

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-03-15 (02:16)

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]	0.655 ± 0.404	17302455	0.995	0.770	1.000	0.0	1.000
sulfurdioxide total vertical column [DU]	$(4.595 \pm 125.490) \times 10^{-2}$	17302455	0.263	0.467	1.173×10^{-2}	-192	237
sulfurdioxide total vertical column precision [DU]	0.579 ± 0.864	17302455	0.197	0.396	0.336	4.341×10^{-2}	154
sulfurdioxide slant column density corrected [DU]	$(2.336 \pm 40.891) \times 10^{-2}$	17302455	0.250	0.361	9.891×10^{-3}	-13.2	231
sulfurdioxide slant column density cobra [DU]	$(2.303 \pm 38.655) \times 10^{-2}$	17302455	0.250	0.361	9.891×10^{-3}	-13.2	51.2
sulfurdioxide slant column density cobra precision [DU]	0.296 ± 0.150	17302455	0.213	0.149	0.247	8.128×10^{-2}	19.4
sulfurdioxide slant column density window1 [DU]	0.215 ± 0.718	17302455	0.275	0.736	0.236	-98.9	101
sulfurdioxide slant column density window1 precision [DU]	0.296 ± 0.150	17302455	0.213	0.149	0.247	8.128×10^{-2}	19.4
sulfurdioxide slant column density corrected win1 [DU]	$(8.004 \pm 70.557) \times 10^{-2}$	17302455	7.500×10^{-2}	0.716	5.885×10^{-2}	-98.9	102
background so2 slant column offset window1 [DU]	-0.135 ± 0.210	17302455	-0.260	0.210	-0.188	-1.49	4.30
sulfurdioxide slant column density window2 [DU]	3.30 ± 9.17	17302455	2.25	11.6	3.01	-1.177×10^3	1.284×10^3
sulfurdioxide slant column density window2 precision [DU]	8.15 ± 2.23	17302455	7.43	2.58	7.81	2.11	671
sulfurdioxide slant column density corrected win2 [DU]	2.16 ± 8.83	17302455	1.75	11.2	2.10	-1.178×10^3	1.282×10^3
background so2 slant column offset window2 [DU]	-1.14 ± 2.60	17302455	0.750	3.48	-0.309	-15.5	13.9
sulfurdioxide slant column density window3 [DU]	-17.8 ± 24.4	17302455	-19.6	30.9	-18.0	-323	888
sulfurdioxide slant column density window3 precision [DU]	28.5 ± 13.6	17302455	22.5	9.57	24.8	9.31	702
sulfurdioxide slant column density corrected win3 [DU]	-10.7 ± 23.3	17302455	-10.6	29.6	-10.7	-320	900
background so2 slant column offset window3 [DU]	7.14 ± 7.58	17302455	1.68	12.5	6.50	-21.1	35.0
sulfurdioxide slant column cobra flag [1]	1.97 ± 0.22	17302455	1.67	0.0	2.00	0.0	2.00
integrated so2 profile apriori [DU]	$(3.261 \pm 8.288) \times 10^{-2}$	17302455	1.316×10^{-2}	1.575×10^{-2}	1.481×10^{-2}	7.776×10^{-5}	3.30
fitted radiance shift [nm]	$(-4.511 \pm 26.940) \times 10^{-4}$	17302455	-5.000×10^{-4}	1.888×10^{-3}	-4.314×10^{-4}	-5.095×10^{-2}	4.289×10^{-2}
fitted radiance squeeze [1]	$(-3.793 \pm 20.954) \times 10^{-5}$	17302455	-1.000×10^{-5}	2.105×10^{-4}	-1.941×10^{-5}	-1.547×10^{-2}	2.133×10^{-2}
fitted root mean square [1]	$(1.304 \pm 0.625) \times 10^{-3}$	17302455	9.250×10^{-4}	5.869×10^{-4}	1.105×10^{-3}	3.156×10^{-4}	6.377×10^{-2}
sulfurdioxide total air mass factor polluted [1]	0.824 ± 0.426	17302455	0.620	0.560	0.766	5.000×10^{-2}	2.75
sulfurdioxide total air mass factor polluted precision [1]	0.116 ± 0.127	17302455	3.500×10^{-2}	0.117	6.752×10^{-2}	2.500×10^{-3}	2.10
sulfurdioxide clear air mass factor polluted [1]	0.701 ± 0.313	17302455	0.580	0.394	0.655	2.580×10^{-2}	2.76
number of spectral points in retrieval [1]	73.4 ± 0.5	17302455	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	5.000×10^{-2}	0.120	0.230	1.000	1.000	1.000	1.000	1.000
sulfurdioxide total vertical column [DU]	-2.70	-0.974	-0.572	-0.376	-0.217	0.250	0.425	0.651	1.13	3.33
sulfurdioxide total vertical column precision [DU]	9.930×10^{-2}	0.133	0.159	0.183	0.215	0.611	0.840	1.14	1.75	4.11
sulfurdioxide slant column density corrected [DU]	-0.886	-0.495	-0.354	-0.262	-0.168	0.192	0.293	0.396	0.564	1.13
sulfurdioxide slant column density cobra [DU]	-0.886	-0.495	-0.354	-0.262	-0.168	0.192	0.293	0.396	0.564	1.13
sulfurdioxide slant column density cobra precision [DU]	0.138	0.163	0.176	0.186	0.200	0.350	0.412	0.472	0.566	0.849
sulfurdioxide slant column density window1 [DU]	-1.85	-0.887	-0.554	-0.347	-0.140	0.596	0.784	0.964	1.24	2.05
sulfurdioxide slant column density window1 precision [DU]	0.138	0.163	0.176	0.186	0.200	0.350	0.412	0.472	0.566	0.849
sulfurdioxide slant column density corrected win1 [DU]	-1.69	-0.926	-0.656	-0.479	-0.294	0.421	0.621	0.823	1.15	2.16
background so2 slant column offset window1 [DU]	-0.407	-0.337	-0.309	-0.291	-0.267	-5.755×10^{-2}	2.208×10^{-2}	0.111	0.242	0.587
sulfurdioxide slant column density window2 [DU]	-17.6	-11.1	-7.84	-5.42	-2.66	8.94	12.0	14.8	18.7	26.9
sulfurdioxide slant column density window2 precision [DU]	4.35	5.26	5.78	6.19	6.68	9.26	10.1	11.0	12.2	14.8
sulfurdioxide slant column density corrected win2 [DU]	-18.9	-12.0	-8.72	-6.24	-3.47	7.72	10.5	13.1	16.6	23.9
background so2 slant column offset window2 [DU]	-8.19	-6.14	-5.01	-4.04	-2.76	0.714	0.999	1.25	1.68	3.09
sulfurdioxide slant column density window3 [DU]	-77.2	-57.5	-48.0	-41.0	-33.3	-2.36	5.66	12.9	22.5	41.5
sulfurdioxide slant column density window3 precision [DU]	14.0	16.4	18.2	19.5	21.1	30.7	35.7	42.1	54.4	86.6
sulfurdioxide slant column density corrected win3 [DU]	-68.2	-48.8	-39.5	-32.8	-25.4	4.16	11.7	18.5	27.6	46.0
background so2 slant column offset window3 [DU]	-7.82	-3.32	-1.94	-0.747	0.852	13.3	15.7	17.4	19.5	23.1
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]	1.595×10^{-3}	3.126×10^{-3}	5.001×10^{-3}	6.631×10^{-3}	8.942×10^{-3}	2.469×10^{-2}	3.412×10^{-2}	5.598×10^{-2}	0.118	0.373
fitted radiance shift [nm]	-8.568×10^{-3}	-4.452×10^{-3}	-3.016×10^{-3}	-2.176×10^{-3}	-1.431×10^{-3}	4.567×10^{-4}	1.179×10^{-3}	2.083×10^{-3}	3.653×10^{-3}	7.962×10^{-3}
fitted radiance squeeze [1]	-7.508×10^{-4}	-3.824×10^{-4}	-2.615×10^{-4}	-1.931×10^{-4}	-1.290×10^{-4}	8.146×10^{-5}	1.321×10^{-4}	1.787×10^{-4}	2.453×10^{-4}	4.020×10^{-4}
fitted root mean square [1]	5.895×10^{-4}	7.252×10^{-4}	7.959×10^{-4}	8.503×10^{-4}	9.179×10^{-4}	1.505×10^{-3}	1.782×10^{-3}	2.051×10^{-3}	2.489×10^{-3}	3.635×10^{-3}
sulfurdioxide total air mass factor polluted [1]	8.769×10^{-2}	0.220	0.318	0.404	0.512	1.07	1.25	1.42	1.63	1.99
sulfurdioxide total air mass factor polluted precision [1]	9.721×10^{-3}	1.685×10^{-2}	2.258×10^{-2}	2.804×10^{-2}	3.529×10^{-2}	0.152	0.205	0.265	0.365	0.578
sulfurdioxide clear air mass factor polluted [1]	0.186	0.283	0.345	0.405	0.484	0.878	0.987	1.08	1.23	1.75
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]	0.658 ± 0.402	8685898	0.770	1.000	0.0	1.000	0.230	1.000
sulfurdioxide total vertical column [DU]	$(7.136 \pm 165.386) \times 10^{-2}$	8685898	0.574	1.478×10^{-2}	-192	237	-0.263	0.311
sulfurdioxide total vertical column precision [DU]	0.760 ± 1.119	8685898	0.581	0.424	5.001×10^{-2}	46.6	0.248	0.829
sulfurdioxide slant column density corrected [DU]	$(2.986 \pm 45.672) \times 10^{-2}$	8685898	0.384	1.126×10^{-2}	-13.2	63.1	-0.178	0.206
sulfurdioxide slant column density cobra [DU]	$(2.932 \pm 43.241) \times 10^{-2}$	8685898	0.384	1.126×10^{-2}	-13.2	45.3	-0.178	0.206
sulfurdioxide slant column density cobra precision [DU]	0.321 ± 0.174	8685898	0.179	0.266	8.128×10^{-2}	15.5	0.206	0.386
sulfurdioxide slant column density window1 [DU]	0.227 ± 0.797	8685898	0.781	0.255	-35.8	69.5	-0.144	0.637
sulfurdioxide slant column density window1 precision [DU]	0.321 ± 0.174	8685898	0.179	0.266	8.128×10^{-2}	15.5	0.206	0.386
sulfurdioxide slant column density corrected win1 [DU]	$(9.851 \pm 78.584) \times 10^{-2}$	8685898	0.764	6.857×10^{-2}	-35.8	69.3	-0.306	0.458
background so2 slant column offset window1 [DU]	-0.129 ± 0.249	8685898	0.225	-0.197	-1.49	4.30	-0.279	-5.459×10^{-2}
sulfurdioxide slant column density window2 [DU]	3.97 ± 9.40	8685898	12.0	3.62	-243	1.284×10^3	-2.23	9.78
sulfurdioxide slant column density window2 precision [DU]	8.25 ± 2.17	8685898	2.60	7.92	2.20	300	6.77	9.37
sulfurdioxide slant column density corrected win2 [DU]	2.14 ± 8.93	8685898	11.4	2.08	-249	1.282×10^3	-3.60	7.79
background so2 slant column offset window2 [DU]	-1.83 ± 2.99	8685898	4.87	-1.12	-15.5	13.9	-4.20	0.667
sulfurdioxide slant column density window3 [DU]	-20.6 ± 24.0	8685898	30.6	-20.7	-190	888	-35.9	-5.32
sulfurdioxide slant column density window3 precision [DU]	27.9 ± 12.7	8685898	8.65	24.5	9.31	702	21.2	29.8
sulfurdioxide slant column density corrected win3 [DU]	-10.8 ± 23.1	8685898	29.2	-10.7	-179	900	-25.3	3.93
background so2 slant column offset window3 [DU]	9.83 ± 7.41	8685898	13.2	10.2	-16.6	35.0	2.93	16.1
sulfurdioxide slant column cobra flag [1]	1.97 ± 0.23	8685898	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(4.692 \pm 11.177) \times 10^{-2}$	8685898	2.757×10^{-2}	1.633×10^{-2}	7.776×10^{-5}	3.30	8.290×10^{-3}	3.587×10^{-2}
fitted radiance shift [nm]	$(-2.974 \pm 25.421) \times 10^{-4}$	8685898	1.677×10^{-3}	-2.956×10^{-4}	-5.095×10^{-2}	4.002×10^{-2}	-1.153×10^{-3}	5.240×10^{-4}
fitted radiance squeeze [1]	$(-4.576 \pm 24.535) \times 10^{-5}$	8685898	2.298×10^{-4}	-1.499×10^{-5}	-1.547×10^{-2}	1.391×10^{-2}	-1.372×10^{-4}	9.262×10^{-5}
fitted root mean square [1]	$(1.409 \pm 0.735) \times 10^{-3}$	8685898	6.947×10^{-4}	1.168×10^{-3}	3.414×10^{-4}	4.494×10^{-2}	9.449×10^{-4}	1.640×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.732 ± 0.422	8685898	0.550	0.662	5.000×10^{-2}	2.75	0.418	0.968
sulfurdioxide total air mass factor polluted precision [1]	0.104 ± 0.139	8685898	9.780×10^{-2}	5.171×10^{-2}	2.500×10^{-3}	2.10	2.815×10^{-2}	0.126
sulfurdioxide clear air mass factor polluted [1]	0.622 ± 0.295	8685898	0.412	0.571	2.580×10^{-2}	2.66	0.393	0.805
number of spectral points in retrieval [1]	73.5 ± 0.5	8685898	1.000	73.0	71.0	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]	0.653 ± 0.406	8616557	0.780	1.000	0.0	1.000	0.220	1.000
sulfurdioxide total vertical column [DU]	$(2.033 \pm 63.533) \times 10^{-2}$	8616557	0.392	9.424×10^{-3}	-73.1	213	-0.184	0.207
sulfurdioxide total vertical column precision [DU]	0.397 ± 0.415	8616557	0.258	0.280	4.341×10^{-2}	154	0.196	0.454
sulfurdioxide slant column density corrected [DU]	$(1.681 \pm 35.412) \times 10^{-2}$	8616557	0.340	8.655×10^{-3}	-12.5	231	-0.160	0.180
sulfurdioxide slant column density cobra [DU]	$(1.670 \pm 33.389) \times 10^{-2}$	8616557	0.340	8.655×10^{-3}	-12.5	51.2	-0.160	0.180
sulfurdioxide slant column density cobra precision [DU]	0.270 ± 0.114	8616557	0.120	0.233	8.685×10^{-2}	19.4	0.196	0.315
sulfurdioxide slant column density window1 [DU]	0.202 ± 0.629	8616557	0.695	0.218	-98.9	101	-0.137	0.558
sulfurdioxide slant column density window1 precision [DU]	0.270 ± 0.114	8616557	0.120	0.233	8.685×10^{-2}	19.4	0.196	0.315
sulfurdioxide slant column density corrected win1 [DU]	$(6.141 \pm 61.357) \times 10^{-2}$	8616557	0.672	5.014×10^{-2}	-98.9	102	-0.284	0.388
background so2 slant column offset window1 [DU]	-0.141 ± 0.162	8616557	0.196	-0.180	-1.49	2.32	-0.257	-6.086×10^{-2}
sulfurdioxide slant column density window2 [DU]	2.63 ± 8.88	8616557	11.2	2.45	-1.177×10^3	845	-3.06	8.11
sulfurdioxide slant column density window2 precision [DU]	8.06 ± 2.29	8616557	2.56	7.70	2.11	671	6.59	9.15
sulfurdioxide slant column density corrected win2 [DU]	2.19 ± 8.73	8616557	11.0	2.13	-1.178×10^3	843	-3.35	7.65
background so2 slant column offset window2 [DU]	-0.442 ± 1.894	8616557	2.16	-4.996×10^{-3}	-9.81	13.4	-1.41	0.748
sulfurdioxide slant column density window3 [DU]	-15.0 ± 24.4	8616557	30.9	-15.3	-323	308	-30.5	0.443
sulfurdioxide slant column density window3 precision [DU]	29.1 ± 14.3	8616557	10.5	25.1	9.47	239	21.1	31.6
sulfurdioxide slant column density corrected win3 [DU]	-10.6 ± 23.6	8616557	29.9	-10.8	-320	305	-25.5	4.40
background so2 slant column offset window3 [DU]	4.43 ± 6.73	8616557	11.3	2.99	-21.1	24.7	-1.06	10.2
sulfurdioxide slant column cobra flag [1]	1.98 ± 0.20	8616557	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(1.820 \pm 2.806) \times 10^{-2}$	8616557	1.116×10^{-2}	1.399×10^{-2}	4.216×10^{-4}	1.10	9.367×10^{-3}	2.053×10^{-2}
fitted radiance shift [nm]	$(-6.061 \pm 28.305) \times 10^{-4}$	8616557	2.072×10^{-3}	-5.978×10^{-4}	-5.033×10^{-2}	4.289×10^{-2}	-1.701×10^{-3}	3.711×10^{-4}
fitted radiance squeeze [1]	$(-3.004 \pm 16.543) \times 10^{-5}$	8616557	1.937×10^{-4}	-2.328×10^{-5}	-1.445×10^{-2}	2.133×10^{-2}	-1.226×10^{-4}	7.109×10^{-5}
fitted root mean square [1]	$(1.197 \pm 0.468) \times 10^{-3}$	8616557	4.798×10^{-4}	1.058×10^{-3}	3.156×10^{-4}	6.377×10^{-2}	8.959×10^{-4}	1.376×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.916 ± 0.410	8616557	0.532	0.870	5.000×10^{-2}	2.74	0.621	1.15
sulfurdioxide total air mass factor polluted precision [1]	0.128 ± 0.113	8616557	0.129	8.876×10^{-2}	5.601×10^{-3}	1.49	4.506×10^{-2}	0.174
sulfurdioxide clear air mass factor polluted [1]	0.780 ± 0.310	8616557	0.362	0.715	0.141	2.76	0.573	0.935
number of spectral points in retrieval [1]	73.4 ± 0.5	8616557	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]	0.691 ± 0.394	12252897	0.720	1.000	0.0	1.000	0.280	1.000
sulfurdioxide total vertical column [DU]	$(2.765 \pm 89.713) \times 10^{-2}$	12252897	0.428	9.794×10^{-3}	-83.2	213	-0.202	0.226
sulfurdioxide total vertical column precision [DU]	0.483 ± 0.637	12252897	0.314	0.303	4.994×10^{-2}	154	0.207	0.521
sulfurdioxide slant column density corrected [DU]	$(1.639 \pm 34.908) \times 10^{-2}$	12252897	0.347	8.502×10^{-3}	-13.2	231	-0.163	0.183
sulfurdioxide slant column density cobra [DU]	$(1.632 \pm 33.544) \times 10^{-2}$	12252897	0.347	8.501×10^{-3}	-13.2	51.2	-0.163	0.183
sulfurdioxide slant column density cobra precision [DU]	0.281 ± 0.127	12252897	0.137	0.236	8.128×10^{-2}	19.4	0.196	0.333
sulfurdioxide slant column density window1 [DU]	0.212 ± 0.656	12252897	0.710	0.231	-57.9	101	-0.131	0.579
sulfurdioxide slant column density window1 precision [DU]	0.281 ± 0.127	12252897	0.137	0.236	8.128×10^{-2}	19.4	0.196	0.333
sulfurdioxide slant column density corrected win1 [DU]	$(6.756 \pm 64.298) \times 10^{-2}$	12252897	0.690	5.333×10^{-2}	-57.9	102	-0.288	0.402
background so2 slant column offset window1 [DU]	-0.145 ± 0.184	12252897	0.200	-0.189	-1.49	2.75	-0.266	-6.640×10^{-2}
sulfurdioxide slant column density window2 [DU]	2.93 ± 8.92	12252897	11.3	2.69	-1.177×10^3	845	-2.86	8.43
sulfurdioxide slant column density window2 precision [DU]	8.00 ± 2.12	12252897	2.49	7.66	2.11	631	6.58	9.07
sulfurdioxide slant column density corrected win2 [DU]	2.17 ± 8.68	12252897	11.0	2.11	-1.178×10^3	843	-3.38	7.64
background so2 slant column offset window2 [DU]	-0.764 ± 2.273	12252897	2.75	-0.136	-15.5	13.9	-1.99	0.758
sulfurdioxide slant column density window3 [DU]	-15.0 ± 24.3	12252897	31.0	-15.2	-291	232	-30.5	0.504
sulfurdioxide slant column density window3 precision [DU]	27.8 ± 12.5	12252897	9.23	24.5	9.31	221	21.0	30.2
sulfurdioxide slant column density corrected win3 [DU]	-8.78 ± 23.07	12252897	29.5	-9.07	-294	231	-23.6	5.89
background so2 slant column offset window3 [DU]	6.18 ± 7.03	12252897	11.3	5.33	-21.1	34.7	0.547	11.8
sulfurdioxide slant column cobra flag [1]	1.98 ± 0.17	12252897	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(2.101 \pm 3.187) \times 10^{-2}$	12252897	1.214×10^{-2}	1.452×10^{-2}	4.216×10^{-4}	1.62	9.672×10^{-3}	2.182×10^{-2}
fitted radiance shift [nm]	$(-4.568 \pm 24.821) \times 10^{-4}$	12252897	1.854×10^{-3}	-4.198×10^{-4}	-4.283×10^{-2}	3.865×10^{-2}	-1.420×10^{-3}	4.335×10^{-4}
fitted radiance squeeze [1]	$(-3.021 \pm 18.340) \times 10^{-5}$	12252897	1.988×10^{-4}	-1.847×10^{-5}	-1.547×10^{-2}	2.133×10^{-2}	-1.211×10^{-4}	7.771×10^{-5}
fitted root mean square [1]	$(1.238 \pm 0.539) \times 10^{-3}$	12252897	5.274×10^{-4}	1.066×10^{-3}	3.156×10^{-4}	6.024×10^{-2}	8.990×10^{-4}	1.426×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.852 ± 0.396	12252897	0.510	0.810	5.000×10^{-2}	2.47	0.572	1.08
sulfurdioxide total air mass factor polluted precision [1]	0.113 ± 0.107	12252897	0.111	7.134×10^{-2}	2.523×10^{-3}	1.61	3.956×10^{-2}	0.151
sulfurdioxide clear air mass factor polluted [1]	0.729 ± 0.289	12252897	0.365	0.688	3.558×10^{-2}	2.51	0.533	0.898
number of spectral points in retrieval [1]	73.4 ± 0.5	12252897	1.000	73.0	52.0	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]	0.609 ± 0.416	3756315	0.820	1.000	0.0	1.000	0.180	1.000
sulfurdioxide total vertical column [DU]	$(7.350 \pm 164.249) \times 10^{-2}$	3756315	0.552	1.449×10^{-2}	-192	199	-0.252	0.300
sulfurdioxide total vertical column precision [DU]	0.731 ± 1.094	3756315	0.548	0.409	4.341×10^{-2}	46.6	0.244	0.792
sulfurdioxide slant column density corrected [DU]	$(3.392 \pm 48.561) \times 10^{-2}$	3756315	0.379	1.156×10^{-2}	-12.3	54.9	-0.175	0.204
sulfurdioxide slant column density cobra [DU]	$(3.315 \pm 45.229) \times 10^{-2}$	3756315	0.379	1.156×10^{-2}	-12.3	45.0	-0.175	0.204
sulfurdioxide slant column density cobra precision [DU]	0.313 ± 0.169	3756315	0.154	0.261	8.685×10^{-2}	16.7	0.210	0.364
sulfurdioxide slant column density window1 [DU]	0.238 ± 0.787	3756315	0.766	0.257	-72.4	50.6	-0.133	0.634
sulfurdioxide slant column density window1 precision [DU]	0.313 ± 0.169	3756315	0.154	0.261	8.685×10^{-2}	16.7	0.210	0.364
sulfurdioxide slant column density corrected win1 [DU]	0.100 ± 0.776	3756315	0.744	6.966×10^{-2}	-72.4	50.7	-0.296	0.448
background so2 slant column offset window1 [DU]	-0.138 ± 0.232	3756315	0.206	-0.202	-1.15	4.30	-0.277	-7.092×10^{-2}
sulfurdioxide slant column density window2 [DU]	3.64 ± 9.52	3756315	12.0	3.35	-367	1.284×10^3	-2.55	9.50
sulfurdioxide slant column density window2 precision [DU]	8.45 ± 2.48	3756315	2.67	8.11	2.28	671	6.91	9.58
sulfurdioxide slant column density corrected win2 [DU]	2.09 ± 9.10	3756315	11.5	2.02	-367	1.282×10^3	-3.72	7.80
background so2 slant column offset window2 [DU]	-1.56 ± 2.90	3756315	4.51	-0.509	-15.5	13.9	-3.82	0.691
sulfurdioxide slant column density window3 [DU]	-24.3 ± 23.3	3756315	29.4	-23.9	-323	888	-38.8	-9.41
sulfurdioxide slant column density window3 precision [DU]	30.6 ± 16.4	3756315	10.7	25.8	10.0	702	21.7	32.5
sulfurdioxide slant column density corrected win3 [DU]	-16.0 ± 23.6	3756315	29.8	-15.5	-320	900	-30.6	-0.846
background so2 slant column offset window3 [DU]	8.25 ± 8.14	3756315	14.3	8.06	-21.1	35.0	1.14	15.4
sulfurdioxide slant column cobra flag [1]	1.96 ± 0.27	3756315	0.0	2.00	0.0	2.00	2.00	2.00
integrated so2 profile apriori [DU]	$(6.113 \pm 14.321) \times 10^{-2}$	3756315	4.192×10^{-2}	1.757×10^{-2}	7.776×10^{-5}	3.30	6.736×10^{-3}	4.866×10^{-2}
fitted radiance shift [nm]	$(-4.270 \pm 32.810) \times 10^{-4}$	3756315	1.956×10^{-3}	-4.623×10^{-4}	-5.095×10^{-2}	4.289×10^{-2}	-1.438×10^{-3}	5.184×10^{-4}
fitted radiance squeeze [1]	$(-4.088 \pm 23.350) \times 10^{-5}$	3756315	2.268×10^{-4}	-1.650×10^{-5}	-1.280×10^{-2}	1.408×10^{-2}	-1.352×10^{-4}	9.165×10^{-5}
fitted root mean square [1]	$(1.375 \pm 0.700) \times 10^{-3}$	3756315	5.920×10^{-4}	1.161×10^{-3}	3.248×10^{-4}	6.377×10^{-2}	9.617×10^{-4}	1.554×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.772 ± 0.488	3756315	0.627	0.647	5.000×10^{-2}	2.75	0.413	1.04
sulfurdioxide total air mass factor polluted precision [1]	0.123 ± 0.167	3756315	0.132	5.420×10^{-2}	2.500×10^{-3}	2.10	2.634×10^{-2}	0.159
sulfurdioxide clear air mass factor polluted [1]	0.646 ± 0.355	3756315	0.410	0.577	2.580×10^{-2}	2.76	0.394	0.805
number of spectral points in retrieval [1]	73.4 ± 0.5	3756315	1.000	73.0	52.0	74.0	73.0	74.0

3 Granule outlines

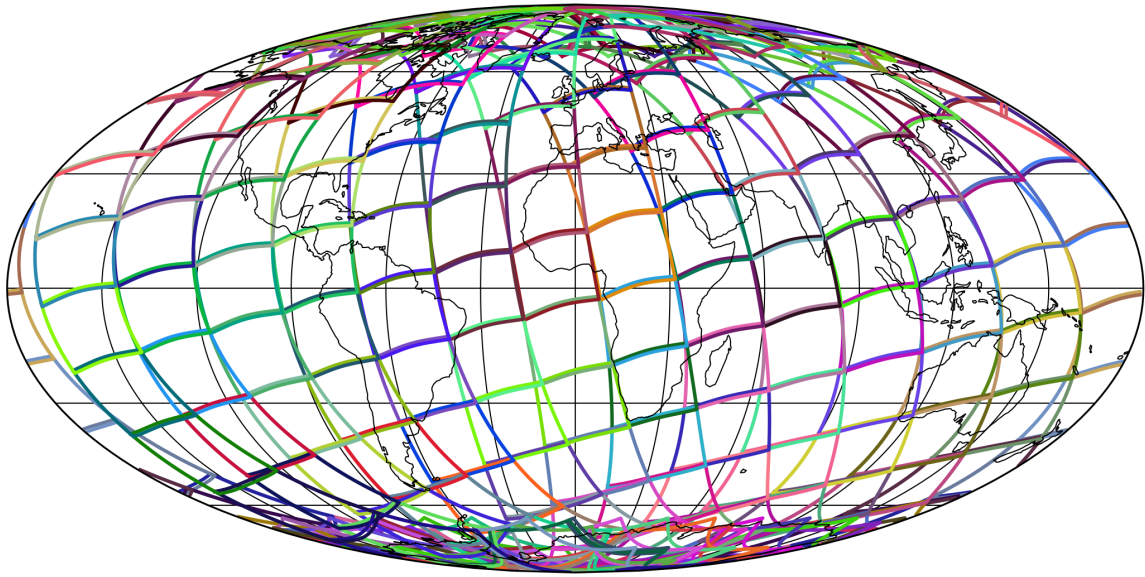


Figure 1: Outline of the granules.

