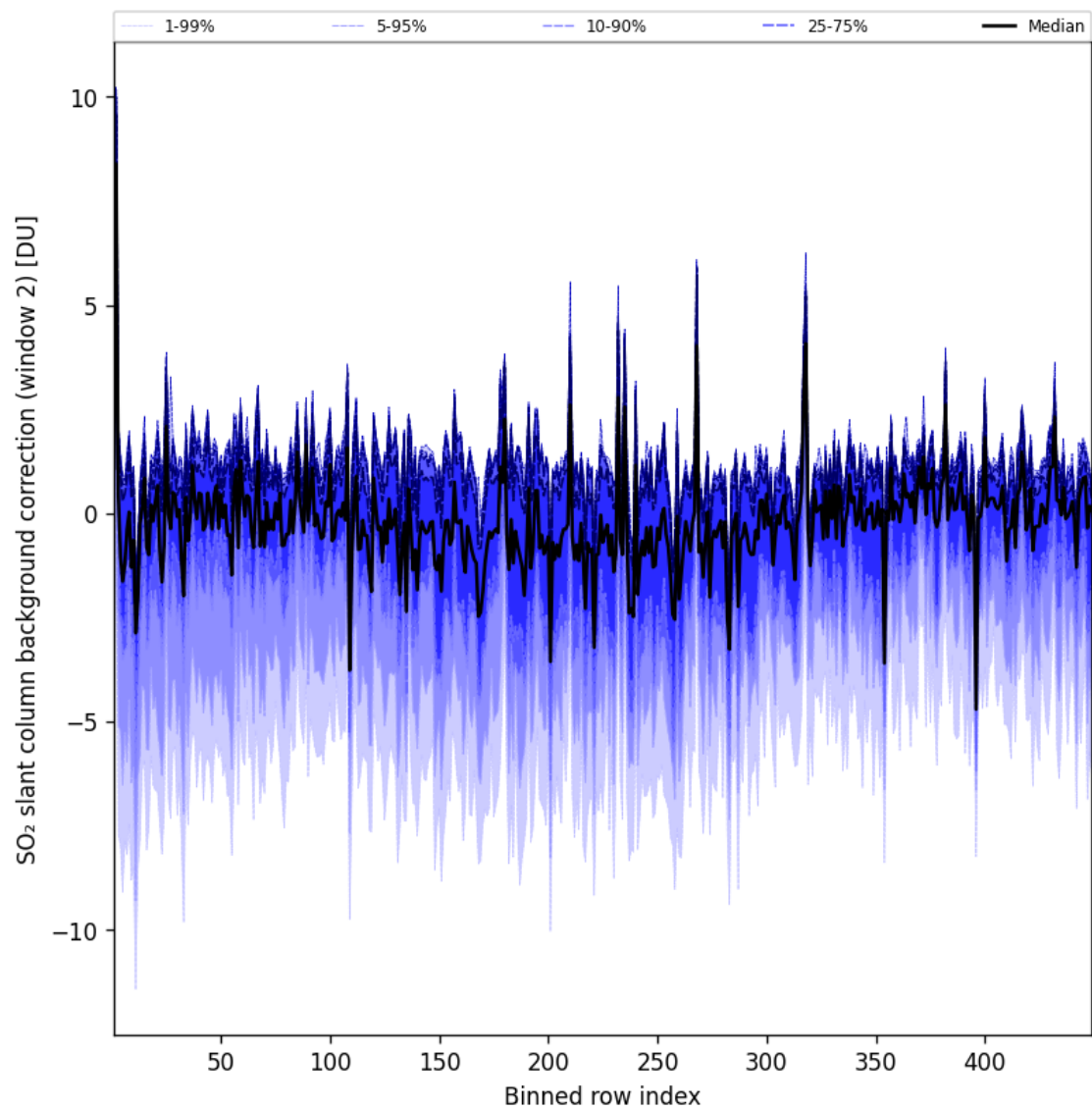


Figure 97: Along track statistics of “SO₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06

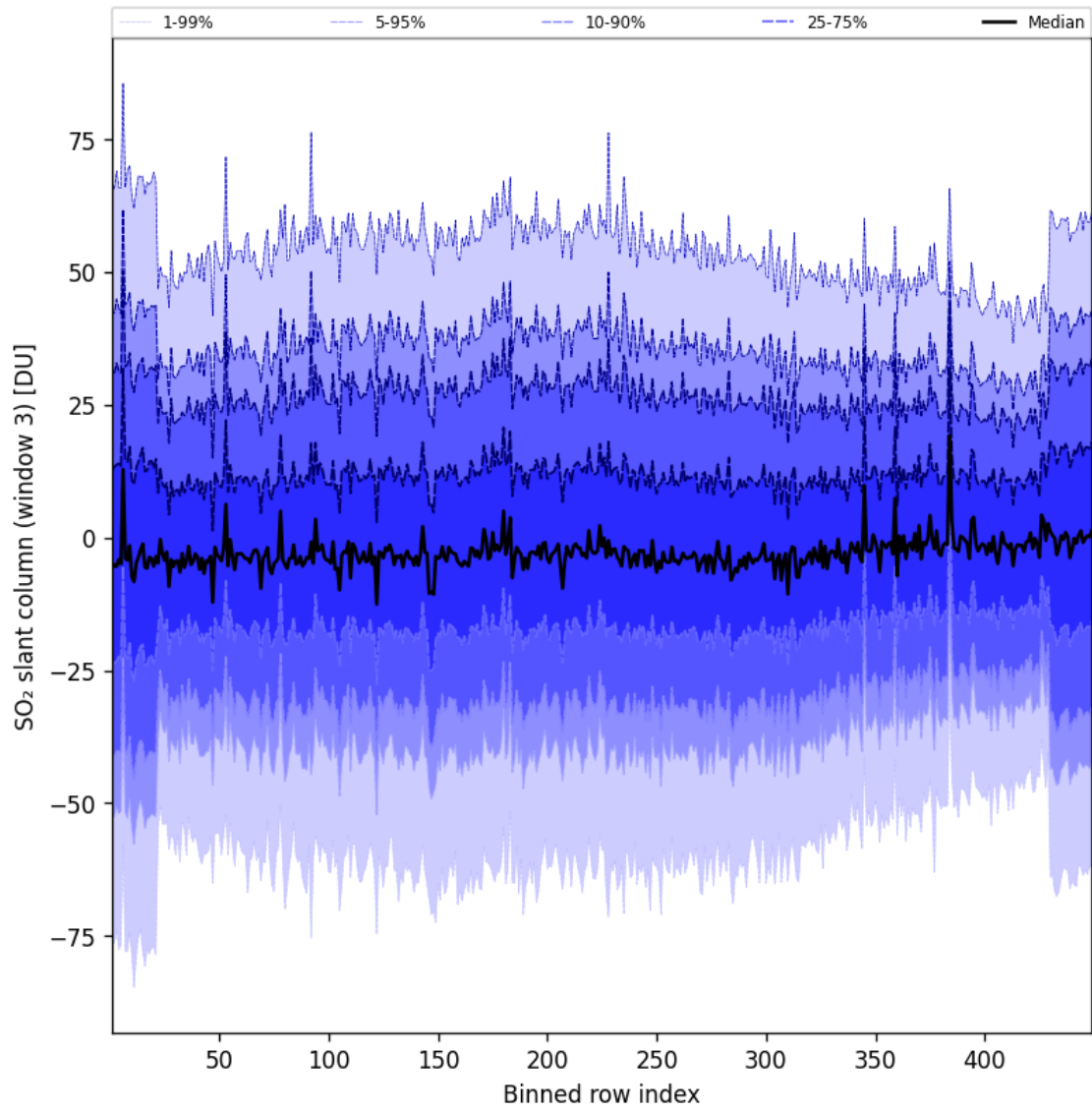


Figure 98: Along track statistics of “SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06

