

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-05-07 (11:44)

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]	0.645 ± 0.398	19817359	0.995	0.770	1.000	0.0	1.000
sulfurdioxide total vertical column [DU]	$(3.367 \pm 100.935) \times 10^{-2}$	19817359	0.294	0.500	1.175×10^{-2}	-48.6	829
sulfurdioxide total vertical column precision [DU]	0.561 ± 0.718	19817359	0.222	0.351	0.358	5.057×10^{-2}	113
sulfurdioxide slant column density corrected [DU]	$(2.415 \pm 46.576) \times 10^{-2}$	19817359	0.267	0.398	1.001×10^{-2}	-16.8	497
sulfurdioxide slant column density cobra [DU]	$(2.335 \pm 41.248) \times 10^{-2}$	19817359	0.267	0.398	1.001×10^{-2}	-16.8	49.2
sulfurdioxide slant column density cobra precision [DU]	0.321 ± 0.138	19817359	0.213	0.159	0.279	8.926×10^{-2}	27.0
sulfurdioxide slant column density window1 [DU]	0.158 ± 0.723	19817359	0.175	0.755	0.165	-117	128
sulfurdioxide slant column density window1 precision [DU]	0.321 ± 0.138	19817359	0.213	0.159	0.279	8.926×10^{-2}	27.0
sulfurdioxide slant column density corrected win1 [DU]	$(5.793 \pm 71.841) \times 10^{-2}$	19817359	2.500×10^{-2}	0.744	3.542×10^{-2}	-117	128
background so2 slant column offset window1 [DU]	-0.101 ± 0.152	19817359	-0.180	0.158	-0.132	-0.858	2.94
sulfurdioxide slant column density window2 [DU]	2.98 ± 9.12	19817359	2.75	11.7	2.83	-1.259×10^3	1.313×10^3
sulfurdioxide slant column density window2 precision [DU]	8.05 ± 2.21	19817359	7.43	2.47	7.73	2.35	787
sulfurdioxide slant column density corrected win2 [DU]	0.678 ± 8.721	19817359	1.25	11.1	0.684	-1.261×10^3	1.312×10^3
background so2 slant column offset window2 [DU]	-2.30 ± 3.16	19817359	0.250	4.01	-1.28	-17.5	11.4
sulfurdioxide slant column density window3 [DU]	-13.0 ± 23.8	19817359	-14.0	30.1	-13.4	-1.428×10^3	690
sulfurdioxide slant column density window3 precision [DU]	27.8 ± 13.3	19817359	22.5	9.41	24.3	9.57	421
sulfurdioxide slant column density corrected win3 [DU]	-4.22 ± 22.96	19817359	-3.92	28.7	-4.21	-1.426×10^3	693
background so2 slant column offset window3 [DU]	8.74 ± 6.65	19817359	1.68	11.4	8.45	-19.6	28.6
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	19817359	1.67	0.0	2.00	2.00	2.00
fitted radiance shift [nm]	$(-2.929 \pm 25.796) \times 10^{-4}$	19817359	-5.000×10^{-4}	1.735×10^{-3}	-2.719×10^{-4}	-8.762×10^{-2}	5.758×10^{-2}
fitted radiance squeeze [1]	$(-1.688 \pm 17.905) \times 10^{-5}$	19817359	-1.000×10^{-5}	2.044×10^{-4}	-1.105×10^{-5}	-2.140×10^{-2}	1.665×10^{-2}
fitted root mean square [1]	$(1.314 \pm 0.552) \times 10^{-3}$	19817359	9.750×10^{-4}	5.538×10^{-4}	1.157×10^{-3}	3.027×10^{-4}	6.226×10^{-2}
sulfurdioxide total air mass factor polluted [1]	0.858 ± 0.427	19817359	0.820	0.543	0.808	5.000×10^{-2}	2.84
sulfurdioxide total air mass factor polluted precision [1]	0.105 ± 0.116	19817359	3.500×10^{-2}	9.608×10^{-2}	6.332×10^{-2}	3.404×10^{-3}	1.89
sulfurdioxide clear air mass factor polluted [1]	0.737 ± 0.293	19817359	0.660	0.379	0.713	6.572×10^{-2}	2.39
number of spectral points in retrieval [1]	73.4 ± 0.5	19817359	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]	-2.42	-0.933	-0.578	-0.393	-0.235	0.265	0.436	0.640	1.05	2.80
sulfurdioxide total vertical column precision [DU]	0.114	0.155	0.186	0.211	0.244	0.595	0.797	1.04	1.56	3.77
sulfurdioxide slant column density corrected [DU]	-0.909	-0.536	-0.388	-0.290	-0.187	0.211	0.321	0.430	0.601	1.10
sulfurdioxide slant column density cobra [DU]	-0.909	-0.536	-0.388	-0.290	-0.187	0.211	0.321	0.430	0.601	1.10
sulfurdioxide slant column density cobra precision [DU]	0.157	0.183	0.197	0.208	0.224	0.383	0.439	0.492	0.575	0.832
sulfurdioxide slant column density window1 [DU]	-1.76	-0.933	-0.623	-0.422	-0.216	0.538	0.733	0.919	1.20	2.02
sulfurdioxide slant column density window1 precision [DU]	0.157	0.183	0.197	0.208	0.224	0.383	0.439	0.492	0.575	0.832
sulfurdioxide slant column density corrected win1 [DU]	-1.68	-0.970	-0.702	-0.522	-0.331	0.413	0.618	0.820	1.14	2.09
background so2 slant column offset window1 [DU]	-0.337	-0.266	-0.241	-0.223	-0.198	-3.996×10^{-2}	1.648×10^{-2}	8.207×10^{-2}	0.187	0.438
sulfurdioxide slant column density window2 [DU]	-18.2	-11.6	-8.24	-5.75	-2.94	8.73	11.7	14.4	18.0	25.5
sulfurdioxide slant column density window2 precision [DU]	4.37	5.23	5.74	6.15	6.63	9.10	9.93	10.8	12.0	14.6
sulfurdioxide slant column density corrected win2 [DU]	-20.3	-13.4	-10.1	-7.62	-4.86	6.21	8.96	11.4	14.8	21.8
background so2 slant column offset window2 [DU]	-11.1	-8.86	-7.15	-5.62	-4.01	-6.915×10^{-3}	0.316	0.550	0.917	2.65
sulfurdioxide slant column density window3 [DU]	-70.9	-51.2	-42.0	-35.4	-28.1	1.95	9.97	17.2	26.9	46.0
sulfurdioxide slant column density window3 precision [DU]	13.5	15.9	17.8	19.2	20.7	30.1	34.9	40.8	52.6	84.9
sulfurdioxide slant column density corrected win3 [DU]	-61.8	-41.8	-32.5	-25.8	-18.5	10.2	17.5	24.2	33.3	51.8
background so2 slant column offset window3 [DU]	-2.56	-0.411	0.662	1.54	2.87	14.3	16.1	17.6	19.5	22.4
sulfurdioxide slant column cobra flag [1]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	-8.123×10^{-3}	-4.079×10^{-3}	-2.684×10^{-3}	-1.878×10^{-3}	-1.187×10^{-3}	5.484×10^{-4}	1.210×10^{-3}	2.057×10^{-3}	3.551×10^{-3}	7.794×10^{-3}
fitted radiance squeeze [1]	-5.144×10^{-4}	-3.069×10^{-4}	-2.255×10^{-4}	-1.713×10^{-4}	-1.152×10^{-4}	8.924×10^{-5}	1.402×10^{-4}	1.871×10^{-4}	2.541×10^{-4}	4.127×10^{-4}
fitted root mean square [1]	6.223×10^{-4}	7.588×10^{-4}	8.311×10^{-4}	8.878×10^{-4}	9.585×10^{-4}	1.512×10^{-3}	1.757×10^{-3}	2.003×10^{-3}	2.356×10^{-3}	3.348×10^{-3}
sulfurdioxide total air mass factor polluted [1]	8.749×10^{-2}	0.240	0.349	0.440	0.554	1.10	1.29	1.47	1.68	2.01
sulfurdioxide total air mass factor polluted precision [1]	1.038×10^{-2}	1.885×10^{-2}	2.481×10^{-2}	3.042×10^{-2}	3.804×10^{-2}	0.134	0.178	0.224	0.312	0.594
sulfurdioxide clear air mass factor polluted [1]	0.218	0.315	0.381	0.445	0.528	0.907	0.998	1.09	1.26	1.64
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]	0.615 ± 0.400	12278251	0.780	0.490	0.0	1.000	0.220	1.000
sulfurdioxide total vertical column [DU]	$(3.415 \pm 105.554) \times 10^{-2}$	12278251	0.500	1.007×10^{-2}	-48.6	151	-0.236	0.264
sulfurdioxide total vertical column precision [DU]	0.585 ± 0.784	12278251	0.371	0.358	5.057×10^{-2}	91.0	0.240	0.611
sulfurdioxide slant column density corrected [DU]	$(2.467 \pm 44.606) \times 10^{-2}$	12278251	0.397	8.590×10^{-3}	-13.7	84.9	-0.187	0.210
sulfurdioxide slant column density cobra [DU]	$(2.389 \pm 41.323) \times 10^{-2}$	12278251	0.397	8.590×10^{-3}	-13.7	49.2	-0.187	0.210
sulfurdioxide slant column density cobra precision [DU]	0.323 ± 0.146	12278251	0.170	0.277	9.649×10^{-2}	27.0	0.219	0.389
sulfurdioxide slant column density window1 [DU]	0.155 ± 0.736	12278251	0.758	0.166	-37.8	40.1	-0.219	0.539
sulfurdioxide slant column density window1 precision [DU]	0.323 ± 0.146	12278251	0.170	0.277	9.649×10^{-2}	27.0	0.219	0.389
sulfurdioxide slant column density corrected win1 [DU]	$(6.399 \pm 73.096) \times 10^{-2}$	12278251	0.747	3.841×10^{-2}	-37.8	40.0	-0.329	0.418
background so2 slant column offset window1 [DU]	$(-9.119 \pm 16.846) \times 10^{-2}$	12278251	0.170	-0.133	-0.858	2.94	-0.200	-3.004×10^{-2}
sulfurdioxide slant column density window2 [DU]	3.57 ± 8.85	12278251	11.5	3.41	-290	688	-2.25	9.22
sulfurdioxide slant column density window2 precision [DU]	7.73 ± 1.99	12278251	2.24	7.43	2.35	202	6.42	8.66
sulfurdioxide slant column density corrected win2 [DU]	0.593 ± 8.292	12278251	10.7	0.627	-299	680	-4.72	5.94
background so2 slant column offset window2 [DU]	-2.97 ± 3.58	12278251	5.57	-2.08	-17.5	11.4	-5.53	4.179×10^{-2}
sulfurdioxide slant column density window3 [DU]	-14.3 ± 22.7	12278251	28.5	-14.9	-1.428×10^3	175	-28.8	-0.296
sulfurdioxide slant column density window3 precision [DU]	26.2 ± 12.5	12278251	7.75	22.9	9.57	421	19.9	27.7
sulfurdioxide slant column density corrected win3 [DU]	-4.19 ± 21.64	12278251	27.0	-4.11	-1.426×10^3	190	-17.6	9.40
background so2 slant column offset window3 [DU]	10.1 ± 7.1	12278251	12.6	11.4	-17.6	28.6	3.30	15.9
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	12278251	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-1.506 \pm 24.395) \times 10^{-4}$	12278251	1.546×10^{-3}	-1.599×10^{-4}	-4.426×10^{-2}	3.808×10^{-2}	-9.507×10^{-4}	5.955×10^{-4}
fitted radiance squeeze [1]	$(-3.549 \pm 17.959) \times 10^{-5}$	12278251	2.035×10^{-4}	-2.405×10^{-5}	-1.512×10^{-2}	1.310×10^{-2}	-1.298×10^{-4}	7.370×10^{-5}
fitted root mean square [1]	$(1.326 \pm 0.588) \times 10^{-3}$	12278251	5.843×10^{-4}	1.149×10^{-3}	3.210×10^{-4}	4.894×10^{-2}	9.463×10^{-4}	1.531×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.867 ± 0.458	12278251	0.617	0.799	5.000×10^{-2}	2.84	0.524	1.14
sulfurdioxide total air mass factor polluted precision [1]	0.112 ± 0.133	12278251	0.100	6.435×10^{-2}	3.404×10^{-3}	1.89	3.619×10^{-2}	0.136
sulfurdioxide clear air mass factor polluted [1]	0.729 ± 0.336	12278251	0.458	0.685	6.572×10^{-2}	2.39	0.467	0.925
number of spectral points in retrieval [1]	73.5 ± 0.5	12278251	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]	0.693 ± 0.390	7539108	0.700	1.000	0.0	1.000	0.300	1.000
sulfurdioxide total vertical column [DU]	$(3.289 \pm 92.922) \times 10^{-2}$	7539108	0.500	1.457×10^{-2}	-42.8	829	-0.233	0.267
sulfurdioxide total vertical column precision [DU]	0.522 ± 0.593	7539108	0.323	0.357	5.178×10^{-2}	113	0.250	0.573
sulfurdioxide slant column density corrected [DU]	$(2.330 \pm 49.617) \times 10^{-2}$	7539108	0.400	1.232×10^{-2}	-16.8	497	-0.186	0.214
sulfurdioxide slant column density cobra [DU]	$(2.248 \pm 41.124) \times 10^{-2}$	7539108	0.400	1.232×10^{-2}	-16.8	34.9	-0.186	0.214
sulfurdioxide slant column density cobra precision [DU]	0.318 ± 0.125	7539108	0.144	0.282	8.926×10^{-2}	21.4	0.231	0.375
sulfurdioxide slant column density window1 [DU]	0.164 ± 0.702	7539108	0.750	0.164	-117	128	-0.213	0.537
sulfurdioxide slant column density window1 precision [DU]	0.318 ± 0.125	7539108	0.144	0.282	8.926×10^{-2}	21.4	0.231	0.375
sulfurdioxide slant column density corrected win1 [DU]	$(4.806 \pm 69.738) \times 10^{-2}$	7539108	0.739	3.052×10^{-2}	-117	128	-0.335	0.404
background so2 slant column offset window1 [DU]	-0.116 ± 0.120	7539108	0.140	-0.132	-0.837	2.81	-0.194	-5.408×10^{-2}
sulfurdioxide slant column density window2 [DU]	2.02 ± 9.45	7539108	11.9	1.86	-1.259×10^3	1.313×10^3	-4.01	7.86
sulfurdioxide slant column density window2 precision [DU]	8.59 ± 2.43	7539108	2.65	8.28	2.46	787	7.09	9.74
sulfurdioxide slant column density corrected win2 [DU]	0.818 ± 9.376	7539108	11.8	0.787	-1.261×10^3	1.312×10^3	-5.10	6.69
background so2 slant column offset window2 [DU]	-1.20 ± 1.84	7539108	2.08	-0.819	-12.2	11.3	-2.14	-6.340×10^{-2}
sulfurdioxide slant column density window3 [DU]	-10.7 ± 25.4	7539108	32.3	-10.7	-505	690	-26.7	5.54
sulfurdioxide slant column density window3 precision [DU]	30.6 ± 14.0	7539108	10.6	26.9	10.00	237	22.8	33.4
sulfurdioxide slant column density corrected win3 [DU]	-4.27 ± 24.96	7539108	31.7	-4.38	-501	693	-20.1	11.6
background so2 slant column offset window3 [DU]	6.47 ± 5.19	7539108	7.85	5.36	-19.6	24.4	2.52	10.4
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	7539108	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-5.247 \pm 27.771) \times 10^{-4}$	7539108	2.034×10^{-3}	-5.017×10^{-4}	-8.762×10^{-2}	5.758×10^{-2}	-1.593×10^{-3}	4.411×10^{-4}
fitted radiance squeeze [1]	$(1.344 \pm 17.394) \times 10^{-5}$	7539108	2.056×10^{-4}	1.063×10^{-5}	-2.140×10^{-2}	1.665×10^{-2}	-9.120×10^{-5}	1.144×10^{-4}
fitted root mean square [1]	$(1.294 \pm 0.487) \times 10^{-3}$	7539108	5.069×10^{-4}	1.168×10^{-3}	3.027×10^{-4}	6.226×10^{-2}	9.792×10^{-4}	1.486×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.843 ± 0.370	7539108	0.446	0.818	5.000×10^{-2}	2.72	0.602	1.05
sulfurdioxide total air mass factor polluted precision [1]	$(9.444 \pm 7.994) \times 10^{-2}$	7539108	9.074×10^{-2}	6.166×10^{-2}	3.658×10^{-3}	1.64	4.016×10^{-2}	0.131
sulfurdioxide clear air mass factor polluted [1]	0.750 ± 0.203	7539108	0.282	0.741	8.718×10^{-2}	1.90	0.607	0.889
number of spectral points in retrieval [1]	73.4 ± 0.5	7539108	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]	0.677 ± 0.391	13671889	0.730	1.000	0.0	1.000	0.270	1.000
sulfurdioxide total vertical column [DU]	$(2.288 \pm 87.764) \times 10^{-2}$	13671889	0.481	9.478×10^{-3}	-48.6	829	-0.229	0.252
sulfurdioxide total vertical column precision [DU]	0.520 ± 0.630	13671889	0.320	0.341	5.807×10^{-2}	34.8	0.241	0.561
sulfurdioxide slant column density corrected [DU]	$(1.483 \pm 38.181) \times 10^{-2}$	13671889	0.389	8.089×10^{-3}	-16.8	497	-0.185	0.204
sulfurdioxide slant column density cobra [DU]	$(1.479 \pm 35.669) \times 10^{-2}$	13671889	0.389	8.089×10^{-3}	-16.8	34.9	-0.185	0.204
sulfurdioxide slant column density cobra precision [DU]	0.315 ± 0.134	13671889	0.160	0.269	9.466×10^{-2}	15.4	0.220	0.380
sulfurdioxide slant column density window1 [DU]	0.153 ± 0.682	13671889	0.744	0.165	-117	70.4	-0.211	0.532
sulfurdioxide slant column density window1 precision [DU]	0.315 ± 0.134	13671889	0.160	0.269	9.466×10^{-2}	15.4	0.220	0.380
sulfurdioxide slant column density corrected win1 [DU]	$(4.609 \pm 67.581) \times 10^{-2}$	13671889	0.734	3.122×10^{-2}	-117	70.3	-0.331	0.402
background so2 slant column offset window1 [DU]	-0.107 ± 0.144	13671889	0.154	-0.135	-0.858	2.81	-0.199	-4.528×10^{-2}
sulfurdioxide slant column density window2 [DU]	2.66 ± 9.04	13671889	11.6	2.48	-1.144×10^3	865	-3.22	8.34
sulfurdioxide slant column density window2 precision [DU]	8.04 ± 2.10	13671889	2.45	7.74	2.35	787	6.65	9.10
sulfurdioxide slant column density corrected win2 [DU]	0.720 ± 8.710	13671889	11.1	0.722	-1.145×10^3	864	-4.84	6.27
background so2 slant column offset window2 [DU]	-1.94 ± 3.00	13671889	3.28	-0.986	-17.5	11.4	-3.21	7.555×10^{-2}
sulfurdioxide slant column density window3 [DU]	-10.2 ± 24.0	13671889	30.7	-10.6	-480	690	-25.6	5.08
sulfurdioxide slant column density window3 precision [DU]	27.3 ± 11.6	13671889	8.84	24.2	9.57	228	20.9	29.7
sulfurdioxide slant column density corrected win3 [DU]	-2.13 ± 22.87	13671889	29.0	-2.37	-475	693	-16.7	12.3
background so2 slant column offset window3 [DU]	8.02 ± 6.51	13671889	10.7	7.09	-19.6	28.5	2.50	13.2
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	13671889	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-3.237 \pm 23.232) \times 10^{-4}$	13671889	1.719×10^{-3}	-2.884×10^{-4}	-4.393×10^{-2}	4.141×10^{-2}	-1.206×10^{-3}	5.133×10^{-4}
fitted radiance squeeze [1]	$(-8.823 \pm 176.004) \times 10^{-6}$	13671889	2.007×10^{-4}	-4.309×10^{-6}	-2.140×10^{-2}	1.665×10^{-2}	-1.060×10^{-4}	9.465×10^{-5}
fitted root mean square [1]	$(1.298 \pm 0.540) \times 10^{-3}$	13671889	5.686×10^{-4}	1.130×10^{-3}	3.486×10^{-4}	6.226×10^{-2}	9.431×10^{-4}	1.512×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.858 ± 0.386	13671889	0.479	0.829	5.000×10^{-2}	2.45	0.597	1.08
sulfurdioxide total air mass factor polluted precision [1]	$(9.716 \pm 9.853) \times 10^{-2}$	13671889	8.362×10^{-2}	6.251×10^{-2}	3.415×10^{-3}	1.89	4.050×10^{-2}	0.124
sulfurdioxide clear air mass factor polluted [1]	0.751 ± 0.259	13671889	0.332	0.744	6.735×10^{-2}	2.11	0.577	0.909
number of spectral points in retrieval [1]	73.5 ± 0.5	13671889	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]	0.621 ± 0.410	4267907	0.810	1.000	0.0	1.000	0.190	1.000
sulfurdioxide total vertical column [DU]	$(4.047 \pm 113.437) \times 10^{-2}$	4267907	0.533	1.443×10^{-2}	-41.2	79.4	-0.247	0.287
sulfurdioxide total vertical column precision [DU]	0.615 ± 0.801	4267907	0.380	0.394	5.057×10^{-2}	34.2	0.258	0.638
sulfurdioxide slant column density corrected [DU]	$(3.233 \pm 55.304) \times 10^{-2}$	4267907	0.399	1.195×10^{-2}	-6.40	84.9	-0.185	0.215
sulfurdioxide slant column density cobra [DU]	$(3.069 \pm 46.536) \times 10^{-2}$	4267907	0.399	1.195×10^{-2}	-6.40	37.5	-0.185	0.215
sulfurdioxide slant column density cobra precision [DU]	0.317 ± 0.136	4267907	0.138	0.281	8.926×10^{-2}	13.9	0.228	0.366
sulfurdioxide slant column density window1 [DU]	0.182 ± 0.747	4267907	0.746	0.179	-70.2	53.9	-0.197	0.549
sulfurdioxide slant column density window1 precision [DU]	0.317 ± 0.136	4267907	0.138	0.281	8.926×10^{-2}	13.9	0.228	0.366
sulfurdioxide slant column density corrected win1 [DU]	$(6.888 \pm 74.287) \times 10^{-2}$	4267907	0.735	4.120×10^{-2}	-70.2	53.7	-0.321	0.414
background so2 slant column offset window1 [DU]	-0.113 ± 0.148	4267907	0.147	-0.144	-0.858	2.15	-0.205	-5.817×10^{-2}
sulfurdioxide slant column density window2 [DU]	2.95 ± 9.23	4267907	11.8	2.90	-650	1.313×10^3	-2.97	8.81
sulfurdioxide slant column density window2 precision [DU]	8.19 ± 2.50	4267907	2.51	7.82	2.49	644	6.69	9.20
sulfurdioxide slant column density corrected win2 [DU]	0.553 ± 8.839	4267907	11.1	0.556	-651	1.312×10^3	-5.00	6.11
background so2 slant column offset window2 [DU]	-2.39 ± 3.13	4267907	4.34	-1.35	-17.2	11.4	-4.40	-5.395×10^{-2}
sulfurdioxide slant column density window3 [DU]	-19.1 ± 22.9	4267907	28.4	-18.9	-384	205	-33.2	-4.81
sulfurdioxide slant column density window3 precision [DU]	30.2 ± 17.1	4267907	11.6	25.3	9.74	261	20.7	32.3
sulfurdioxide slant column density corrected win3 [DU]	-9.98 ± 23.14	4267907	28.7	-9.21	-377	213	-24.0	4.73
background so2 slant column offset window3 [DU]	9.12 ± 6.61	4267907	11.5	9.29	-19.6	28.6	3.20	14.7
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	4267907	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-1.958 \pm 32.769) \times 10^{-4}$	4267907	1.813×10^{-3}	-2.053×10^{-4}	-8.762×10^{-2}	5.758×10^{-2}	-1.132×10^{-3}	6.814×10^{-4}
fitted radiance squeeze [1]	$(-2.437 \pm 17.639) \times 10^{-5}$	4267907	2.054×10^{-4}	-1.873×10^{-5}	-1.395×10^{-2}	1.319×10^{-2}	-1.233×10^{-4}	8.215×10^{-5}
fitted root mean square [1]	$(1.291 \pm 0.525) \times 10^{-3}$	4267907	4.606×10^{-4}	1.166×10^{-3}	3.027×10^{-4}	3.840×10^{-2}	9.779×10^{-4}	1.438×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.839 ± 0.491	4267907	0.634	0.705	5.000×10^{-2}	2.82	0.485	1.12
sulfurdioxide total air mass factor polluted precision [1]	0.124 ± 0.144	4267907	0.136	6.474×10^{-2}	3.575×10^{-3}	1.76	3.038×10^{-2}	0.167
sulfurdioxide clear air mass factor polluted [1]	0.694 ± 0.333	4267907	0.402	0.609	7.586×10^{-2}	2.39	0.457	0.860
number of spectral points in retrieval [1]	73.4 ± 0.5	4267907	1.000	73.0	52.0	74.0	73.0	74.0

Table 7: Correlation matrix

Clear AMF (polished)	Precision of total AMF (polished)	Total AMF (polished)	DOAS in wavelength squeeze	DOAS in wavelength shift	DOAS in wavelength background correction (window 3)	Corrected SO ₂ slant column (window 3)	SO ₂ slant column background correction (window 3)	SO ₂ slant column precision (window 3)	Corrected SO ₂ slant column (window 2)	SO ₂ slant column background correction (window 2)	SO ₂ slant column precision (window 2)	SO ₂ slant column background correction (window 1)	SO ₂ slant column precision (window 1)	SO ₂ slant column background correction (Chera)	SO ₂ slant column precision (Chera)	Chera SO ₂ slant column	Corrected SO ₂ slant column	SO ₂ vertical column precision	SO ₂ vertical column	Latitude	Solar zenith angle	Viewing zenith angle	
-0.194	-0.129	-0.197	-1.369 × 10 ⁻²	-5.841 × 10 ⁻³	-0.190	8.731 × 10 ⁻³	2.889 × 10 ⁻²	6.134 × 10 ⁻²	5.036 × 10 ⁻²	6.410 × 10 ⁻³	0.152	0.323	0.152	0.323	0.351	0.351	-1.341 × 10 ⁻³	-2.289 × 10 ⁻³	0.256	1.107 × 10 ⁻²	-8.010 × 10 ⁻³	5.839 × 10 ⁻³	1.000
1.408 × 10 ⁻²	6.758 × 10 ⁻²	0.110	-0.116	-0.108	0.624	1.297 × 10 ⁻²	-3.605 × 10 ⁻²	-0.683	2.903 × 10 ⁻³	-0.683	0.230	0.563	0.230	0.563	0.594	0.594	3.710 × 10 ⁻²	3.370 × 10 ⁻²	0.186	2.512 × 10 ⁻²	-7.534 × 10 ⁻³	1.000	1.000
4.267 × 10 ⁻²	0.106	0.107	-0.217	5.500 × 10 ⁻²	0.482	5.500 × 10 ⁻²	-0.173	-0.134	-1.680 × 10 ⁻²	-0.134	-0.163	0.249	-0.163	0.249	0.183	0.183	2.305 × 10 ⁻²	2.155 × 10 ⁻²	0.186	1.165 × 10 ⁻²	-7.534 × 10 ⁻³	1.000	1.000
-0.445	-0.237	-0.523	-2.680 × 10 ⁻²	-5.361 × 10 ⁻³	1.593 × 10 ⁻³	1.276 × 10 ⁻³	-2.622 × 10 ⁻²	-0.183	-2.712 × 10 ⁻²	-0.183	0.155	0.340 × 10 ⁻³	-0.183	0.340 × 10 ⁻³	0.394	0.394	2.698 × 10 ⁻²	2.698 × 10 ⁻²	0.693	6.476 × 10 ⁻²	1.107 × 10 ⁻²	5.839 × 10 ⁻³	1.000
7.720 × 10 ⁻³	1.563 × 10 ⁻²	2.062 × 10 ⁻²	-9.389 × 10 ⁻³	-3.405 × 10 ⁻³	2.852 × 10 ⁻²	4.159 × 10 ⁻³	-7.024 × 10 ⁻³	-4.620 × 10 ⁻³	-4.620 × 10 ⁻³	-4.620 × 10 ⁻³	1.295 × 10 ⁻²	3.904 × 10 ⁻²	1.295 × 10 ⁻²	3.904 × 10 ⁻²	0.541	0.541	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
6.150 × 10 ⁻²	1.560 × 10 ⁻²	1.990 × 10 ⁻²	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	3.119 × 10 ⁻²	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.138	-4.113 × 10 ⁻²	-7.484 × 10 ⁻²	0.439	2.938 × 10 ⁻³	-7.910 × 10 ⁻³	-0.594	-5.869 × 10 ⁻³	-0.594	0.155	0.340 × 10 ⁻³	-0.594	0.340 × 10 ⁻³	0.644	0.644	7.701 × 10 ⁻²	7.701 × 10 ⁻²	1.000	2.981 × 10 ⁻²	3.370 × 10 ⁻²	5.839 × 10 ⁻³	1.000
-0.124	-0.938 × 10 ⁻²	-0.1																					

Table 8: Covariance matrix

[illegible]

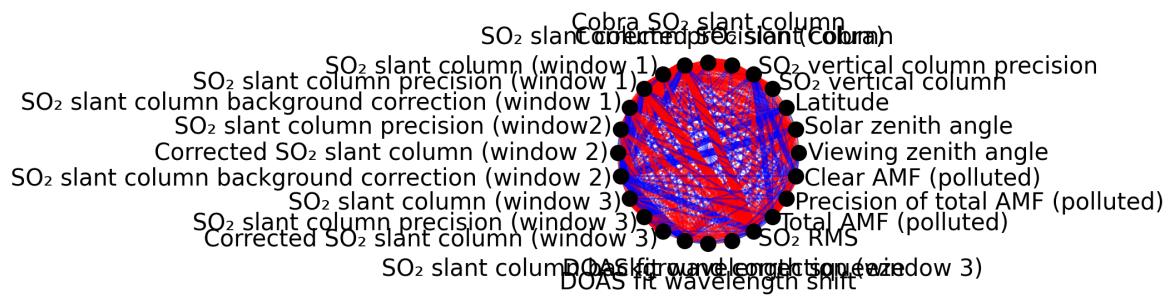


Figure 1: Map of correlation graph for 2025-04-20 to 2025-04-22.

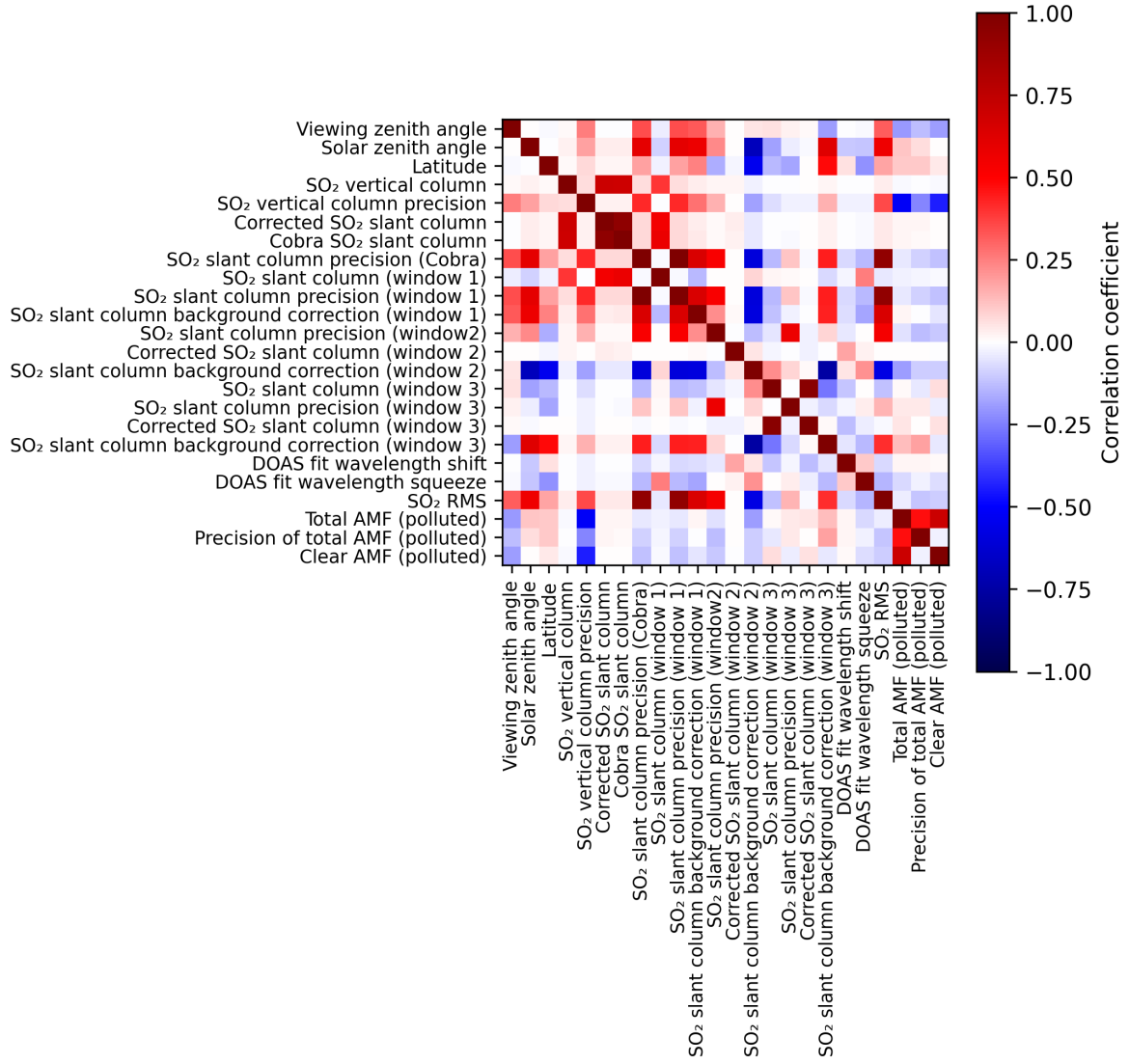


Figure 2: Map of correlation matrix for 2025-04-20 to 2025-04-22.

3 Granule outlines

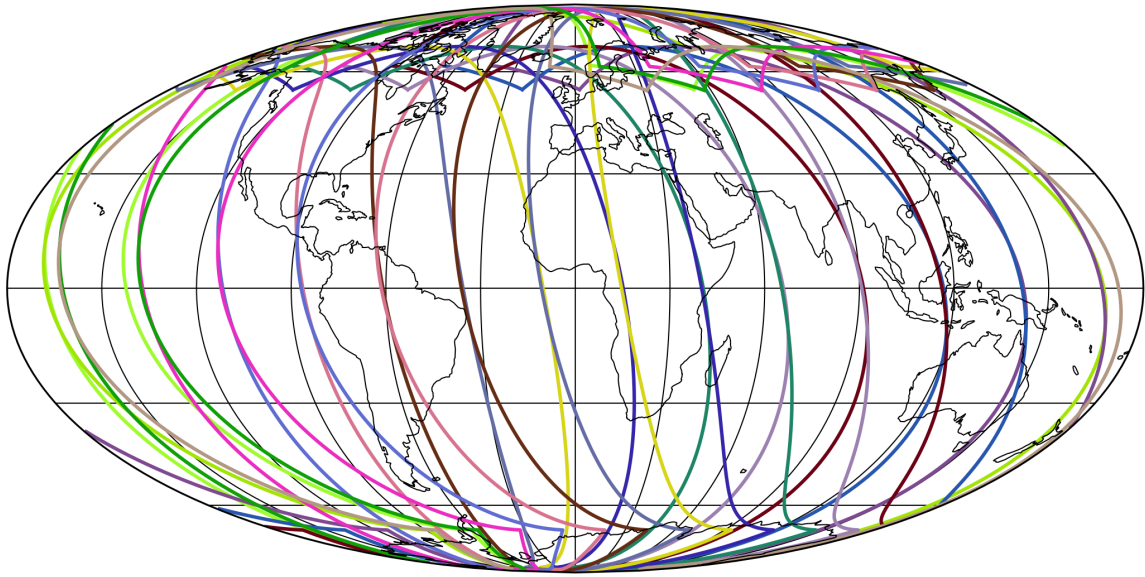


Figure 3: Outline of the granules.

4 Input data monitoring

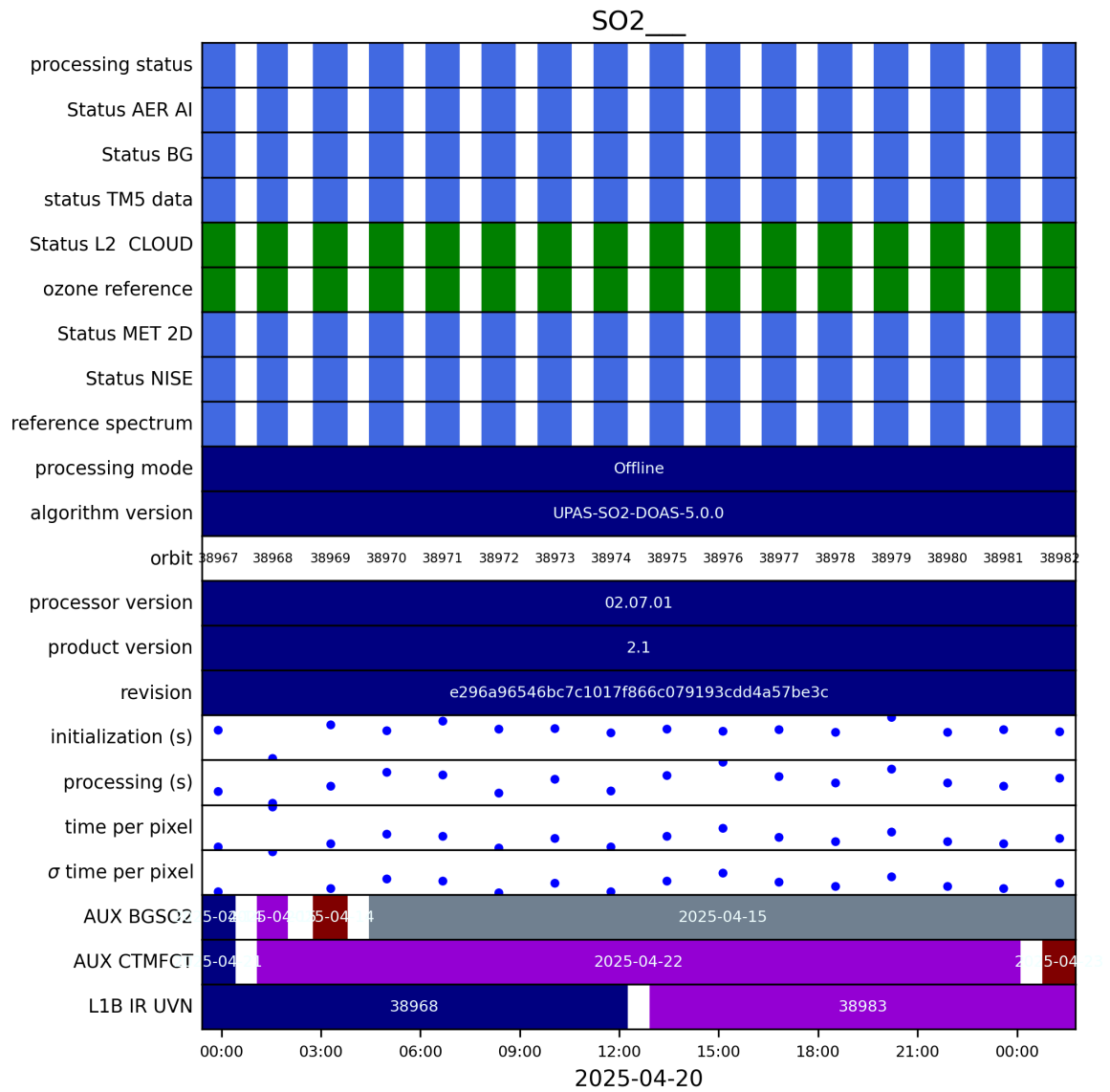


Figure 4: Input data per granule

5 Warnings and errors

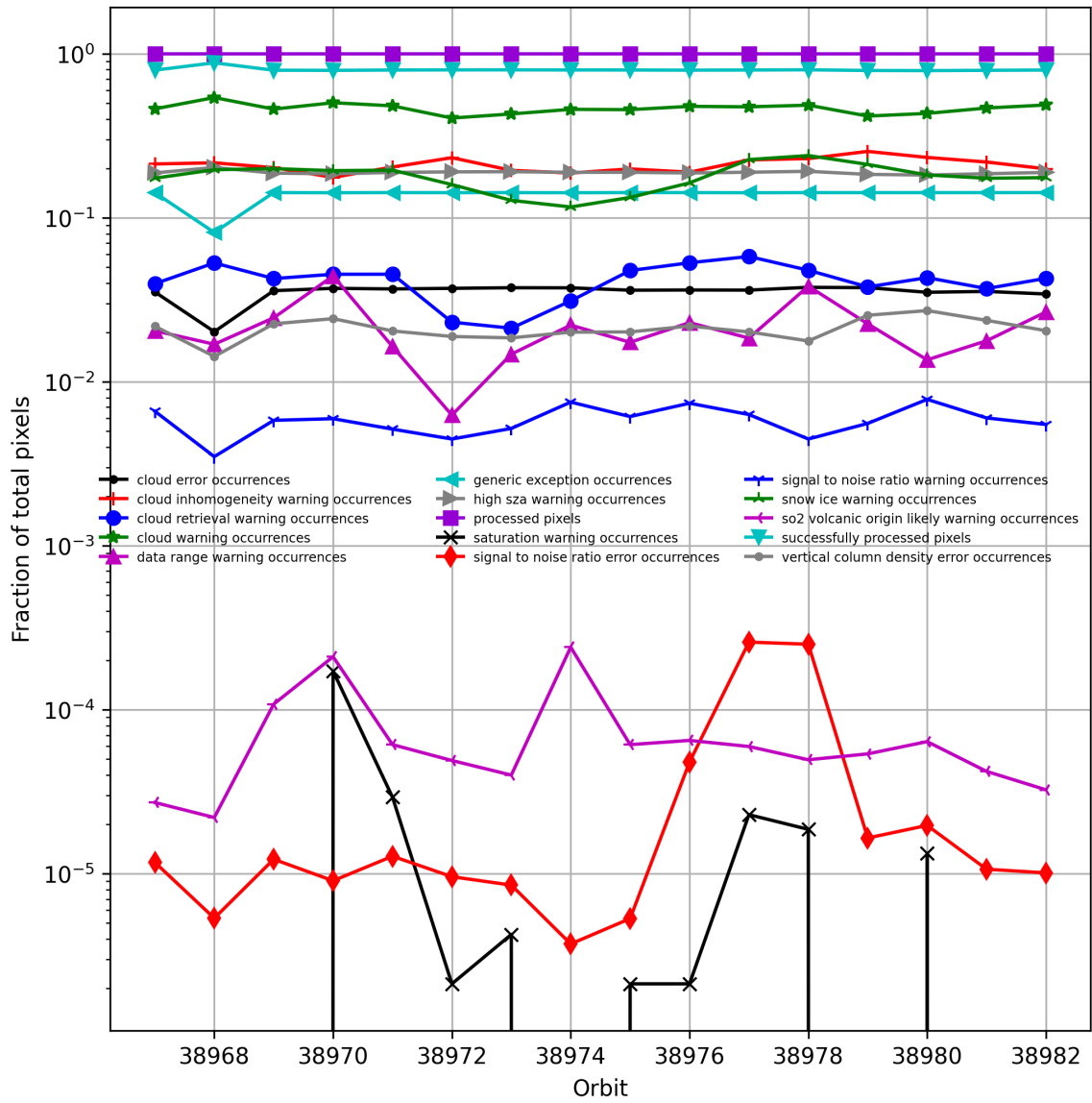


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

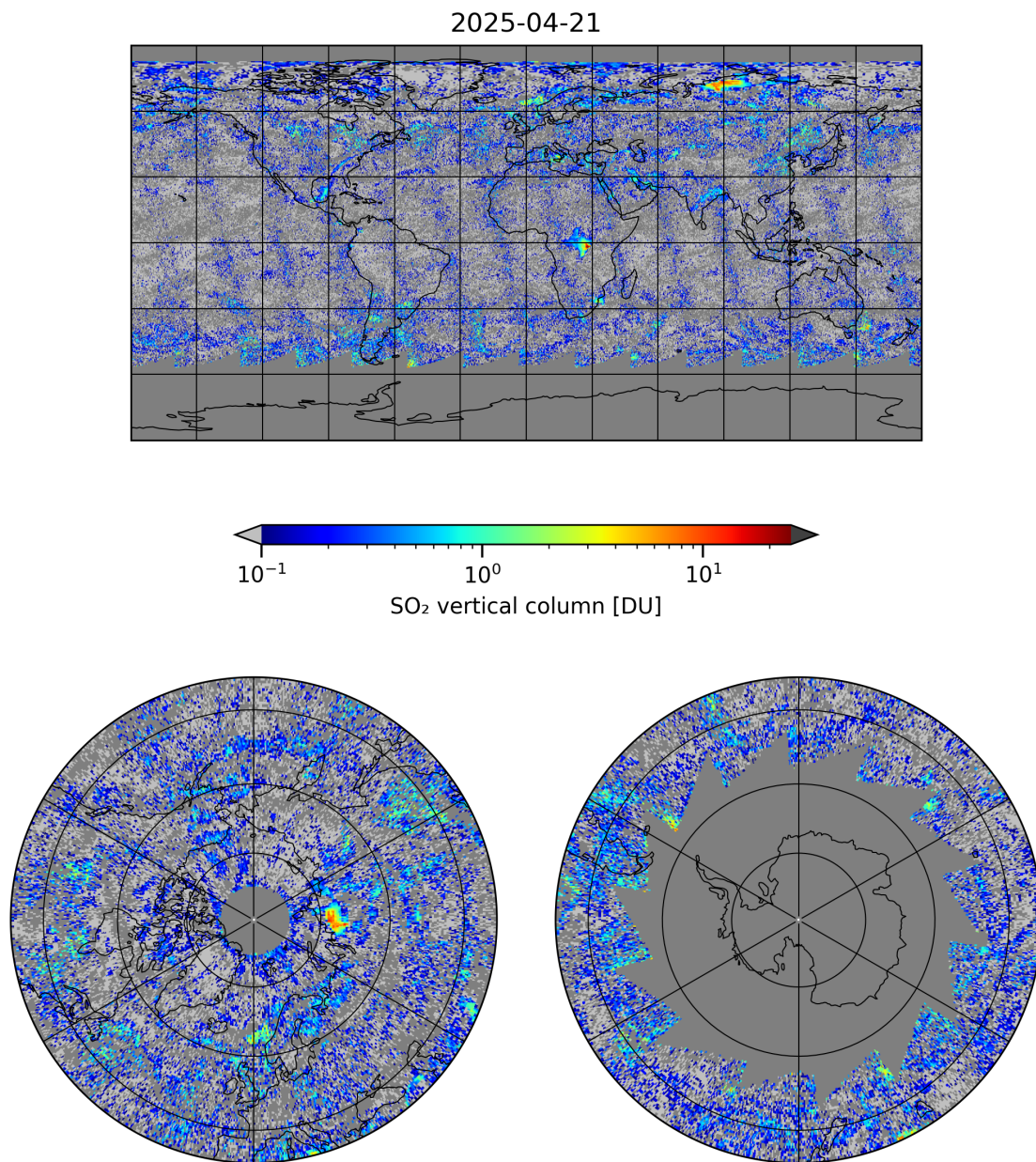


Figure 6: Map of “SO₂ vertical column” for 2025-04-20 to 2025-04-22

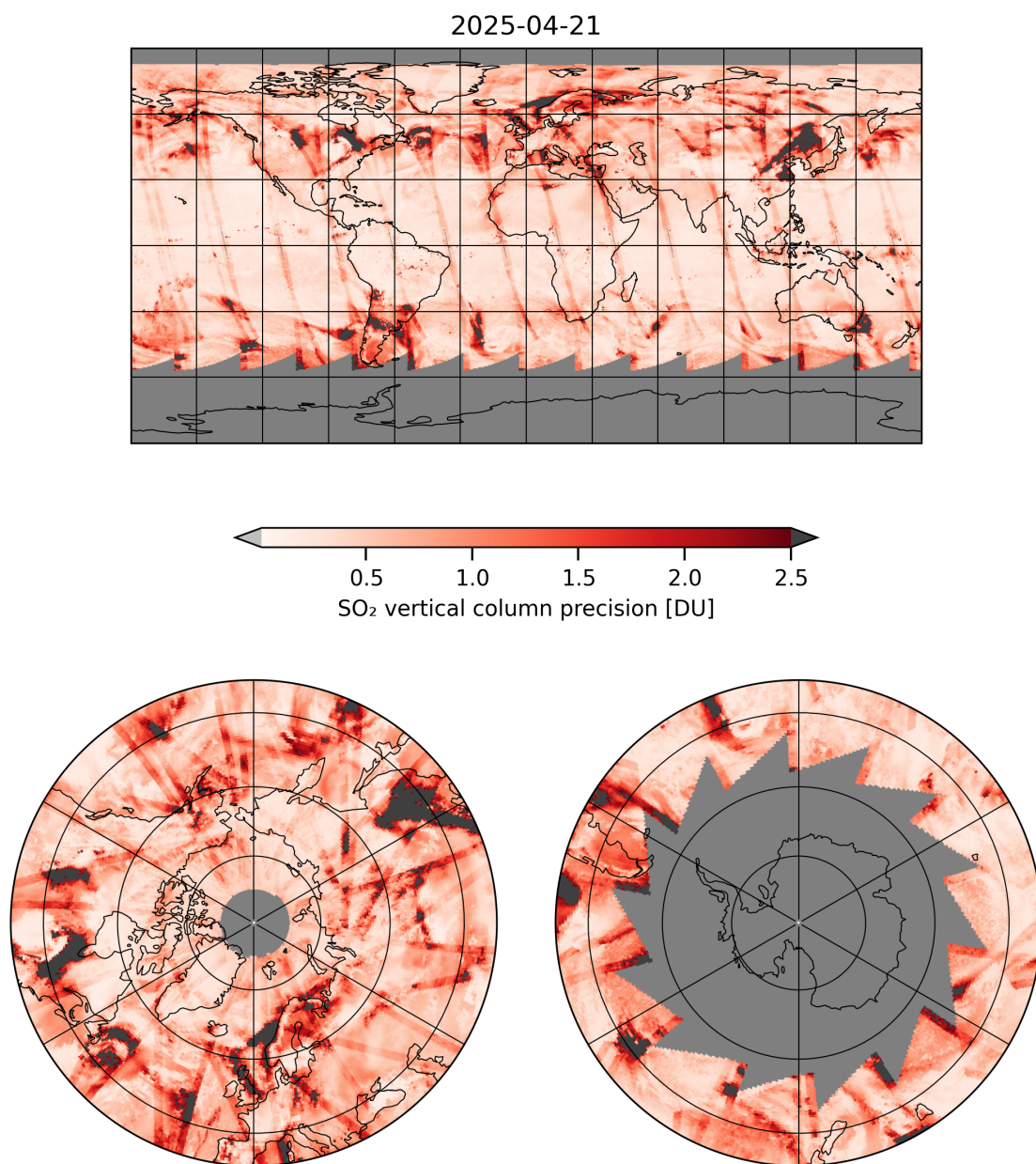


Figure 7: Map of “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22

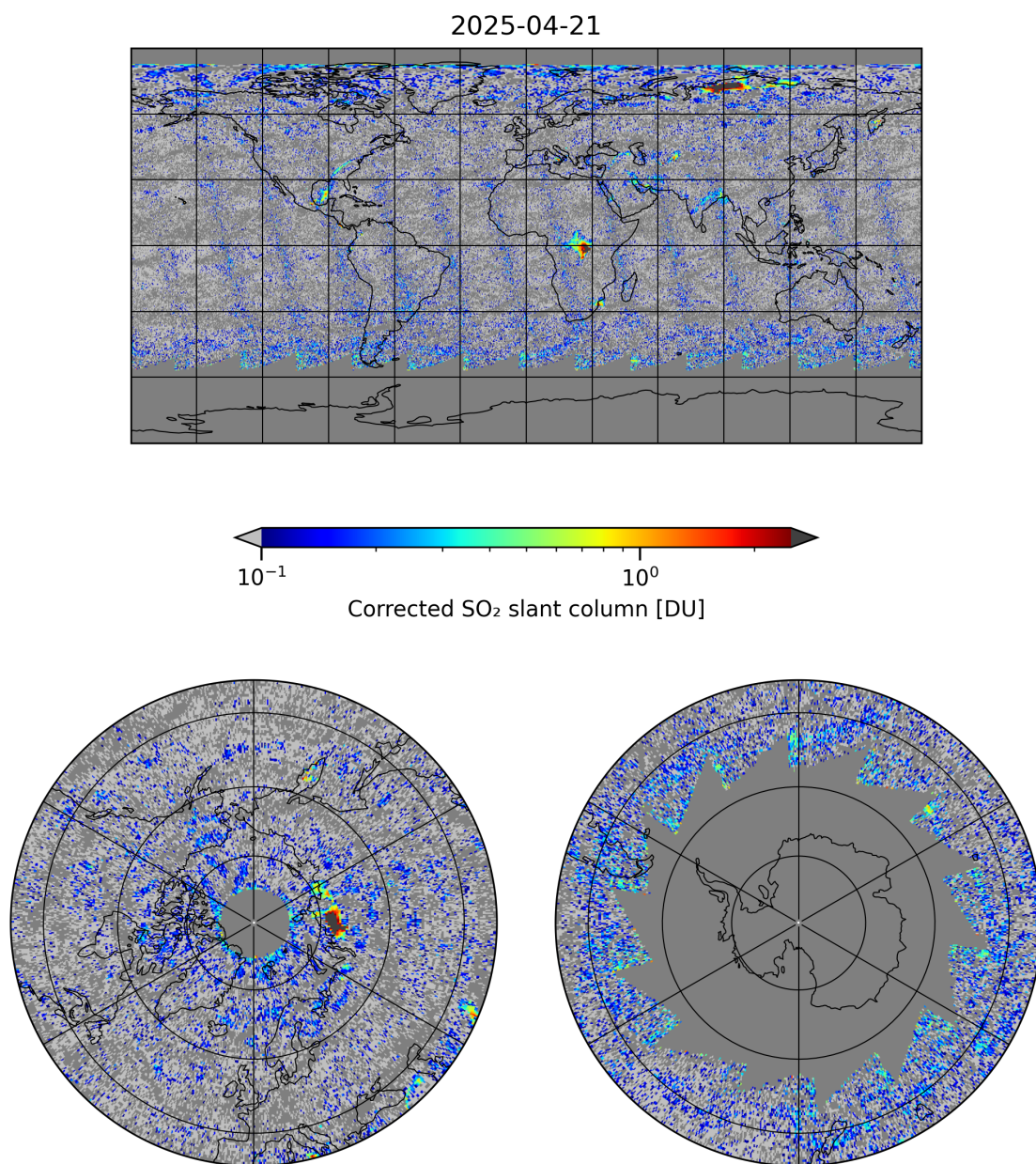


Figure 8: Map of “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22

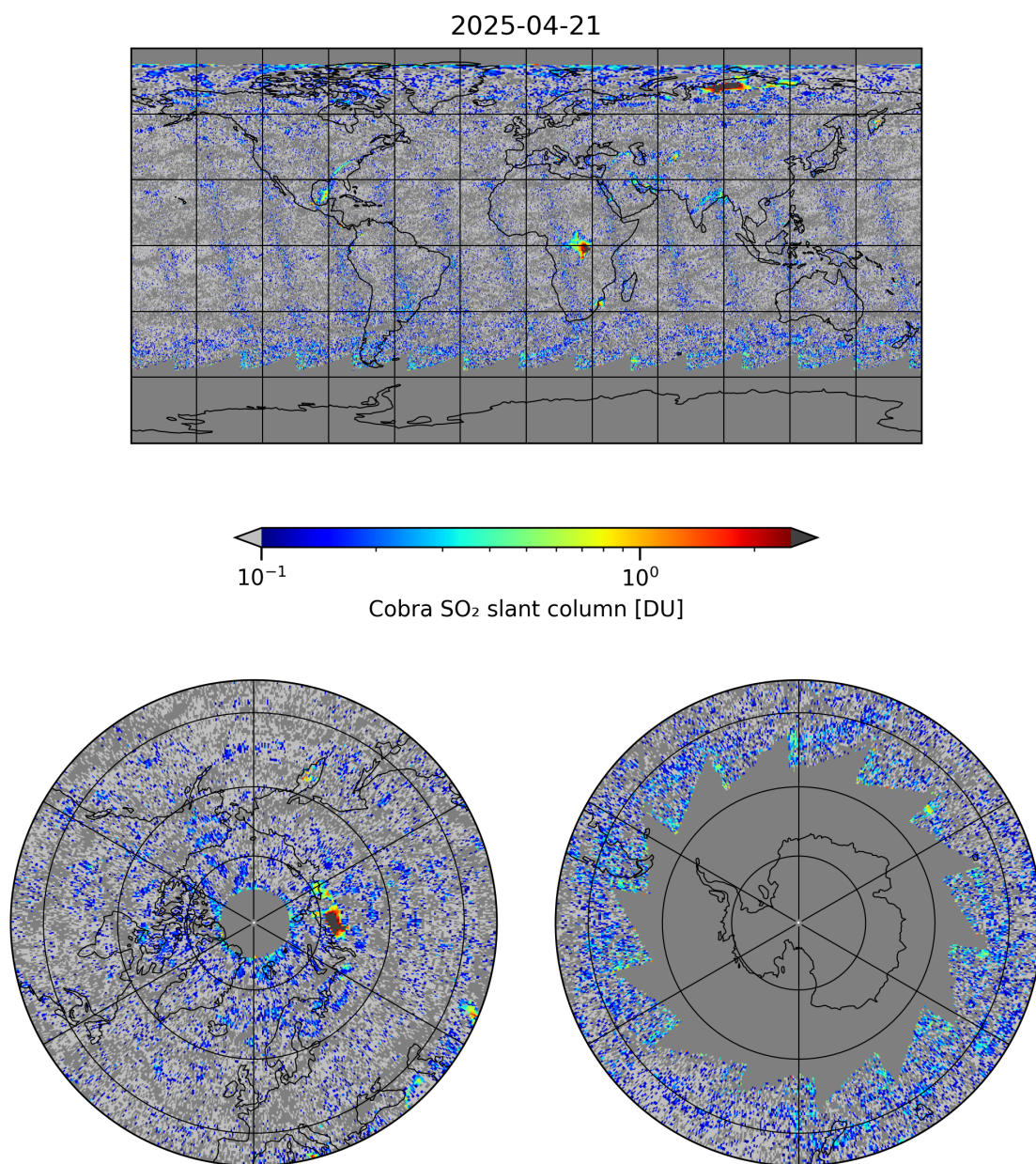


Figure 9: Map of “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22

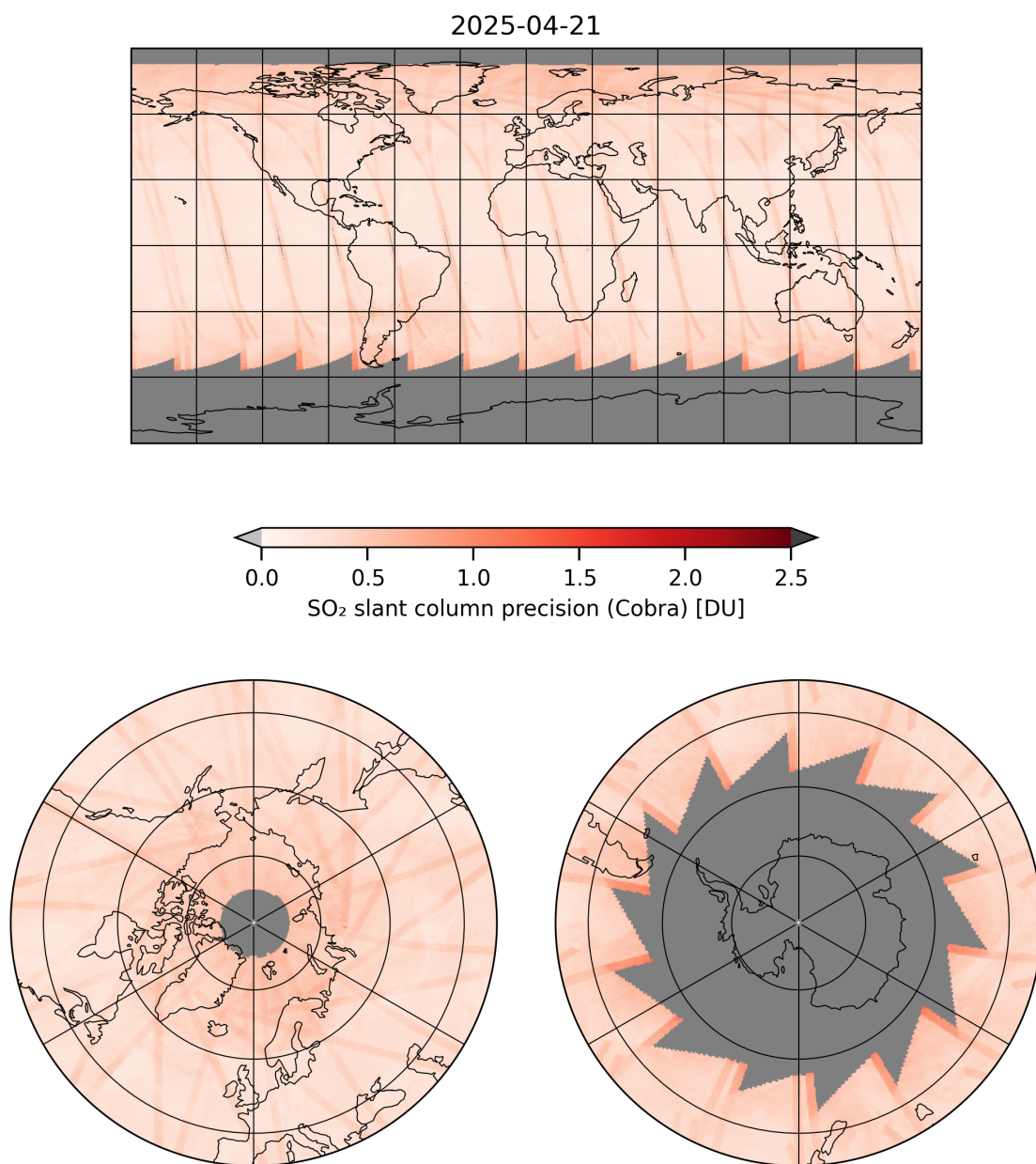


Figure 10: Map of “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22

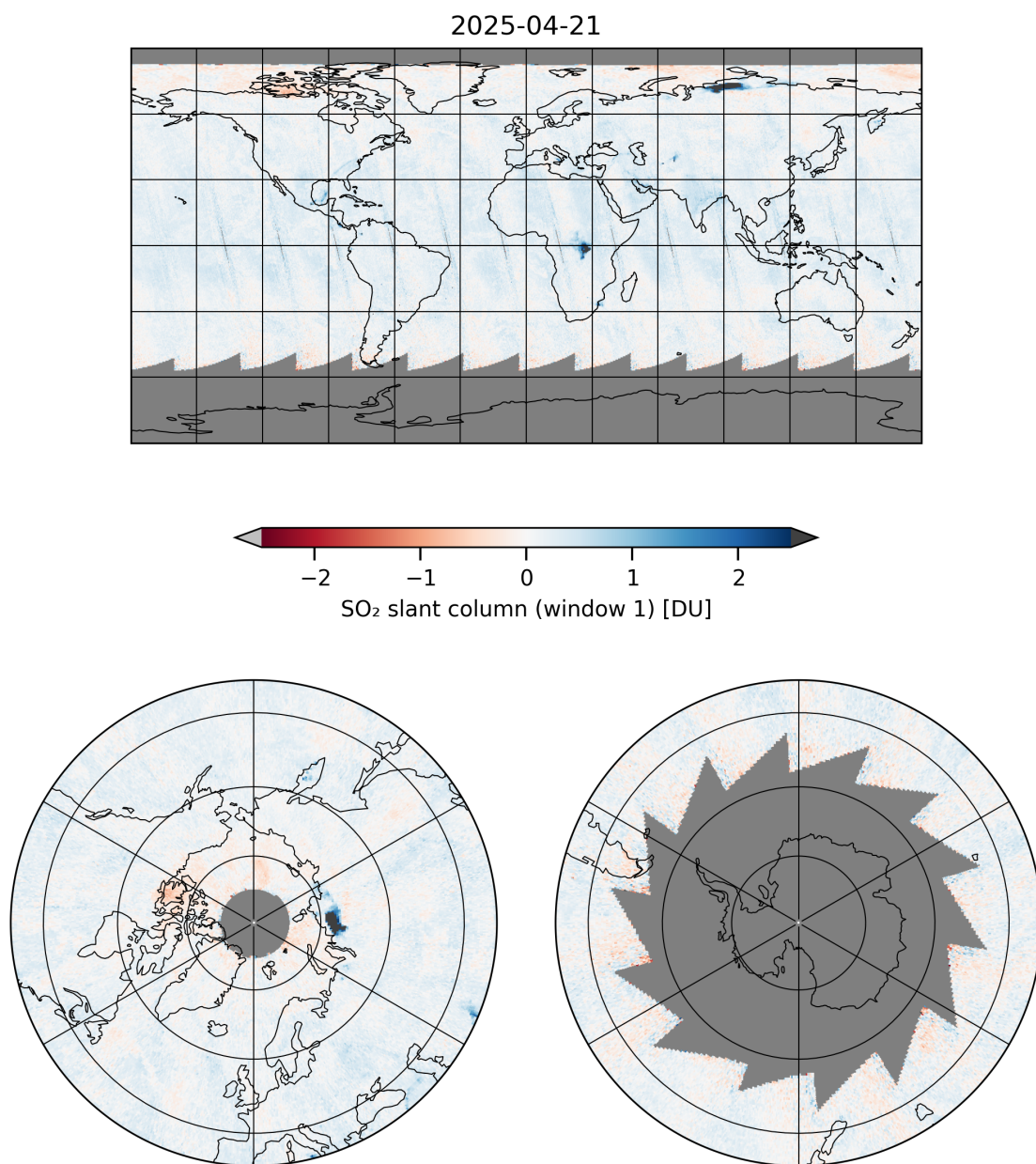


Figure 11: Map of “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22

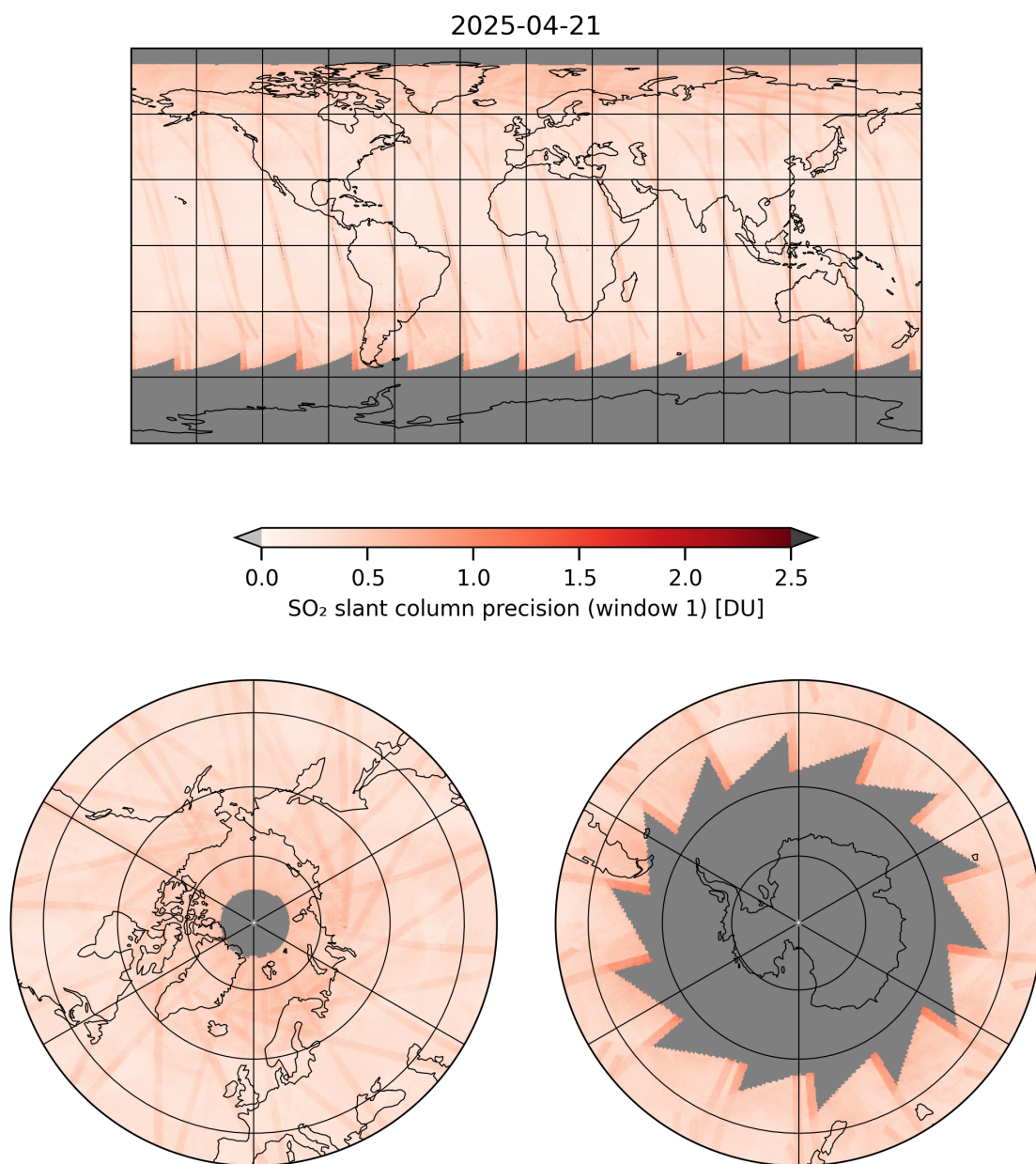


Figure 12: Map of “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22

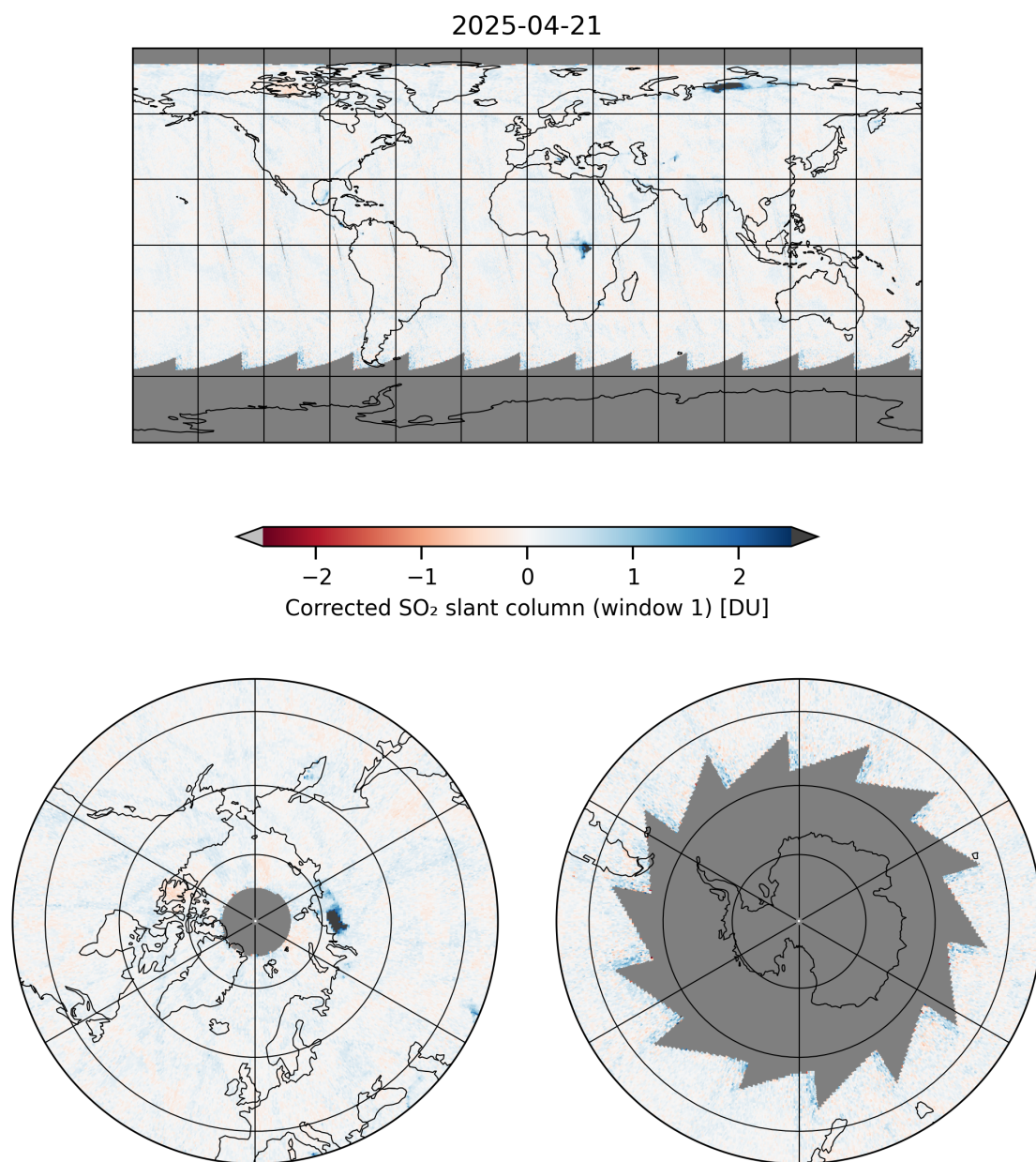


Figure 13: Map of "Corrected SO₂ slant column (window 1)" for 2025-04-20 to 2025-04-22

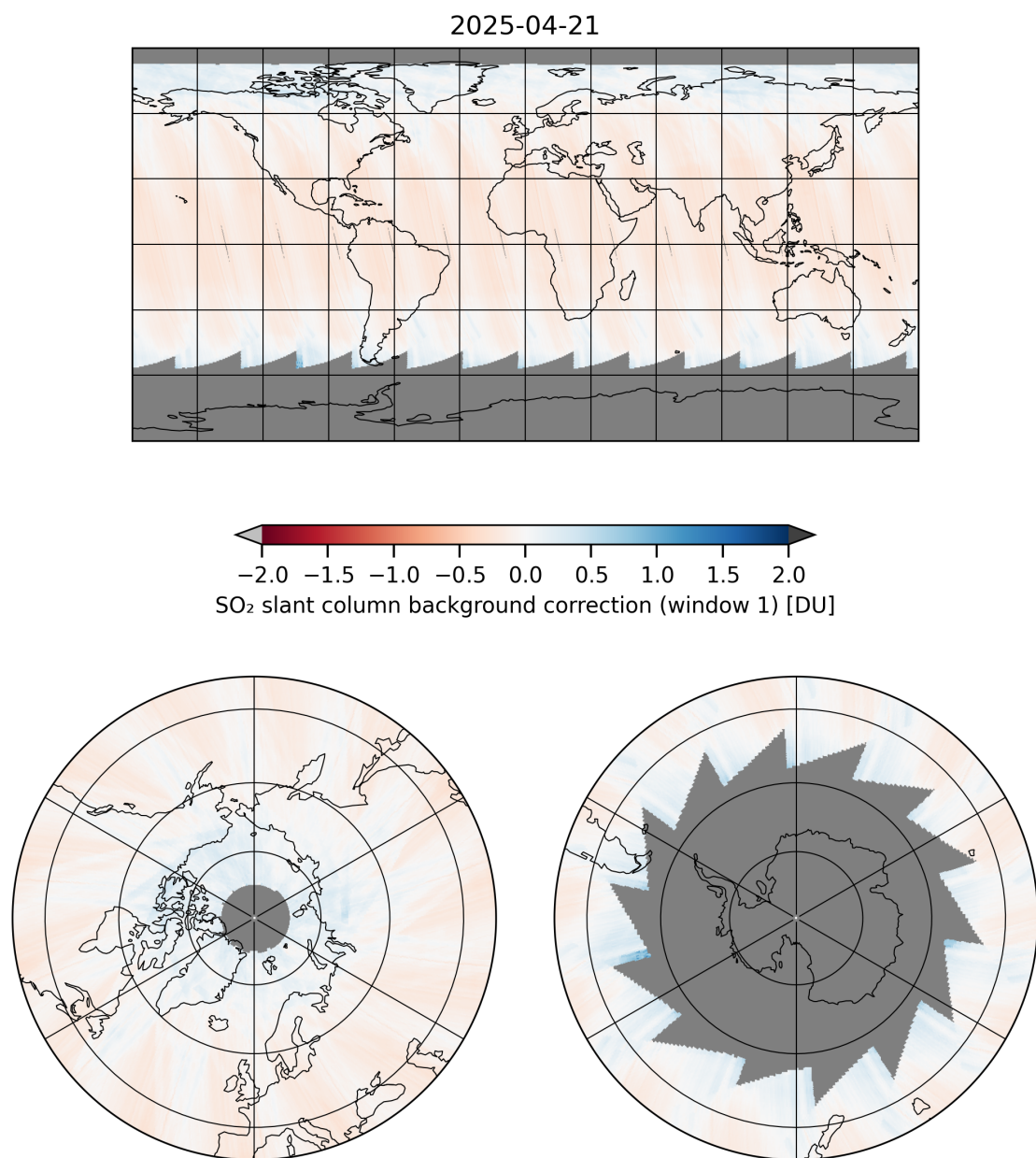


Figure 14: Map of “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22

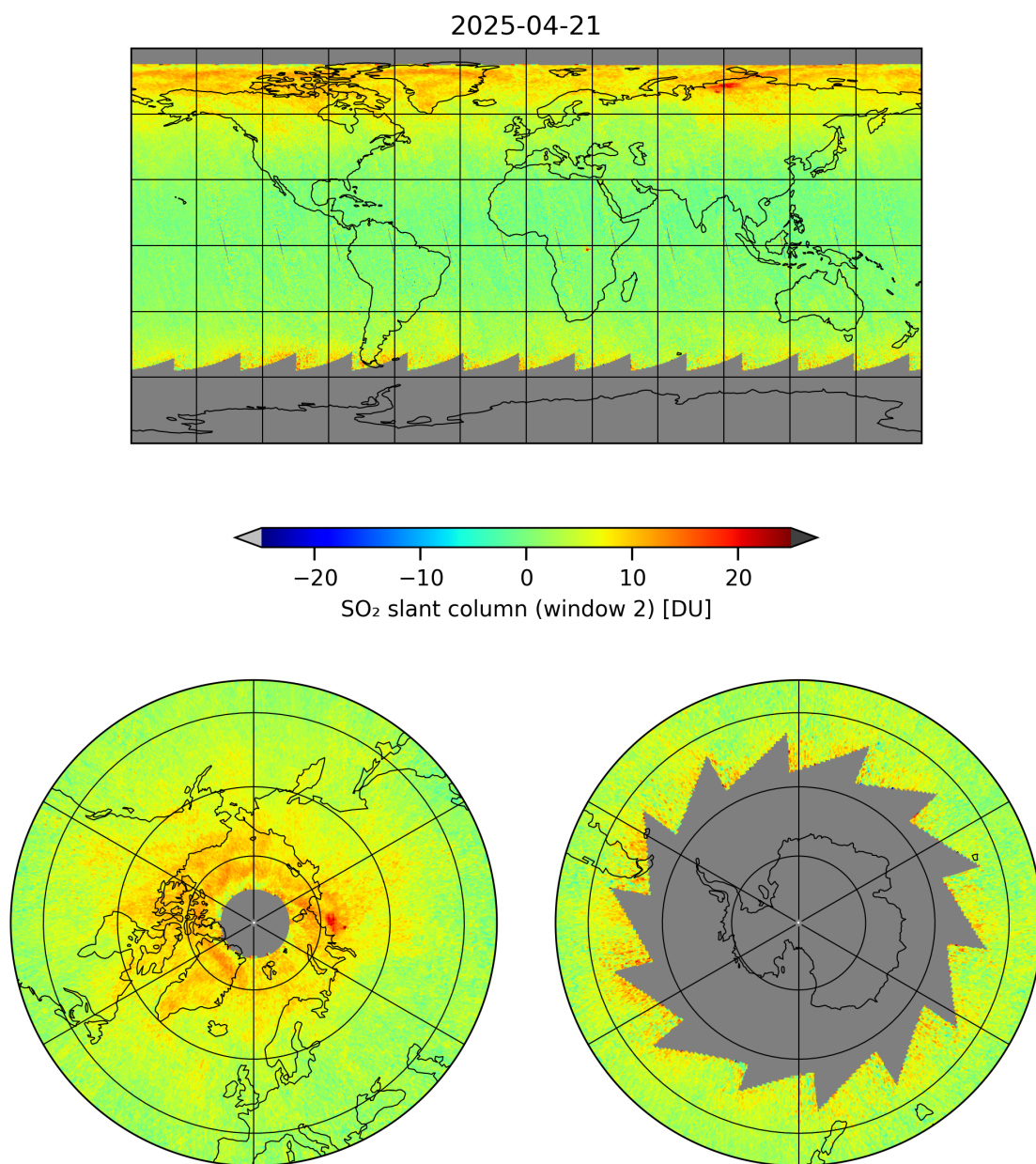


Figure 15: Map of “SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22

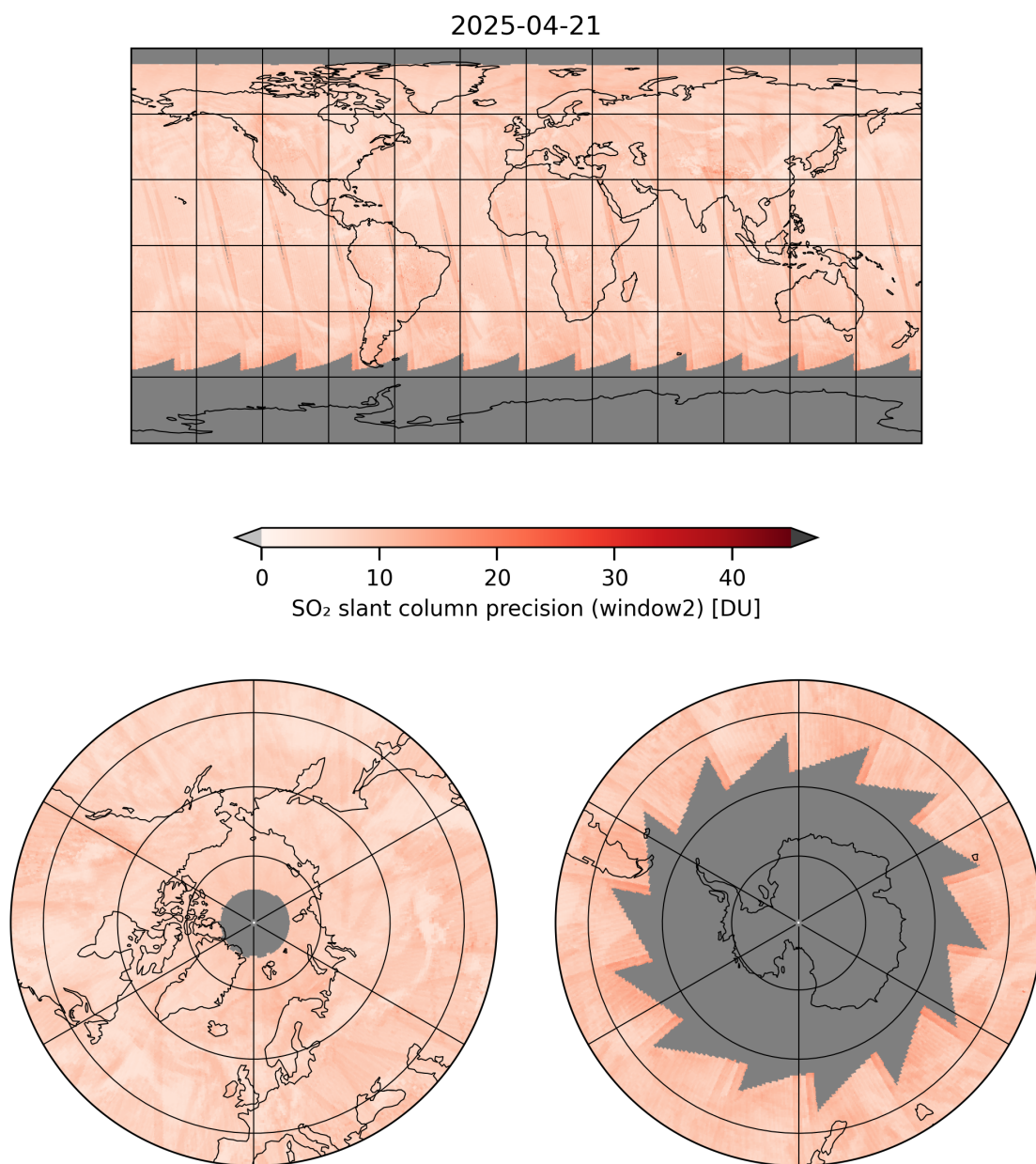


Figure 16: Map of “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22

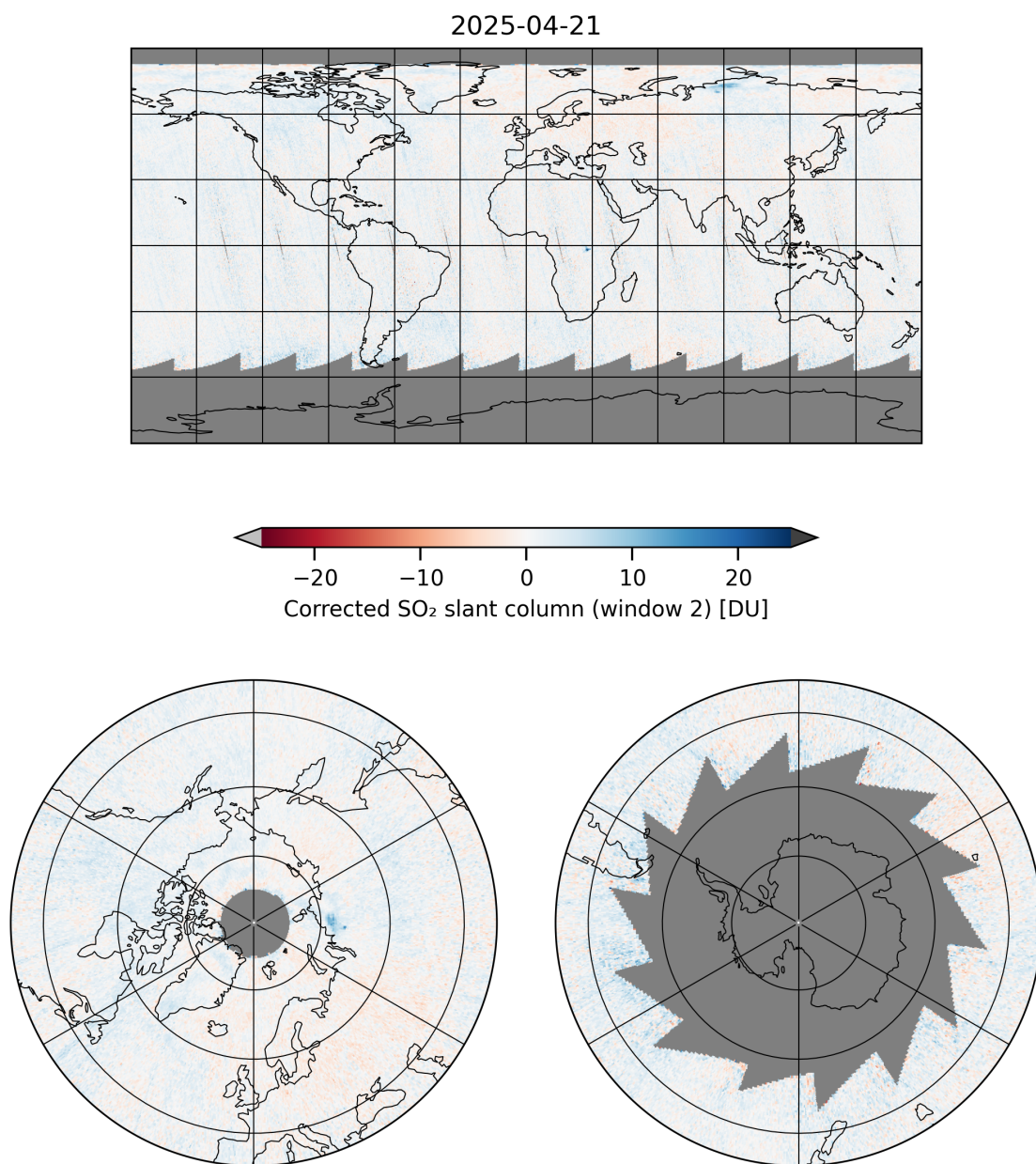


Figure 17: Map of “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22

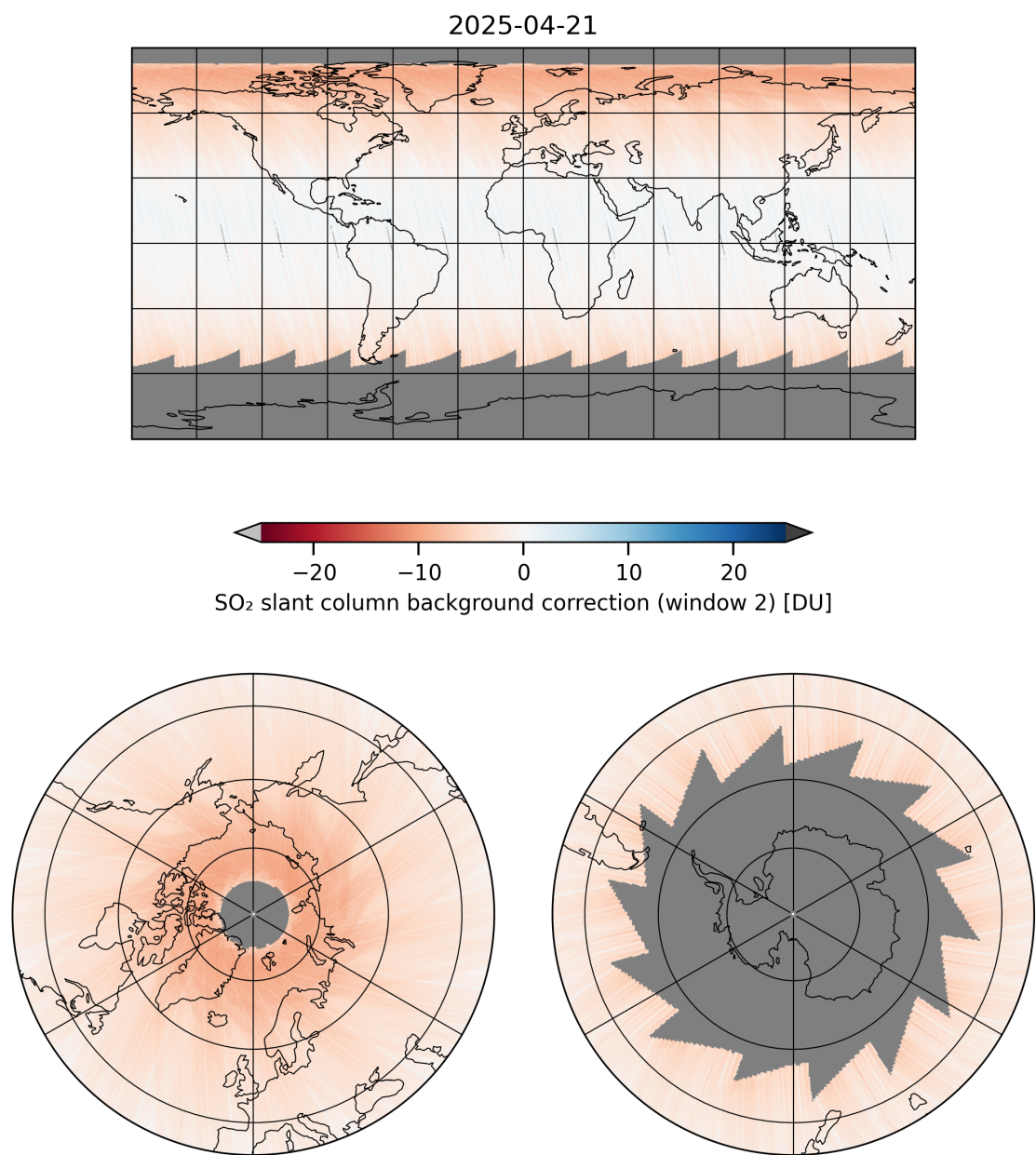


Figure 18: Map of “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22

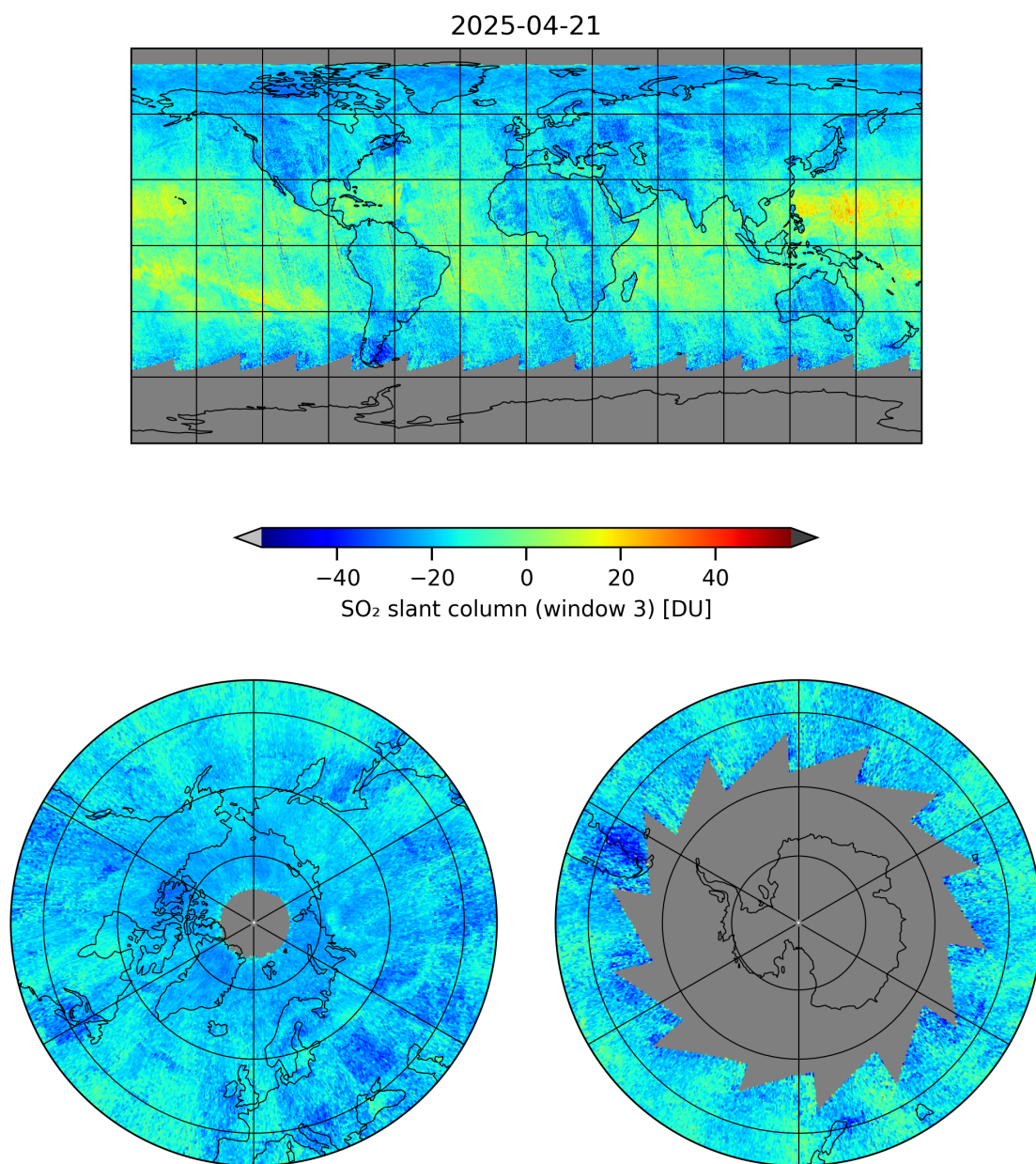


Figure 19: Map of “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22

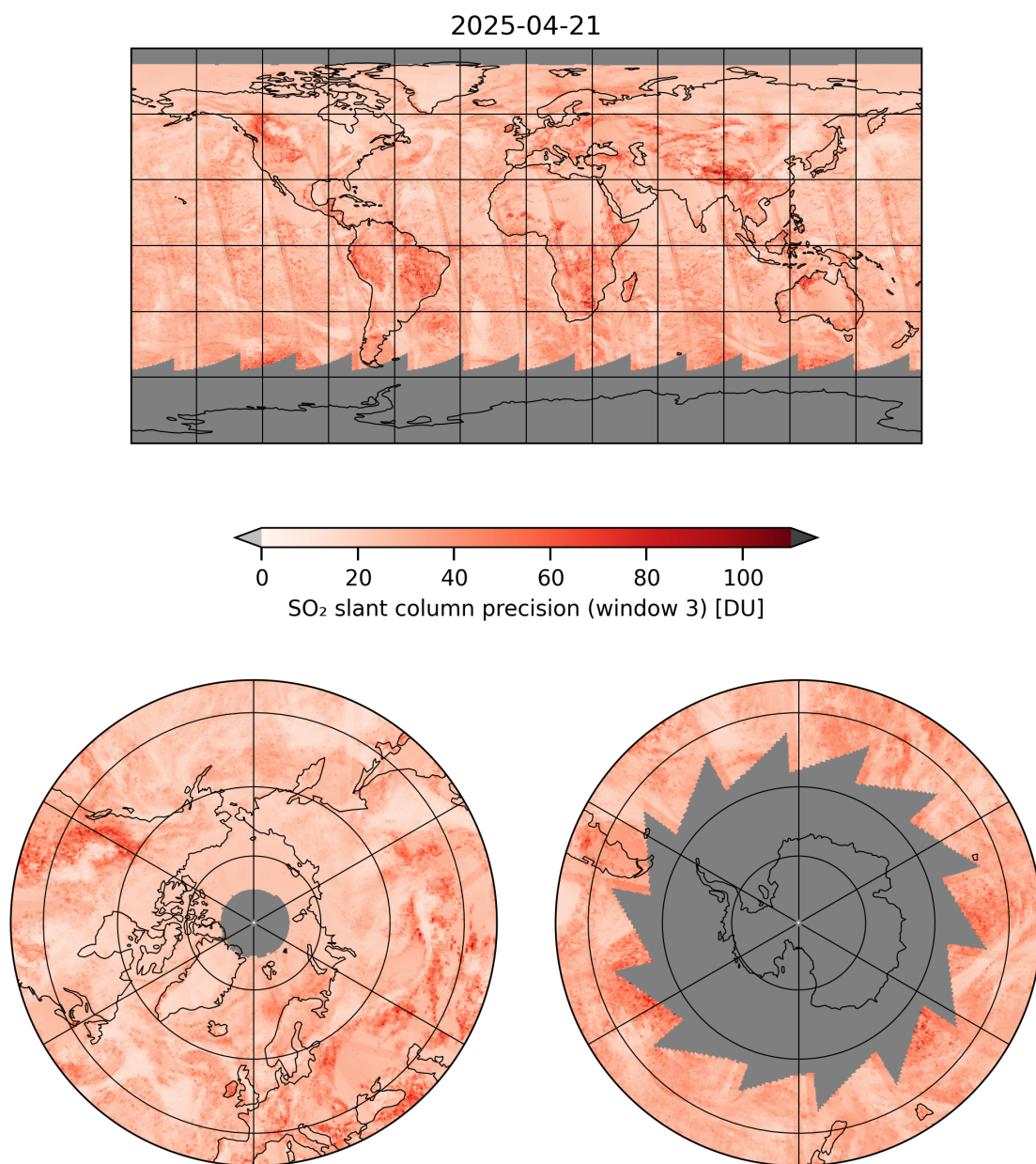


Figure 20: Map of “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22

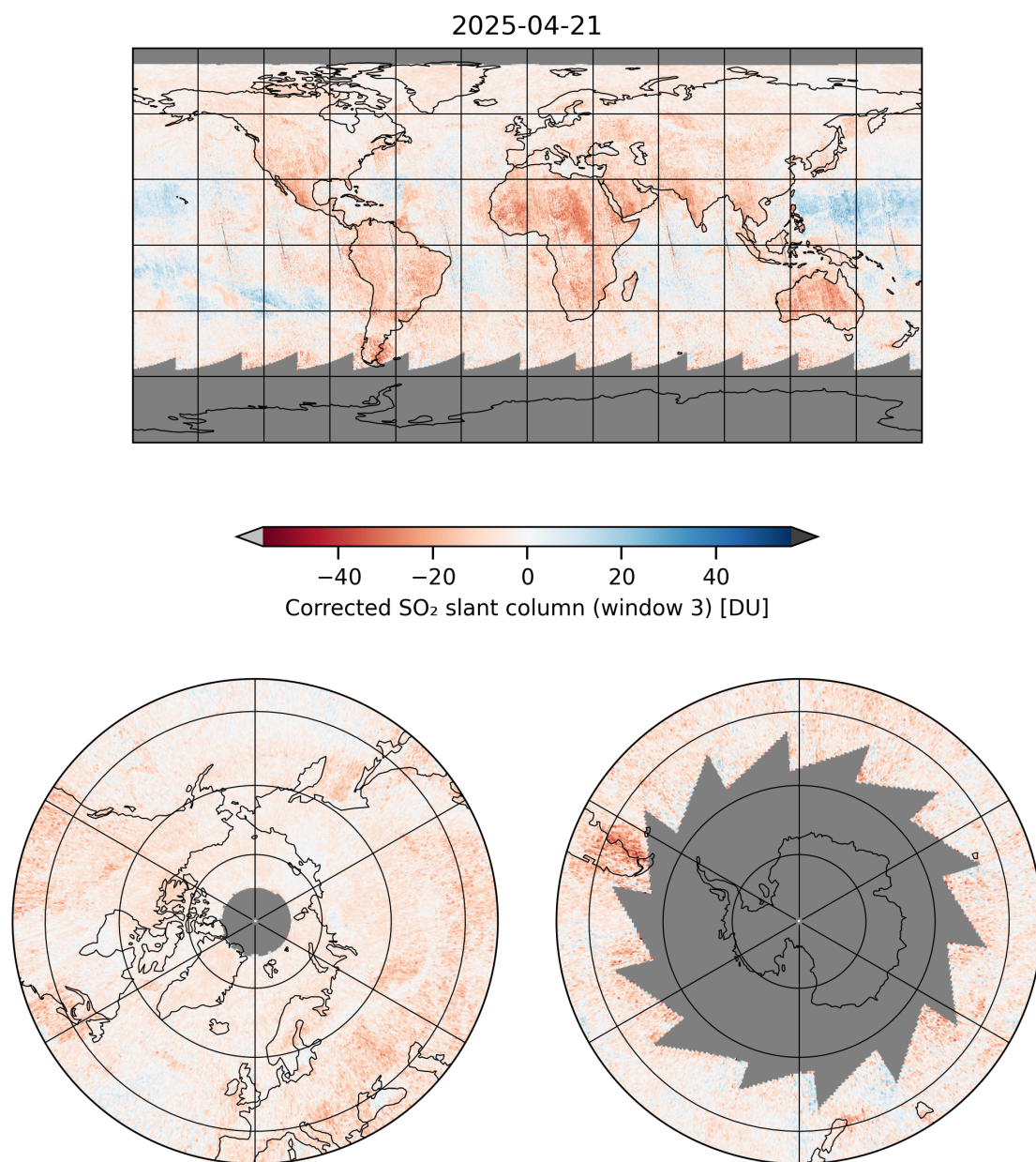


Figure 21: Map of “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22

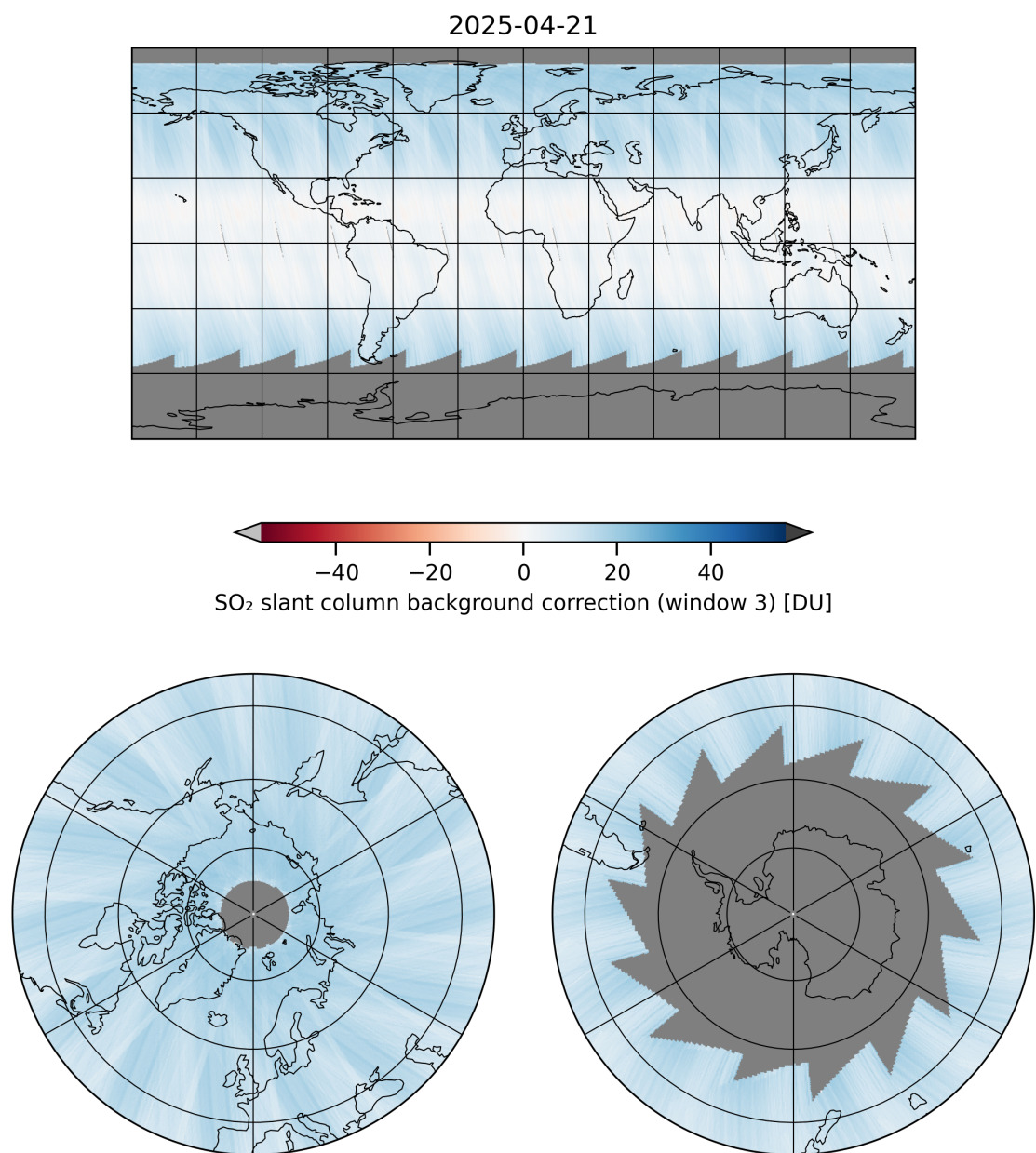


Figure 22: Map of “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22

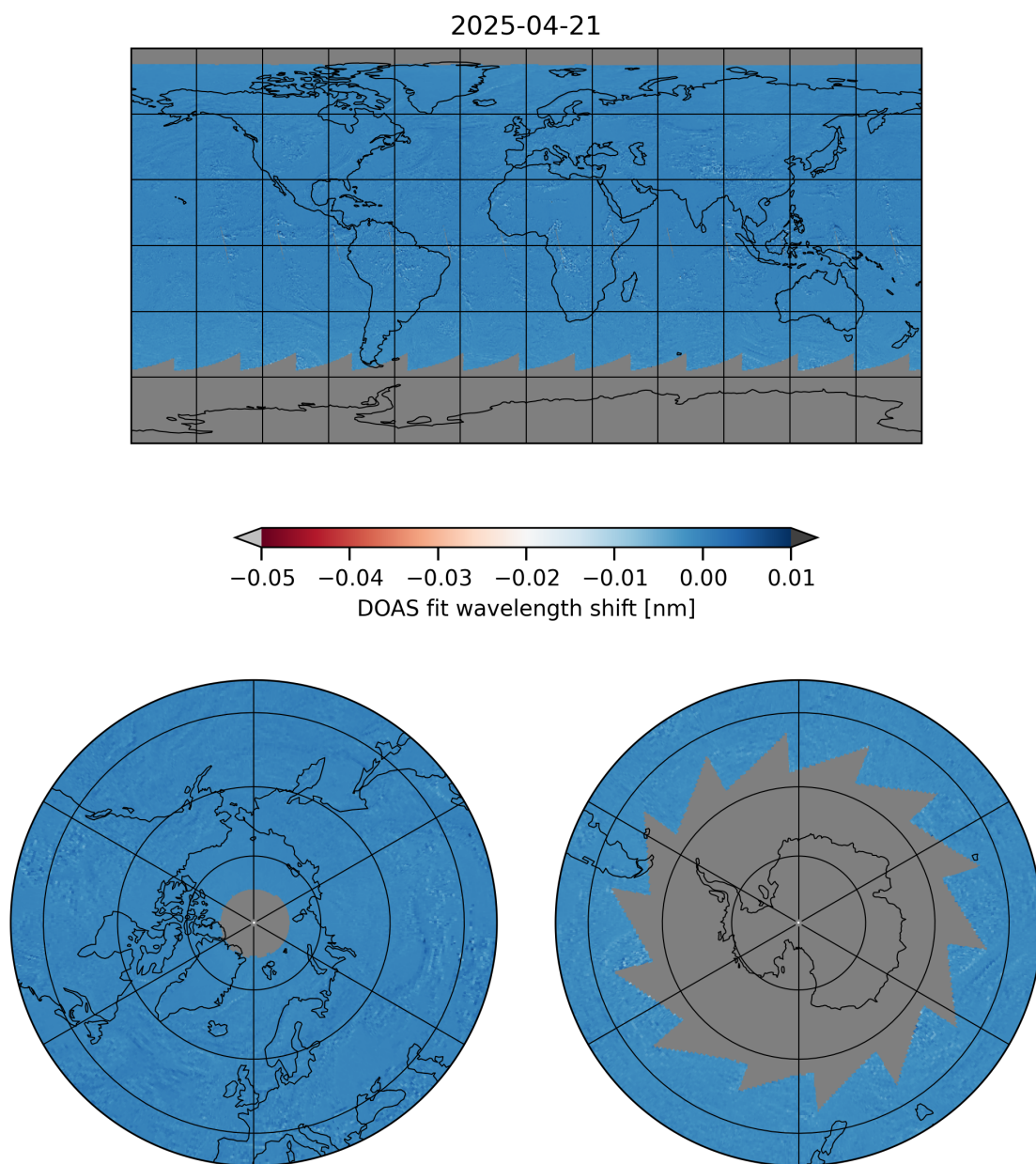


Figure 23: Map of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22

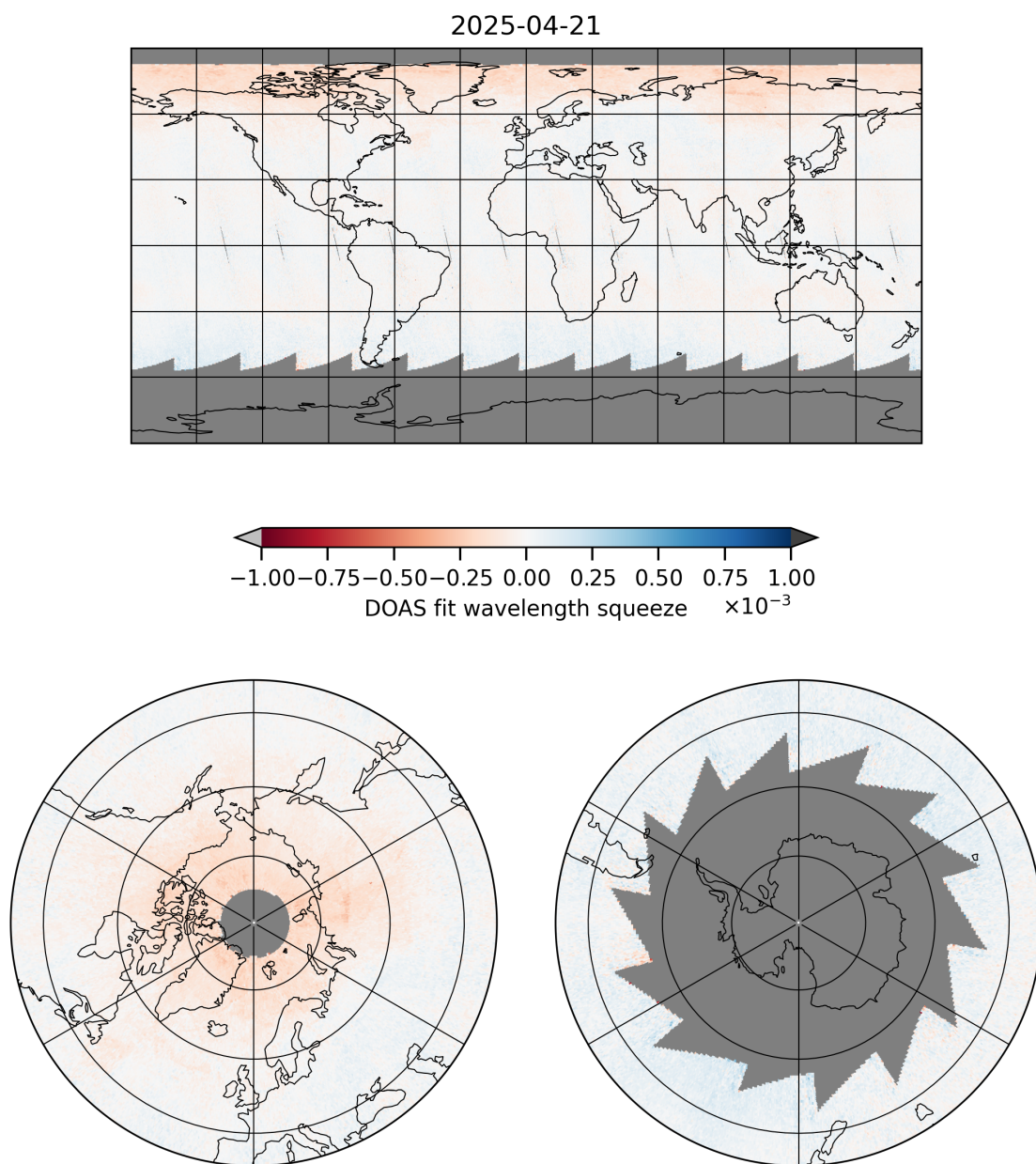


Figure 24: Map of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22

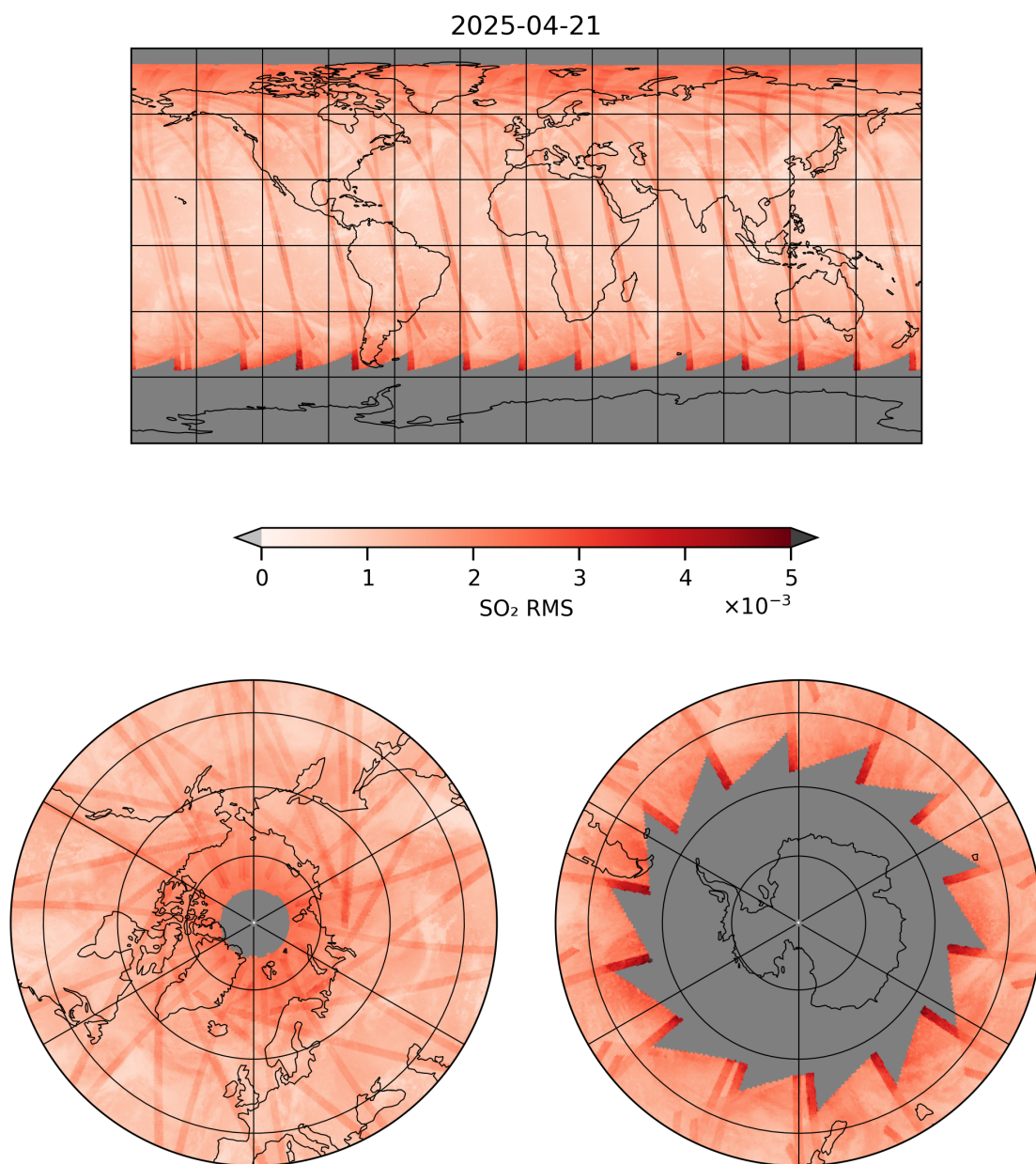


Figure 25: Map of “SO₂ RMS” for 2025-04-20 to 2025-04-22

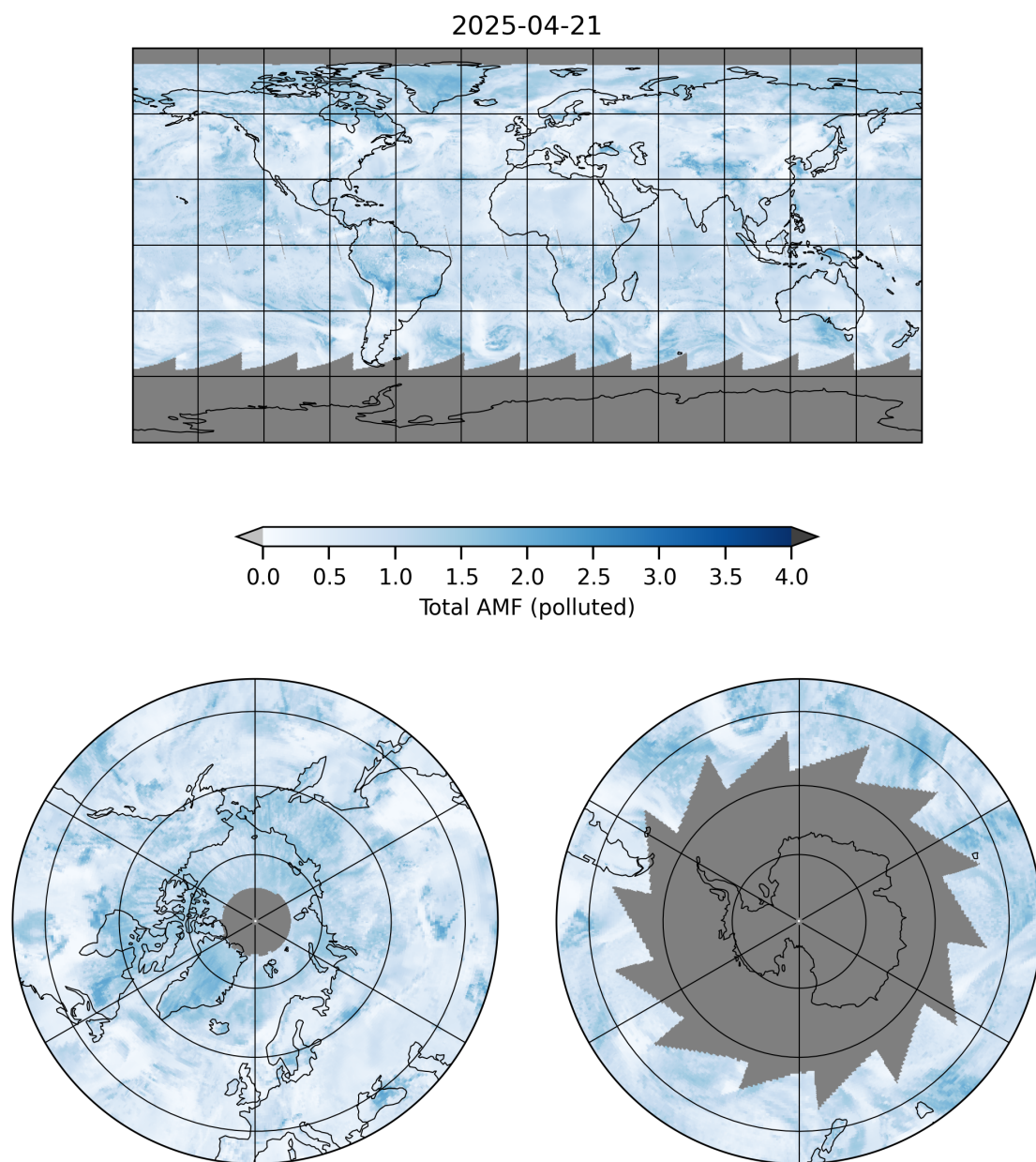


Figure 26: Map of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22

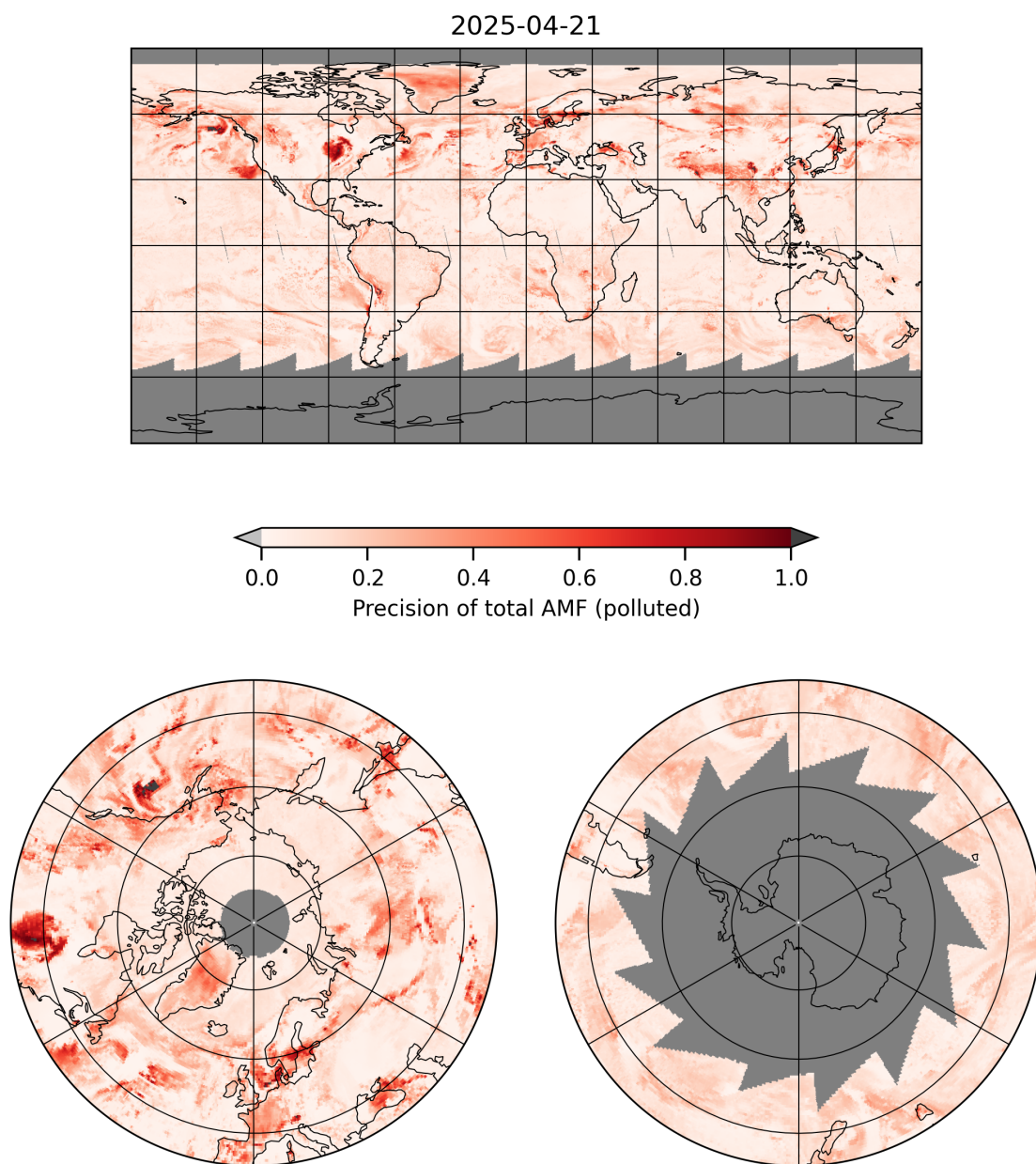


Figure 27: Map of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22

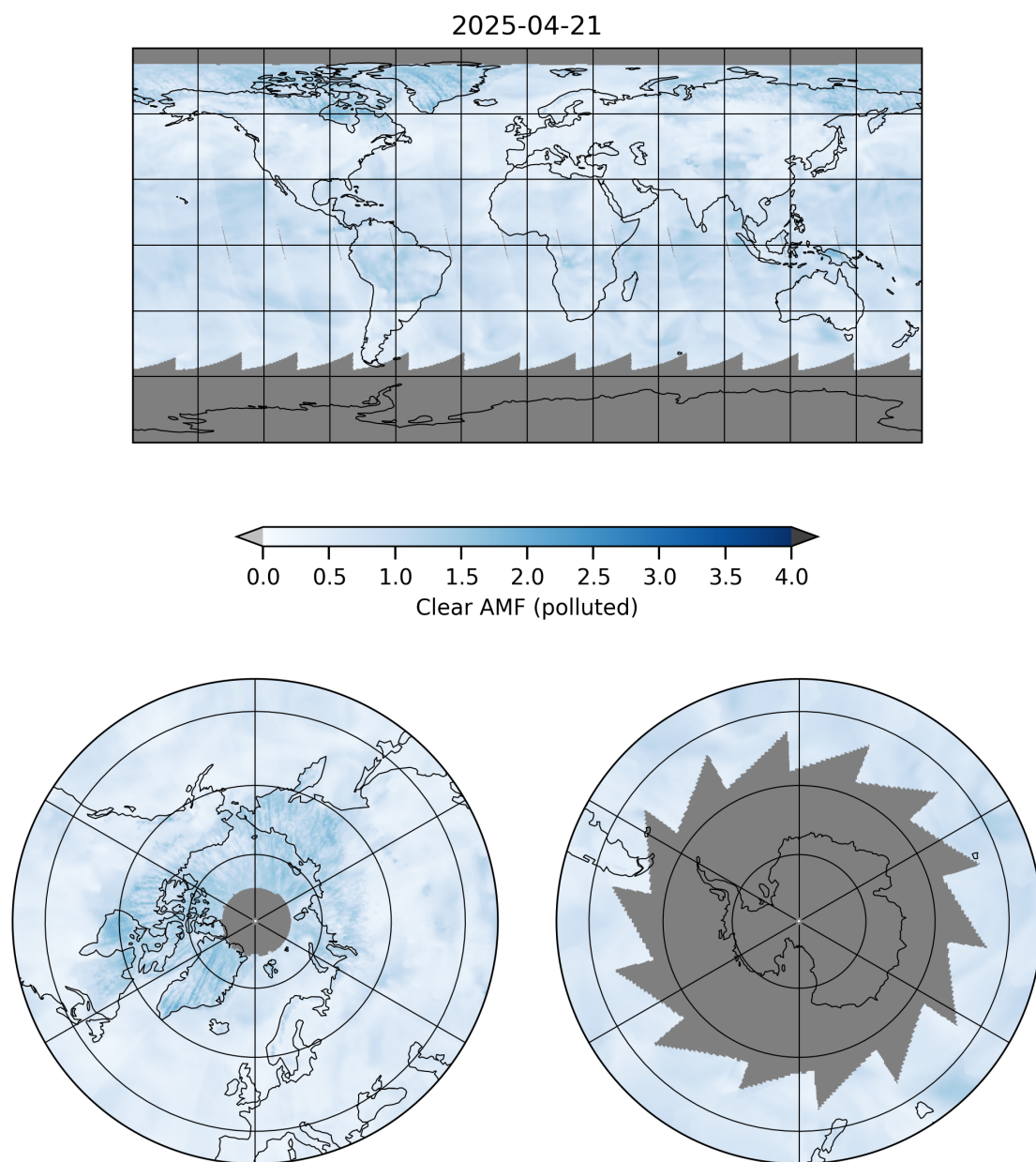


Figure 28: Map of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22

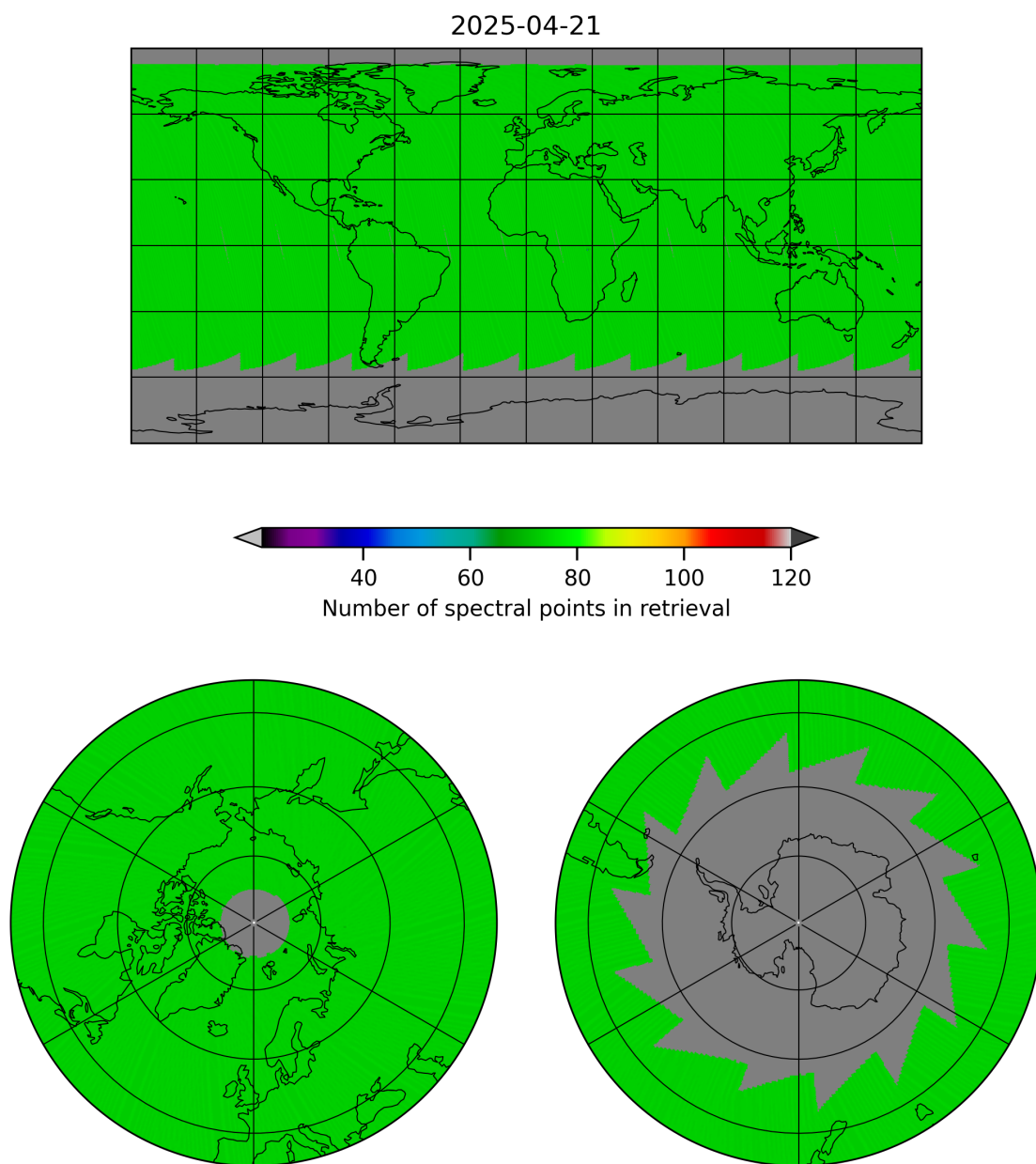


Figure 29: Map of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22

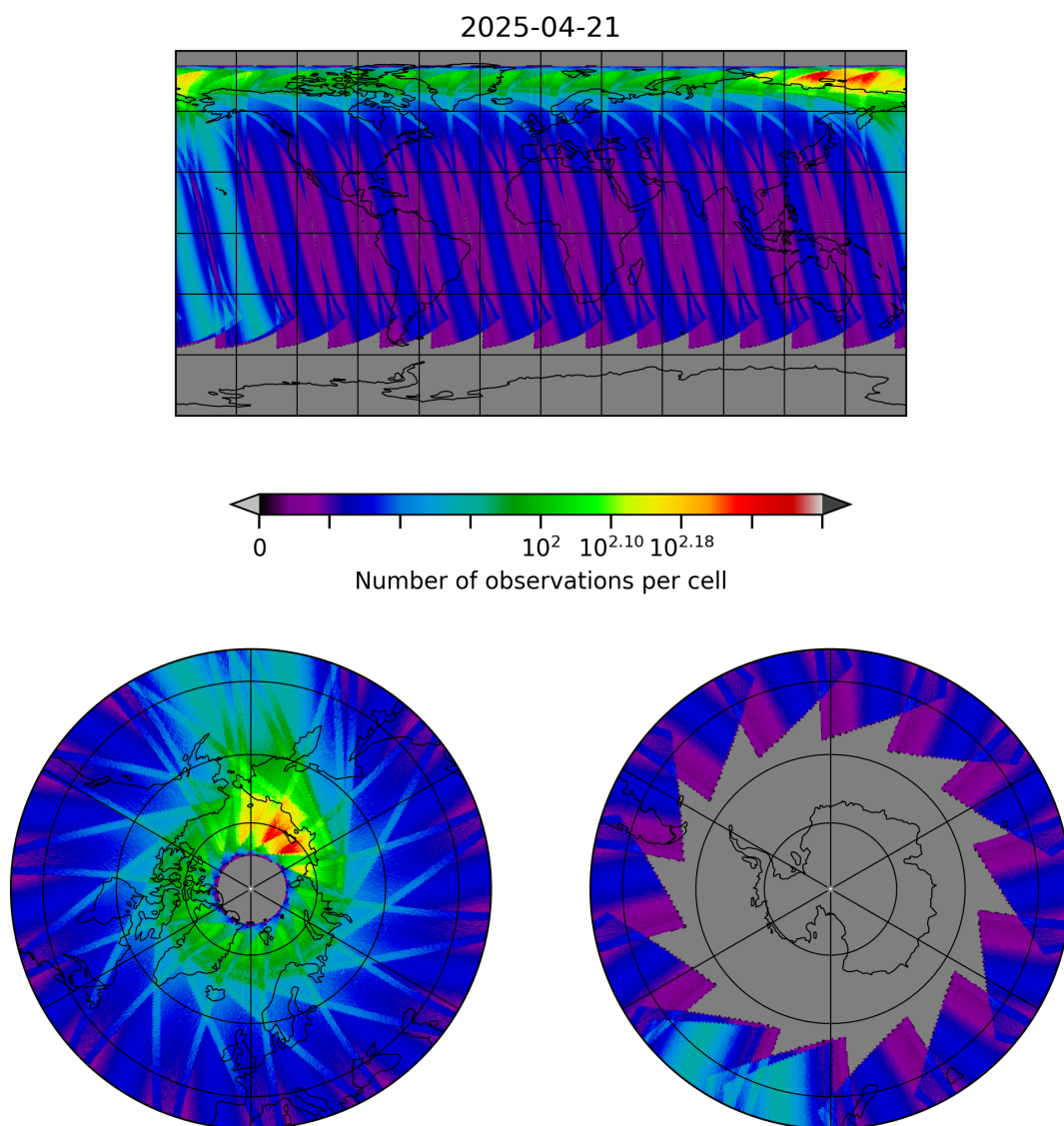


Figure 30: Map of the number of observations for 2025-04-20 to 2025-04-22

7 Zonal average

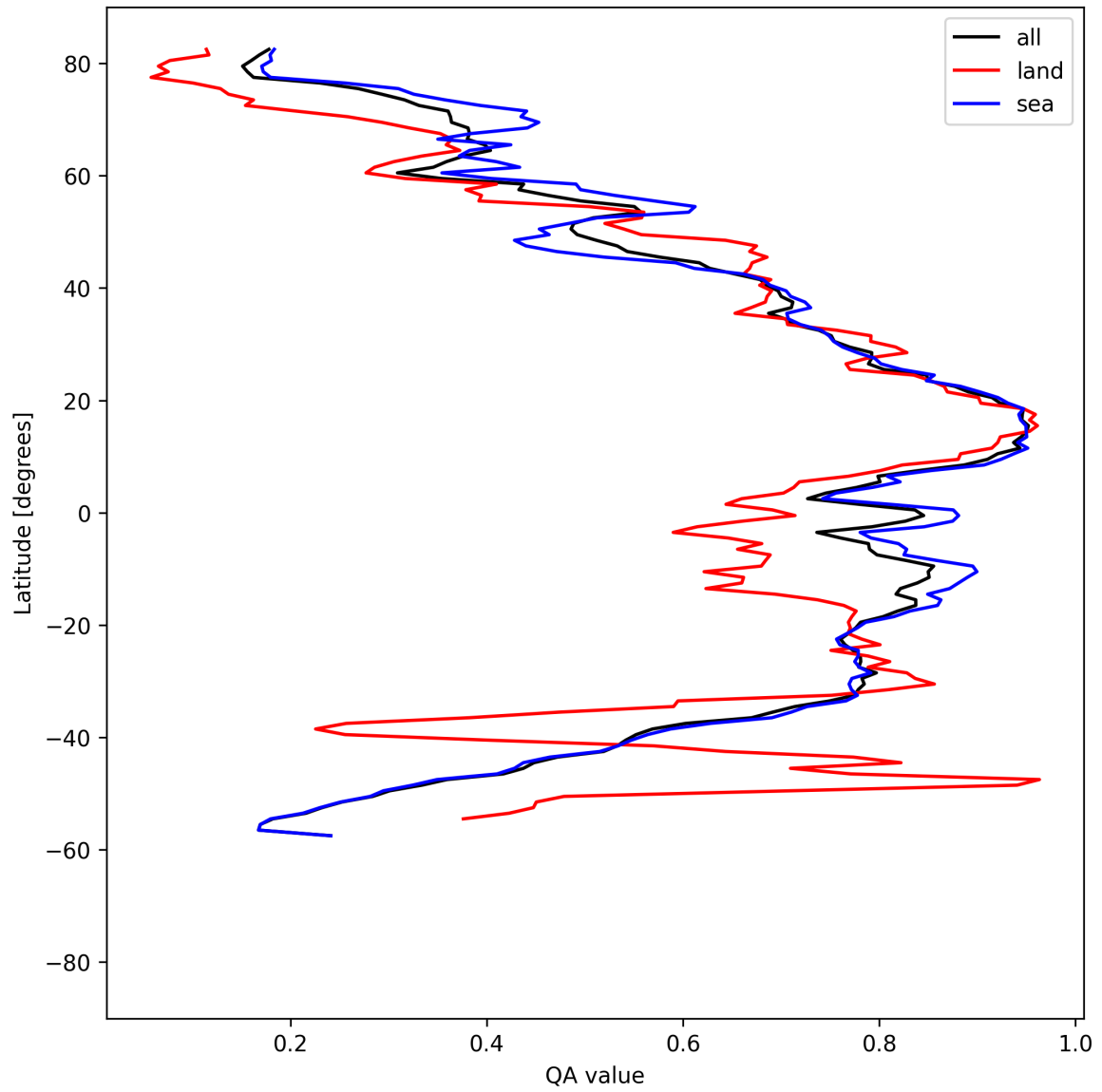


Figure 31: Zonal average of “QA value” for 2025-04-20 to 2025-04-22.

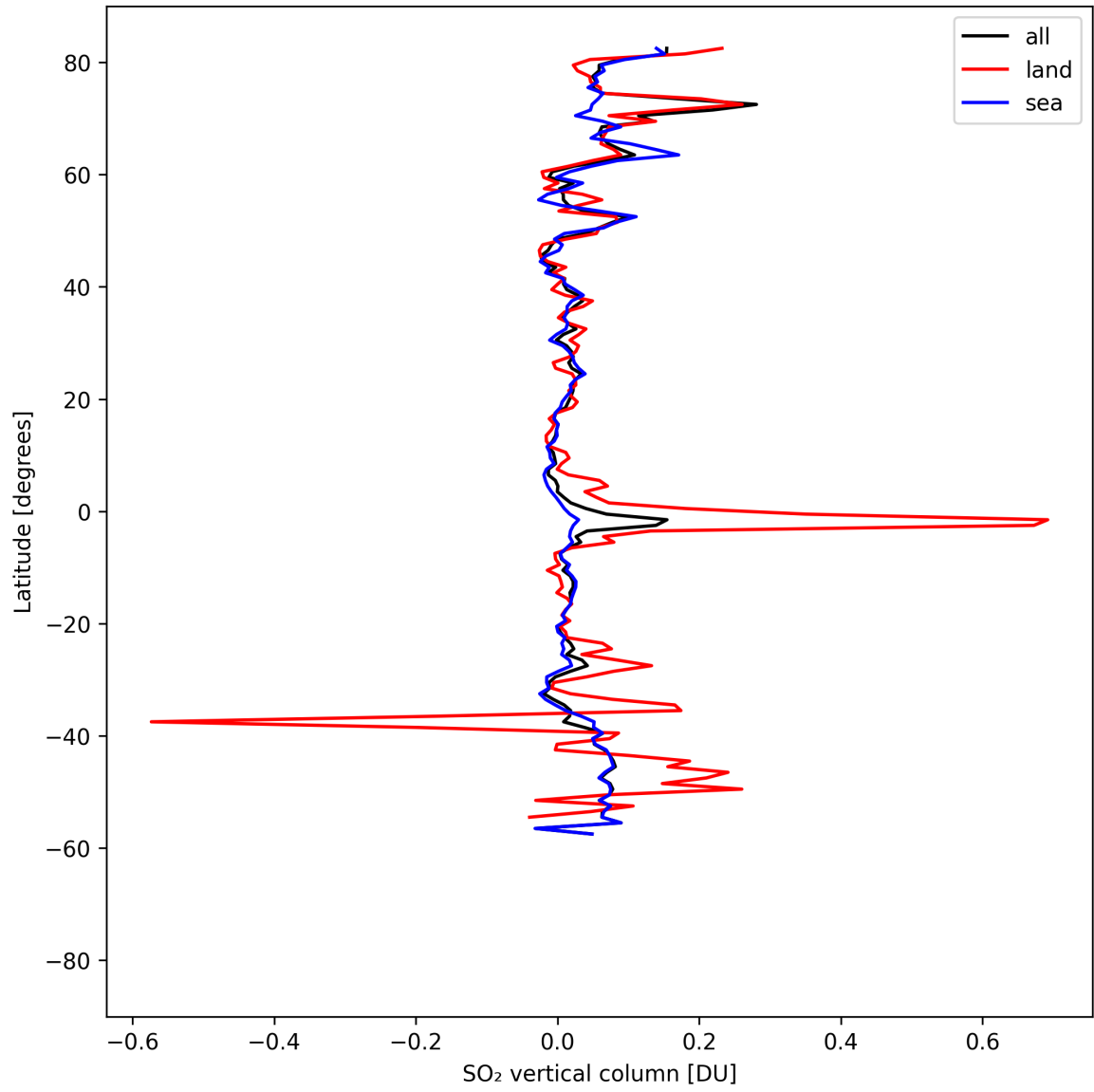


Figure 32: Zonal average of “SO₂ vertical column” for 2025-04-20 to 2025-04-22.

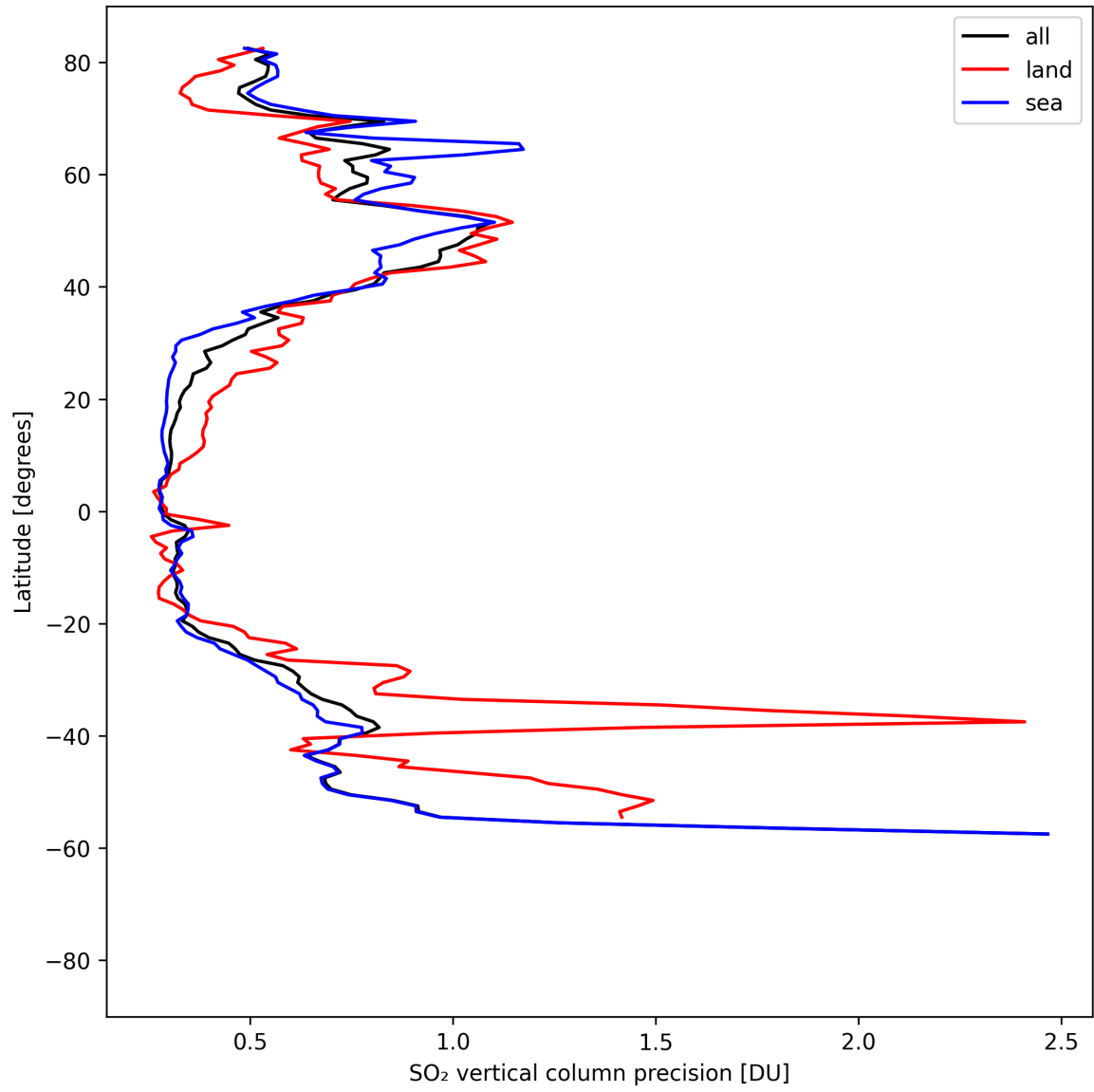


Figure 33: Zonal average of “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22.

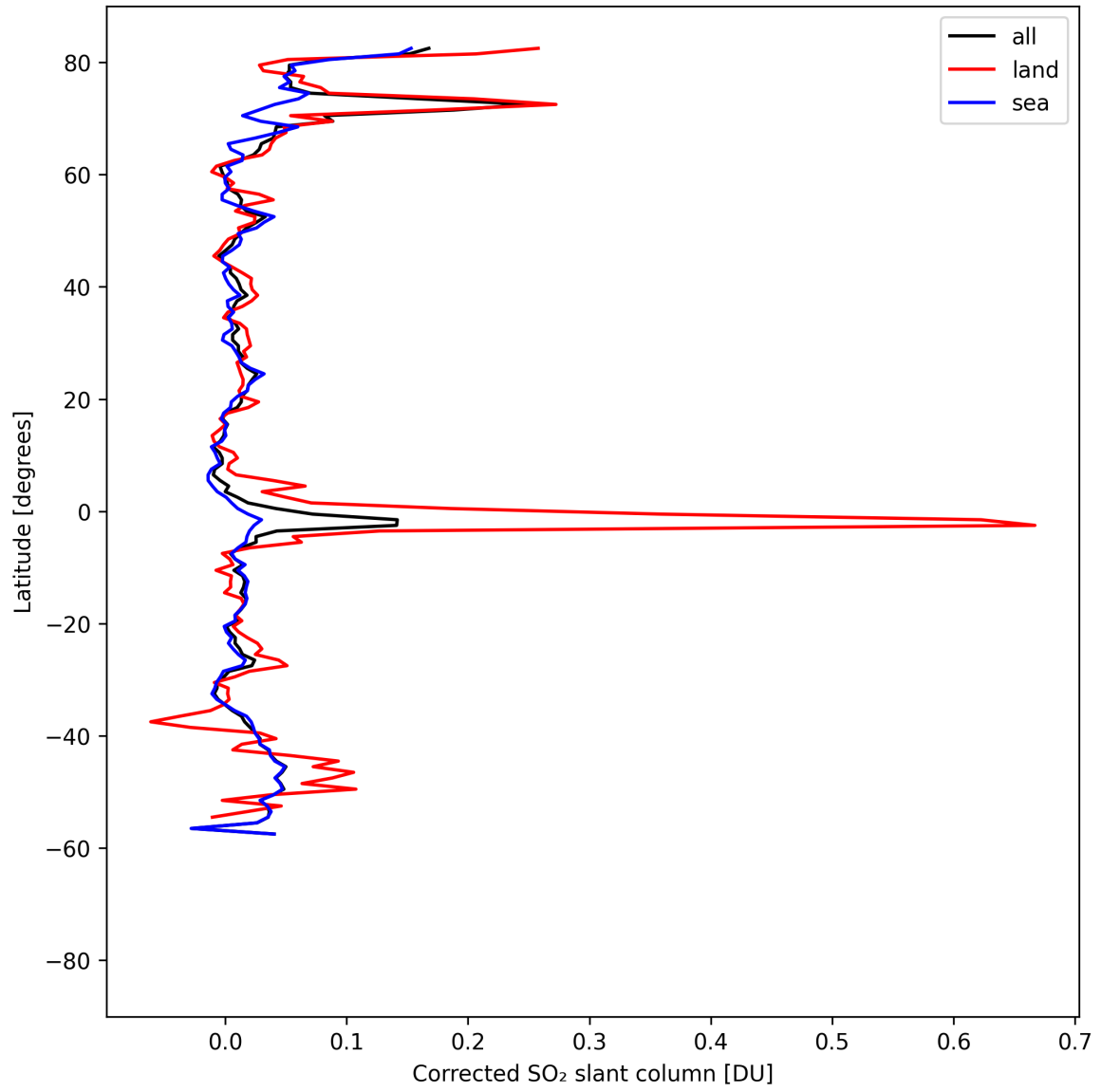


Figure 34: Zonal average of “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22.

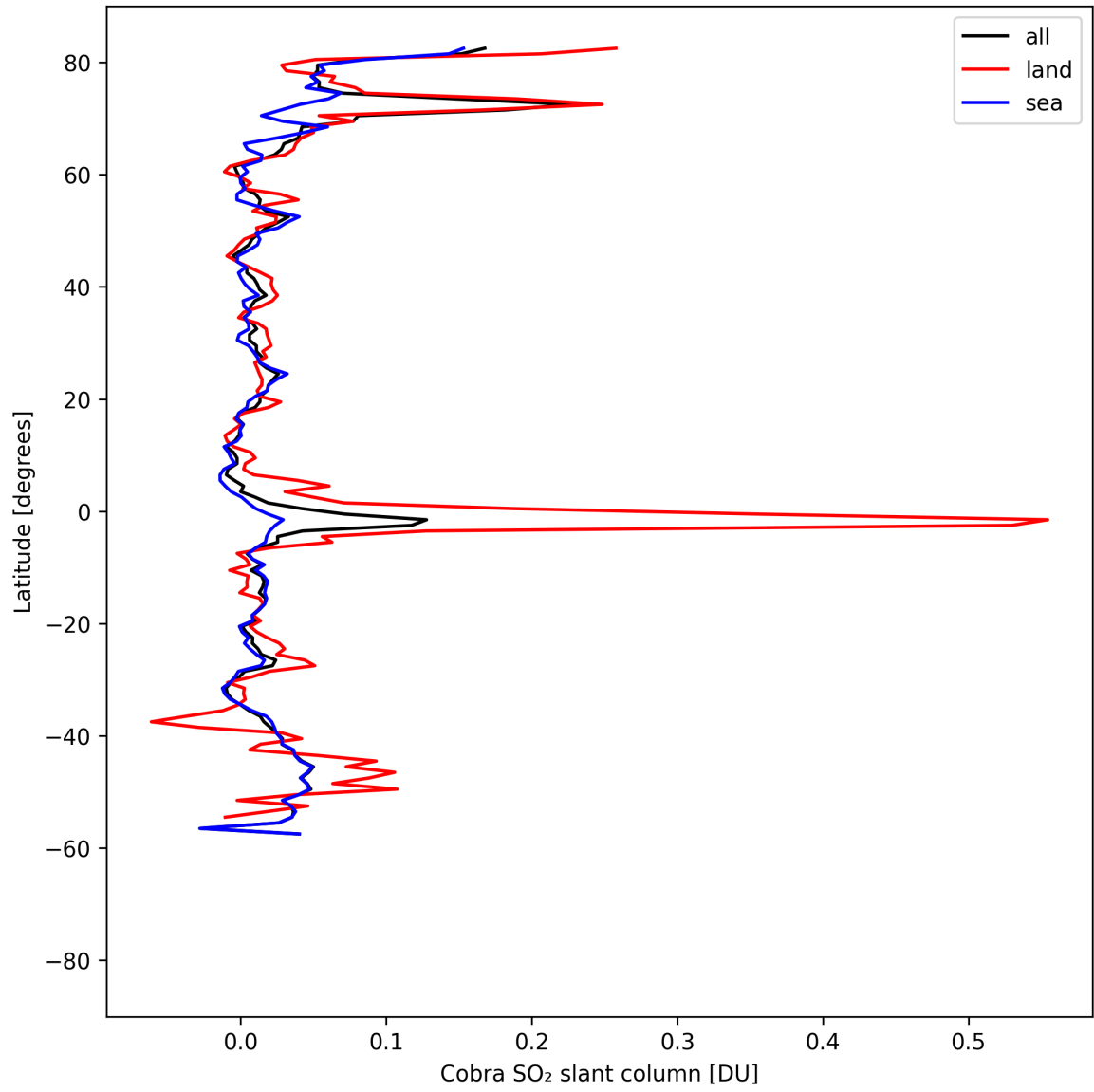


Figure 35: Zonal average of “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

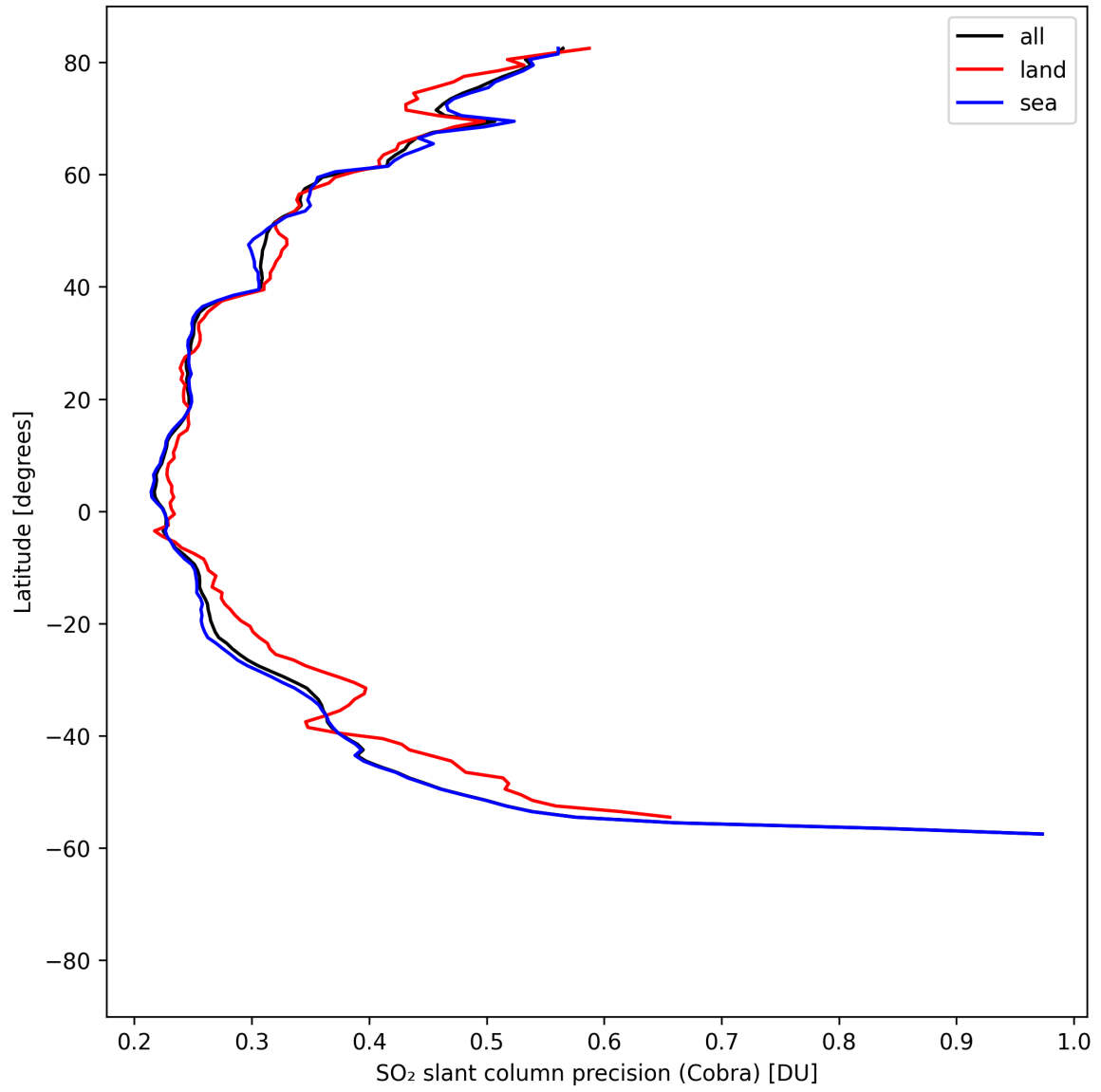


Figure 36: Zonal average of “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

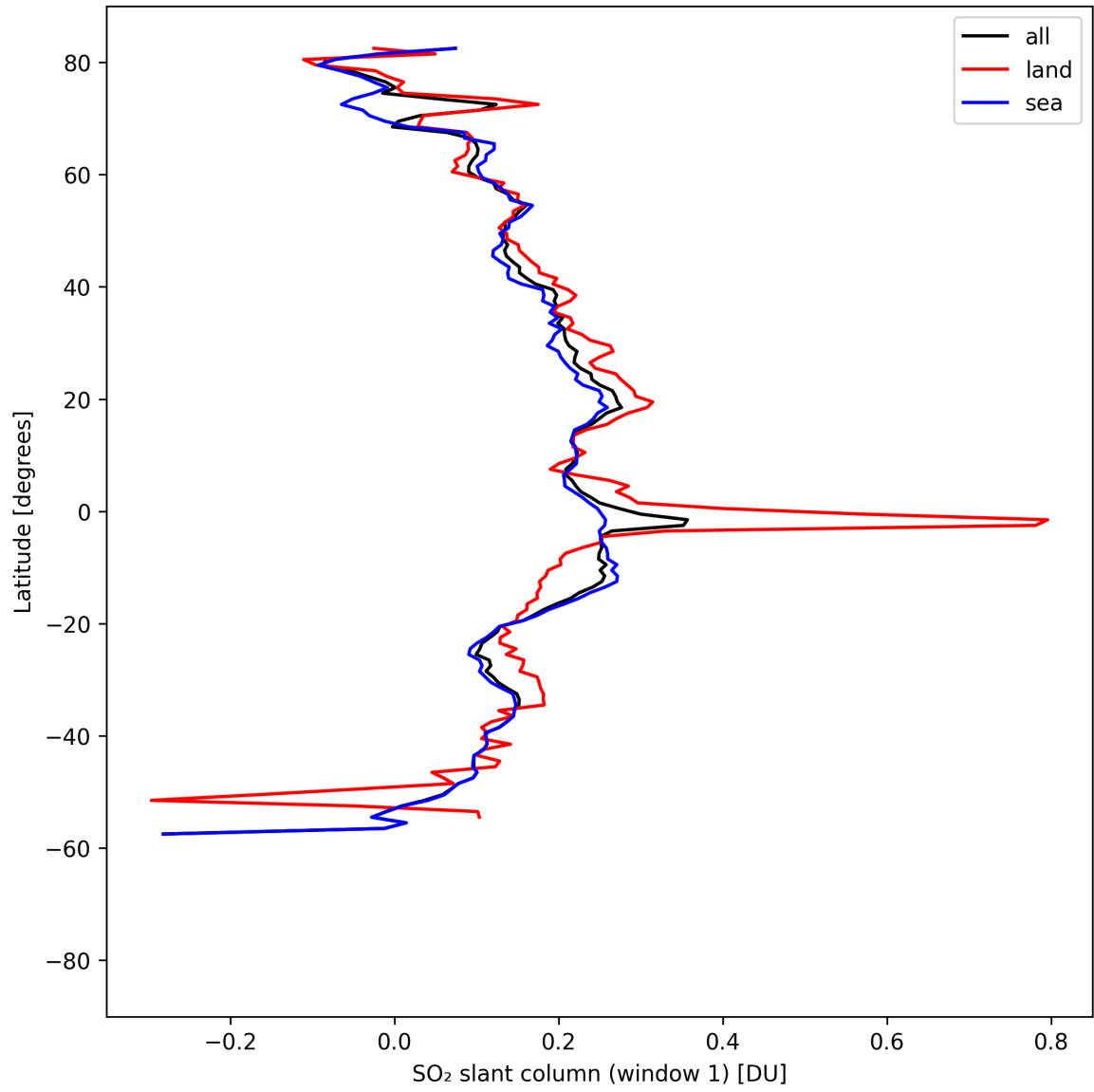


Figure 37: Zonal average of “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

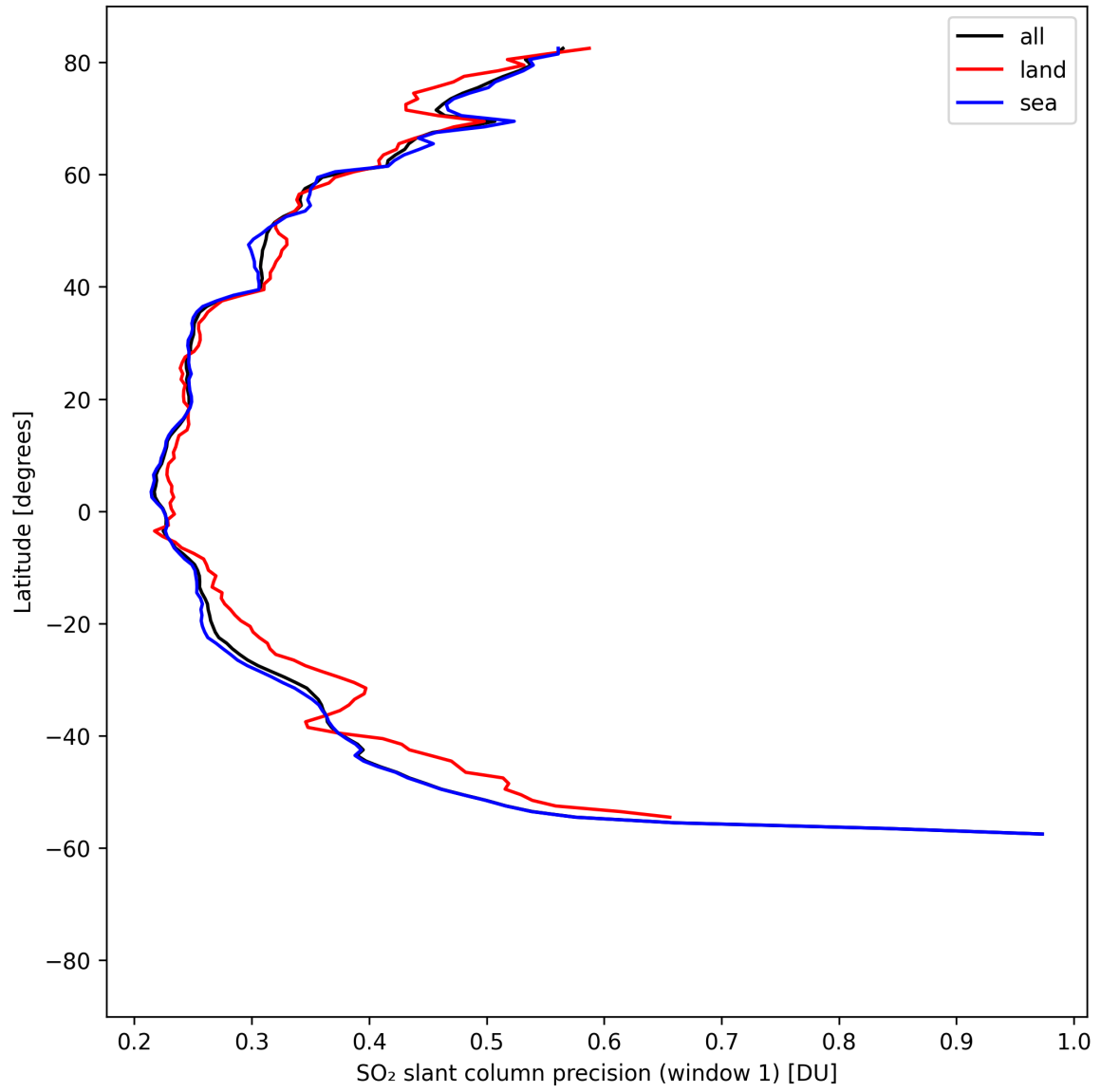


Figure 38: Zonal average of “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

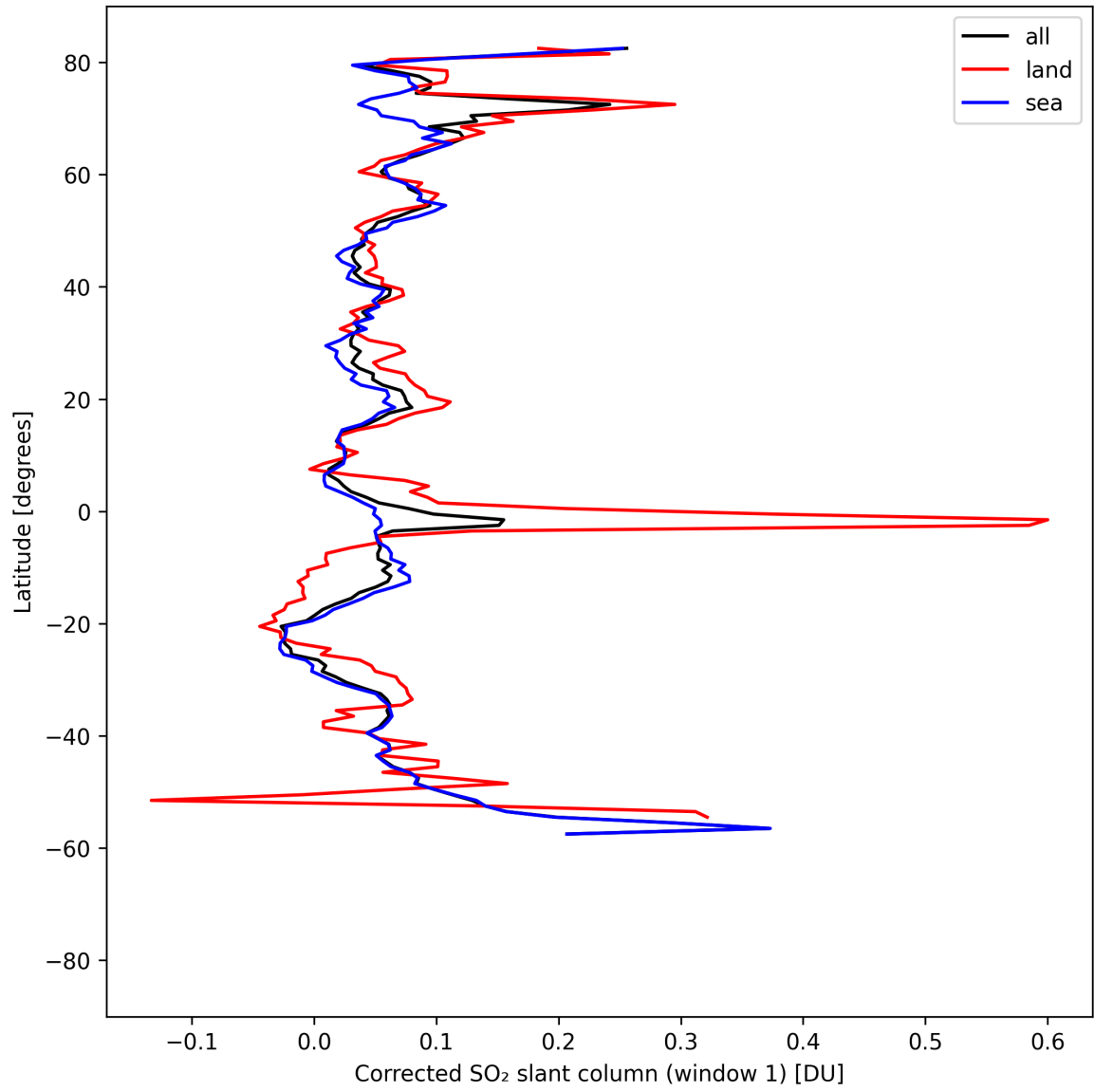


Figure 39: Zonal average of "Corrected SO₂ slant column (window 1)" for 2025-04-20 to 2025-04-22.

