

PyCAMA report generated by tropl2-proc

tropl2-proc

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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]	0.636 ± 0.408	19948500	0.995	0.790	1.000	0.0	1.000
sulfurdioxide total vertical column [DU]	$(3.108 \pm 104.692) \times 10^{-2}$	19948500	0.278	0.459	1.074×10^{-2}	-102	464
sulfurdioxide total vertical column precision [DU]	0.540 ± 0.801	19948500	0.222	0.357	0.335	4.923×10^{-2}	147
sulfurdioxide slant column density corrected [DU]	$(1.865 \pm 40.954) \times 10^{-2}$	19948500	0.258	0.393	1.002×10^{-2}	-22.8	589
sulfurdioxide slant column density cobra [DU]	$(1.850 \pm 37.072) \times 10^{-2}$	19948500	0.258	0.393	1.002×10^{-2}	-22.8	107
sulfurdioxide slant column density cobra precision [DU]	0.317 ± 0.137	19948500	0.237	0.155	0.271	8.476×10^{-2}	29.8
sulfurdioxide slant column density window1 [DU]	$(9.884 \pm 68.429) \times 10^{-2}$	19948500	0.125	0.747	0.102	-81.9	99.1
sulfurdioxide slant column density window1 precision [DU]	0.317 ± 0.137	19948500	0.237	0.155	0.271	8.476×10^{-2}	29.8
sulfurdioxide slant column density corrected win1 [DU]	$(4.161 \pm 67.496) \times 10^{-2}$	19948500	2.500×10^{-2}	0.732	2.348×10^{-2}	-81.9	99.4
background so2 slant column offset window1 [DU]	$(-5.723 \pm 14.151) \times 10^{-2}$	19948500	-0.140	0.170	-8.954×10^{-2}	-1.44	4.28
sulfurdioxide slant column density window2 [DU]	1.61 ± 8.99	19948500	1.25	11.2	1.51	-1.017×10^3	1.817×10^3
sulfurdioxide slant column density window2 precision [DU]	8.12 ± 2.37	19948500	7.43	2.66	7.75	2.19	752
sulfurdioxide slant column density corrected win2 [DU]	0.251 ± 8.878	19948500	0.250	11.1	0.258	-1.017×10^3	1.812×10^3
background so2 slant column offset window2 [DU]	-1.36 ± 1.93	19948500	0.250	2.60	-0.991	-11.0	8.00
sulfurdioxide slant column density window3 [DU]	-6.90 ± 23.95	19948500	-7.28	29.4	-6.98	-664	532
sulfurdioxide slant column density window3 precision [DU]	27.9 ± 13.2	19948500	22.5	10.3	24.5	9.01	638
sulfurdioxide slant column density corrected win3 [DU]	0.222 ± 23.517	19948500	1.68	29.0	0.312	-663	545
background so2 slant column offset window3 [DU]	7.12 ± 4.80	19948500	10.6	7.17	7.64	-15.0	26.9
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	19948500	1.67	0.0	2.00	2.00	2.00
fitted radiance shift [nm]	$(-1.123 \pm 25.293) \times 10^{-4}$	19948500	1.000×10^{-4}	1.667×10^{-3}	-1.195×10^{-4}	-4.627×10^{-2}	6.426×10^{-2}
fitted radiance squeeze [1]	$(-5.065 \pm 19.151) \times 10^{-5}$	19948500	-3.000×10^{-5}	2.221×10^{-4}	-4.367×10^{-5}	-1.714×10^{-2}	1.606×10^{-2}
fitted root mean square [1]	$(1.295 \pm 0.533) \times 10^{-3}$	19948500	1.025×10^{-3}	5.168×10^{-4}	1.144×10^{-3}	2.708×10^{-4}	0.102
sulfurdioxide total air mass factor polluted [1]	0.938 ± 0.516	19948500	0.700	0.638	0.822	5.000×10^{-2}	2.96
sulfurdioxide total air mass factor polluted precision [1]	0.125 ± 0.162	19948500	3.500×10^{-2}	0.114	7.335×10^{-2}	2.557×10^{-3}	2.29
sulfurdioxide clear air mass factor polluted [1]	0.778 ± 0.367	19948500	0.700	0.418	0.719	4.494×10^{-2}	2.73
number of spectral points in retrieval [1]	73.4 ± 0.5	19948500	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	4.000×10^{-2}	0.1000	0.210	1.000	1.000	1.000	1.000	1.000
sulfurdioxide total vertical column [DU]	-2.32	-0.891	-0.546	-0.367	-0.215	0.243	0.407	0.605	0.996	2.64
sulfurdioxide total vertical column precision [DU]	9.883×10^{-2}	0.131	0.158	0.184	0.221	0.578	0.766	0.983	1.47	3.70
sulfurdioxide slant column density corrected [DU]	-0.903	-0.530	-0.384	-0.287	-0.185	0.209	0.316	0.422	0.587	1.04
sulfurdioxide slant column density cobra [DU]	-0.903	-0.530	-0.384	-0.287	-0.185	0.209	0.316	0.422	0.587	1.04
sulfurdioxide slant column density cobra precision [DU]	0.151	0.181	0.196	0.209	0.224	0.378	0.437	0.490	0.575	0.811
sulfurdioxide slant column density window1 [DU]	-1.72	-0.955	-0.667	-0.474	-0.274	0.473	0.667	0.853	1.13	1.92
sulfurdioxide slant column density window1 precision [DU]	0.151	0.181	0.196	0.209	0.224	0.378	0.437	0.490	0.575	0.811
sulfurdioxide slant column density corrected win1 [DU]	-1.63	-0.957	-0.698	-0.523	-0.337	0.395	0.596	0.791	1.09	1.95
background so2 slant column offset window1 [DU]	-0.306	-0.225	-0.198	-0.178	-0.154	1.644×10^{-2}	7.323×10^{-2}	0.128	0.205	0.378
sulfurdioxide slant column density window2 [DU]	-19.6	-12.7	-9.33	-6.85	-4.07	7.16	10.0	12.6	16.2	24.0
sulfurdioxide slant column density window2 precision [DU]	4.28	5.12	5.65	6.07	6.58	9.24	10.2	11.1	12.4	15.1
sulfurdioxide slant column density corrected win2 [DU]	-21.3	-14.0	-10.6	-8.09	-5.29	5.79	8.56	11.1	14.5	21.8
background so2 slant column offset window2 [DU]	-6.45	-4.93	-4.06	-3.33	-2.56	4.703×10^{-2}	0.336	0.558	0.880	3.00
sulfurdioxide slant column density window3 [DU]	-67.4	-46.0	-36.1	-29.1	-21.6	7.88	15.6	22.8	32.5	52.1
sulfurdioxide slant column density window3 precision [DU]	13.2	15.5	17.3	18.7	20.4	30.7	35.3	40.8	52.3	84.2
sulfurdioxide slant column density corrected win3 [DU]	-59.3	-38.5	-28.7	-21.7	-14.2	14.8	22.3	29.1	38.5	57.9
background so2 slant column offset window3 [DU]	-3.87	-1.02	0.662	2.03	3.53	10.7	11.8	12.8	14.2	16.9
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]	-7.836×10^{-3}	-3.802×10^{-3}	-2.396×10^{-3}	-1.609×10^{-3}	-9.673×10^{-4}	6.997×10^{-4}	1.353×10^{-3}	2.182×10^{-3}	3.663×10^{-3}	7.861×10^{-3}
fitted radiance squeeze [1]	-5.686×10^{-4}	-3.644×10^{-4}	-2.786×10^{-4}	-2.198×10^{-4}	-1.581×10^{-4}	6.394×10^{-5}	1.179×10^{-4}	1.679×10^{-4}	2.392×10^{-4}	4.113×10^{-4}
fitted root mean square [1]	5.996×10^{-4}	7.447×10^{-4}	8.274×10^{-4}	8.887×10^{-4}	9.603×10^{-4}	1.477×10^{-3}	1.734×10^{-3}	1.981×10^{-3}	2.324×10^{-3}	3.213×10^{-3}
sulfurdioxide total air mass factor polluted [1]	8.676×10^{-2}	0.249	0.360	0.455	0.575	1.21	1.50	1.74	1.99	2.29
sulfurdioxide total air mass factor polluted precision [1]	1.005×10^{-2}	1.853×10^{-2}	2.488×10^{-2}	3.083×10^{-2}	3.800×10^{-2}	0.152	0.194	0.253	0.389	0.883
sulfurdioxide clear air mass factor polluted [1]	0.207	0.307	0.371	0.435	0.529	0.947	1.08	1.23	1.55	1.99
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]	0.580 ± 0.418	13992501	0.850	0.490	0.0	1.000	0.150	1.000
sulfurdioxide total vertical column [DU]	$(2.255 \pm 94.662) \times 10^{-2}$	13992501	0.411	8.268×10^{-3}	-53.1	86.2	-0.195	0.216
sulfurdioxide total vertical column precision [DU]	0.489 ± 0.758	13992501	0.299	0.293	4.923×10^{-2}	26.2	0.201	0.500
sulfurdioxide slant column density corrected [DU]	$(1.471 \pm 33.925) \times 10^{-2}$	13992501	0.369	8.005×10^{-3}	-7.07	44.9	-0.175	0.194
sulfurdioxide slant column density cobra [DU]	$(1.469 \pm 33.758) \times 10^{-2}$	13992501	0.369	8.005×10^{-3}	-7.07	21.6	-0.175	0.194
sulfurdioxide slant column density cobra precision [DU]	0.294 ± 0.121	13992501	0.122	0.255	8.476×10^{-2}	6.93	0.215	0.337
sulfurdioxide slant column density window1 [DU]	$(8.633 \pm 63.720) \times 10^{-2}$	13992501	0.711	9.438×10^{-2}	-79.5	27.8	-0.265	0.445
sulfurdioxide slant column density window1 precision [DU]	0.294 ± 0.121	13992501	0.122	0.255	8.476×10^{-2}	6.93	0.215	0.337
sulfurdioxide slant column density corrected win1 [DU]	$(3.530 \pm 62.277) \times 10^{-2}$	13992501	0.691	2.047×10^{-2}	-79.5	27.6	-0.320	0.371
background so2 slant column offset window1 [DU]	$(-5.103 \pm 14.880) \times 10^{-2}$	13992501	0.201	-7.936×10^{-2}	-1.44	3.84	-0.164	3.783×10^{-2}
sulfurdioxide slant column density window2 [DU]	1.46 ± 8.28	13992501	10.6	1.44	-613	640	-3.86	6.75
sulfurdioxide slant column density window2 precision [DU]	7.62 ± 2.04	13992501	2.27	7.32	2.19	338	6.29	8.56
sulfurdioxide slant column density corrected win2 [DU]	0.210 ± 8.174	13992501	10.5	0.237	-615	636	-5.00	5.45
background so2 slant column offset window2 [DU]	-1.25 ± 1.89	13992501	2.65	-0.936	-10.1	8.00	-2.48	0.170
sulfurdioxide slant column density window3 [DU]	-6.54 ± 22.27	13992501	27.5	-6.87	-664	405	-20.4	7.09
sulfurdioxide slant column density window3 precision [DU]	26.0 ± 12.9	13992501	8.35	22.7	9.01	638	19.4	27.7
sulfurdioxide slant column density corrected win3 [DU]	0.282 ± 21.755	13992501	27.0	0.326	-663	403	-13.2	13.9
background so2 slant column offset window3 [DU]	6.82 ± 4.89	13992501	7.88	7.96	-15.0	20.8	2.79	10.7
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	13992501	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(2.753 \pm 253.020) \times 10^{-5}$	13992501	1.579×10^{-3}	-8.815×10^{-6}	-4.627×10^{-2}	4.214×10^{-2}	-7.837×10^{-4}	7.951×10^{-4}
fitted radiance squeeze [1]	$(-7.901 \pm 17.958) \times 10^{-5}$	13992501	2.150×10^{-4}	-6.529×10^{-5}	-1.683×10^{-2}	6.454×10^{-3}	-1.788×10^{-4}	3.619×10^{-5}
fitted root mean square [1]	$(1.221 \pm 0.484) \times 10^{-3}$	13992501	4.390×10^{-4}	1.087×10^{-3}	2.708×10^{-4}	0.102	9.253×10^{-4}	1.364×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.997 ± 0.560	13992501	0.792	0.890	5.000×10^{-2}	2.96	0.572	1.36
sulfurdioxide total air mass factor polluted precision [1]	0.143 ± 0.184	13992501	0.126	8.725×10^{-2}	2.803×10^{-3}	2.29	4.175×10^{-2}	0.168
sulfurdioxide clear air mass factor polluted [1]	0.811 ± 0.414	13992501	0.519	0.749	5.710×10^{-2}	2.73	0.496	1.02
number of spectral points in retrieval [1]	73.5 ± 0.5	13992501	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]	0.766 ± 0.351	5955999	0.550	1.000	0.0	1.000	0.450	1.000
sulfurdioxide total vertical column [DU]	$(5.111 \pm 125.109) \times 10^{-2}$	5955999	0.603	1.913×10^{-2}	-102	464	-0.277	0.326
sulfurdioxide total vertical column precision [DU]	0.658 ± 0.883	5955999	0.423	0.444	5.963×10^{-2}	147	0.302	0.724
sulfurdioxide slant column density corrected [DU]	$(2.790 \pm 53.969) \times 10^{-2}$	5955999	0.462	1.589×10^{-2}	-22.8	589	-0.212	0.249
sulfurdioxide slant column density cobra [DU]	$(2.743 \pm 43.871) \times 10^{-2}$	5955999	0.462	1.589×10^{-2}	-22.8	107	-0.212	0.249
sulfurdioxide slant column density cobra precision [DU]	0.370 ± 0.157	5955999	0.191	0.343	0.103	29.8	0.253	0.444
sulfurdioxide slant column density window1 [DU]	0.128 ± 0.783	5955999	0.845	0.125	-81.9	99.1	-0.297	0.548
sulfurdioxide slant column density window1 precision [DU]	0.370 ± 0.157	5955999	0.191	0.343	0.103	29.8	0.253	0.444
sulfurdioxide slant column density corrected win1 [DU]	$(5.643 \pm 78.383) \times 10^{-2}$	5955999	0.843	3.213×10^{-2}	-81.9	99.4	-0.382	0.461
background so2 slant column offset window1 [DU]	$(-7.178 \pm 12.144) \times 10^{-2}$	5955999	9.991×10^{-2}	-9.800×10^{-2}	-1.37	4.28	-0.135	-3.473×10^{-2}
sulfurdioxide slant column density window2 [DU]	1.95 ± 10.48	5955999	13.0	1.72	-1.017×10^3	1.817×10^3	-4.66	8.30
sulfurdioxide slant column density window2 precision [DU]	9.30 ± 2.68	5955999	2.91	8.95	2.26	752	7.67	10.6
sulfurdioxide slant column density corrected win2 [DU]	0.348 ± 10.345	5955999	12.8	0.317	-1.017×10^3	1.812×10^3	-6.08	6.73
background so2 slant column offset window2 [DU]	-1.61 ± 2.01	5955999	2.58	-1.08	-11.0	7.49	-2.80	-0.216
sulfurdioxide slant column density window3 [DU]	-7.74 ± 27.49	5955999	34.9	-7.32	-380	532	-24.9	9.99
sulfurdioxide slant column density window3 precision [DU]	32.1 ± 13.1	5955999	10.2	29.0	10.4	228	24.8	35.0
sulfurdioxide slant column density corrected win3 [DU]	$(8.123 \pm 2721.118) \times 10^{-2}$	5955999	34.7	0.264	-369	545	-17.1	17.6
background so2 slant column offset window3 [DU]	7.82 ± 4.50	5955999	6.13	7.09	-10.6	26.9	4.71	10.8
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	5955999	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-4.408 \pm 24.964) \times 10^{-4}$	5955999	1.788×10^{-3}	-4.176×10^{-4}	-4.143×10^{-2}	6.426×10^{-2}	-1.365×10^{-3}	4.223×10^{-4}
fitted radiance squeeze [1]	$(1.596 \pm 20.186) \times 10^{-5}$	5955999	2.319×10^{-4}	1.238×10^{-5}	-1.714×10^{-2}	1.606×10^{-2}	-1.019×10^{-4}	1.300×10^{-4}
fitted root mean square [1]	$(1.471 \pm 0.598) \times 10^{-3}$	5955999	6.422×10^{-4}	1.304×10^{-3}	3.684×10^{-4}	0.102	1.076×10^{-3}	1.718×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.799 ± 0.357	5955999	0.394	0.732	5.000×10^{-2}	2.66	0.579	0.973
sulfurdioxide total air mass factor polluted precision [1]	$(8.211 \pm 7.339) \times 10^{-2}$	5955999	7.649×10^{-2}	5.180×10^{-2}	2.557×10^{-3}	1.43	3.424×10^{-2}	0.111
sulfurdioxide clear air mass factor polluted [1]	0.701 ± 0.204	5955999	0.238	0.688	4.494×10^{-2}	1.93	0.576	0.814
number of spectral points in retrieval [1]	73.4 ± 0.5	5955999	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]	0.651 ± 0.397	13509185	0.770	1.000	0.0	1.000	0.230	1.000
sulfurdioxide total vertical column [DU]	$(2.937 \pm 97.380) \times 10^{-2}$	13509185	0.465	1.077×10^{-2}	-56.0	305	-0.219	0.246
sulfurdioxide total vertical column precision [DU]	0.531 ± 0.735	13509185	0.350	0.334	5.633×10^{-2}	83.1	0.226	0.576
sulfurdioxide slant column density corrected [DU]	$(1.821 \pm 40.711) \times 10^{-2}$	13509185	0.396	9.829×10^{-3}	-22.8	589	-0.186	0.210
sulfurdioxide slant column density cobra [DU]	$(1.814 \pm 37.145) \times 10^{-2}$	13509185	0.396	9.829×10^{-3}	-22.8	107	-0.186	0.210
sulfurdioxide slant column density cobra precision [DU]	0.320 ± 0.137	13509185	0.168	0.273	8.476×10^{-2}	29.8	0.222	0.390
sulfurdioxide slant column density window1 [DU]	0.101 ± 0.694	13509185	0.756	0.108	-80.2	99.1	-0.274	0.482
sulfurdioxide slant column density window1 precision [DU]	0.320 ± 0.137	13509185	0.168	0.273	8.476×10^{-2}	29.8	0.222	0.390
sulfurdioxide slant column density corrected win1 [DU]	$(4.760 \pm 68.344) \times 10^{-2}$	13509185	0.740	3.005×10^{-2}	-80.2	99.4	-0.334	0.405
background so2 slant column offset window1 [DU]	$(-5.293 \pm 14.945) \times 10^{-2}$	13509185	0.179	-9.229×10^{-2}	-1.44	3.84	-0.154	2.459×10^{-2}
sulfurdioxide slant column density window2 [DU]	1.70 ± 8.97	13509185	11.2	1.56	-647	1.817×10^3	-4.01	7.23
sulfurdioxide slant column density window2 precision [DU]	8.07 ± 2.25	13509185	2.62	7.70	2.19	752	6.57	9.19
sulfurdioxide slant column density corrected win2 [DU]	0.314 ± 8.836	13509185	11.1	0.315	-649	1.812×10^3	-5.23	5.85
background so2 slant column offset window2 [DU]	-1.38 ± 2.03	13509185	2.81	-0.882	-11.0	8.00	-2.72	9.788×10^{-2}
sulfurdioxide slant column density window3 [DU]	-4.49 ± 23.84	13509185	29.6	-4.83	-355	228	-19.3	10.3
sulfurdioxide slant column density window3 precision [DU]	26.9 ± 11.6	13509185	9.52	23.9	9.01	638	20.3	29.8
sulfurdioxide slant column density corrected win3 [DU]	2.39 ± 23.18	13509185	28.8	2.19	-343	235	-12.1	16.8
background so2 slant column offset window3 [DU]	6.89 ± 4.82	13509185	7.17	7.09	-15.0	26.9	3.30	10.5
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	13509185	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-1.324 \pm 21.917) \times 10^{-4}$	13509185	1.583×10^{-3}	-1.175×10^{-4}	-4.143×10^{-2}	6.426×10^{-2}	-9.361×10^{-4}	6.474×10^{-4}
fitted radiance squeeze [1]	$(-4.302 \pm 19.383) \times 10^{-5}$	13509185	2.231×10^{-4}	-3.541×10^{-5}	-1.683×10^{-2}	1.606×10^{-2}	-1.507×10^{-4}	7.244×10^{-5}
fitted root mean square [1]	$(1.309 \pm 0.546) \times 10^{-3}$	13509185	5.686×10^{-4}	1.146×10^{-3}	3.399×10^{-4}	0.102	9.558×10^{-4}	1.524×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.919 ± 0.474	13509185	0.562	0.827	5.000×10^{-2}	2.68	0.601	1.16
sulfurdioxide total air mass factor polluted precision [1]	0.123 ± 0.173	13509185	9.800×10^{-2}	6.894×10^{-2}	2.803×10^{-3}	2.14	3.933×10^{-2}	0.137
sulfurdioxide clear air mass factor polluted [1]	0.791 ± 0.371	13509185	0.398	0.732	6.690×10^{-2}	2.44	0.550	0.948
number of spectral points in retrieval [1]	73.4 ± 0.5	13509185	1.000	73.0	70.0	74.0	73.0	74.0

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

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.635 ± 0.425	4417484	0.840	1.000	0.0	1.000	0.160	1.000
sulfurdioxide total vertical column [DU]	$(3.476 \pm 108.838) \times 10^{-2}$	4417484	0.435	1.127×10^{-2}	-102	200	-0.201	0.233
sulfurdioxide total vertical column precision [DU]	0.529 ± 0.843	4417484	0.340	0.330	4.923×10^{-2}	90.8	0.205	0.545
sulfurdioxide slant column density corrected [DU]	$(2.135 \pm 39.274) \times 10^{-2}$	4417484	0.379	1.094×10^{-2}	-22.4	130	-0.176	0.203
sulfurdioxide slant column density cobra [DU]	$(2.104 \pm 36.421) \times 10^{-2}$	4417484	0.379	1.094×10^{-2}	-22.4	28.1	-0.176	0.203
sulfurdioxide slant column density cobra precision [DU]	0.302 ± 0.134	4417484	0.110	0.260	9.225×10^{-2}	18.4	0.223	0.333
sulfurdioxide slant column density window1 [DU]	0.115 ± 0.647	4417484	0.714	0.109	-81.9	54.4	-0.247	0.467
sulfurdioxide slant column density window1 precision [DU]	0.302 ± 0.134	4417484	0.110	0.260	9.225×10^{-2}	18.4	0.223	0.333
sulfurdioxide slant column density corrected win1 [DU]	$(2.919 \pm 63.970) \times 10^{-2}$	4417484	0.701	1.081×10^{-2}	-81.9	54.3	-0.334	0.367
background so2 slant column offset window1 [DU]	$(-8.613 \pm 11.789) \times 10^{-2}$	4417484	0.141	-0.108	-0.617	4.28	-0.166	-2.514×10^{-2}
sulfurdioxide slant column density window2 [DU]	1.22 ± 9.10	4417484	11.3	1.20	-1.017×10^3	1.041×10^3	-4.44	6.83
sulfurdioxide slant column density window2 precision [DU]	8.26 ± 2.69	4417484	2.74	7.87	2.42	562	6.64	9.38
sulfurdioxide slant column density corrected win2 [DU]	0.144 ± 9.021	4417484	11.1	0.159	-1.017×10^3	1.039×10^3	-5.42	5.70
background so2 slant column offset window2 [DU]	-1.07 ± 1.69	4417484	2.11	-0.812	-10.1	7.35	-2.03	7.553×10^{-2}
sulfurdioxide slant column density window3 [DU]	-12.1 ± 23.7	4417484	28.9	-11.5	-664	532	-26.2	2.72
sulfurdioxide slant column density window3 precision [DU]	30.4 ± 16.5	4417484	12.2	25.9	9.51	322	21.1	33.4
sulfurdioxide slant column density corrected win3 [DU]	-5.20 ± 23.89	4417484	29.5	-4.47	-663	545	-19.6	9.86
background so2 slant column offset window3 [DU]	6.85 ± 4.84	4417484	7.37	7.54	-15.0	24.4	3.24	10.6
sulfurdioxide slant column cobra flag [1]	2.00 ± 0.00	4417484	0.0	2.00	2.00	2.00	2.00	2.00
fitted radiance shift [nm]	$(-7.382 \pm 322.085) \times 10^{-5}$	4417484	1.801×10^{-3}	-1.321×10^{-4}	-4.627×10^{-2}	4.214×10^{-2}	-1.011×10^{-3}	7.895×10^{-4}
fitted radiance squeeze [1]	$(-5.188 \pm 18.187) \times 10^{-5}$	4417484	2.125×10^{-4}	-4.737×10^{-5}	-1.714×10^{-2}	1.529×10^{-2}	-1.558×10^{-4}	5.670×10^{-5}
fitted root mean square [1]	$(1.235 \pm 0.481) \times 10^{-3}$	4417484	4.046×10^{-4}	1.116×10^{-3}	2.708×10^{-4}	5.446×10^{-2}	9.544×10^{-4}	1.359×10^{-3}
sulfurdioxide total air mass factor polluted [1]	0.970 ± 0.584	4417484	0.760	0.795	5.000×10^{-2}	2.96	0.542	1.30
sulfurdioxide total air mass factor polluted precision [1]	0.127 ± 0.134	4417484	0.147	8.481×10^{-2}	2.557×10^{-3}	2.29	3.344×10^{-2}	0.180
sulfurdioxide clear air mass factor polluted [1]	0.761 ± 0.354	4417484	0.392	0.691	4.494×10^{-2}	2.73	0.523	0.915
number of spectral points in retrieval [1]	73.4 ± 0.5	4417484	1.000	73.0	52.0	74.0	73.0	74.0

Table 7: Correlation matrix

Clear AMF (polluted)	Precision of total AMF (polluted)	Total AMF (polluted)	SO ₂ RMS	DOAS fit wavelength squeeze	DOAS fit wavelength shift	Corrected SO ₂ slant column (window 3)	SO ₂ slant column precision (window 3)	SO ₂ slant column (window 3)	Corrected SO ₂ slant column (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 (window 1)	SO ₂ slant column precision (Cohn)	Cohn 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
-0.161	-0.142	-0.184	0.310	-2.051 × 10 ⁻²	-4.519 × 10 ⁻³	-1.459 × 10 ⁻²	2.363 × 10 ⁻²	1.339 × 10 ⁻²	1.198 × 10 ⁻²	0.142	9.857 × 10 ⁻²	0.340	1.738 × 10 ⁻²	0.340	6.375 × 10 ⁻³	5.626 × 10 ⁻³	0.240	1.138 × 10 ⁻²	9.024 × 10 ⁻³	1.000	1.000
0.204	-1.661 × 10 ⁻²	0.195	0.566	-0.175	-9.563 × 10 ⁻²	0.563	1.719 × 10 ⁻²	-0.122	2.779 × 10 ⁻³	0.292	0.623	0.603	-0.116	0.603	2.002 × 10 ⁻³	1.834 × 10 ⁻²	0.173	2.154 × 10 ⁻²	-9.237 × 10 ⁻³	1.000	9.024 × 10 ⁻³
0.257	0.240	-4.248 × 10 ⁻²	-0.389	-4.248 × 10 ⁻²	6.373 × 10 ⁻²	0.207	-4.505 × 10 ⁻³	-0.201	-1.063 × 10 ⁻²	-0.275	0.402	-0.103	-6.470 × 10 ⁻²	-0.103	-6.470 × 10 ⁻²	-6.421 × 10 ⁻²	-1.038 × 10 ⁻²	-8.240 × 10 ⁻³	-3.292 × 10 ⁻²	1.000	-9.237 × 10 ⁻³
-1.680 × 10 ⁻²	-8.196 × 10 ⁻³	4.279 × 10 ⁻²	3.706 × 10 ⁻²	3.121 × 10 ⁻³	-4.112 × 10 ⁻³	1.222 × 10 ⁻²	-3.784 × 10 ⁻⁴	-2.820 × 10 ⁻³	-9.804 × 10 ⁻⁴	2.507 × 10 ⁻²	1.955 × 10 ⁻²	0.340	6.546 × 10 ⁻²	0.640	6.546 × 10 ⁻²	6.242 × 10 ⁻²	0.105	1.000	2.154 × 10 ⁻²	1.000	-3.292 × 10 ⁻²
-0.360	-0.206	-0.458	0.354	-8.969 × 10 ⁻³	-3.503 × 10 ⁻²	0.163	-2.430 × 10 ⁻²	-5.663 × 10 ⁻²	-0.135	0.204	0.175	0.404	1.263 × 10 ⁻²	0.404	1.263 × 10 ⁻²	2.757 × 10 ⁻²	1.000	0.105	-6.421 × 10 ⁻²	1.000	-3.292 × 10 ⁻²
-1.639 × 10 ⁻³	1.600 × 10 ⁻³	3.706 × 10 ⁻²	5.241 × 10 ⁻³	3.121 × 10 ⁻³	-4.110 × 10 ⁻³	8.923 × 10 ⁻³	8.229 × 10 ⁻⁴	-1.504 × 10 ⁻²	2.081 × 10 ⁻²	2.716 × 10 ⁻²	2.005 × 10 ⁻²	1.457 × 10 ⁻²	7.232 × 10 ⁻²	0.492	7.232 × 10 ⁻²	6.242 × 10 ⁻²	0.918	0.635	-1.038 × 10 ⁻²	1.834 × 10 ⁻²	-9.237 × 10 ⁻³
-2.051 × 10 ⁻³	-4.585 × 10 ⁻²	-5.724 × 10 ⁻²	-0.110	-8.856 × 10 ⁻²	-4.422 × 10 ⁻³	9.737 × 10 ⁻³	6.785 × 10 ⁻⁴	-1.285 × 10 ⁻³	1.438 × 10 ⁻²	1.261 × 10 ⁻²	1.612 × 10 ⁻²	0.538	6.242 × 10 ⁻²	0.538	6.242 × 10 ⁻²	6.242 × 10 ⁻²	2.871 × 10 ⁻²	0.640	-1.097 × 10 ⁻²	2.002 × 10 ⁻²	6.375 × 10 ⁻³
-5.945 × 10 ⁻²	-5.398 × 10 ⁻²	-7.779 × 10 ⁻²	-0.110	-8.856 × 10 ⁻²	-4.422 × 10 ⁻³	9.737 × 10 ⁻³	6.785 × 10 ⁻⁴	-1.285 × 10 ⁻³	1.438 × 10 ⁻²	1.261 × 10 ⁻²	1.612 × 10 ⁻²	0.538	6.242 × 10 ⁻²	0.538	6.242 × 10 ⁻²	6.242 × 10 ⁻²	2.871 × 10 ⁻²	0.640	-1.097 × 10 ⁻²	2.002 × 10 ⁻²	6.375 × 10 ⁻³
-4.585 × 10 ⁻³	-0.151	-5.724 × 10 ⁻²	-0.110	-8.856 × 10 ⁻²	-4.422 × 10 ⁻³	9.737 × 10 ⁻³	6.785 × 10 ⁻⁴	-1.285 × 10 ⁻³	1.438 × 10 ⁻²	1.261 × 10 ⁻²	1.612 × 10 ⁻²	0.538	6.242 × 10 ⁻²	0.538	6.242 × 10 ⁻²	6.242 × 10 ⁻²	2.871 × 10 ⁻²	0.640	-1.097 × 10 ⁻²	2.002 × 10 ⁻²	6.375 × 10 ⁻³
-0.113	-0.213	-0.148	0.603	5.201 × 10 ⁻²	-6.557 × 10 ⁻²	0.163	-2.807 × 10 ⁻²	-6.029 × 10 ⁻²	-0.193	0.591	1.000	6.660 × 10 ⁻³	3.712 × 10 ⁻²	0.591	3.712 × 10 ⁻²	2.005 × 10 ⁻²	0.404	2.507 × 10 ⁻²	-0.275	2.779 × 10 ⁻³	1.000
-5.259 × 10 ⁻³	4.851 × 10 ⁻³	-2.705 × 10 ⁻³	7.285 × 10 ⁻³	2.521 × 10 ⁻²	-6.557 × 10 ⁻²	0.167	-2.807 × 10 ⁻²	-6.029 × 10 ⁻²	-0.193	0.591	1.000	6.660 × 10 ⁻³	3.712 × 10 ⁻²	0.591	3.712 × 10 ⁻²	2.005 × 10 ⁻²	0.404	2.507 × 10 ⁻²	-0.275	2.779 × 10 ⁻³	1.000
-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181	-0.181

Table 8: Covariance matrix

Clear AMF (polined)	Precision of total AMF (polined)	Total AMF (polined)	SO ₂ RMS	DOAS fit wavelength squeeze	DOAS fit wavelength shift	SO ₂ slant column background correction (window 3)	Corrected SO ₂ slant column (window 3)	SO ₂ slant column precision (window 3)	SO ₂ slant column (window 3)	SO ₂ slant column background correction (window 2)	Corrected SO ₂ slant column (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 (window 1)	Cobra 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	
-1.16	-0.451	-1.86	3.236×10^{-3}	-7.686×10^{-5}	-2.236×10^{-4}	-1.37	4.90	6.13	6.28	4.79	2.08	6.62	0.273	0.916	0.233	0.916	4.624×10^{-2}	4.509×10^{-2}	3.76	0.233	-6.79	2.94	383
1.25	-4.483×10^{-2}	1.68	5.030×10^{-3}	-5.588×10^{-4}	-4.032×10^{-3}	45.0	-3.50	3.80	-48.5	-21.9	0.411	11.6	1.47	1.38	-1.32	1.38	0.125	0.376	0.376	-20.6	278	2.94	
3.55	1.46	6.41	-8.511×10^{-4}	-2.800×10^{-3}	6.054×10^{-3}	37.3	-3.98	-124	-41.2	-14.6	-3.54	-24.5	-0.334	-0.334	-2.66	-0.334	-1.93	-0.324	-0.324	1.411 $\times 10^3$	-6.79	-6.79	
-6.463×10^{-3}	-1.389×10^{-3}	-1.049×10^{-2}	5.497×10^{-5}	-1.089×10^{-5}	-1.089×10^{-5}	6.139×10^{-2}	-9.316×10^{-3}	4.615×10^{-2}	-7.071×10^{-2}	-3.255×10^{-2}	0.107	6.229×10^{-2}	2.896×10^{-3}	0.244	0.244	9.421×10^{-3}	8.525×10^{-3}	8.775×10^{-2}	1.10	-0.324	0.376	0.233	
-0.106	-2.670×10^{-2}	-0.189	1.514×10^{-4}	-1.376×10^{-6}	-7.096×10^{-5}	0.629	-0.458	0.239	-1.09	-0.208	7.026×10^{-2}	0.389	1.980×10^{-2}	4.444×10^{-2}	4.444×10^{-2}	9.045×10^{-3}	9.045×10^{-3}	8.775×10^{-2}	0.641	-1.93	0.125	3.76	
-2.466×10^{-4}	1.061×10^{-4}	6.599×10^{-4}	8.094×10^{-6}	4.110×10^{-7}	-4.258×10^{-6}	1.754×10^{-2}	7.926×10^{-3}	1.260×10^{-2}	-9.617×10^{-3}	-1.189×10^{-2}	7.565×10^{-2}	2.640×10^{-2}	8.445×10^{-4}	0.138	0.138	4.071×10^{-3}	4.071×10^{-3}	9.045×10^{-3}	0.272	-0.160	0.125	4.509 $\times 10^{-2}$	
-2.794×10^{-3}	-2.316×10^{-3}	6.352×10^{-4}	7.922×10^{-6}	4.259×10^{-7}	-4.146×10^{-6}	1.733×10^{-2}	5.915×10^{-3}	1.119×10^{-2}	-1.141×10^{-2}	-1.178×10^{-2}	4.734×10^{-2}	1.765×10^{-2}	8.457×10^{-4}	0.137	0.137	3.181×10^{-3}	3.181×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-3.365×10^{-3}	-4.063×10^{-3}	-4.063×10^{-3}	6.720×10^{-5}	-3.079×10^{-5}	-3.079×10^{-5}	0.252	-5.411×10^{-2}	-5.411×10^{-2}	-0.124	-0.124	1.539×10^{-2}	6.029×10^{-2}	1.635×10^{-2}	0.468	0.468	6.713×10^{-4}	6.713×10^{-4}	4.444×10^{-2}	0.244	-2.66	0.916	0.233	
-2.316×10^{-3}	-3.365×10^{-3}	-3.365×10^{-3}	6.720×10^{-5}	-3.079×10^{-5}	-3.079×10^{-5}	0.252	-5.411×10^{-2}	-5.411×10^{-2}	-0.124	-0.124	1.539×10^{-2}	6.029×10^{-2}	1.635×10^{-2}	0.468	0.468	6.713×10^{-4}	6.713×10^{-4}	4.444×10^{-2}	0.244	-2.66	0.916	0.233	
9.246×10^{-3}	1.671×10^{-2}	1.671×10^{-2}	3.737×10^{-5}	-1.927×10^{-5}	-1.927×10^{-5}	0.346	-2.868×10^{-3}	-2.868×10^{-3}	-0.151	-0.151	2.608×10^{-2}	3.655×10^{-2}	3.655×10^{-2}	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-9.840×10^{-2}	-8.171×10^{-2}	-8.171×10^{-2}	7.636×10^{-4}	-3.937×10^{-4}	-3.937×10^{-4}	1.86	-4.826×10^{-2}	-4.826×10^{-2}	-0.434	-0.434	0.140	5.63	6.029×10^{-2}	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-1.716×10^{-2}	6.974×10^{-3}	6.974×10^{-3}	3.450×10^{-5}	-2.285×10^{-5}	-2.285×10^{-5}	0.249	-9.896×10^{-5}	-9.896×10^{-5}	-0.172	-0.172	2.608×10^{-2}	3.655×10^{-2}	3.655×10^{-2}	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.389	-0.389	-0.389	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111	0.847	0.140	5.63	0.193	0.193	9.510×10^{-3}	9.510×10^{-3}	8.525×10^{-3}	0.248	-0.153	0.124	4.624×10^{-2}	
-0.404	-0.387	-0.387	1.556×10^{-3}	-2.334×10^{-4}	-2.334×10^{-4}	1.22	-7.080×10^{-3}	-7.080×10^{-3}	-0.111	-0.111													

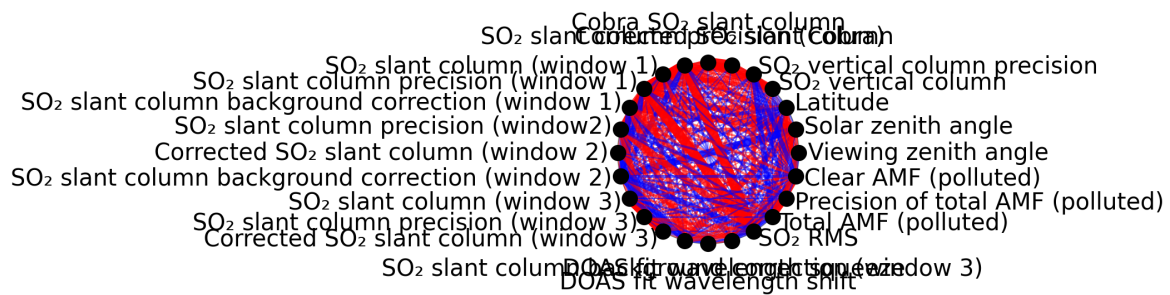


Figure 1: Map of correlation graph for 2025-06-13 to 2025-06-15.

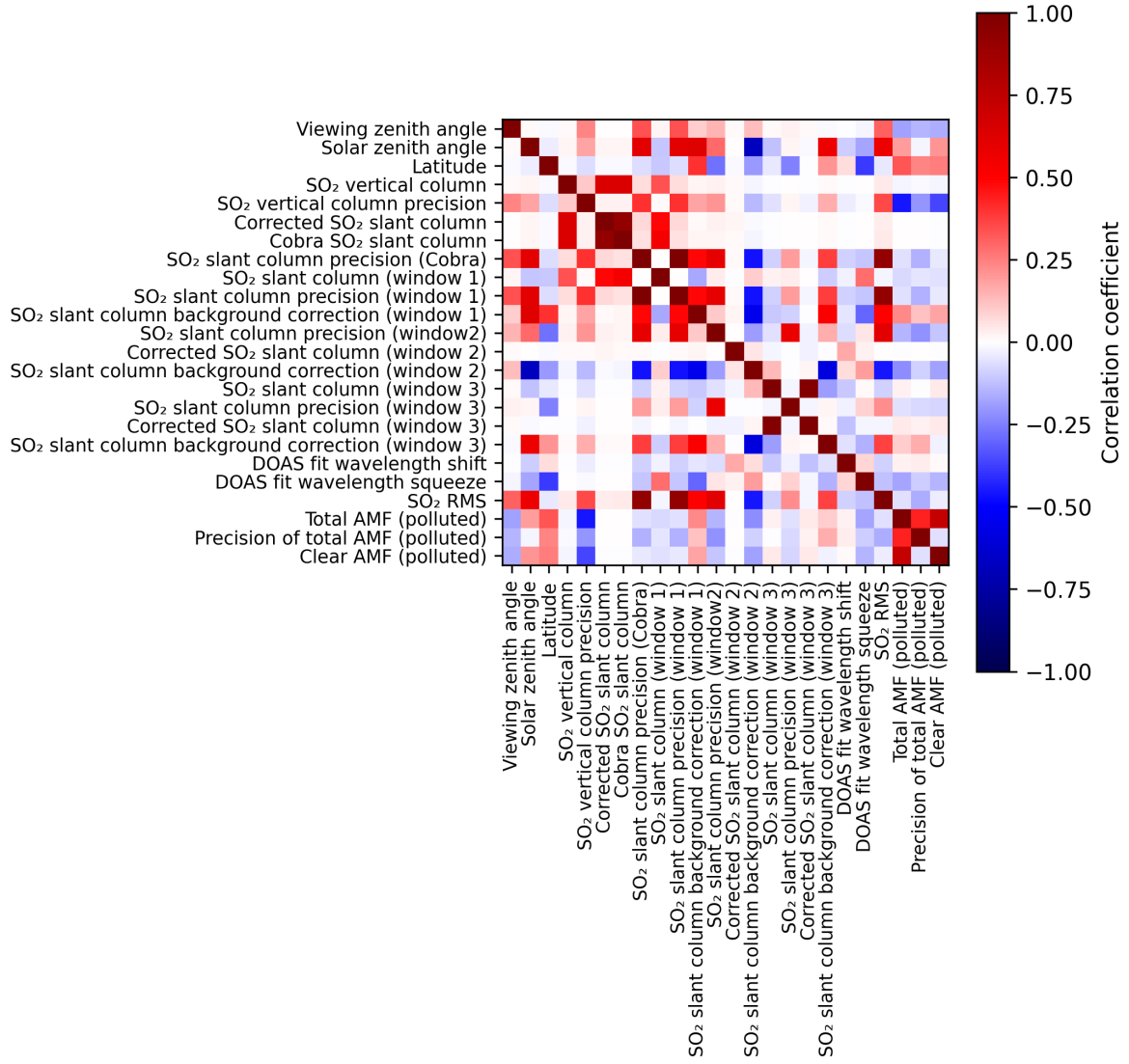


Figure 2: Map of correlation matrix for 2025-06-13 to 2025-06-15.

3 Granule outlines

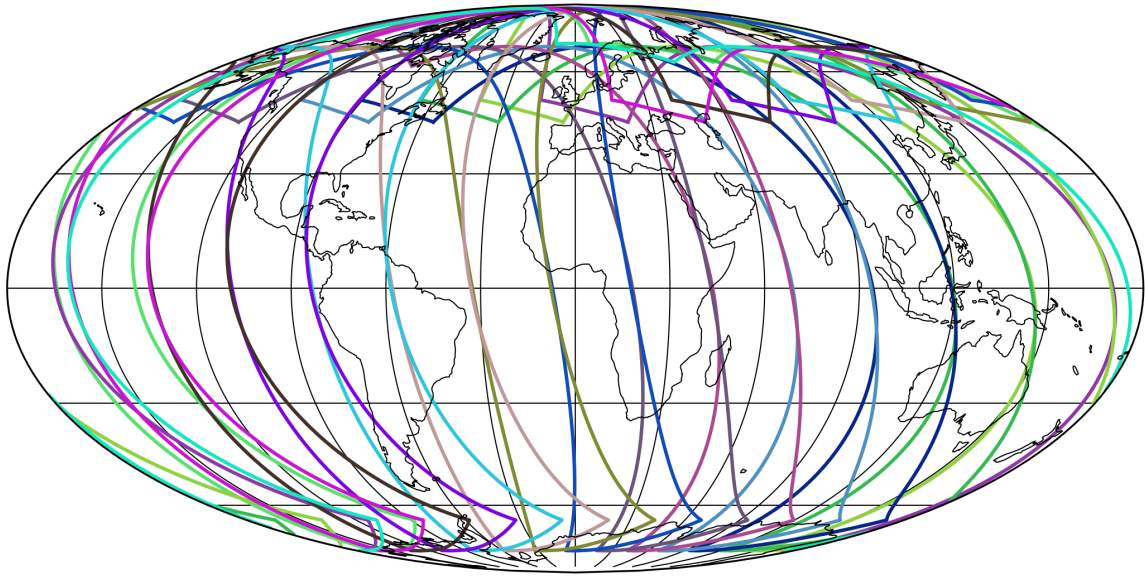


Figure 3: Outline of the granules.

4 Input data monitoring

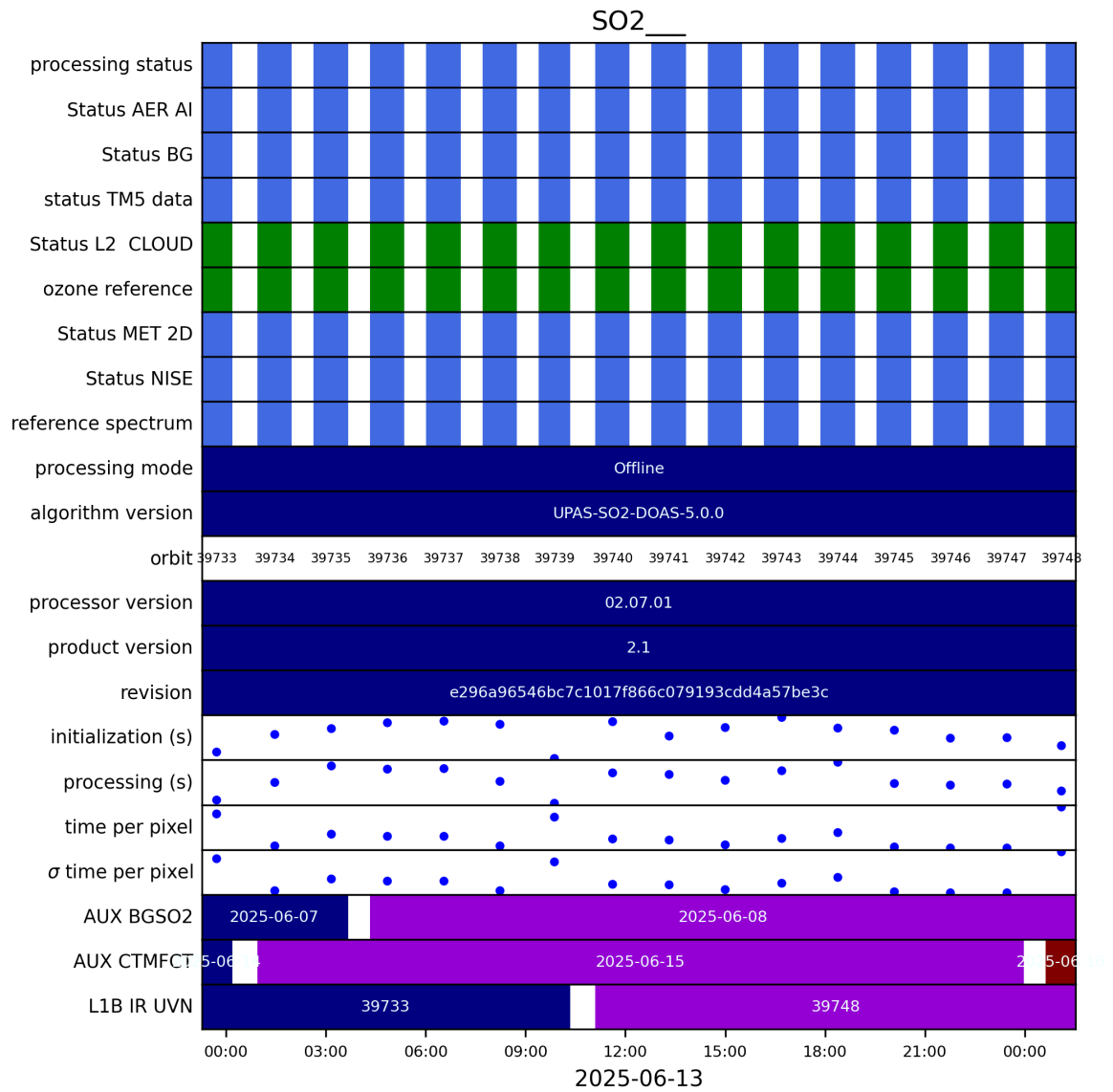


Figure 4: Input data per granule

5 Warnings and errors

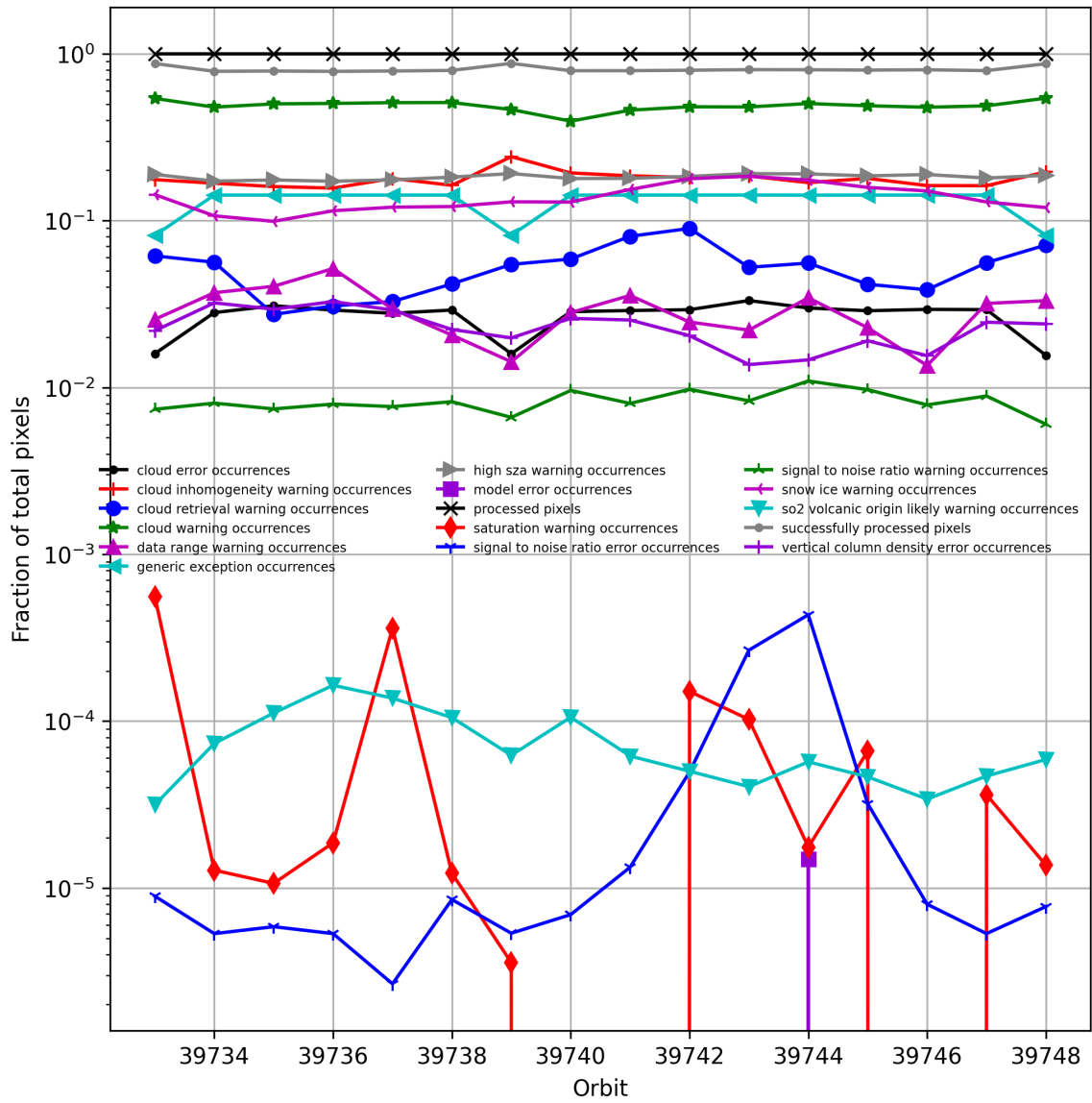


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

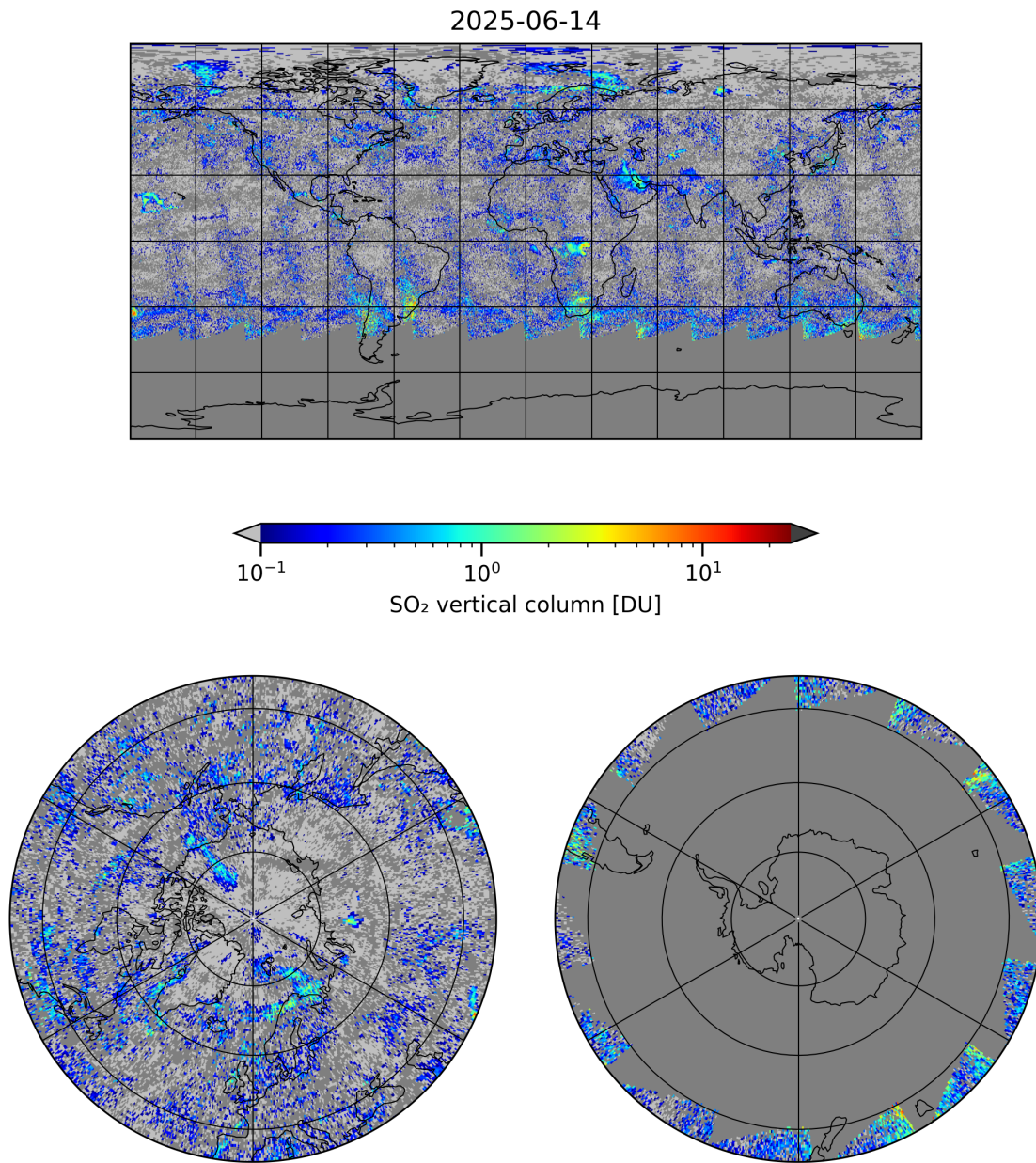


Figure 6: Map of “SO₂ vertical column” for 2025-06-13 to 2025-06-15

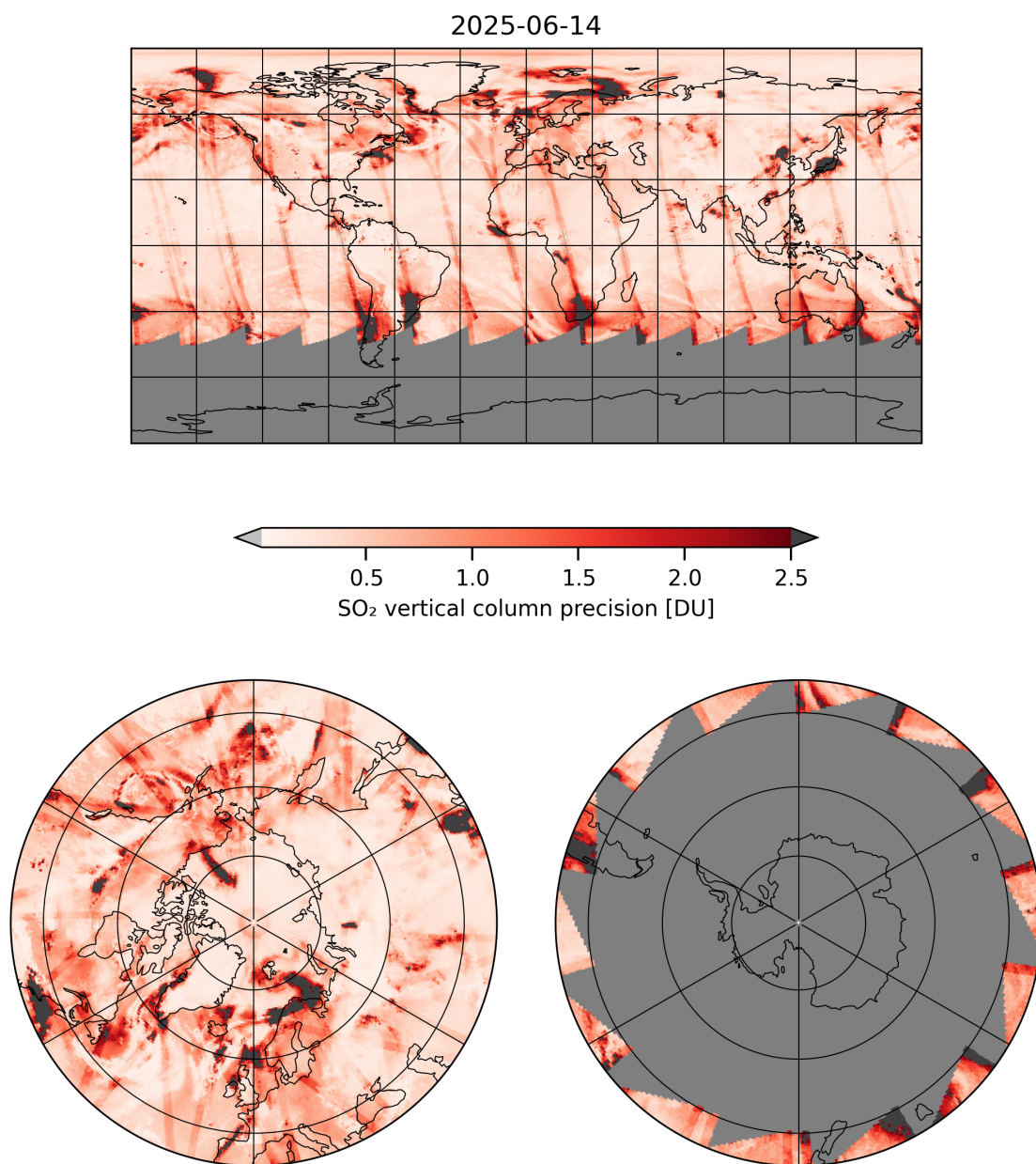


Figure 7: Map of “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15

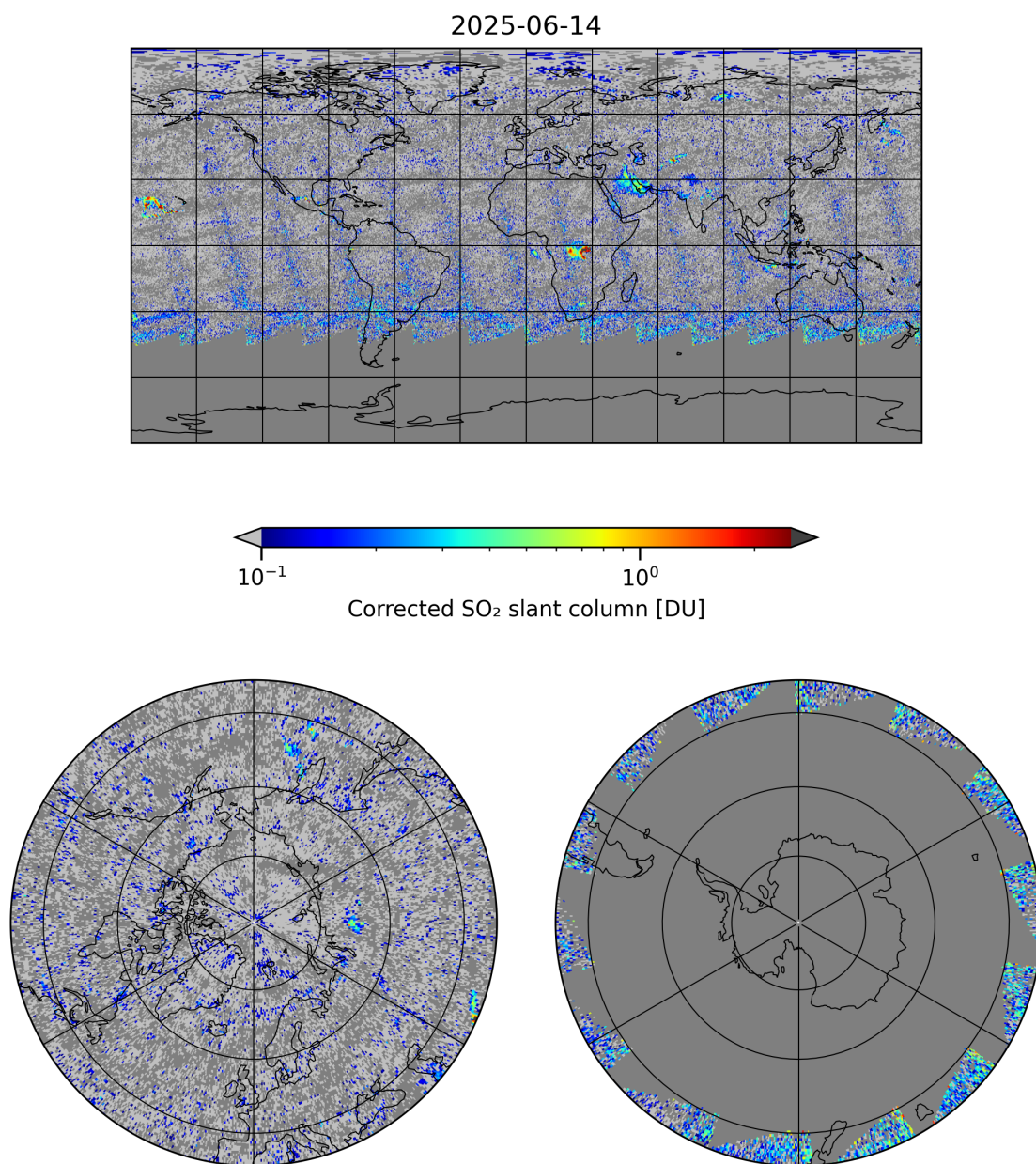


Figure 8: Map of “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15

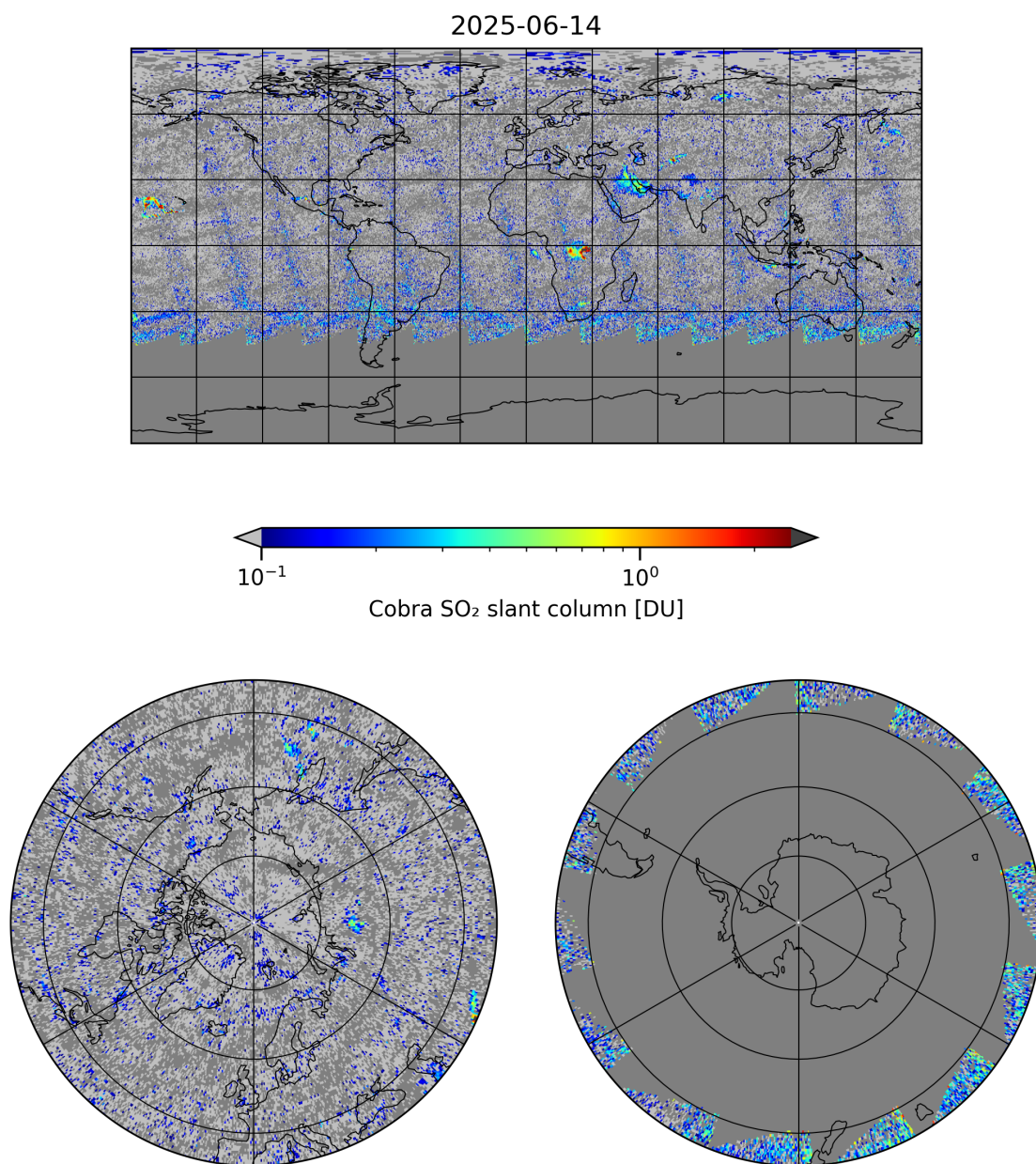


Figure 9: Map of “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15

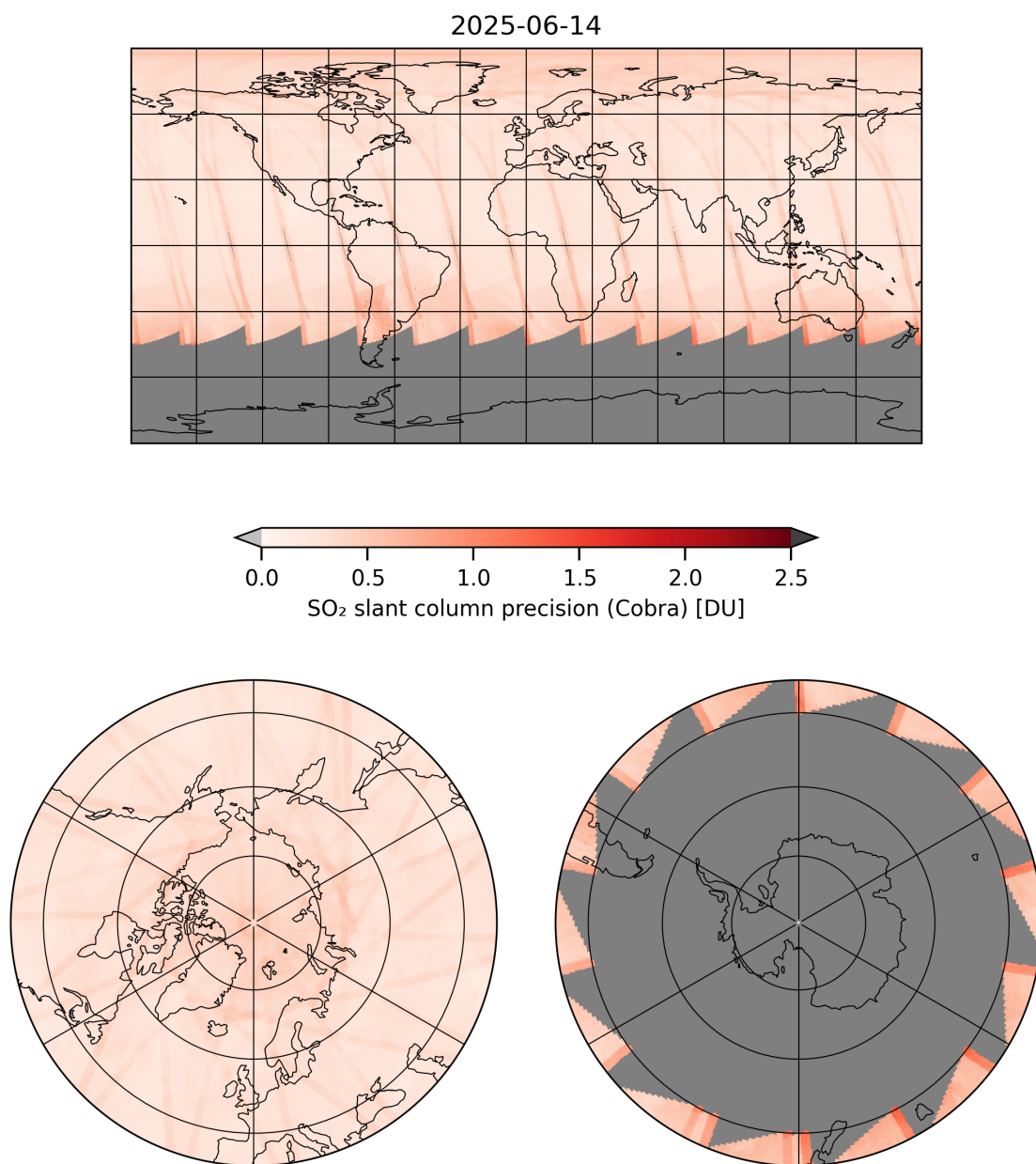


Figure 10: Map of “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15

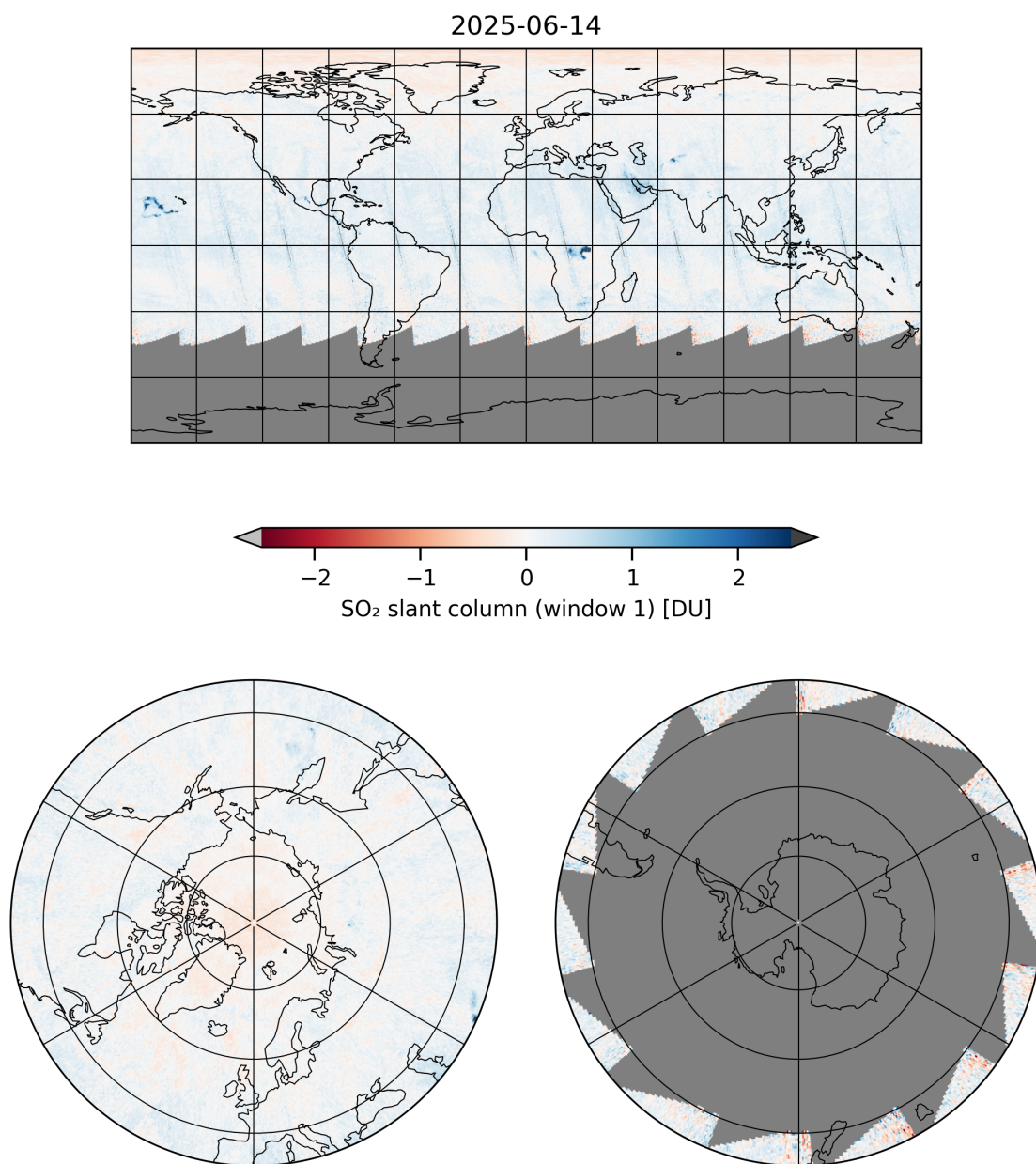


Figure 11: Map of “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15

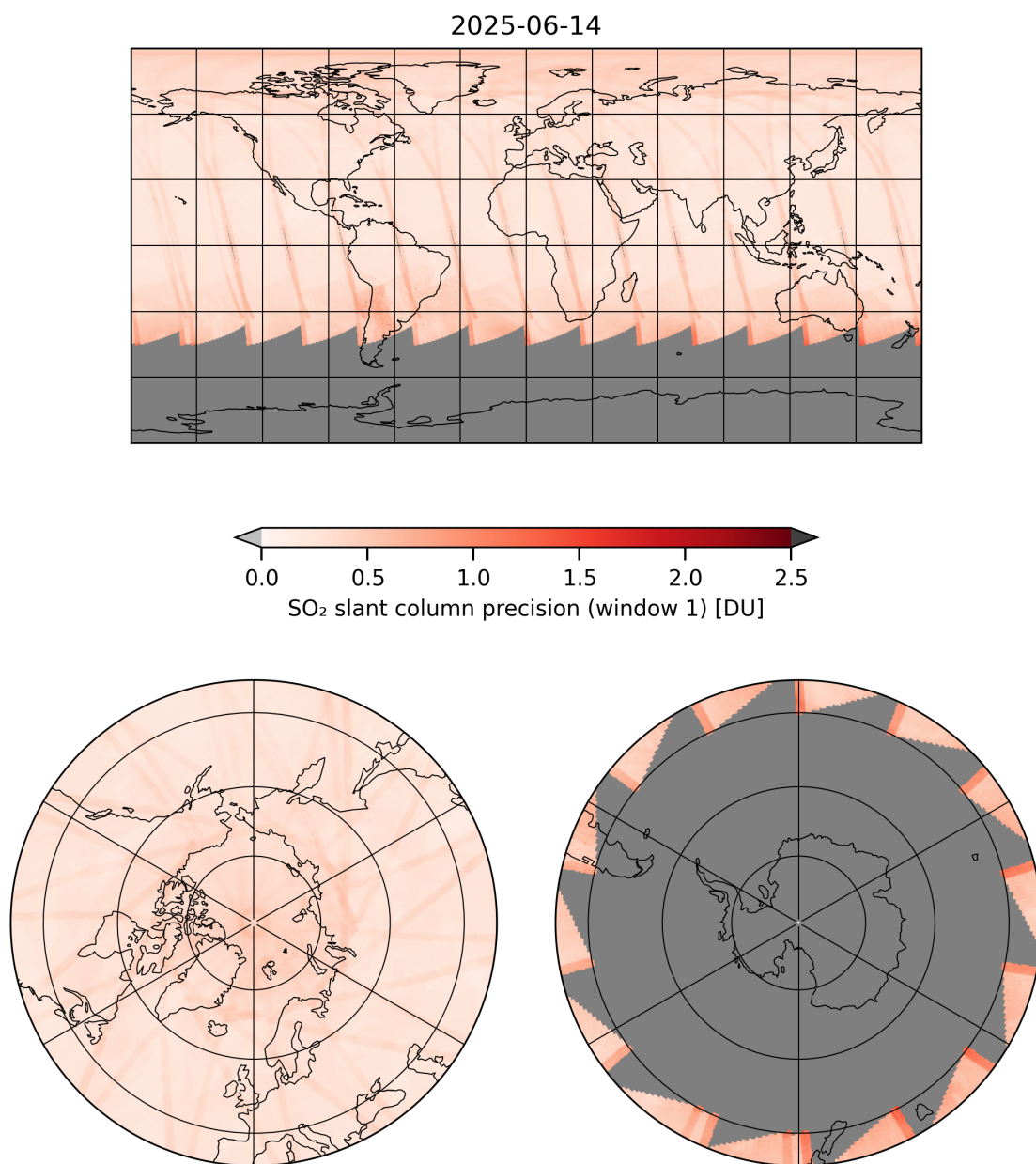


Figure 12: Map of “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15

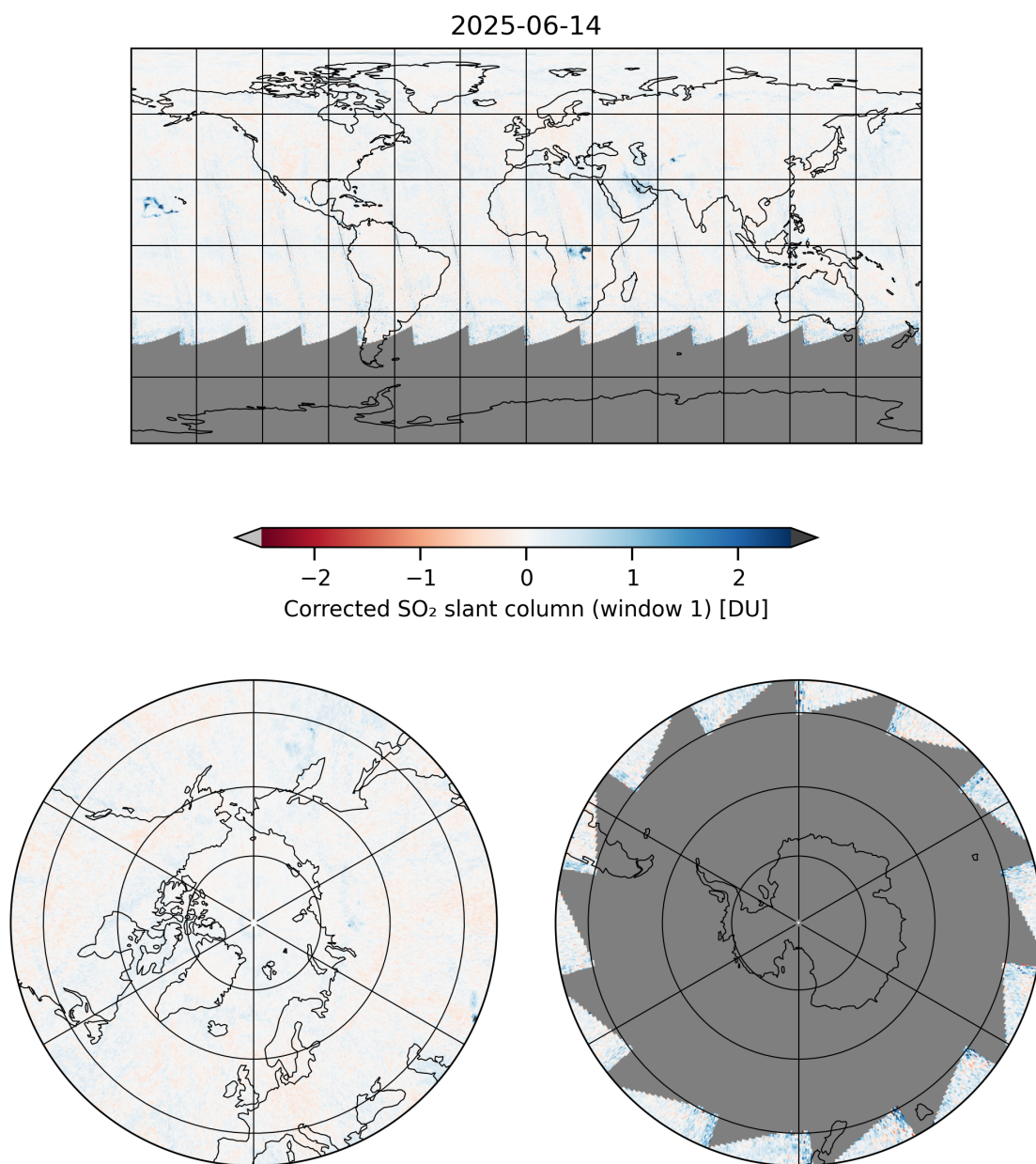


Figure 13: Map of “Corrected SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15

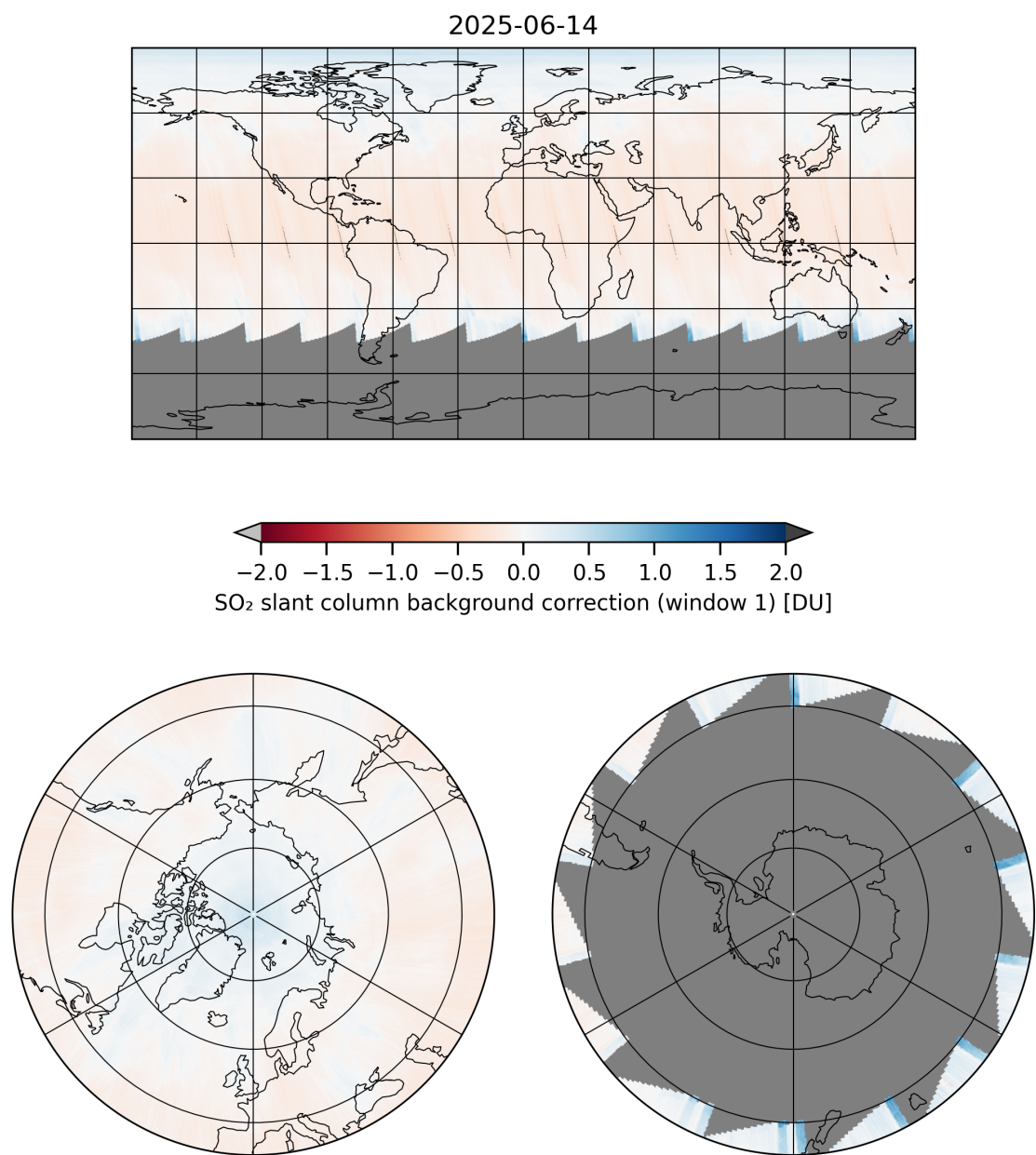


Figure 14: Map of “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15

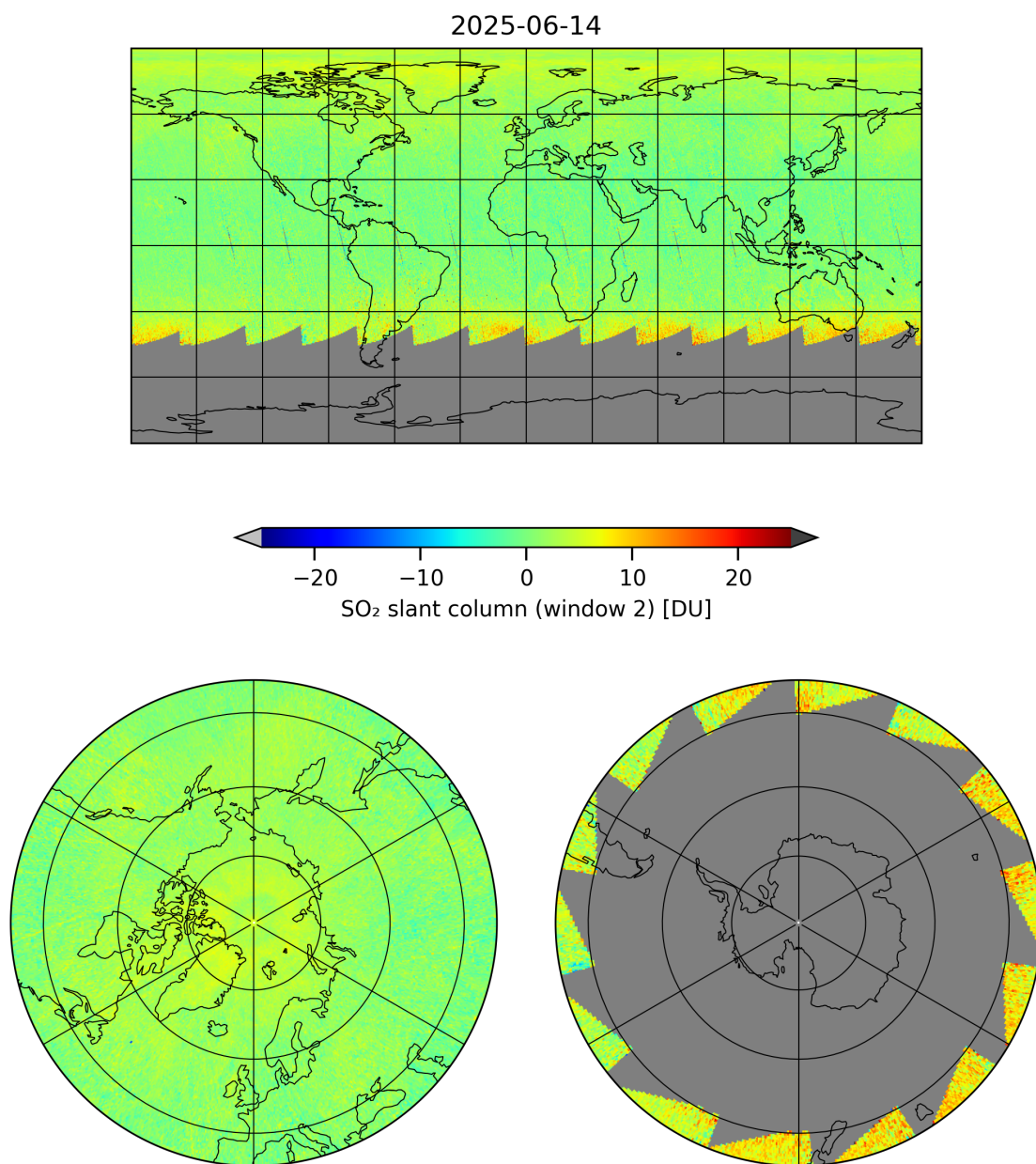


Figure 15: Map of “SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15

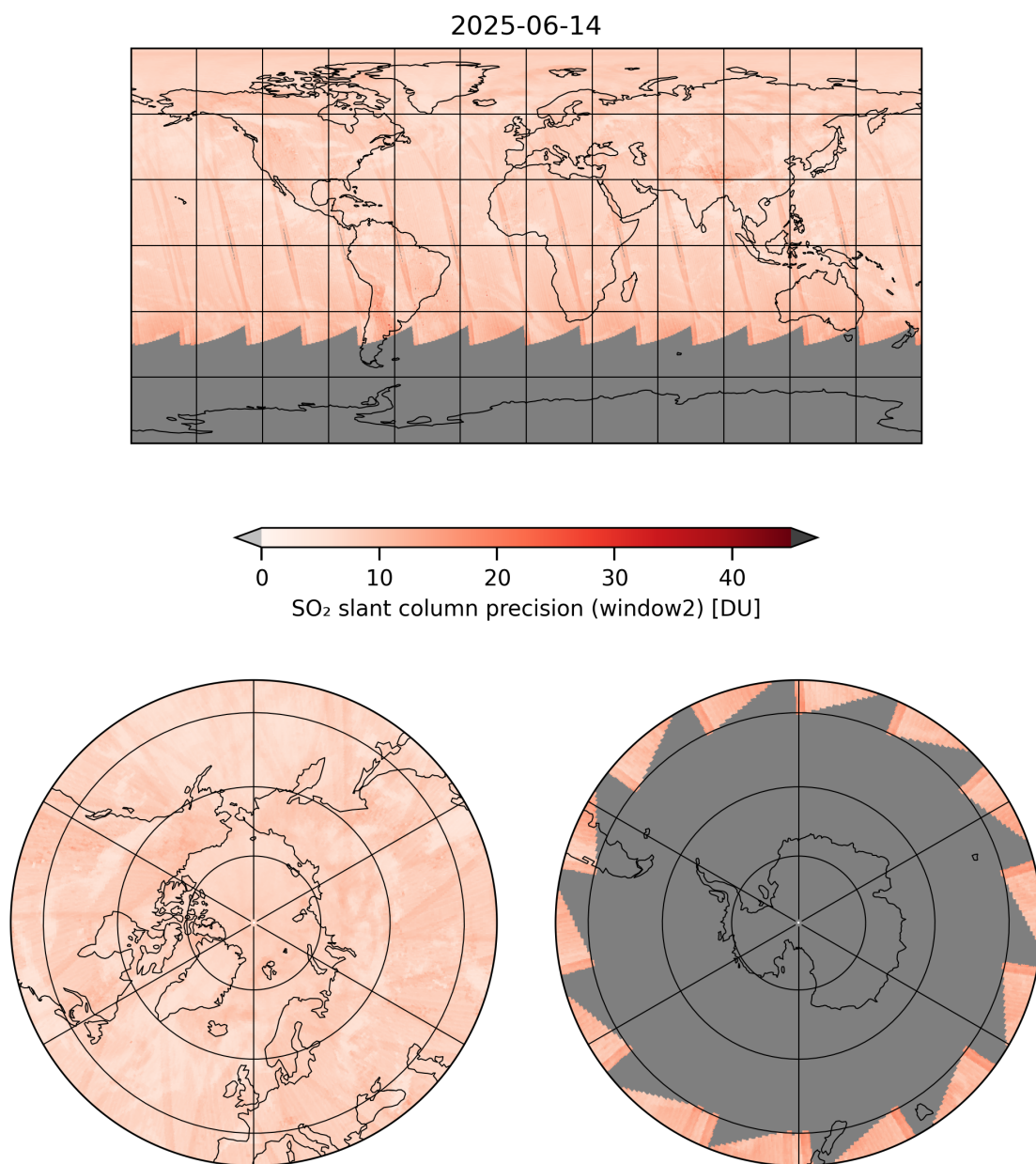


Figure 16: Map of “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15

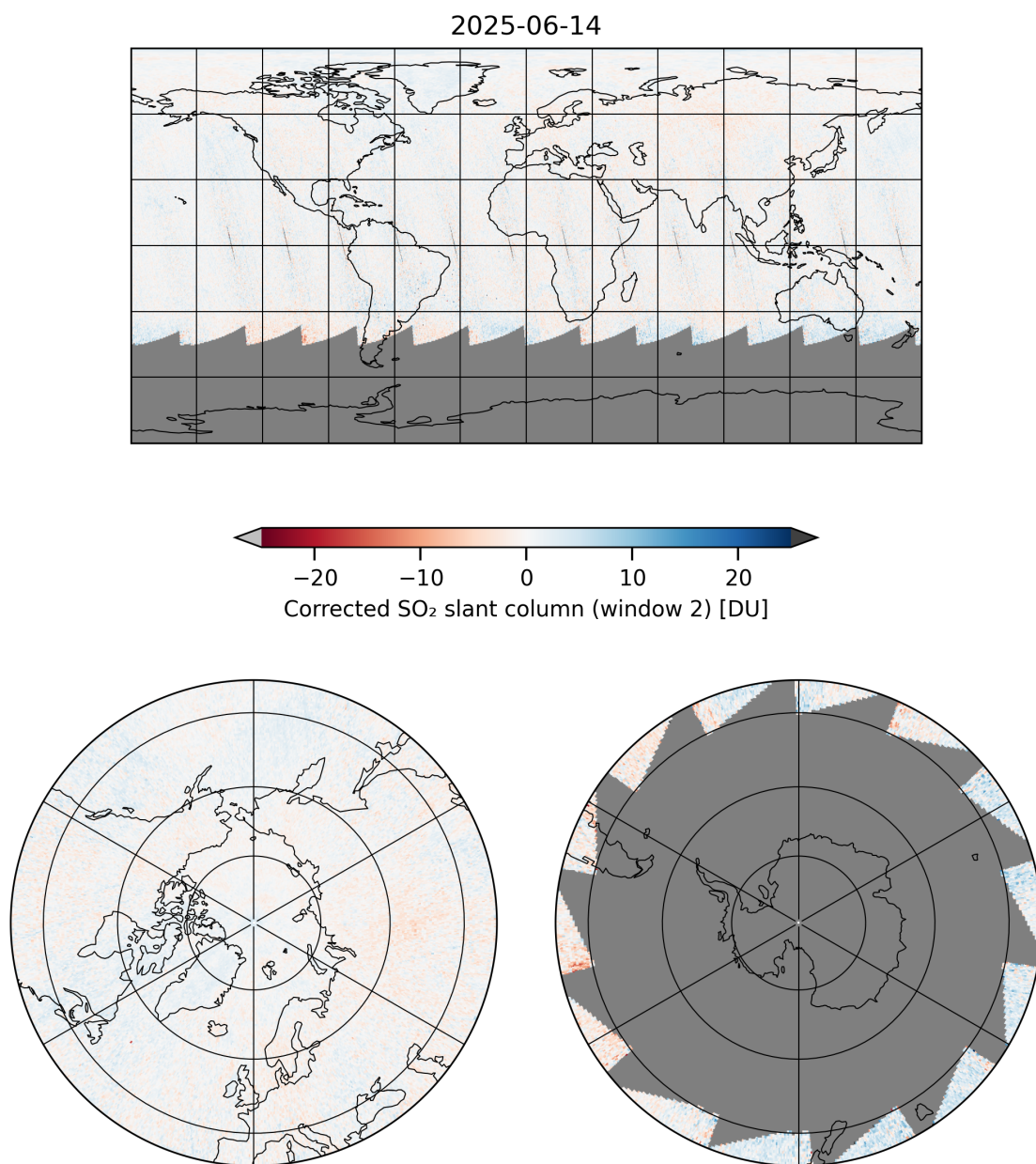


Figure 17: Map of “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15

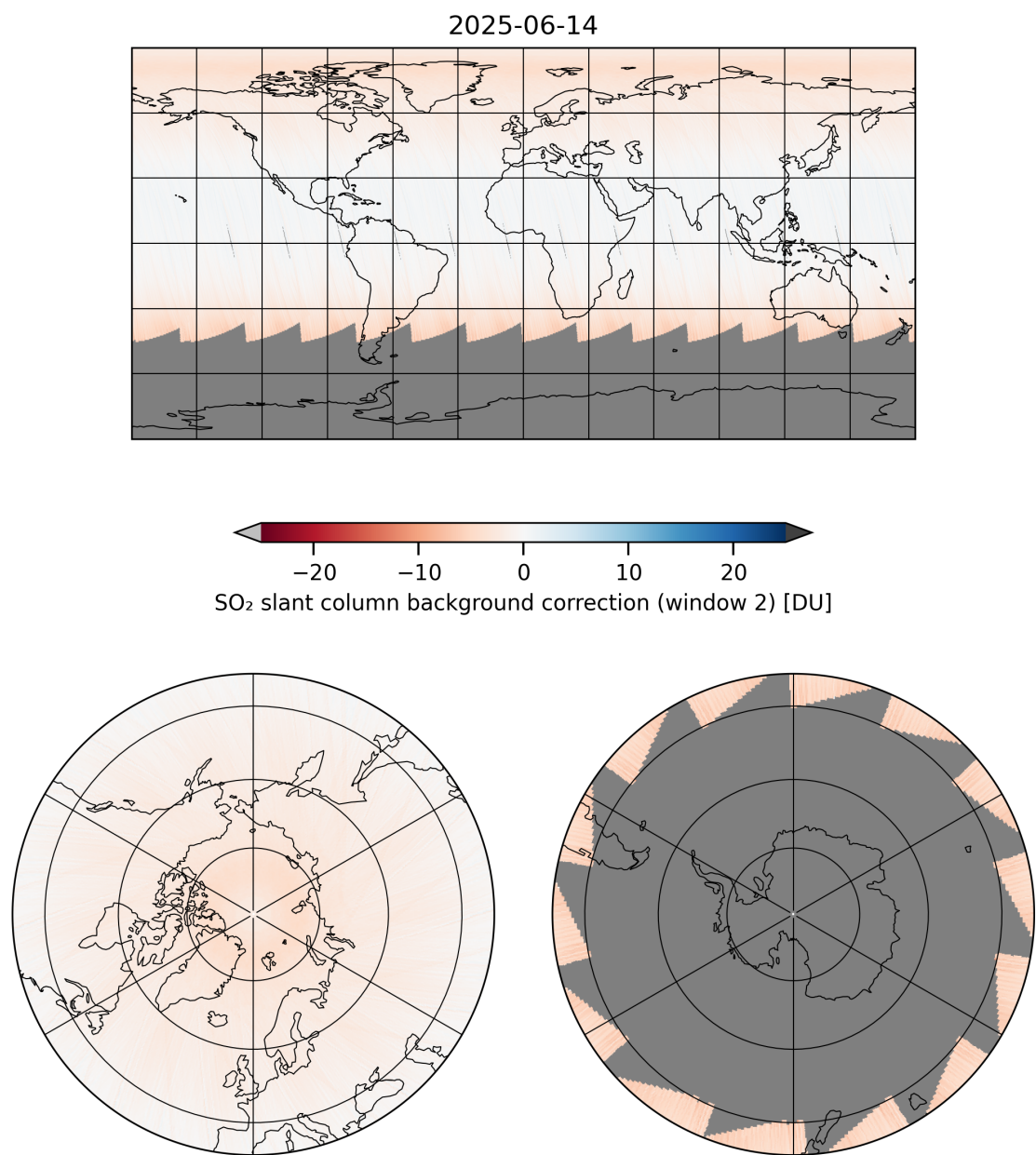


Figure 18: Map of “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15

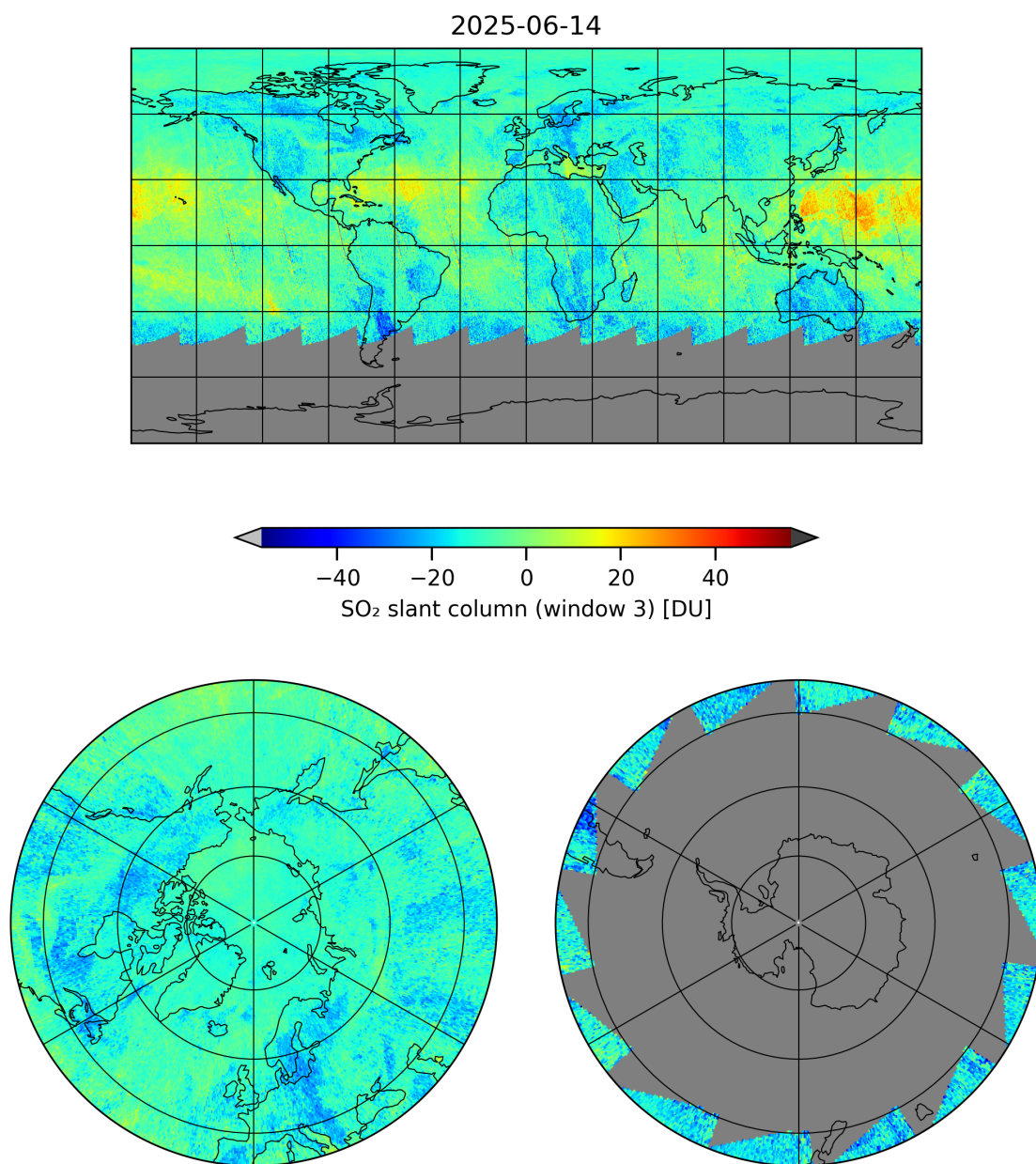


Figure 19: Map of “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15

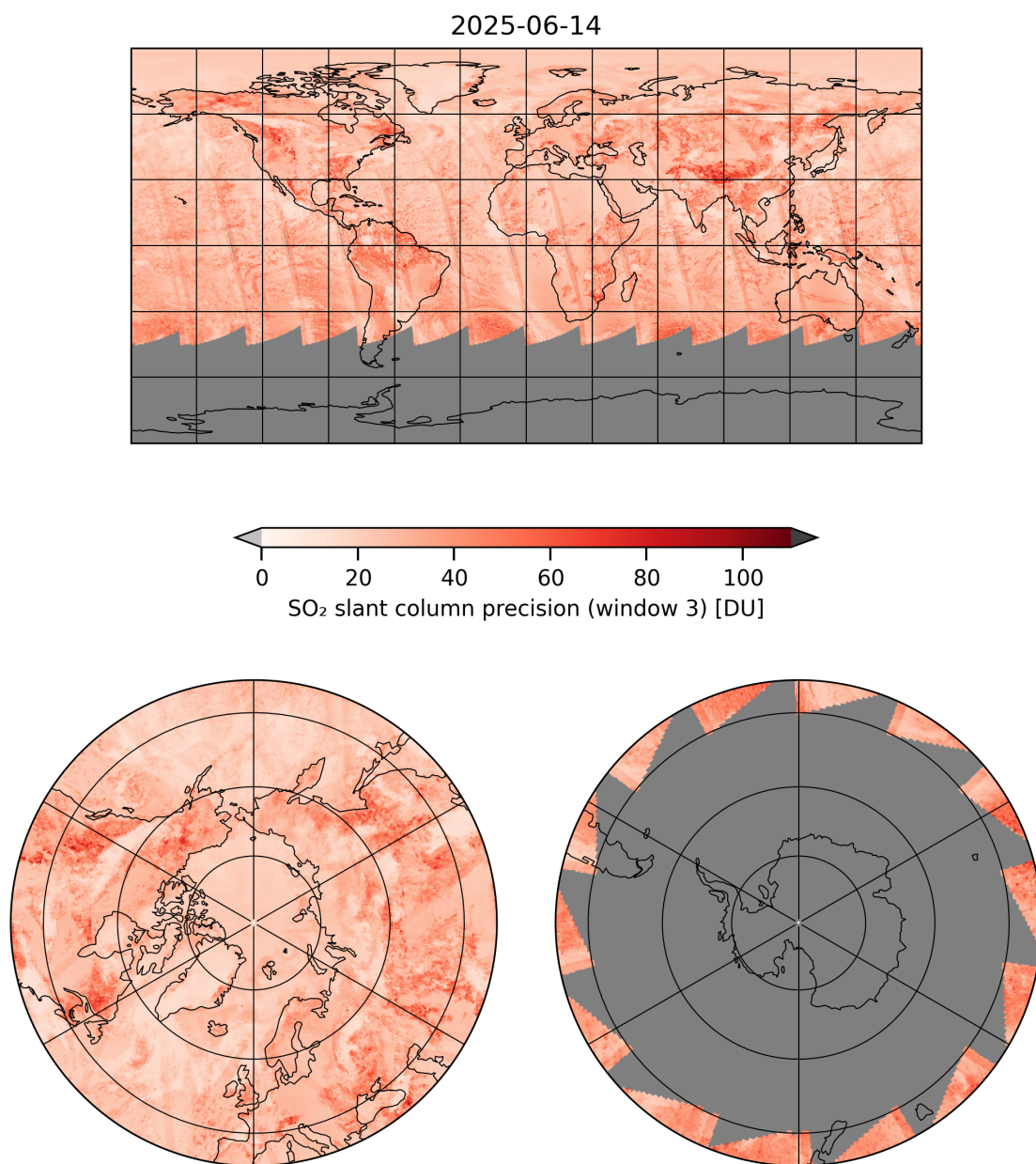


Figure 20: Map of “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15

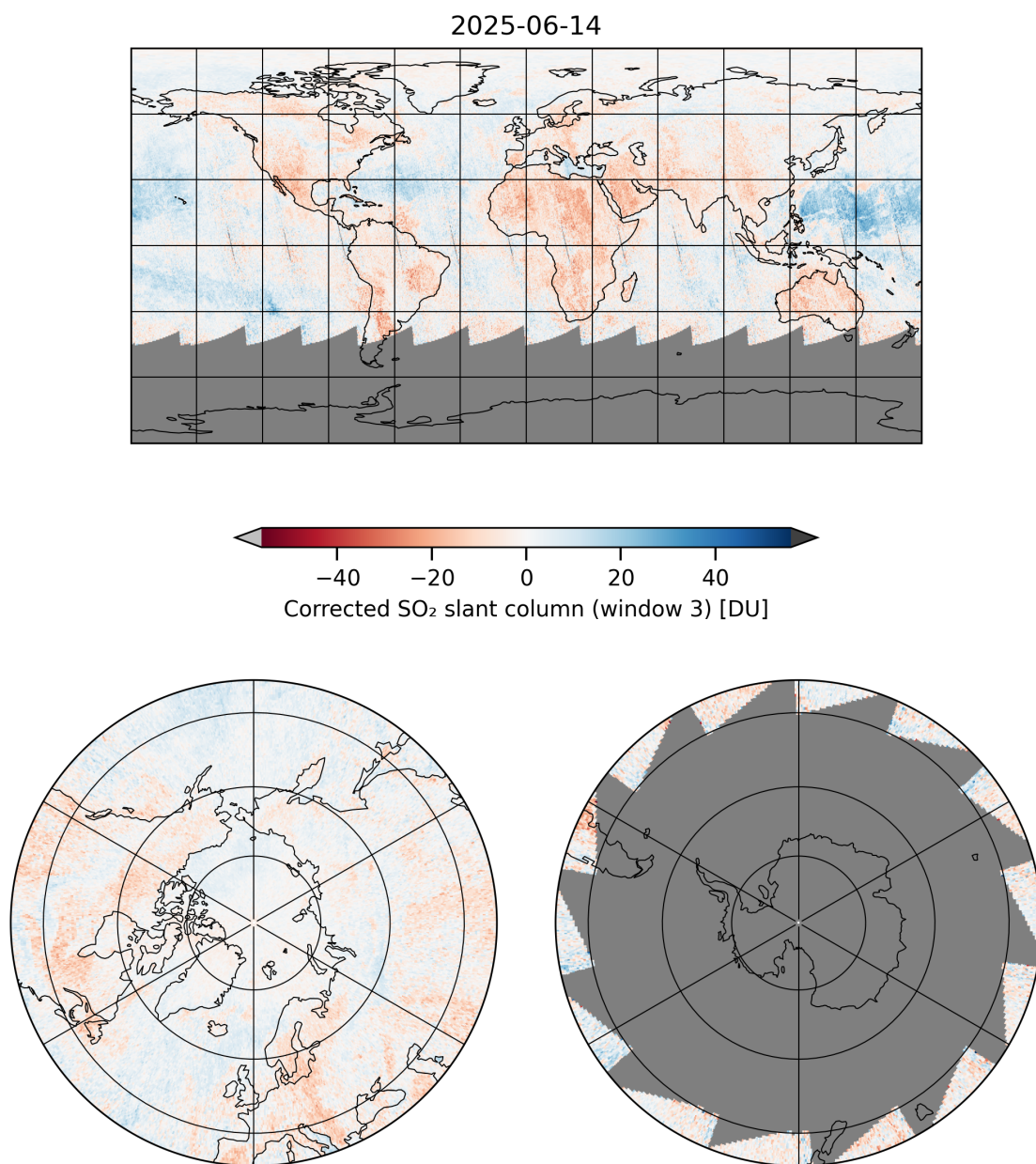


Figure 21: Map of “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15

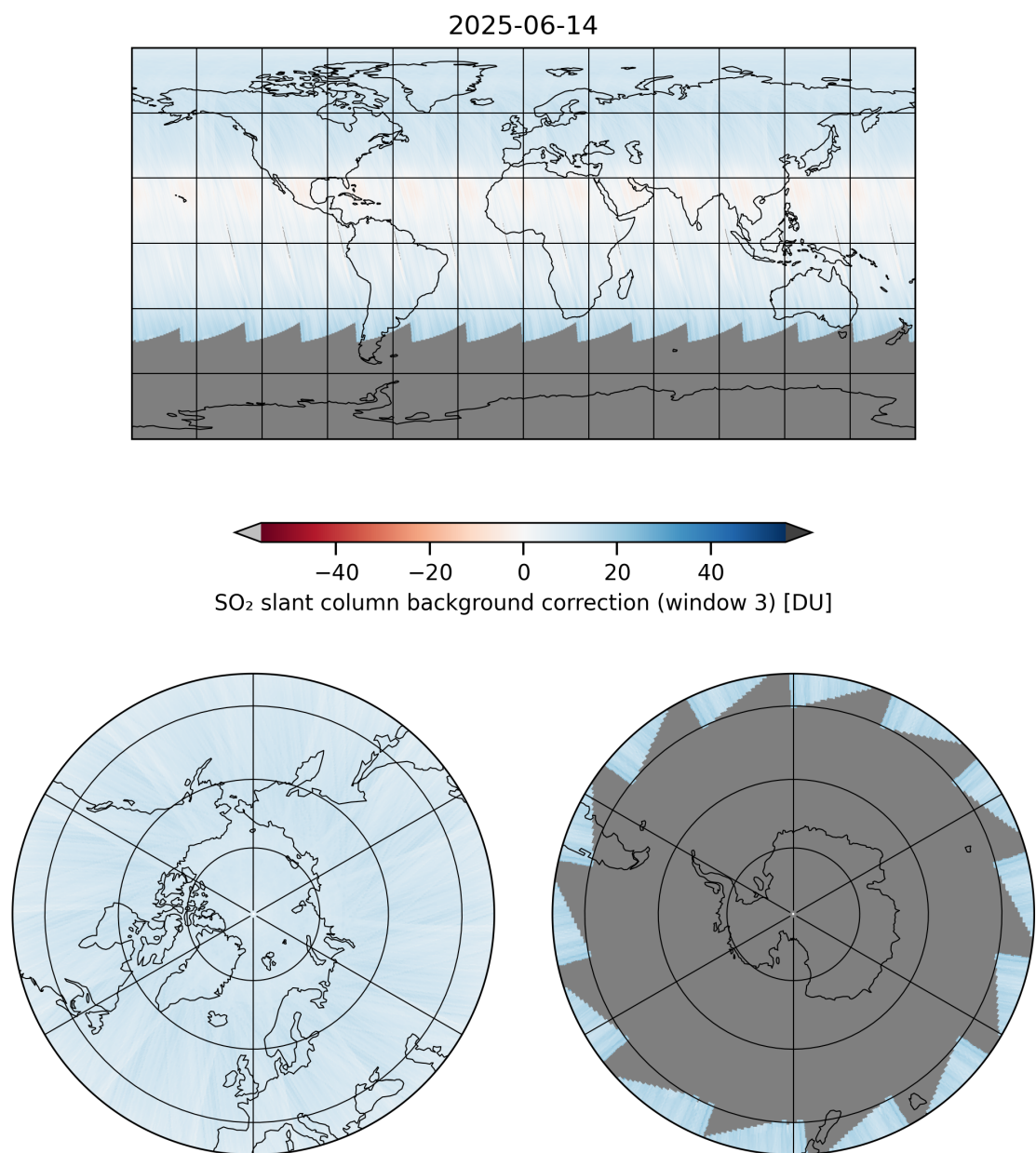


Figure 22: Map of “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15

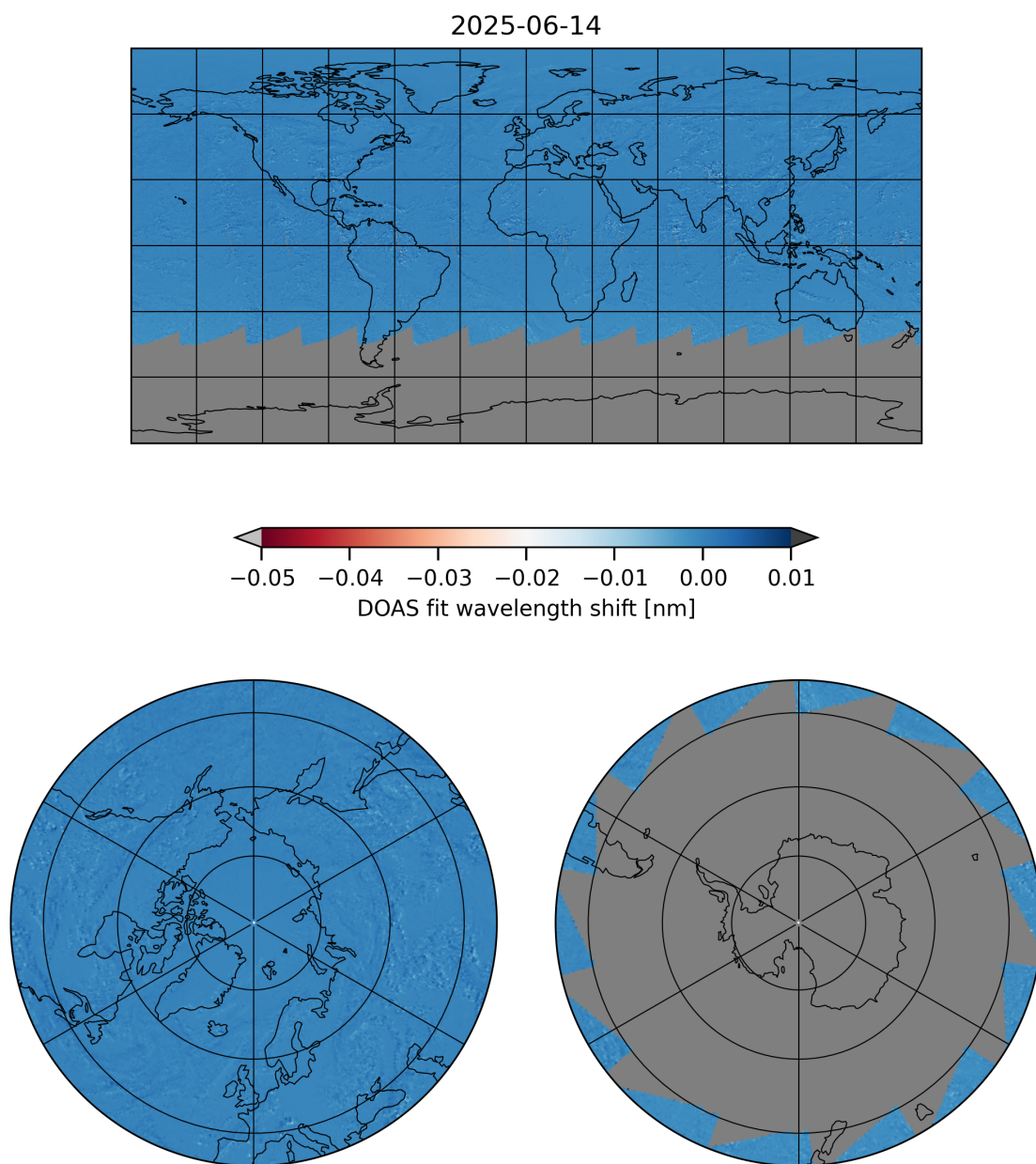


Figure 23: Map of “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15

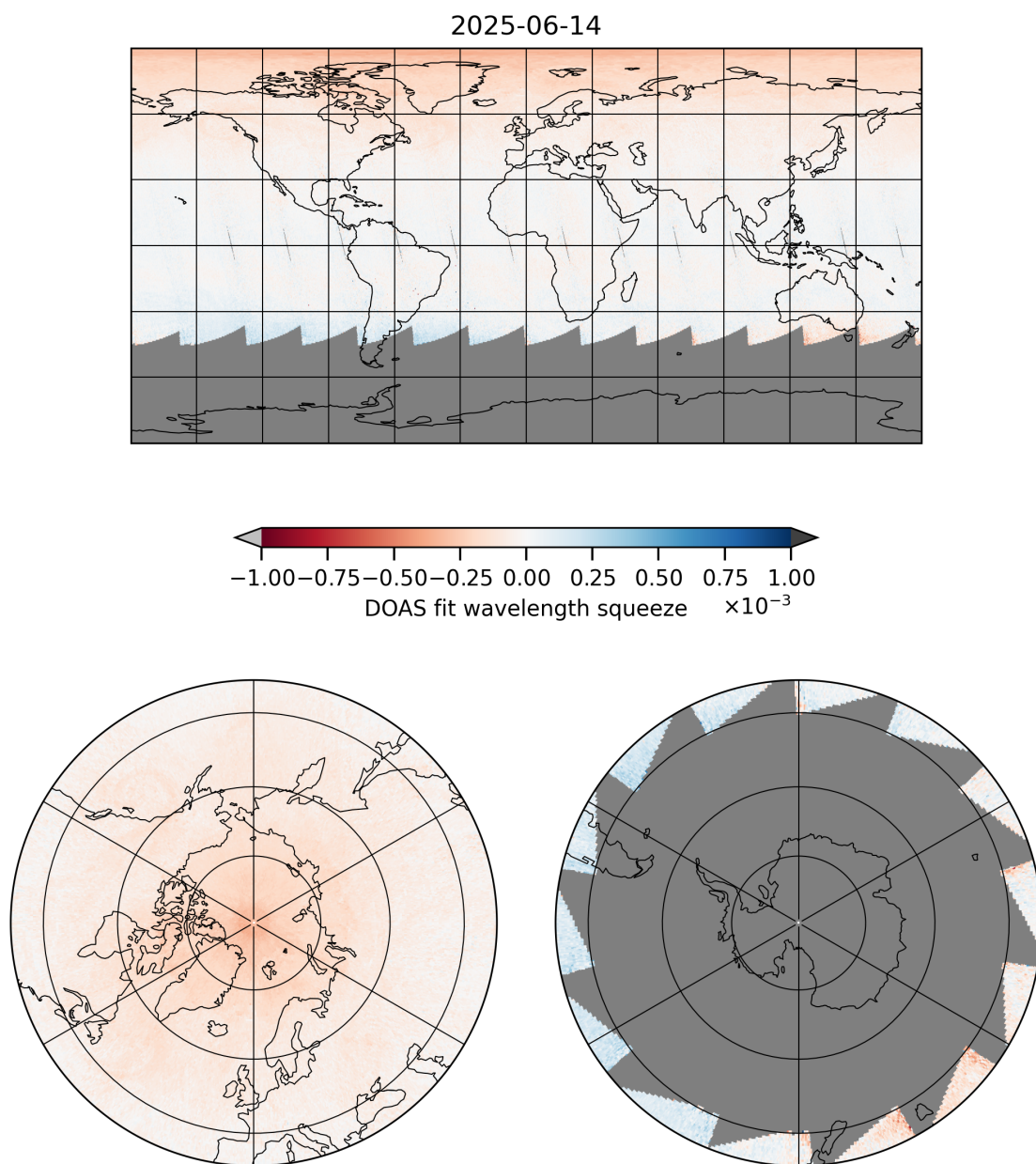


Figure 24: Map of “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15

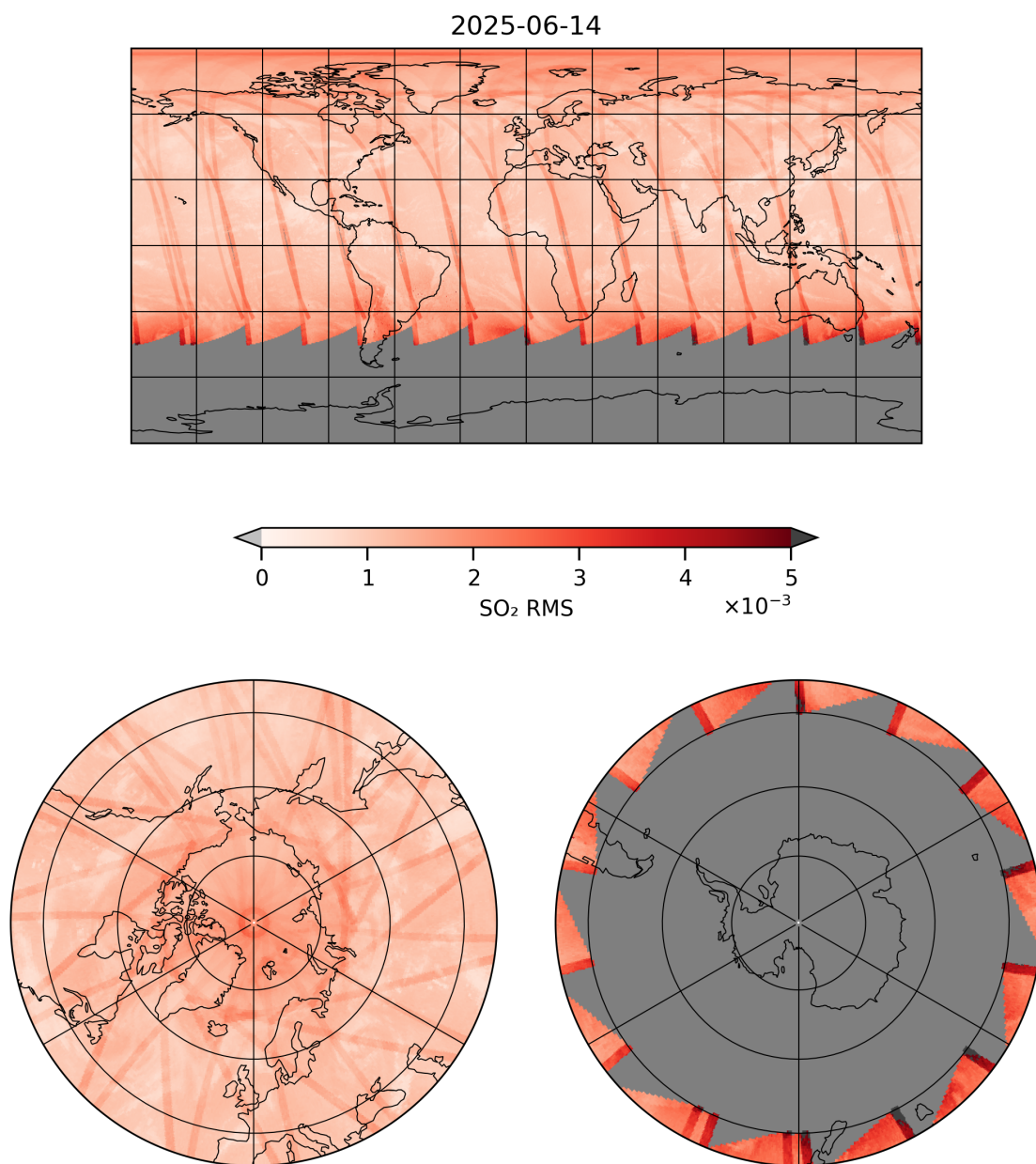


Figure 25: Map of “SO₂ RMS” for 2025-06-13 to 2025-06-15

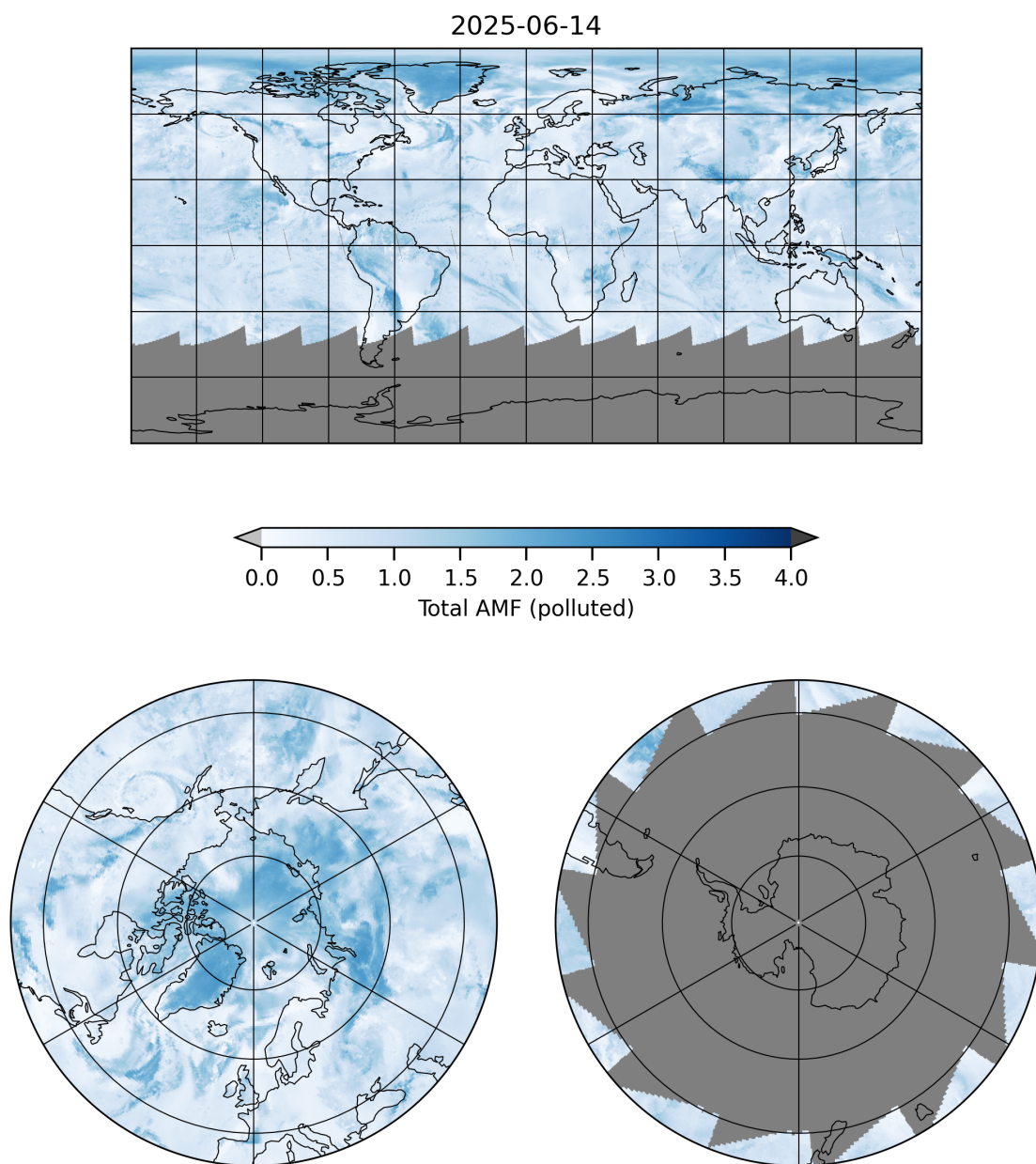


Figure 26: Map of “Total AMF (polluted)” for 2025-06-13 to 2025-06-15

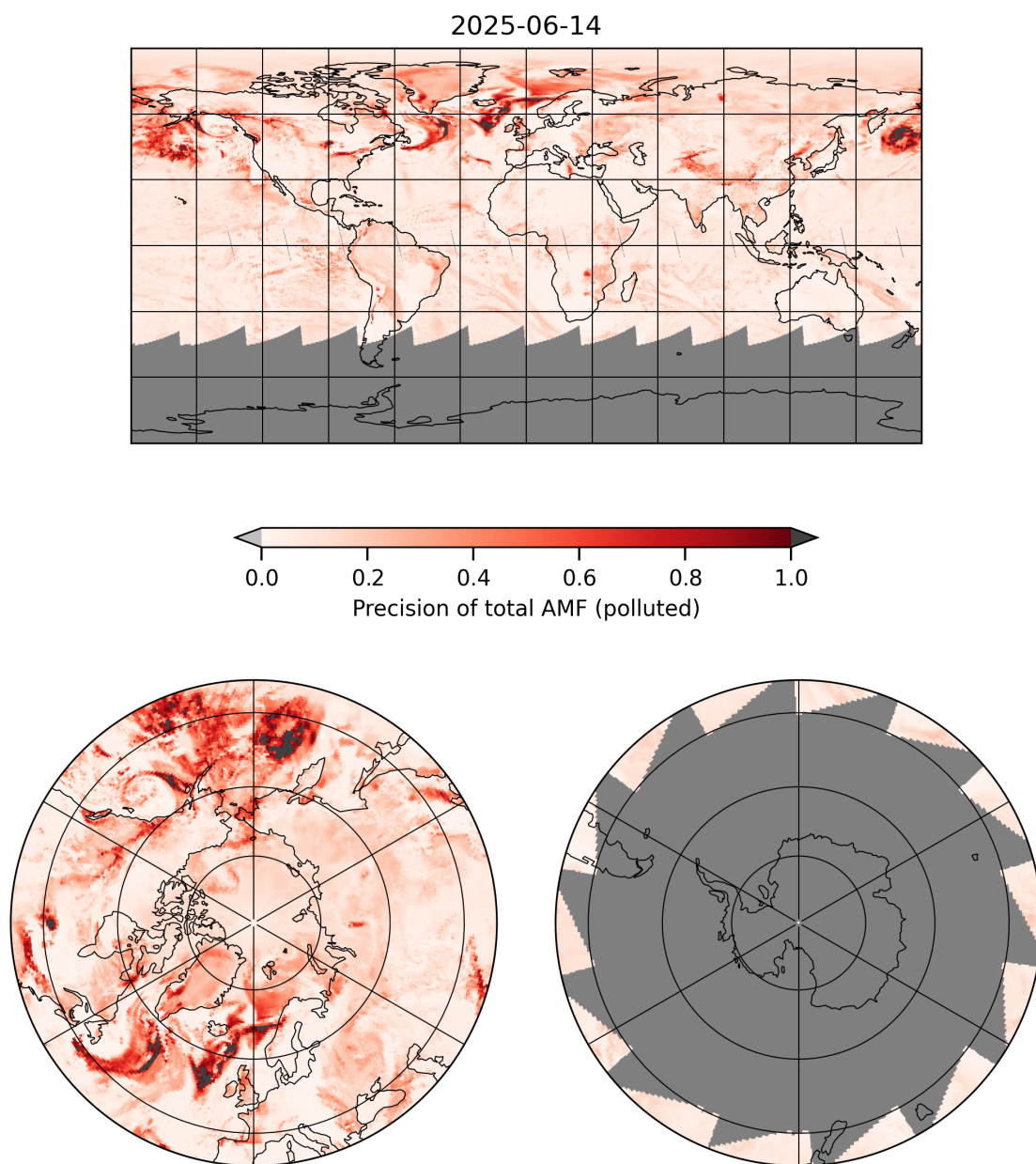


Figure 27: Map of “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15

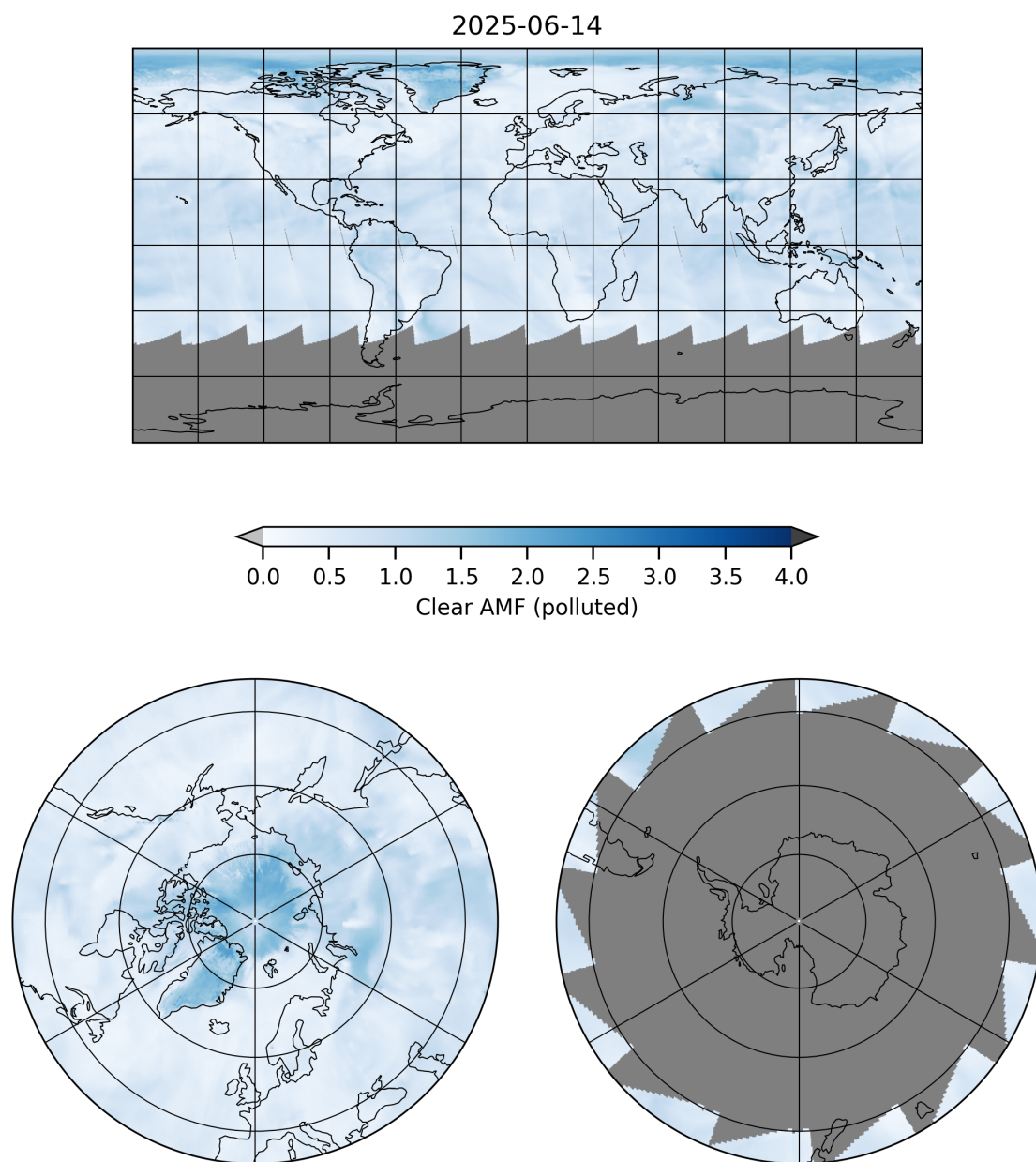


Figure 28: Map of “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15

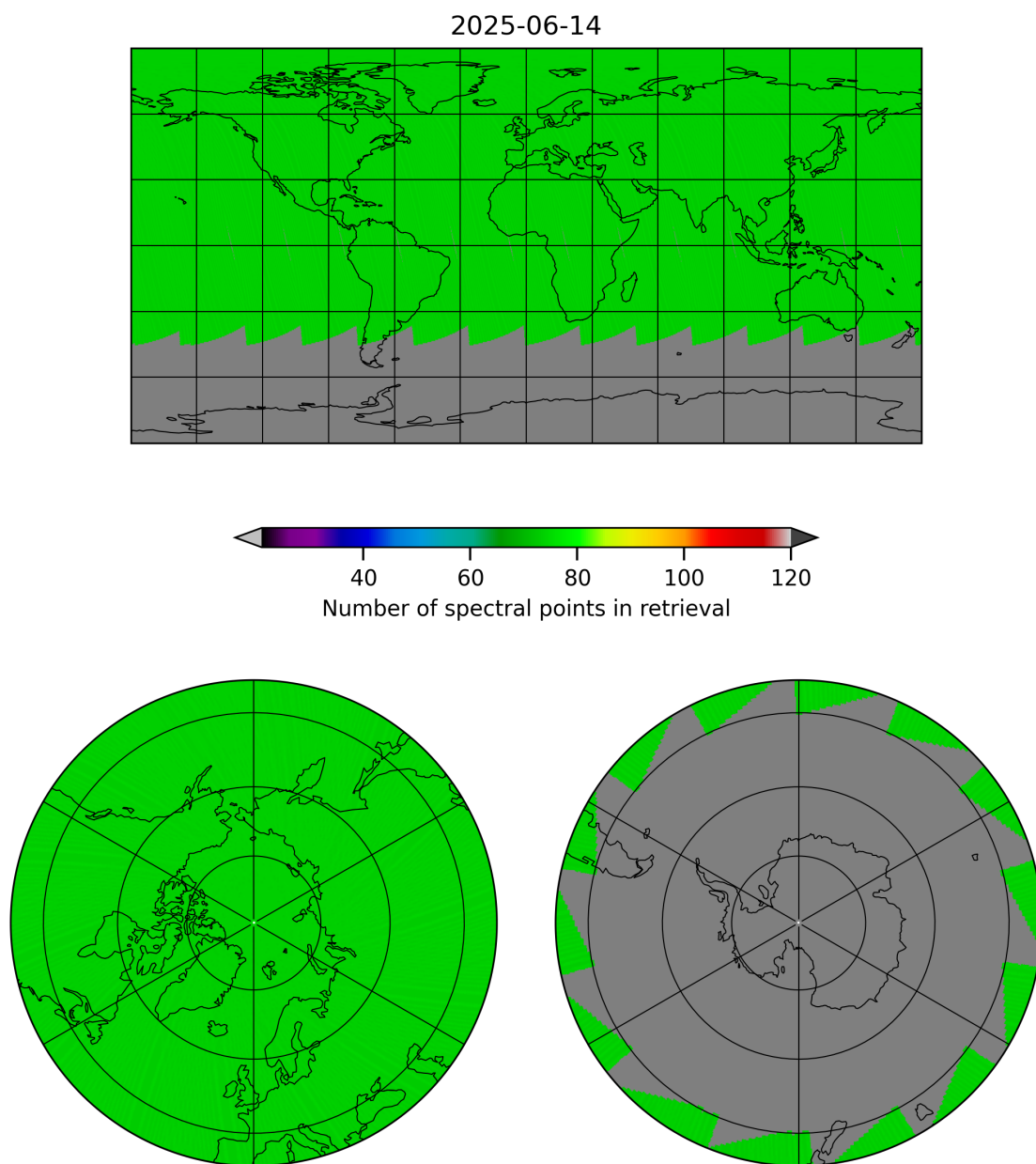


Figure 29: Map of “Number of spectral points in retrieval” for 2025-06-13 to 2025-06-15

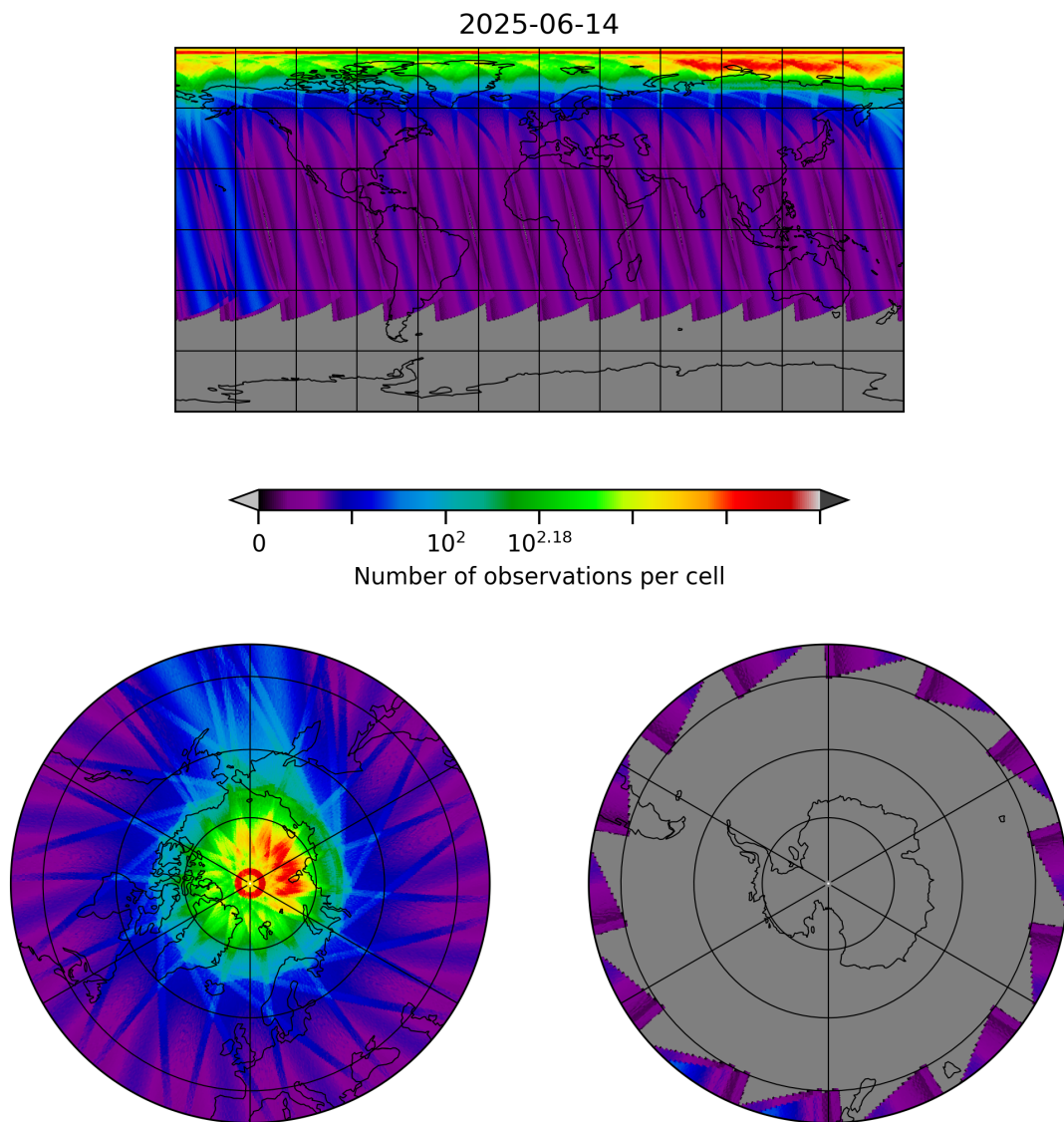


Figure 30: Map of the number of observations for 2025-06-13 to 2025-06-15

7 Zonal average

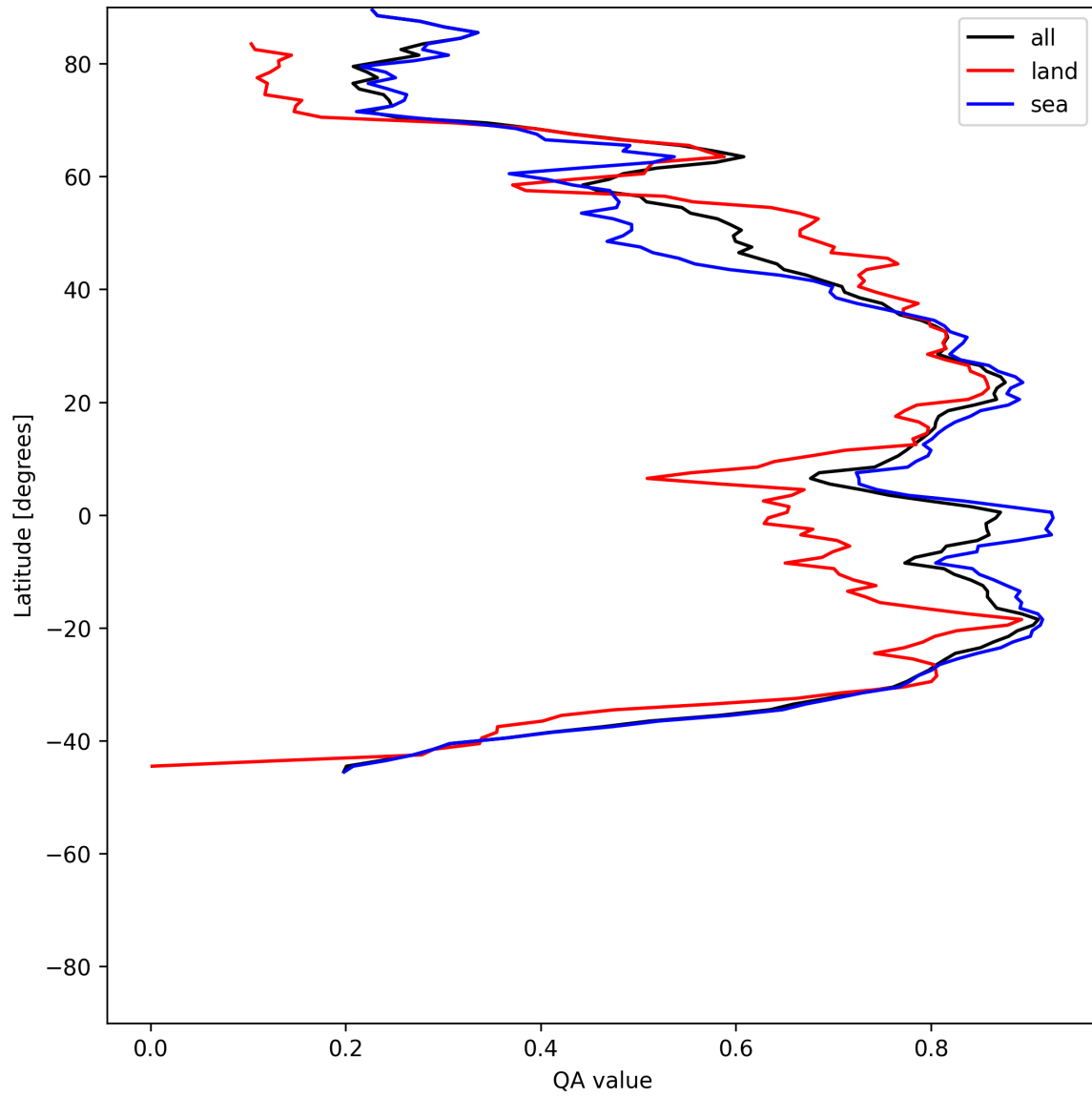


Figure 31: Zonal average of “QA value” for 2025-06-13 to 2025-06-15.

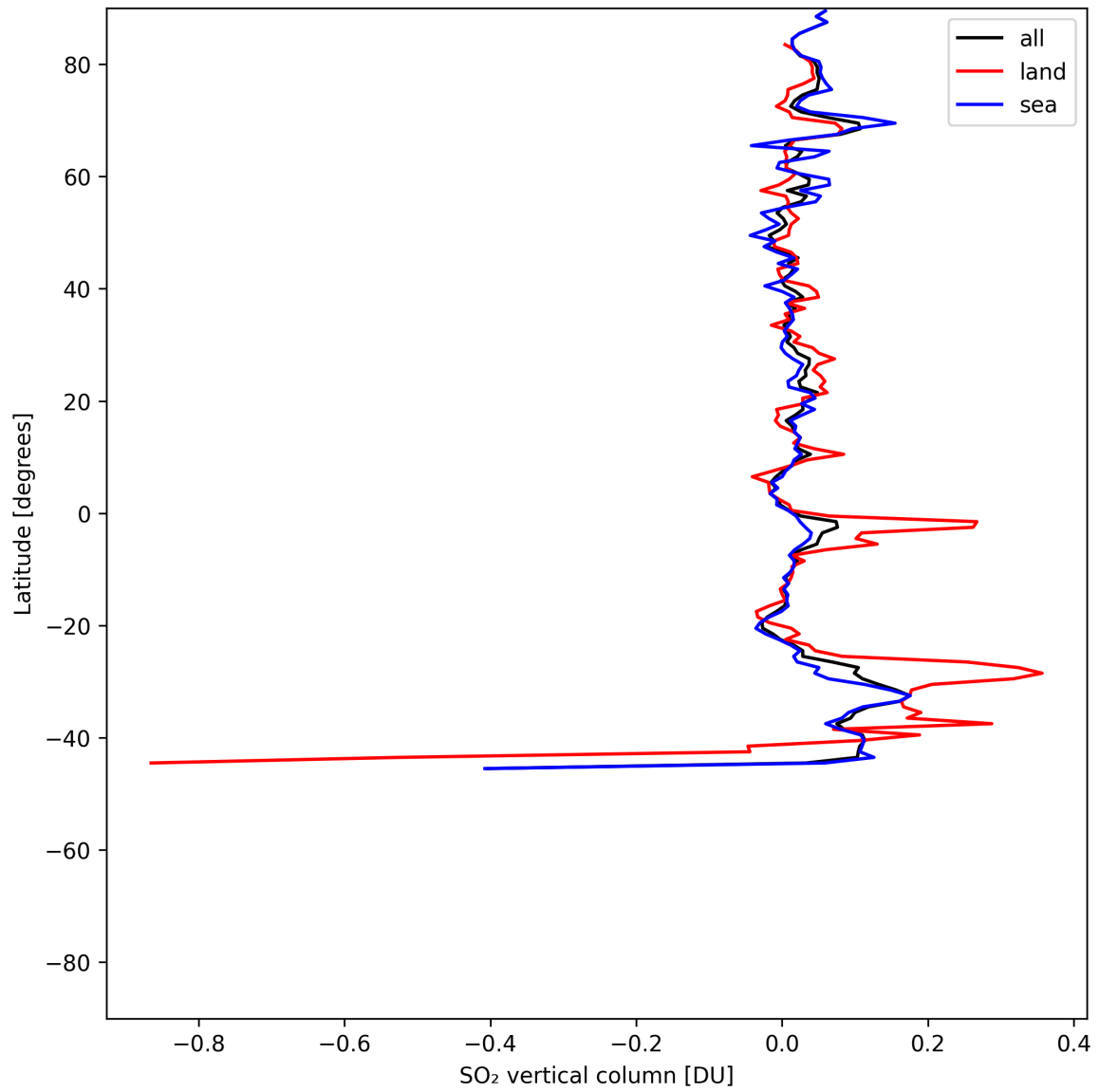


Figure 32: Zonal average of “SO₂ vertical column” for 2025-06-13 to 2025-06-15.

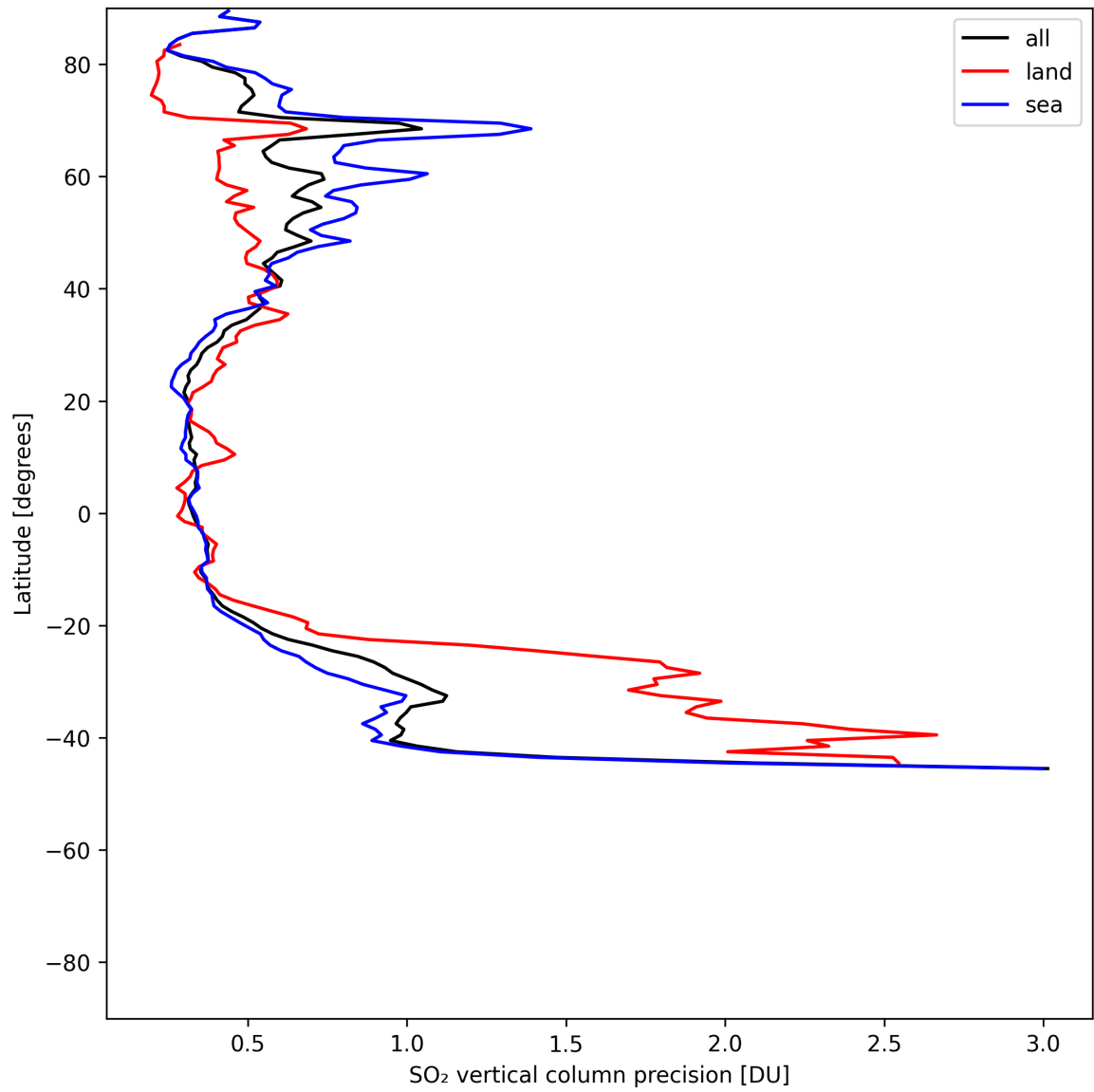


Figure 33: Zonal average of “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15.

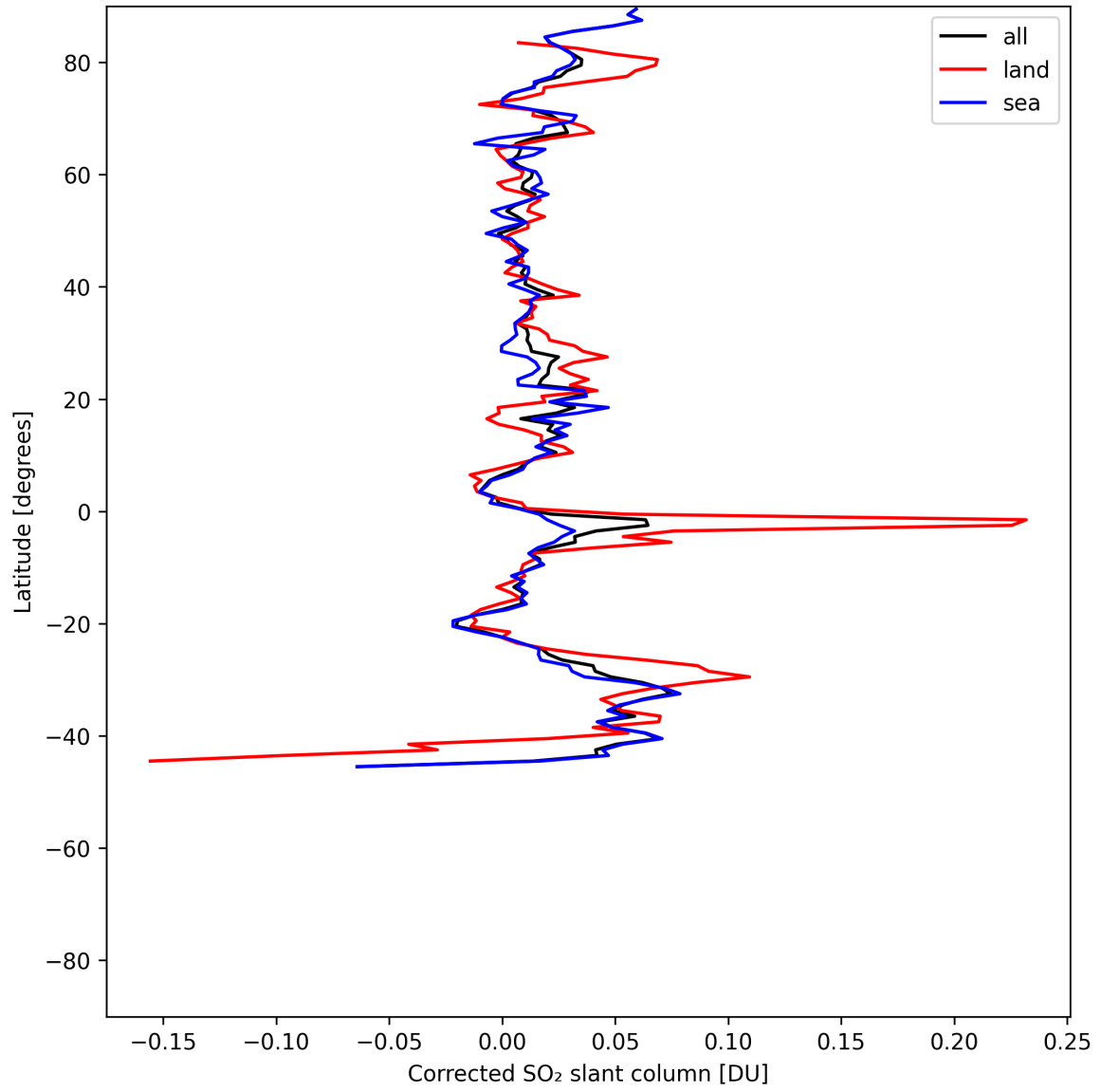


Figure 34: Zonal average of “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15.

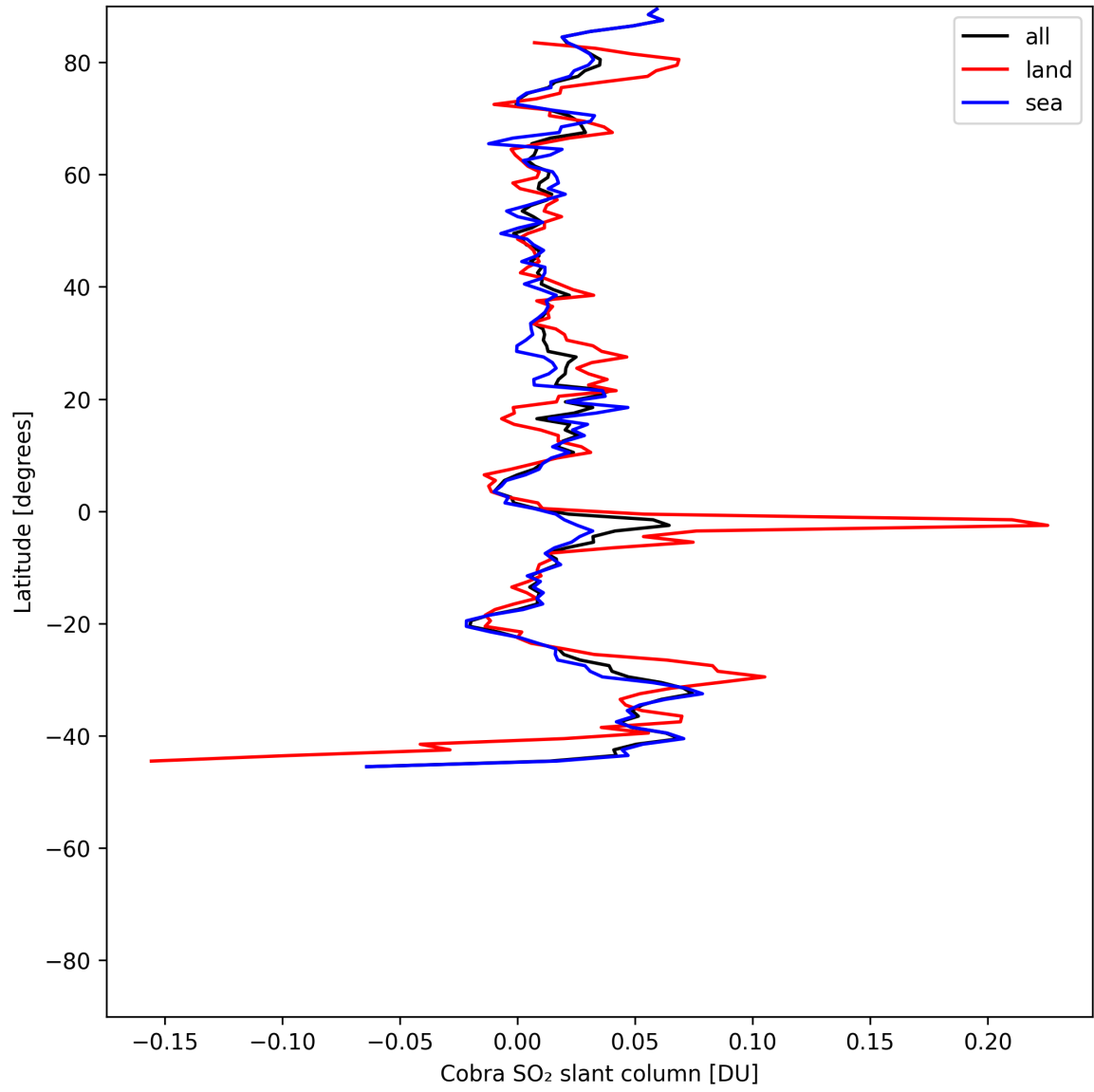


Figure 35: Zonal average of “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

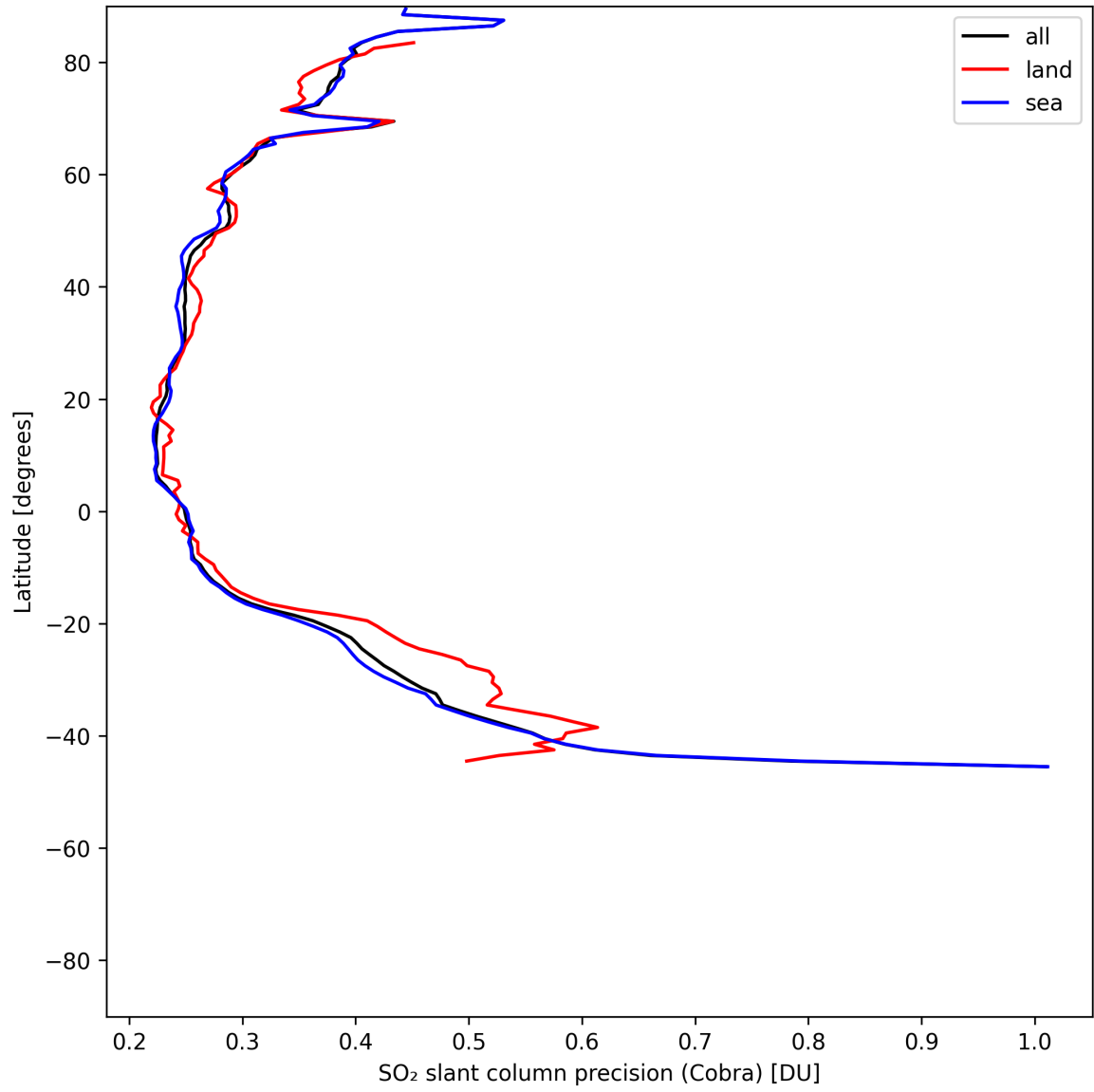


Figure 36: Zonal average of "SO₂ slant column precision (Cobra)" for 2025-06-13 to 2025-06-15.