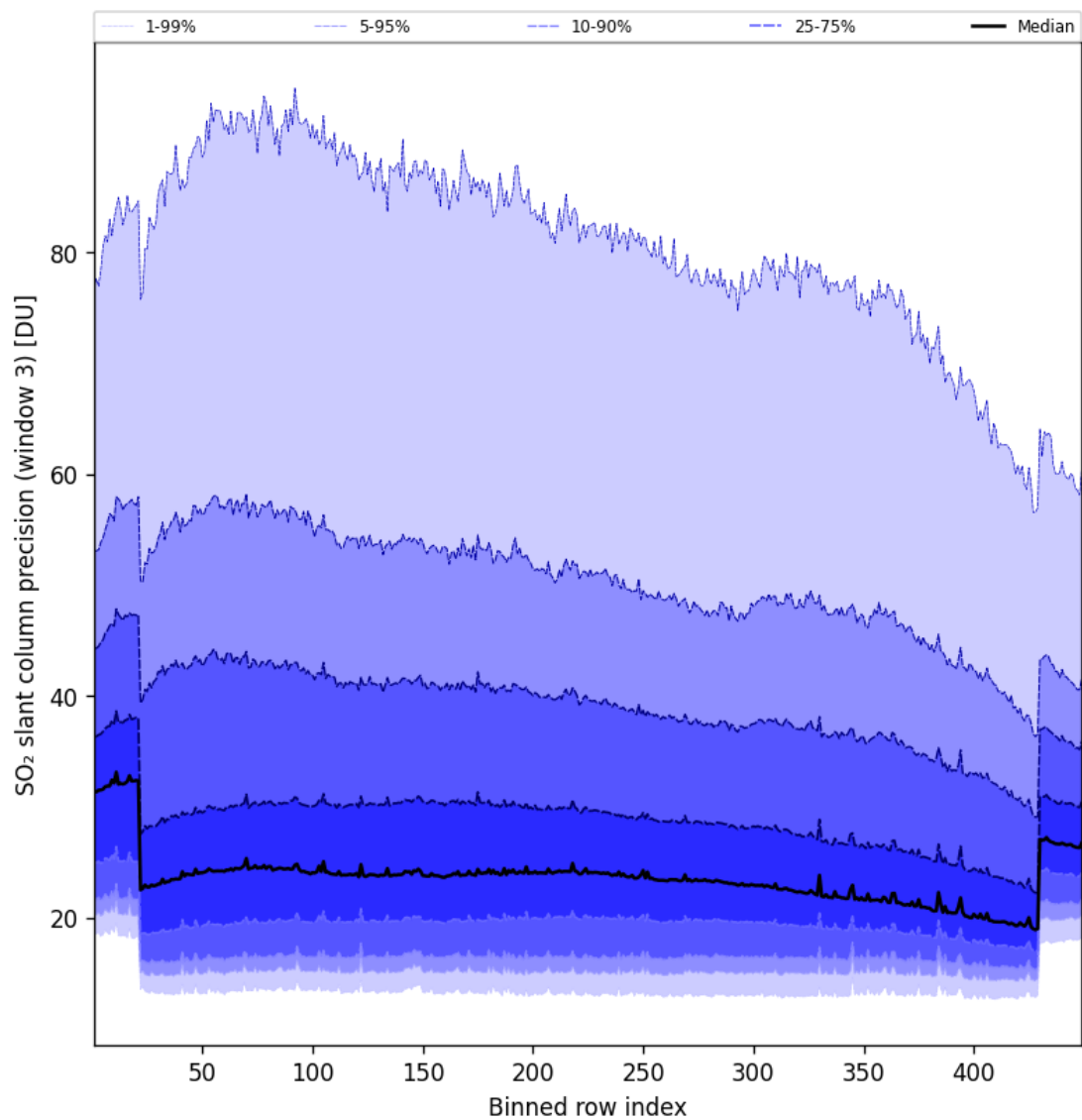


Figure 99: Along track statistics of “SO₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06

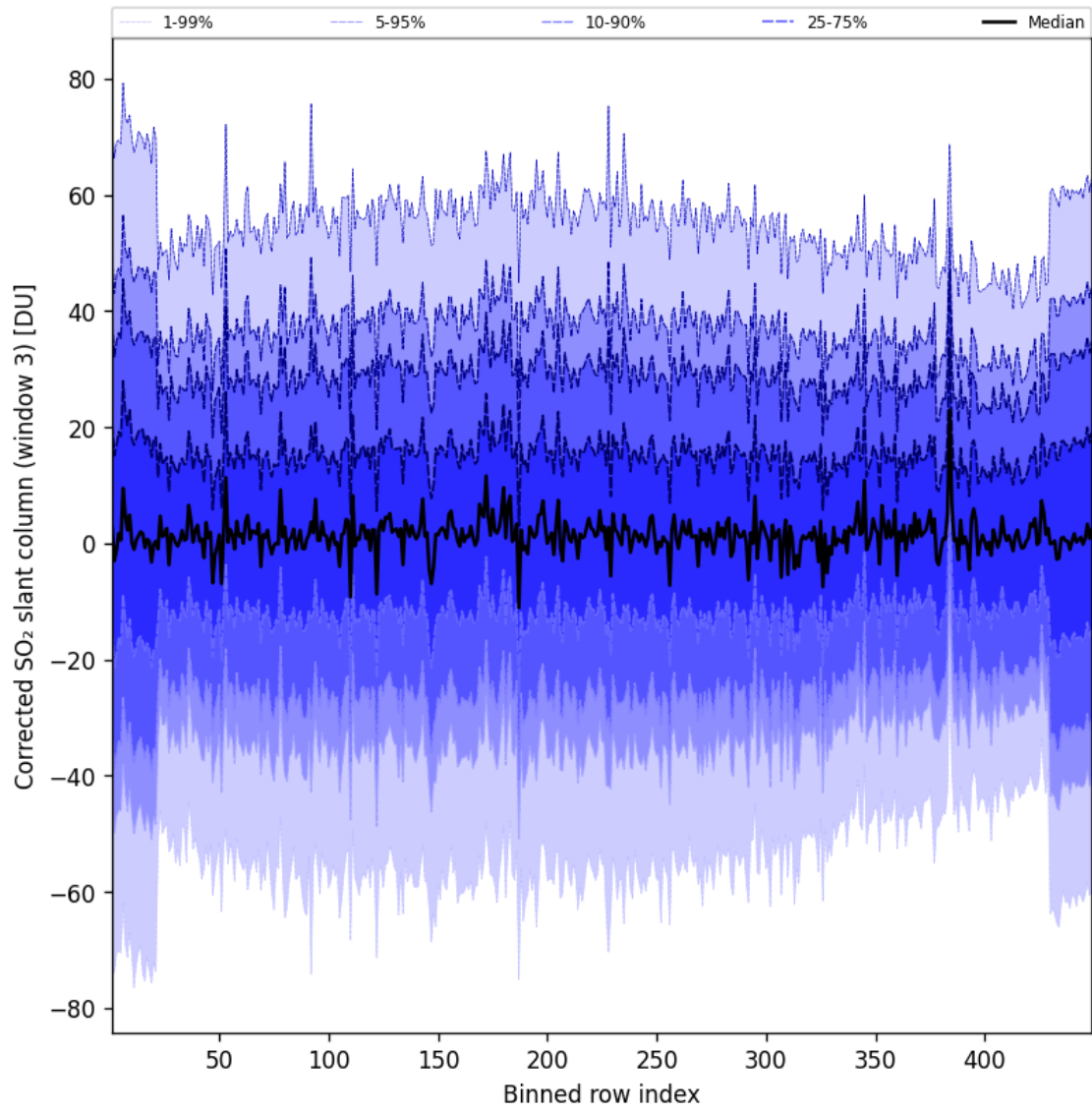


Figure 100: Along track statistics of “Corrected SO₂ slant column (window 3)” for 2024-12-05 to 2024-12-06