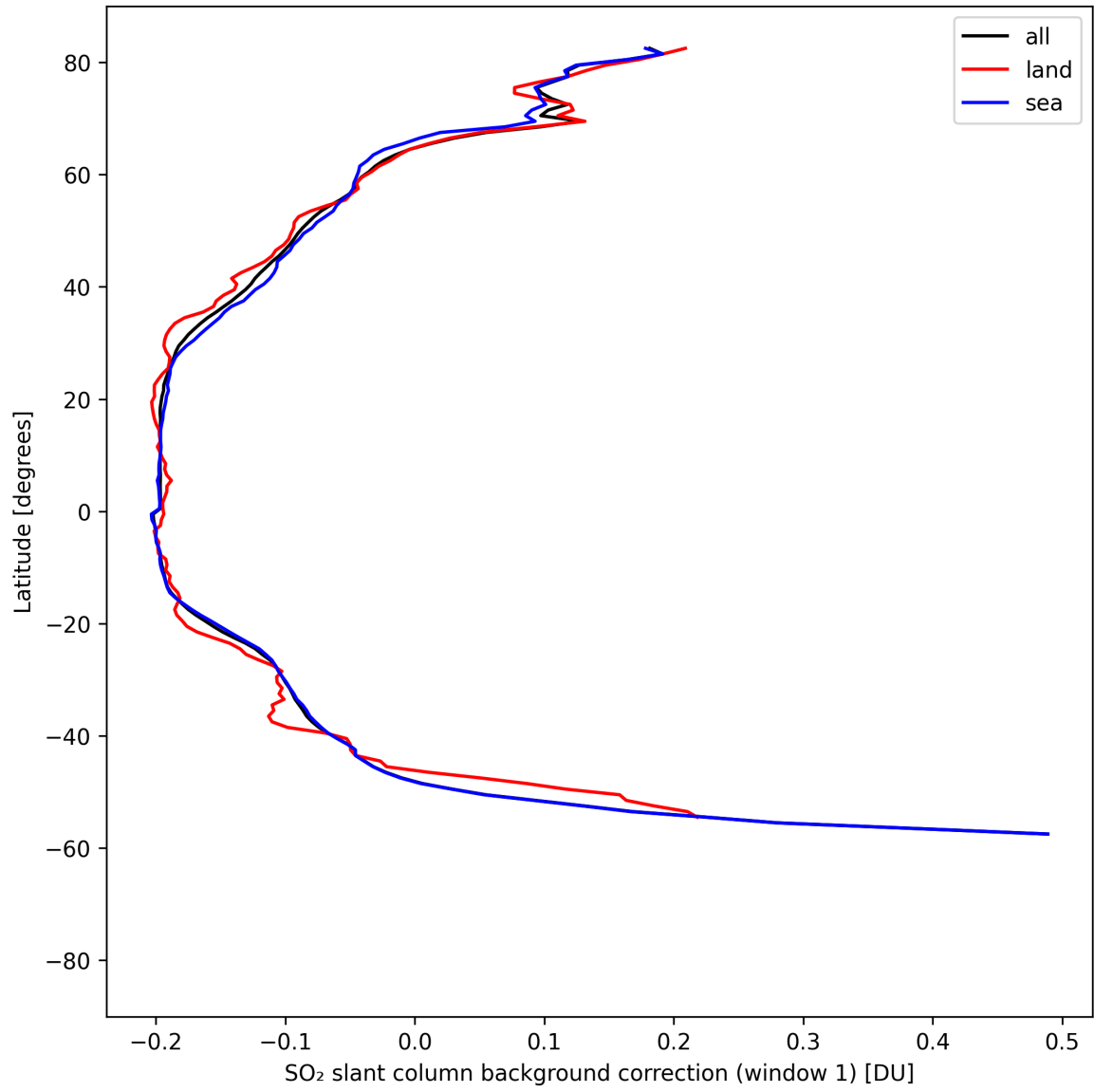


Figure 40: Zonal average of “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

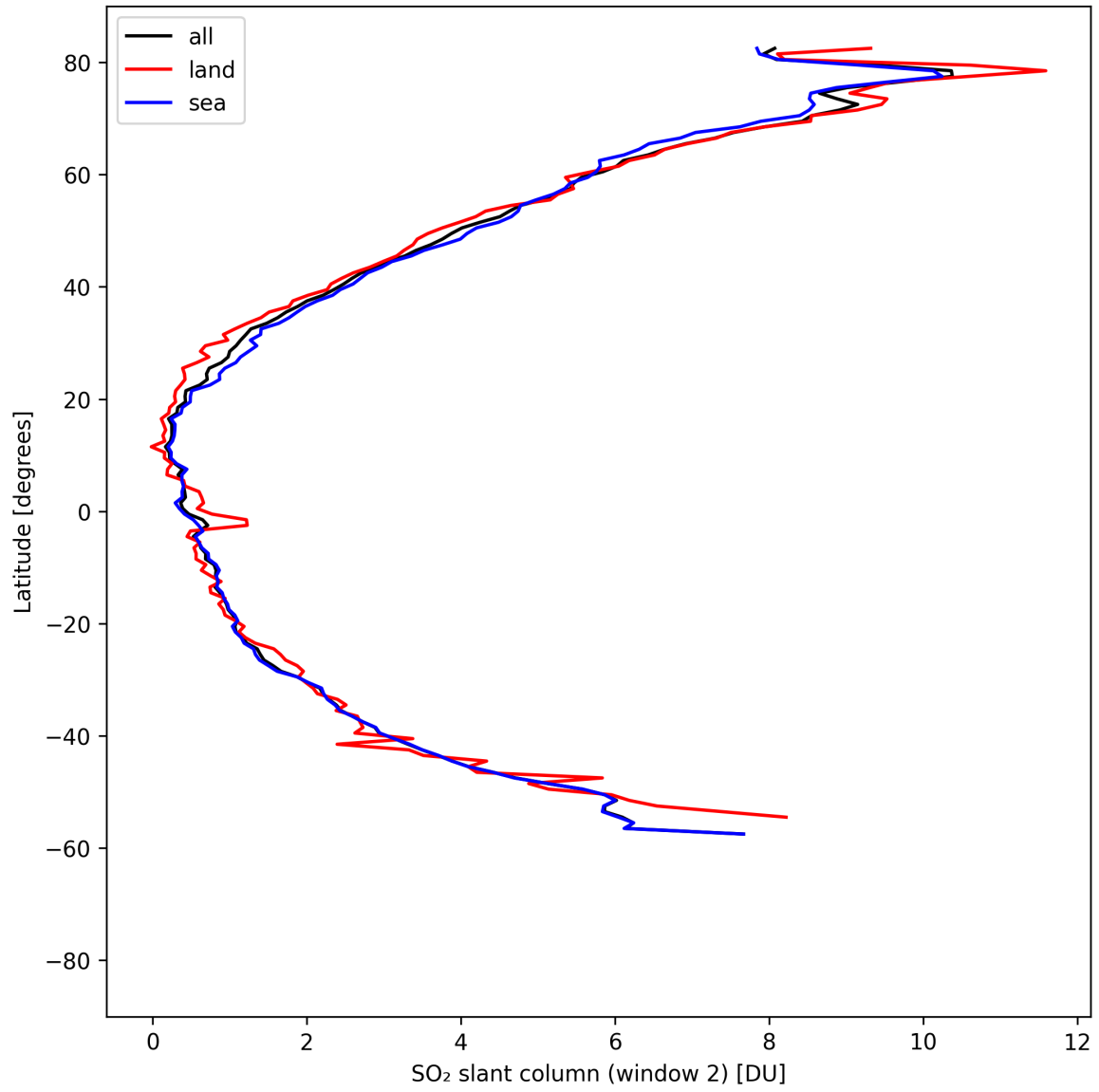


Figure 41: Zonal average of “SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

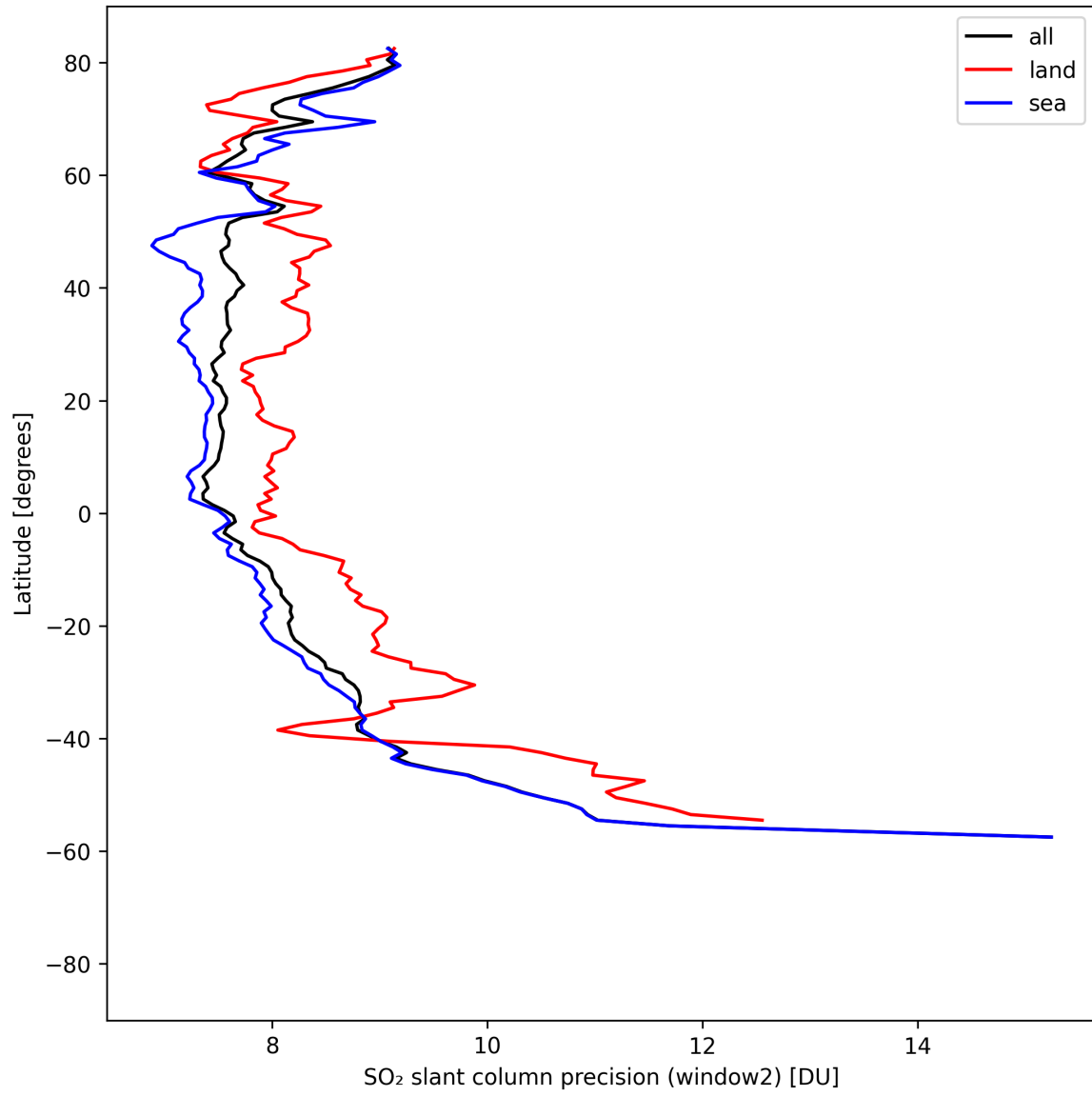


Figure 42: Zonal average of “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

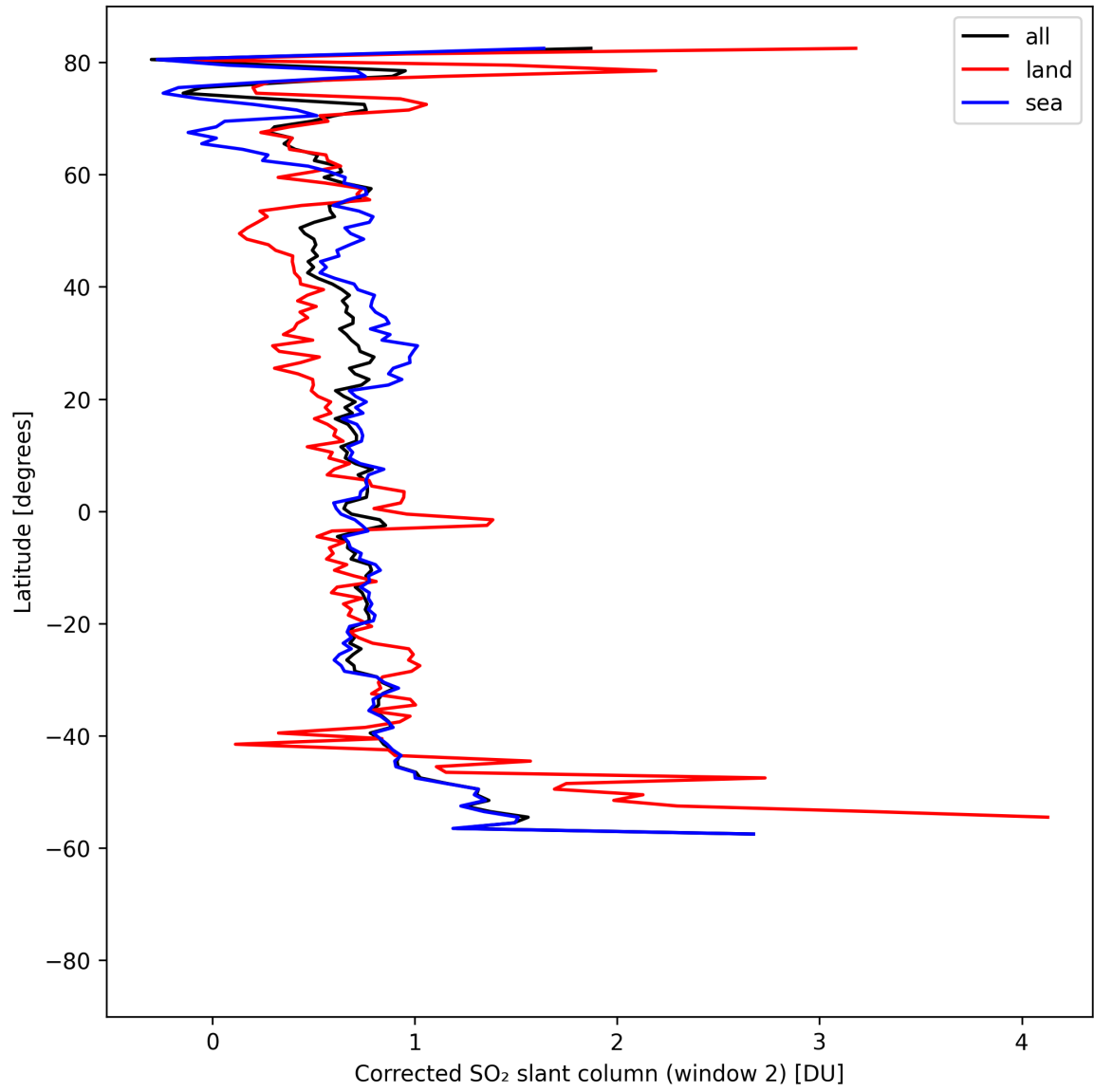


Figure 43: Zonal average of “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

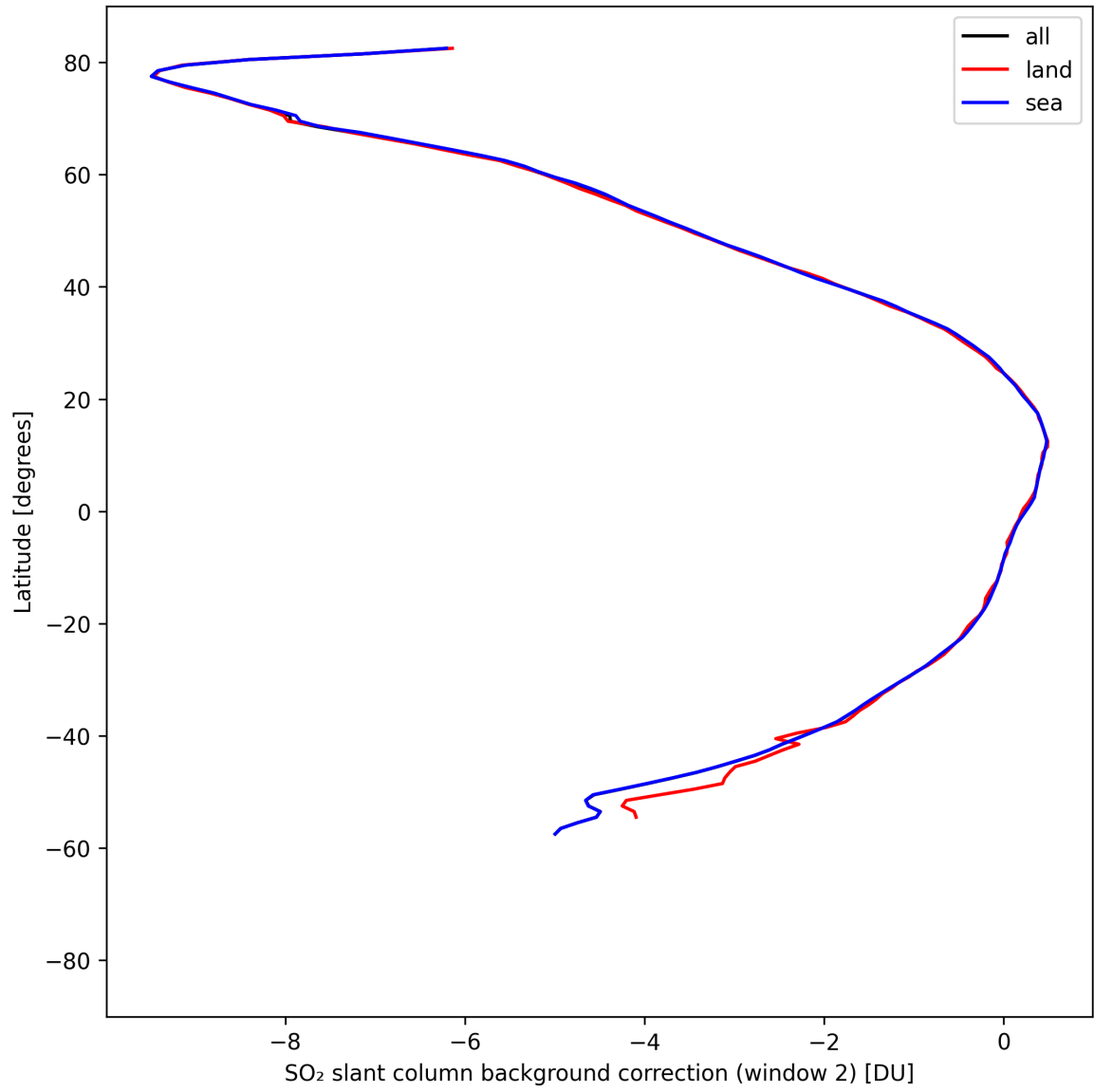


Figure 44: Zonal average of “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

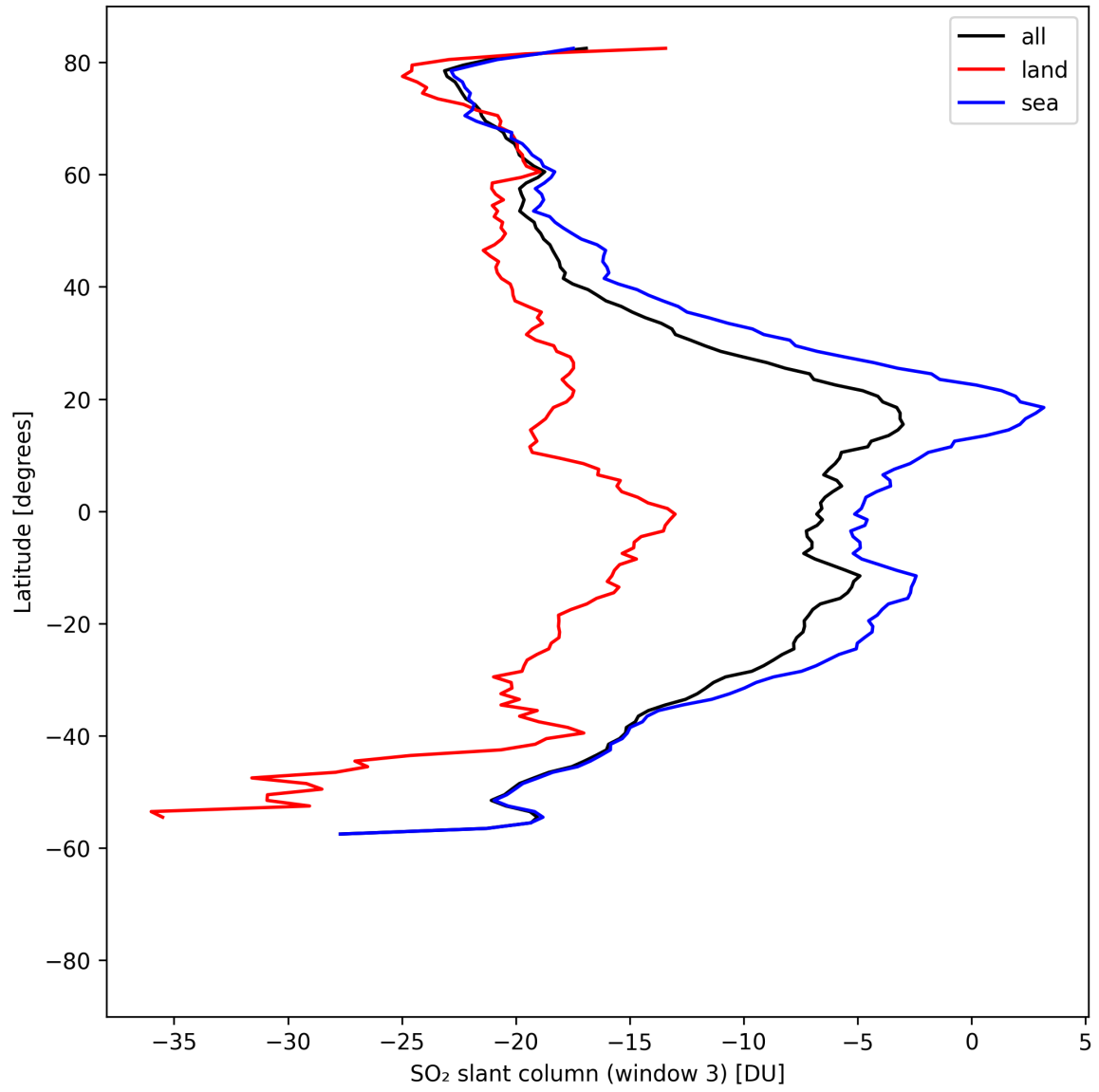


Figure 45: Zonal average of “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

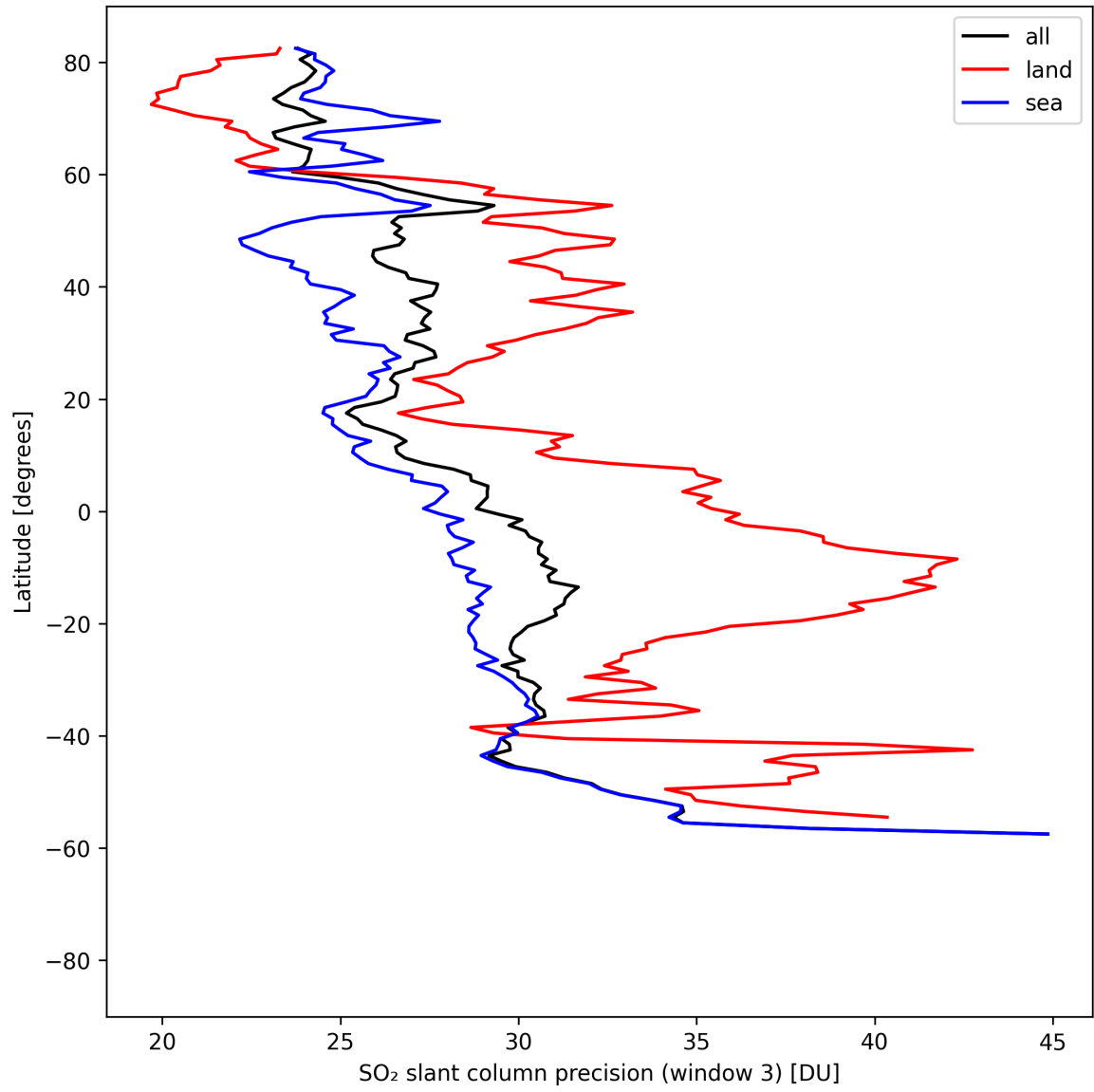


Figure 46: Zonal average of “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

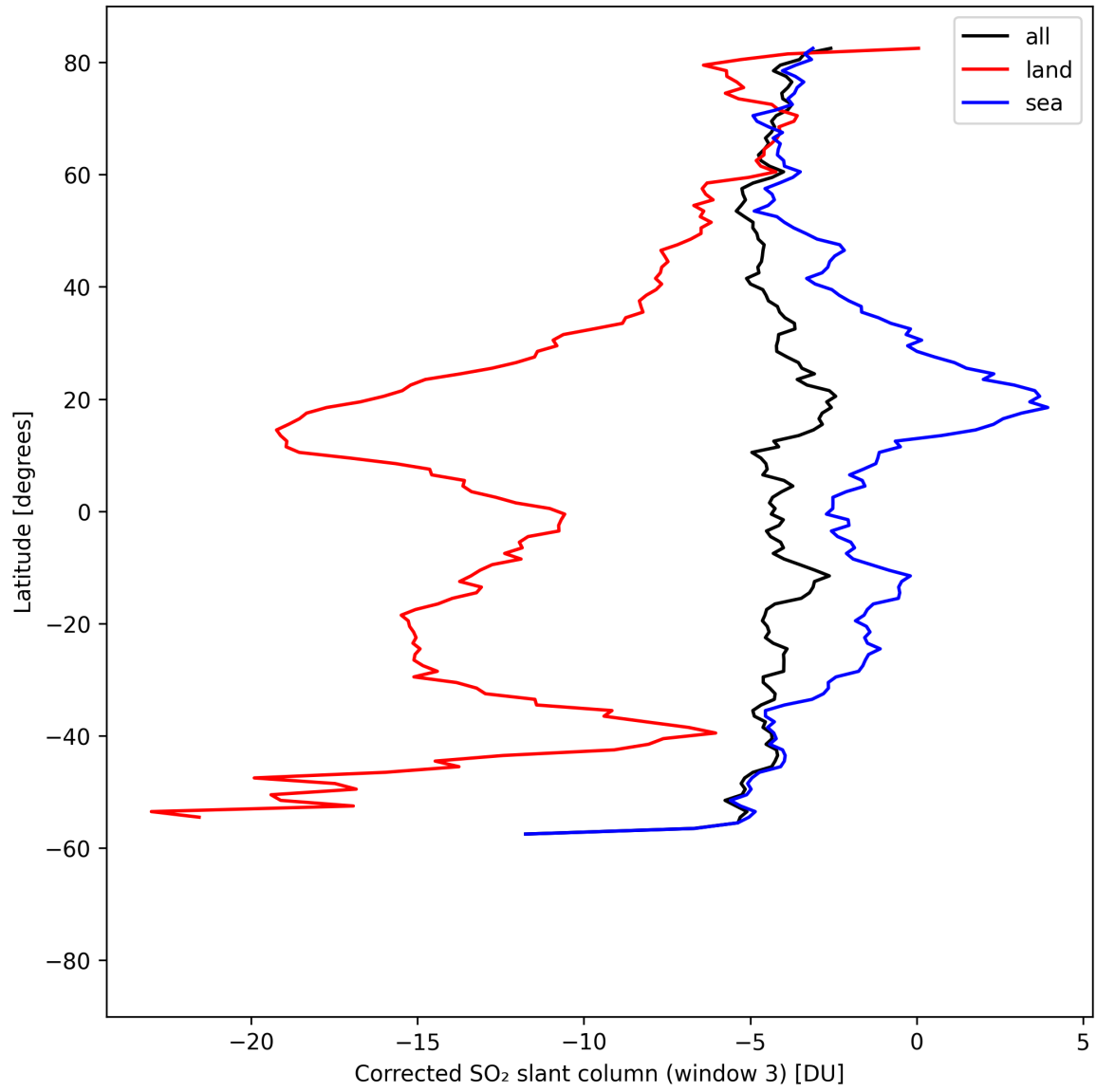


Figure 47: Zonal average of “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

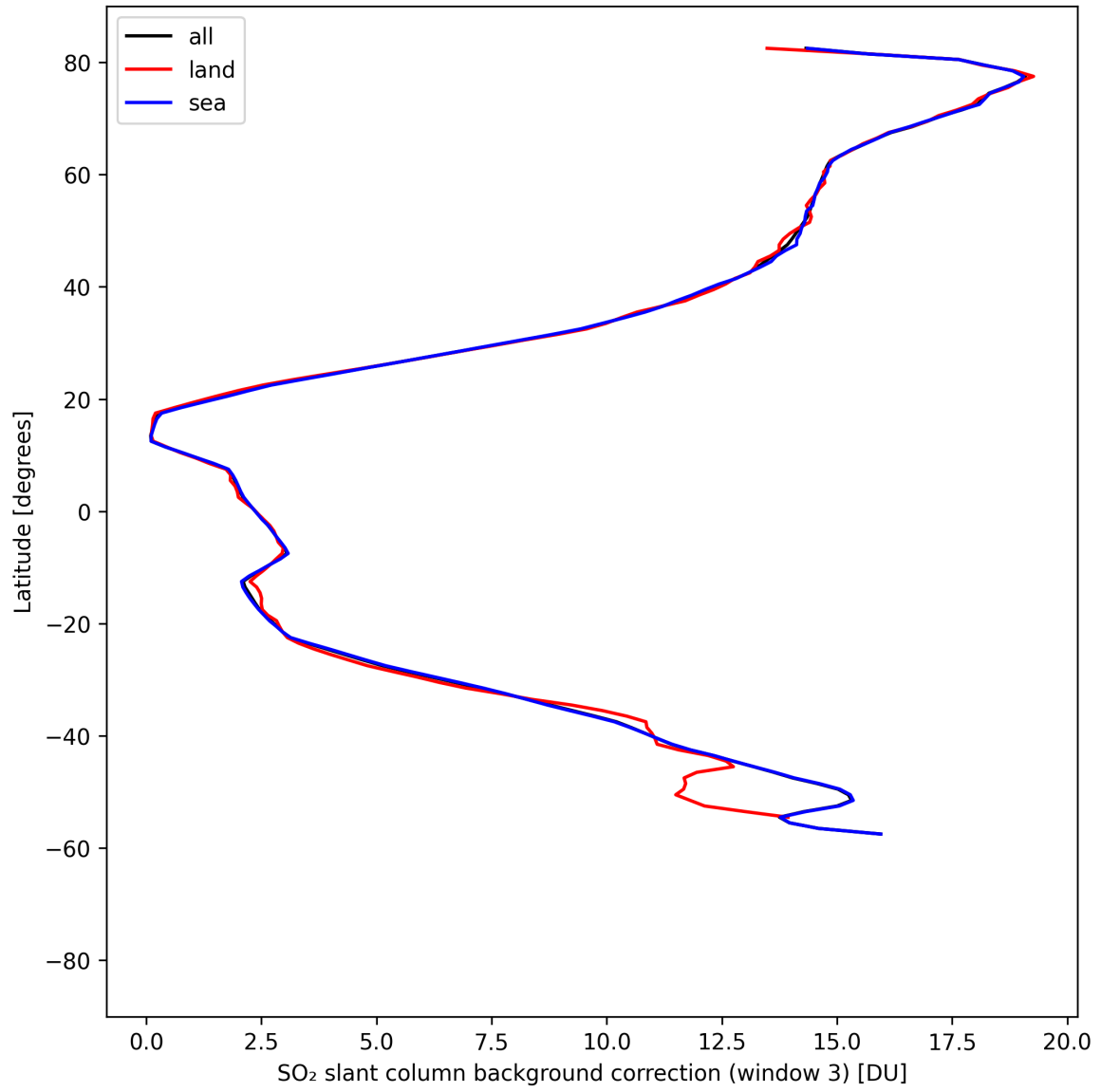


Figure 48: Zonal average of “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

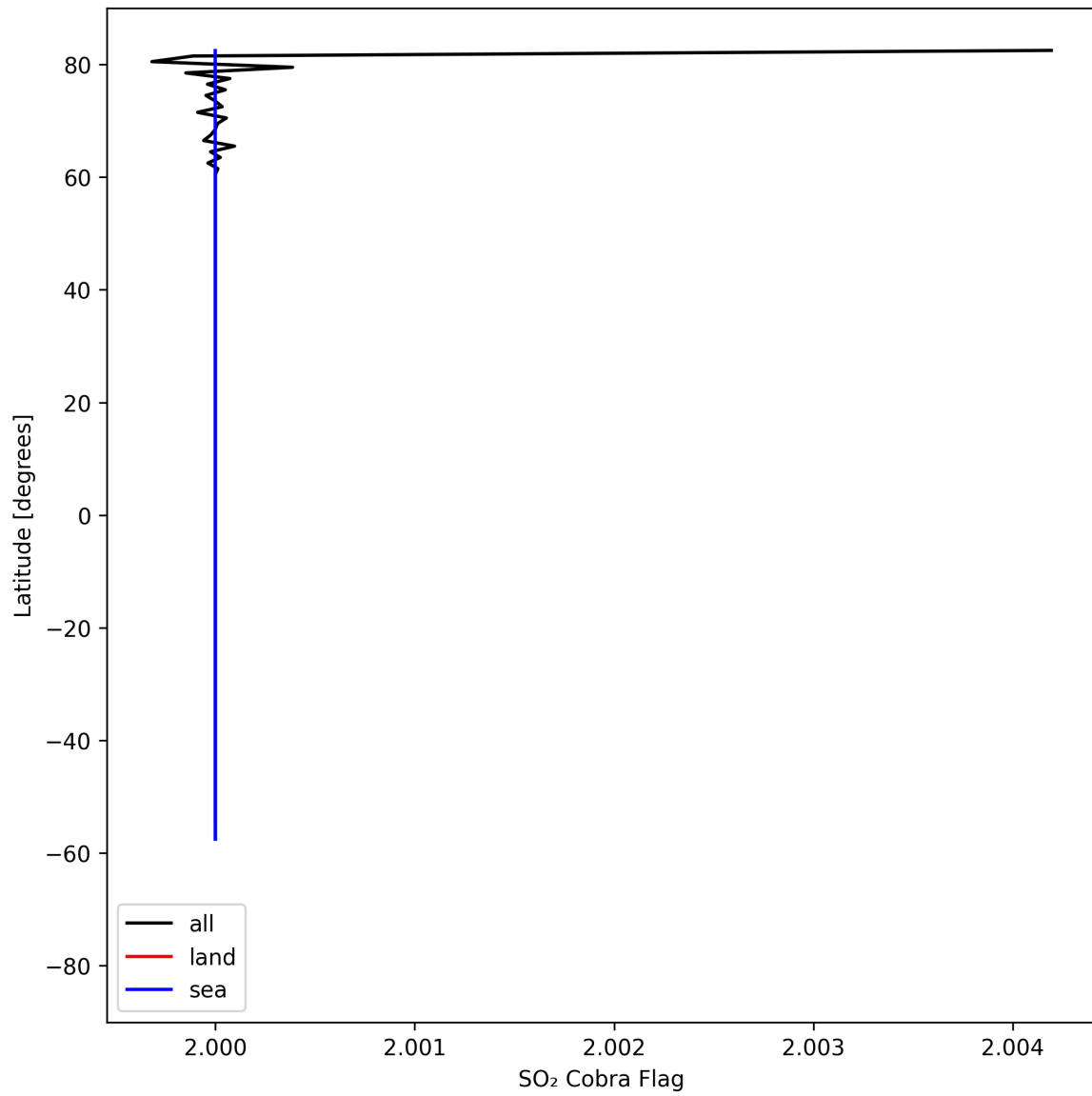


Figure 49: Zonal average of “SO₂ Cobra Flag” for 2025-04-20 to 2025-04-22.

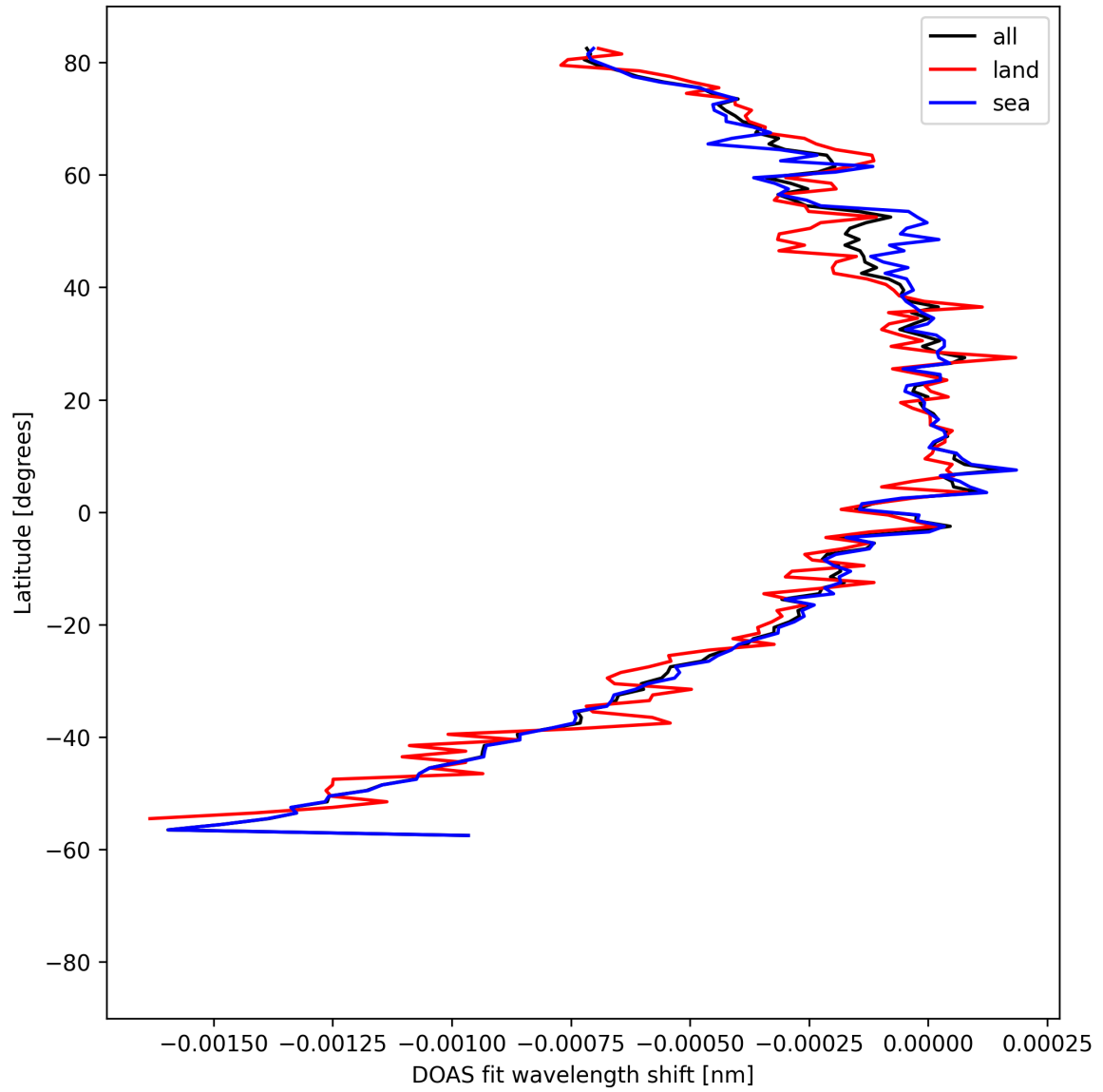


Figure 50: Zonal average of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

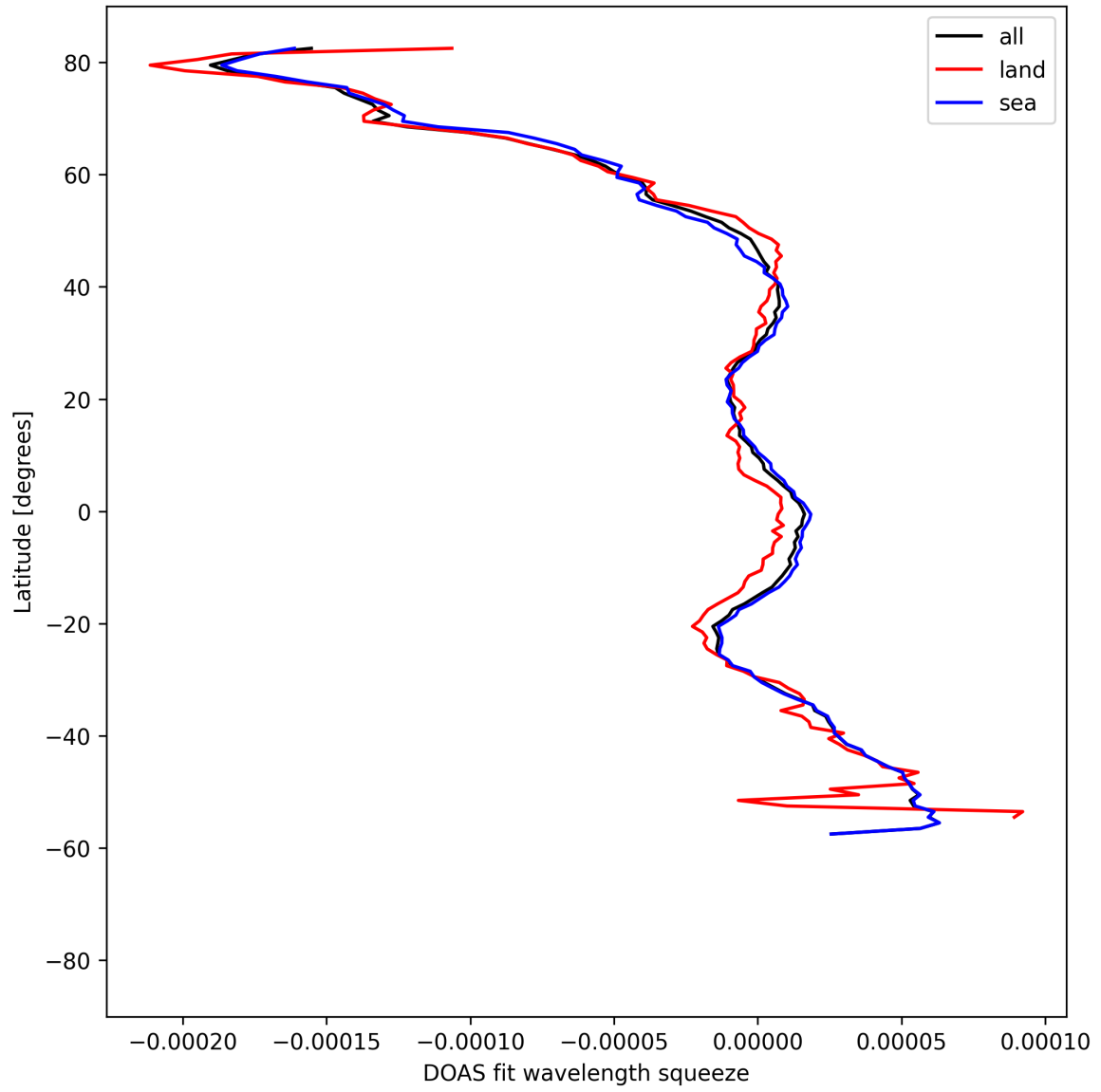


Figure 51: Zonal average of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

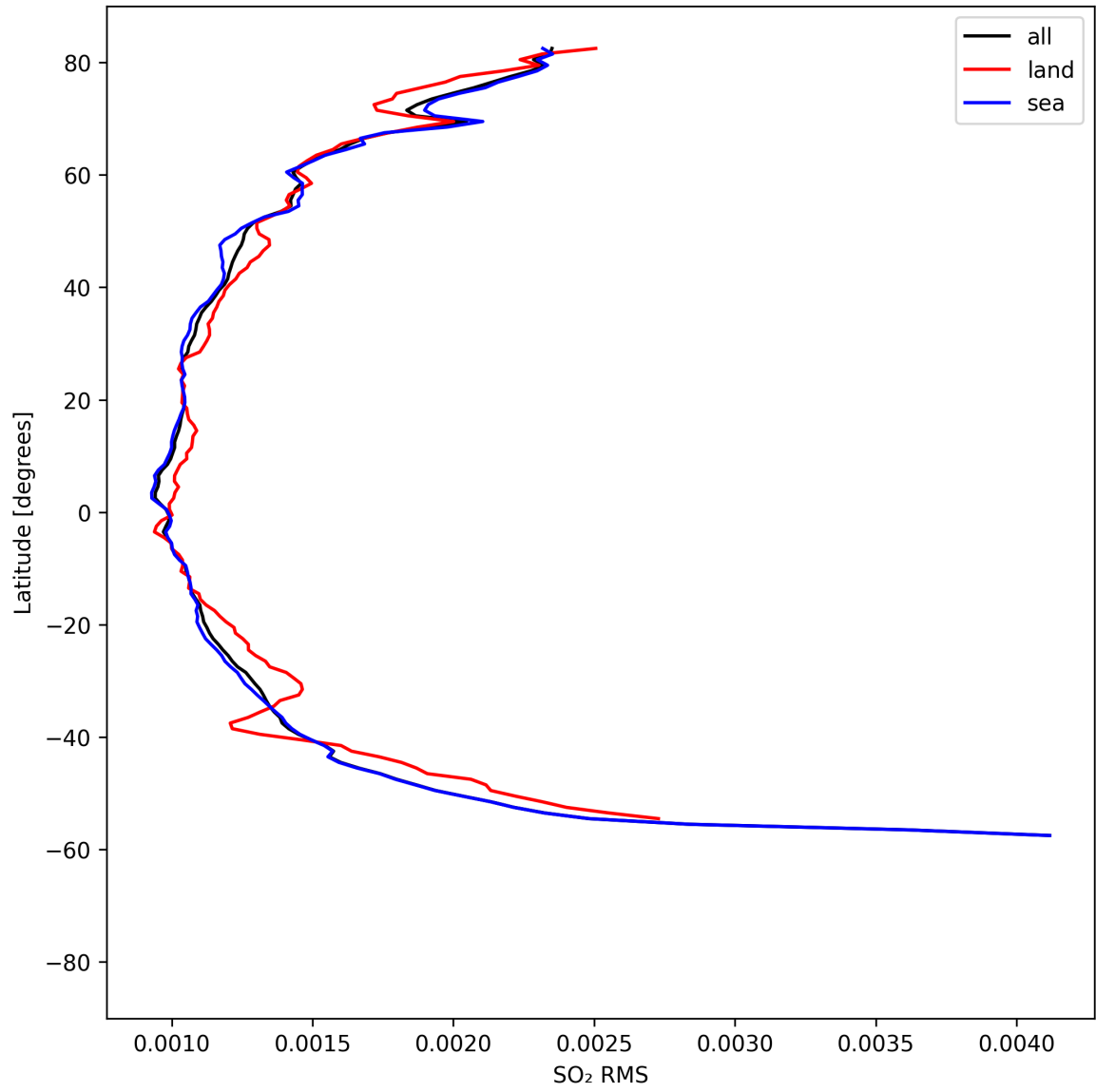


Figure 52: Zonal average of “SO₂ RMS” for 2025-04-20 to 2025-04-22.

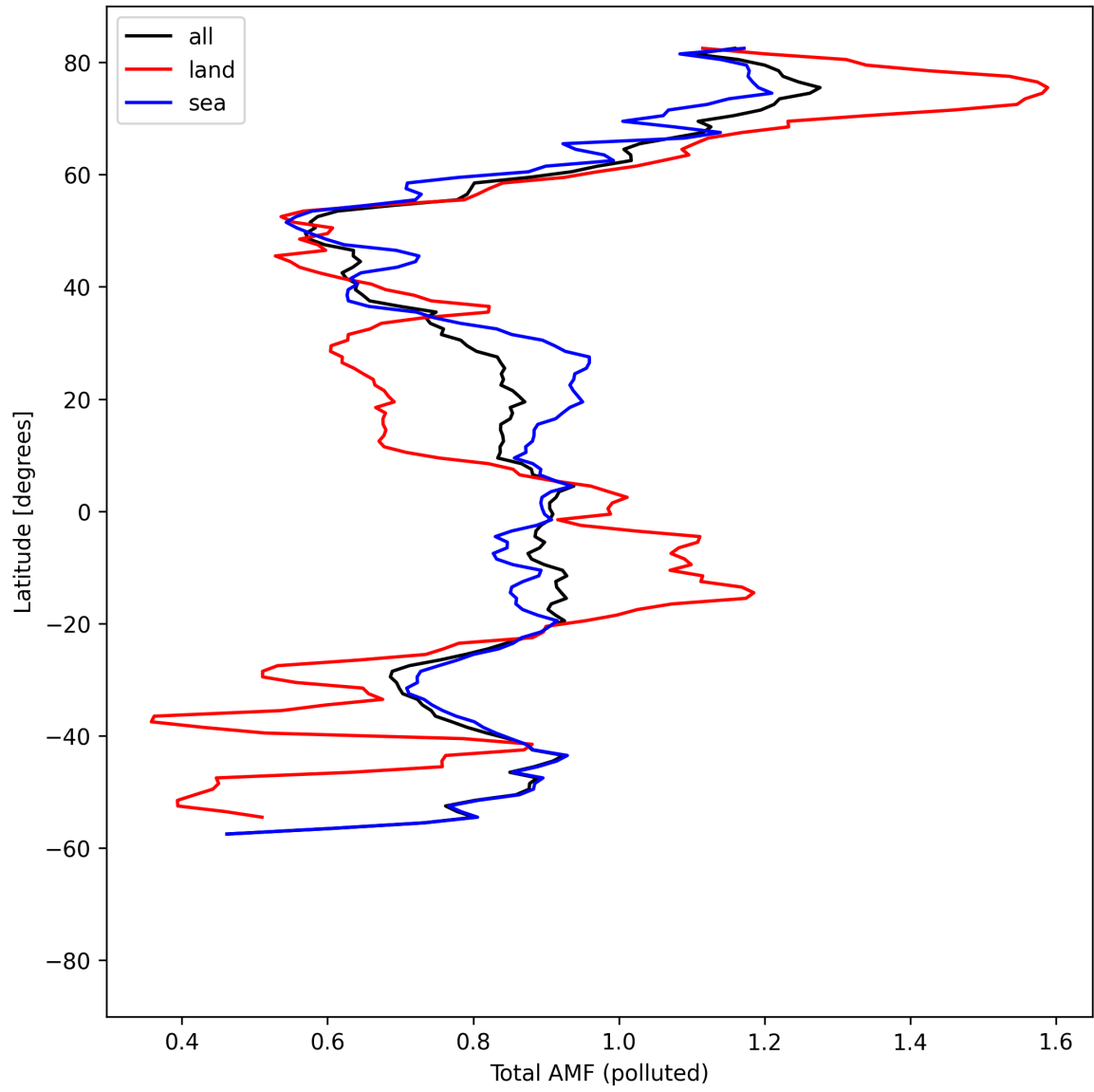


Figure 53: Zonal average of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

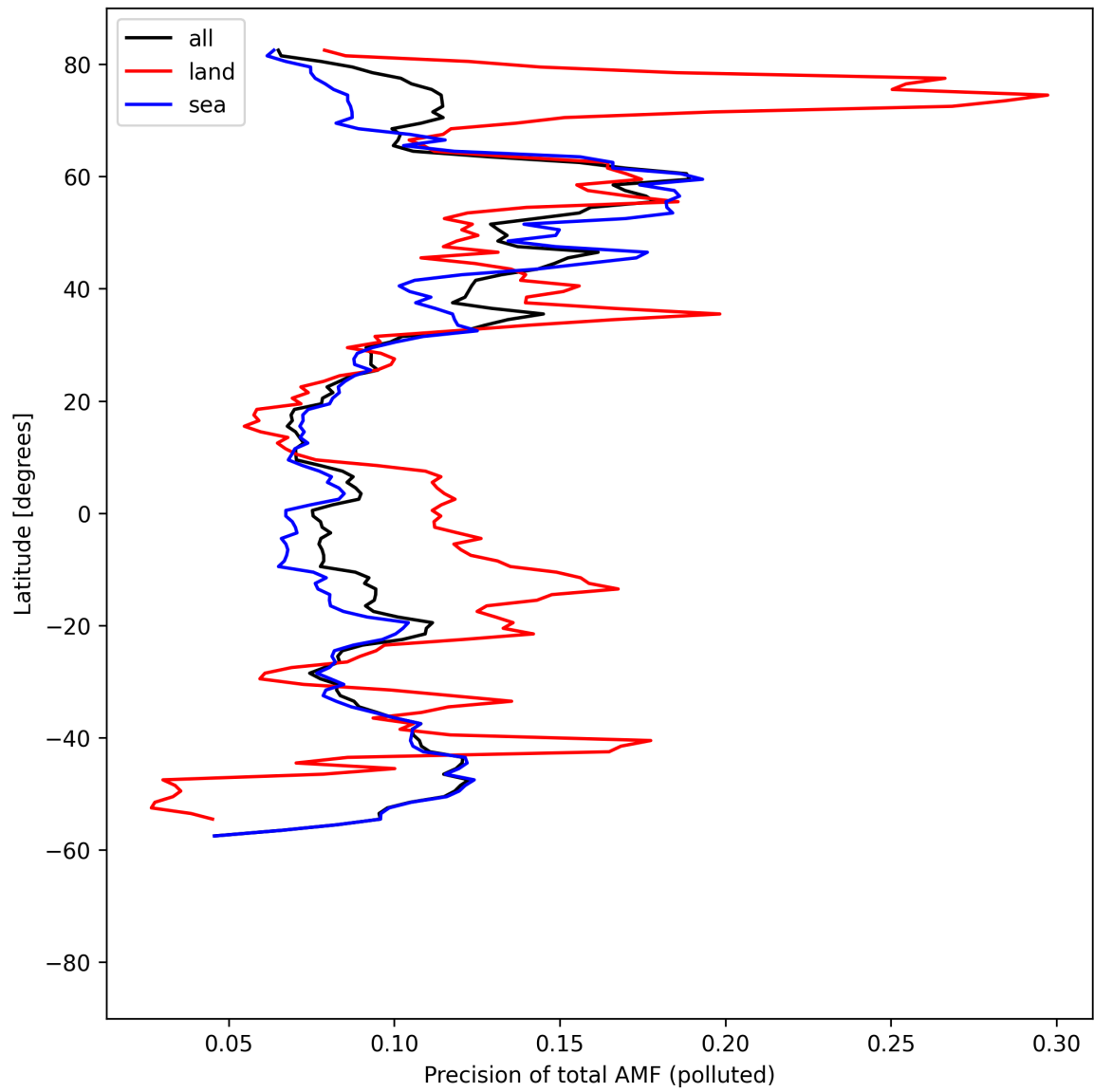


Figure 54: Zonal average of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

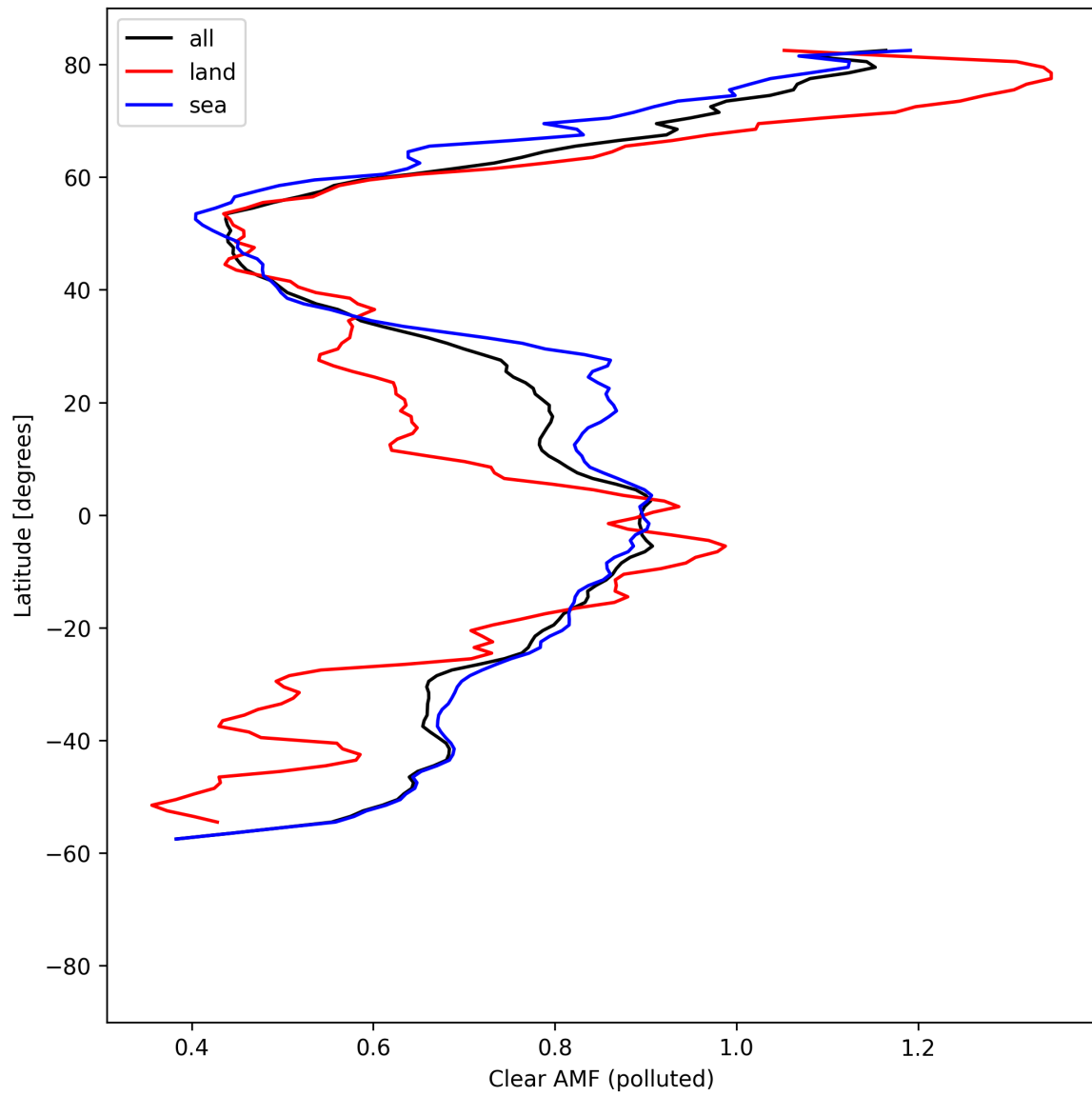


Figure 55: Zonal average of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

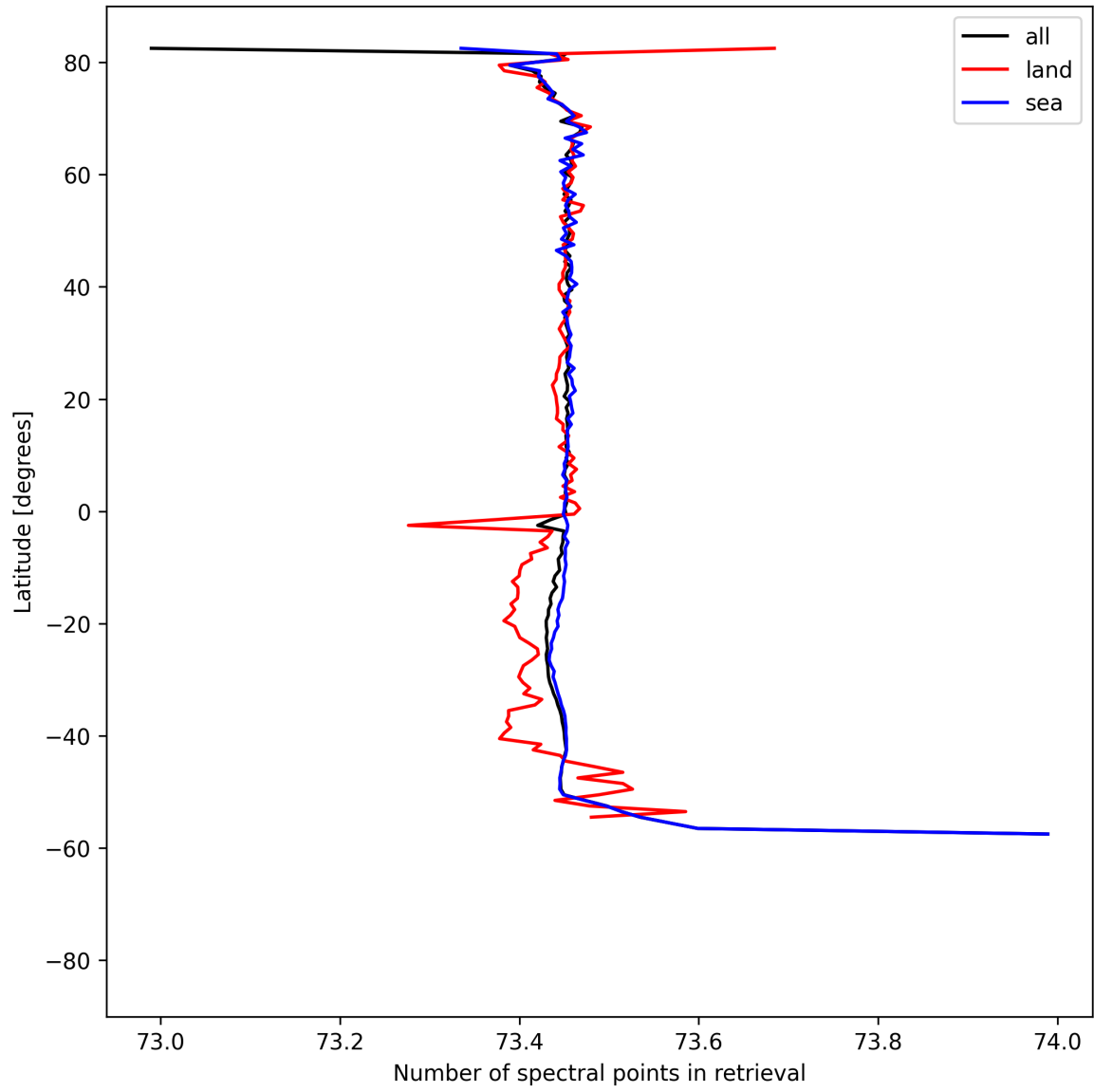


Figure 56: Zonal average of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22.

8 Histograms

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

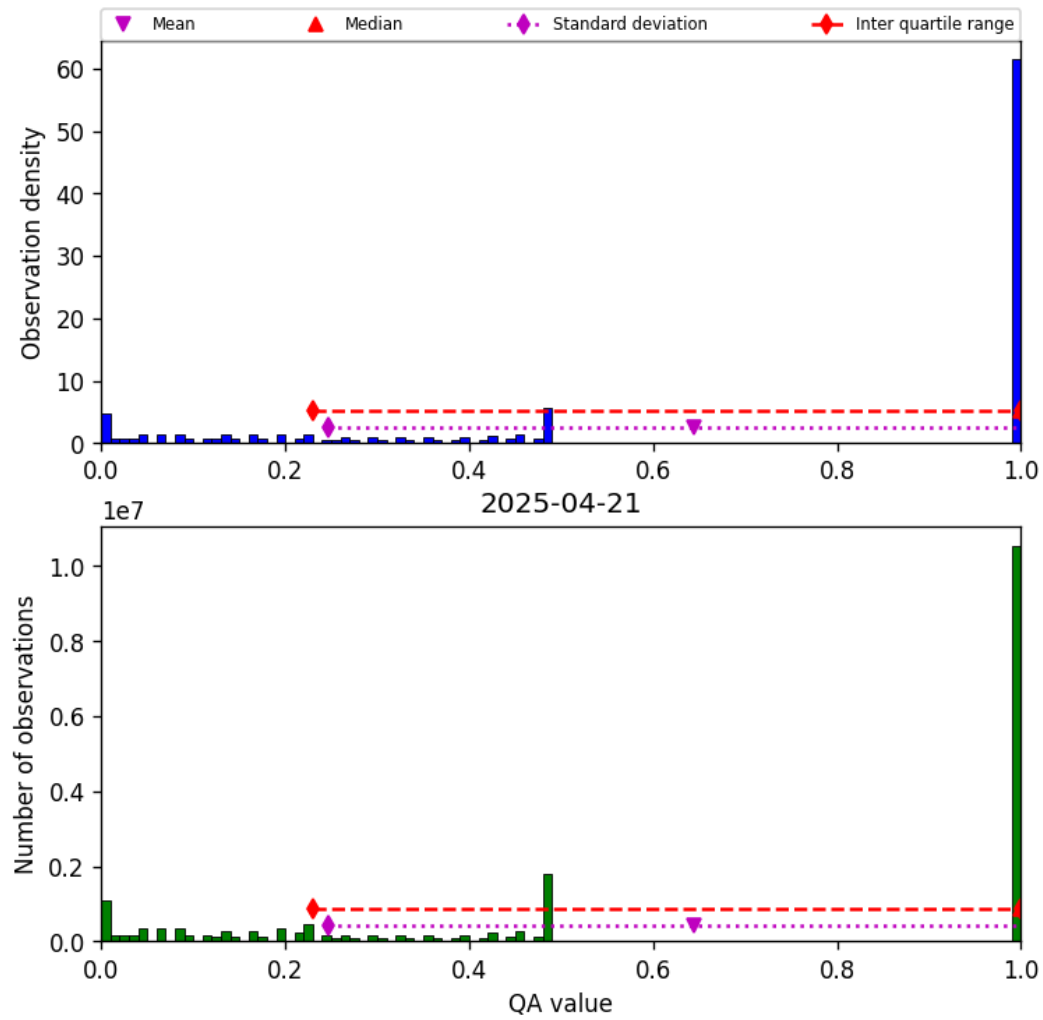


Figure 57: Histogram of “QA value” for 2025-04-20 to 2025-04-22

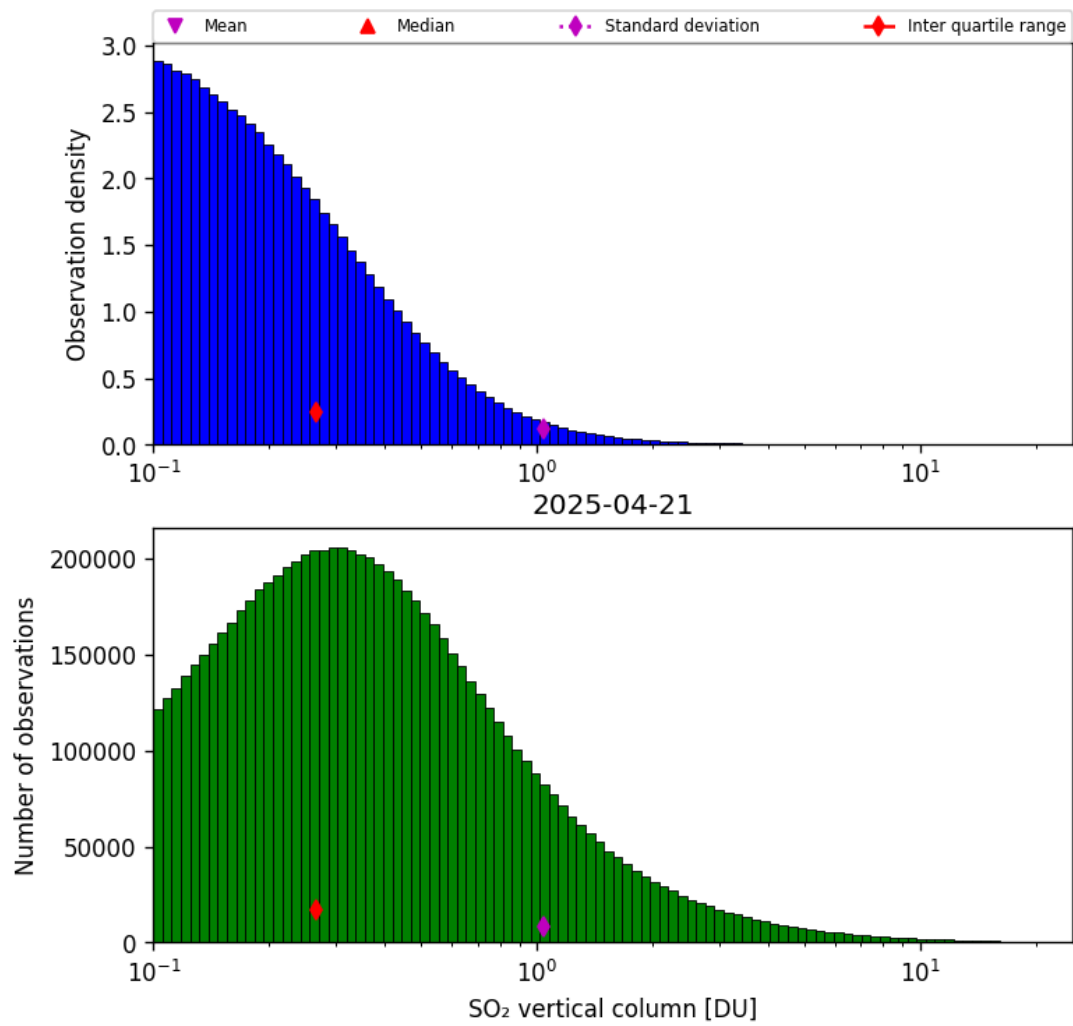


Figure 58: Histogram of “SO₂ vertical column” for 2025-04-20 to 2025-04-22

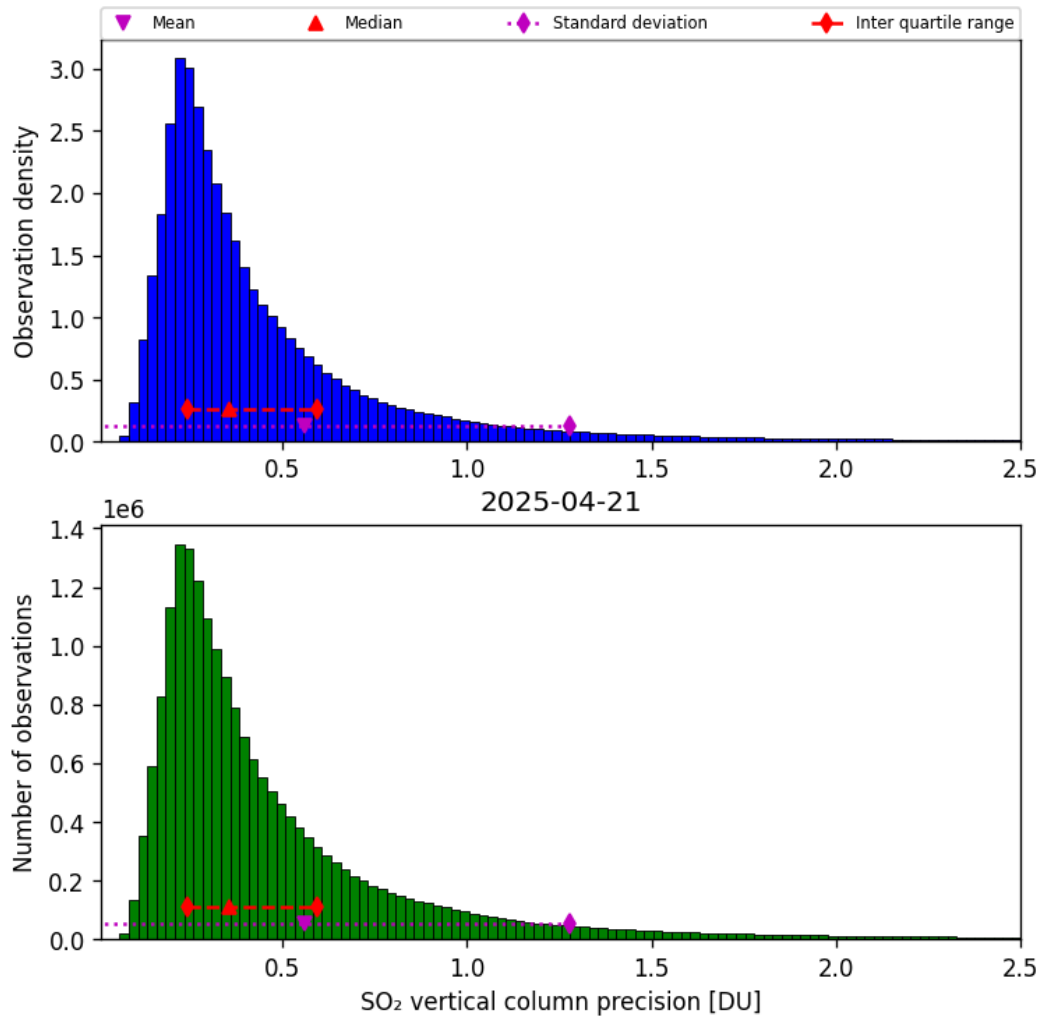


Figure 59: Histogram of “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22

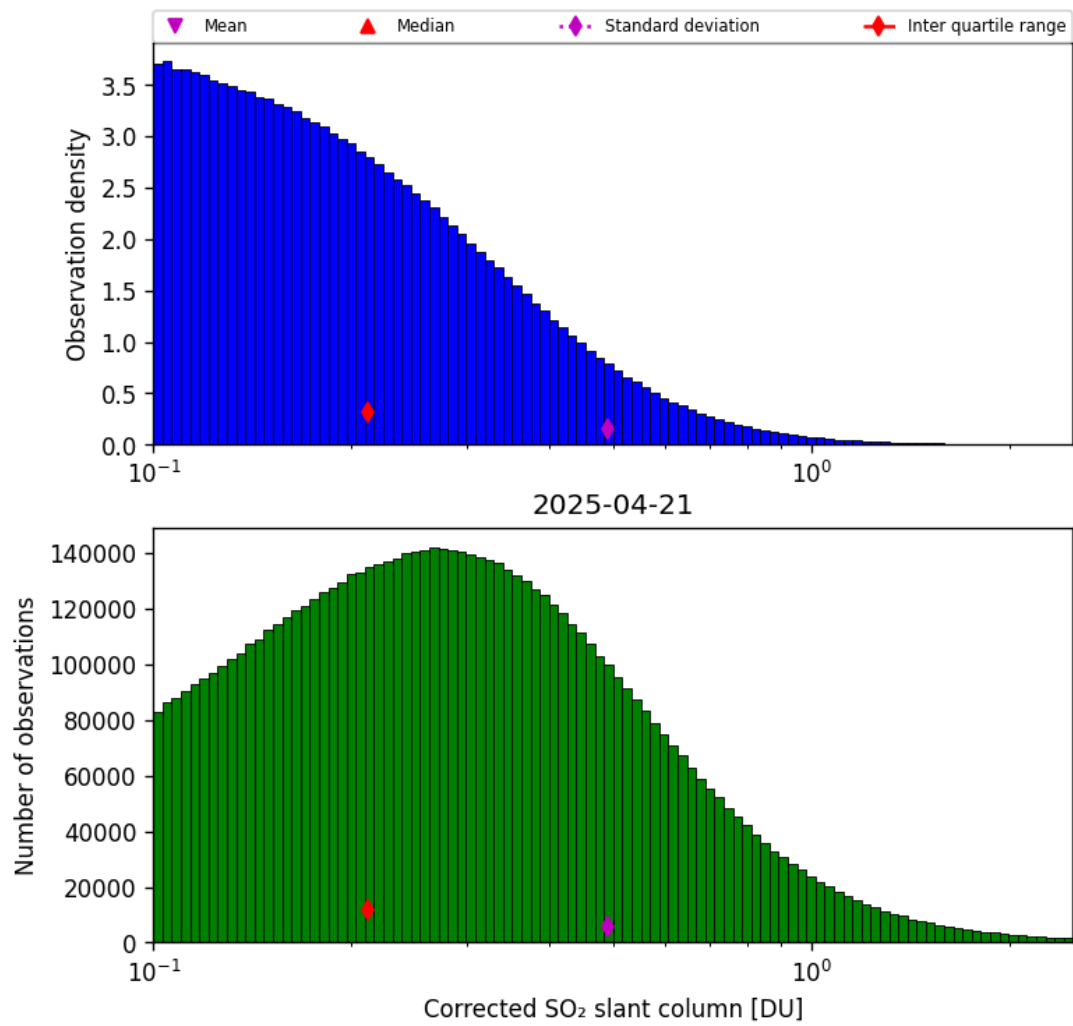


Figure 60: Histogram of “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22

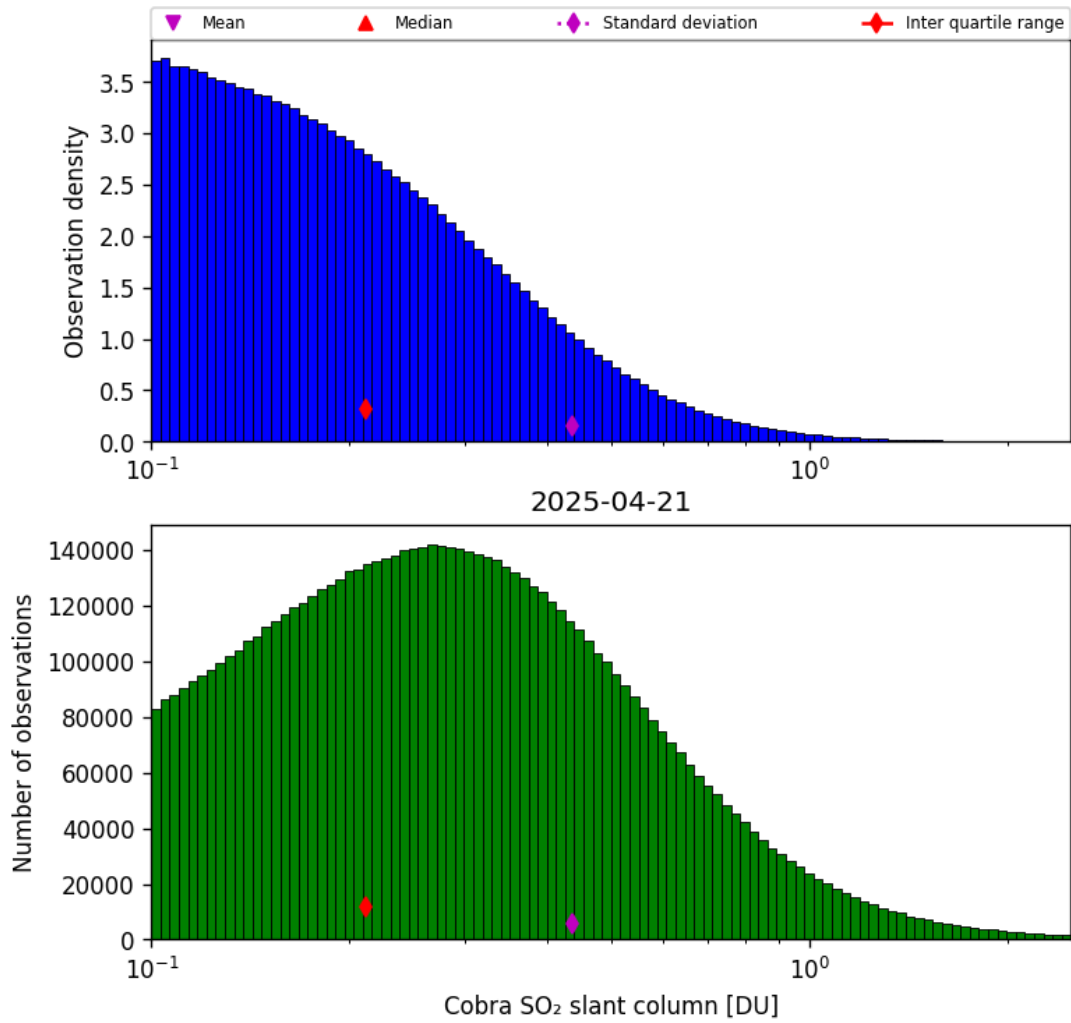


Figure 61: Histogram of “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22

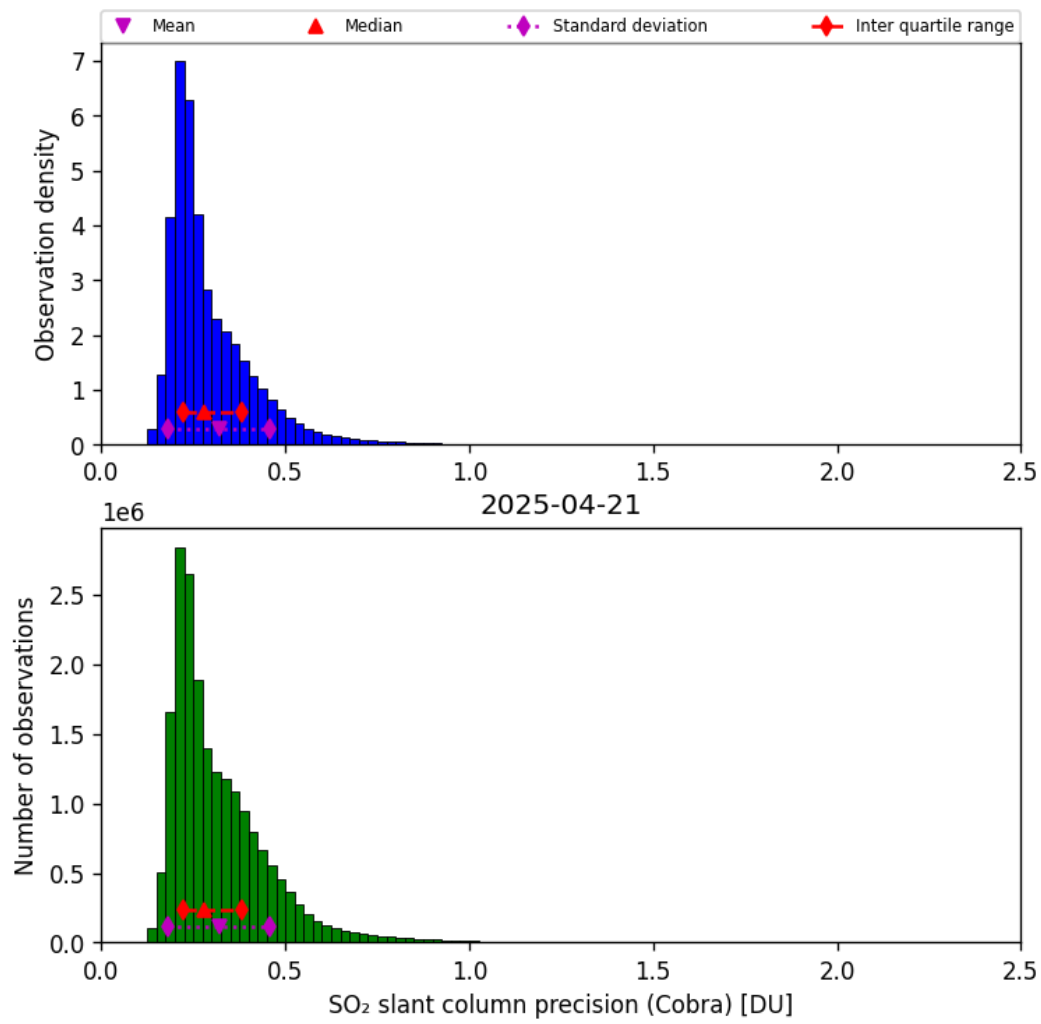


Figure 62: Histogram of “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22

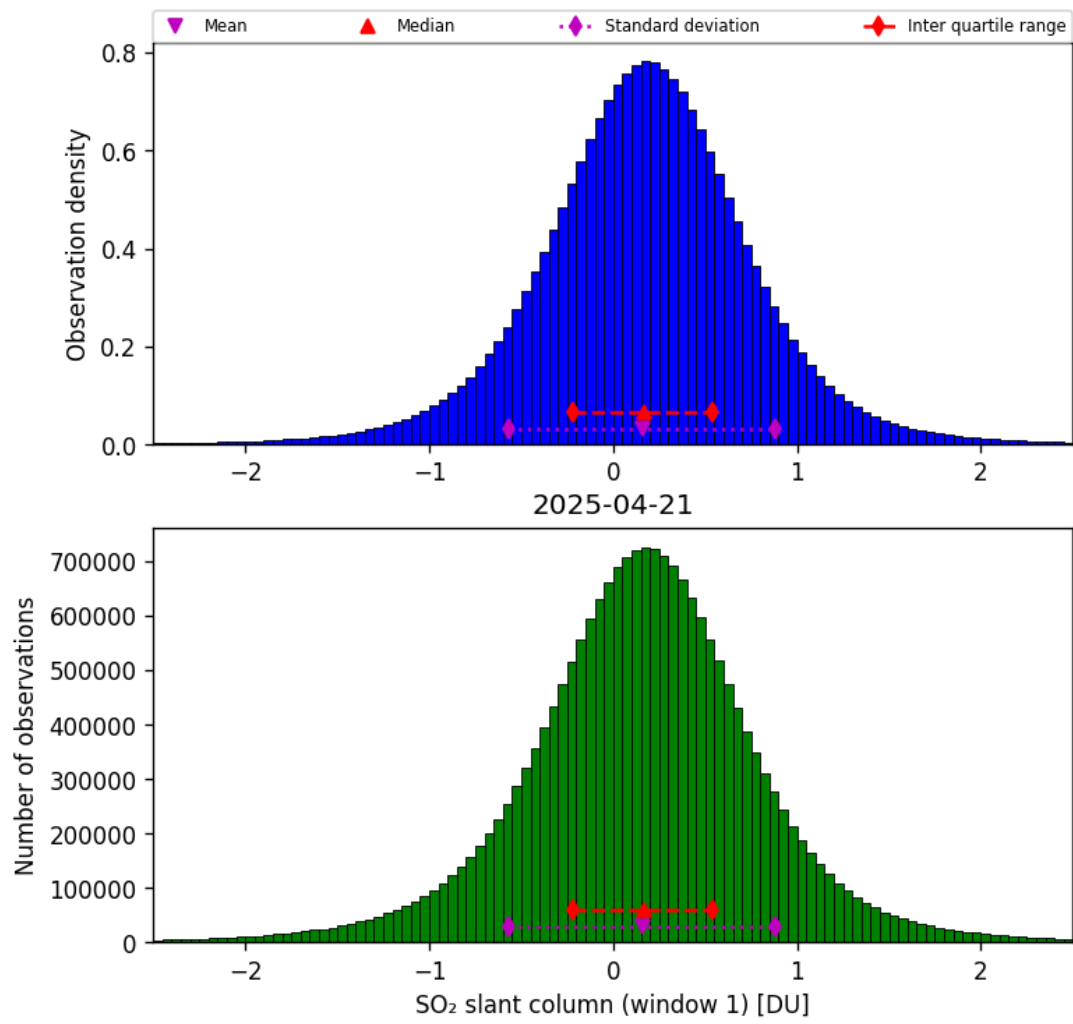


Figure 63: Histogram of “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22

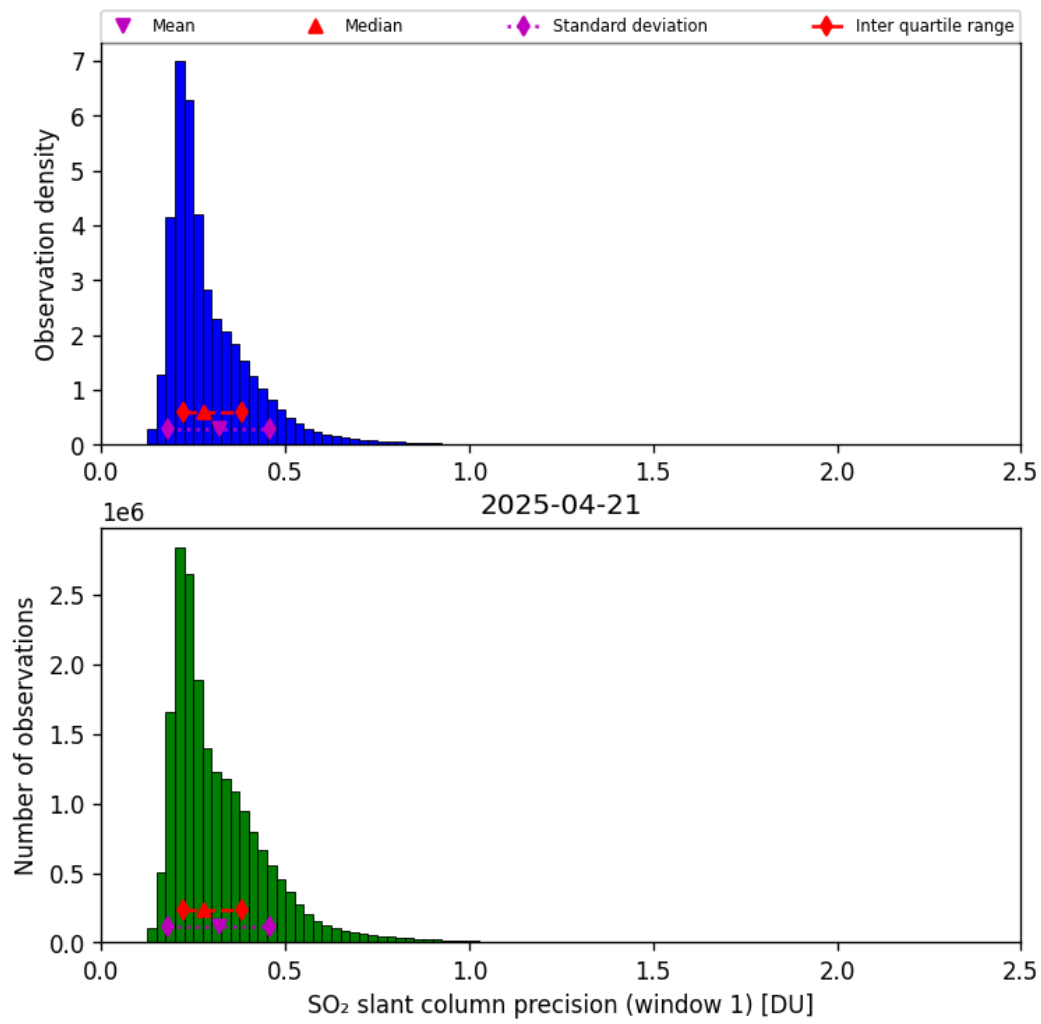


Figure 64: Histogram of “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22

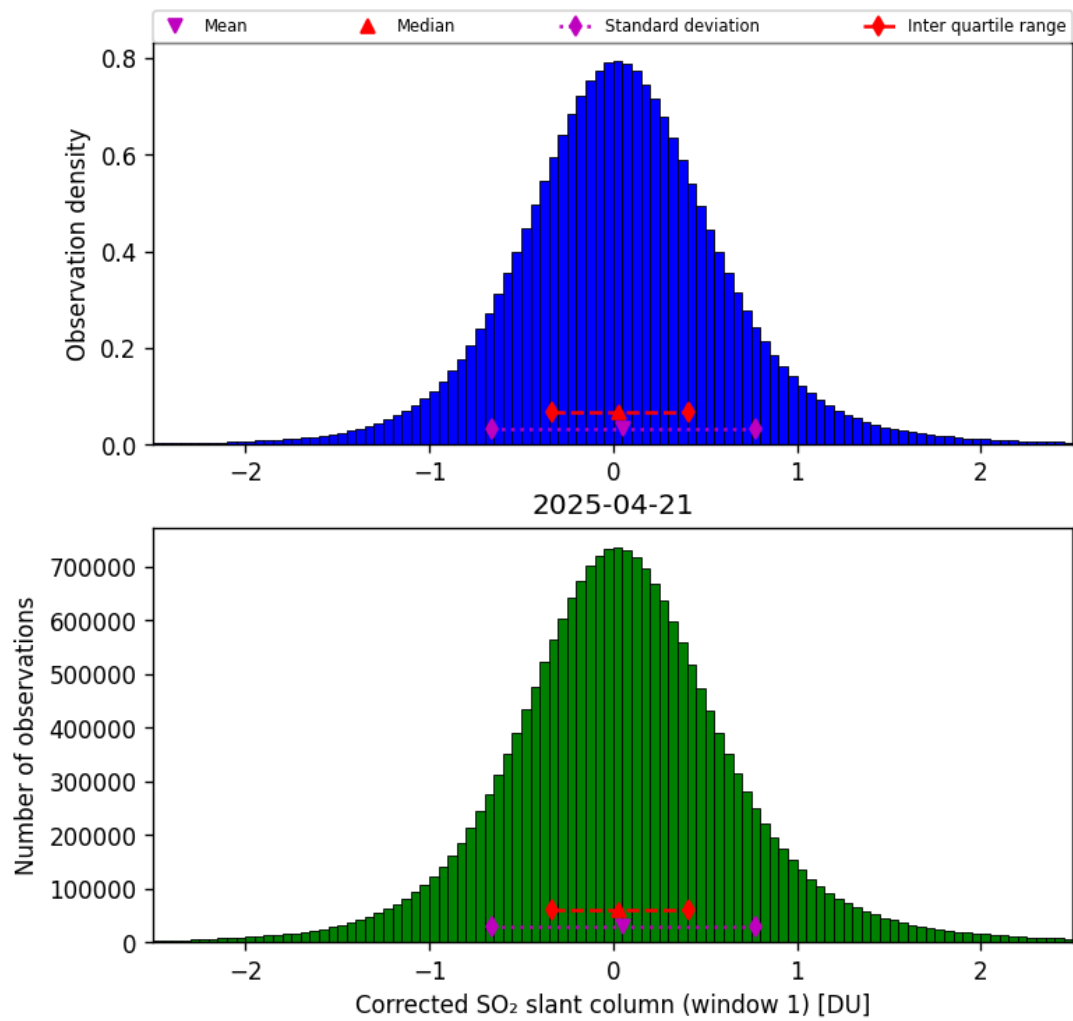


Figure 65: Histogram of “Corrected SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22

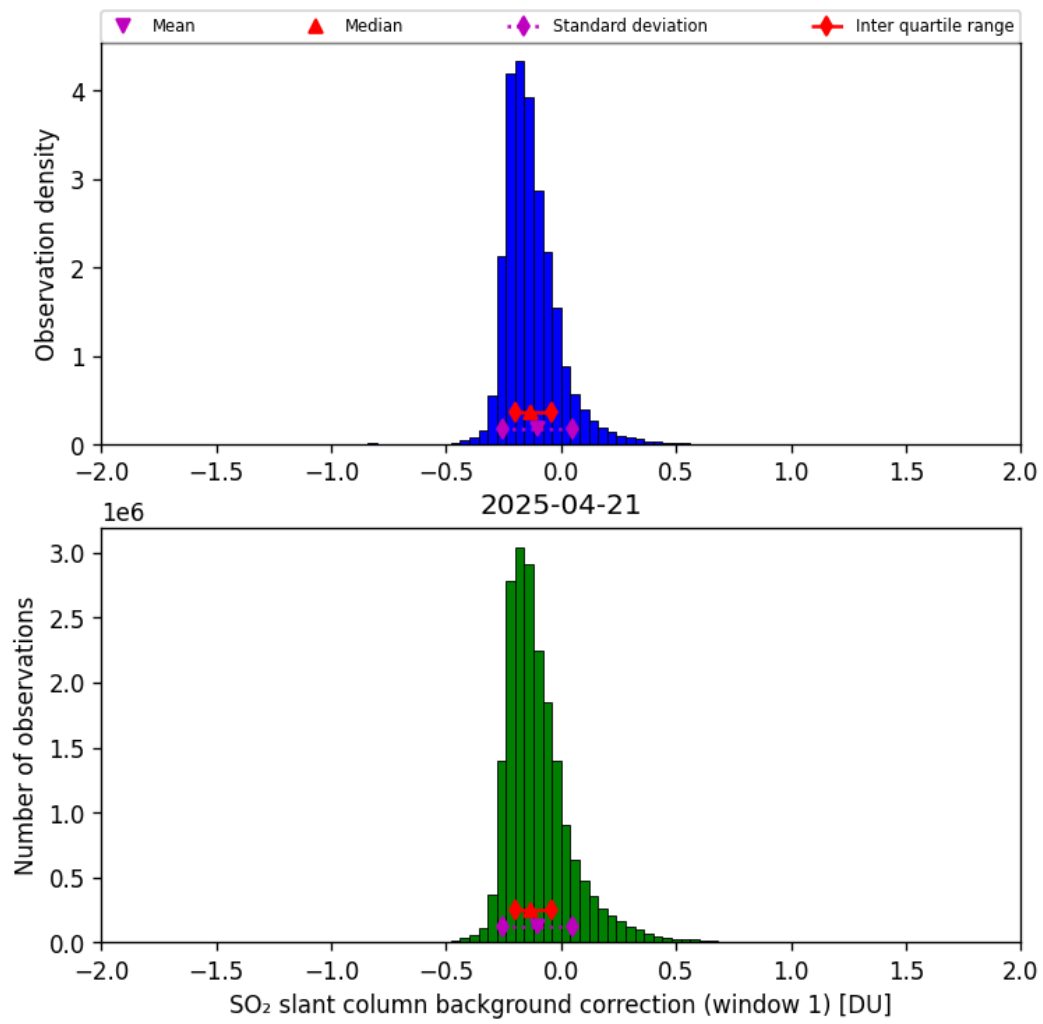


Figure 66: Histogram of “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22

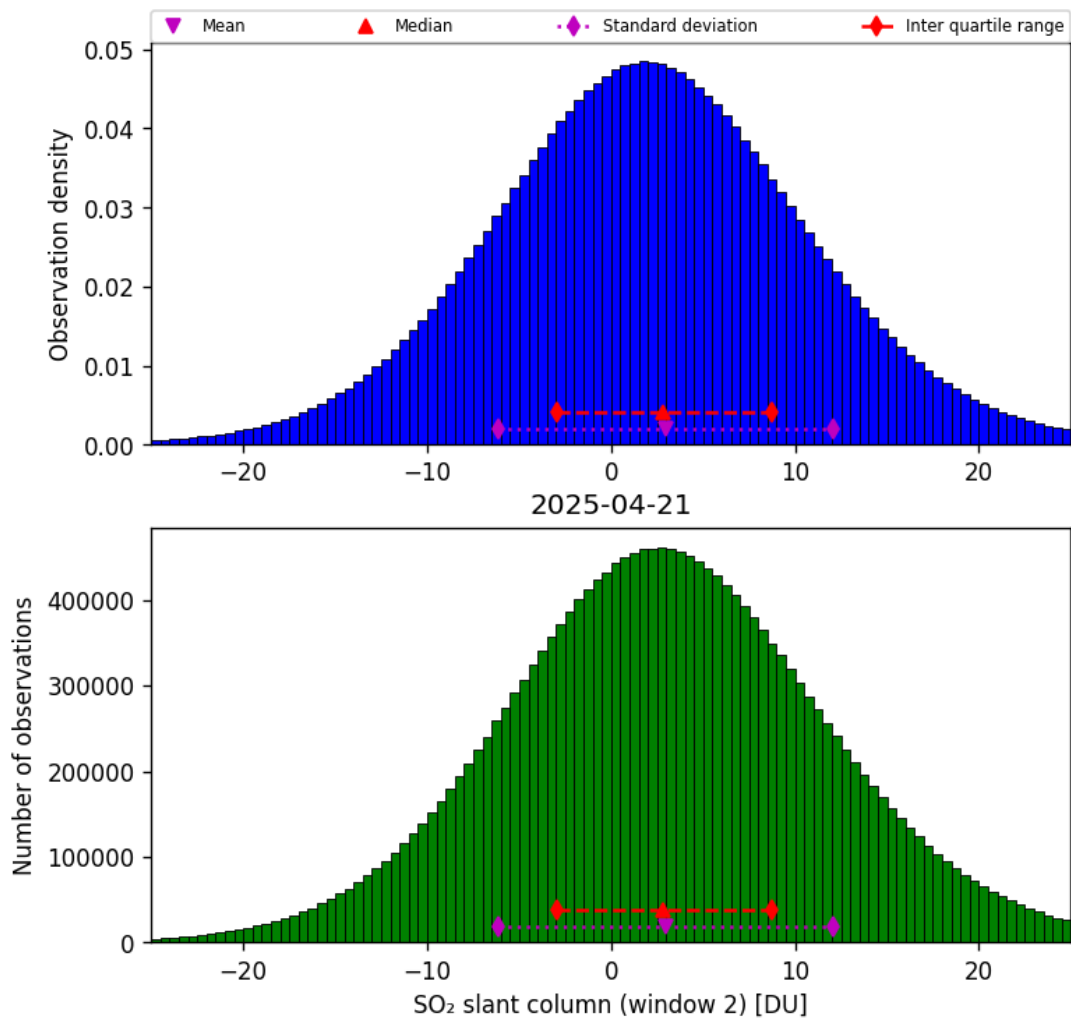


Figure 67: Histogram of “SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22

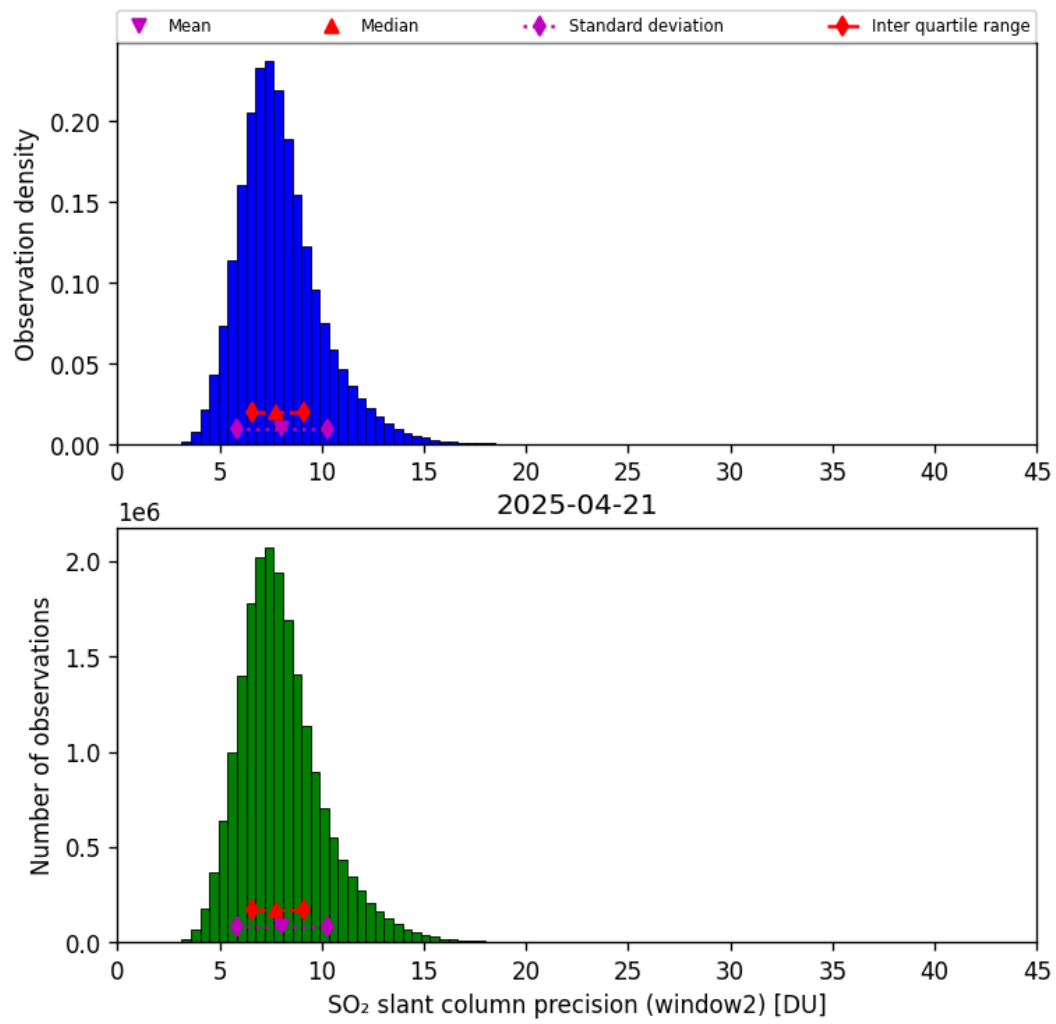


Figure 68: Histogram of “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22

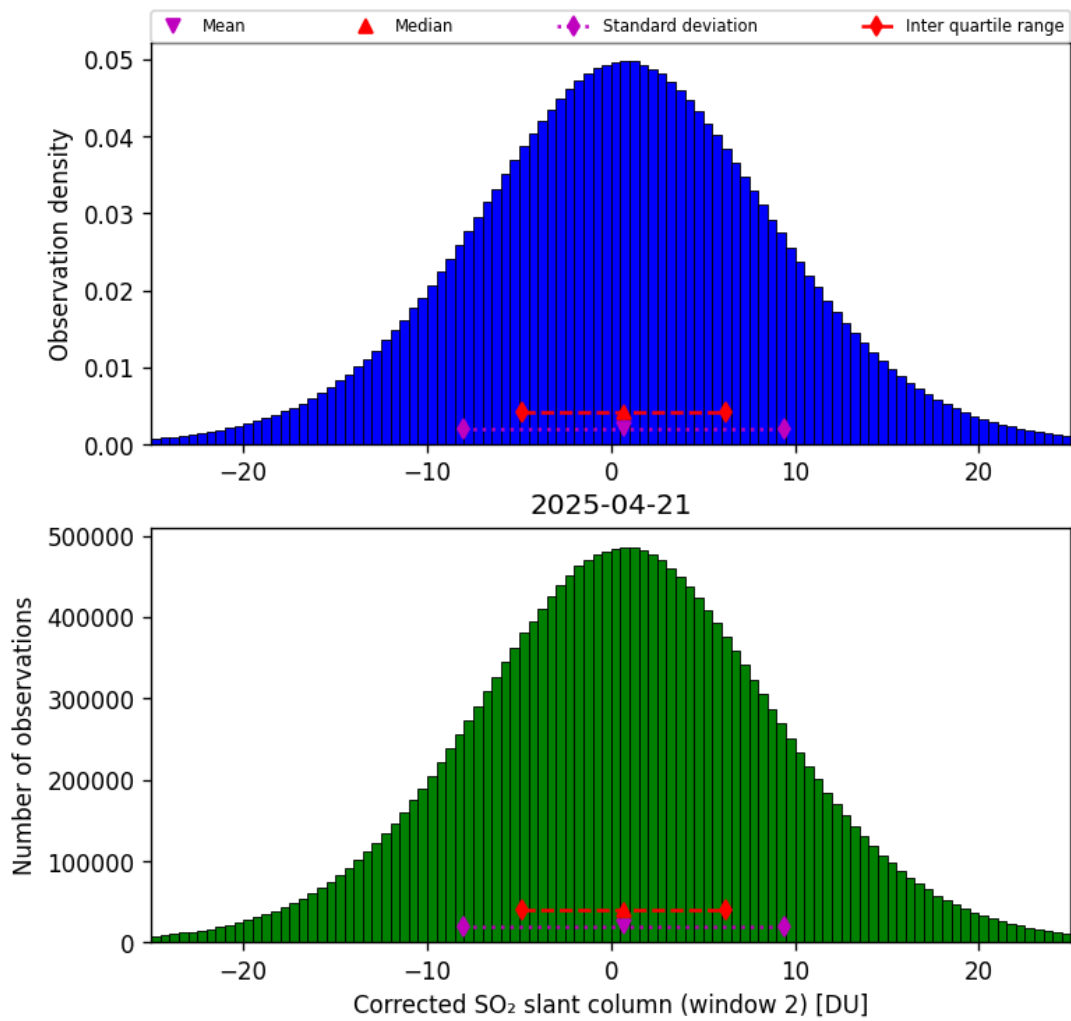


Figure 69: Histogram of “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22

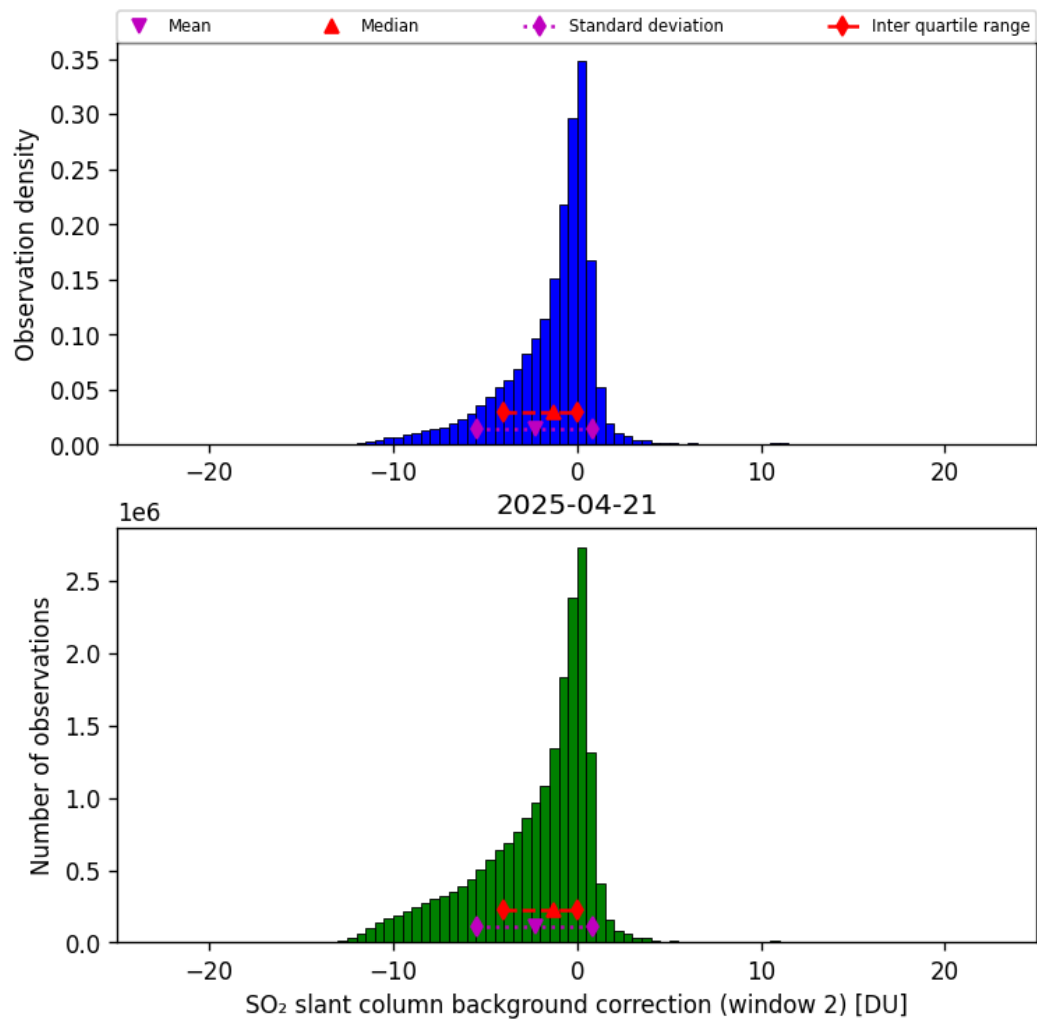


Figure 70: Histogram of “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22

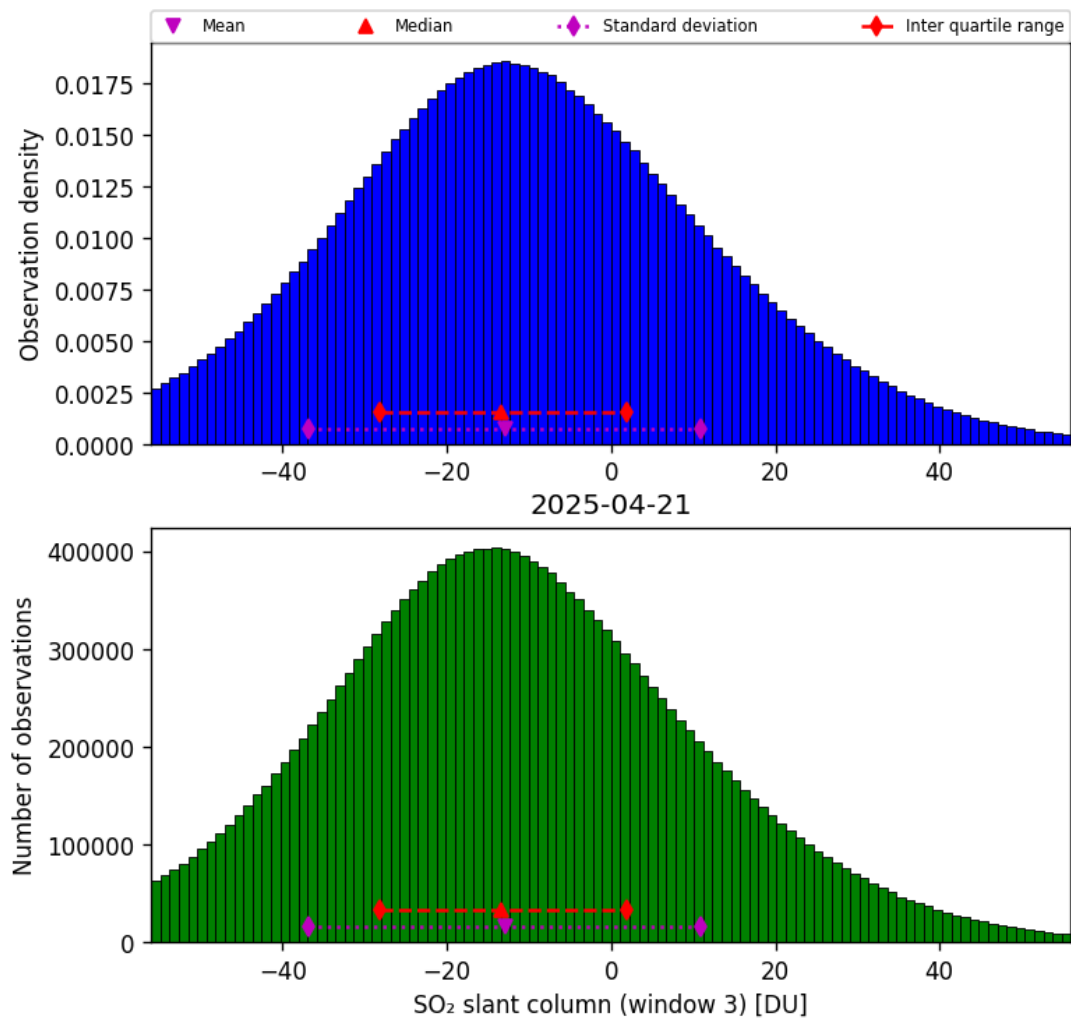


Figure 71: Histogram of “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22

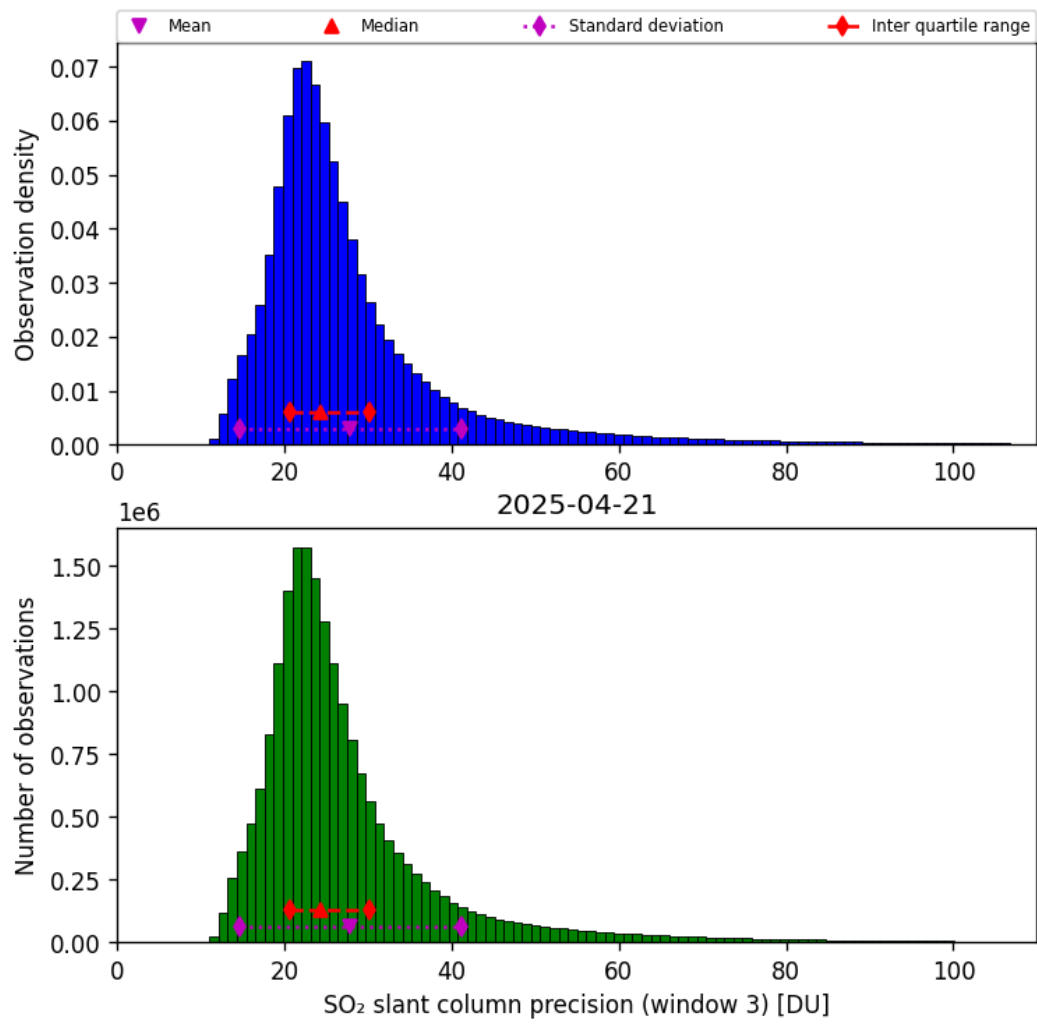


Figure 72: Histogram of “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22

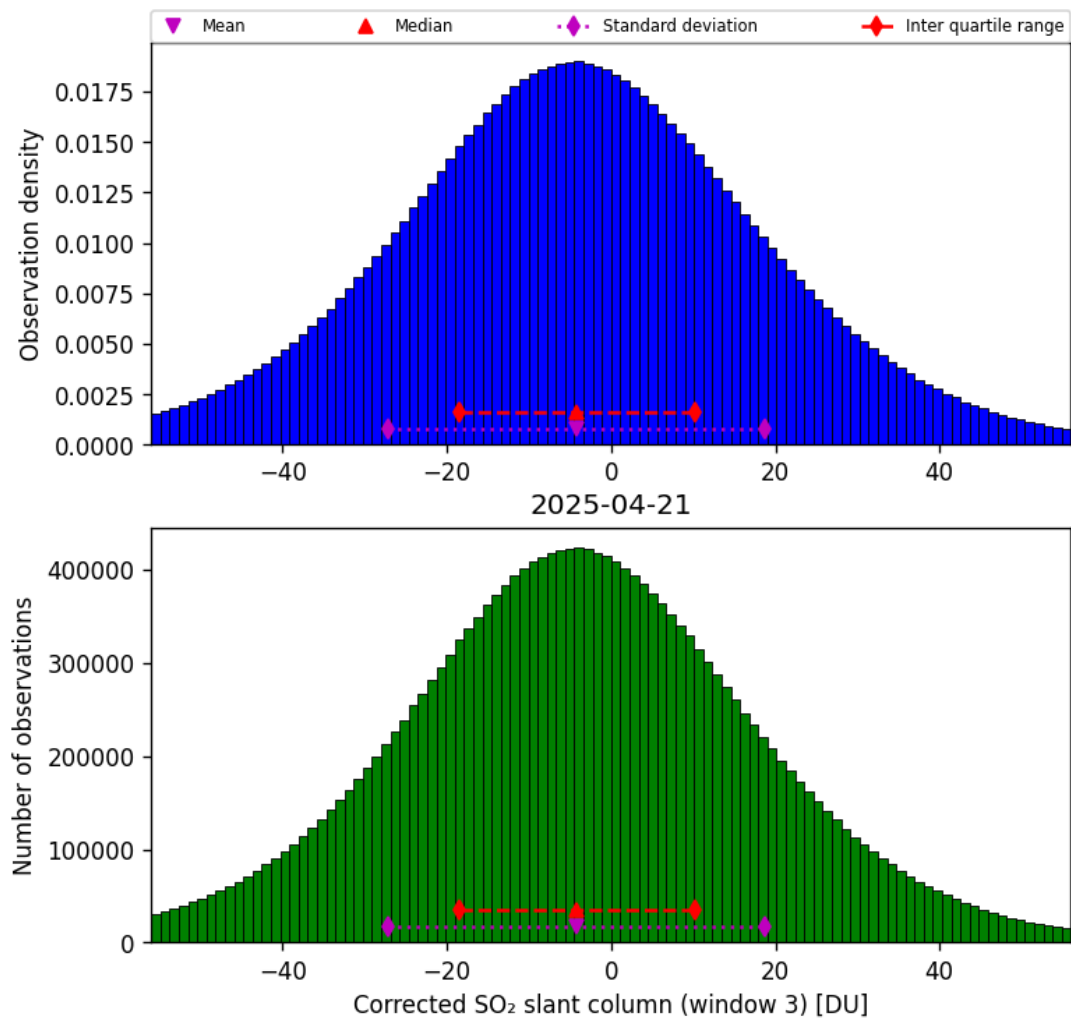


Figure 73: Histogram of “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22

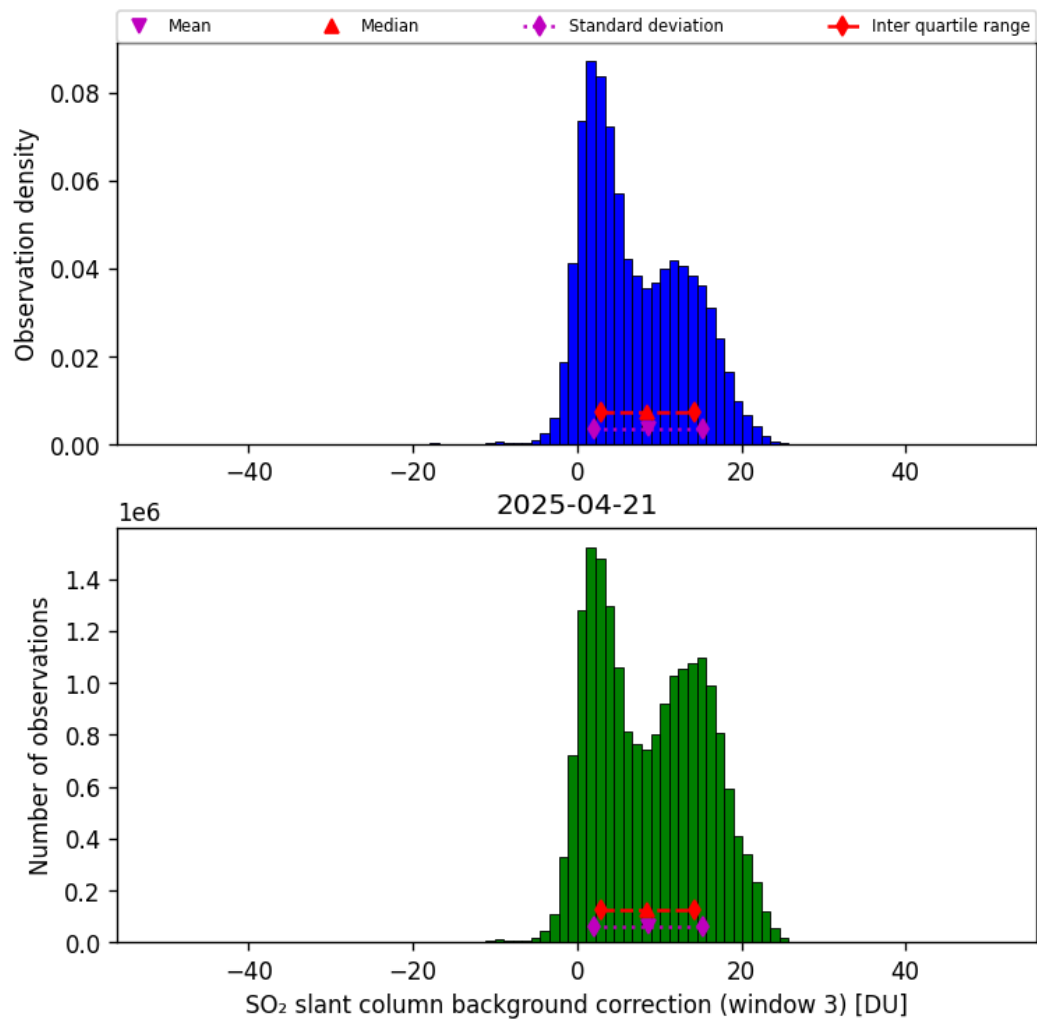


Figure 74: Histogram of “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22

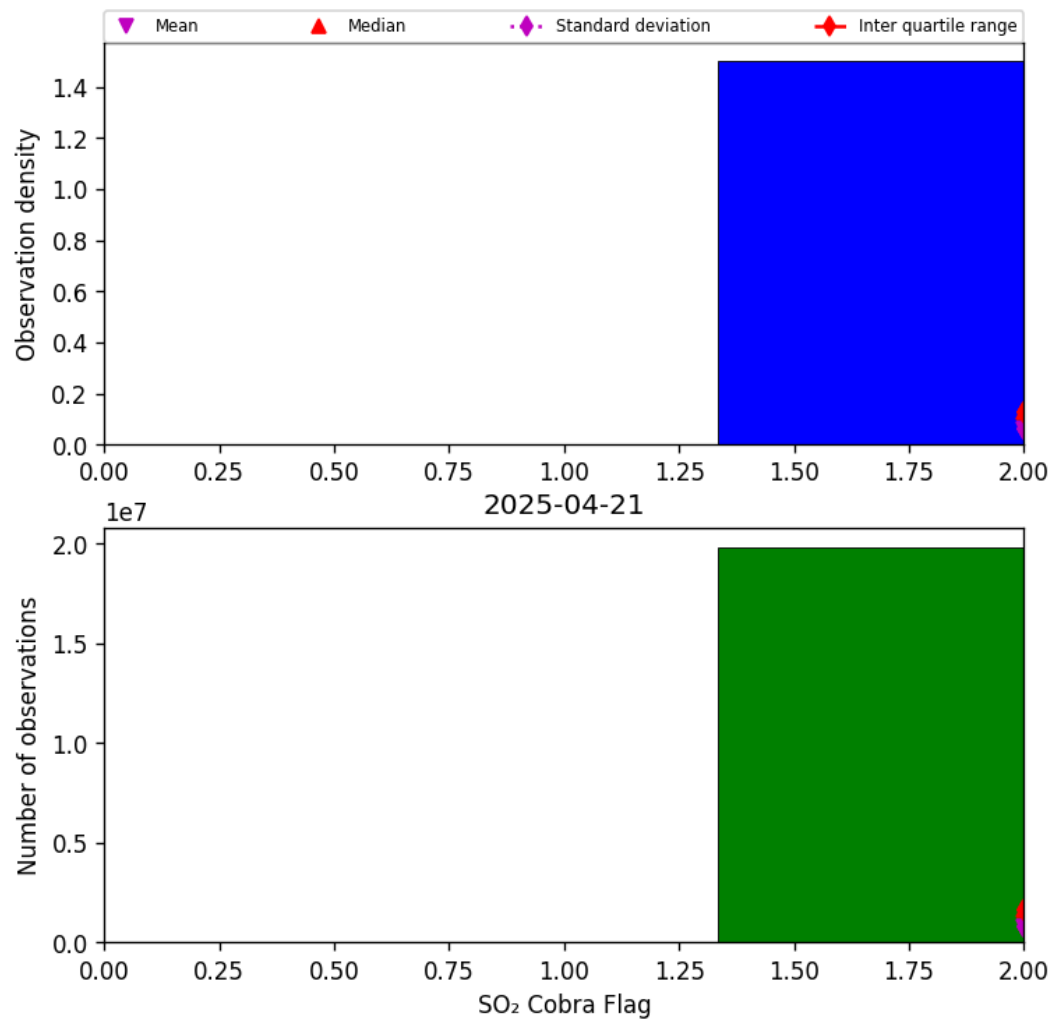


Figure 75: Histogram of “SO₂ Cobra Flag” for 2025-04-20 to 2025-04-22

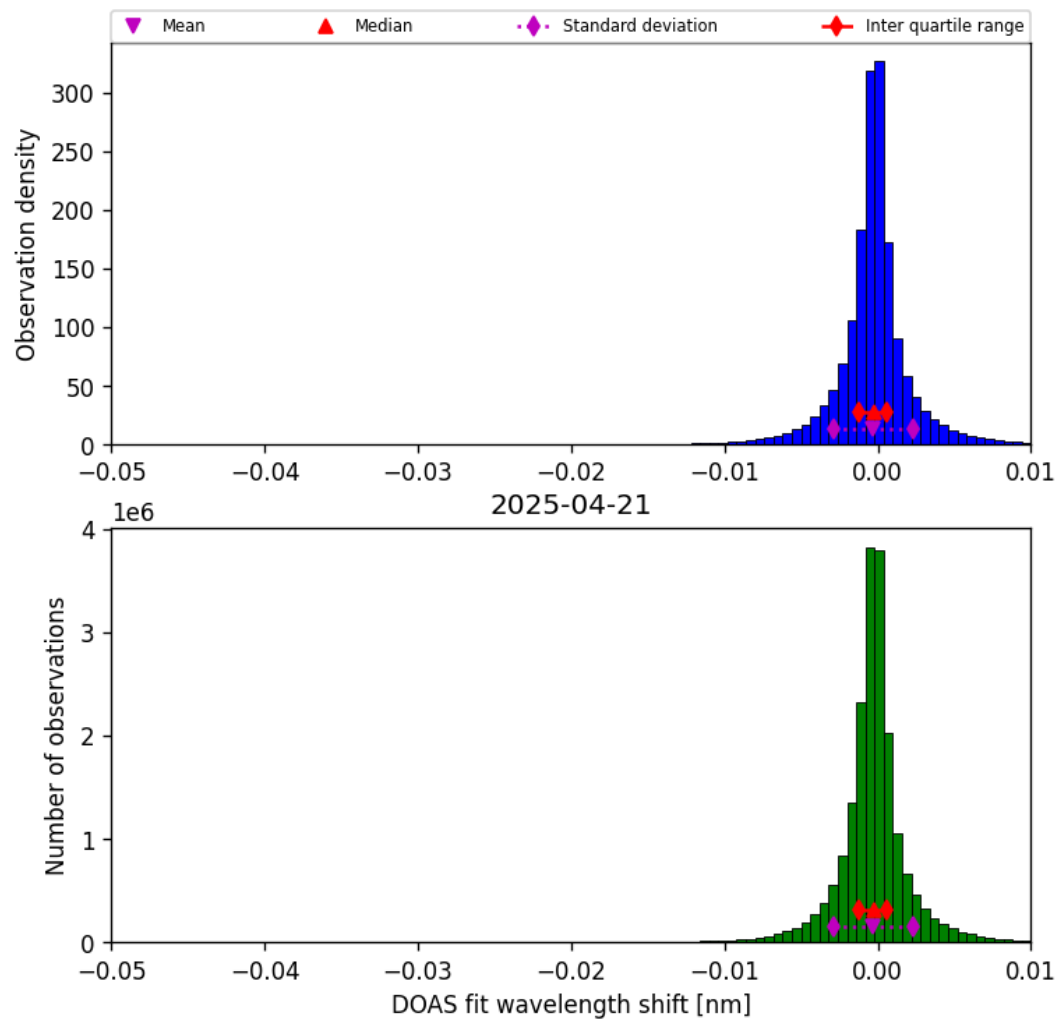


Figure 76: Histogram of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22

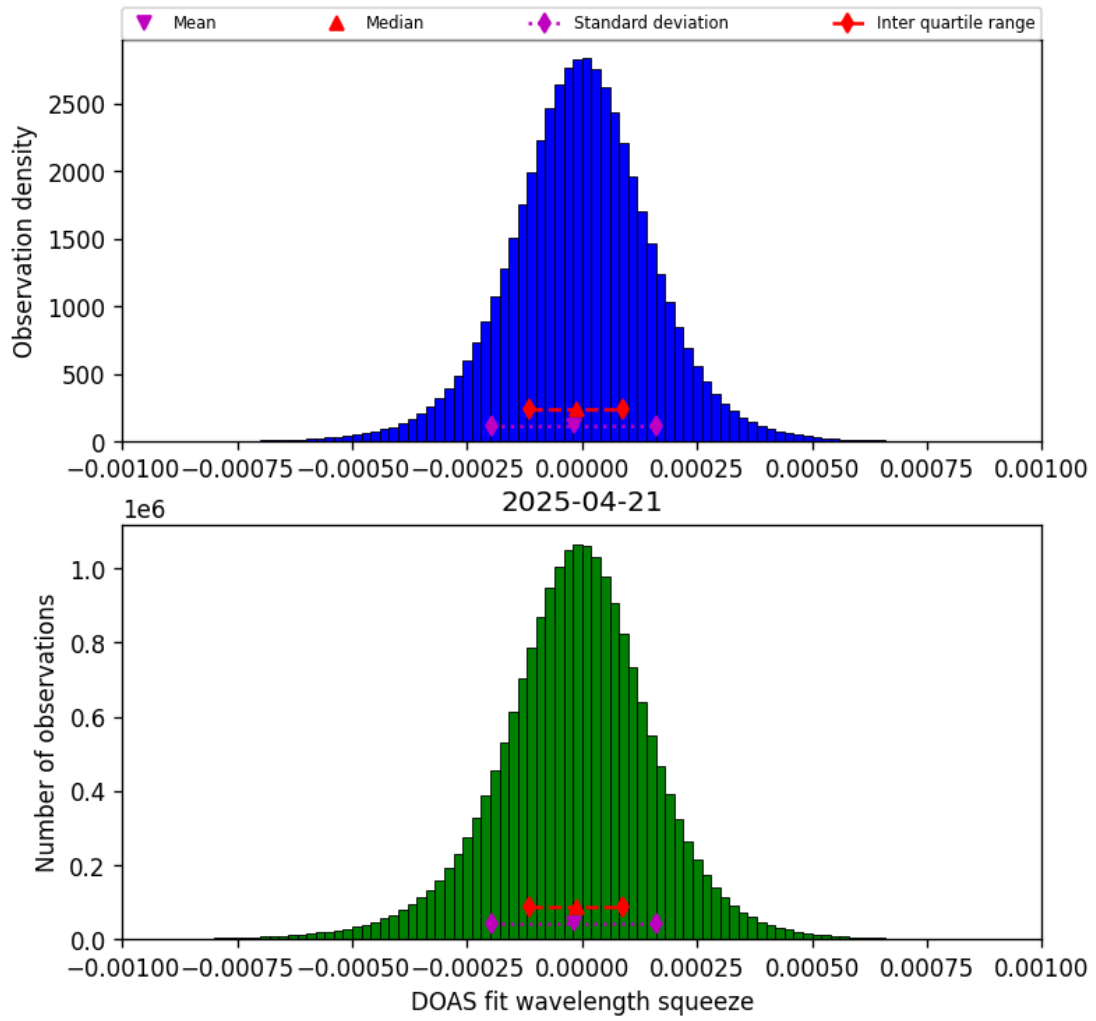


Figure 77: Histogram of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22

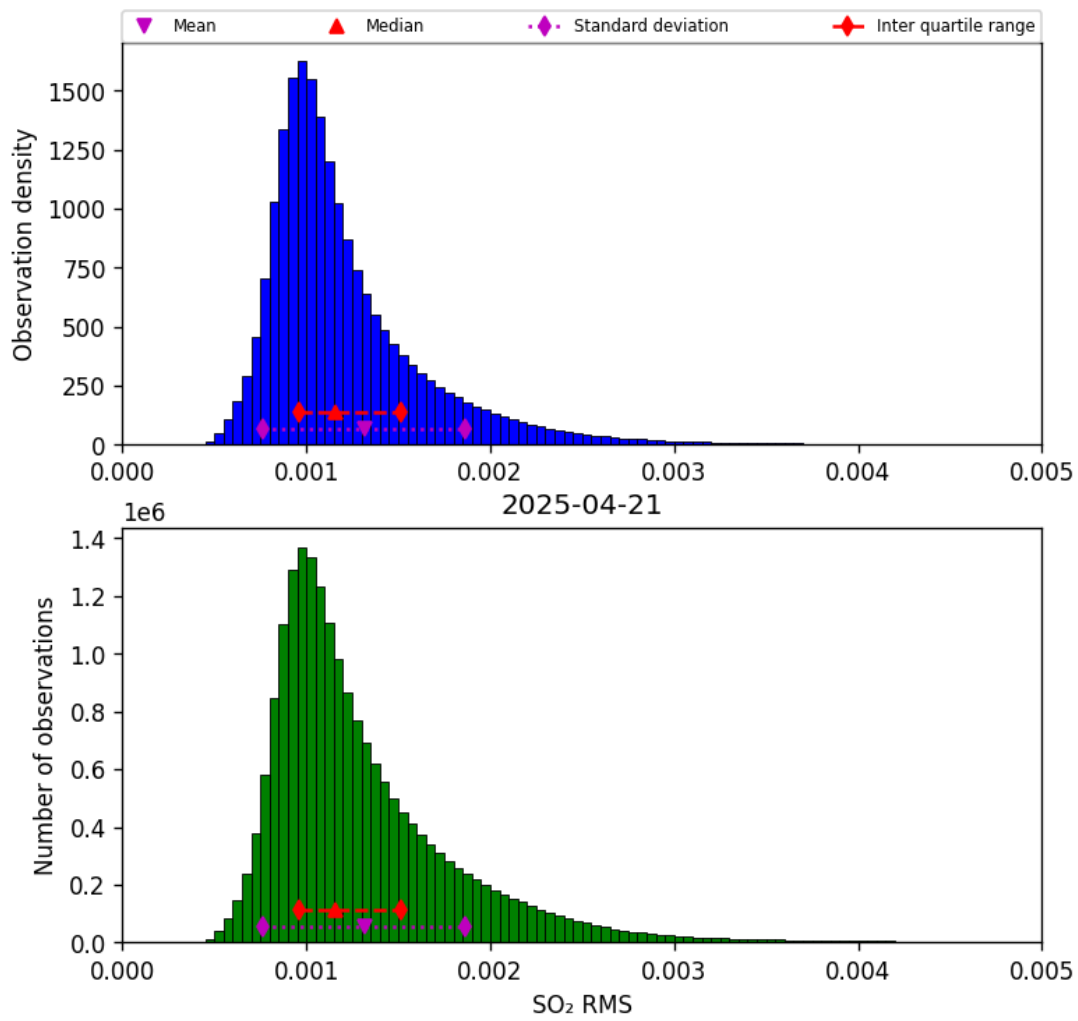


Figure 78: Histogram of “SO₂ RMS” for 2025-04-20 to 2025-04-22

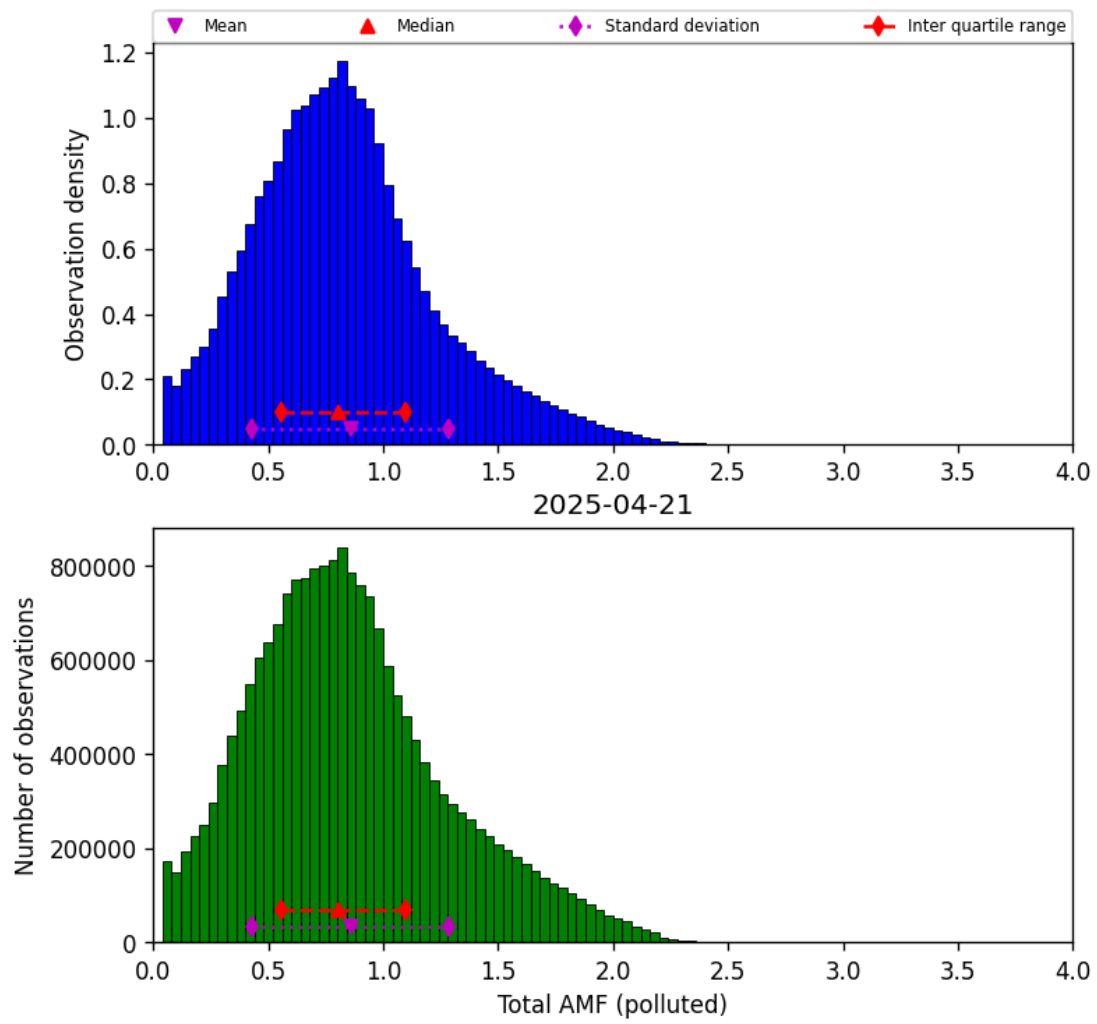


Figure 79: Histogram of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22

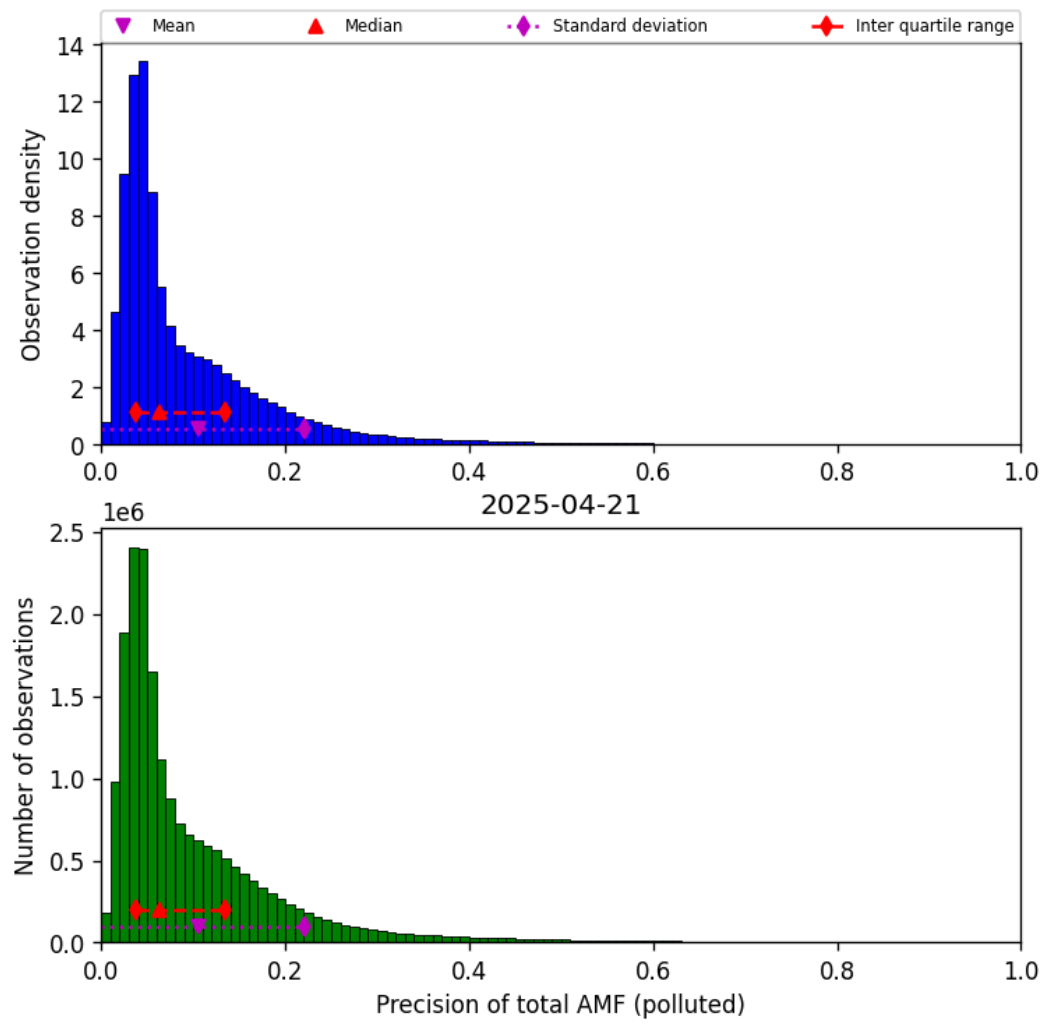


Figure 80: Histogram of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22

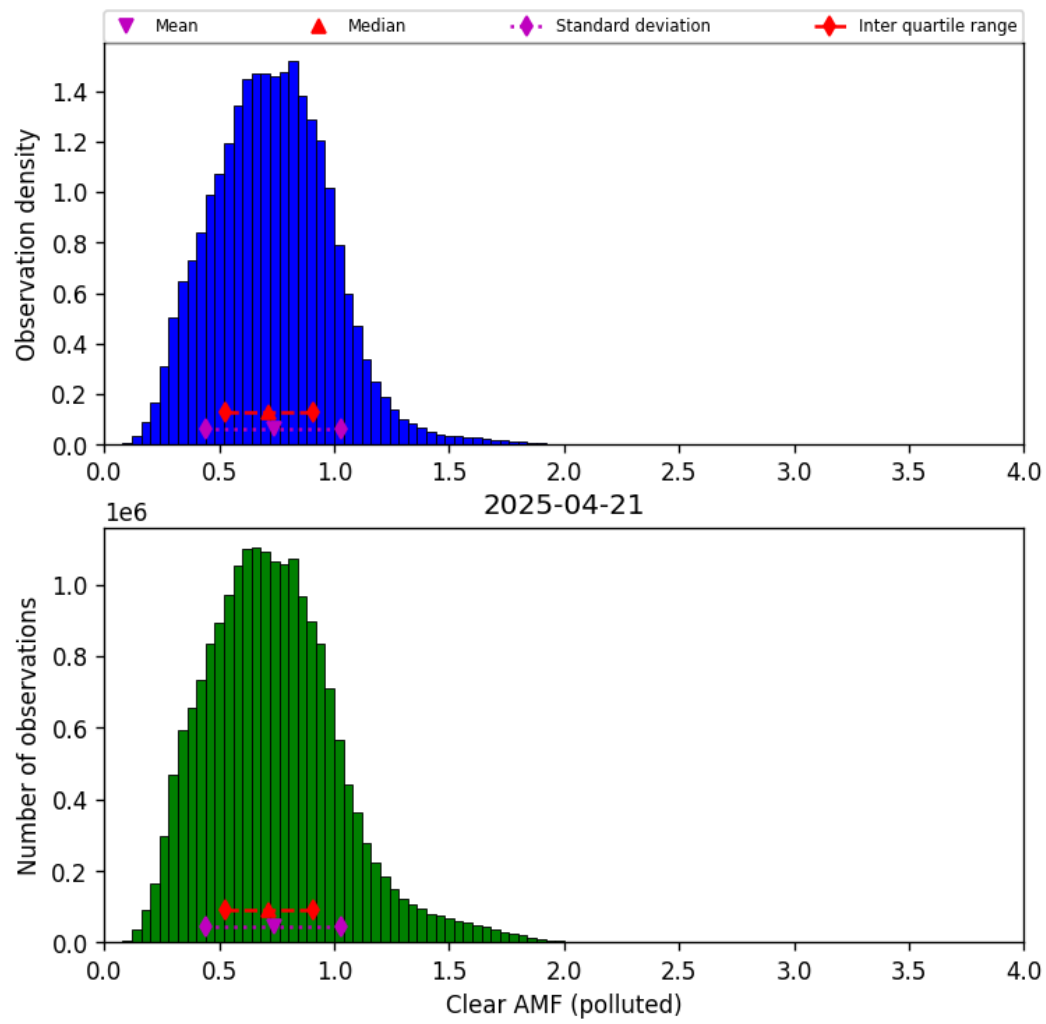


Figure 81: Histogram of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22

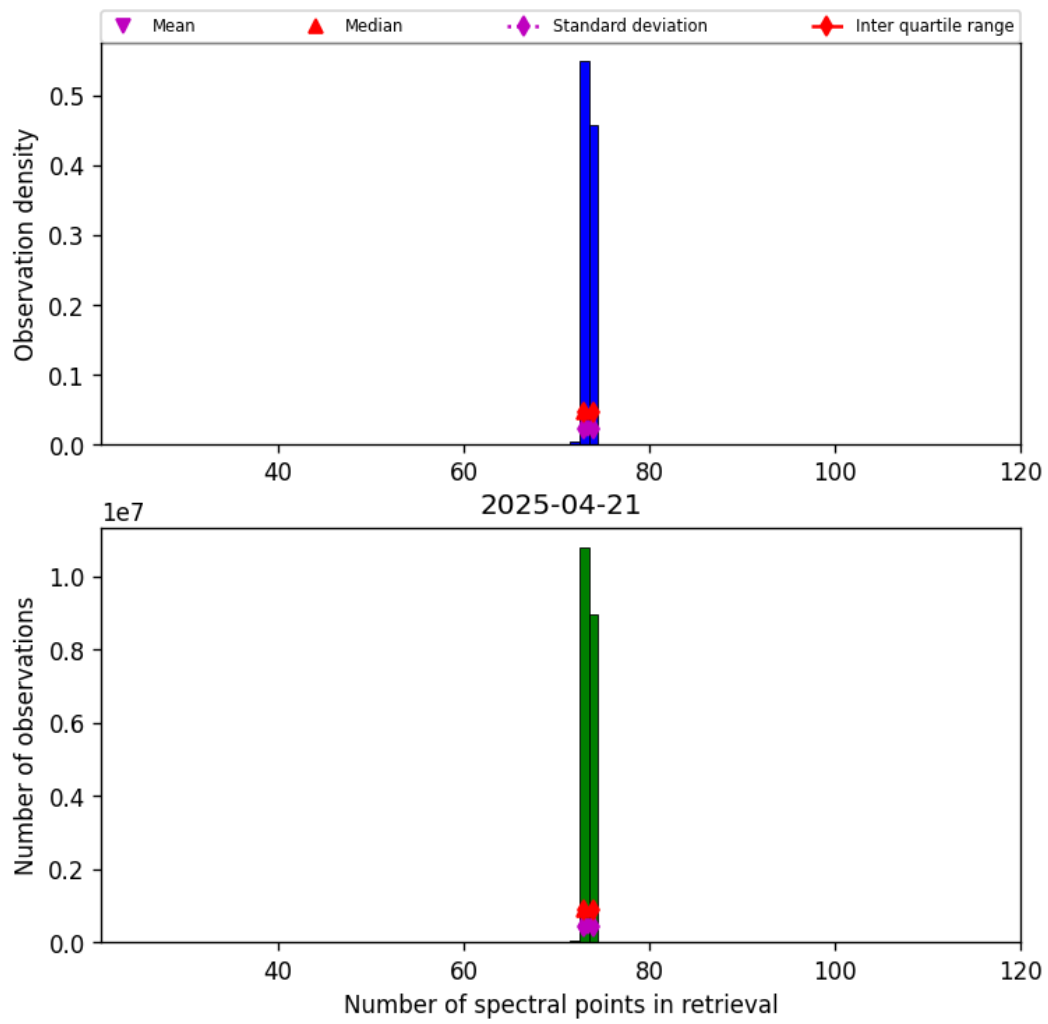


Figure 82: Histogram of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22

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.

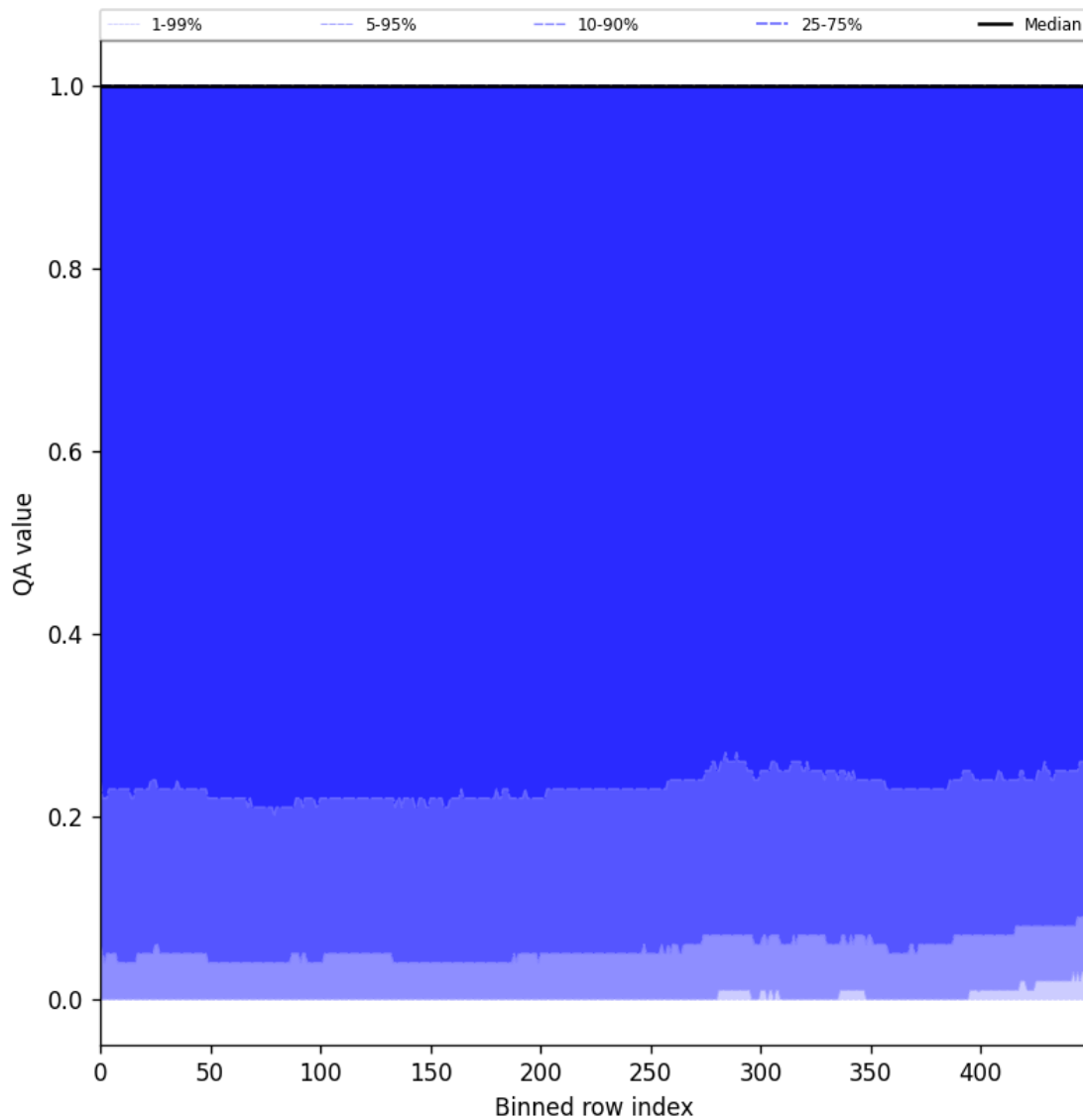


Figure 83: Along track statistics of “QA value” for 2025-04-20 to 2025-04-22

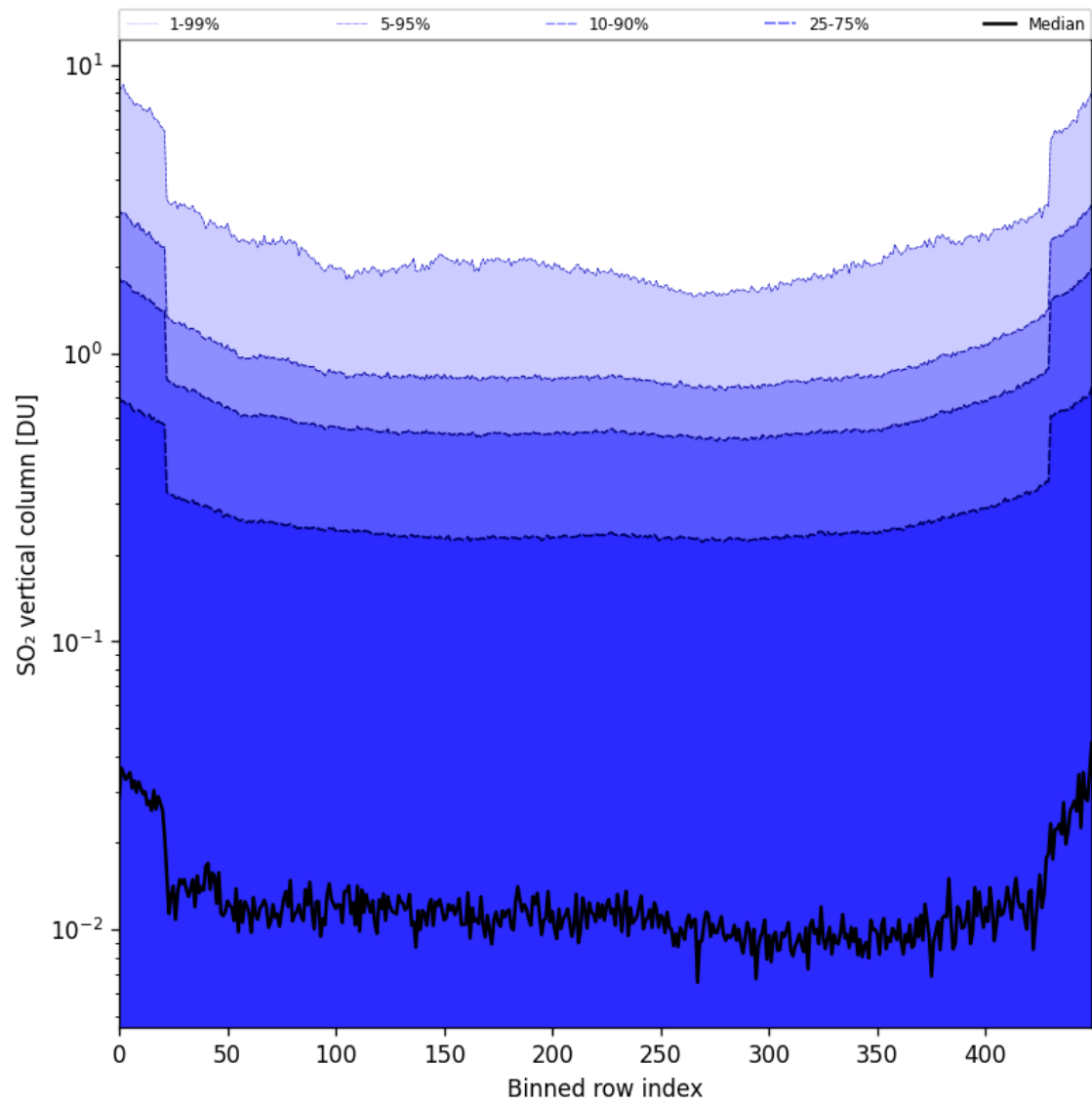


Figure 84: Along track statistics of “SO₂ vertical column” for 2025-04-20 to 2025-04-22

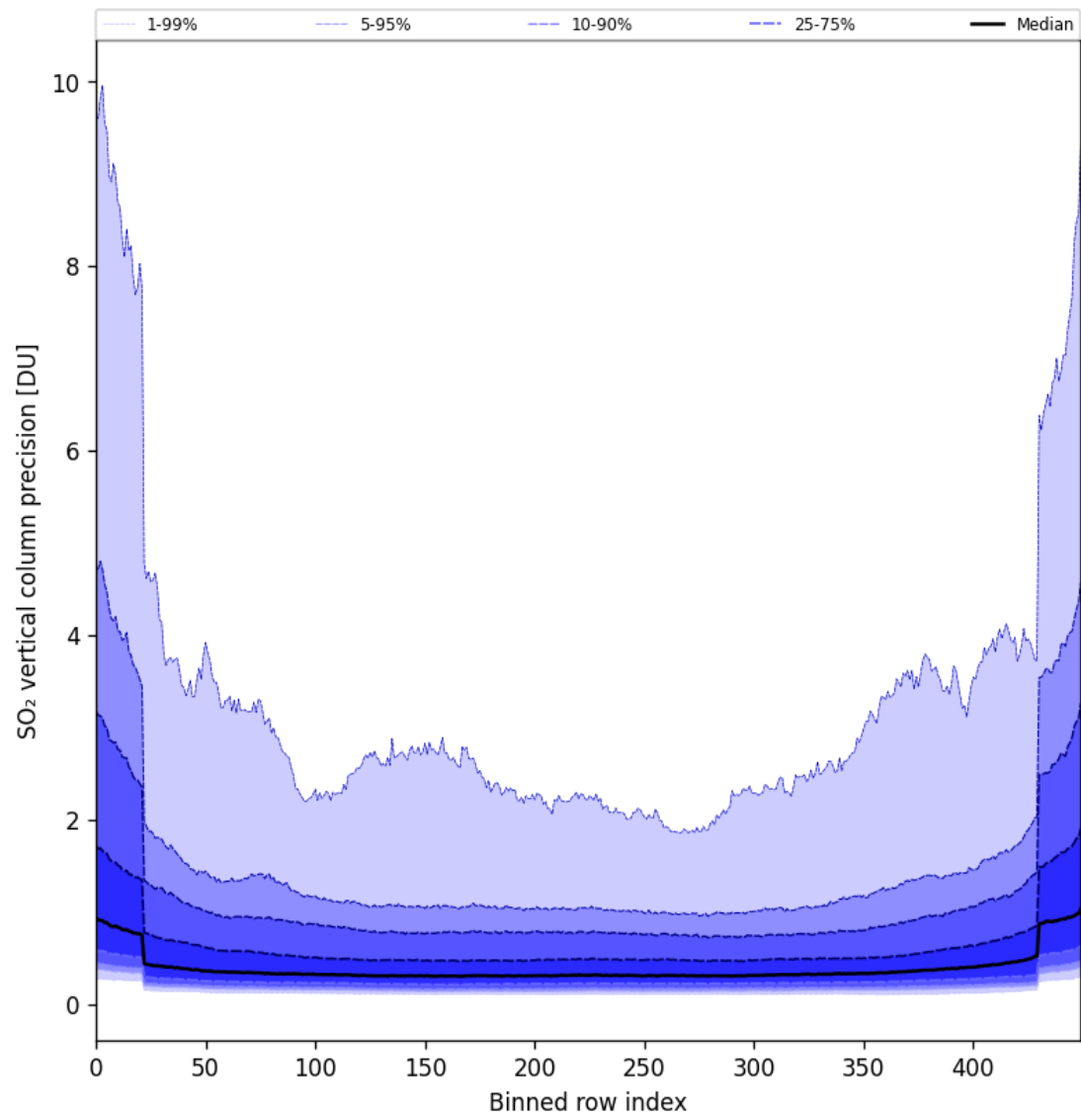


Figure 85: Along track statistics of “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22

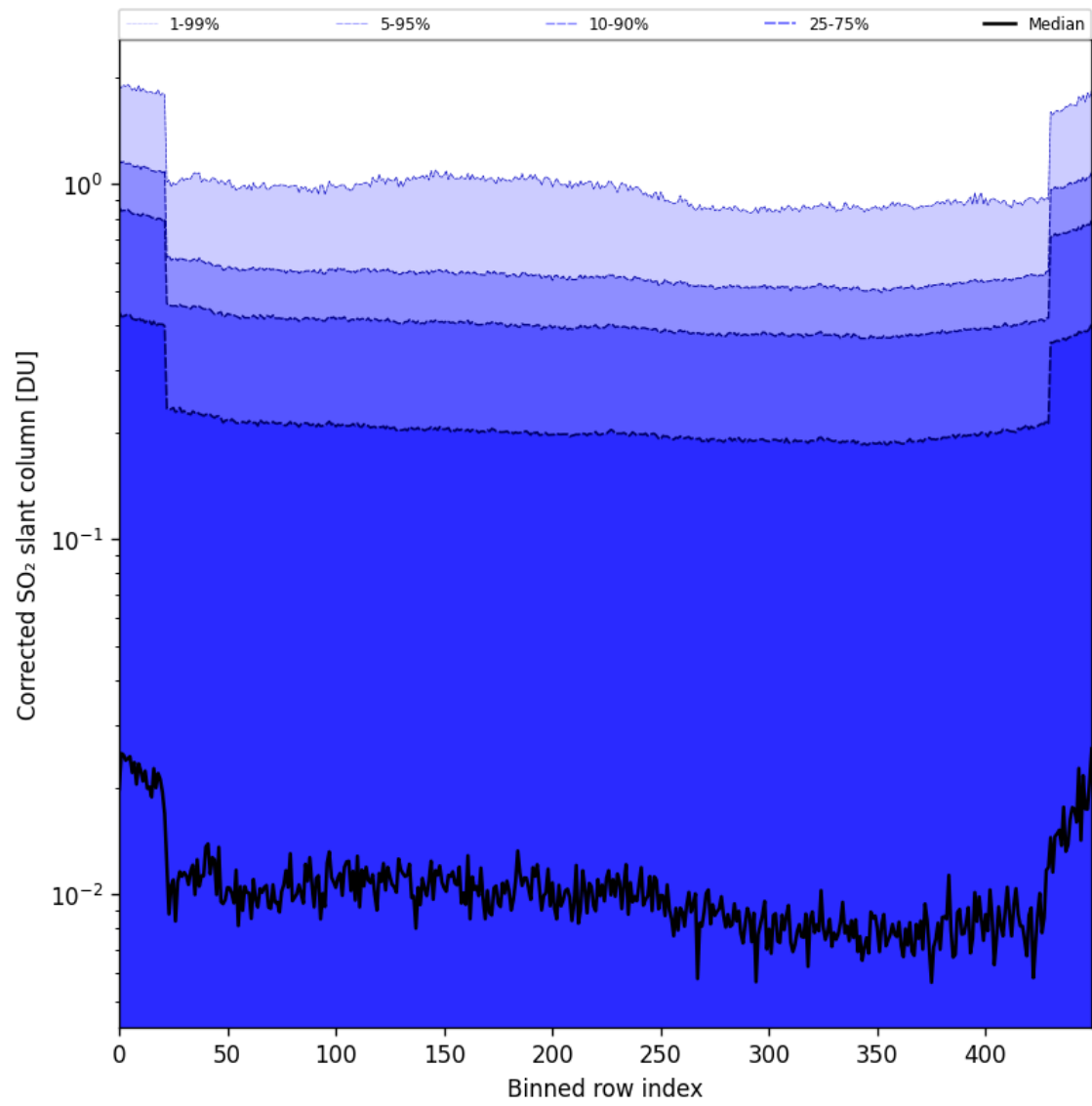


Figure 86: Along track statistics of “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22

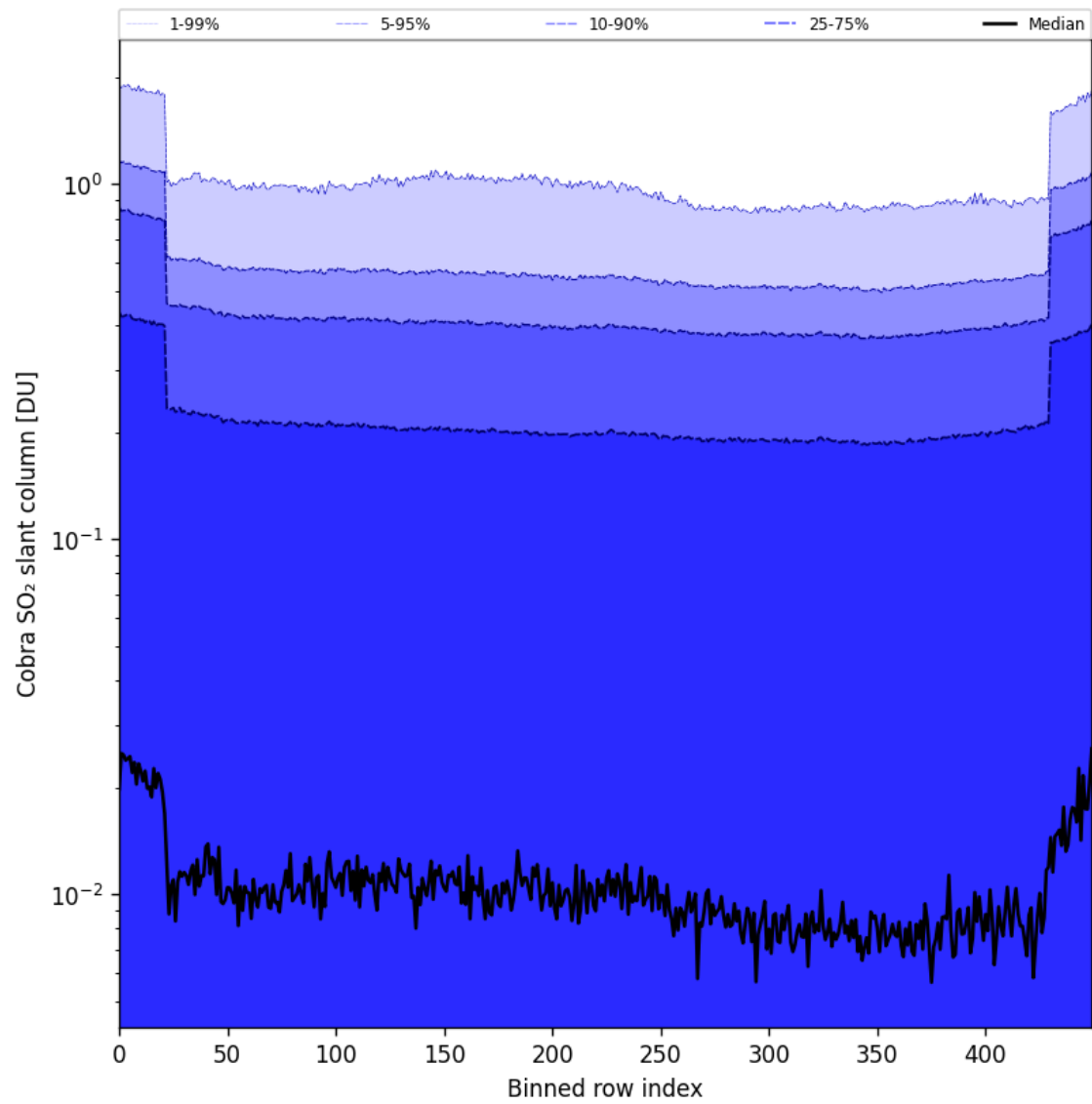


Figure 87: Along track statistics of “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22

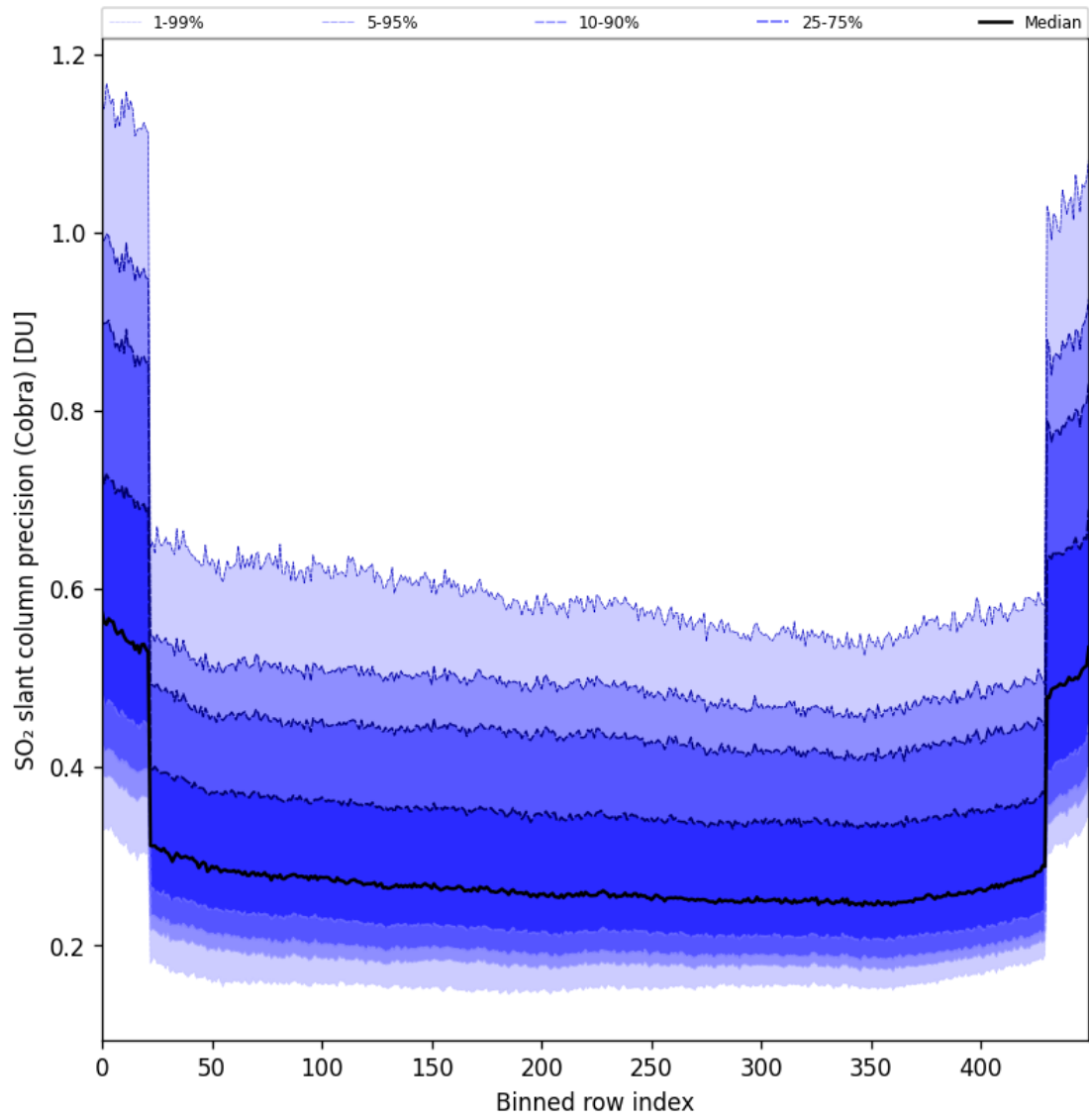


Figure 88: Along track statistics of “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22

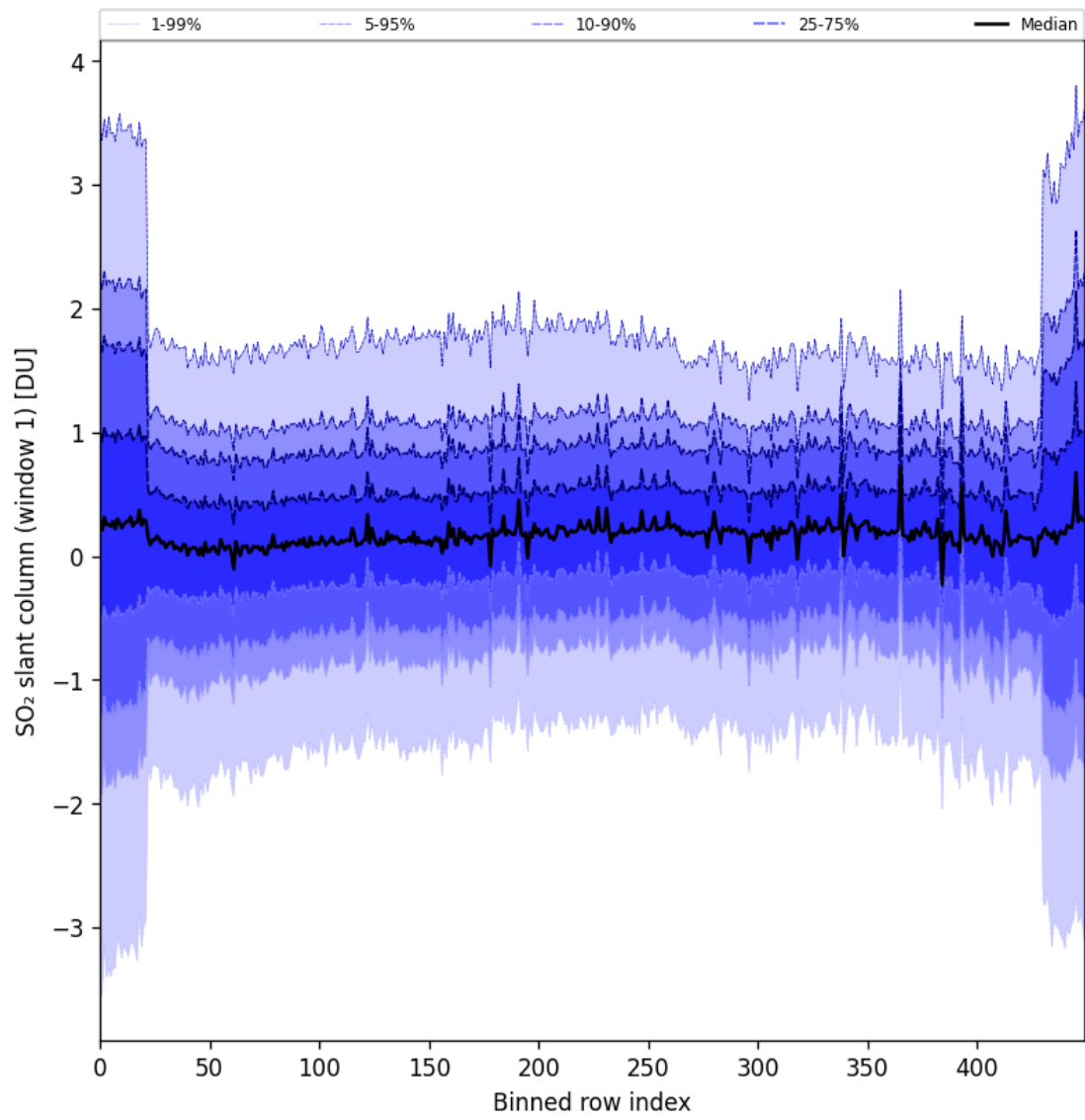


Figure 89: Along track statistics of “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22

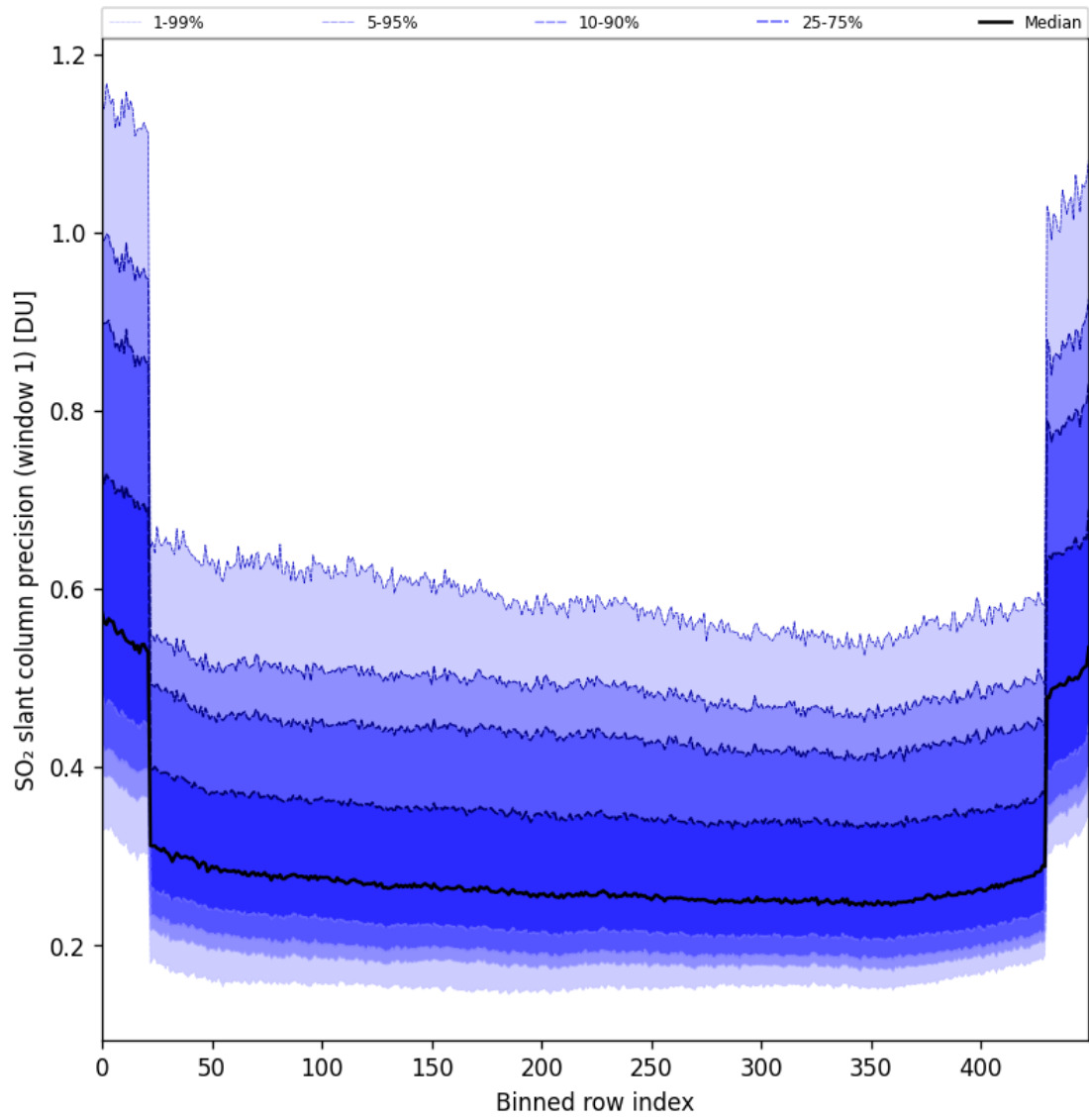


Figure 90: Along track statistics of “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22

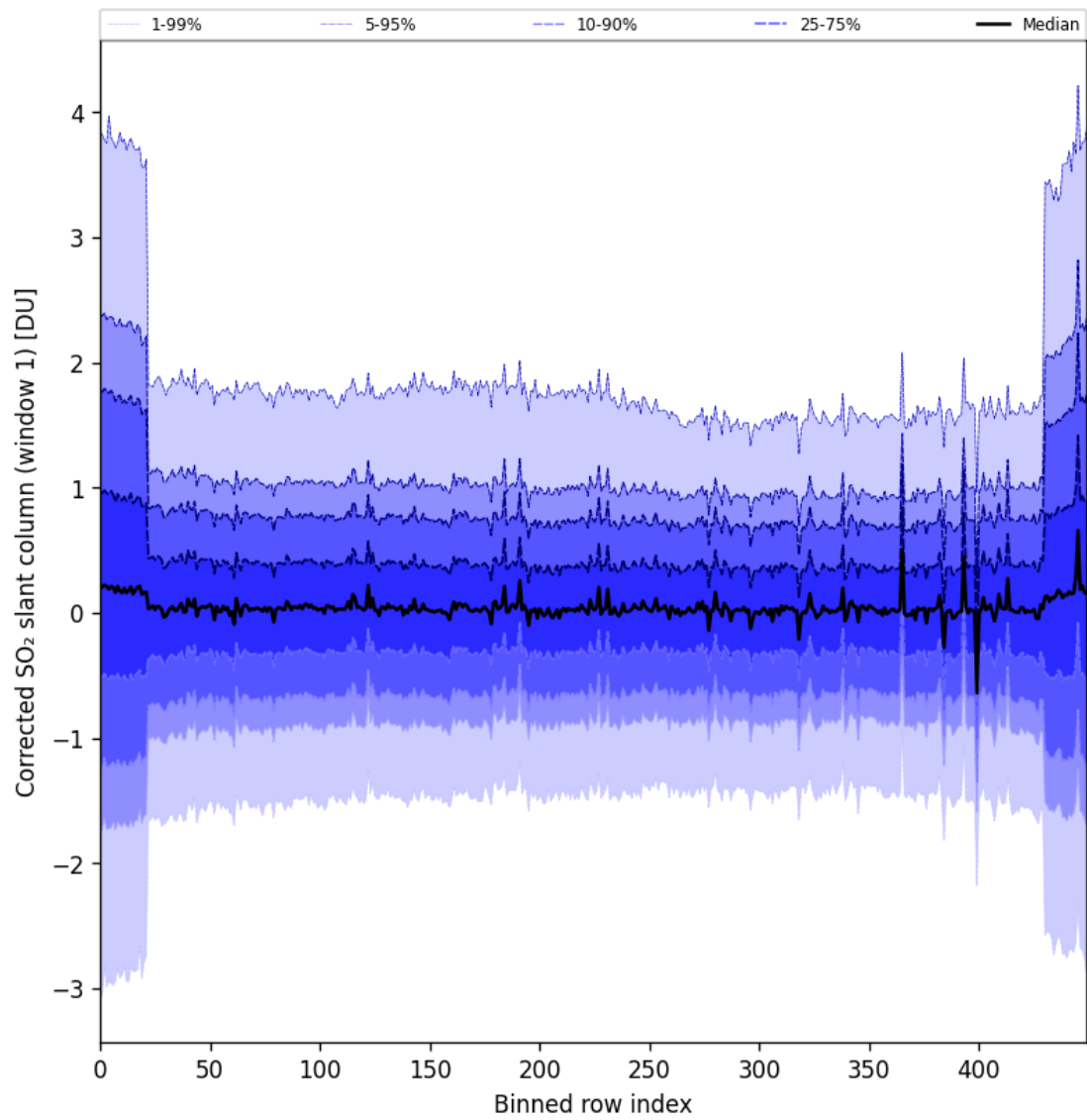


Figure 91: Along track statistics of “Corrected SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22

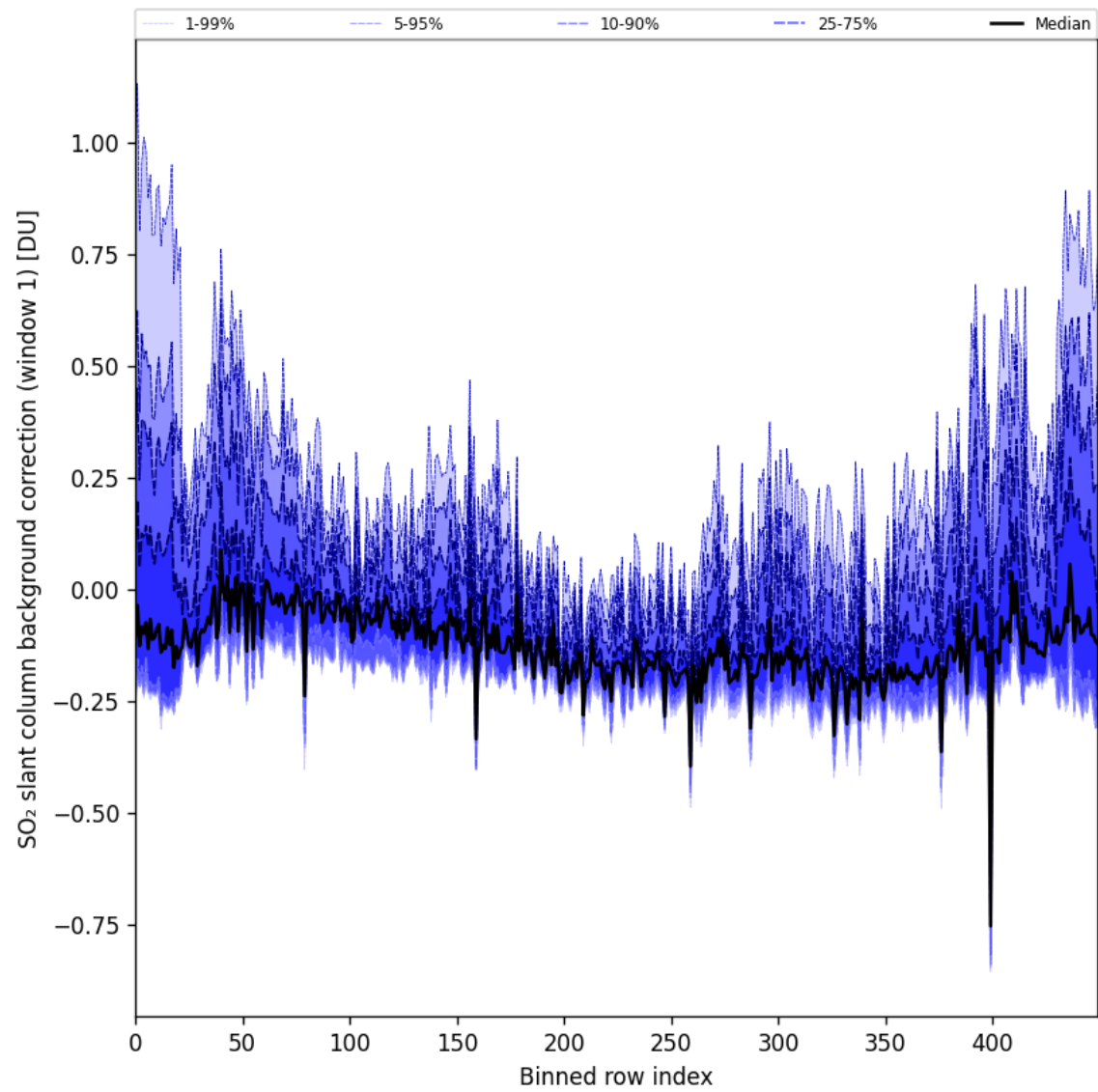


Figure 92: Along track statistics of “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22

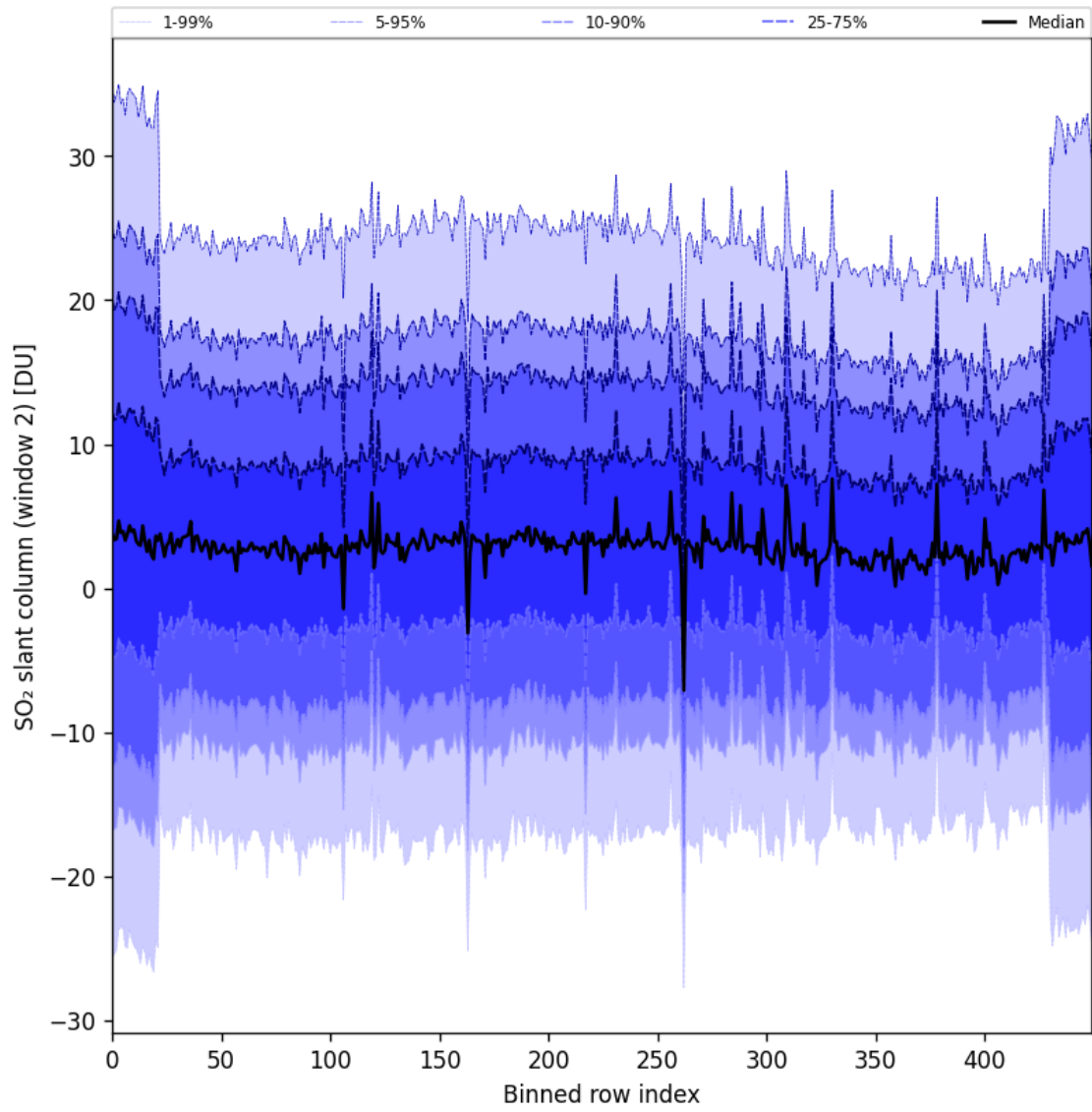


Figure 93: Along track statistics of “SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22

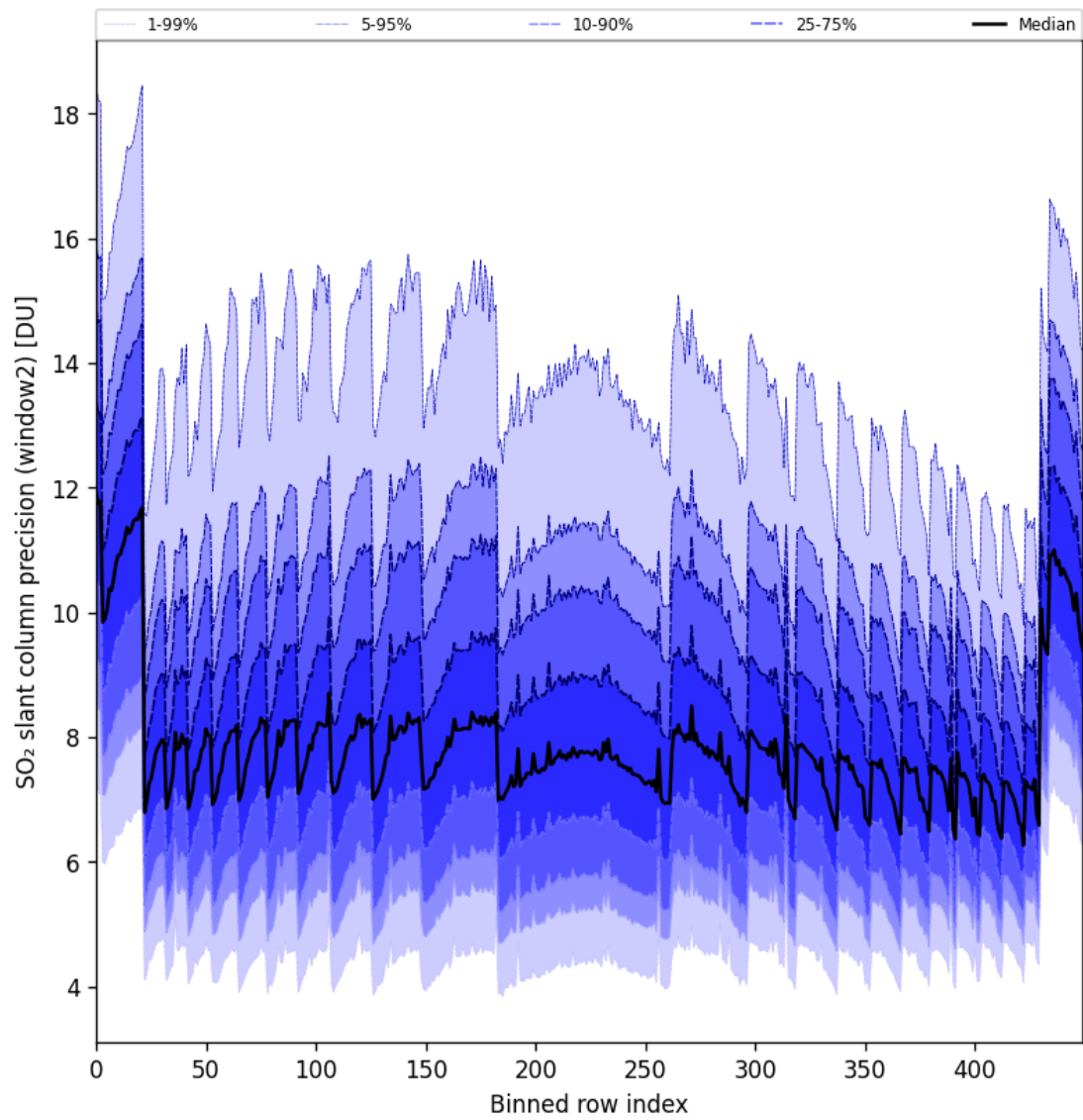


Figure 94: Along track statistics of “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22