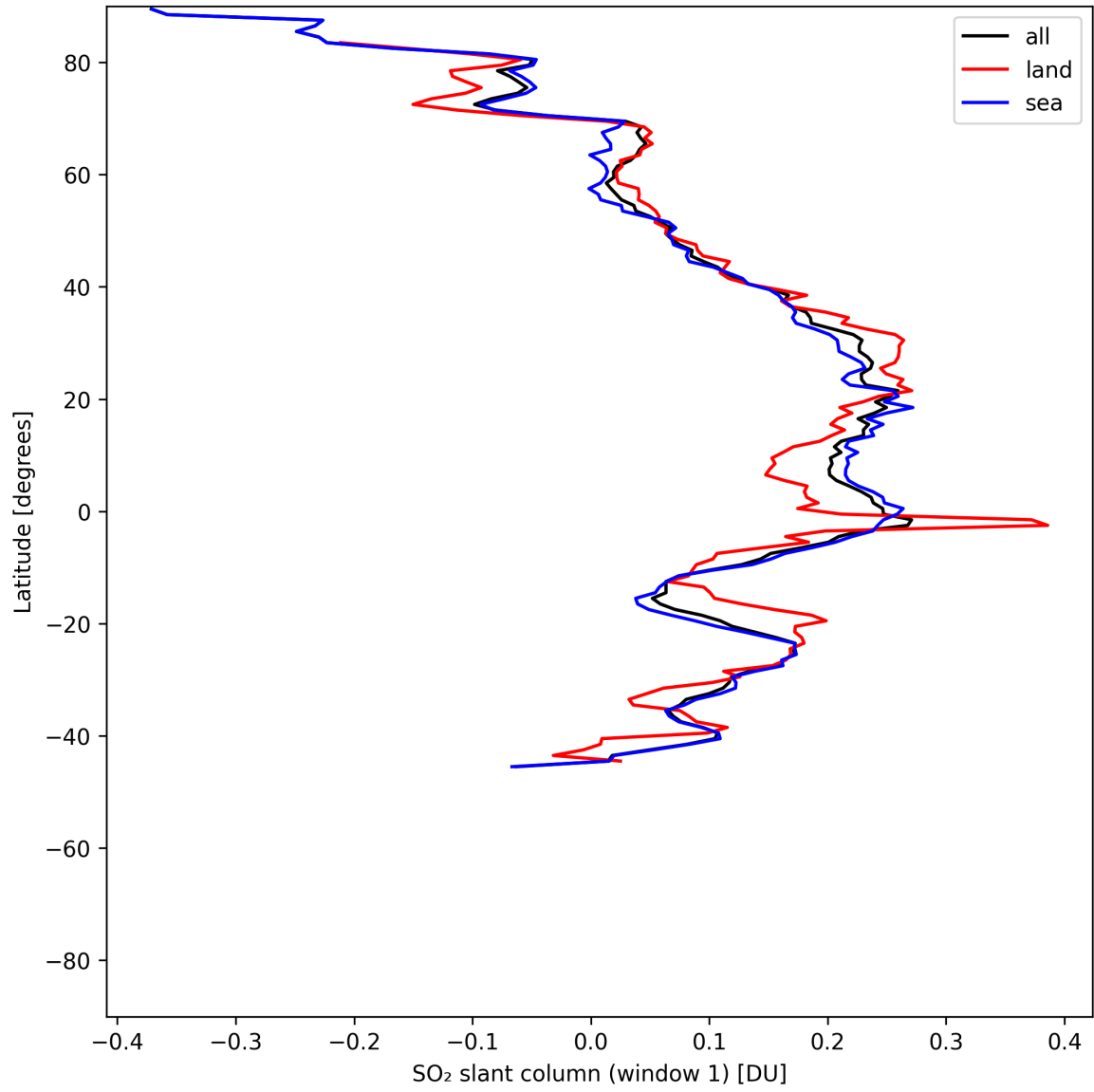


Figure 37: Zonal average of “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

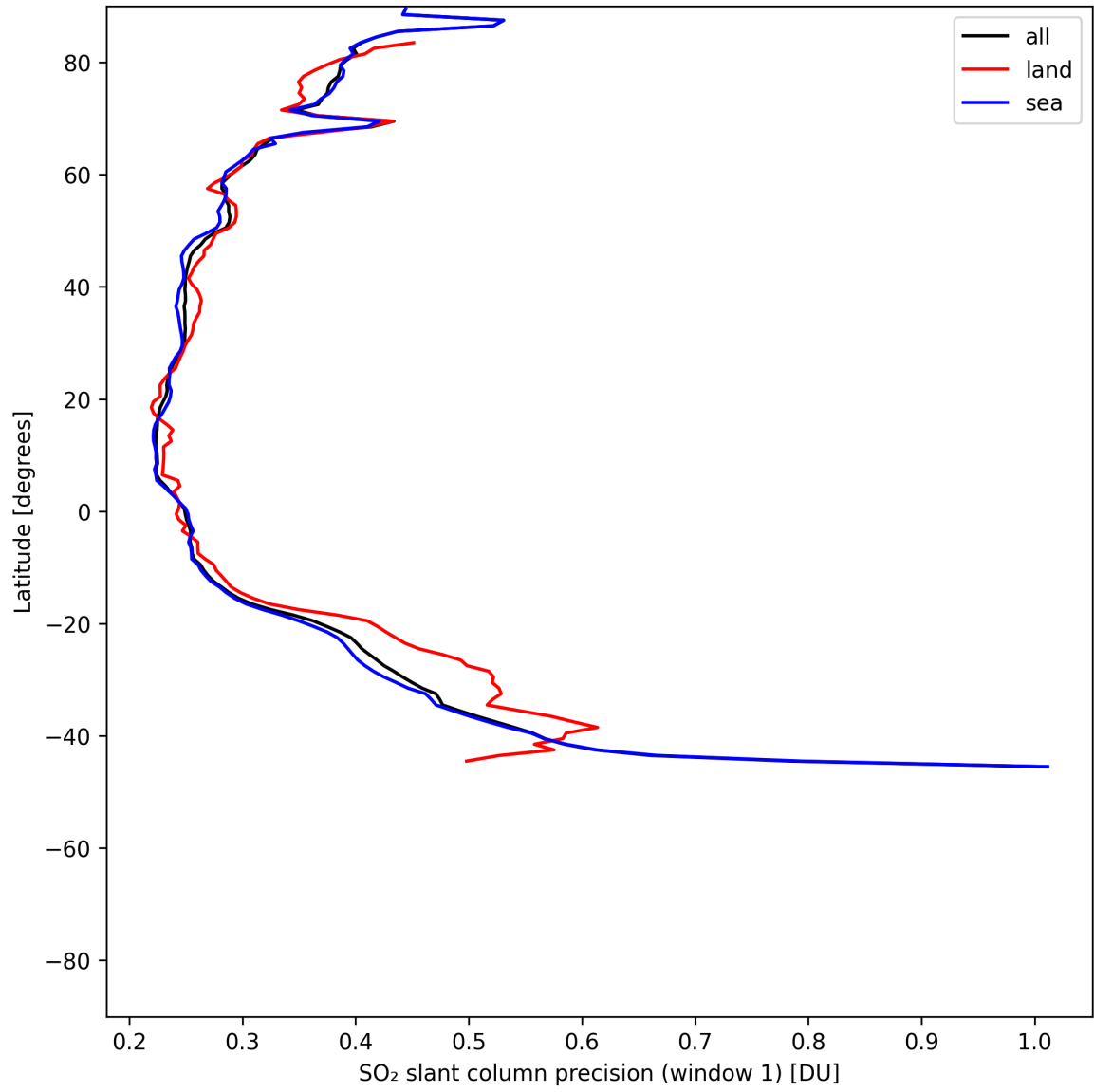


Figure 38: Zonal average of “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

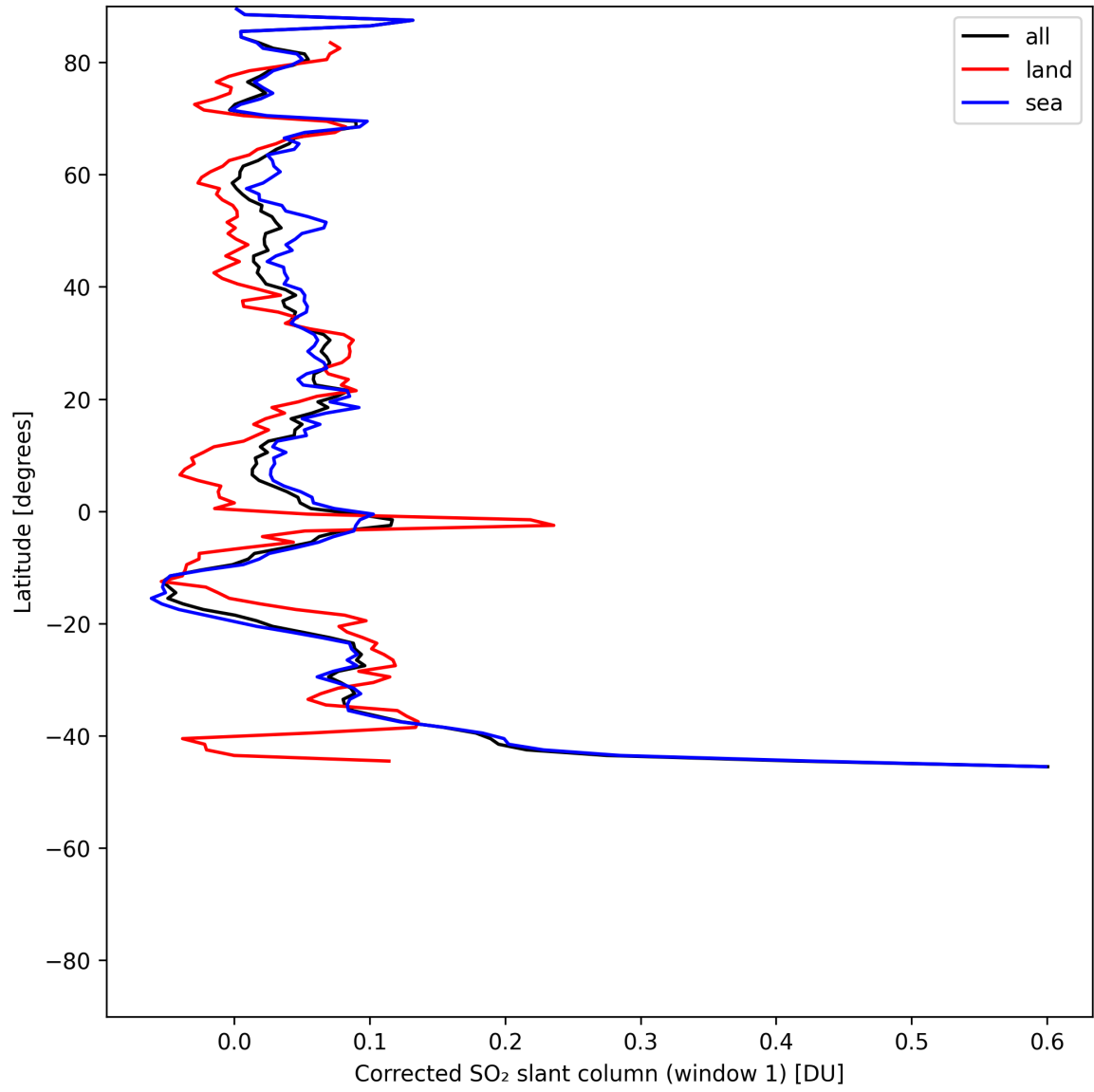


Figure 39: Zonal average of “Corrected SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

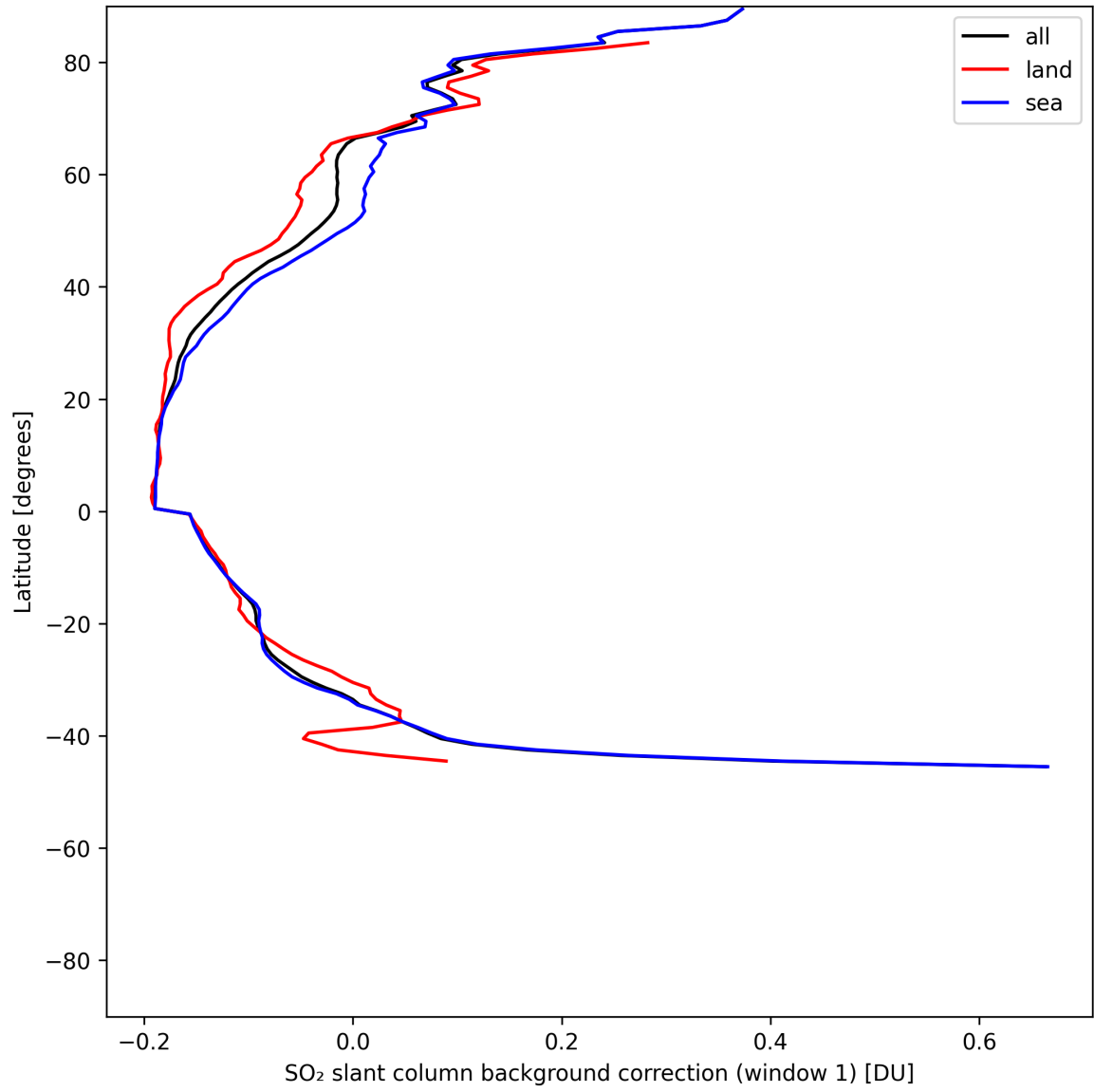


Figure 40: Zonal average of “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

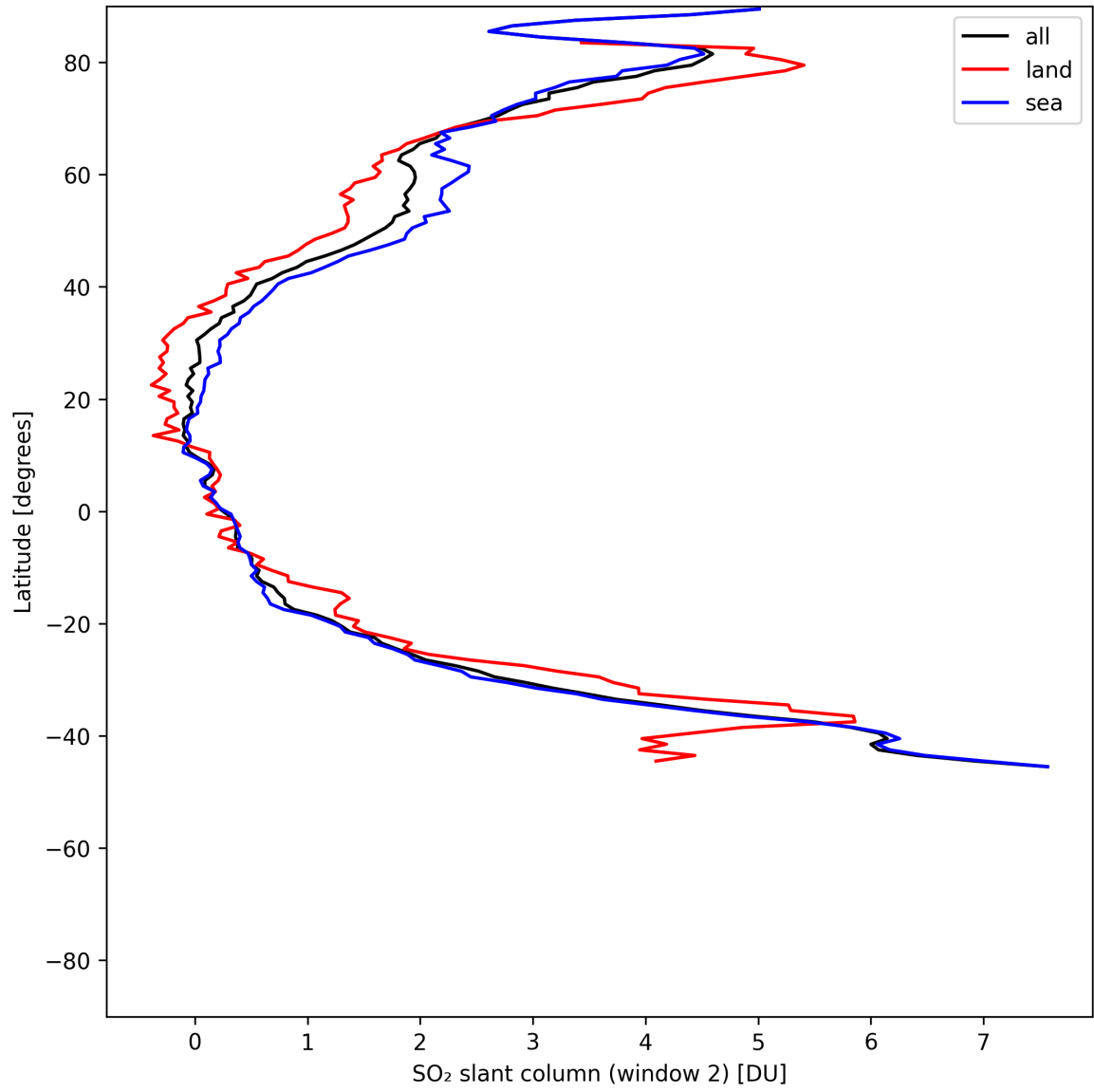


Figure 41: Zonal average of “SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

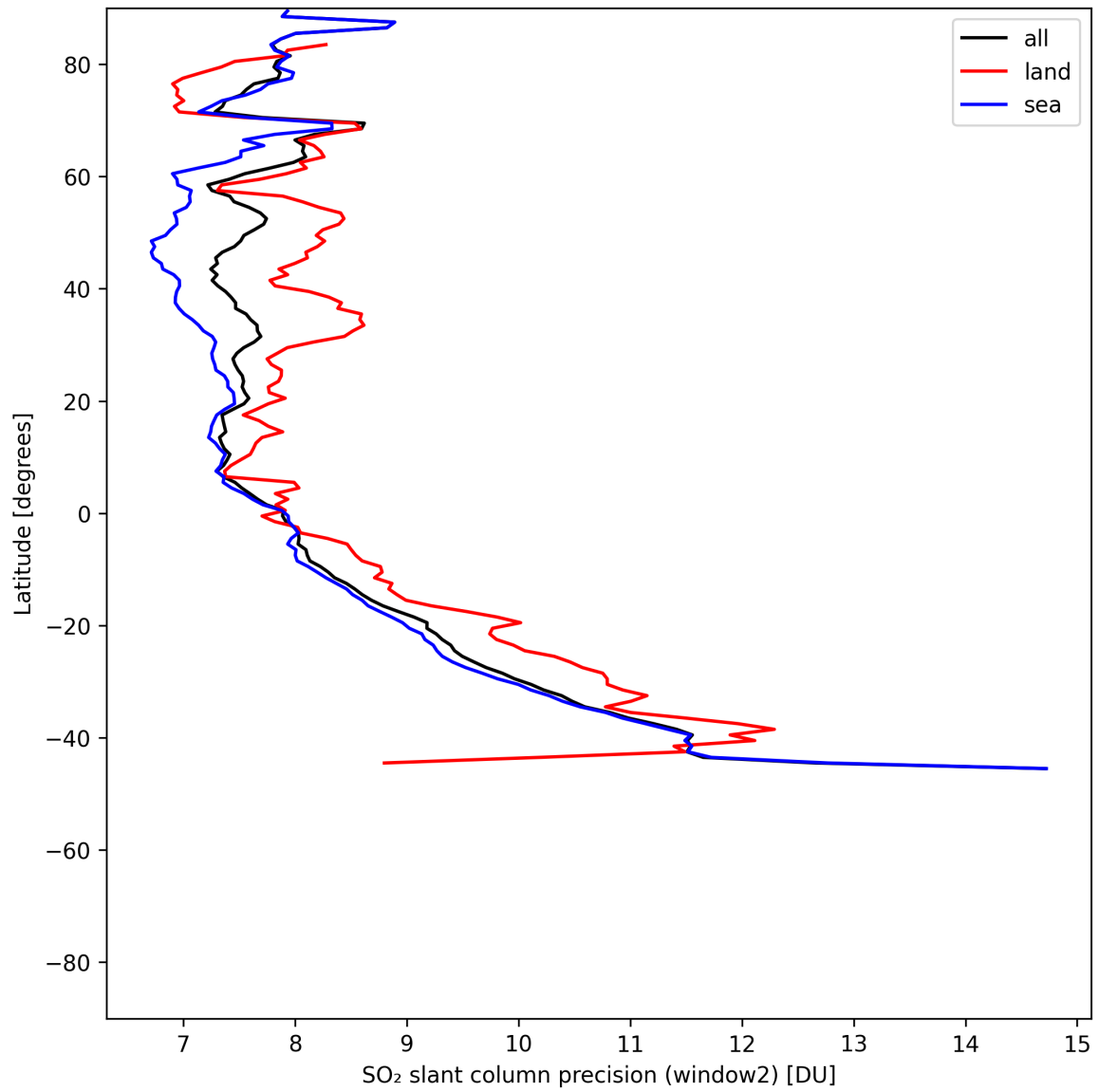


Figure 42: Zonal average of “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

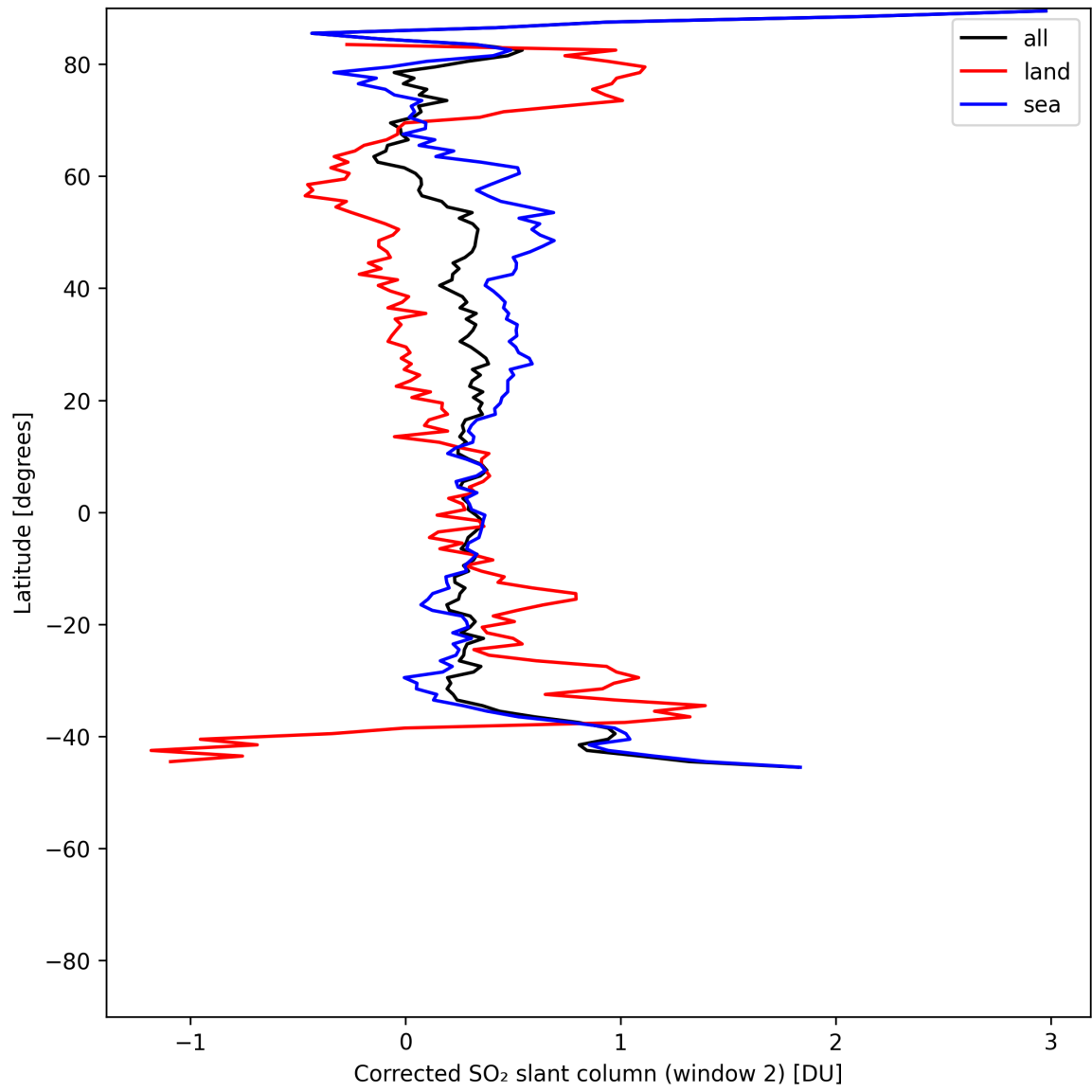


Figure 43: Zonal average of “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

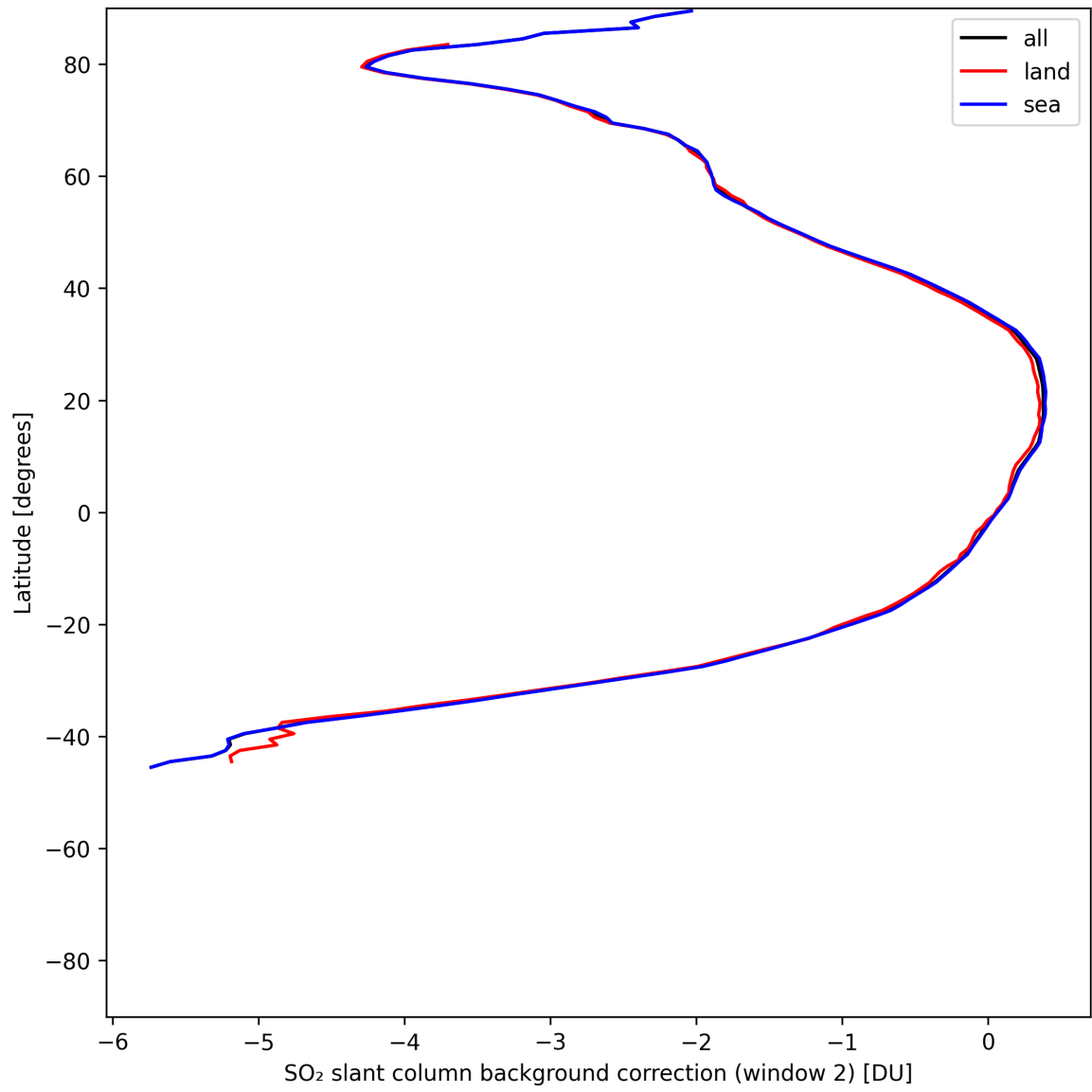


Figure 44: Zonal average of “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

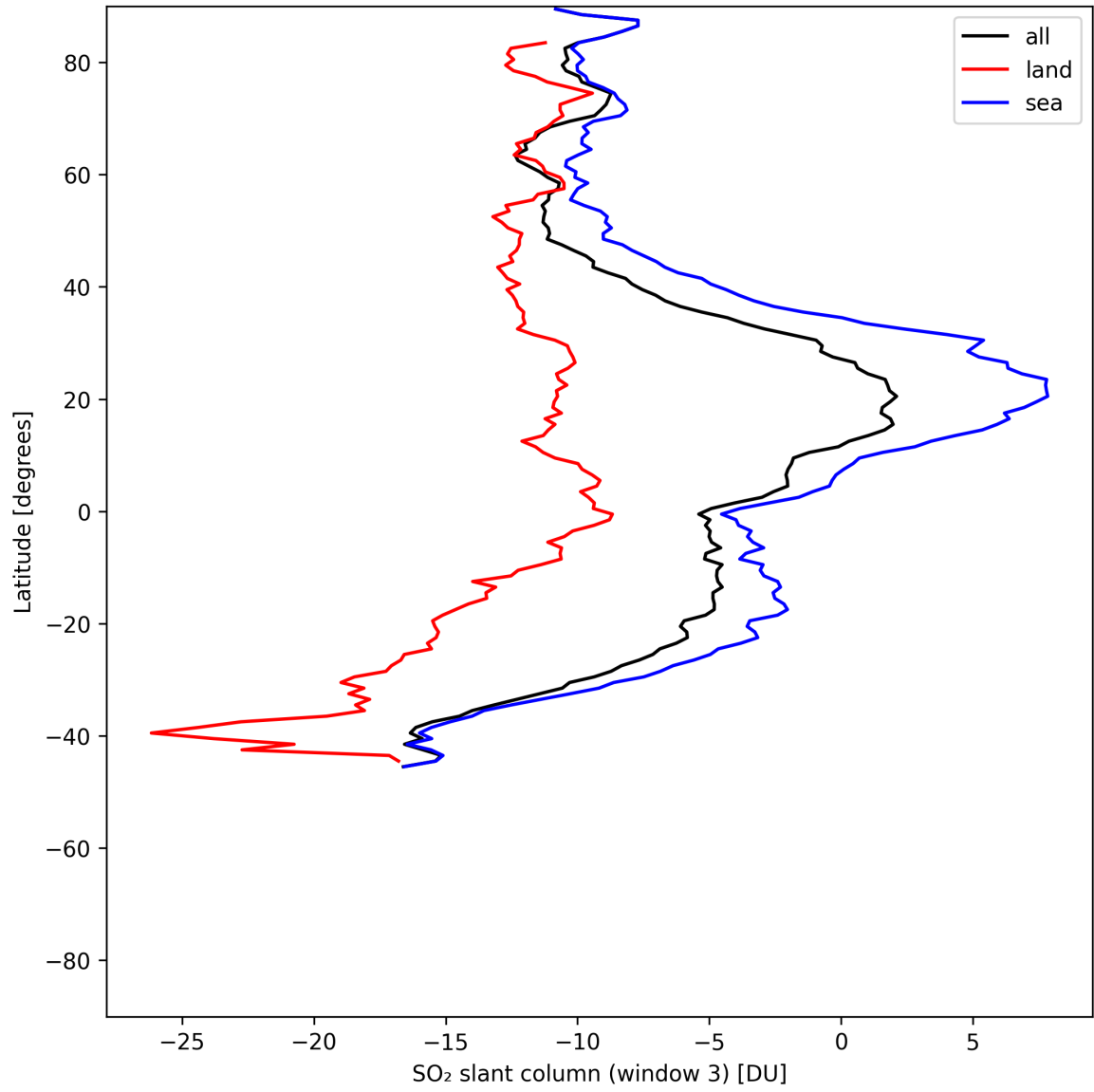


Figure 45: Zonal average of “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

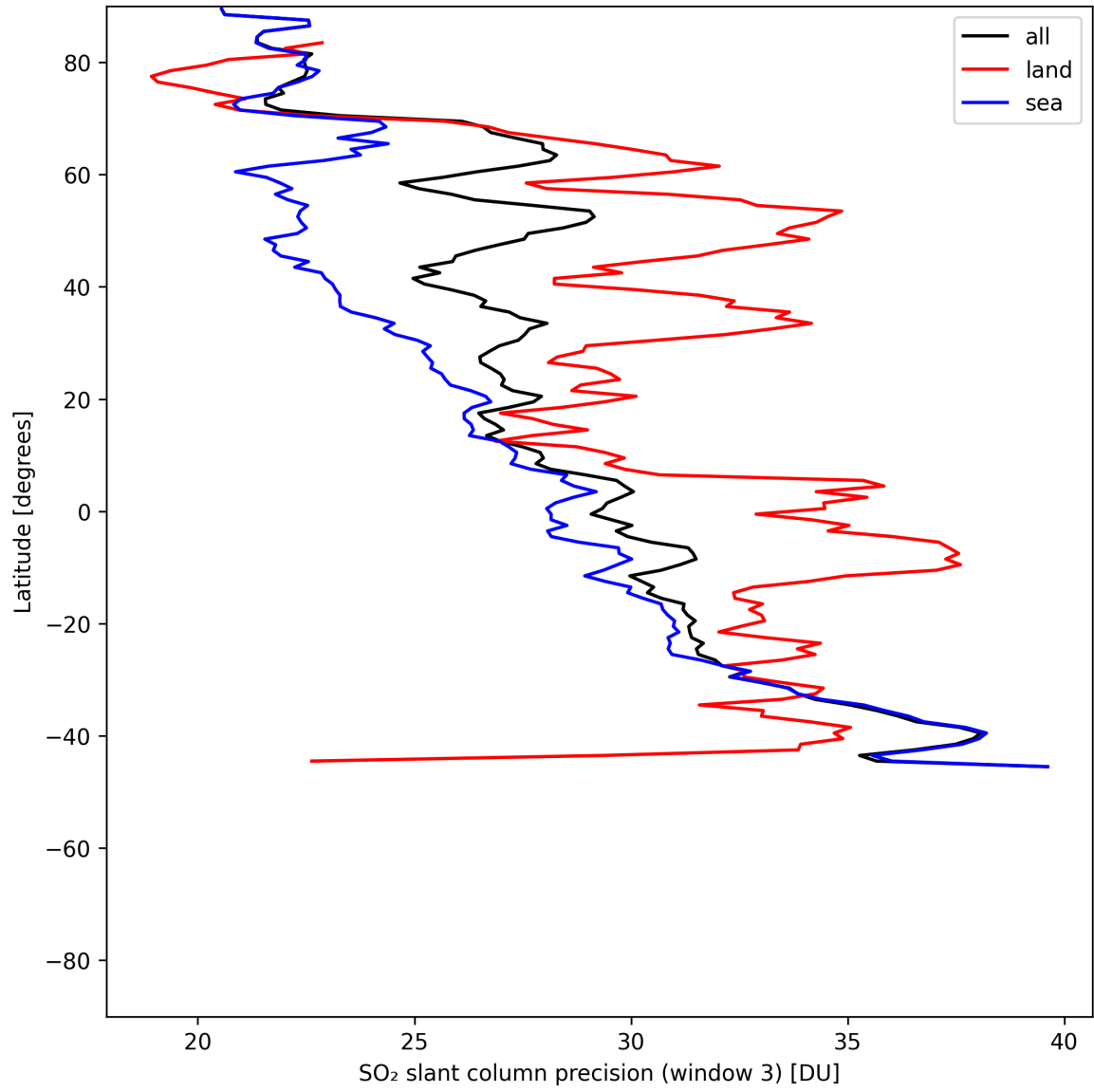


Figure 46: Zonal average of “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

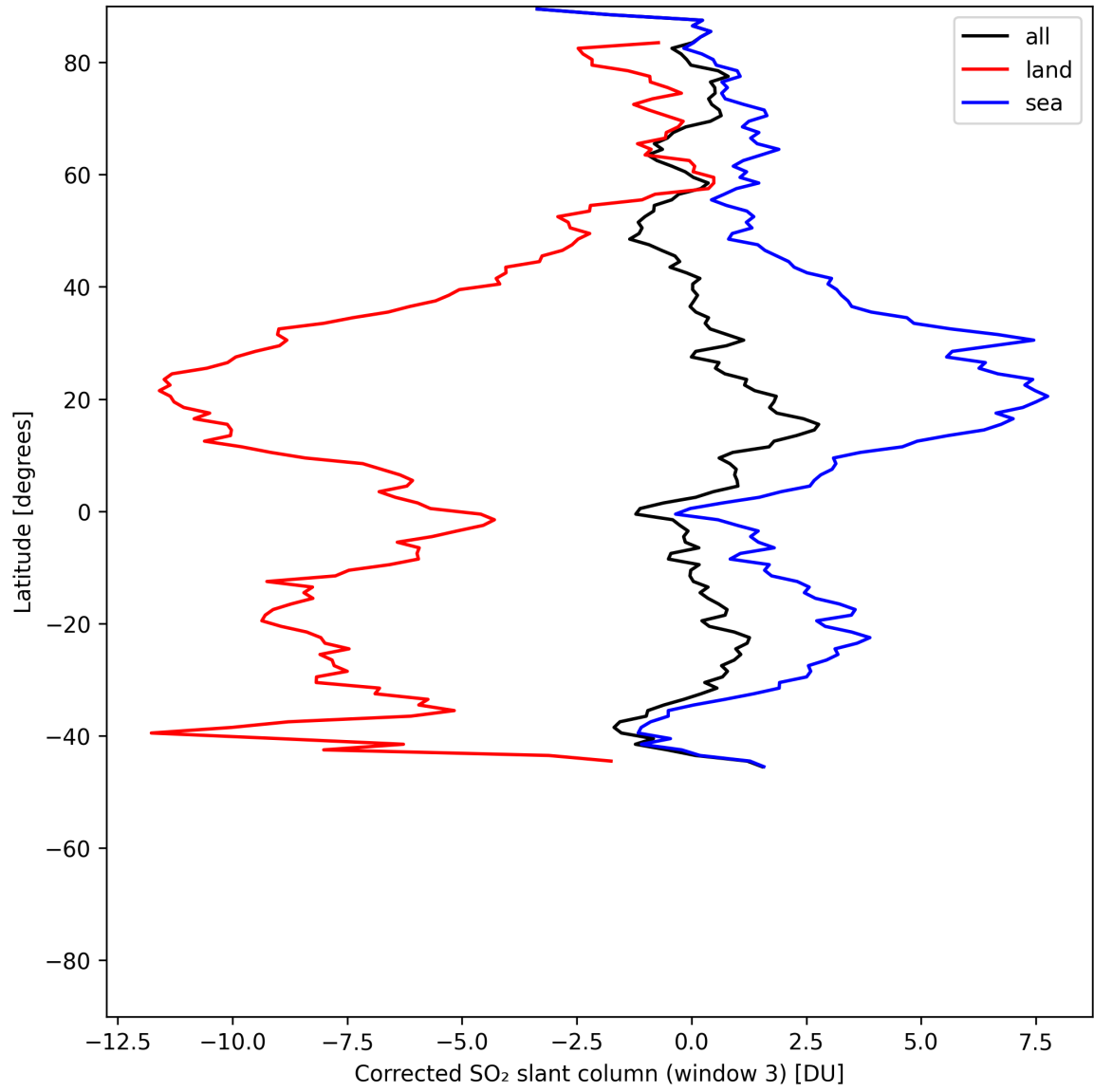


Figure 47: Zonal average of “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

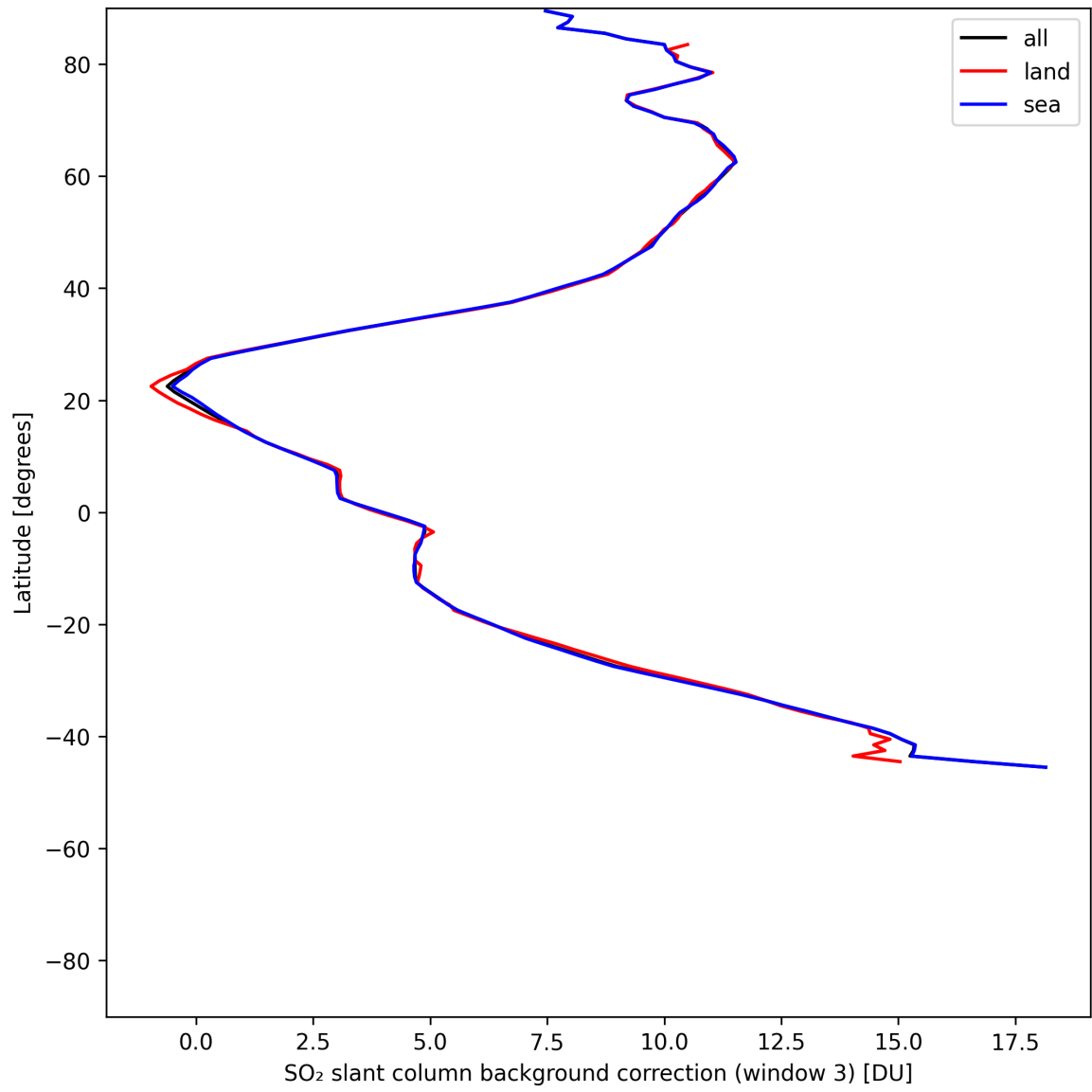


Figure 48: Zonal average of “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

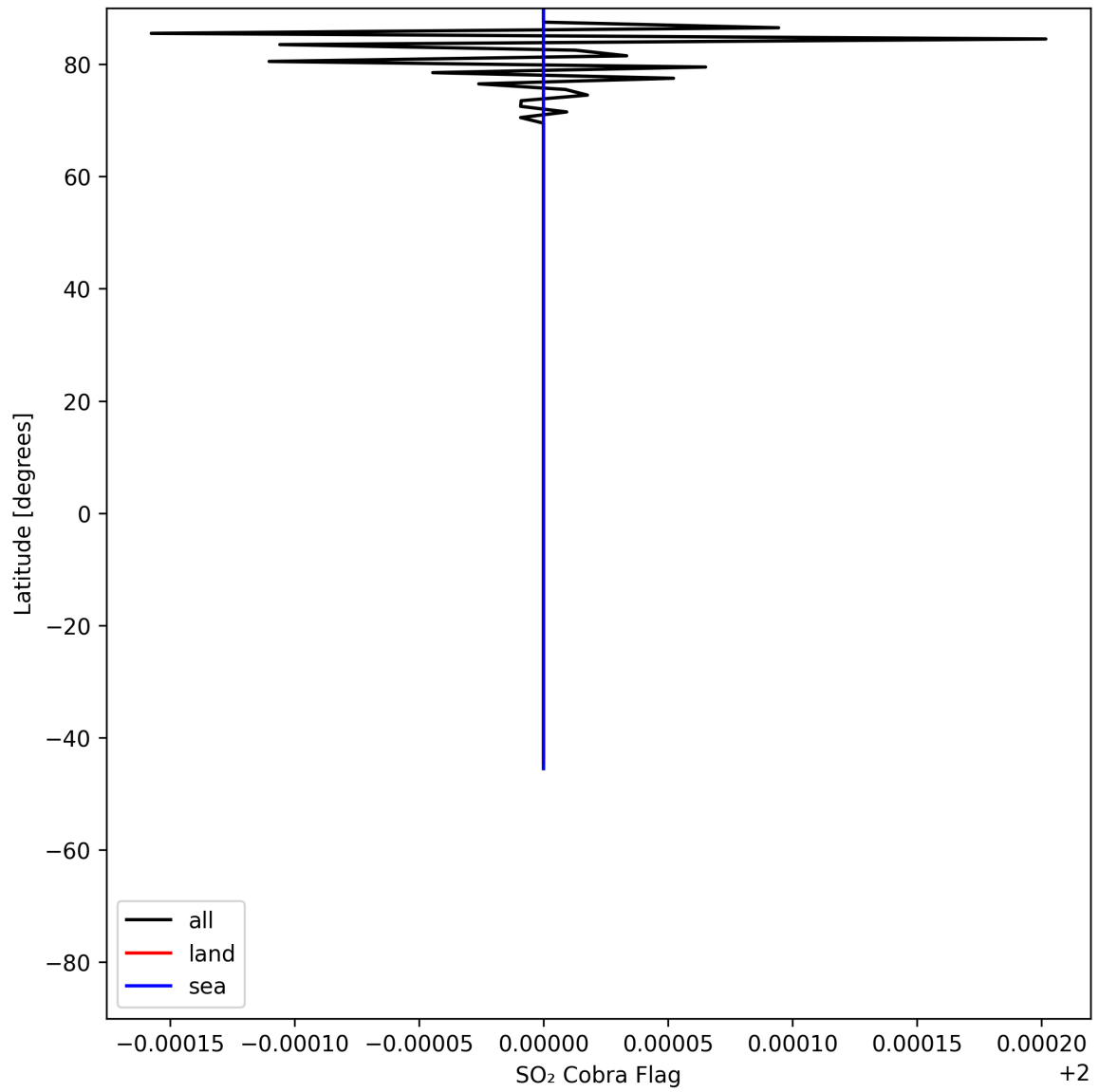


Figure 49: Zonal average of "SO₂ Cobra Flag" for 2025-06-13 to 2025-06-15.

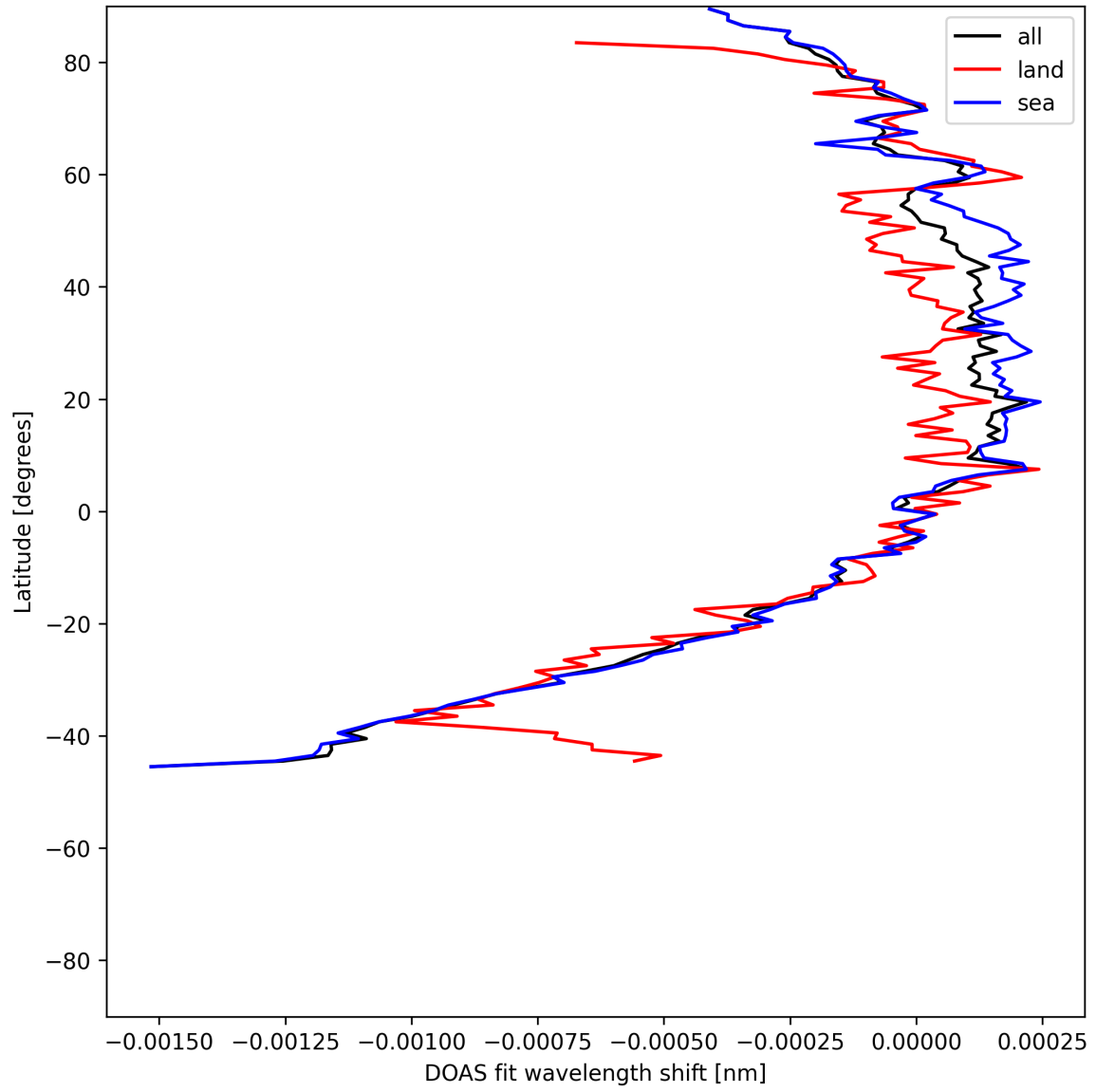


Figure 50: Zonal average of “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

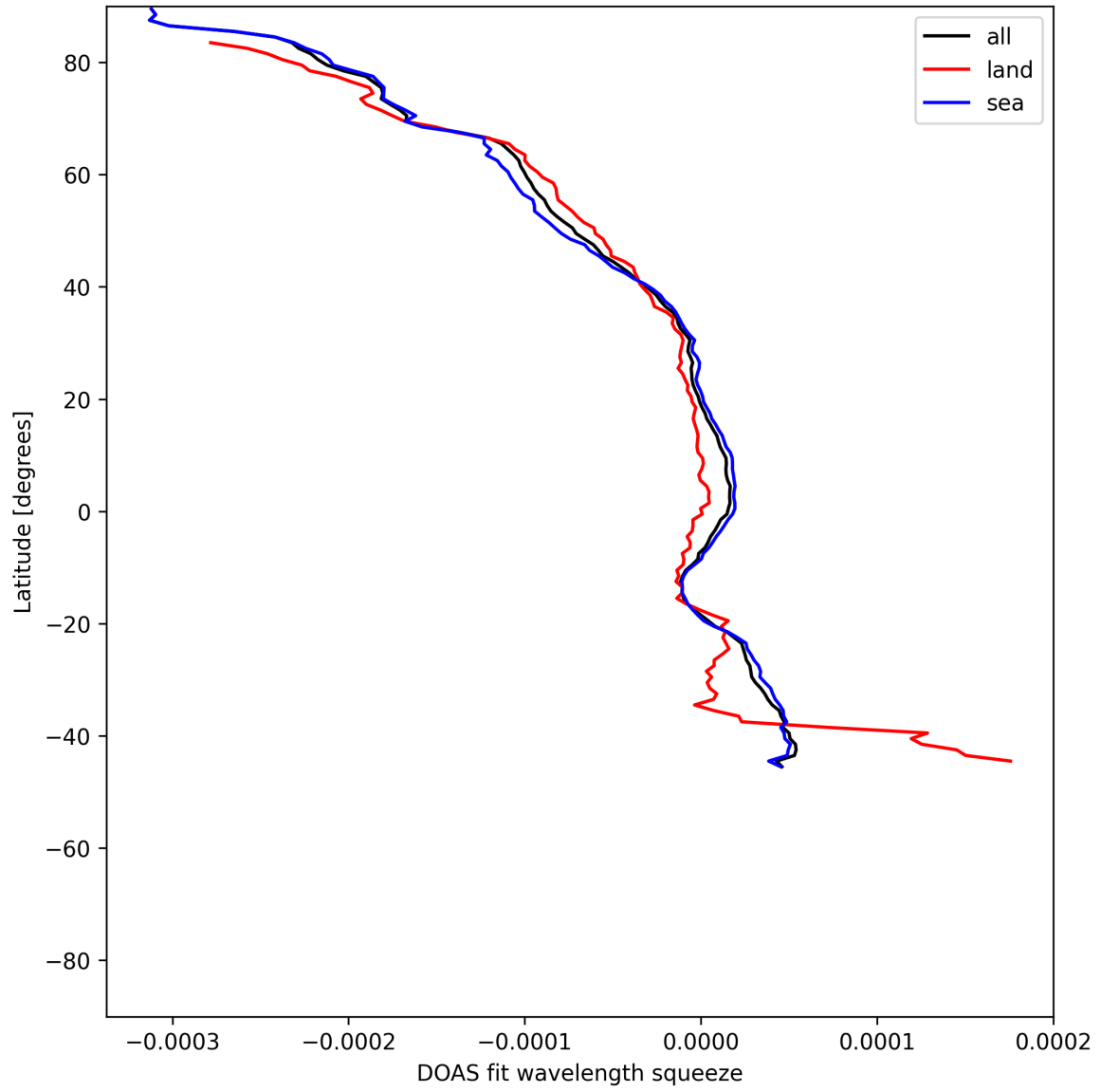


Figure 51: Zonal average of “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

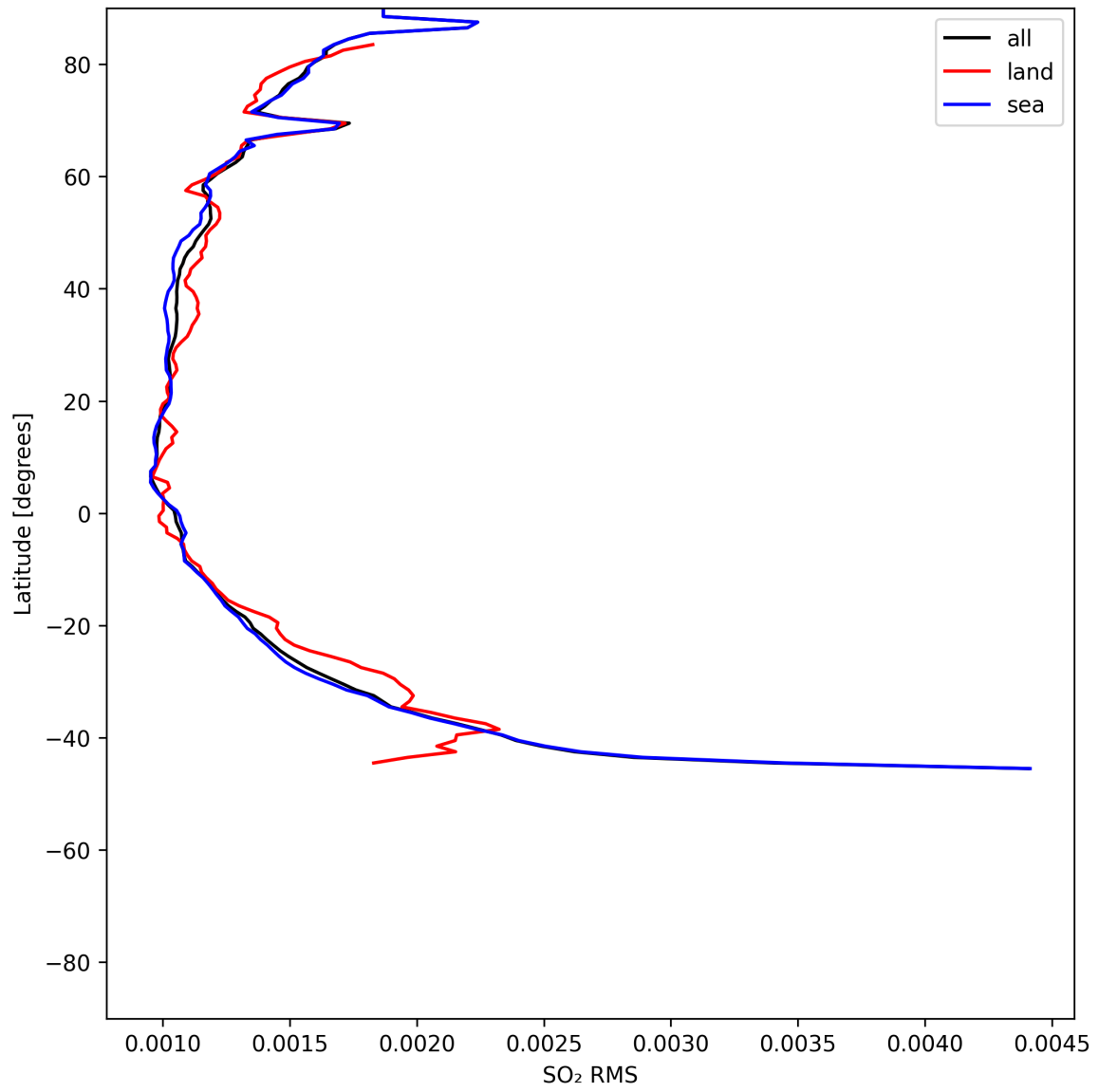


Figure 52: Zonal average of “SO₂ RMS” for 2025-06-13 to 2025-06-15.

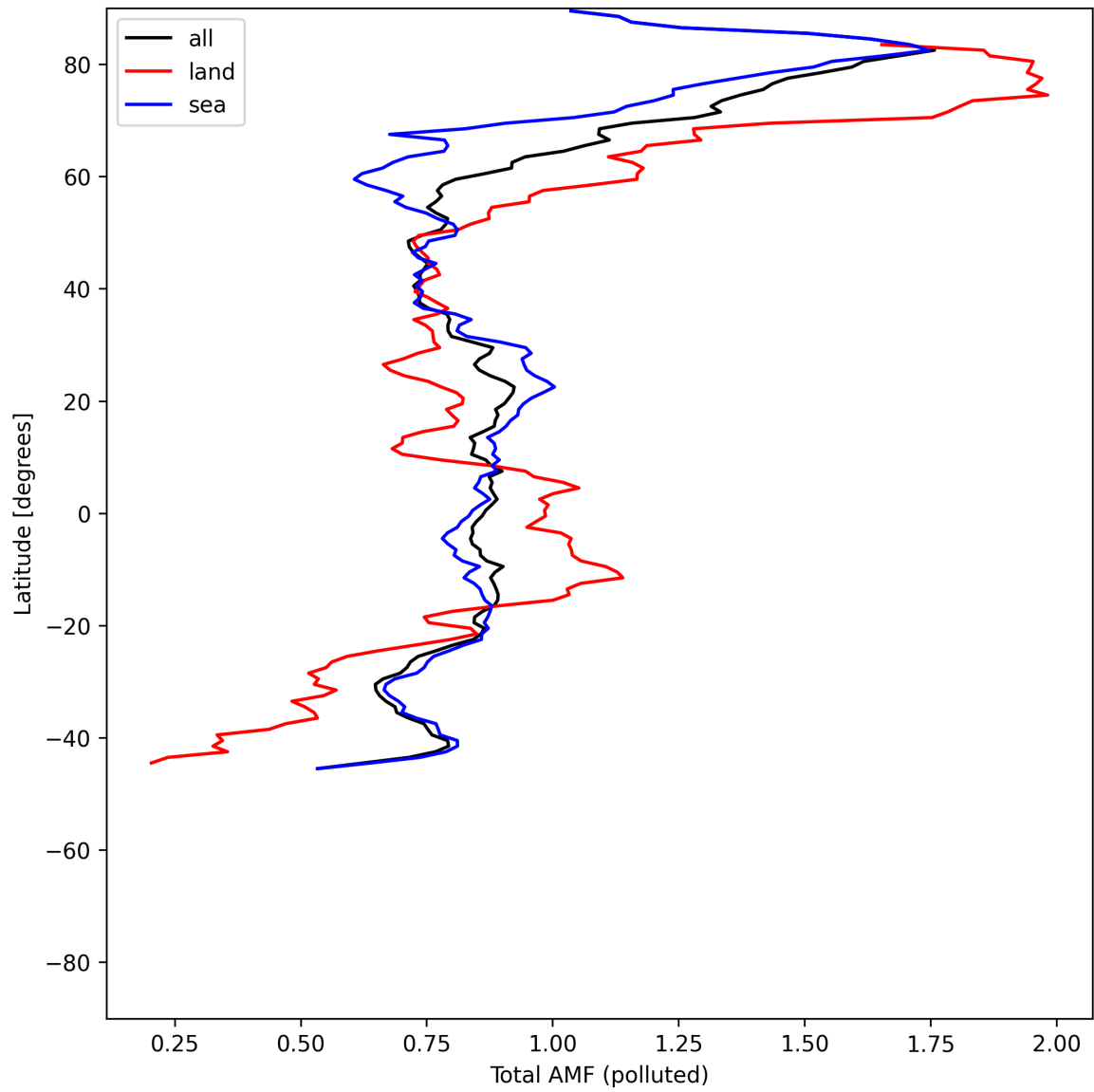


Figure 53: Zonal average of “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

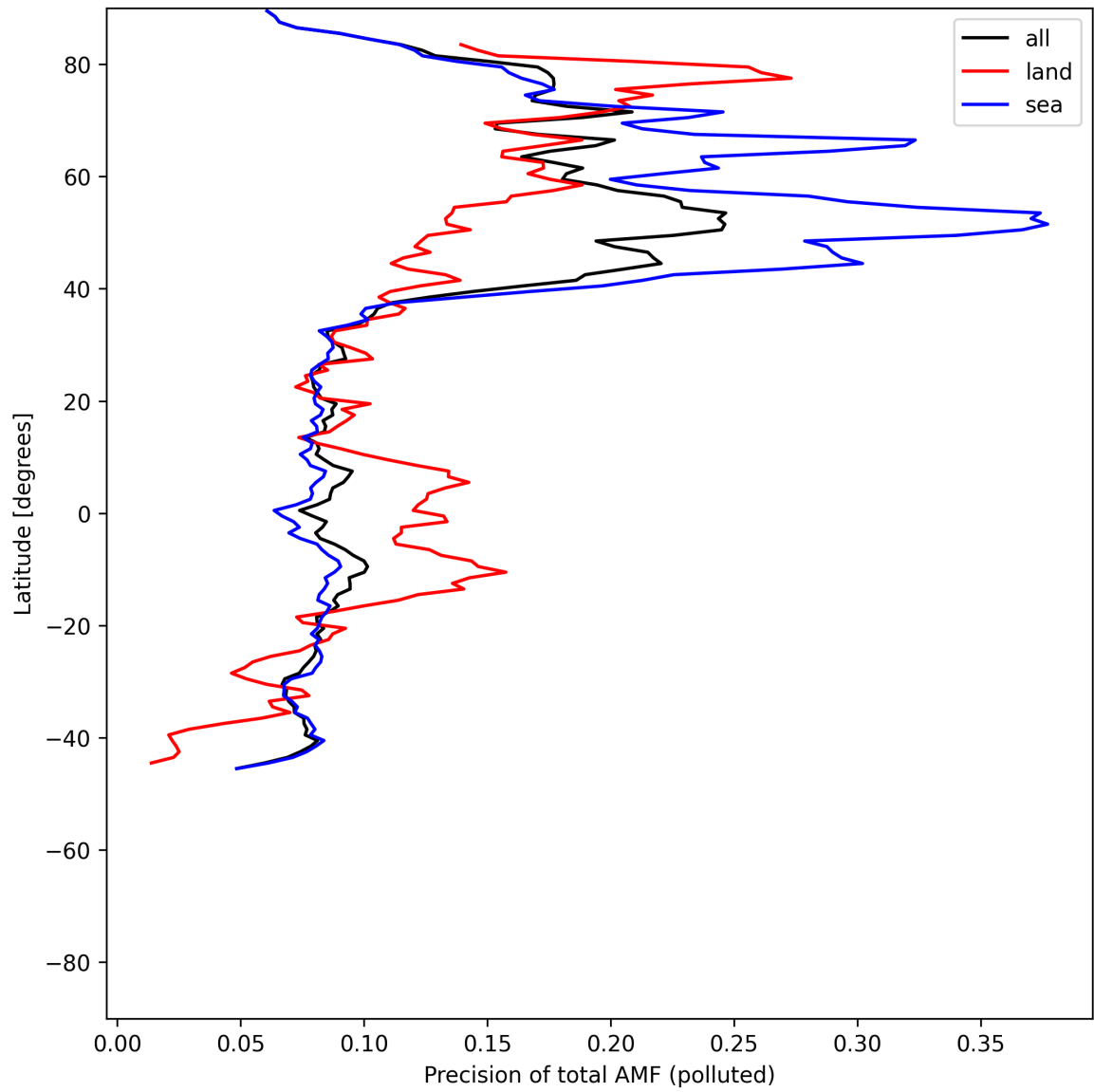


Figure 54: Zonal average of “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

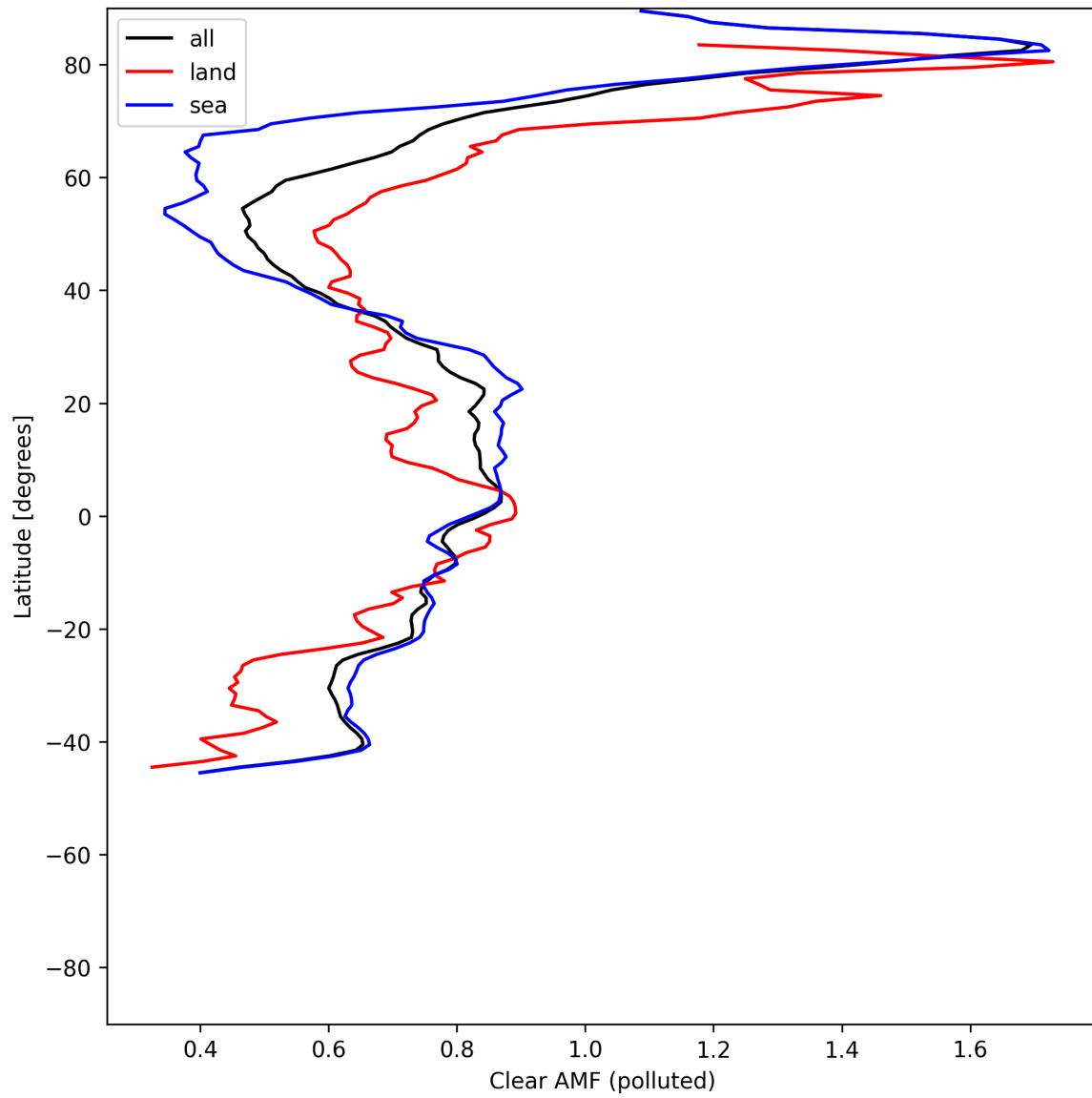


Figure 55: Zonal average of “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

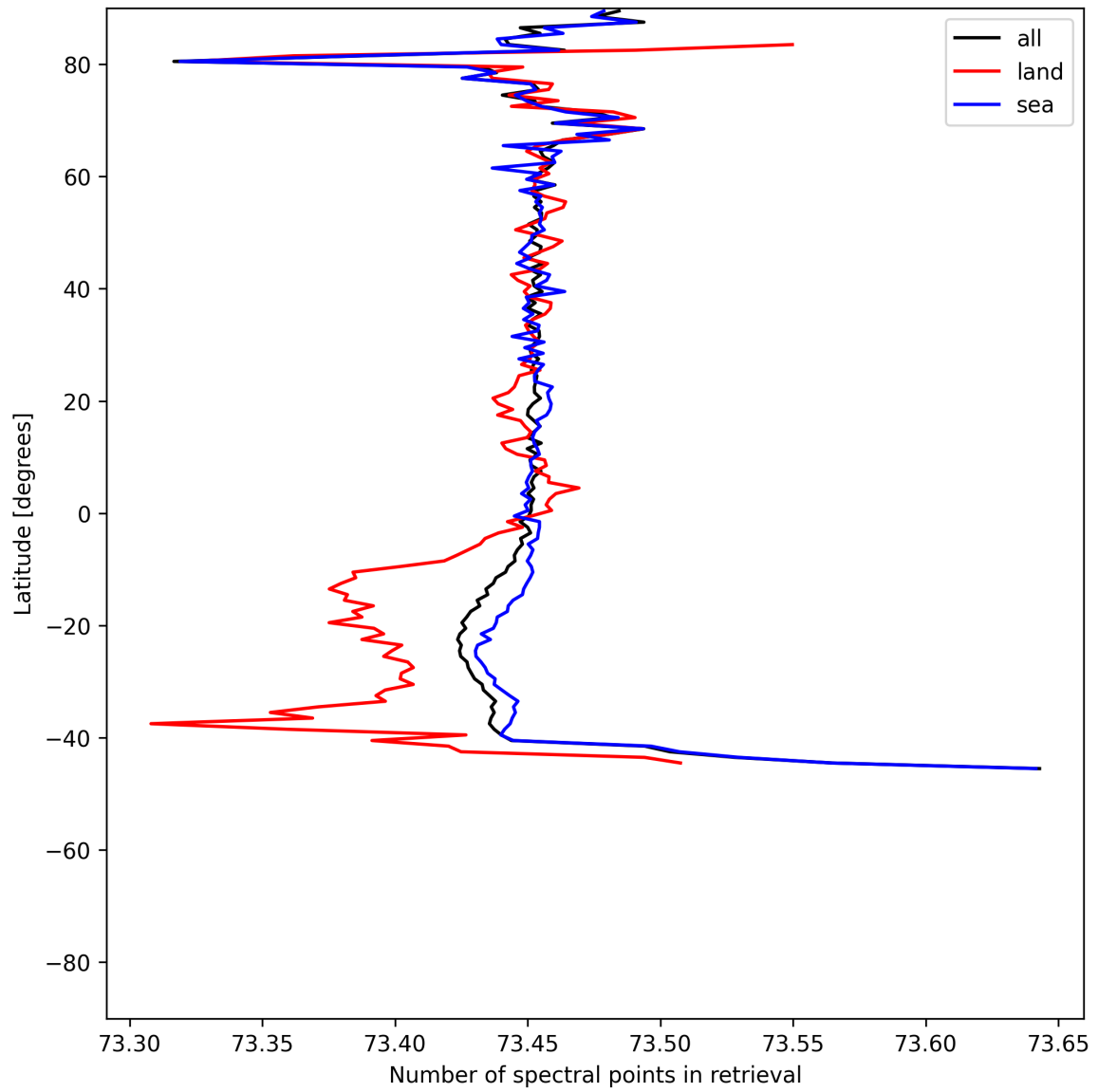


Figure 56: Zonal average of “Number of spectral points in retrieval” for 2025-06-13 to 2025-06-15.

8 Histograms

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

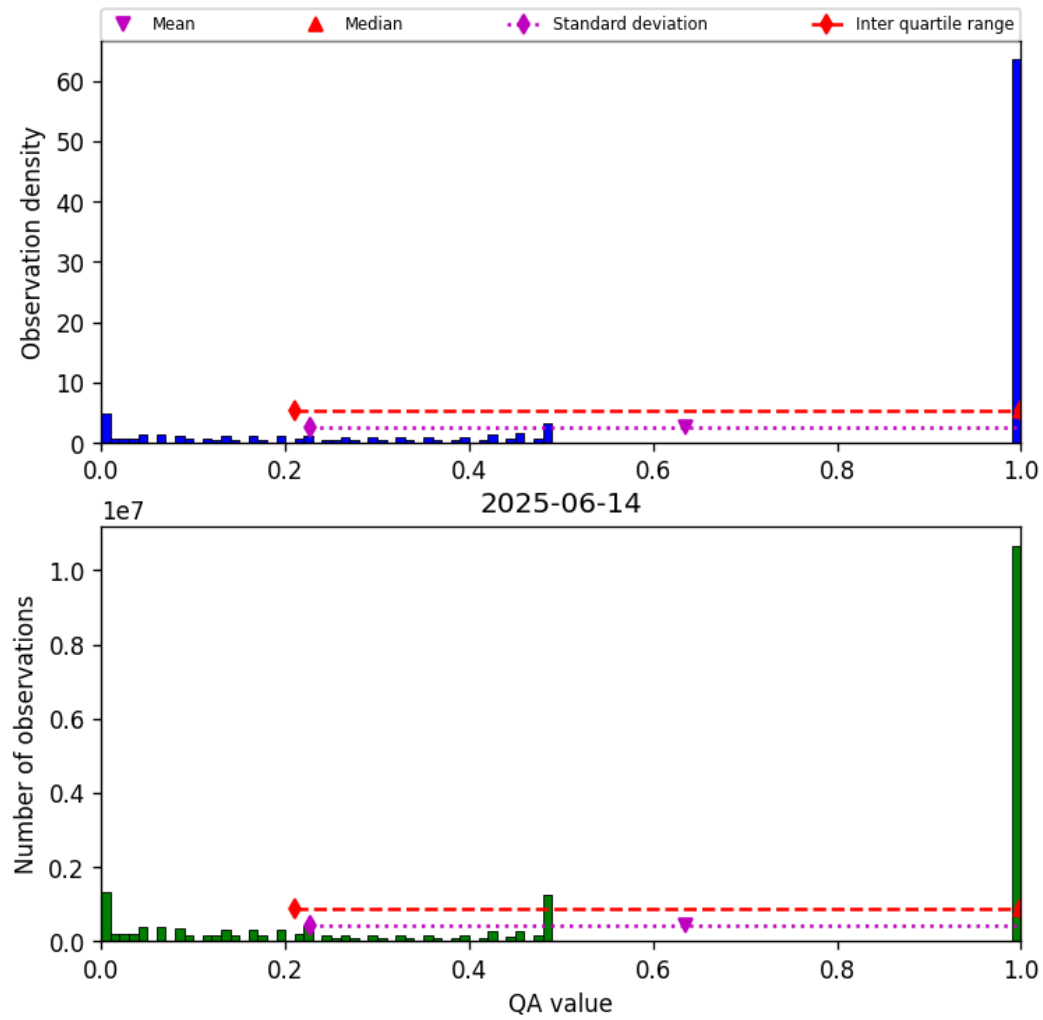


Figure 57: Histogram of “QA value” for 2025-06-13 to 2025-06-15

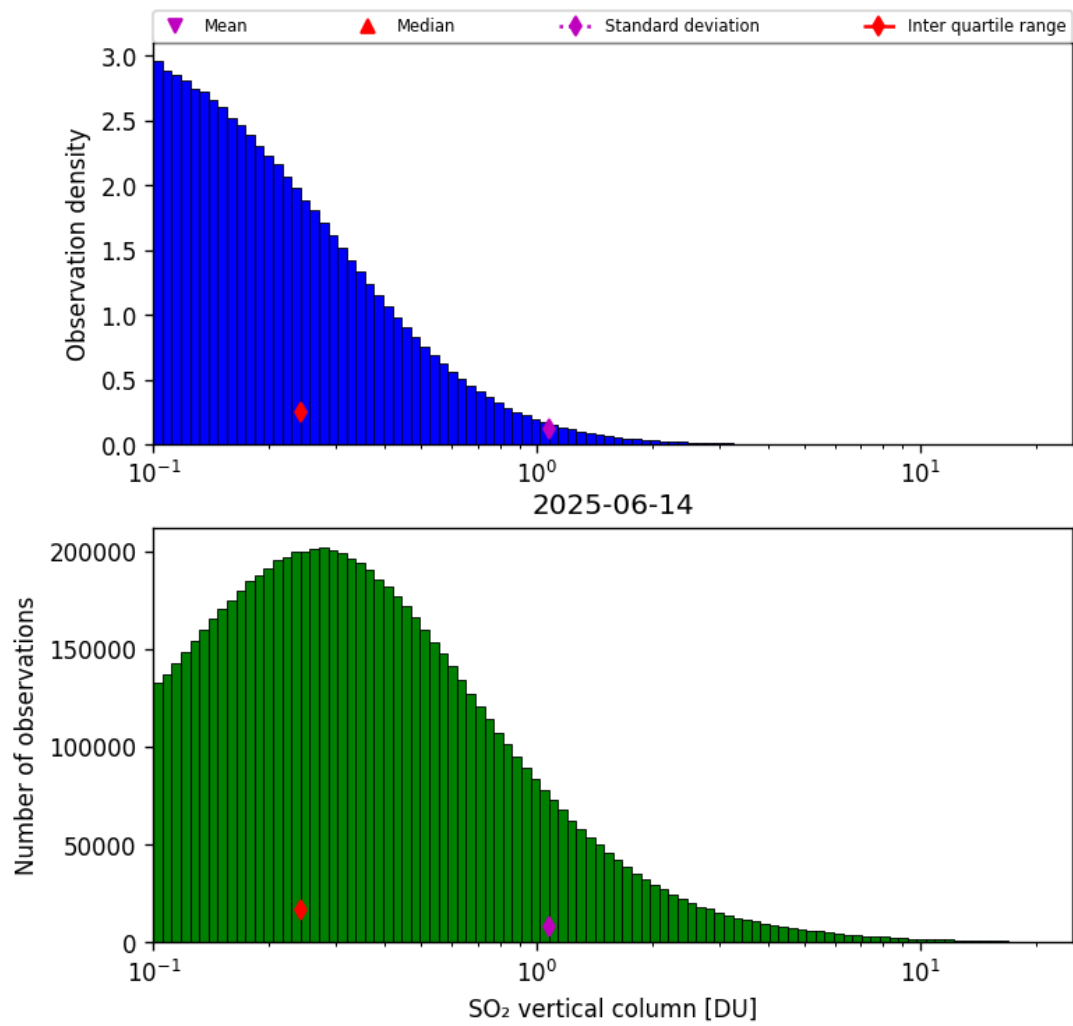


Figure 58: Histogram of “SO₂ vertical column” for 2025-06-13 to 2025-06-15

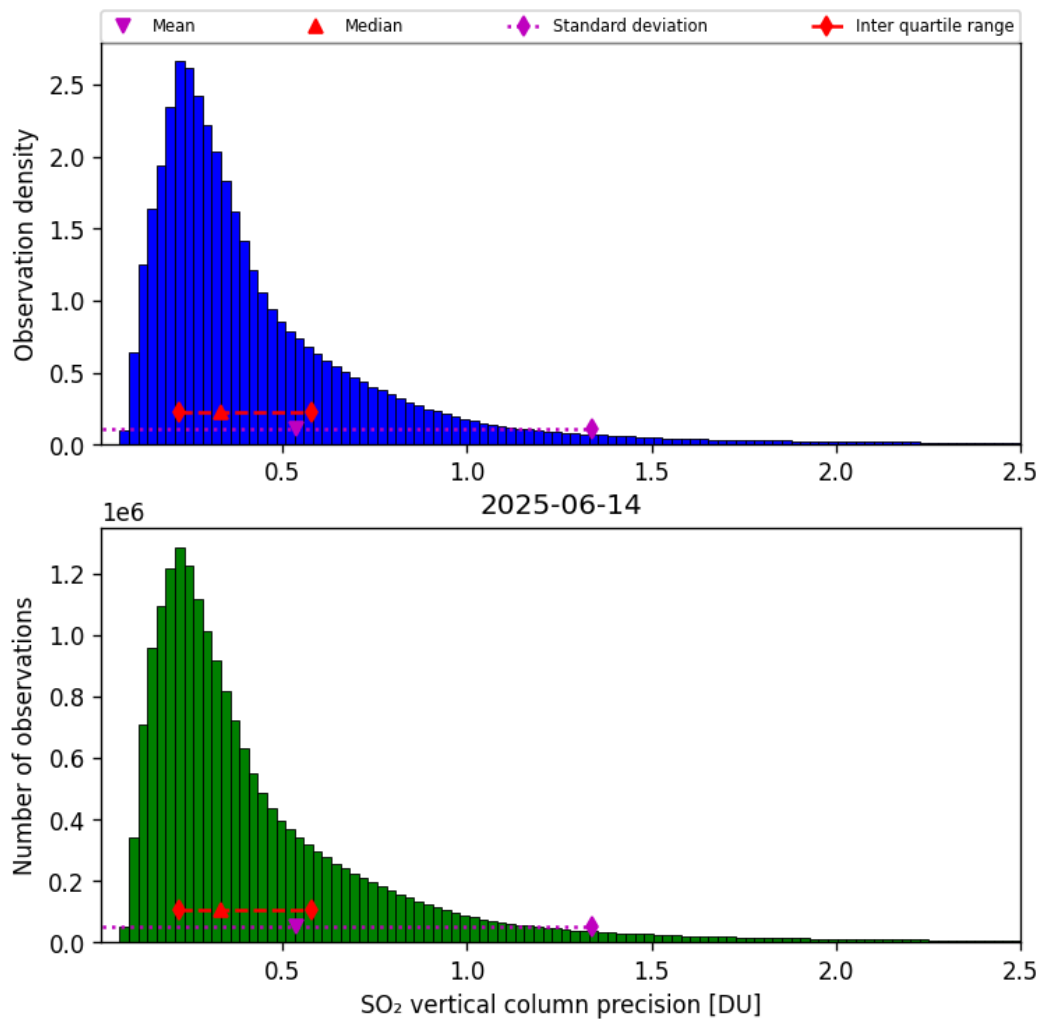


Figure 59: Histogram of “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15

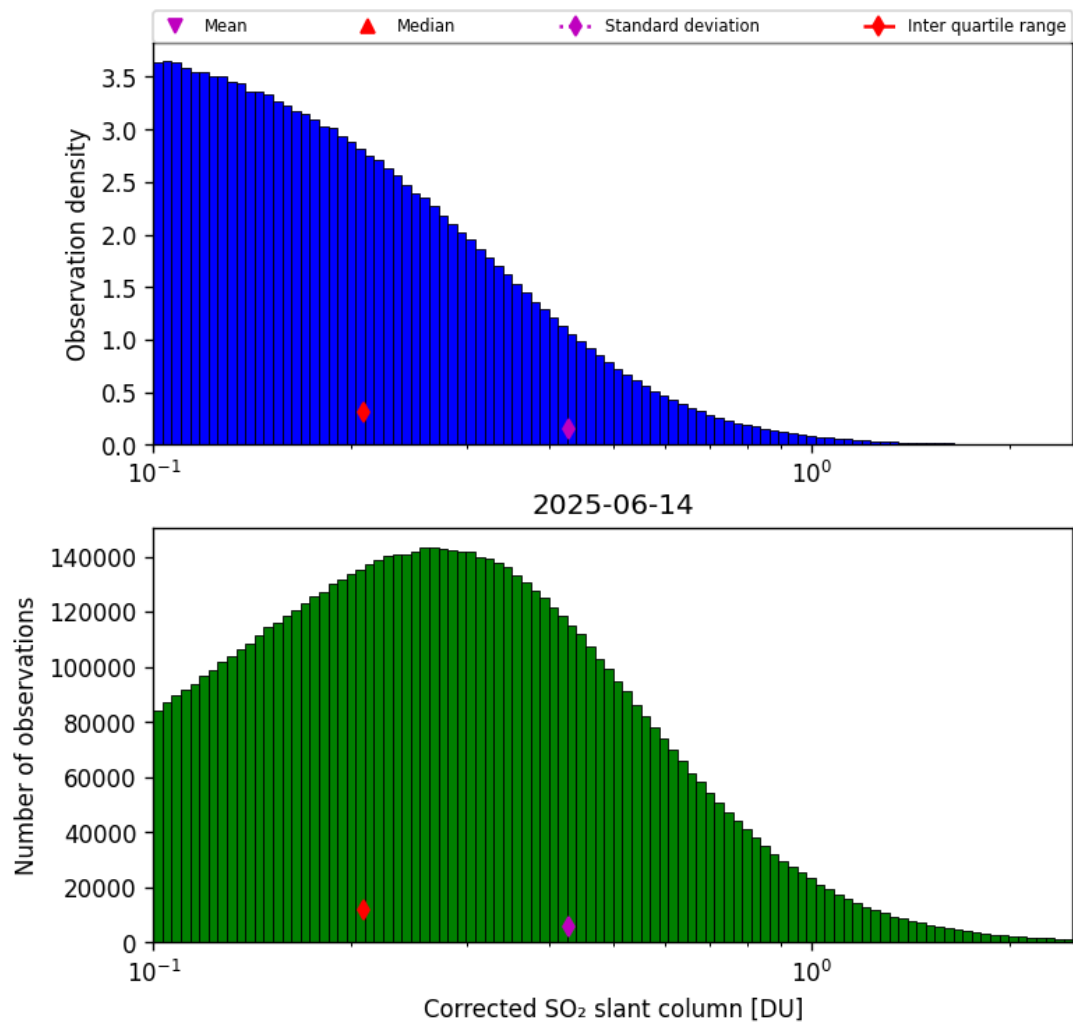


Figure 60: Histogram of “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15

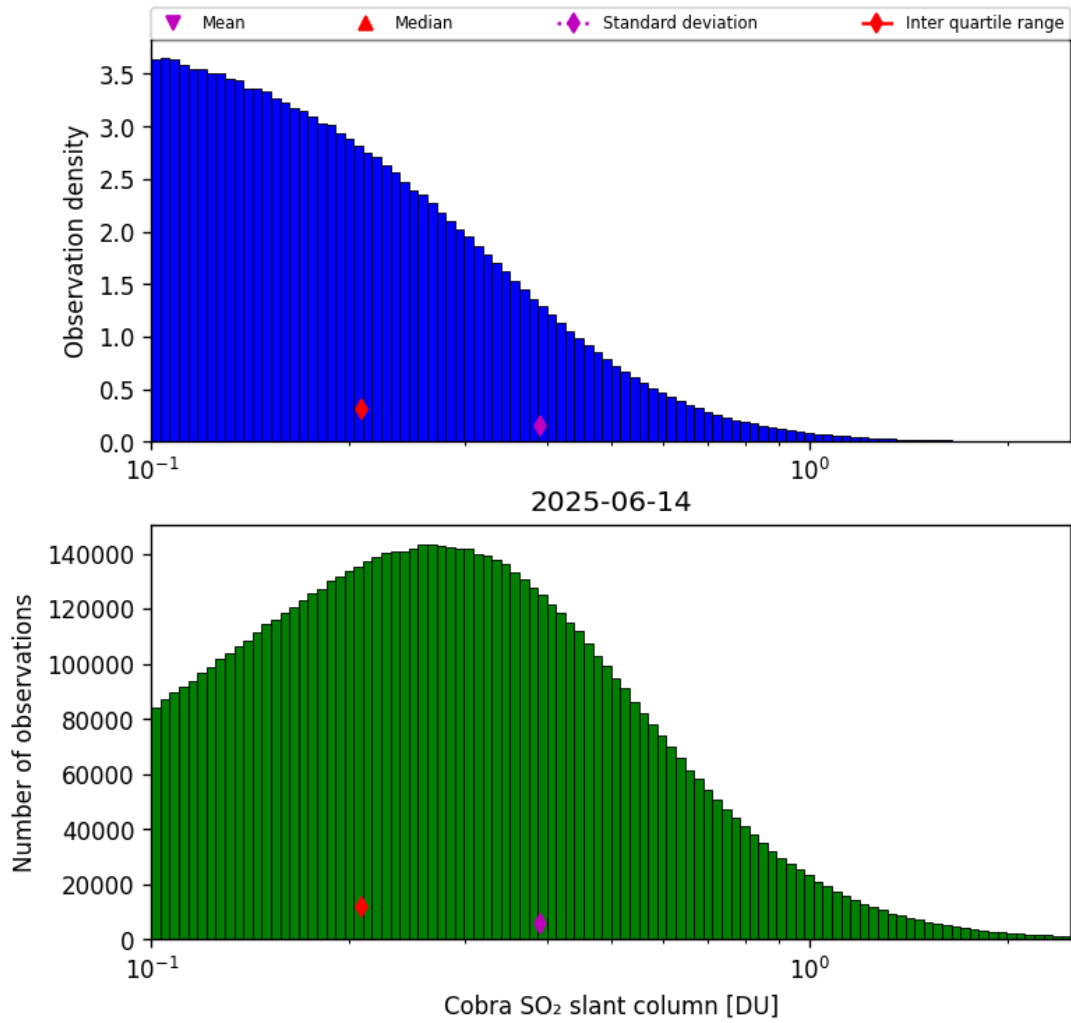


Figure 61: Histogram of “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15

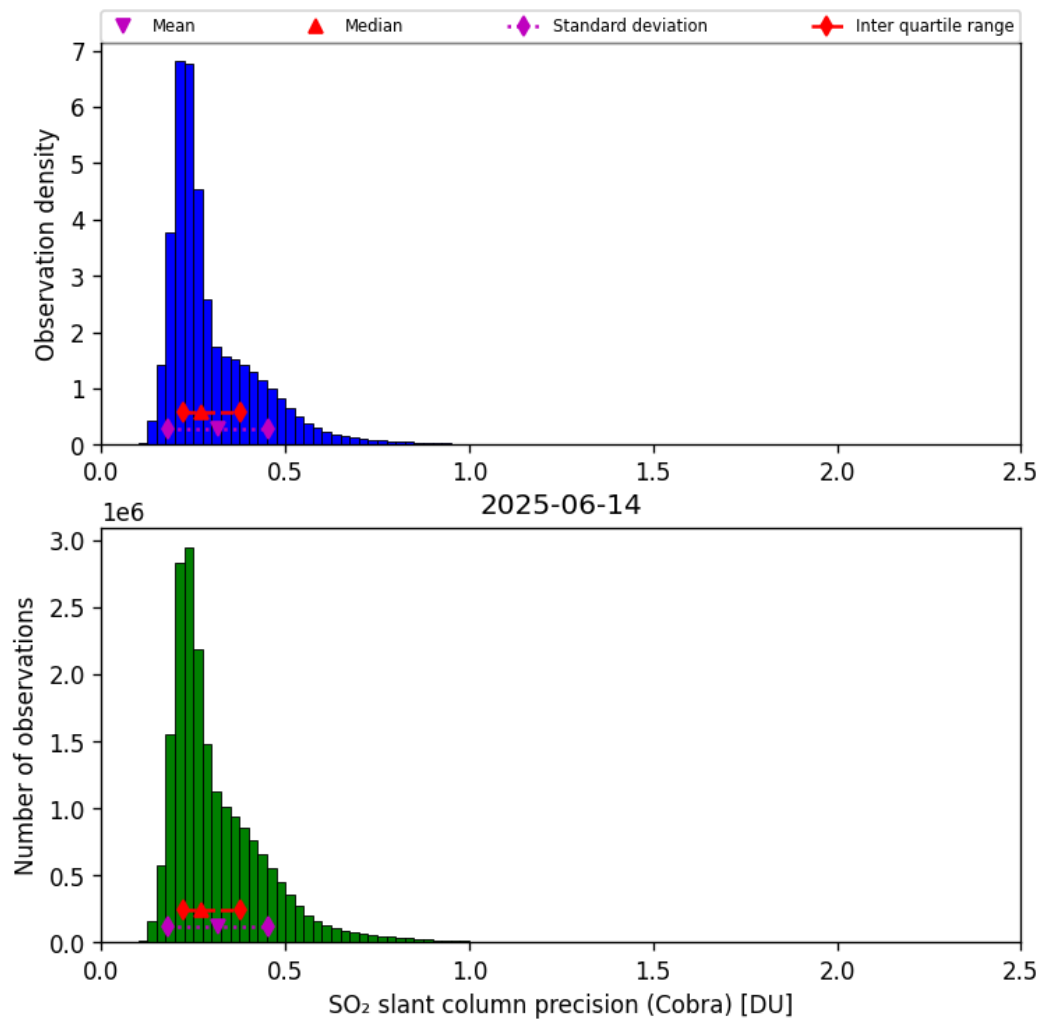


Figure 62: Histogram of “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15

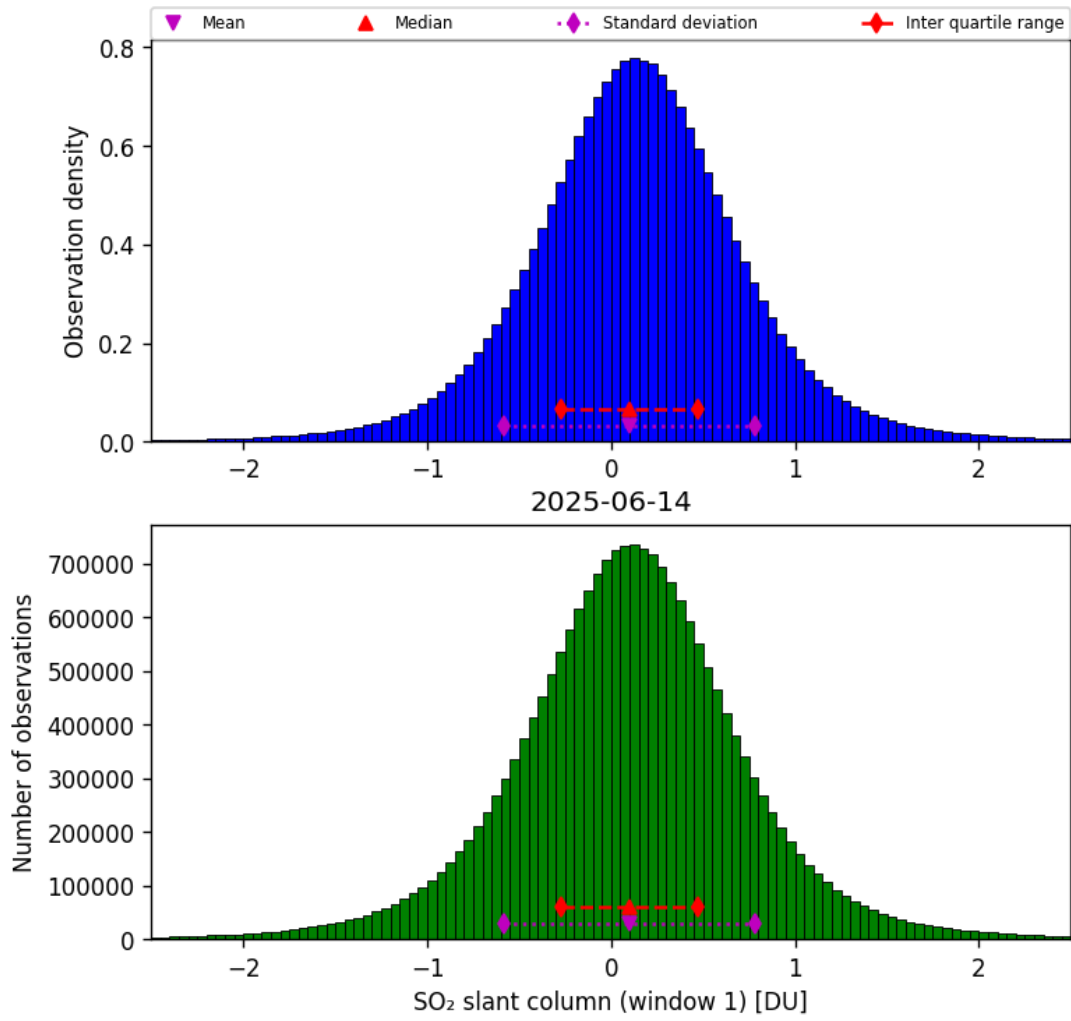


Figure 63: Histogram of “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15

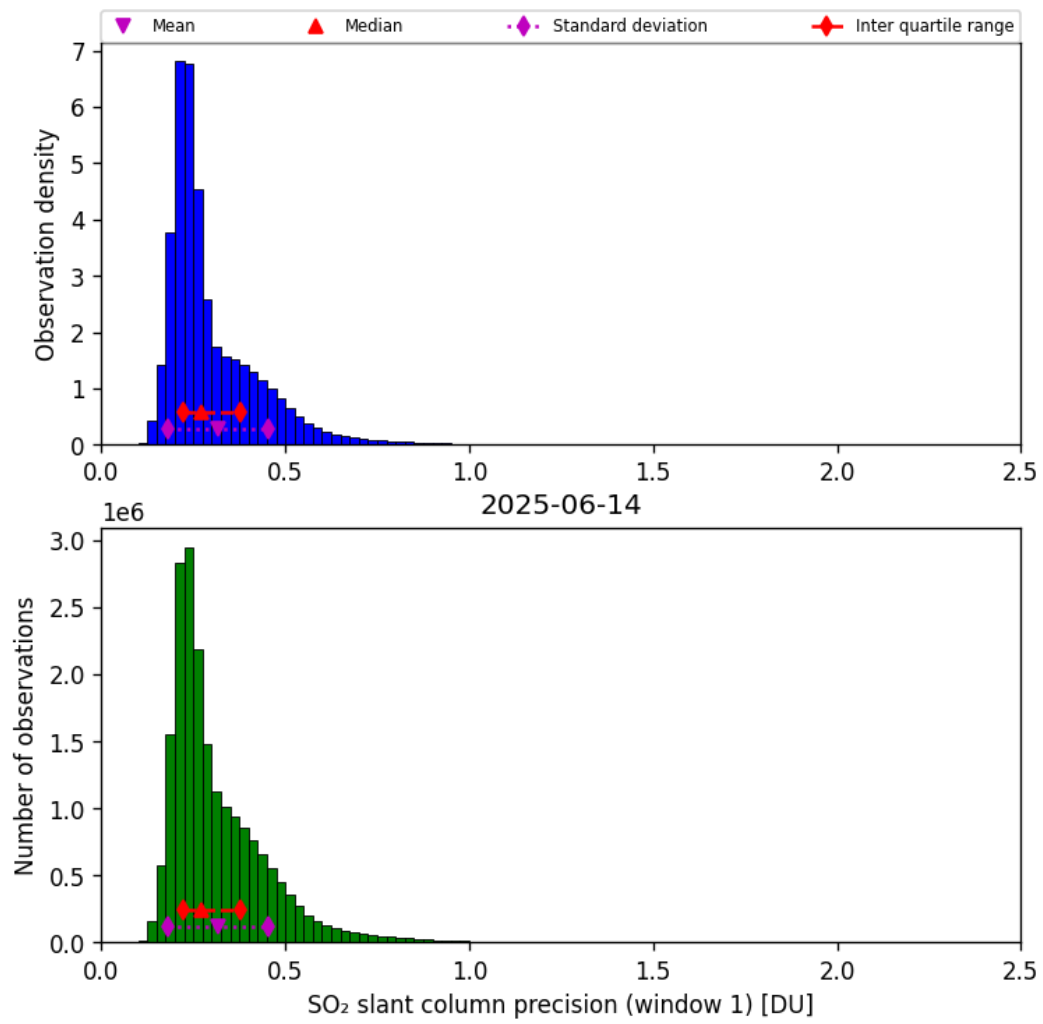


Figure 64: Histogram of “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15

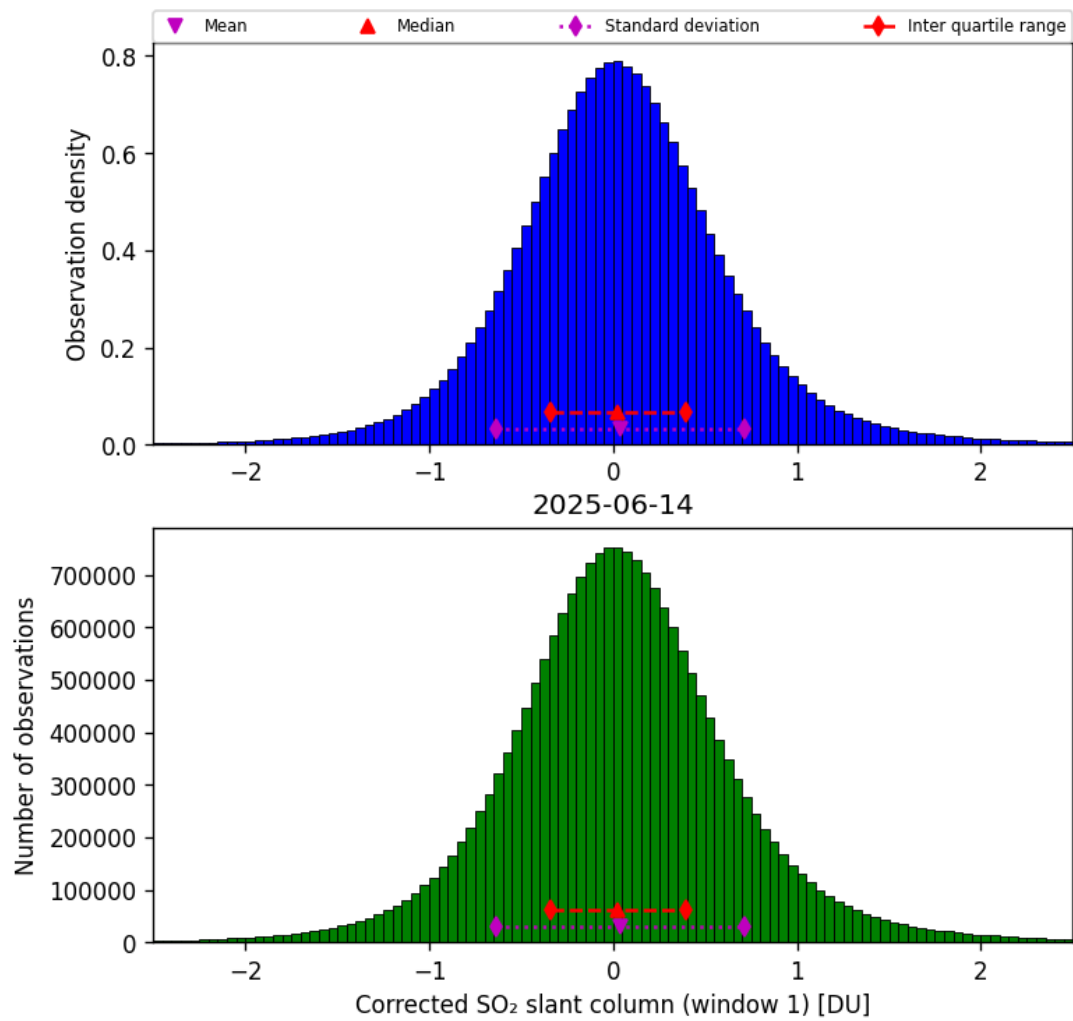


Figure 65: Histogram of “Corrected SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15

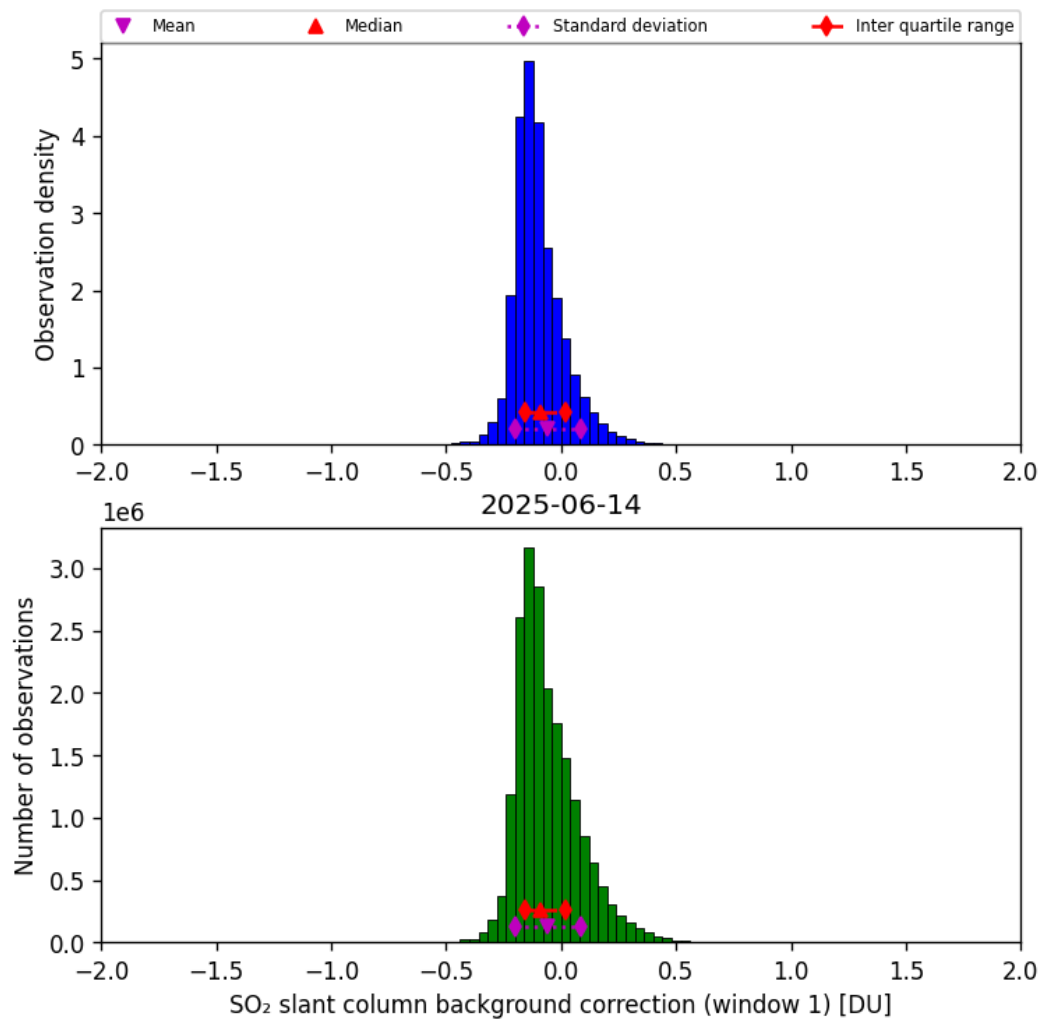


Figure 66: Histogram of “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15

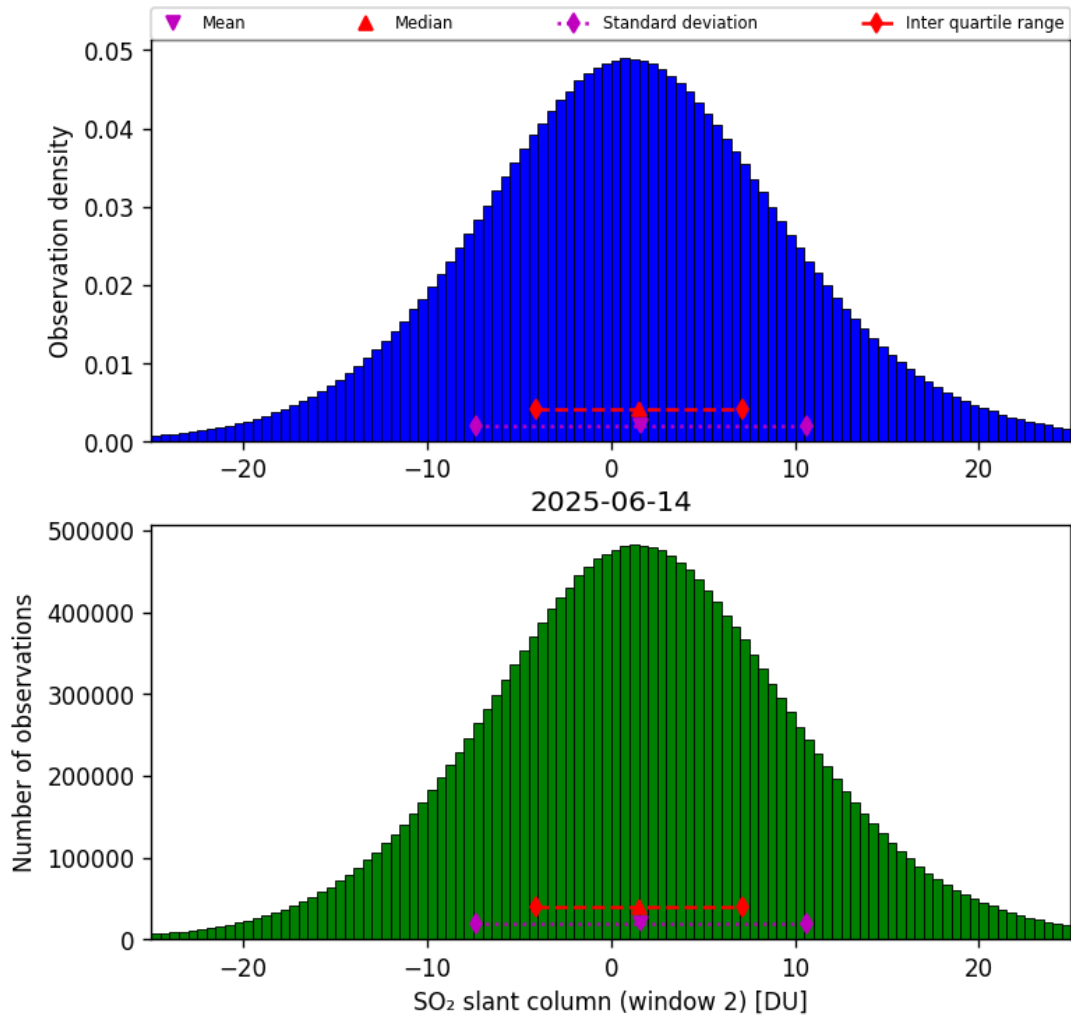


Figure 67: Histogram of “SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15

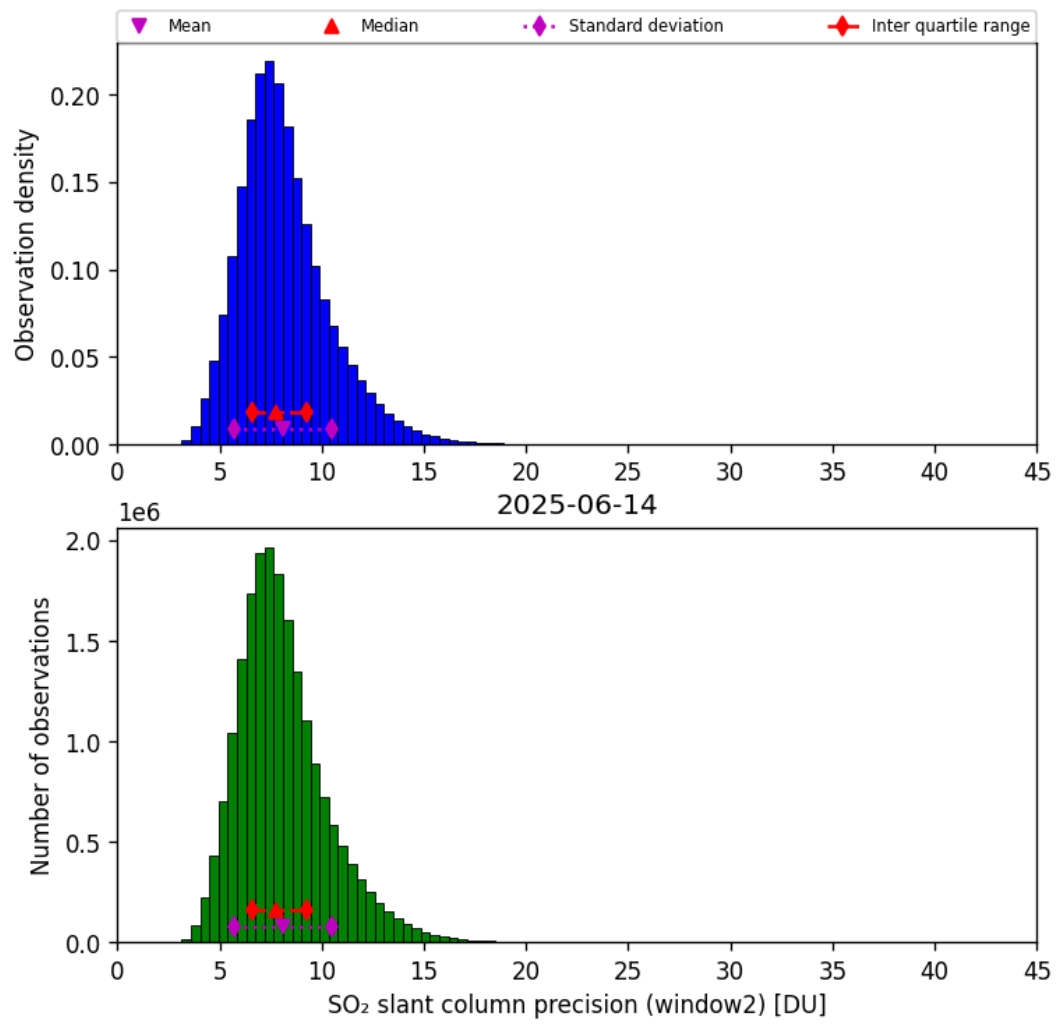


Figure 68: Histogram of “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15

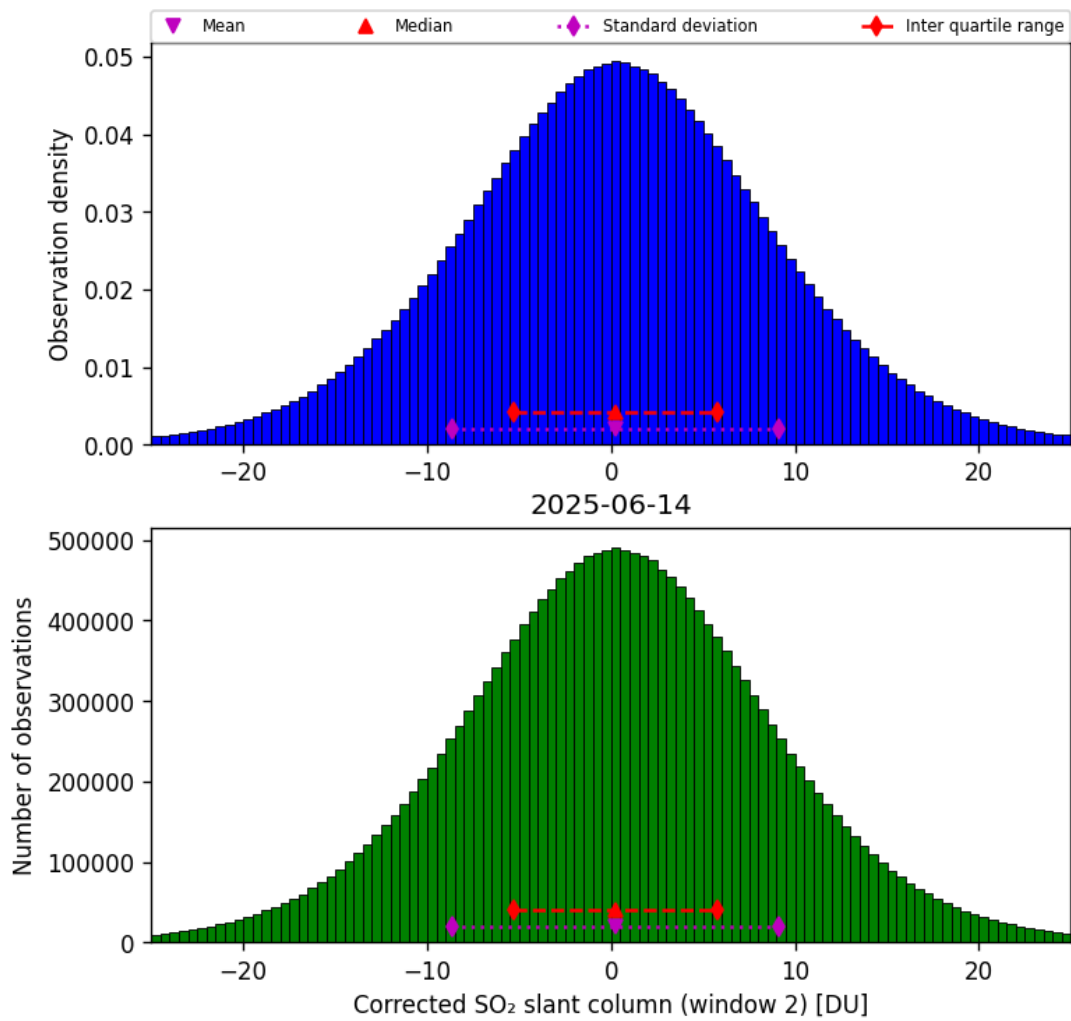


Figure 69: Histogram of “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15

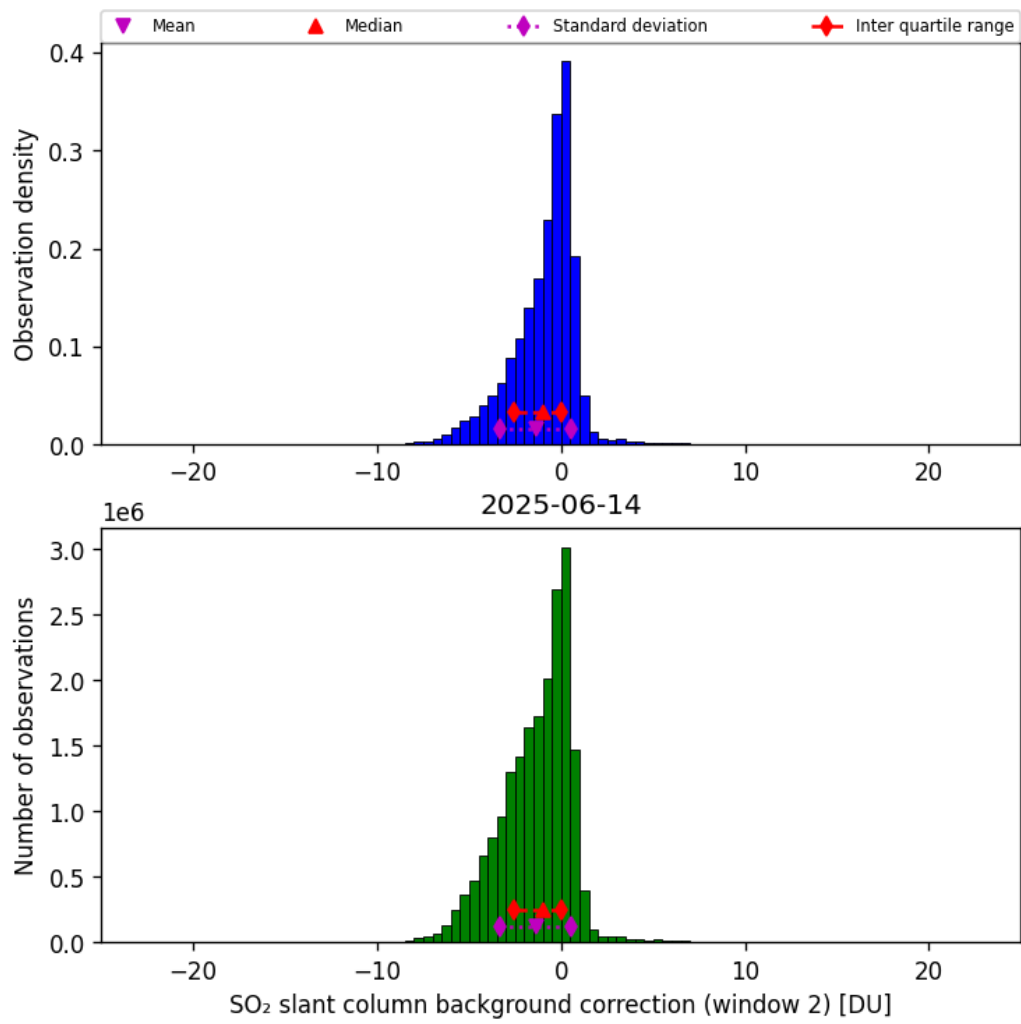


Figure 70: Histogram of “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15

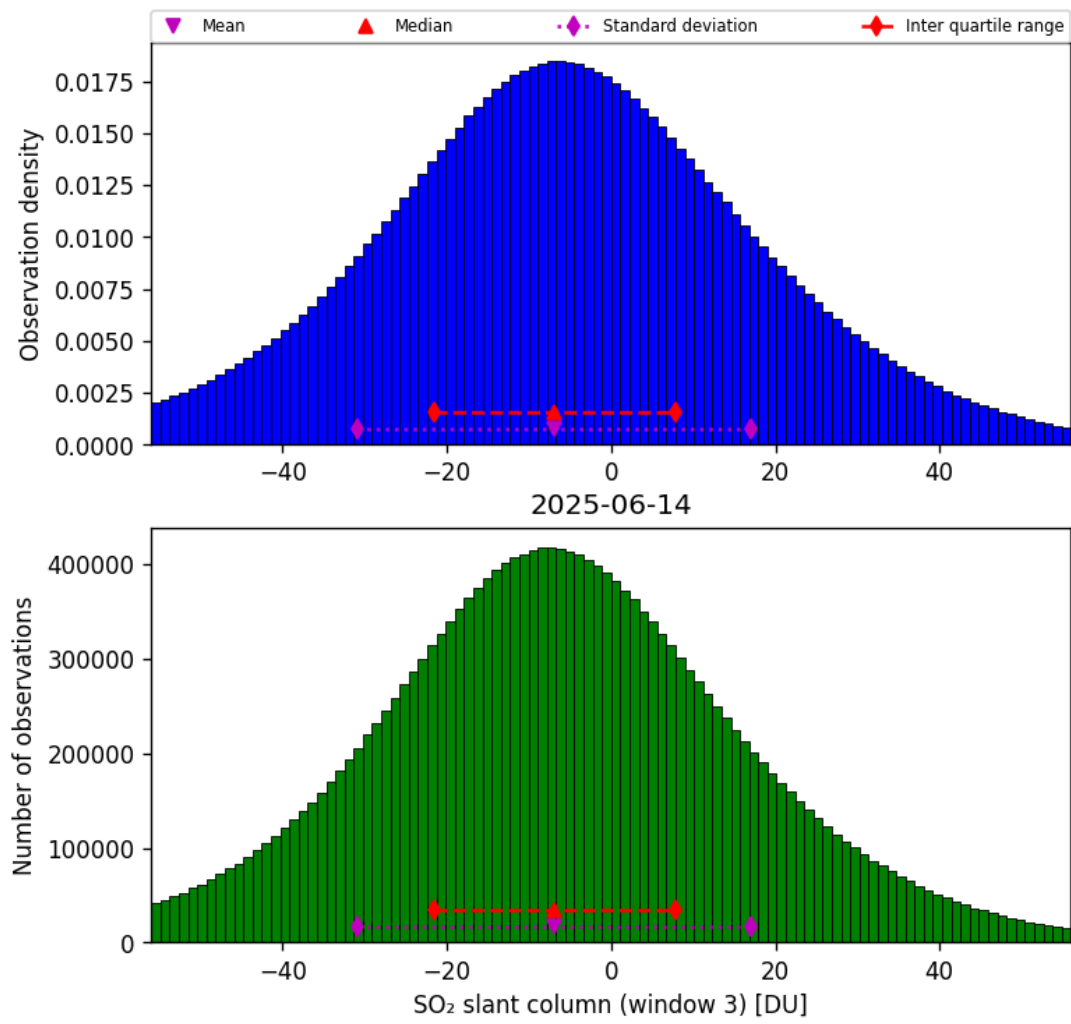


Figure 71: Histogram of “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15

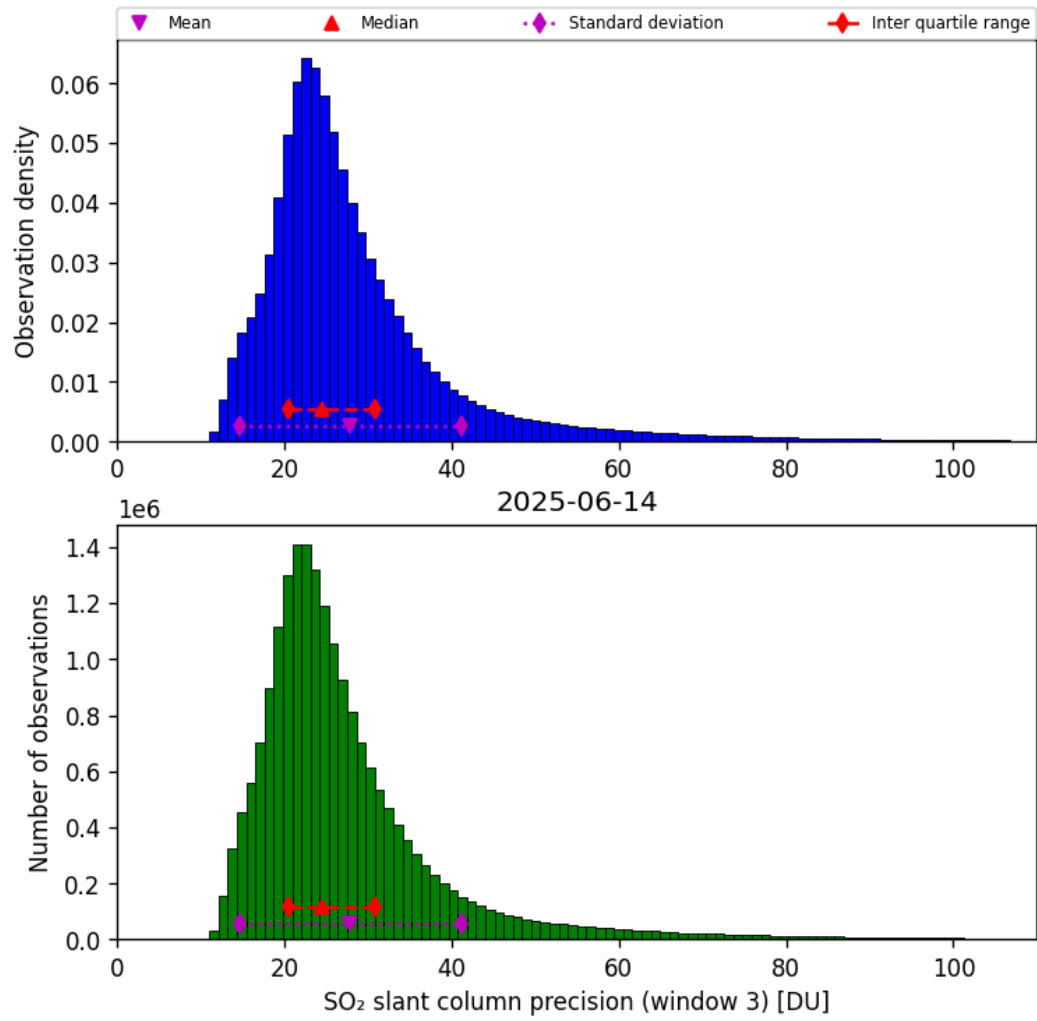


Figure 72: Histogram of “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15

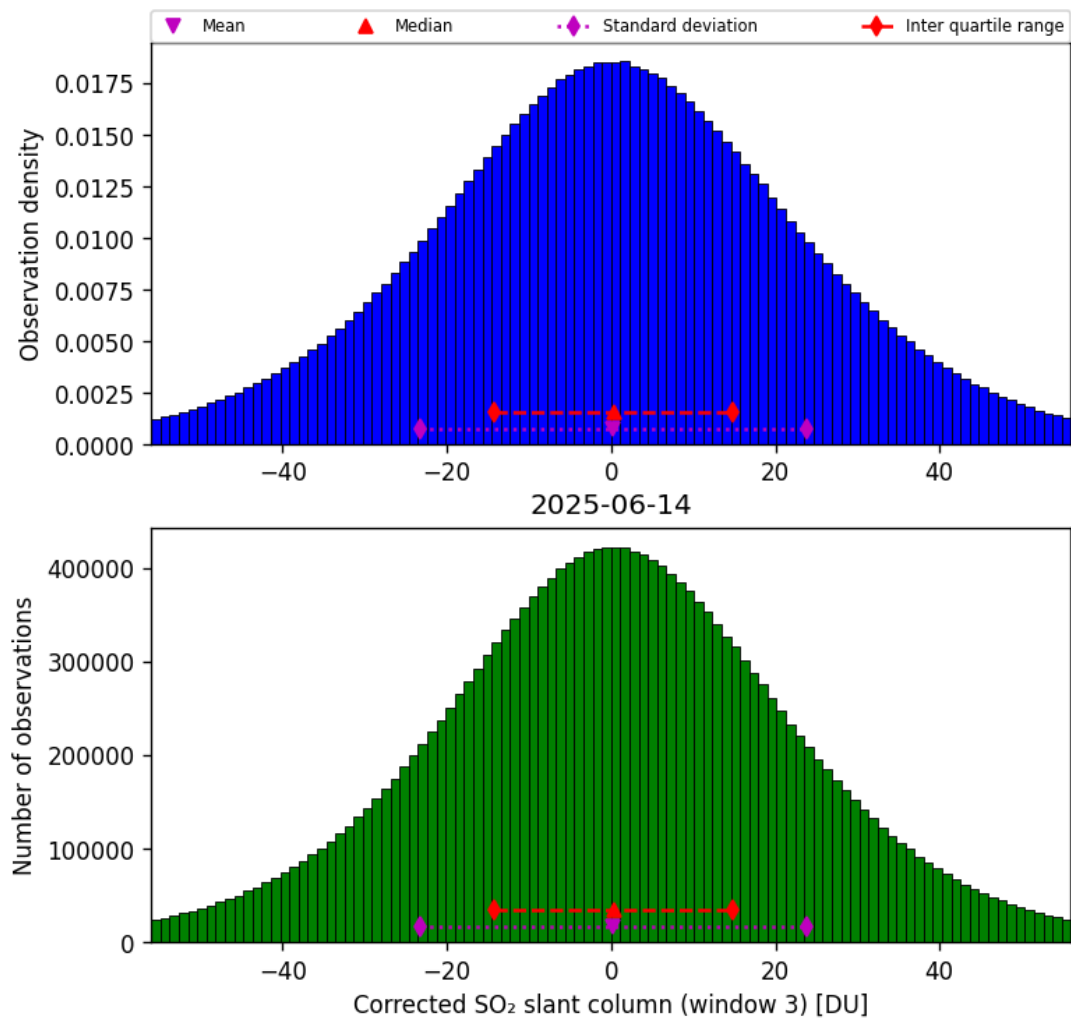


Figure 73: Histogram of “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15

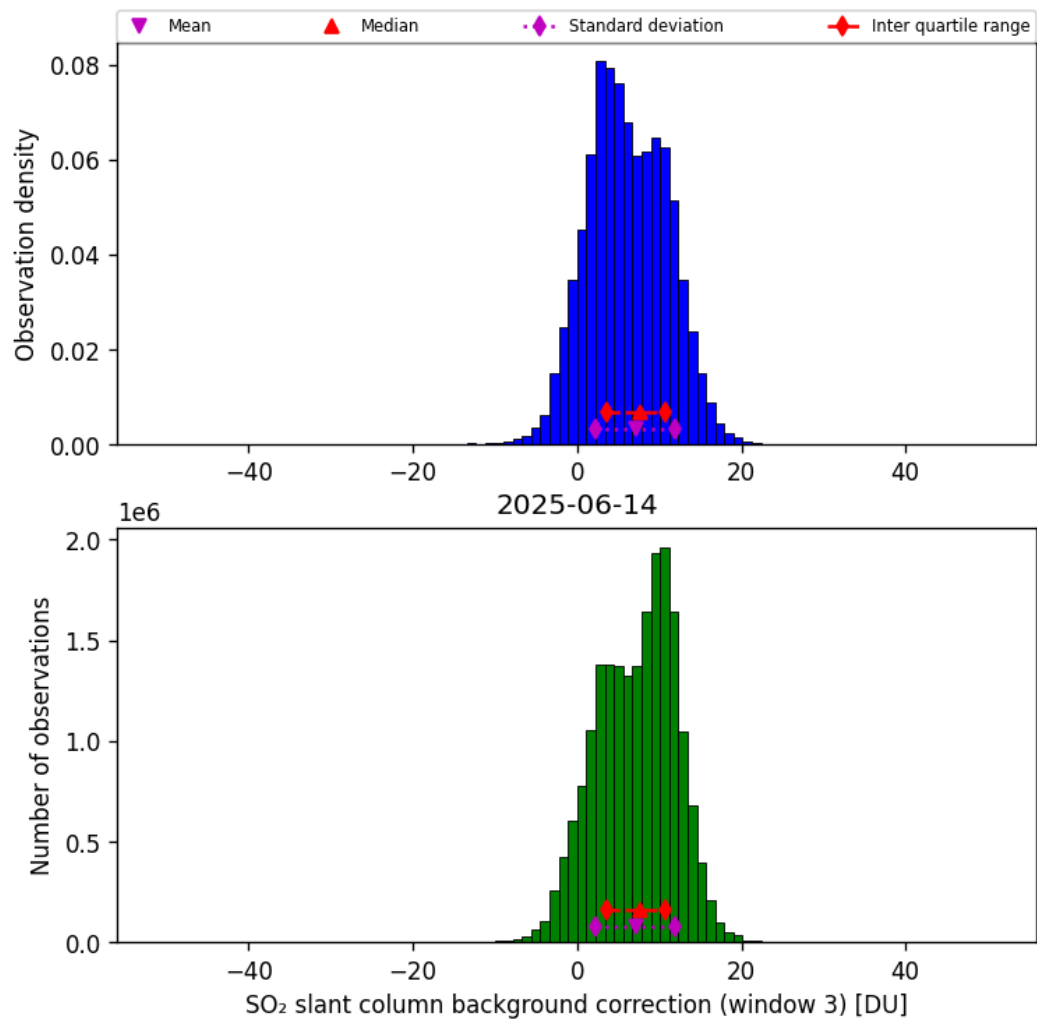


Figure 74: Histogram of “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15

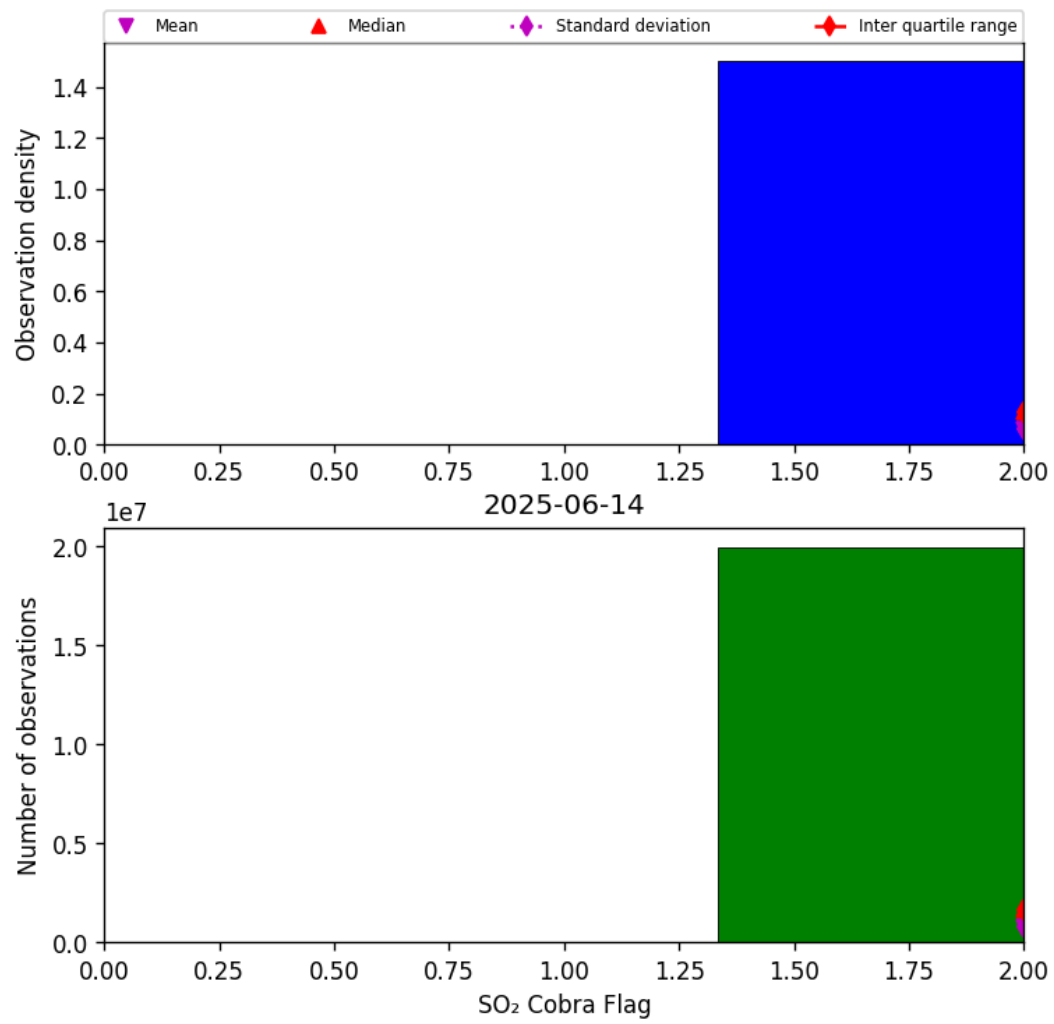


Figure 75: Histogram of “SO₂ Cobra Flag” for 2025-06-13 to 2025-06-15

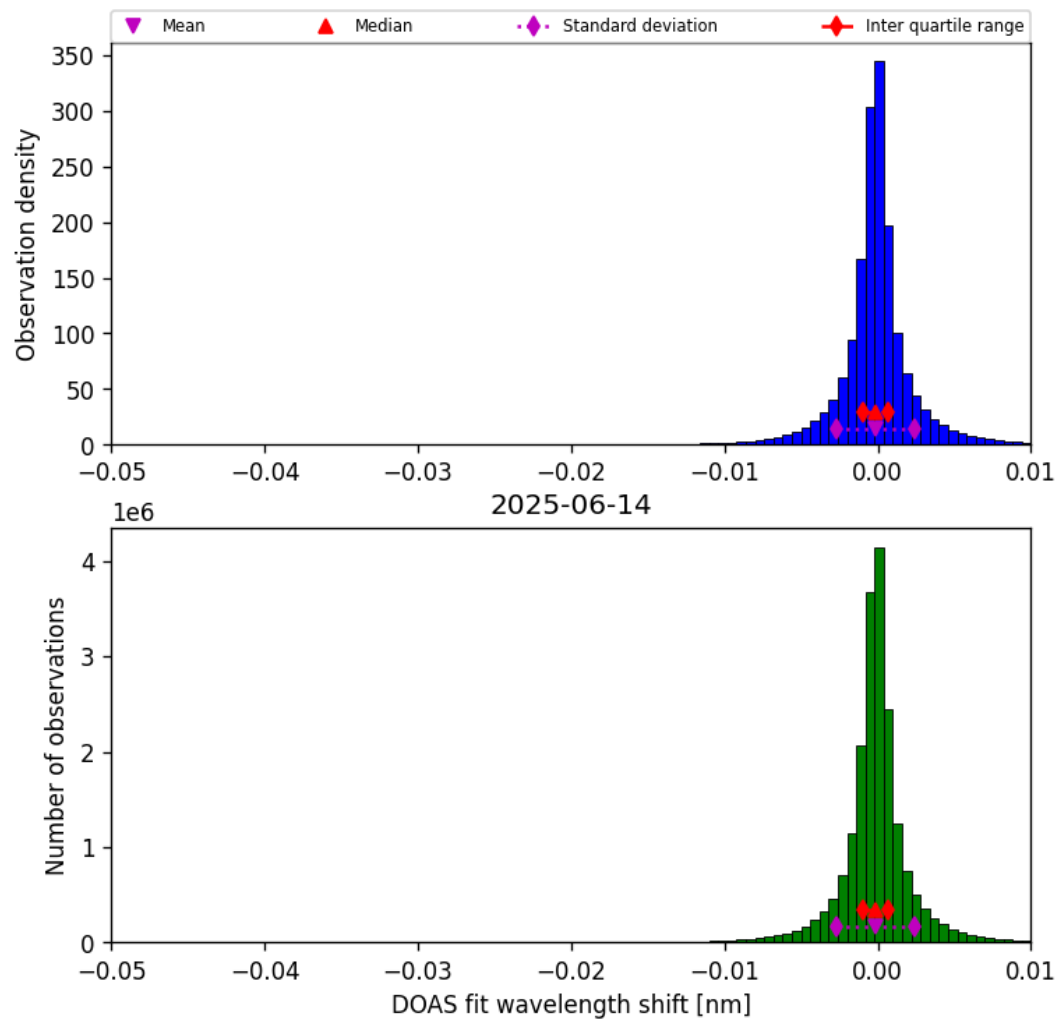


Figure 76: Histogram of “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15

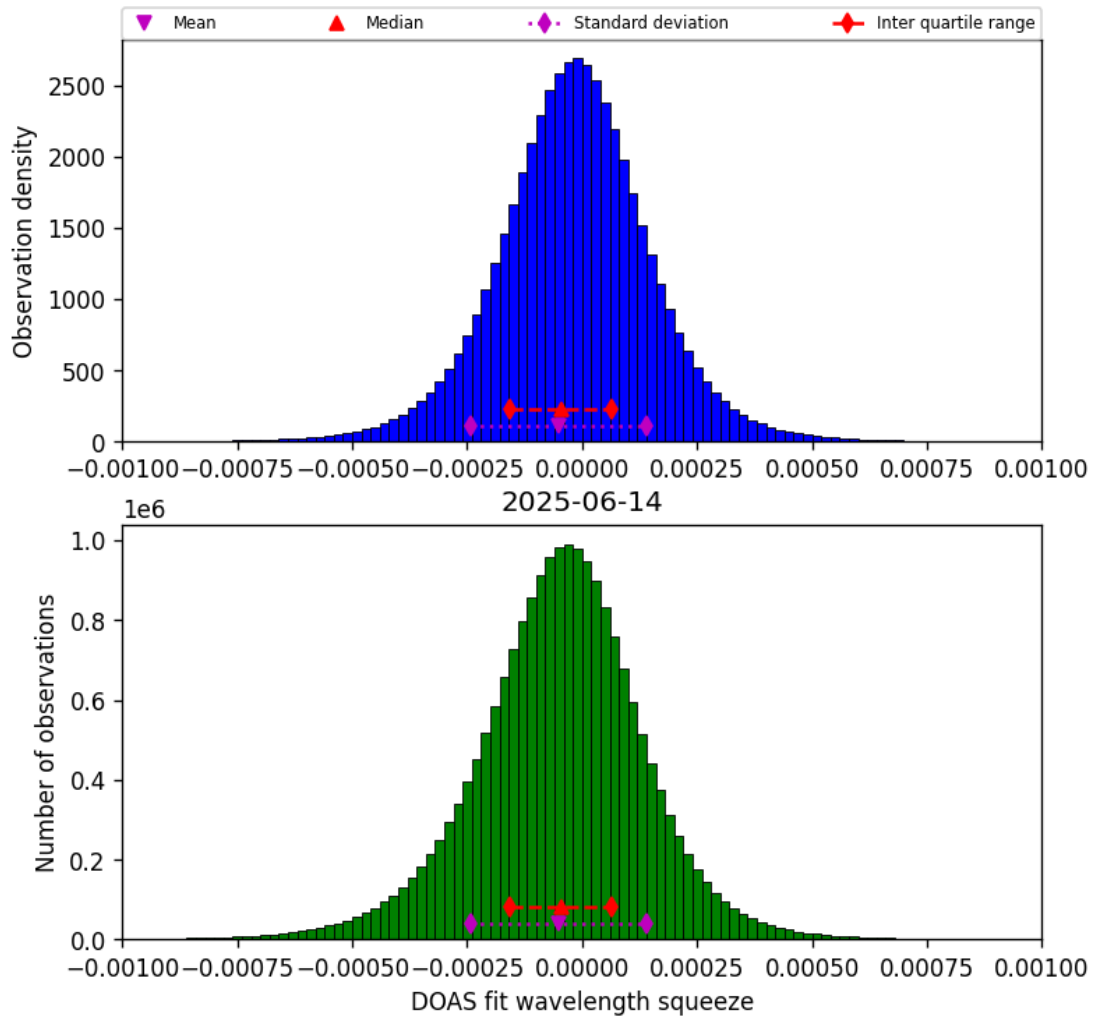


Figure 77: Histogram of “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15

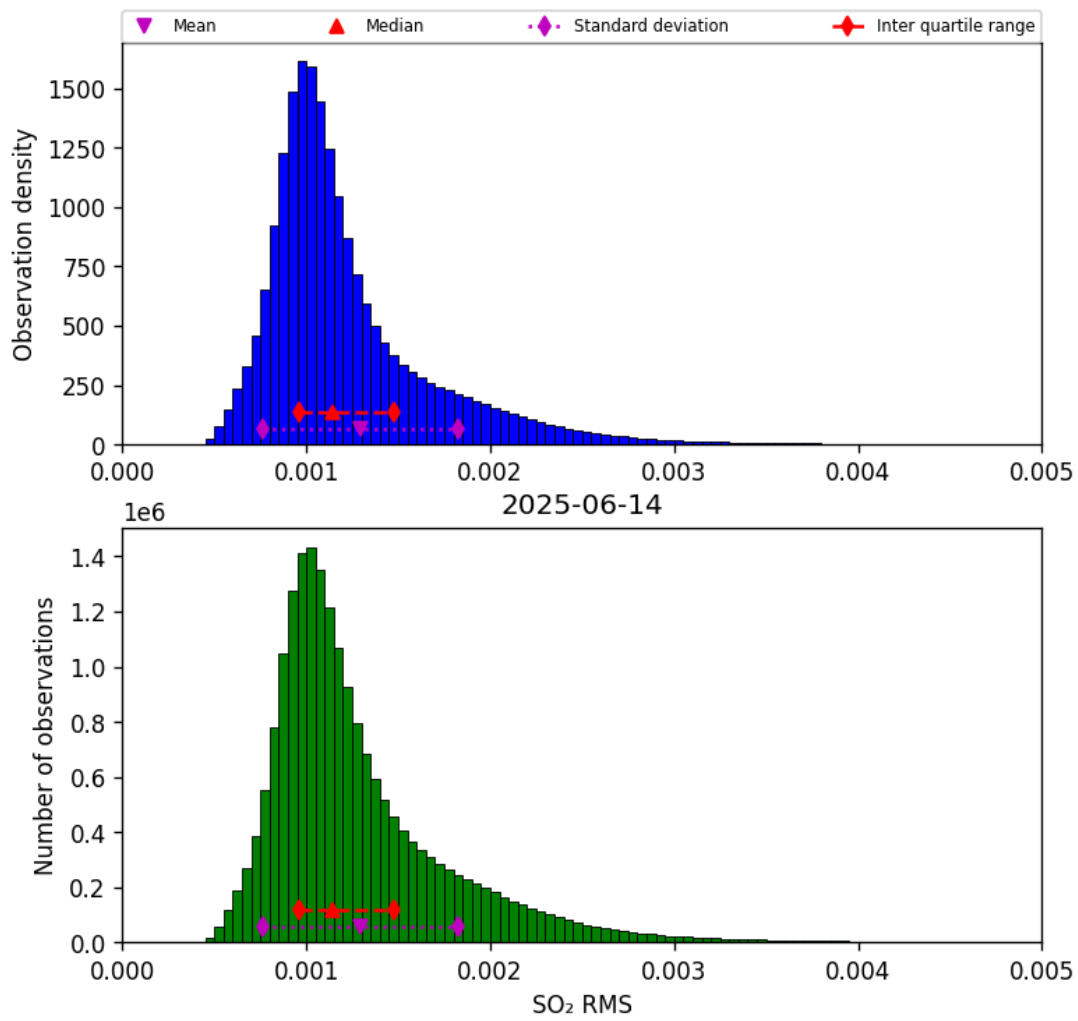


Figure 78: Histogram of “SO₂ RMS” for 2025-06-13 to 2025-06-15

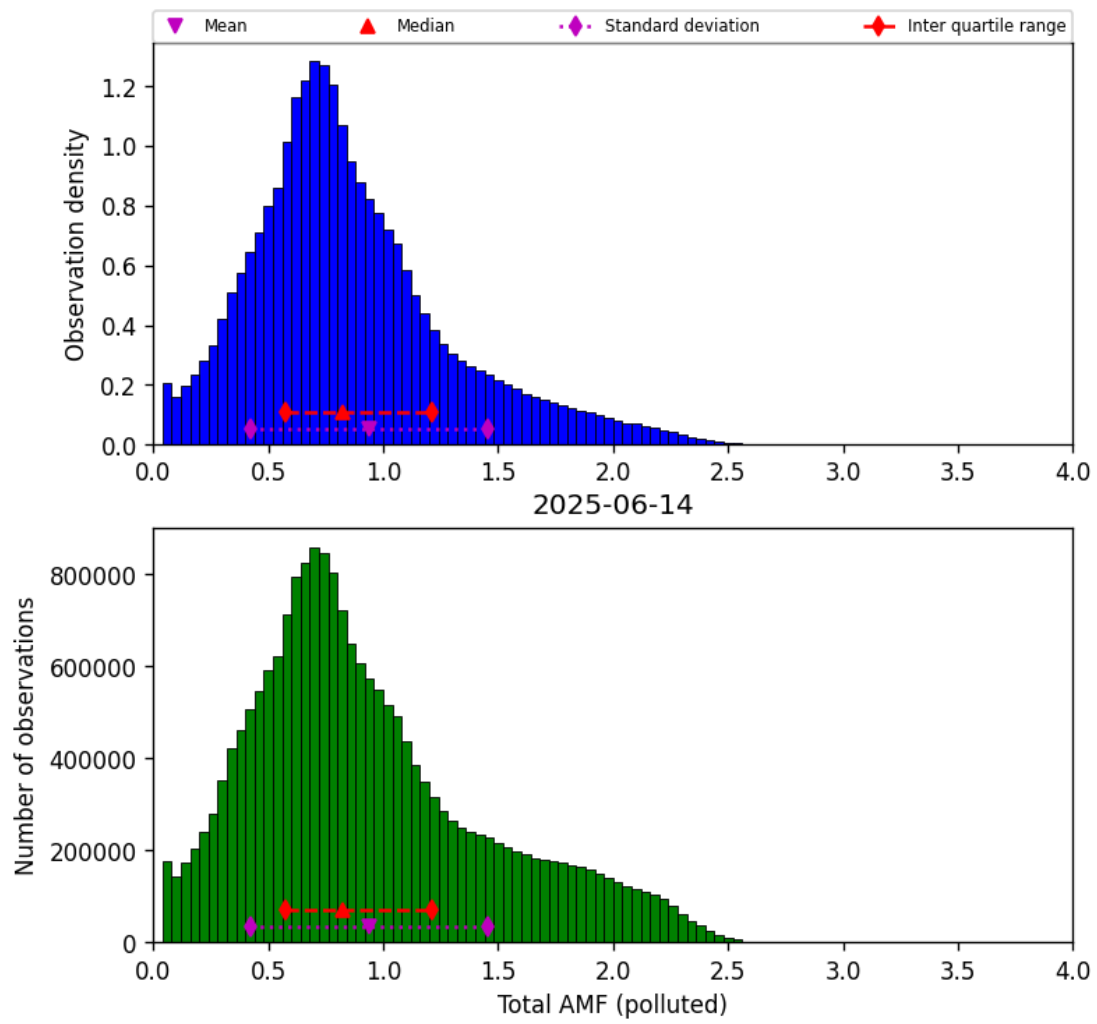


Figure 79: Histogram of “Total AMF (polluted)” for 2025-06-13 to 2025-06-15

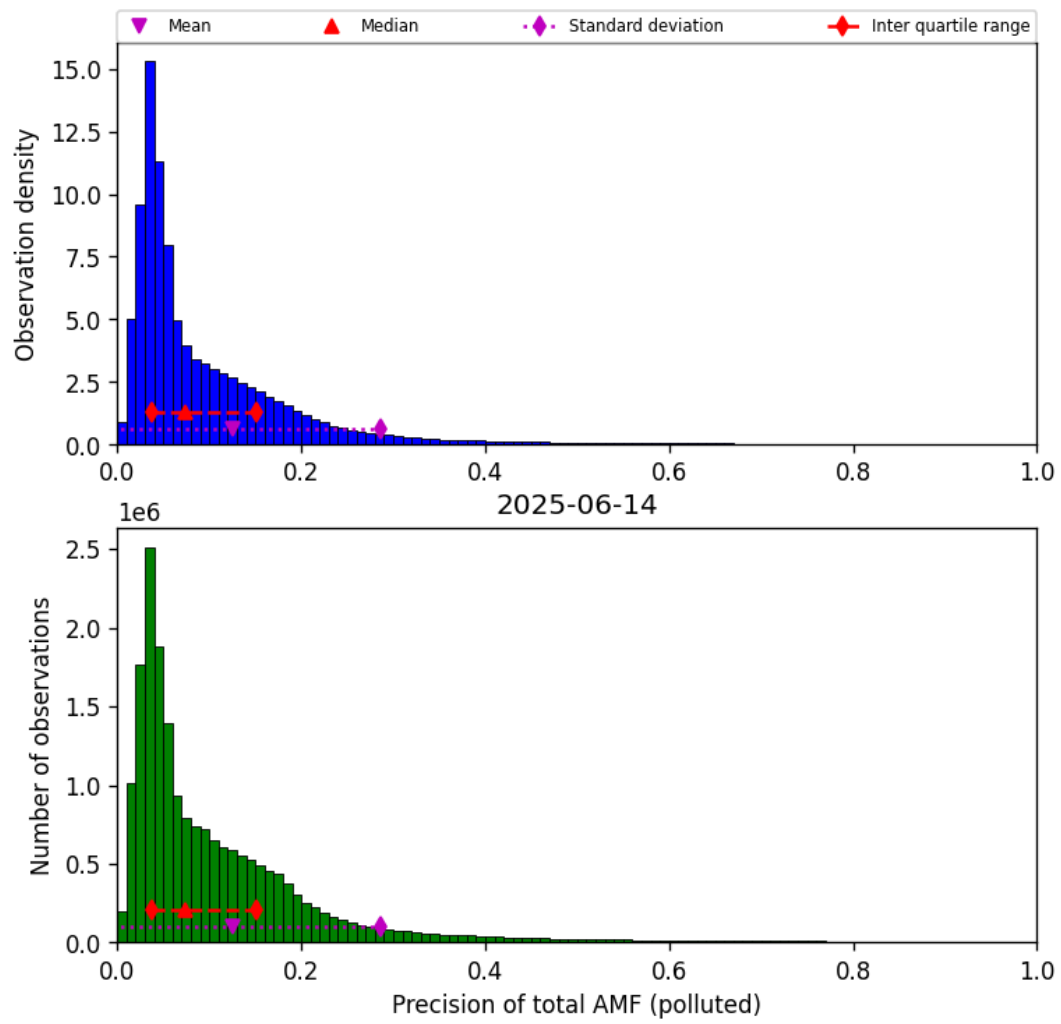


Figure 80: Histogram of “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15

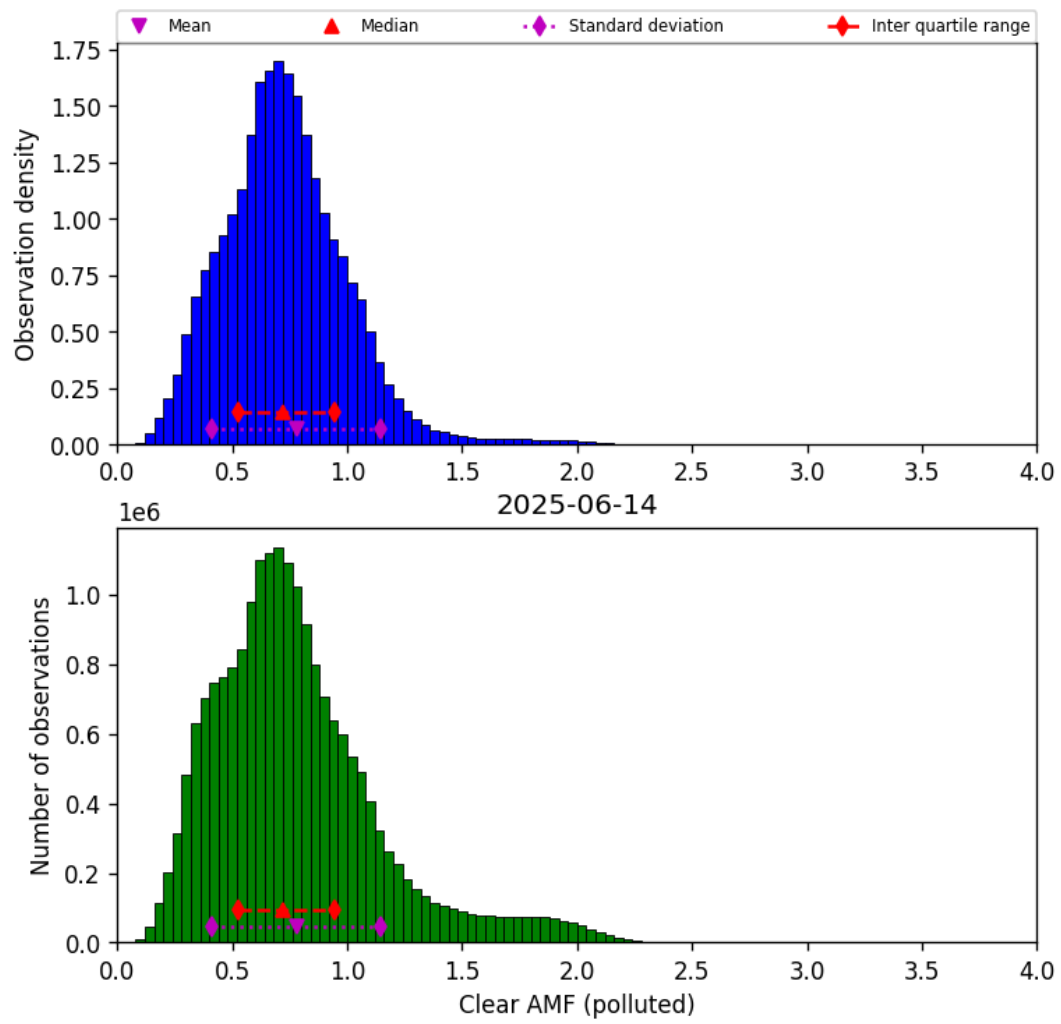


Figure 81: Histogram of “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15

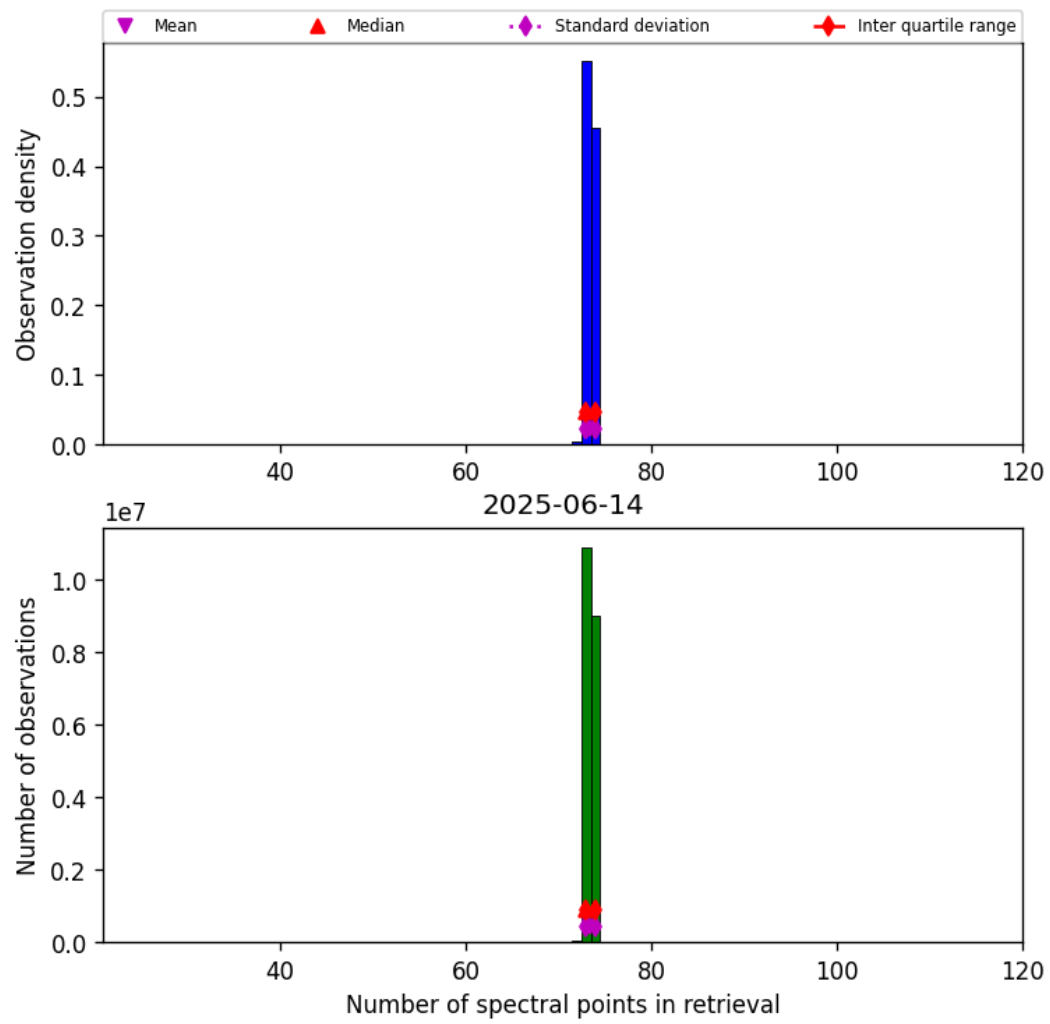


Figure 82: Histogram of “Number of spectral points in retrieval” for 2025-06-13 to 2025-06-15

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.

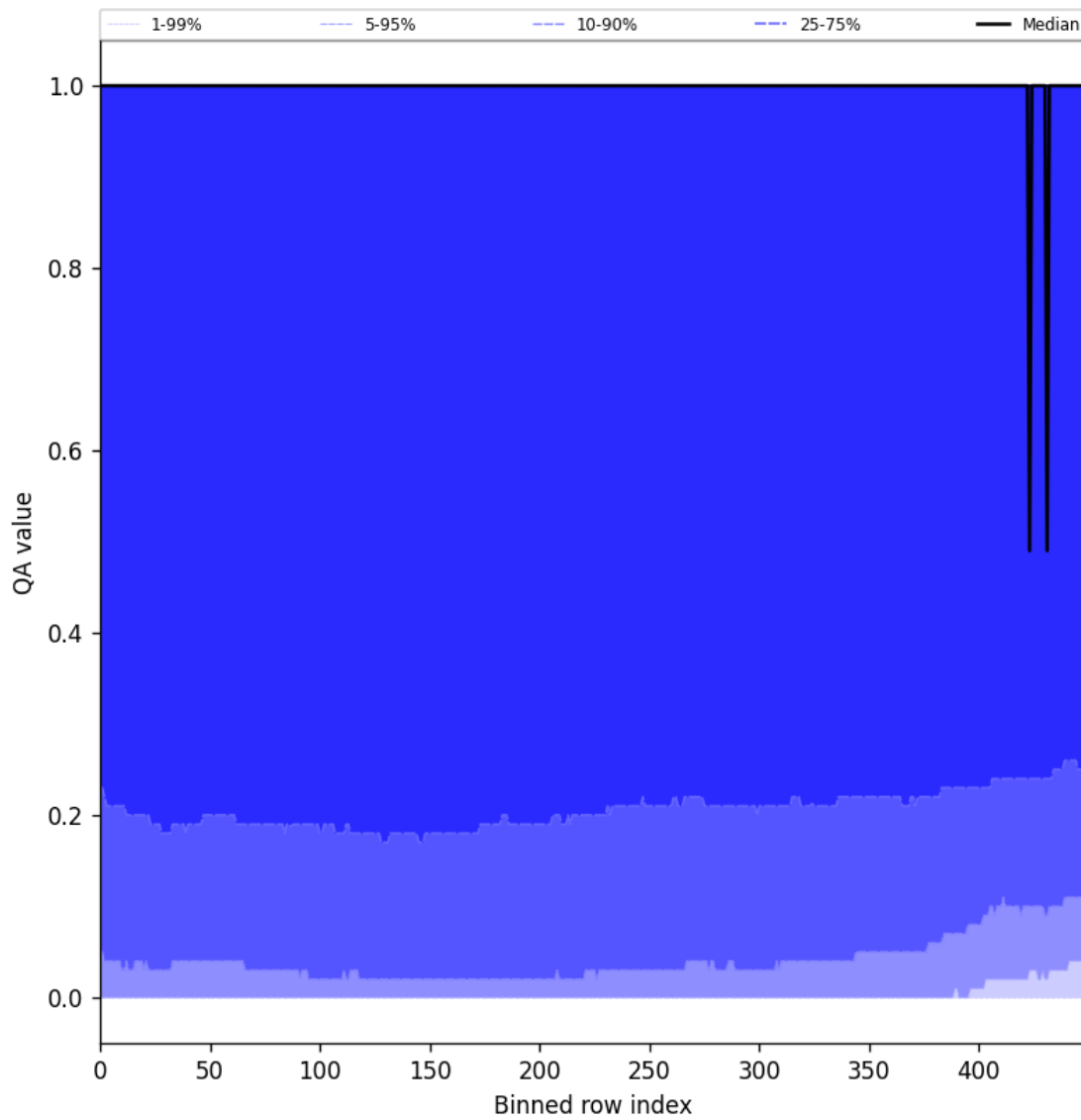


Figure 83: Along track statistics of “QA value” for 2025-06-13 to 2025-06-15

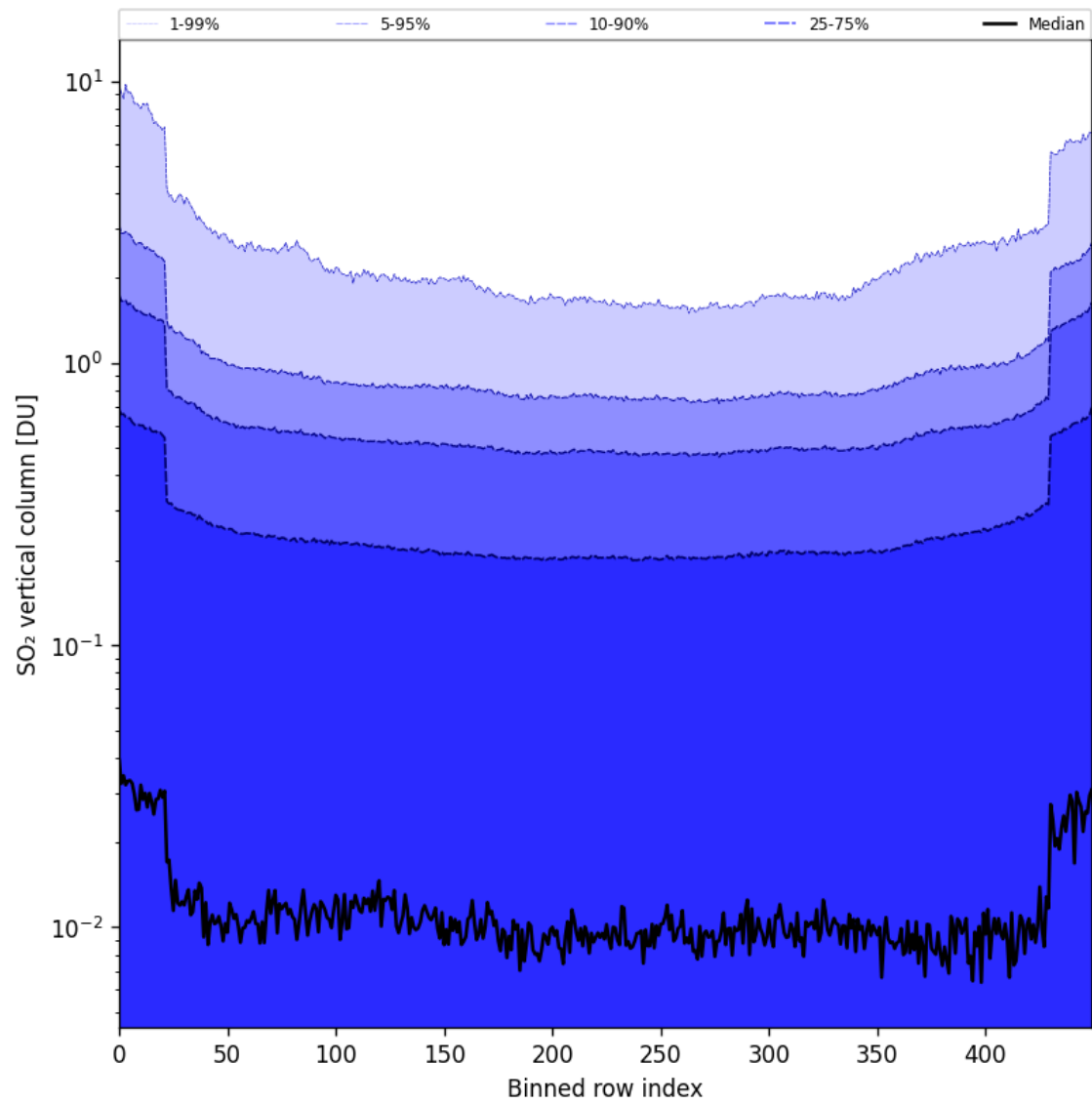


Figure 84: Along track statistics of “SO₂ vertical column” for 2025-06-13 to 2025-06-15

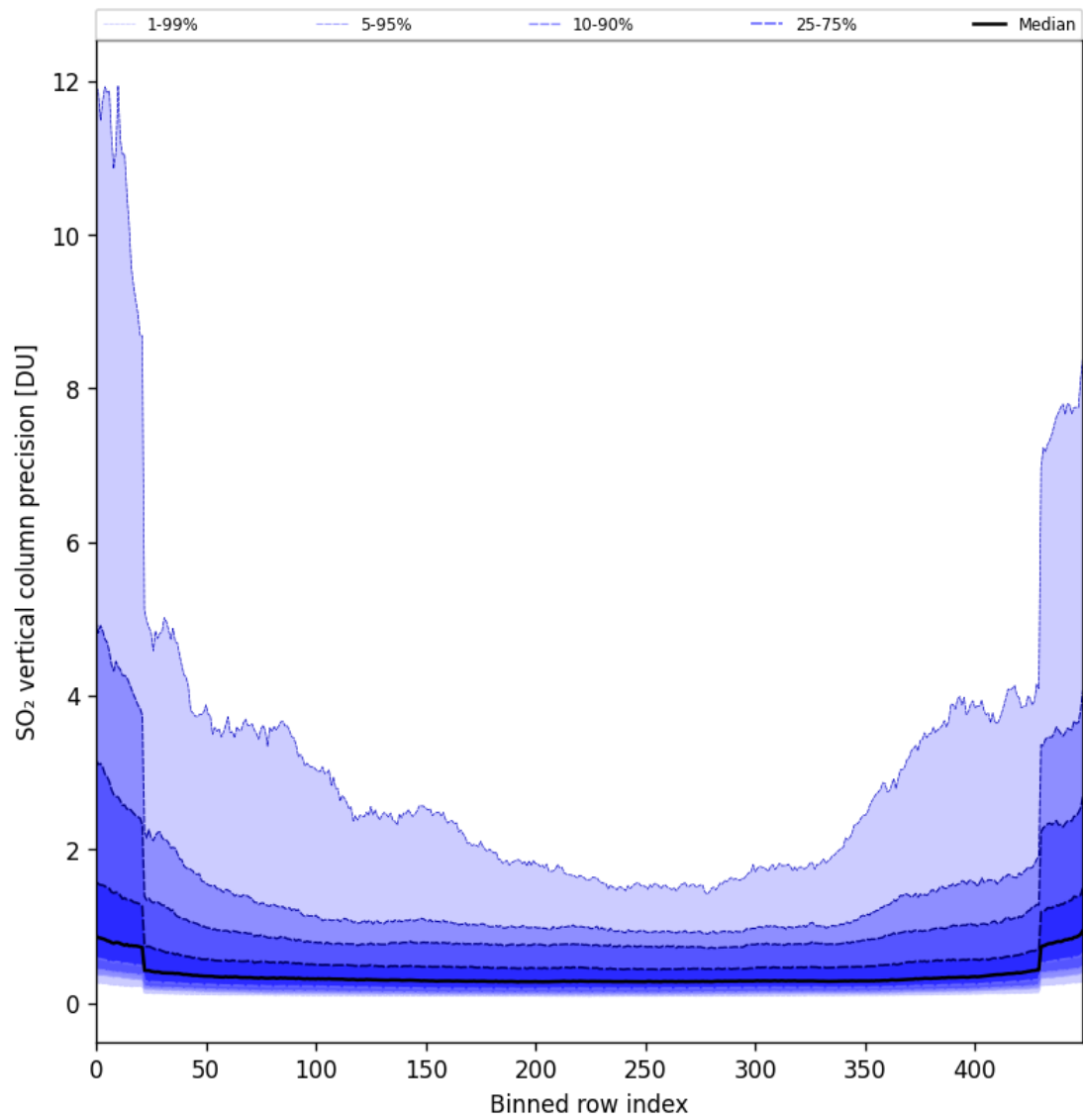


Figure 85: Along track statistics of “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15

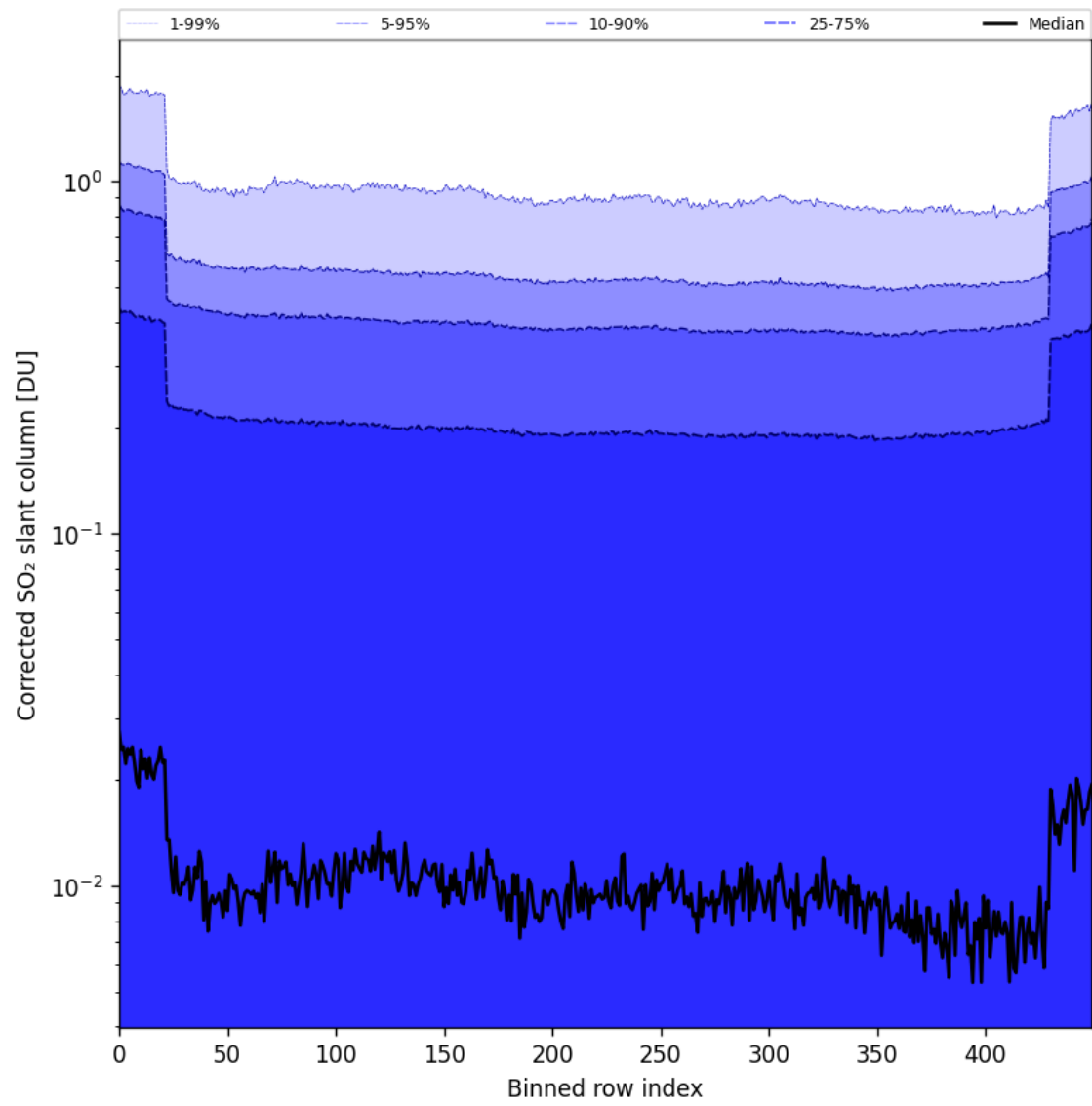


Figure 86: Along track statistics of "Corrected SO₂ slant column" for 2025-06-13 to 2025-06-15

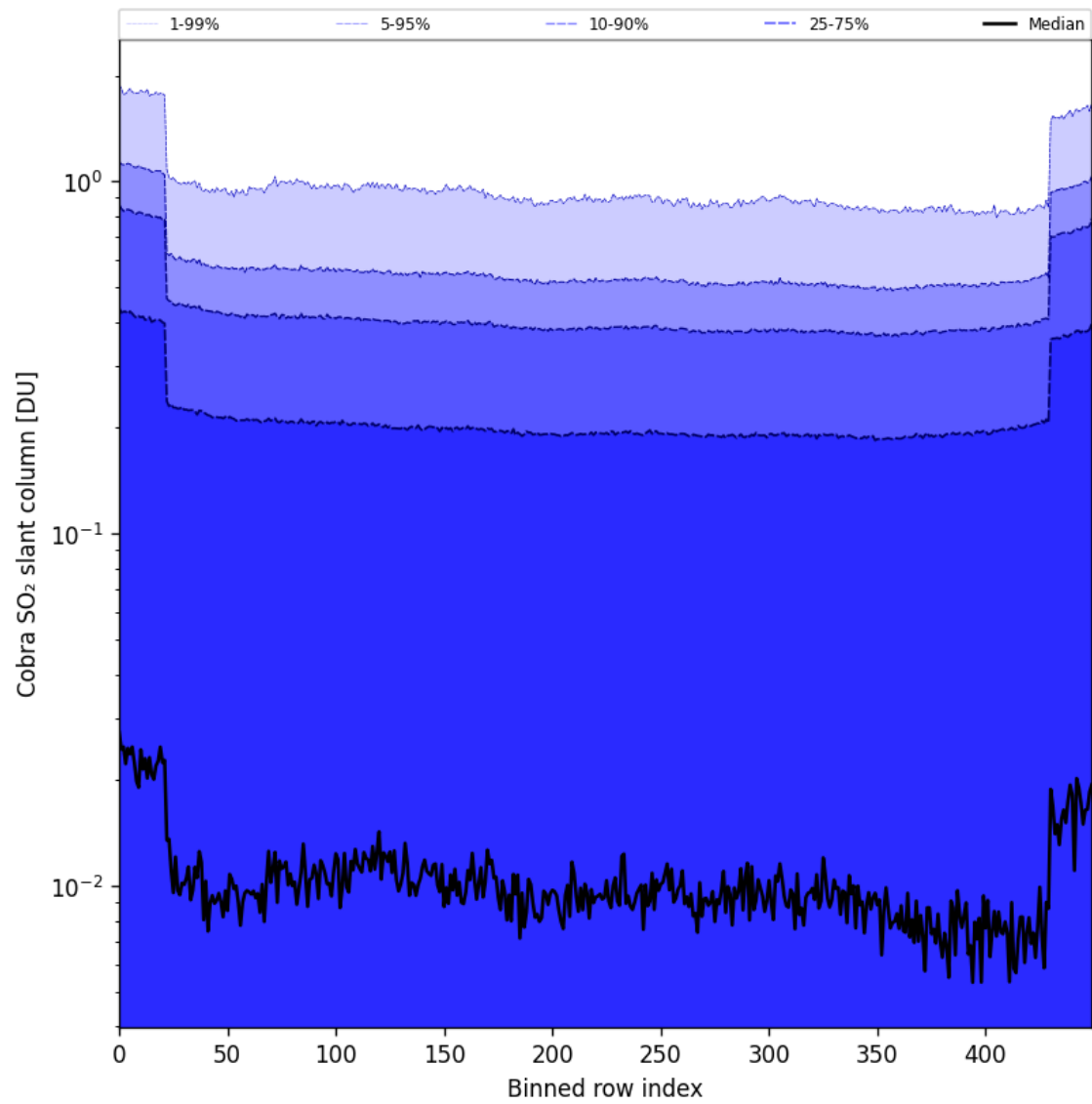


Figure 87: Along track statistics of “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15

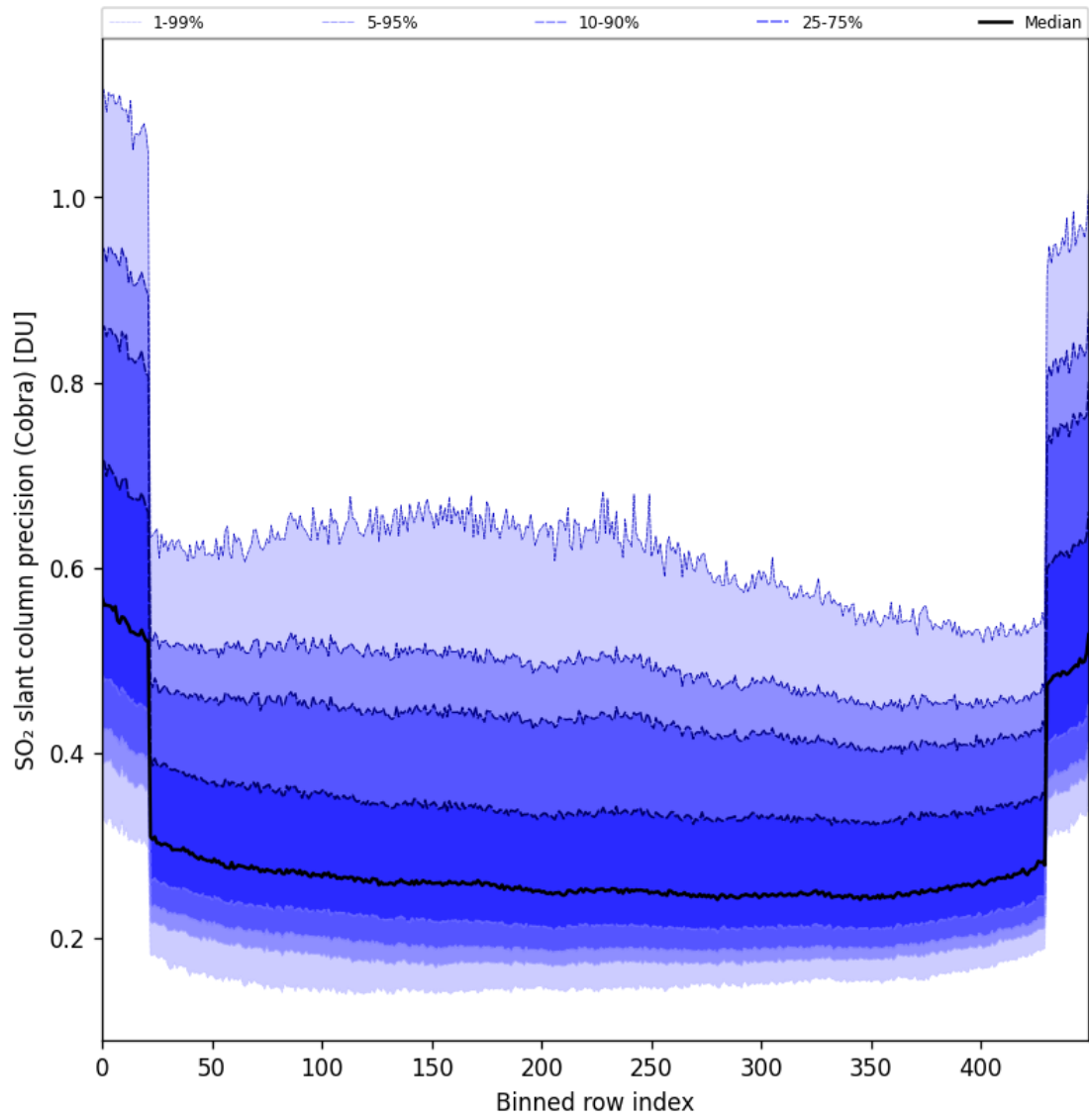


Figure 88: Along track statistics of “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15

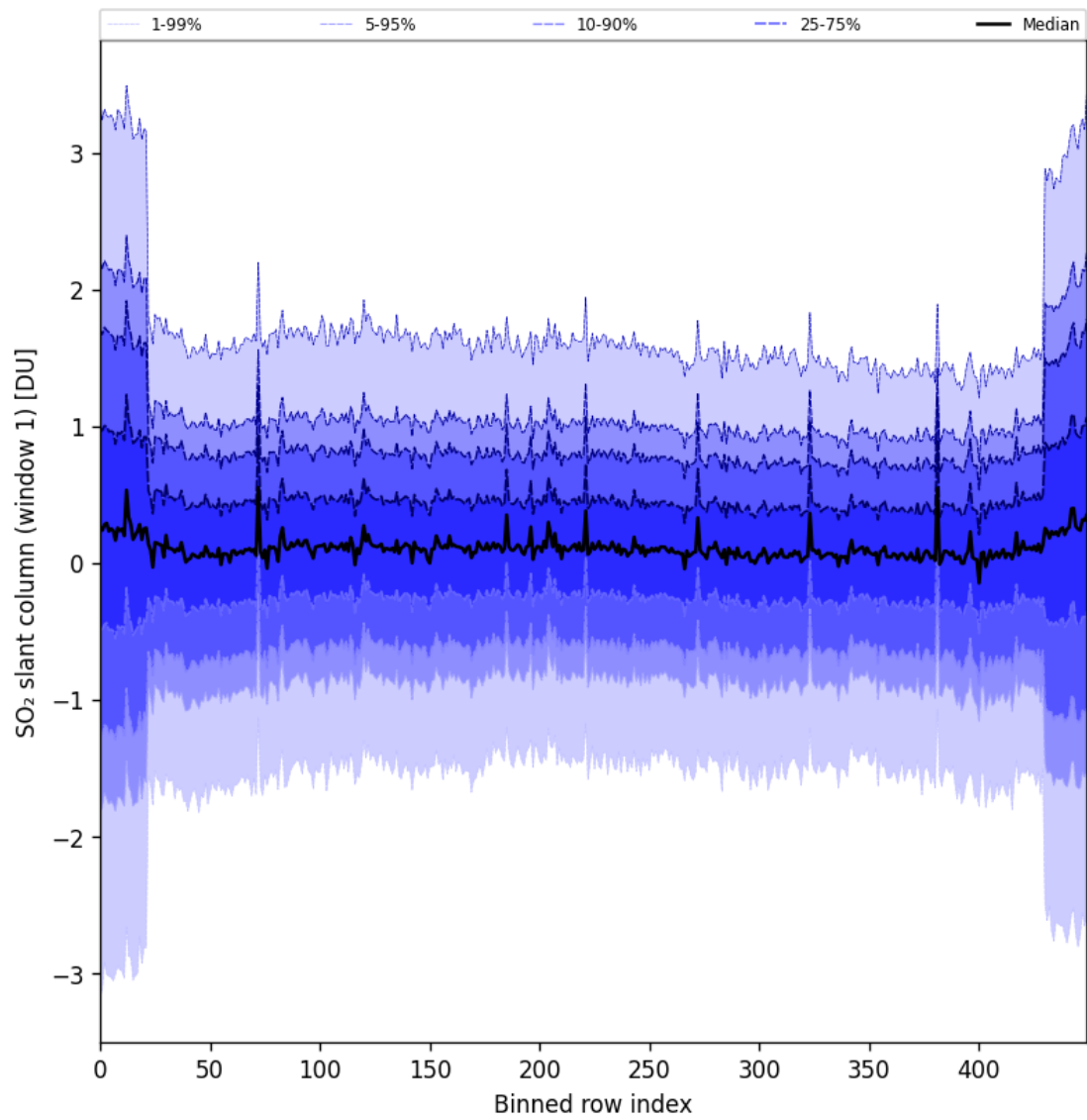


Figure 89: Along track statistics of “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15

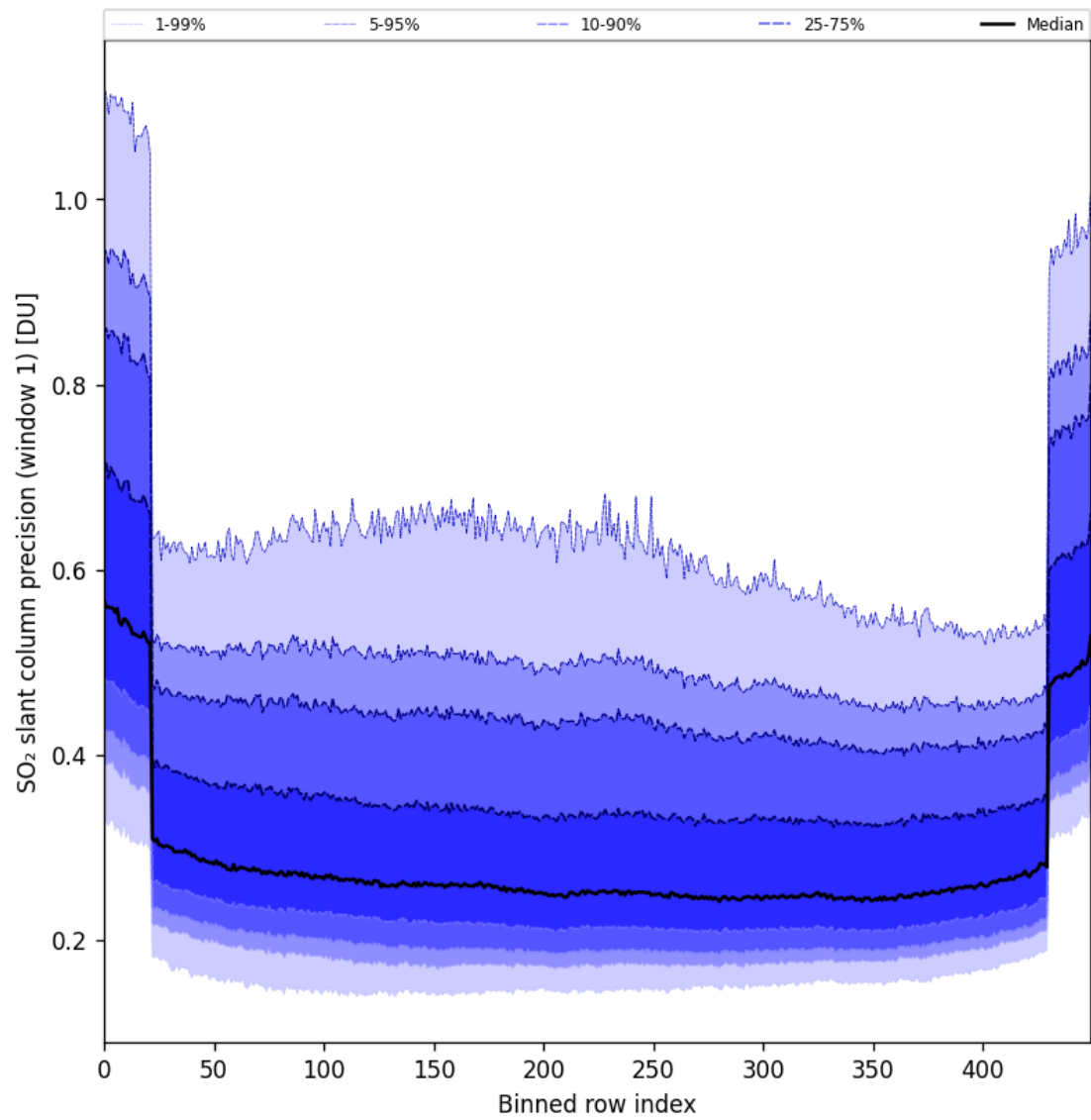


Figure 90: Along track statistics of “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15

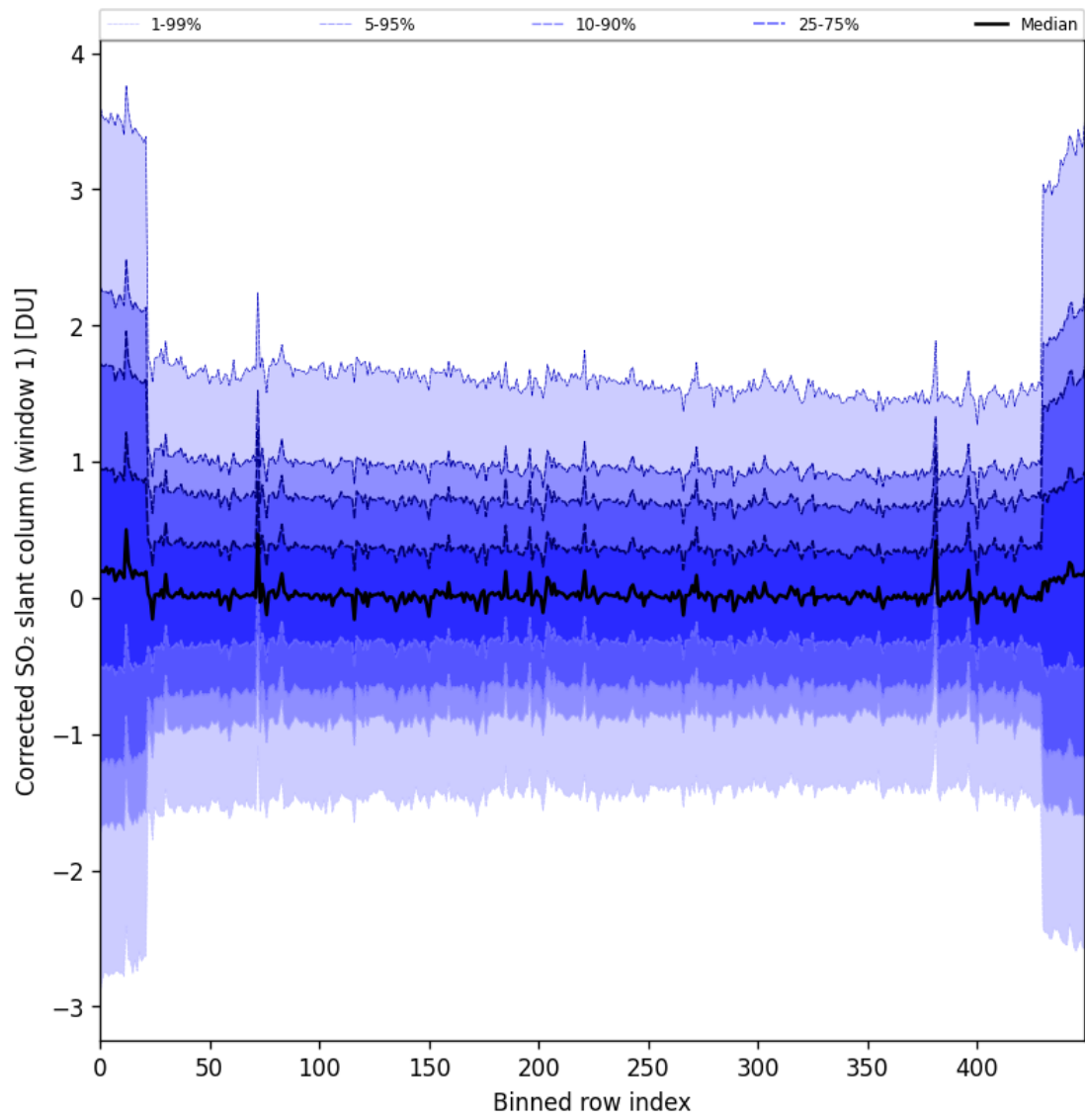


Figure 91: Along track statistics of “Corrected SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15

