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:

$$\overline{x} = \frac{1}{N}\sum_{i=1}^{N} x_i \tag{1}$$

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 $\sigma(x) = \sqrt{V(x)}$.

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

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:

$$P(x \leq m) = P(x \geq m) = \int_{-\infty}^{m} f(x)\,\mathrm{d}x = \frac{1}{2} \tag{3}$$

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

The median is a special case of a percentile. Instead of ½ 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}.

$$C_{kl} = C(x_{(k)}, x_{(l)}) = \frac{1}{N-1}\sum_{i=1}^{N}(x_{(k),i} - \overline{x_{(k)}})(x_{(l),i} - \overline{x_{(l)}}) \tag{4}$$

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

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

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]	0.969 ± 0.104	26184365	0.995	0.0	1.000	0.350	1.000
cloud pressure crb [hPa]	759 ± 195	26184365	915	281	818	130	1.058×10^{3}
cloud pressure crb precision [hPa]	31.0 ± 61.9	26184365	0.750	20.4	3.35	8.301×10^{-3}	746
cloud fraction crb [1]	0.392 ± 0.351	26184365	0.996	0.622	0.279	0.0	1.000
cloud fraction crb precision [1]	$(4.953 \pm 15.500) \times 10^{-4}$	26184365	2.500×10^{-4}	3.637×10^{-4}	2.819×10^{-4}	1.815×10^{-8}	0.599
scene albedo [1]	0.383 ± 0.298	26184365	1.500×10^{-2}	0.504	0.331	5.475×10^{-3}	4.62
scene albedo precision [1]	$(3.586 \pm 4.880) \times 10^{-4}$	26184365	2.500×10^{-4}	1.821×10^{-4}	1.934×10^{-4}	4.101×10^{-5}	1.803×10^{-2}
apparent scene pressure [hPa]	792 ± 169	26184365	944	234	847	130	1.059×10^{3}
apparent scene pressure precision [hPa]	20.2 ± 42.9	26184365	0.500	10.1	2.05	5.455×10^{-2}	225
chi square [1]	$(0.453 \pm 1.069) \times 10^{4}$	26184365	0.450	5.303×10^{3}	1.281×10^{3}	0.260	4.416×10^{6}
number of iterations [1]	2.72 ± 1.06	26184365	2.31	1.000	2.00	1.000	14.0
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(8.244 \pm 59.067) \times 10^{-10}$	26184365	2.500×10^{-10}	4.698×10^{-9}	8.265×10^{-10}	-2.441×10^{-6}	1.587×10^{-6}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.676 \pm 0.674) \times 10^{-9}$	26184365	8.500×10^{-10}	9.604×10^{-10}	1.571×10^{-9}	4.039×10^{-10}	5.804×10^{-9}
chi square fluorescence [1]	$(0.626 \pm 1.180) \times 10^{5}$	26184365	750	5.556×10^{4}	1.927×10^{4}	99.8	6.854×10^{6}
degrees of freedom fluorescence [1]	6.00 ± 0.00	26184365	5.95	0.0	6.00	6.00	6.00
number of spectral points in retrieval [1]	59.0 ± 0.1	26184365	58.5	0.0	59.0	52.0	59.0
wavelength calibration offset [nm]	$(-4.539 \pm 11.347) \times 10^{-3}$	26184365	-4.000×10^{-4}	1.232×10^{-2}	-3.124×10^{-3}	-0.152	9.573×10^{-2}