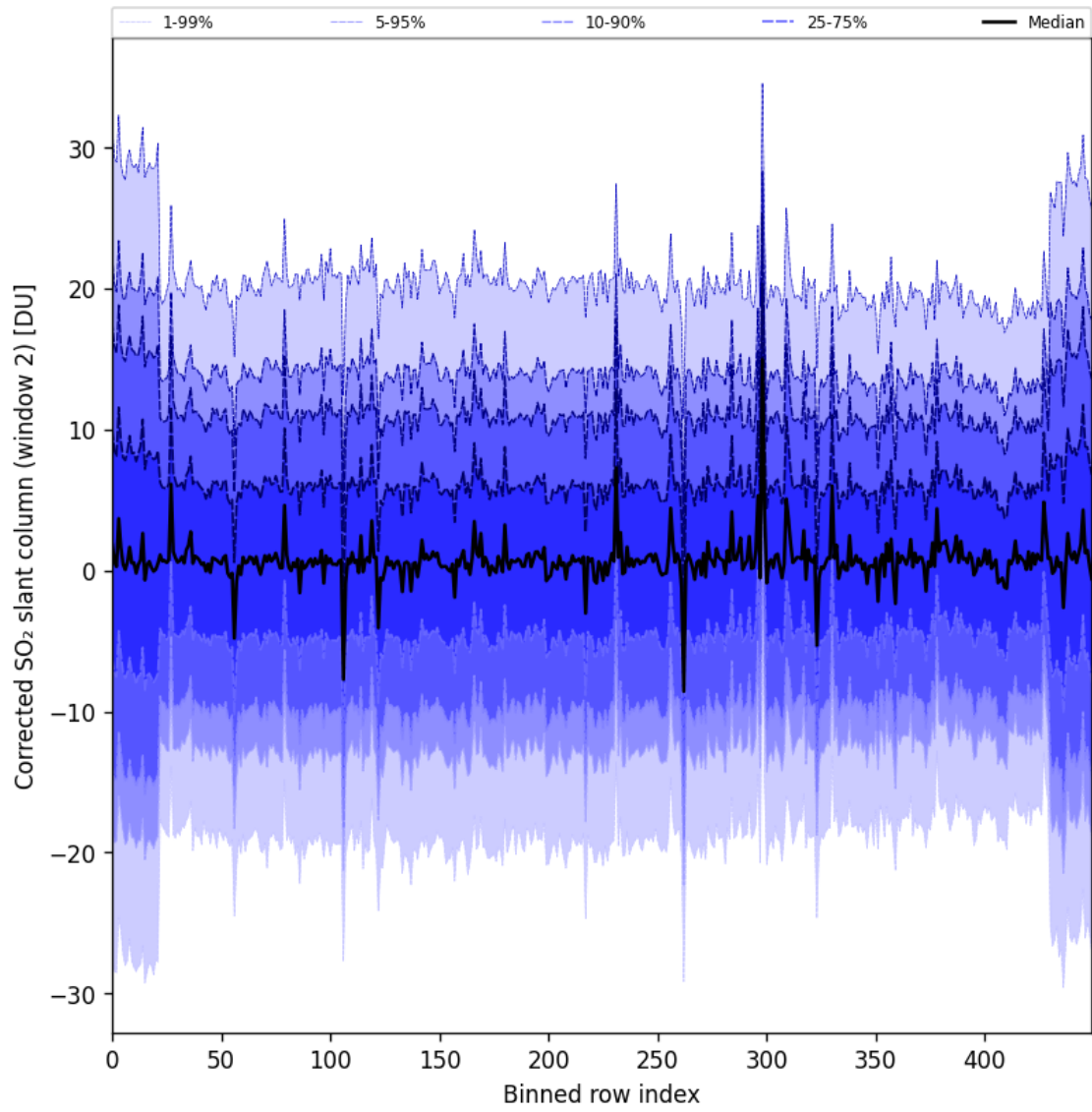


Figure 95: Along track statistics of “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22

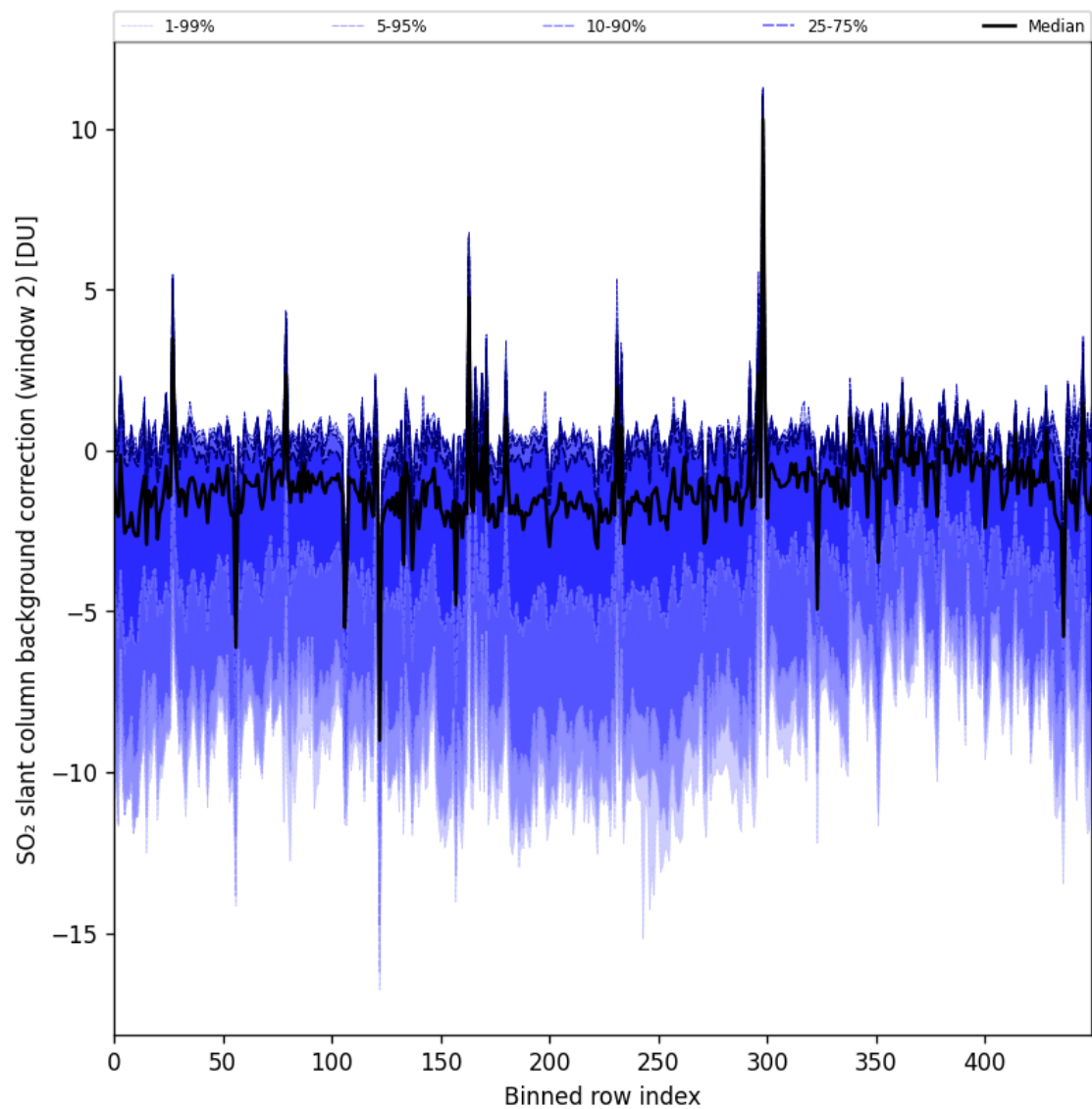


Figure 96: Along track statistics of “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22

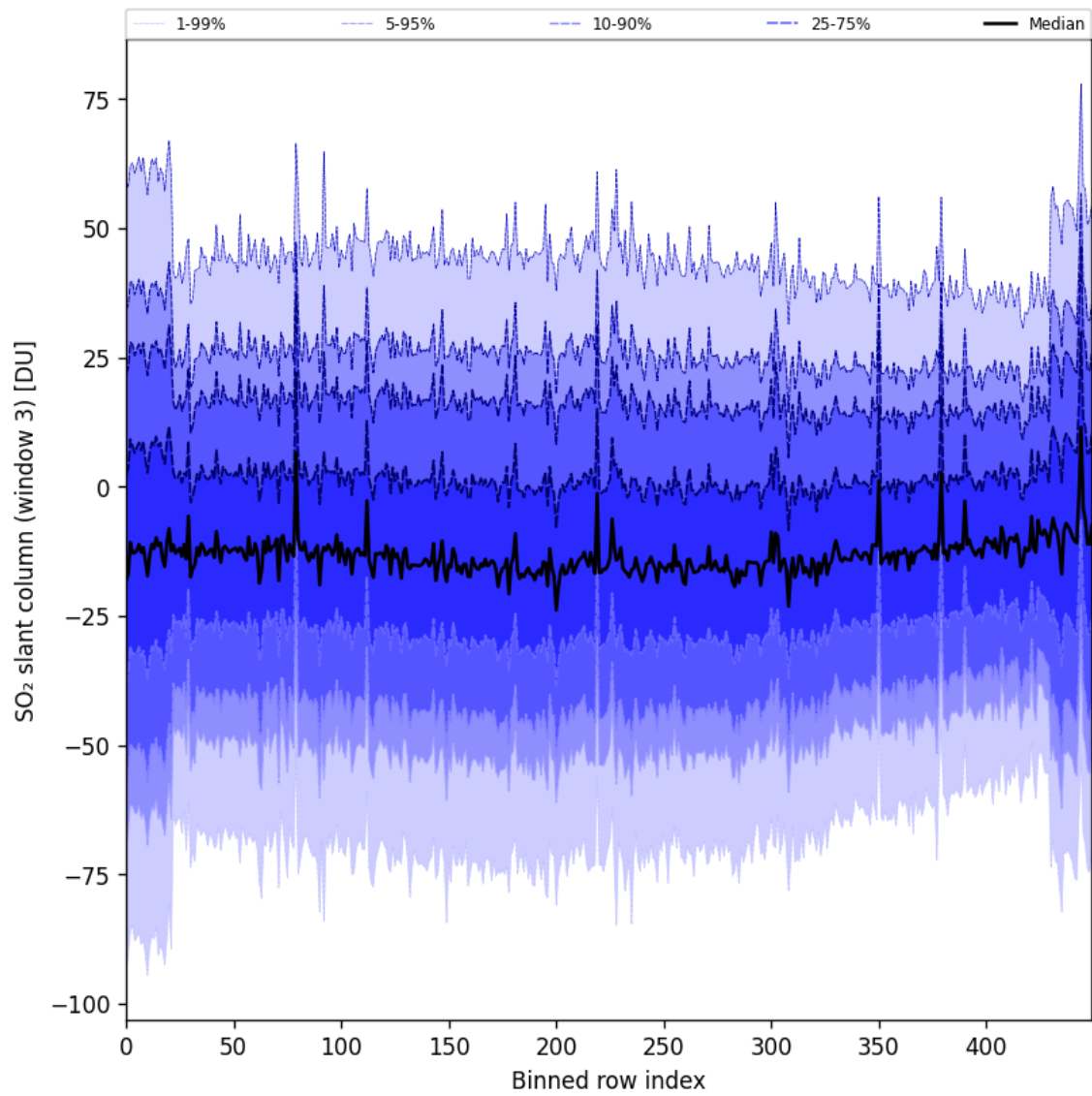


Figure 97: Along track statistics of “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22

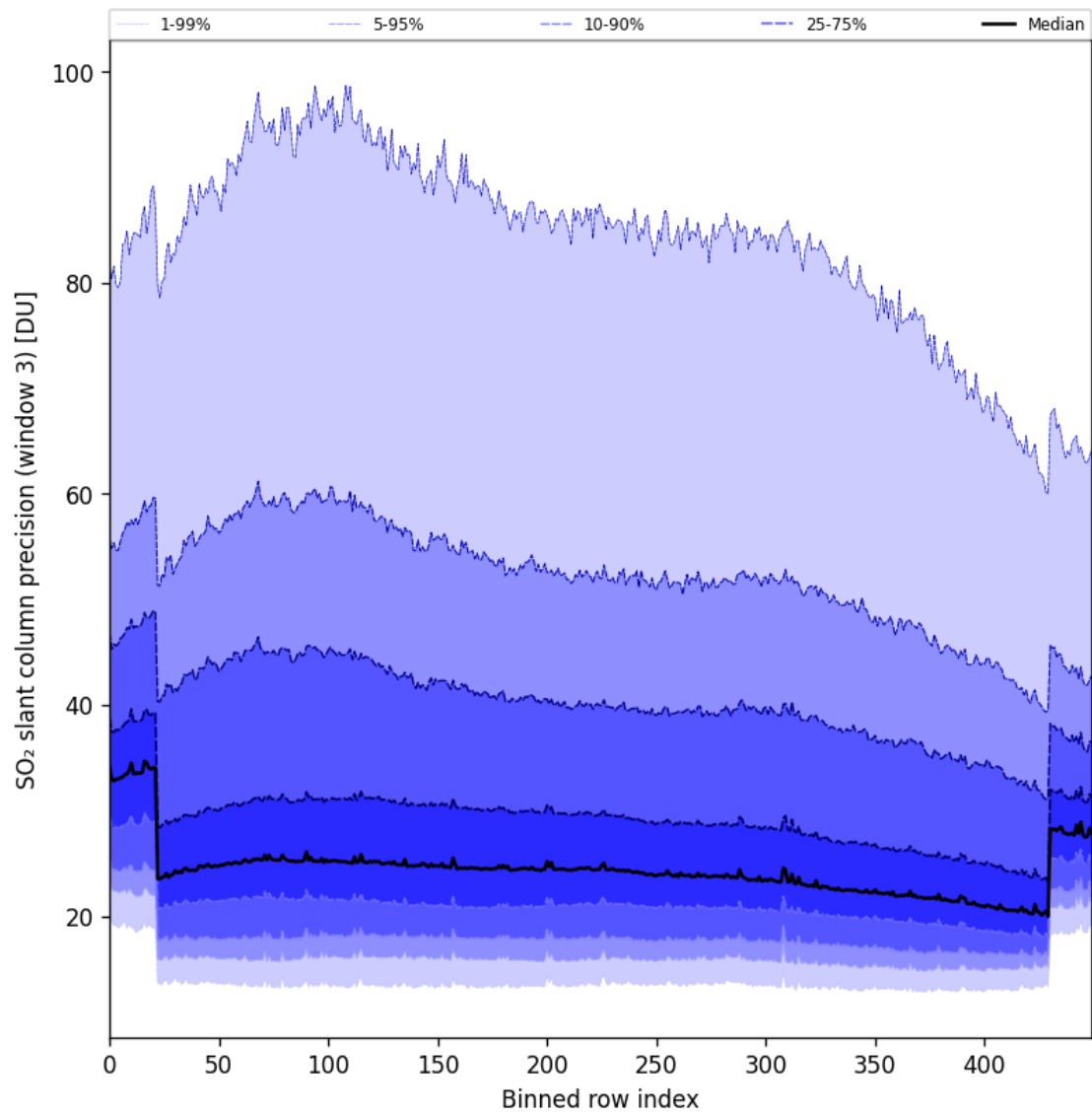


Figure 98: Along track statistics of “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22

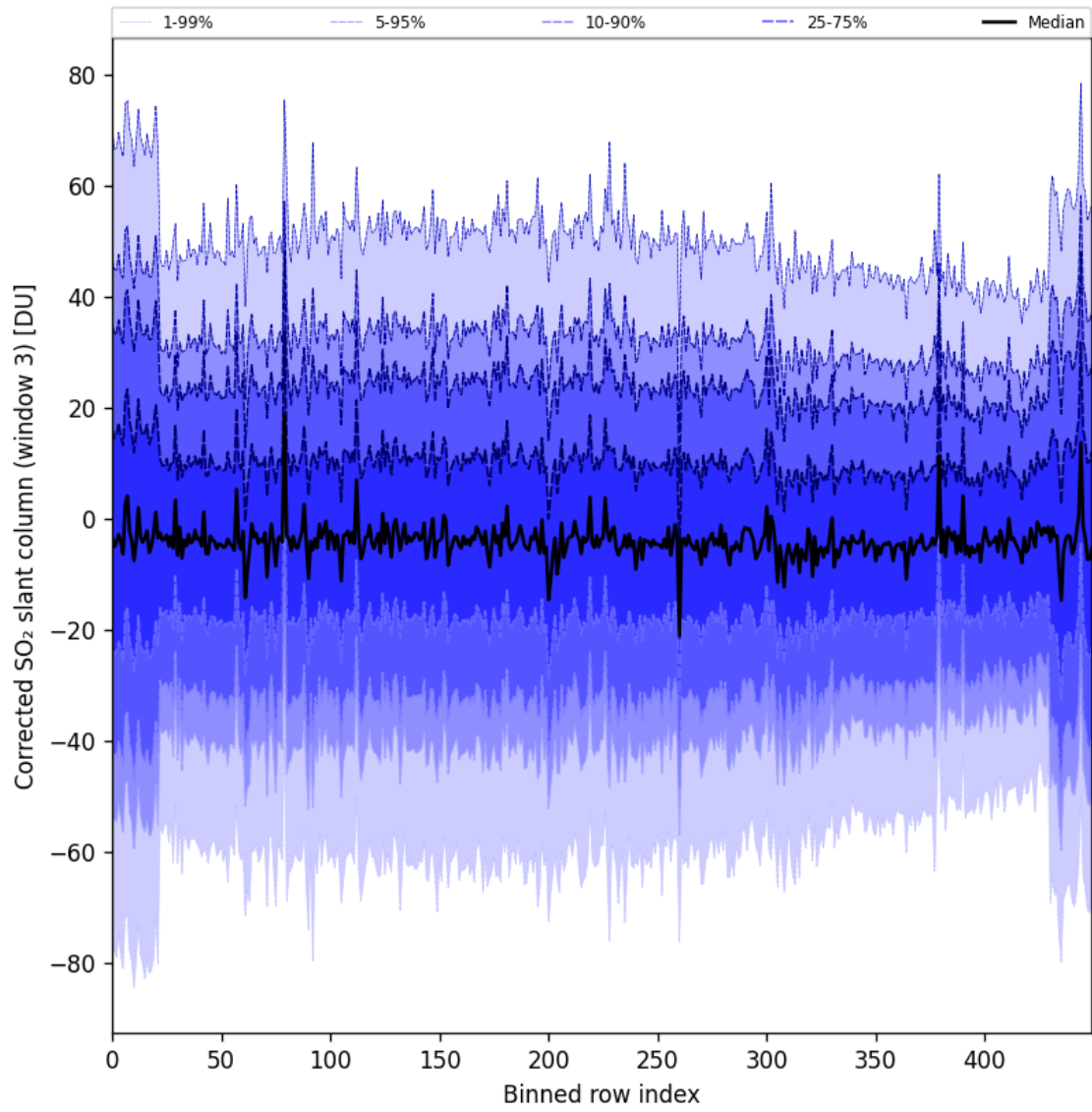


Figure 99: Along track statistics of “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22

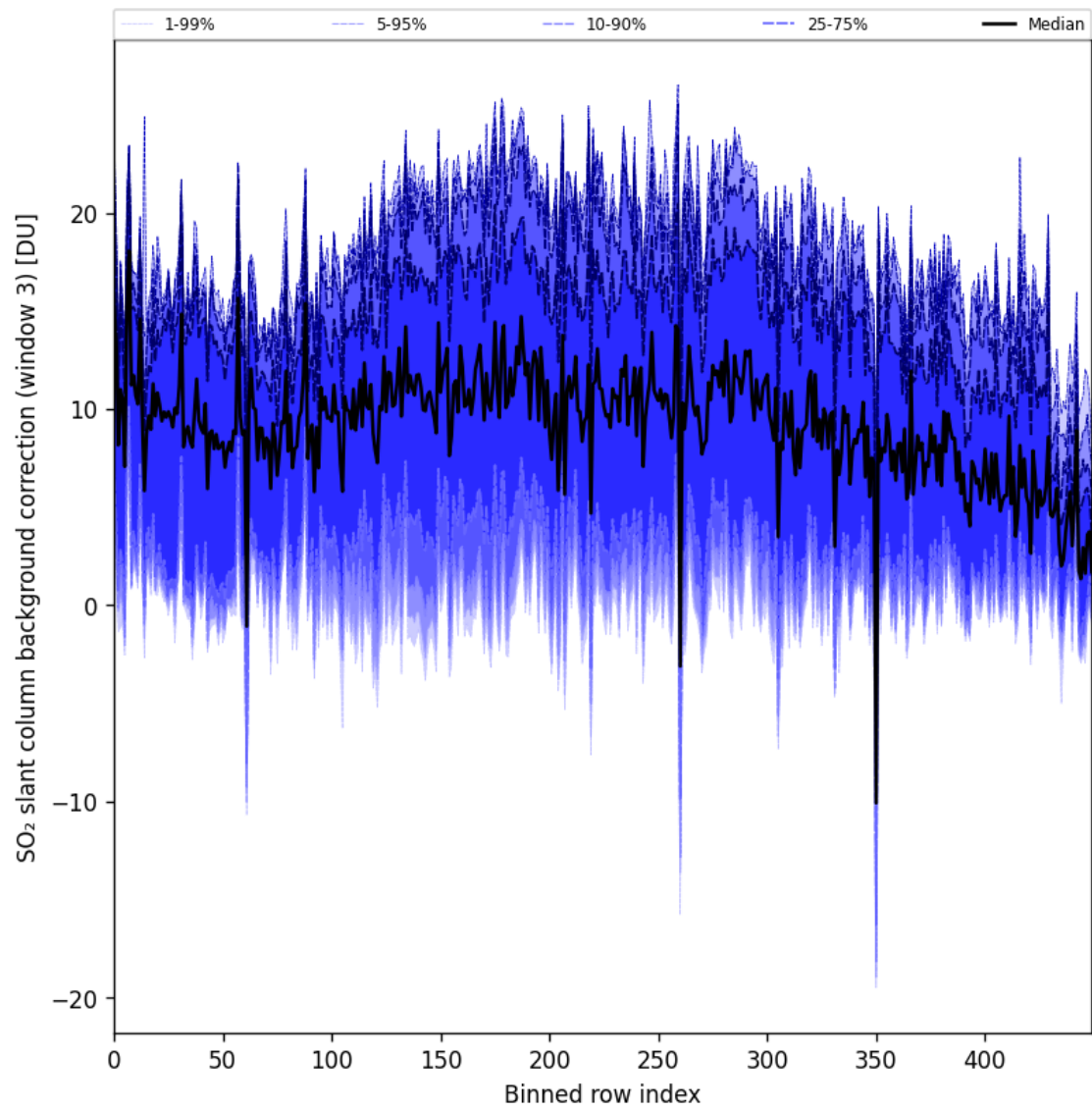


Figure 100: Along track statistics of “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22

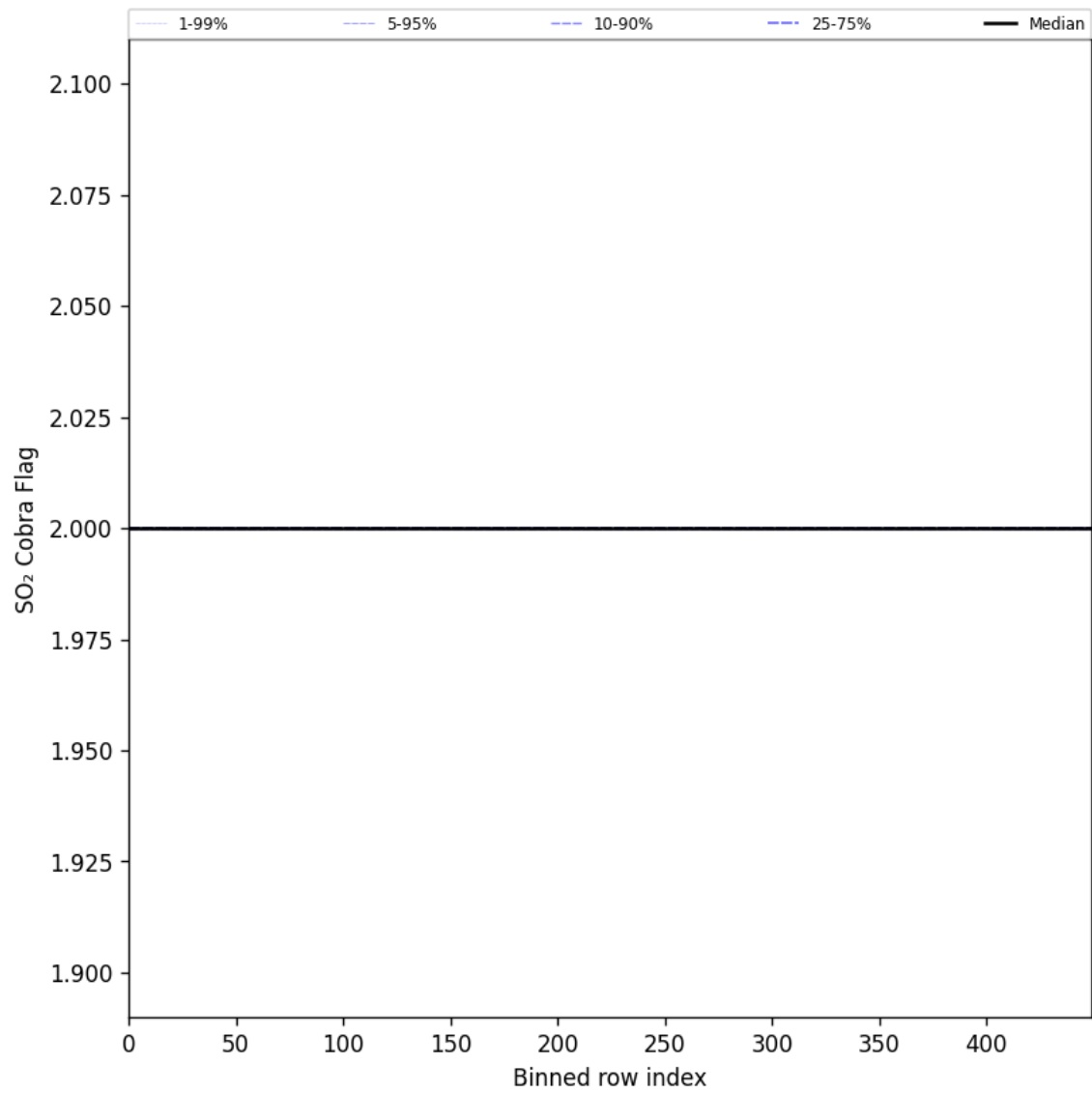


Figure 101: Along track statistics of “SO₂ Cobra Flag” for 2025-04-20 to 2025-04-22

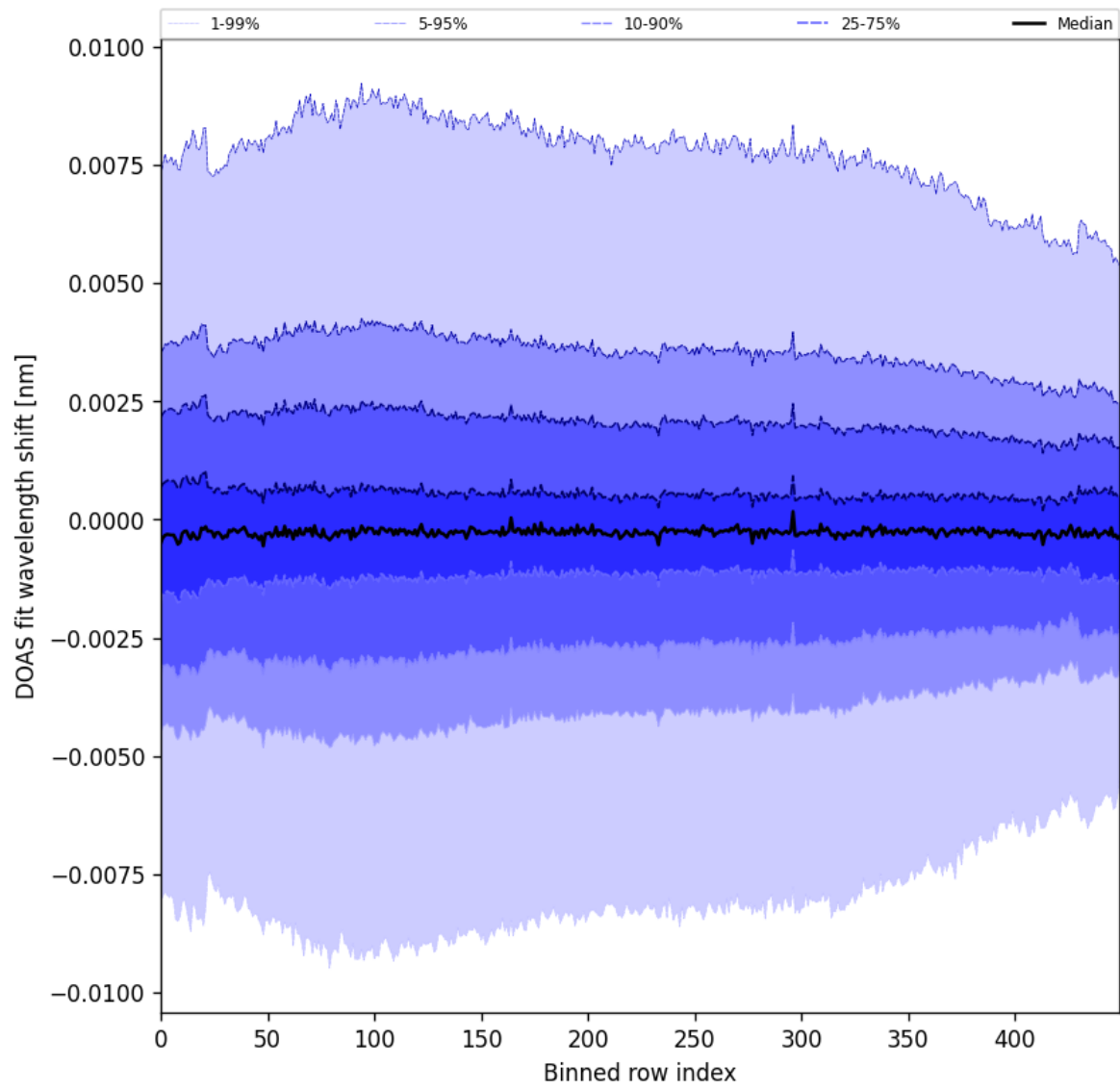


Figure 102: Along track statistics of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22

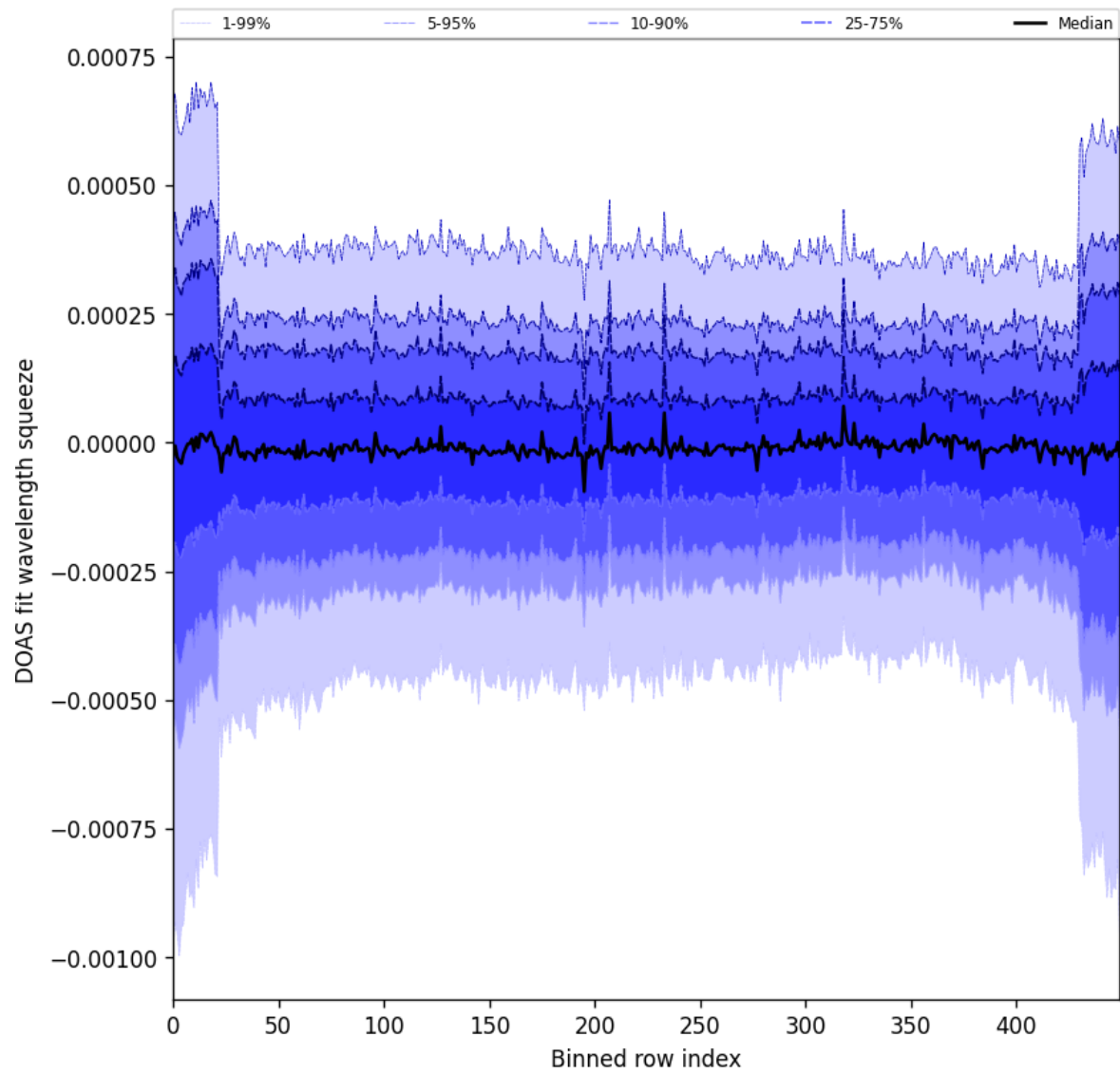


Figure 103: Along track statistics of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22

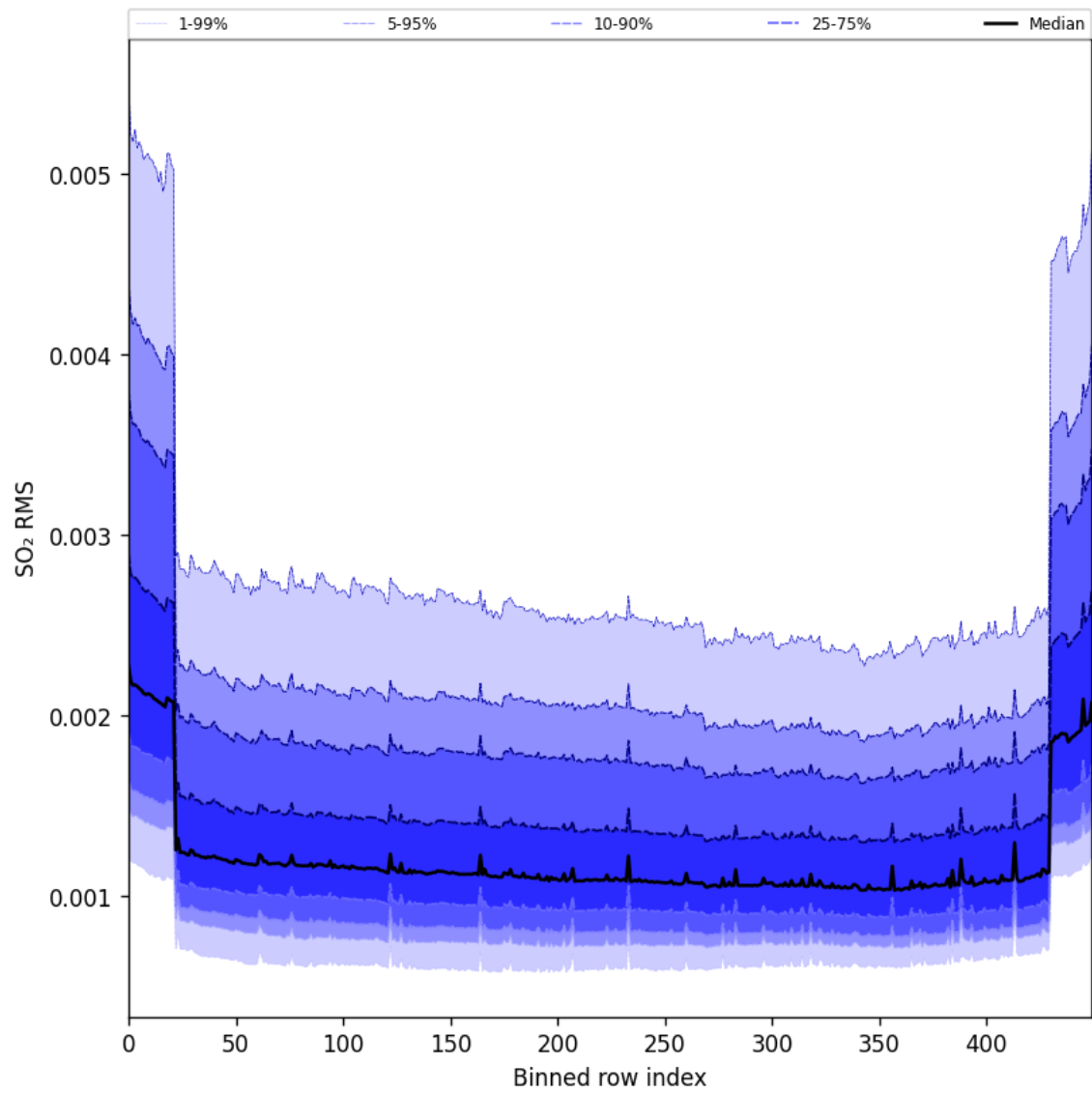


Figure 104: Along track statistics of “SO₂ RMS” for 2025-04-20 to 2025-04-22

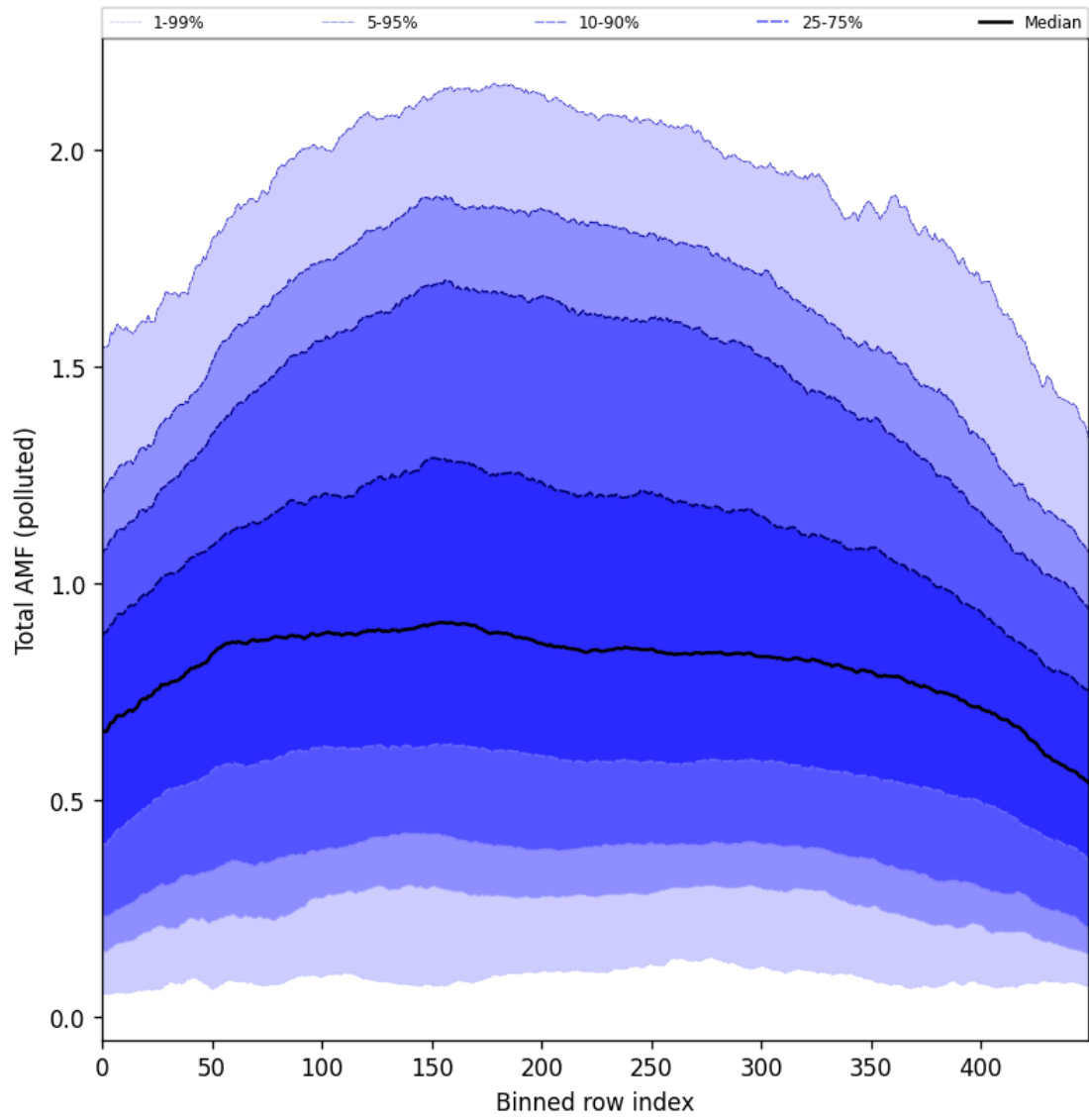


Figure 105: Along track statistics of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22

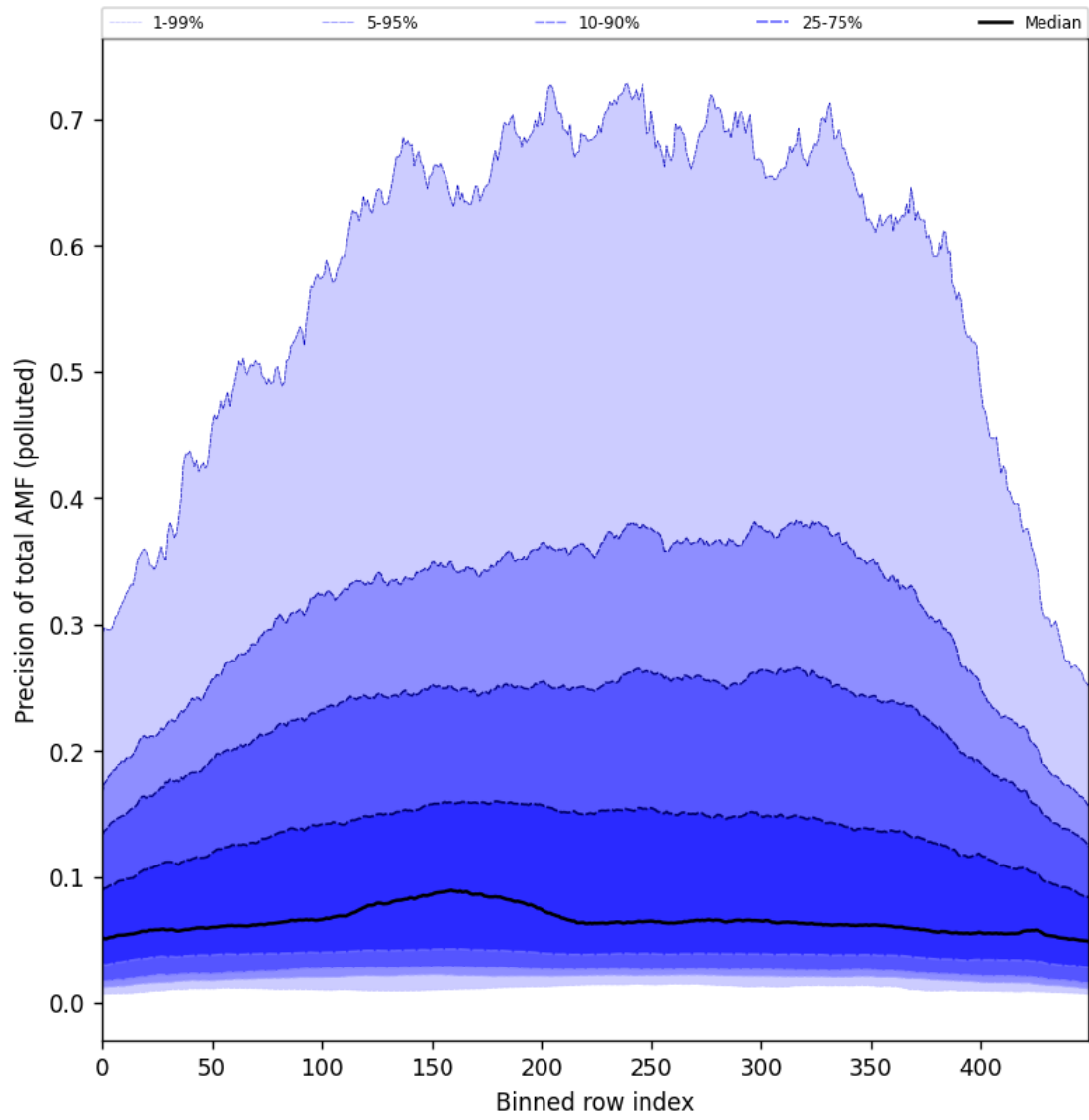


Figure 106: Along track statistics of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22

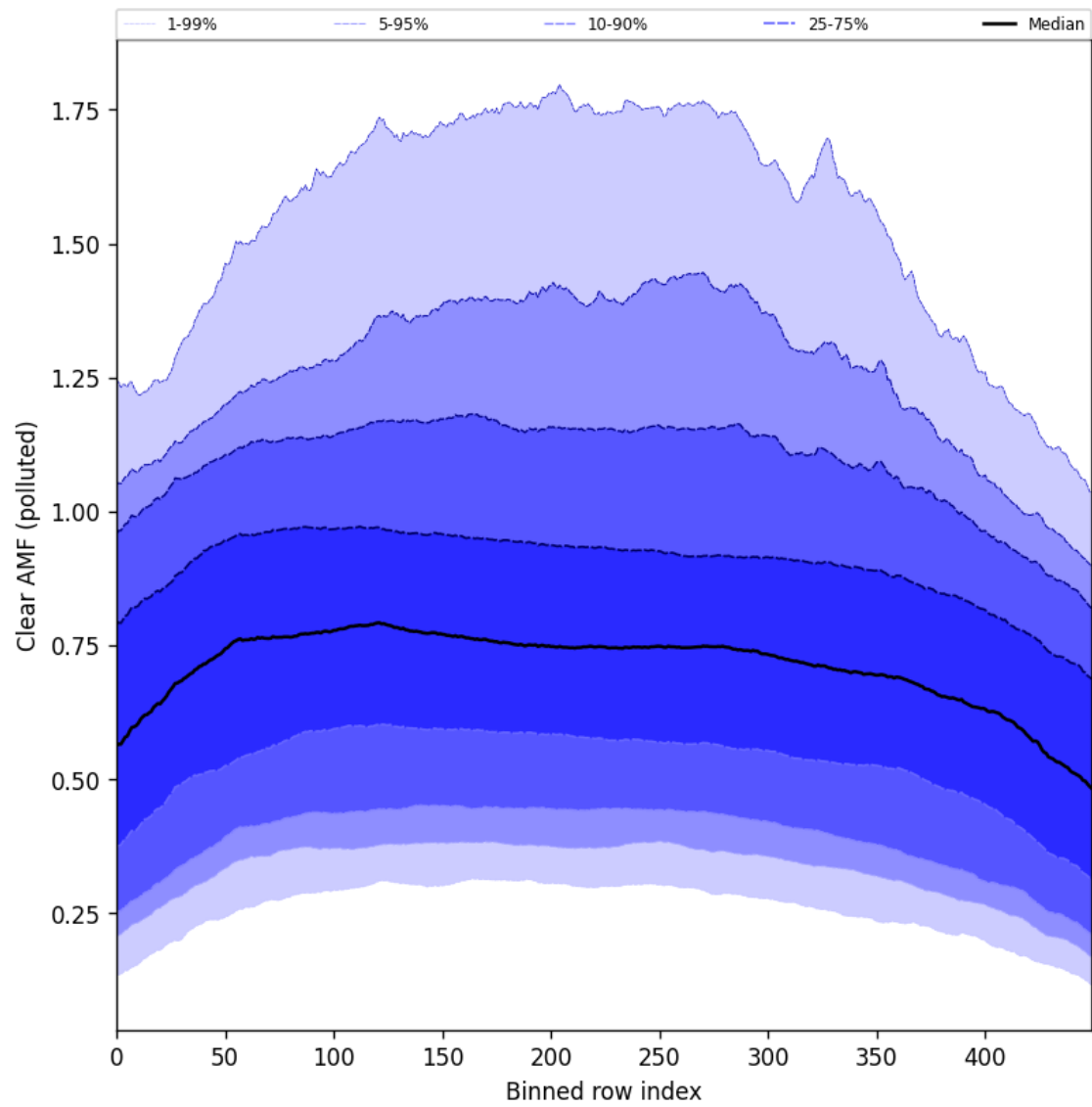


Figure 107: Along track statistics of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22

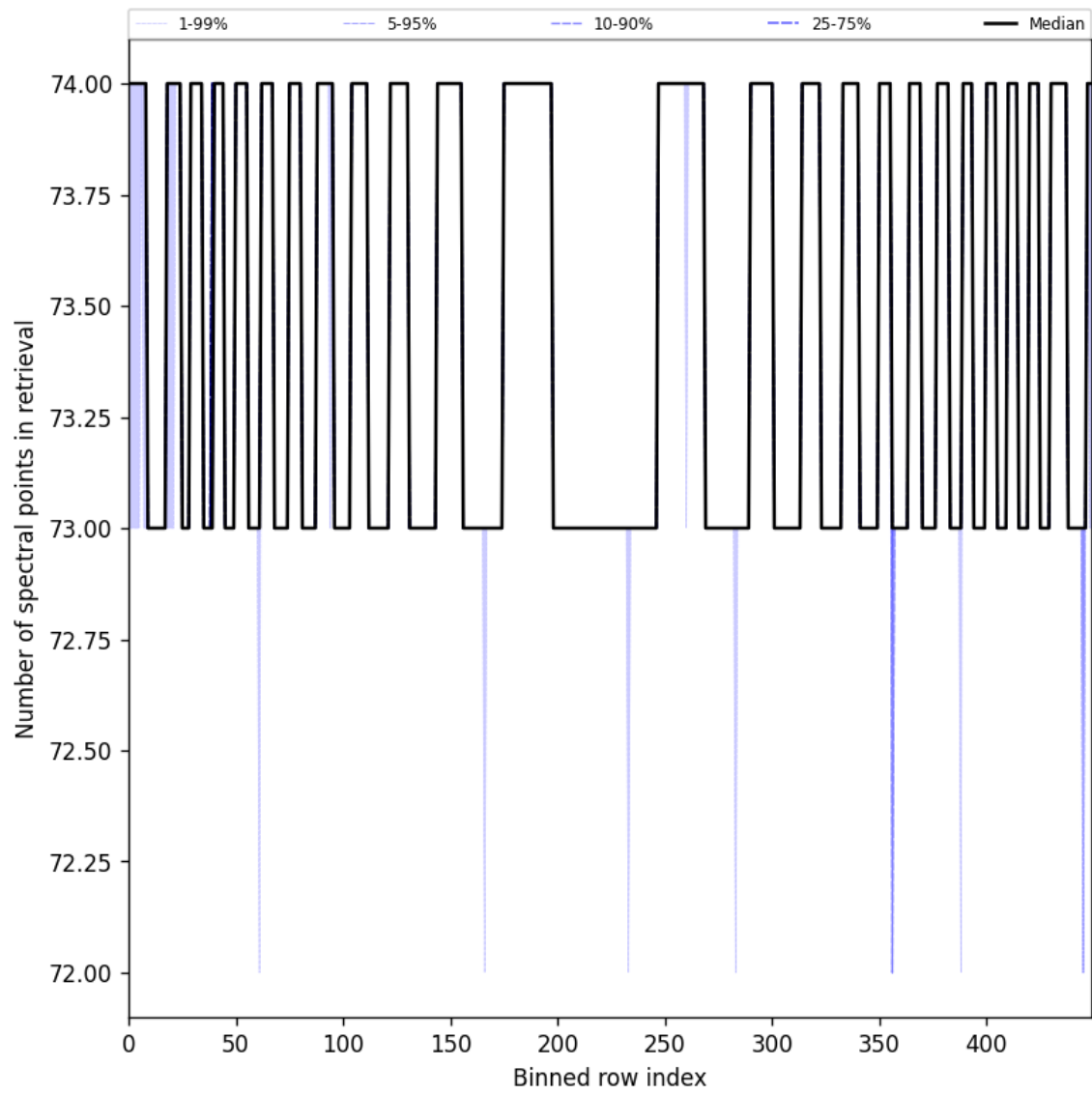


Figure 108: Along track statistics of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22

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.

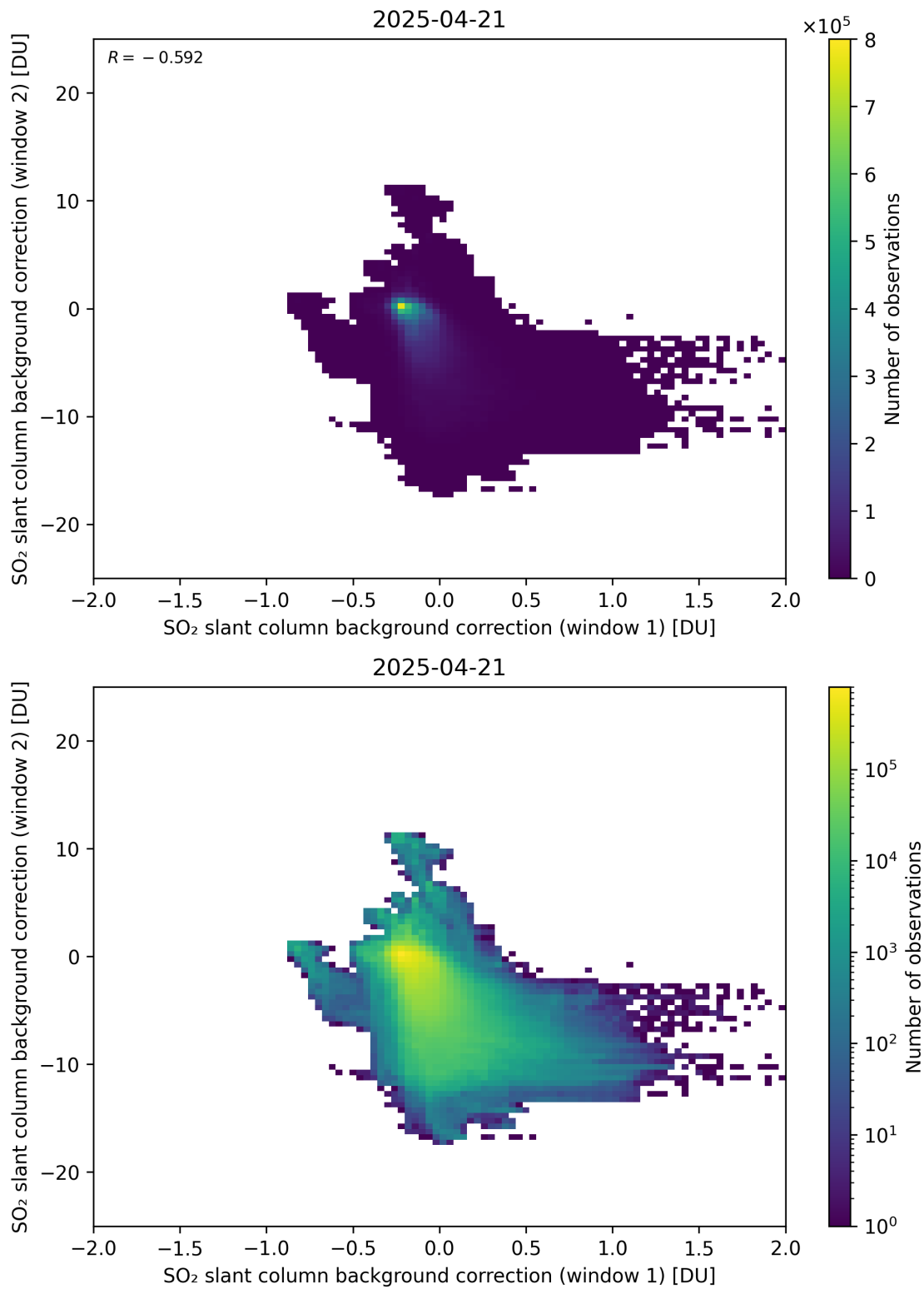


Figure 109: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

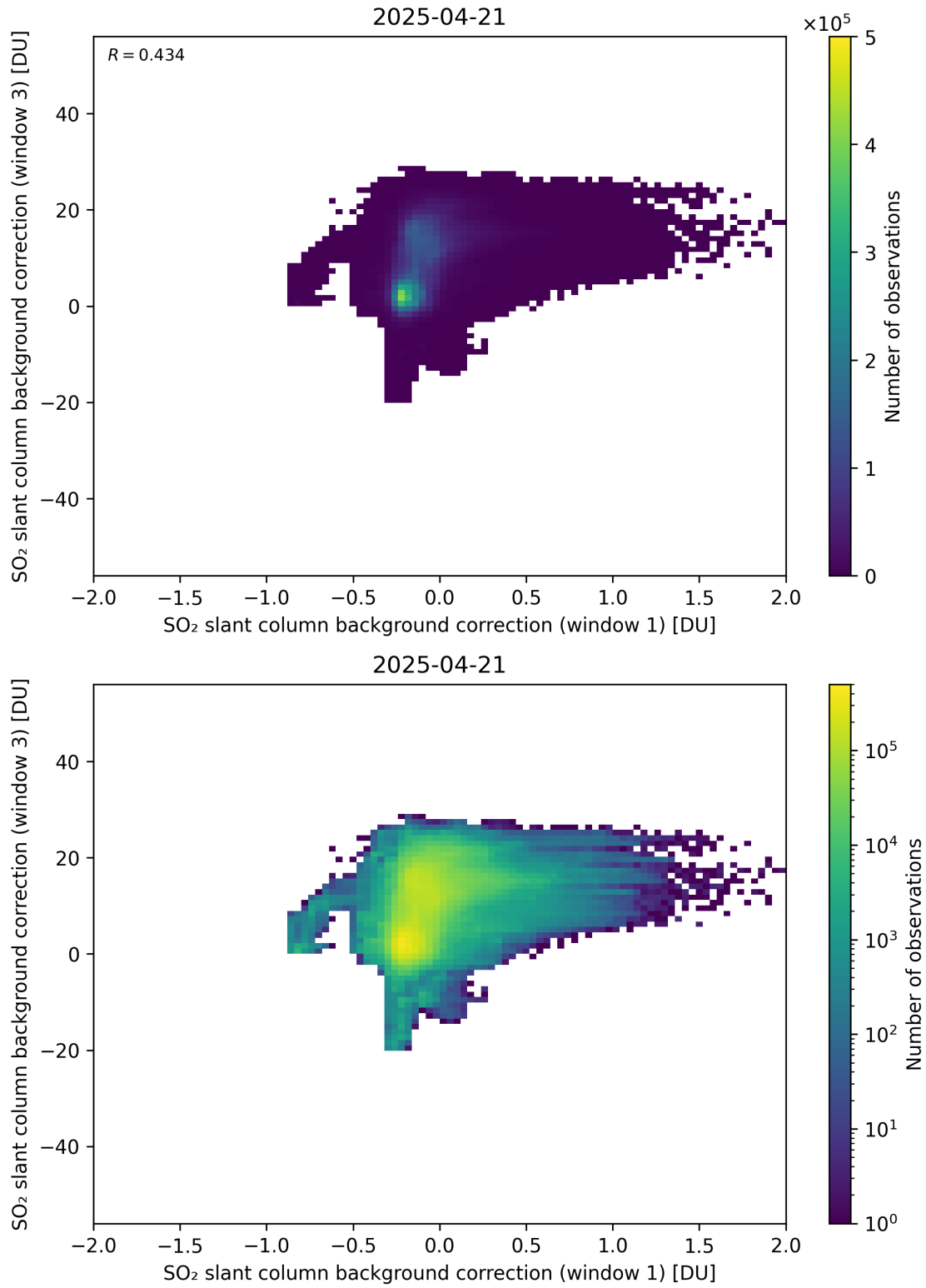


Figure 110: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

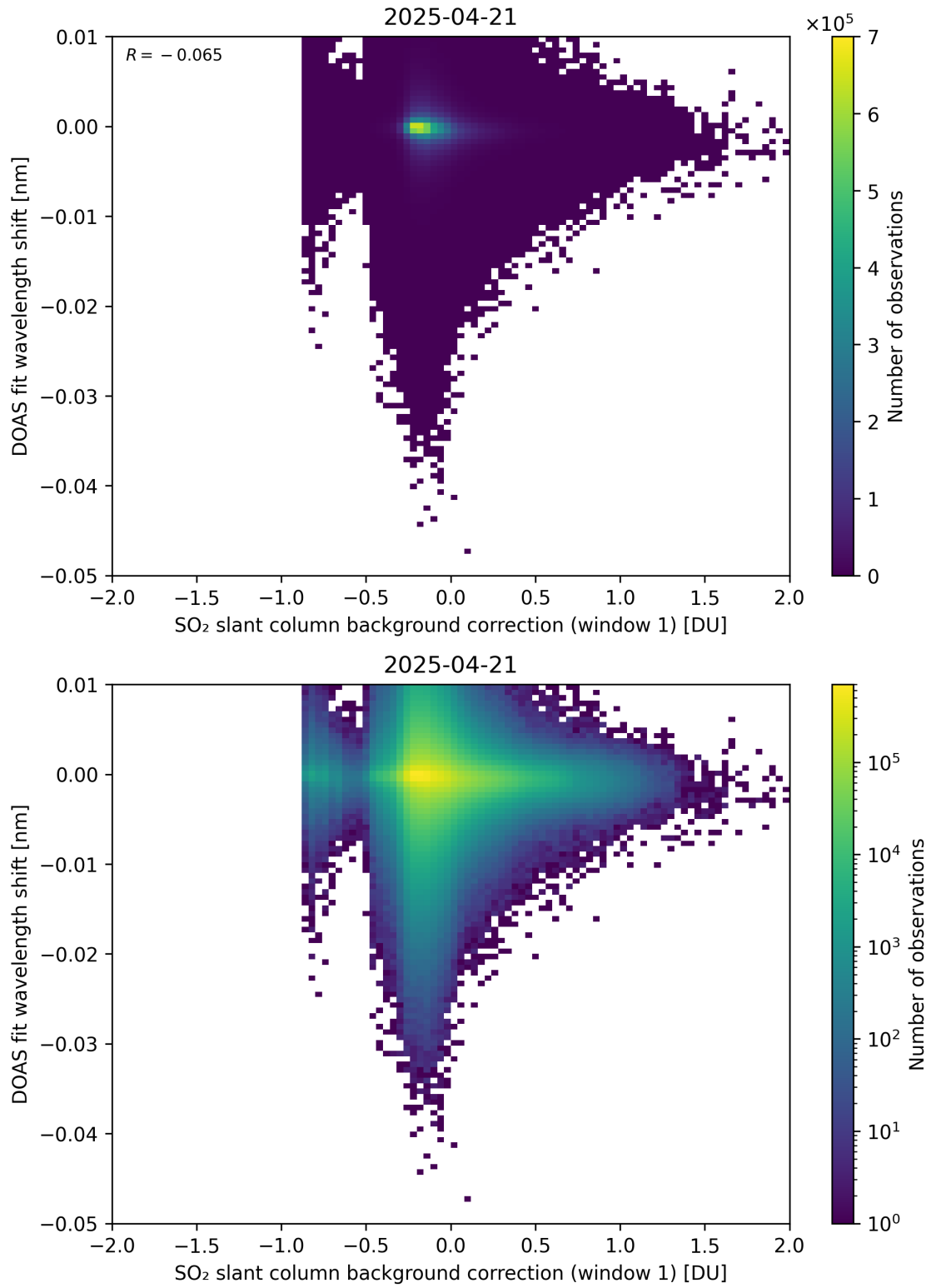


Figure 111: Scatter density plot of “SO₂ slant column background correction (window 1)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

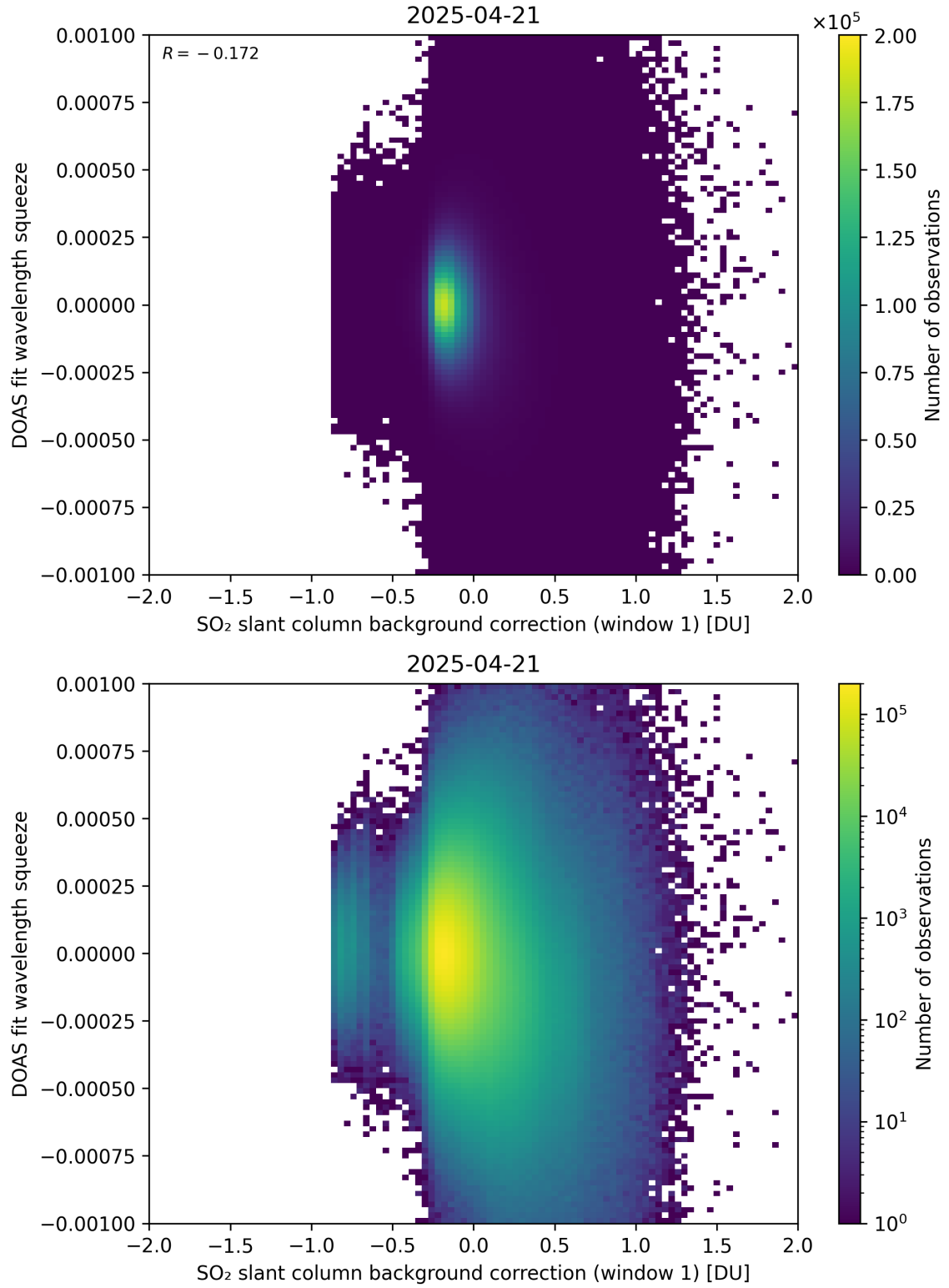


Figure 112: Scatter density plot of “SO₂ slant column background correction (window 1)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

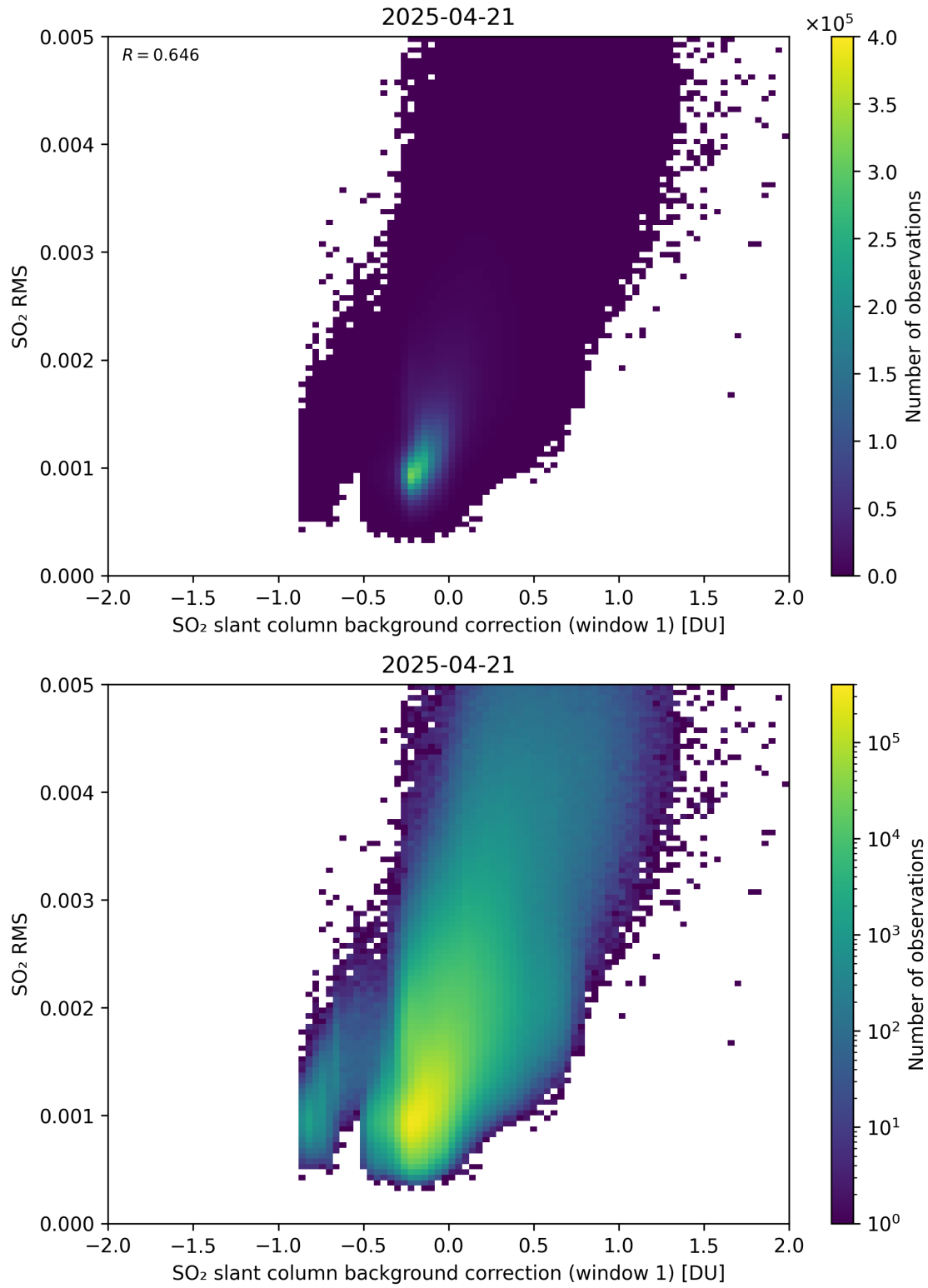


Figure 113: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

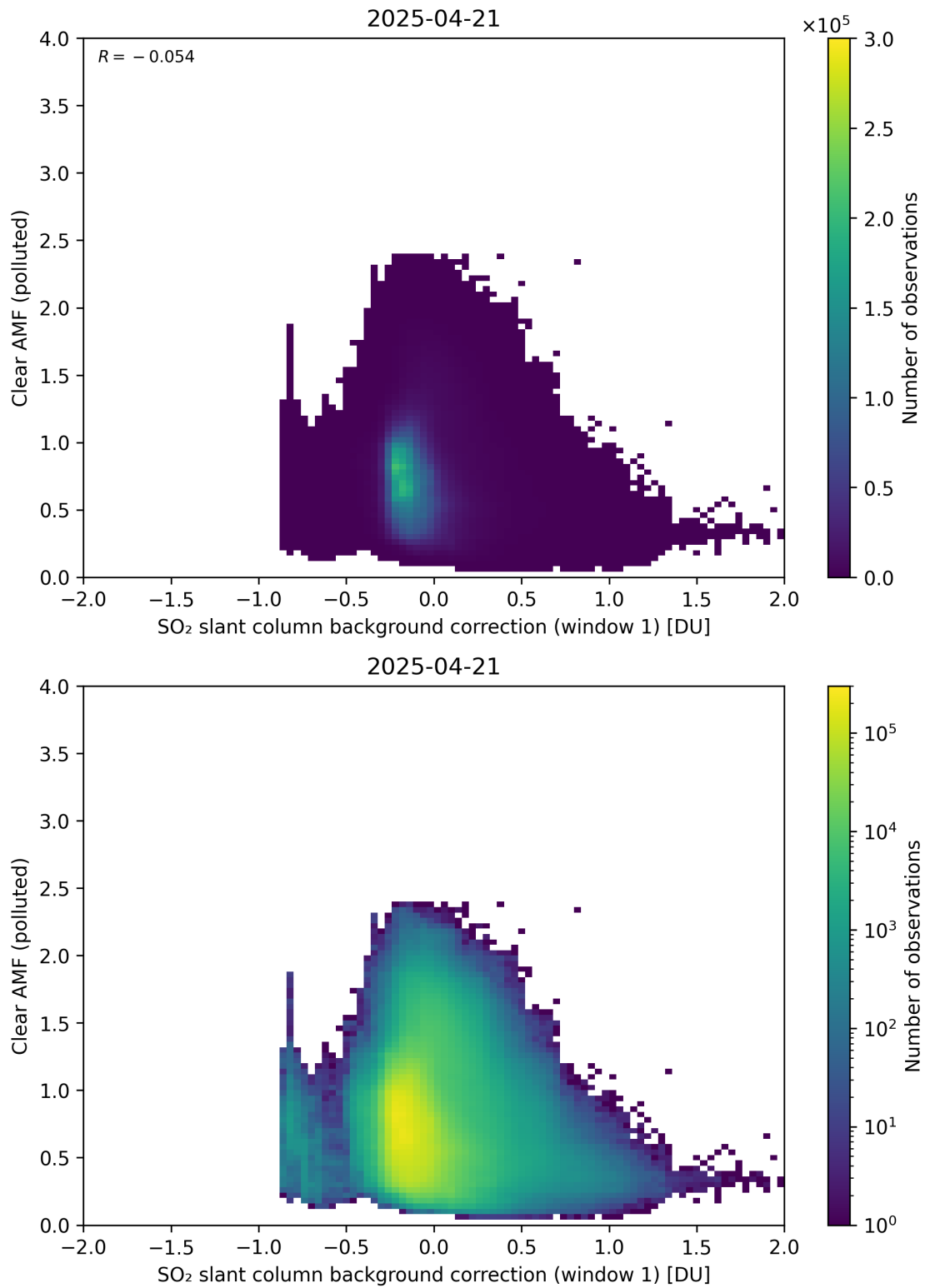


Figure 114: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

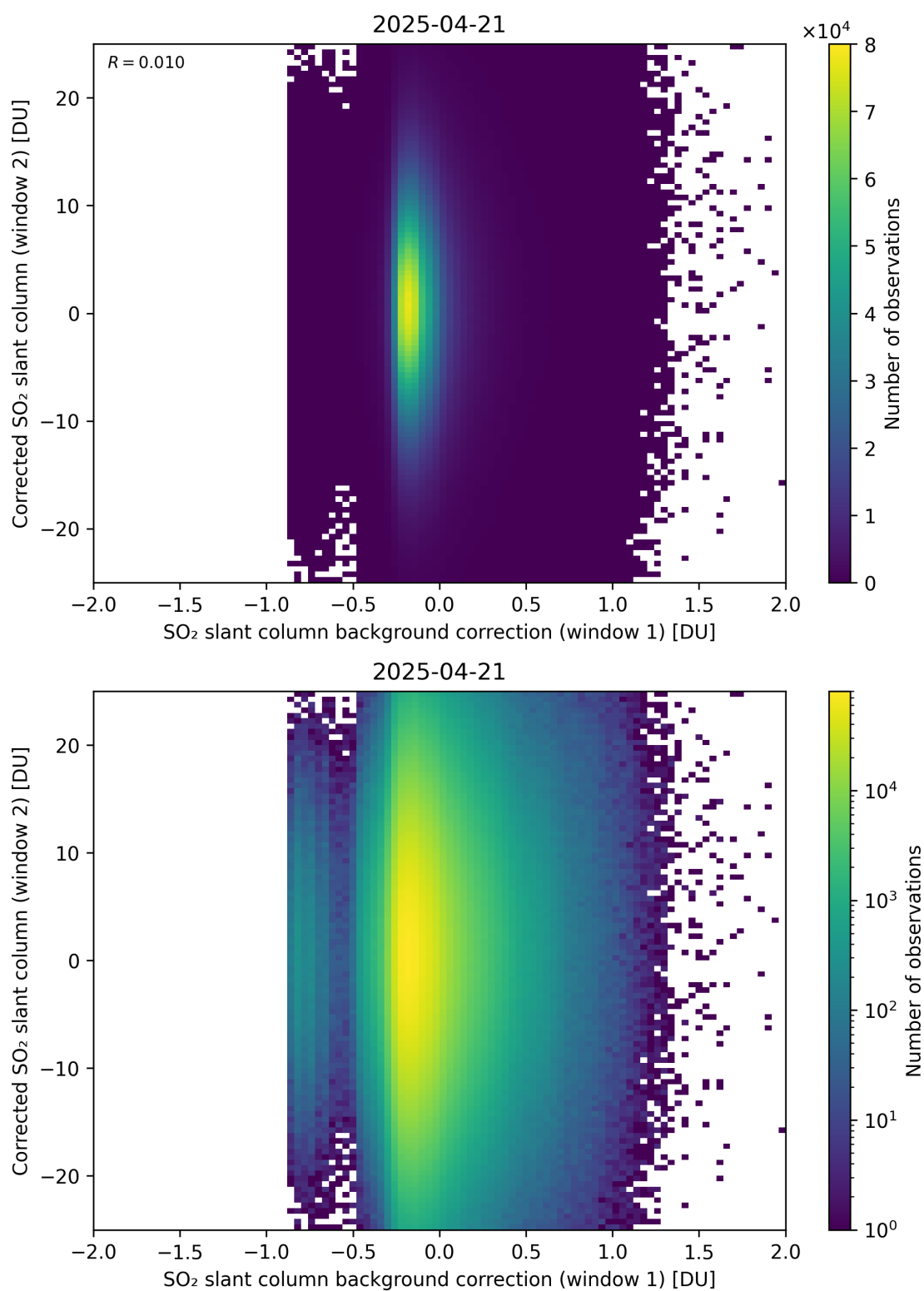


Figure 115: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

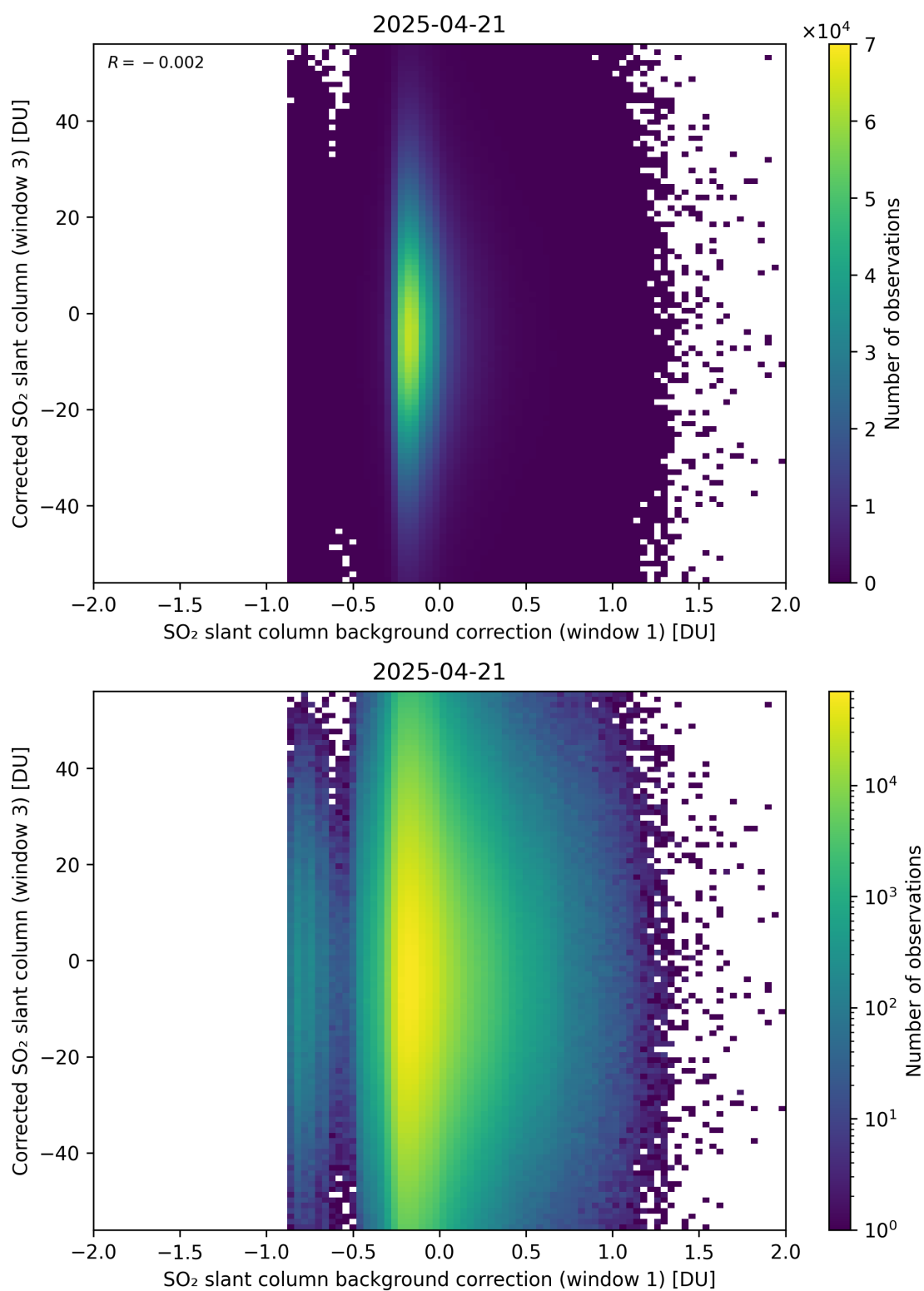


Figure 116: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

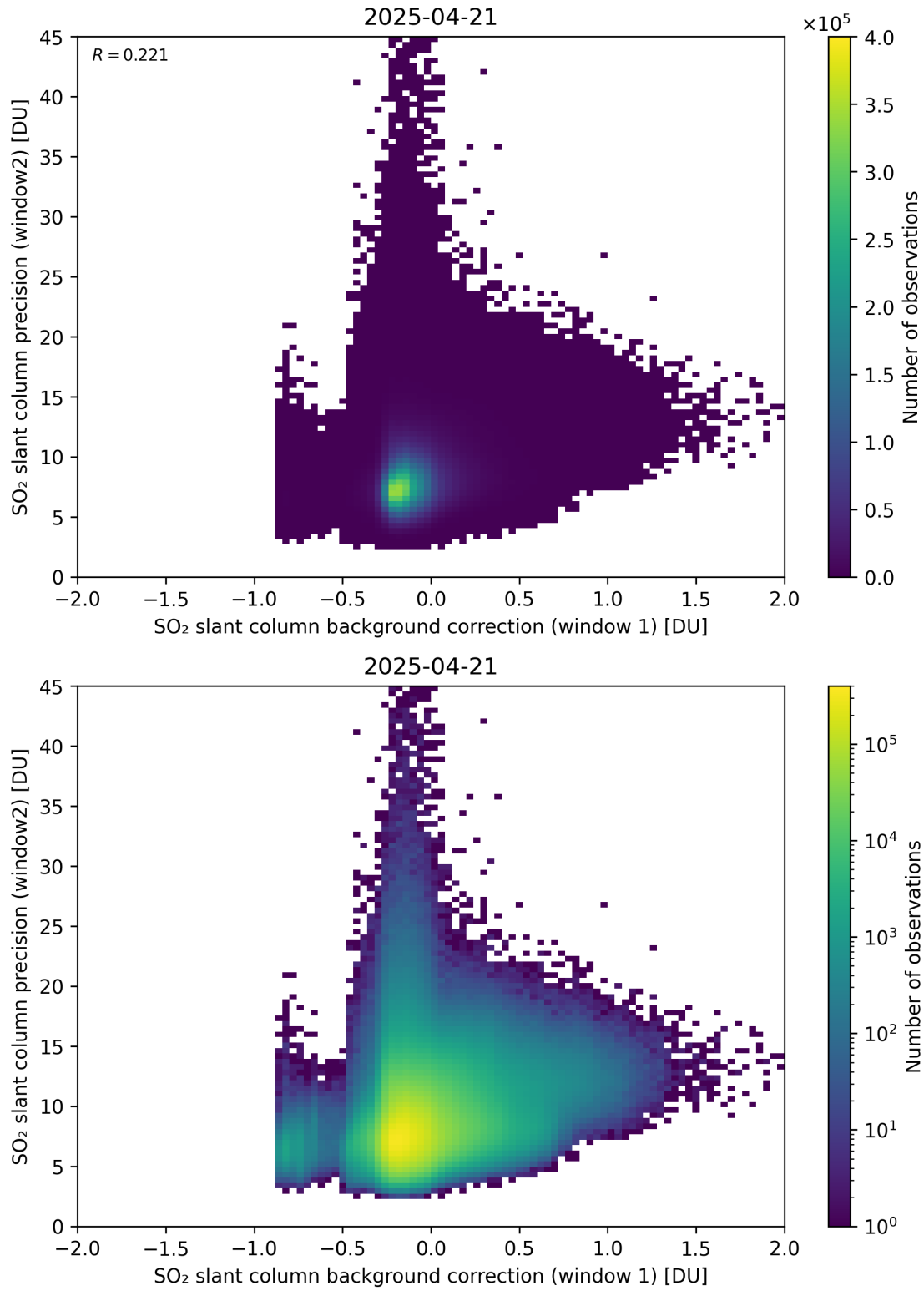


Figure 117: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

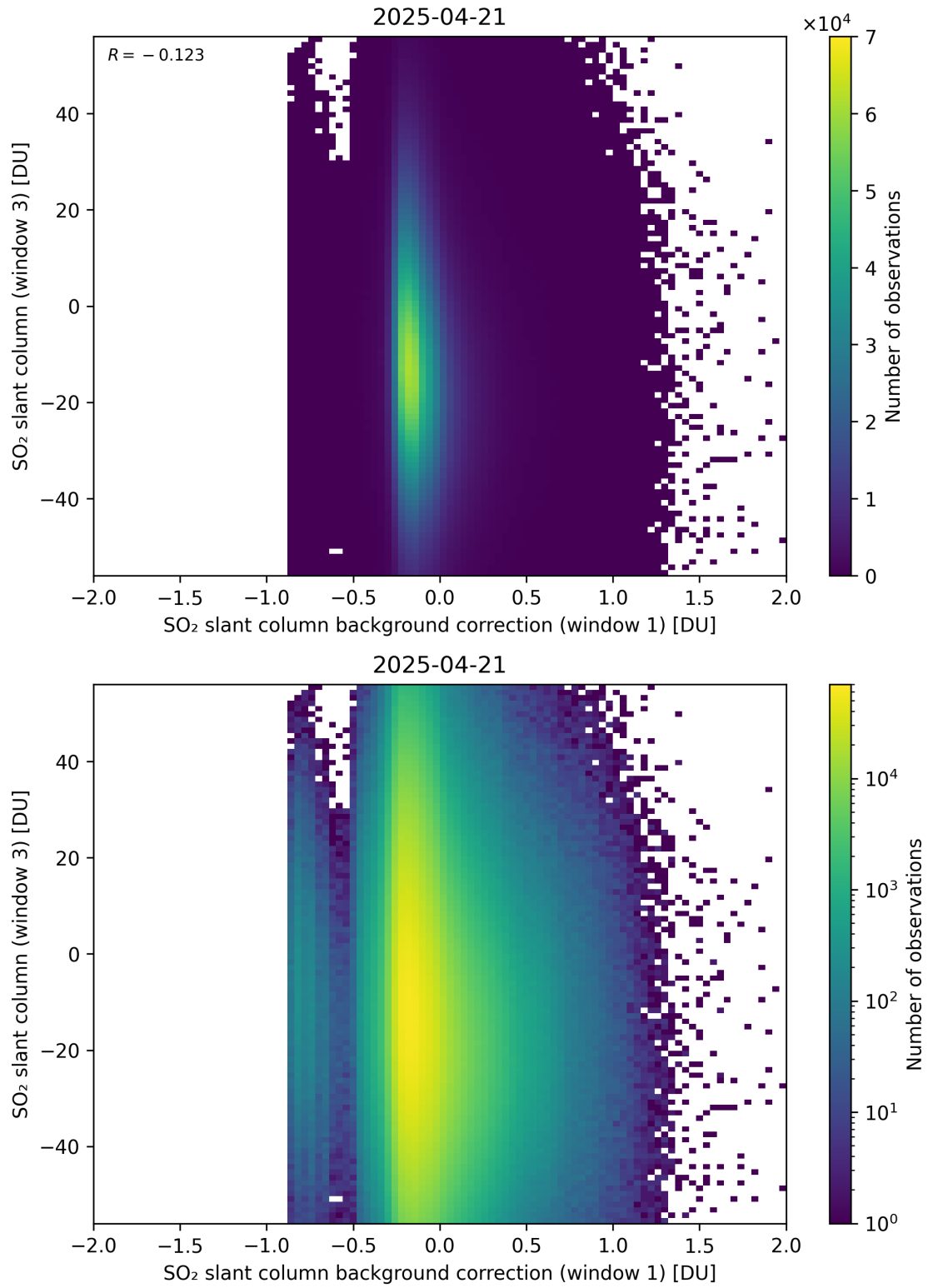


Figure 118: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

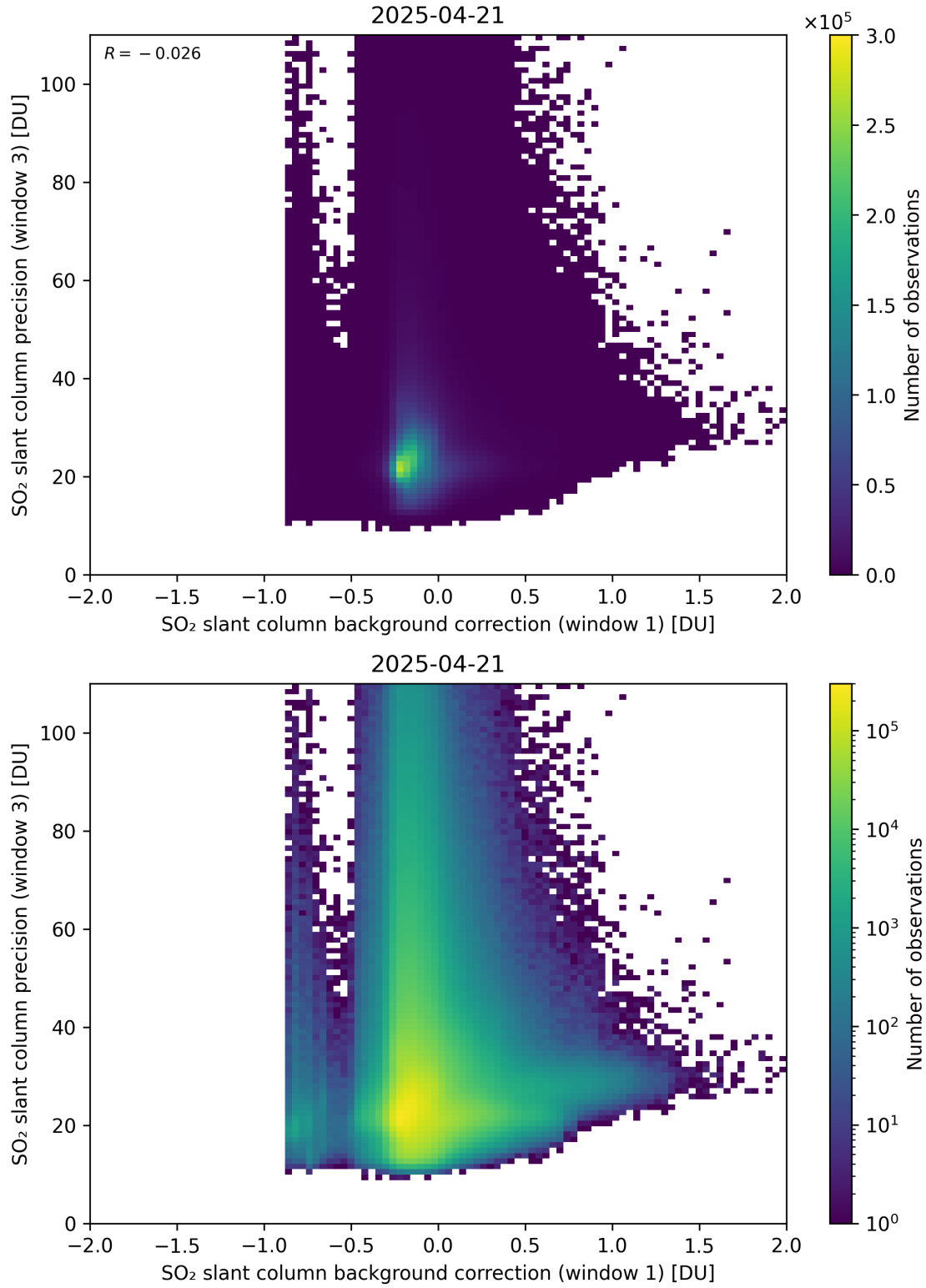


Figure 119: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

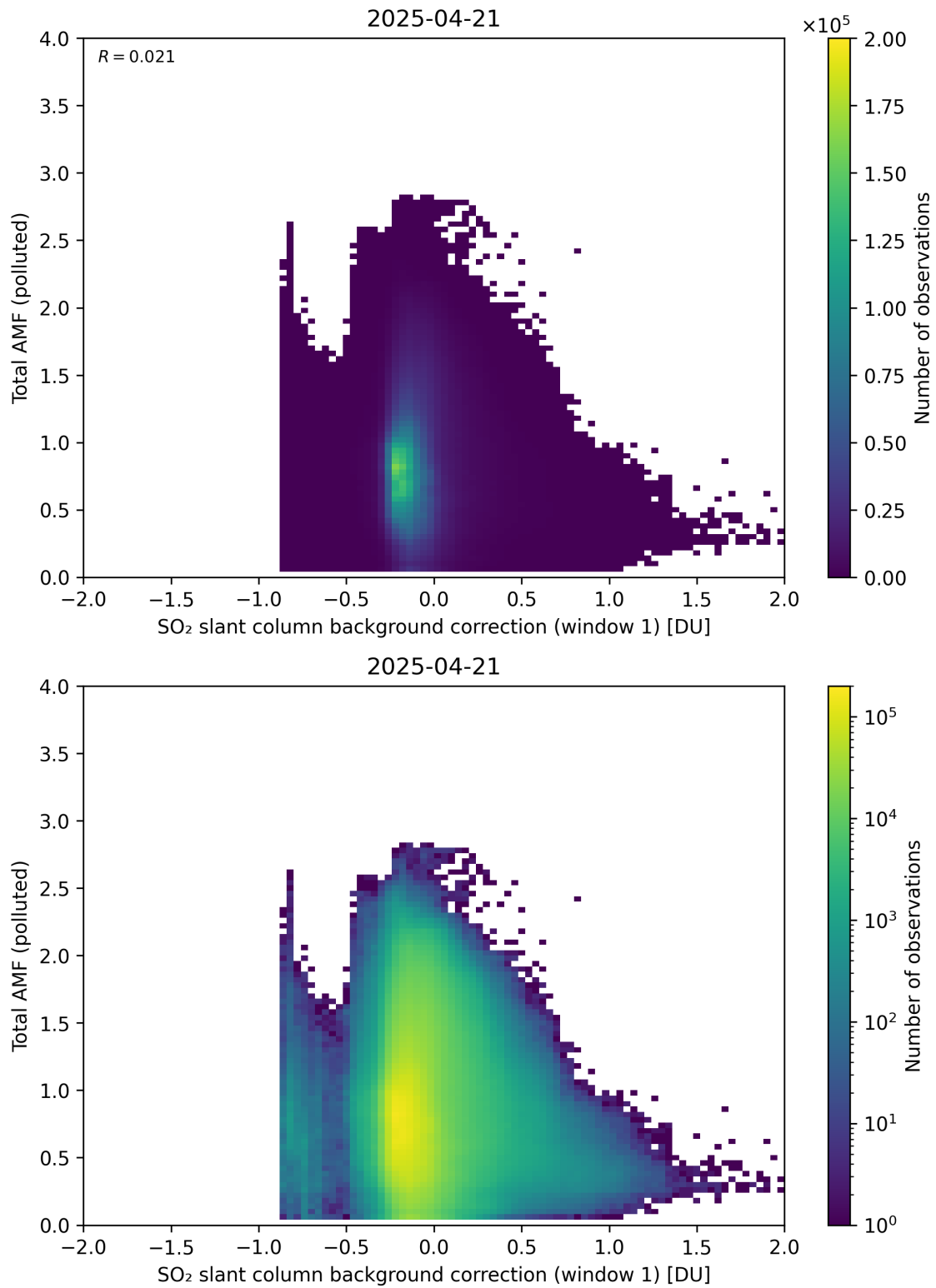


Figure 120: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

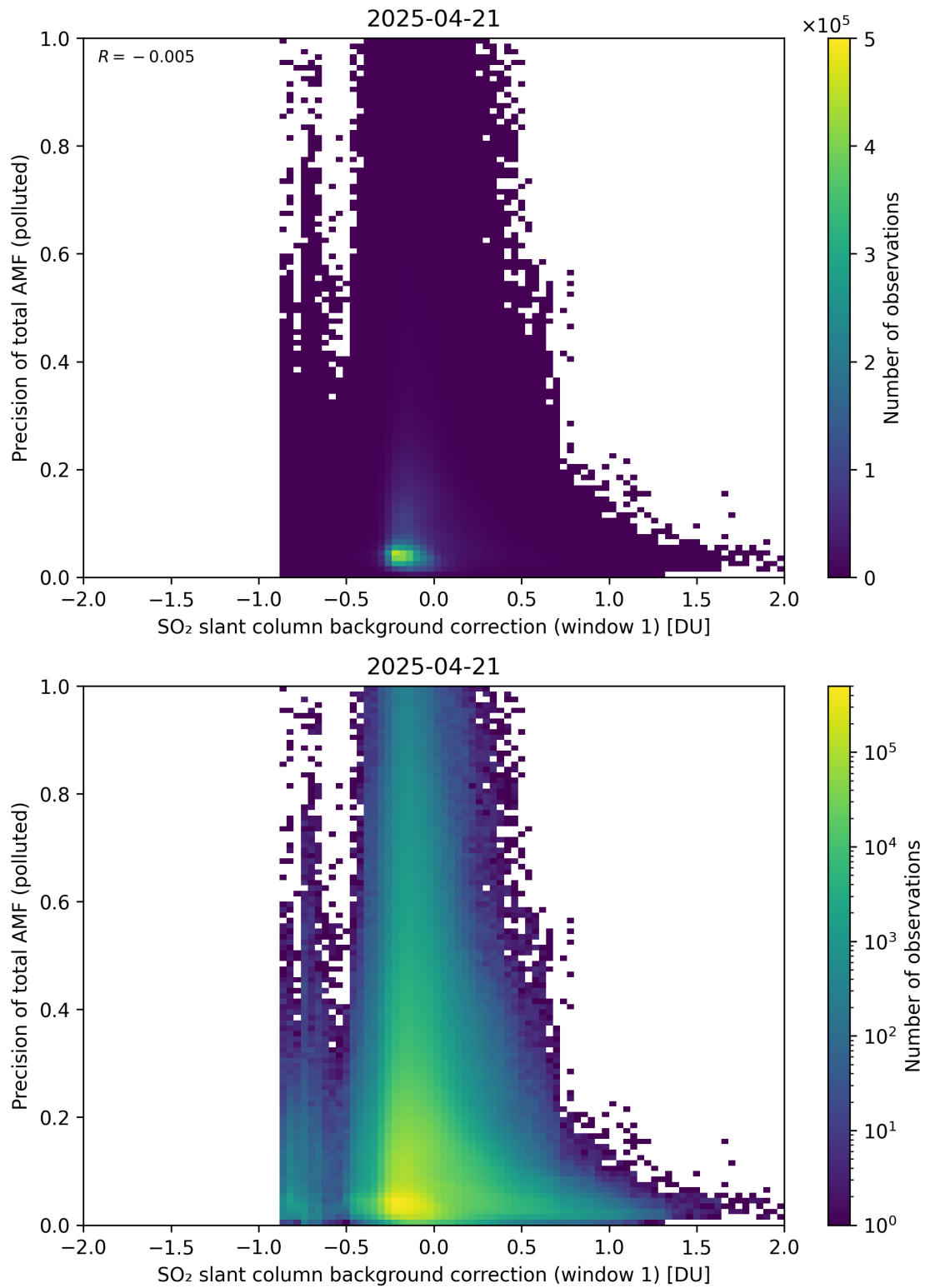


Figure 121: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

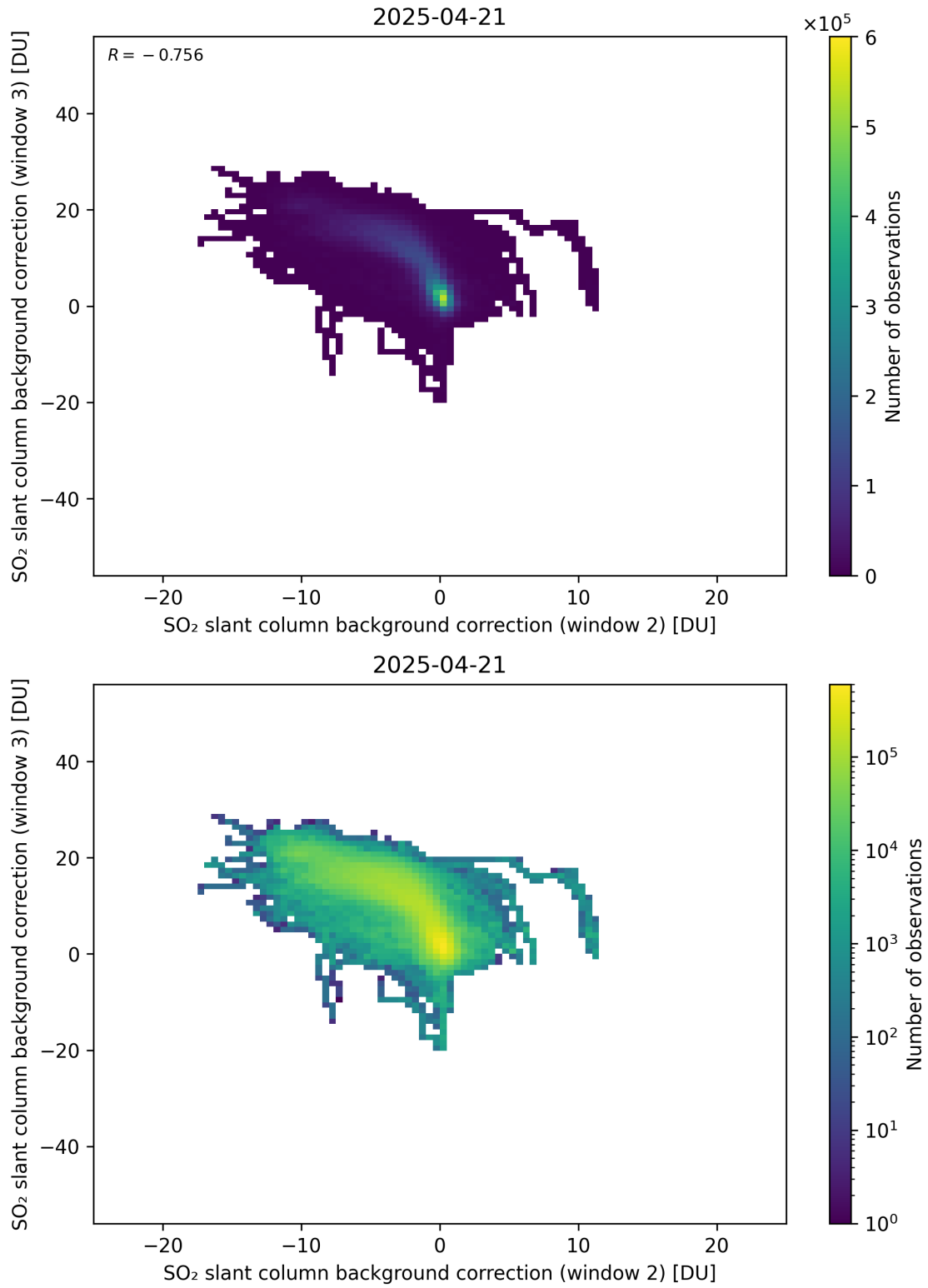


Figure 122: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

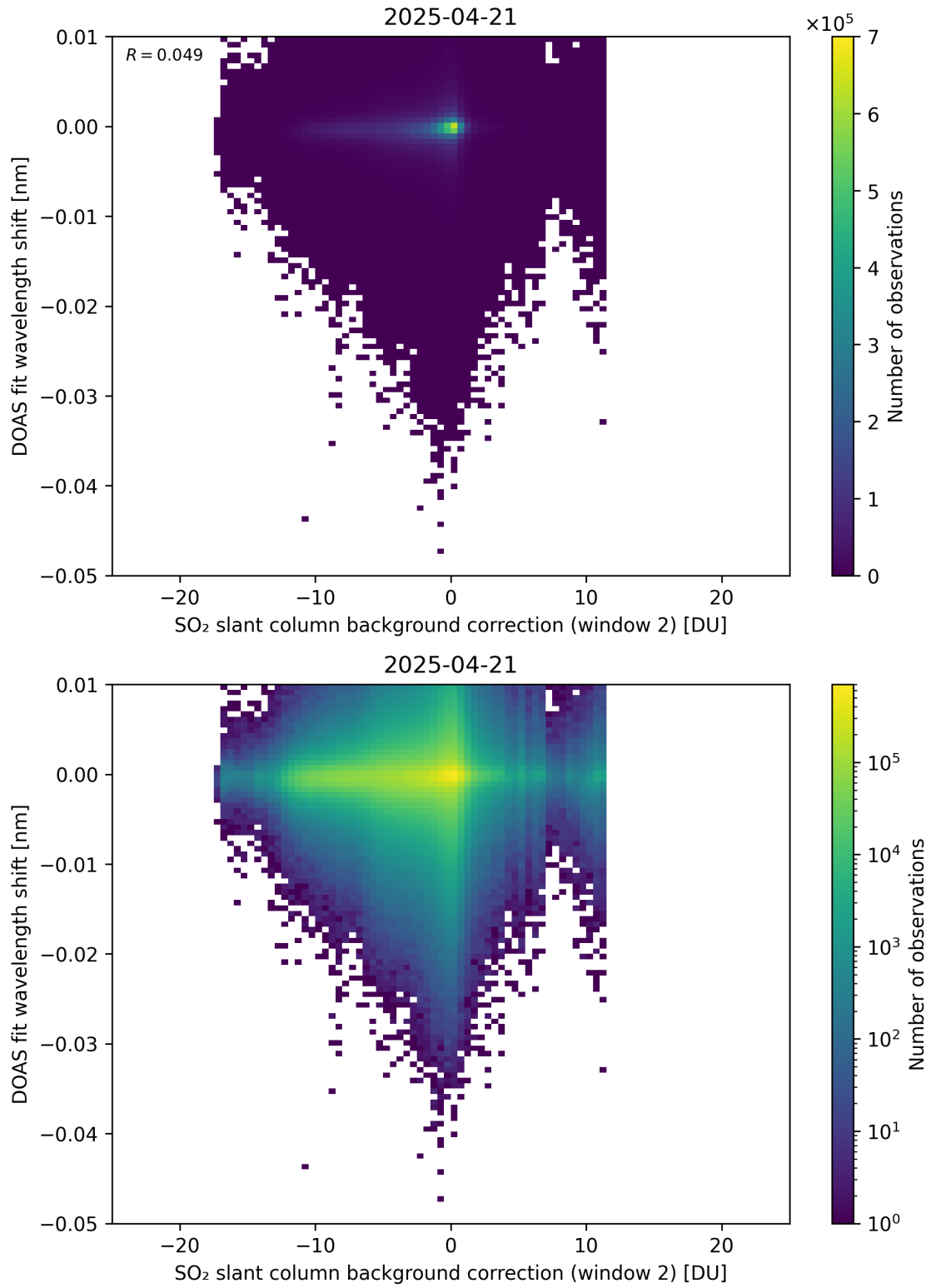


Figure 123: Scatter density plot of “SO₂ slant column background correction (window 2)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

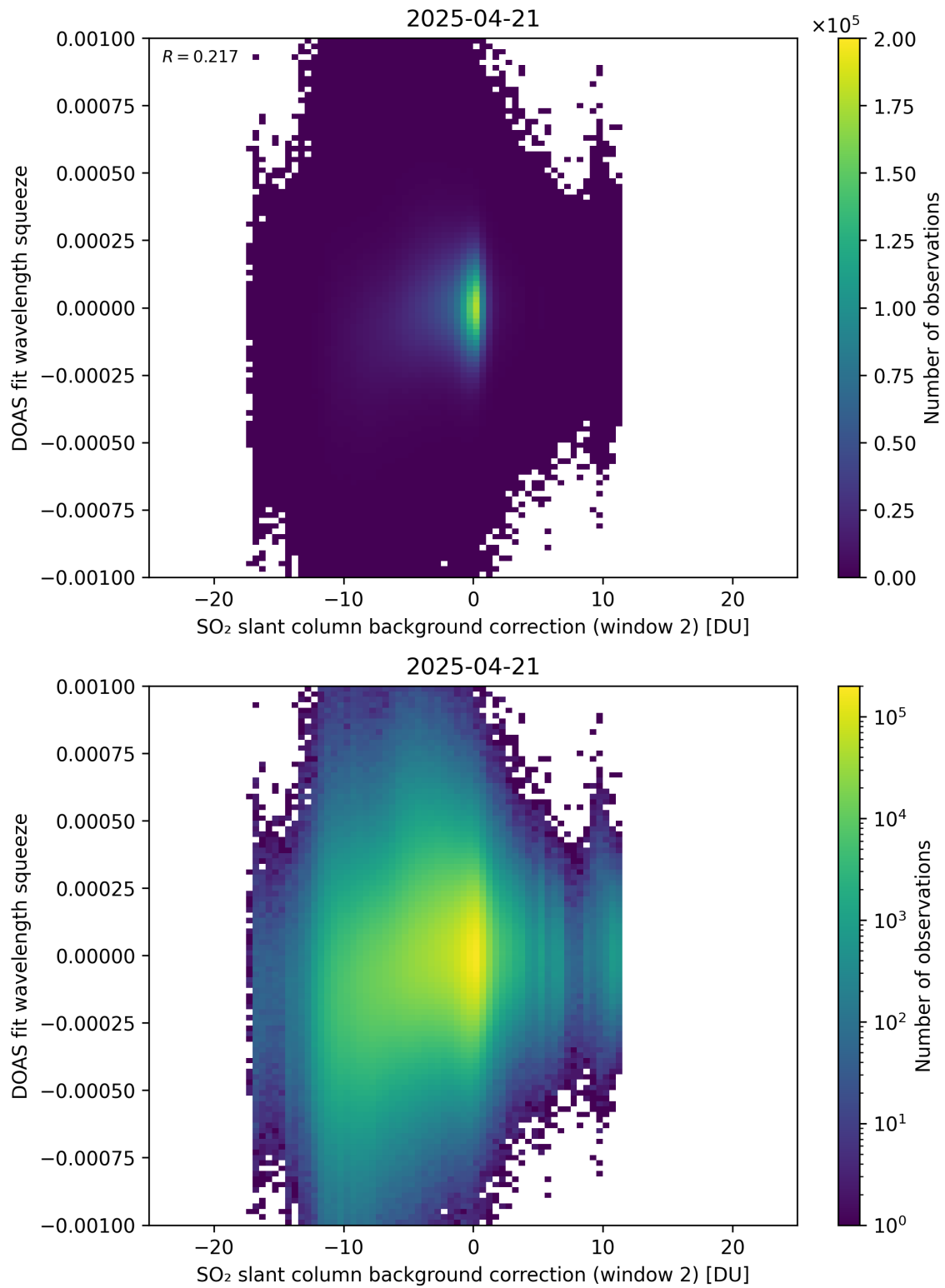


Figure 124: Scatter density plot of “SO₂ slant column background correction (window 2)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

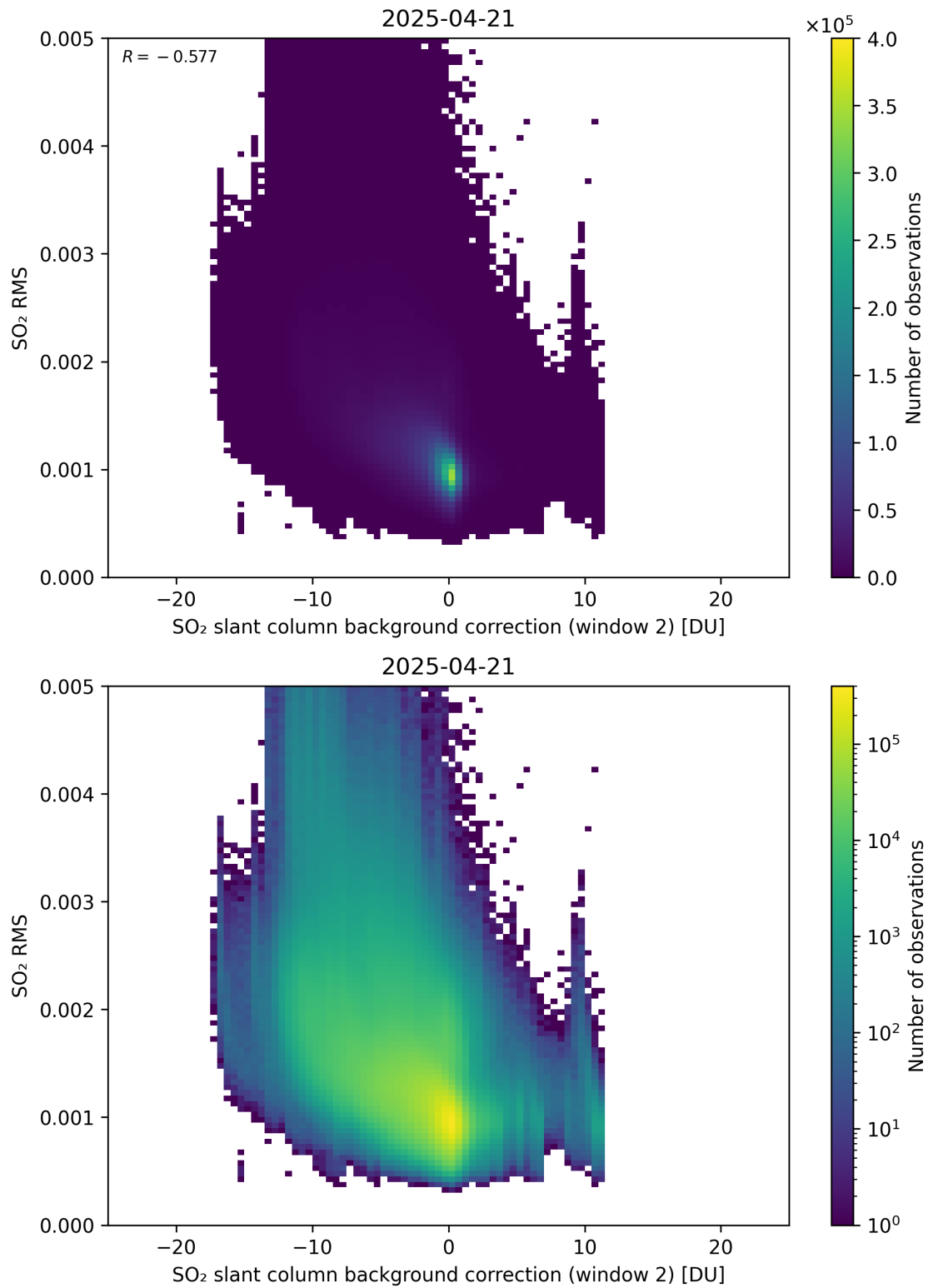


Figure 125: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

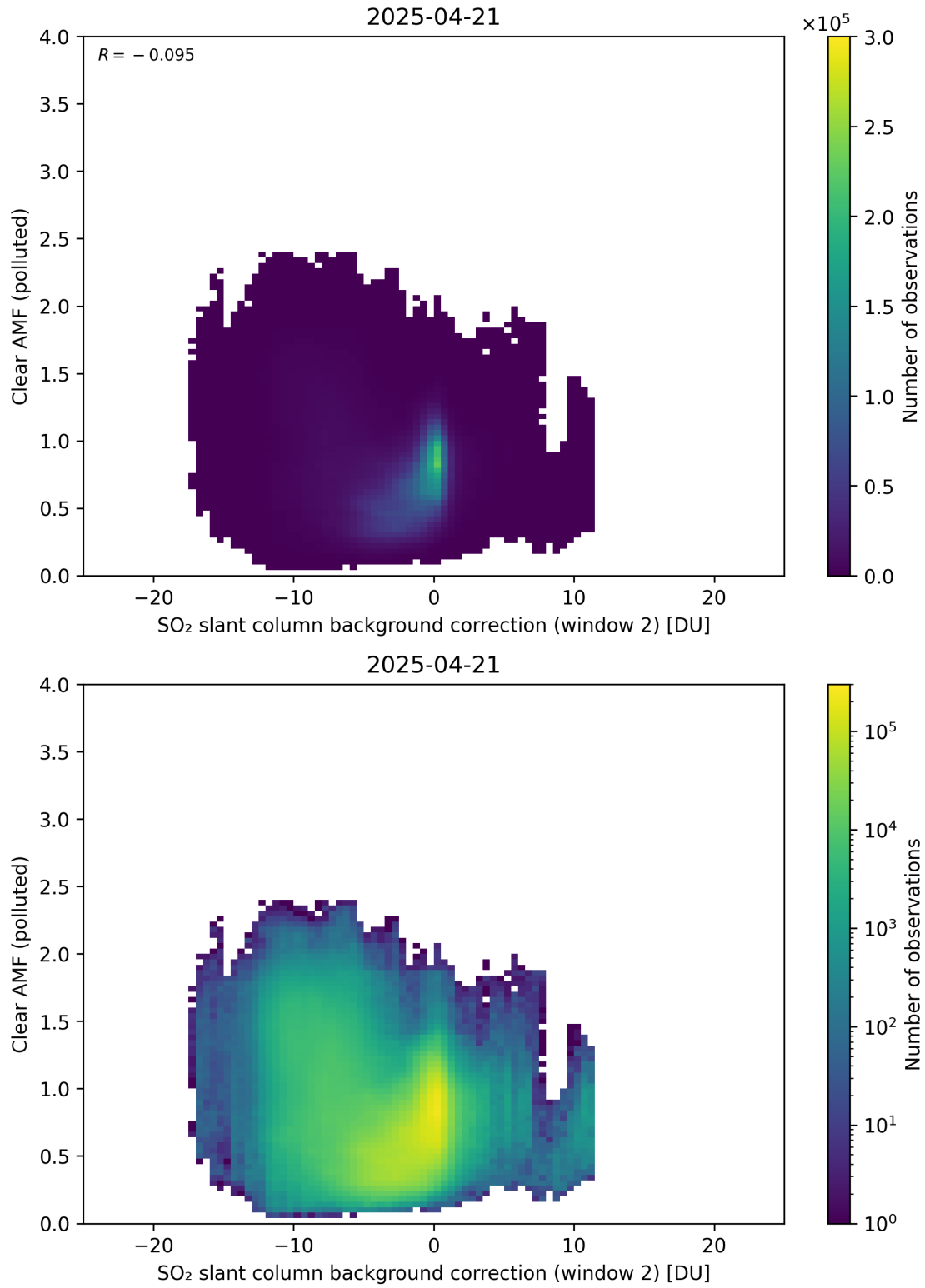


Figure 126: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

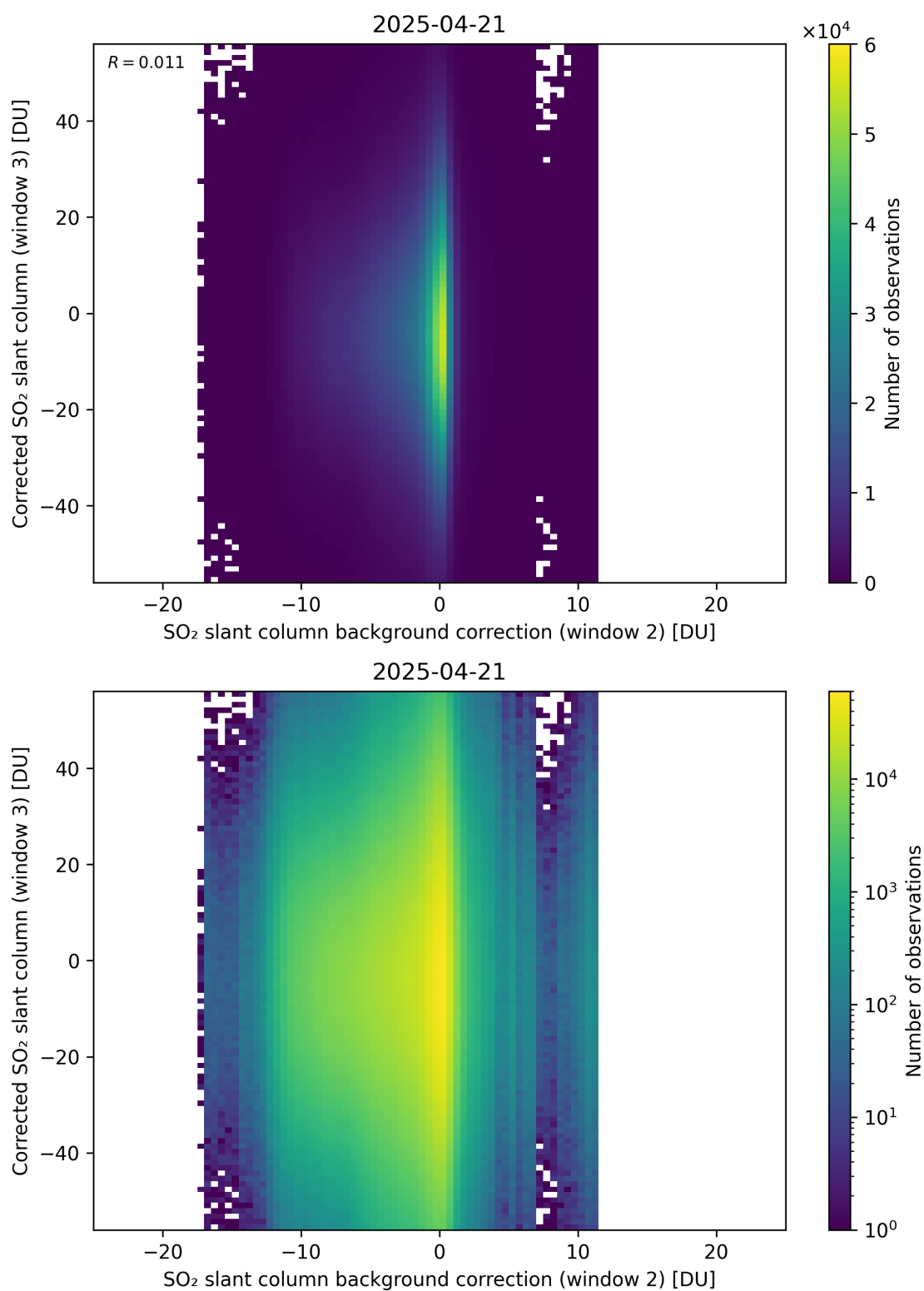


Figure 127: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

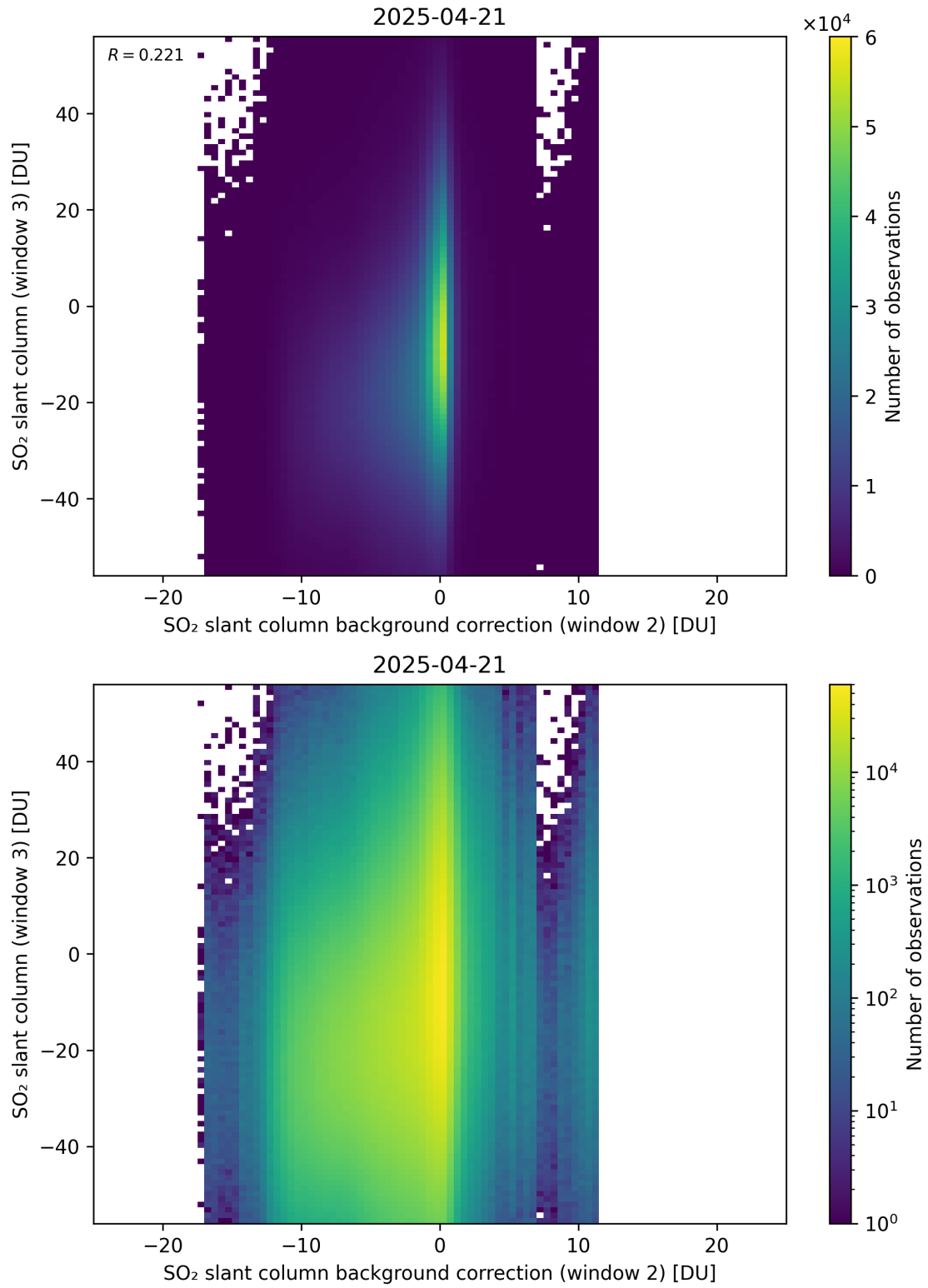


Figure 128: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

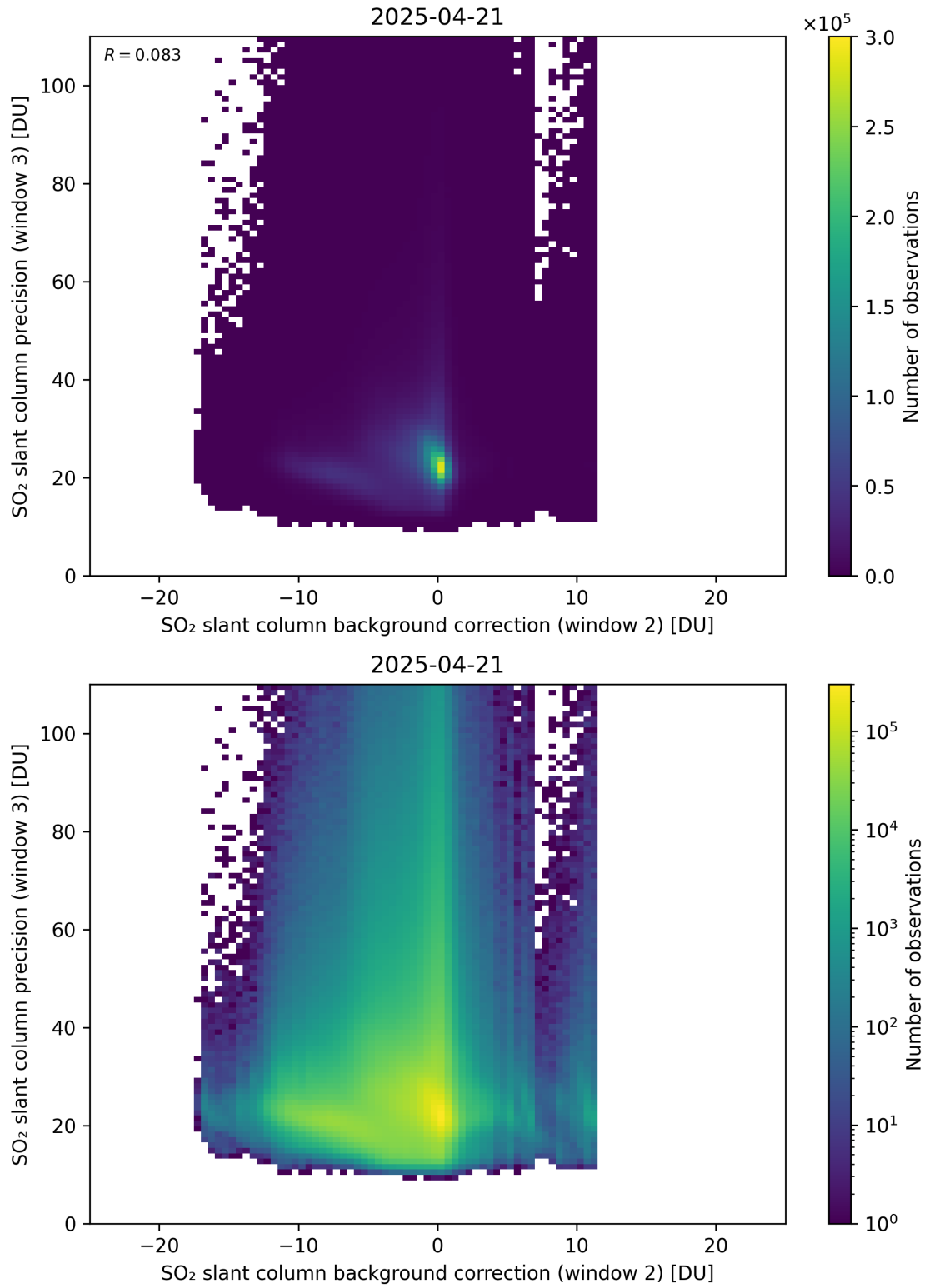


Figure 129: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

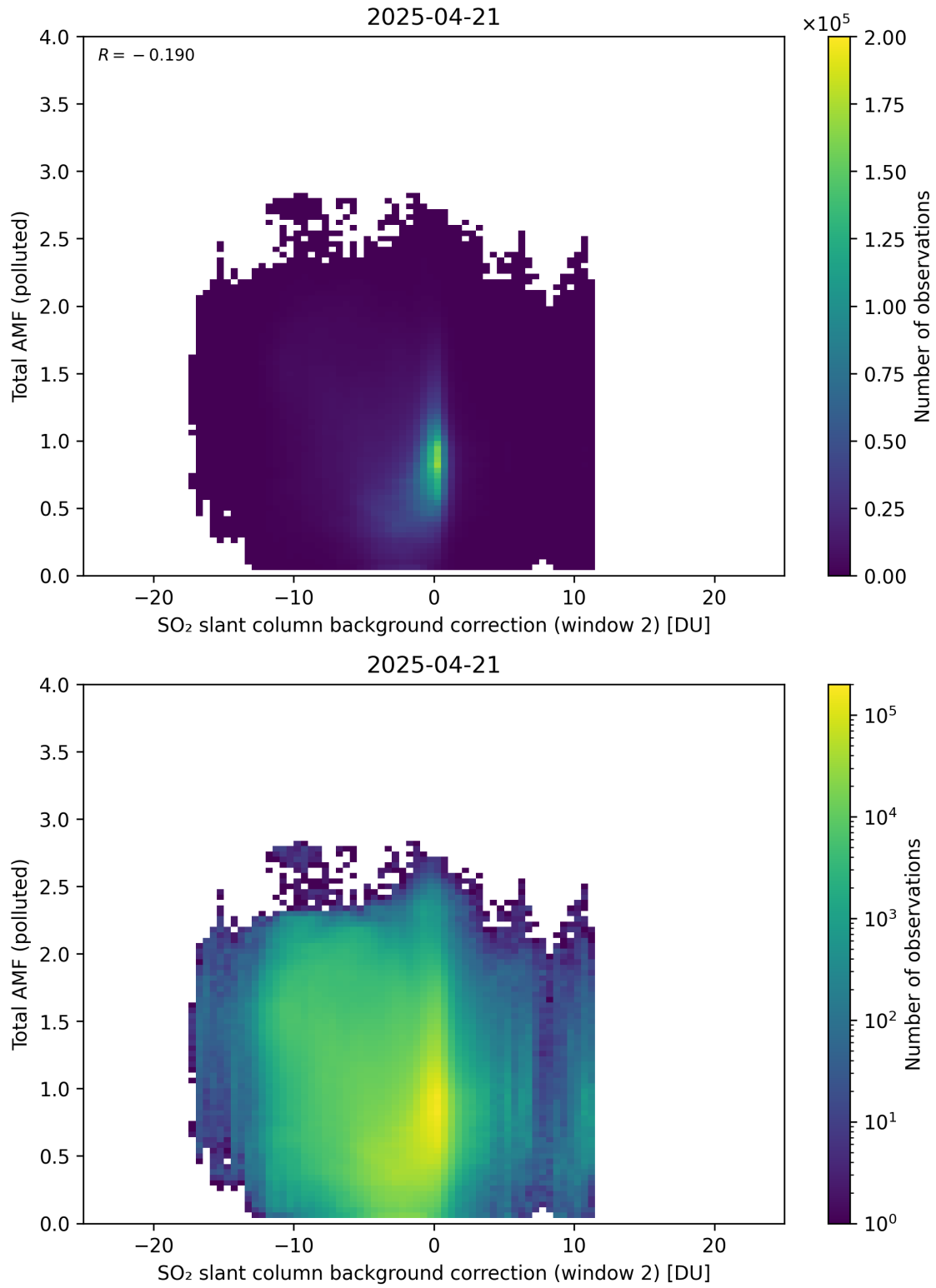


Figure 130: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

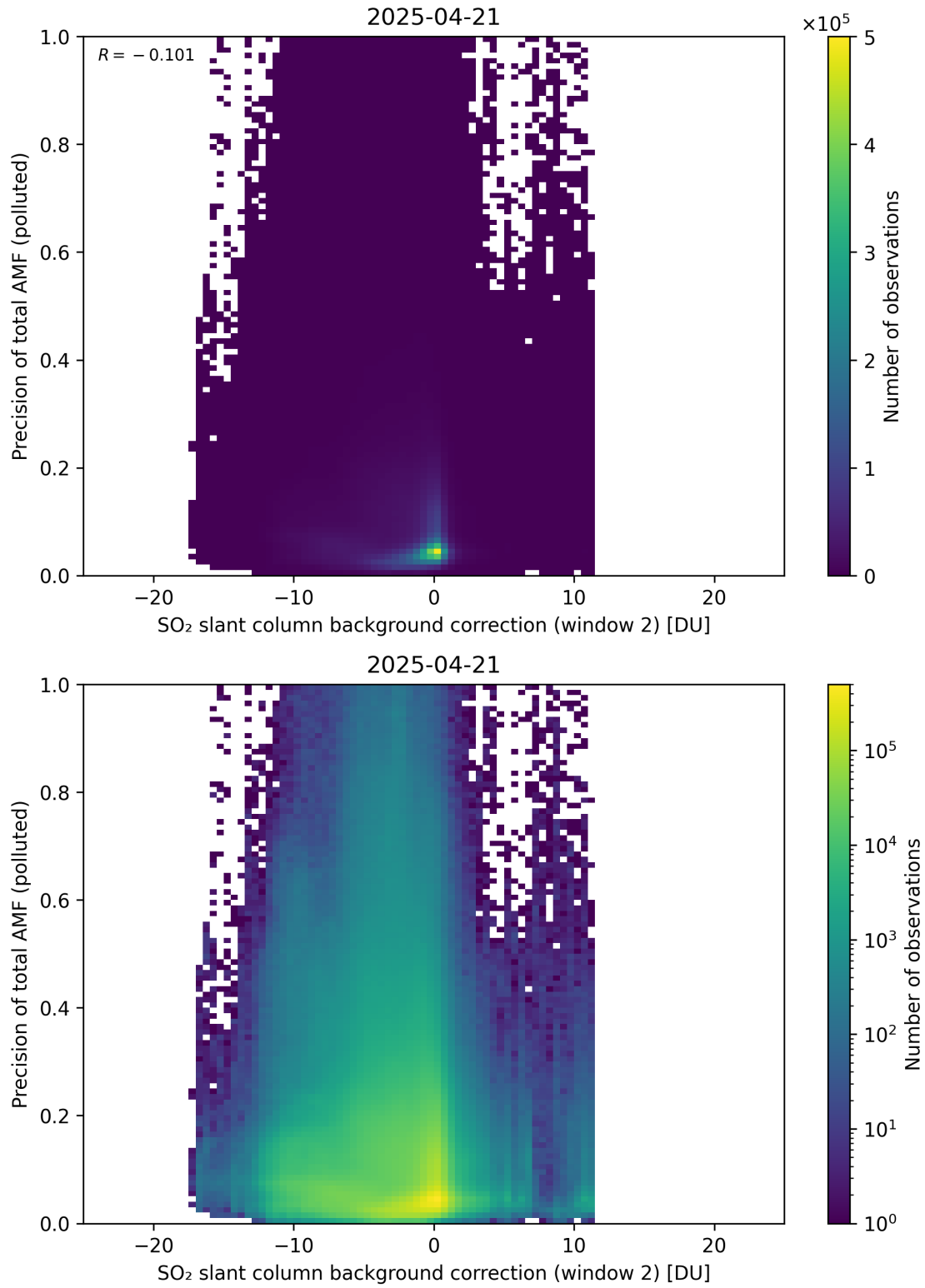


Figure 131: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

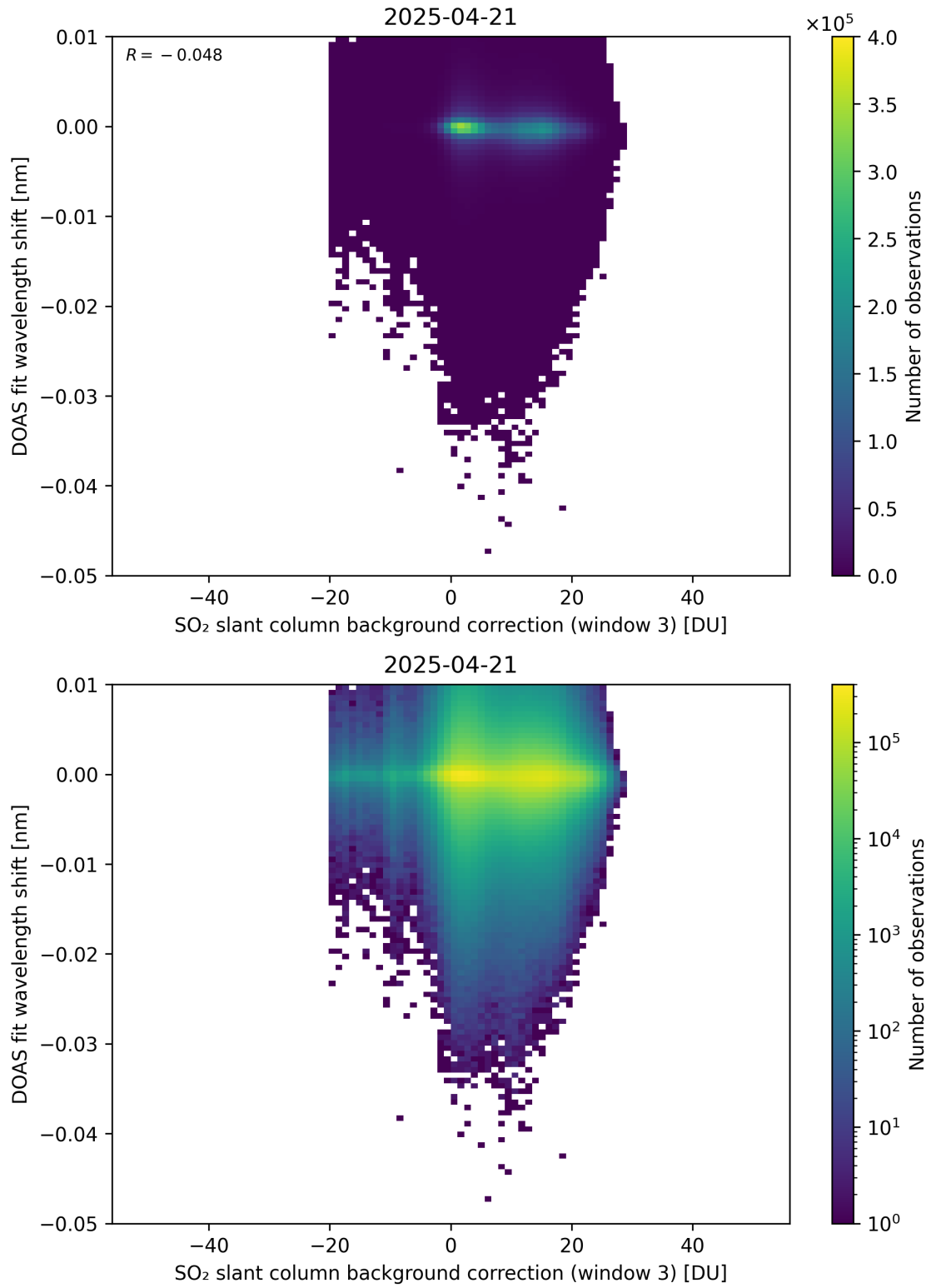


Figure 132: Scatter density plot of “SO₂ slant column background correction (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

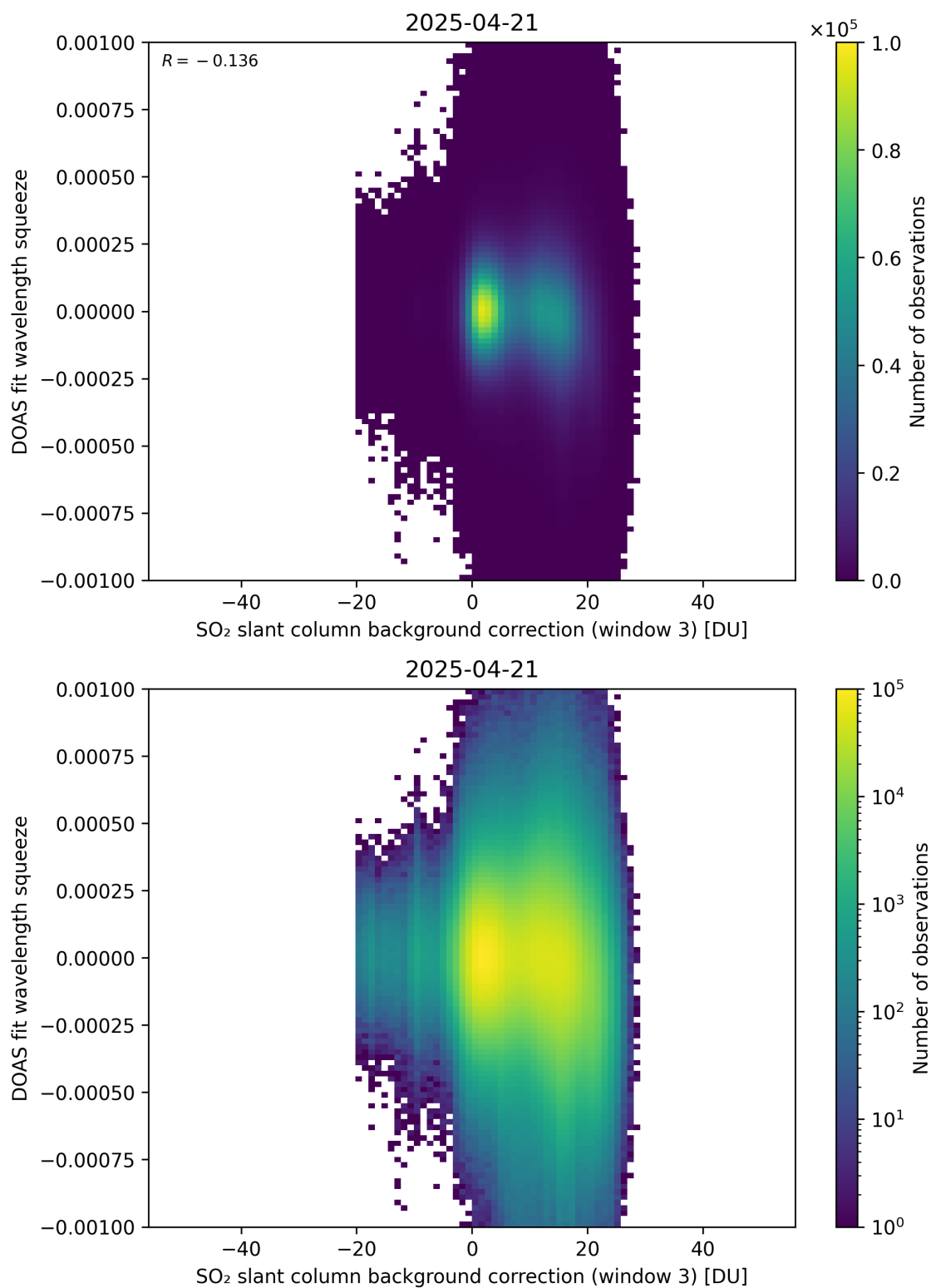


Figure 133: Scatter density plot of “SO₂ slant column background correction (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

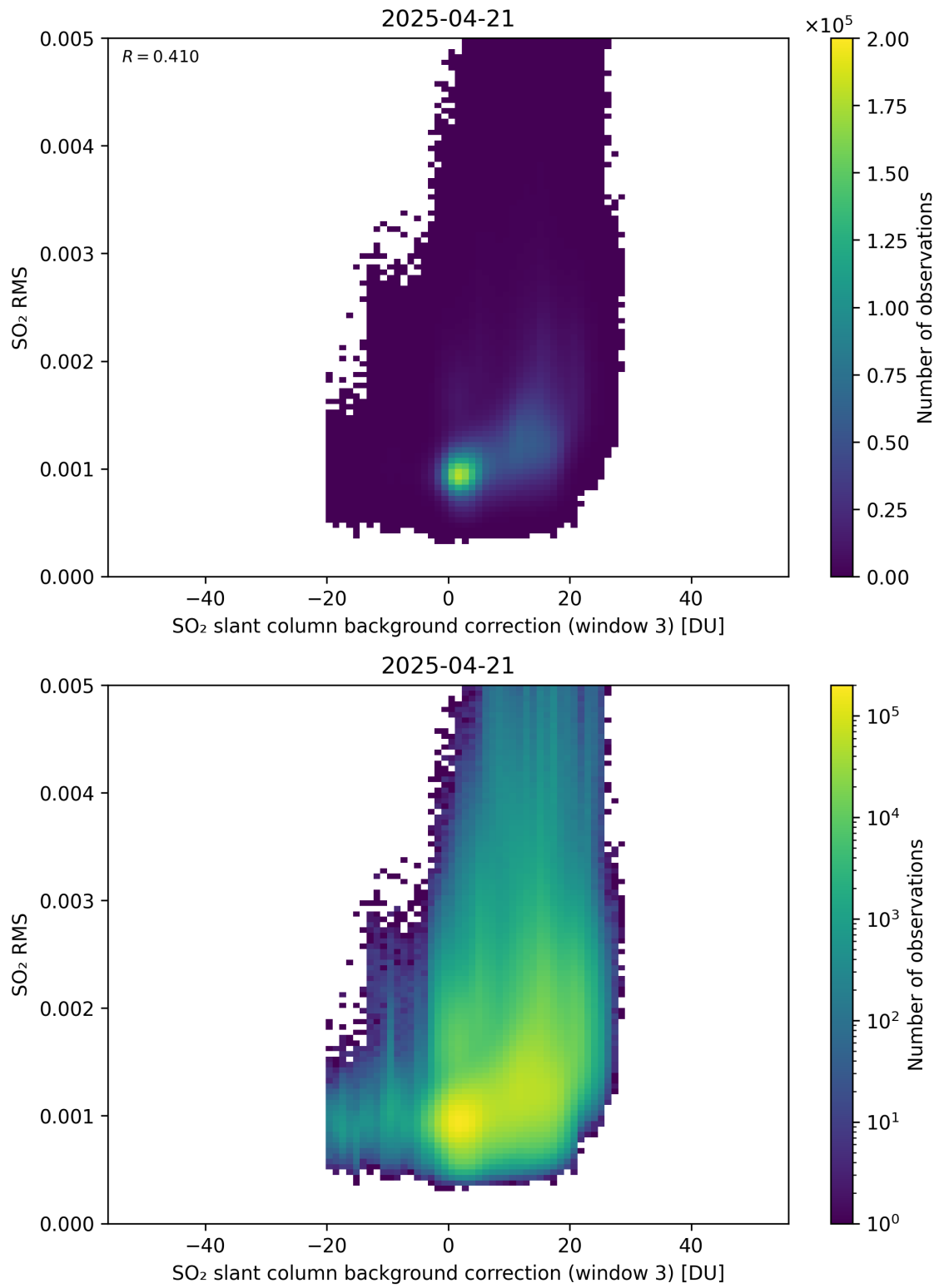


Figure 134: Scatter density plot of “SO₂ slant column background correction (window 3)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

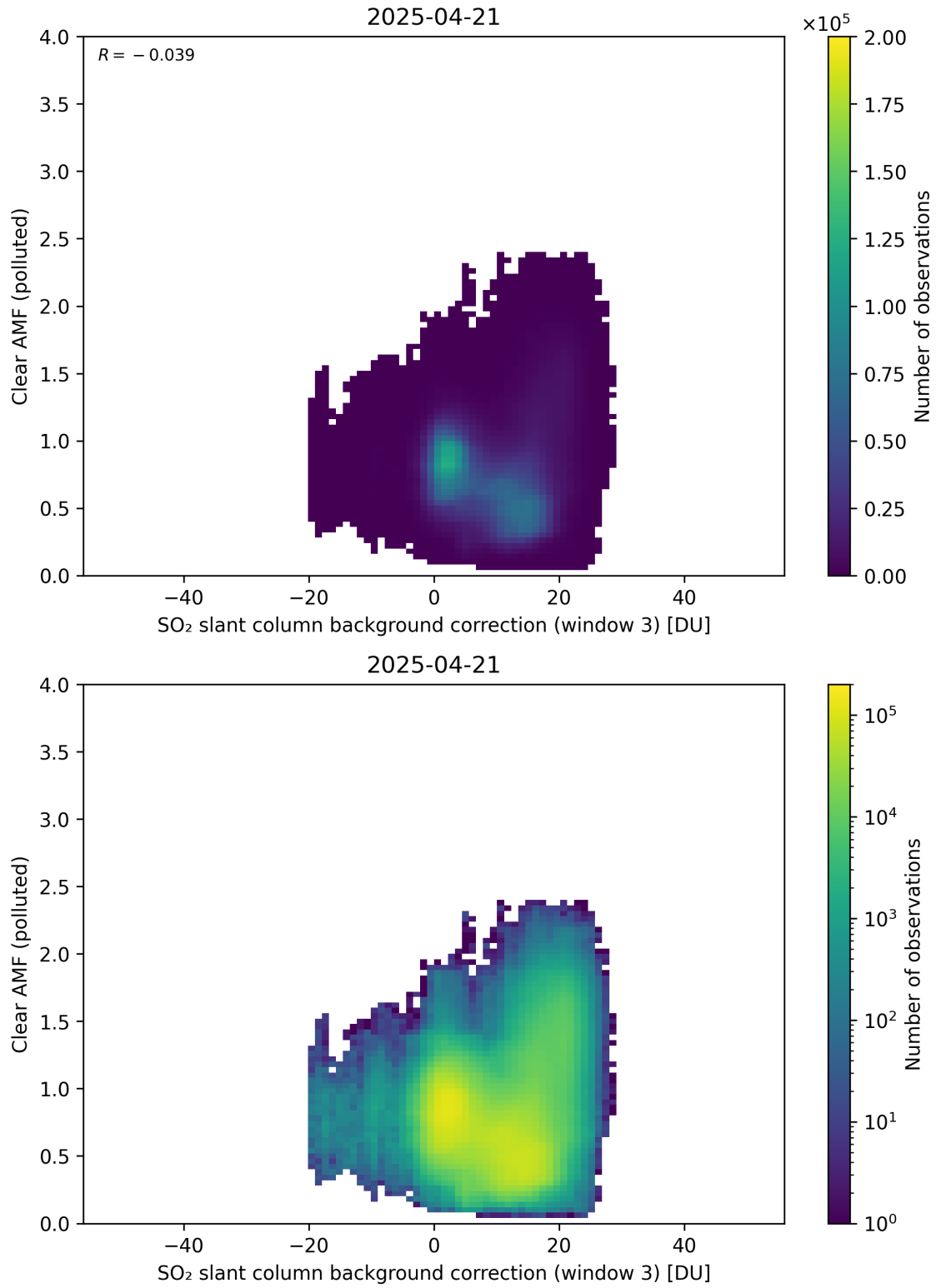


Figure 135: Scatter density plot of “SO₂ slant column background correction (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

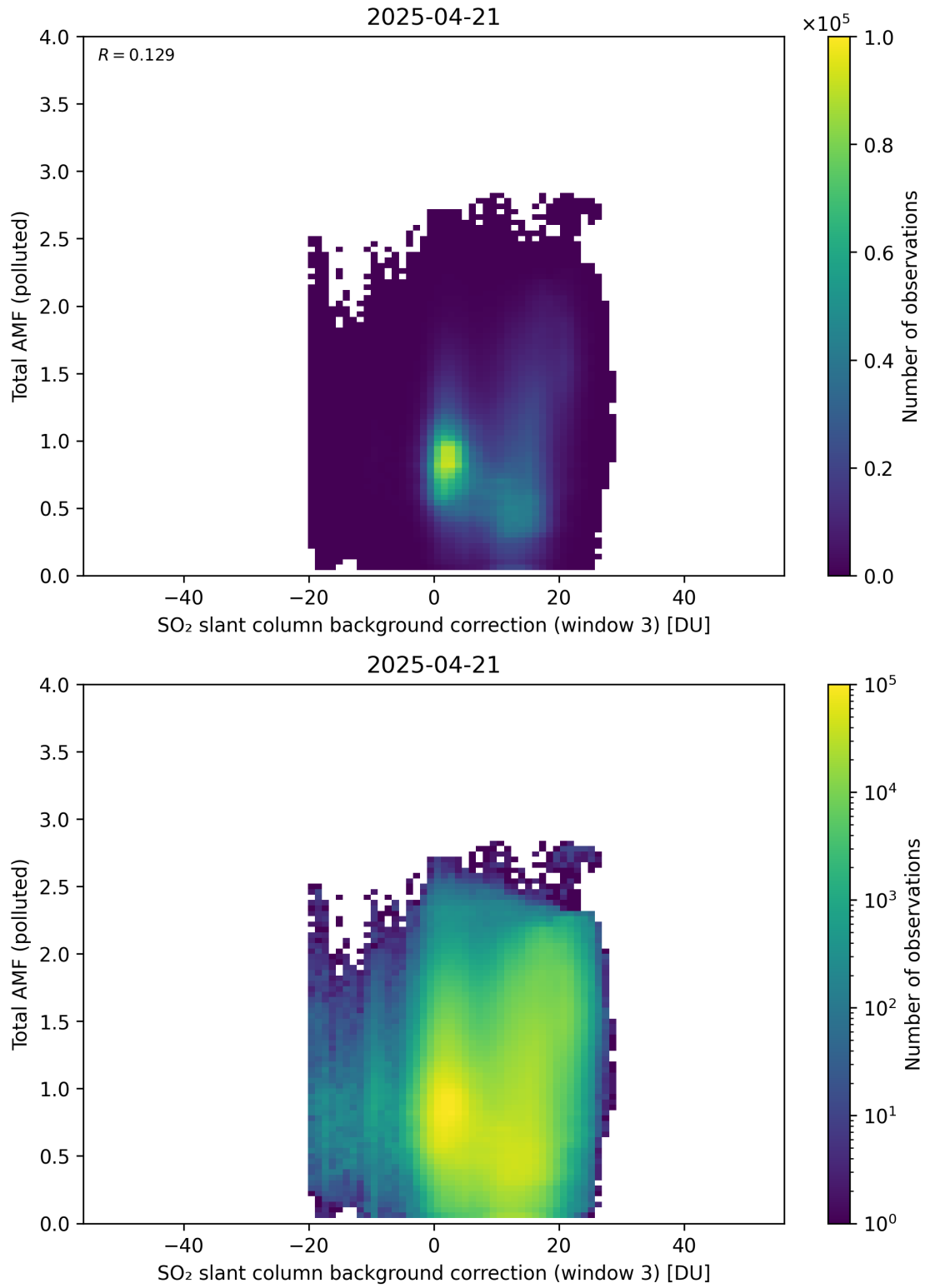


Figure 136: Scatter density plot of “SO₂ slant column background correction (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

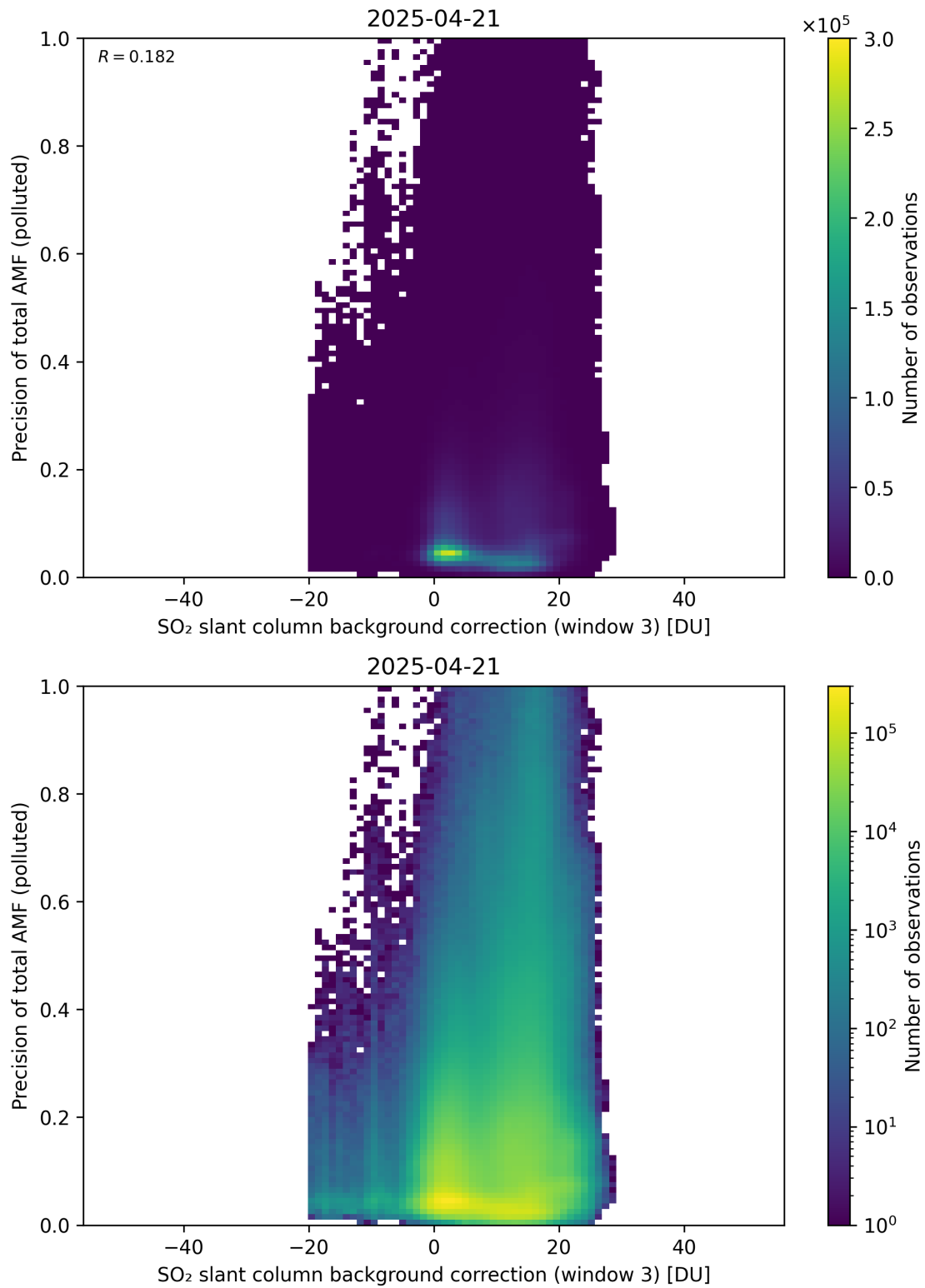


Figure 137: Scatter density plot of “SO₂ slant column background correction (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

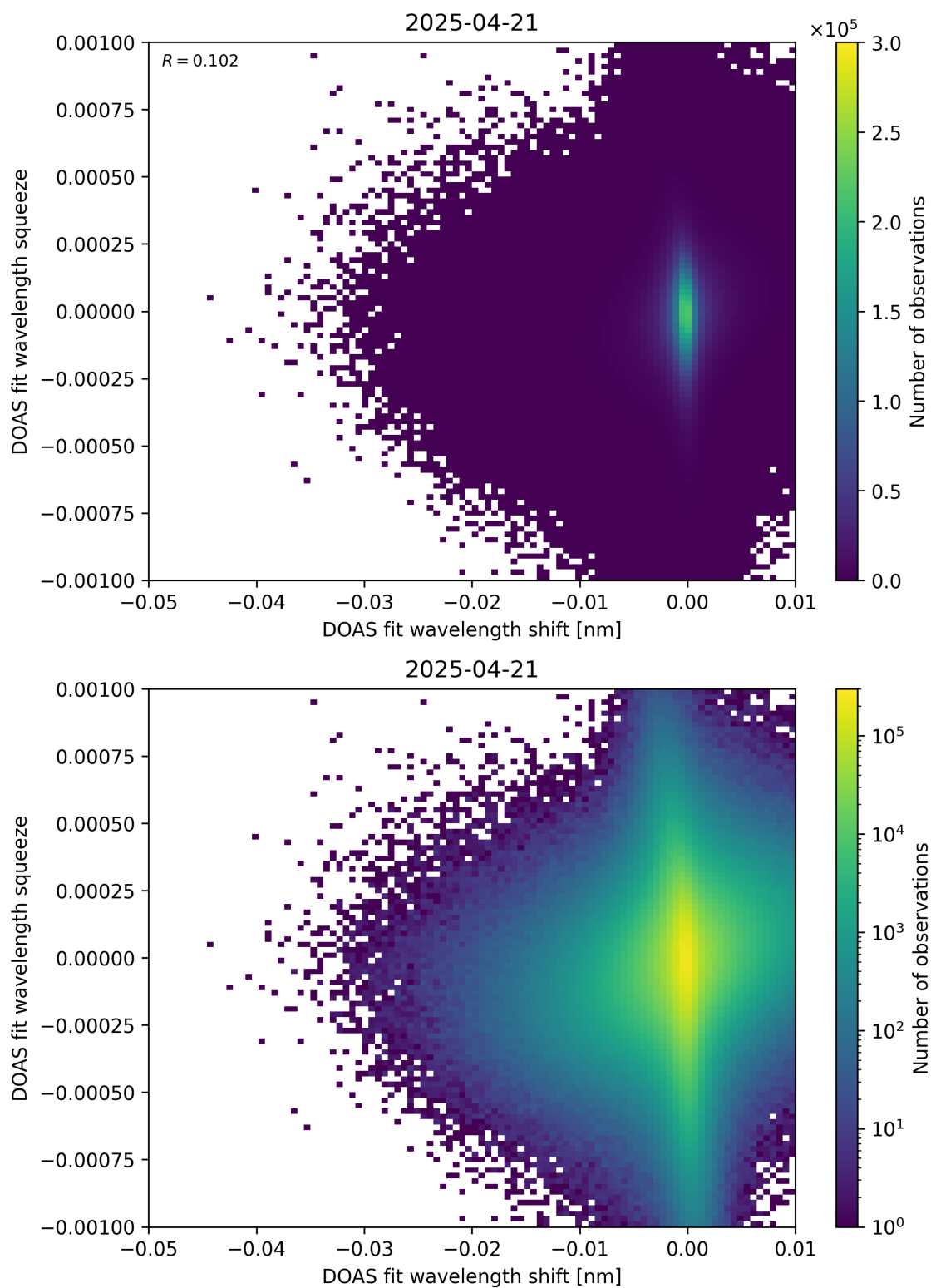


Figure 138: Scatter density plot of “DOAS fit wavelength shift” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

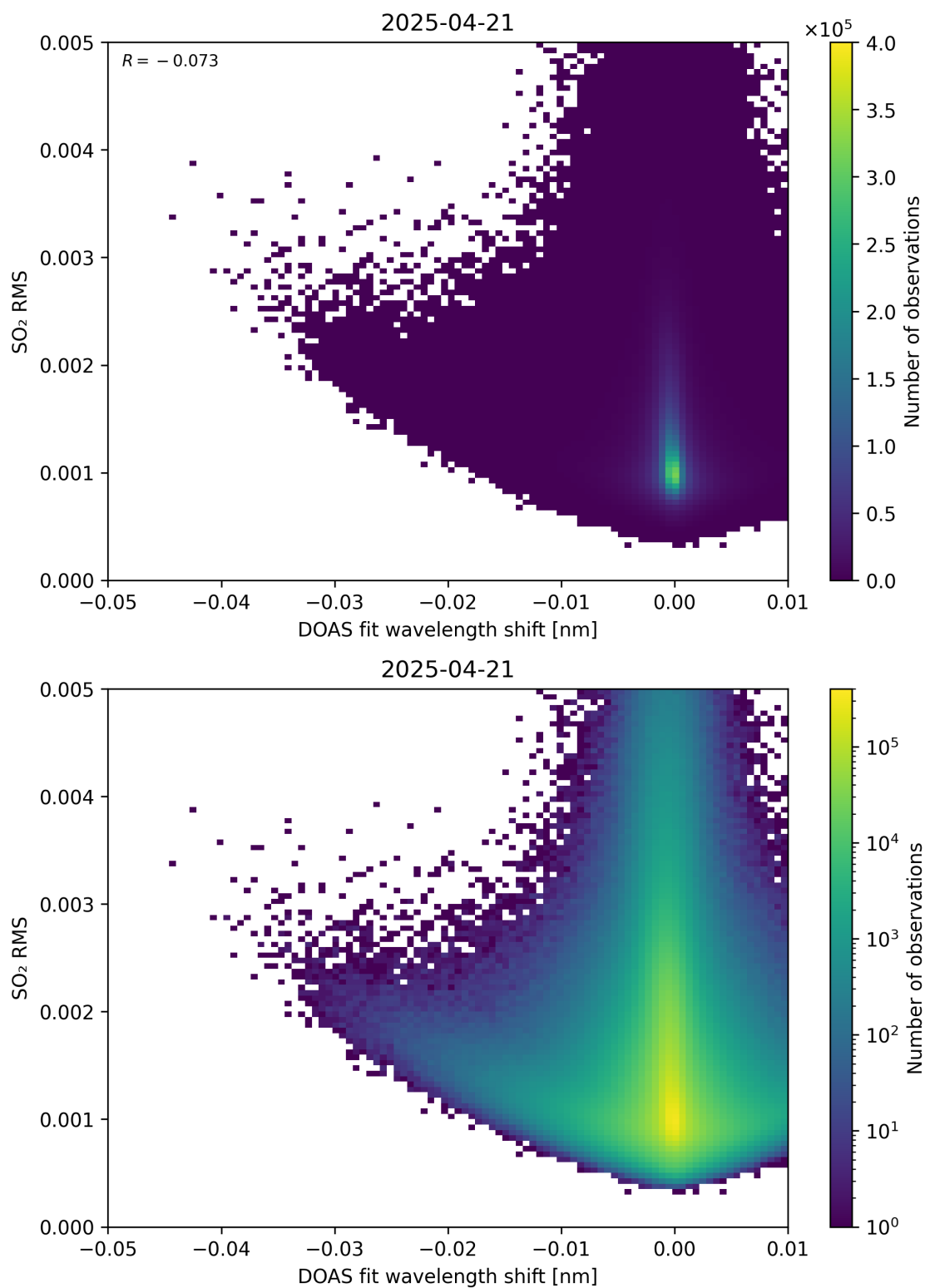


Figure 139: Scatter density plot of “DOAS fit wavelength shift” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

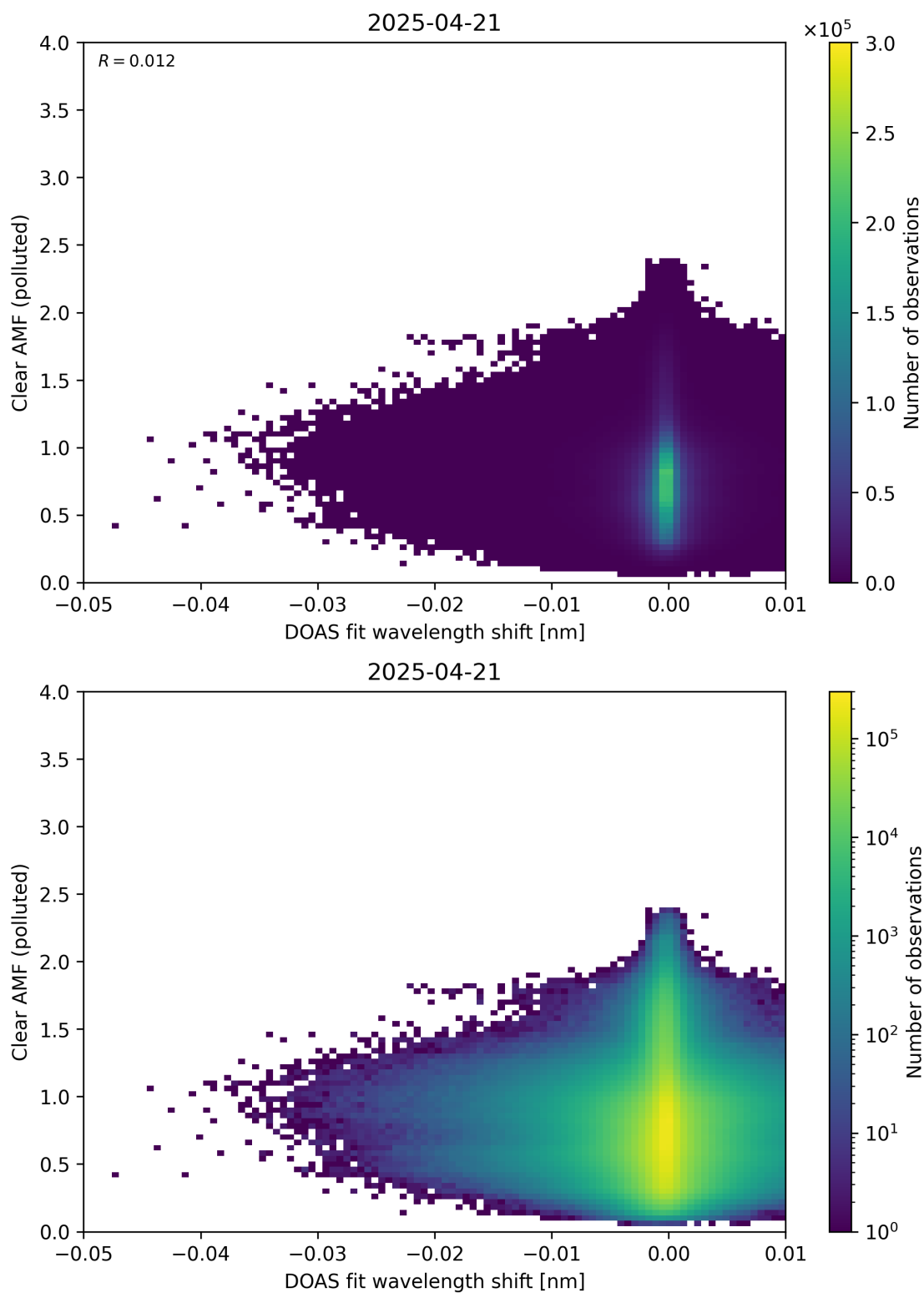


Figure 140: Scatter density plot of “DOAS fit wavelength shift” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

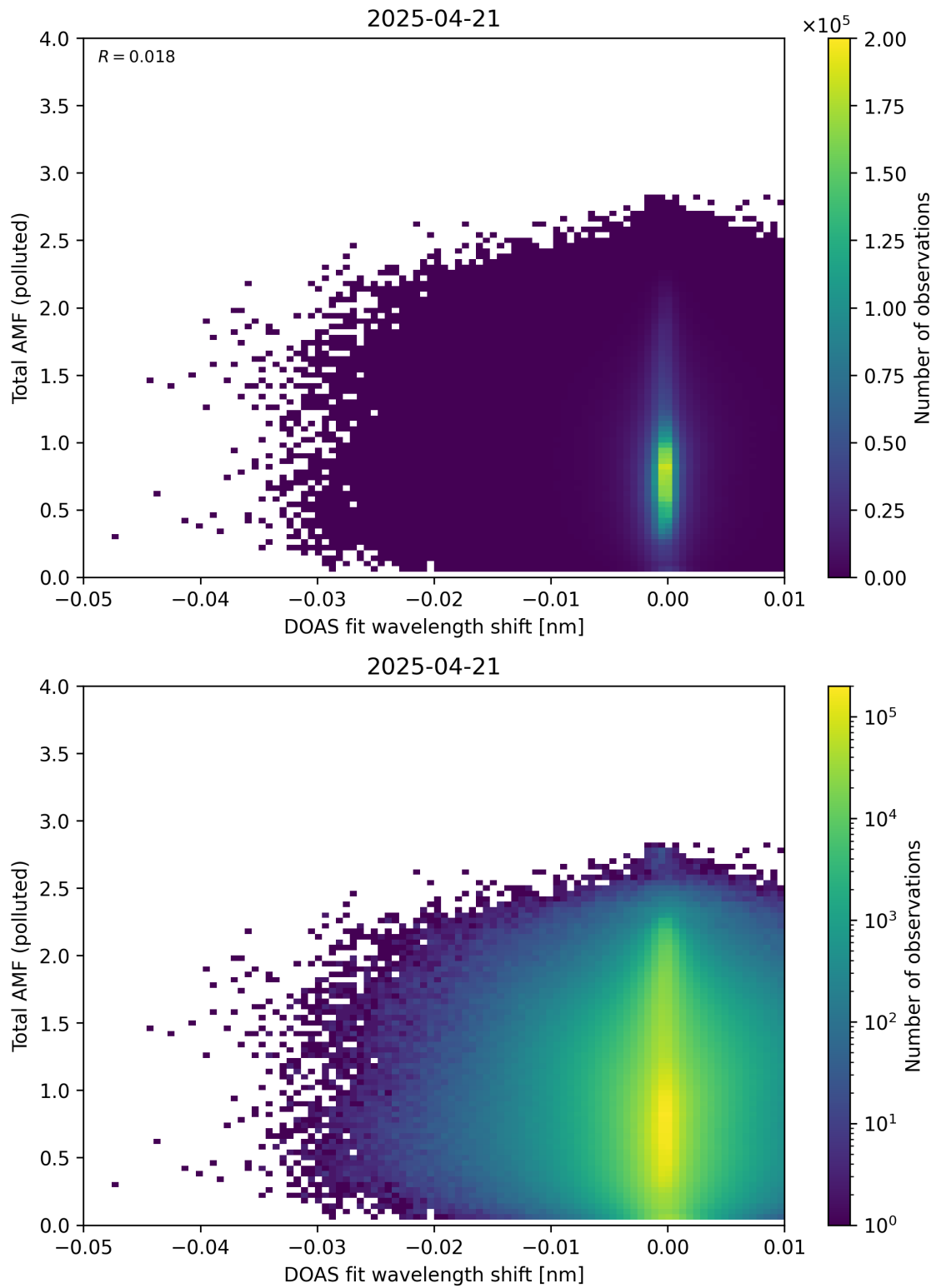


Figure 141: Scatter density plot of “DOAS fit wavelength shift” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

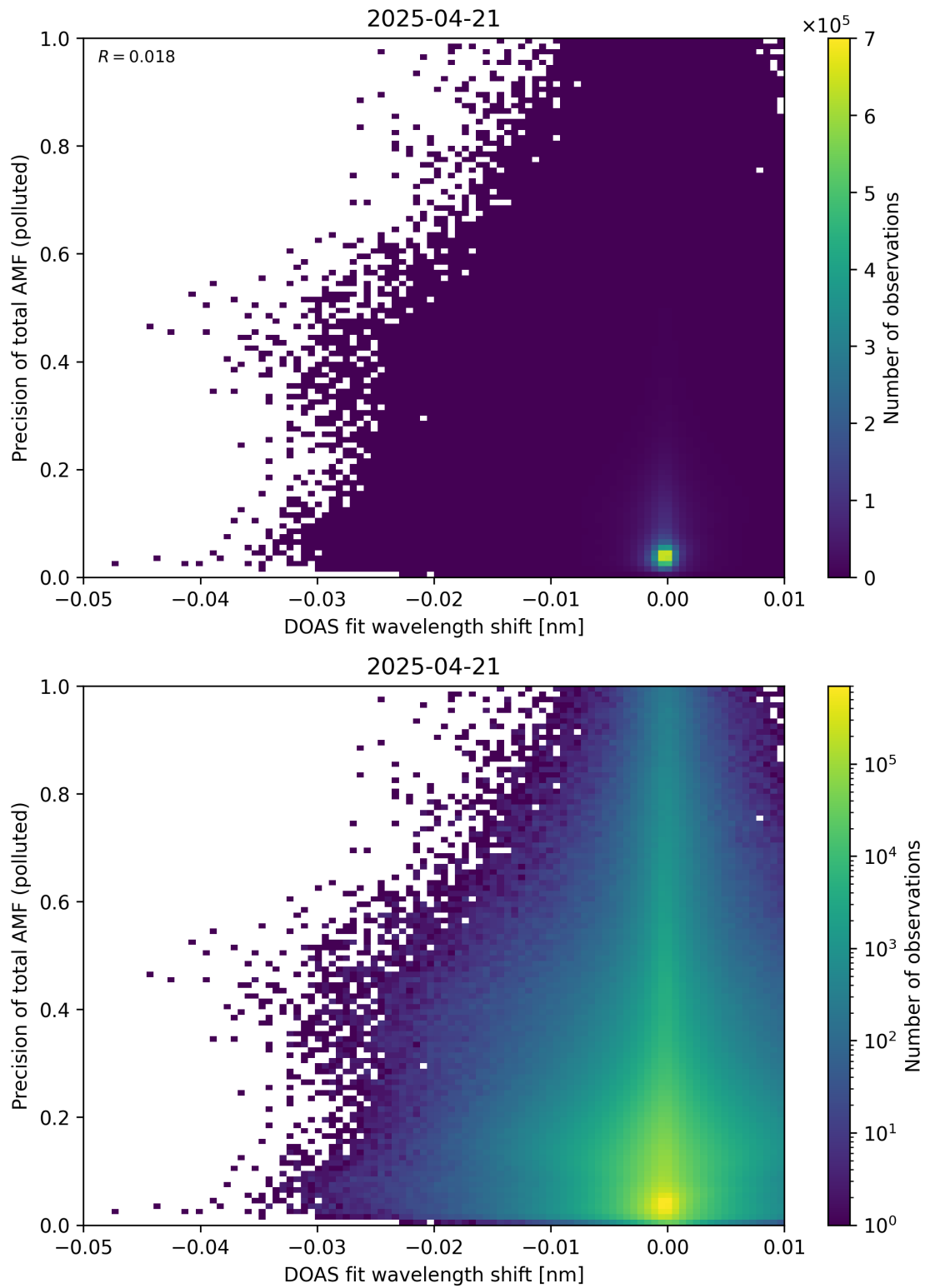


Figure 142: Scatter density plot of “DOAS fit wavelength shift” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

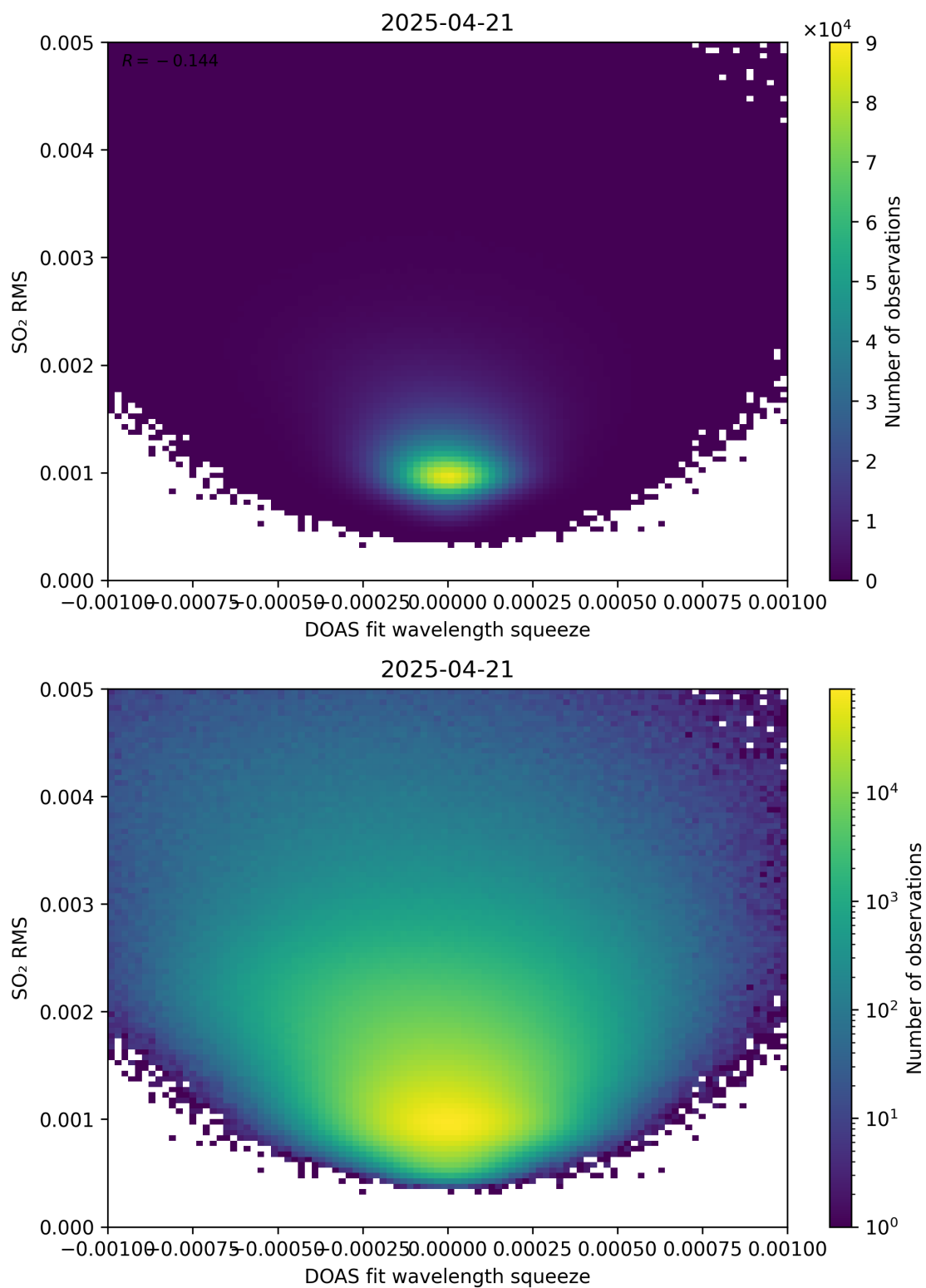


Figure 143: Scatter density plot of “DOAS fit wavelength squeeze” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