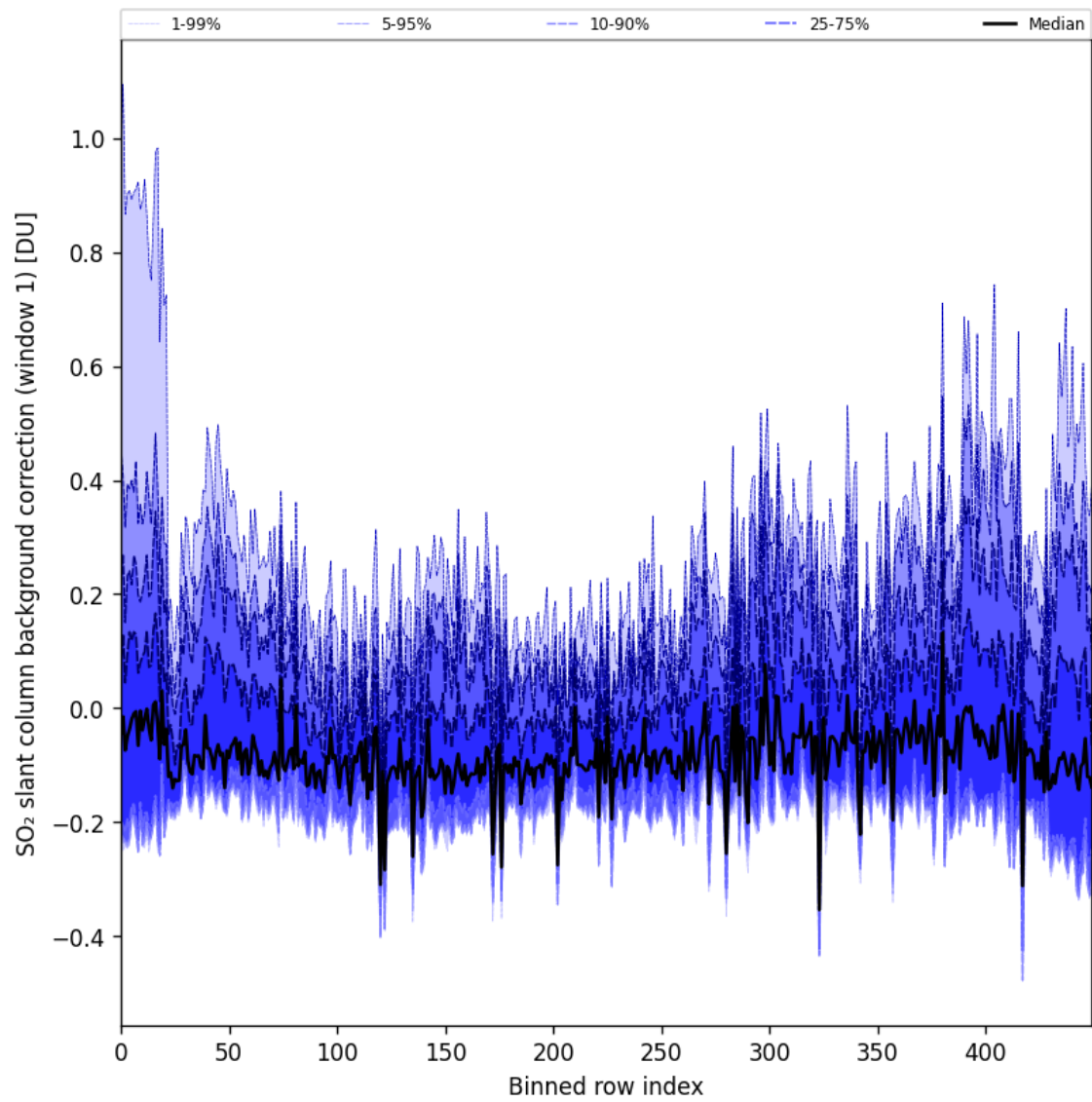


Figure 92: Along track statistics of “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15

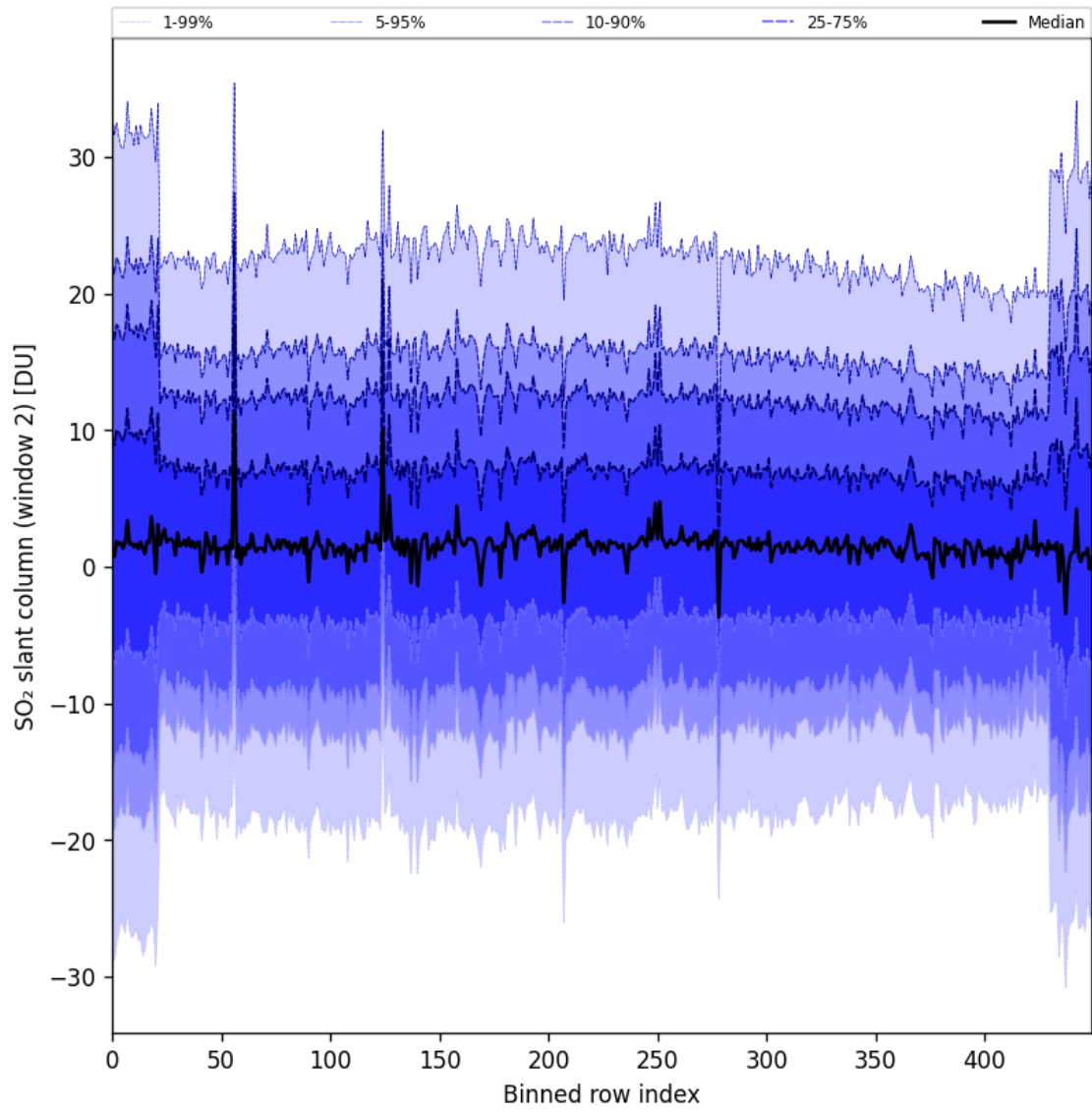


Figure 93: Along track statistics of “SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15

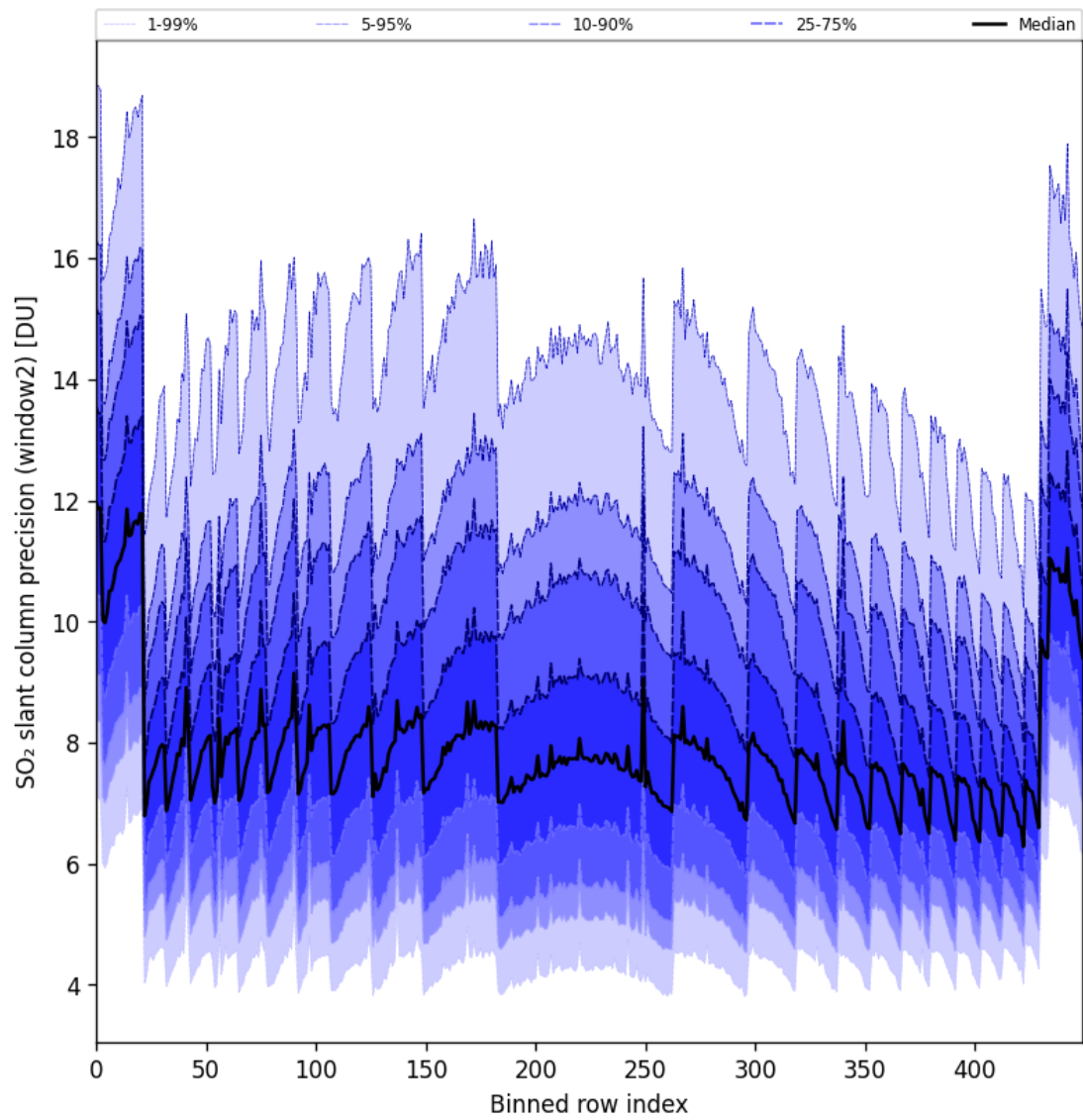


Figure 94: Along track statistics of “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15

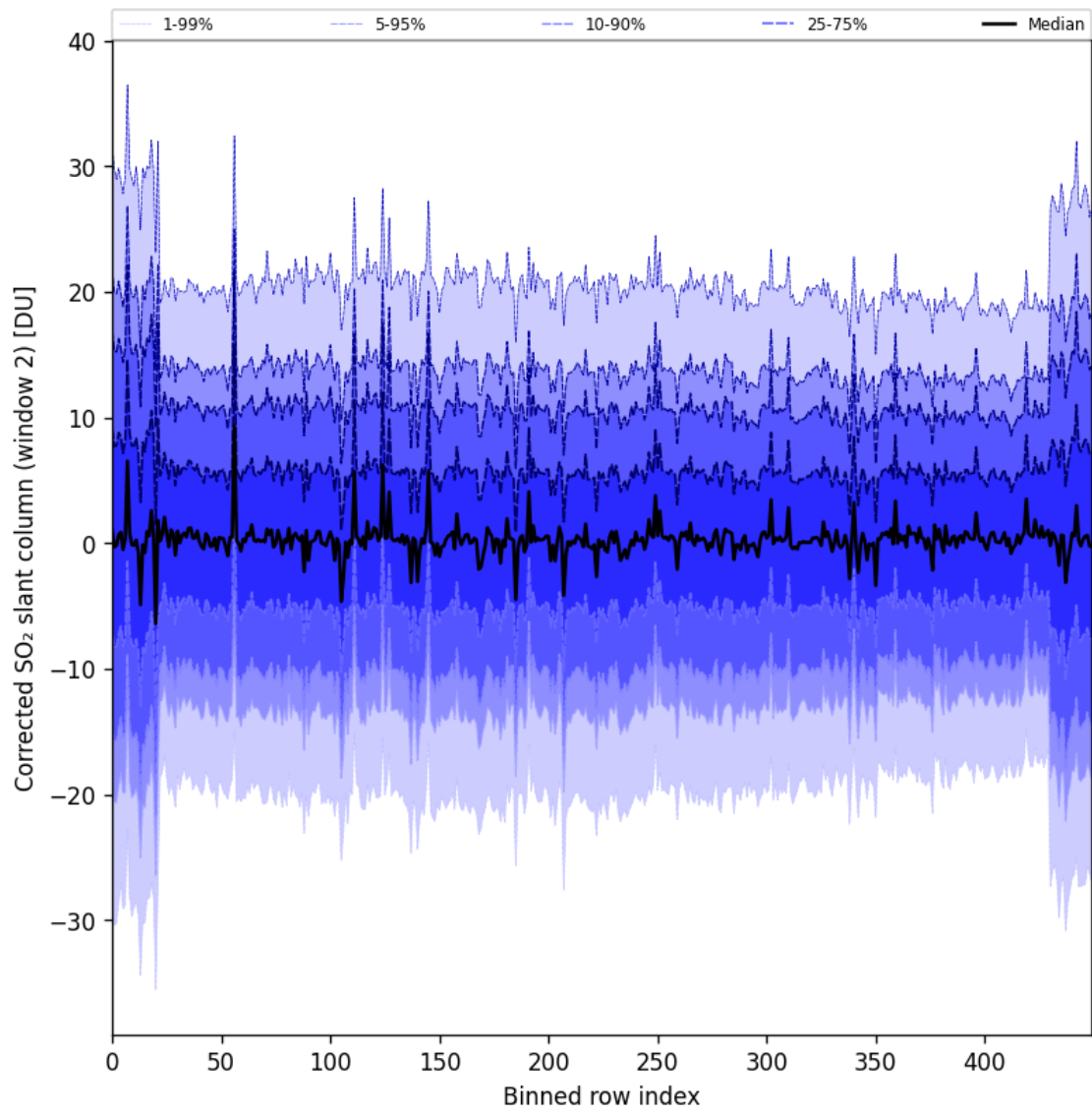


Figure 95: Along track statistics of “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15

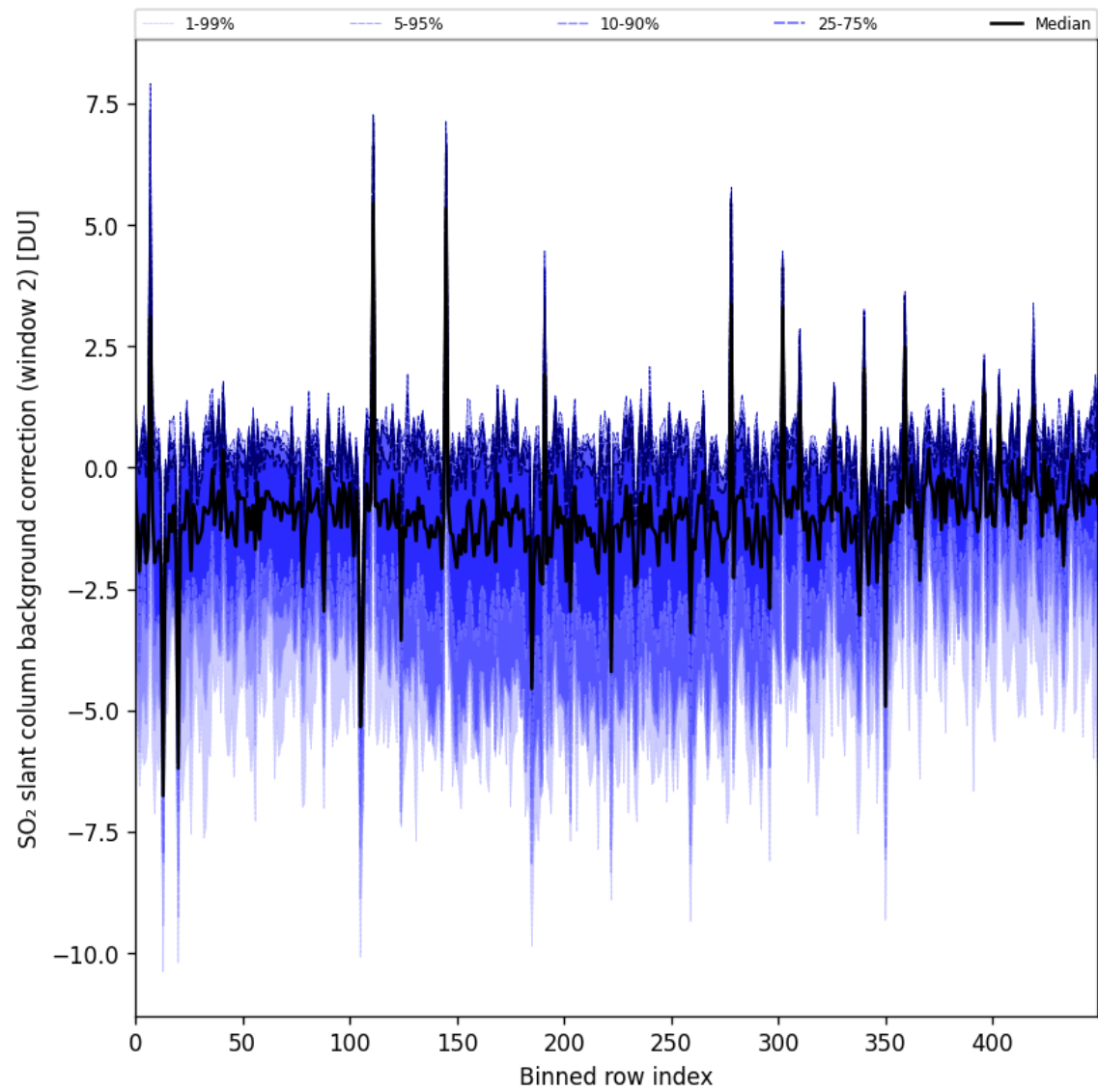


Figure 96: Along track statistics of “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15

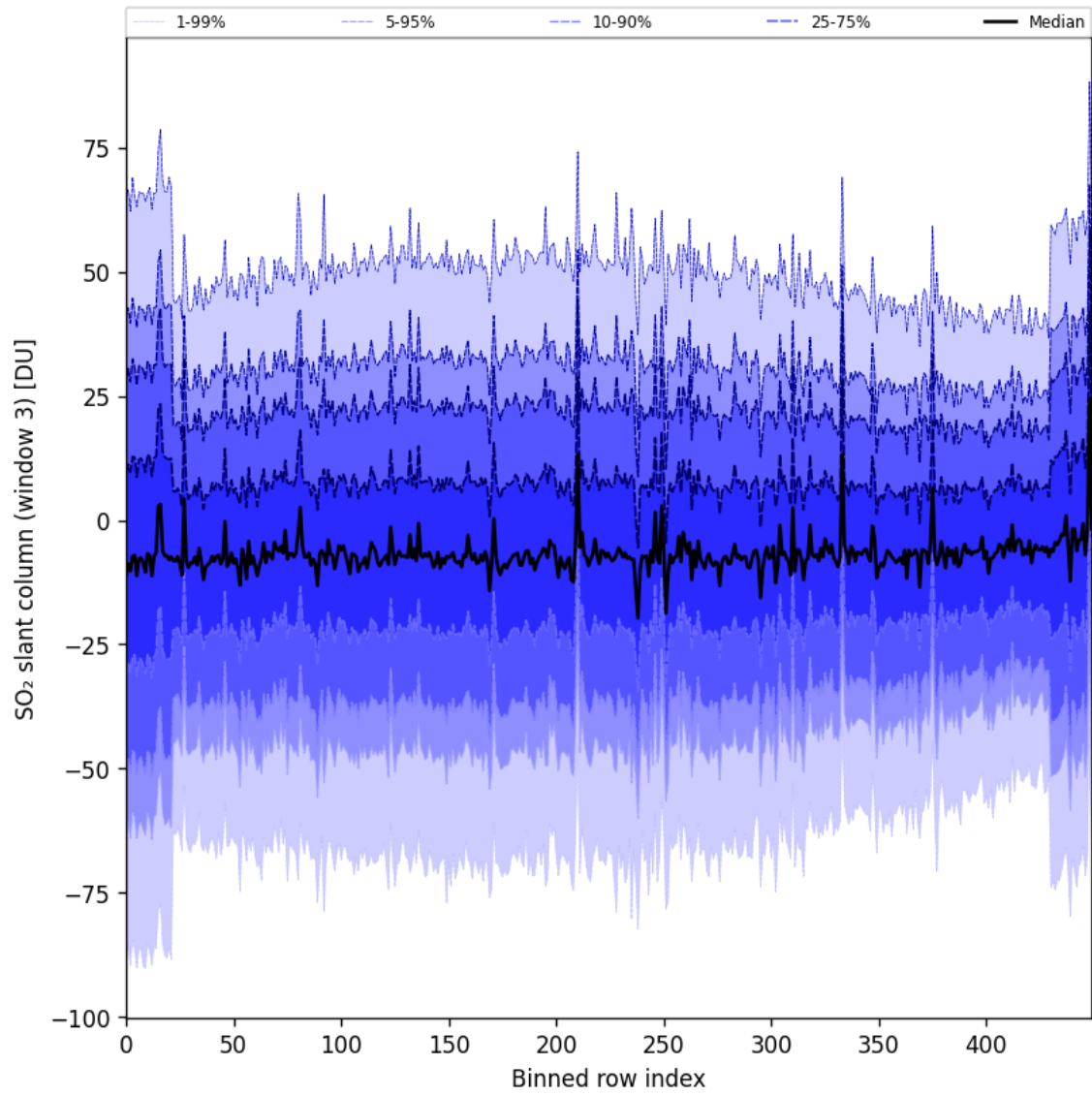


Figure 97: Along track statistics of “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15

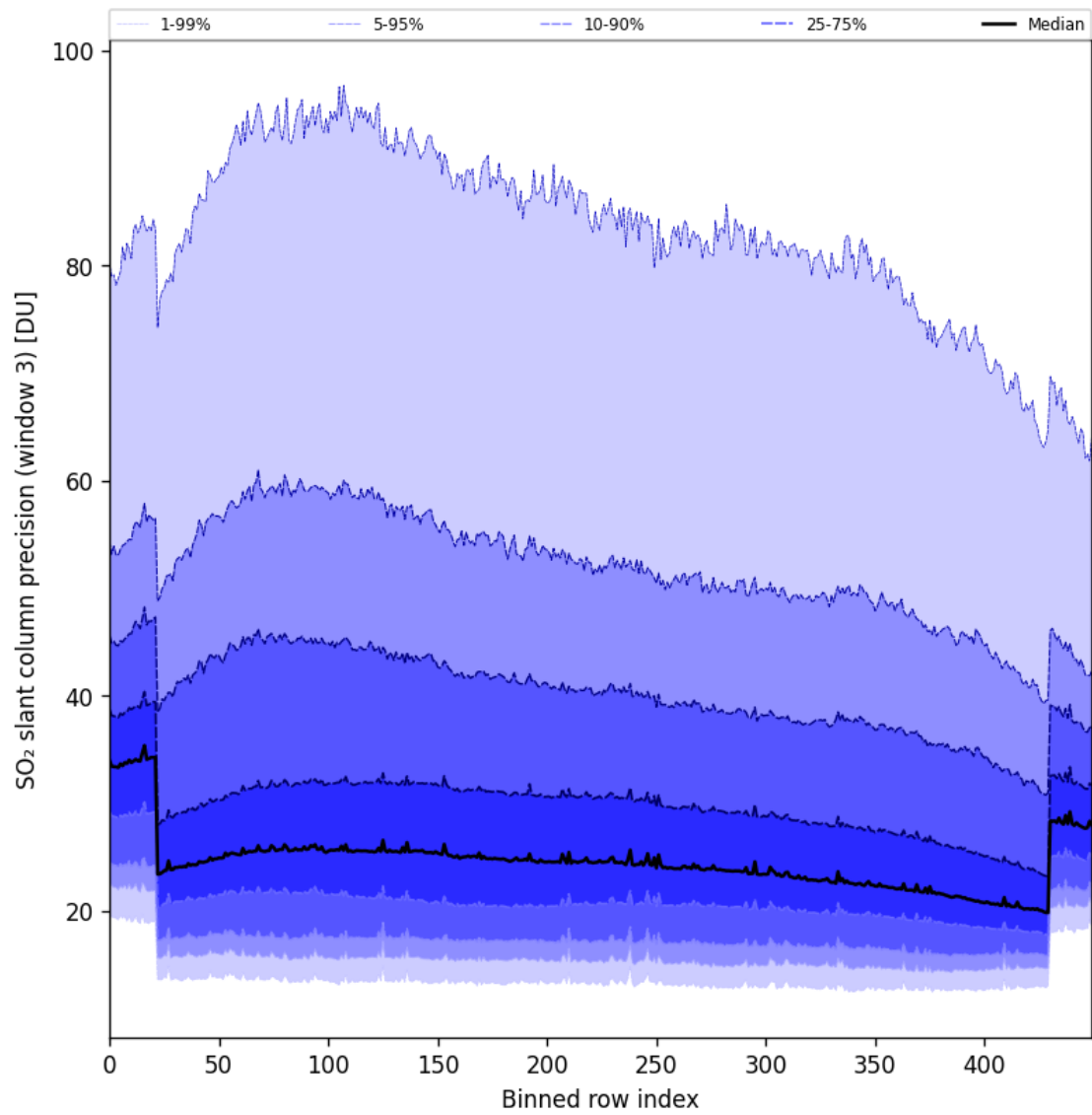


Figure 98: Along track statistics of “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15

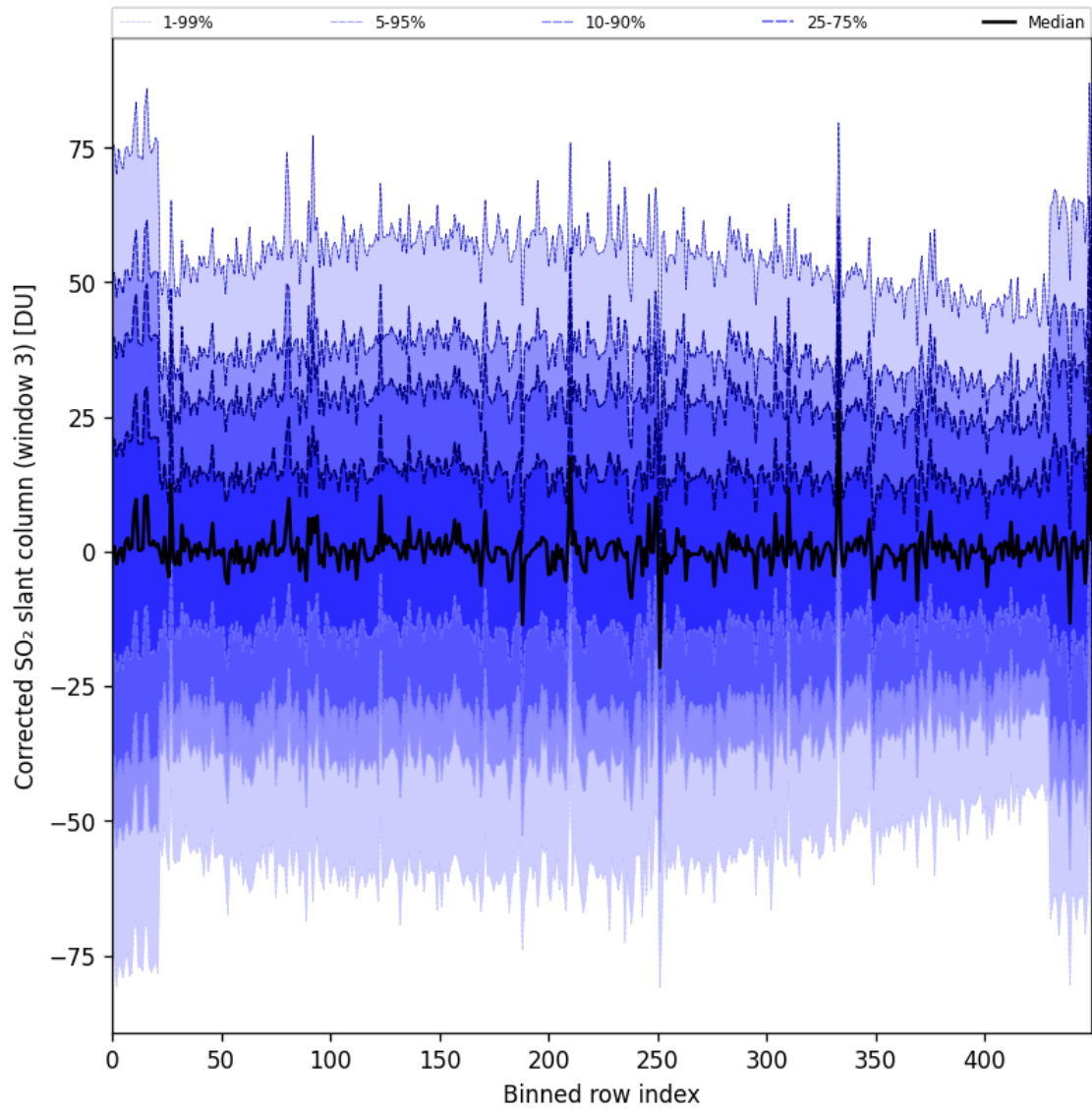


Figure 99: Along track statistics of “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15

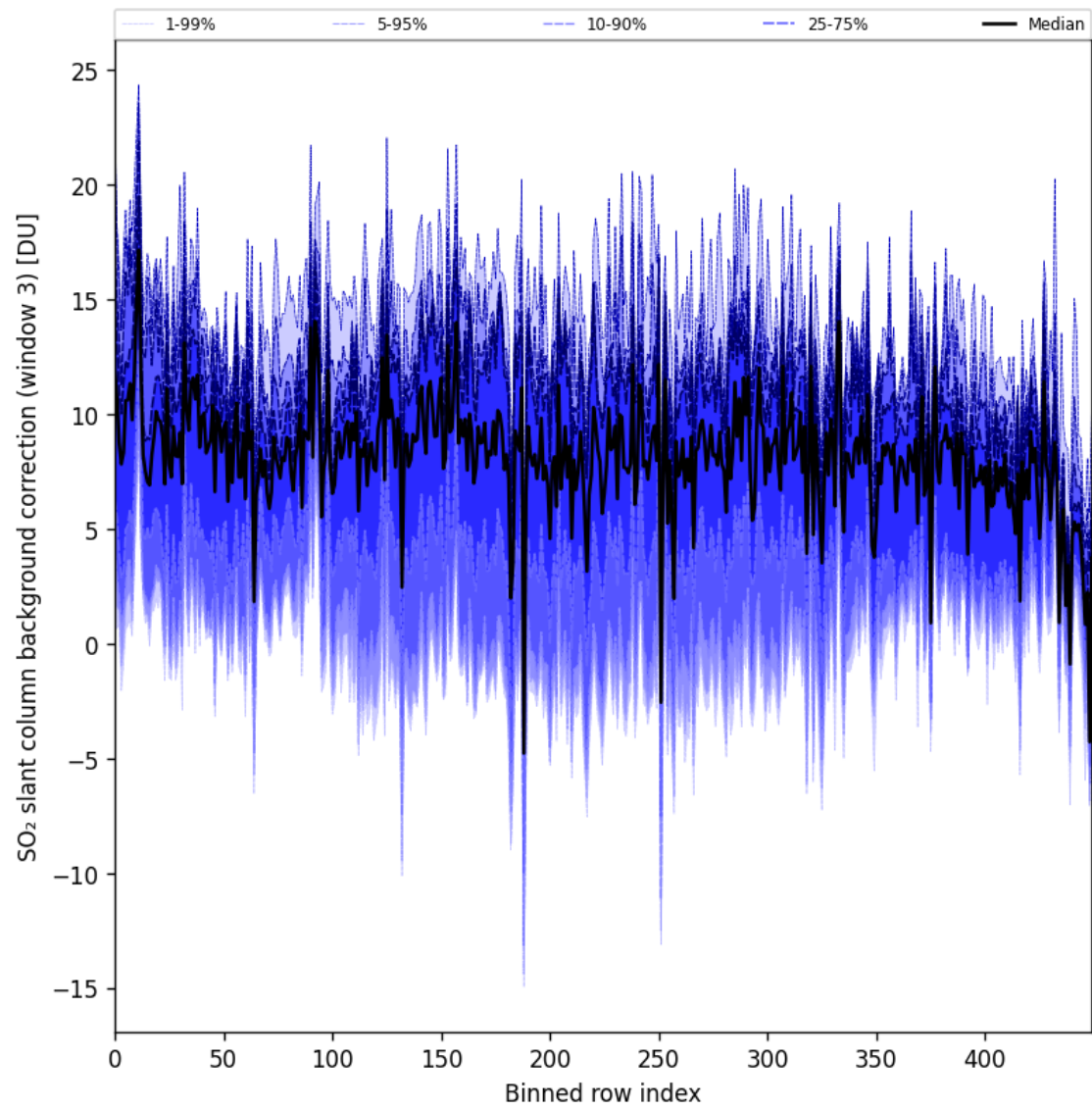


Figure 100: Along track statistics of “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15

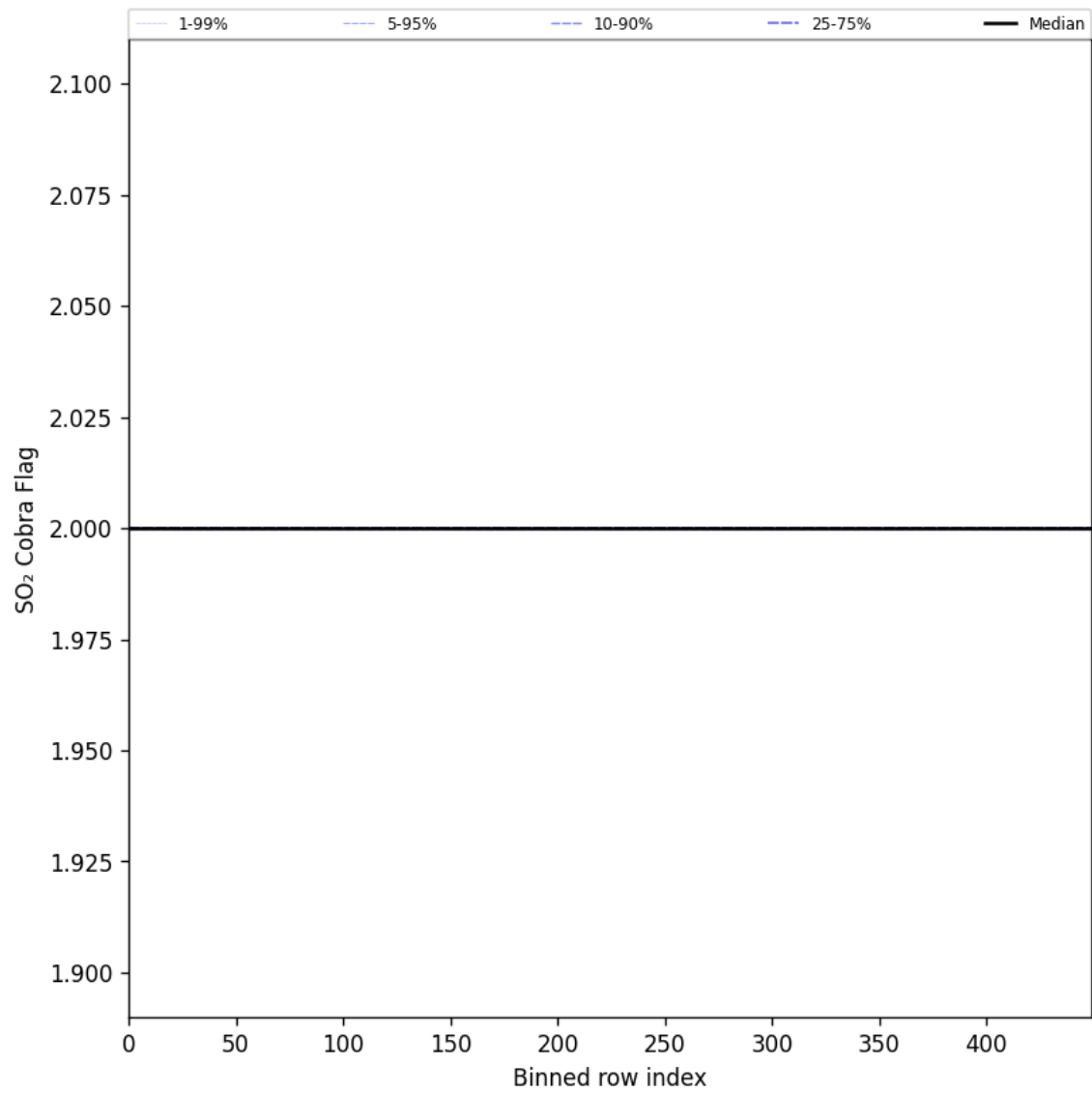


Figure 101: Along track statistics of “SO₂ Cobra Flag” for 2025-06-13 to 2025-06-15

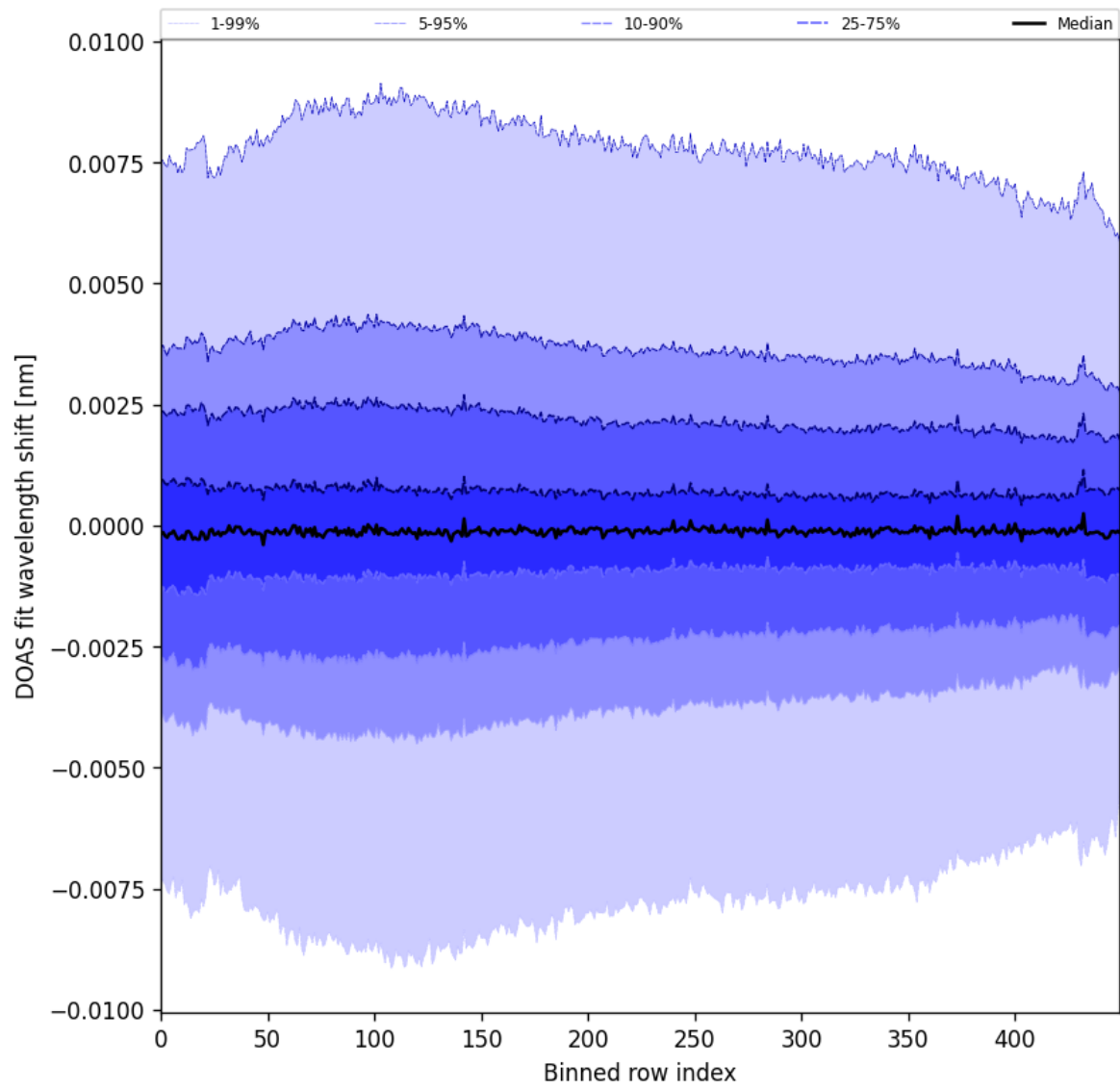


Figure 102: Along track statistics of “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15

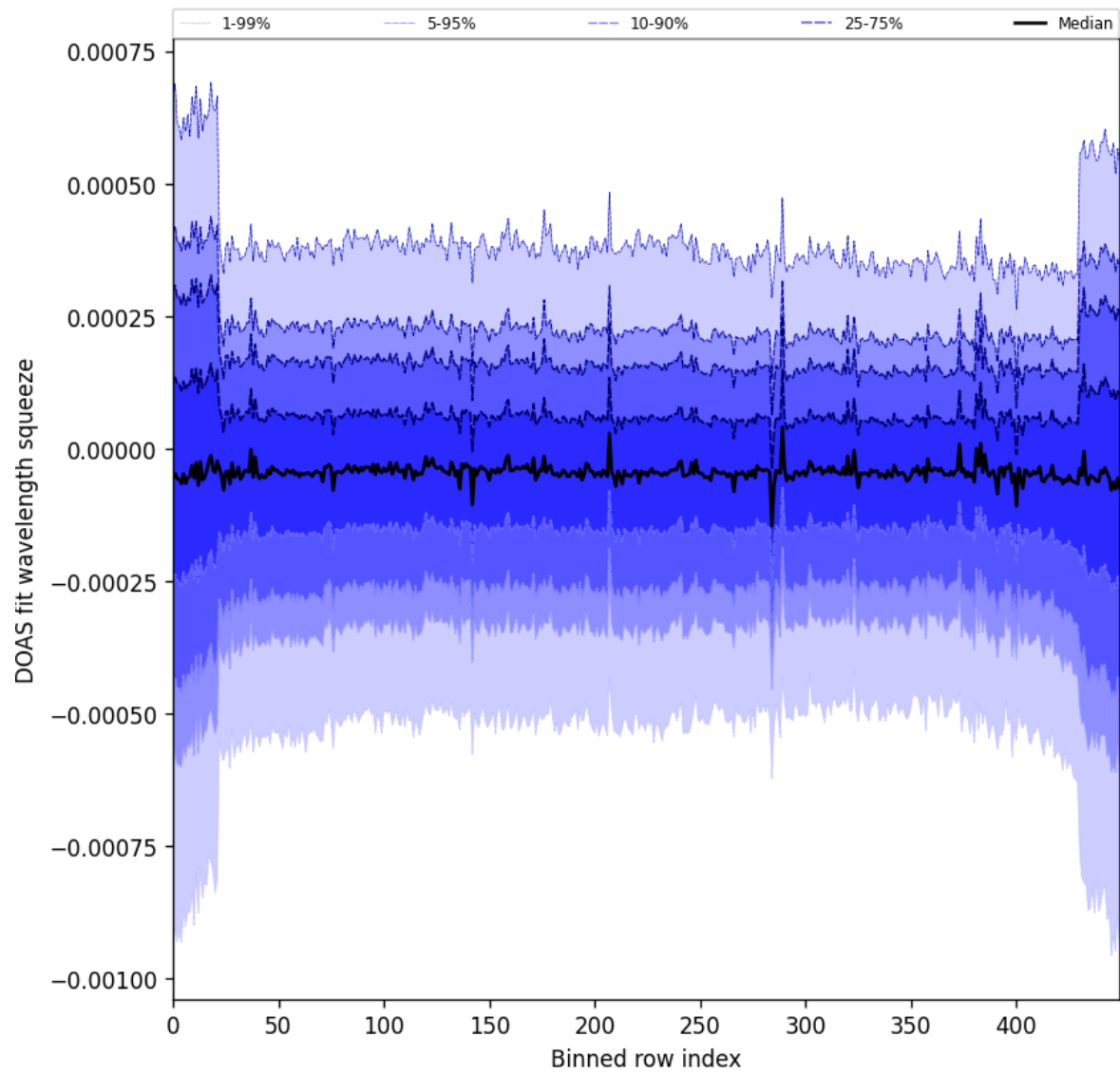


Figure 103: Along track statistics of “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15

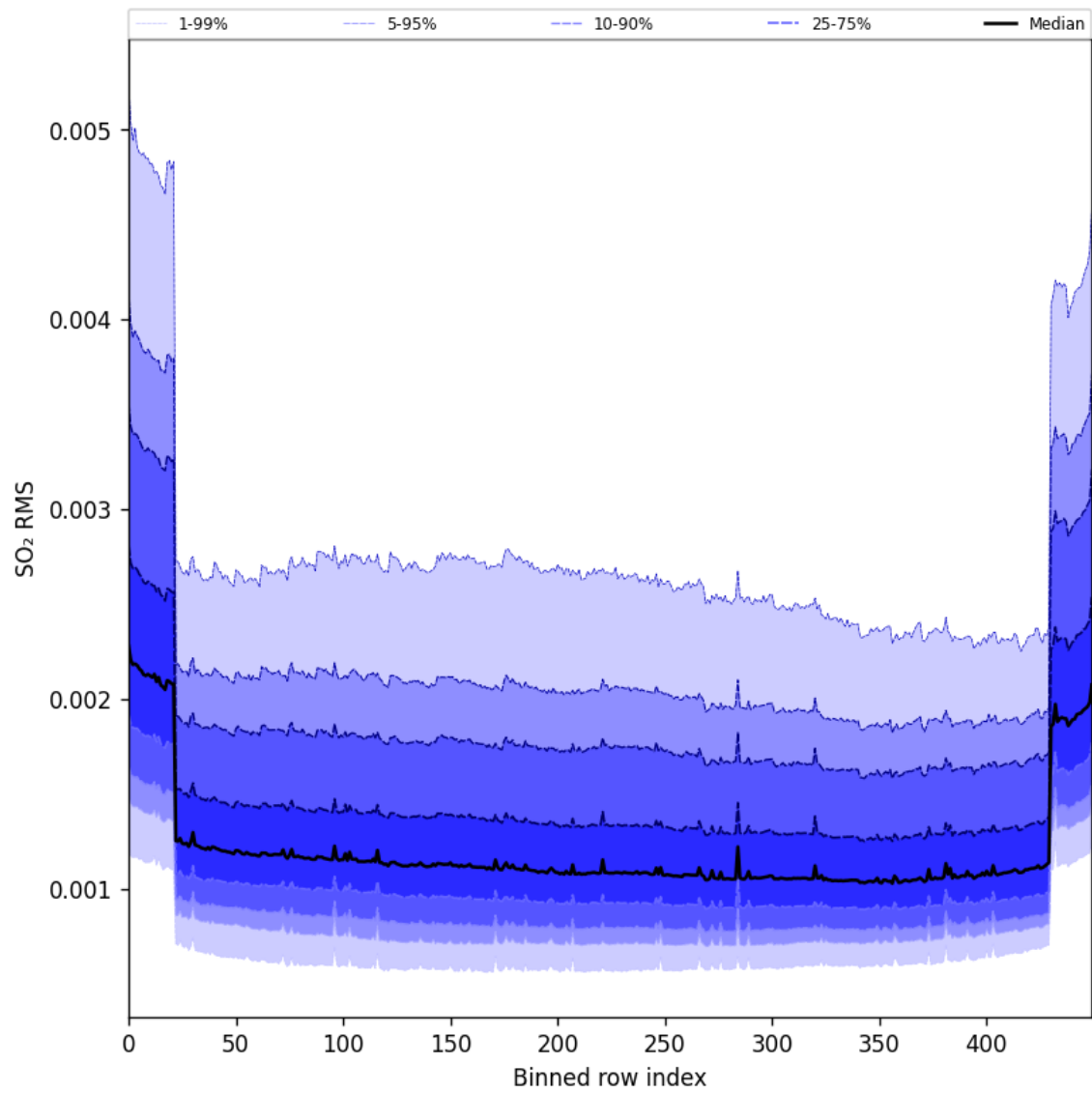


Figure 104: Along track statistics of “SO₂ RMS” for 2025-06-13 to 2025-06-15

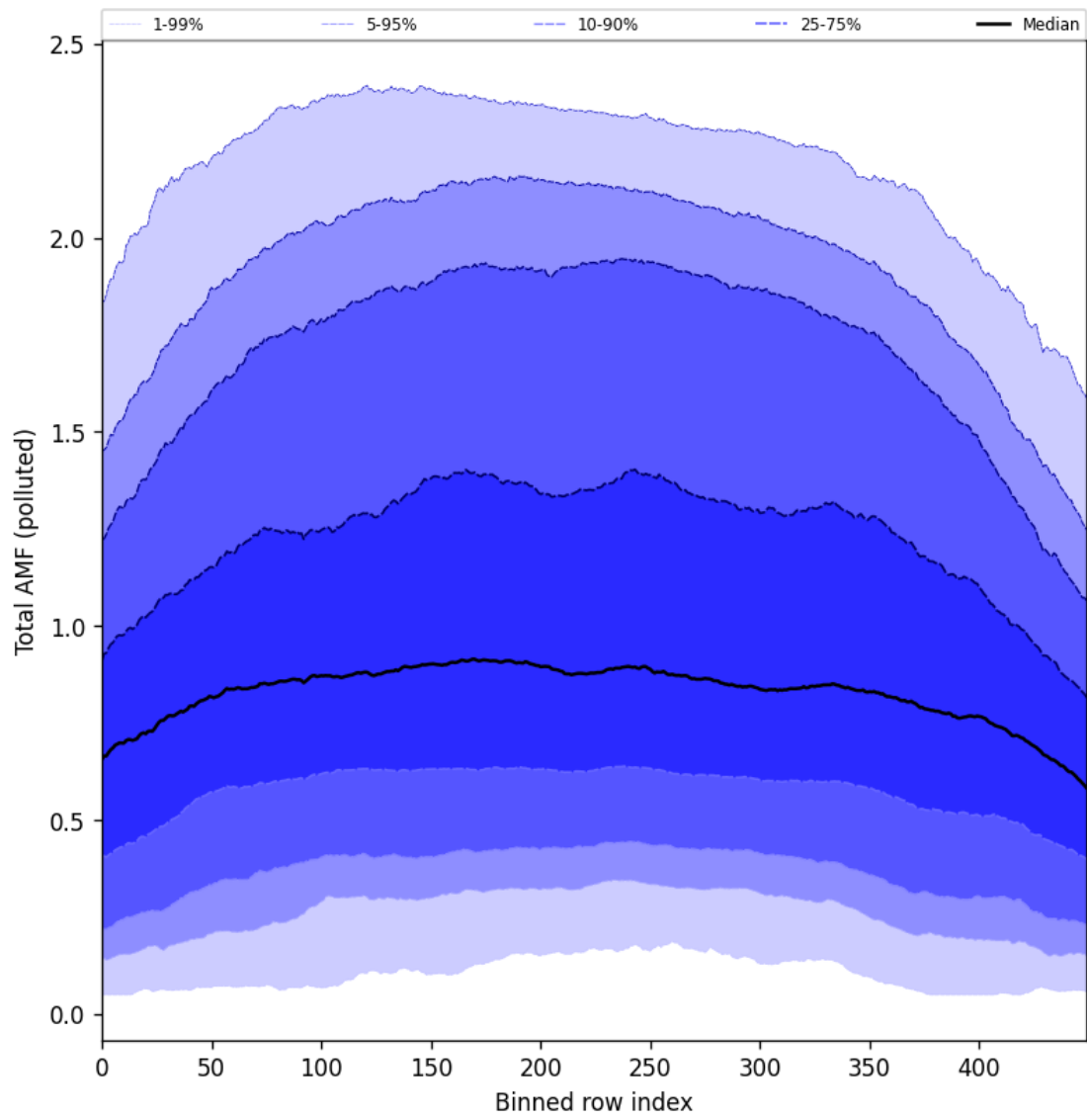


Figure 105: Along track statistics of “Total AMF (polluted)” for 2025-06-13 to 2025-06-15

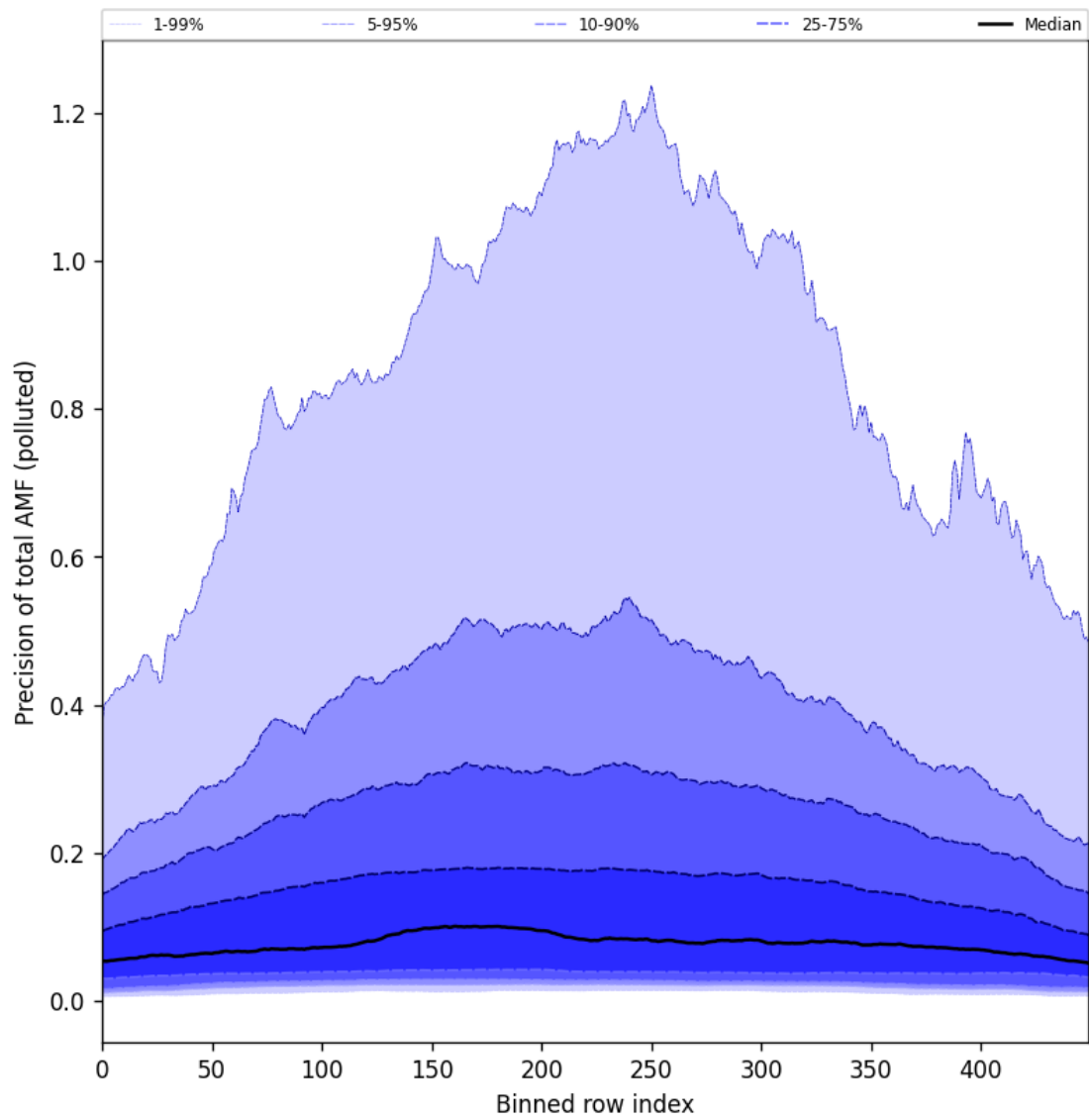


Figure 106: Along track statistics of “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15

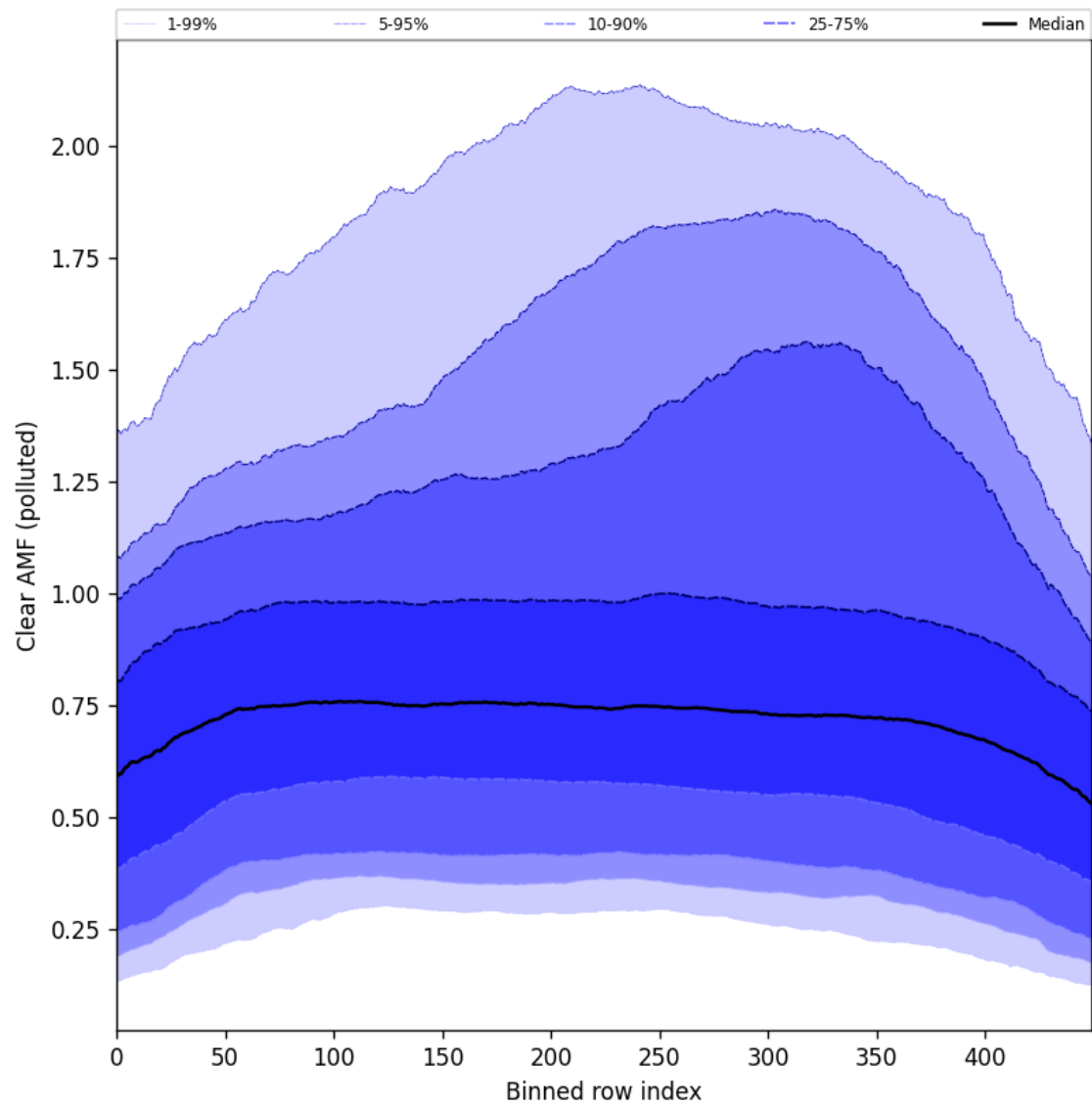


Figure 107: Along track statistics of “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15

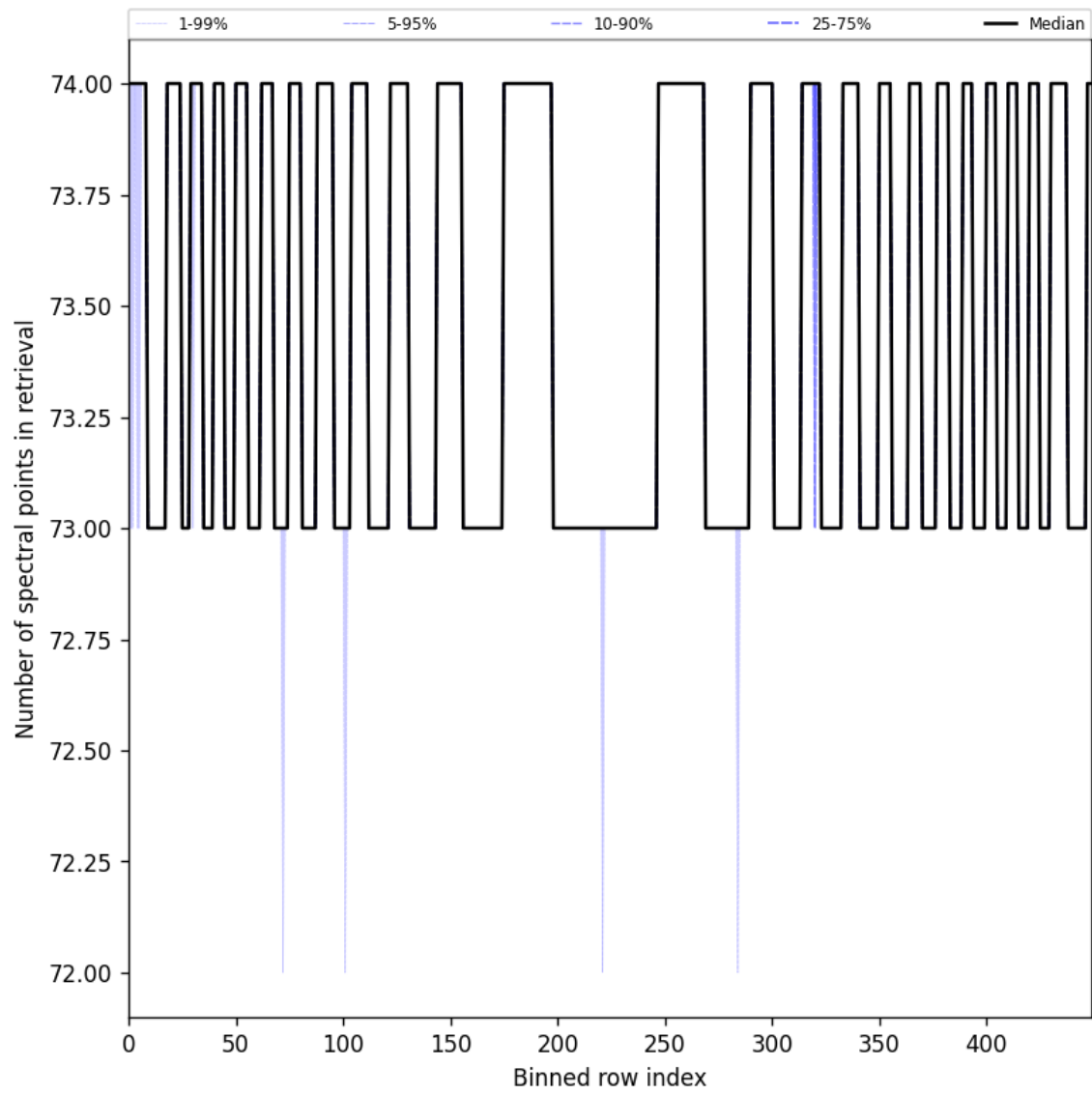


Figure 108: Along track statistics of “Number of spectral points in retrieval” for 2025-06-13 to 2025-06-15

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.

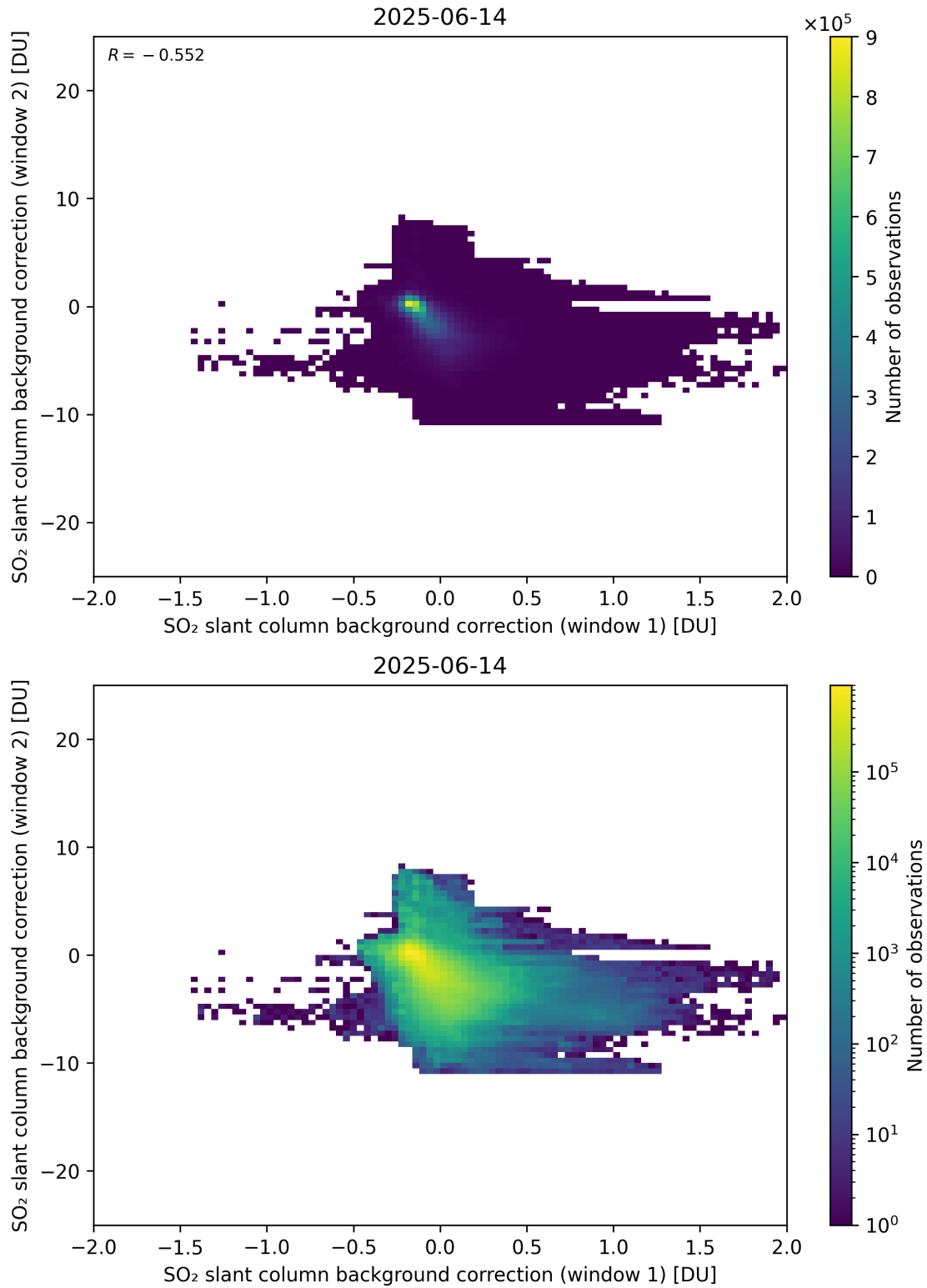


Figure 109: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

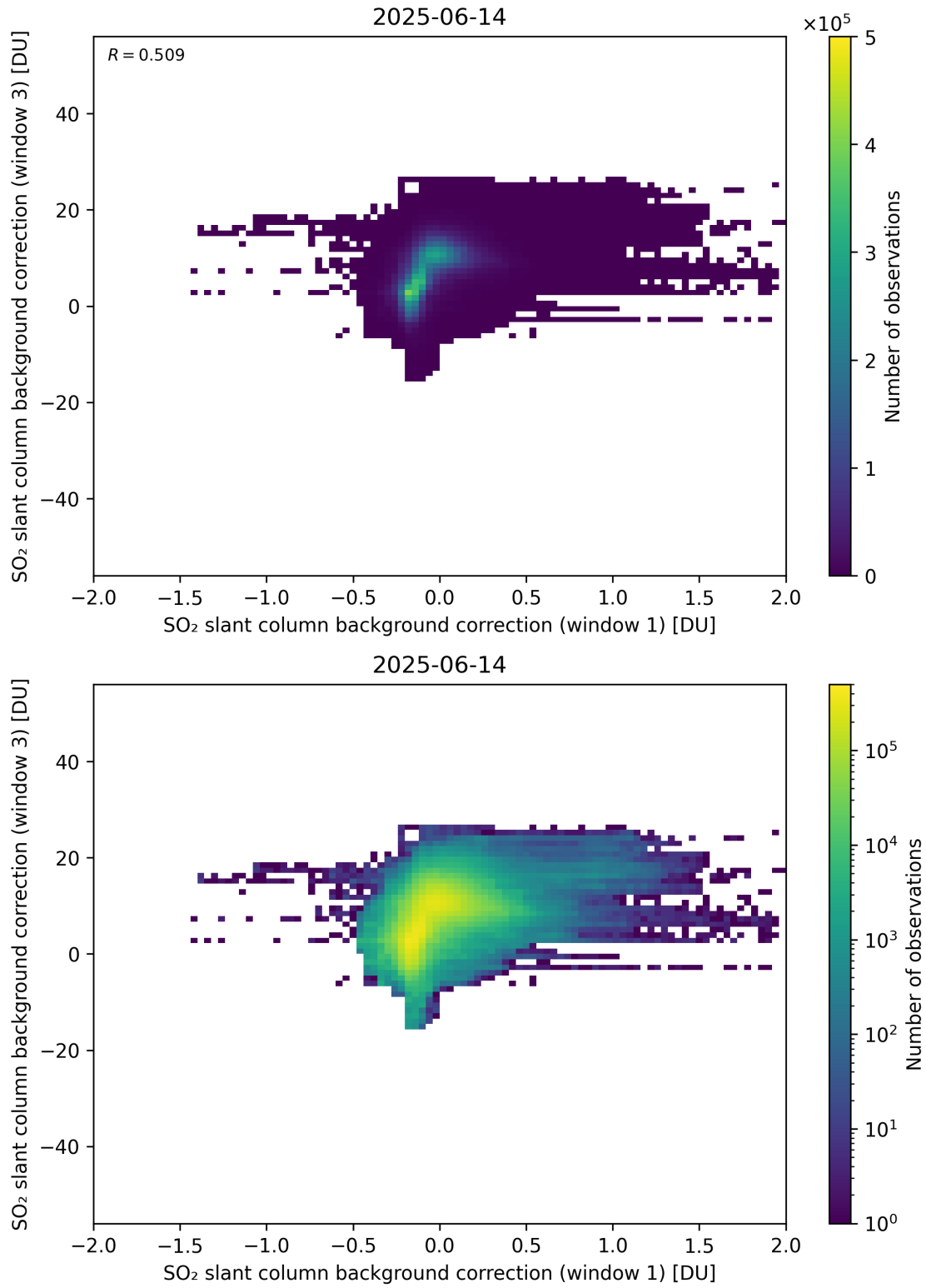


Figure 110: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

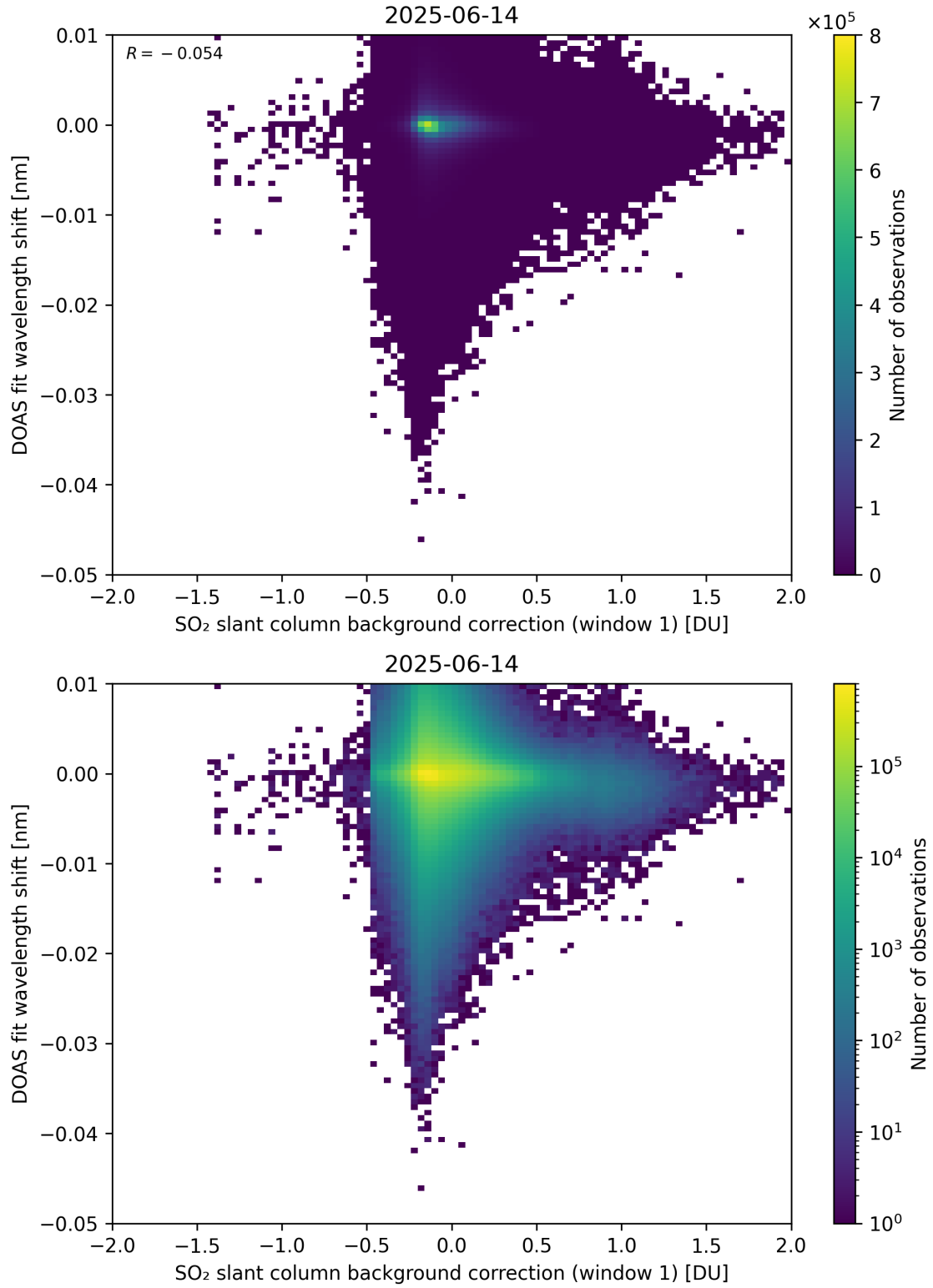


Figure 111: Scatter density plot of “SO₂ slant column background correction (window 1)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

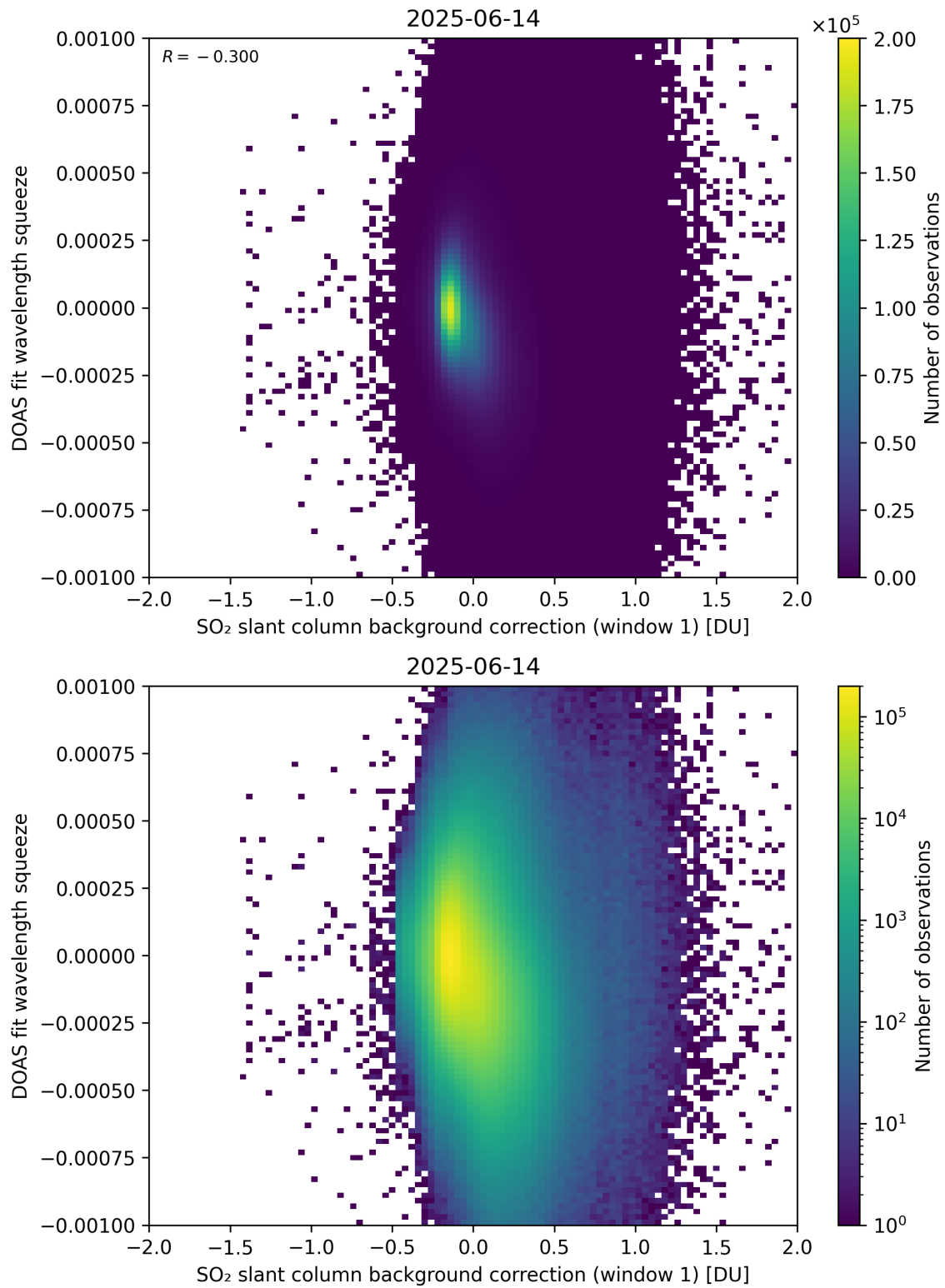


Figure 112: Scatter density plot of “SO₂ slant column background correction (window 1)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

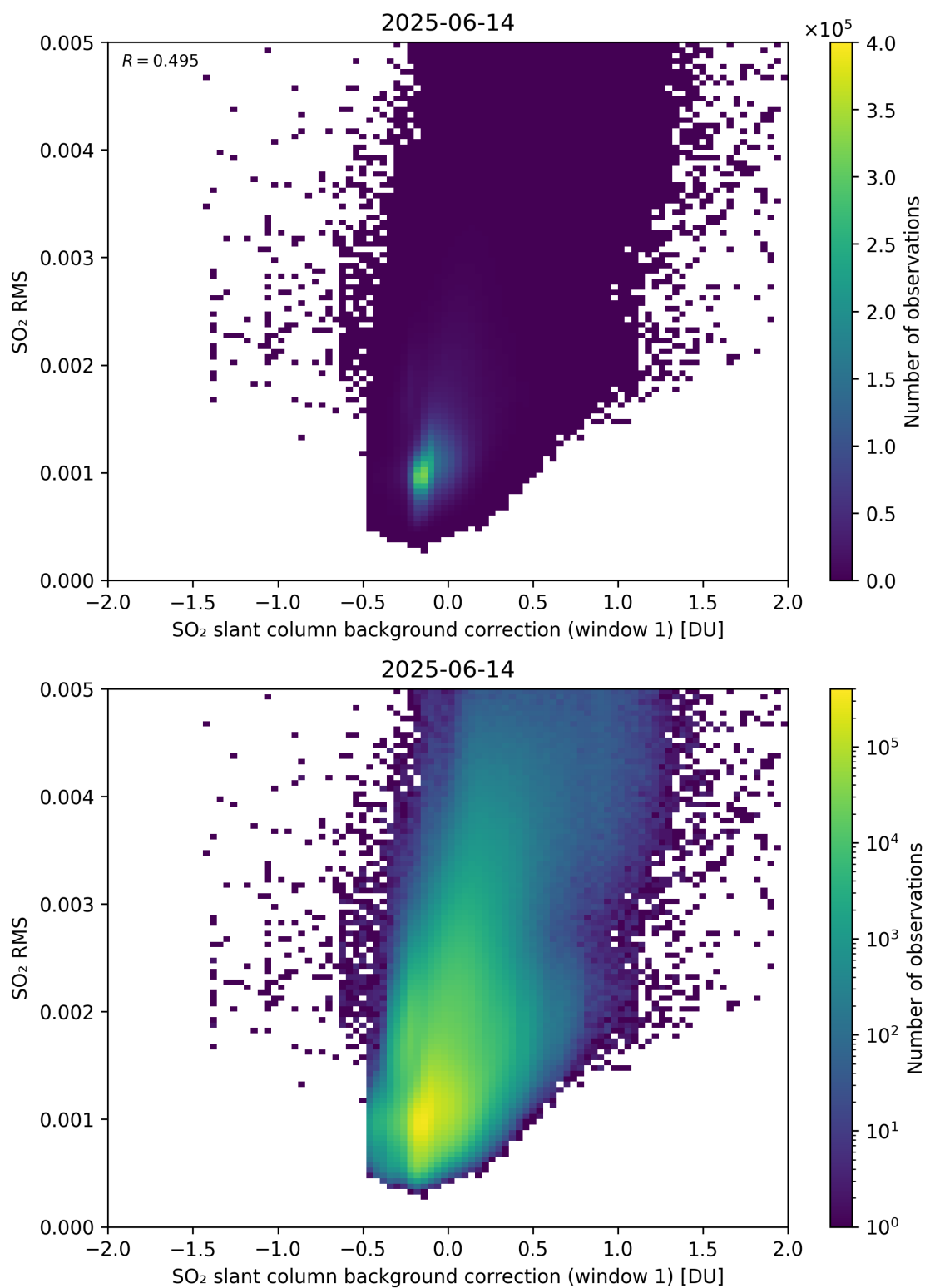


Figure 113: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

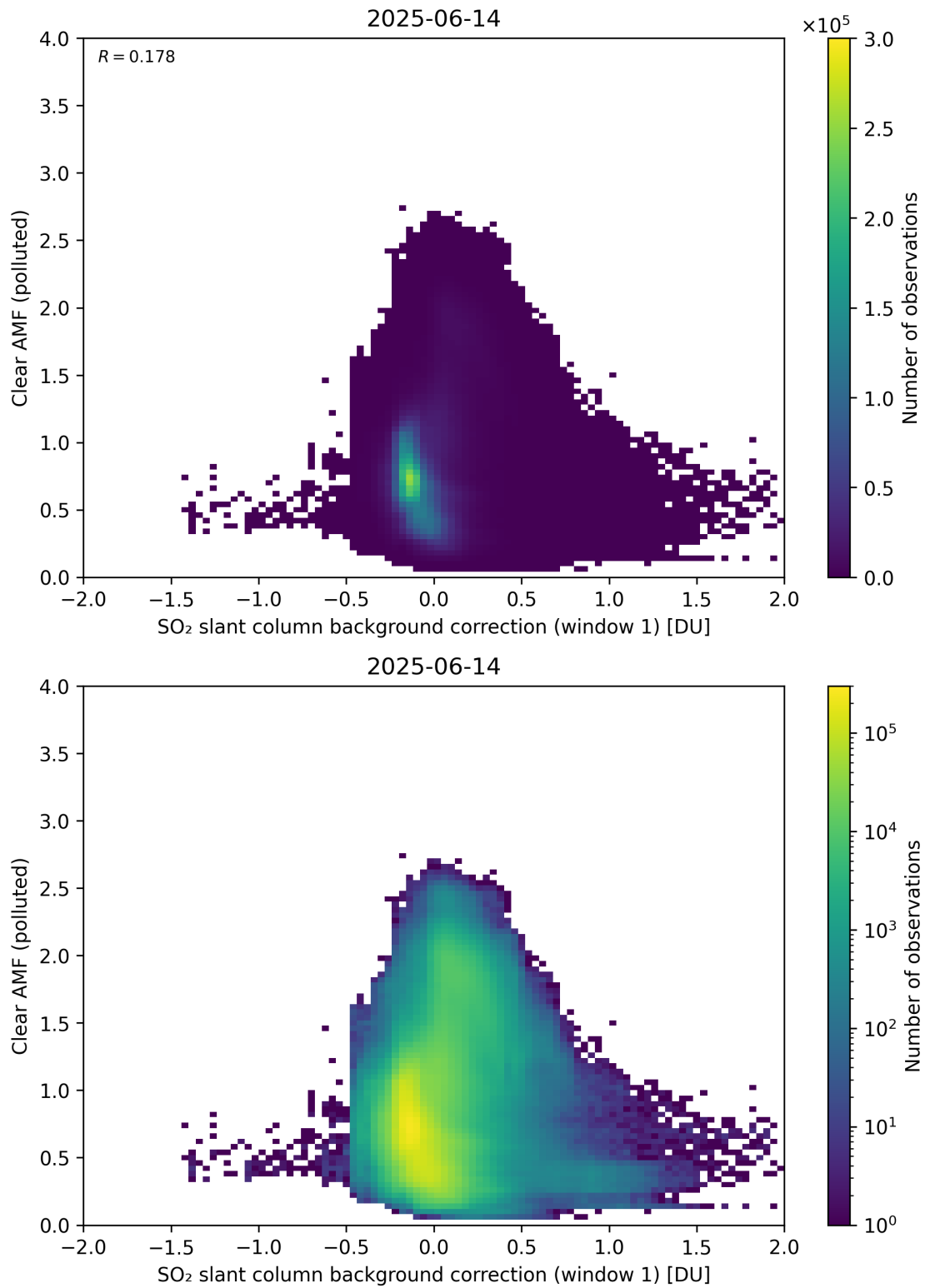


Figure 114: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

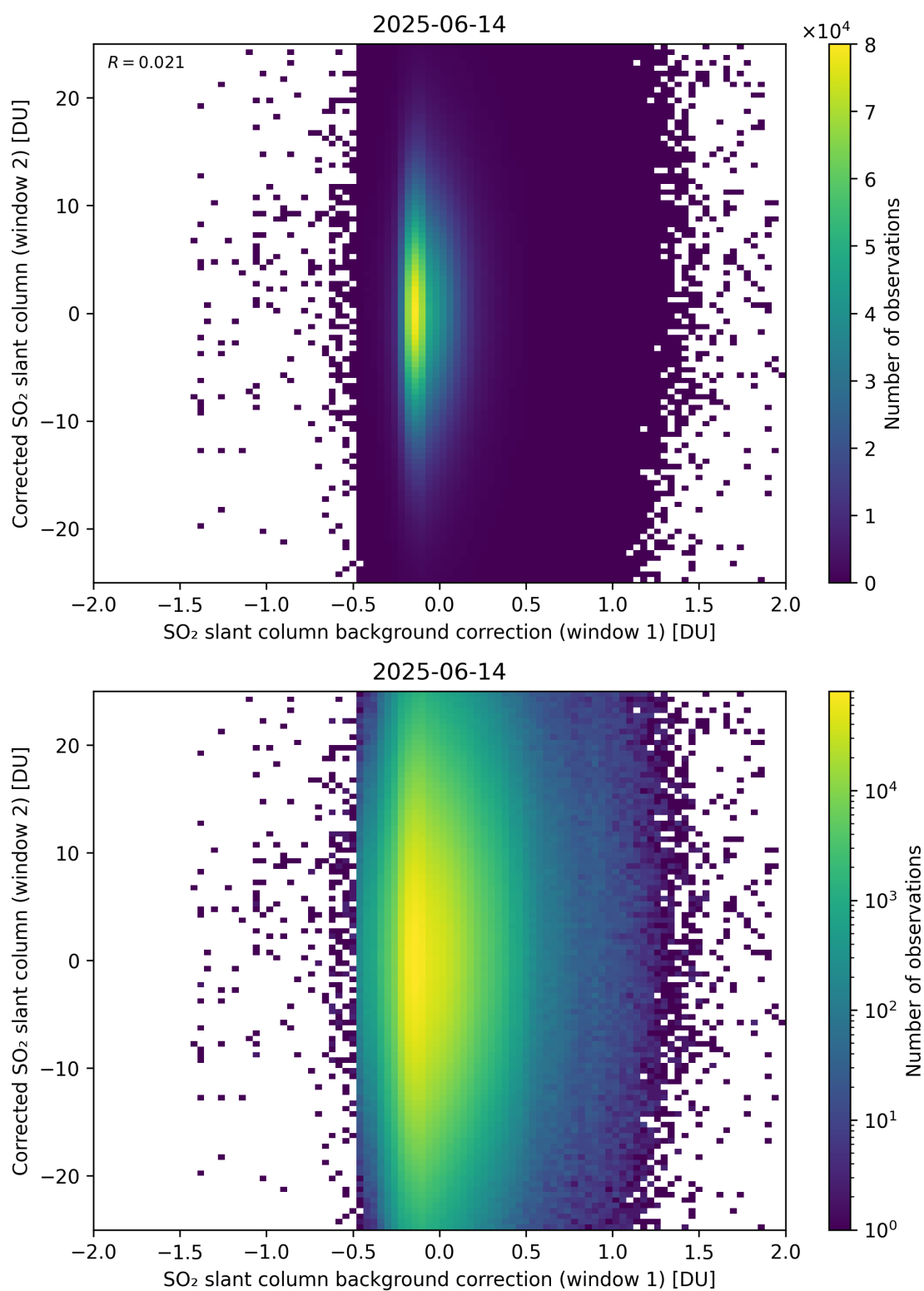


Figure 115: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

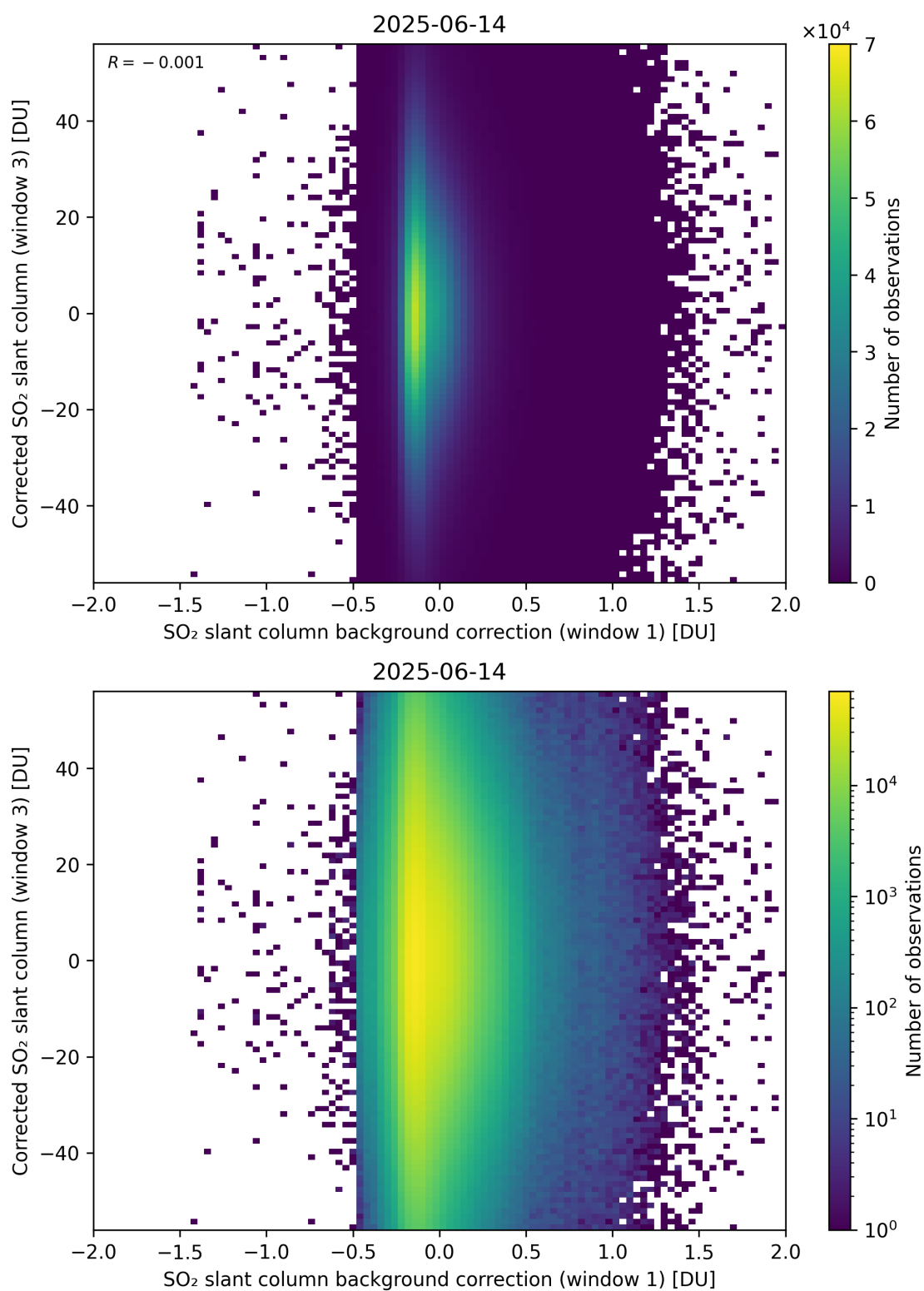


Figure 116: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

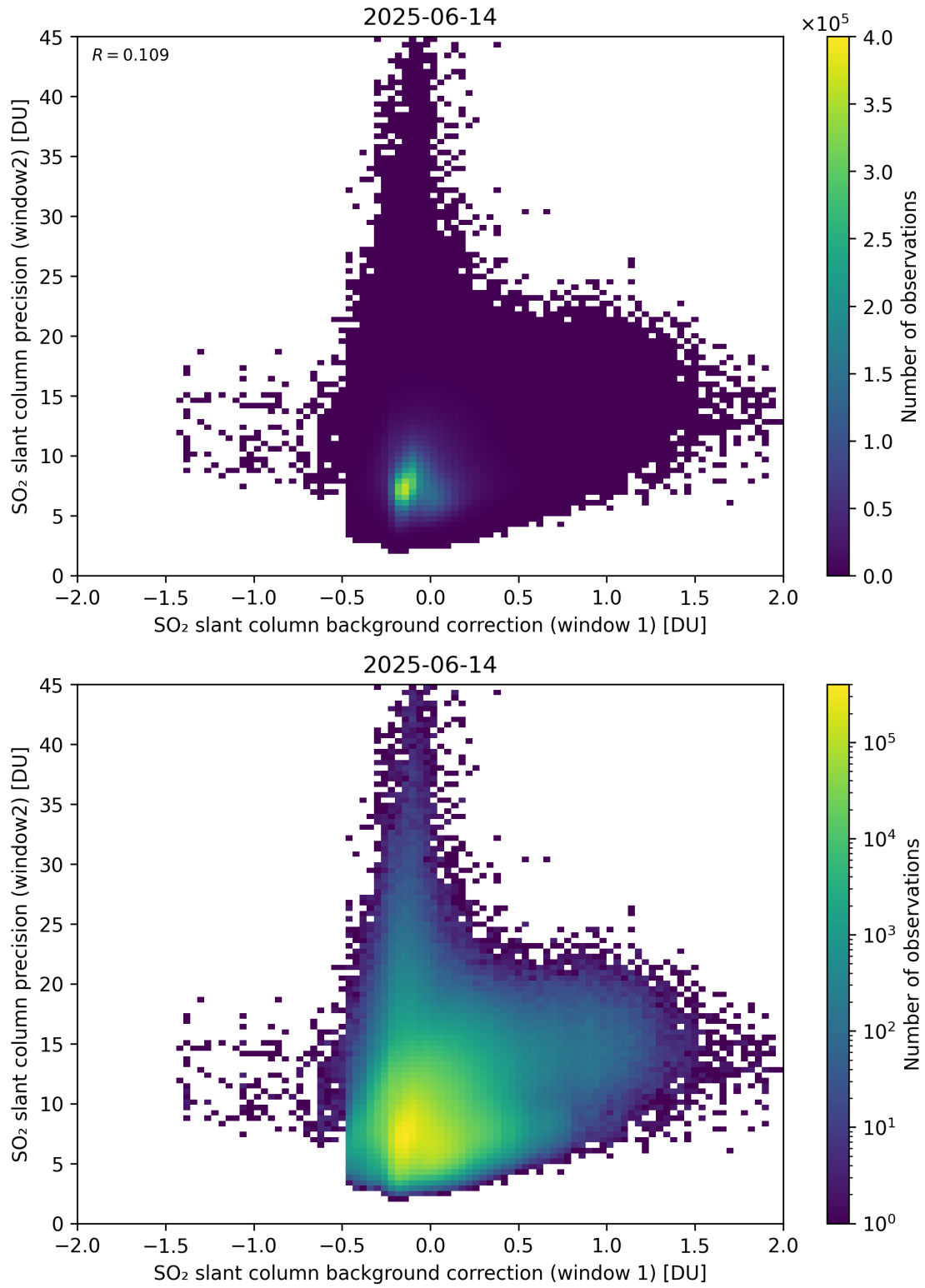


Figure 117: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

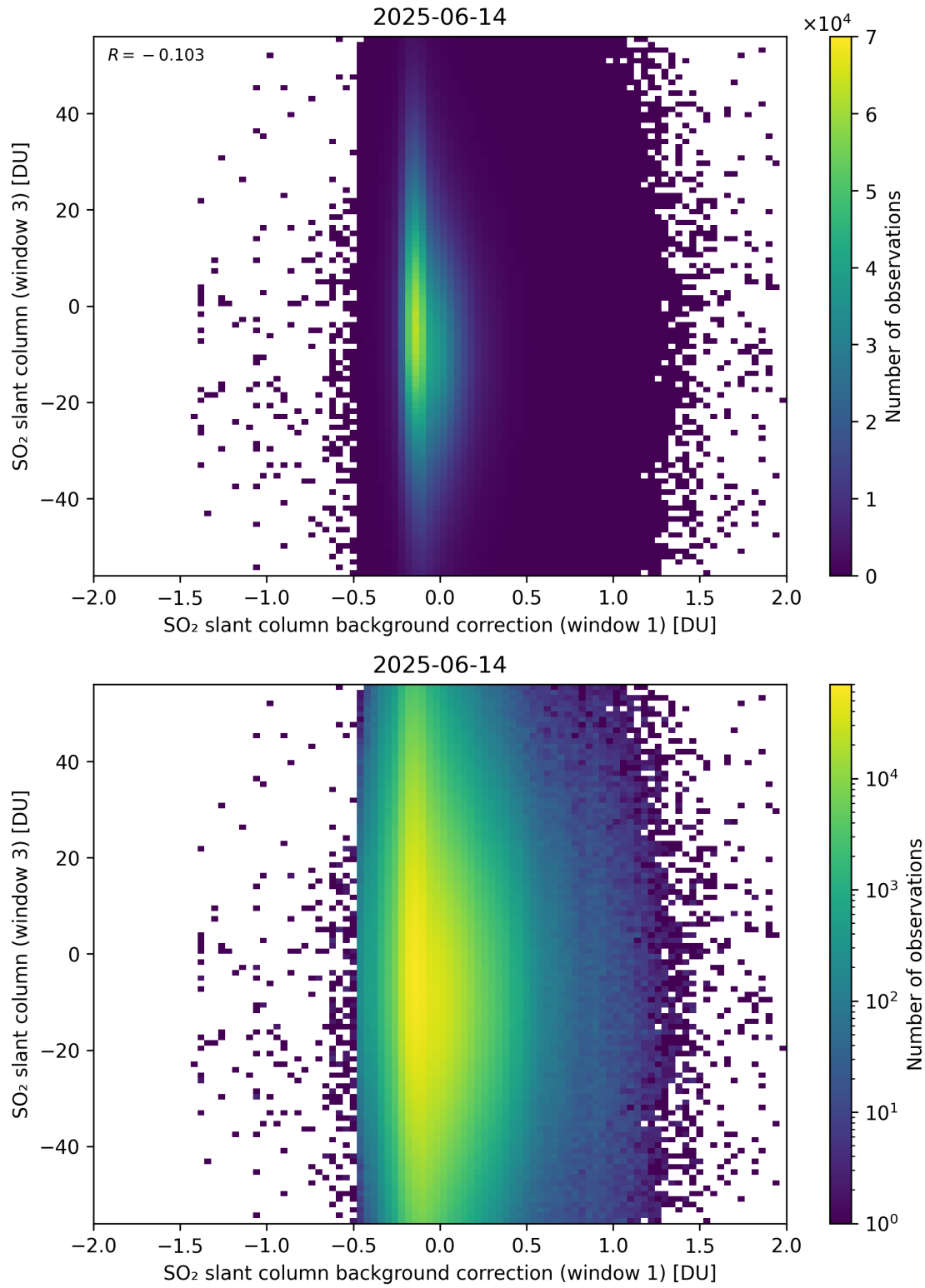


Figure 118: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

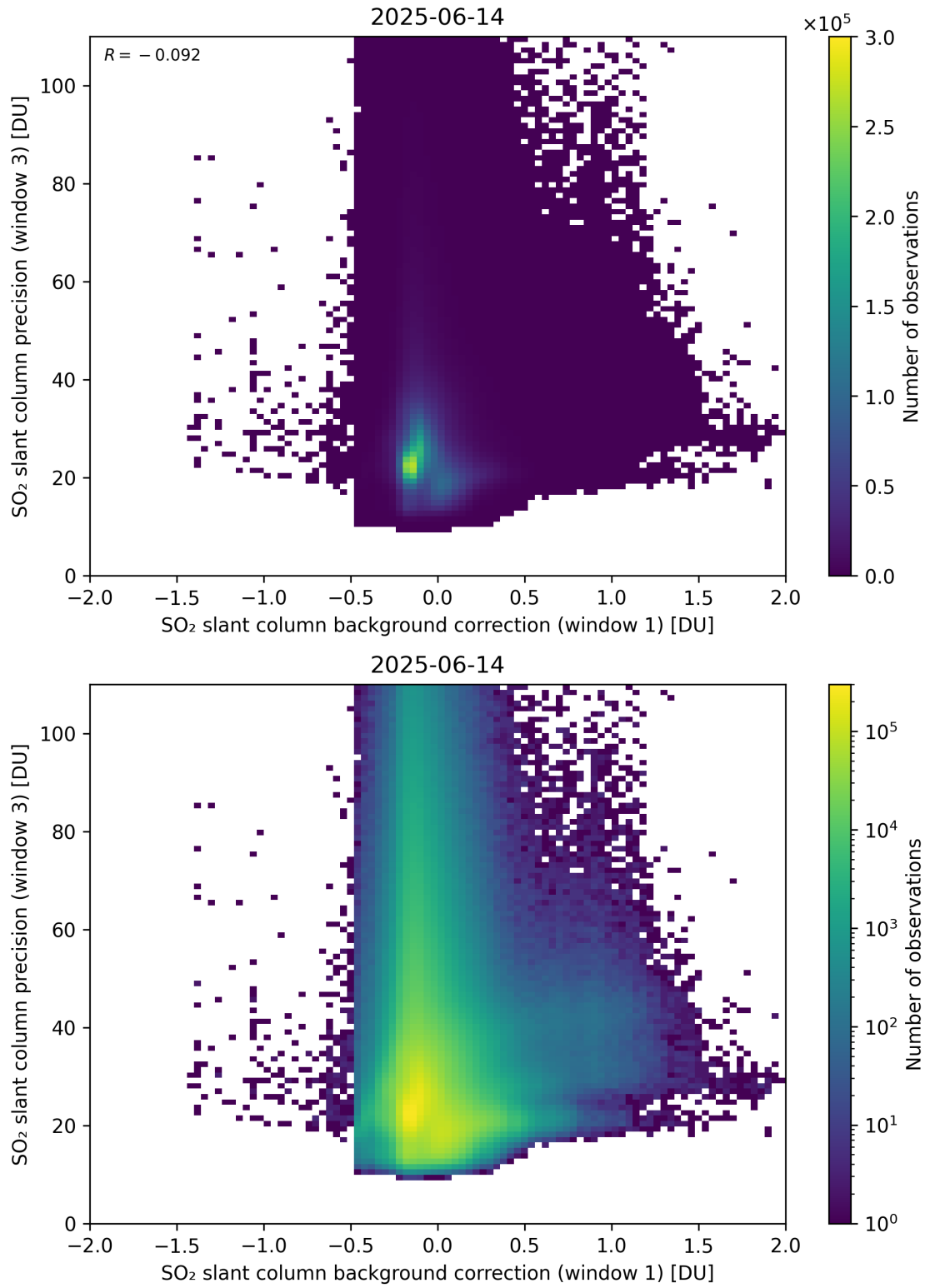


Figure 119: Scatter density plot of “SO₂ slant column background correction (window 1)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

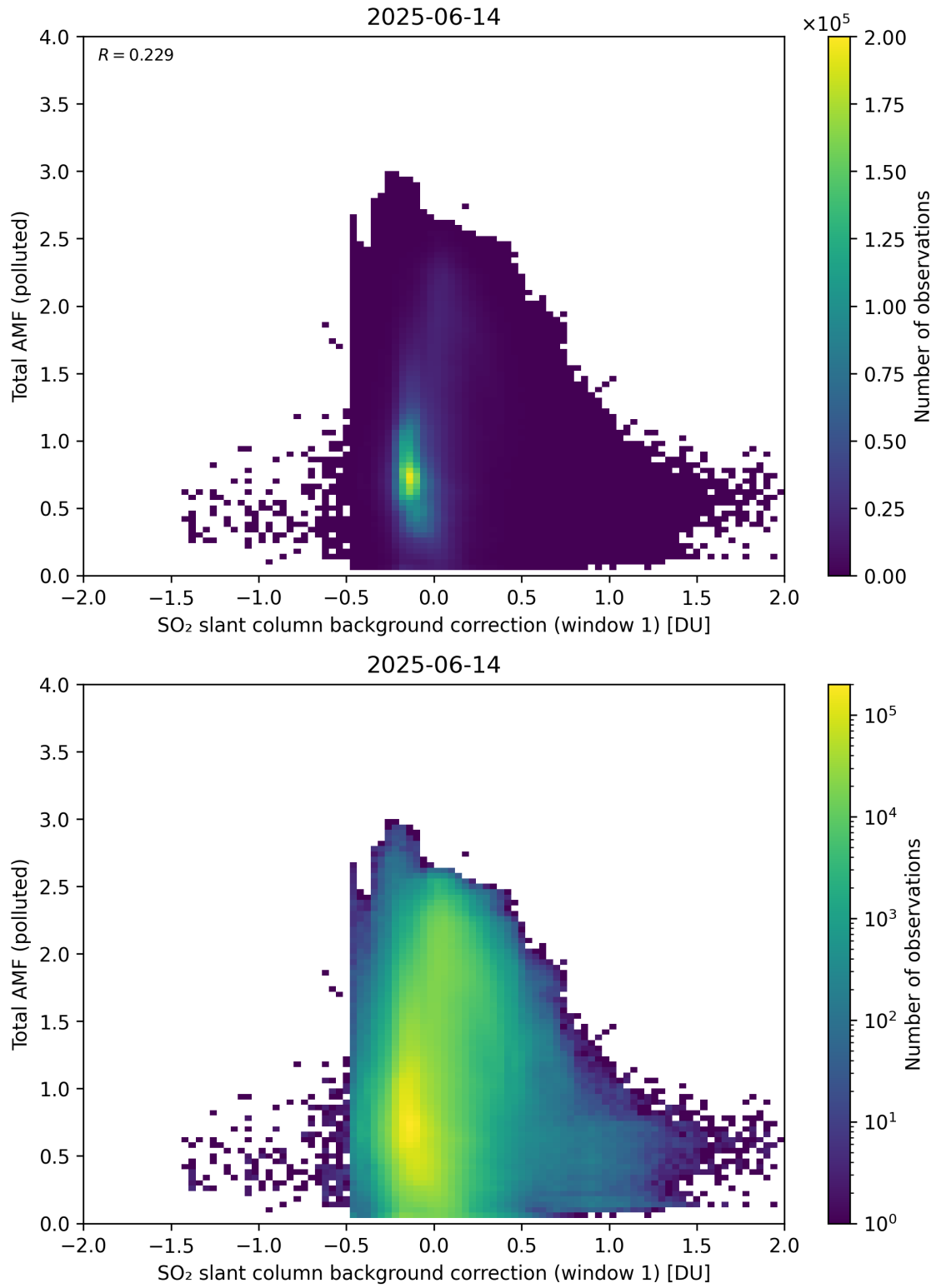


Figure 120: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

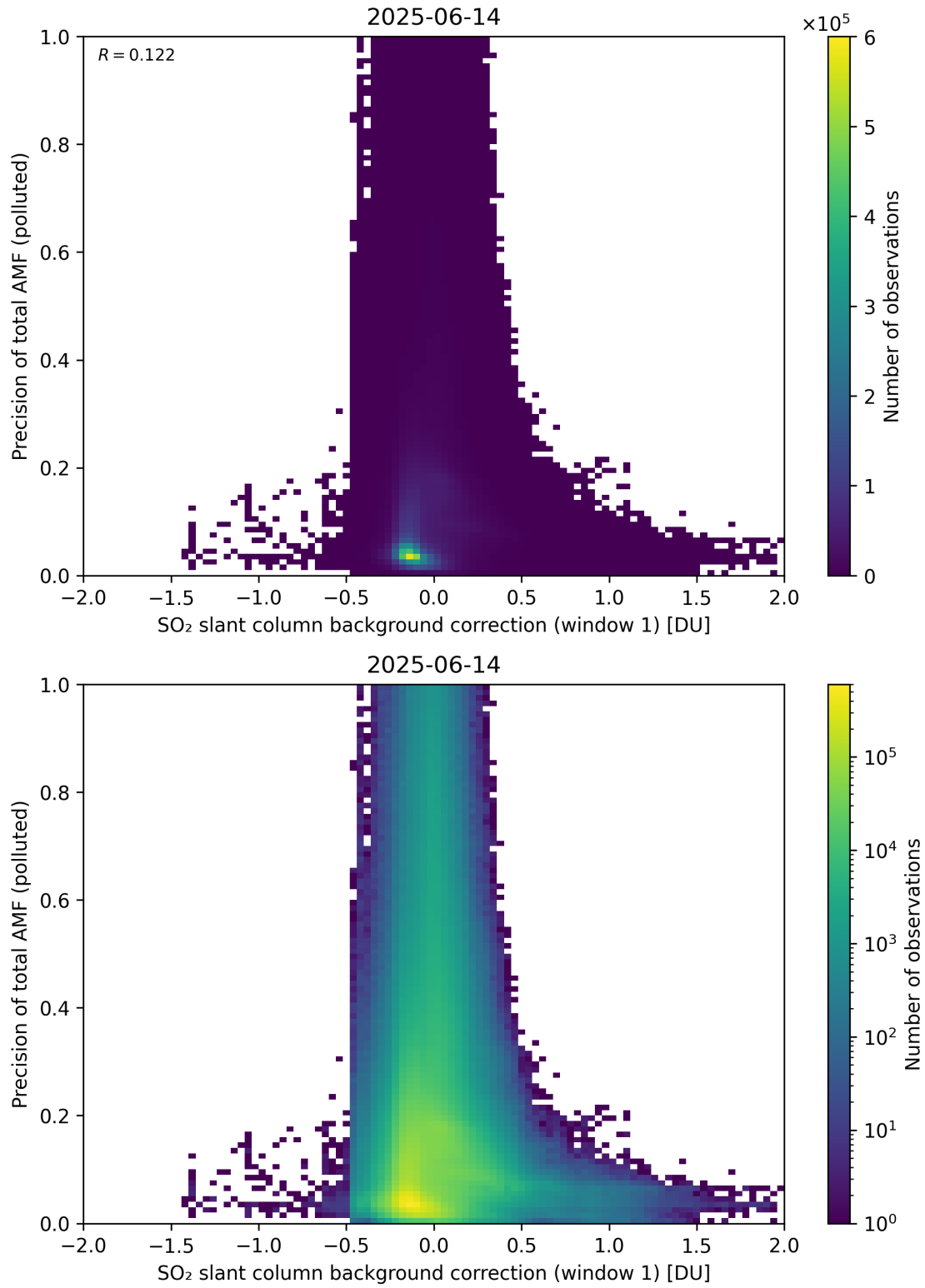


Figure 121: Scatter density plot of “SO₂ slant column background correction (window 1)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

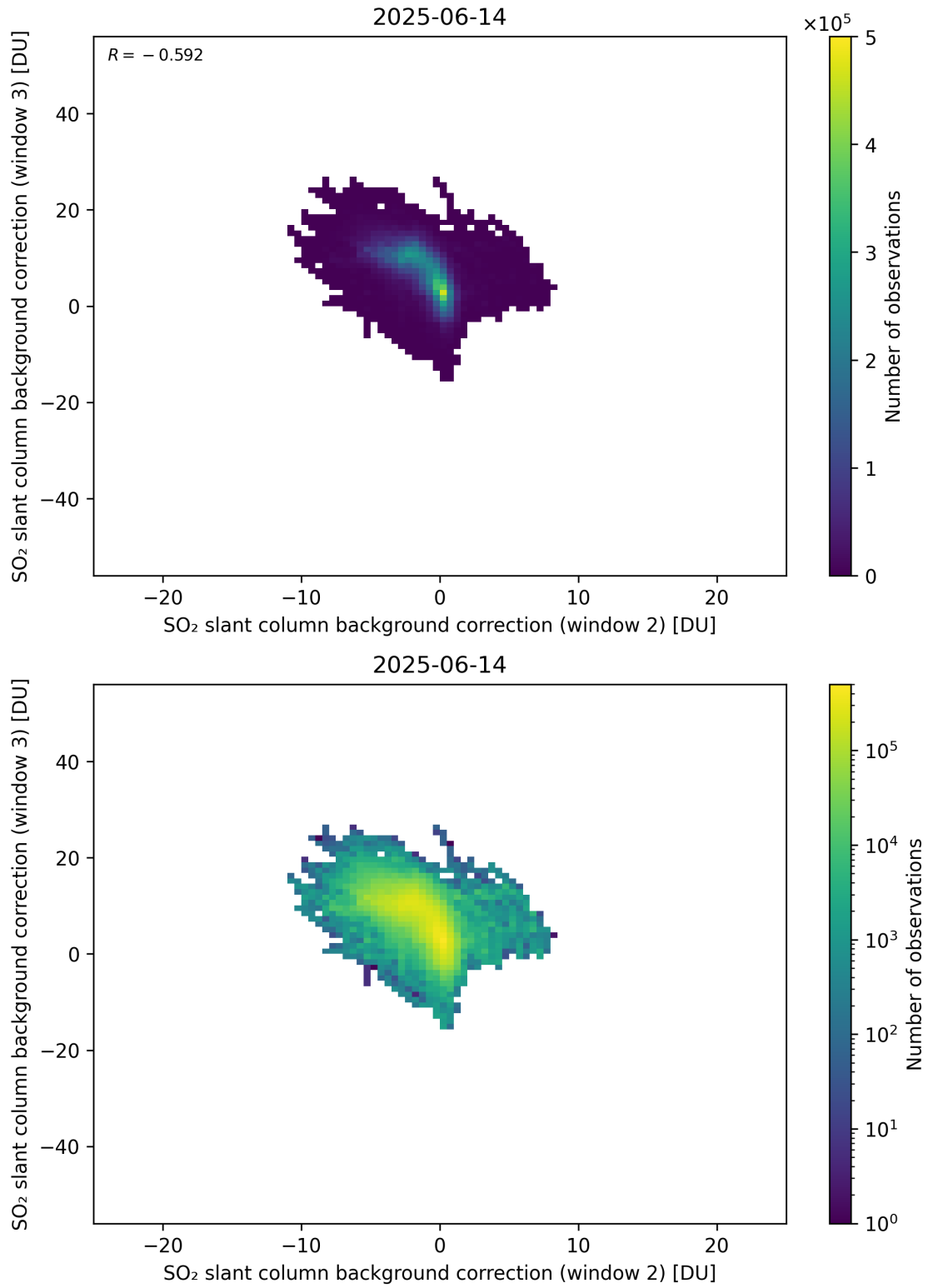


Figure 122: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

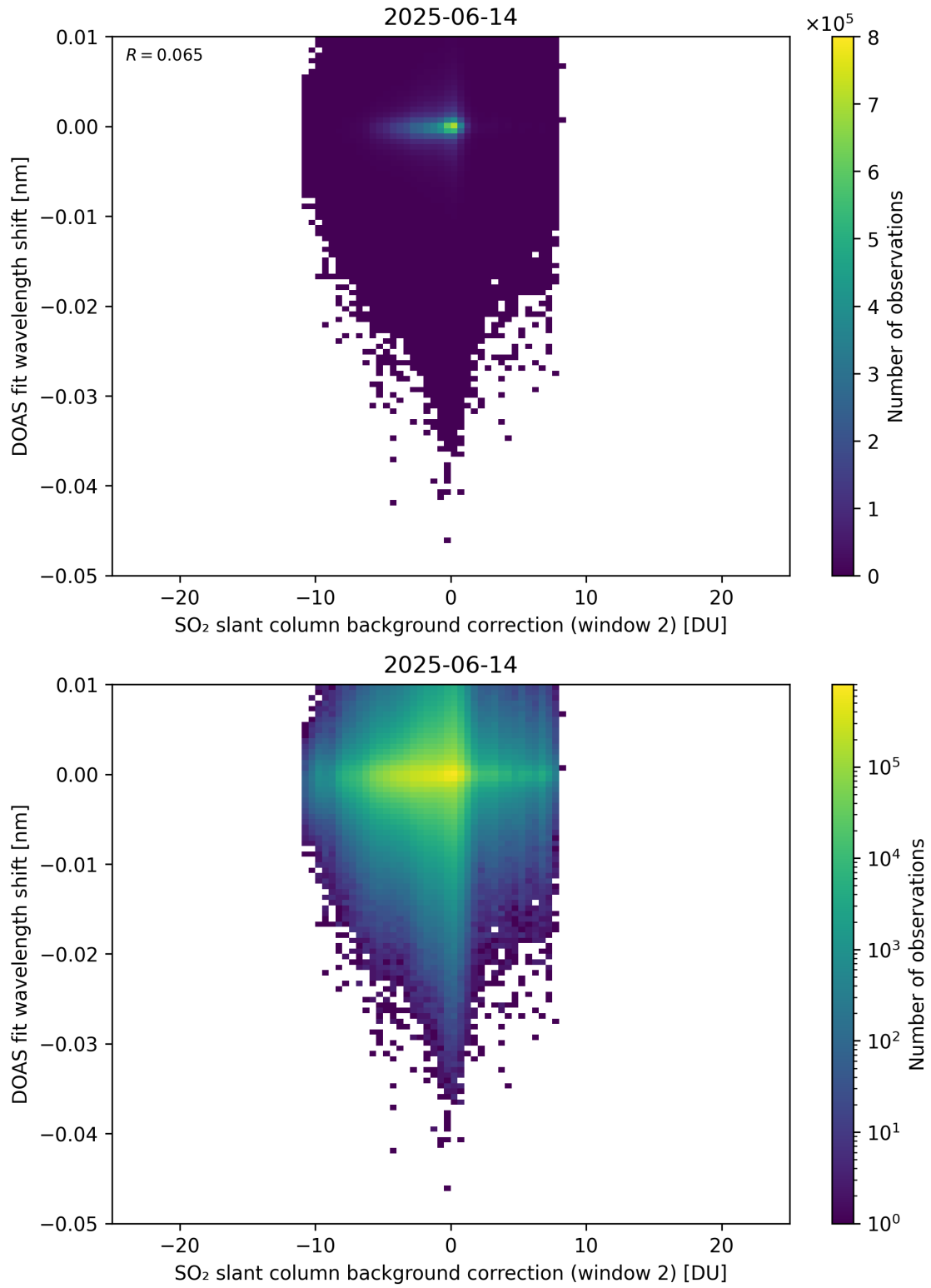


Figure 123: Scatter density plot of “SO₂ slant column background correction (window 2)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

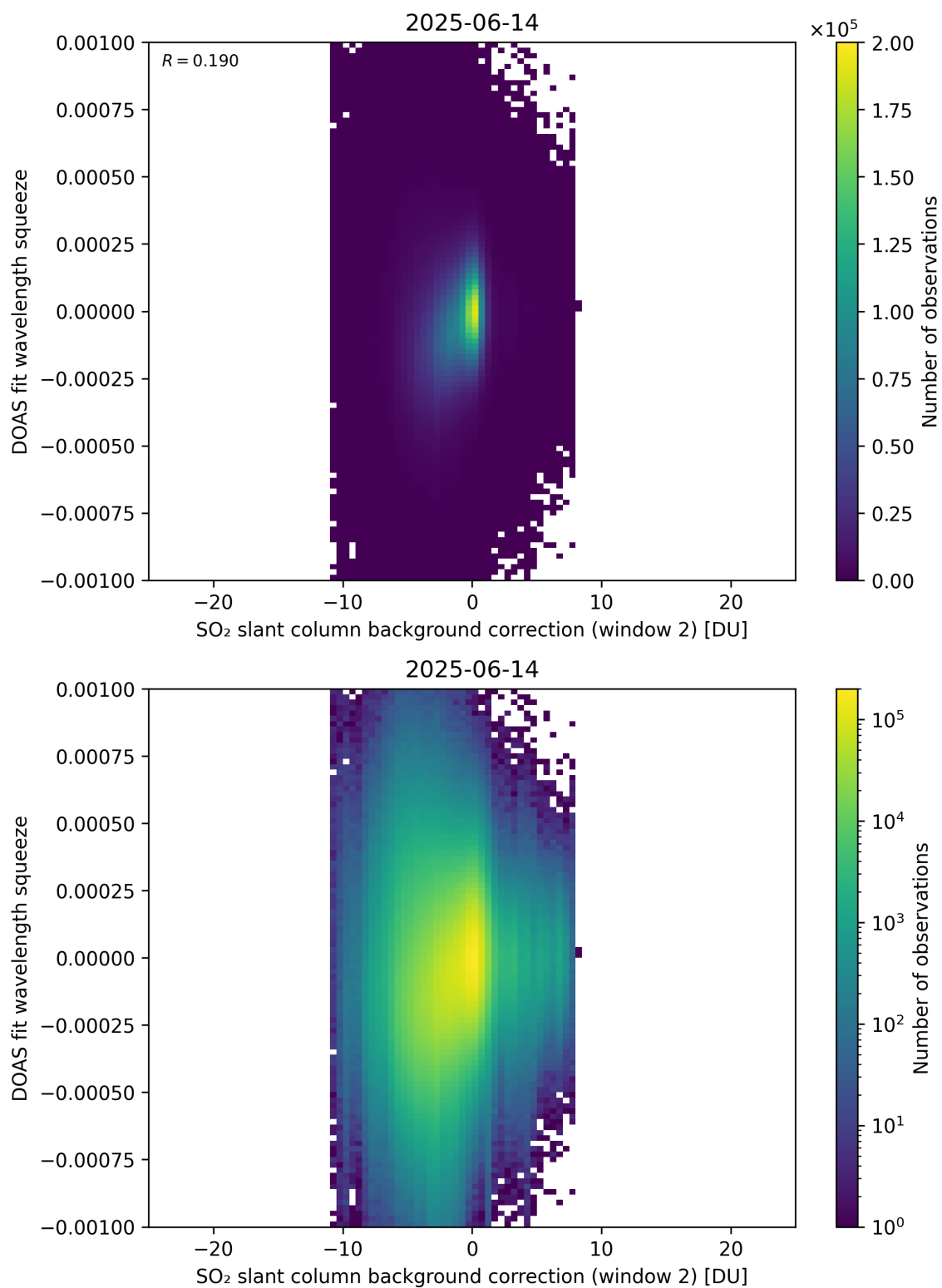


Figure 124: Scatter density plot of “SO₂ slant column background correction (window 2)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

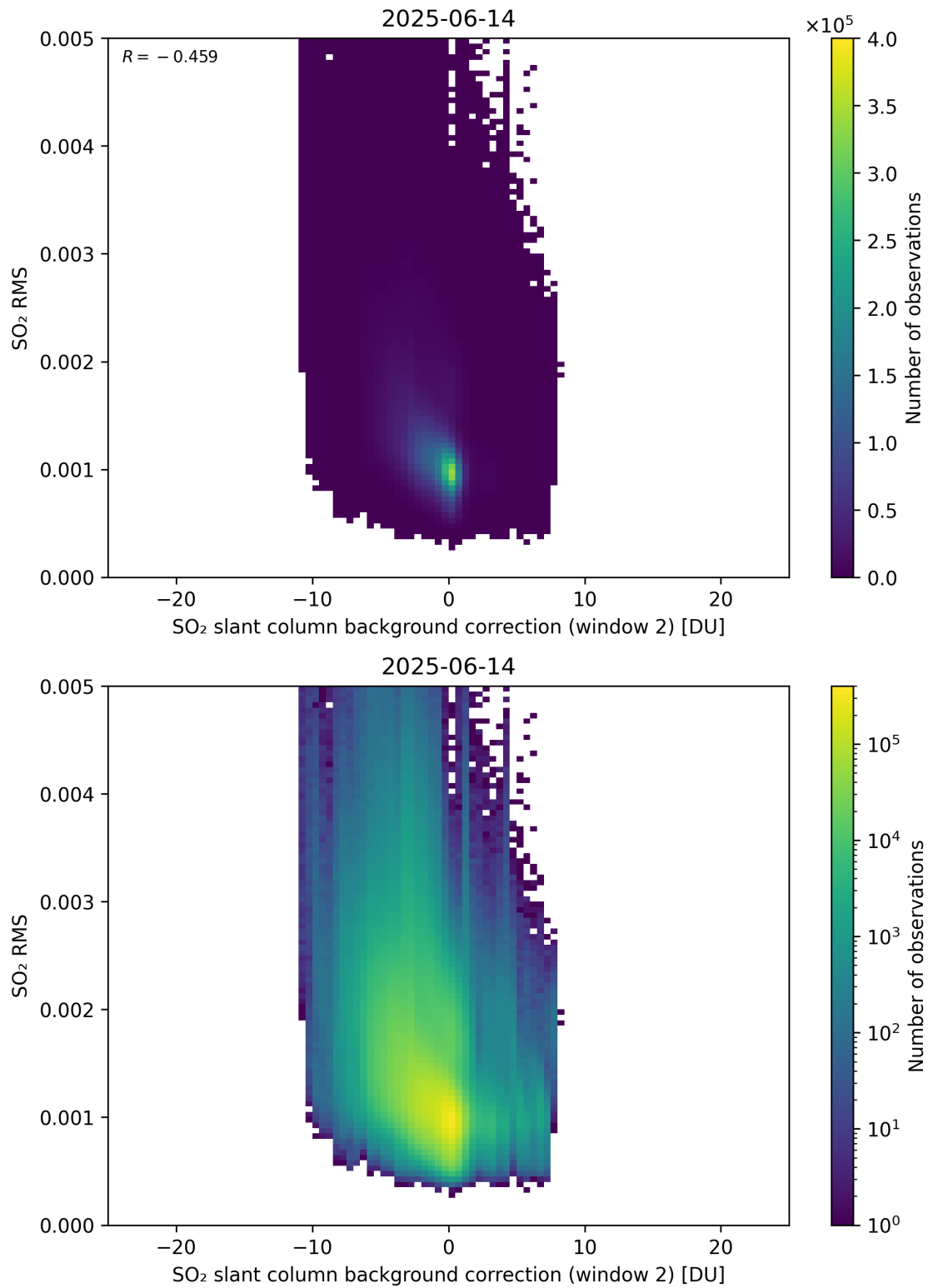


Figure 125: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

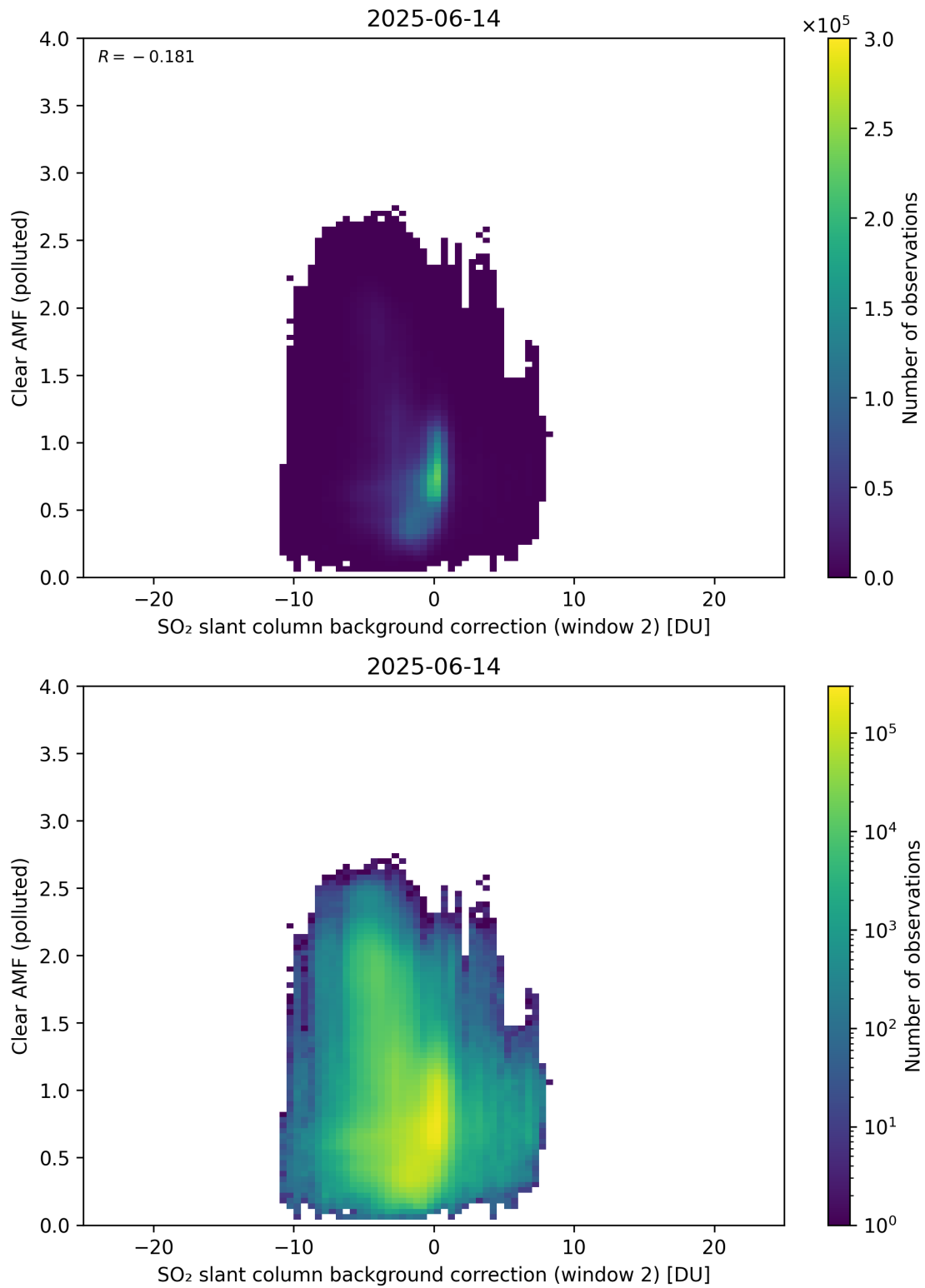


Figure 126: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

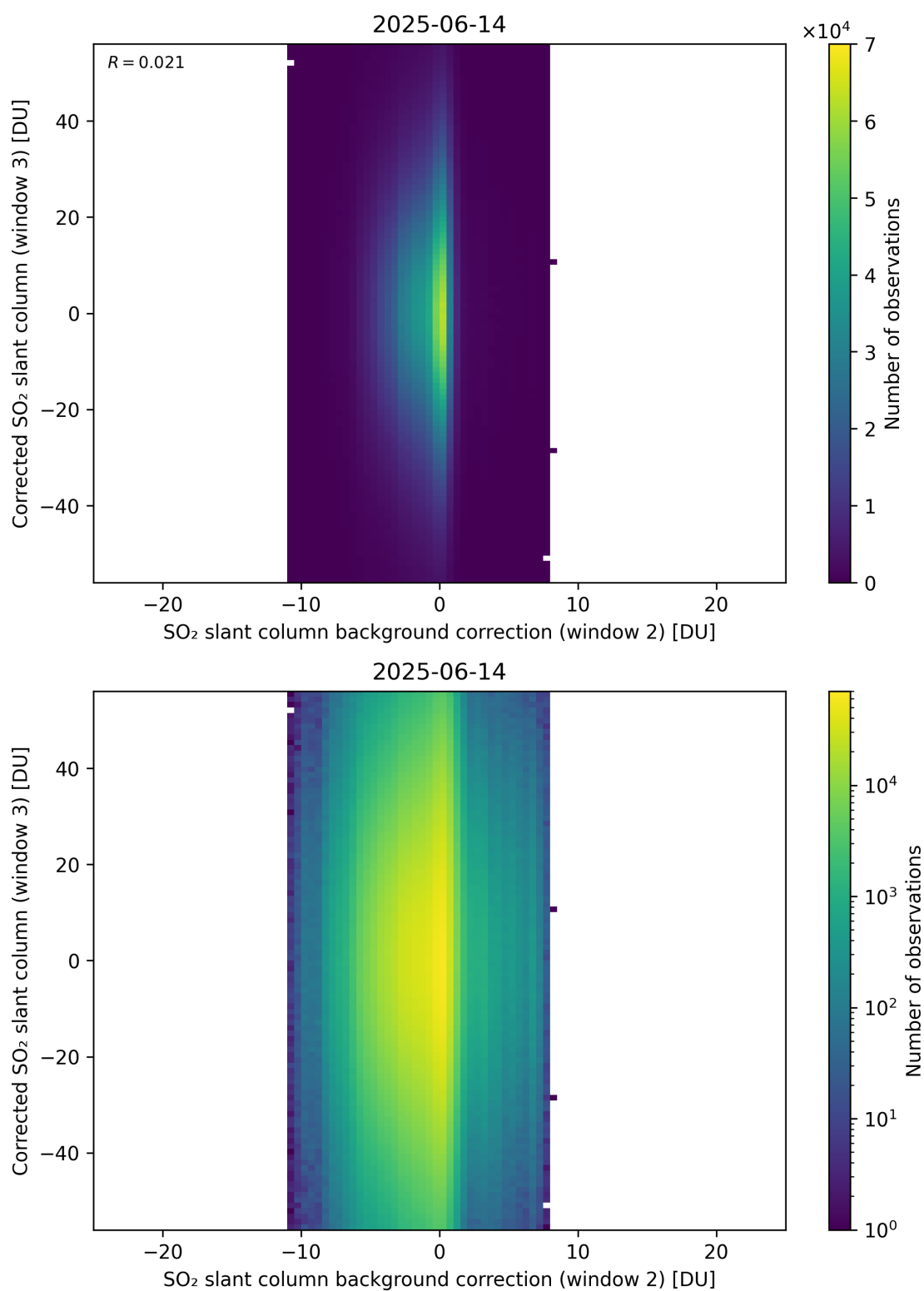


Figure 127: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

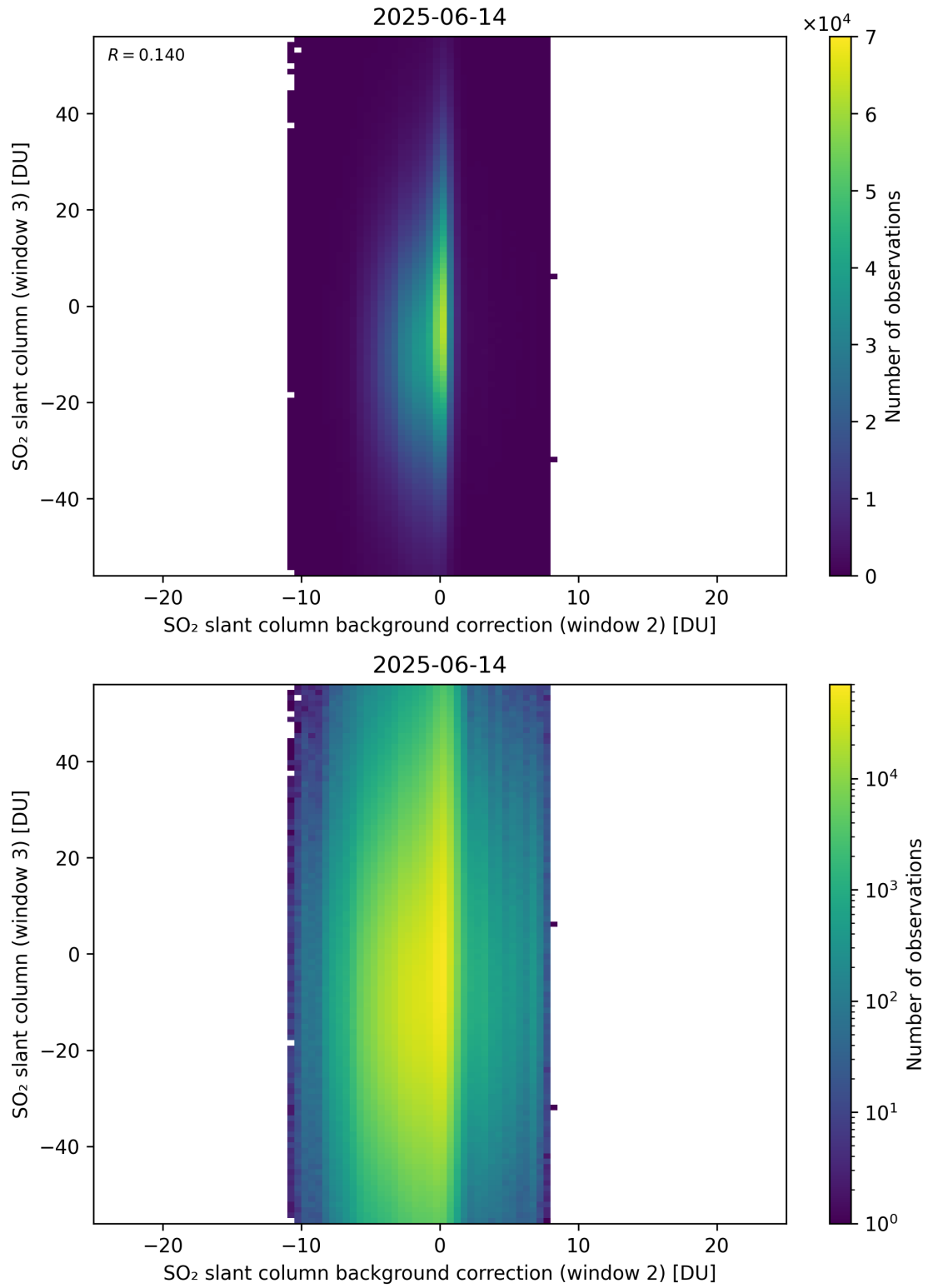


Figure 128: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

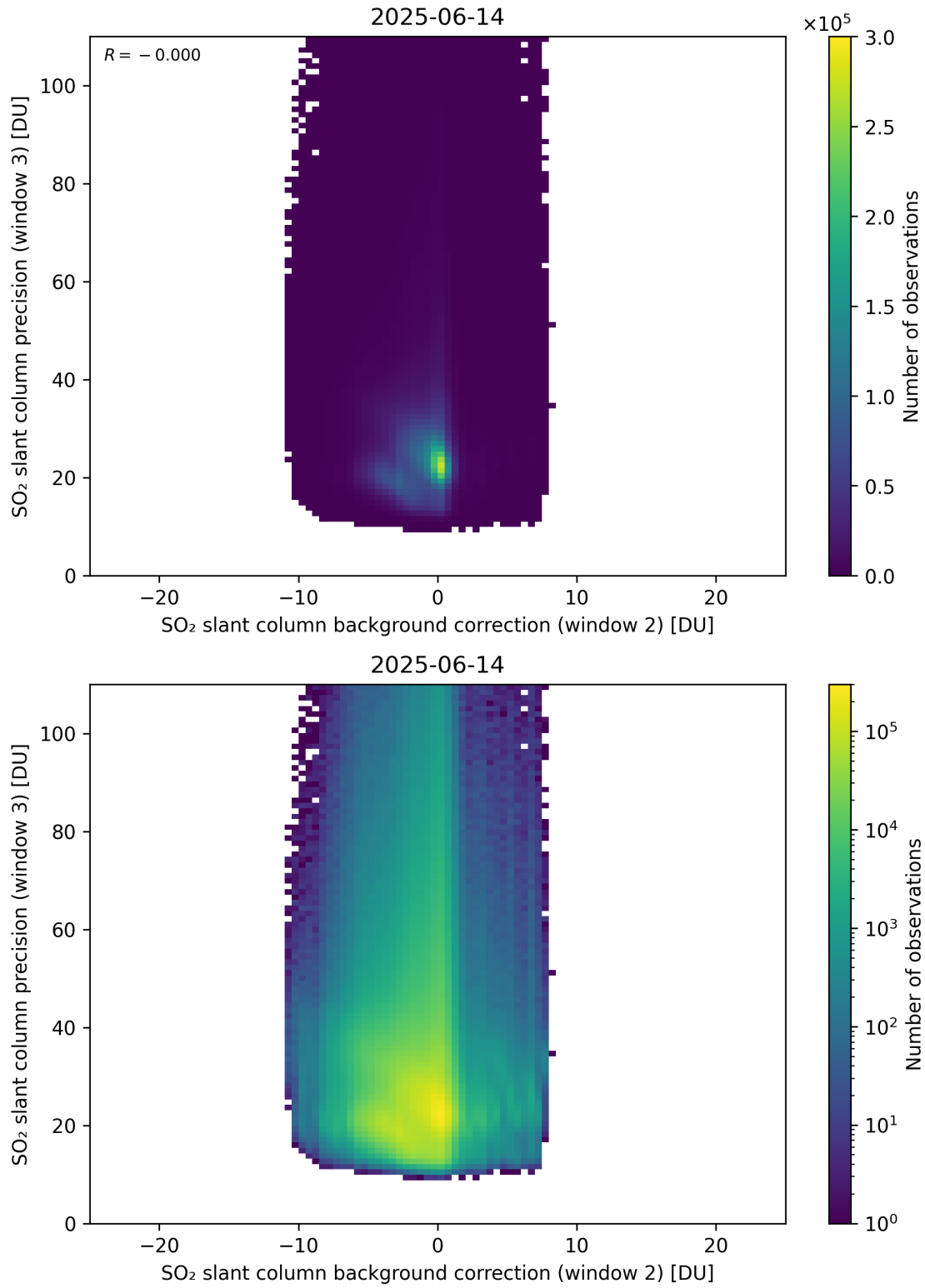


Figure 129: Scatter density plot of “SO₂ slant column background correction (window 2)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

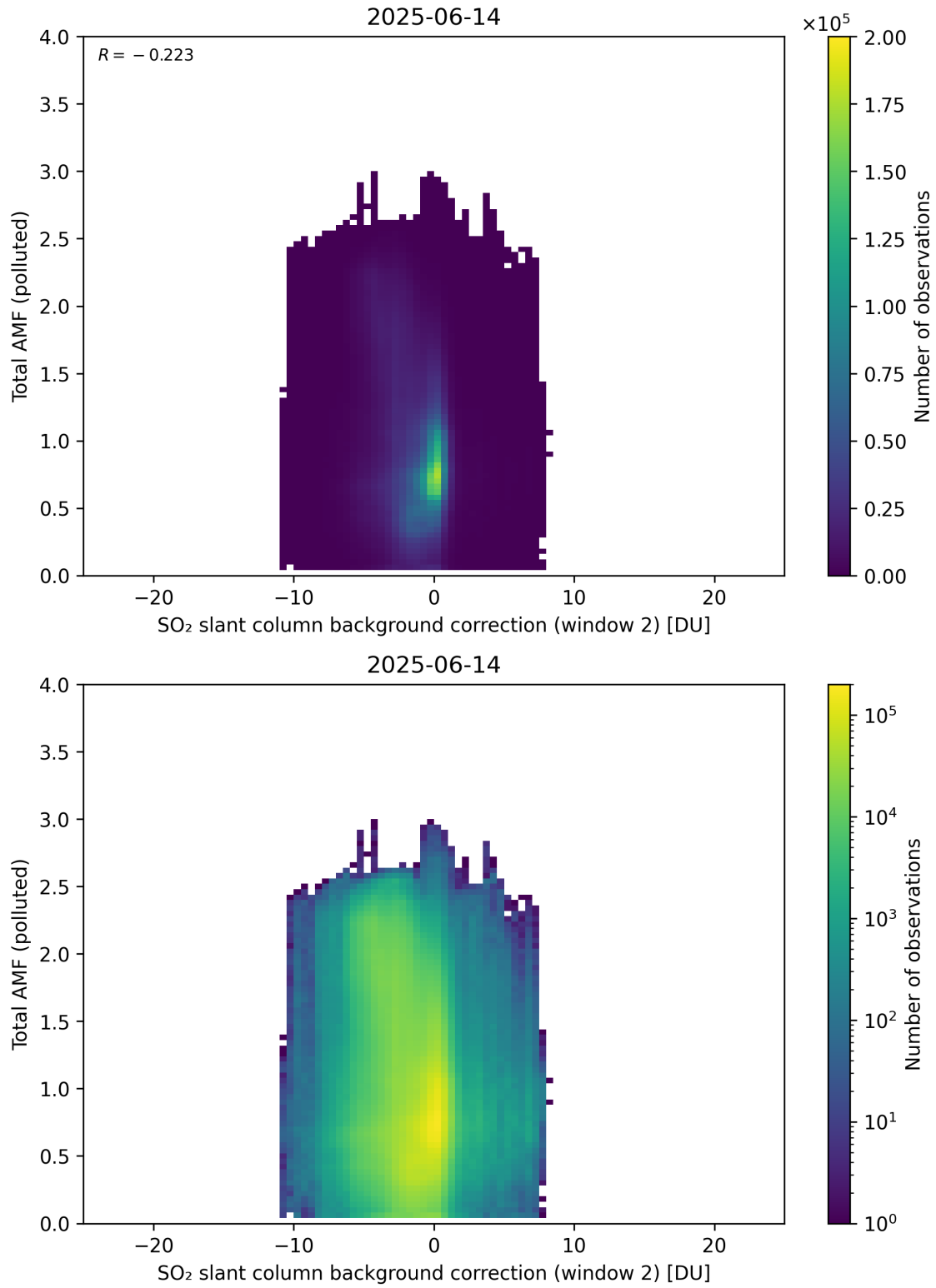


Figure 130: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

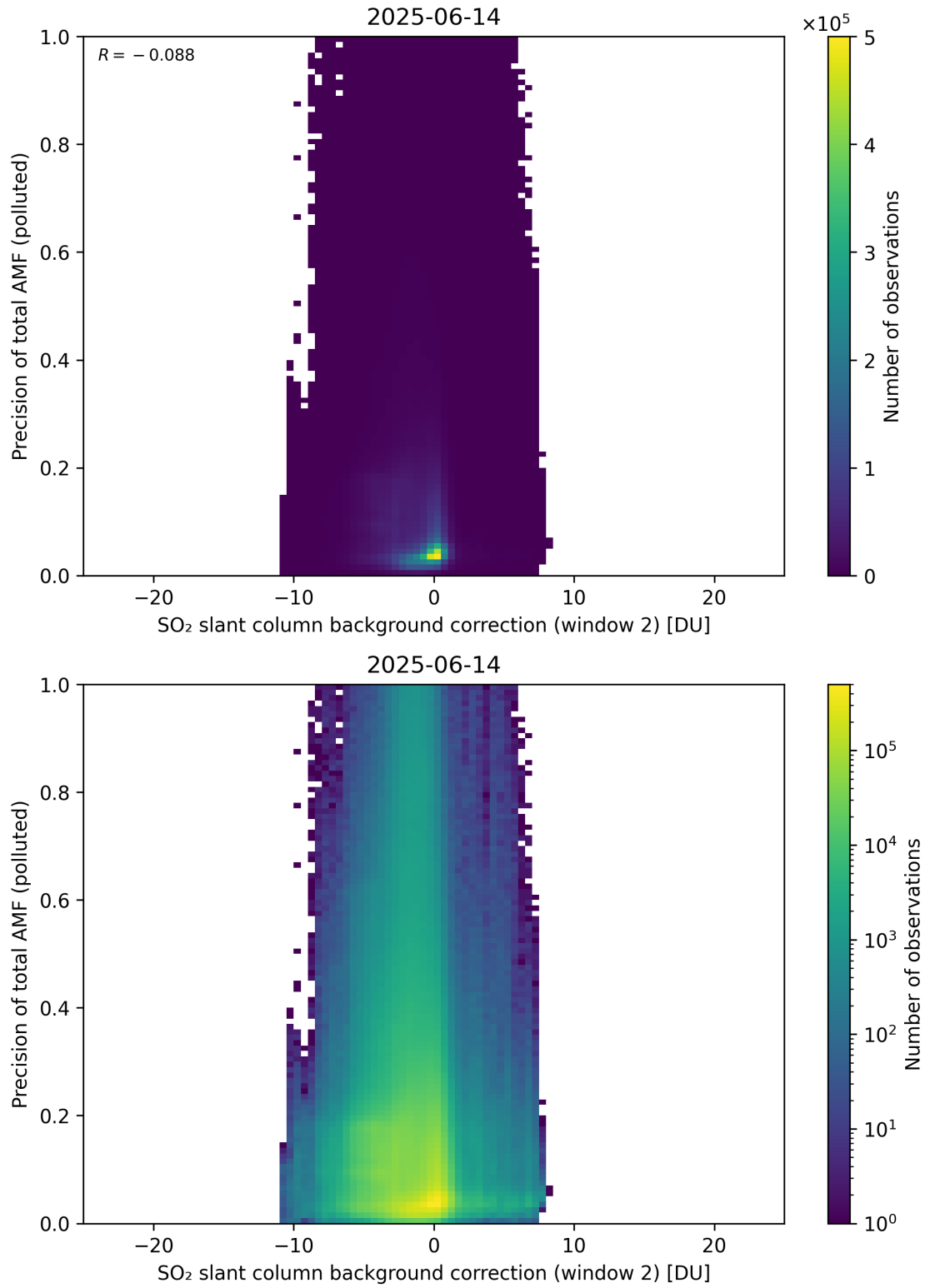


Figure 131: Scatter density plot of “SO₂ slant column background correction (window 2)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

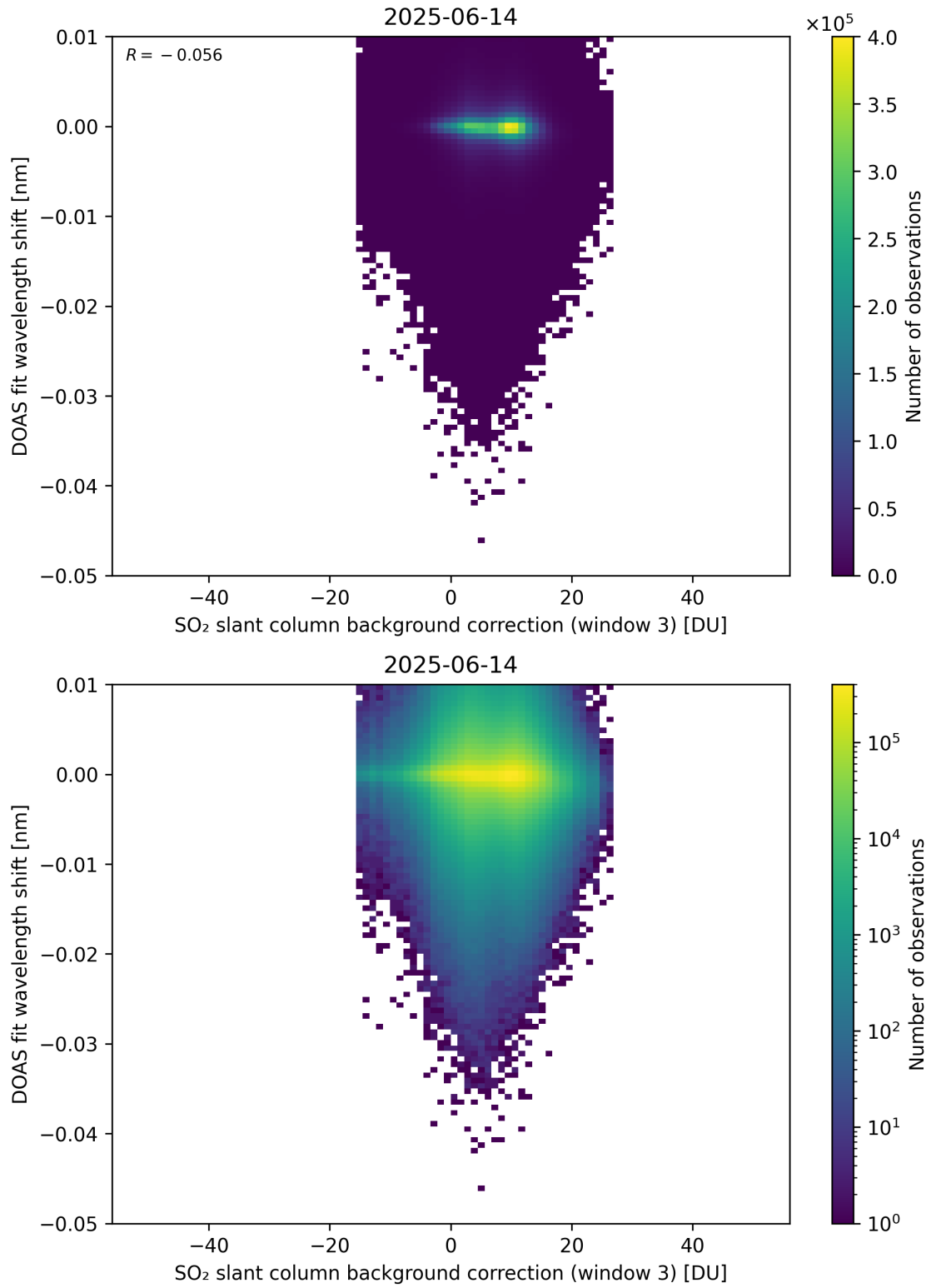


Figure 132: Scatter density plot of “SO₂ slant column background correction (window 3)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

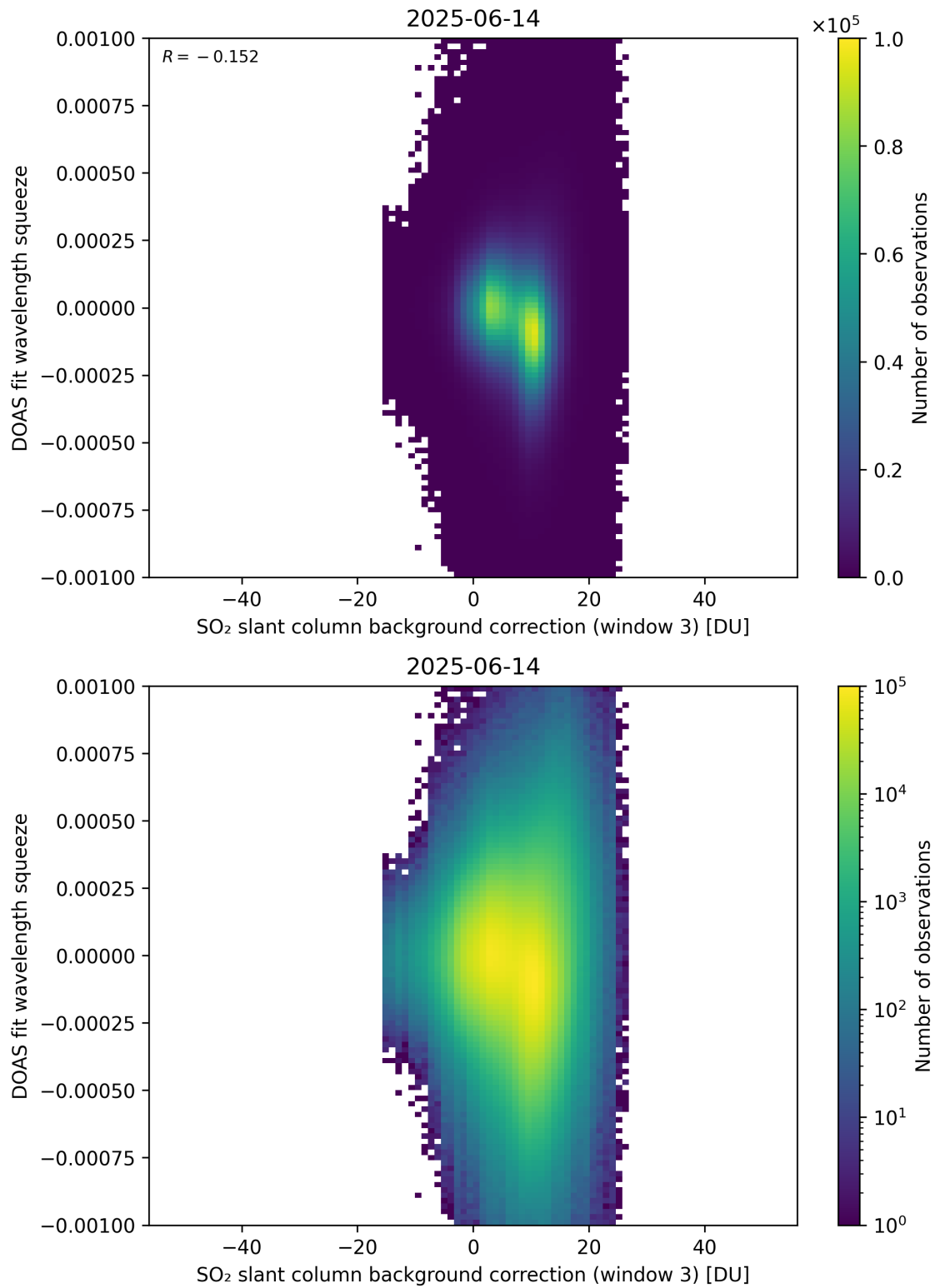


Figure 133: Scatter density plot of “SO₂ slant column background correction (window 3)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

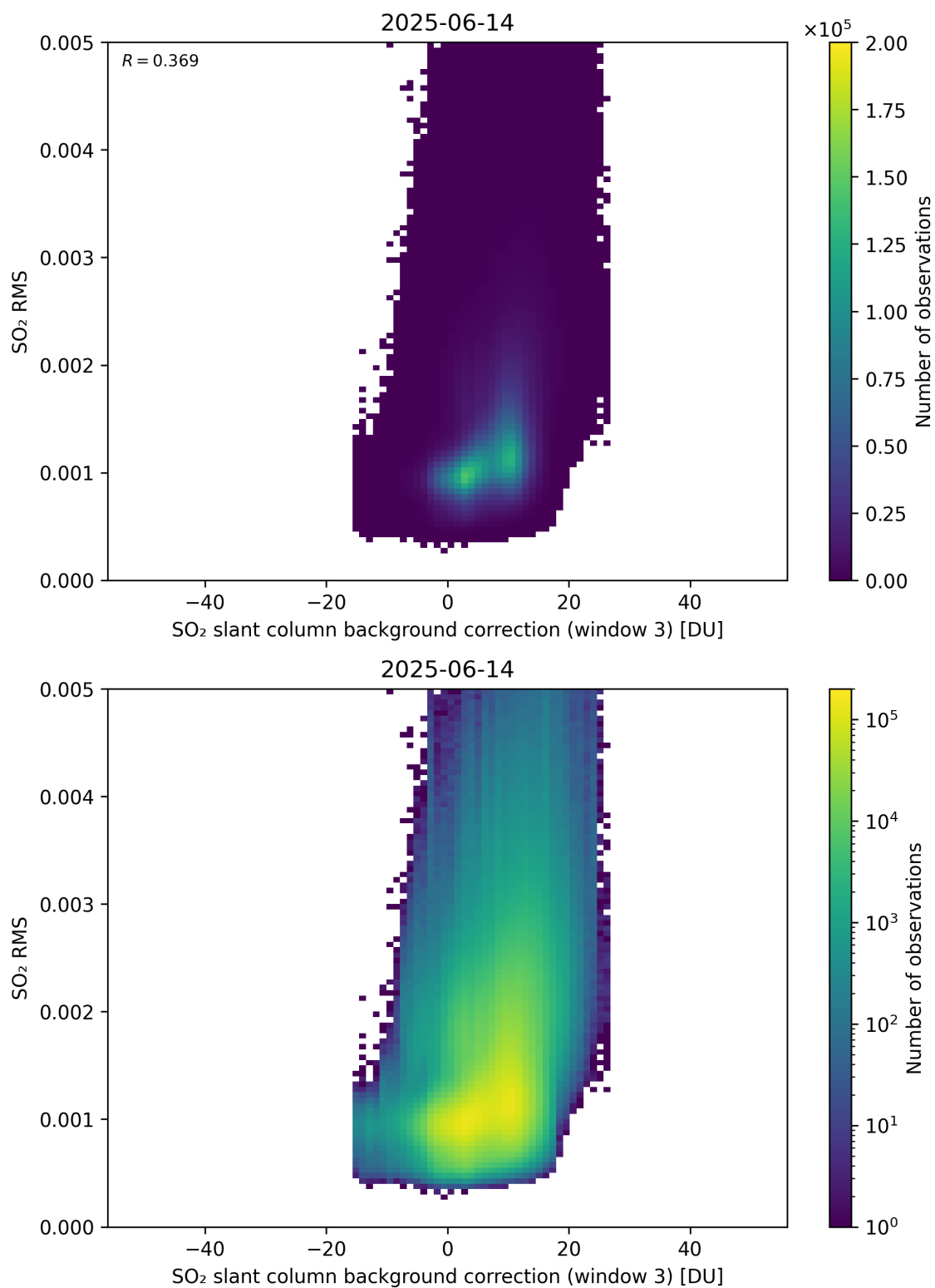


Figure 134: Scatter density plot of “SO₂ slant column background correction (window 3)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

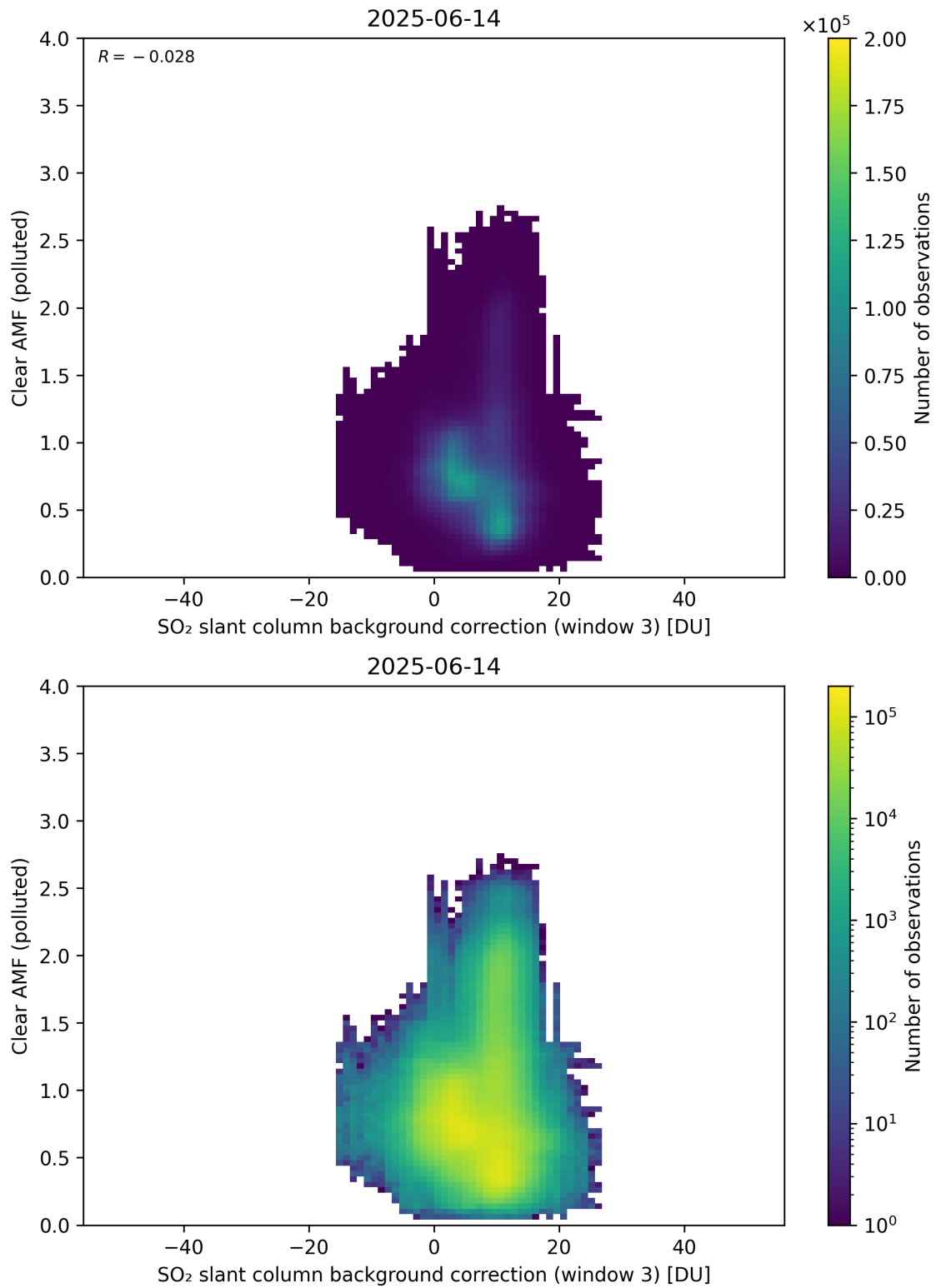


Figure 135: Scatter density plot of “SO₂ slant column background correction (window 3)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

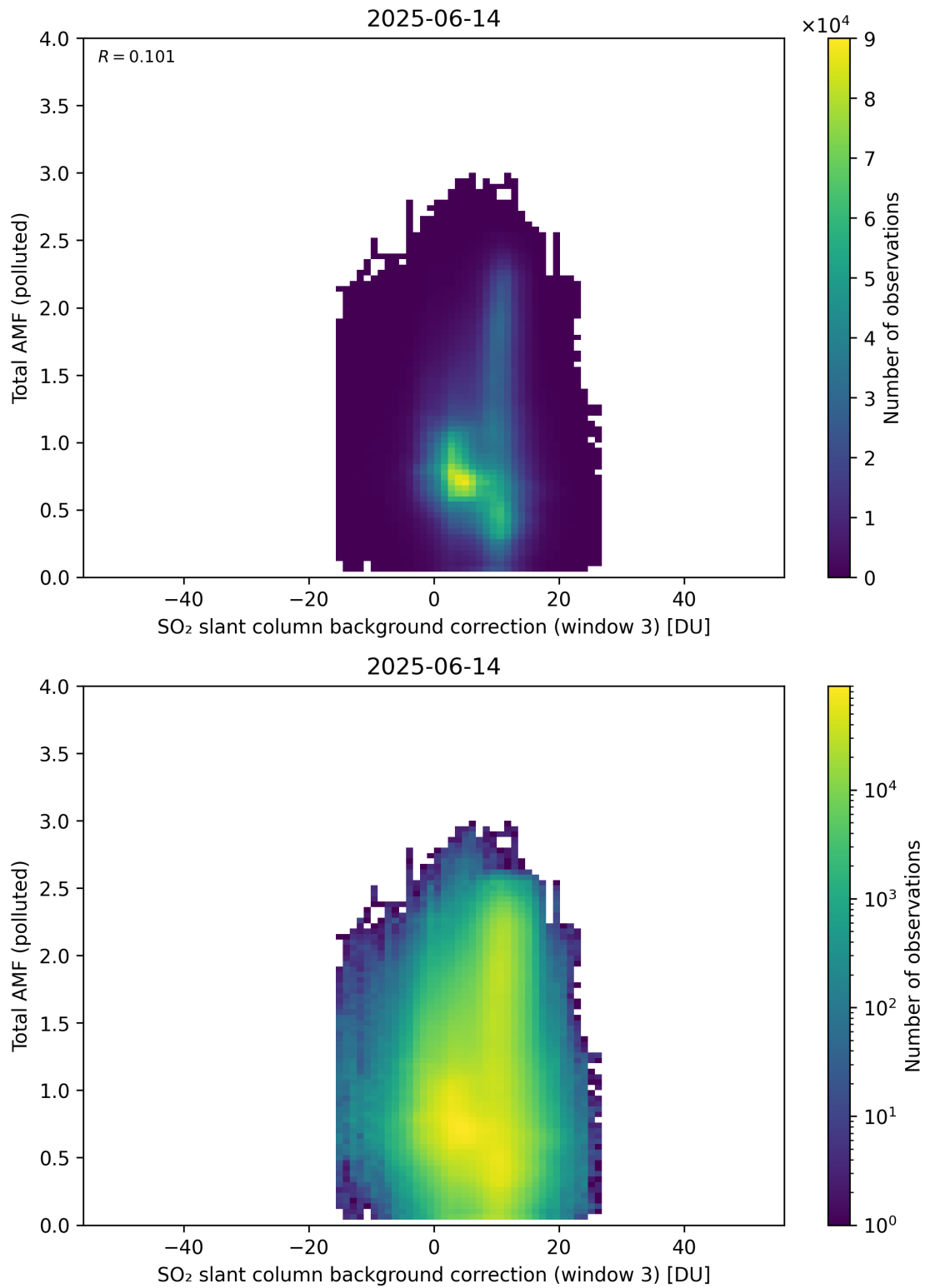


Figure 136: Scatter density plot of “SO₂ slant column background correction (window 3)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

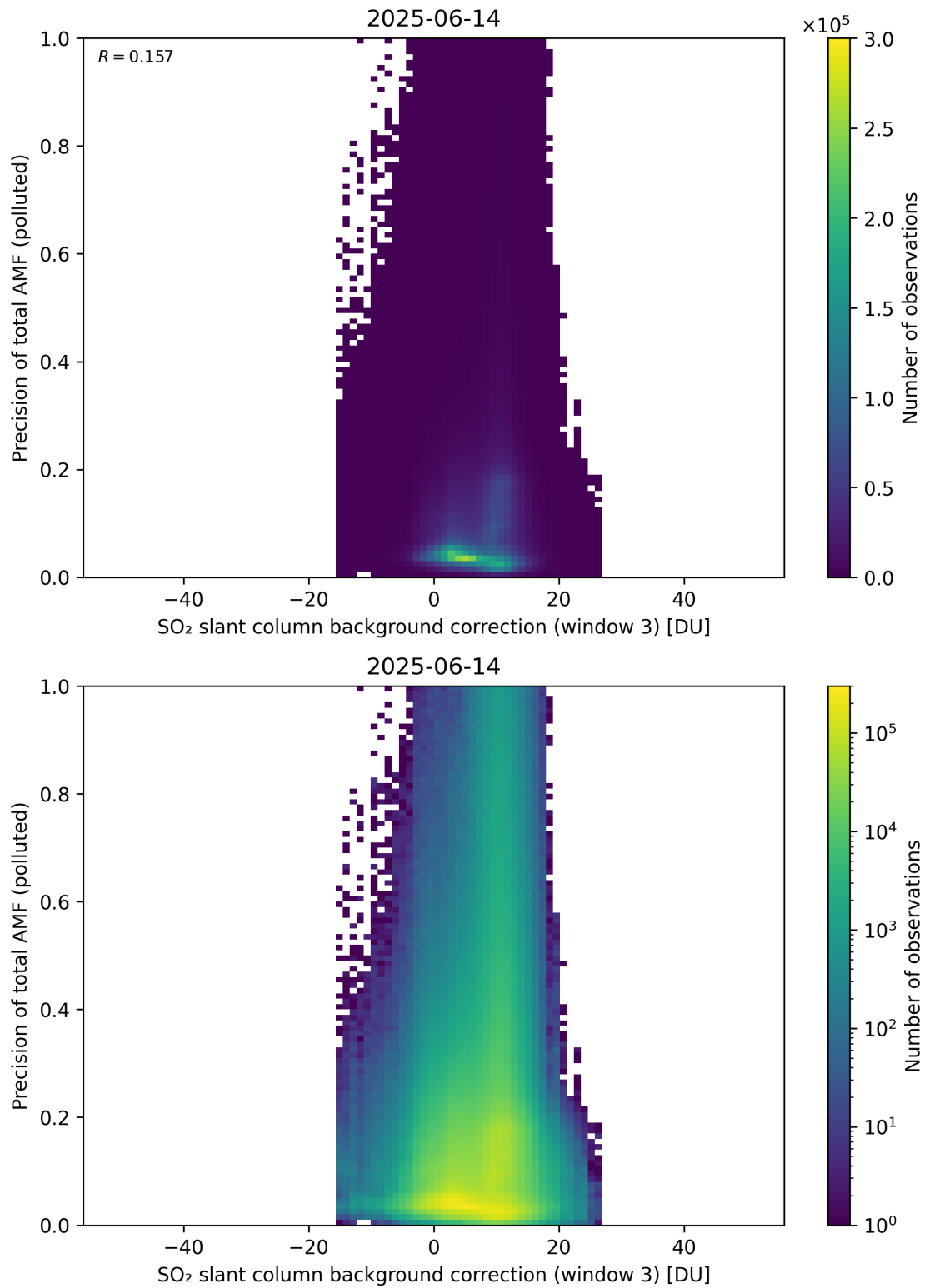


Figure 137: Scatter density plot of “SO₂ slant column background correction (window 3)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

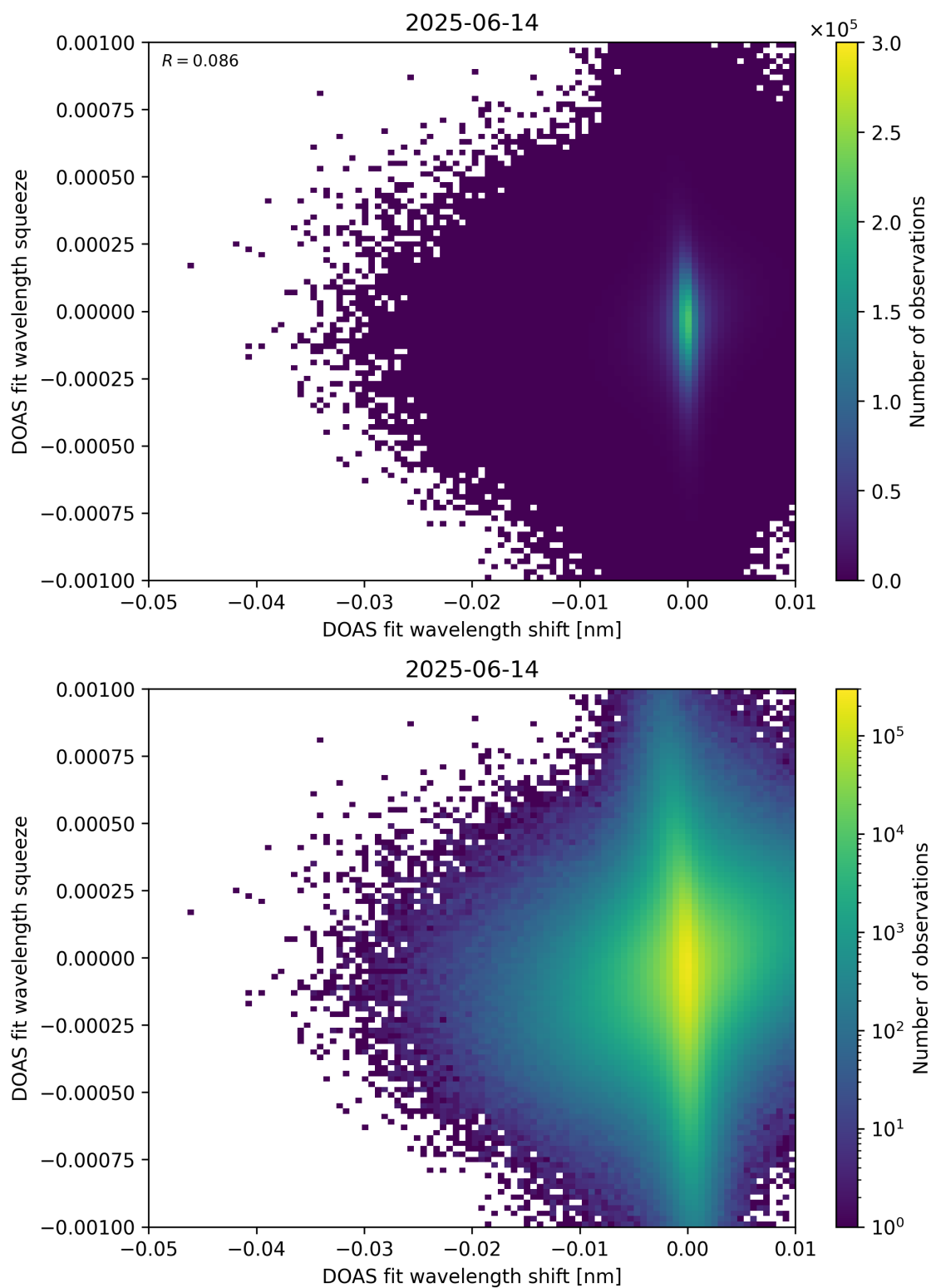


Figure 138: Scatter density plot of “DOAS fit wavelength shift” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

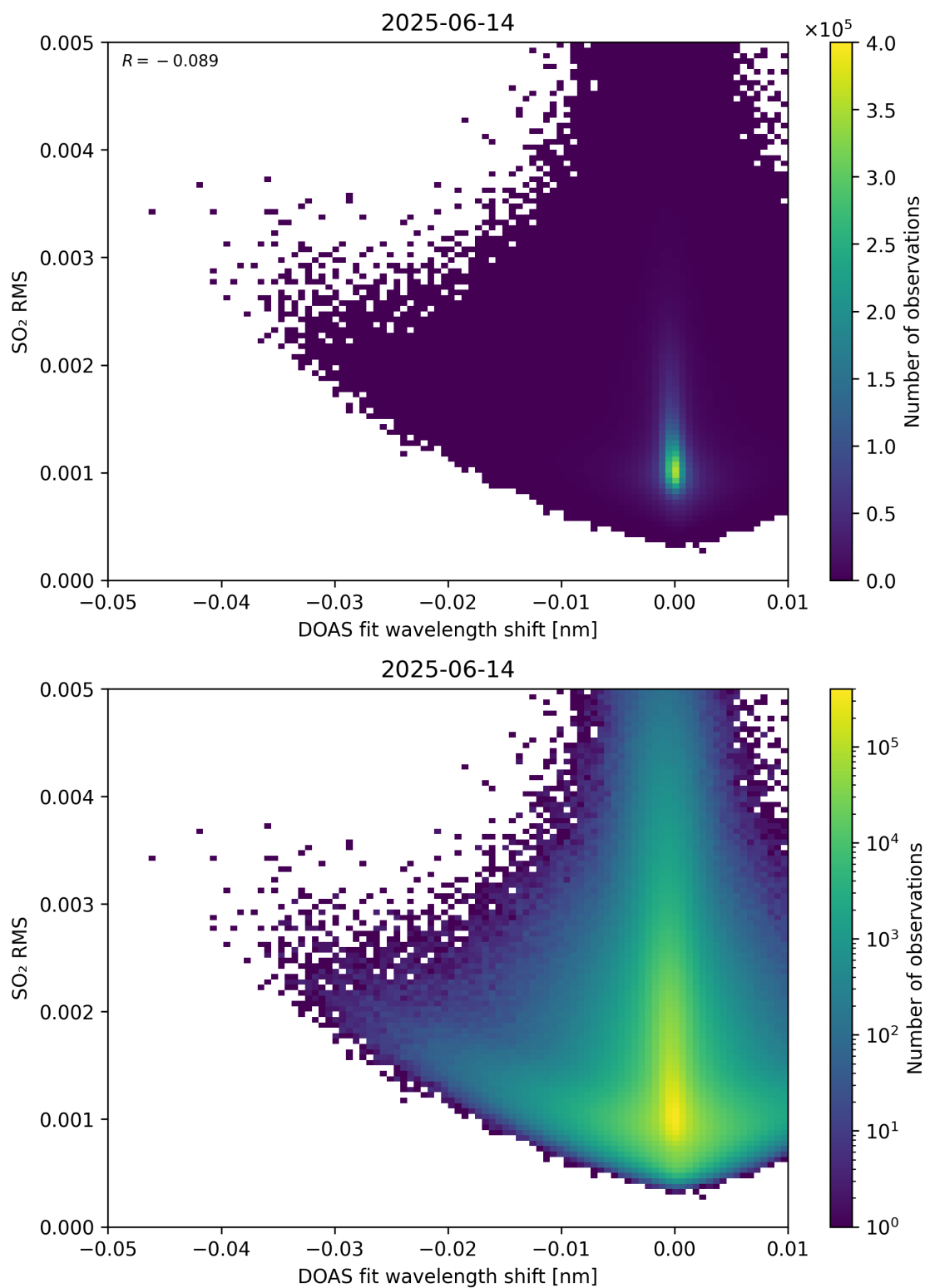


Figure 139: Scatter density plot of “DOAS fit wavelength shift” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

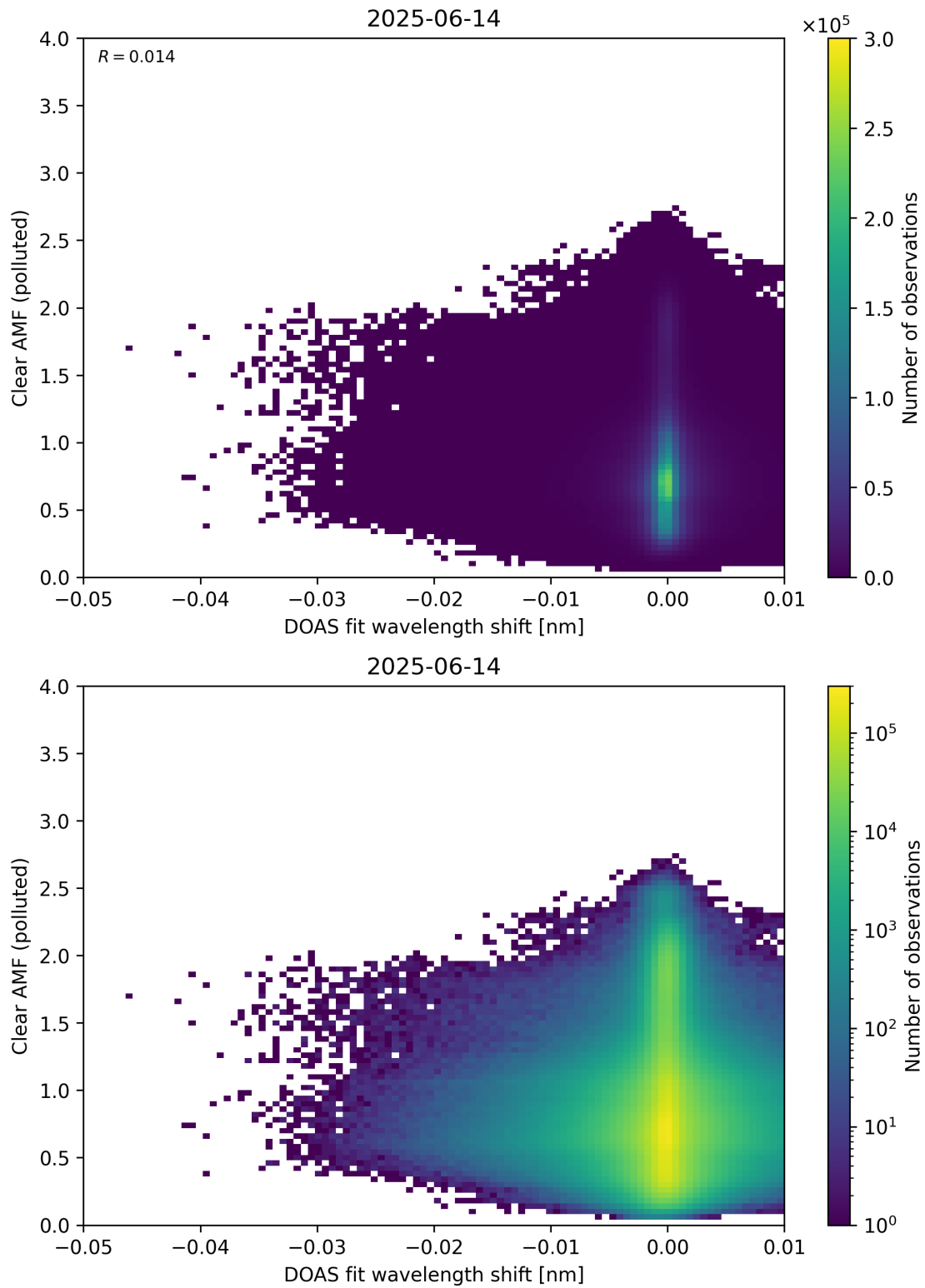


Figure 140: Scatter density plot of “DOAS fit wavelength shift” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