4 Input data monitoring

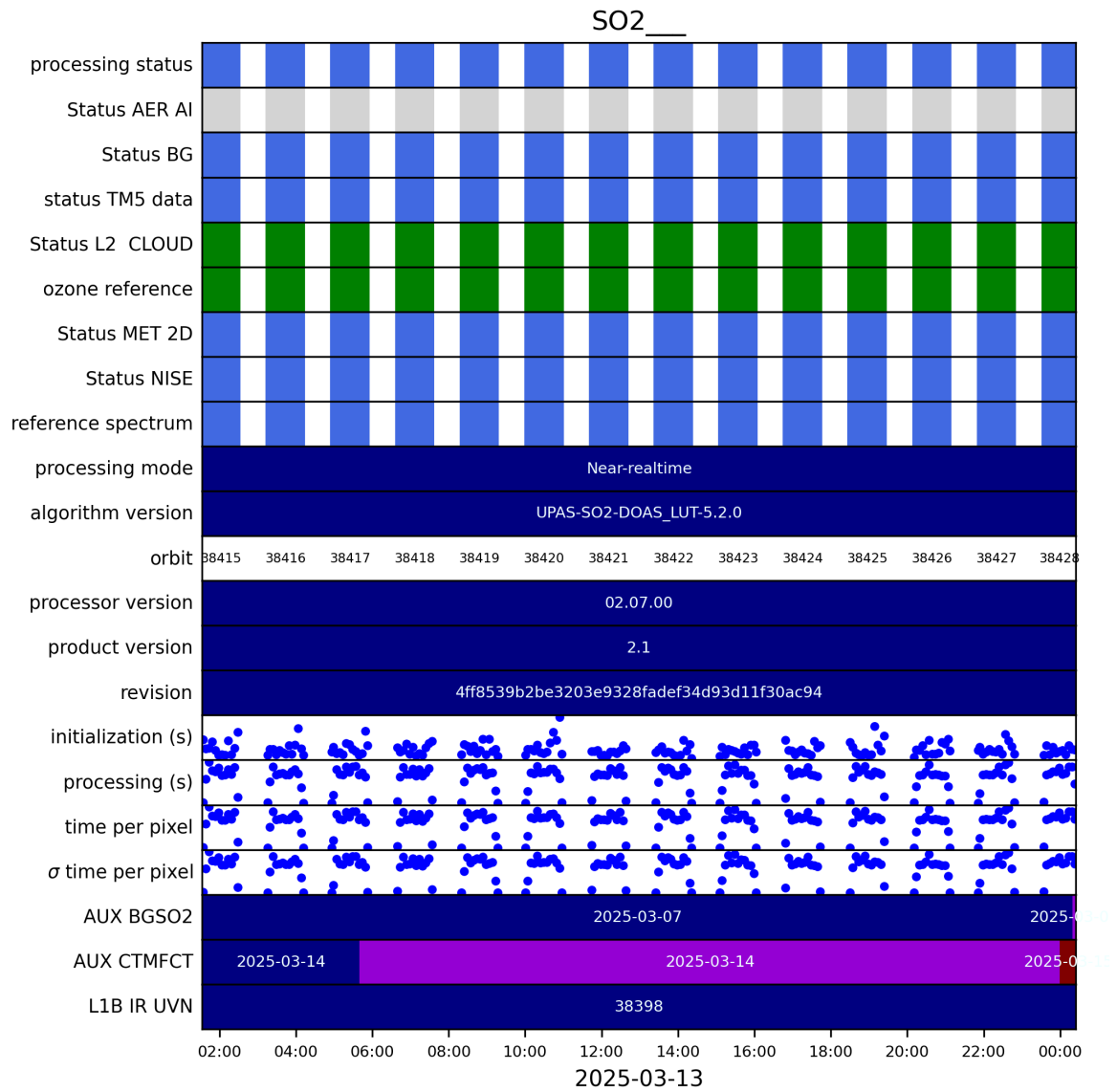


Figure 2: Input data per granule

5 Warnings and errors

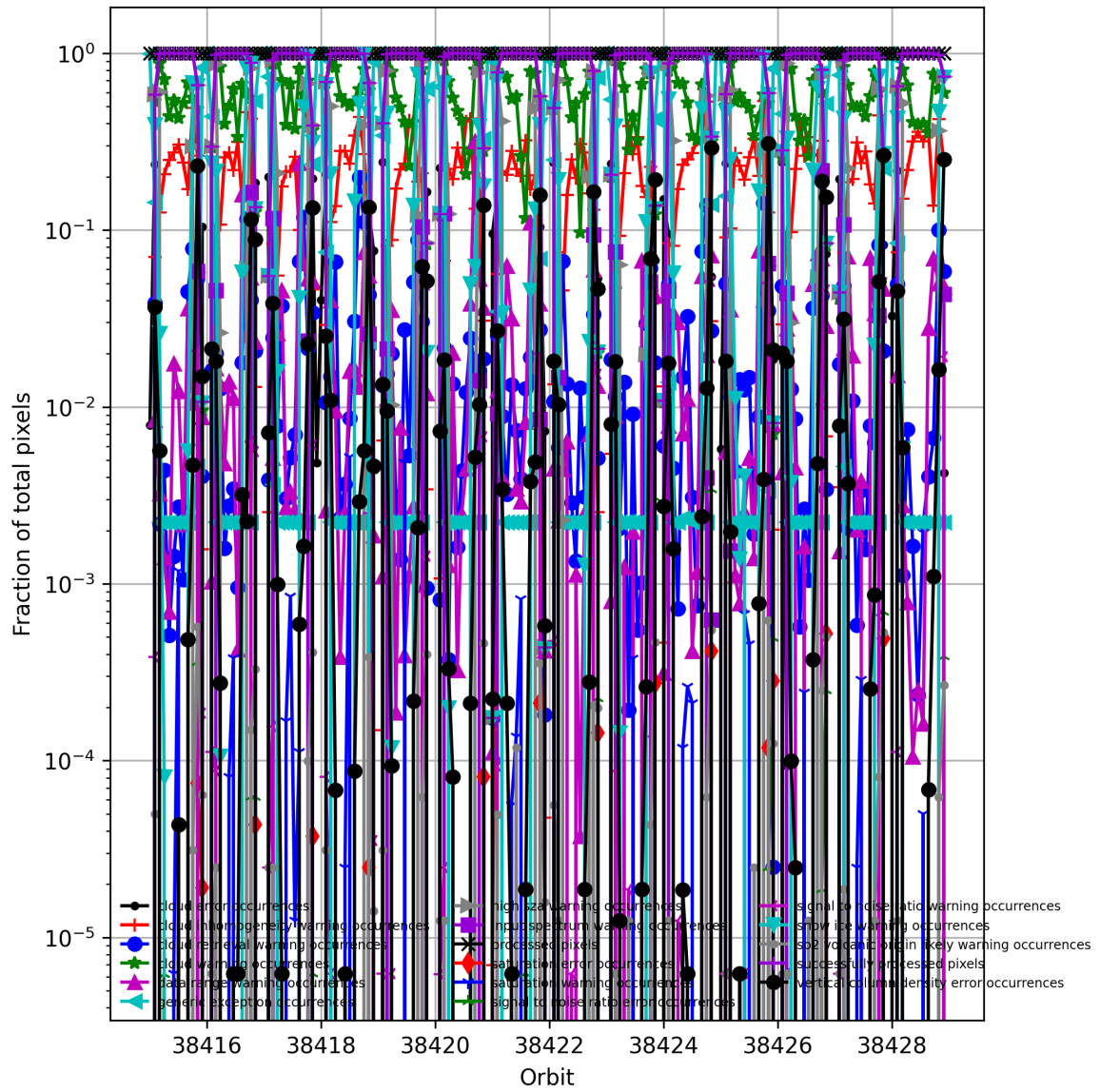


Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

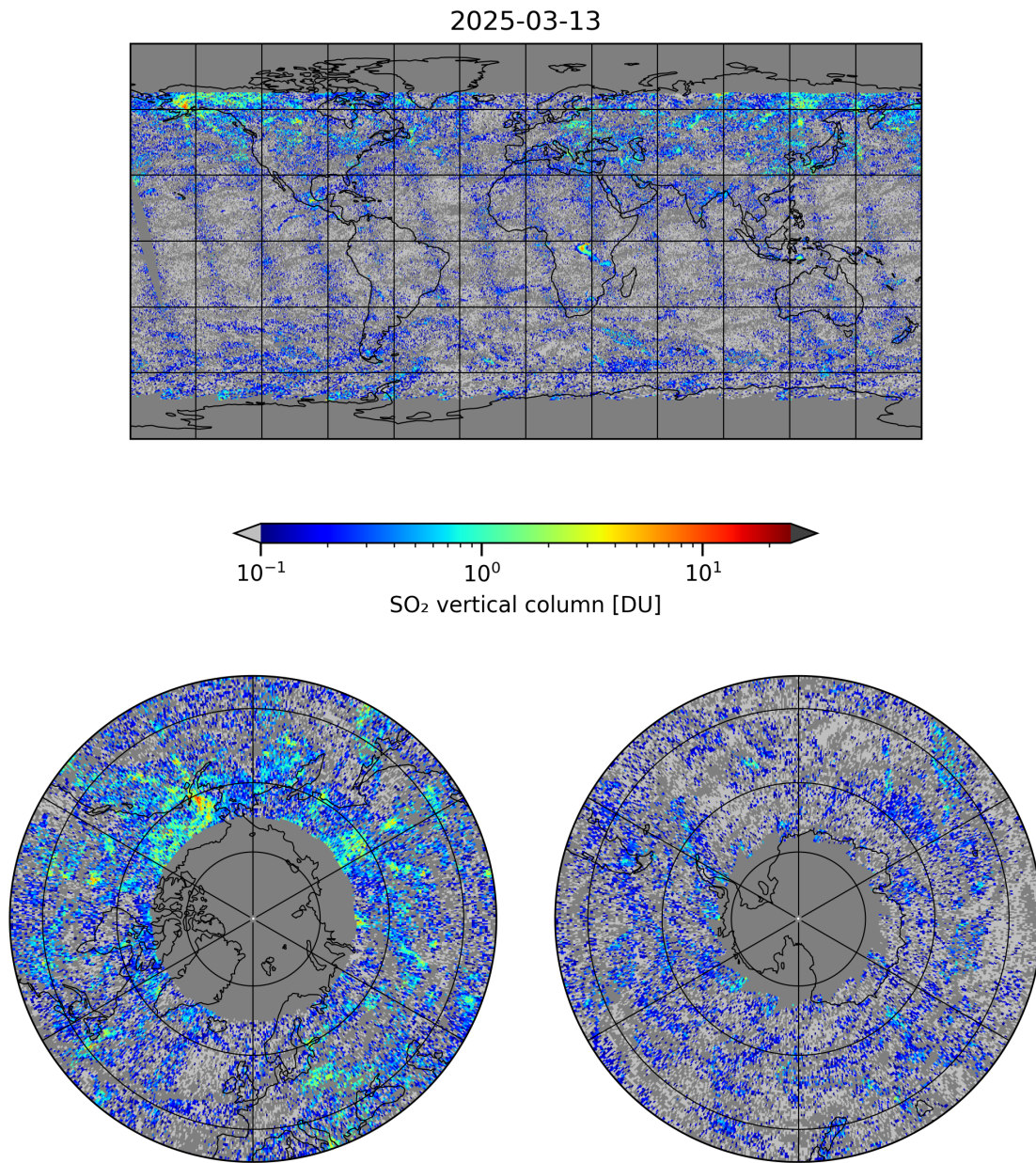


Figure 4: Map of “SO₂ vertical column” for 2025-03-13 to 2025-03-14

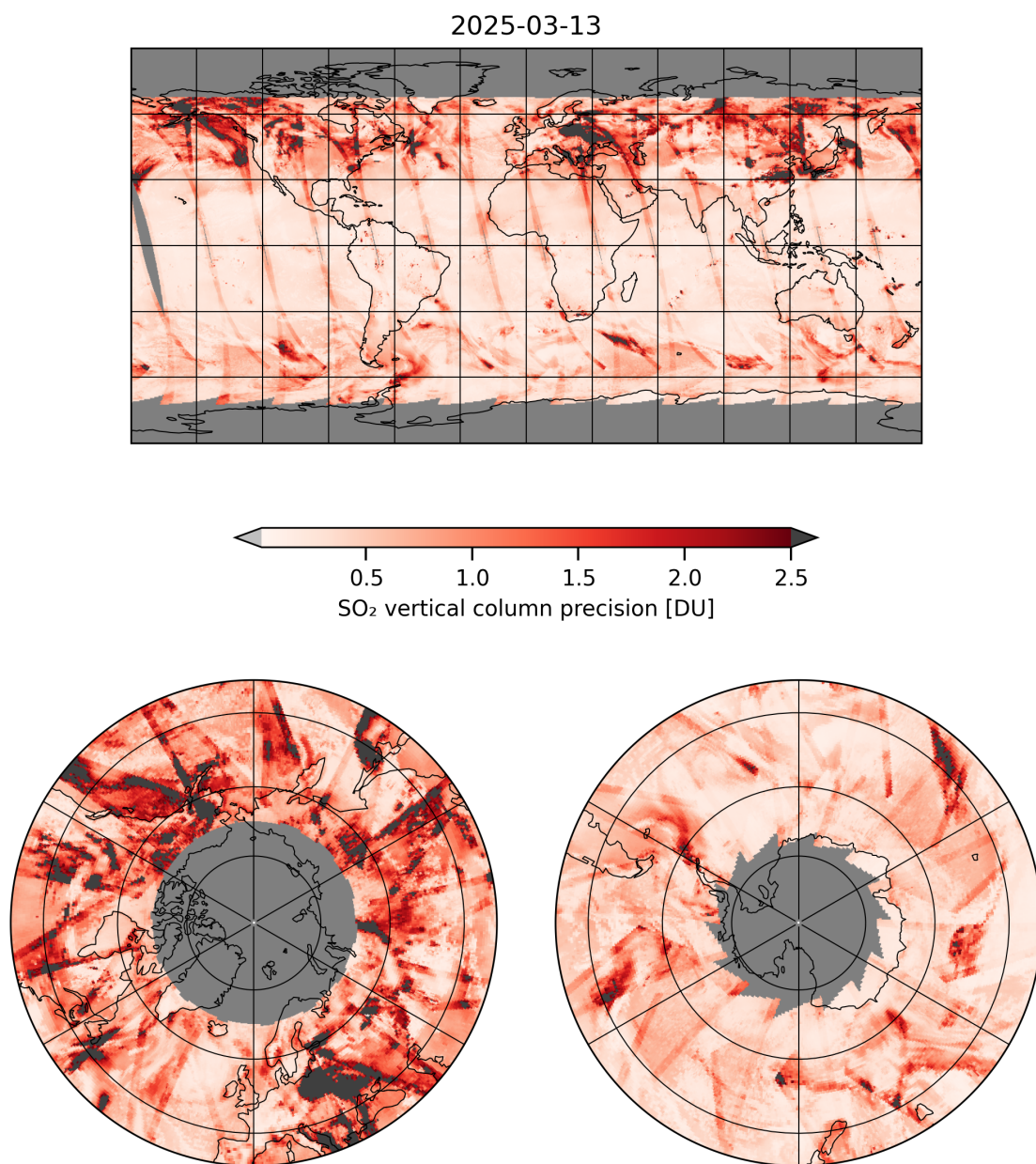


Figure 5: Map of “SO₂ vertical column precision” for 2025-03-13 to 2025-03-14

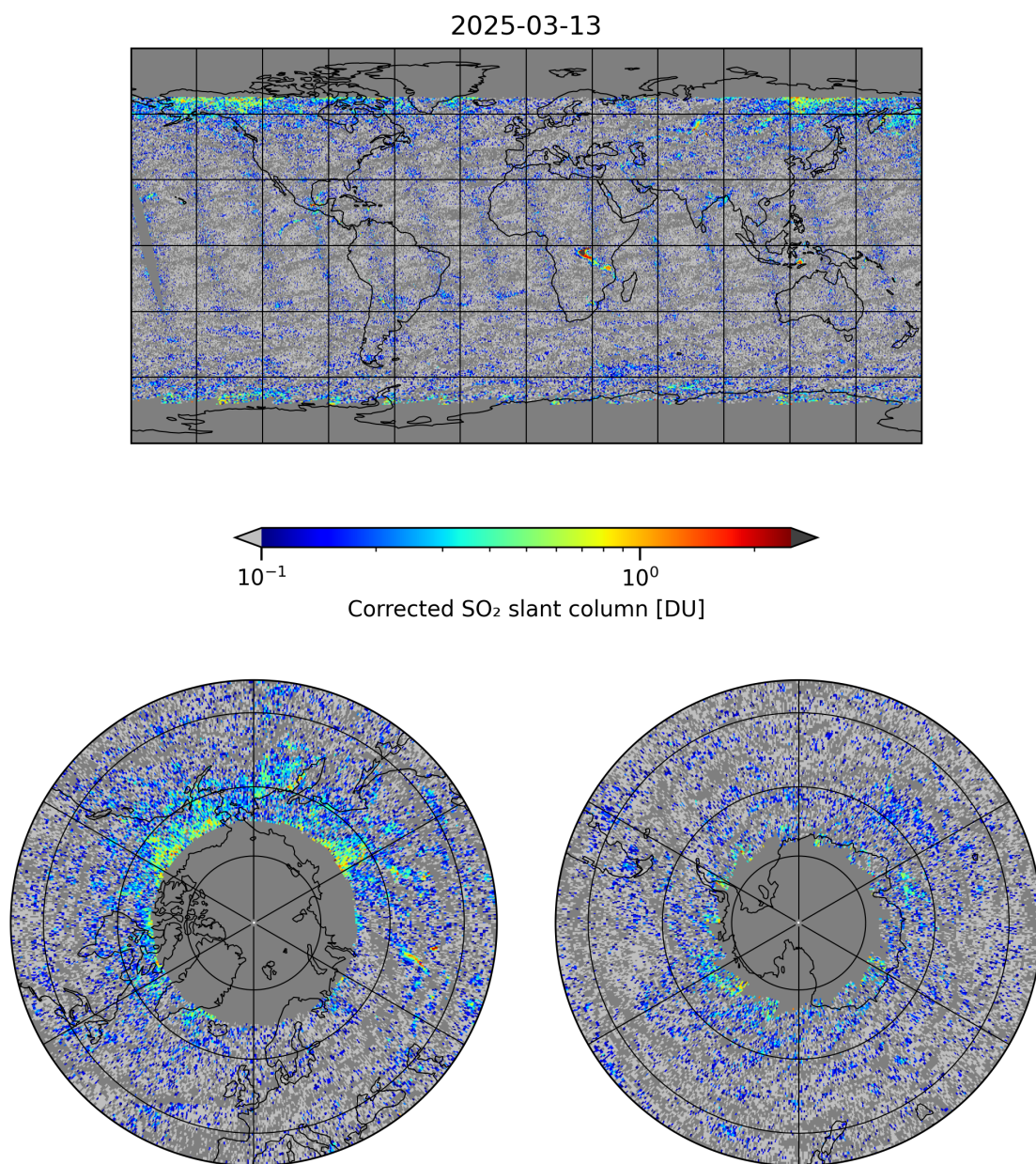


Figure 6: Map of “Corrected SO₂ slant column” for 2025-03-13 to 2025-03-14

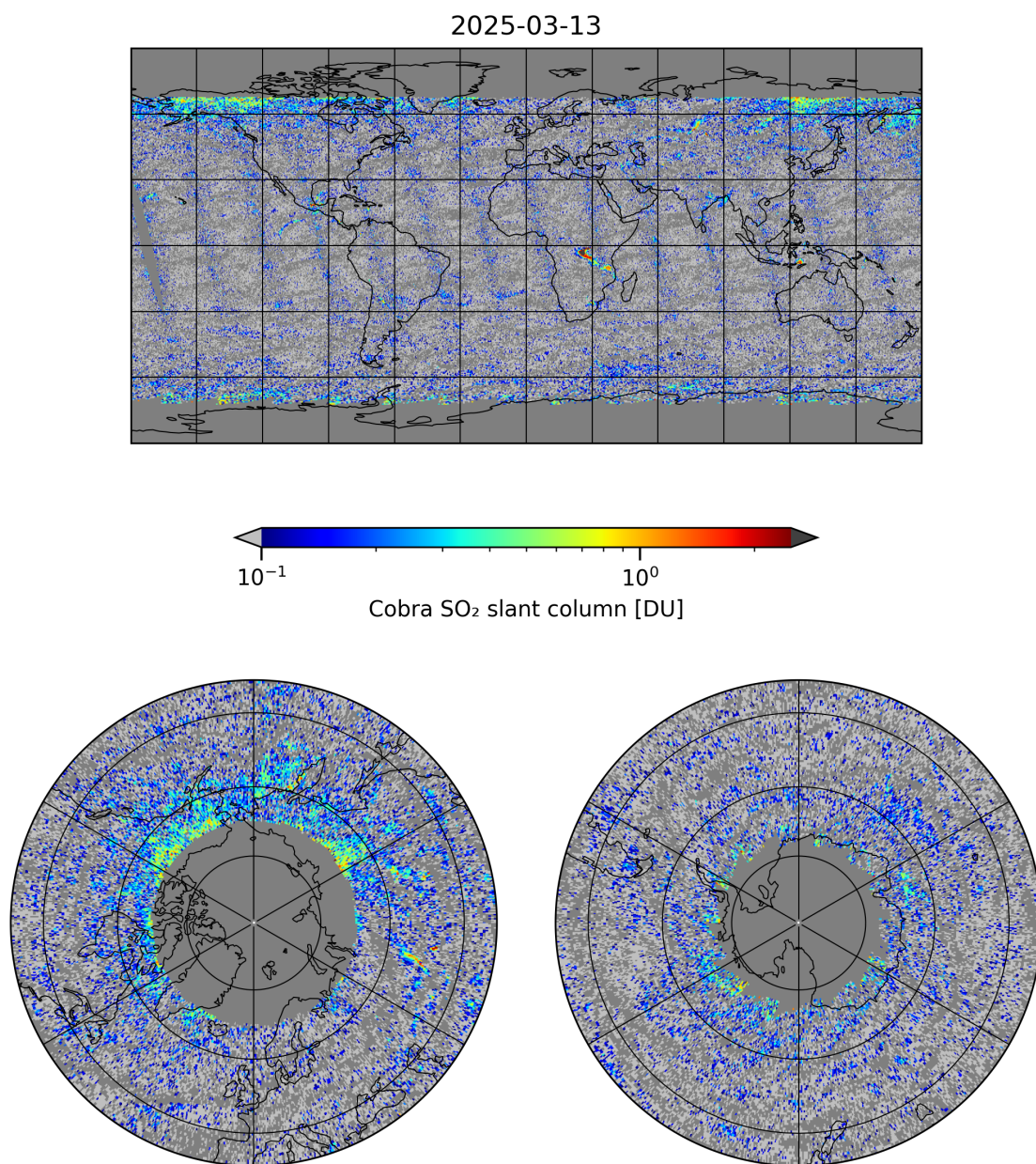


Figure 7: Map of “Cobra SO₂ slant column” for 2025-03-13 to 2025-03-14

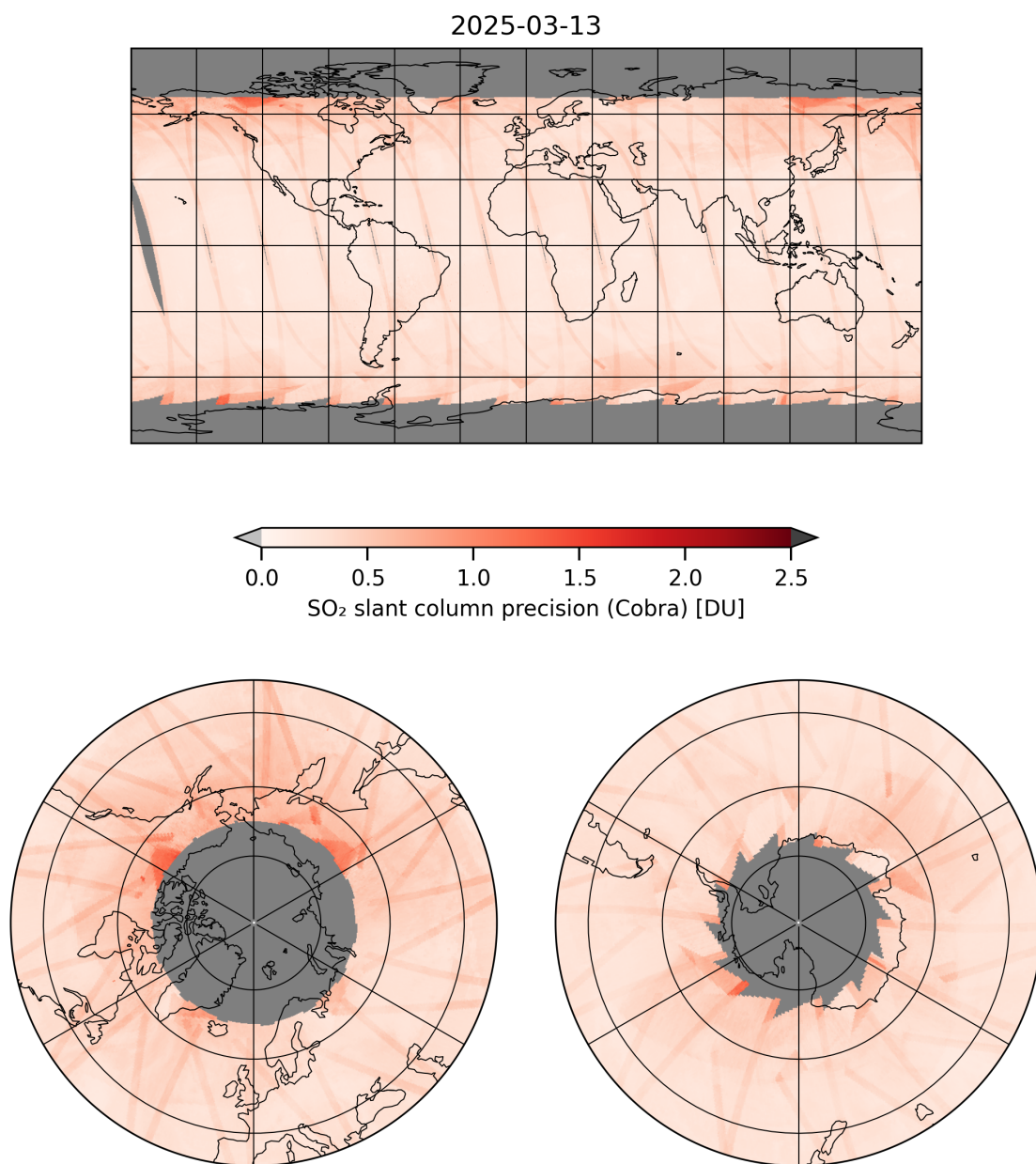


Figure 8: Map of “SO₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14

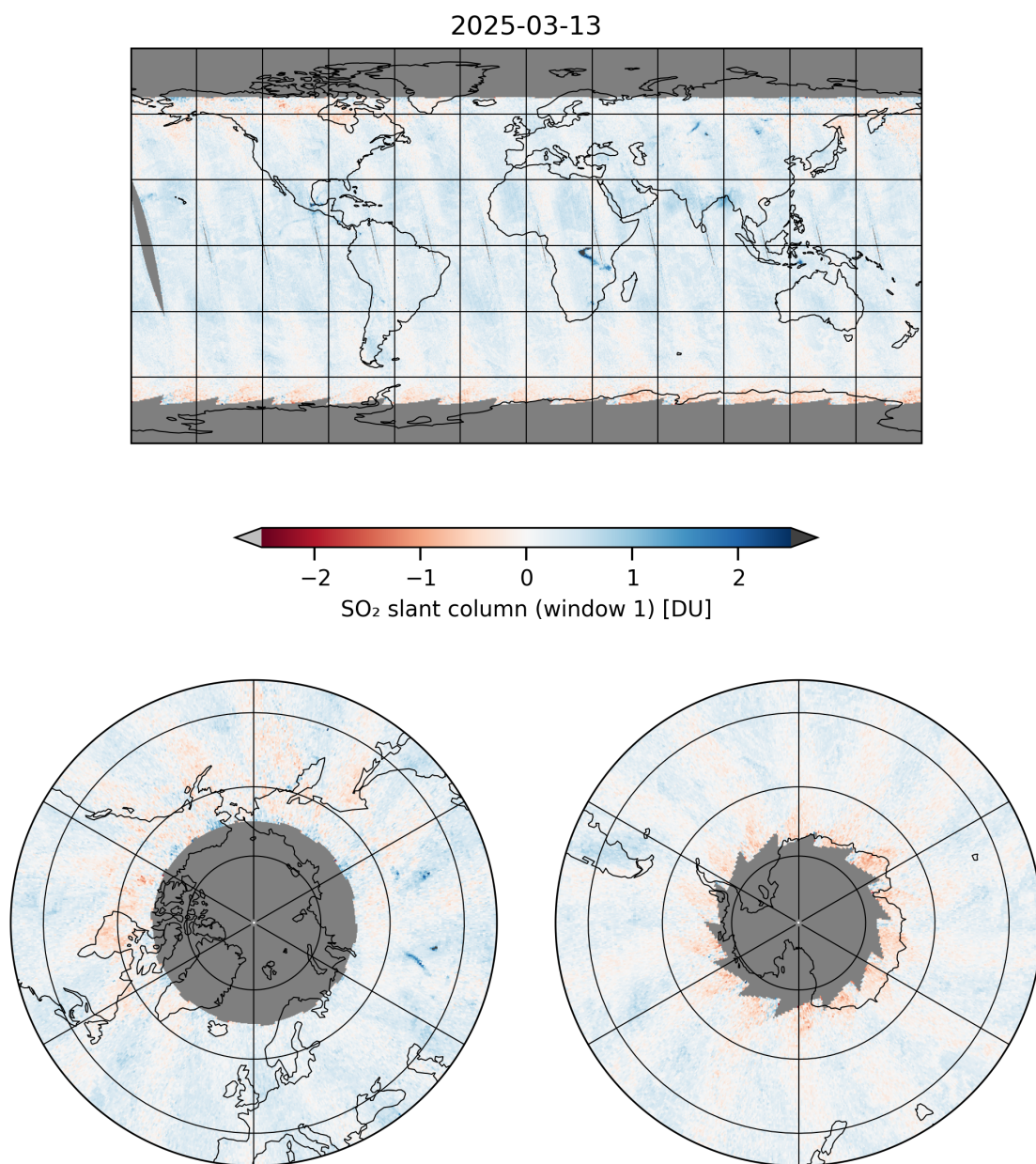


Figure 9: Map of “SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14

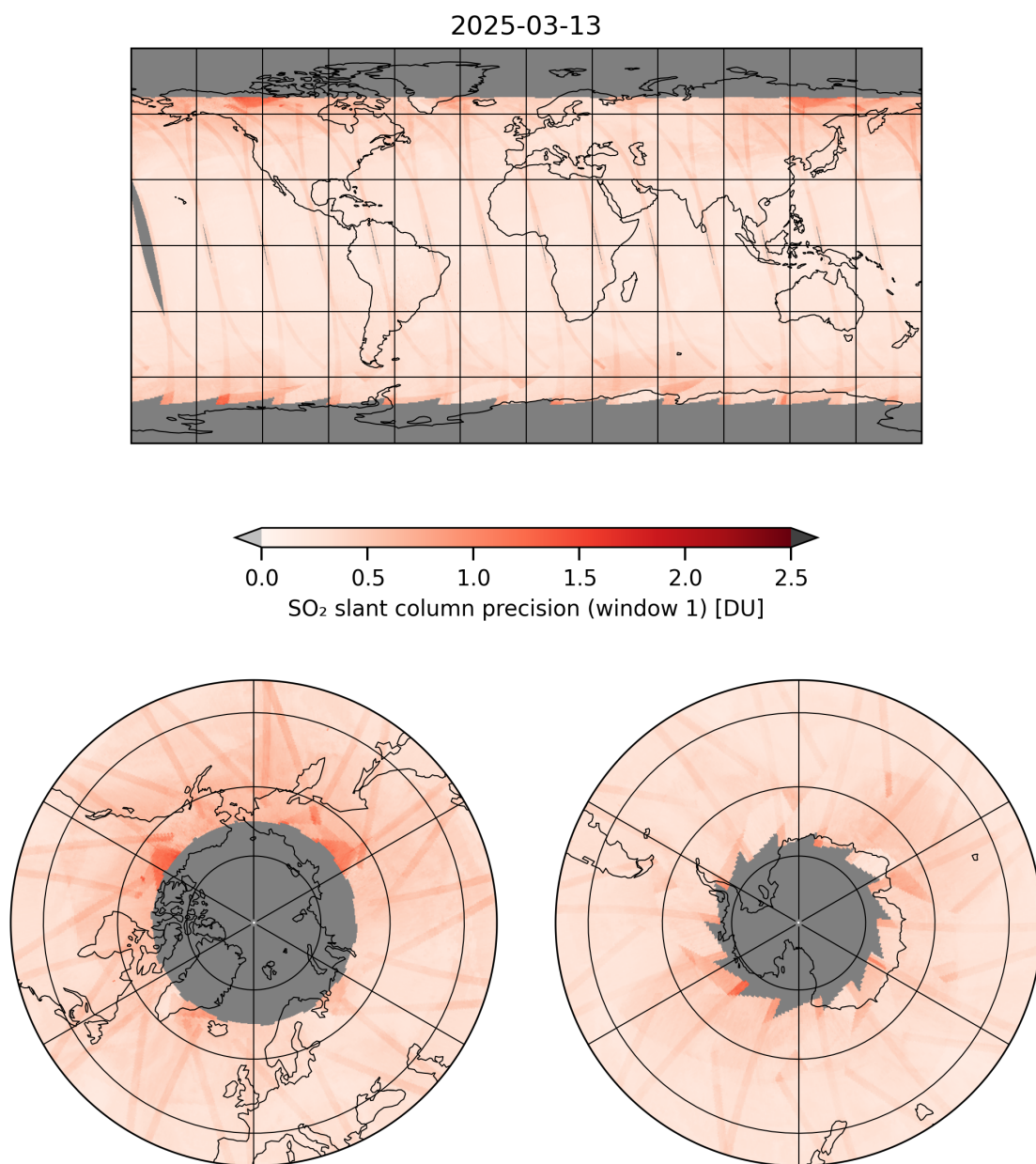


Figure 10: Map of “SO₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14

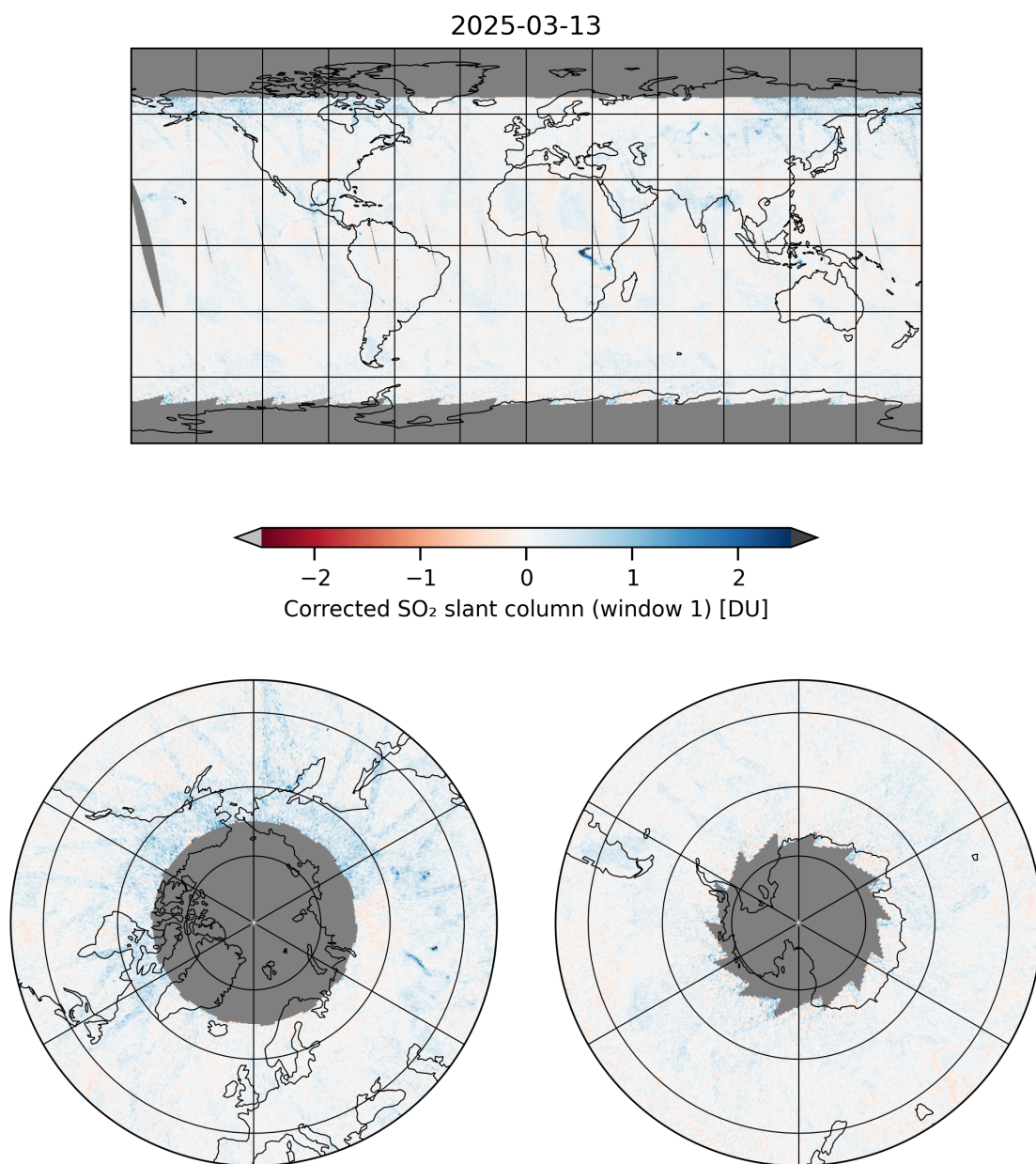


Figure 11: Map of “Corrected SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14

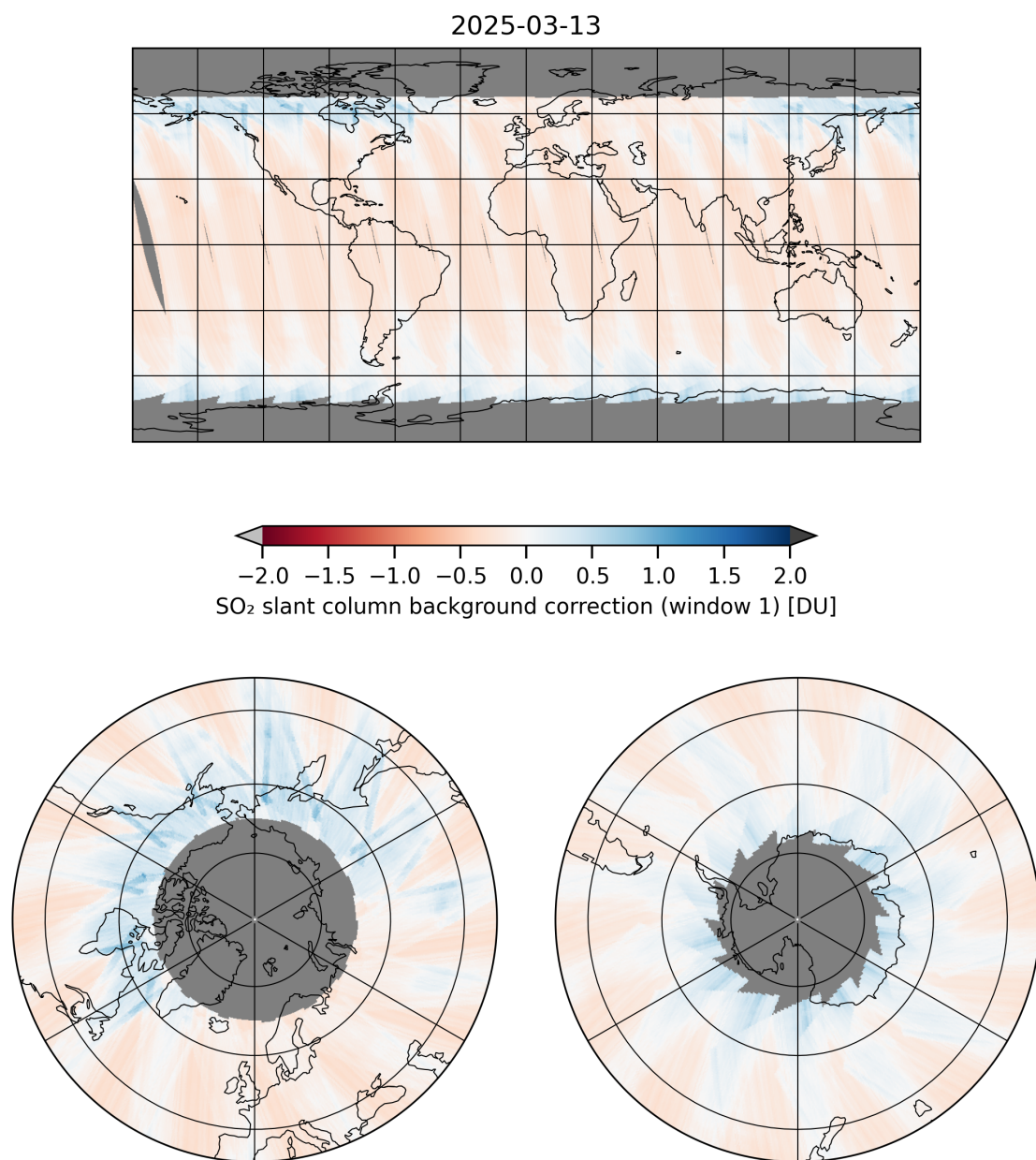


Figure 12: Map of “SO₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14

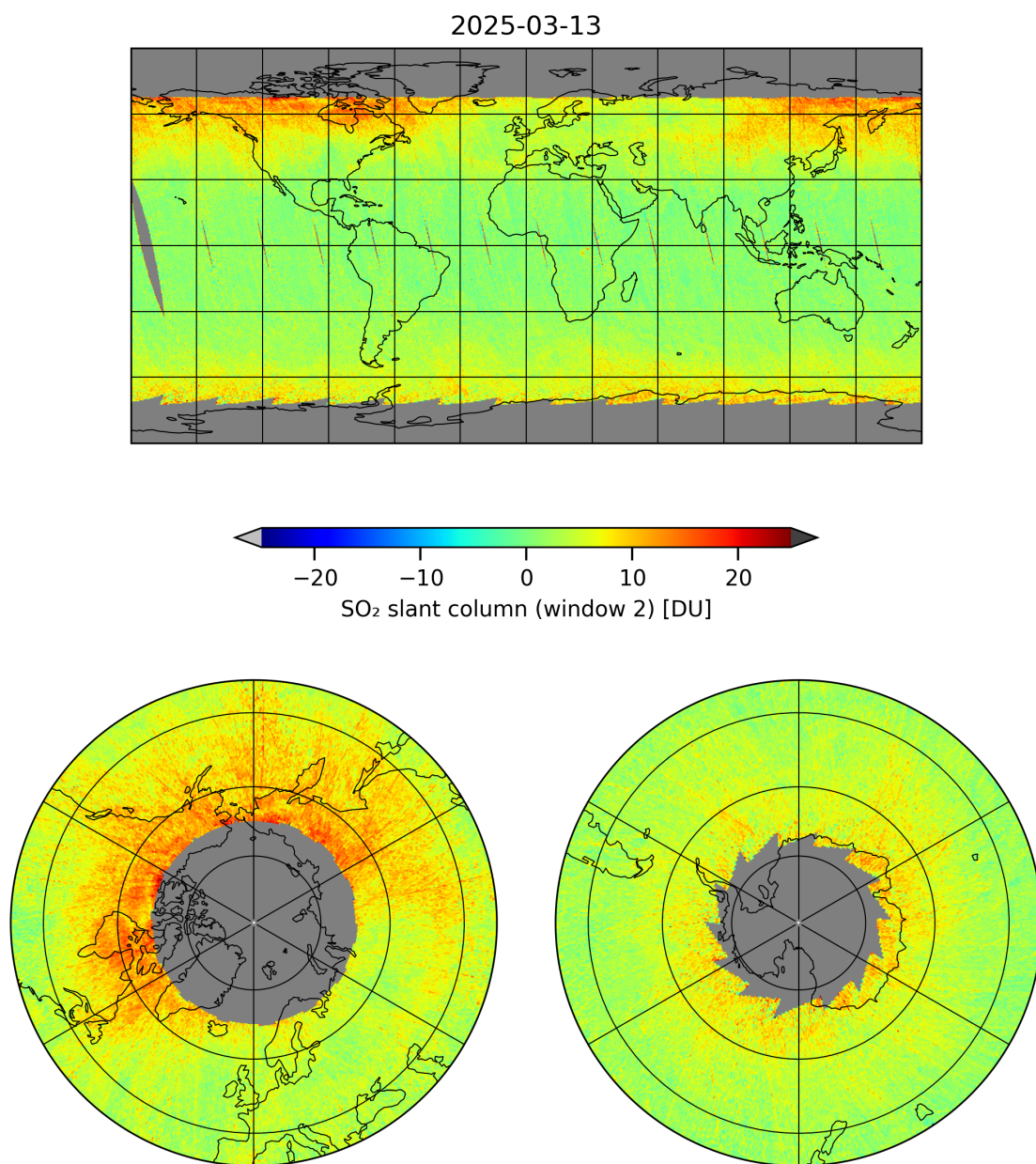


Figure 13: Map of “SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14

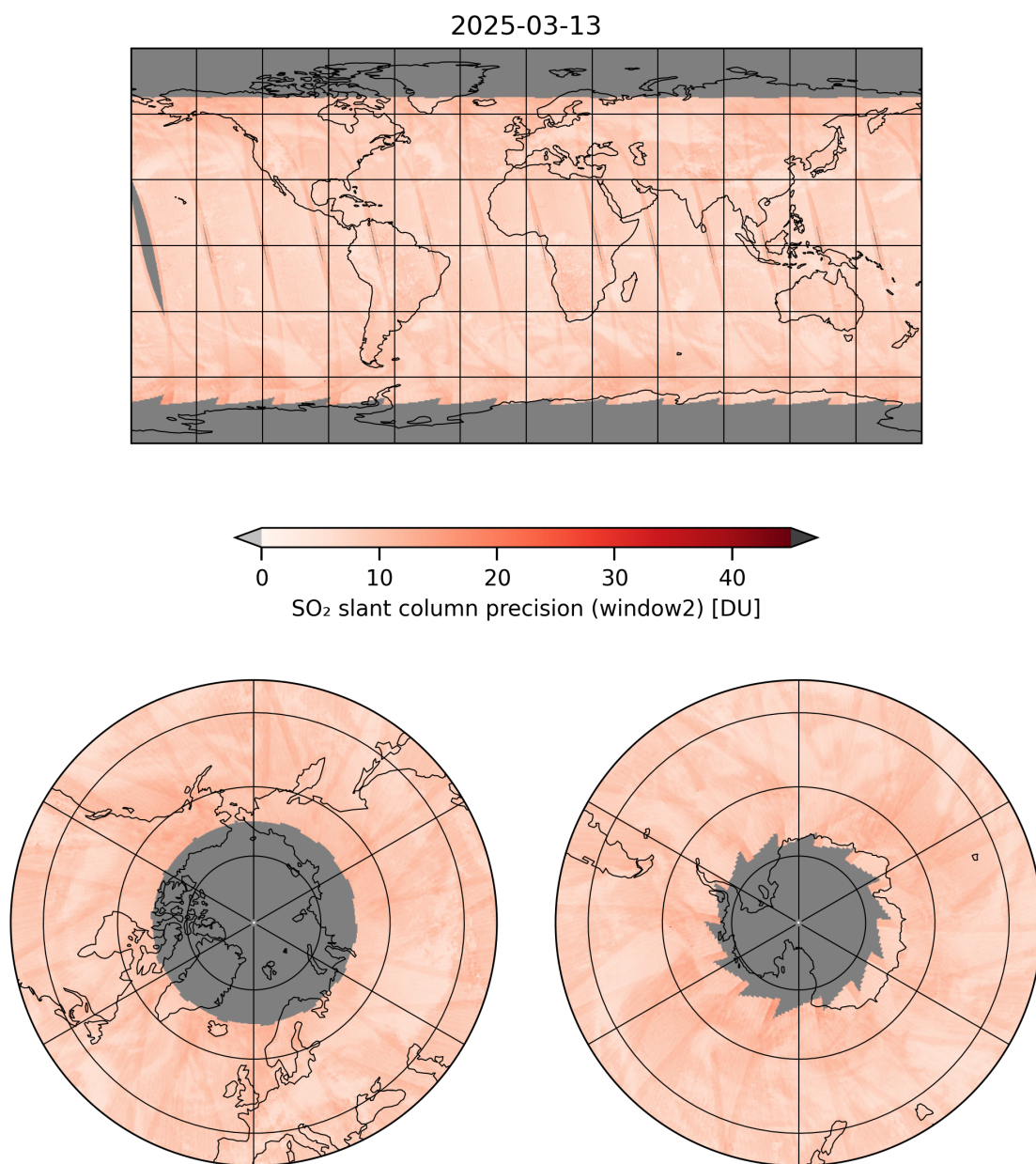


Figure 14: Map of “SO₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14

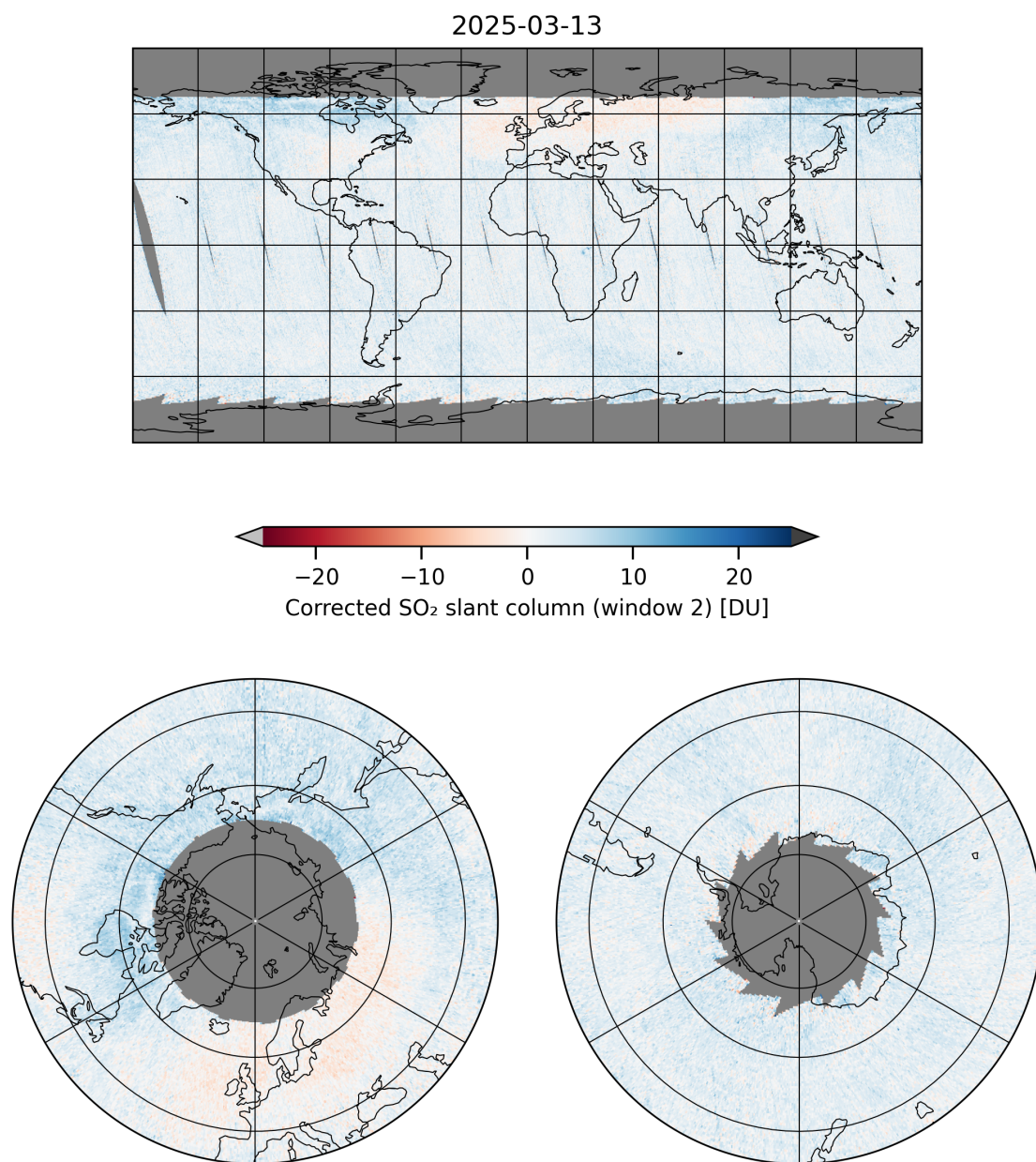


Figure 15: Map of “Corrected SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14

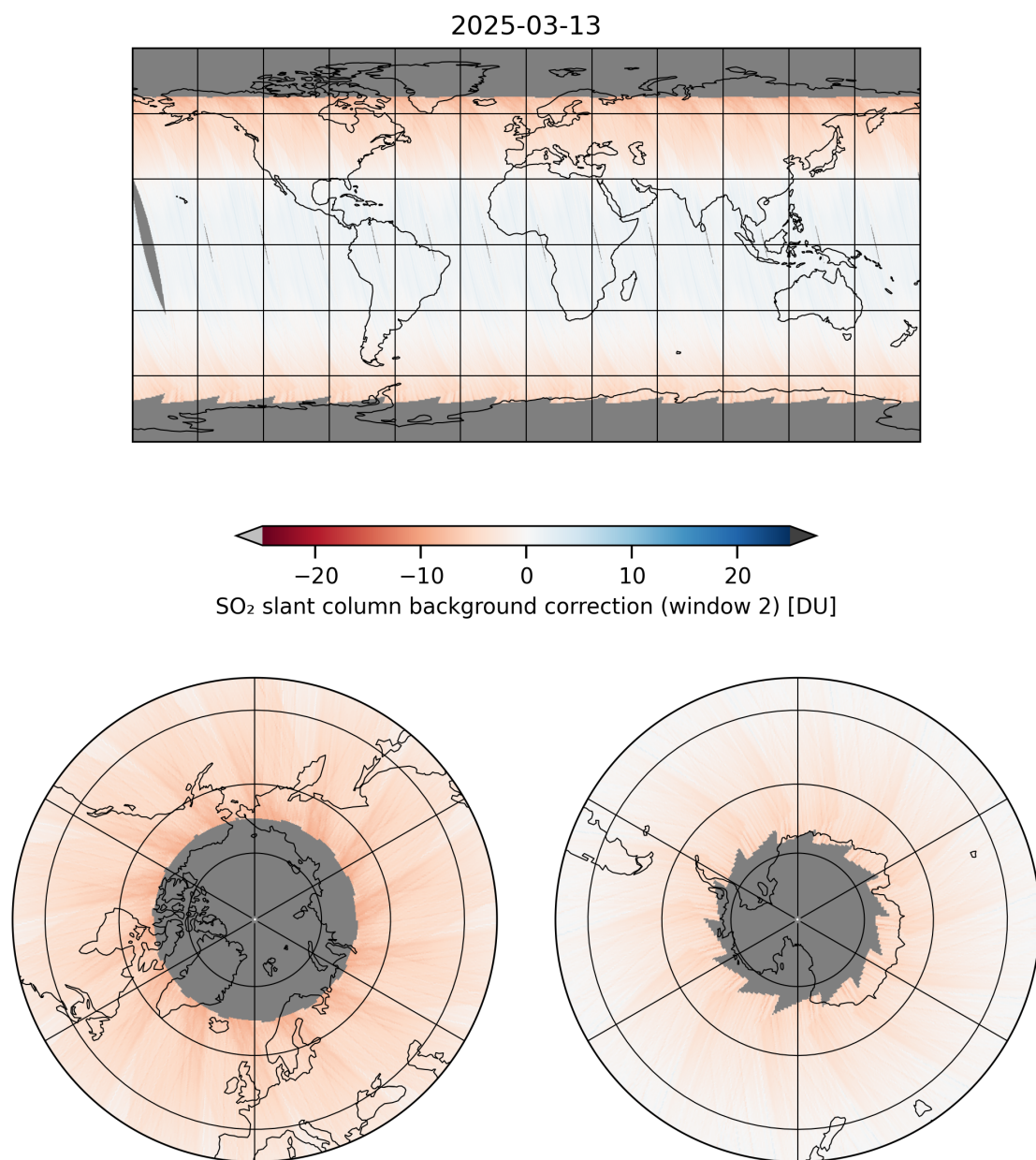


Figure 16: Map of “SO₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14

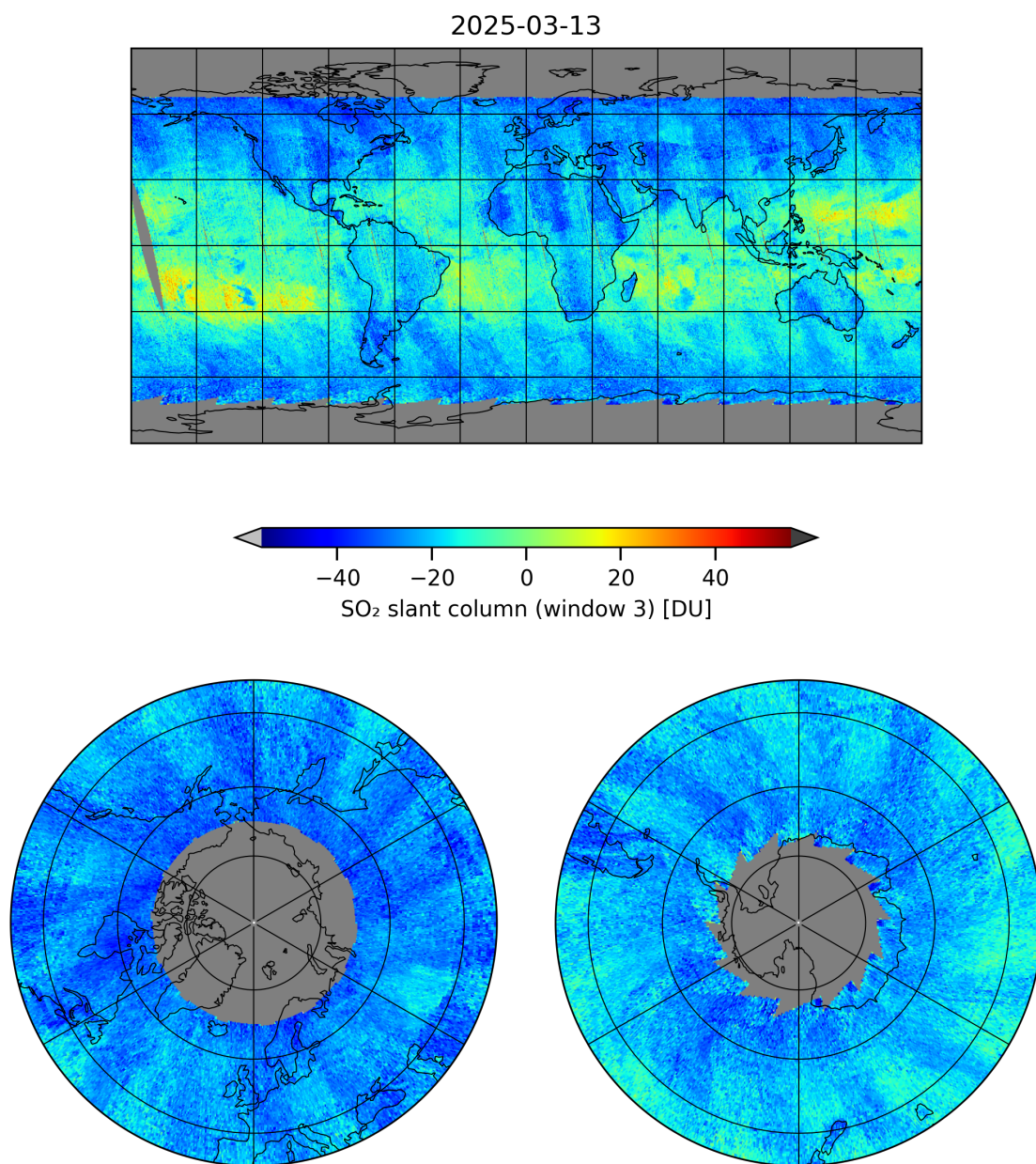


Figure 17: Map of “SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14

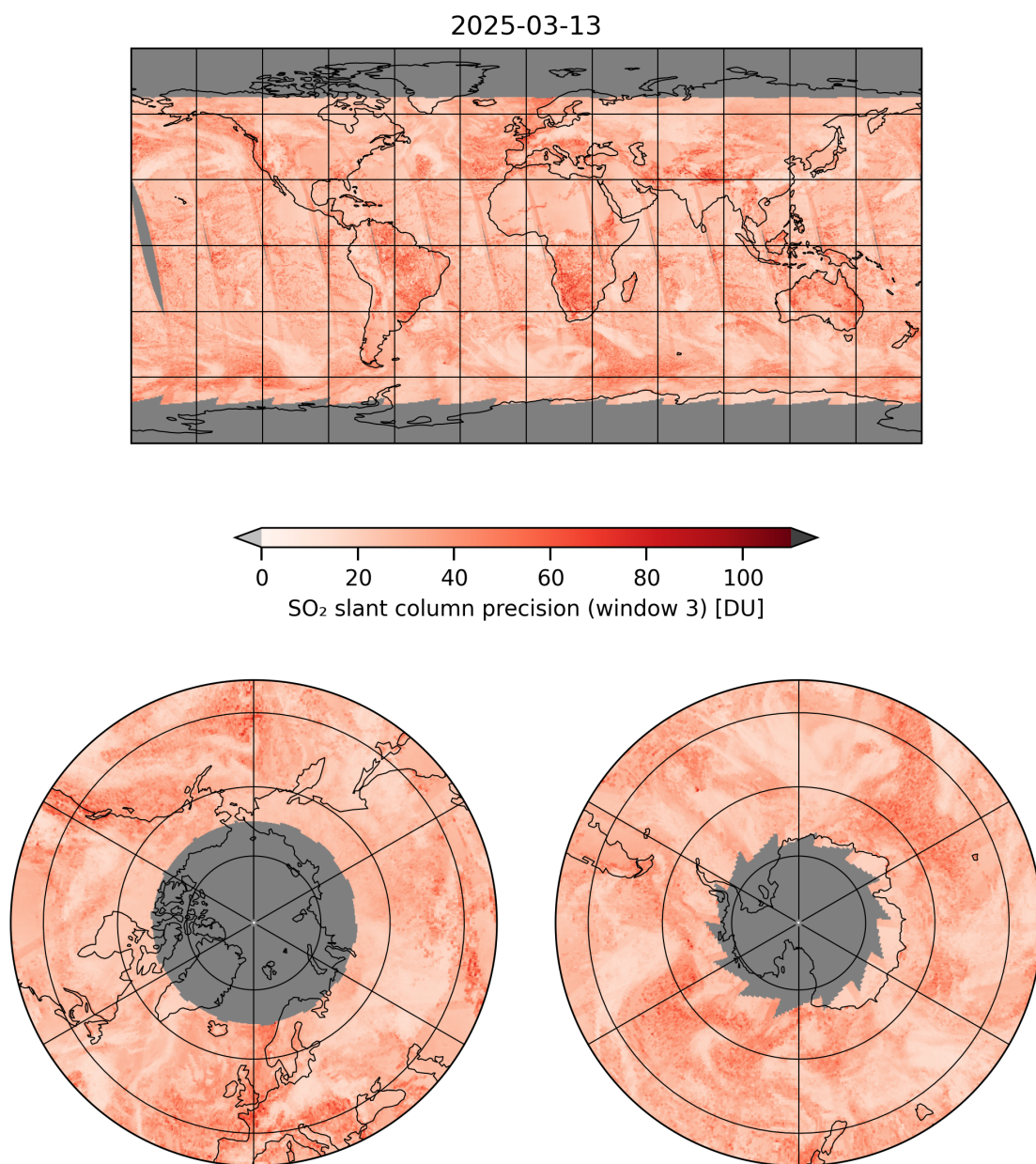


Figure 18: Map of “SO₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14

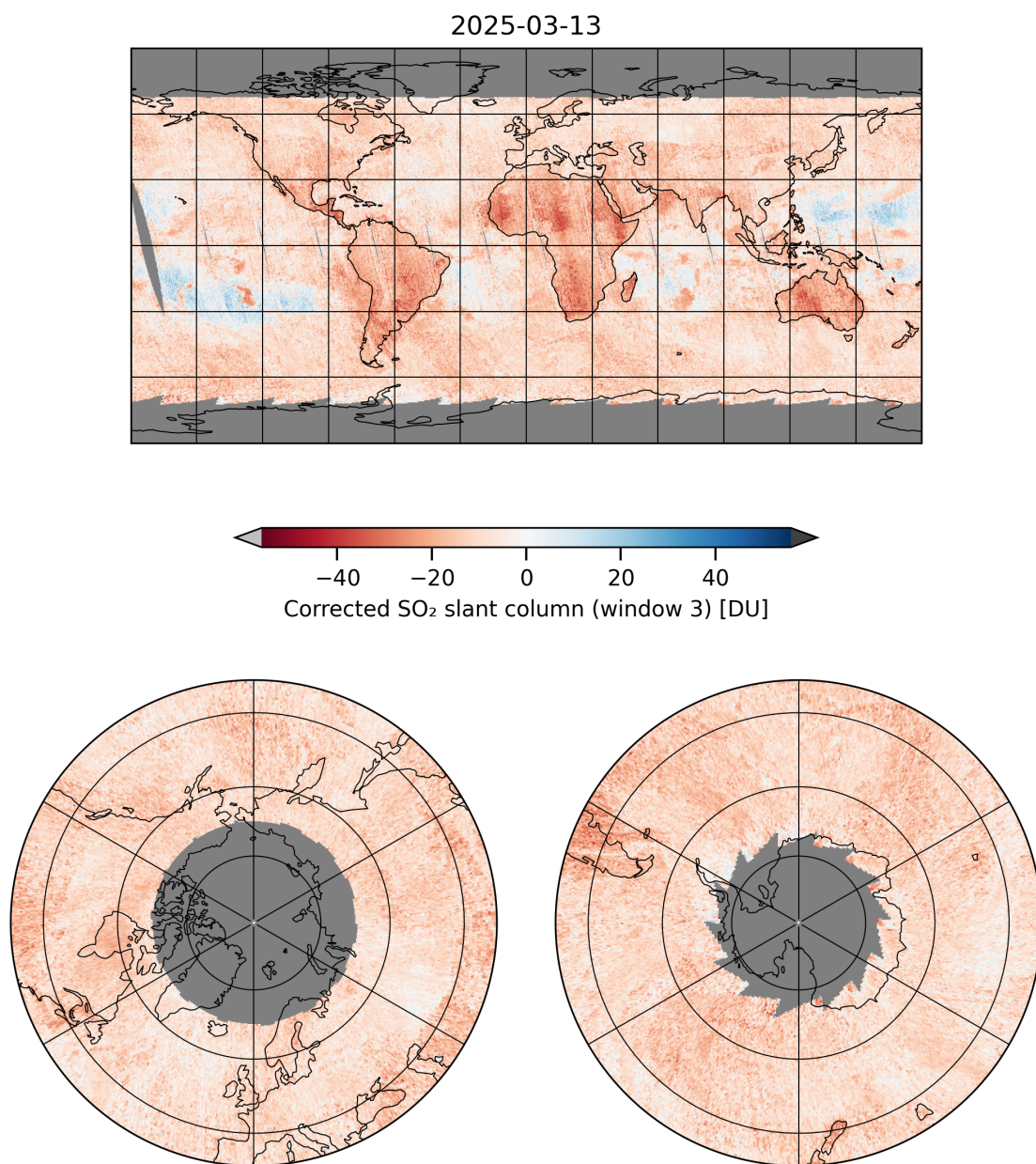


Figure 19: Map of “Corrected SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14