Table 2: Percentile ranges

Variable	1 %	5 %	10 %	15.9 %	25 %	75 %	84.1 %	90 %	95 %	99 %
qa value [1]	0.500	0.900	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000
cloud pressure crb [hPa]	242	369	461	539	634	915	945	965	984	1.010×10^{3}
cloud pressure crb precision [hPa]	0.180	0.381	0.527	0.681	0.971	21.3	55.8	118	211	249
cloud fraction crb [1]	0.0	8.592×10^{-3}	1.951×10^{-2}	3.562×10^{-2}	6.995×10^{-2}	0.692	0.880	1.000	1.000	1.000
cloud fraction crb precision [1]	9.225×10^{-5}	1.000×10^{-4}	1.000×10^{-4}	1.297×10^{-4}	1.725×10^{-4}	5.362×10^{-4}	7.368×10^{-4}	9.038×10^{-4}	1.199×10^{-3}	3.011×10^{-3}
scene albedo [1]	1.118×10^{-2}	1.910×10^{-2}	3.140×10^{-2}	5.278×10^{-2}	0.109	0.613	0.729	0.815	0.905	1.08
scene albedo precision [1]	5.860×10^{-5}	8.438×10^{-5}	1.008×10^{-4}	1.132×10^{-4}	1.328×10^{-4}	3.148×10^{-4}	4.820×10^{-4}	7.999×10^{-4}	1.468×10^{-3}	2.476×10^{-3}
apparent scene pressure [hPa]	319	445	533	606	690	924	948	964	980	1.000×10^{3}
apparent scene pressure precision [hPa]	0.182	0.385	0.526	0.667	0.893	11.0	33.8	74.5	139	187
chi square [1]	0.369	0.745	2.20	9.49	76.5	5.380×10^{3}	8.757×10^{3}	1.255×10^{4}	1.866×10^{4}	3.788×10^{4}
number of iterations [1]	2.00	2.00	2.00	2.00	2.00	3.00	4.00	4.00	4.00	6.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	-1.549×10^{-8}	-7.529×10^{-9}	-4.515×10^{-9}	-2.797×10^{-9}	-1.348×10^{-9}	3.350×10^{-9}	4.829×10^{-9}	6.321×10^{-9}	8.670×10^{-9}	1.492×10^{-8}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	7.428×10^{-10}	8.225×10^{-10}	8.908×10^{-10}	9.799×10^{-10}	1.130×10^{-9}	2.090×10^{-9}	2.324×10^{-9}	2.626×10^{-9}	2.906×10^{-9}	3.605×10^{-9}
chi square fluorescence [1]	360	818	1.570×10^{3}	2.756×10^{3}	5.360×10^{3}	6.092×10^{4}	1.034×10^{5}	1.666×10^{5}	2.966×10^{5}	6.100×10^{5}
degrees of freedom fluorescence [1]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0	59.0
wavelength calibration offset [nm]	-3.941×10^{-2}	-2.402×10^{-2}	-1.813×10^{-2}	-1.417×10^{-2}	-1.013×10^{-2}	2.182×10^{-3}	4.381×10^{-3}	6.338×10^{-3}	1.025×10^{-2}	2.351×10^{-2}