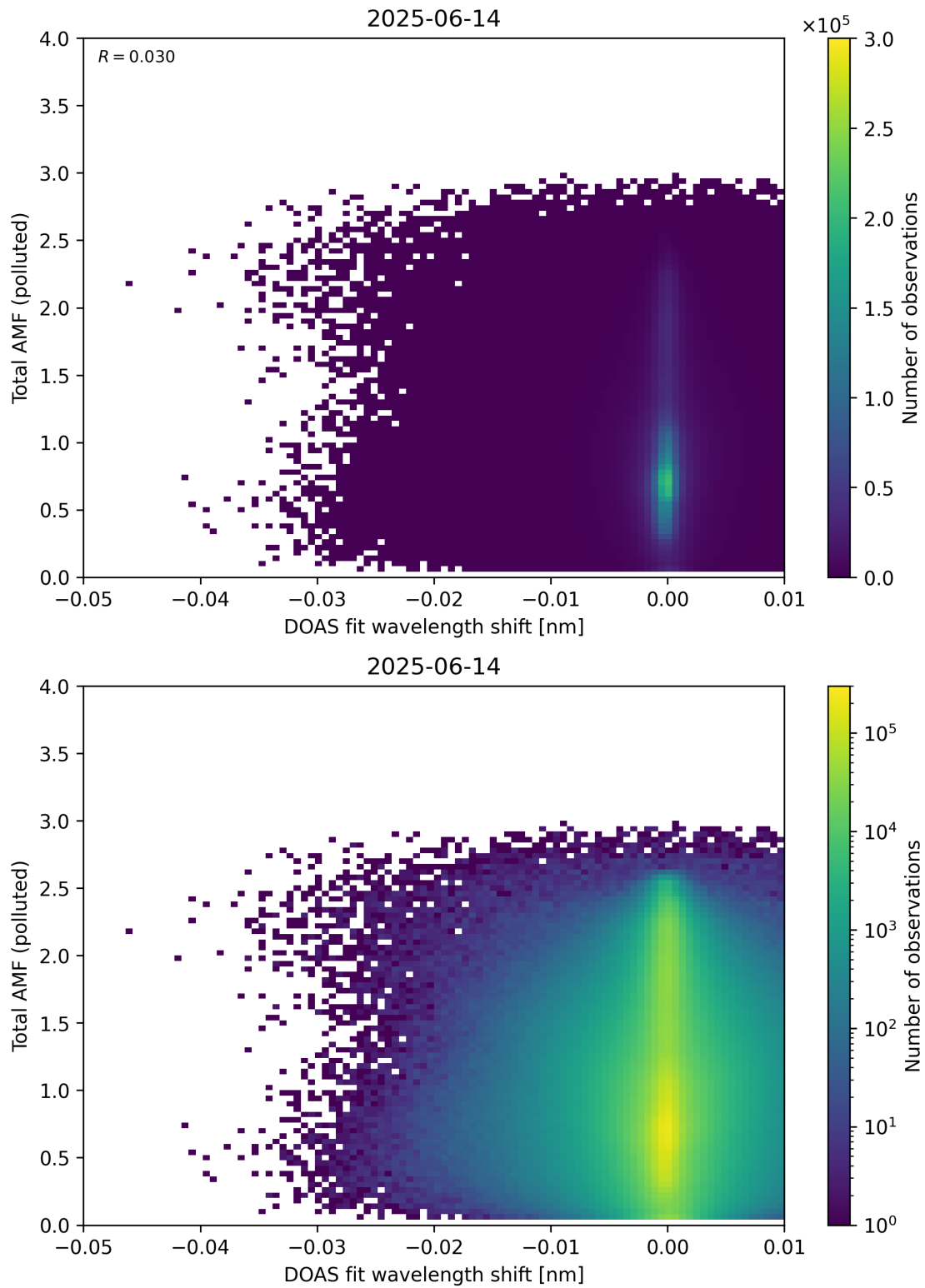


Figure 141: Scatter density plot of “DOAS fit wavelength shift” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

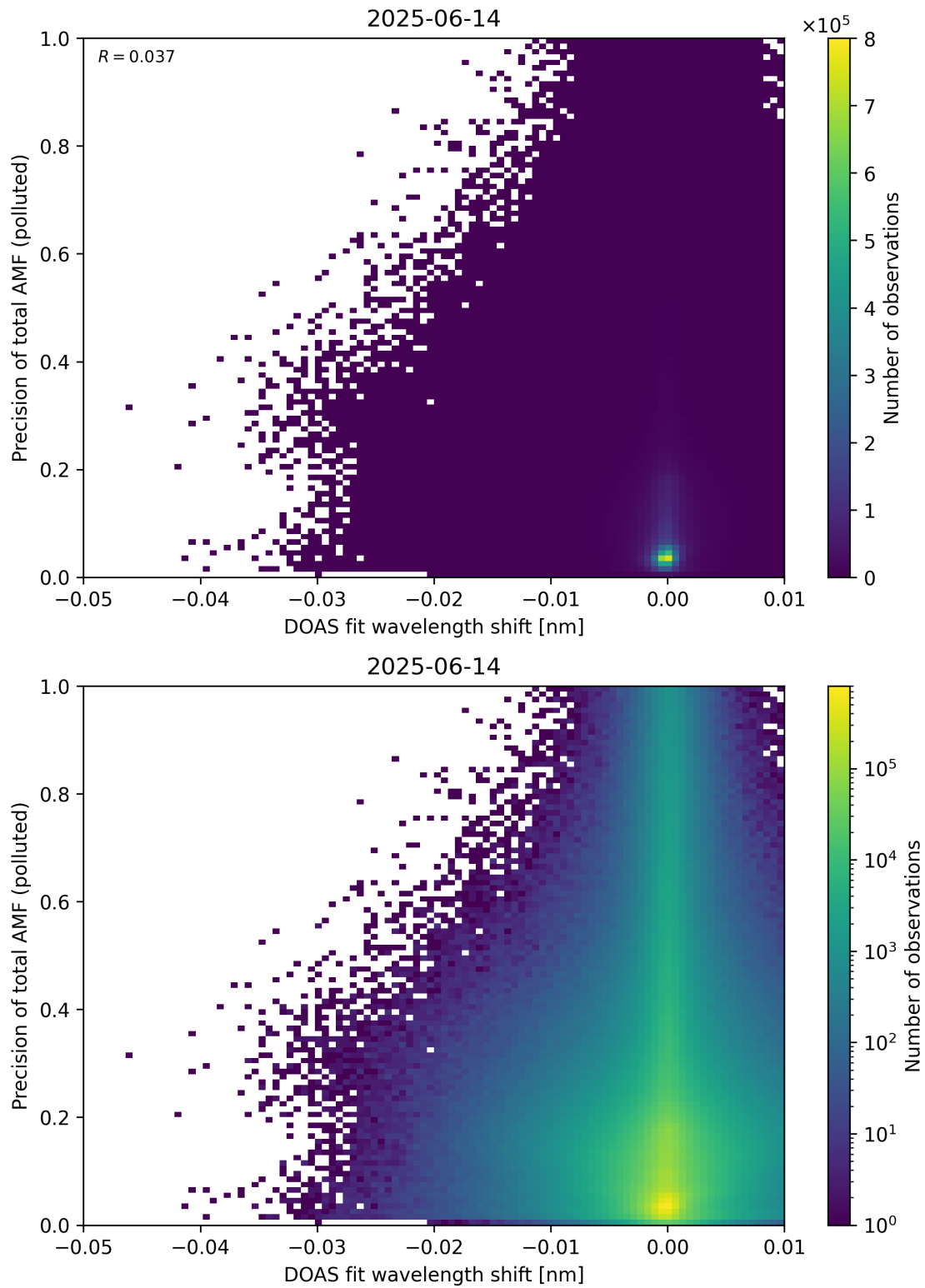


Figure 142: Scatter density plot of “DOAS fit wavelength shift” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

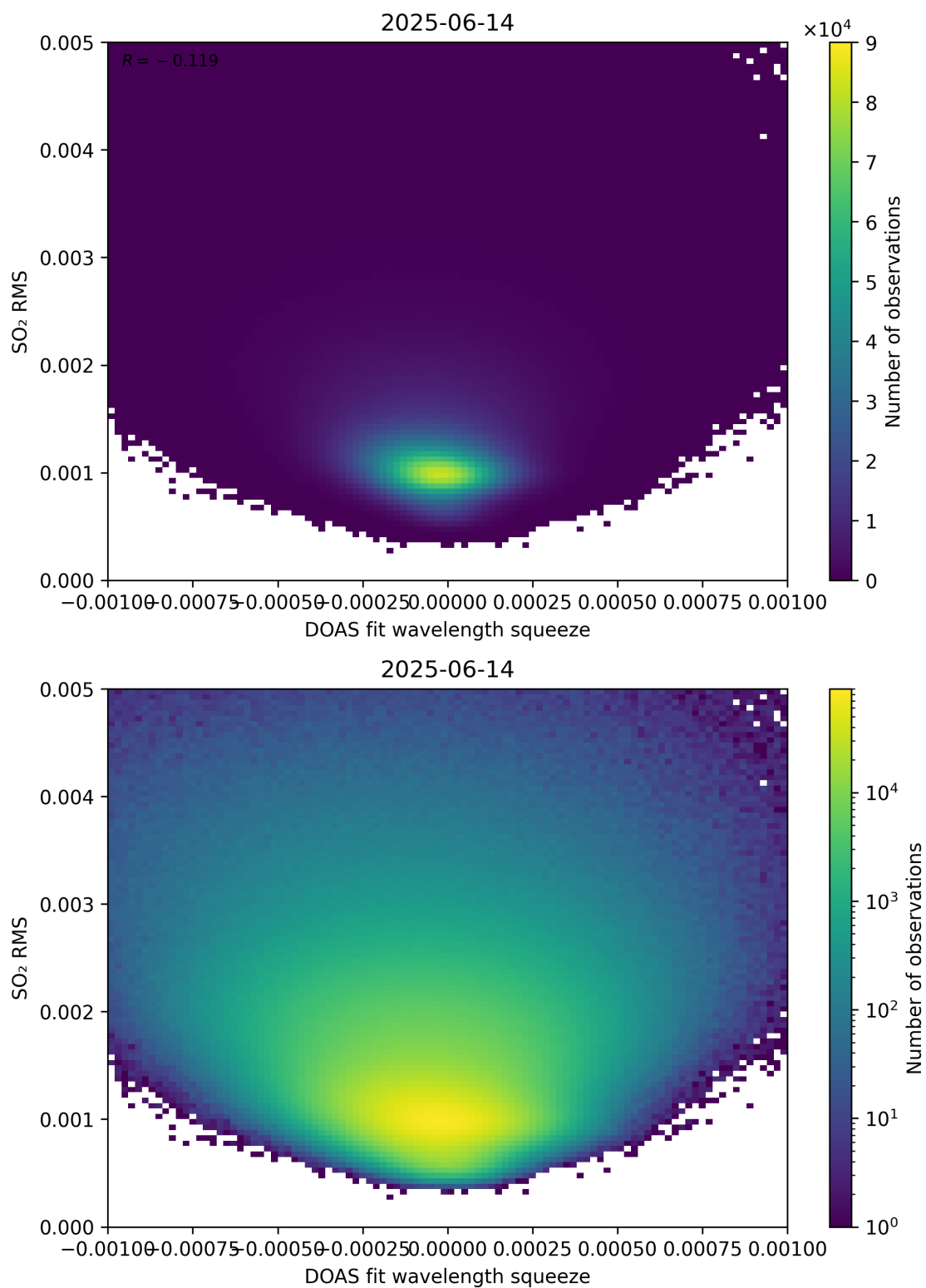


Figure 143: Scatter density plot of “DOAS fit wavelength squeeze” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

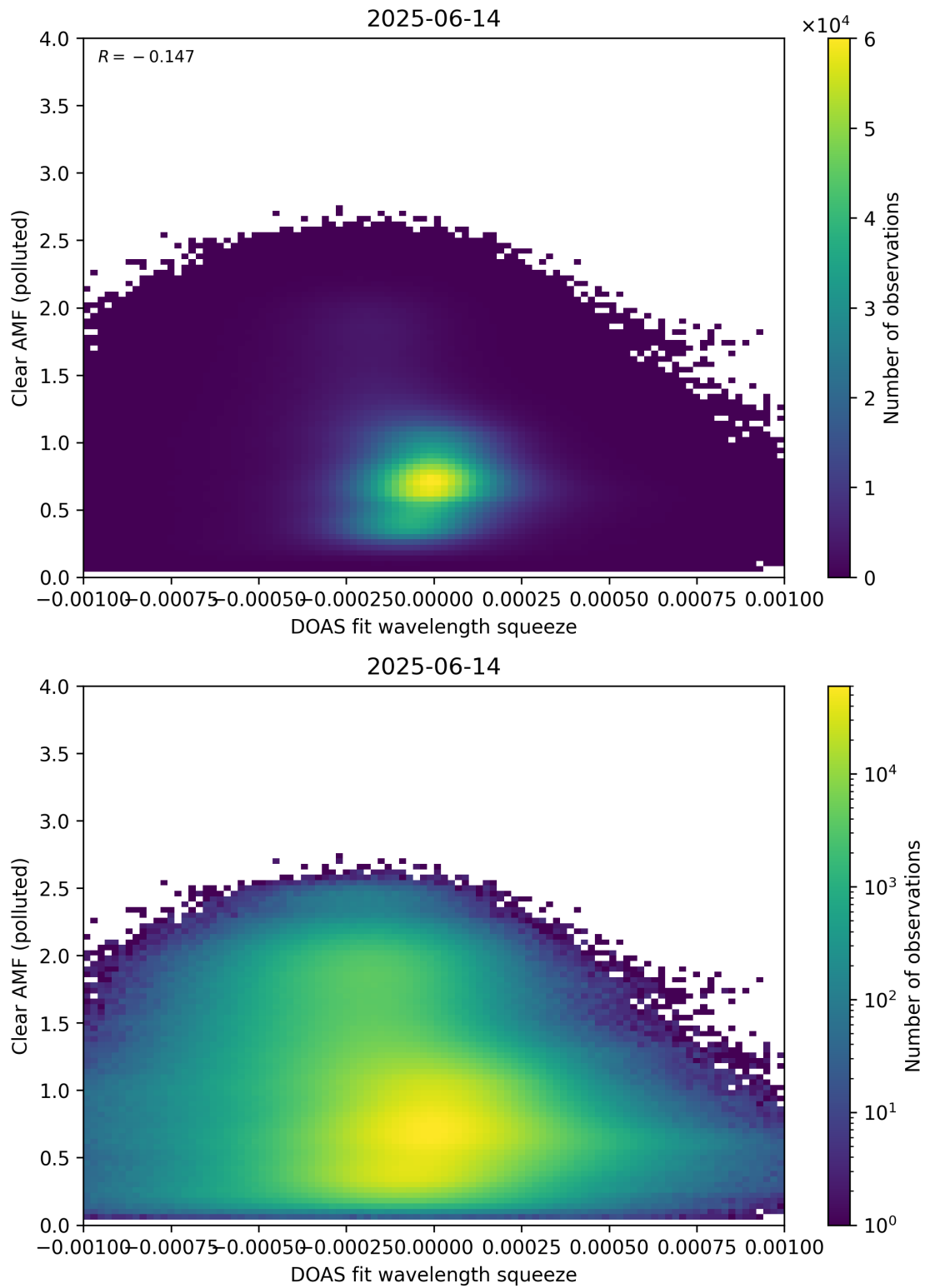


Figure 144: Scatter density plot of “DOAS fit wavelength squeeze” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

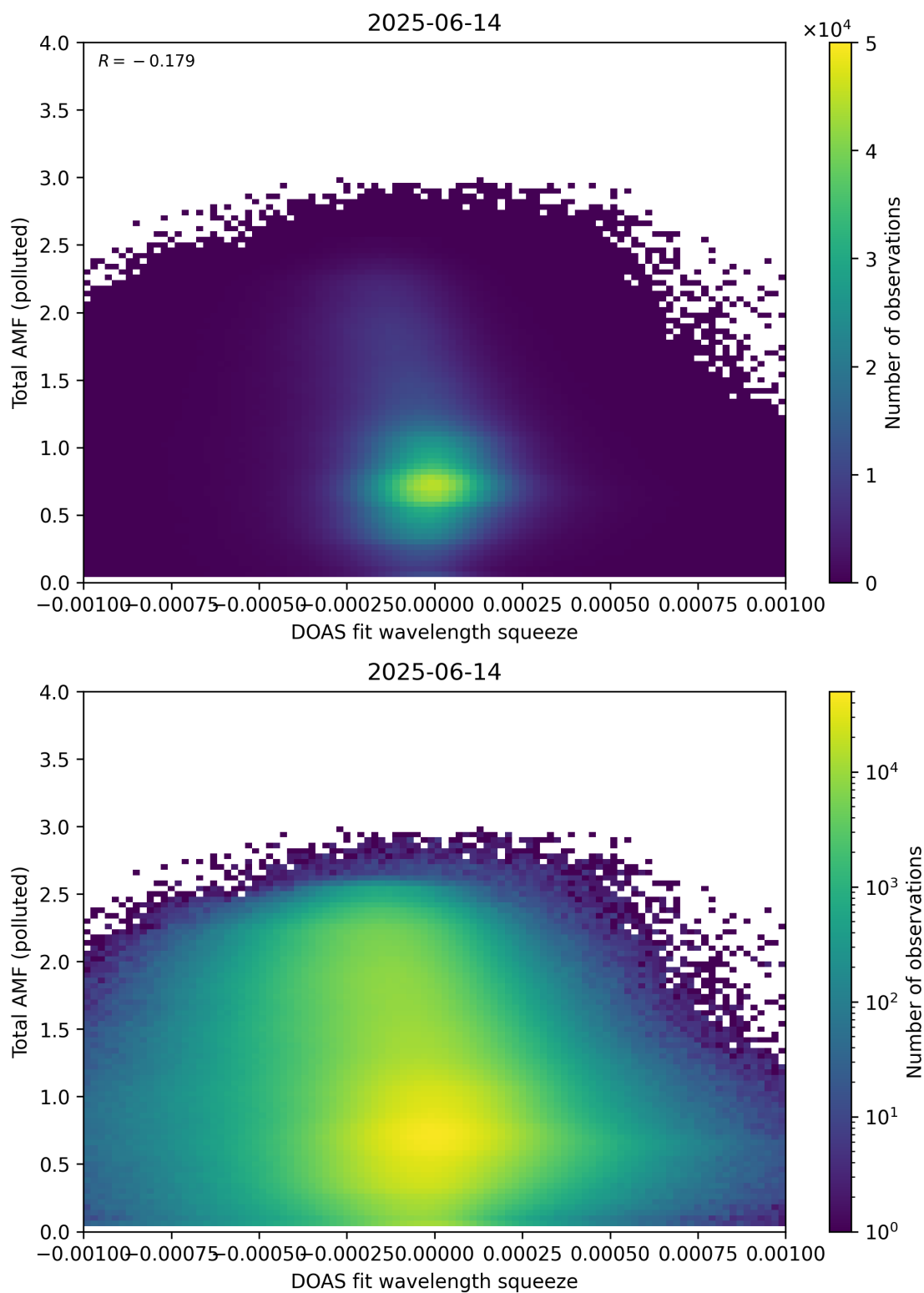


Figure 145: Scatter density plot of “DOAS fit wavelength squeeze” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

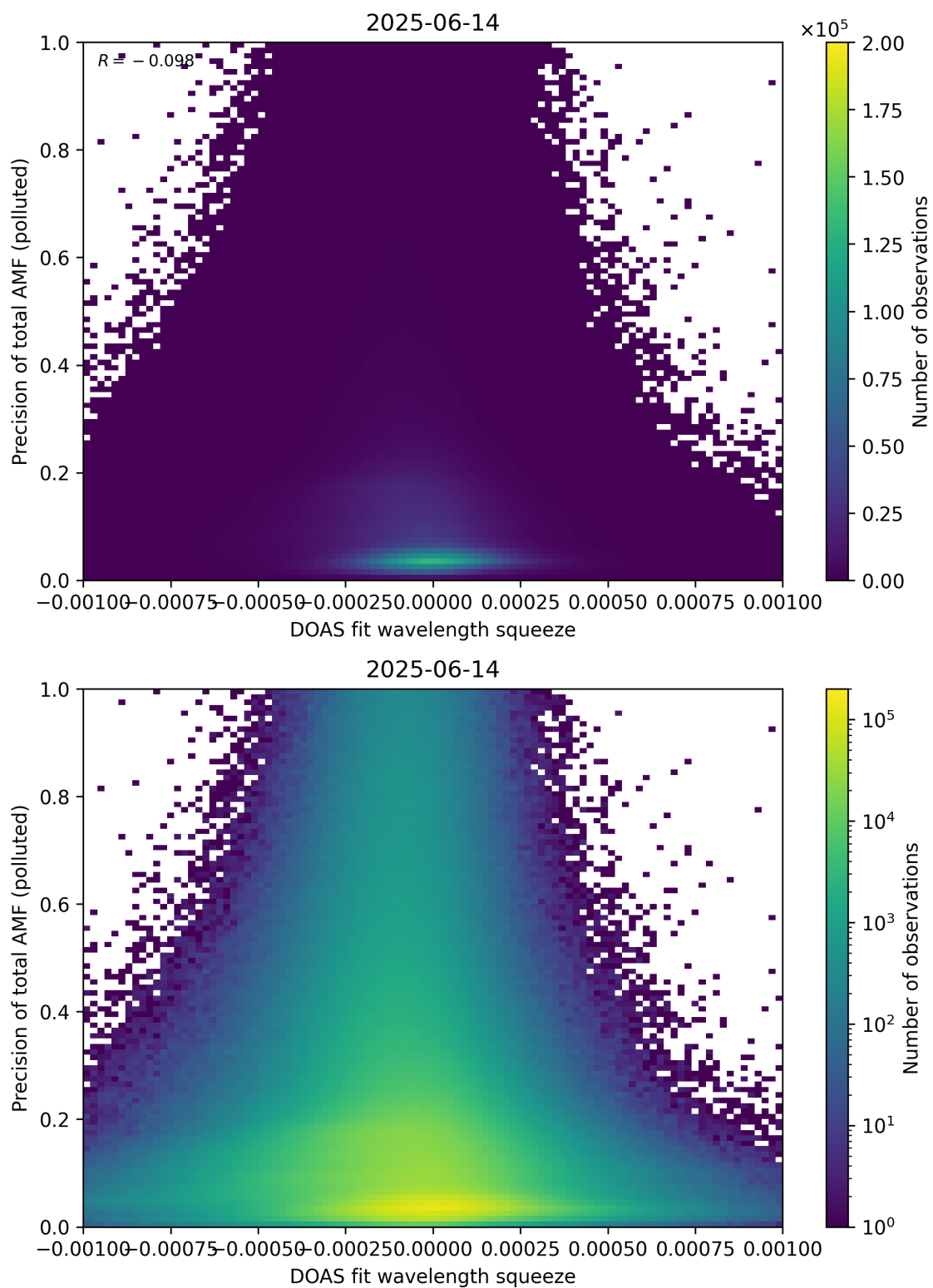


Figure 146: Scatter density plot of “DOAS fit wavelength squeeze” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

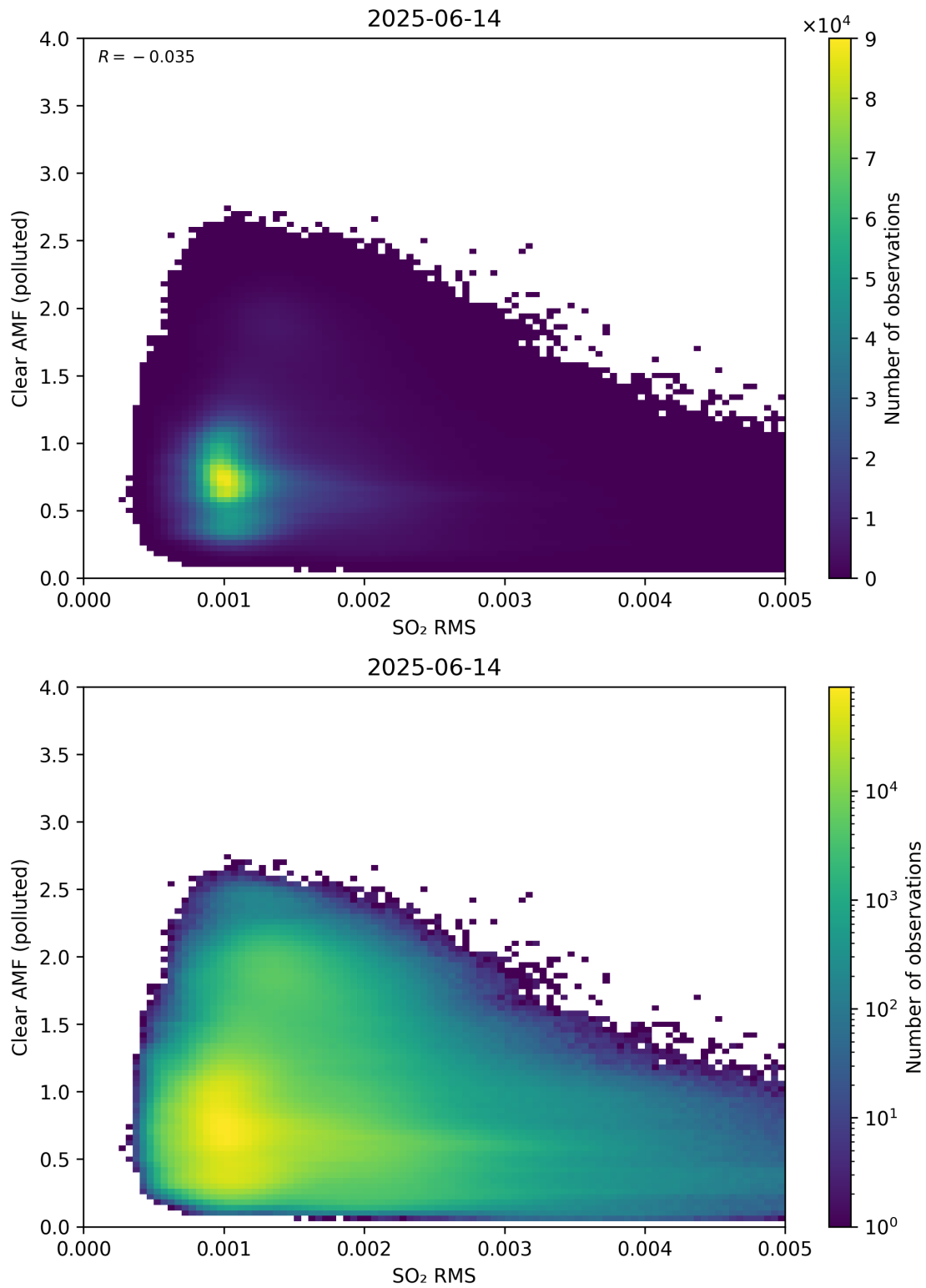


Figure 147: Scatter density plot of “SO₂ RMS” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

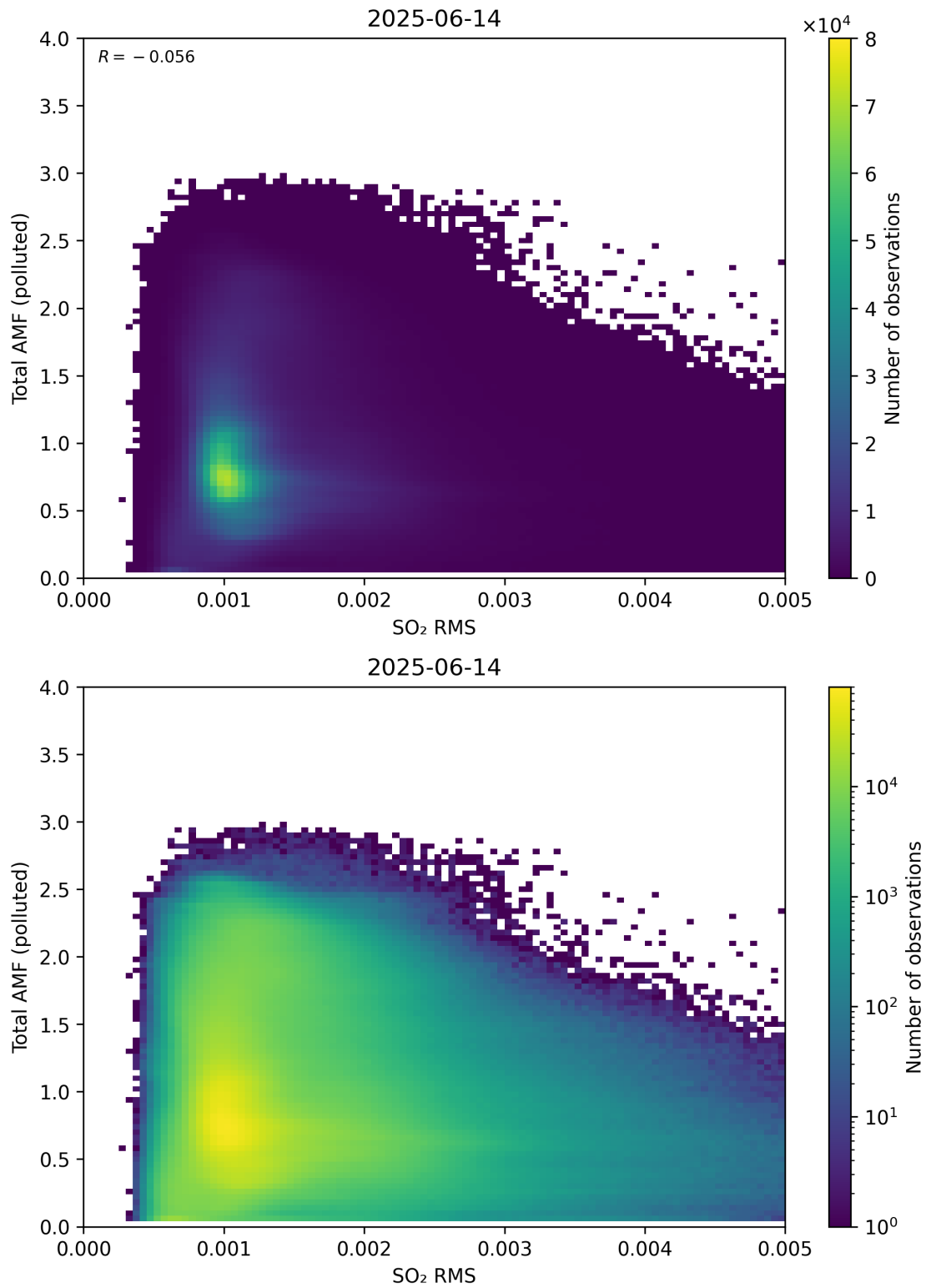


Figure 148: Scatter density plot of “SO₂ RMS” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

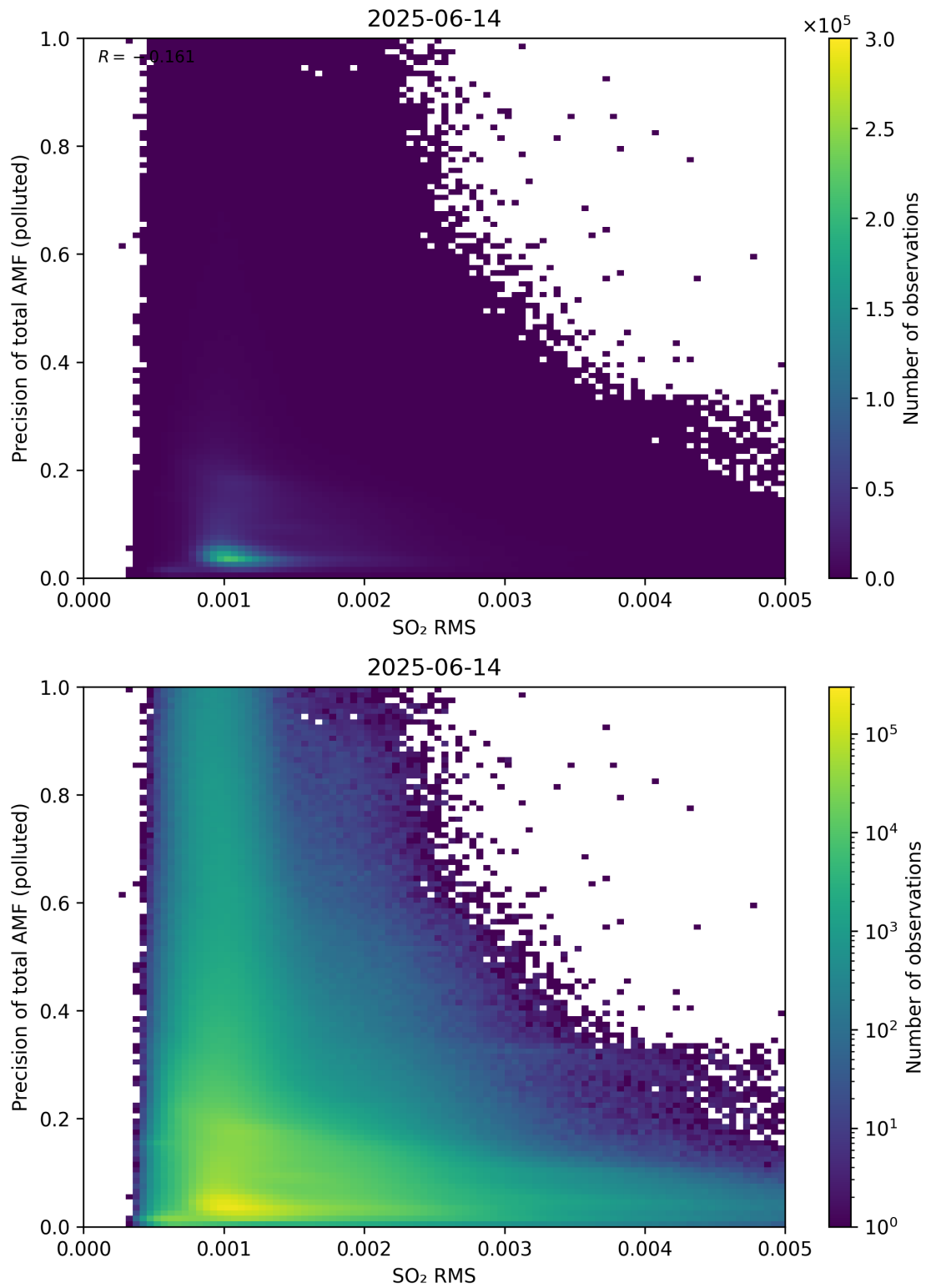


Figure 149: Scatter density plot of “SO₂ RMS” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

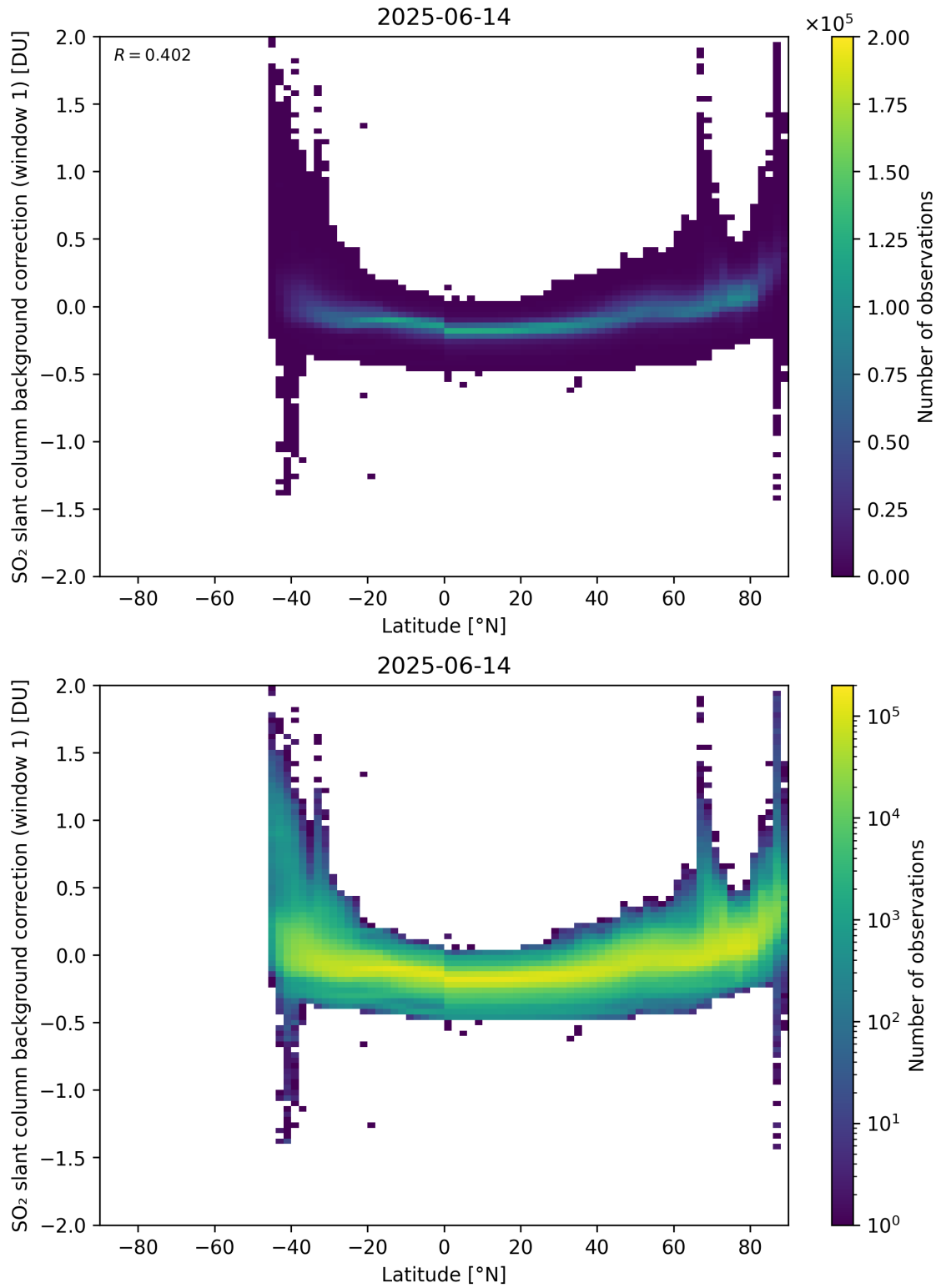


Figure 150: Scatter density plot of “Latitude” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

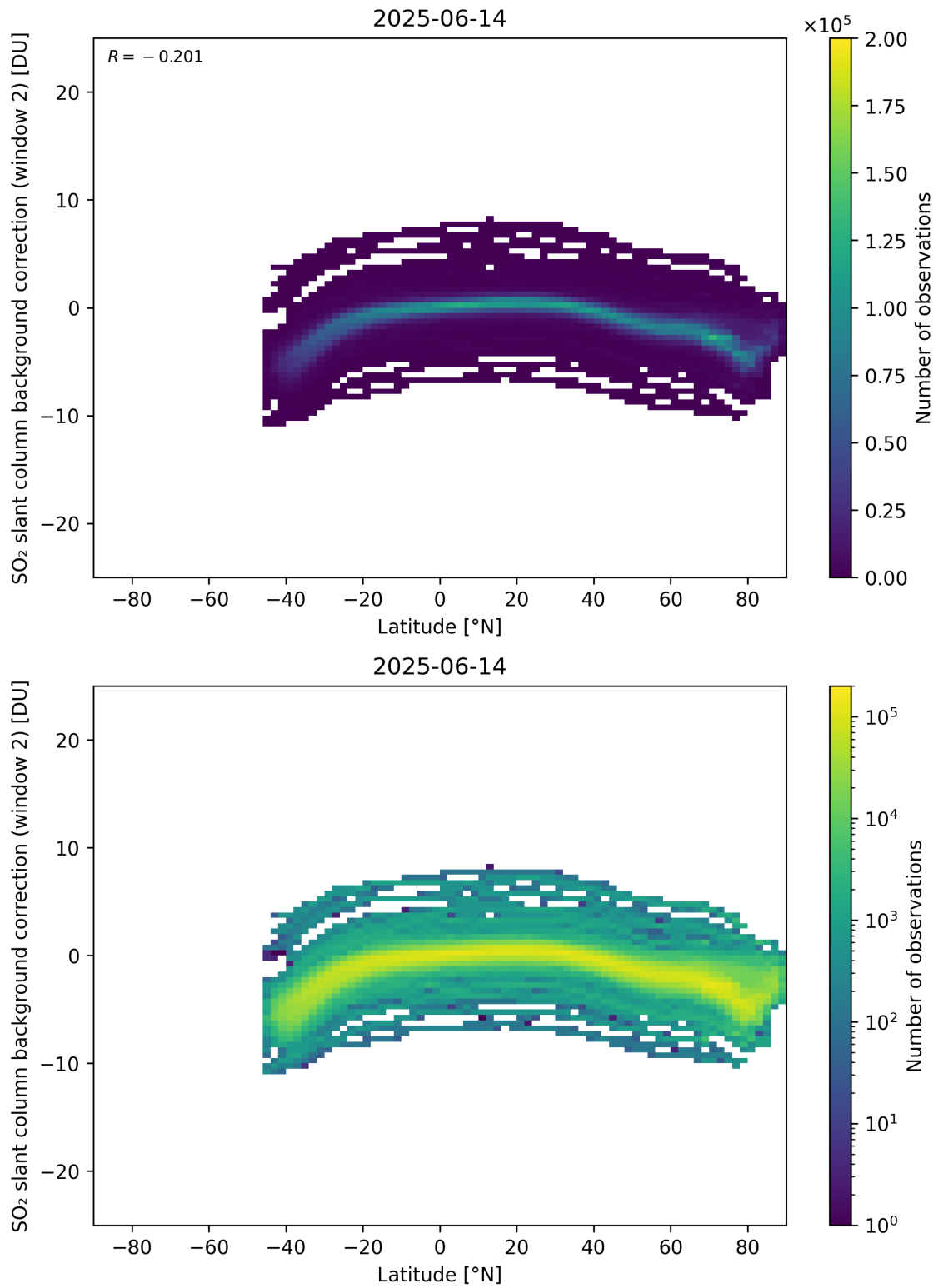


Figure 151: Scatter density plot of “Latitude” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

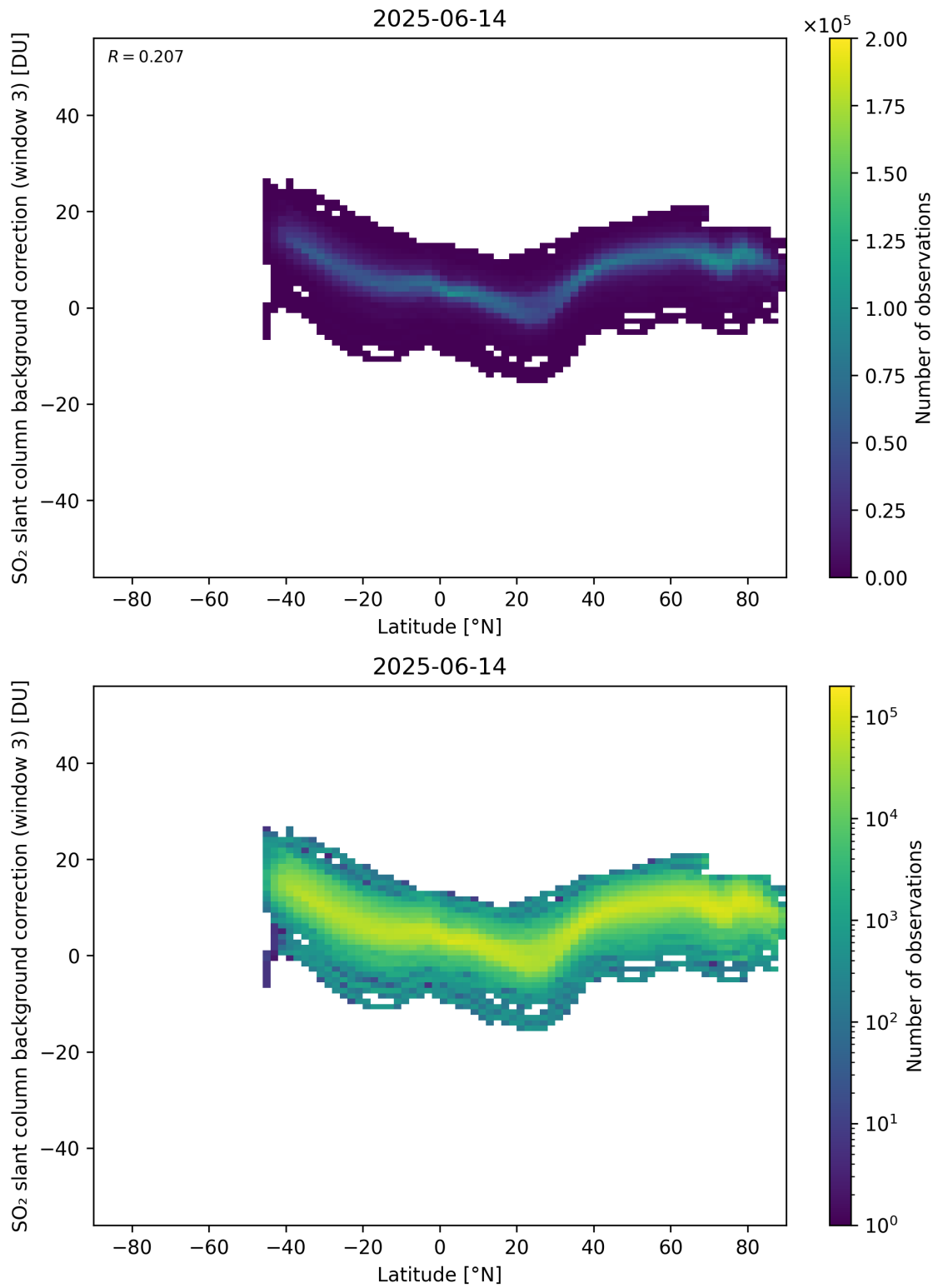


Figure 152: Scatter density plot of “Latitude” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

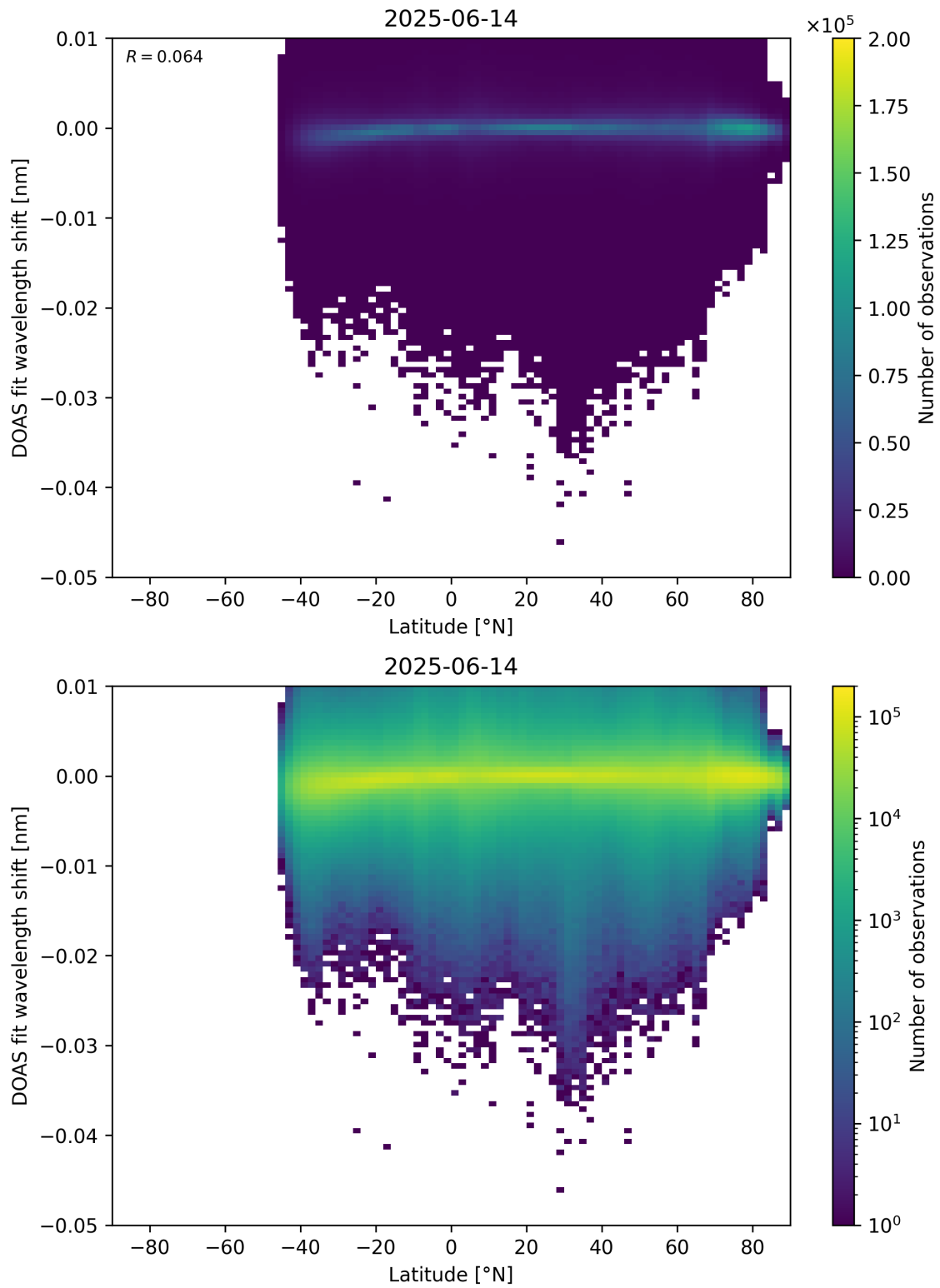


Figure 153: Scatter density plot of “Latitude” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

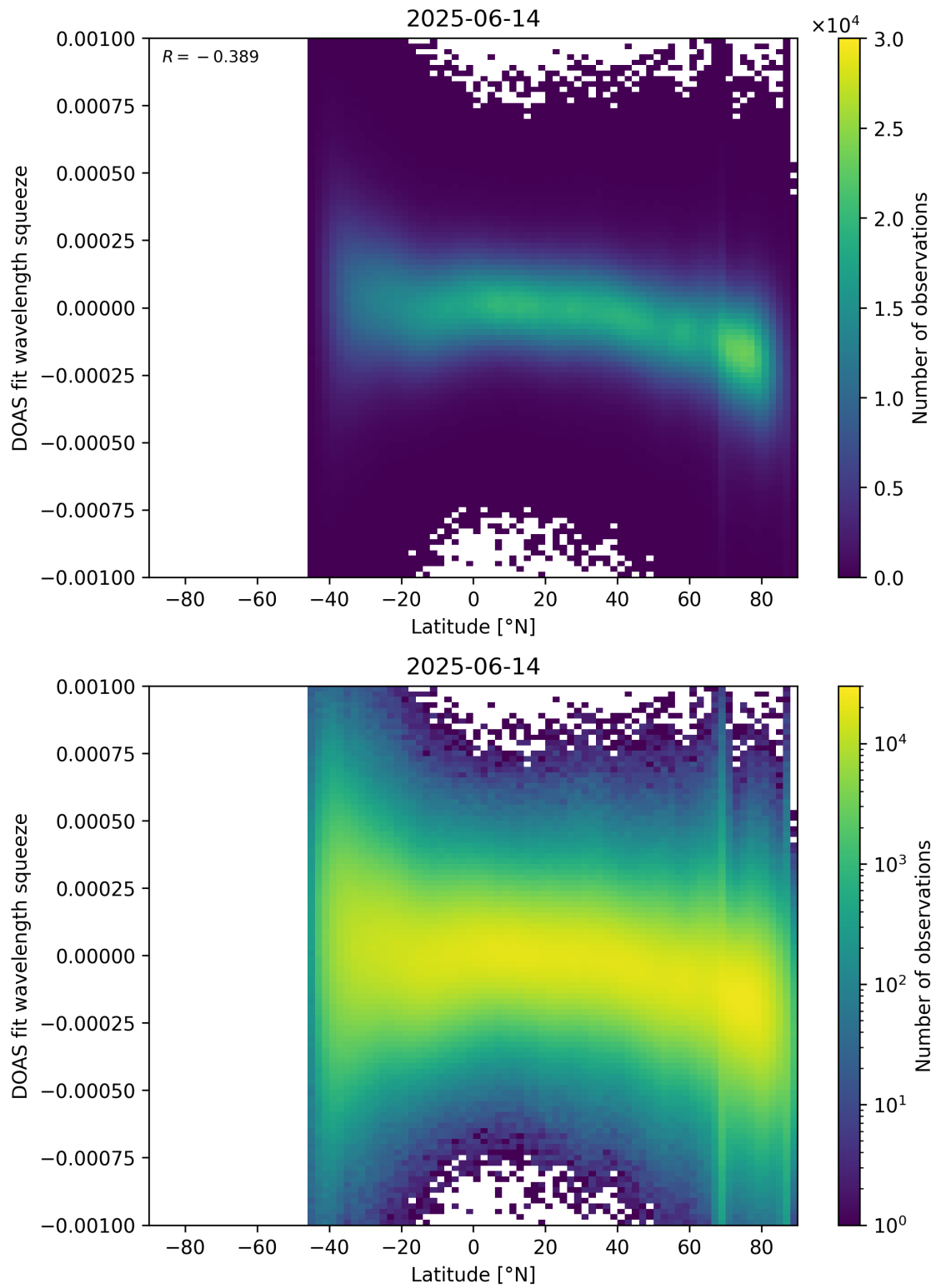


Figure 154: Scatter density plot of “Latitude” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

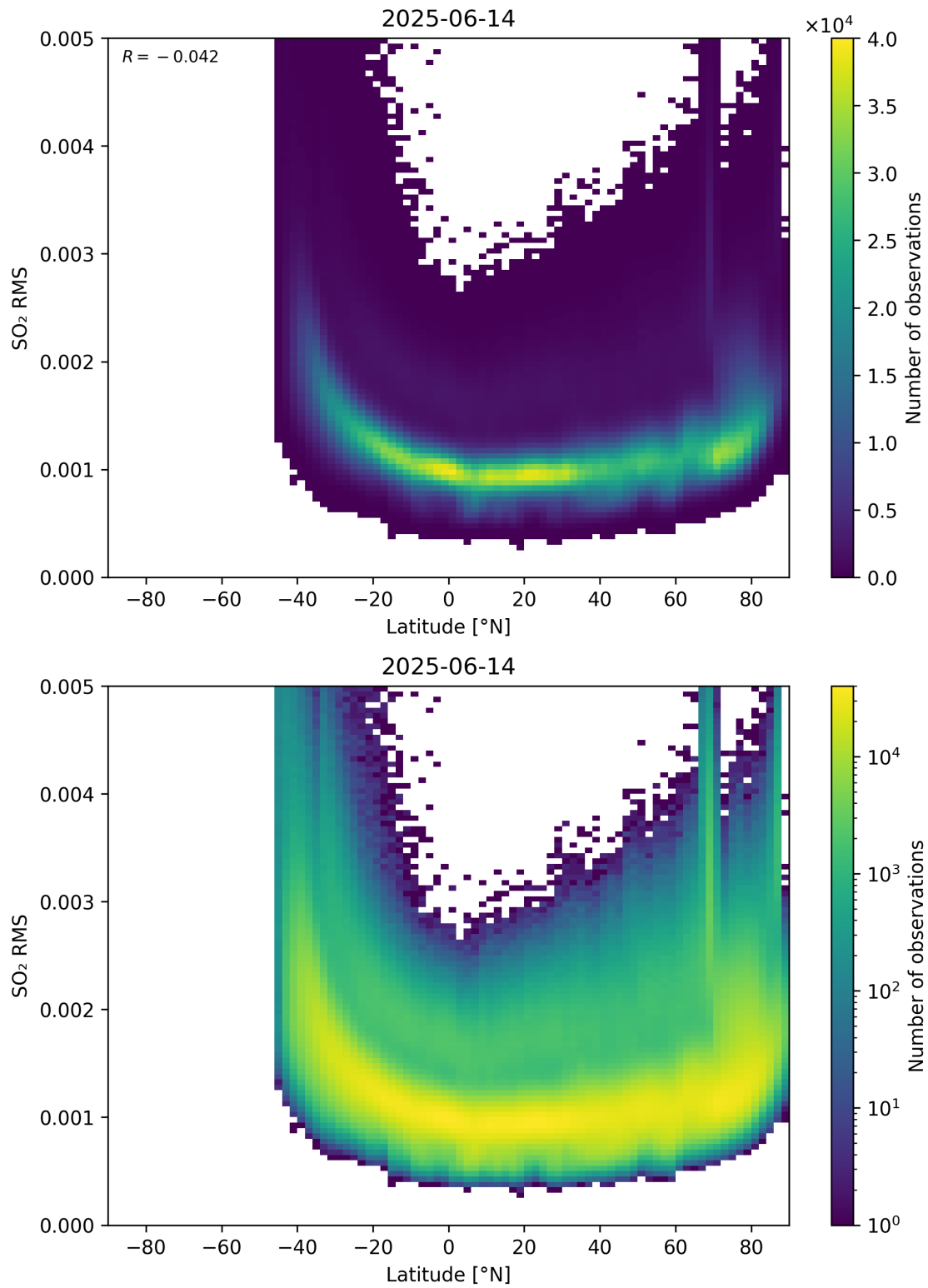


Figure 155: Scatter density plot of “Latitude” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

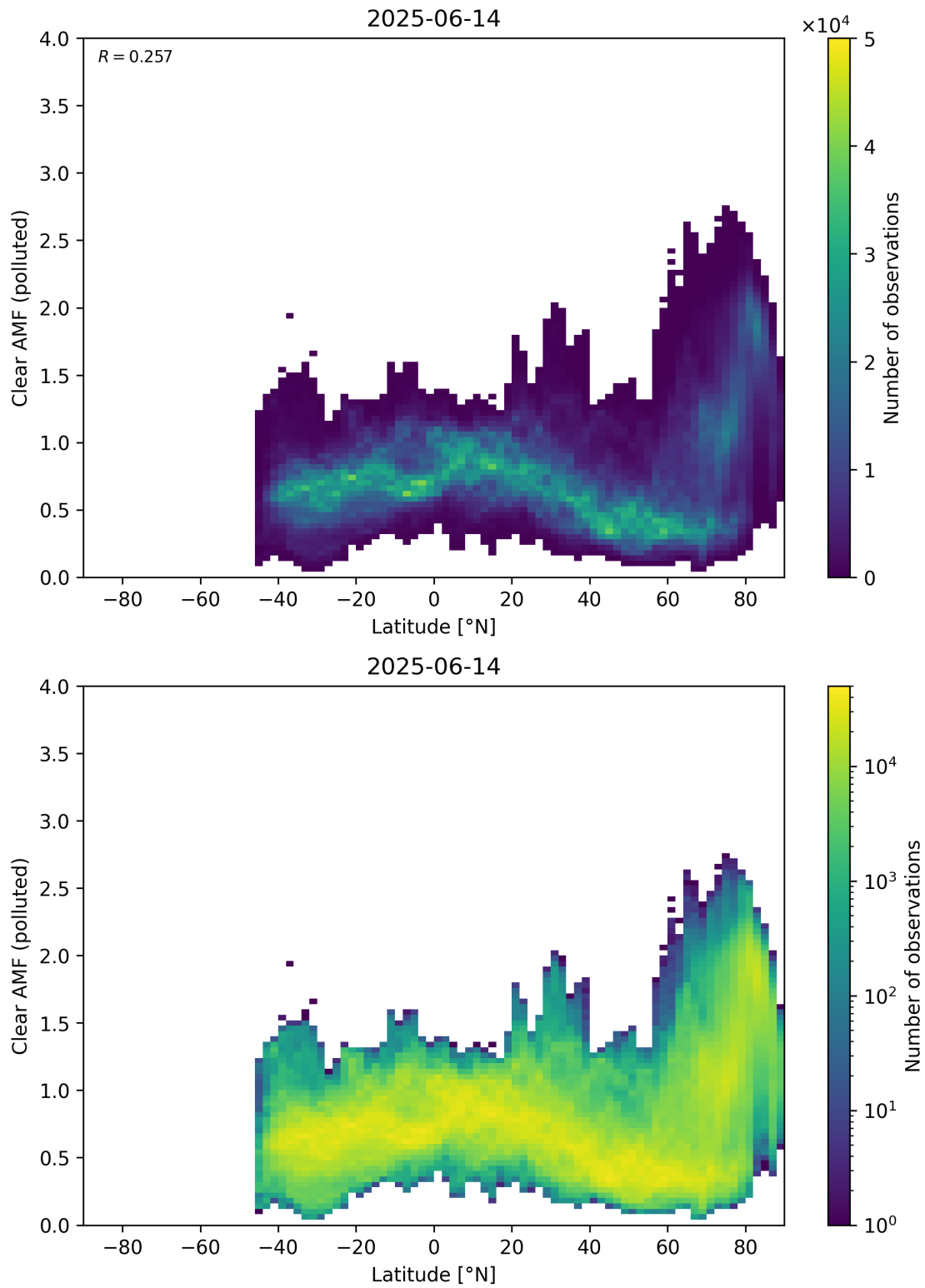


Figure 156: Scatter density plot of “Latitude” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

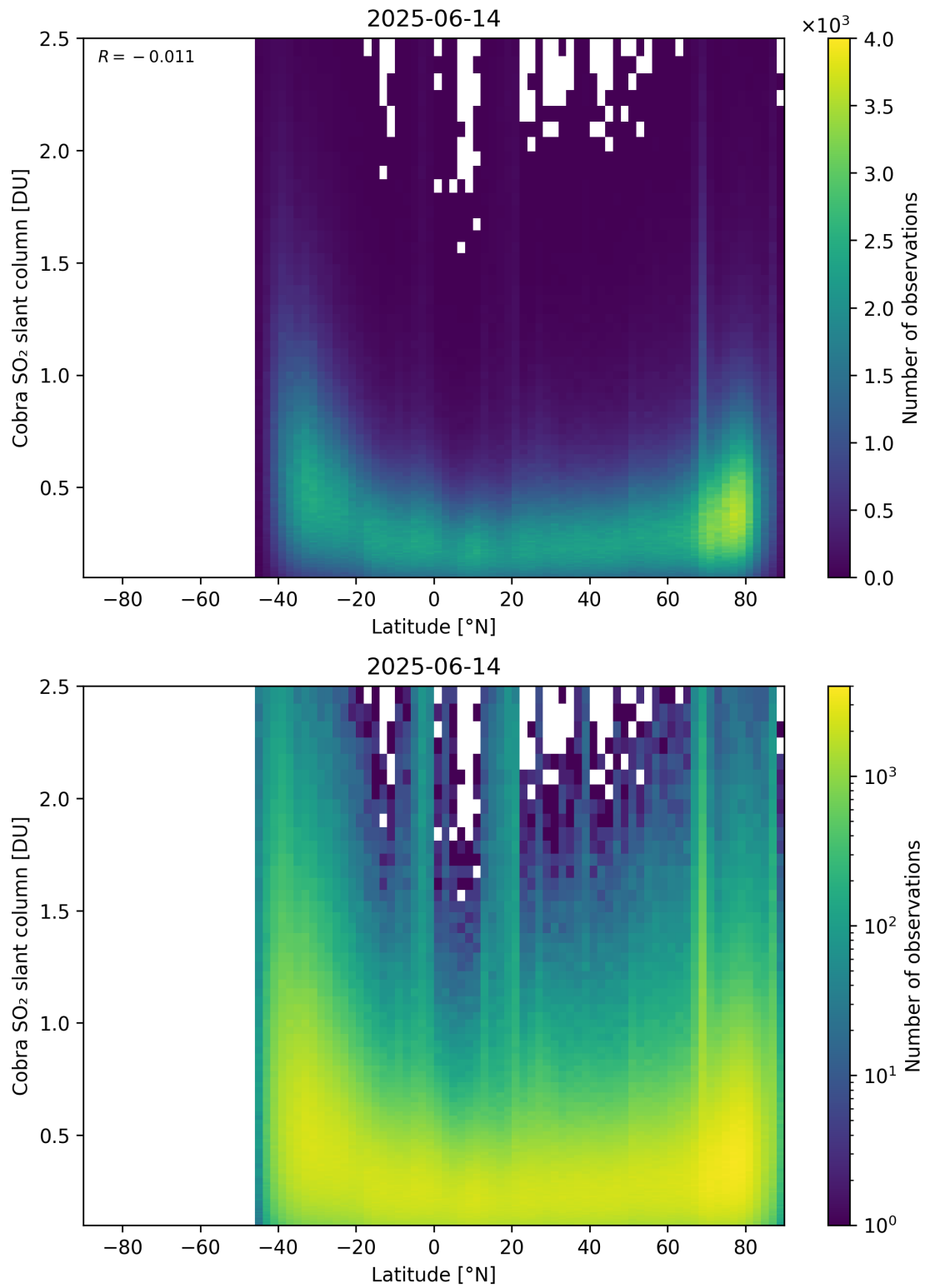


Figure 157: Scatter density plot of “Latitude” against “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

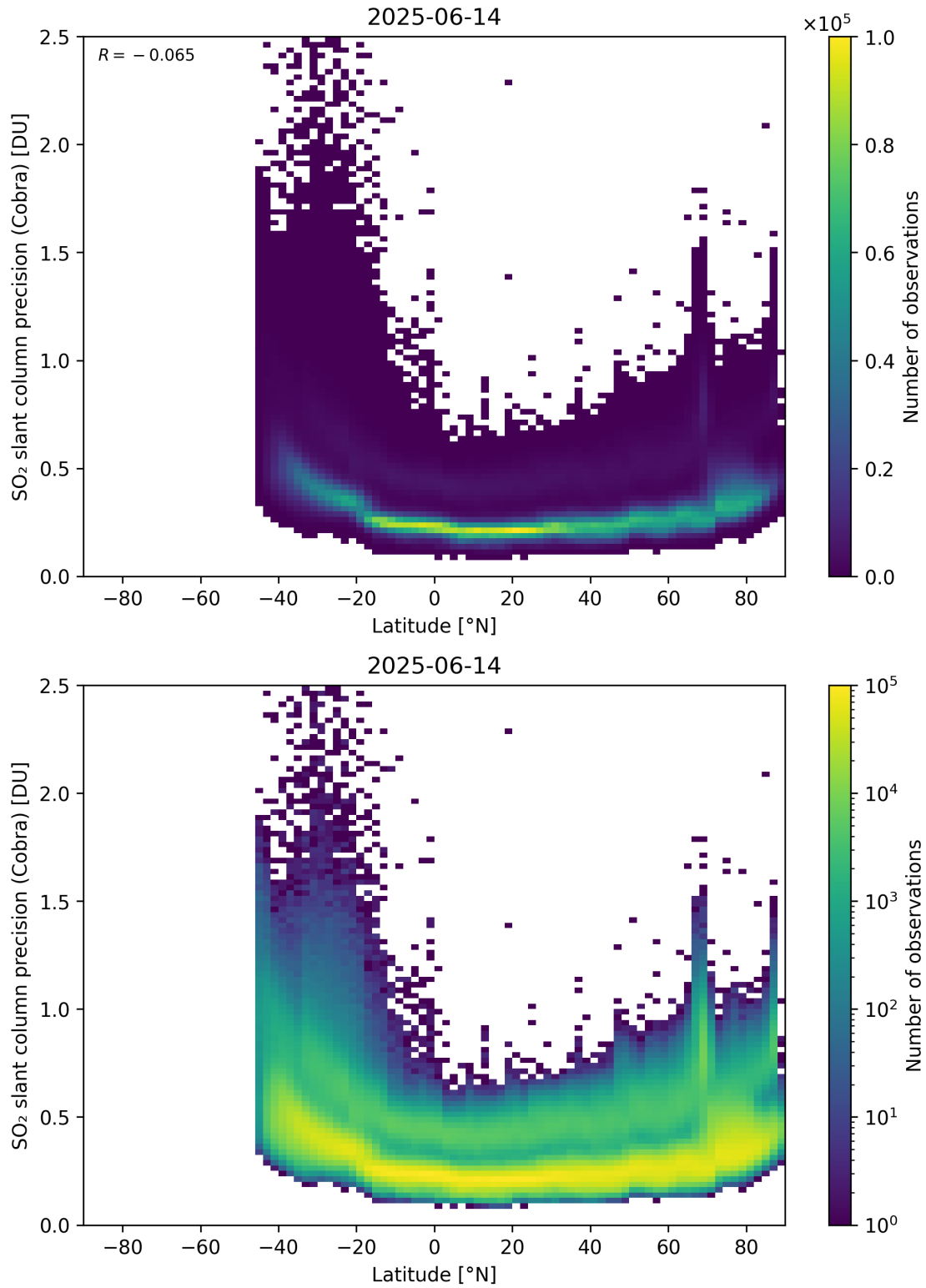


Figure 158: Scatter density plot of “Latitude” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

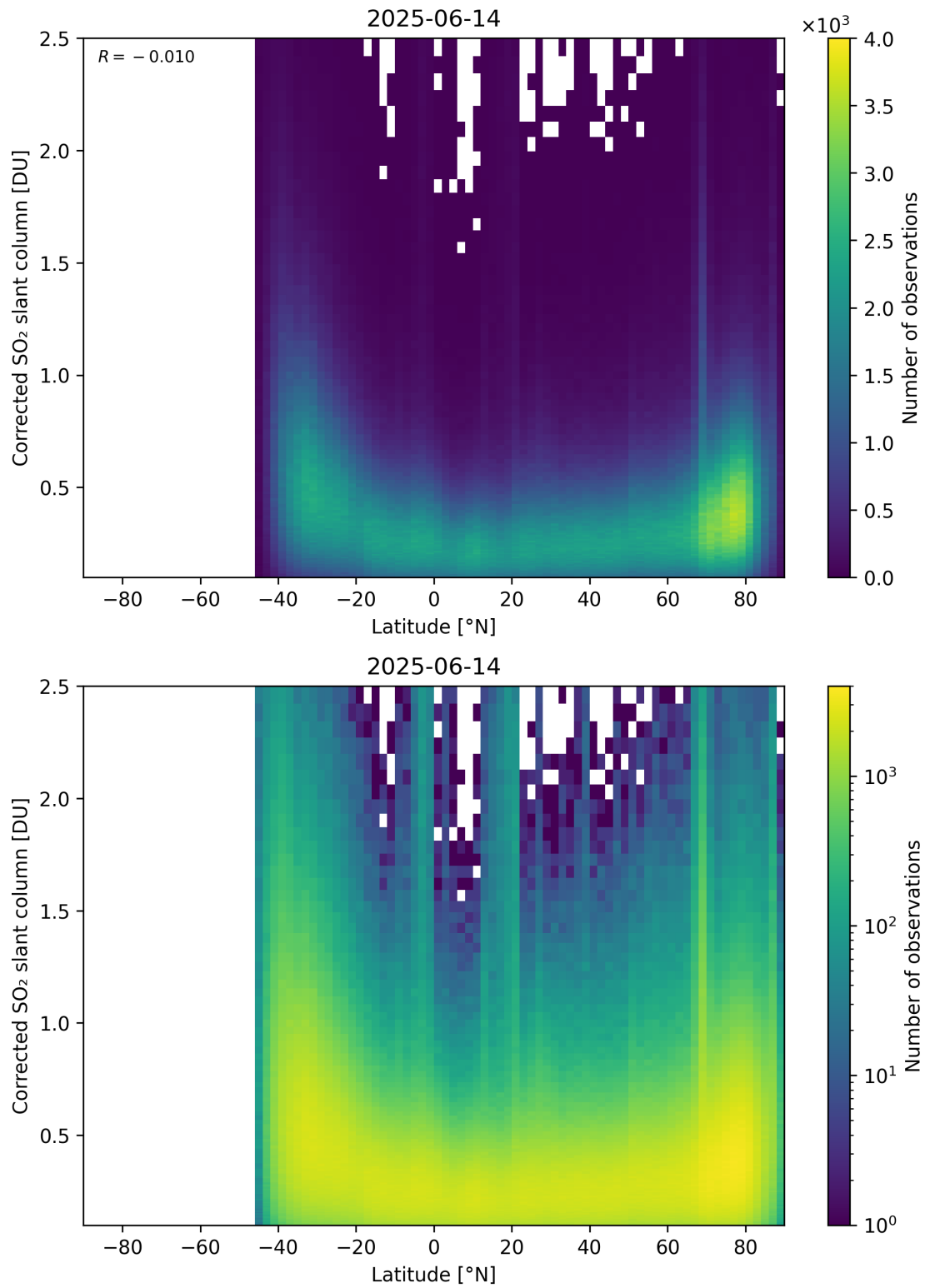


Figure 159: Scatter density plot of “Latitude” against “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15.

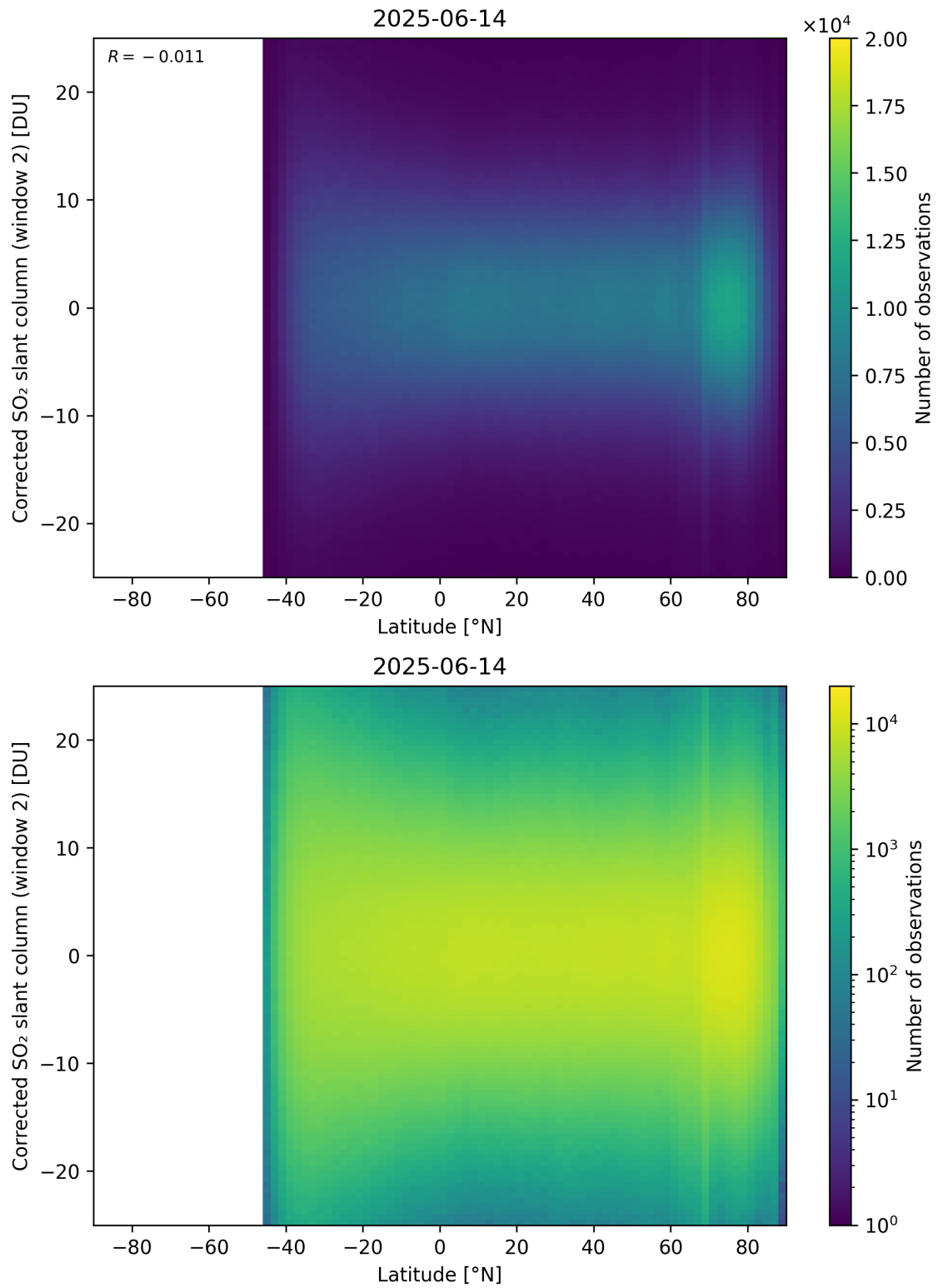


Figure 160: Scatter density plot of “Latitude” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

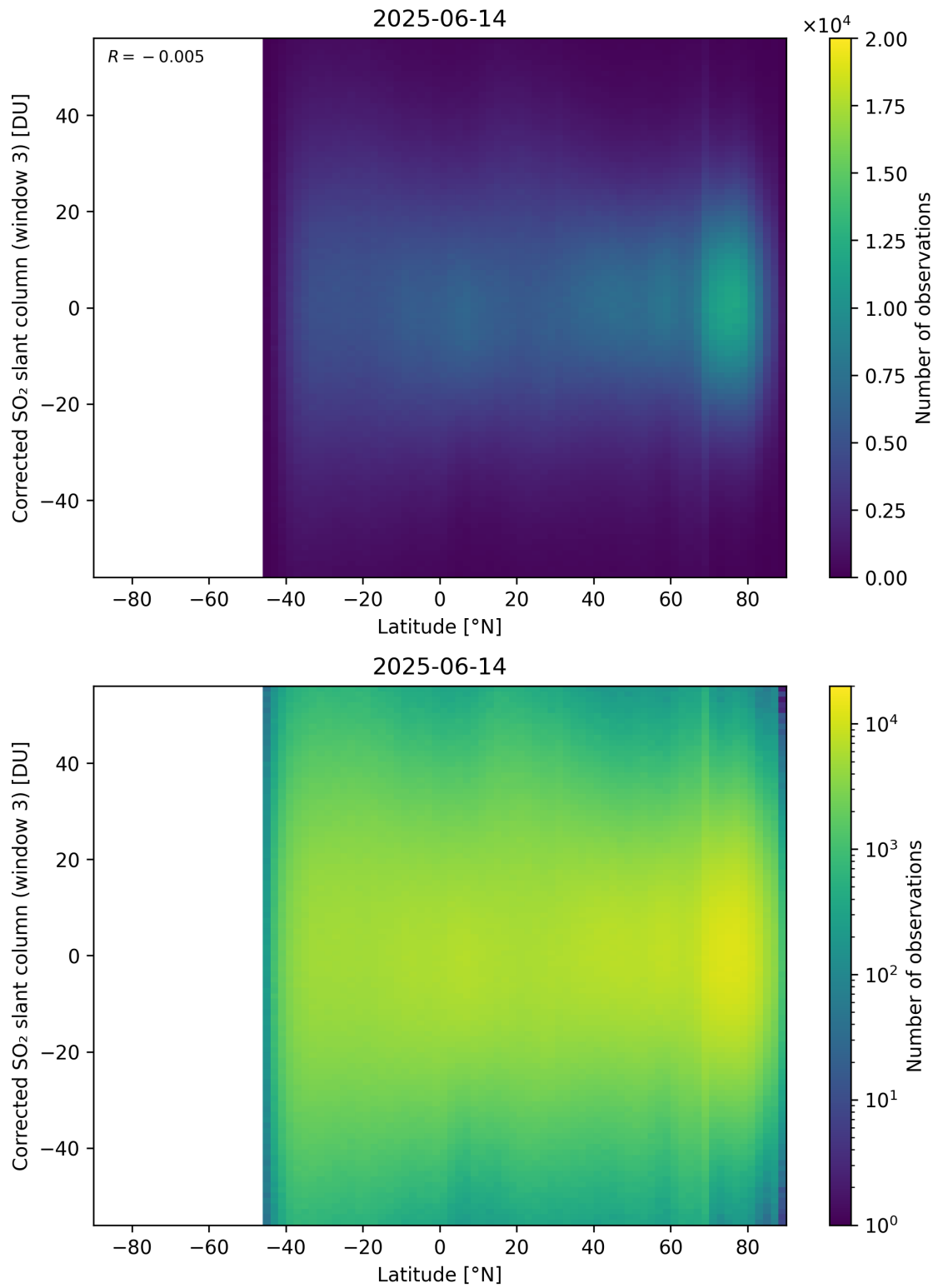


Figure 161: Scatter density plot of “Latitude” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

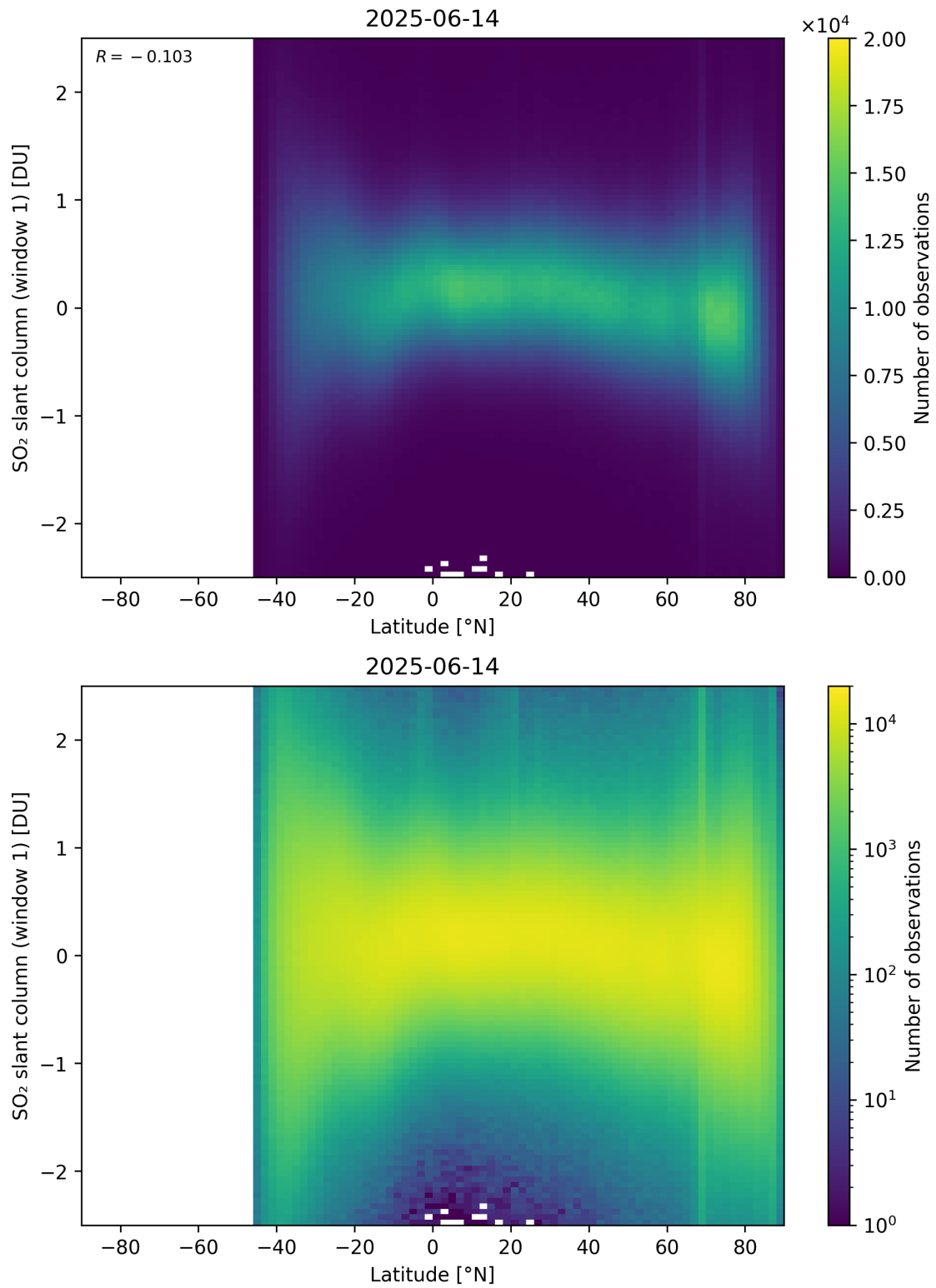


Figure 162: Scatter density plot of “Latitude” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

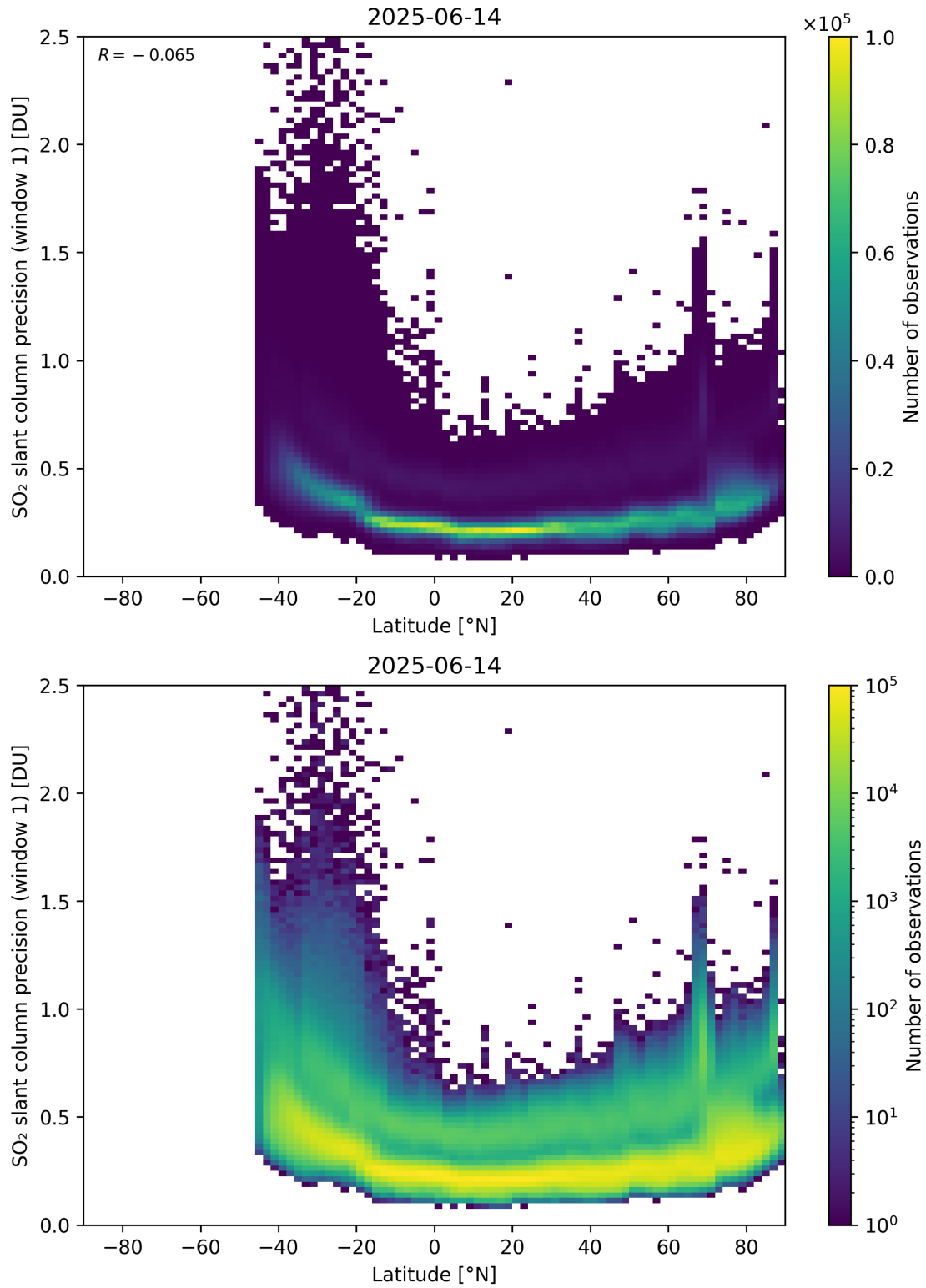


Figure 163: Scatter density plot of “Latitude” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

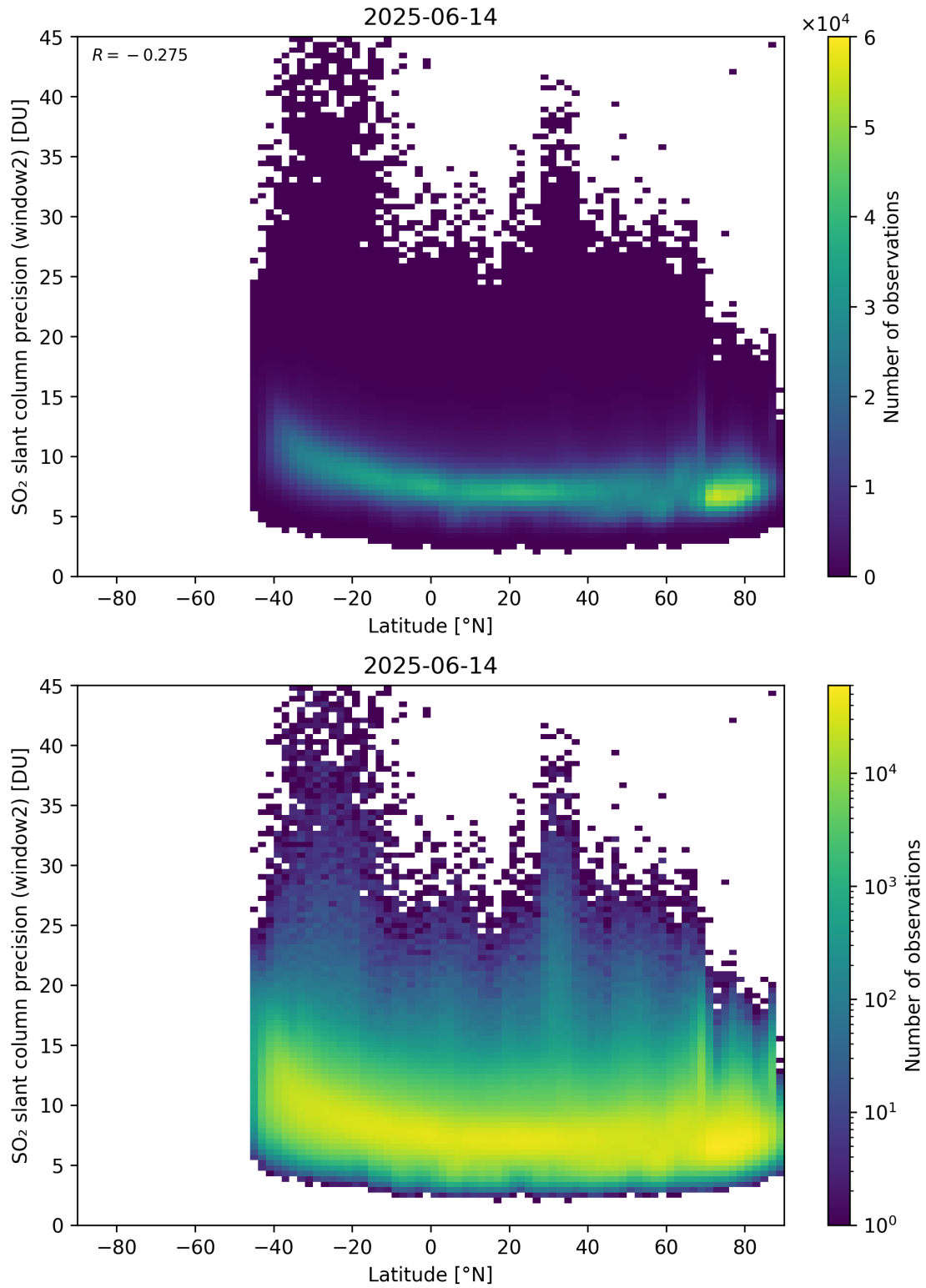


Figure 164: Scatter density plot of “Latitude” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

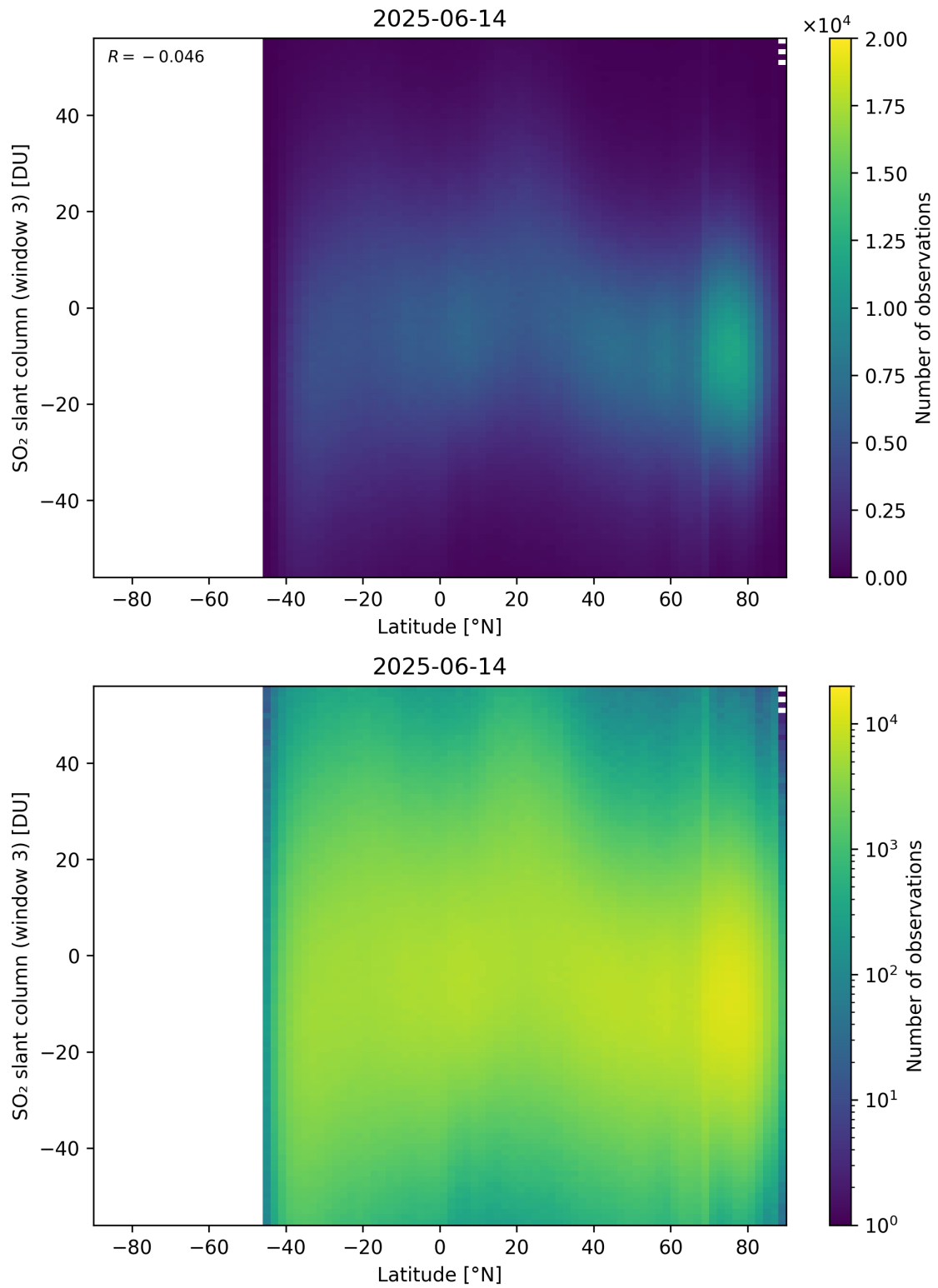


Figure 165: Scatter density plot of “Latitude” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

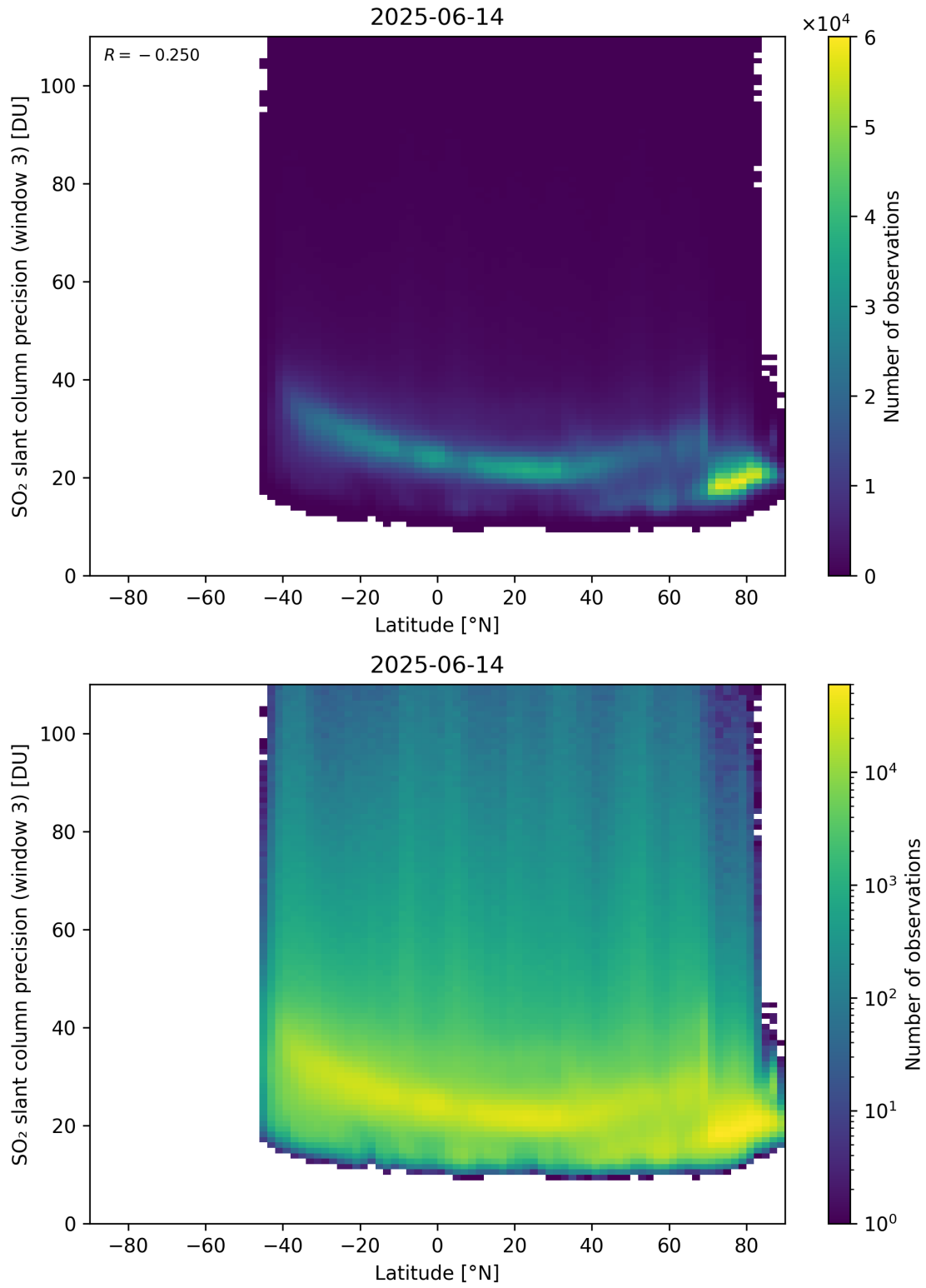


Figure 166: Scatter density plot of “Latitude” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

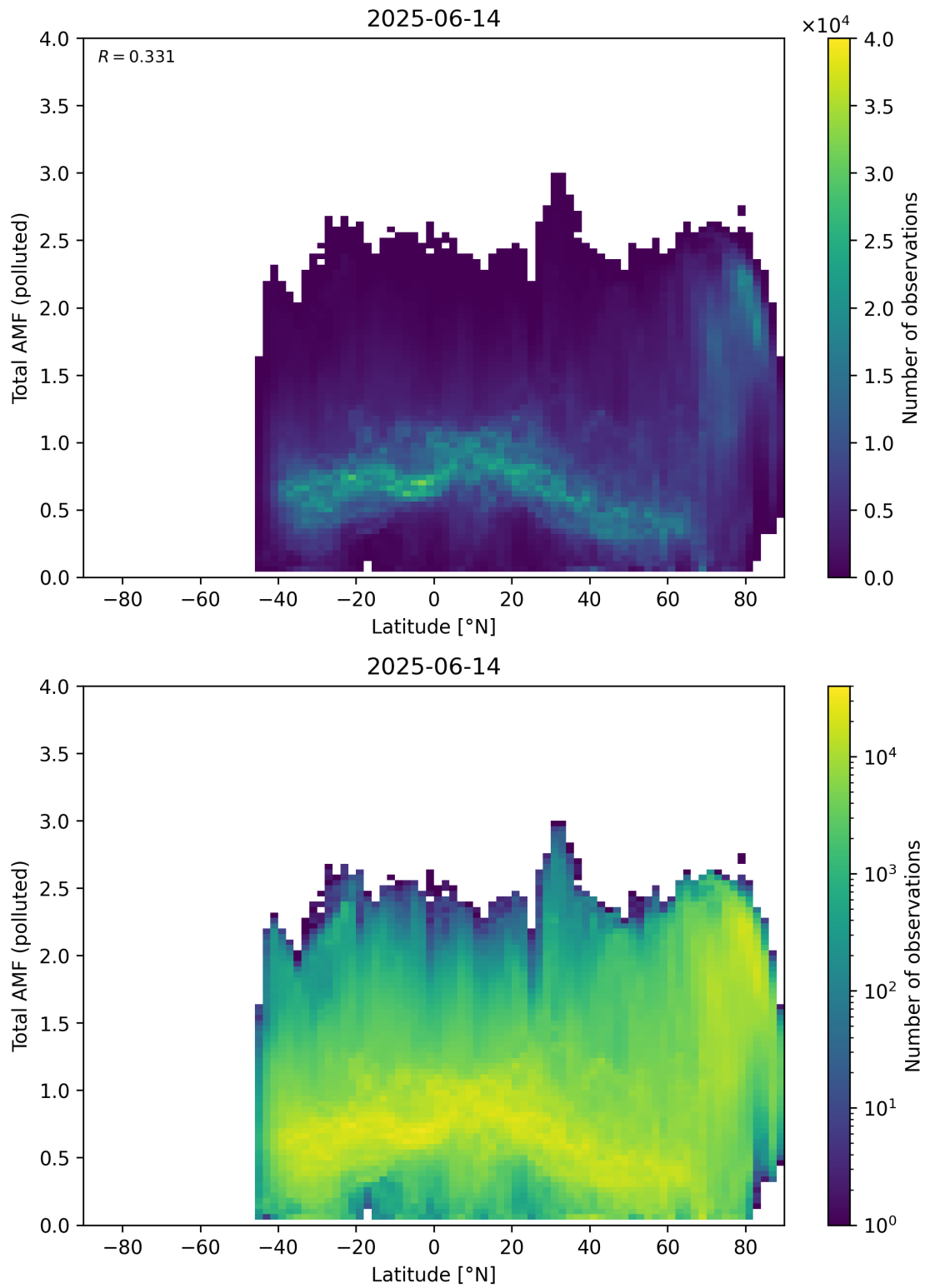


Figure 167: Scatter density plot of “Latitude” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

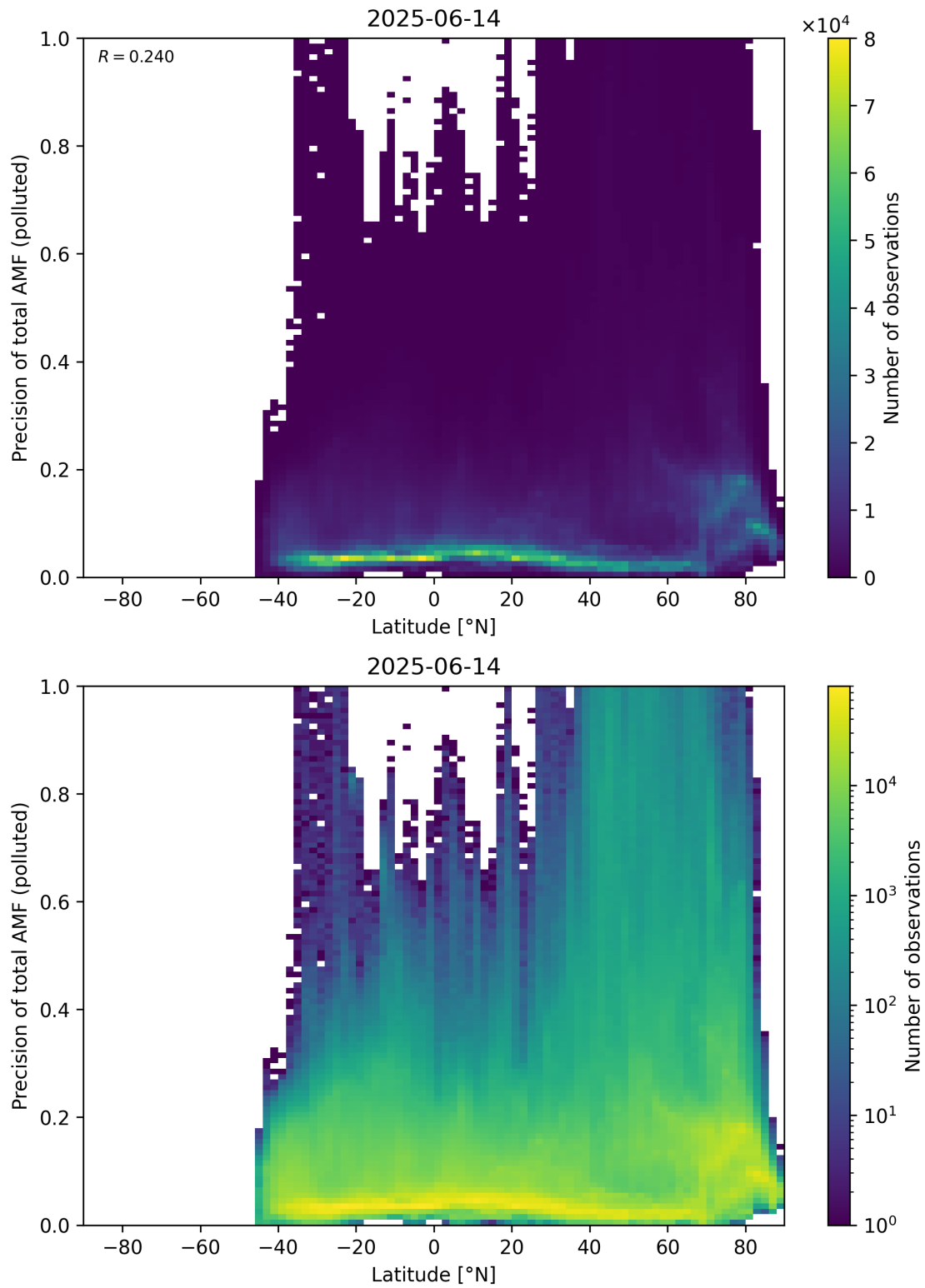


Figure 168: Scatter density plot of “Latitude” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

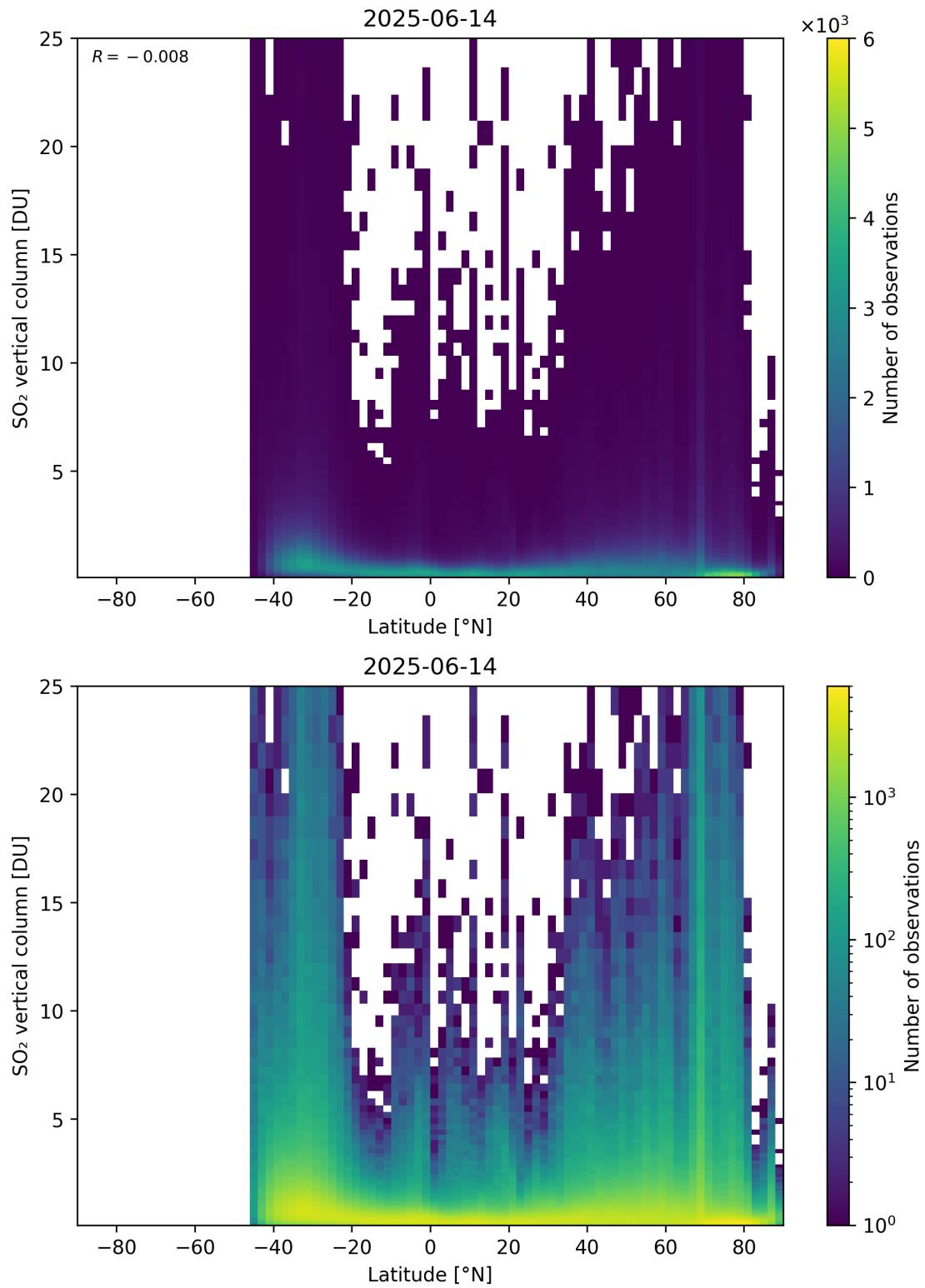


Figure 169: Scatter density plot of “Latitude” against “SO₂ vertical column” for 2025-06-13 to 2025-06-15.

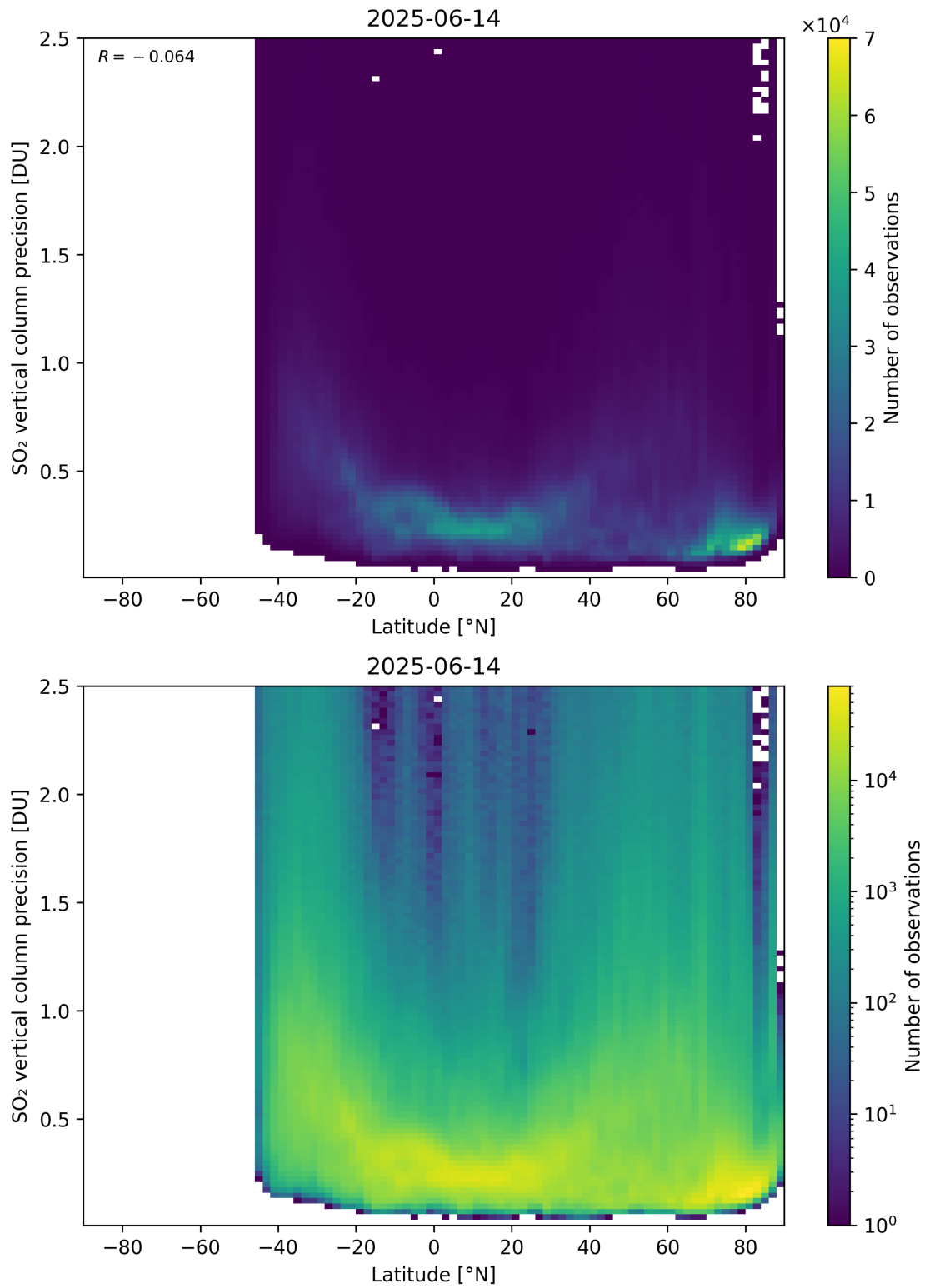


Figure 170: Scatter density plot of “Latitude” against “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15.

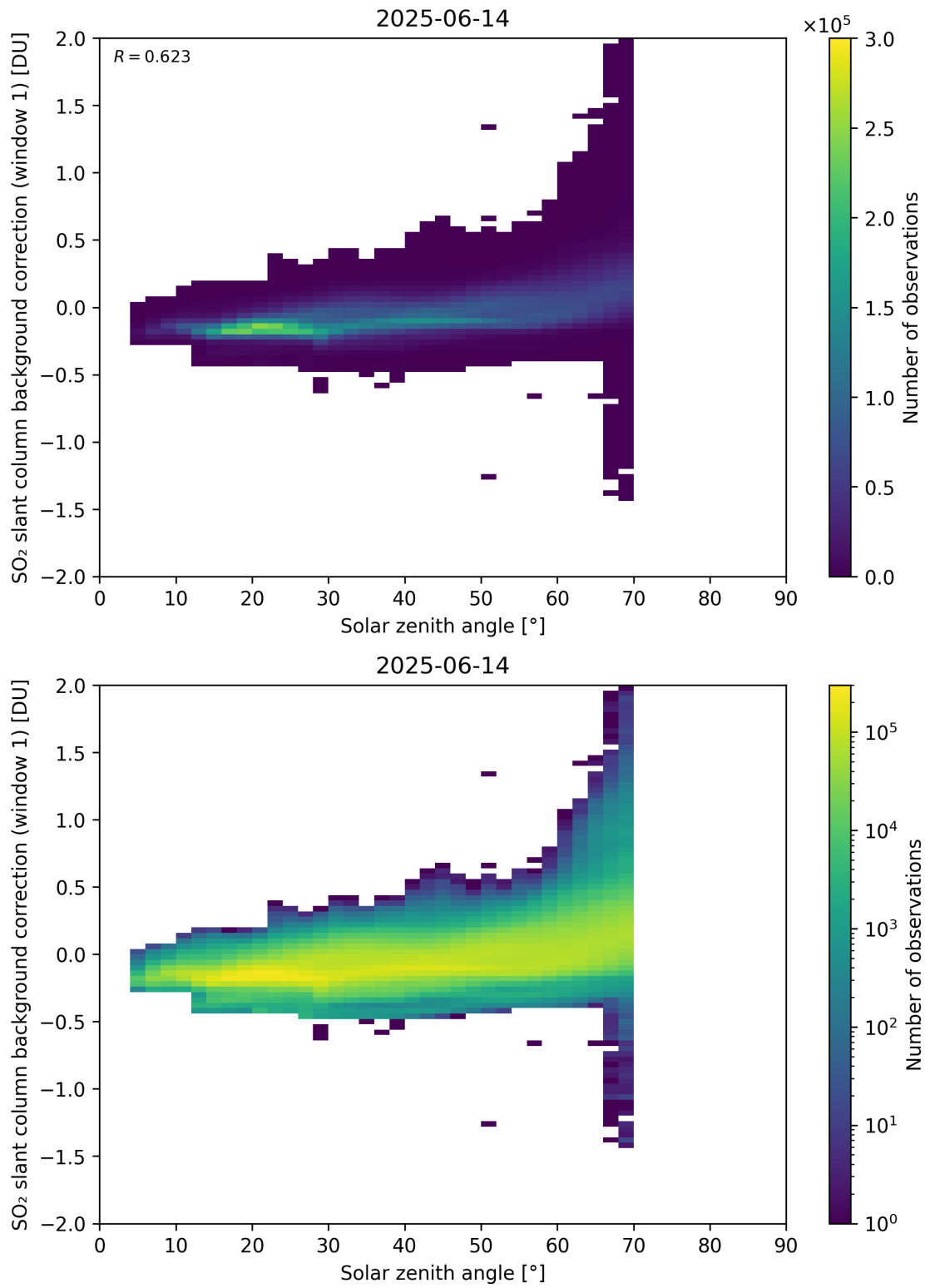


Figure 171: Scatter density plot of “Solar zenith angle” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

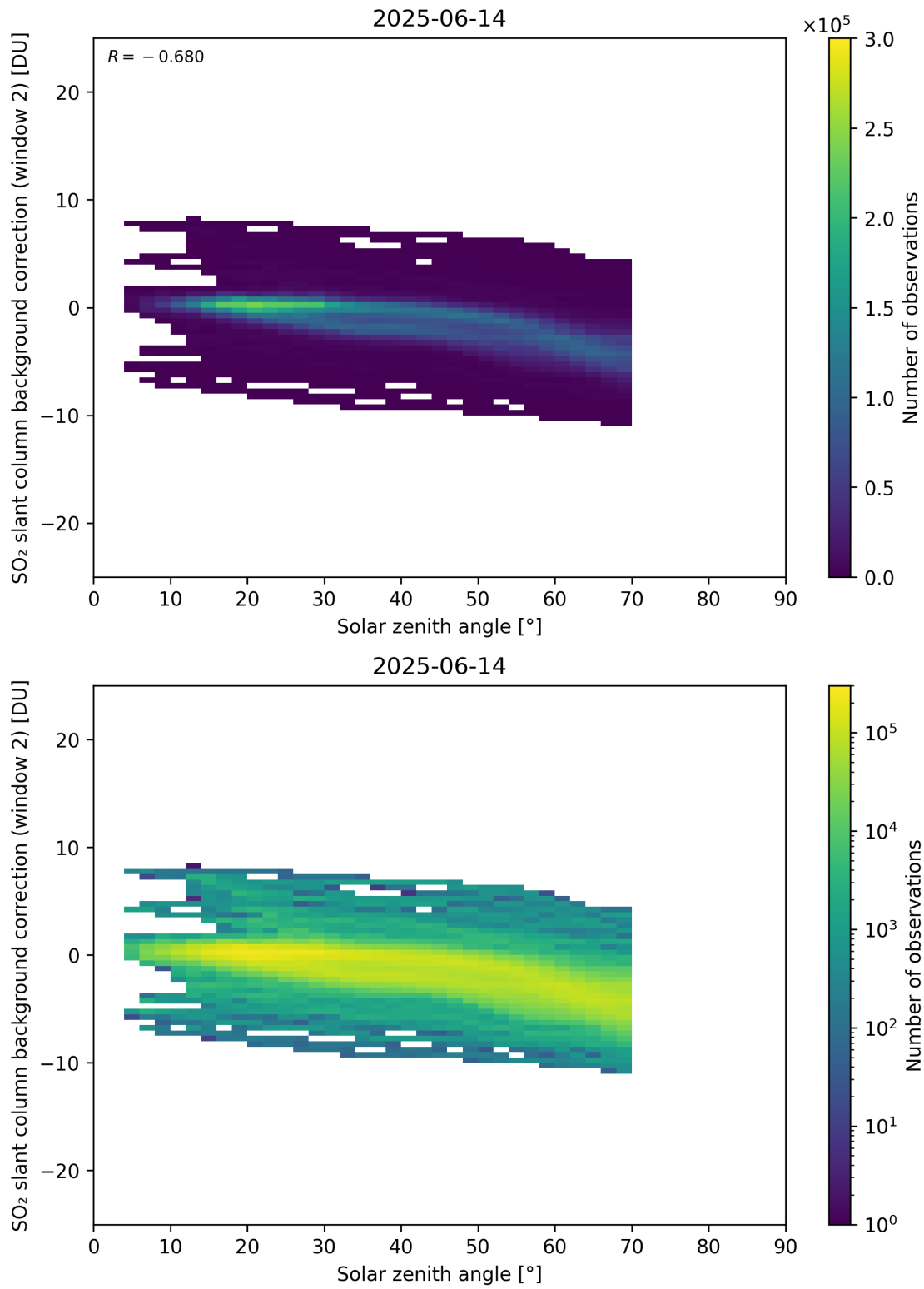


Figure 172: Scatter density plot of “Solar zenith angle” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

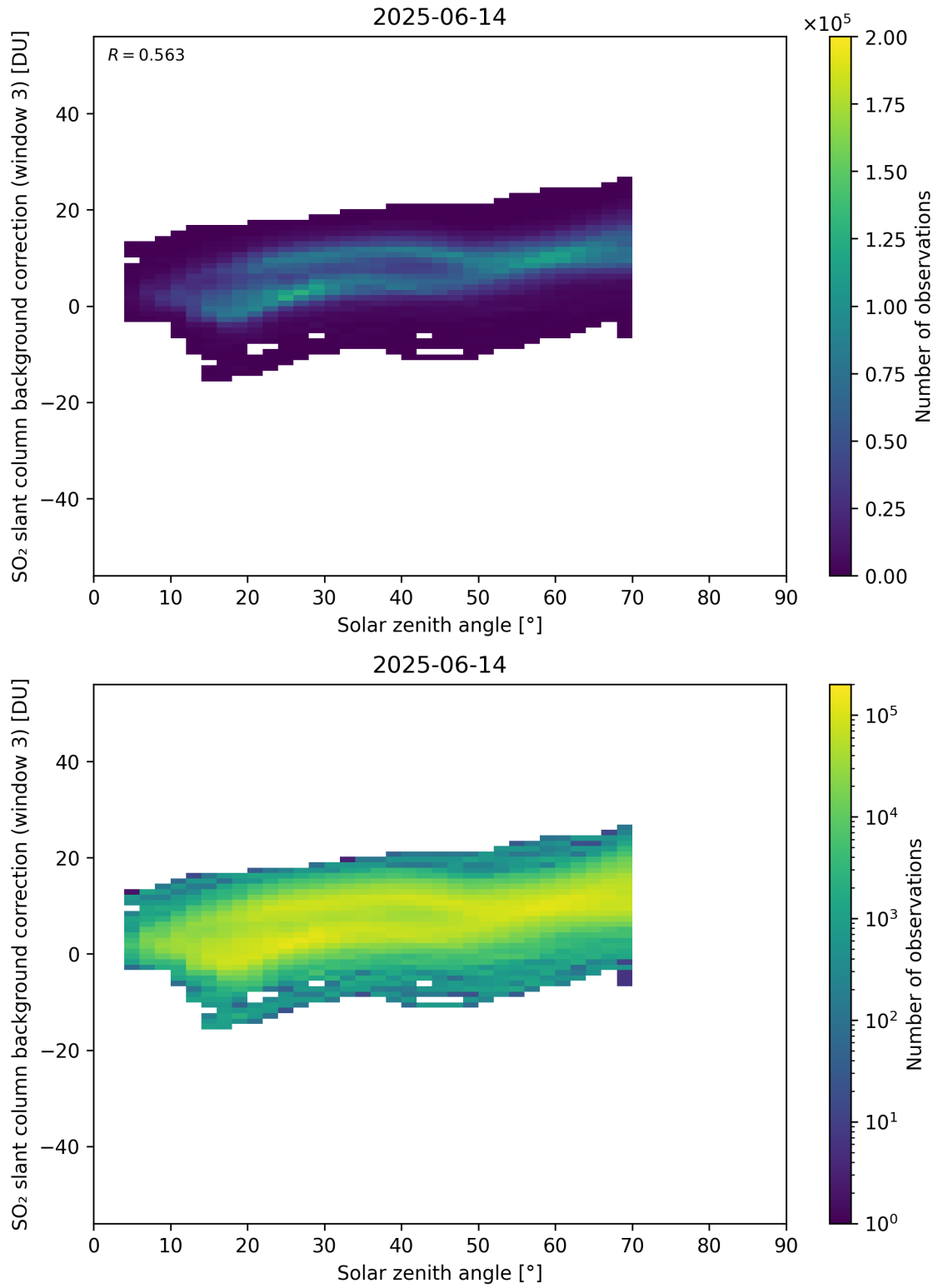


Figure 173: Scatter density plot of “Solar zenith angle” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

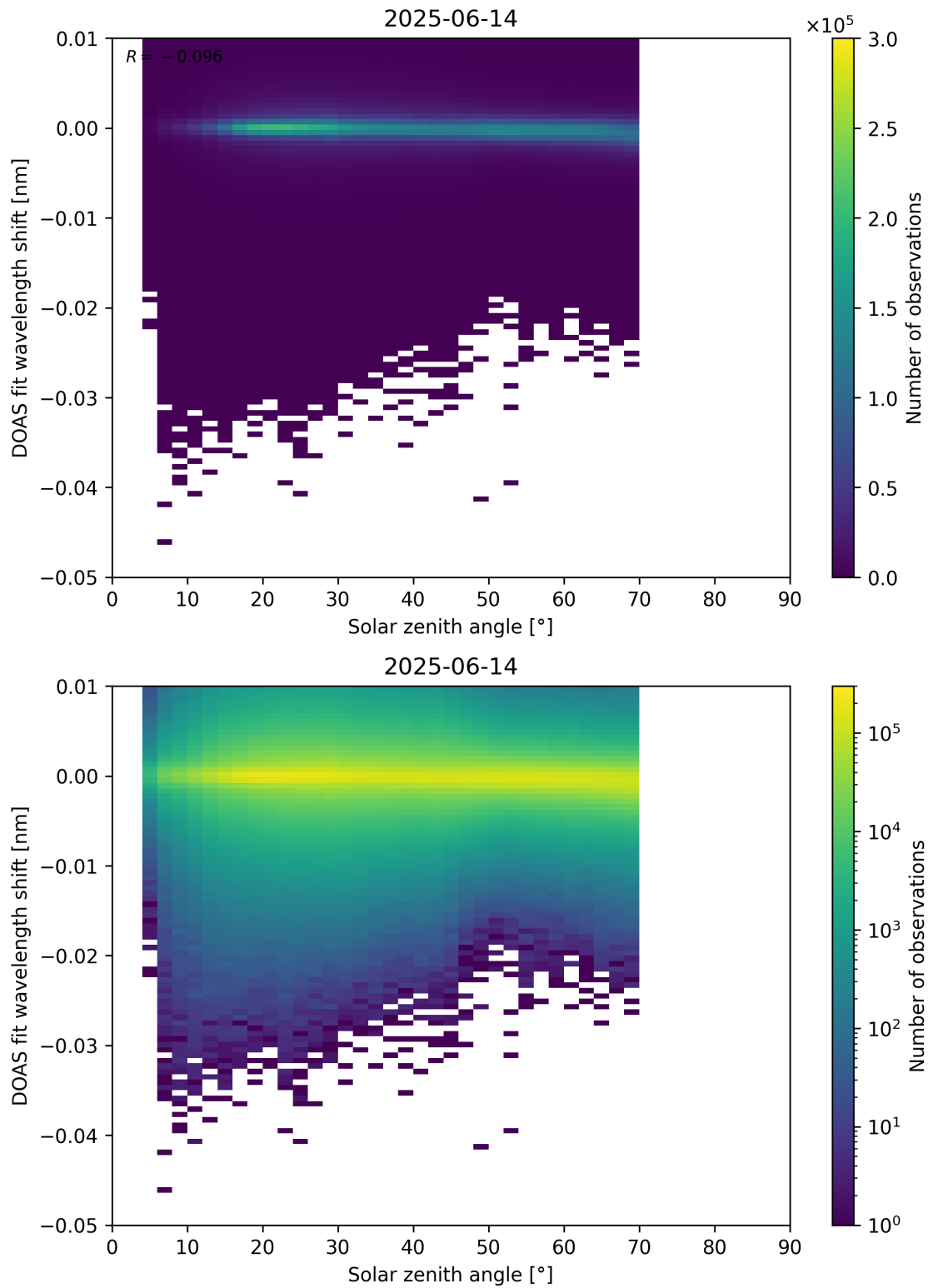


Figure 174: Scatter density plot of “Solar zenith angle” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

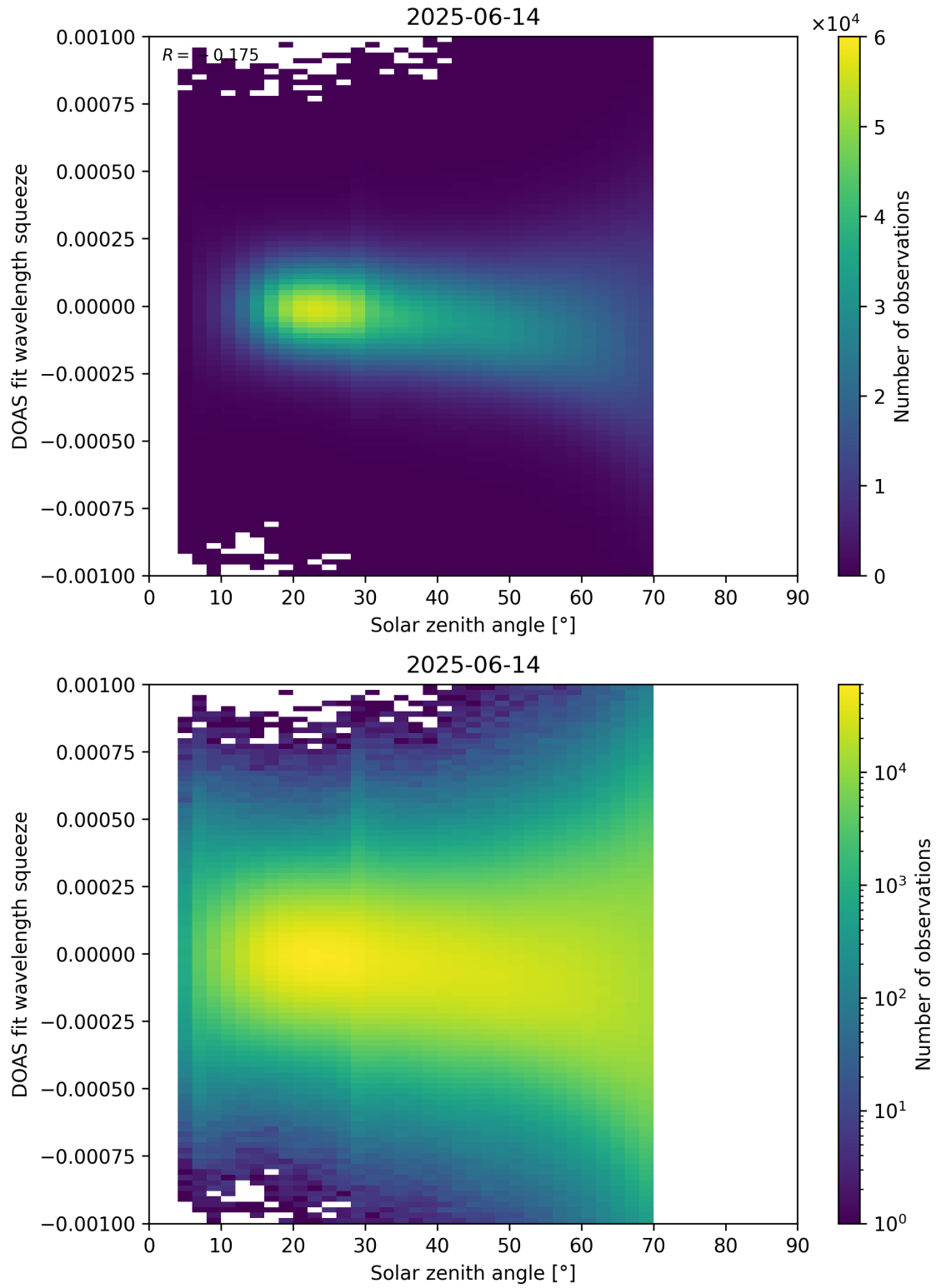


Figure 175: Scatter density plot of “Solar zenith angle” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

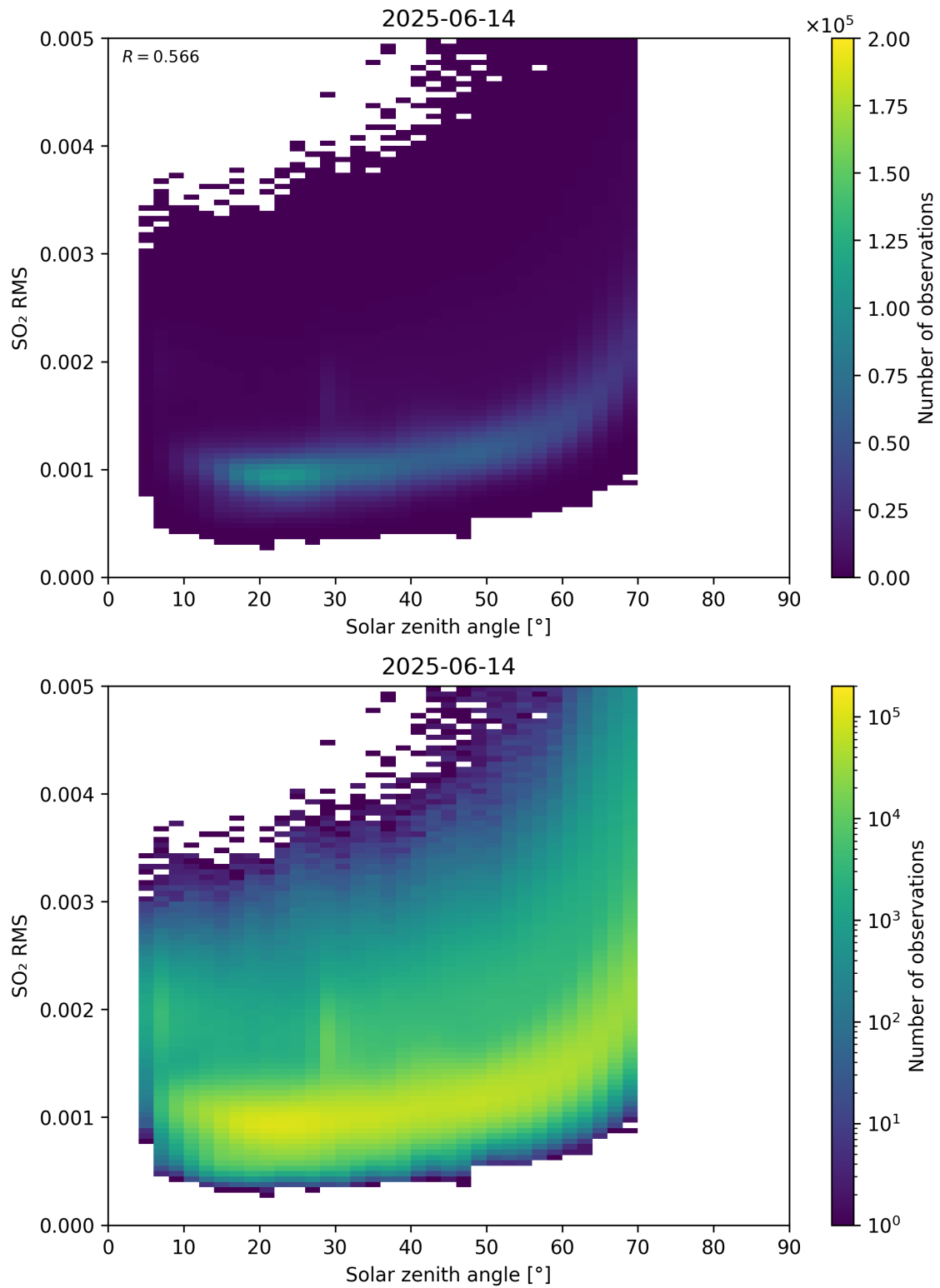


Figure 176: Scatter density plot of “Solar zenith angle” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

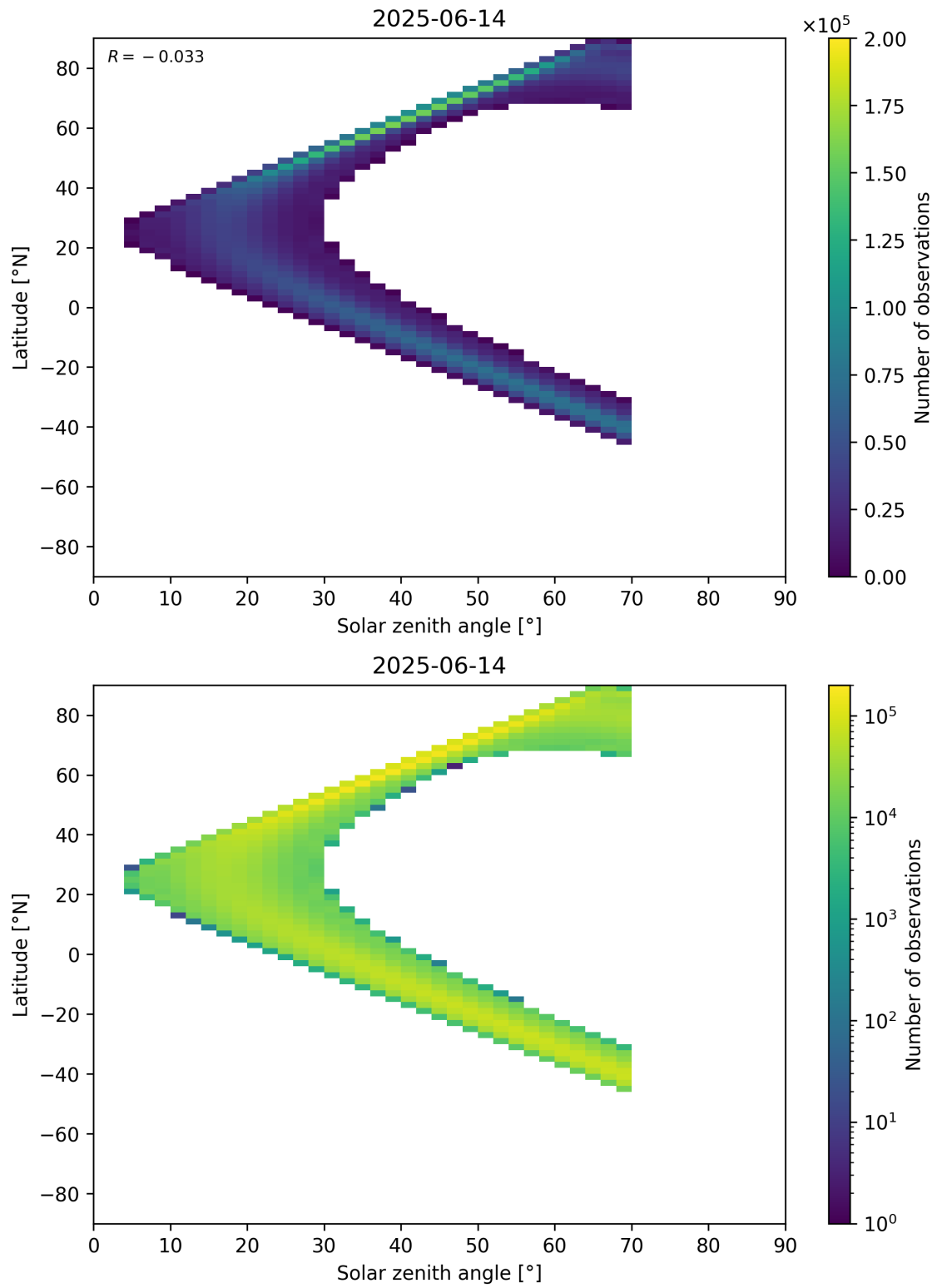


Figure 177: Scatter density plot of “Solar zenith angle” against “Latitude” for 2025-06-13 to 2025-06-15.

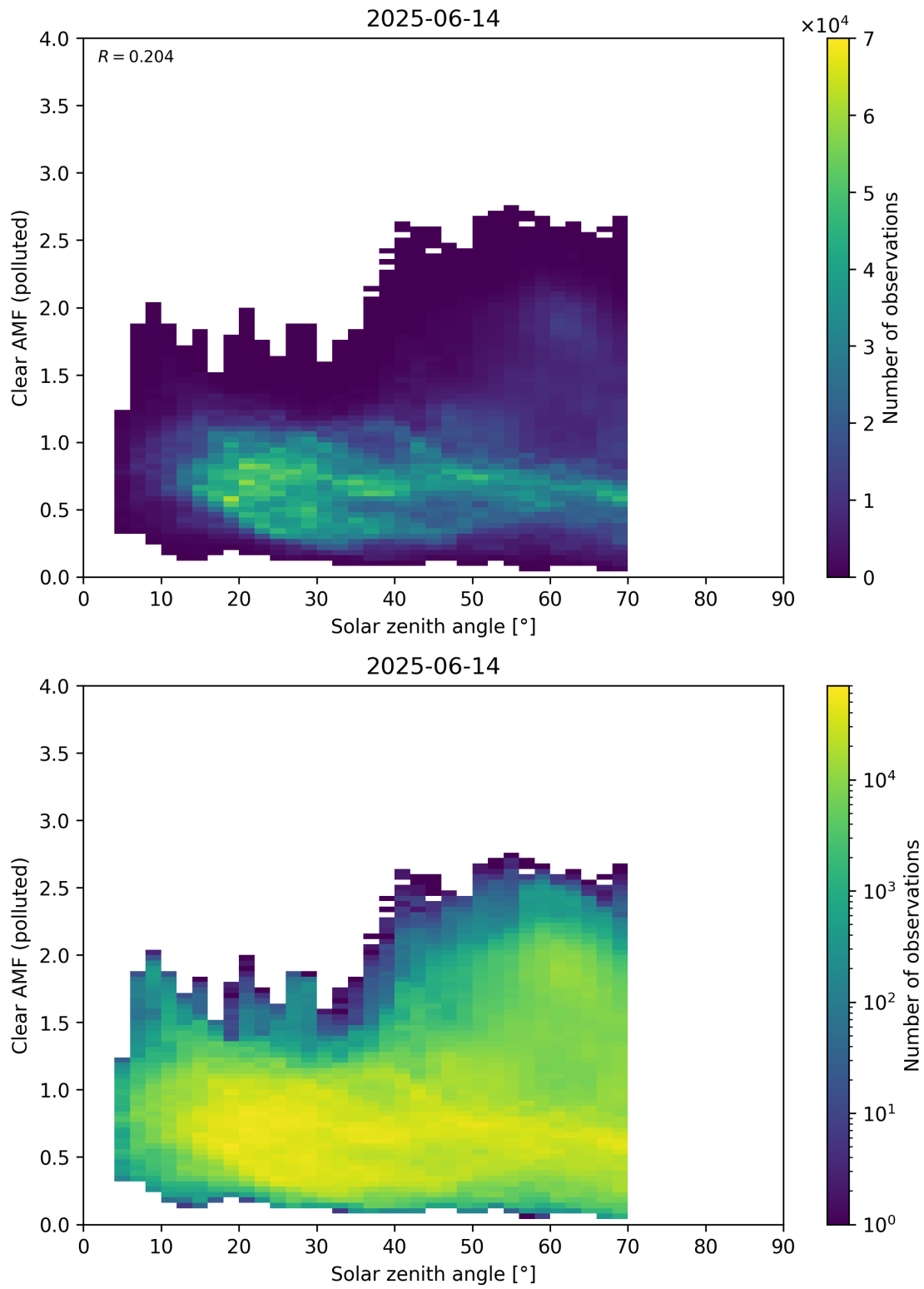


Figure 178: Scatter density plot of “Solar zenith angle” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

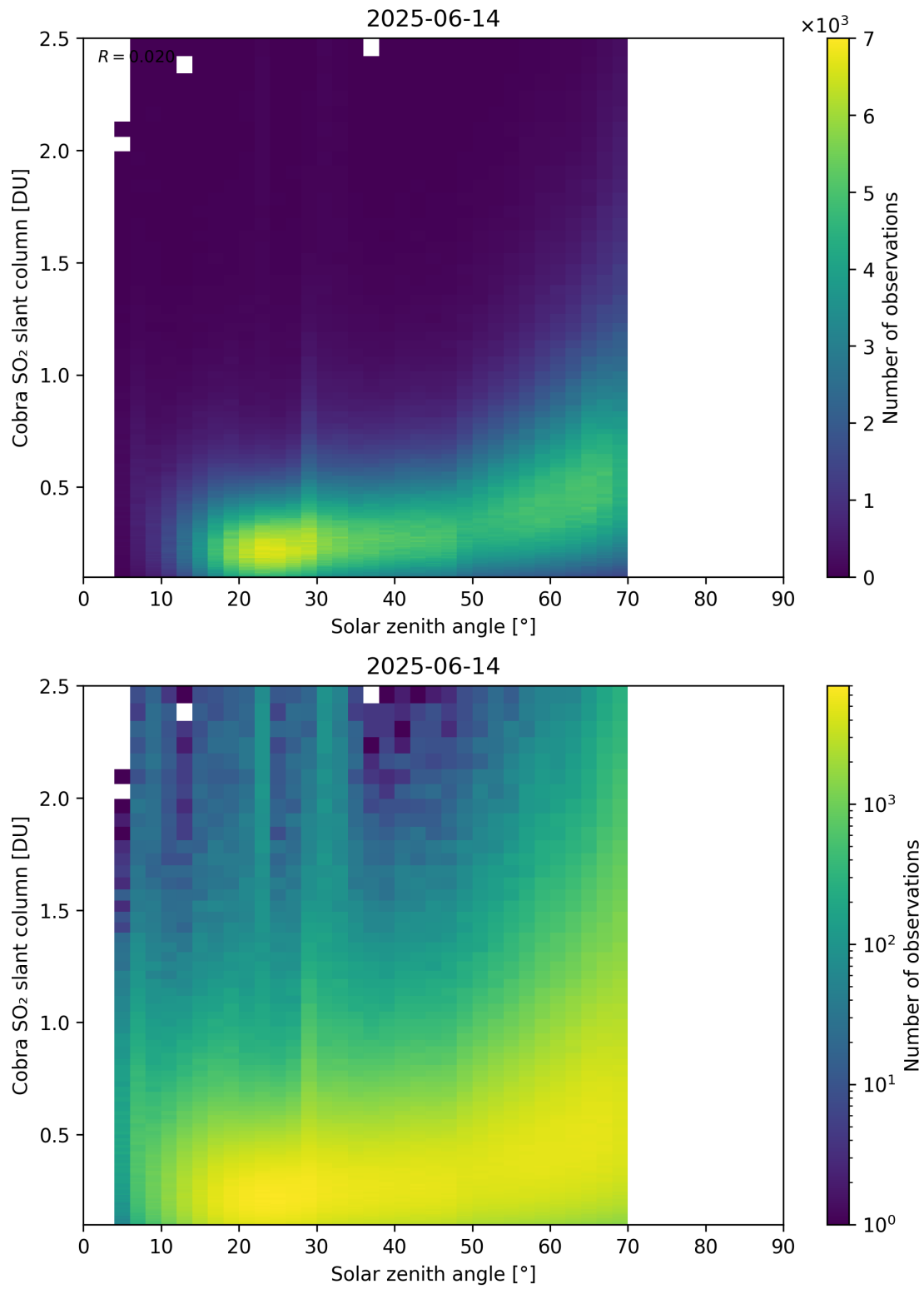


Figure 179: Scatter density plot of “Solar zenith angle” against “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

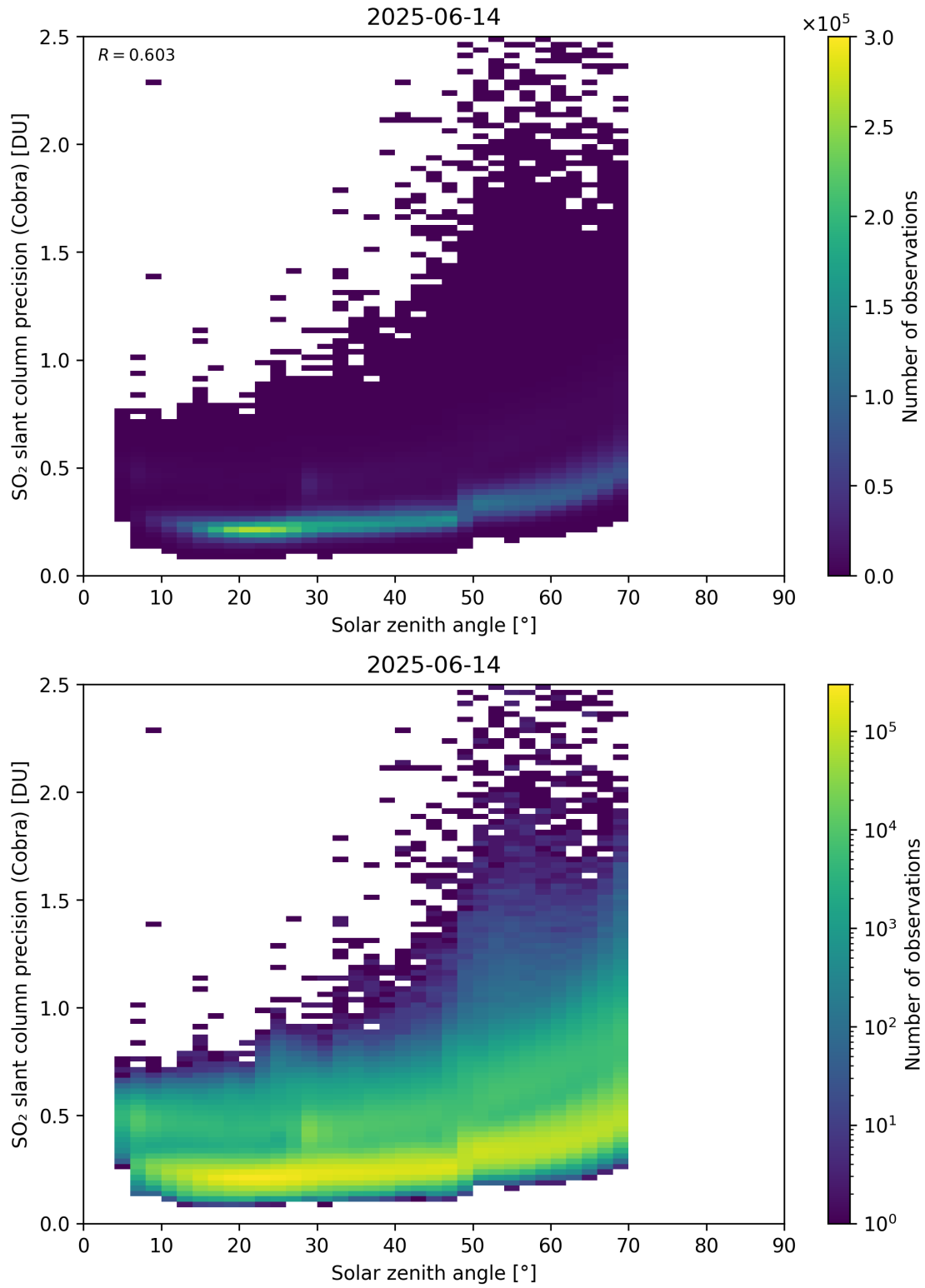


Figure 180: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

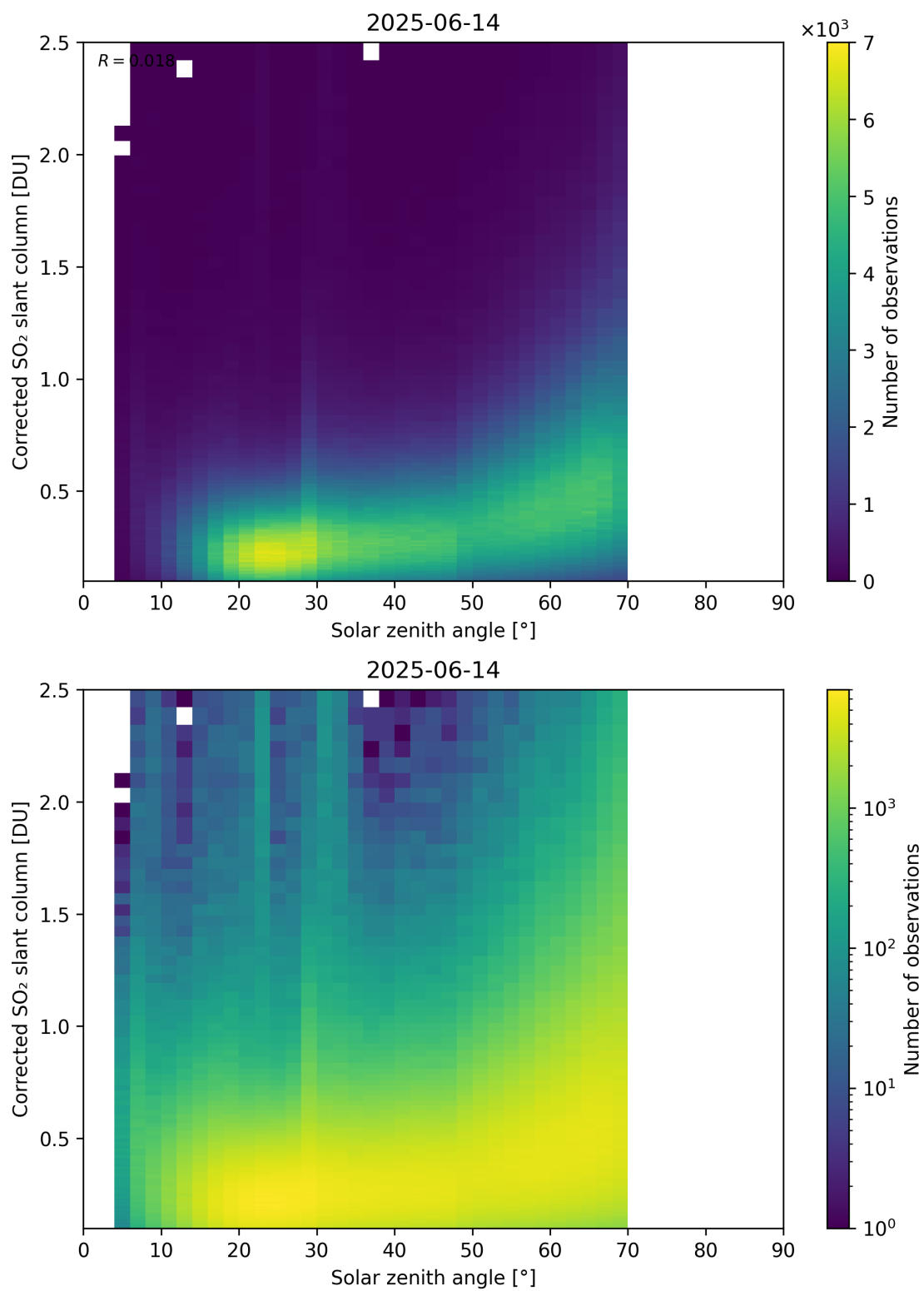


Figure 181: Scatter density plot of “Solar zenith angle” against “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15.

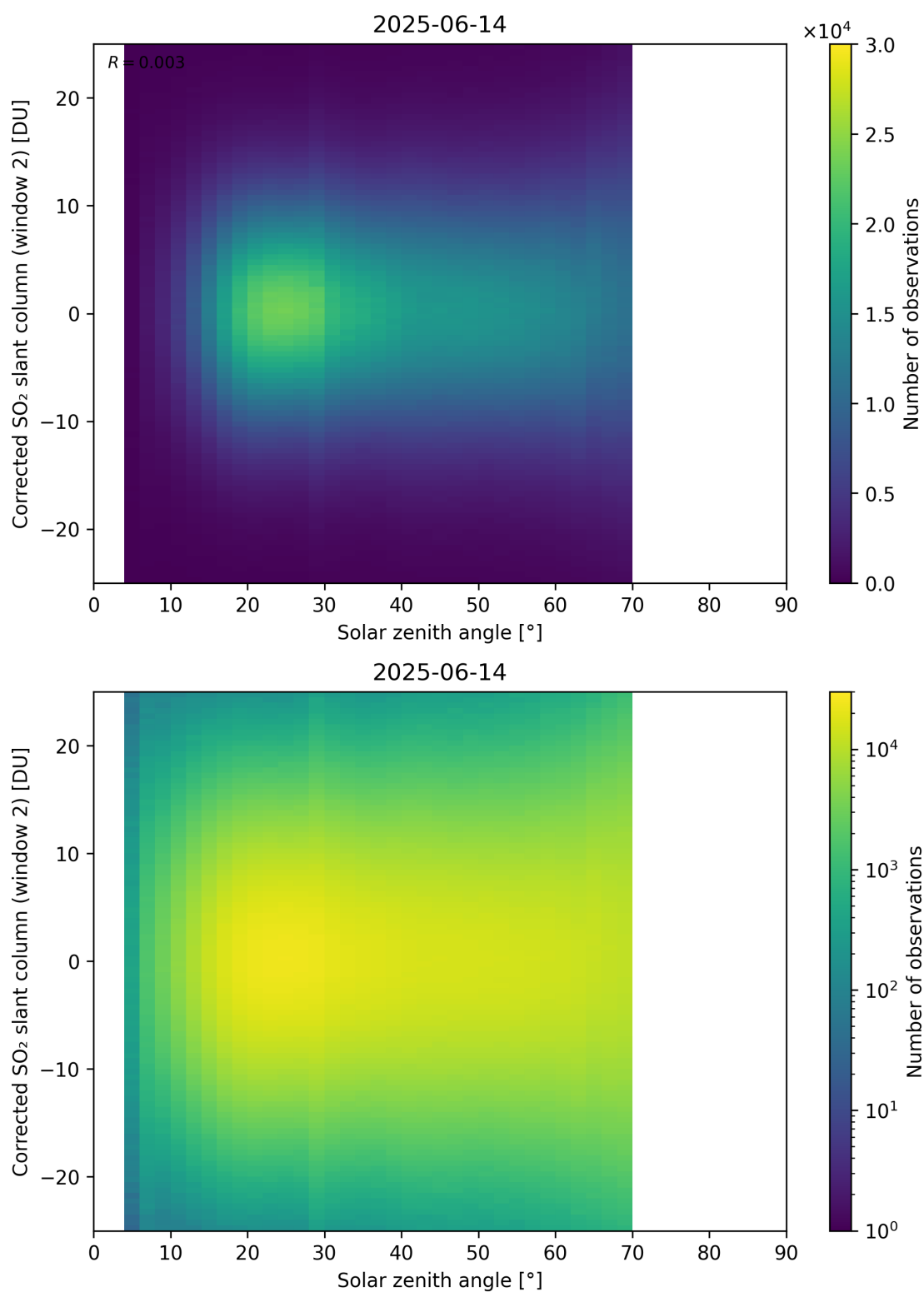


Figure 182: Scatter density plot of “Solar zenith angle” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

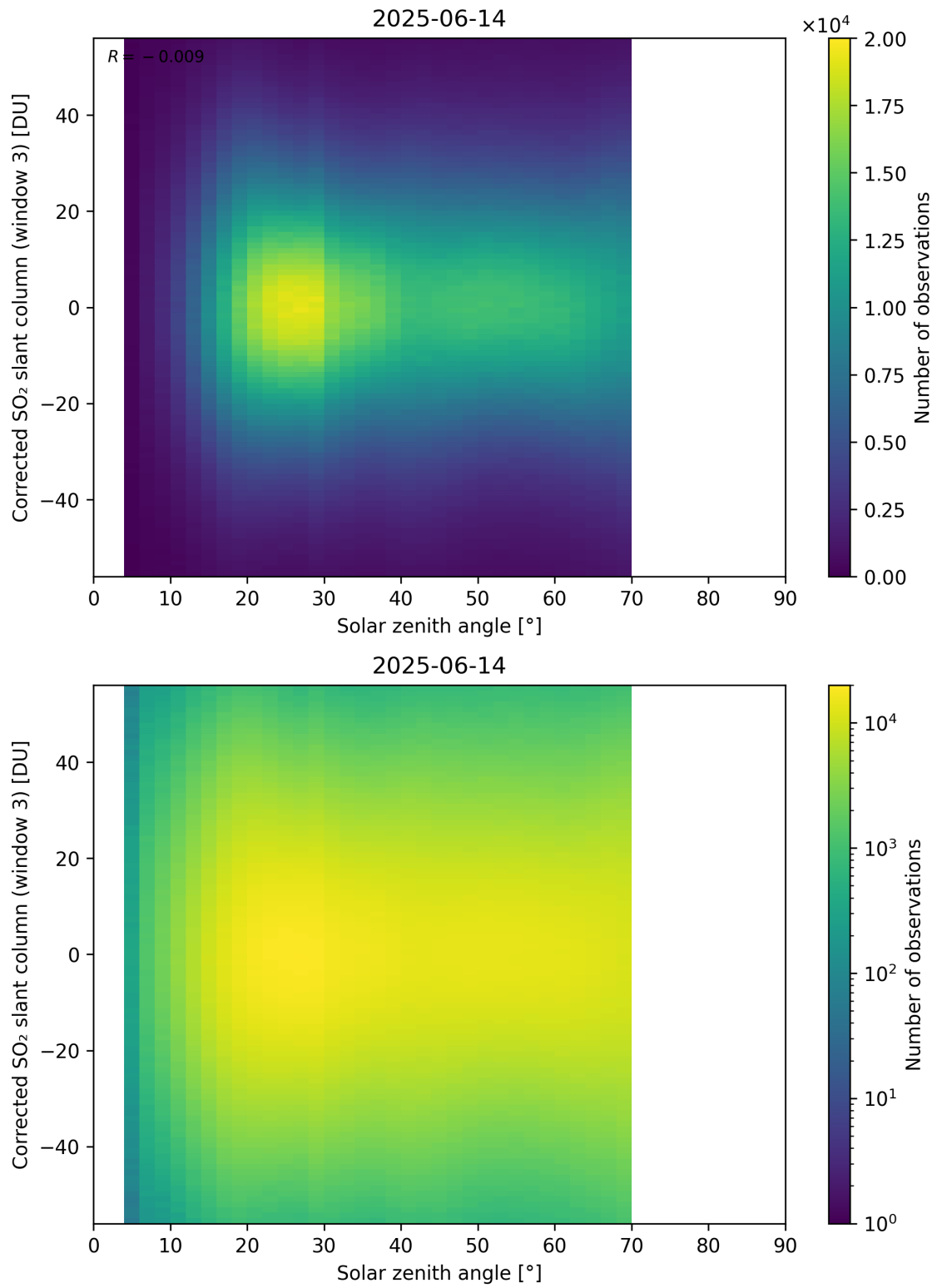


Figure 183: Scatter density plot of “Solar zenith angle” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

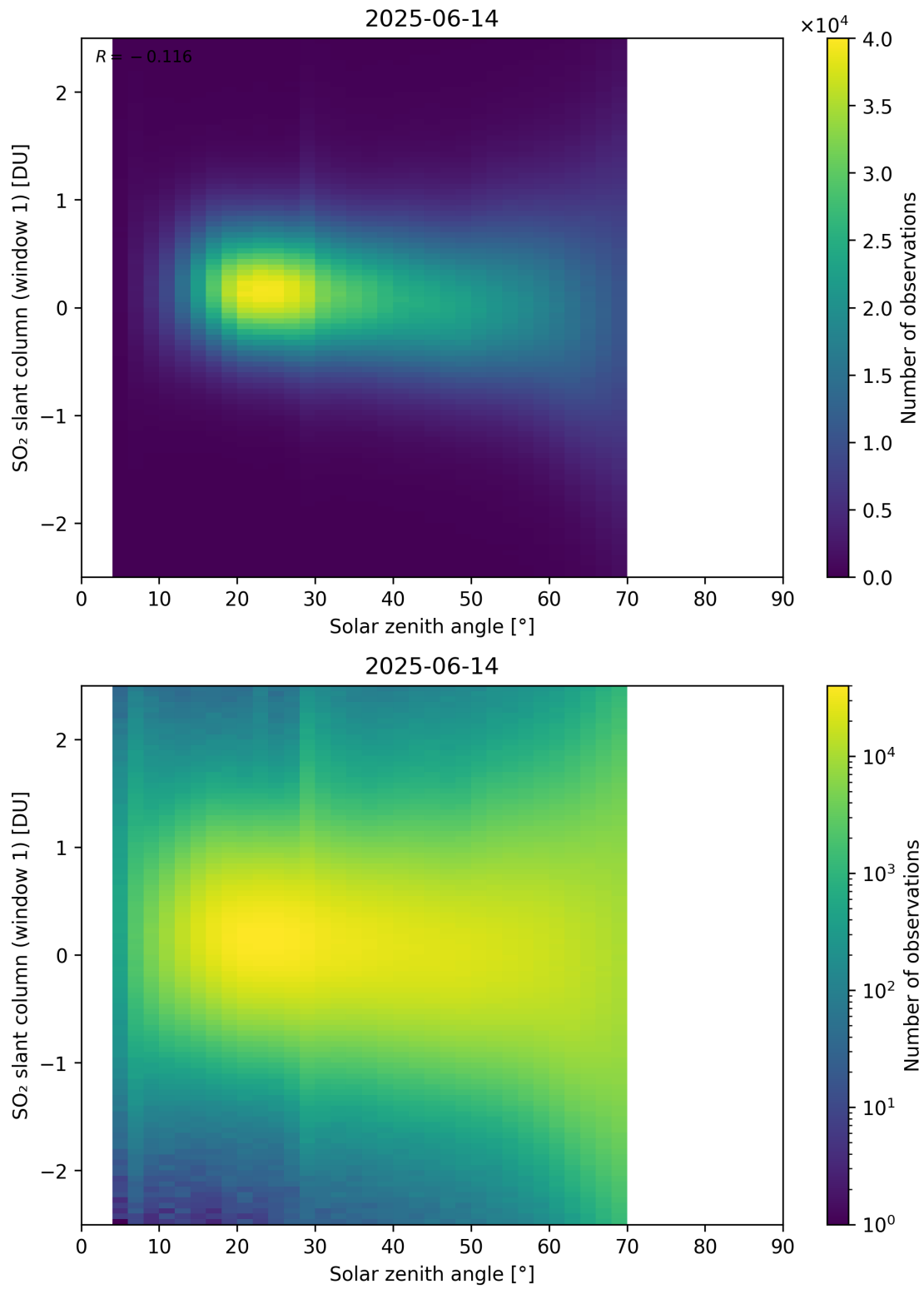


Figure 184: Scatter density plot of “Solar zenith angle” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

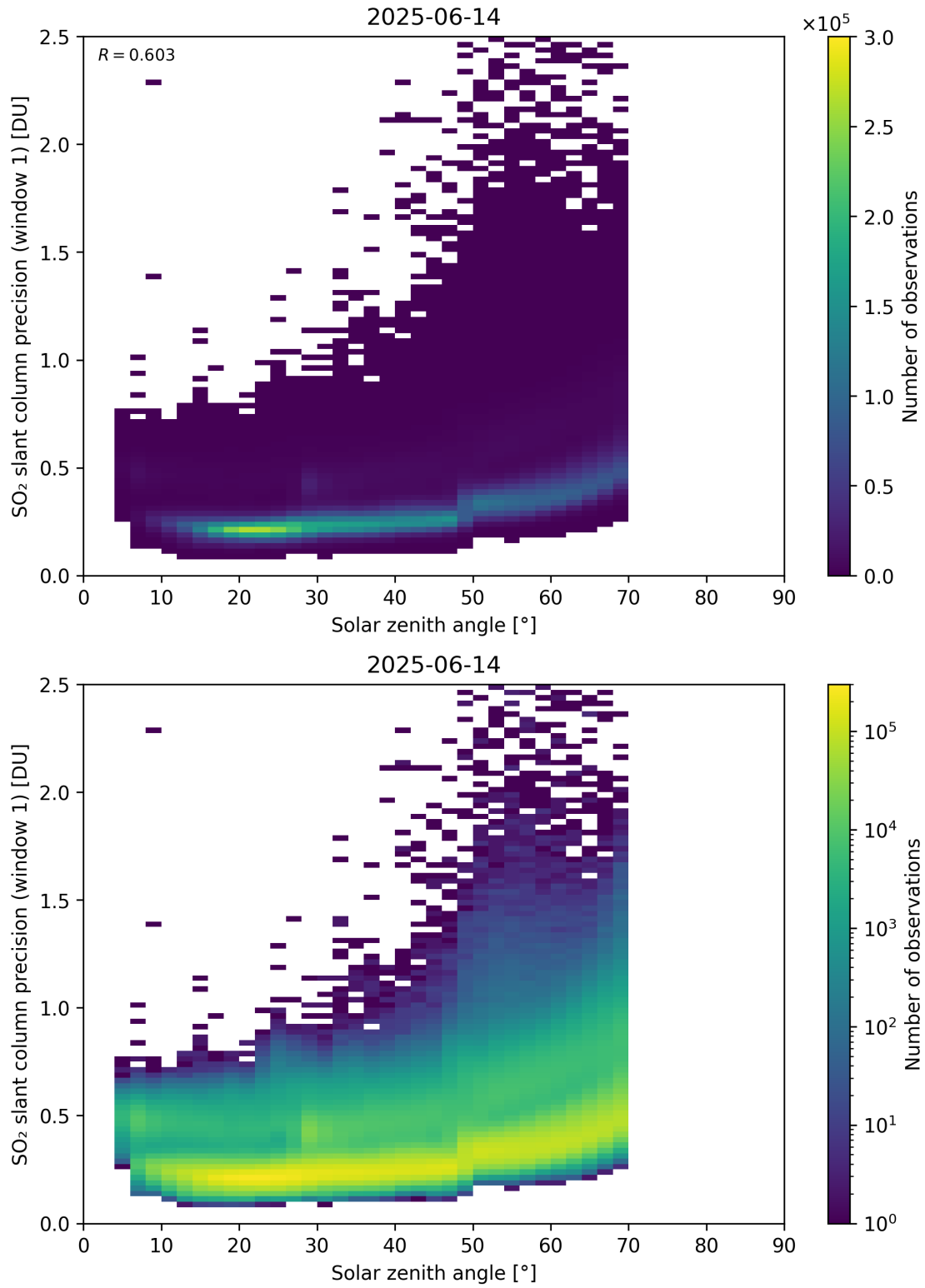


Figure 185: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

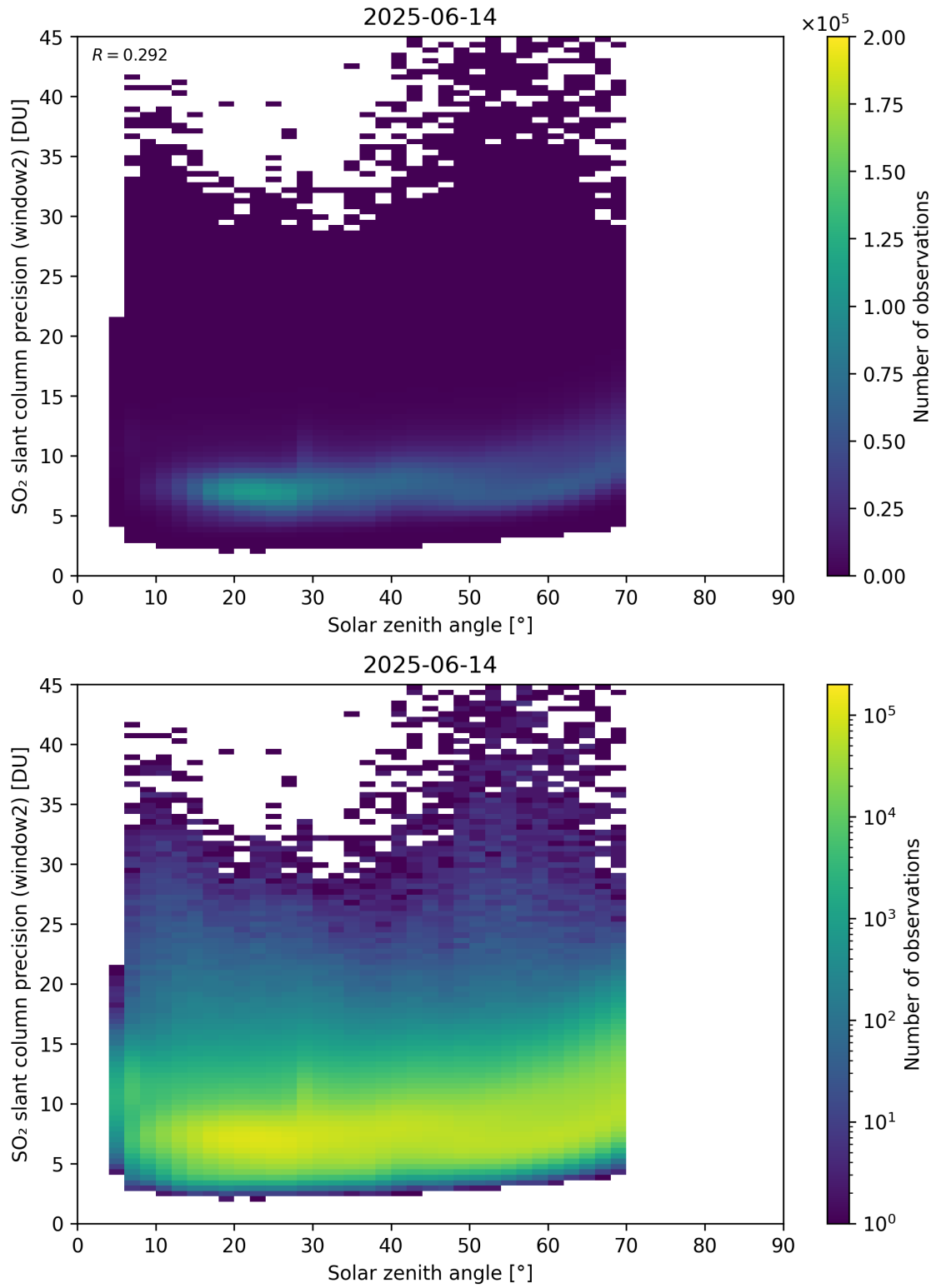


Figure 186: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

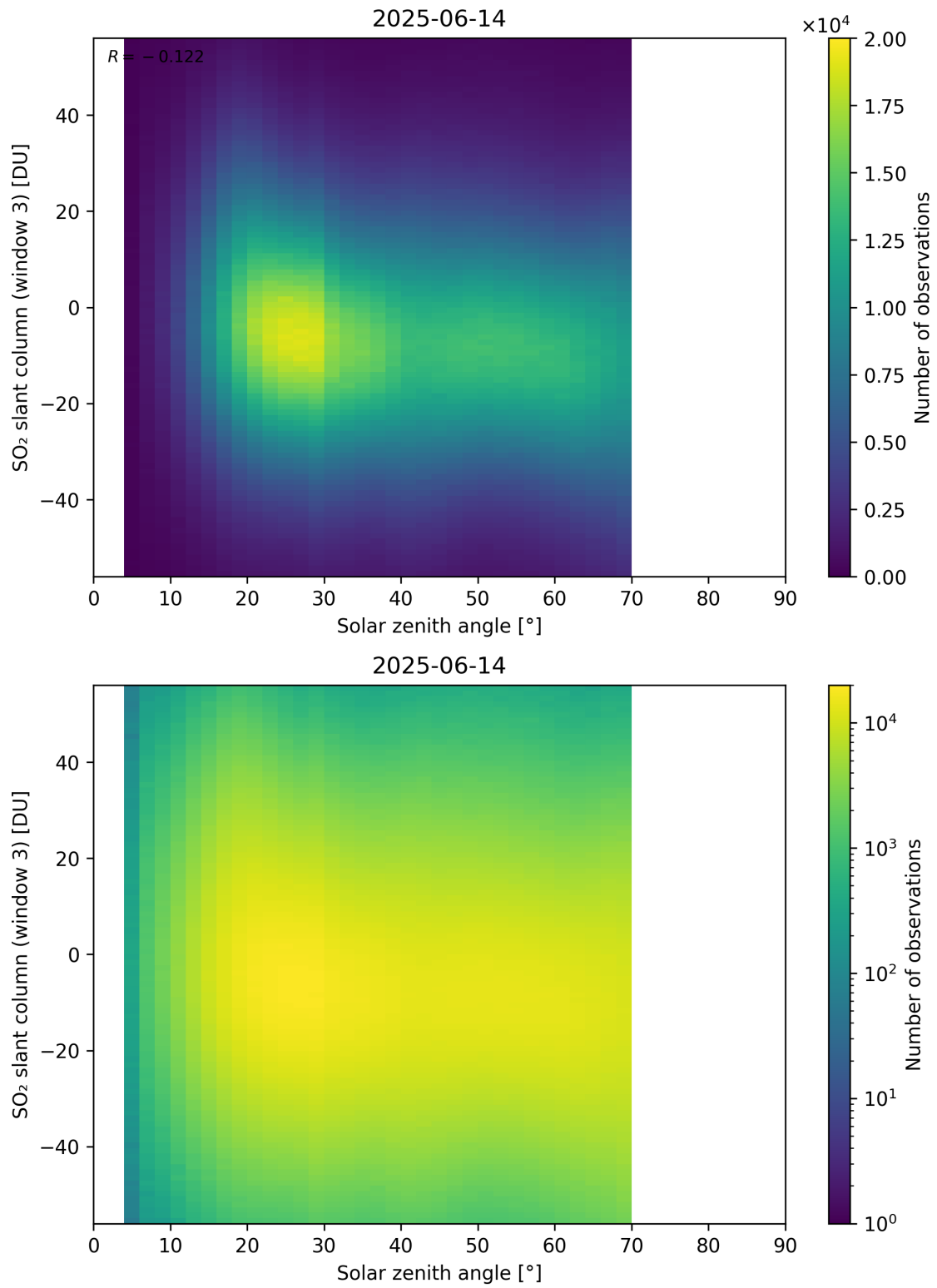


Figure 187: Scatter density plot of “Solar zenith angle” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

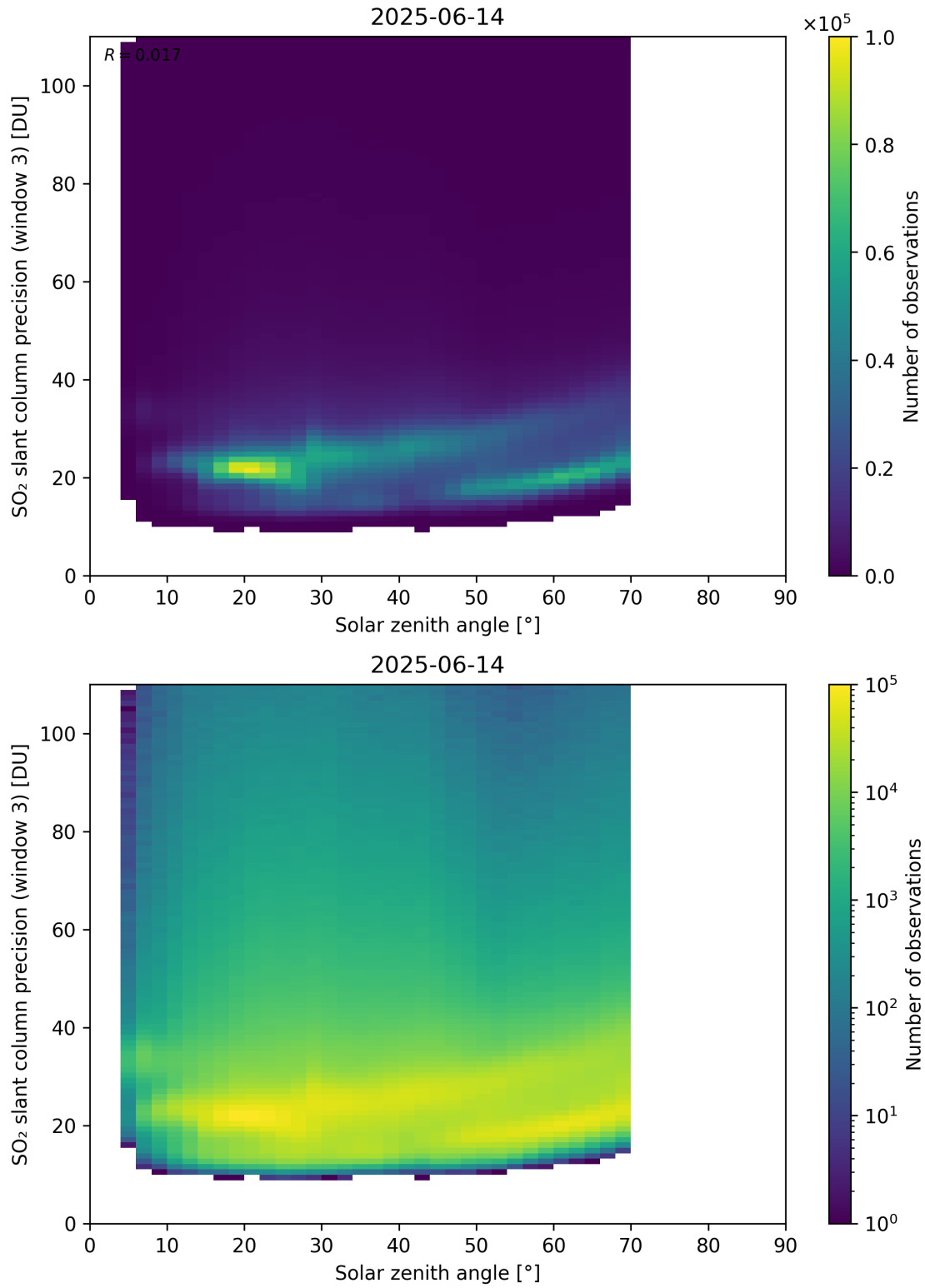


Figure 188: Scatter density plot of “Solar zenith angle” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

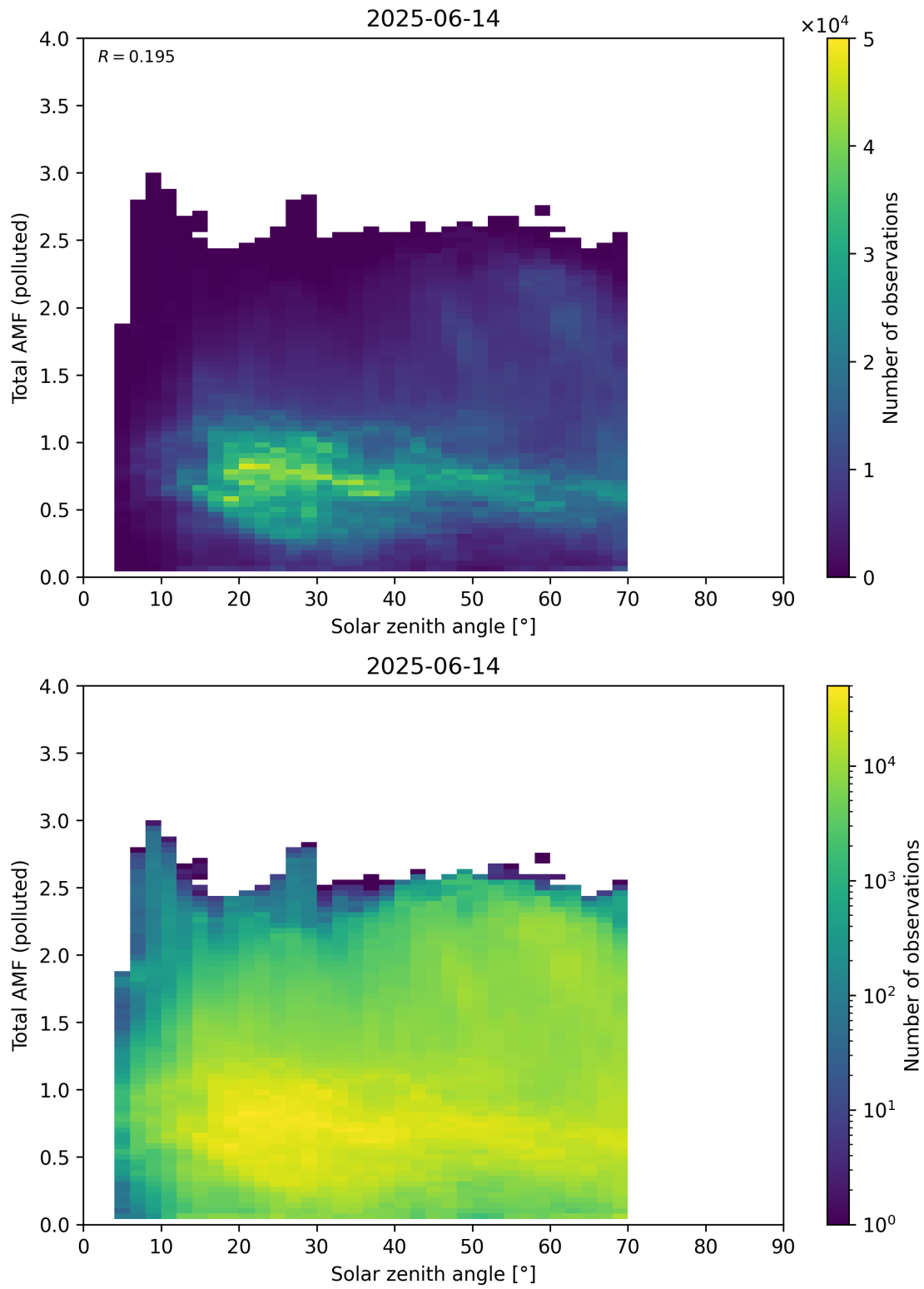


Figure 189: Scatter density plot of “Solar zenith angle” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

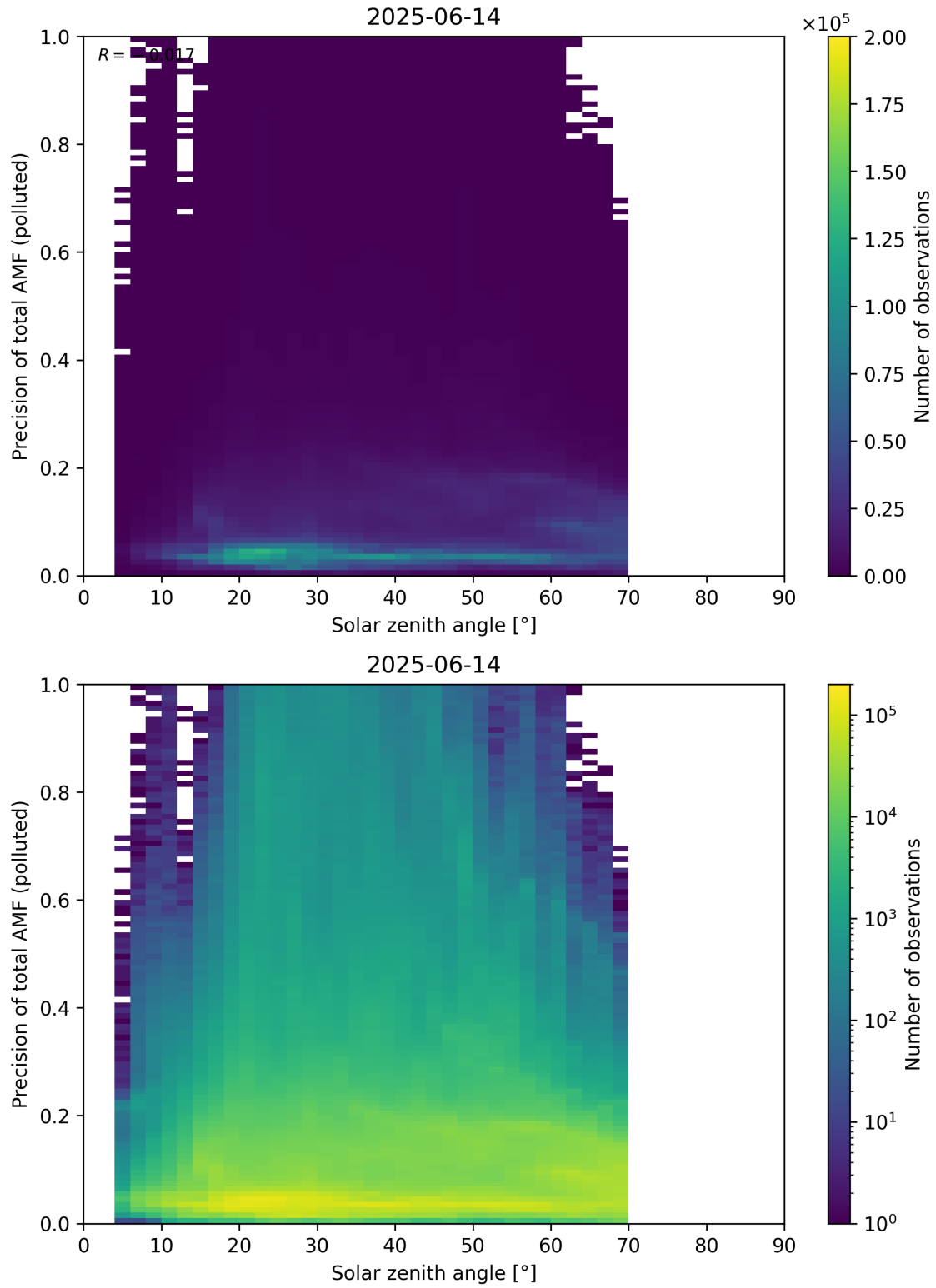


Figure 190: Scatter density plot of “Solar zenith angle” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

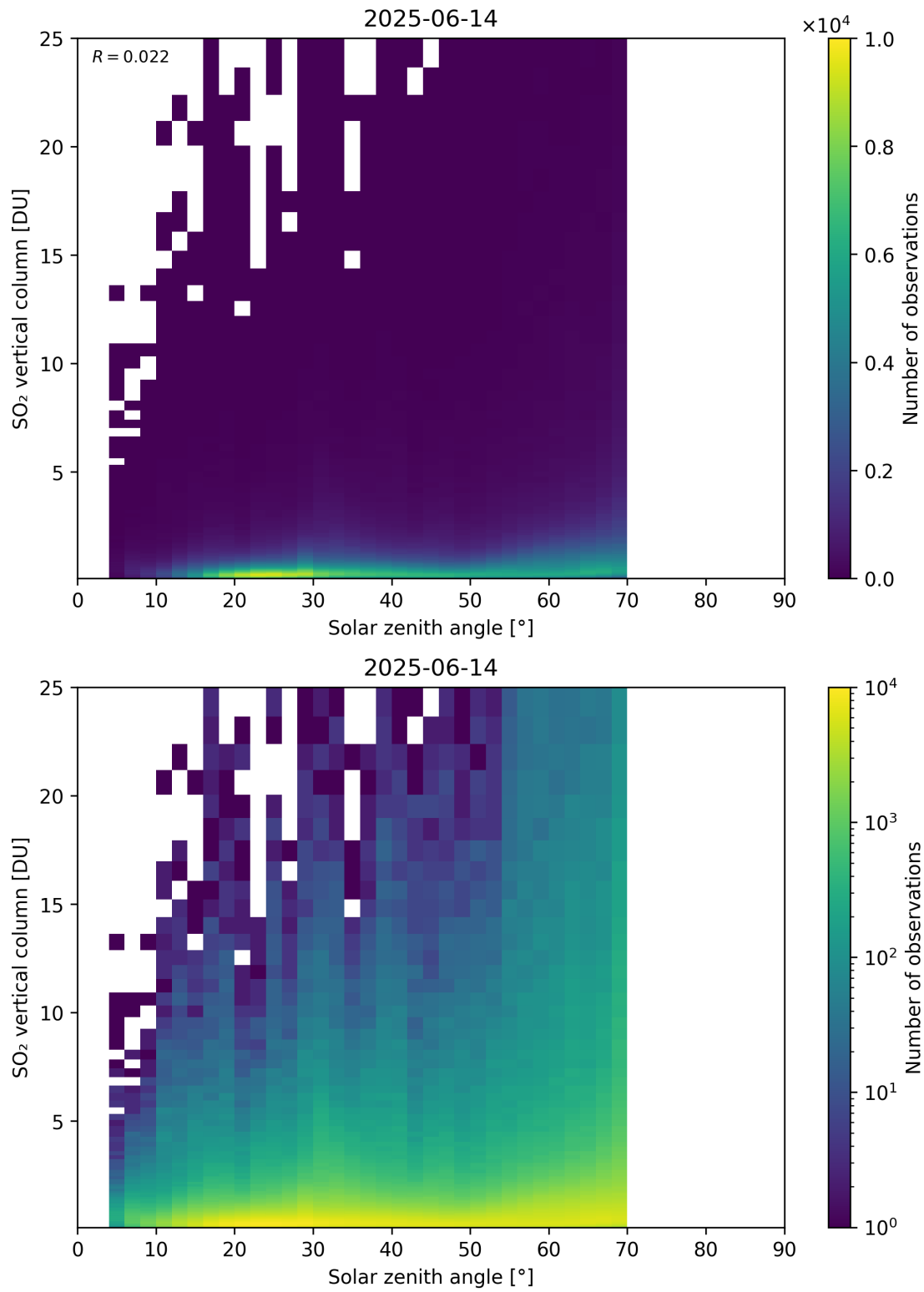


Figure 191: Scatter density plot of “Solar zenith angle” against “SO₂ vertical column” for 2025-06-13 to 2025-06-15.