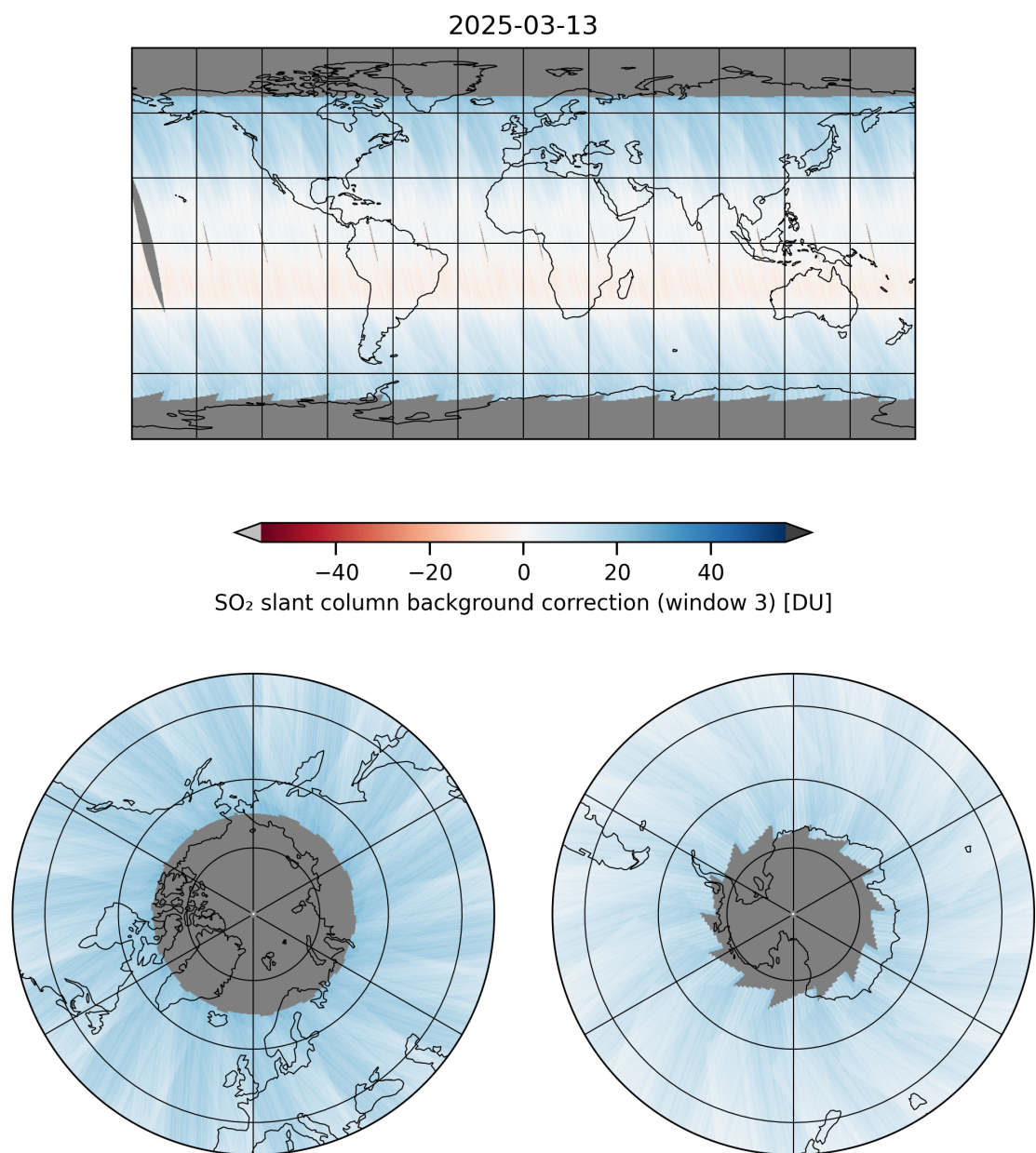


Figure 20: Map of “SO₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14

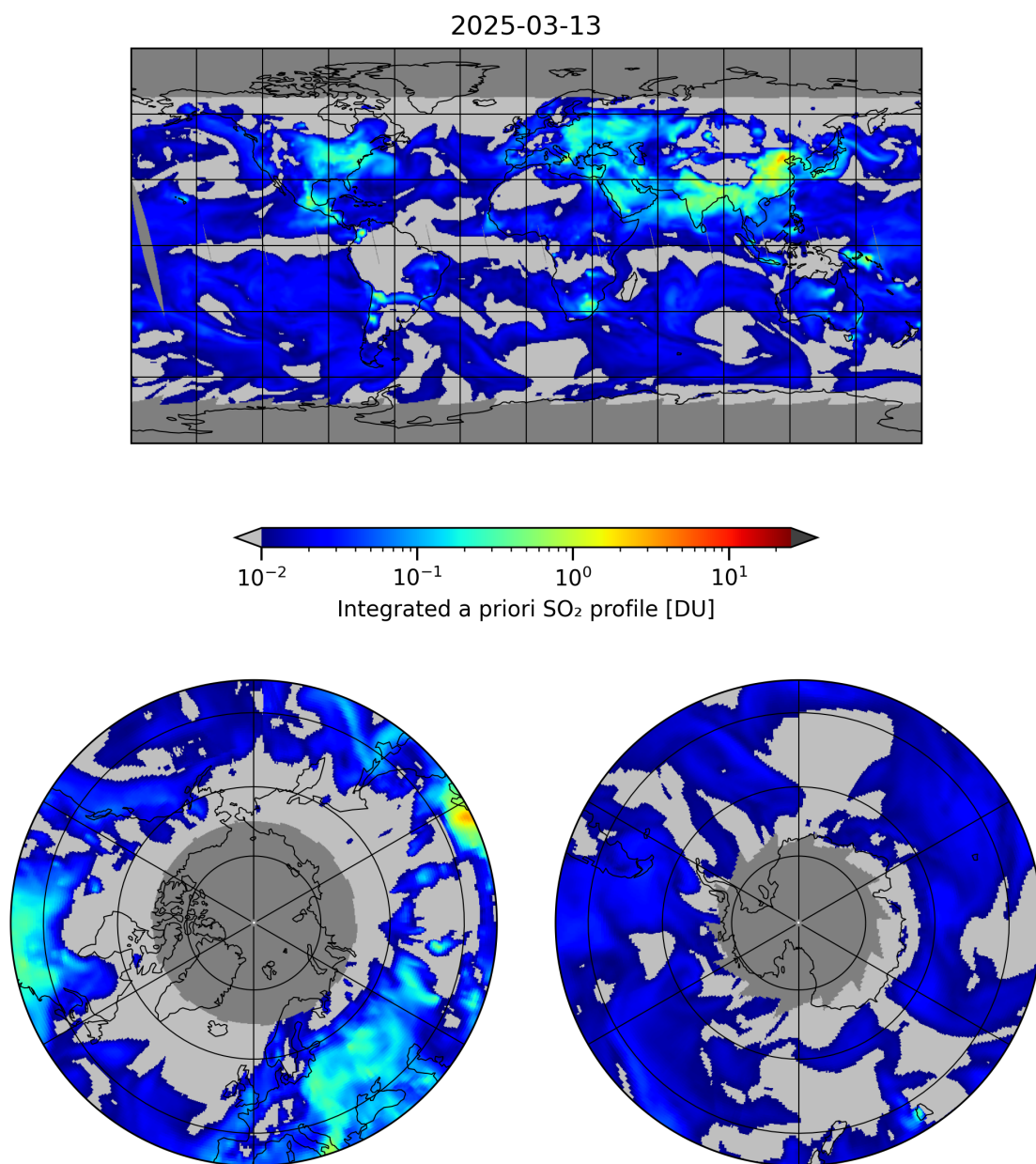


Figure 21: Map of “Integrated a priori SO₂ profile” for 2025-03-13 to 2025-03-14

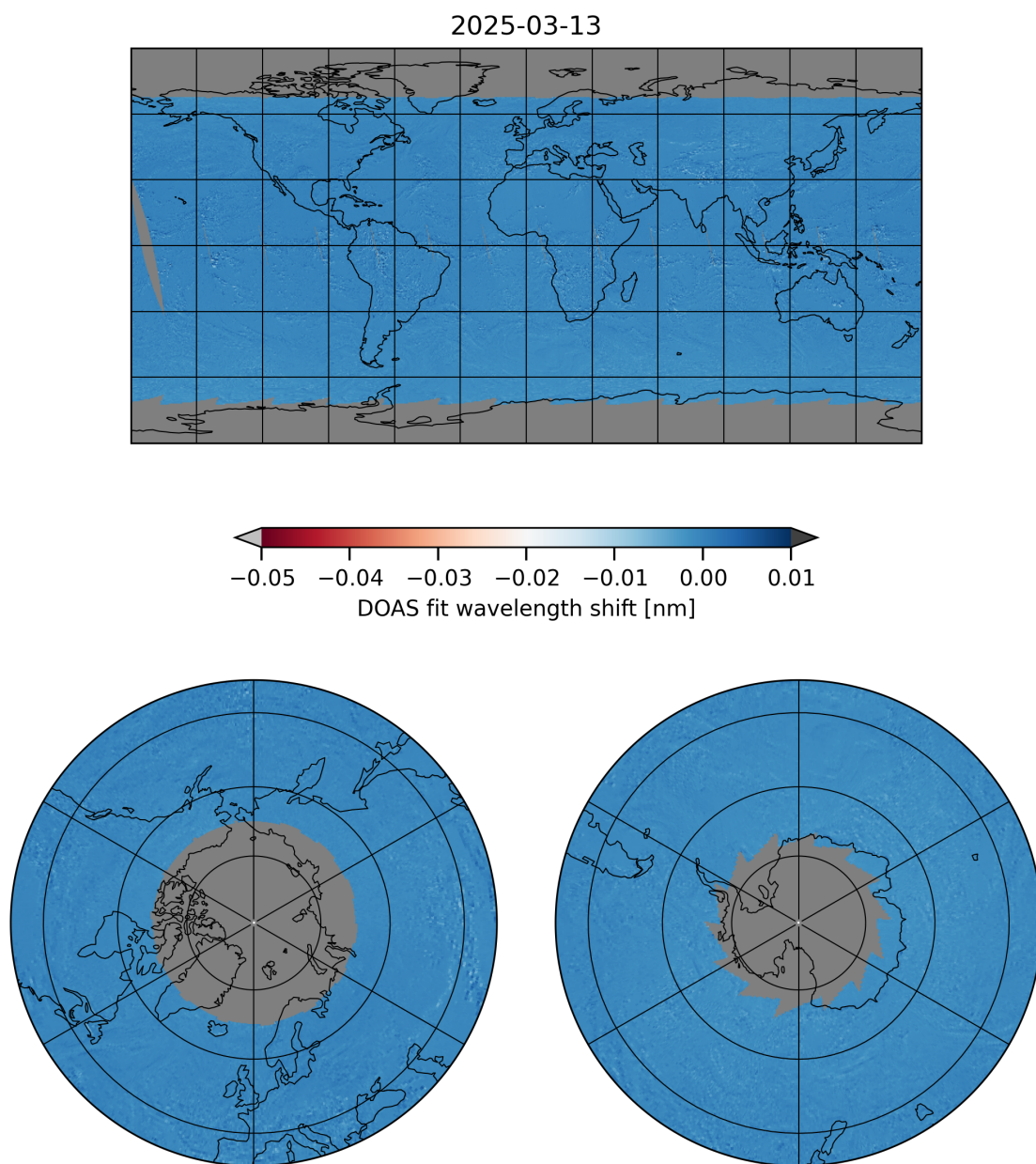


Figure 22: Map of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14

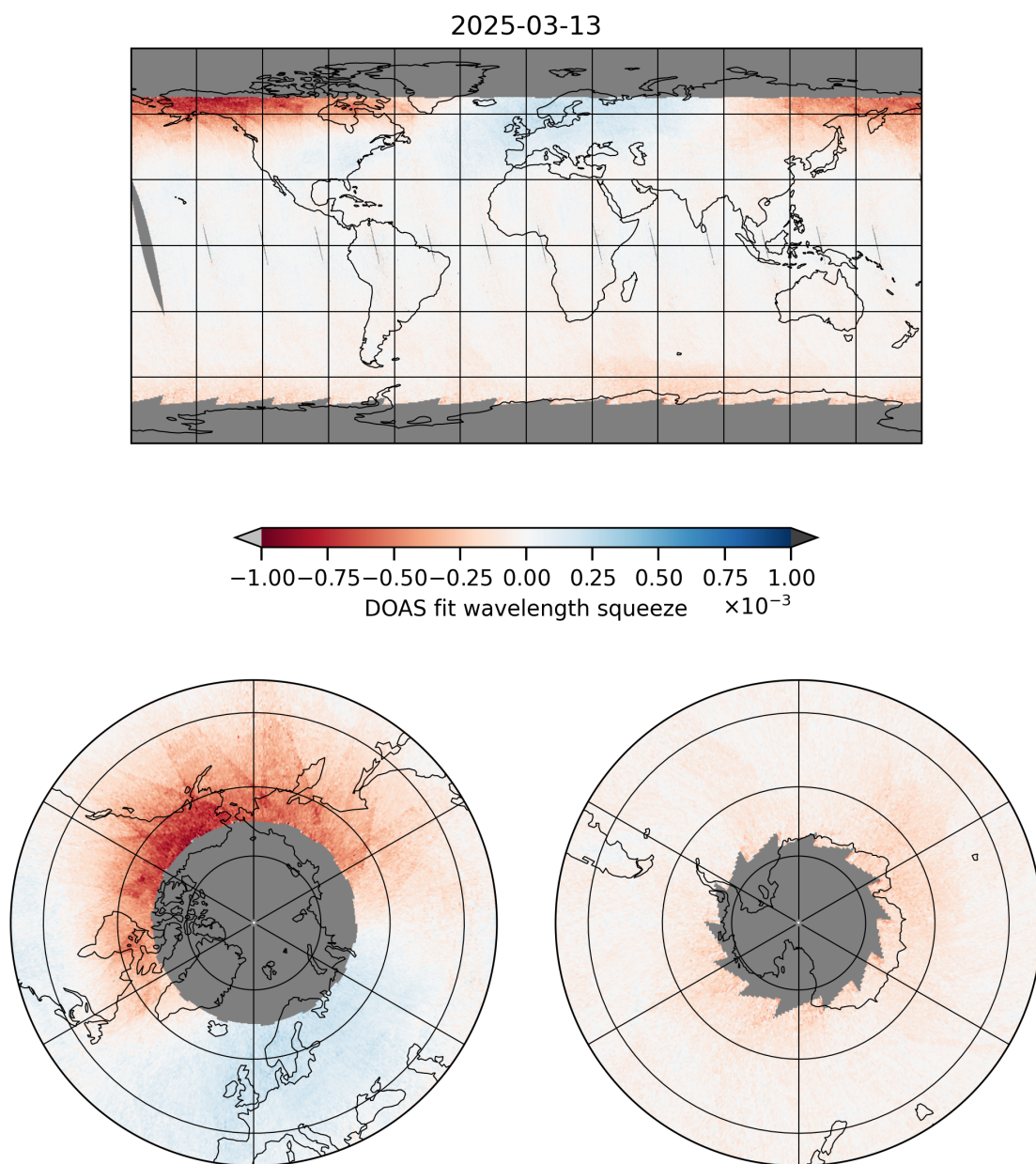


Figure 23: Map of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14

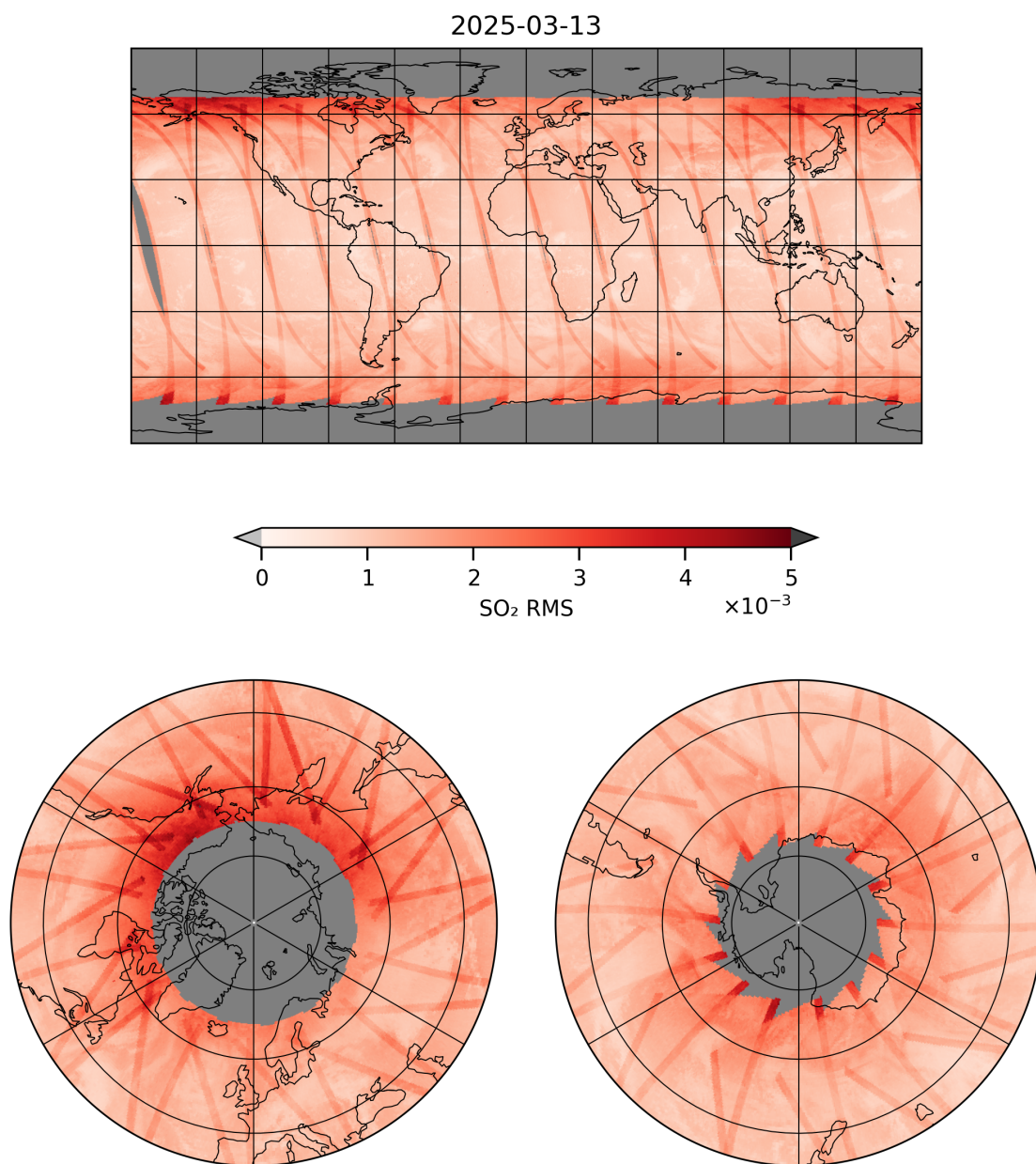


Figure 24: Map of “SO₂ RMS” for 2025-03-13 to 2025-03-14

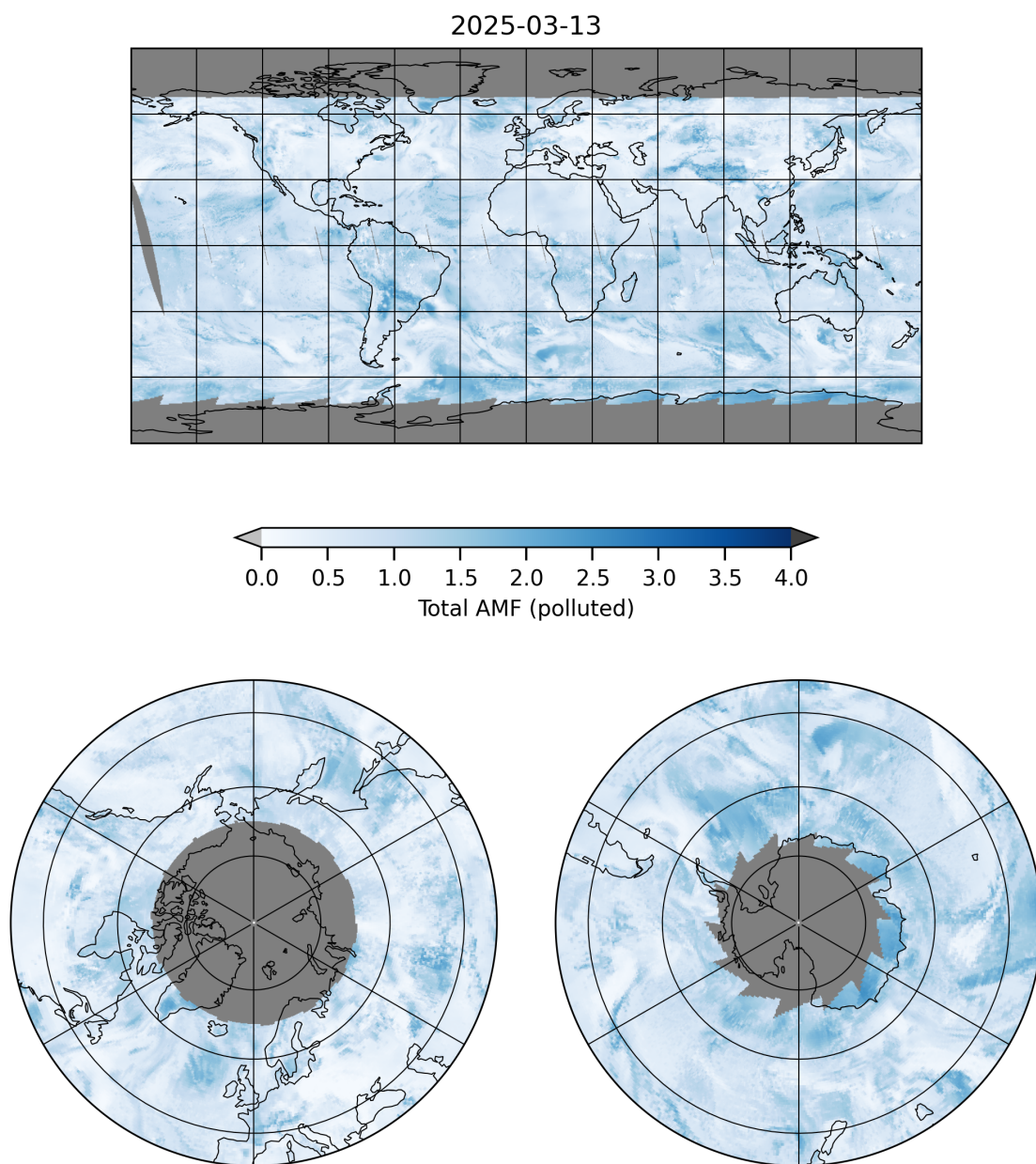


Figure 25: Map of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14

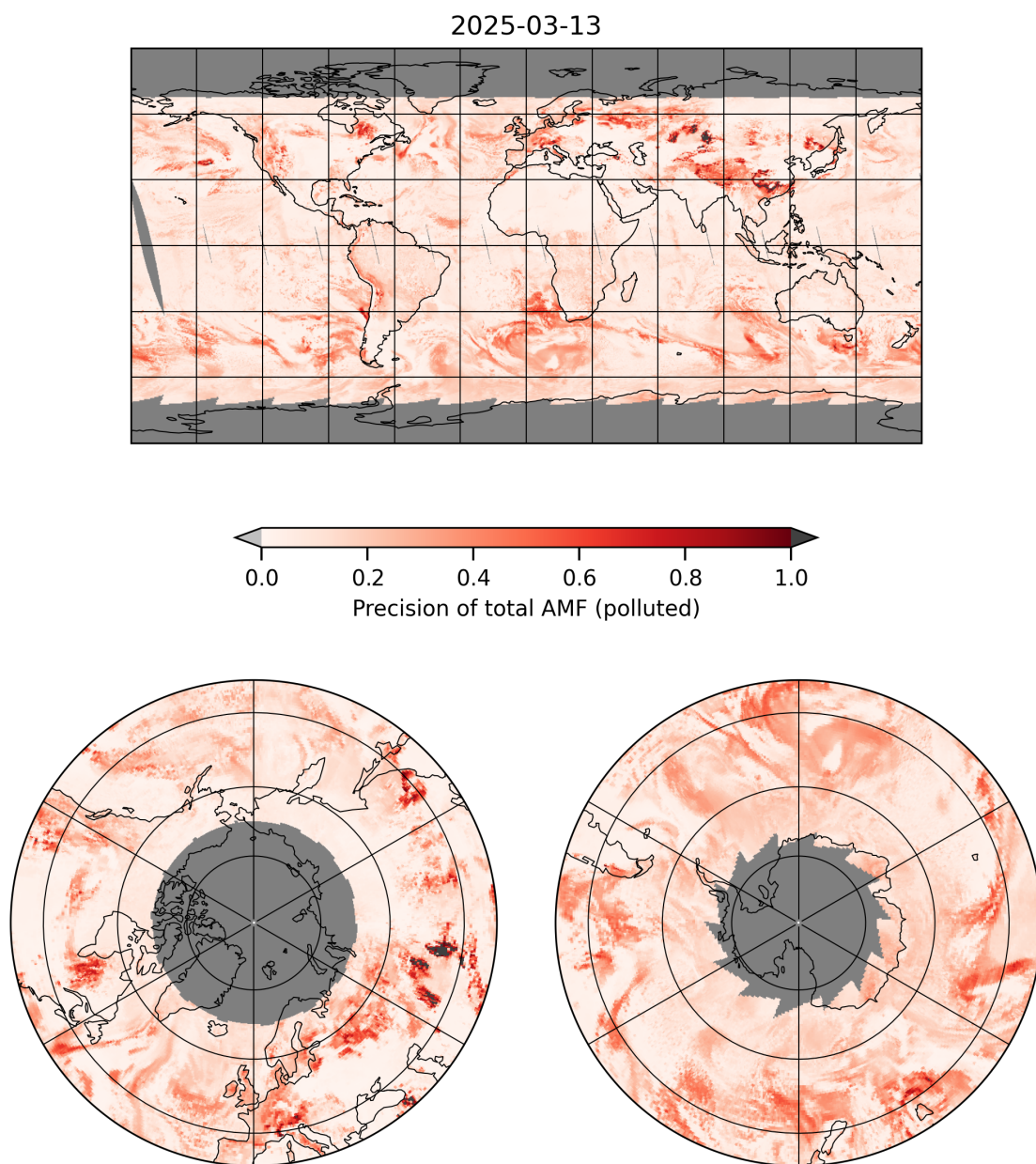


Figure 26: Map of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14

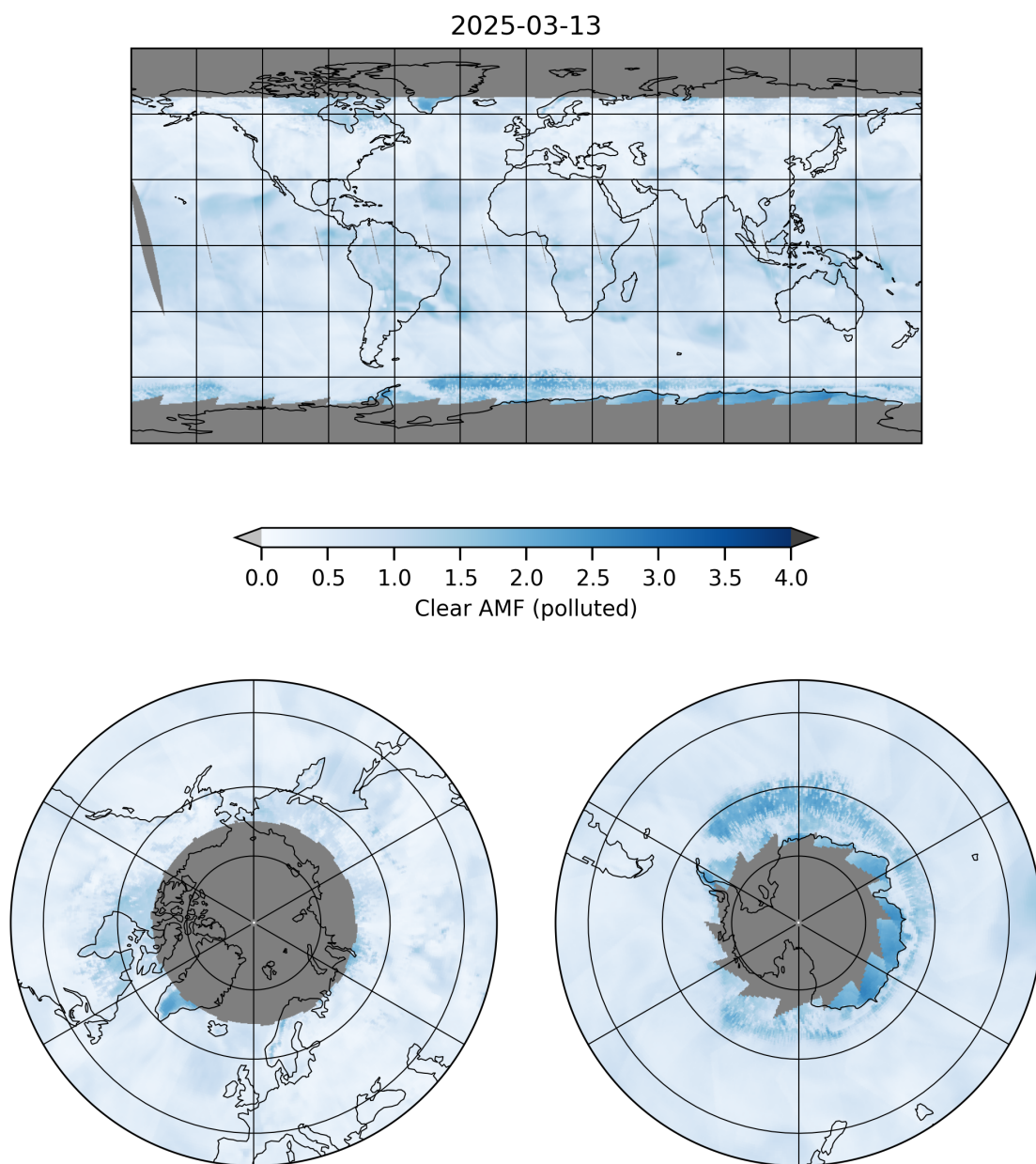


Figure 27: Map of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14

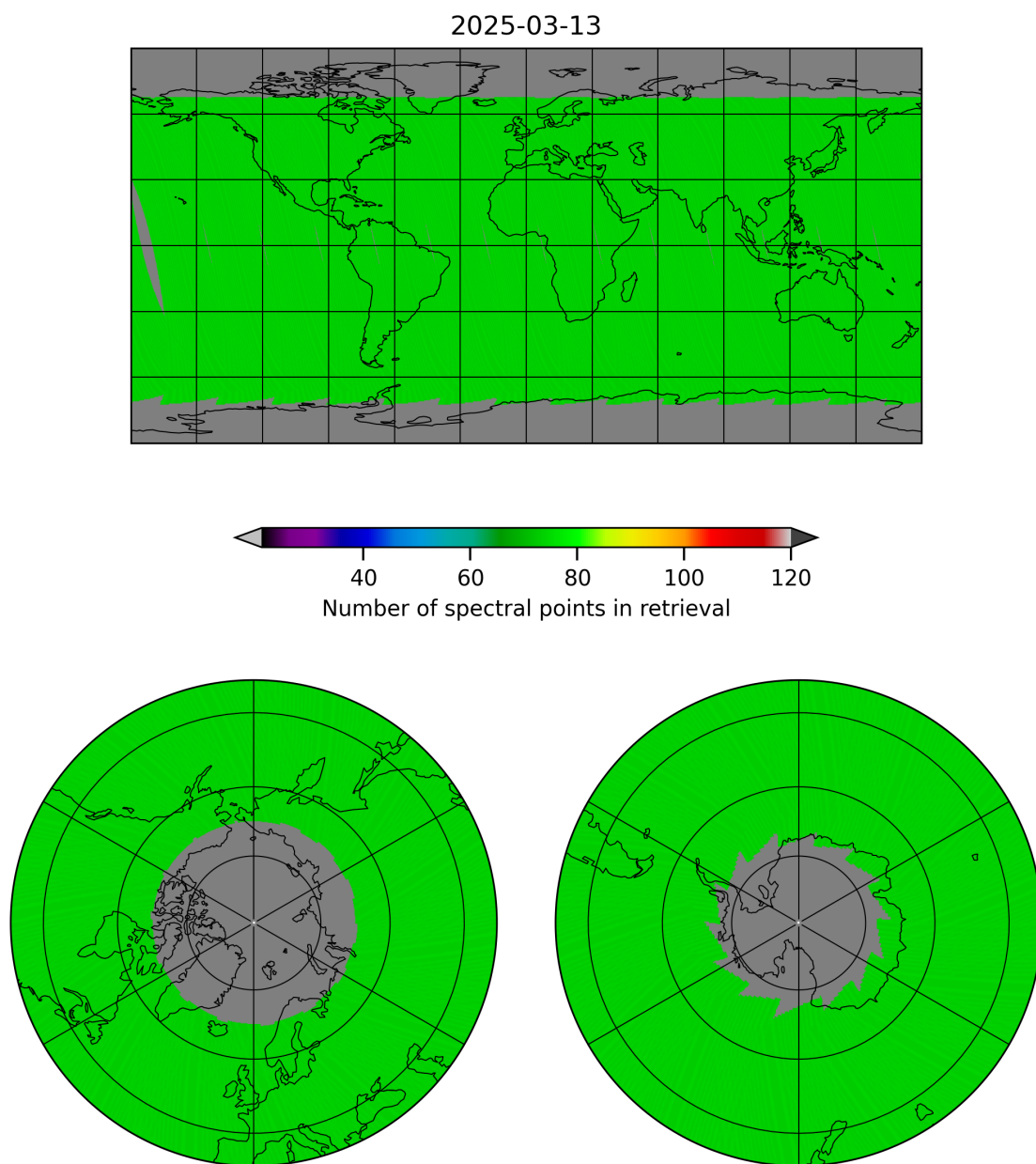


Figure 28: Map of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14

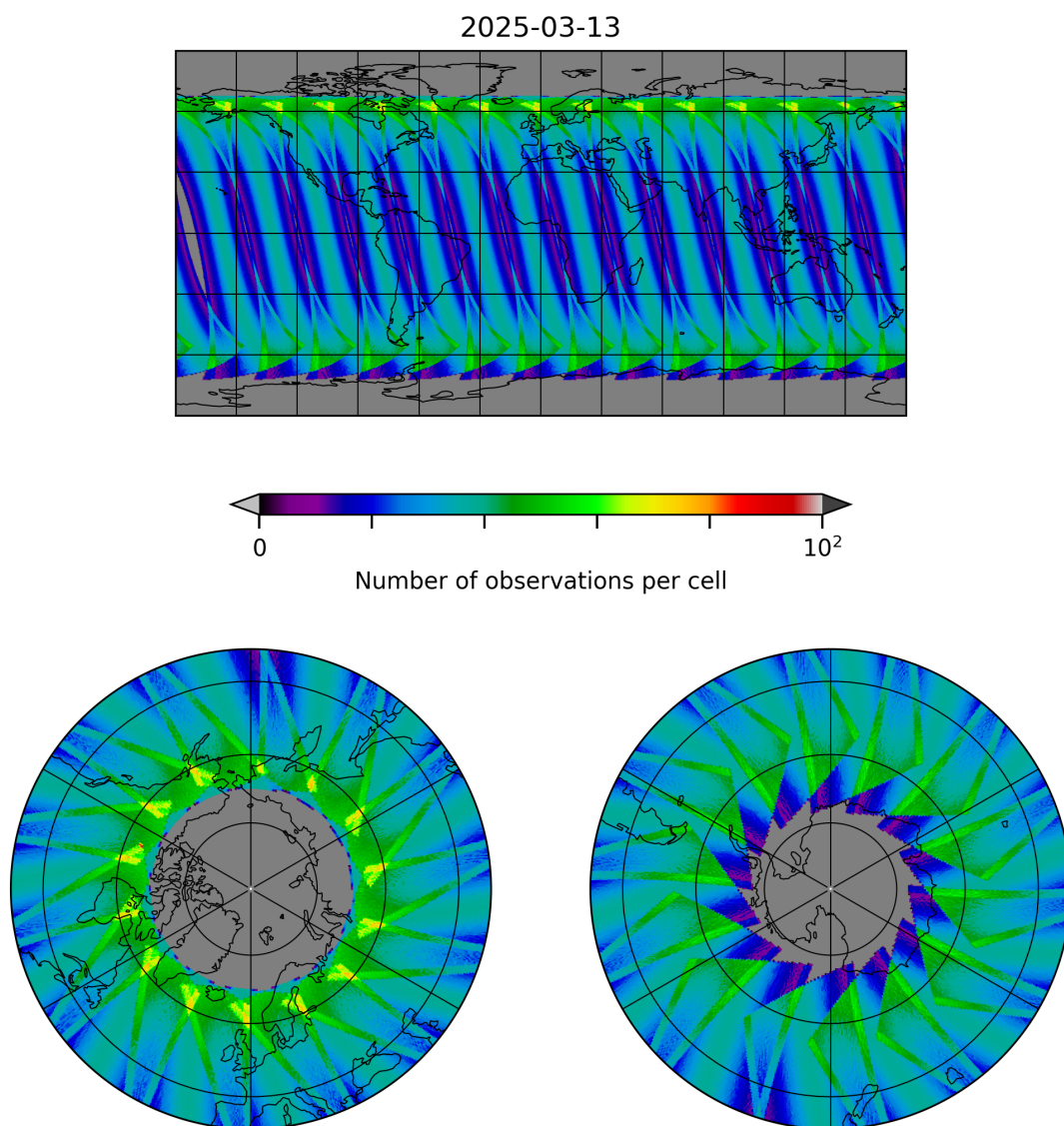


Figure 29: Map of the number of observations for 2025-03-13 to 2025-03-14

7 Zonal average

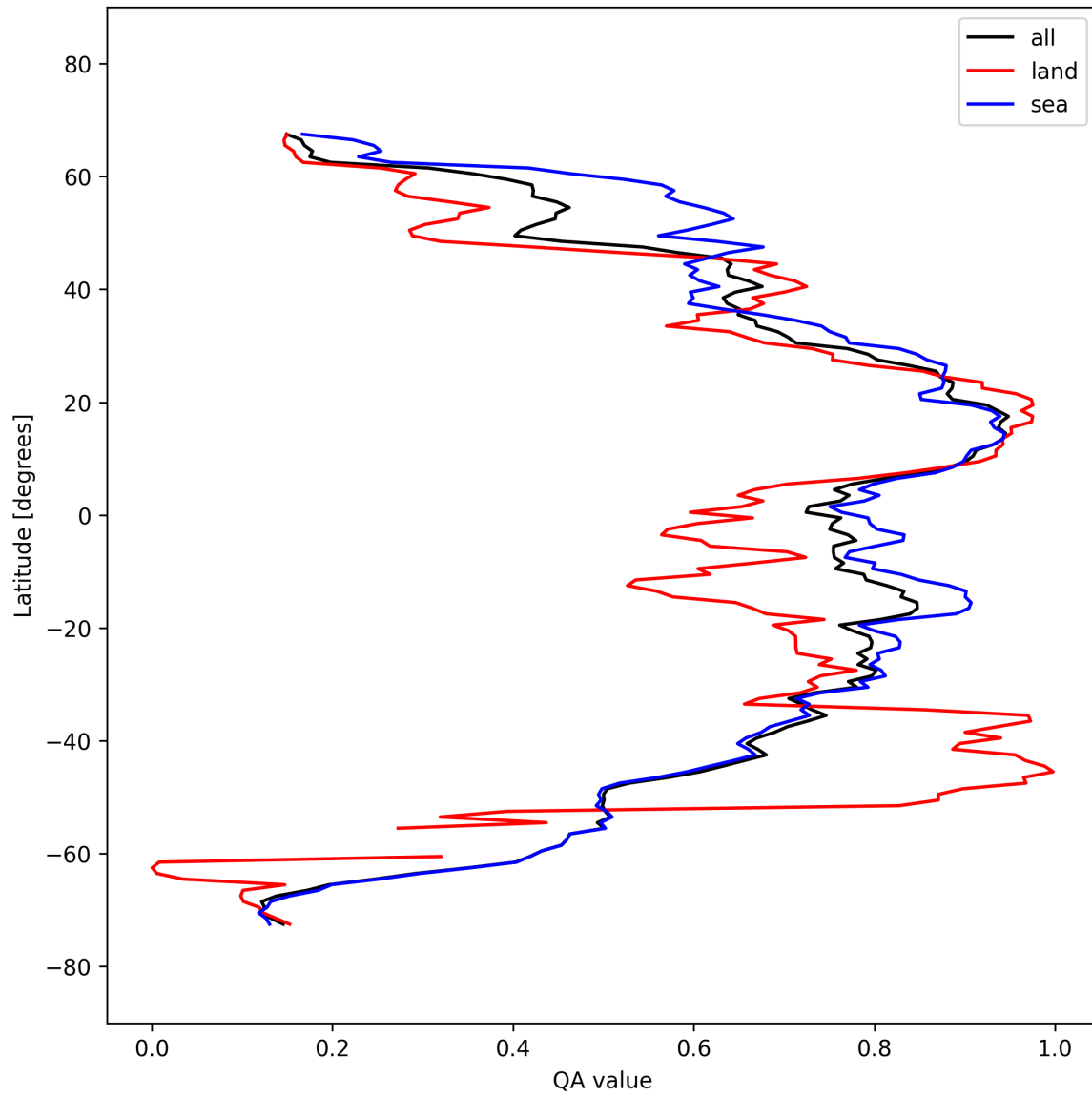


Figure 30: Zonal average of “QA value” for 2025-03-13 to 2025-03-14.

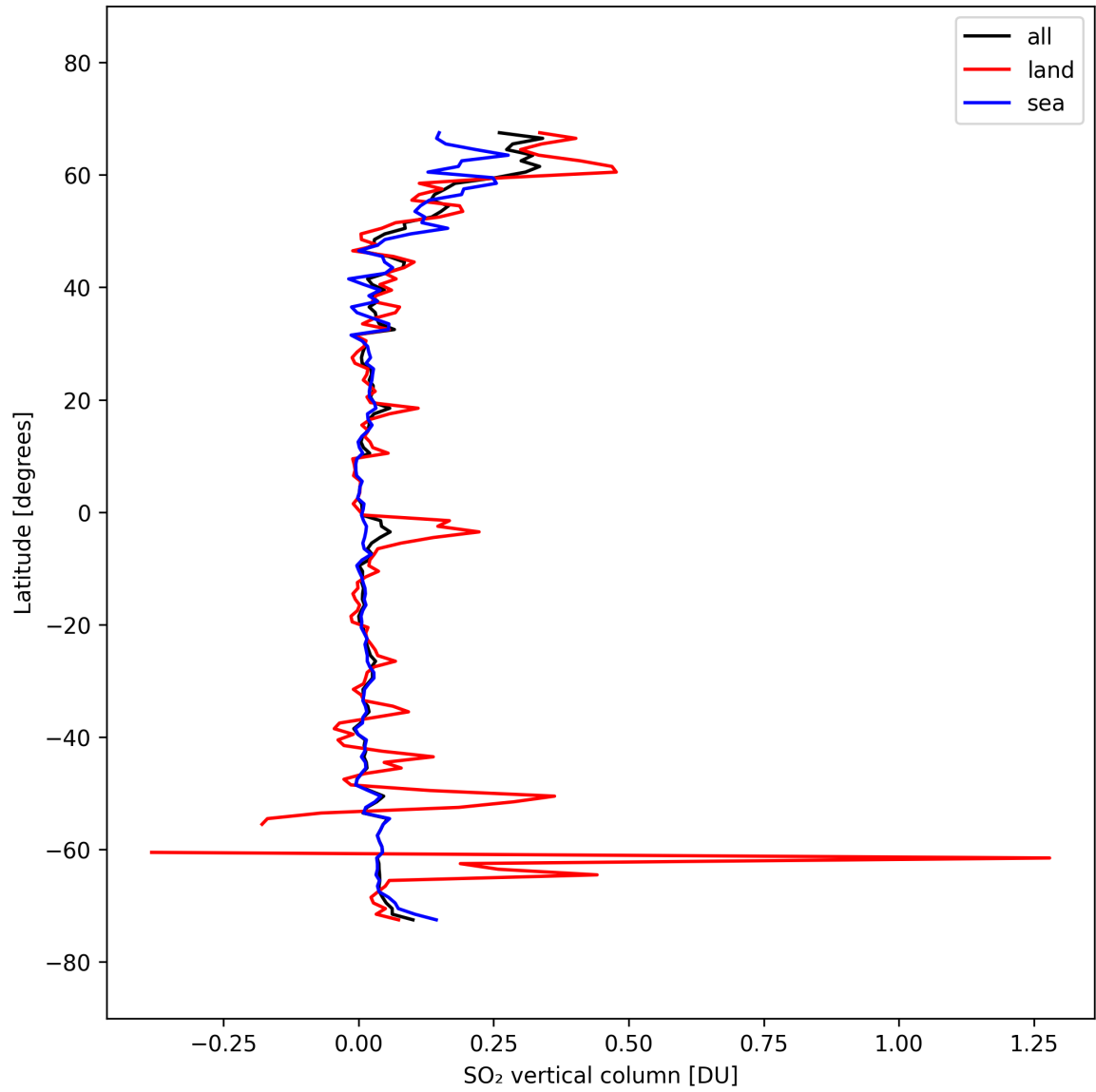


Figure 31: Zonal average of “SO₂ vertical column” for 2025-03-13 to 2025-03-14.

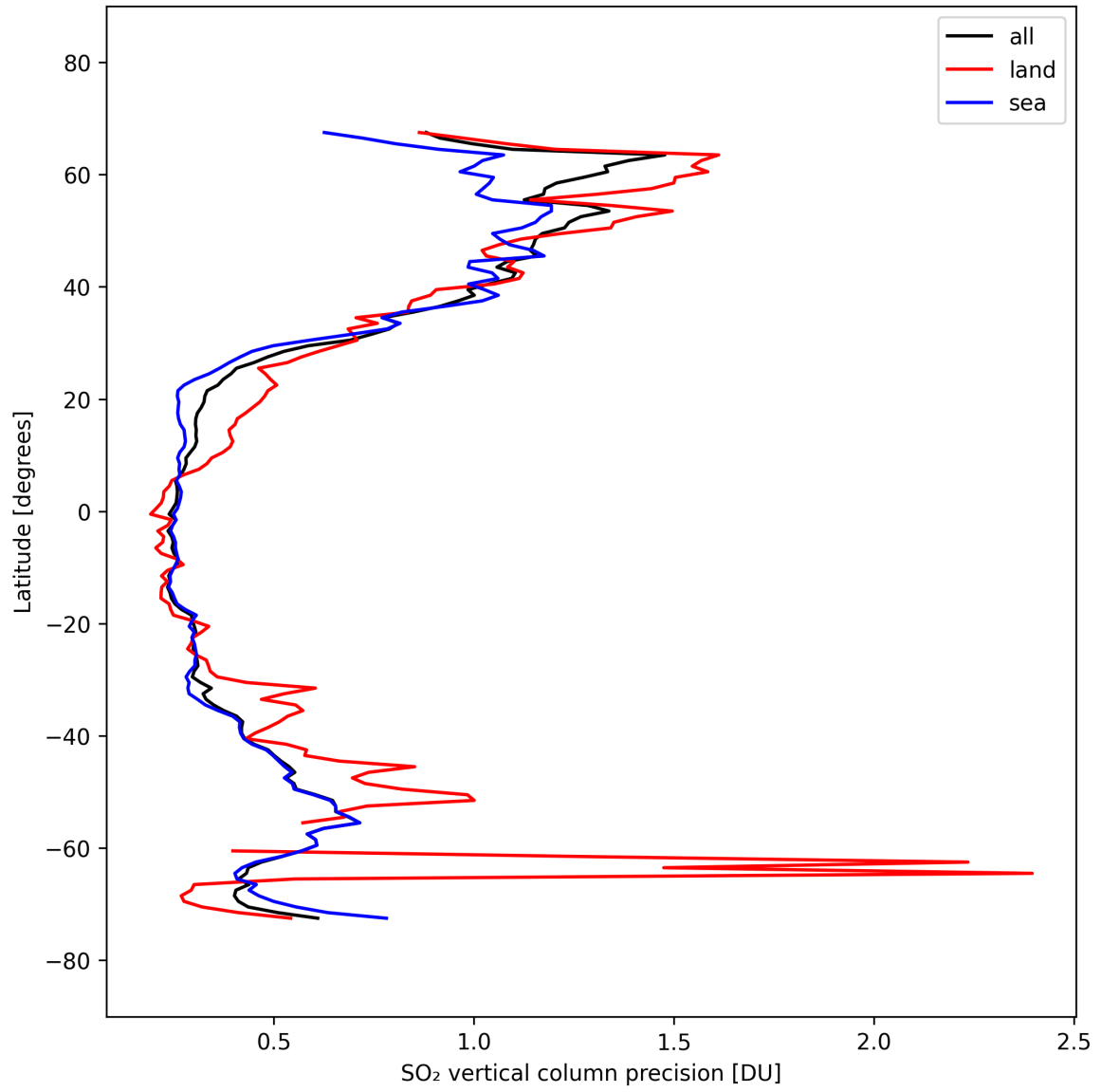


Figure 32: Zonal average of “SO₂ vertical column precision” for 2025-03-13 to 2025-03-14.

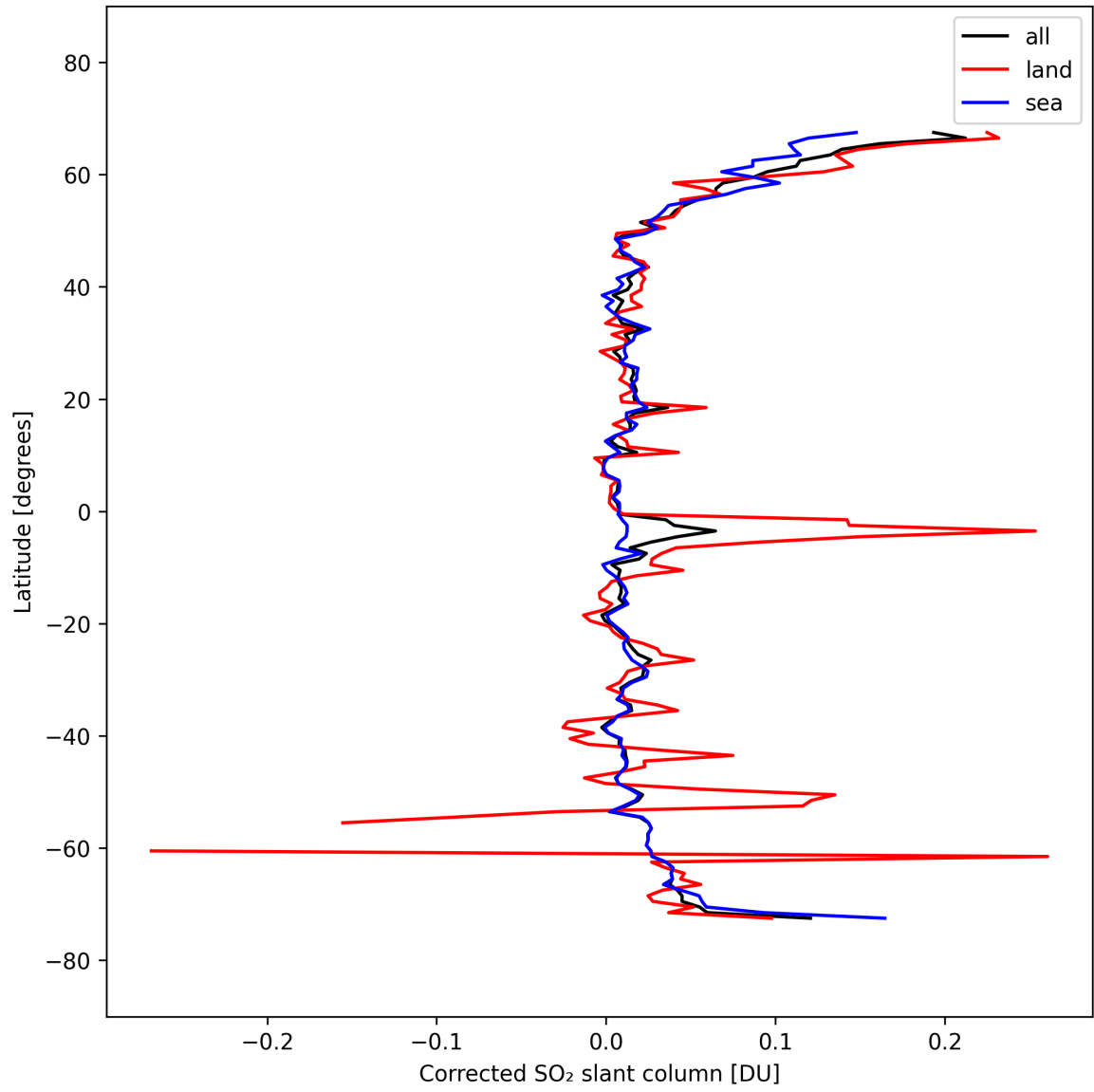


Figure 33: Zonal average of "Corrected SO₂ slant column" for 2025-03-13 to 2025-03-14.

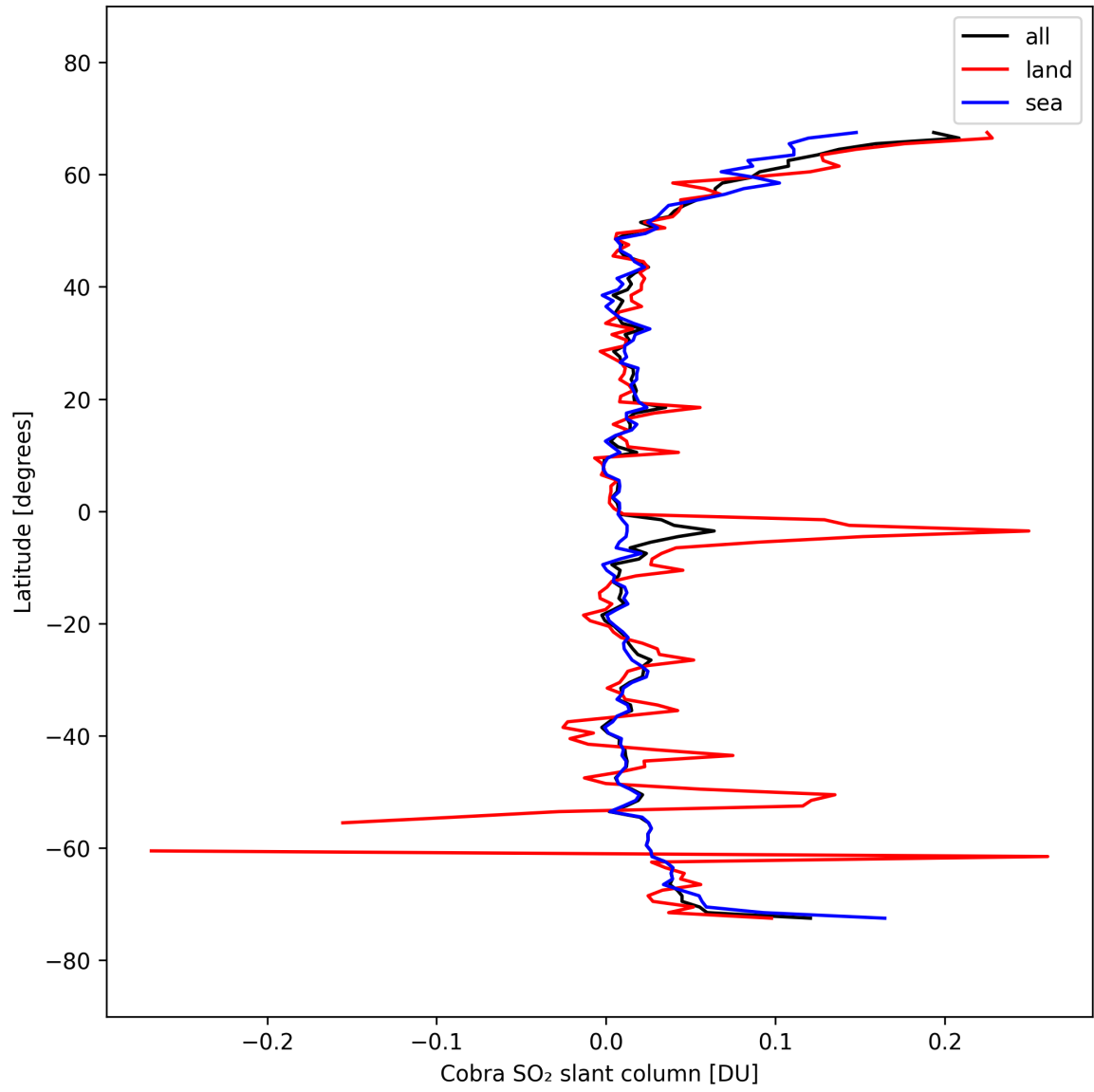


Figure 34: Zonal average of “Cobra SO₂ slant column” for 2025-03-13 to 2025-03-14.

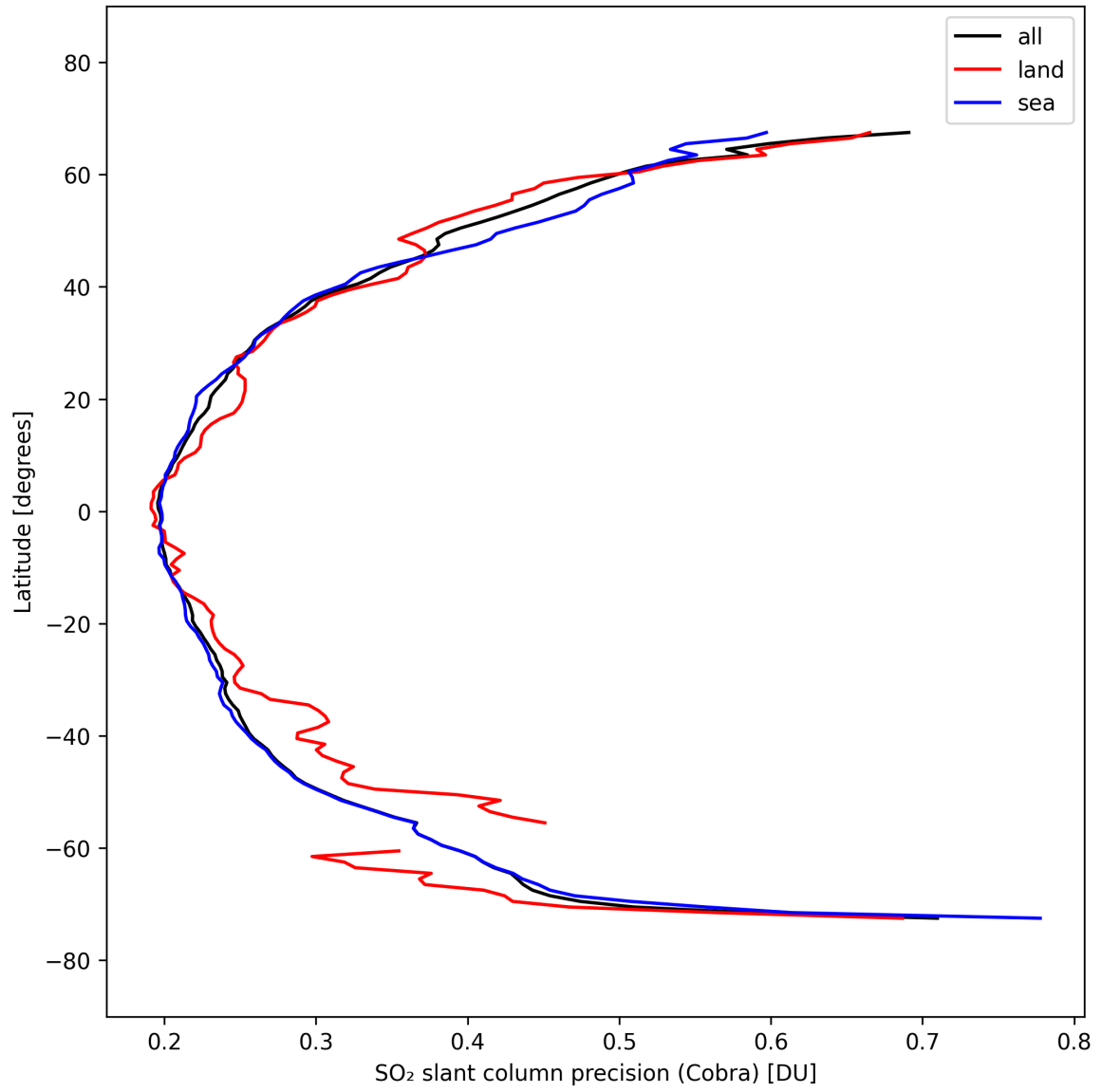


Figure 35: Zonal average of “SO₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14.

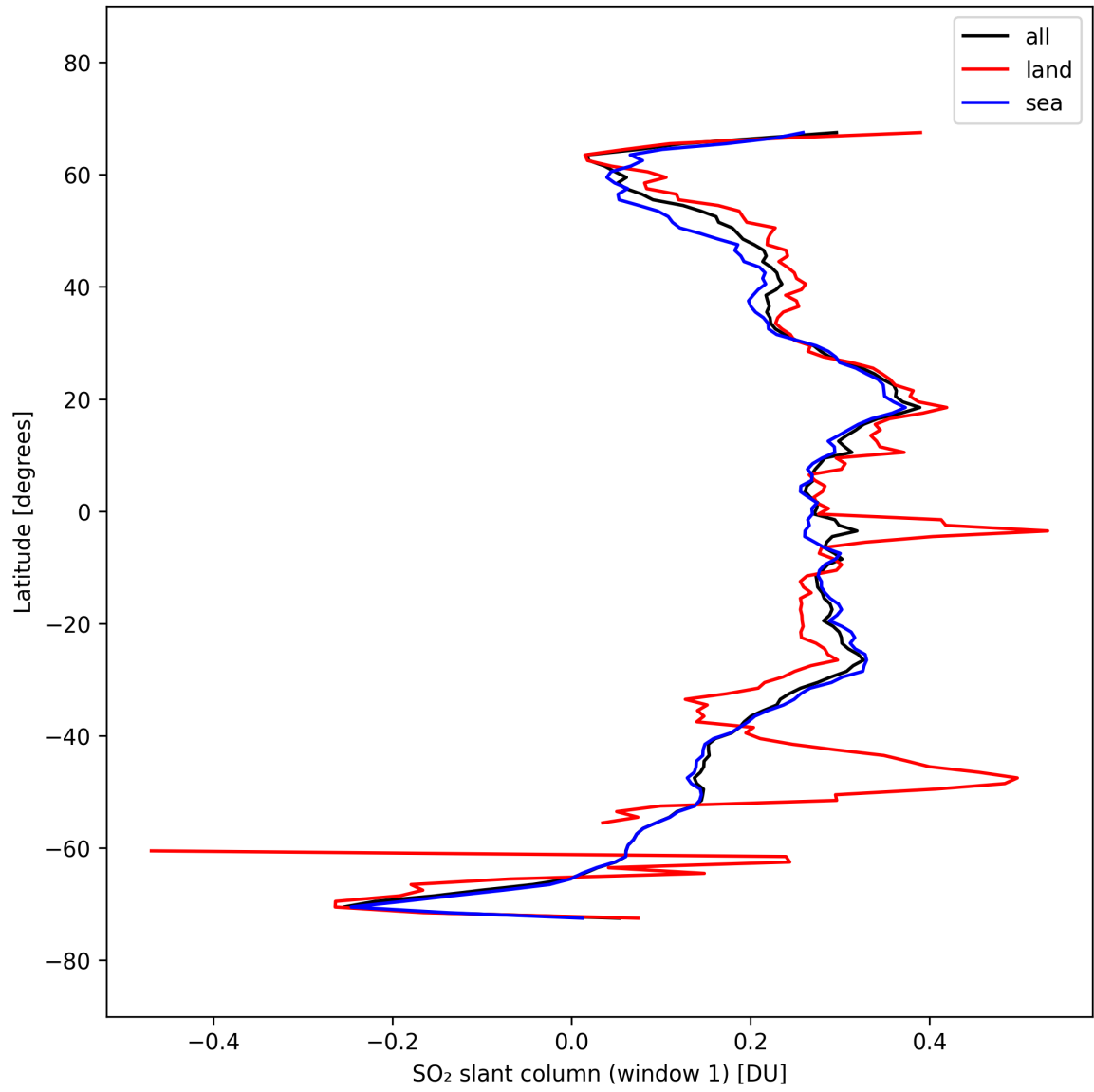


Figure 36: Zonal average of “SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14.

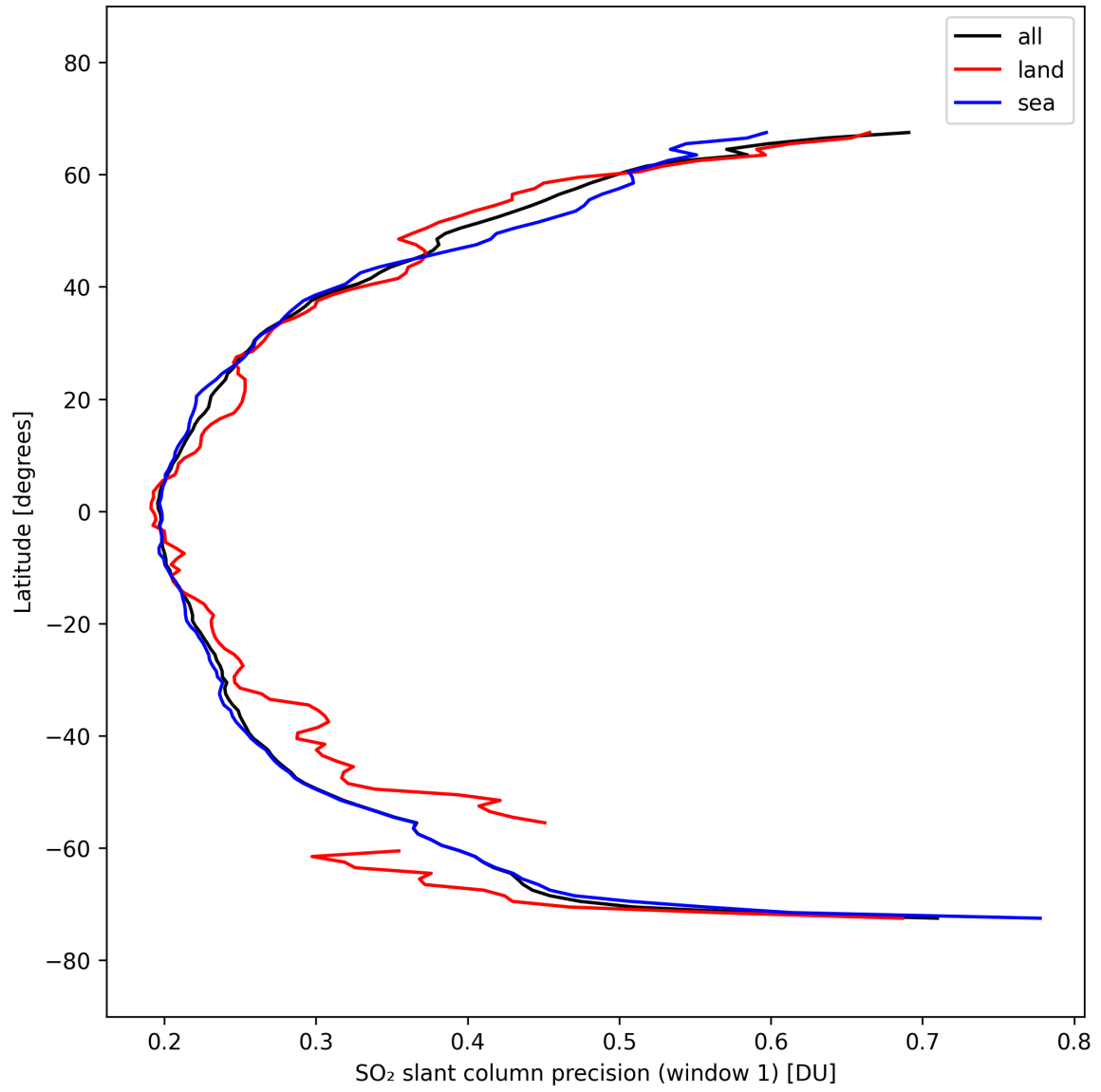


Figure 37: Zonal average of “SO₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14.