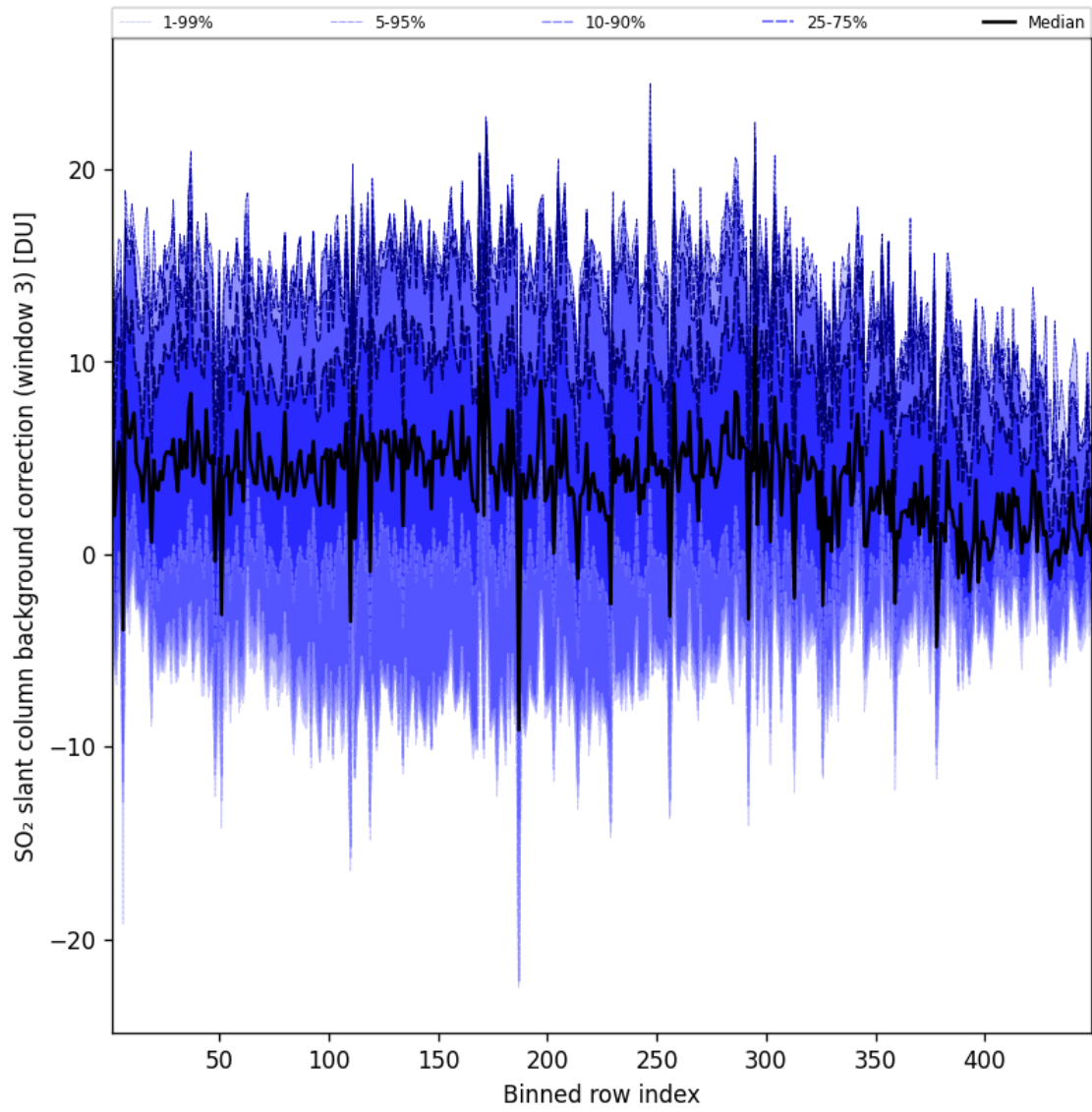


Figure 101: Along track statistics of “SO₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06

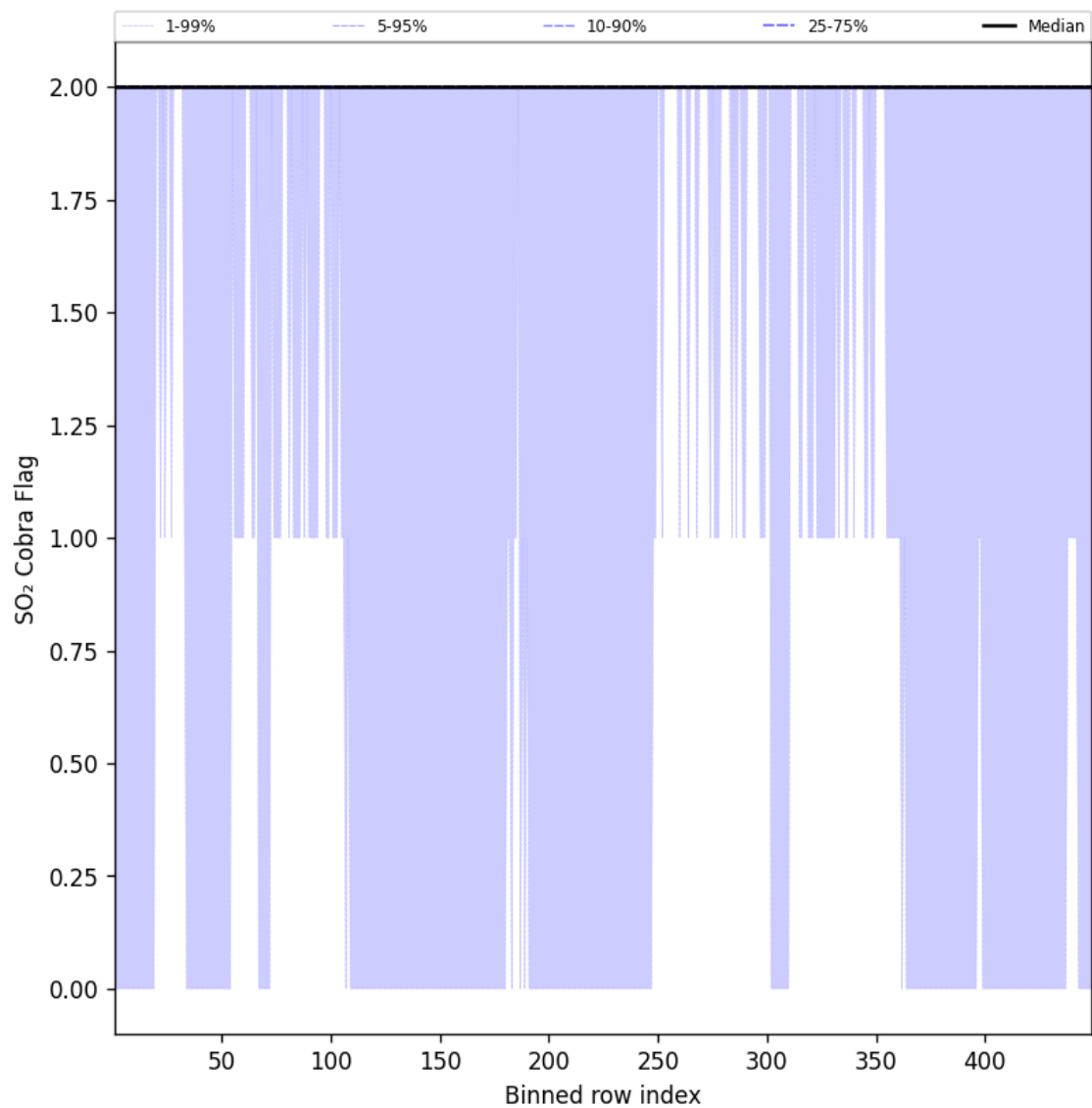


Figure 102: Along track statistics of “SO₂ Cobra Flag” for 2024-12-05 to 2024-12-06