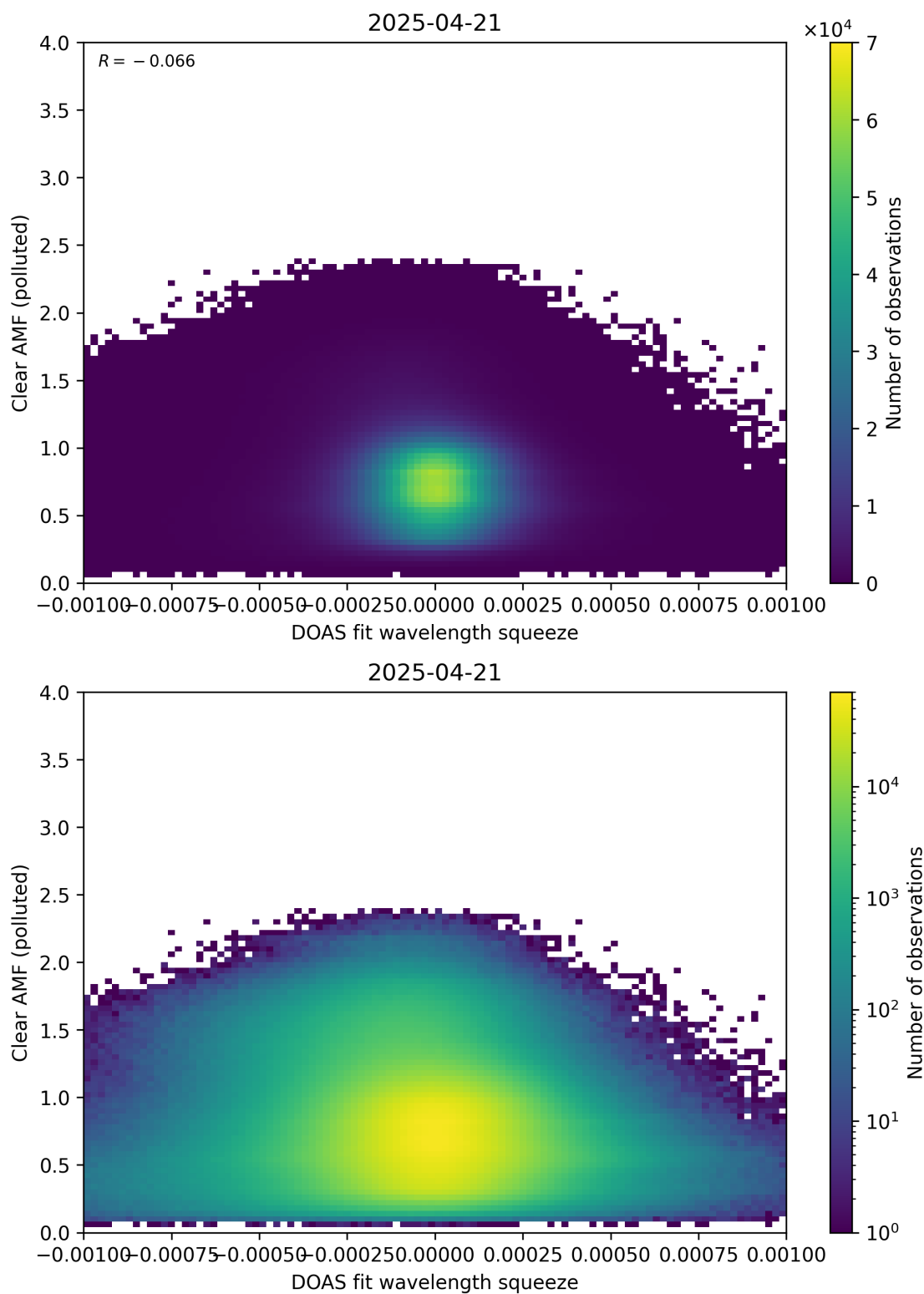


Figure 144: Scatter density plot of “DOAS fit wavelength squeeze” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

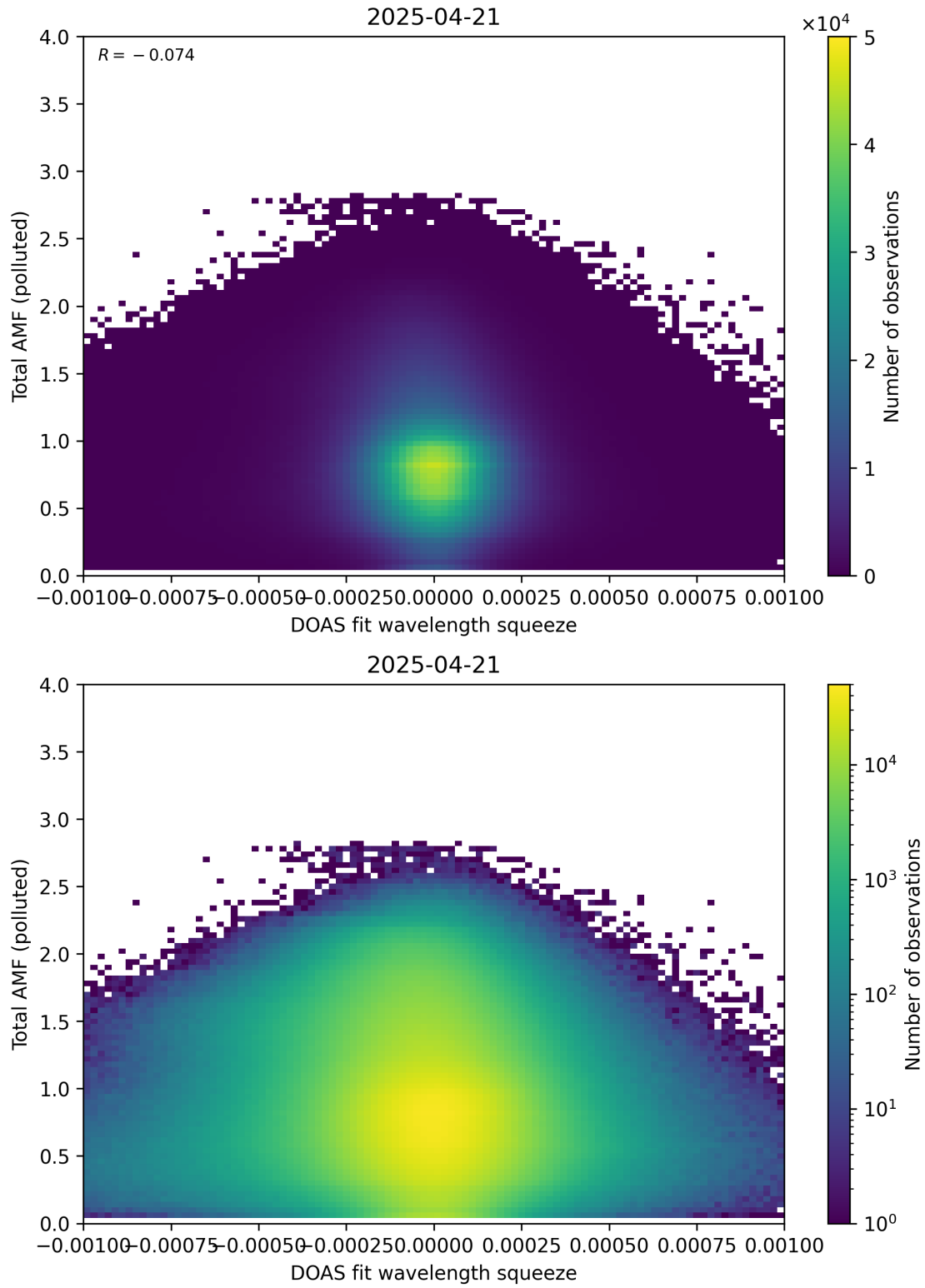


Figure 145: Scatter density plot of “DOAS fit wavelength squeeze” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

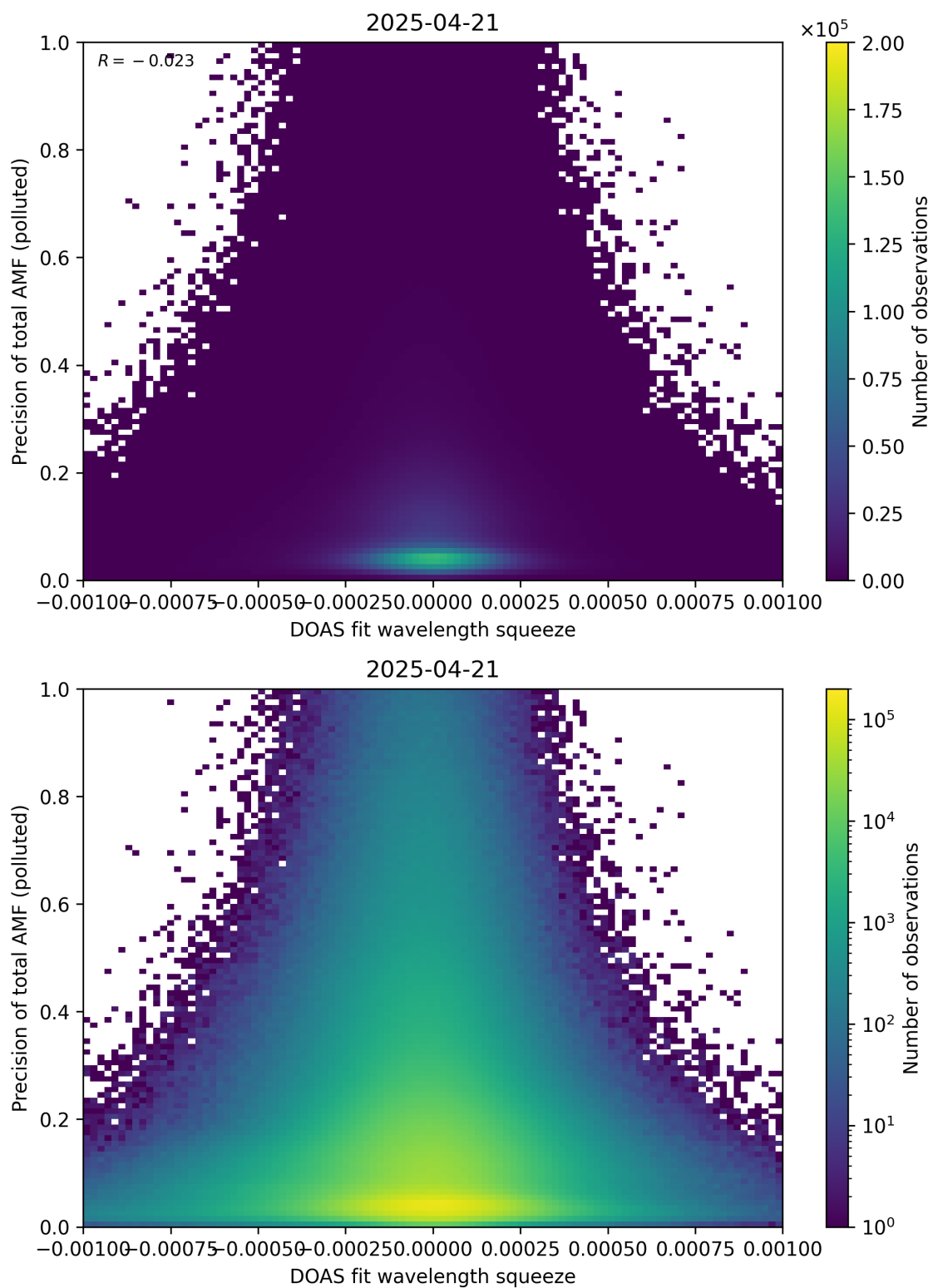


Figure 146: Scatter density plot of “DOAS fit wavelength squeeze” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

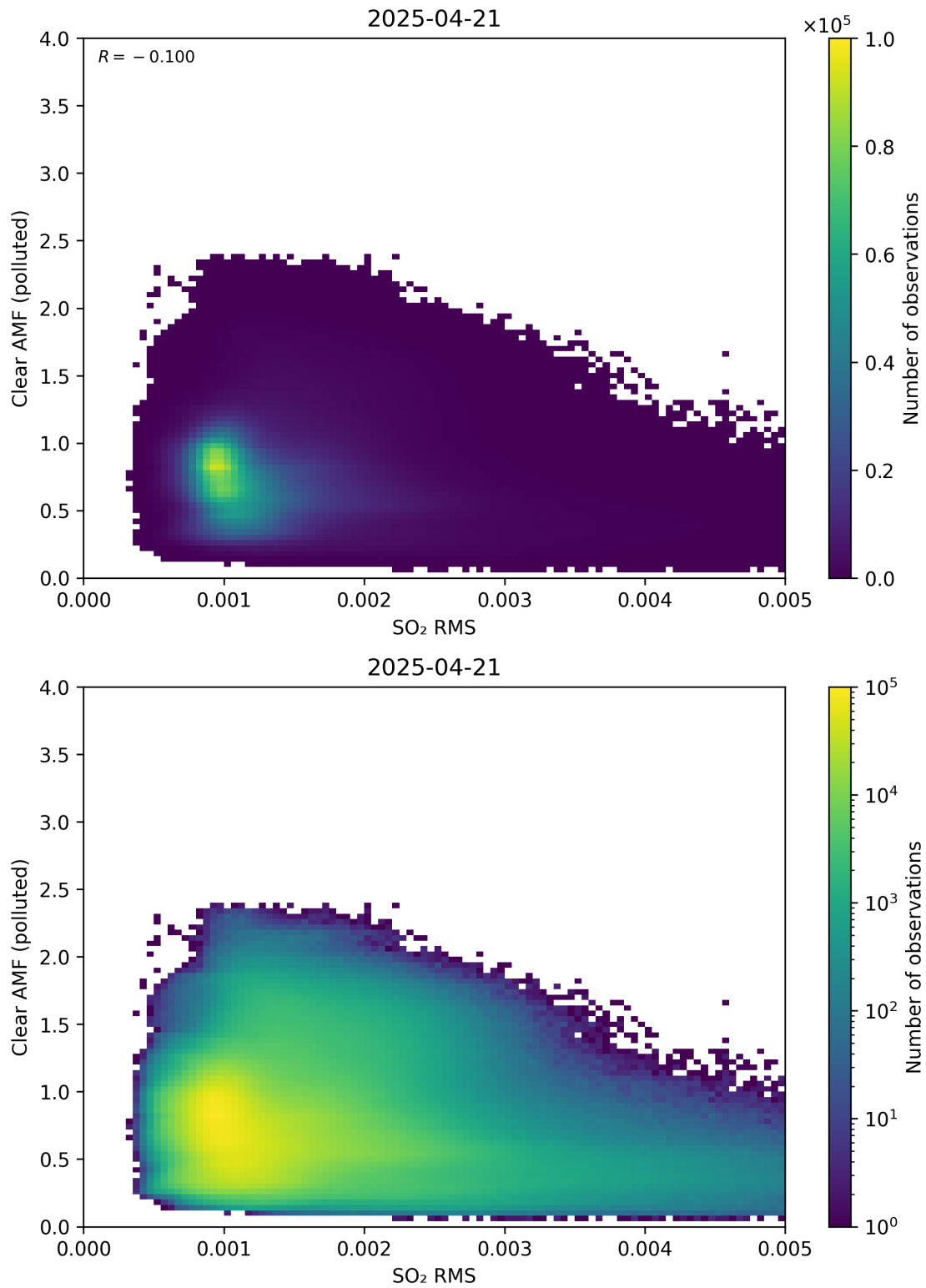


Figure 147: Scatter density plot of “SO₂ RMS” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

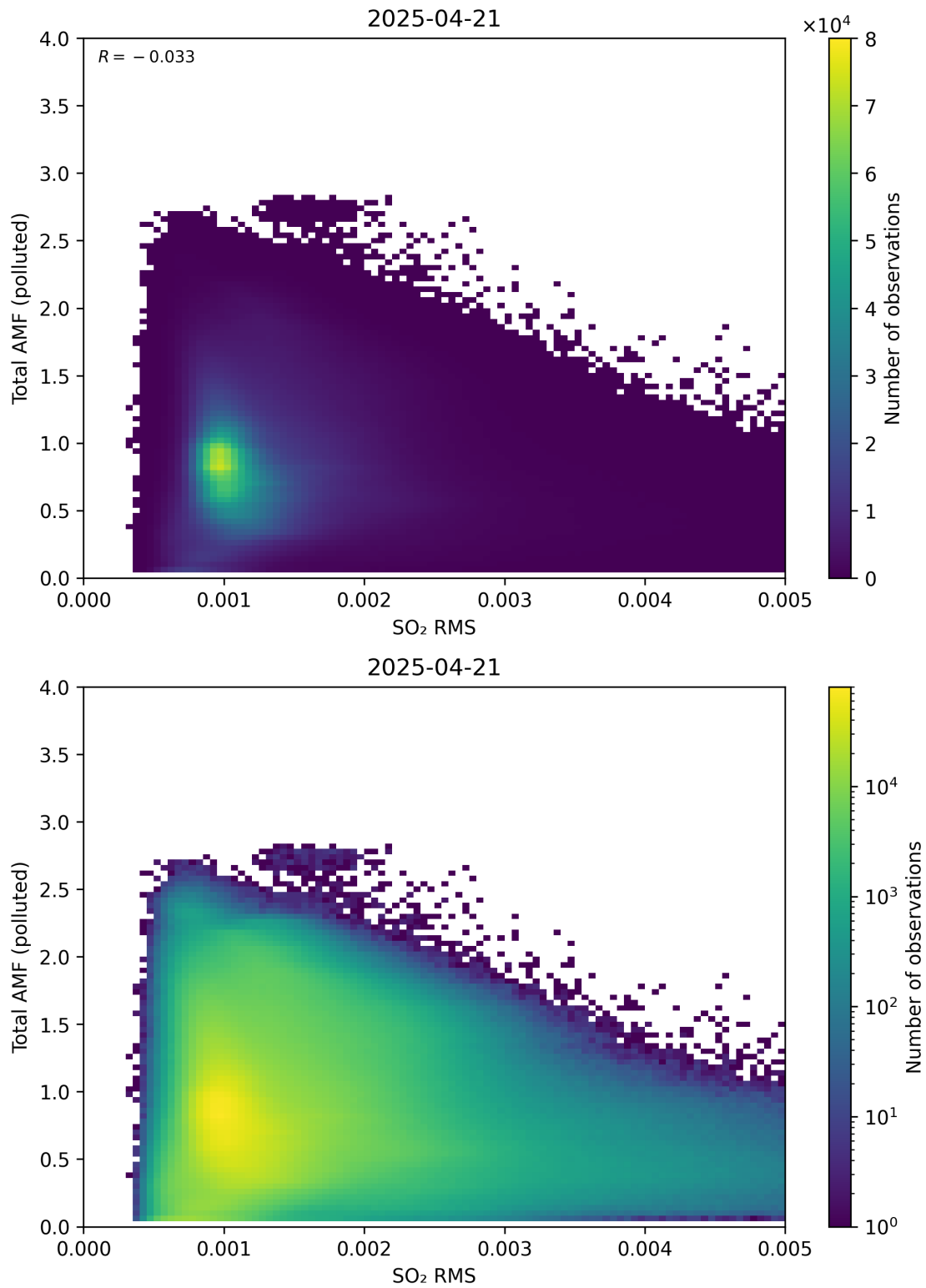


Figure 148: Scatter density plot of “SO₂ RMS” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

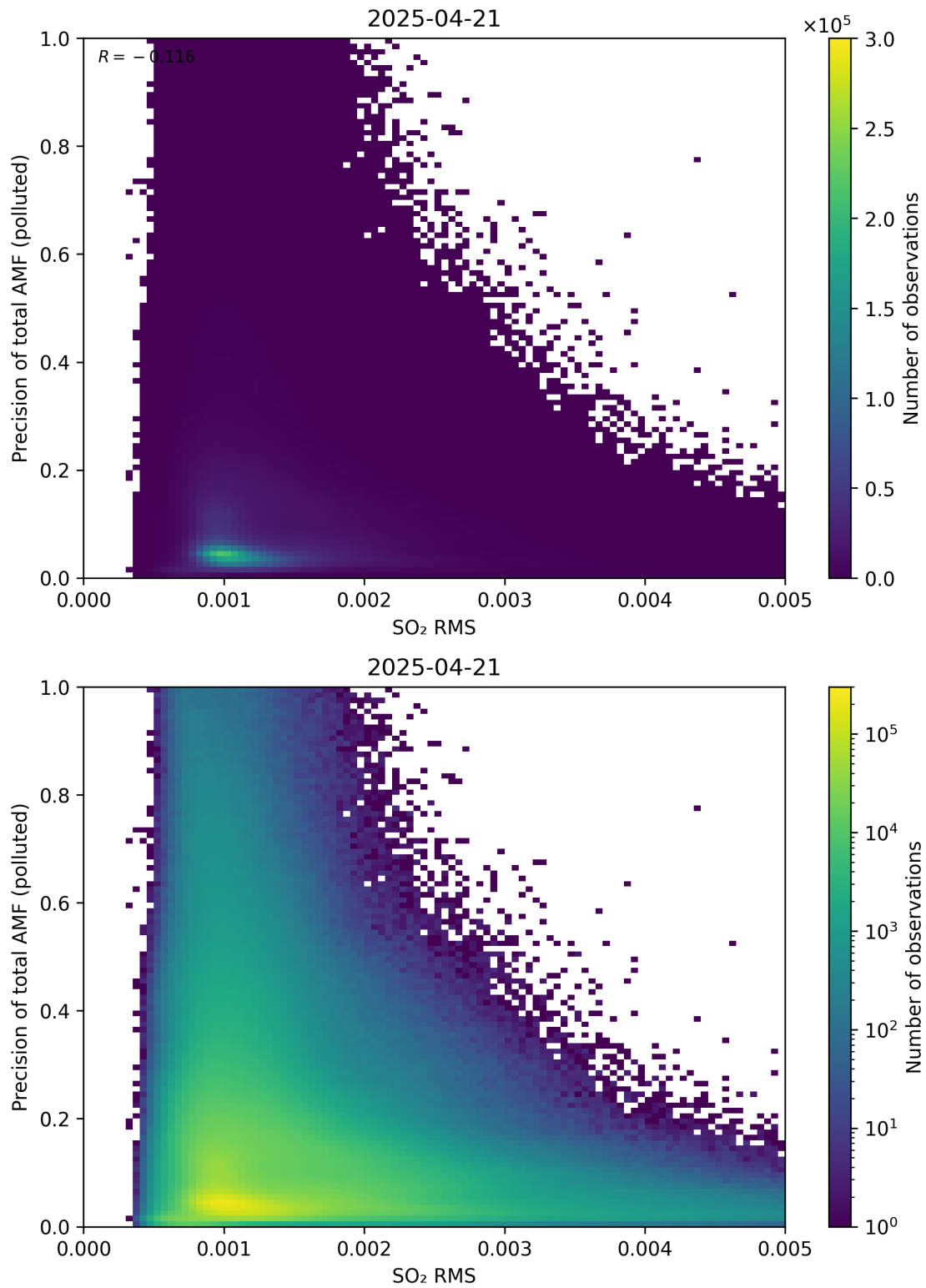


Figure 149: Scatter density plot of “SO₂ RMS” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

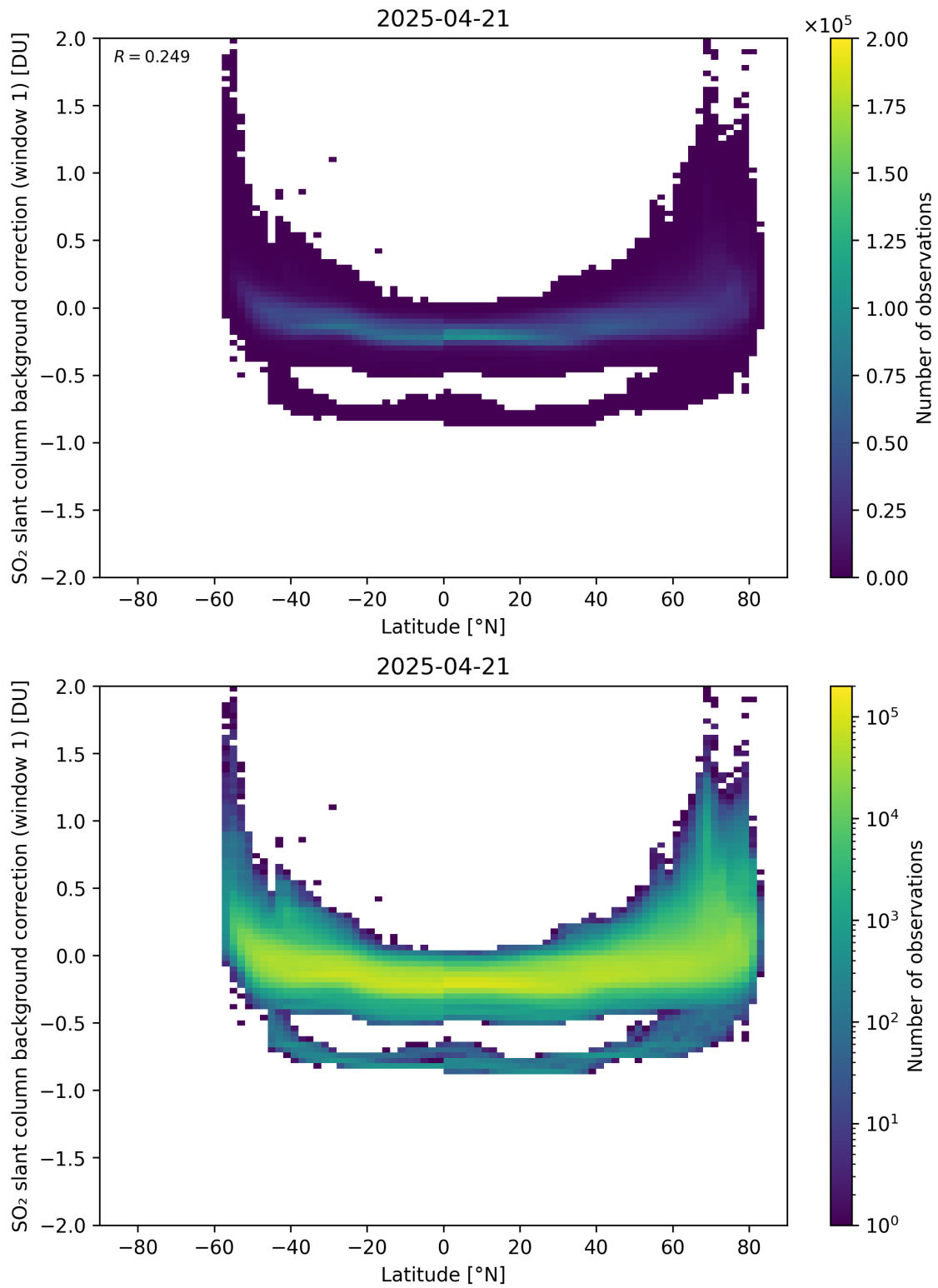


Figure 150: Scatter density plot of “Latitude” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

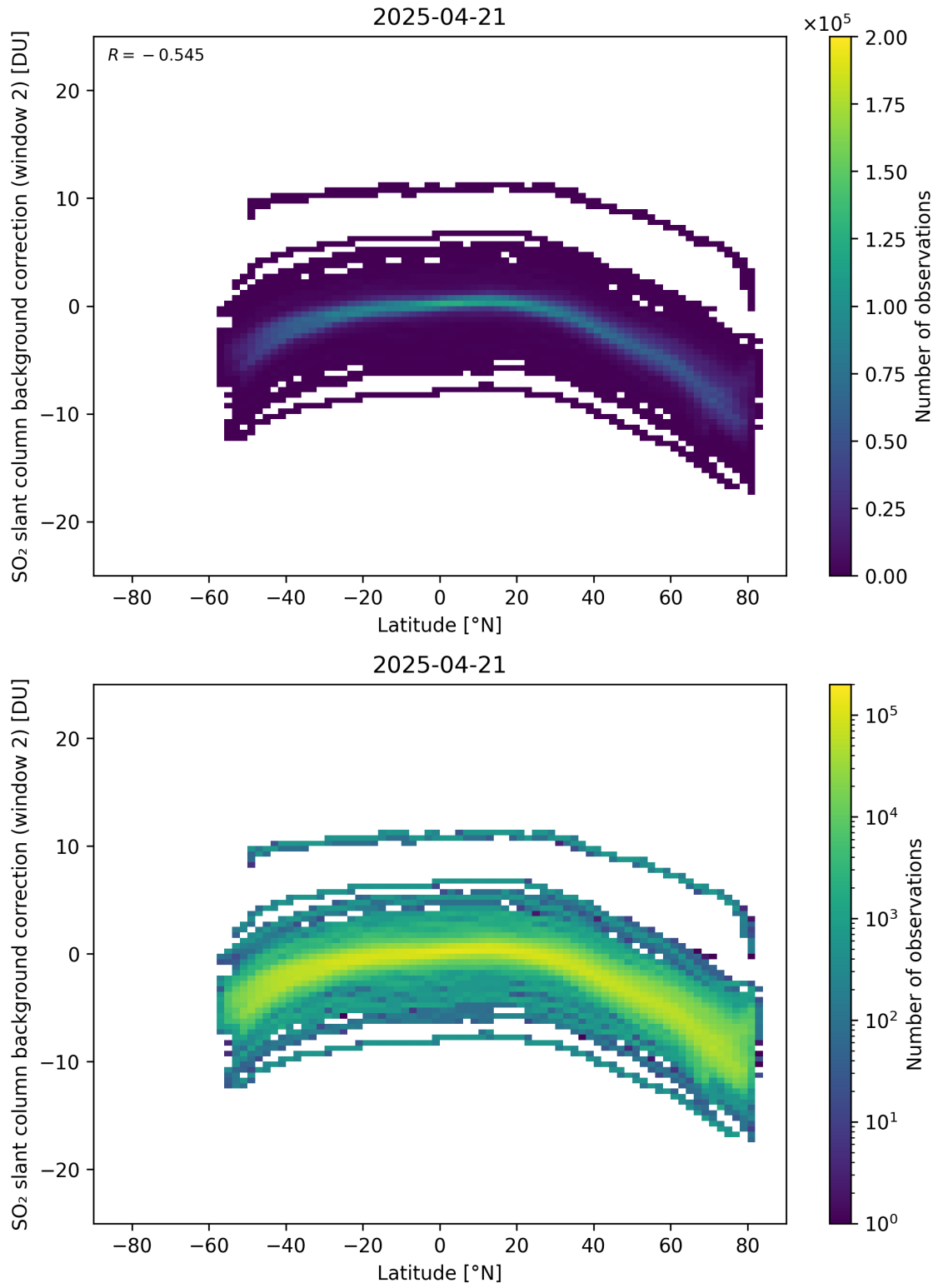


Figure 151: Scatter density plot of “Latitude” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

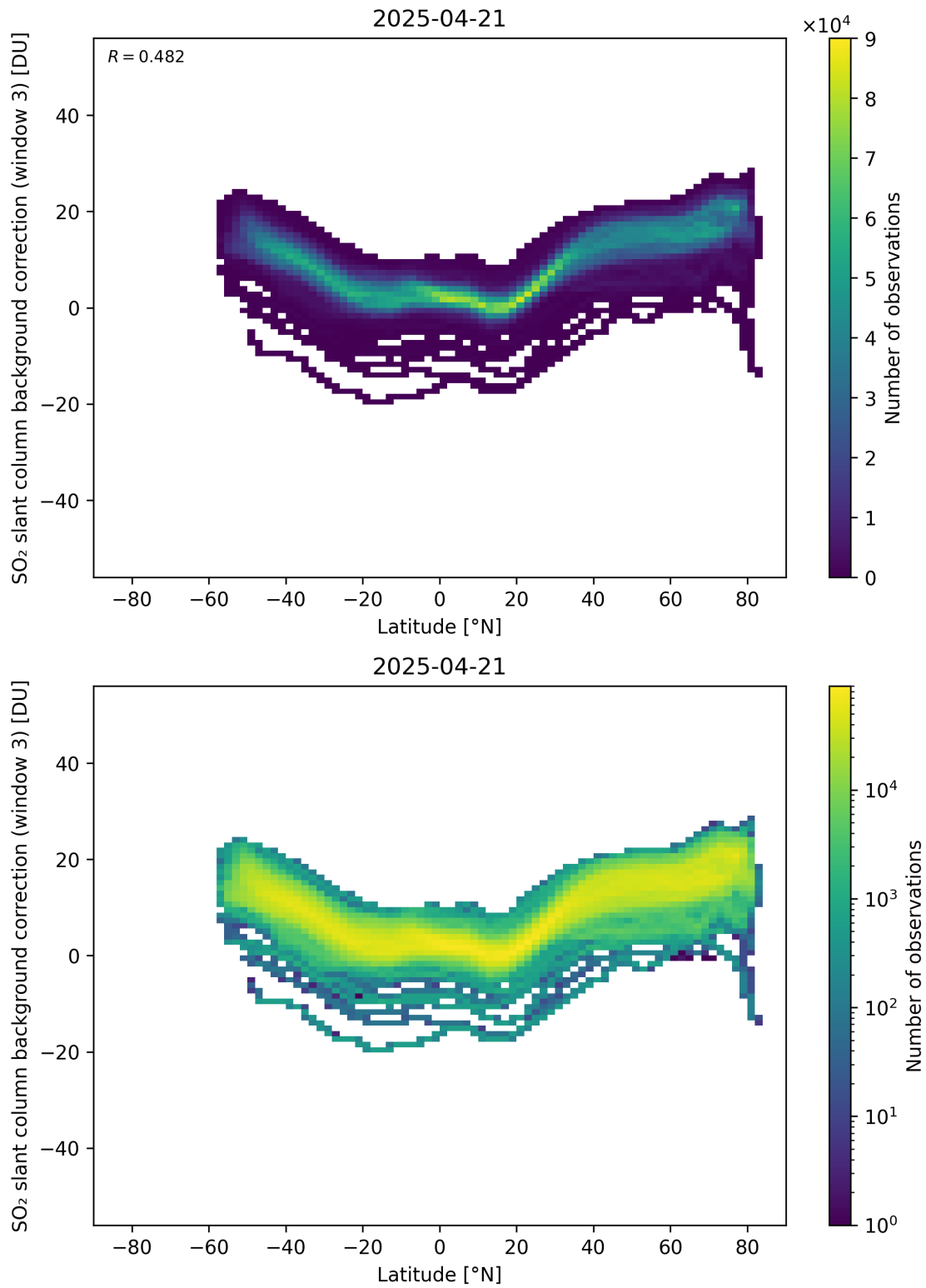


Figure 152: Scatter density plot of “Latitude” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

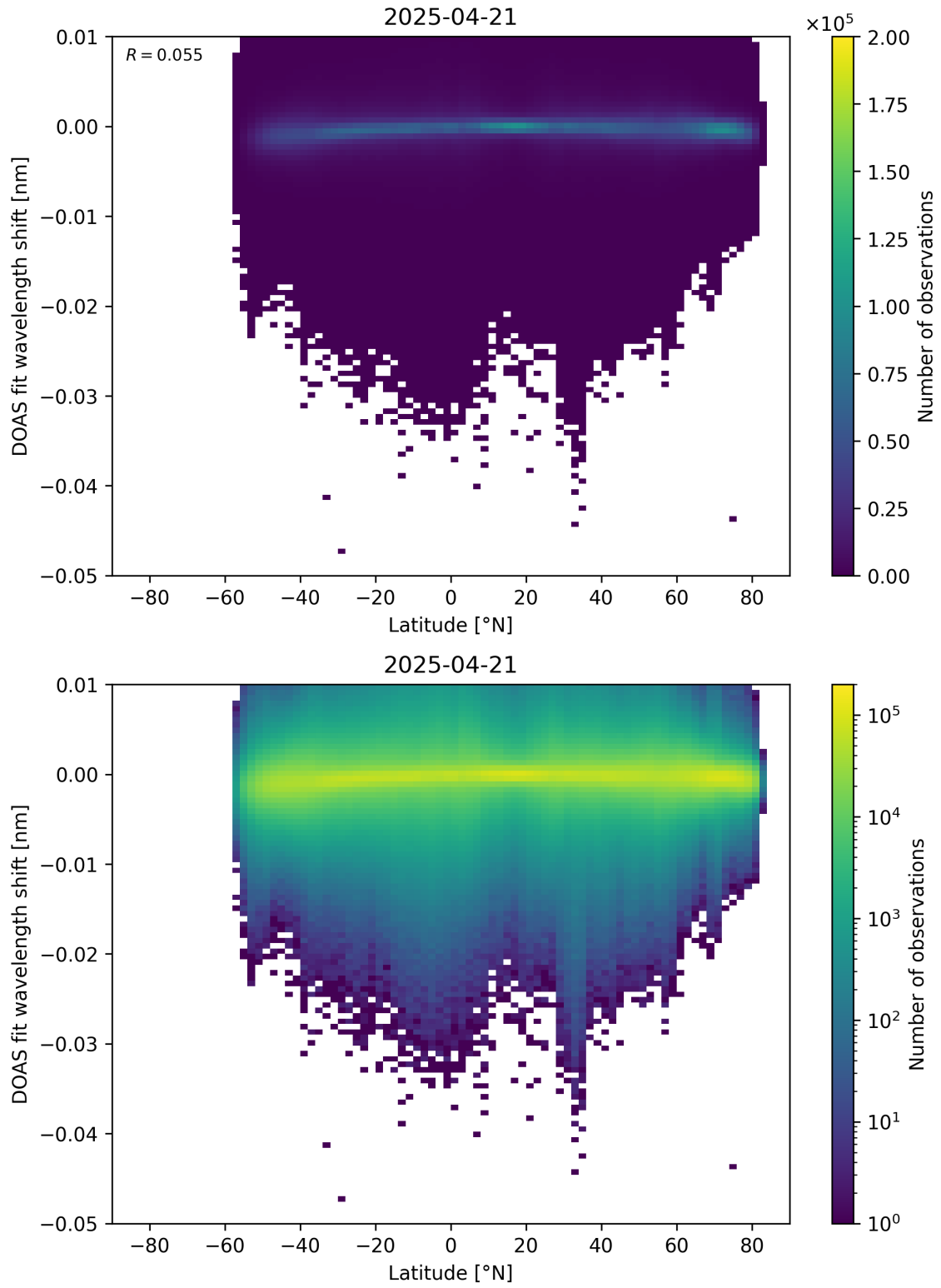


Figure 153: Scatter density plot of “Latitude” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

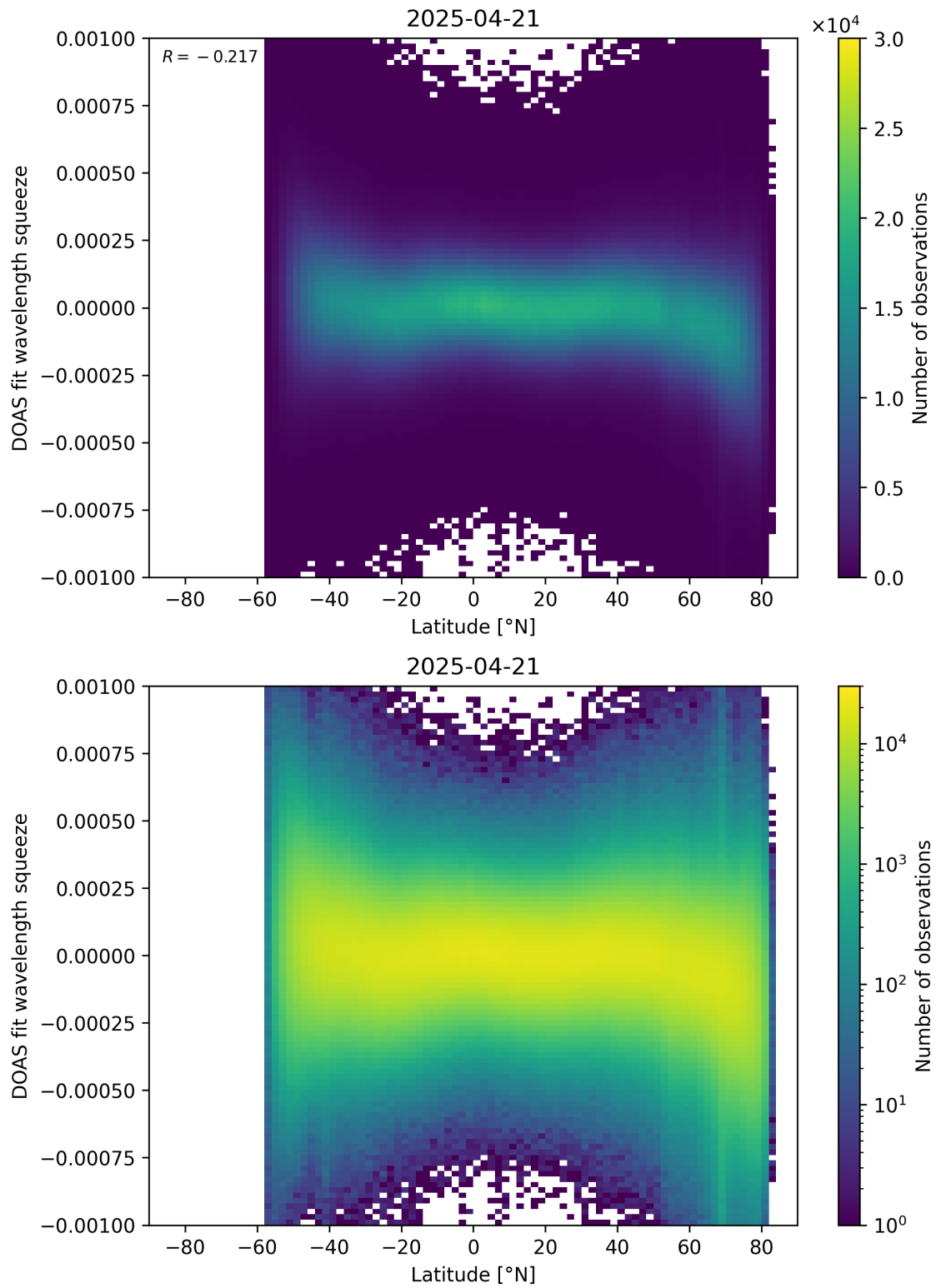


Figure 154: Scatter density plot of “Latitude” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

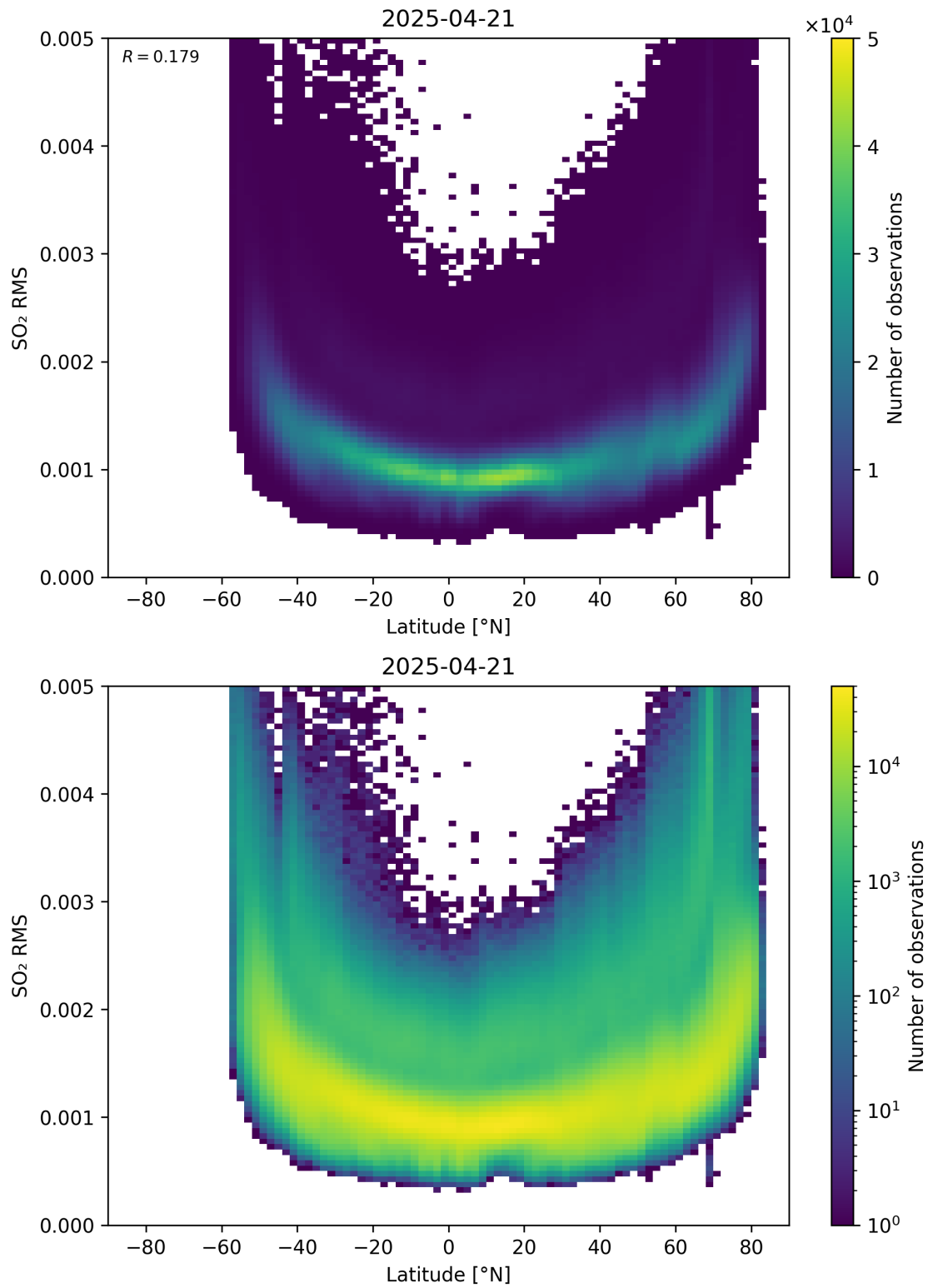


Figure 155: Scatter density plot of “Latitude” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

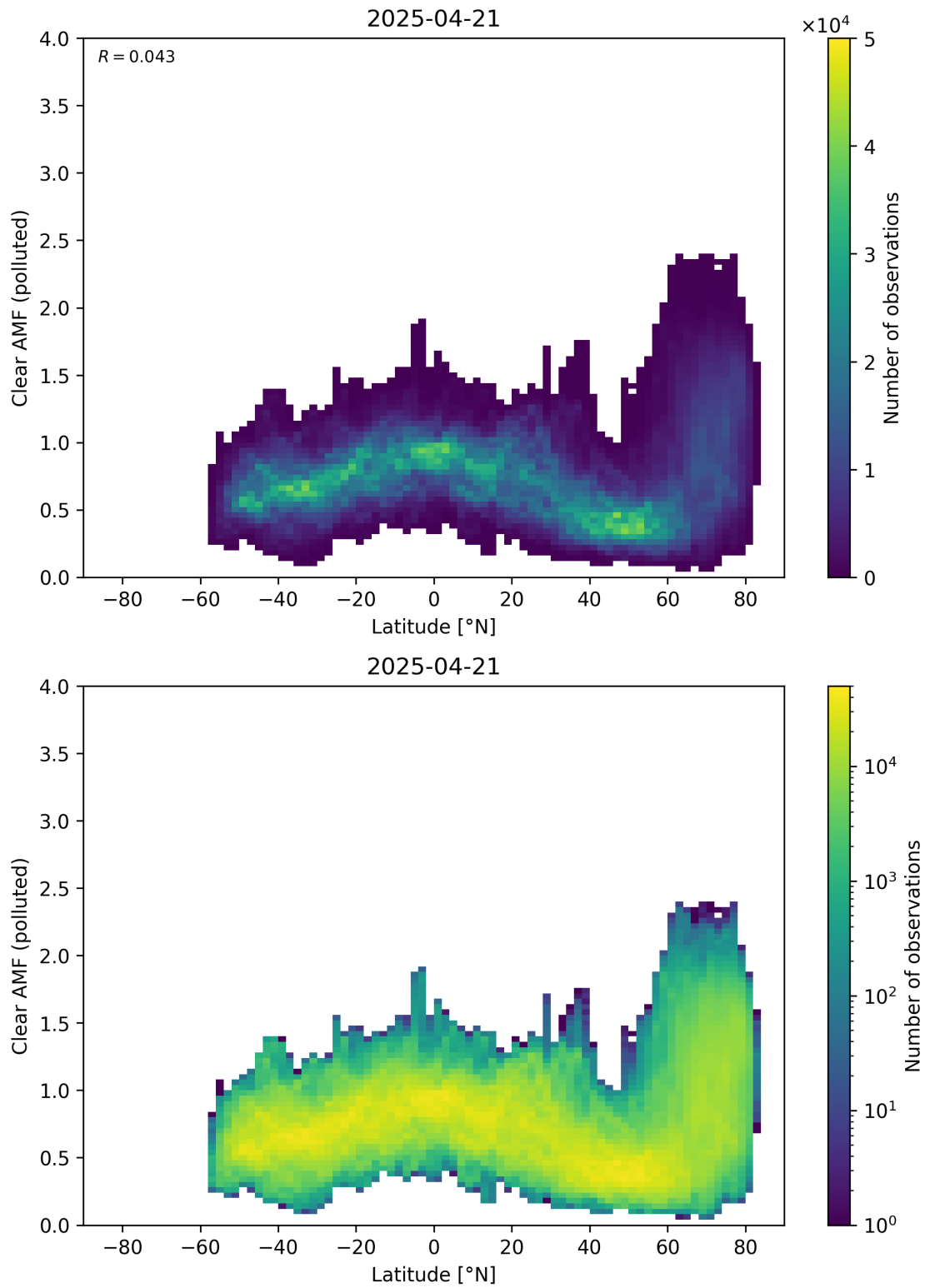


Figure 156: Scatter density plot of “Latitude” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

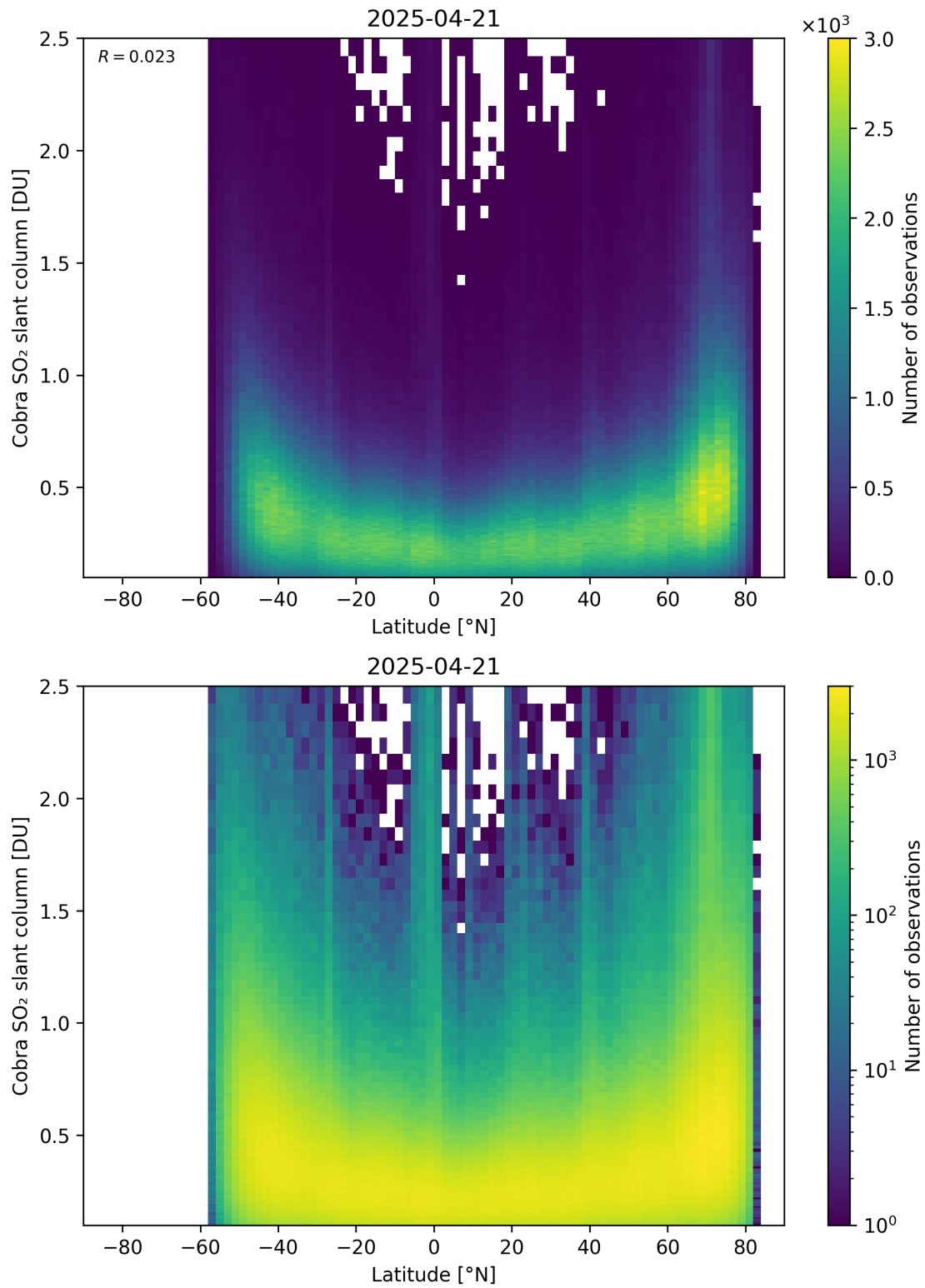


Figure 157: Scatter density plot of “Latitude” against “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

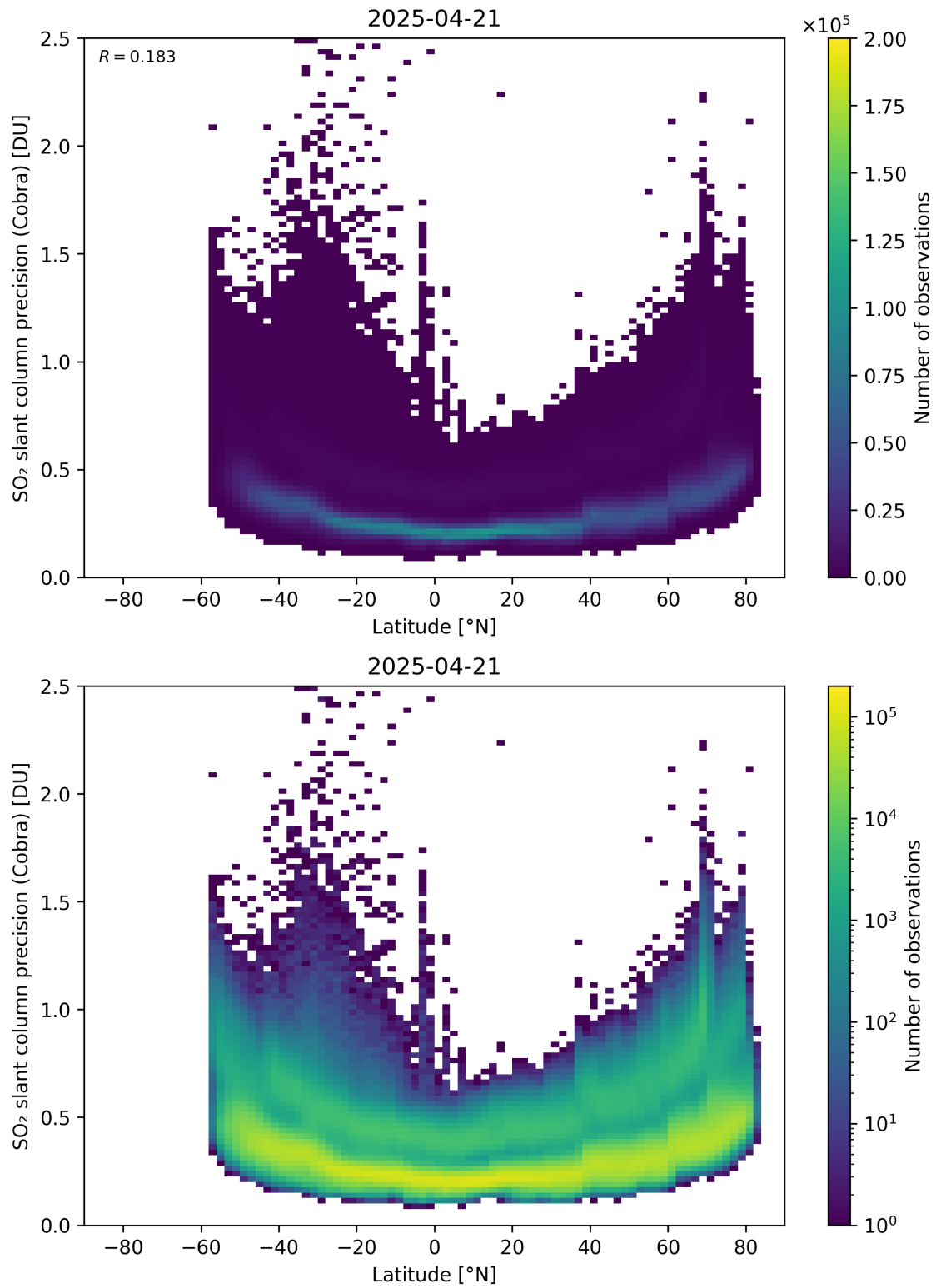


Figure 158: Scatter density plot of “Latitude” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

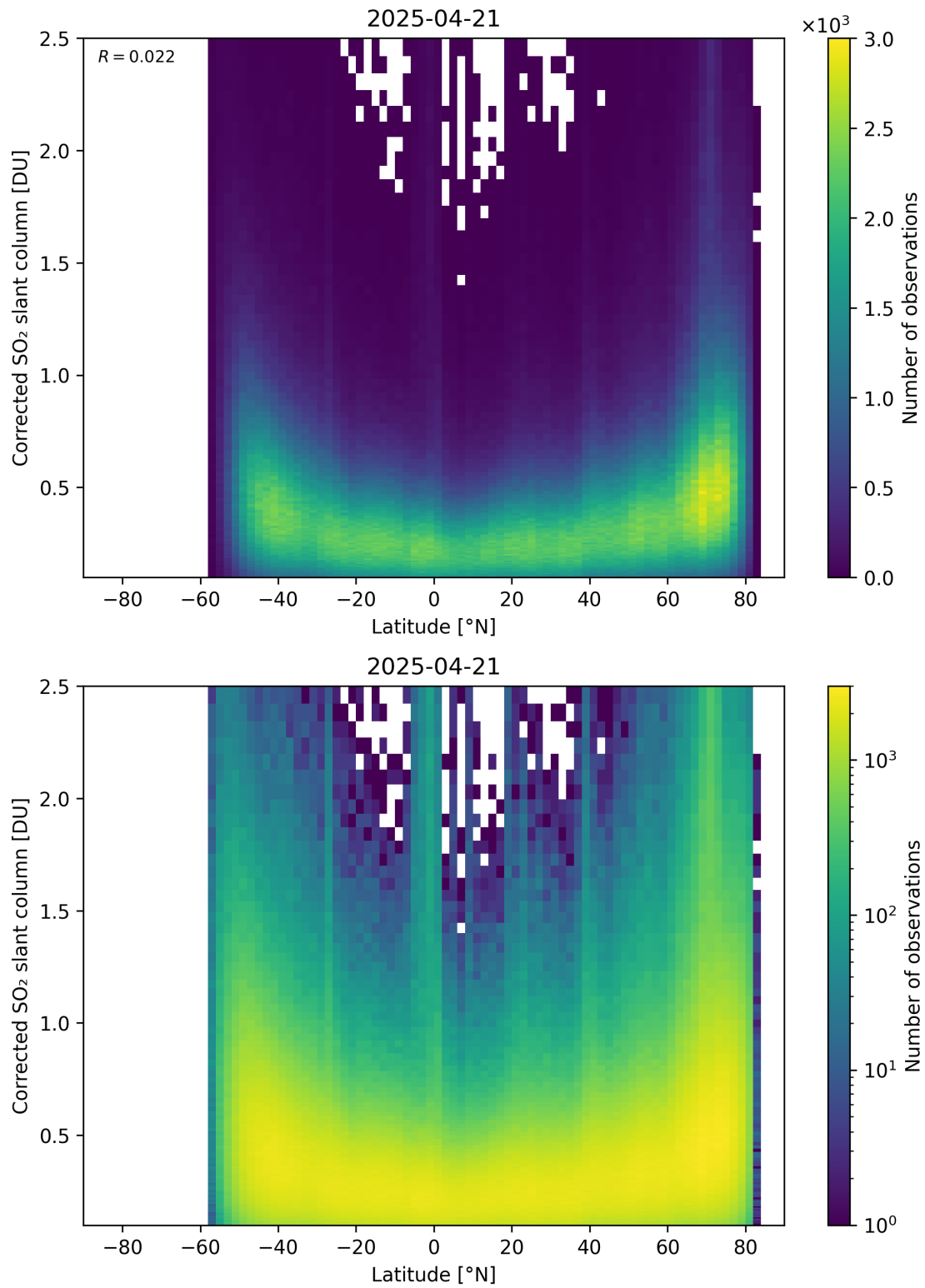


Figure 159: Scatter density plot of “Latitude” against “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22.

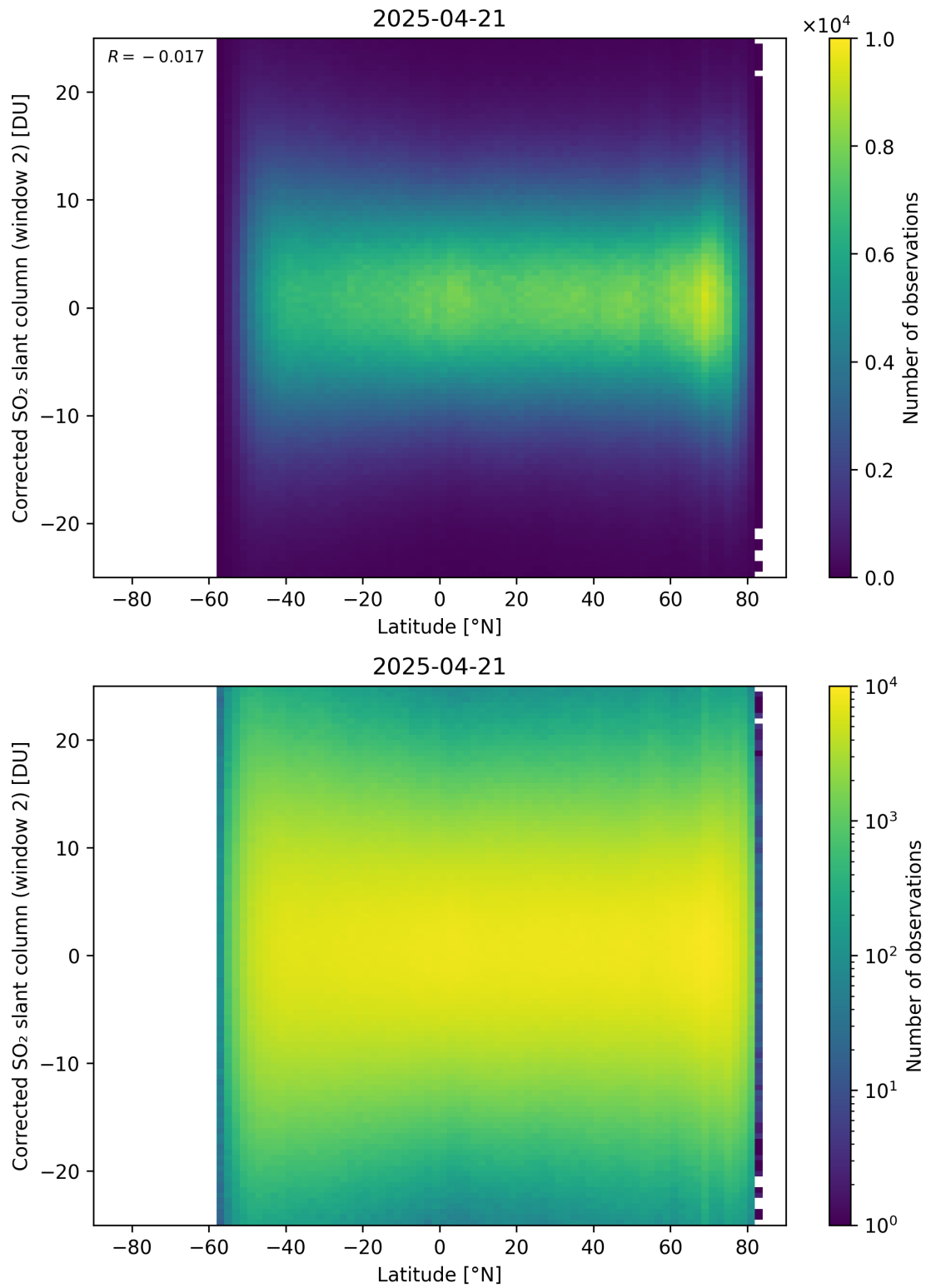


Figure 160: Scatter density plot of “Latitude” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

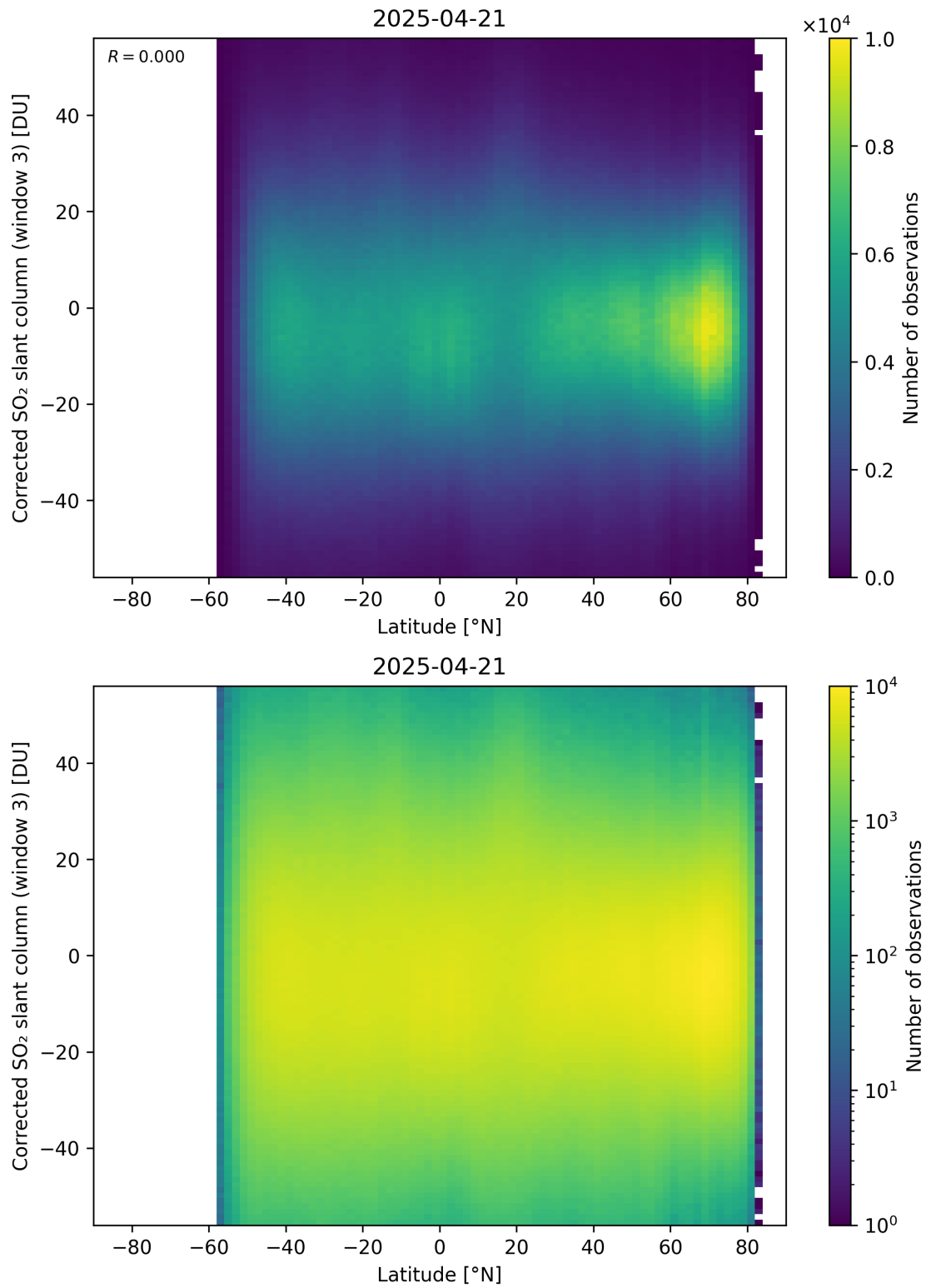


Figure 161: Scatter density plot of “Latitude” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

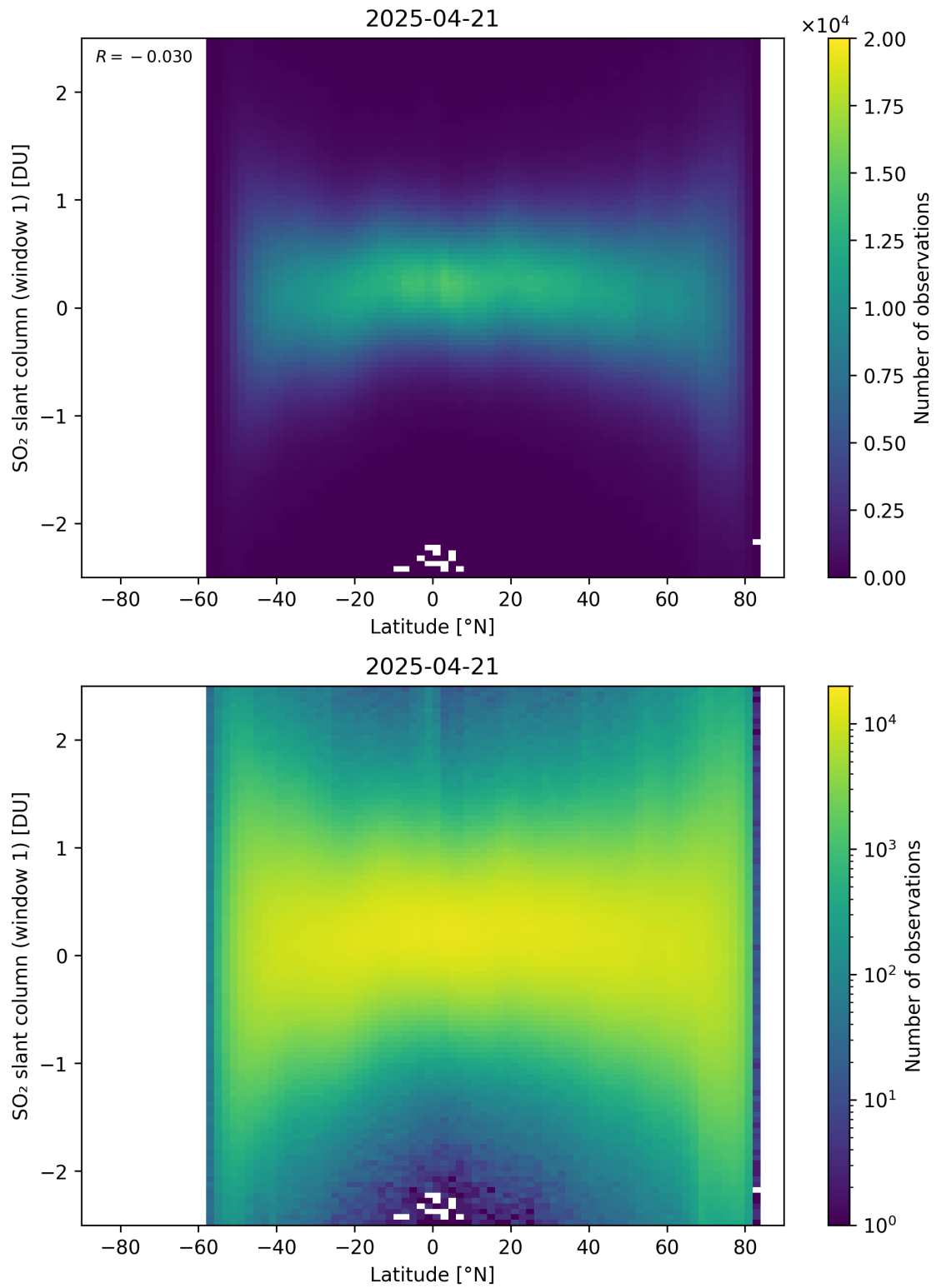


Figure 162: Scatter density plot of “Latitude” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

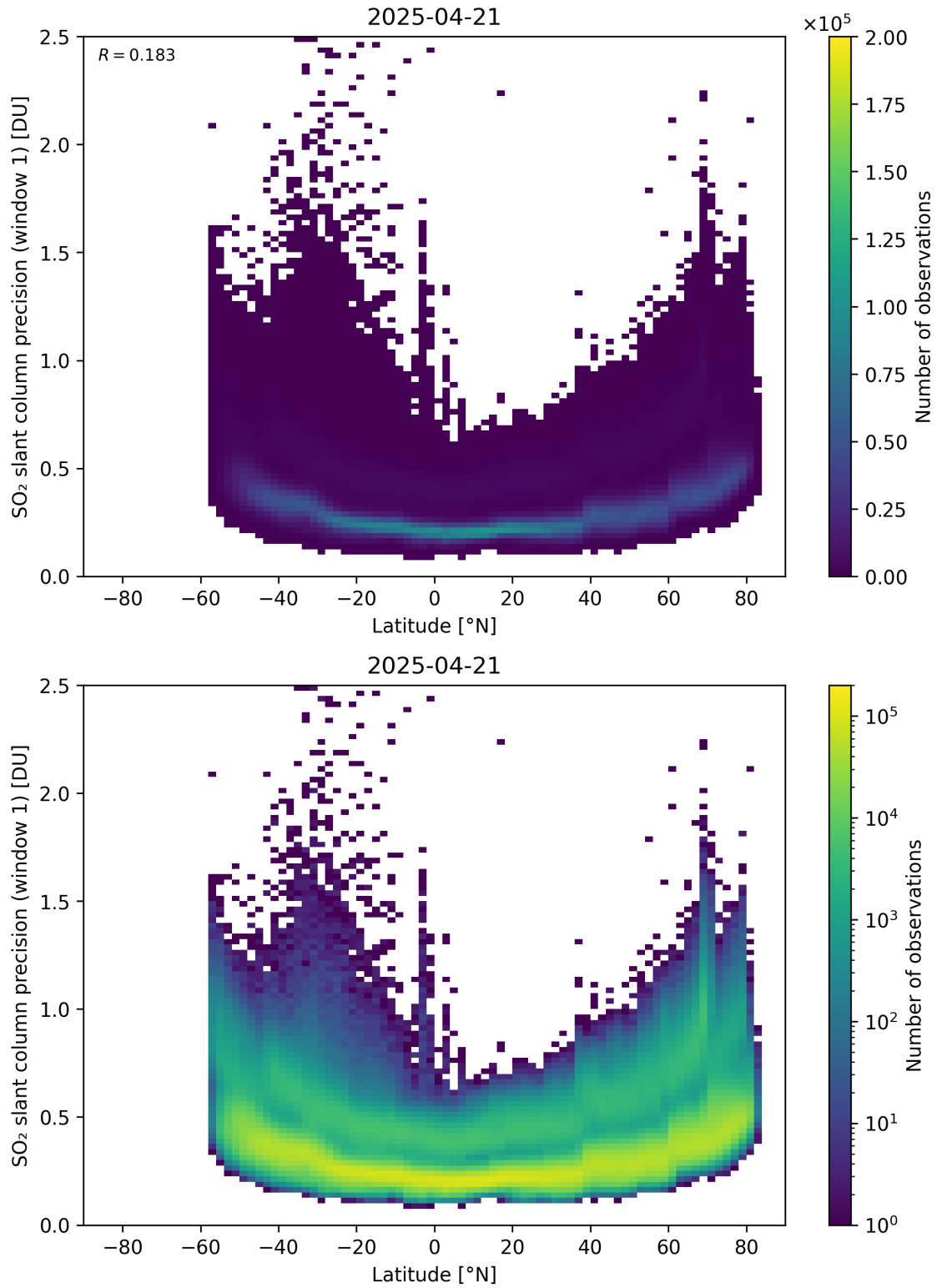


Figure 163: Scatter density plot of “Latitude” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

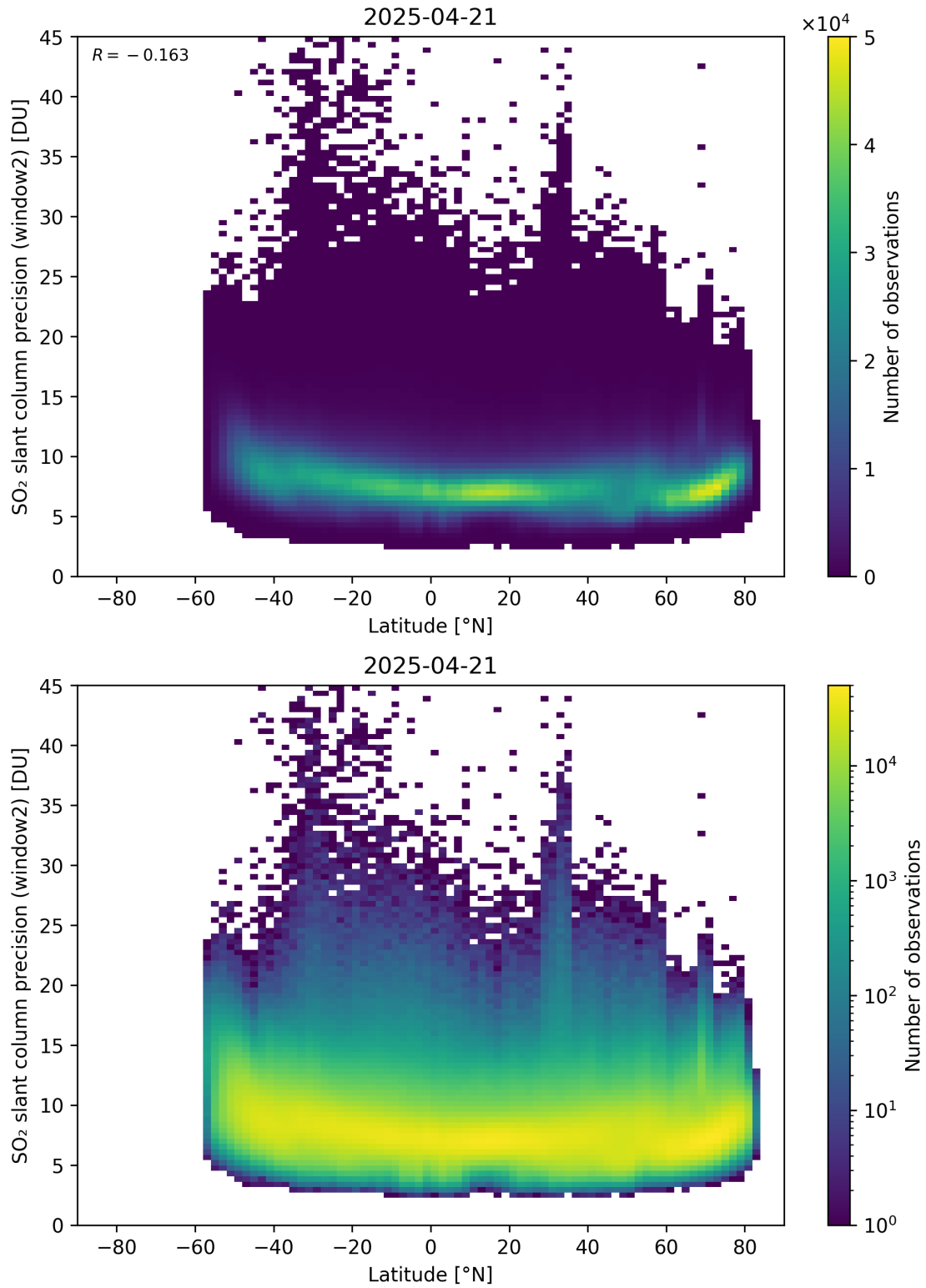


Figure 164: Scatter density plot of “Latitude” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

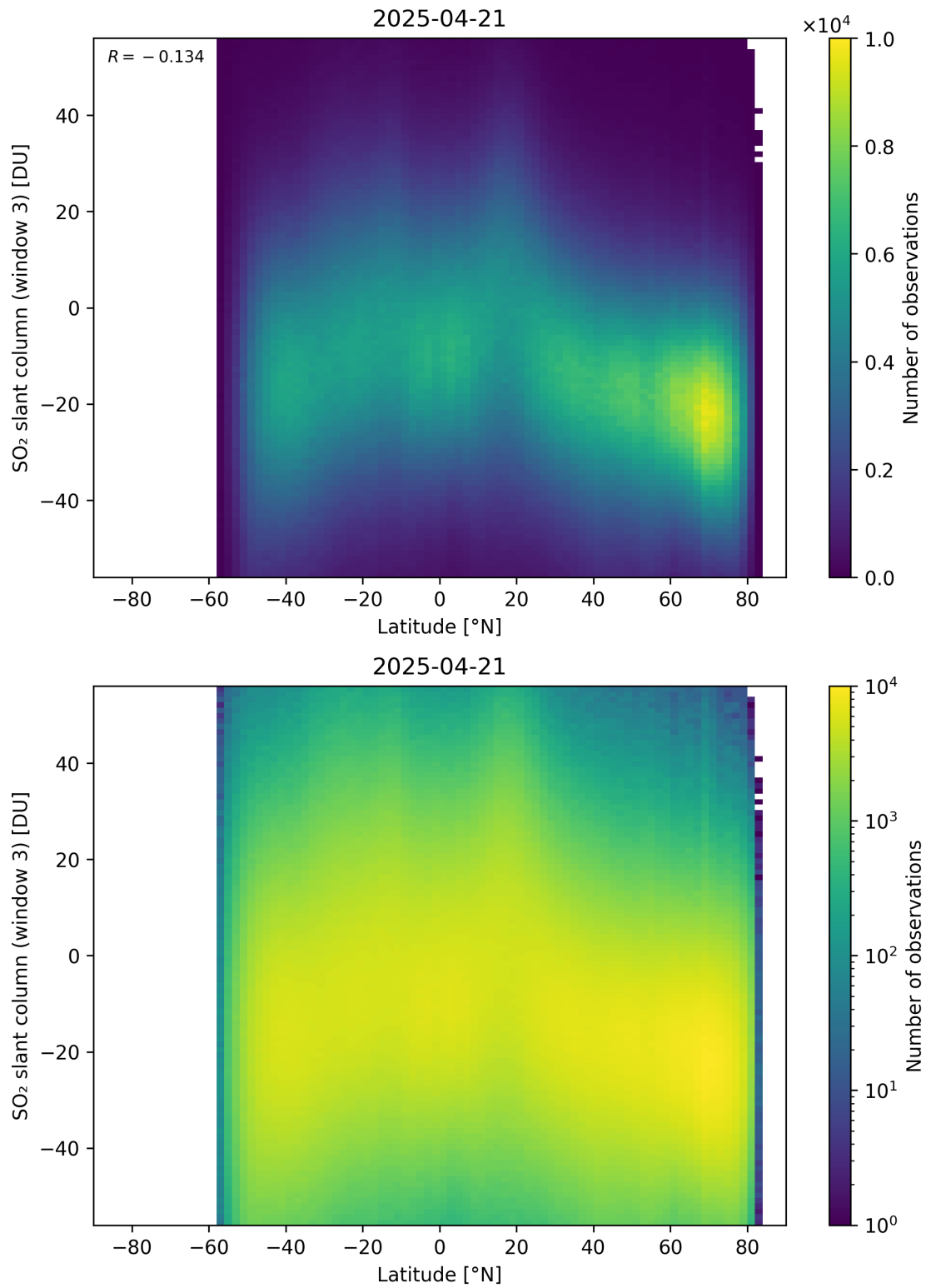


Figure 165: Scatter density plot of “Latitude” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

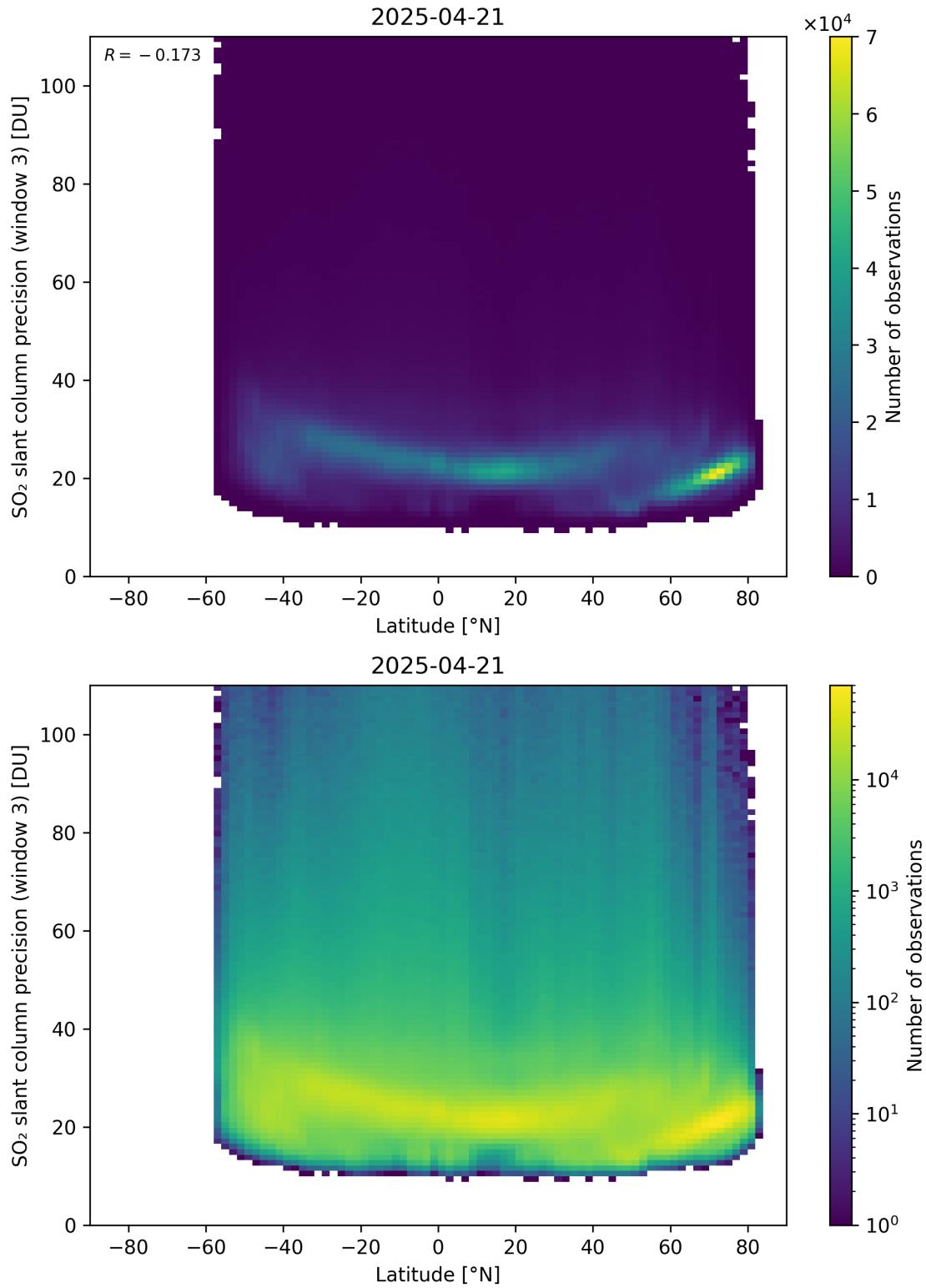


Figure 166: Scatter density plot of “Latitude” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

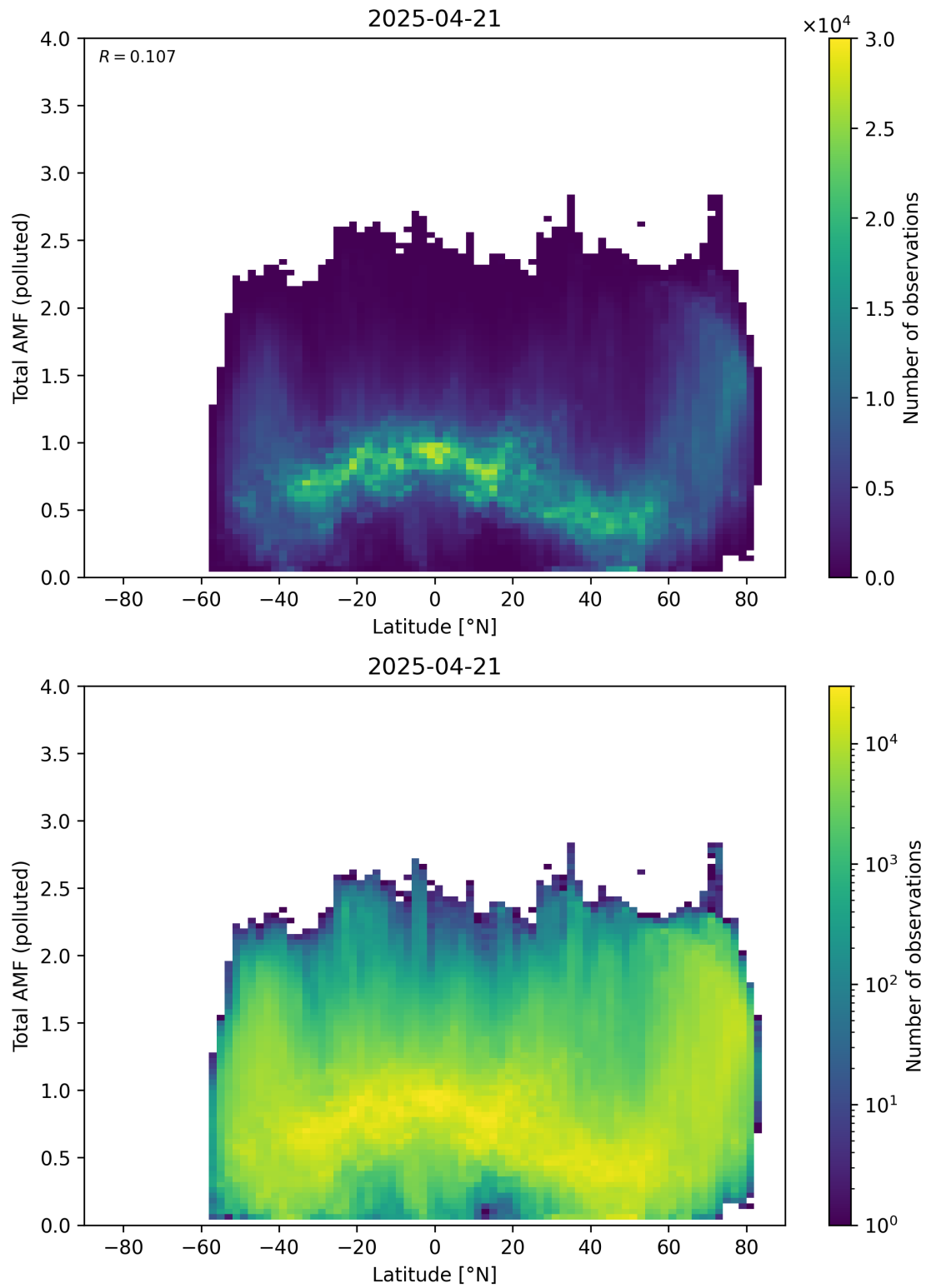


Figure 167: Scatter density plot of “Latitude” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

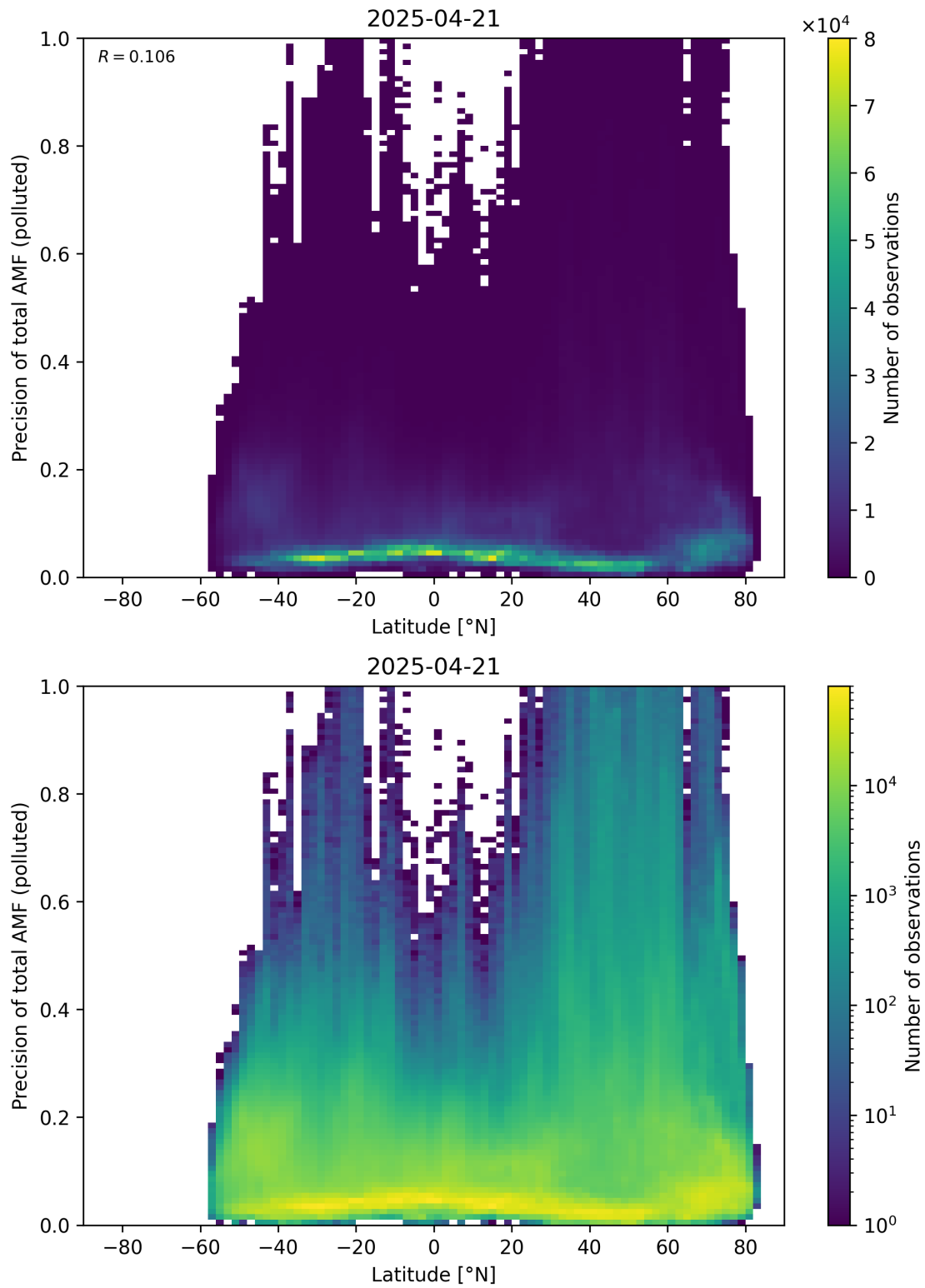


Figure 168: Scatter density plot of “Latitude” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

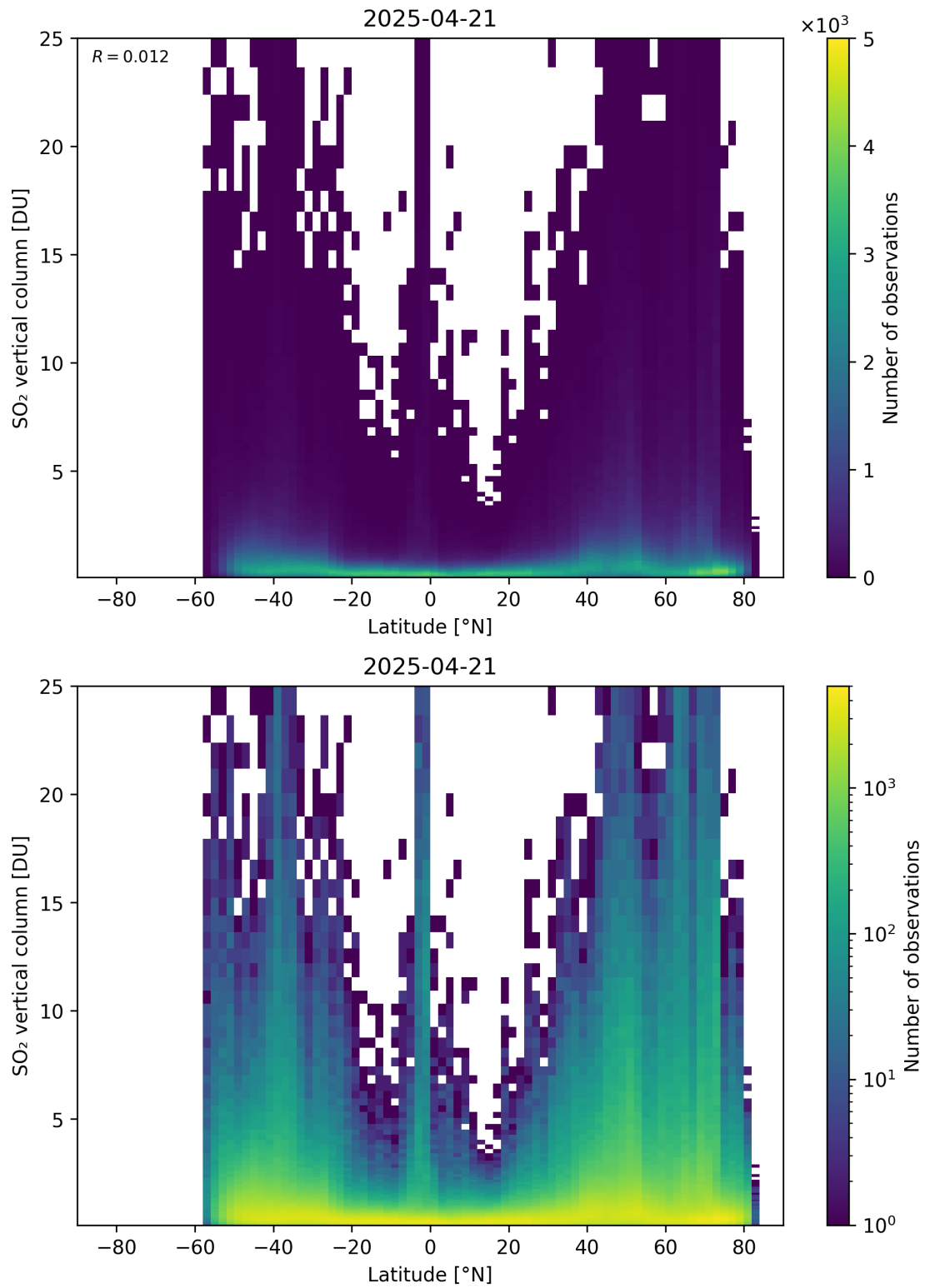


Figure 169: Scatter density plot of “Latitude” against “SO₂ vertical column” for 2025-04-20 to 2025-04-22.

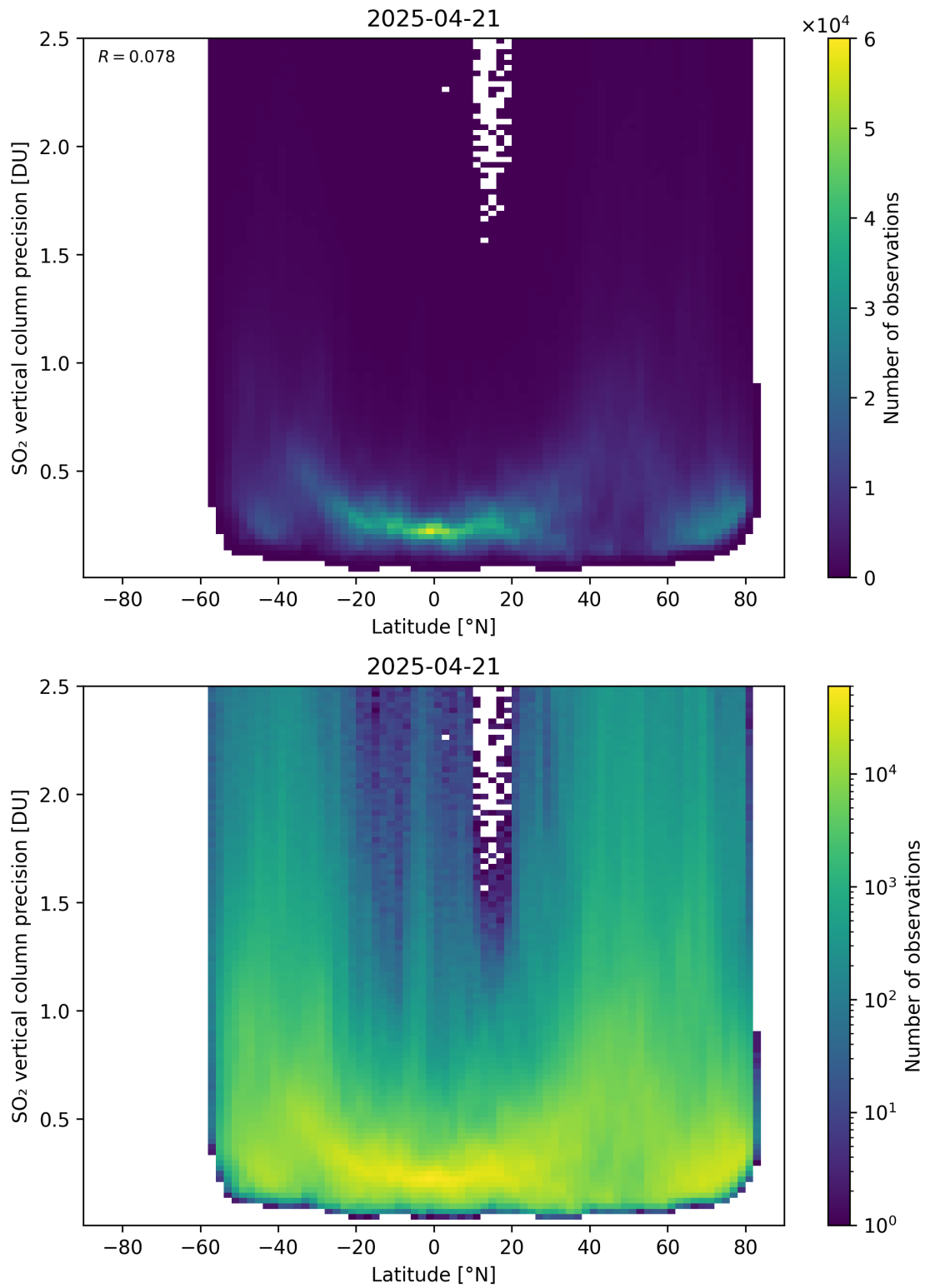


Figure 170: Scatter density plot of “Latitude” against “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22.

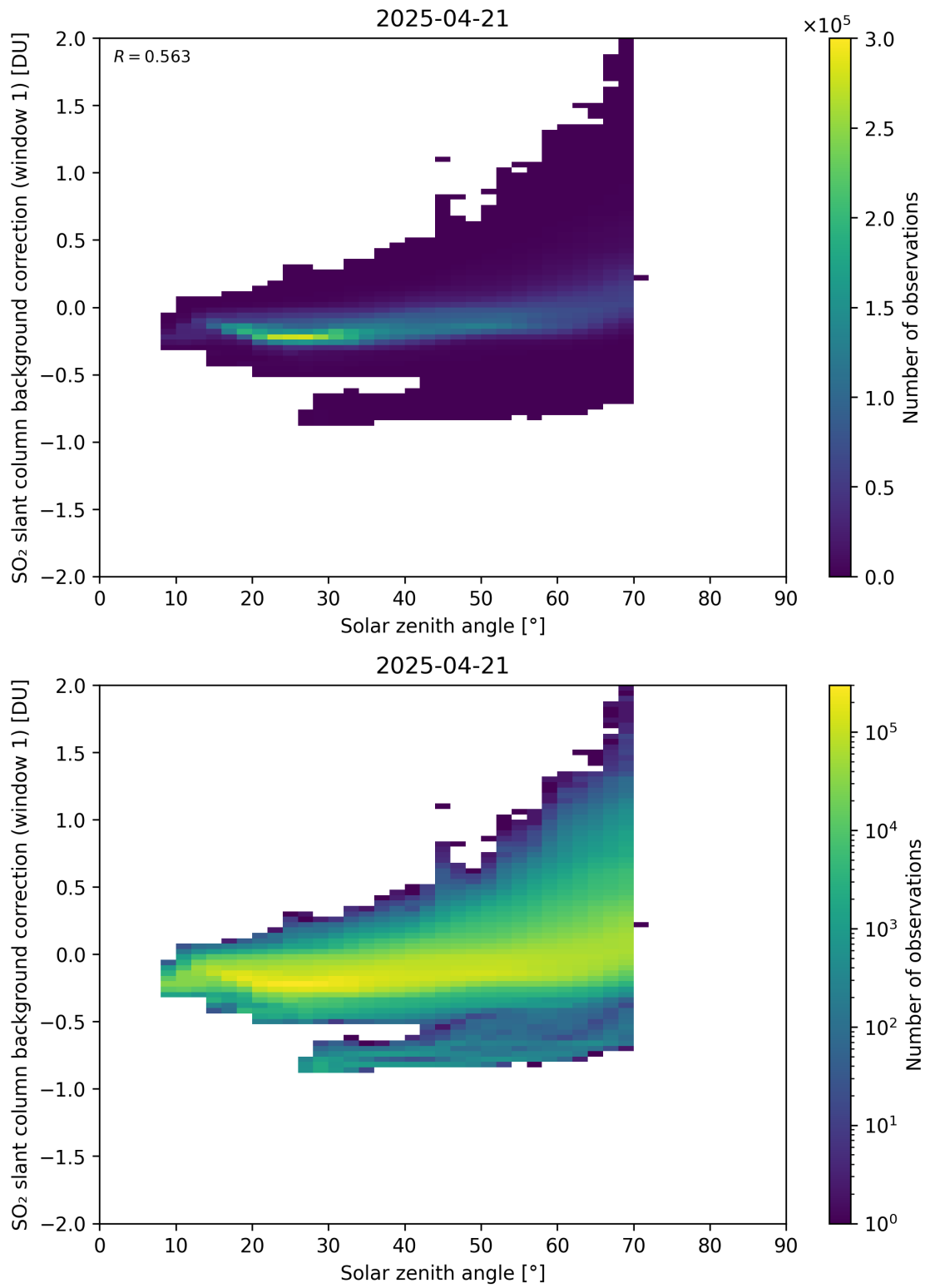


Figure 171: Scatter density plot of “Solar zenith angle” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

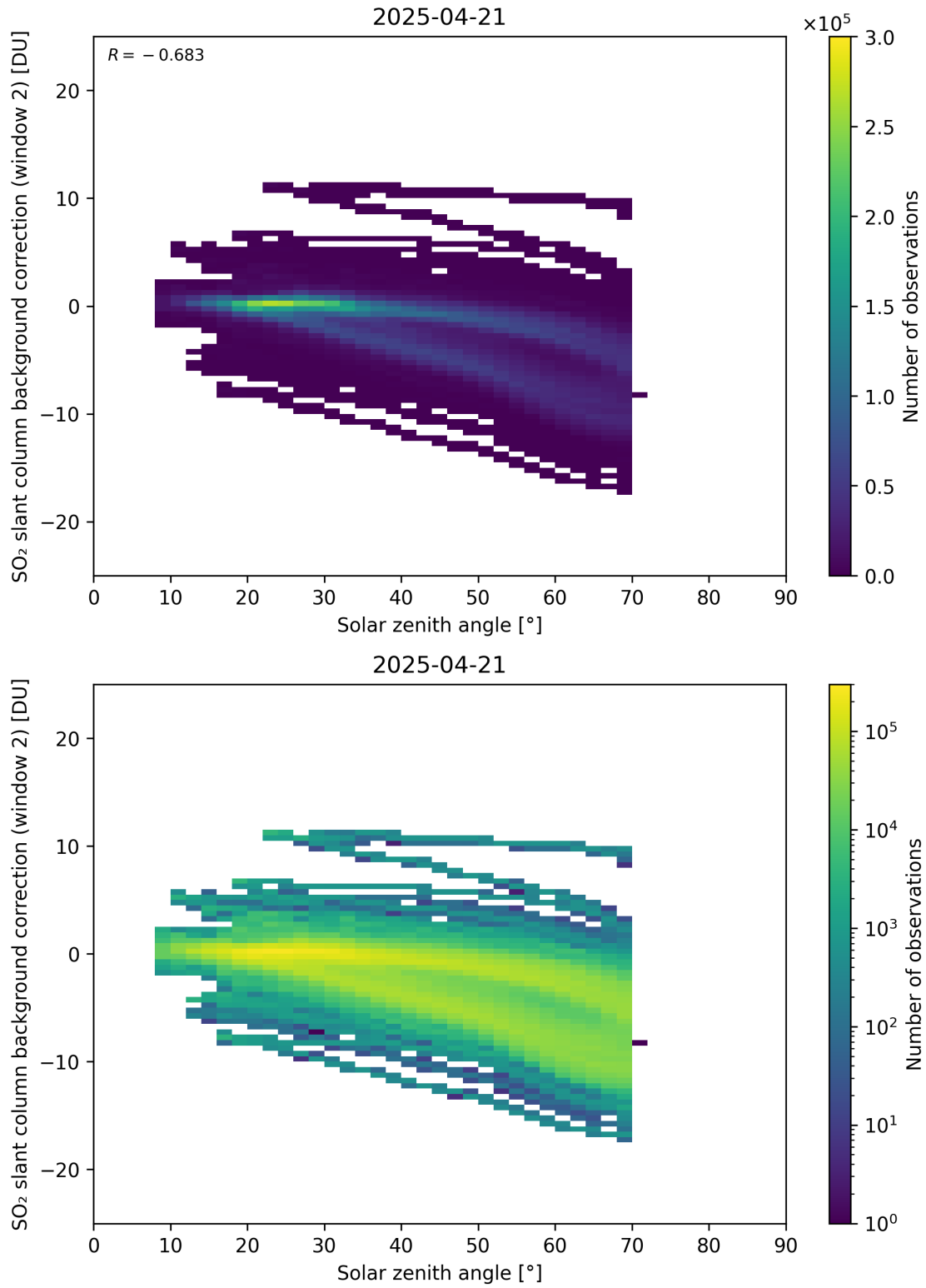


Figure 172: Scatter density plot of “Solar zenith angle” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

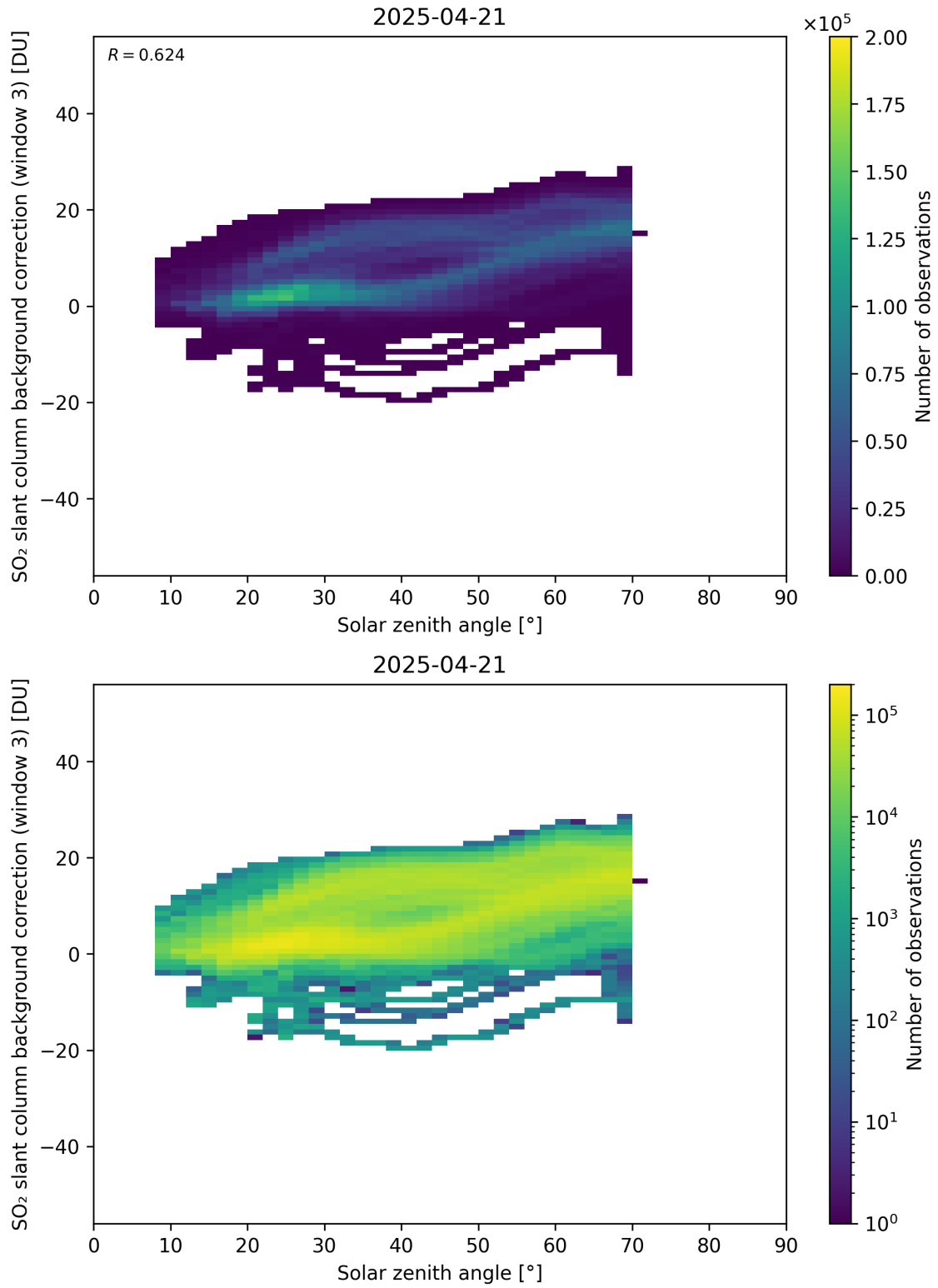


Figure 173: Scatter density plot of “Solar zenith angle” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

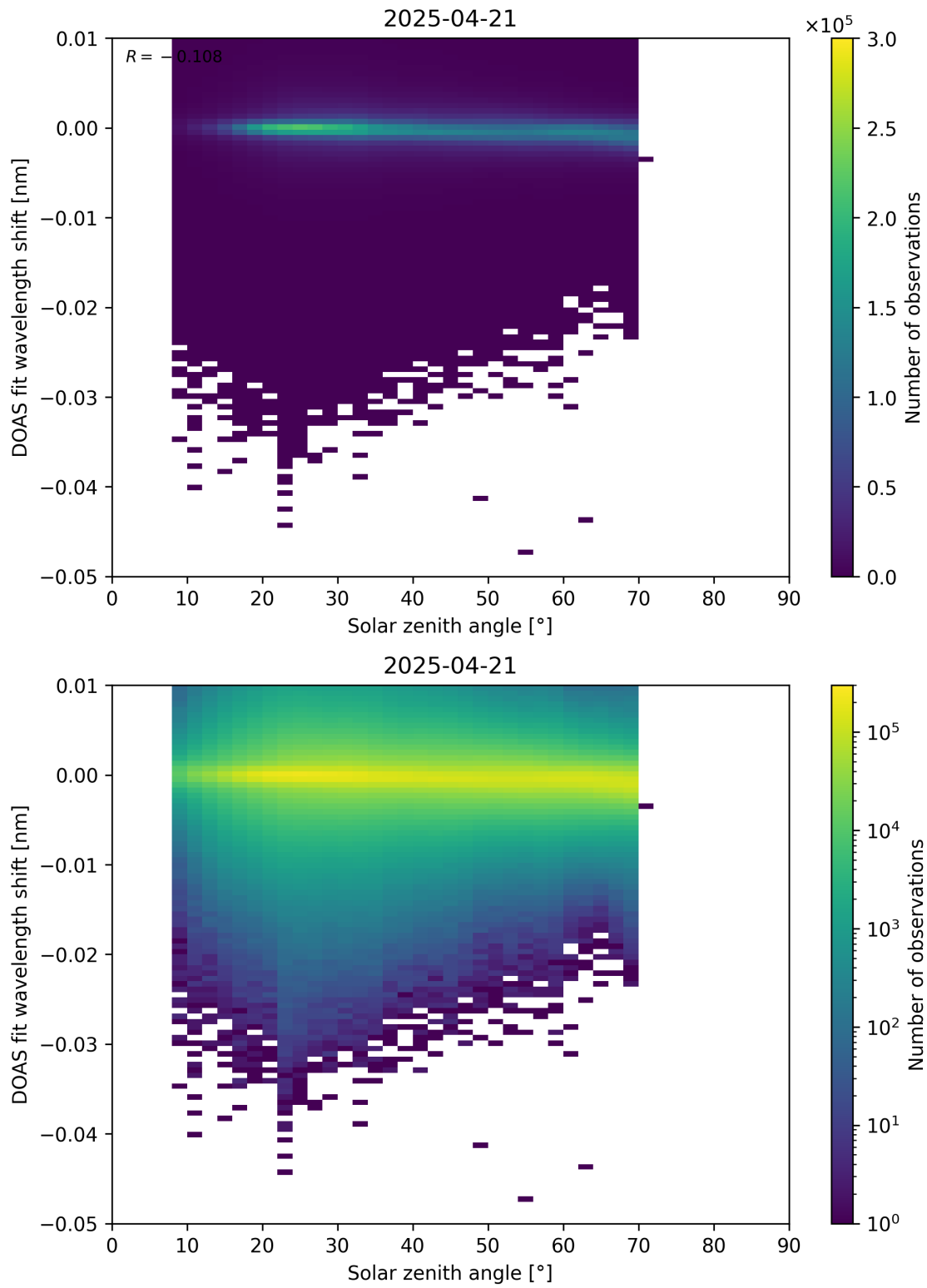


Figure 174: Scatter density plot of “Solar zenith angle” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

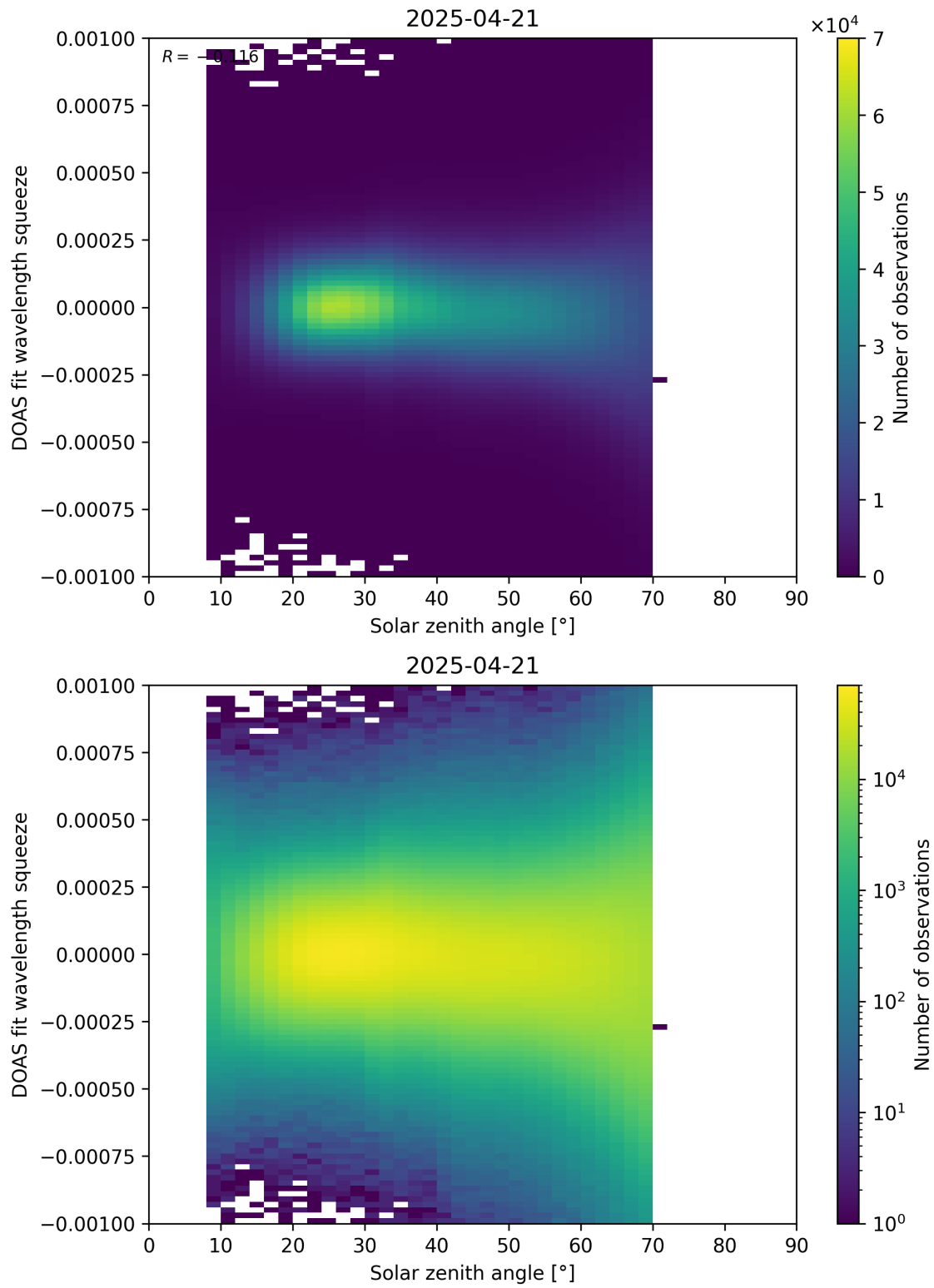


Figure 175: Scatter density plot of “Solar zenith angle” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

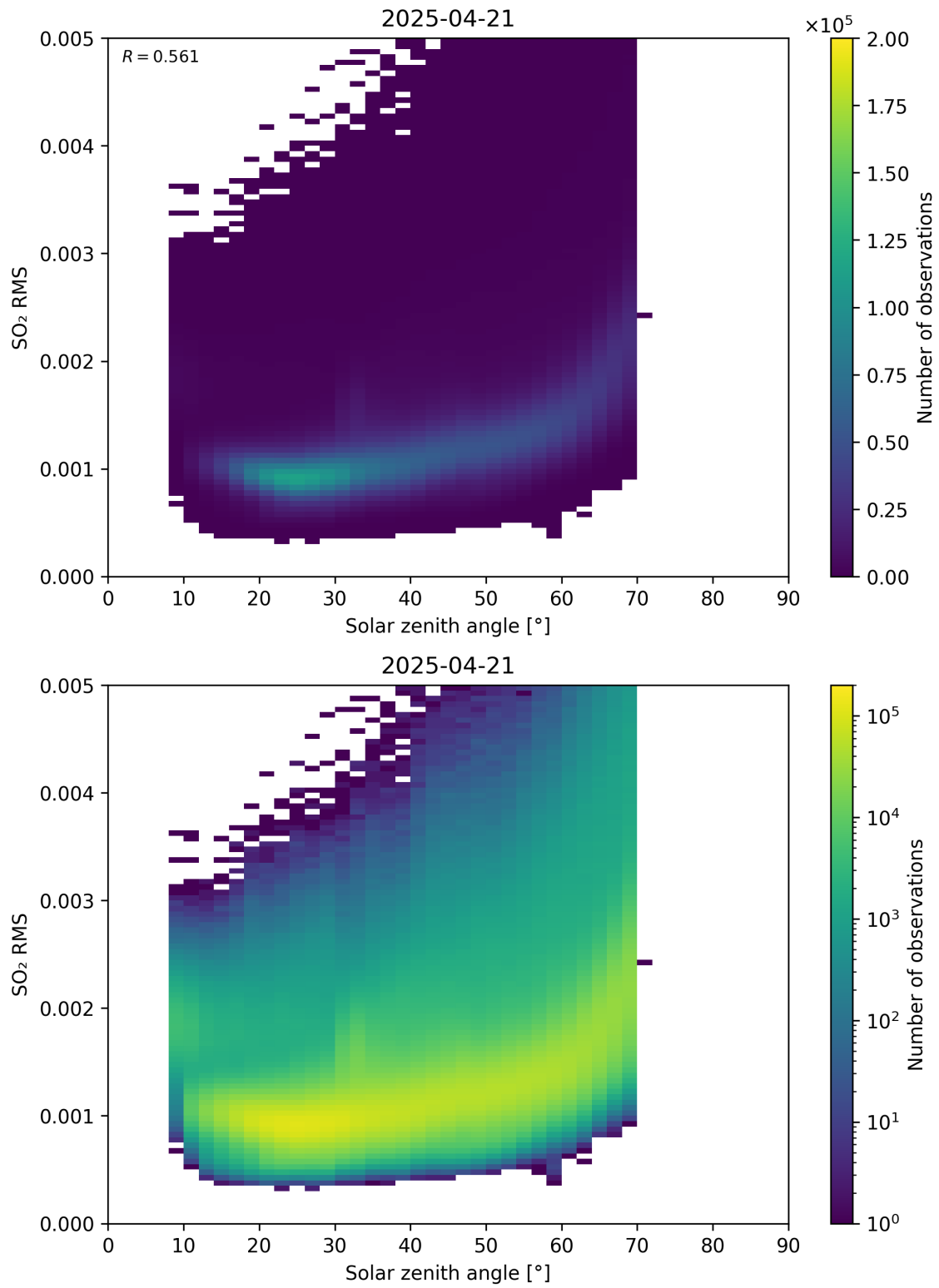


Figure 176: Scatter density plot of “Solar zenith angle” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

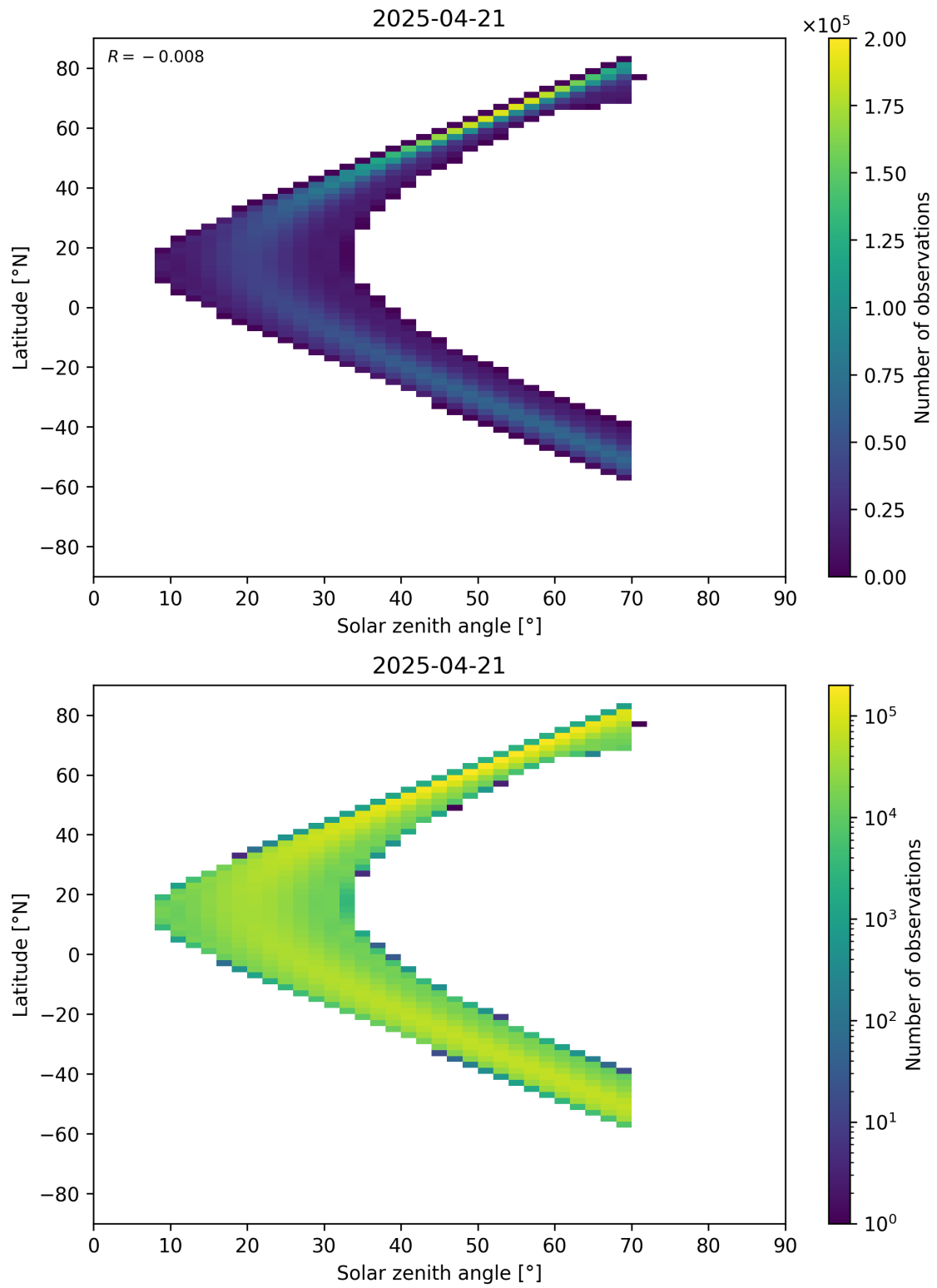


Figure 177: Scatter density plot of “Solar zenith angle” against “Latitude” for 2025-04-20 to 2025-04-22.

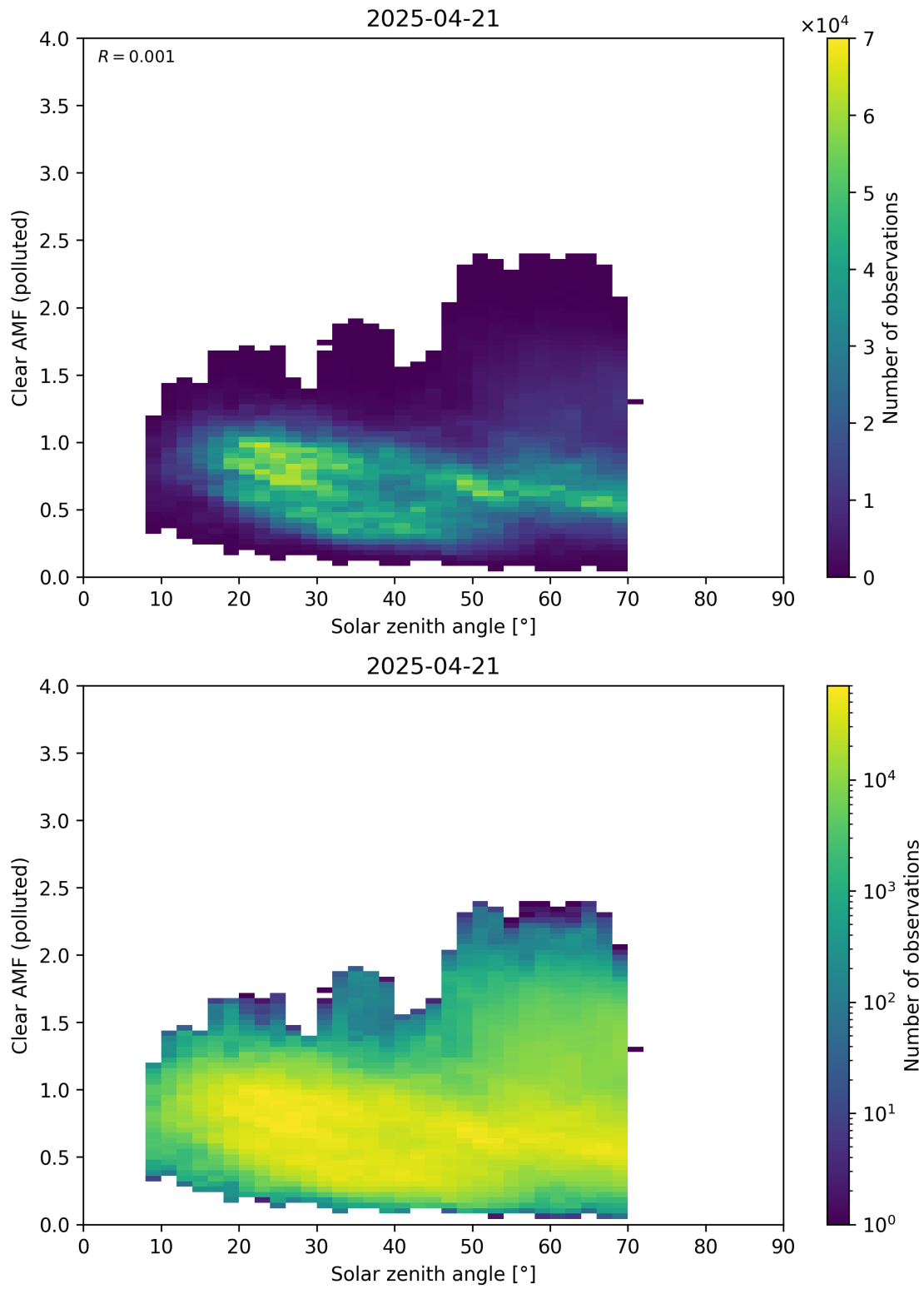


Figure 178: Scatter density plot of “Solar zenith angle” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

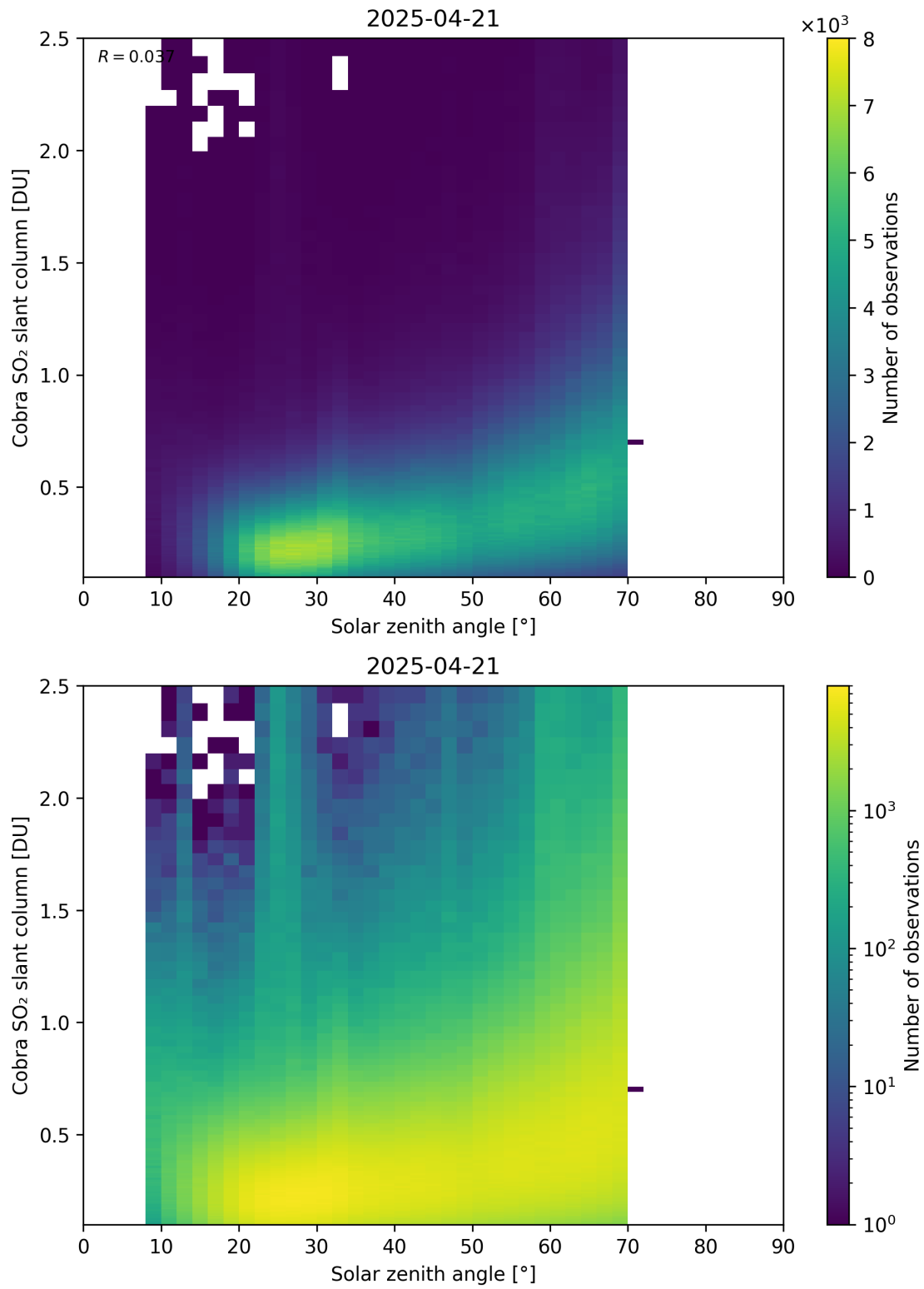


Figure 179: Scatter density plot of “Solar zenith angle” against “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

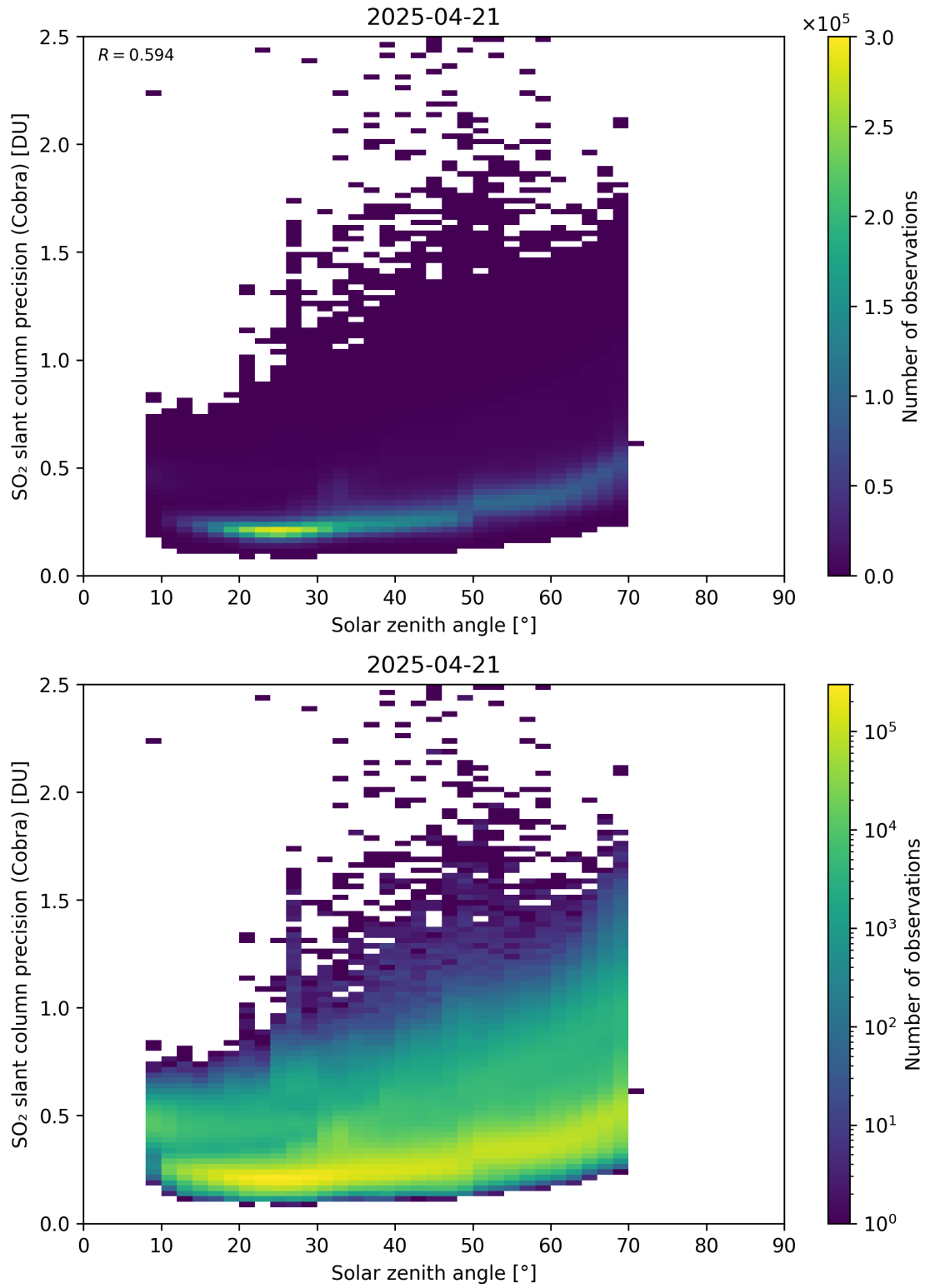


Figure 180: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

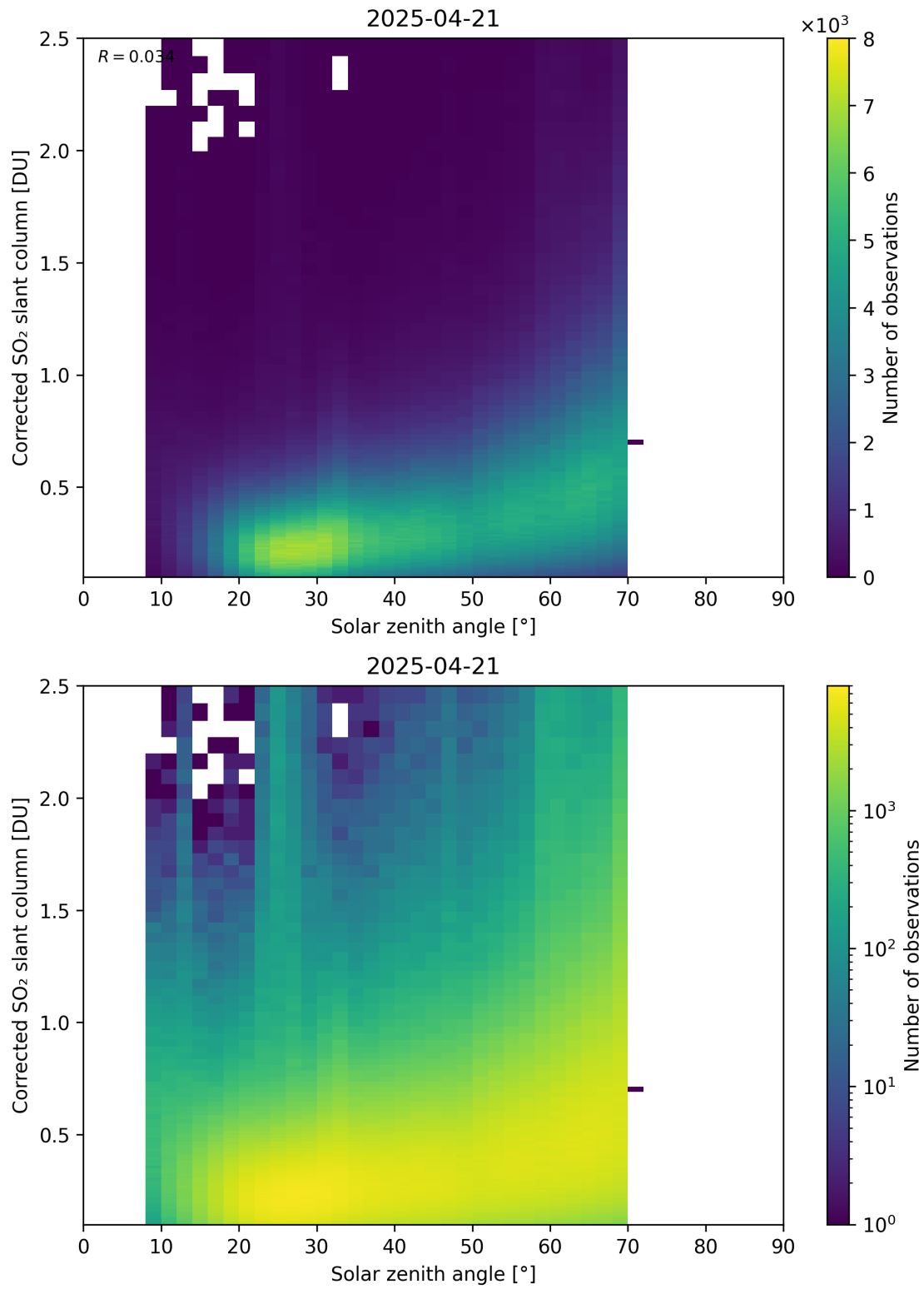


Figure 181: Scatter density plot of “Solar zenith angle” against “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22.

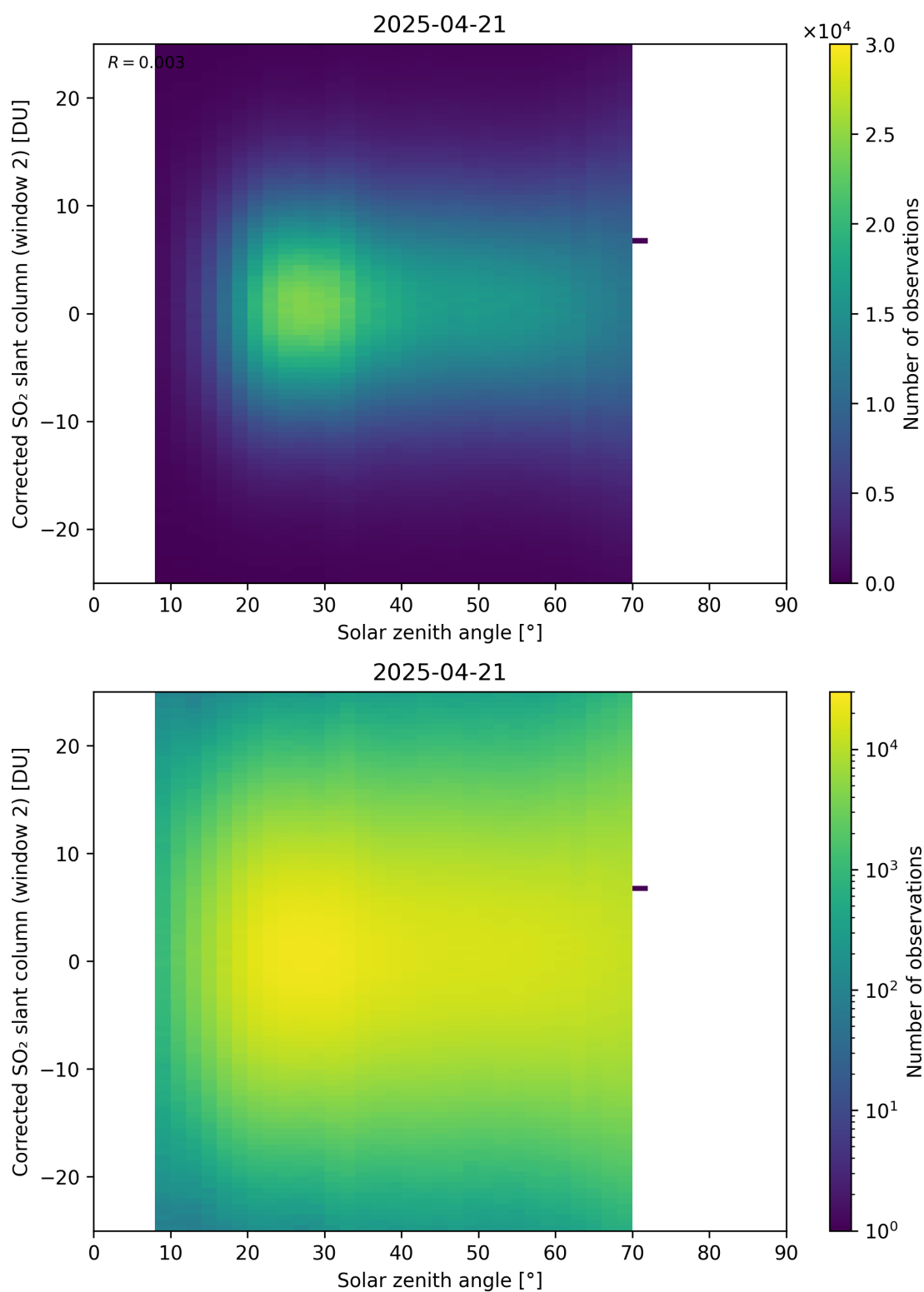


Figure 182: Scatter density plot of “Solar zenith angle” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

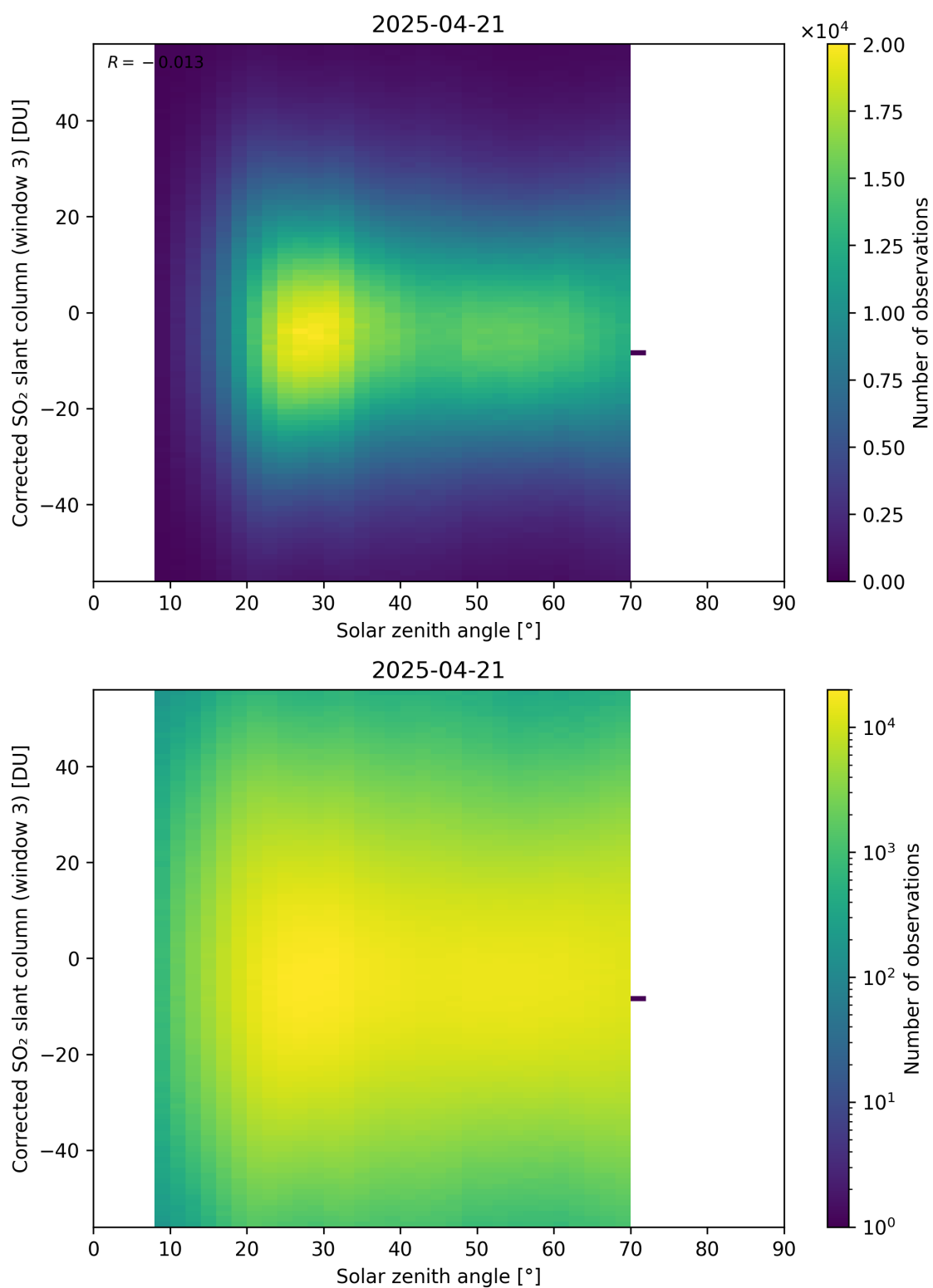


Figure 183: Scatter density plot of “Solar zenith angle” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

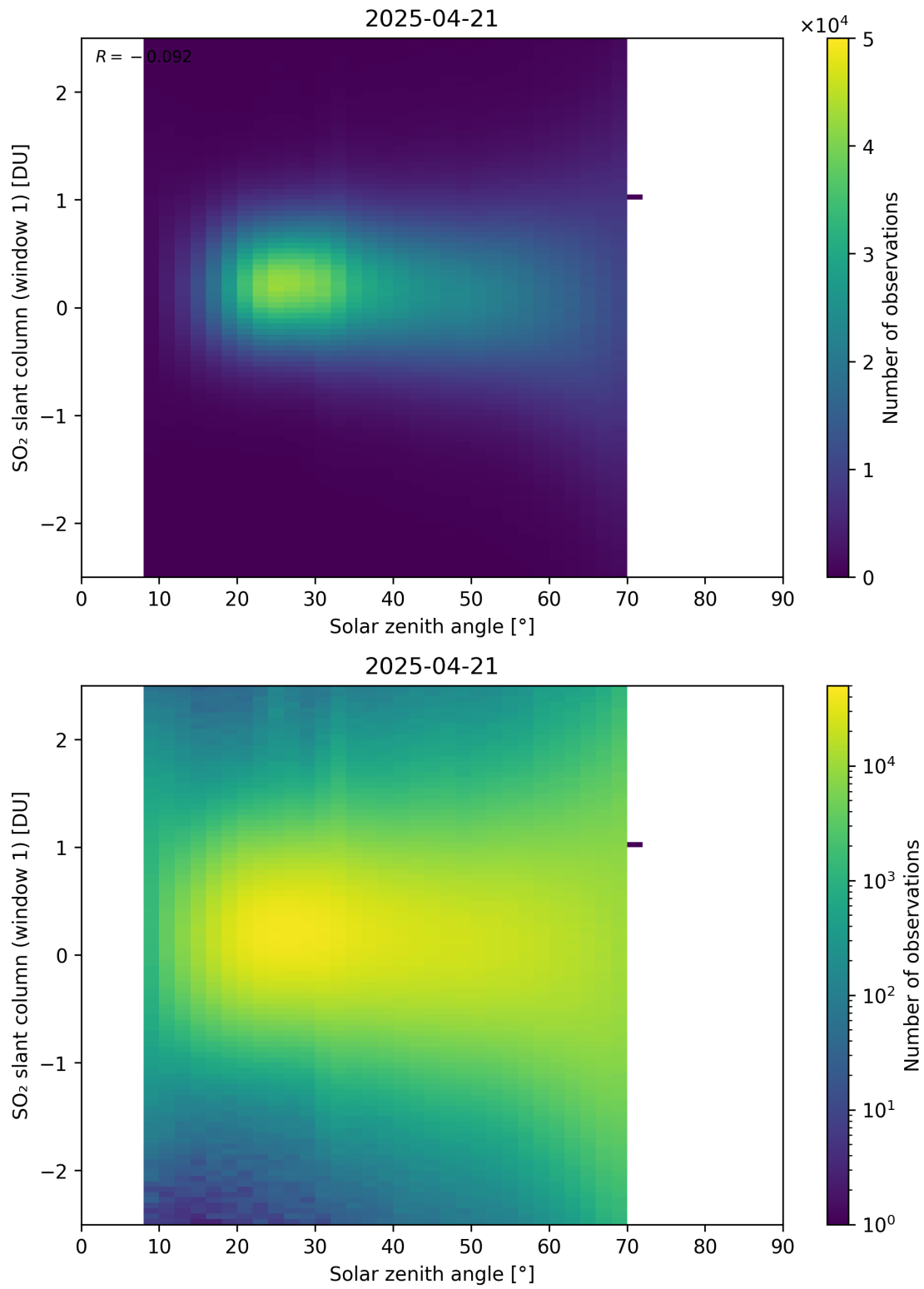


Figure 184: Scatter density plot of “Solar zenith angle” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

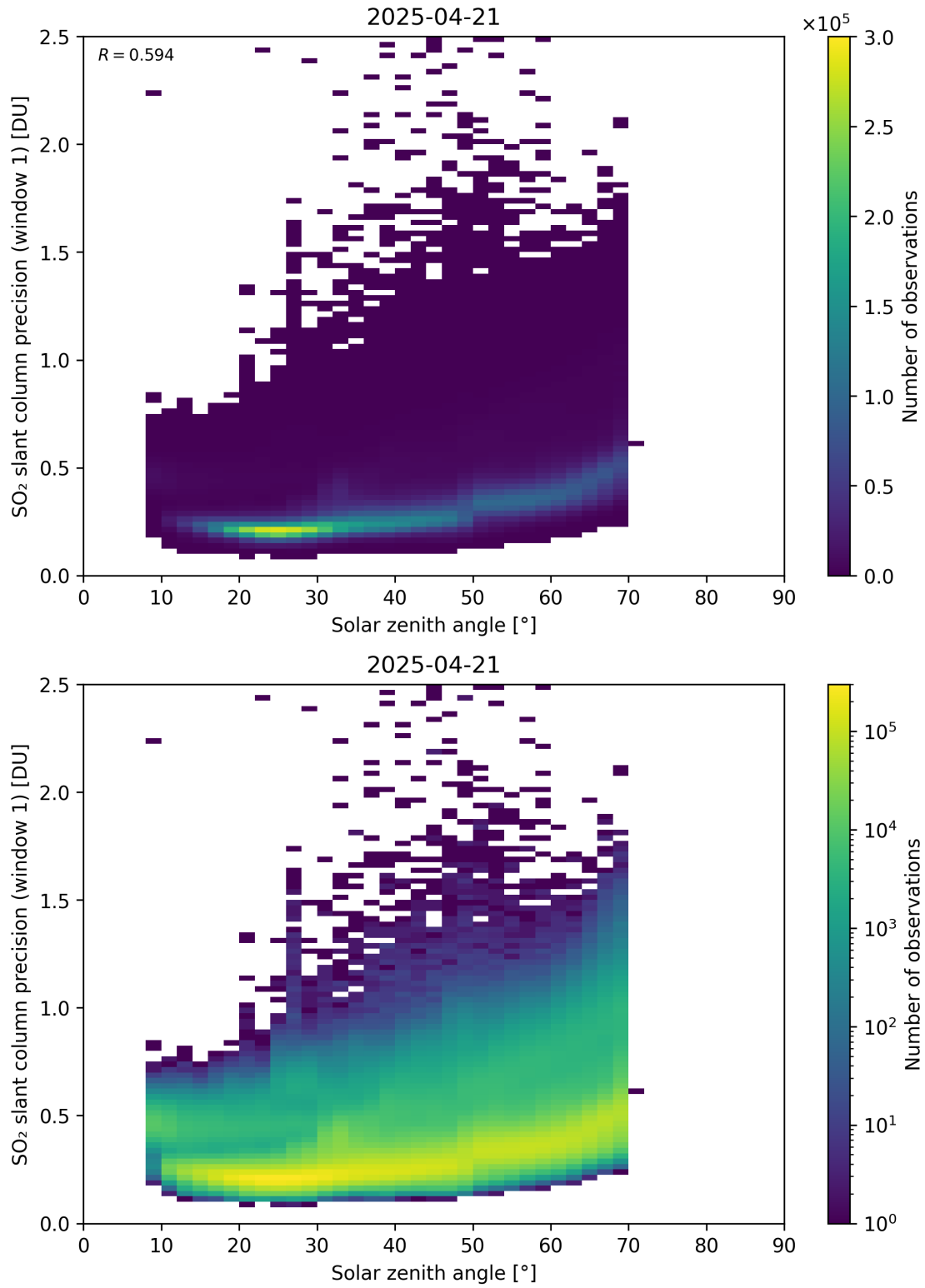


Figure 185: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

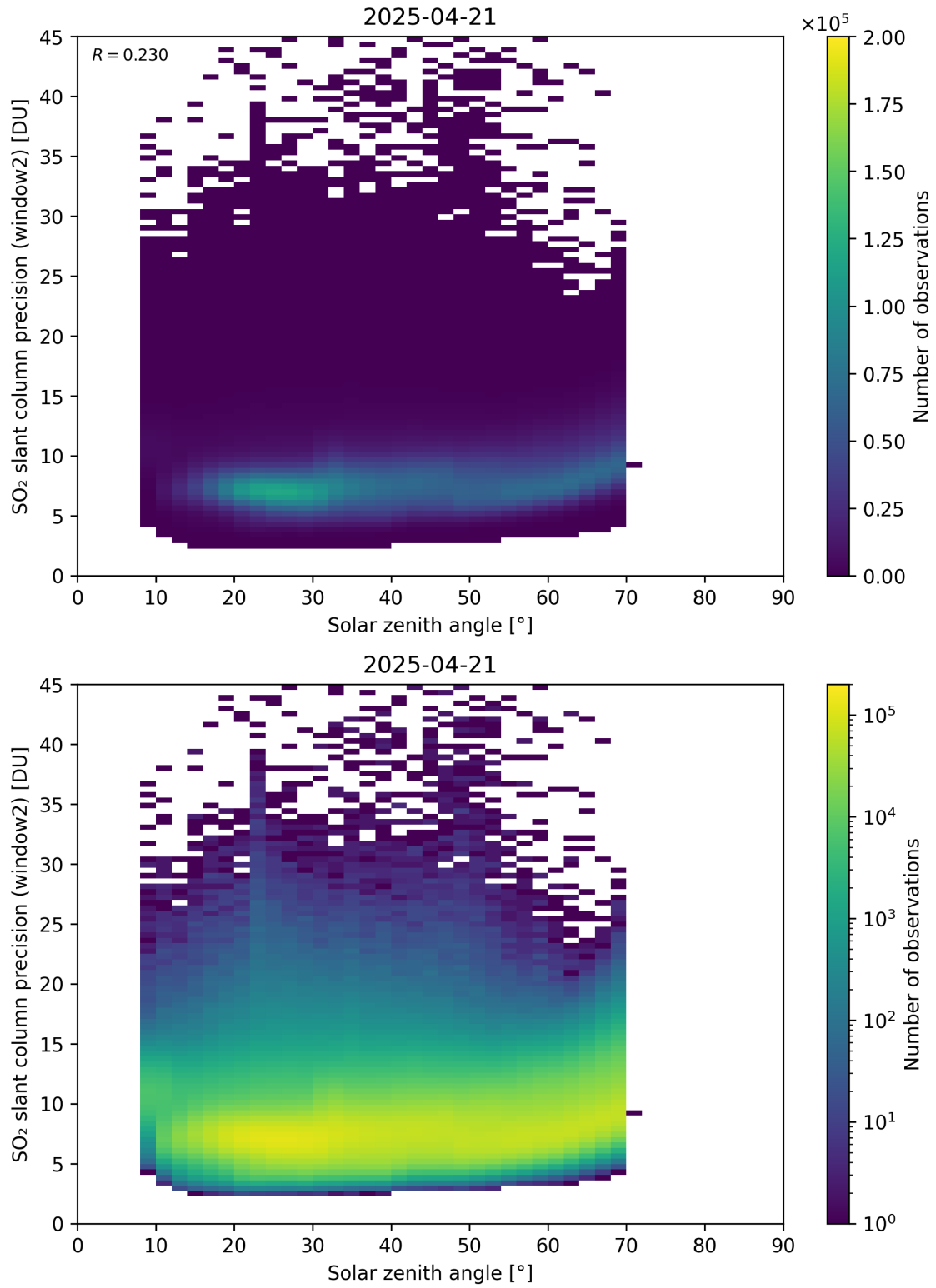


Figure 186: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

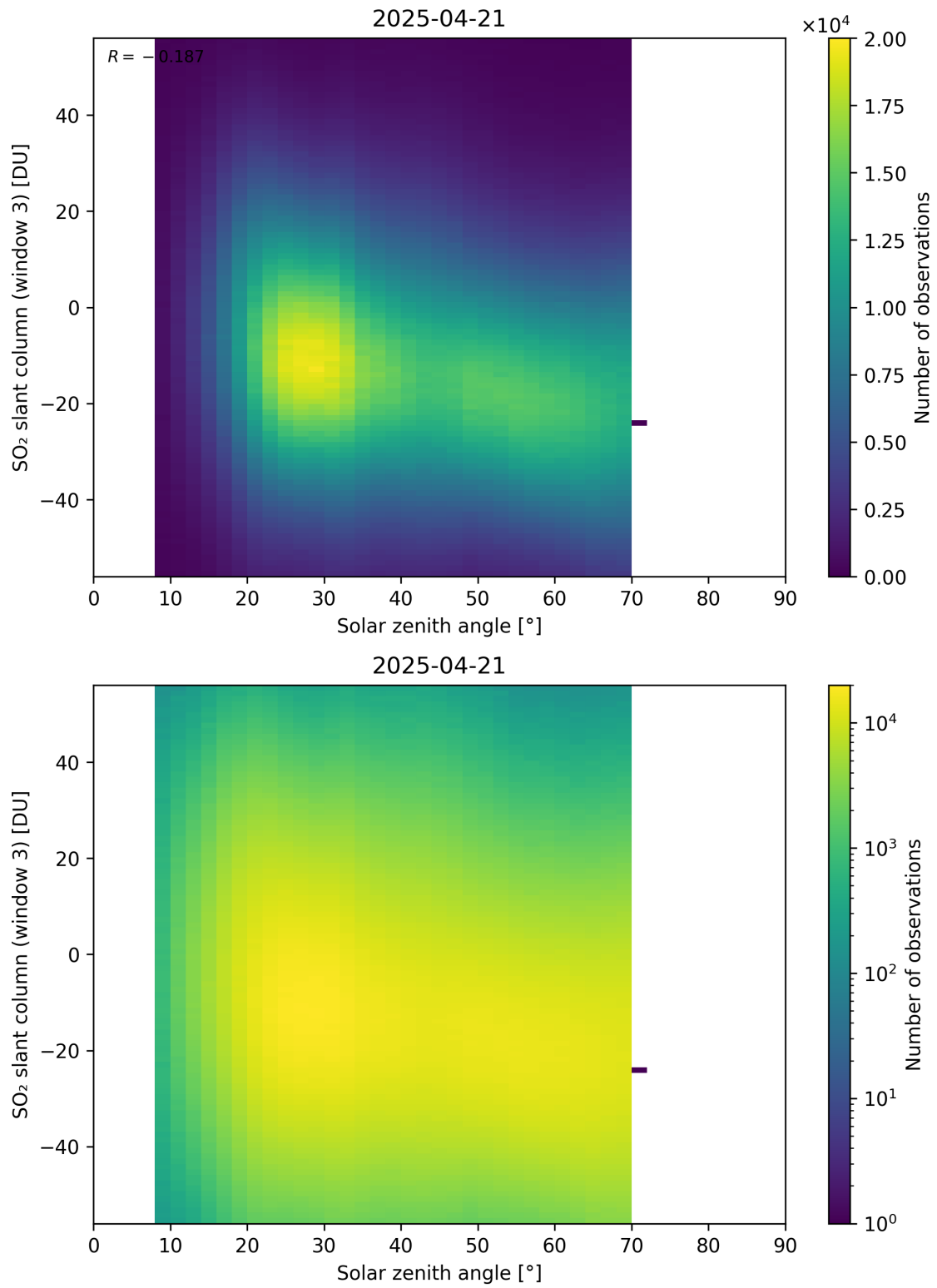


Figure 187: Scatter density plot of “Solar zenith angle” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

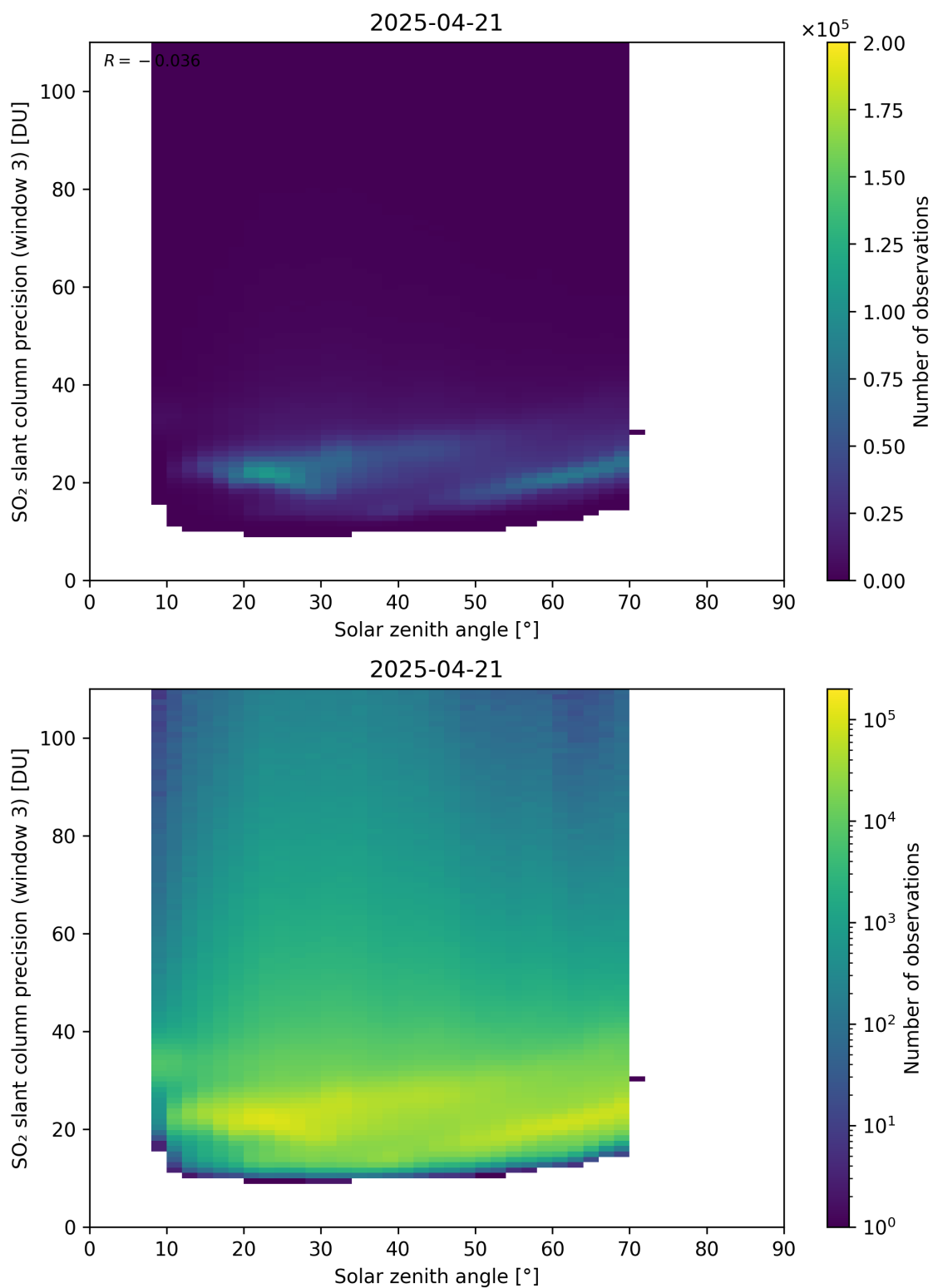


Figure 188: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

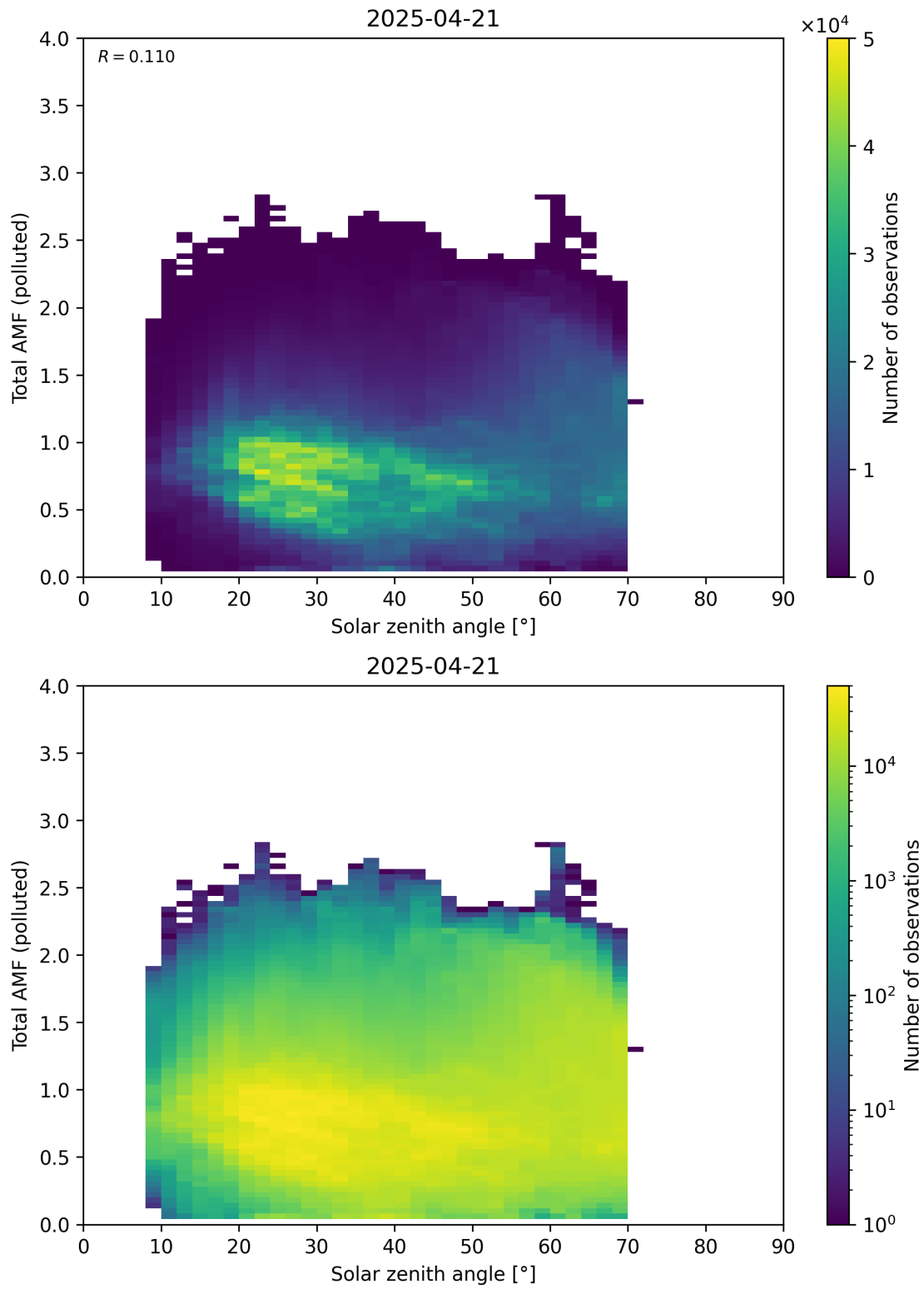


Figure 189: Scatter density plot of “Solar zenith angle” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

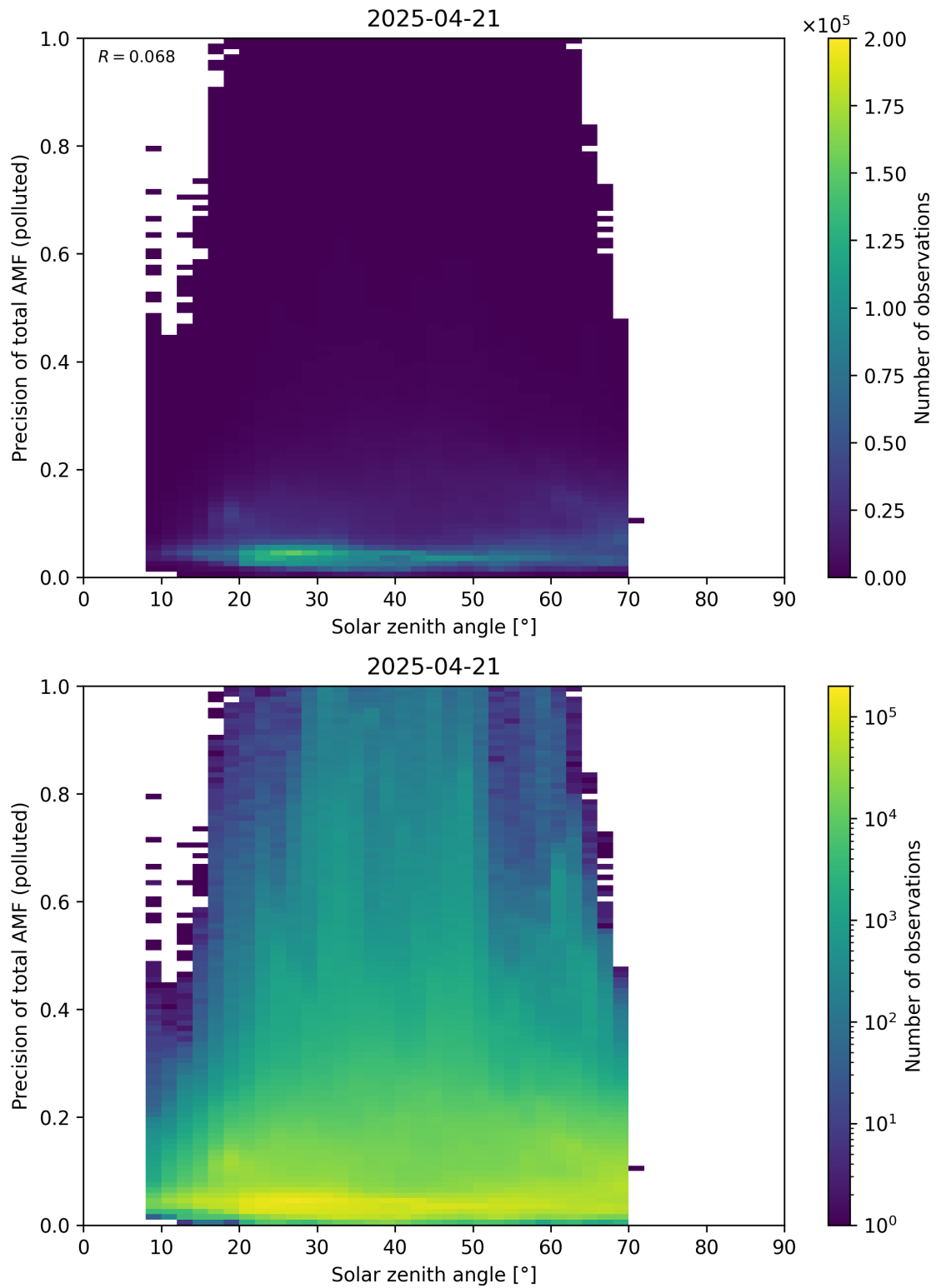


Figure 190: Scatter density plot of “Solar zenith angle” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

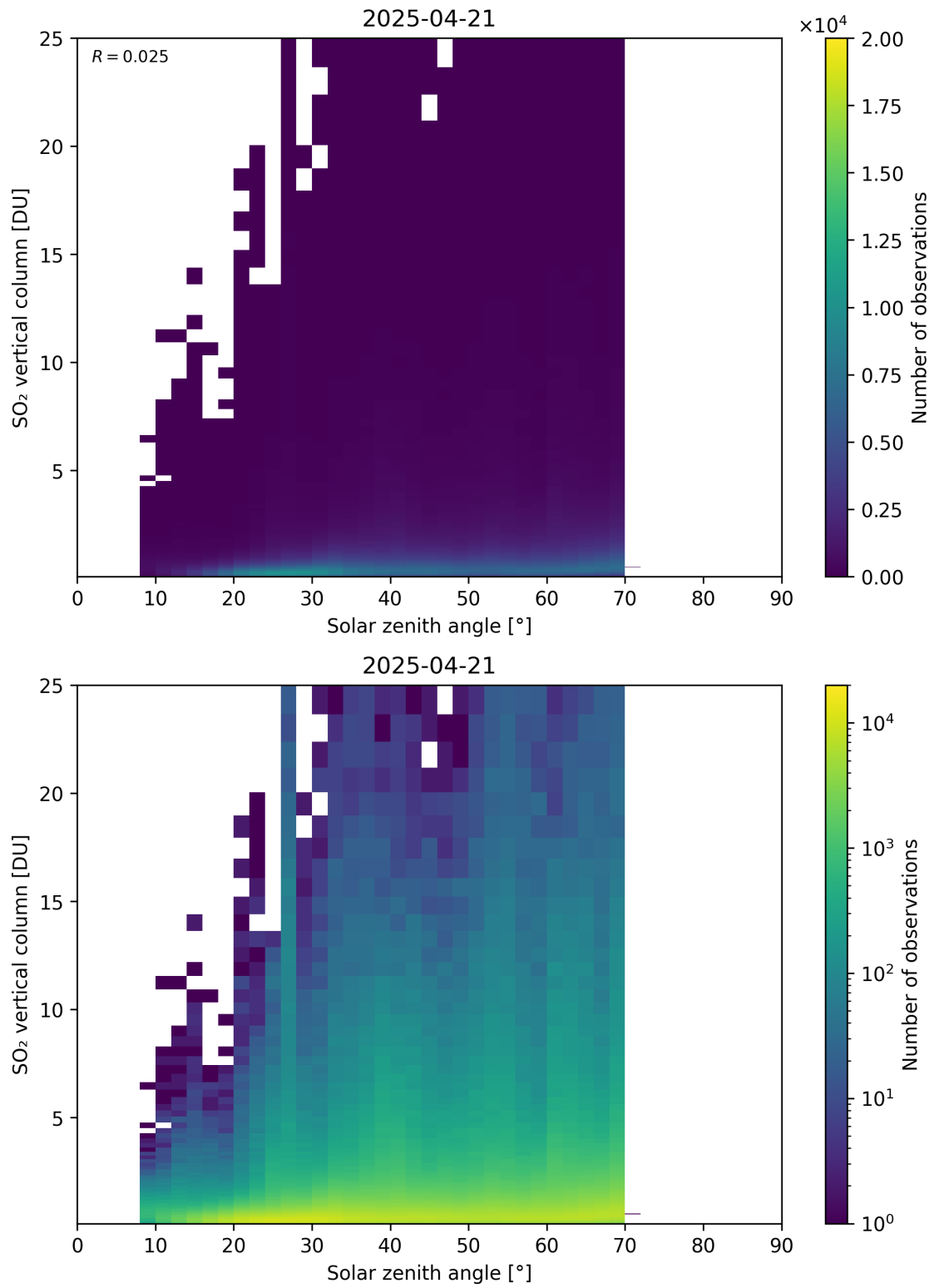


Figure 191: Scatter density plot of “Solar zenith angle” against “SO₂ vertical column” for 2025-04-20 to 2025-04-22.

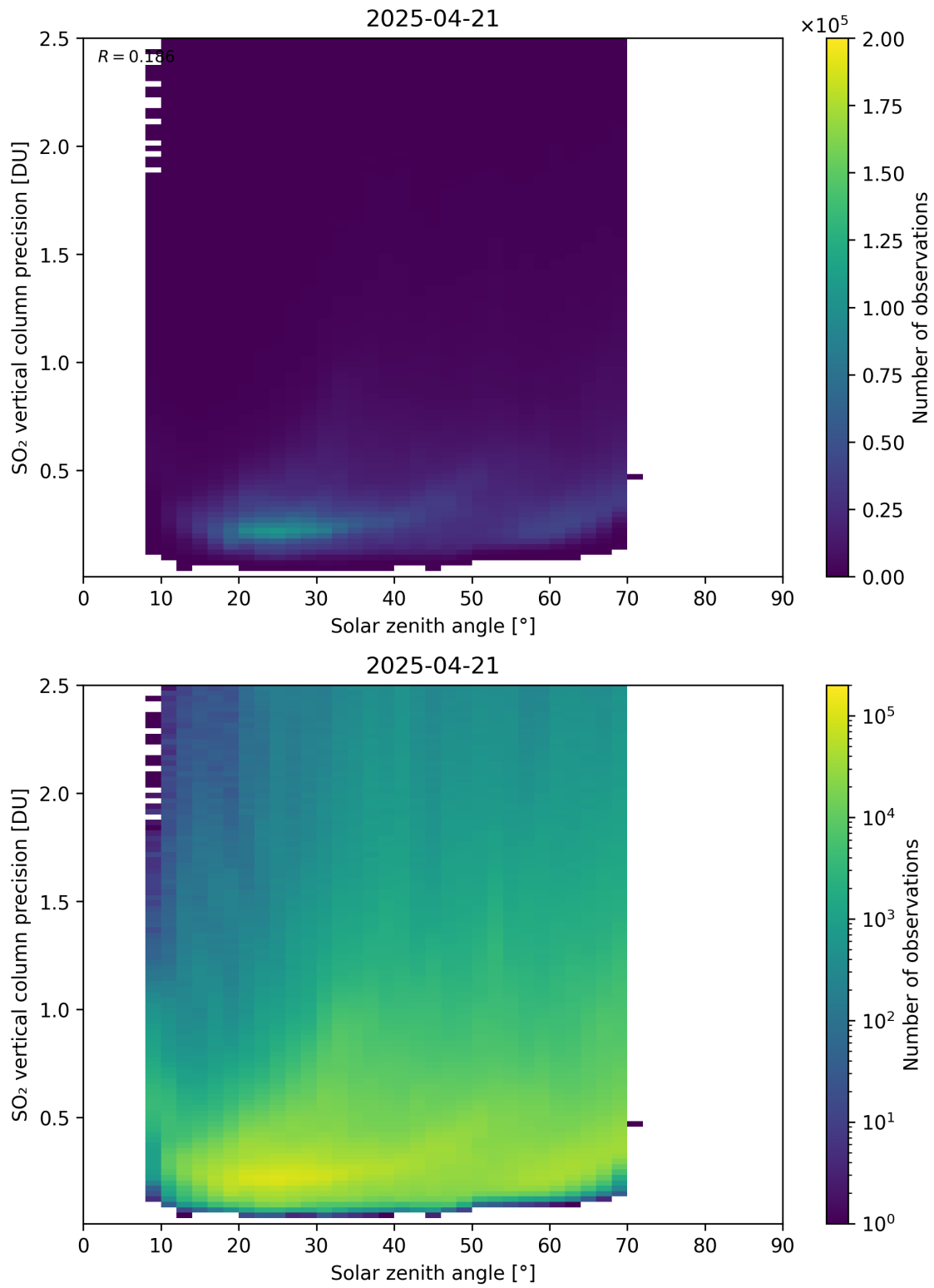


Figure 192: Scatter density plot of “Solar zenith angle” against “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22.