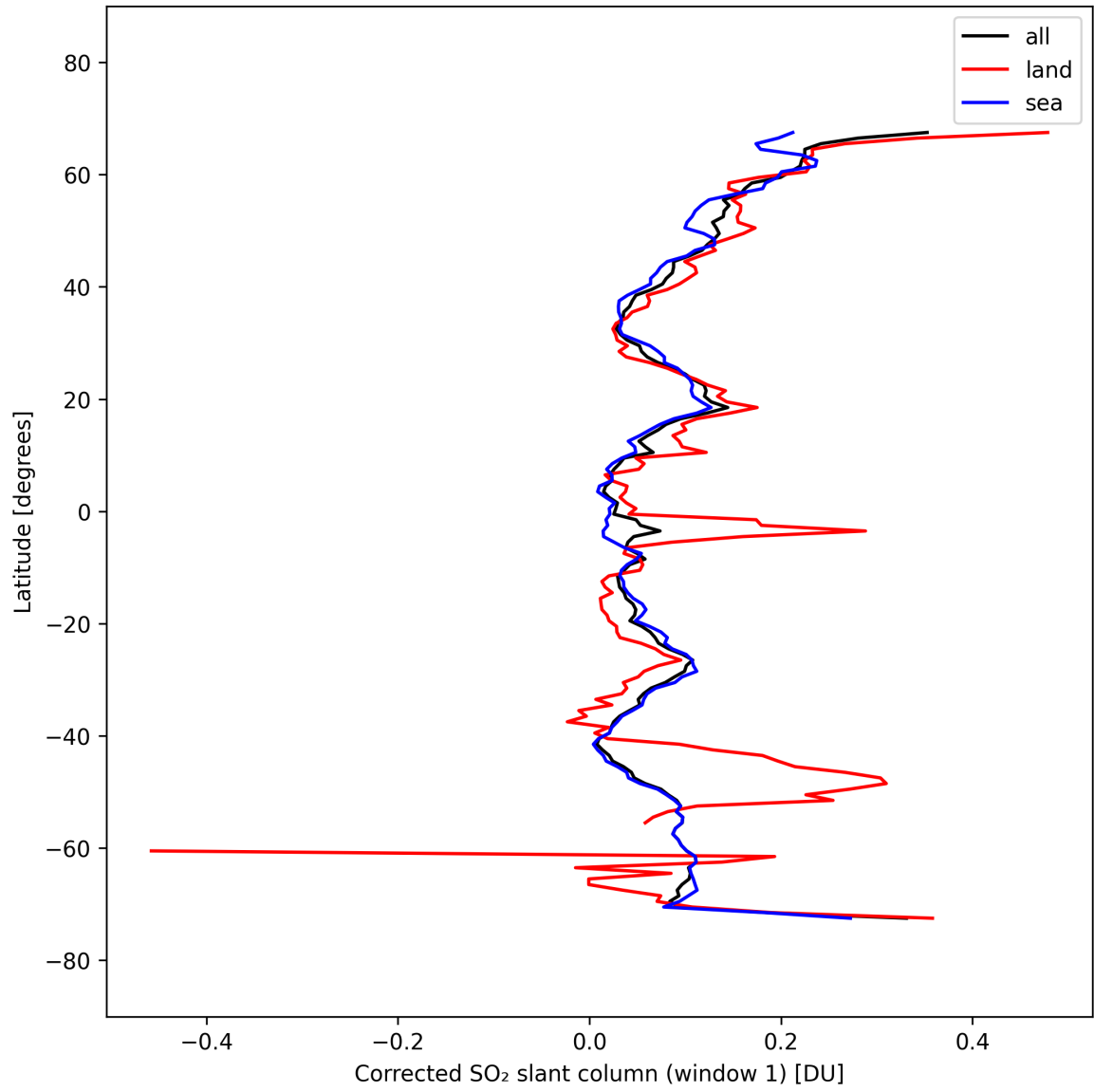


Figure 38: Zonal average of “Corrected SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14.

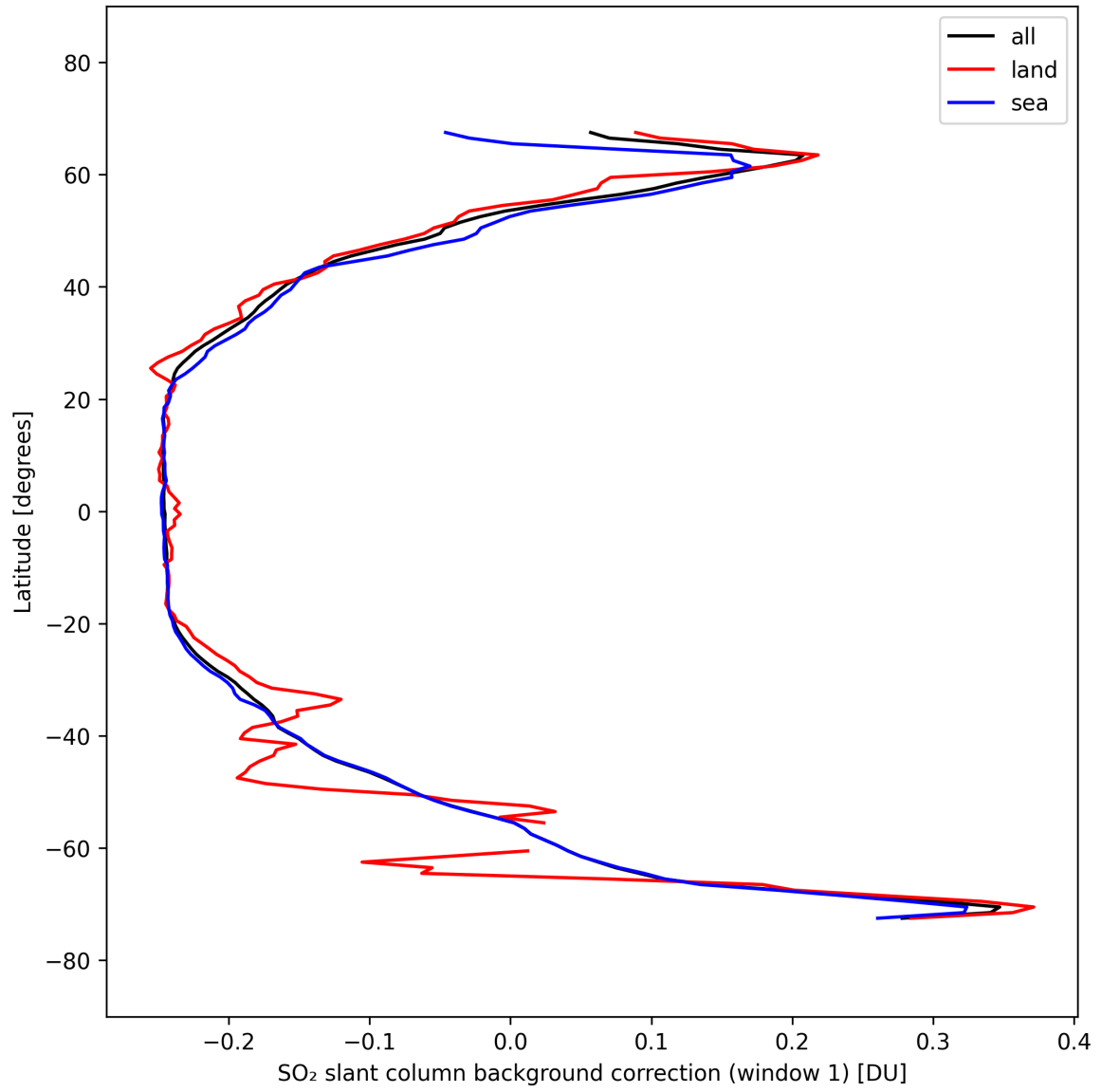


Figure 39: Zonal average of “SO₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14.

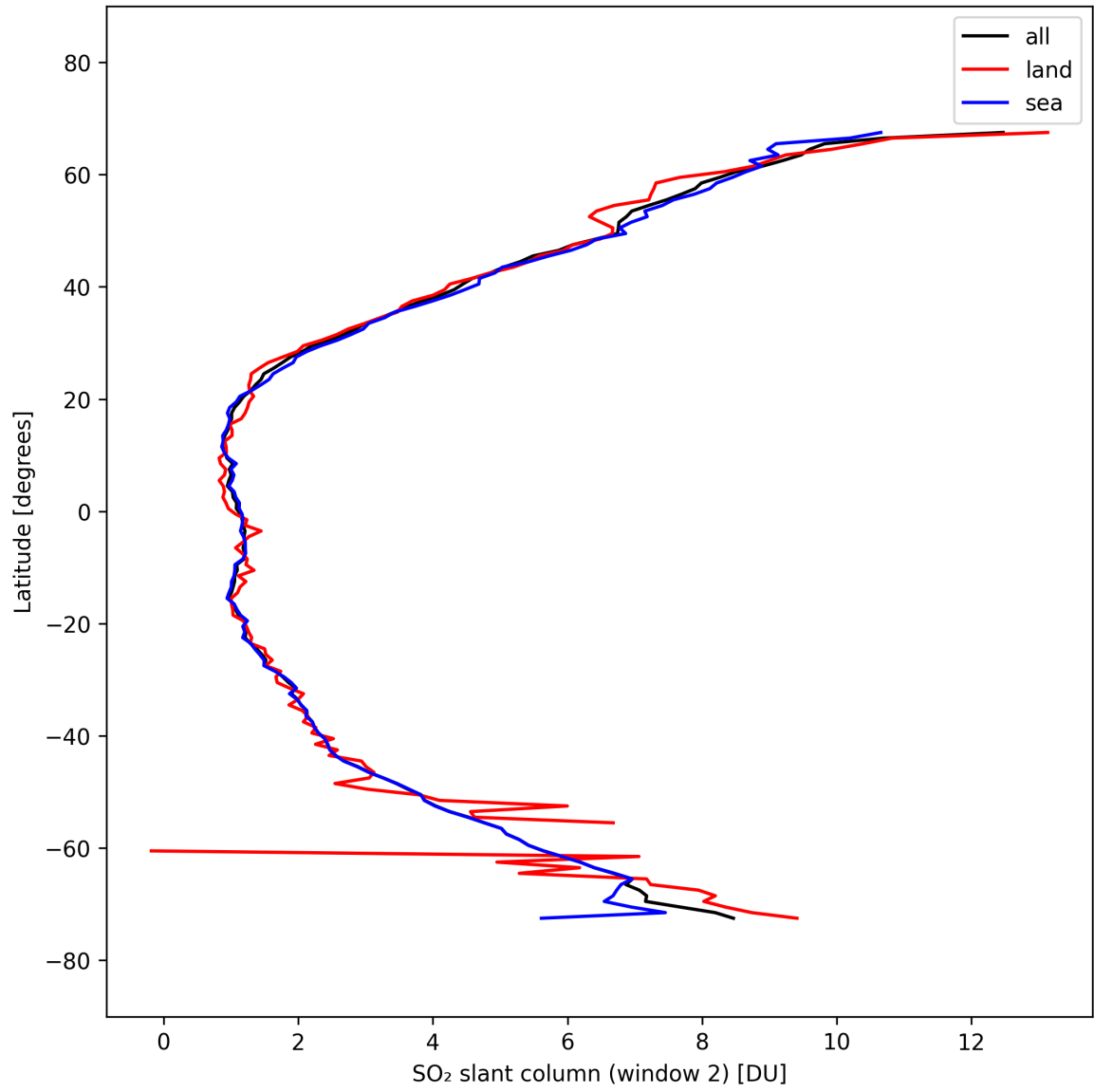


Figure 40: Zonal average of “SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14.

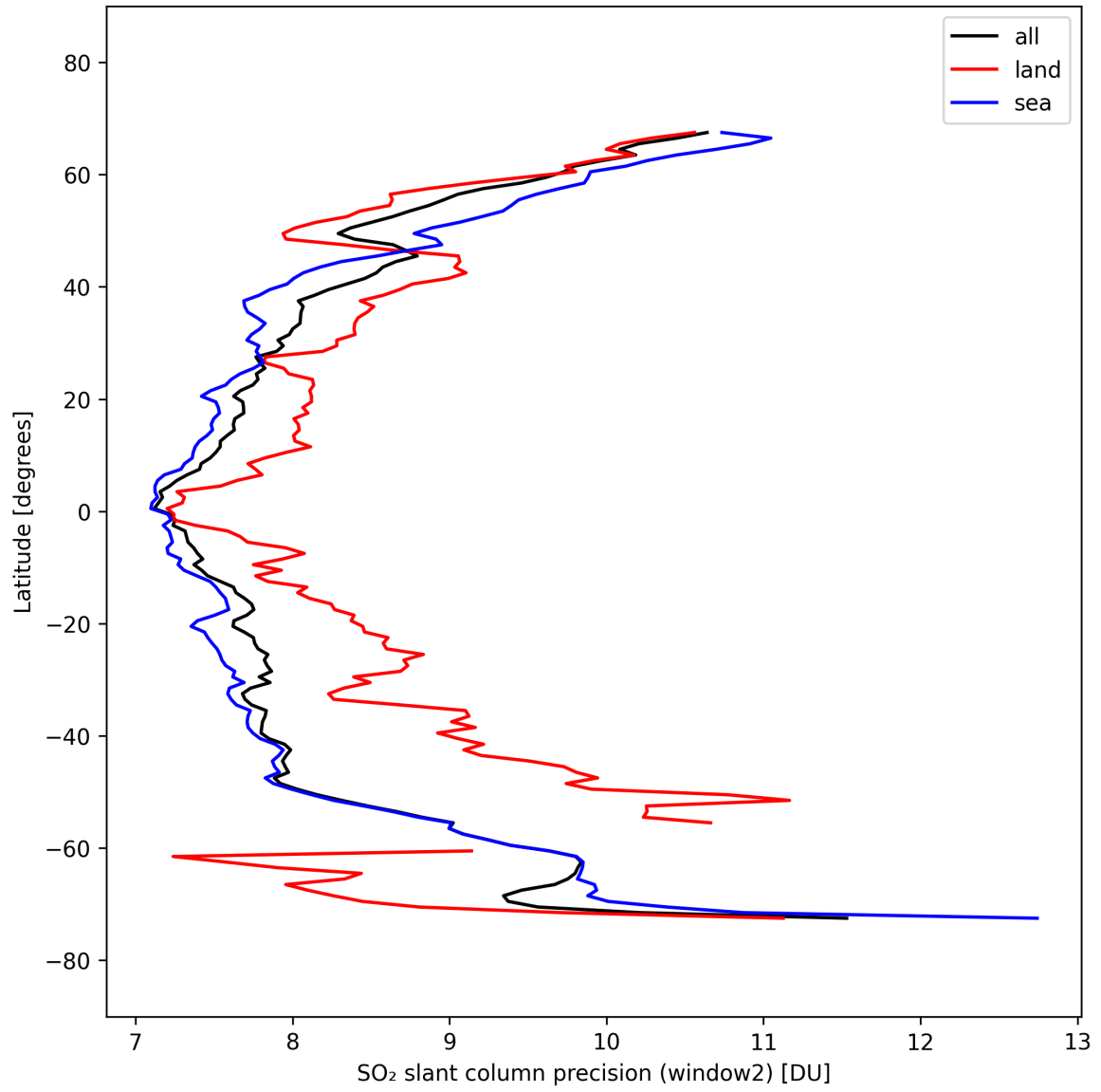


Figure 41: Zonal average of “SO₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14.

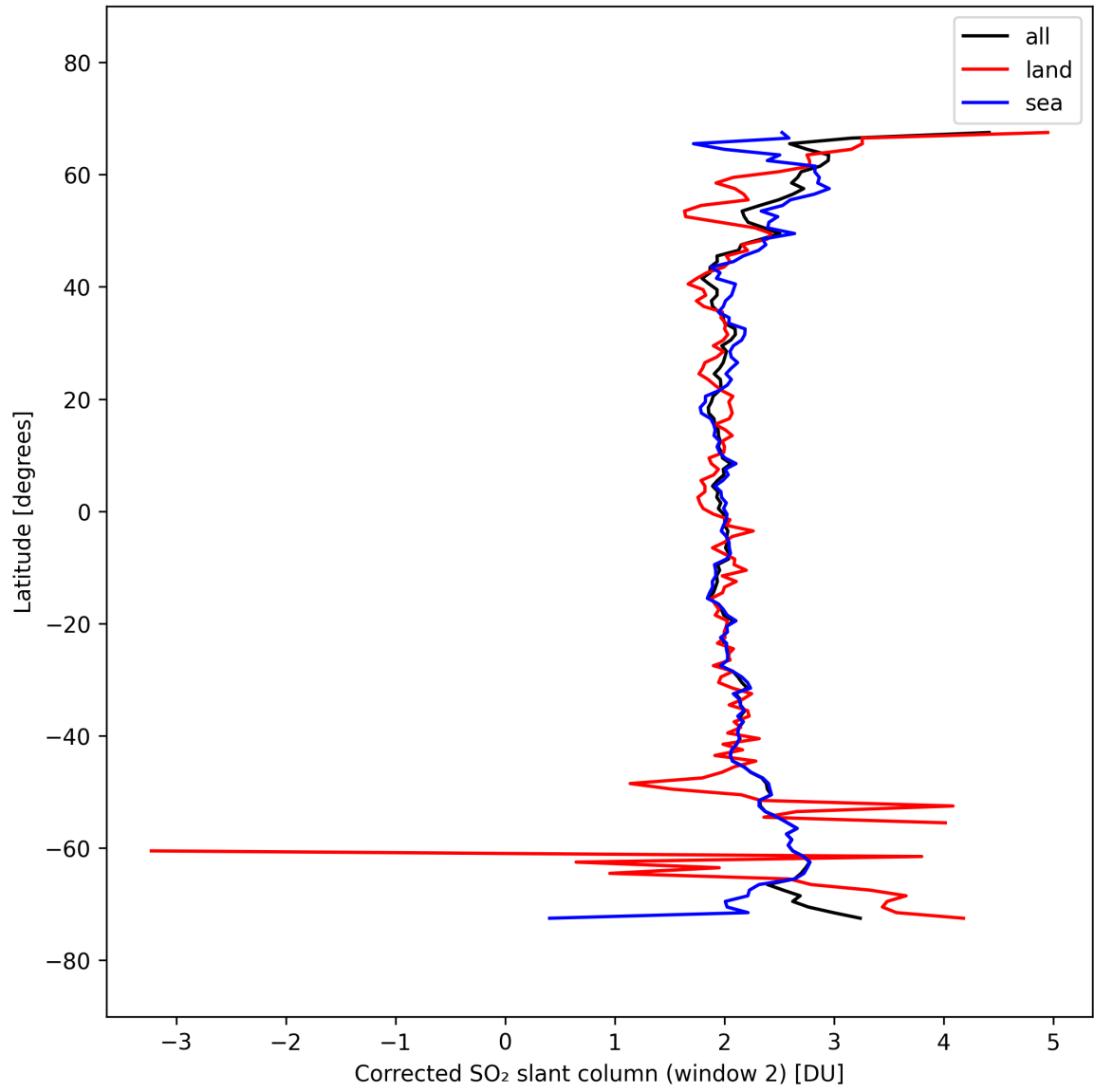


Figure 42: Zonal average of “Corrected SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14.

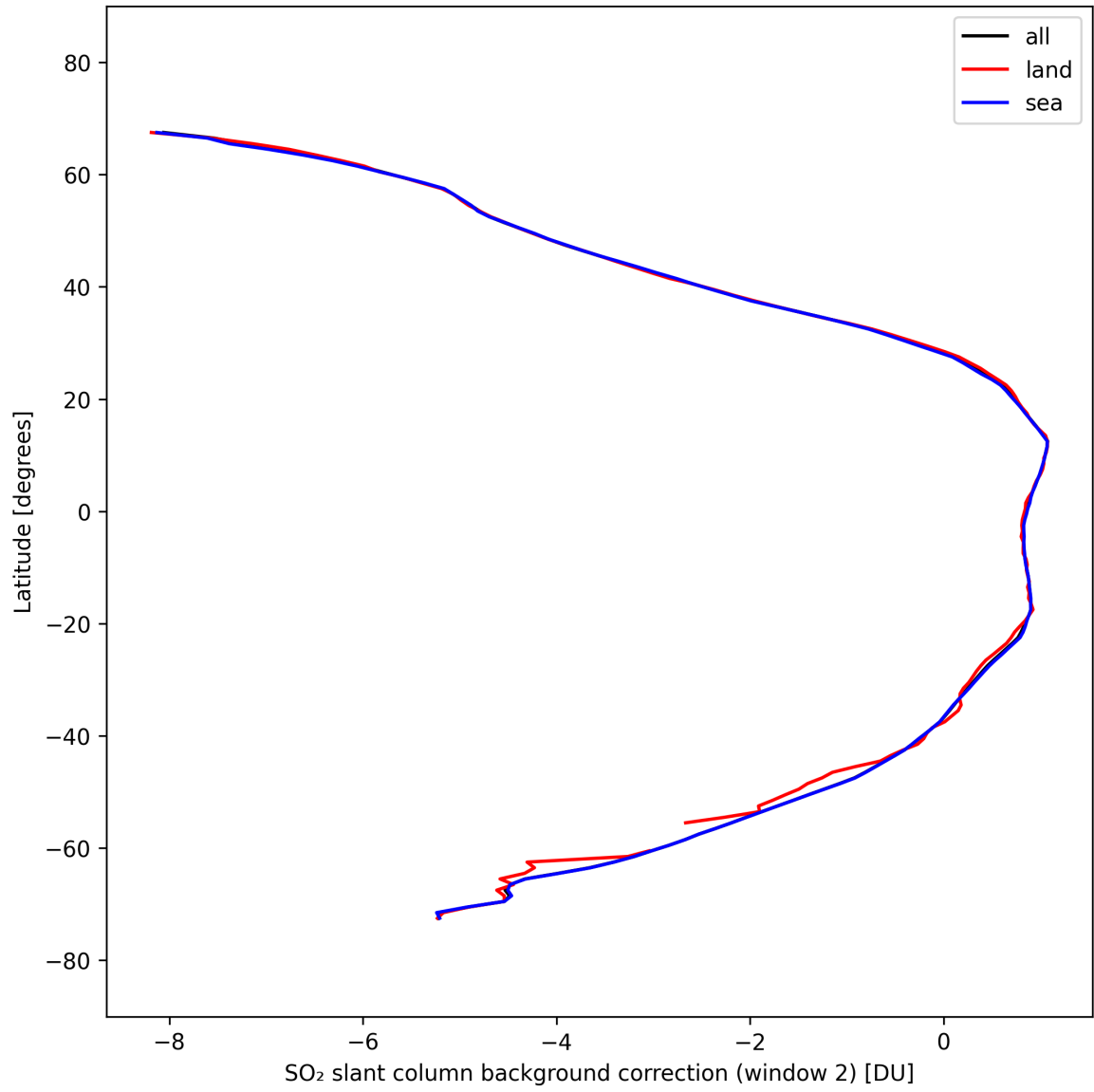


Figure 43: Zonal average of “SO₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14.

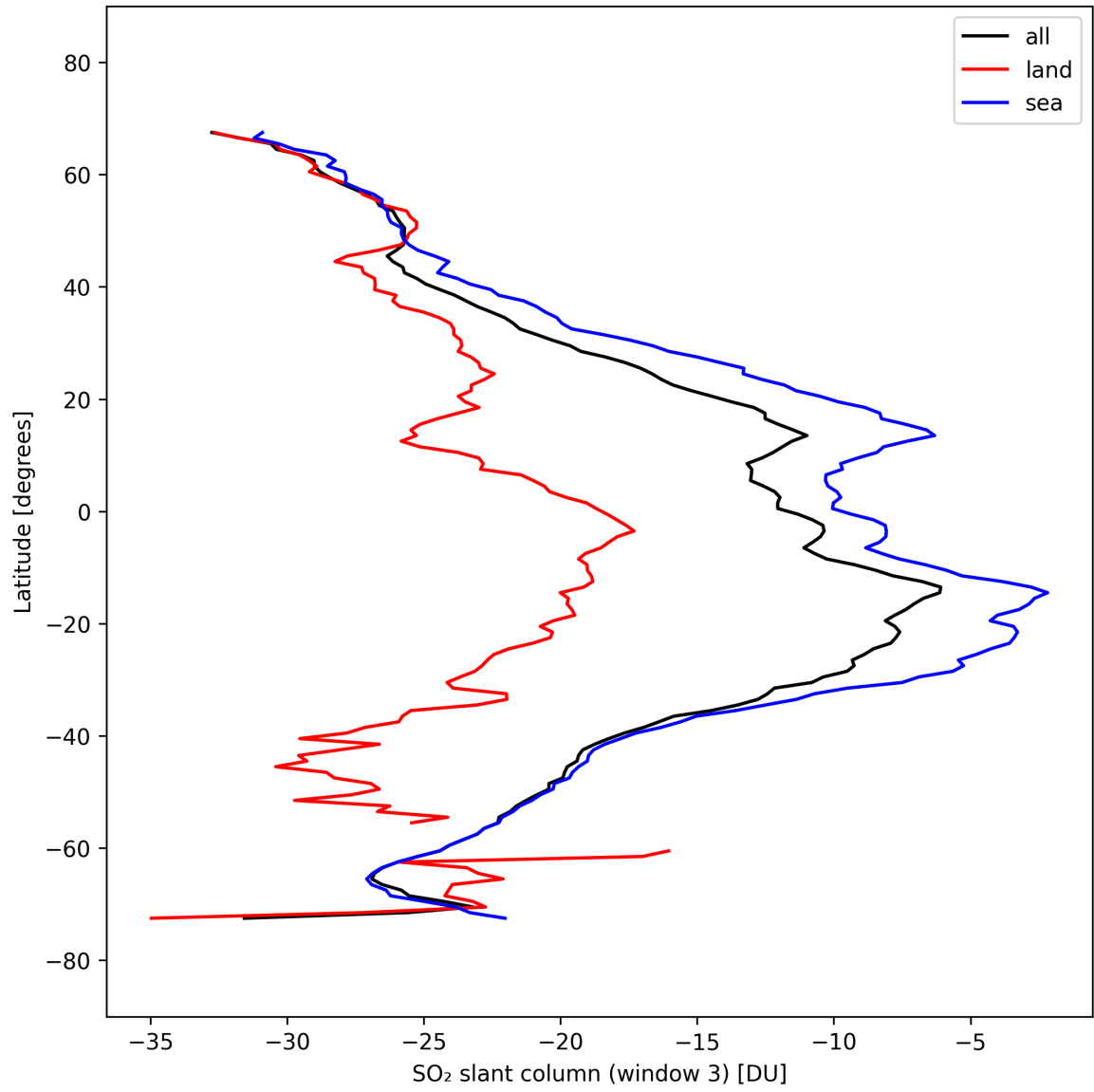


Figure 44: Zonal average of “SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14.

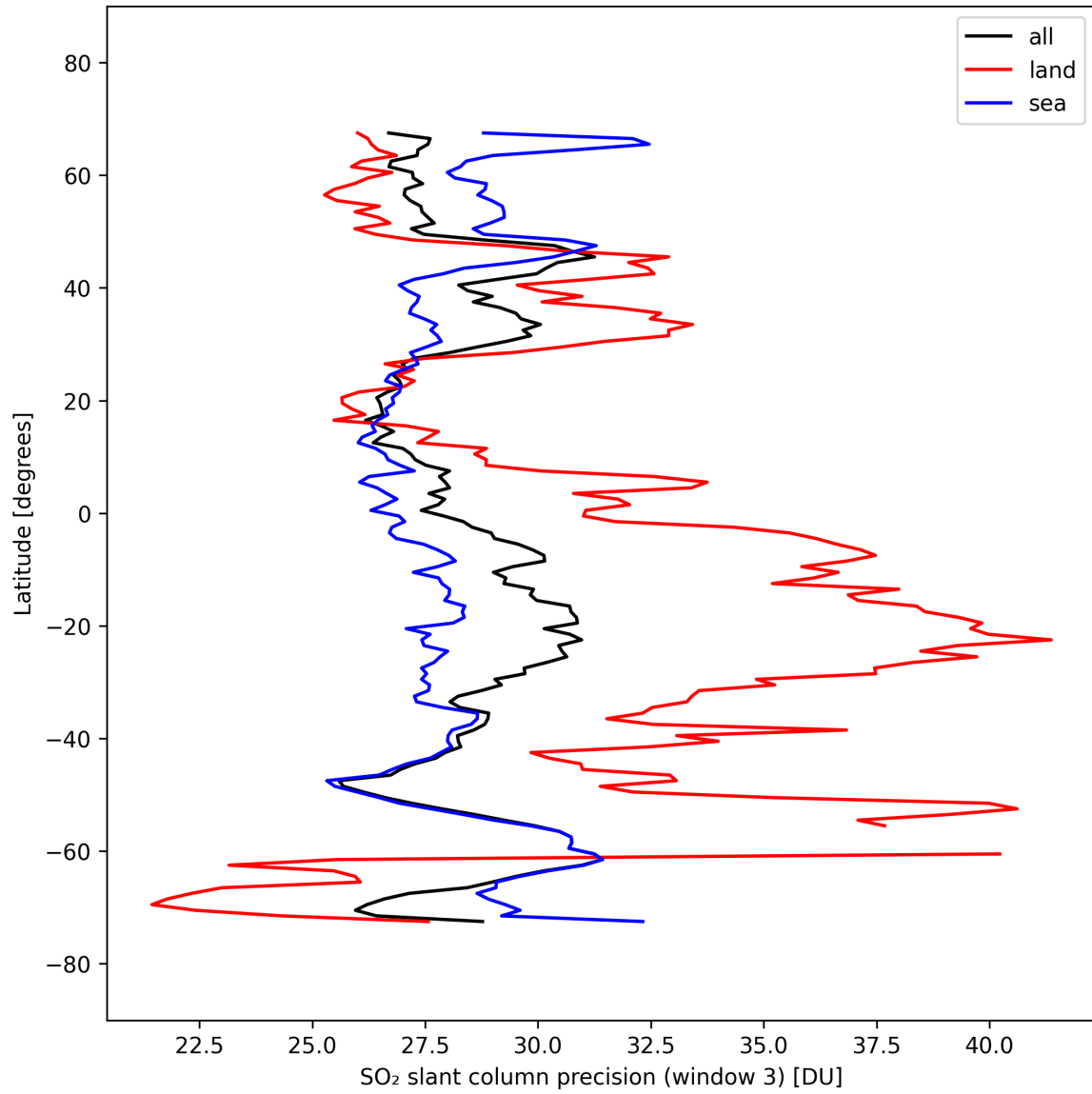


Figure 45: Zonal average of “SO₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14.

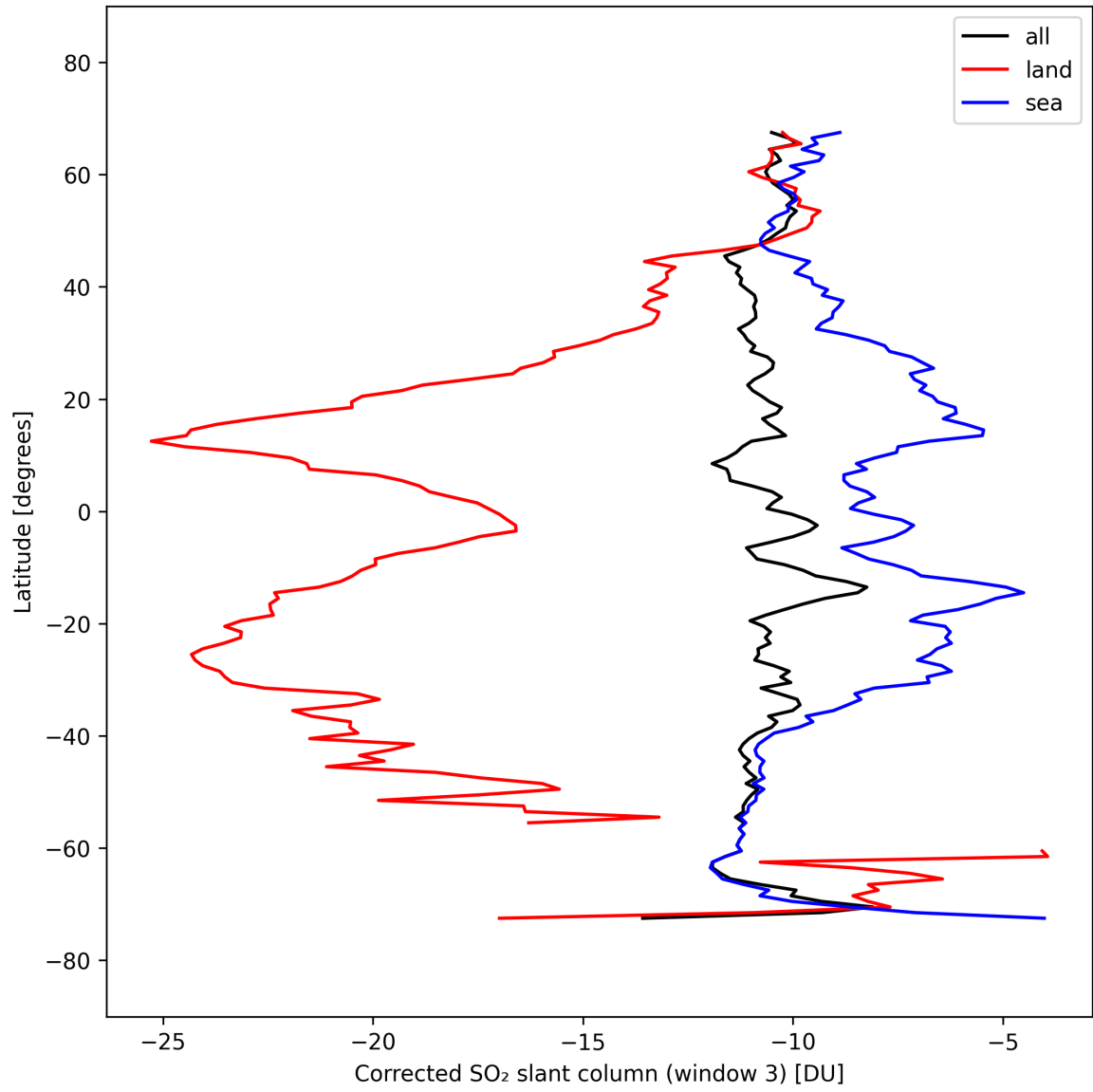


Figure 46: Zonal average of “Corrected SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14.

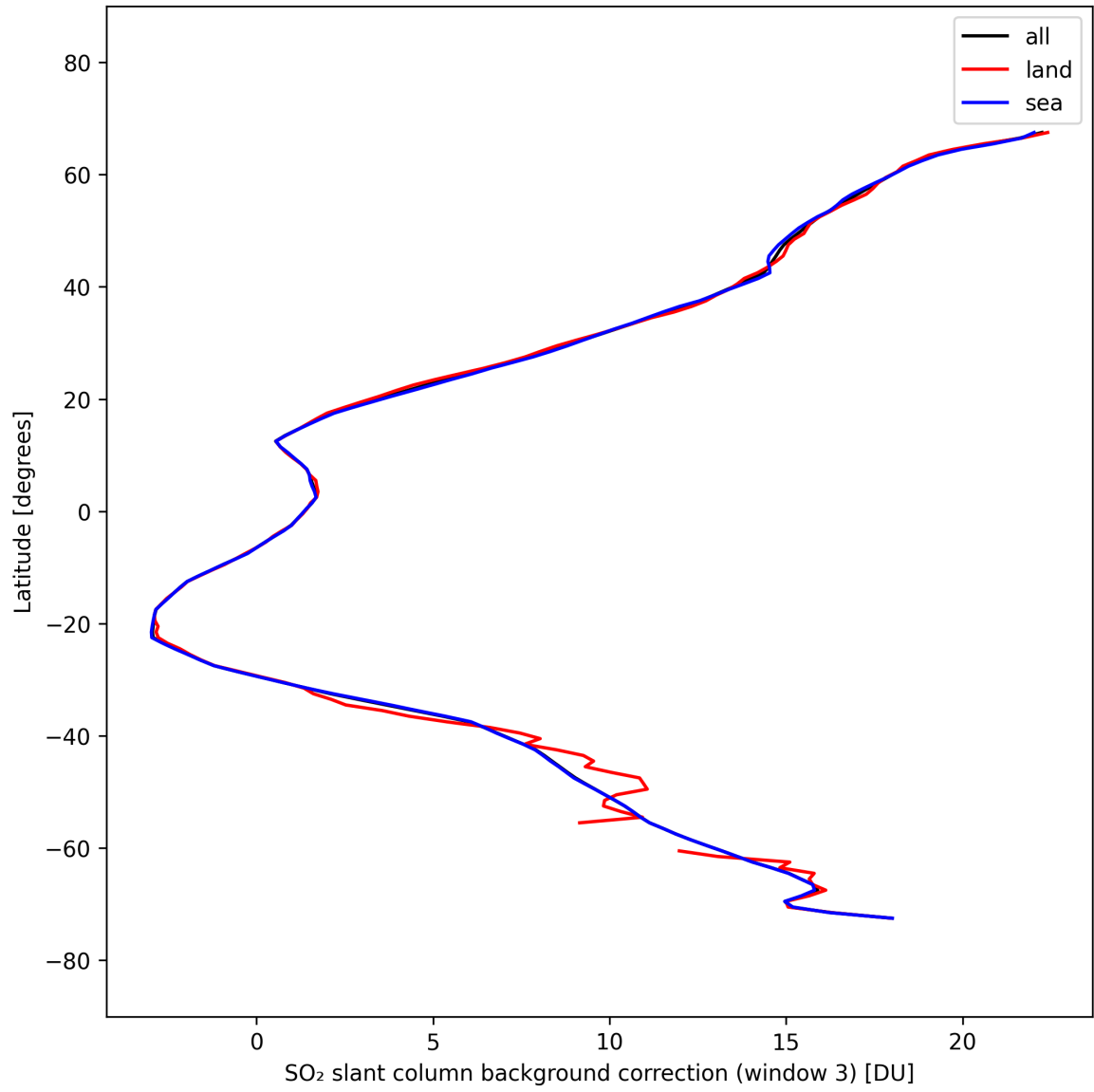


Figure 47: Zonal average of “SO₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14.

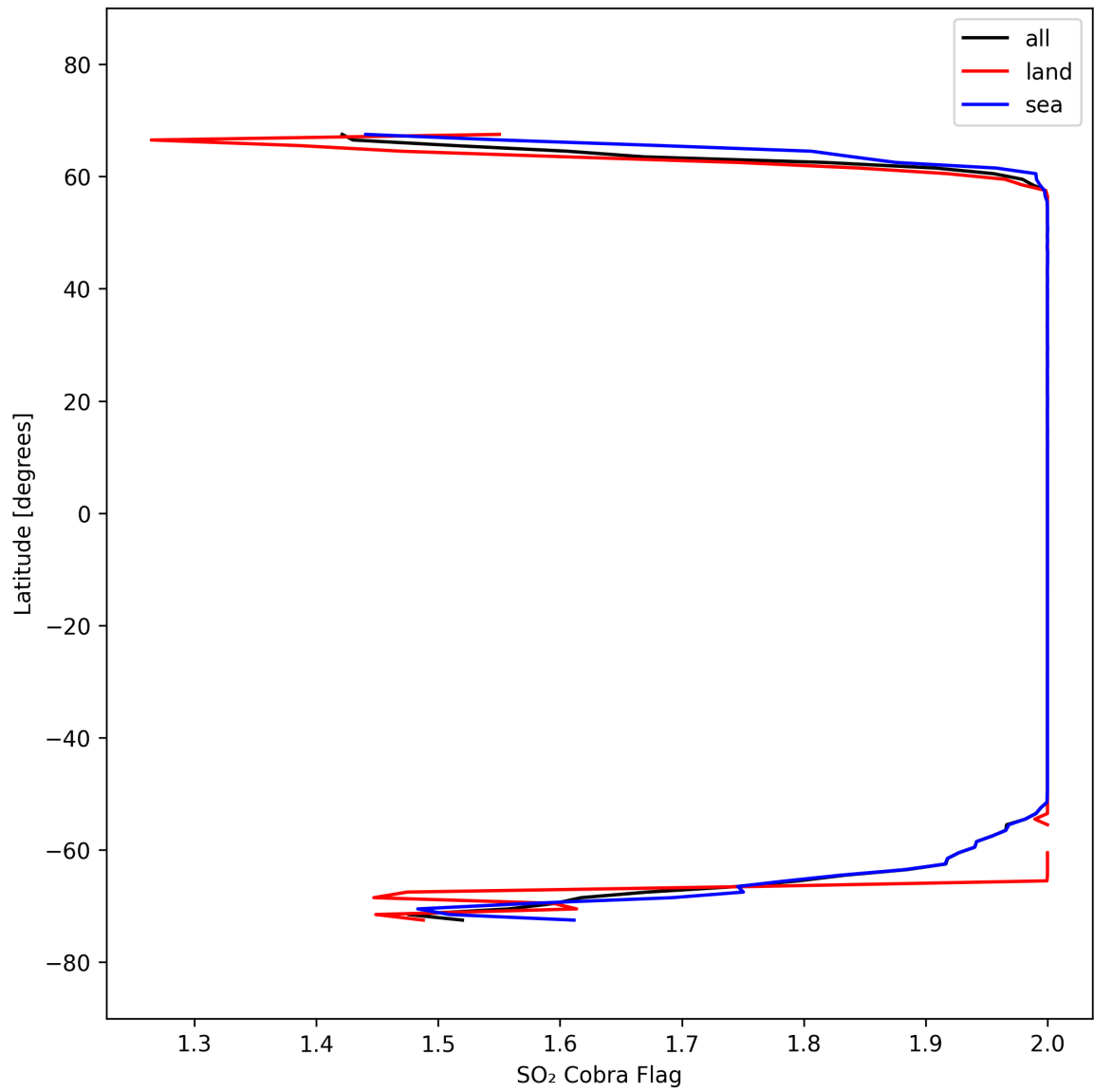


Figure 48: Zonal average of "SO₂ Cobra Flag" for 2025-03-13 to 2025-03-14.

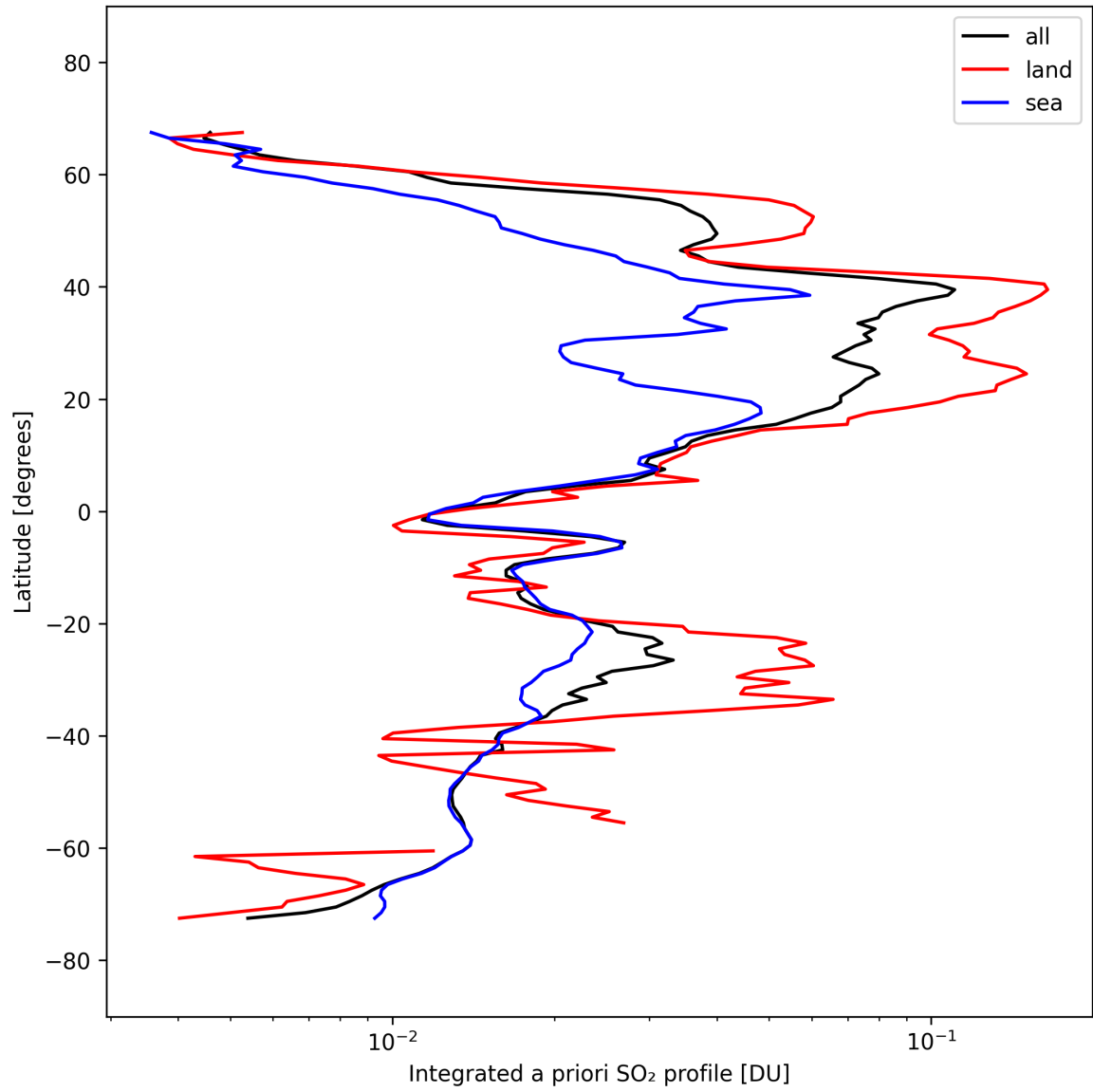


Figure 49: Zonal average of “Integrated a priori SO₂ profile” for 2025-03-13 to 2025-03-14.

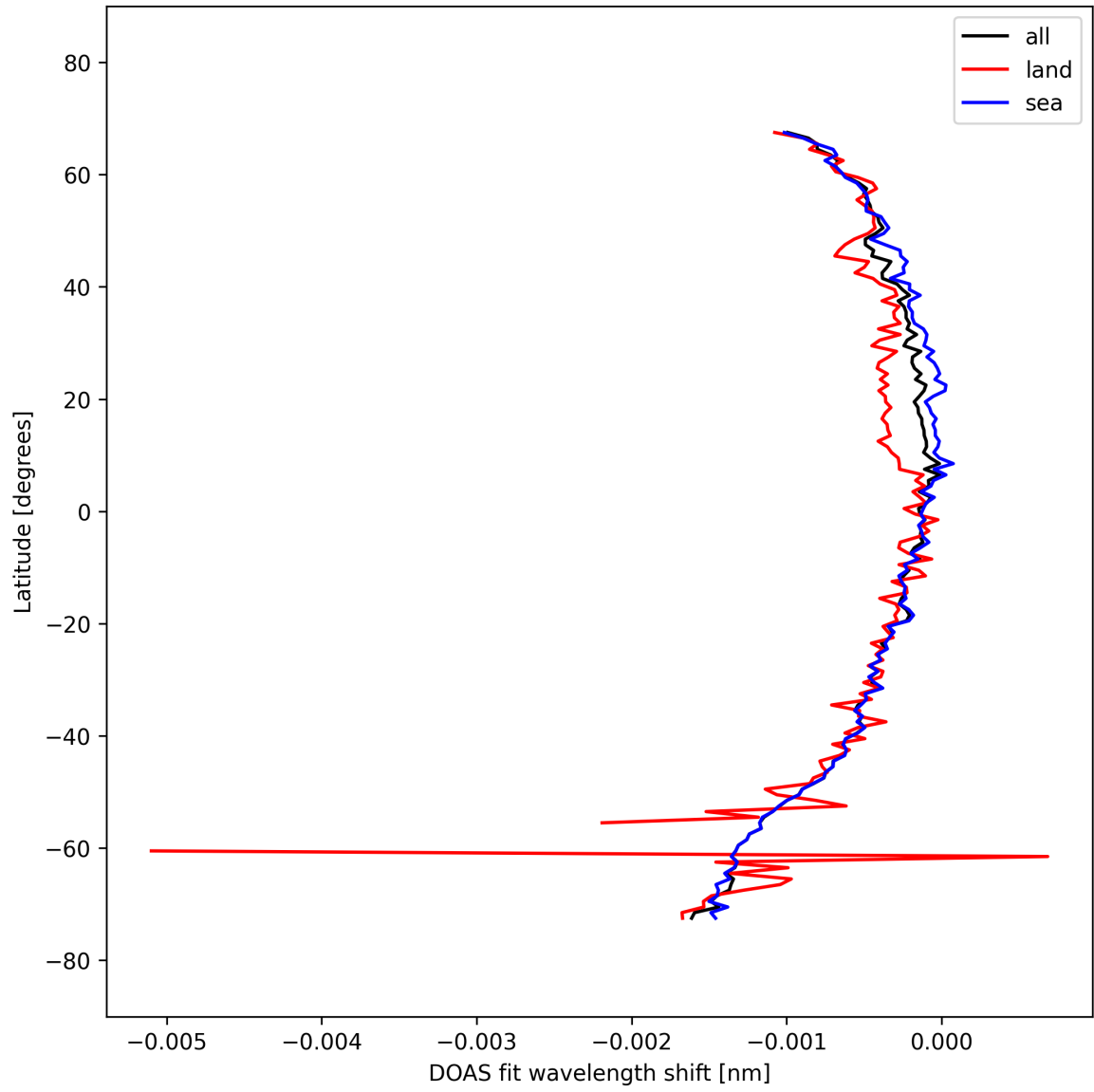


Figure 50: Zonal average of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14.

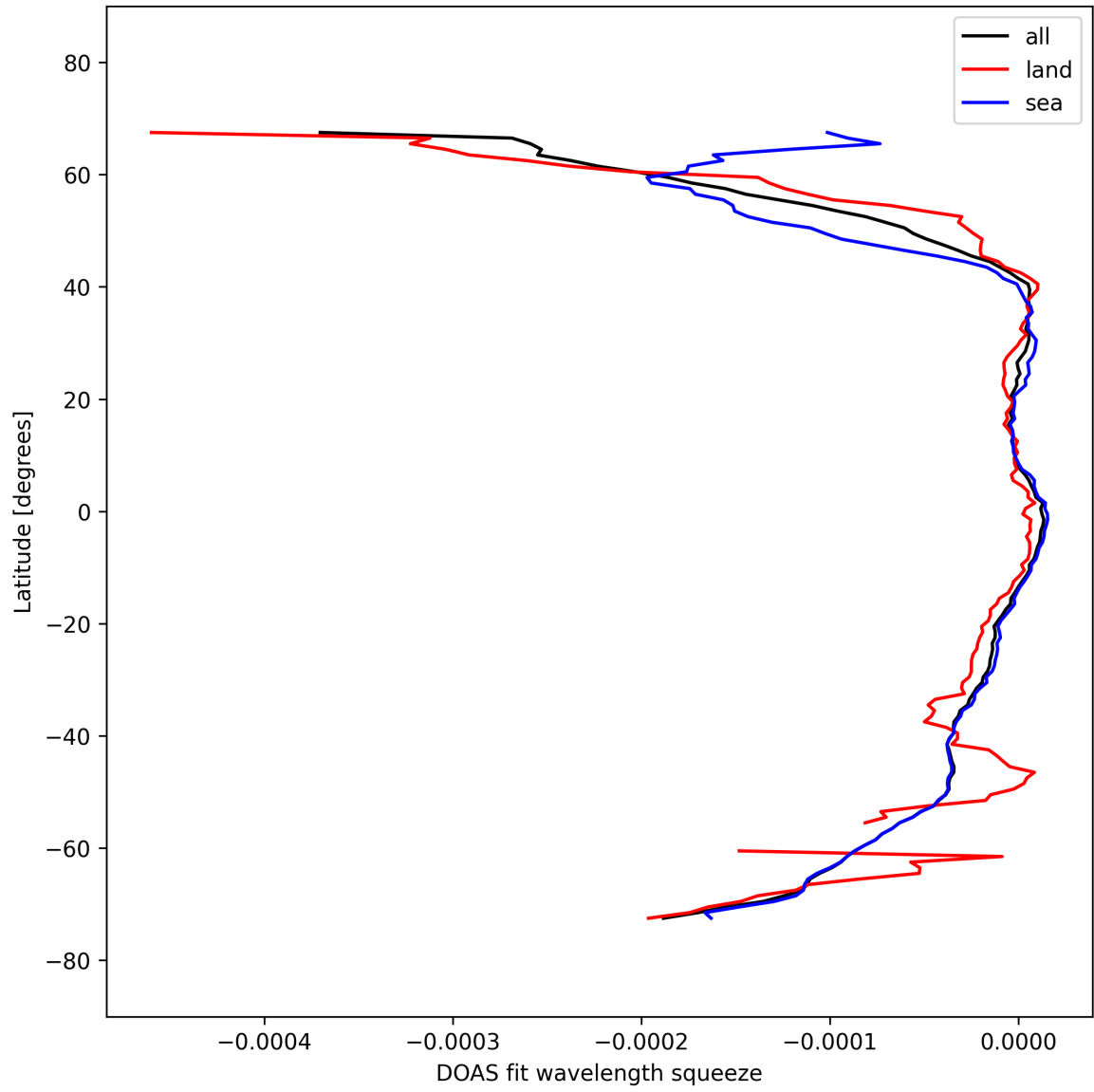


Figure 51: Zonal average of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14.

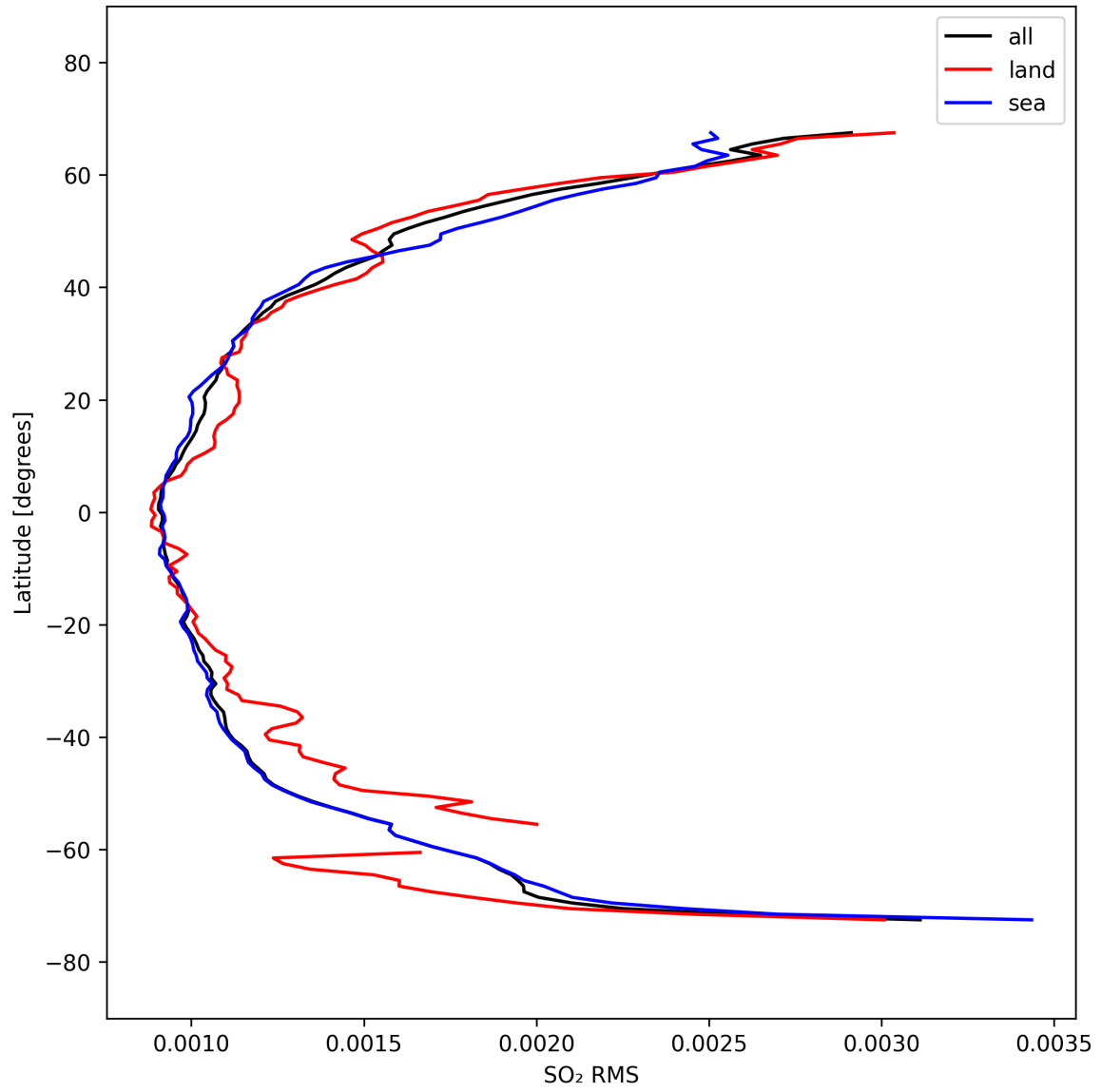


Figure 52: Zonal average of “SO₂ RMS” for 2025-03-13 to 2025-03-14.