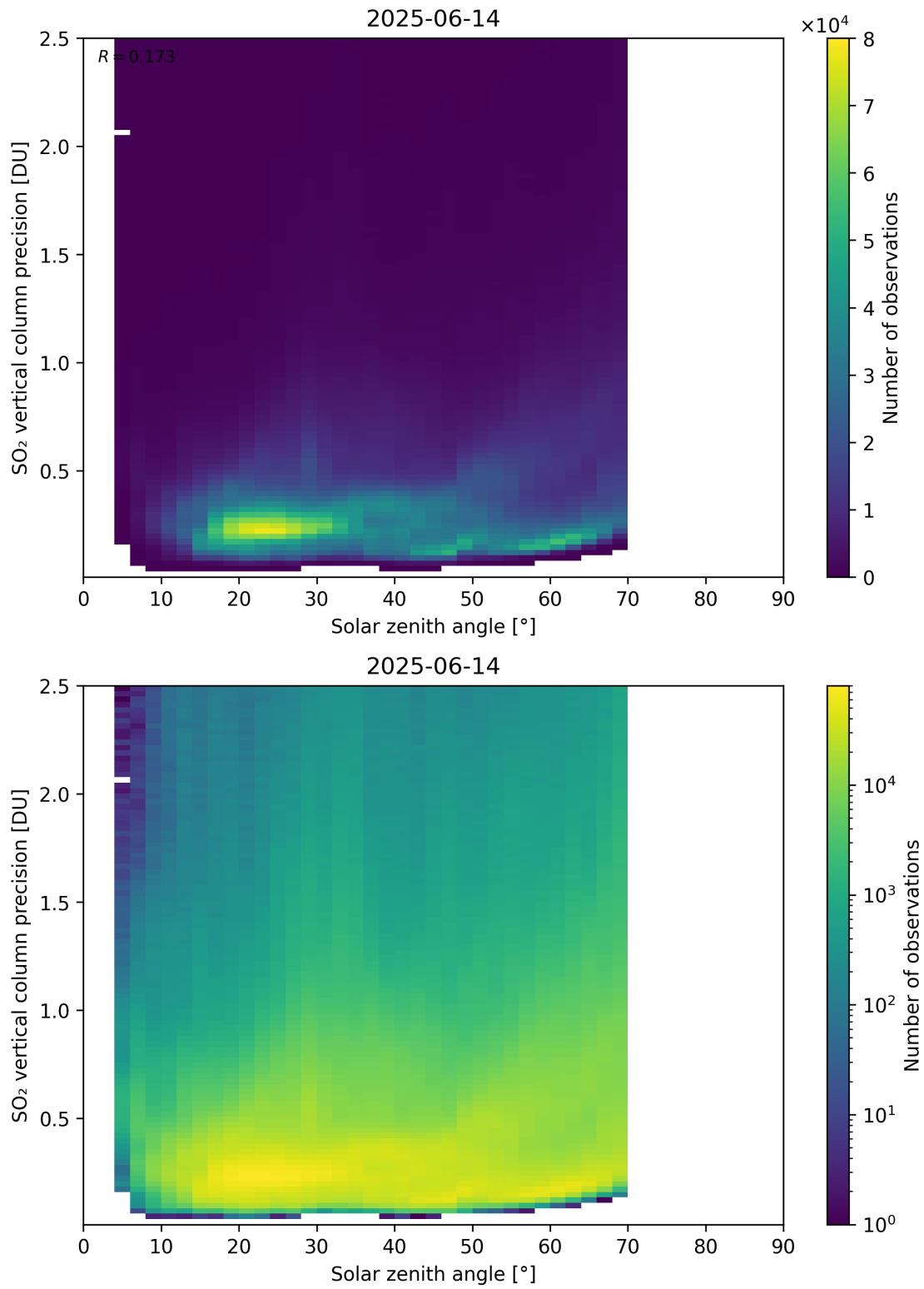


Figure 192: Scatter density plot of “Solar zenith angle” against “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15.

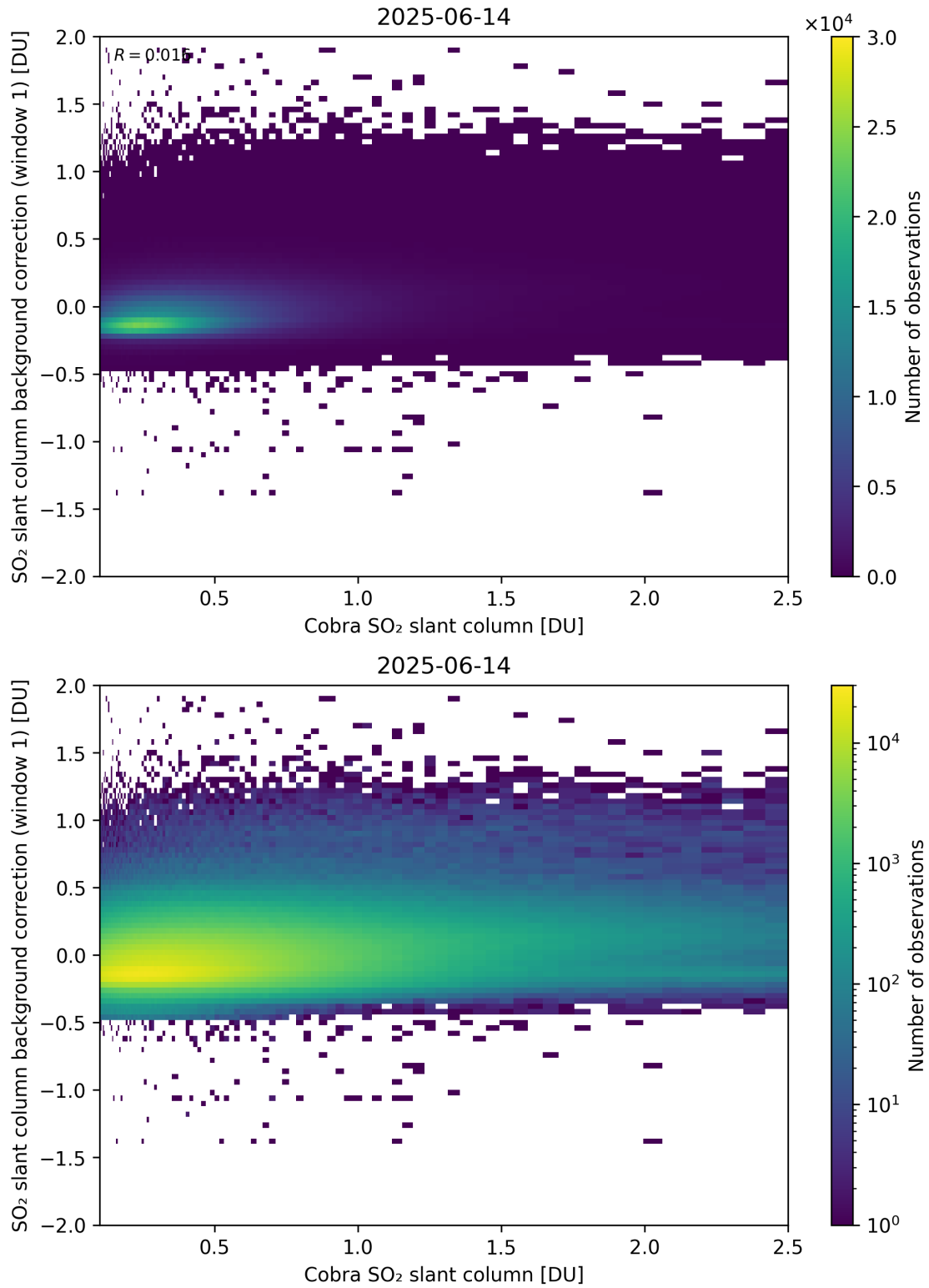


Figure 193: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

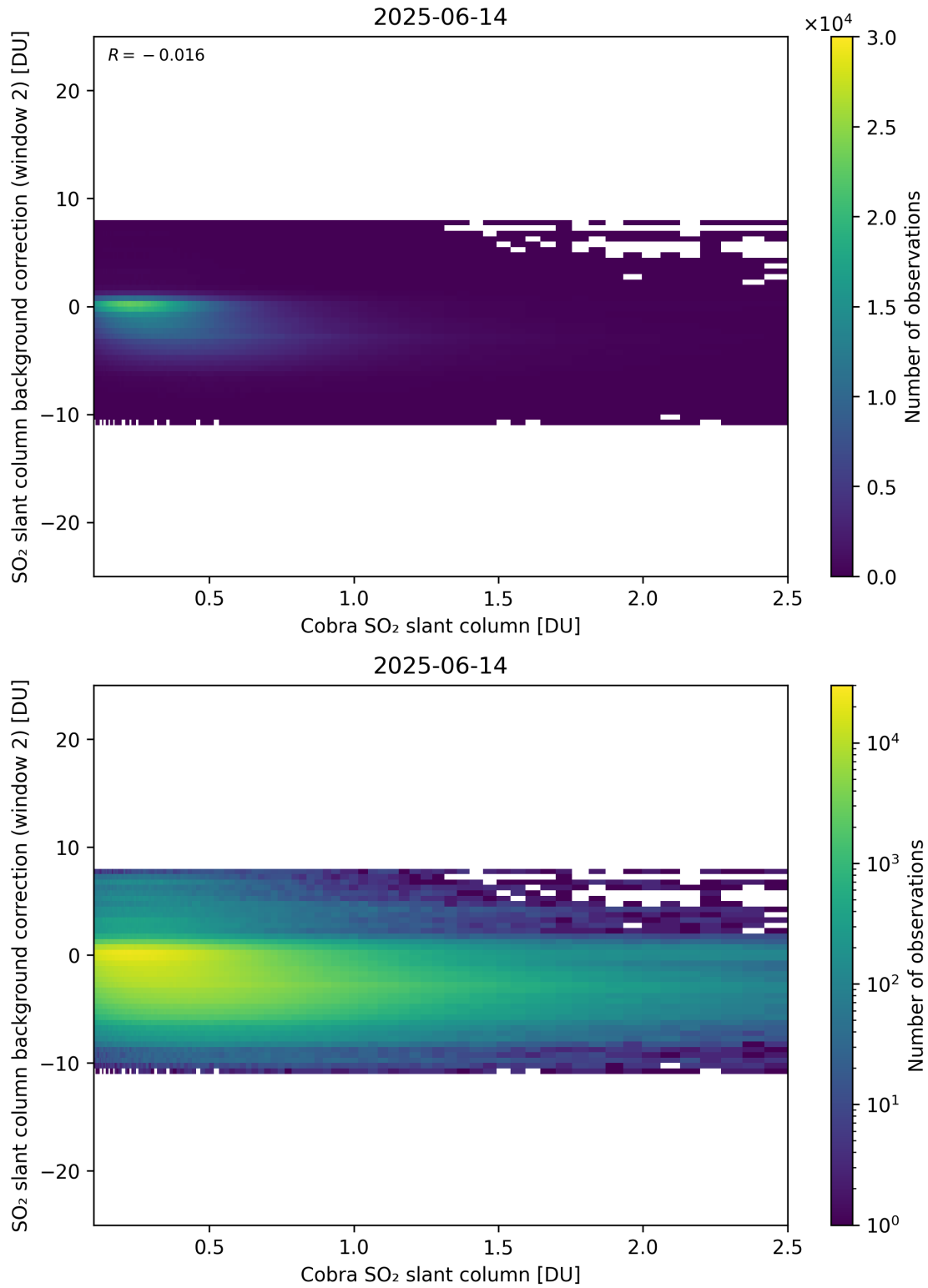


Figure 194: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

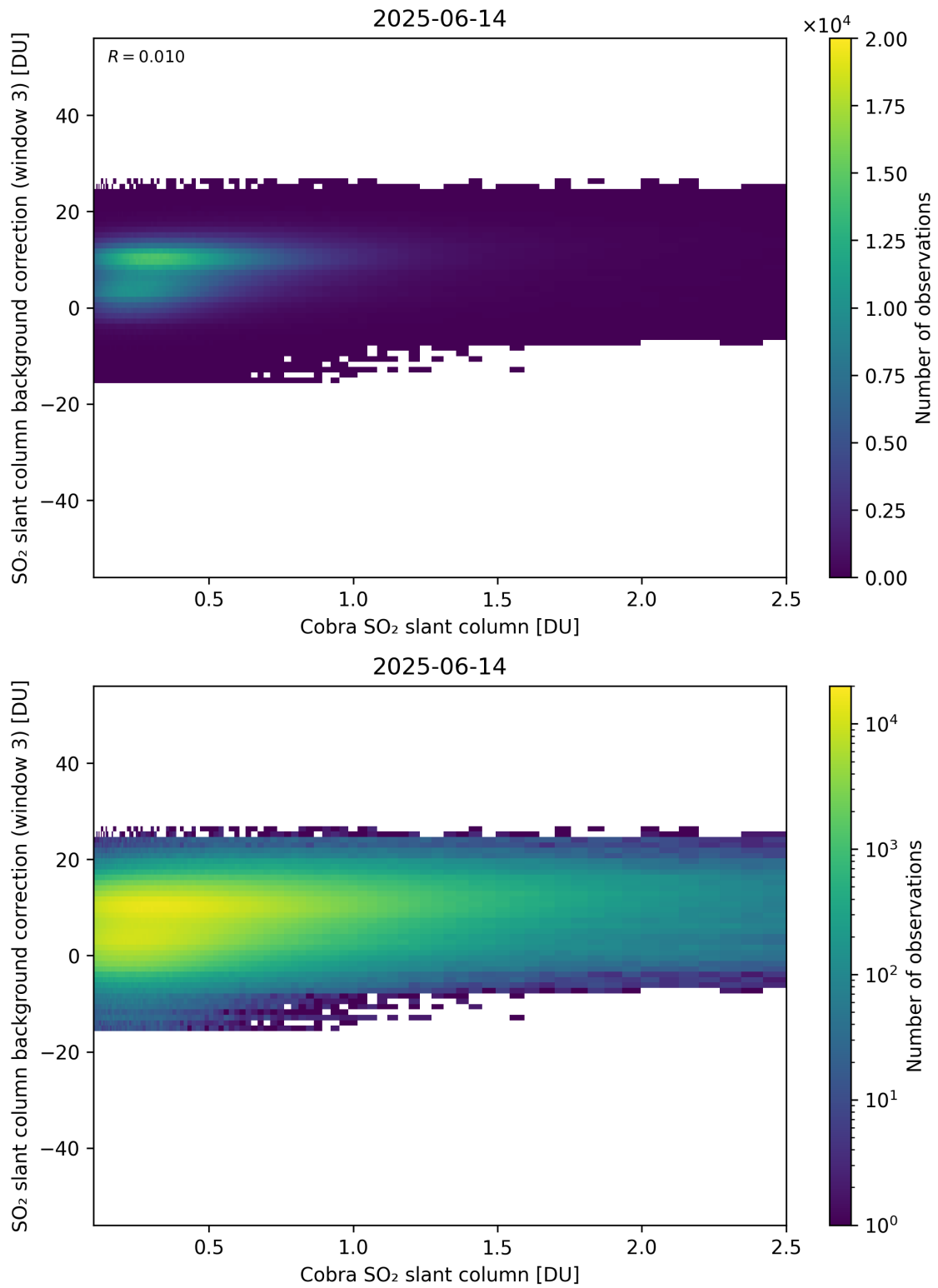


Figure 195: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

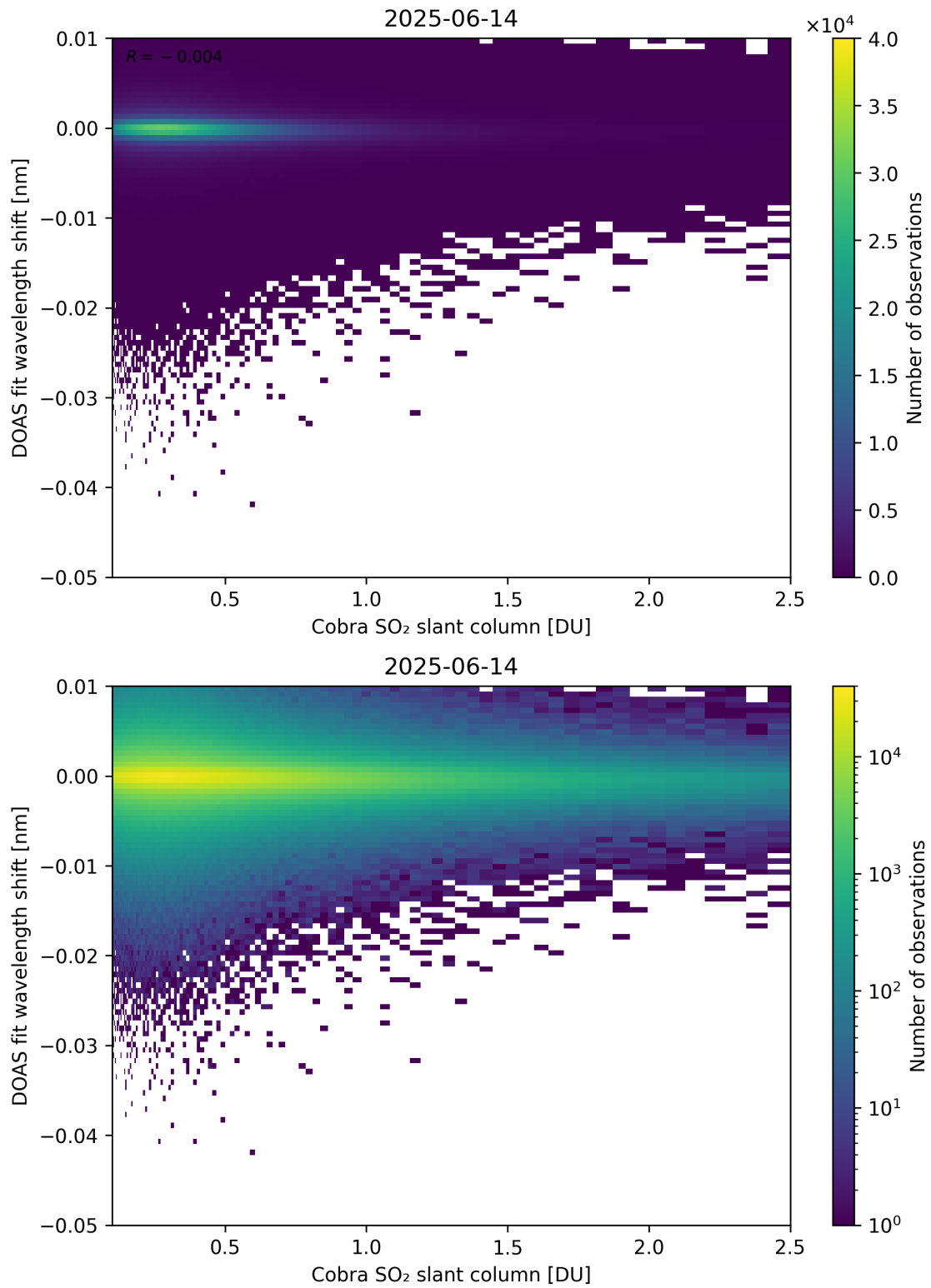


Figure 196: Scatter density plot of “Cobra SO₂ slant column” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

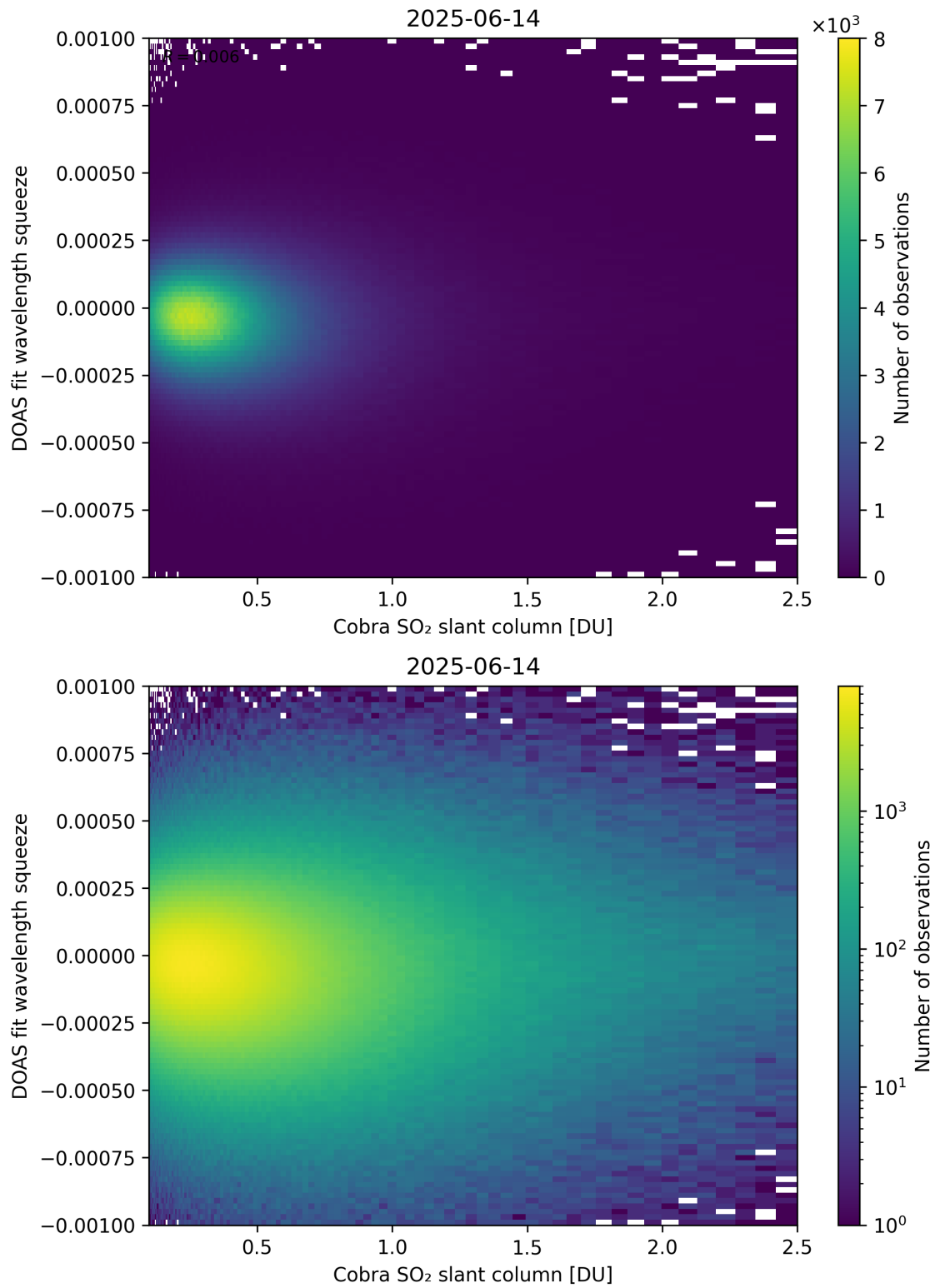


Figure 197: Scatter density plot of “Cobra SO₂ slant column” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

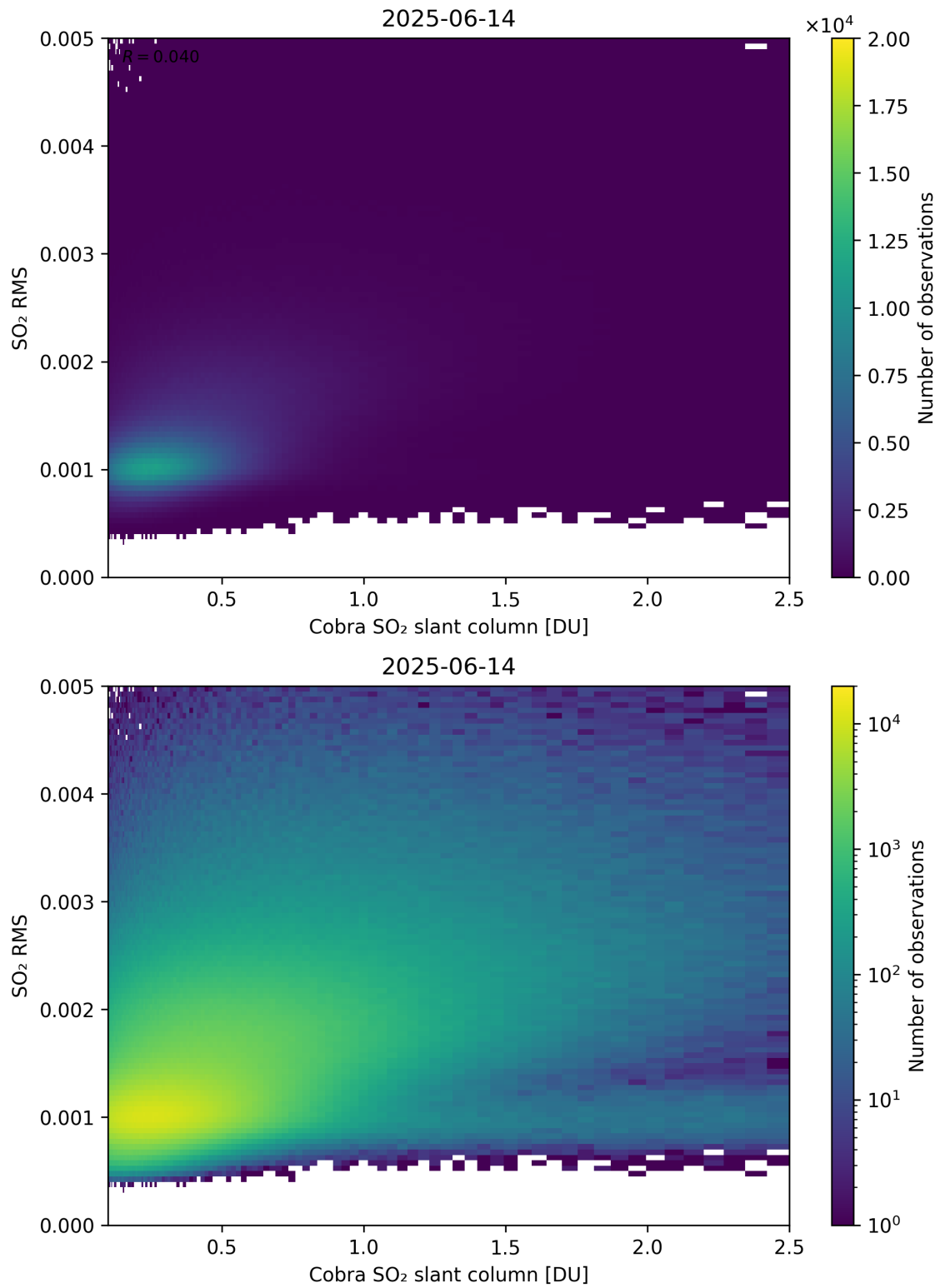


Figure 198: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

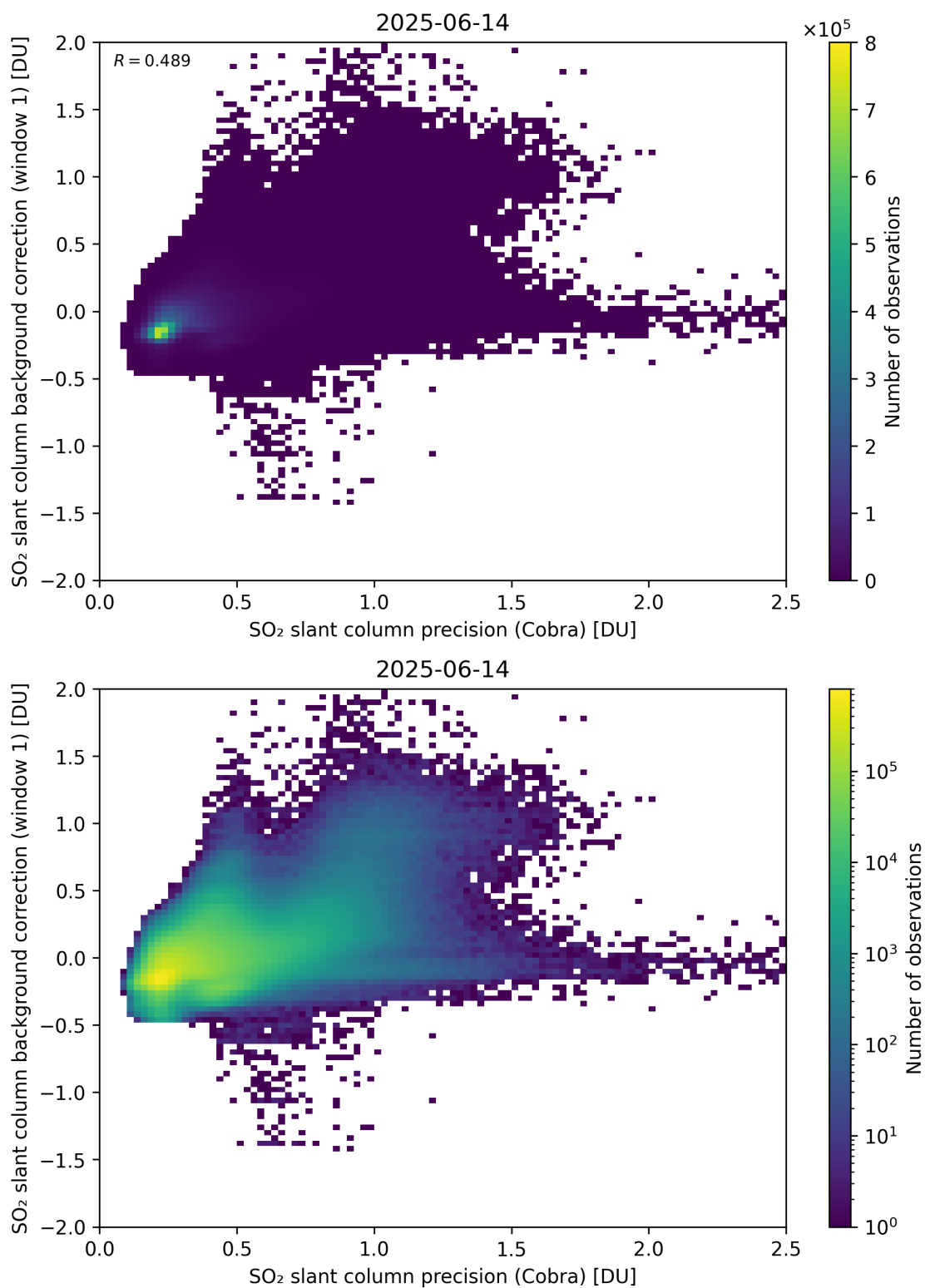


Figure 199: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

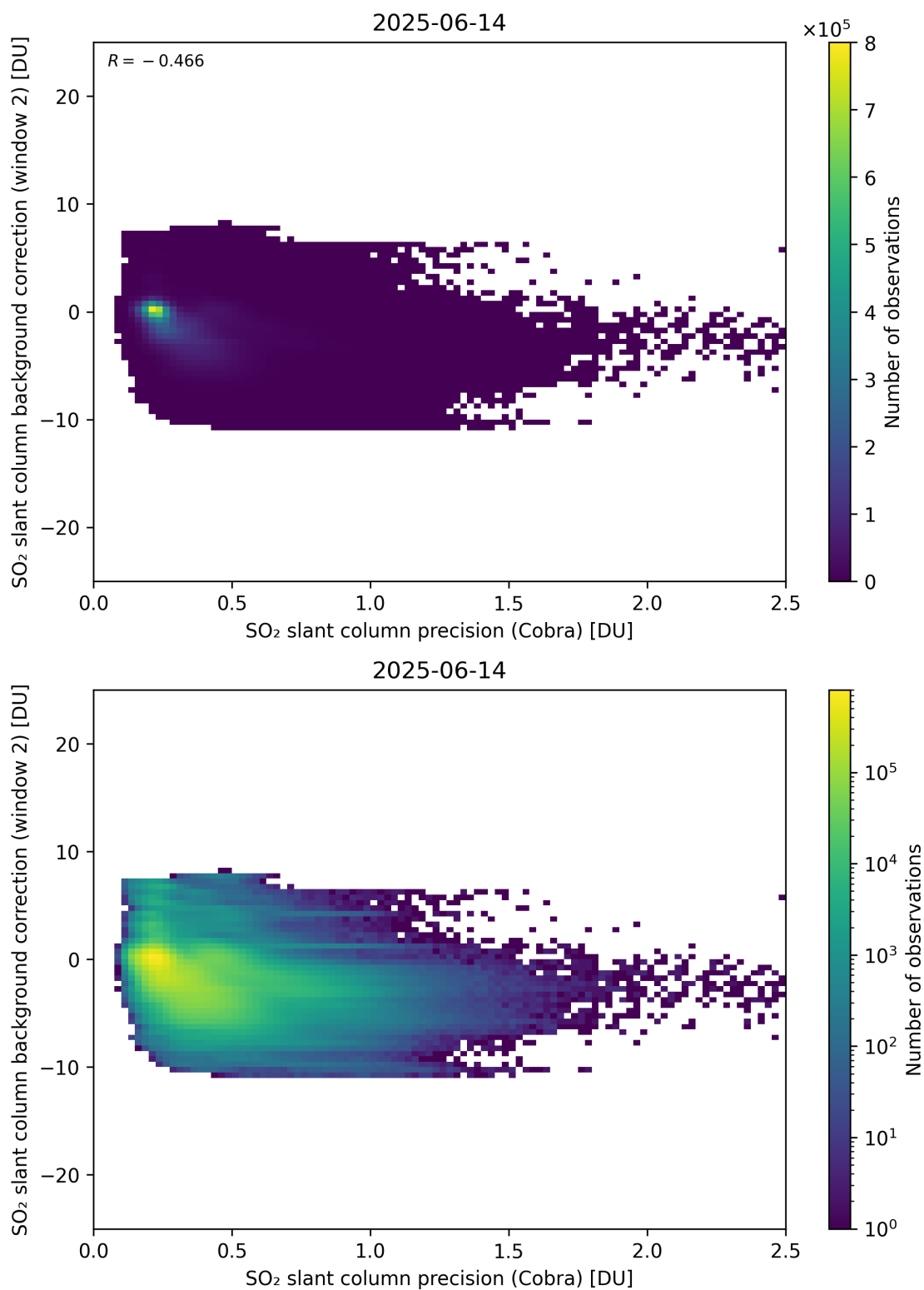


Figure 200: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

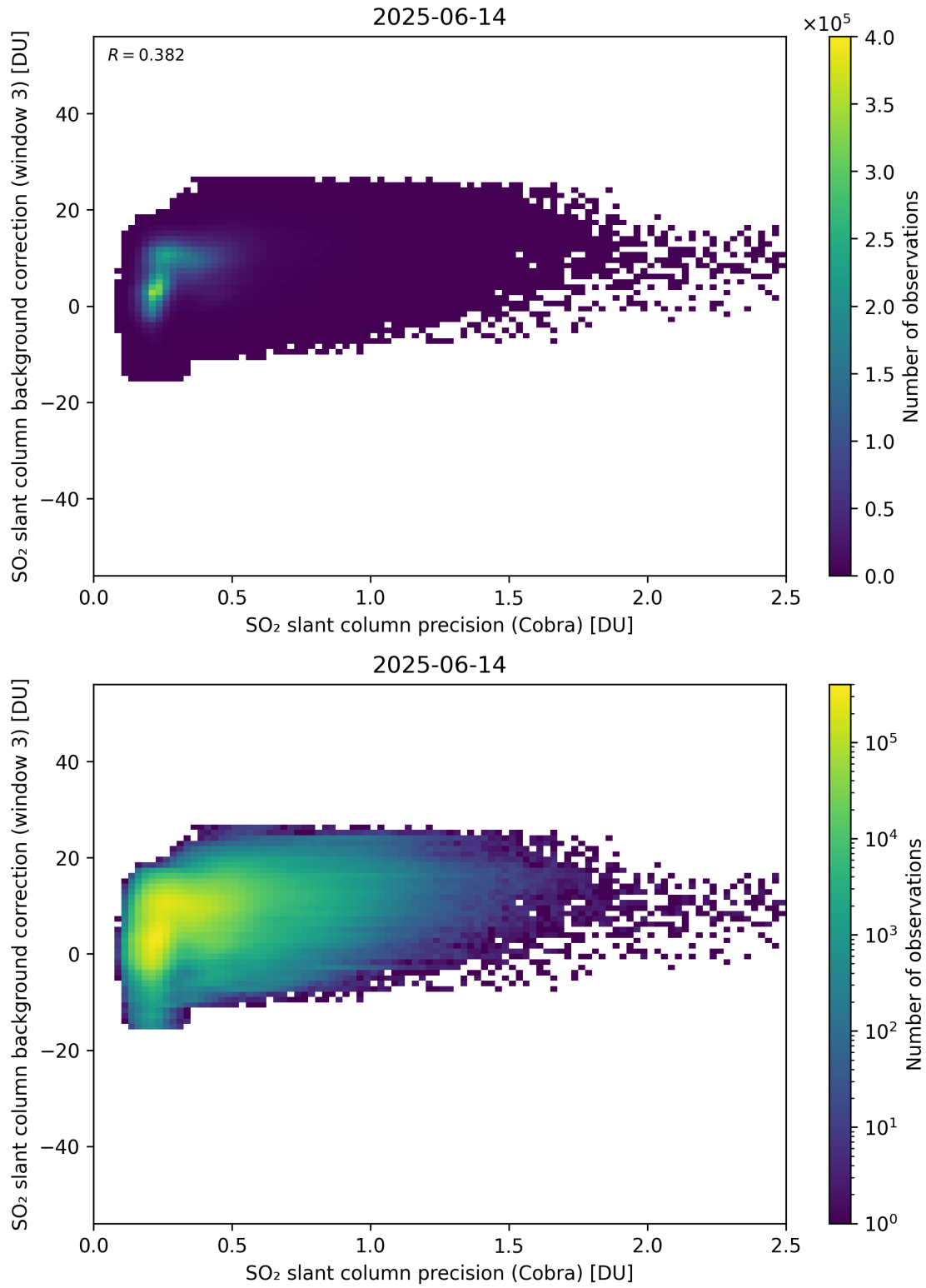


Figure 201: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

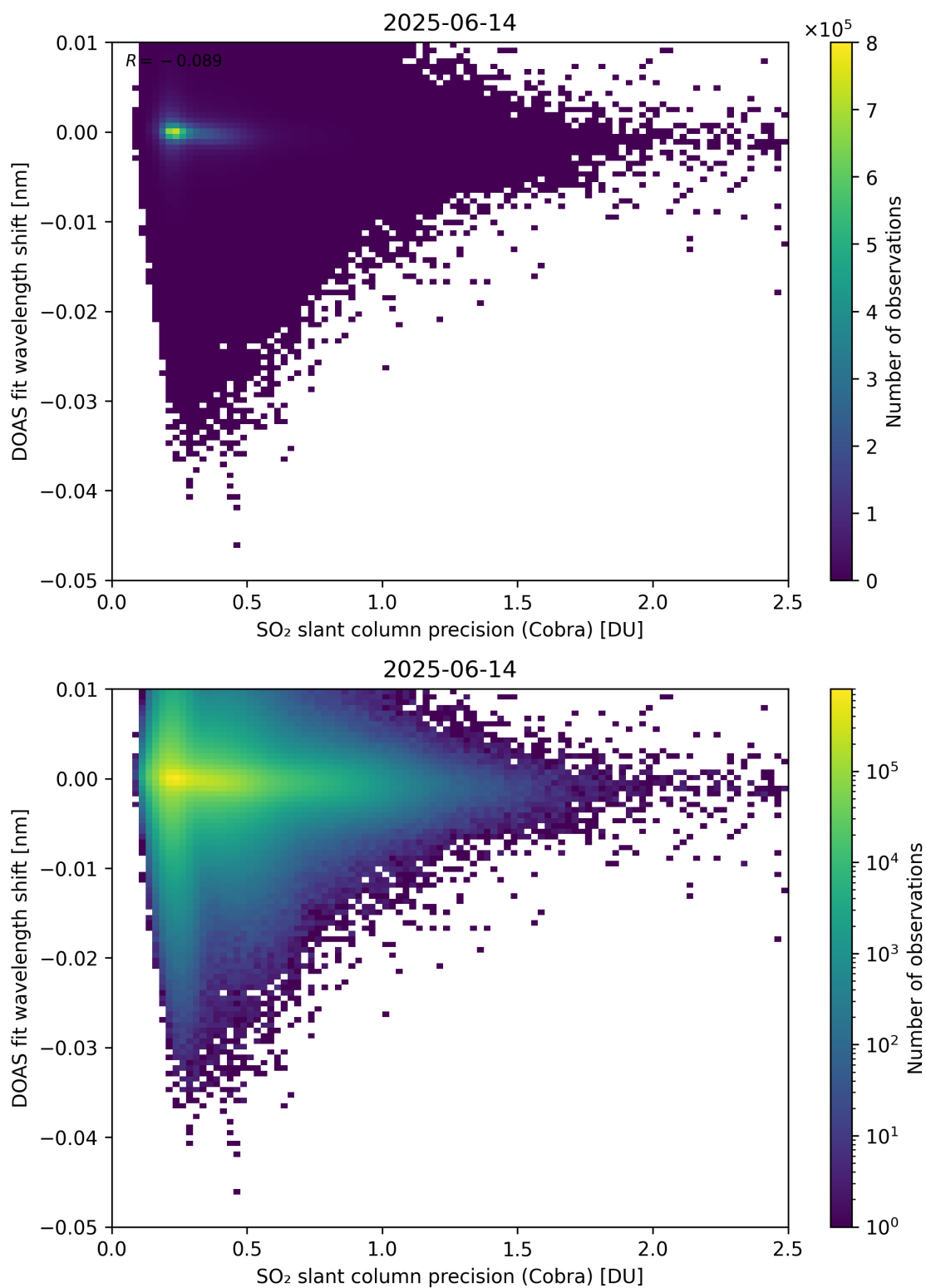


Figure 202: Scatter density plot of “SO₂ slant column precision (Cobra)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

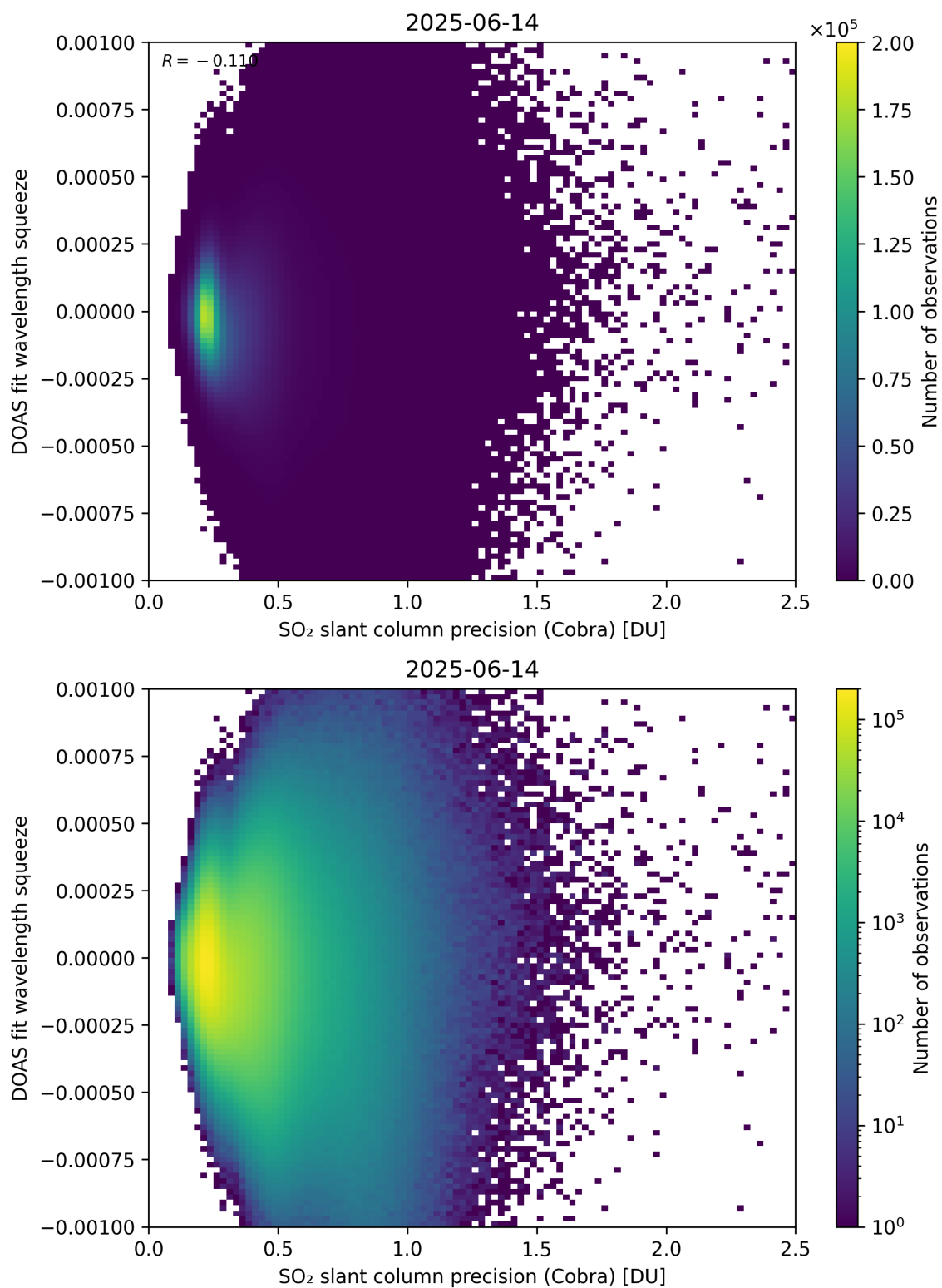


Figure 203: Scatter density plot of “SO₂ slant column precision (Cobra)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

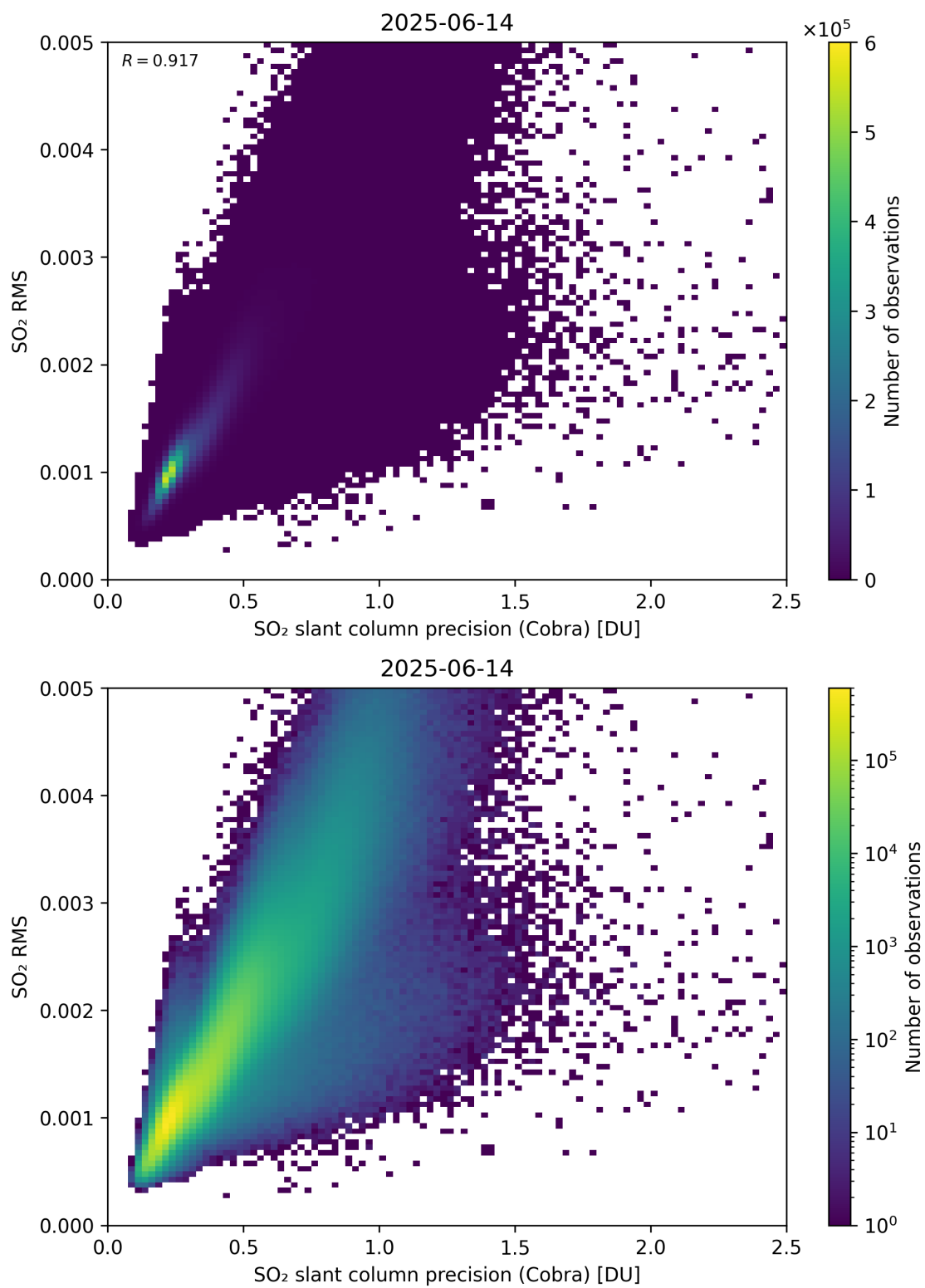


Figure 204: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

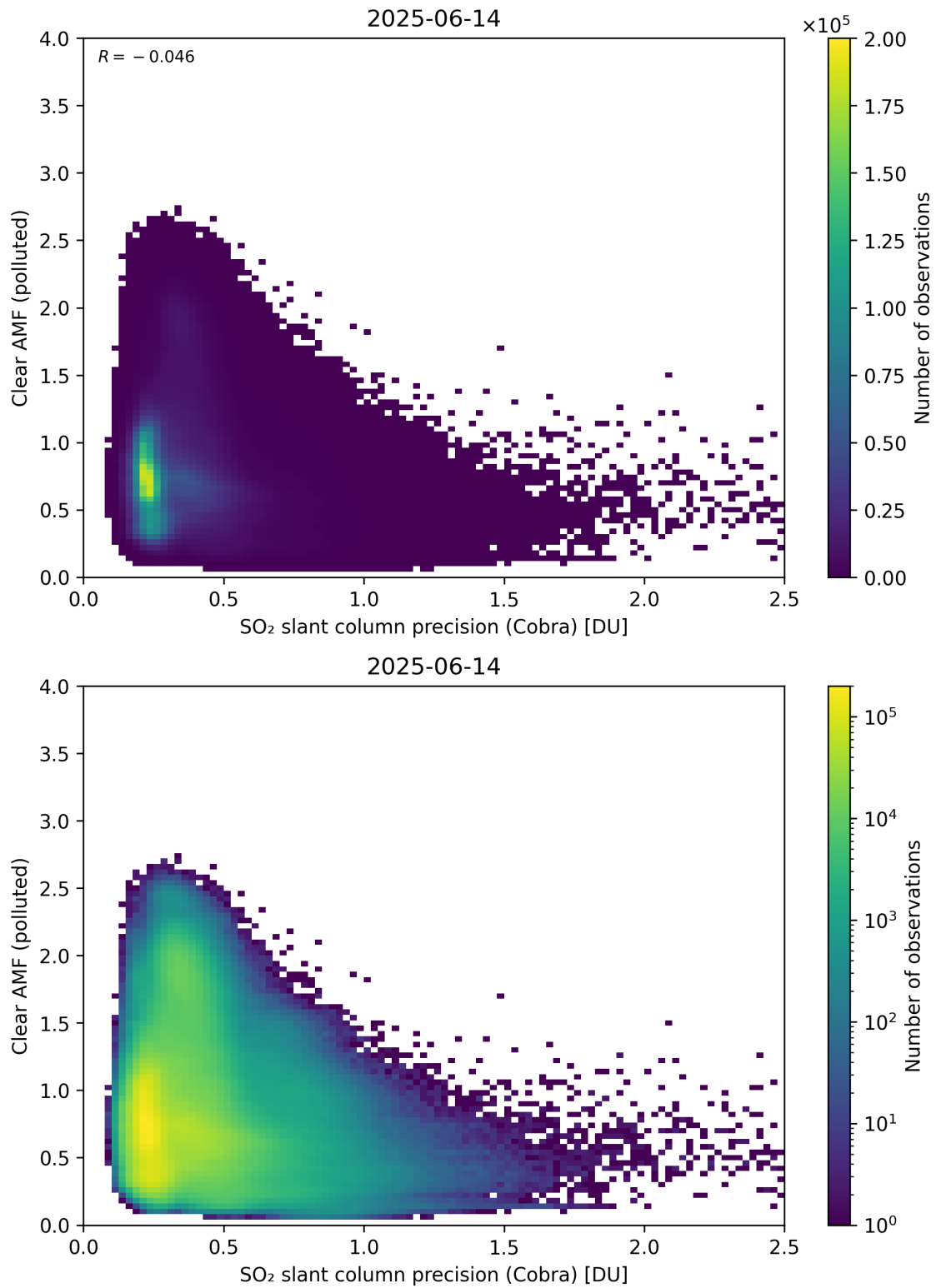


Figure 205: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

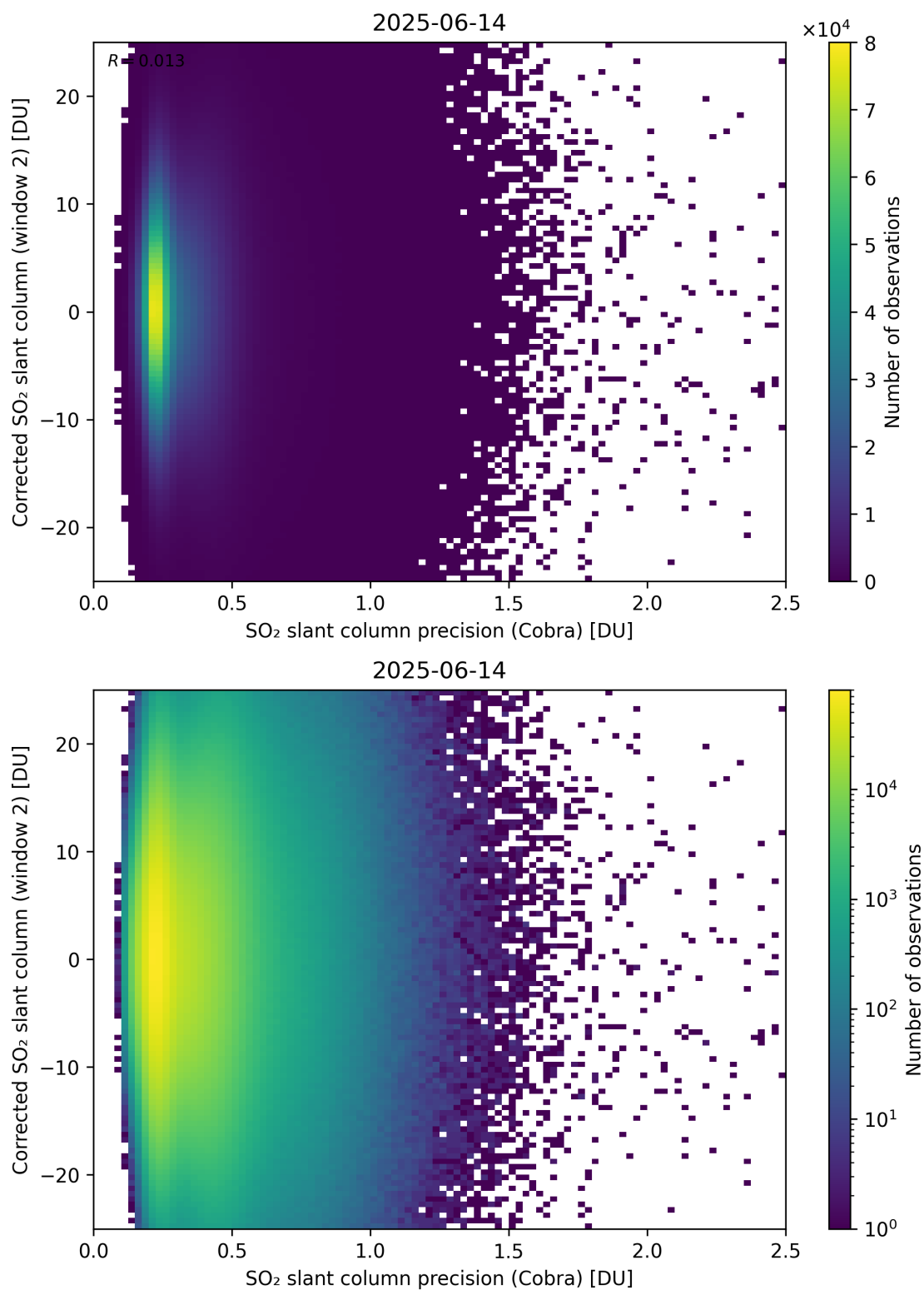


Figure 206: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

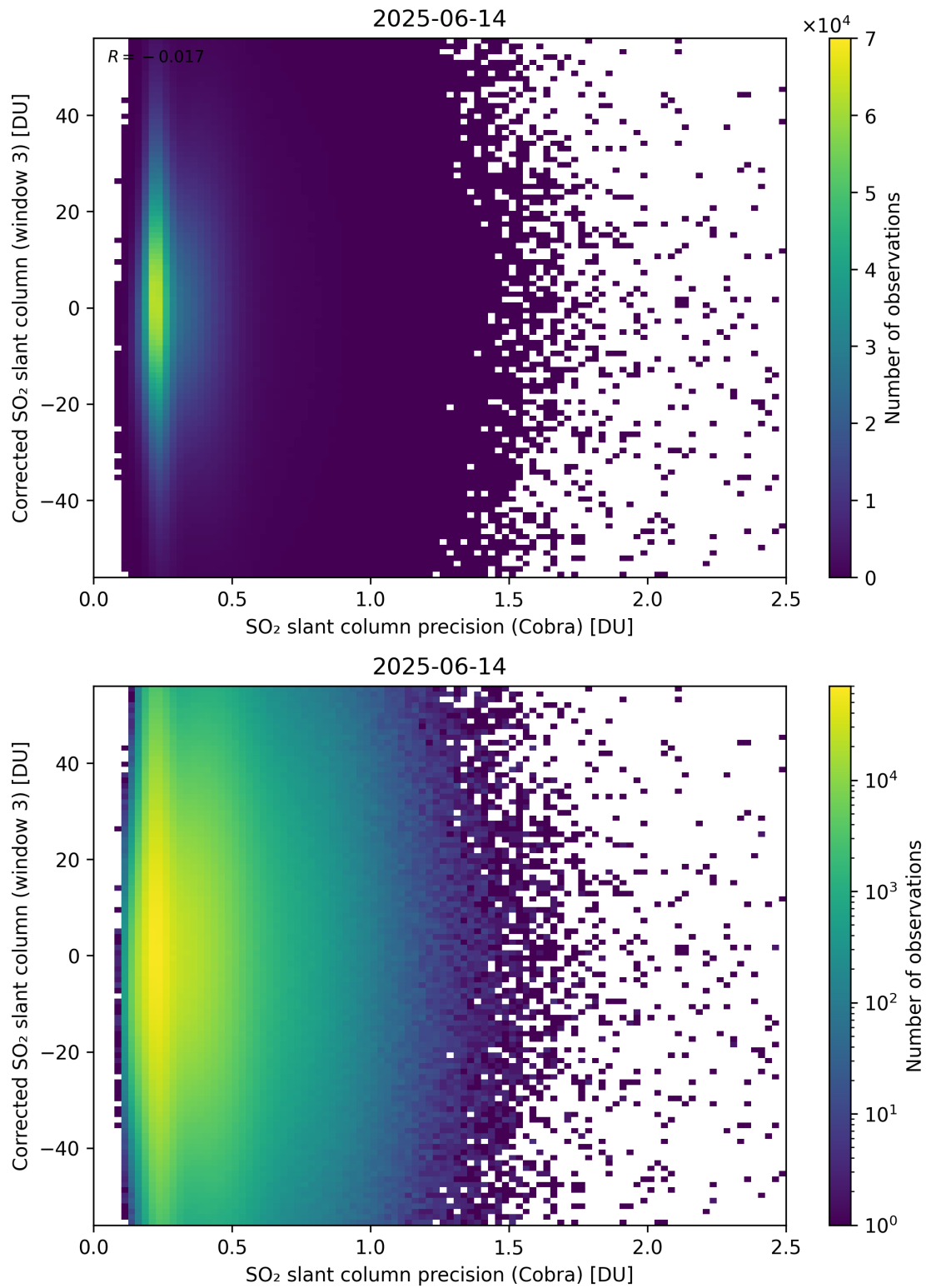


Figure 207: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

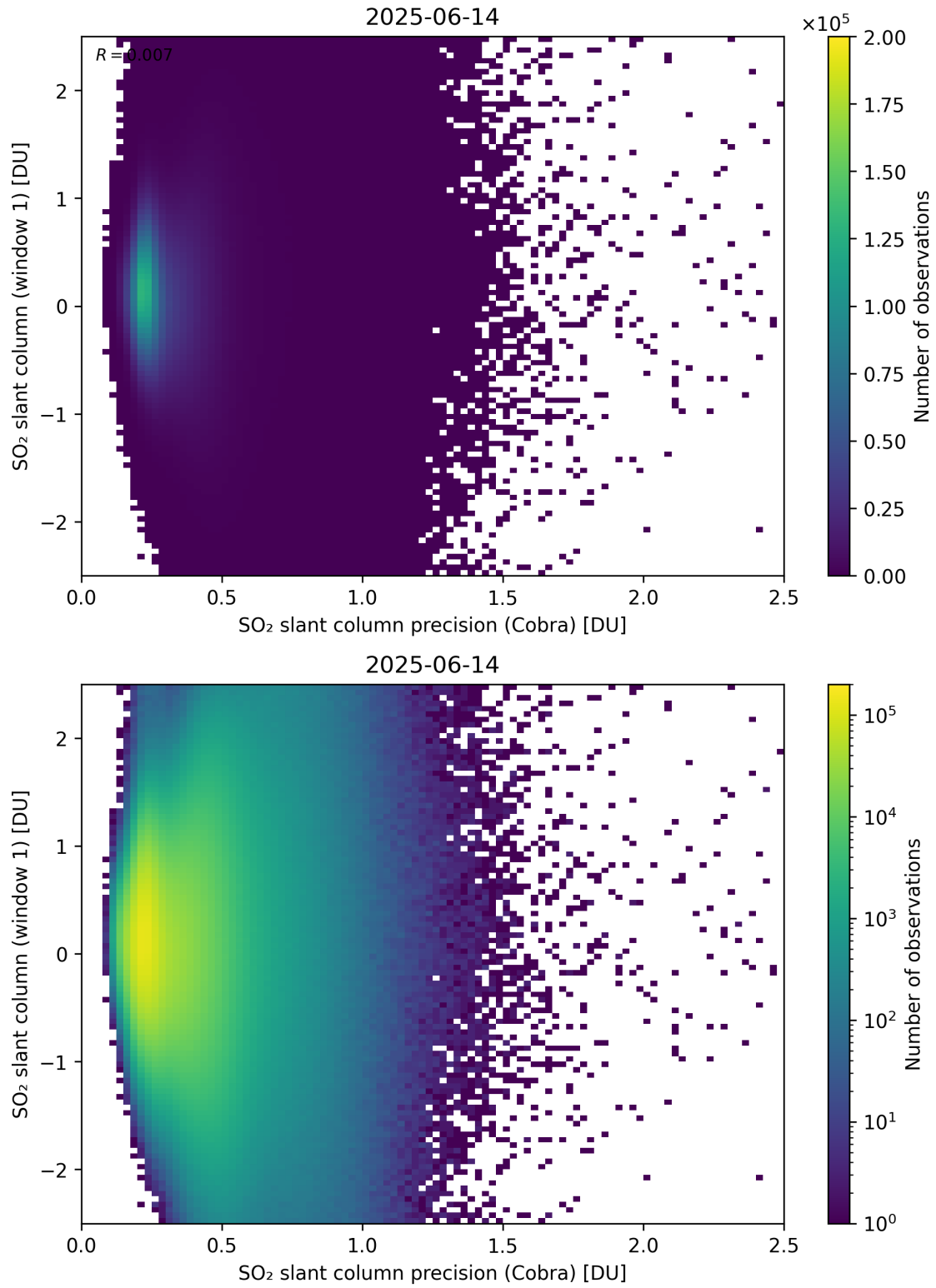


Figure 208: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

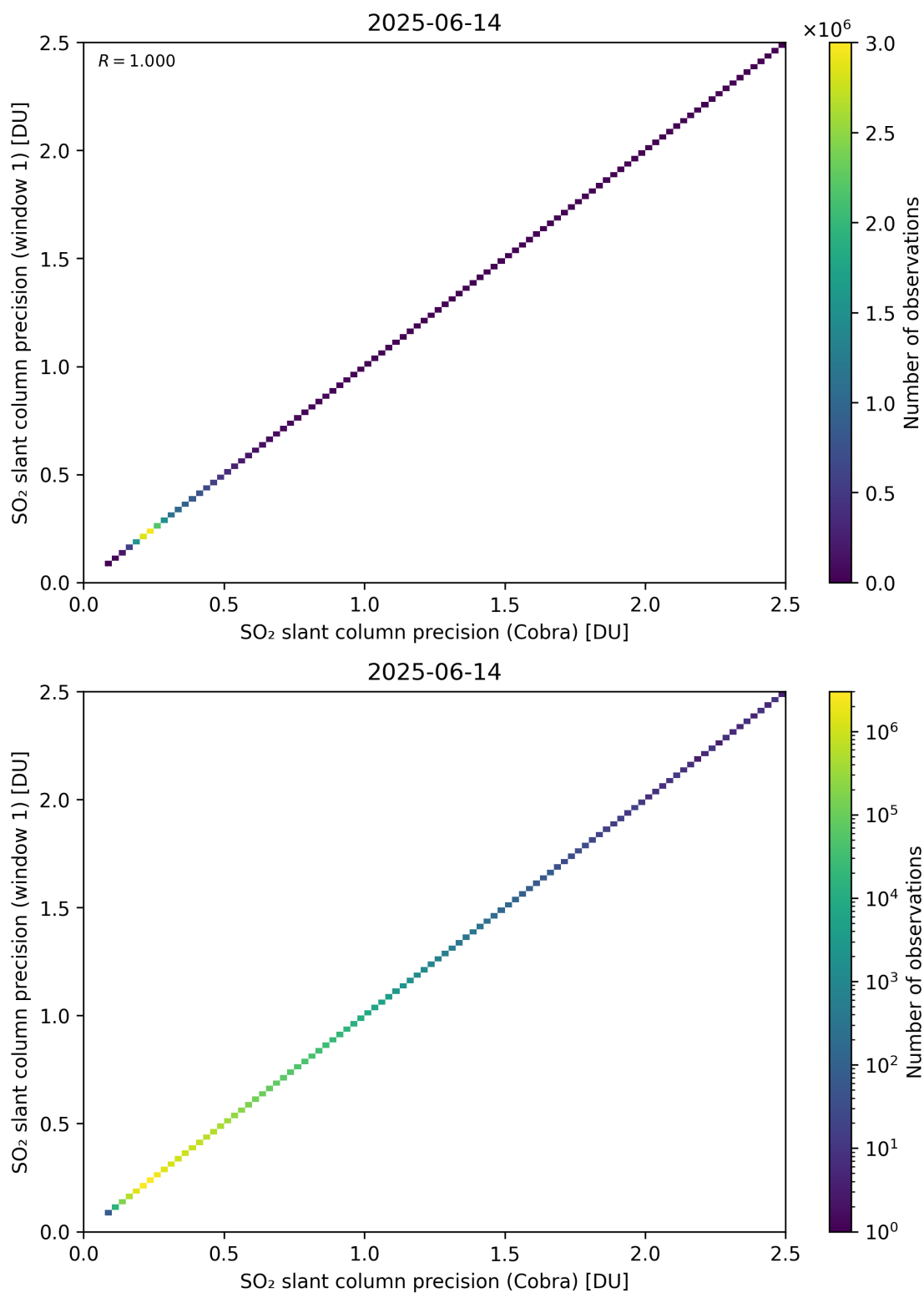


Figure 209: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

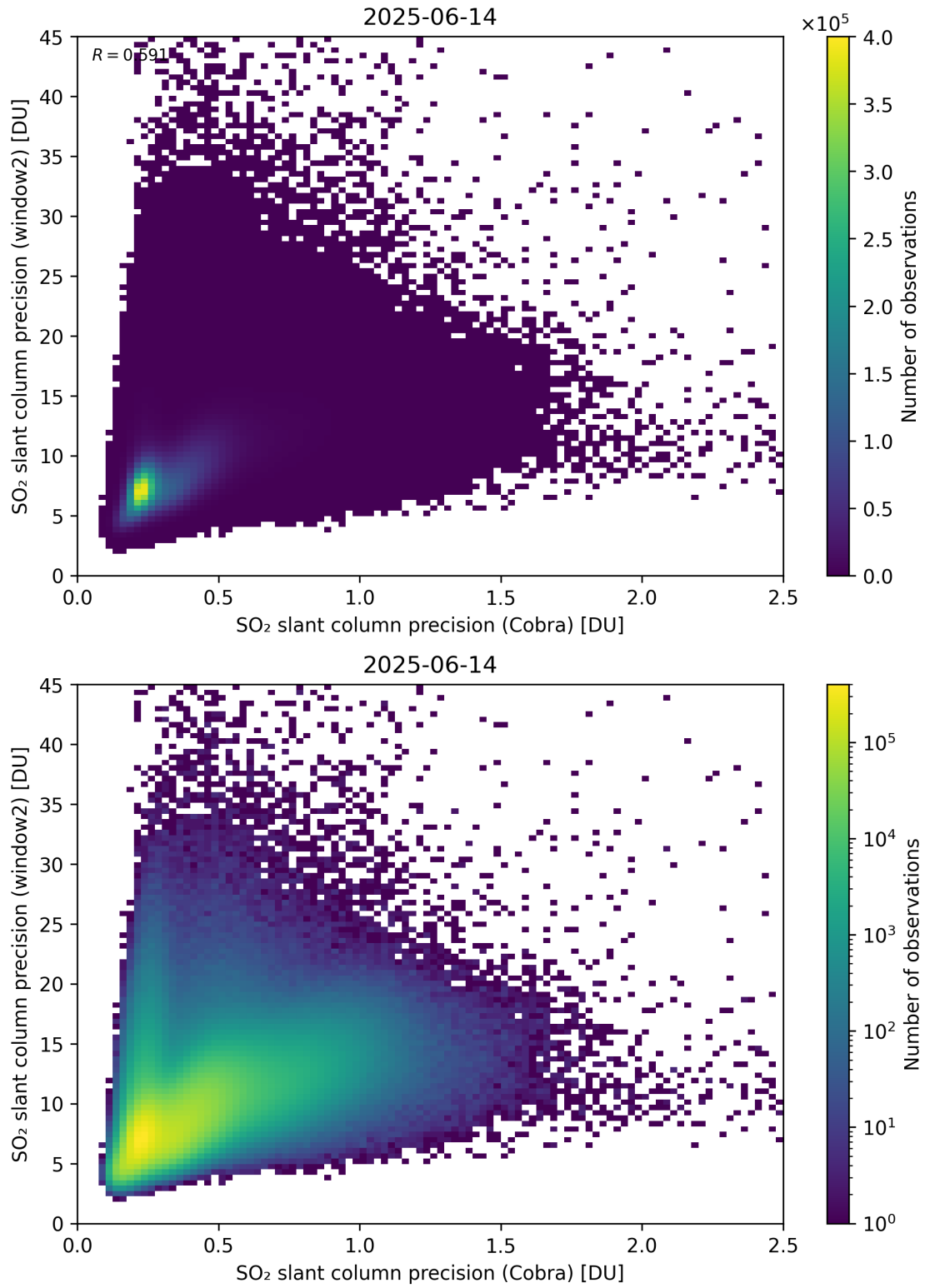


Figure 210: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

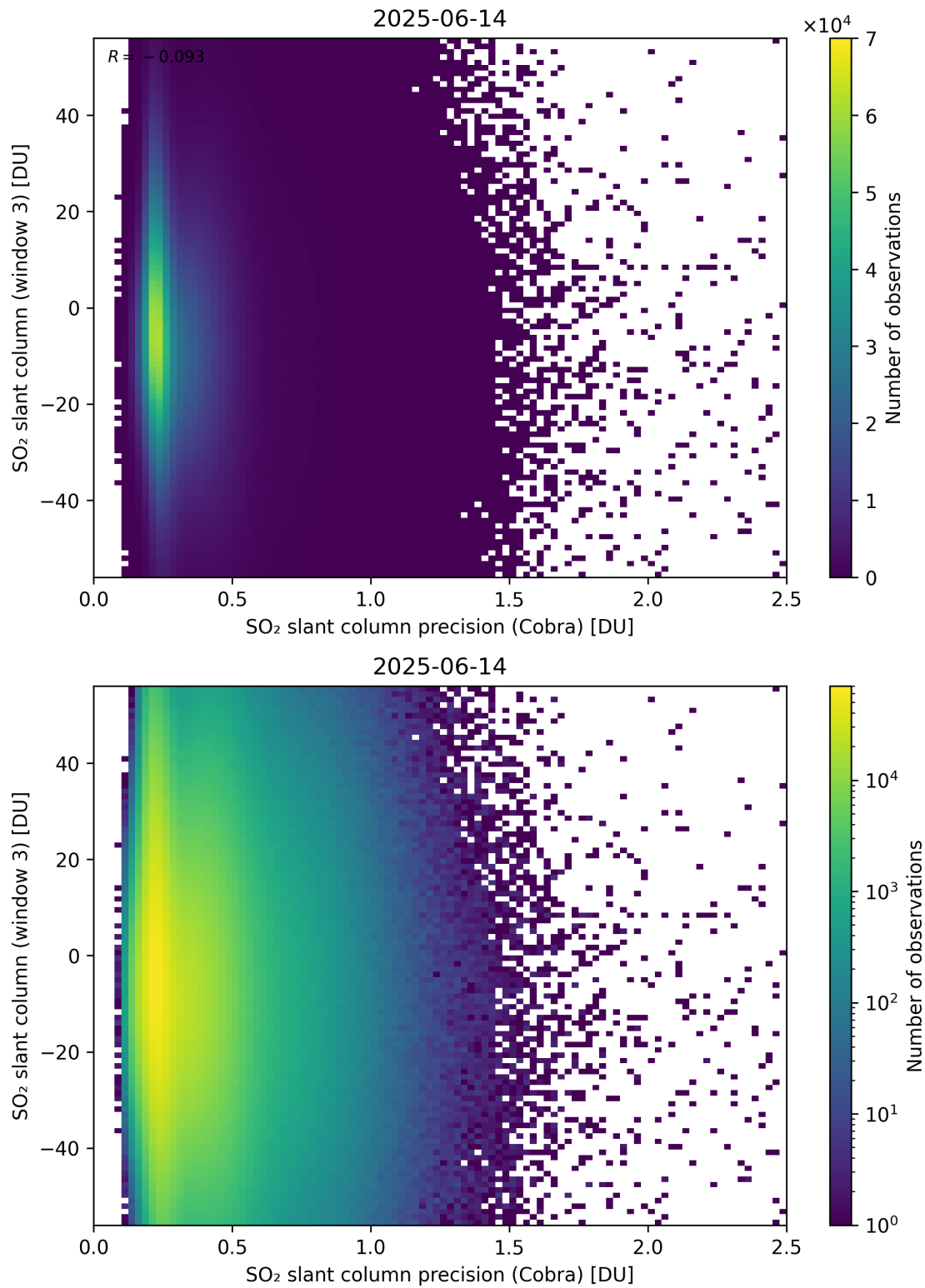


Figure 211: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

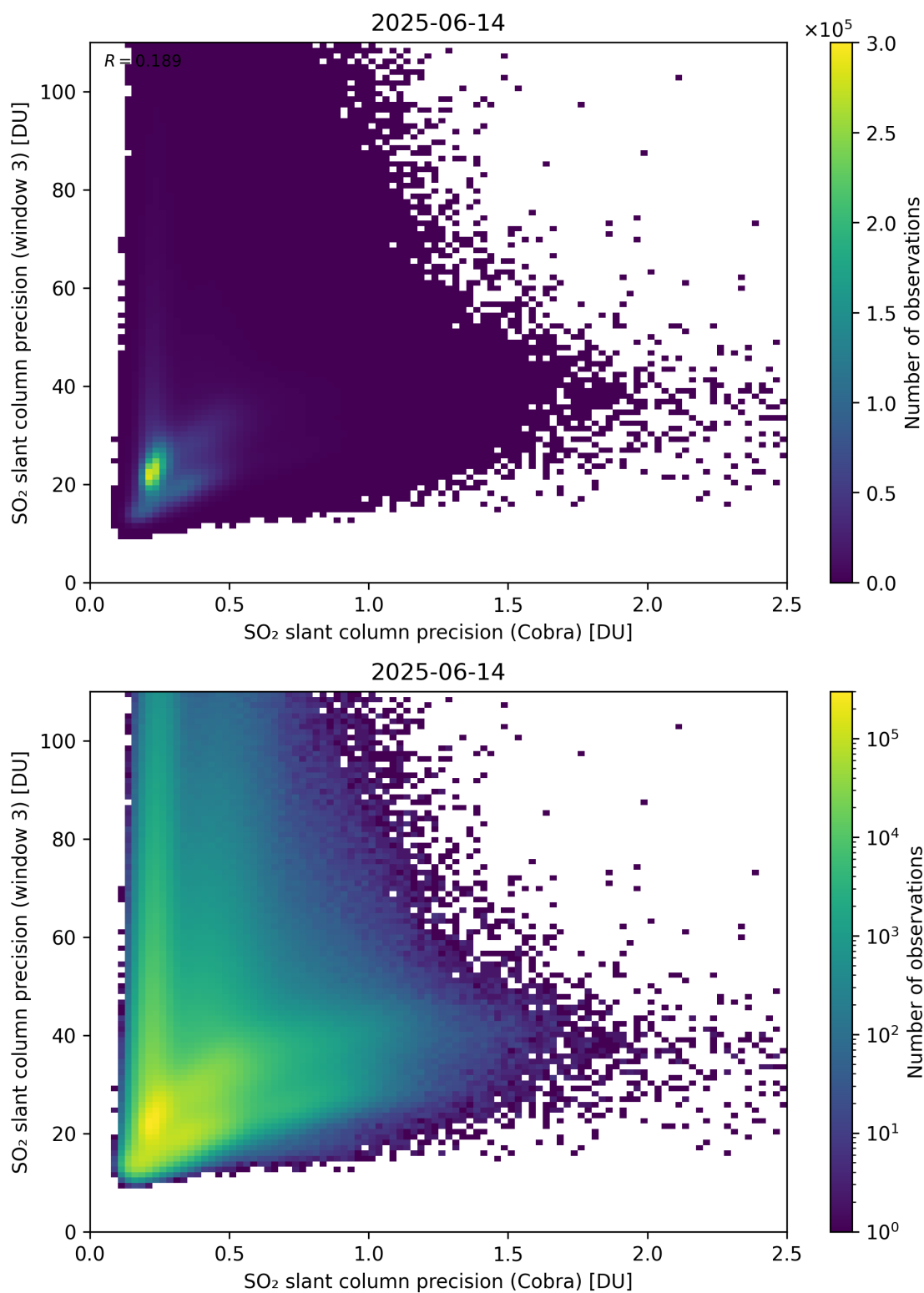


Figure 212: Scatter density plot of “SO₂ slant column precision (Cobra)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

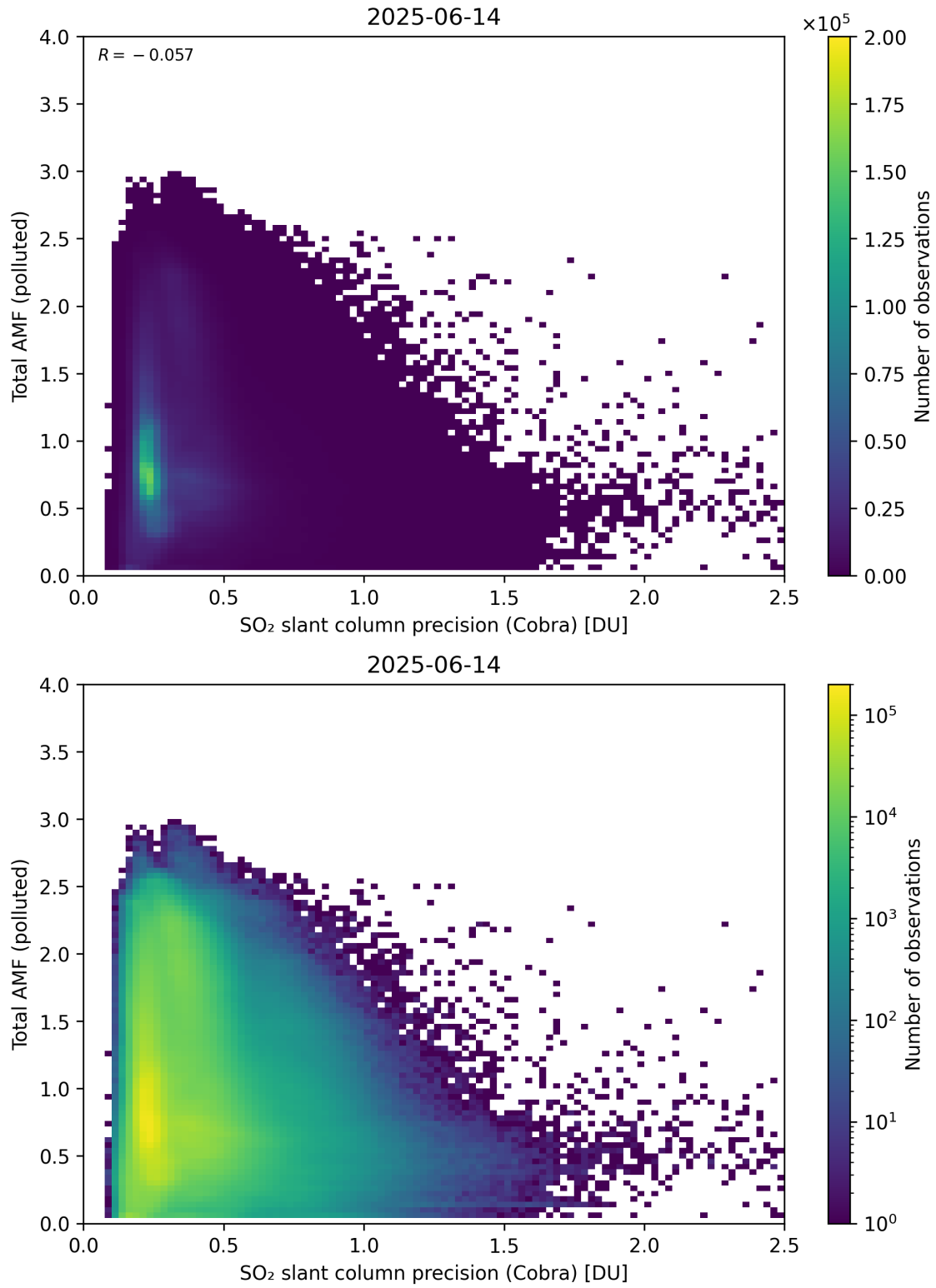


Figure 213: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

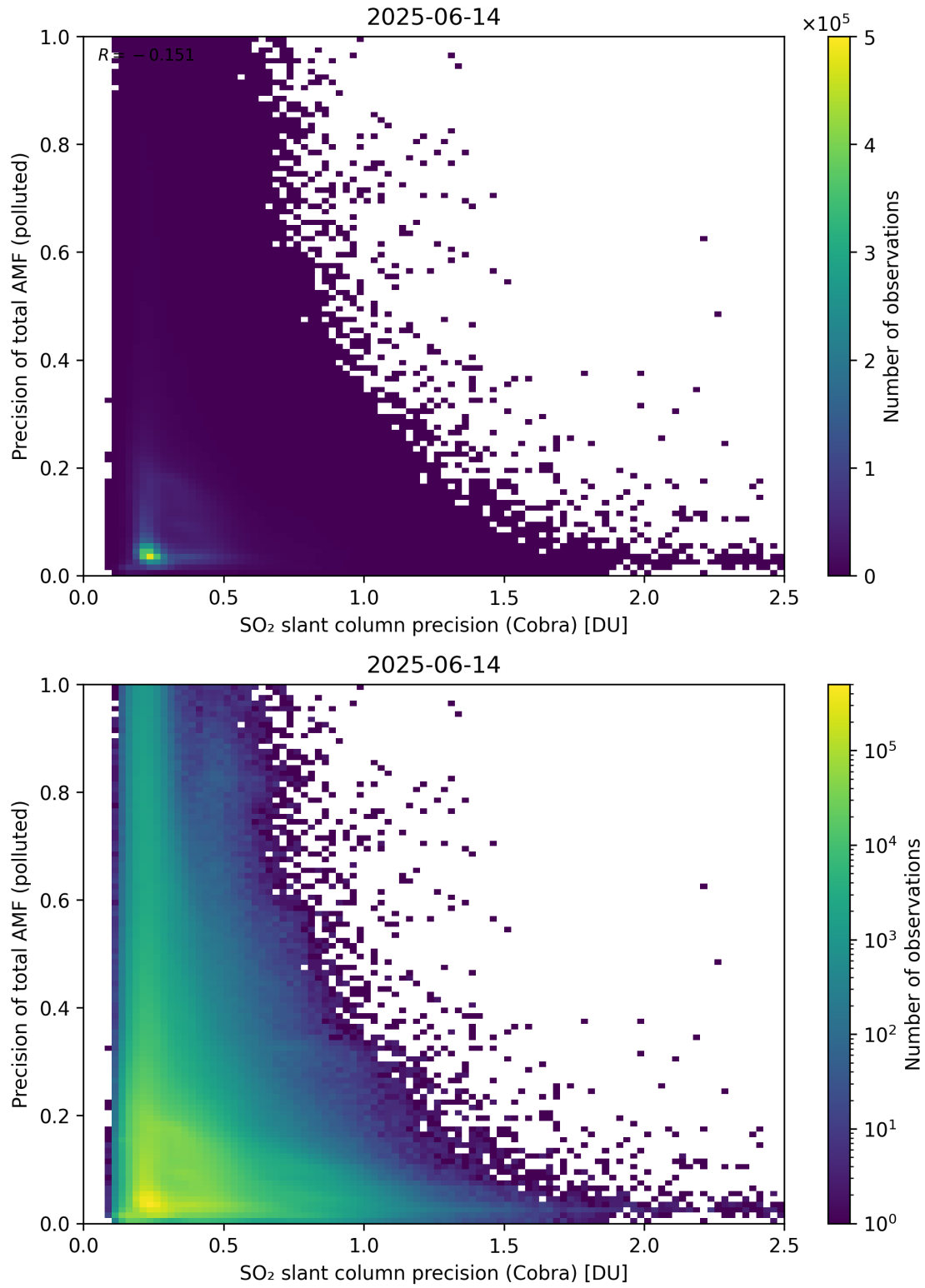


Figure 214: Scatter density plot of “SO₂ slant column precision (Cobra)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

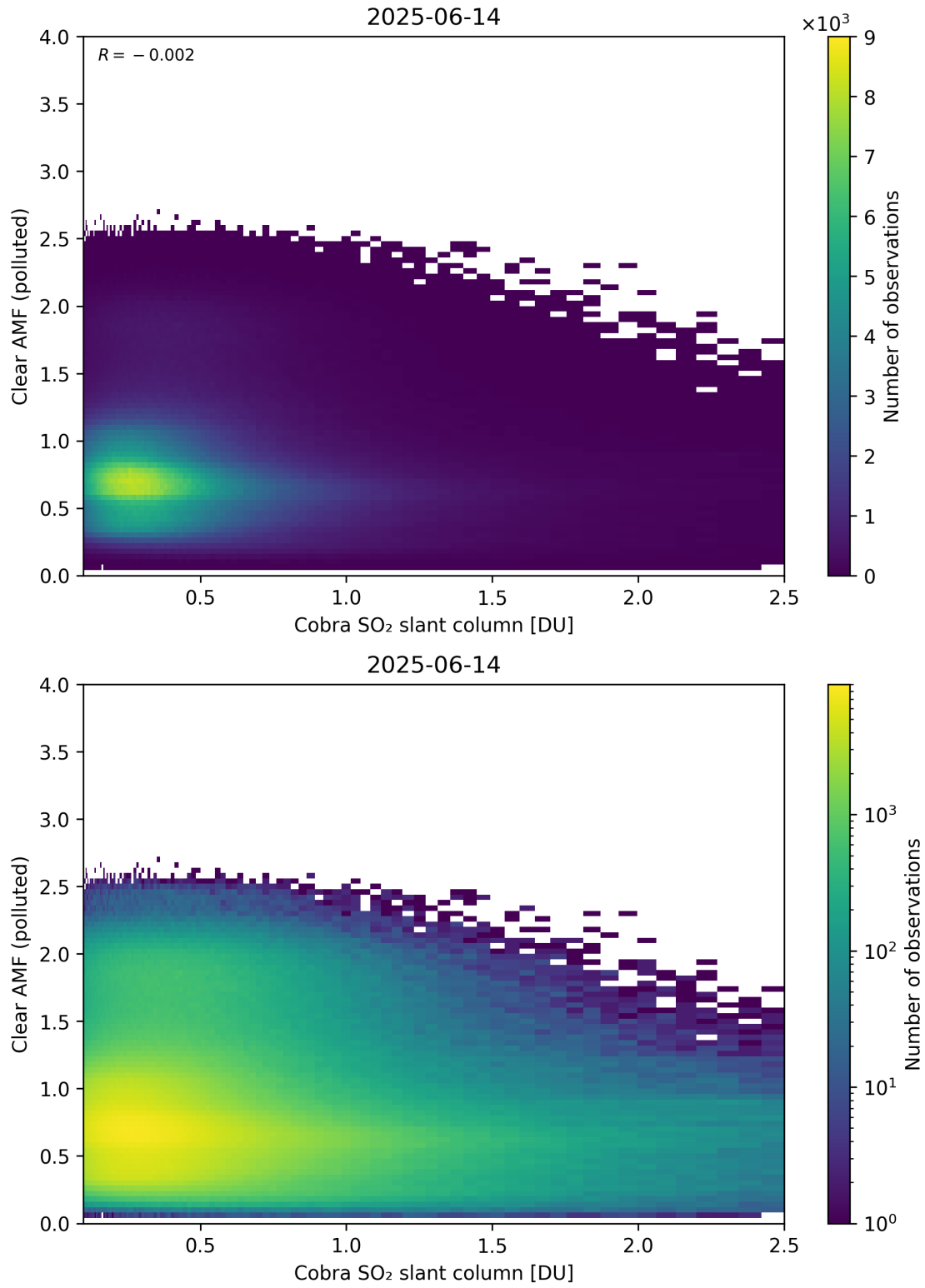


Figure 215: Scatter density plot of “Cobra SO₂ slant column” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

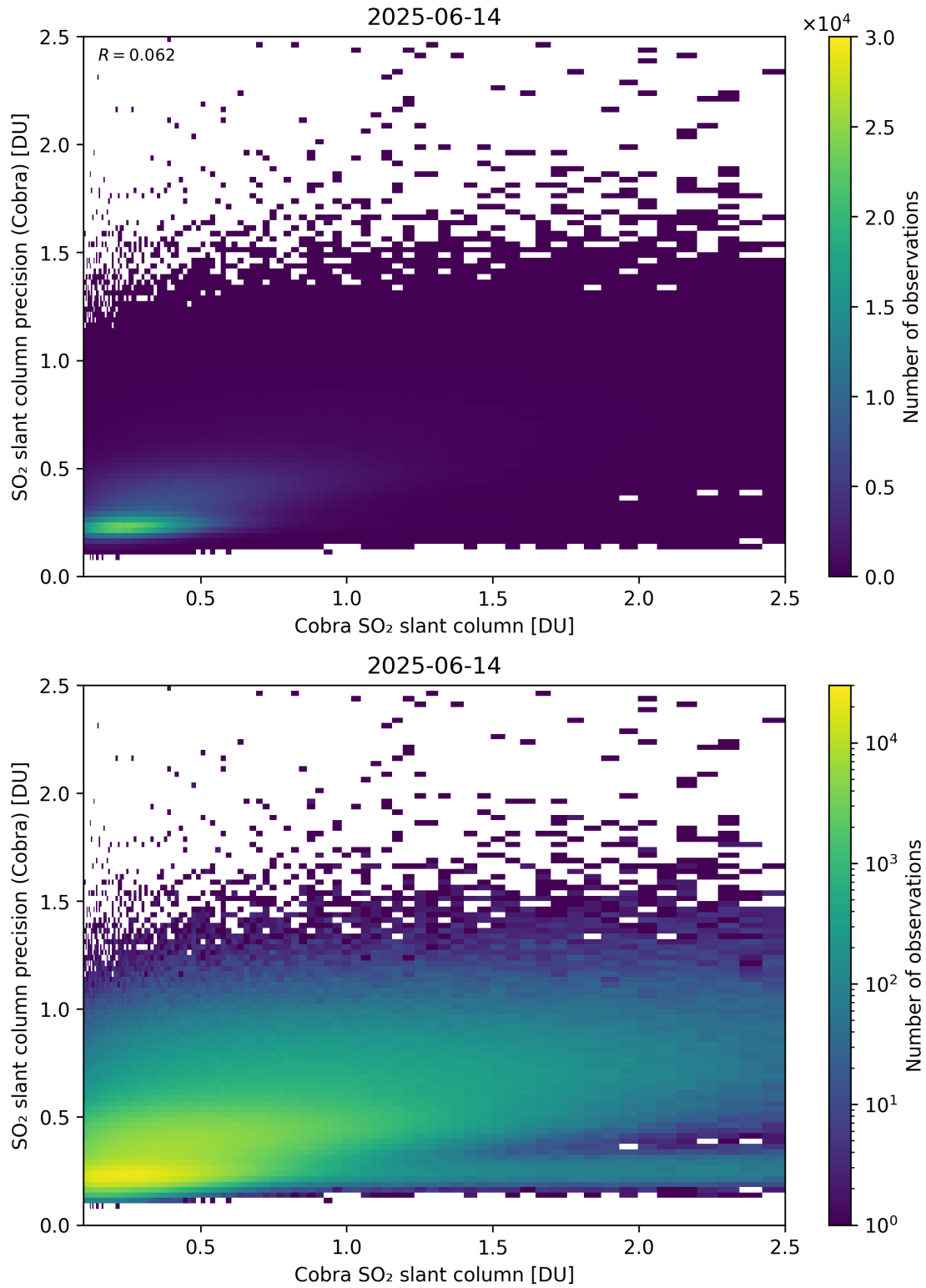


Figure 216: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

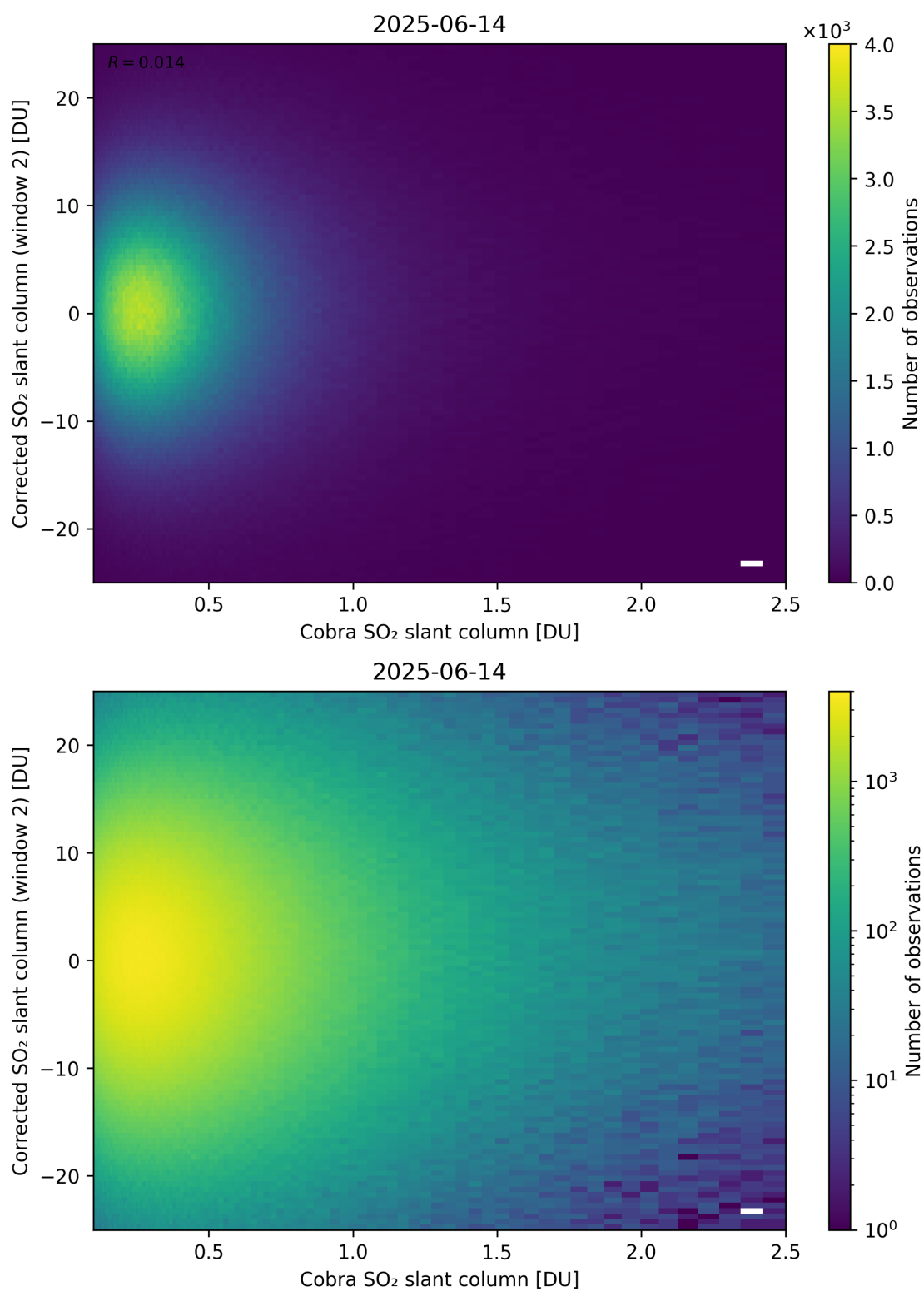


Figure 217: Scatter density plot of “Cobra SO₂ slant column” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

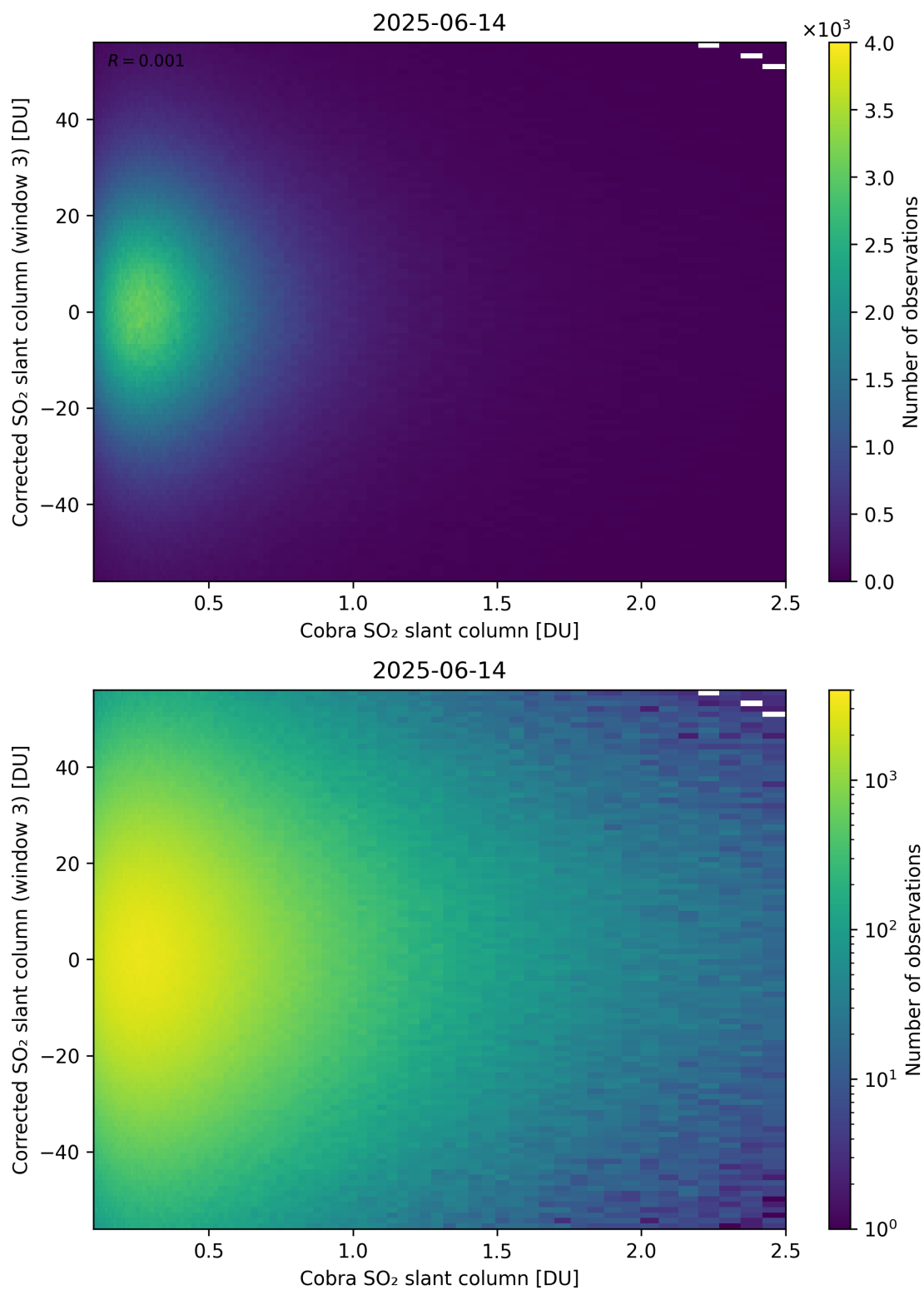


Figure 218: Scatter density plot of “Cobra SO₂ slant column” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

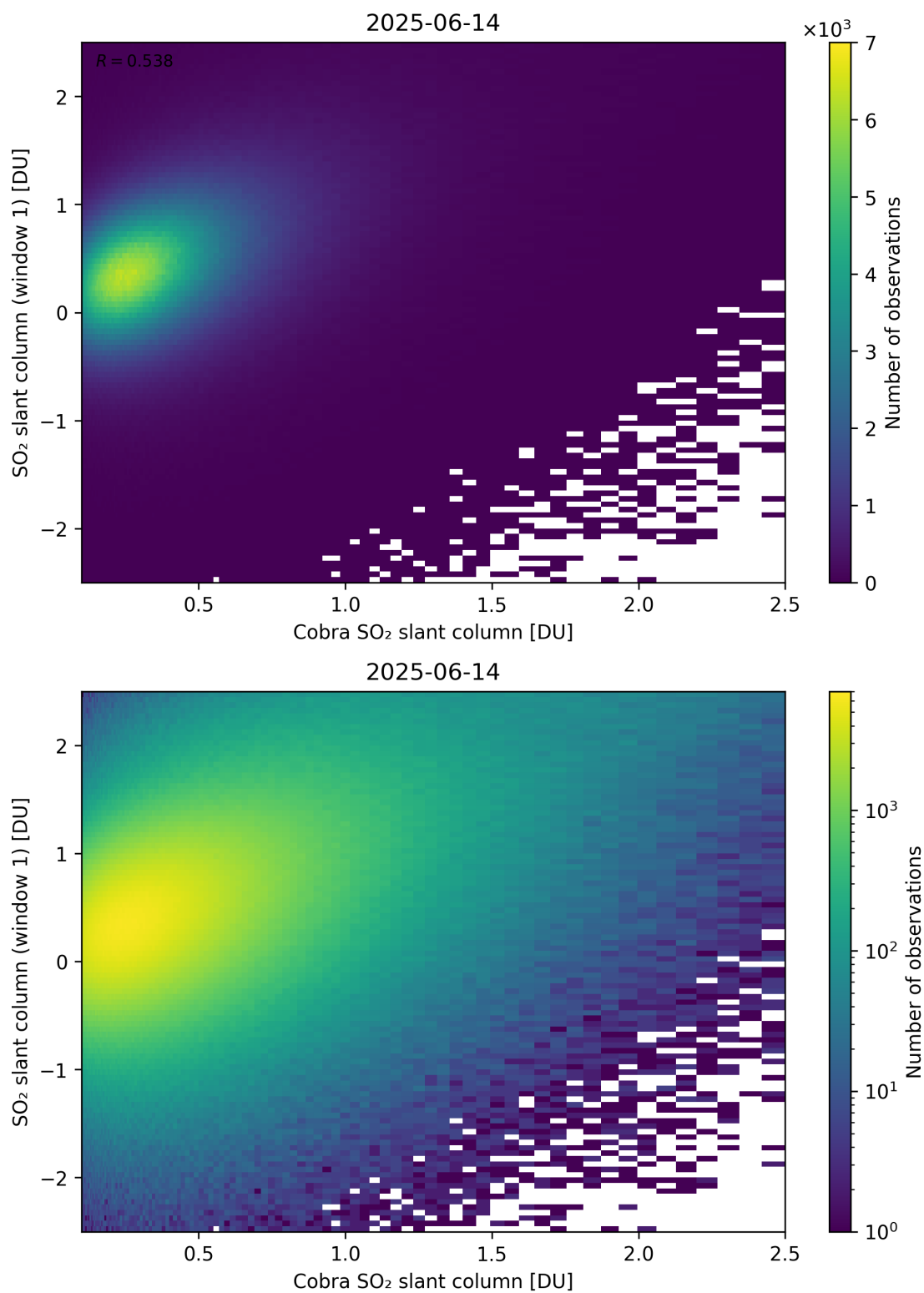


Figure 219: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

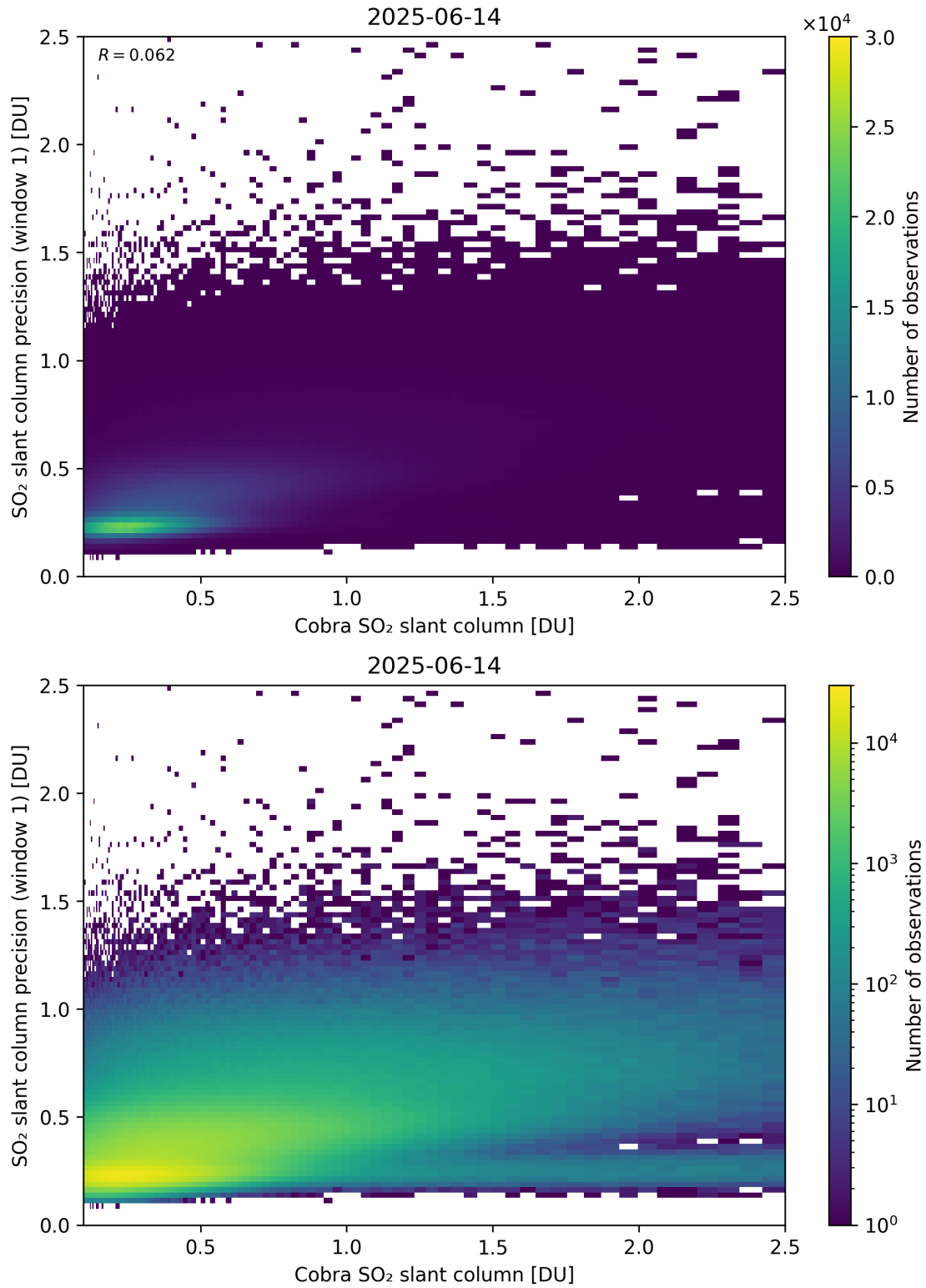


Figure 220: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

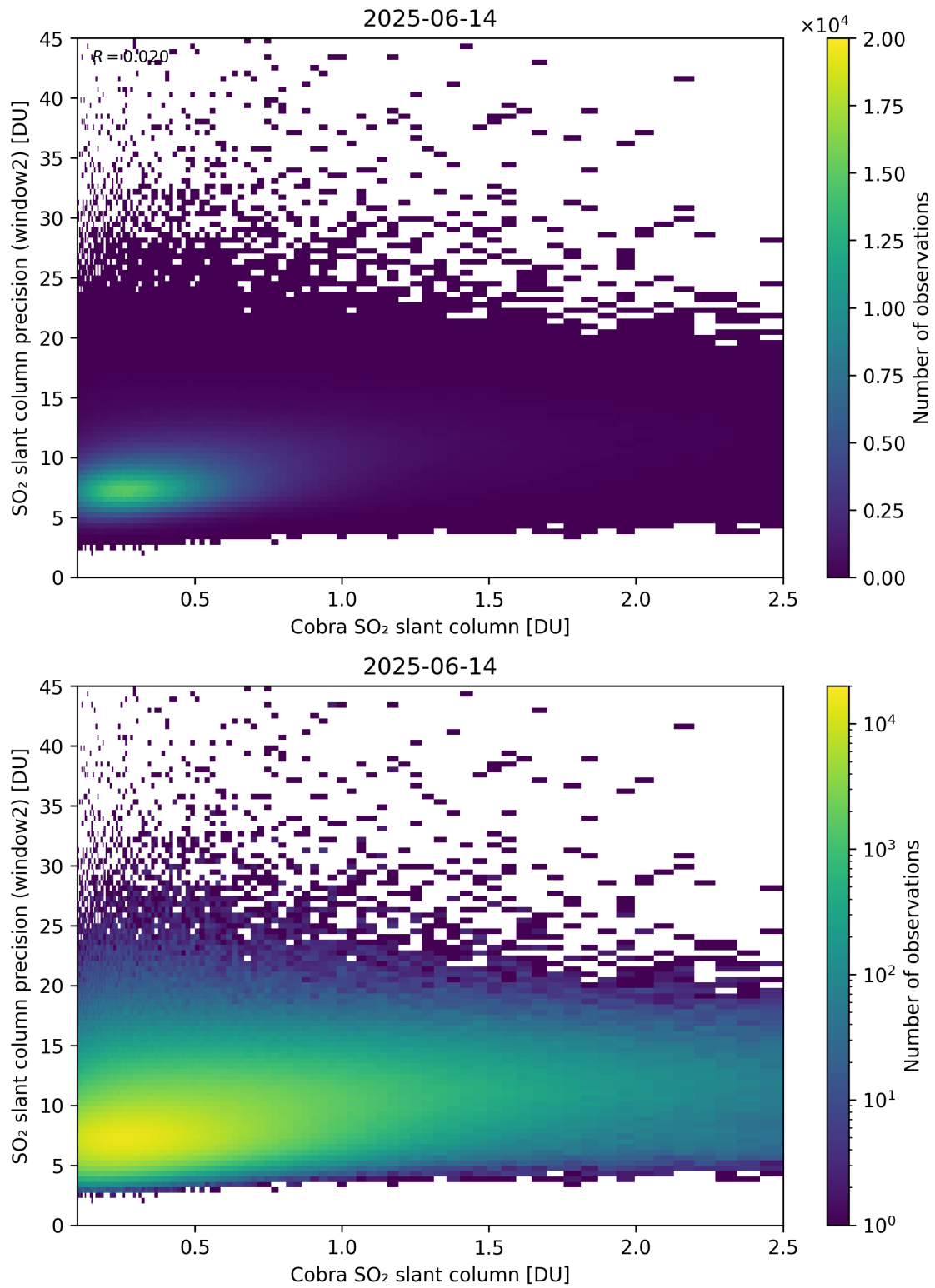


Figure 221: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

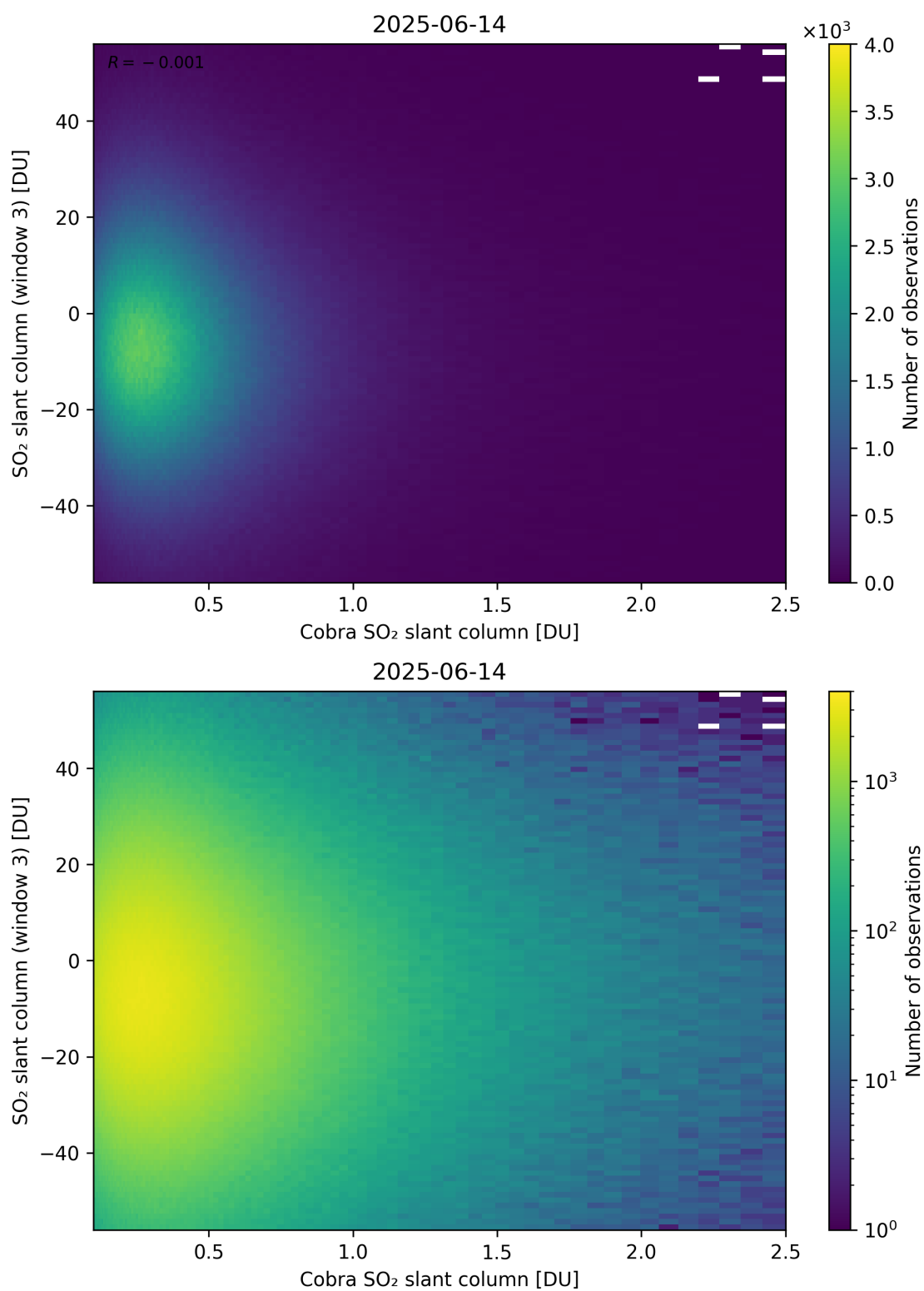


Figure 222: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

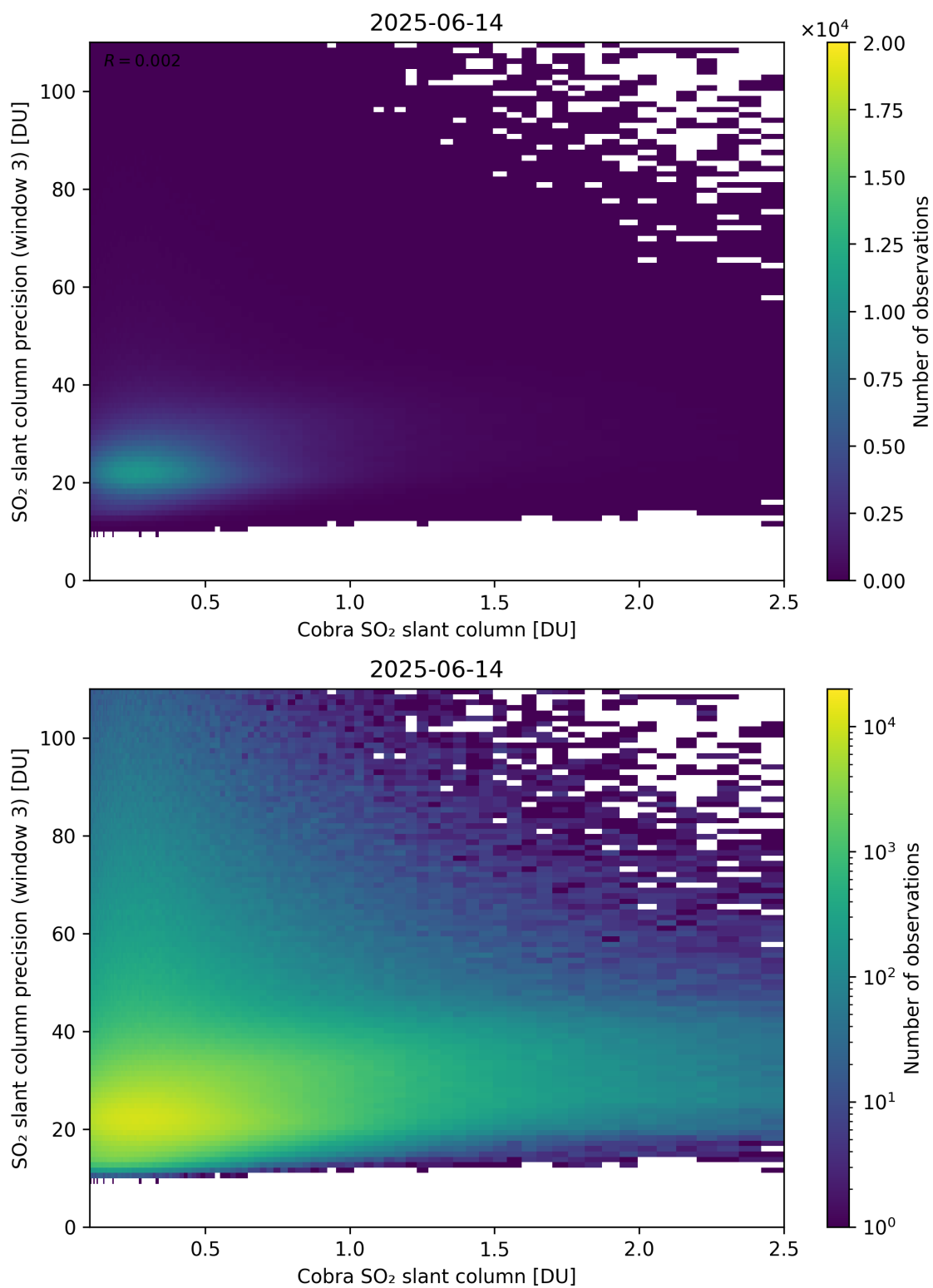


Figure 223: Scatter density plot of “Cobra SO₂ slant column” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

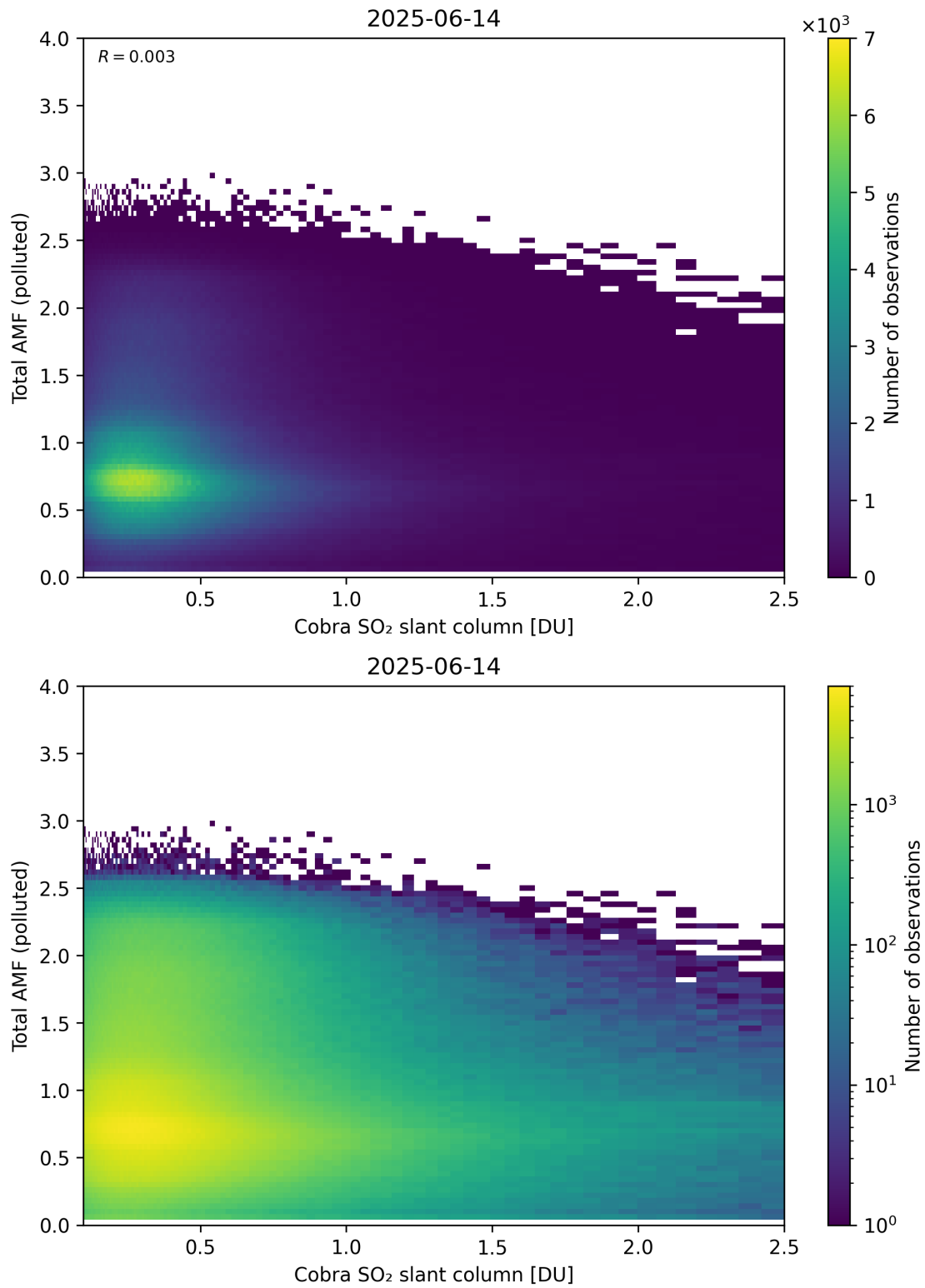


Figure 224: Scatter density plot of “Cobra SO₂ slant column” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

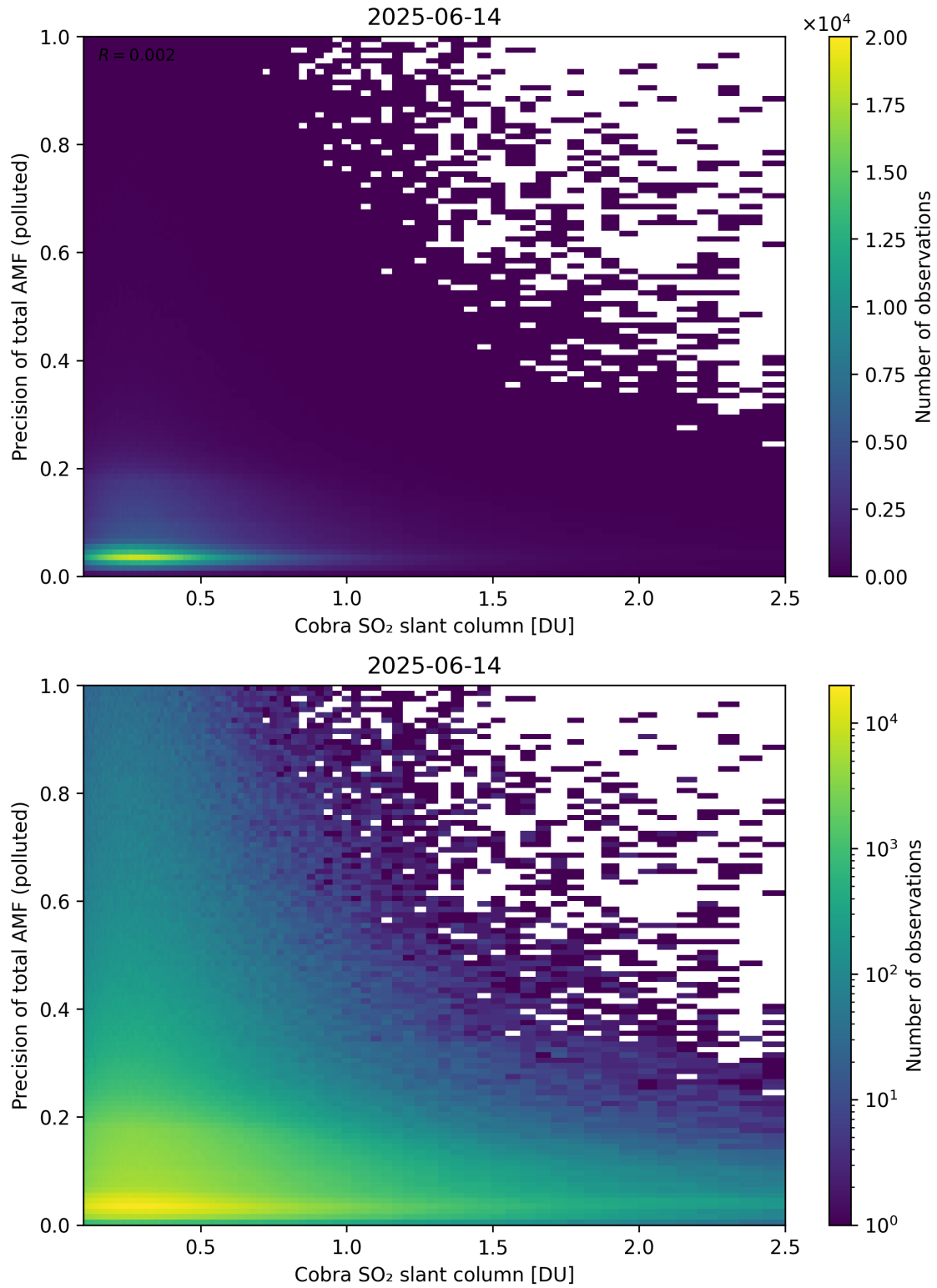


Figure 225: Scatter density plot of “Cobra SO₂ slant column” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

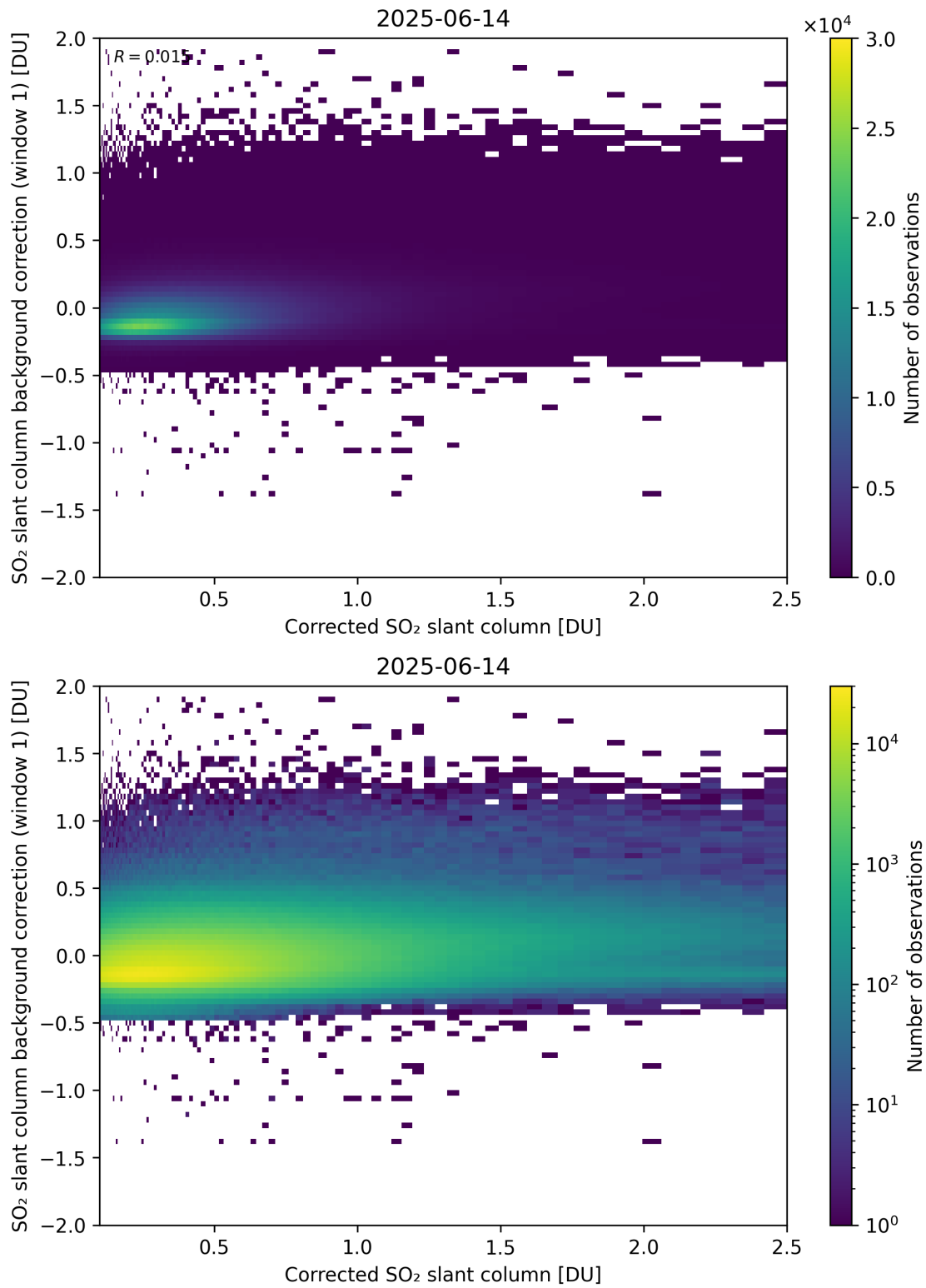


Figure 226: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

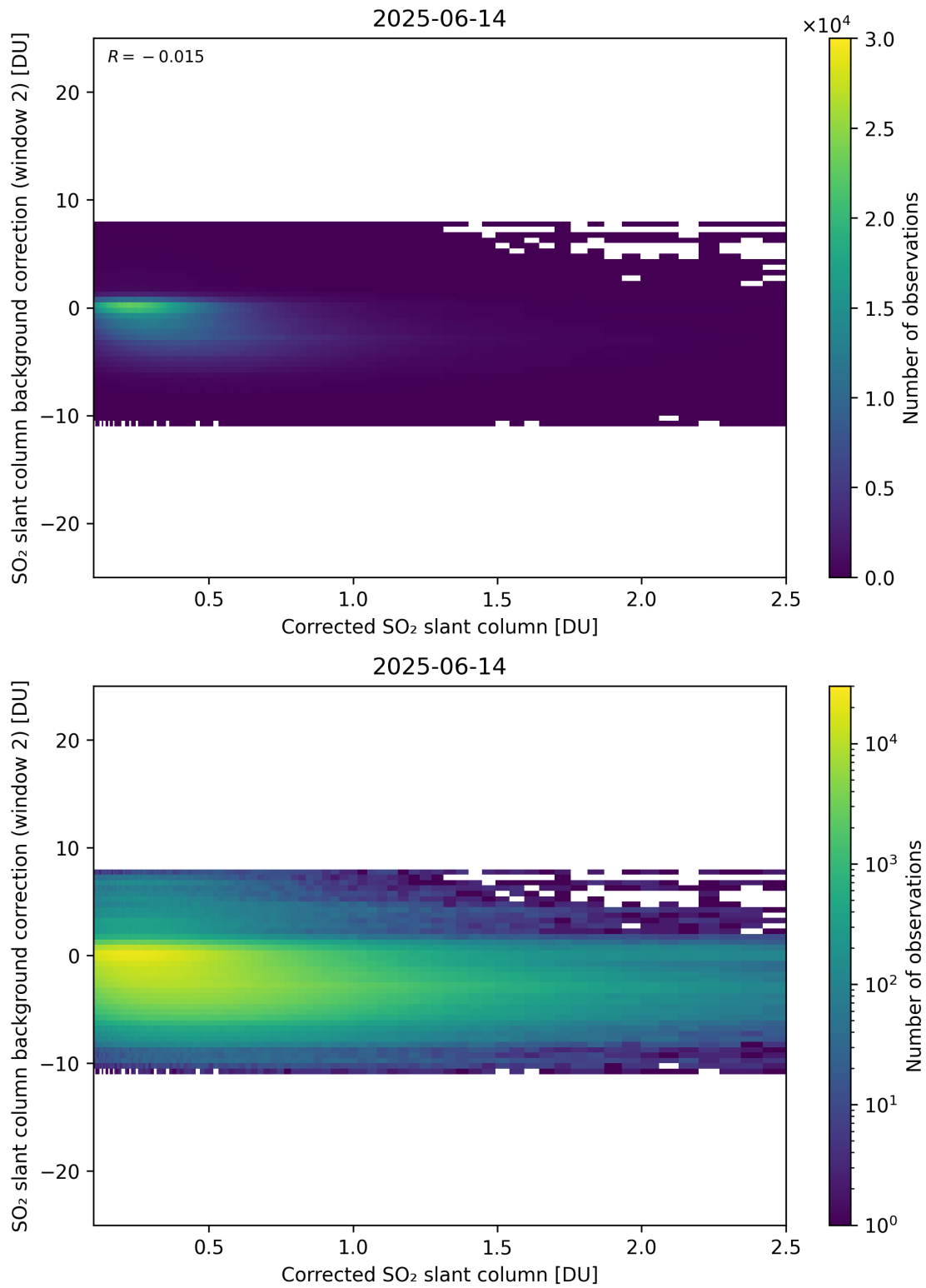


Figure 227: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

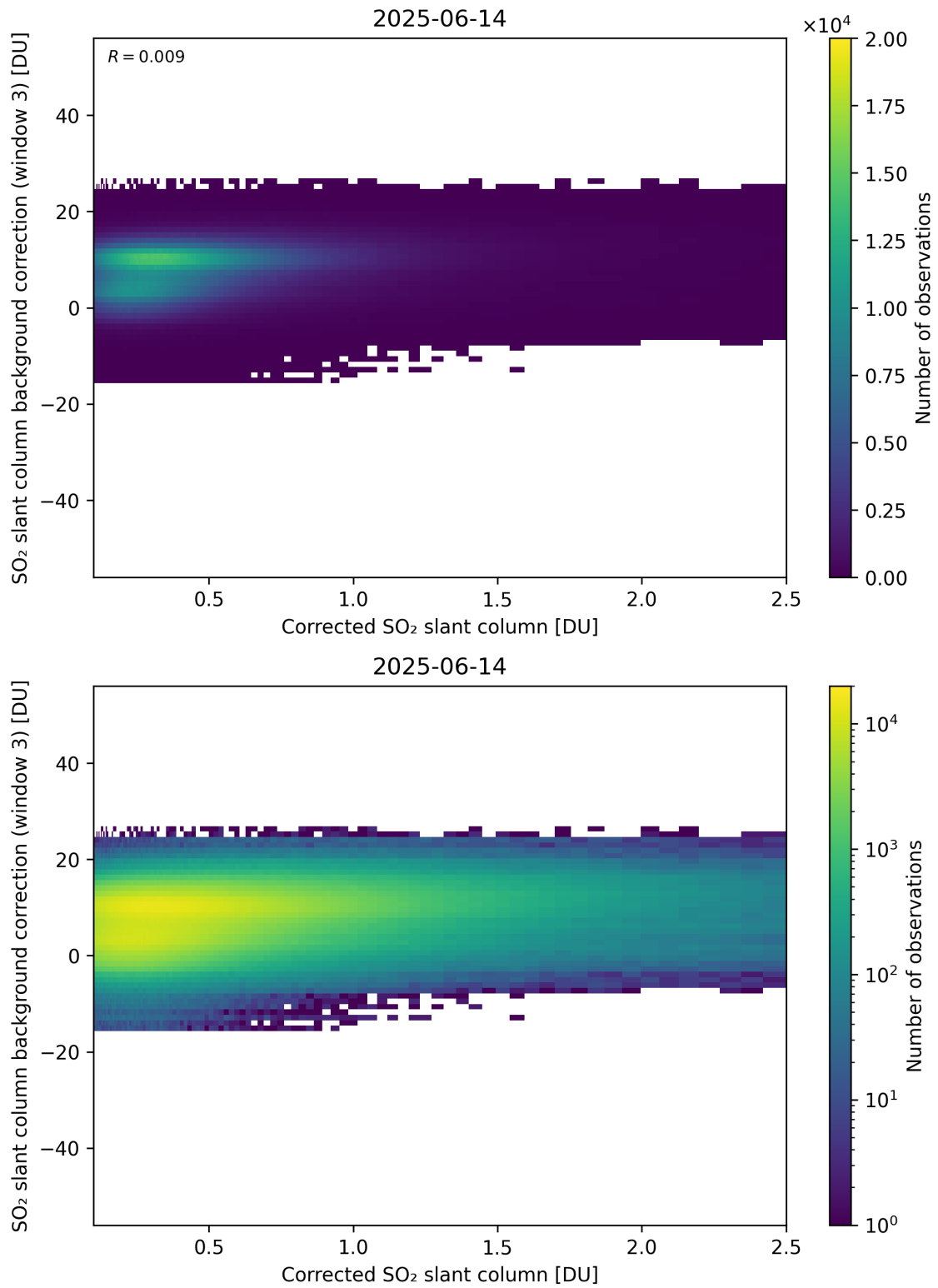


Figure 228: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

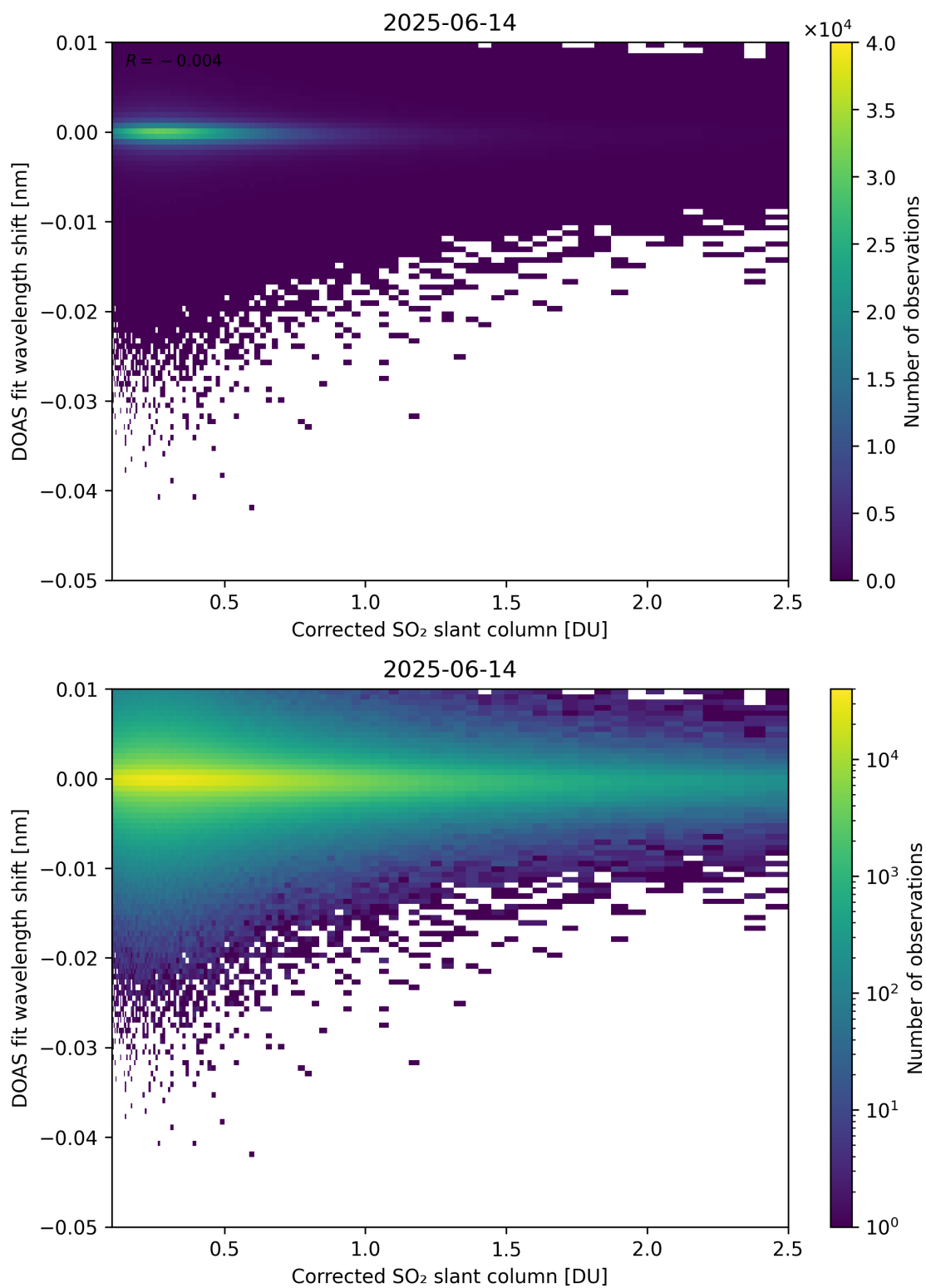


Figure 229: Scatter density plot of “Corrected SO₂ slant column” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

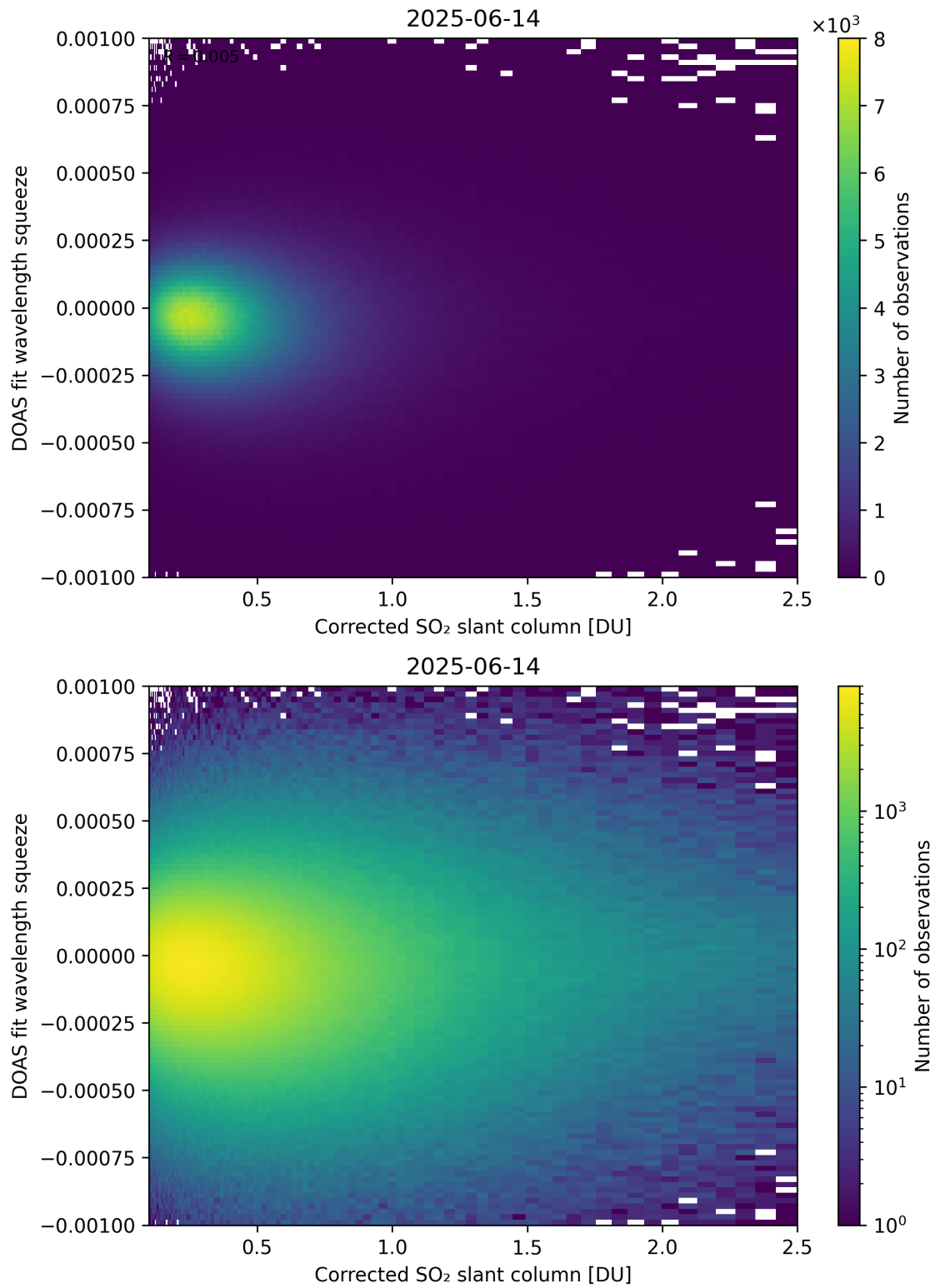


Figure 230: Scatter density plot of “Corrected SO₂ slant column” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

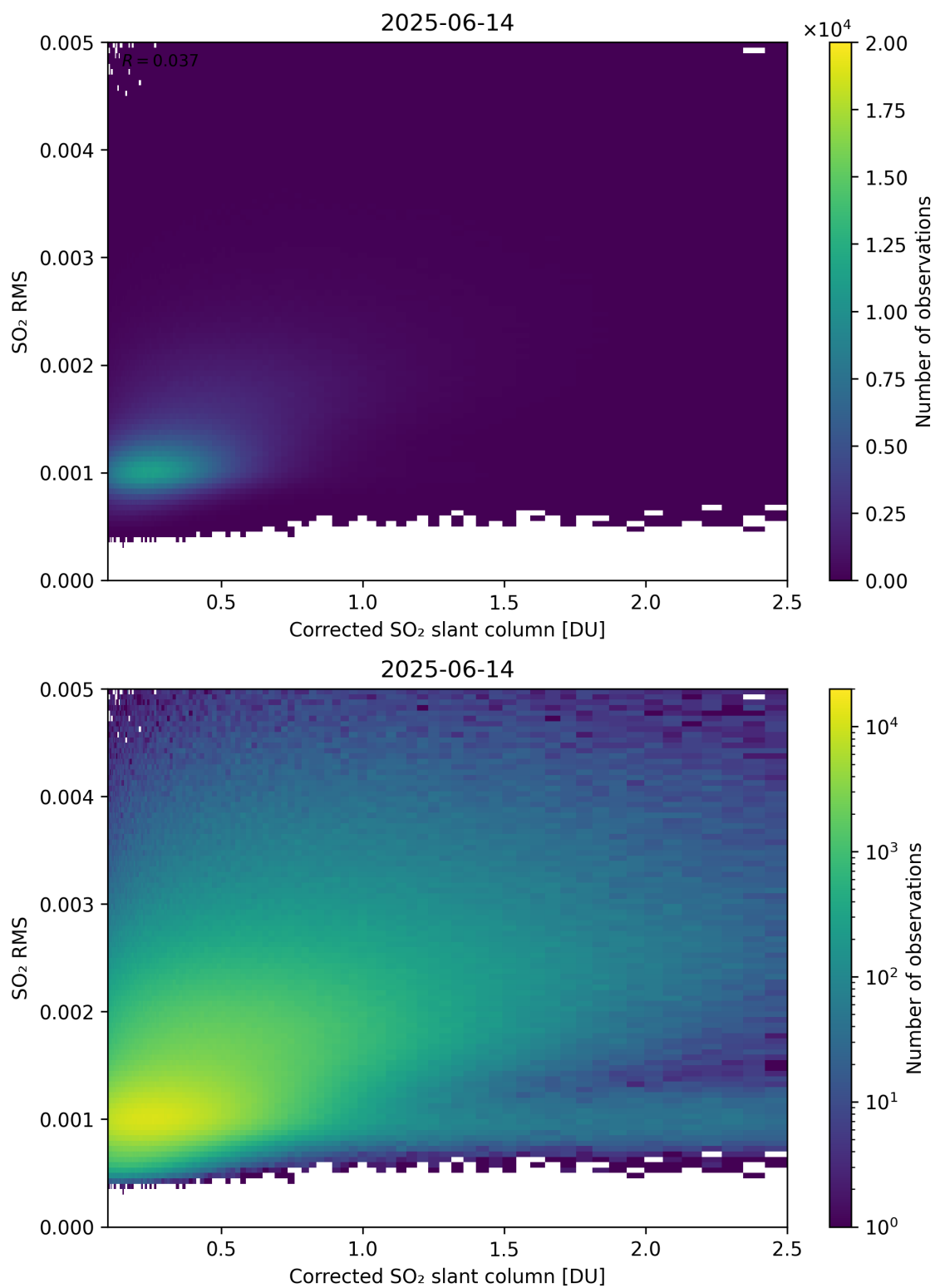


Figure 231: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

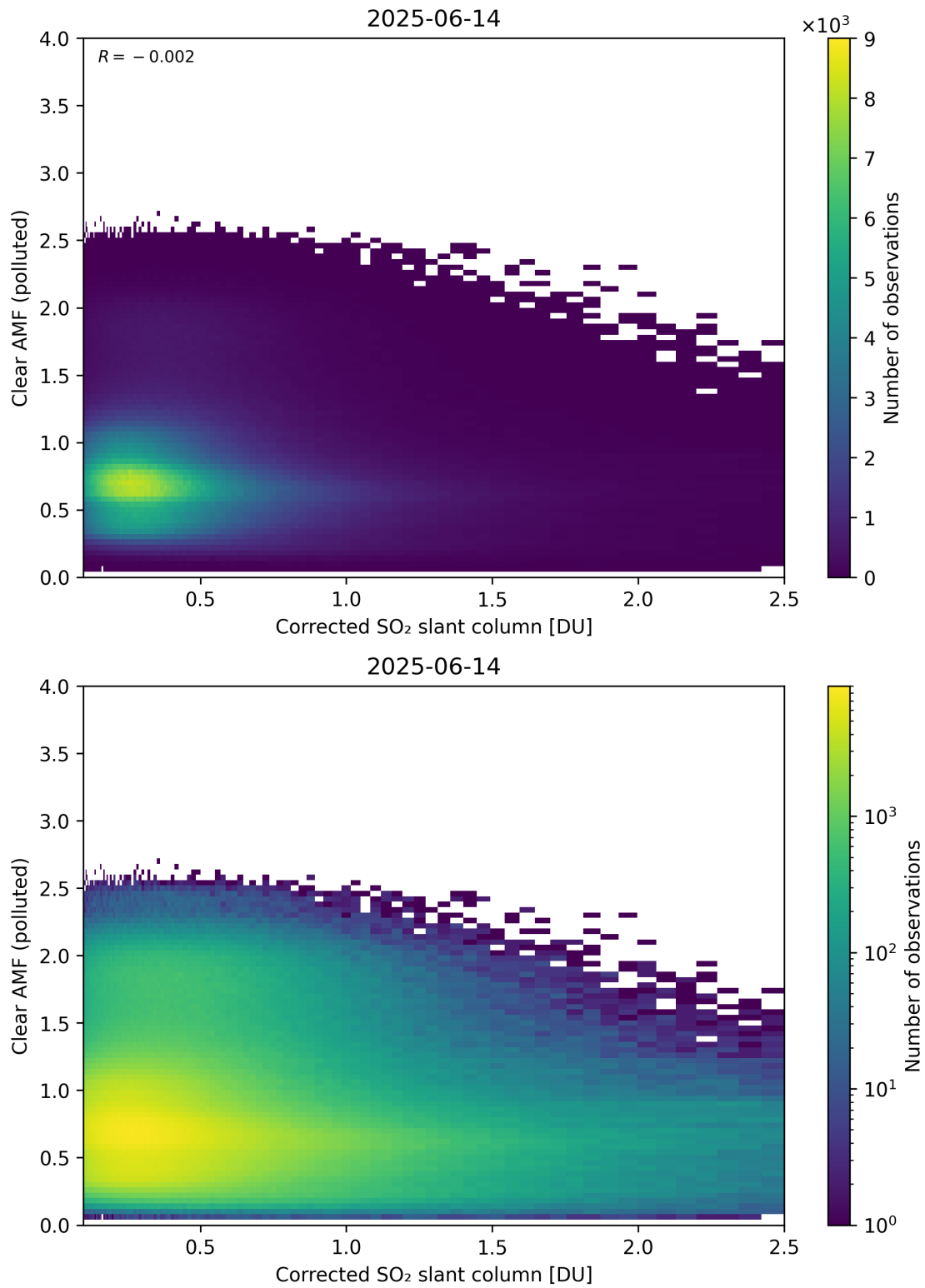


Figure 232: Scatter density plot of “Corrected SO₂ slant column” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

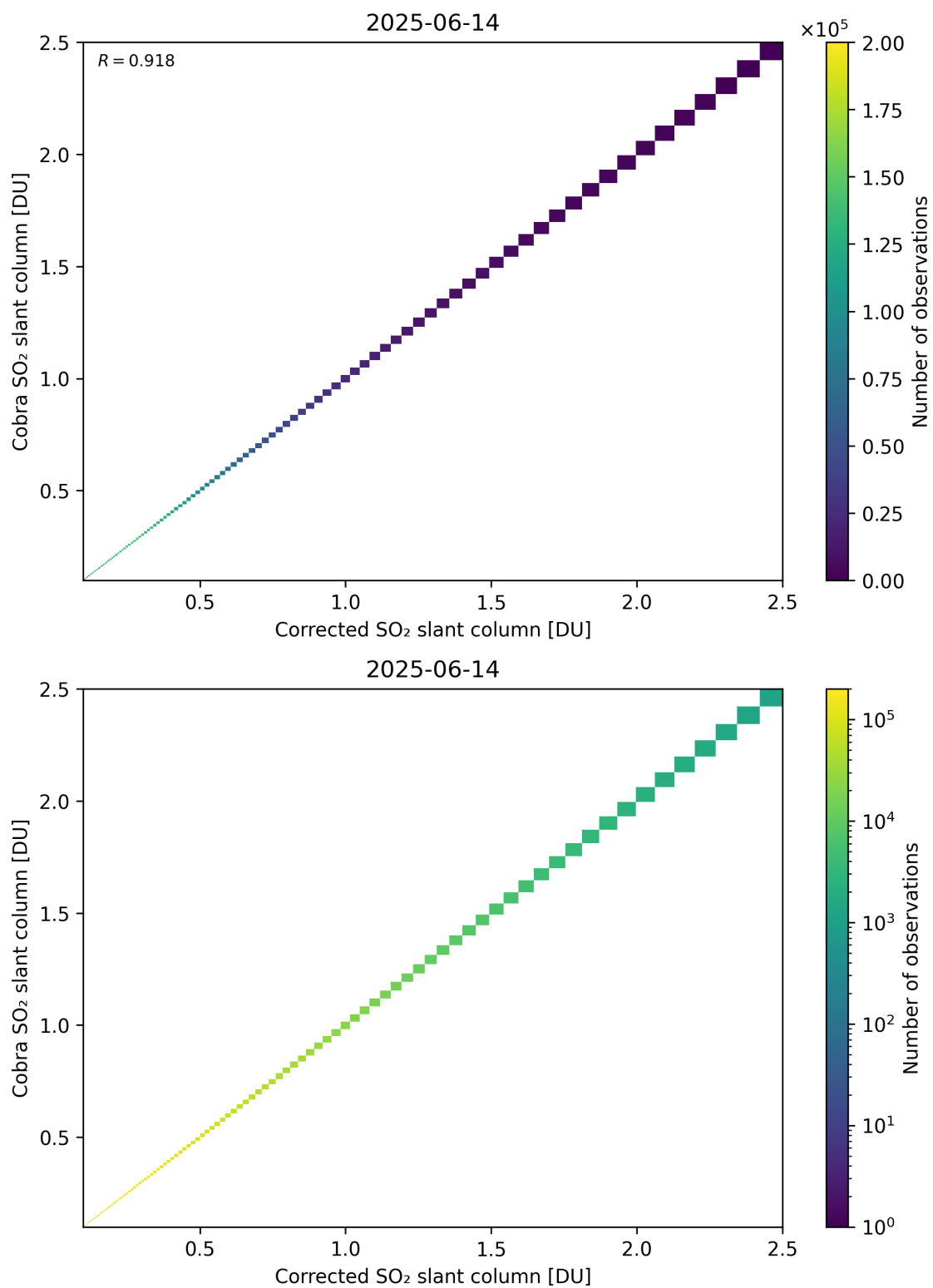


Figure 233: Scatter density plot of “Corrected SO₂ slant column” against “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

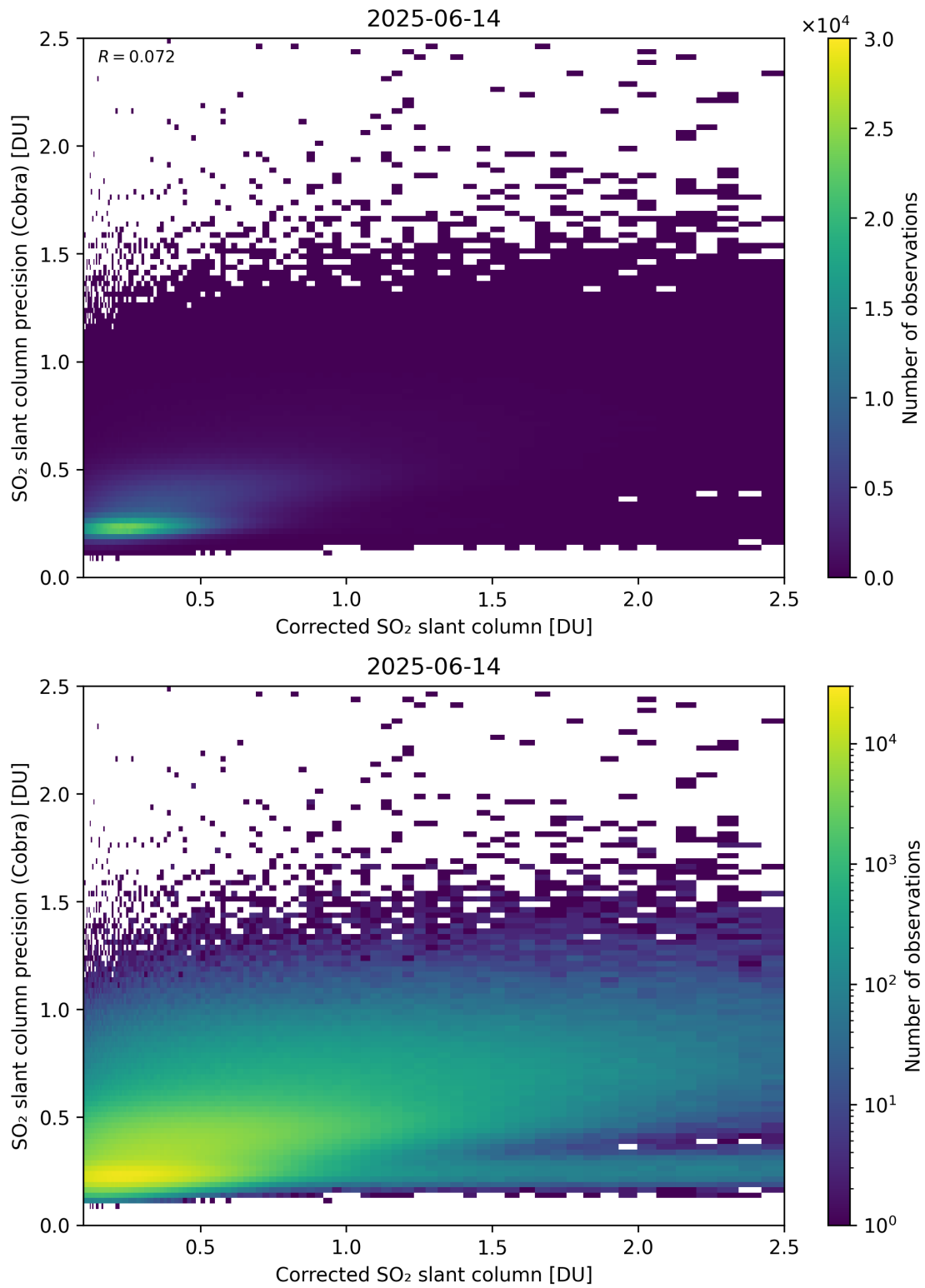


Figure 234: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

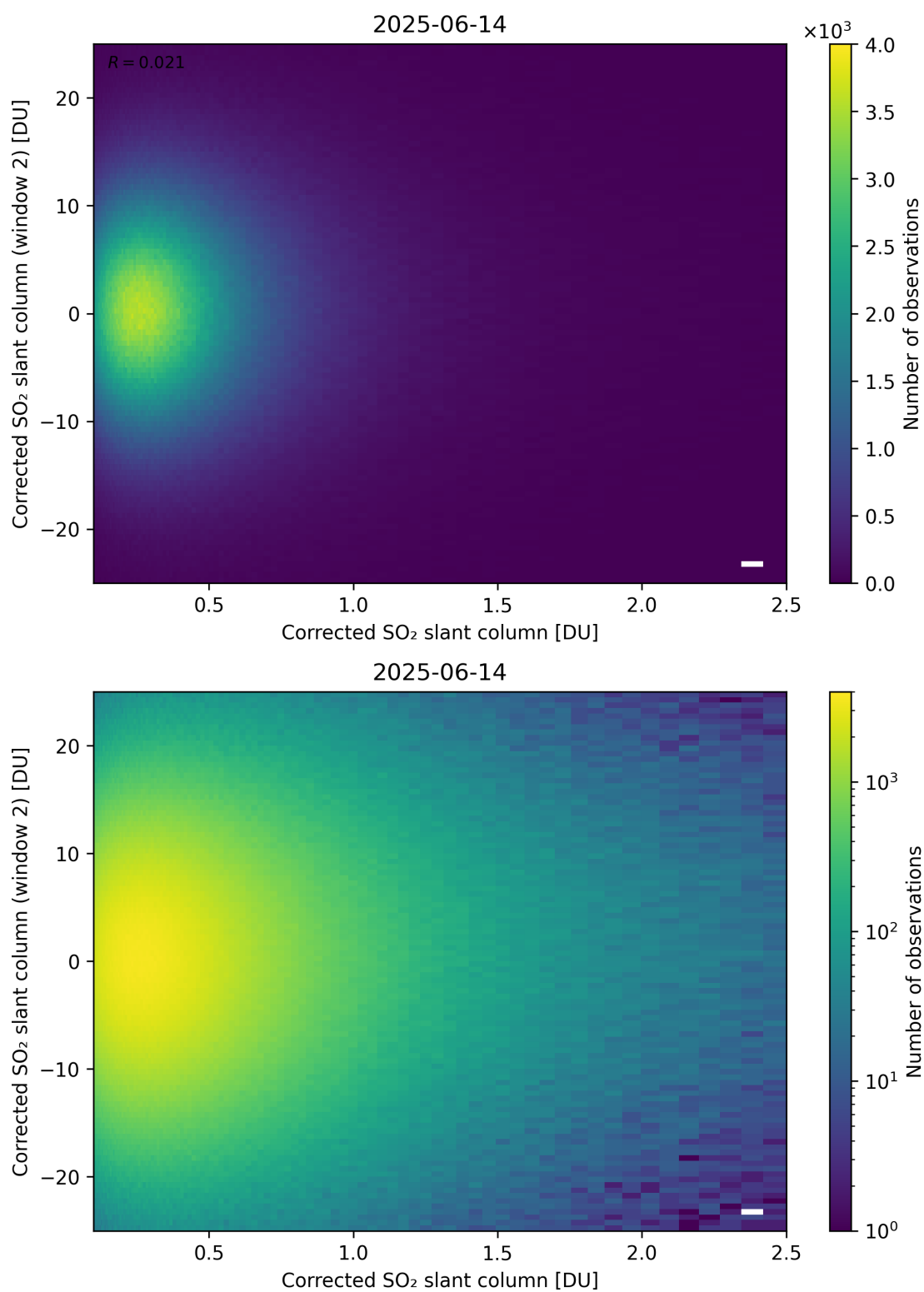


Figure 235: Scatter density plot of “Corrected SO₂ slant column” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

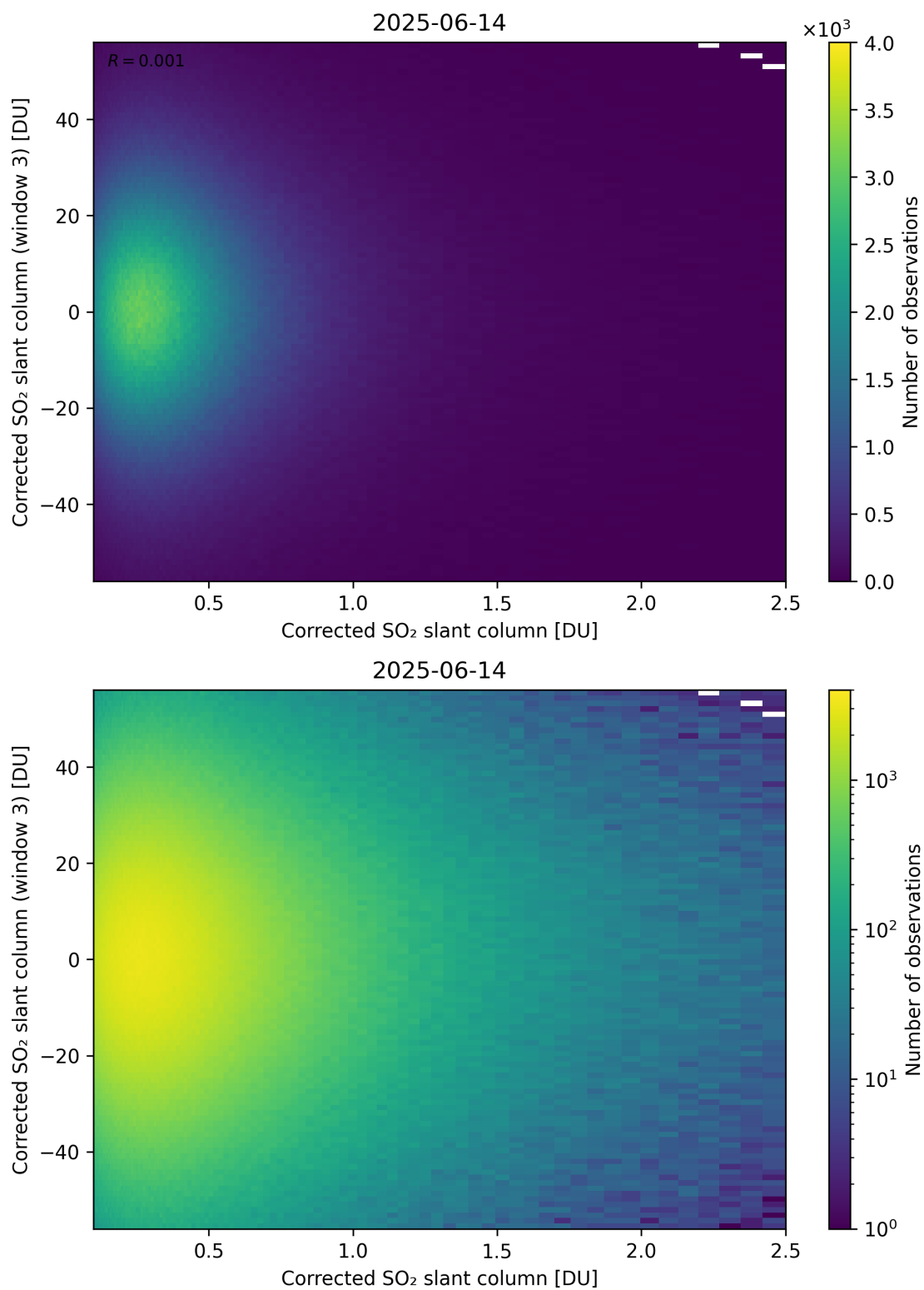


Figure 236: Scatter density plot of “Corrected SO₂ slant column” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