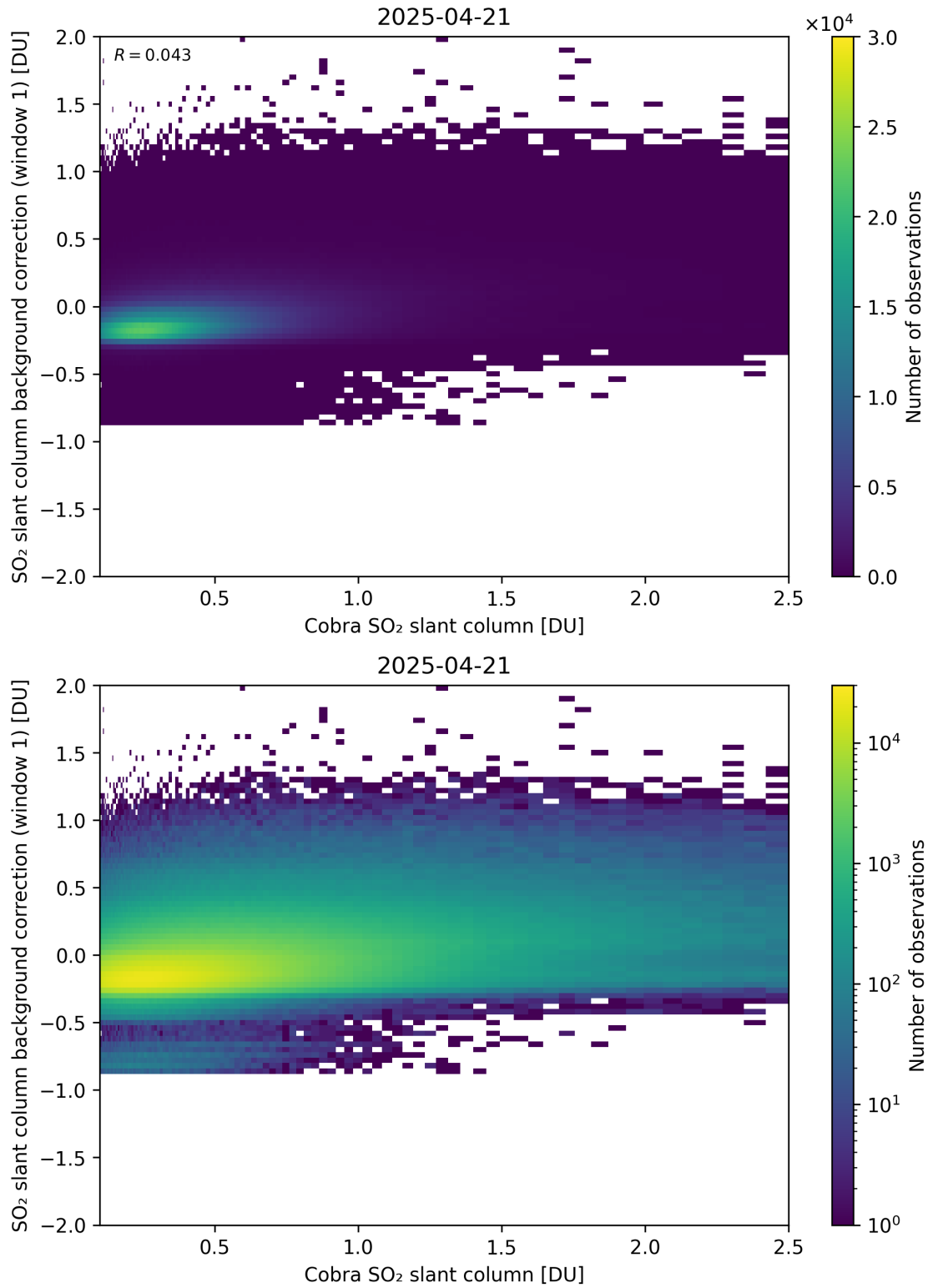


Figure 193: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

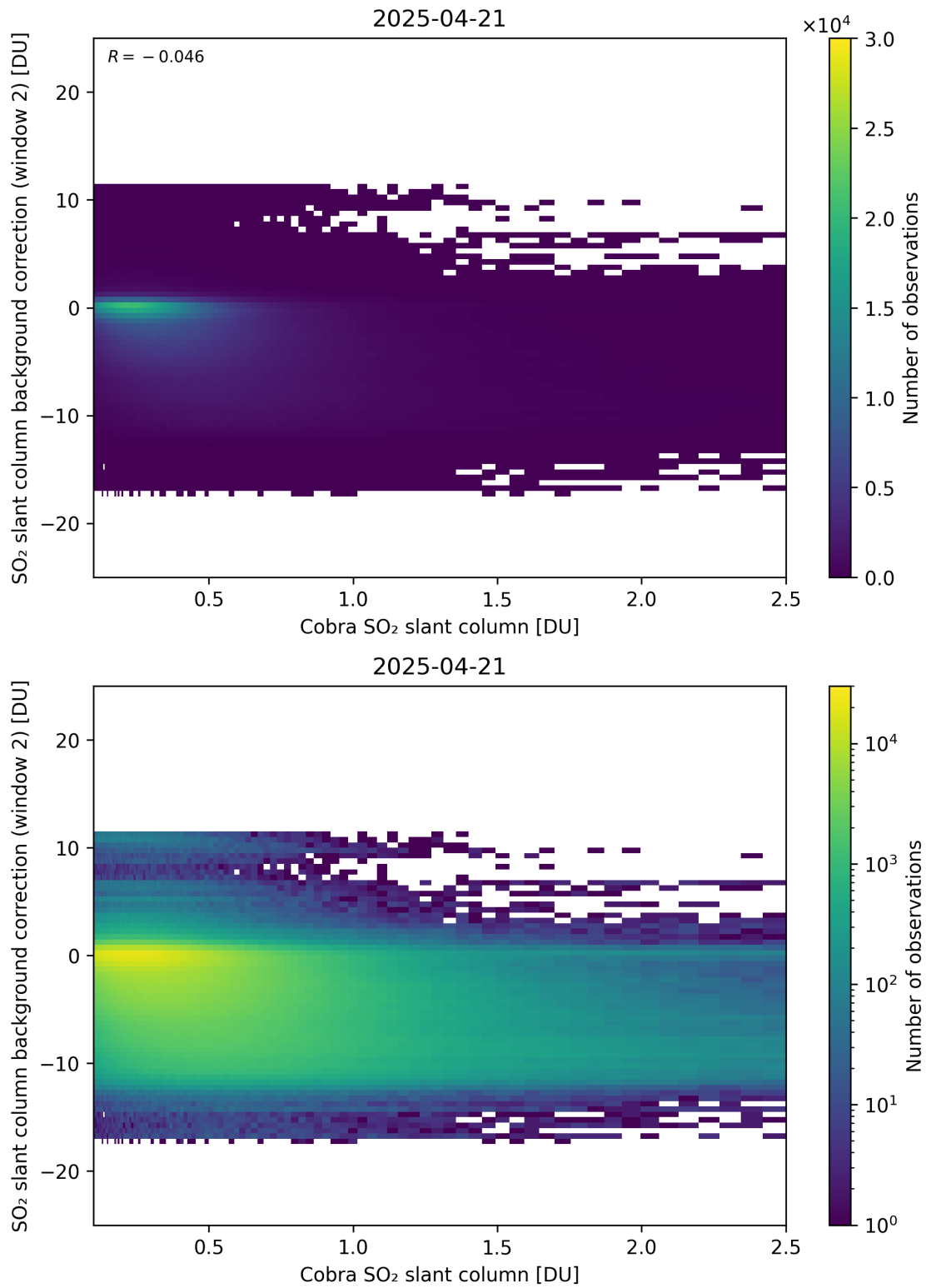


Figure 194: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

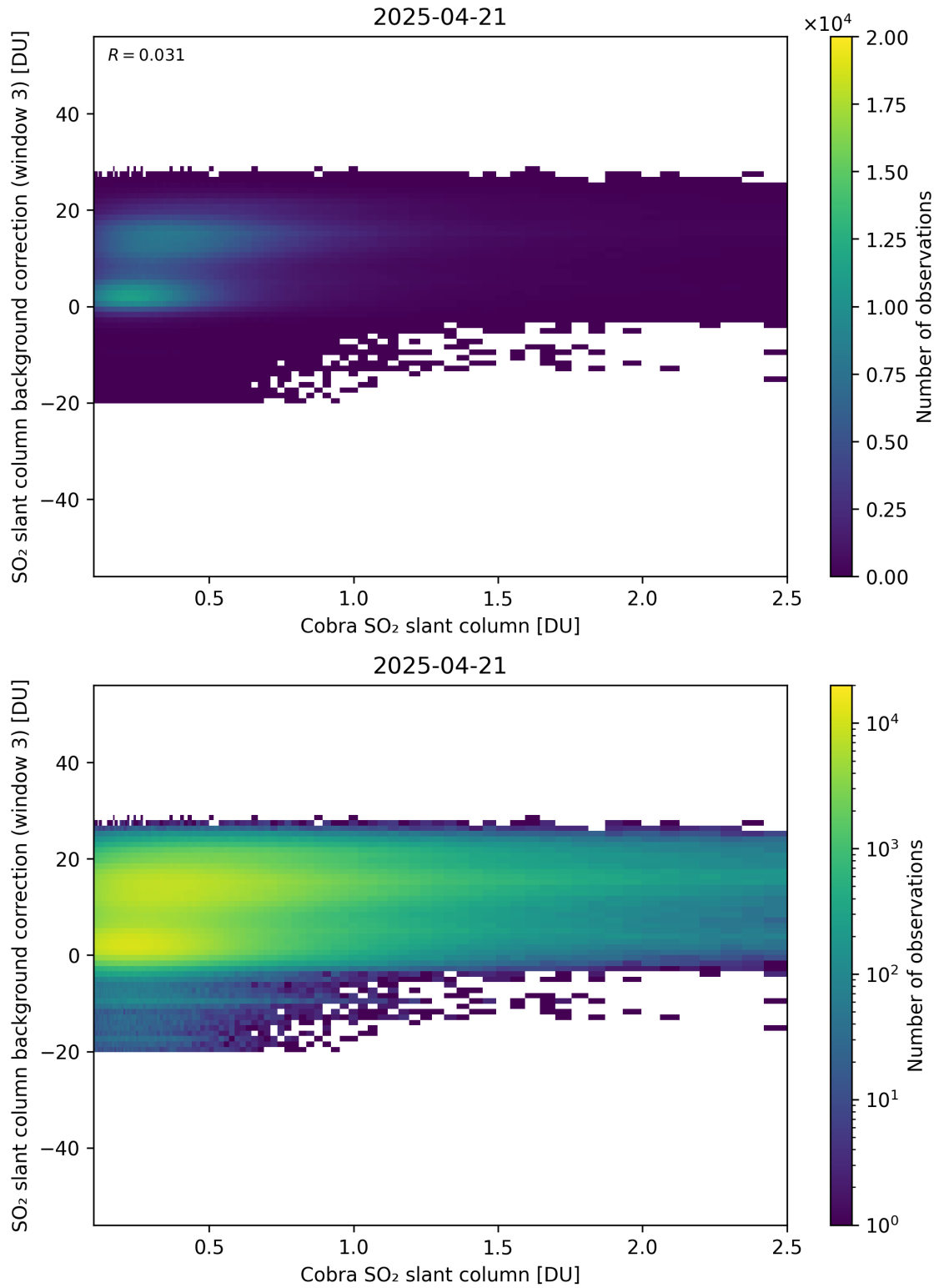


Figure 195: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

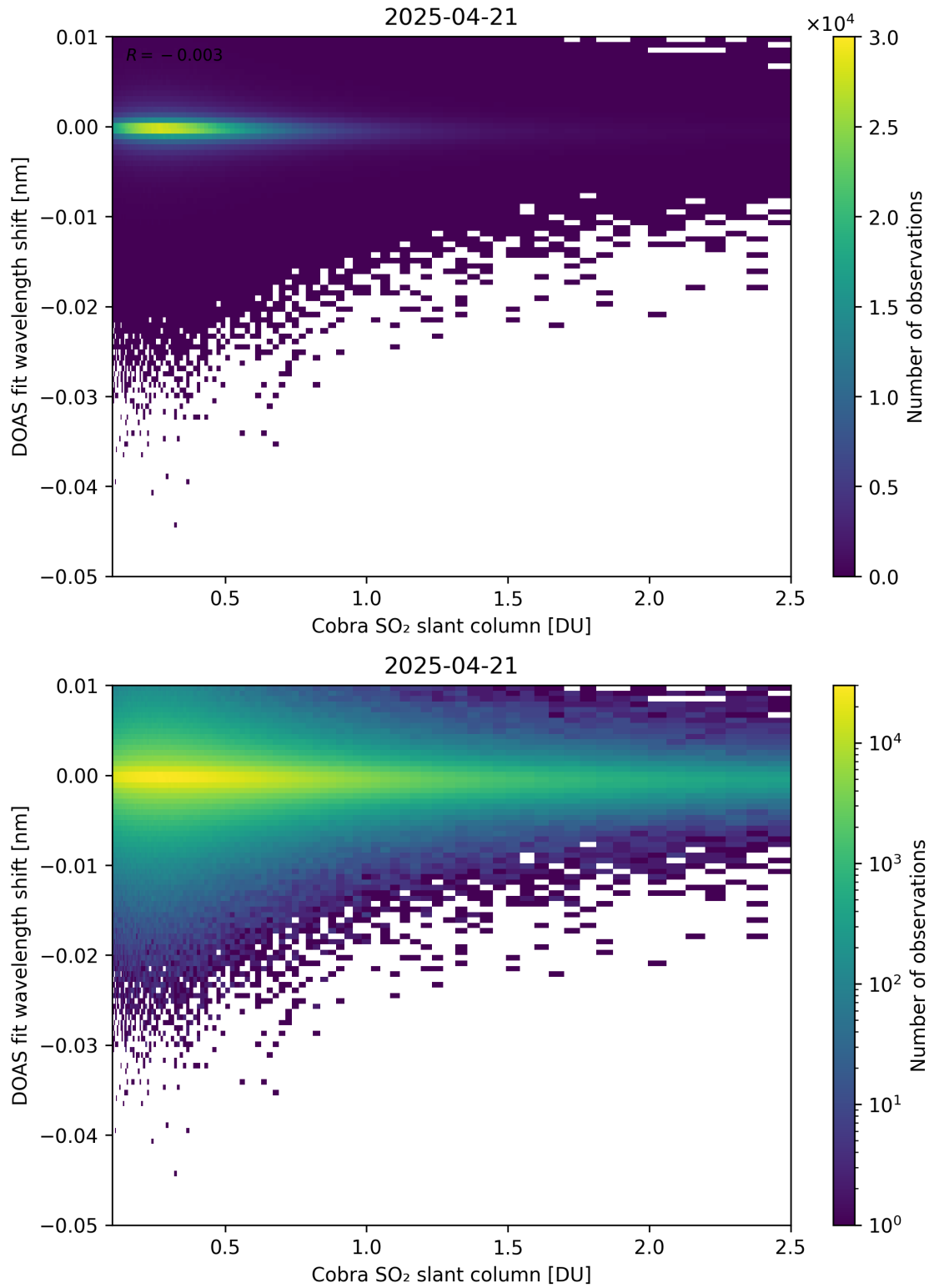


Figure 196: Scatter density plot of “Cobra SO₂ slant column” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

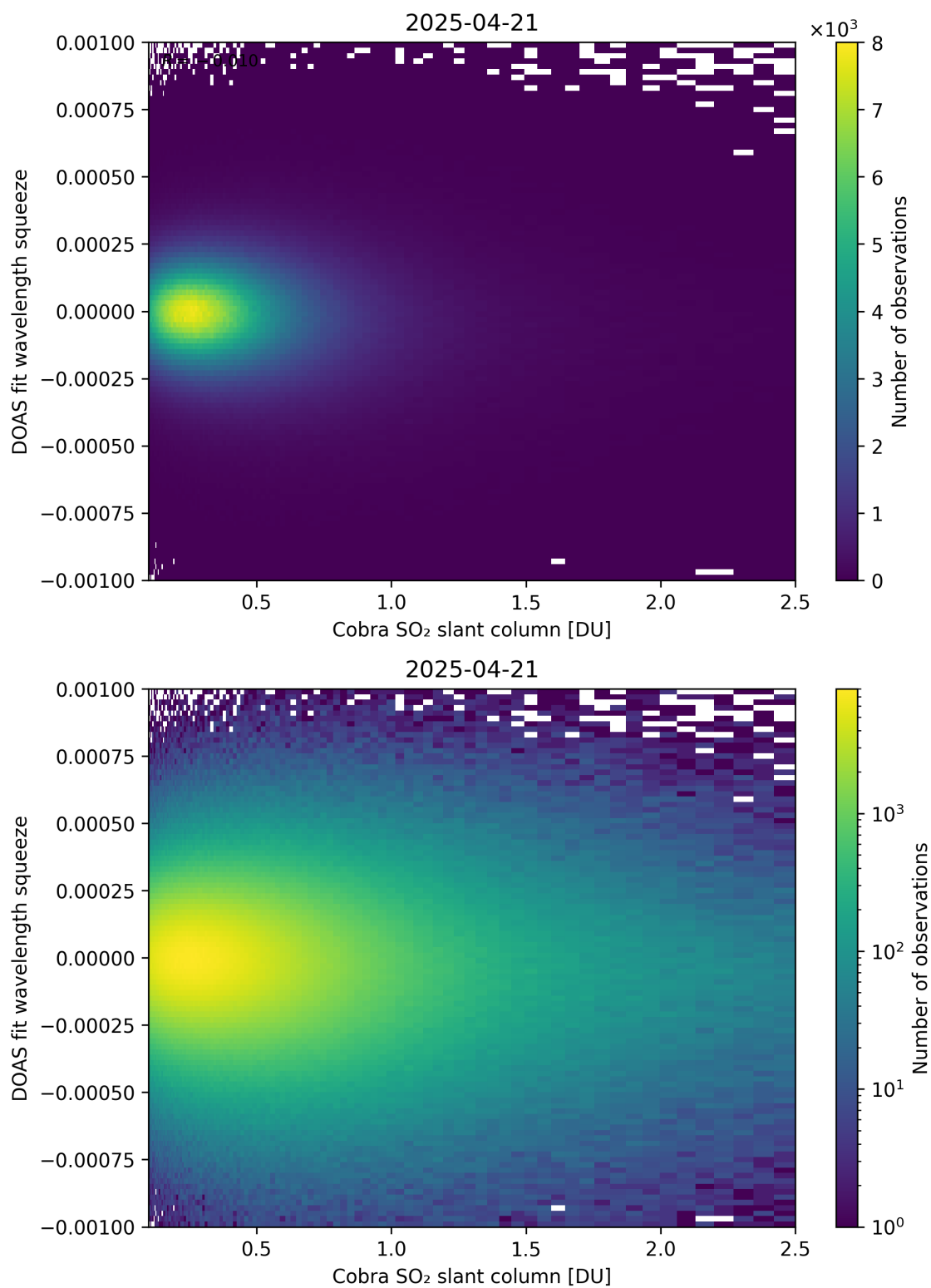


Figure 197: Scatter density plot of “Cobra SO₂ slant column” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

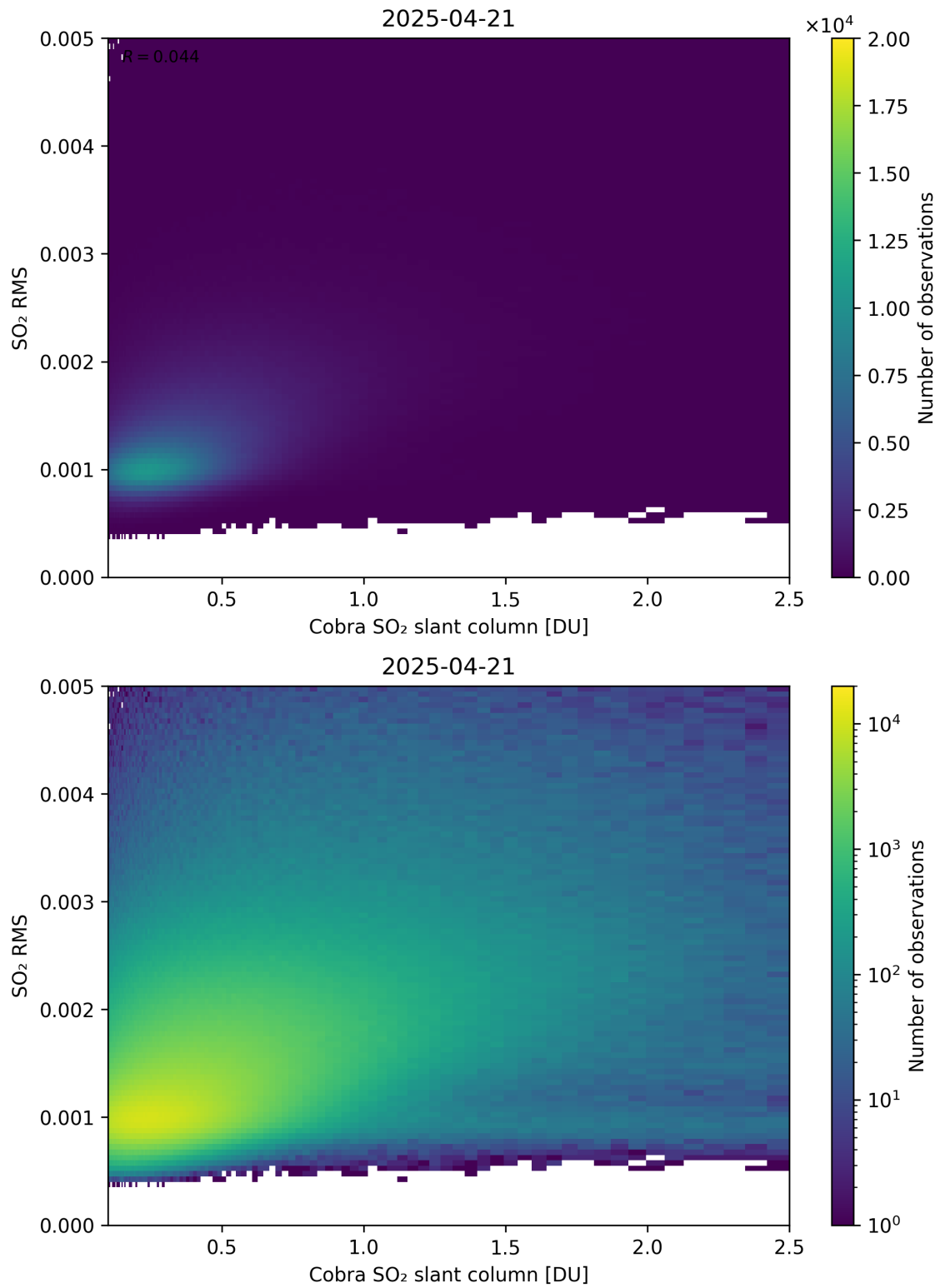


Figure 198: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

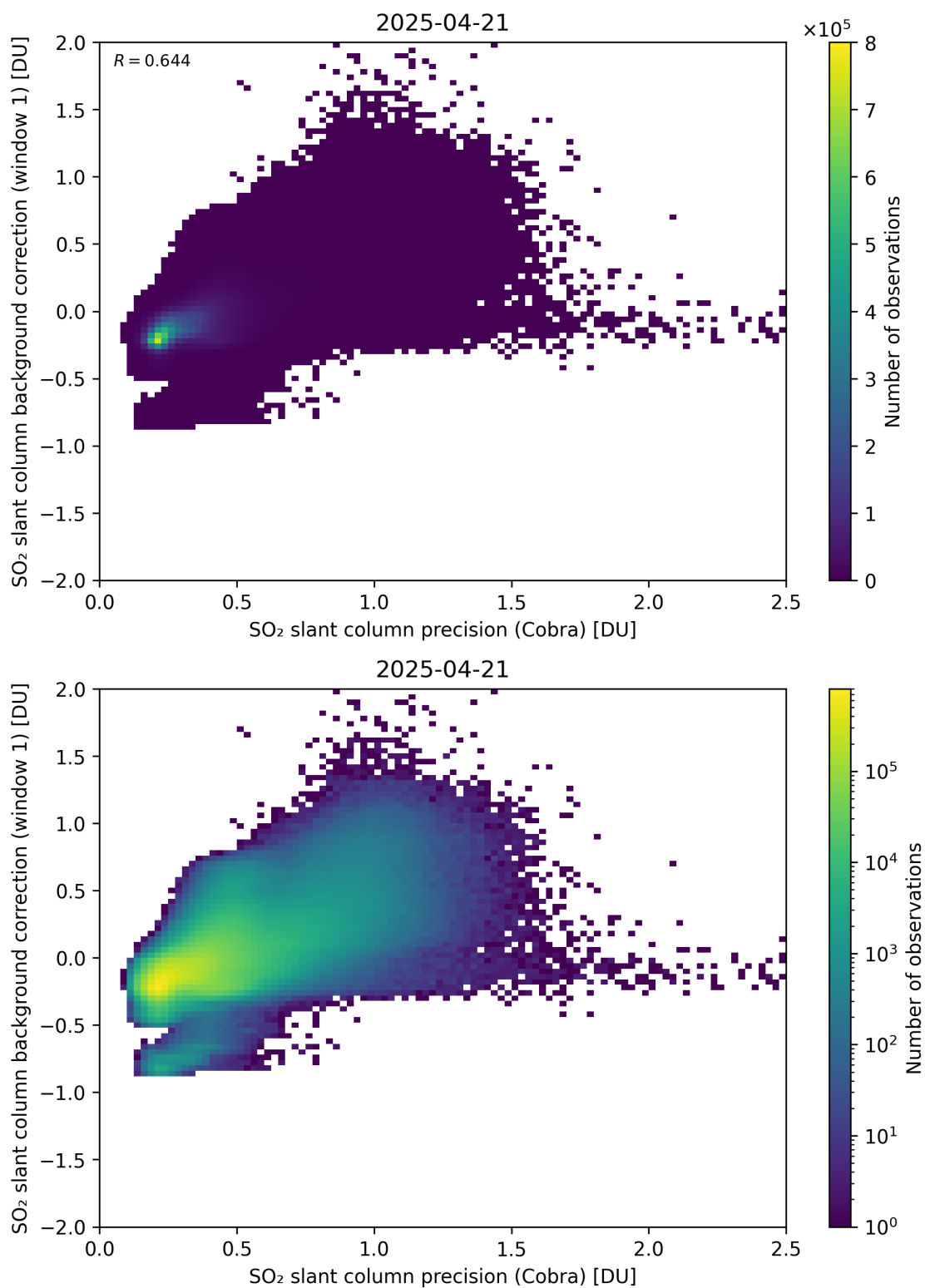


Figure 199: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

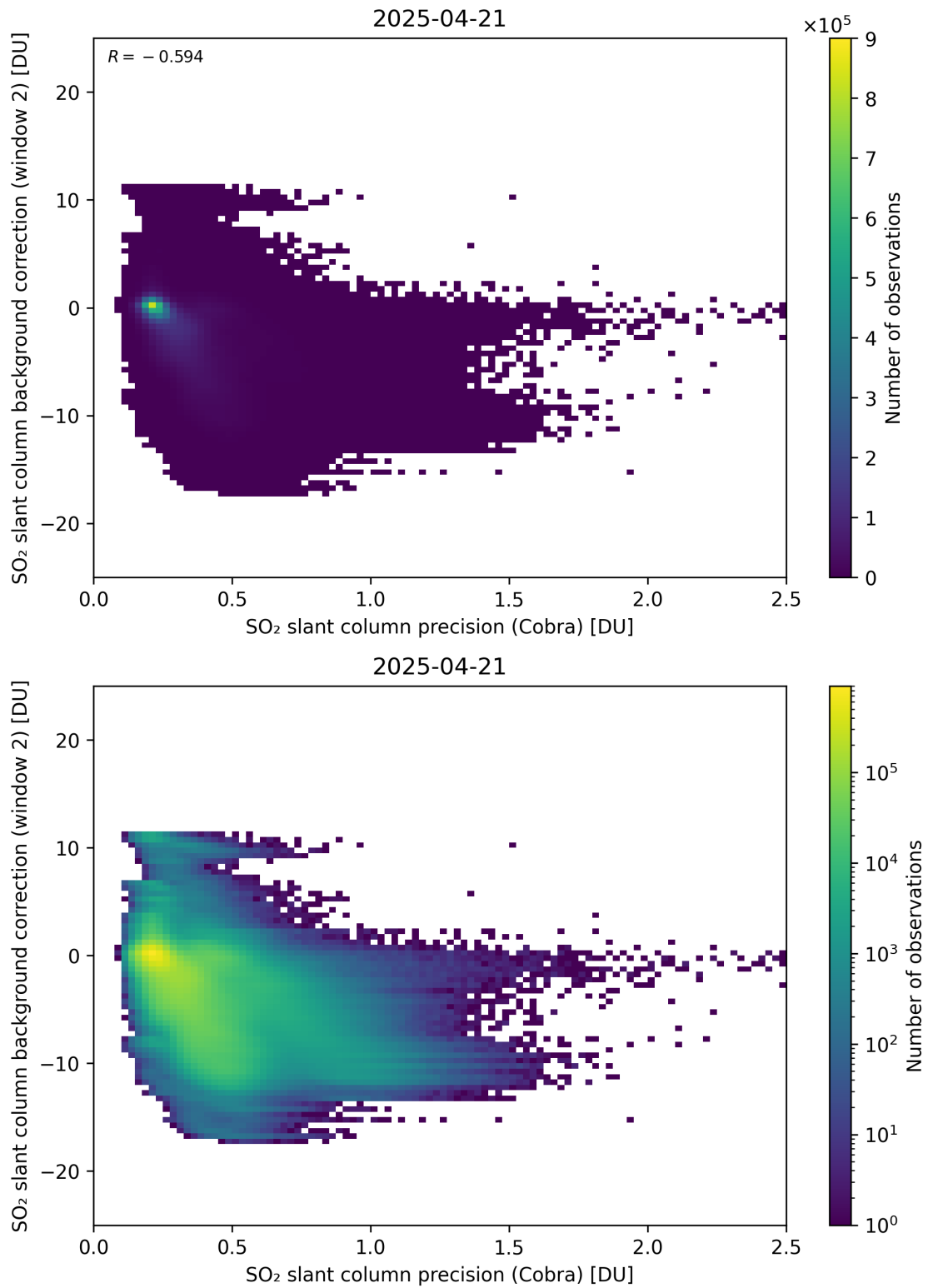


Figure 200: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

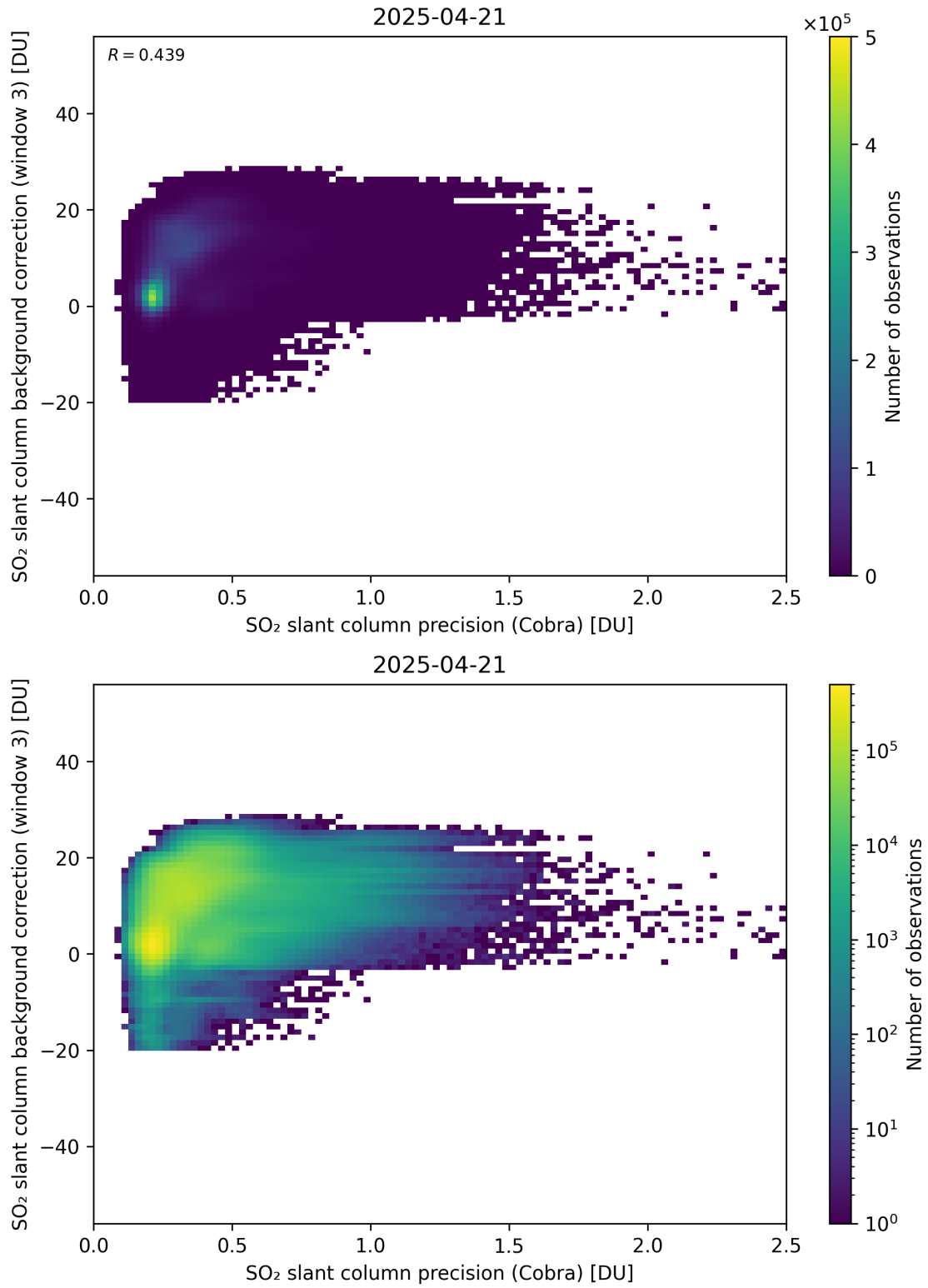


Figure 201: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

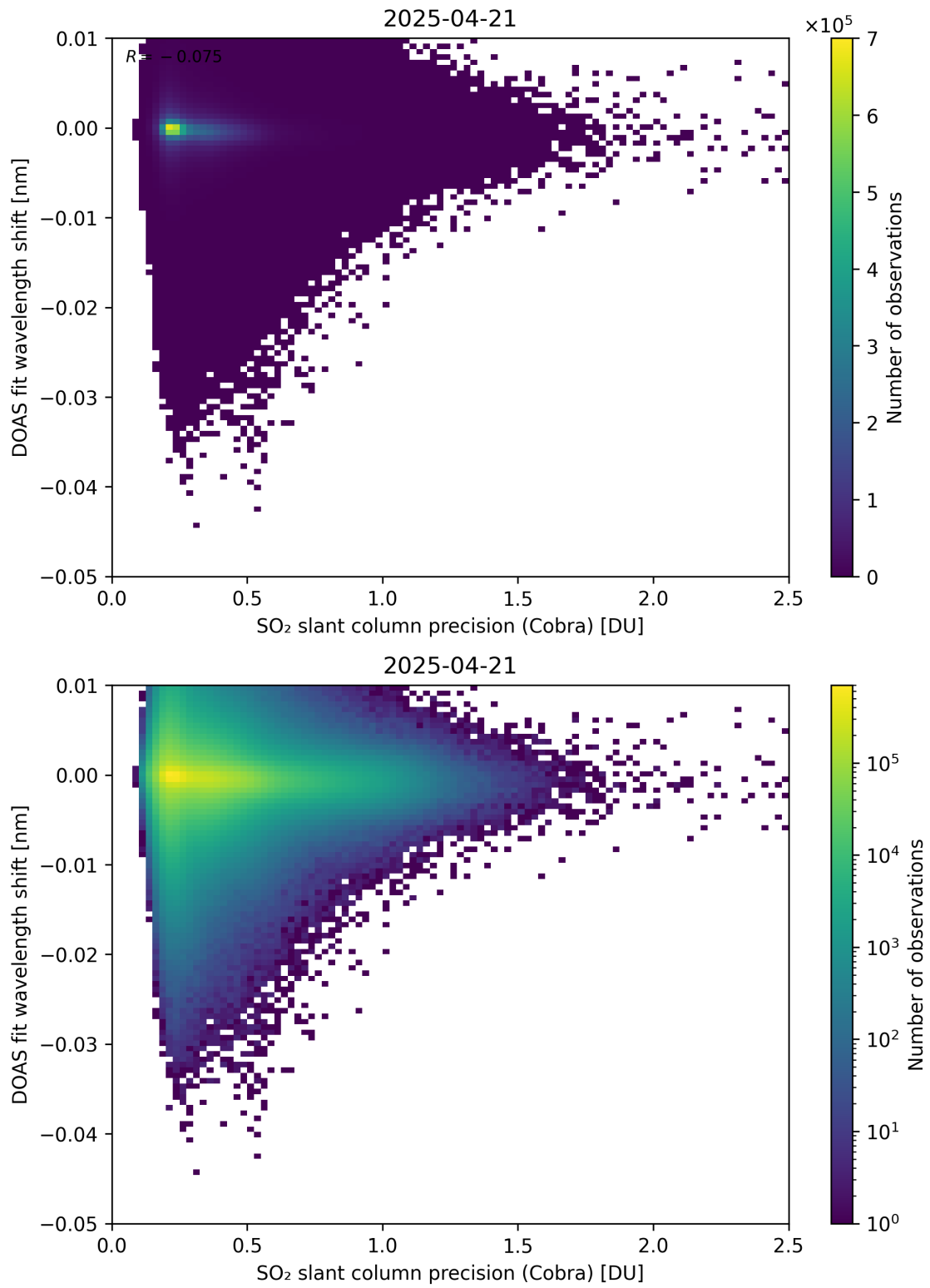


Figure 202: Scatter density plot of “SO₂ slant column precision (Cobra)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

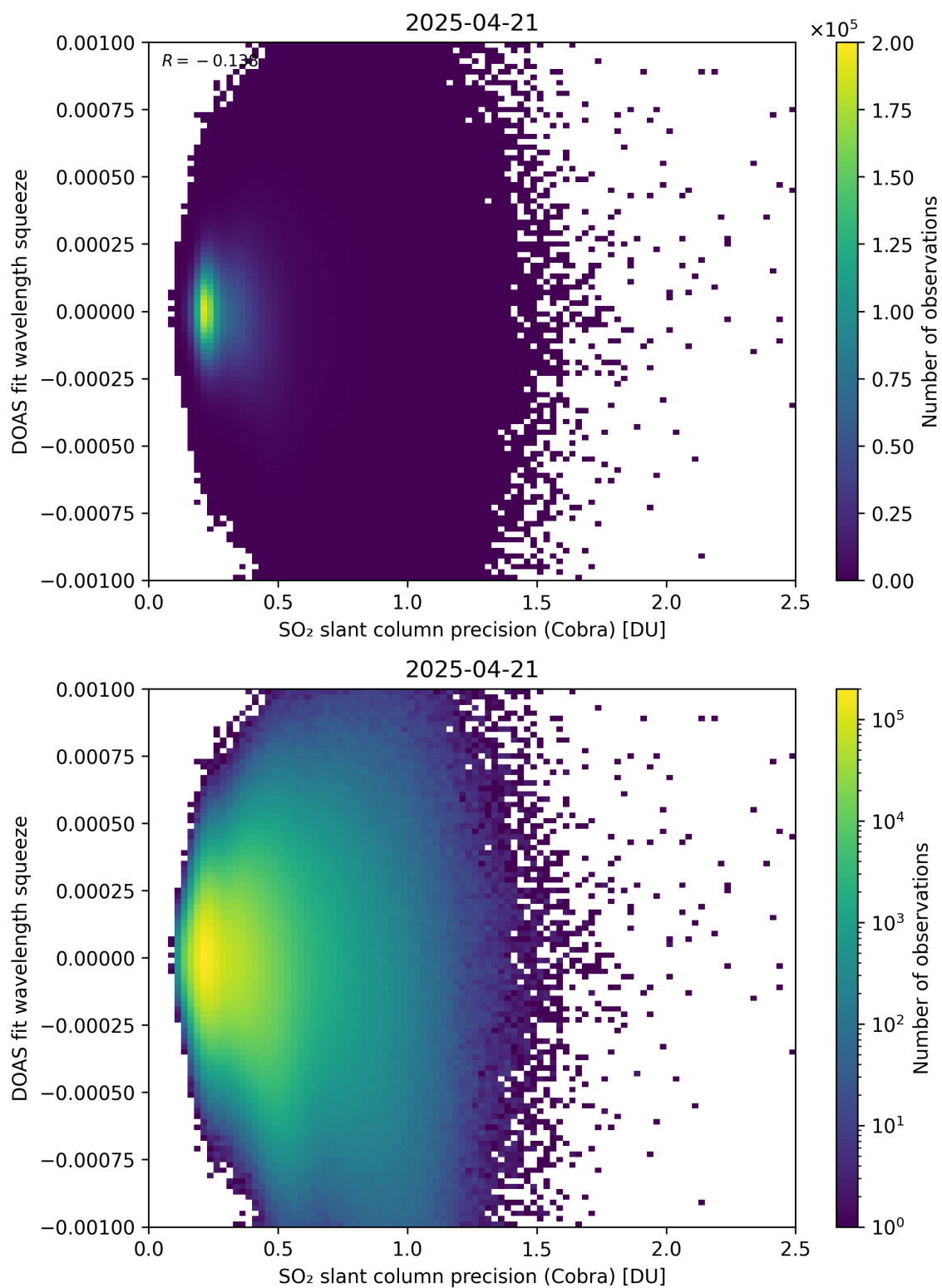


Figure 203: Scatter density plot of “SO₂ slant column precision (Cobra)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

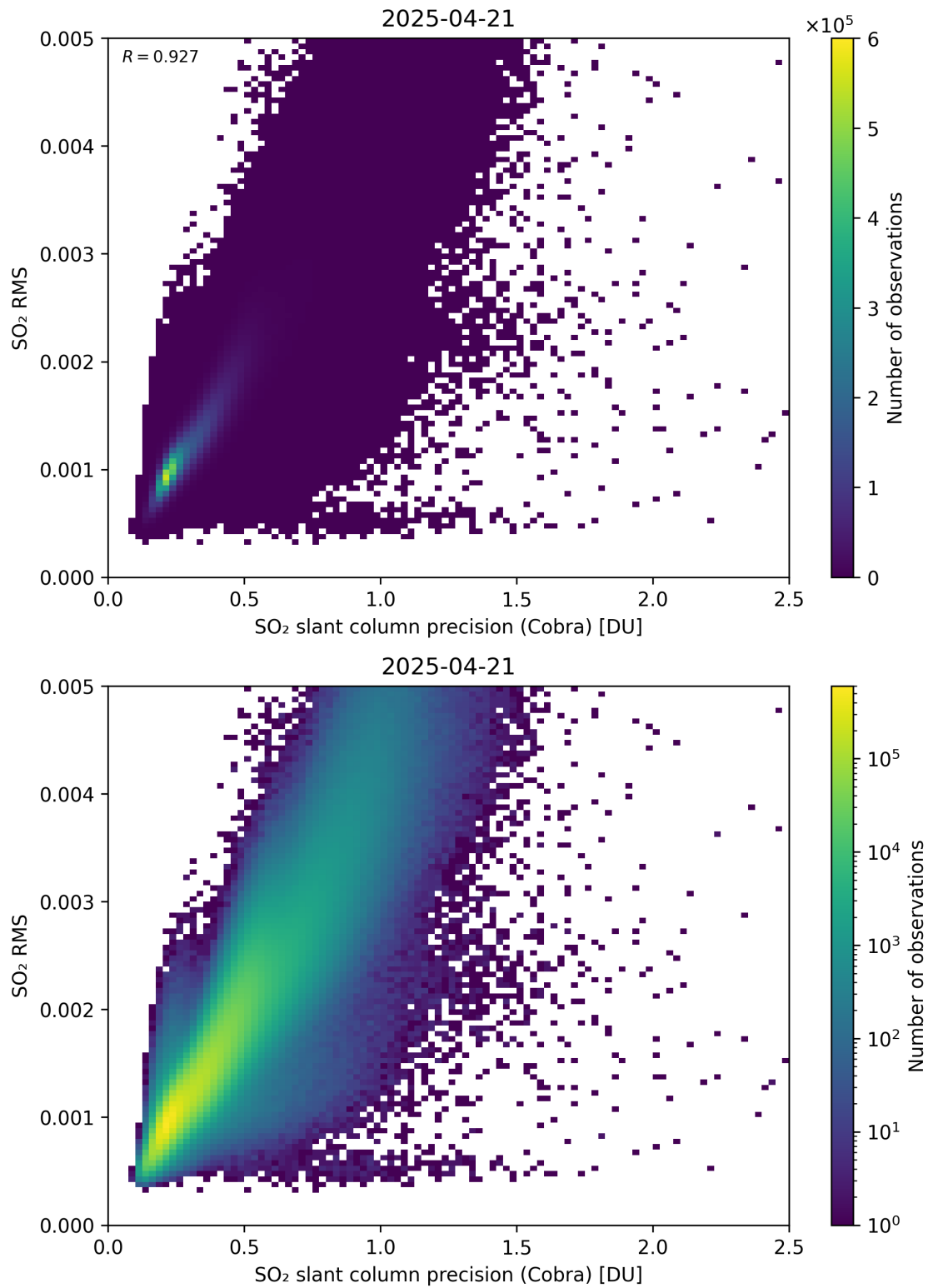


Figure 204: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

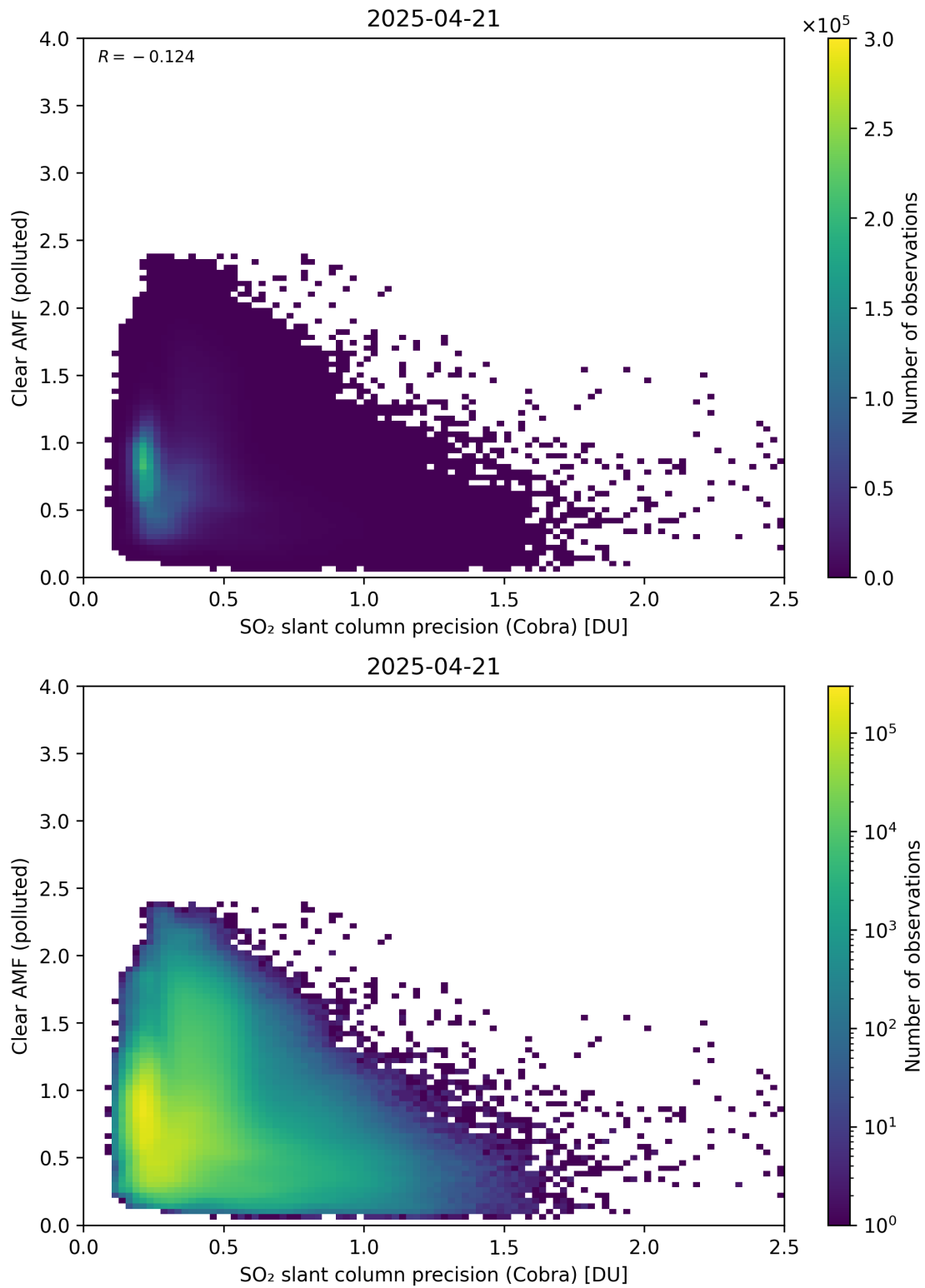


Figure 205: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

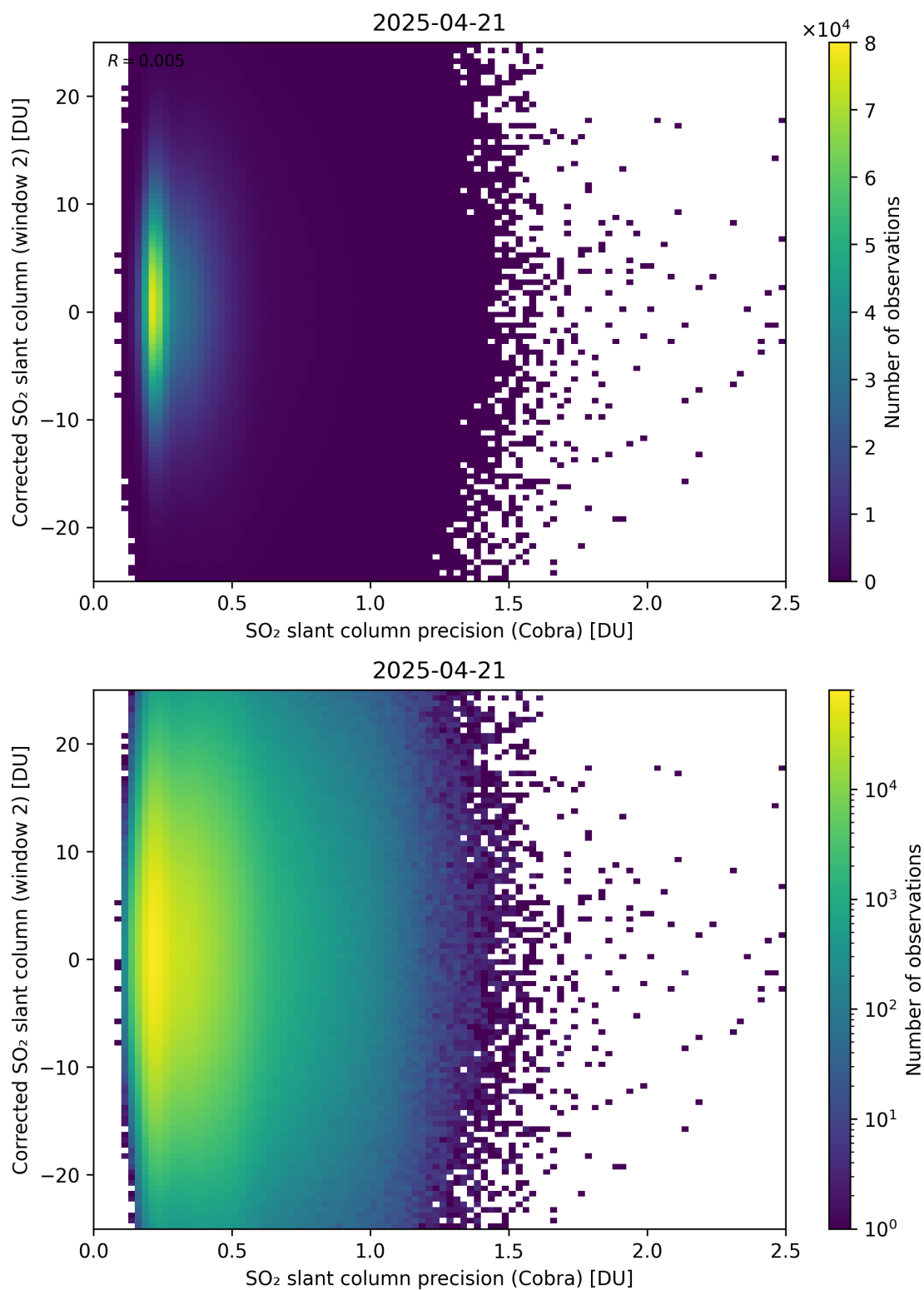


Figure 206: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

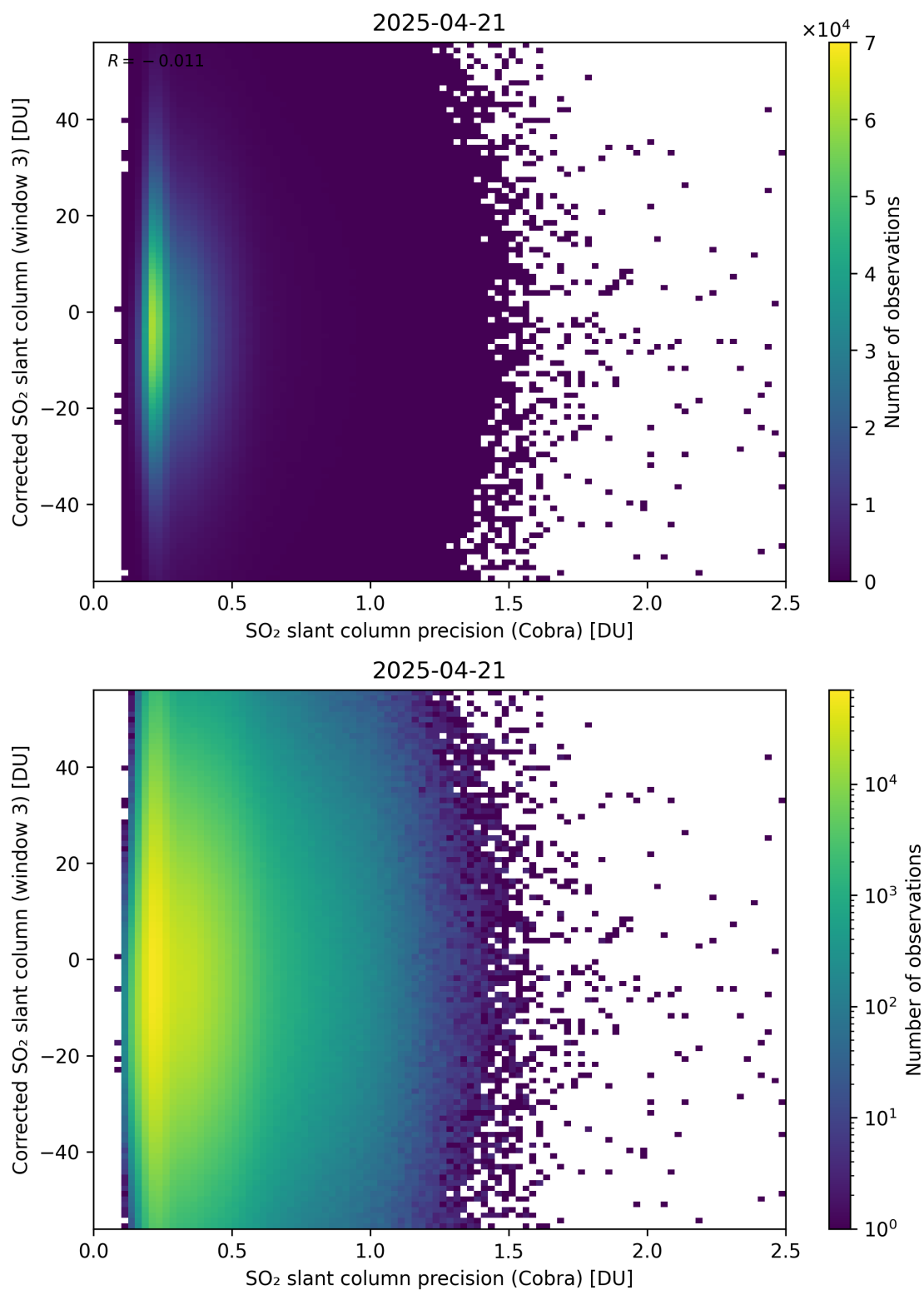


Figure 207: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

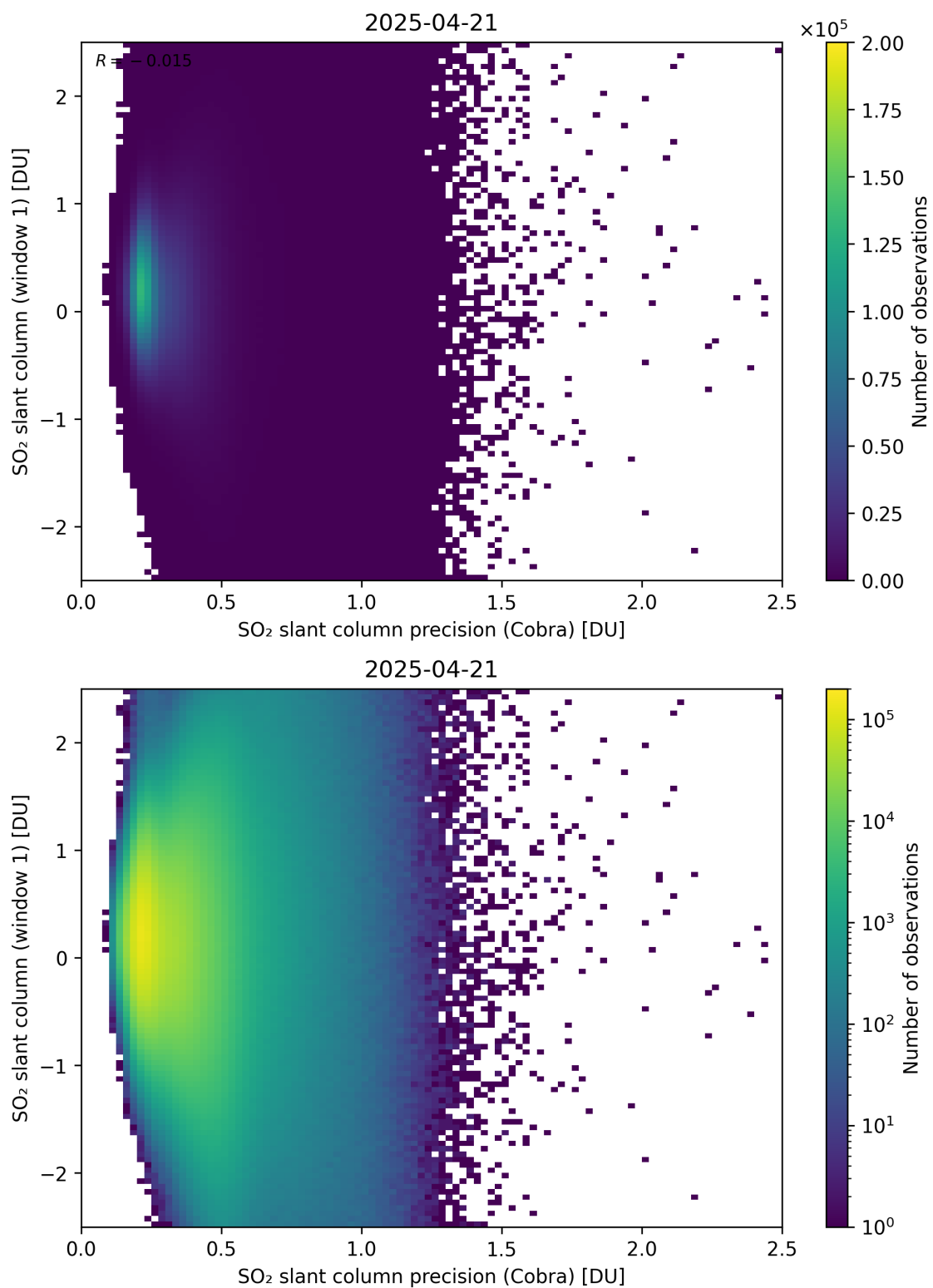


Figure 208: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

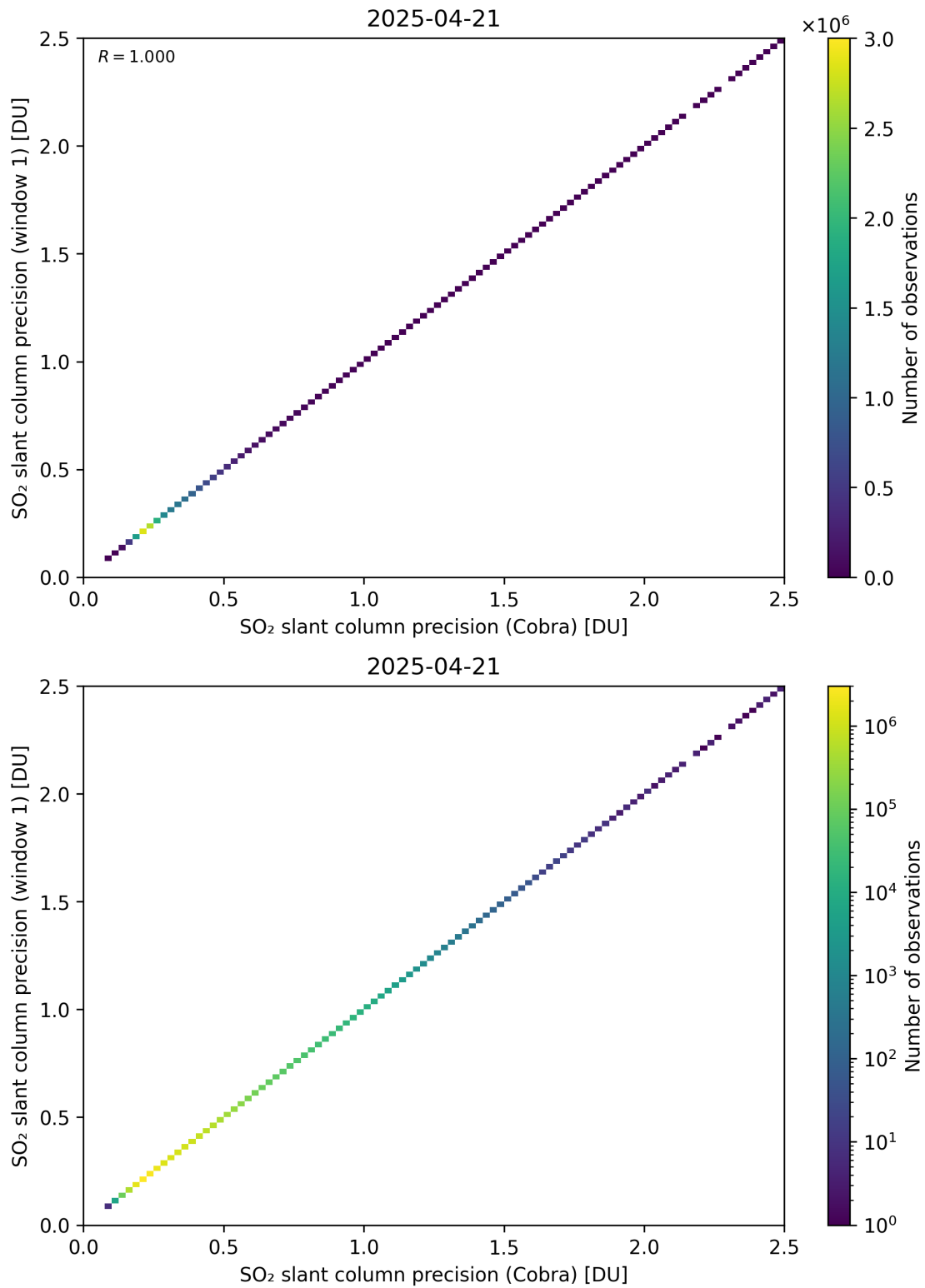


Figure 209: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

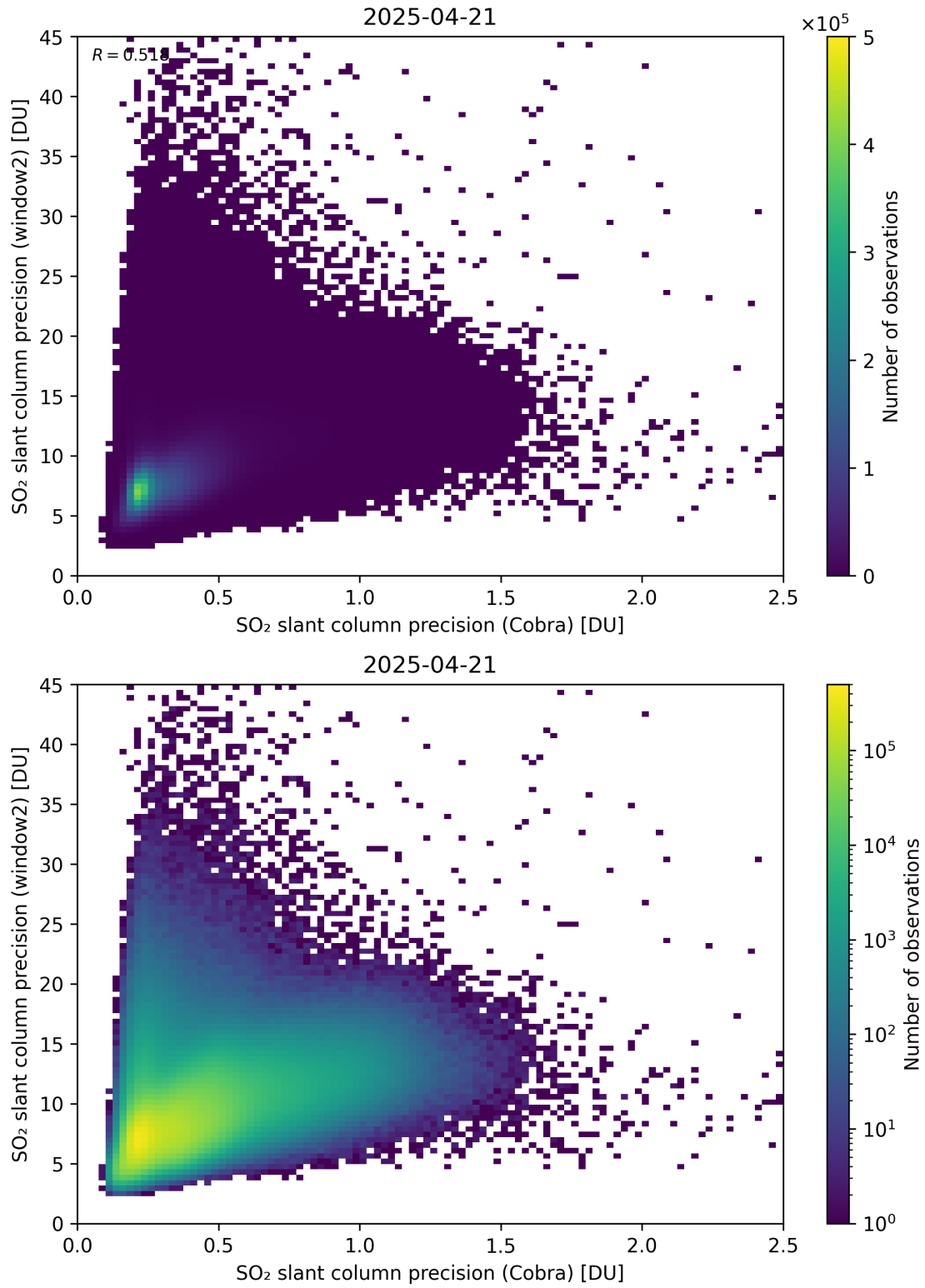


Figure 210: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

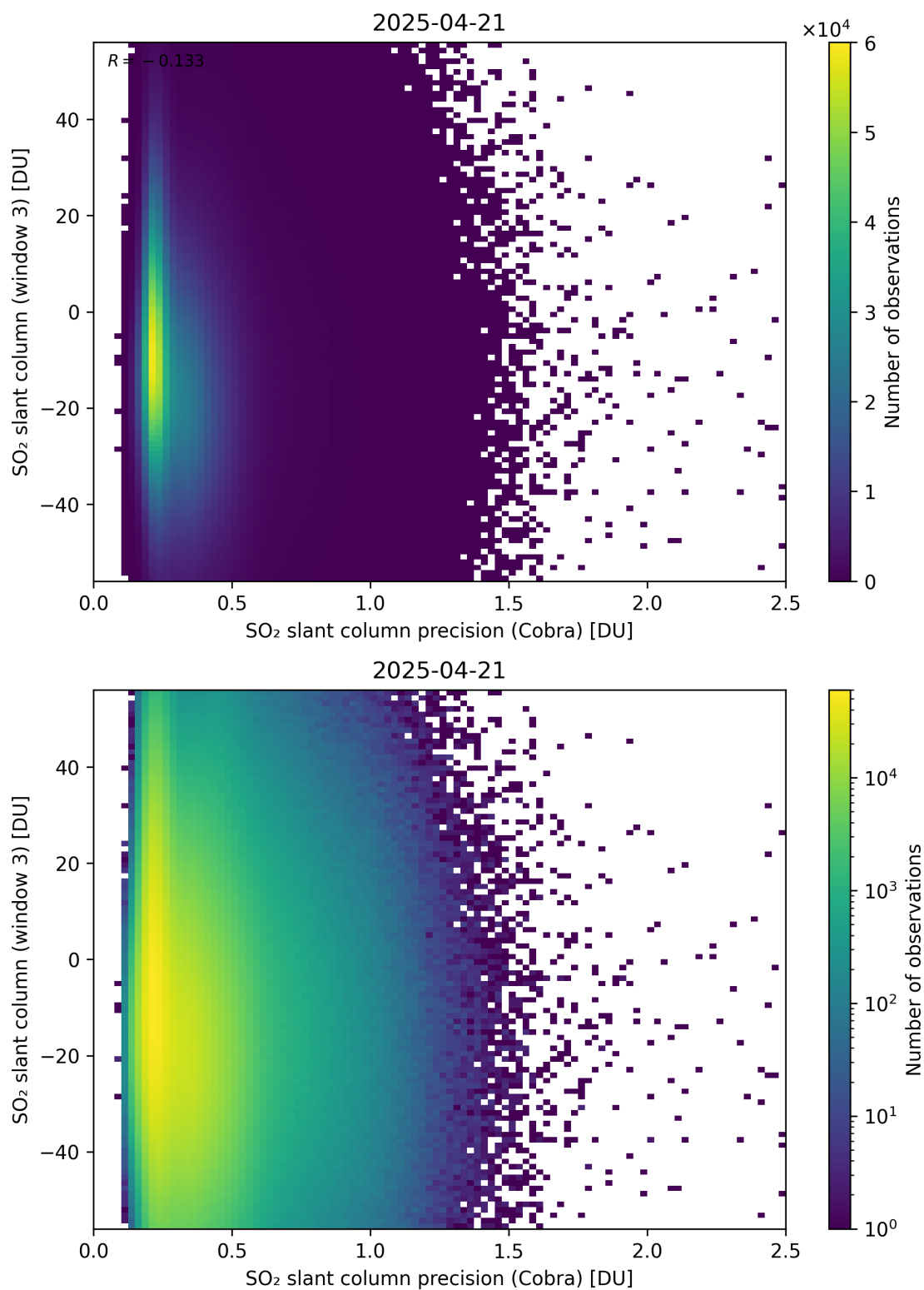


Figure 211: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

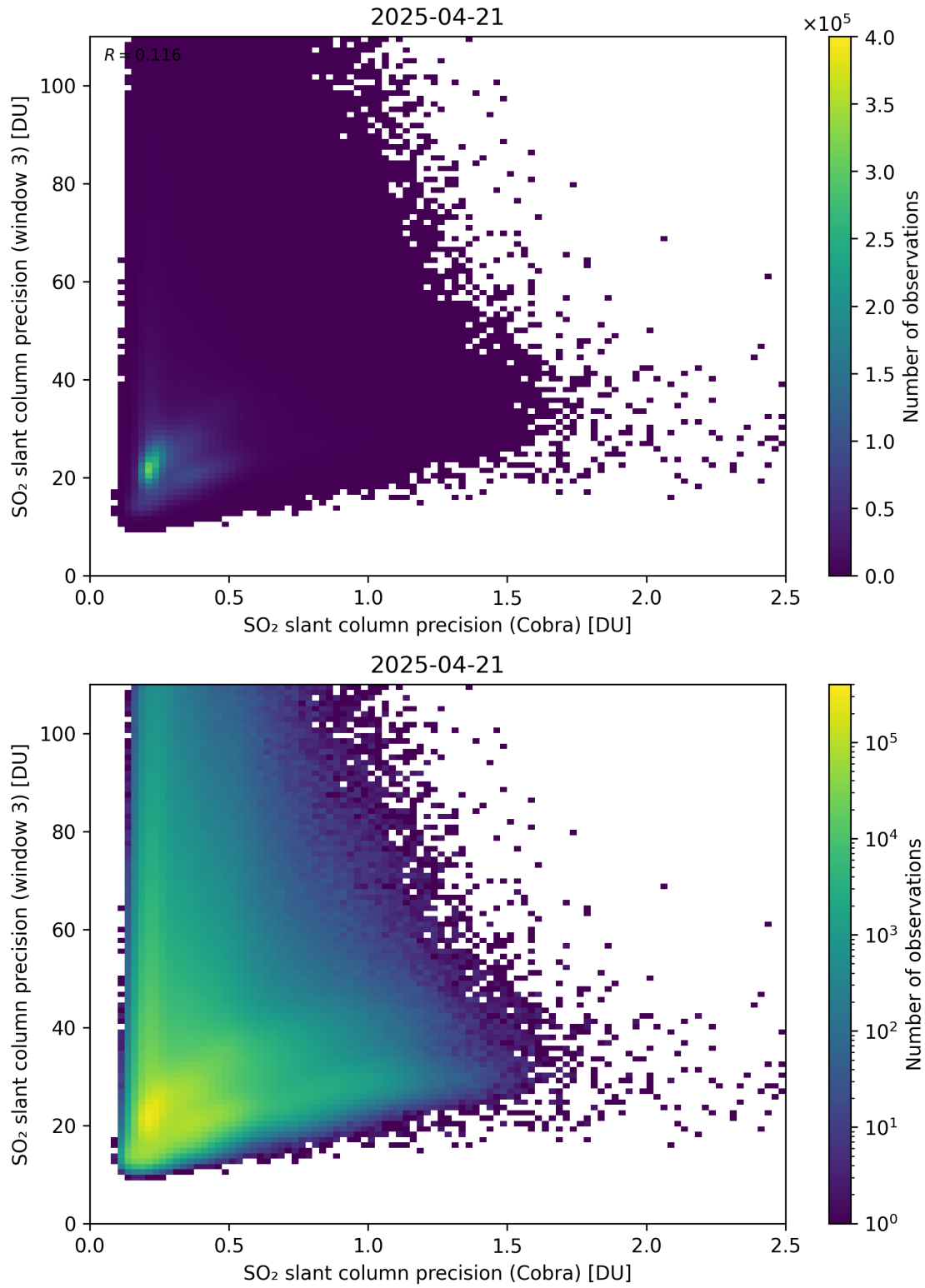


Figure 212: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

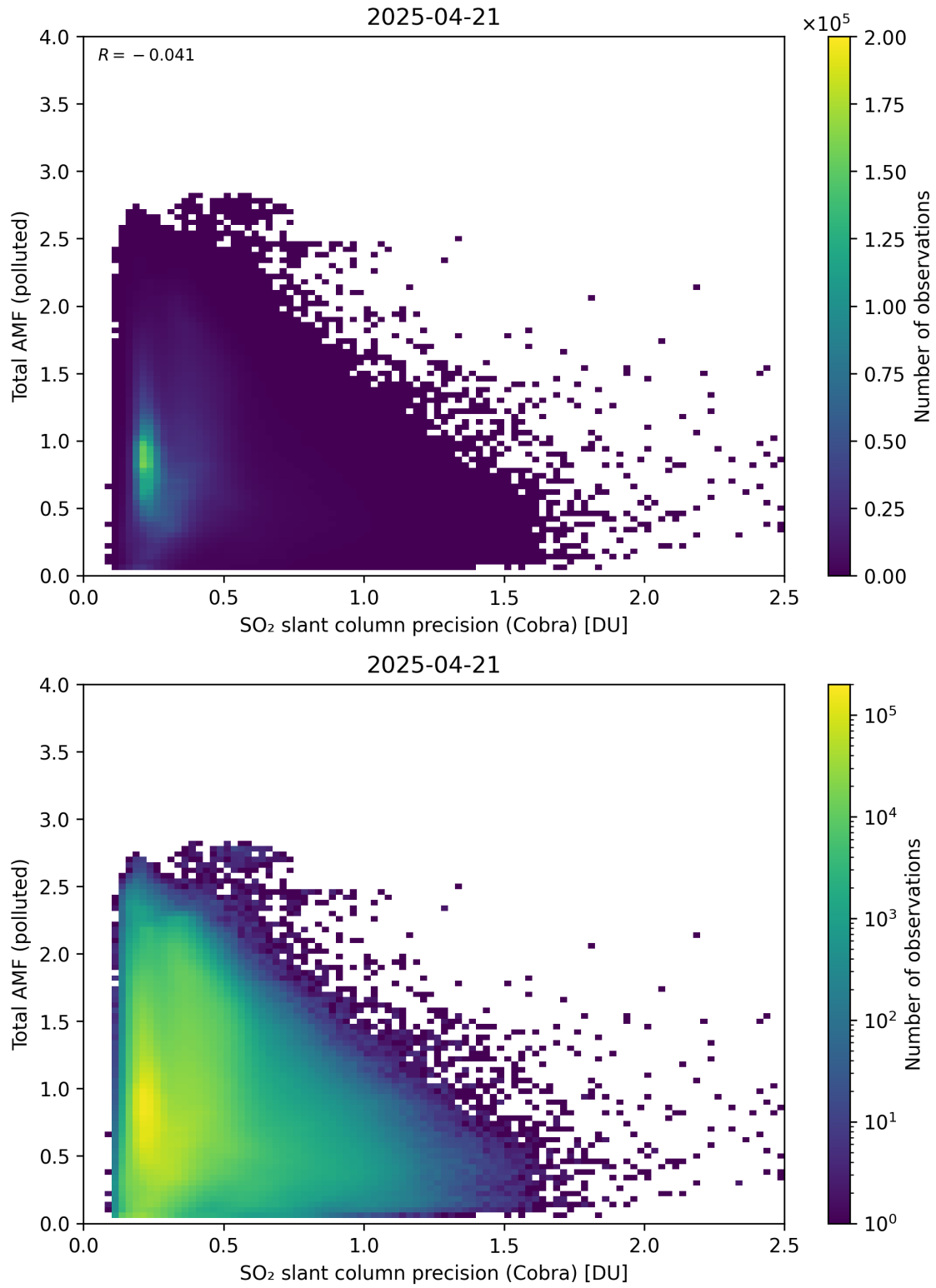


Figure 213: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

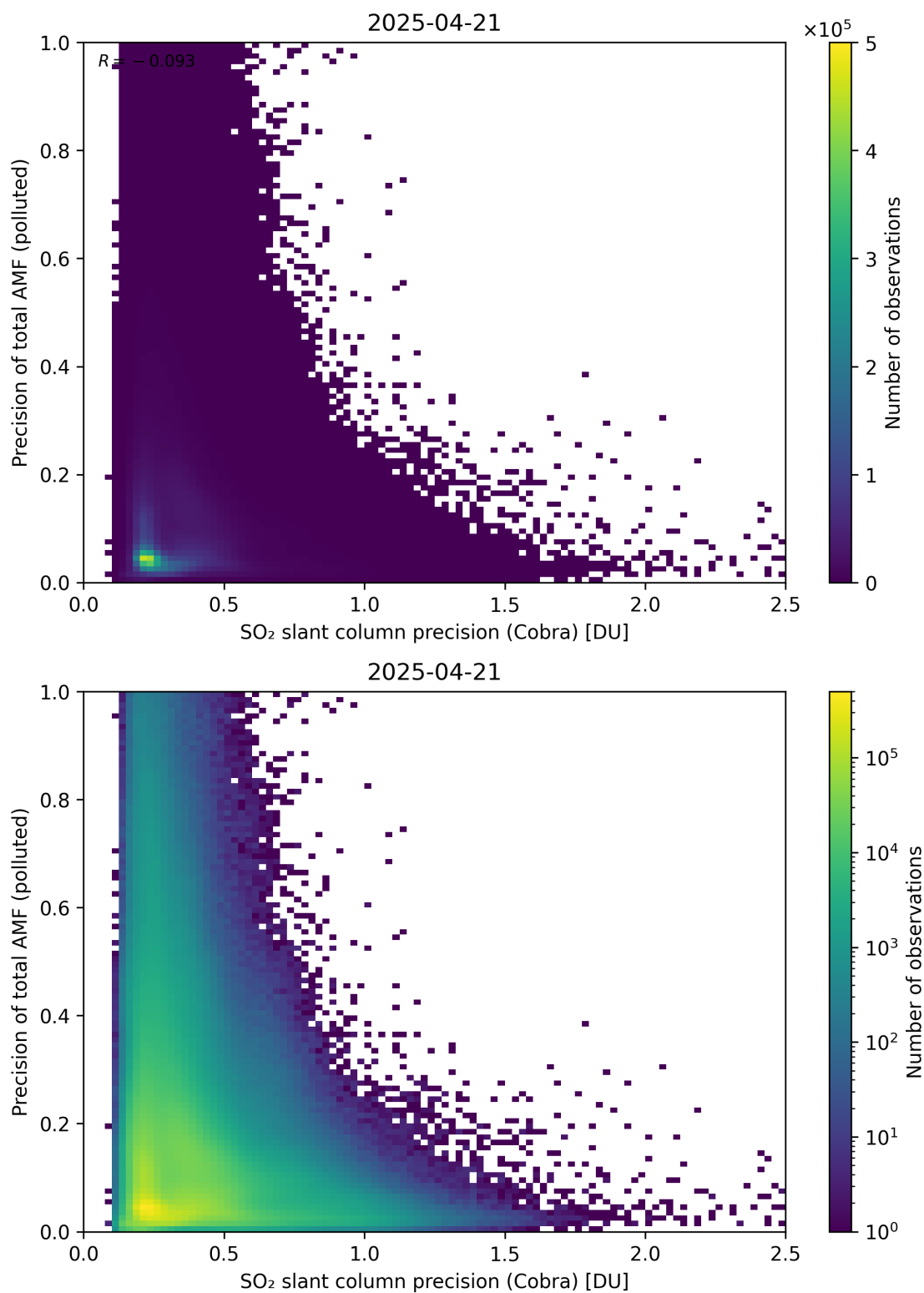


Figure 214: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

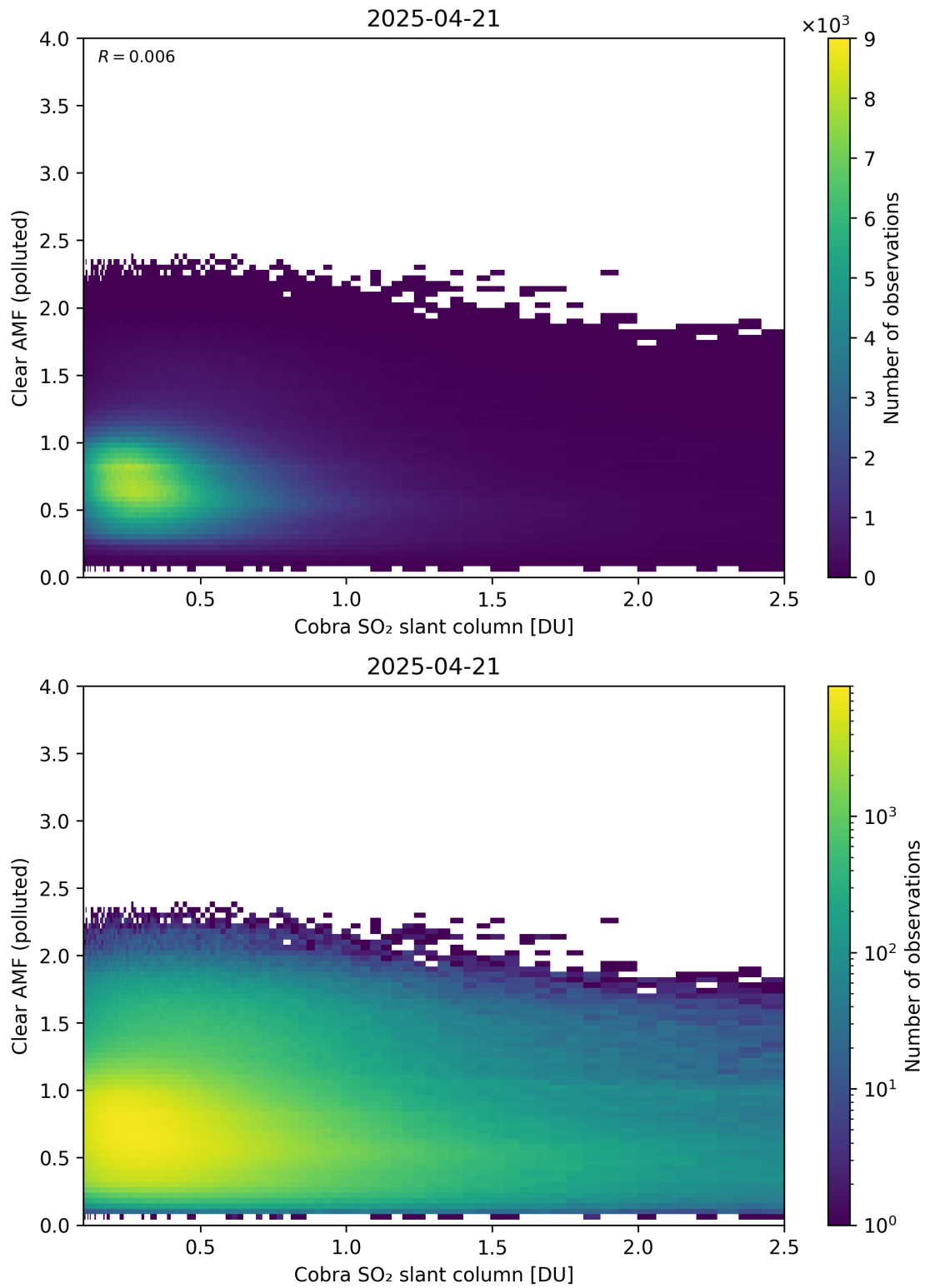


Figure 215: Scatter density plot of “Cobra SO₂ slant column” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

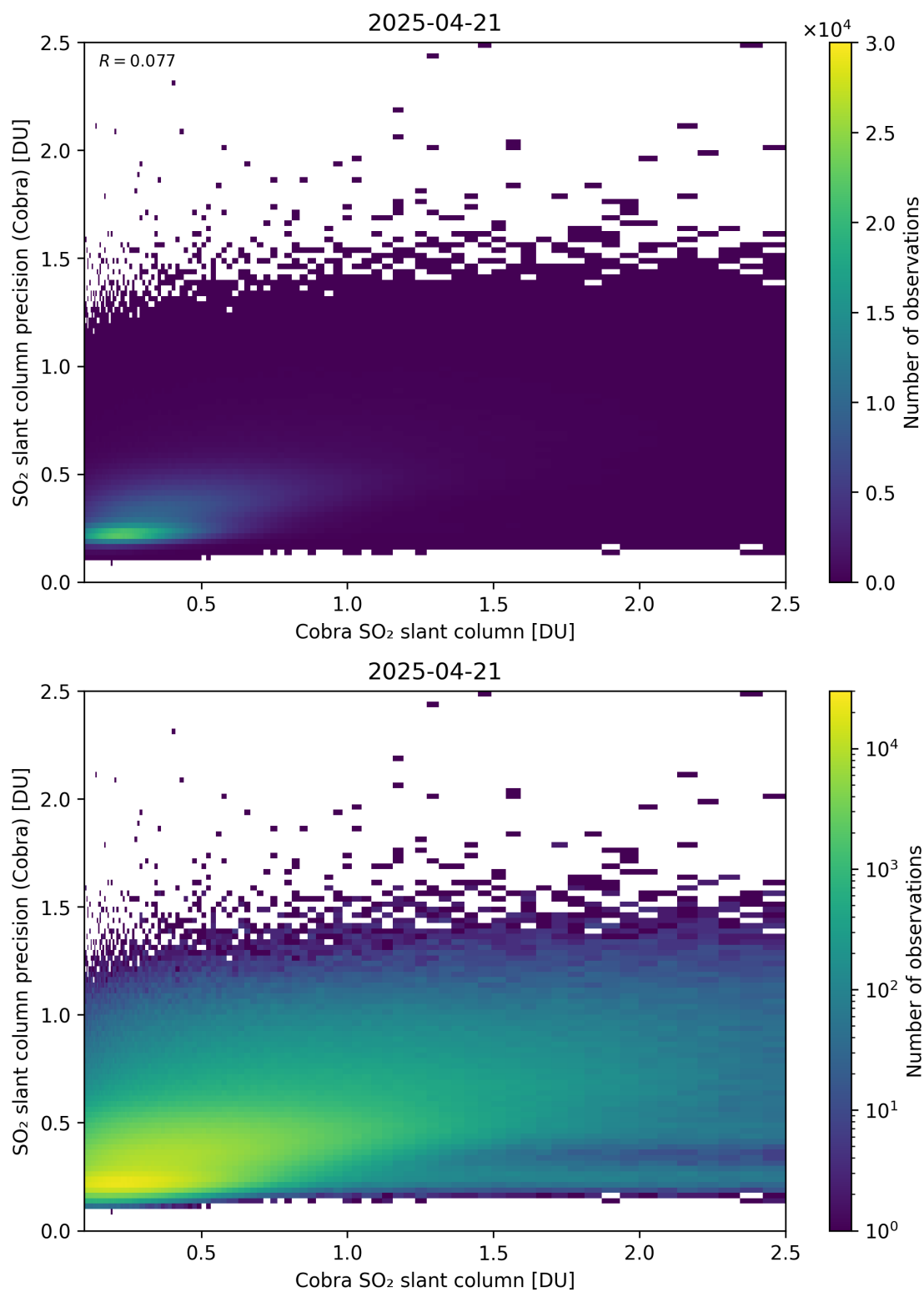


Figure 216: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

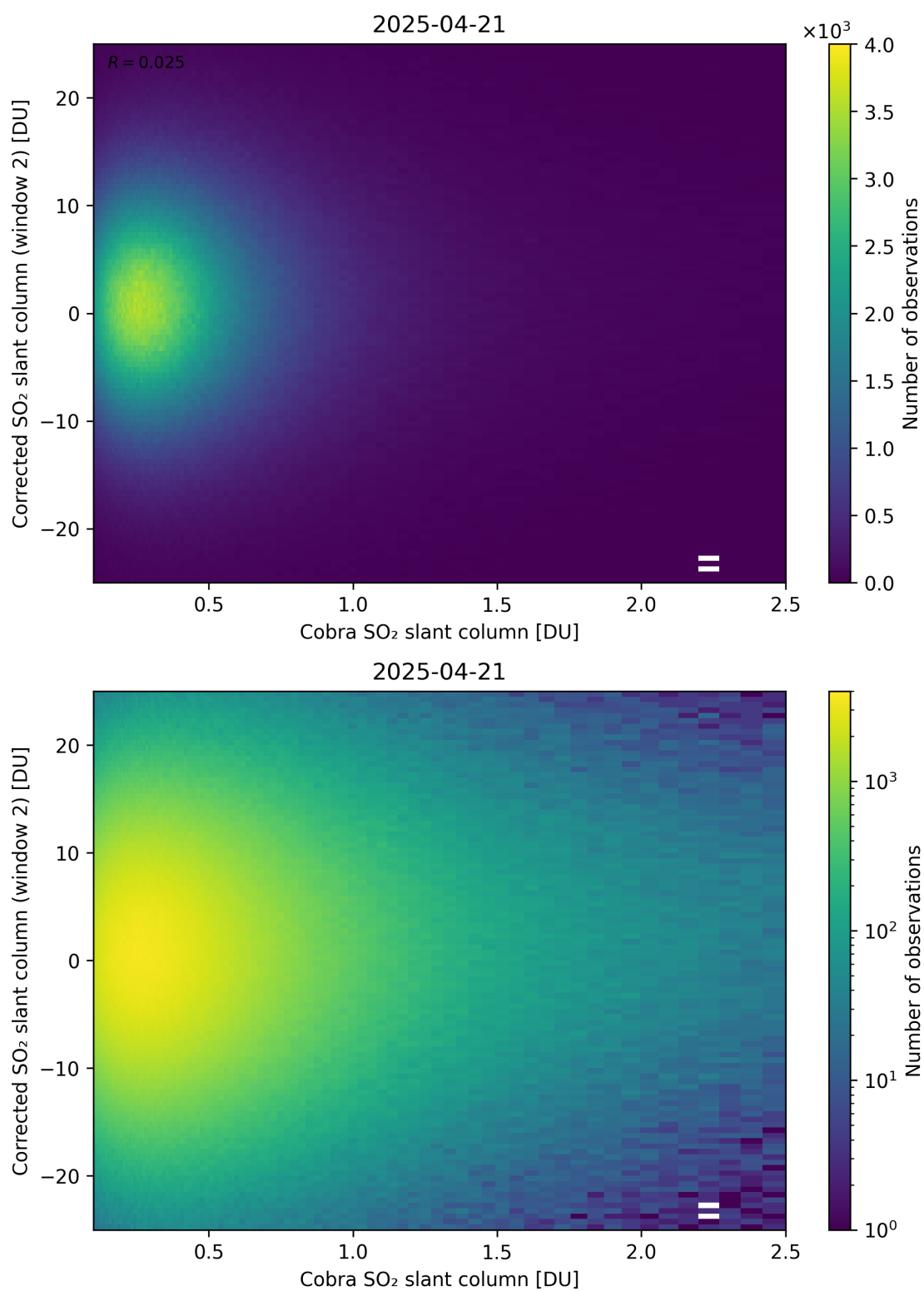


Figure 217: Scatter density plot of “Cobra SO₂ slant column” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

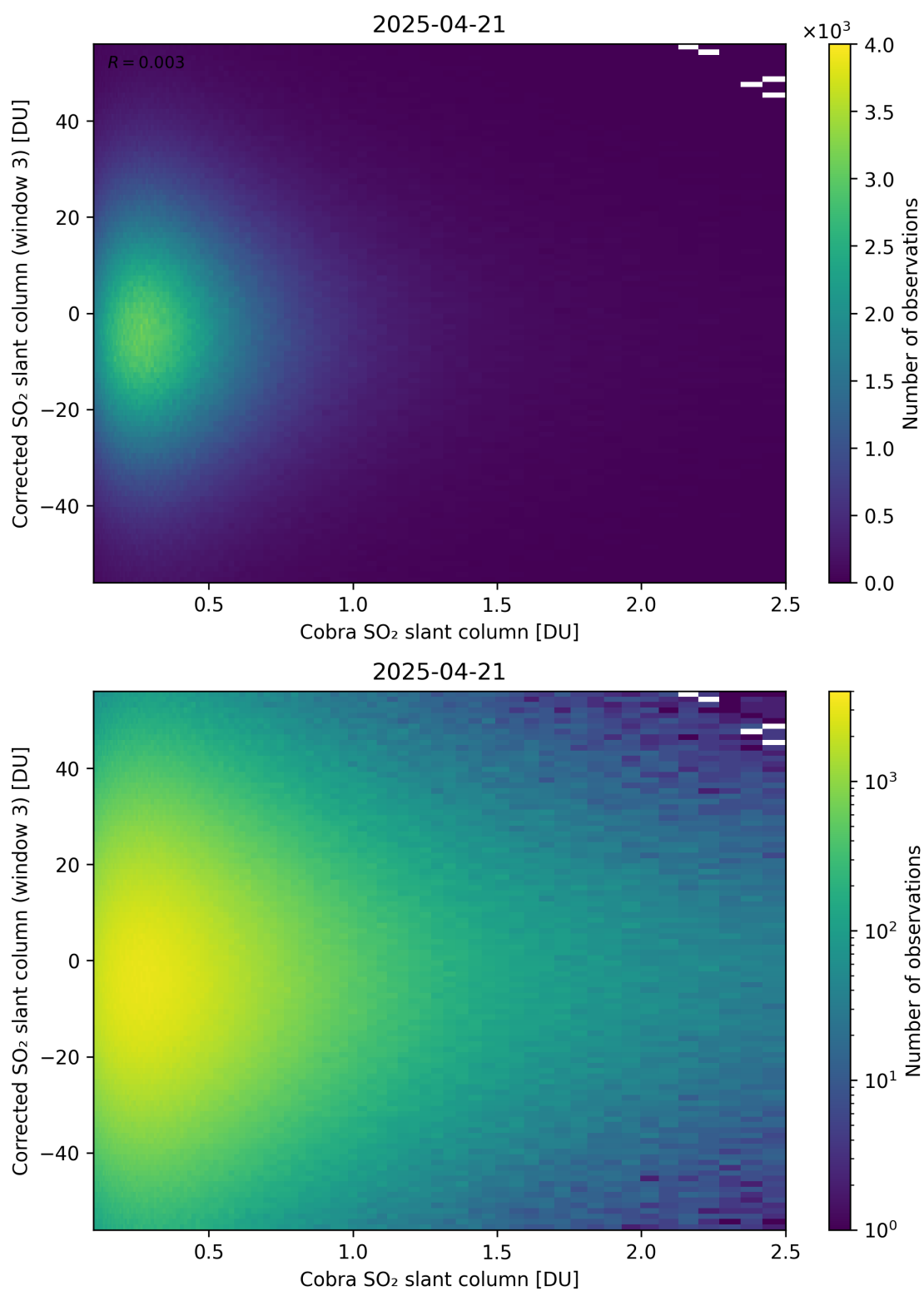


Figure 218: Scatter density plot of “Cobra SO₂ slant column” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

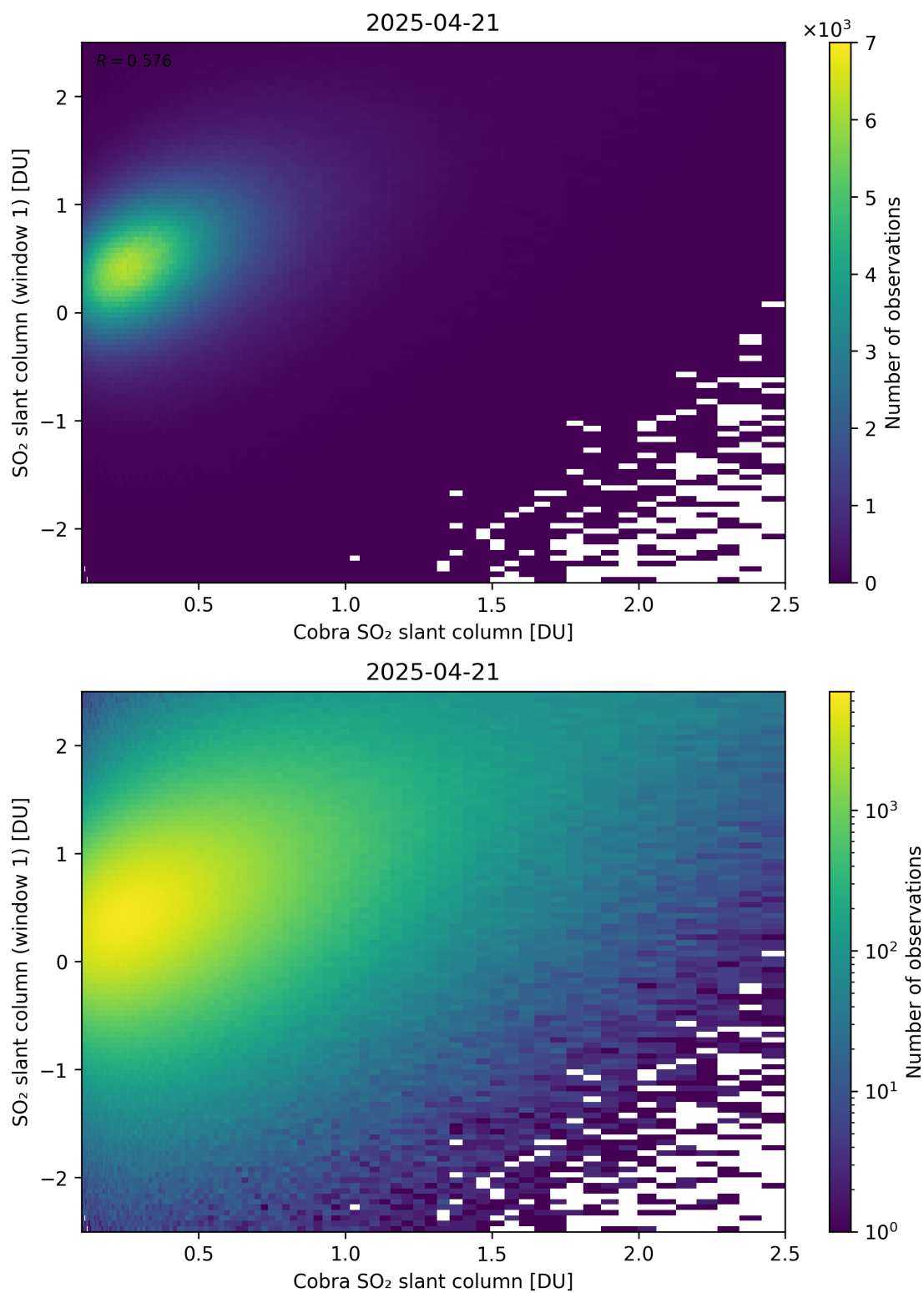


Figure 219: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

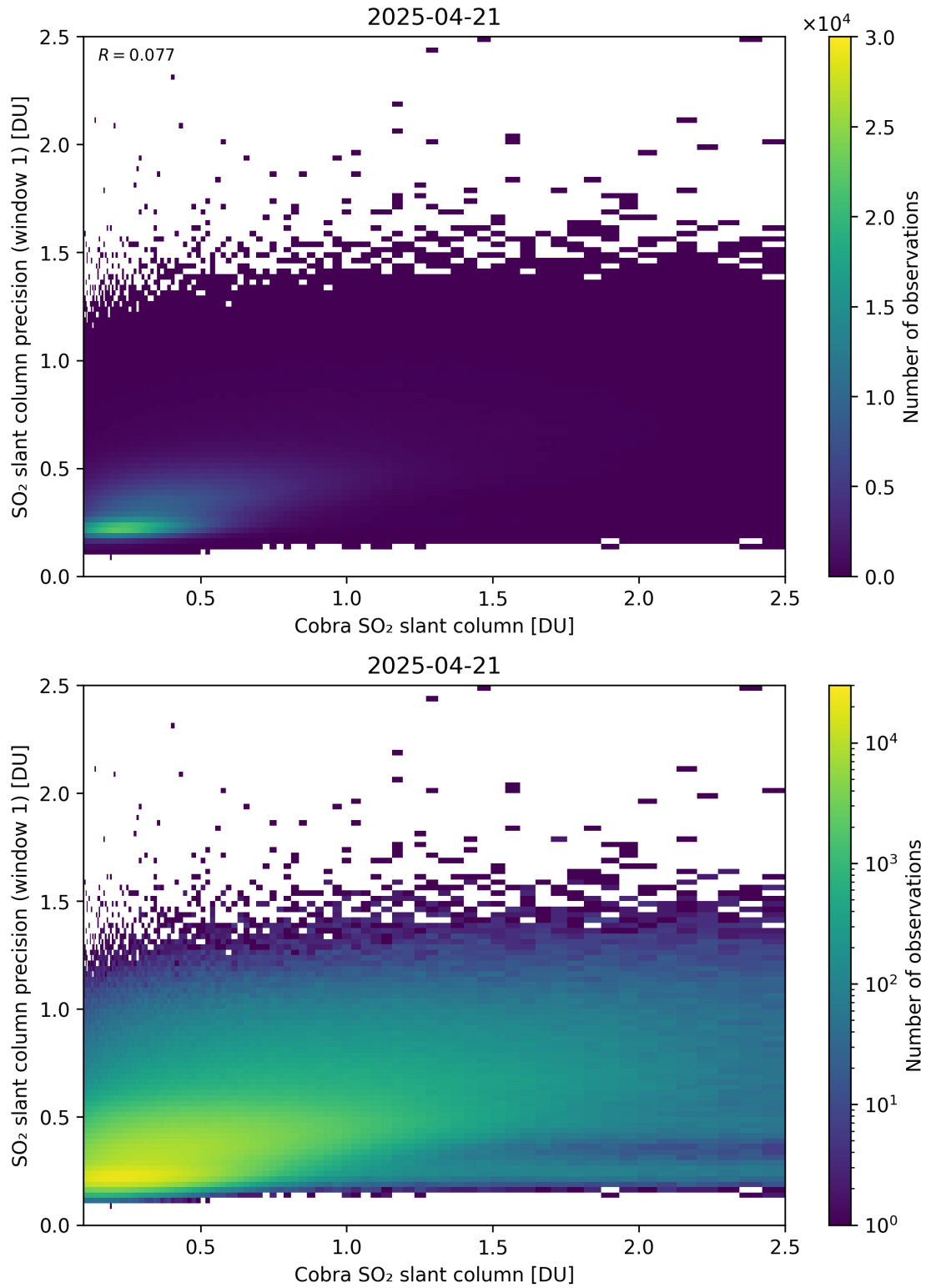


Figure 220: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

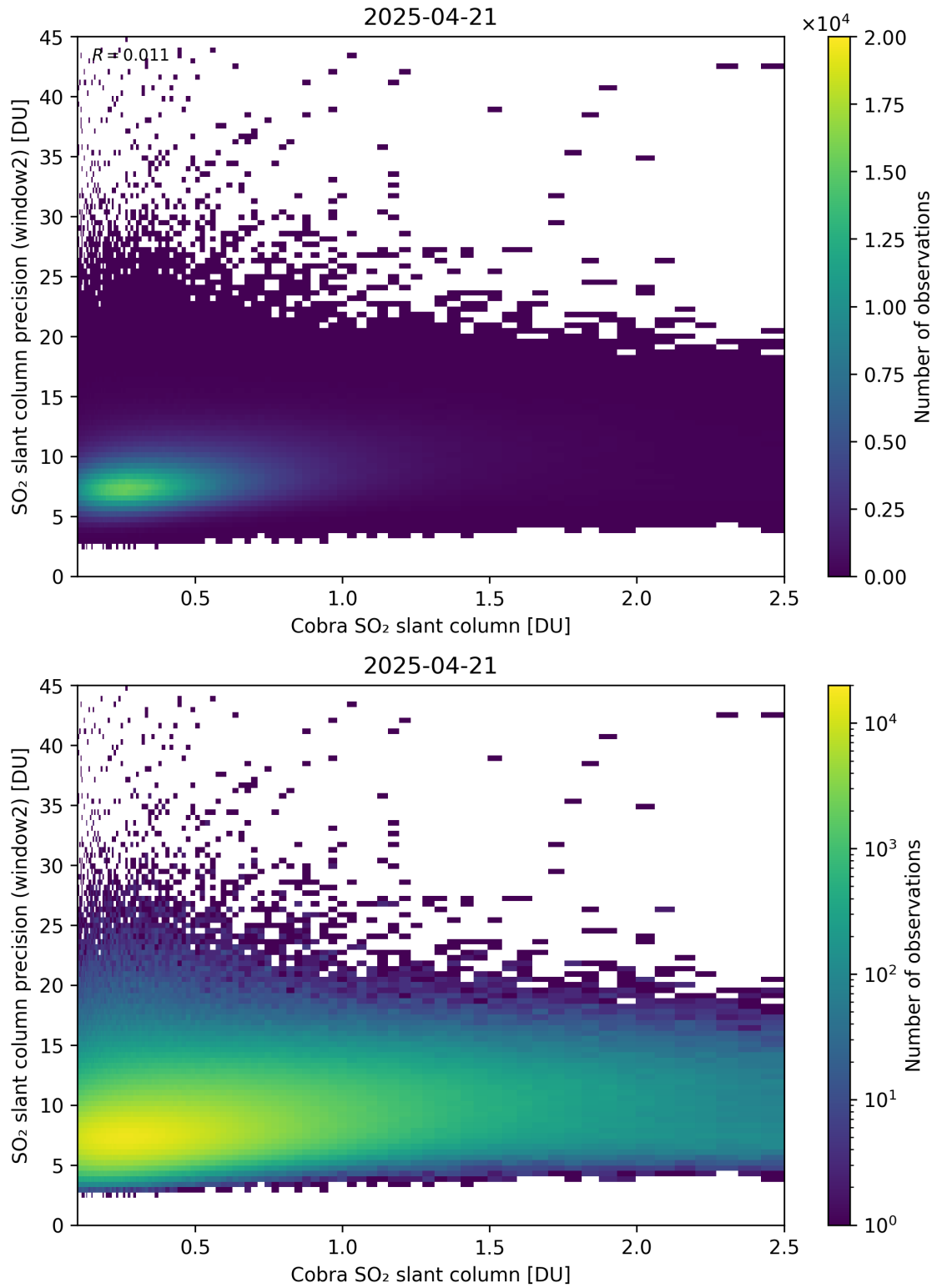


Figure 221: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

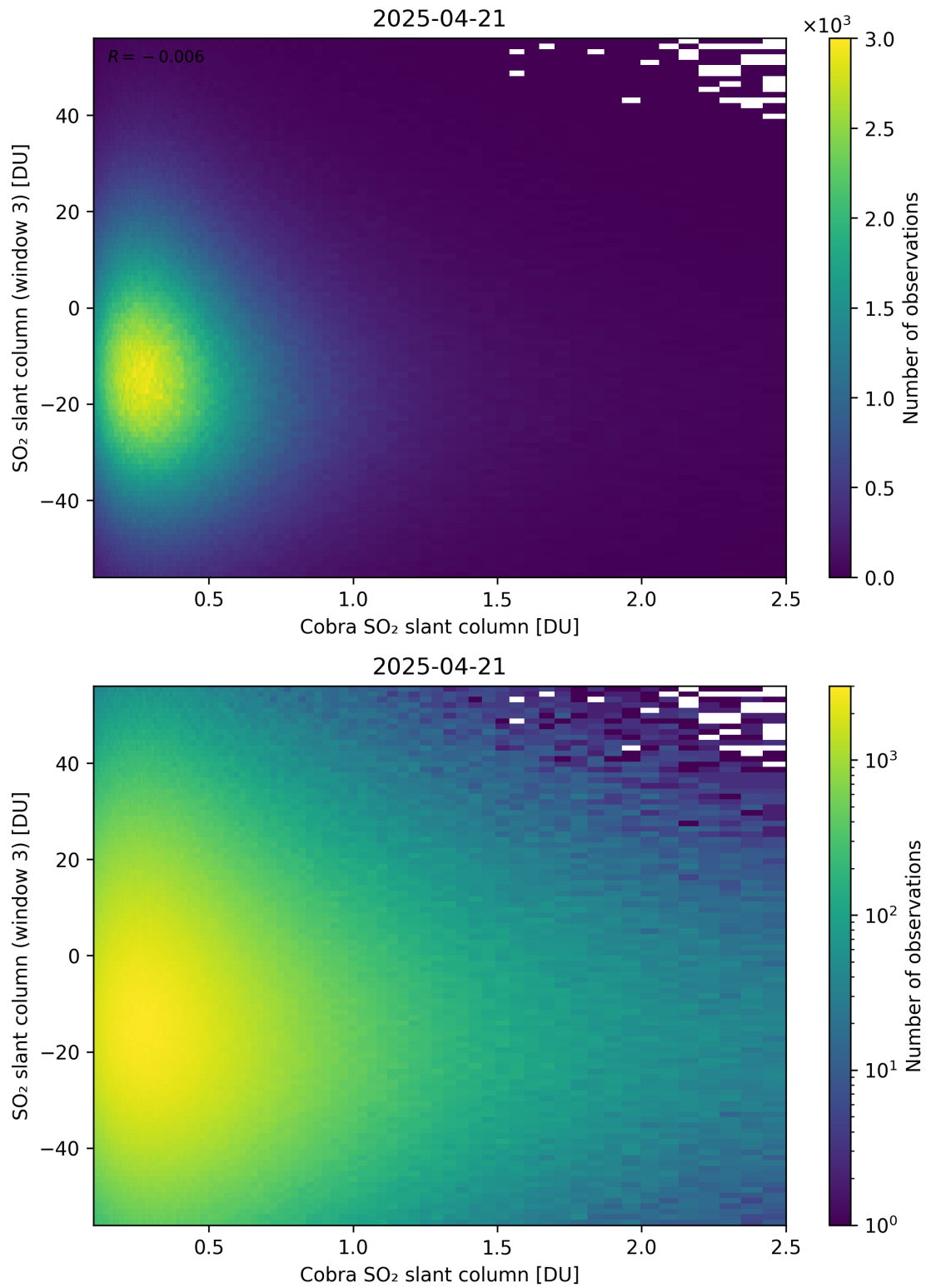


Figure 222: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

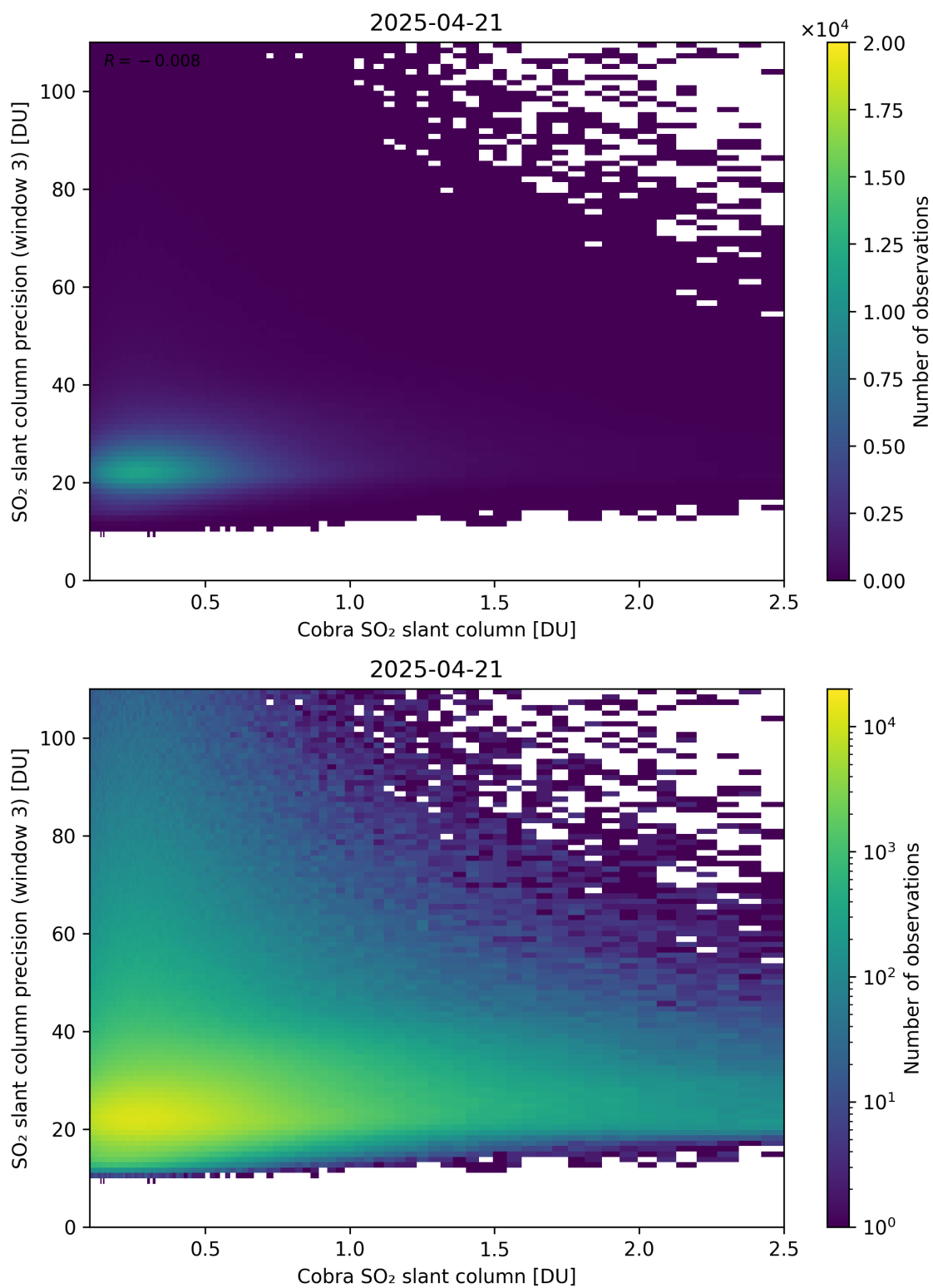


Figure 223: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

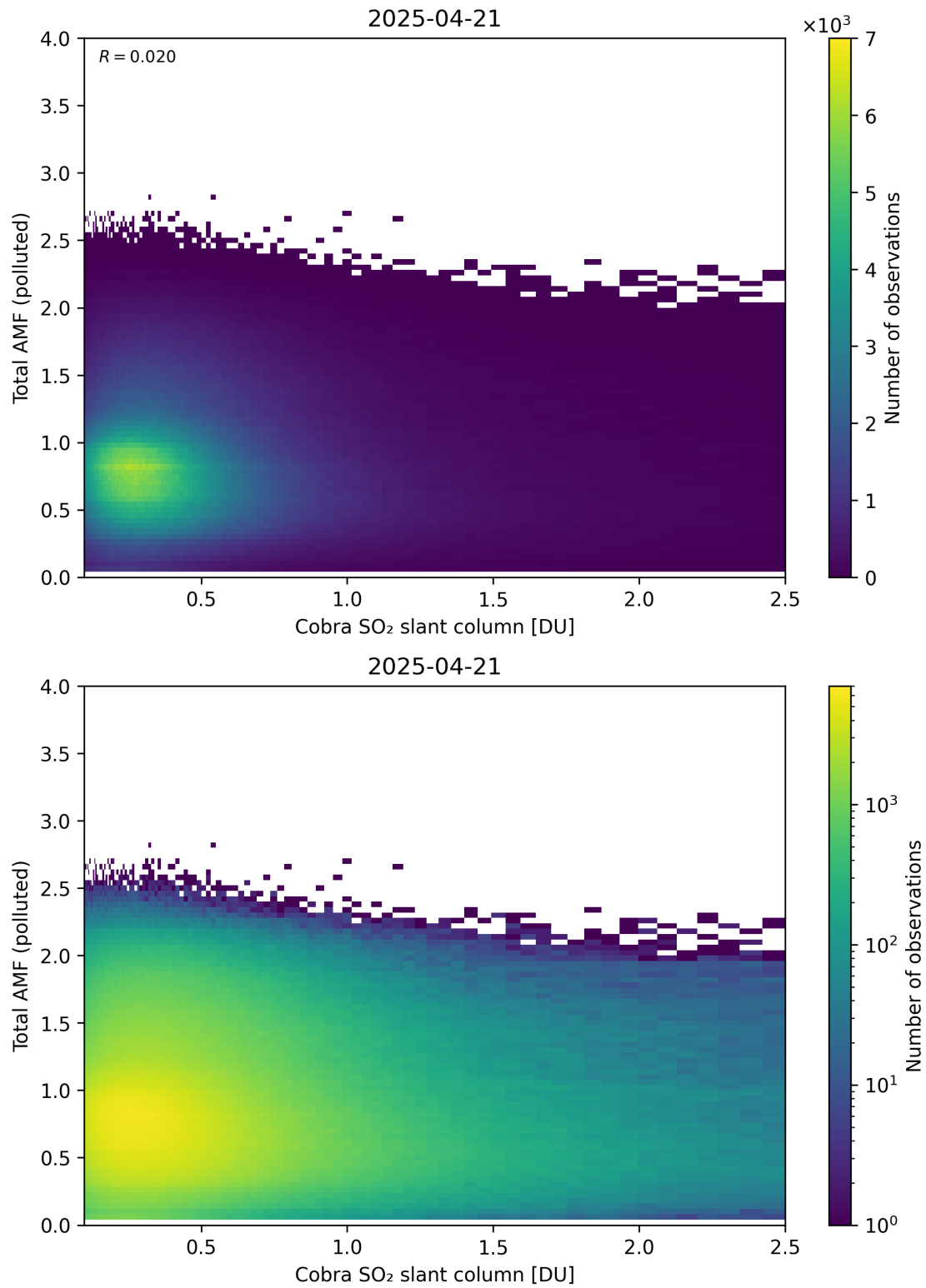


Figure 224: Scatter density plot of “Cobra SO₂ slant column” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

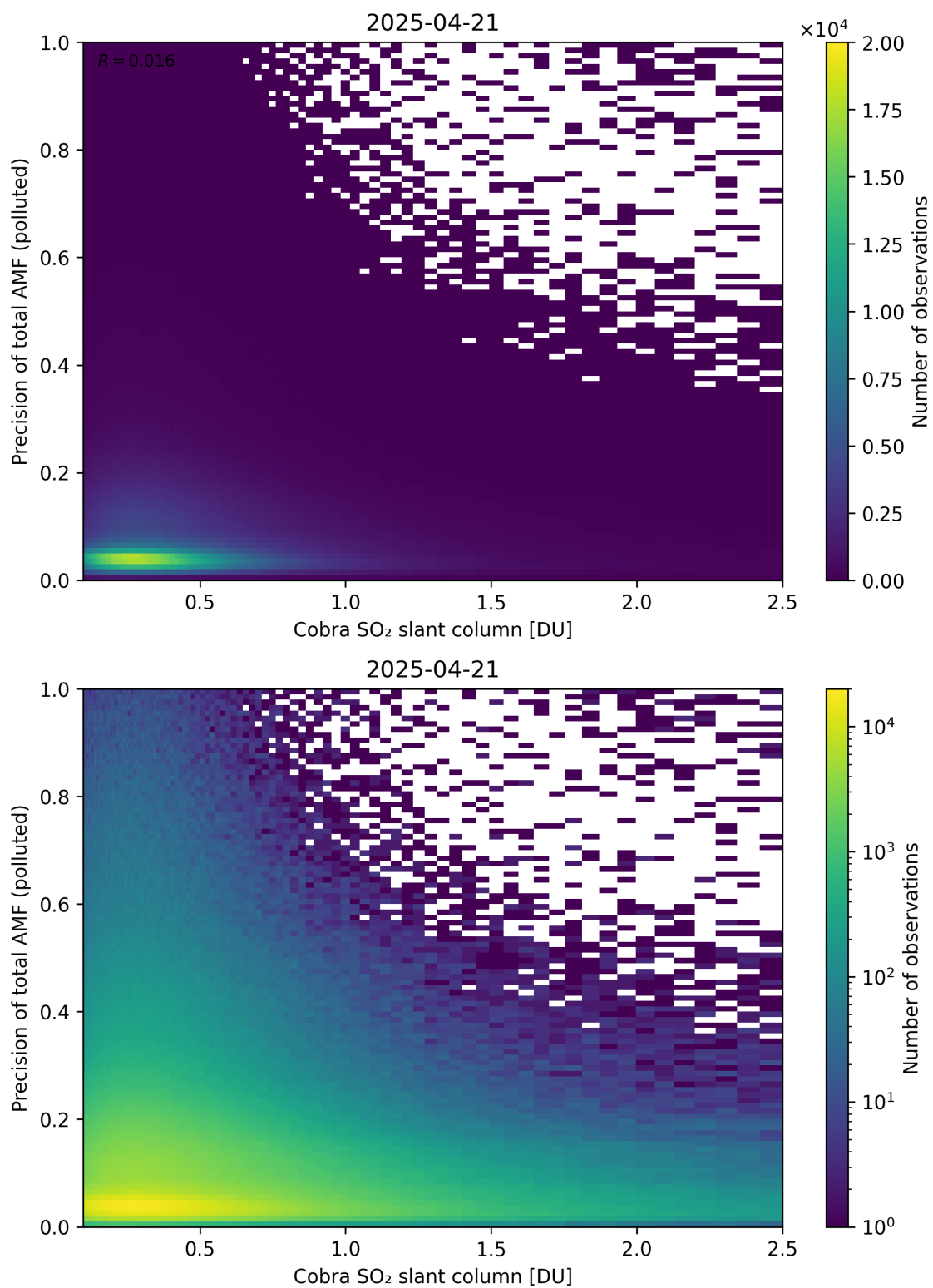


Figure 225: Scatter density plot of “Cobra SO₂ slant column” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

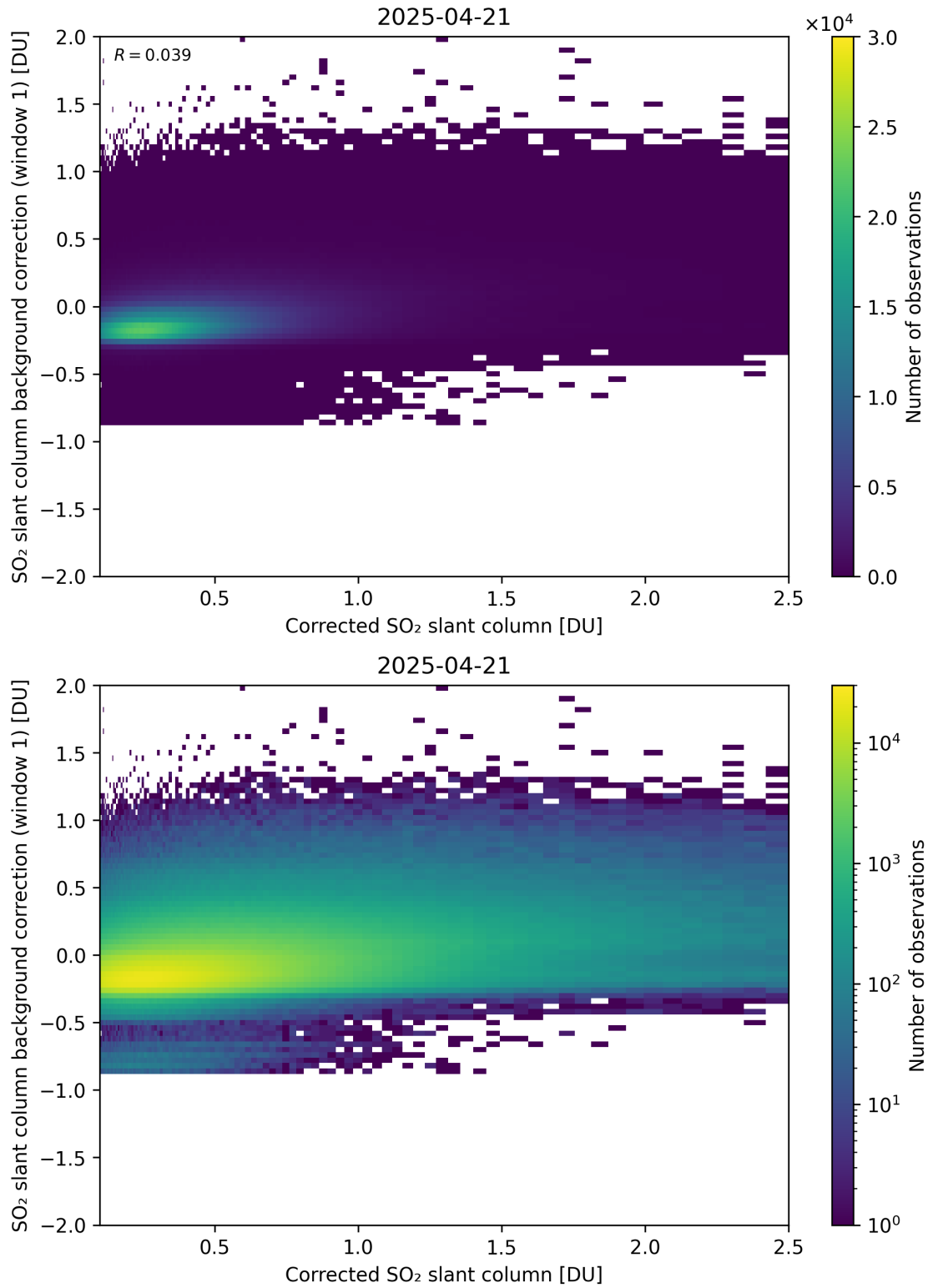


Figure 226: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

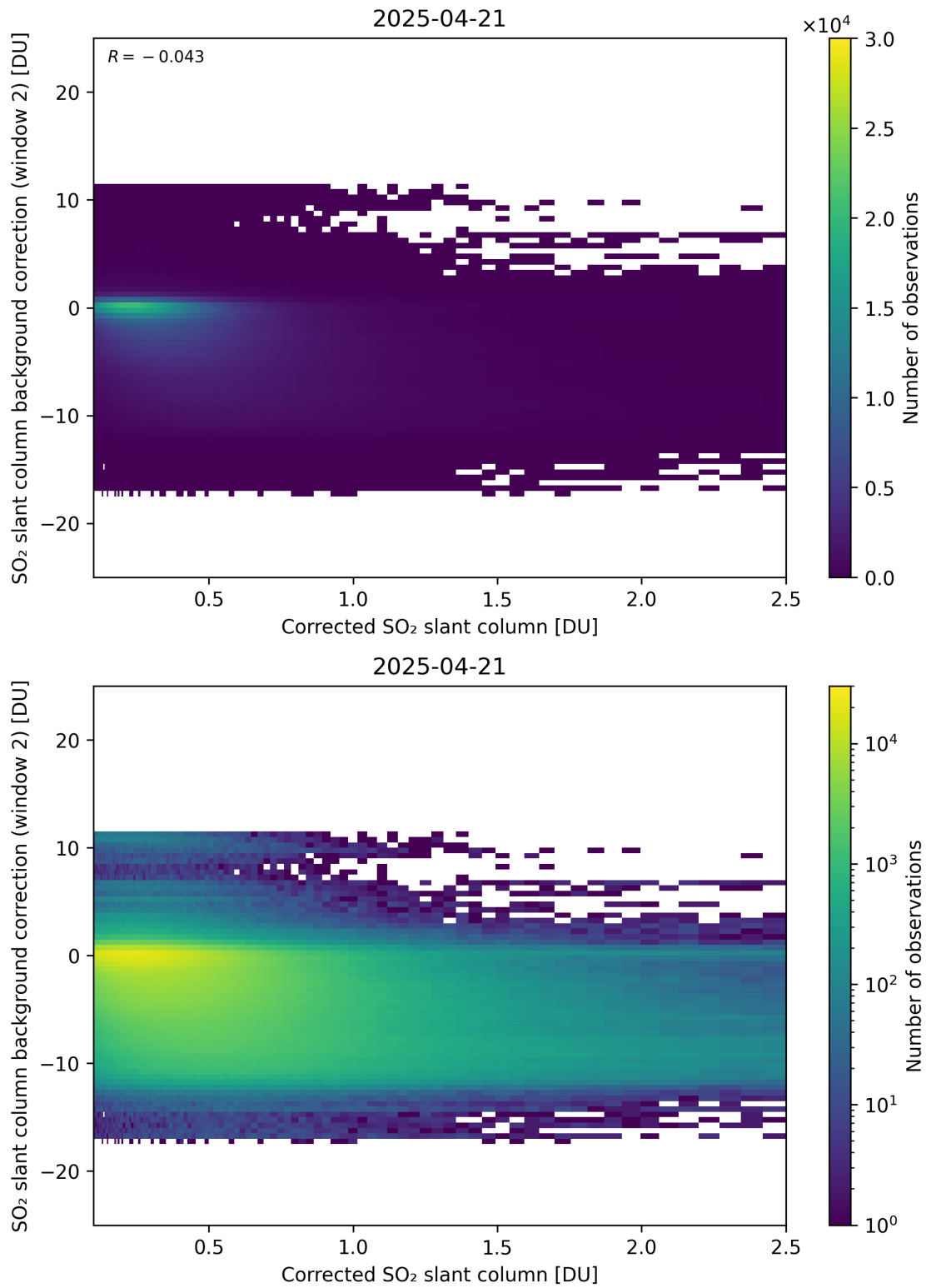


Figure 227: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

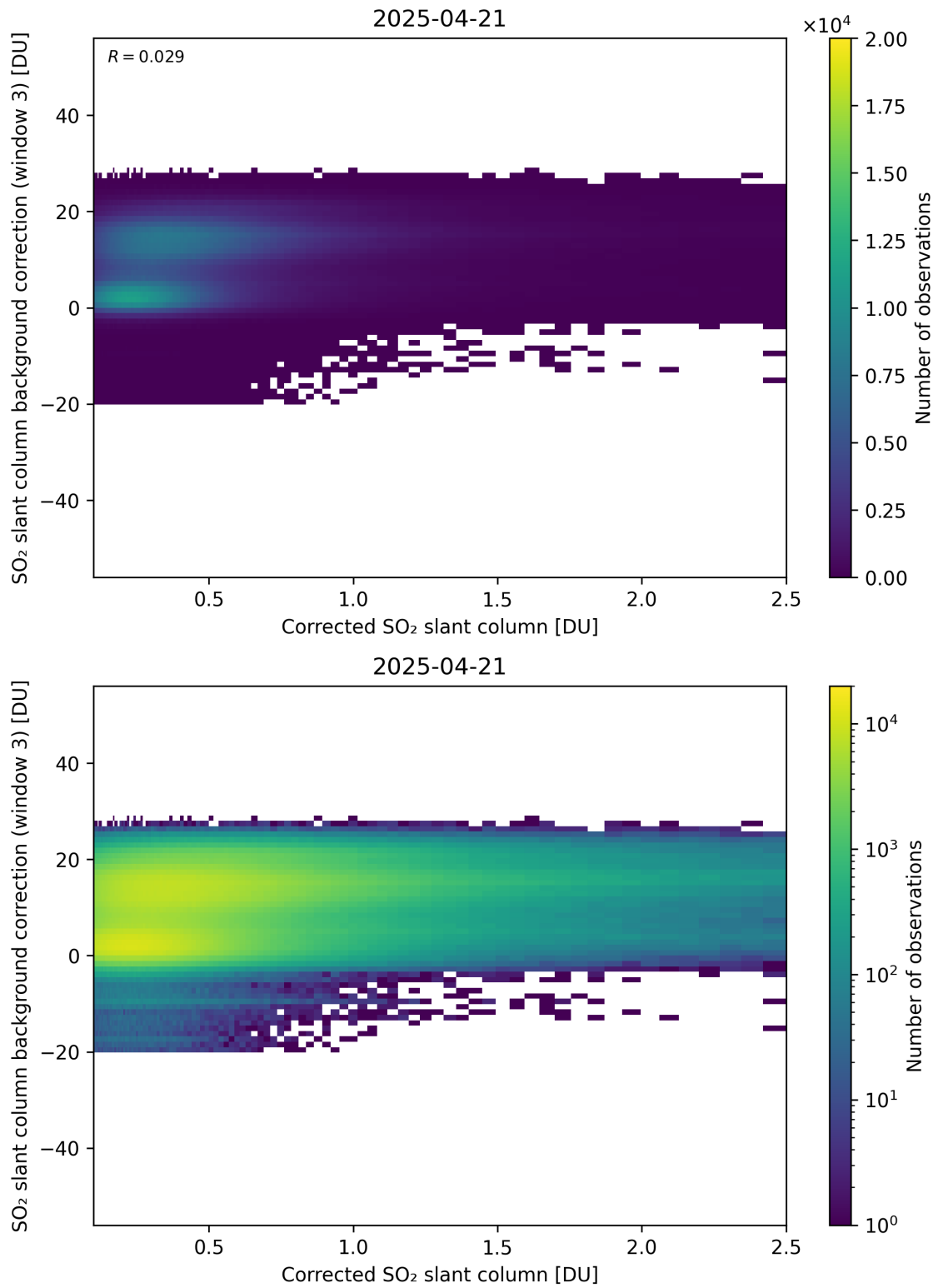


Figure 228: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

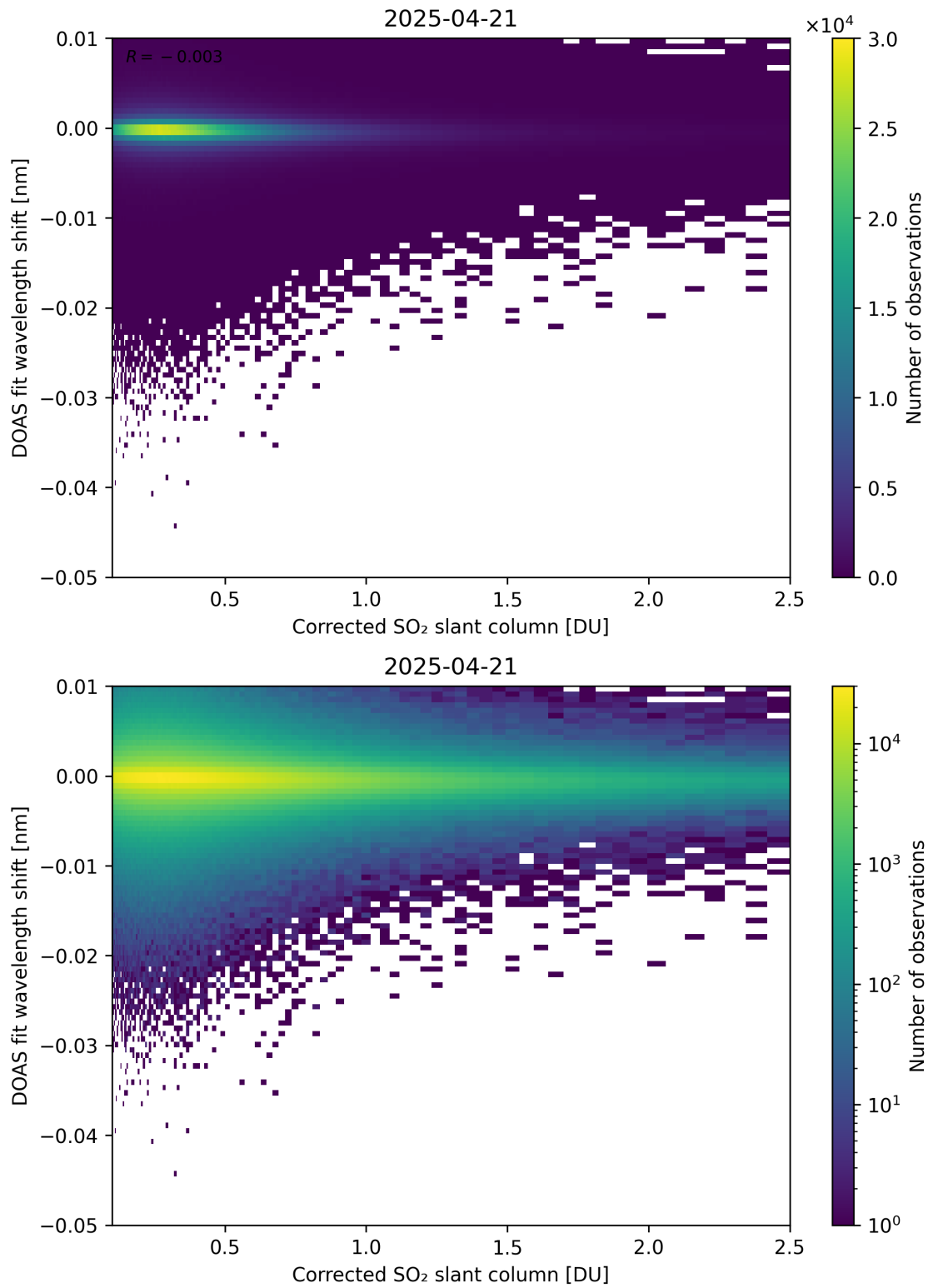


Figure 229: Scatter density plot of “Corrected SO₂ slant column” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

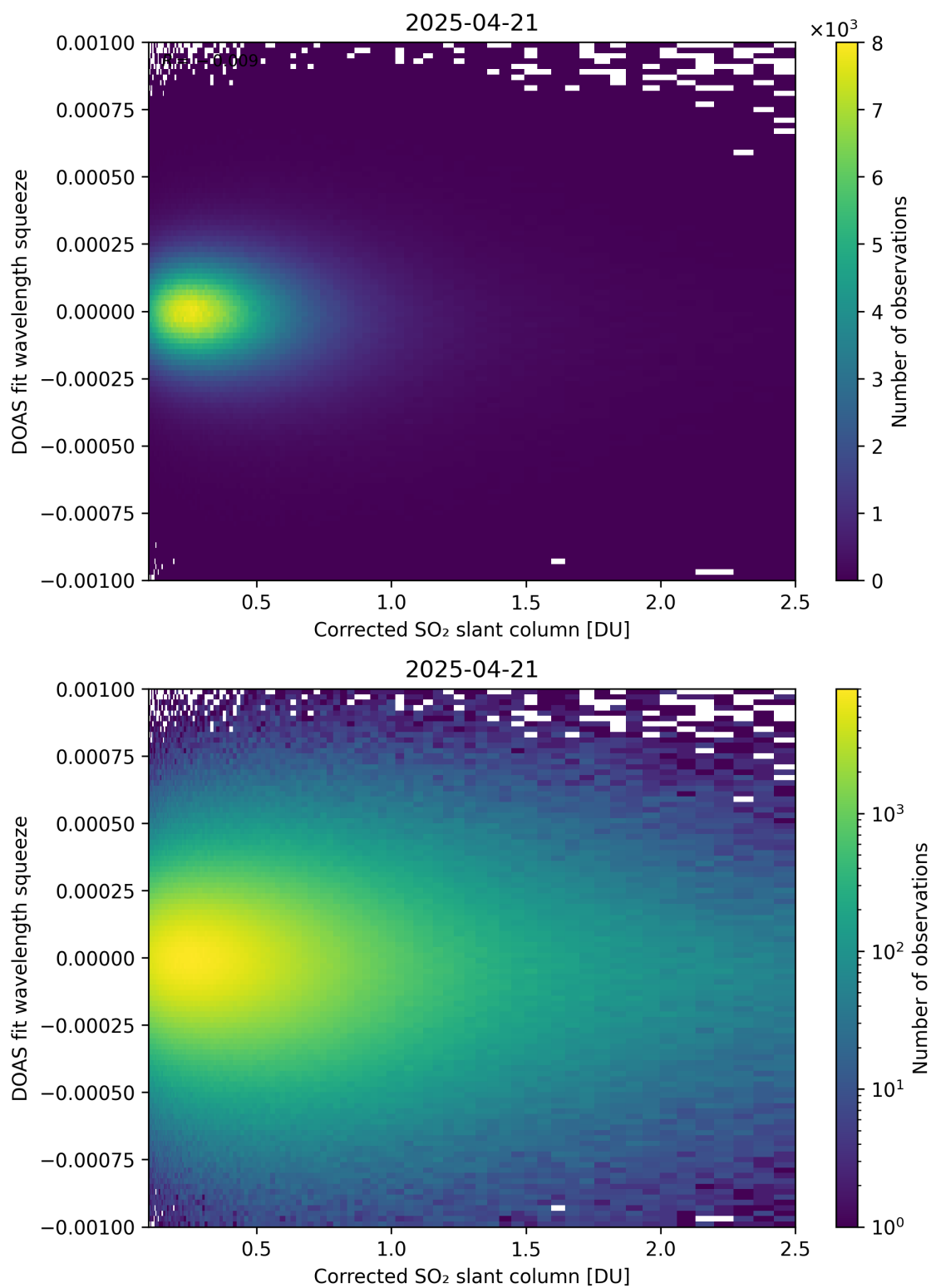


Figure 230: Scatter density plot of “Corrected SO₂ slant column” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

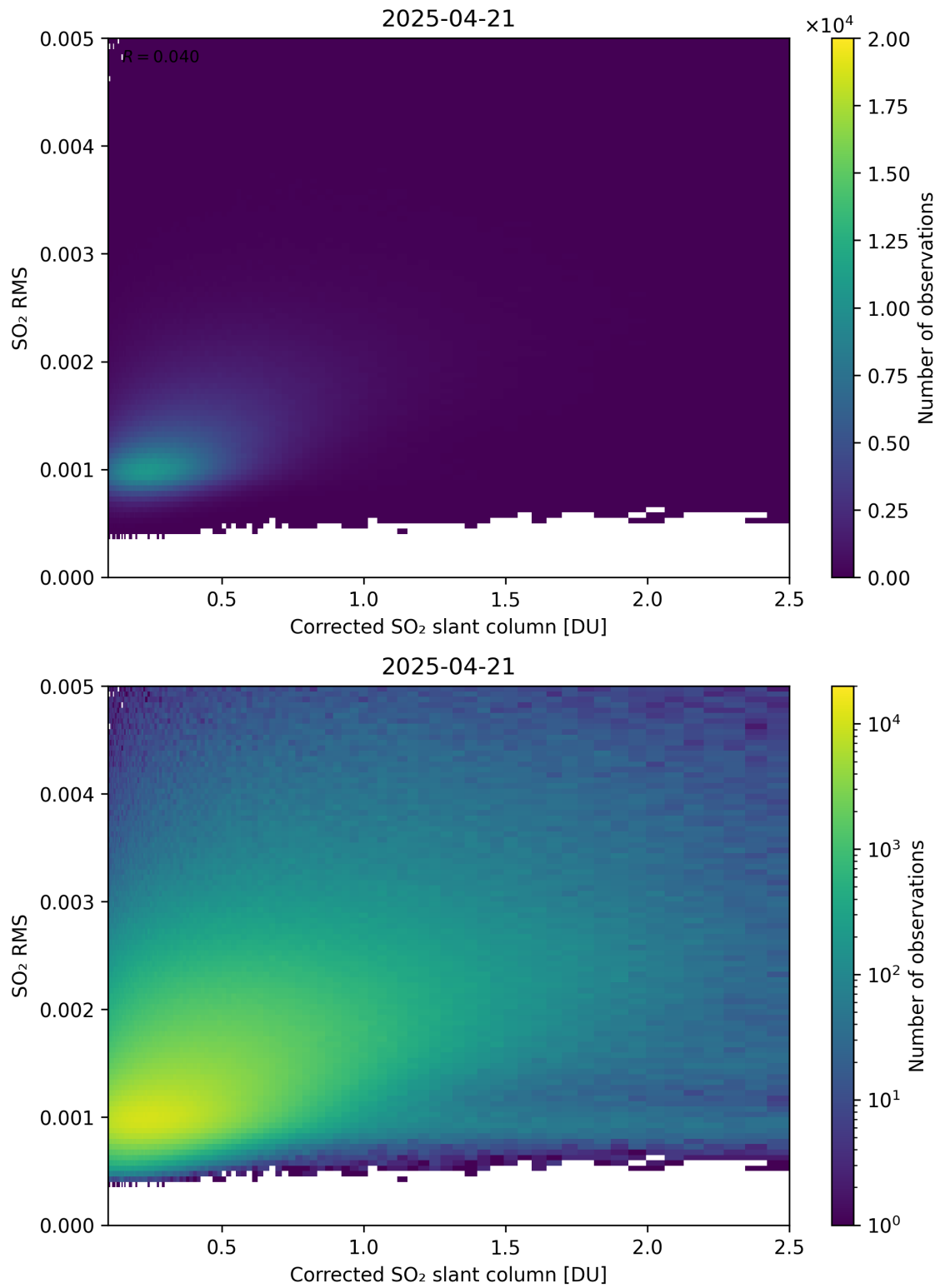


Figure 231: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

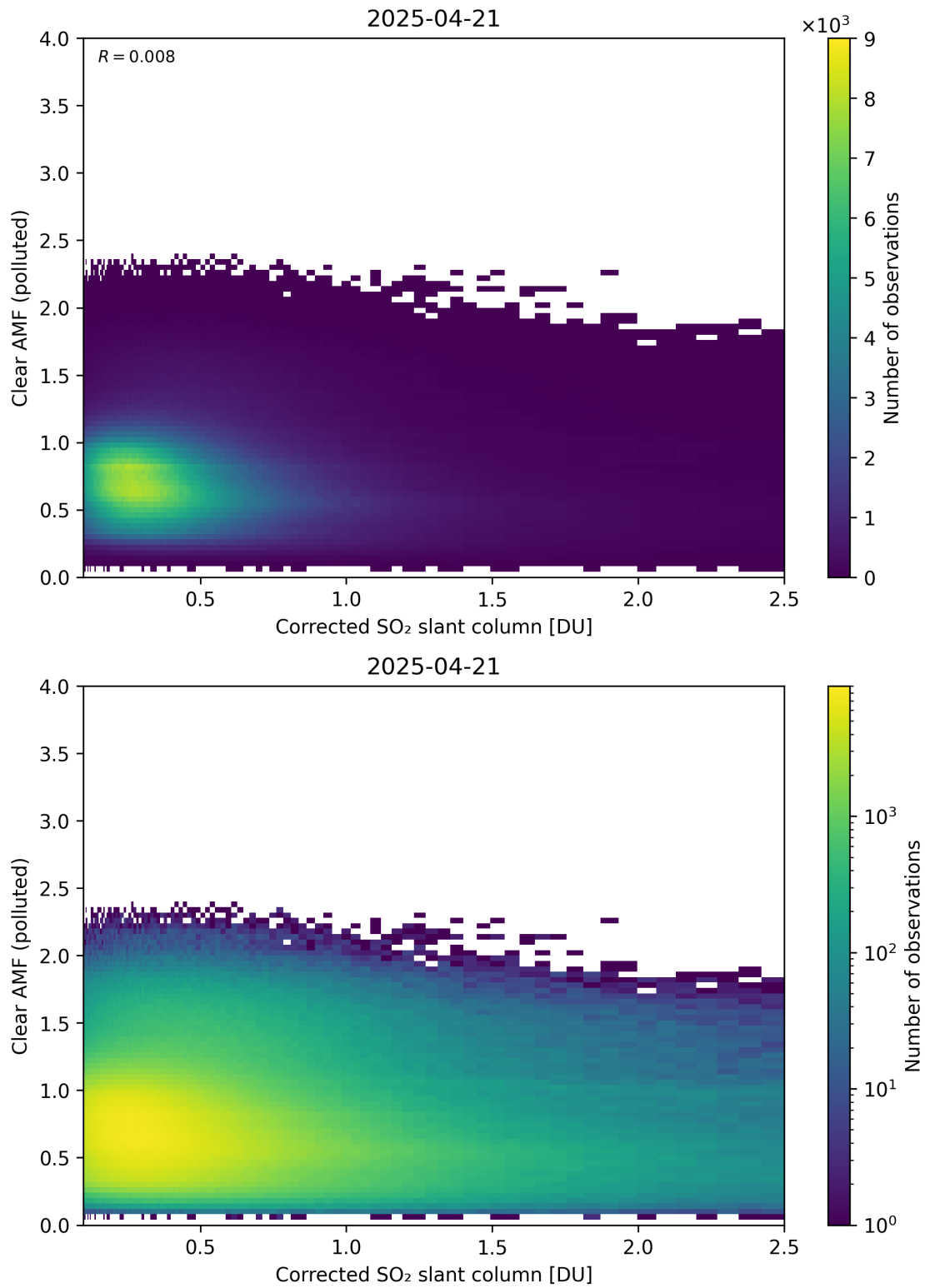


Figure 232: Scatter density plot of “Corrected SO₂ slant column” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

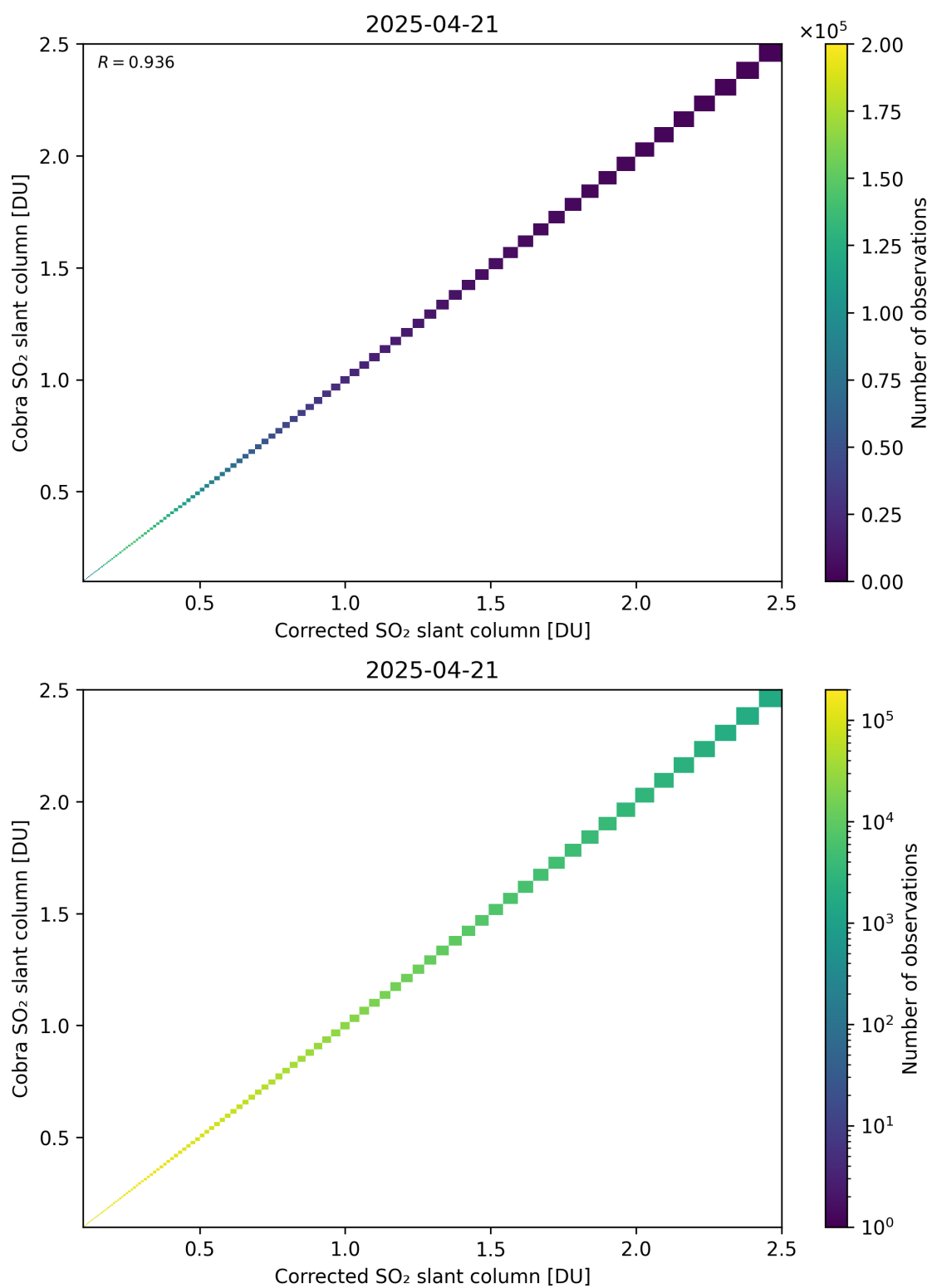


Figure 233: Scatter density plot of “Corrected SO₂ slant column” against “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

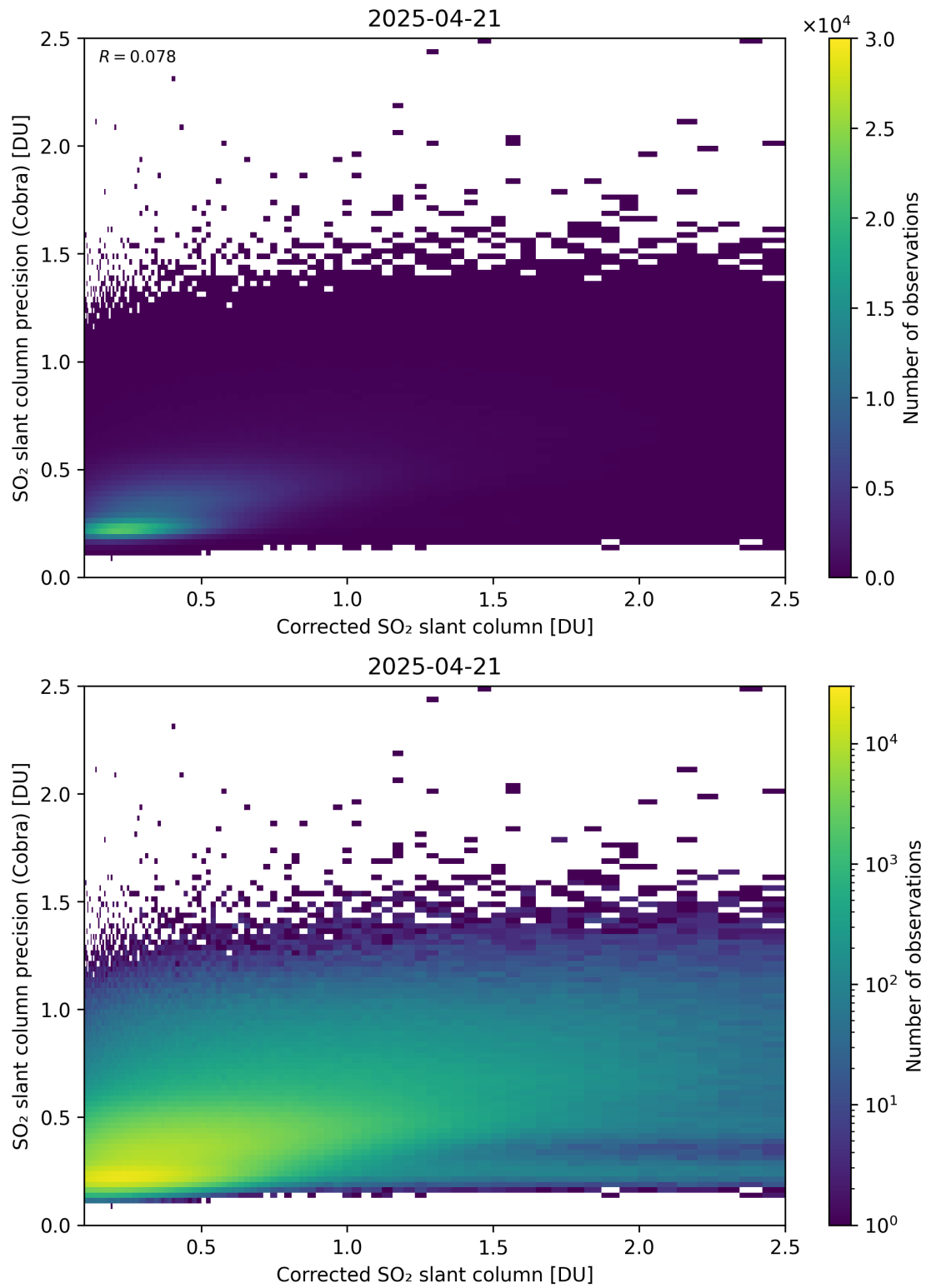


Figure 234: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

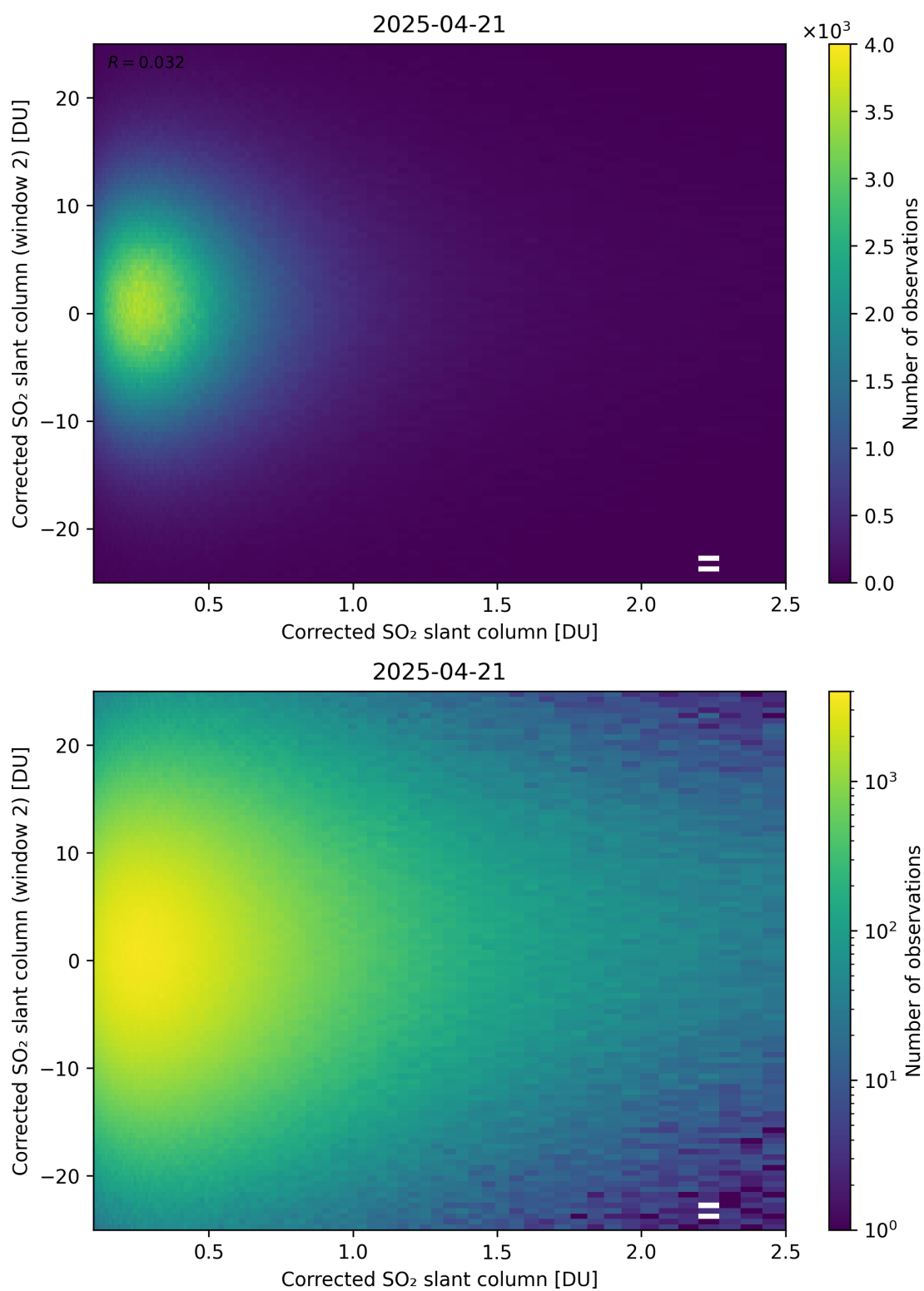


Figure 235: Scatter density plot of “Corrected SO₂ slant column” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

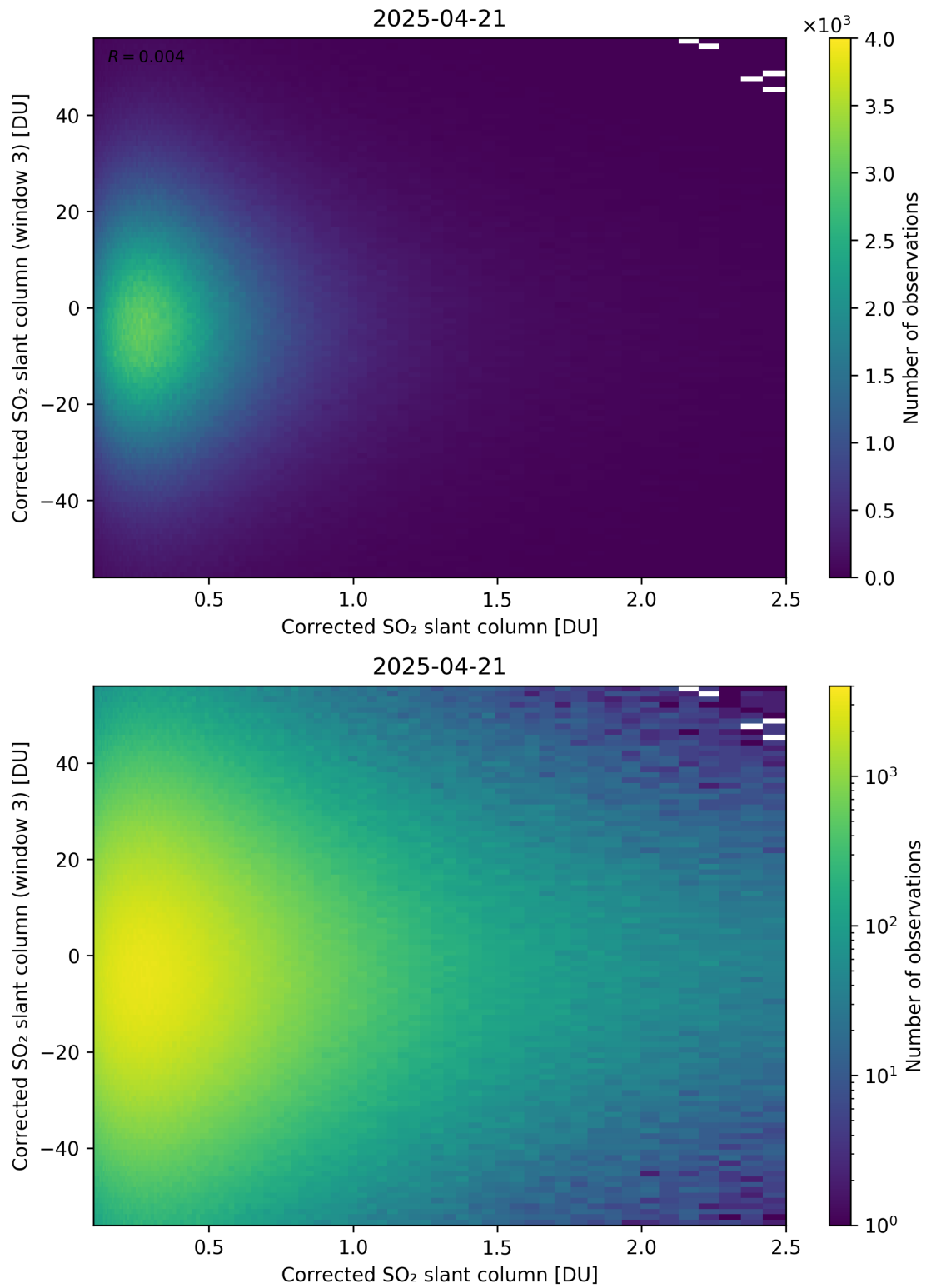


Figure 236: Scatter density plot of “Corrected SO₂ slant column” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

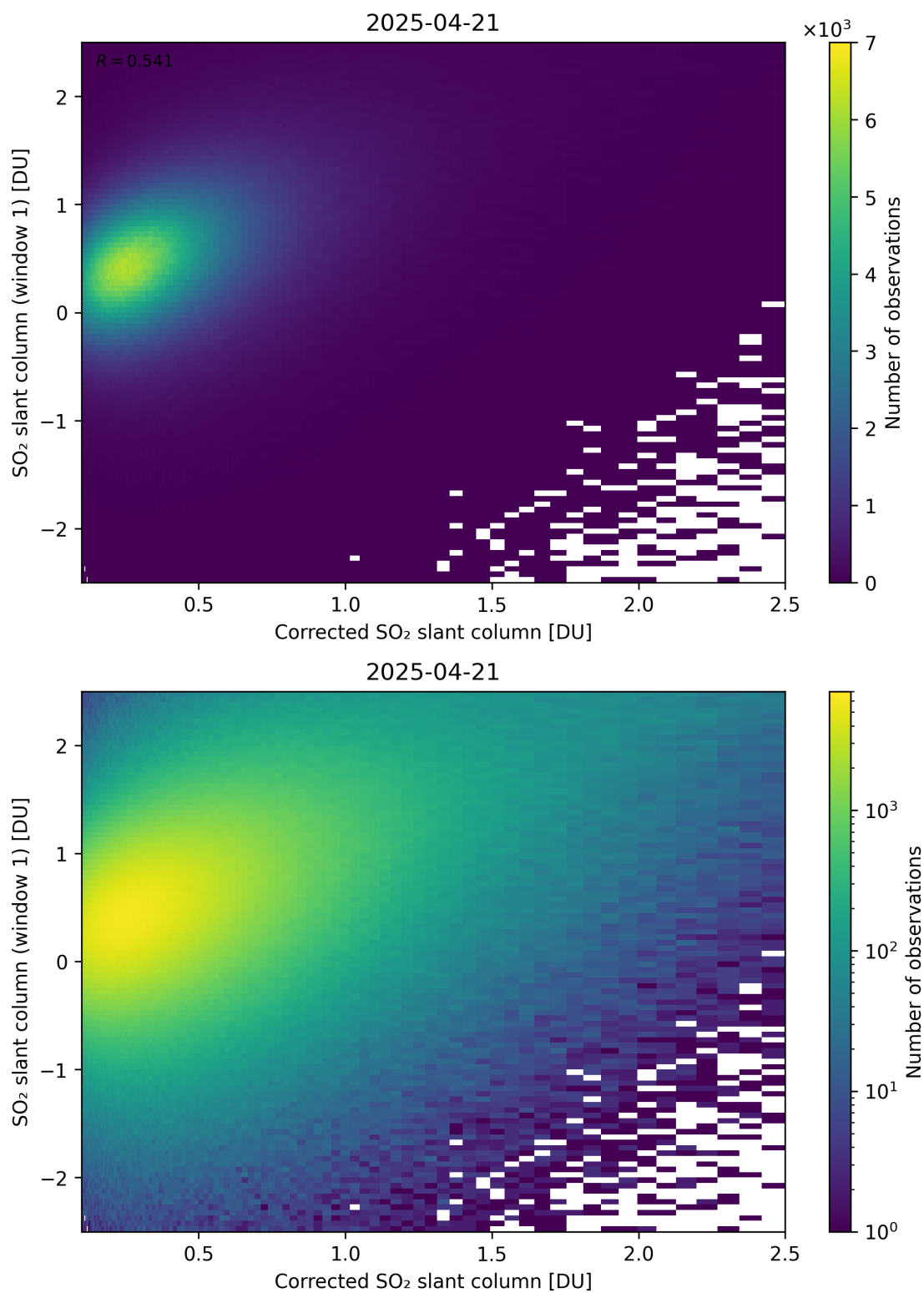


Figure 237: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

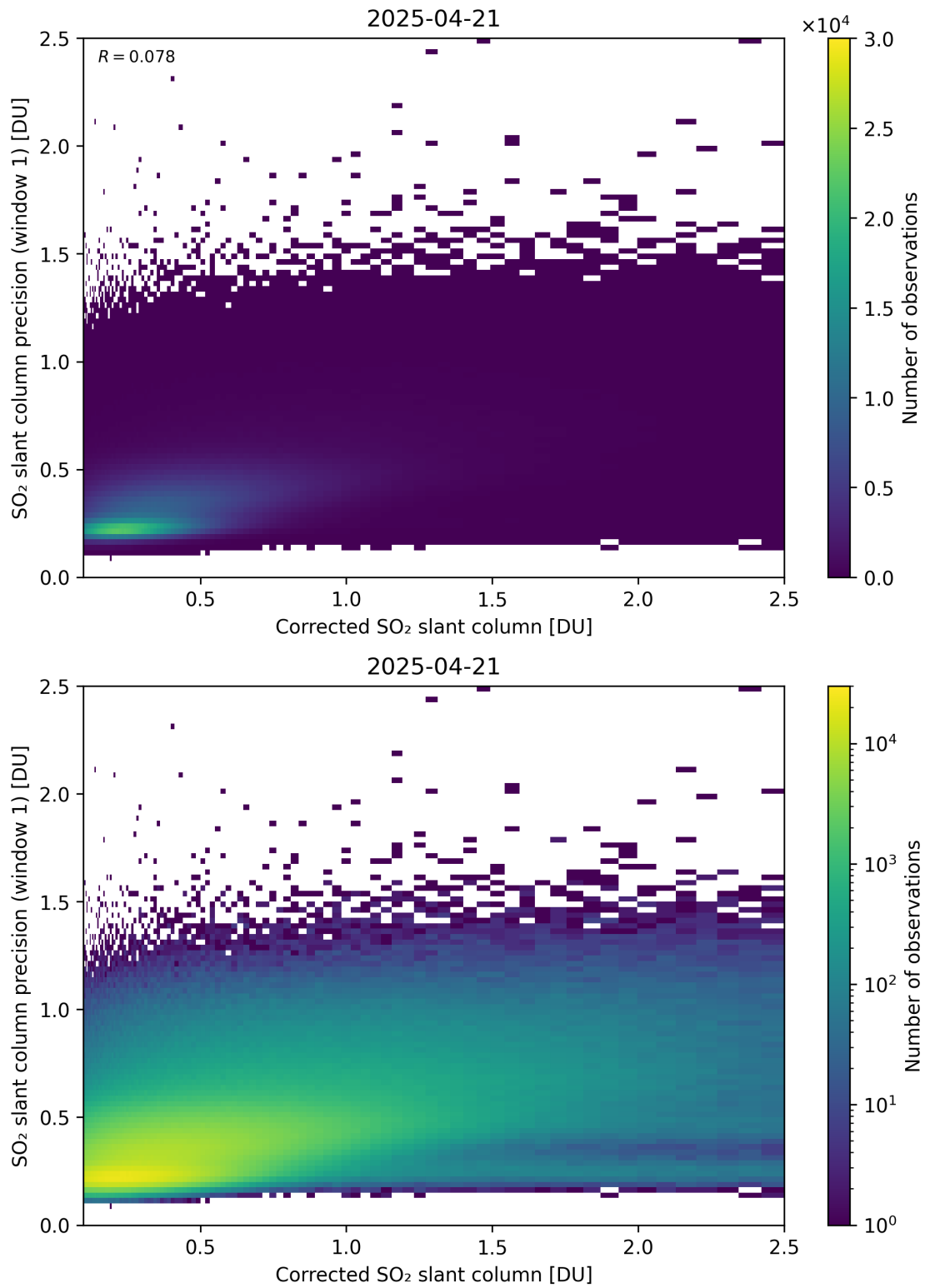


Figure 238: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

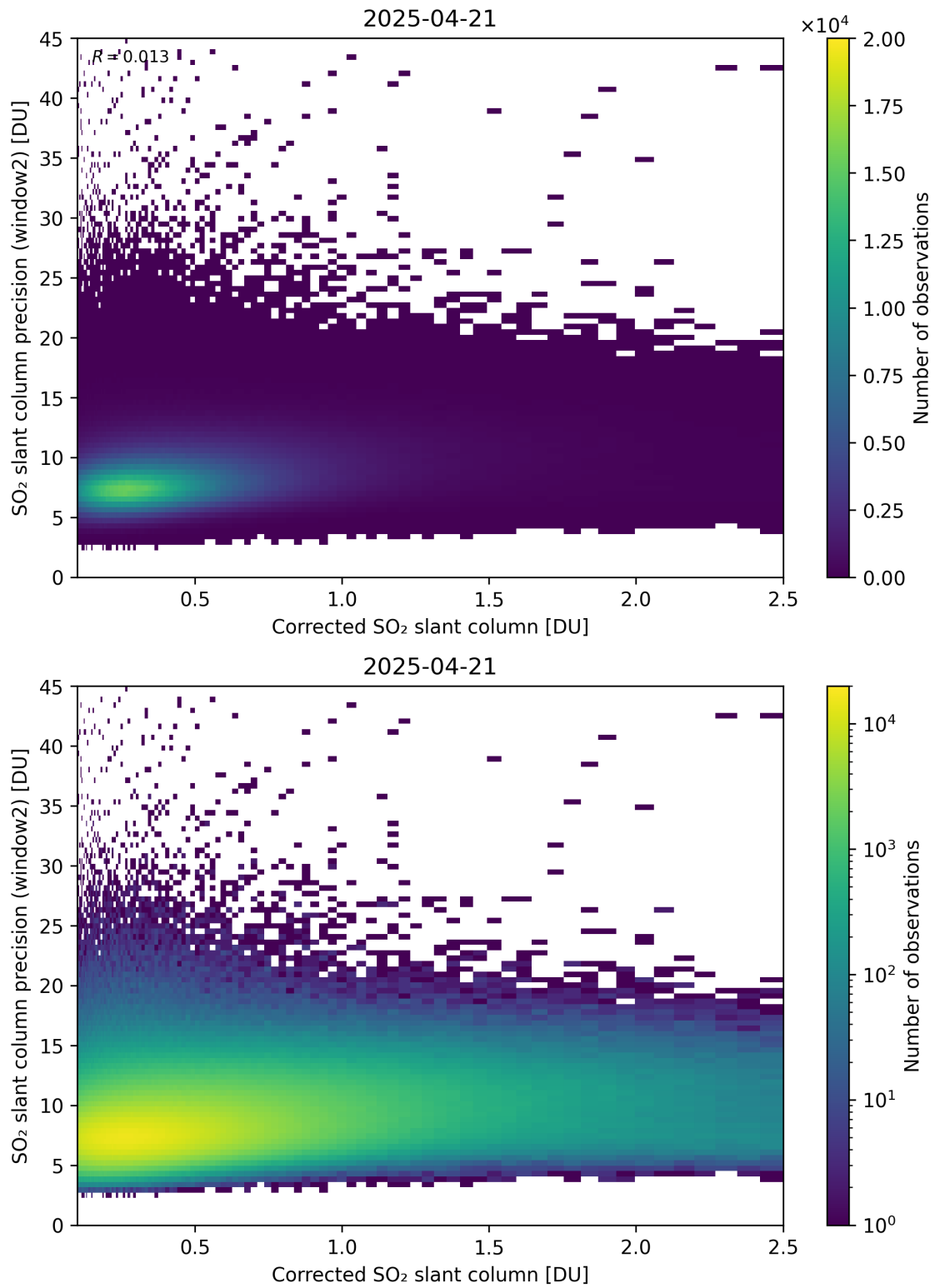


Figure 239: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

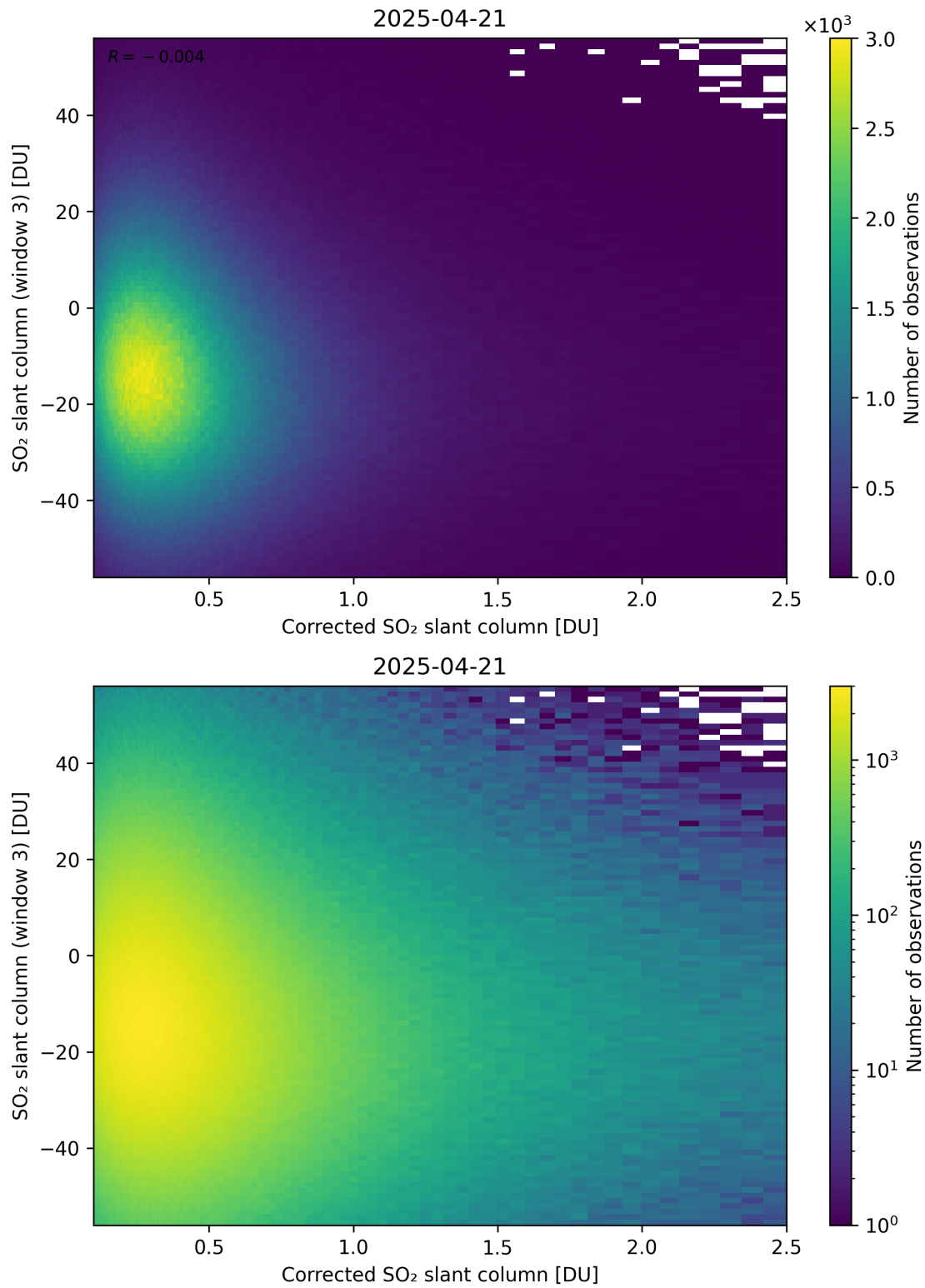


Figure 240: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

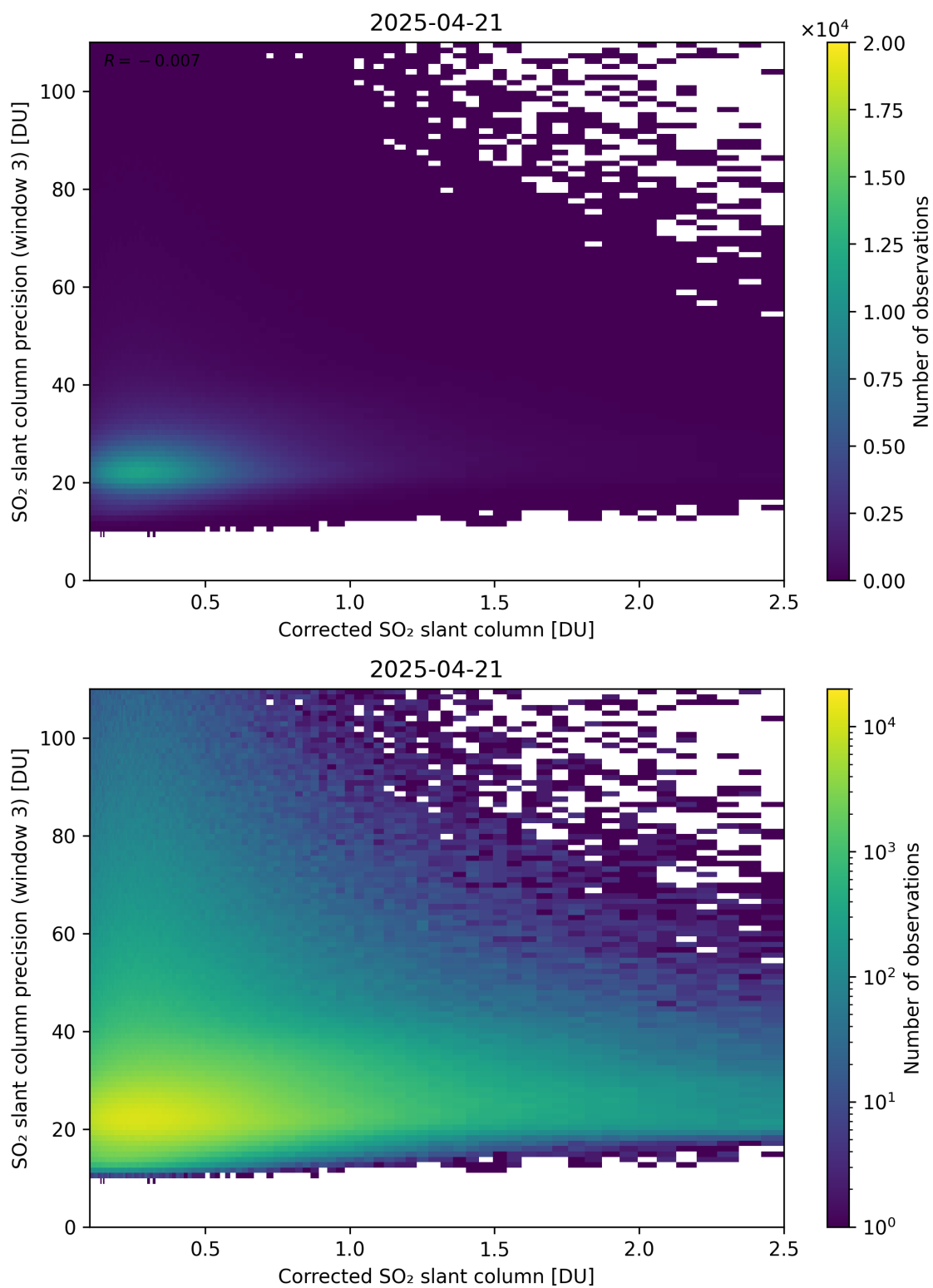


Figure 241: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

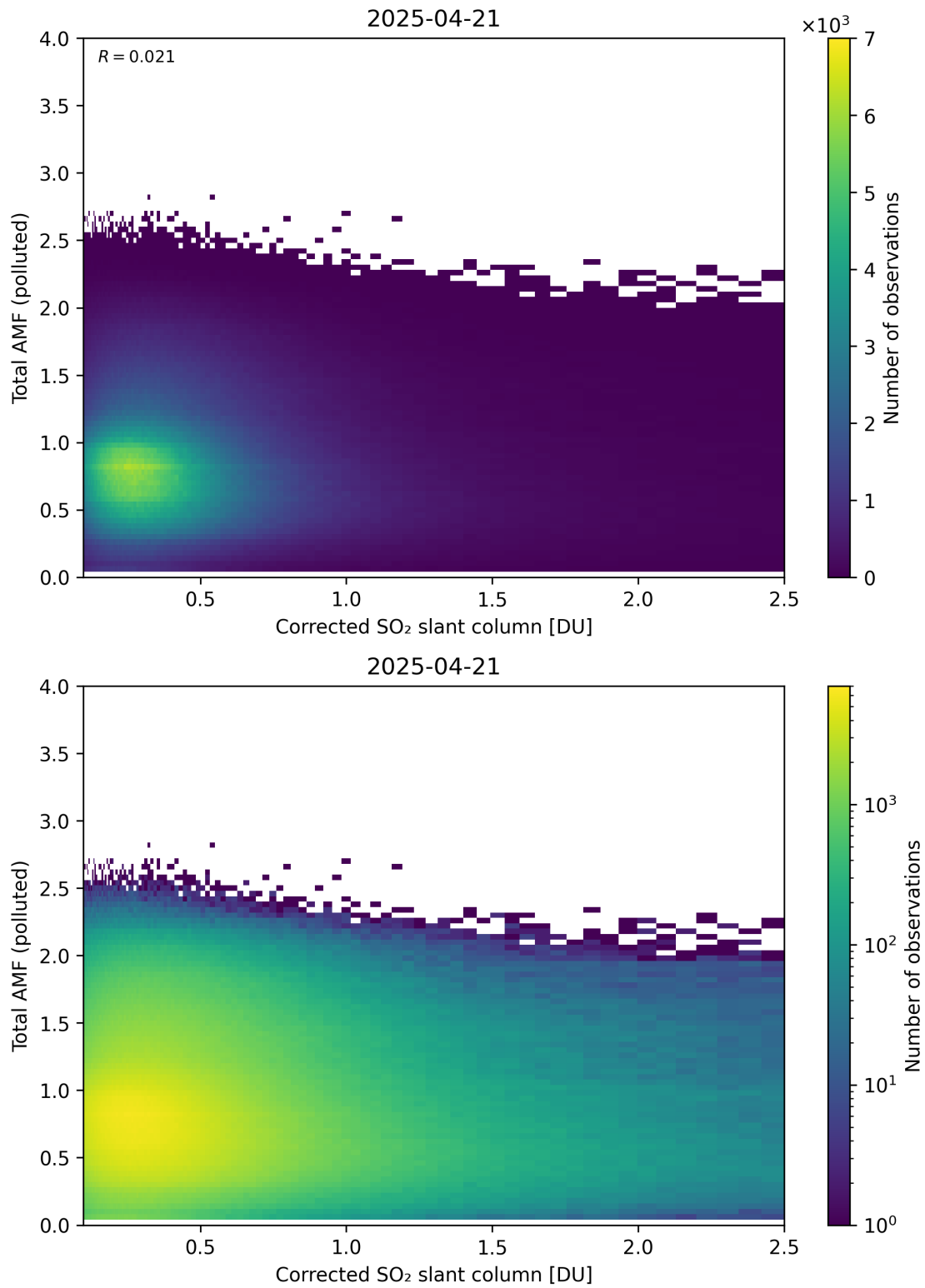


Figure 242: Scatter density plot of “Corrected SO₂ slant column” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