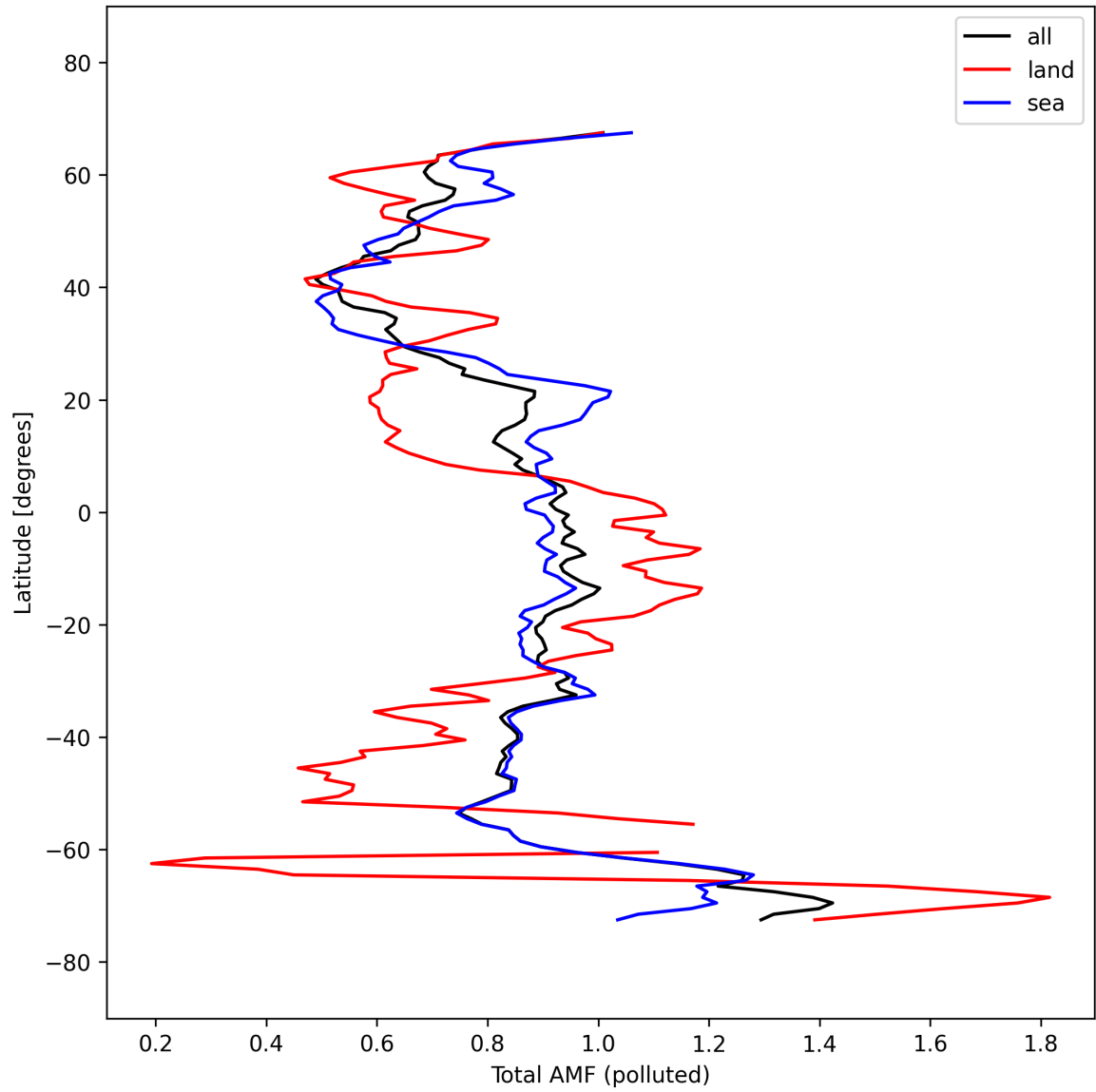


Figure 53: Zonal average of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14.

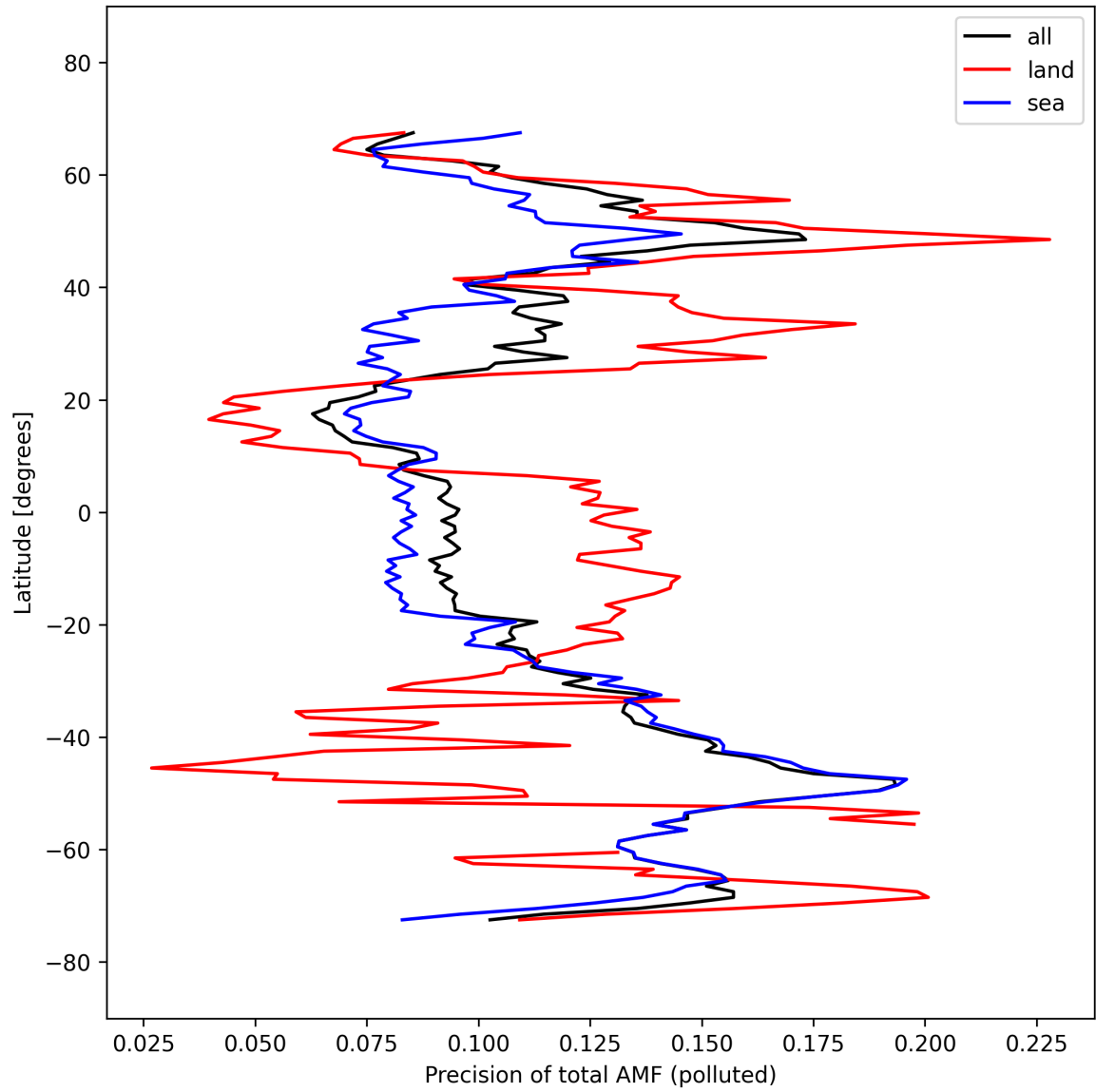


Figure 54: Zonal average of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14.

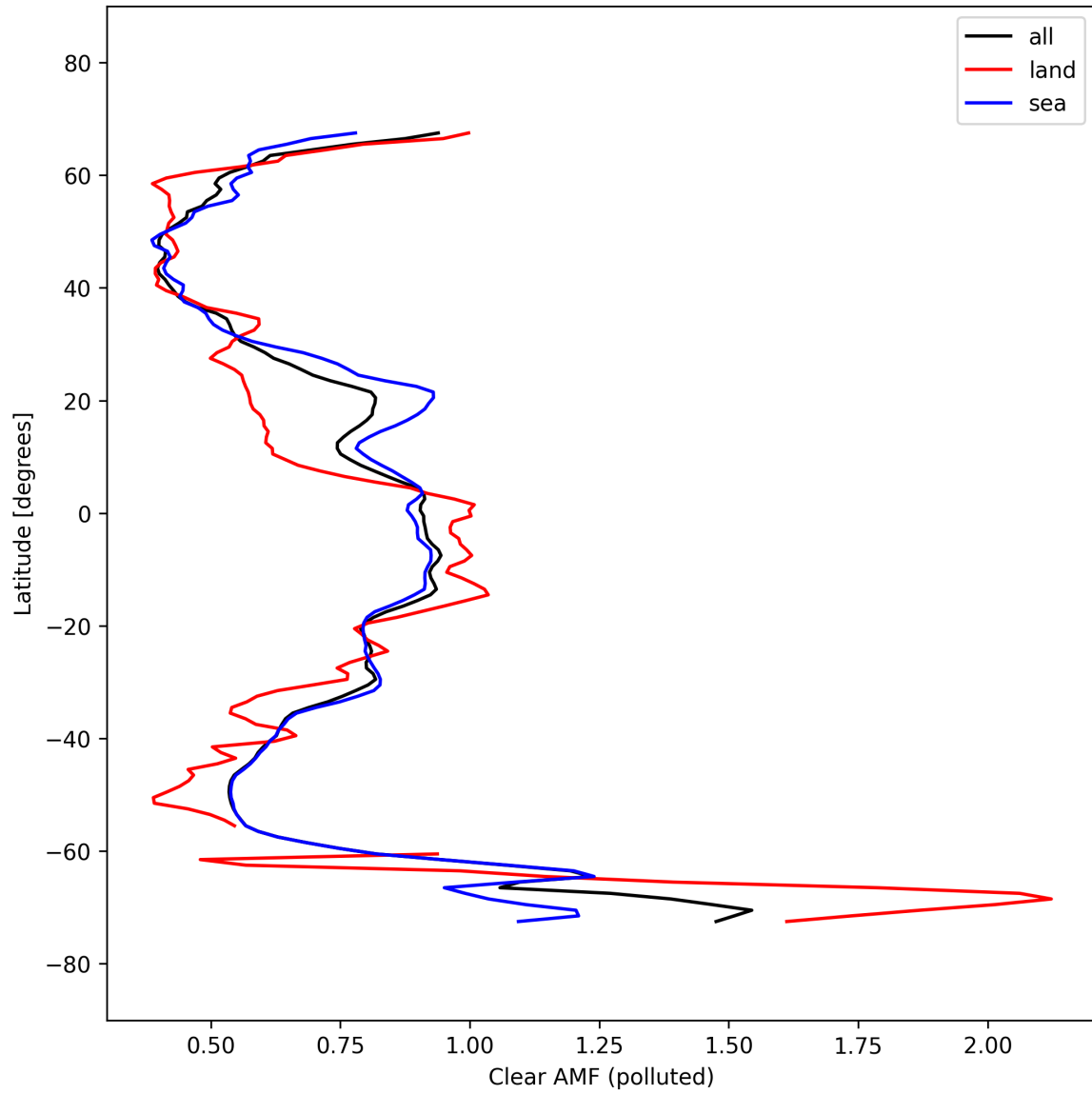


Figure 55: Zonal average of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14.

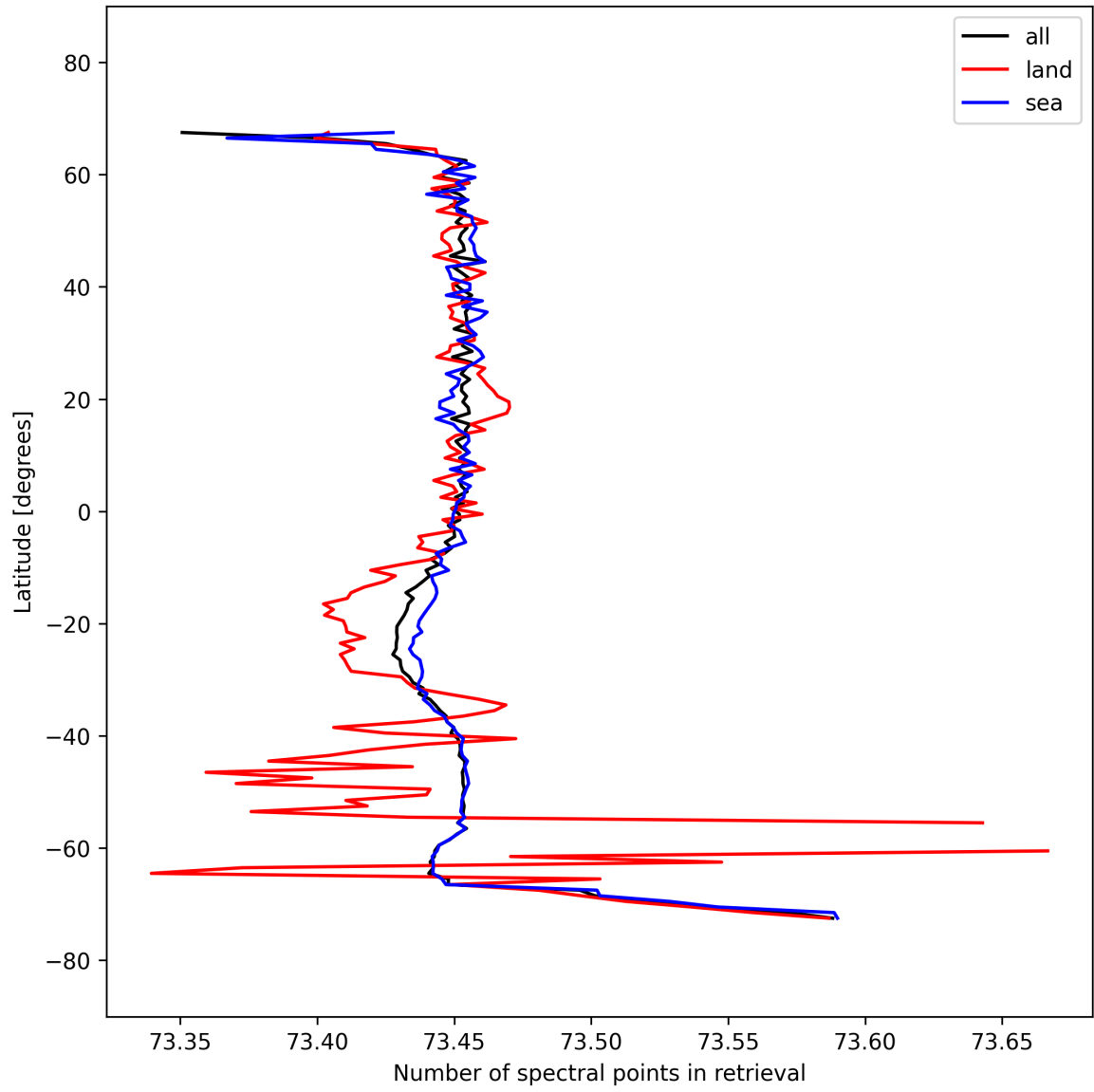


Figure 56: Zonal average of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14.

8 Histograms

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

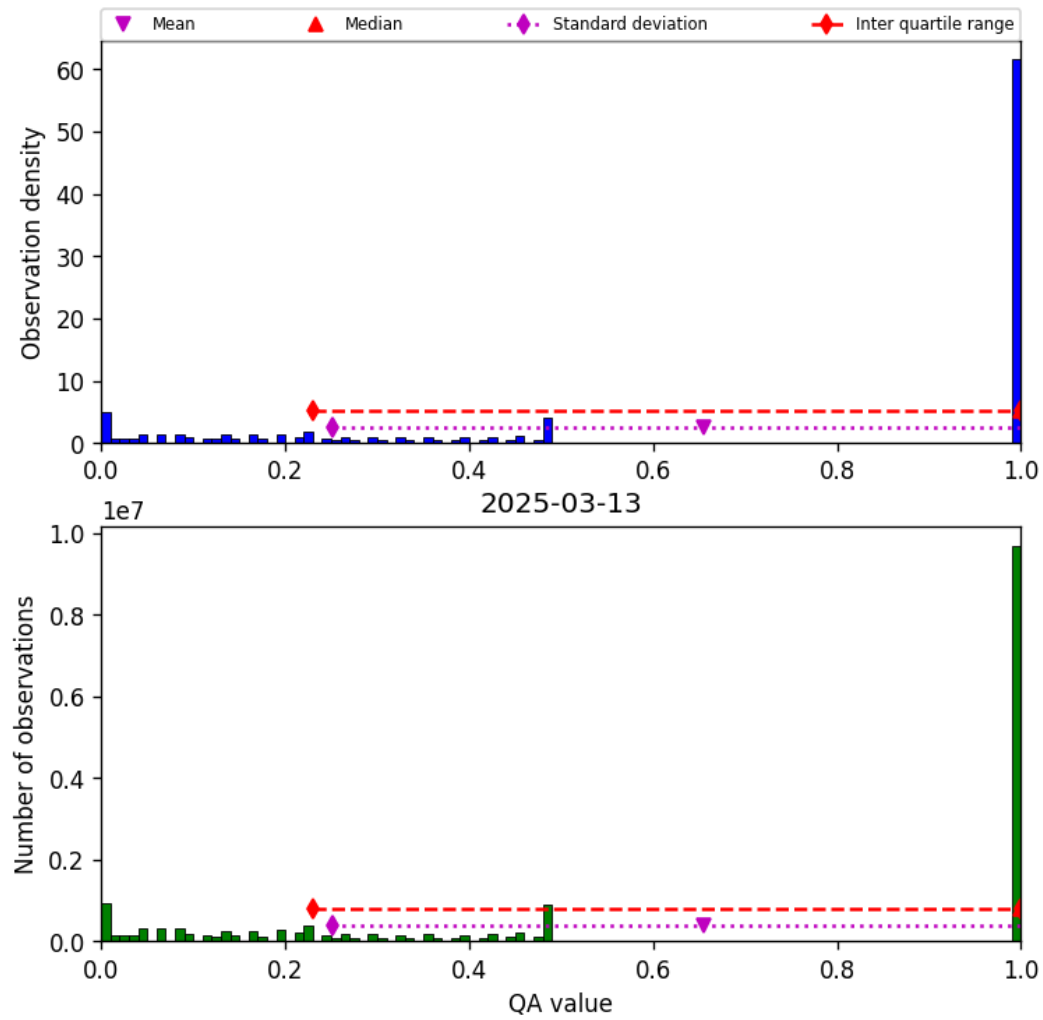


Figure 57: Histogram of “QA value” for 2025-03-13 to 2025-03-14

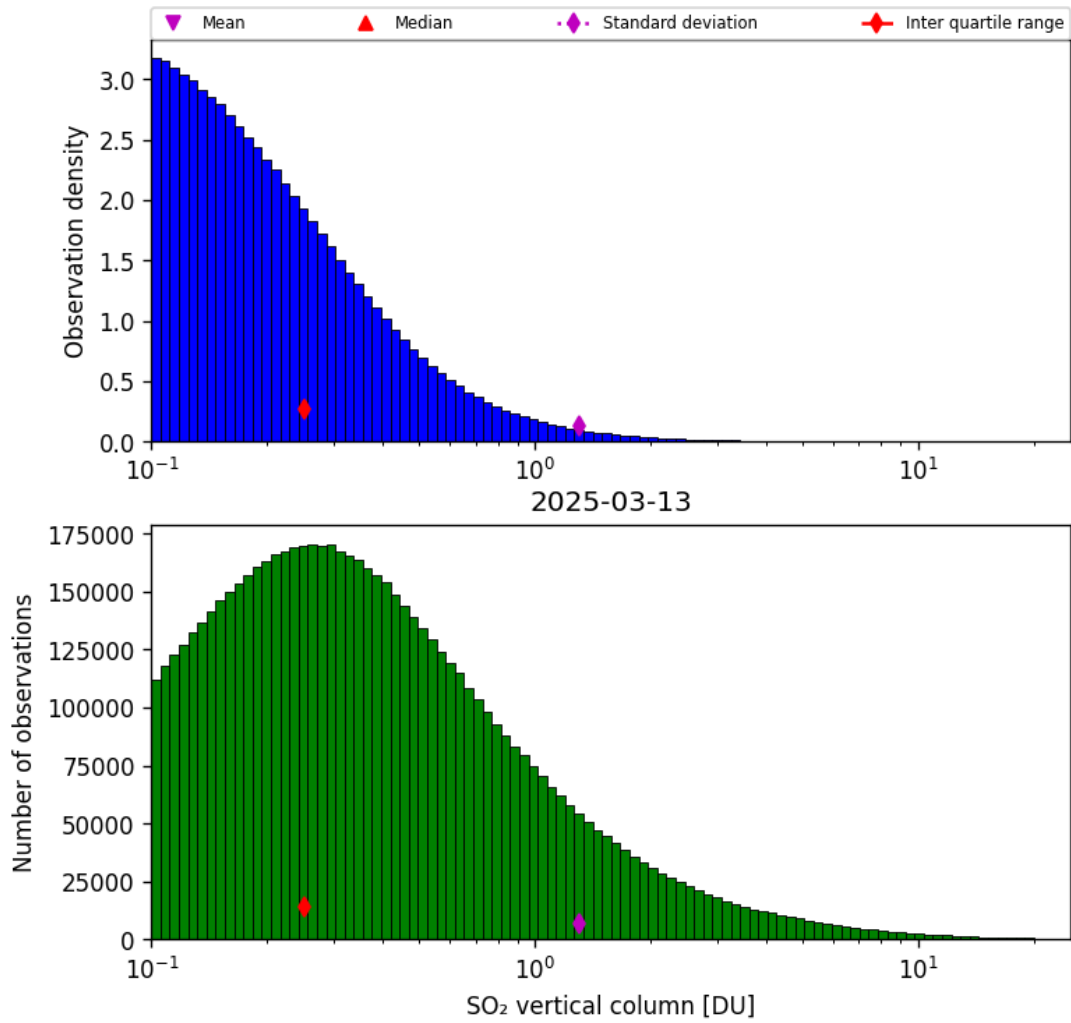


Figure 58: Histogram of “SO₂ vertical column” for 2025-03-13 to 2025-03-14

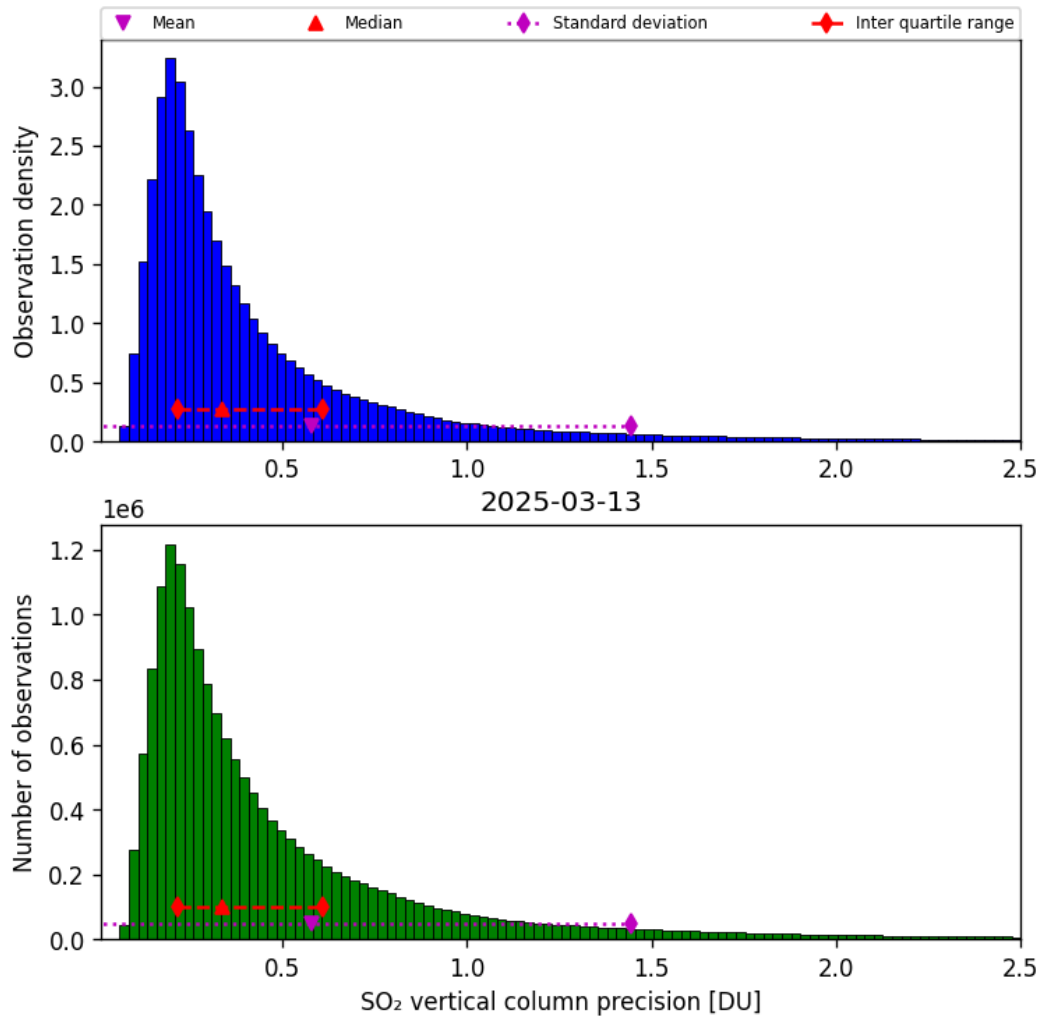


Figure 59: Histogram of “SO₂ vertical column precision” for 2025-03-13 to 2025-03-14

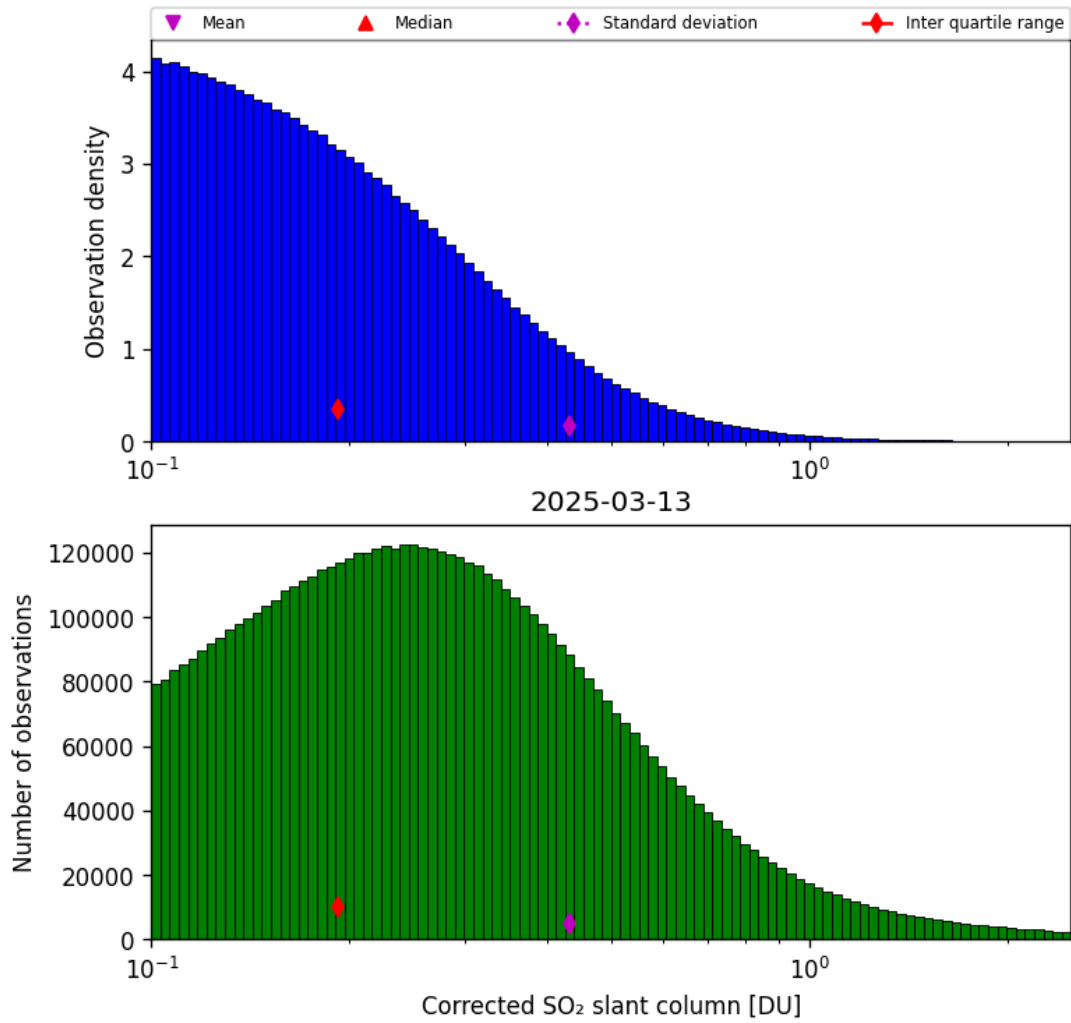


Figure 60: Histogram of “Corrected SO₂ slant column” for 2025-03-13 to 2025-03-14

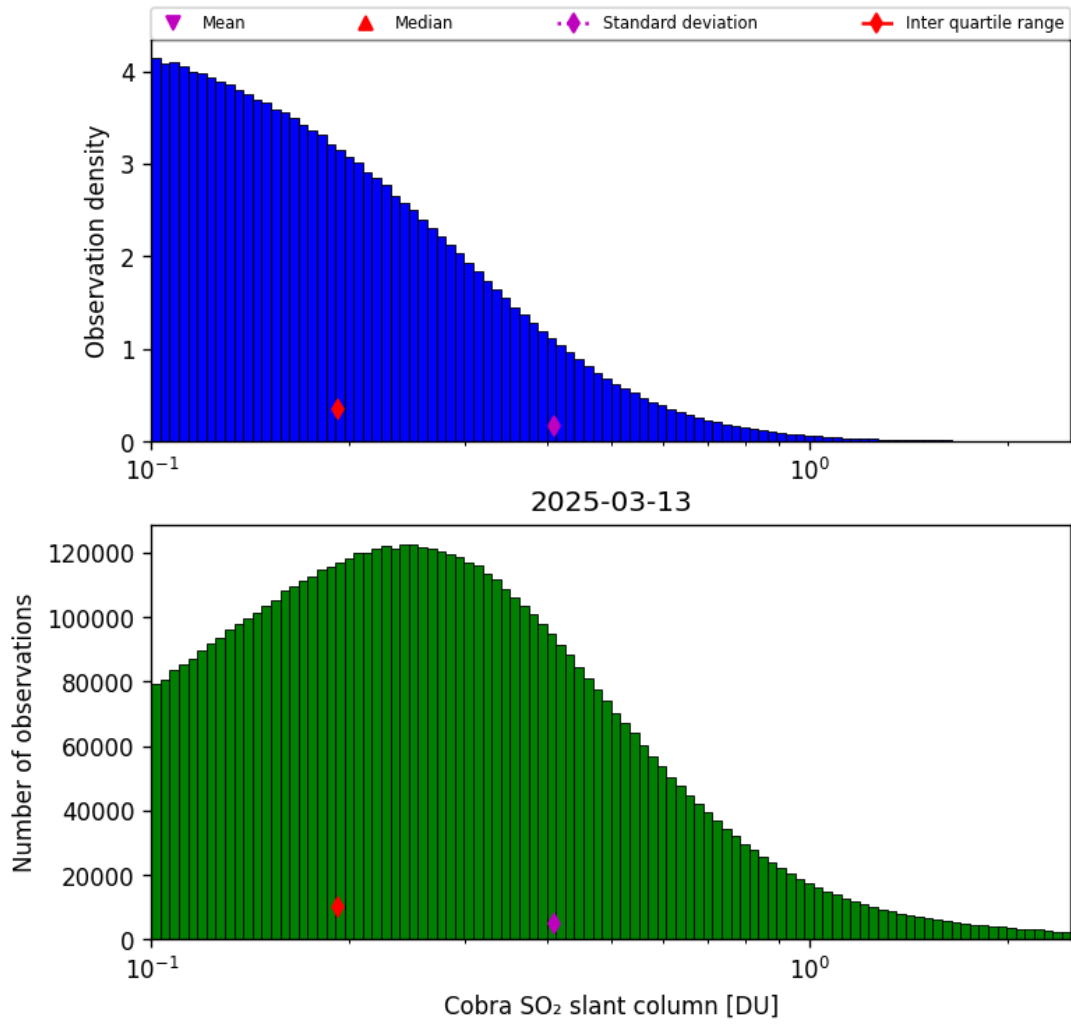


Figure 61: Histogram of “Cobra SO₂ slant column” for 2025-03-13 to 2025-03-14

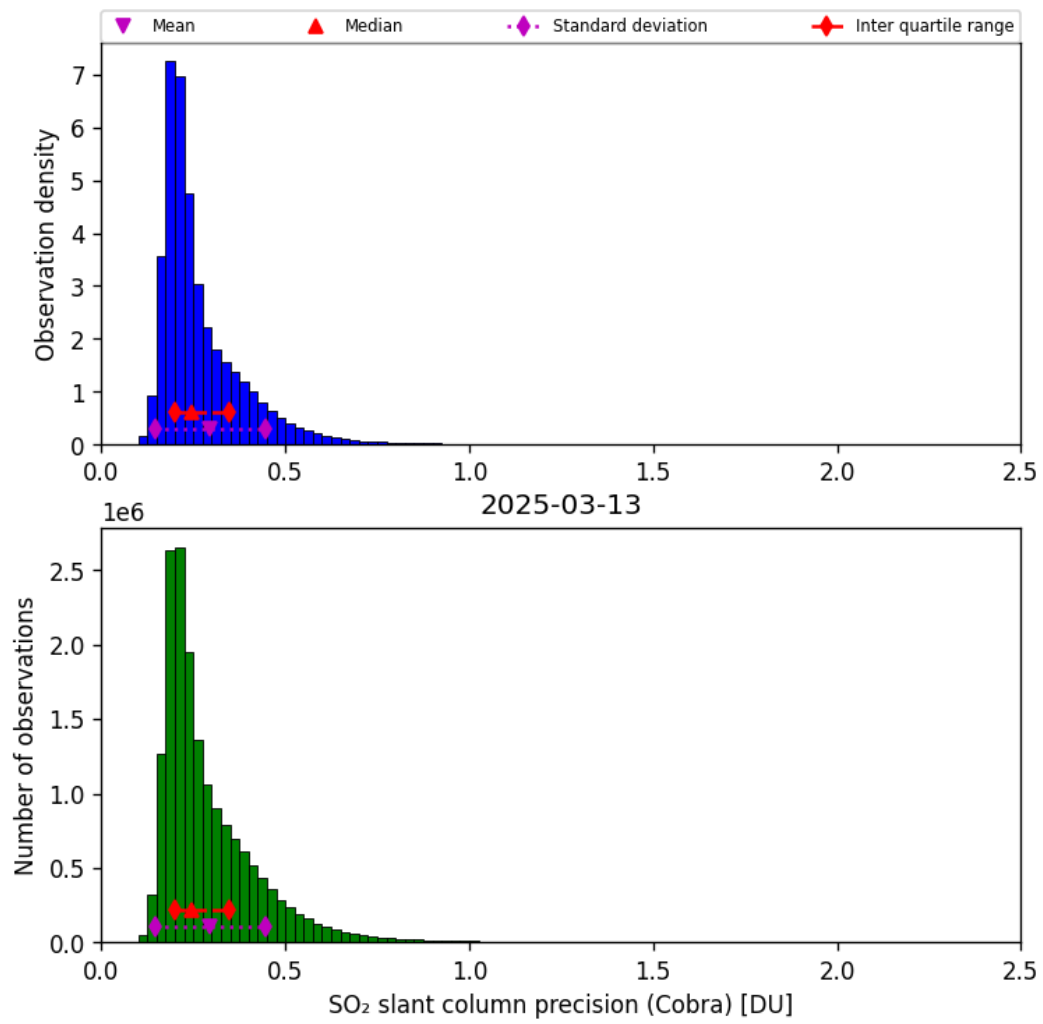


Figure 62: Histogram of “SO₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14

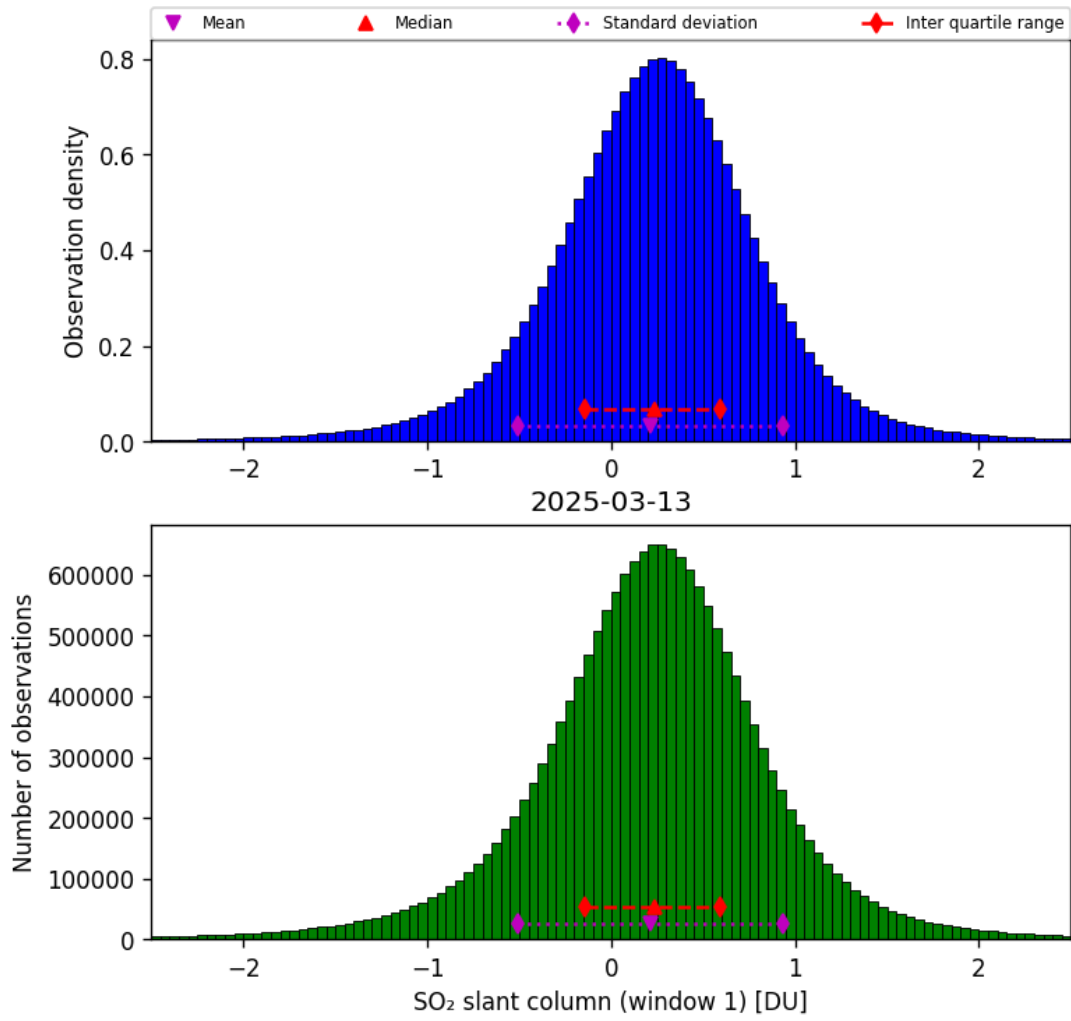


Figure 63: Histogram of “SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14

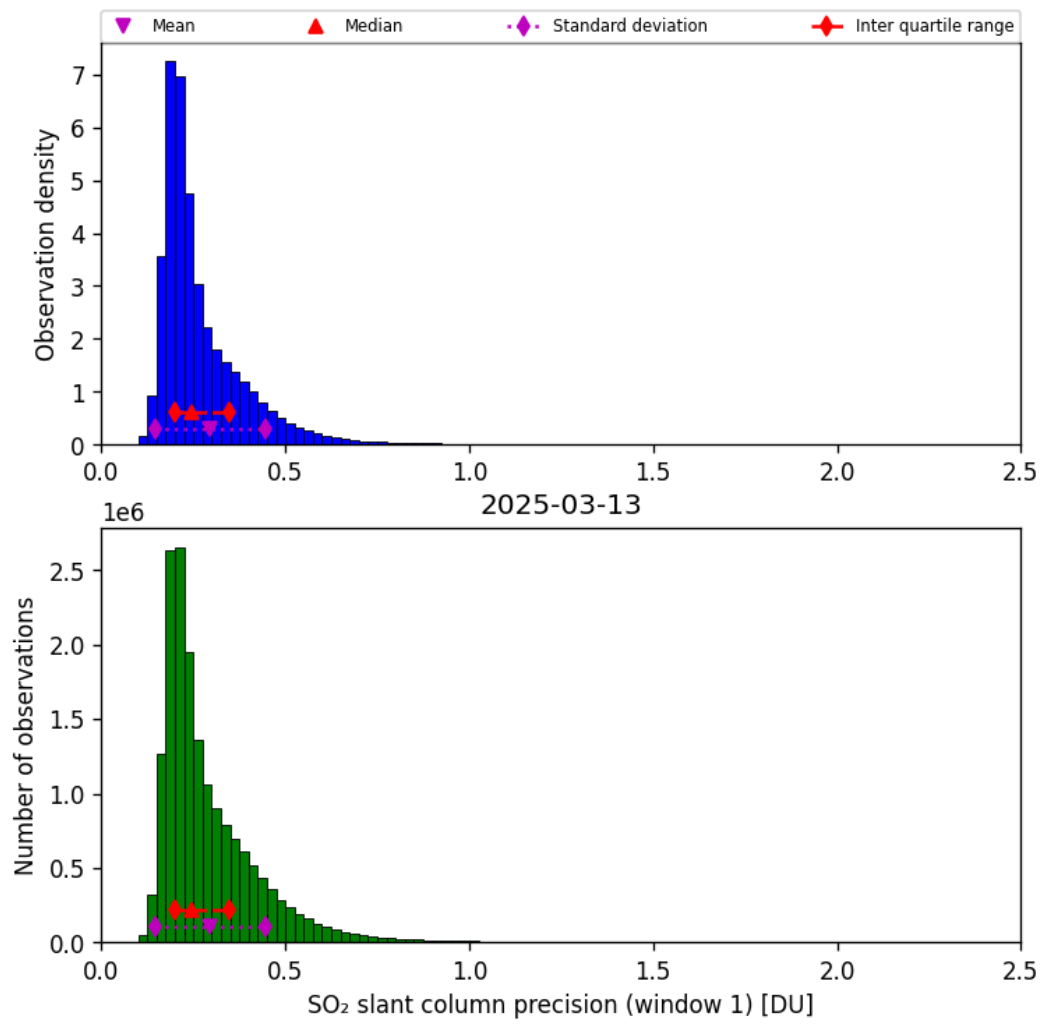


Figure 64: Histogram of “SO₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14

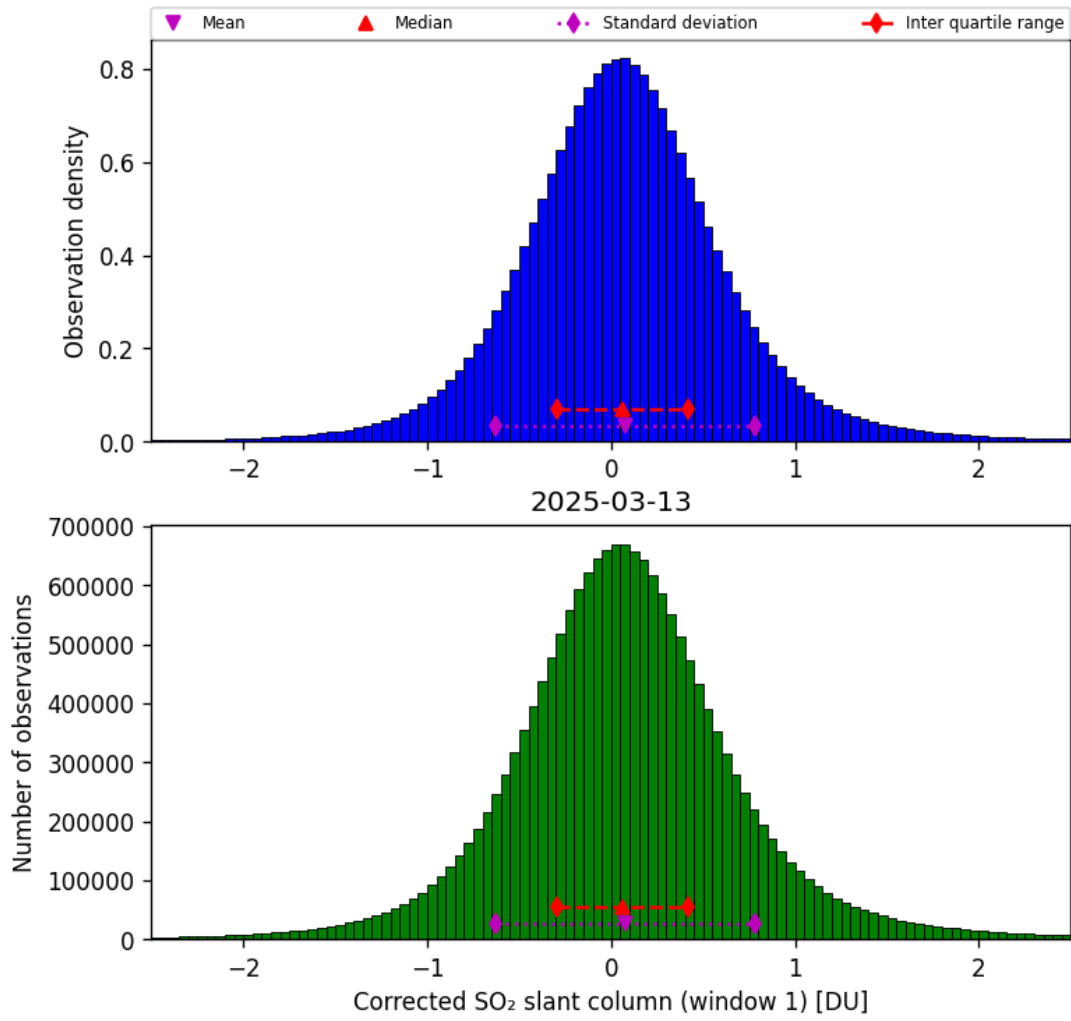


Figure 65: Histogram of “Corrected SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14

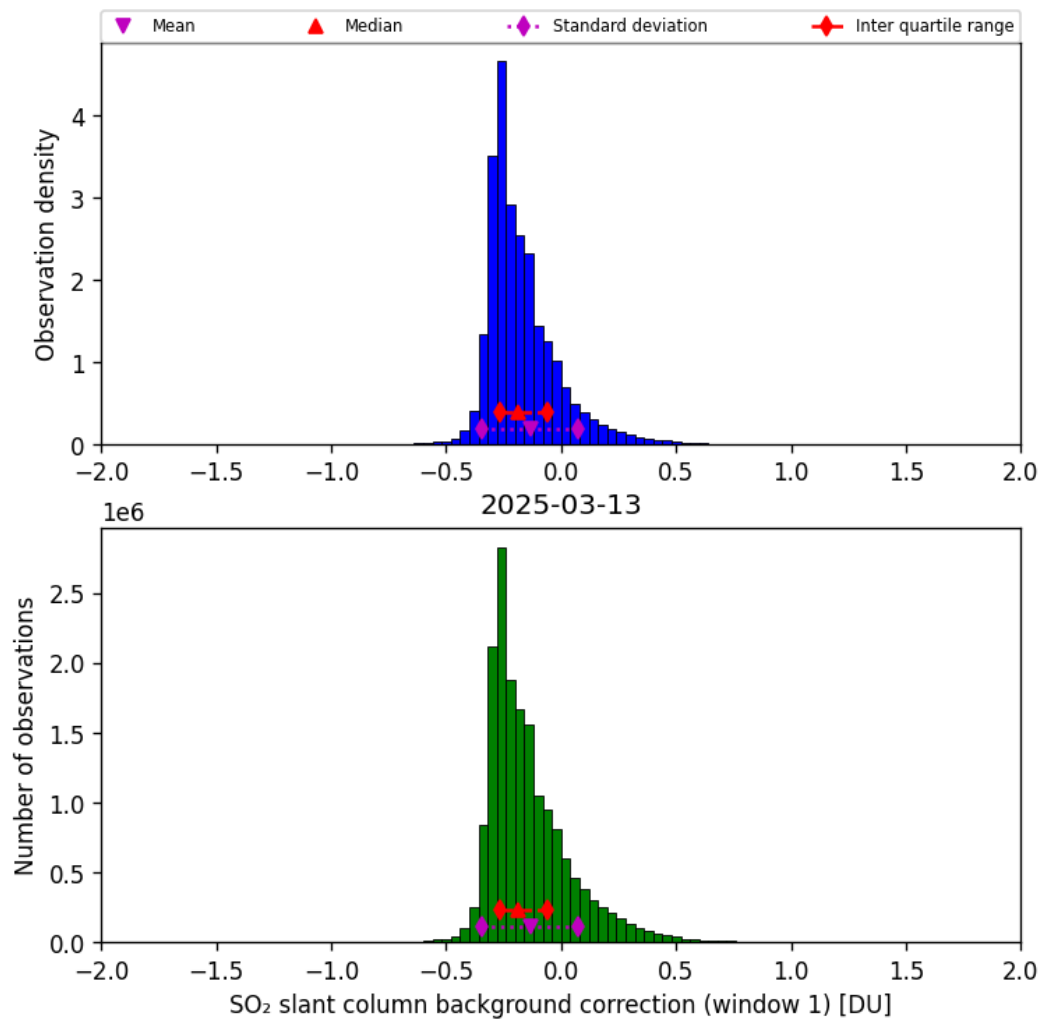


Figure 66: Histogram of “SO₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14

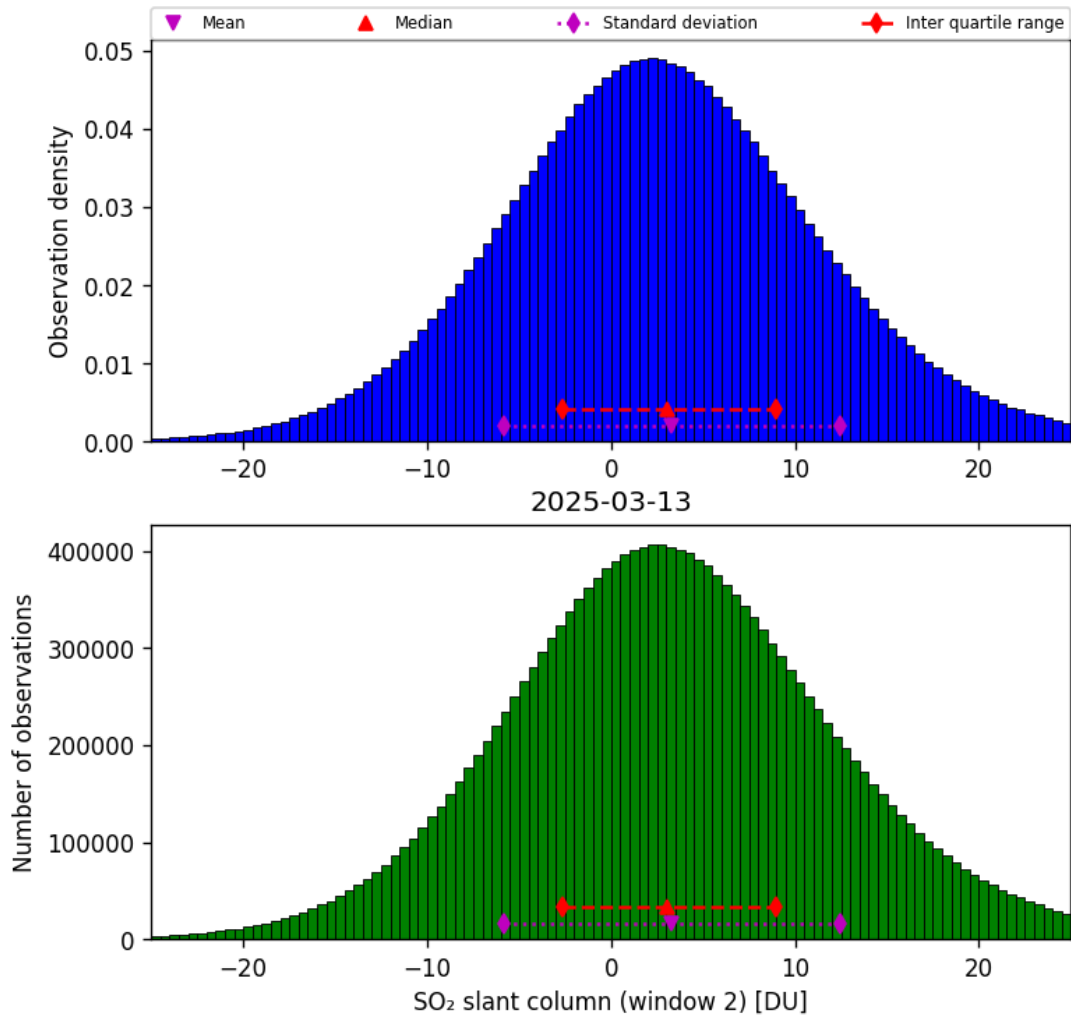


Figure 67: Histogram of “SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14