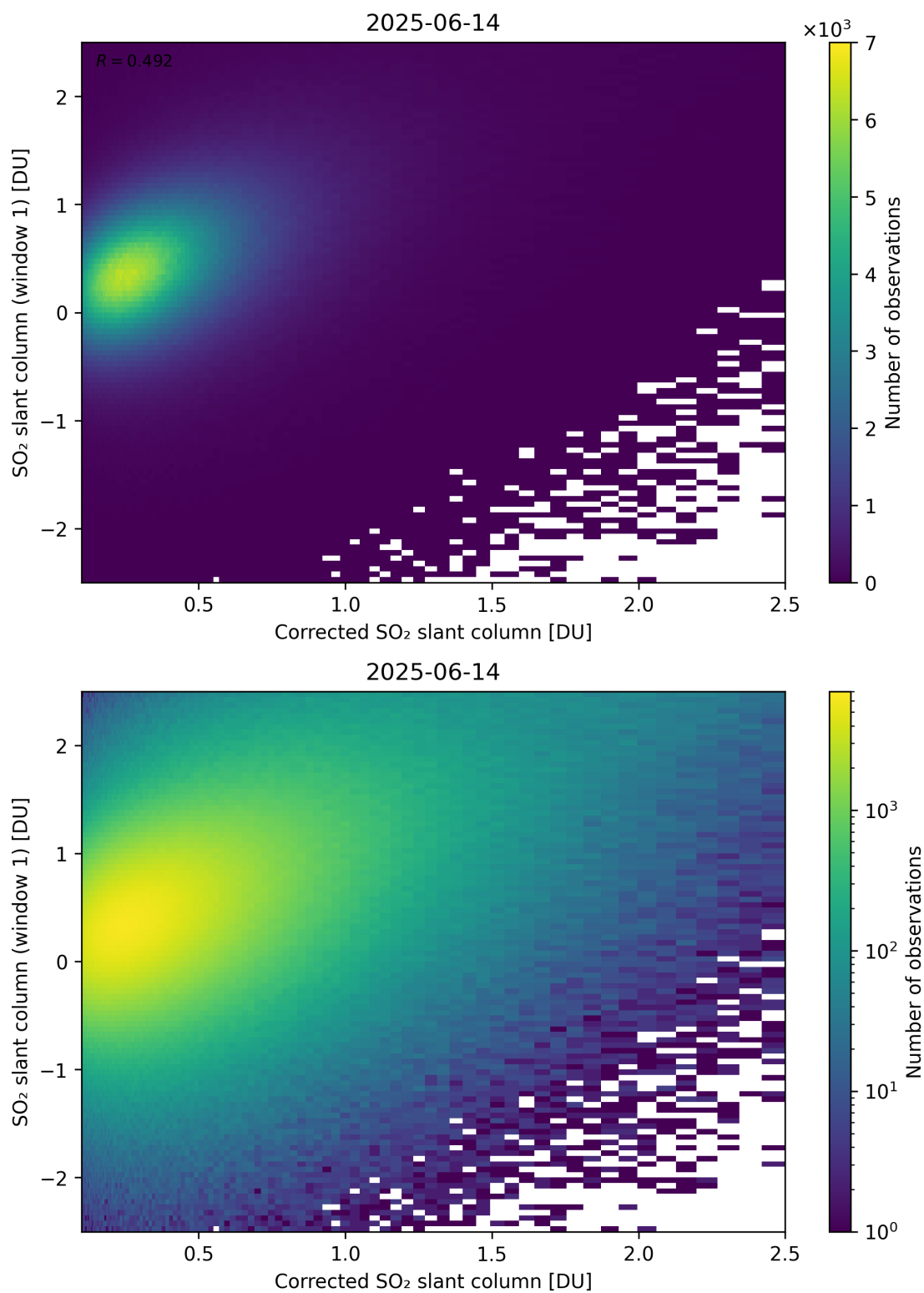


Figure 237: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

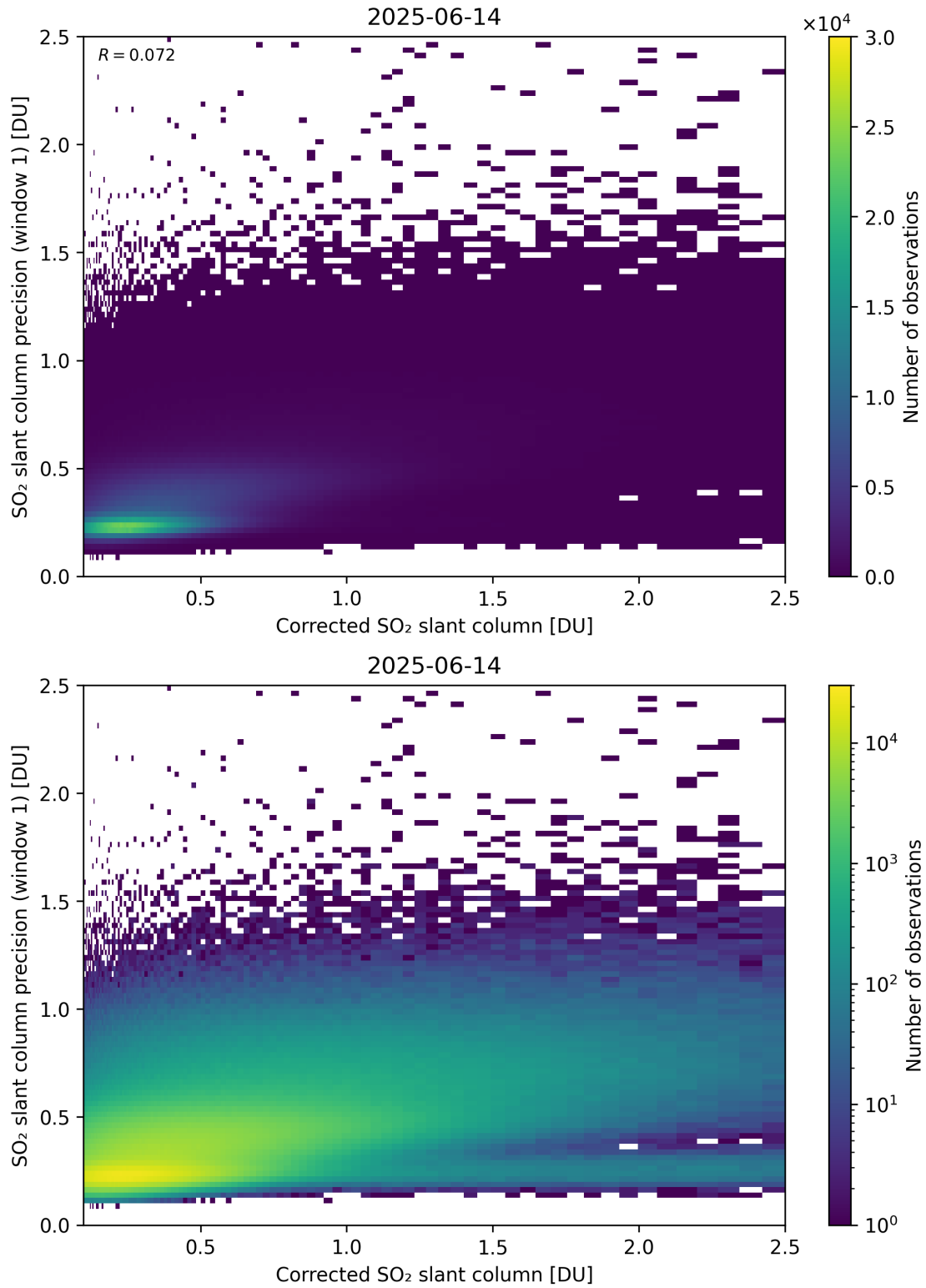


Figure 238: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

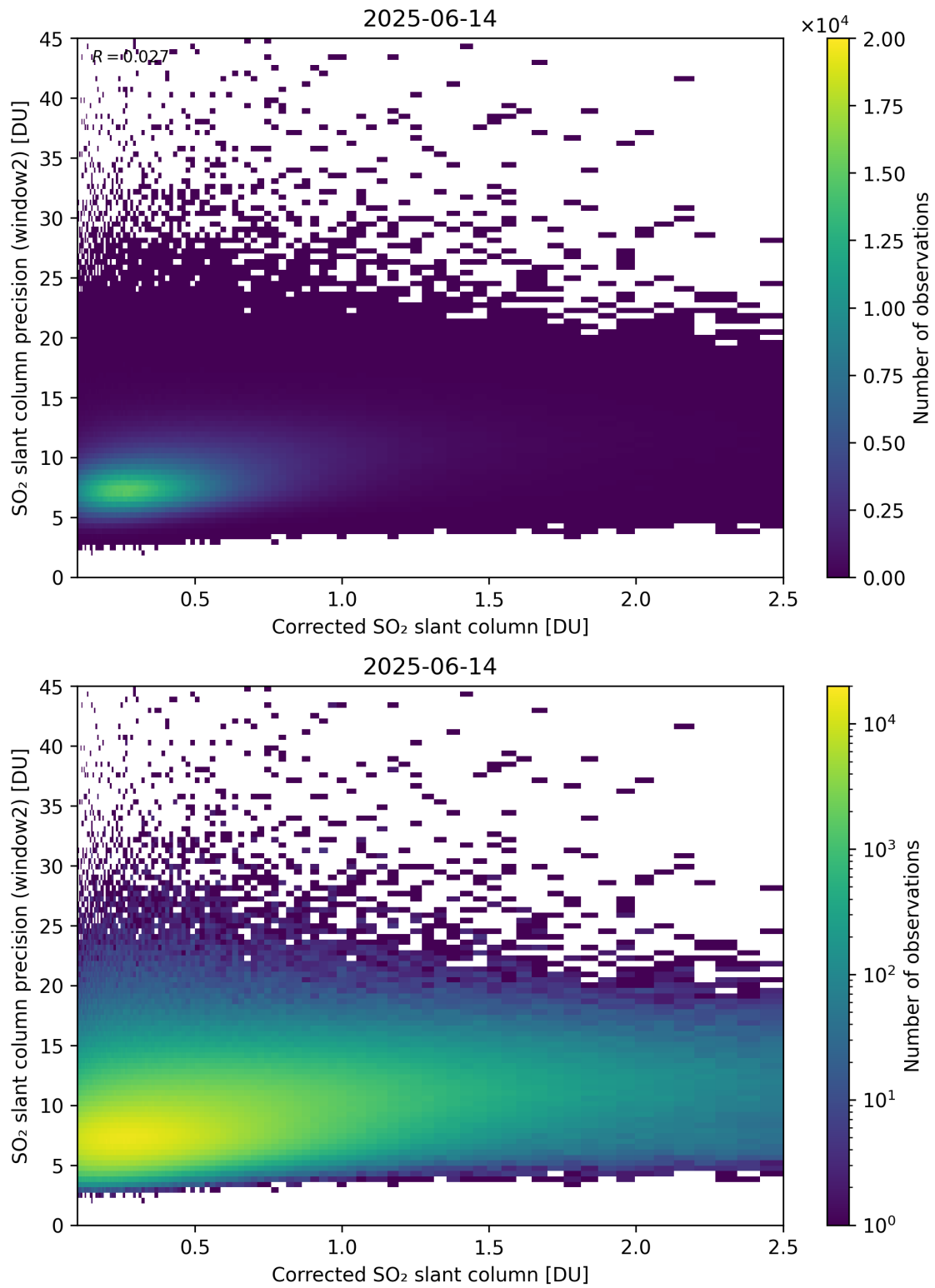


Figure 239: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

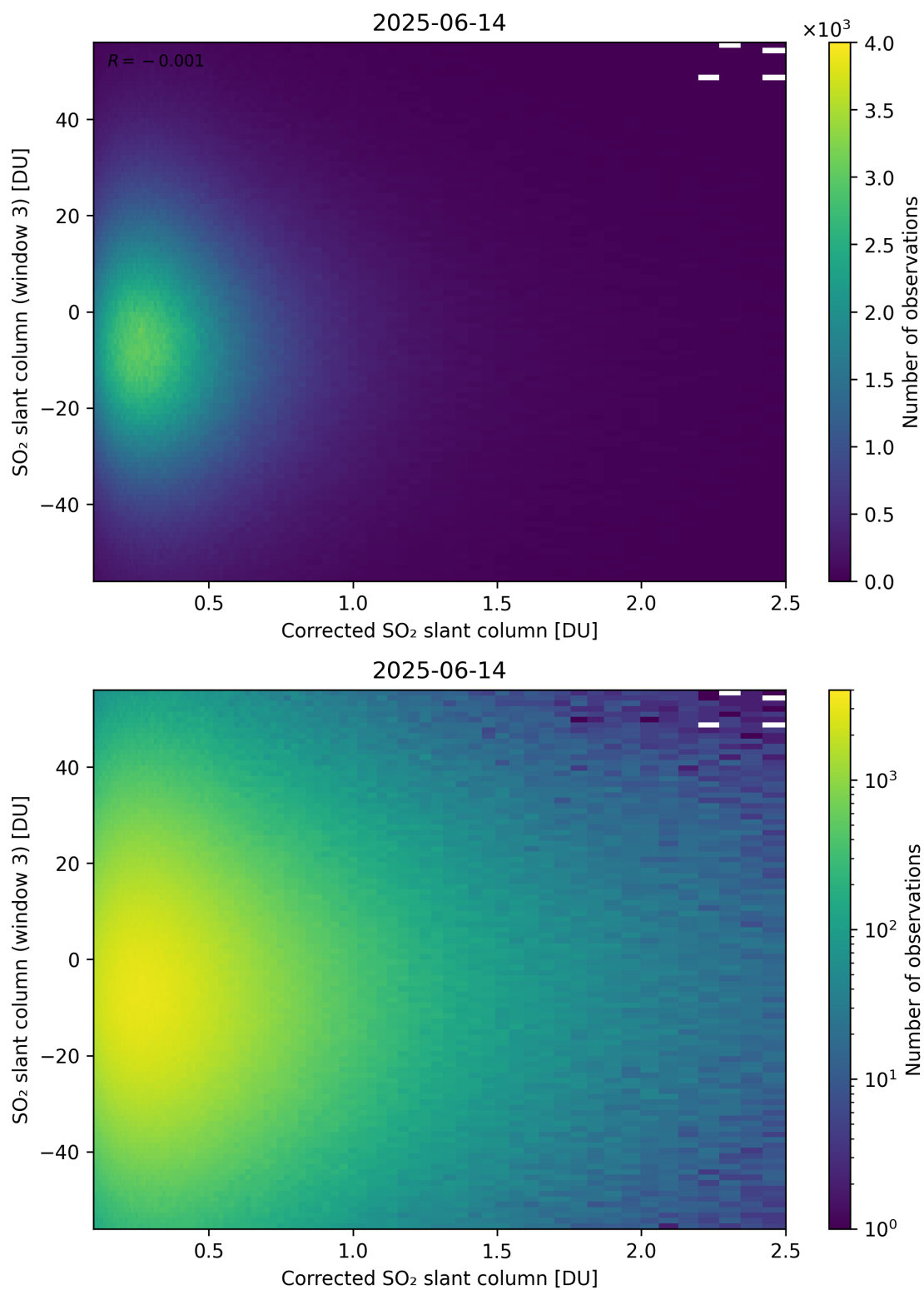


Figure 240: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

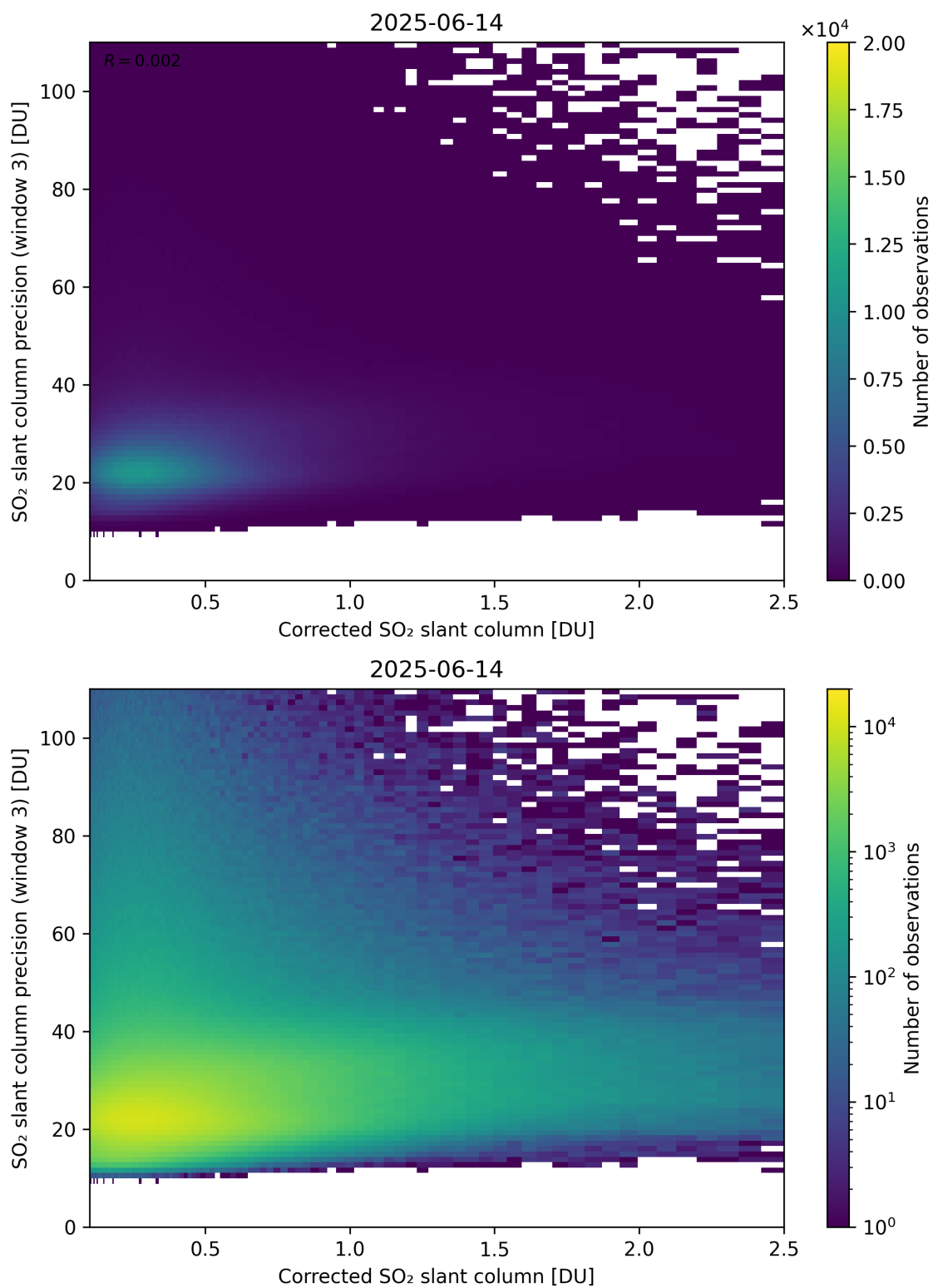


Figure 241: Scatter density plot of “Corrected SO₂ slant column” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

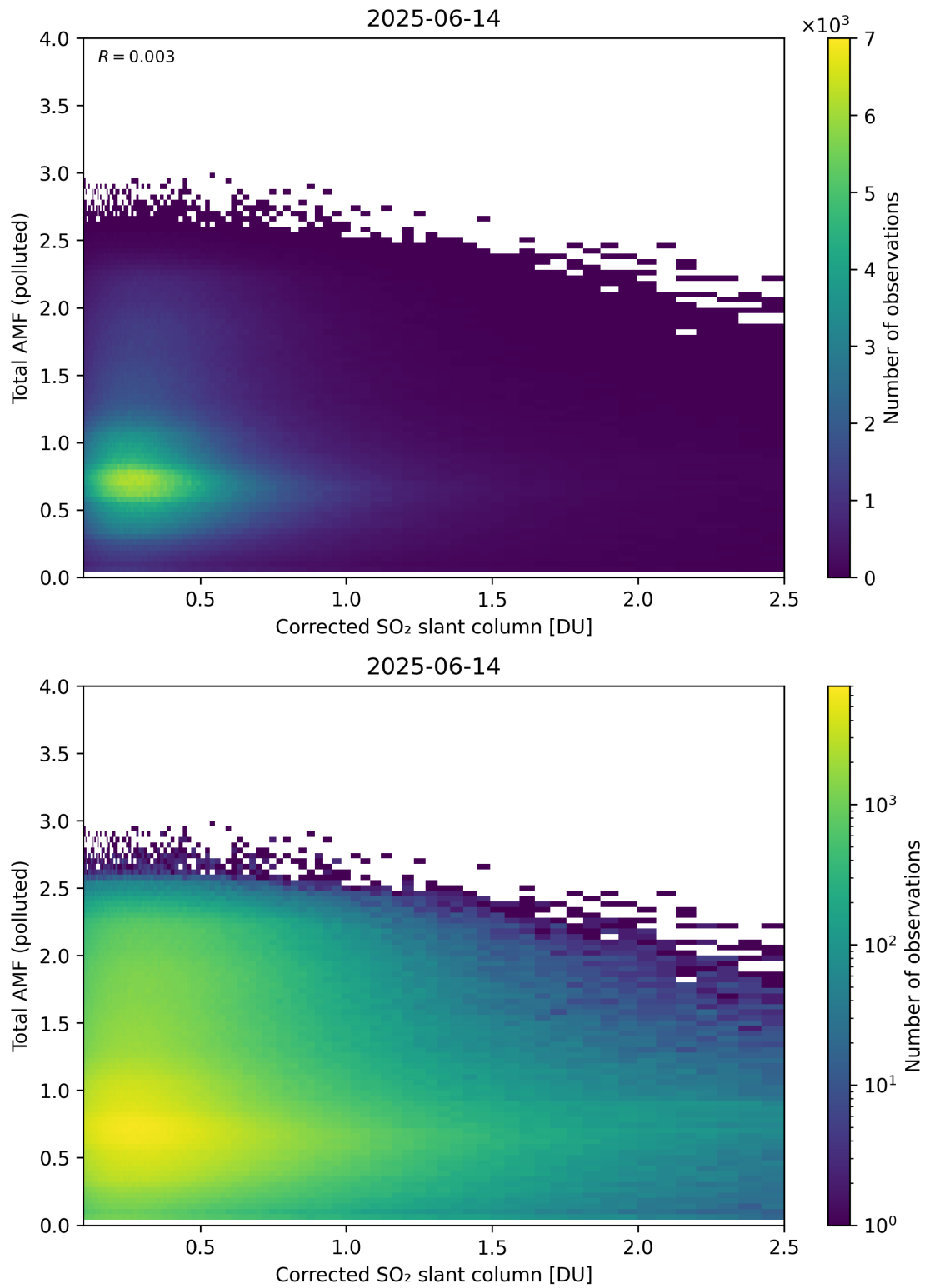


Figure 242: Scatter density plot of “Corrected SO₂ slant column” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

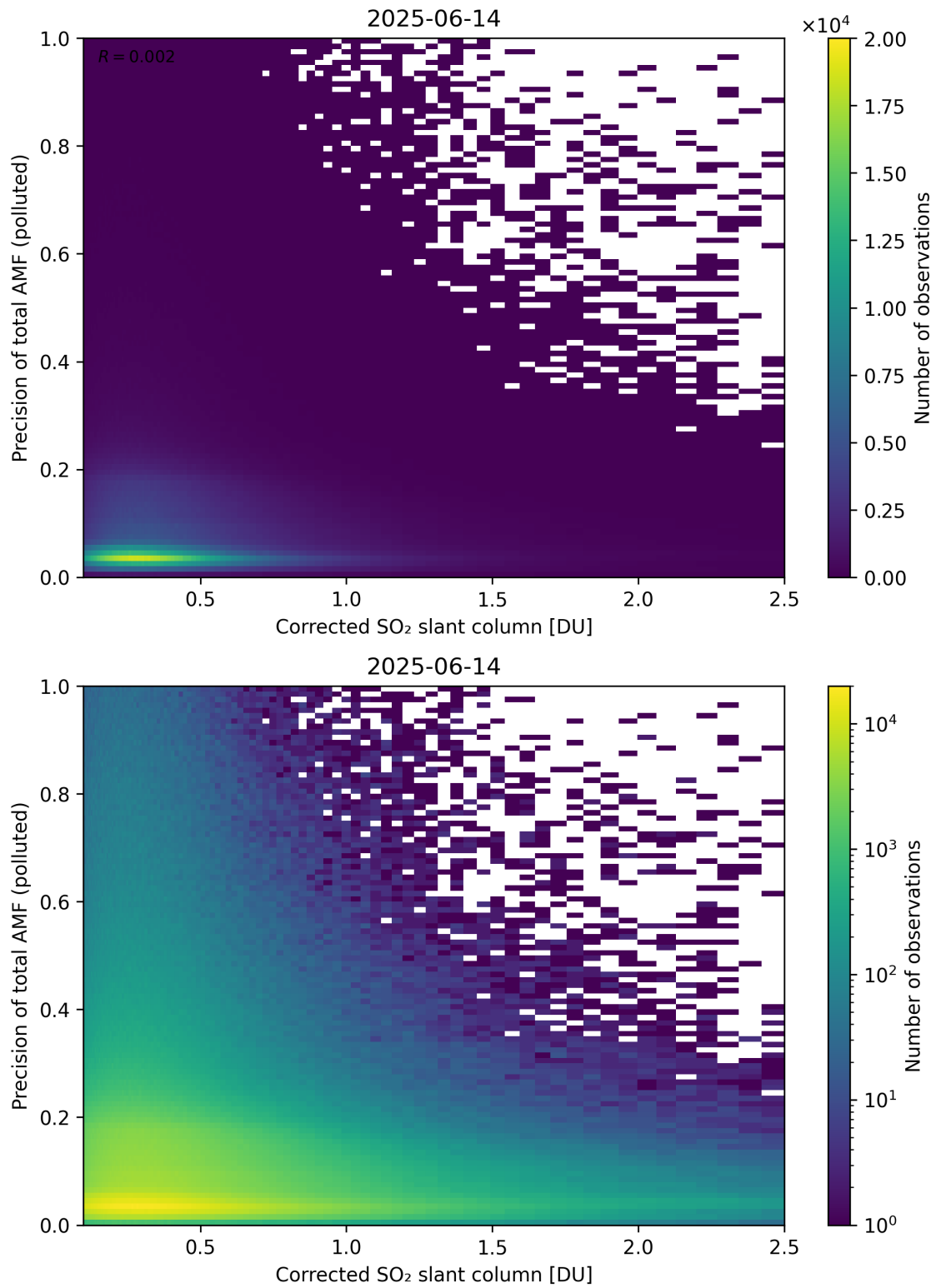


Figure 243: Scatter density plot of “Corrected SO₂ slant column” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

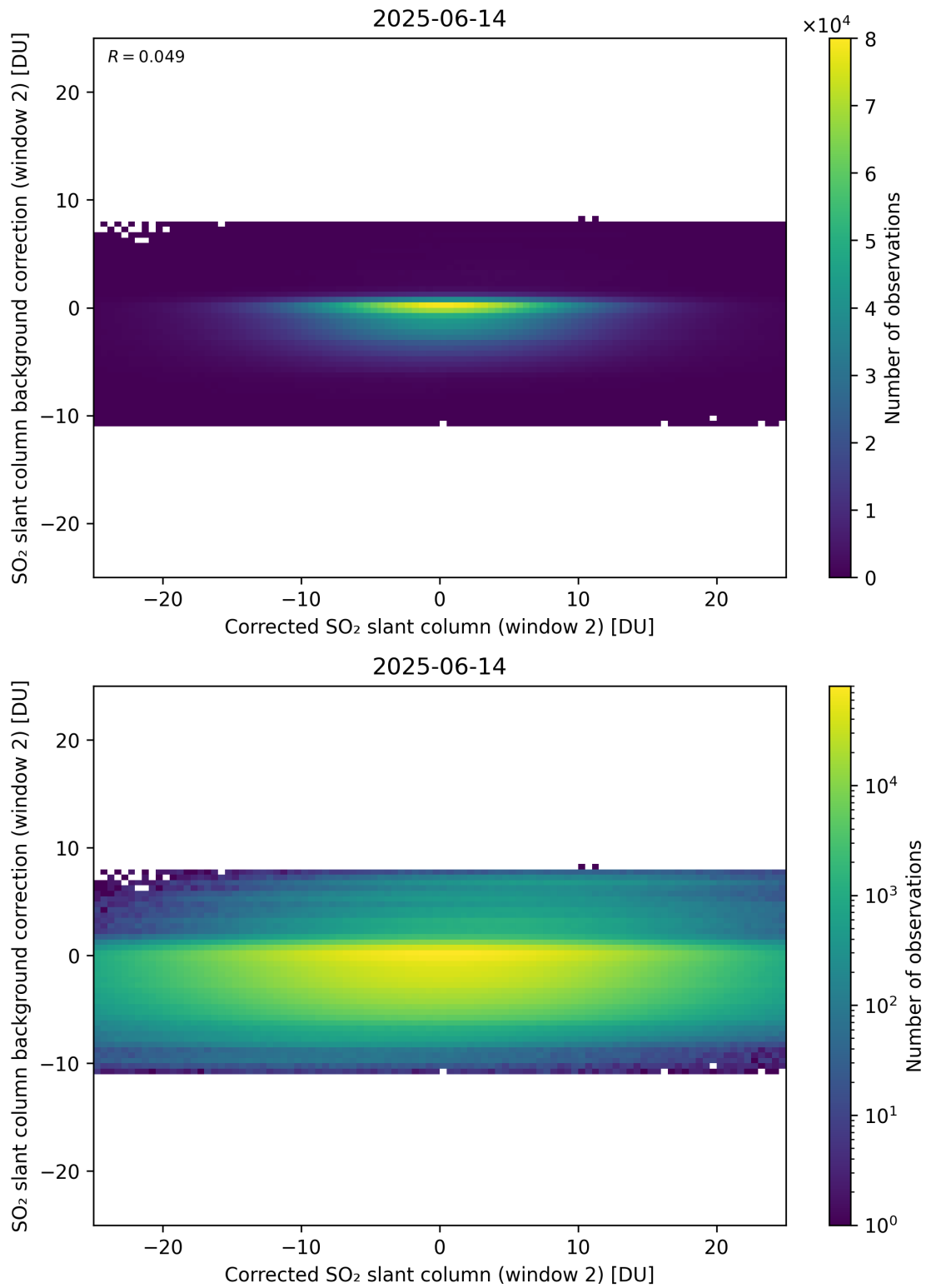


Figure 244: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

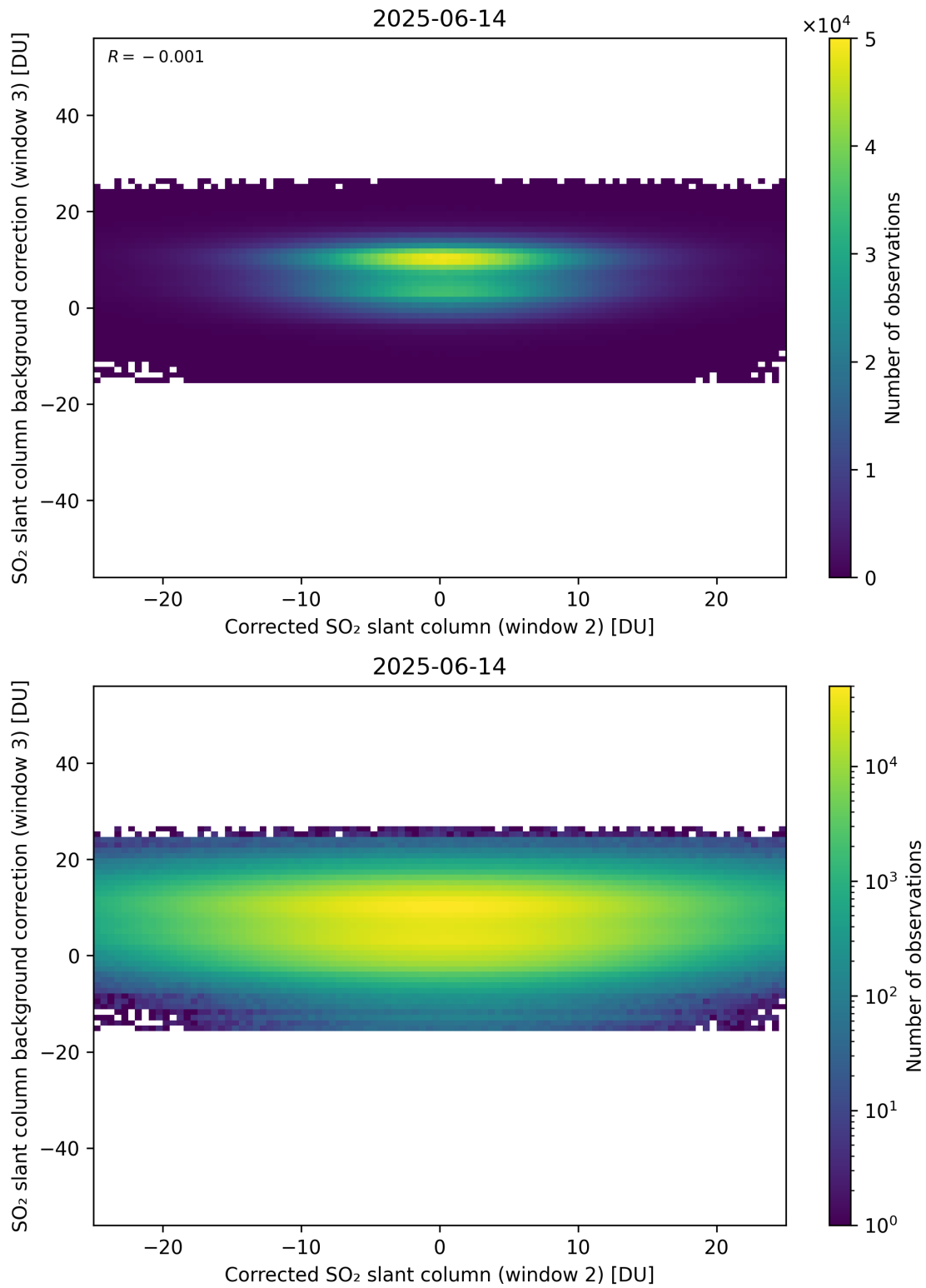


Figure 245: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

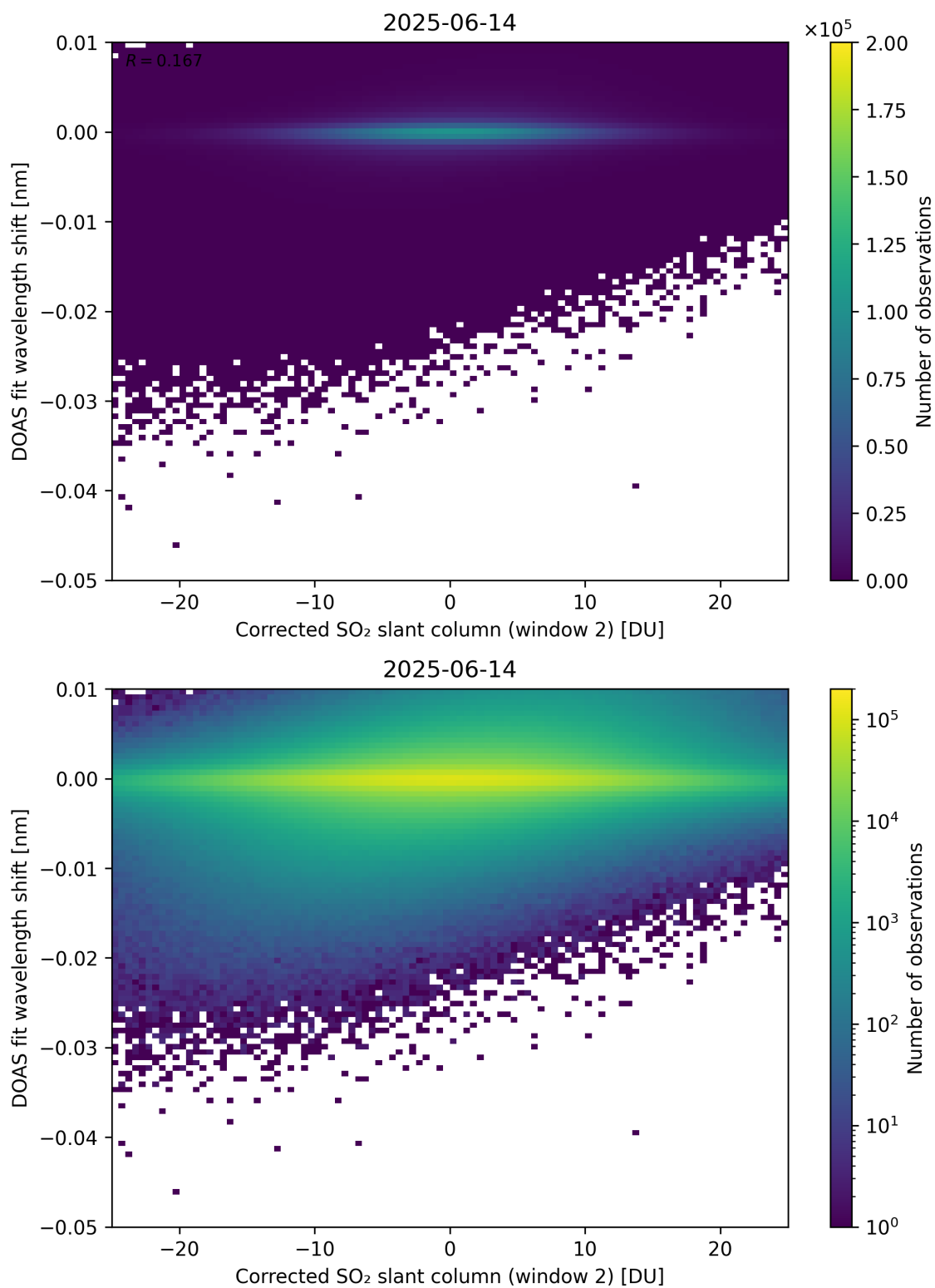


Figure 246: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

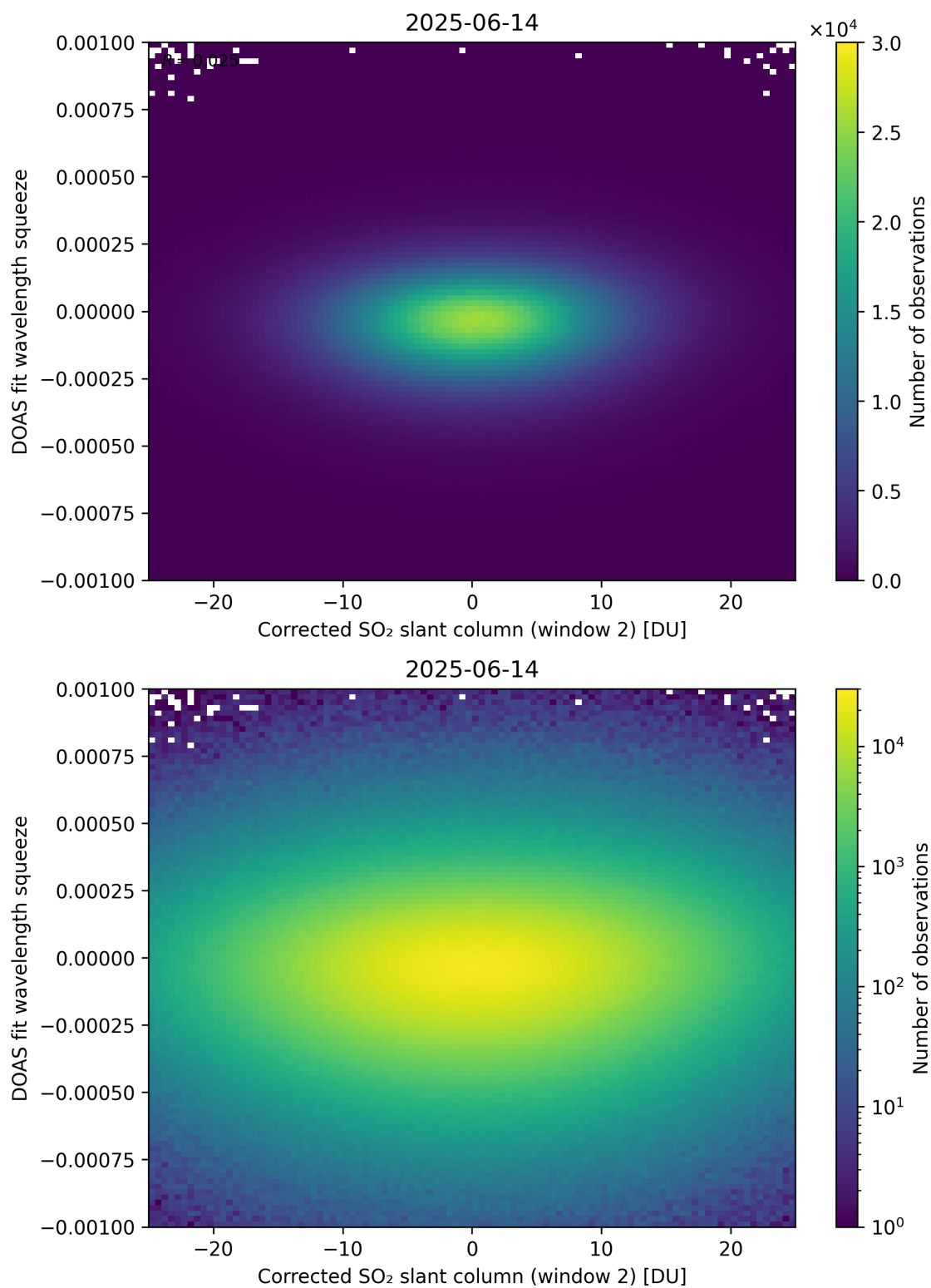


Figure 247: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

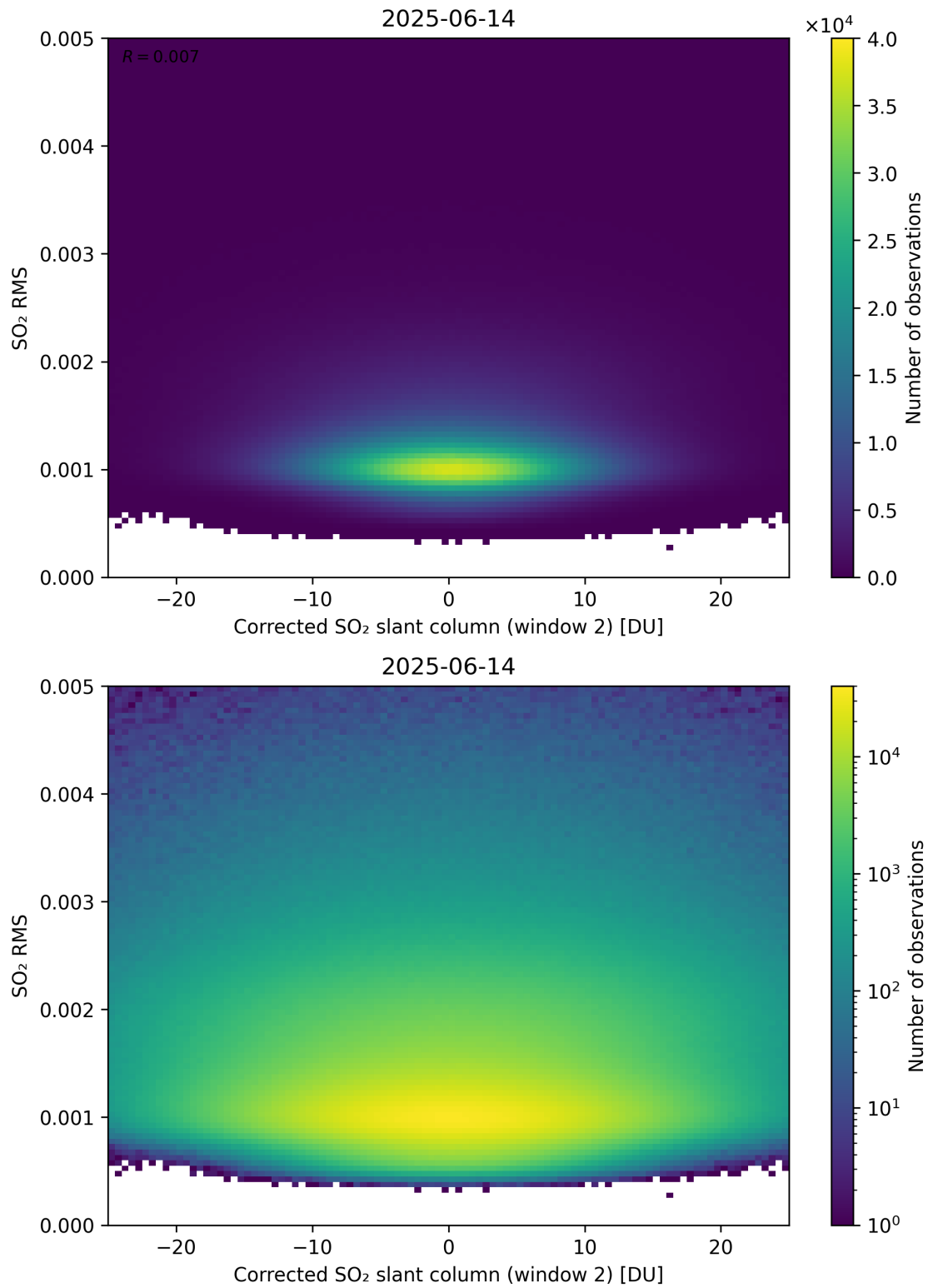


Figure 248: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

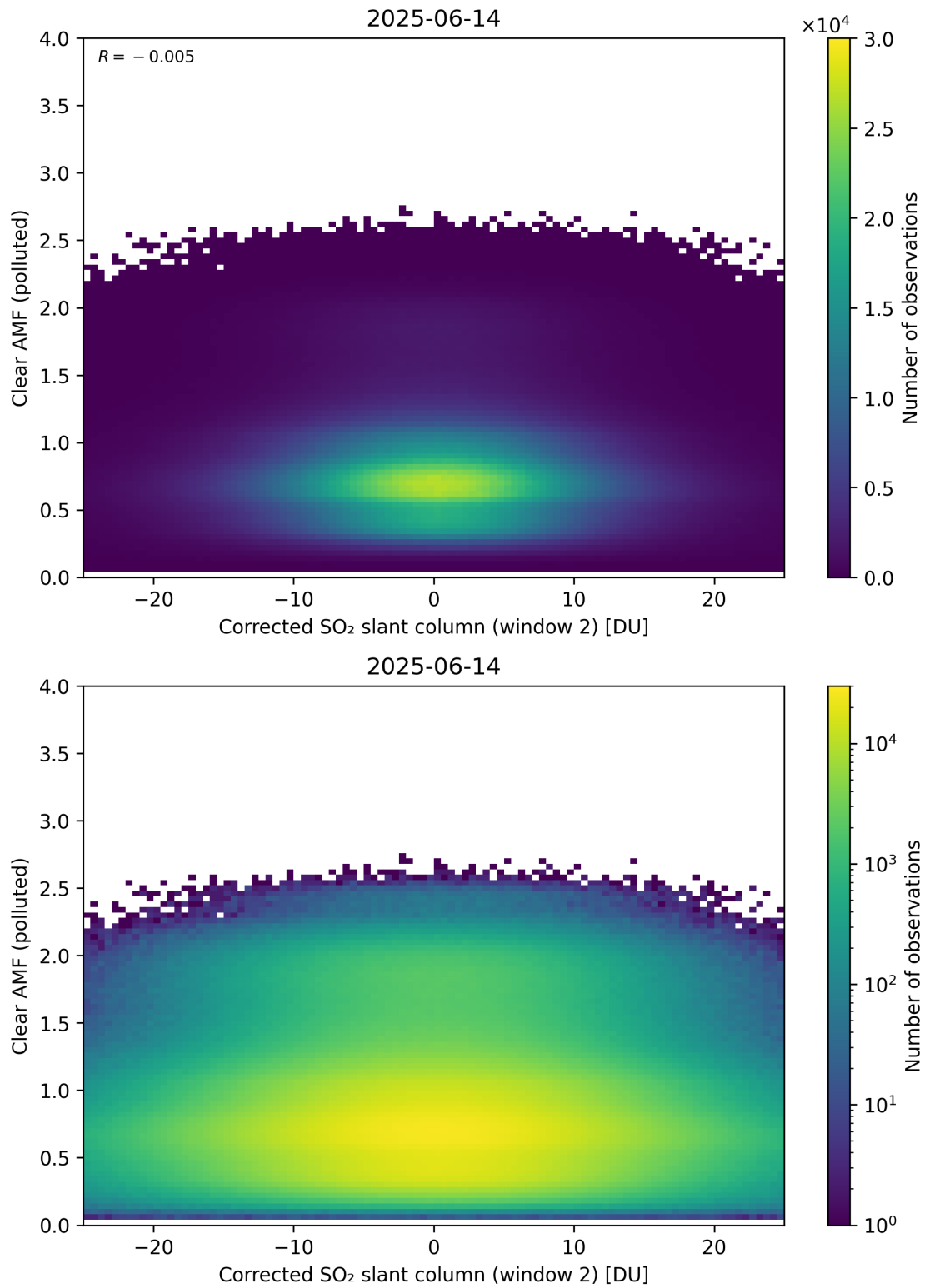


Figure 249: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

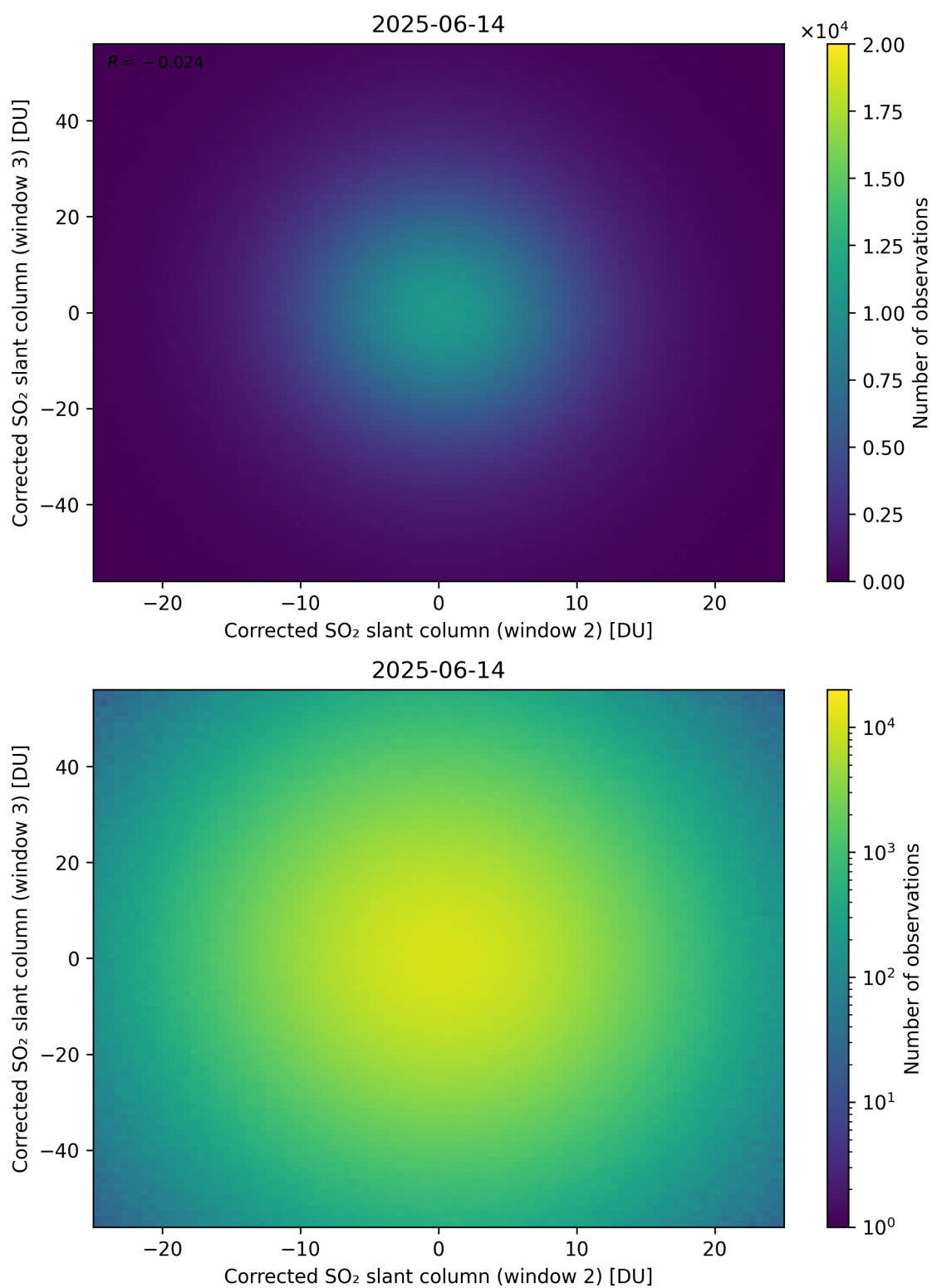


Figure 250: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

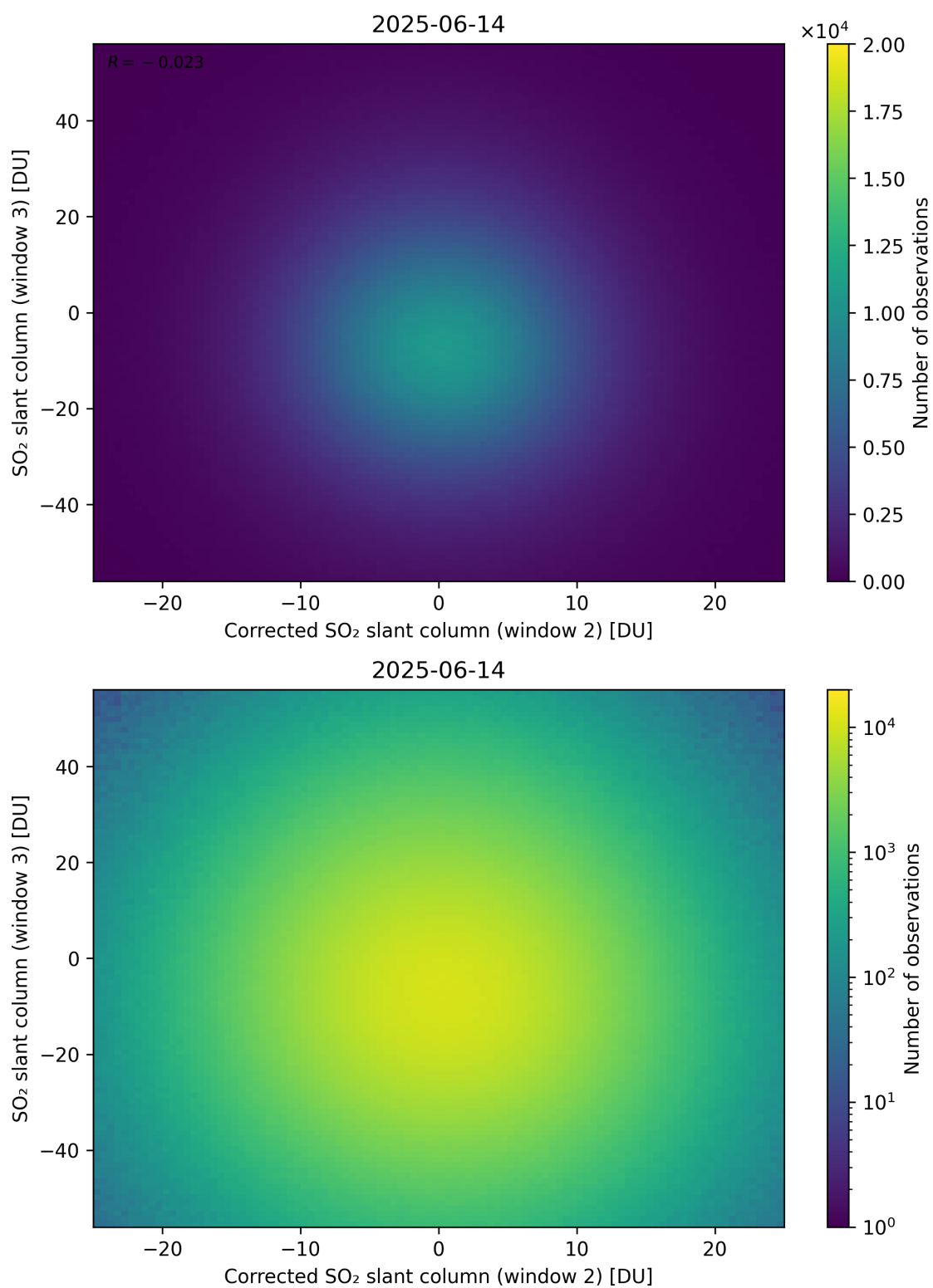


Figure 251: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

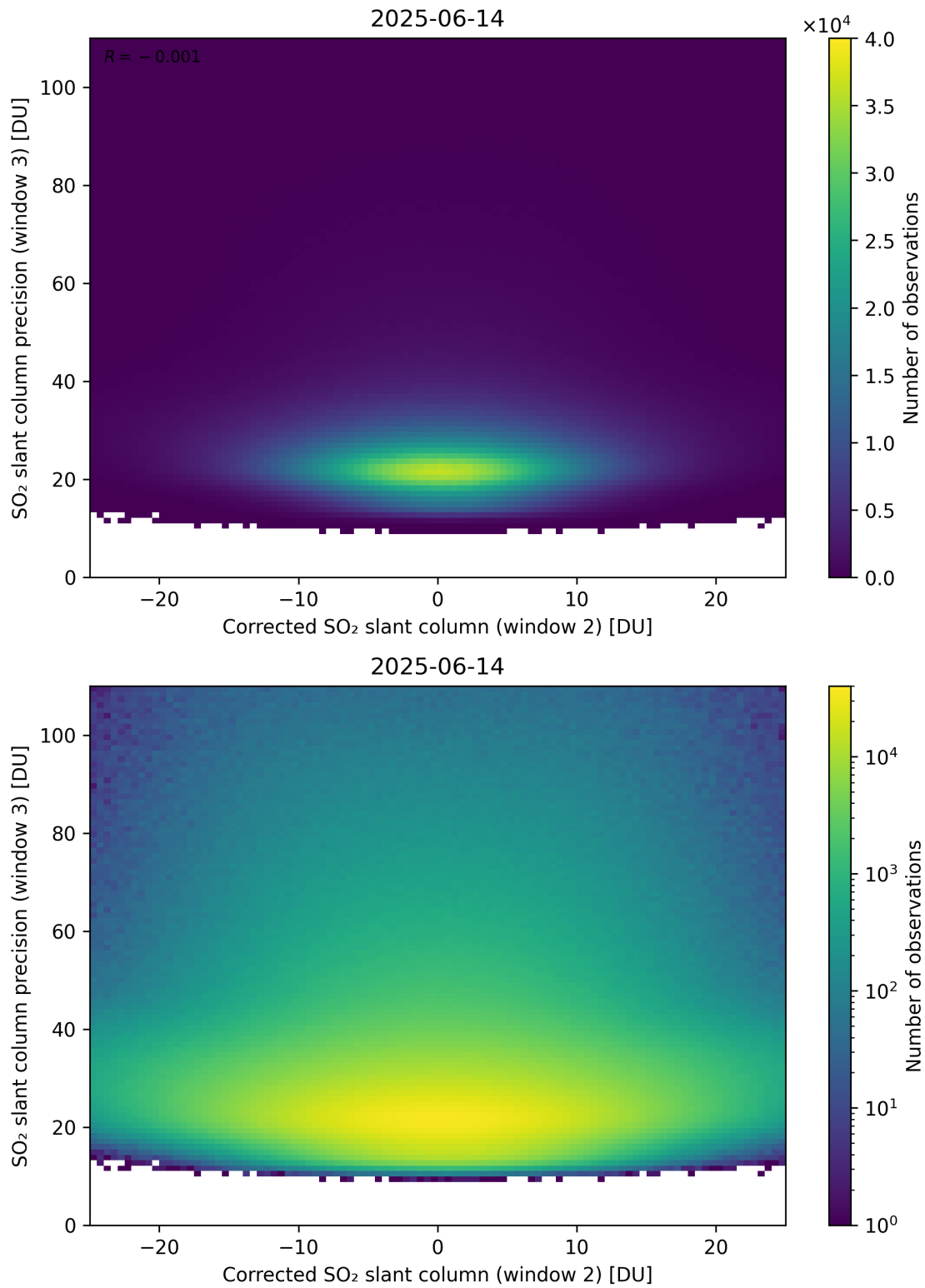


Figure 252: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

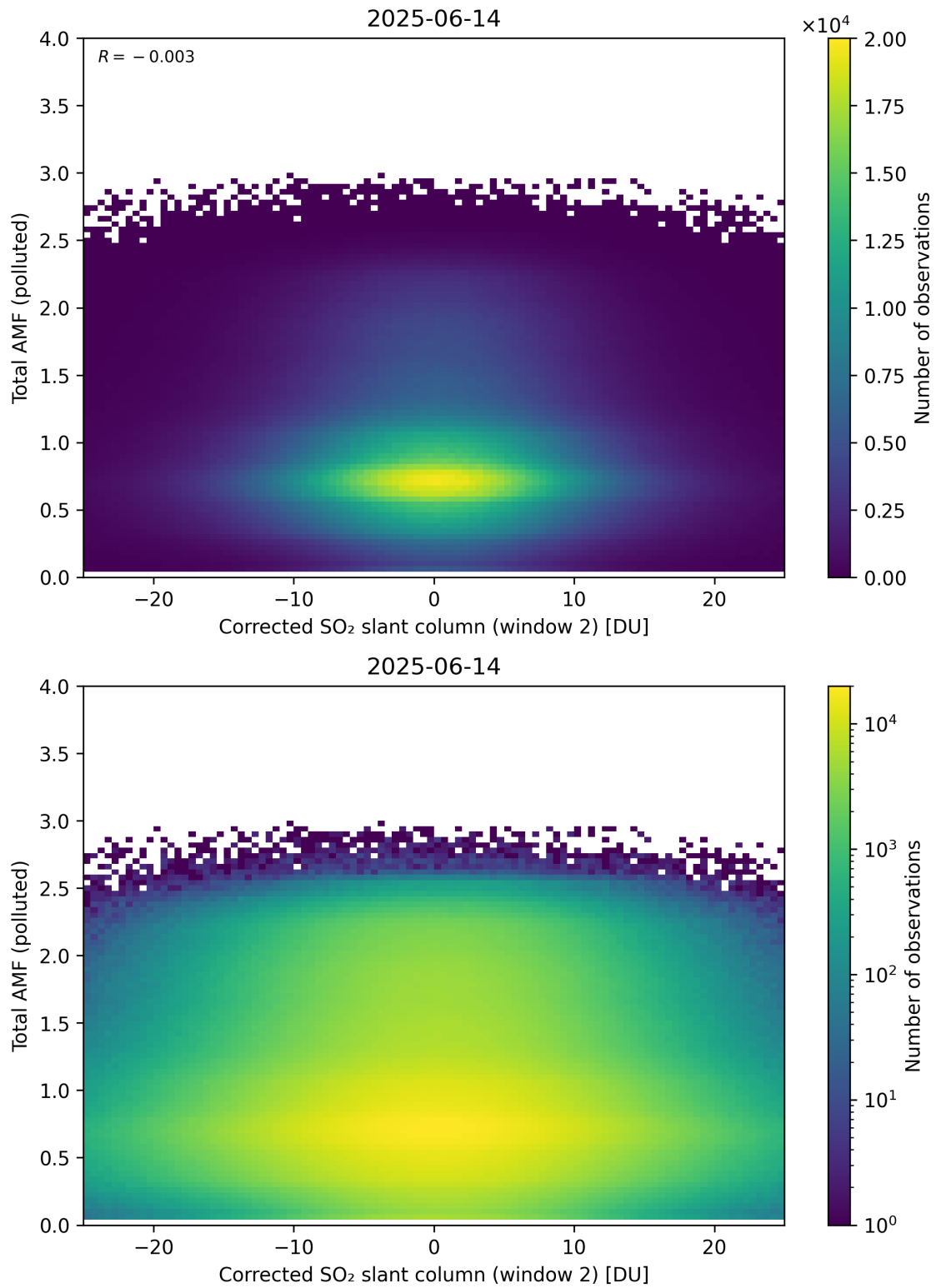


Figure 253: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

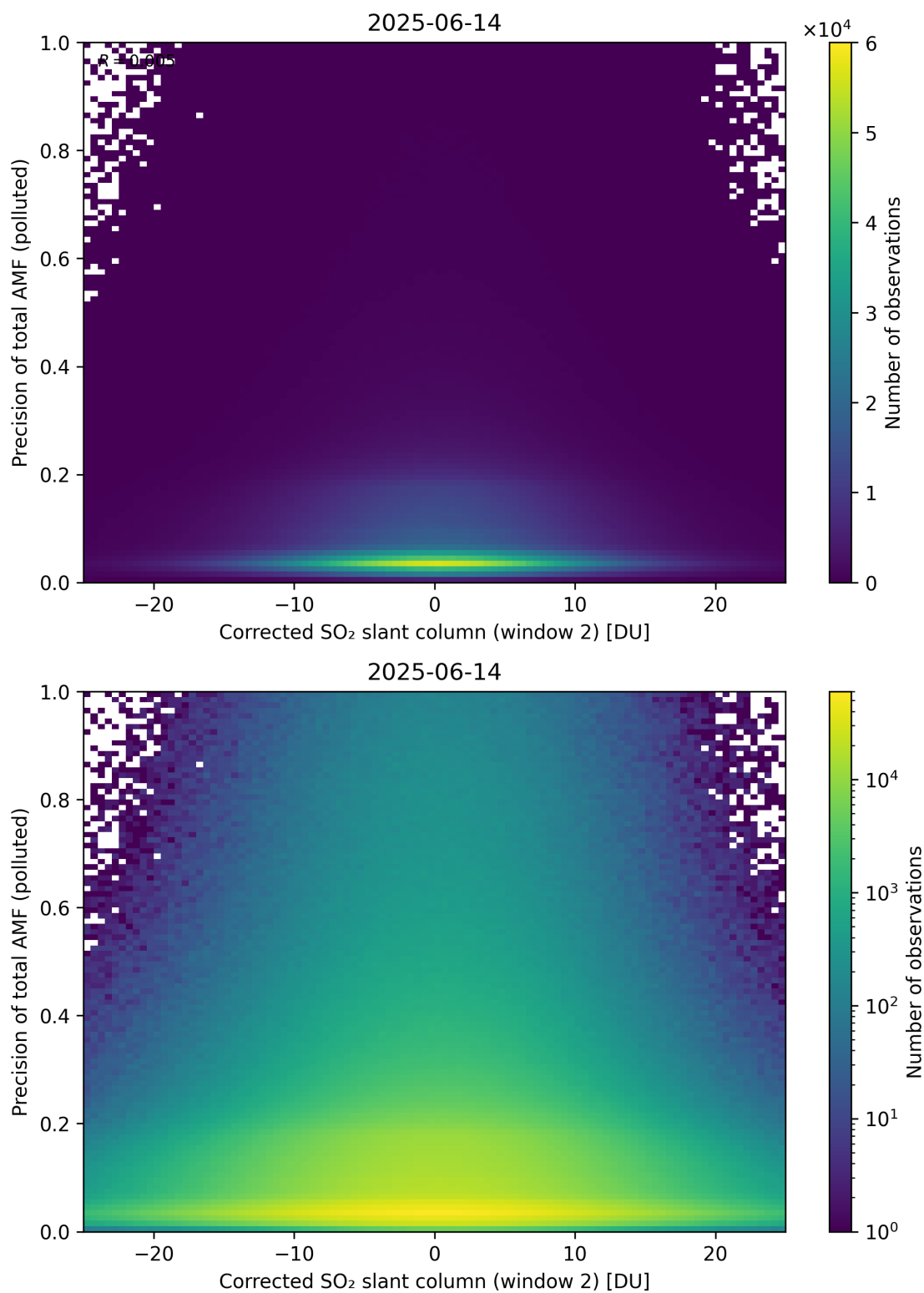


Figure 254: Scatter density plot of “Corrected SO₂ slant column (window 2)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

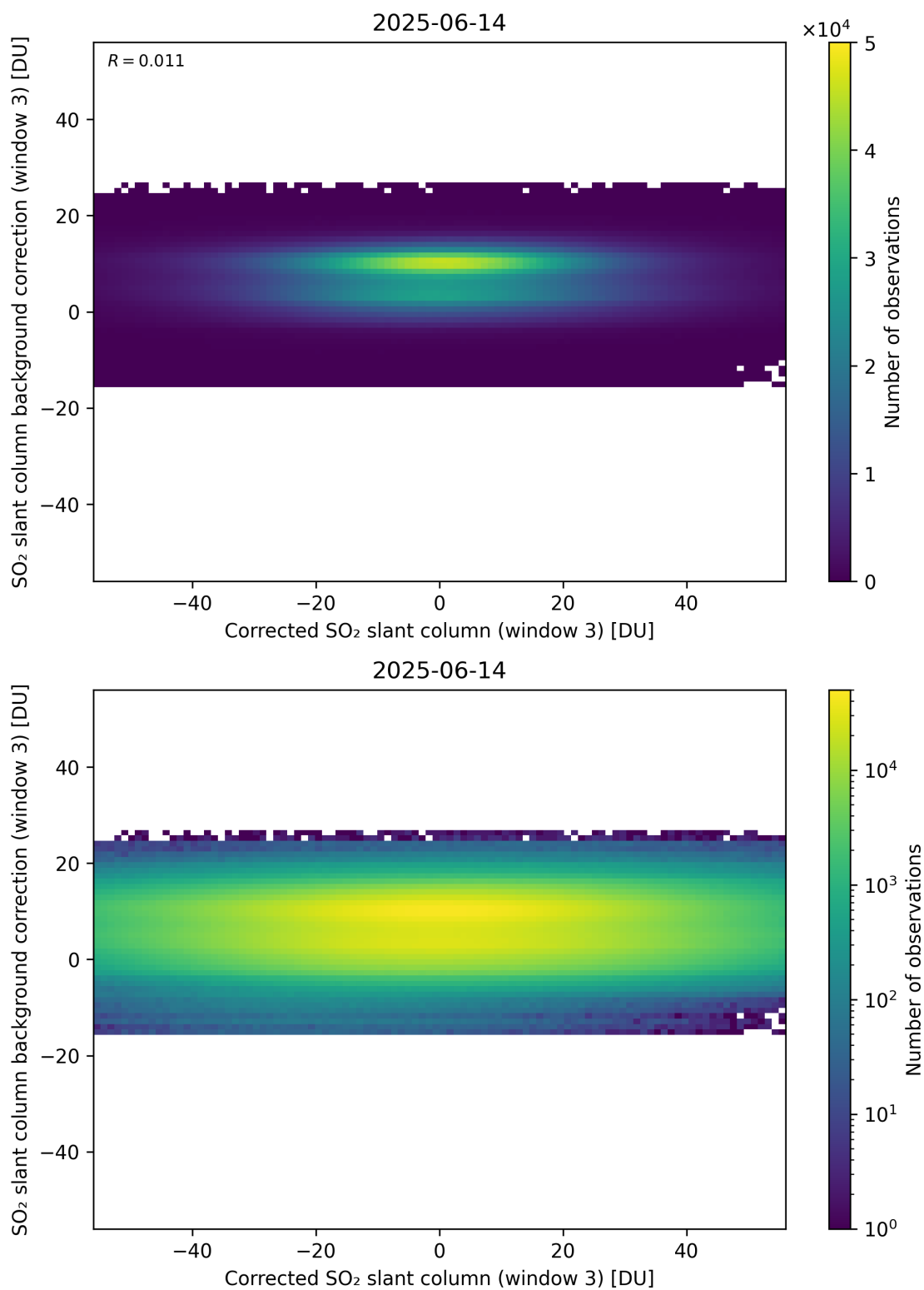


Figure 255: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

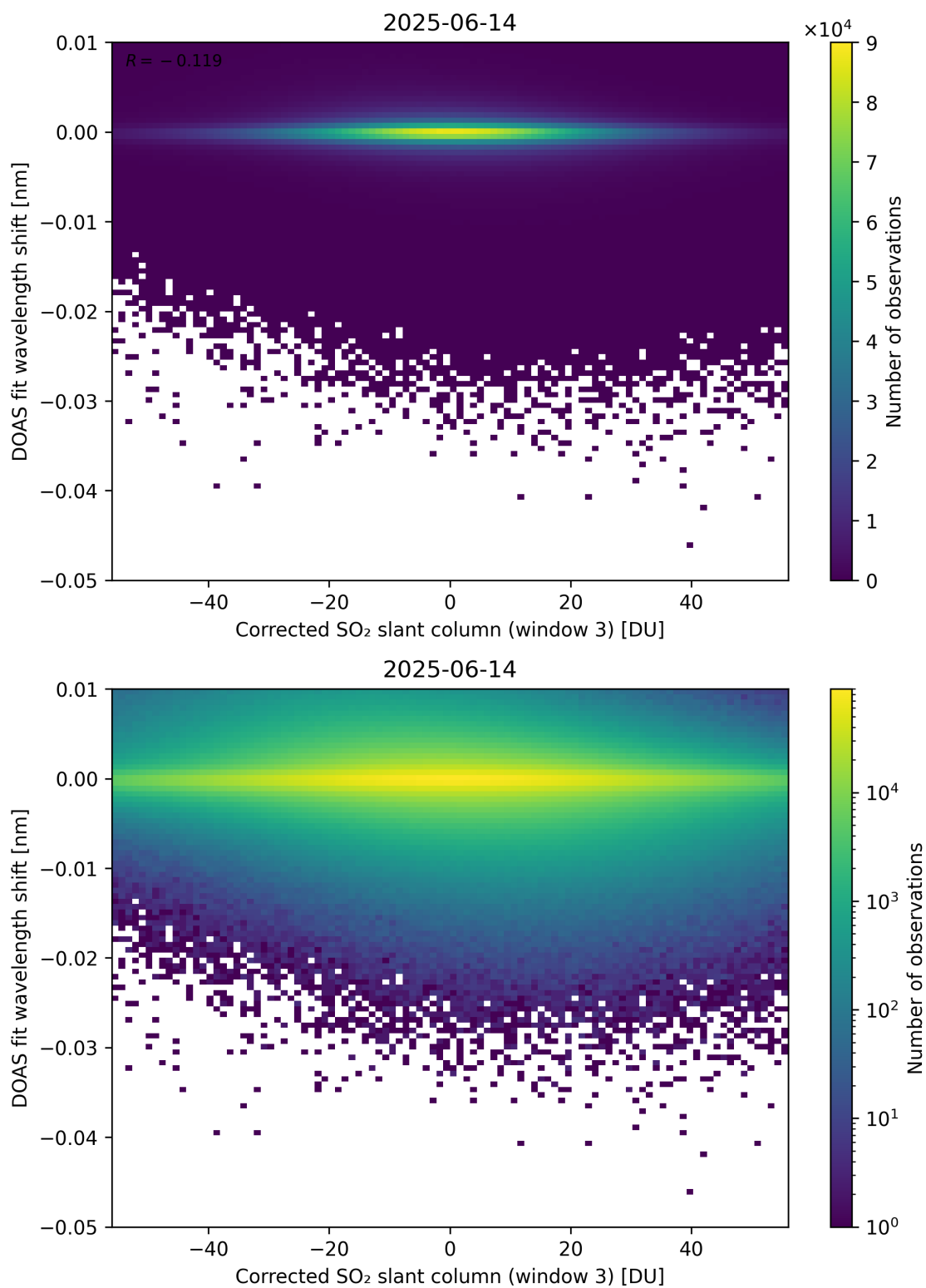


Figure 256: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

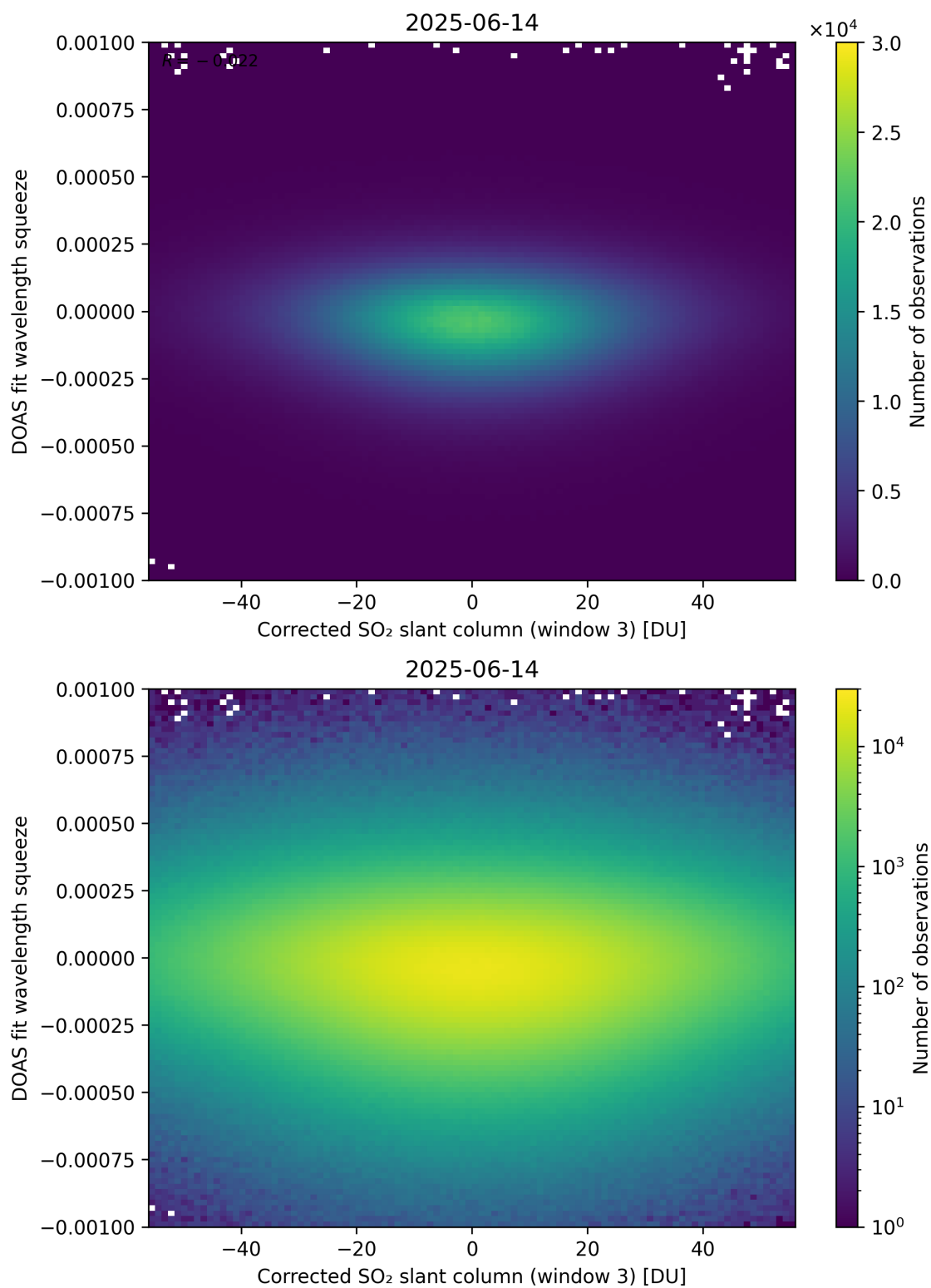


Figure 257: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

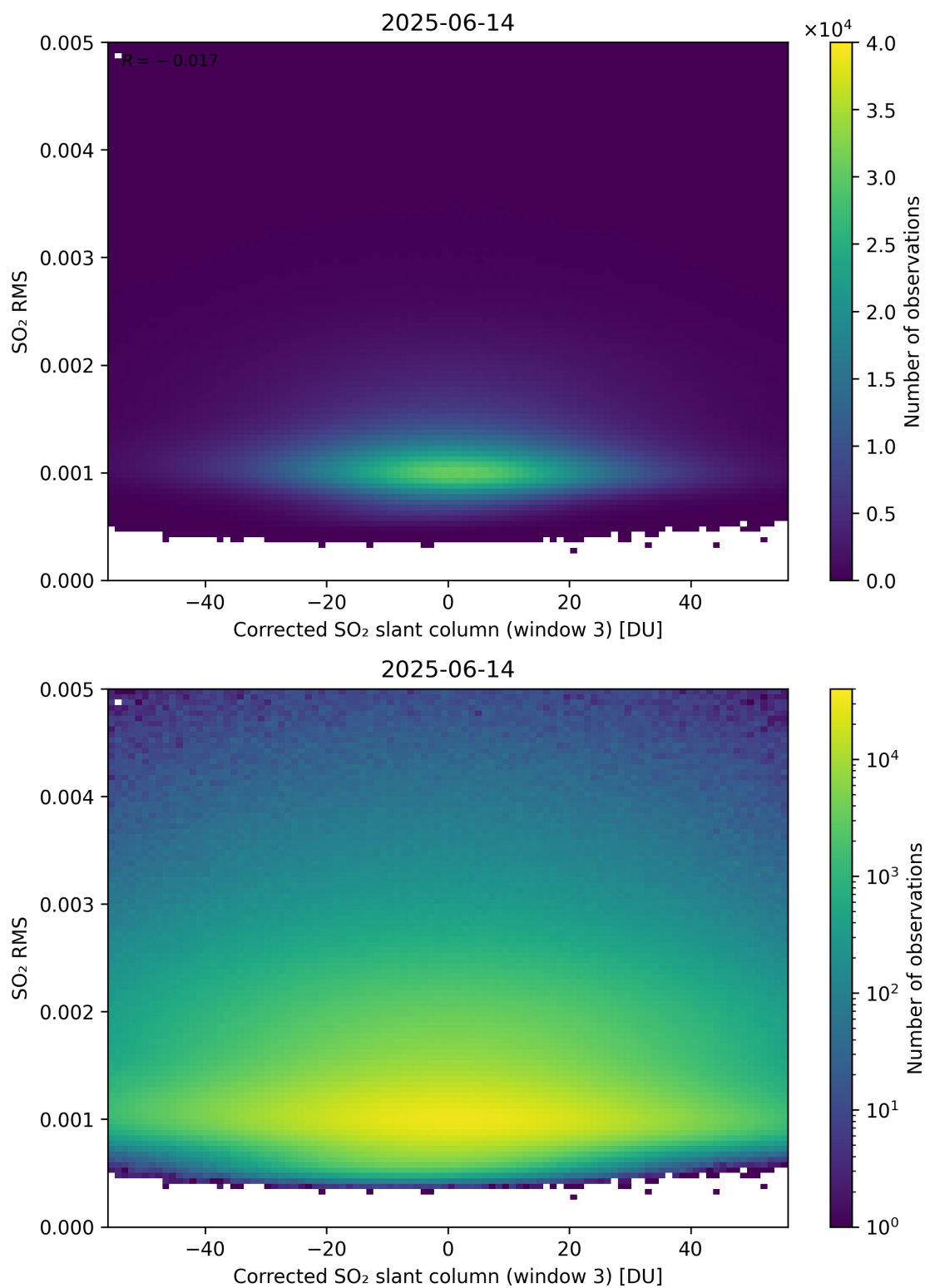


Figure 258: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

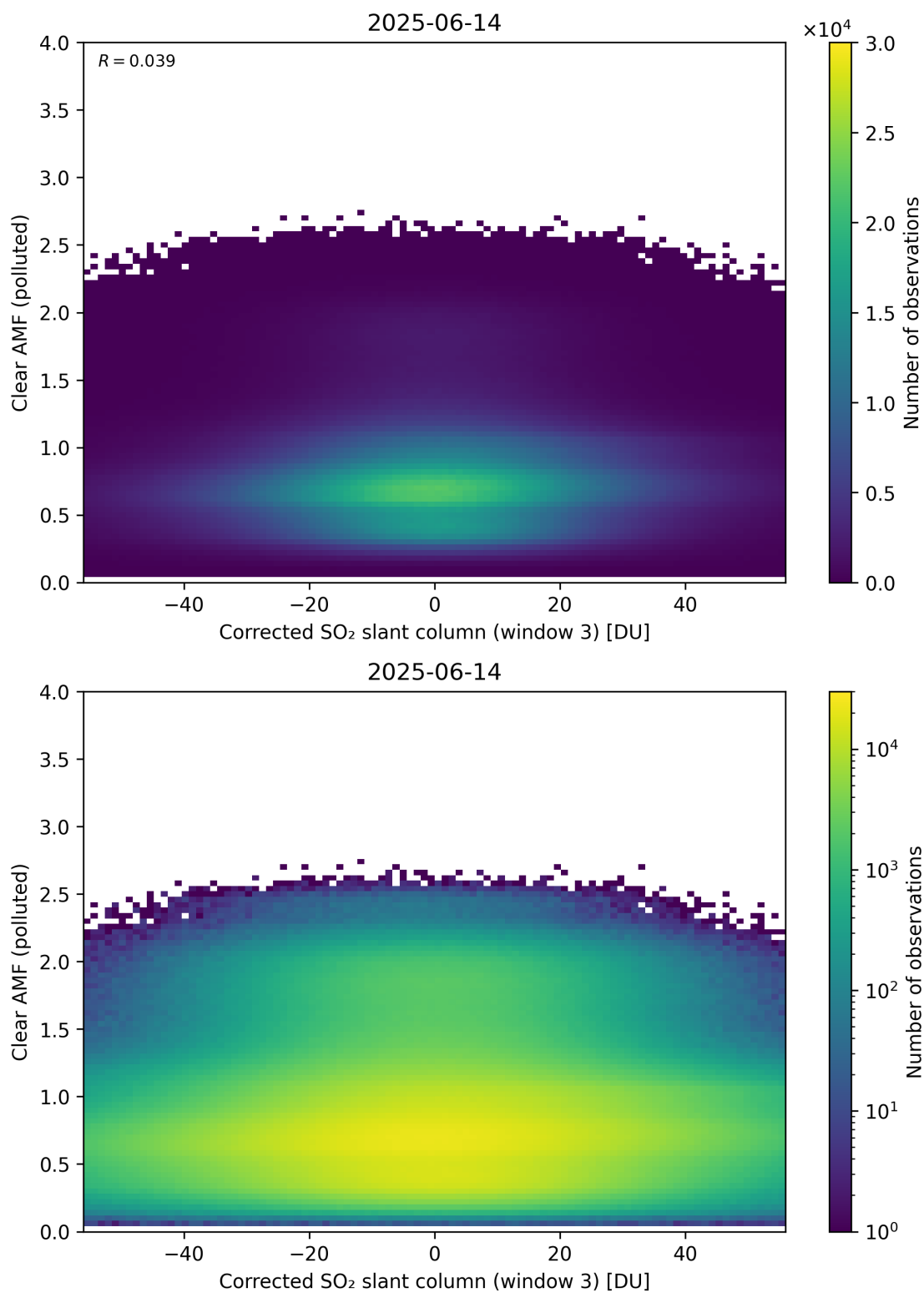


Figure 259: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

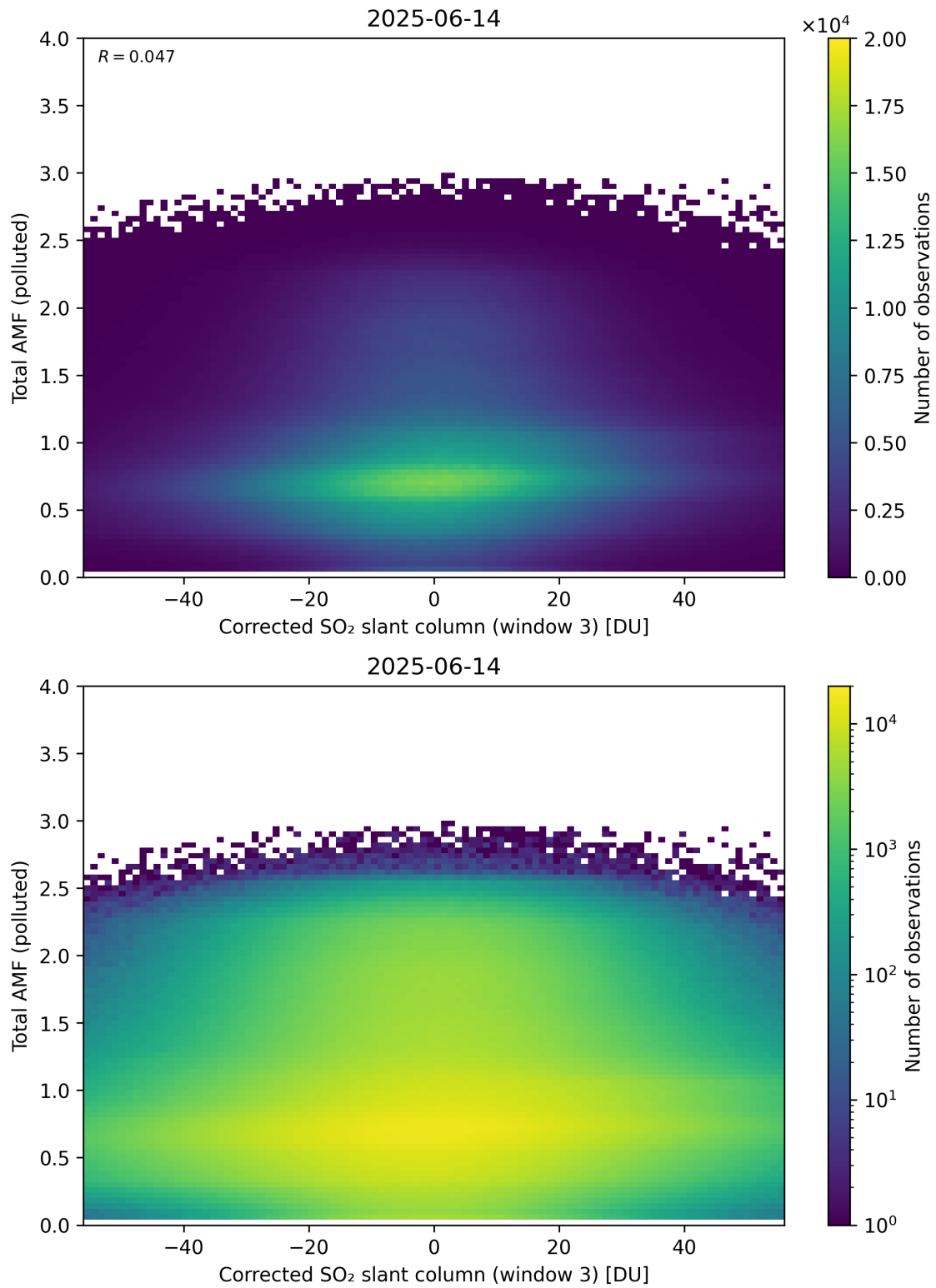


Figure 260: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

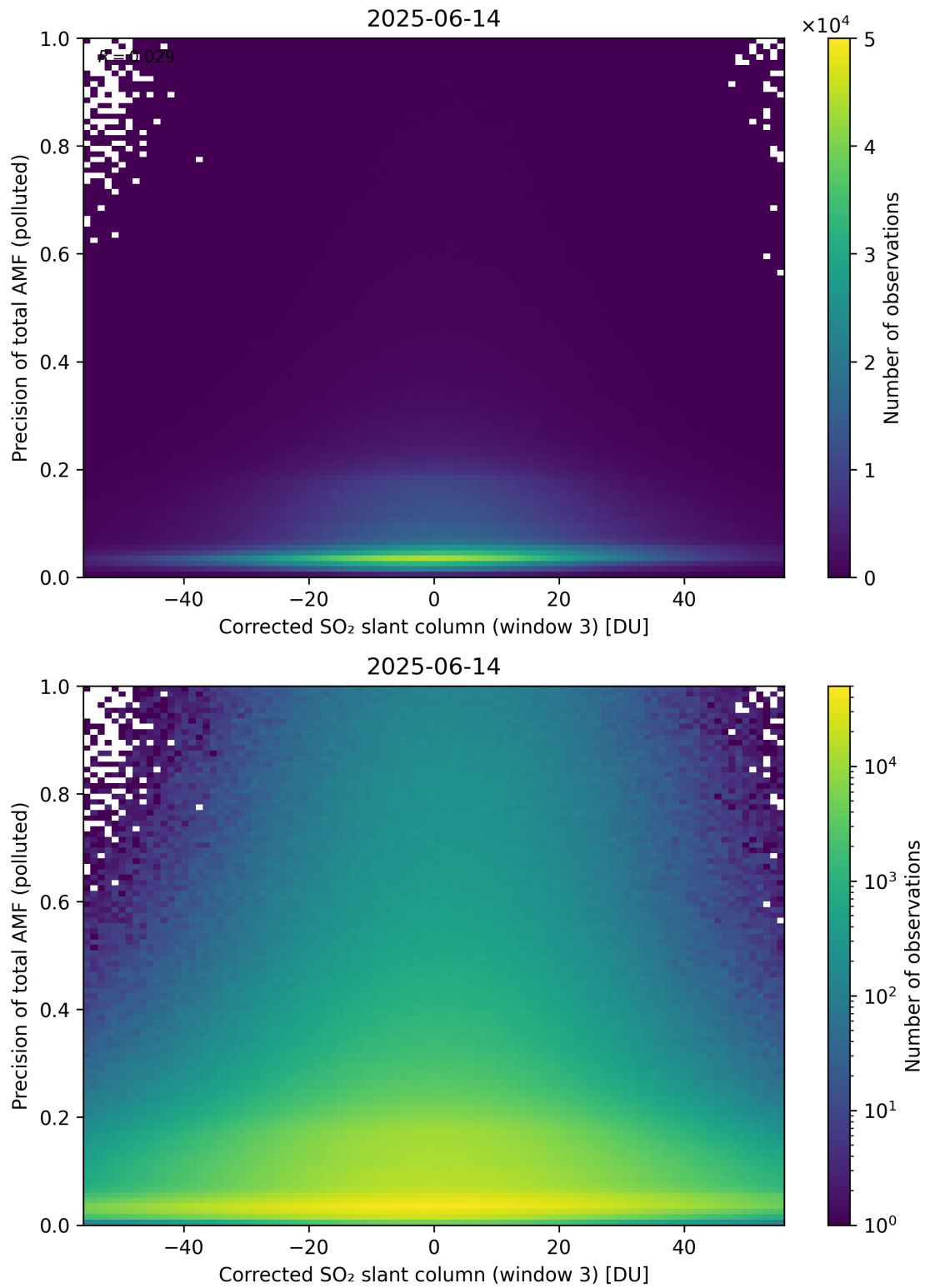


Figure 261: Scatter density plot of “Corrected SO₂ slant column (window 3)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

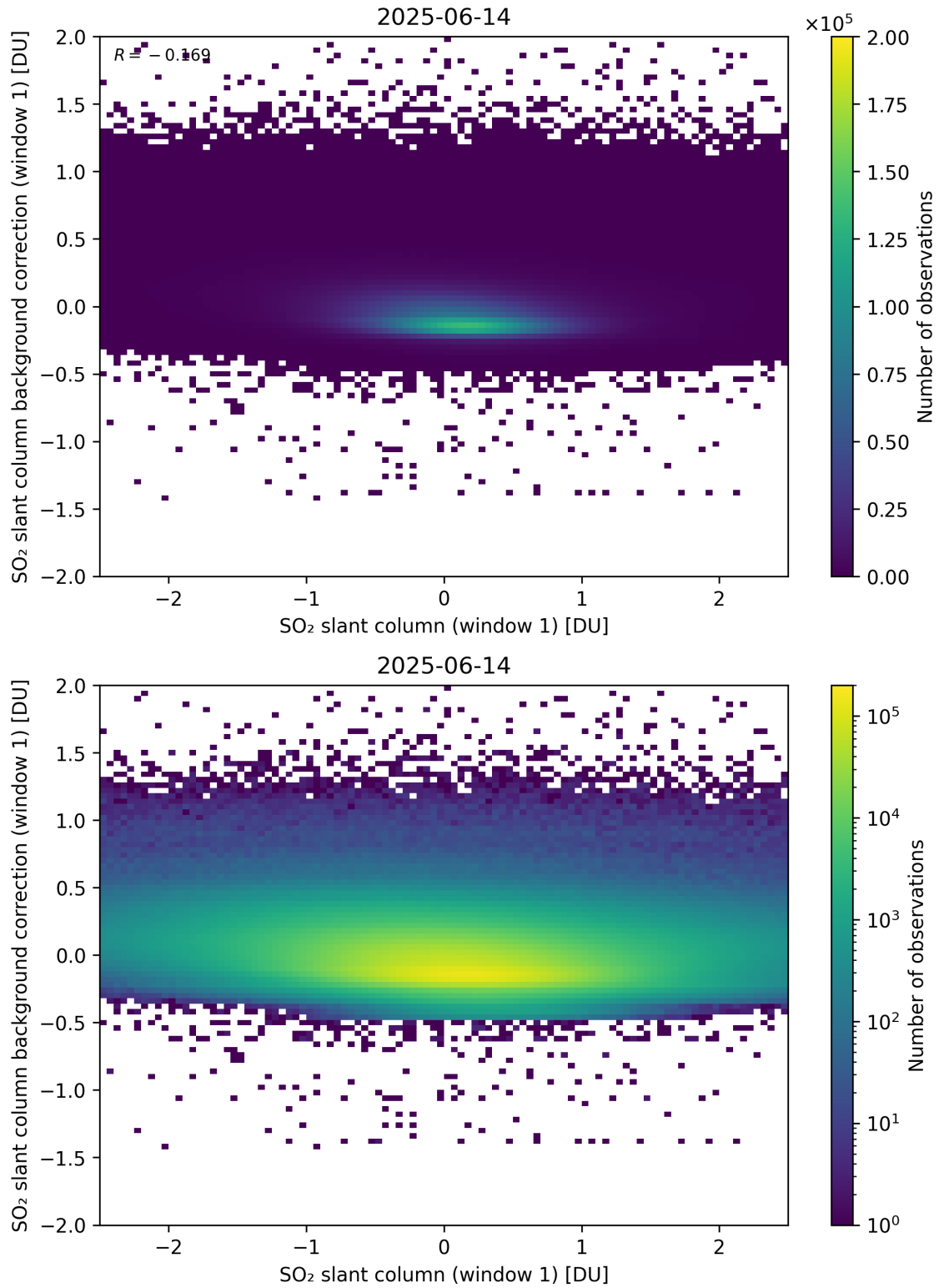


Figure 262: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

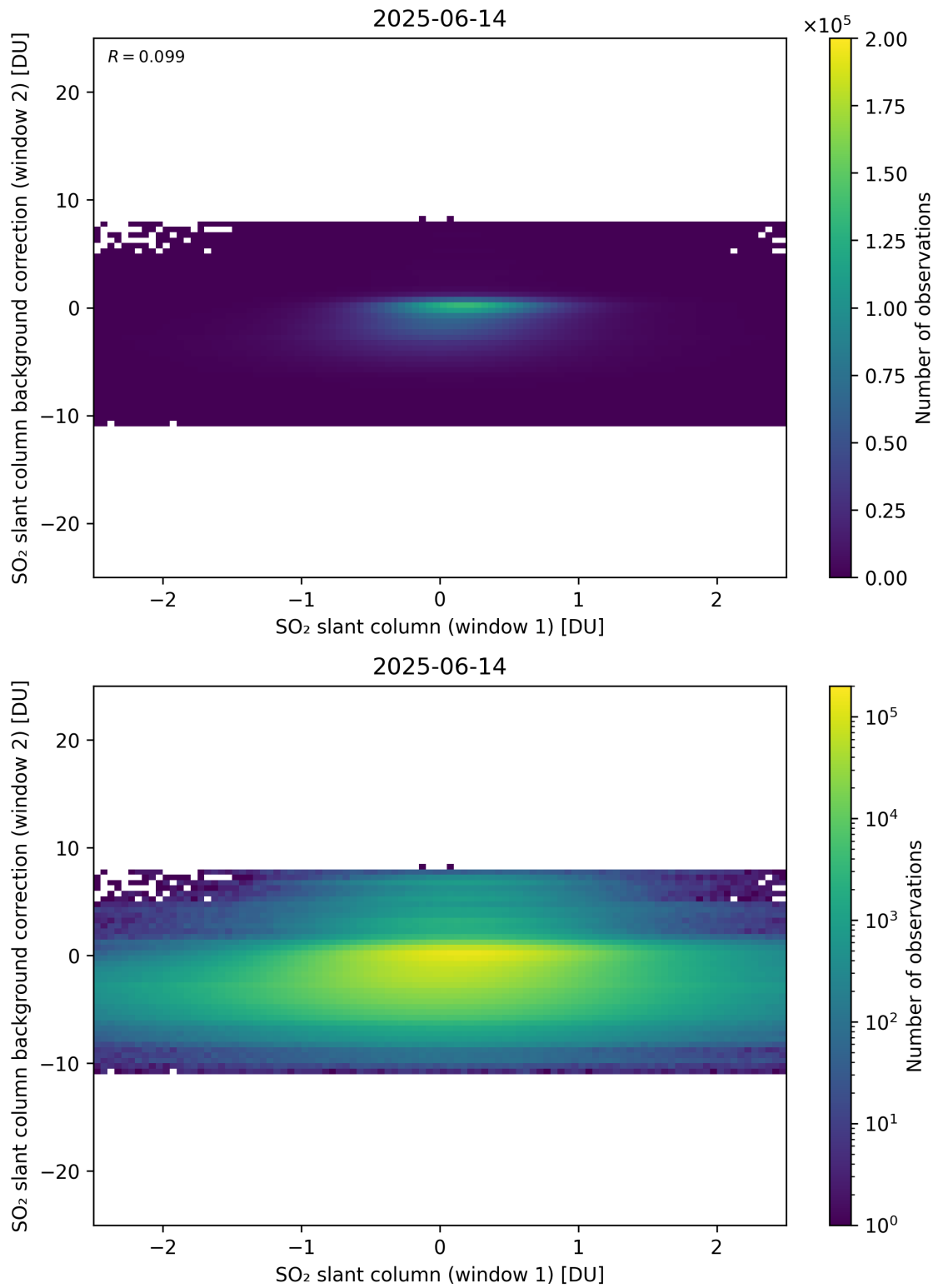


Figure 263: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

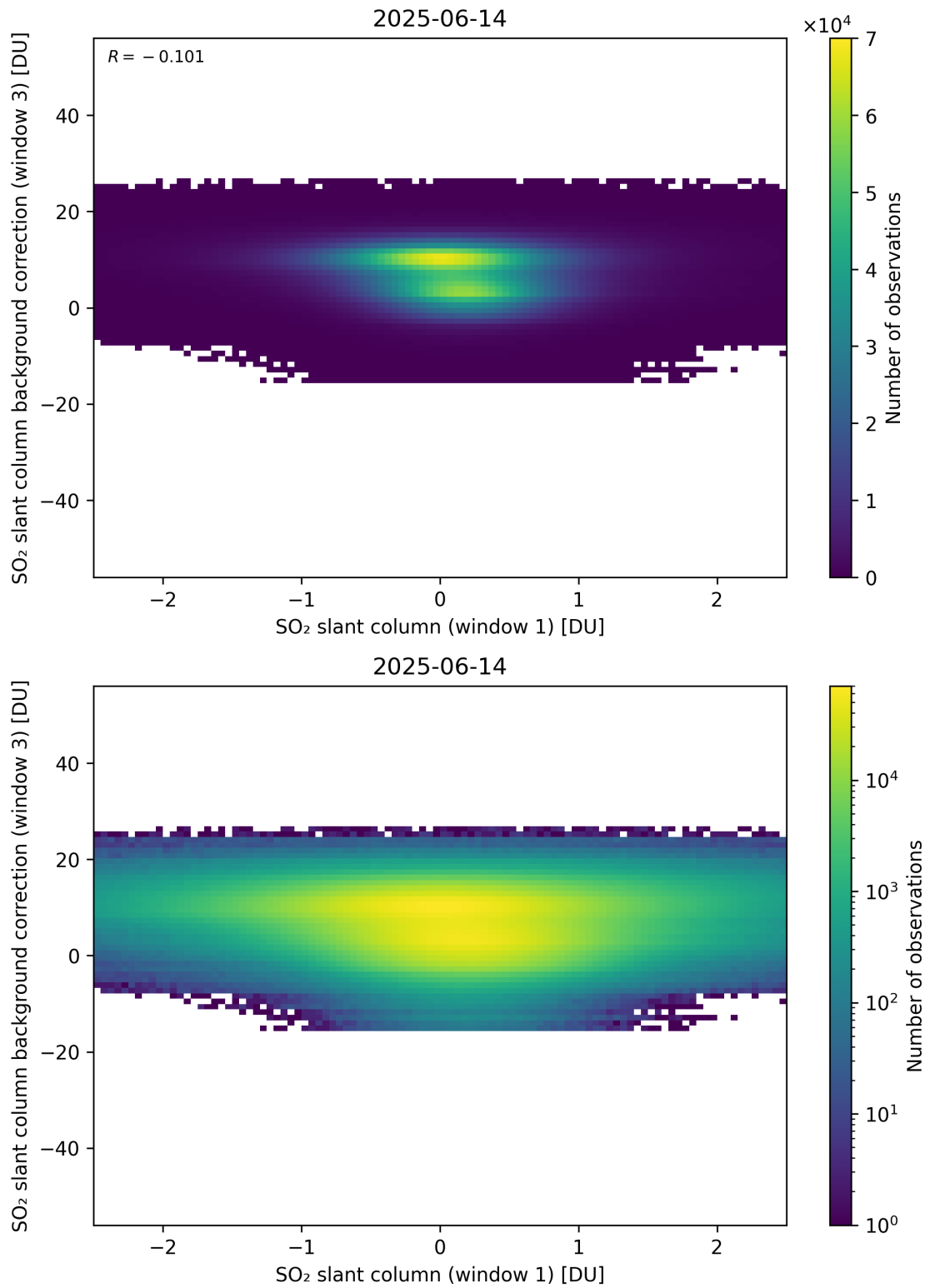


Figure 264: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

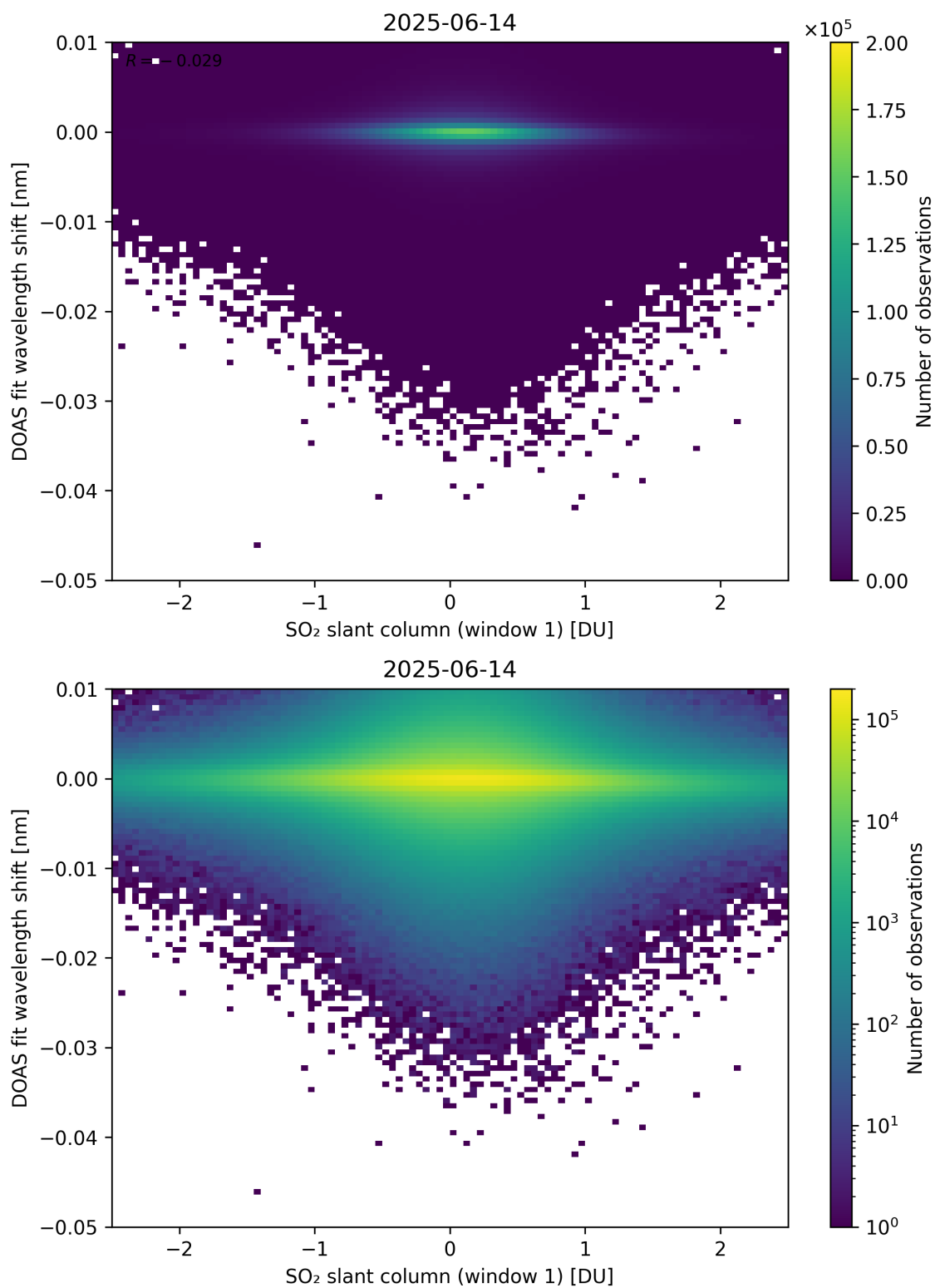


Figure 265: Scatter density plot of “SO₂ slant column (window 1)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

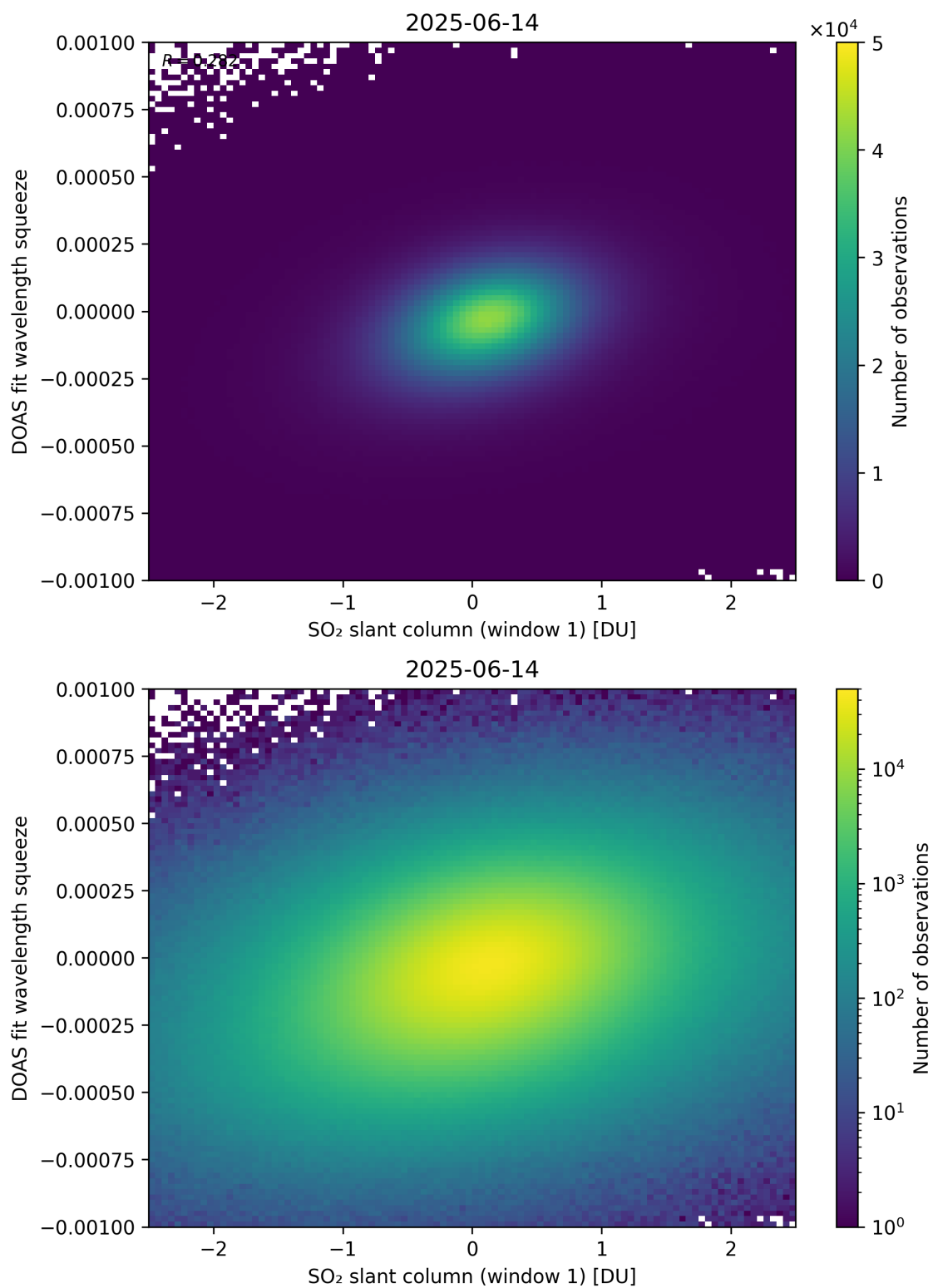


Figure 266: Scatter density plot of “SO₂ slant column (window 1)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

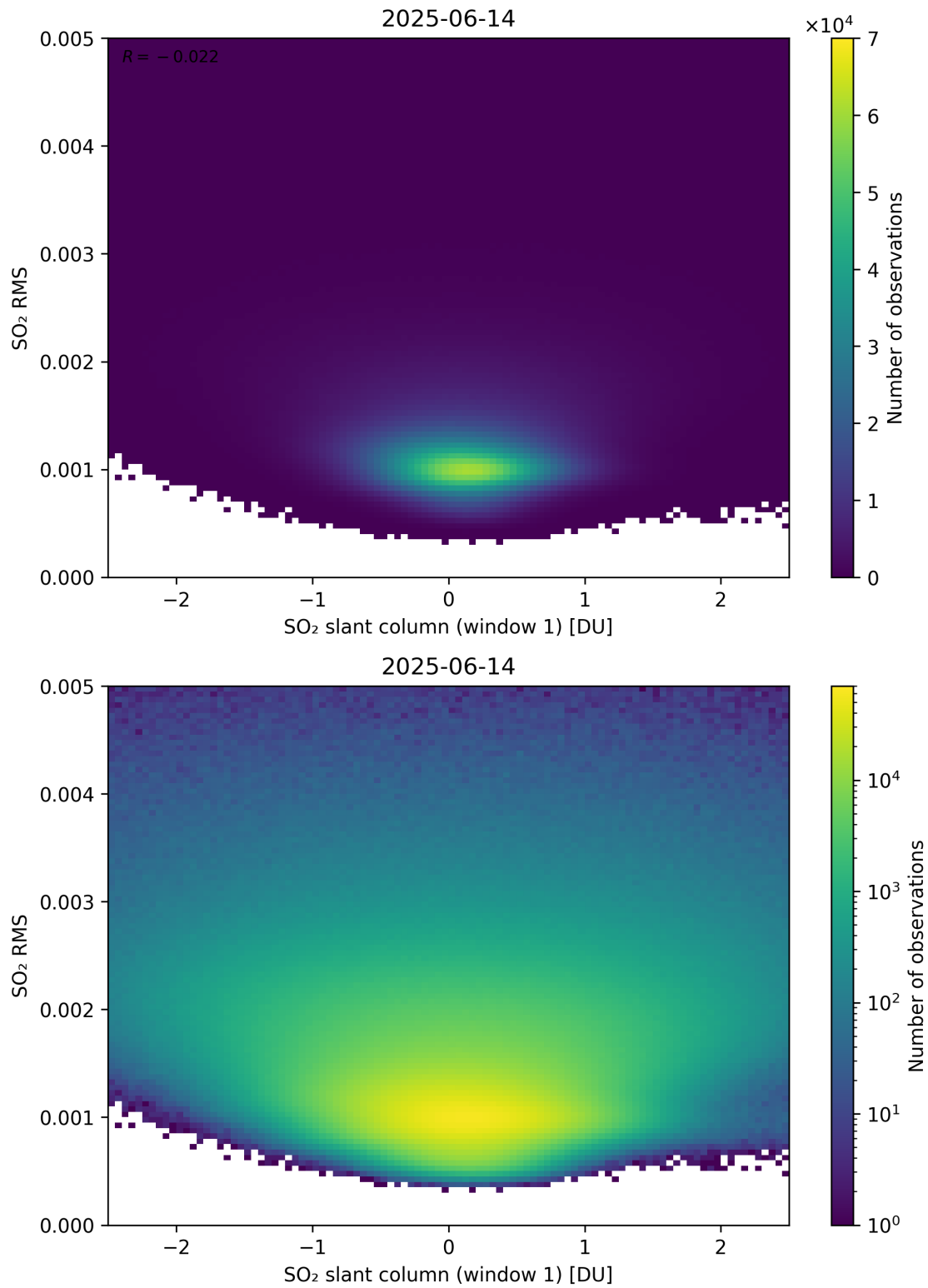


Figure 267: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

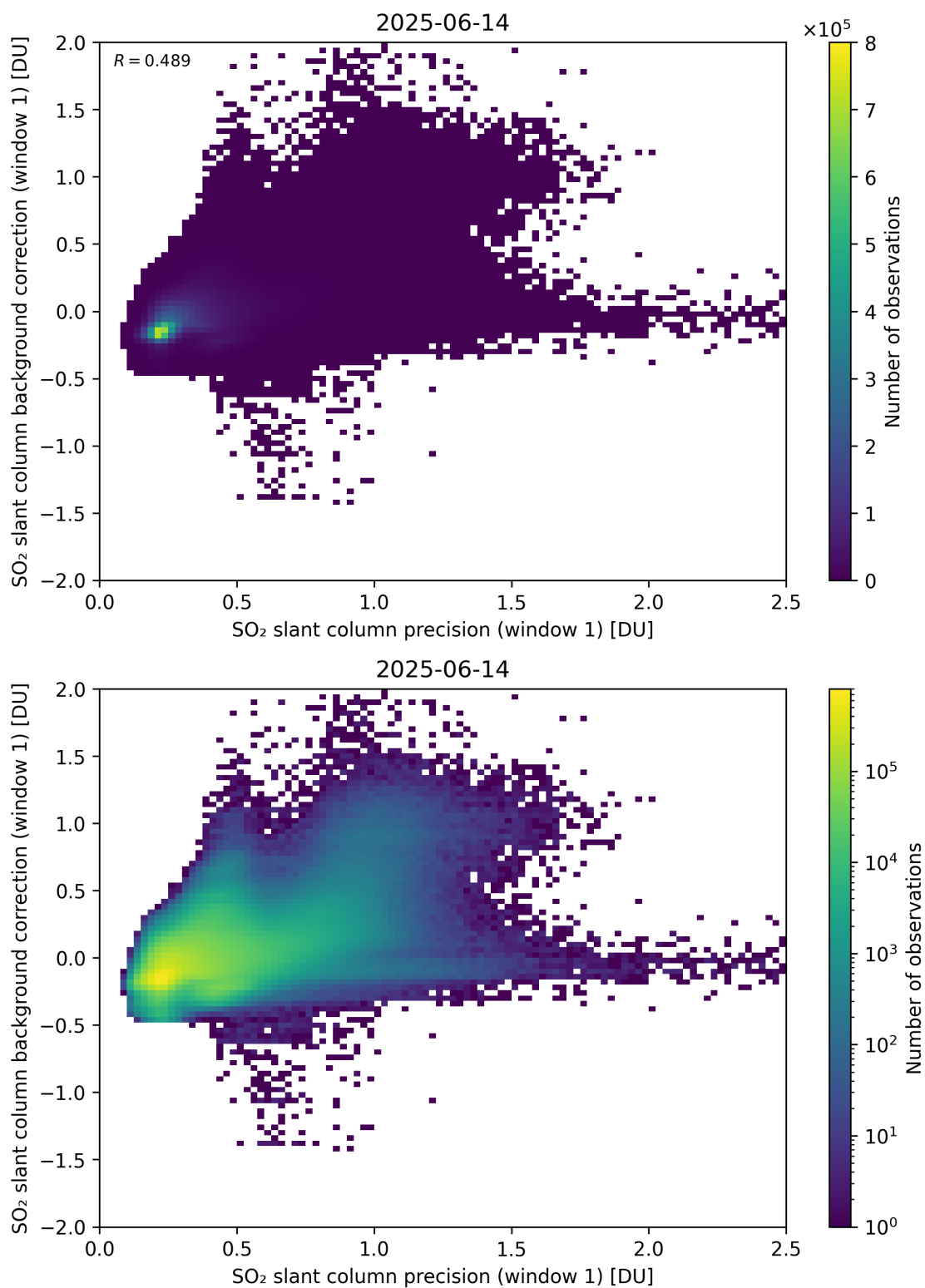


Figure 268: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

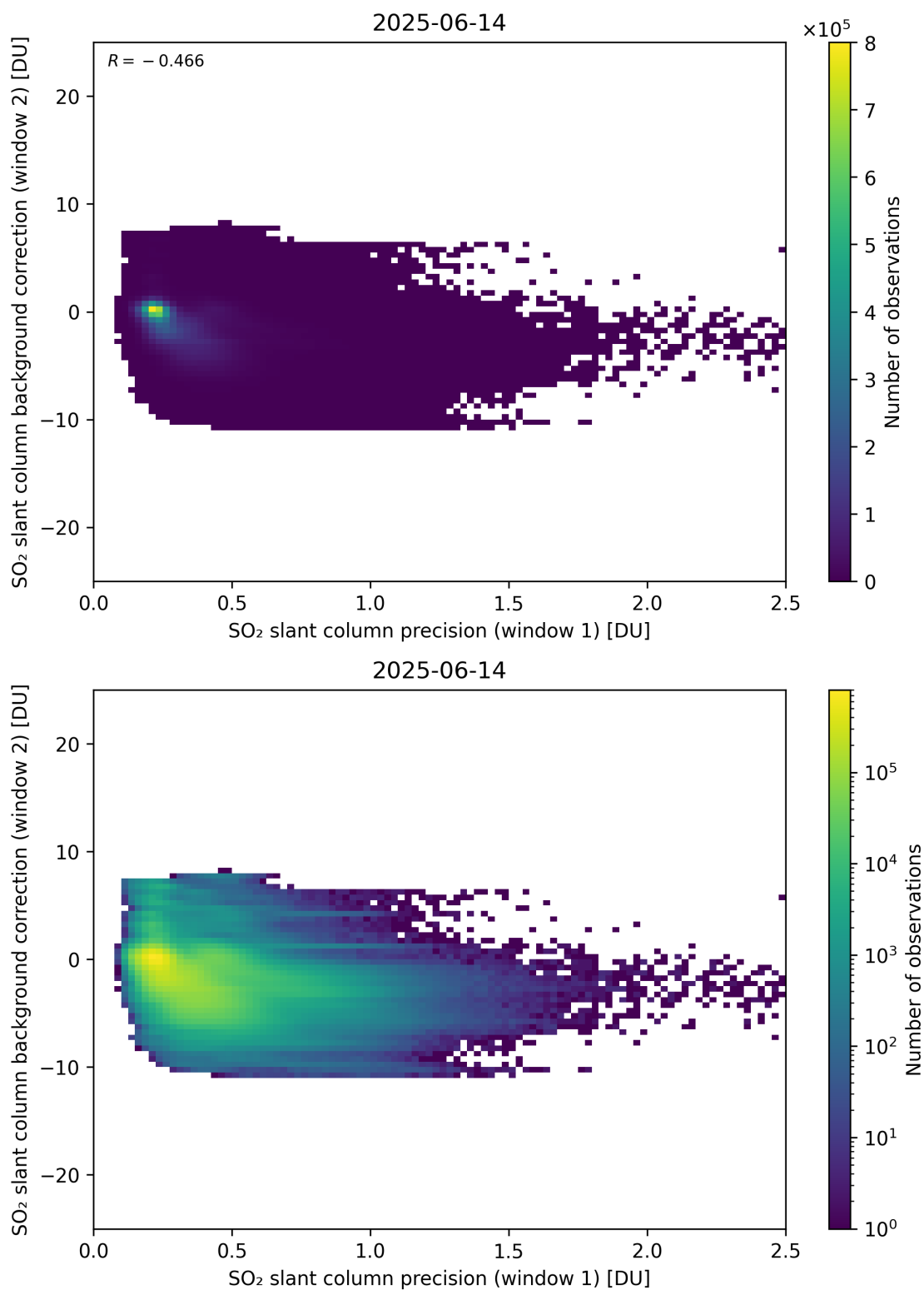


Figure 269: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

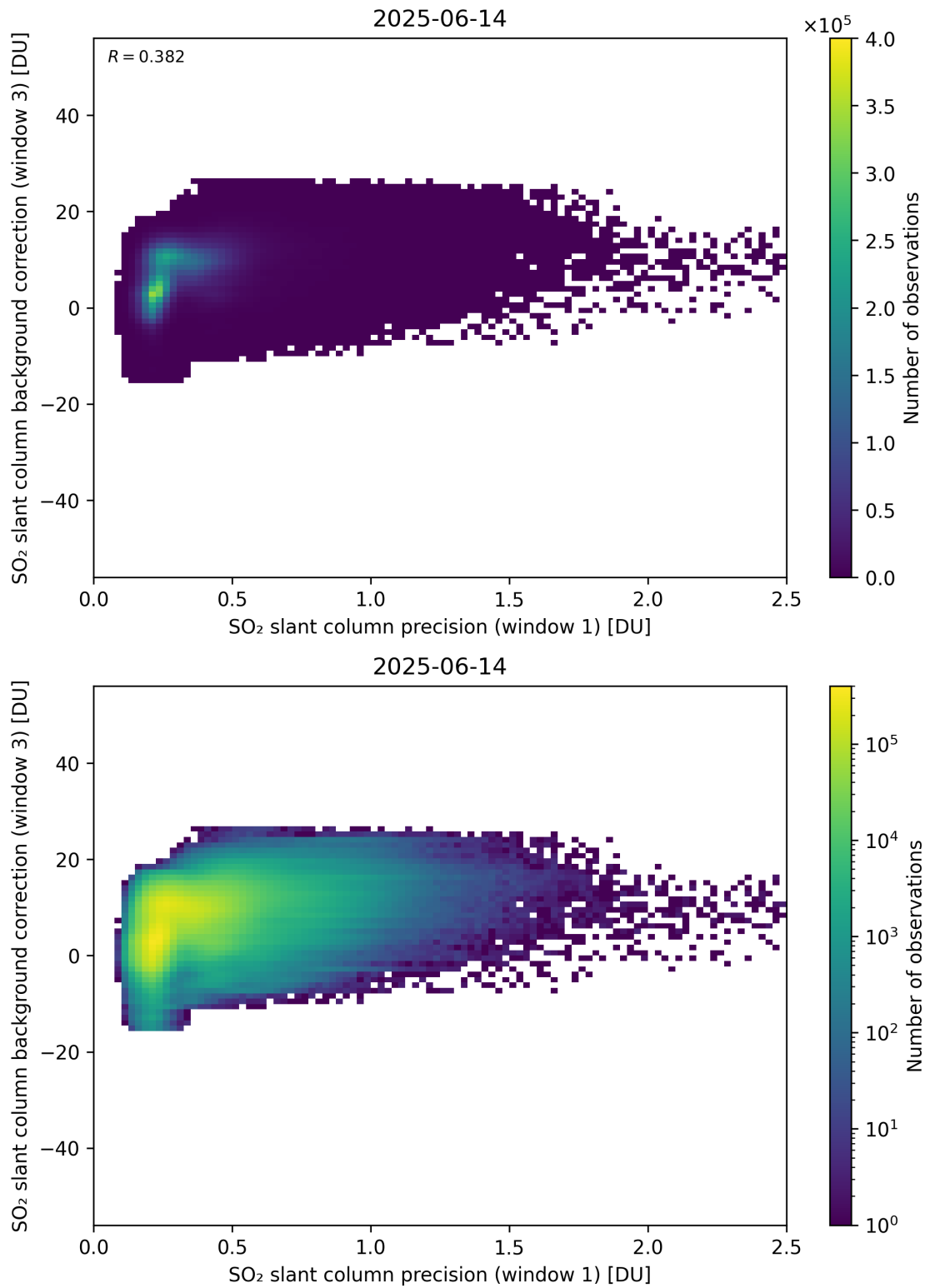


Figure 270: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

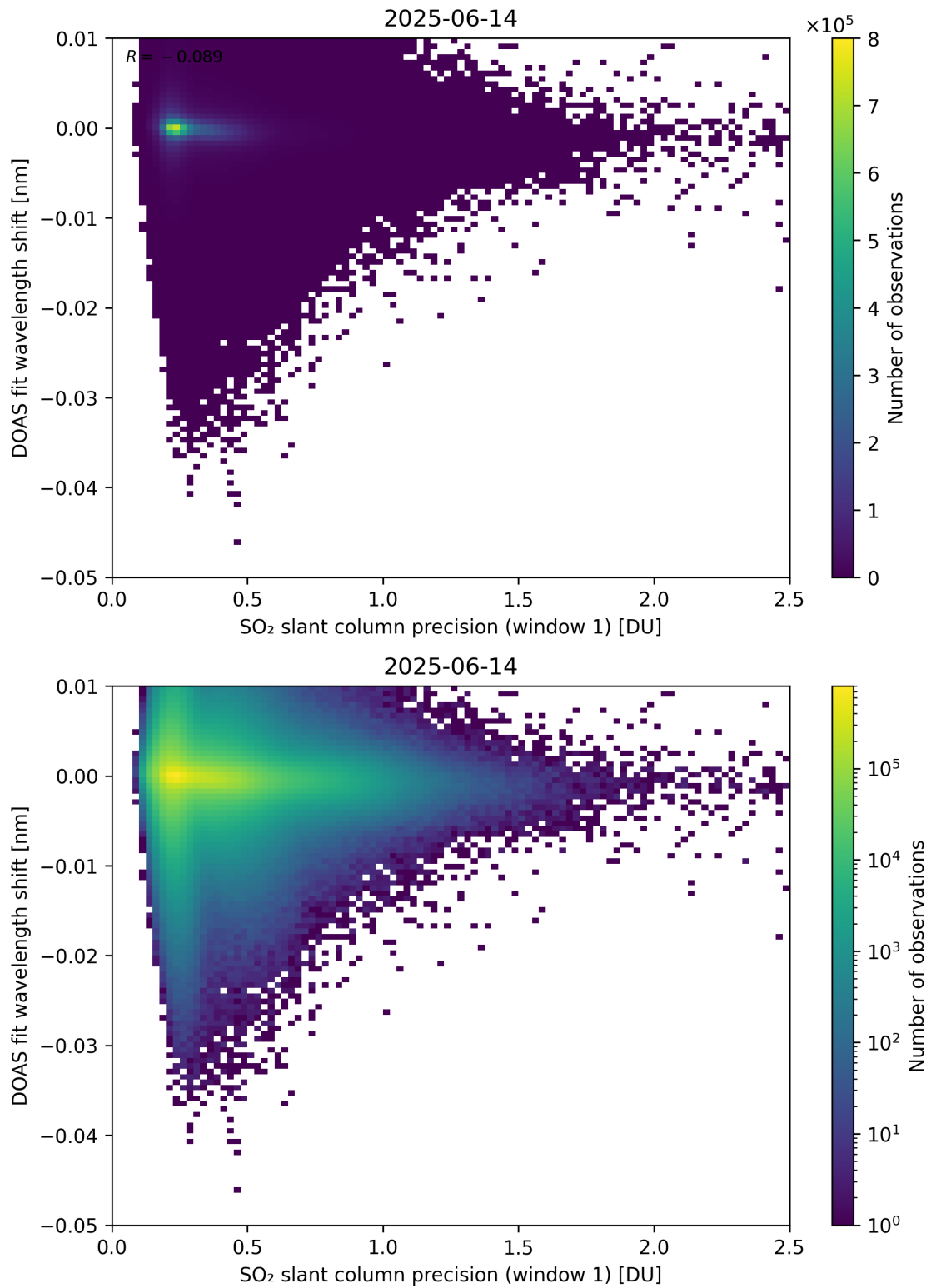


Figure 271: Scatter density plot of “SO₂ slant column precision (window 1)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

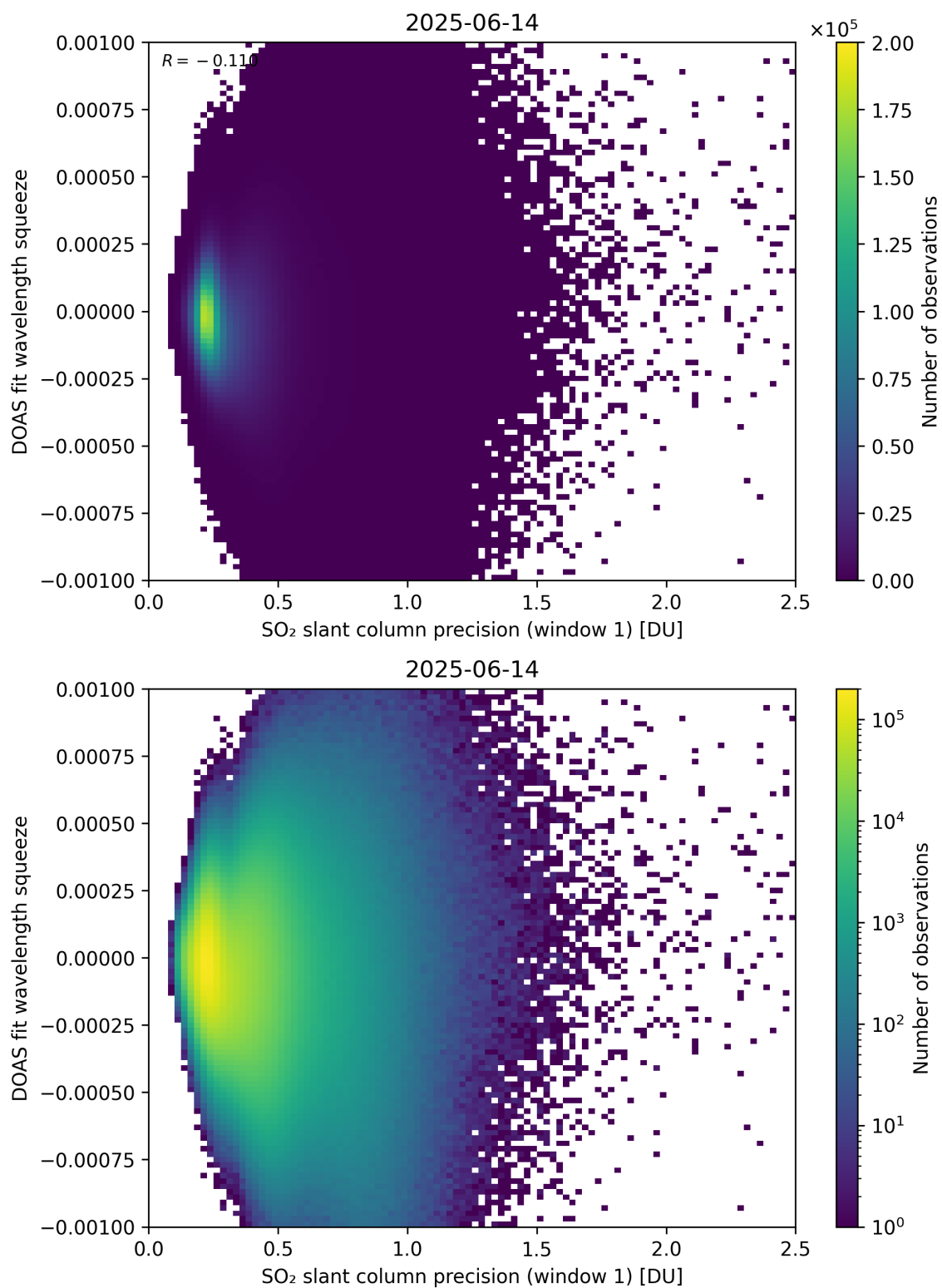


Figure 272: Scatter density plot of “SO₂ slant column precision (window 1)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

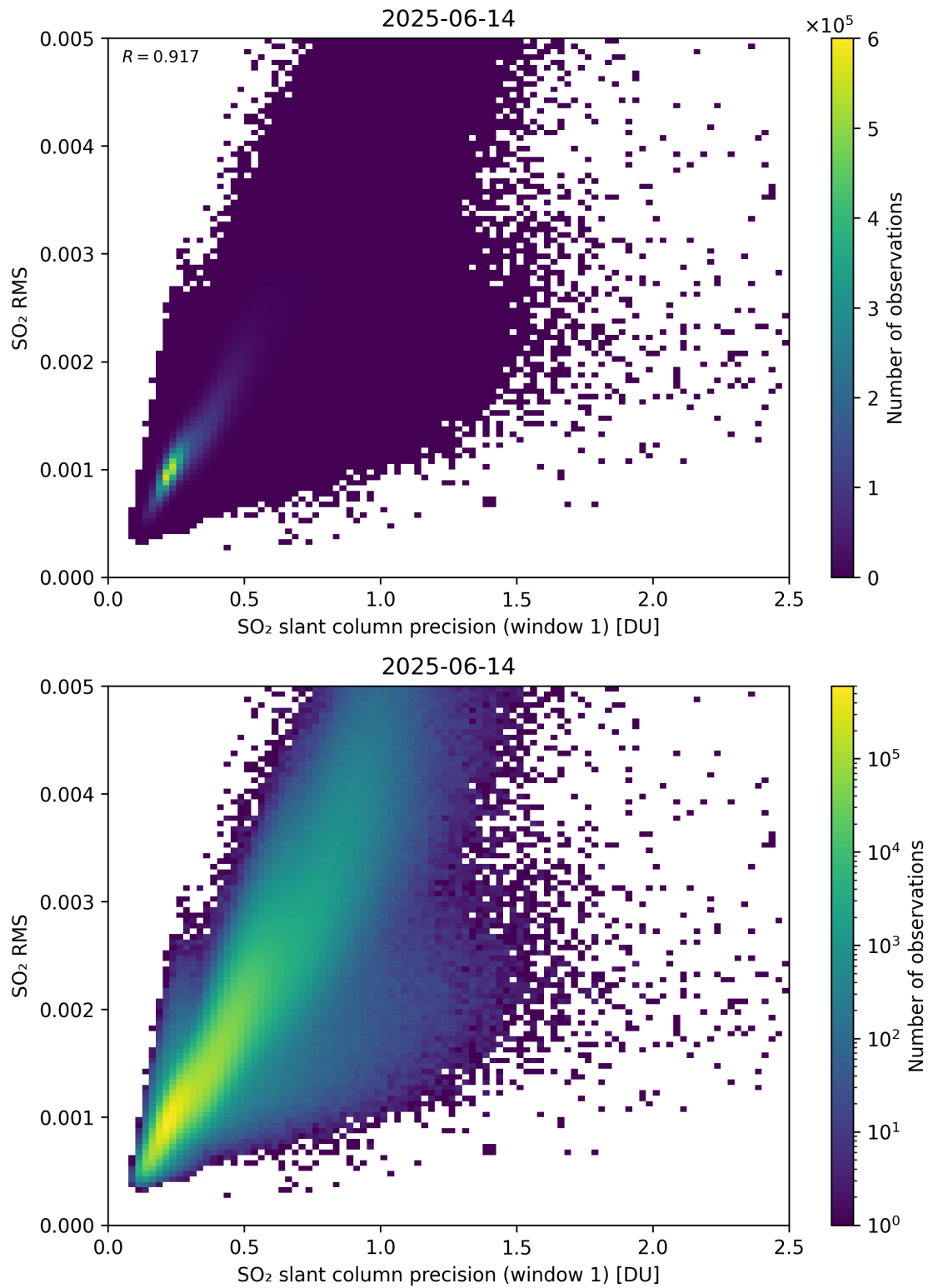


Figure 273: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

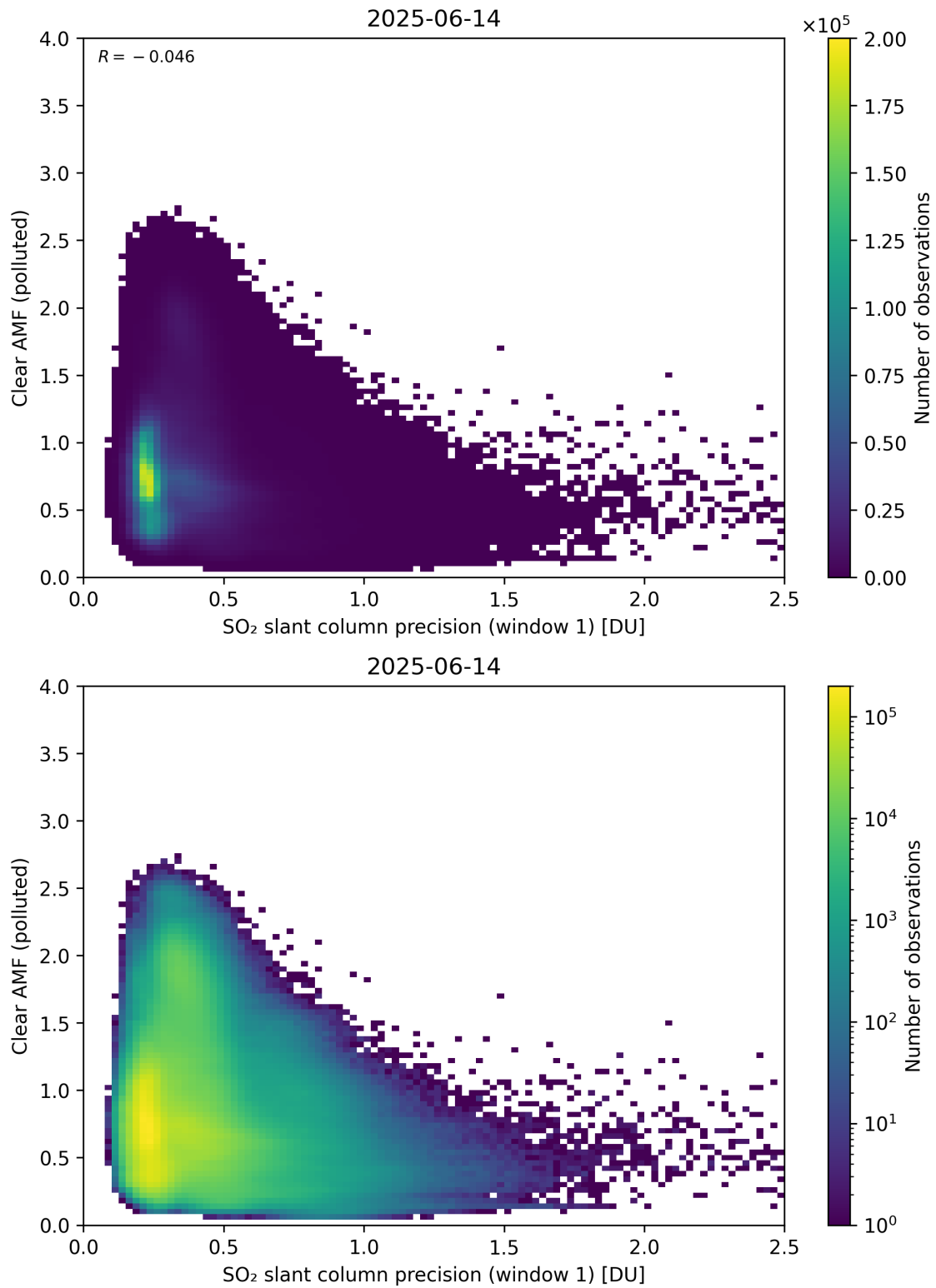


Figure 274: Scatter density plot of “SO₂ slant column precision (window 1)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

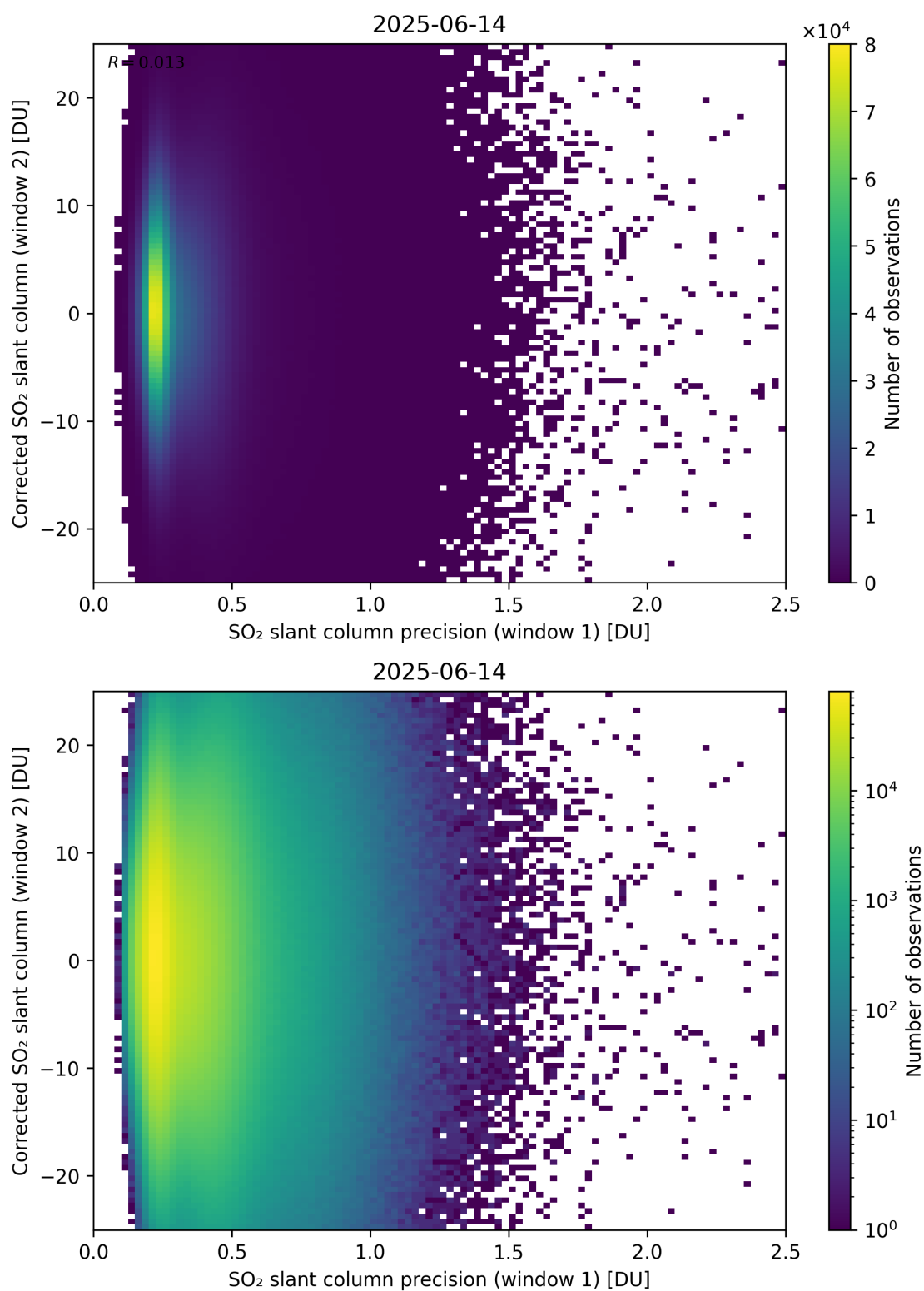


Figure 275: Scatter density plot of “SO₂ slant column precision (window 1)” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

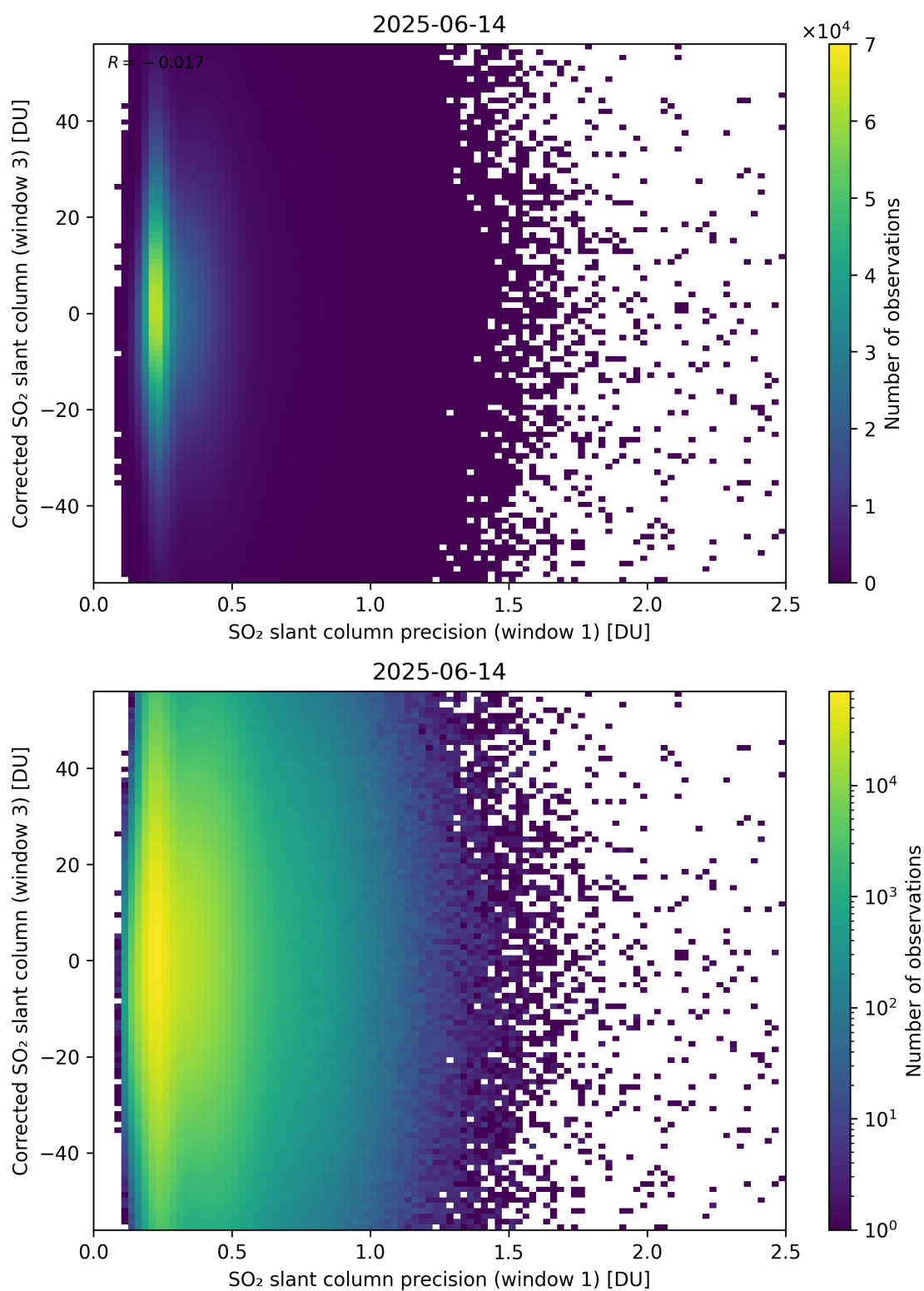


Figure 276: Scatter density plot of “SO₂ slant column precision (window 1)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

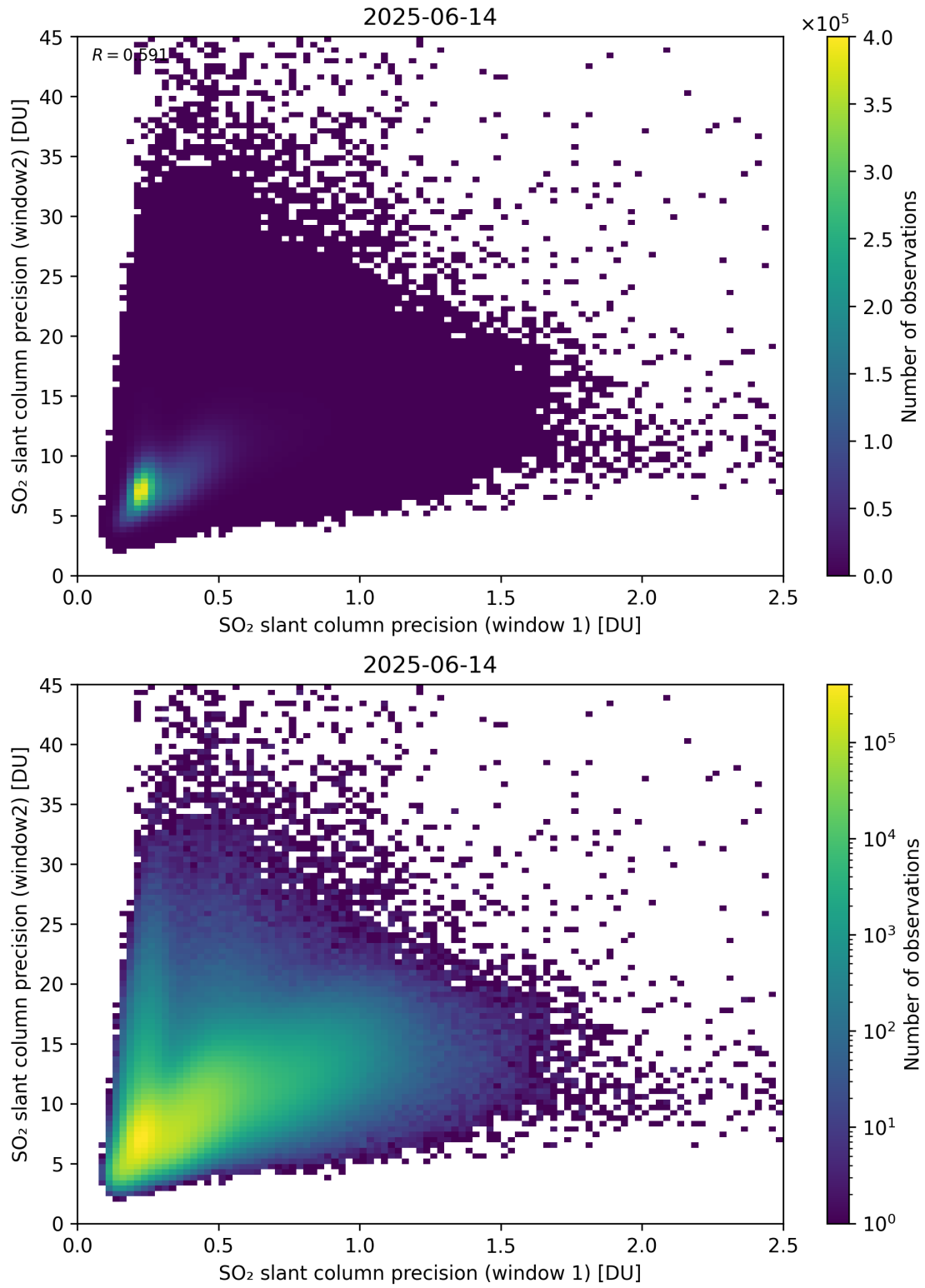


Figure 277: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

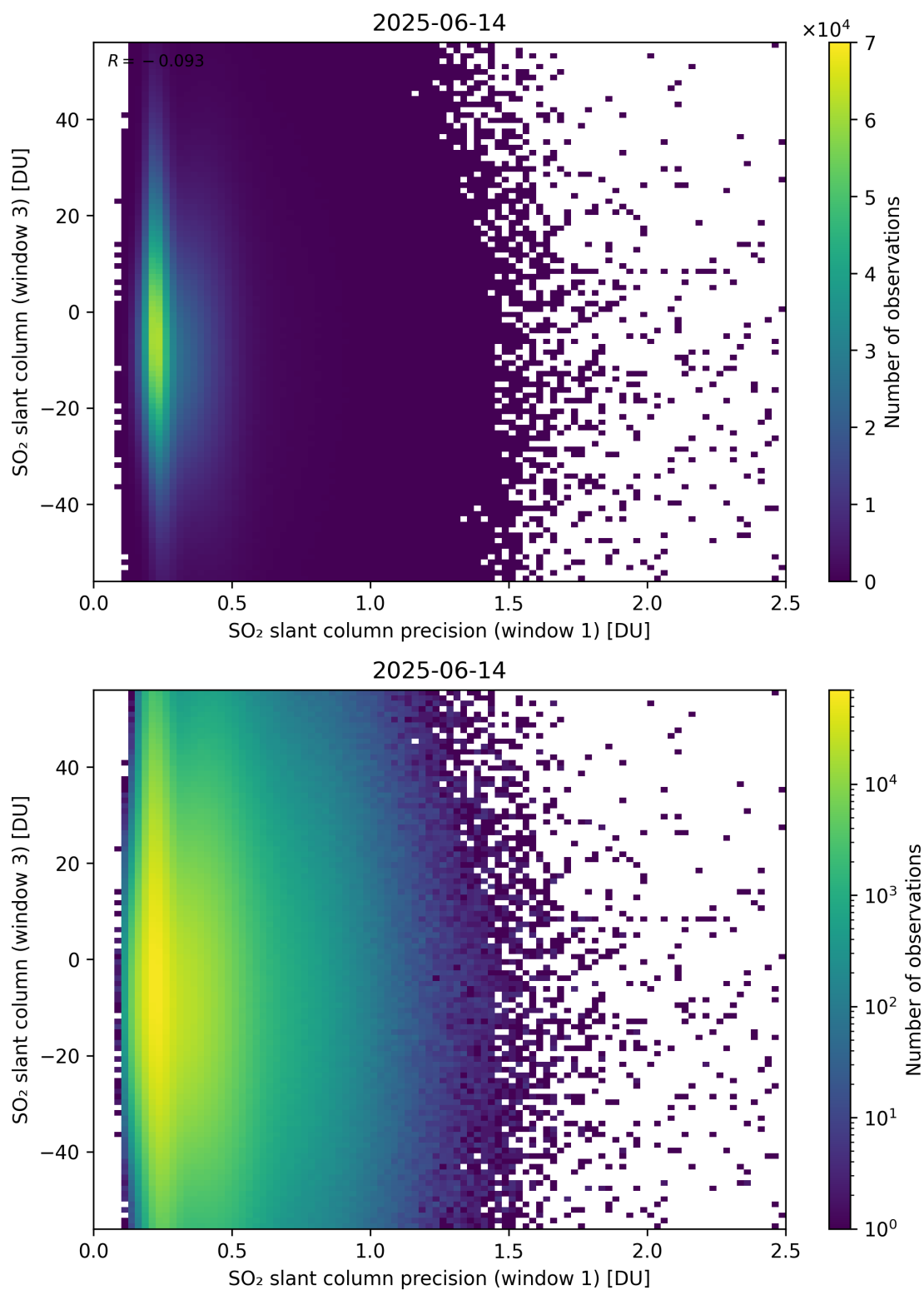


Figure 278: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

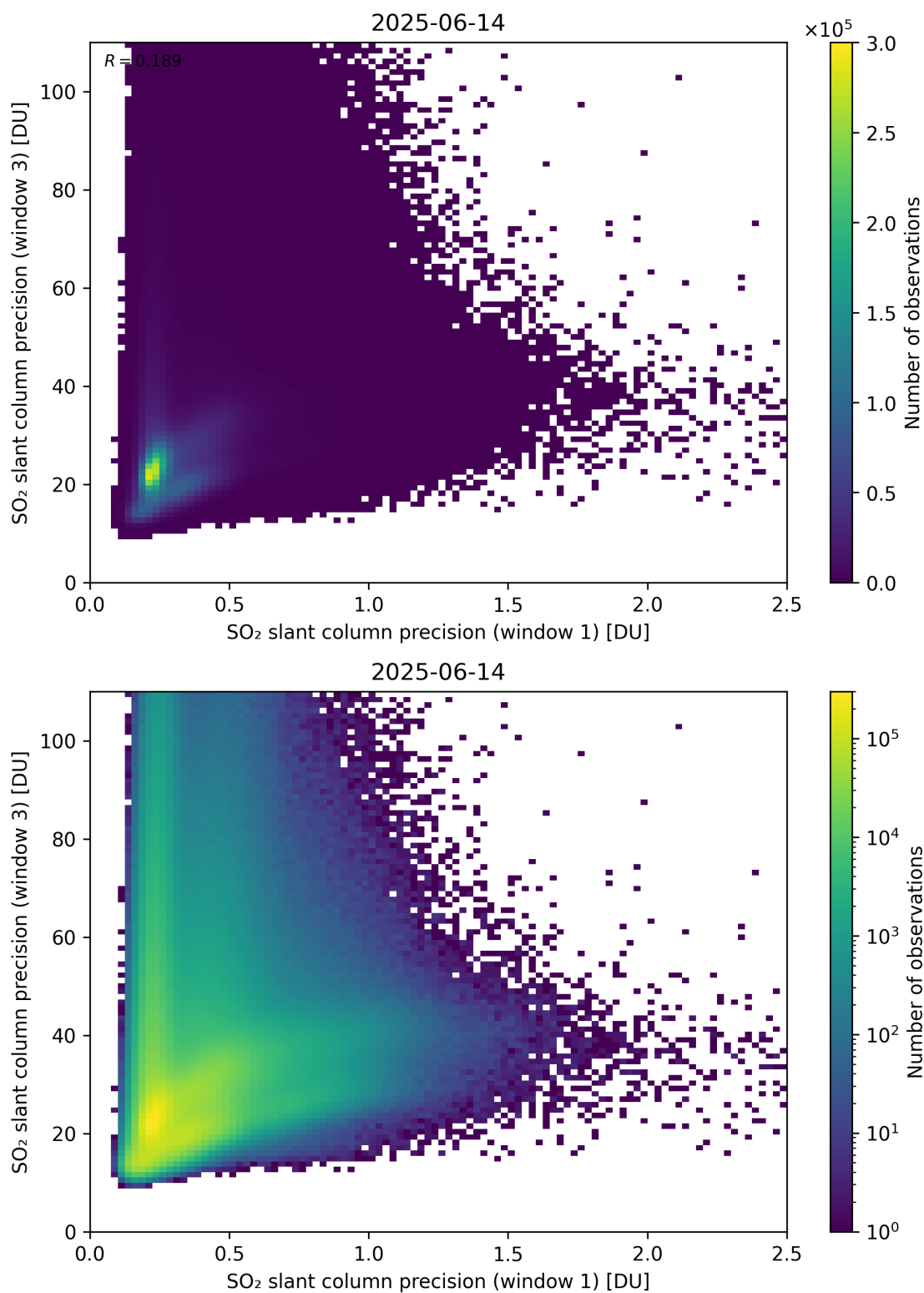


Figure 279: Scatter density plot of “SO₂ slant column precision (window 1)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

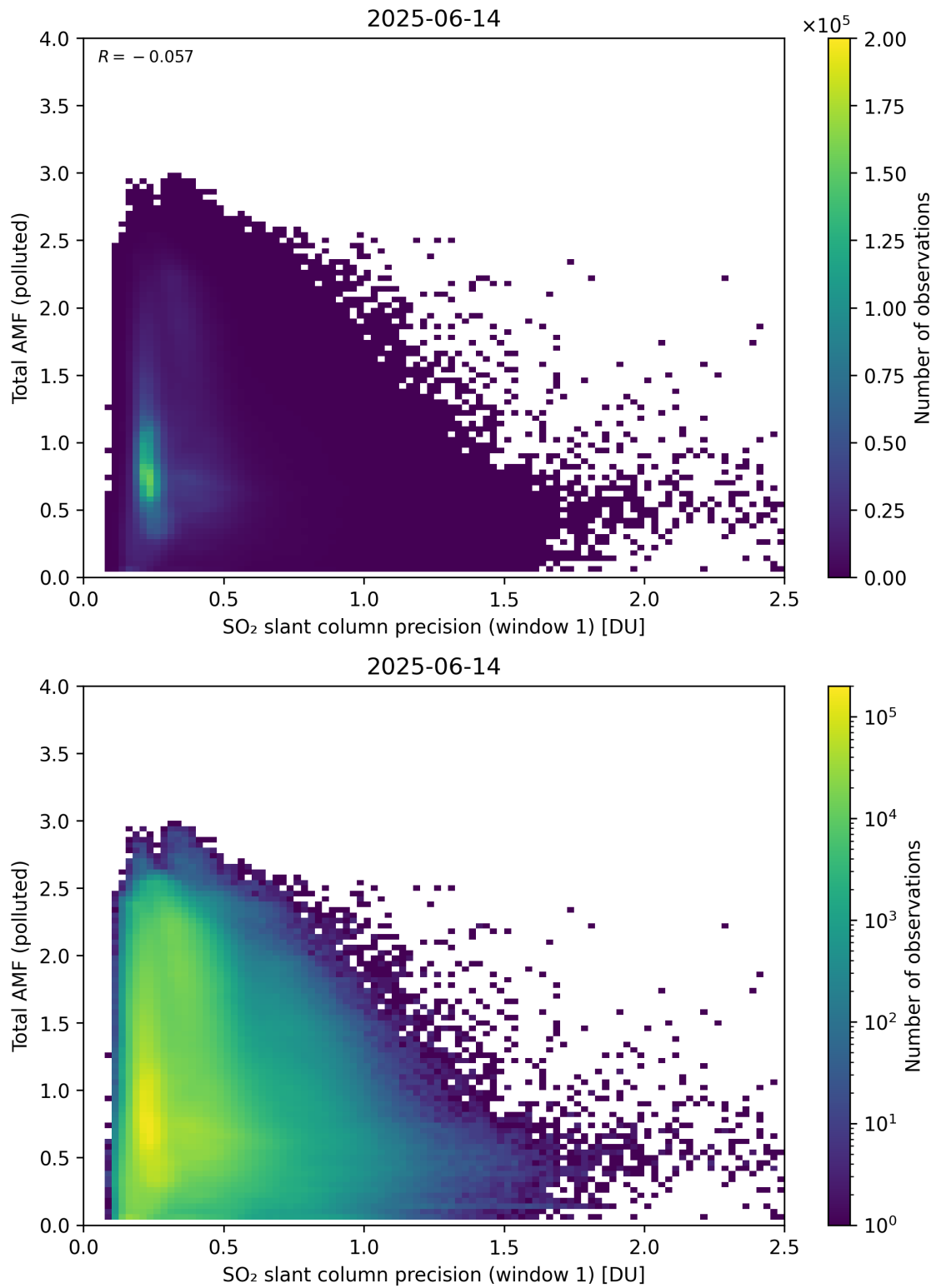


Figure 280: Scatter density plot of “SO₂ slant column precision (window 1)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

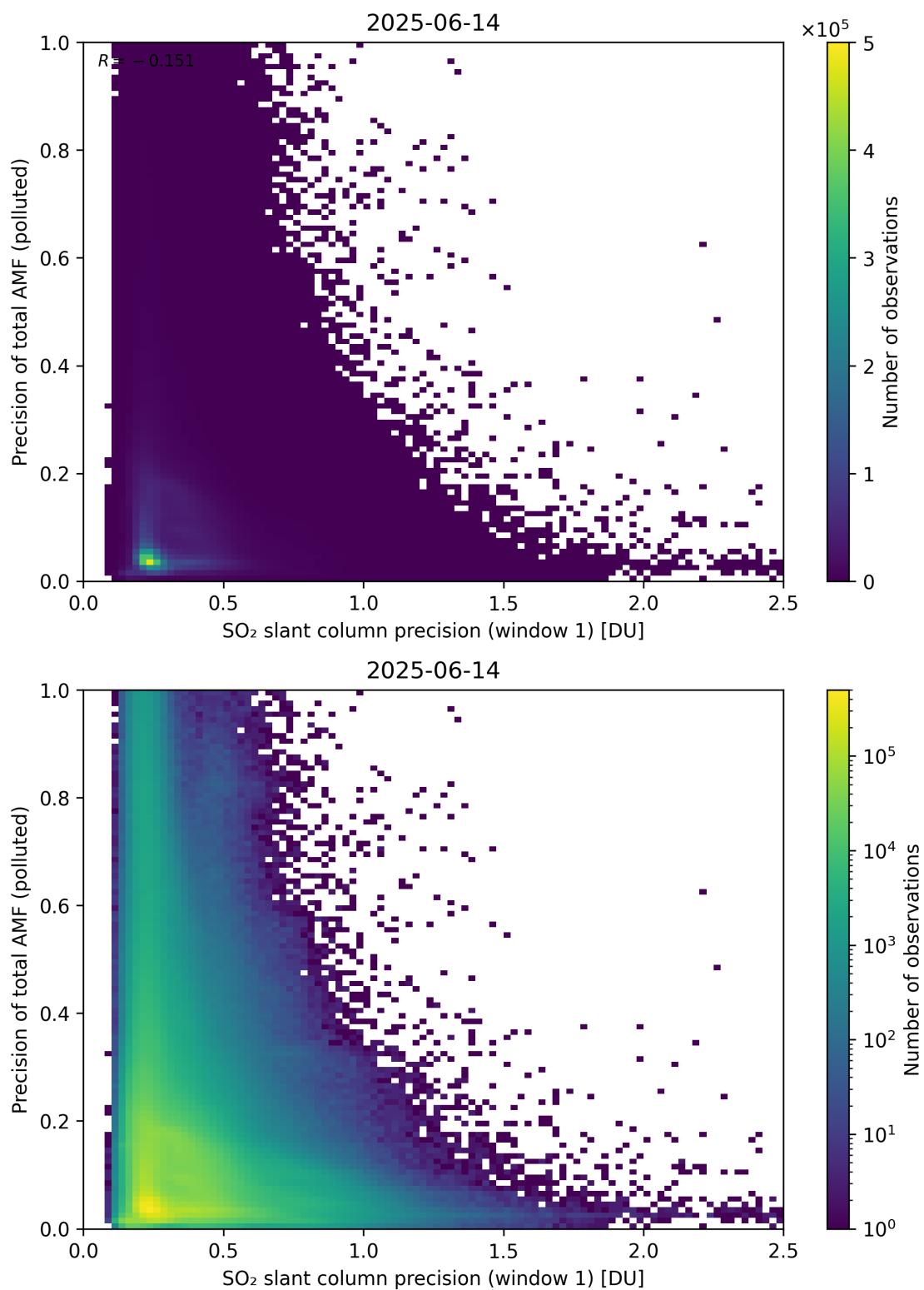


Figure 281: Scatter density plot of “SO₂ slant column precision (window 1)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

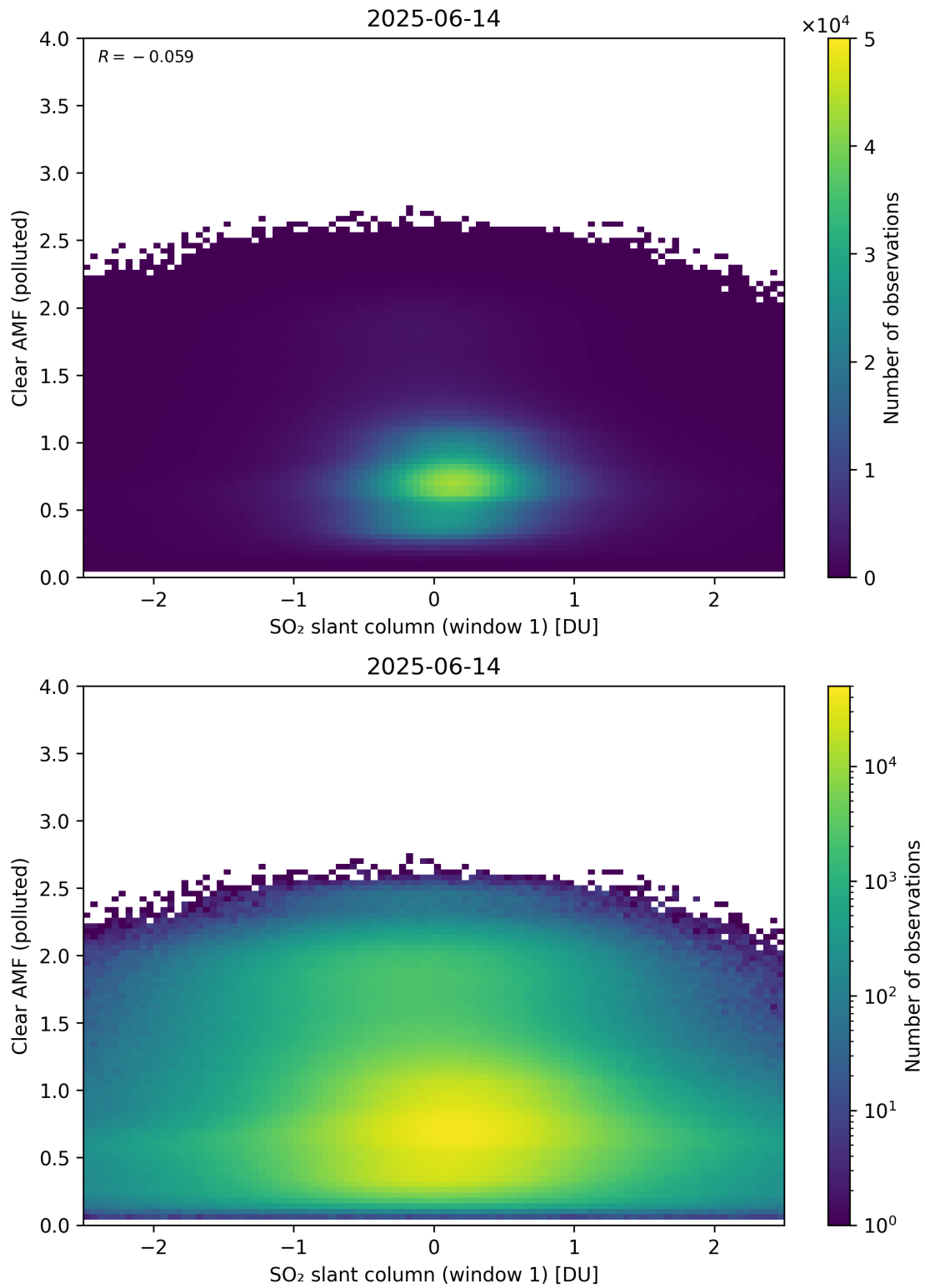


Figure 282: Scatter density plot of “SO₂ slant column (window 1)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

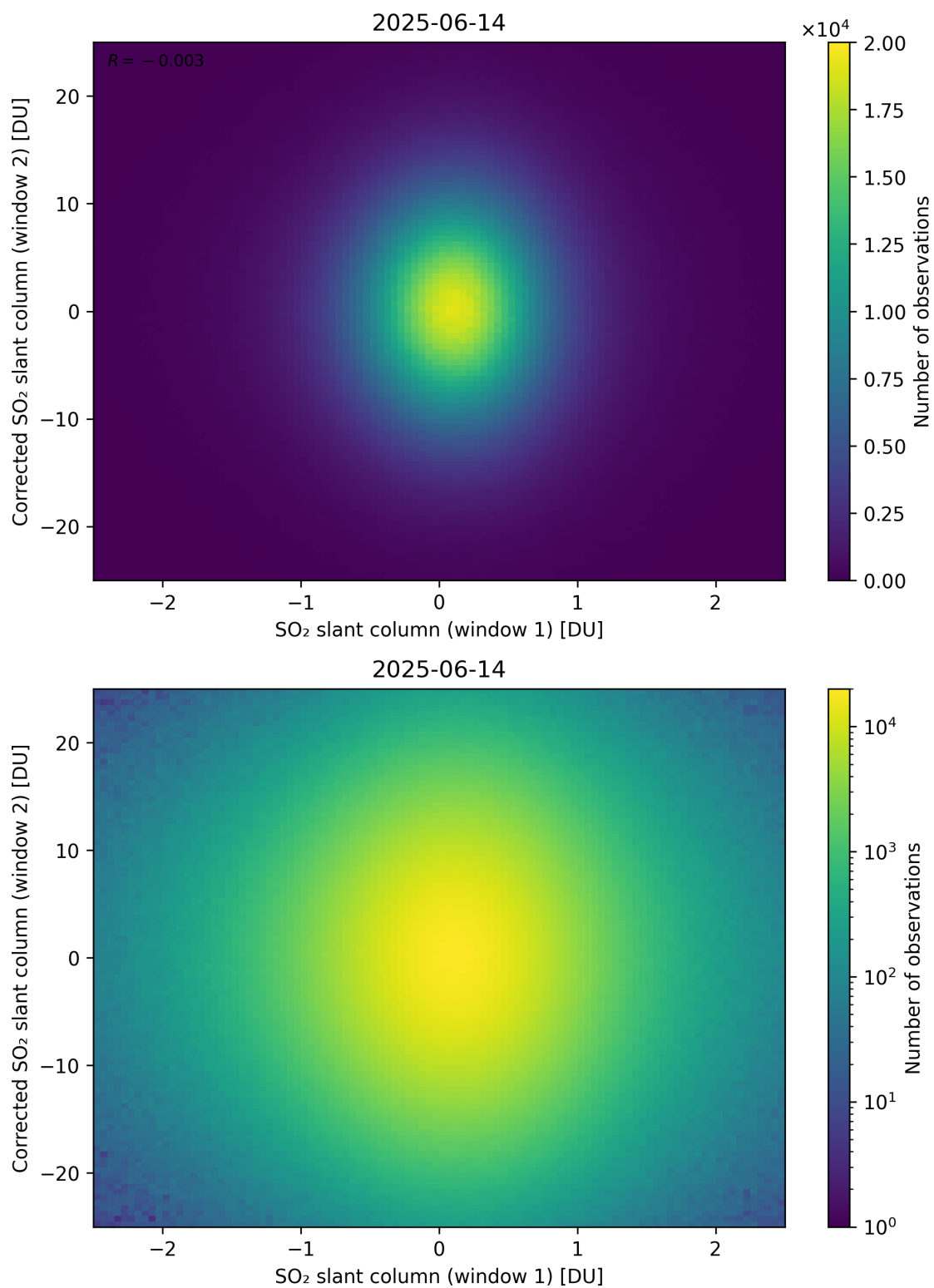


Figure 283: Scatter density plot of “SO₂ slant column (window 1)” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

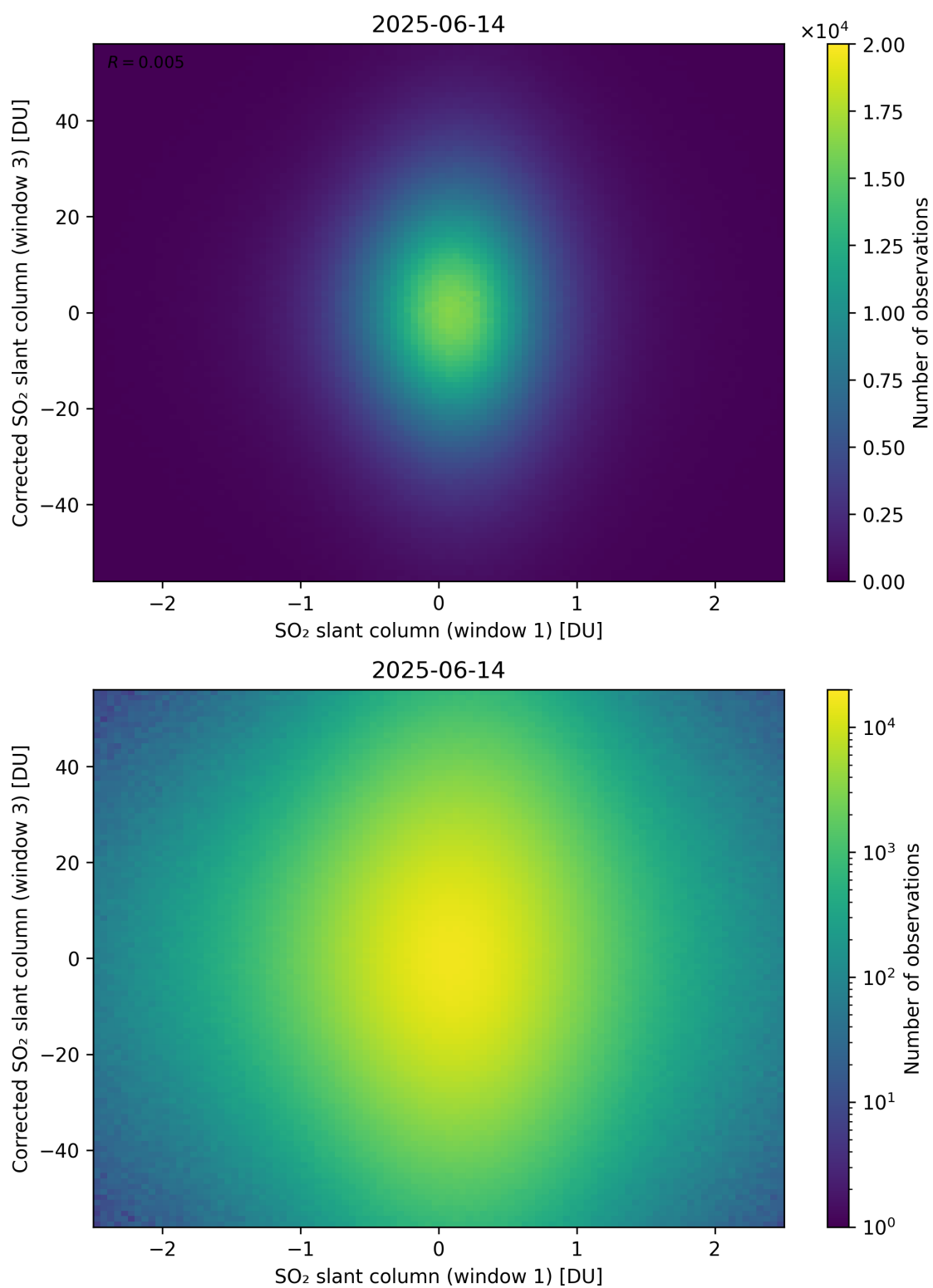


Figure 284: Scatter density plot of “SO₂ slant column (window 1)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

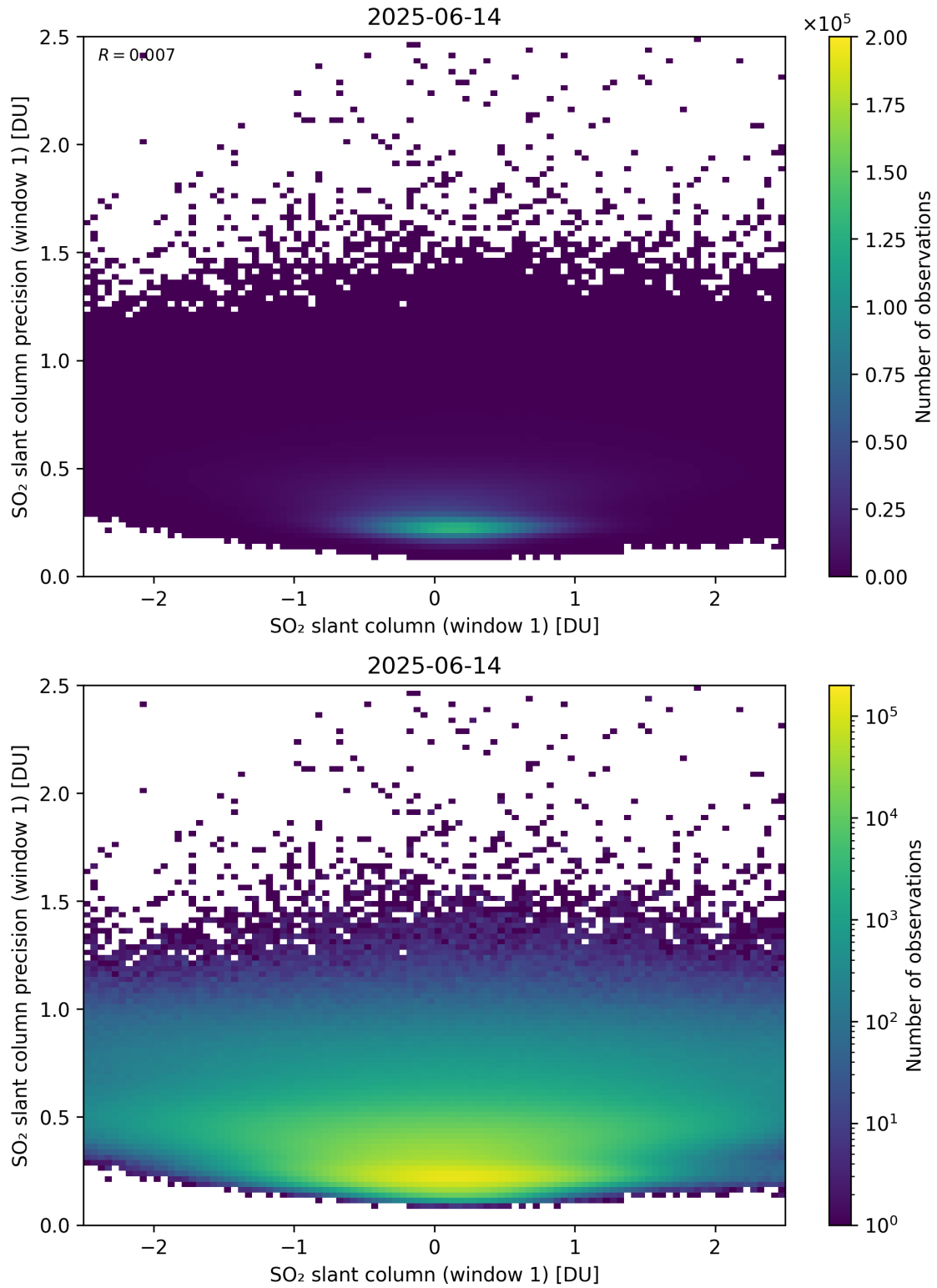


Figure 285: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

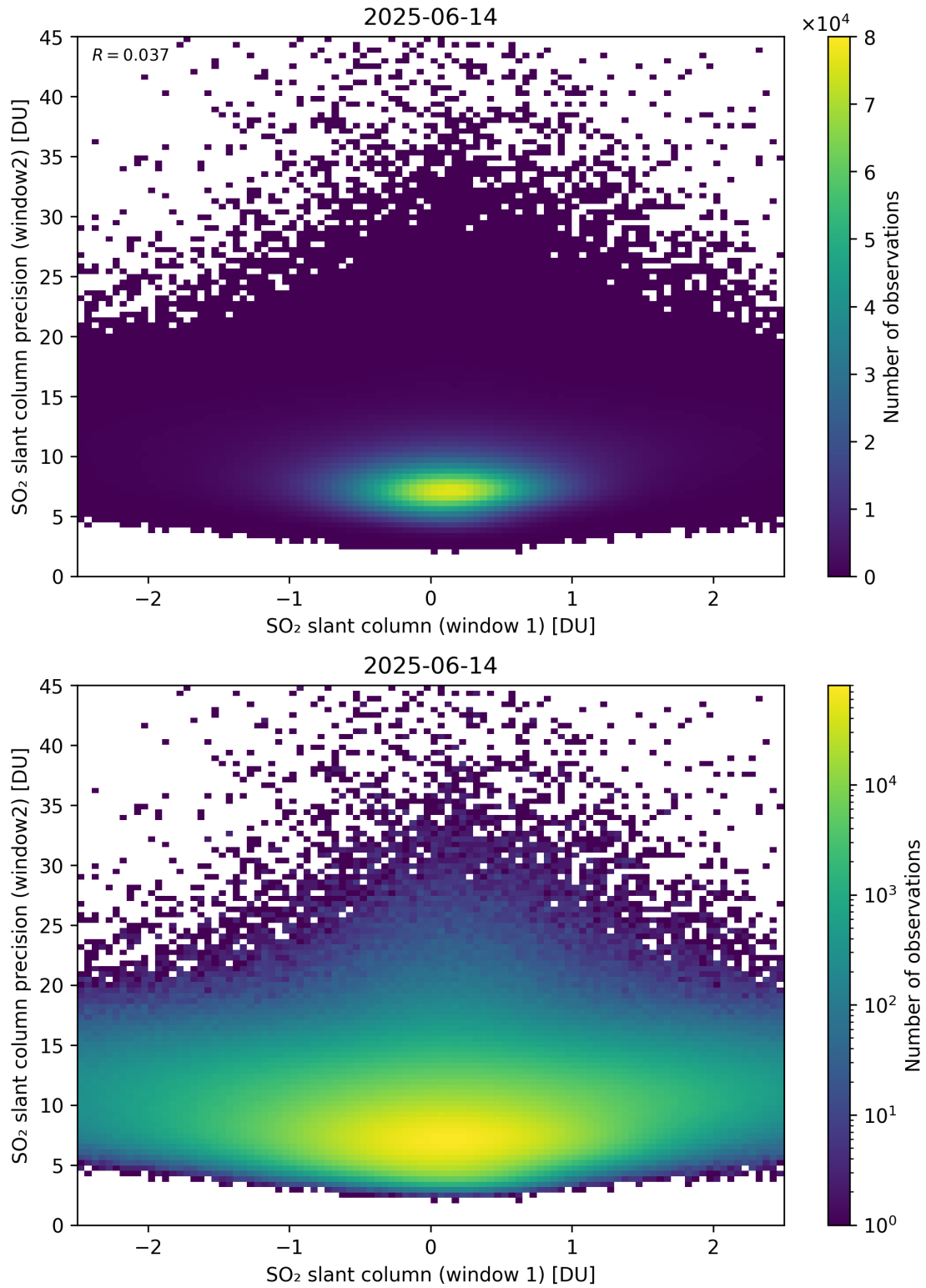


Figure 286: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

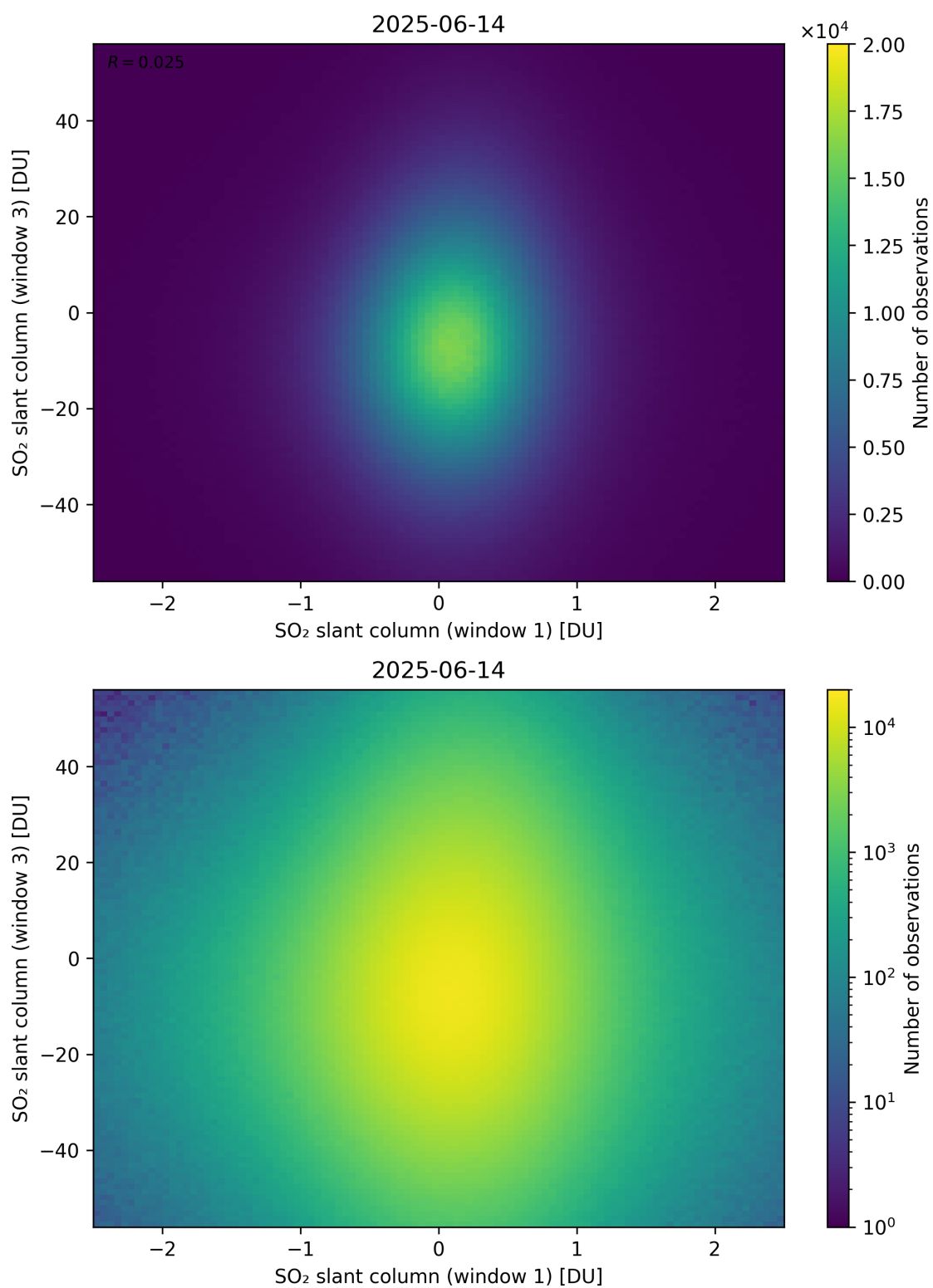


Figure 287: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

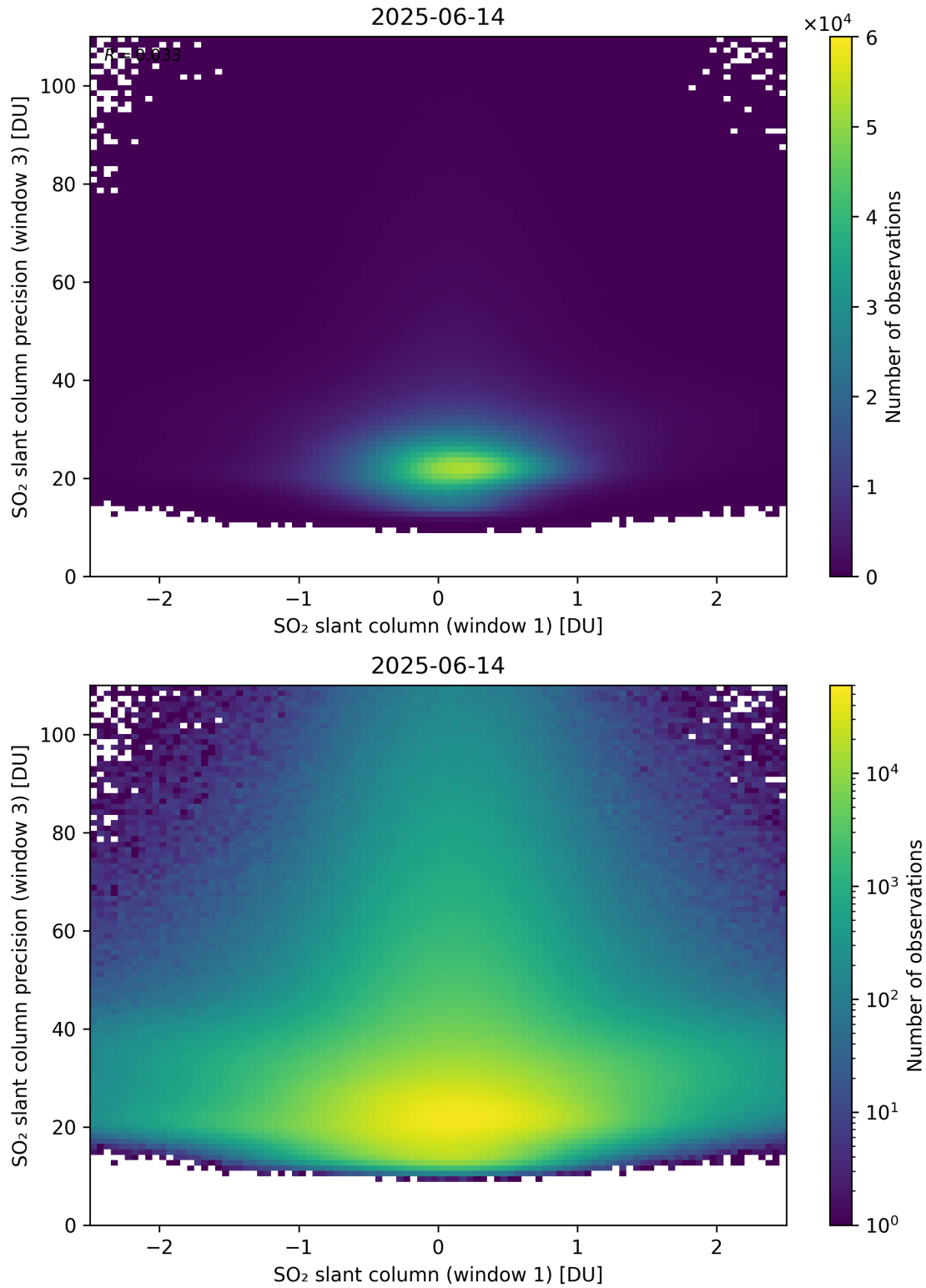


Figure 288: Scatter density plot of “SO₂ slant column (window 1)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