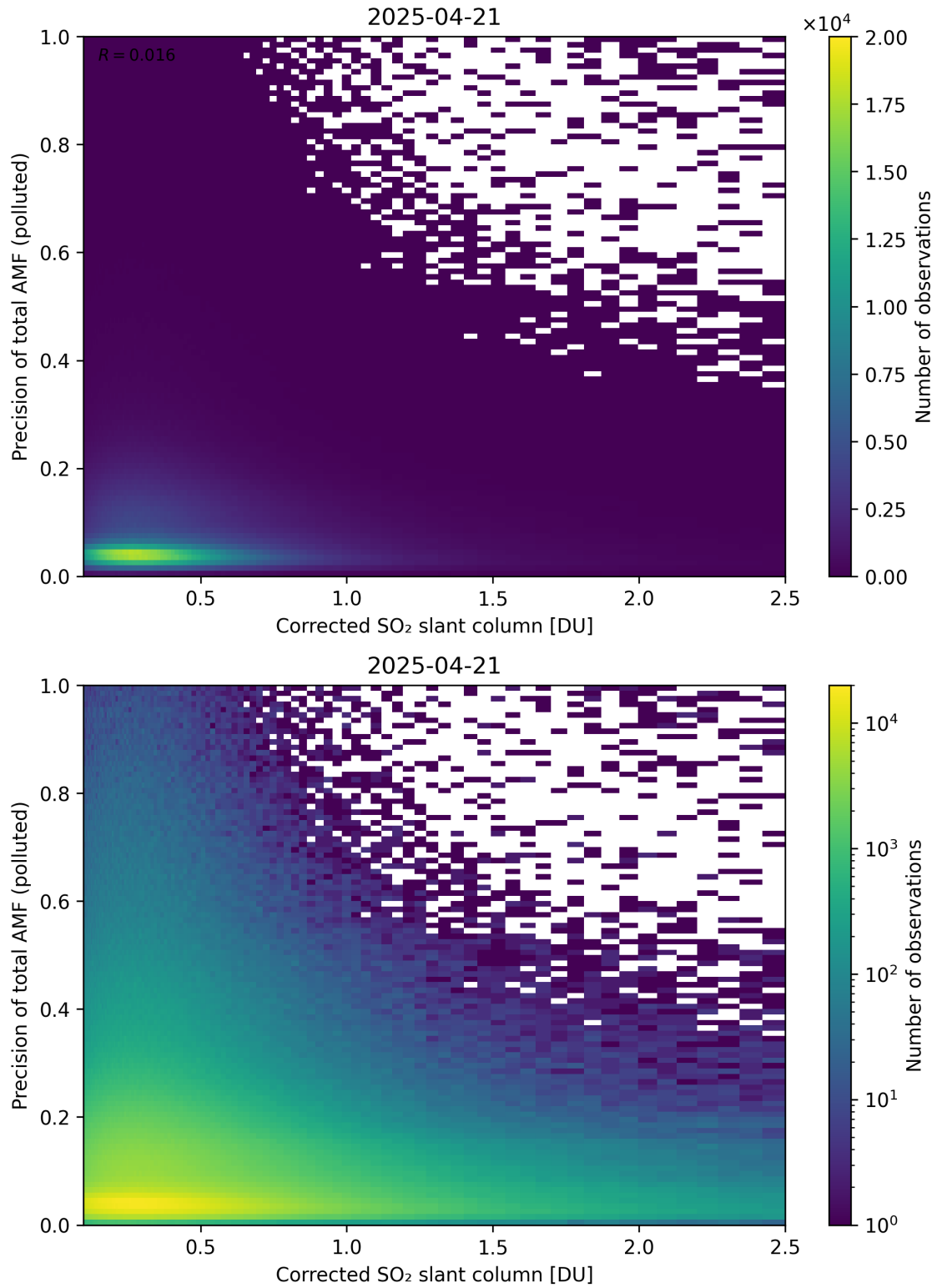


Figure 243: Scatter density plot of “Corrected SO₂ slant column” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

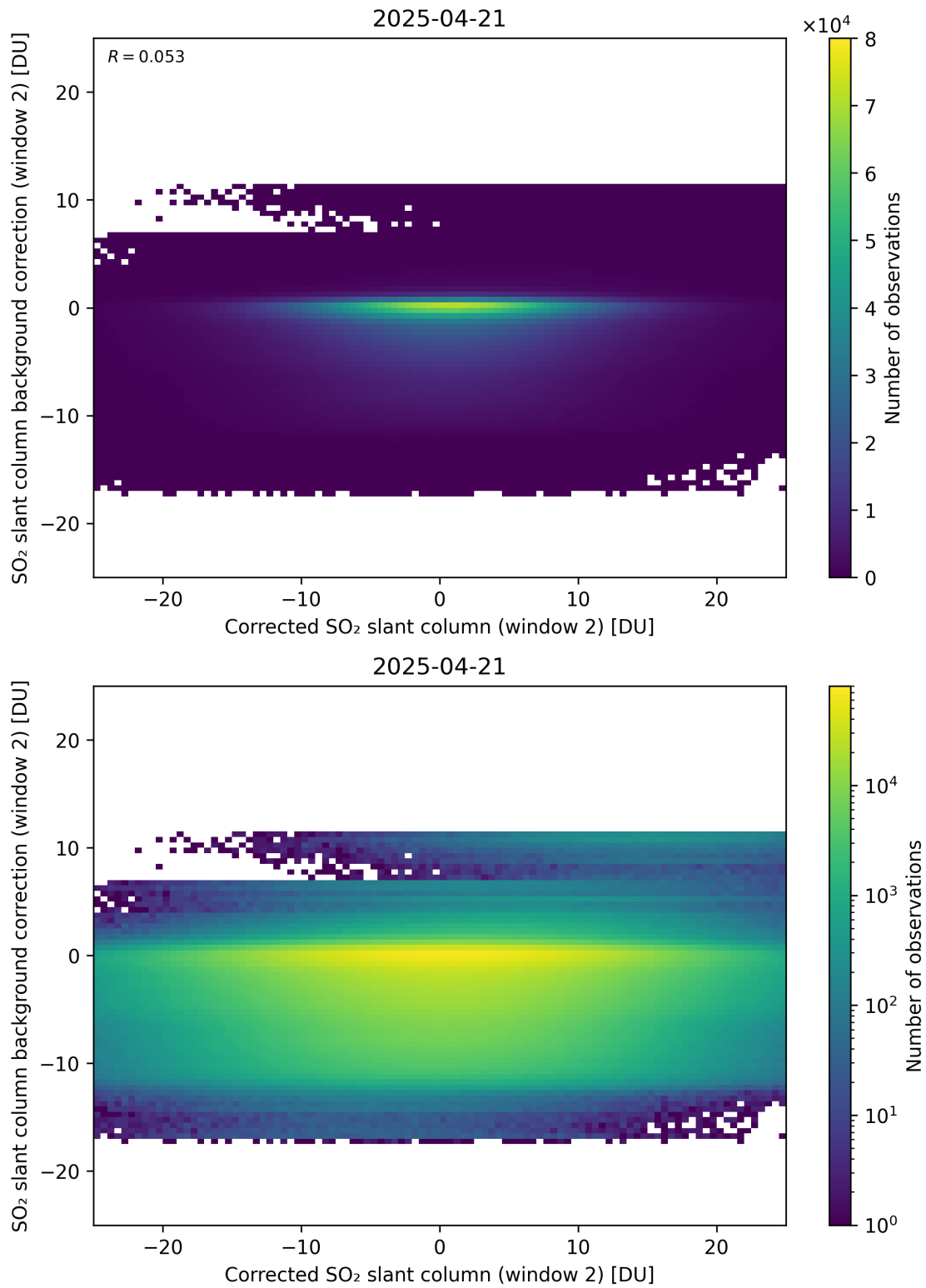


Figure 244: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

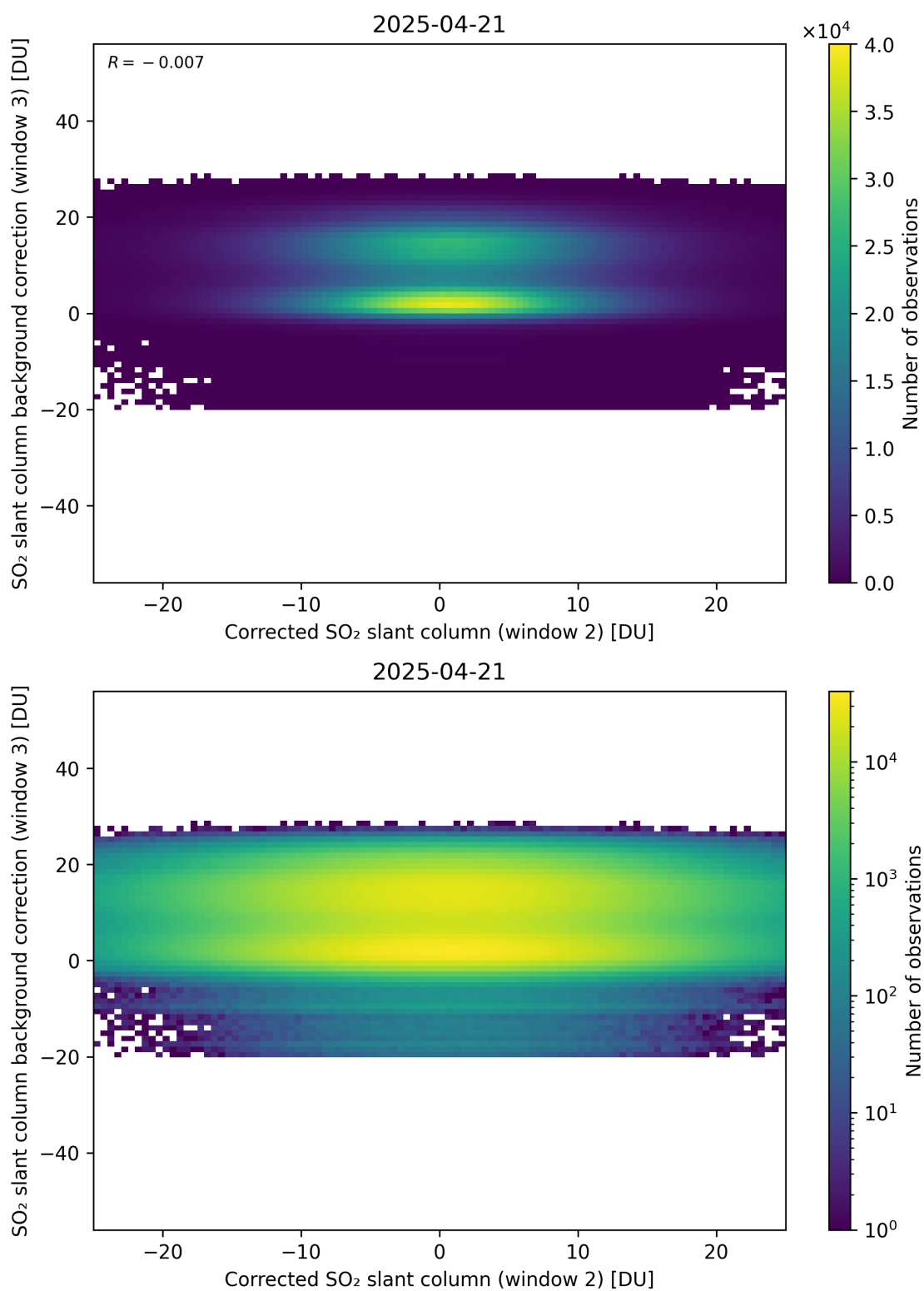


Figure 245: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

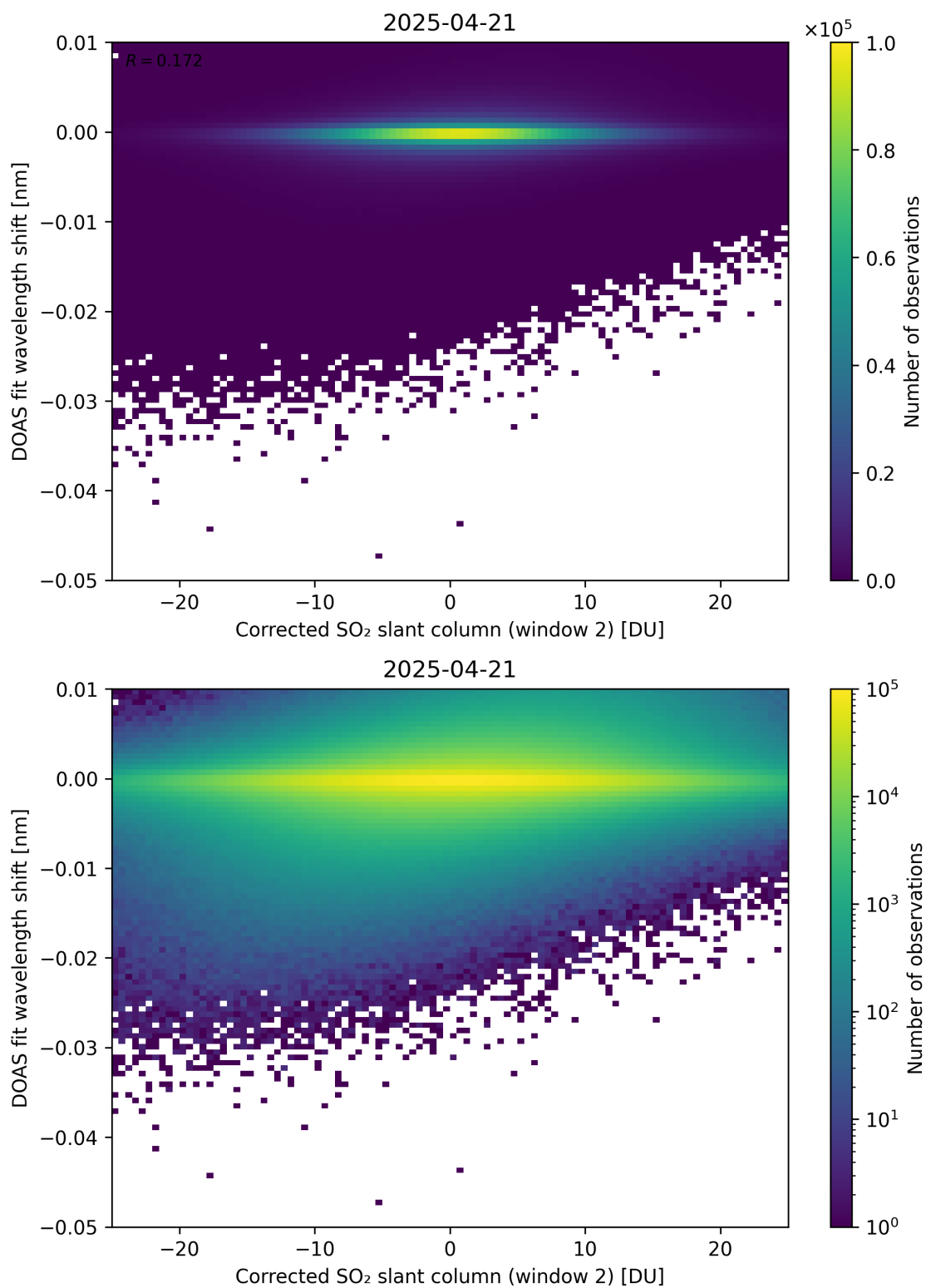


Figure 246: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

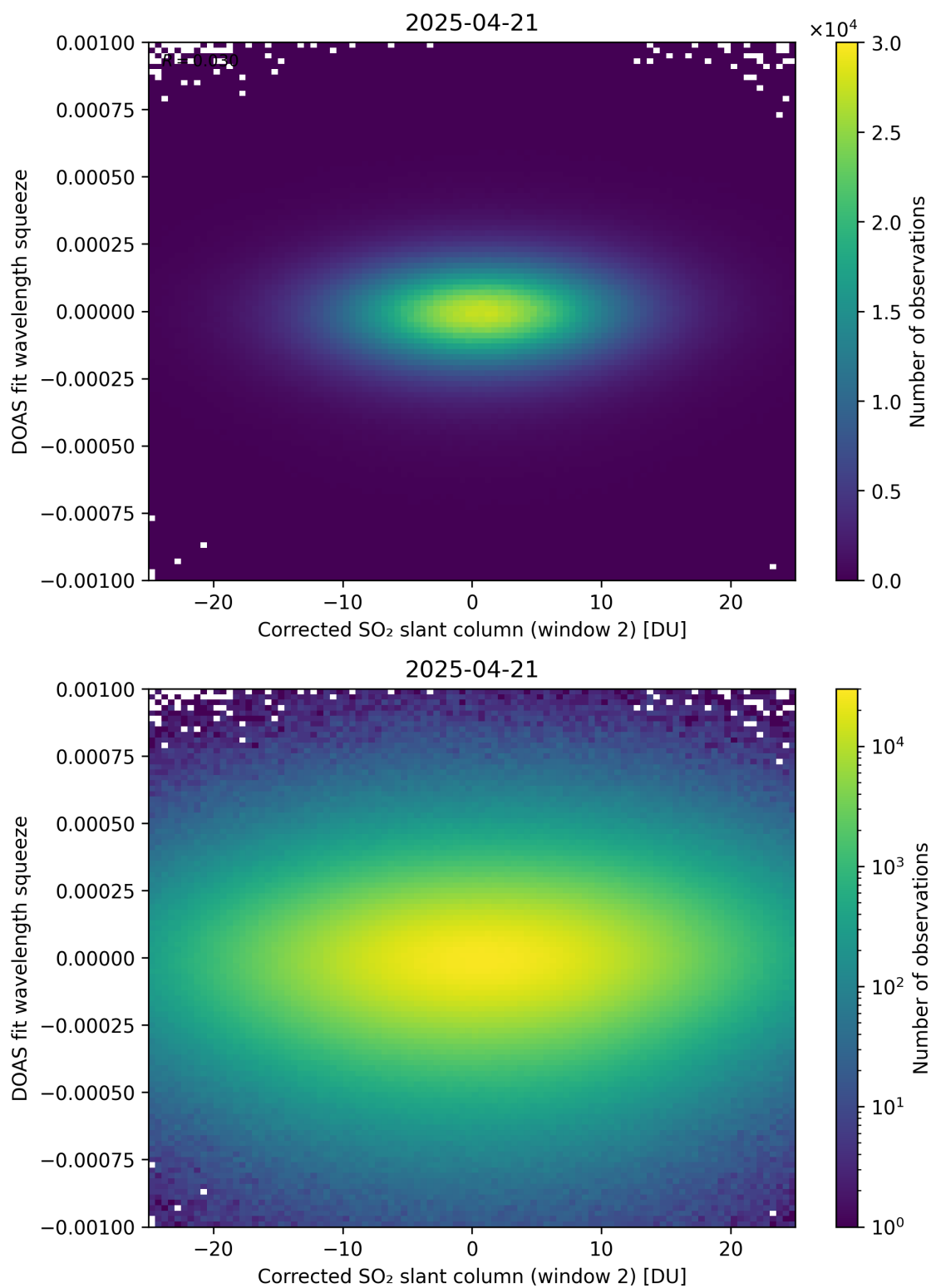


Figure 247: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

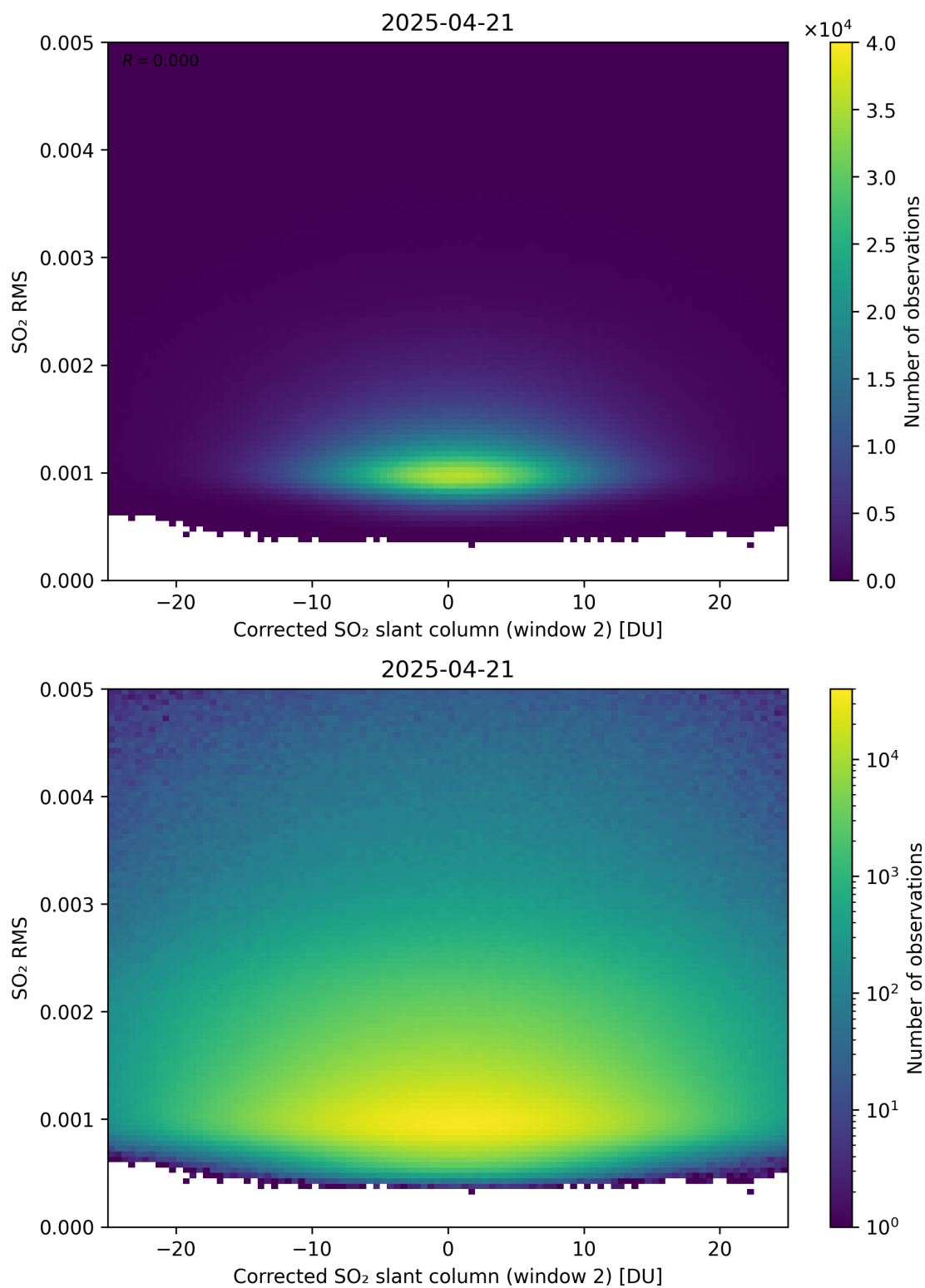


Figure 248: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

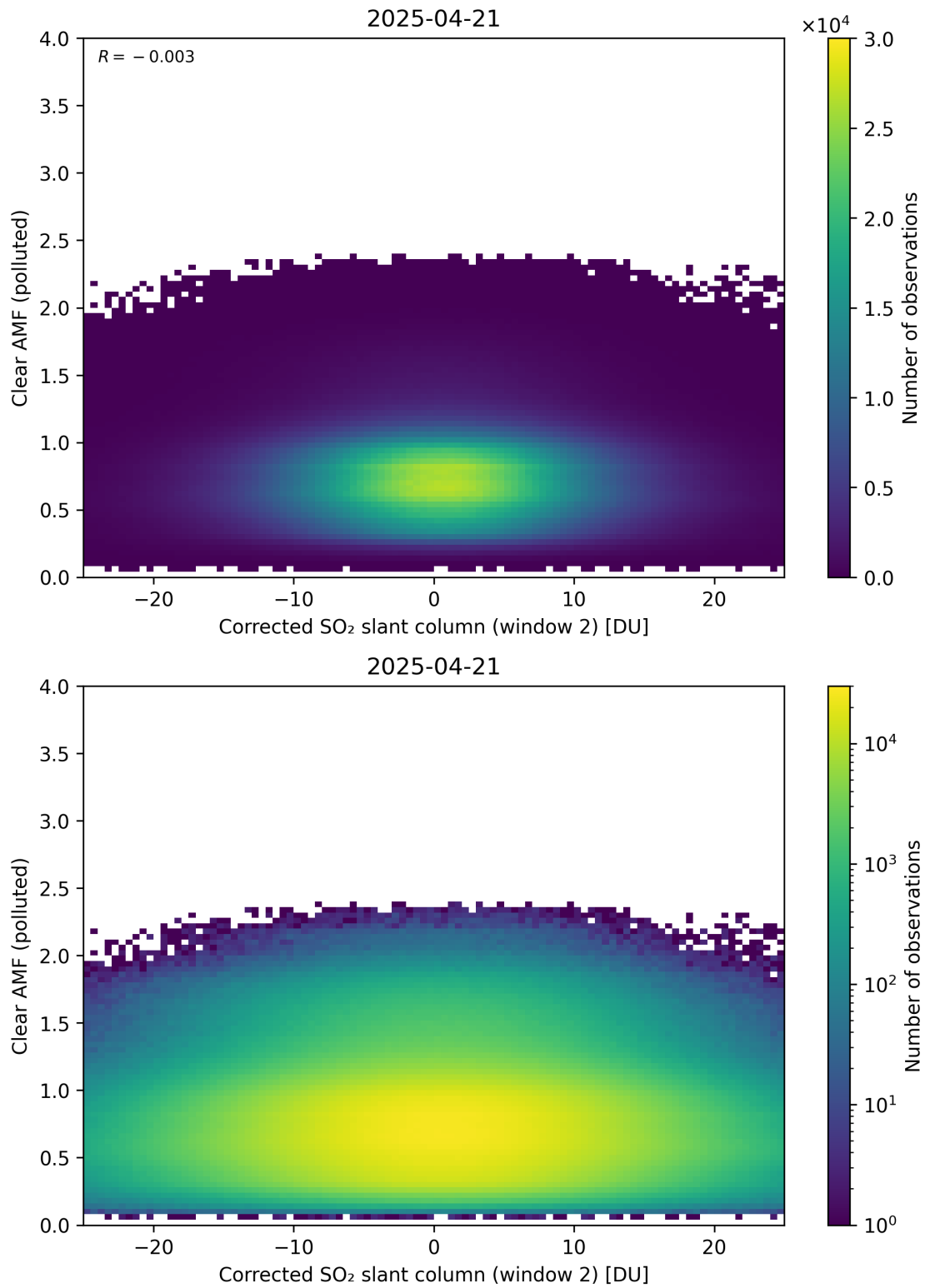


Figure 249: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

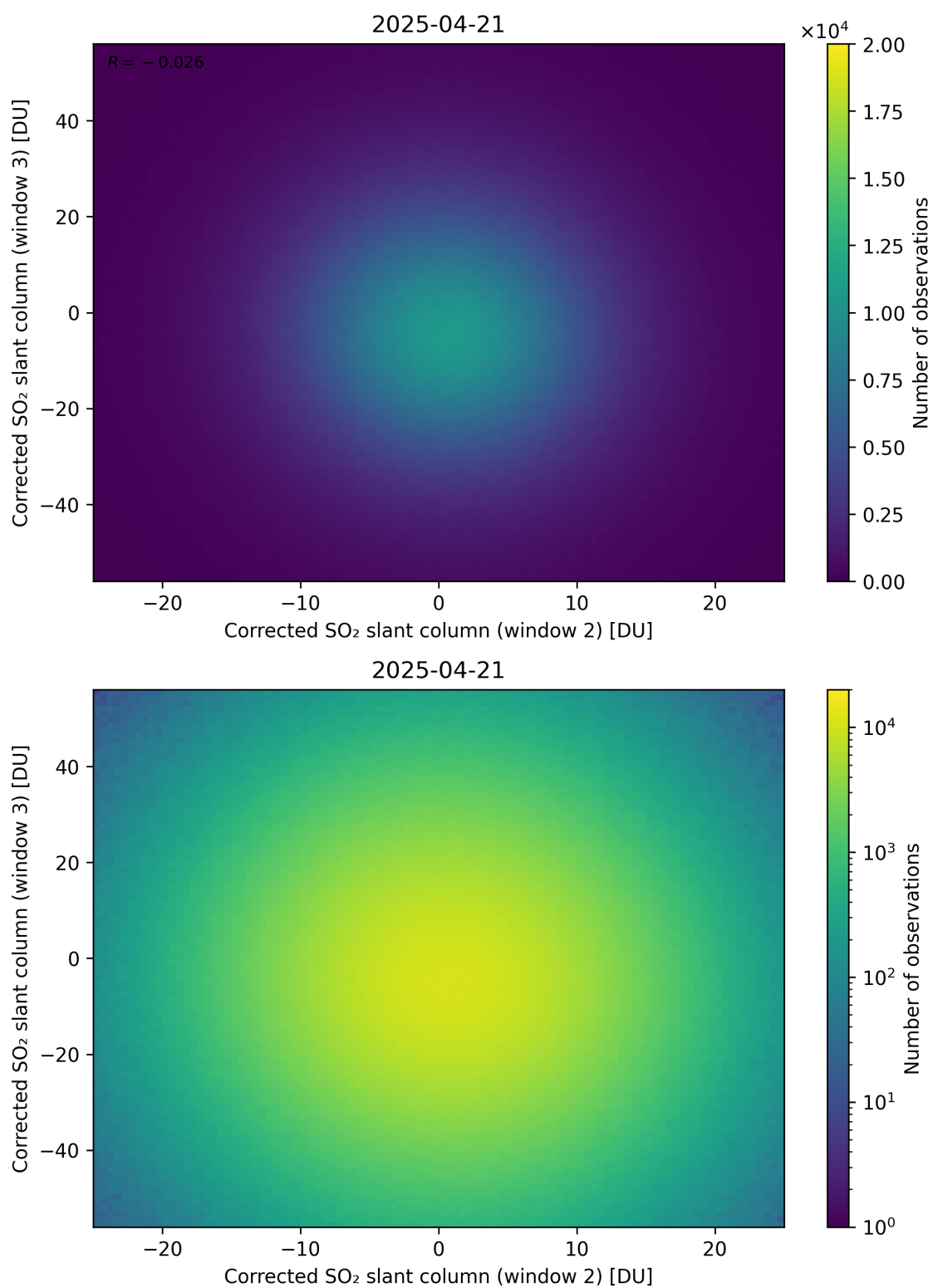


Figure 250: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

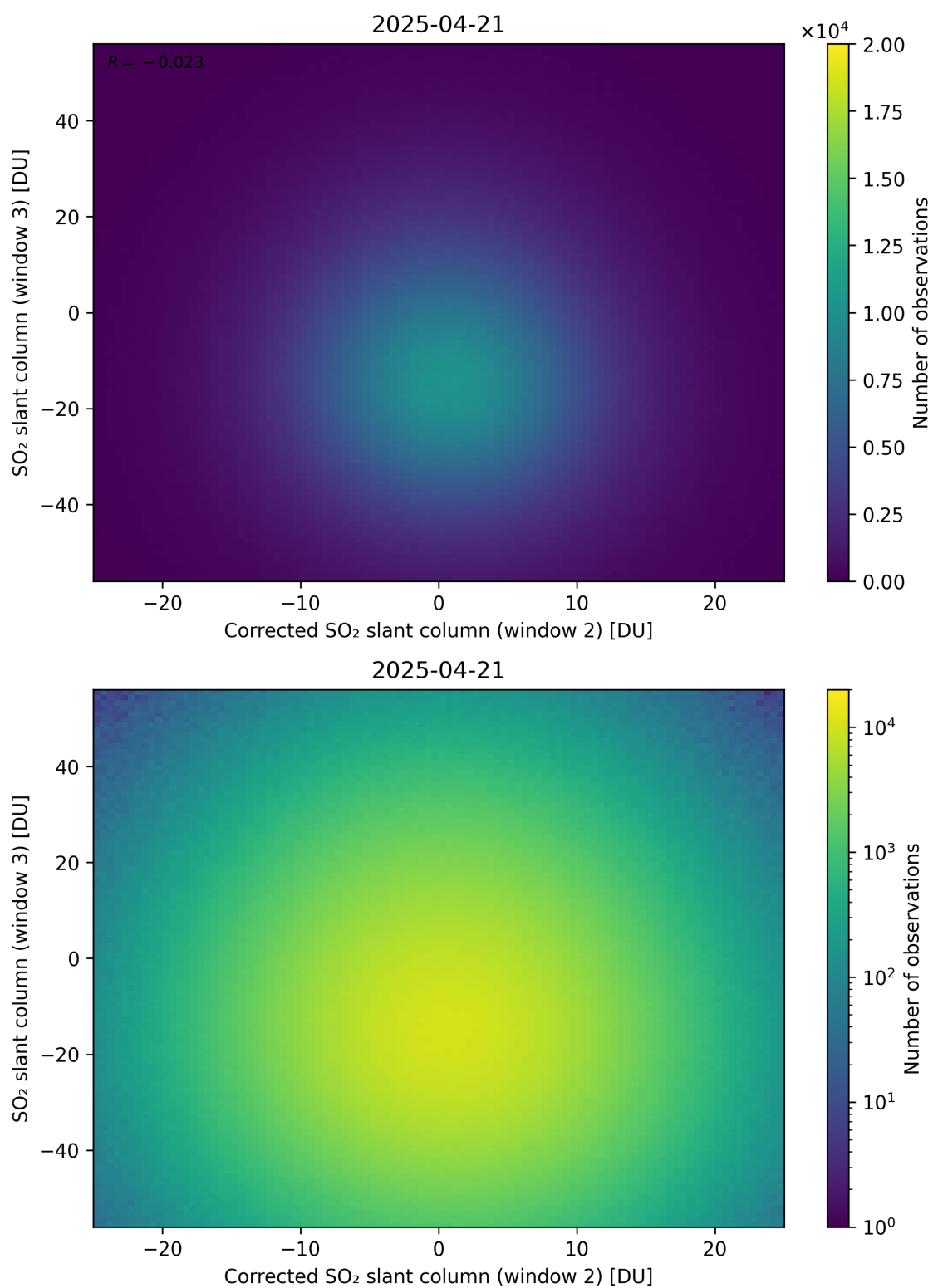


Figure 251: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

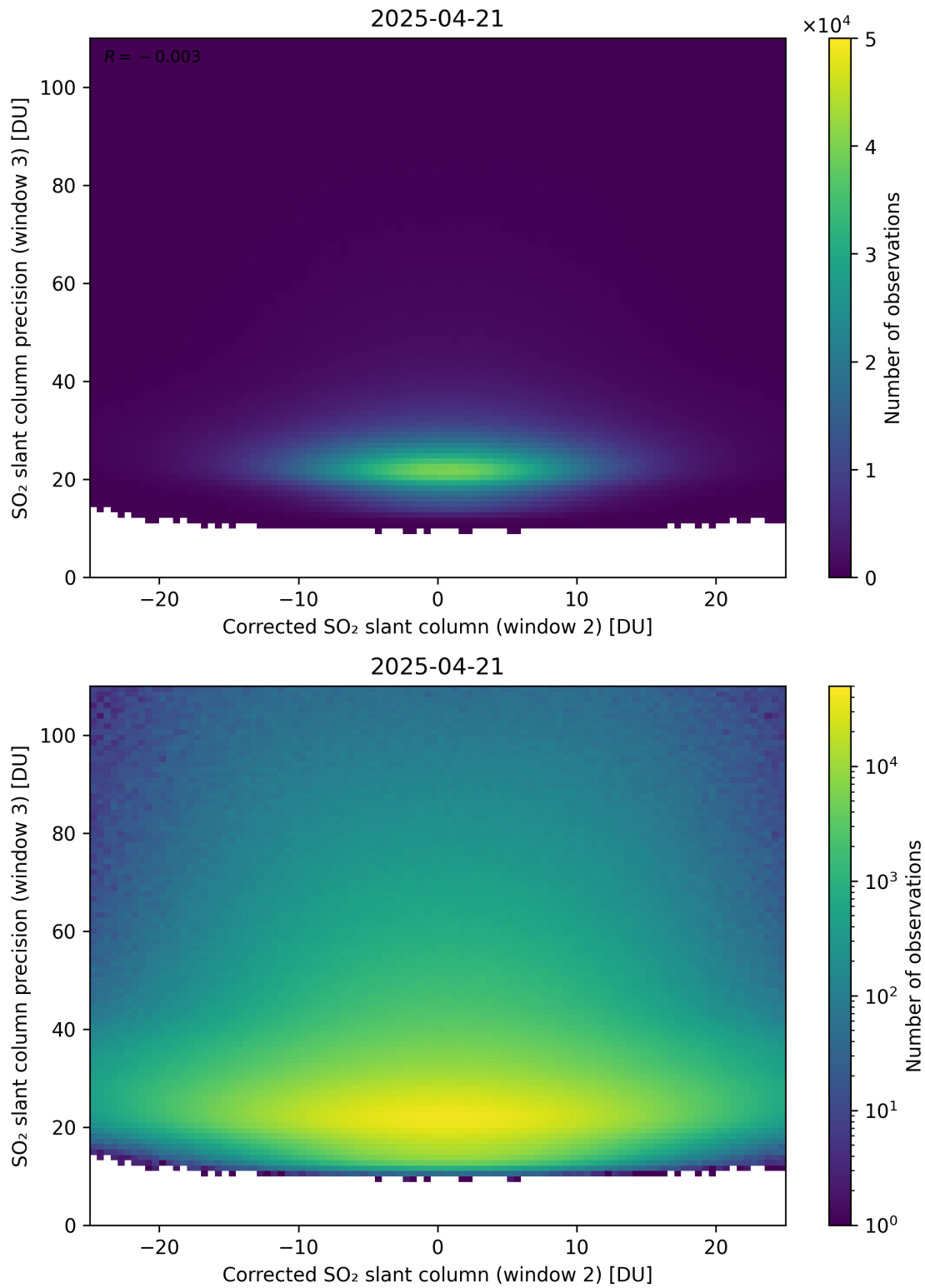


Figure 252: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

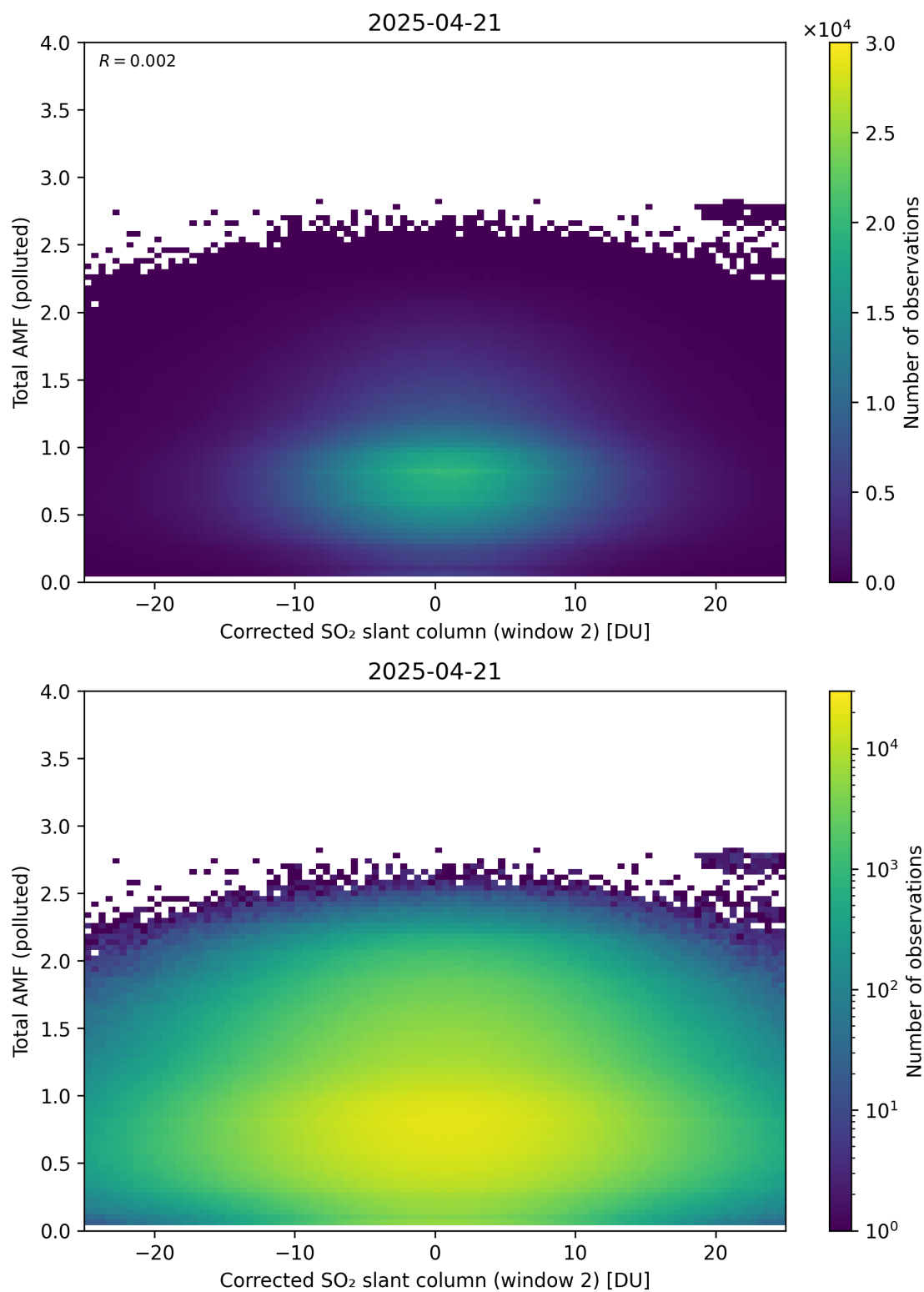


Figure 253: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

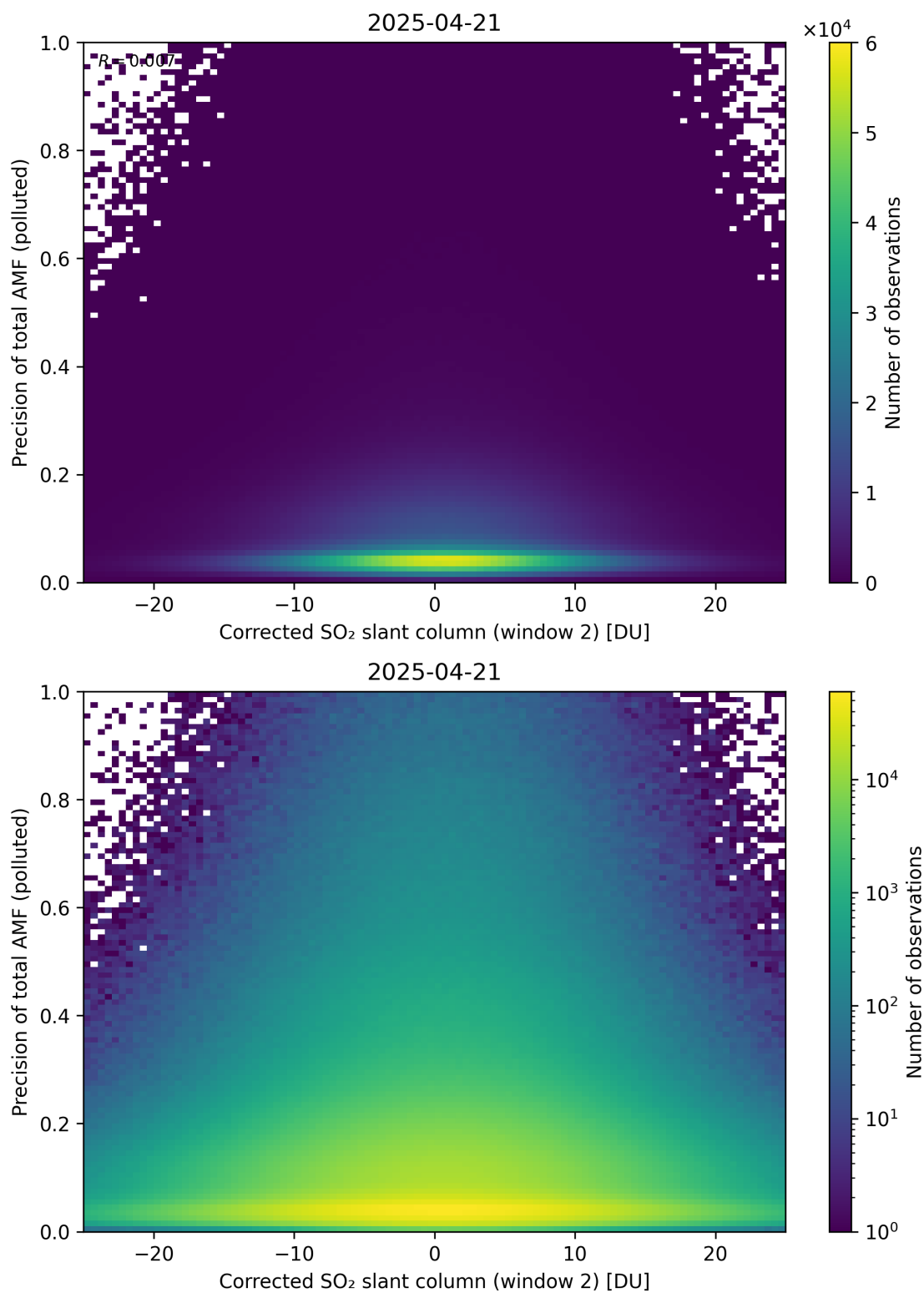


Figure 254: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

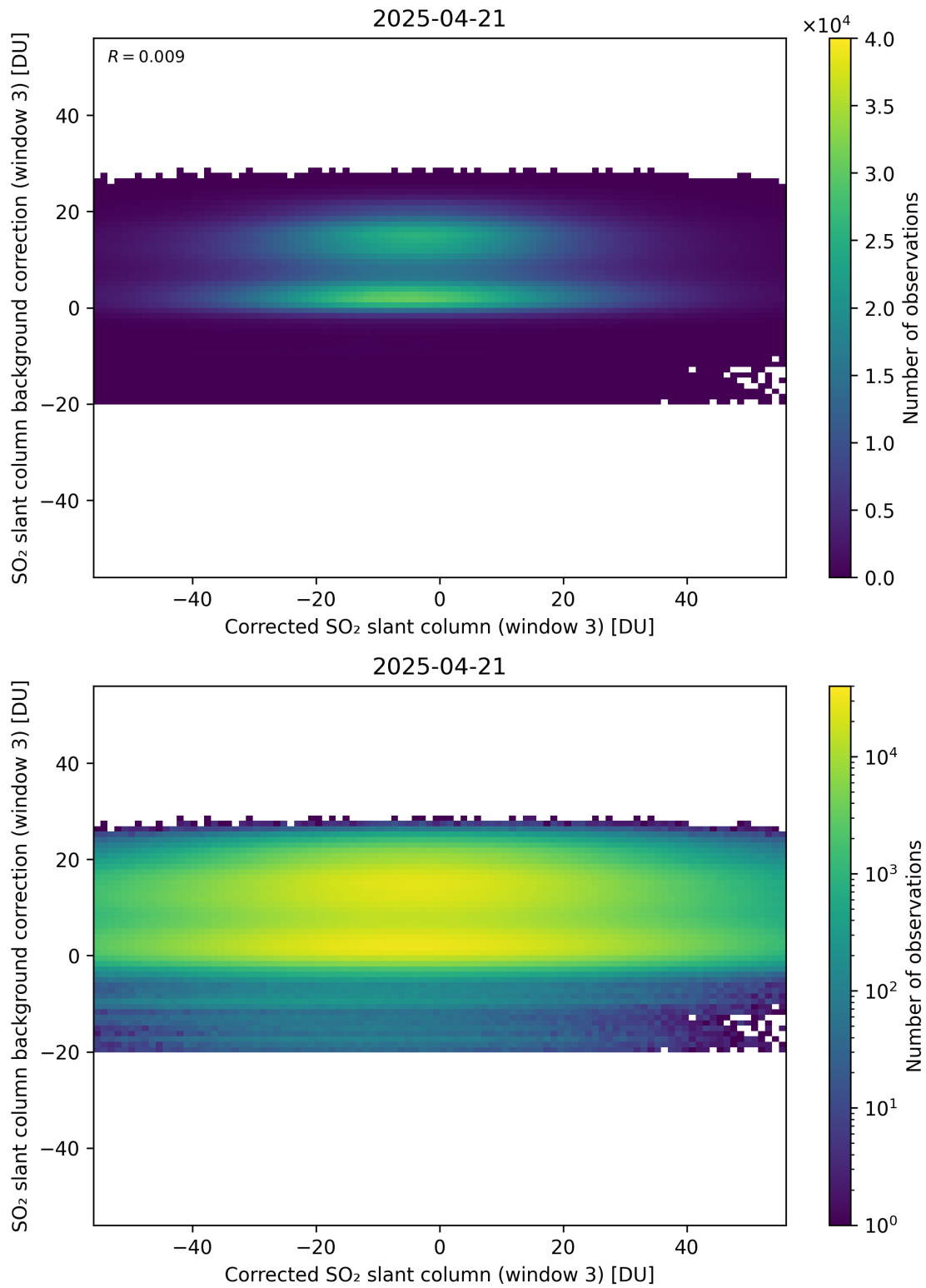


Figure 255: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

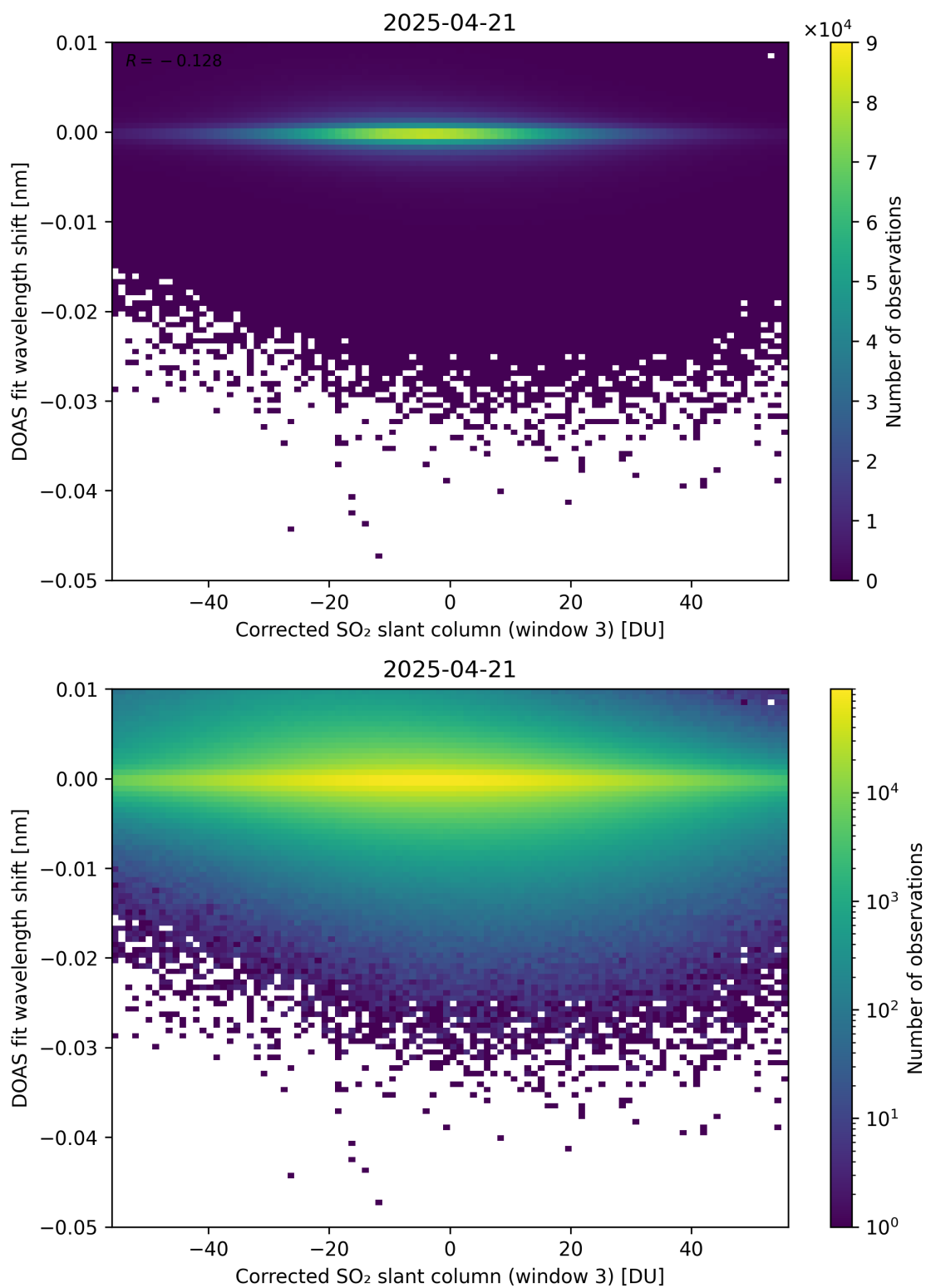


Figure 256: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

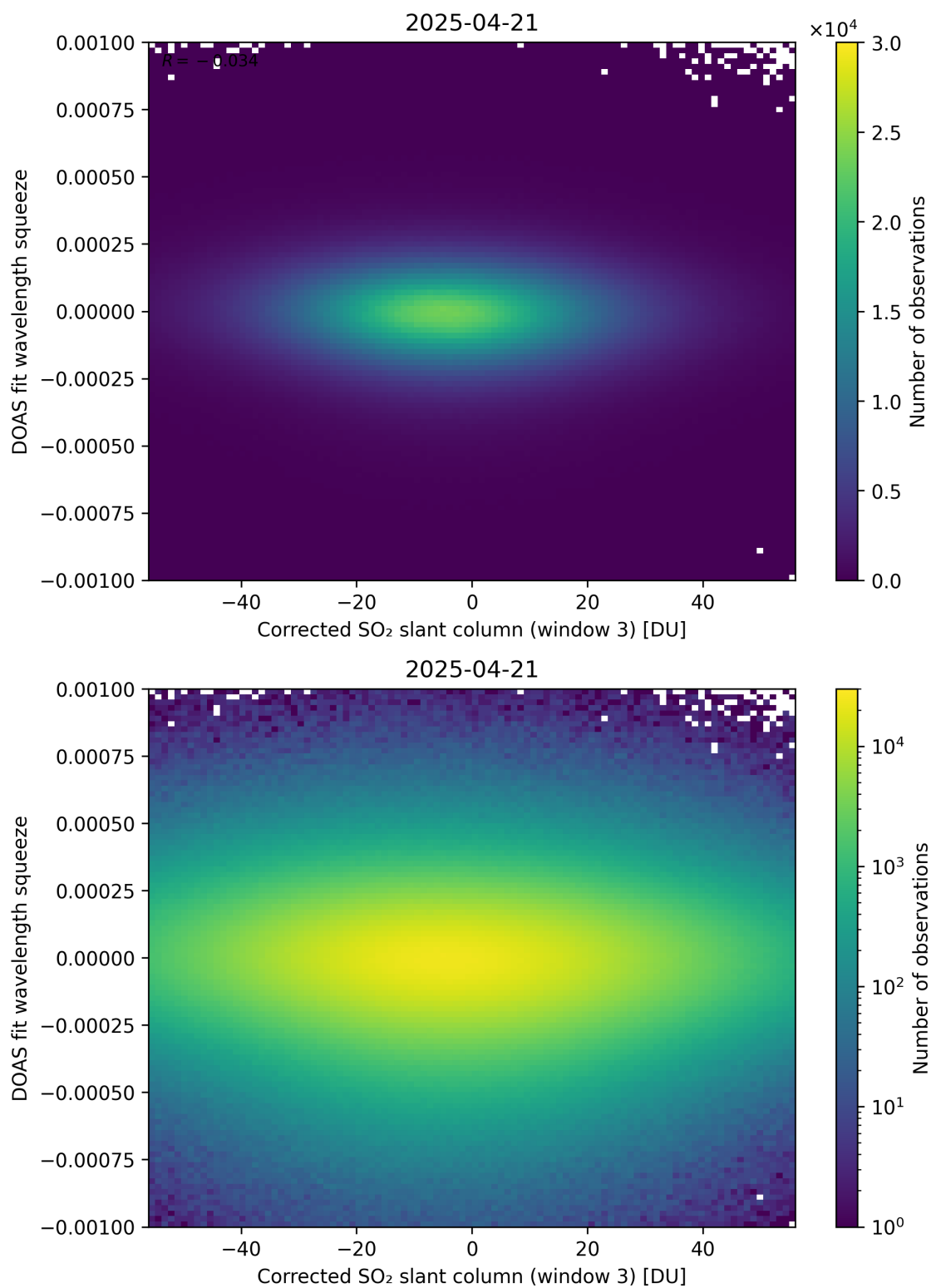


Figure 257: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

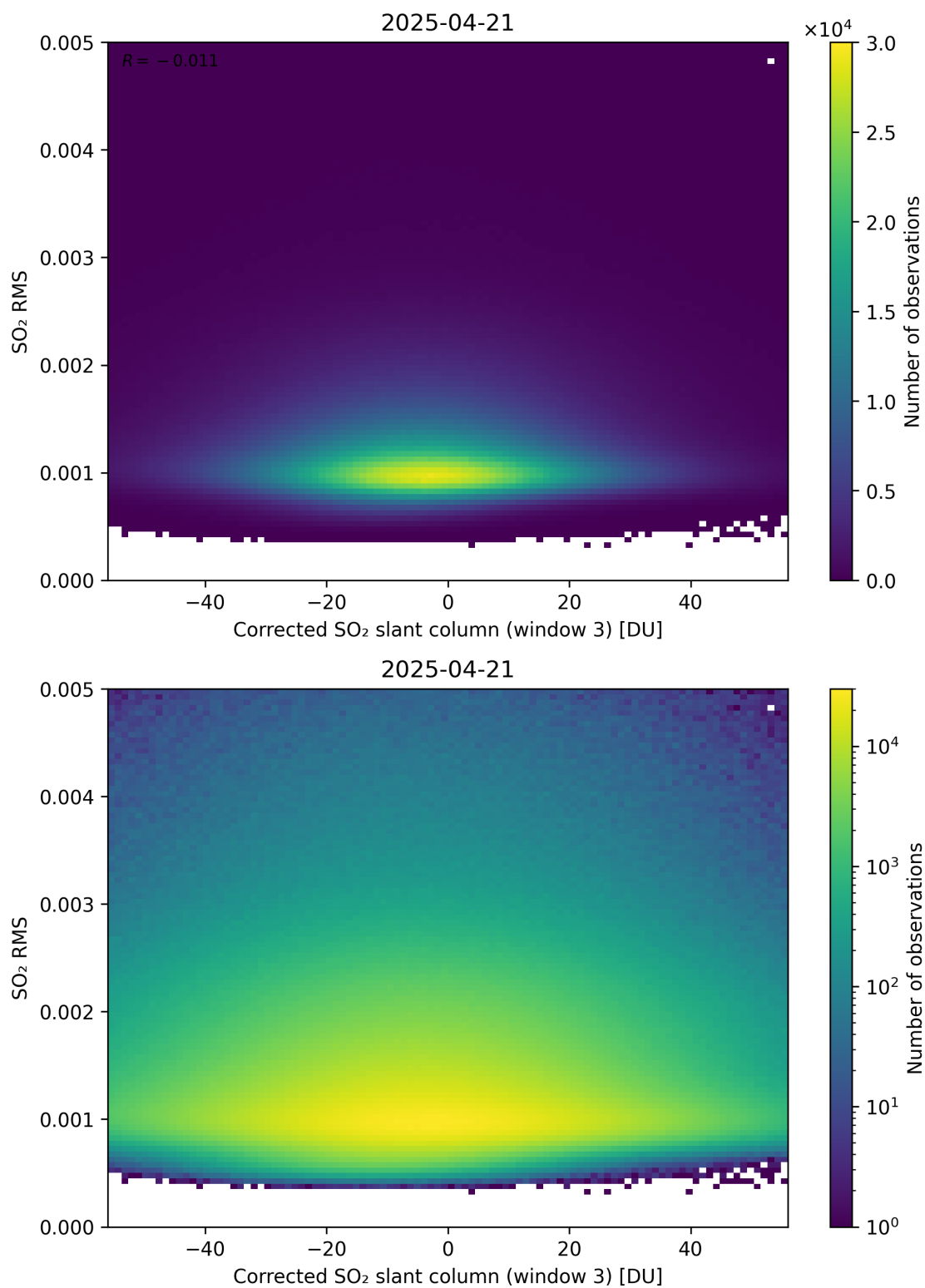


Figure 258: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

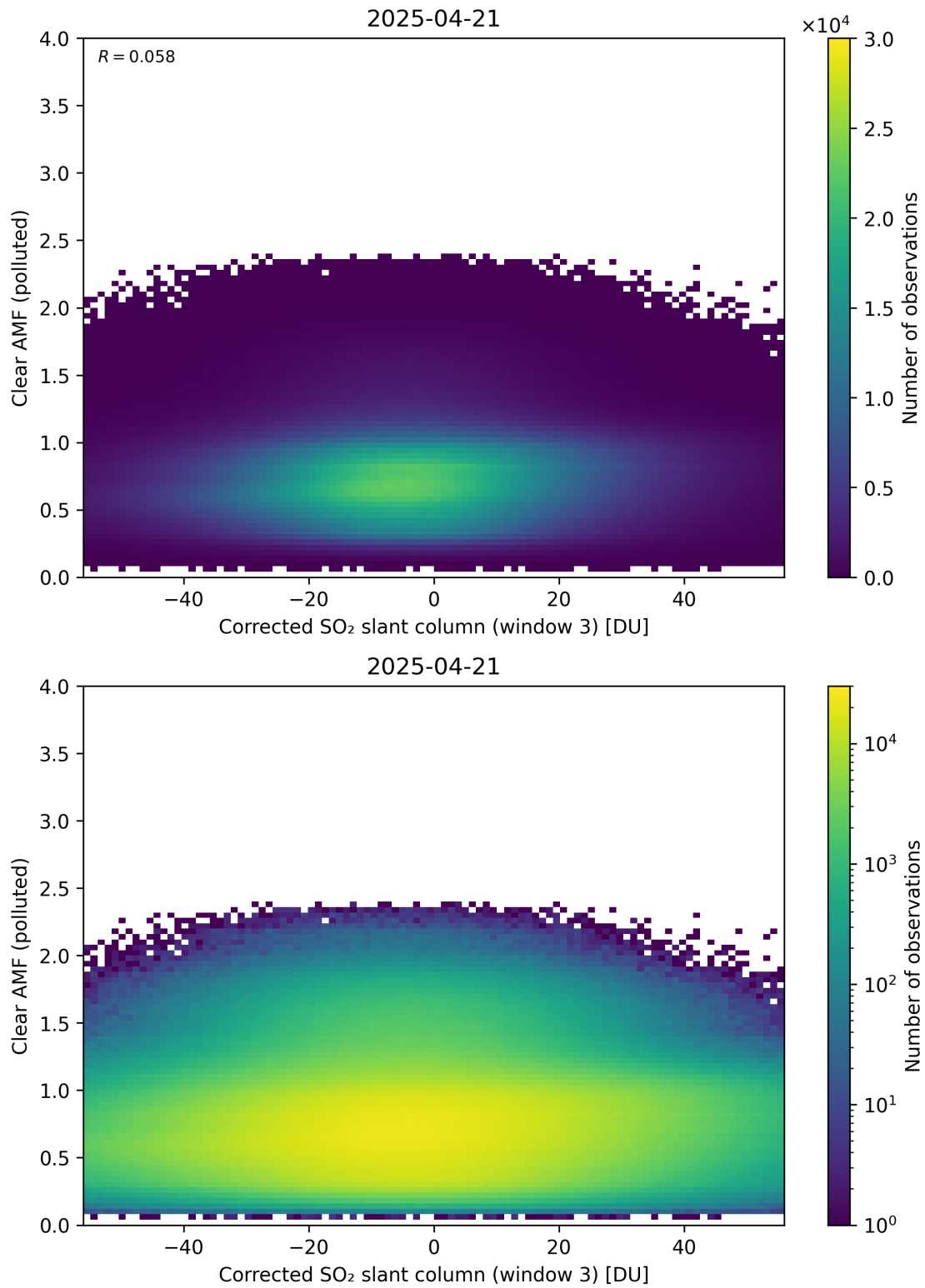


Figure 259: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

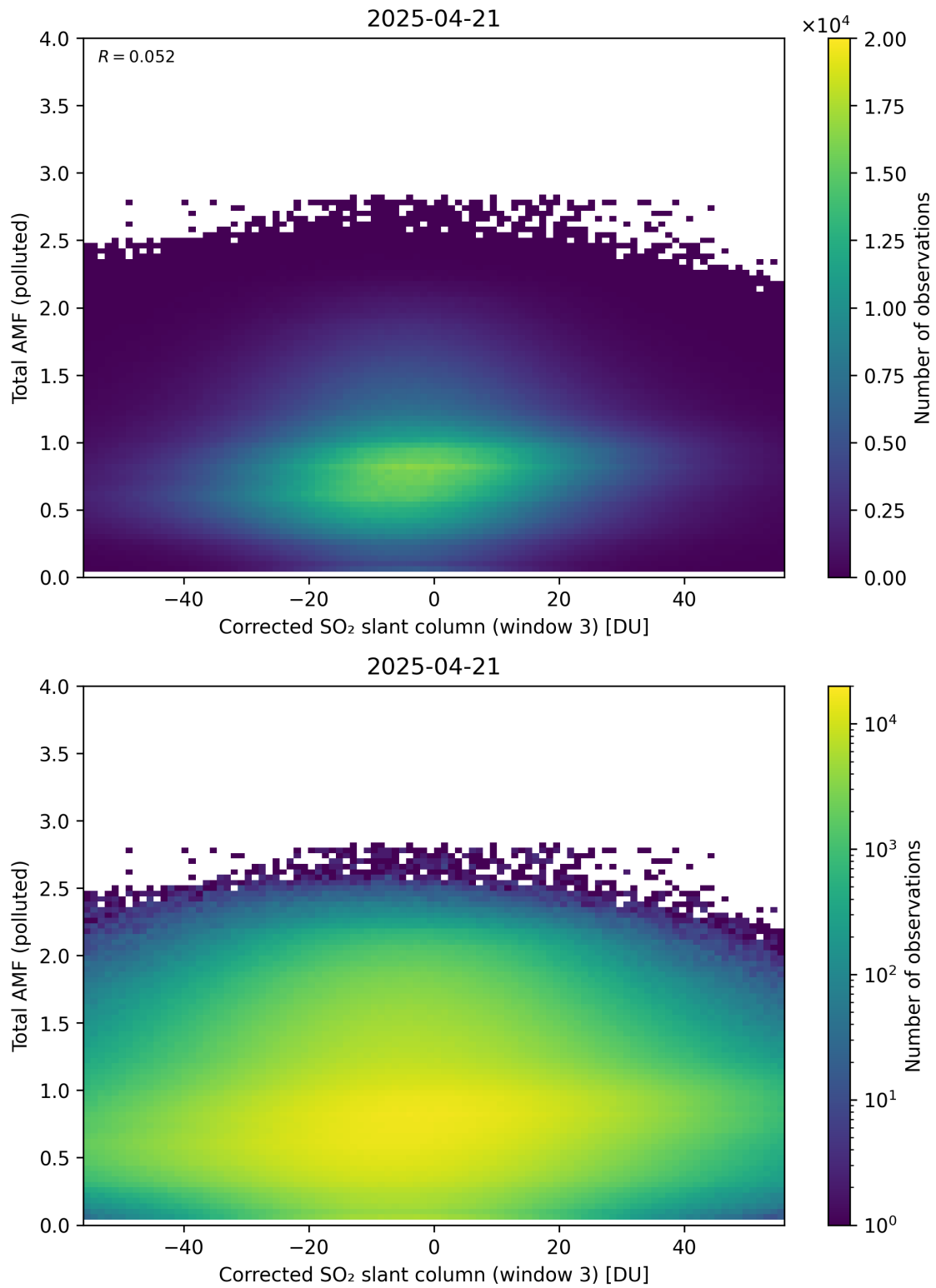


Figure 260: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

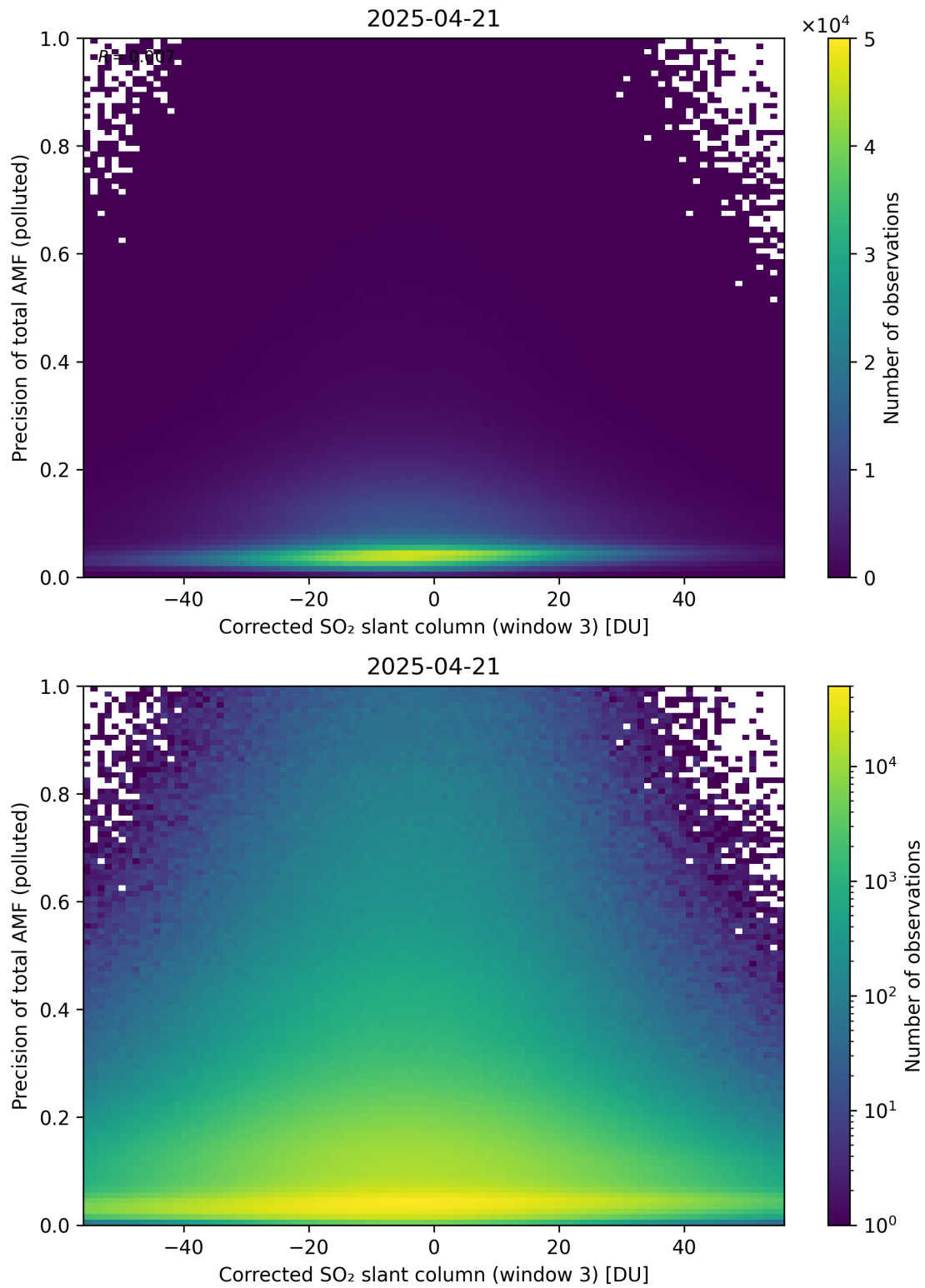


Figure 261: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

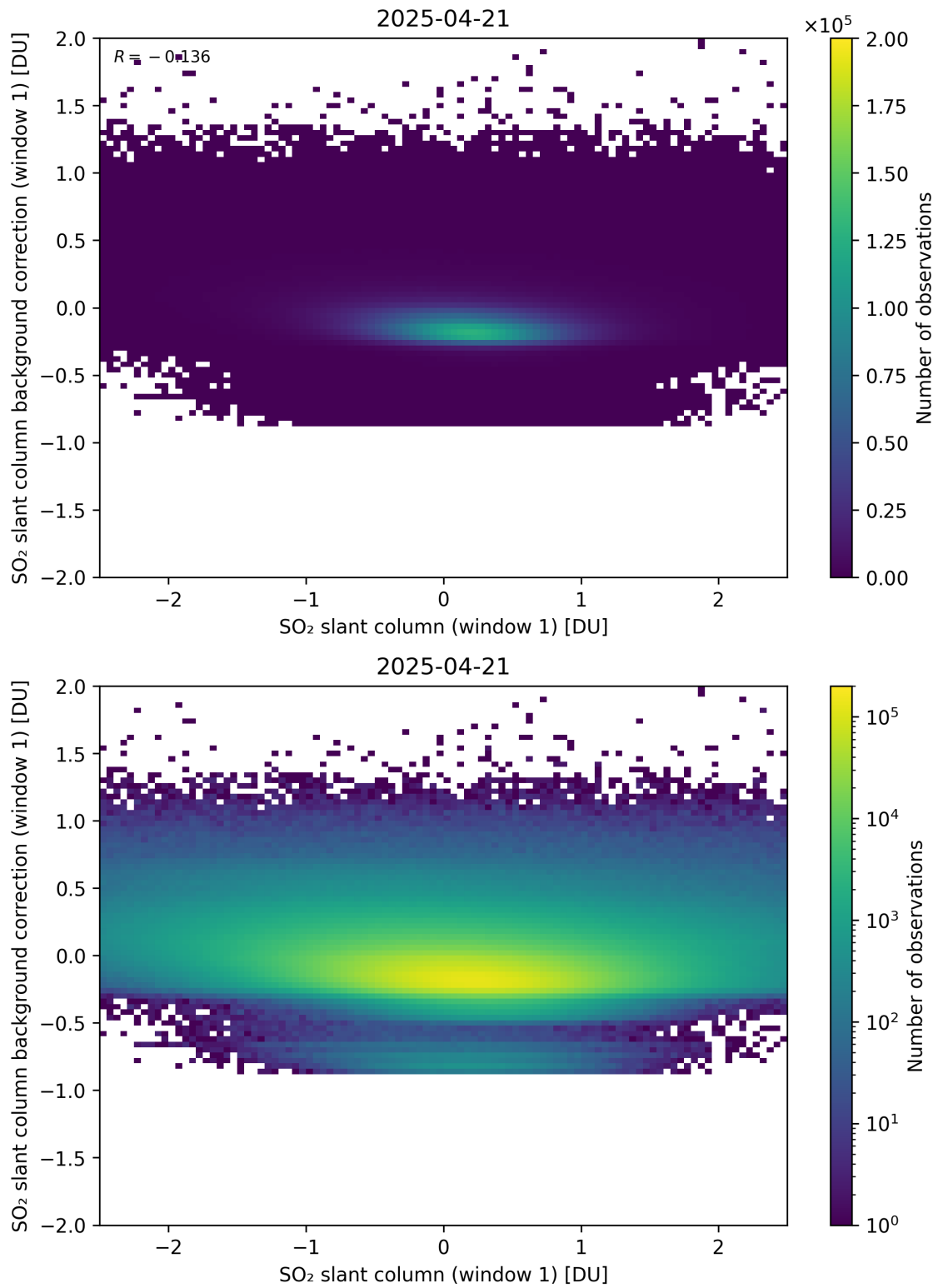


Figure 262: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

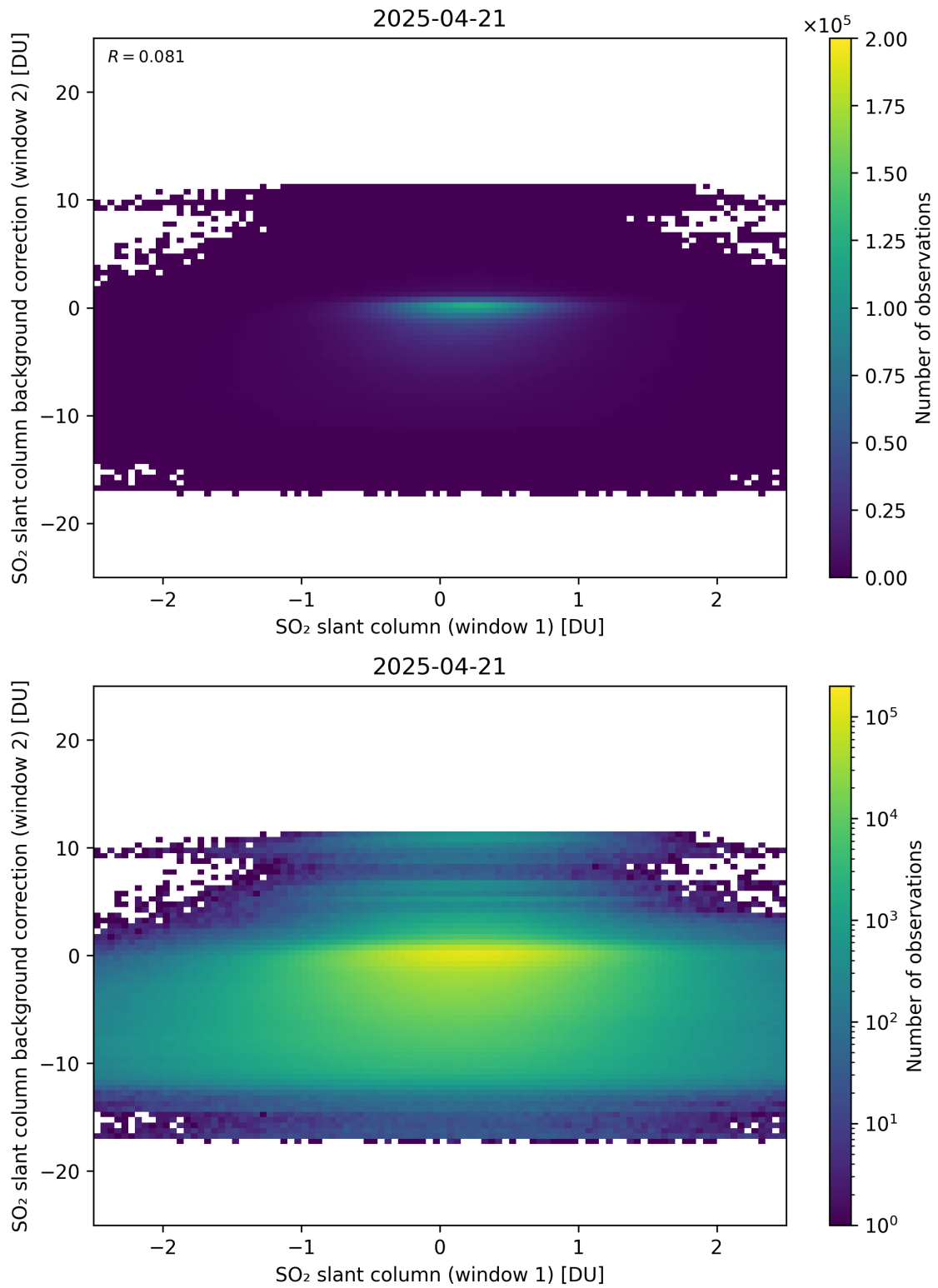


Figure 263: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

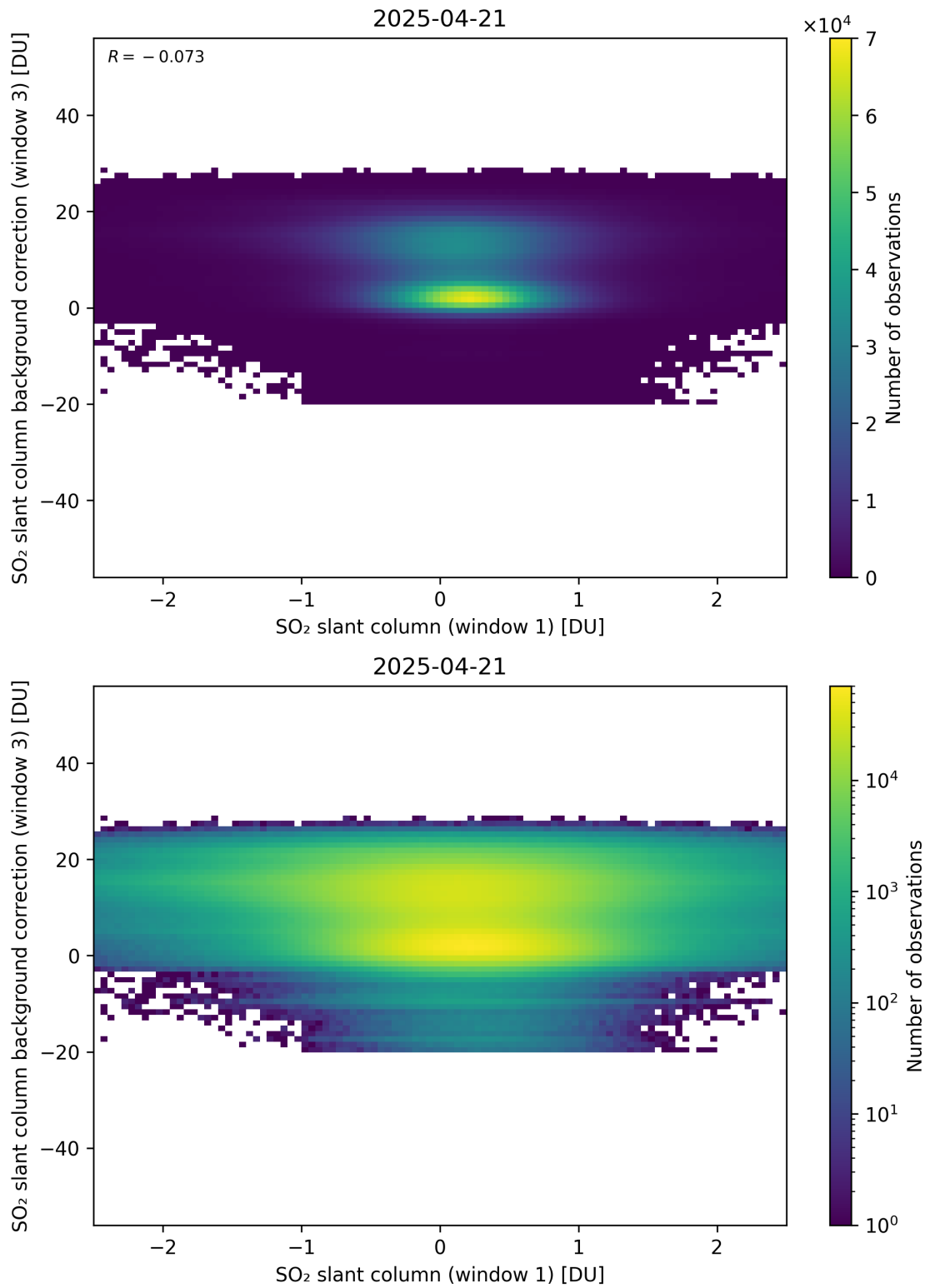


Figure 264: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

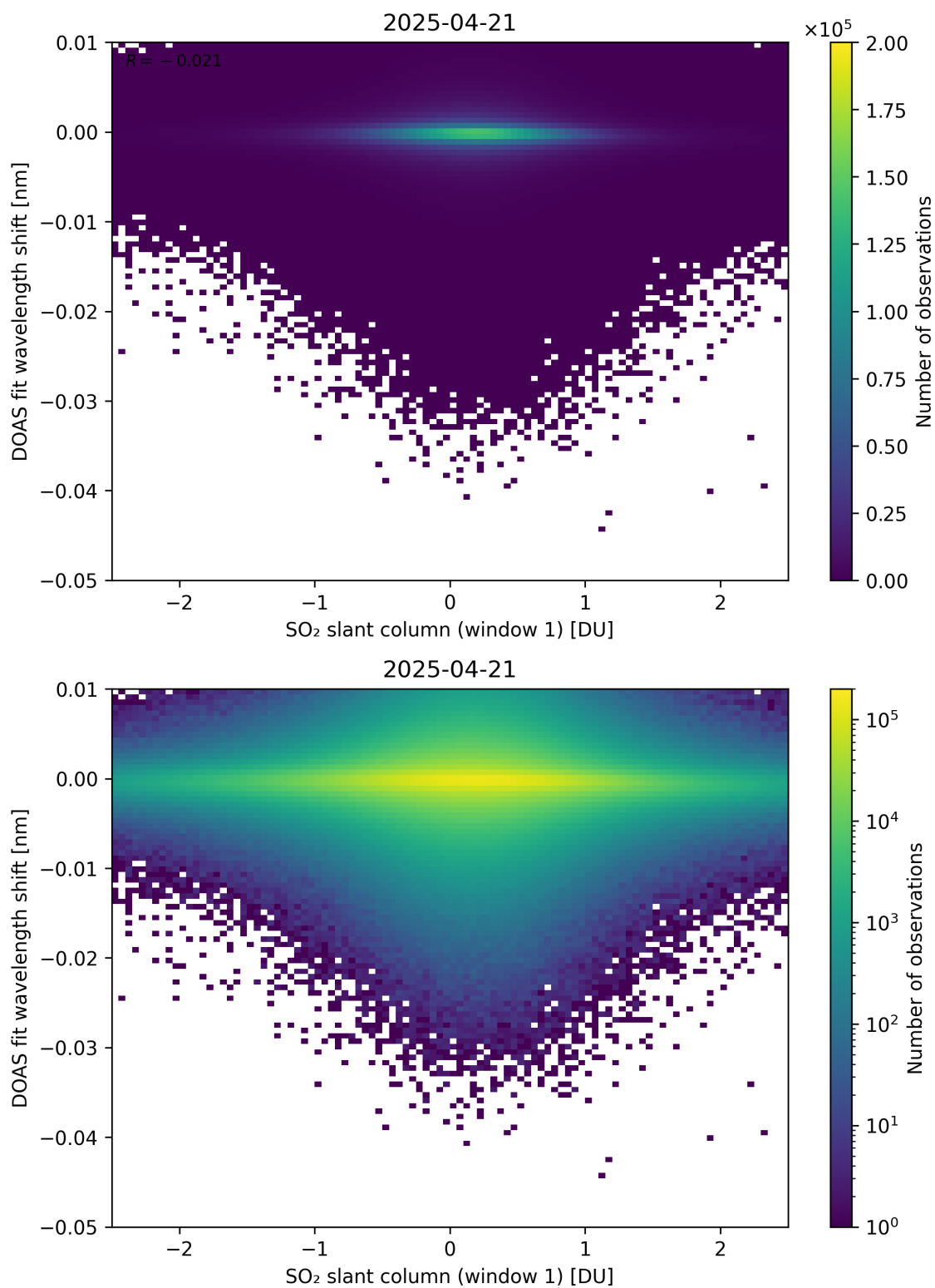


Figure 265: Scatter density plot of “SO₂ slant column (window 1)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

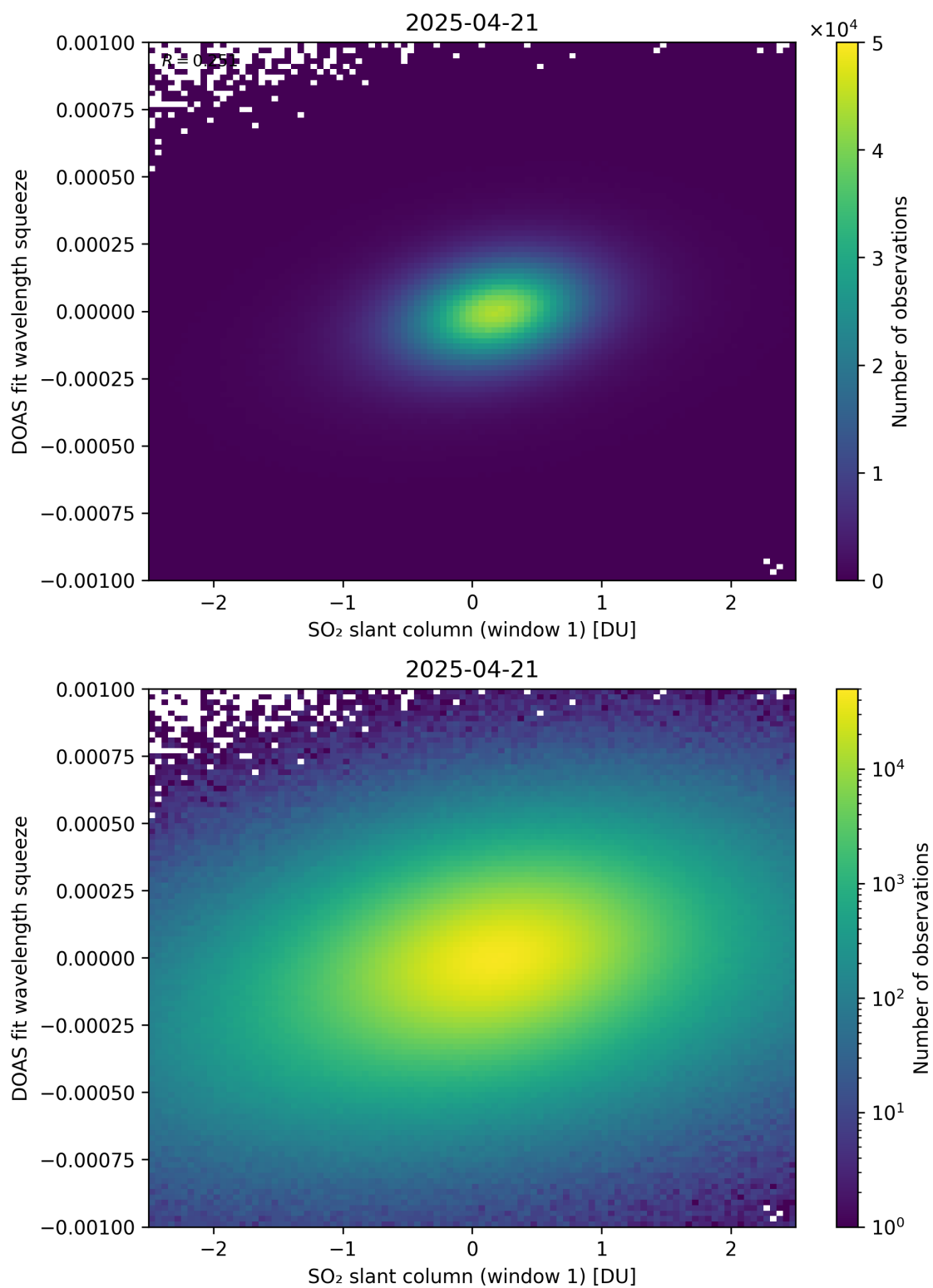


Figure 266: Scatter density plot of “SO₂ slant column (window 1)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

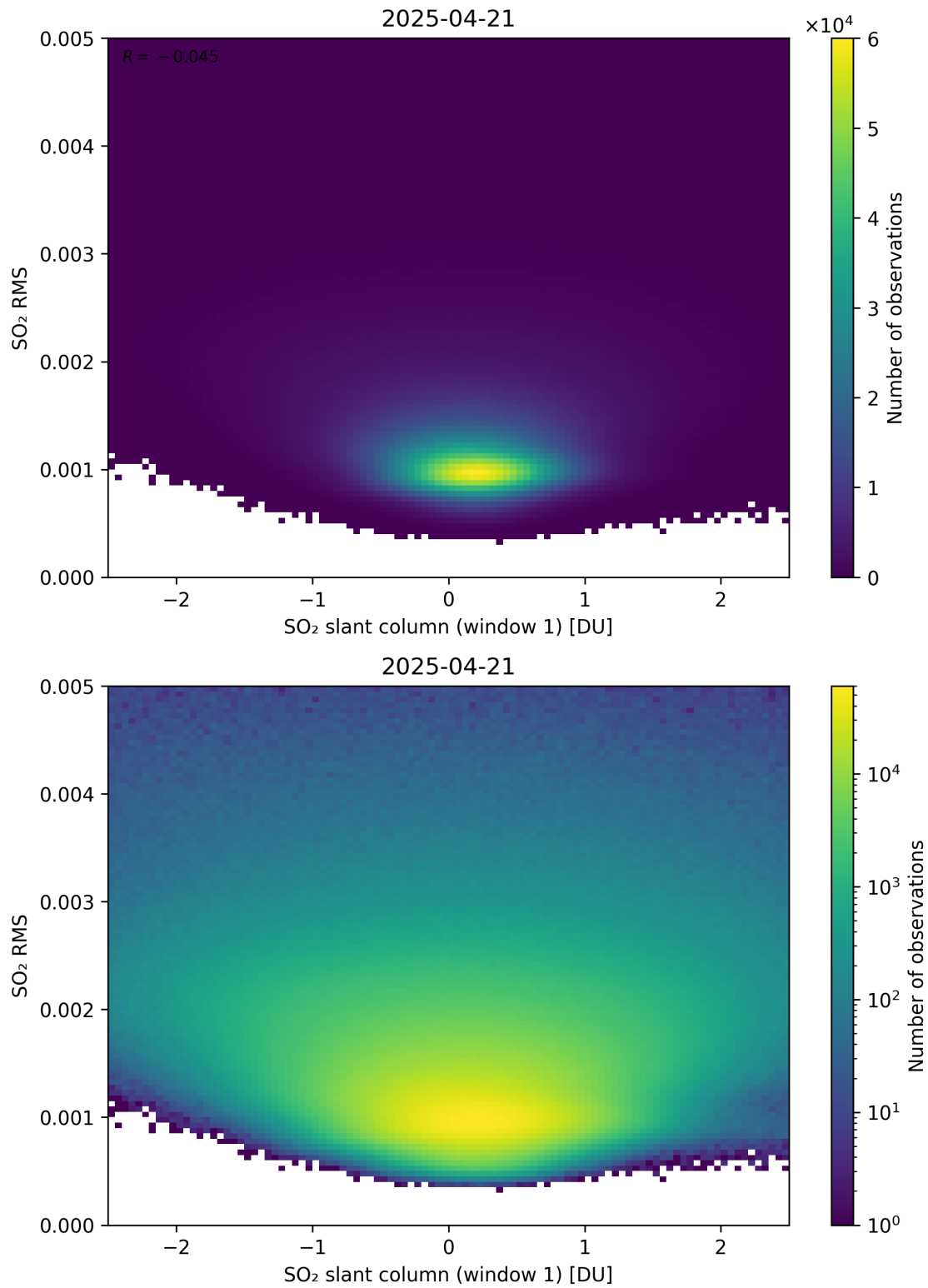


Figure 267: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

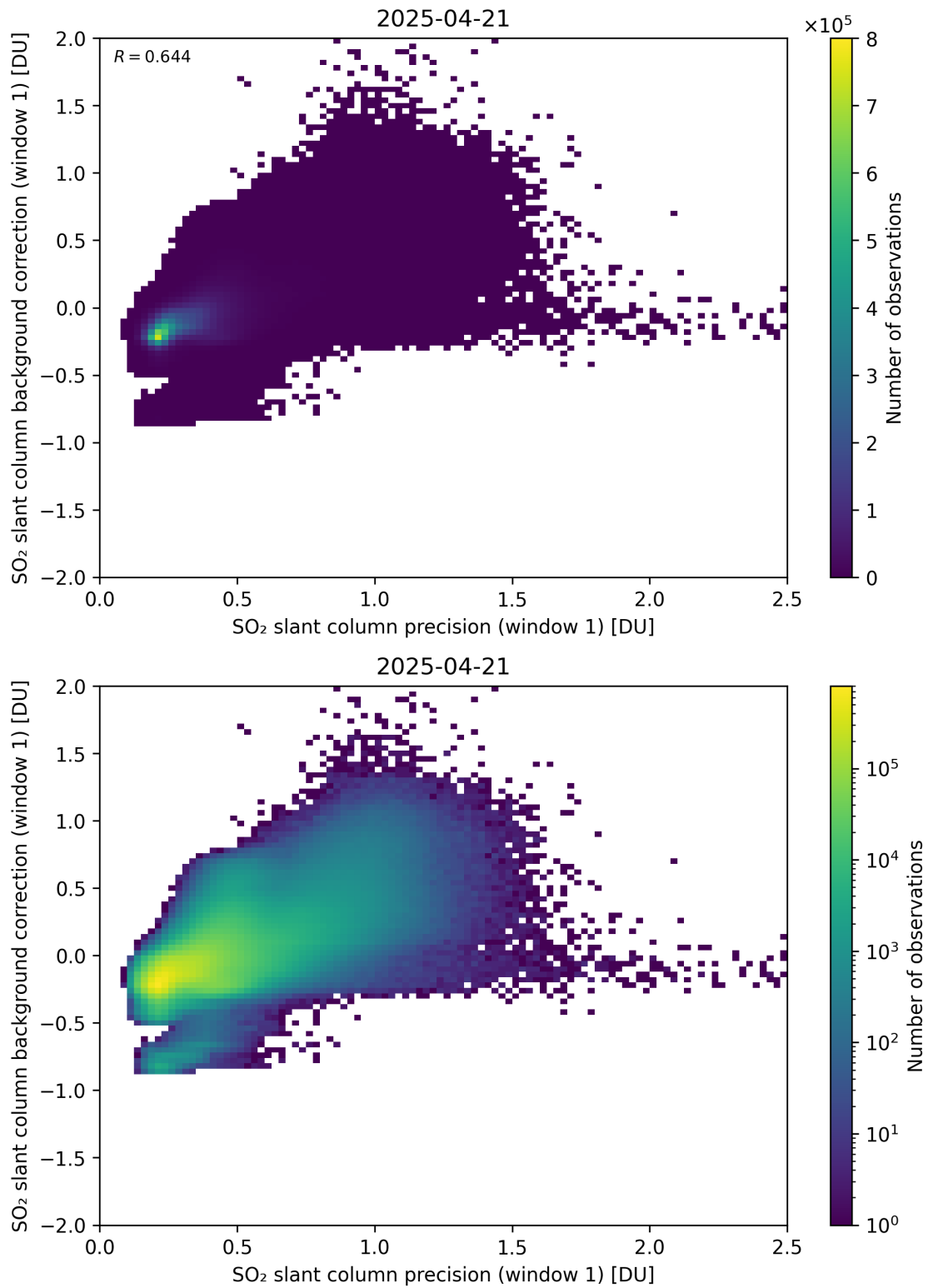


Figure 268: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

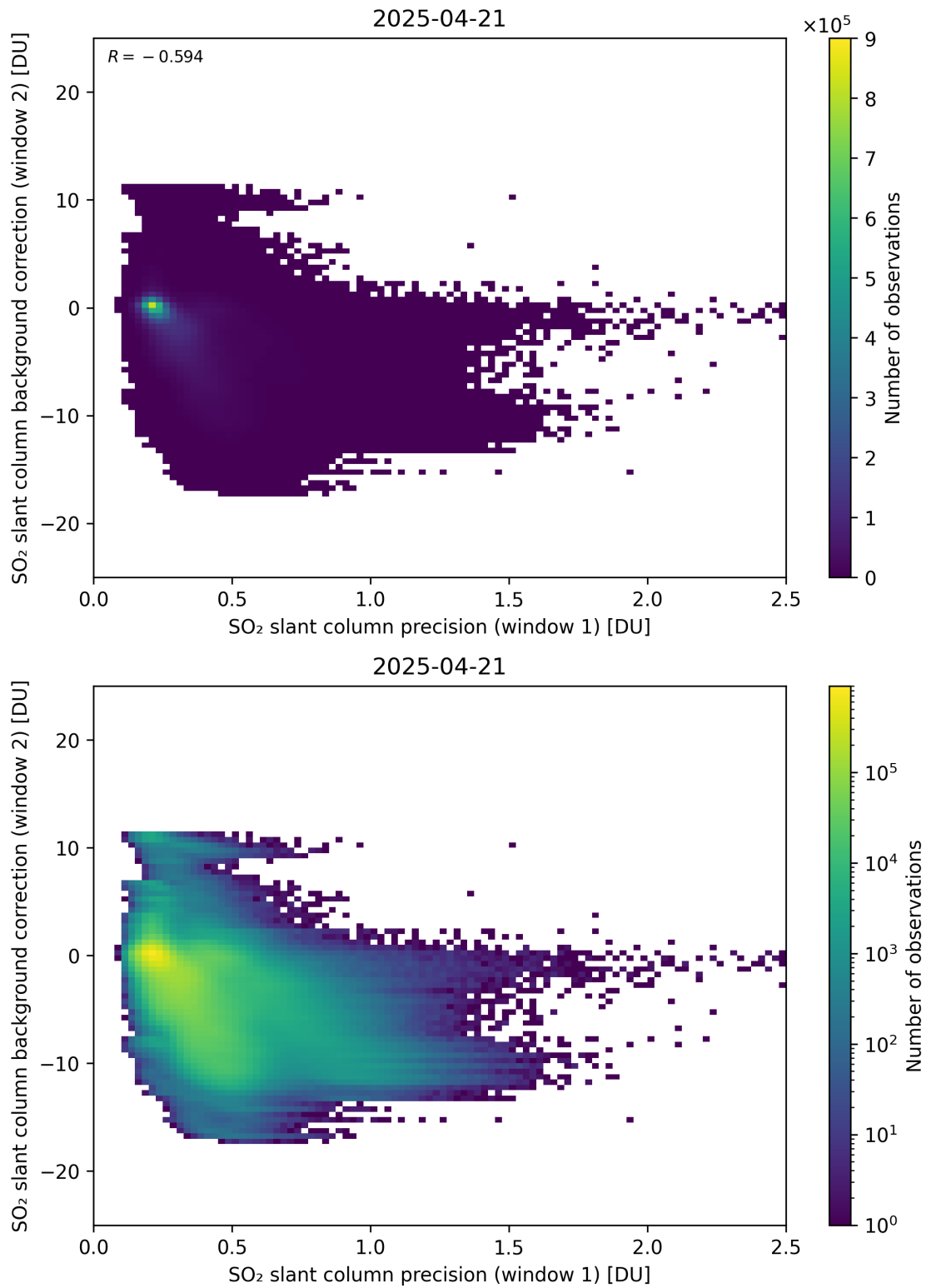


Figure 269: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

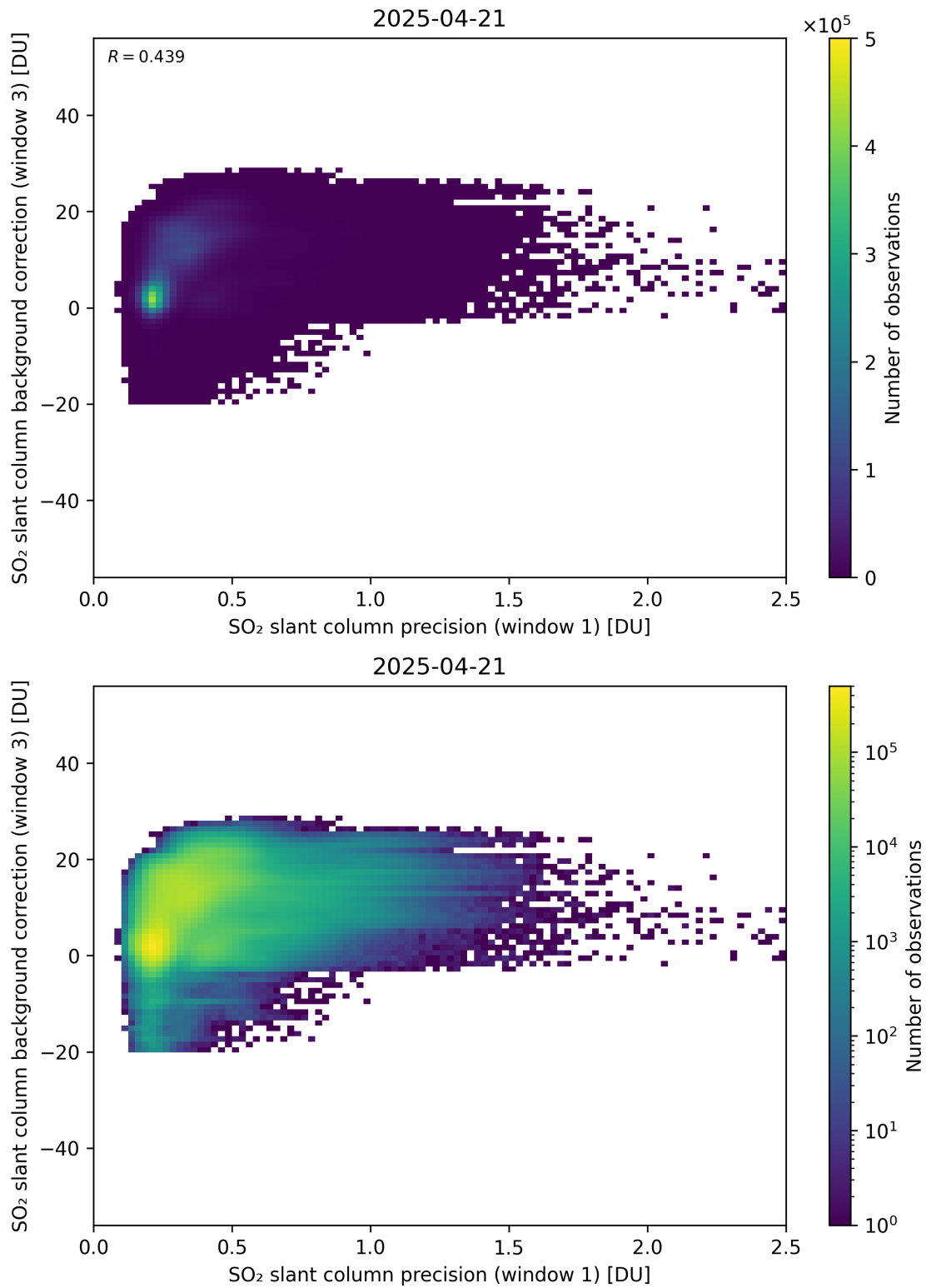


Figure 270: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

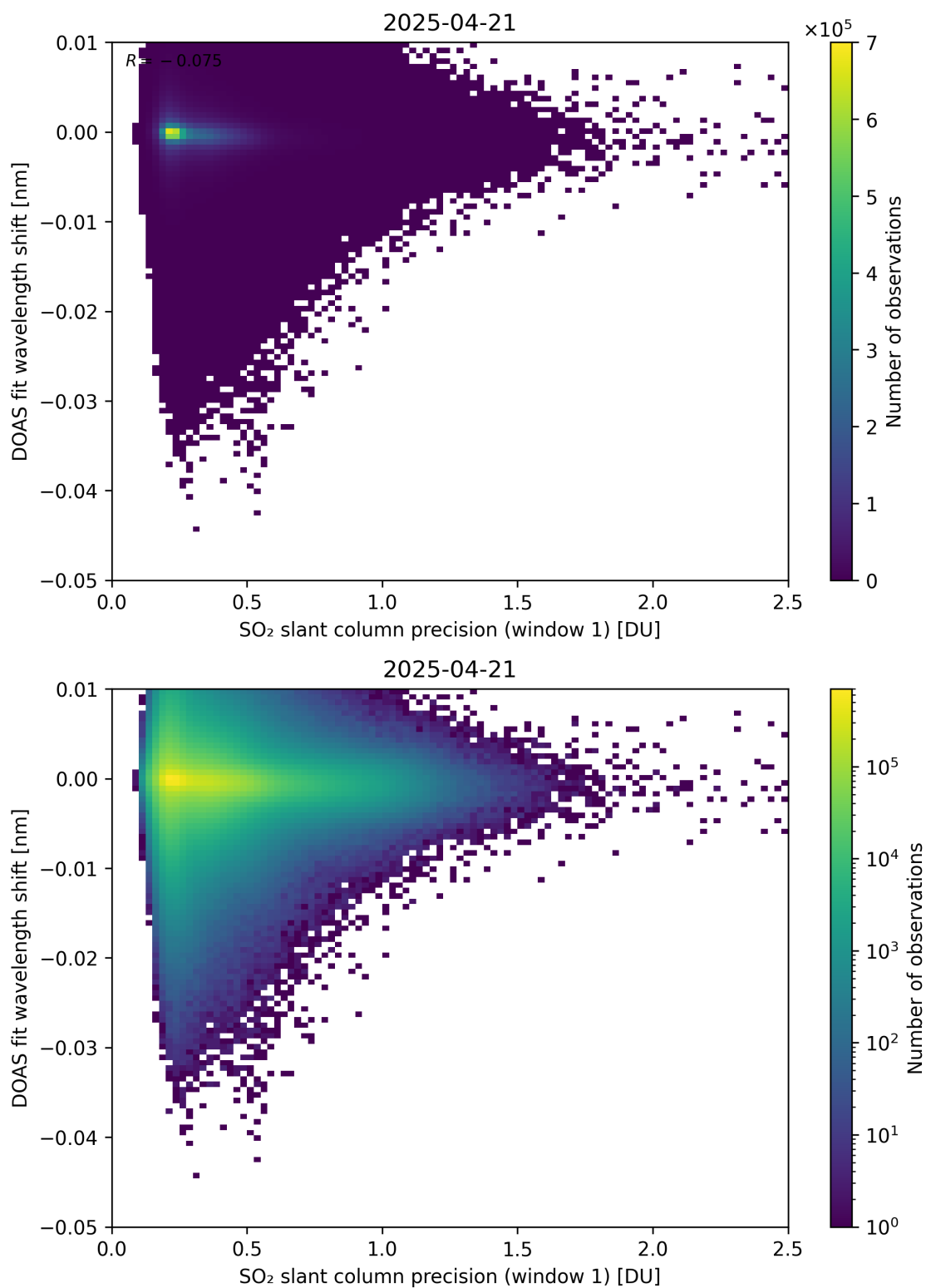


Figure 271: Scatter density plot of “SO₂ slant column precision (window 1)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

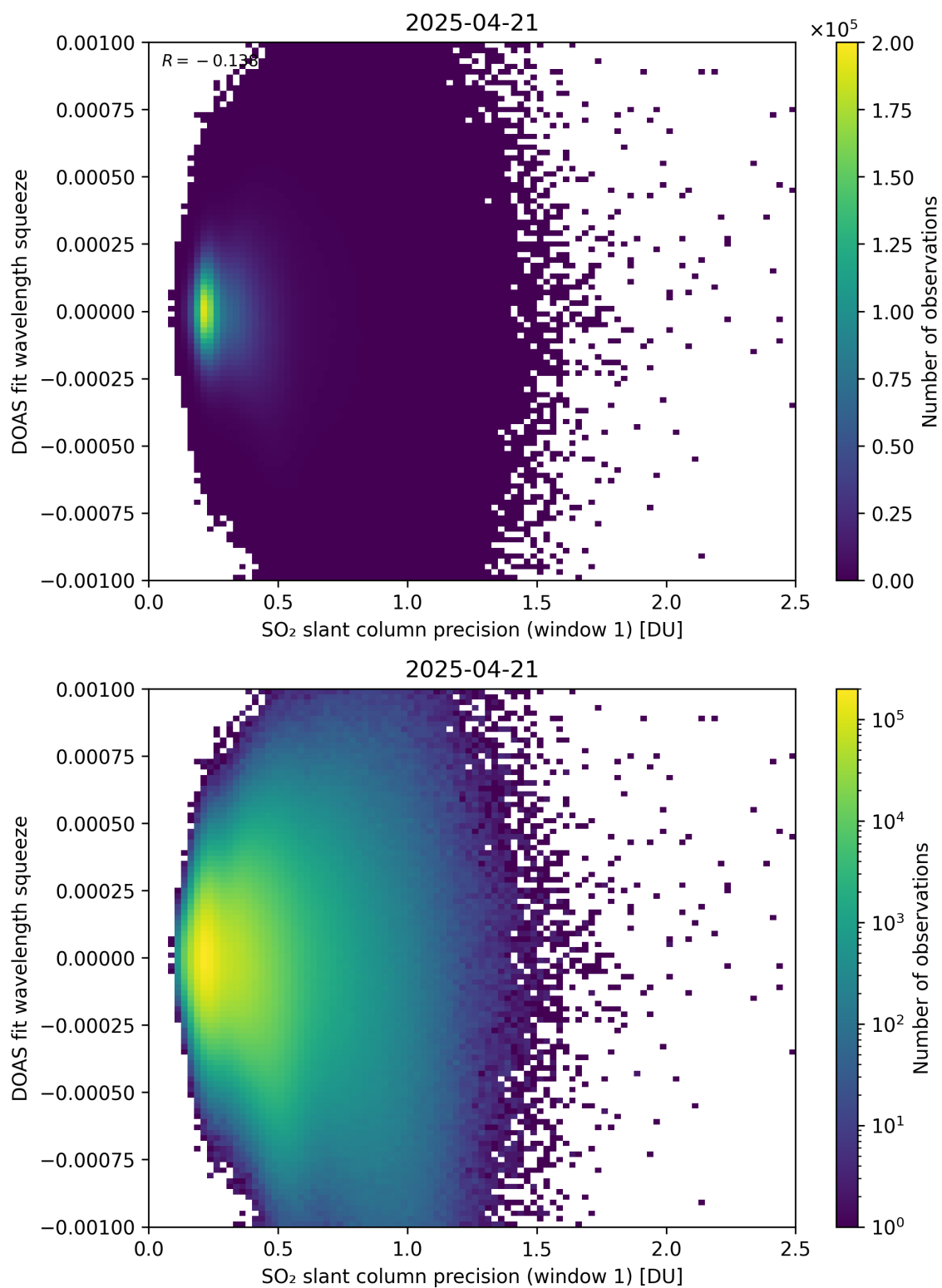


Figure 272: Scatter density plot of “SO₂ slant column precision (window 1)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

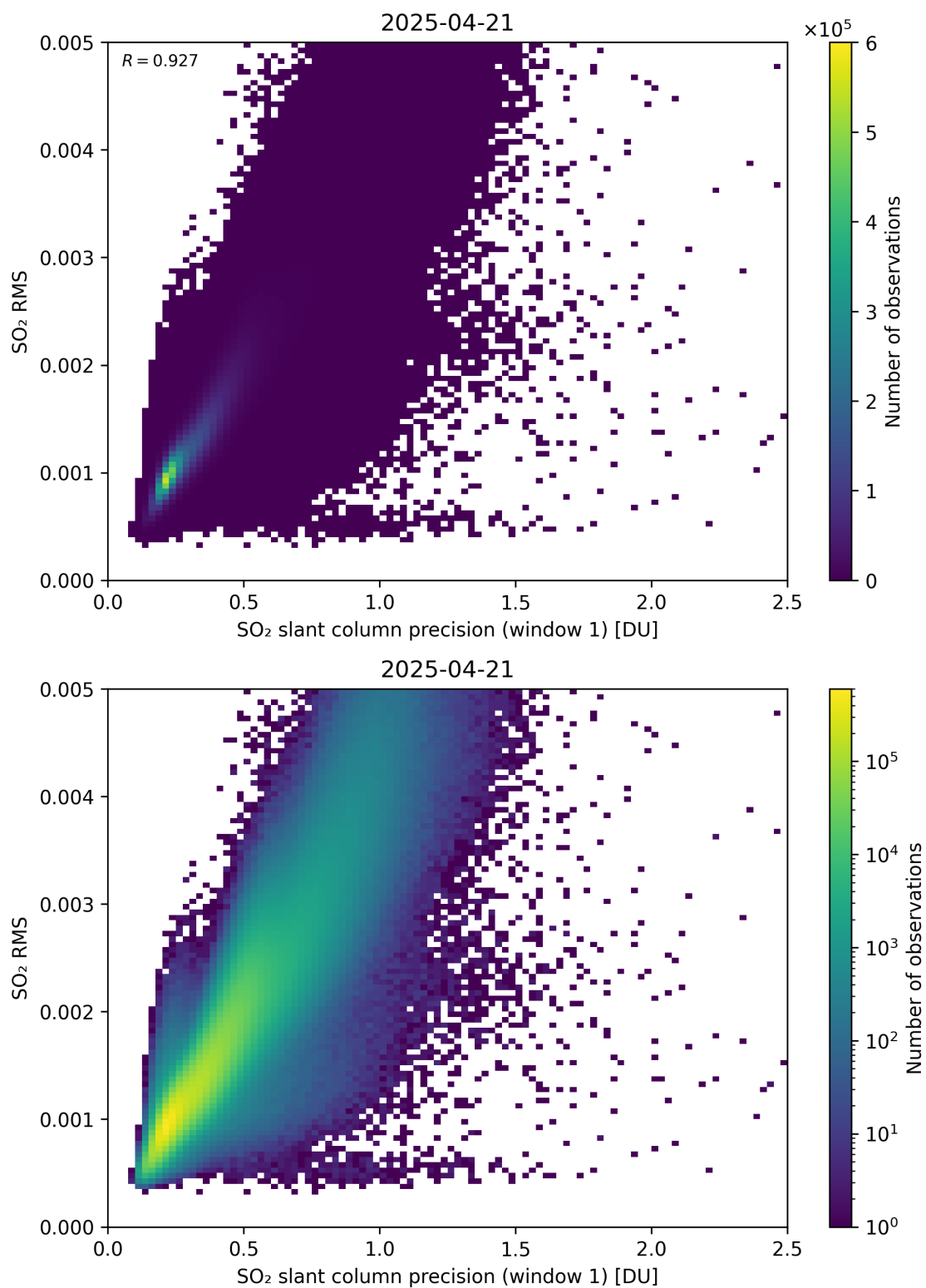


Figure 273: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

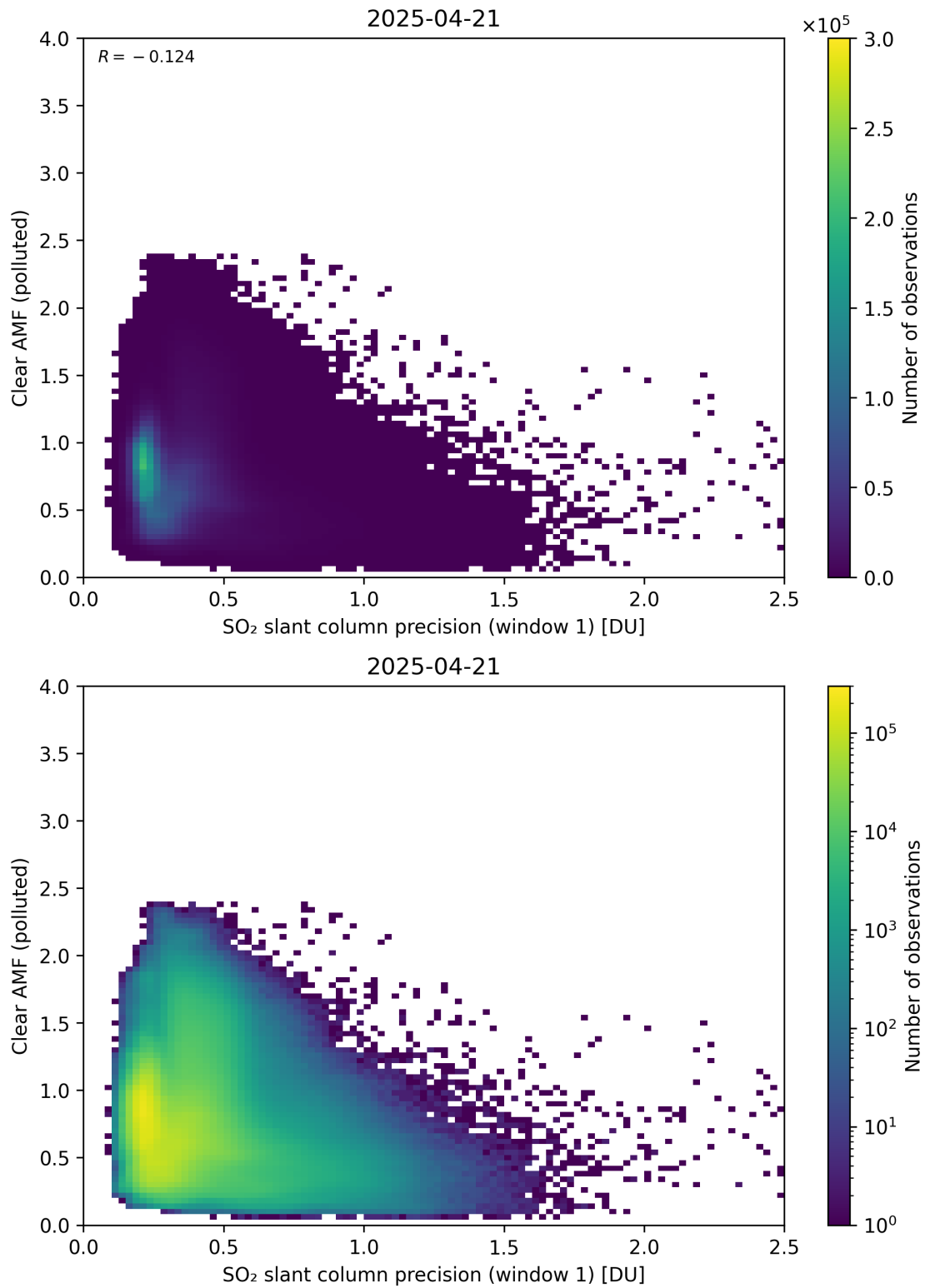


Figure 274: Scatter density plot of “SO₂ slant column precision (window 1)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

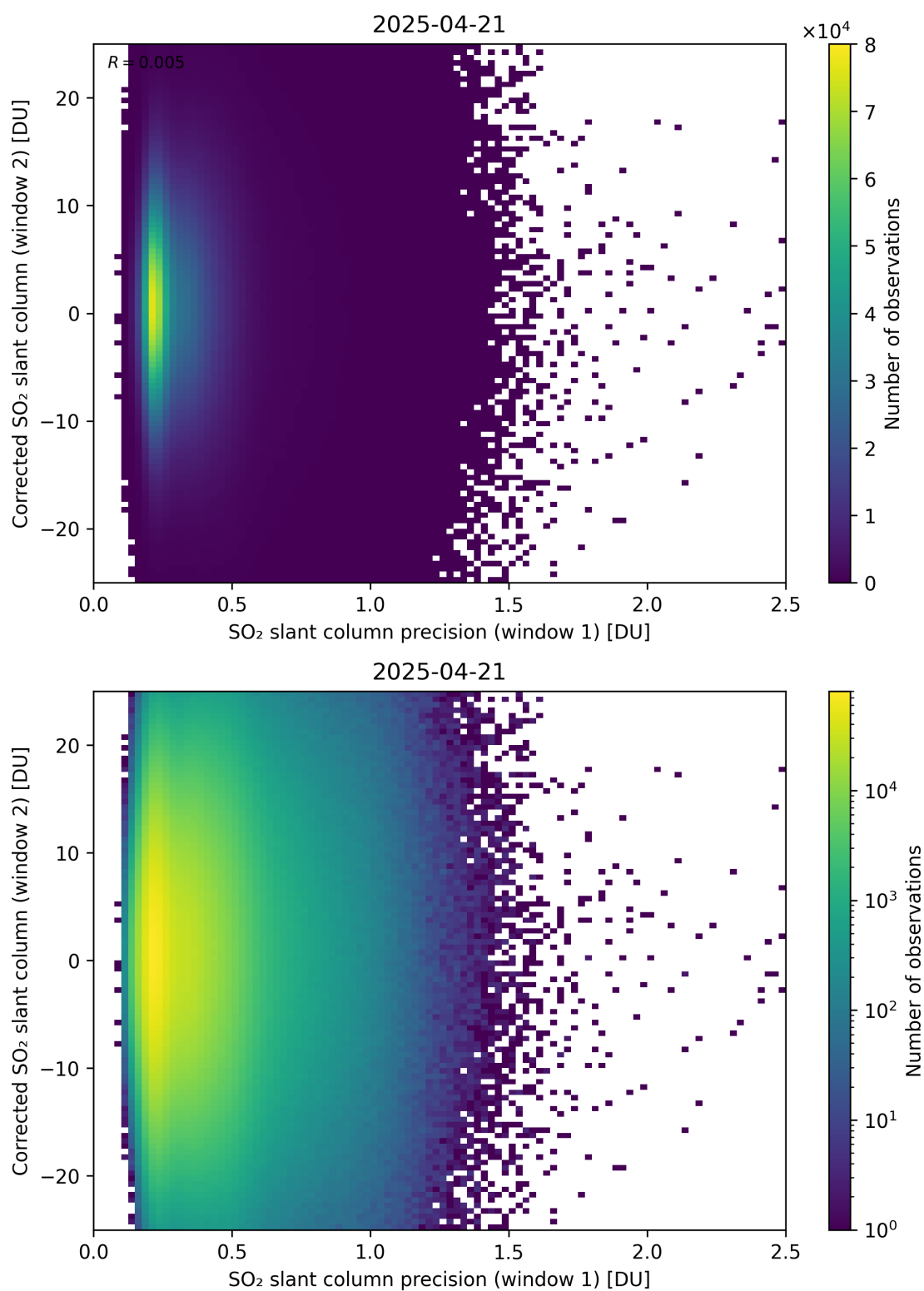


Figure 275: Scatter density plot of “SO₂ slant column precision (window 1)” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

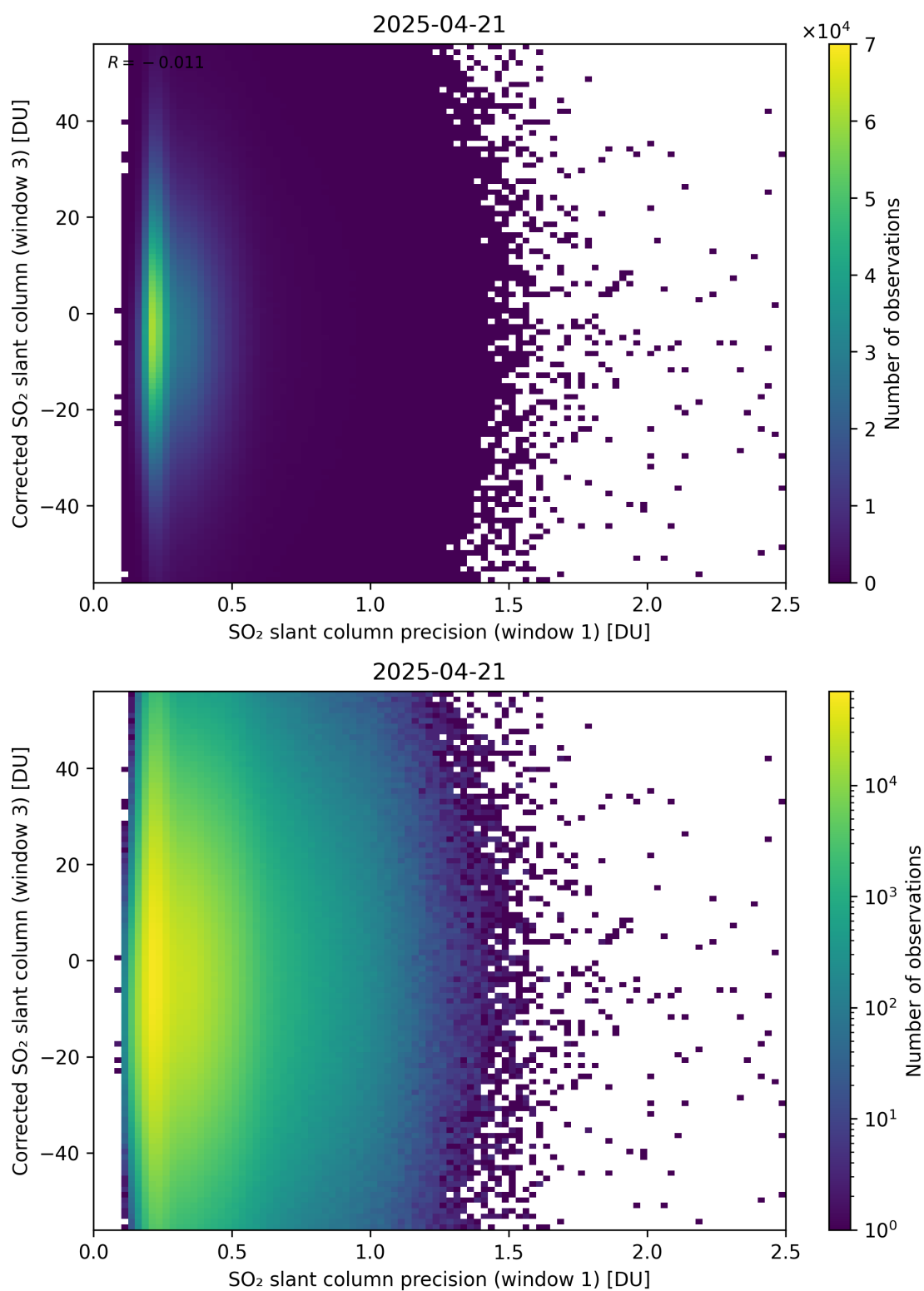


Figure 276: Scatter density plot of “SO₂ slant column precision (window 1)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

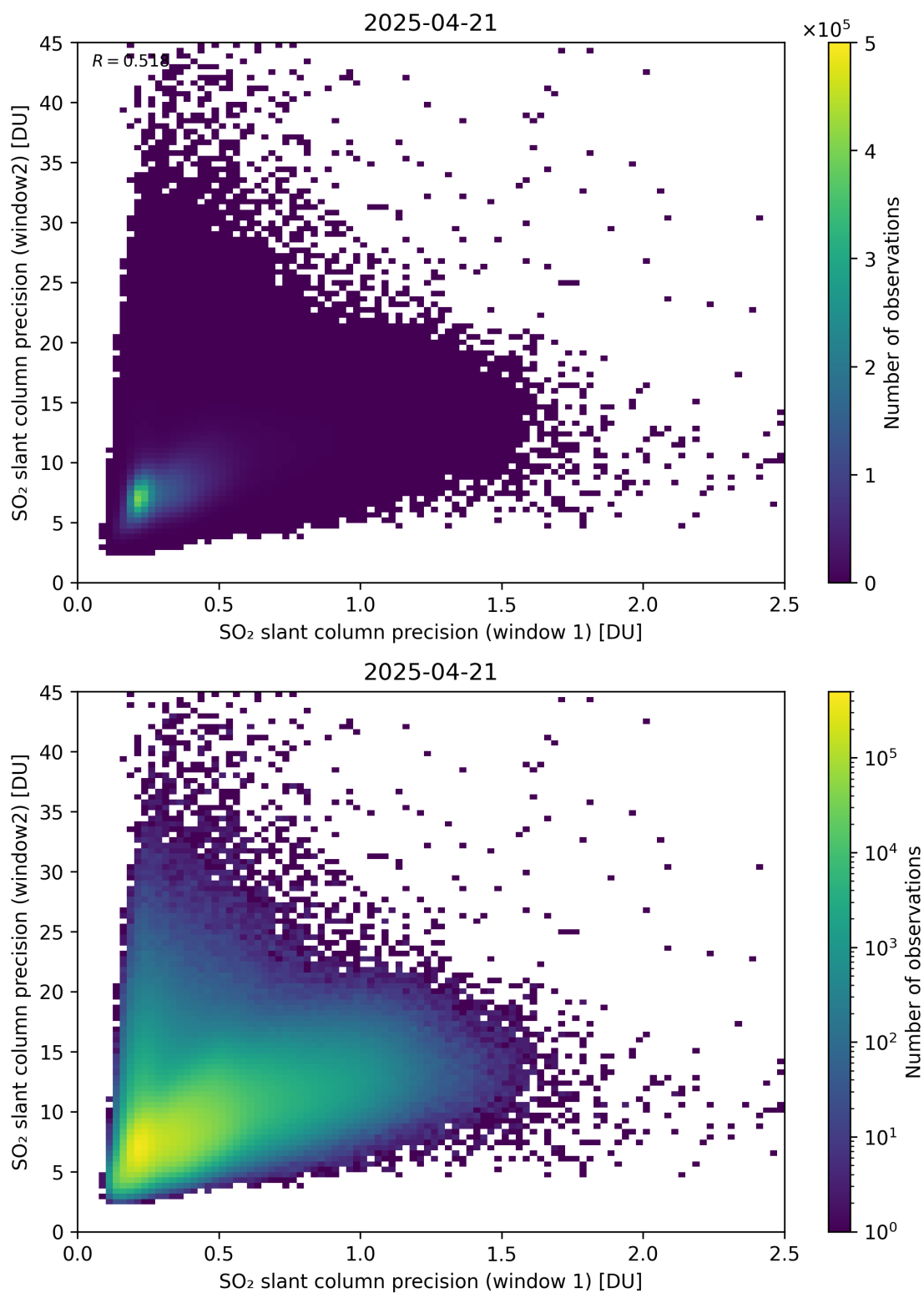


Figure 277: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

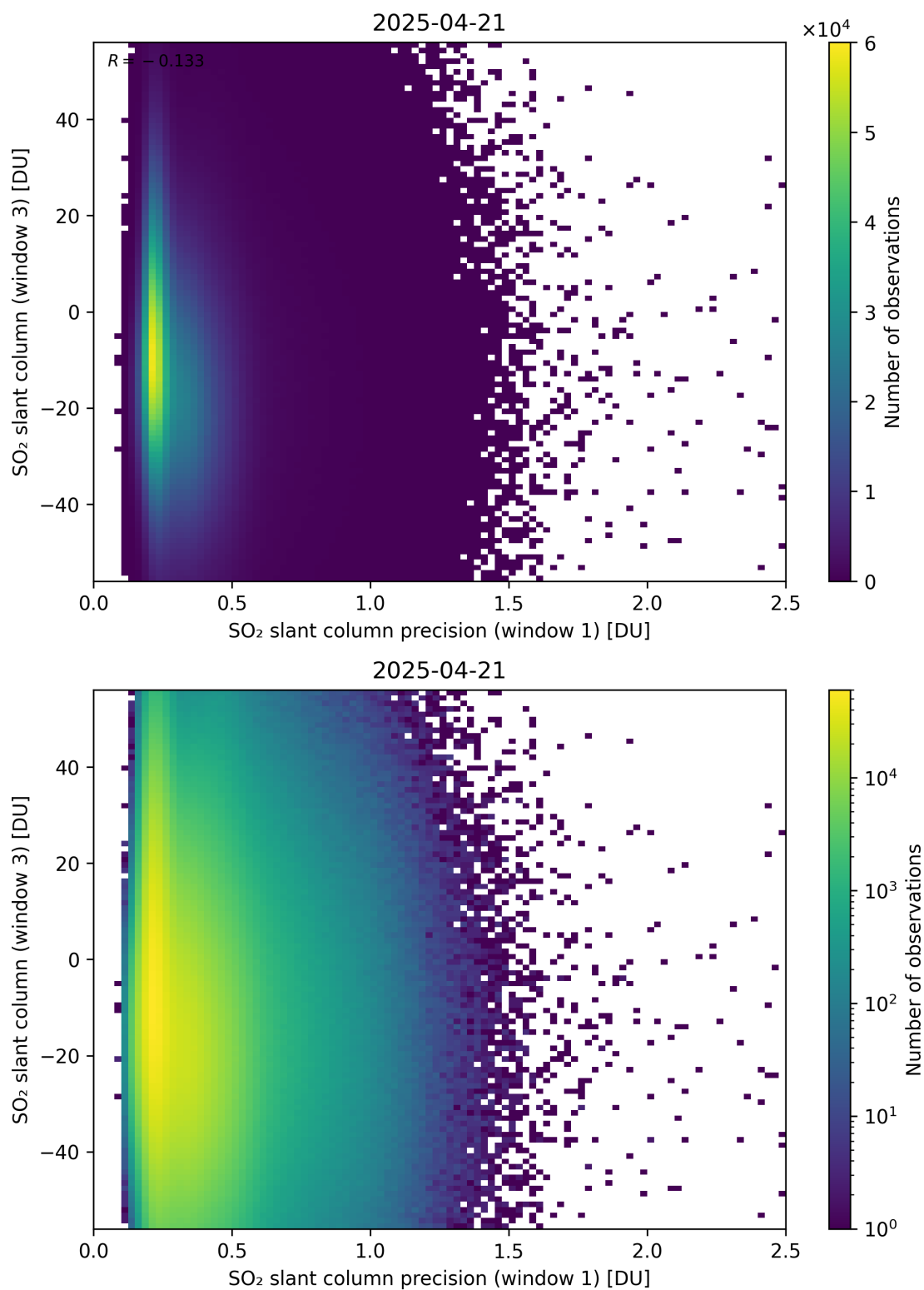


Figure 278: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

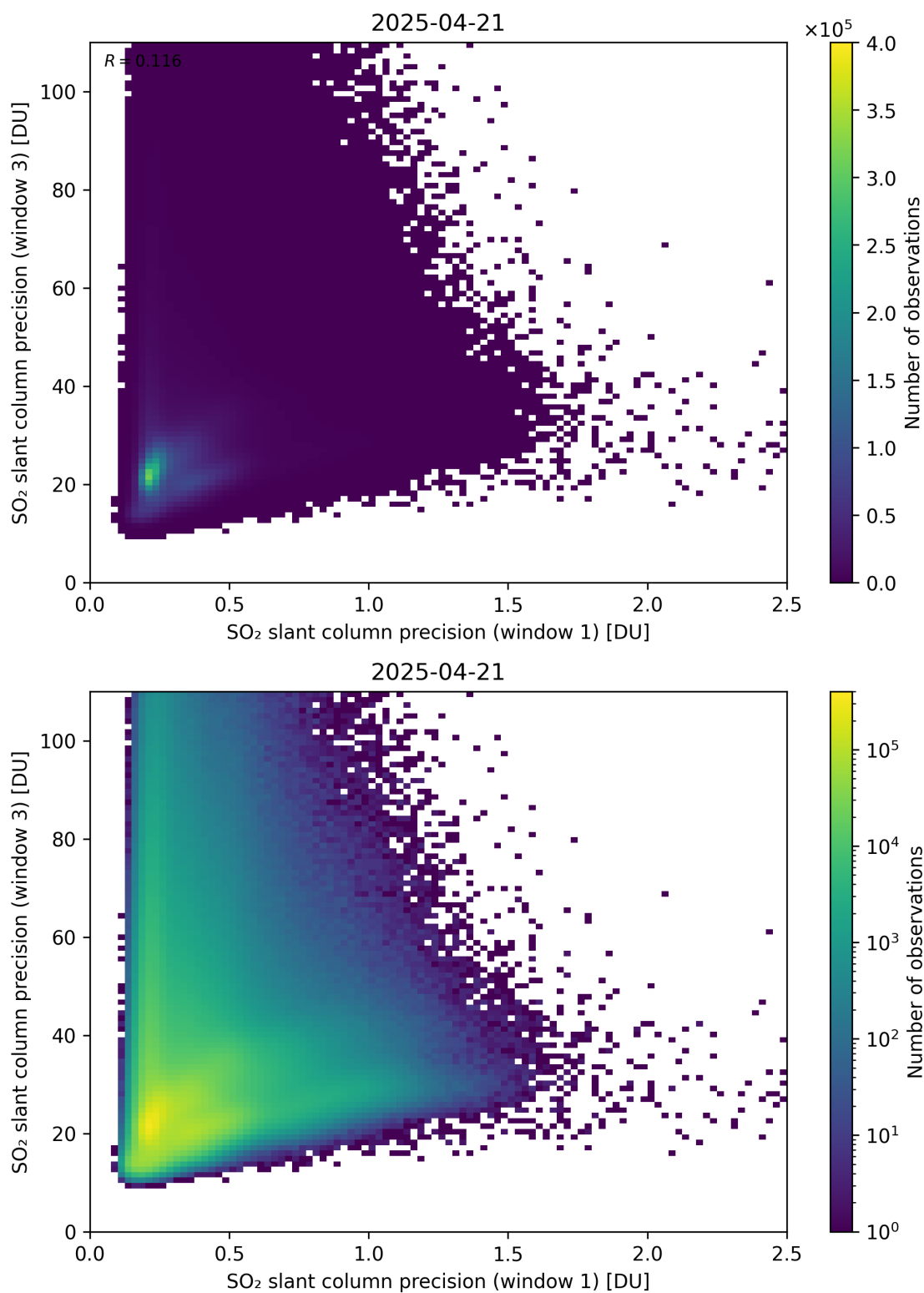


Figure 279: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

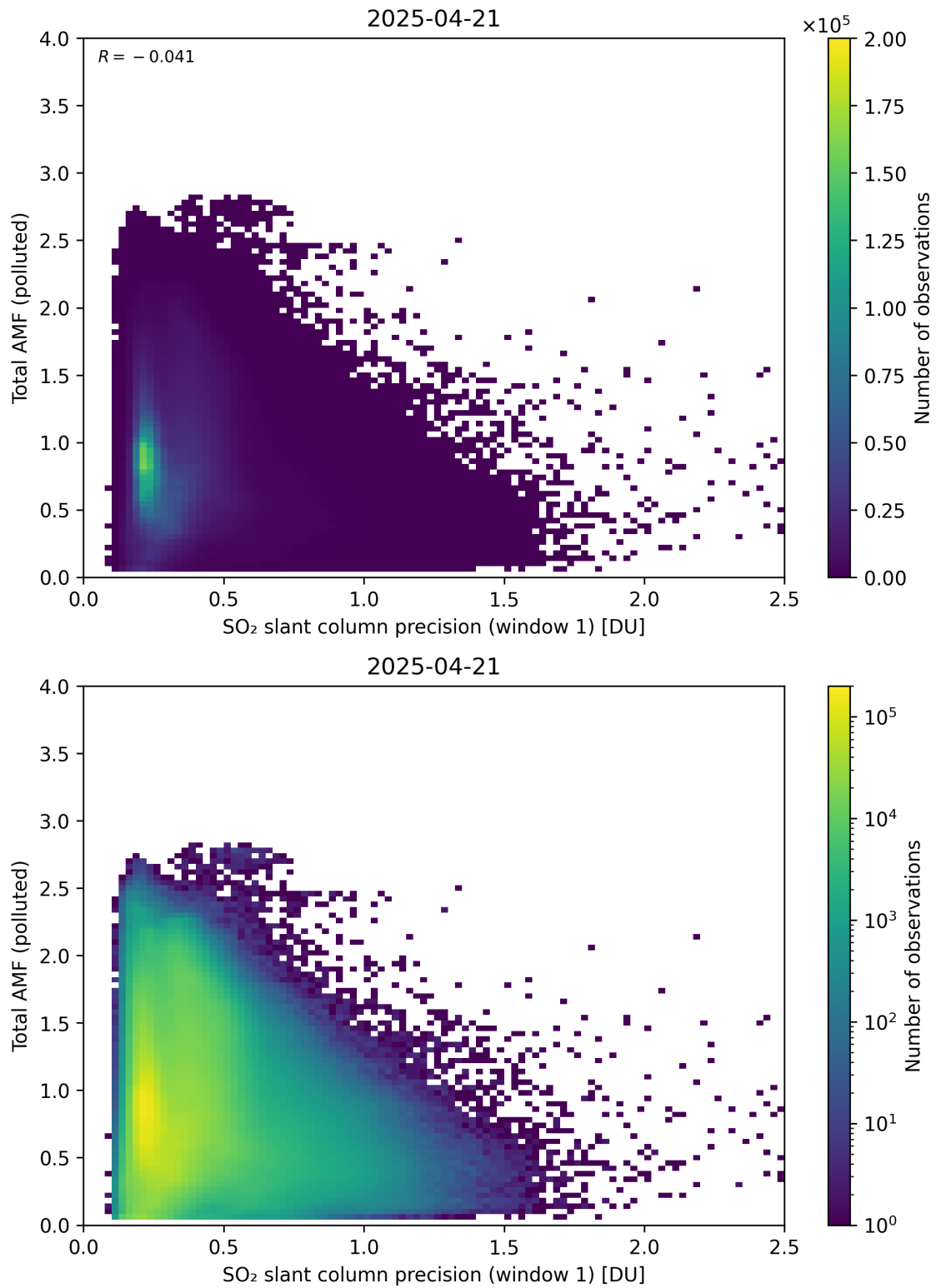


Figure 280: Scatter density plot of “SO₂ slant column precision (window 1)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

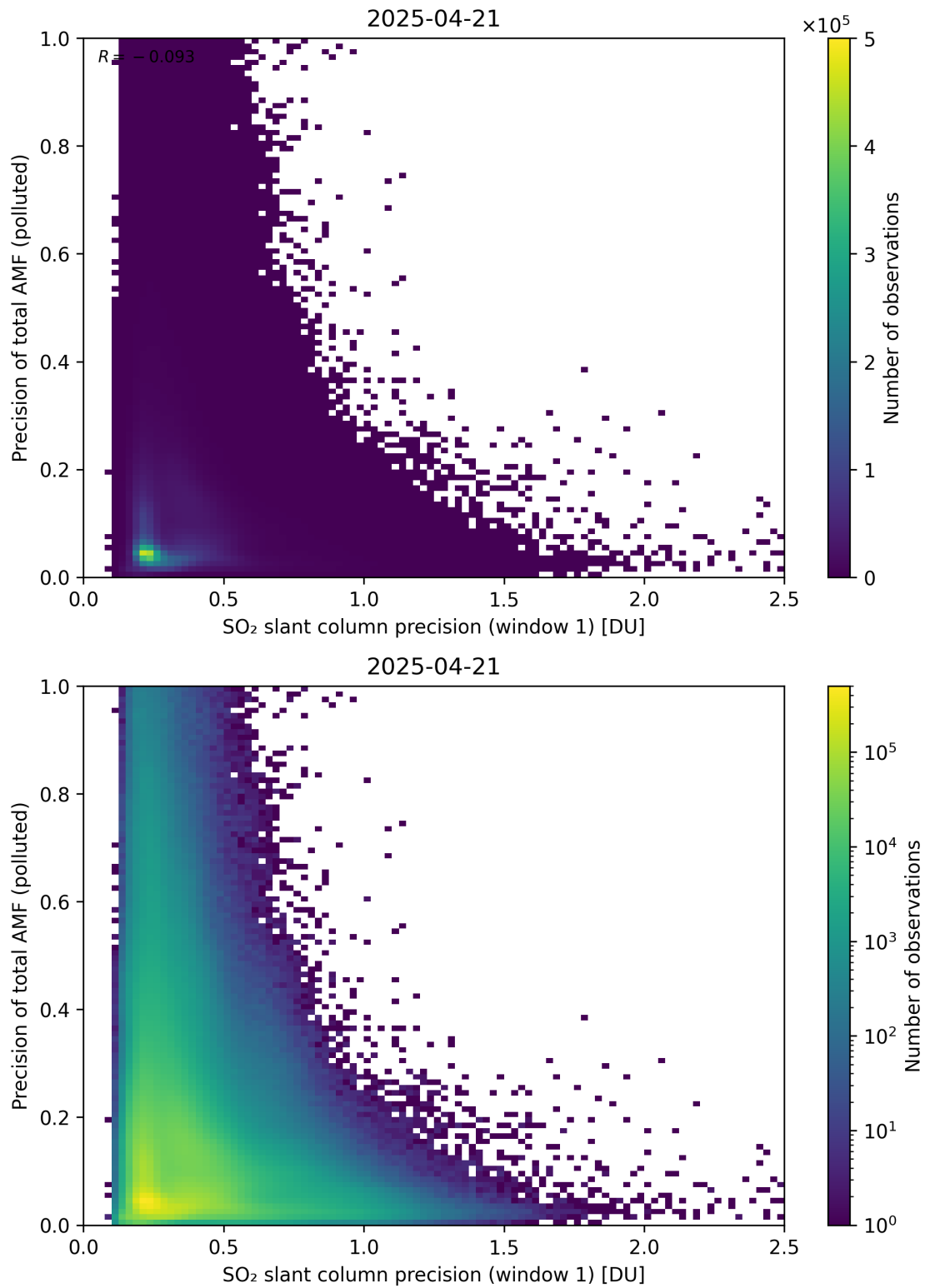


Figure 281: Scatter density plot of “SO₂ slant column precision (window 1)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

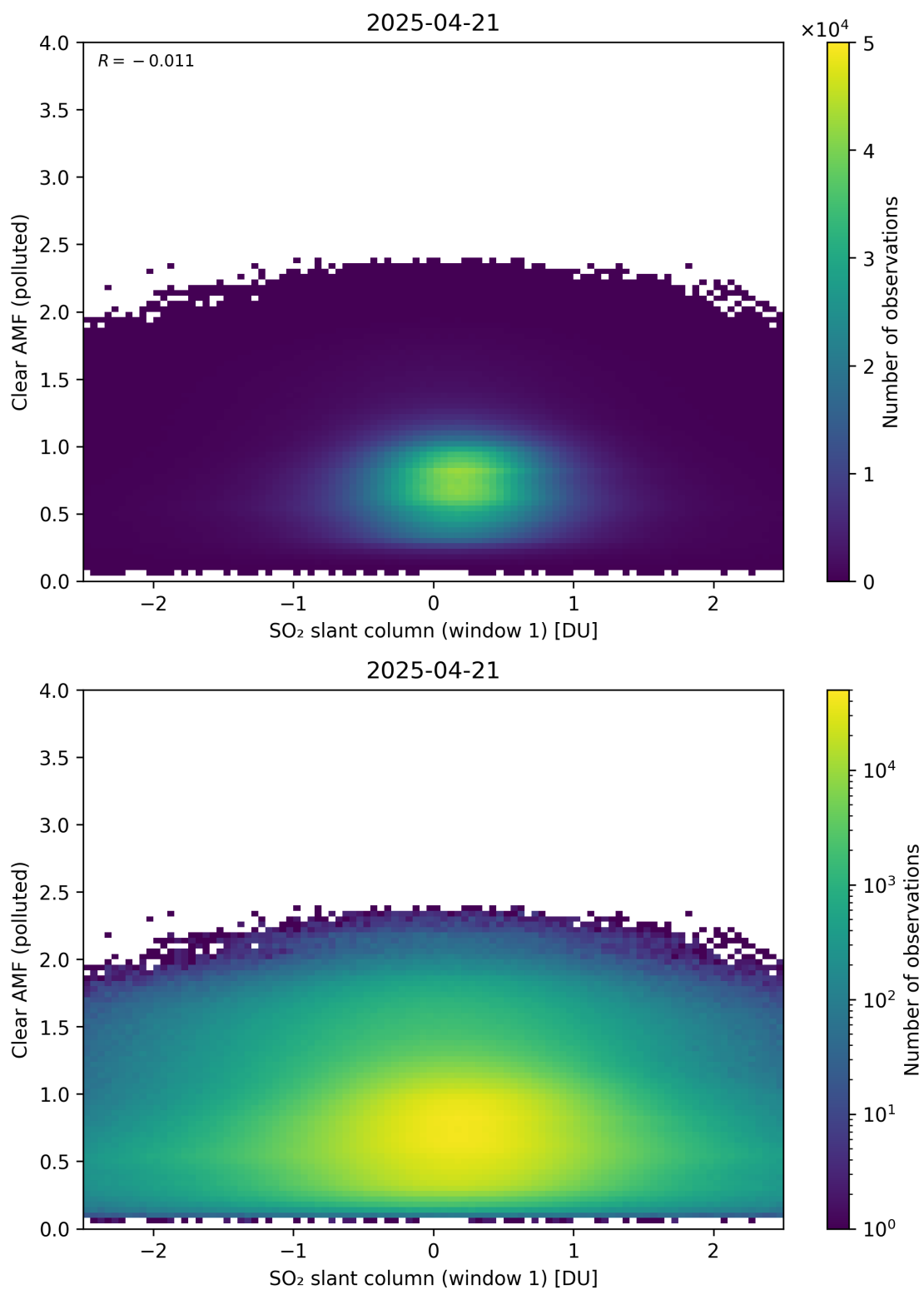


Figure 282: Scatter density plot of “SO₂ slant column (window 1)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

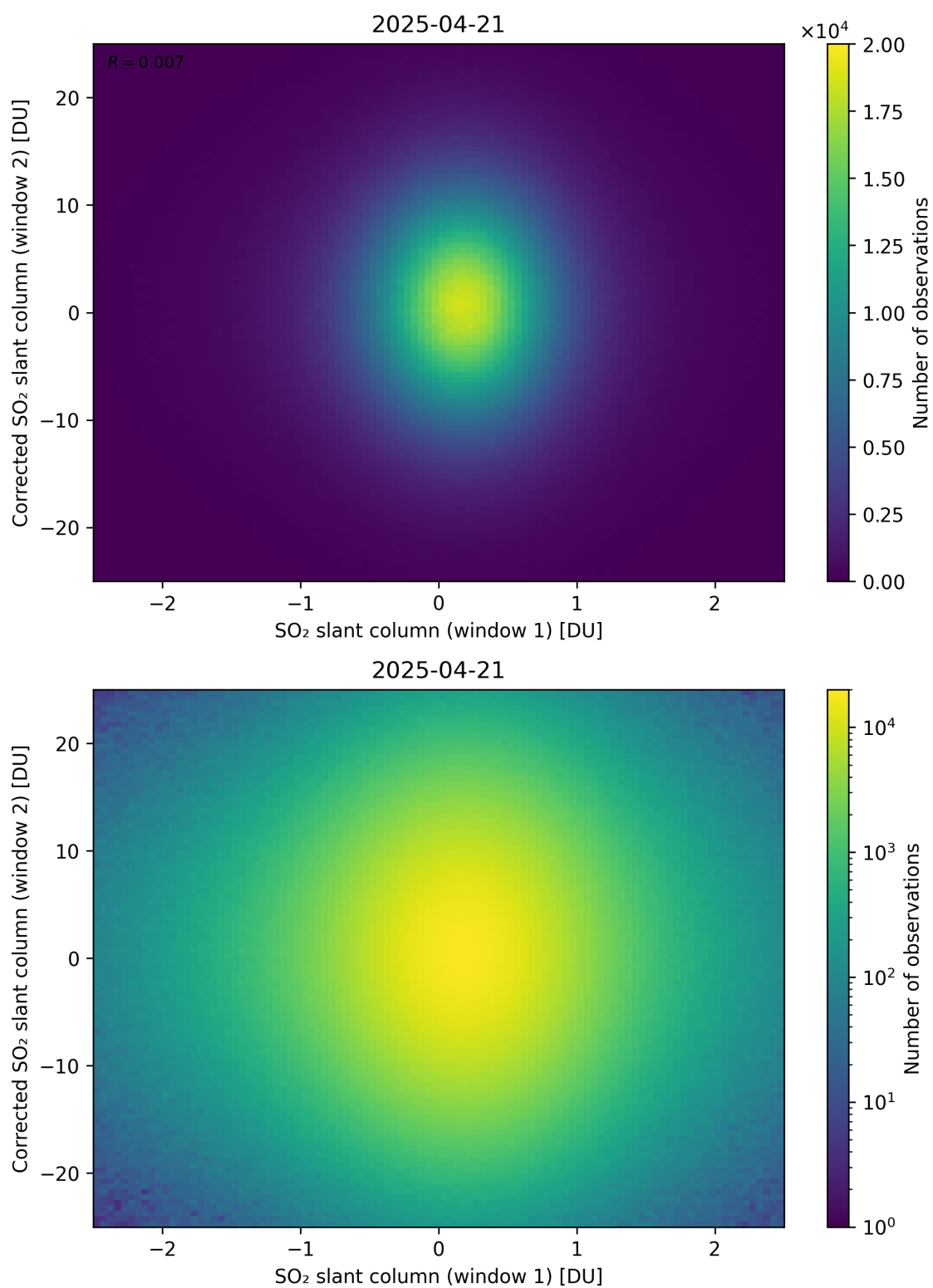


Figure 283: Scatter density plot of “SO₂ slant column (window 1)” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

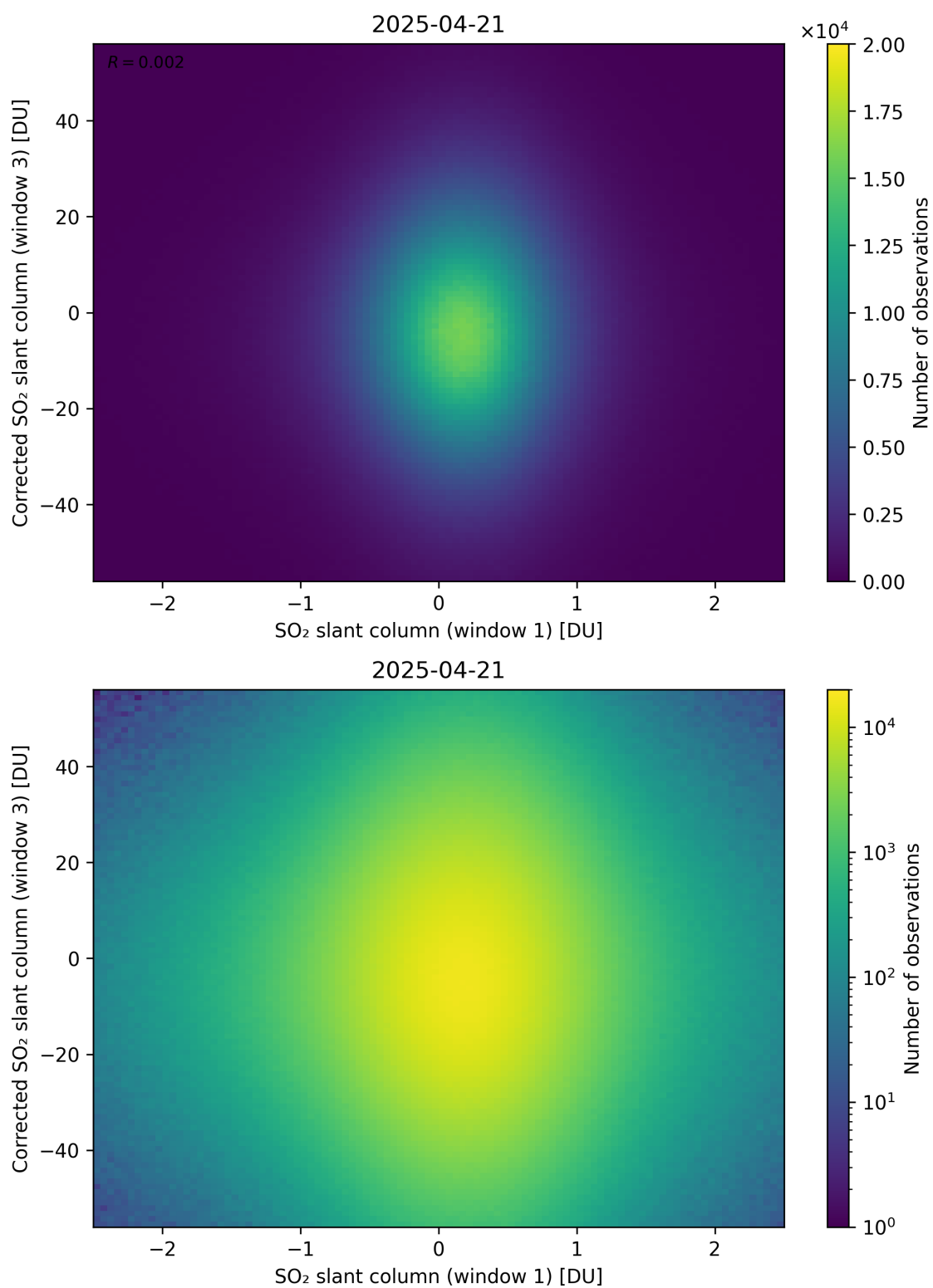


Figure 284: Scatter density plot of “SO₂ slant column (window 1)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

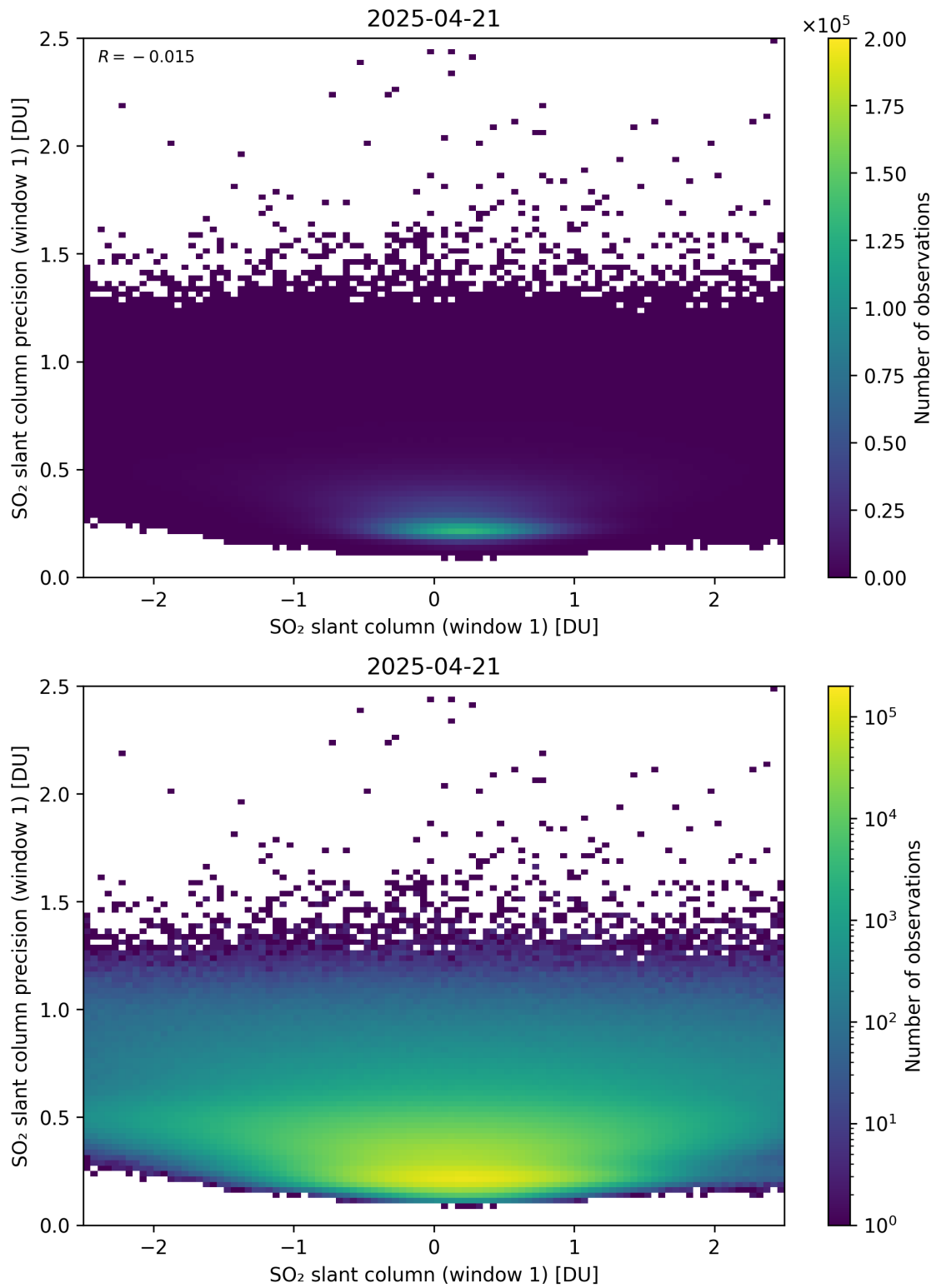


Figure 285: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

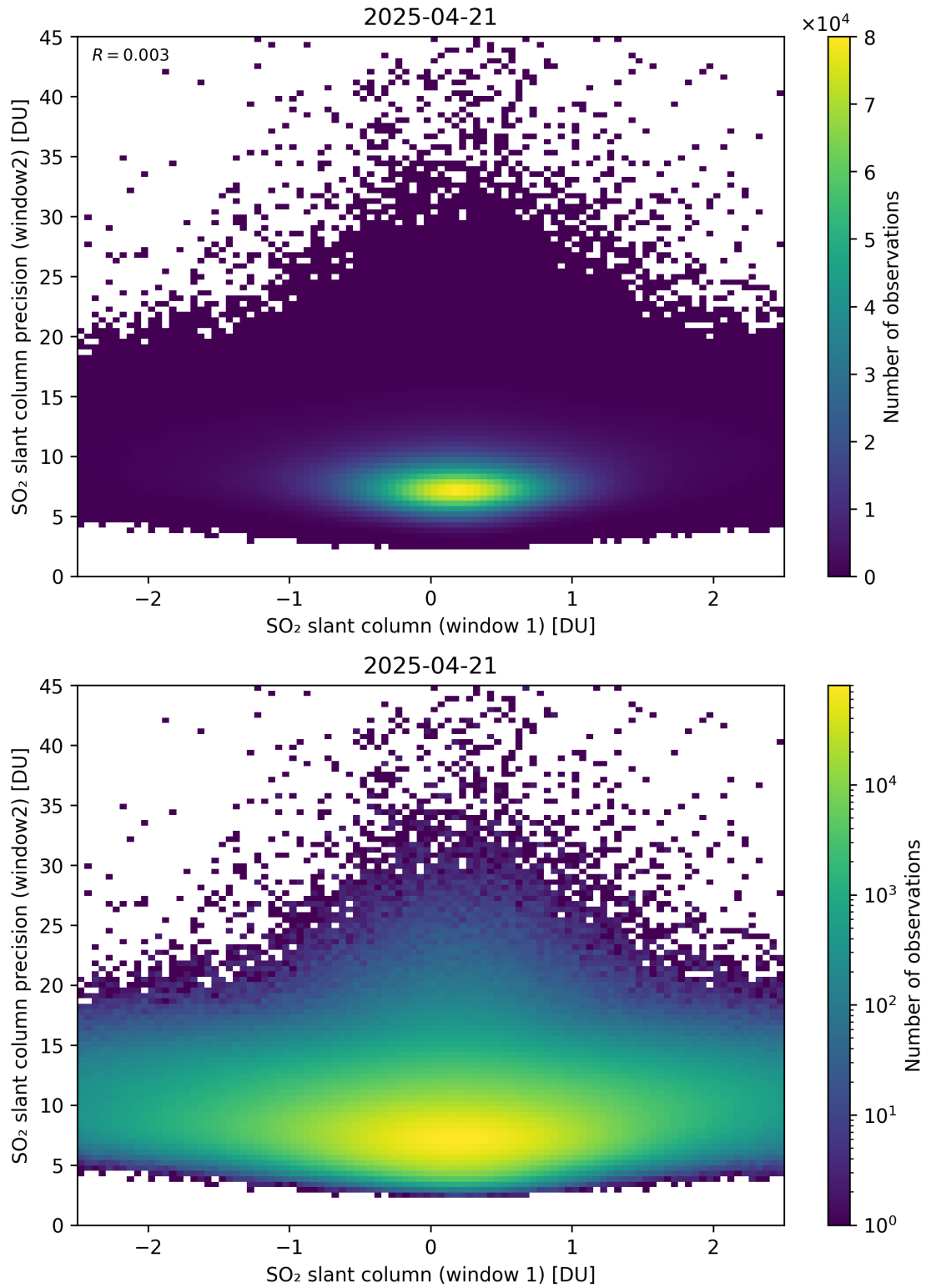


Figure 286: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

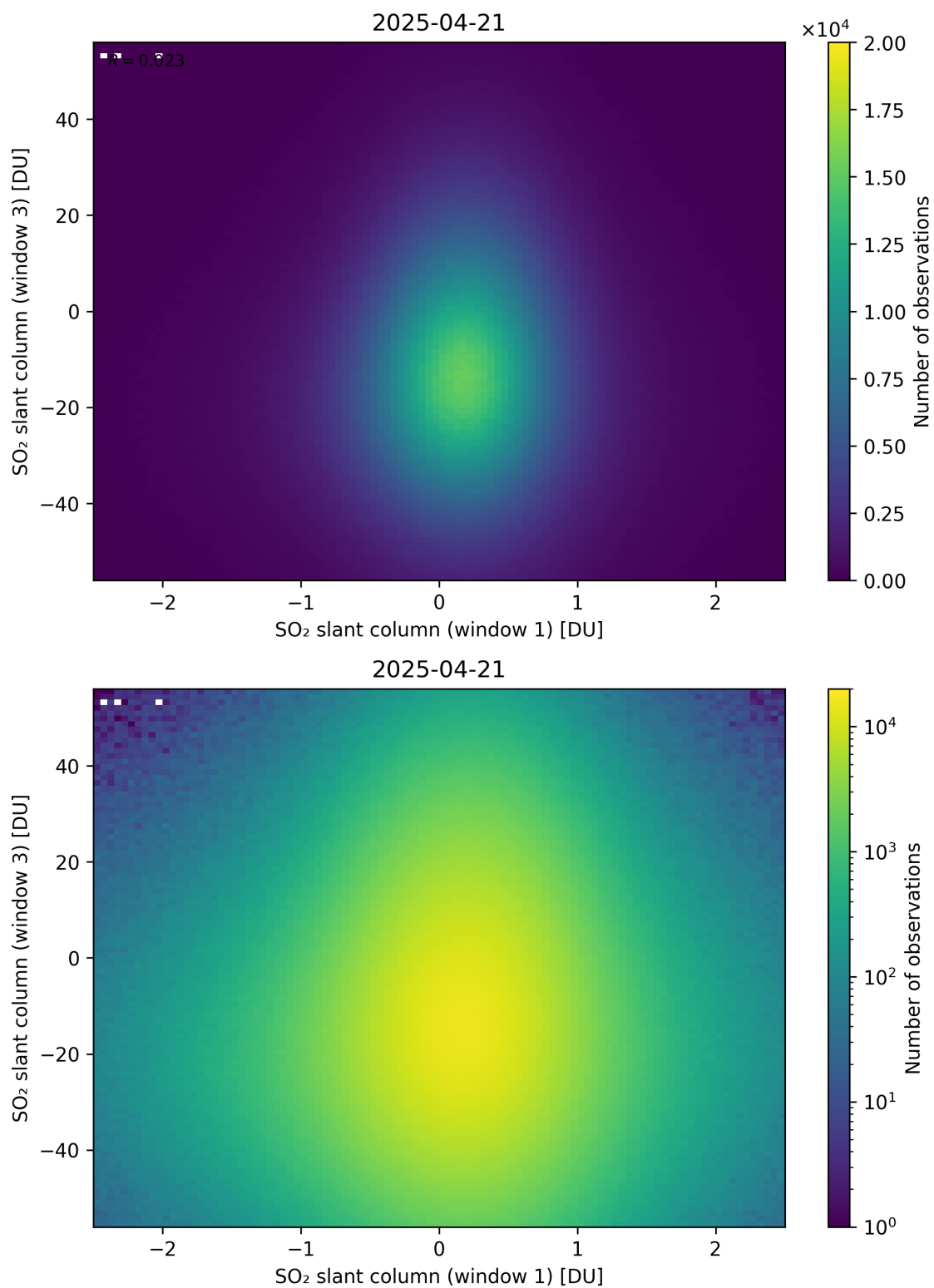


Figure 287: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

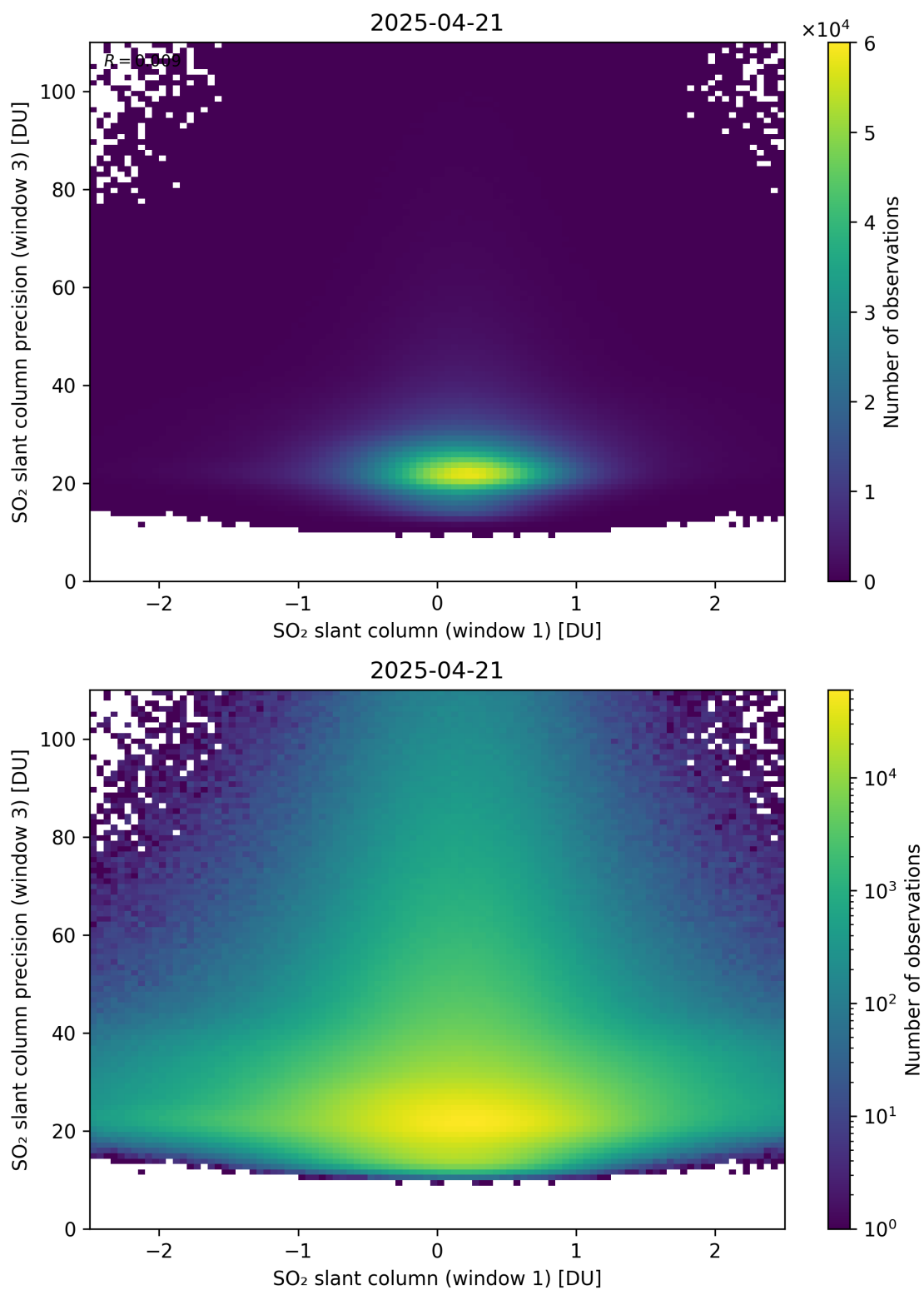


Figure 288: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

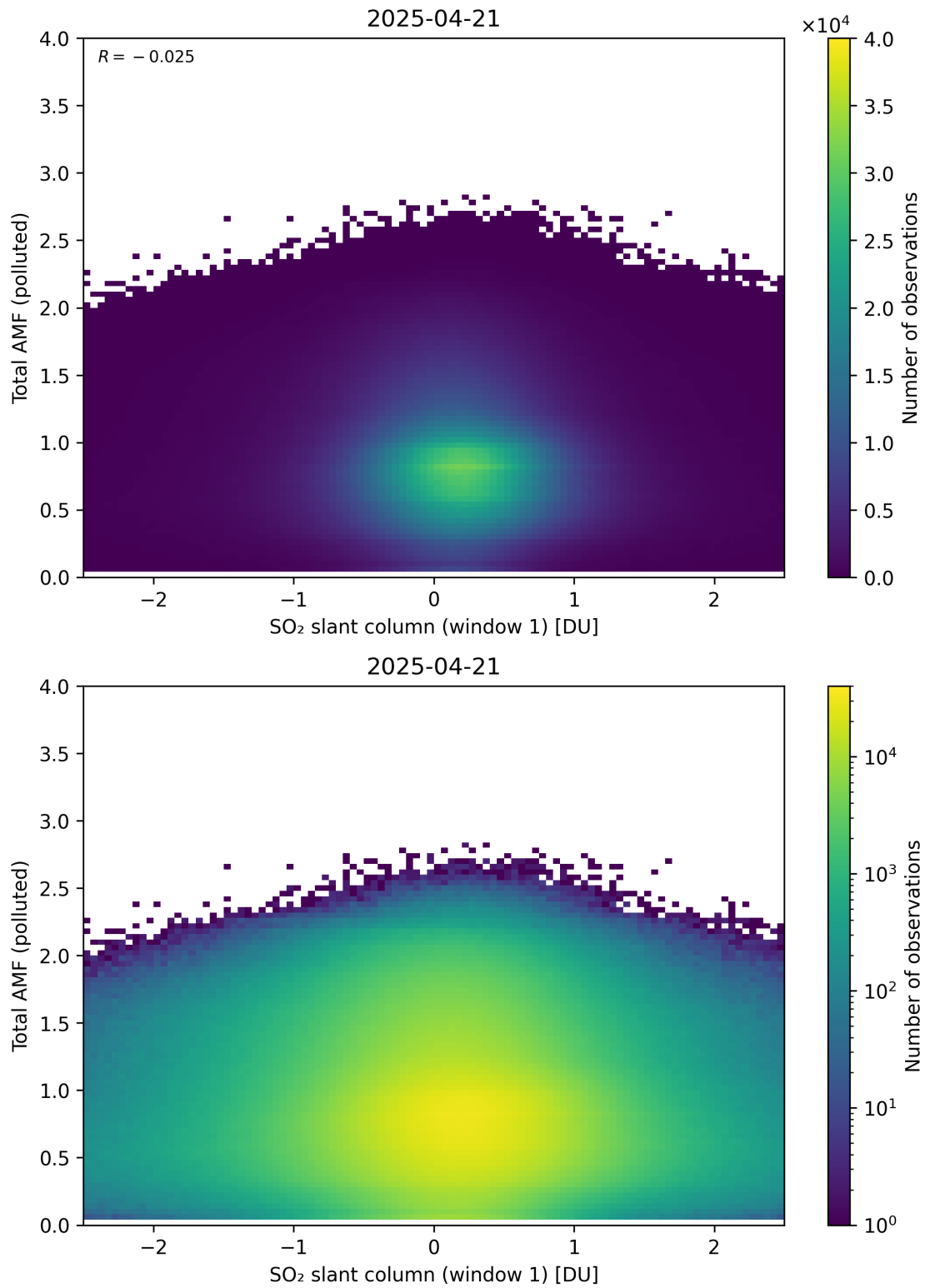


Figure 289: Scatter density plot of “SO₂ slant column (window 1)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

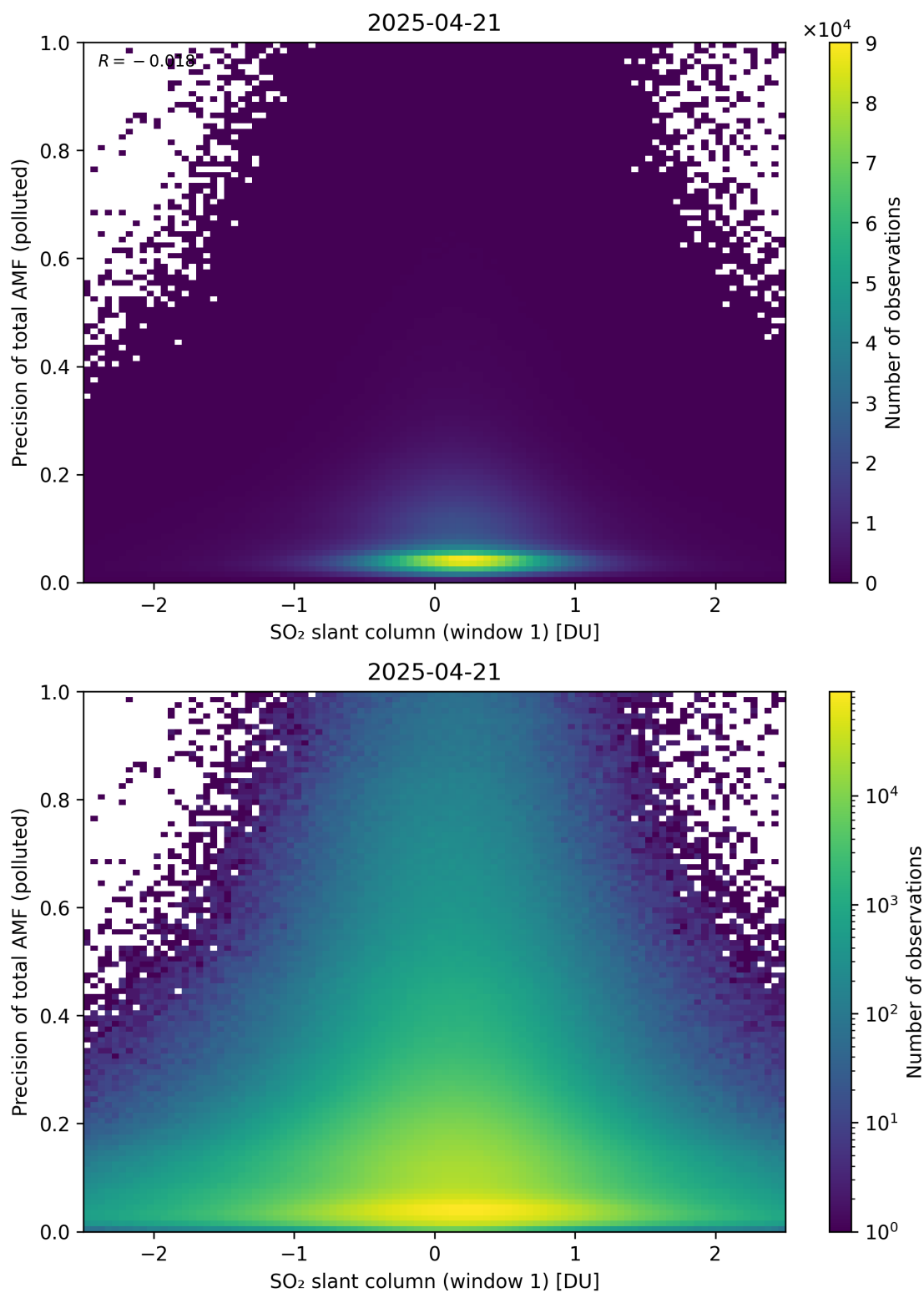


Figure 290: Scatter density plot of “SO₂ slant column (window 1)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