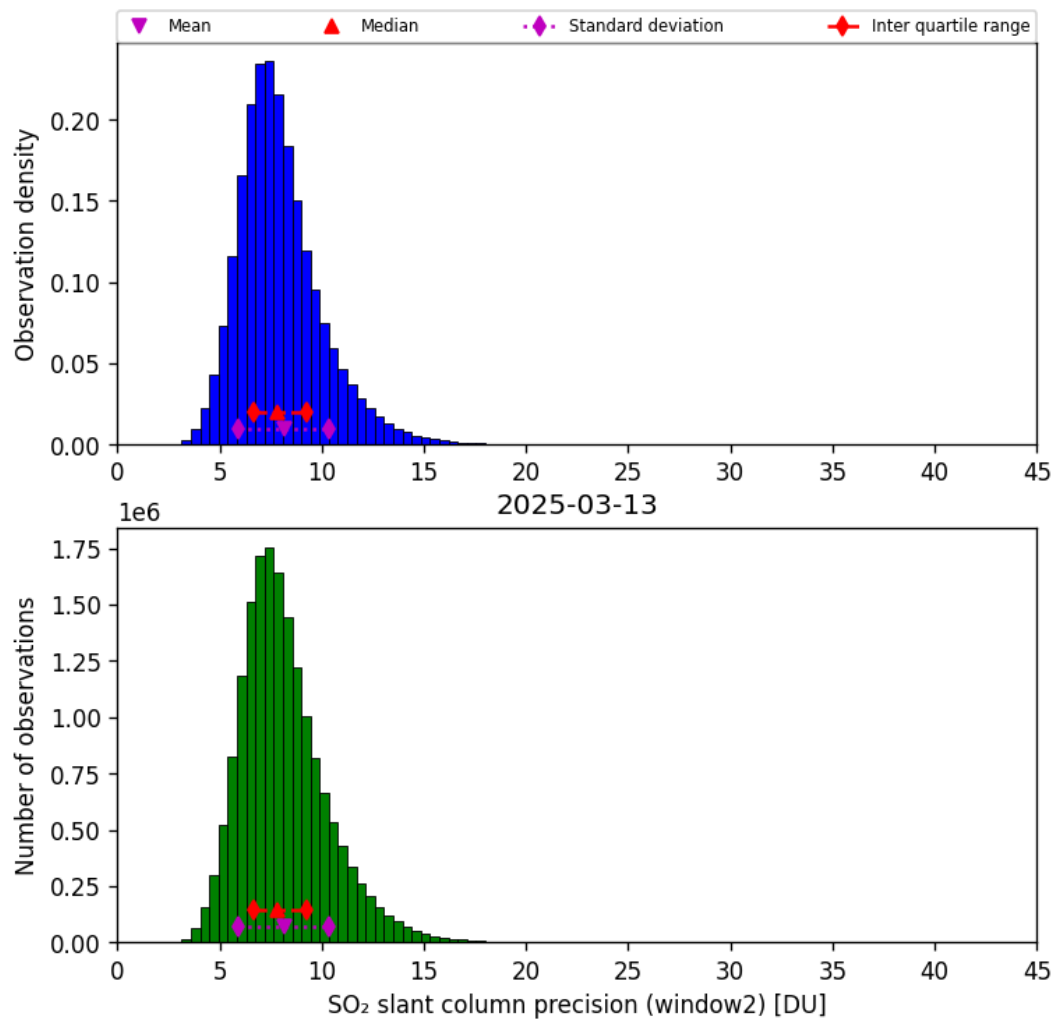


Figure 68: Histogram of “SO₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14

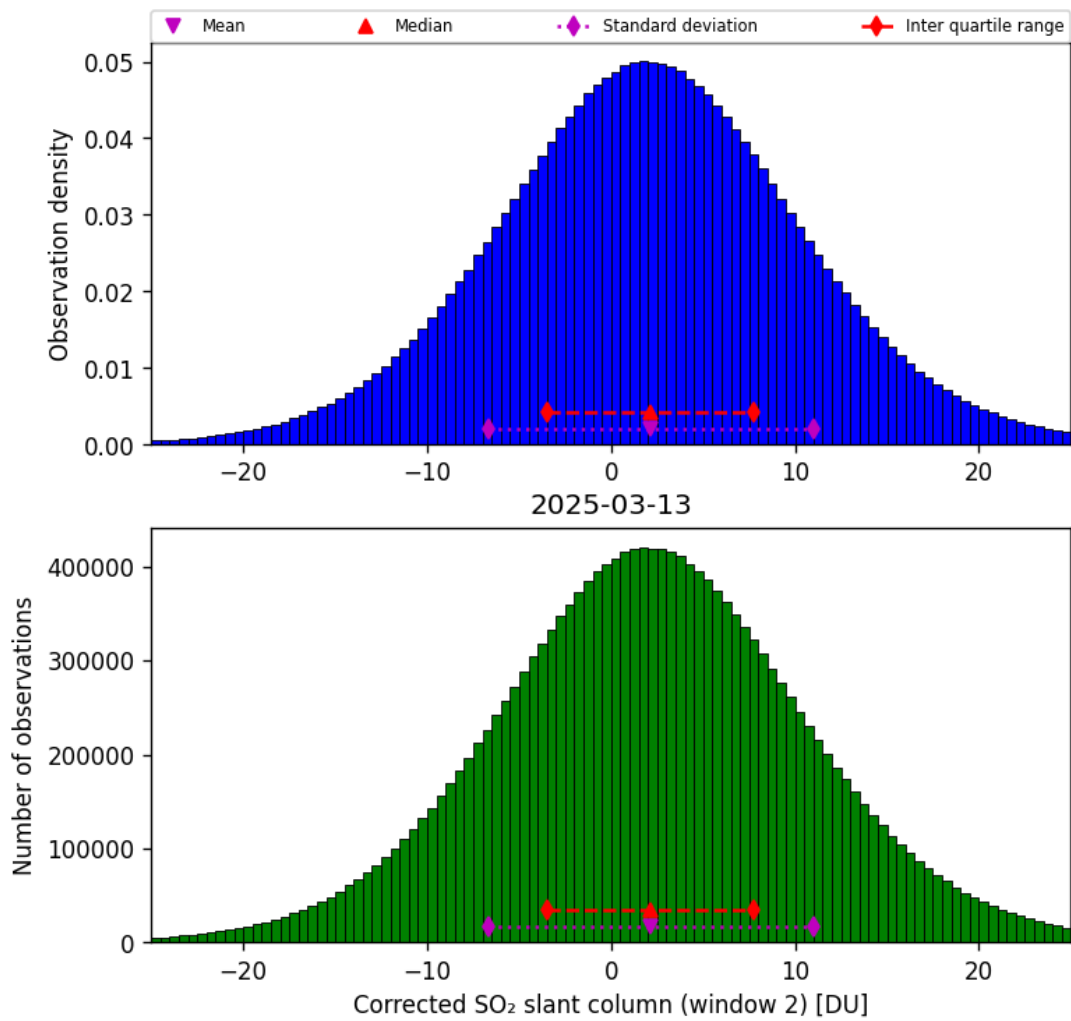


Figure 69: Histogram of “Corrected SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14

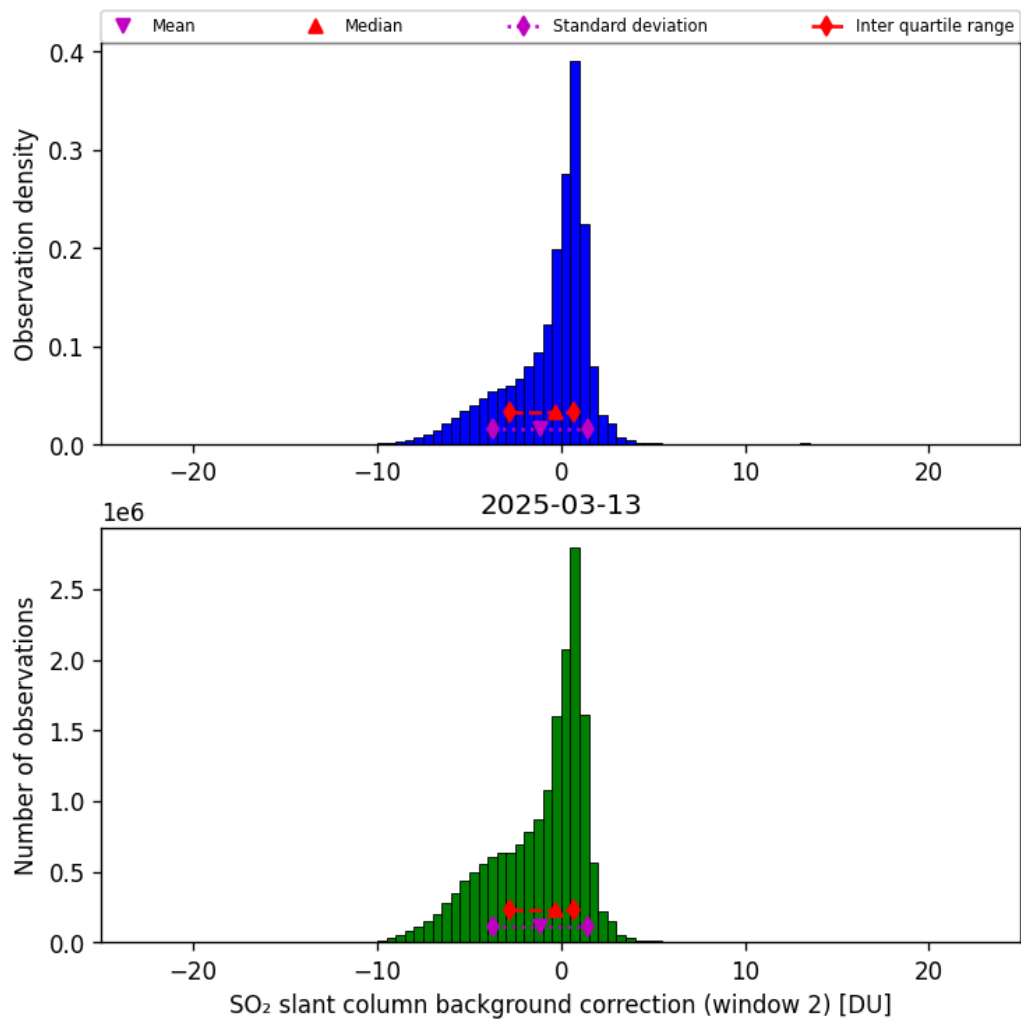


Figure 70: Histogram of “SO₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14

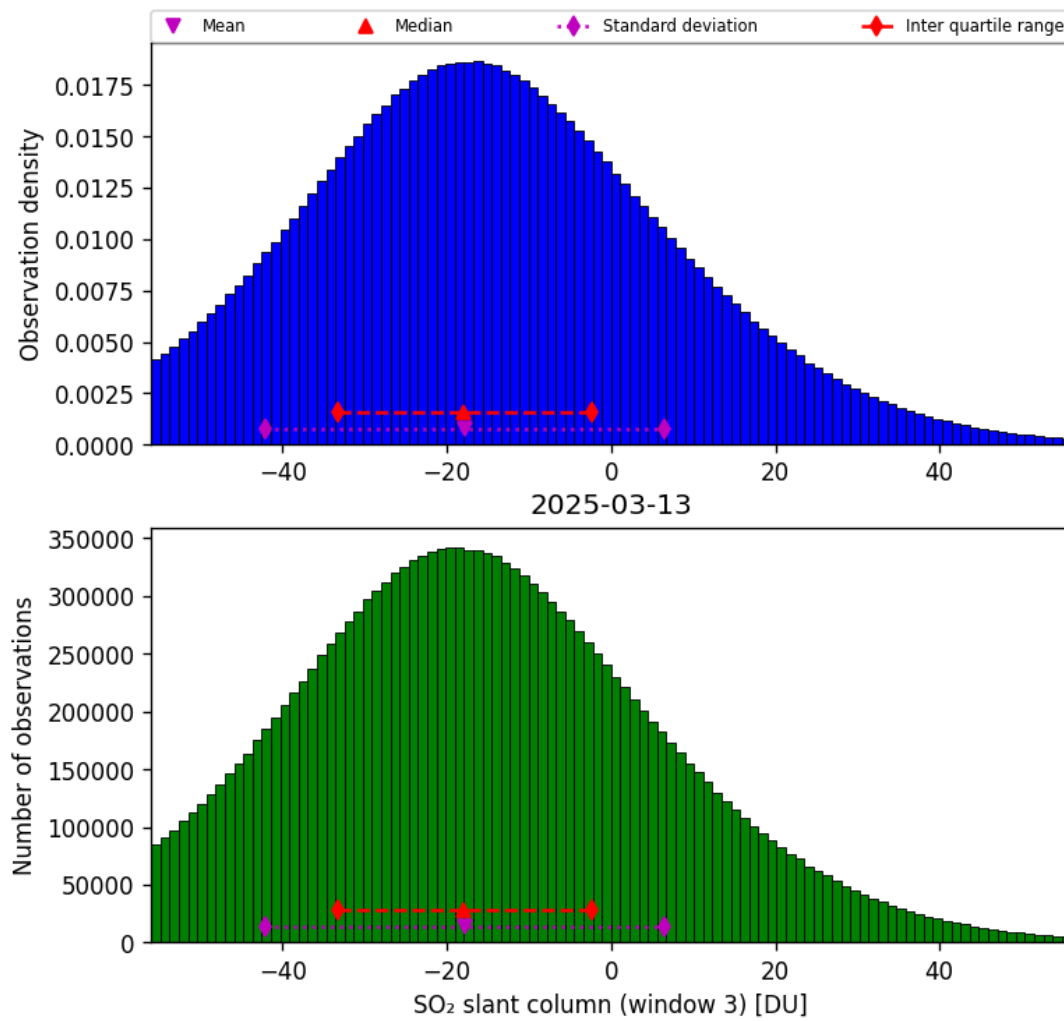


Figure 71: Histogram of “SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14

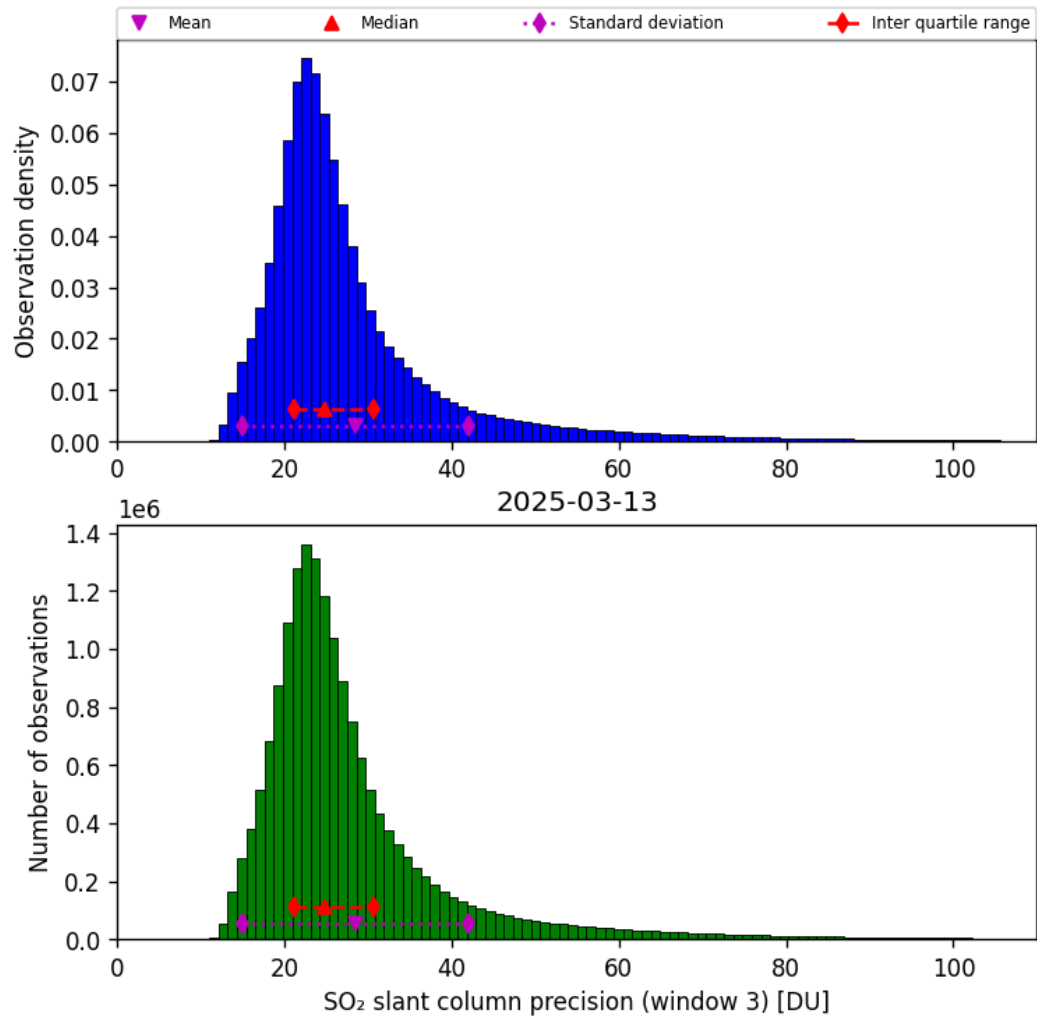


Figure 72: Histogram of “SO₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14

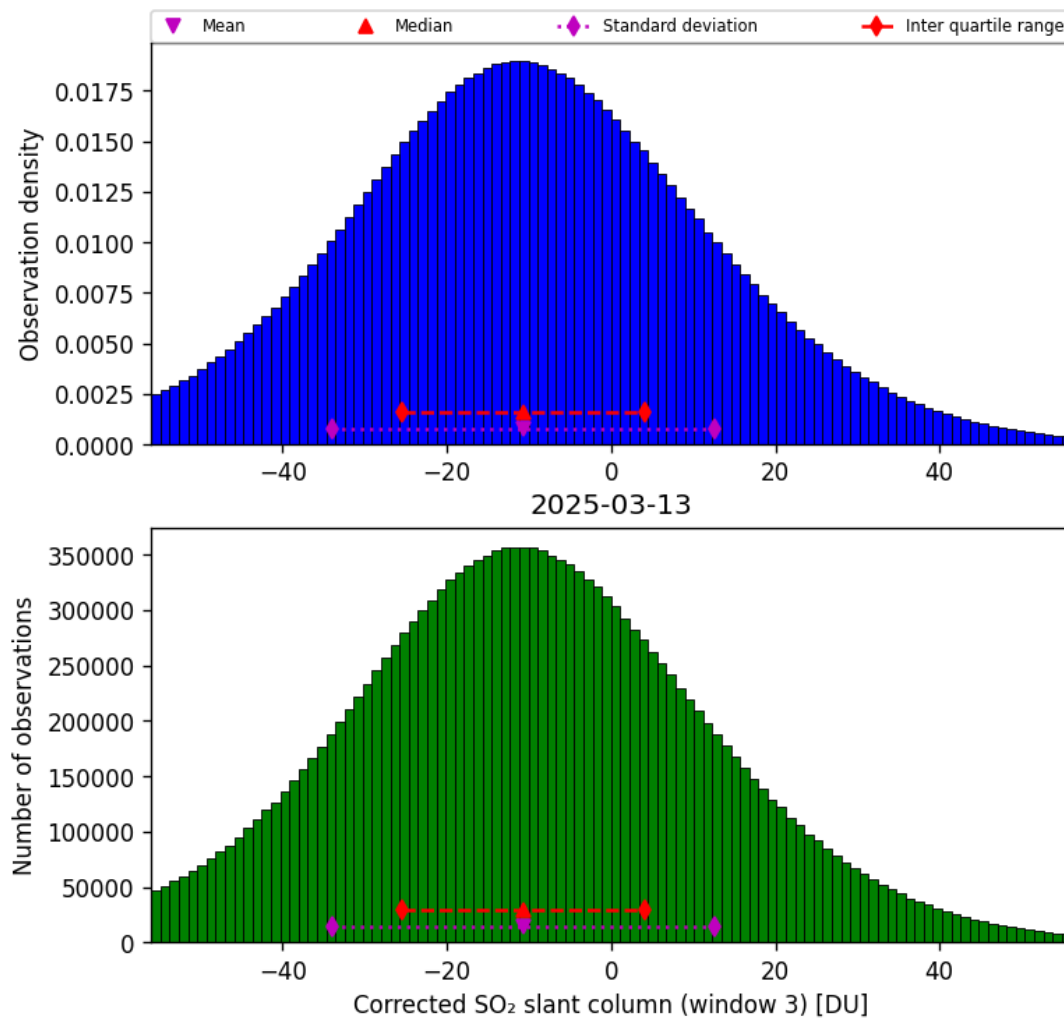


Figure 73: Histogram of “Corrected SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14

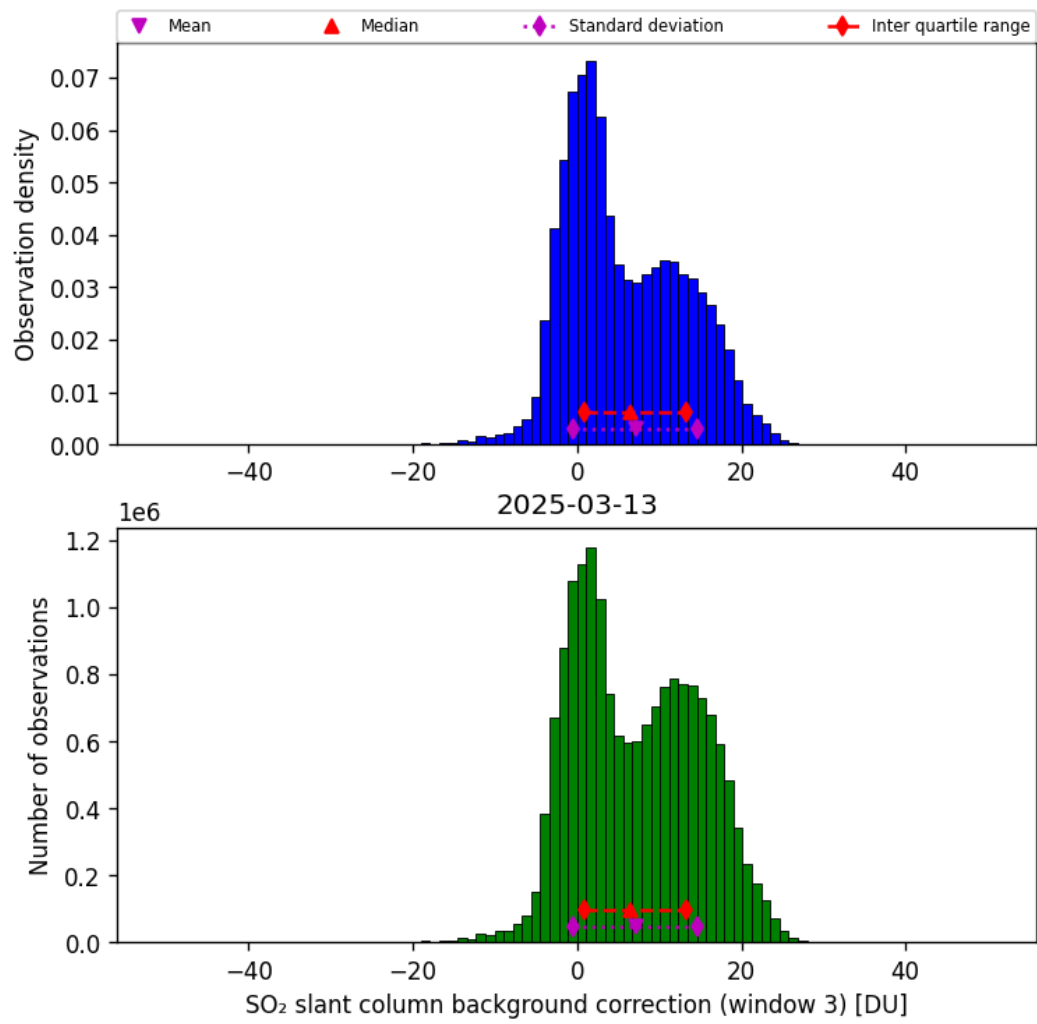


Figure 74: Histogram of “SO₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14

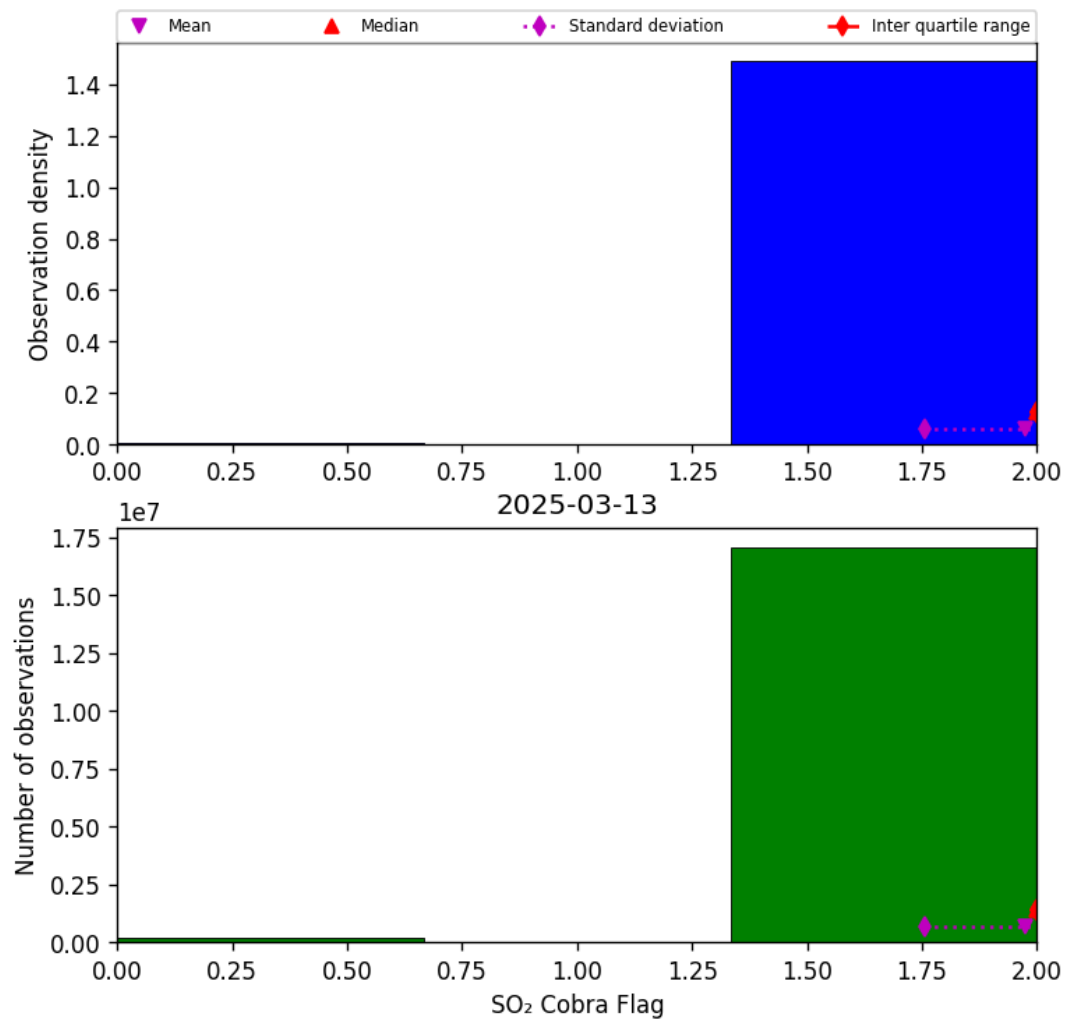


Figure 75: Histogram of “SO₂ Cobra Flag” for 2025-03-13 to 2025-03-14

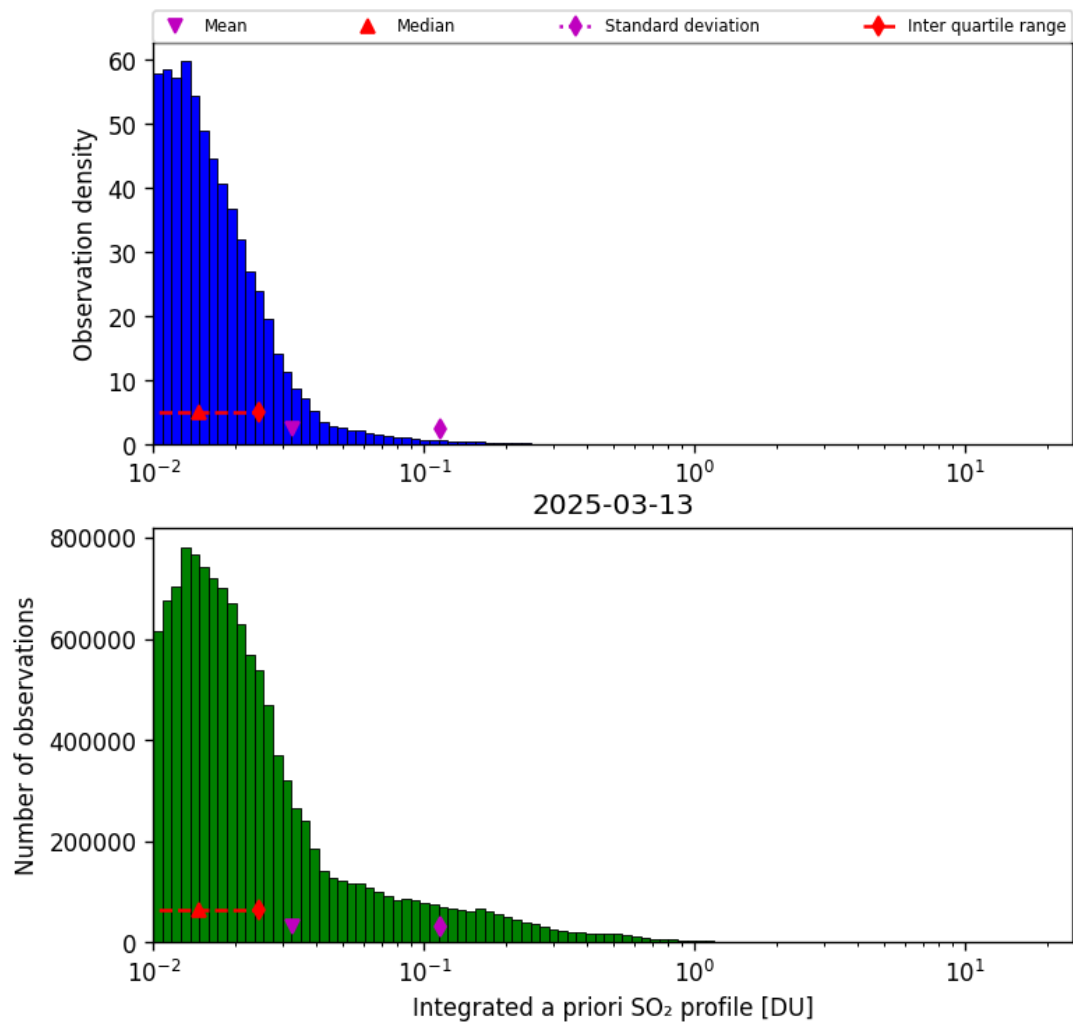


Figure 76: Histogram of “Integrated a priori SO₂ profile” for 2025-03-13 to 2025-03-14

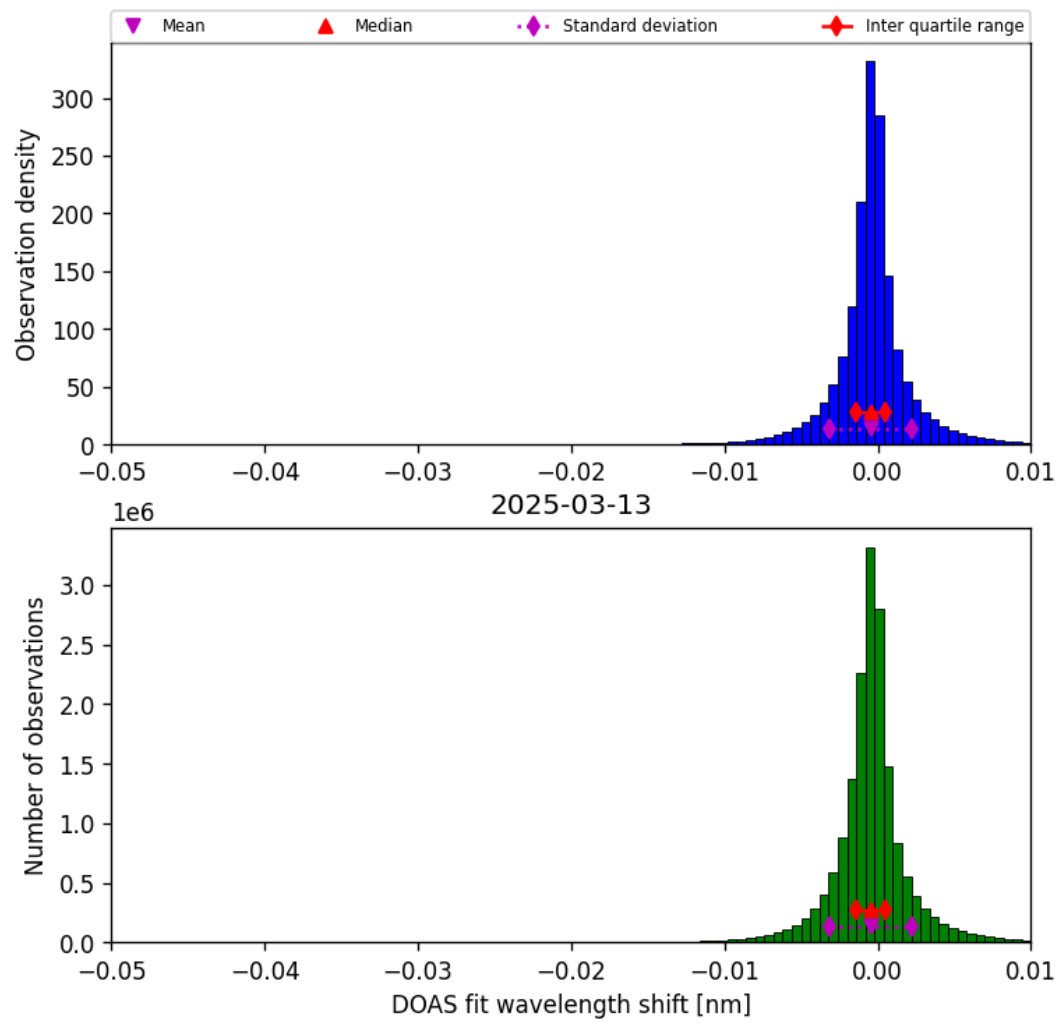


Figure 77: Histogram of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14

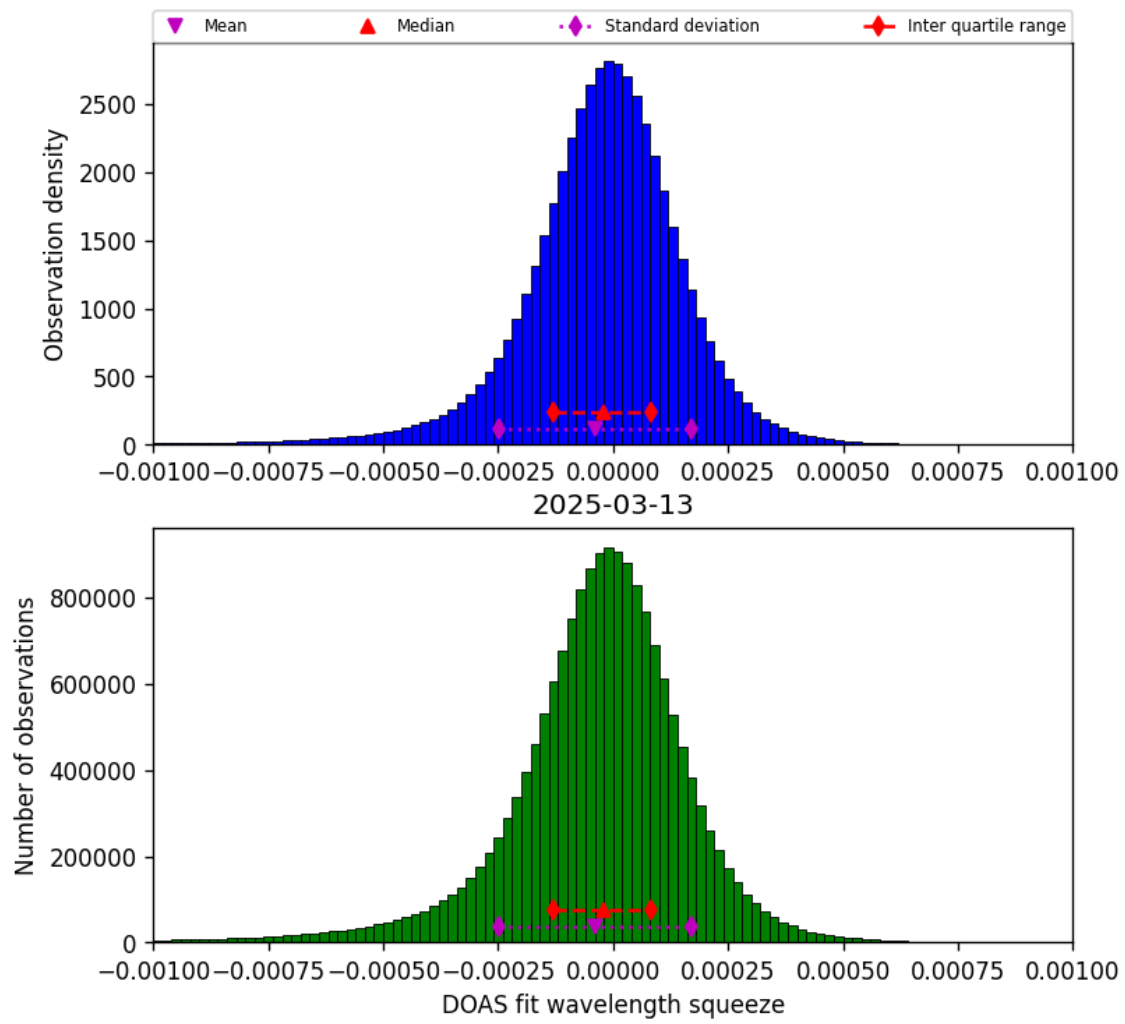


Figure 78: Histogram of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14

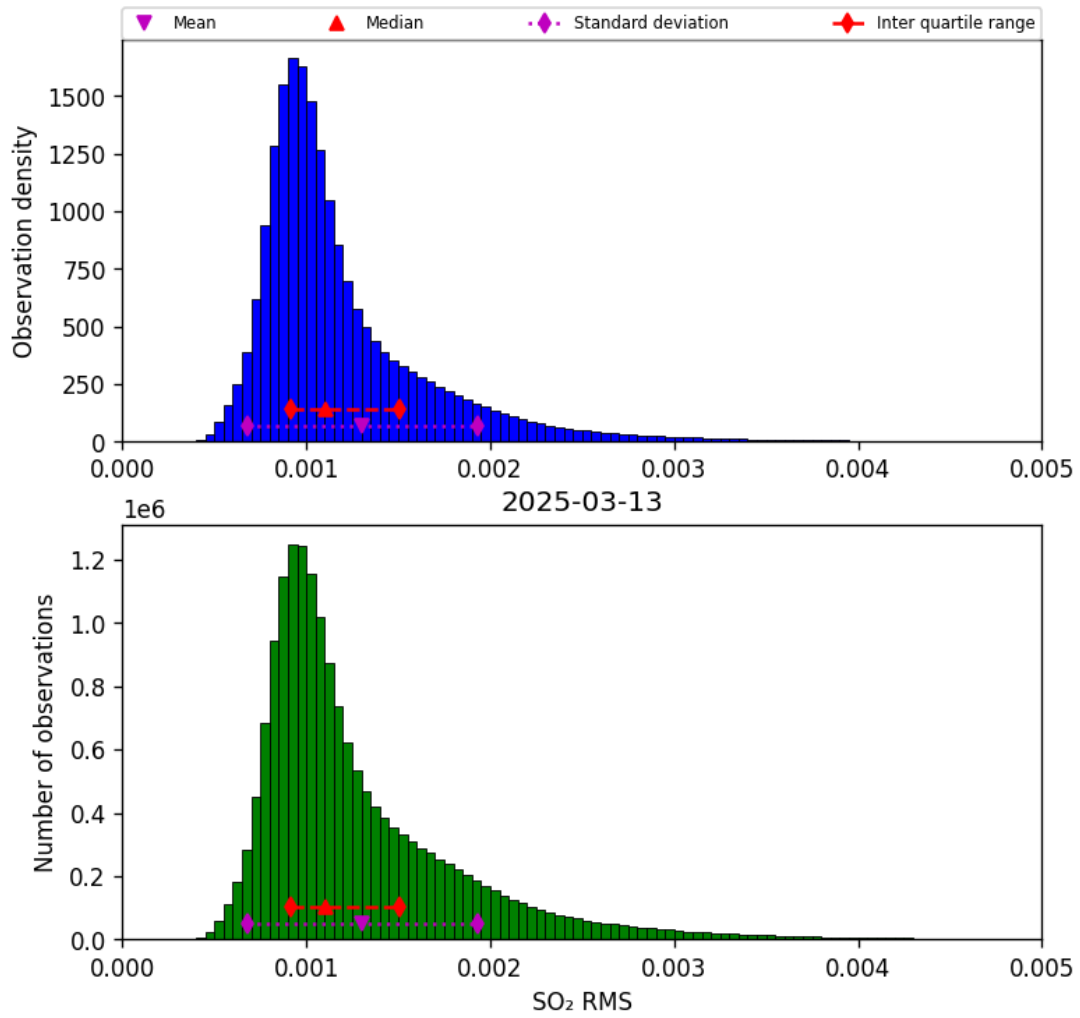


Figure 79: Histogram of “SO₂ RMS” for 2025-03-13 to 2025-03-14

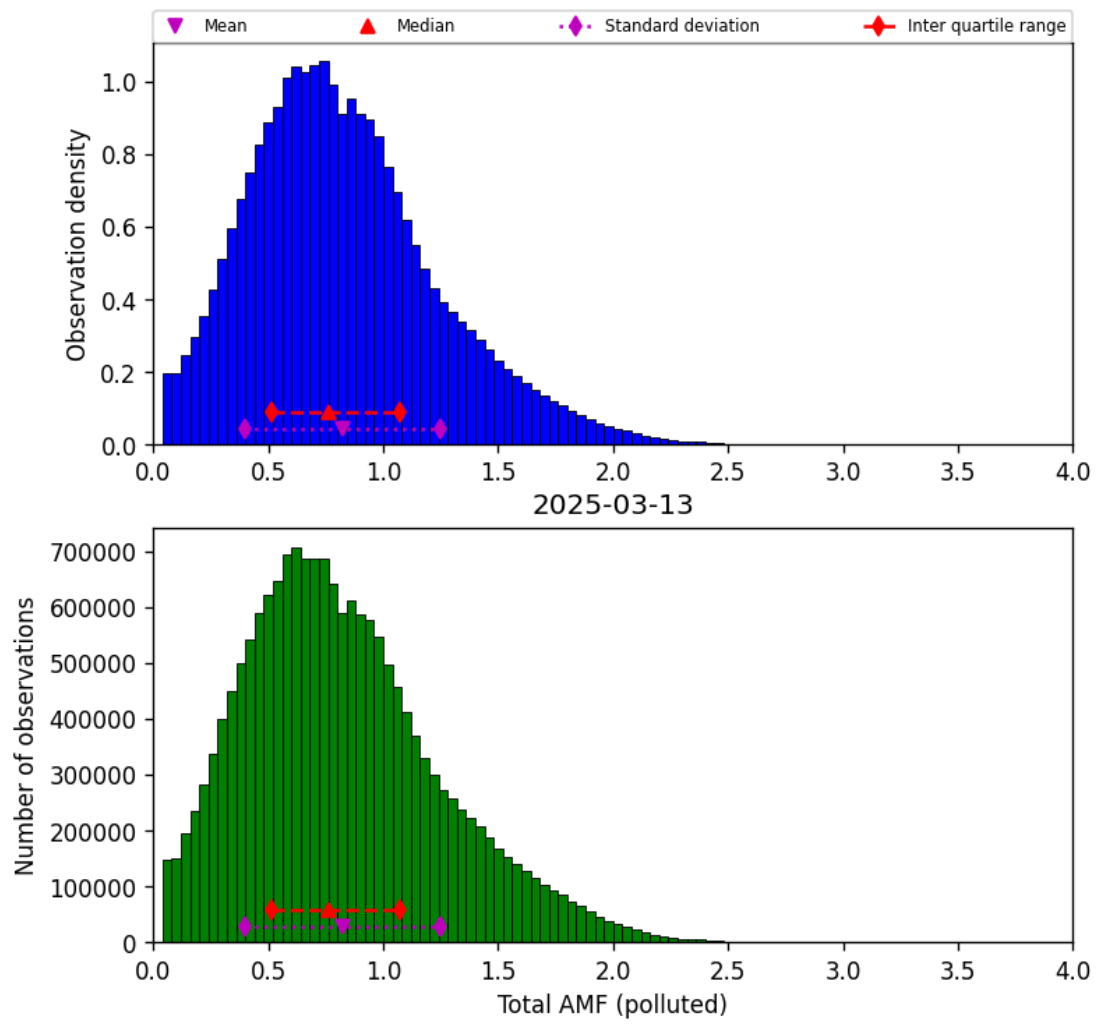


Figure 80: Histogram of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14

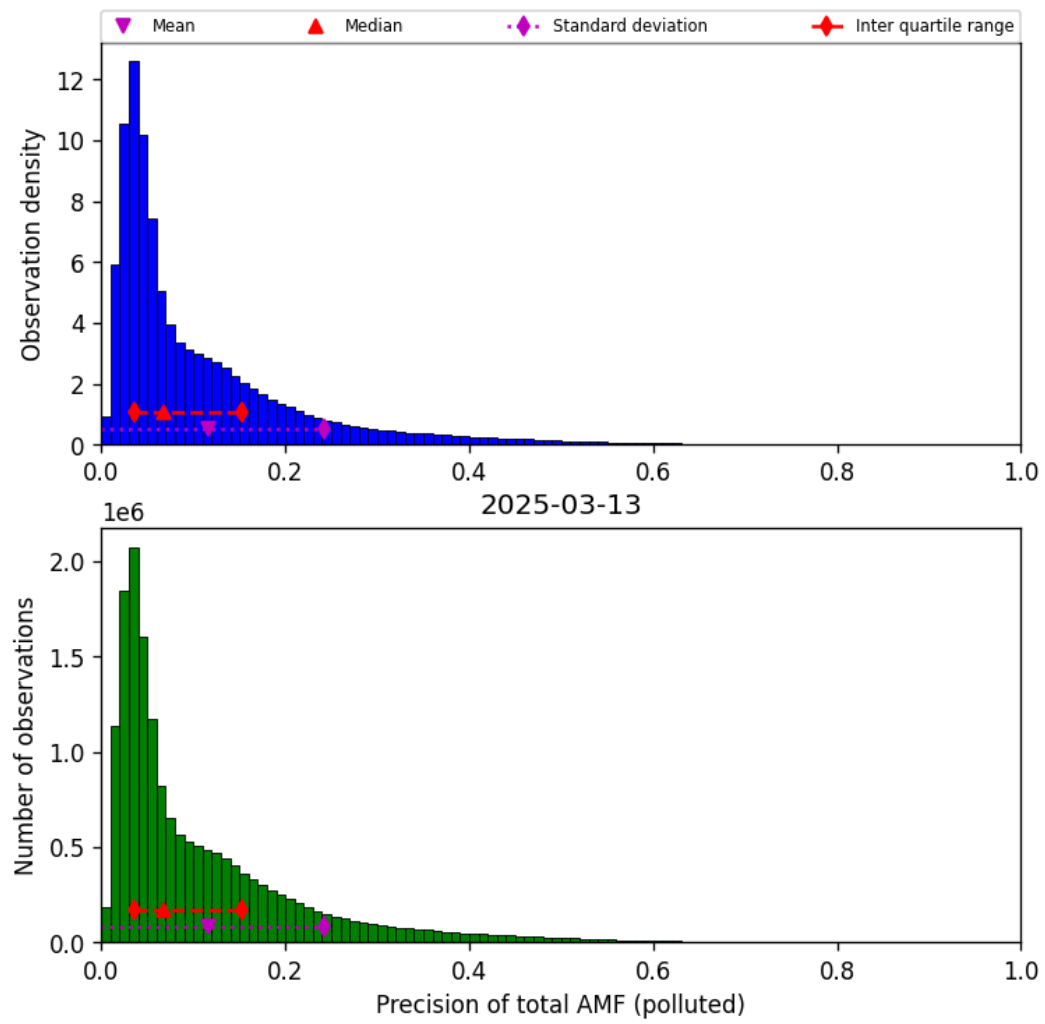


Figure 81: Histogram of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14

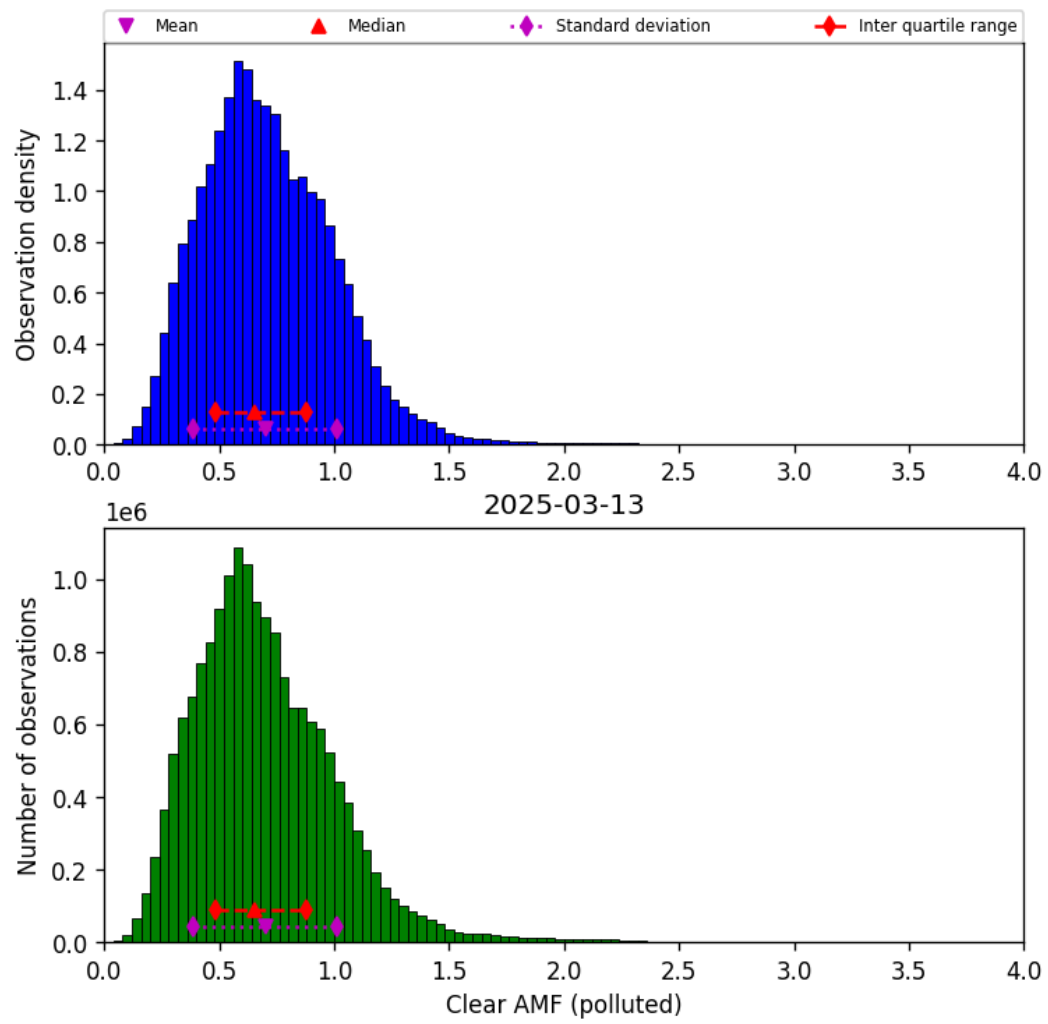


Figure 82: Histogram of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14

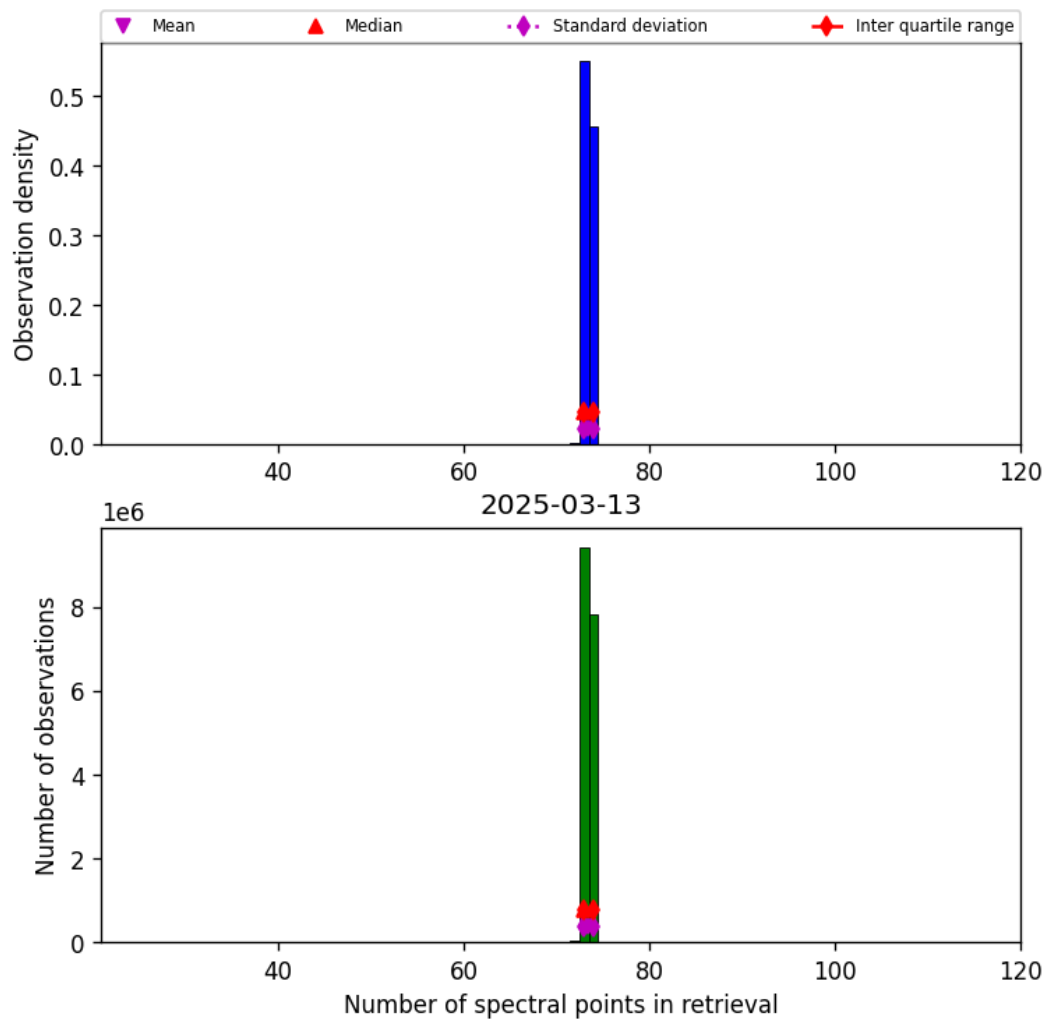


Figure 83: Histogram of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14

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.