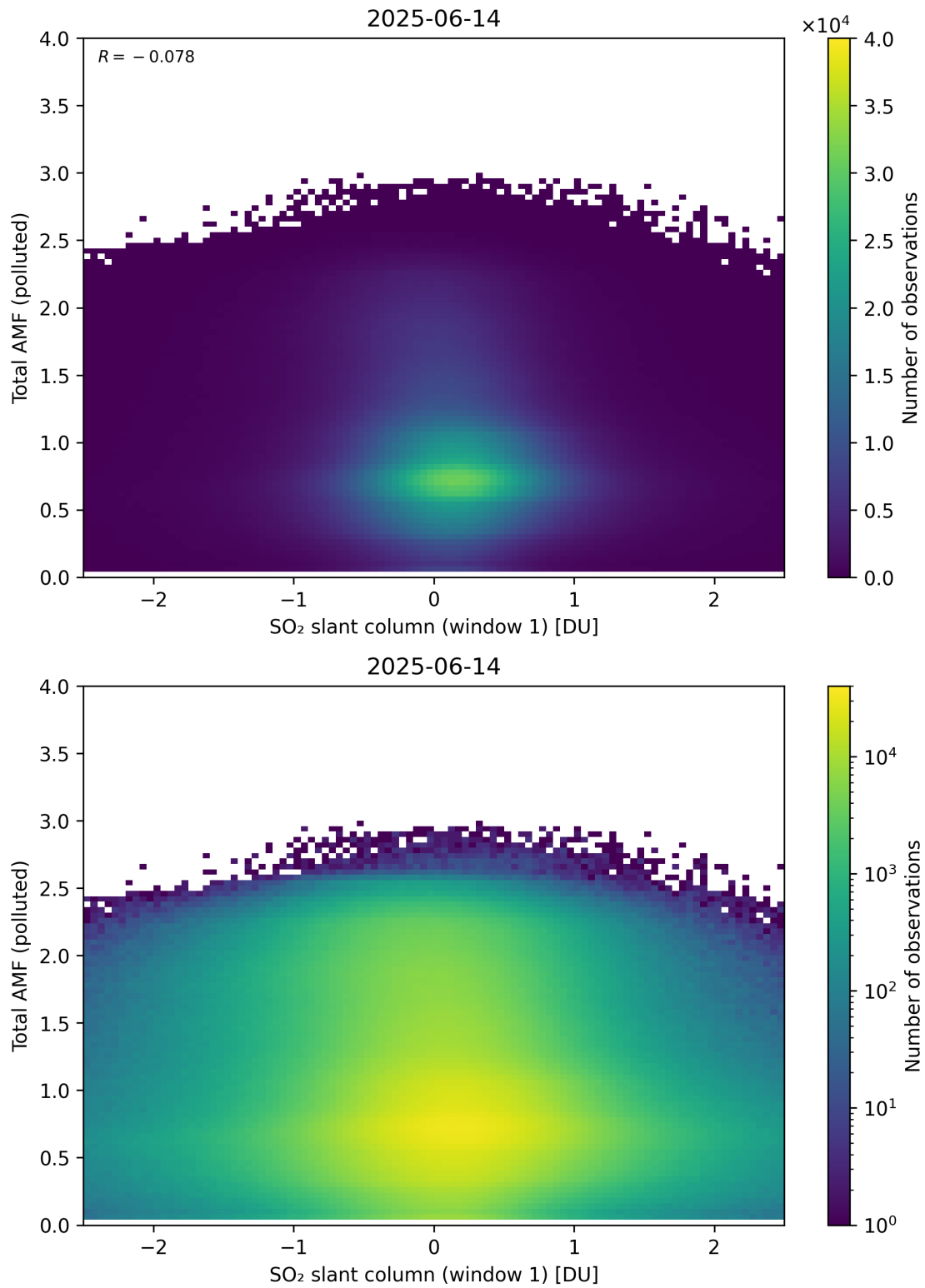


Figure 289: Scatter density plot of “SO₂ slant column (window 1)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

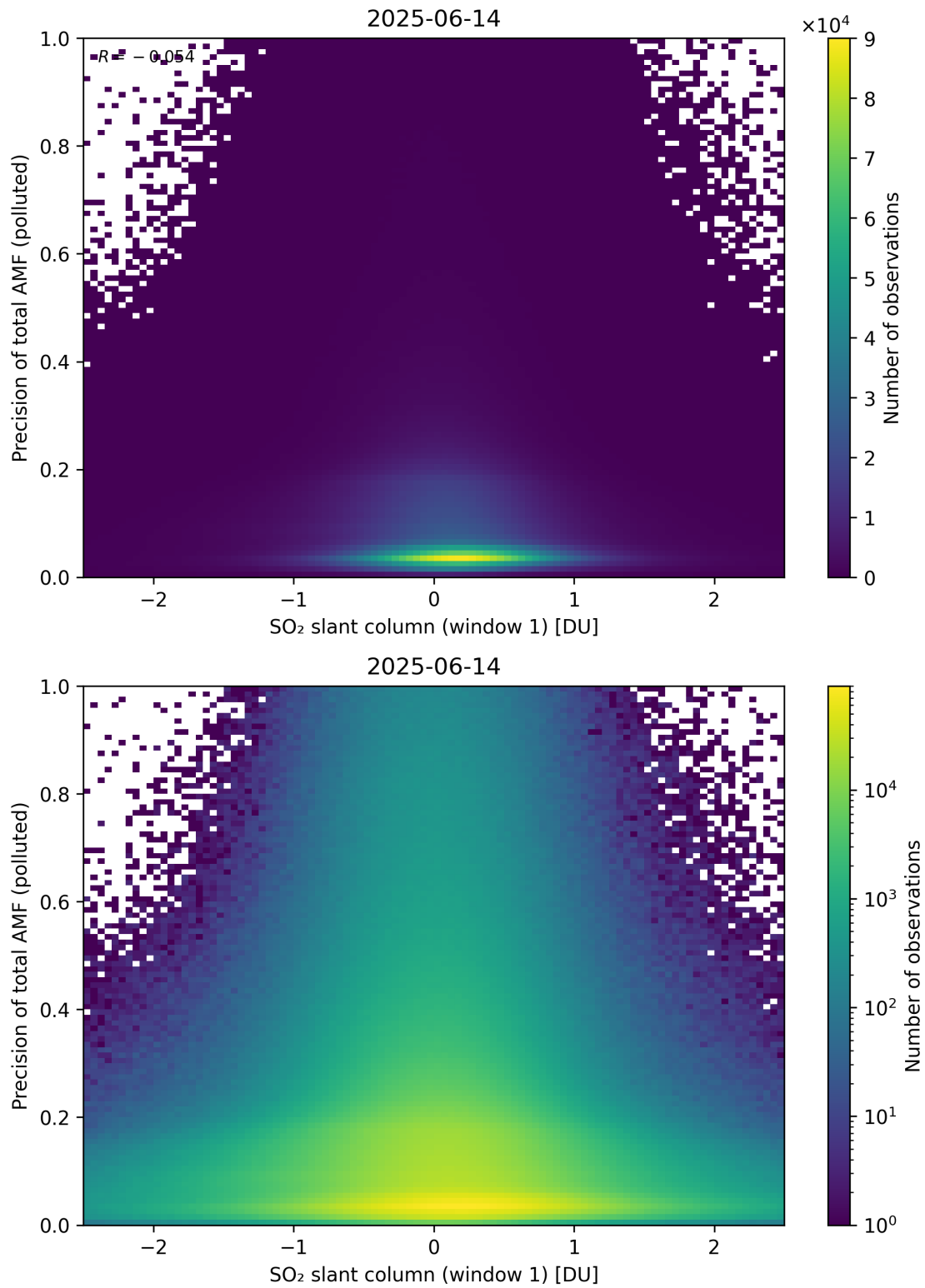


Figure 290: Scatter density plot of “SO₂ slant column (window 1)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

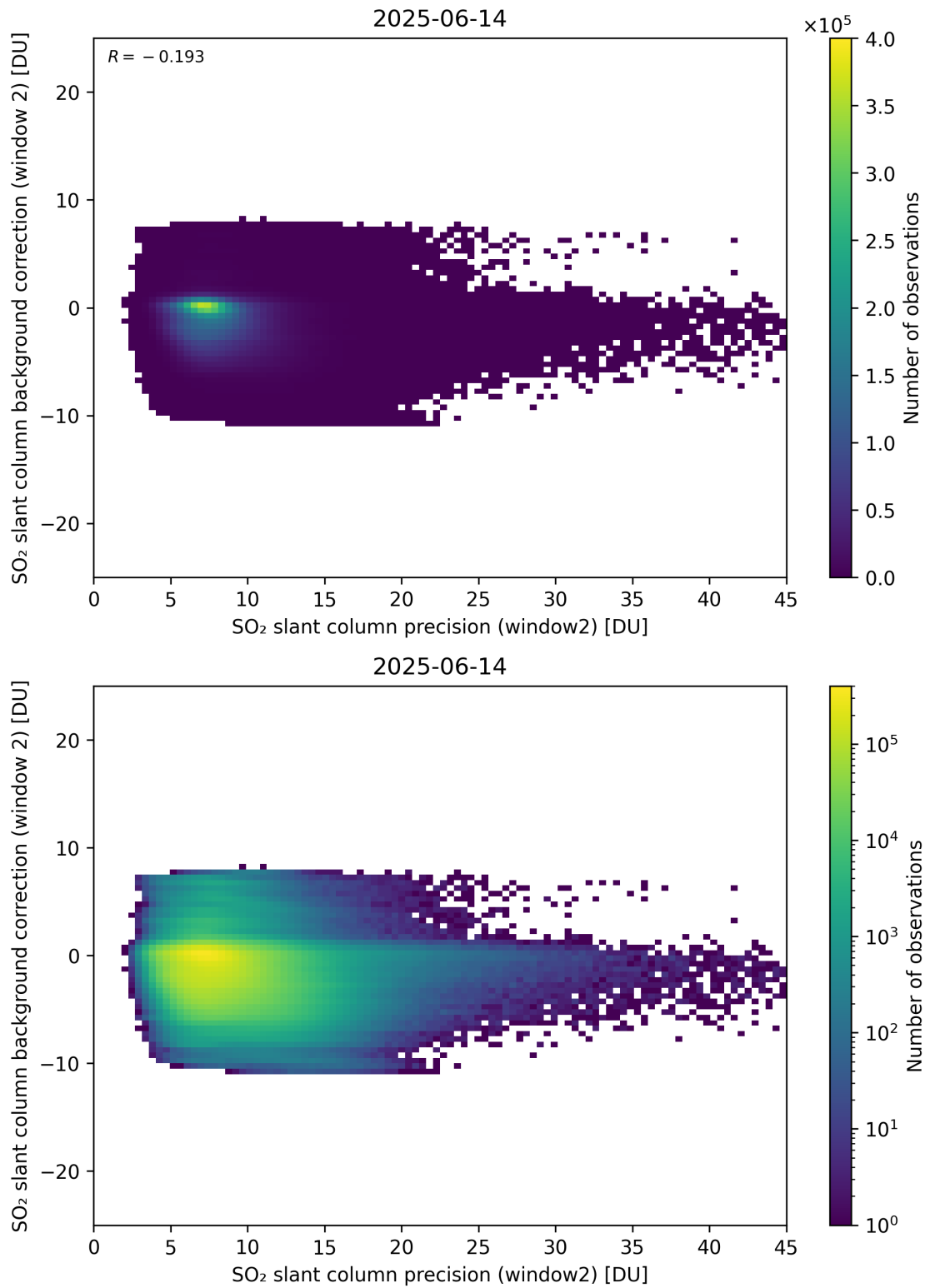


Figure 291: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

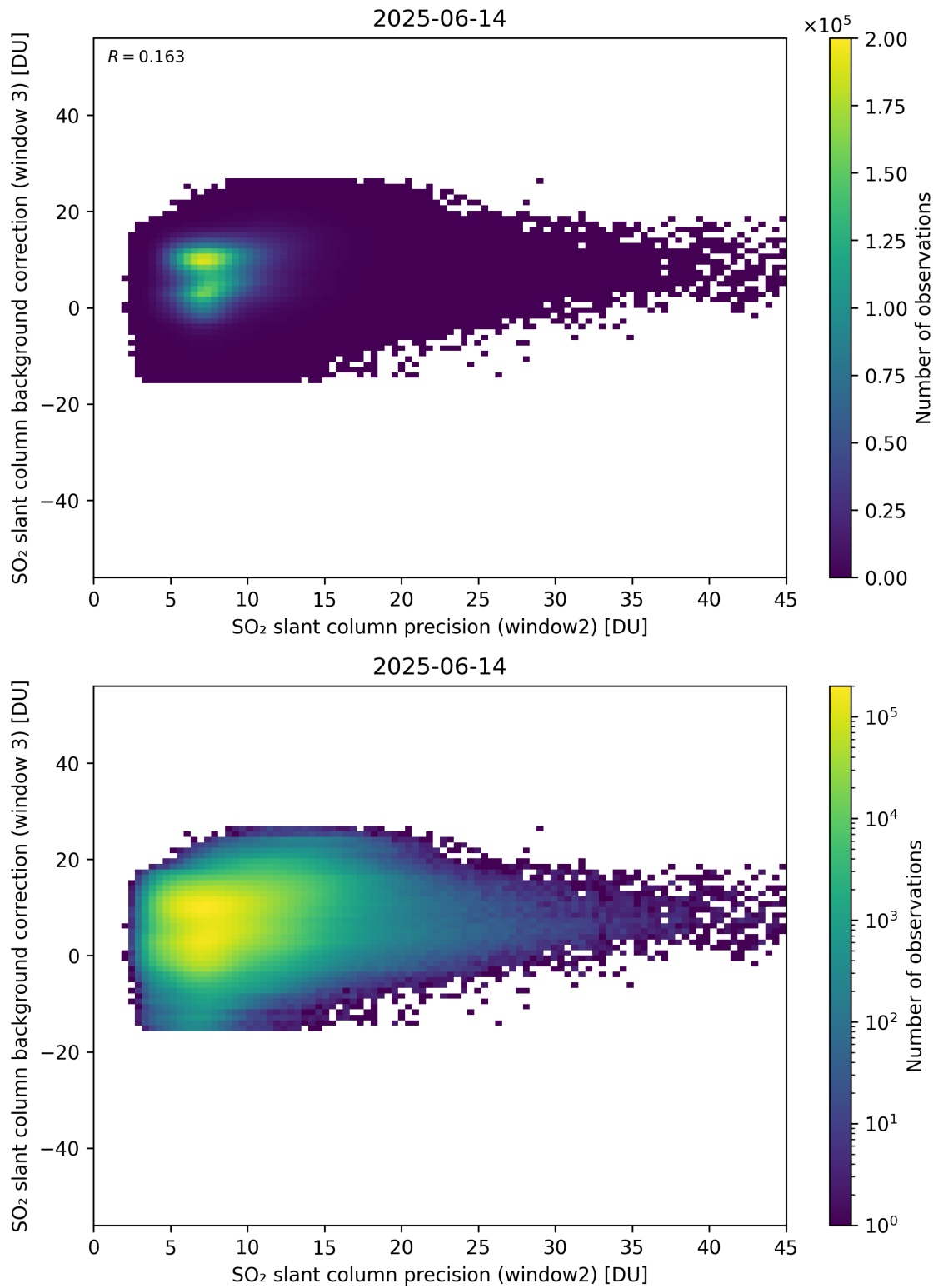


Figure 292: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

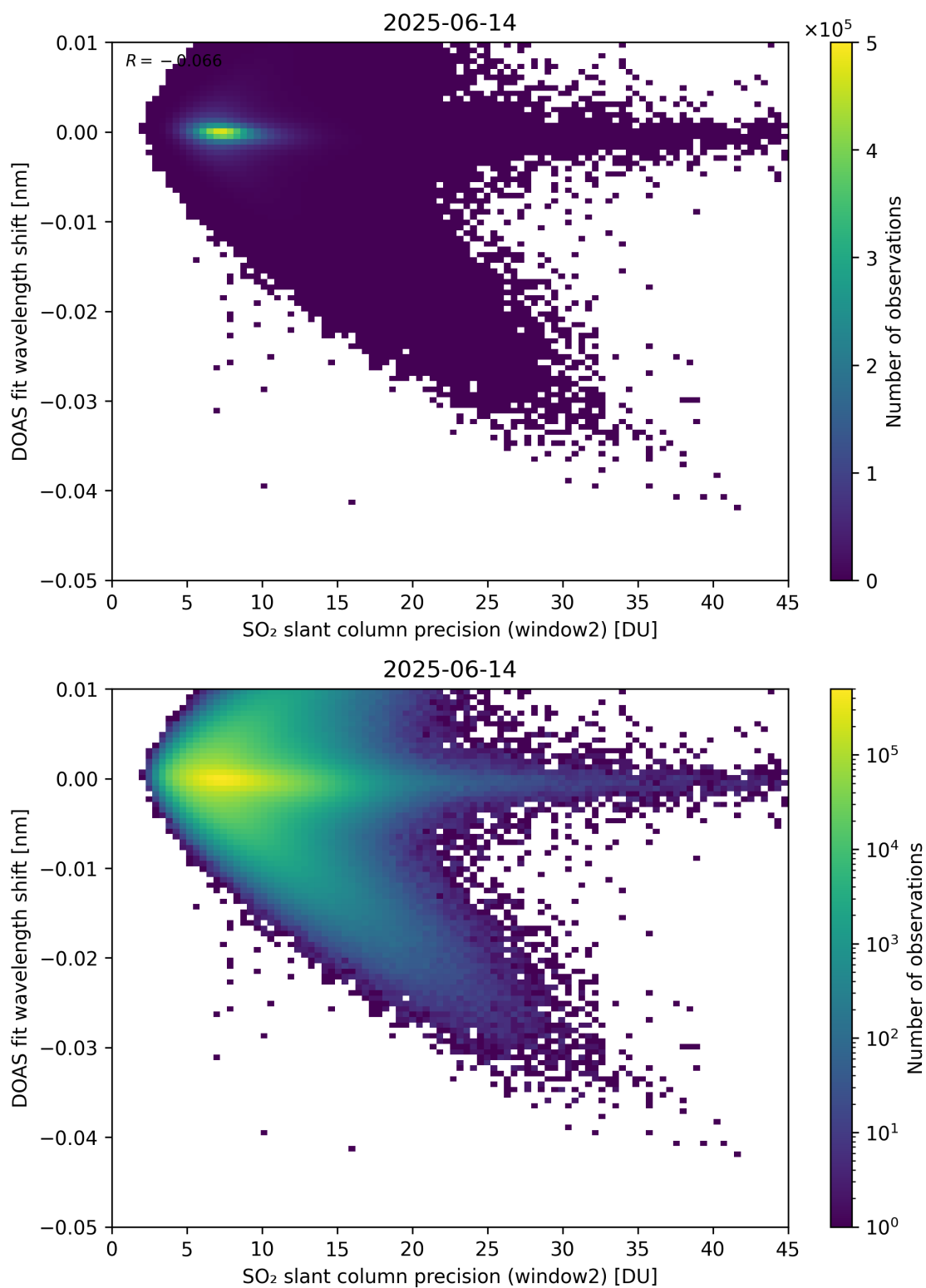


Figure 293: Scatter density plot of “SO₂ slant column precision (window2)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

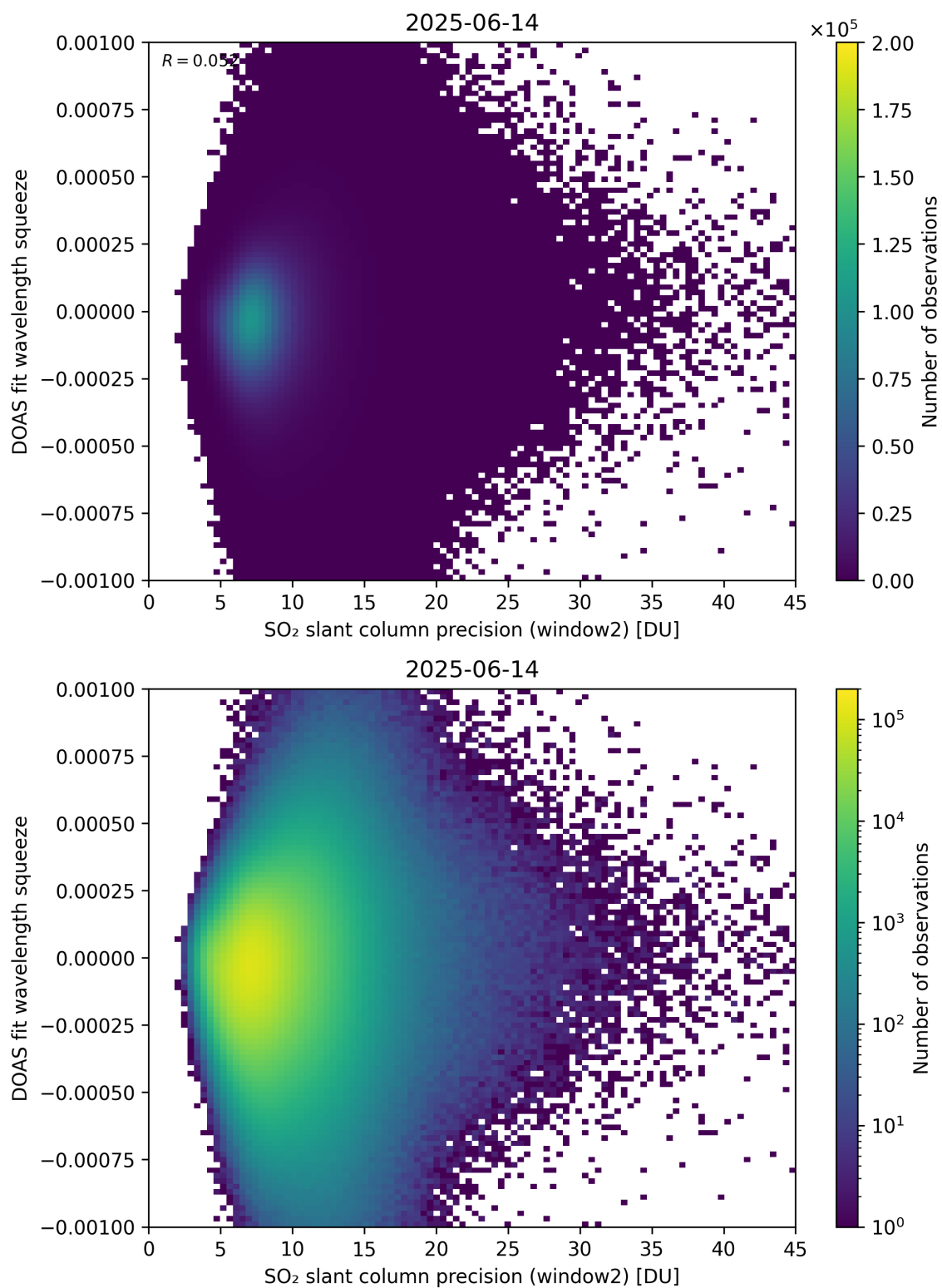


Figure 294: Scatter density plot of “SO₂ slant column precision (window2)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

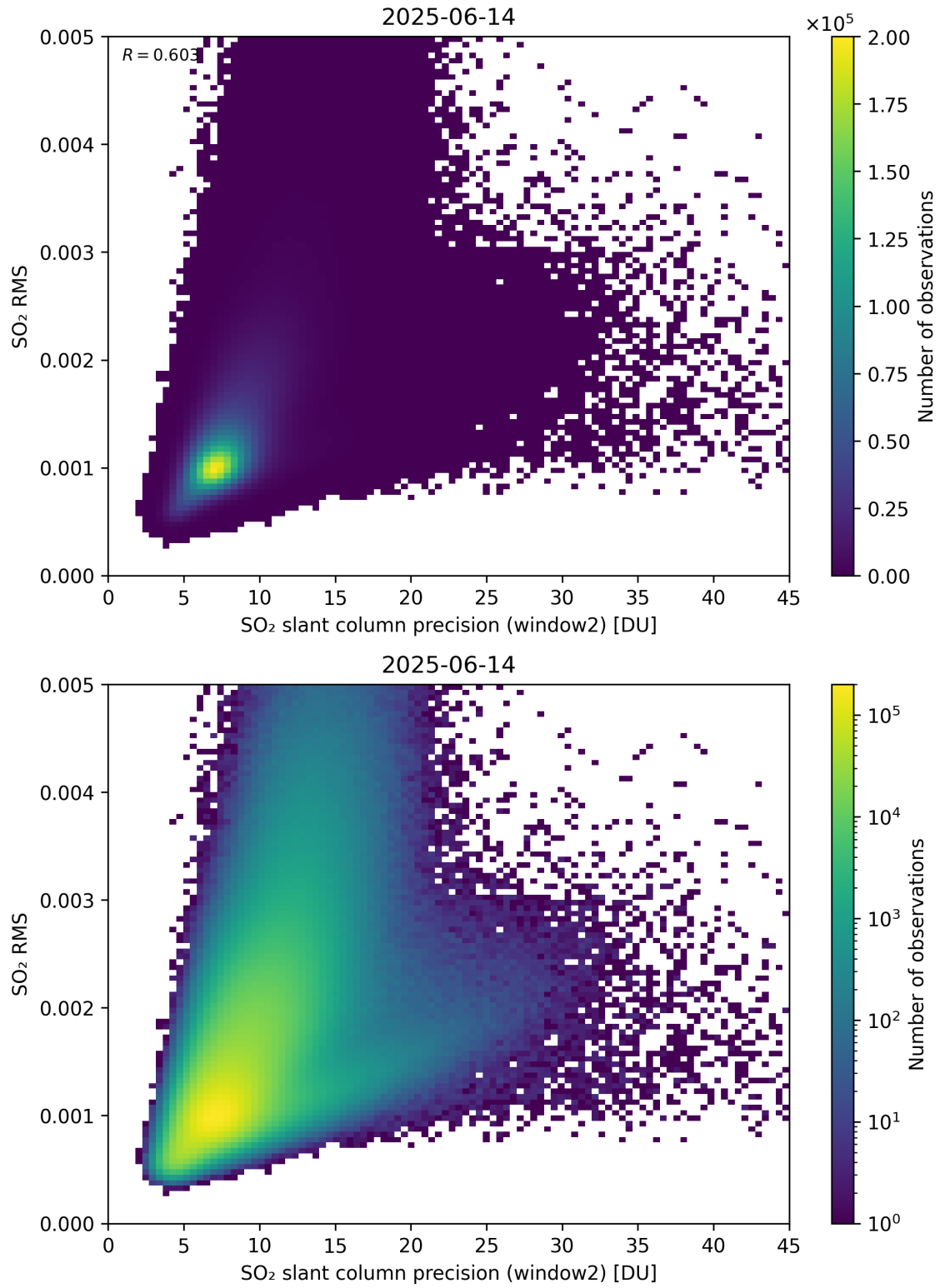


Figure 295: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

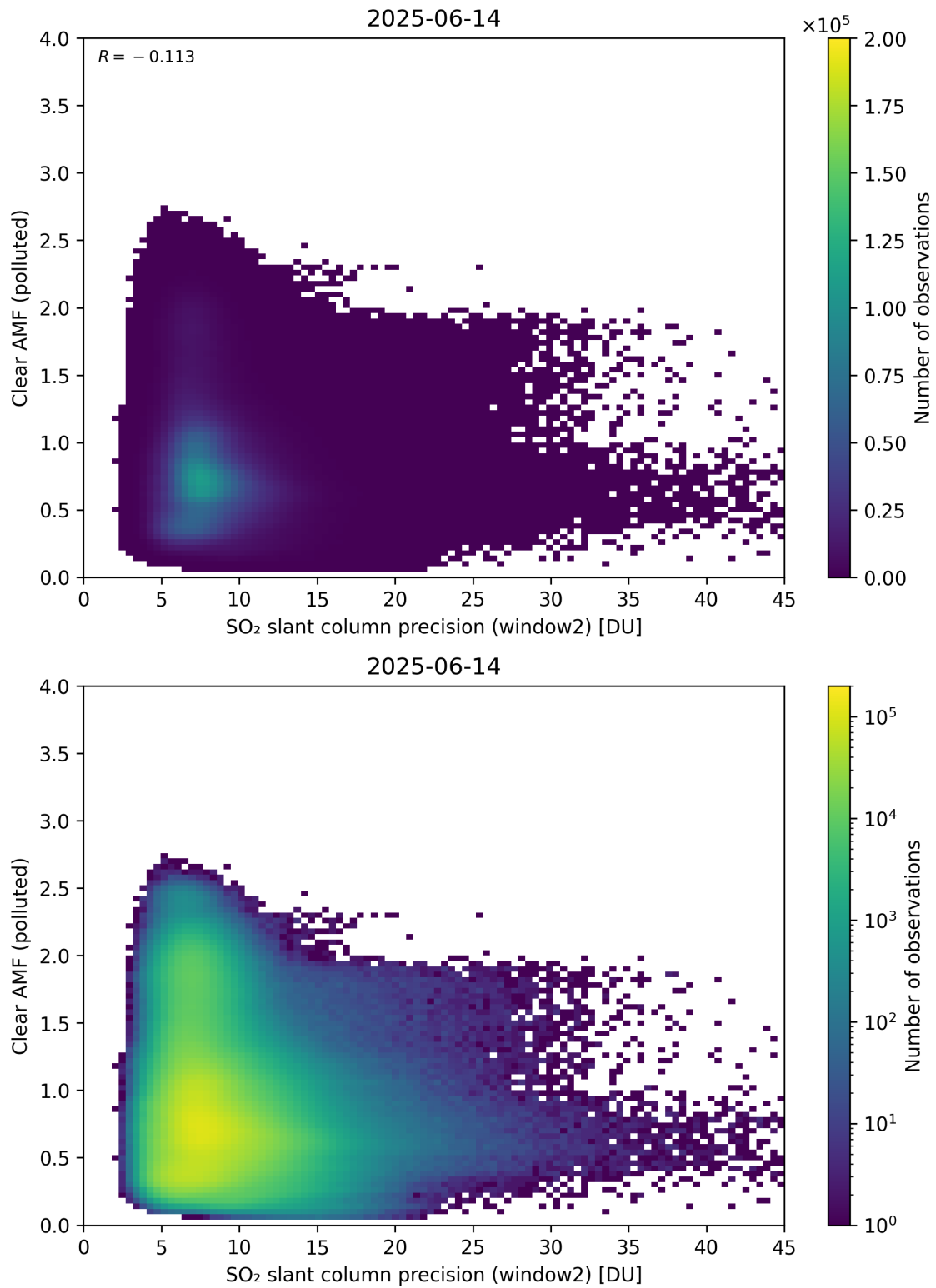


Figure 296: Scatter density plot of “SO₂ slant column precision (window2)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

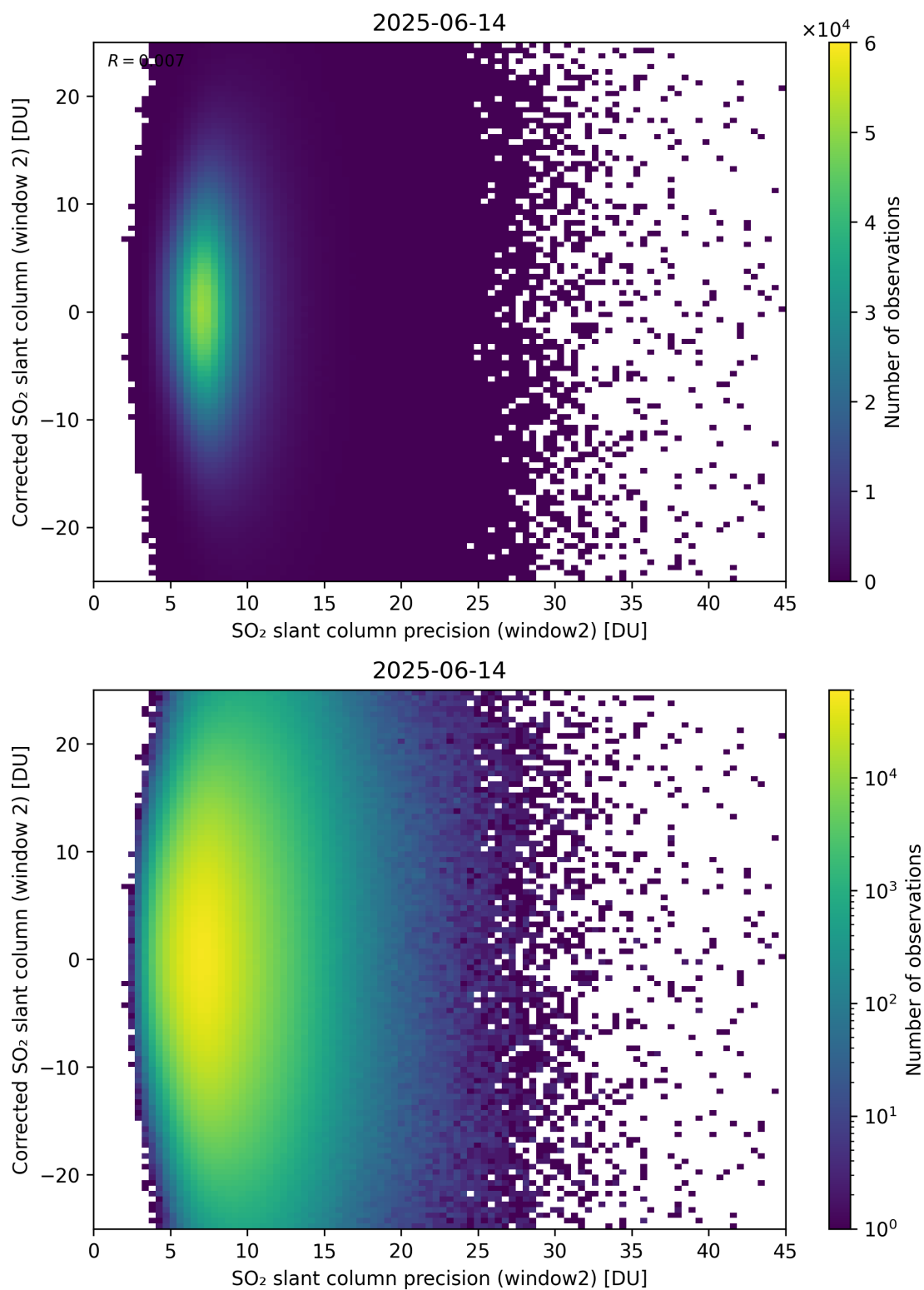


Figure 297: Scatter density plot of “SO₂ slant column precision (window2)” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

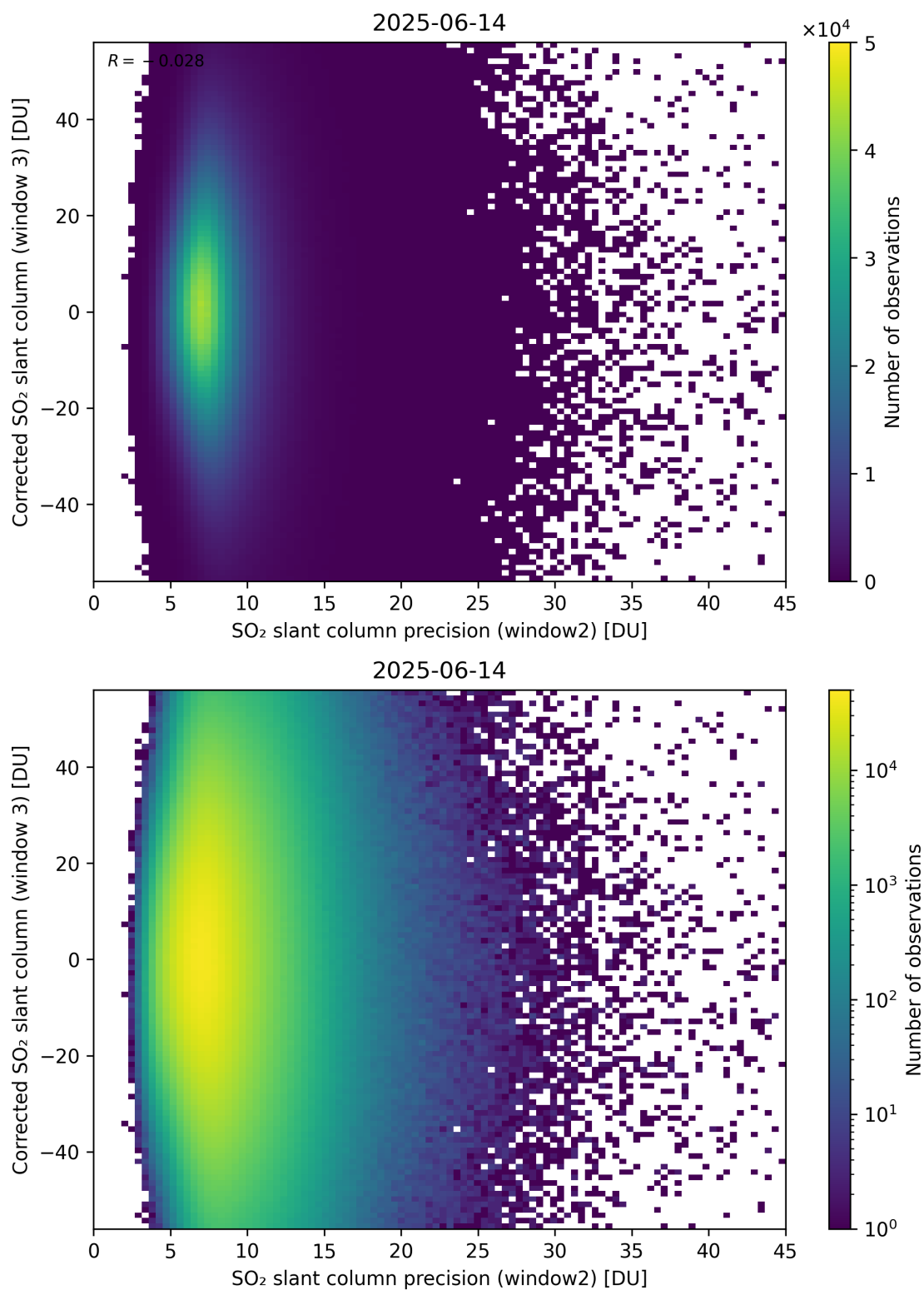


Figure 298: Scatter density plot of “SO₂ slant column precision (window2)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

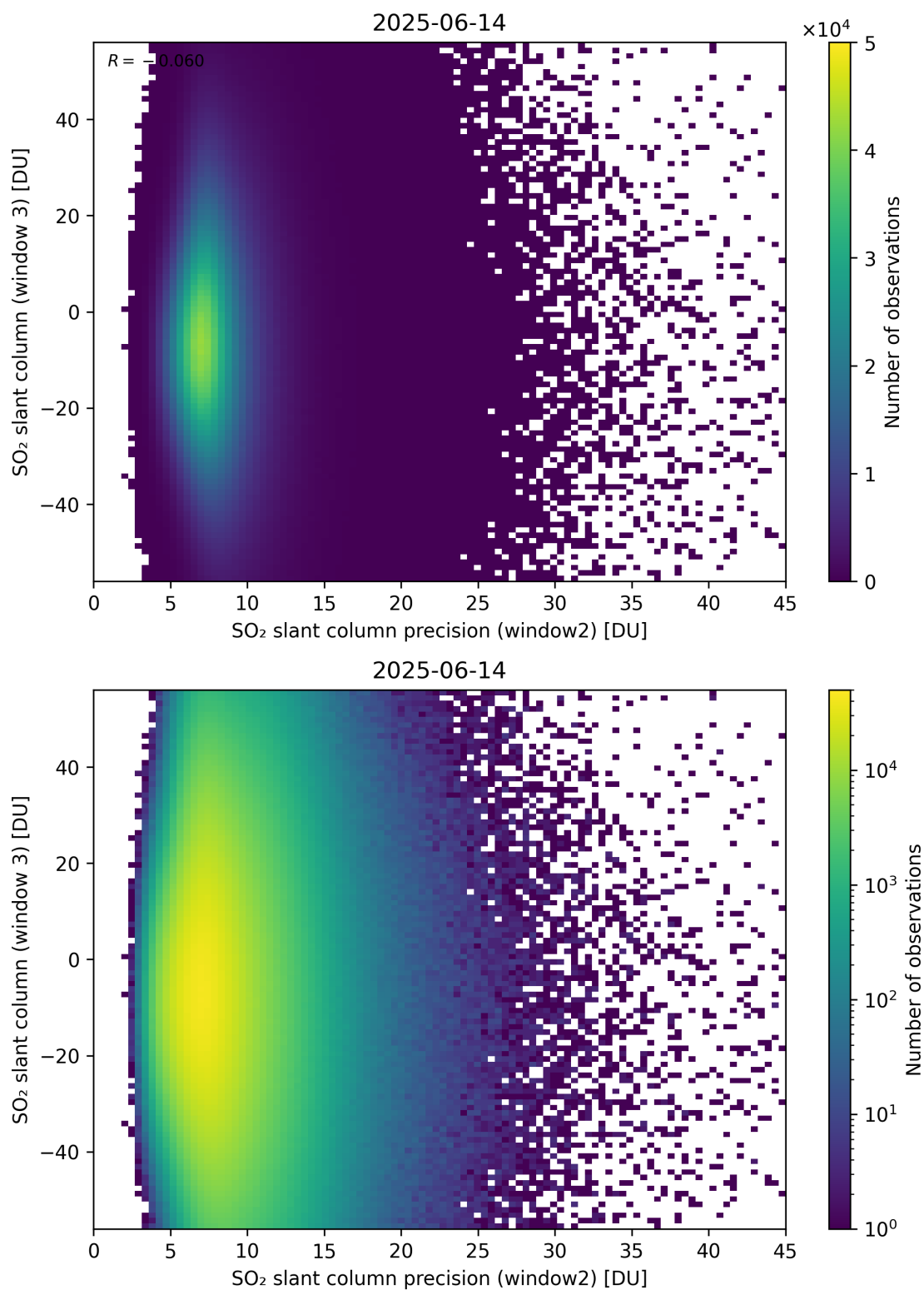


Figure 299: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

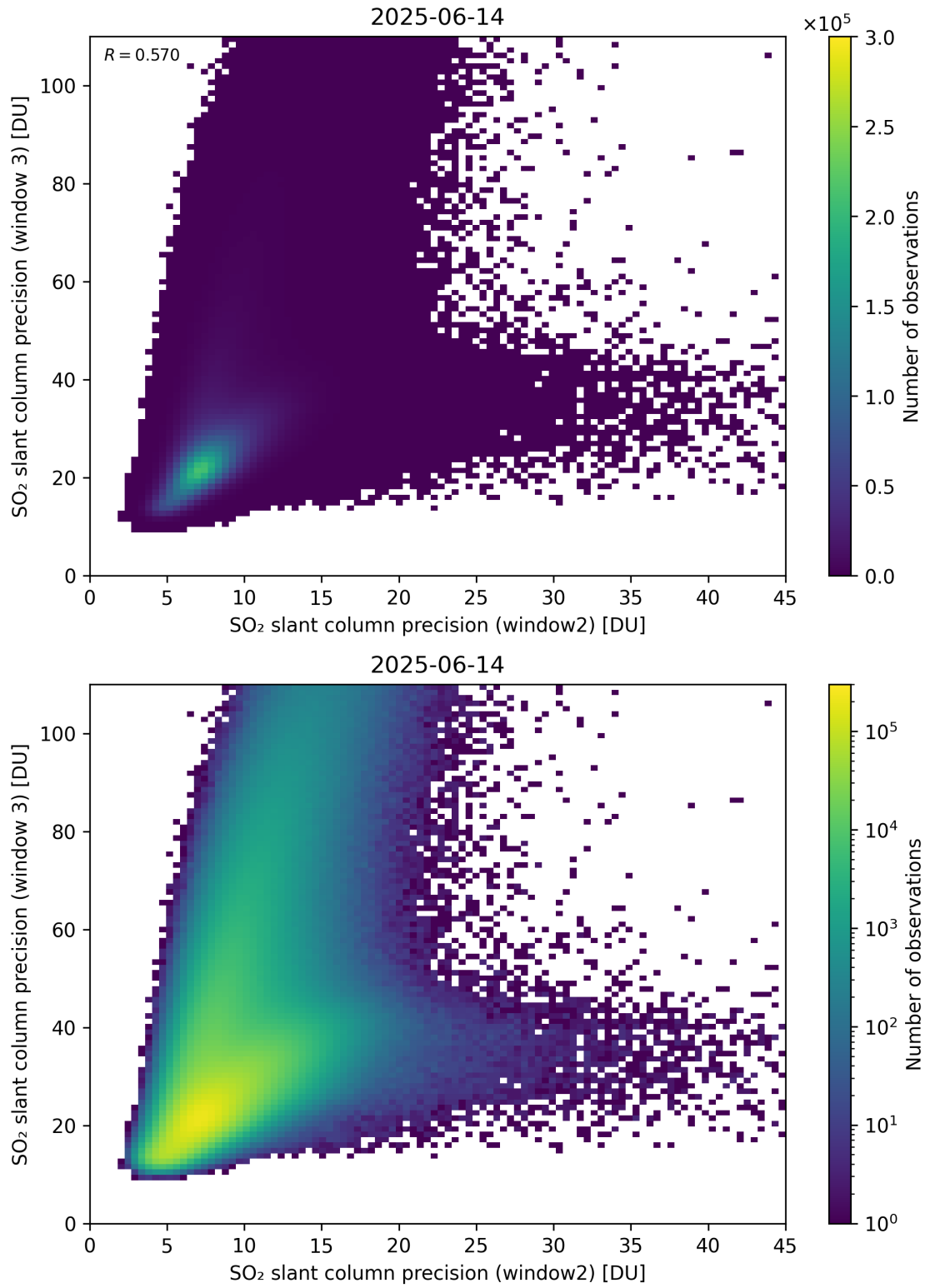


Figure 300: Scatter density plot of “SO₂ slant column precision (window2)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

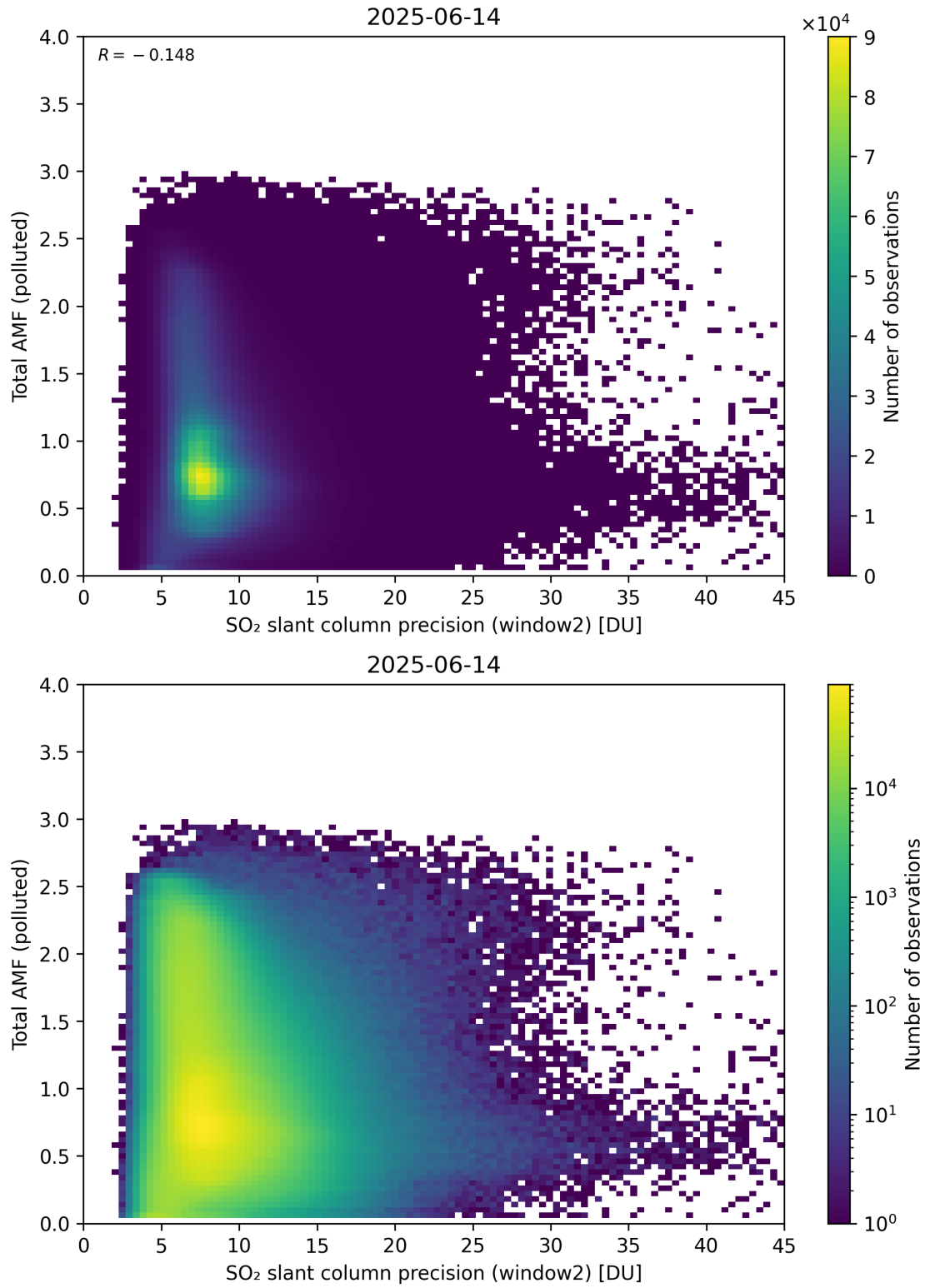


Figure 301: Scatter density plot of “SO₂ slant column precision (window2)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

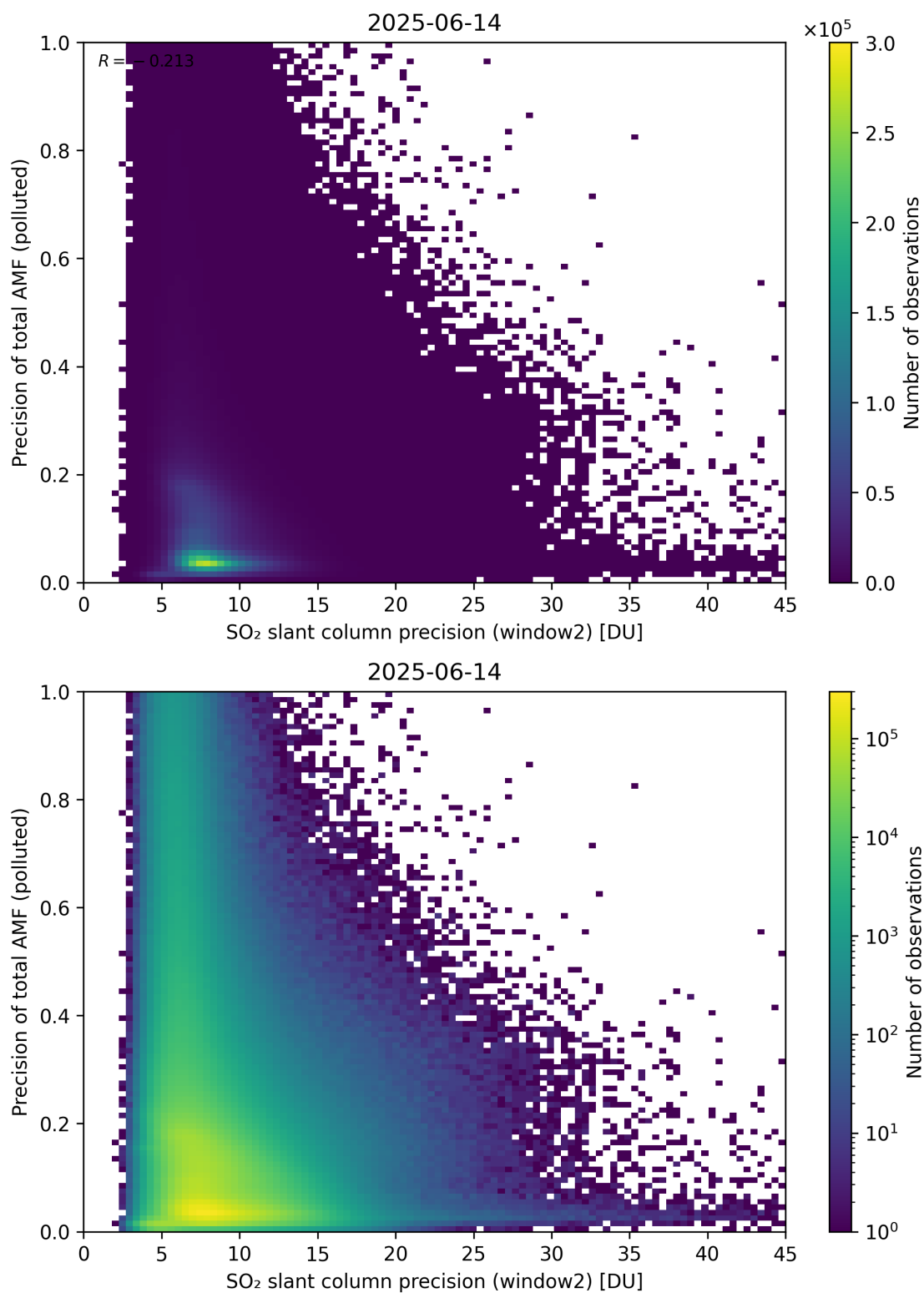


Figure 302: Scatter density plot of “SO₂ slant column precision (window2)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

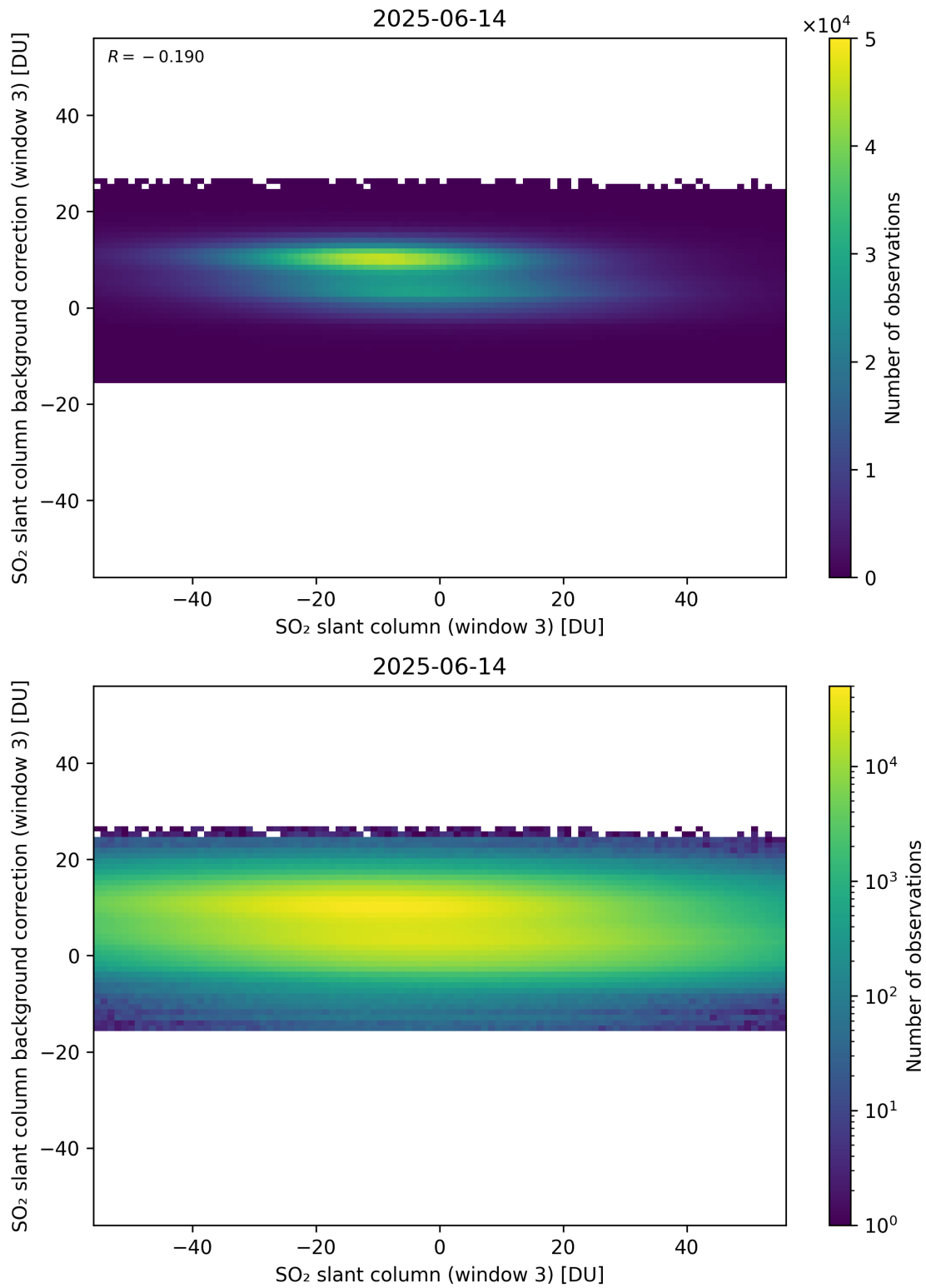


Figure 303: Scatter density plot of “SO₂ slant column (window 3)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

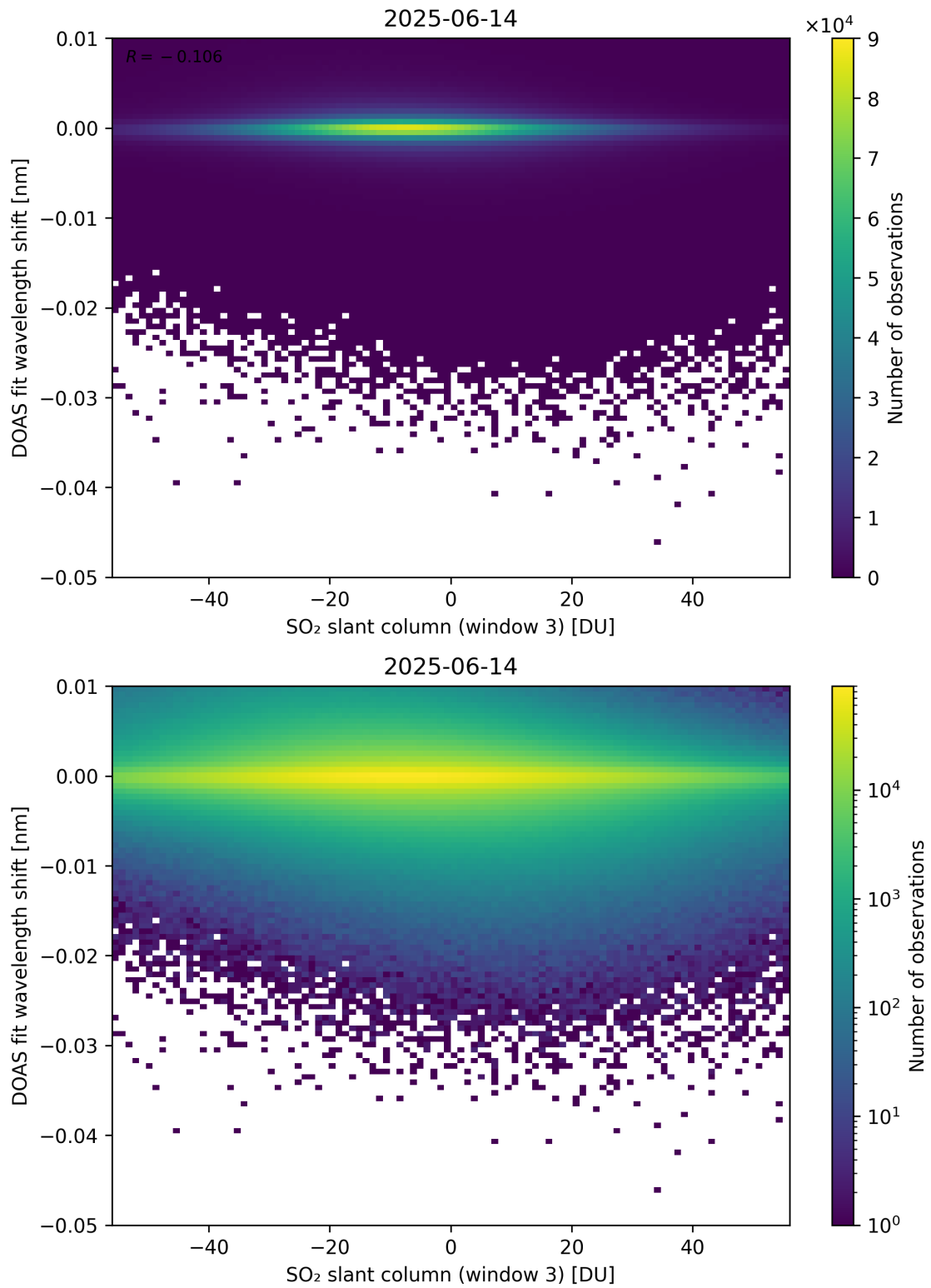


Figure 304: Scatter density plot of “SO₂ slant column (window 3)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

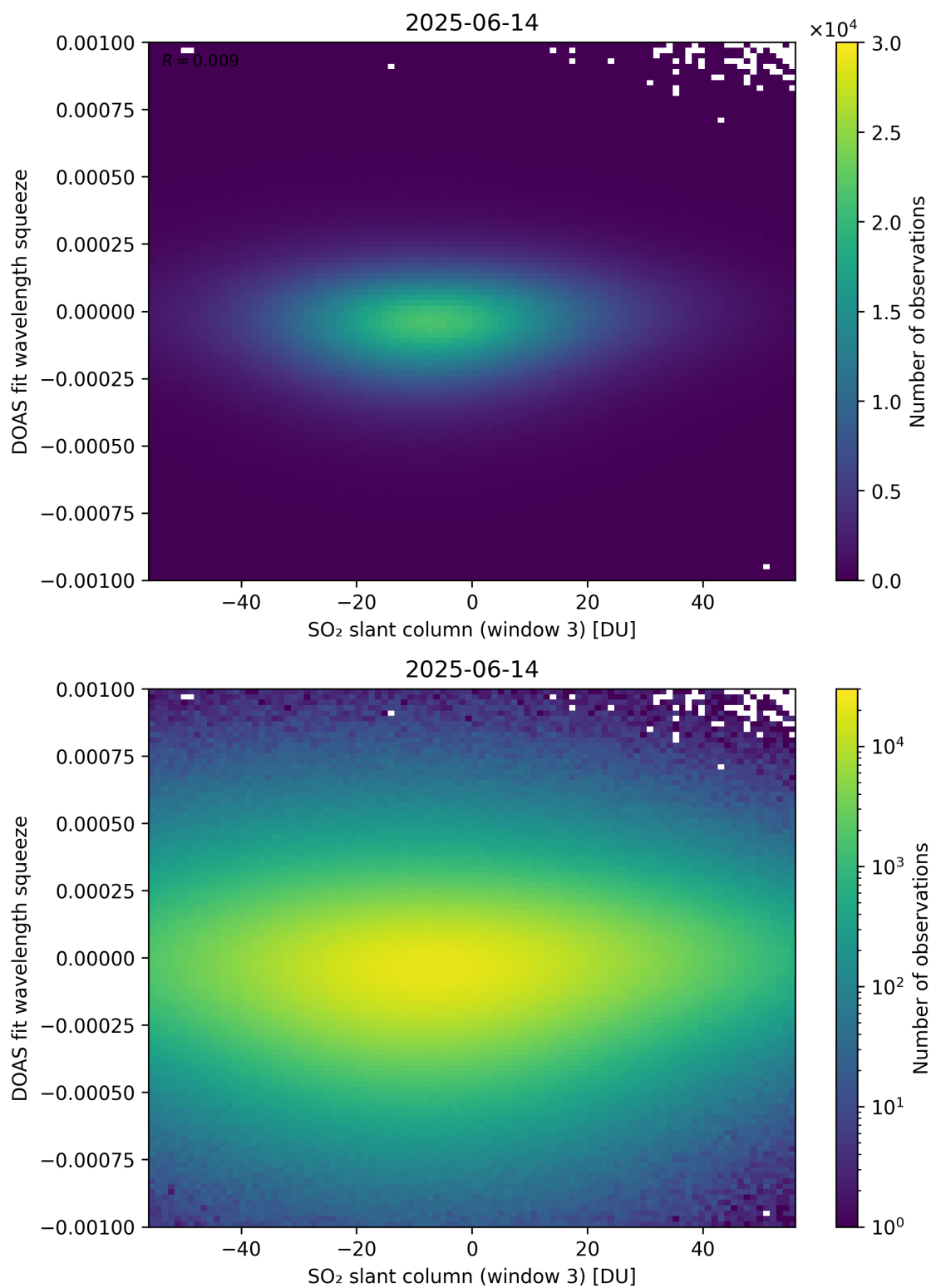


Figure 305: Scatter density plot of “SO₂ slant column (window 3)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

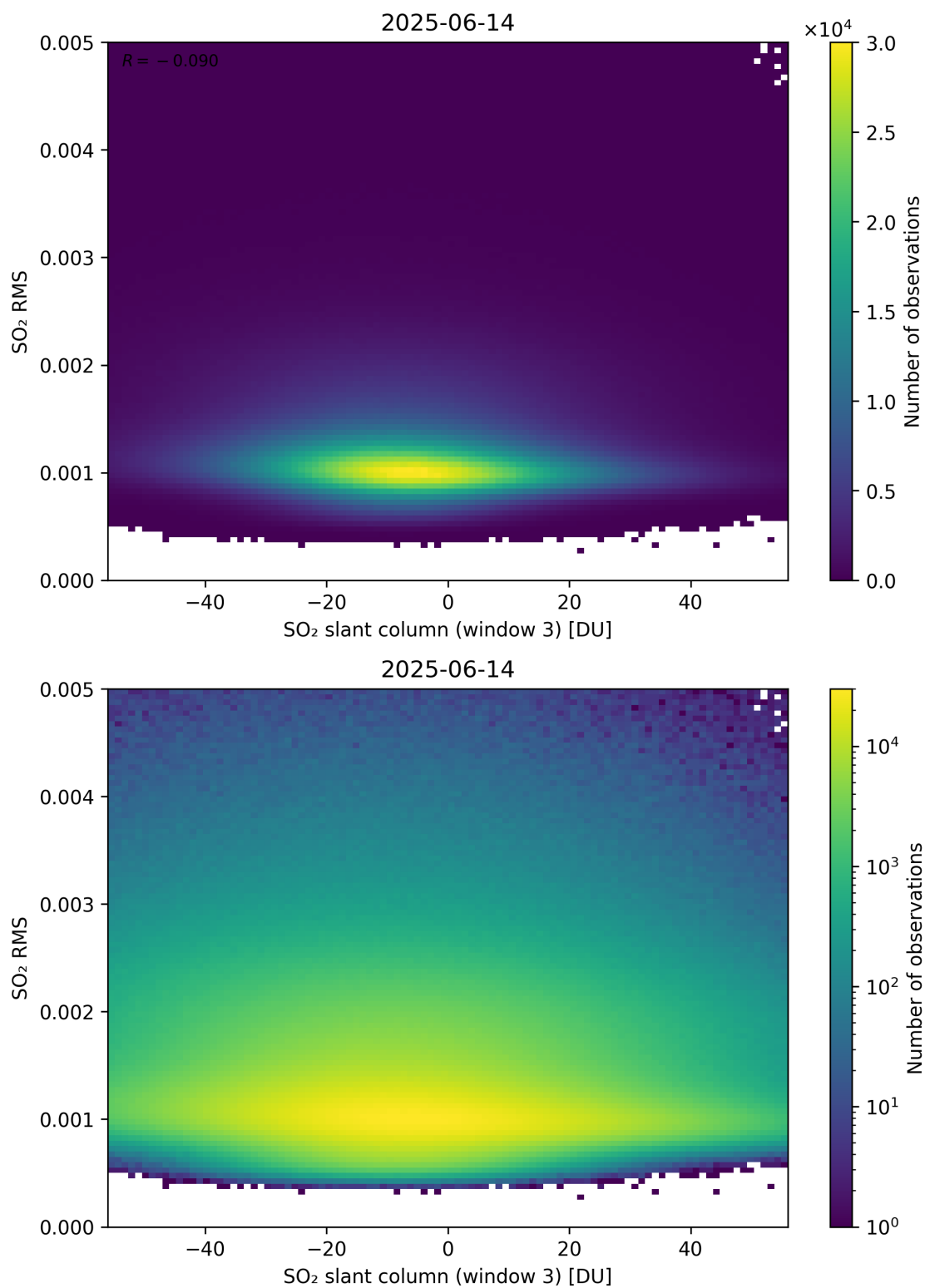


Figure 306: Scatter density plot of “SO₂ slant column (window 3)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

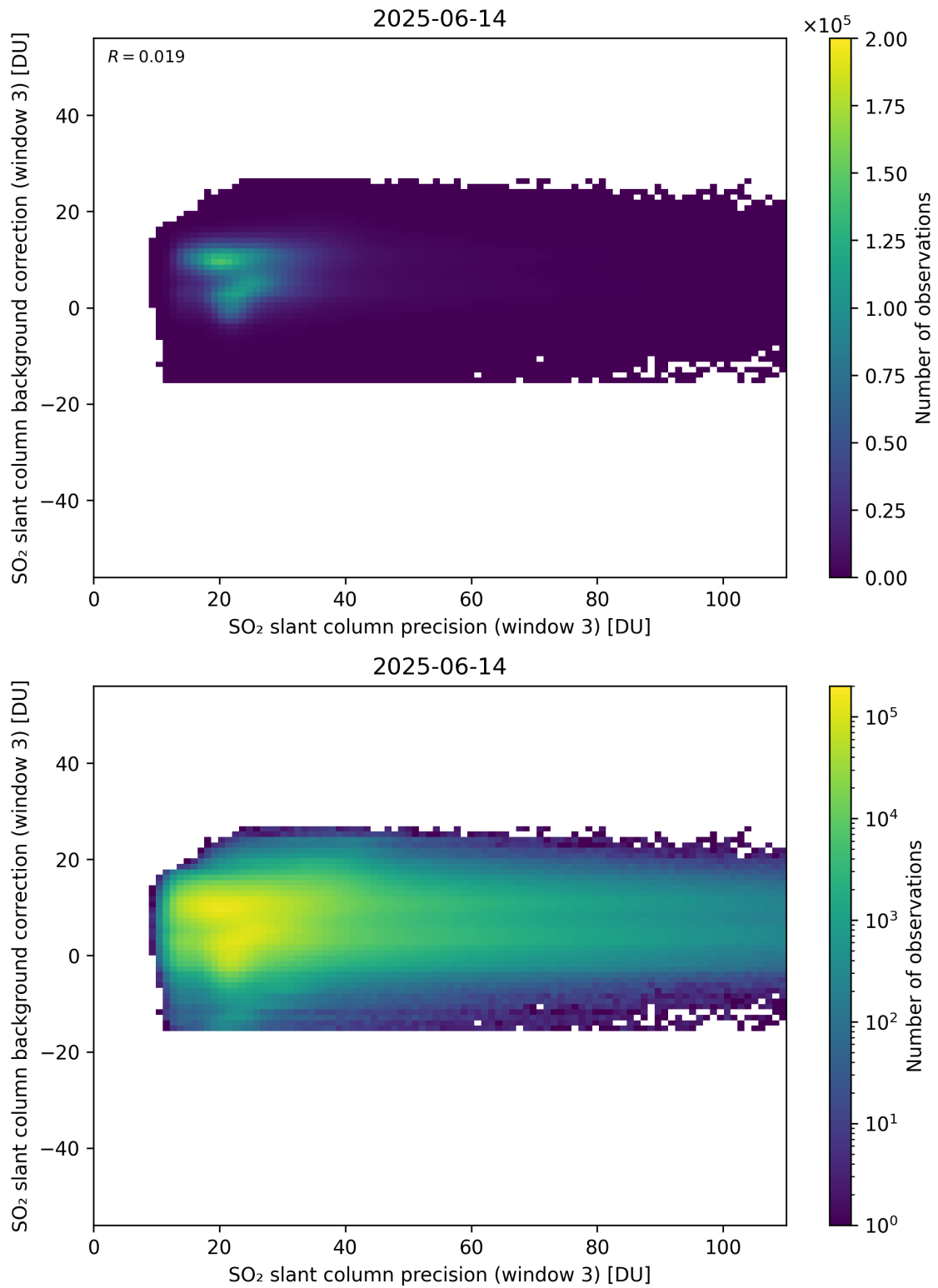


Figure 307: Scatter density plot of “SO₂ slant column precision (window 3)” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

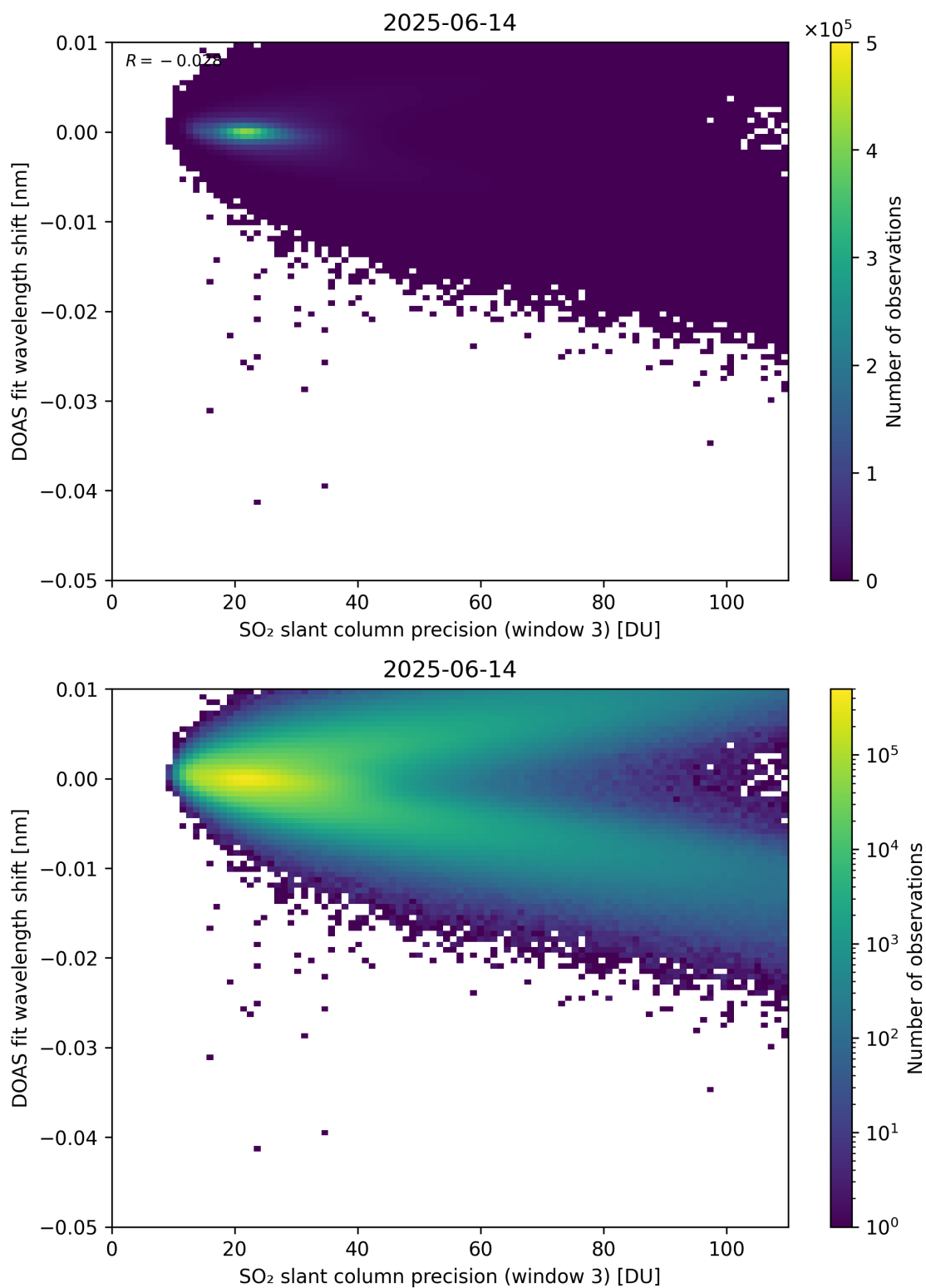


Figure 308: Scatter density plot of “SO₂ slant column precision (window 3)” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

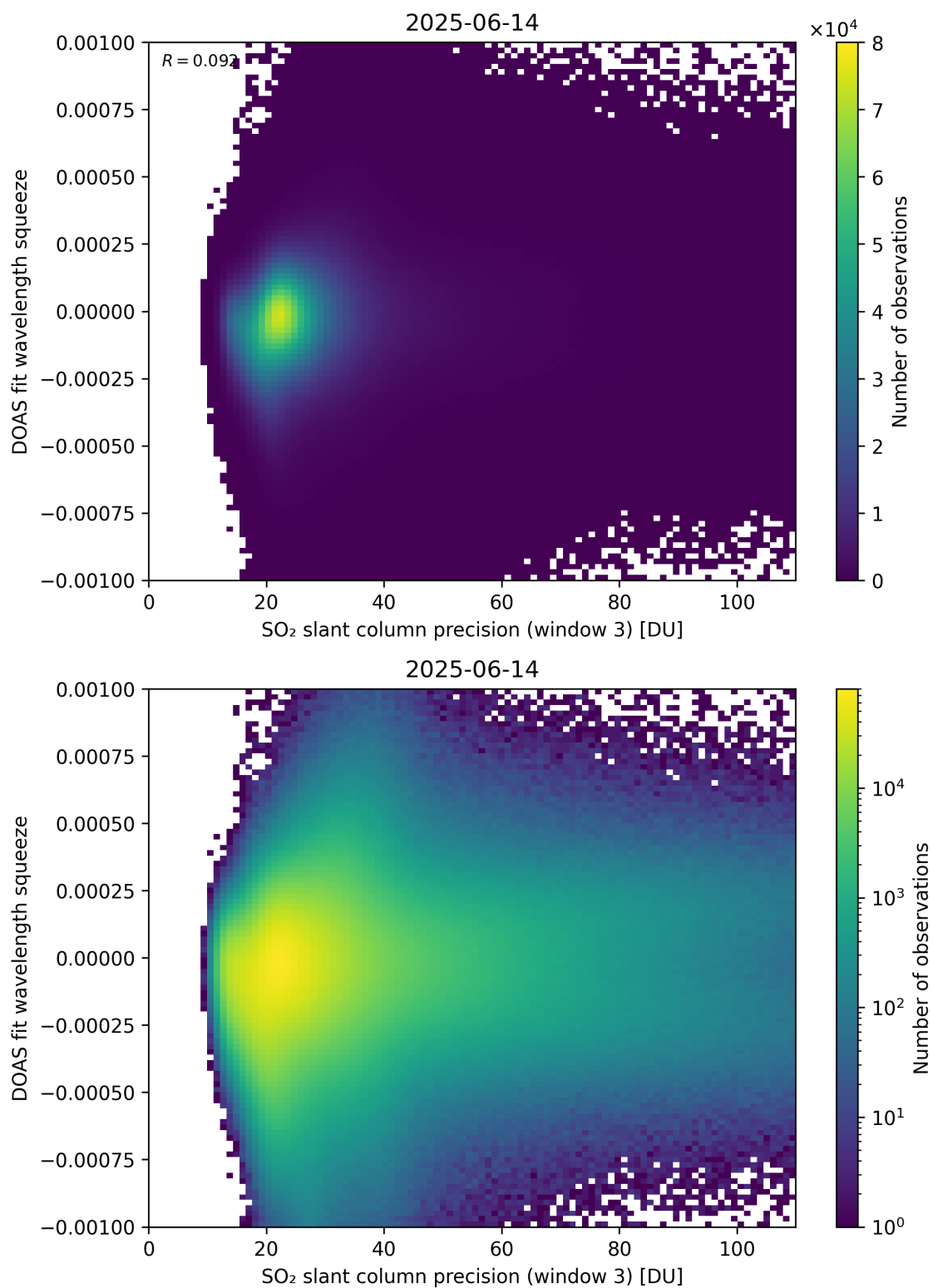


Figure 309: Scatter density plot of “SO₂ slant column precision (window 3)” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

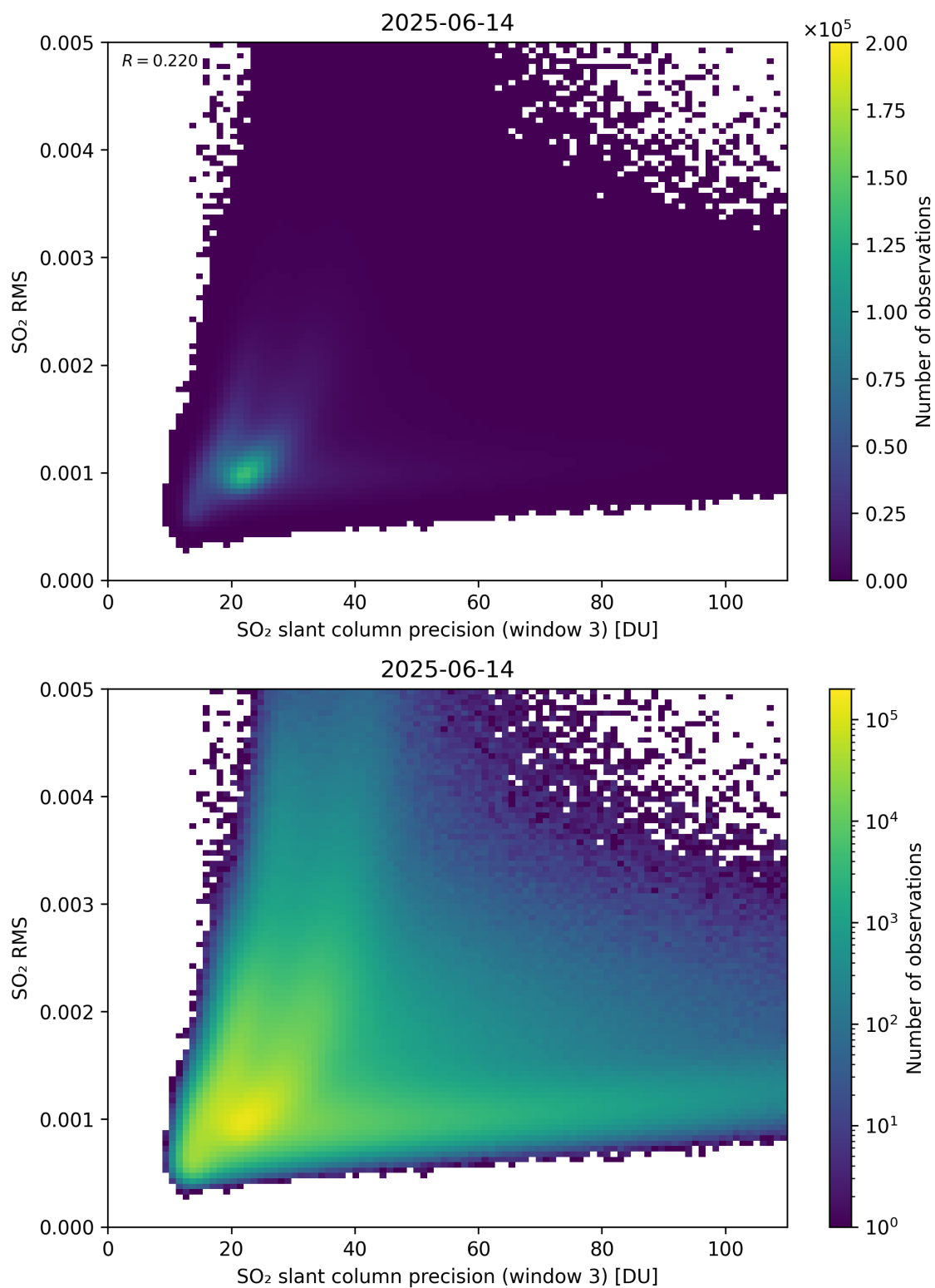


Figure 310: Scatter density plot of “SO₂ slant column precision (window 3)” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

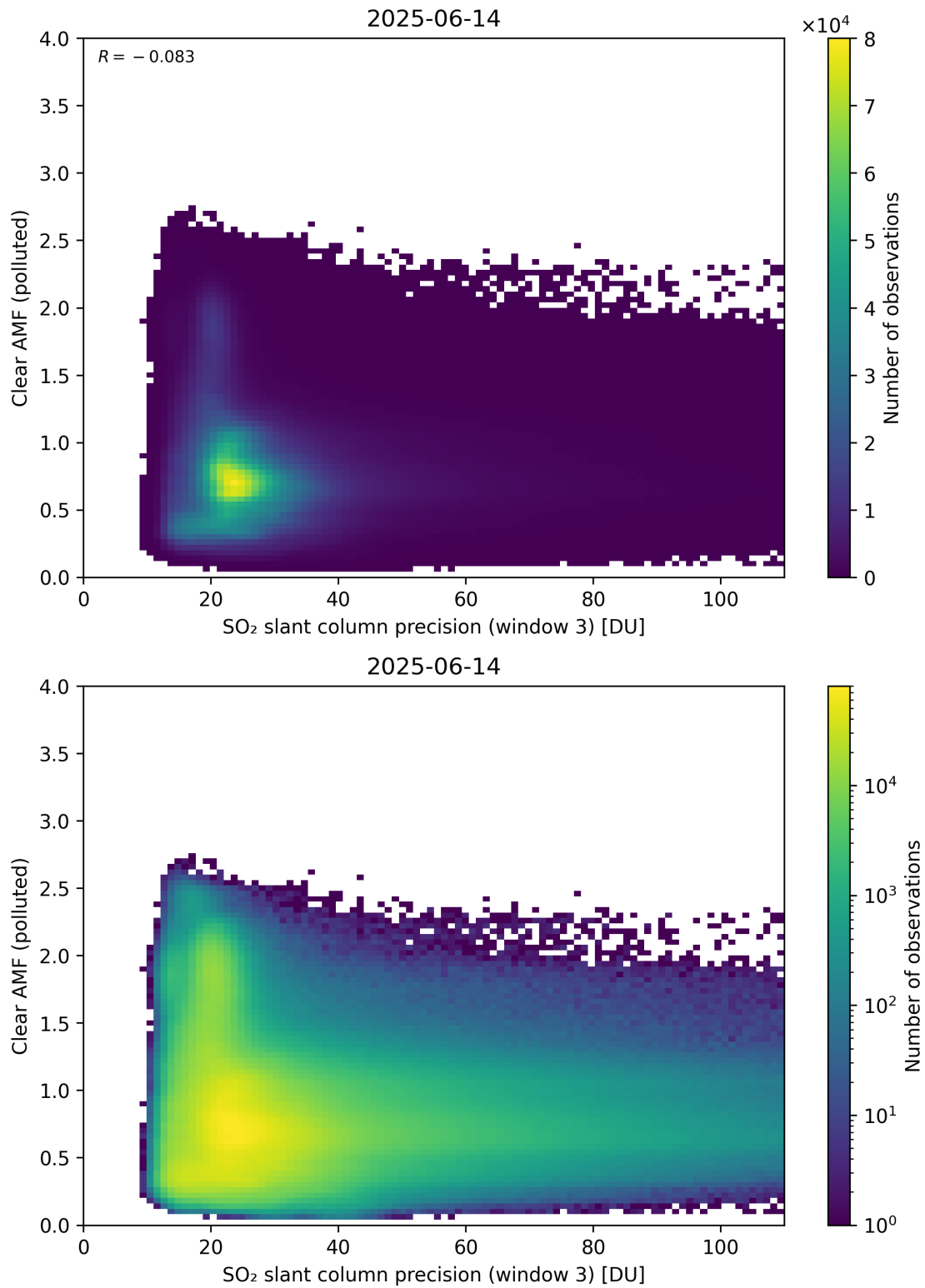


Figure 311: Scatter density plot of “SO₂ slant column precision (window 3)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

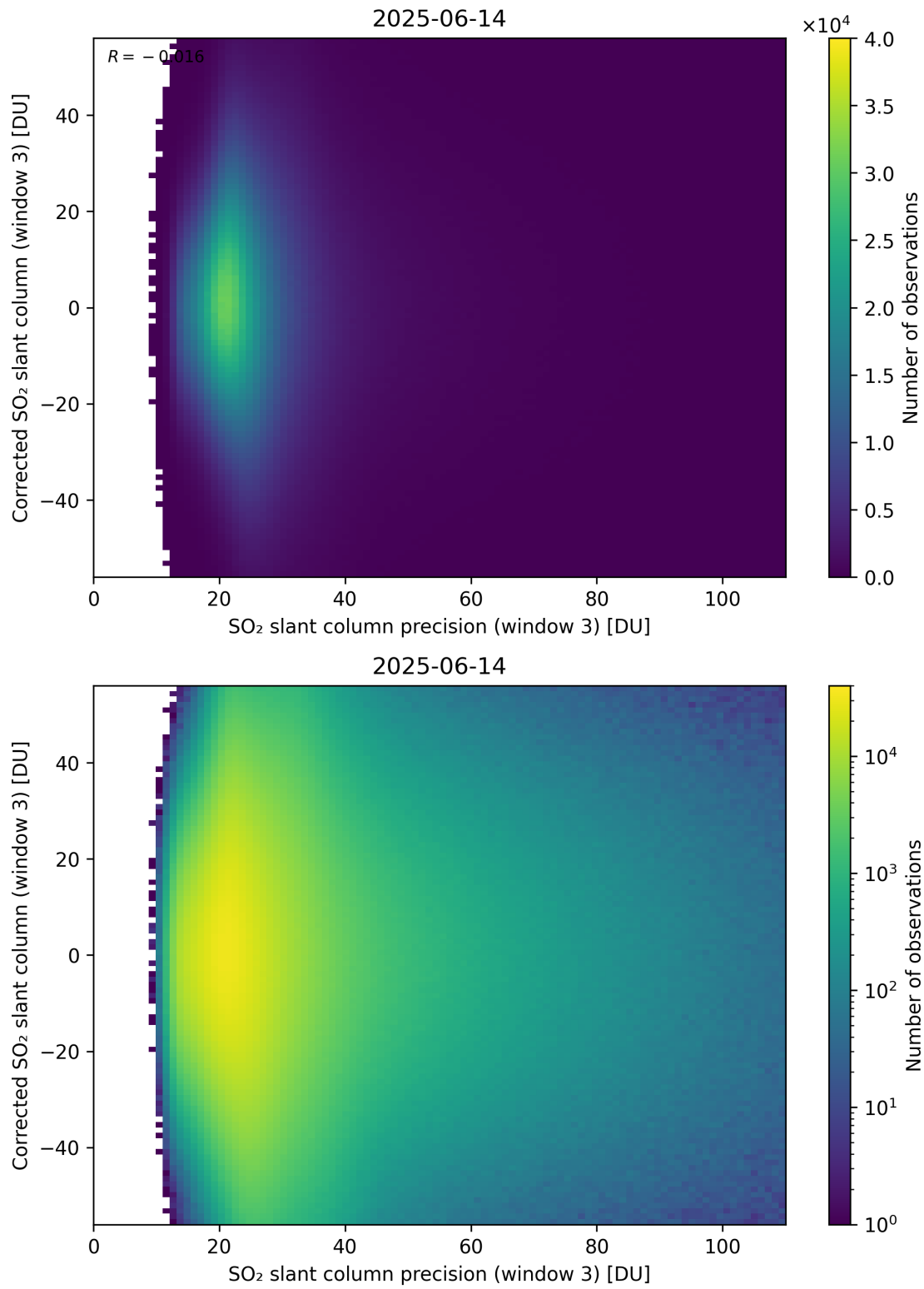


Figure 312: Scatter density plot of “SO₂ slant column precision (window 3)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

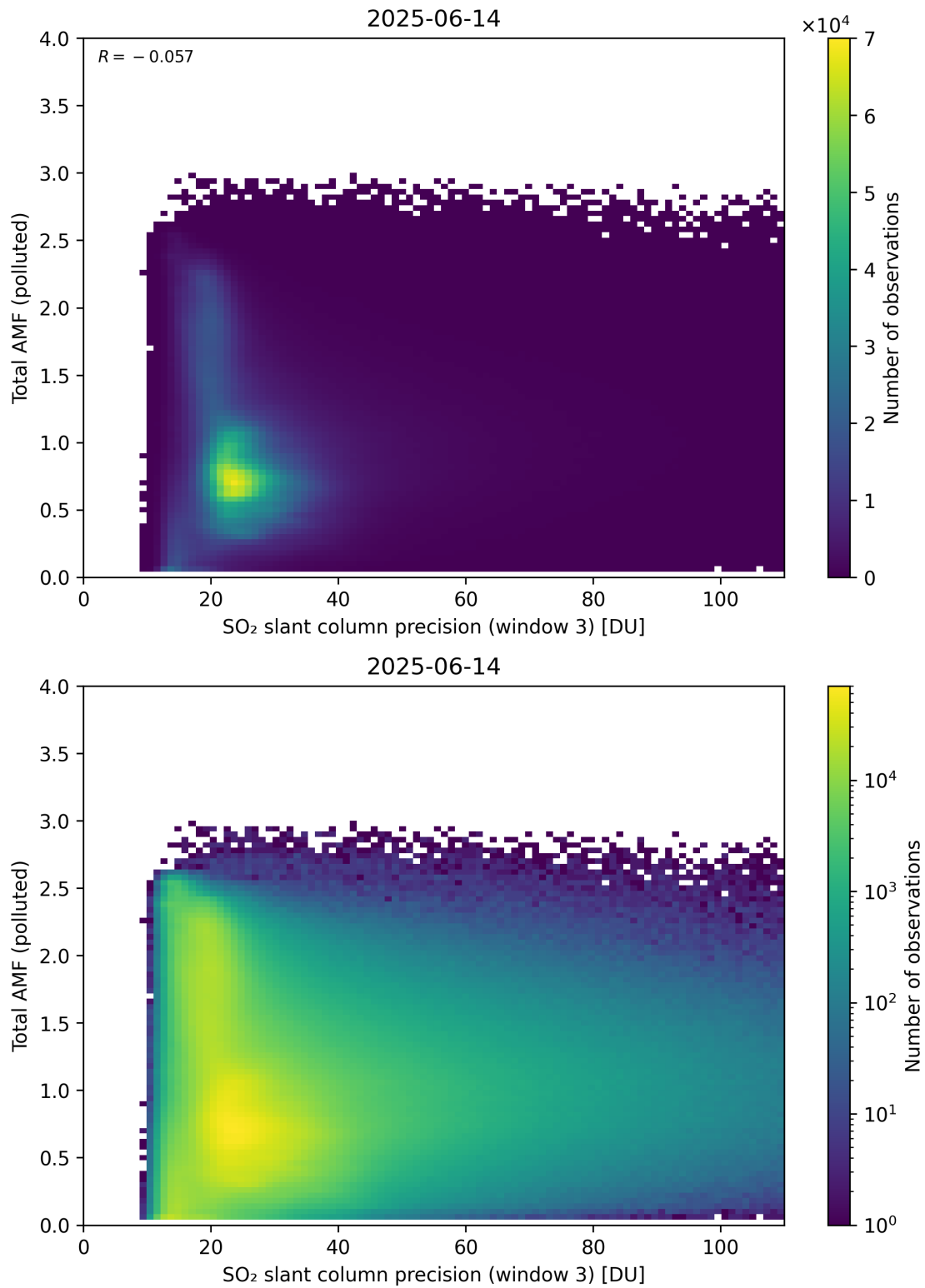


Figure 313: Scatter density plot of “SO₂ slant column precision (window 3)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

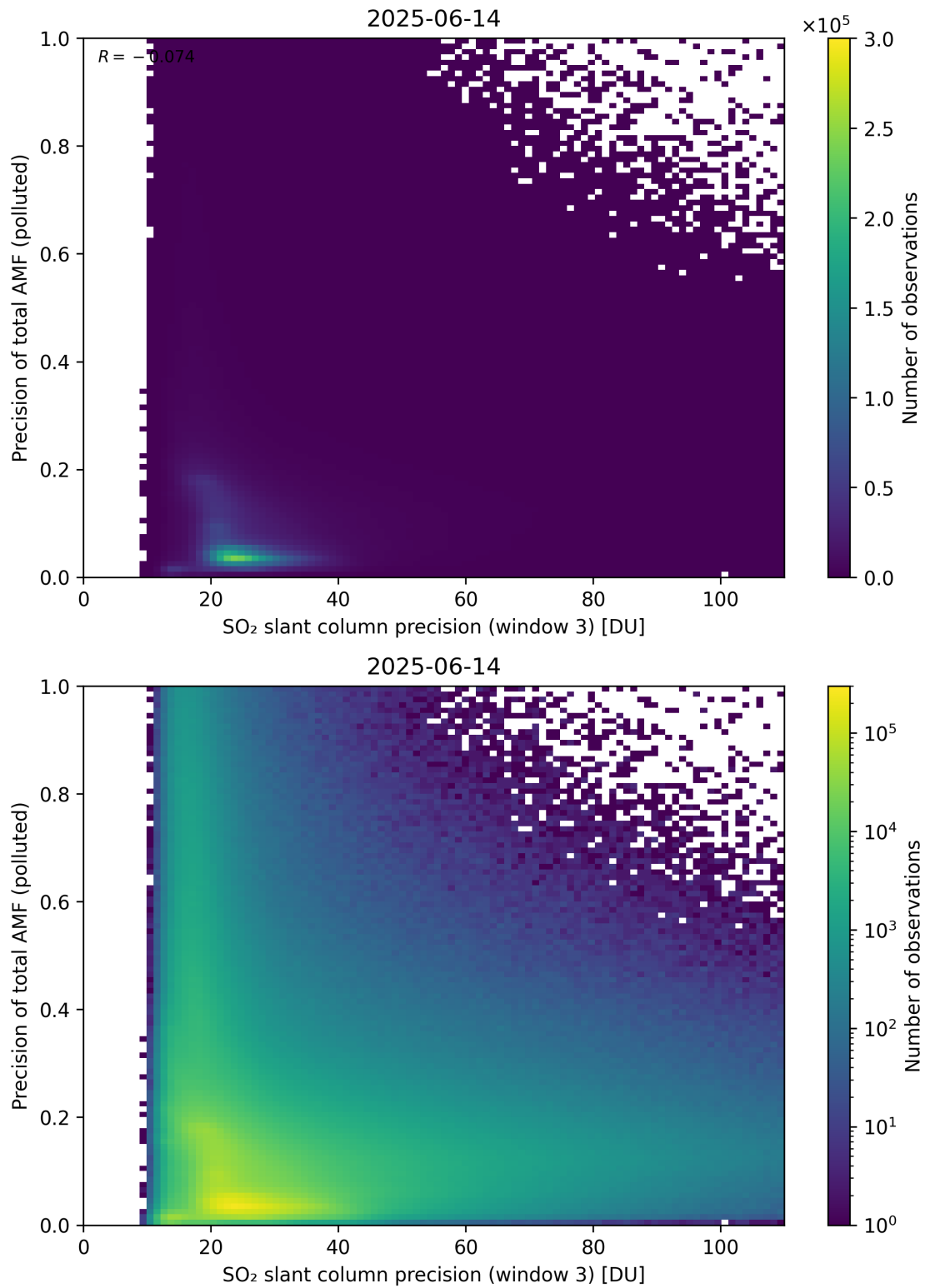


Figure 314: Scatter density plot of “SO₂ slant column precision (window 3)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

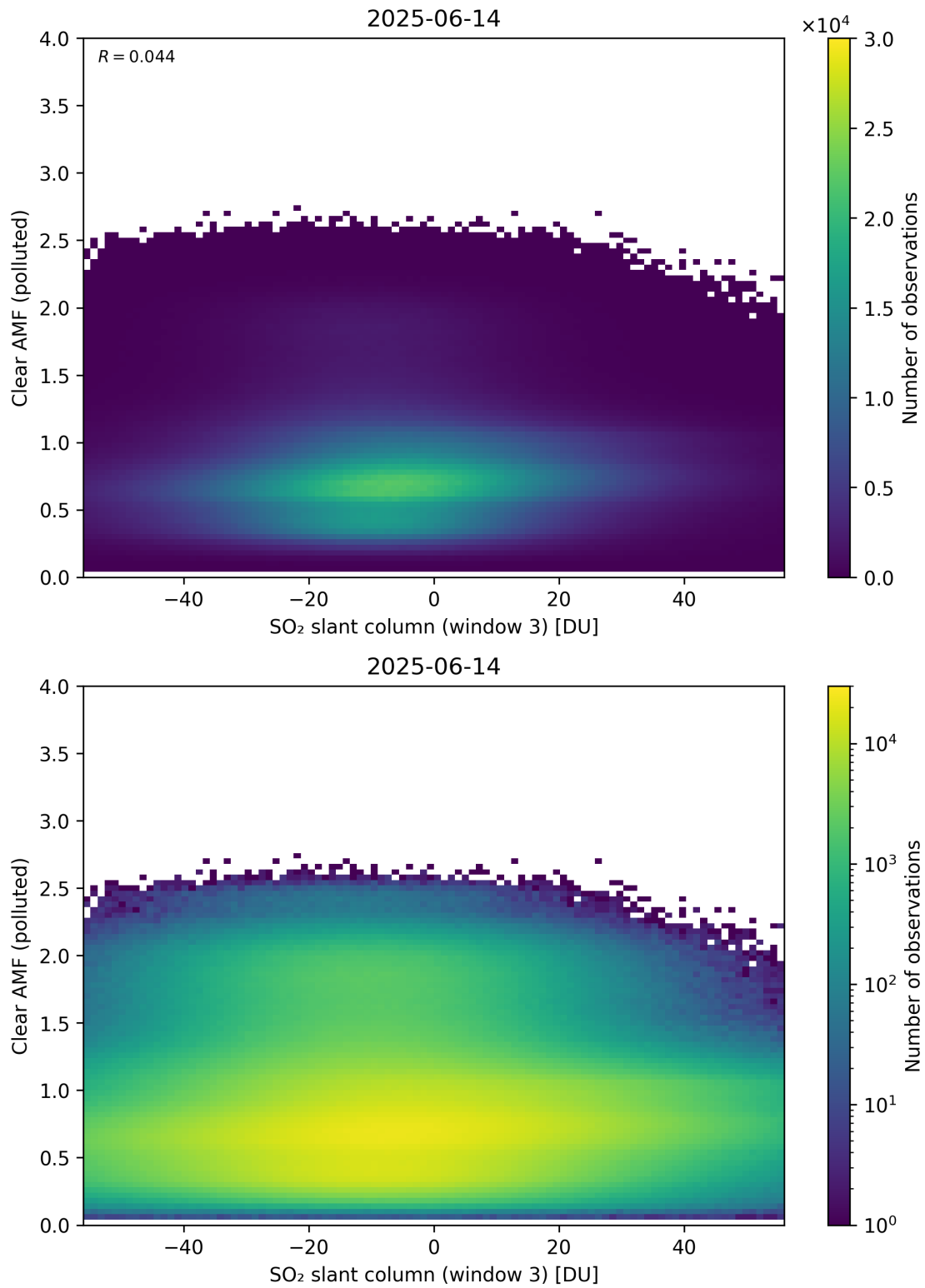


Figure 315: Scatter density plot of “SO₂ slant column (window 3)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

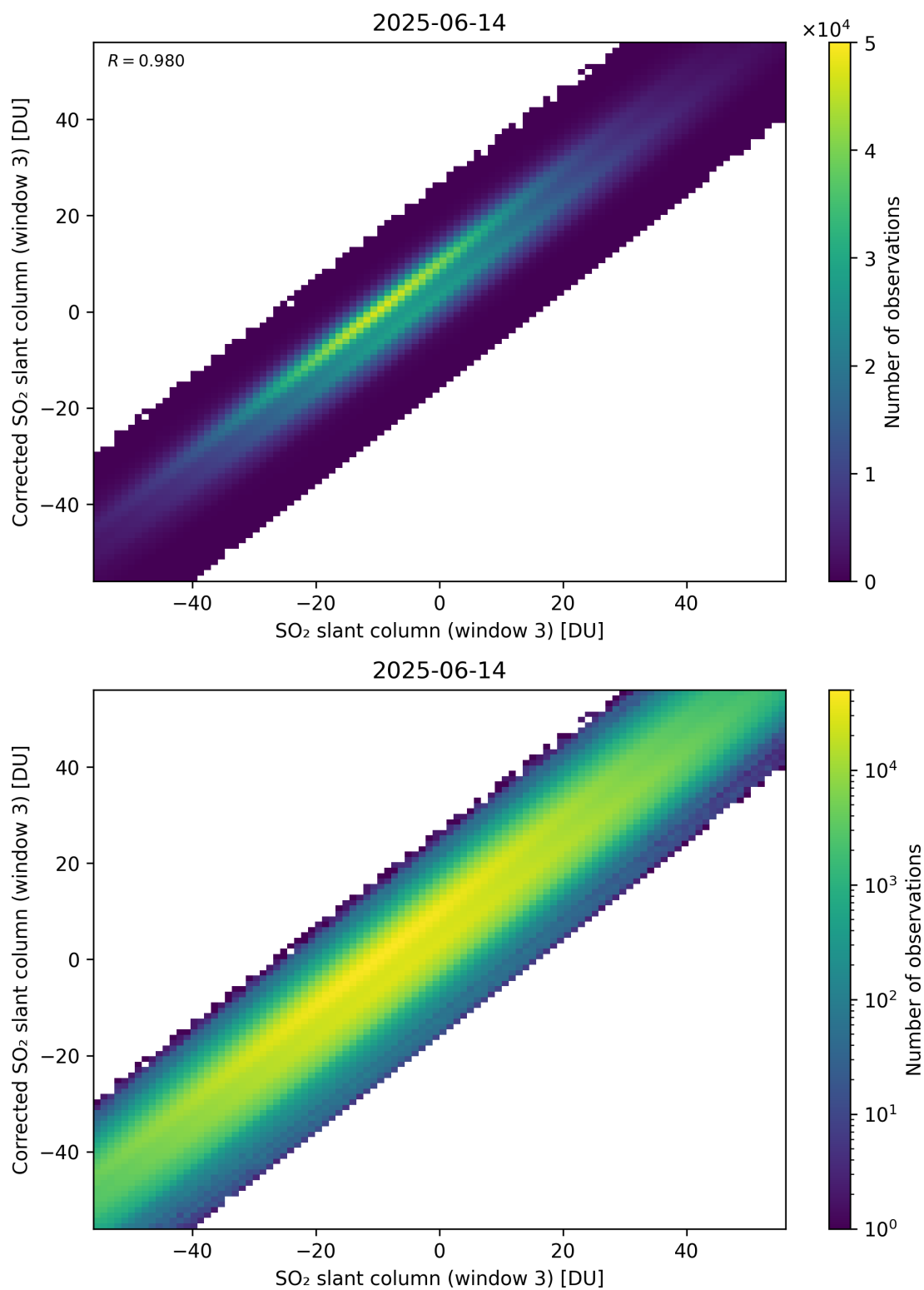


Figure 316: Scatter density plot of “SO₂ slant column (window 3)” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

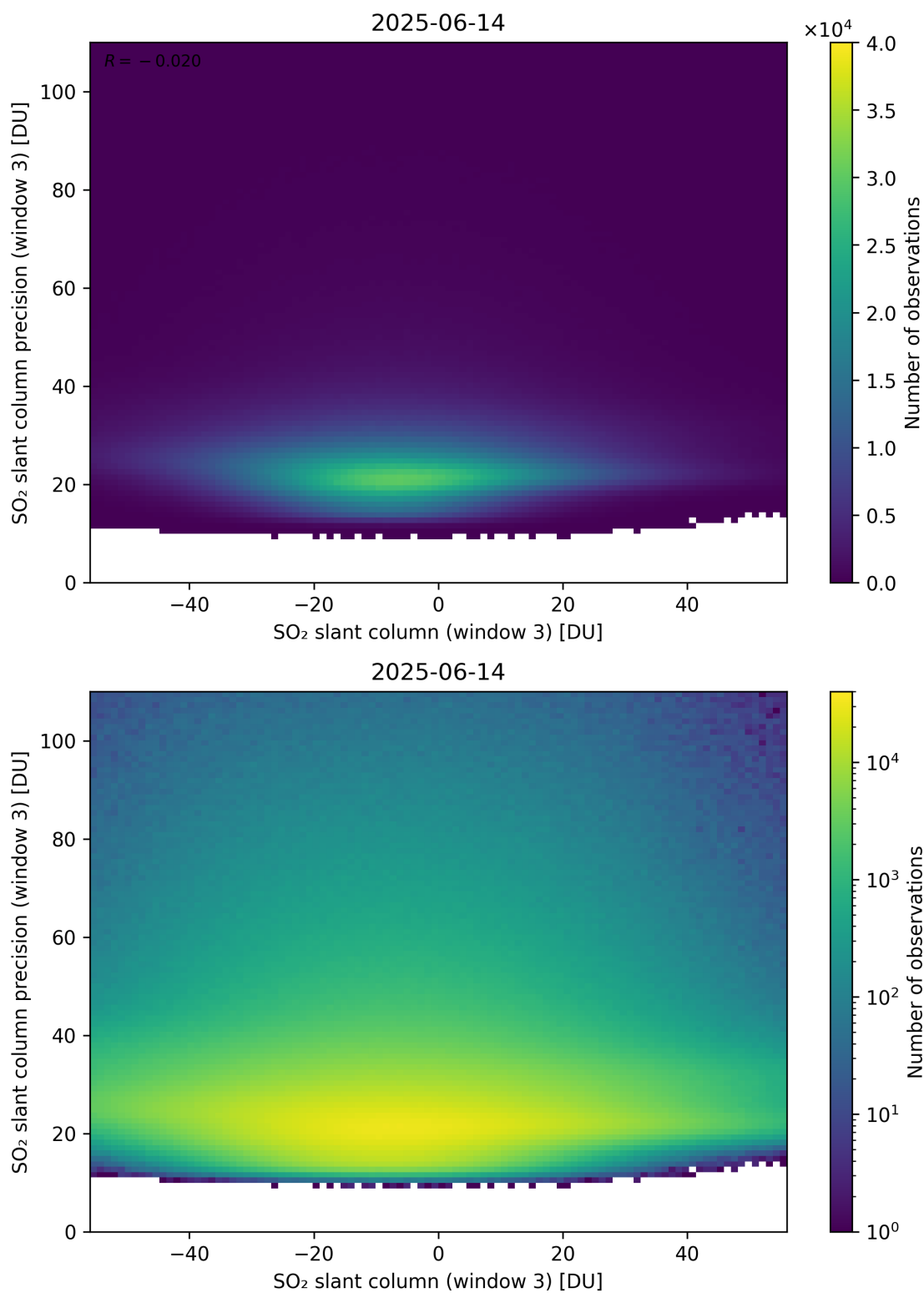


Figure 317: Scatter density plot of “SO₂ slant column (window 3)” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

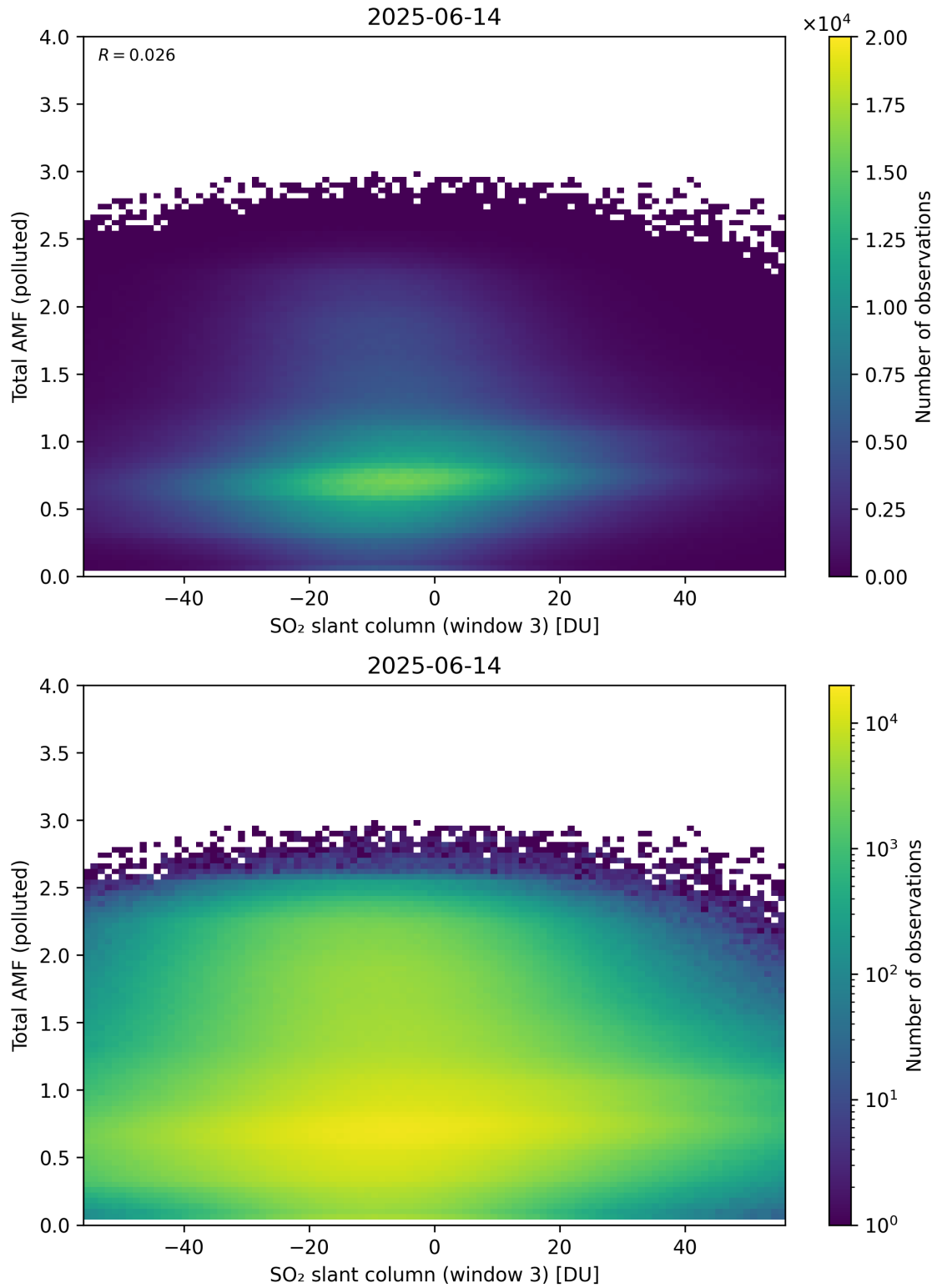


Figure 318: Scatter density plot of “SO₂ slant column (window 3)” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

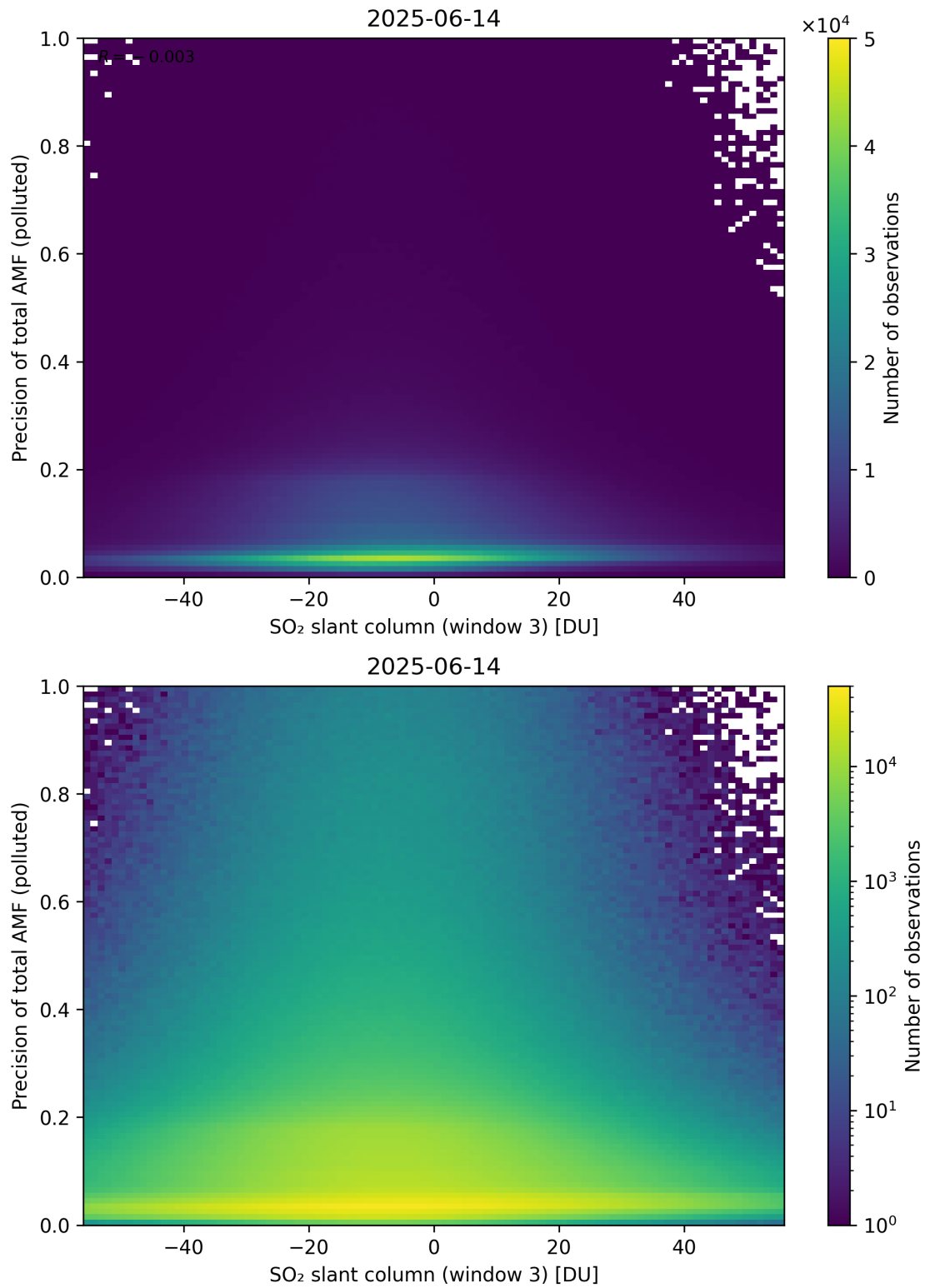


Figure 319: Scatter density plot of “SO₂ slant column (window 3)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

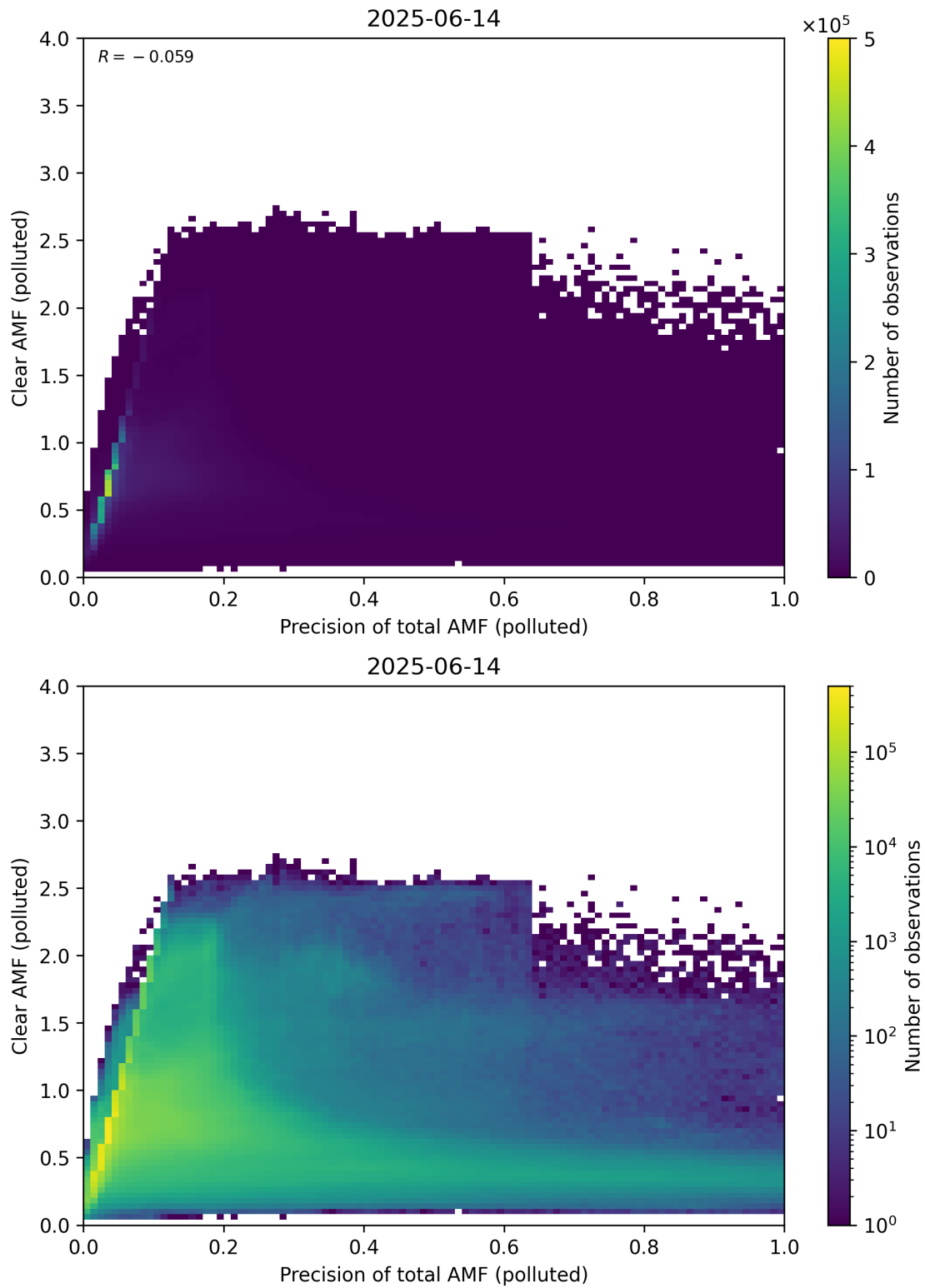


Figure 320: Scatter density plot of “Precision of total AMF (polluted)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

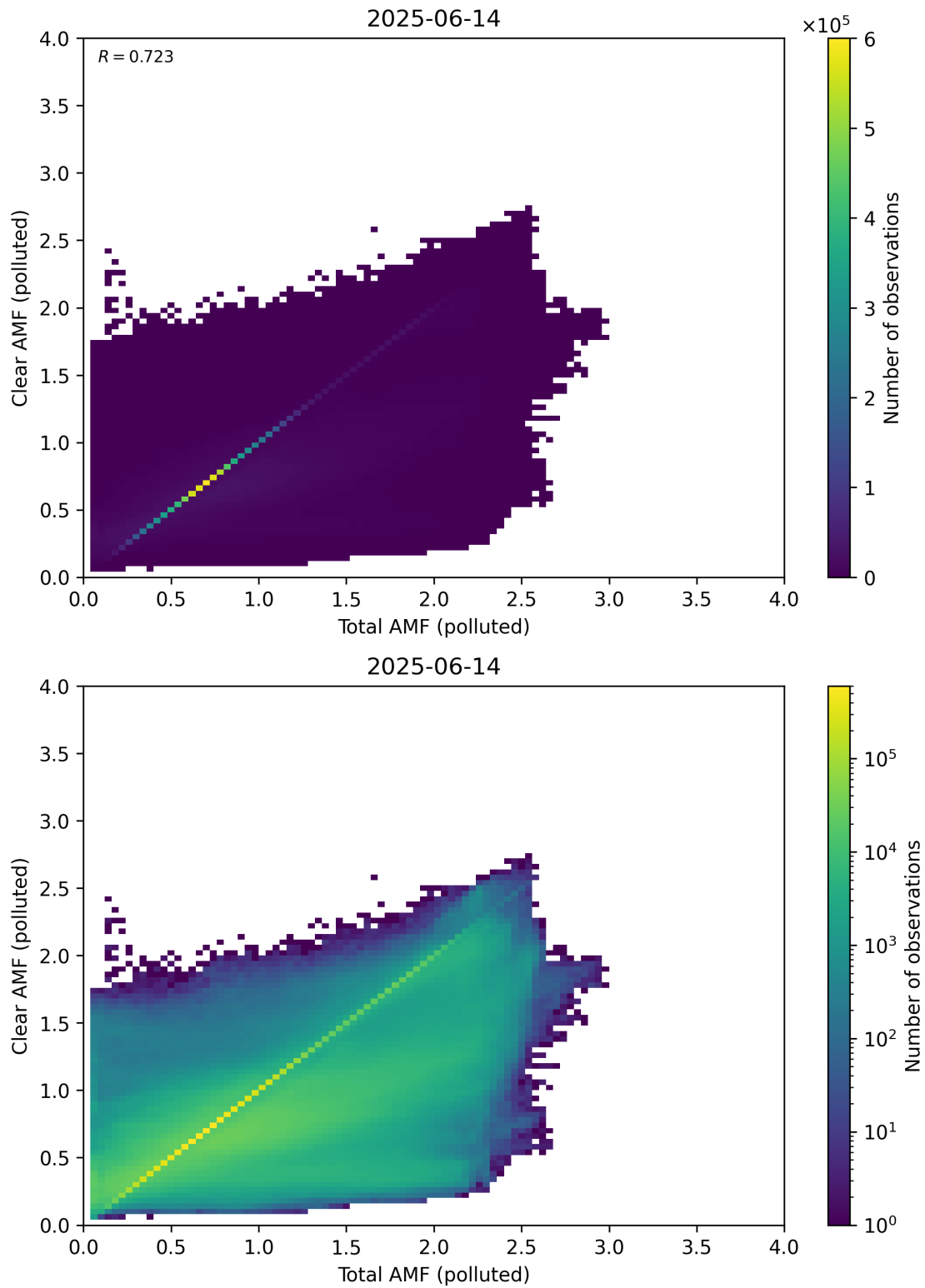


Figure 321: Scatter density plot of “Total AMF (polluted)” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

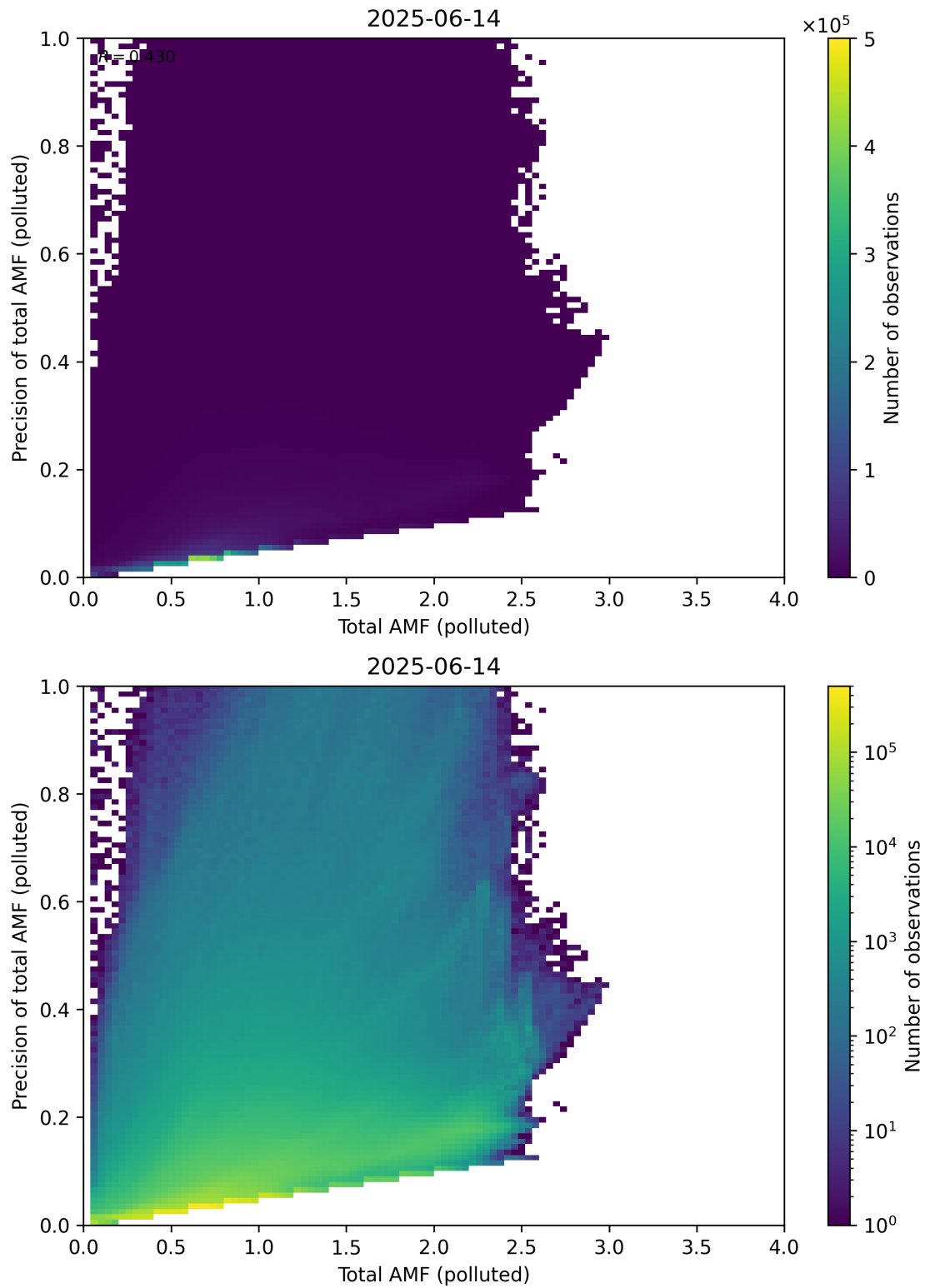


Figure 322: Scatter density plot of “Total AMF (polluted)” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

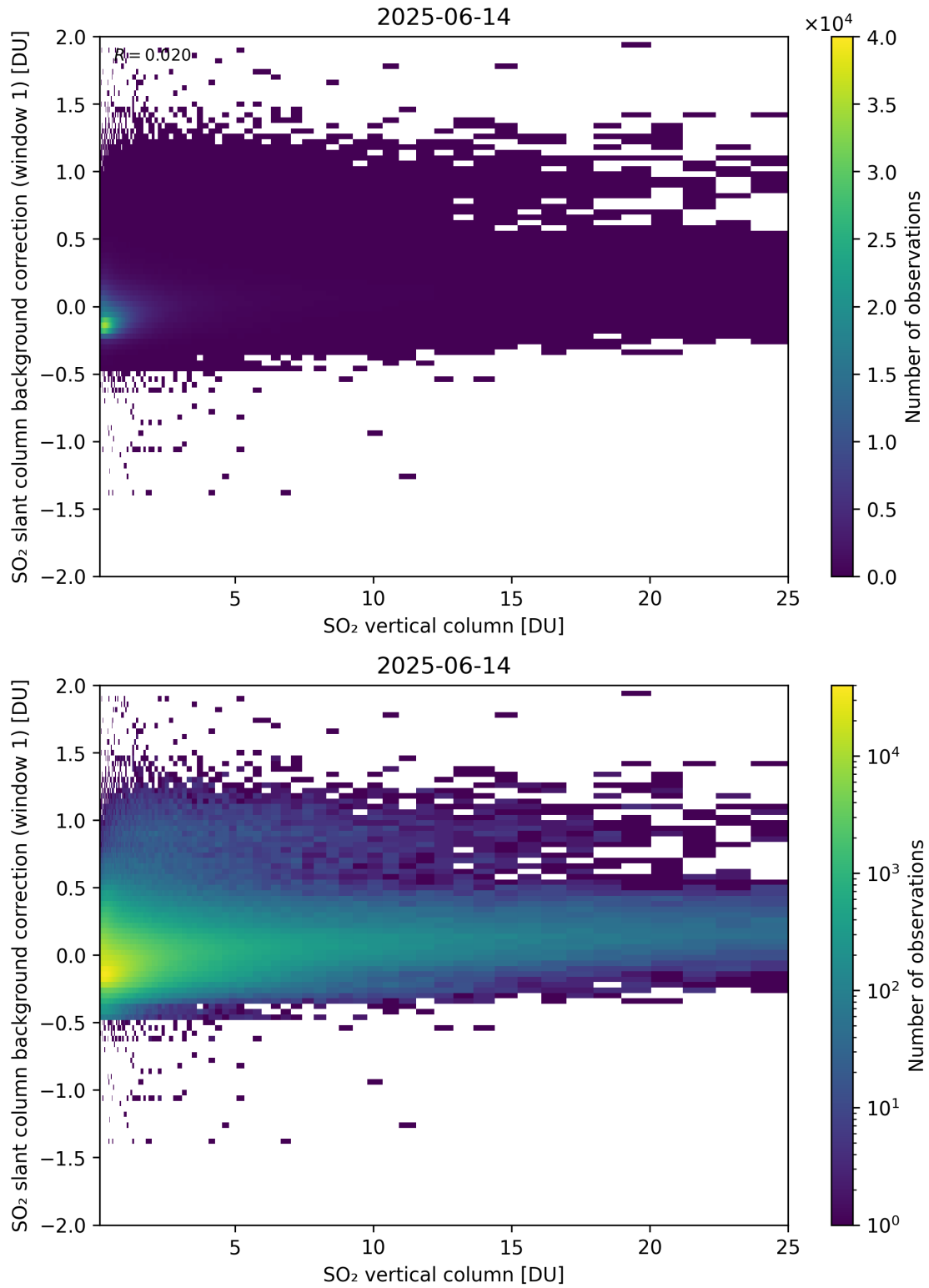


Figure 323: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

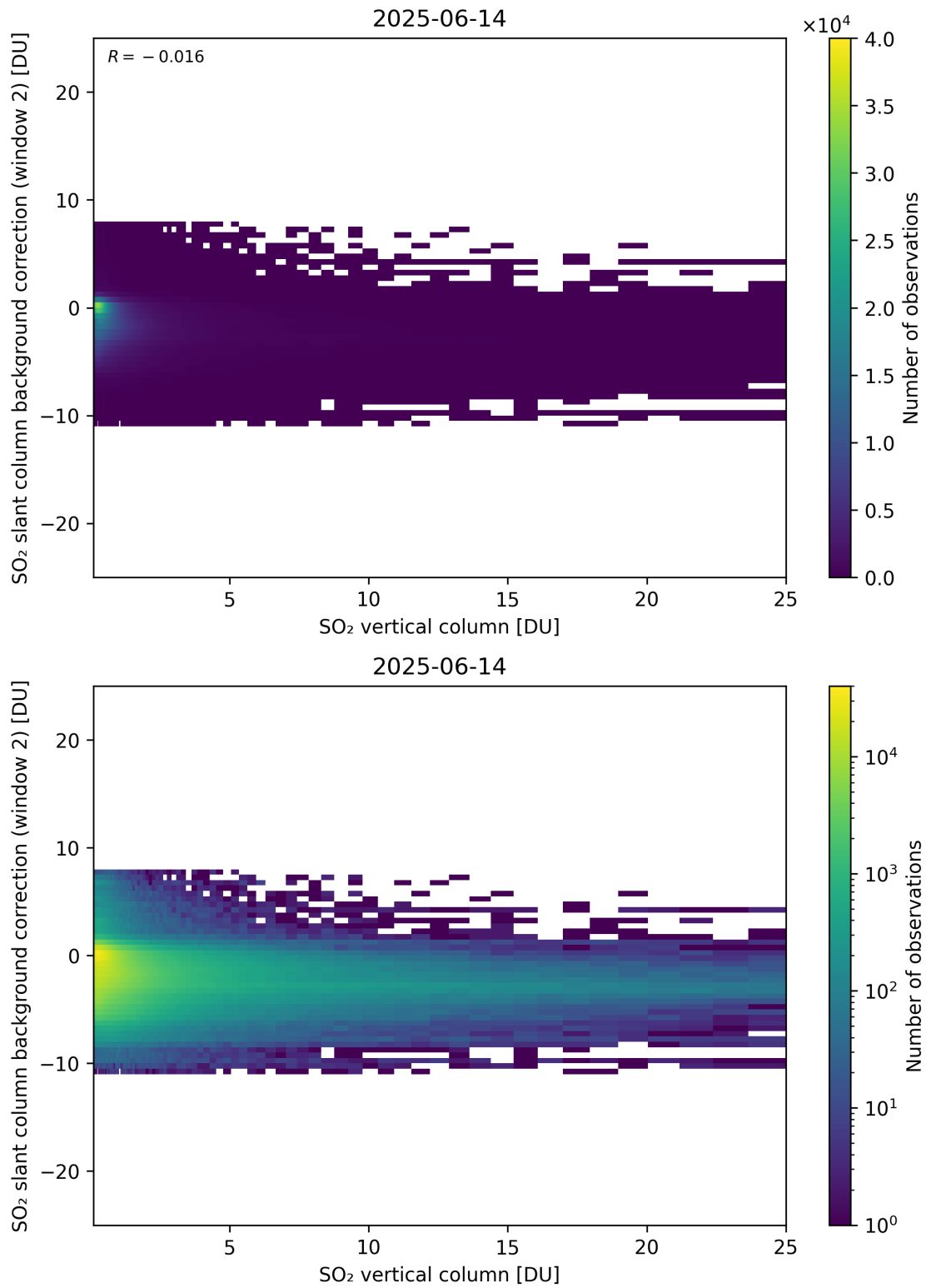


Figure 324: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

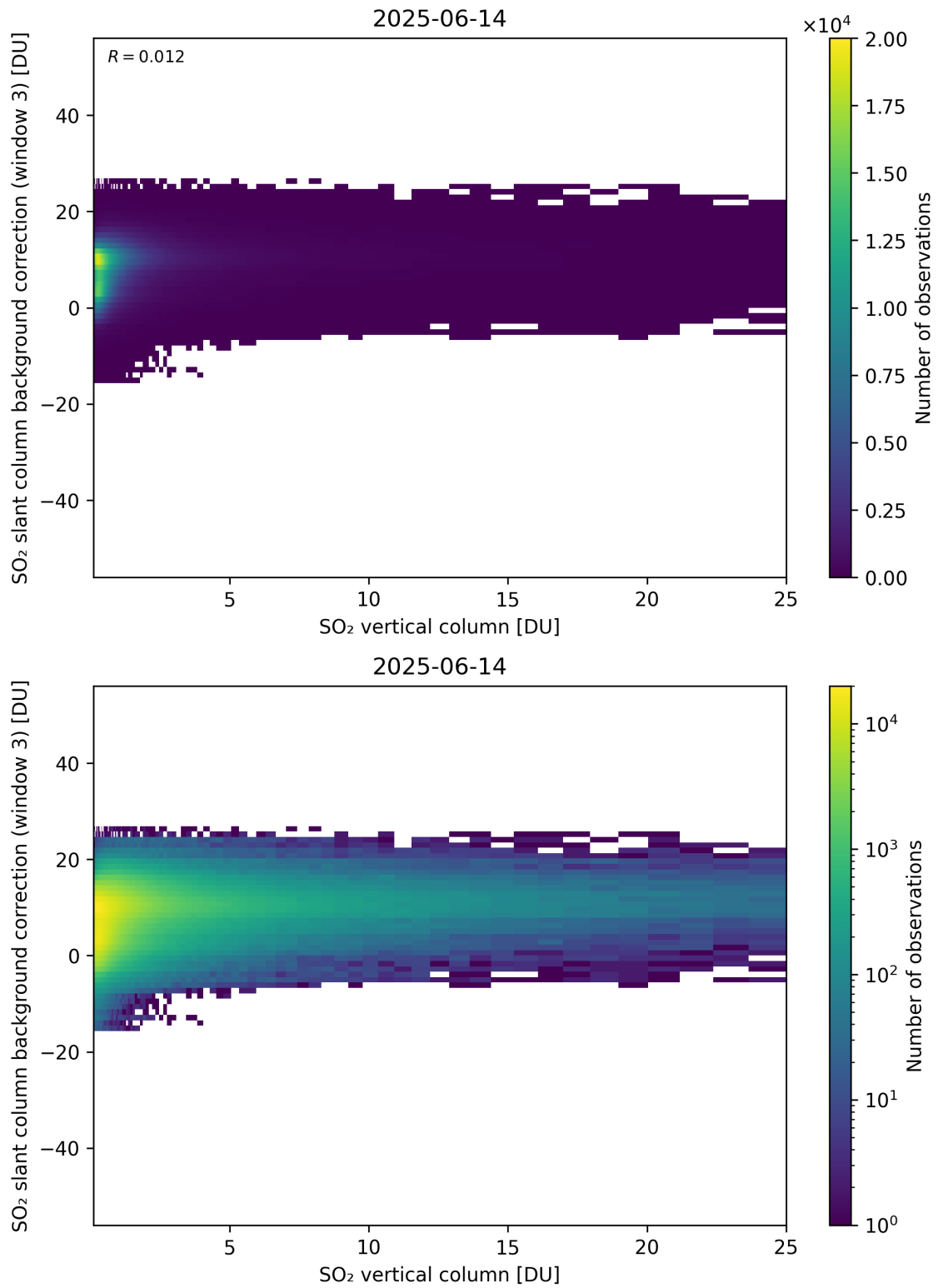


Figure 325: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

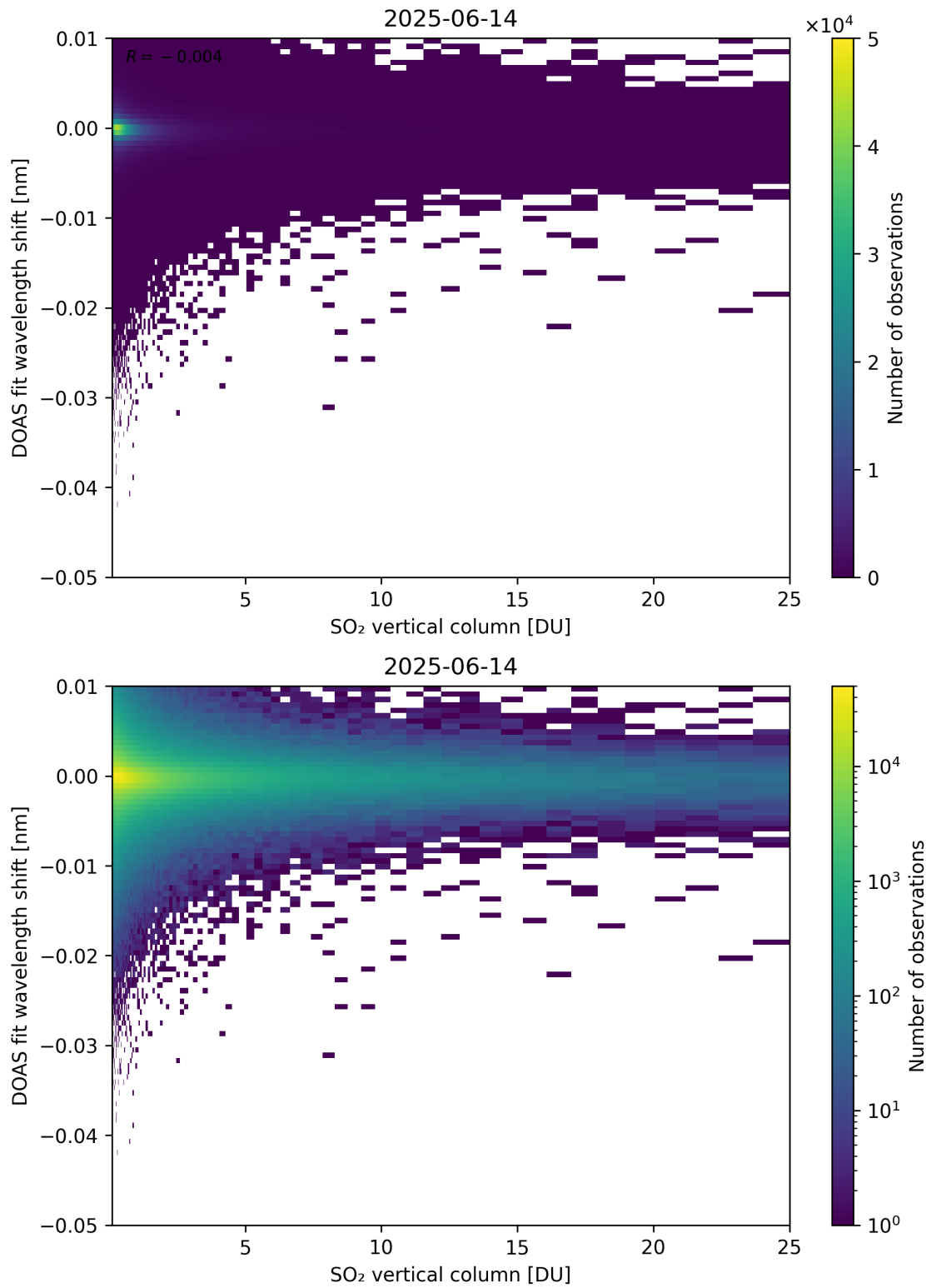


Figure 326: Scatter density plot of “SO₂ vertical column” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

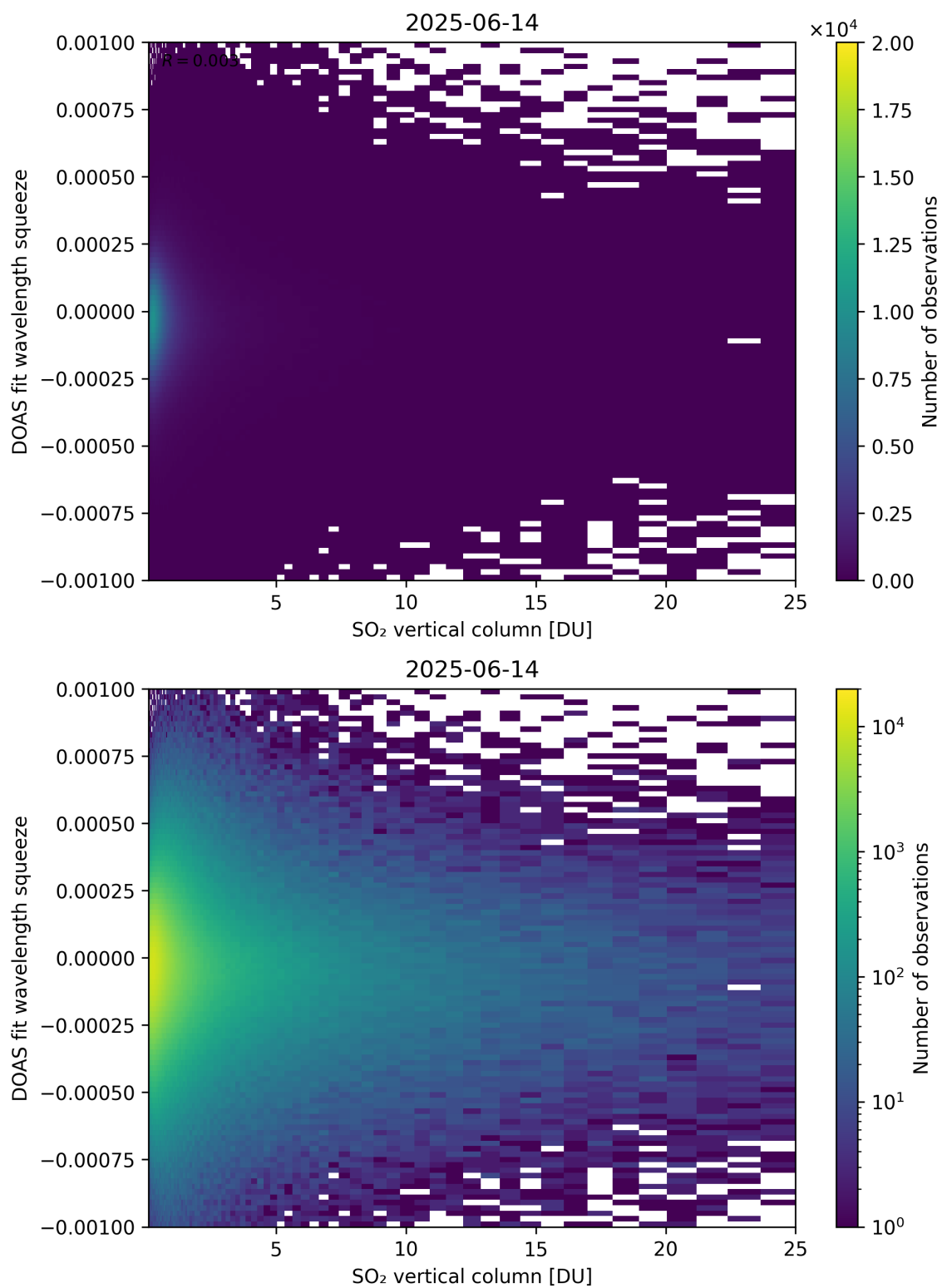


Figure 327: Scatter density plot of “SO₂ vertical column” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

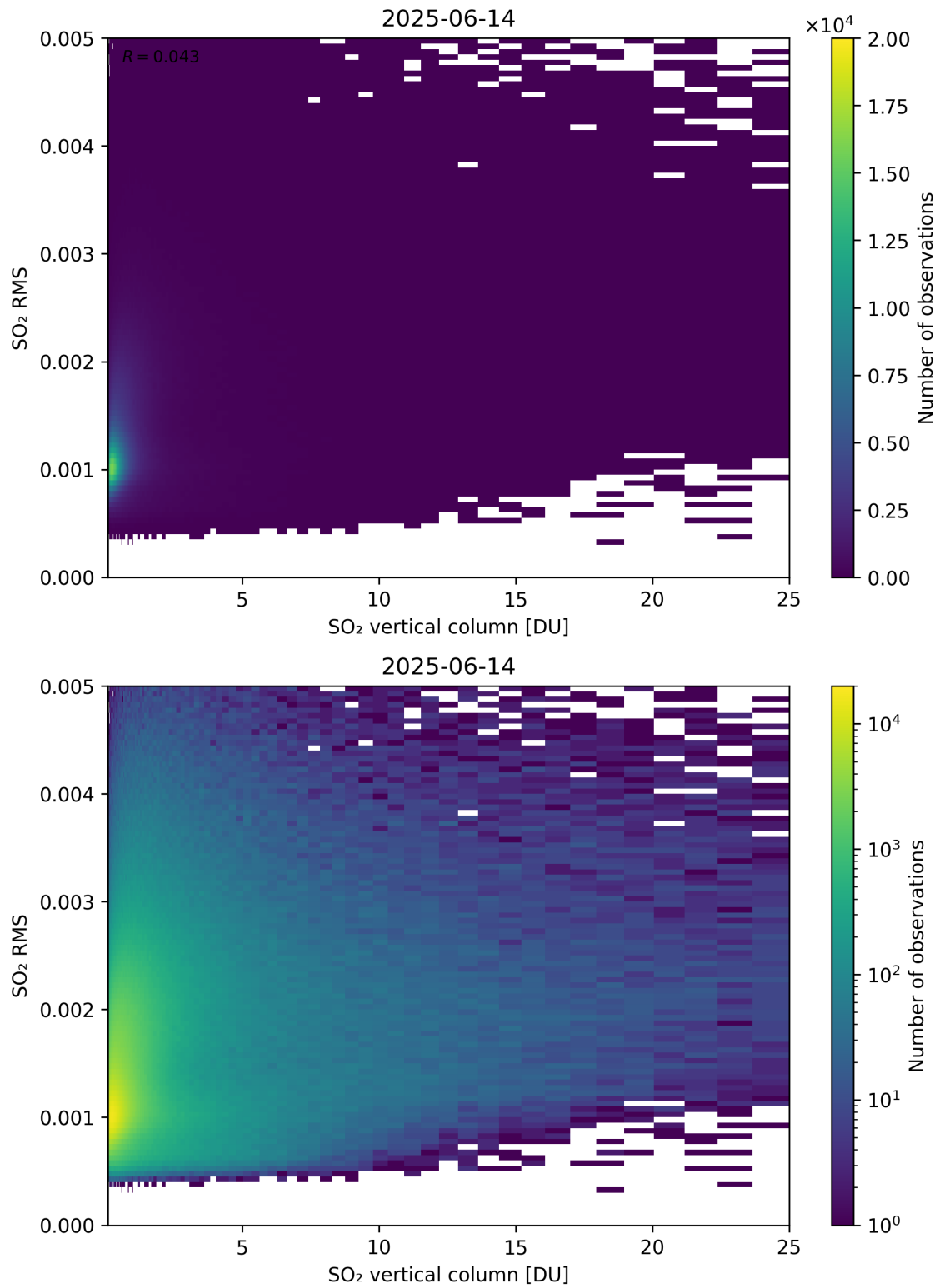


Figure 328: Scatter density plot of “SO₂ vertical column” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

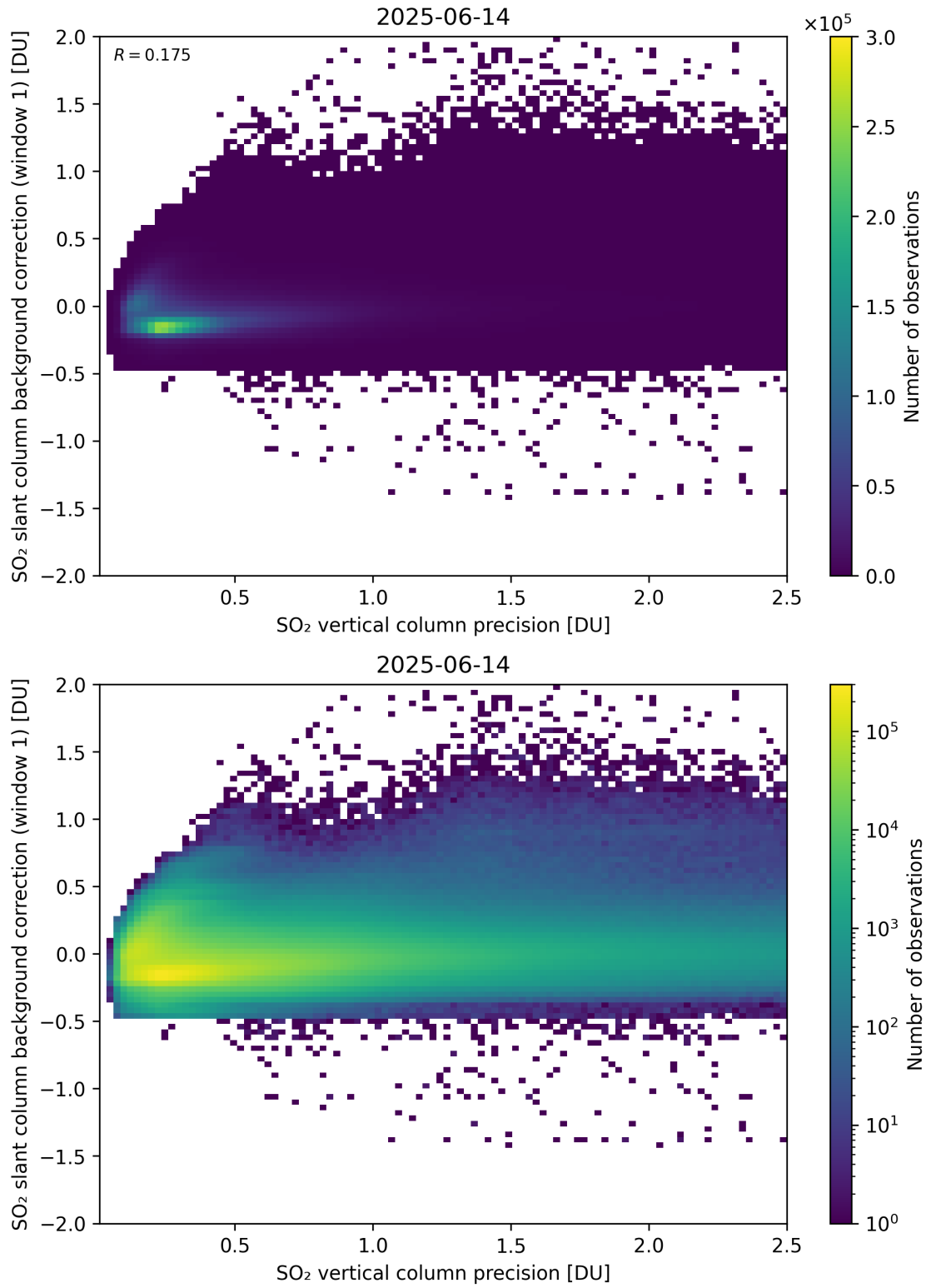


Figure 329: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

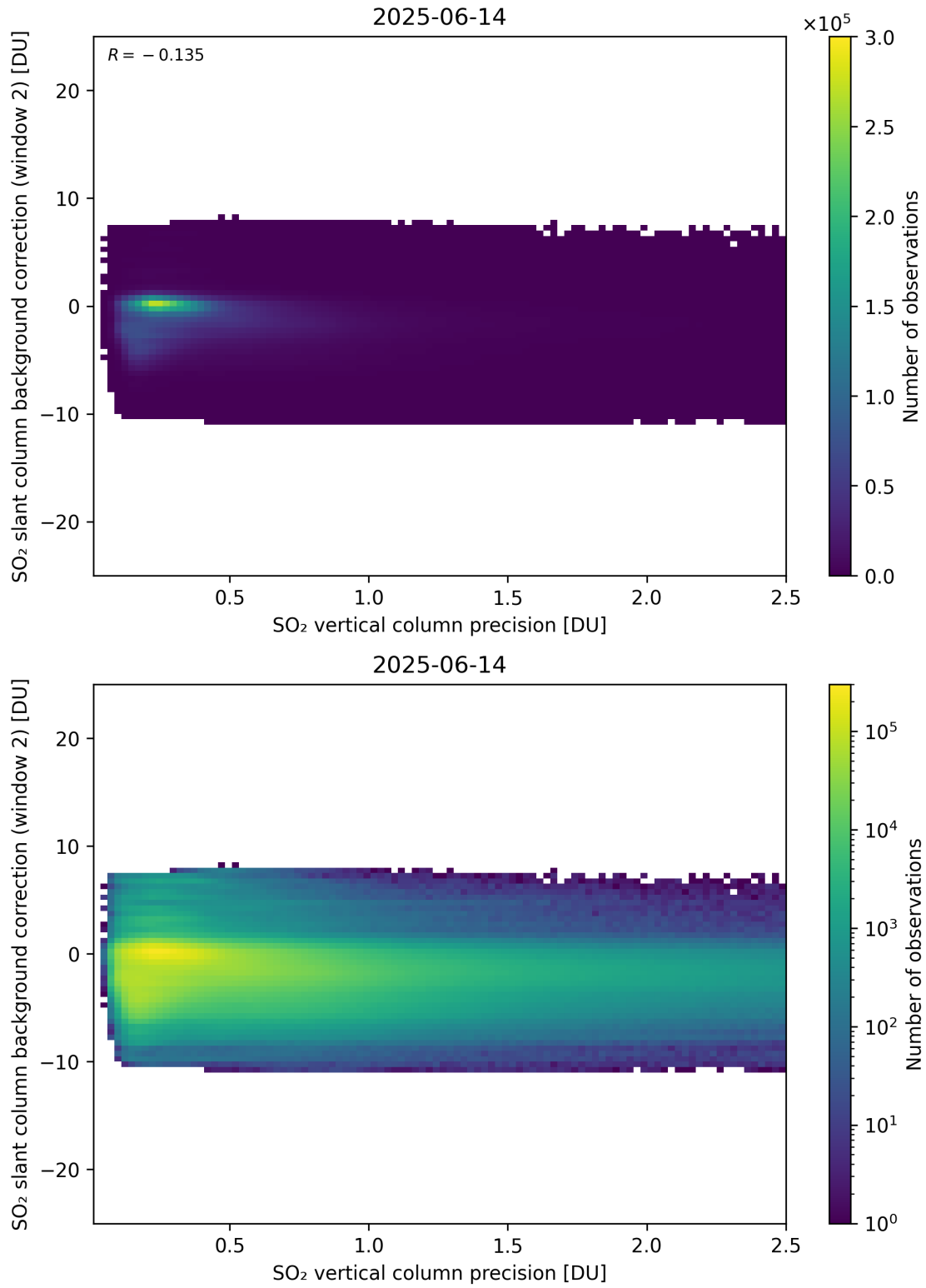


Figure 330: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

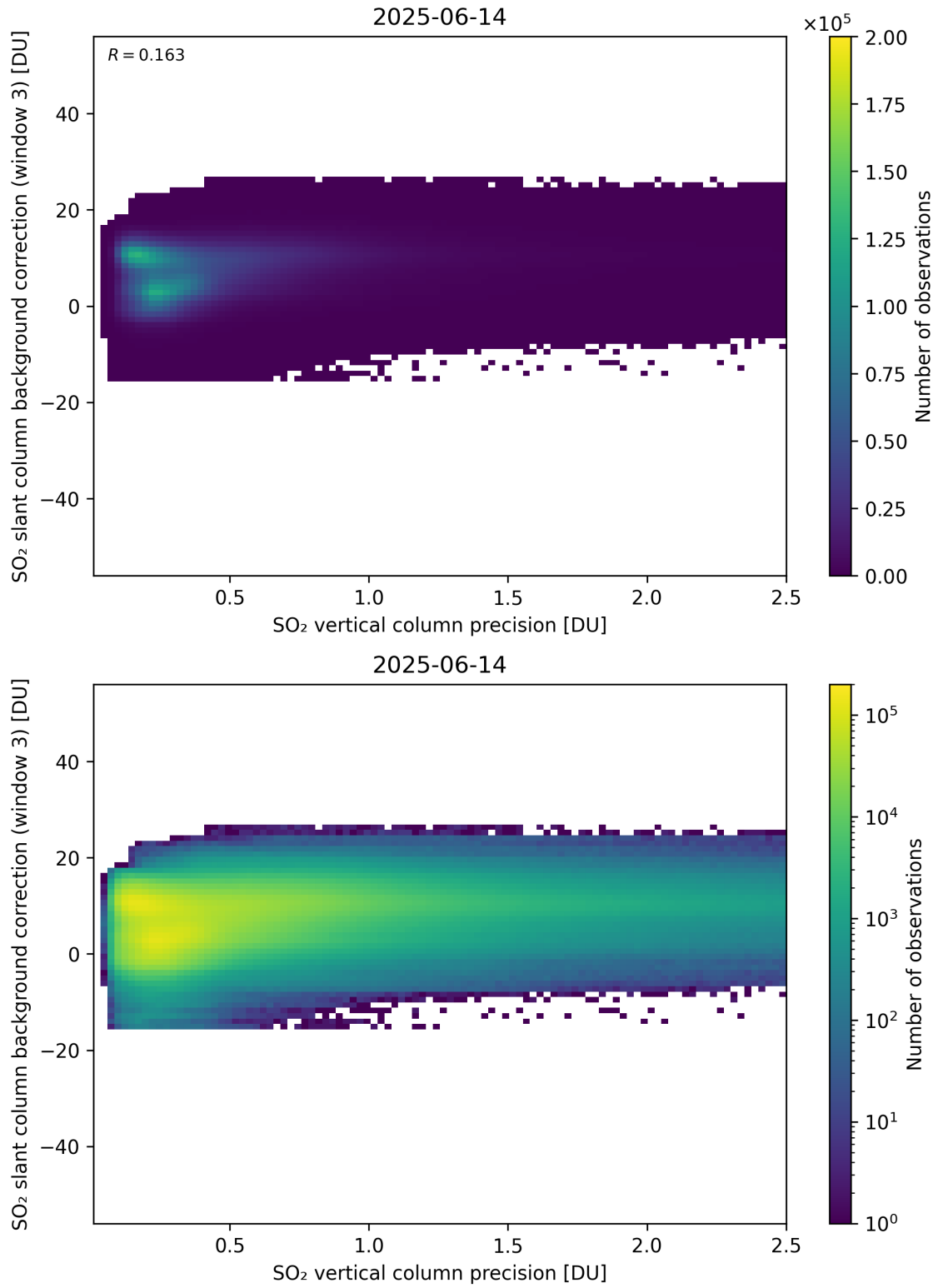


Figure 331: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

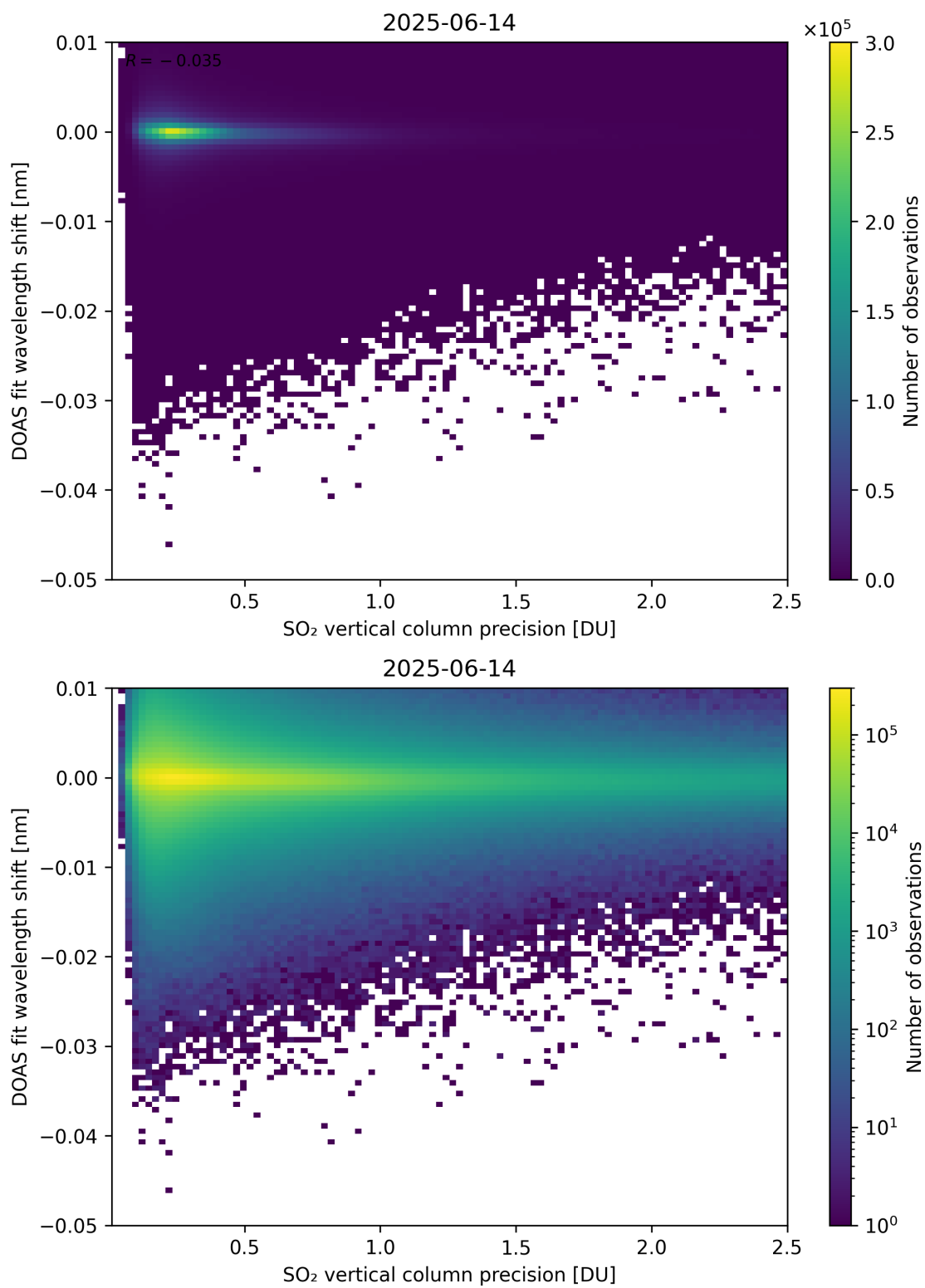


Figure 332: Scatter density plot of “SO₂ vertical column precision” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

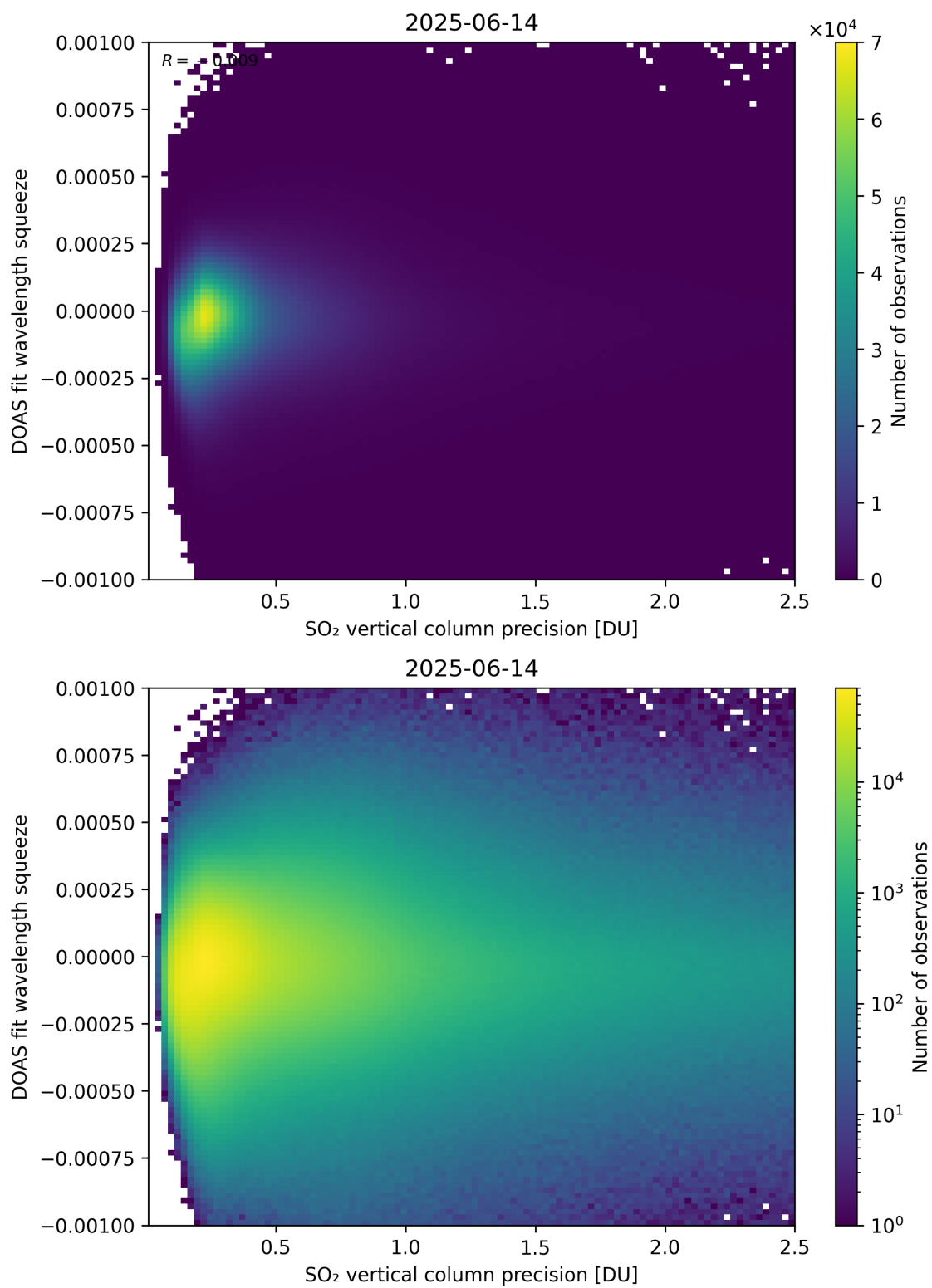


Figure 333: Scatter density plot of “SO₂ vertical column precision” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

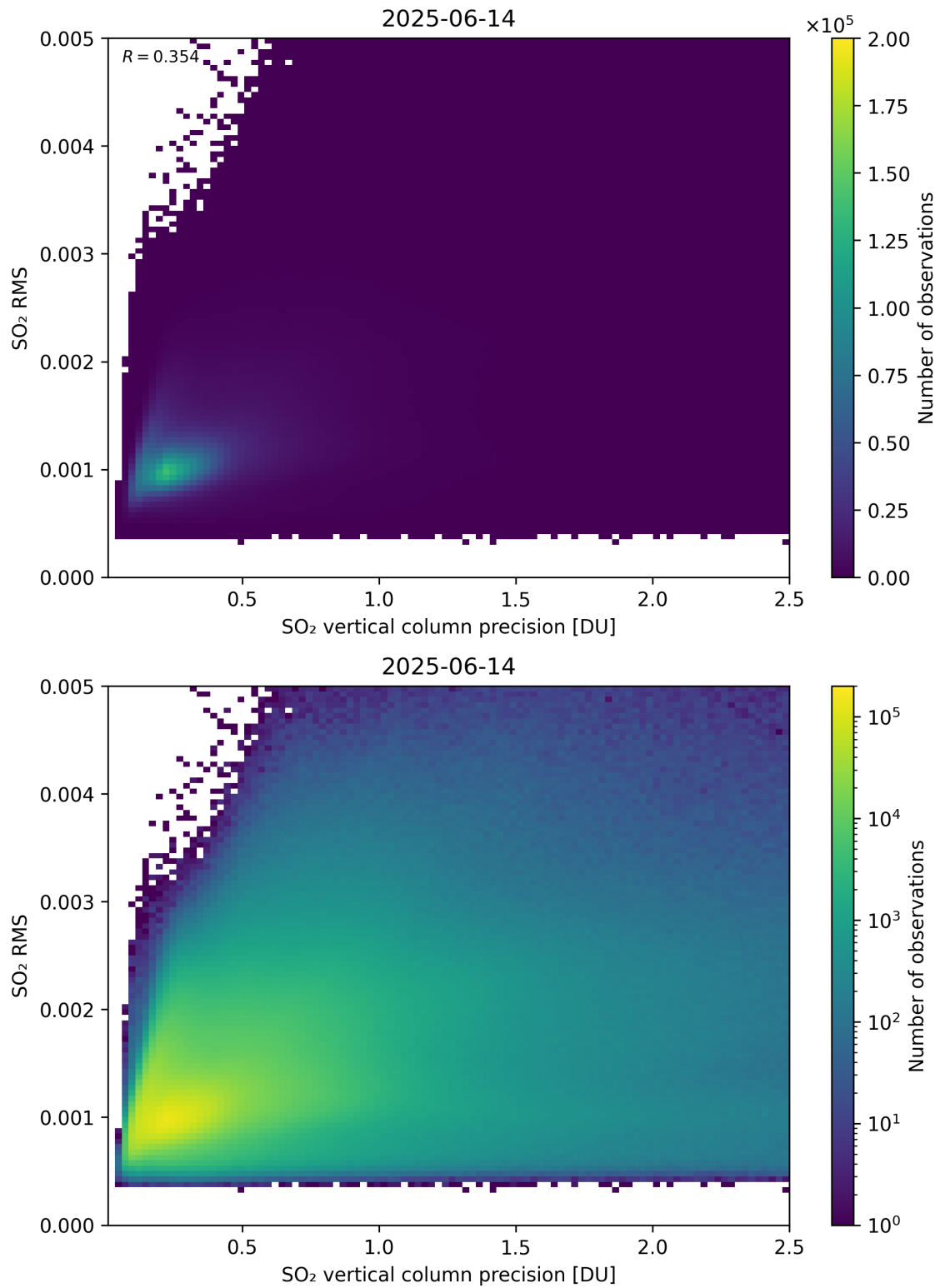


Figure 334: Scatter density plot of “SO₂ vertical column precision” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

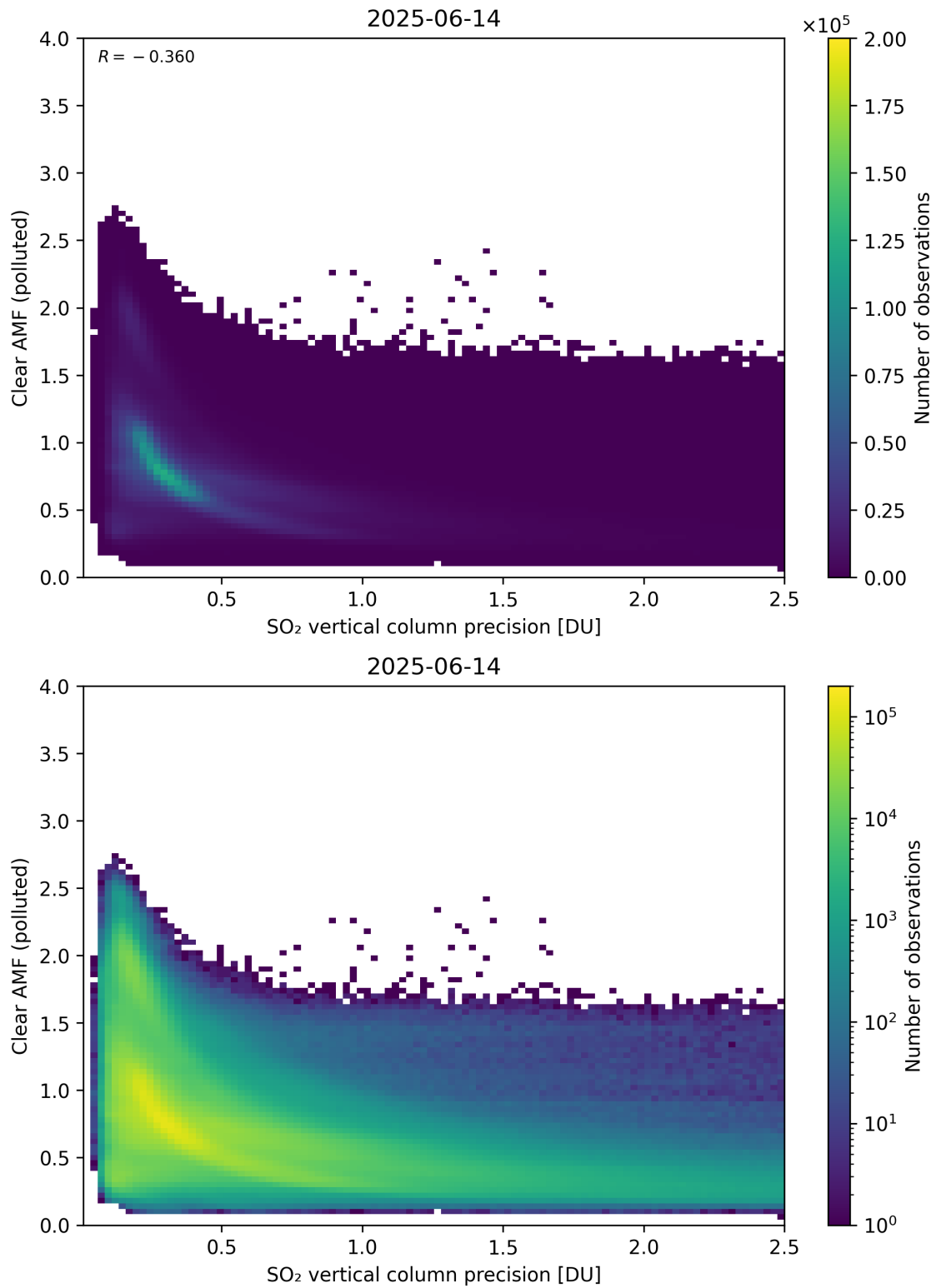


Figure 335: Scatter density plot of “SO₂ vertical column precision” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

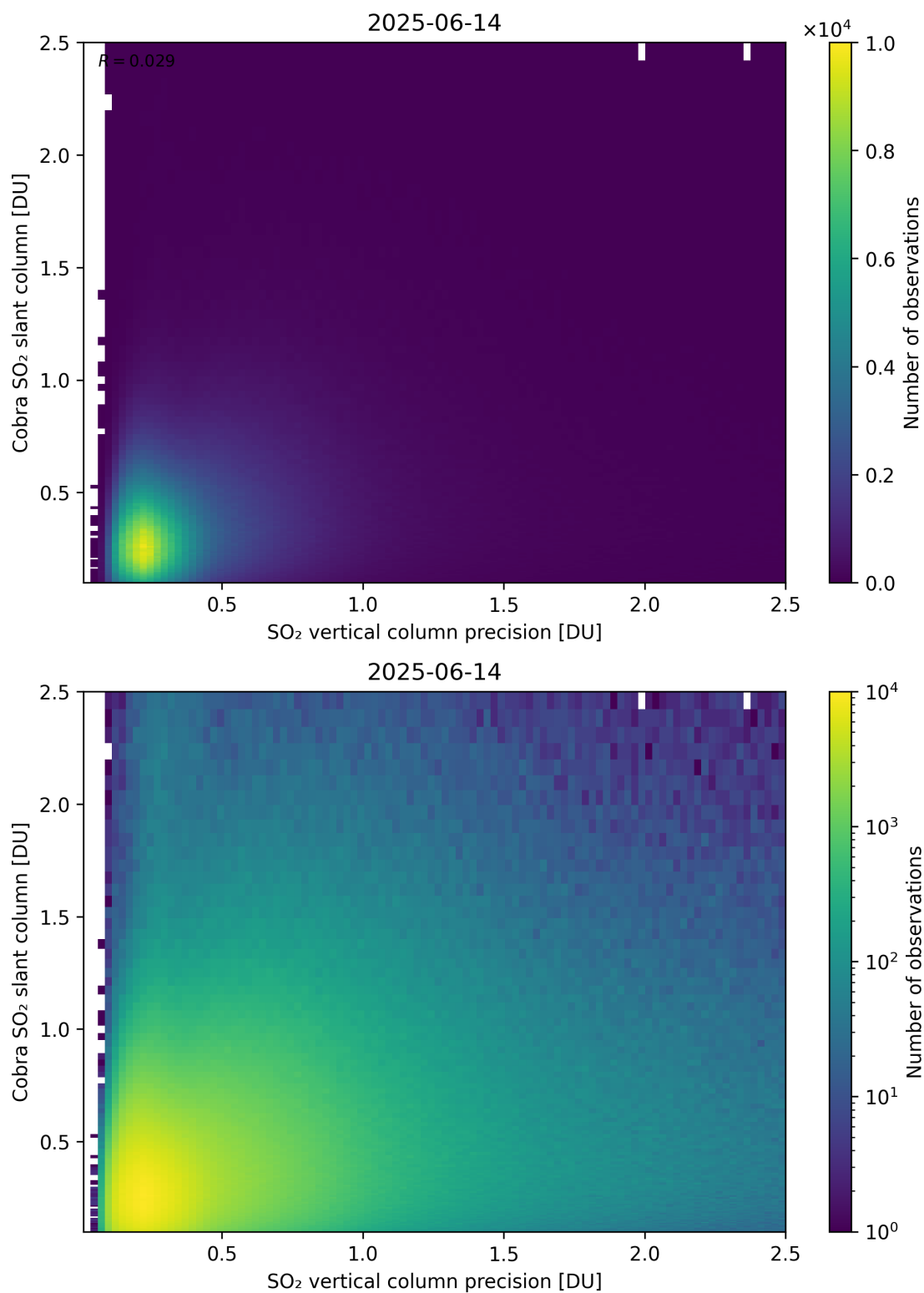


Figure 336: Scatter density plot of “SO₂ vertical column precision” against “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

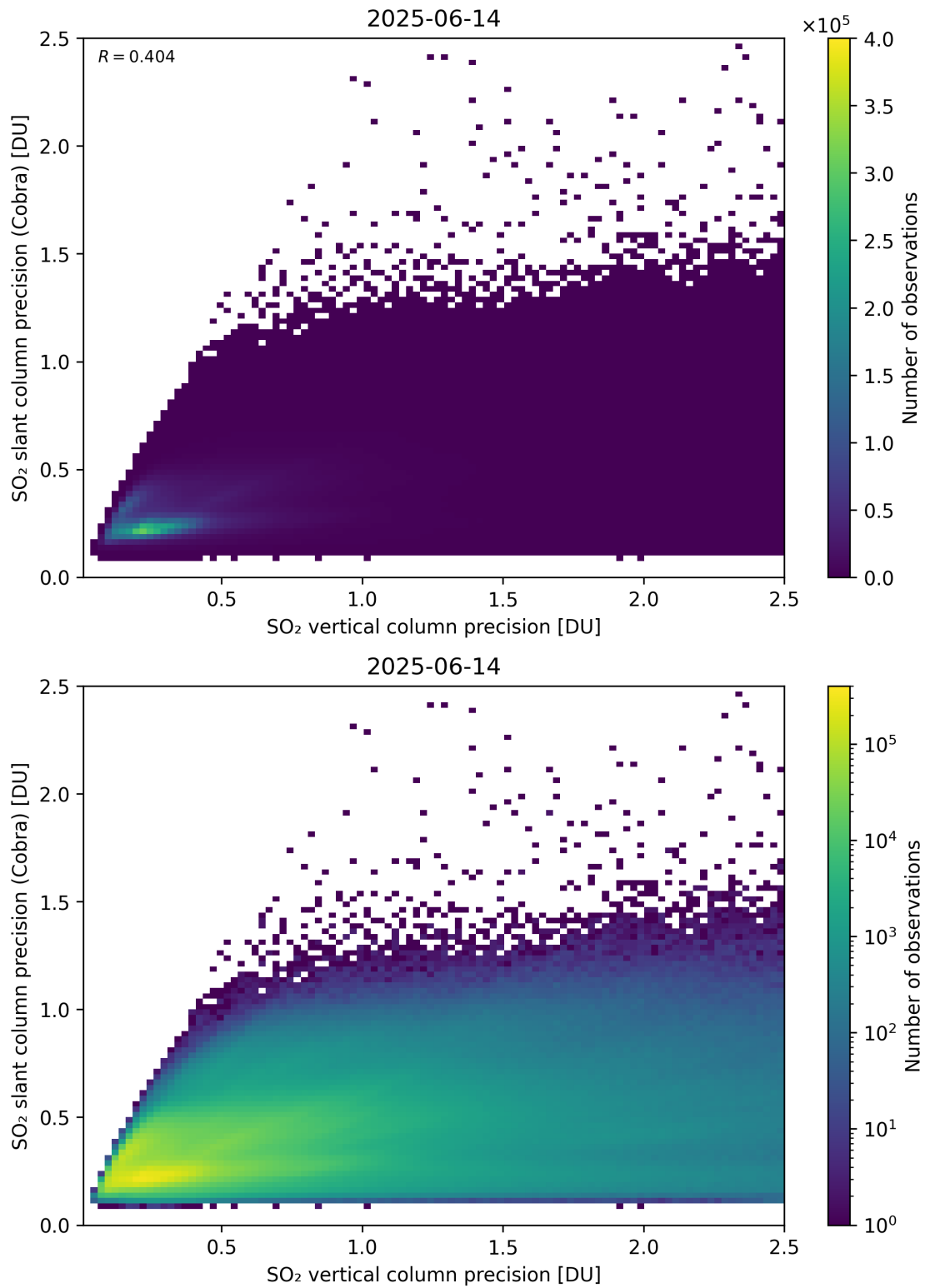


Figure 337: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

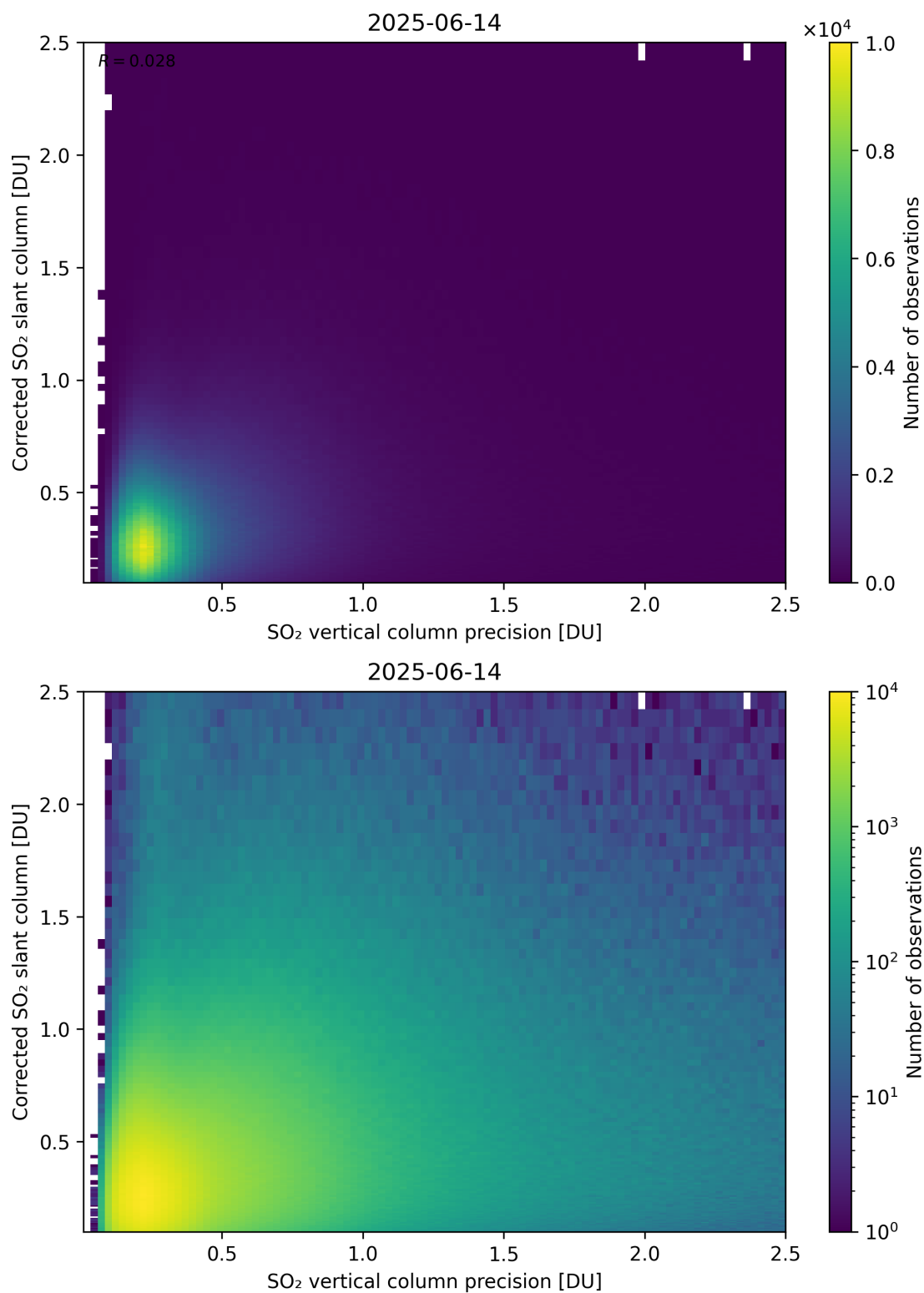


Figure 338: Scatter density plot of “SO₂ vertical column precision” against “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15.