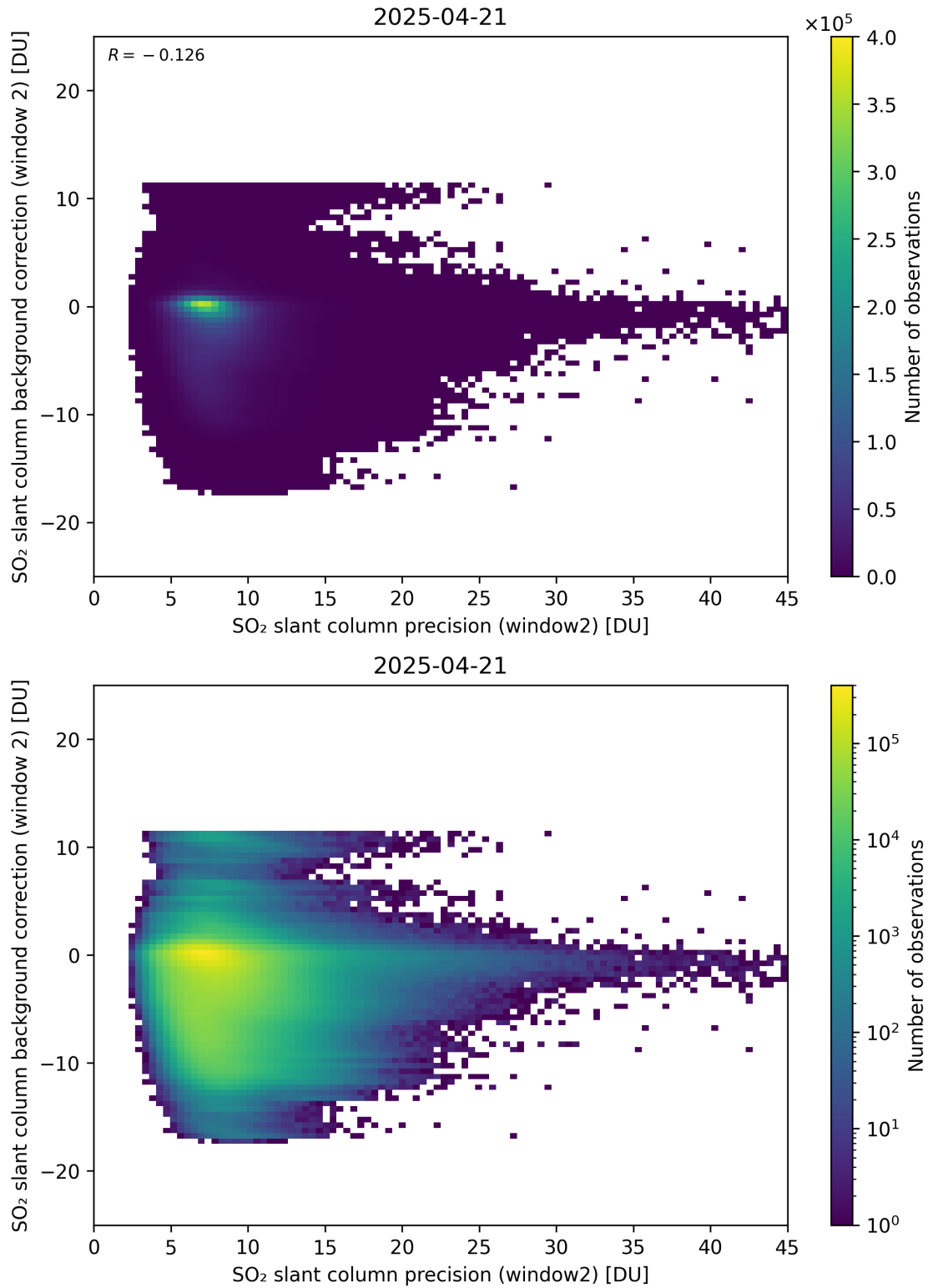


Figure 291: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

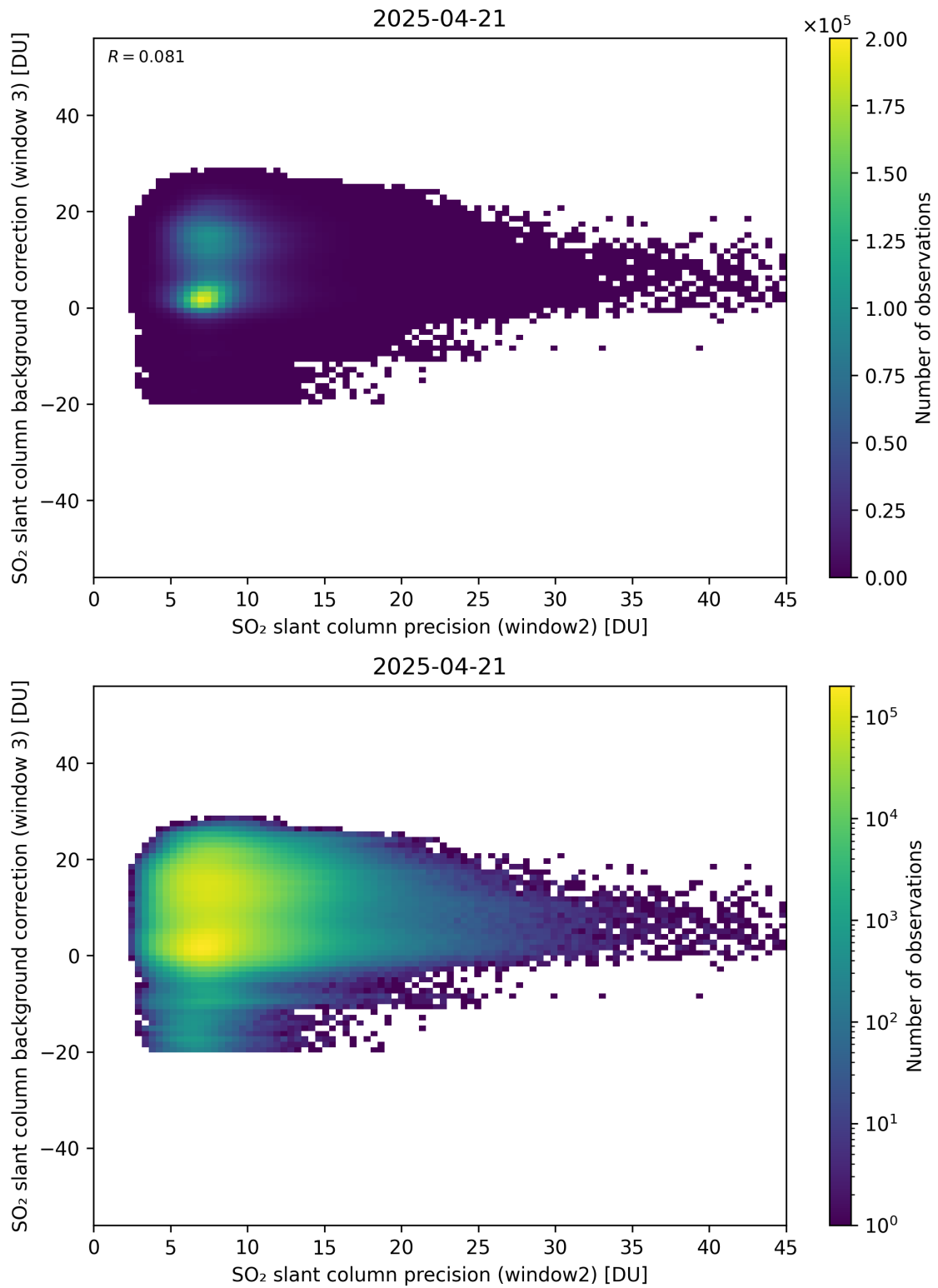


Figure 292: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

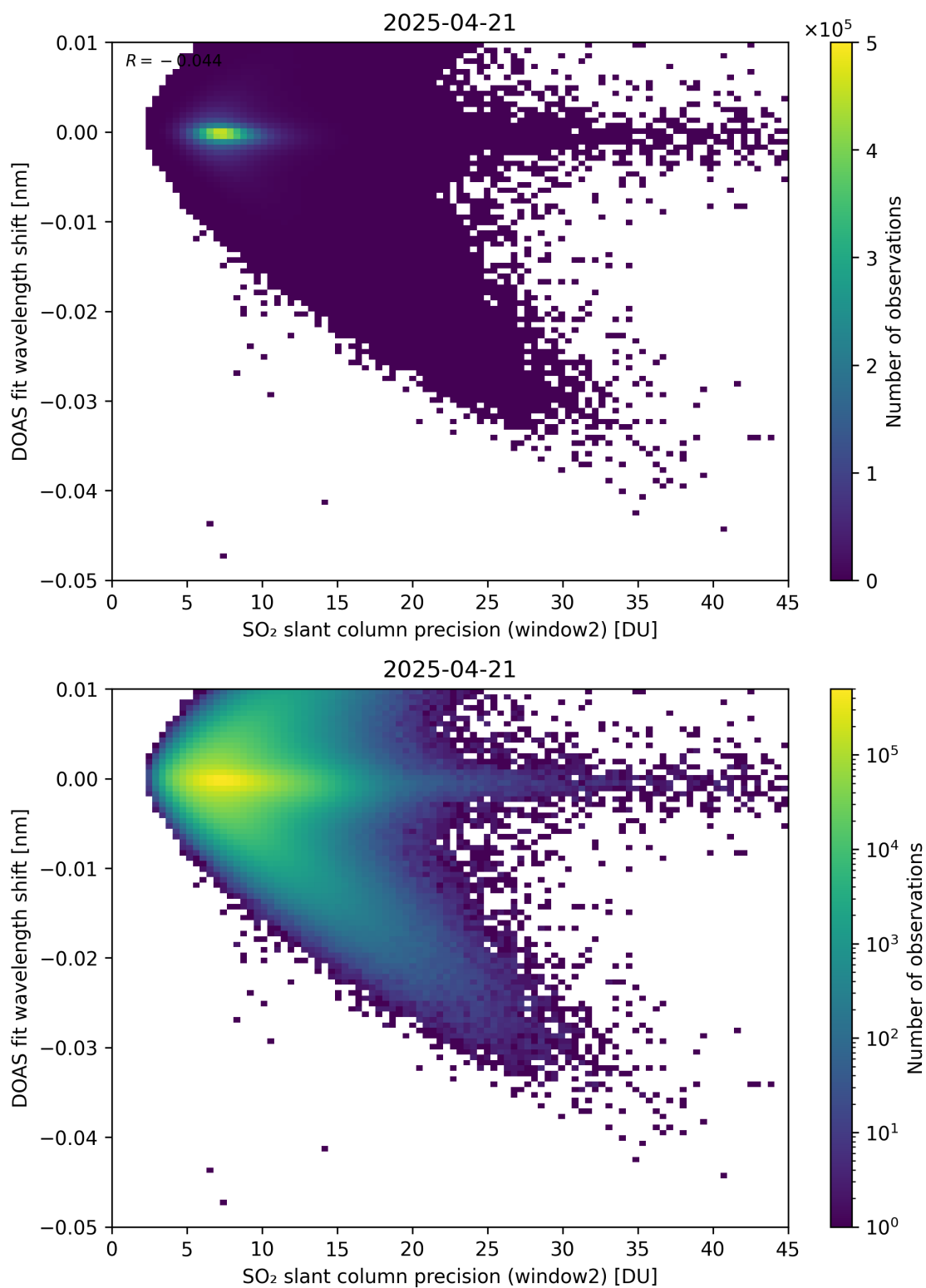


Figure 293: Scatter density plot of “SO₂ slant column precision (window2)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

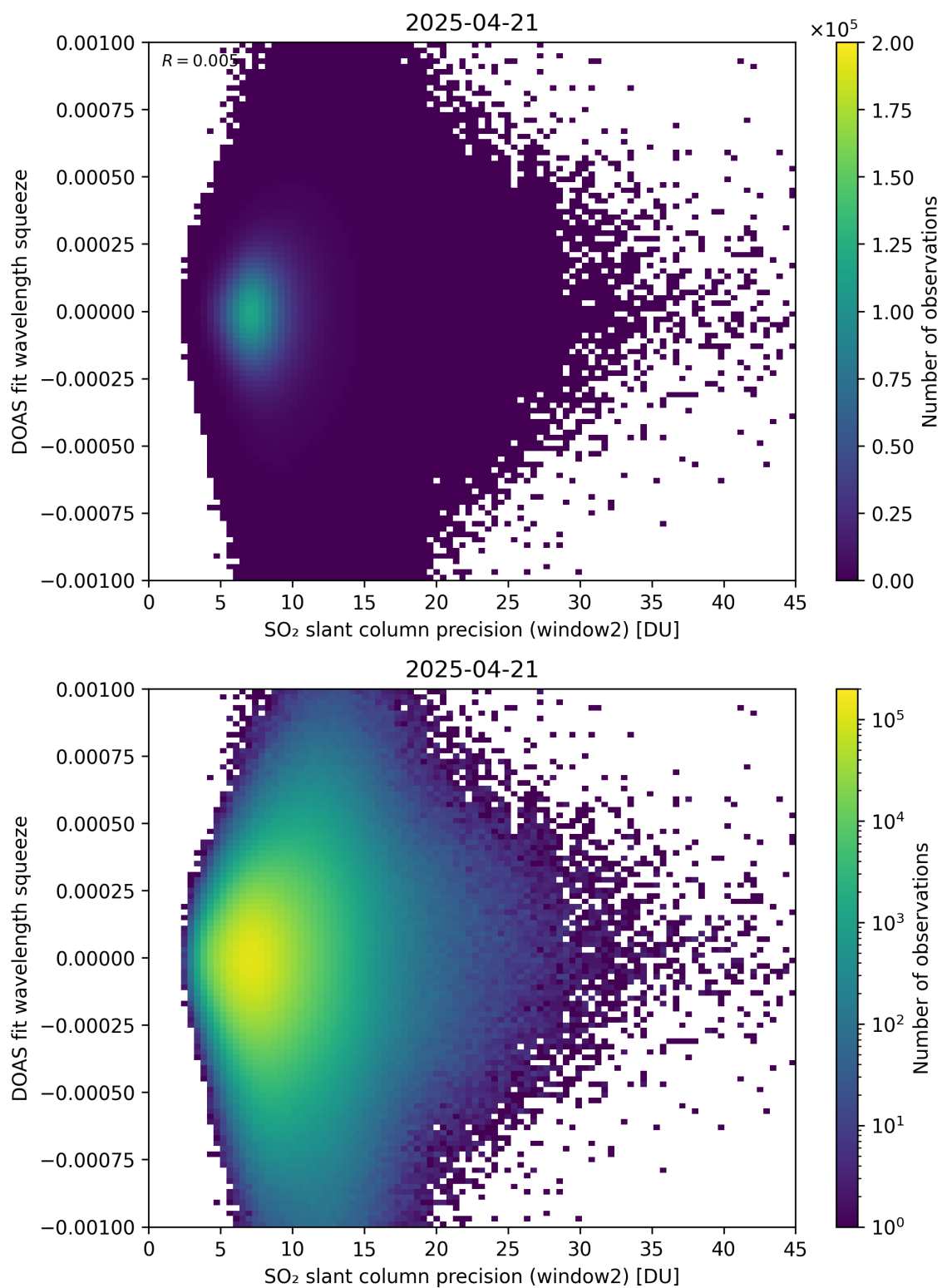


Figure 294: Scatter density plot of “SO₂ slant column precision (window2)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

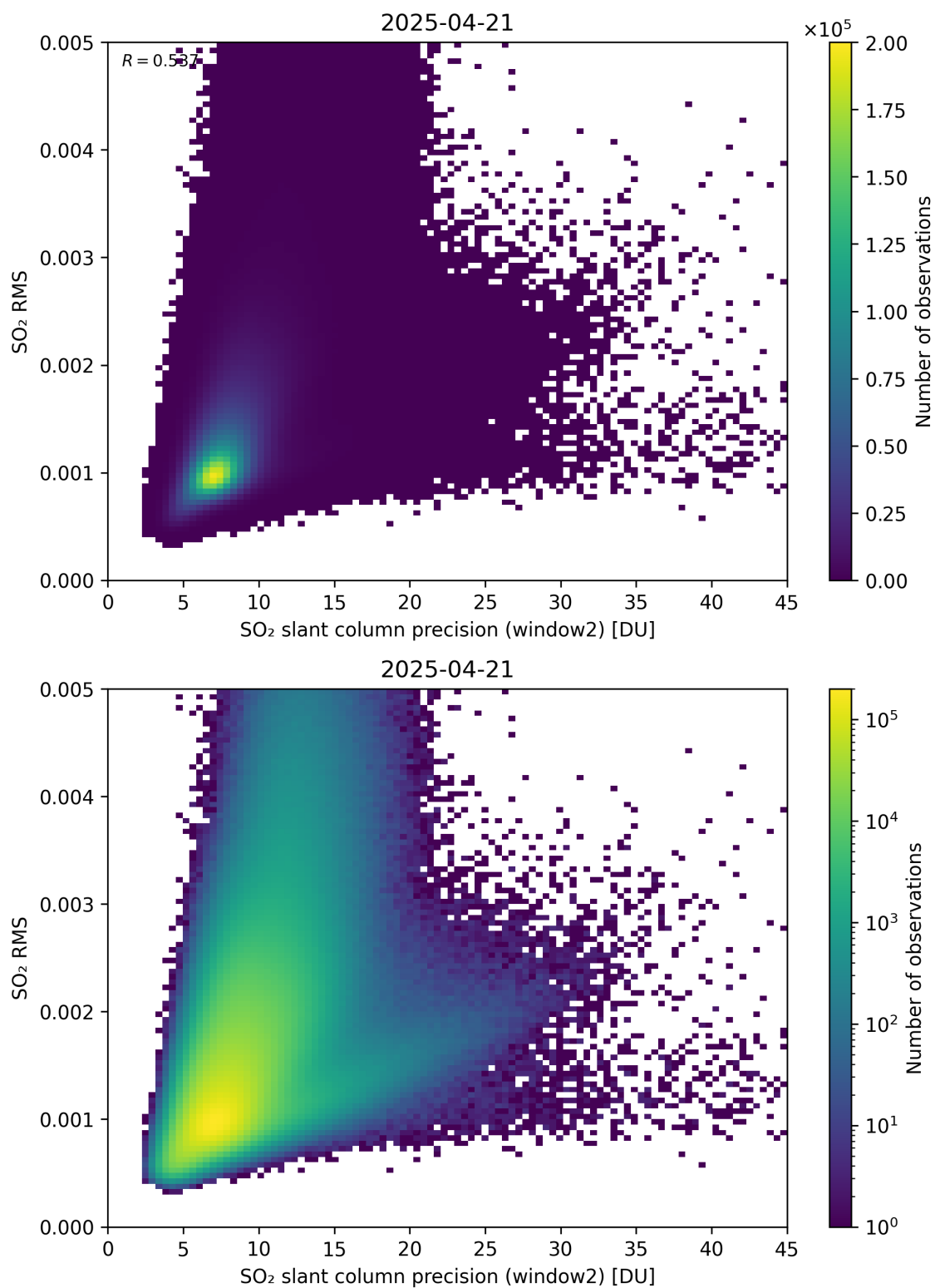


Figure 295: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

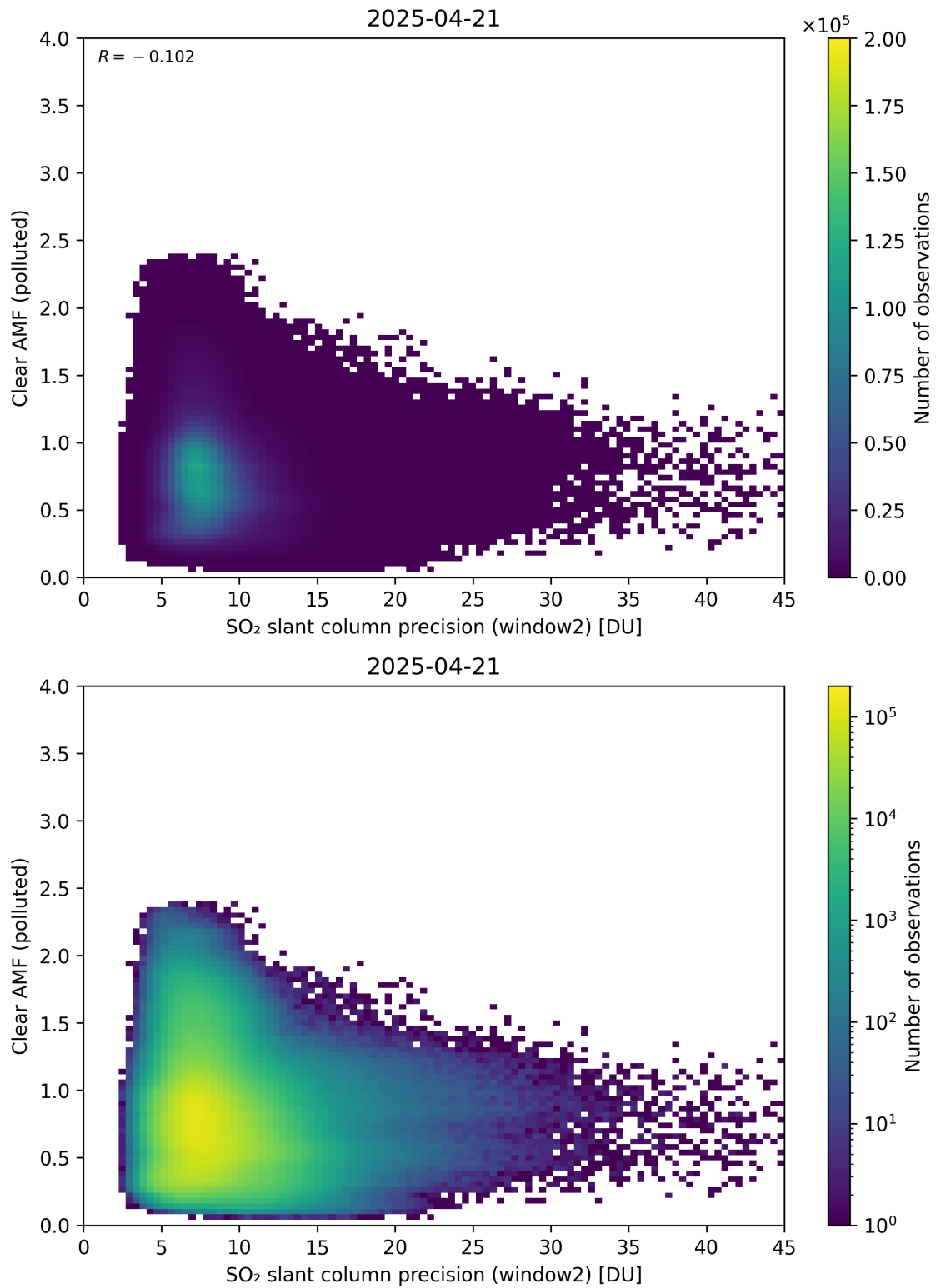


Figure 296: Scatter density plot of “SO₂ slant column precision (window2)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

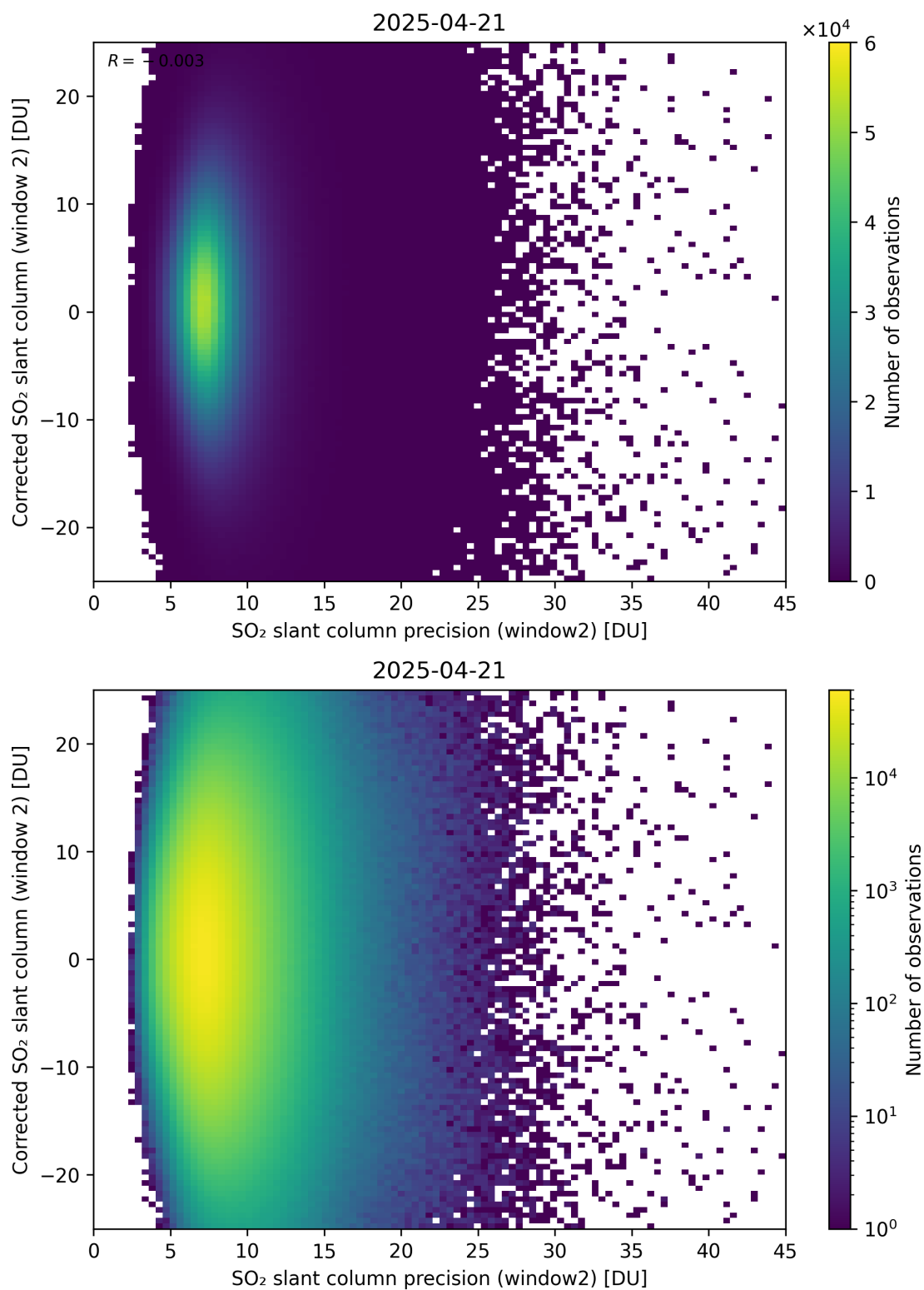


Figure 297: Scatter density plot of “SO₂ slant column precision (window2)” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

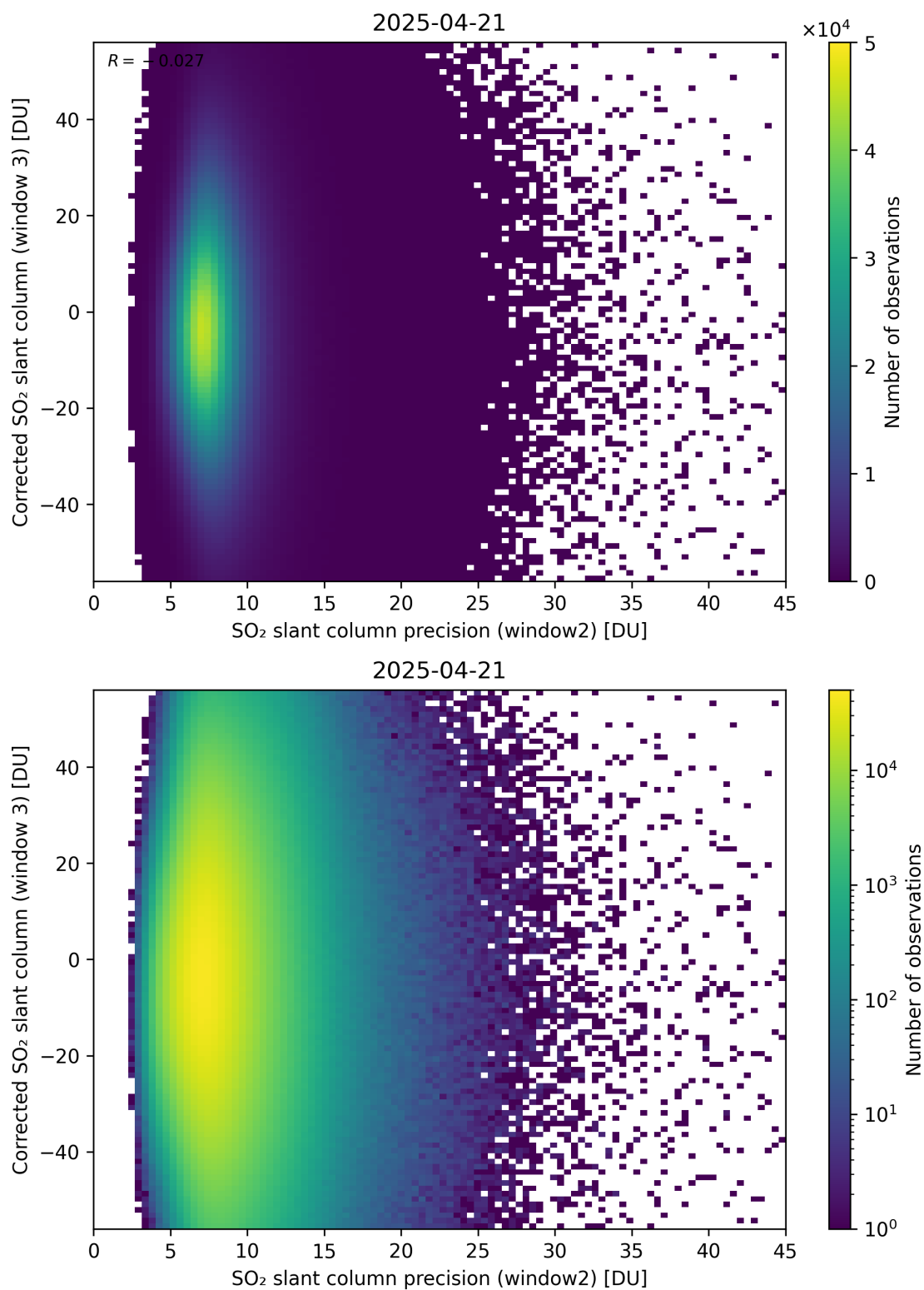


Figure 298: Scatter density plot of “SO₂ slant column precision (window2)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

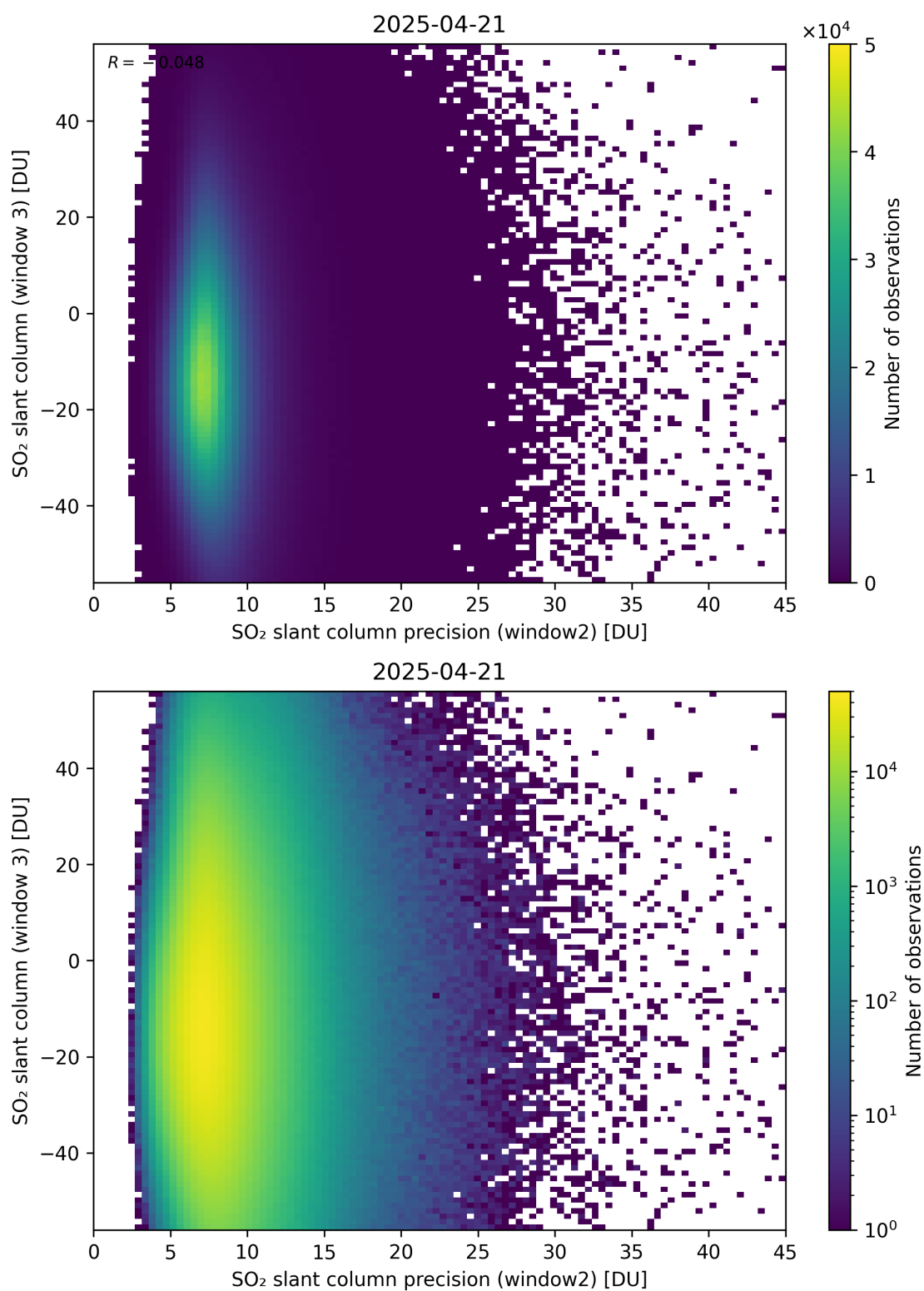


Figure 299: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

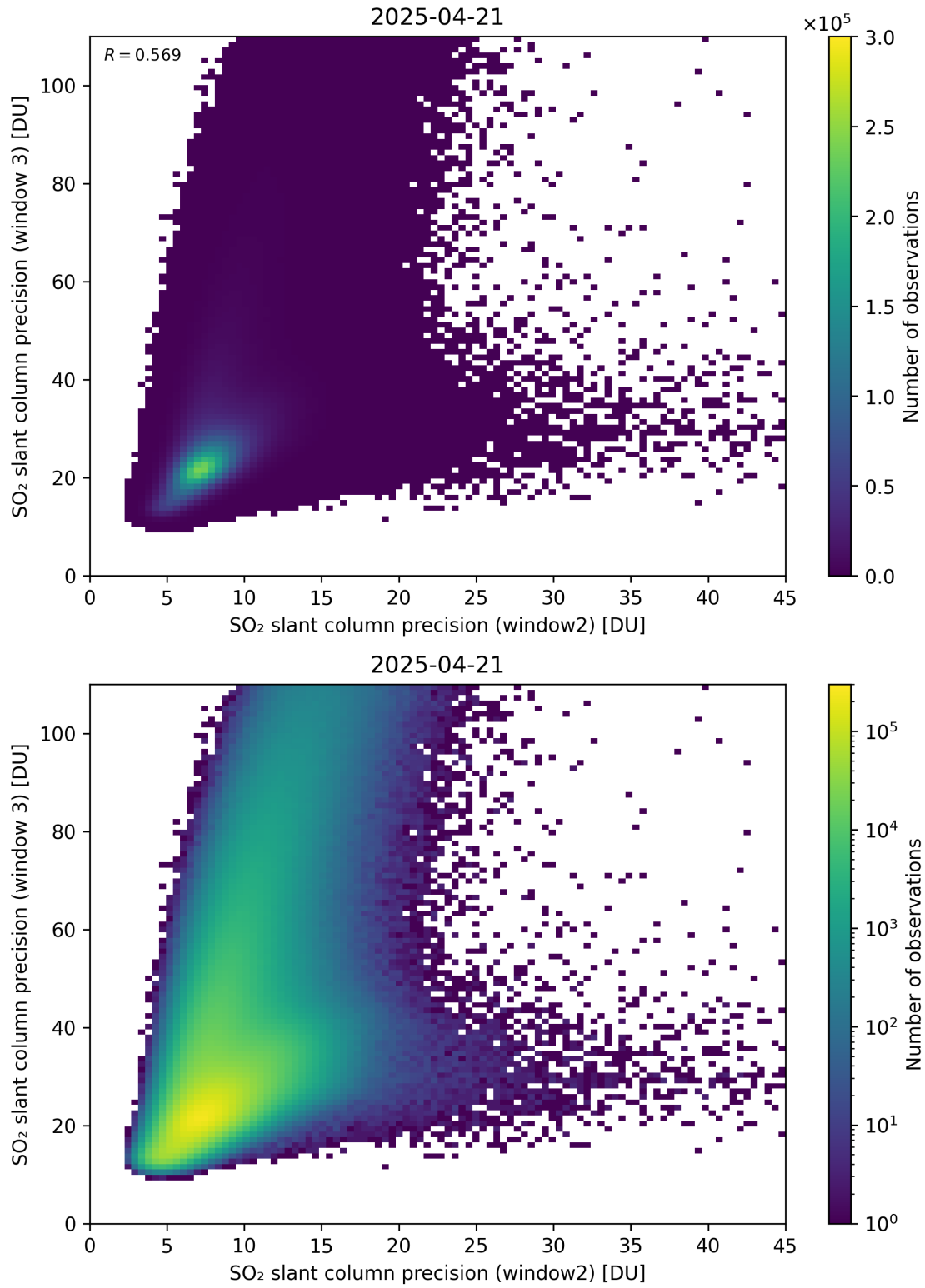


Figure 300: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

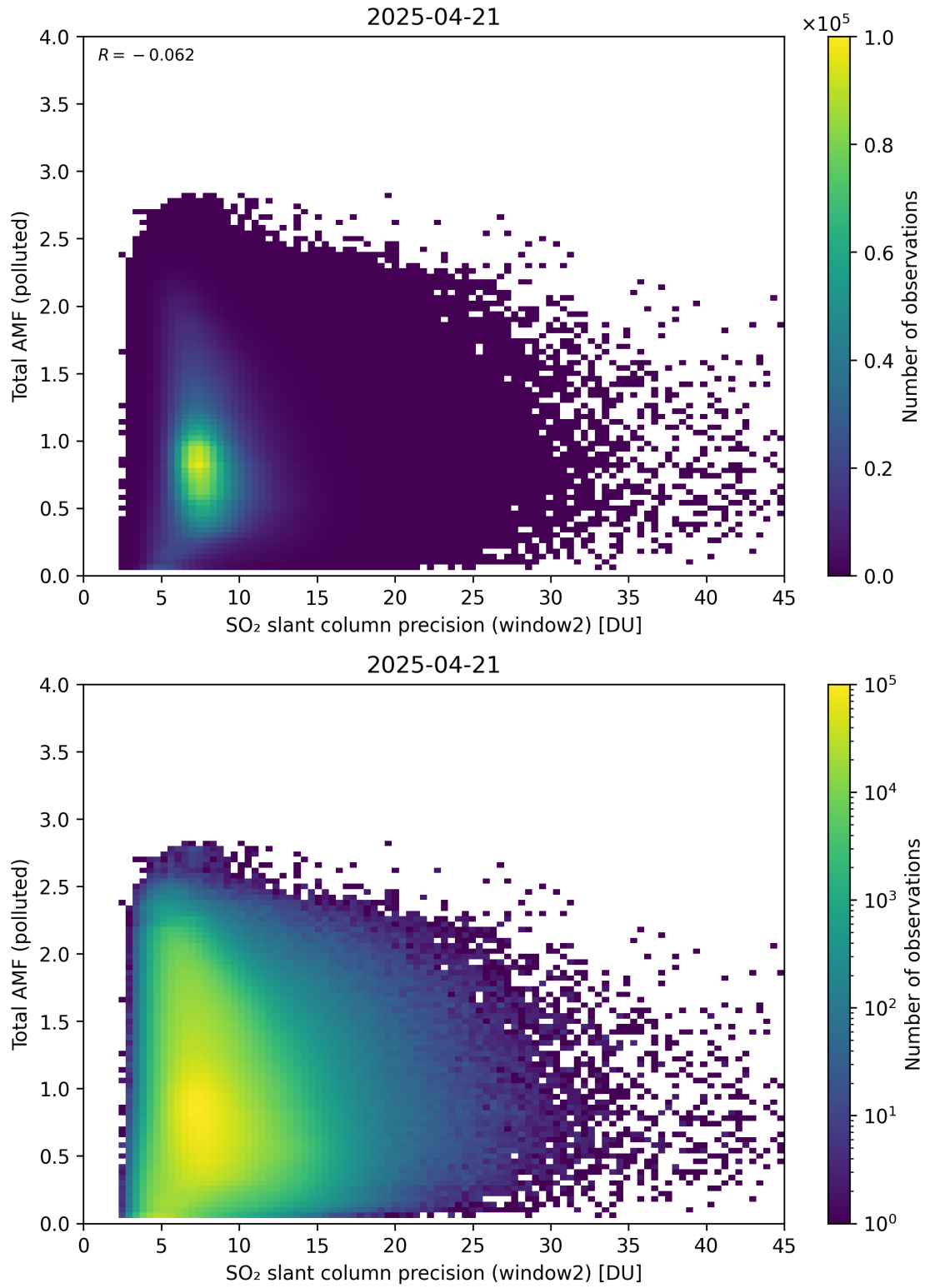


Figure 301: Scatter density plot of “SO₂ slant column precision (window2)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

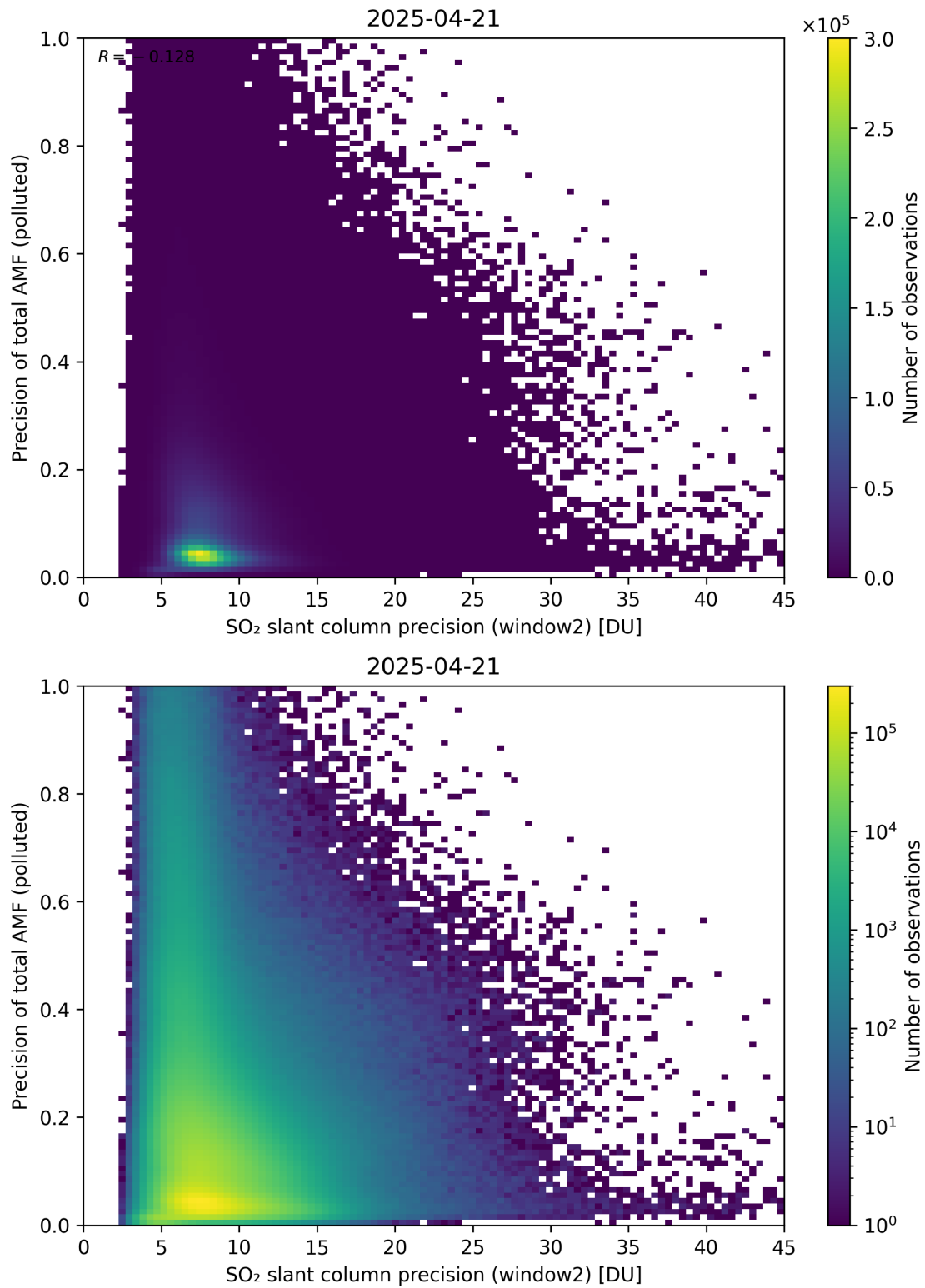


Figure 302: Scatter density plot of “SO₂ slant column precision (window2)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

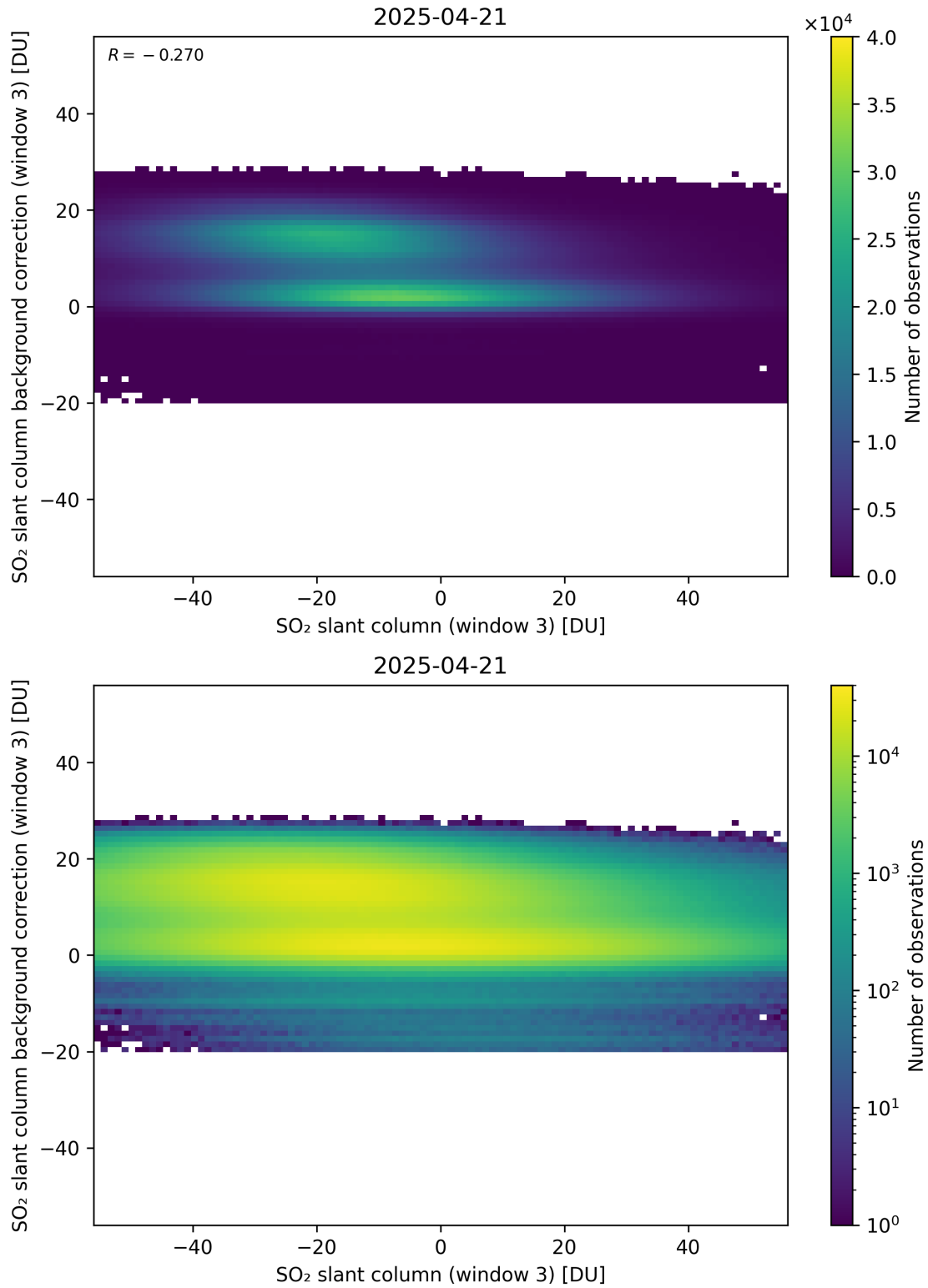


Figure 303: Scatter density plot of “SO₂ slant column (window 3)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

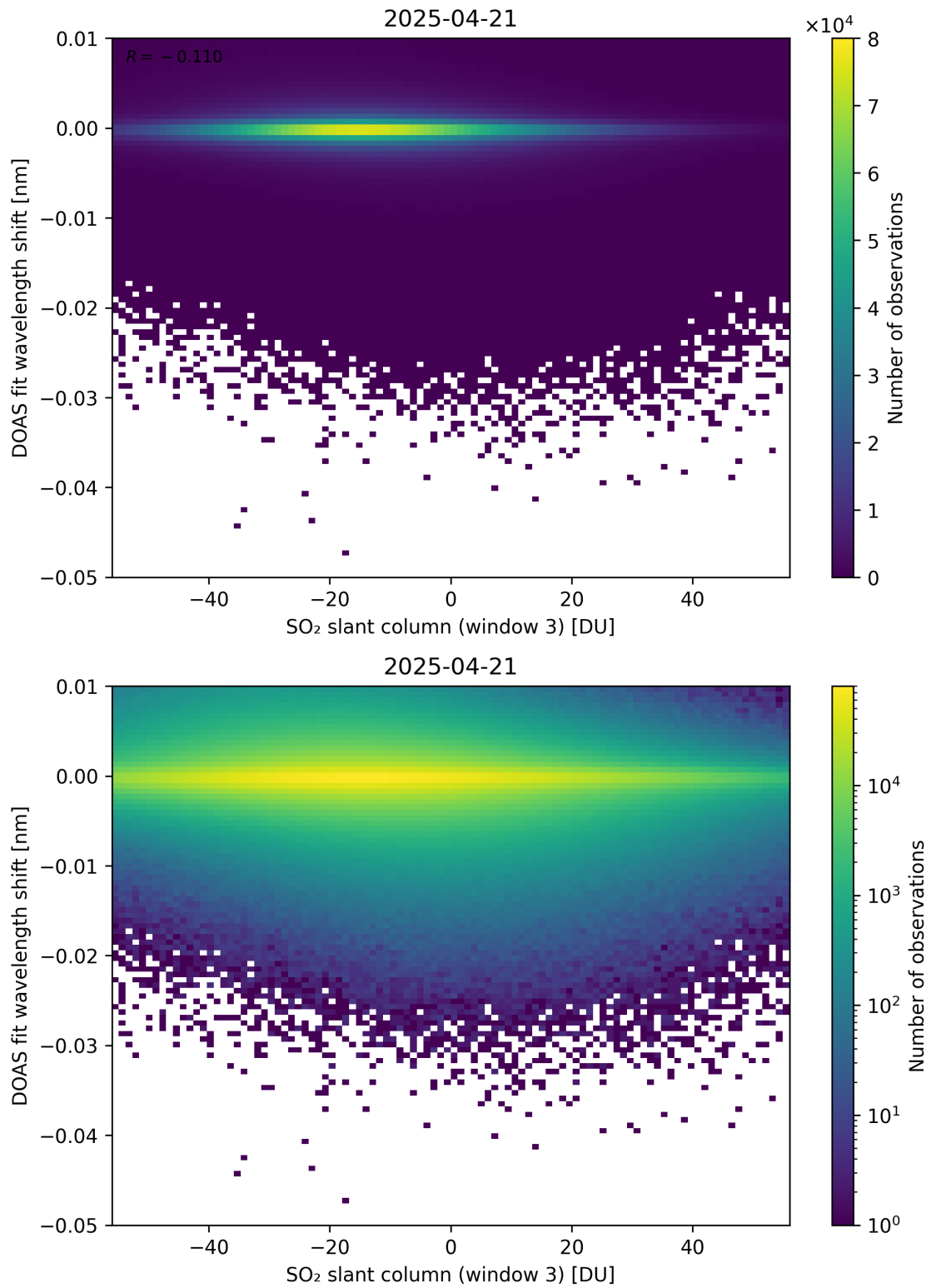


Figure 304: Scatter density plot of “SO₂ slant column (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

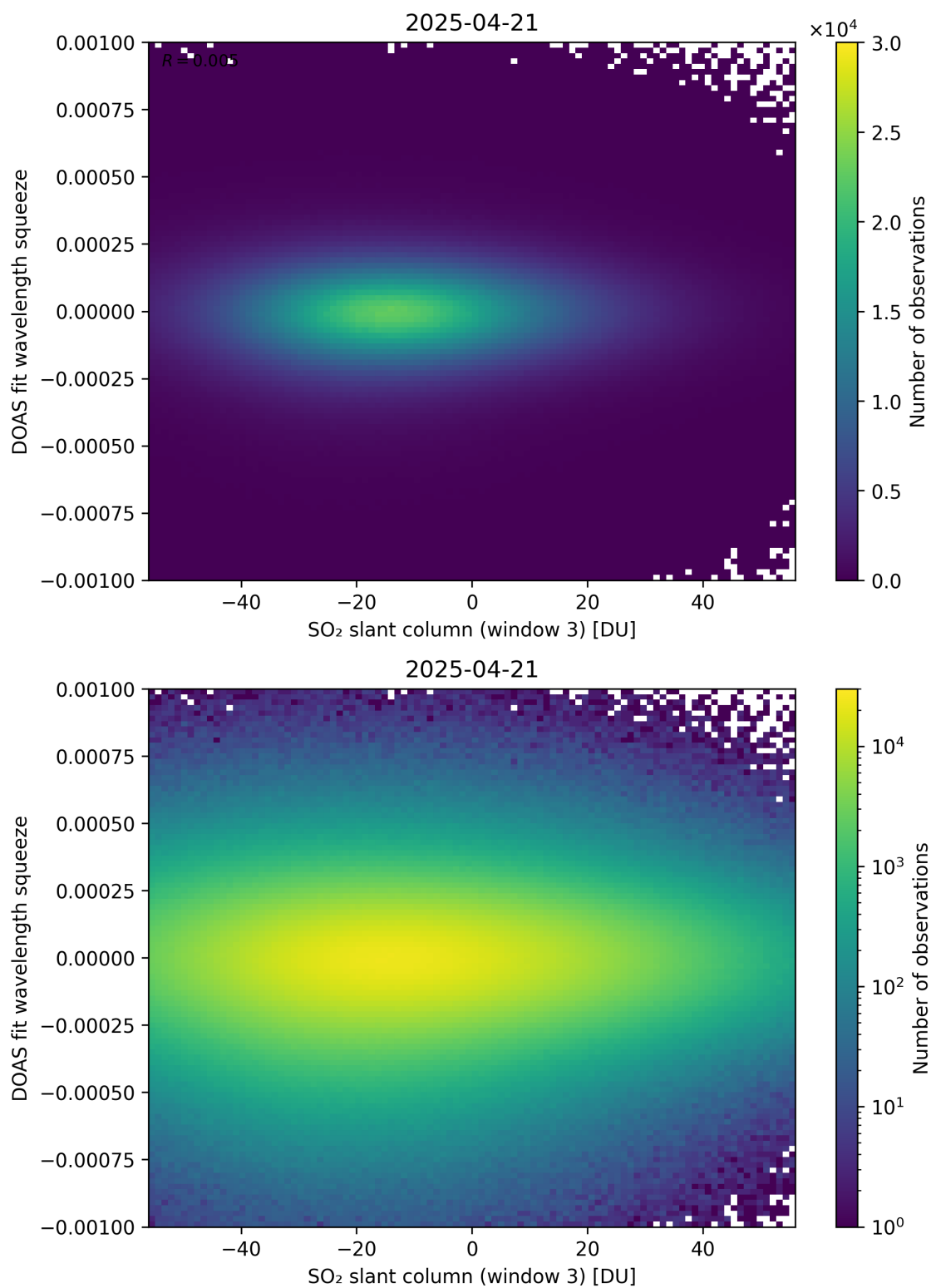


Figure 305: Scatter density plot of “SO₂ slant column (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

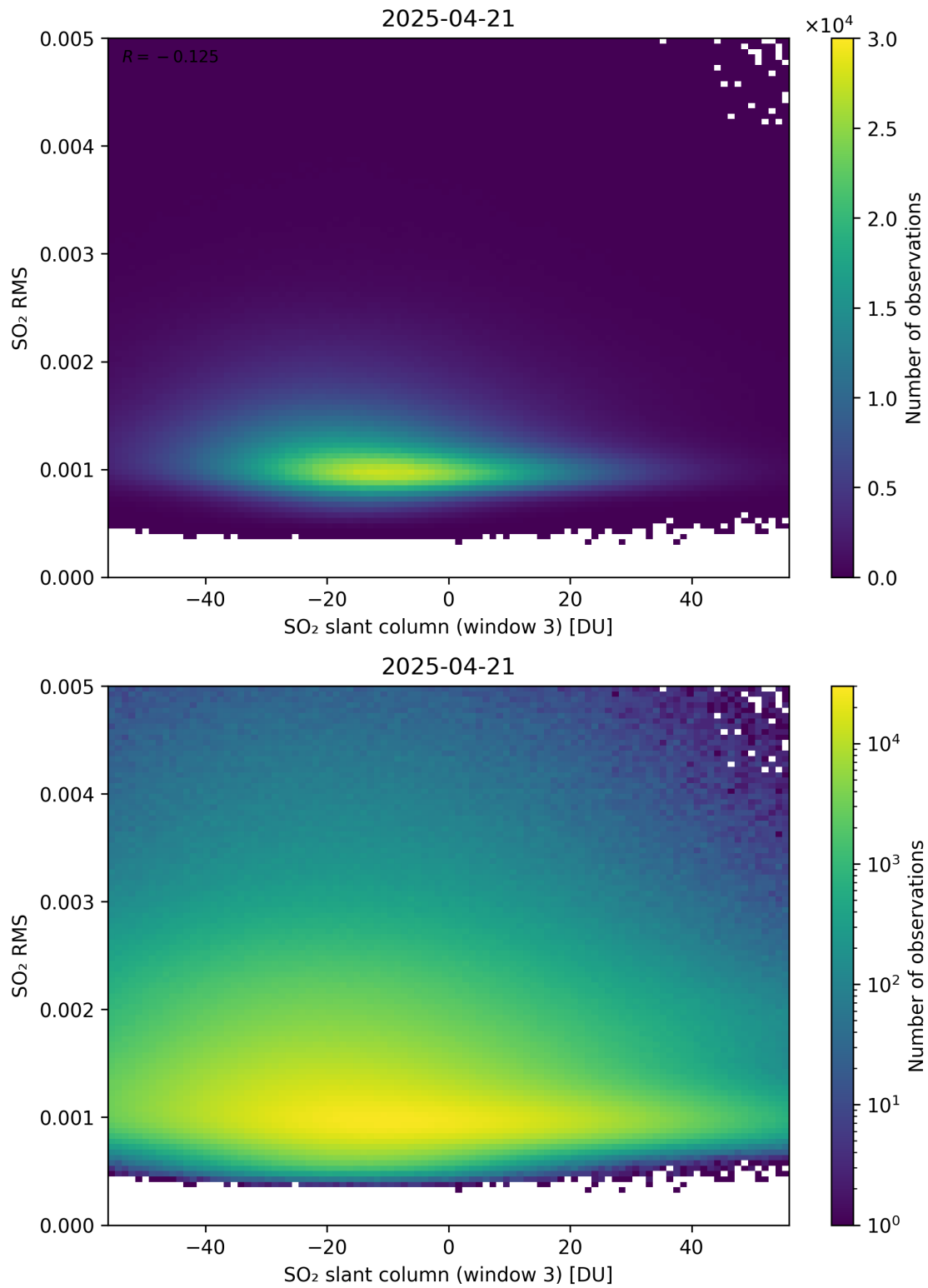


Figure 306: Scatter density plot of “SO₂ slant column (window 3)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

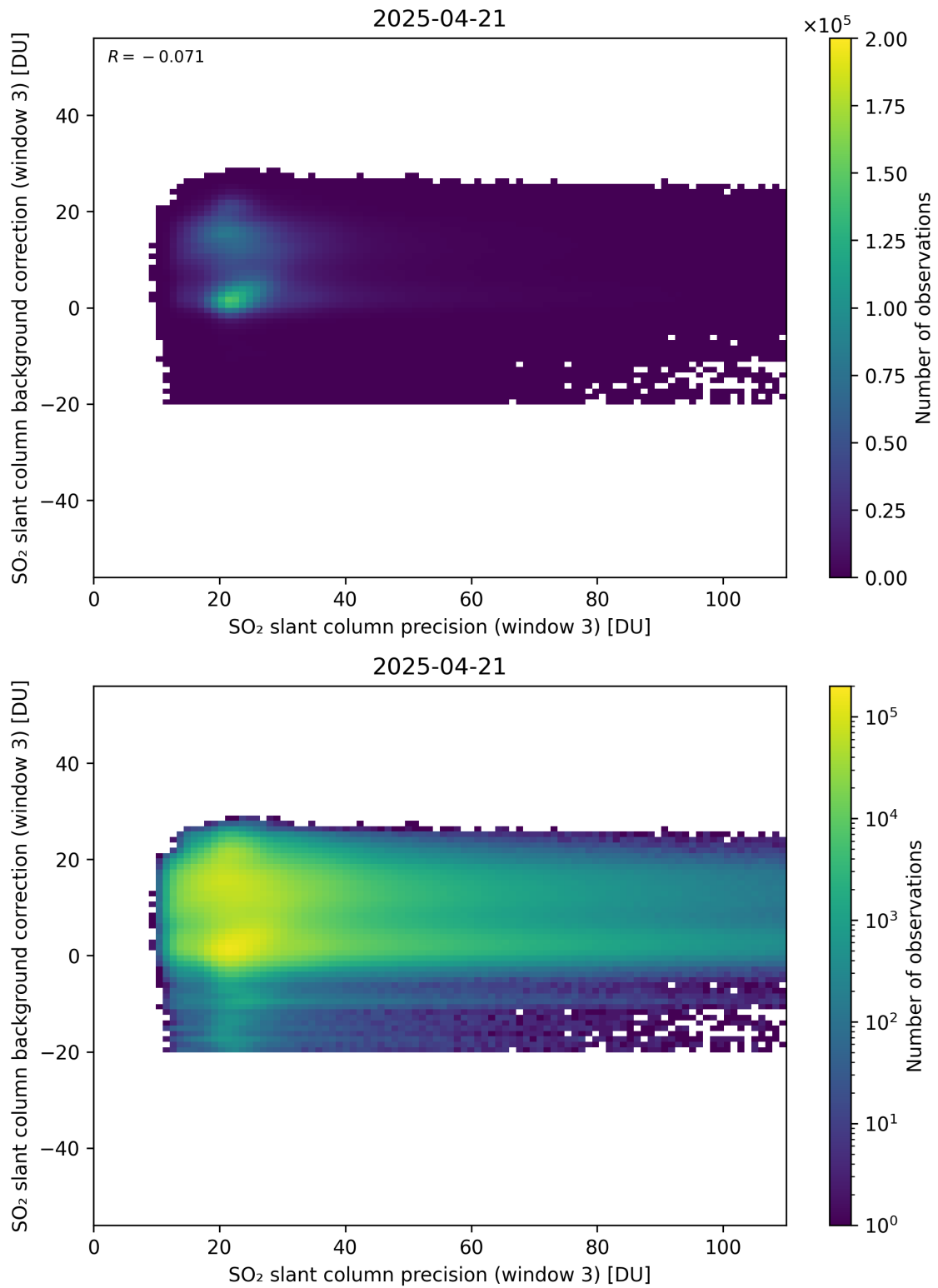


Figure 307: Scatter density plot of “SO₂ slant column precision (window 3)” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

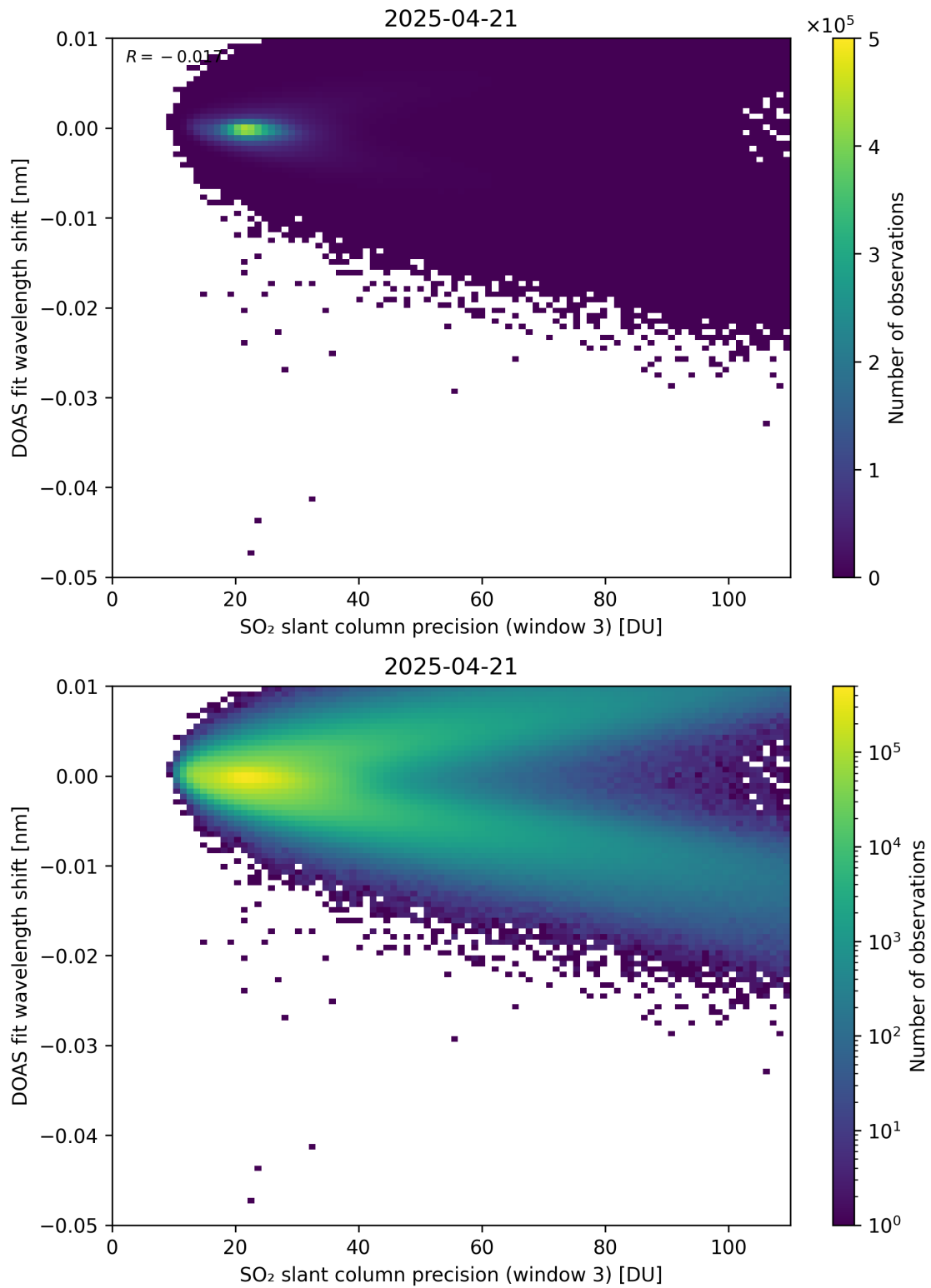


Figure 308: Scatter density plot of “SO₂ slant column precision (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

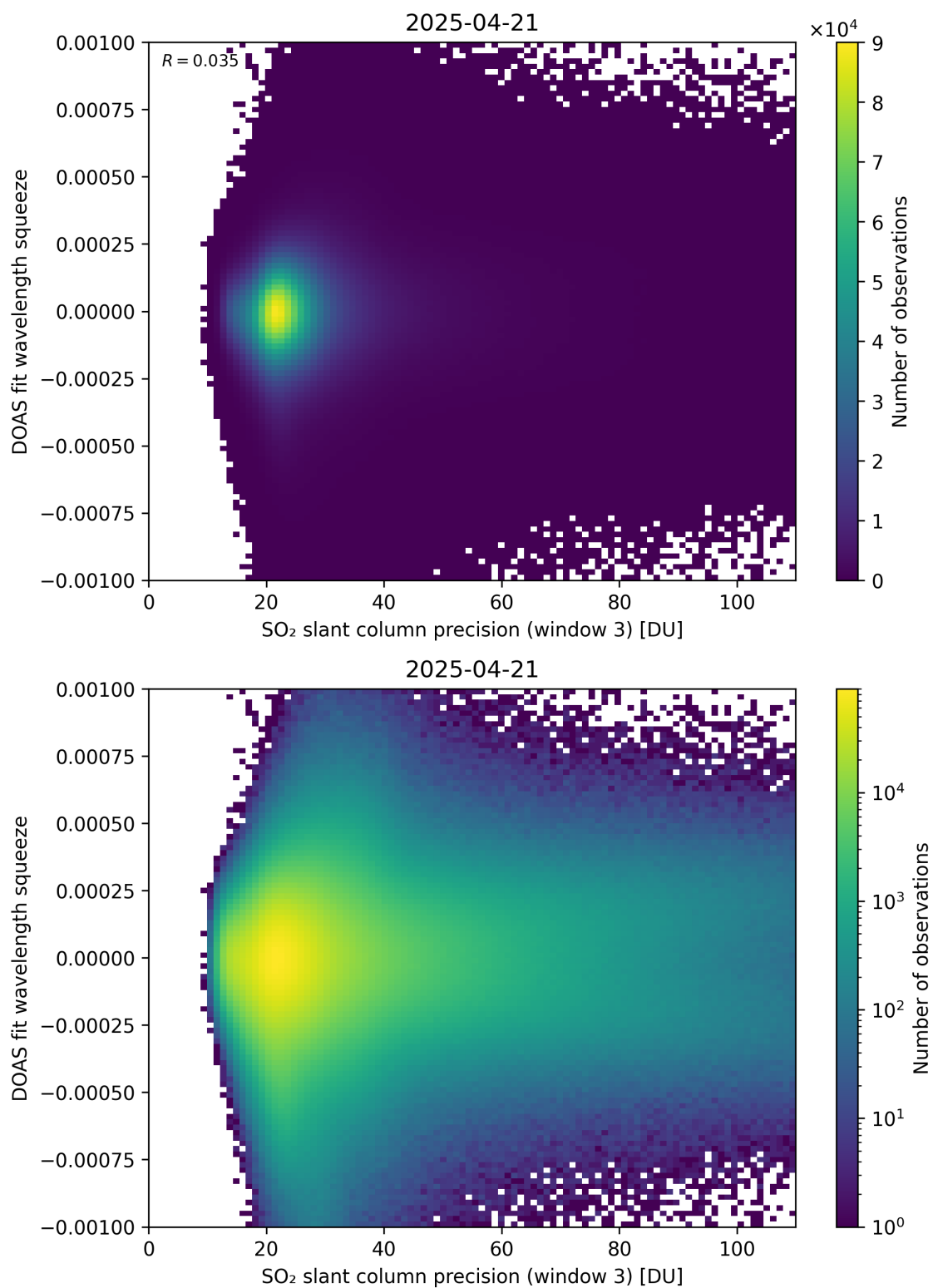


Figure 309: Scatter density plot of “SO₂ slant column precision (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

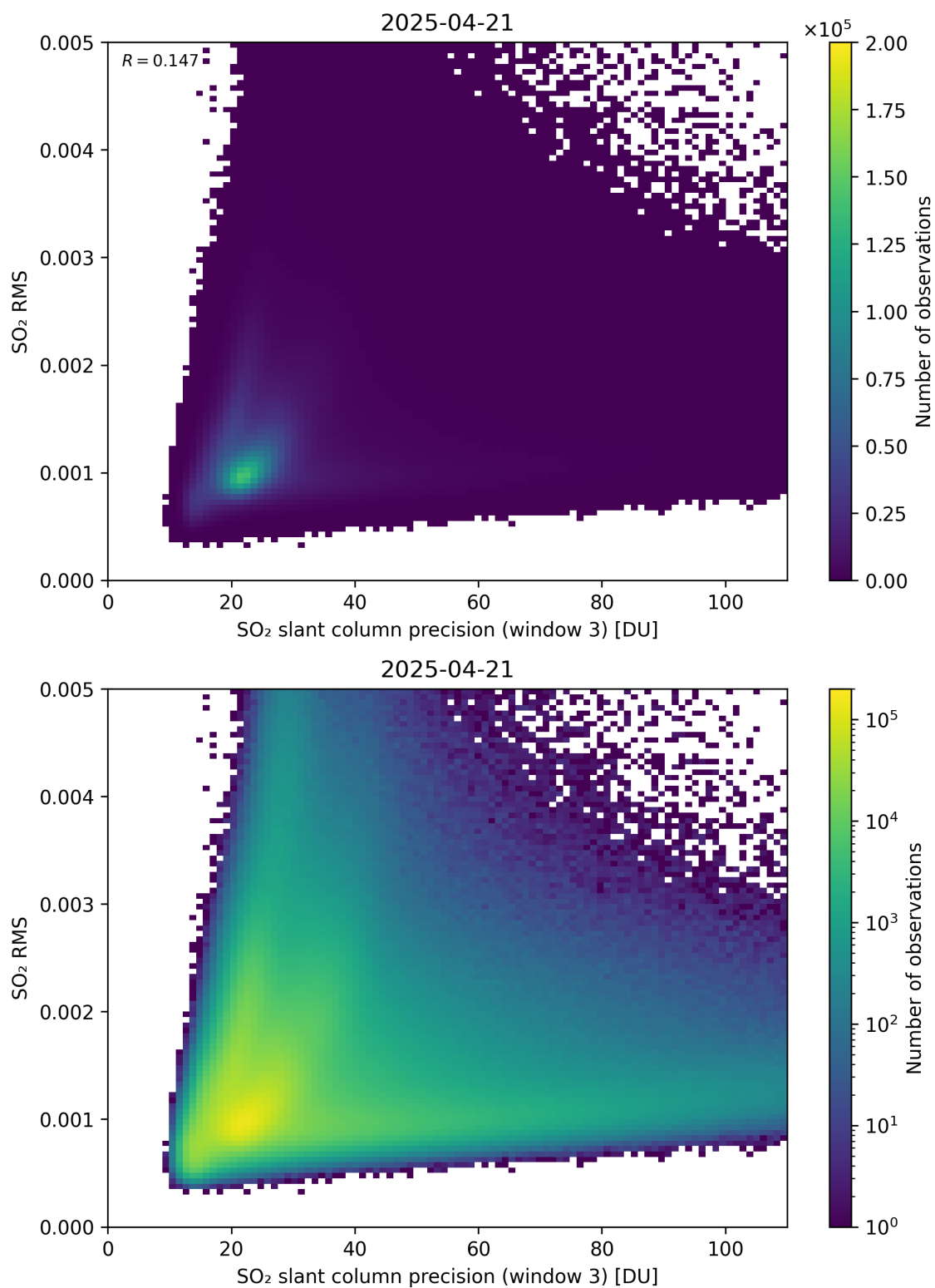


Figure 310: Scatter density plot of “SO₂ slant column precision (window 3)” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

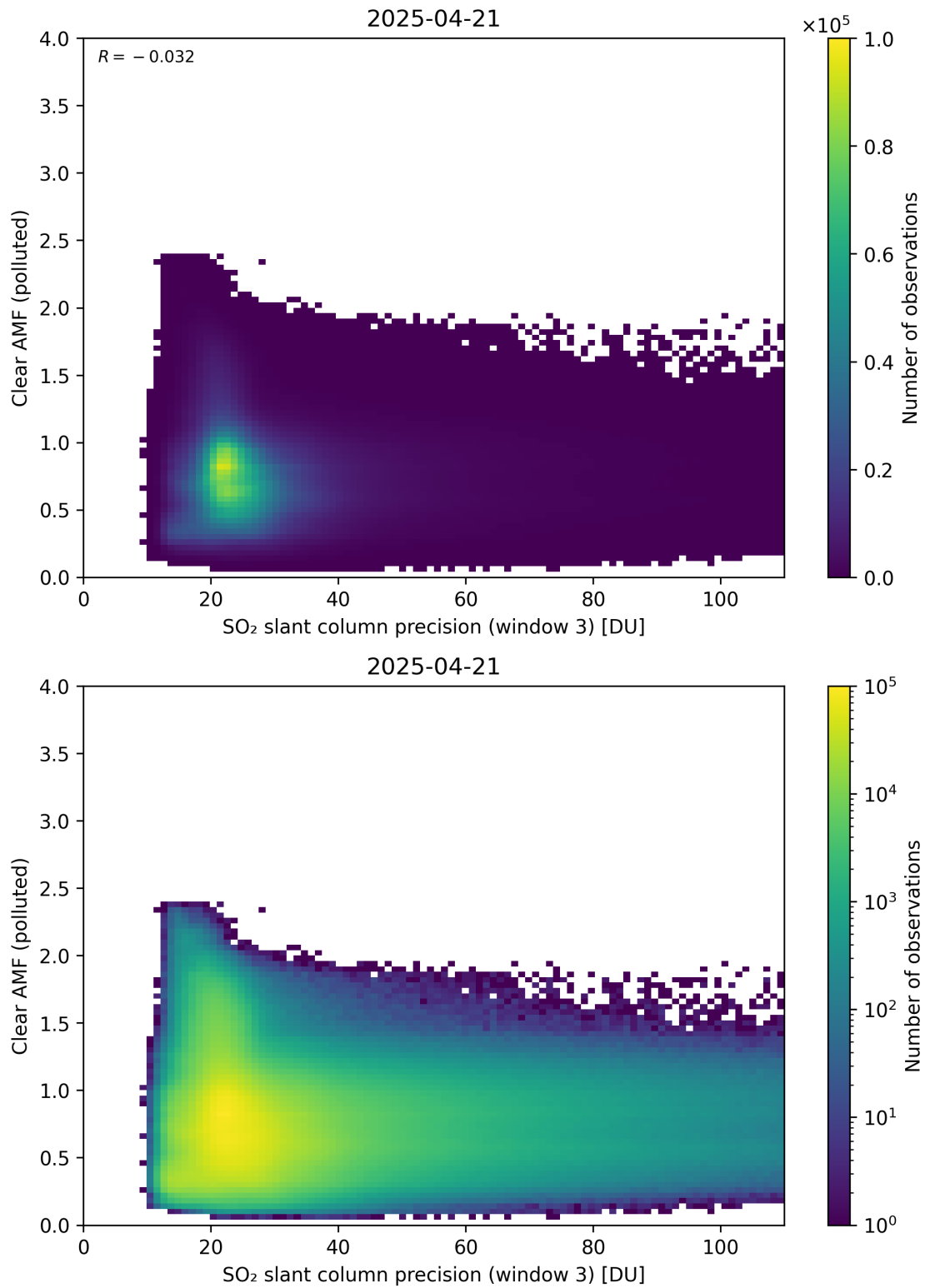


Figure 311: Scatter density plot of “SO₂ slant column precision (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

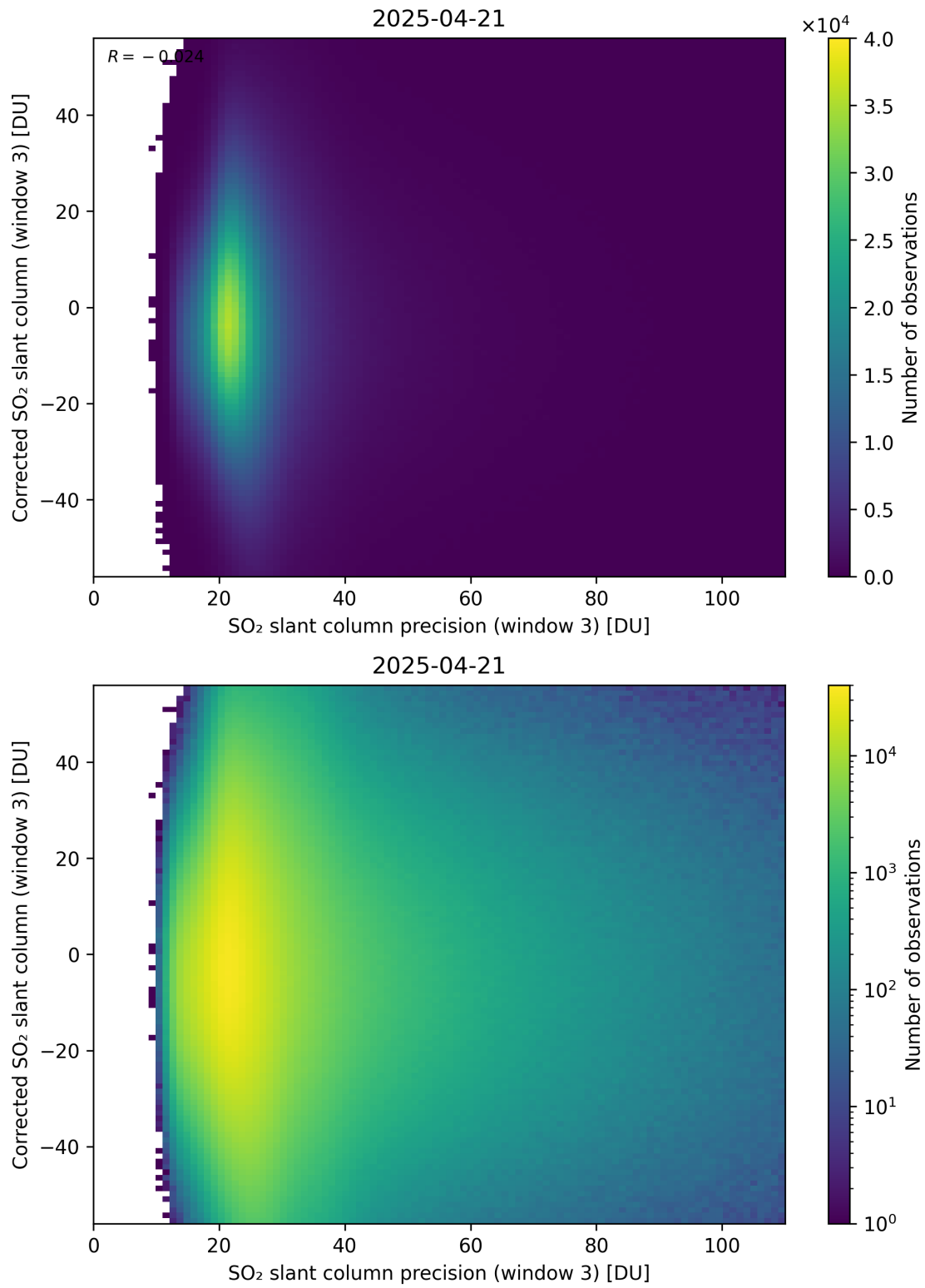


Figure 312: Scatter density plot of “SO₂ slant column precision (window 3)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

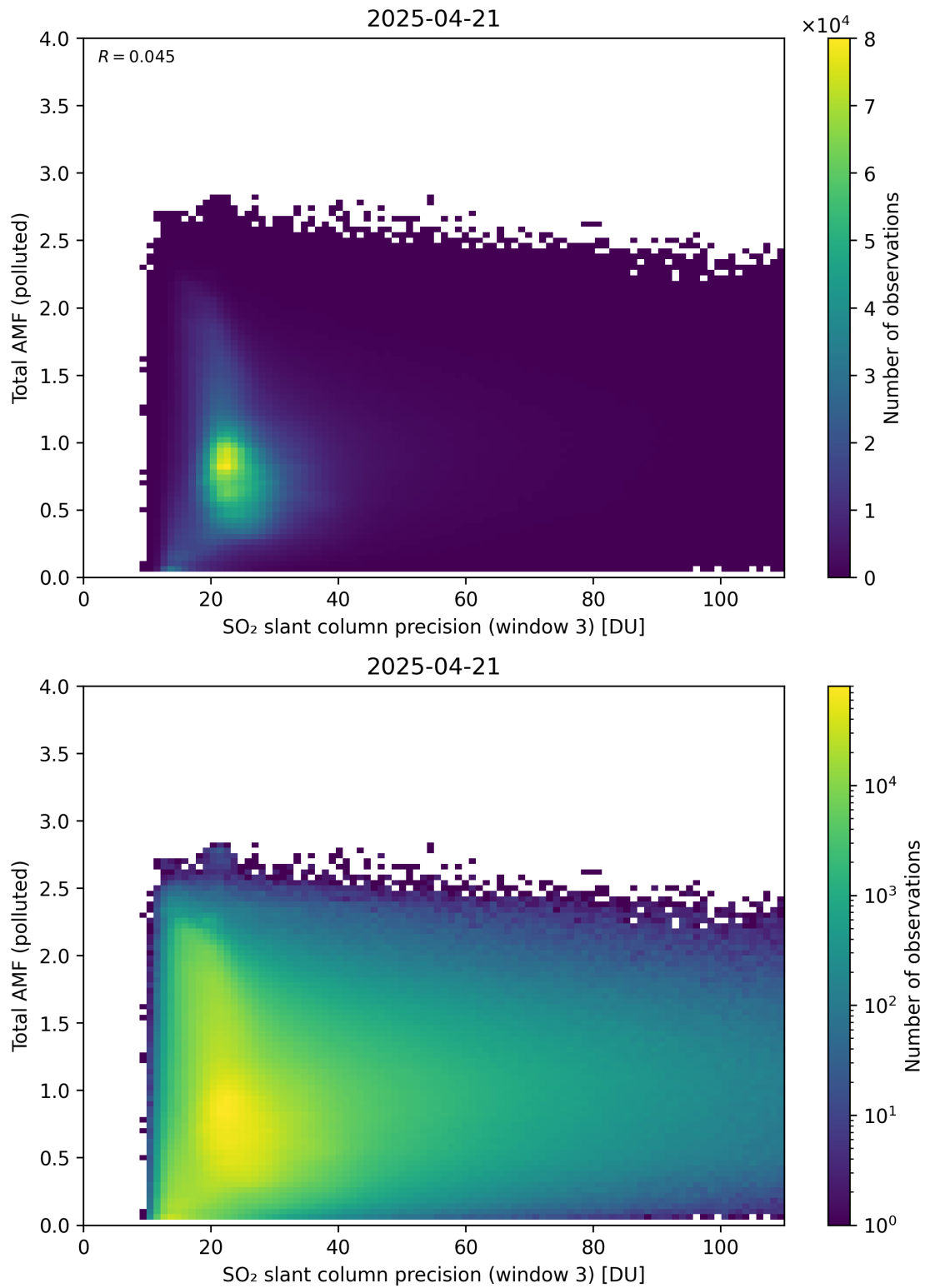


Figure 313: Scatter density plot of “SO₂ slant column precision (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

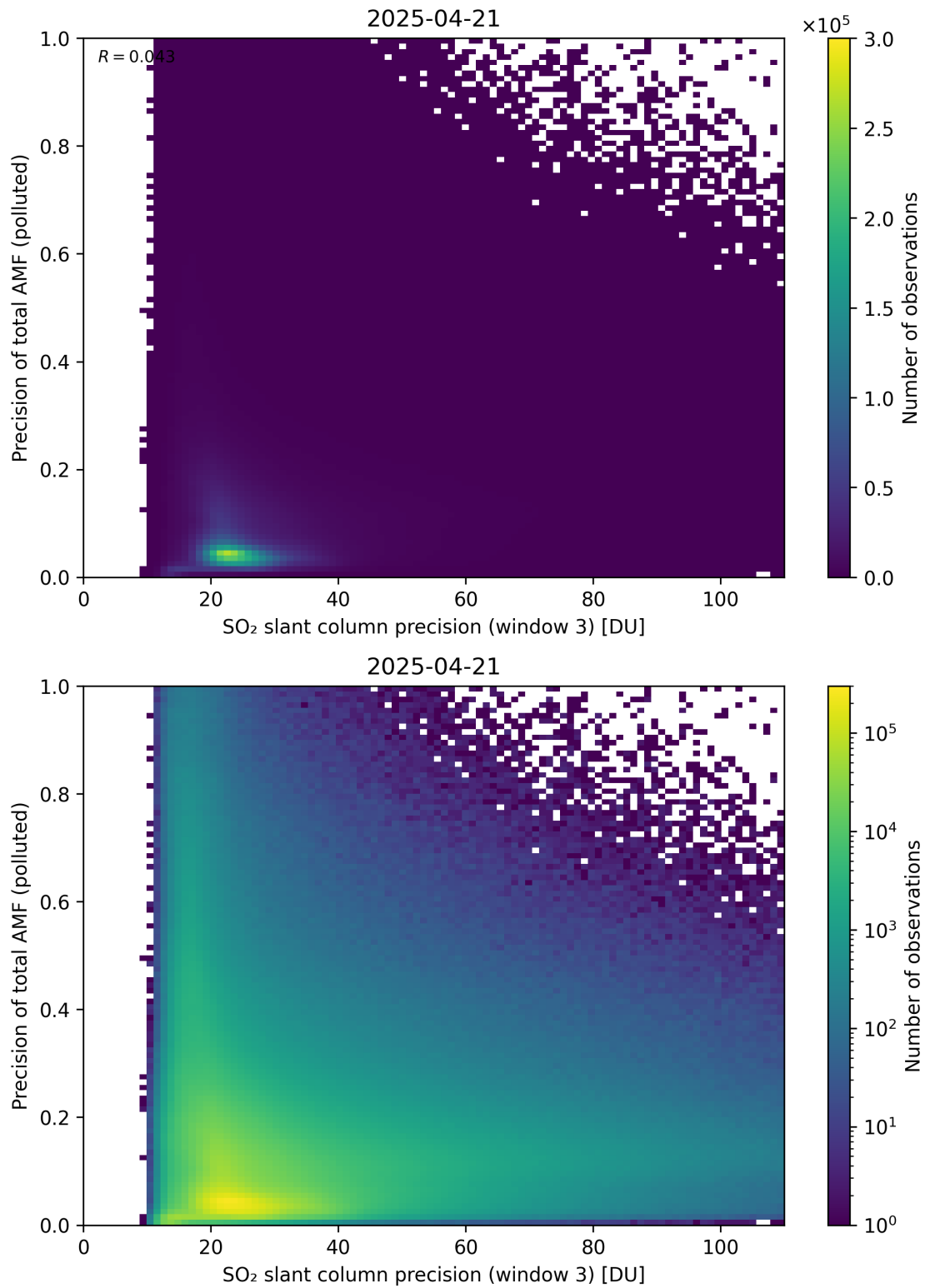


Figure 314: Scatter density plot of “SO₂ slant column precision (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

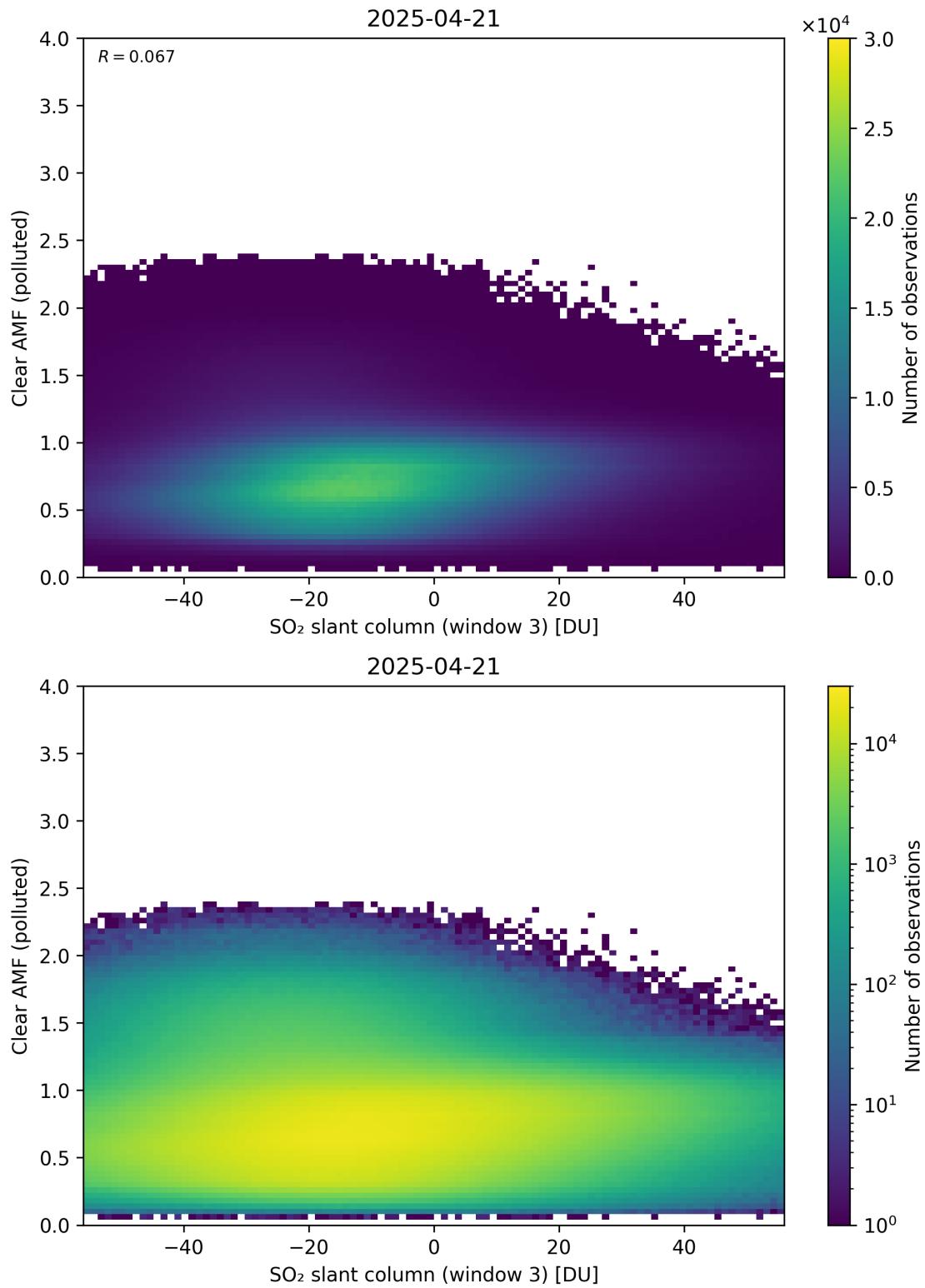


Figure 315: Scatter density plot of “SO₂ slant column (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

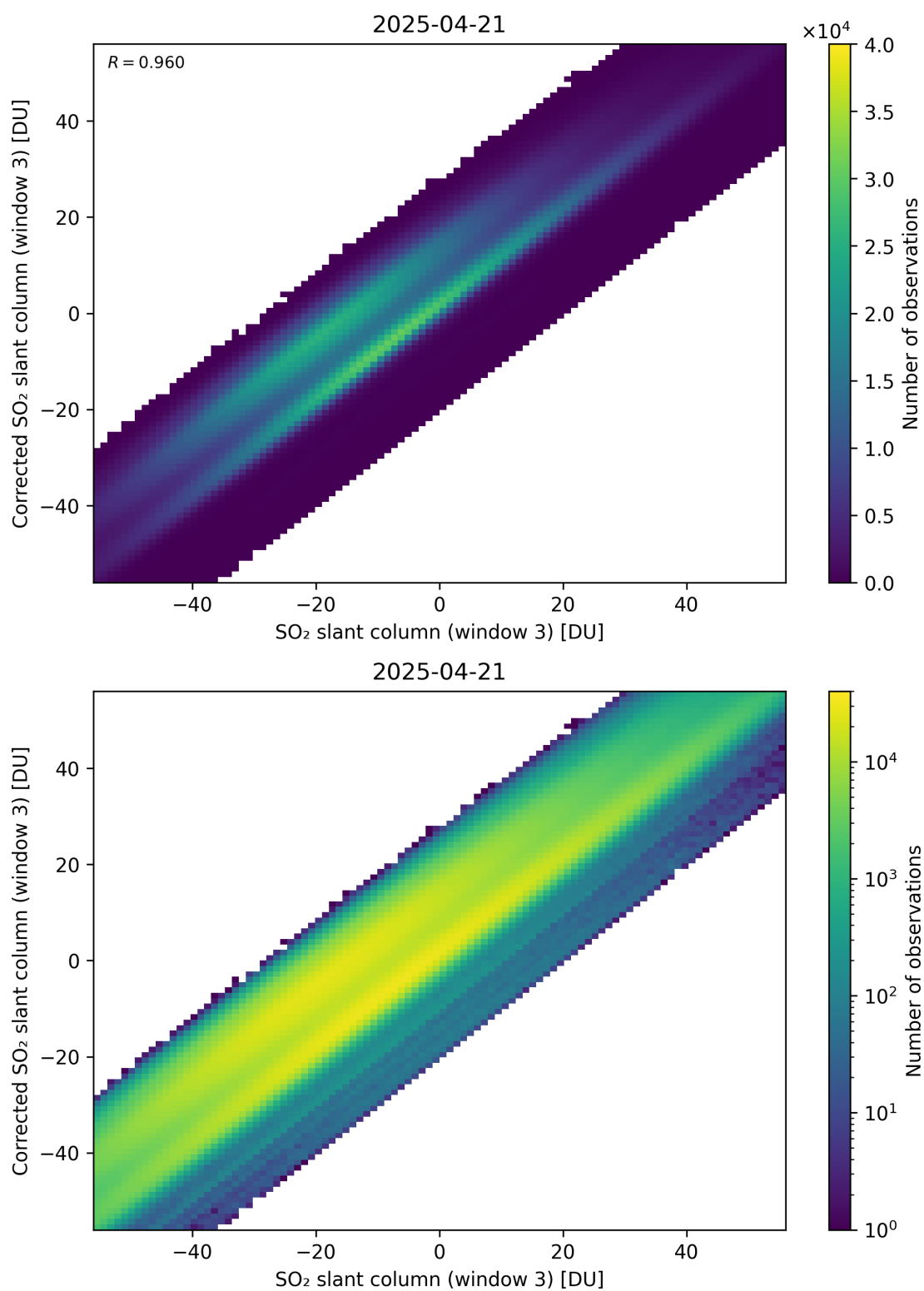


Figure 316: Scatter density plot of “SO₂ slant column (window 3)” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

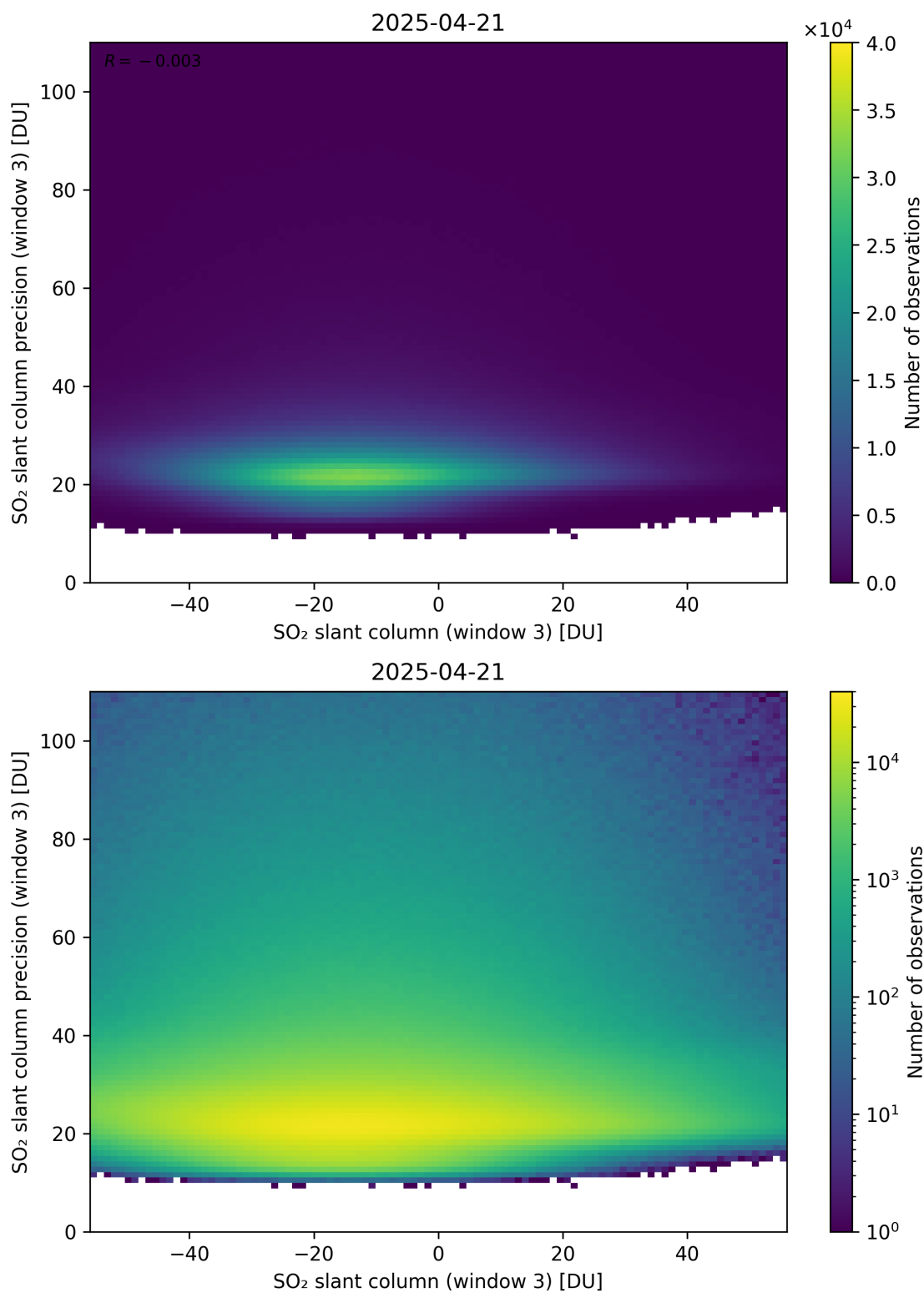


Figure 317: Scatter density plot of “SO₂ slant column (window 3)” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

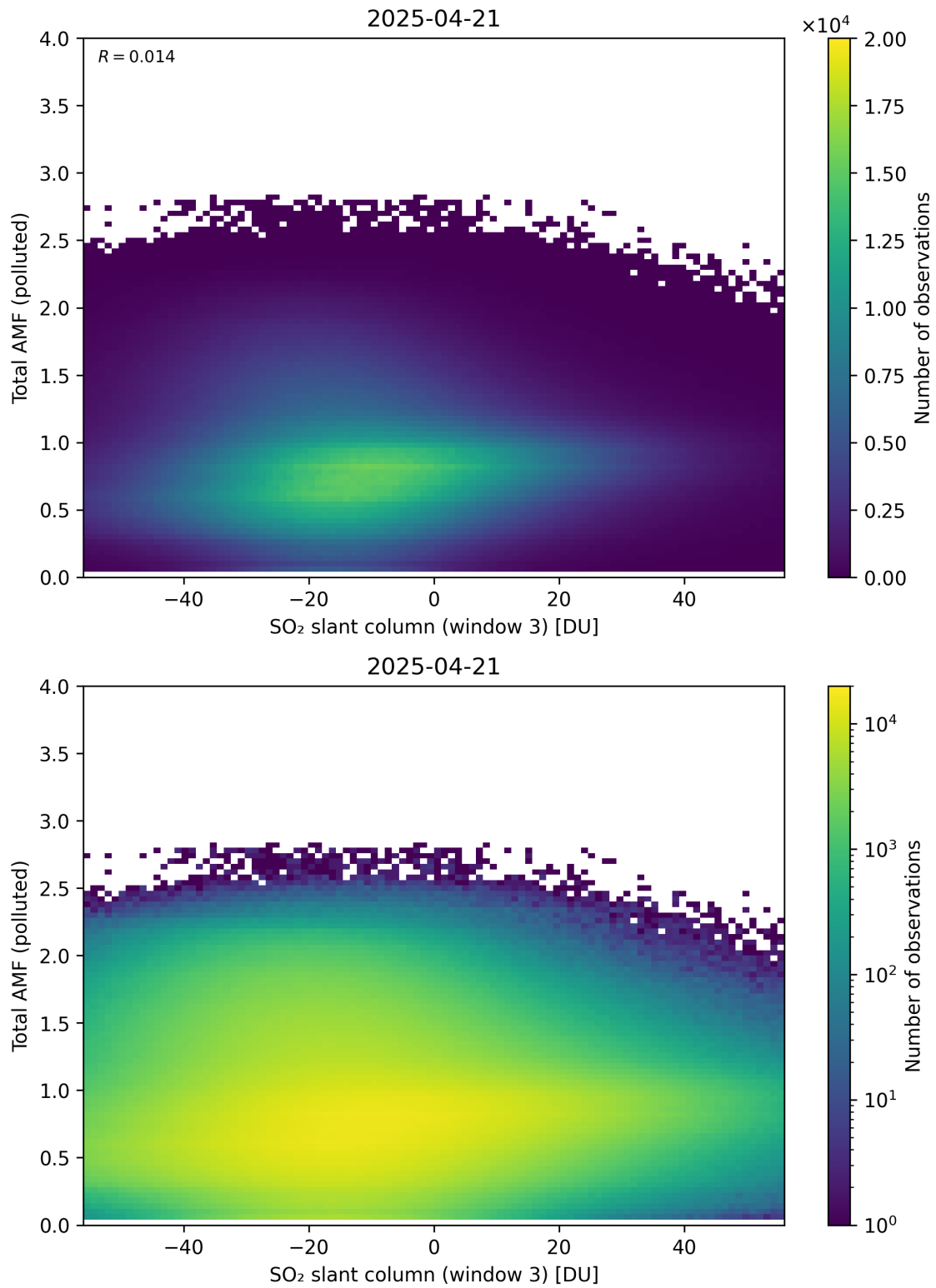


Figure 318: Scatter density plot of “SO₂ slant column (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

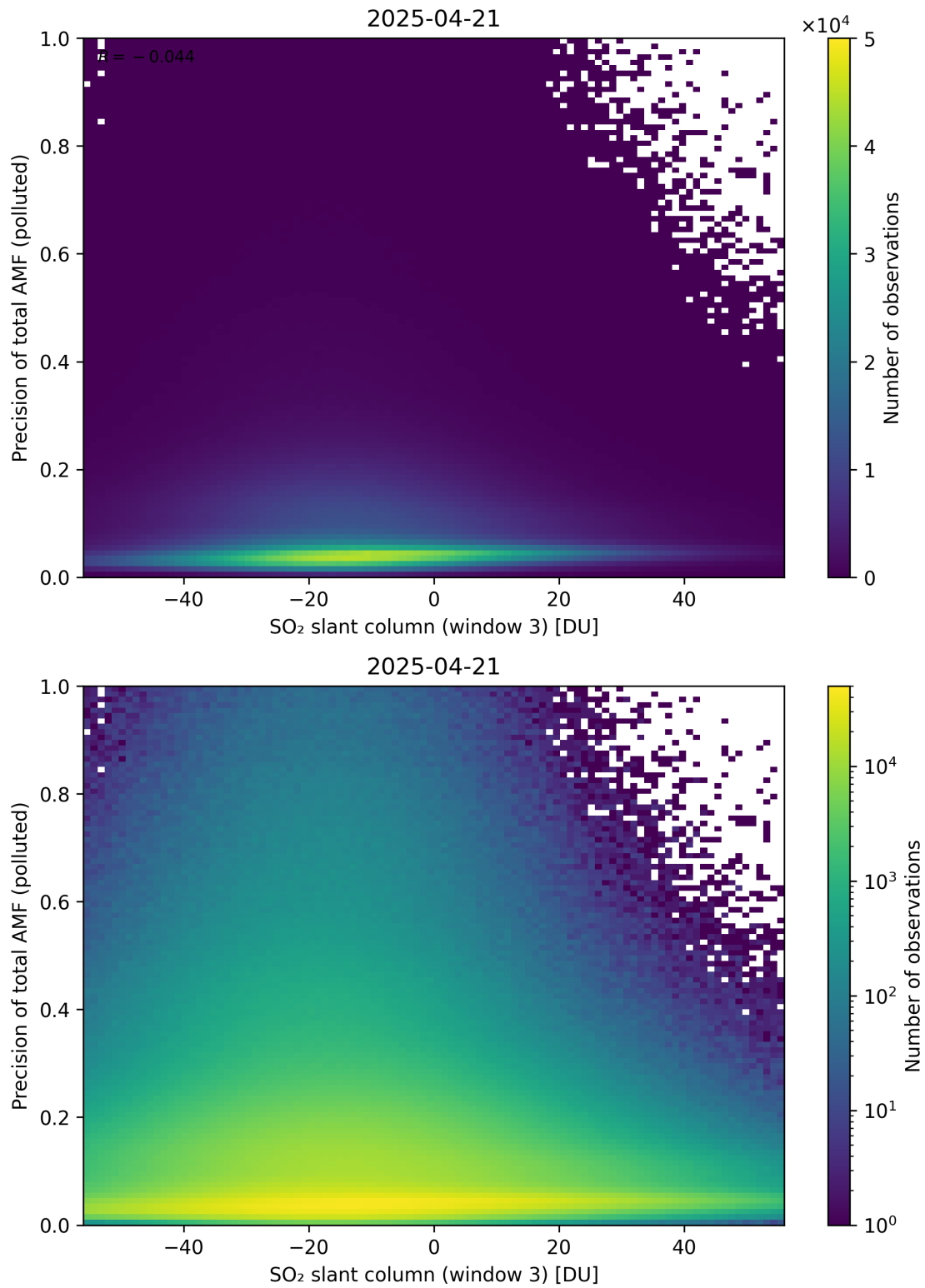


Figure 319: Scatter density plot of “SO₂ slant column (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

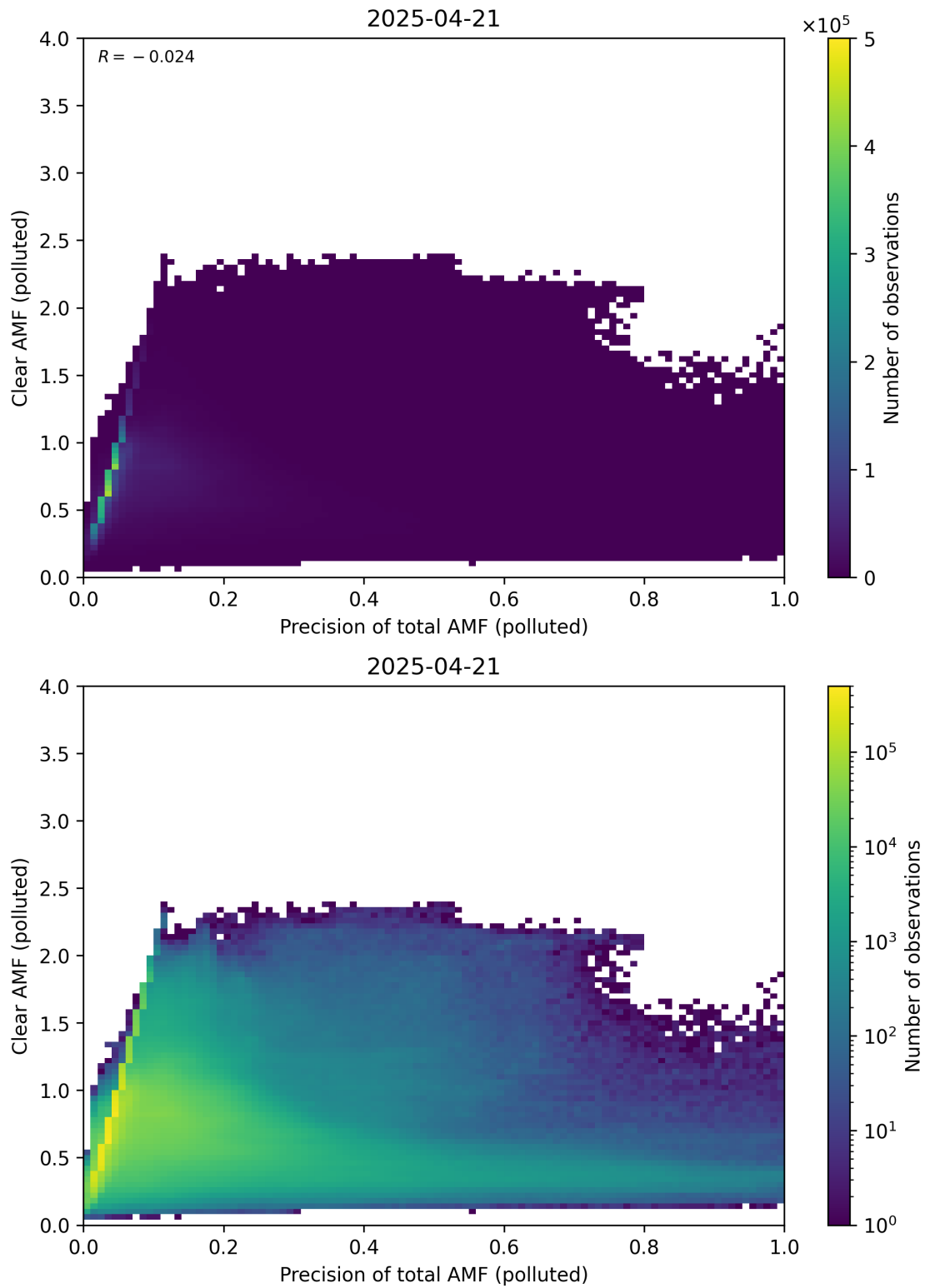


Figure 320: Scatter density plot of “Precision of total AMF (polluted)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

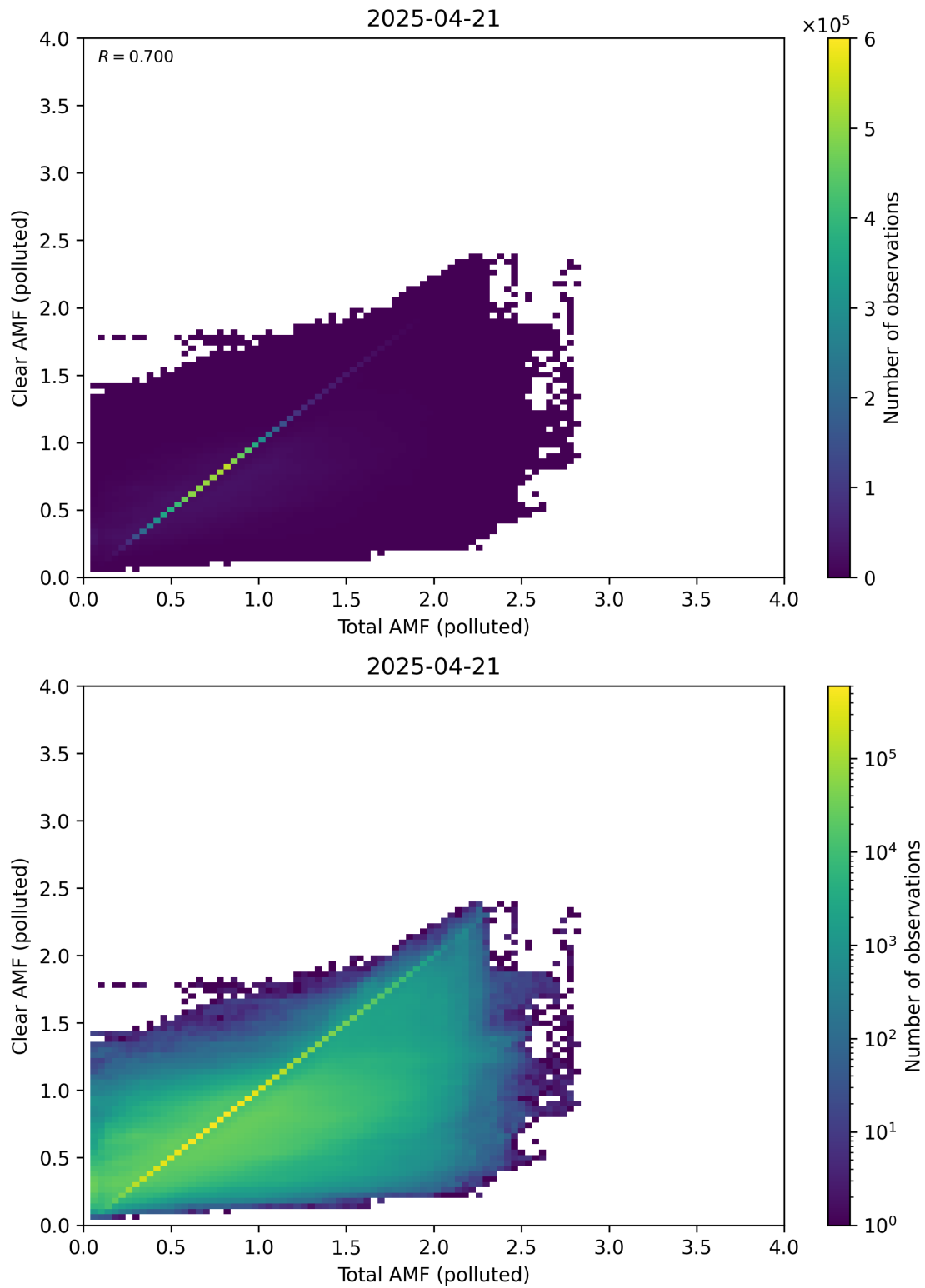


Figure 321: Scatter density plot of “Total AMF (polluted)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

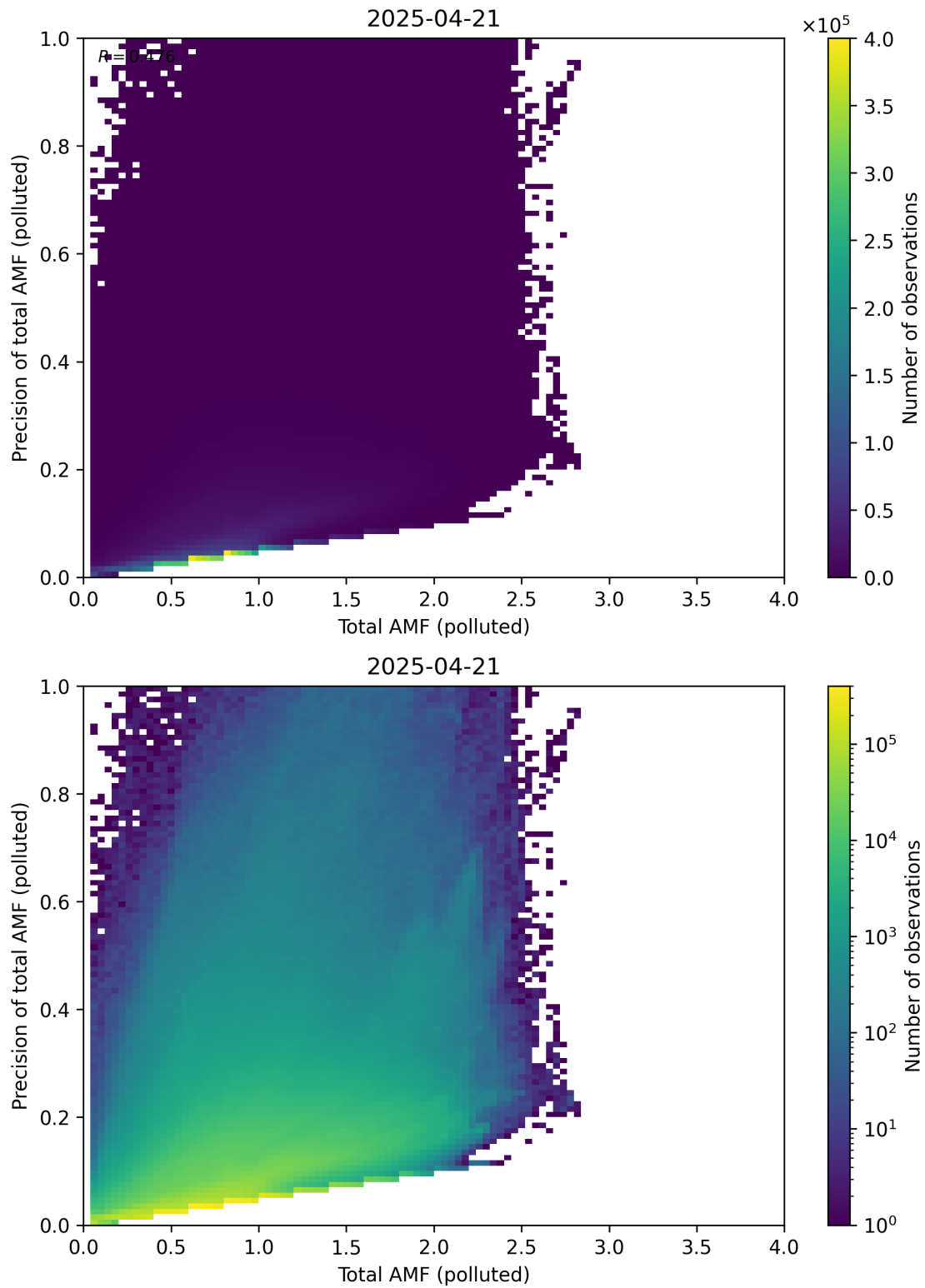


Figure 322: Scatter density plot of “Total AMF (polluted)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

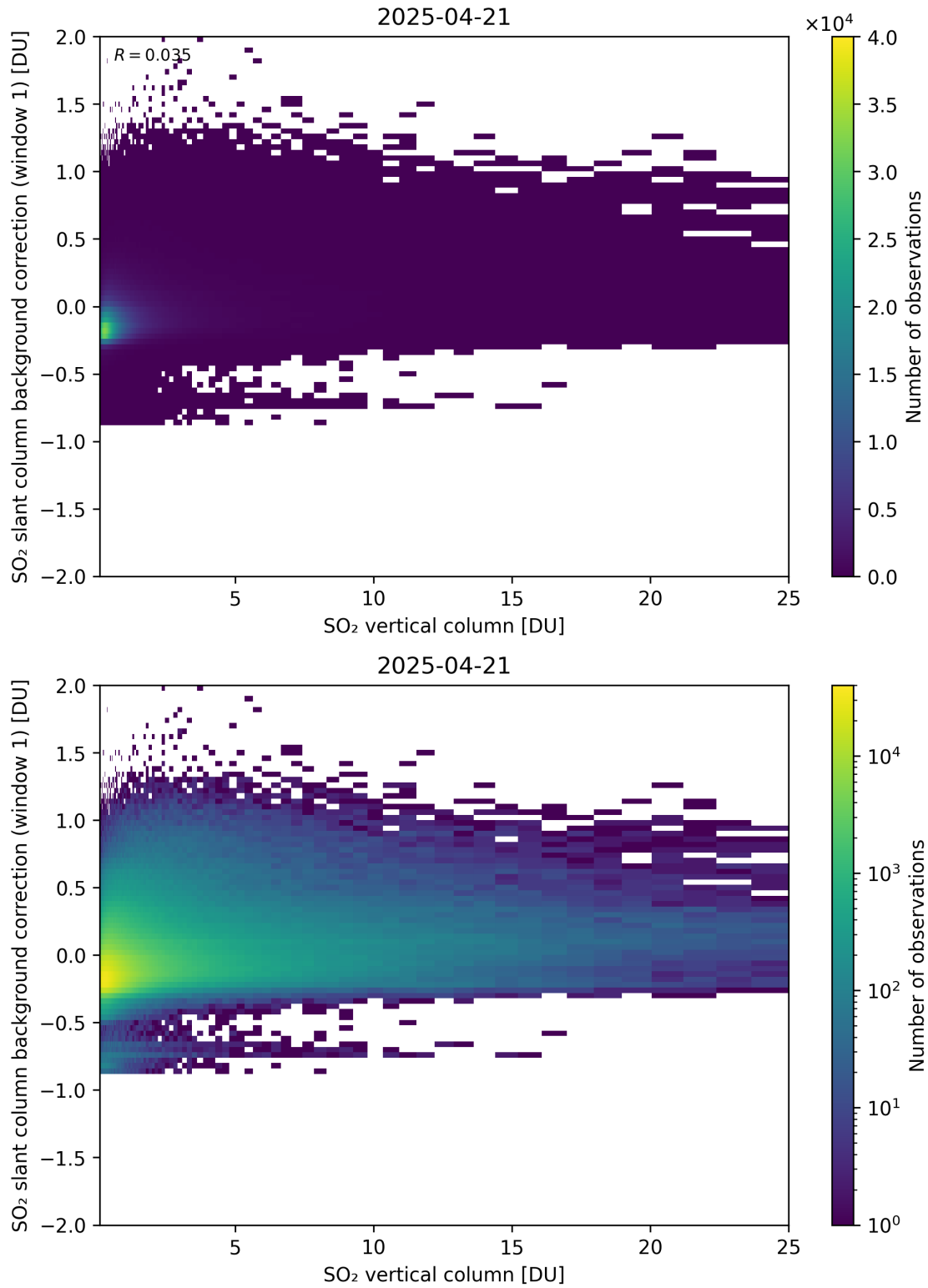


Figure 323: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

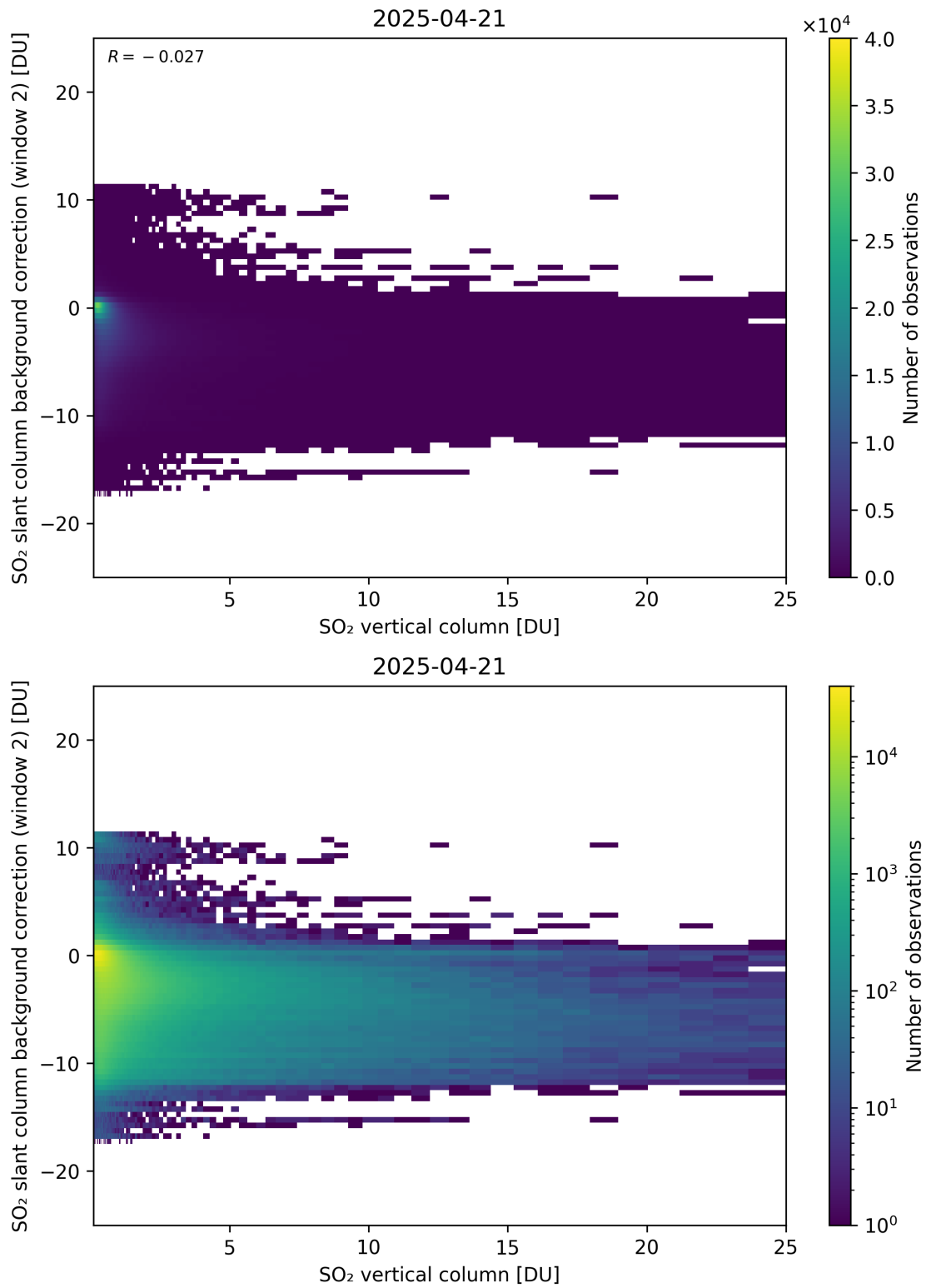


Figure 324: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

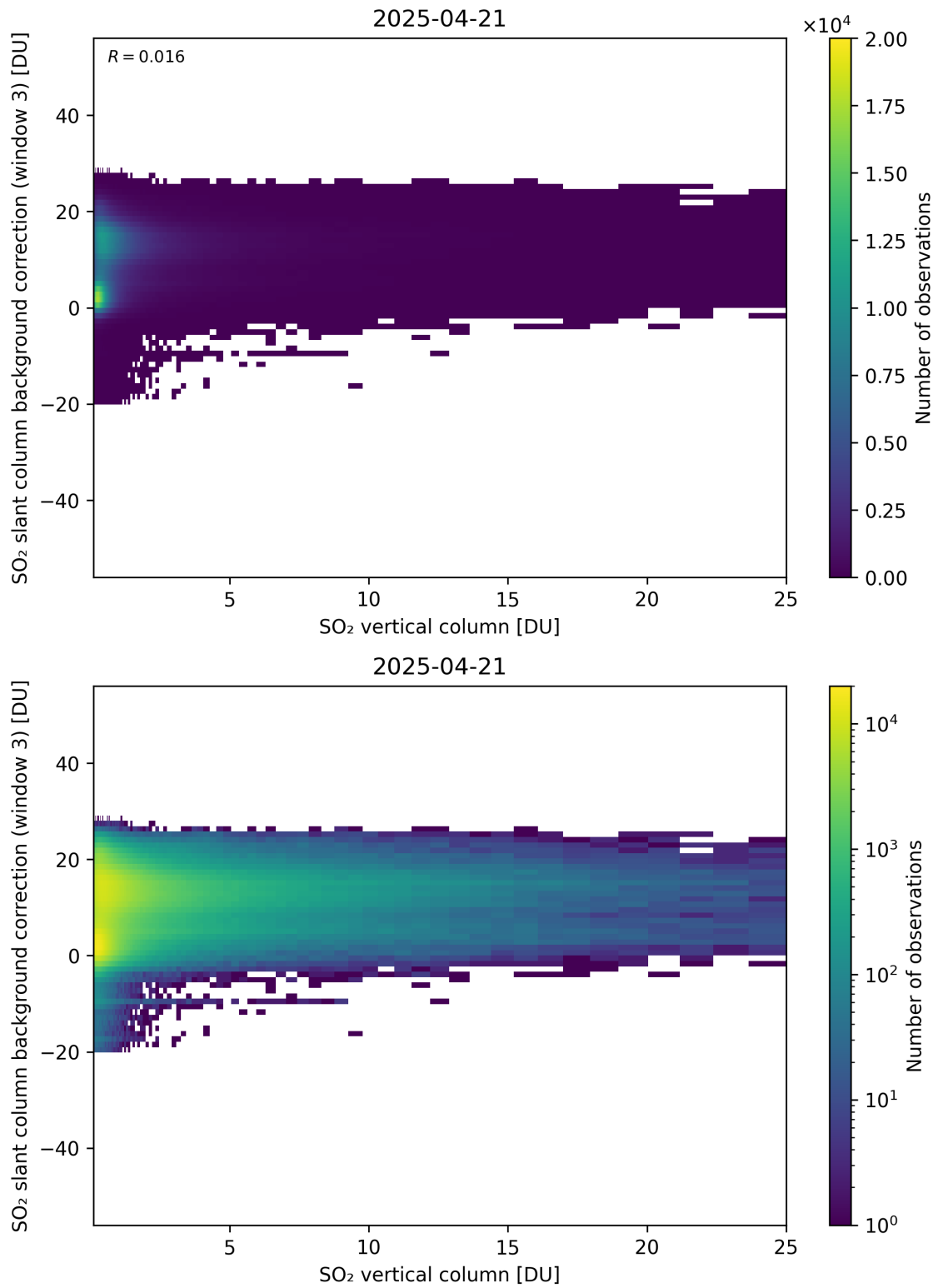


Figure 325: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

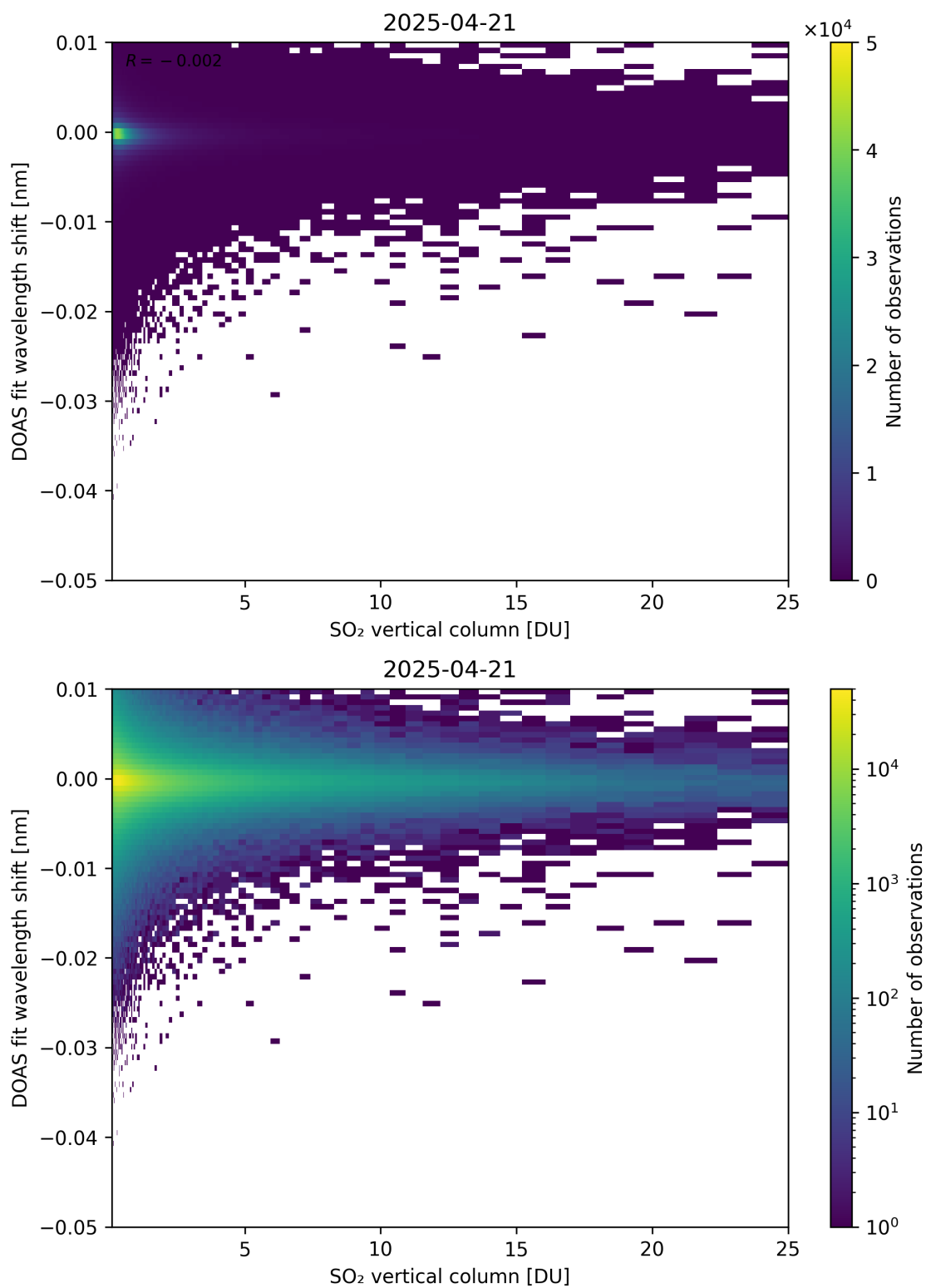


Figure 326: Scatter density plot of “SO₂ vertical column” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

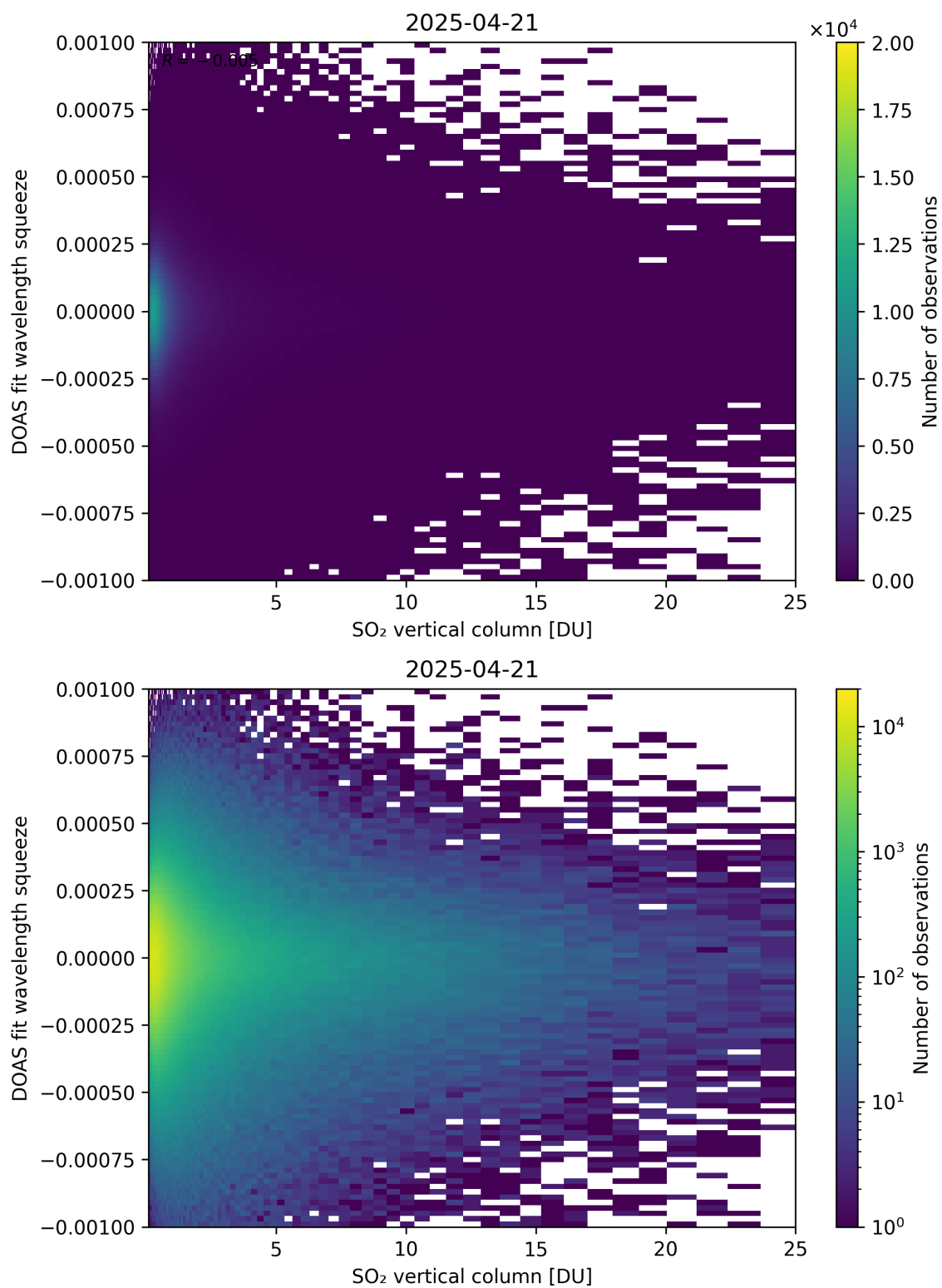


Figure 327: Scatter density plot of “SO₂ vertical column” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

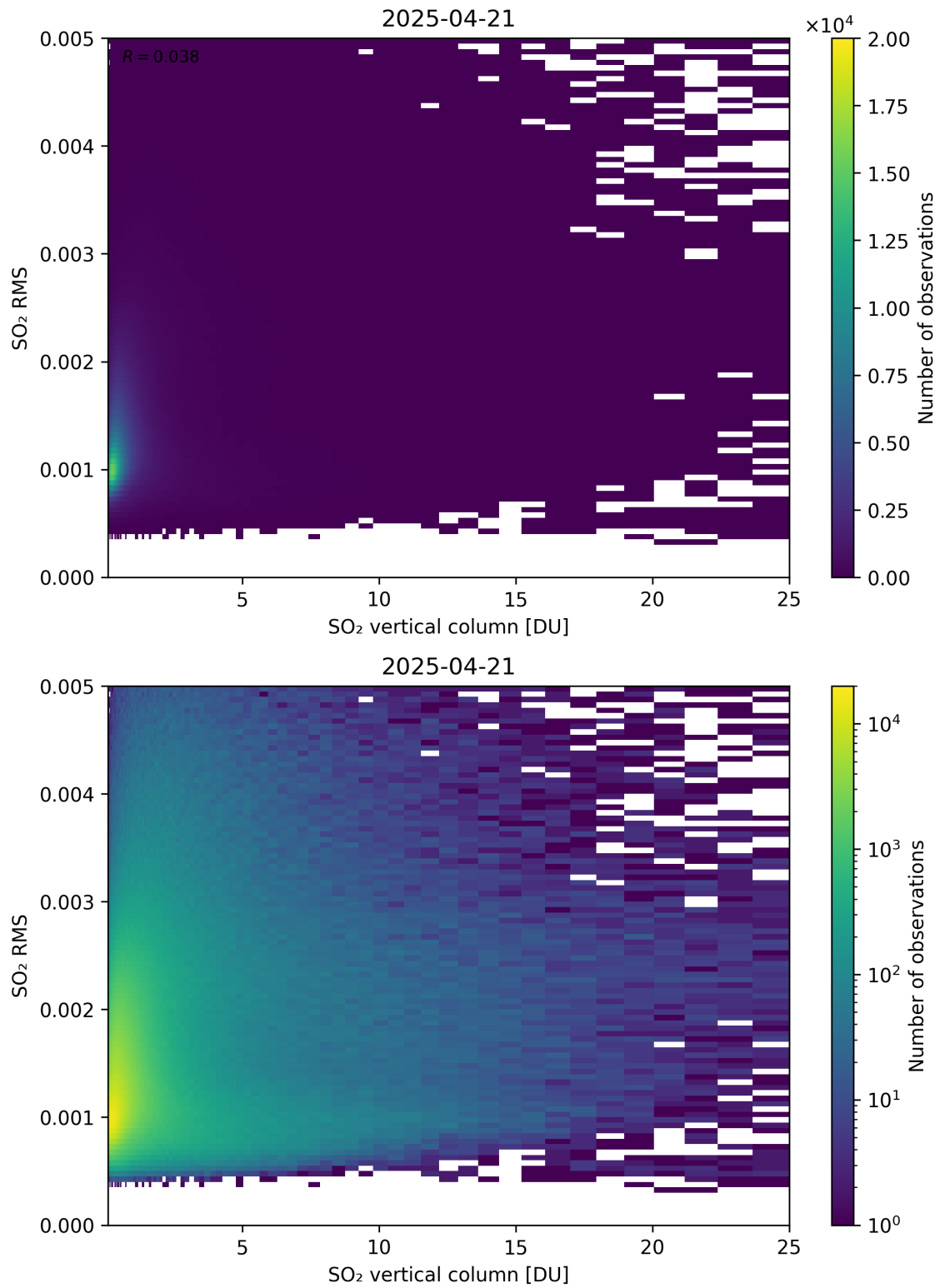


Figure 328: Scatter density plot of “SO₂ vertical column” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

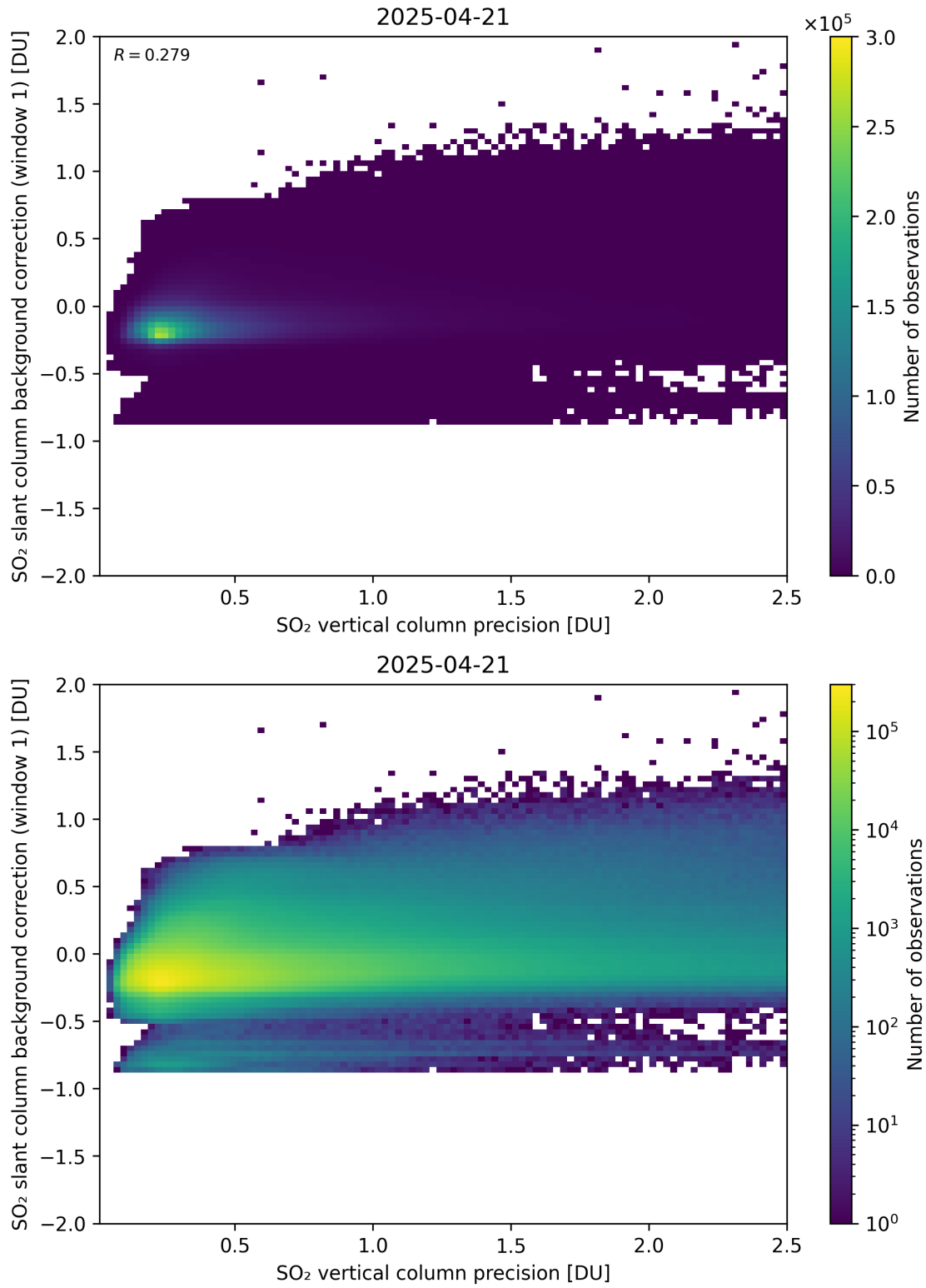


Figure 329: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

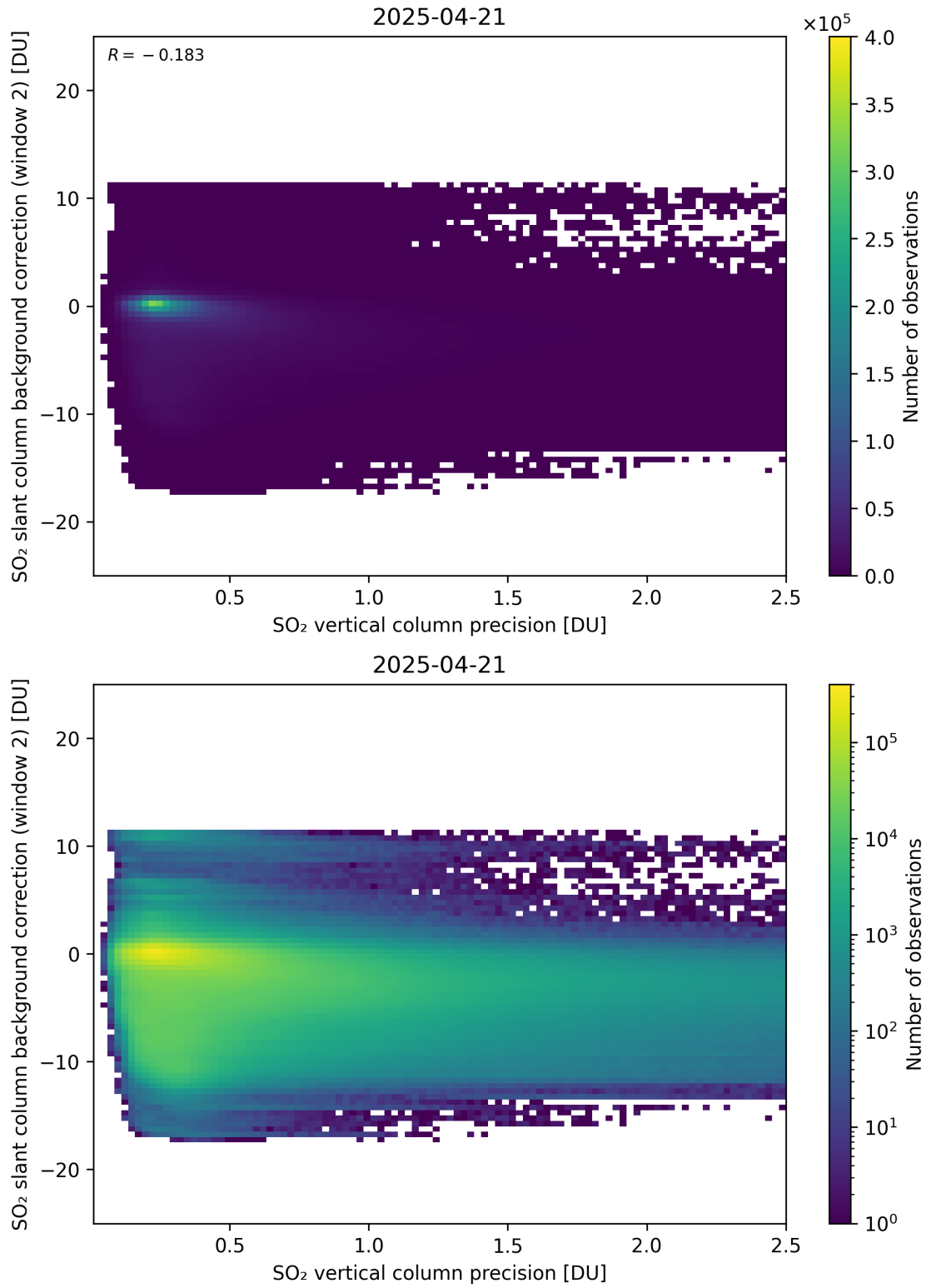


Figure 330: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

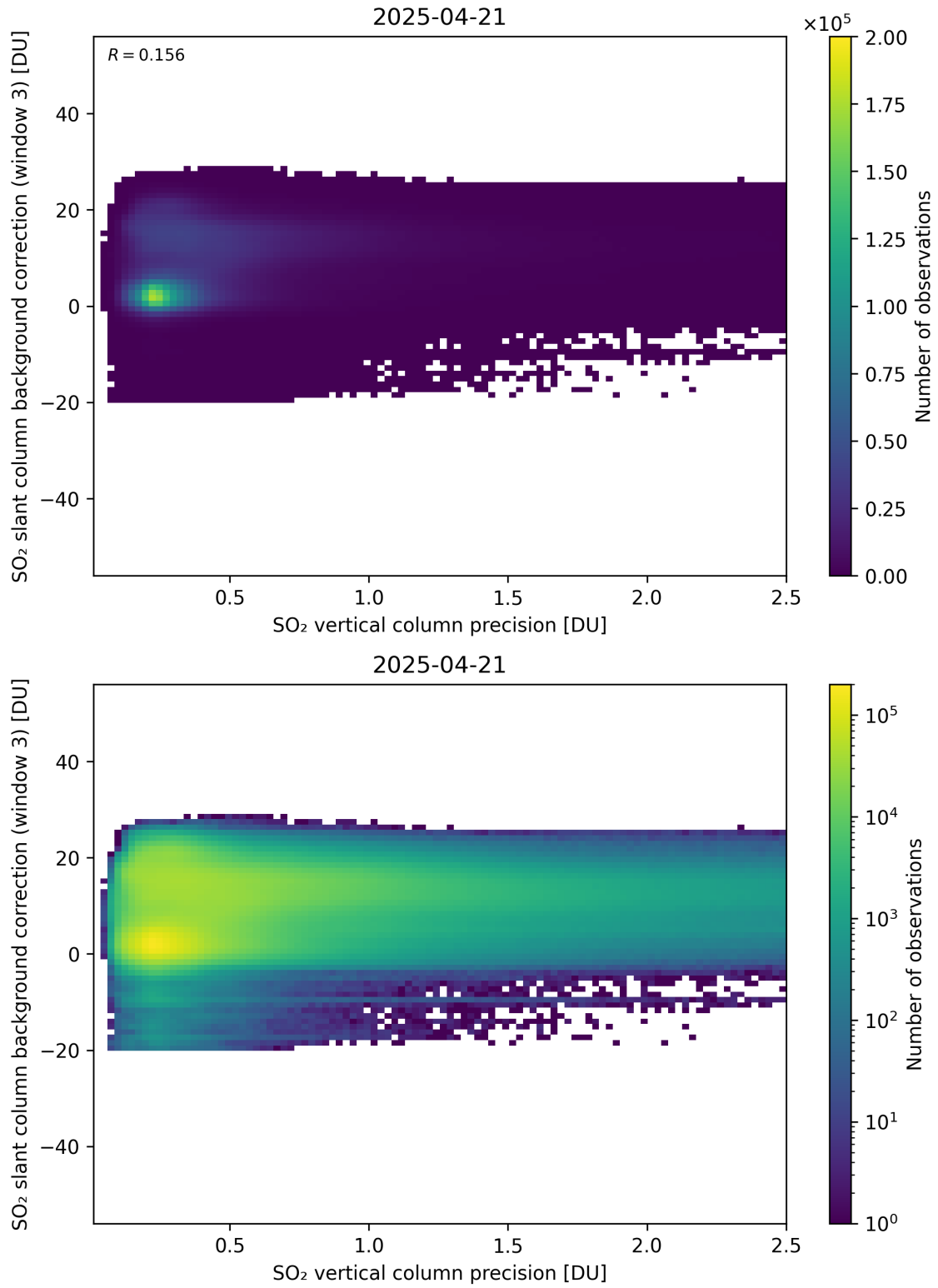


Figure 331: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

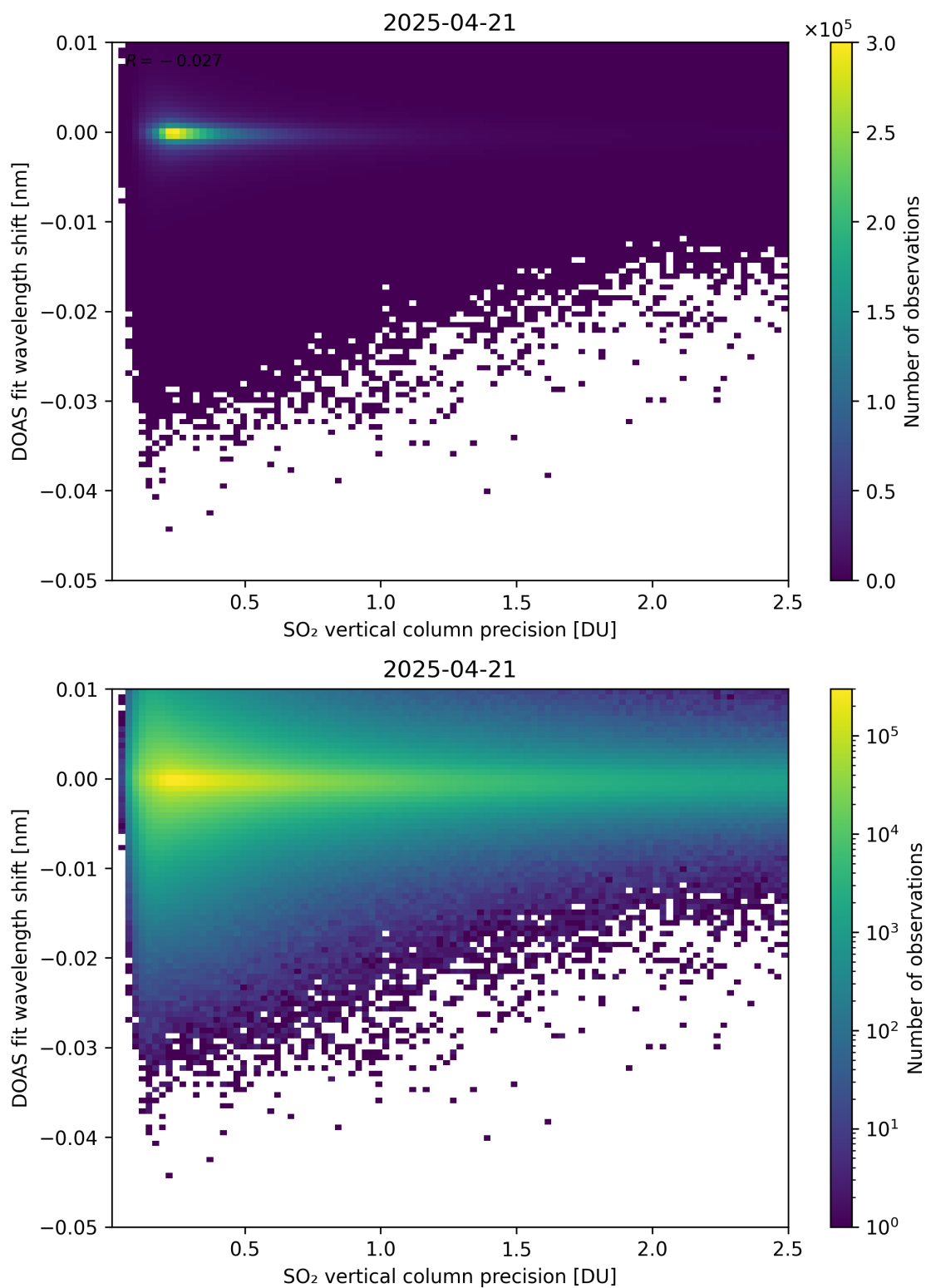


Figure 332: Scatter density plot of “SO₂ vertical column precision” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

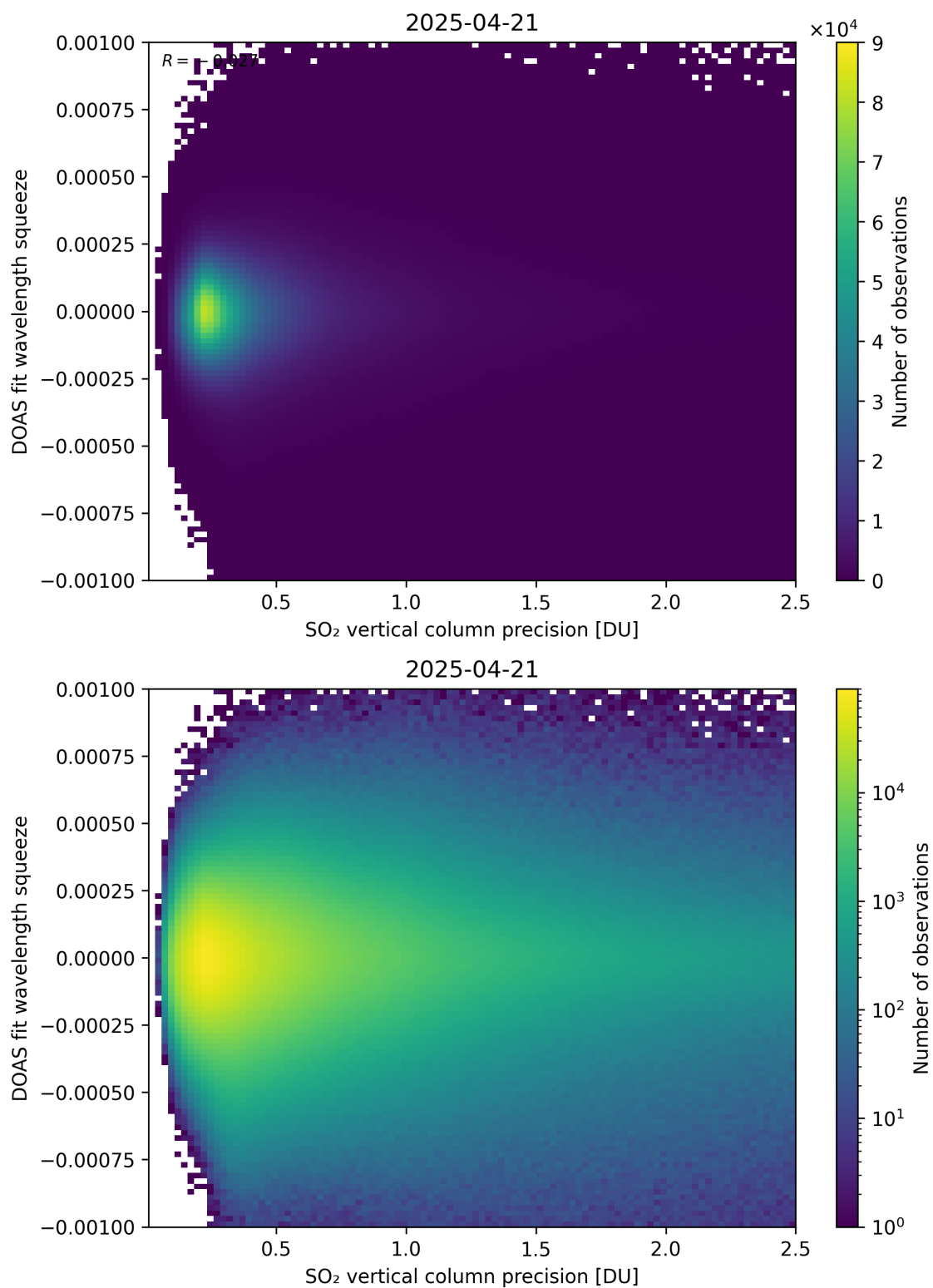


Figure 333: Scatter density plot of “SO₂ vertical column precision” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

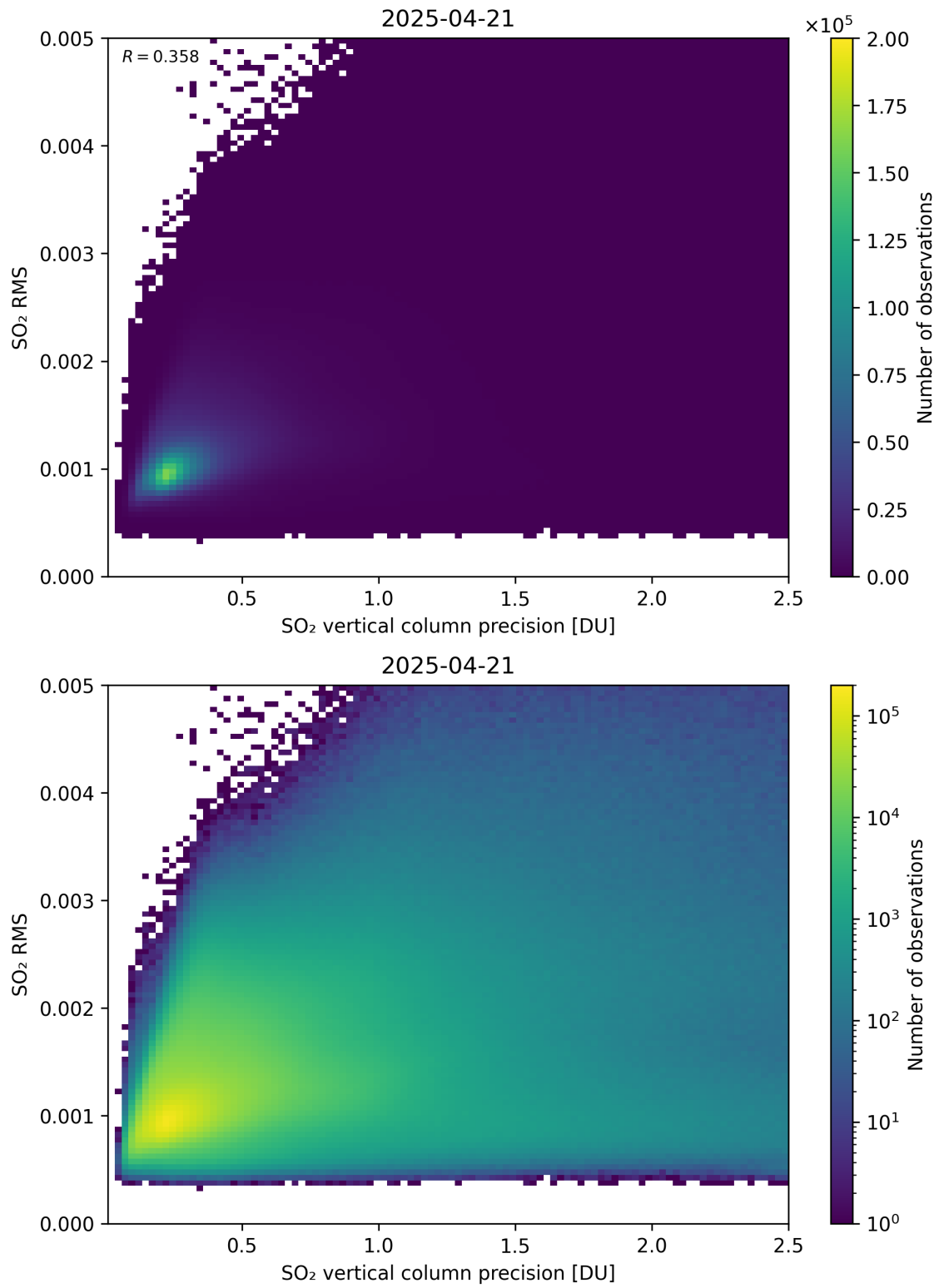


Figure 334: Scatter density plot of “SO₂ vertical column precision” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

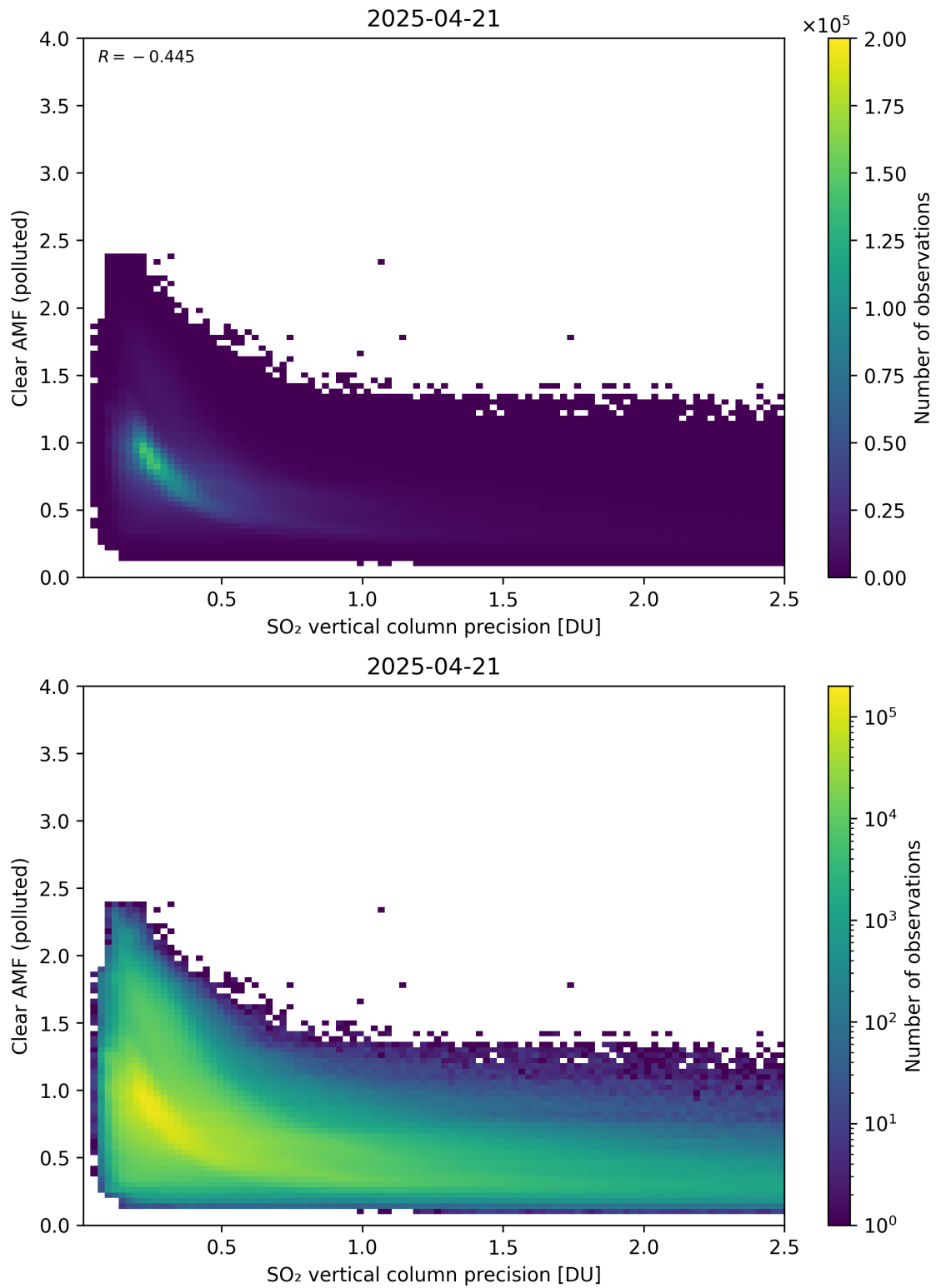


Figure 335: Scatter density plot of “SO₂ vertical column precision” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

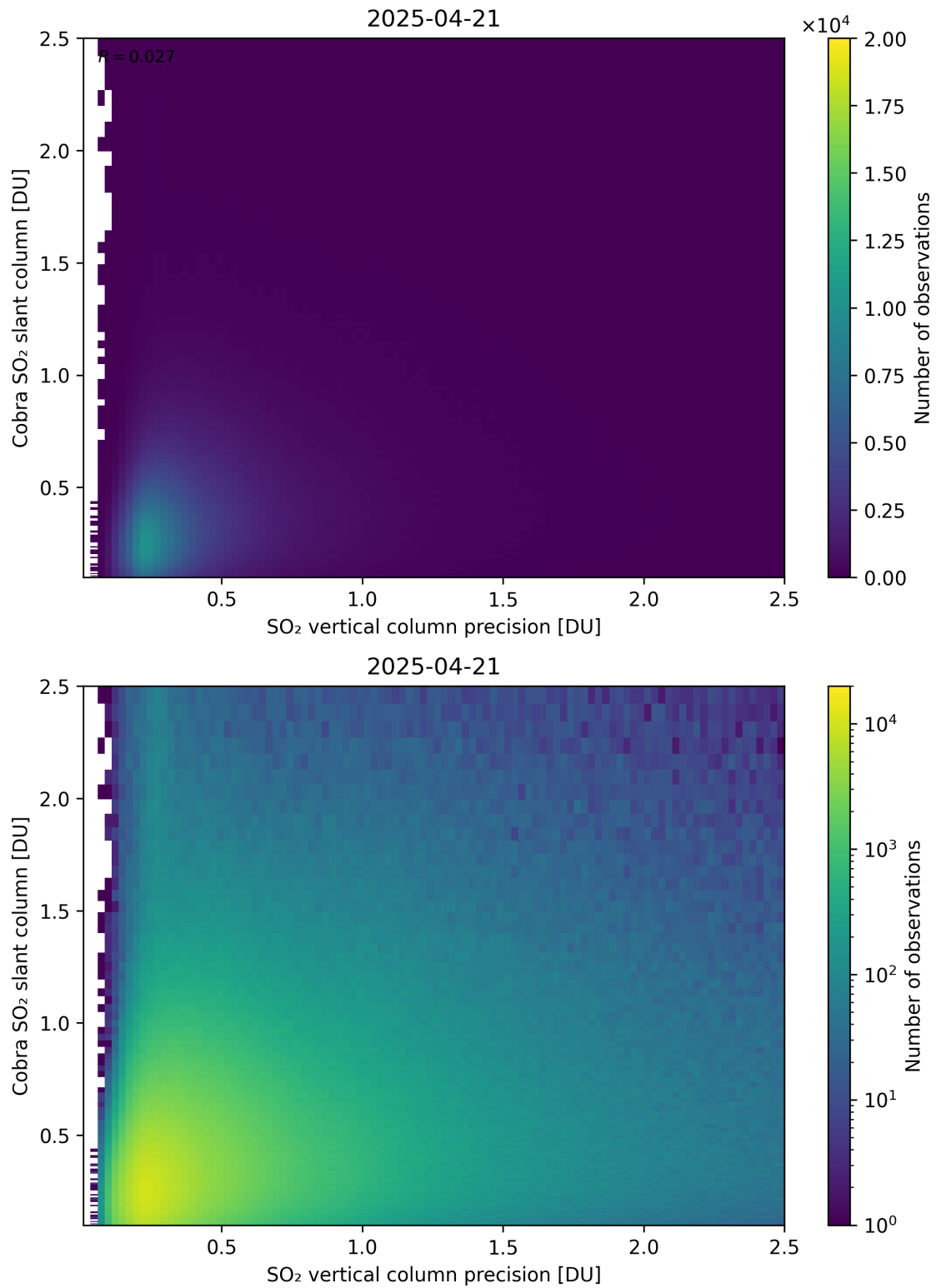


Figure 336: Scatter density plot of “SO₂ vertical column precision” against “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

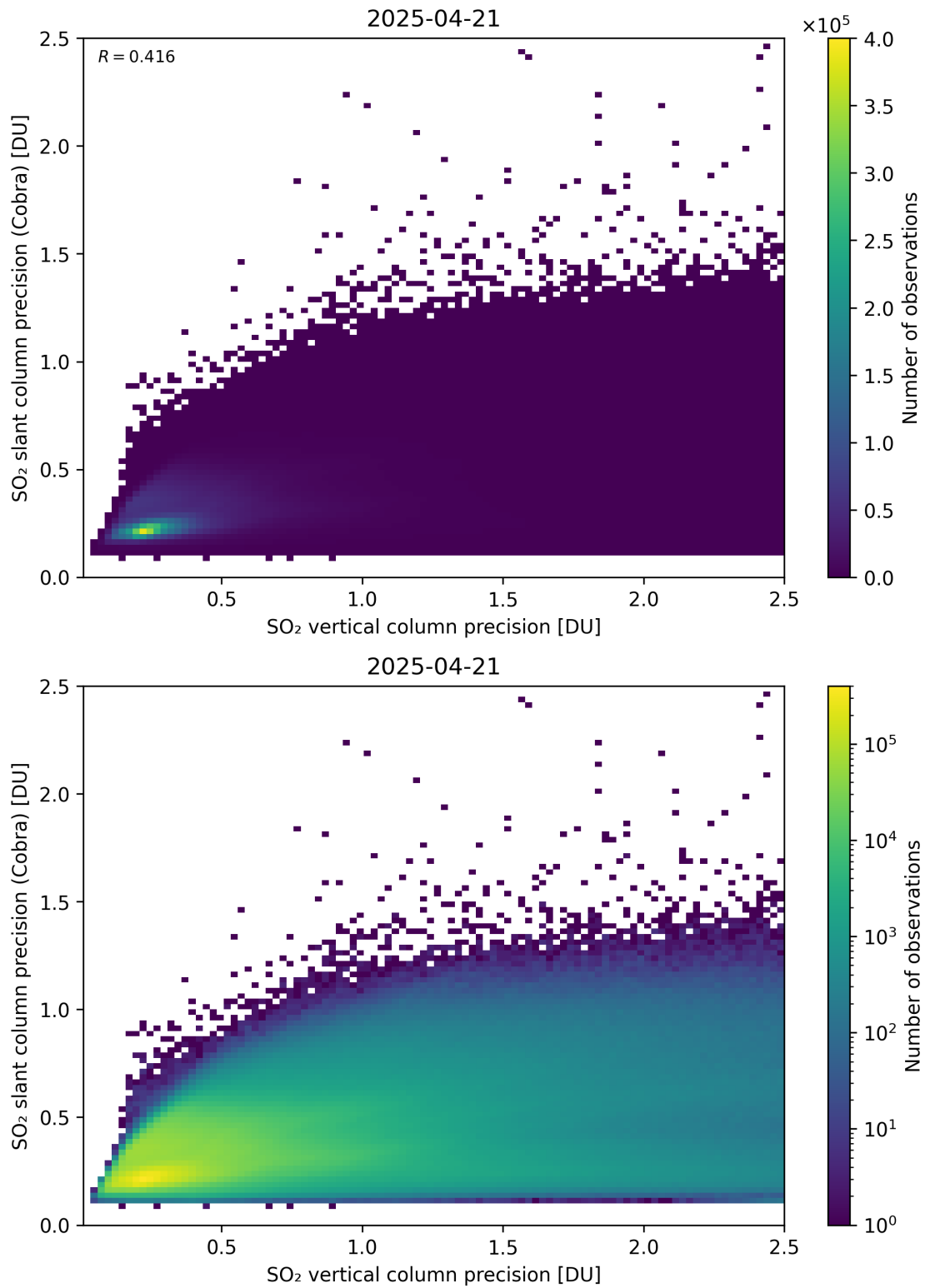


Figure 337: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

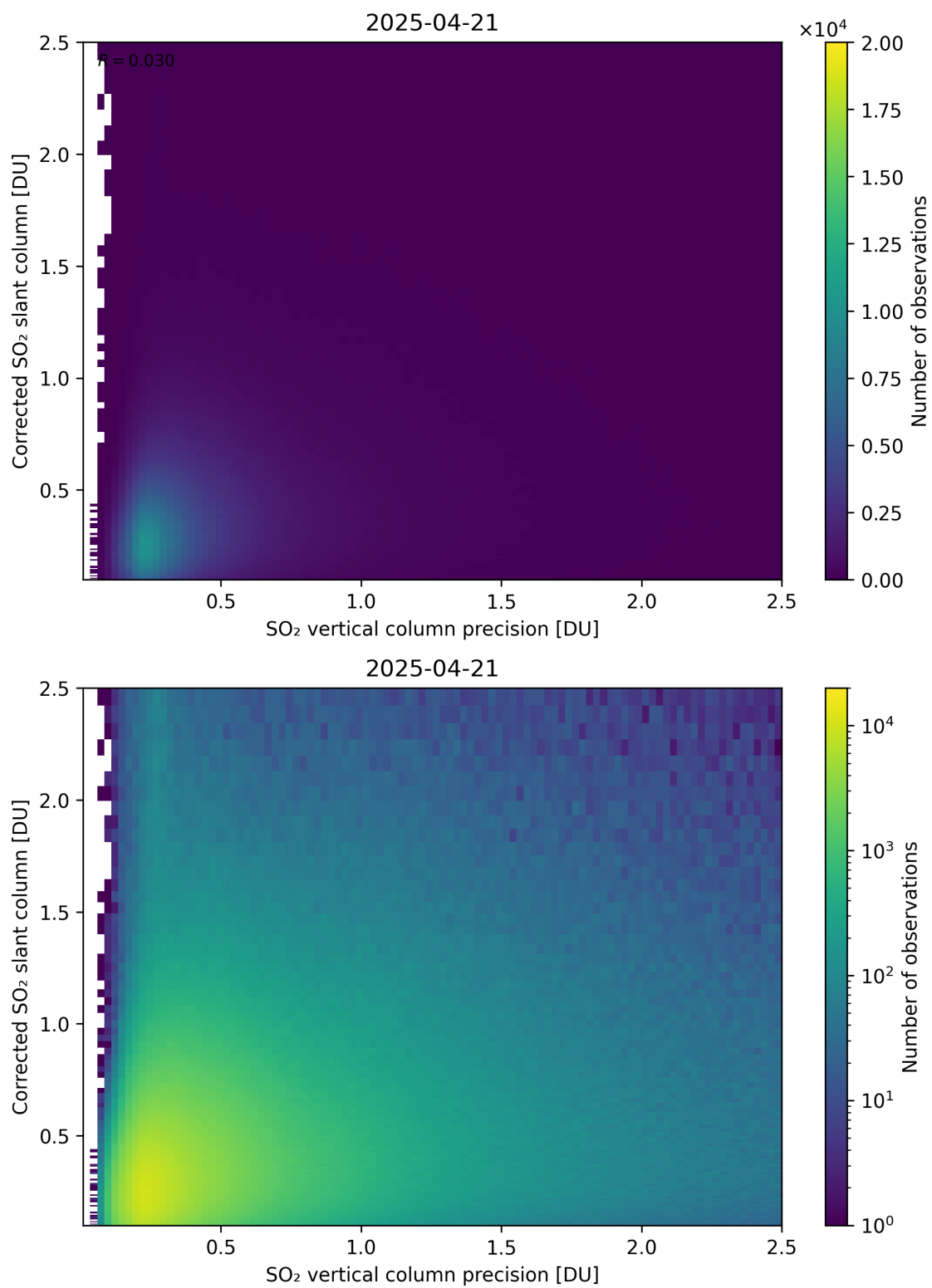


Figure 338: Scatter density plot of “SO₂ vertical column precision” against “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22.