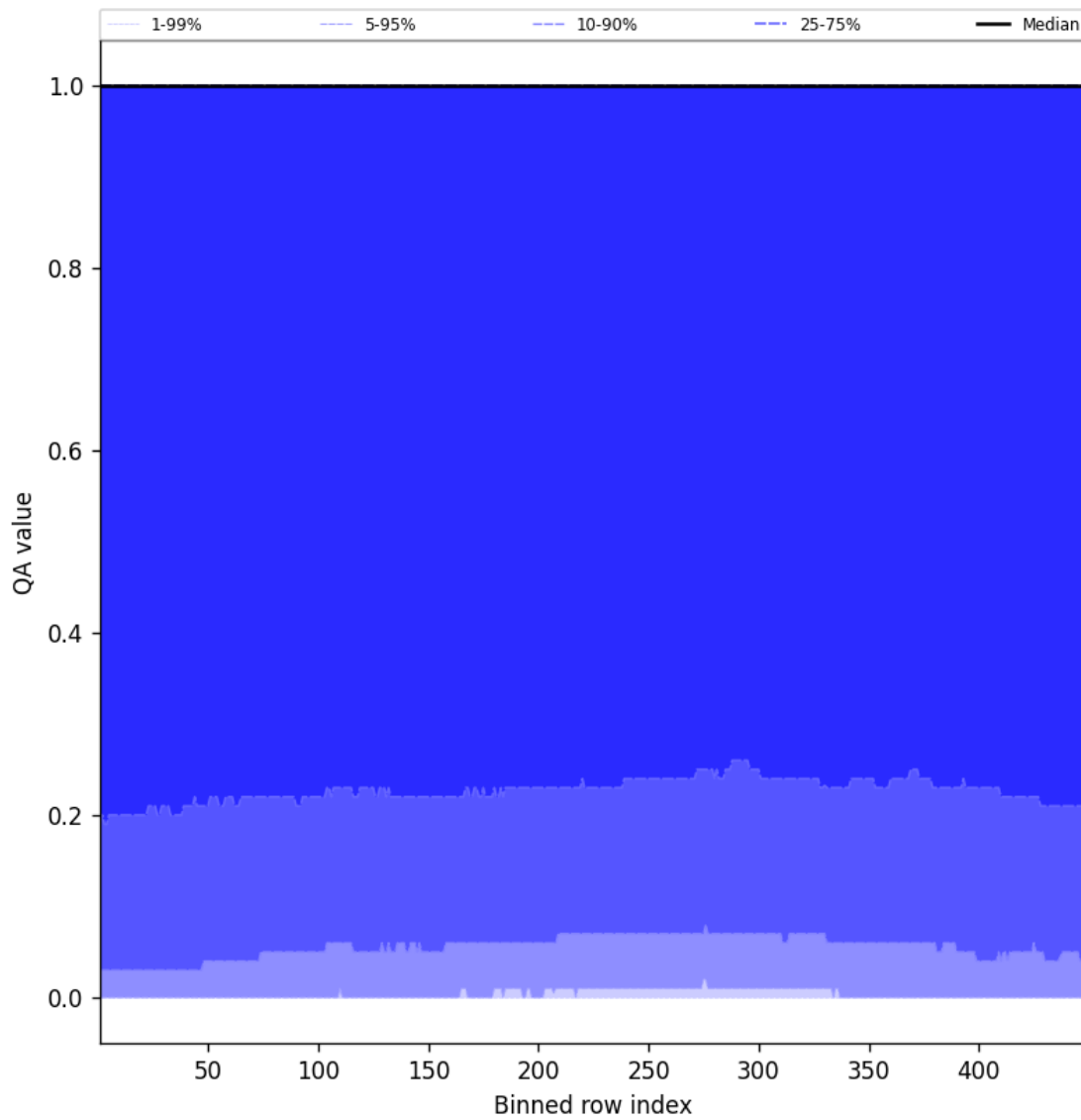


Figure 84: Along track statistics of “QA value” for 2025-03-13 to 2025-03-14

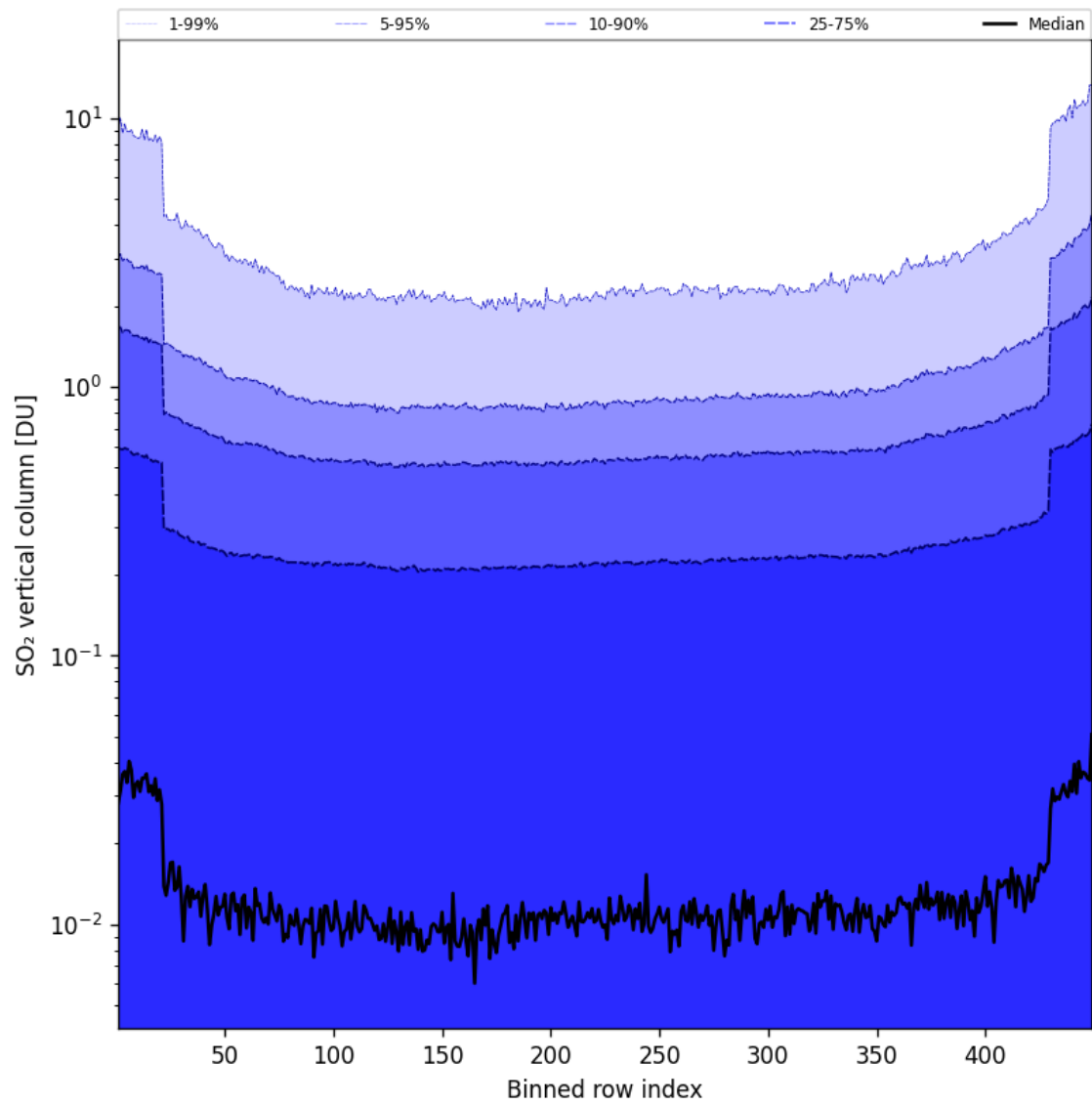


Figure 85: Along track statistics of “SO₂ vertical column” for 2025-03-13 to 2025-03-14

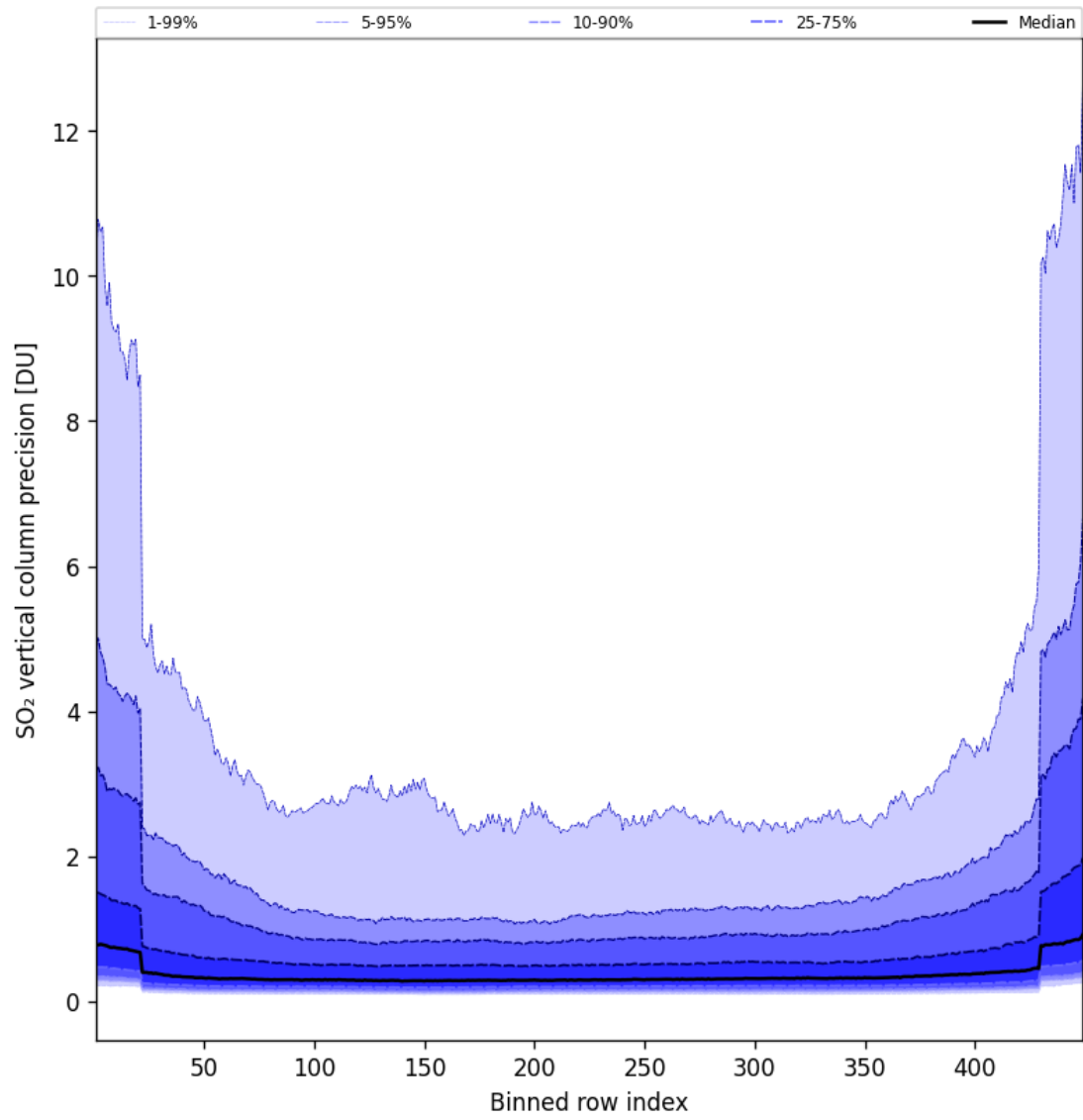


Figure 86: Along track statistics of “SO₂ vertical column precision” for 2025-03-13 to 2025-03-14

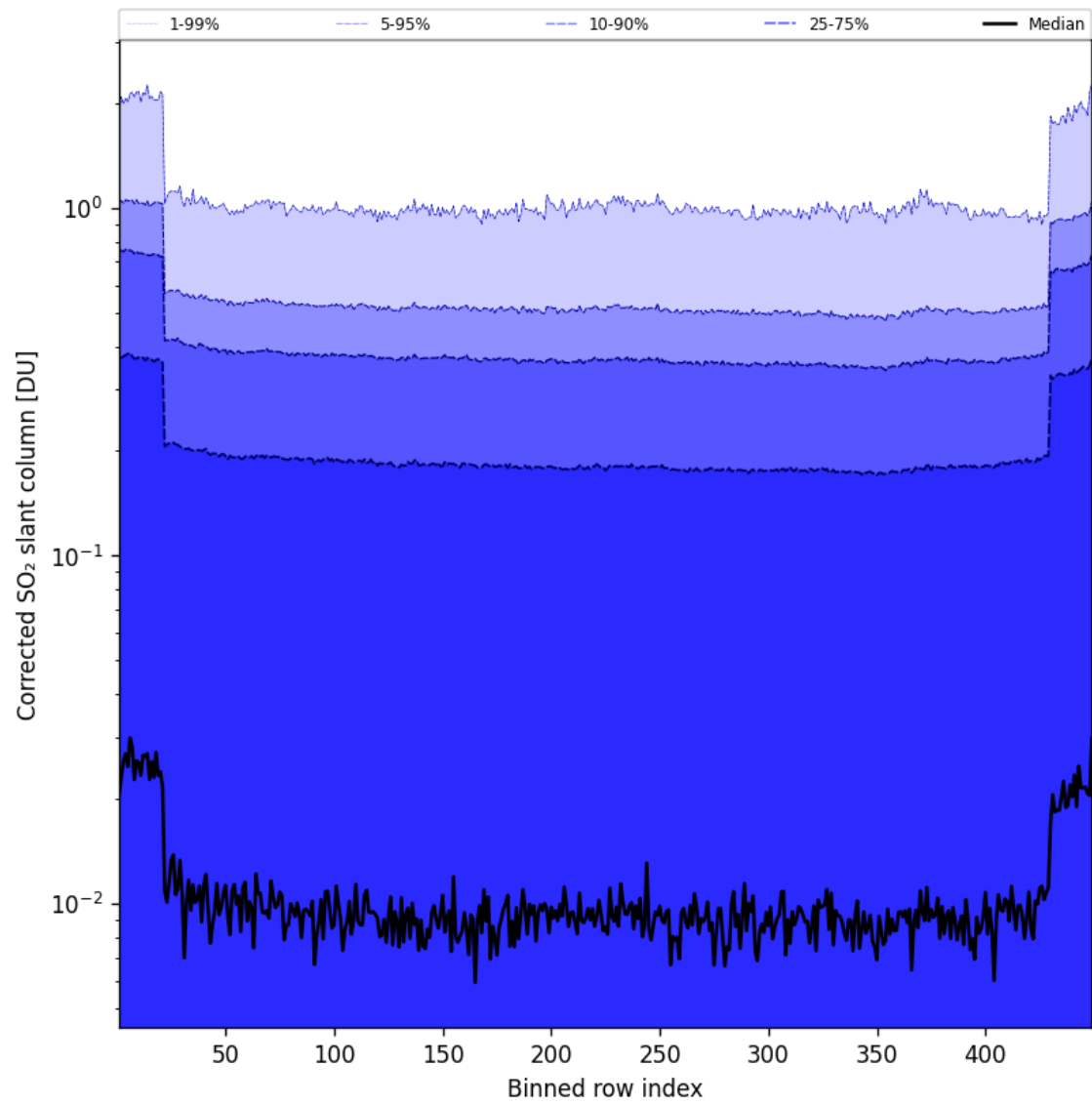


Figure 87: Along track statistics of “Corrected SO₂ slant column” for 2025-03-13 to 2025-03-14

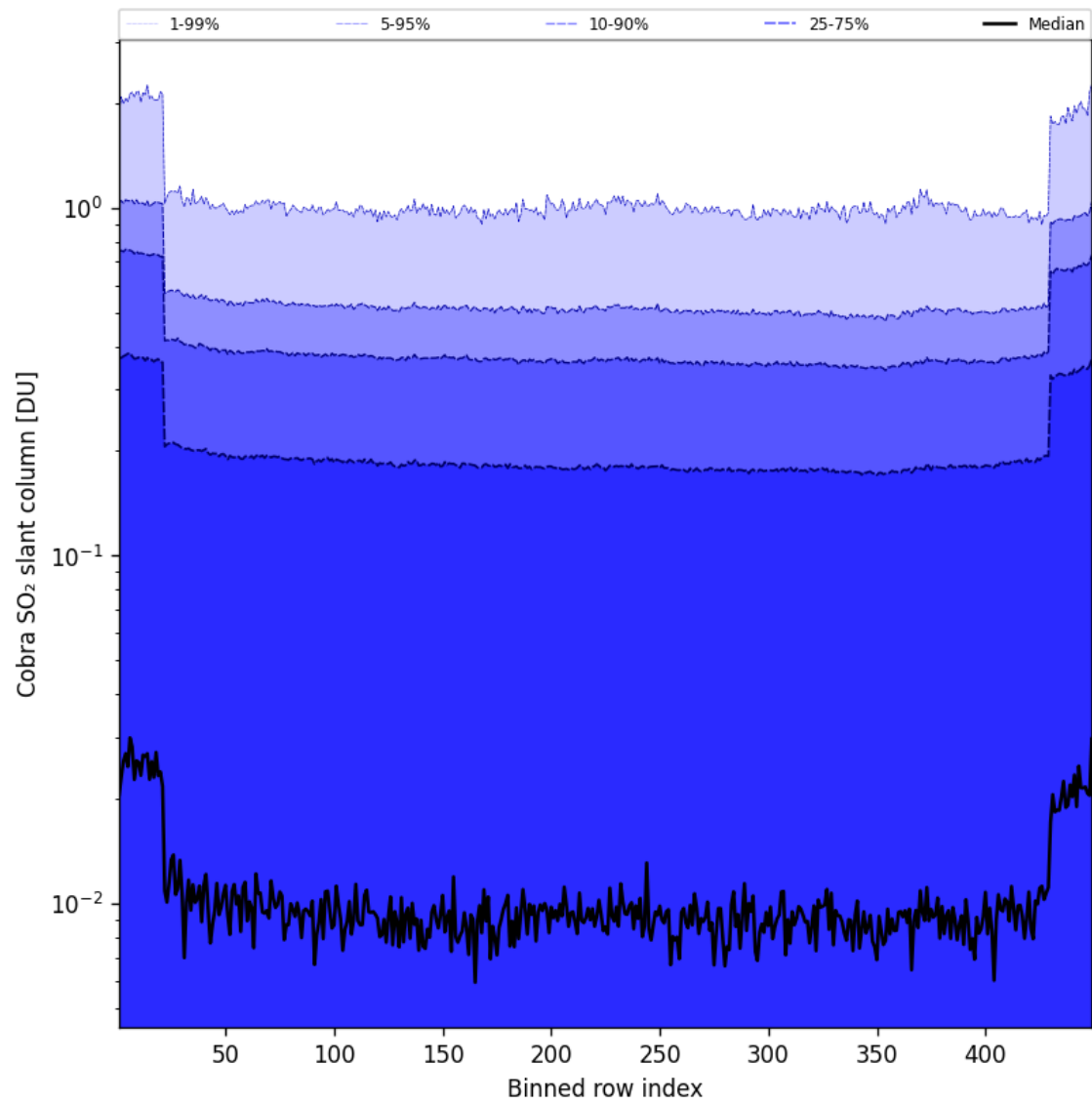


Figure 88: Along track statistics of “Cobra SO₂ slant column” for 2025-03-13 to 2025-03-14

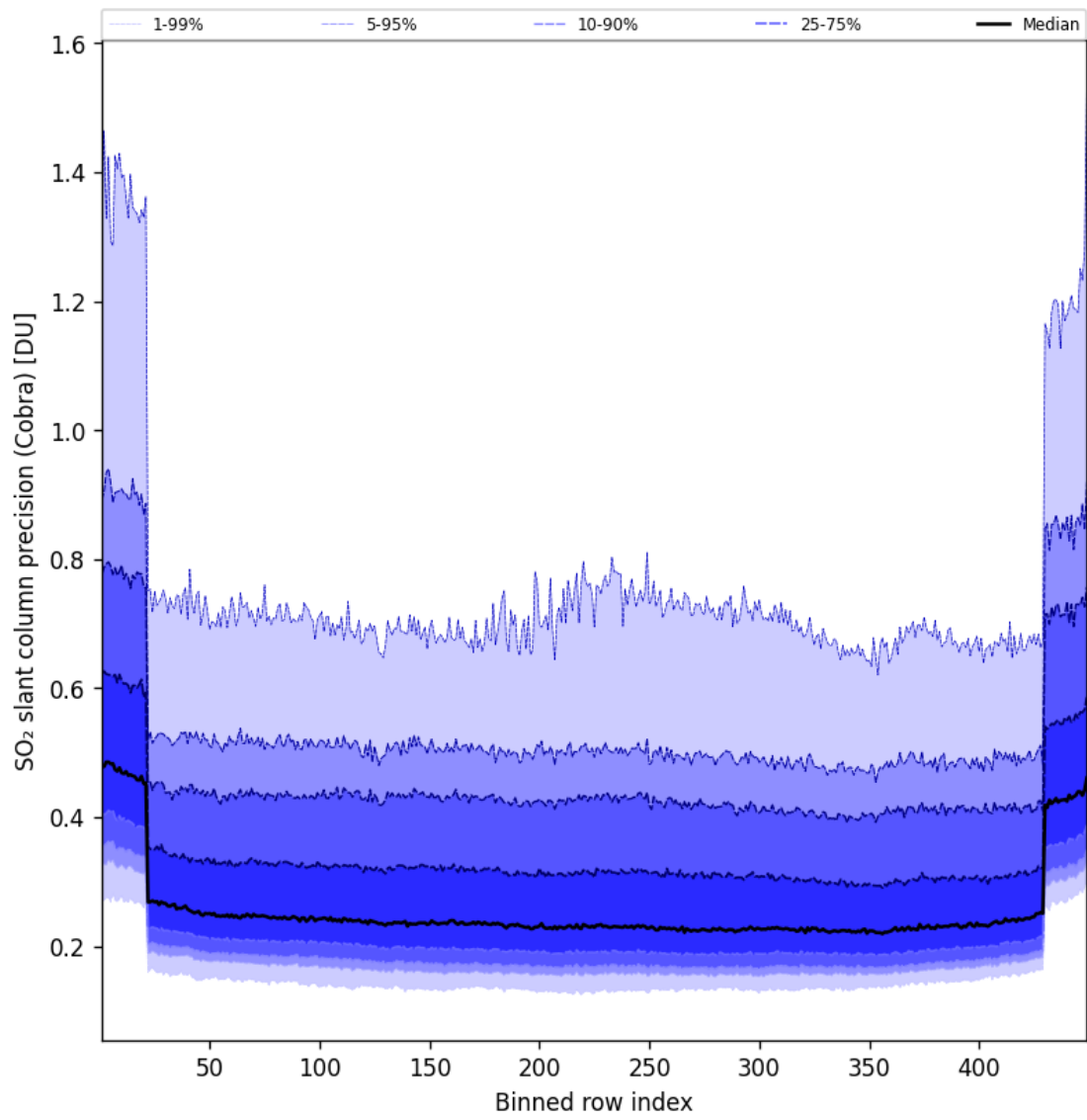


Figure 89: Along track statistics of “SO₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14

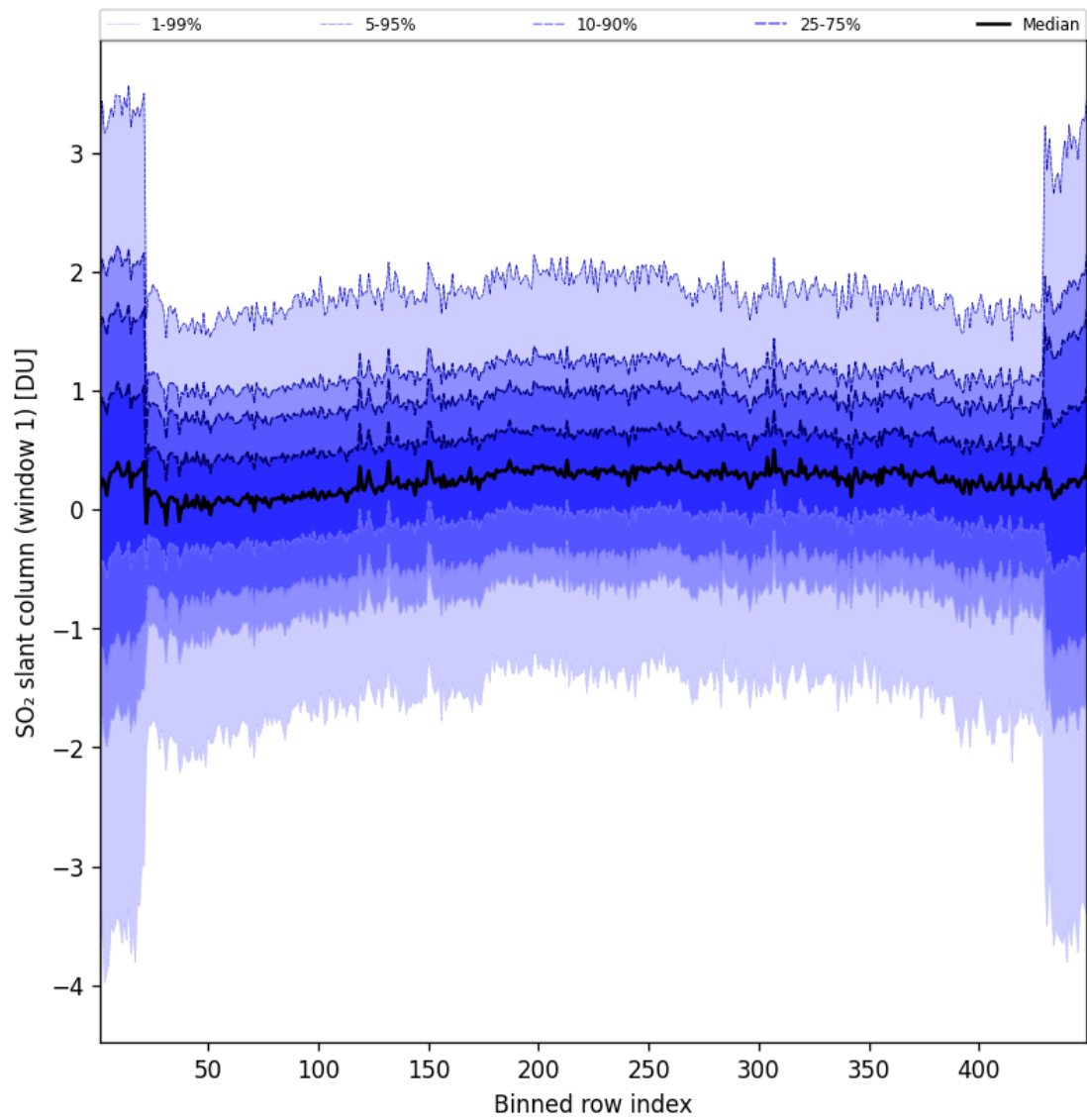


Figure 90: Along track statistics of “SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14

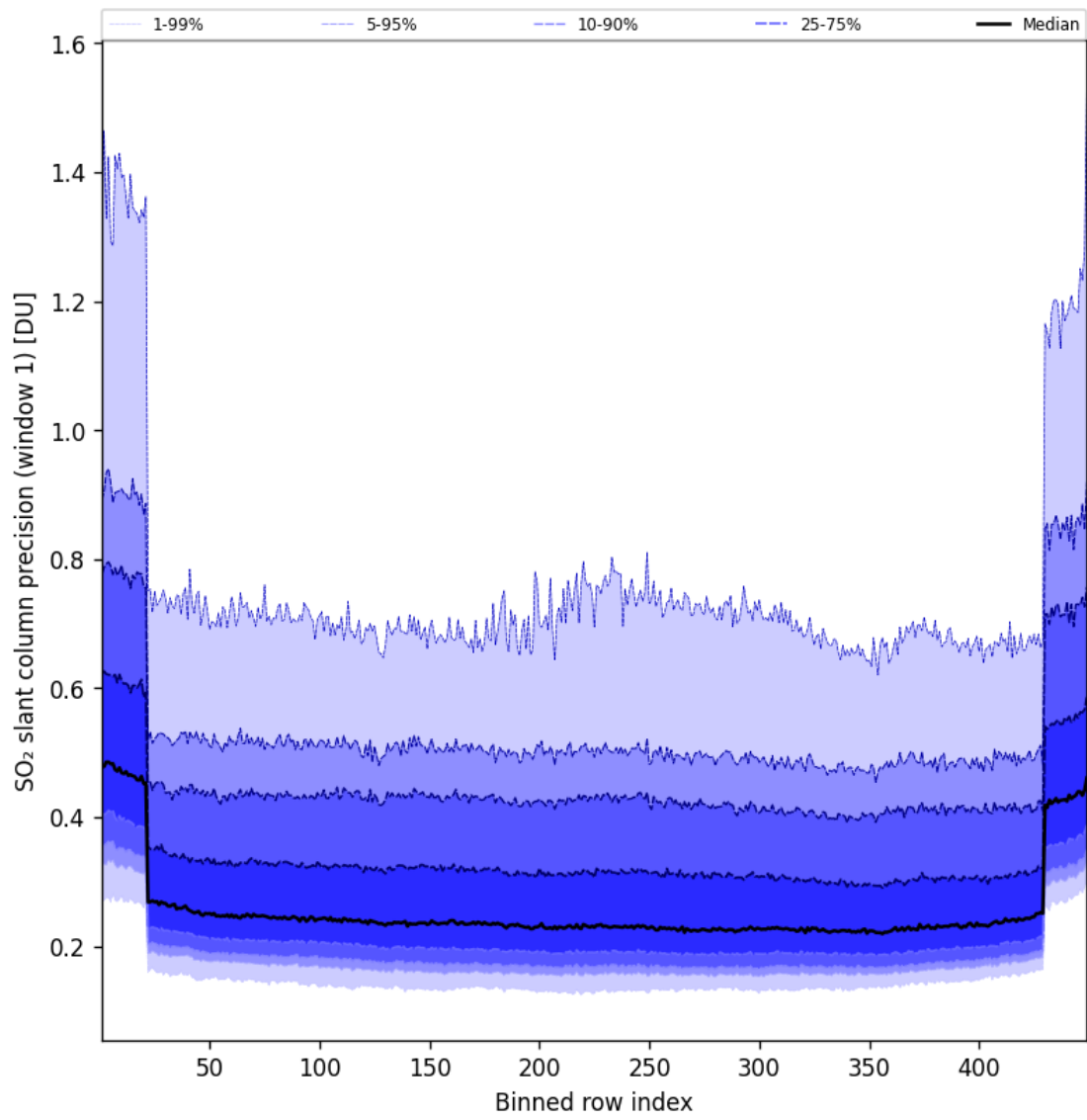


Figure 91: Along track statistics of “SO₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14

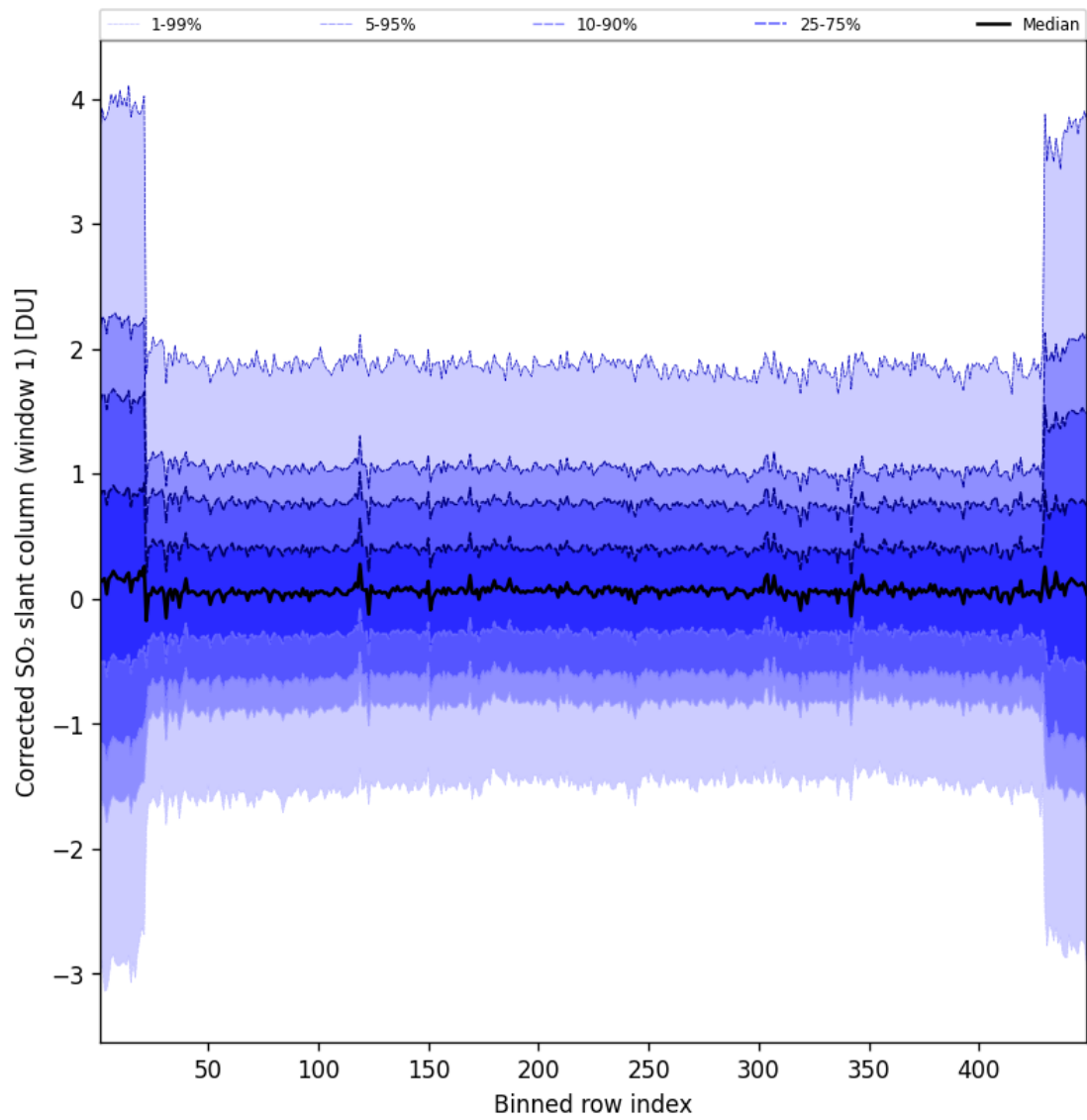


Figure 92: Along track statistics of “Corrected SO₂ slant column (window 1)” for 2025-03-13 to 2025-03-14

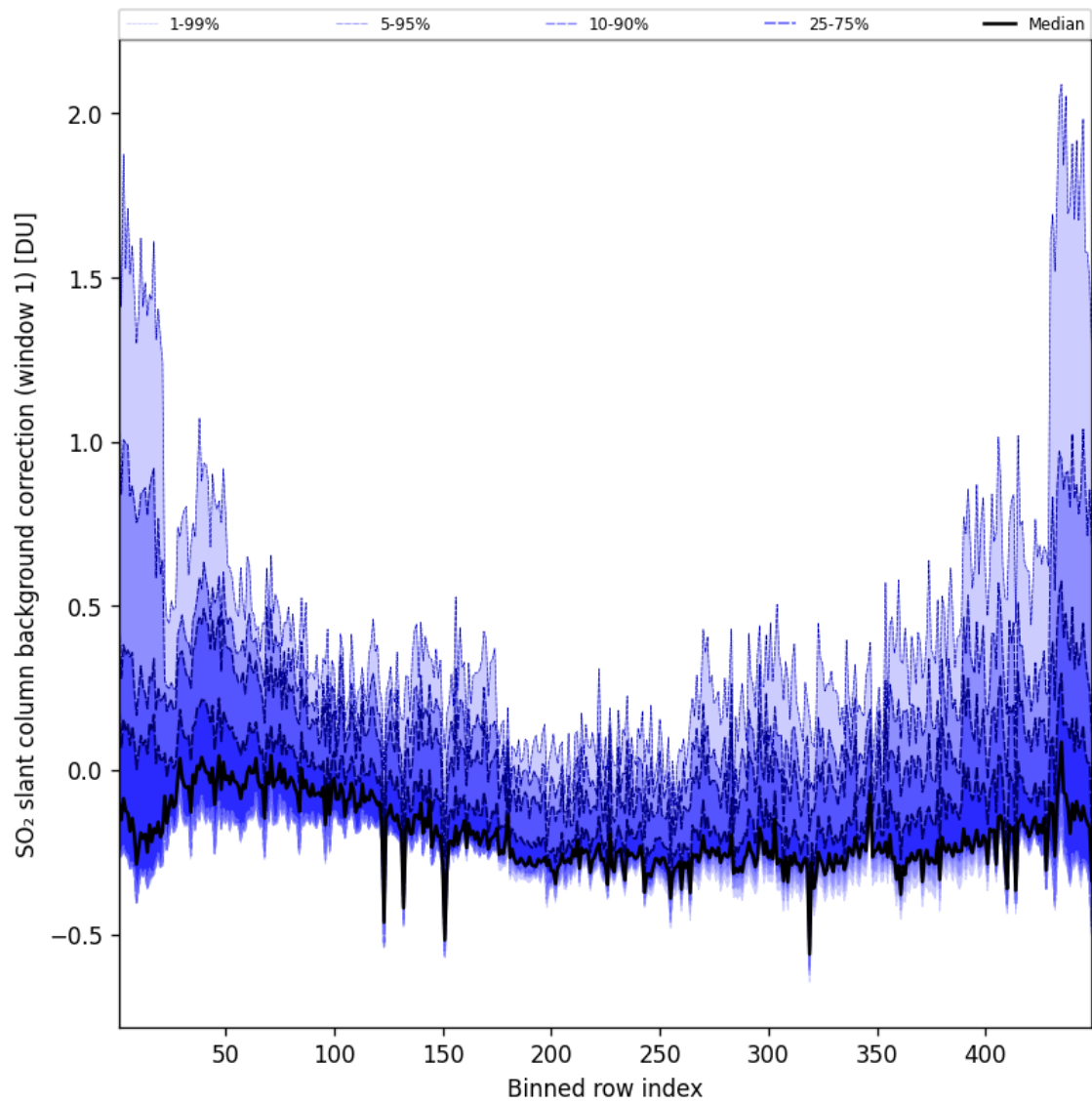


Figure 93: Along track statistics of “SO₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14

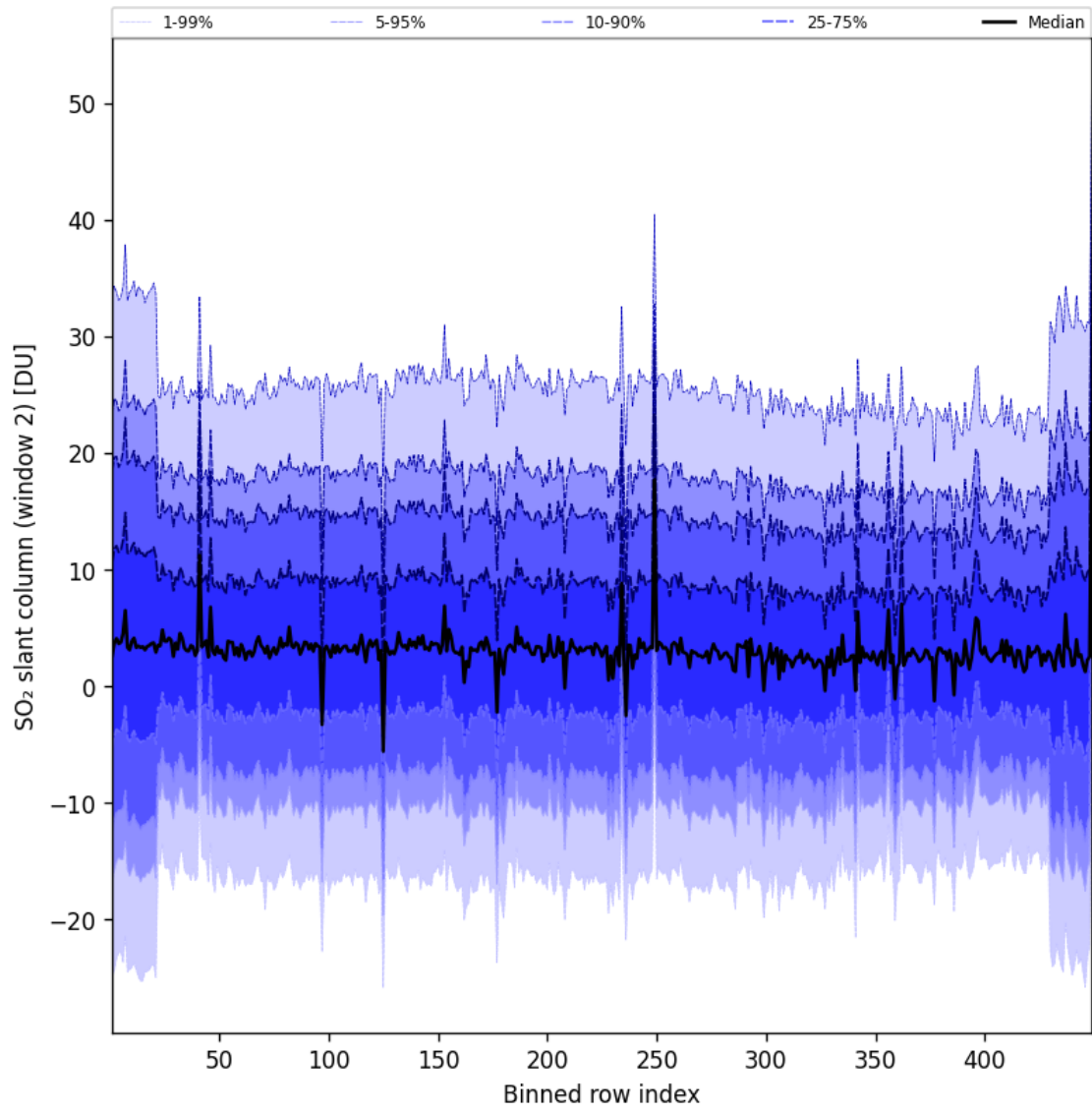


Figure 94: Along track statistics of “SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14

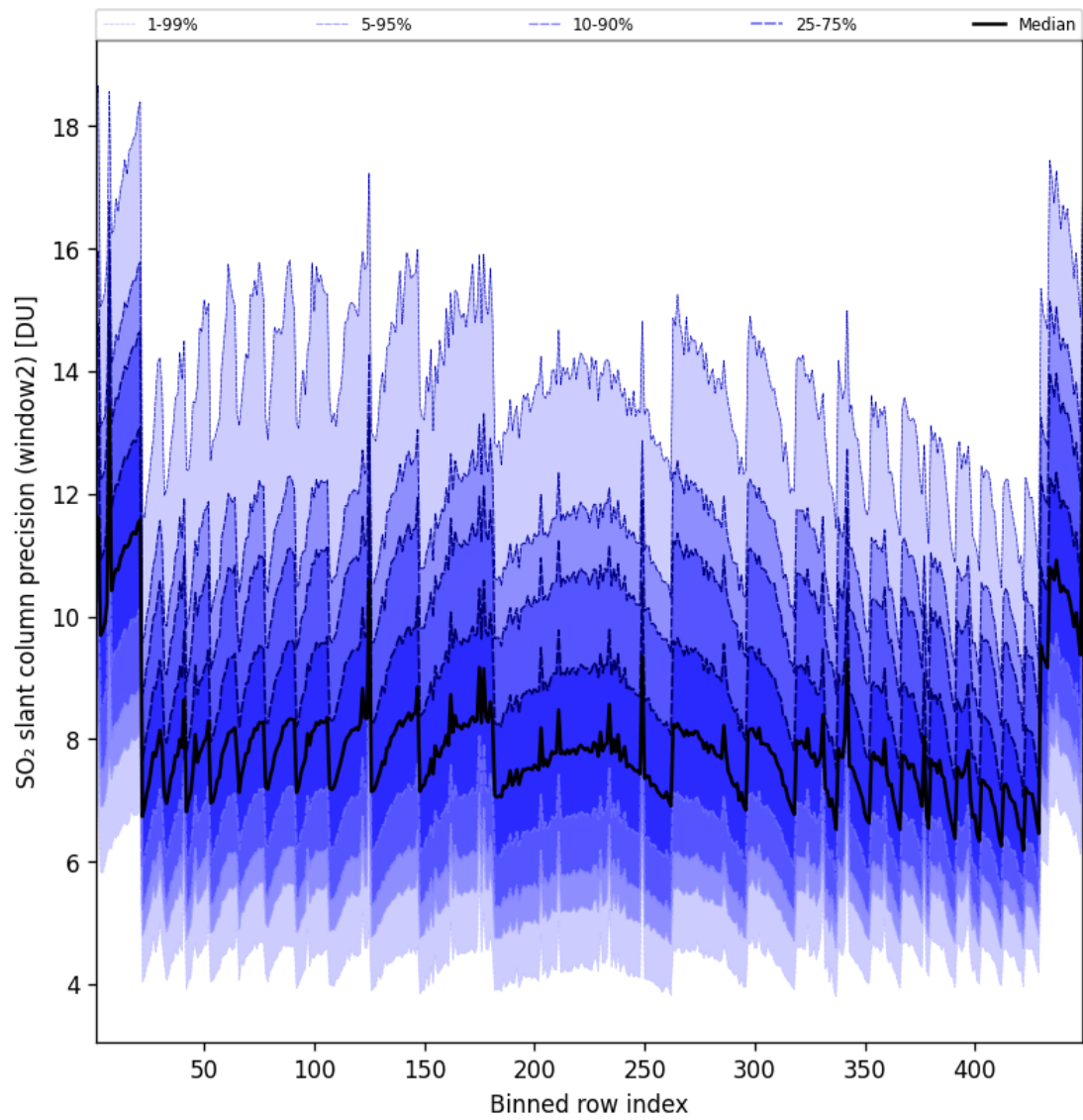


Figure 95: Along track statistics of “SO₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14

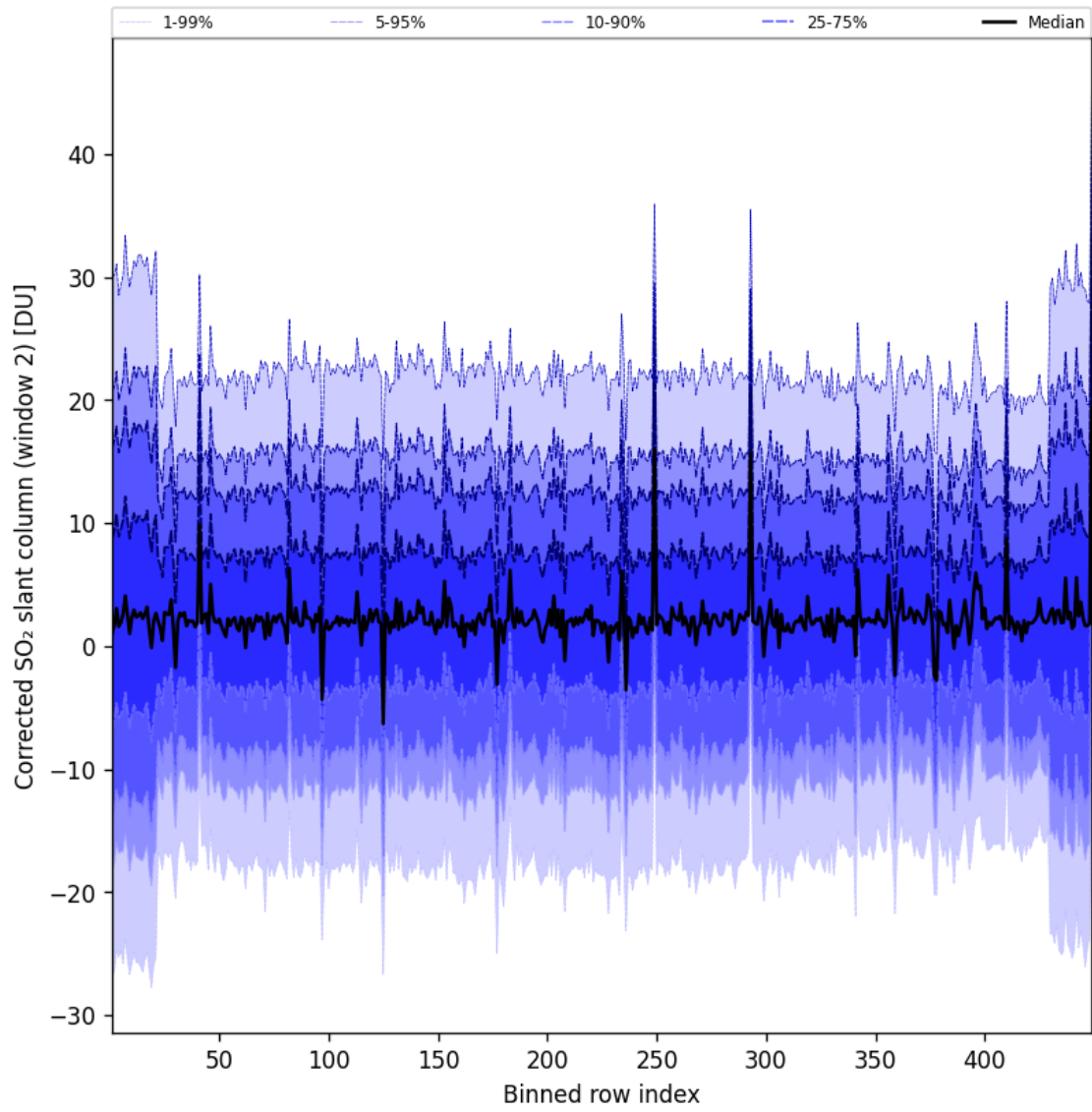


Figure 96: Along track statistics of “Corrected SO₂ slant column (window 2)” for 2025-03-13 to 2025-03-14

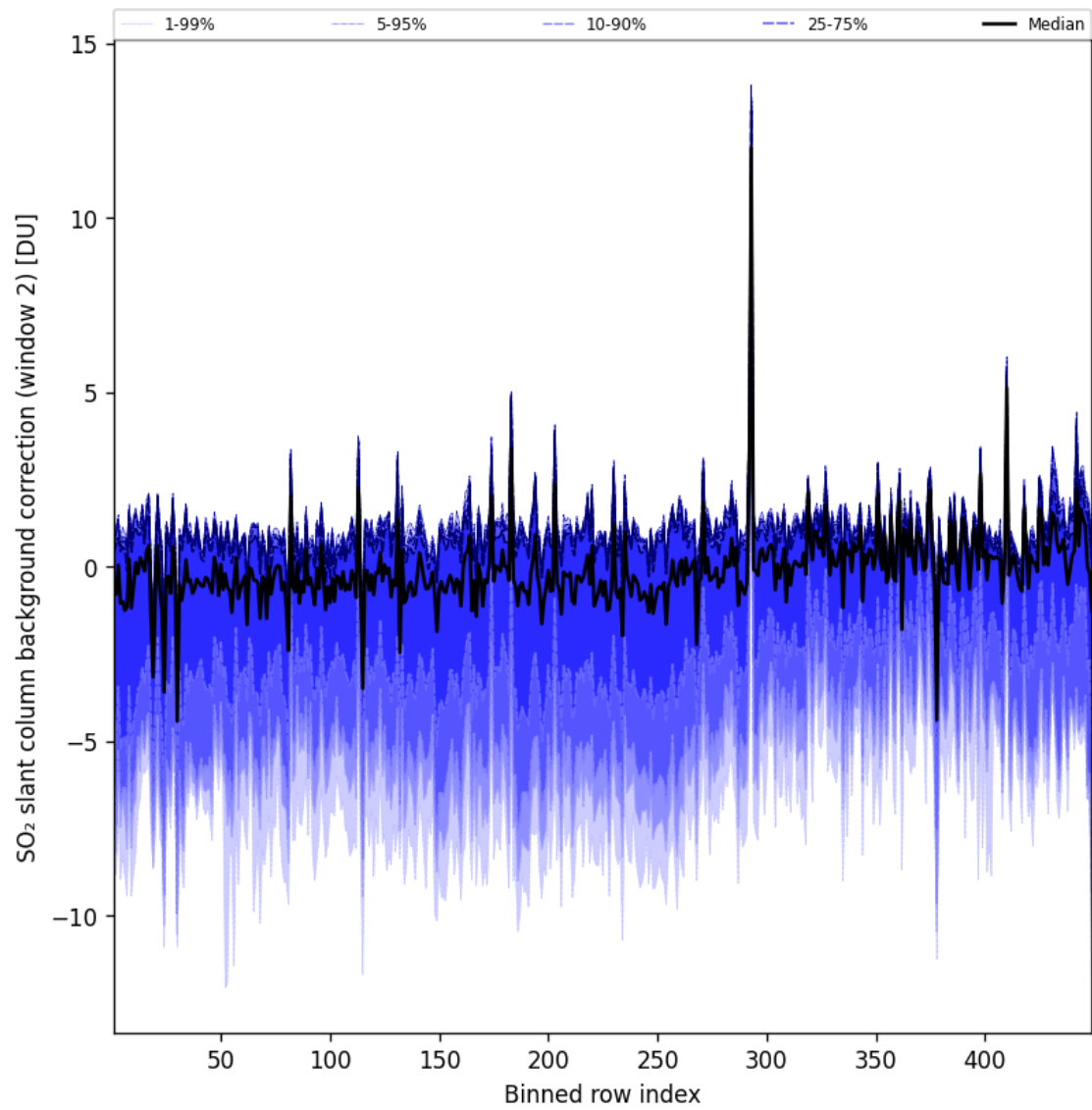


Figure 97: Along track statistics of “SO₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14