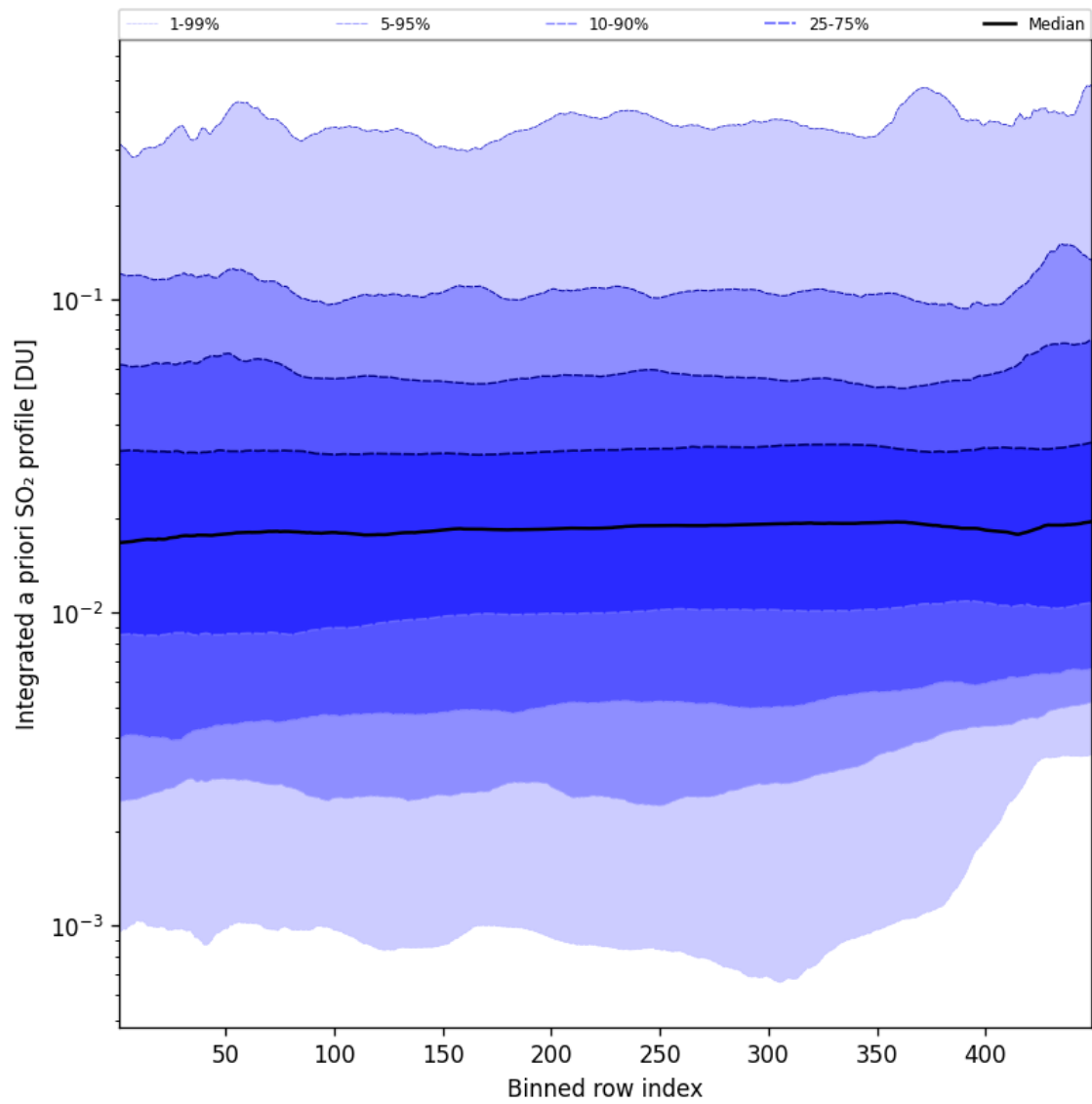


Figure 103: Along track statistics of “Integrated a priori SO₂ profile” for 2024-12-05 to 2024-12-06

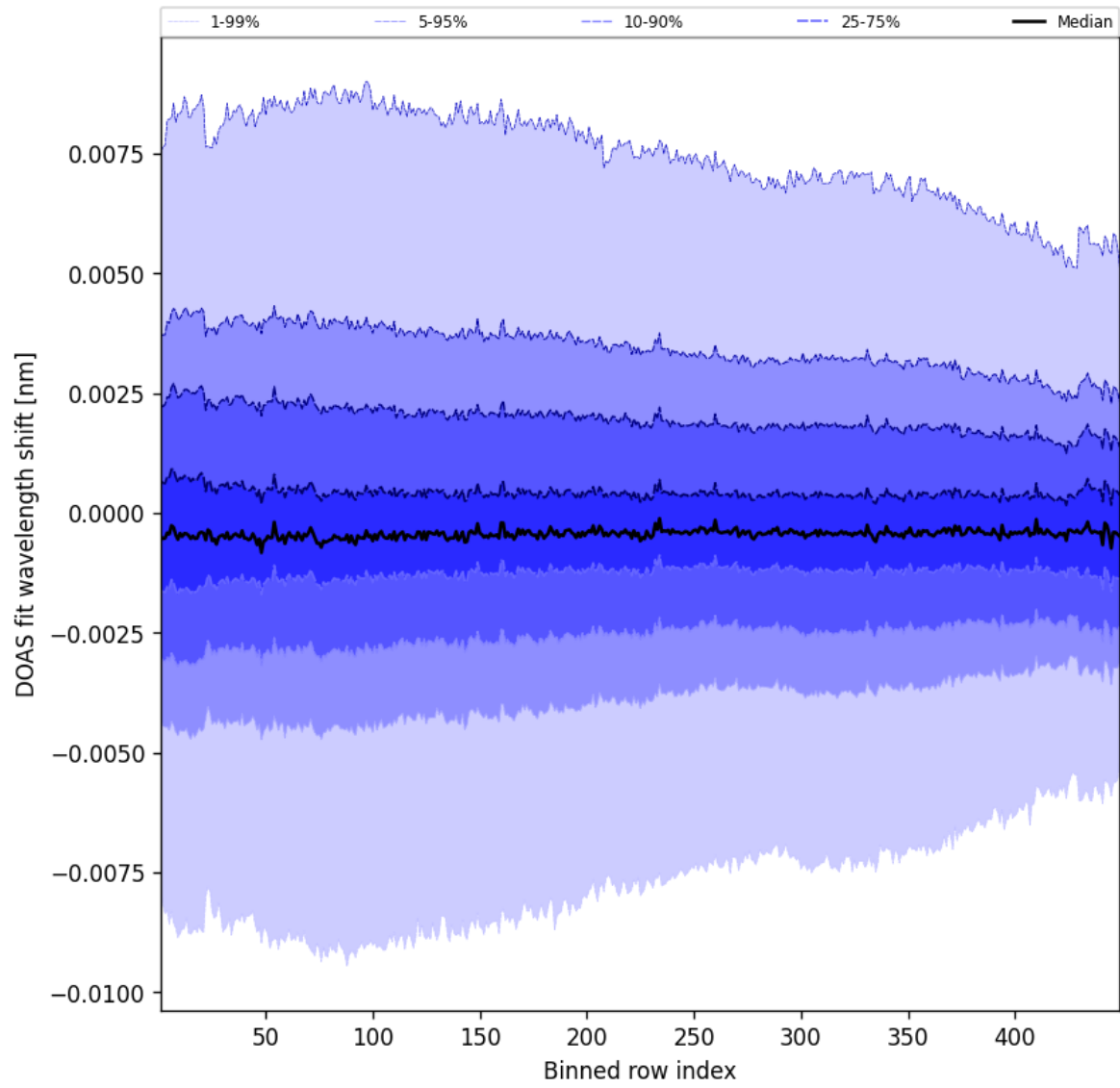


Figure 104: Along track statistics of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06