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]	0.979 ± 0.072	14355423	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	741 ± 205	14355423	315	789	130	1.058×10^{3}	600	915
cloud pressure crb precision [hPa]	28.0 ± 59.2	14355423	16.4	3.44	8.301×10^{-3}	746	0.925	17.3
cloud fraction crb [1]	0.384 ± 0.344	14355423	0.598	0.263	0.0	1.000	7.575×10^{-2}	0.674
cloud fraction crb precision [1]	$(4.329 \pm 8.086) \times 10^{-4}$	14355423	3.193×10^{-4}	2.781×10^{-4}	2.702×10^{-6}	0.451	1.718×10^{-4}	4.910×10^{-4}
scene albedo [1]	0.388 ± 0.284	14355423	0.466	0.348	5.475×10^{-3}	3.85	0.136	0.602
scene albedo precision [1]	$(3.374 \pm 4.911) \times 10^{-4}$	14355423	1.671×10^{-4}	1.775×10^{-4}	4.101×10^{-5}	1.803×10^{-2}	1.216×10^{-4}	2.886×10^{-4}
apparent scene pressure [hPa]	781 ± 180	14355423	259	834	130	1.059×10^{3}	669	928
apparent scene pressure precision [hPa]	17.7 ± 40.9	14355423	6.88	1.92	5.455×10^{-2}	225	0.838	7.72
chi square [1]	$(0.498 \pm 1.078) \times 10^{4}$	14355423	5.658×10^{3}	1.403×10^{3}	0.263	4.416×10^{6}	139	5.797×10^{3}
number of iterations [1]	2.79 ± 0.98	14355423	1.000	3.00	1.000	14.0	2.00	3.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(6.586 \pm 66.113) \times 10^{-10}$	14355423	4.886×10^{-9}	6.739×10^{-10}	-2.441×10^{-6}	1.587×10^{-6}	-1.686×10^{-9}	3.200×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.755 \pm 0.712) \times 10^{-9}$	14355423	1.018×10^{-9}	1.638×10^{-9}	4.039×10^{-10}	5.804×10^{-9}	1.193×10^{-9}	2.212×10^{-9}
chi square fluorescence [1]	$(0.817 \pm 1.385) \times 10^{5}$	14355423	7.192×10^{4}	2.972×10^{4}	99.8	6.854×10^{6}	1.049×10^{4}	8.241×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	14355423	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	59.0 ± 0.1	14355423	0.0	59.0	52.0	59.0	59.0	59.0
wavelength calibration offset [nm]	$(-6.084 \pm 11.021) \times 10^{-3}$	14355423	1.209×10^{-2}	-4.736×10^{-3}	-0.149	9.573×10^{-2}	-1.159×10^{-2}	5.002×10^{-4}

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]	0.957 ± 0.132	11828942	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	781 ± 179	11828942	240	842	130	1.034×10^{3}	676	915
cloud pressure crb precision [hPa]	34.7 ± 64.9	11828942	27.6	3.23	1.233×10^{-2}	458	1.02	28.6
cloud fraction crb [1]	0.402 ± 0.359	11828942	0.651	0.300	0.0	1.000	6.237×10^{-2}	0.713
cloud fraction crb precision [1]	$(5.710 \pm 21.246) \times 10^{-4}$	11828942	4.187×10^{-4}	2.873×10^{-4}	1.815×10^{-8}	0.599	1.732×10^{-4}	5.920×10^{-4}
scene albedo [1]	0.378 ± 0.315	11828942	0.548	0.307	6.000×10^{-3}	4.62	8.054×10^{-2}	0.628
scene albedo precision [1]	$(3.844 \pm 4.831) \times 10^{-4}$	11828942	1.995×10^{-4}	2.120×10^{-4}	4.119×10^{-5}	8.352×10^{-3}	1.498×10^{-4}	3.493×10^{-4}
apparent scene pressure [hPa]	806 ± 153	11828942	201	857	138	1.034×10^{3}	719	920
apparent scene pressure precision [hPa]	23.4 ± 45.0	11828942	16.9	2.25	6.593×10^{-2}	210	0.952	17.8
chi square [1]	$(0.399 \pm 1.055) \times 10^{4}$	11828942	4.930×10^{3}	1.132×10^{3}	0.260	1.742×10^{6}	30.2	4.960×10^{3}
number of iterations [1]	2.65 ± 1.14	11828942	1.000	2.00	1.000	14.0	2.00	3.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.026 \pm 4.910) \times 10^{-9}$	11828942	4.495×10^{-9}	1.006×10^{-9}	-1.151×10^{-6}	8.349×10^{-7}	-9.877×10^{-10}	3.508×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.580 \pm 0.613) \times 10^{-9}$	11828942	8.305×10^{-10}	1.500×10^{-9}	5.497×10^{-10}	5.538×10^{-9}	1.078×10^{-9}	1.909×10^{-9}
chi square fluorescence [1]	$(0.393 \pm 0.809) \times 10^{5}$	11828942	3.407×10^{4}	9.659×10^{3}	110	1.594×10^{6}	2.607×10^{3}	3.668×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	11828942	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	59.0 ± 0.1	11828942	0.0	59.0	57.0	59.0	59.0	59.0
wavelength calibration offset [nm]	$(-2.662 \pm 11.453) \times 10^{-3}$	11828942	1.176×10^{-2}	-1.019×10^{-3}	-0.152	8.555×10^{-2}	-8.001×10^{-3}	3.761×10^{-3}