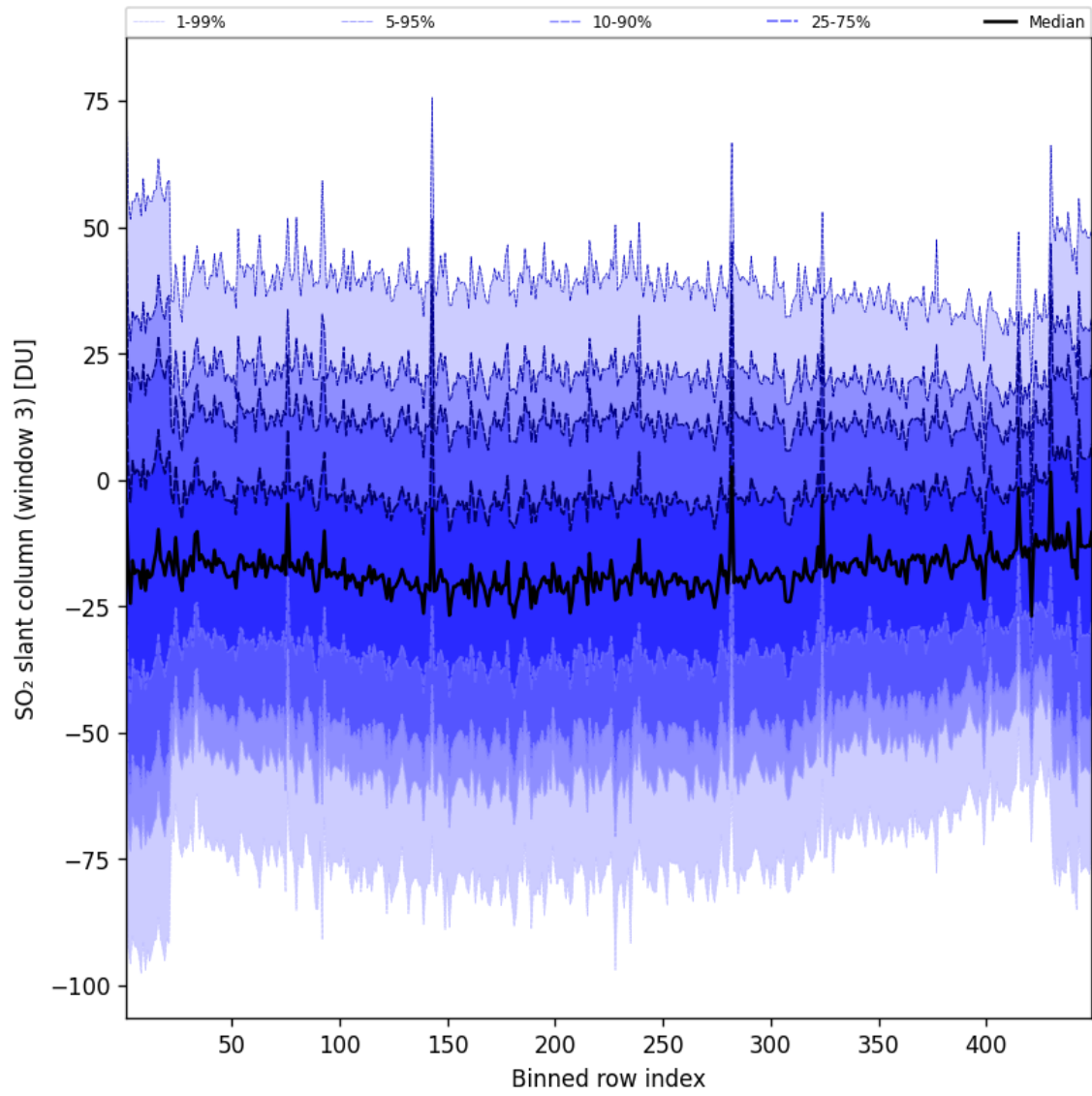


Figure 98: Along track statistics of “SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14

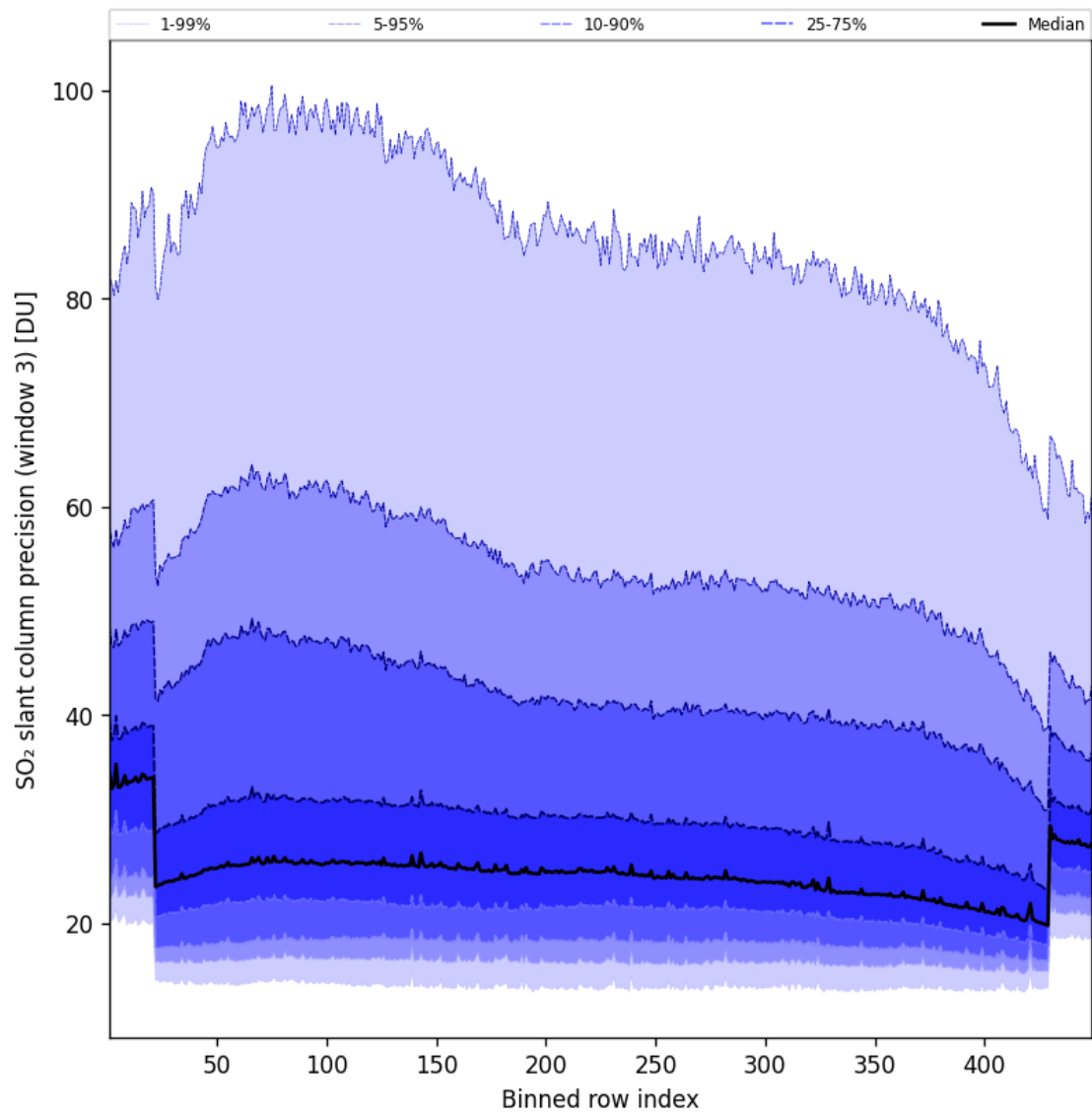


Figure 99: Along track statistics of “SO₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14

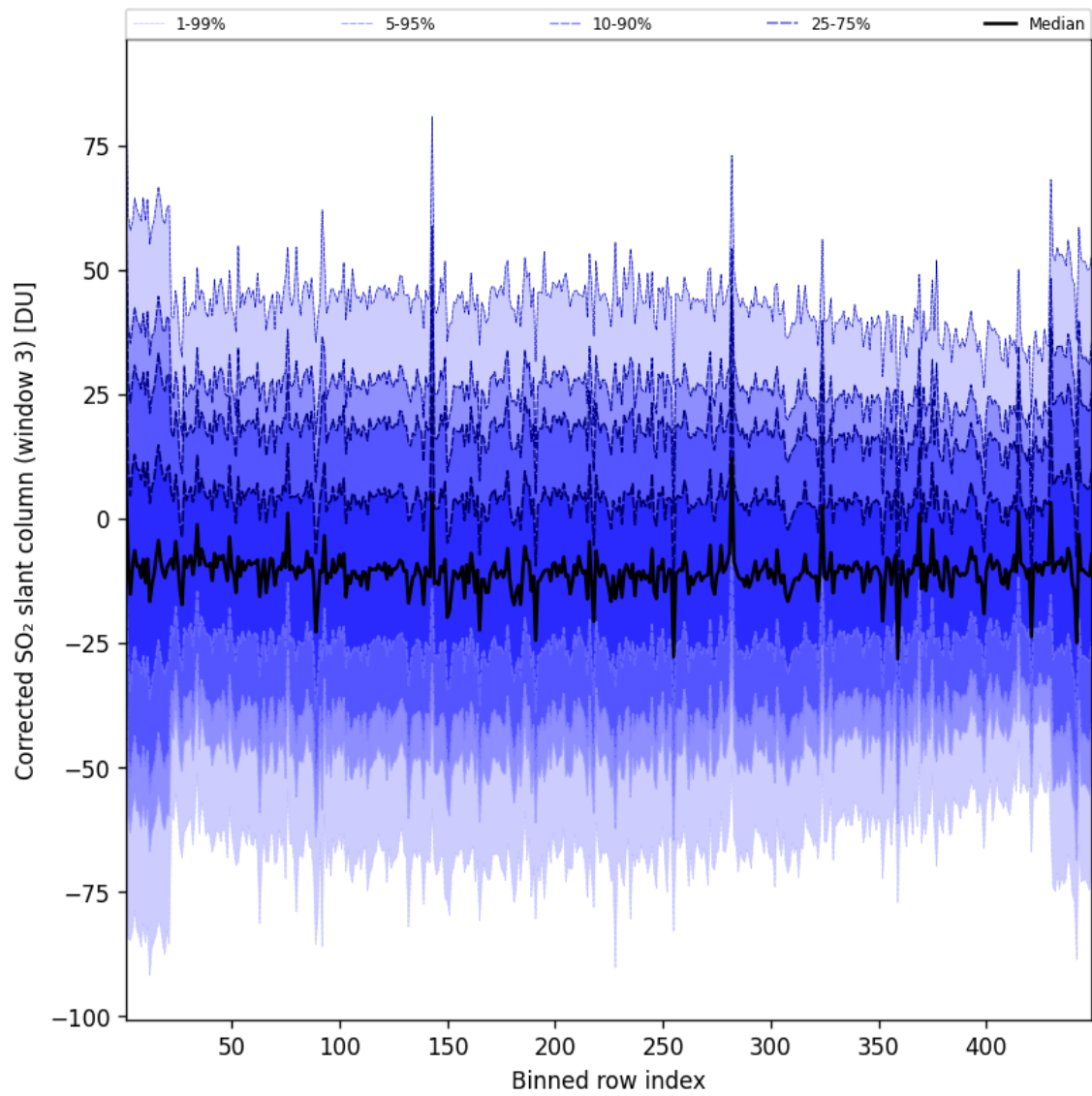


Figure 100: Along track statistics of “Corrected SO₂ slant column (window 3)” for 2025-03-13 to 2025-03-14

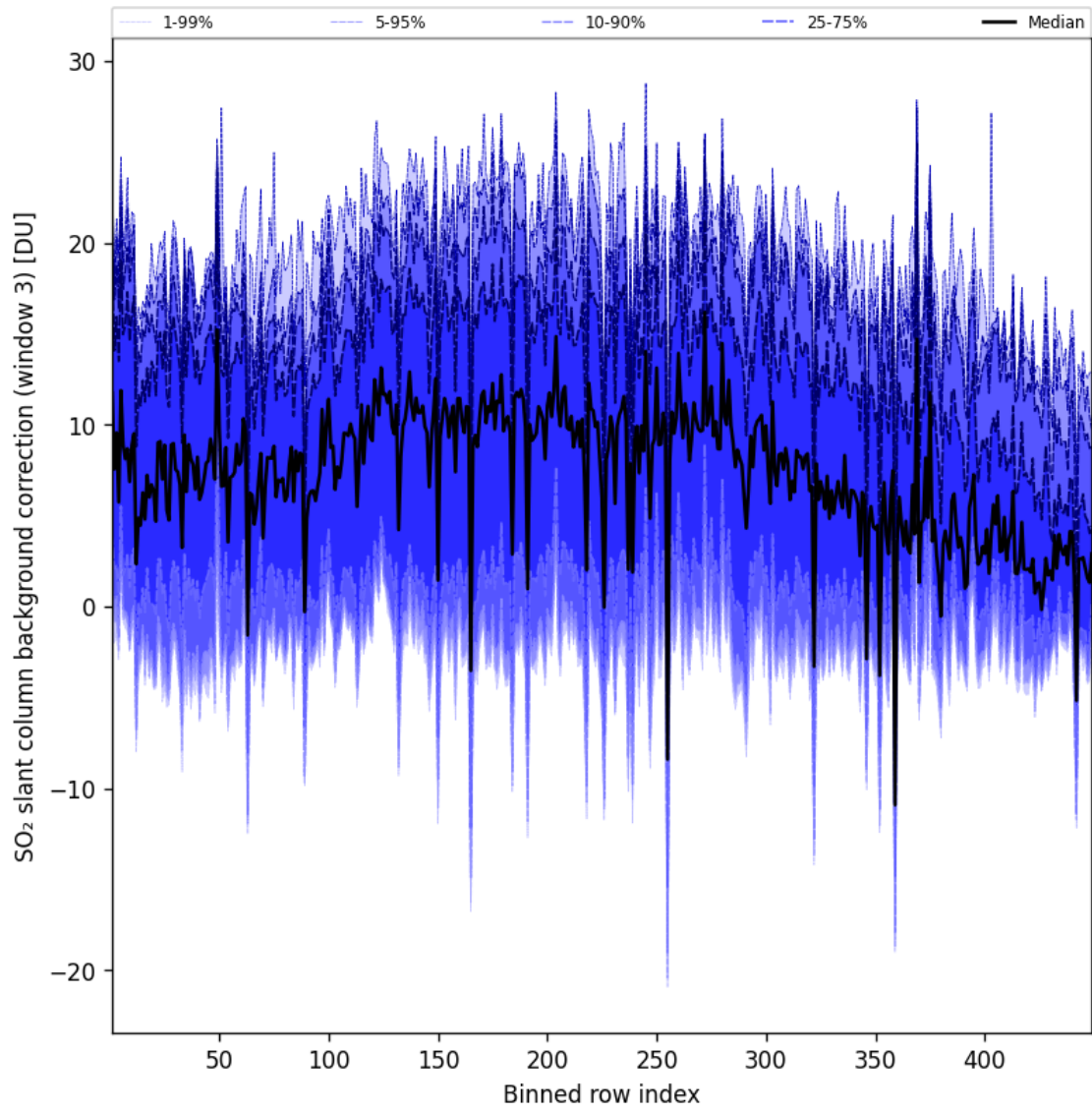


Figure 101: Along track statistics of “SO₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14

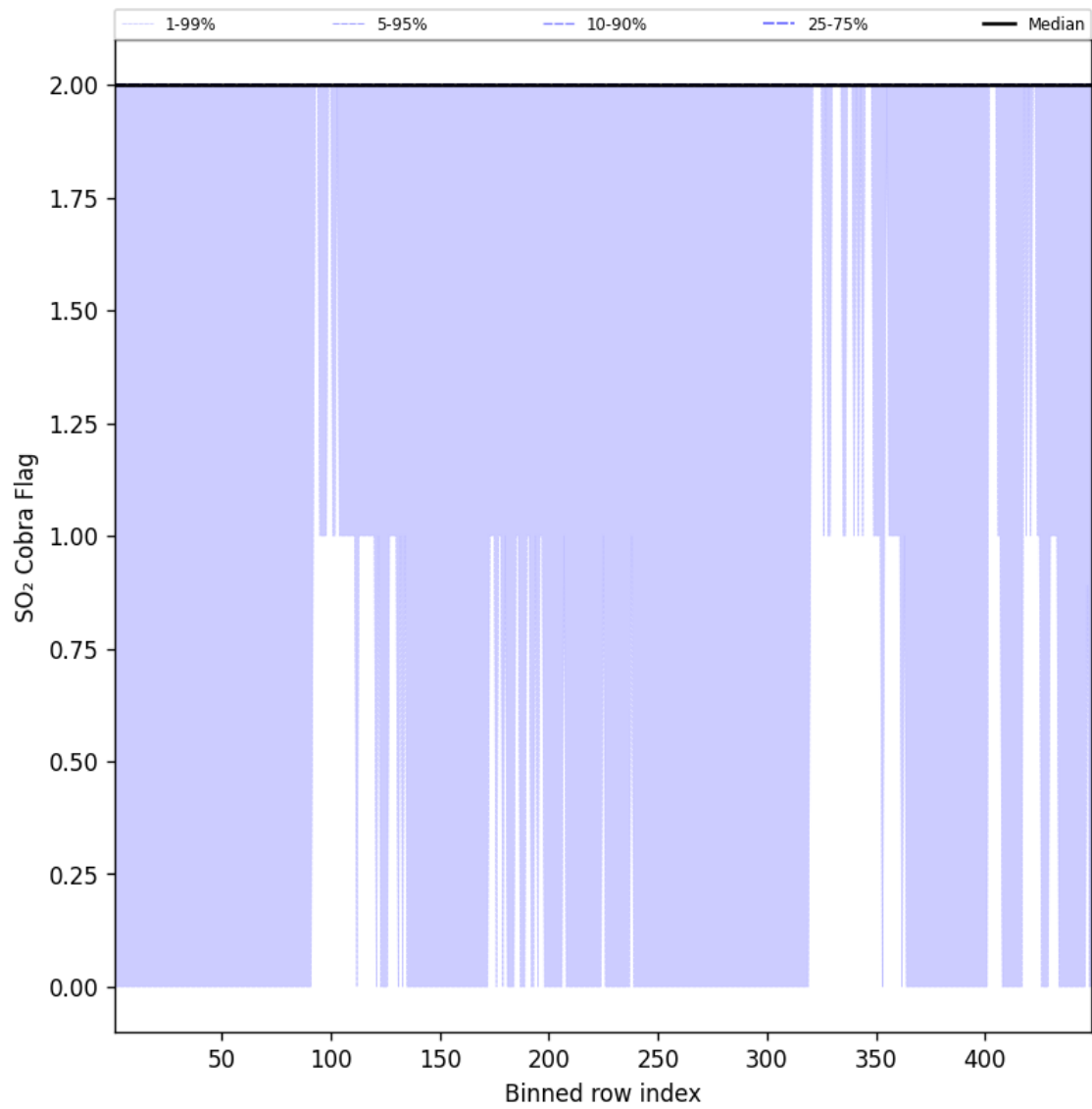


Figure 102: Along track statistics of “SO₂ Cobra Flag” for 2025-03-13 to 2025-03-14

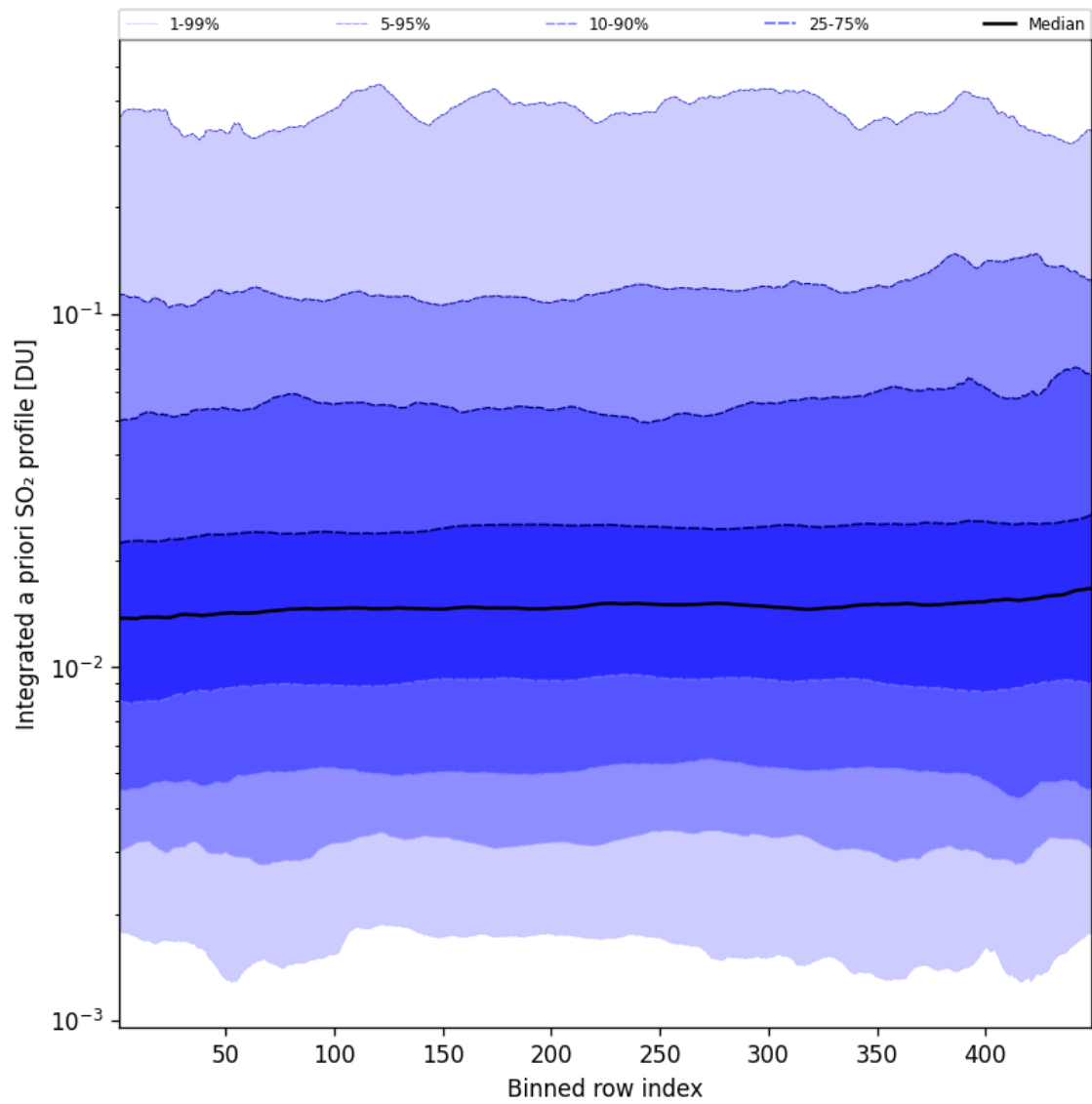


Figure 103: Along track statistics of “Integrated a priori SO₂ profile” for 2025-03-13 to 2025-03-14

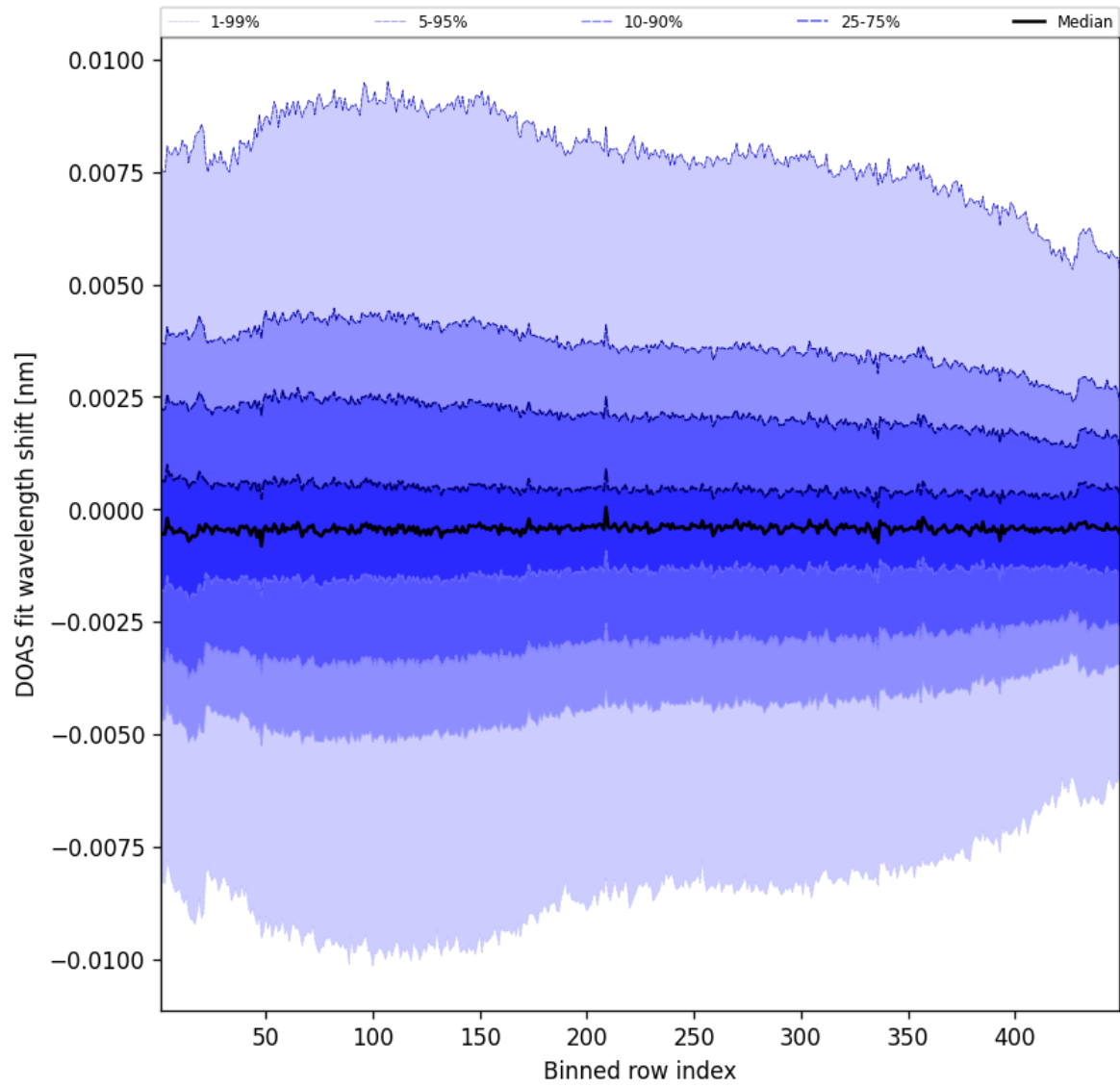


Figure 104: Along track statistics of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14

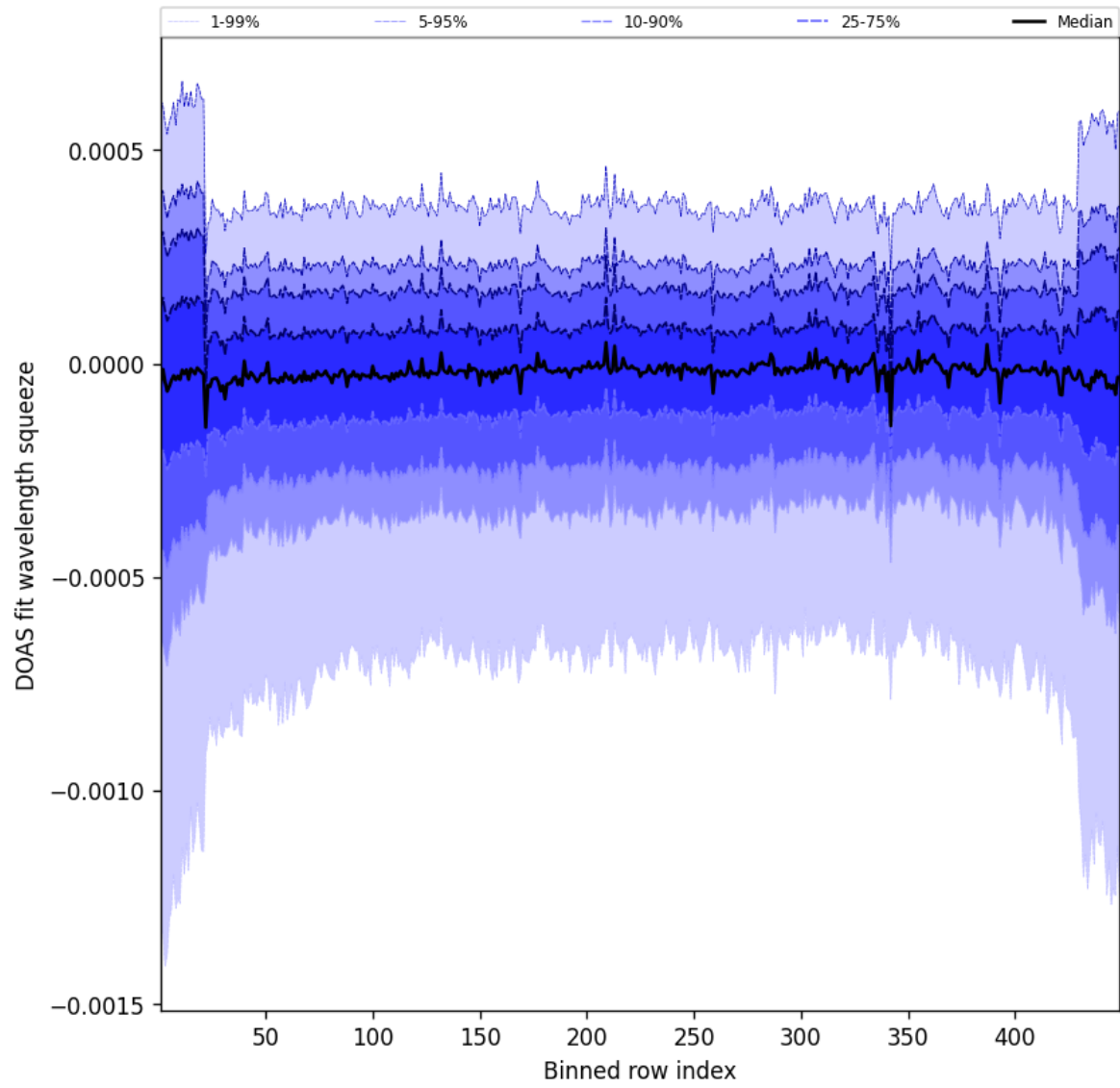


Figure 105: Along track statistics of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14

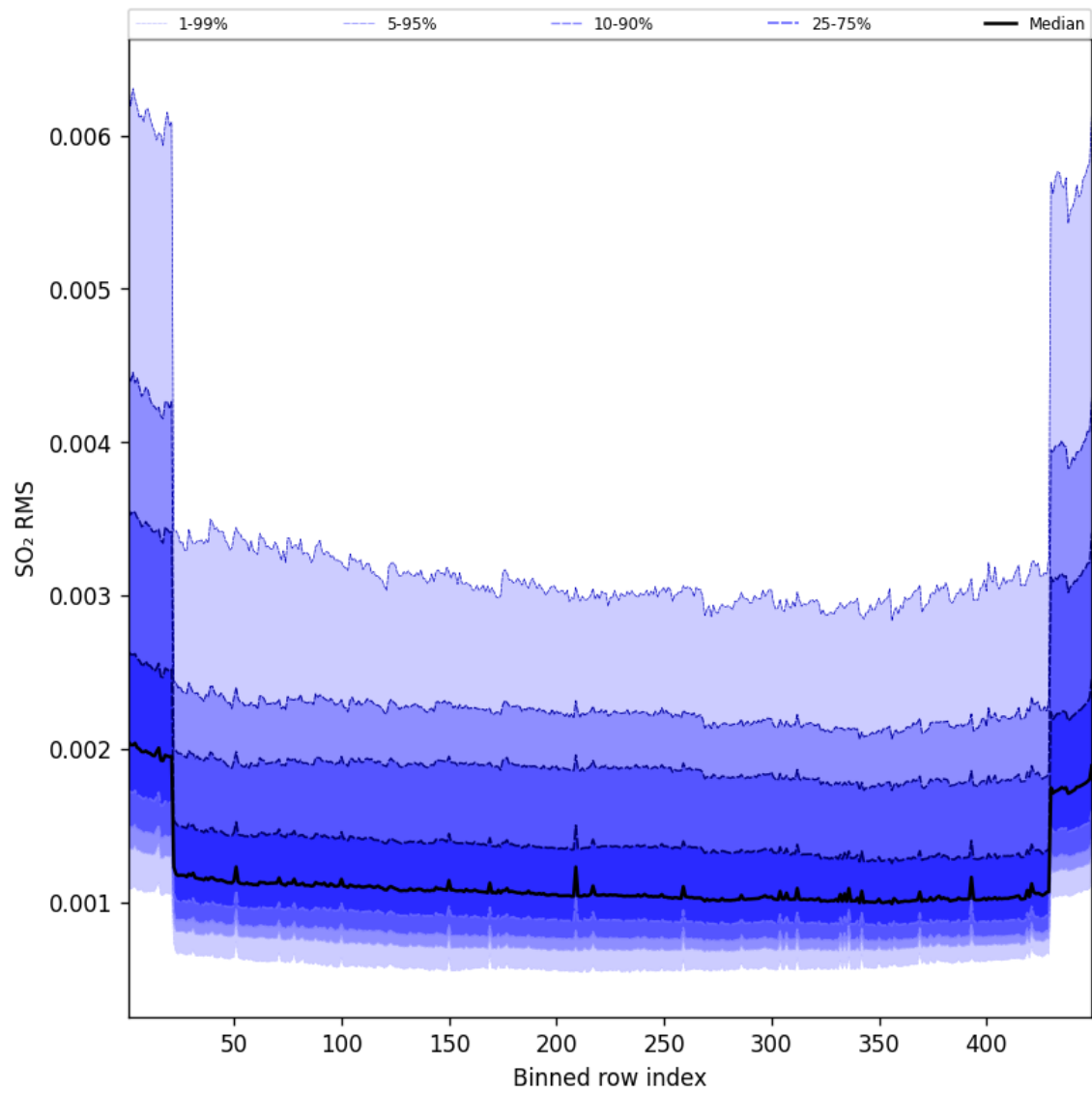


Figure 106: Along track statistics of “SO₂ RMS” for 2025-03-13 to 2025-03-14

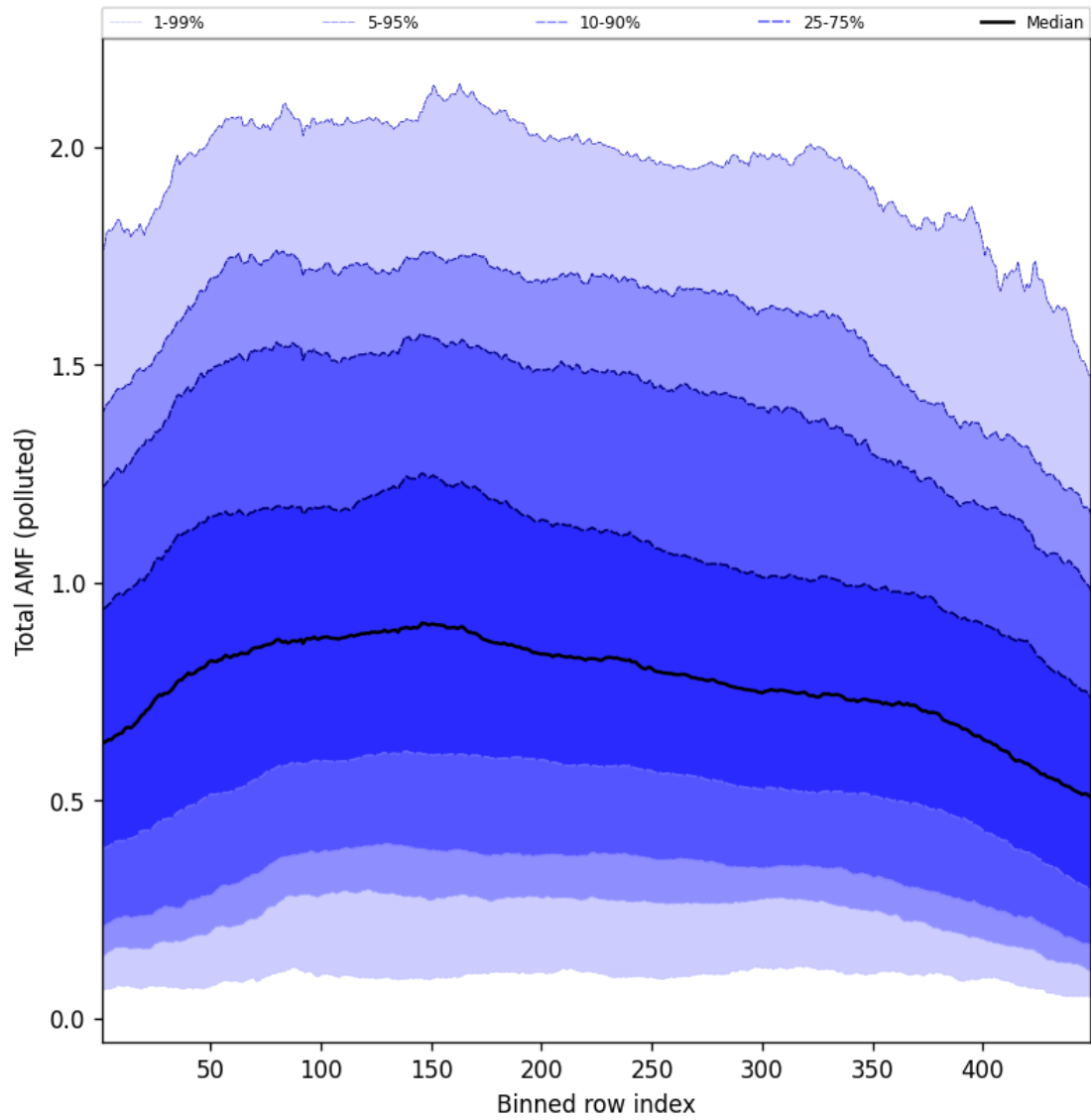


Figure 107: Along track statistics of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14

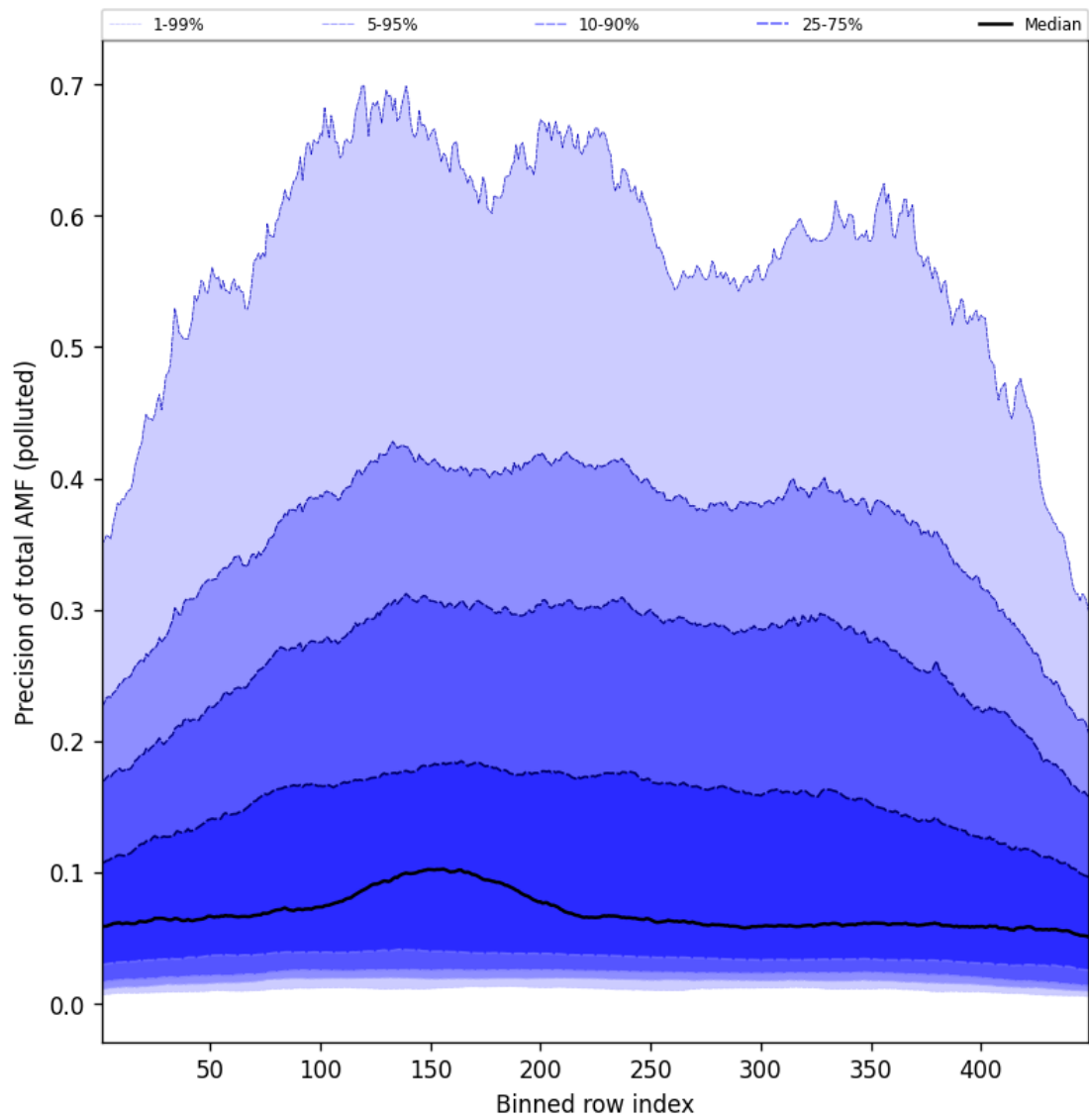


Figure 108: Along track statistics of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14

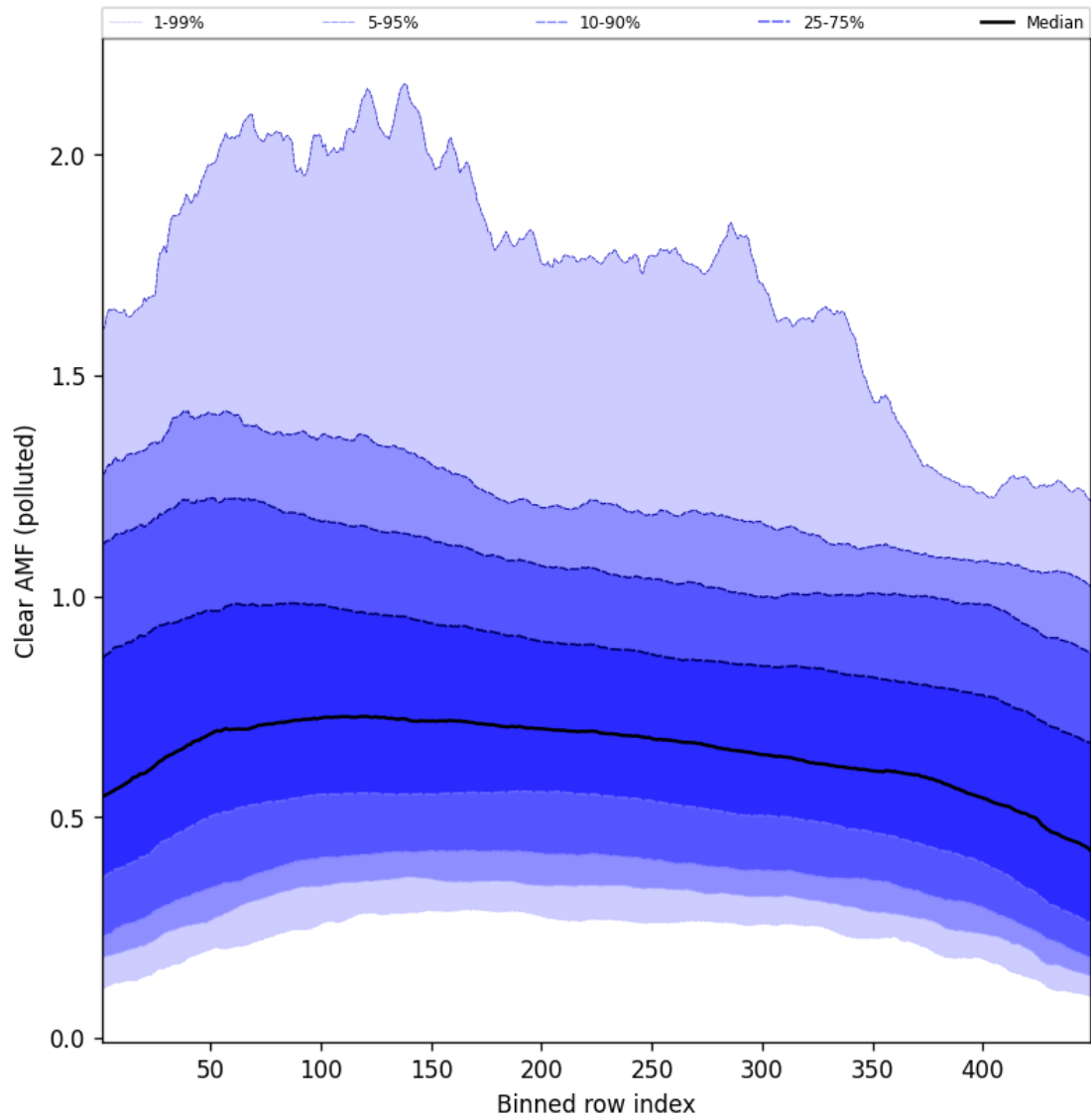


Figure 109: Along track statistics of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14

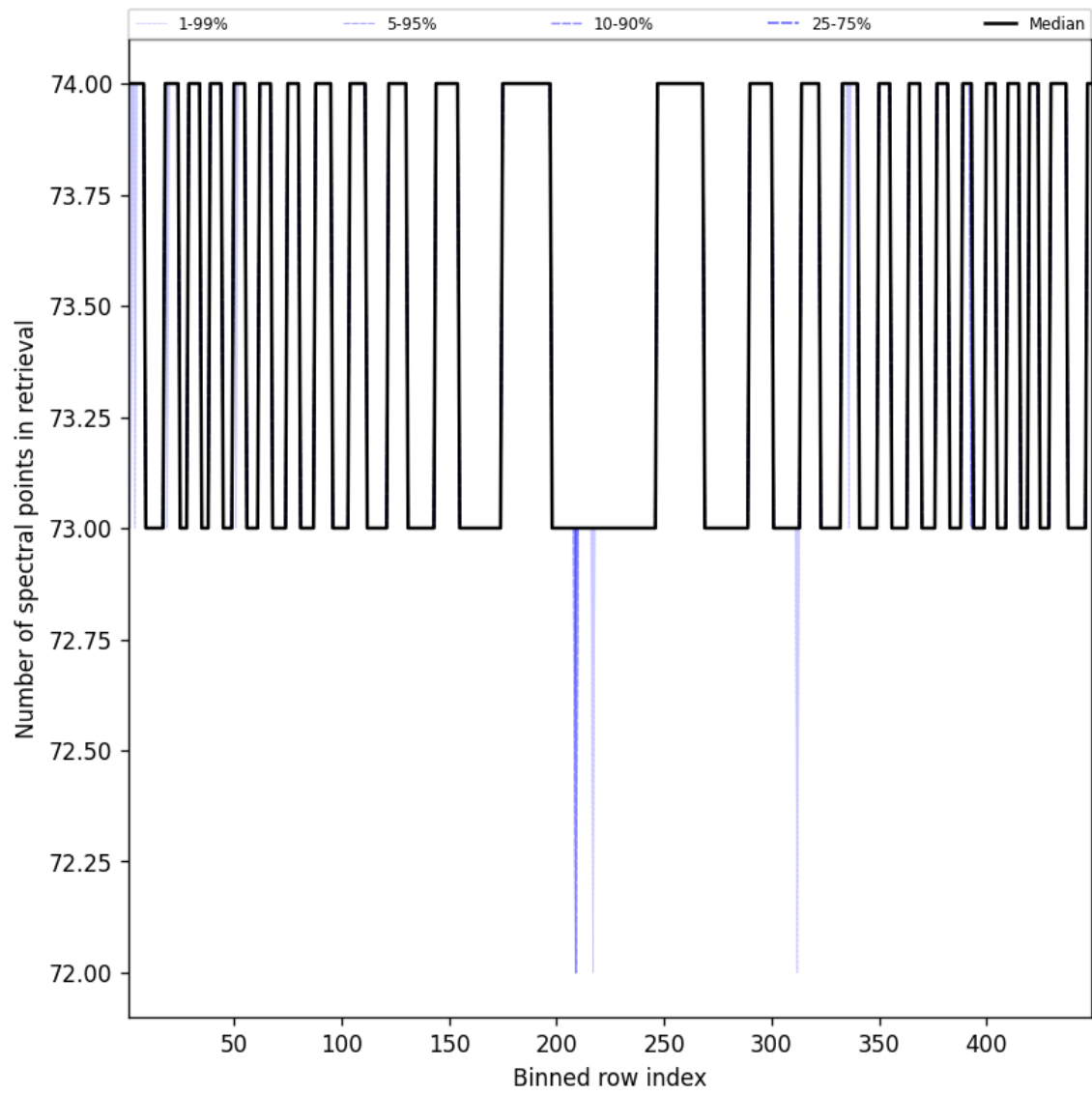


Figure 110: Along track statistics of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14

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 2025-03-13 to 2025-03-14	11
5	Map of “SO ₂ vertical column precision” for 2025-03-13 to 2025-03-14	12
6	Map of “Corrected SO ₂ slant column” for 2025-03-13 to 2025-03-14	13
7	Map of “Cobra SO ₂ slant column” for 2025-03-13 to 2025-03-14	14
8	Map of “SO ₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14	15
9	Map of “SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14	16
10	Map of “SO ₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14	17
11	Map of “Corrected SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14	18
12	Map of “SO ₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14	19
13	Map of “SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14	20
14	Map of “SO ₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14	21
15	Map of “Corrected SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14	22
16	Map of “SO ₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14	23
17	Map of “SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14	24
18	Map of “SO ₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14	25
19	Map of “Corrected SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14	26
20	Map of “SO ₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14	27
21	Map of “Integrated a priori SO ₂ profile” for 2025-03-13 to 2025-03-14	28
22	Map of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14	29
23	Map of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14	30
24	Map of “SO ₂ RMS” for 2025-03-13 to 2025-03-14	31
25	Map of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14	32
26	Map of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14	33
27	Map of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14	34
28	Map of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14	35
29	Map of the number of observations for 2025-03-13 to 2025-03-14	36

30	Zonal average of “QA value” for 2025-03-13 to 2025-03-14.	37
31	Zonal average of “SO ₂ vertical column” for 2025-03-13 to 2025-03-14.	38
32	Zonal average of “SO ₂ vertical column precision” for 2025-03-13 to 2025-03-14.	39
33	Zonal average of “Corrected SO ₂ slant column” for 2025-03-13 to 2025-03-14.	40
34	Zonal average of “Cobra SO ₂ slant column” for 2025-03-13 to 2025-03-14.	41
35	Zonal average of “SO ₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14.	42
36	Zonal average of “SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14.	43
37	Zonal average of “SO ₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14.	44
38	Zonal average of “Corrected SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14.	45
39	Zonal average of “SO ₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14. . .	46
40	Zonal average of “SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14.	47
41	Zonal average of “SO ₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14.	48
42	Zonal average of “Corrected SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14.	49
43	Zonal average of “SO ₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14. . .	50
44	Zonal average of “SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14.	51
45	Zonal average of “SO ₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14.	52
46	Zonal average of “Corrected SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14.	53
47	Zonal average of “SO ₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14. . .	54
48	Zonal average of “SO ₂ Cobra Flag” for 2025-03-13 to 2025-03-14.	55
49	Zonal average of “Integrated a priori SO ₂ profile” for 2025-03-13 to 2025-03-14.	56
50	Zonal average of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14.	57
51	Zonal average of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14.	58
52	Zonal average of “SO ₂ RMS” for 2025-03-13 to 2025-03-14.	59
53	Zonal average of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14.	60
54	Zonal average of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14.	61
55	Zonal average of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14.	62
56	Zonal average of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14.	63
57	Histogram of “QA value” for 2025-03-13 to 2025-03-14	64
58	Histogram of “SO ₂ vertical column” for 2025-03-13 to 2025-03-14	65
59	Histogram of “SO ₂ vertical column precision” for 2025-03-13 to 2025-03-14	66
60	Histogram of “Corrected SO ₂ slant column” for 2025-03-13 to 2025-03-14	67
61	Histogram of “Cobra SO ₂ slant column” for 2025-03-13 to 2025-03-14	68
62	Histogram of “SO ₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14	69
63	Histogram of “SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14	70
64	Histogram of “SO ₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14	71
65	Histogram of “Corrected SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14	72
66	Histogram of “SO ₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14	73
67	Histogram of “SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14	74
68	Histogram of “SO ₂ slant column precision (window2)” for 2025-03-13 to 2025-03-14	75
69	Histogram of “Corrected SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14	76
70	Histogram of “SO ₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14	77
71	Histogram of “SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14	78
72	Histogram of “SO ₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14	79
73	Histogram of “Corrected SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14	80
74	Histogram of “SO ₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14	81
75	Histogram of “SO ₂ Cobra Flag” for 2025-03-13 to 2025-03-14	82
76	Histogram of “Integrated a priori SO ₂ profile” for 2025-03-13 to 2025-03-14	83
77	Histogram of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14	84
78	Histogram of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14	85
79	Histogram of “SO ₂ RMS” for 2025-03-13 to 2025-03-14	86
80	Histogram of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14	87
81	Histogram of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14	88
82	Histogram of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14	89
83	Histogram of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14	90
84	Along track statistics of “QA value” for 2025-03-13 to 2025-03-14	91
85	Along track statistics of “SO ₂ vertical column” for 2025-03-13 to 2025-03-14	92
86	Along track statistics of “SO ₂ vertical column precision” for 2025-03-13 to 2025-03-14	93
87	Along track statistics of “Corrected SO ₂ slant column” for 2025-03-13 to 2025-03-14	94
88	Along track statistics of “Cobra SO ₂ slant column” for 2025-03-13 to 2025-03-14	95
89	Along track statistics of “SO ₂ slant column precision (Cobra)” for 2025-03-13 to 2025-03-14	96
90	Along track statistics of “SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14	97
91	Along track statistics of “SO ₂ slant column precision (window 1)” for 2025-03-13 to 2025-03-14	98

92	Along track statistics of “Corrected SO ₂ slant column (window 1)” for 2025-03-13 to 2025-03-14	99
93	Along track statistics of “SO ₂ slant column background correction (window 1)” for 2025-03-13 to 2025-03-14	100
94	Along track statistics of “SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14	101
95	Along track statistics of “SO ₂ slant column precision (window 2)” for 2025-03-13 to 2025-03-14	102
96	Along track statistics of “Corrected SO ₂ slant column (window 2)” for 2025-03-13 to 2025-03-14	103
97	Along track statistics of “SO ₂ slant column background correction (window 2)” for 2025-03-13 to 2025-03-14	104
98	Along track statistics of “SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14	105
99	Along track statistics of “SO ₂ slant column precision (window 3)” for 2025-03-13 to 2025-03-14	106
100	Along track statistics of “Corrected SO ₂ slant column (window 3)” for 2025-03-13 to 2025-03-14	107
101	Along track statistics of “SO ₂ slant column background correction (window 3)” for 2025-03-13 to 2025-03-14	108
102	Along track statistics of “SO ₂ Cobra Flag” for 2025-03-13 to 2025-03-14	109
103	Along track statistics of “Integrated a priori SO ₂ profile” for 2025-03-13 to 2025-03-14	110
104	Along track statistics of “DOAS fit wavelength shift” for 2025-03-13 to 2025-03-14	111
105	Along track statistics of “DOAS fit wavelength squeeze” for 2025-03-13 to 2025-03-14	112
106	Along track statistics of “SO ₂ RMS” for 2025-03-13 to 2025-03-14	113
107	Along track statistics of “Total AMF (polluted)” for 2025-03-13 to 2025-03-14	114
108	Along track statistics of “Precision of total AMF (polluted)” for 2025-03-13 to 2025-03-14	115
109	Along track statistics of “Clear AMF (polluted)” for 2025-03-13 to 2025-03-14	116
110	Along track statistics of “Number of spectral points in retrieval” for 2025-03-13 to 2025-03-14	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).