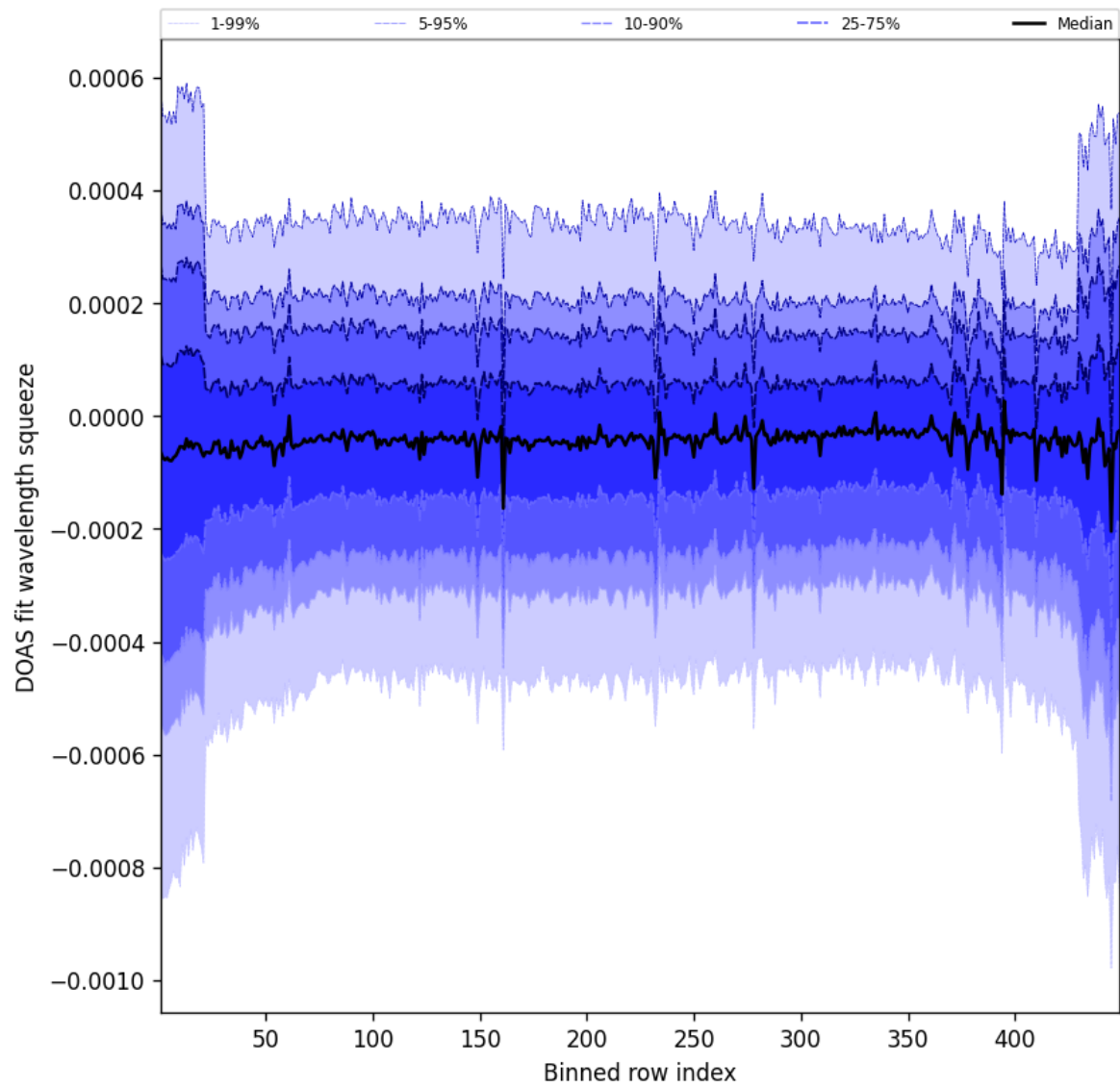


Figure 105: Along track statistics of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06