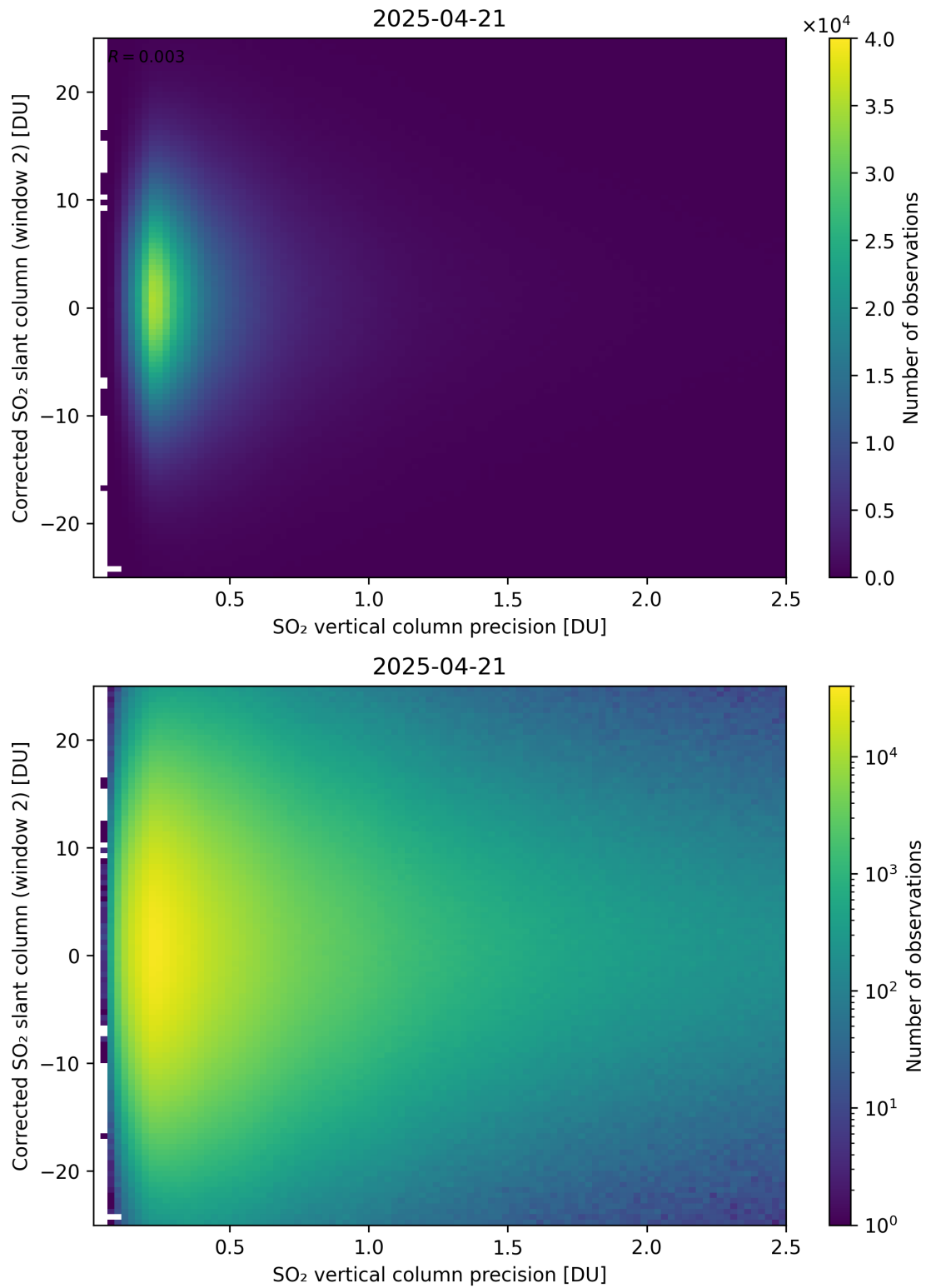


Figure 339: Scatter density plot of “SO₂ vertical column precision” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

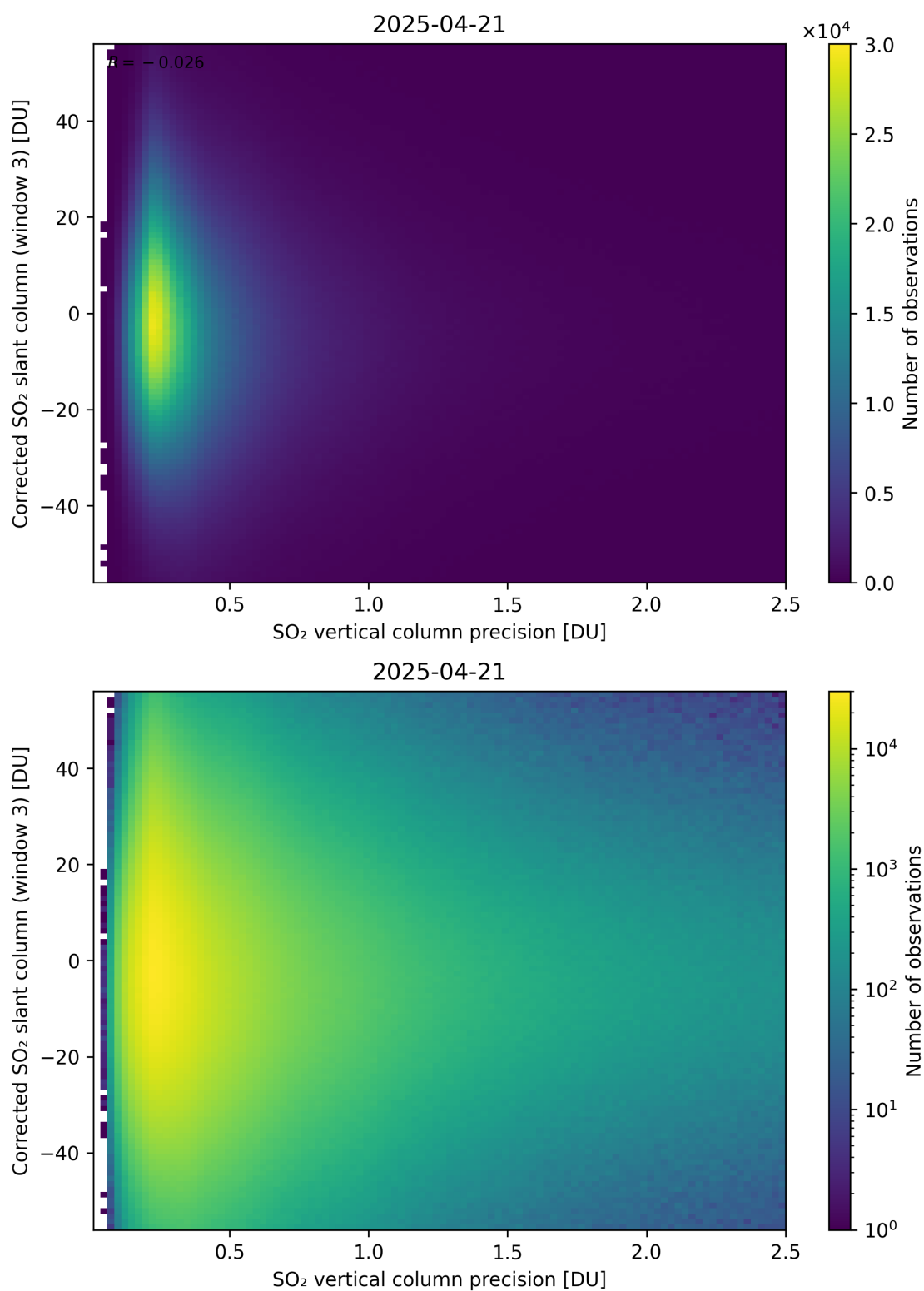


Figure 340: Scatter density plot of “SO₂ vertical column precision” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

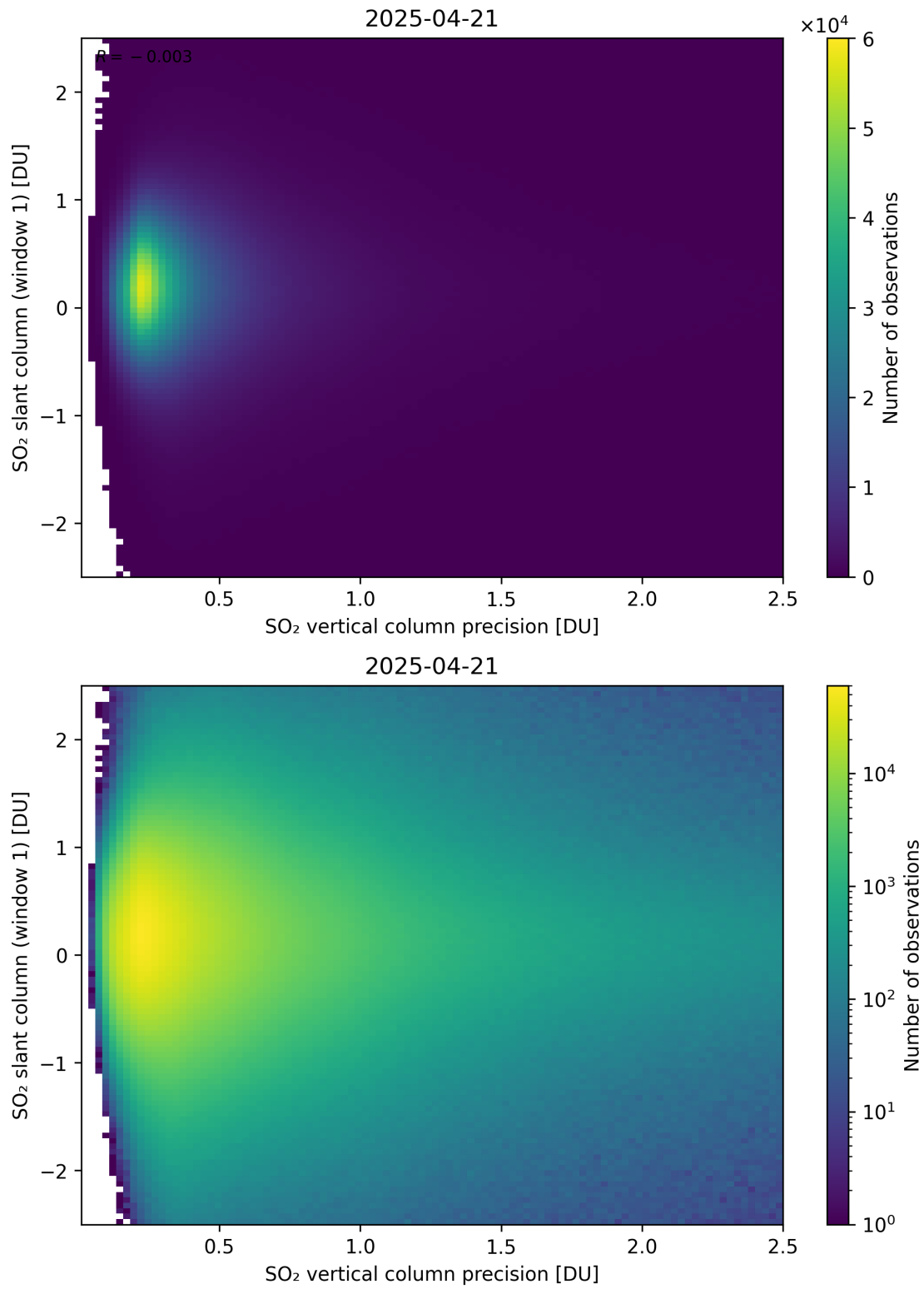


Figure 341: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

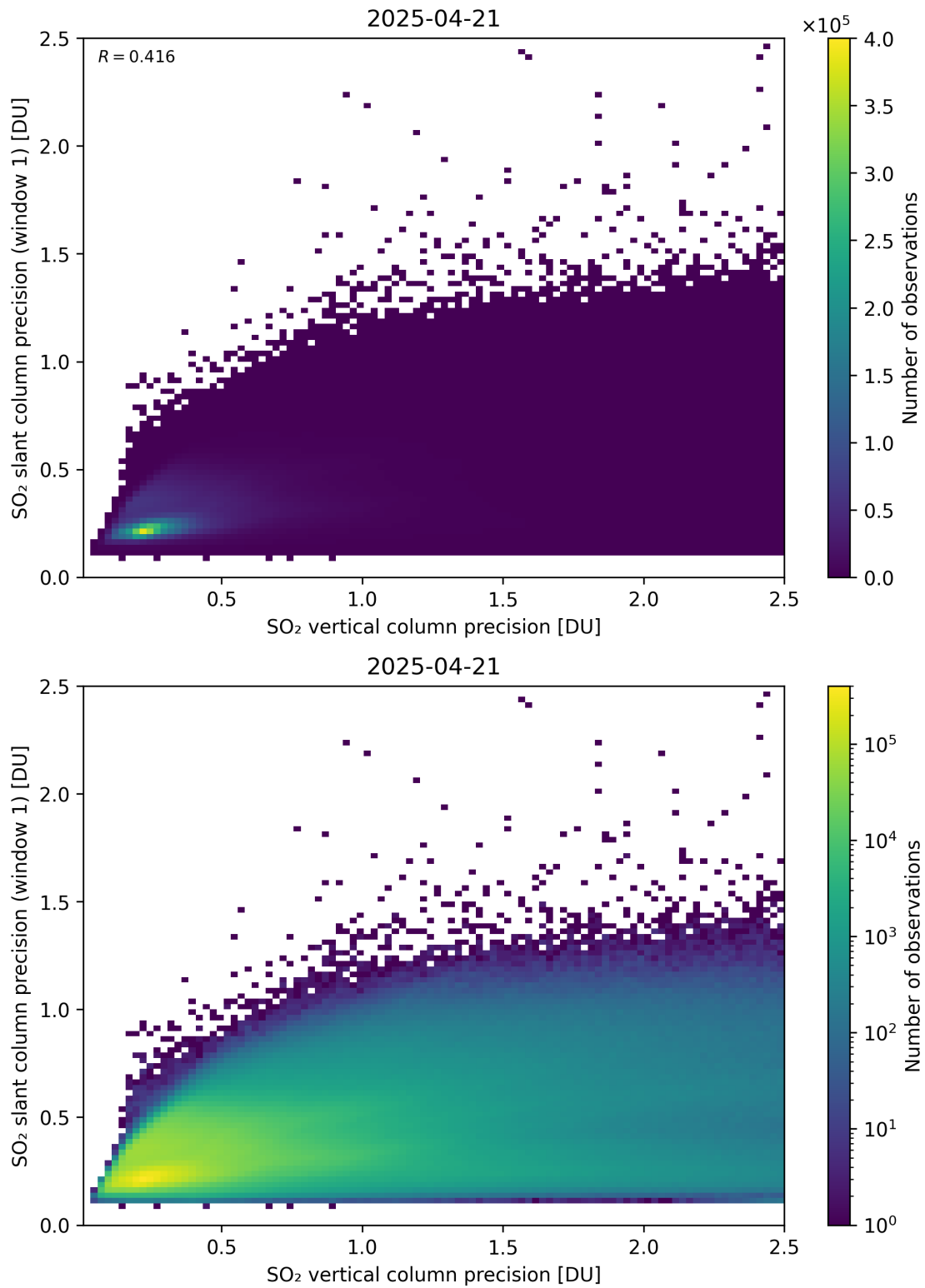


Figure 342: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

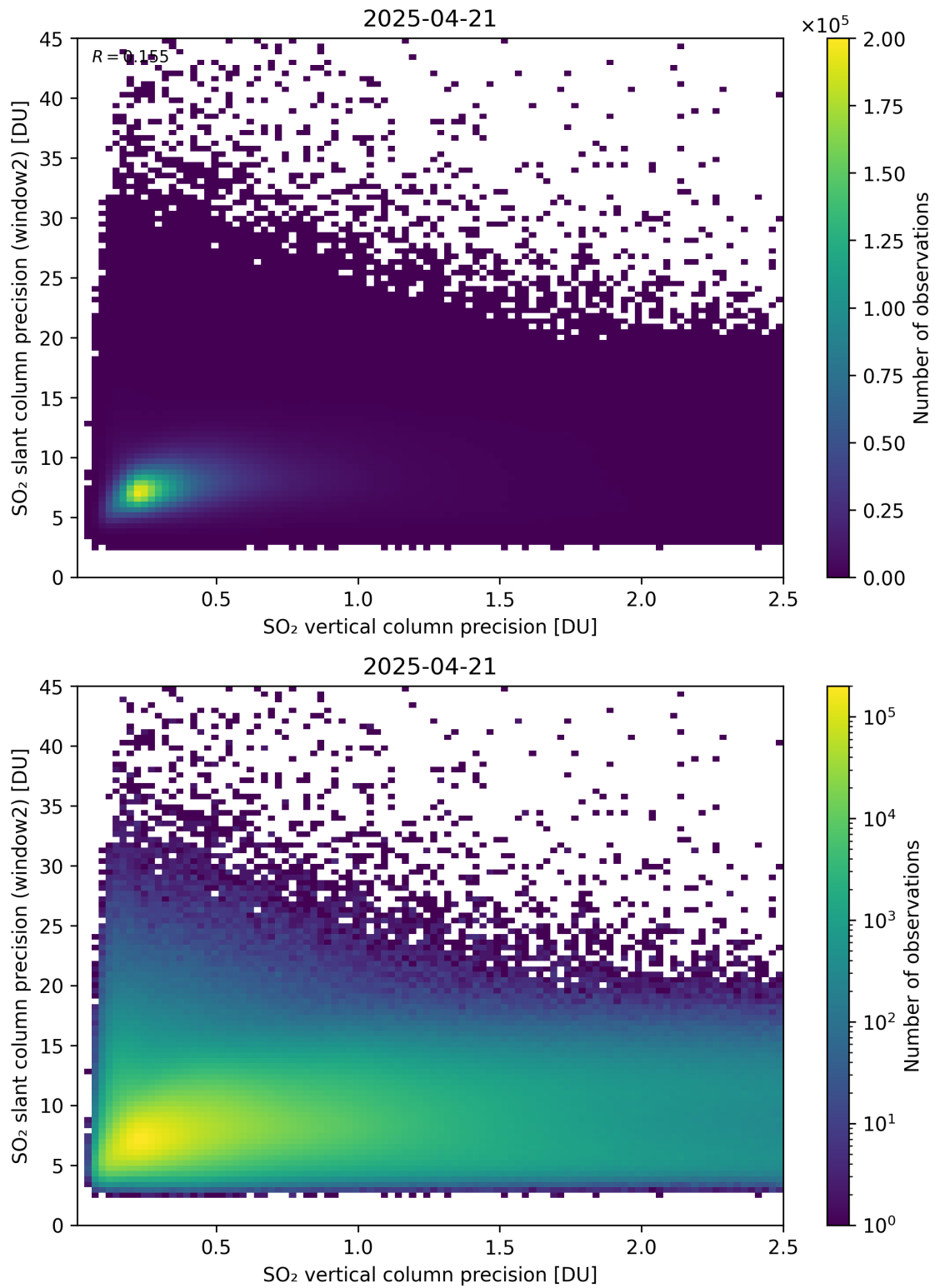


Figure 343: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

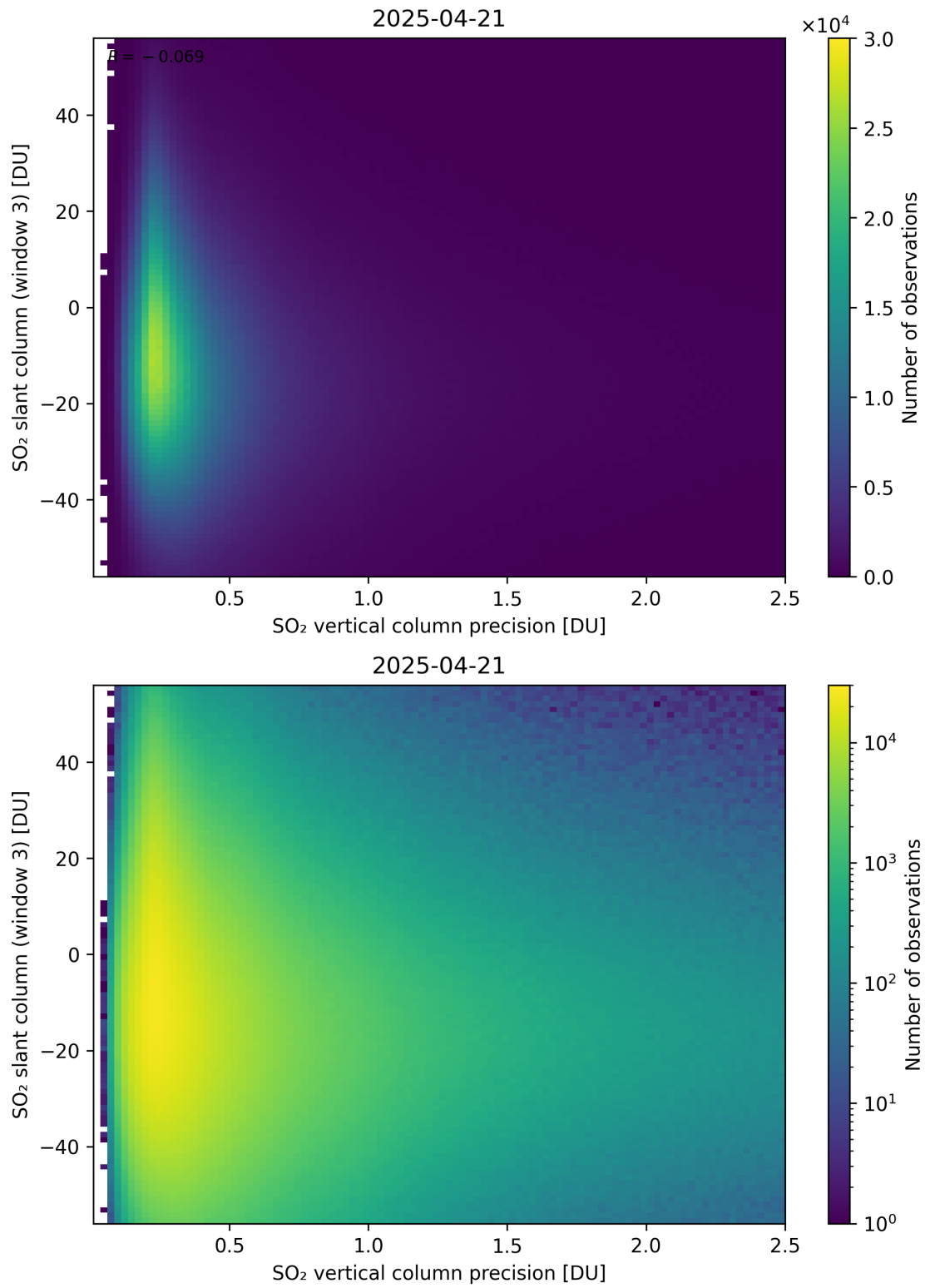


Figure 344: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

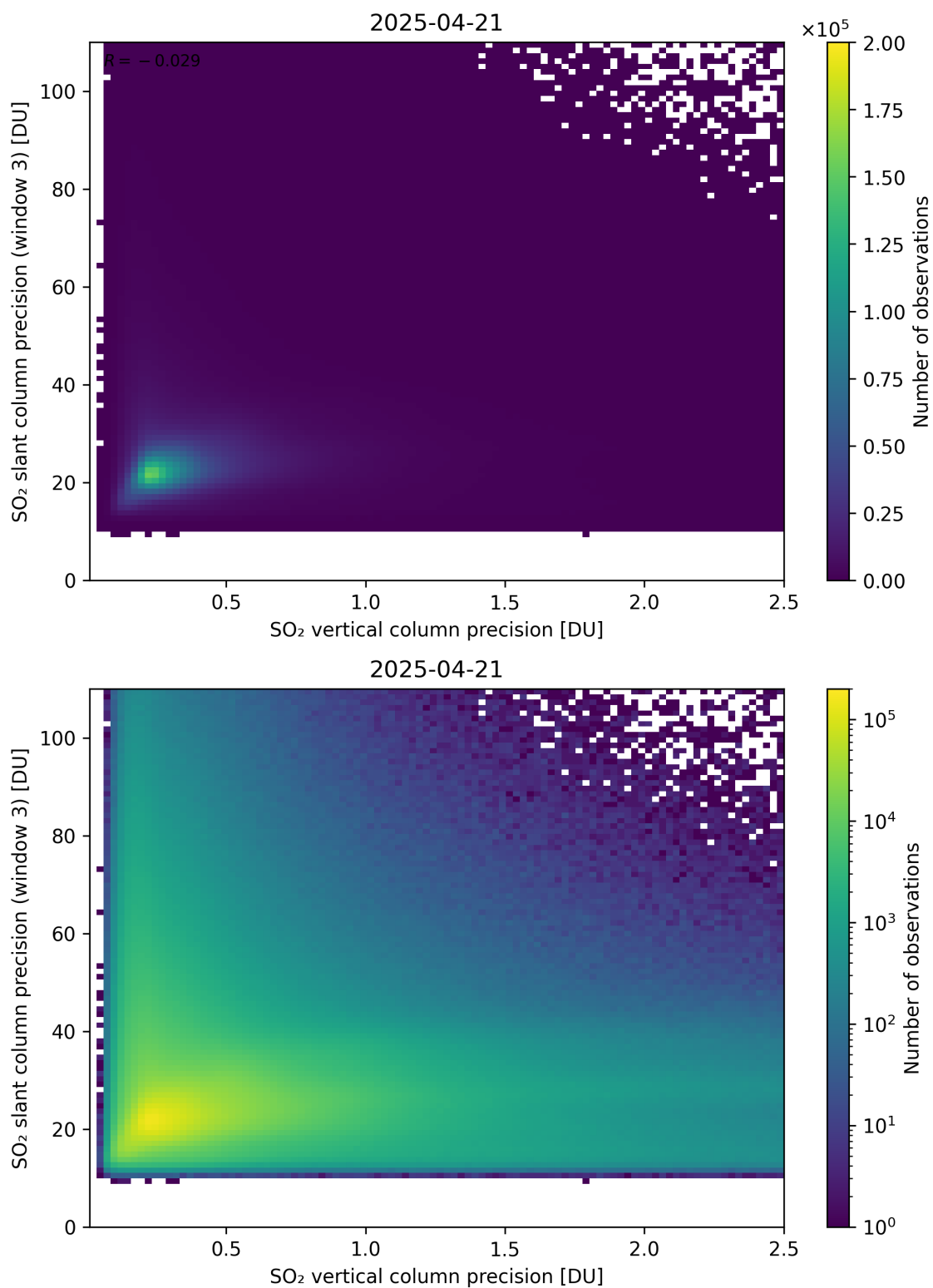


Figure 345: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

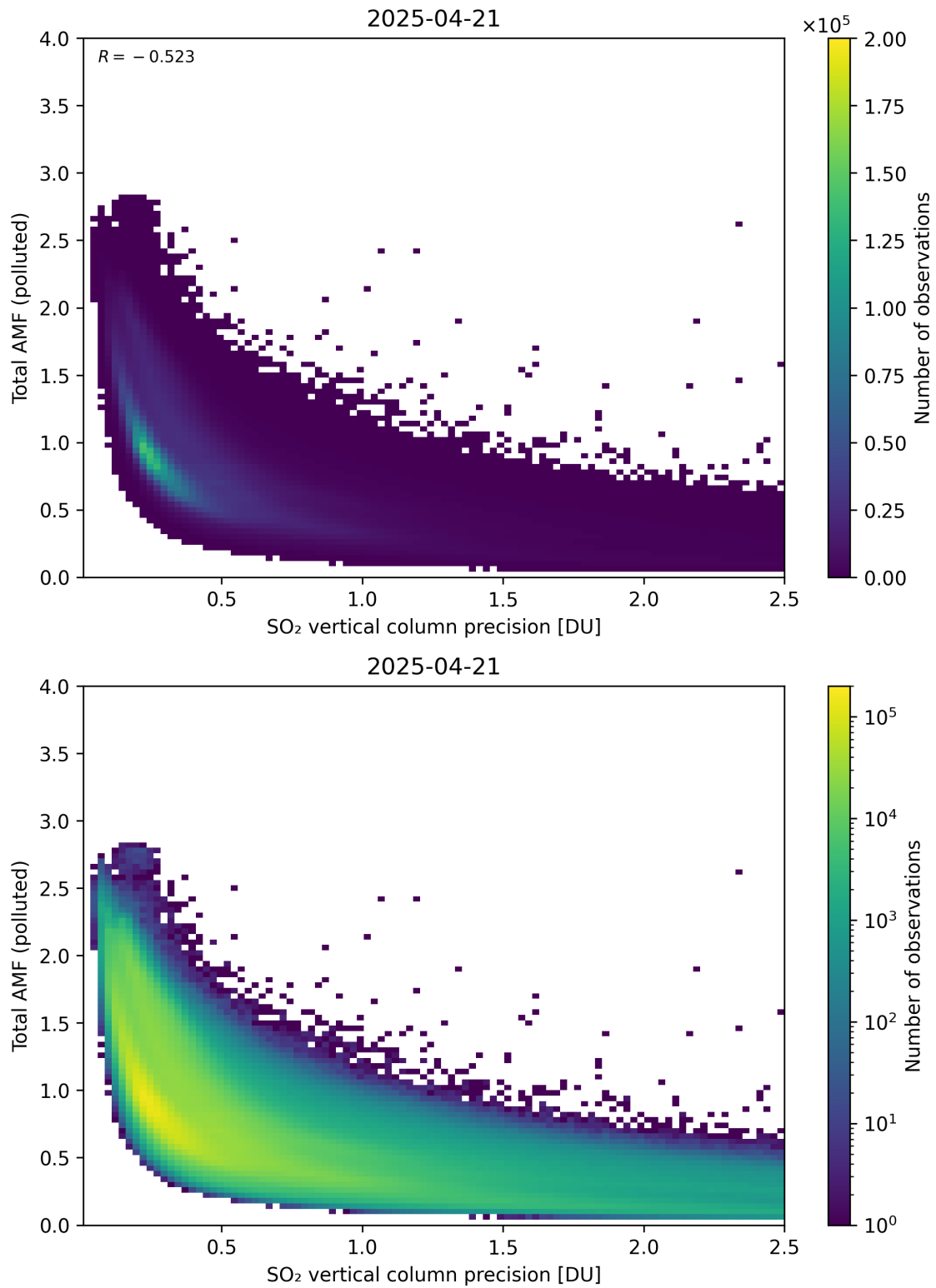


Figure 346: Scatter density plot of “SO₂ vertical column precision” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

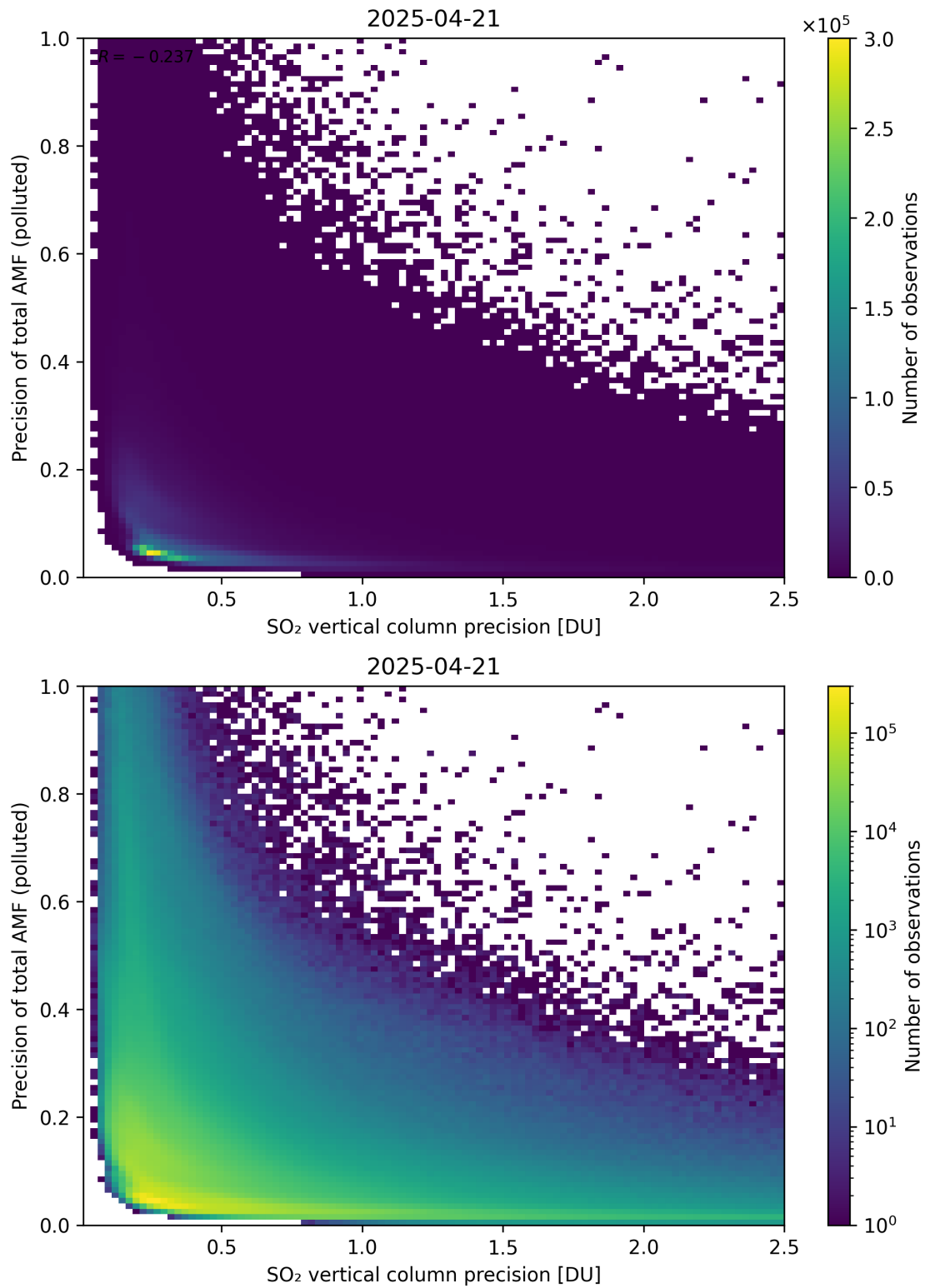


Figure 347: Scatter density plot of “SO₂ vertical column precision” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

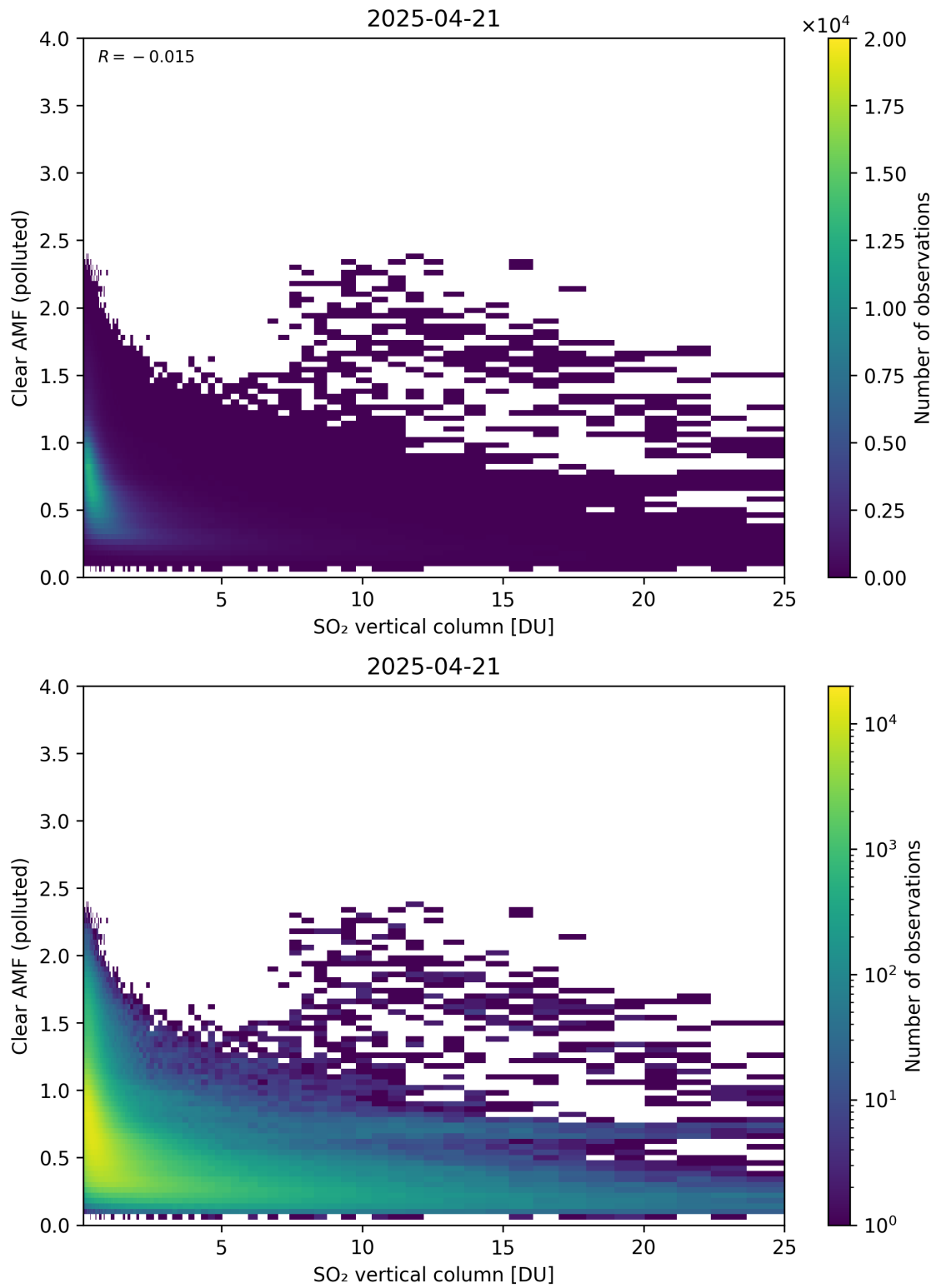


Figure 348: Scatter density plot of “SO₂ vertical column” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

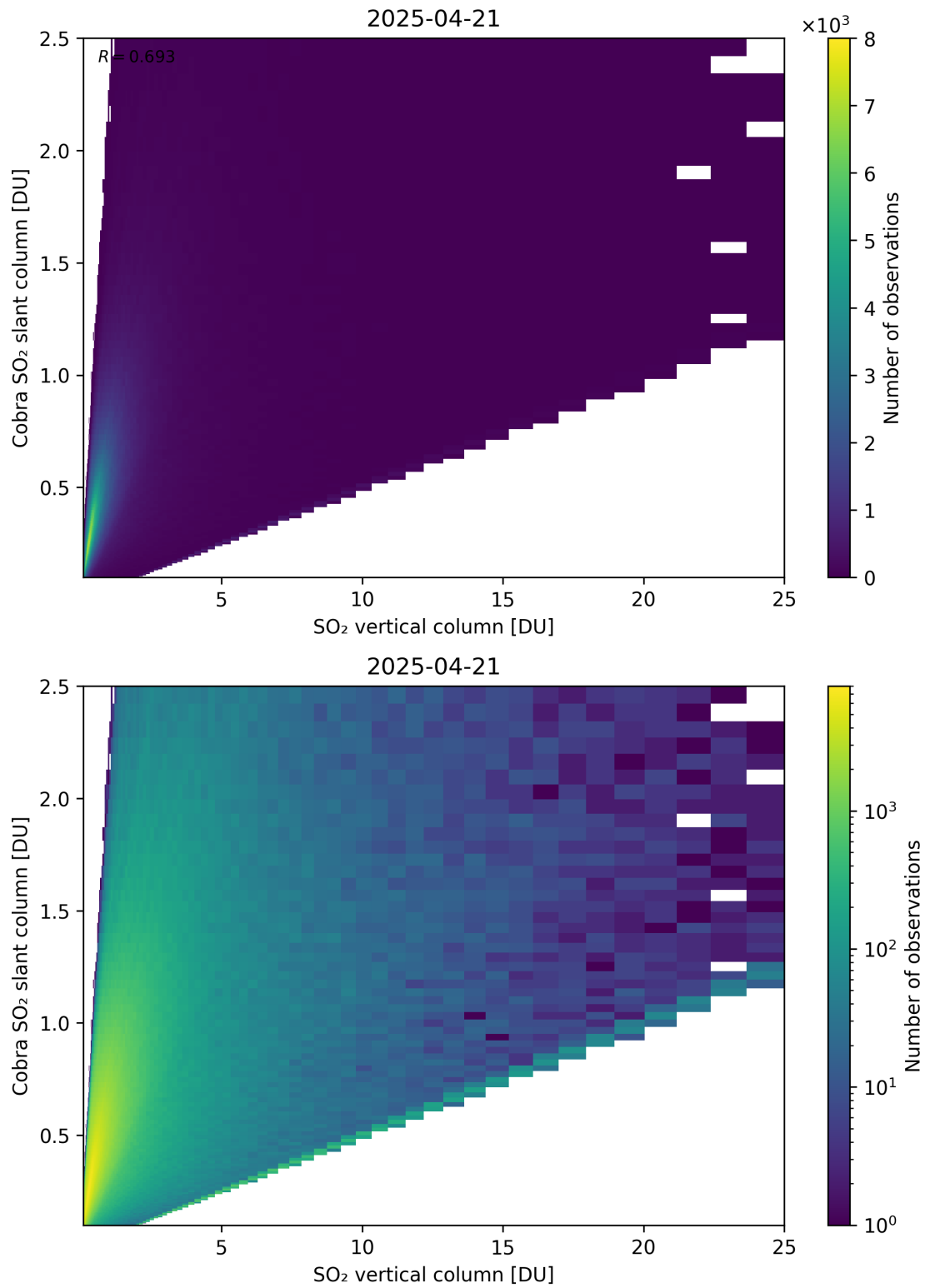


Figure 349: Scatter density plot of “SO₂ vertical column” against “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

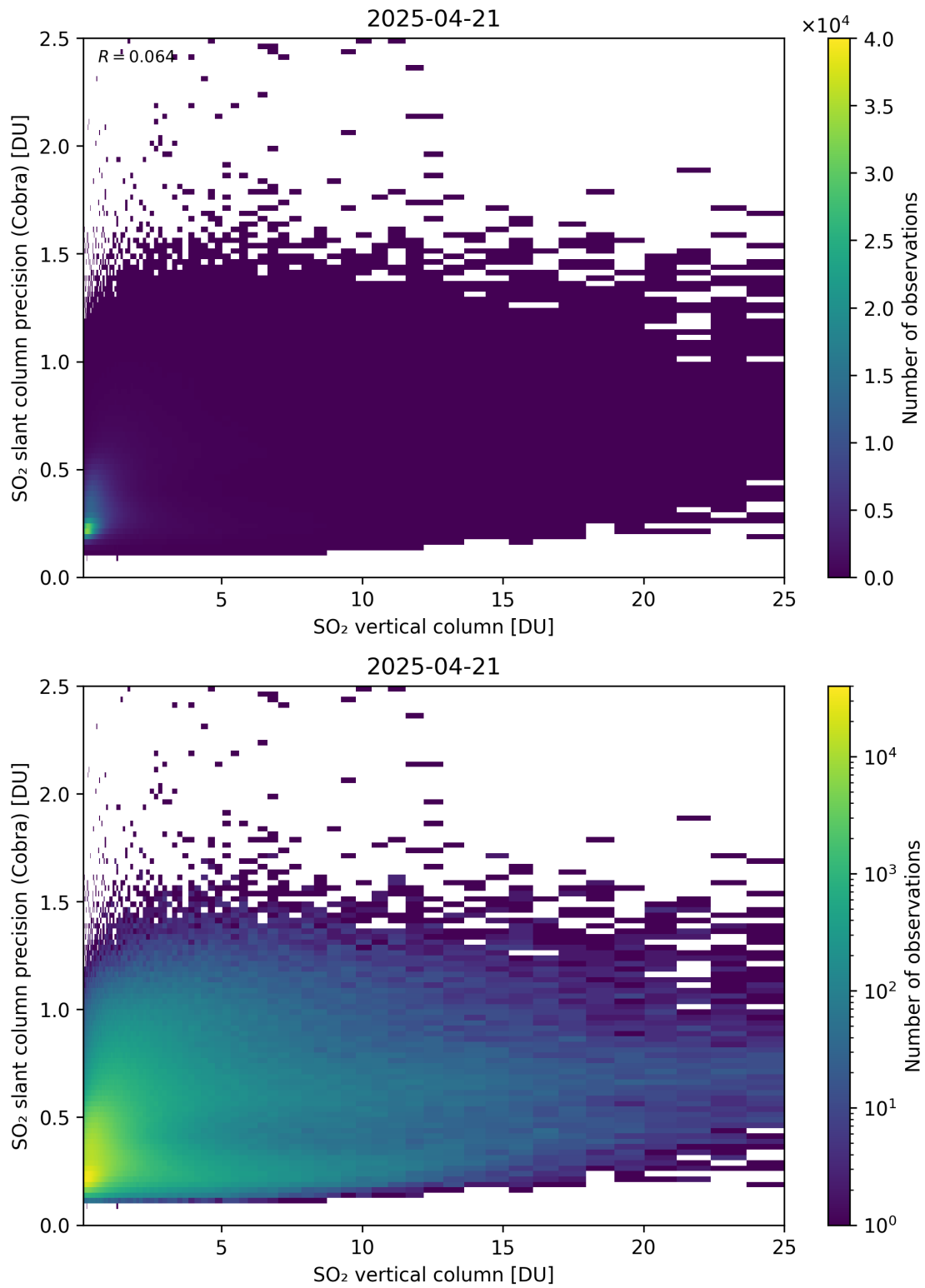


Figure 350: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

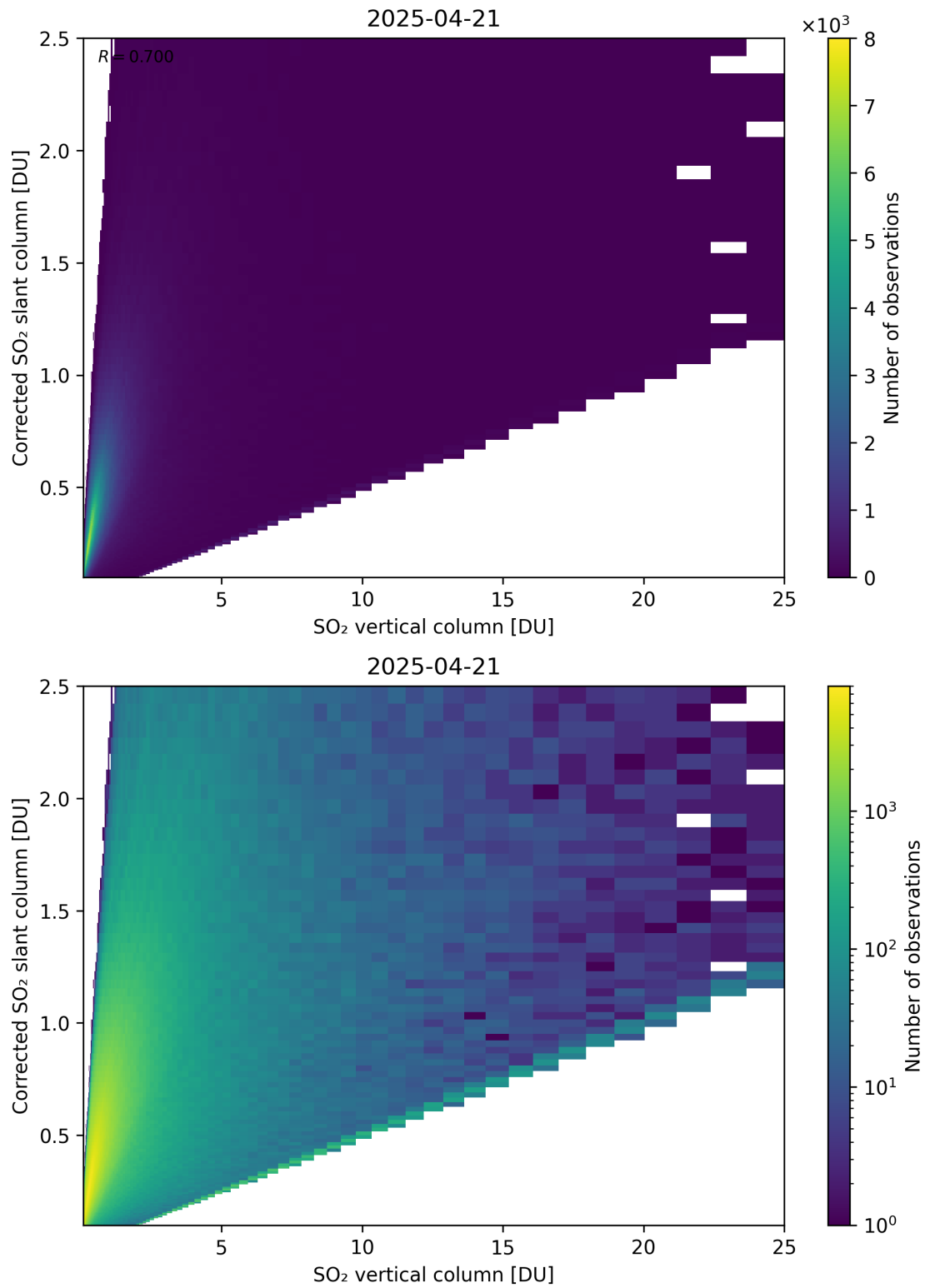


Figure 351: Scatter density plot of “SO₂ vertical column” against “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22.

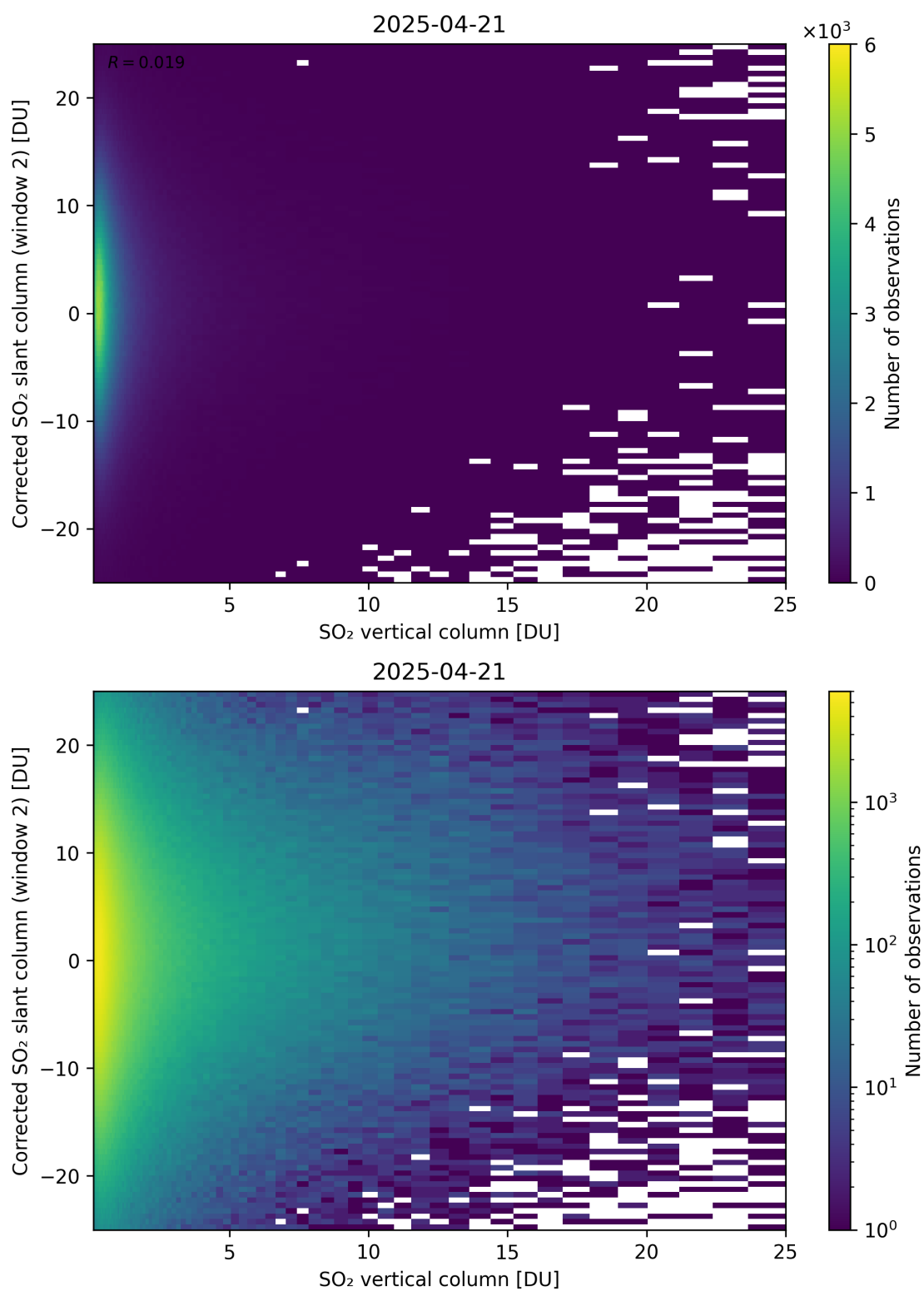


Figure 352: Scatter density plot of “SO₂ vertical column” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

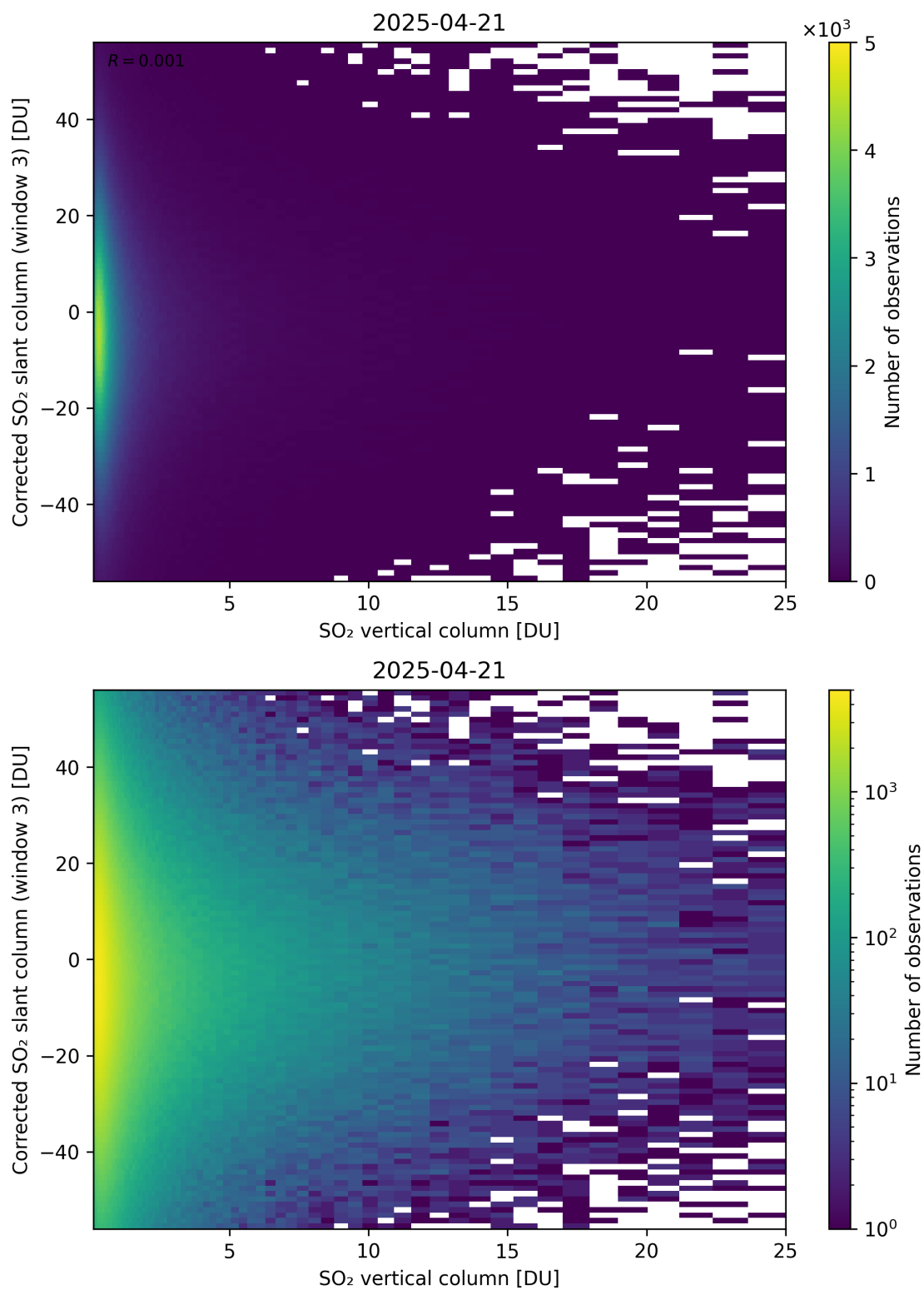


Figure 353: Scatter density plot of “SO₂ vertical column” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

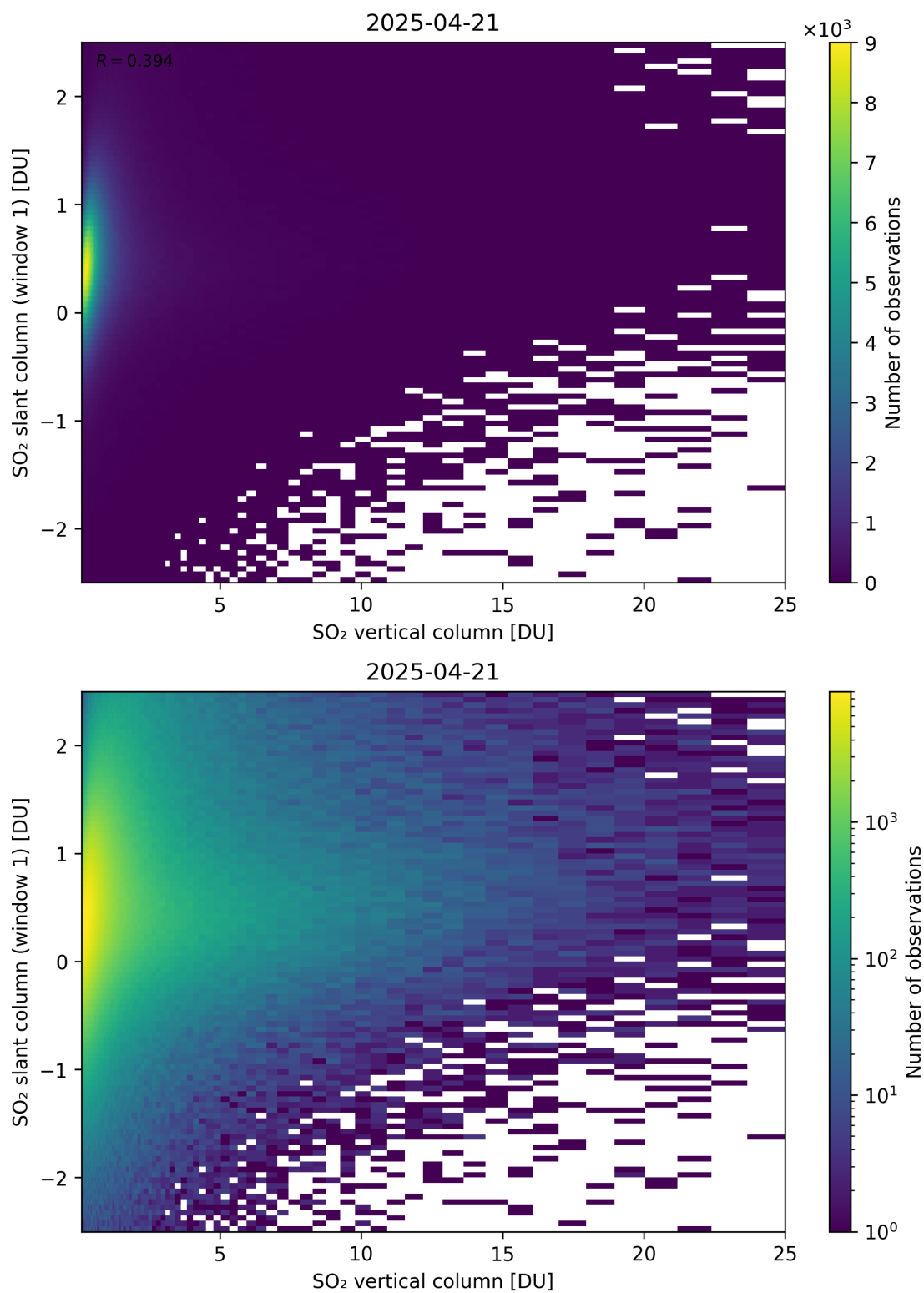


Figure 354: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

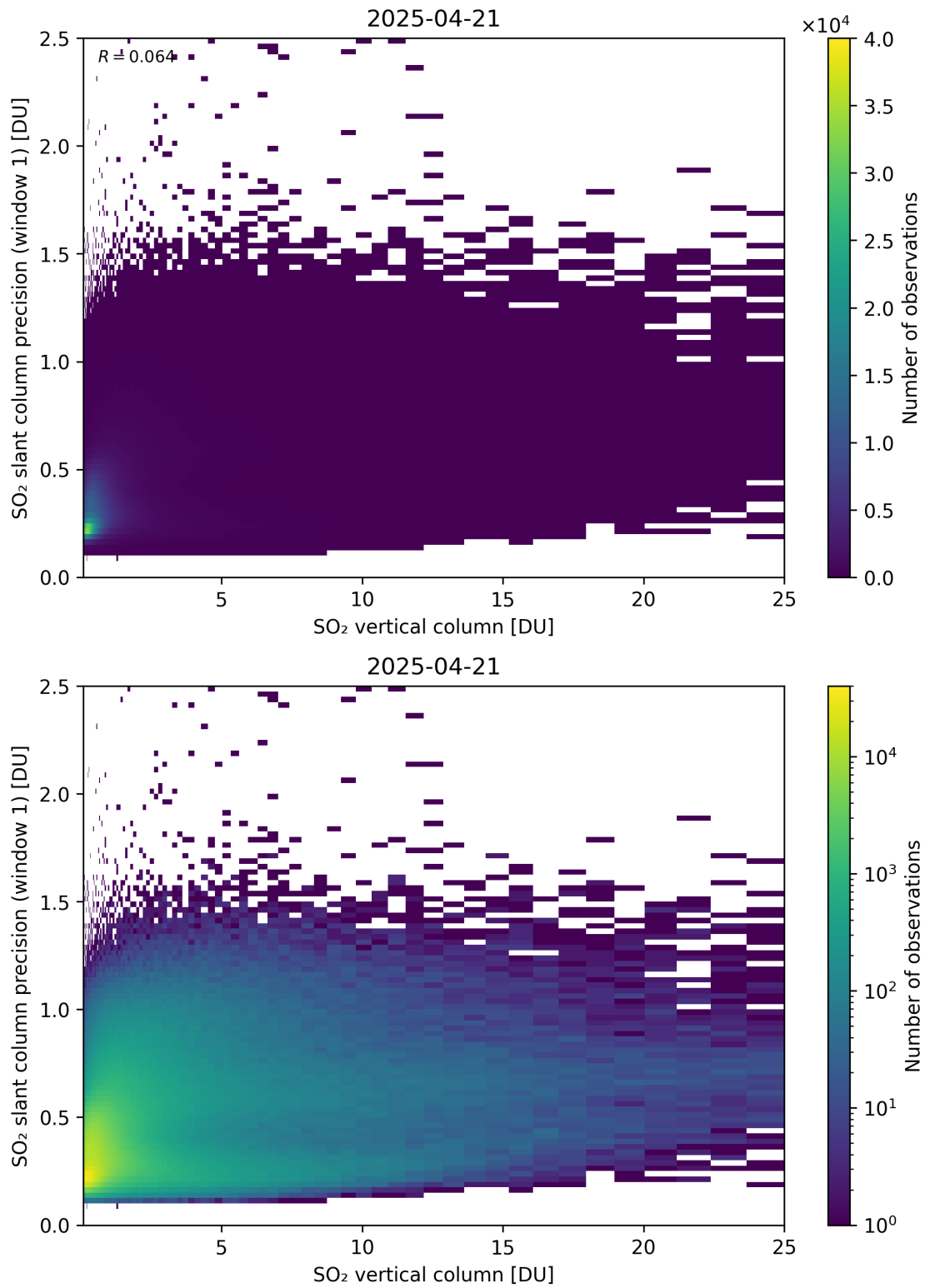


Figure 355: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

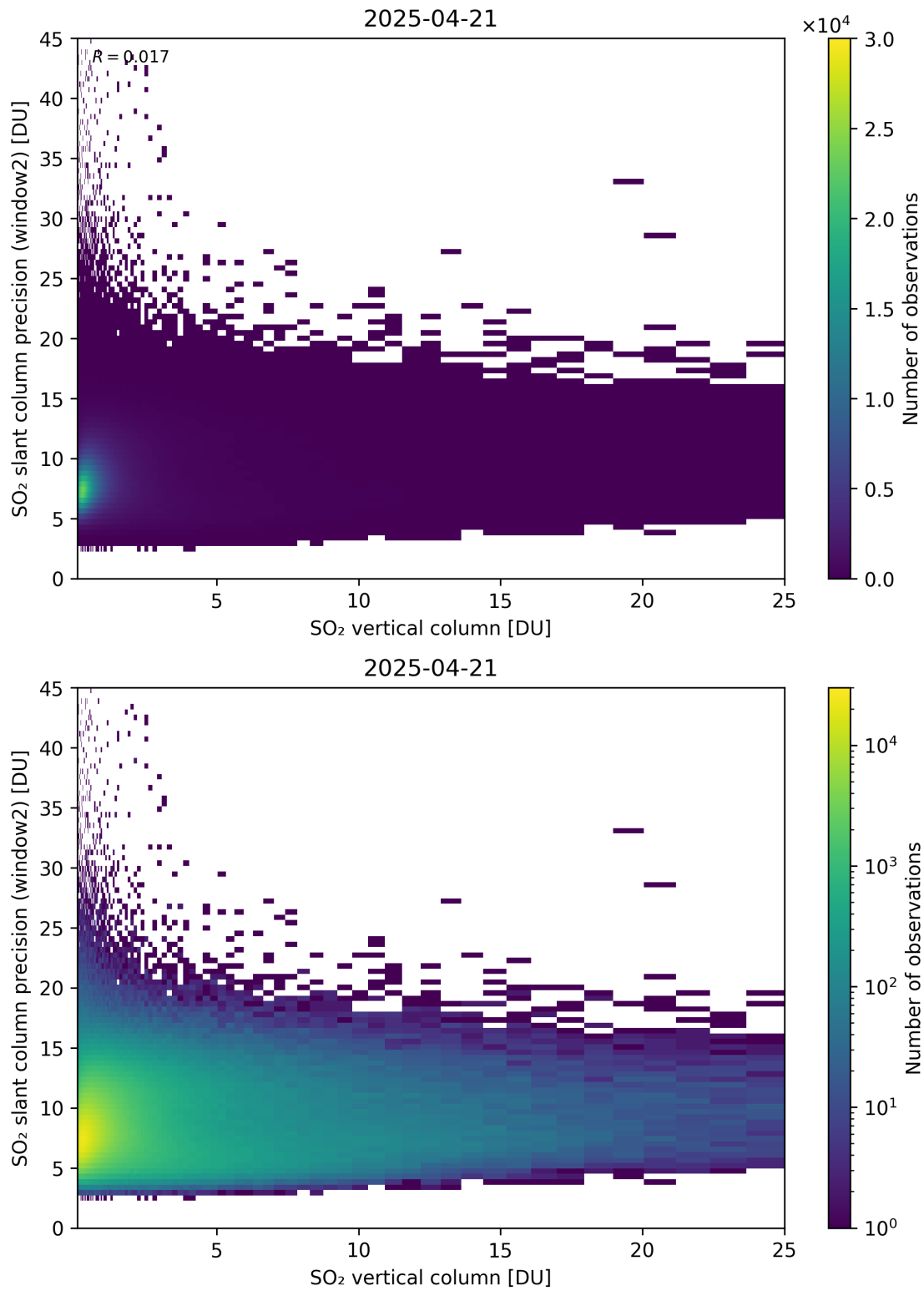


Figure 356: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

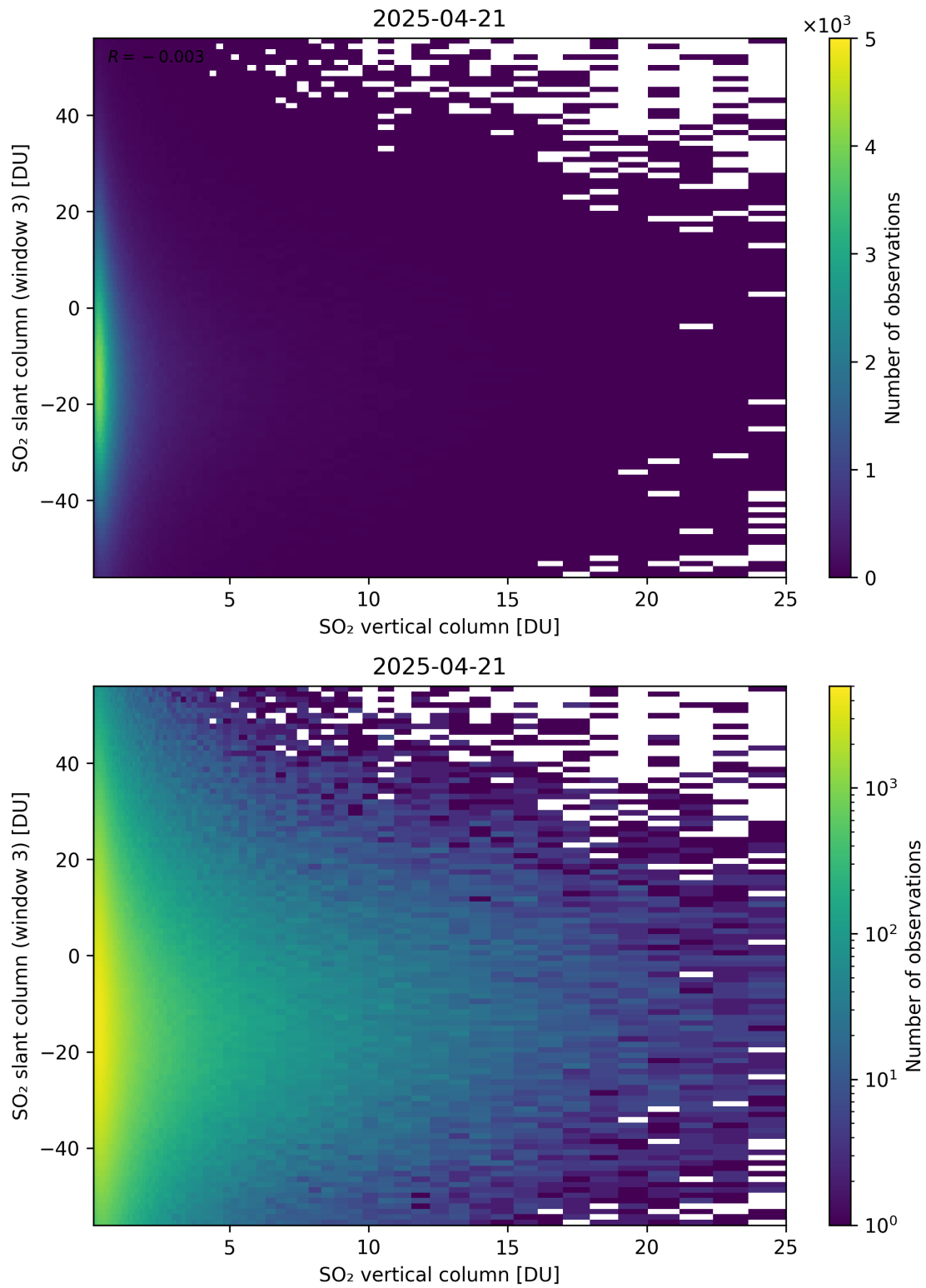


Figure 357: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

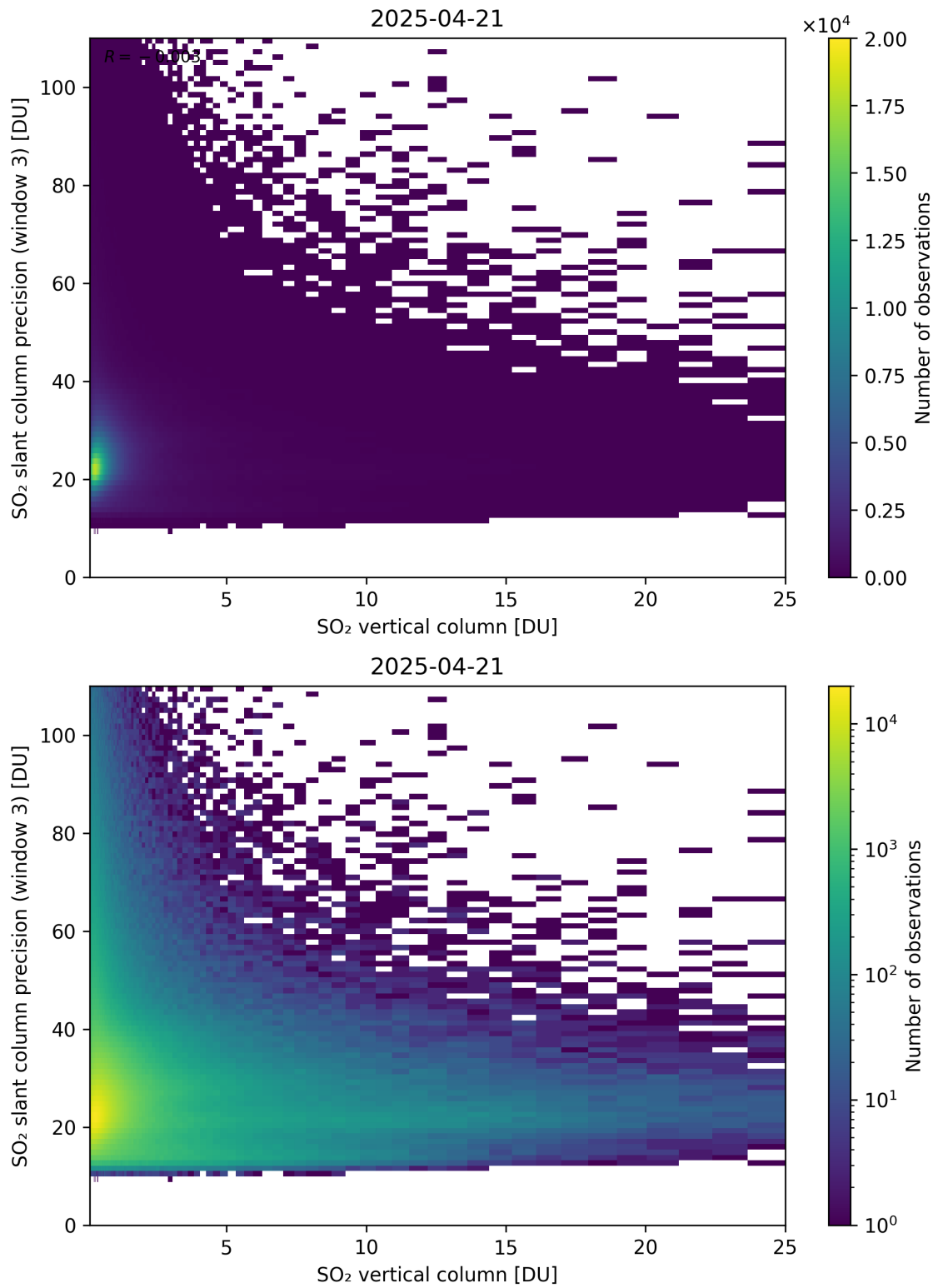


Figure 358: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

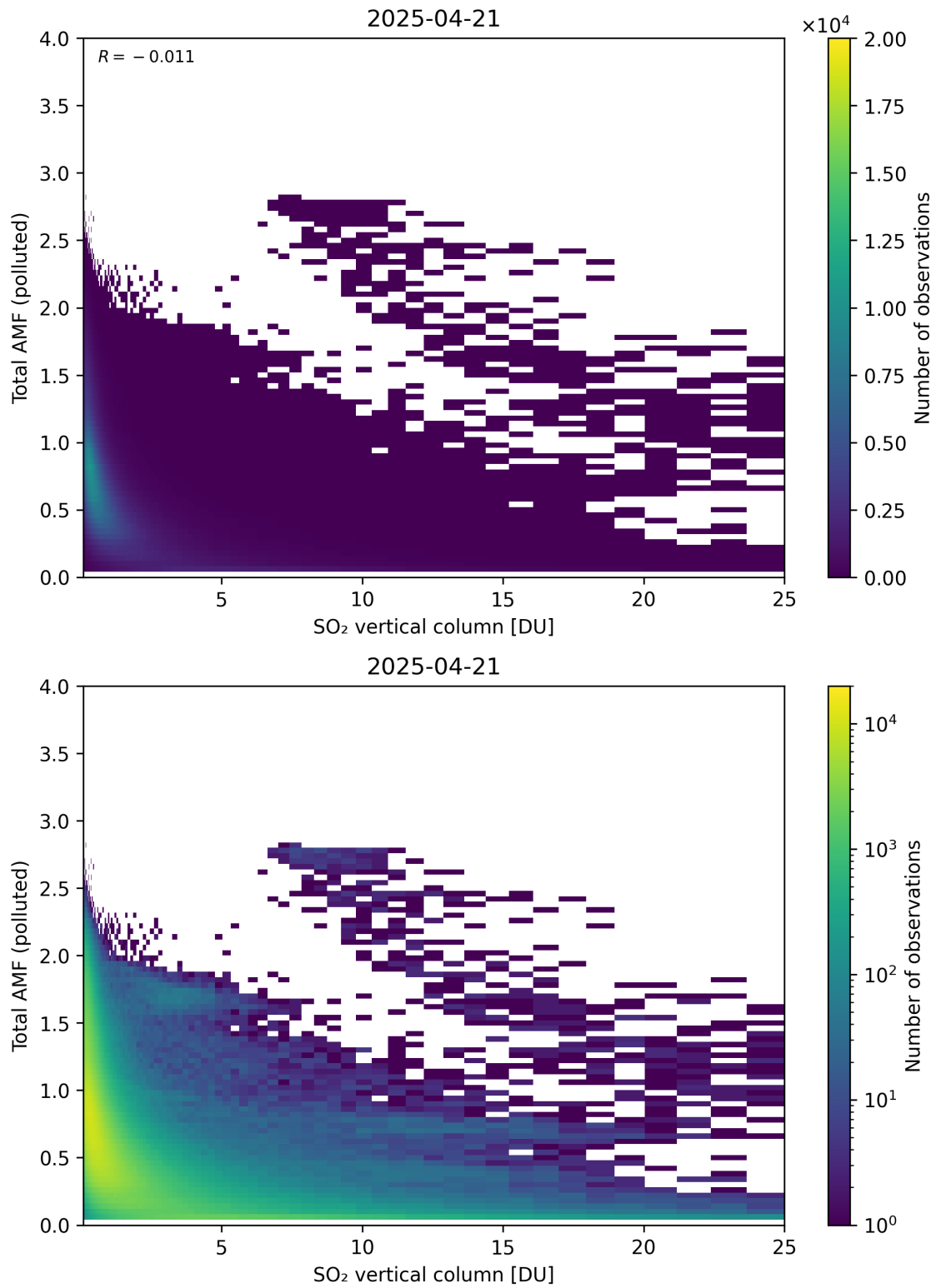


Figure 359: Scatter density plot of “SO₂ vertical column” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

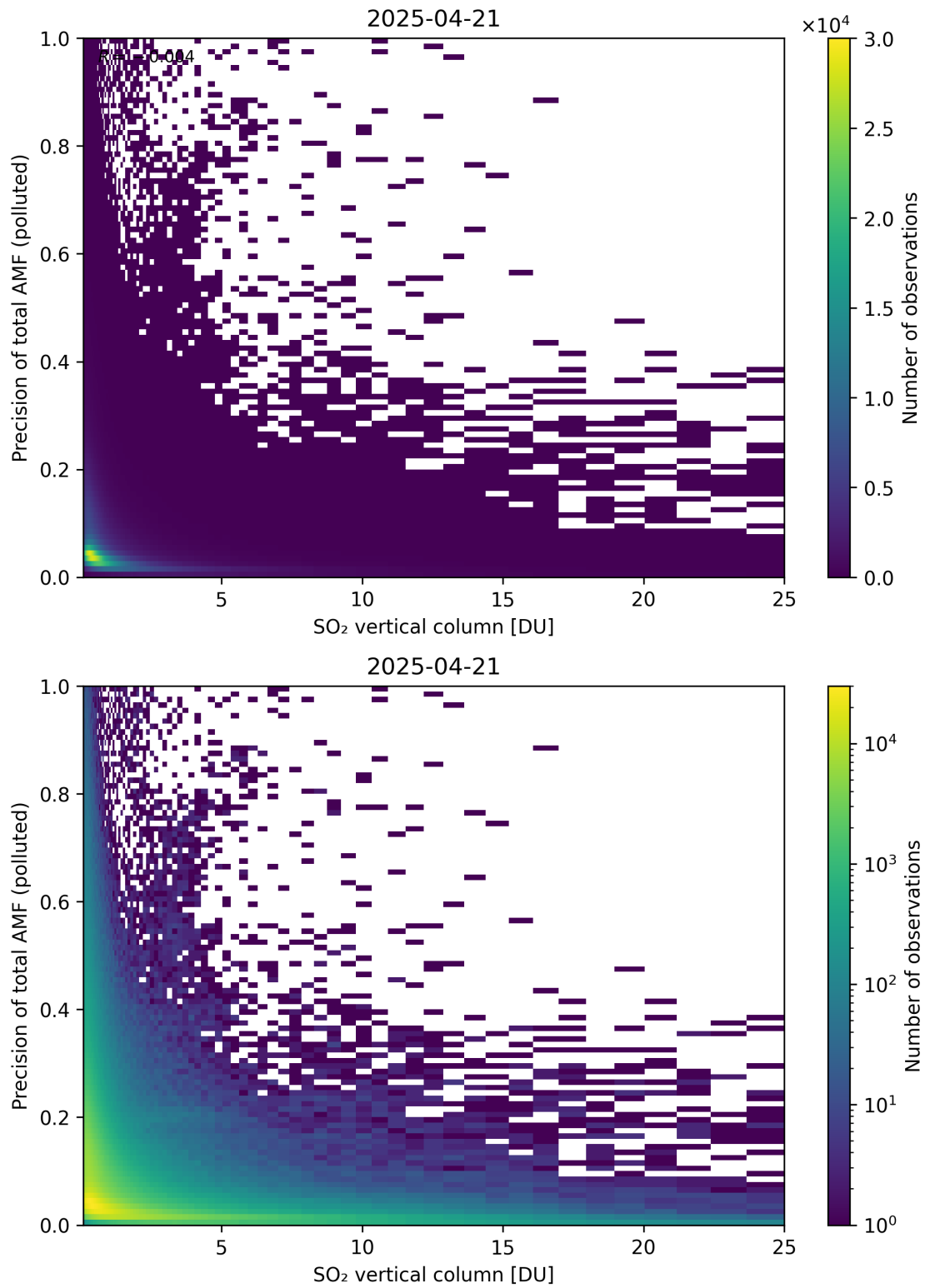


Figure 360: Scatter density plot of “SO₂ vertical column” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

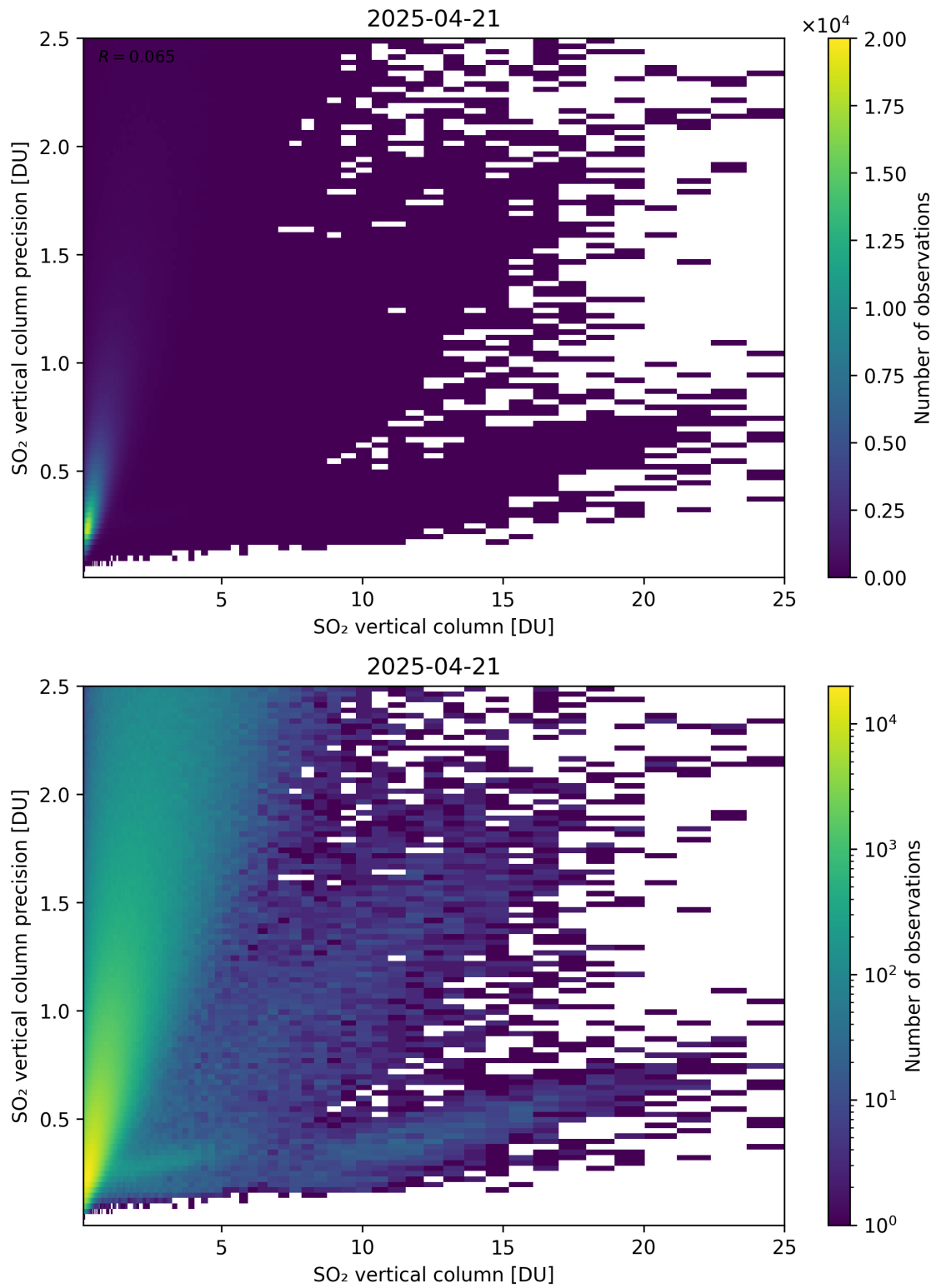


Figure 361: Scatter density plot of “SO₂ vertical column” against “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22.

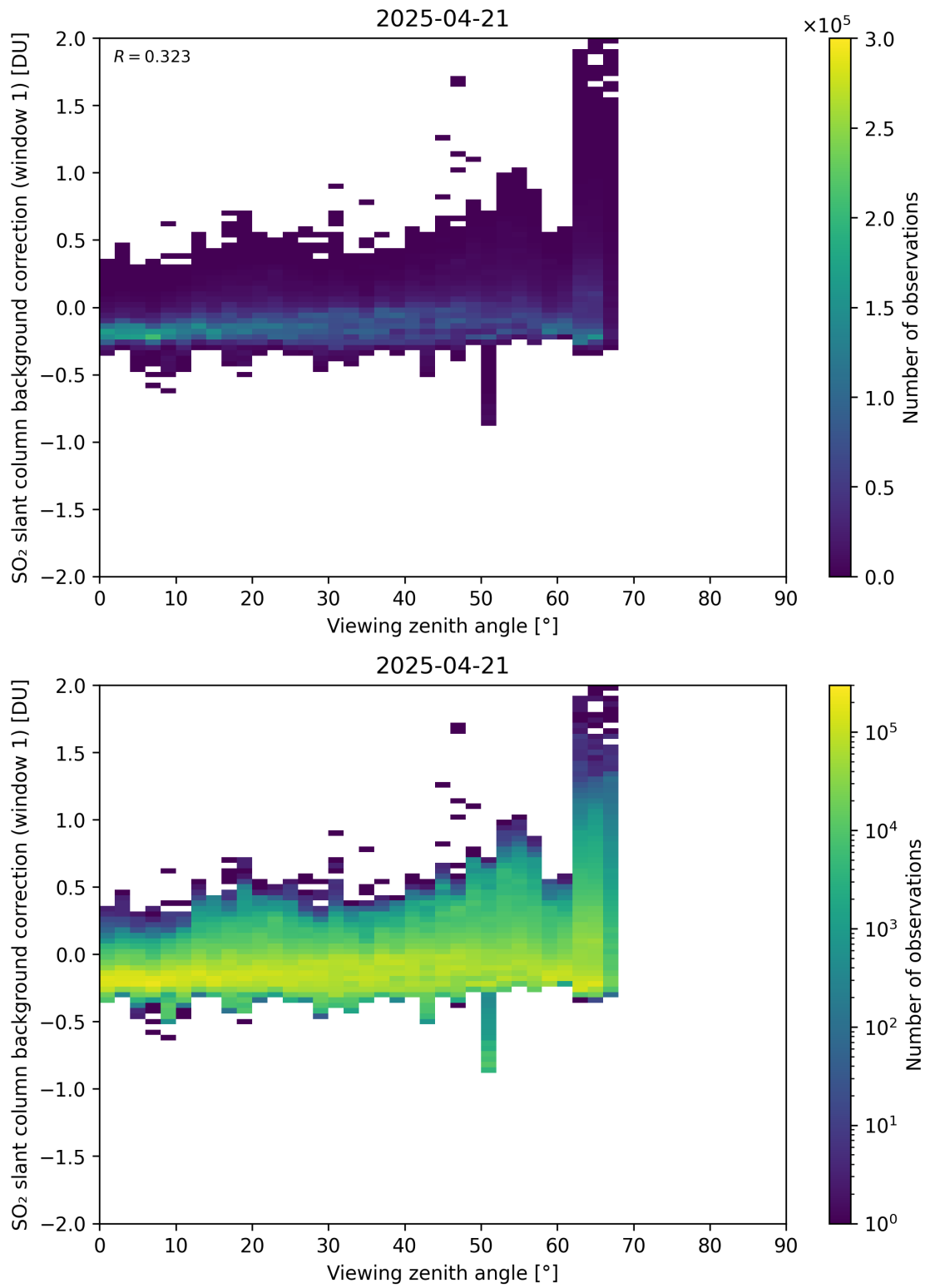


Figure 362: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.

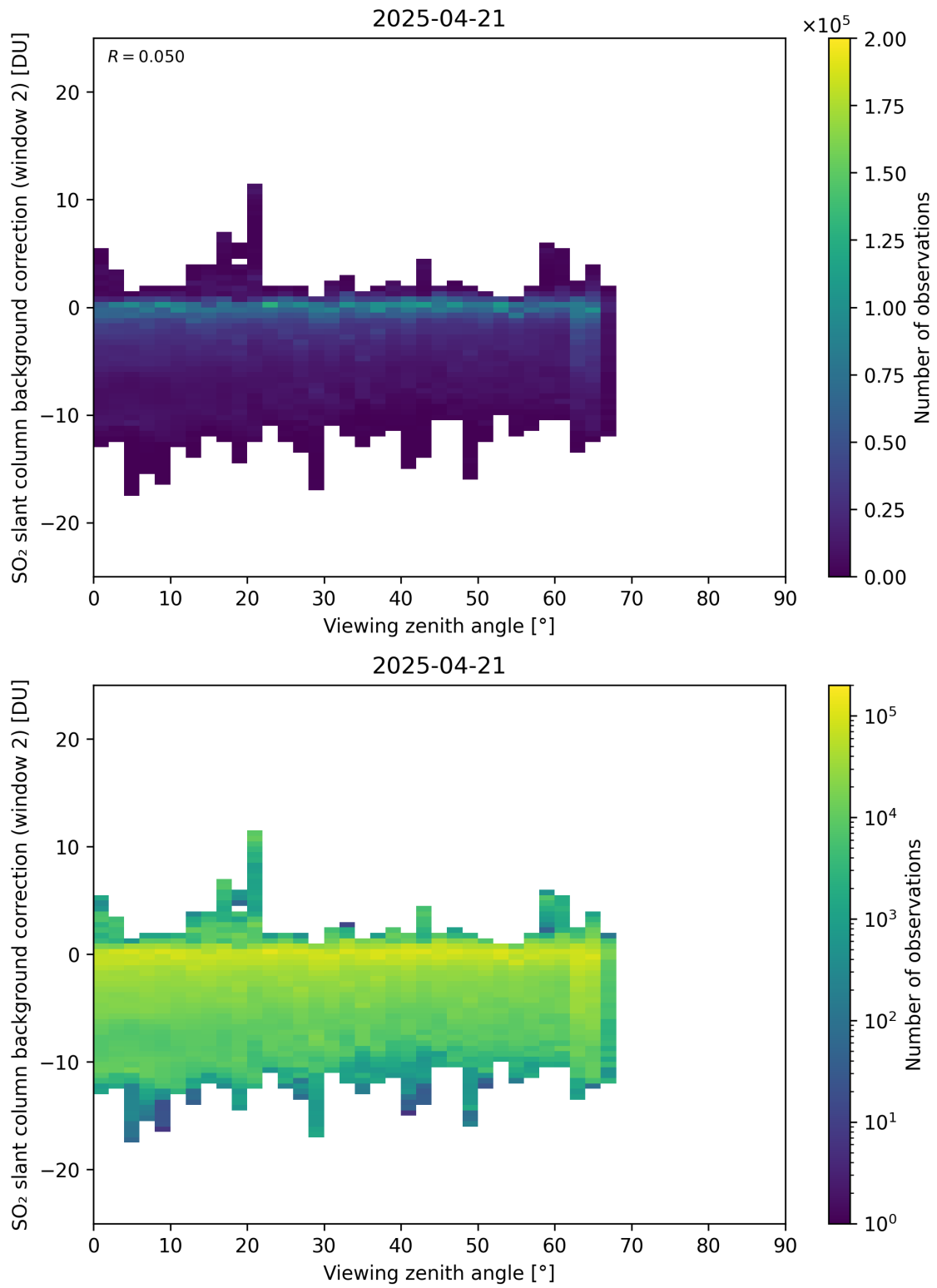


Figure 363: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.

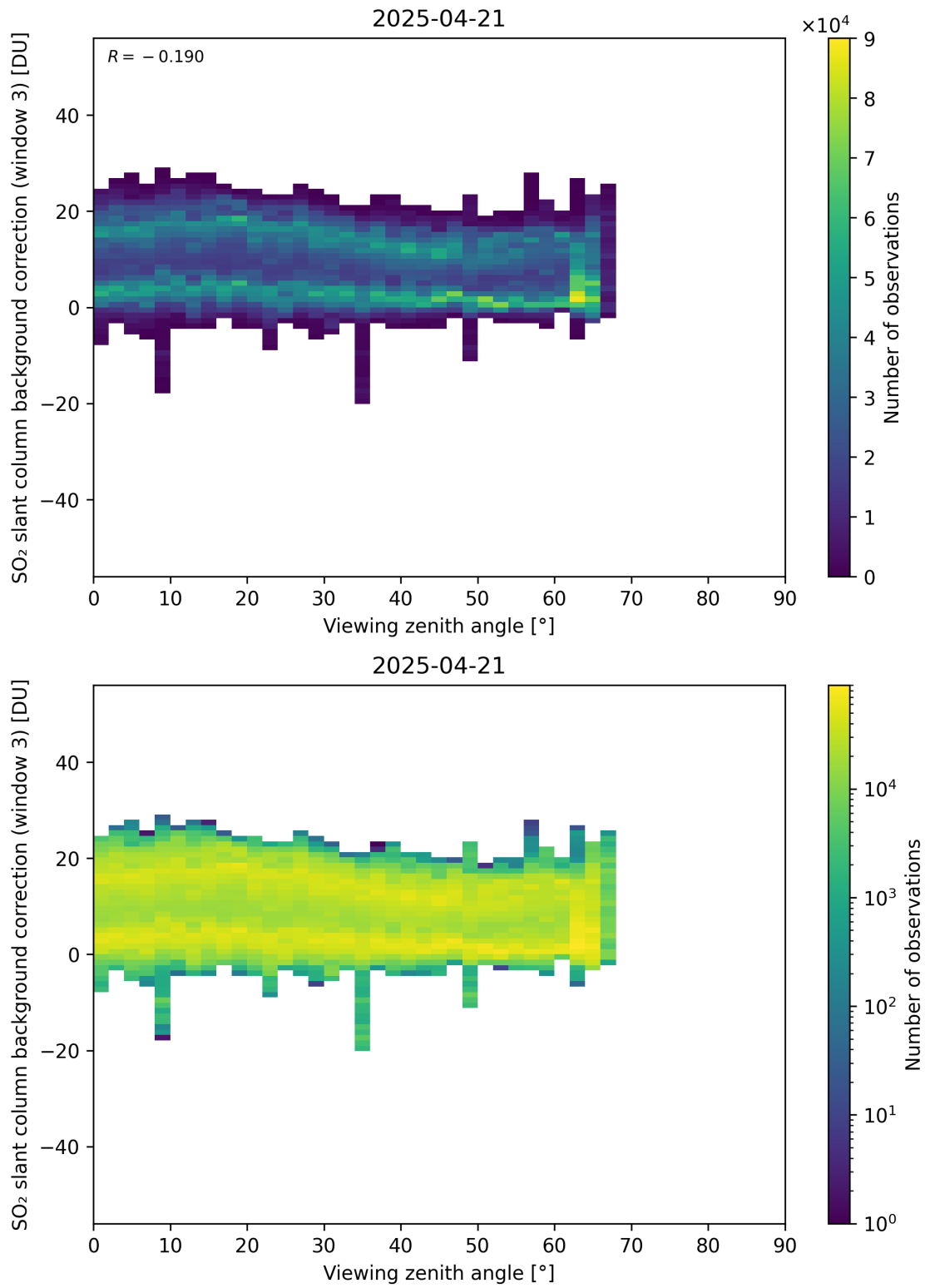


Figure 364: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.

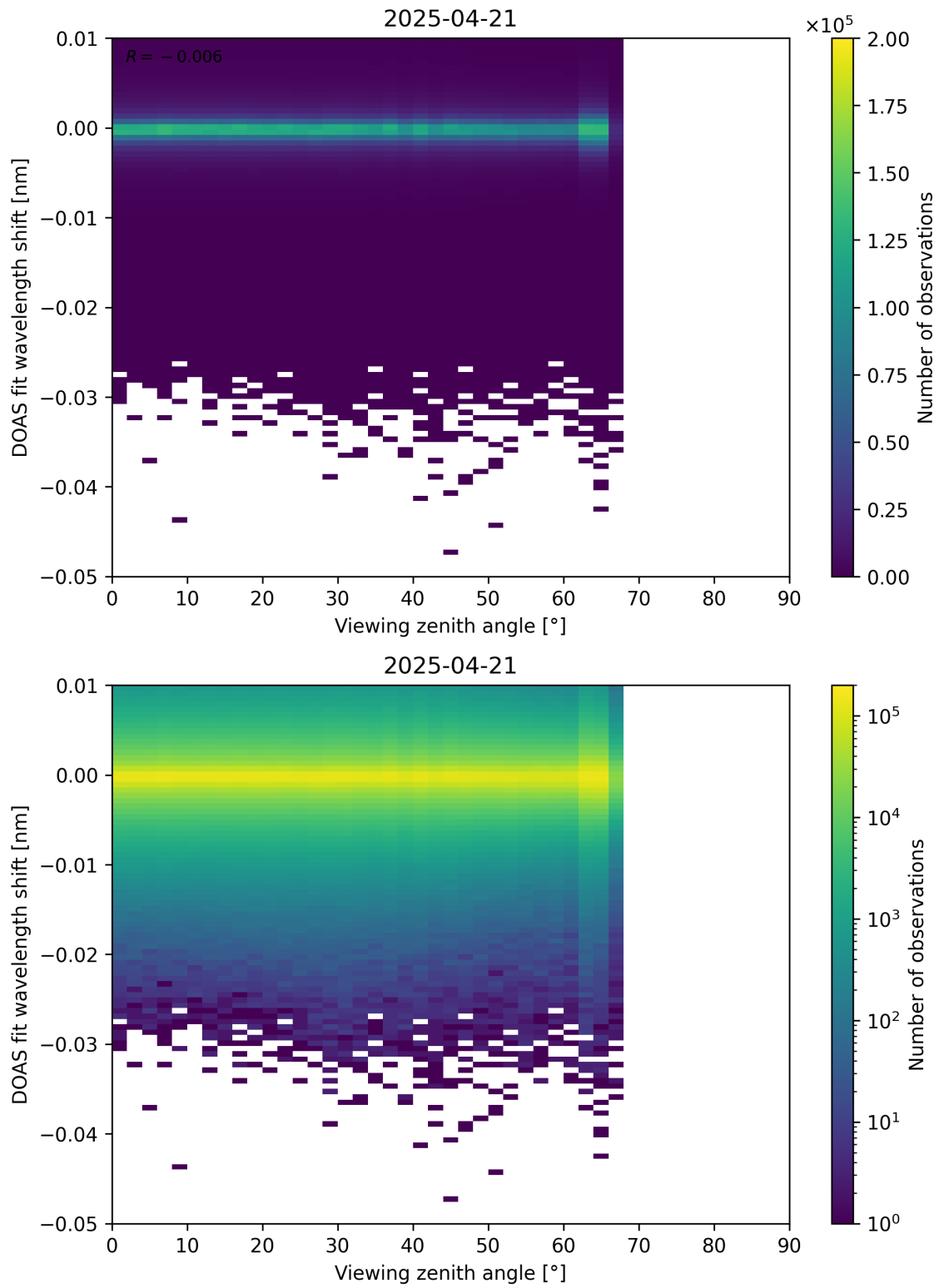


Figure 365: Scatter density plot of “Viewing zenith angle” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.

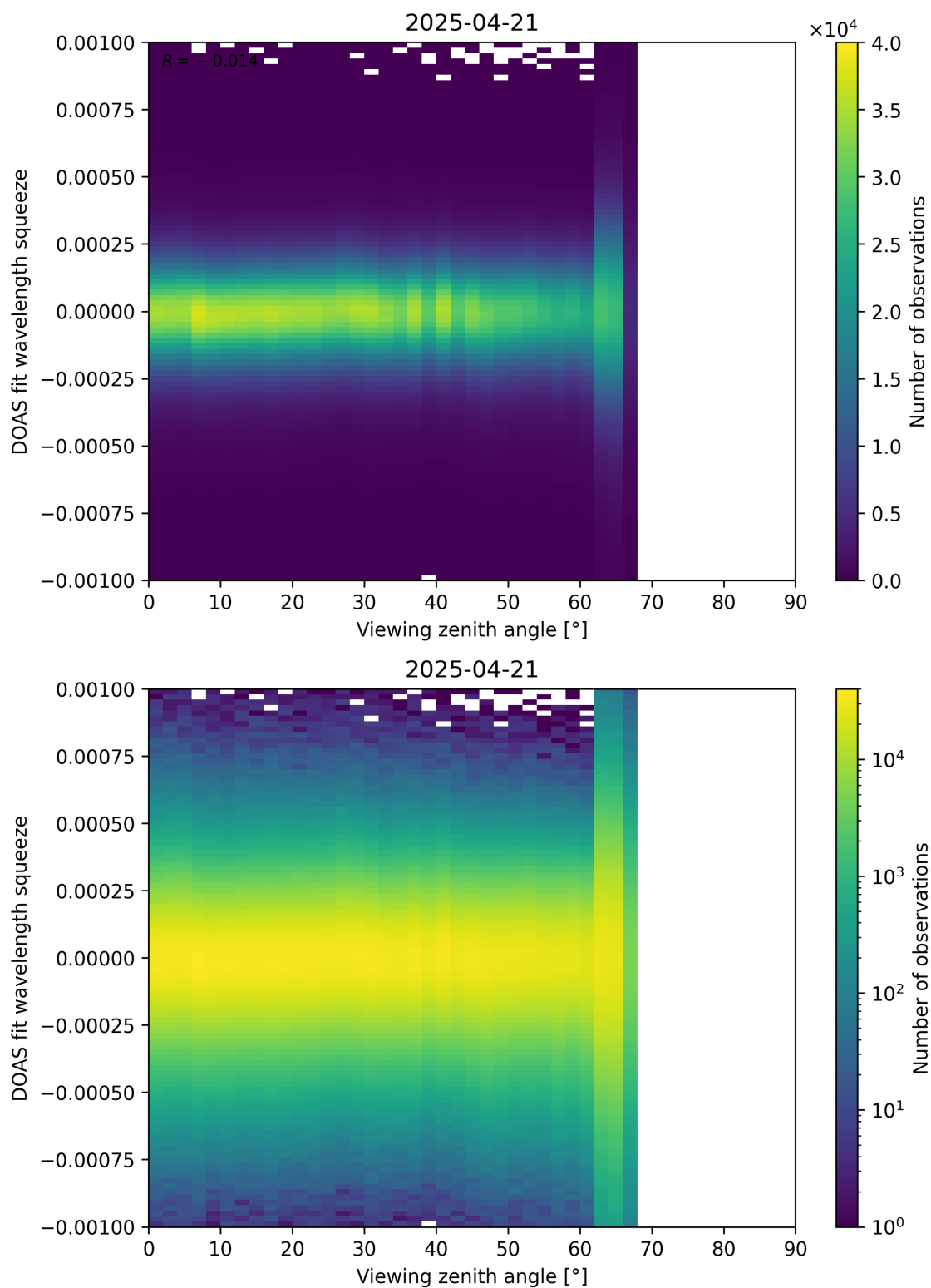


Figure 366: Scatter density plot of “Viewing zenith angle” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.

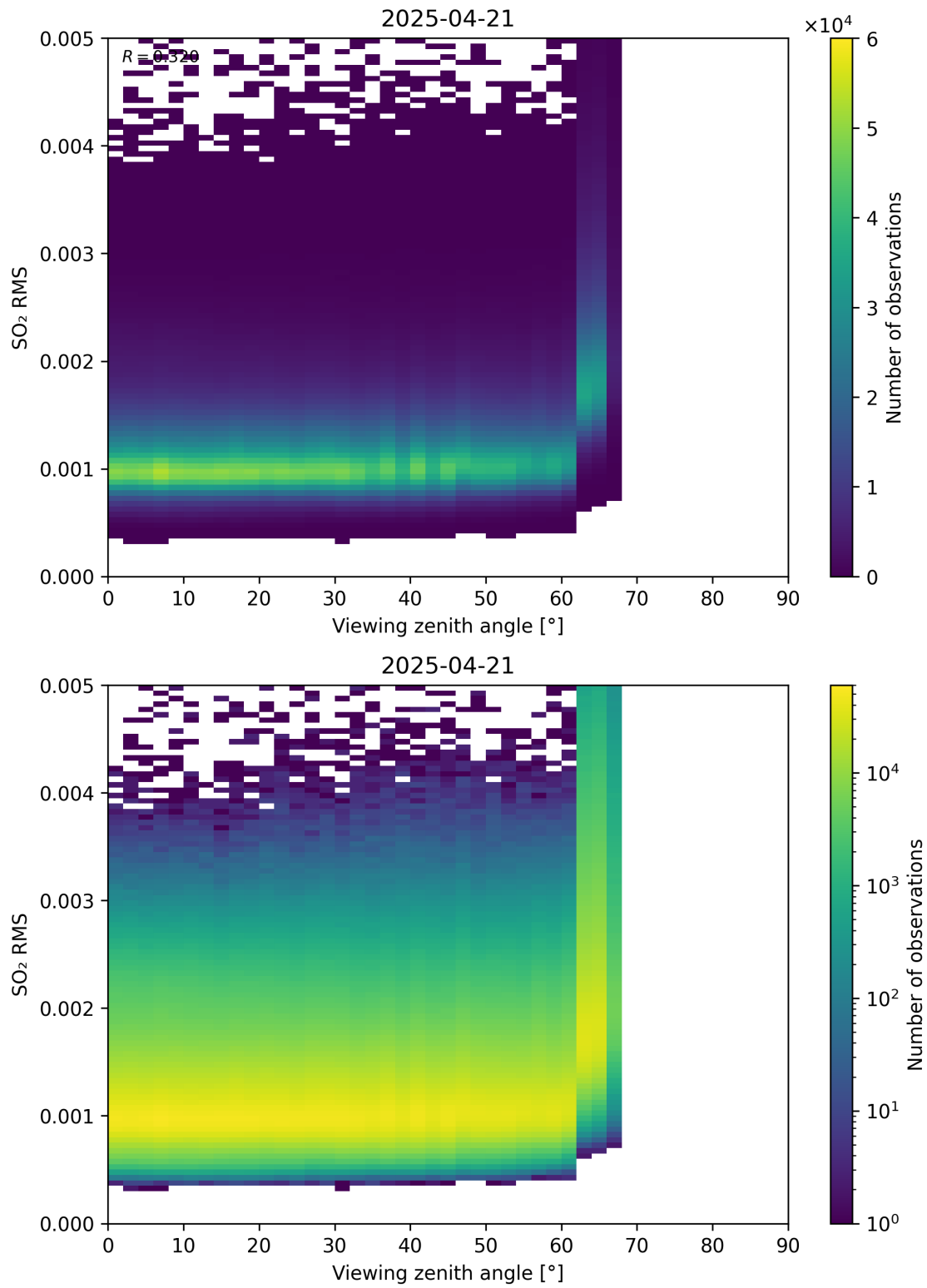


Figure 367: Scatter density plot of “Viewing zenith angle” against “SO₂ RMS” for 2025-04-20 to 2025-04-22.

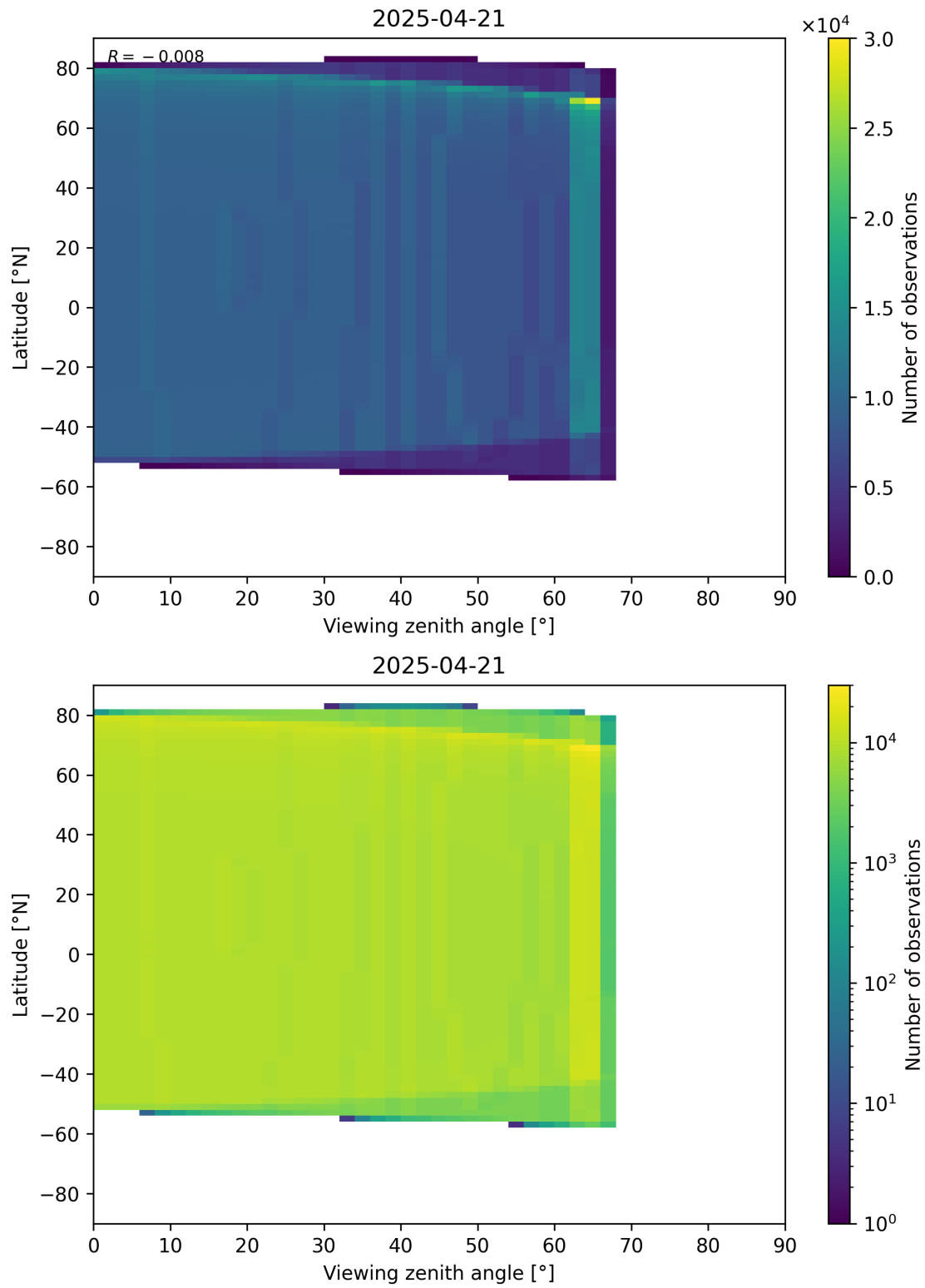


Figure 368: Scatter density plot of “Viewing zenith angle” against “Latitude” for 2025-04-20 to 2025-04-22.

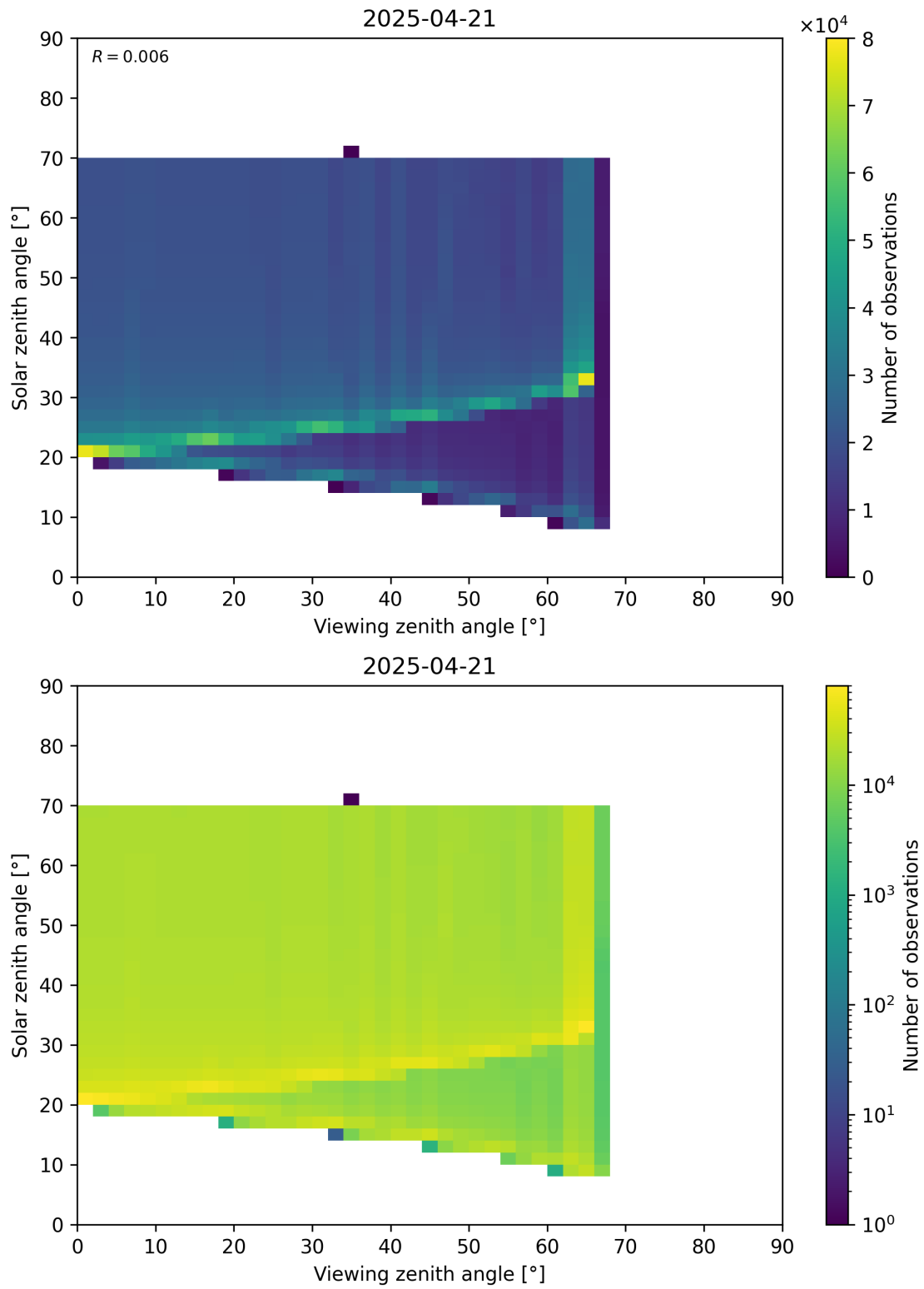


Figure 369: Scatter density plot of “Viewing zenith angle” against “Solar zenith angle” for 2025-04-20 to 2025-04-22.

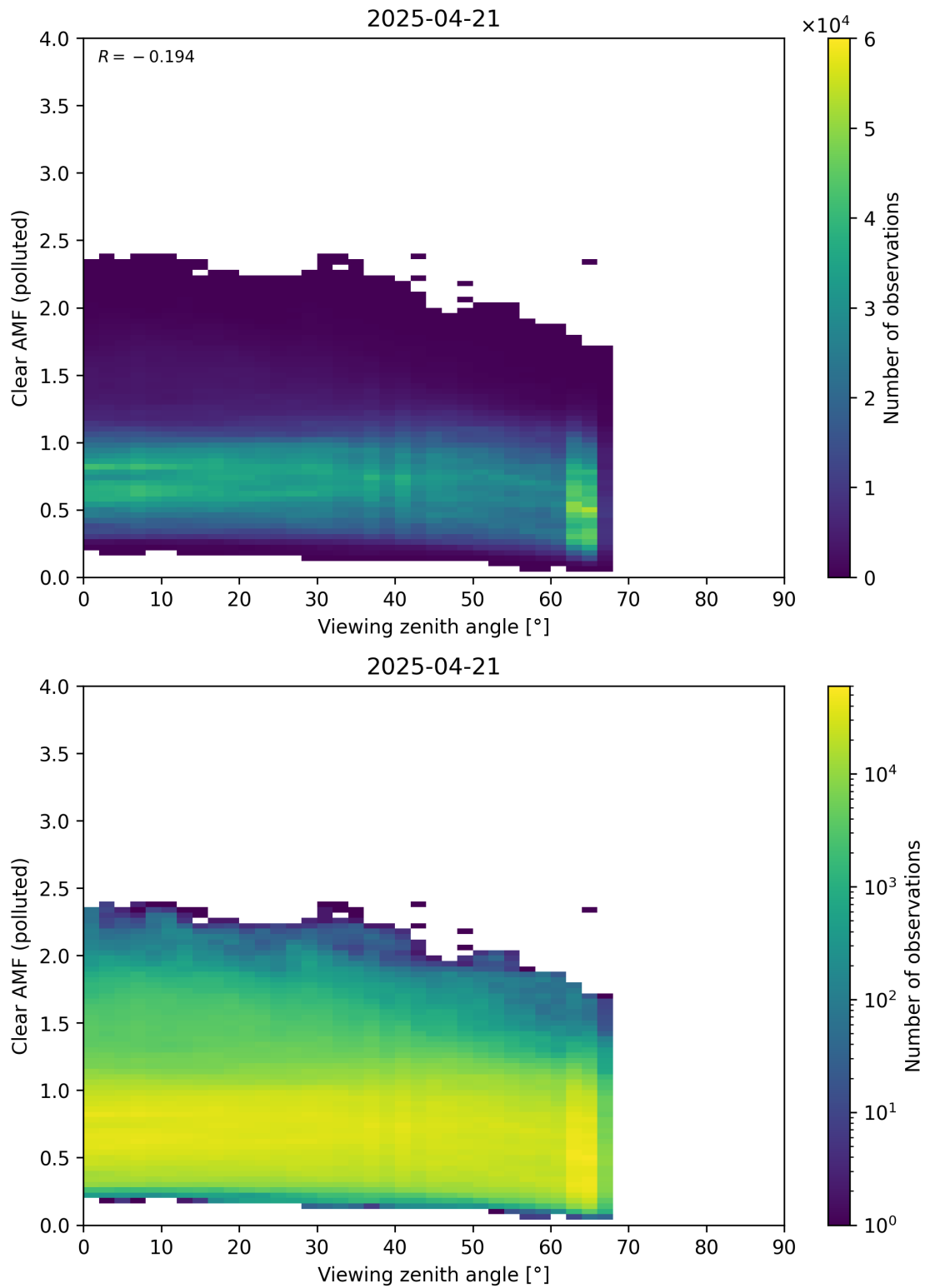


Figure 370: Scatter density plot of “Viewing zenith angle” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.

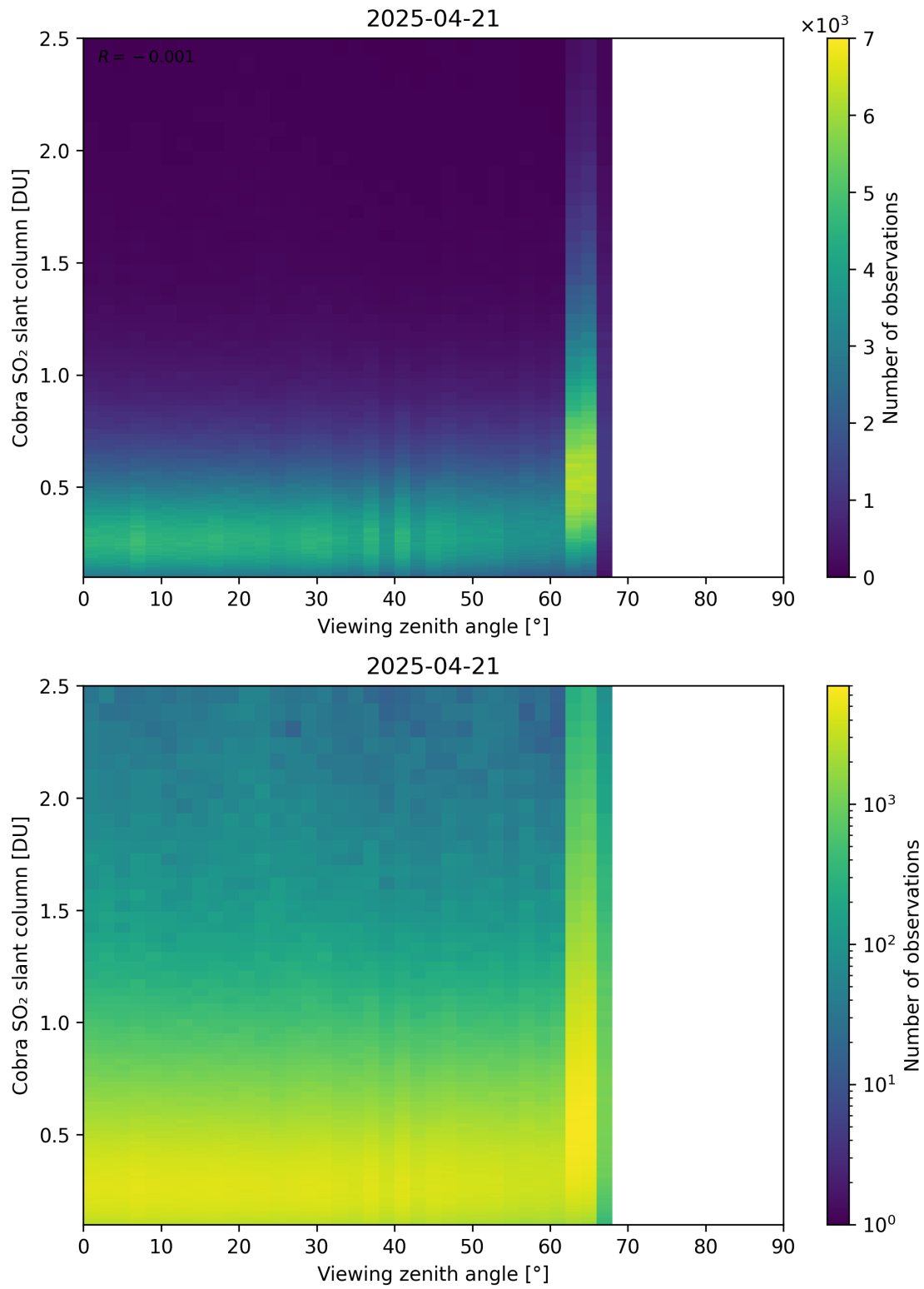


Figure 371: Scatter density plot of “Viewing zenith angle” against “Cobra SO₂ slant column” for 2025-04-20 to 2025-04-22.

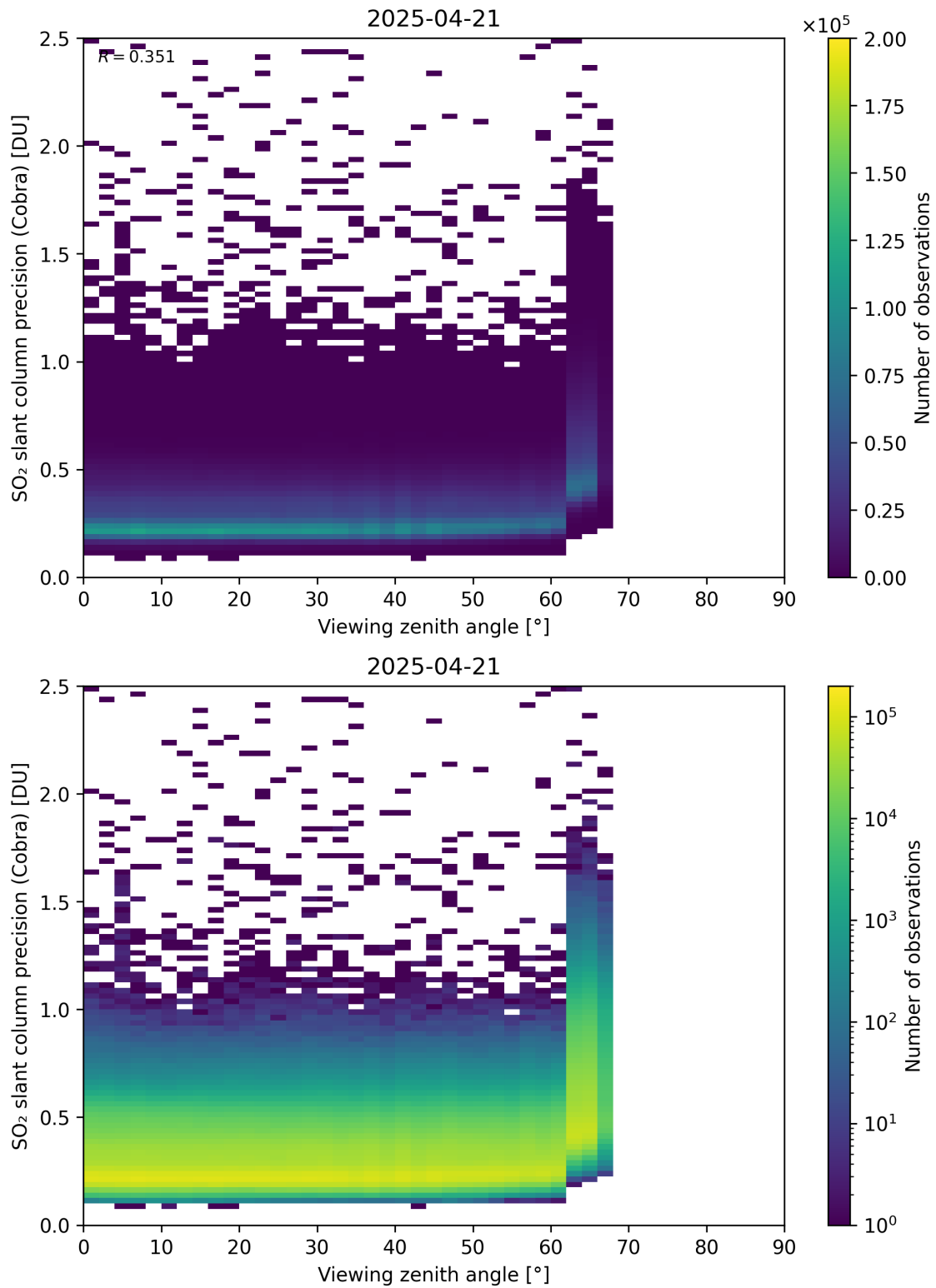


Figure 372: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.

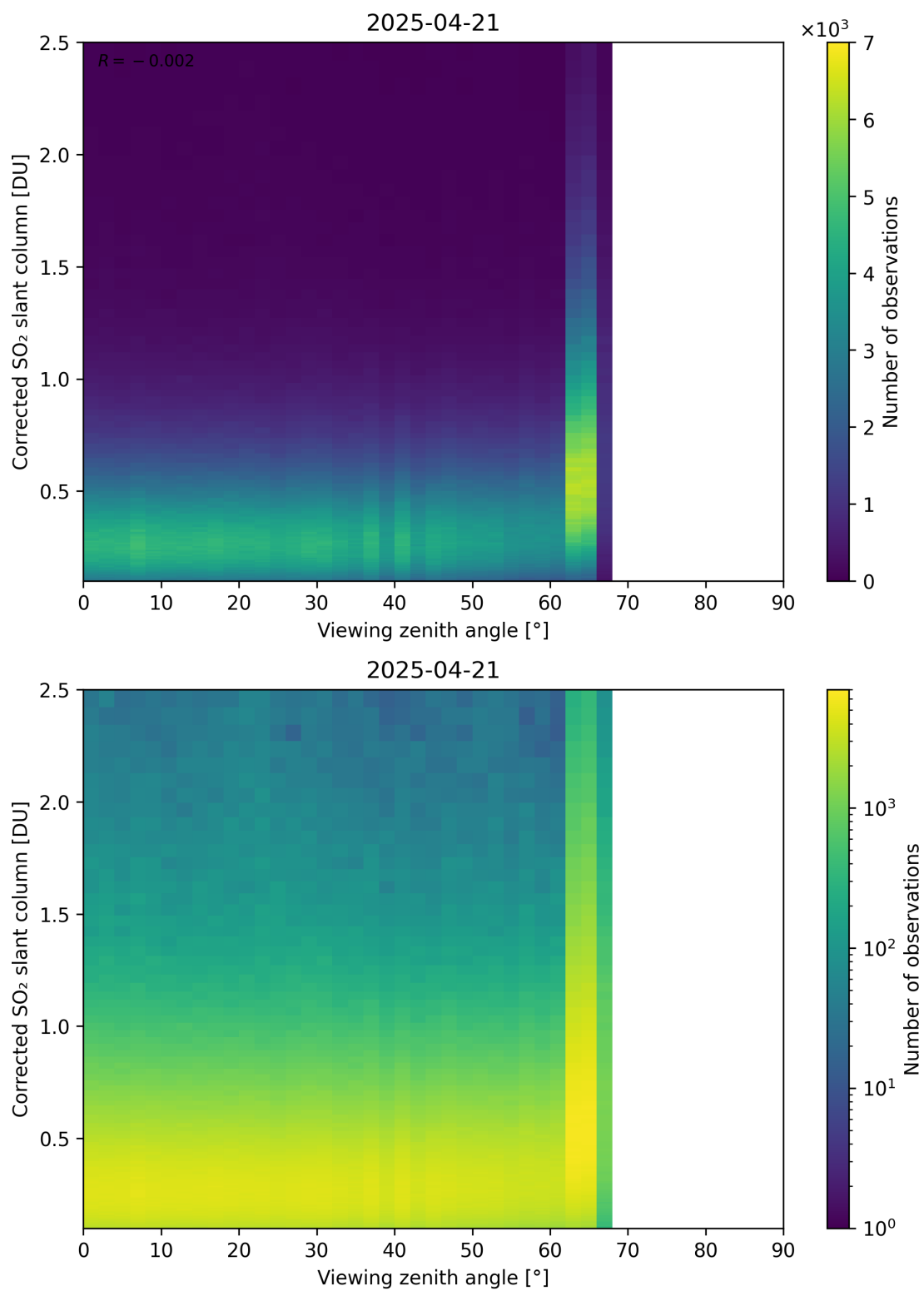


Figure 373: Scatter density plot of “Viewing zenith angle” against “Corrected SO₂ slant column” for 2025-04-20 to 2025-04-22.

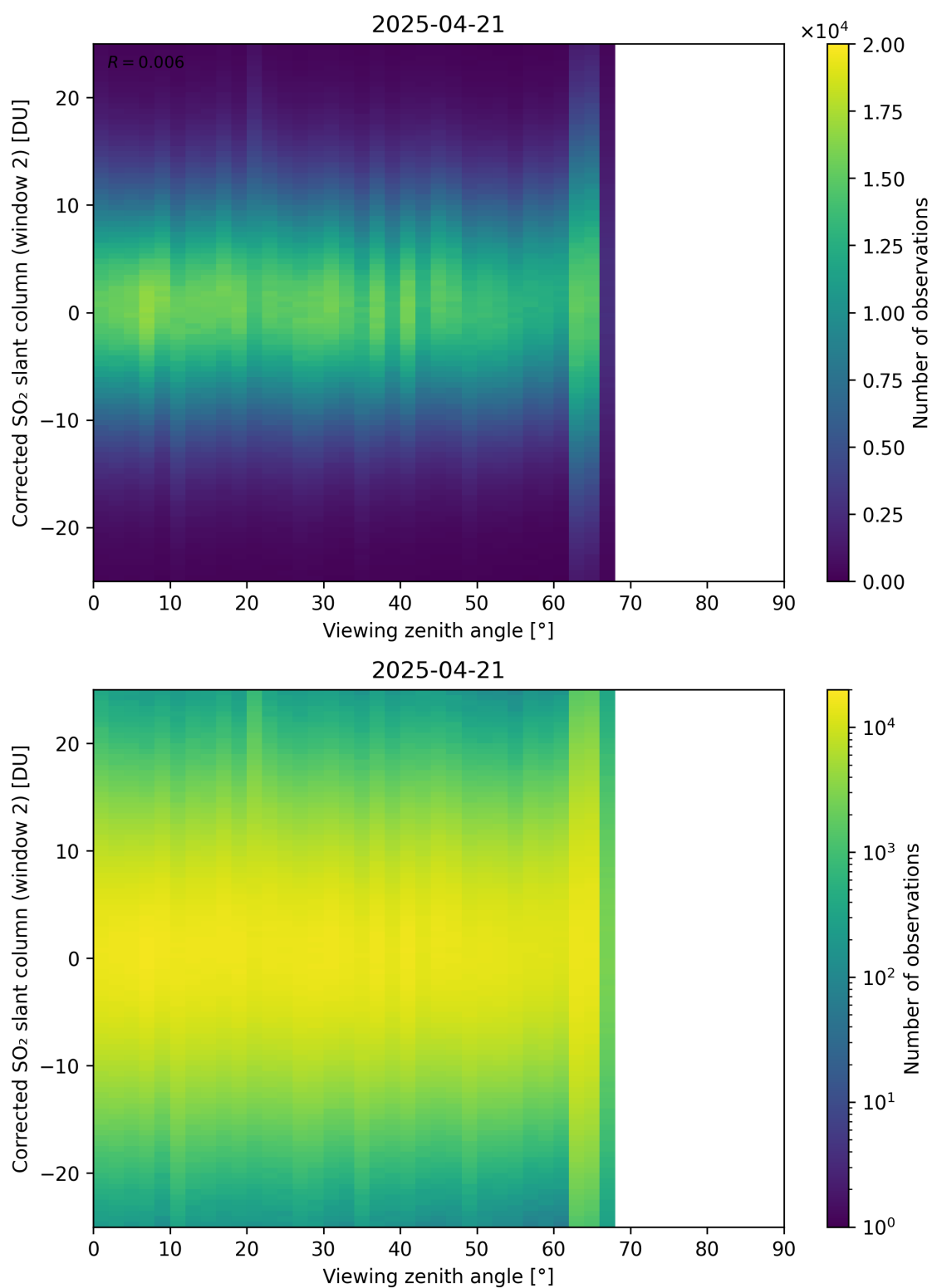


Figure 374: Scatter density plot of “Viewing zenith angle” against “Corrected SO₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.

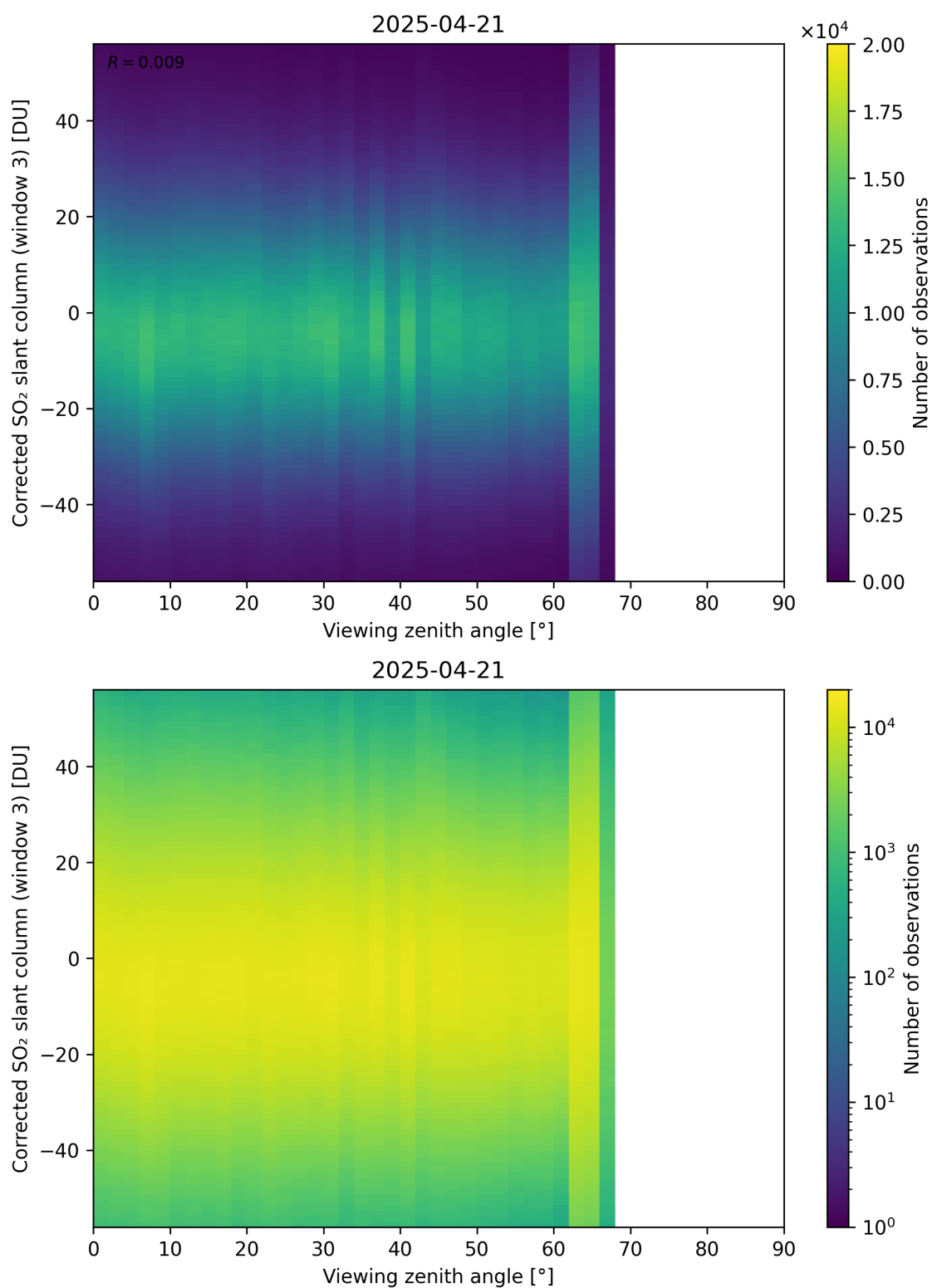


Figure 375: Scatter density plot of “Viewing zenith angle” against “Corrected SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

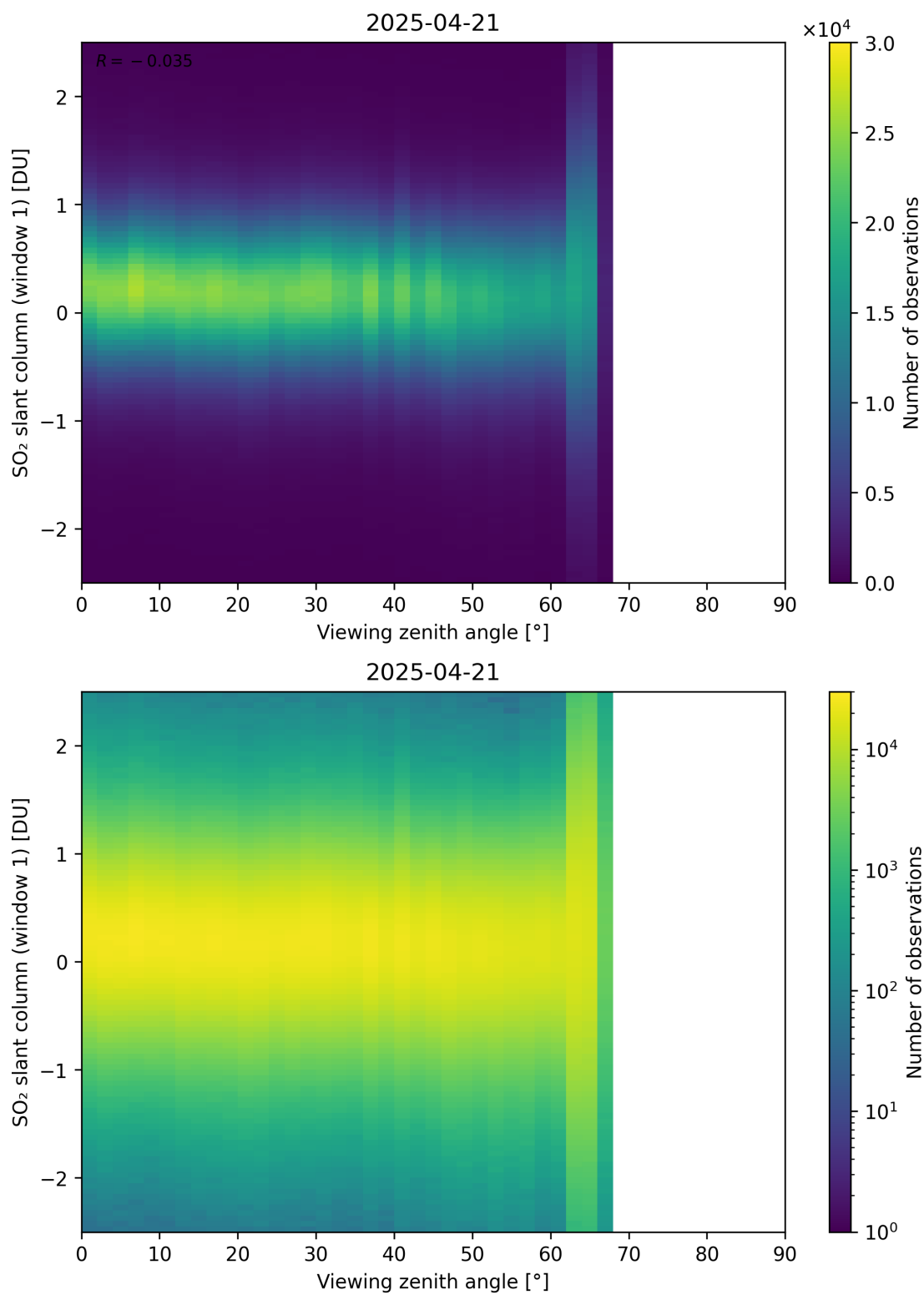


Figure 376: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.

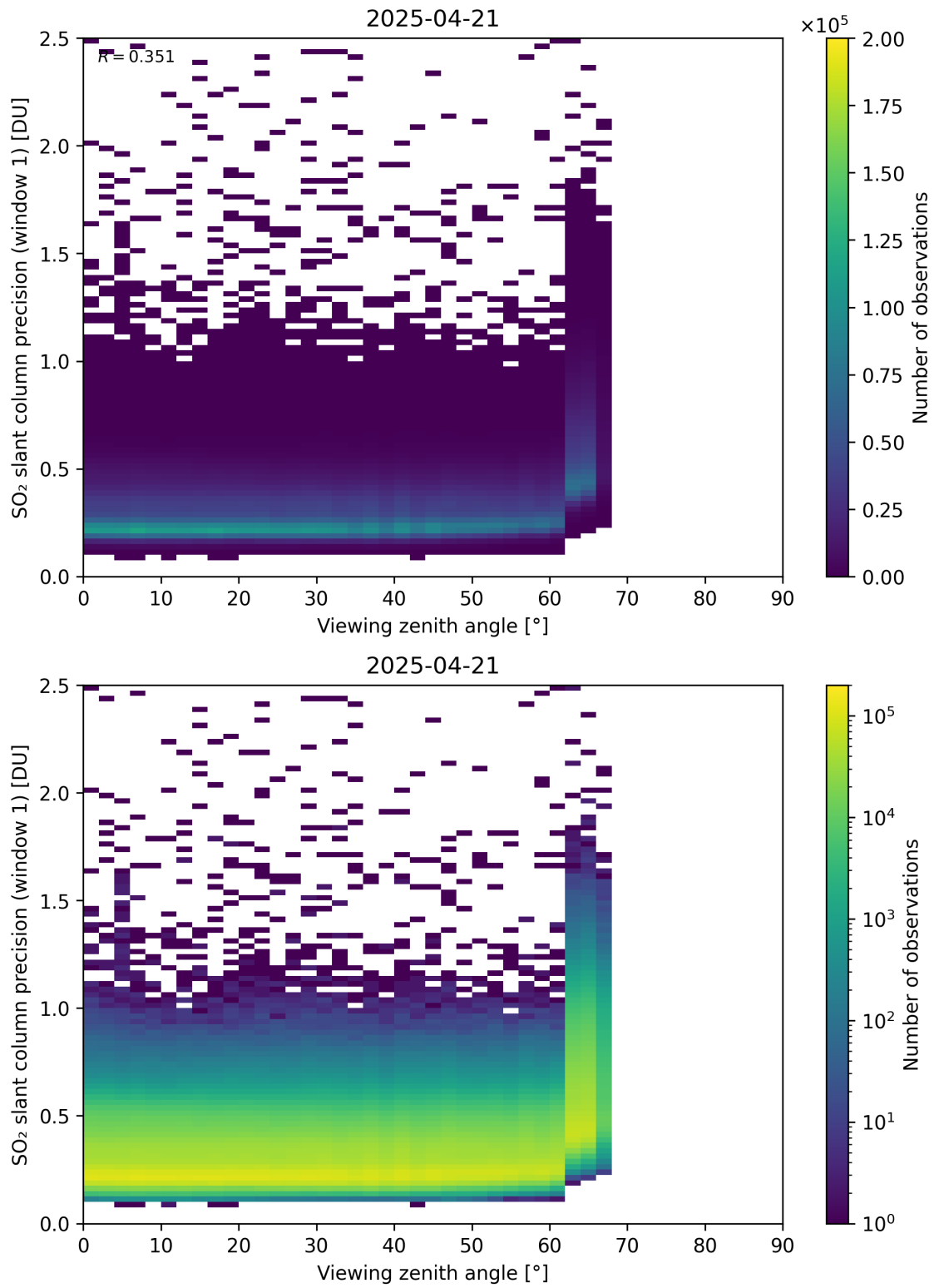


Figure 377: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.

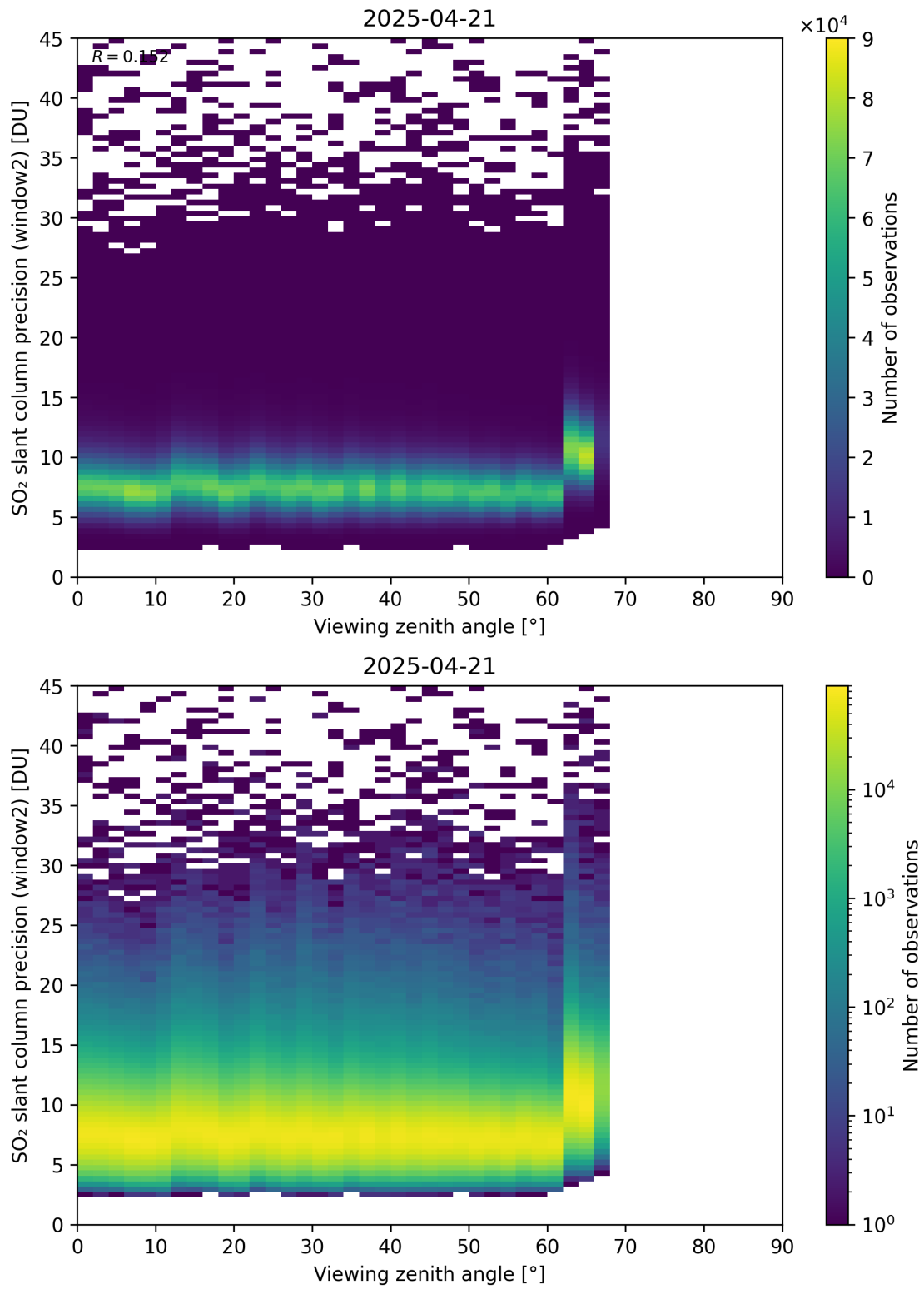


Figure 378: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.

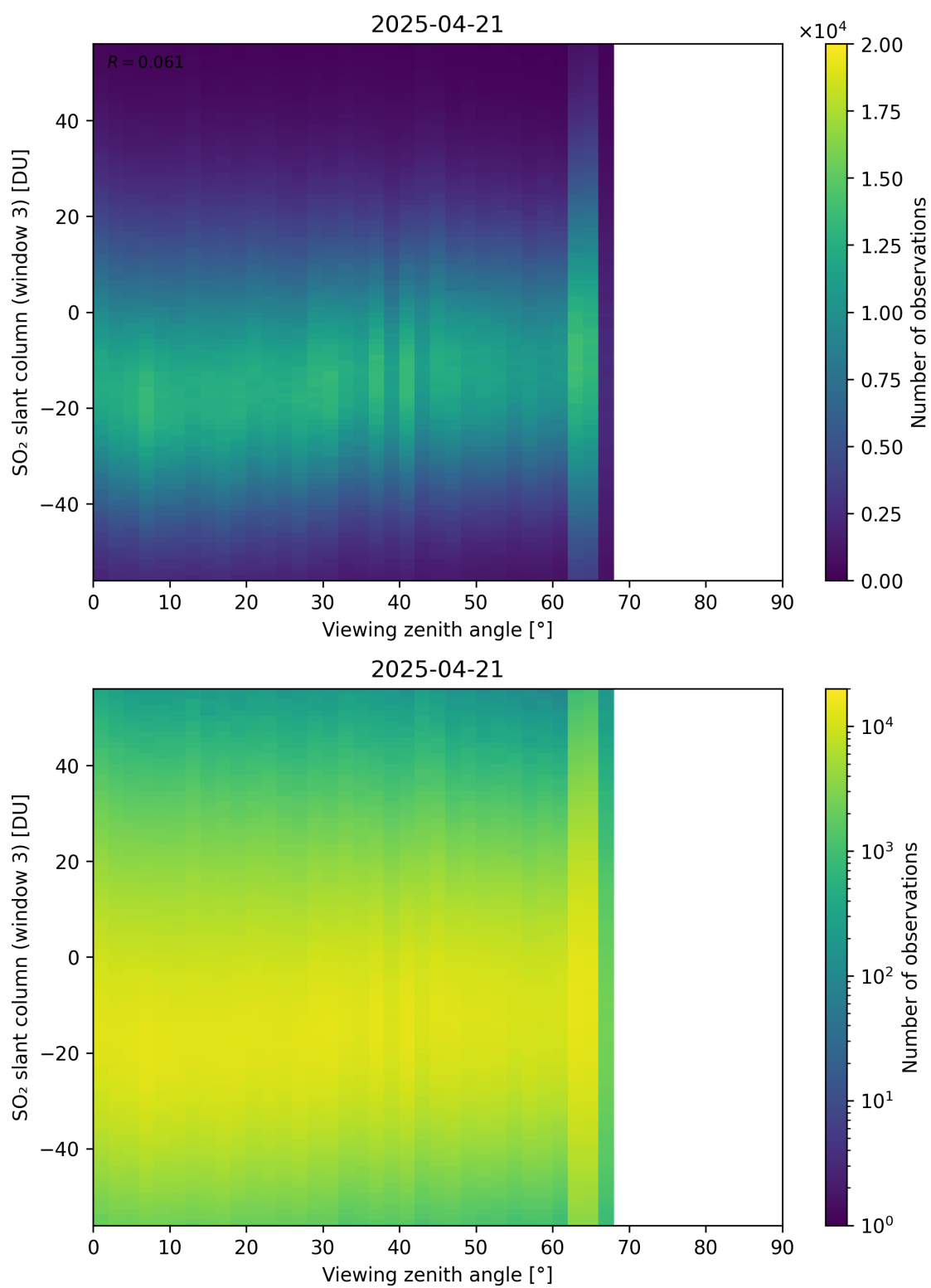


Figure 379: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.

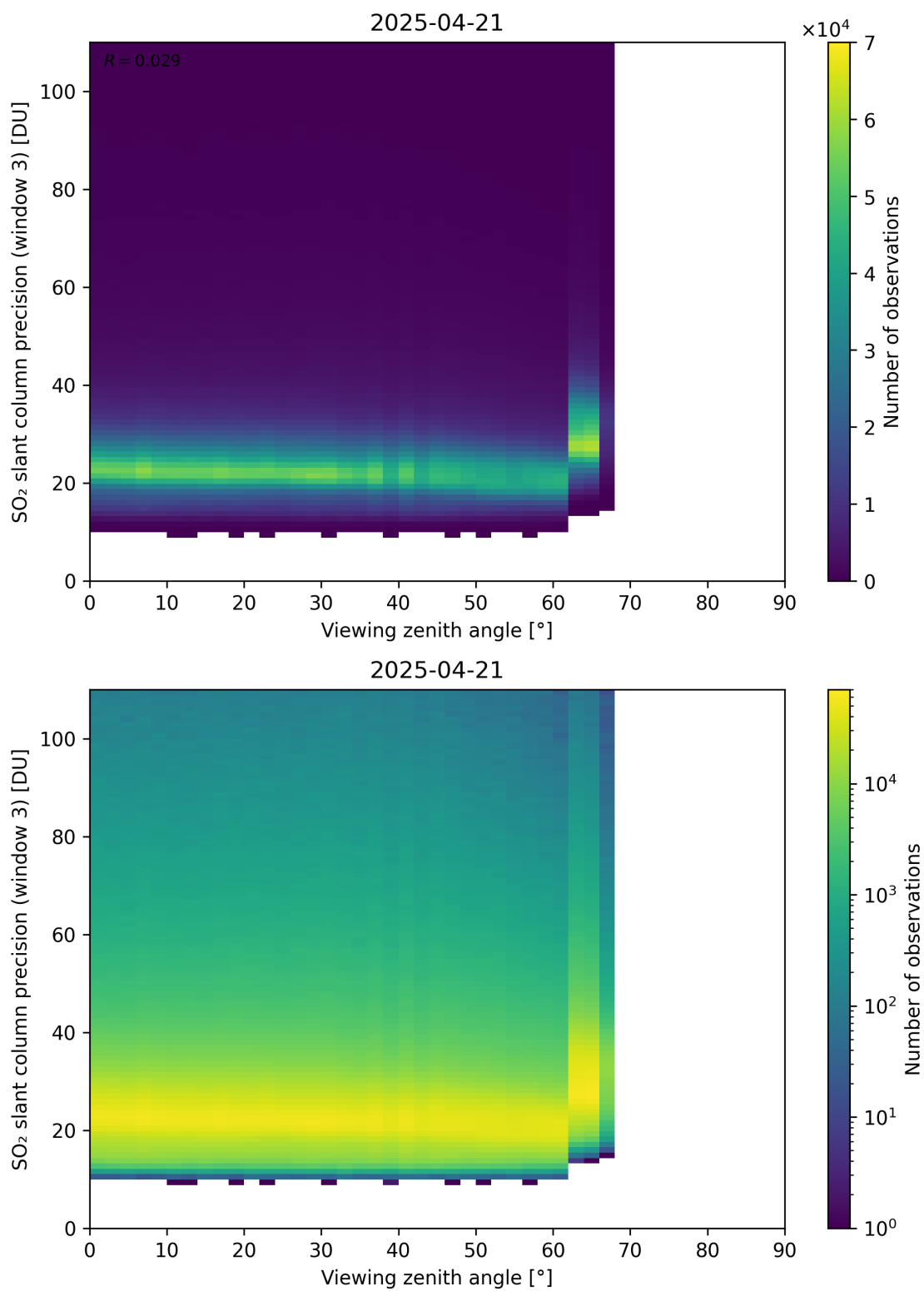


Figure 380: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.

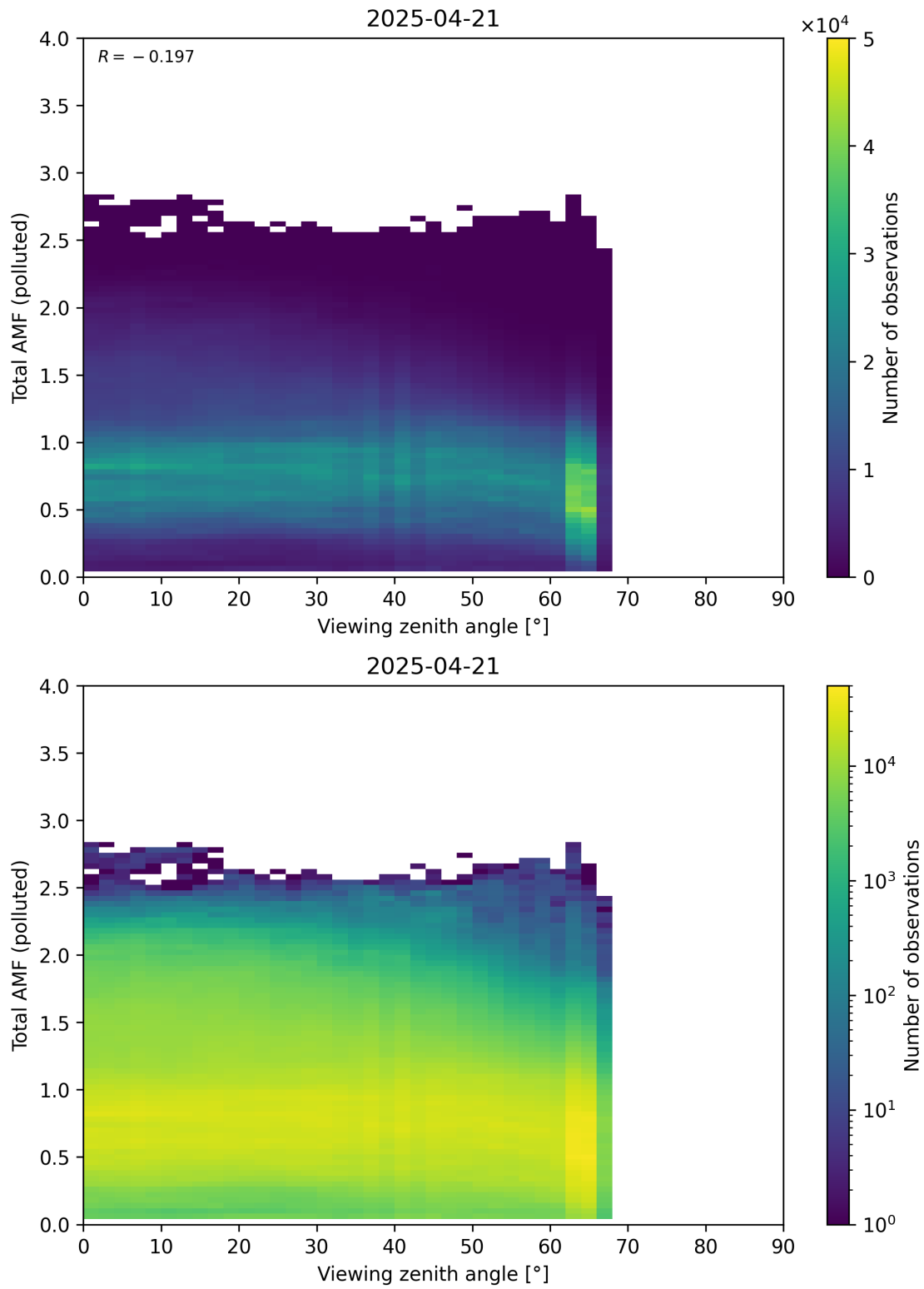


Figure 381: Scatter density plot of “Viewing zenith angle” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.

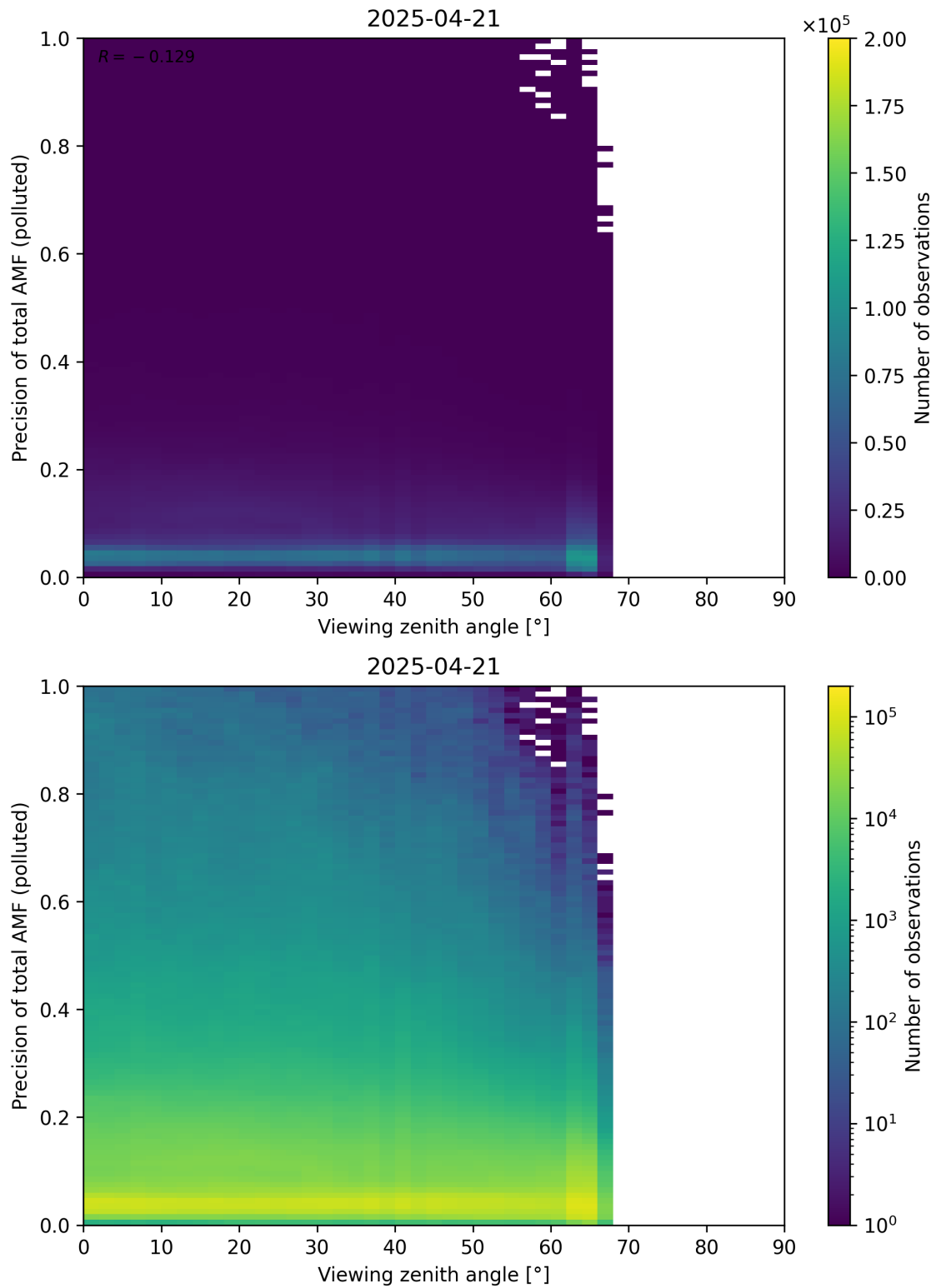


Figure 382: Scatter density plot of “Viewing zenith angle” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.

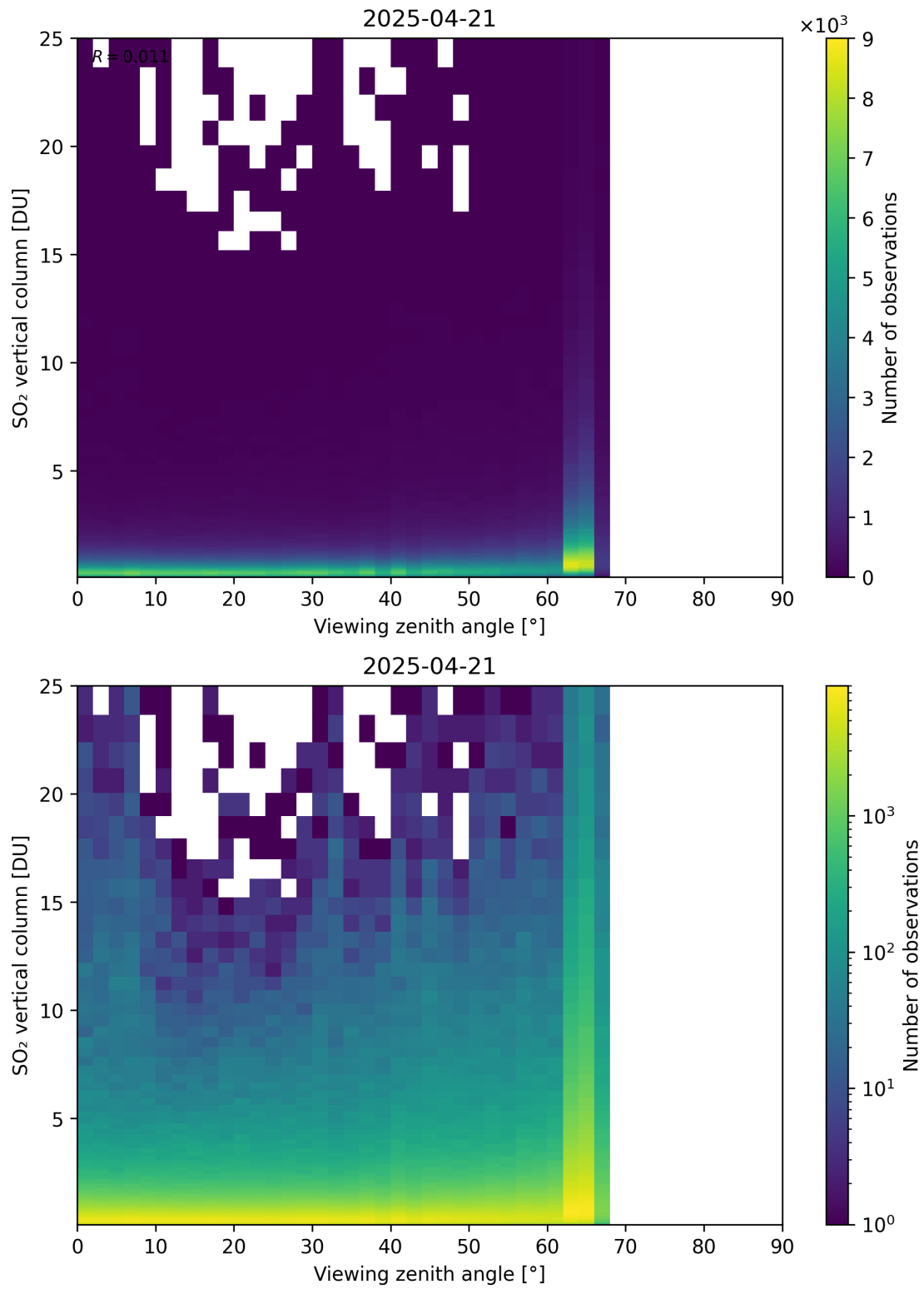


Figure 383: Scatter density plot of “Viewing zenith angle” against “SO₂ vertical column” for 2025-04-20 to 2025-04-22.

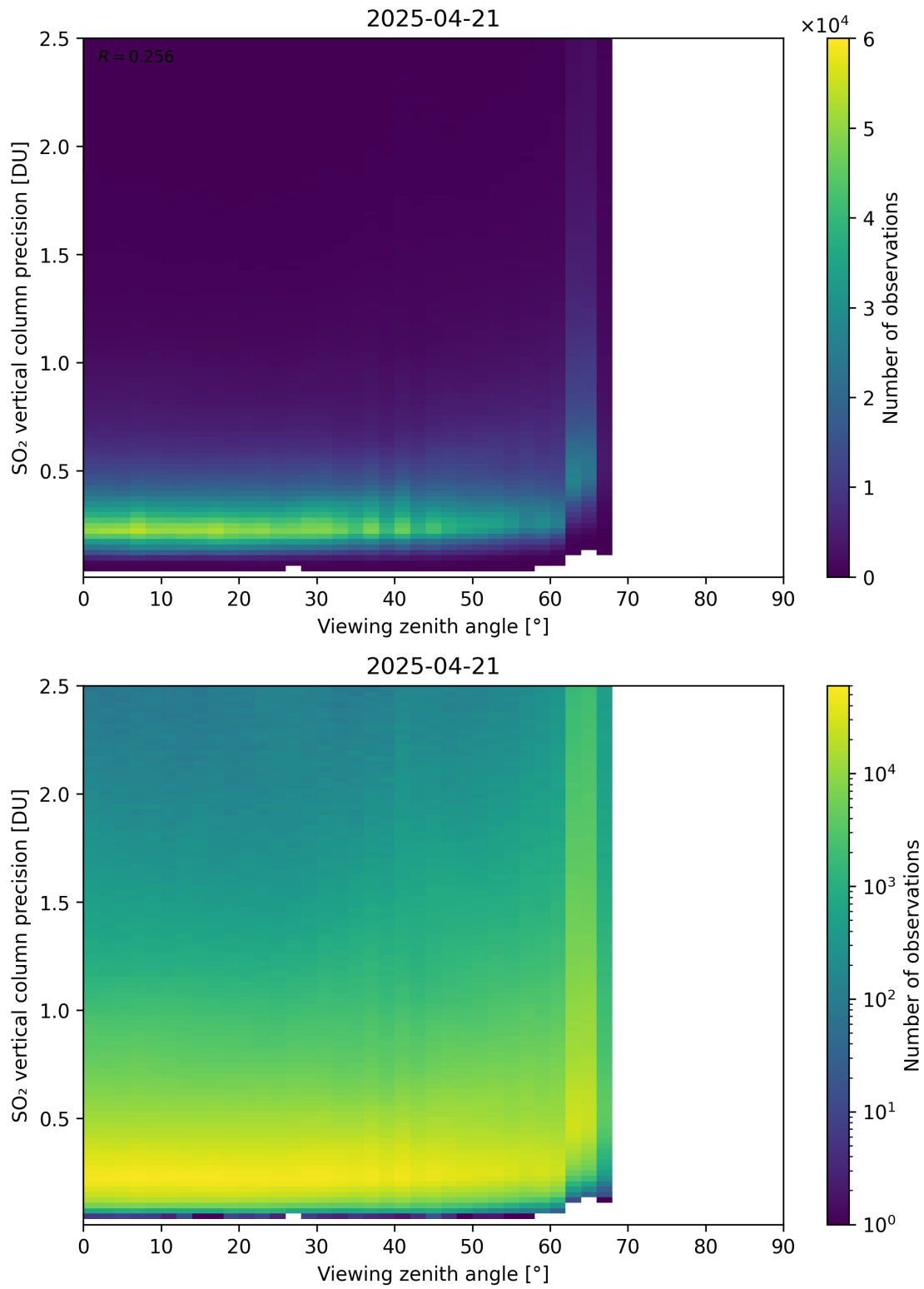


Figure 384: Scatter density plot of “Viewing zenith angle” against “SO₂ vertical column precision” for 2025-04-20 to 2025-04-22.

Contents

1	Short Introduction	1
1.1	The list of parameters	1
2	Definitions	1
3	Granule outlines	12
4	Input data monitoring	13
5	Warnings and errors	14
6	World maps	15
7	Zonal average	40
8	Histograms	66
9	Along track statistics	92
10	Coincidence density	118
11	Copyright information of ‘PyCAMA’	394

List of Figures

1	Map of correlation graph for 2025-04-20 to 2025-04-22.	10
2	Map of correlation matrix for 2025-04-20 to 2025-04-22.	11
3	Outline of the granules.	12
4	Input data per granule	13
5	Fraction of pixels with specific warnings and errors during processing	14
6	Map of “SO ₂ vertical column” for 2025-04-20 to 2025-04-22	15
7	Map of “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22	16
8	Map of “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22	17
9	Map of “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22	18
10	Map of “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22	19
11	Map of “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22	20
12	Map of “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22	21
13	Map of “Corrected SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22	22
14	Map of “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22	23
15	Map of “SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22	24
16	Map of “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22	25
17	Map of “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22	26
18	Map of “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22	27
19	Map of “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22	28
20	Map of “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22	29
21	Map of “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22	30
22	Map of “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22	31
23	Map of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22	32
24	Map of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22	33
25	Map of “SO ₂ RMS” for 2025-04-20 to 2025-04-22	34
26	Map of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22	35
27	Map of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22	36
28	Map of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22	37
29	Map of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22	38
30	Map of the number of observations for 2025-04-20 to 2025-04-22	39
31	Zonal average of “QA value” for 2025-04-20 to 2025-04-22.	40
32	Zonal average of “SO ₂ vertical column” for 2025-04-20 to 2025-04-22.	41
33	Zonal average of “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22.	42
34	Zonal average of “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22.	43
35	Zonal average of “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	44
36	Zonal average of “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	45

37	Zonal average of “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	46
38	Zonal average of “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	47
39	Zonal average of “Corrected SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	48
40	Zonal average of “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22. . .	49
41	Zonal average of “SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	50
42	Zonal average of “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	51
43	Zonal average of “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	52
44	Zonal average of “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22. . .	53
45	Zonal average of “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	54
46	Zonal average of “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	55
47	Zonal average of “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	56
48	Zonal average of “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22. . .	57
49	Zonal average of “SO ₂ Cobra Flag” for 2025-04-20 to 2025-04-22.	58
50	Zonal average of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	59
51	Zonal average of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	60
52	Zonal average of “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	61
53	Zonal average of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	62
54	Zonal average of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	63
55	Zonal average of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	64
56	Zonal average of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22.	65
57	Histogram of “QA value” for 2025-04-20 to 2025-04-22	66
58	Histogram of “SO ₂ vertical column” for 2025-04-20 to 2025-04-22	67
59	Histogram of “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22	68
60	Histogram of “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22	69
61	Histogram of “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22	70
62	Histogram of “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22	71
63	Histogram of “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22	72
64	Histogram of “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22	73
65	Histogram of “Corrected SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22	74
66	Histogram of “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22	75
67	Histogram of “SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22	76
68	Histogram of “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22	77
69	Histogram of “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22	78
70	Histogram of “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22	79
71	Histogram of “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22	80
72	Histogram of “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22	81
73	Histogram of “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22	82
74	Histogram of “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22	83
75	Histogram of “SO ₂ Cobra Flag” for 2025-04-20 to 2025-04-22	84
76	Histogram of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22	85
77	Histogram of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22	86
78	Histogram of “SO ₂ RMS” for 2025-04-20 to 2025-04-22	87
79	Histogram of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22	88
80	Histogram of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22	89
81	Histogram of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22	90
82	Histogram of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22	91
83	Along track statistics of “QA value” for 2025-04-20 to 2025-04-22	92
84	Along track statistics of “SO ₂ vertical column” for 2025-04-20 to 2025-04-22	93
85	Along track statistics of “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22	94
86	Along track statistics of “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22	95
87	Along track statistics of “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22	96
88	Along track statistics of “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22	97
89	Along track statistics of “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22	98
90	Along track statistics of “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22	99
91	Along track statistics of “Corrected SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22	100
92	Along track statistics of “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22	101
93	Along track statistics of “SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22	102
94	Along track statistics of “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22	103
95	Along track statistics of “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22	104
96	Along track statistics of “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22	105
97	Along track statistics of “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22	106
98	Along track statistics of “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22	107

99	Along track statistics of “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22	108
100	Along track statistics of “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22	109
101	Along track statistics of “SO ₂ Cobra Flag” for 2025-04-20 to 2025-04-22	110
102	Along track statistics of “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22	111
103	Along track statistics of “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22	112
104	Along track statistics of “SO ₂ RMS” for 2025-04-20 to 2025-04-22	113
105	Along track statistics of “Total AMF (polluted)” for 2025-04-20 to 2025-04-22	114
106	Along track statistics of “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22	115
107	Along track statistics of “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22	116
108	Along track statistics of “Number of spectral points in retrieval” for 2025-04-20 to 2025-04-22	117
109	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	118
110	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	119
111	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	120
112	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	121
113	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	122
114	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	123
115	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	124
116	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	125
117	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	126
118	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	127
119	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	128
120	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	129
121	Scatter density plot of “SO ₂ slant column background correction (window 1)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	130
122	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	131
123	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	132
124	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	133
125	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	134
126	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	135
127	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	136
128	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	137
129	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	138
130	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	139
131	Scatter density plot of “SO ₂ slant column background correction (window 2)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	140
132	Scatter density plot of “SO ₂ slant column background correction (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	141
133	Scatter density plot of “SO ₂ slant column background correction (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	142
134	Scatter density plot of “SO ₂ slant column background correction (window 3)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	143

135	Scatter density plot of “SO ₂ slant column background correction (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	144
136	Scatter density plot of “SO ₂ slant column background correction (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	145
137	Scatter density plot of “SO ₂ slant column background correction (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	146
138	Scatter density plot of “DOAS fit wavelength shift” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	147
139	Scatter density plot of “DOAS fit wavelength shift” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	148
140	Scatter density plot of “DOAS fit wavelength shift” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	149
141	Scatter density plot of “DOAS fit wavelength shift” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	150
142	Scatter density plot of “DOAS fit wavelength shift” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	151
143	Scatter density plot of “DOAS fit wavelength squeeze” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	152
144	Scatter density plot of “DOAS fit wavelength squeeze” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	153
145	Scatter density plot of “DOAS fit wavelength squeeze” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	154
146	Scatter density plot of “DOAS fit wavelength squeeze” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	155
147	Scatter density plot of “SO ₂ RMS” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	156
148	Scatter density plot of “SO ₂ RMS” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	157
149	Scatter density plot of “SO ₂ RMS” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	158
150	Scatter density plot of “Latitude” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	159
151	Scatter density plot of “Latitude” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	160
152	Scatter density plot of “Latitude” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	161
153	Scatter density plot of “Latitude” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	162
154	Scatter density plot of “Latitude” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	163
155	Scatter density plot of “Latitude” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	164
156	Scatter density plot of “Latitude” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	165
157	Scatter density plot of “Latitude” against “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	166
158	Scatter density plot of “Latitude” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	167
159	Scatter density plot of “Latitude” against “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22.	168
160	Scatter density plot of “Latitude” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	169
161	Scatter density plot of “Latitude” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	170
162	Scatter density plot of “Latitude” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	171
163	Scatter density plot of “Latitude” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	172
164	Scatter density plot of “Latitude” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	173
165	Scatter density plot of “Latitude” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	174
166	Scatter density plot of “Latitude” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	175
167	Scatter density plot of “Latitude” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	176
168	Scatter density plot of “Latitude” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	177
169	Scatter density plot of “Latitude” against “SO ₂ vertical column” for 2025-04-20 to 2025-04-22.	178
170	Scatter density plot of “Latitude” against “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22.	179
171	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	180
172	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	181
173	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	182
174	Scatter density plot of “Solar zenith angle” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	183

175	Scatter density plot of “Solar zenith angle” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	184
176	Scatter density plot of “Solar zenith angle” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	185
177	Scatter density plot of “Solar zenith angle” against “Latitude” for 2025-04-20 to 2025-04-22.	186
178	Scatter density plot of “Solar zenith angle” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	187
179	Scatter density plot of “Solar zenith angle” against “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	188
180	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	189
181	Scatter density plot of “Solar zenith angle” against “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22.	190
182	Scatter density plot of “Solar zenith angle” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	191
183	Scatter density plot of “Solar zenith angle” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	192
184	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	193
185	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	194
186	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	195
187	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	196
188	Scatter density plot of “Solar zenith angle” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	197
189	Scatter density plot of “Solar zenith angle” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	198
190	Scatter density plot of “Solar zenith angle” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	199
191	Scatter density plot of “Solar zenith angle” against “SO ₂ vertical column” for 2025-04-20 to 2025-04-22.	200
192	Scatter density plot of “Solar zenith angle” against “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22.	201
193	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	202
194	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	203
195	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	204
196	Scatter density plot of “Cobra SO ₂ slant column” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	205
197	Scatter density plot of “Cobra SO ₂ slant column” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	206
198	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	207
199	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	208
200	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	209
201	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	210
202	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	211
203	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	212
204	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	213
205	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	214
206	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	215
207	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	216
208	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	217

209	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	218
210	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	219
211	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	220
212	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	221
213	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	222
214	Scatter density plot of “SO ₂ slant column precision (Cobra)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	223
215	Scatter density plot of “Cobra SO ₂ slant column” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	224
216	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	225
217	Scatter density plot of “Cobra SO ₂ slant column” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	226
218	Scatter density plot of “Cobra SO ₂ slant column” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	227
219	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	228
220	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	229
221	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	230
222	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	231
223	Scatter density plot of “Cobra SO ₂ slant column” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	232
224	Scatter density plot of “Cobra SO ₂ slant column” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	233
225	Scatter density plot of “Cobra SO ₂ slant column” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	234
226	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	235
227	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	236
228	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	237
229	Scatter density plot of “Corrected SO ₂ slant column” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	238
230	Scatter density plot of “Corrected SO ₂ slant column” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	239
231	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	240
232	Scatter density plot of “Corrected SO ₂ slant column” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	241
233	Scatter density plot of “Corrected SO ₂ slant column” against “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	242
234	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	243
235	Scatter density plot of “Corrected SO ₂ slant column” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	244
236	Scatter density plot of “Corrected SO ₂ slant column” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	245
237	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	246
238	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	247
239	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	248

240	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	249
241	Scatter density plot of “Corrected SO ₂ slant column” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	250
242	Scatter density plot of “Corrected SO ₂ slant column” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	251
243	Scatter density plot of “Corrected SO ₂ slant column” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	252
244	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	253
245	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	254
246	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	255
247	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	256
248	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	257
249	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	258
250	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	259
251	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	260
252	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	261
253	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	262
254	Scatter density plot of “Corrected SO ₂ slant column (window 2)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	263
255	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	264
256	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	265
257	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	266
258	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	267
259	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	268
260	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	269
261	Scatter density plot of “Corrected SO ₂ slant column (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	270
262	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	271
263	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	272
264	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	273
265	Scatter density plot of “SO ₂ slant column (window 1)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	274
266	Scatter density plot of “SO ₂ slant column (window 1)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	275
267	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	276
268	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	277
269	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	278
270	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	279

271	Scatter density plot of “SO ₂ slant column precision (window 1)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	280
272	Scatter density plot of “SO ₂ slant column precision (window 1)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	281
273	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	282
274	Scatter density plot of “SO ₂ slant column precision (window 1)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	283
275	Scatter density plot of “SO ₂ slant column precision (window 1)” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	284
276	Scatter density plot of “SO ₂ slant column precision (window 1)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	285
277	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ slant column precision (window 2)” for 2025-04-20 to 2025-04-22.	286
278	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	287
279	Scatter density plot of “SO ₂ slant column precision (window 1)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	288
280	Scatter density plot of “SO ₂ slant column precision (window 1)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	289
281	Scatter density plot of “SO ₂ slant column precision (window 1)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	290
282	Scatter density plot of “SO ₂ slant column (window 1)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	291
283	Scatter density plot of “SO ₂ slant column (window 1)” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	292
284	Scatter density plot of “SO ₂ slant column (window 1)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	293
285	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	294
286	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column precision (window 2)” for 2025-04-20 to 2025-04-22.	295
287	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	296
288	Scatter density plot of “SO ₂ slant column (window 1)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	297
289	Scatter density plot of “SO ₂ slant column (window 1)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	298
290	Scatter density plot of “SO ₂ slant column (window 1)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	299
291	Scatter density plot of “SO ₂ slant column precision (window 2)” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	300
292	Scatter density plot of “SO ₂ slant column precision (window 2)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	301
293	Scatter density plot of “SO ₂ slant column precision (window 2)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	302
294	Scatter density plot of “SO ₂ slant column precision (window 2)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	303
295	Scatter density plot of “SO ₂ slant column precision (window 2)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	304
296	Scatter density plot of “SO ₂ slant column precision (window 2)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	305
297	Scatter density plot of “SO ₂ slant column precision (window 2)” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	306
298	Scatter density plot of “SO ₂ slant column precision (window 2)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	307
299	Scatter density plot of “SO ₂ slant column precision (window 2)” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	308
300	Scatter density plot of “SO ₂ slant column precision (window 2)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	309
301	Scatter density plot of “SO ₂ slant column precision (window 2)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	310

302	Scatter density plot of “SO ₂ slant column precision (window2)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	311
303	Scatter density plot of “SO ₂ slant column (window 3)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	312
304	Scatter density plot of “SO ₂ slant column (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	313
305	Scatter density plot of “SO ₂ slant column (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	314
306	Scatter density plot of “SO ₂ slant column (window 3)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	315
307	Scatter density plot of “SO ₂ slant column precision (window 3)” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	316
308	Scatter density plot of “SO ₂ slant column precision (window 3)” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	317
309	Scatter density plot of “SO ₂ slant column precision (window 3)” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	318
310	Scatter density plot of “SO ₂ slant column precision (window 3)” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	319
311	Scatter density plot of “SO ₂ slant column precision (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	320
312	Scatter density plot of “SO ₂ slant column precision (window 3)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	321
313	Scatter density plot of “SO ₂ slant column precision (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	322
314	Scatter density plot of “SO ₂ slant column precision (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	323
315	Scatter density plot of “SO ₂ slant column (window 3)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	324
316	Scatter density plot of “SO ₂ slant column (window 3)” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	325
317	Scatter density plot of “SO ₂ slant column (window 3)” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	326
318	Scatter density plot of “SO ₂ slant column (window 3)” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	327
319	Scatter density plot of “SO ₂ slant column (window 3)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	328
320	Scatter density plot of “Precision of total AMF (polluted)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	329
321	Scatter density plot of “Total AMF (polluted)” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	330
322	Scatter density plot of “Total AMF (polluted)” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	331
323	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	332
324	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	333
325	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	334
326	Scatter density plot of “SO ₂ vertical column” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	335
327	Scatter density plot of “SO ₂ vertical column” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	336
328	Scatter density plot of “SO ₂ vertical column” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	337
329	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	338
330	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	339
331	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	340
332	Scatter density plot of “SO ₂ vertical column precision” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	341
333	Scatter density plot of “SO ₂ vertical column precision” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	342
334	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	343

335	Scatter density plot of “SO ₂ vertical column precision” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	344
336	Scatter density plot of “SO ₂ vertical column precision” against “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	345
337	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	346
338	Scatter density plot of “SO ₂ vertical column precision” against “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22.	347
339	Scatter density plot of “SO ₂ vertical column precision” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	348
340	Scatter density plot of “SO ₂ vertical column precision” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	349
341	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	350
342	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	351
343	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	352
344	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	353
345	Scatter density plot of “SO ₂ vertical column precision” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	354
346	Scatter density plot of “SO ₂ vertical column precision” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	355
347	Scatter density plot of “SO ₂ vertical column precision” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	356
348	Scatter density plot of “SO ₂ vertical column” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	357
349	Scatter density plot of “SO ₂ vertical column” against “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	358
350	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	359
351	Scatter density plot of “SO ₂ vertical column” against “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22.	360
352	Scatter density plot of “SO ₂ vertical column” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	361
353	Scatter density plot of “SO ₂ vertical column” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	362
354	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	363
355	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	364
356	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	365
357	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	366
358	Scatter density plot of “SO ₂ vertical column” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	367
359	Scatter density plot of “SO ₂ vertical column” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	368
360	Scatter density plot of “SO ₂ vertical column” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	369
361	Scatter density plot of “SO ₂ vertical column” against “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22.	370
362	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column background correction (window 1)” for 2025-04-20 to 2025-04-22.	371
363	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column background correction (window 2)” for 2025-04-20 to 2025-04-22.	372
364	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column background correction (window 3)” for 2025-04-20 to 2025-04-22.	373
365	Scatter density plot of “Viewing zenith angle” against “DOAS fit wavelength shift” for 2025-04-20 to 2025-04-22.	374
366	Scatter density plot of “Viewing zenith angle” against “DOAS fit wavelength squeeze” for 2025-04-20 to 2025-04-22.	375
367	Scatter density plot of “Viewing zenith angle” against “SO ₂ RMS” for 2025-04-20 to 2025-04-22.	376

368	Scatter density plot of “Viewing zenith angle” against “Latitude” for 2025-04-20 to 2025-04-22.	377
369	Scatter density plot of “Viewing zenith angle” against “Solar zenith angle” for 2025-04-20 to 2025-04-22. .	378
370	Scatter density plot of “Viewing zenith angle” against “Clear AMF (polluted)” for 2025-04-20 to 2025-04-22.	379
371	Scatter density plot of “Viewing zenith angle” against “Cobra SO ₂ slant column” for 2025-04-20 to 2025-04-22.	380
372	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column precision (Cobra)” for 2025-04-20 to 2025-04-22.	381
373	Scatter density plot of “Viewing zenith angle” against “Corrected SO ₂ slant column” for 2025-04-20 to 2025-04-22.	382
374	Scatter density plot of “Viewing zenith angle” against “Corrected SO ₂ slant column (window 2)” for 2025-04-20 to 2025-04-22.	383
375	Scatter density plot of “Viewing zenith angle” against “Corrected SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	384
376	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column (window 1)” for 2025-04-20 to 2025-04-22.	385
377	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column precision (window 1)” for 2025-04-20 to 2025-04-22.	386
378	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column precision (window2)” for 2025-04-20 to 2025-04-22.	387
379	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column (window 3)” for 2025-04-20 to 2025-04-22.	388
380	Scatter density plot of “Viewing zenith angle” against “SO ₂ slant column precision (window 3)” for 2025-04-20 to 2025-04-22.	389
381	Scatter density plot of “Viewing zenith angle” against “Total AMF (polluted)” for 2025-04-20 to 2025-04-22.	390
382	Scatter density plot of “Viewing zenith angle” against “Precision of total AMF (polluted)” for 2025-04-20 to 2025-04-22.	391
383	Scatter density plot of “Viewing zenith angle” against “SO ₂ vertical column” for 2025-04-20 to 2025-04-22.	392
384	Scatter density plot of “Viewing zenith angle” against “SO ₂ vertical column precision” for 2025-04-20 to 2025-04-22.	393

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
7	Correlation matrix	8
8	Covariance matrix	9

11 Copyright information of ‘PyCAMA’

Copyright © 2005 – 2023, Maarten Snee (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 Sneepe (maarten.sneepe@knmi.nl).