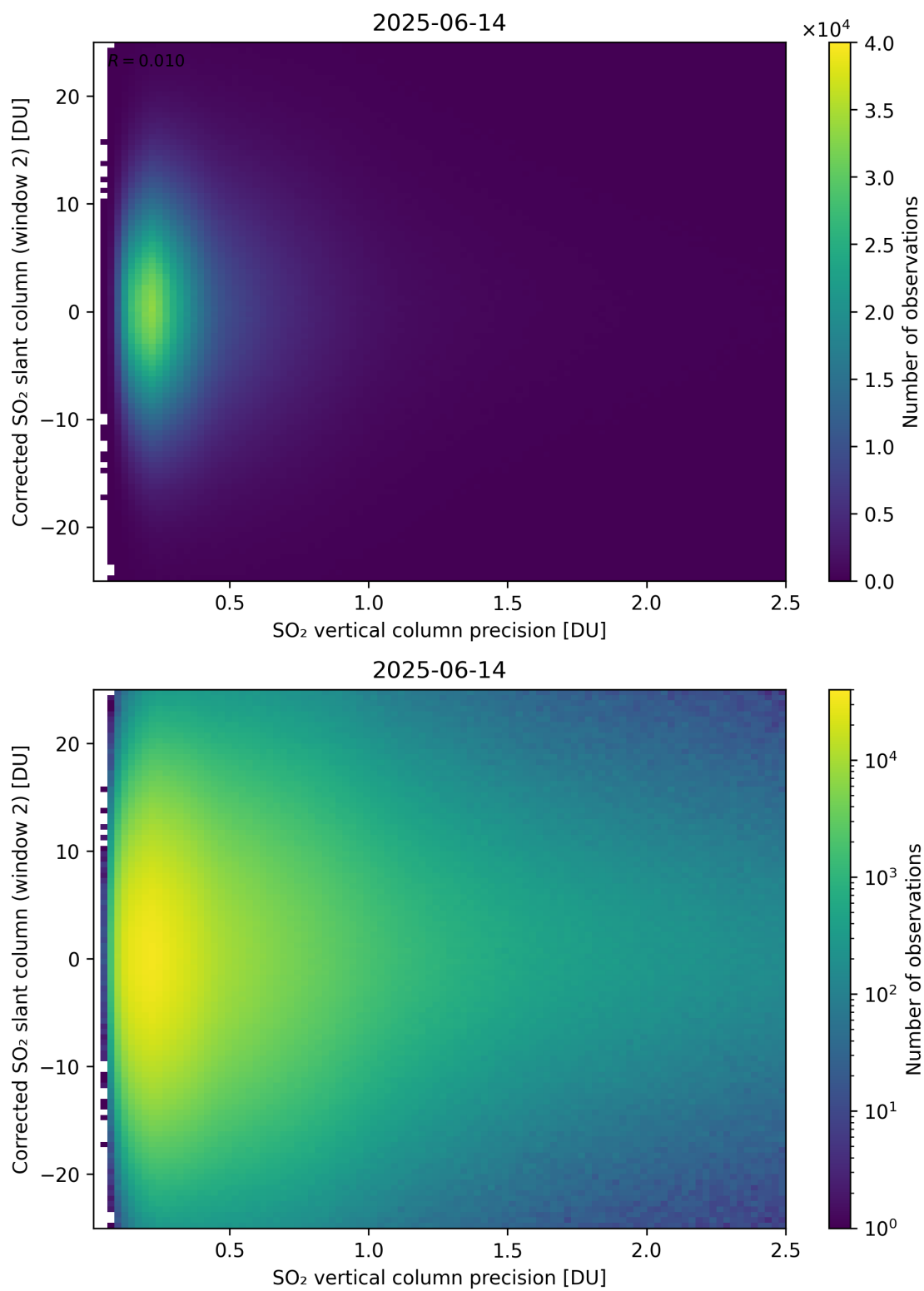


Figure 339: Scatter density plot of “SO₂ vertical column precision” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

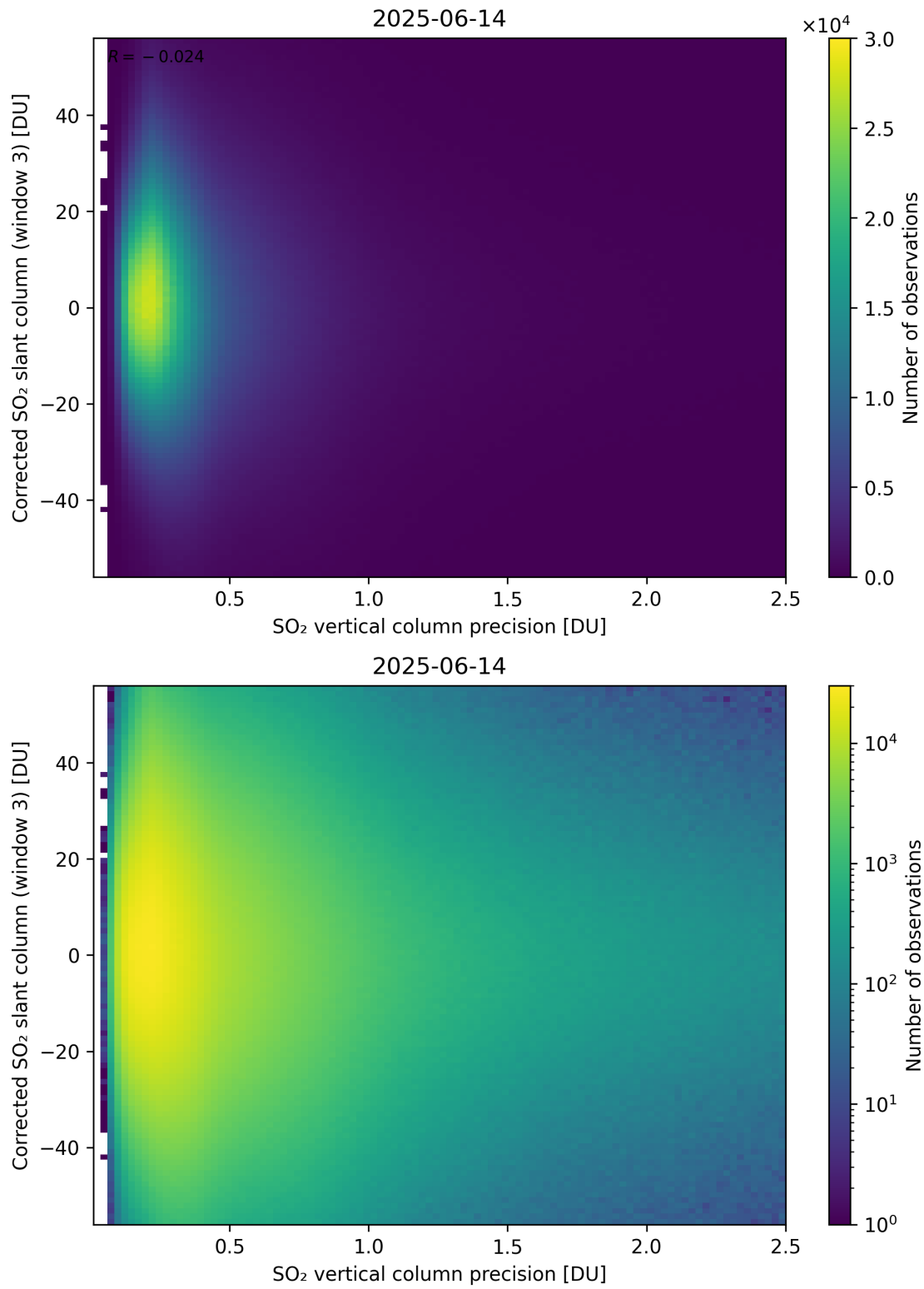


Figure 340: Scatter density plot of “SO₂ vertical column precision” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

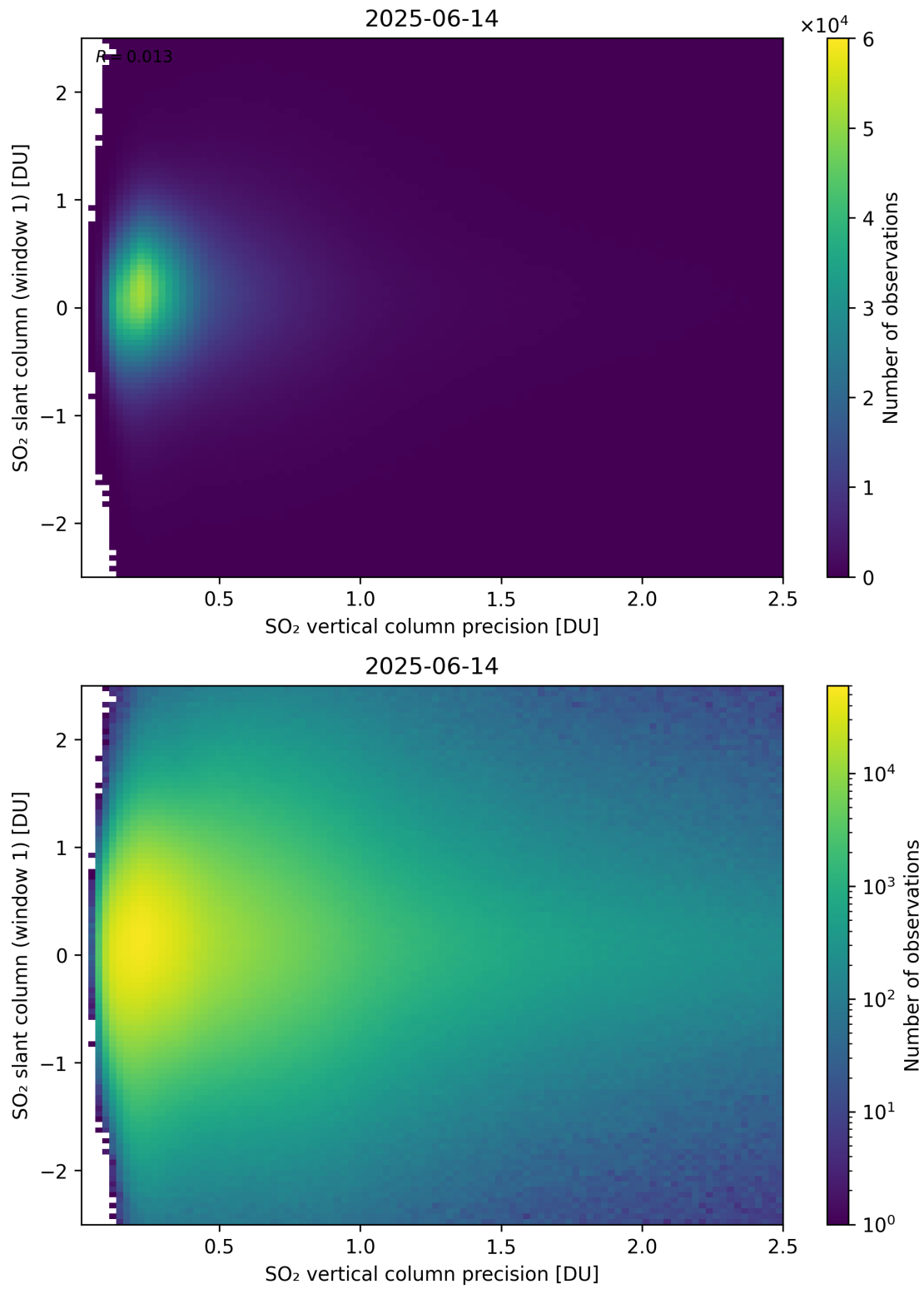


Figure 341: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

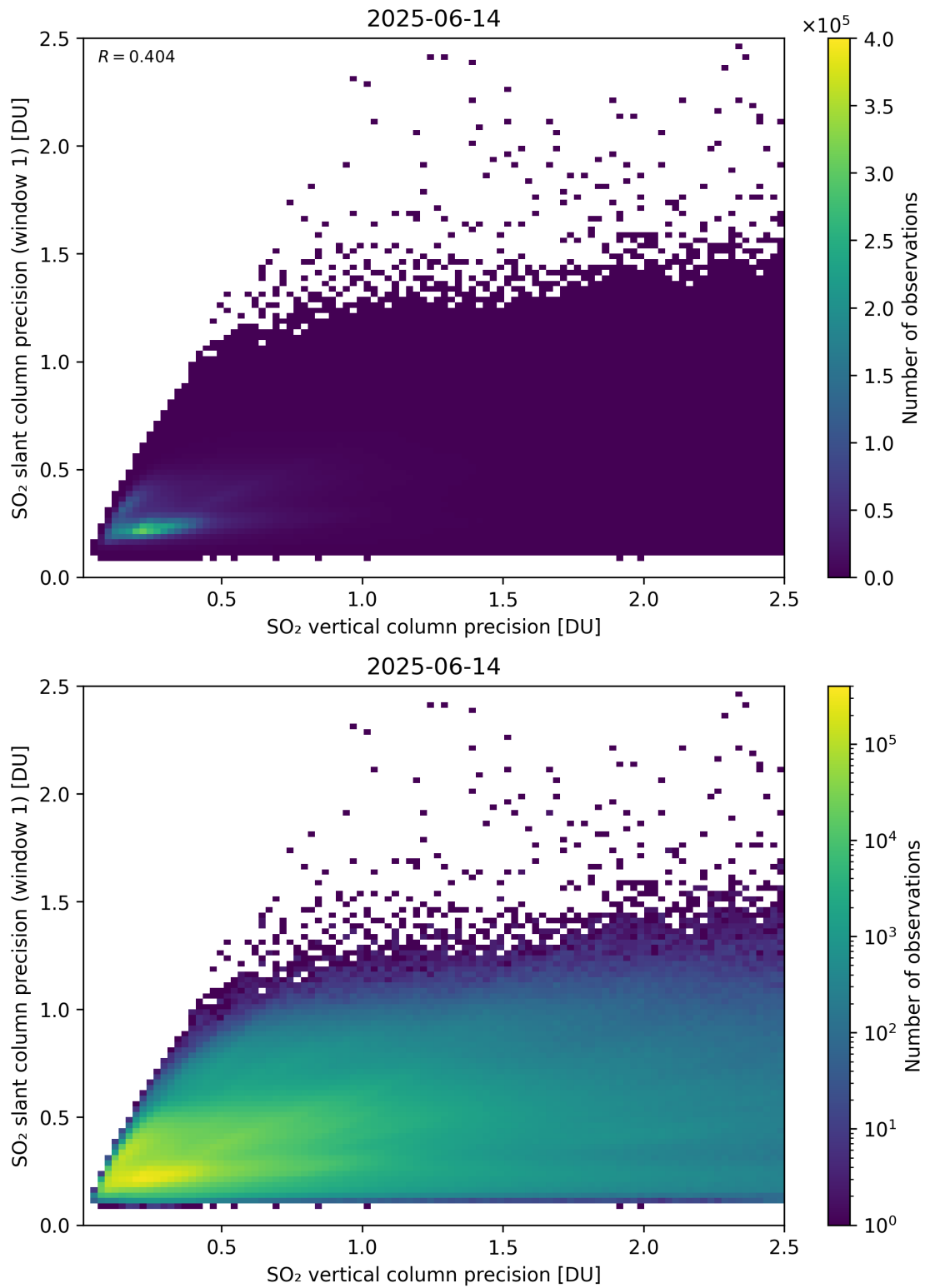


Figure 342: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

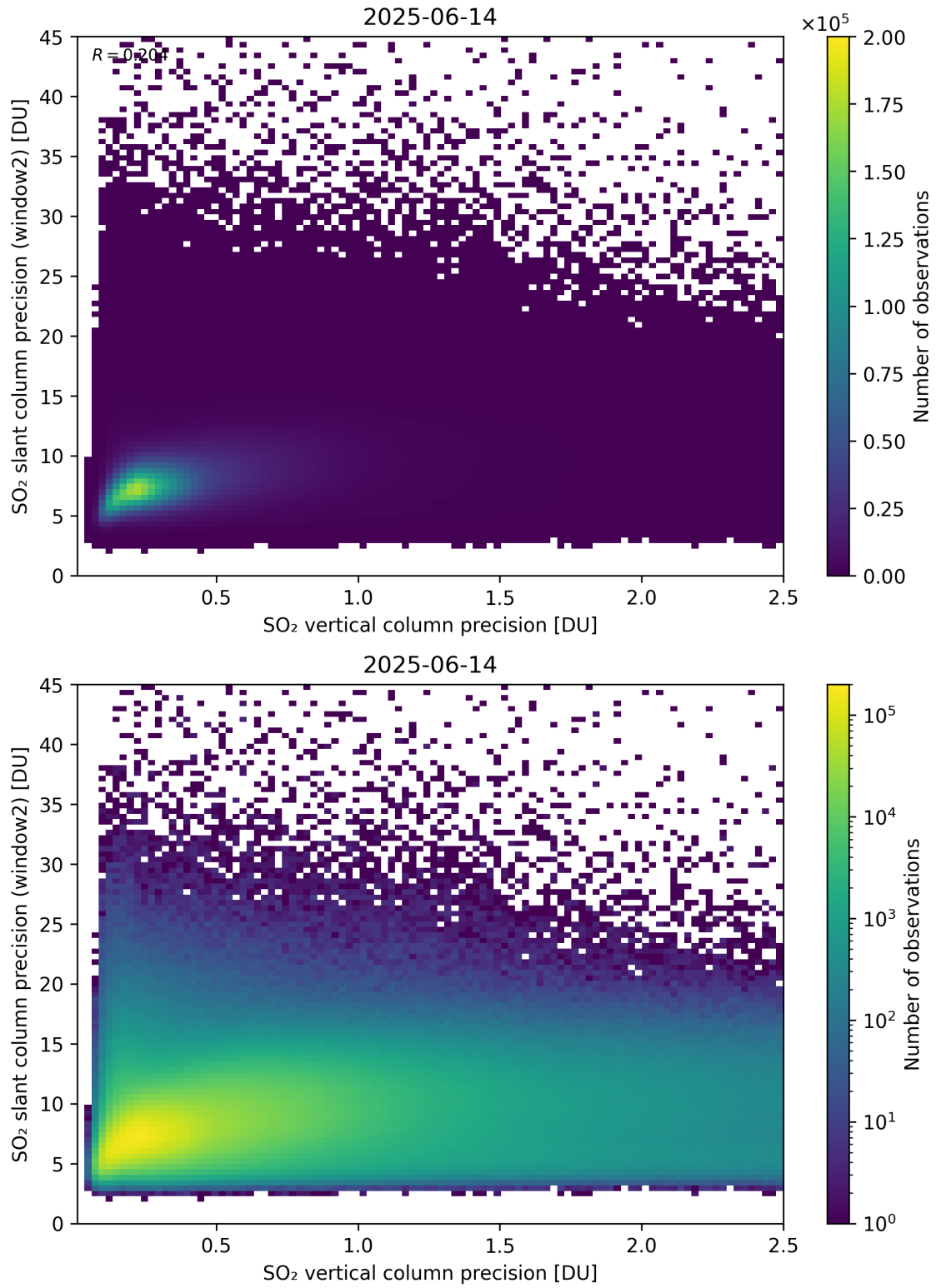


Figure 343: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

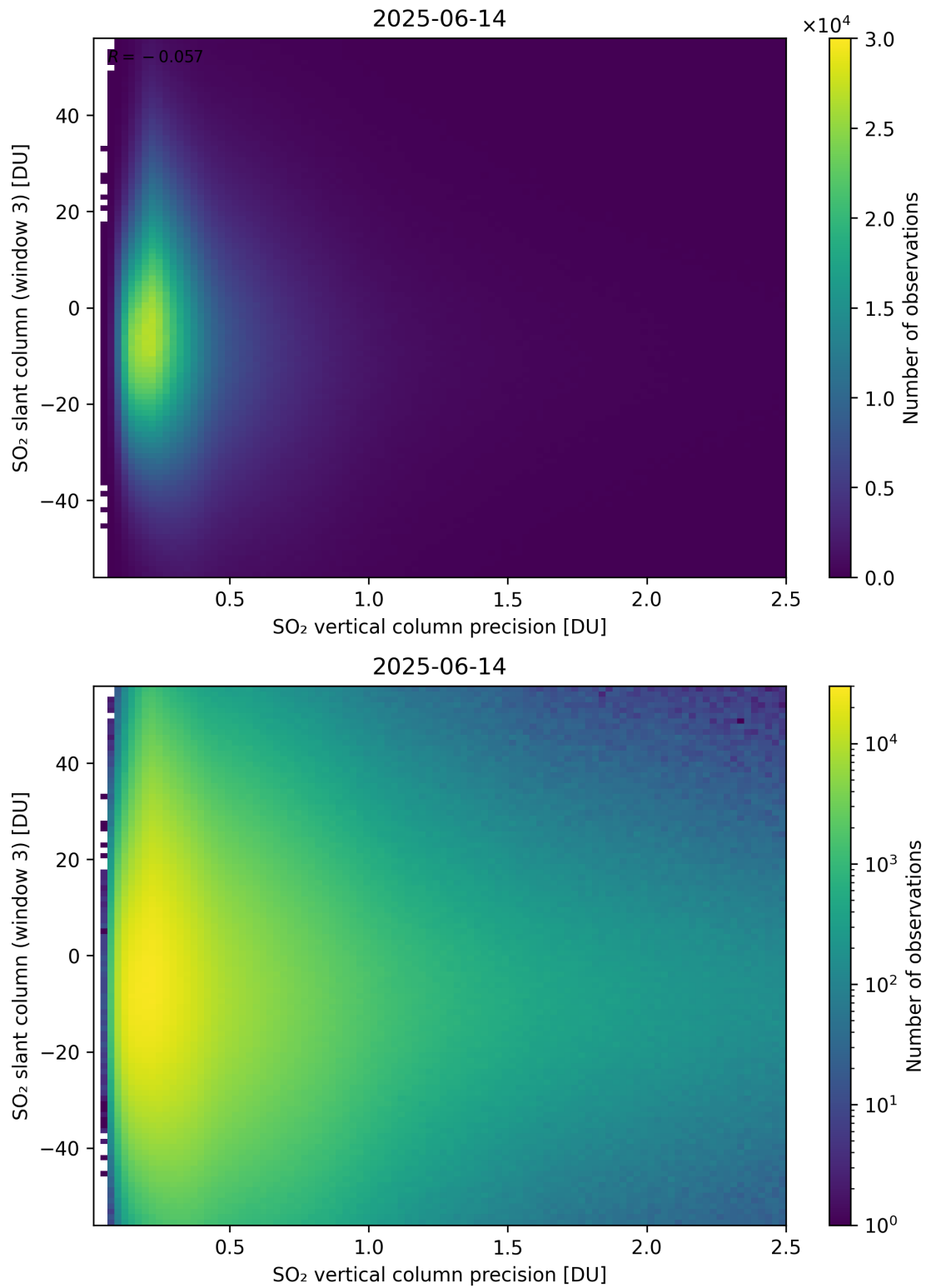


Figure 344: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

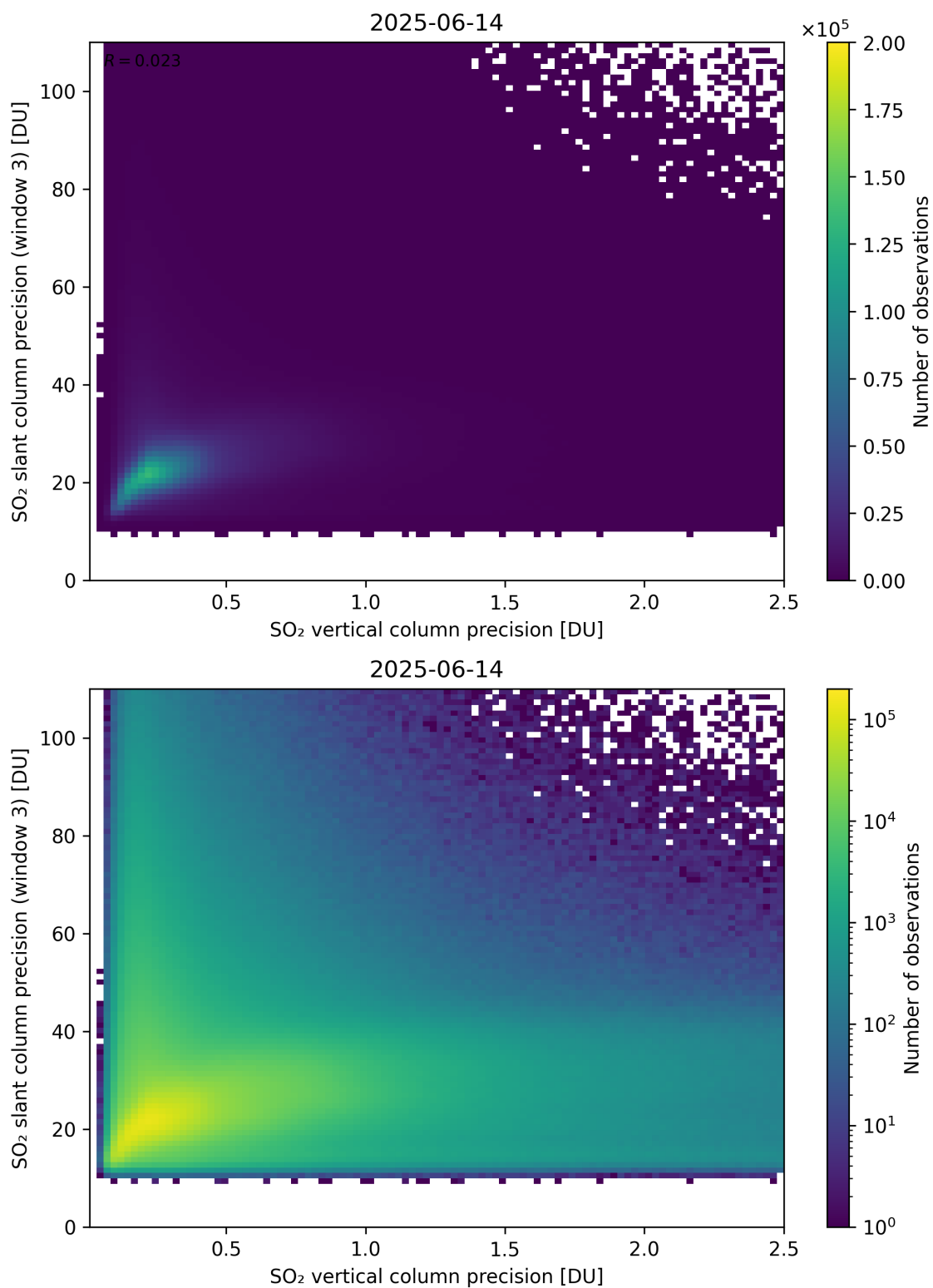


Figure 345: Scatter density plot of “SO₂ vertical column precision” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

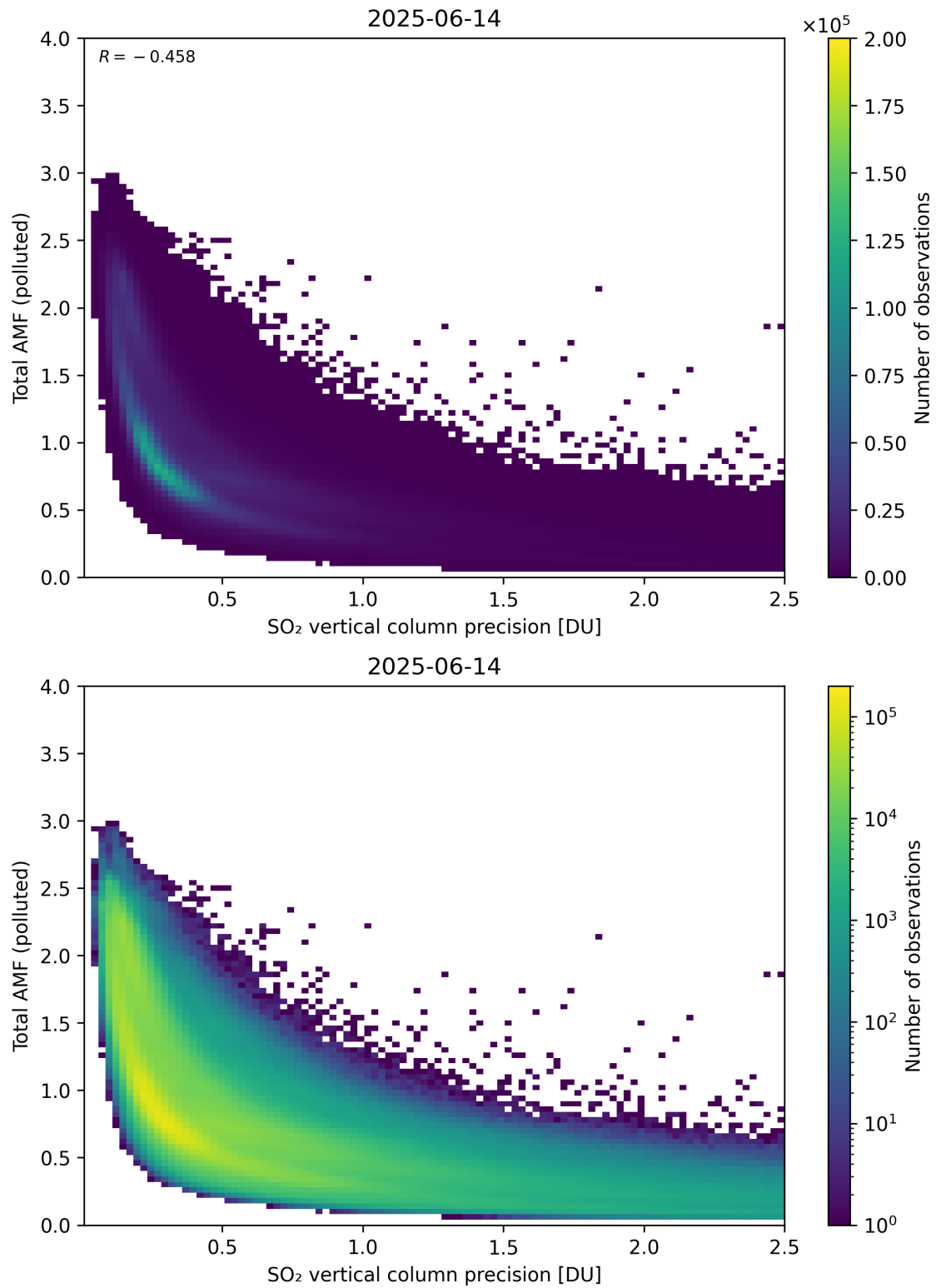


Figure 346: Scatter density plot of “SO₂ vertical column precision” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

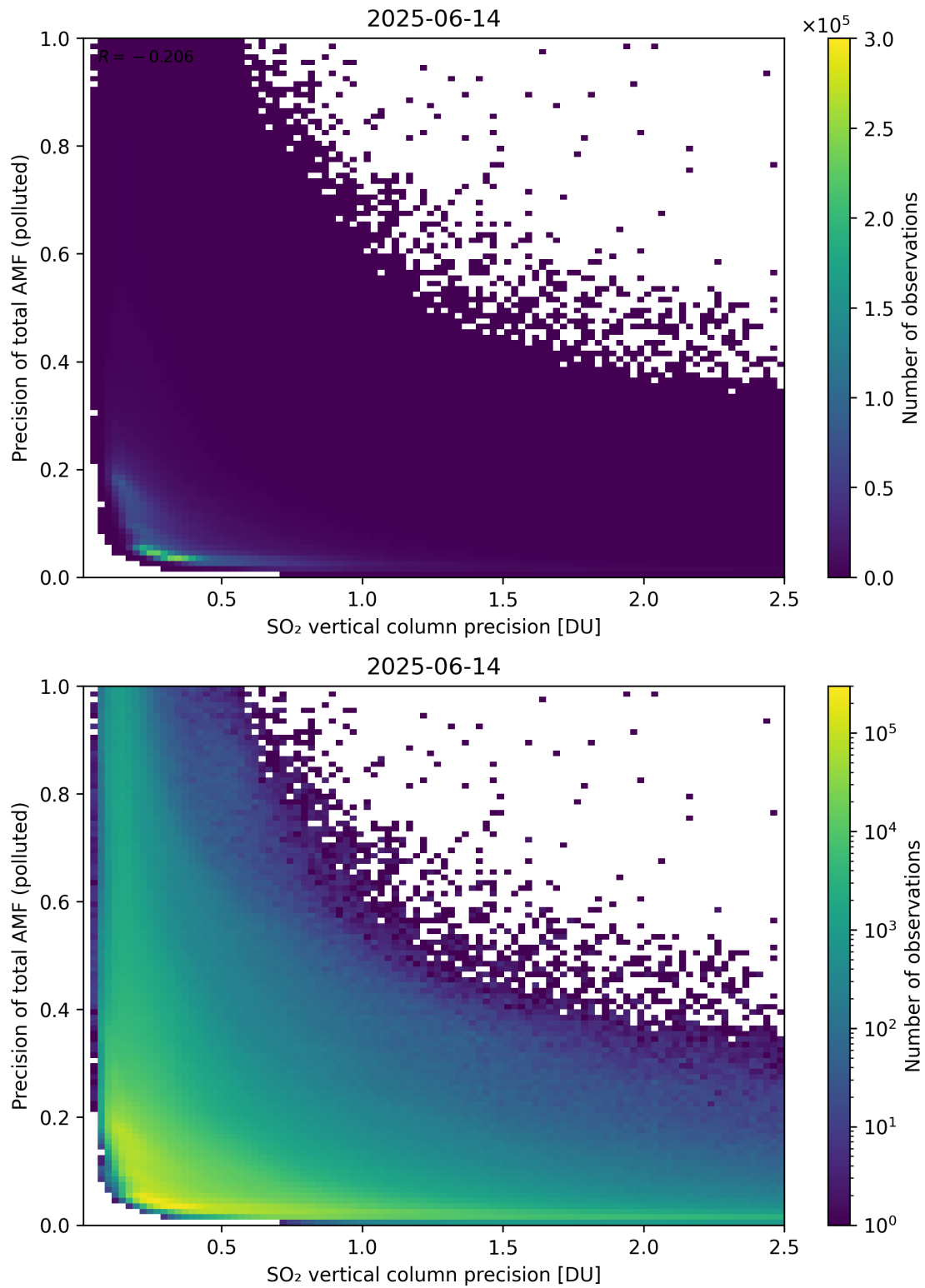


Figure 347: Scatter density plot of “SO₂ vertical column precision” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

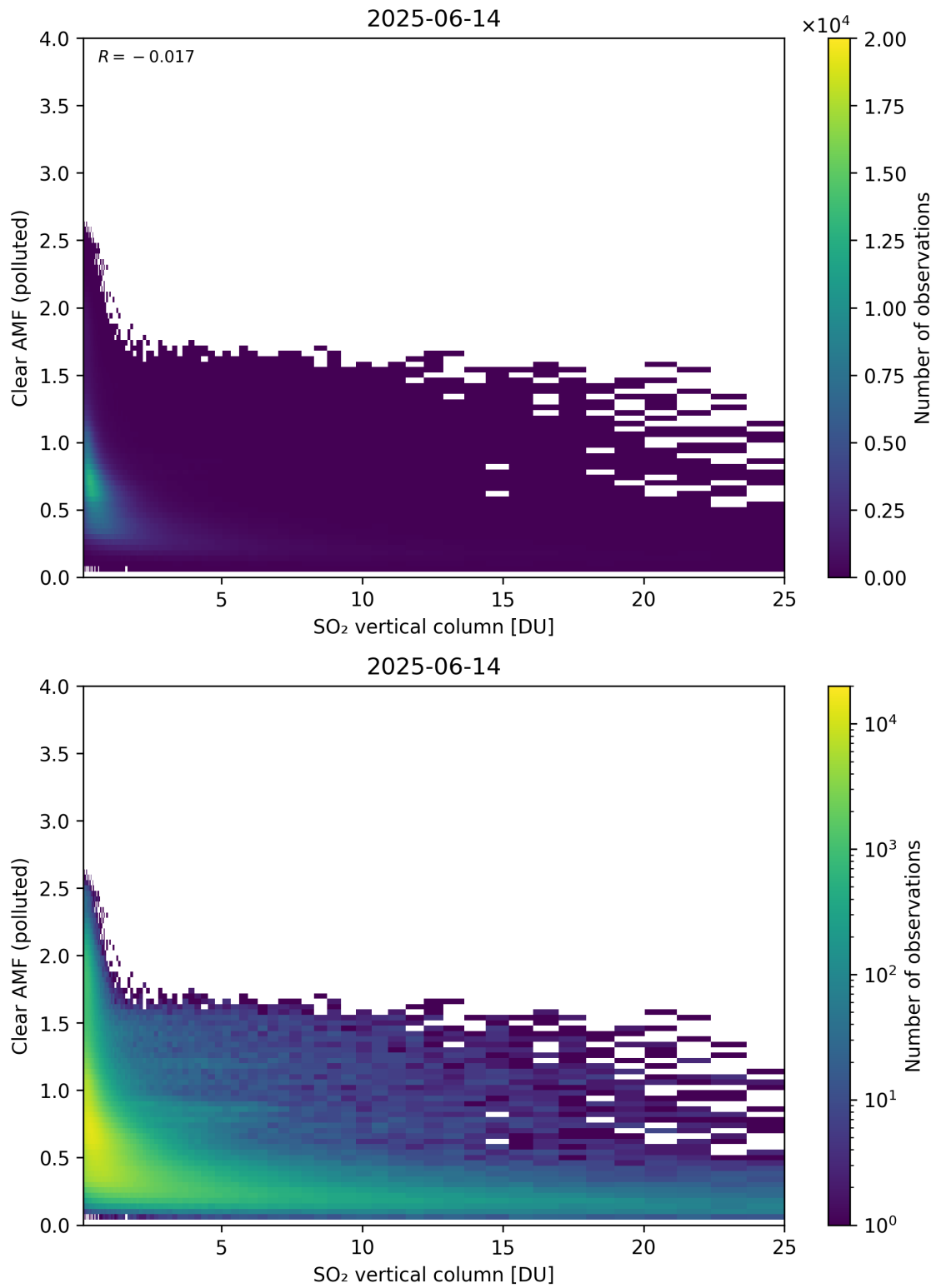


Figure 348: Scatter density plot of “SO₂ vertical column” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

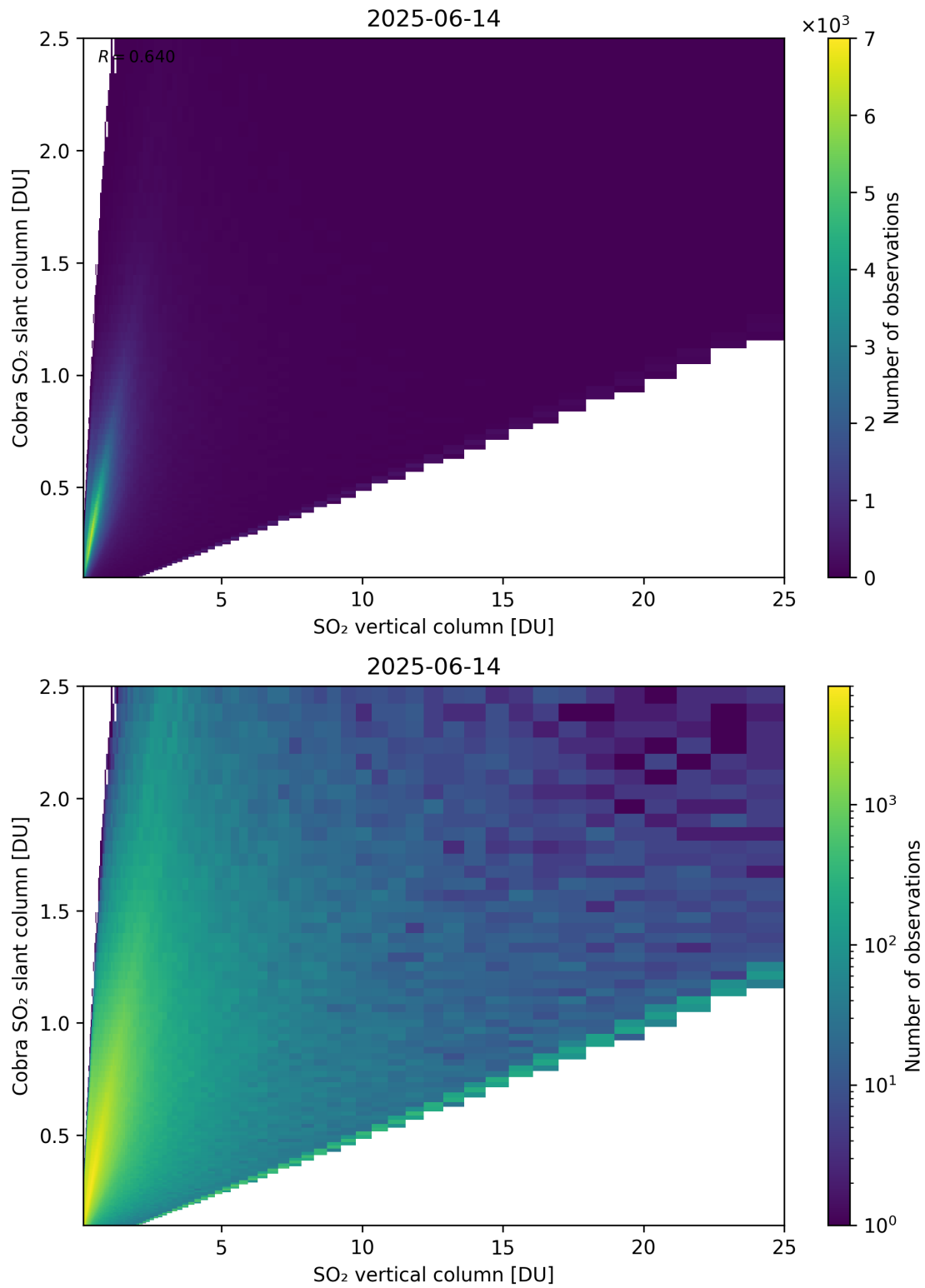


Figure 349: Scatter density plot of “SO₂ vertical column” against “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

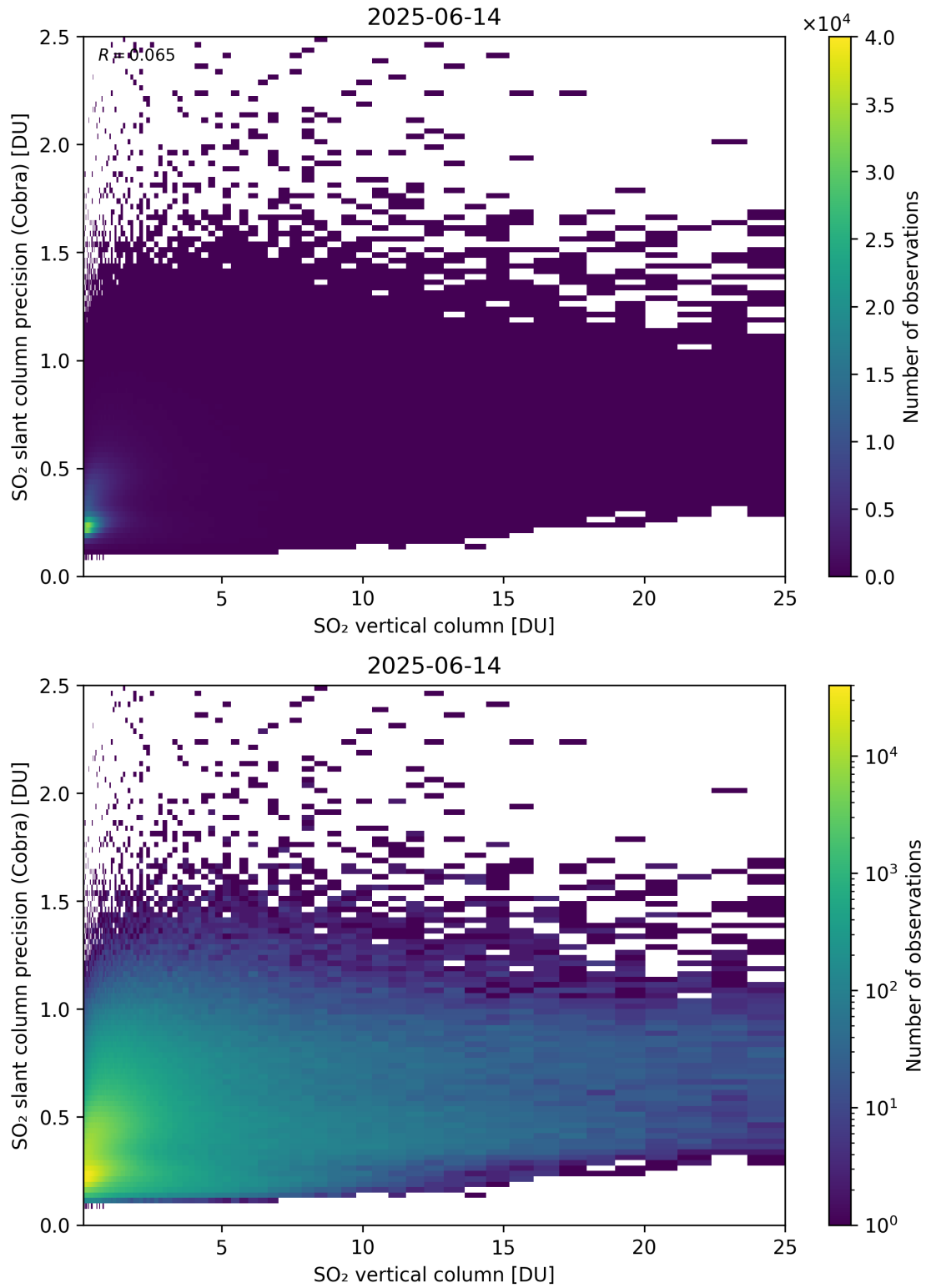


Figure 350: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

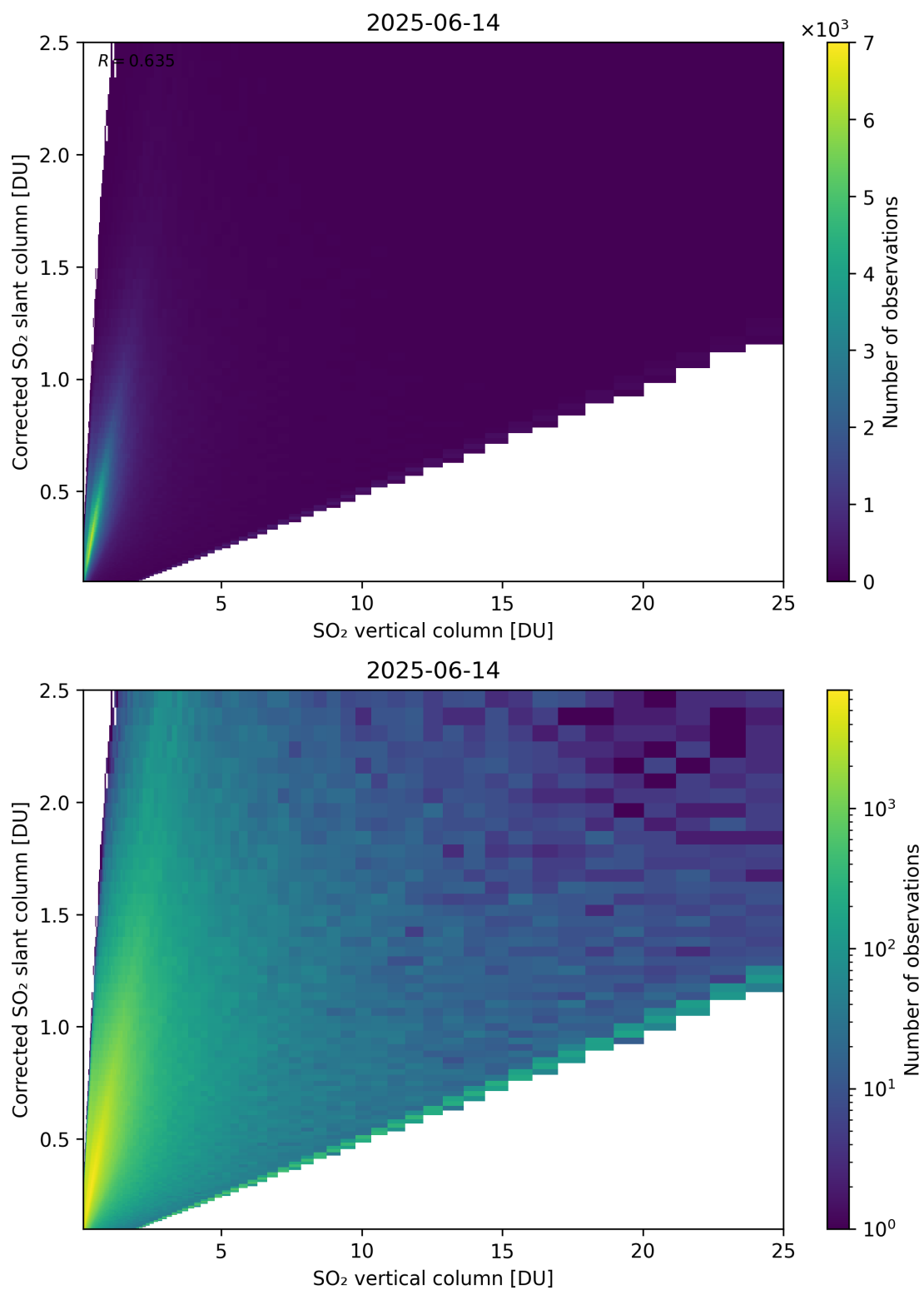


Figure 351: Scatter density plot of “SO₂ vertical column” against “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15.

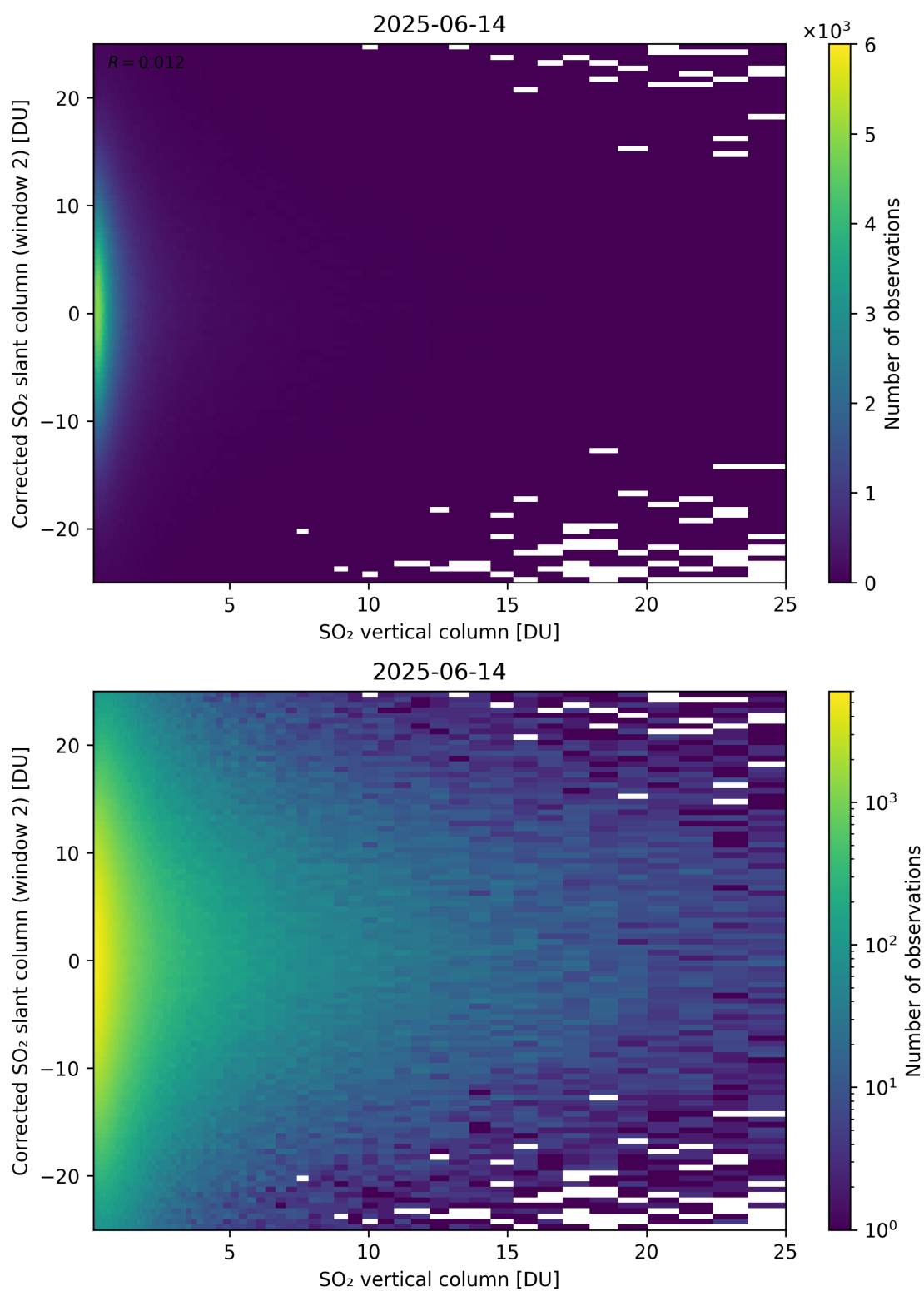


Figure 352: Scatter density plot of “SO₂ vertical column” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

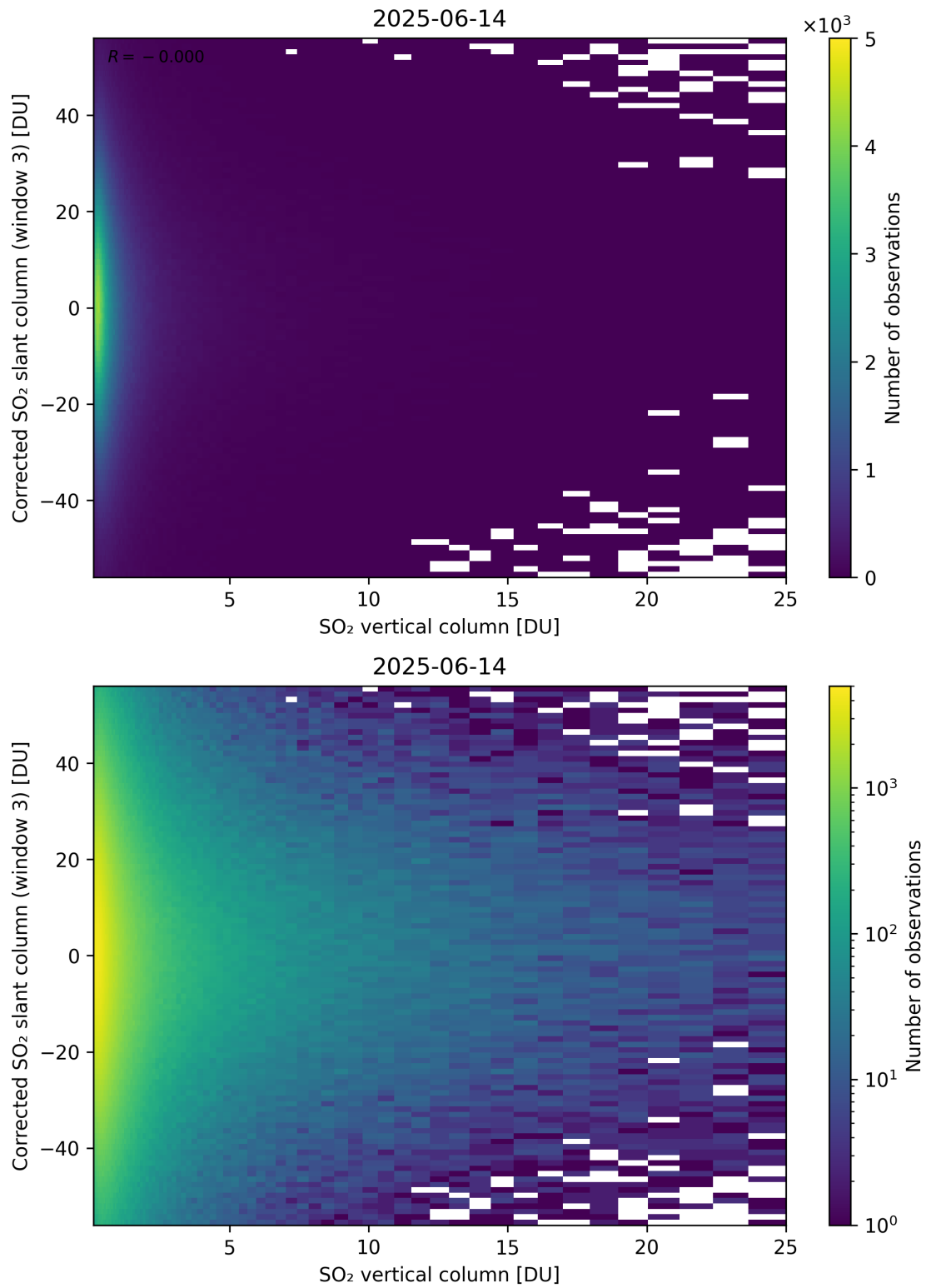


Figure 353: Scatter density plot of “SO₂ vertical column” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

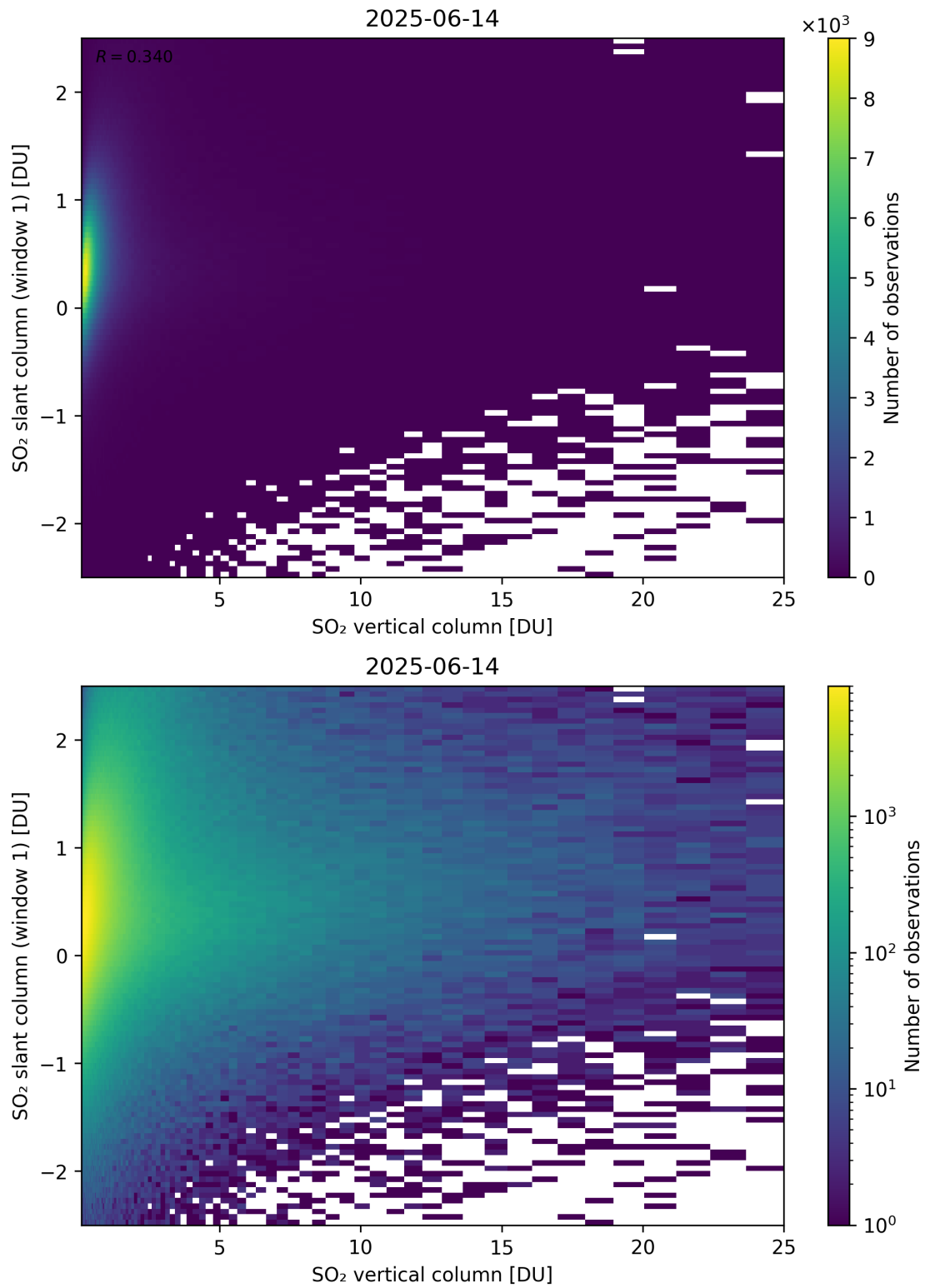


Figure 354: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

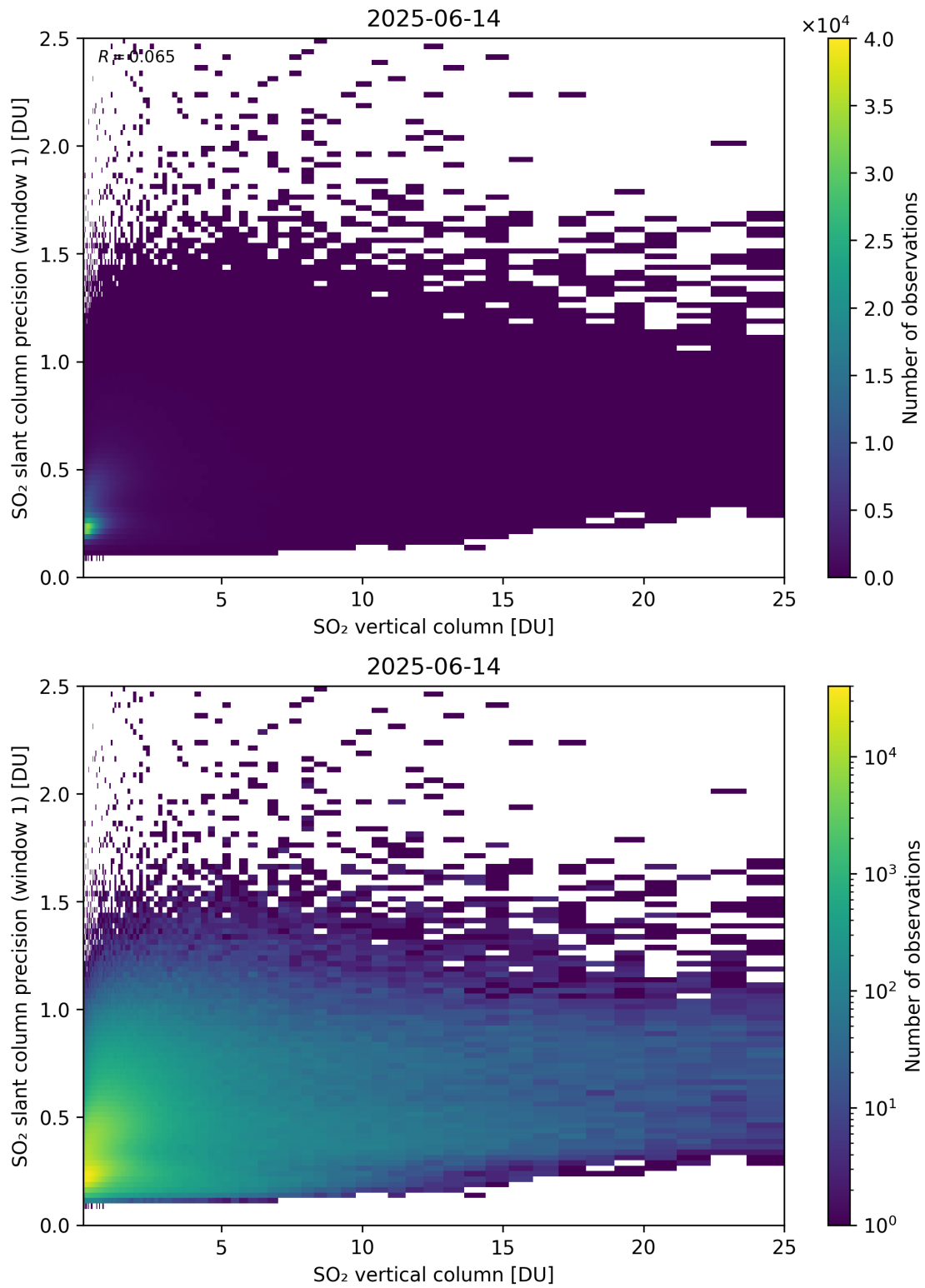


Figure 355: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

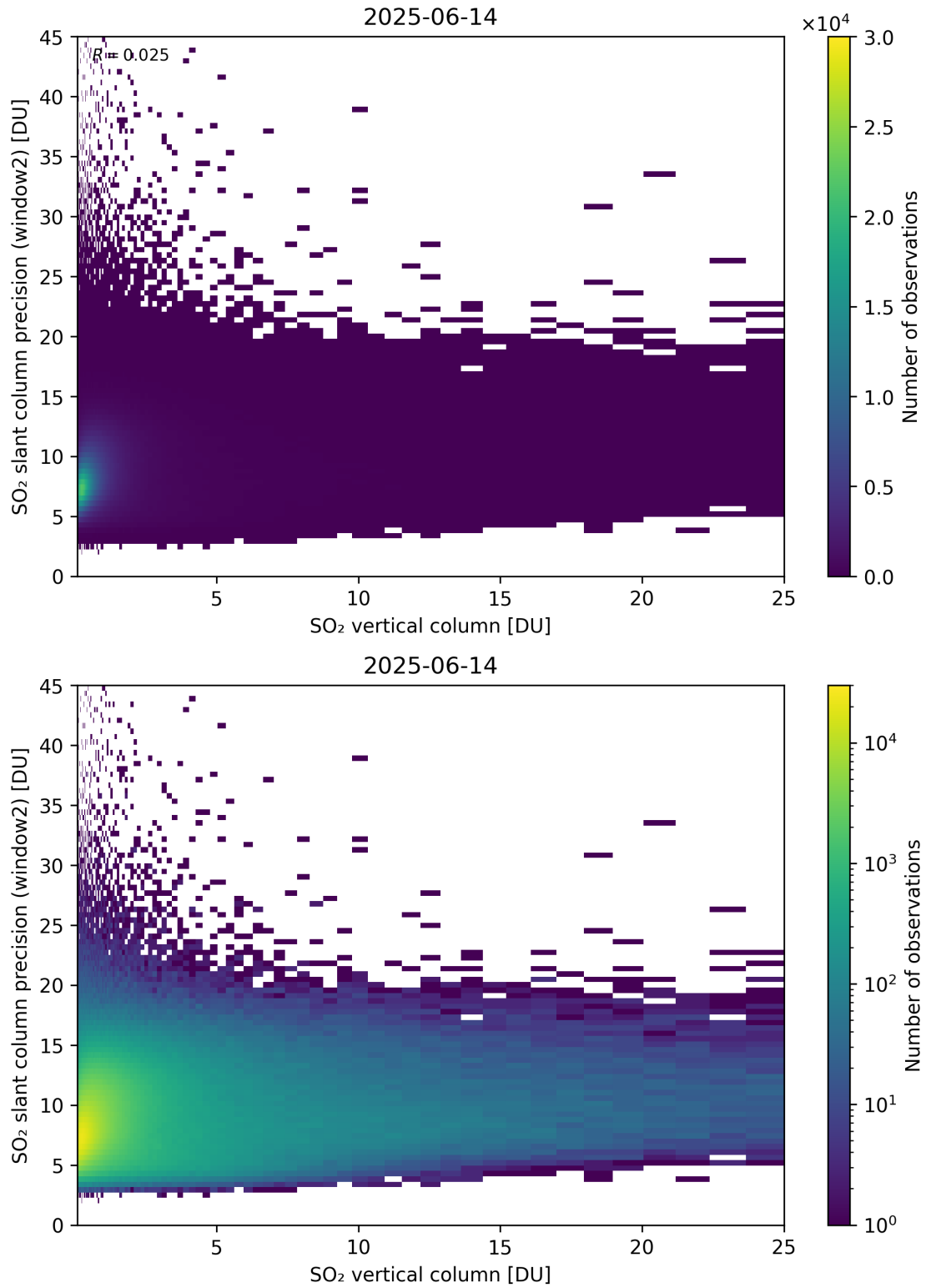


Figure 356: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

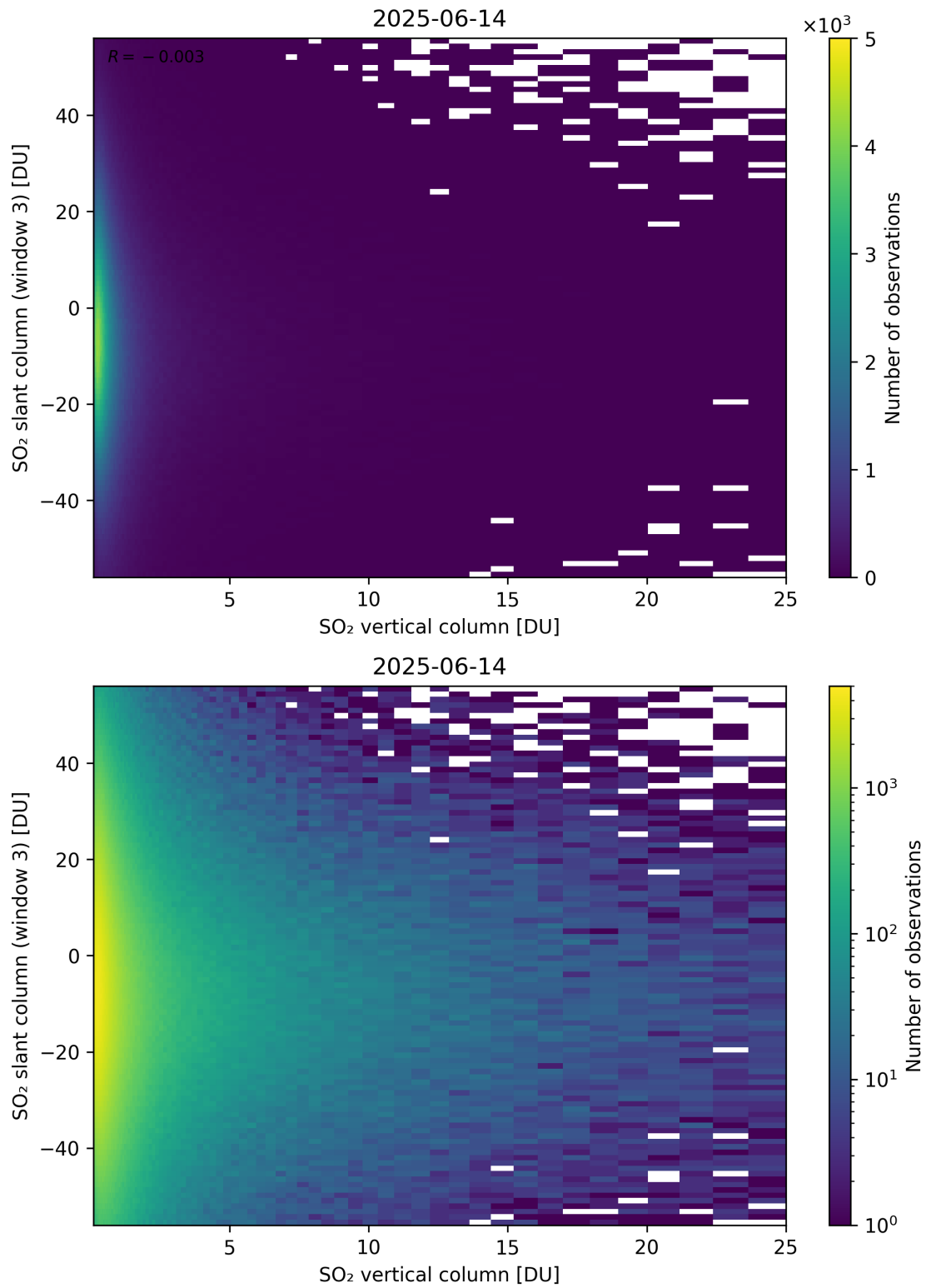


Figure 357: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

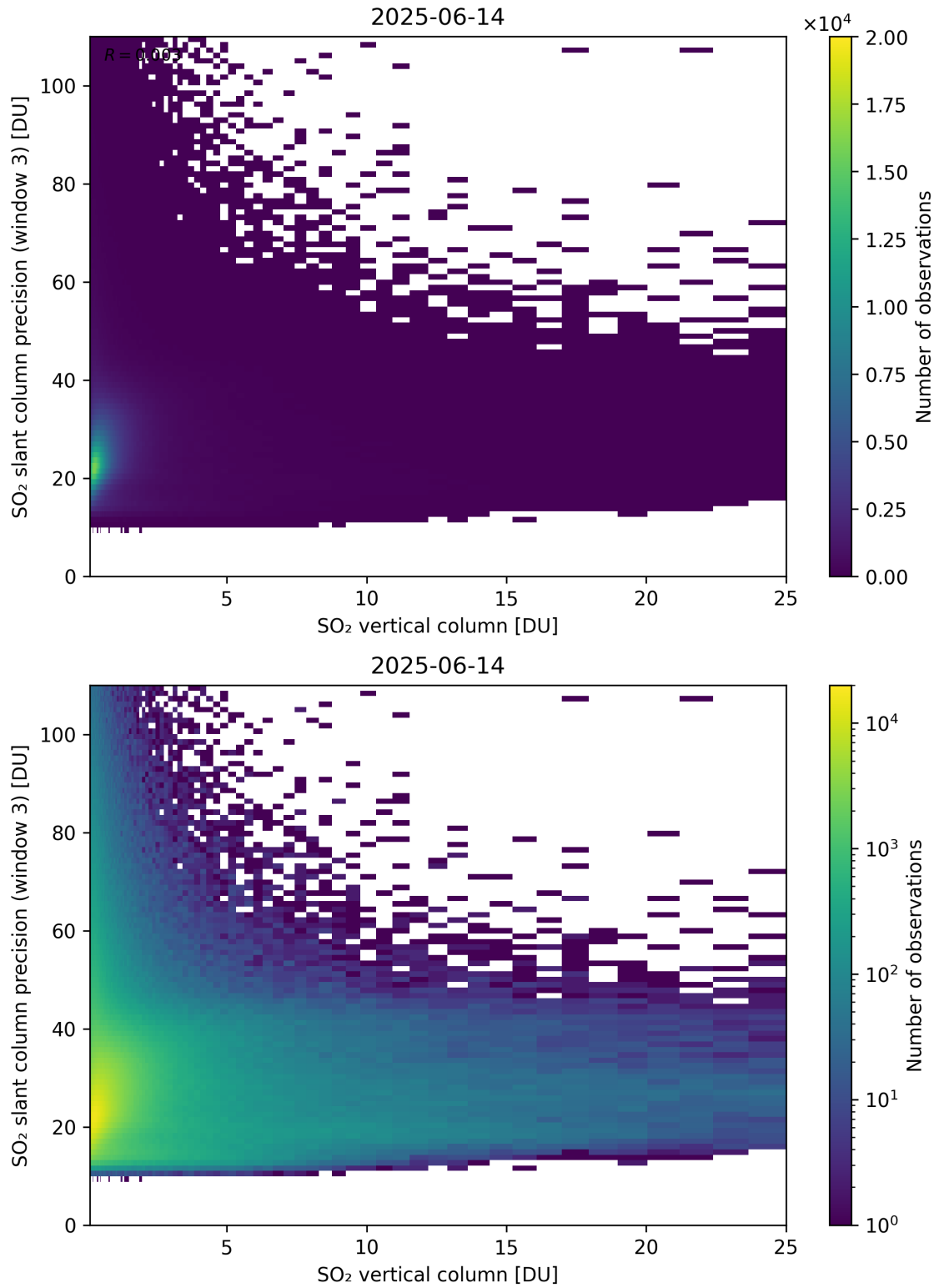


Figure 358: Scatter density plot of “SO₂ vertical column” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

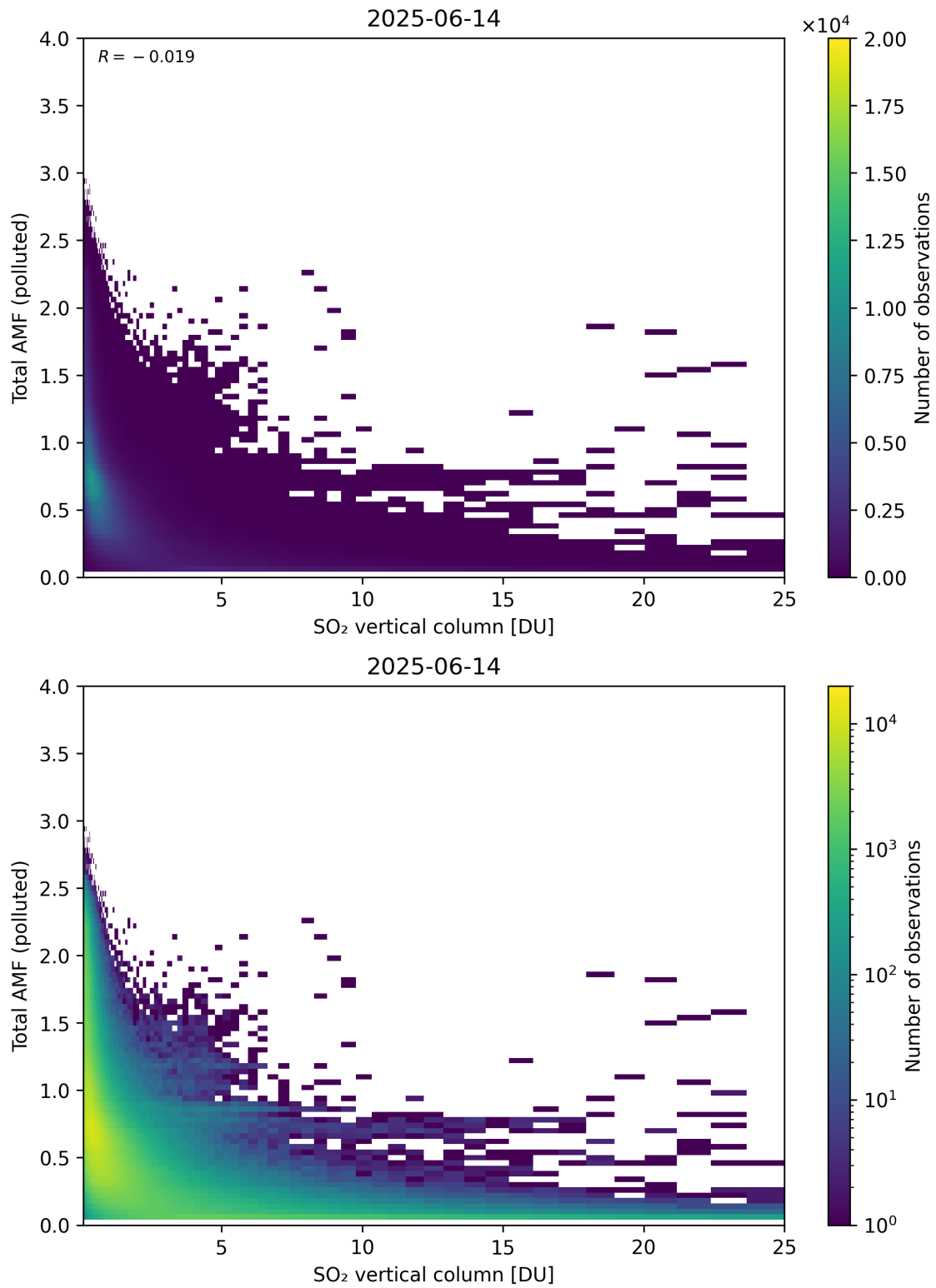


Figure 359: Scatter density plot of “SO₂ vertical column” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

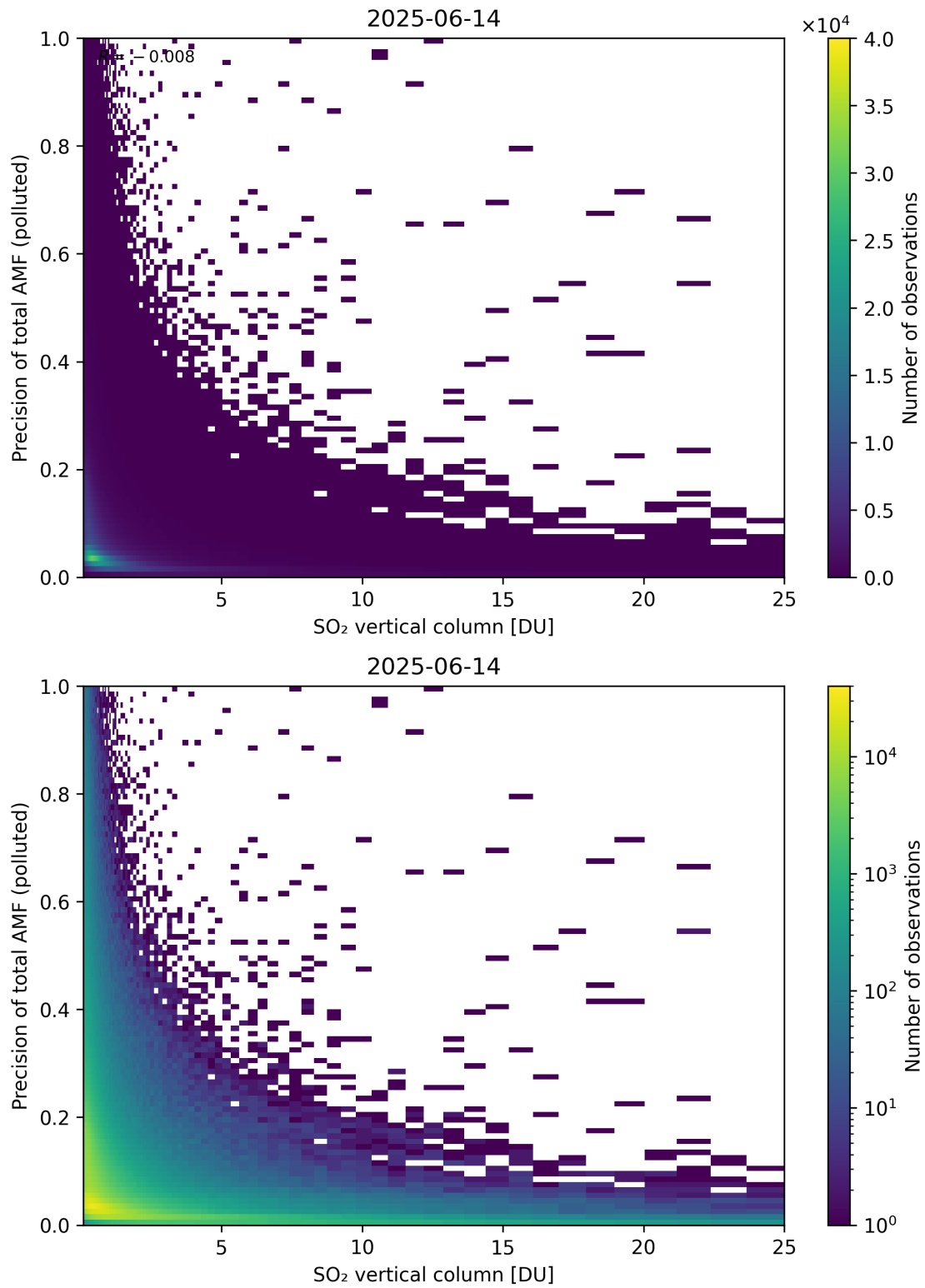


Figure 360: Scatter density plot of “SO₂ vertical column” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

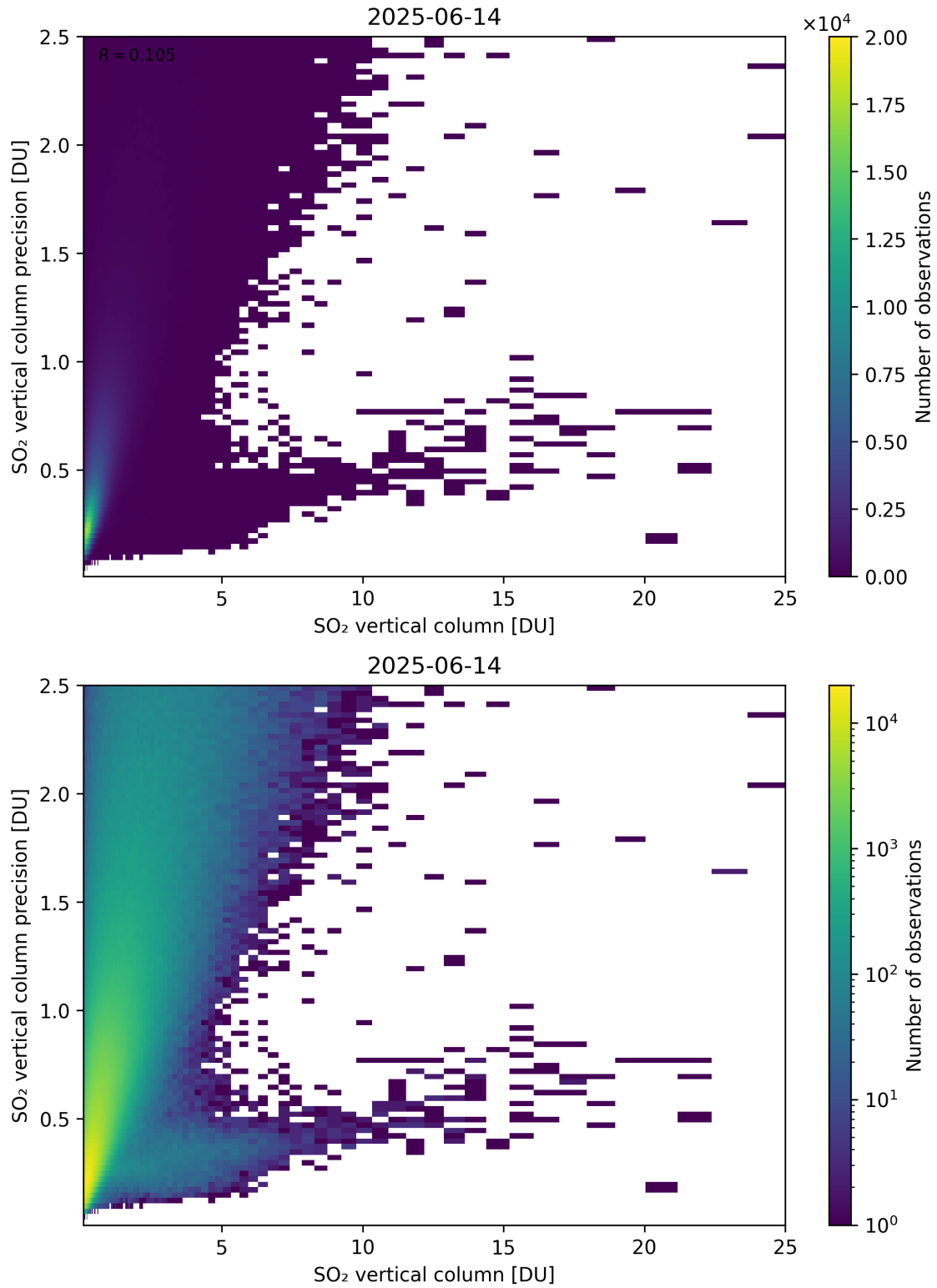


Figure 361: Scatter density plot of “SO₂ vertical column” against “SO₂ vertical column precision” for 2025-06-13 to 2025-06-15.

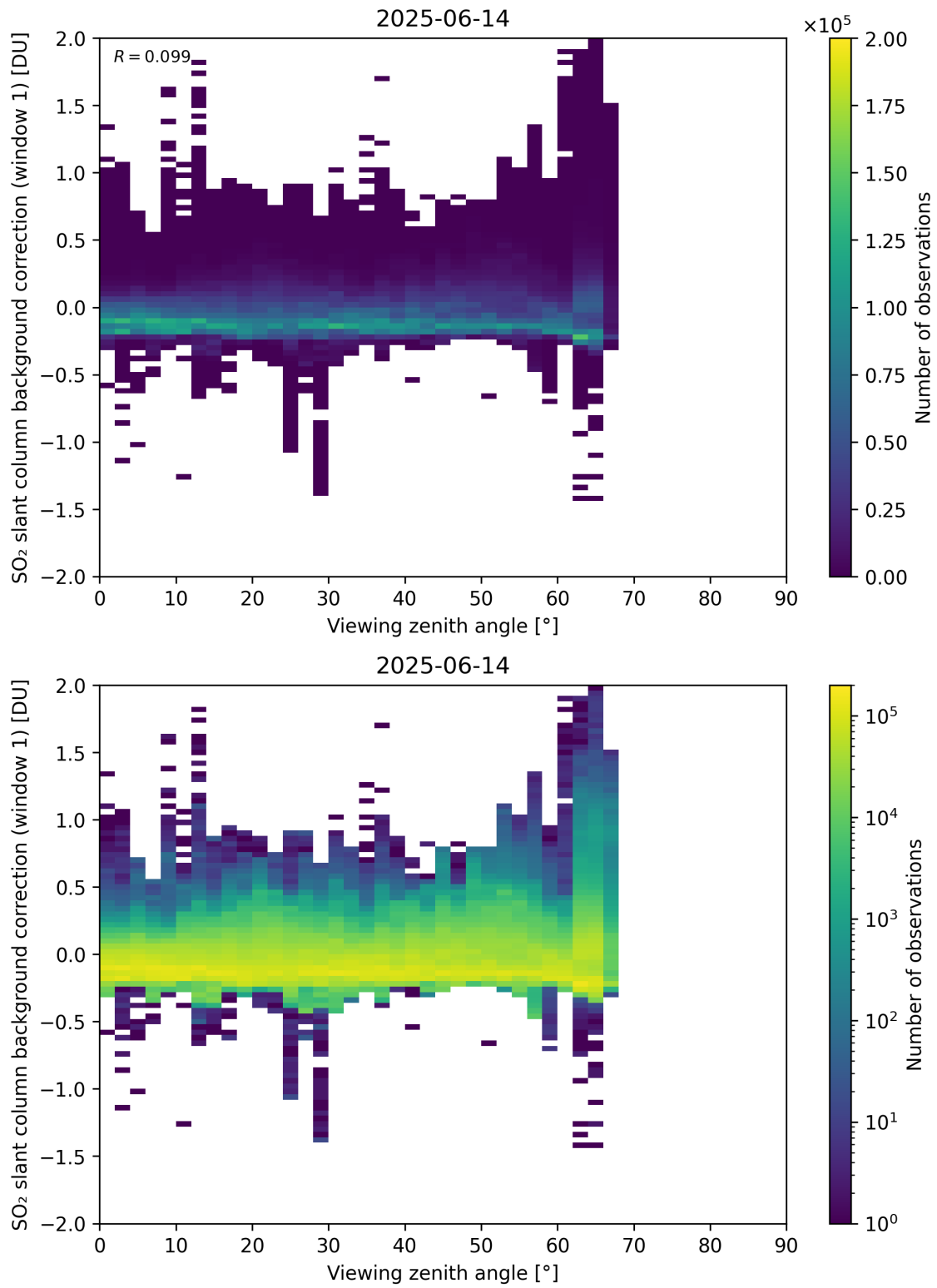


Figure 362: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column background correction (window 1)” for 2025-06-13 to 2025-06-15.

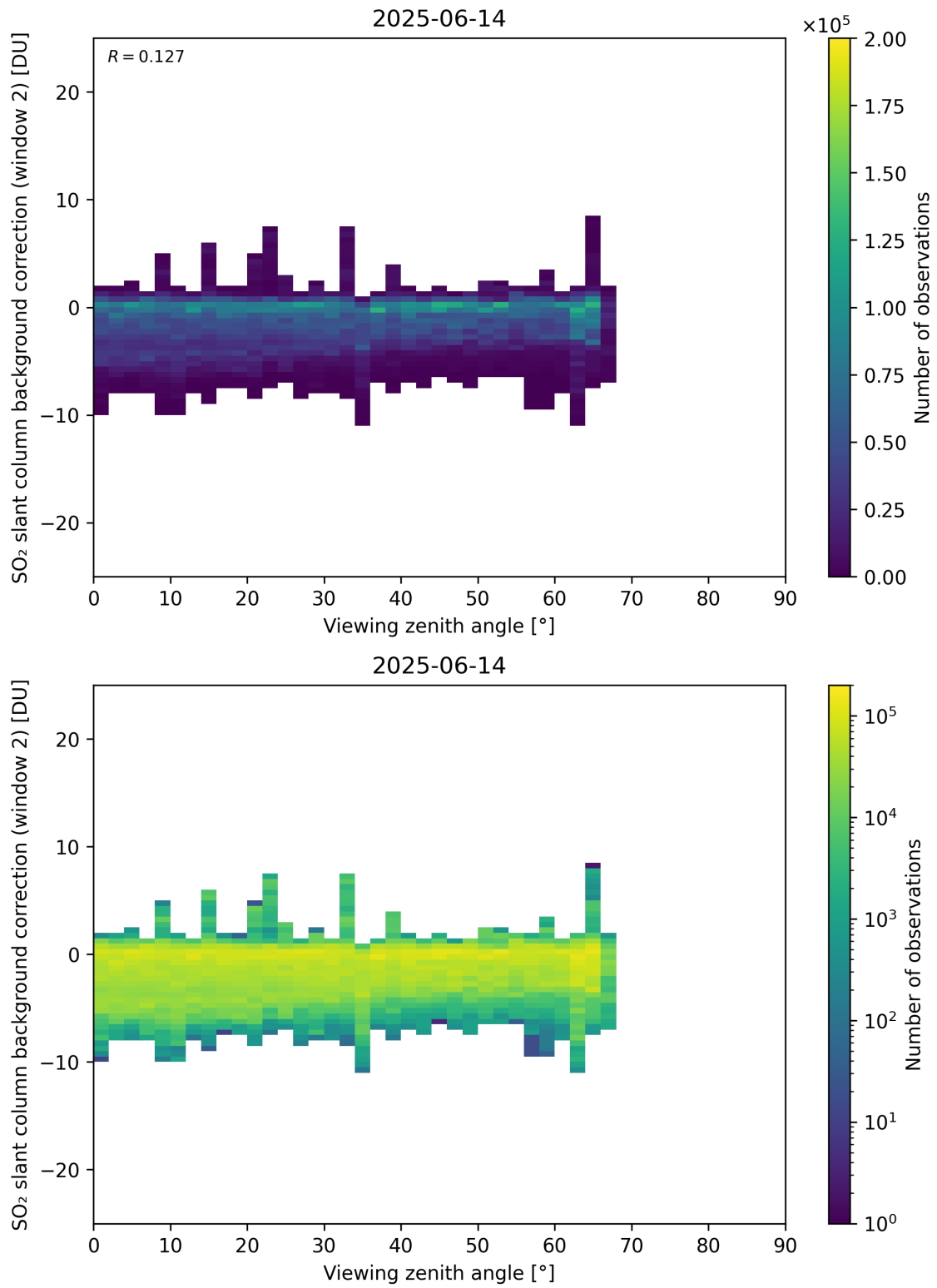


Figure 363: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column background correction (window 2)” for 2025-06-13 to 2025-06-15.

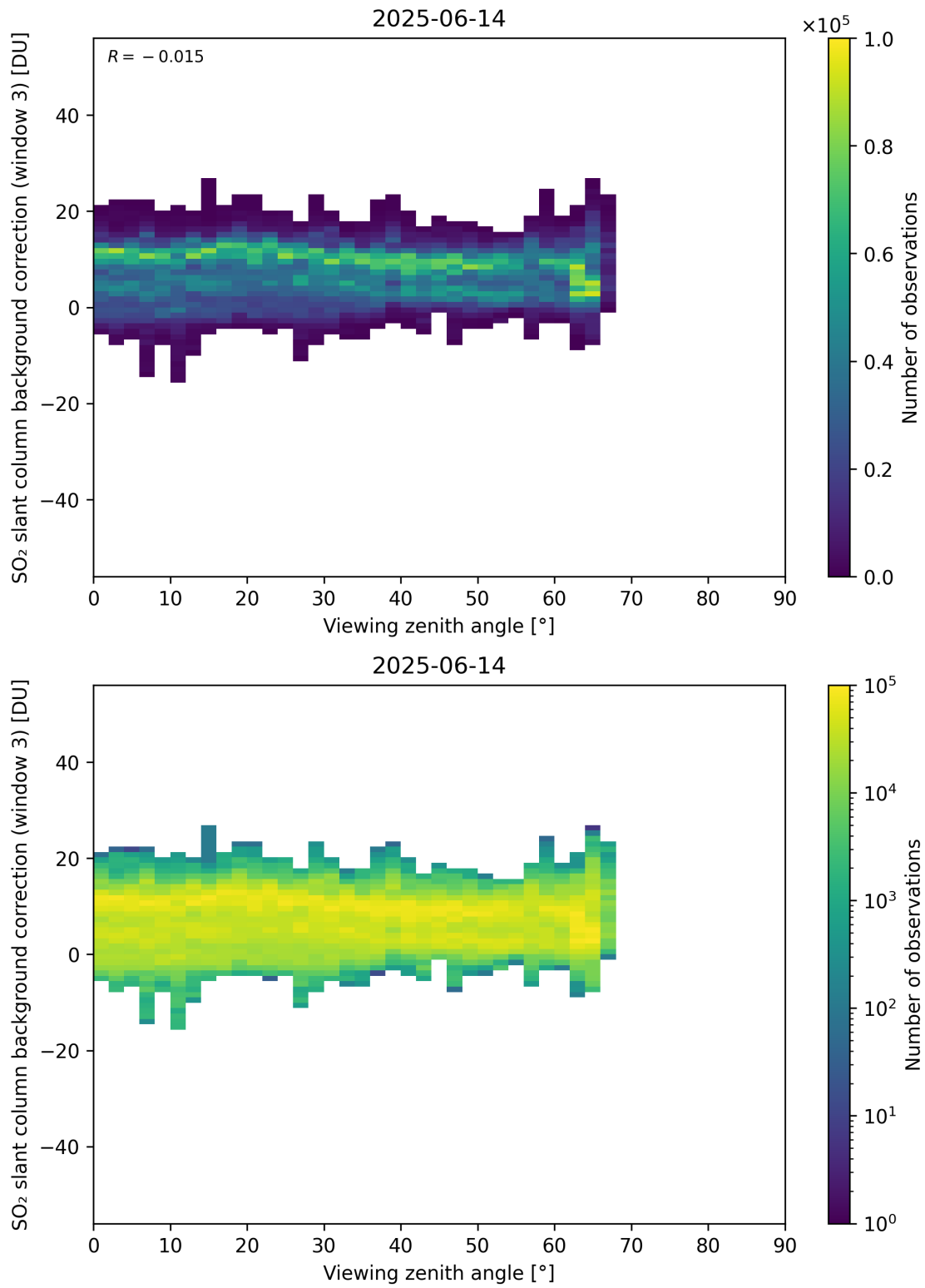


Figure 364: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column background correction (window 3)” for 2025-06-13 to 2025-06-15.

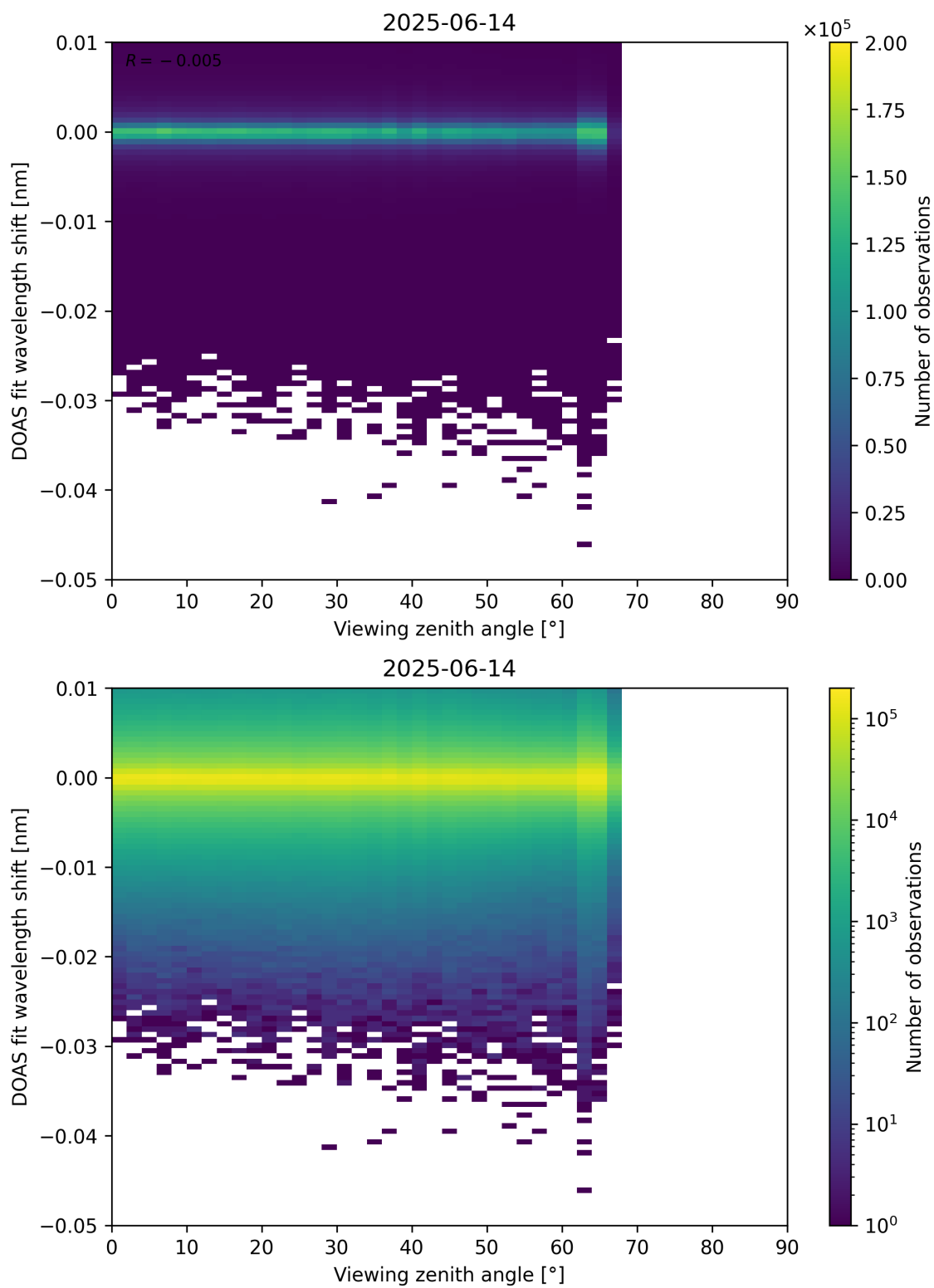


Figure 365: Scatter density plot of “Viewing zenith angle” against “DOAS fit wavelength shift” for 2025-06-13 to 2025-06-15.

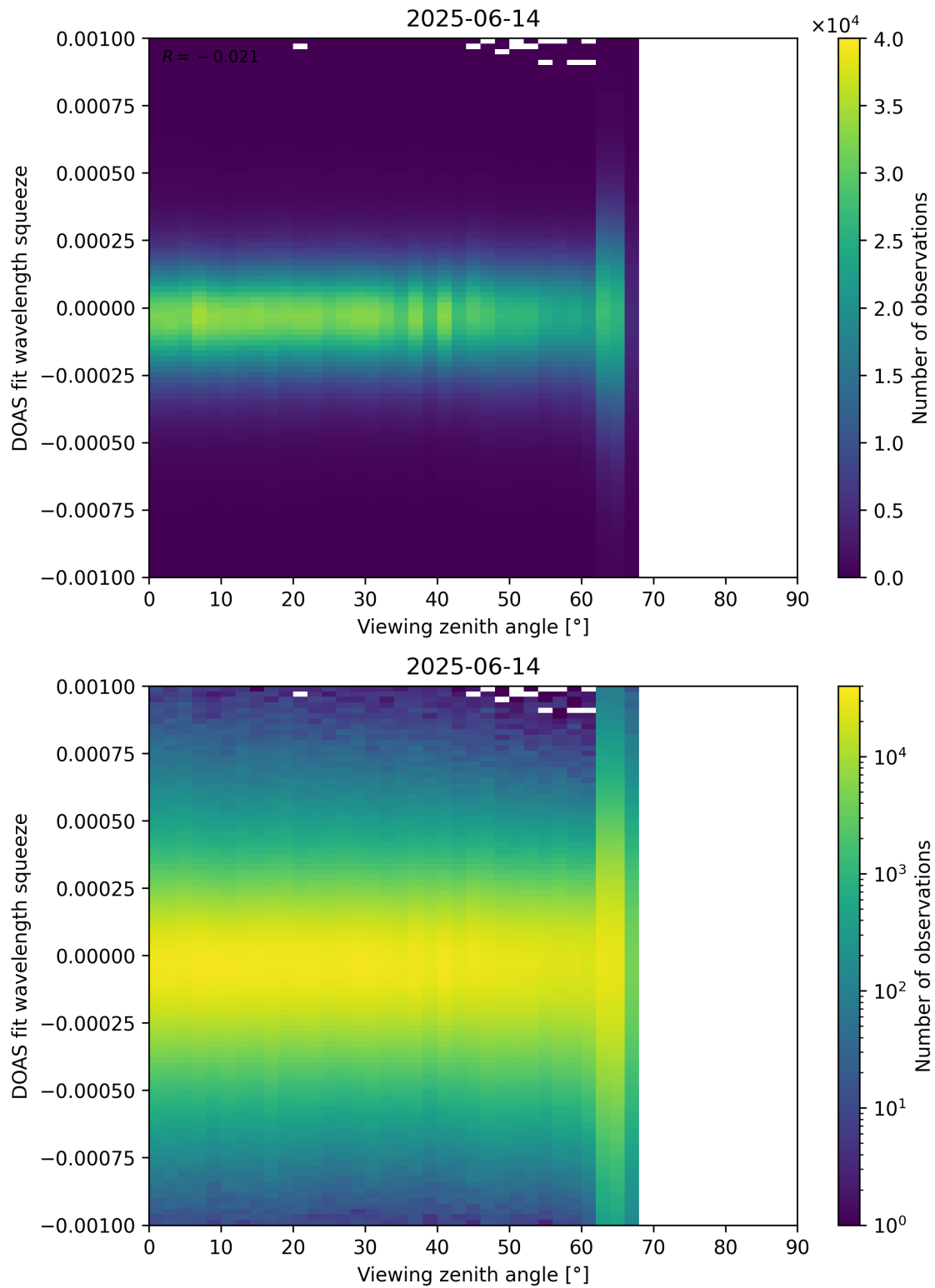


Figure 366: Scatter density plot of “Viewing zenith angle” against “DOAS fit wavelength squeeze” for 2025-06-13 to 2025-06-15.

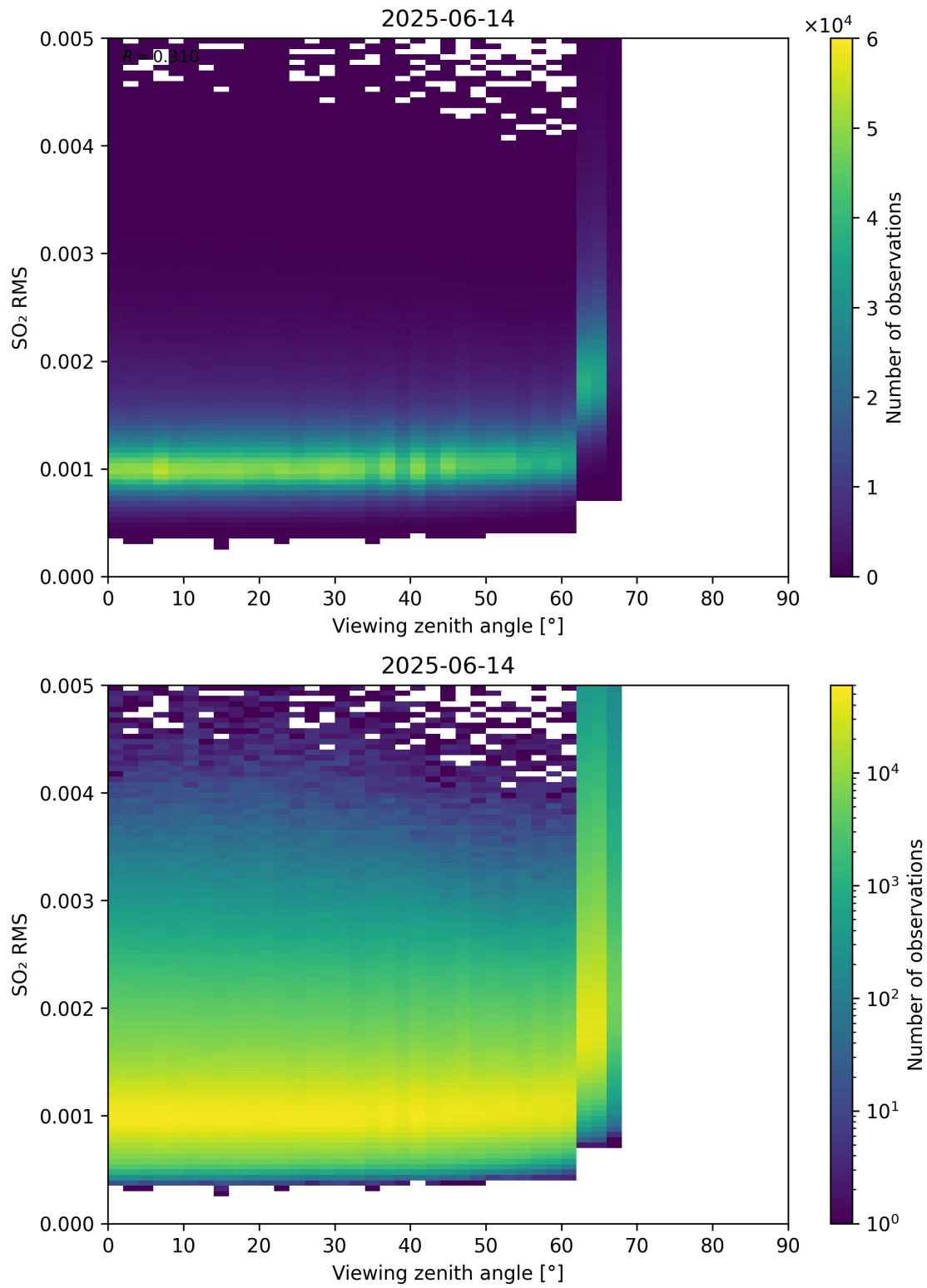


Figure 367: Scatter density plot of “Viewing zenith angle” against “SO₂ RMS” for 2025-06-13 to 2025-06-15.

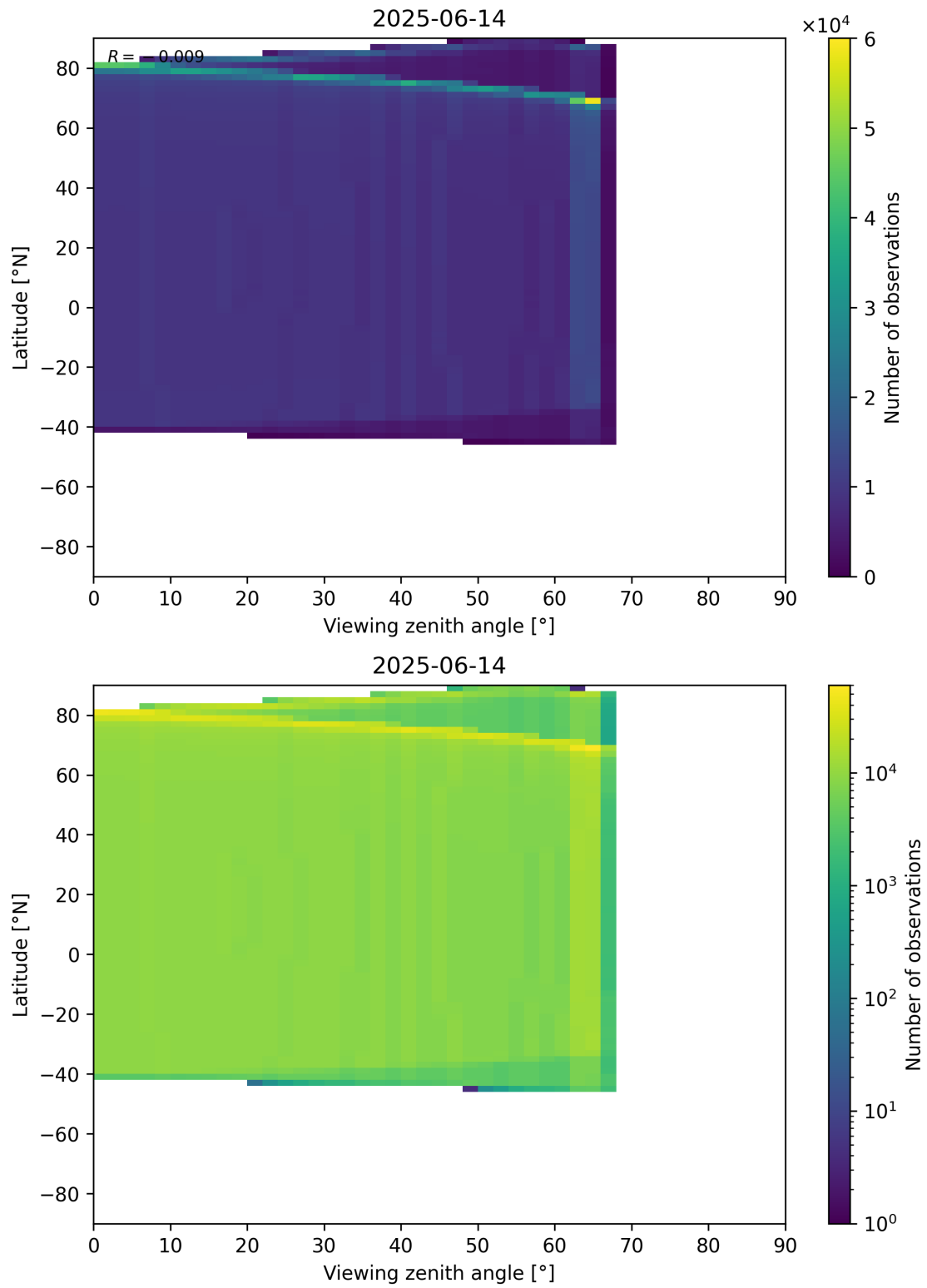


Figure 368: Scatter density plot of “Viewing zenith angle” against “Latitude” for 2025-06-13 to 2025-06-15.

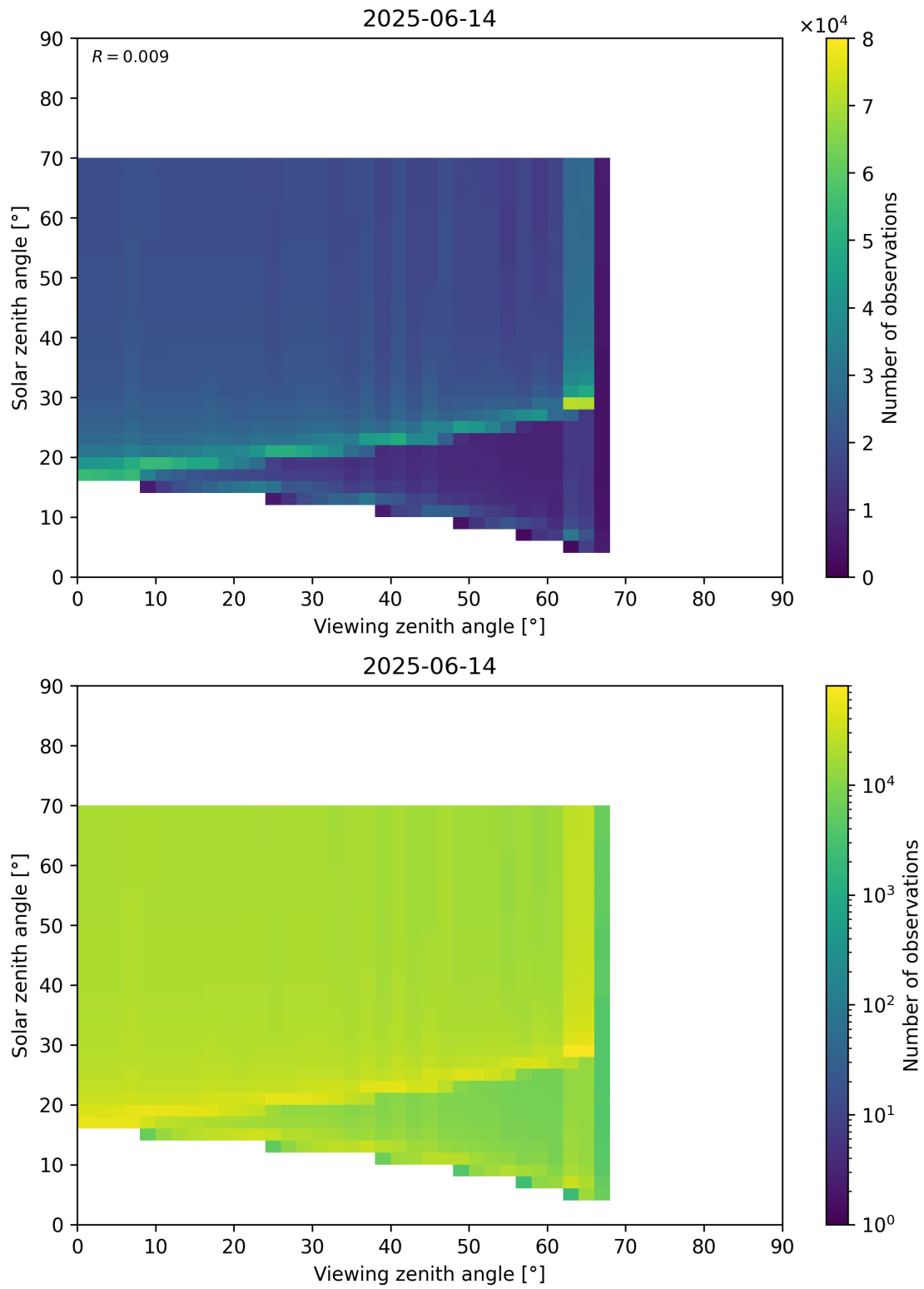


Figure 369: Scatter density plot of “Viewing zenith angle” against “Solar zenith angle” for 2025-06-13 to 2025-06-15.

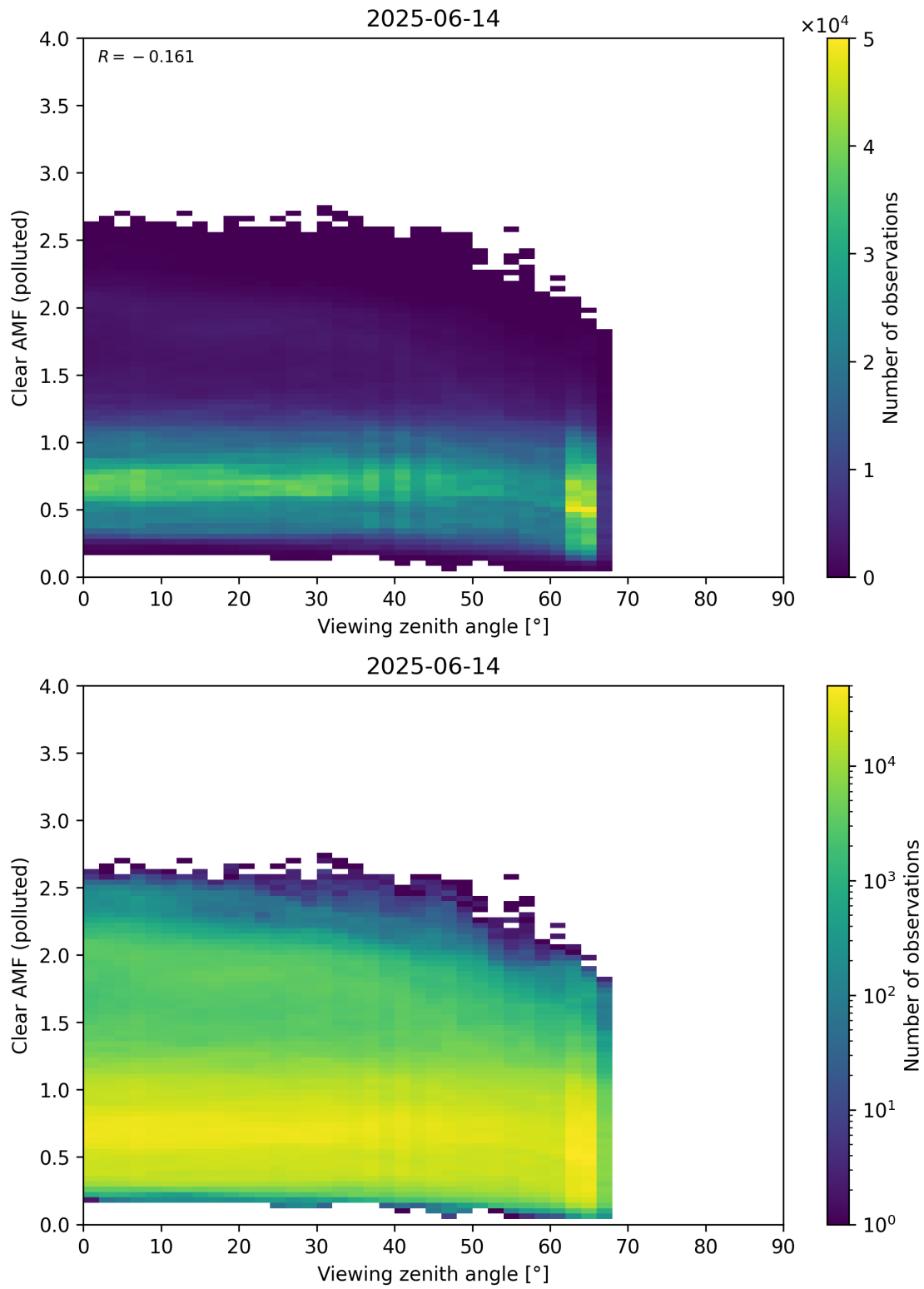


Figure 370: Scatter density plot of “Viewing zenith angle” against “Clear AMF (polluted)” for 2025-06-13 to 2025-06-15.

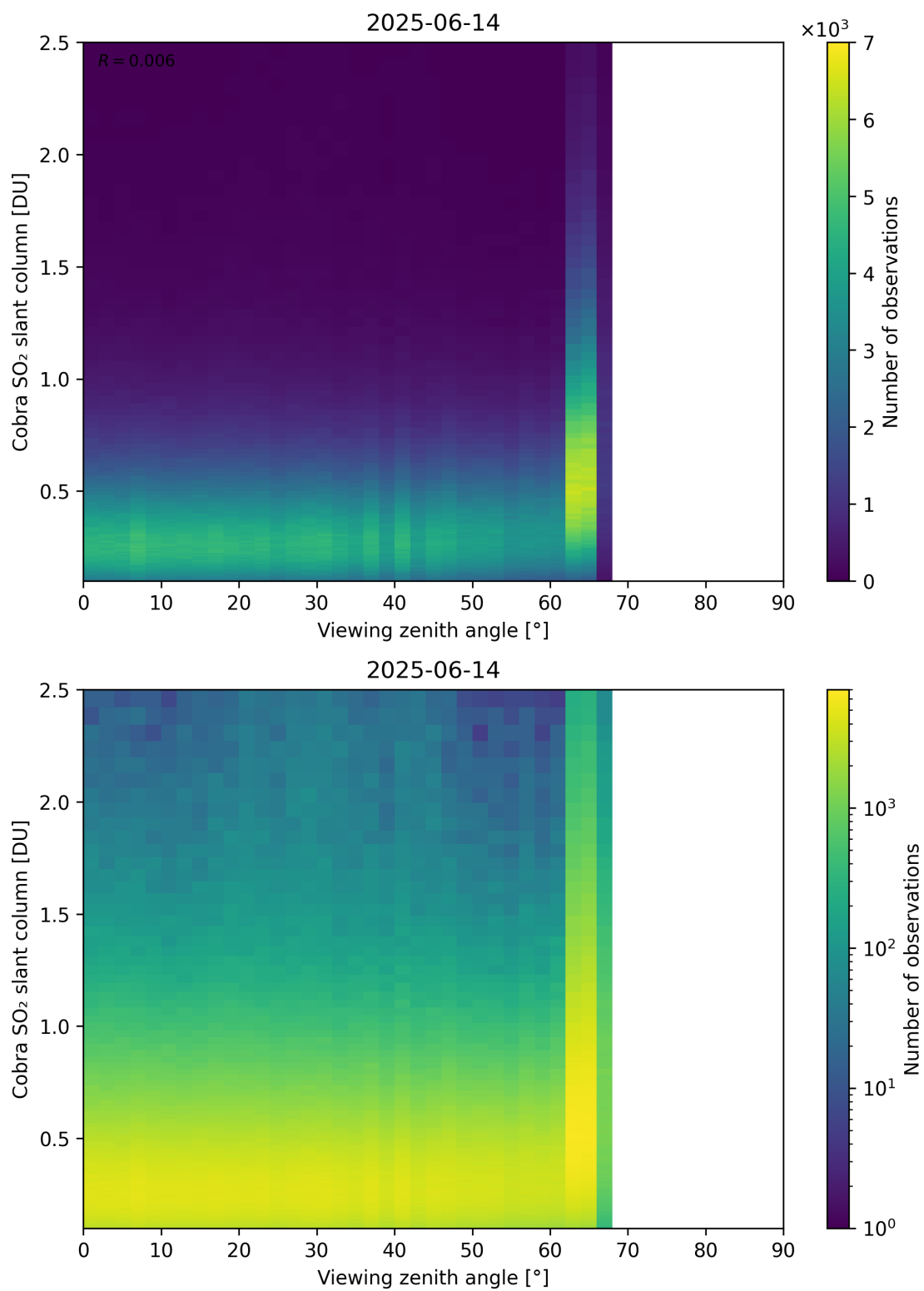


Figure 371: Scatter density plot of “Viewing zenith angle” against “Cobra SO₂ slant column” for 2025-06-13 to 2025-06-15.

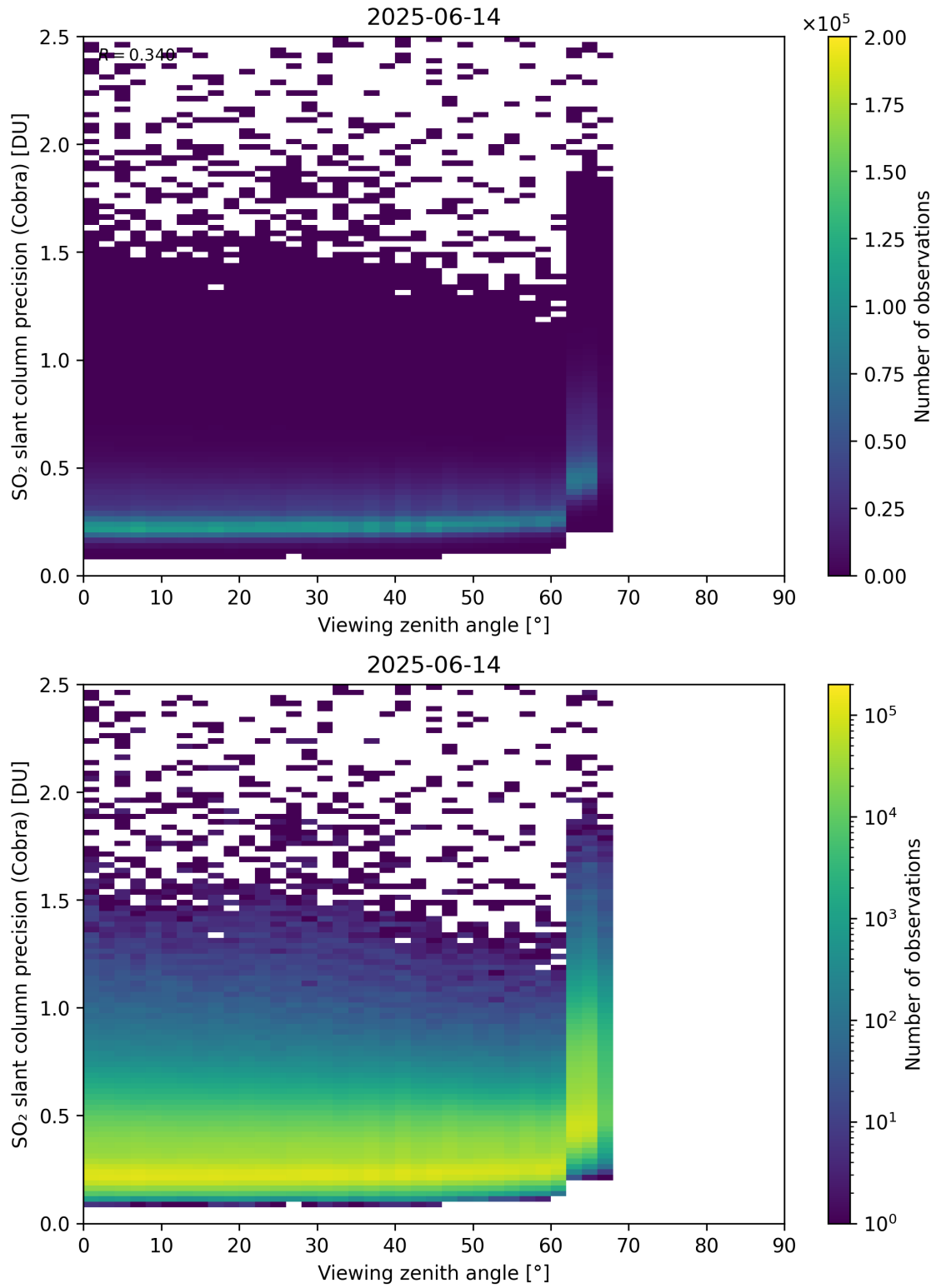


Figure 372: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (Cobra)” for 2025-06-13 to 2025-06-15.

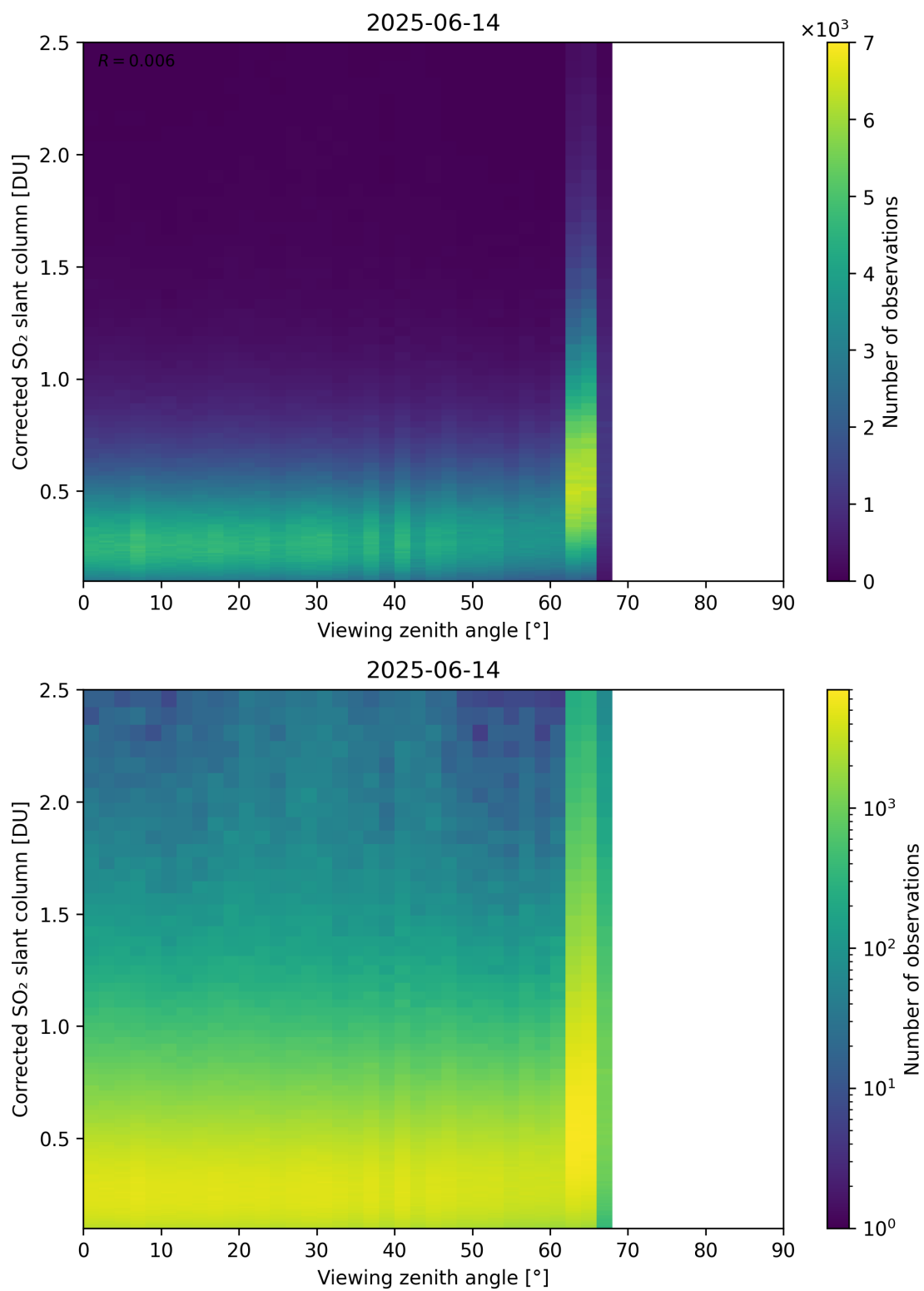


Figure 373: Scatter density plot of “Viewing zenith angle” against “Corrected SO₂ slant column” for 2025-06-13 to 2025-06-15.

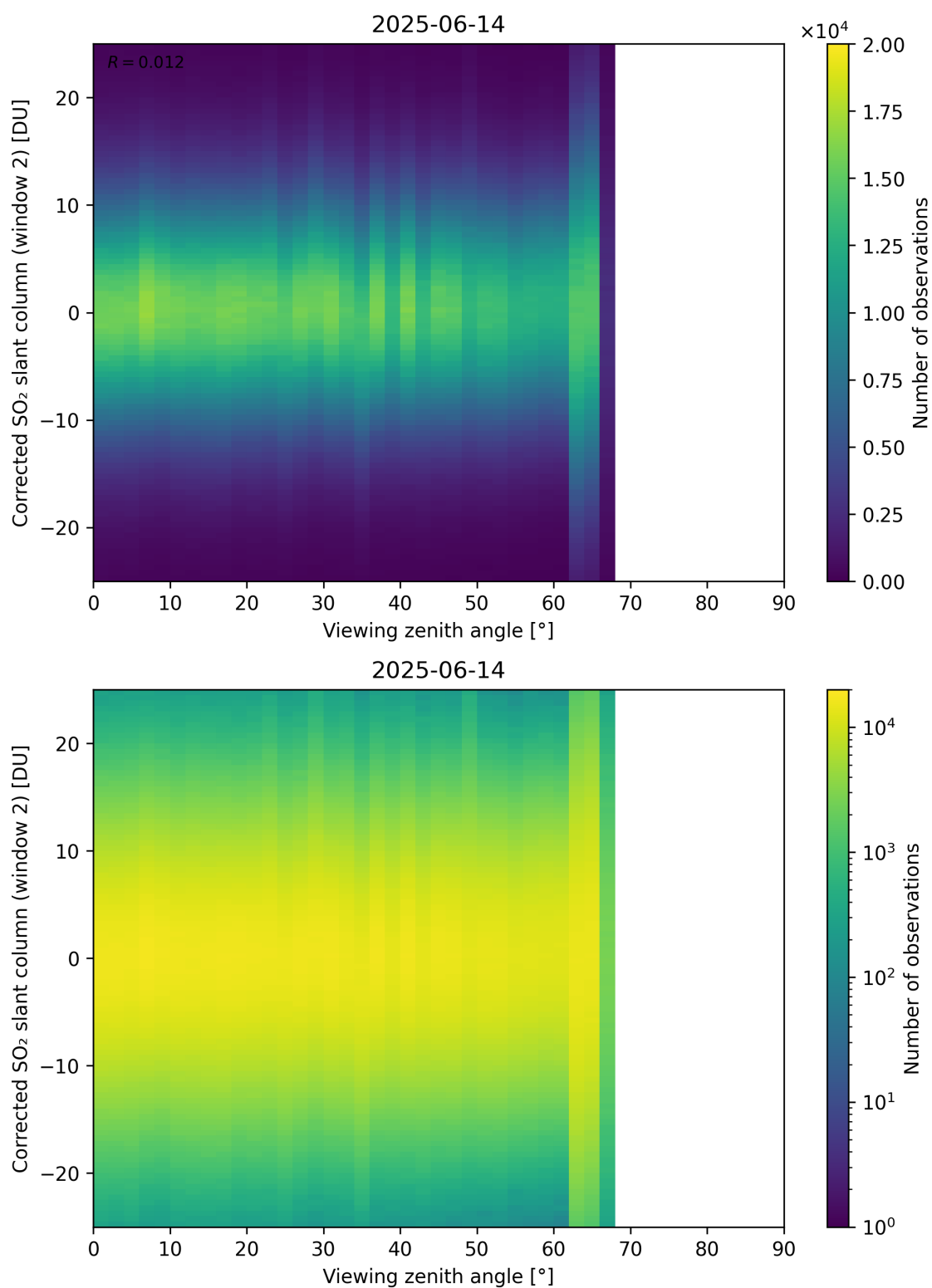


Figure 374: Scatter density plot of “Viewing zenith angle” against “Corrected SO₂ slant column (window 2)” for 2025-06-13 to 2025-06-15.

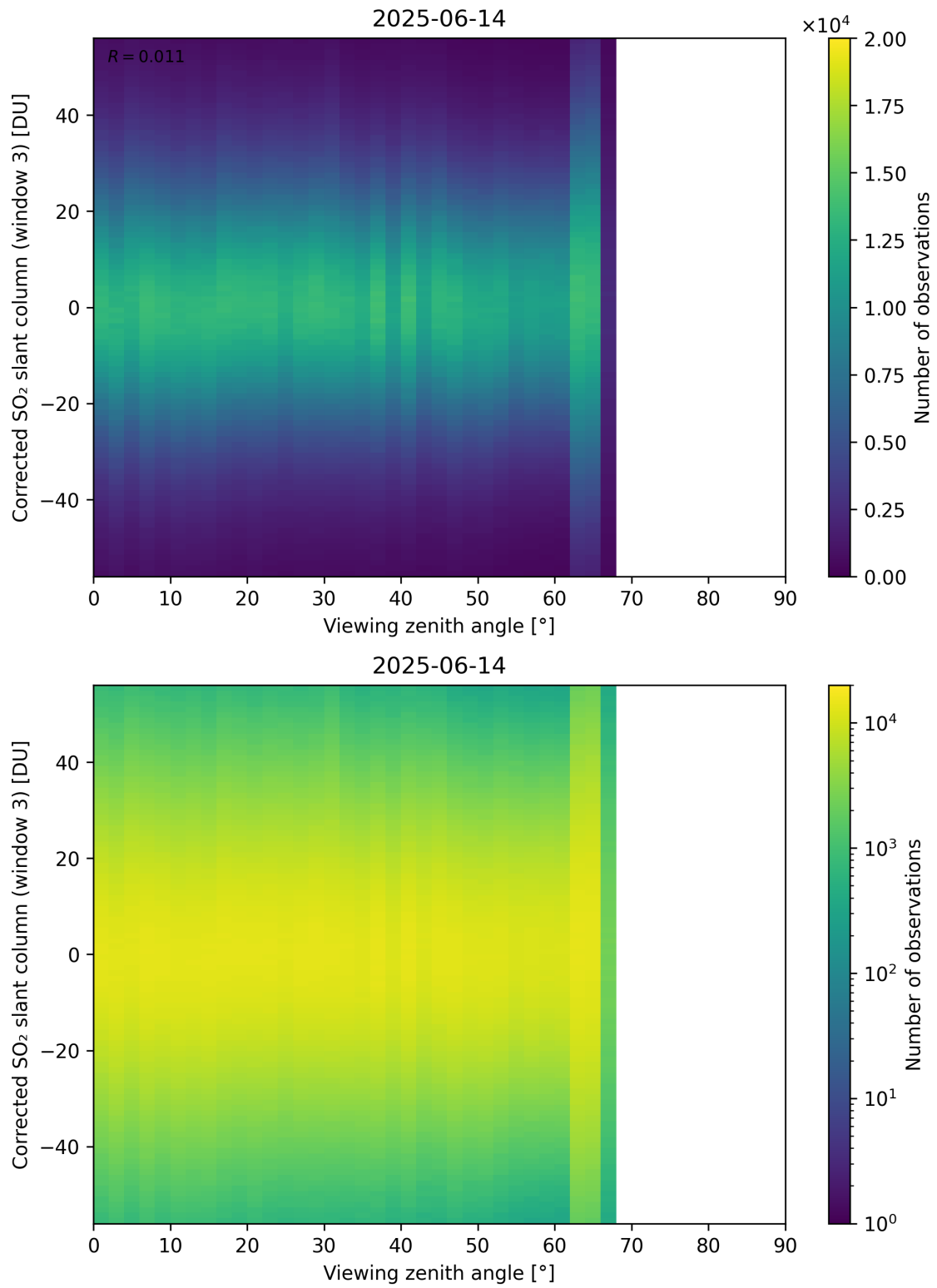


Figure 375: Scatter density plot of “Viewing zenith angle” against “Corrected SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

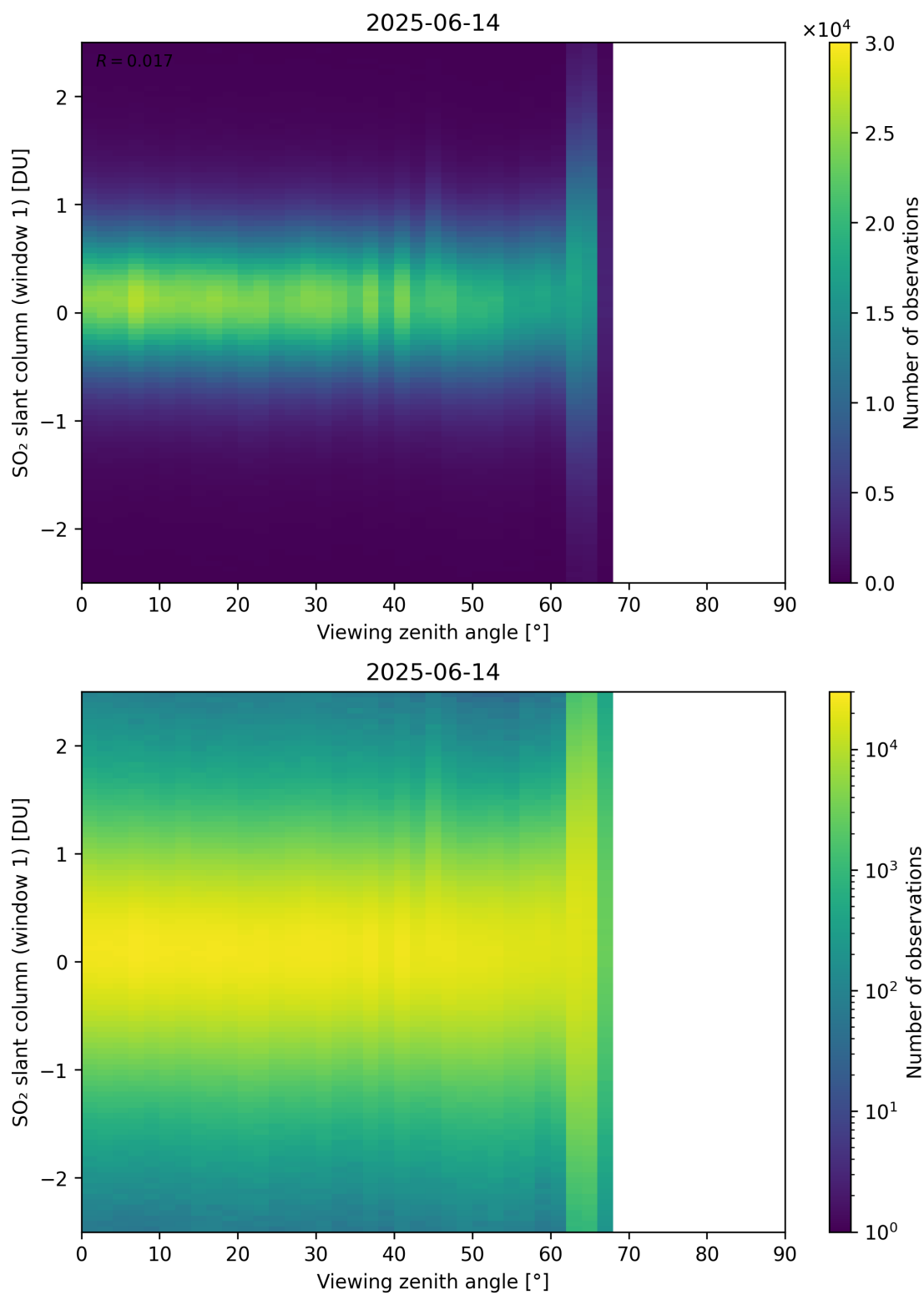


Figure 376: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column (window 1)” for 2025-06-13 to 2025-06-15.

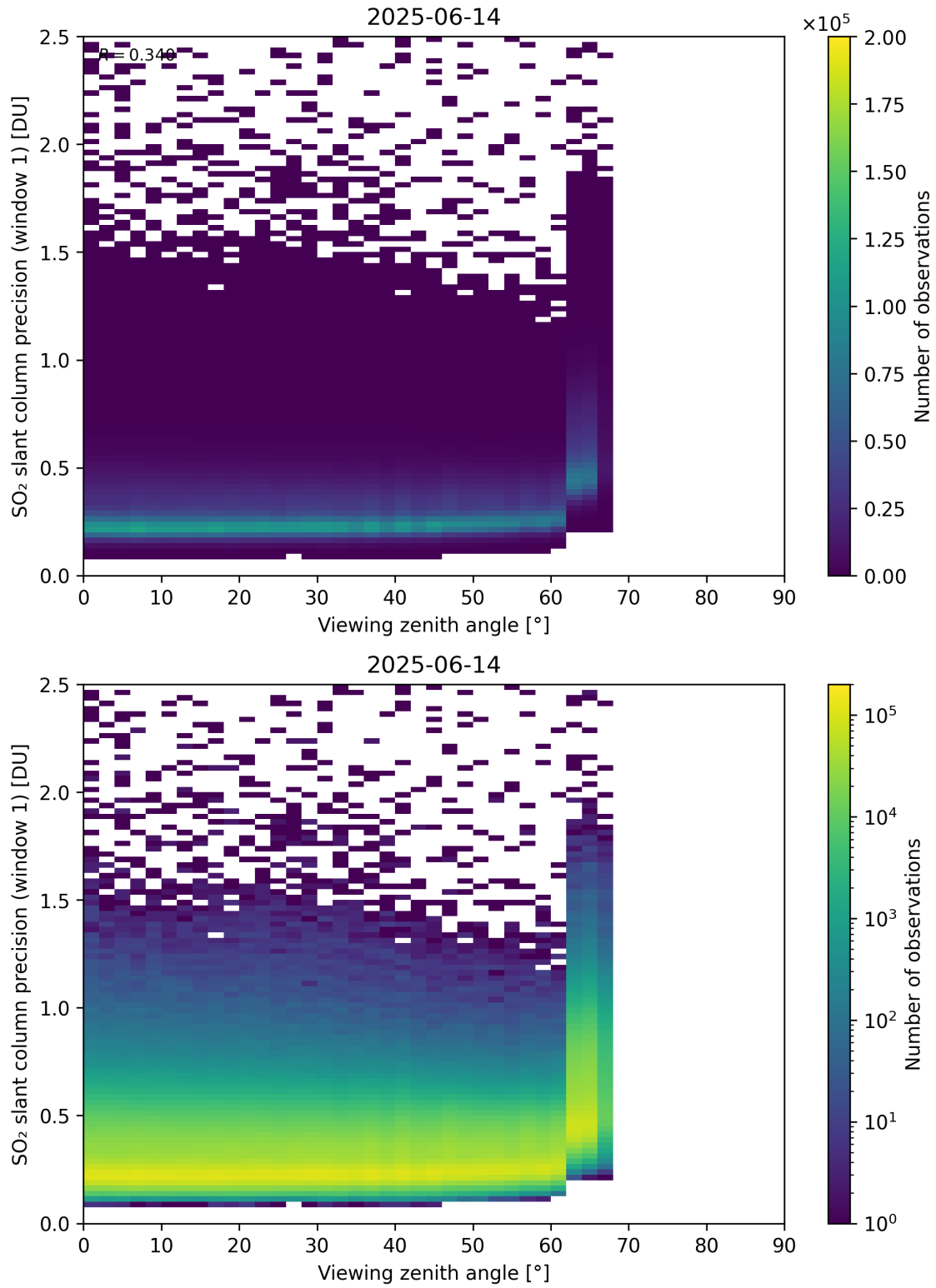


Figure 377: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (window 1)” for 2025-06-13 to 2025-06-15.

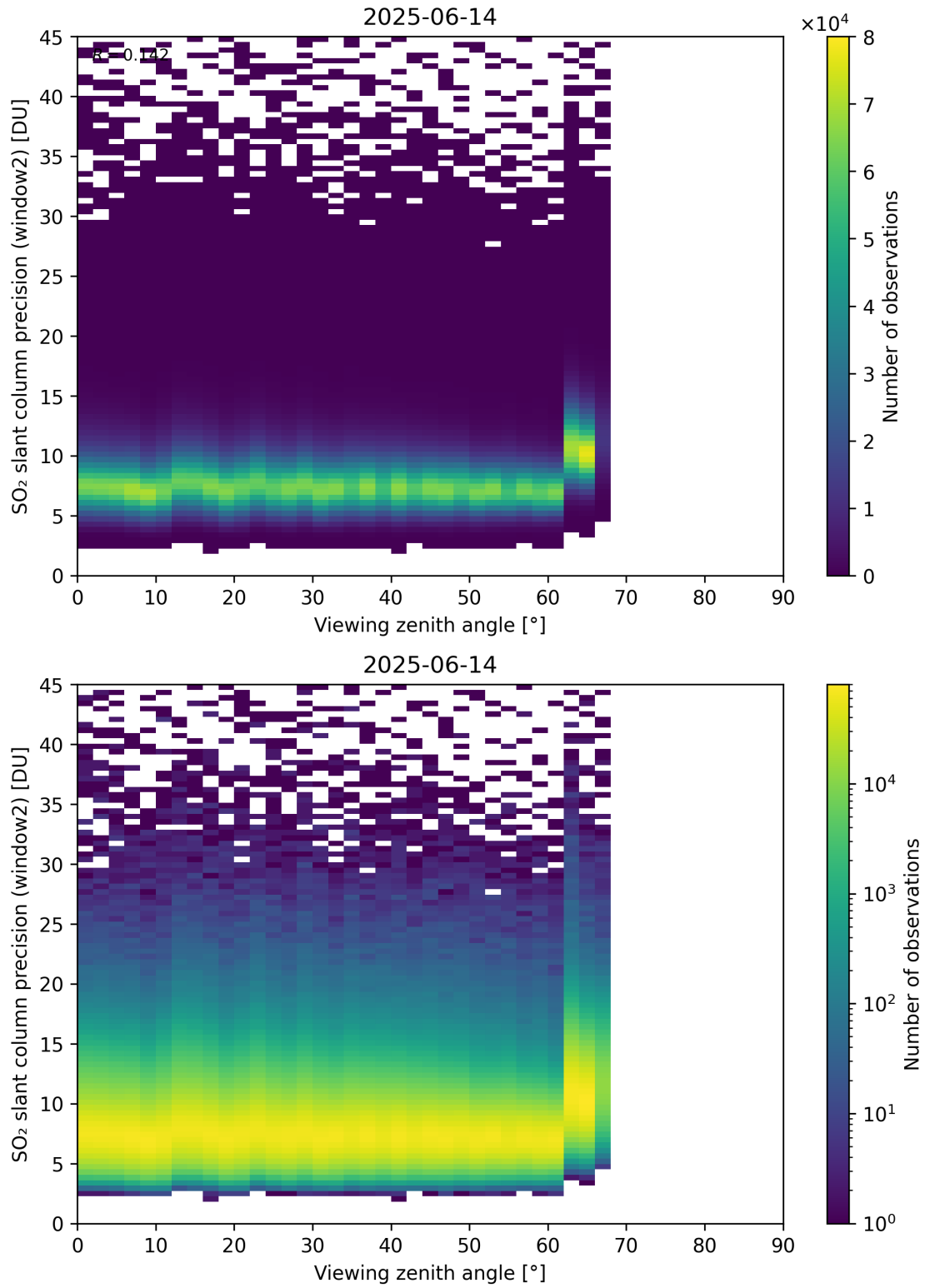


Figure 378: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (window2)” for 2025-06-13 to 2025-06-15.

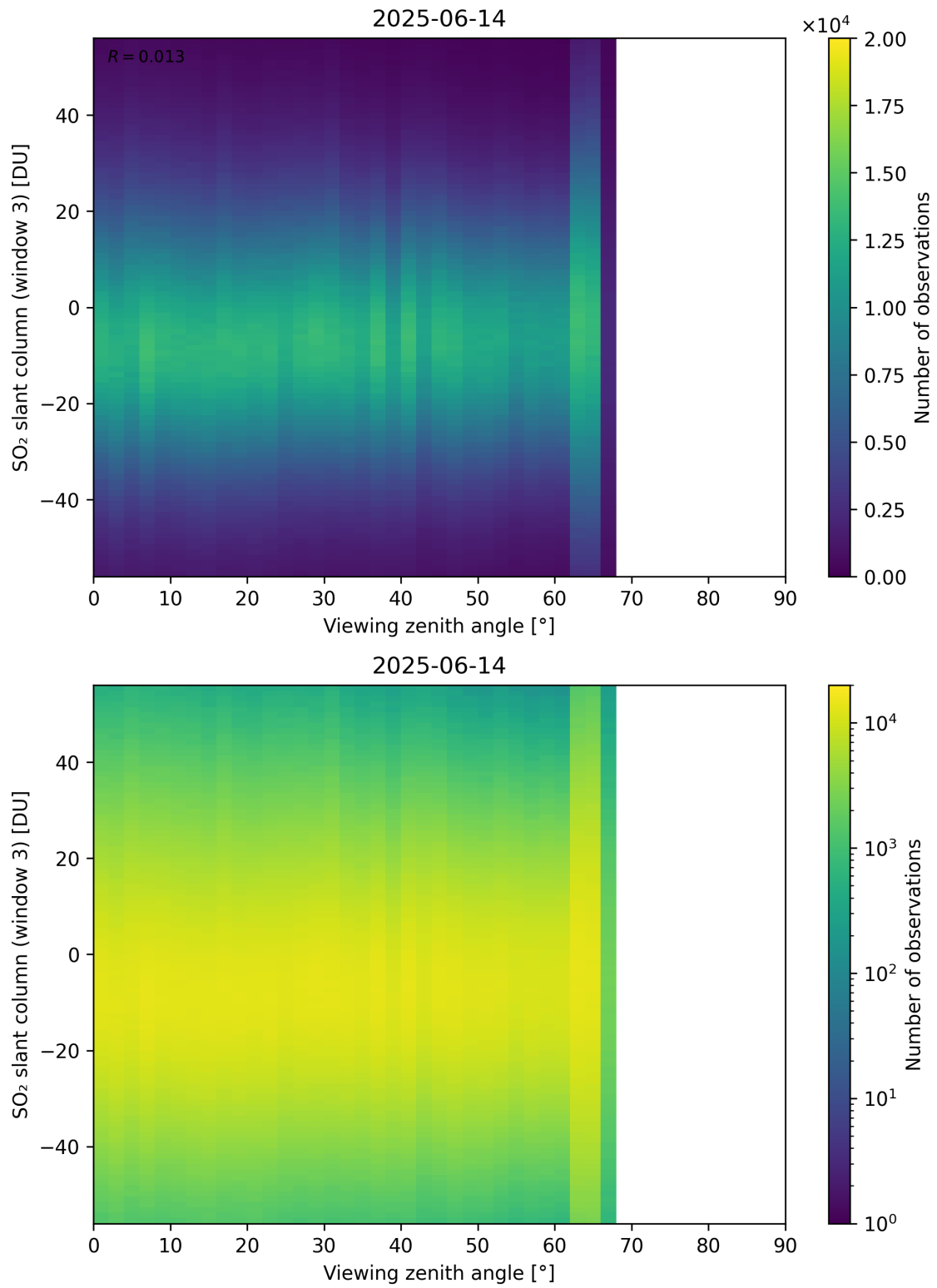


Figure 379: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column (window 3)” for 2025-06-13 to 2025-06-15.

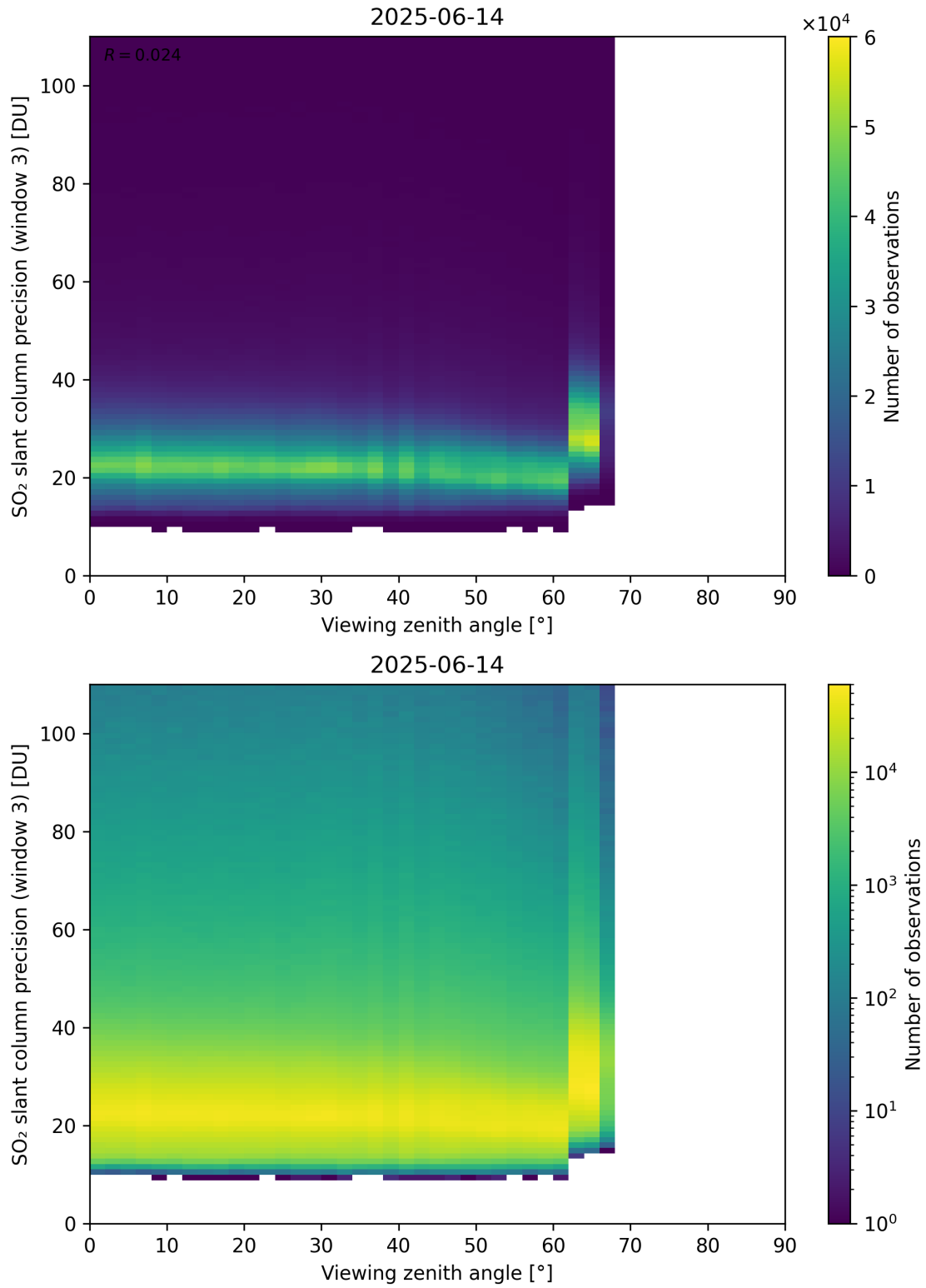


Figure 380: Scatter density plot of “Viewing zenith angle” against “SO₂ slant column precision (window 3)” for 2025-06-13 to 2025-06-15.

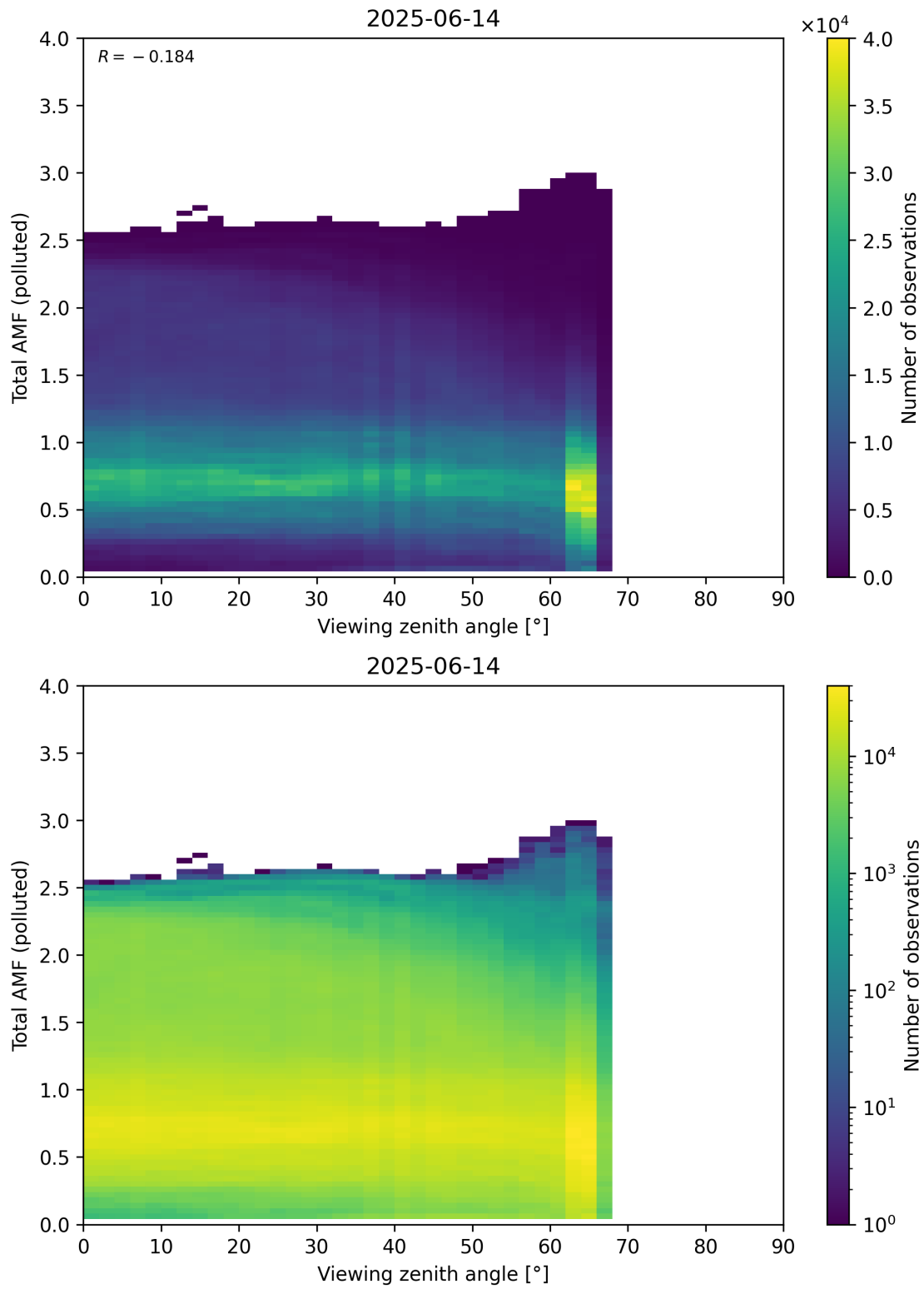


Figure 381: Scatter density plot of “Viewing zenith angle” against “Total AMF (polluted)” for 2025-06-13 to 2025-06-15.

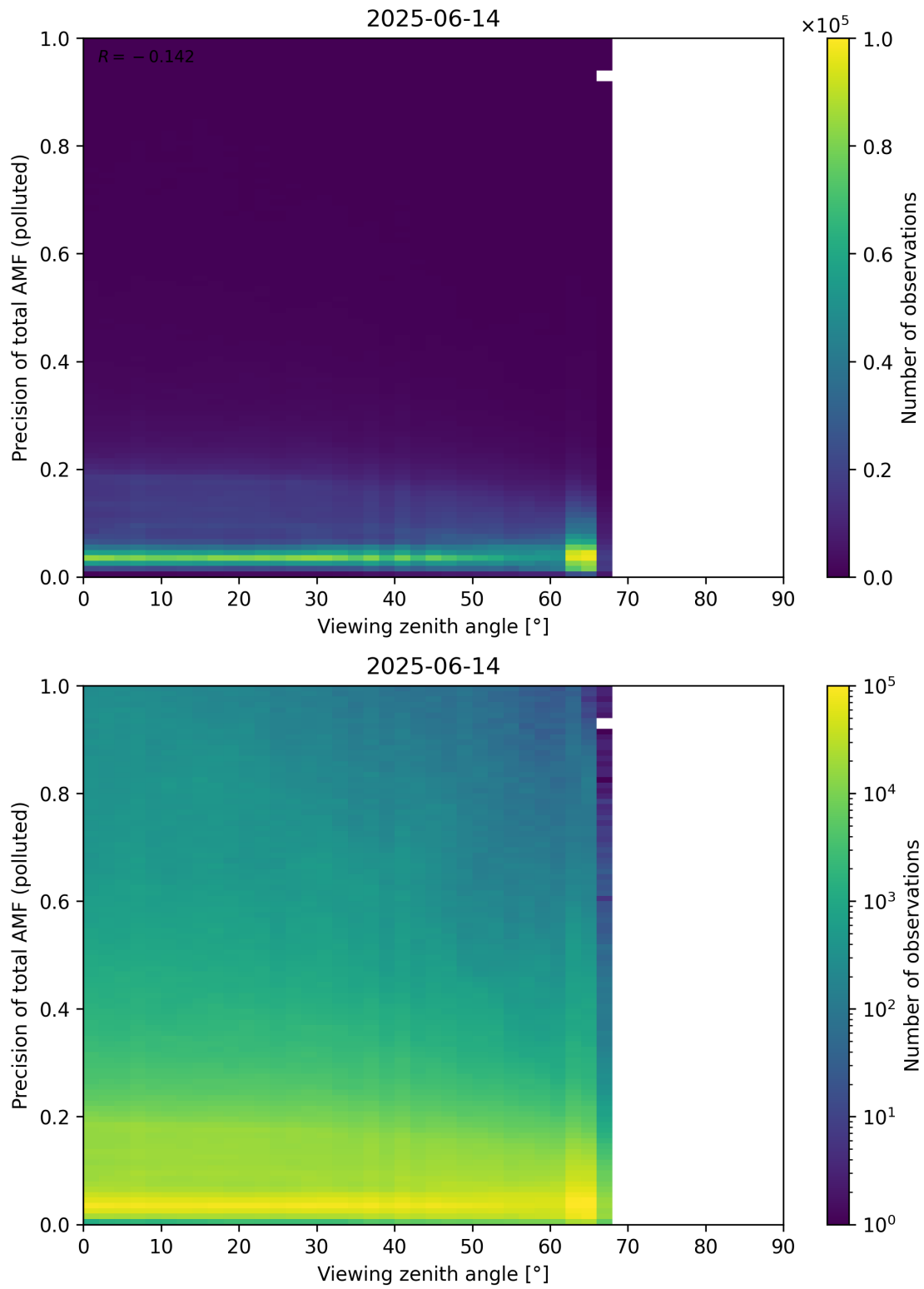


Figure 382: Scatter density plot of “Viewing zenith angle” against “Precision of total AMF (polluted)” for 2025-06-13 to 2025-06-15.

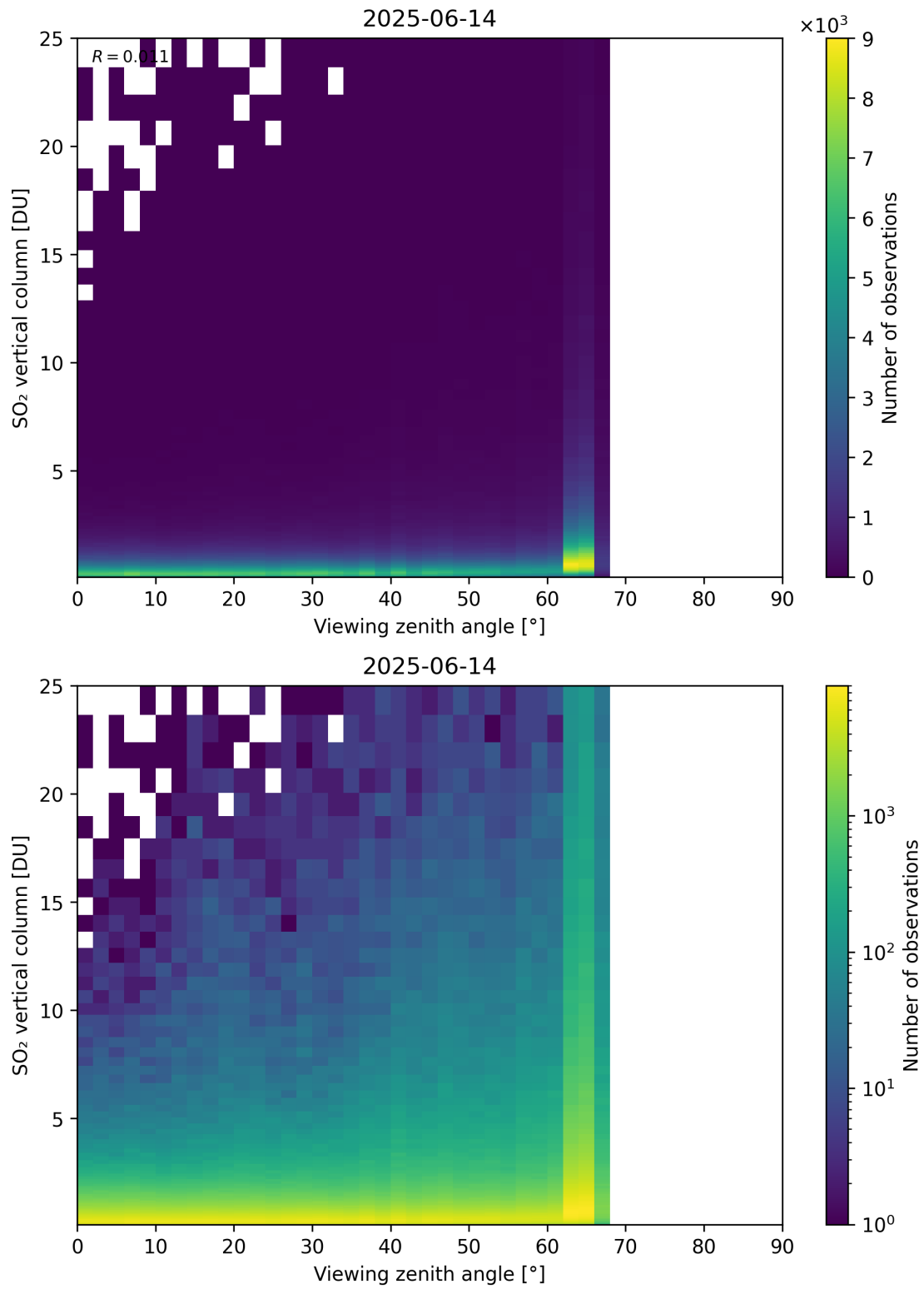


Figure 383: Scatter density plot of “Viewing zenith angle” against “SO₂ vertical column” for 2025-06-13 to 2025-06-15.

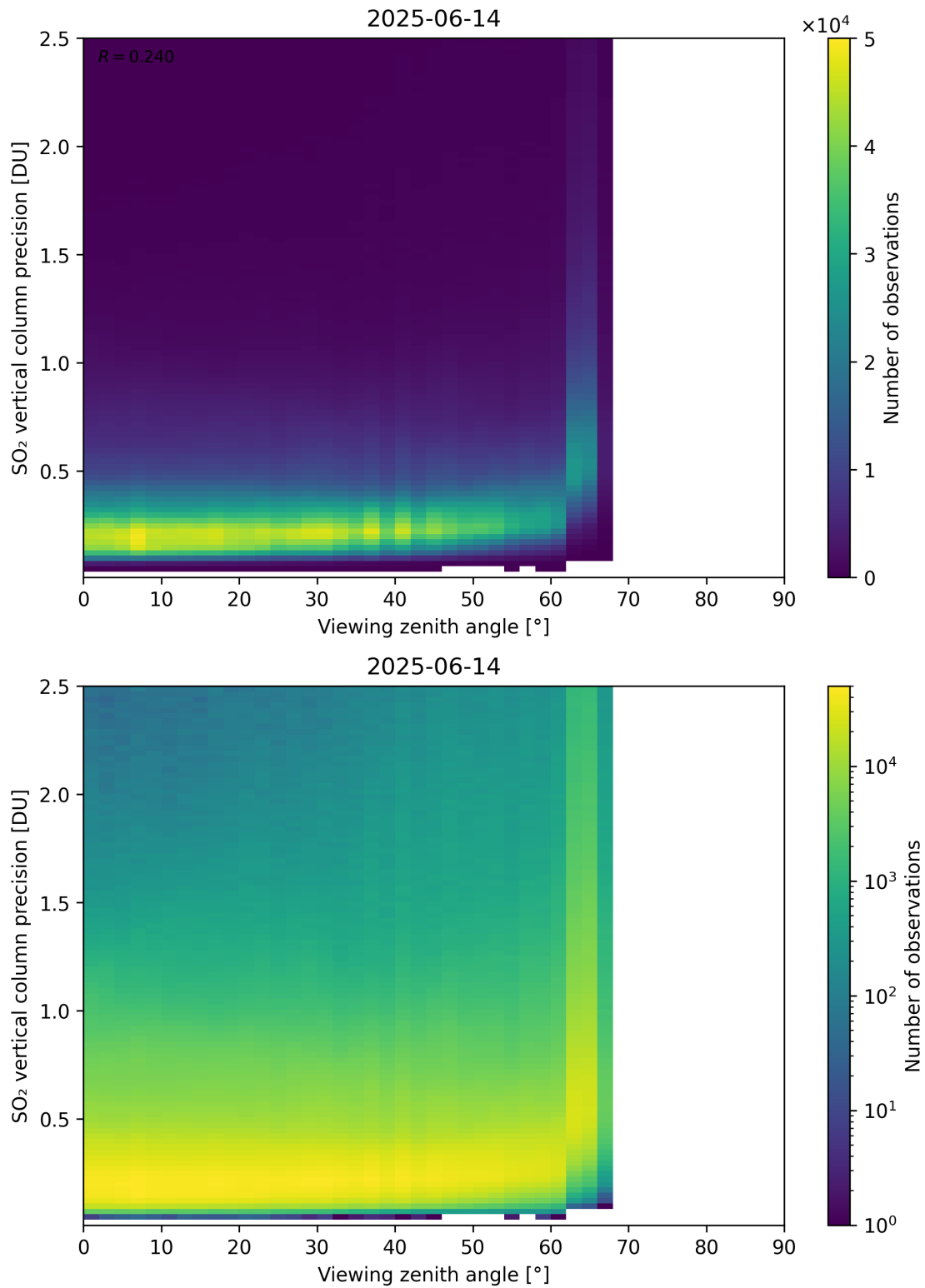


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