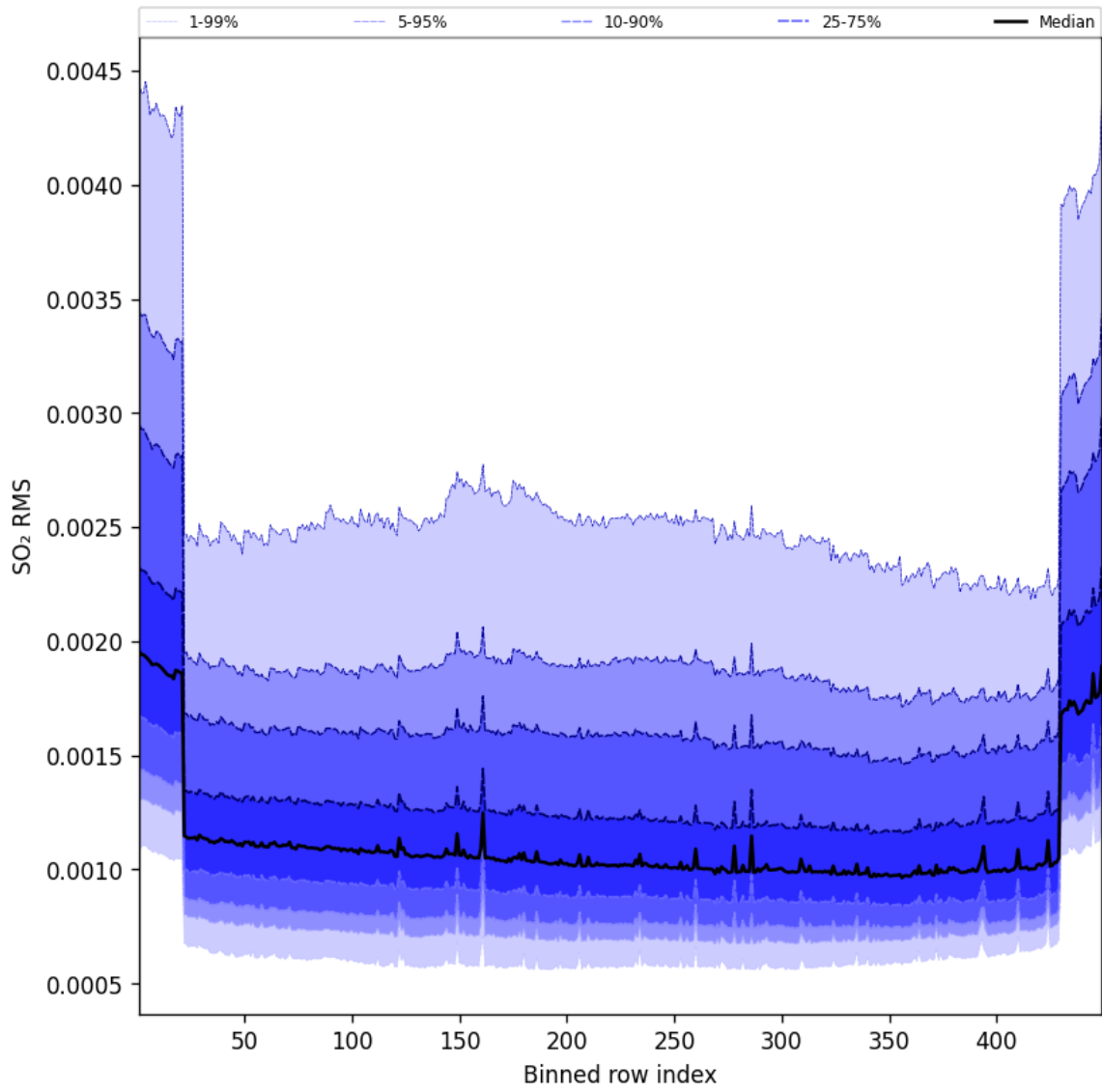


Figure 106: Along track statistics of “SO₂ RMS” for 2024-12-05 to 2024-12-06

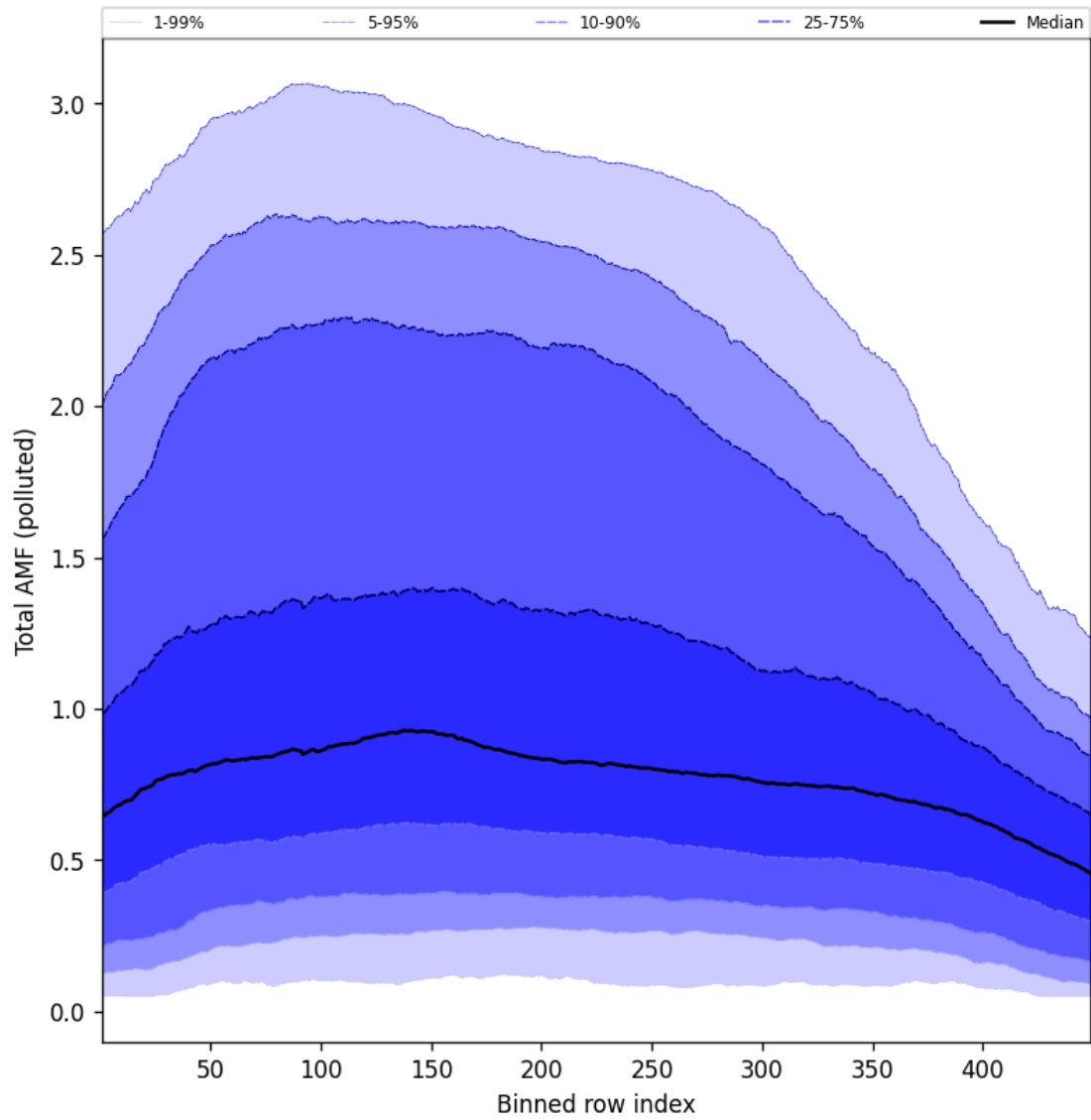


Figure 107: Along track statistics of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06

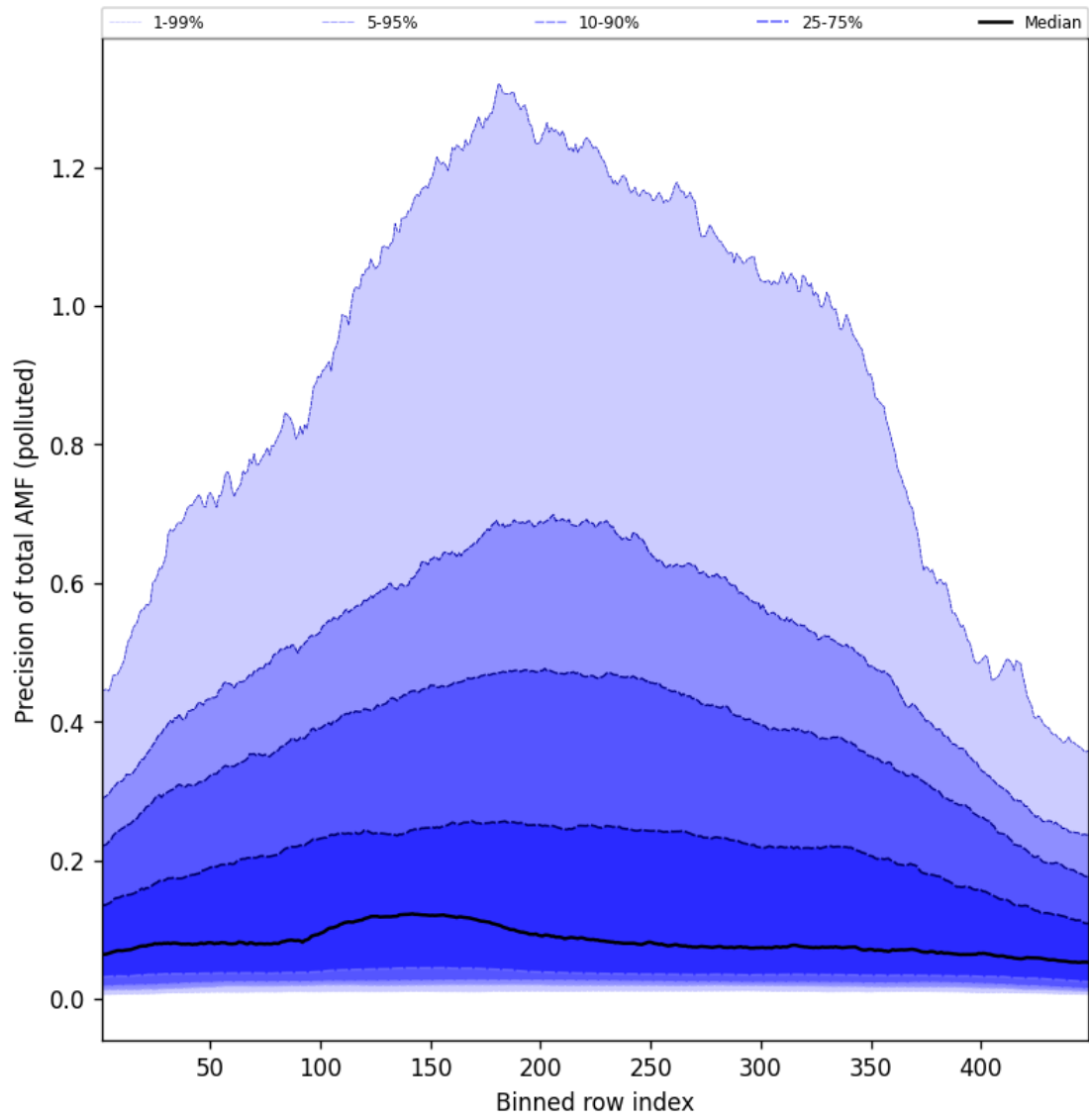


Figure 108: Along track statistics of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06

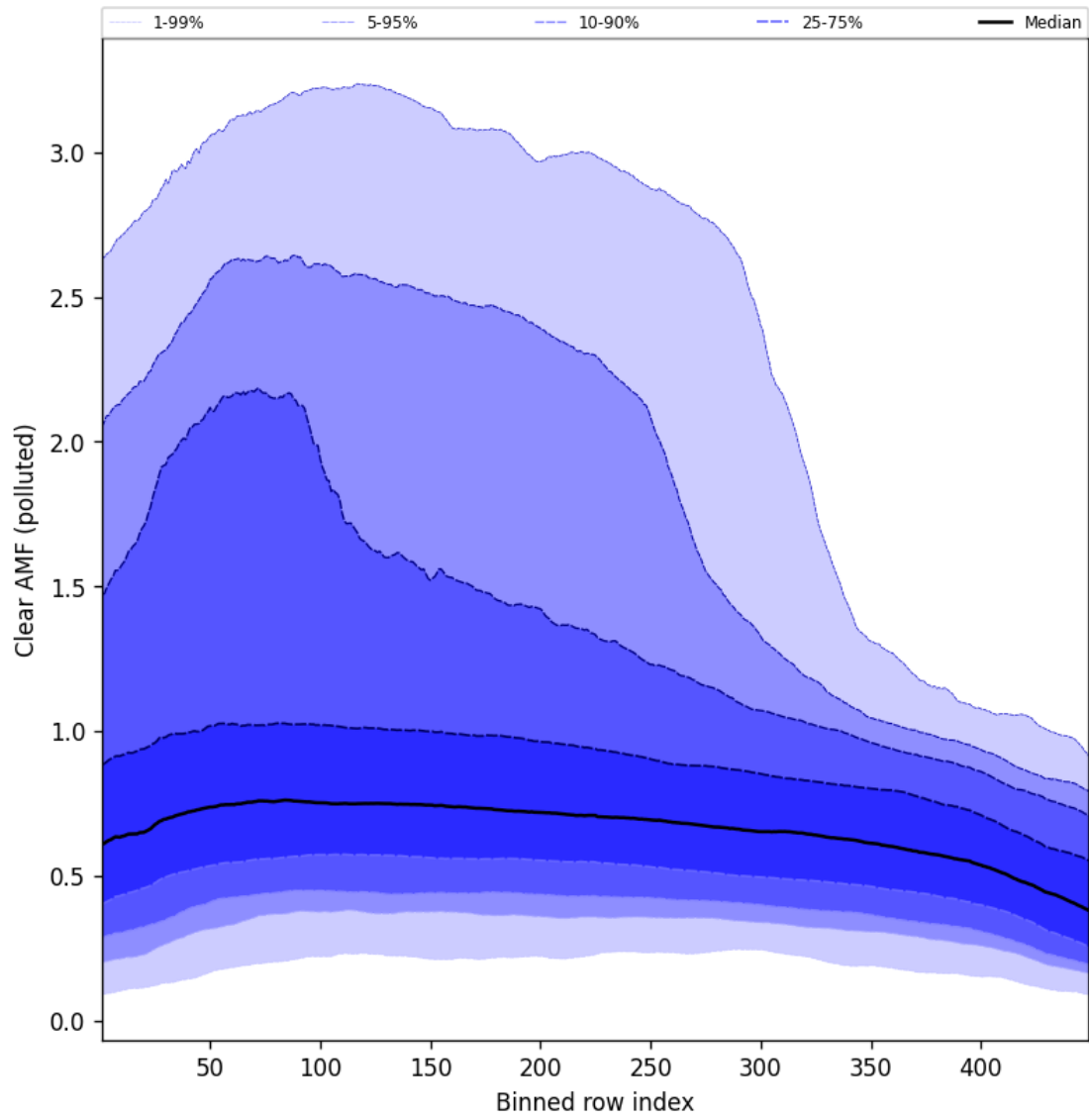


Figure 109: Along track statistics of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06

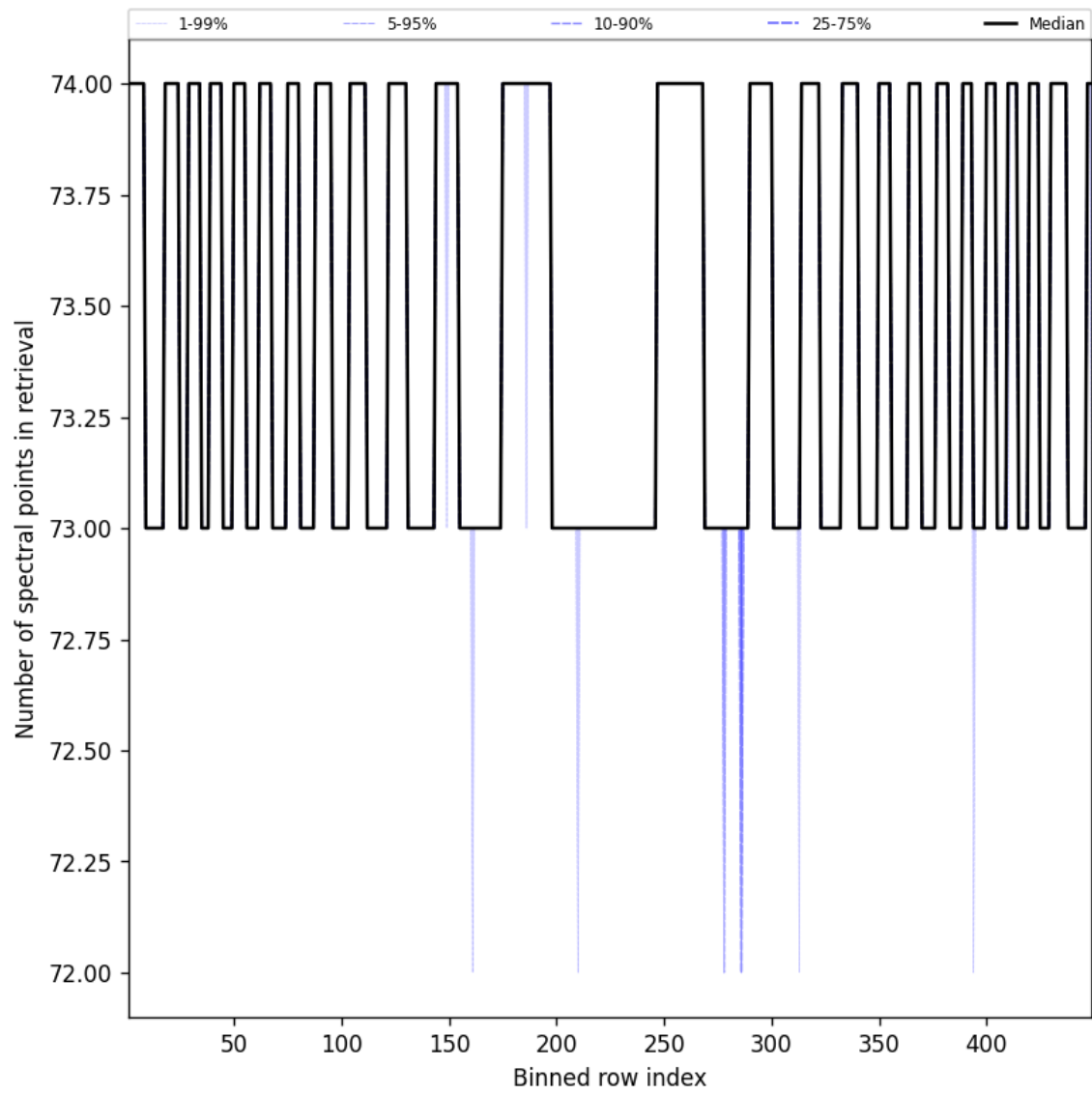


Figure 110: Along track statistics of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06

10 Coincidence density

To investigate the relation between parameters scatter density plots are produced. These include some ‘hidden’ parameters, latitude and the solar- and viewing geometries, in addition to all configured parameters. All combinations of pairs of parameters are included *once*, in one direction alone.

Contents

1	Short Introduction	1
1.1	The list of parameters	1
2	Definitions	1
3	Granule outlines	8
4	Input data monitoring	9
5	Warnings and errors	10
6	World maps	11
7	Zonal average	37
8	Histograms	64
9	Along track statistics	91
10	Coincidence density	118
11	Copyright information of ‘PyCAMA’	118

List of Figures

1	Outline of the granules.	8
2	Input data per granule	9
3	Fraction of pixels with specific warnings and errors during processing	10
4	Map of “SO ₂ vertical column” for 2024-12-05 to 2024-12-06	11
5	Map of “SO ₂ vertical column precision” for 2024-12-05 to 2024-12-06	12
6	Map of “Corrected SO ₂ slant column” for 2024-12-05 to 2024-12-06	13
7	Map of “Cobra SO ₂ slant column” for 2024-12-05 to 2024-12-06	14
8	Map of “SO ₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06	15
9	Map of “SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06	16
10	Map of “SO ₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06	17
11	Map of “Corrected SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06	18
12	Map of “SO ₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06	19
13	Map of “SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06	20
14	Map of “SO ₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06	21
15	Map of “Corrected SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06	22
16	Map of “SO ₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06	23
17	Map of “SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06	24
18	Map of “SO ₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06	25
19	Map of “Corrected SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06	26
20	Map of “SO ₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06	27
21	Map of “Integrated a priori SO ₂ profile” for 2024-12-05 to 2024-12-06	28
22	Map of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06	29
23	Map of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06	30
24	Map of “SO ₂ RMS” for 2024-12-05 to 2024-12-06	31
25	Map of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06	32
26	Map of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06	33
27	Map of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06	34
28	Map of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06	35
29	Map of the number of observations for 2024-12-05 to 2024-12-06	36

30	Zonal average of “QA value” for 2024-12-05 to 2024-12-06.	37
31	Zonal average of “SO ₂ vertical column” for 2024-12-05 to 2024-12-06.	38
32	Zonal average of “SO ₂ vertical column precision” for 2024-12-05 to 2024-12-06.	39
33	Zonal average of “Corrected SO ₂ slant column” for 2024-12-05 to 2024-12-06.	40
34	Zonal average of “Cobra SO ₂ slant column” for 2024-12-05 to 2024-12-06.	41
35	Zonal average of “SO ₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06.	42
36	Zonal average of “SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06.	43
37	Zonal average of “SO ₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06.	44
38	Zonal average of “Corrected SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06.	45
39	Zonal average of “SO ₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06.	46
40	Zonal average of “SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06.	47
41	Zonal average of “SO ₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06.	48
42	Zonal average of “Corrected SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06.	49
43	Zonal average of “SO ₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06.	50
44	Zonal average of “SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06.	51
45	Zonal average of “SO ₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06.	52
46	Zonal average of “Corrected SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06.	53
47	Zonal average of “SO ₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06.	54
48	Zonal average of “SO ₂ Cobra Flag” for 2024-12-05 to 2024-12-06.	55
49	Zonal average of “Integrated a priori SO ₂ profile” for 2024-12-05 to 2024-12-06.	56
50	Zonal average of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06.	57
51	Zonal average of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06.	58
52	Zonal average of “SO ₂ RMS” for 2024-12-05 to 2024-12-06.	59
53	Zonal average of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06.	60
54	Zonal average of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06.	61
55	Zonal average of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06.	62
56	Zonal average of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06.	63
57	Histogram of “QA value” for 2024-12-05 to 2024-12-06	64
58	Histogram of “SO ₂ vertical column” for 2024-12-05 to 2024-12-06	65
59	Histogram of “SO ₂ vertical column precision” for 2024-12-05 to 2024-12-06	66
60	Histogram of “Corrected SO ₂ slant column” for 2024-12-05 to 2024-12-06	67
61	Histogram of “Cobra SO ₂ slant column” for 2024-12-05 to 2024-12-06	68
62	Histogram of “SO ₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06	69
63	Histogram of “SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06	70
64	Histogram of “SO ₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06	71
65	Histogram of “Corrected SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06	72
66	Histogram of “SO ₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06	73
67	Histogram of “SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06	74
68	Histogram of “SO ₂ slant column precision (window2)” for 2024-12-05 to 2024-12-06	75
69	Histogram of “Corrected SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06	76
70	Histogram of “SO ₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06	77
71	Histogram of “SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06	78
72	Histogram of “SO ₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06	79
73	Histogram of “Corrected SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06	80
74	Histogram of “SO ₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06	81
75	Histogram of “SO ₂ Cobra Flag” for 2024-12-05 to 2024-12-06	82
76	Histogram of “Integrated a priori SO ₂ profile” for 2024-12-05 to 2024-12-06	83
77	Histogram of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06	84
78	Histogram of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06	85
79	Histogram of “SO ₂ RMS” for 2024-12-05 to 2024-12-06	86
80	Histogram of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06	87
81	Histogram of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06	88
82	Histogram of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06	89
83	Histogram of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06	90
84	Along track statistics of “QA value” for 2024-12-05 to 2024-12-06	91
85	Along track statistics of “SO ₂ vertical column” for 2024-12-05 to 2024-12-06	92
86	Along track statistics of “SO ₂ vertical column precision” for 2024-12-05 to 2024-12-06	93
87	Along track statistics of “Corrected SO ₂ slant column” for 2024-12-05 to 2024-12-06	94
88	Along track statistics of “Cobra SO ₂ slant column” for 2024-12-05 to 2024-12-06	95
89	Along track statistics of “SO ₂ slant column precision (Cobra)” for 2024-12-05 to 2024-12-06	96
90	Along track statistics of “SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06	97
91	Along track statistics of “SO ₂ slant column precision (window 1)” for 2024-12-05 to 2024-12-06	98

92	Along track statistics of “Corrected SO ₂ slant column (window 1)” for 2024-12-05 to 2024-12-06	99
93	Along track statistics of “SO ₂ slant column background correction (window 1)” for 2024-12-05 to 2024-12-06	100
94	Along track statistics of “SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06	101
95	Along track statistics of “SO ₂ slant column precision (window 2)” for 2024-12-05 to 2024-12-06	102
96	Along track statistics of “Corrected SO ₂ slant column (window 2)” for 2024-12-05 to 2024-12-06	103
97	Along track statistics of “SO ₂ slant column background correction (window 2)” for 2024-12-05 to 2024-12-06	104
98	Along track statistics of “SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06	105
99	Along track statistics of “SO ₂ slant column precision (window 3)” for 2024-12-05 to 2024-12-06	106
100	Along track statistics of “Corrected SO ₂ slant column (window 3)” for 2024-12-05 to 2024-12-06	107
101	Along track statistics of “SO ₂ slant column background correction (window 3)” for 2024-12-05 to 2024-12-06	108
102	Along track statistics of “SO ₂ Cobra Flag” for 2024-12-05 to 2024-12-06	109
103	Along track statistics of “Integrated a priori SO ₂ profile” for 2024-12-05 to 2024-12-06	110
104	Along track statistics of “DOAS fit wavelength shift” for 2024-12-05 to 2024-12-06	111
105	Along track statistics of “DOAS fit wavelength squeeze” for 2024-12-05 to 2024-12-06	112
106	Along track statistics of “SO ₂ RMS” for 2024-12-05 to 2024-12-06	113
107	Along track statistics of “Total AMF (polluted)” for 2024-12-05 to 2024-12-06	114
108	Along track statistics of “Precision of total AMF (polluted)” for 2024-12-05 to 2024-12-06	115
109	Along track statistics of “Clear AMF (polluted)” for 2024-12-05 to 2024-12-06	116
110	Along track statistics of “Number of spectral points in retrieval” for 2024-12-05 to 2024-12-06	117

List of Tables

1	Parameterlist and basic statistics for the analysis	2
2	Percentile ranges	3
3	Parameterlist and basic statistics for the analysis for observations in the northern hemisphere	4
4	Parameterlist and basic statistics for the analysis for observations in the southern hemisphere	5
5	Parameterlist and basic statistics for the analysis for observations over water	6
6	Parameterlist and basic statistics for the analysis for observations over land	7

11 Copyright information of ‘PyCAMA’

Copyright © 2005 – 2023, Maarten Sneep (KNMI).

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

This software is provided by the copyright holders and contributors “as is” and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the copyright holder or contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if advised of the possibility of such damage.

Maarten Sneep (maarten.sneep@knmi.nl).