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]	0.978 ± 0.071	18857130	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	781 ± 191	18857130	259	849	130	1.034×10^{3}	668	927
cloud pressure crb precision [hPa]	36.5 ± 67.4	18857130	28.3	3.76	1.312×10^{-2}	713	1.09	29.4
cloud fraction crb [1]	0.375 ± 0.335	18857130	0.581	0.273	0.0	1.000	6.633×10^{-2}	0.648
cloud fraction crb precision [1]	$(5.105 \pm 12.700) \times 10^{-4}$	18857130	4.727×10^{-4}	3.193×10^{-4}	1.815×10^{-8}	0.599	1.763×10^{-4}	6.490×10^{-4}
scene albedo [1]	0.335 ± 0.293	18857130	0.510	0.254	5.475×10^{-3}	4.62	6.390×10^{-2}	0.574
scene albedo precision [1]	$(4.215 \pm 5.528) \times 10^{-4}$	18857130	2.331×10^{-4}	2.159×10^{-4}	4.125×10^{-5}	1.803×10^{-2}	1.470×10^{-4}	3.801×10^{-4}
apparent scene pressure [hPa]	799 ± 170	18857130	224	856	130	1.059×10^{3}	704	928
apparent scene pressure precision [hPa]	27.1 ± 48.6	18857130	23.8	3.01	5.888×10^{-2}	225	1.02	24.9
chi square [1]	$(0.369 \pm 0.958) \times 10^{4}$	18857130	4.078×10^{3}	626	0.260	1.742×10^{6}	17.3	4.095×10^{3}
number of iterations [1]	2.50 ± 1.00	18857130	1.000	2.00	1.000	14.0	2.00	3.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(5.535 \pm 54.391) \times 10^{-10}$	18857130	4.234×10^{-9}	5.479×10^{-10}	-1.836×10^{-6}	1.505×10^{-6}	-1.384×10^{-9}	2.849×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.570 \pm 0.660) \times 10^{-9}$	18857130	8.801×10^{-10}	1.431×10^{-9}	4.039×10^{-10}	5.597×10^{-9}	1.037×10^{-9}	1.917×10^{-9}
chi square fluorescence [1]	$(0.475 \pm 0.924) \times 10^{5}$	18857130	4.208×10^{4}	1.448×10^{4}	99.8	6.854×10^{6}	4.364×10^{3}	4.645×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	18857130	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	59.0 ± 0.1	18857130	0.0	59.0	56.0	59.0	59.0	59.0
wavelength calibration offset [nm]	$(-4.519 \pm 11.908) \times 10^{-3}$	18857130	1.237×10^{-2}	-3.022×10^{-3}	-0.152	9.573×10^{-2}	-1.016×10^{-2}	2.207×10^{-3}

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]	0.925 ± 0.181	5224794	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	697 ± 195	5224794	286	722	130	1.032×10^{3}	568	855
cloud pressure crb precision [hPa]	16.4 ± 40.6	5224794	10.4	2.40	1.202×10^{-2}	715	0.714	11.1
cloud fraction crb [1]	0.442 ± 0.396	5224794	0.879	0.281	0.0	1.000	7.426×10^{-2}	0.953
cloud fraction crb precision [1]	$(4.957 \pm 24.668) \times 10^{-4}$	5224794	1.595×10^{-4}	2.393×10^{-4}	3.293×10^{-8}	0.451	1.444×10^{-4}	3.039×10^{-4}
scene albedo [1]	0.531 ± 0.278	5224794	0.471	0.458	1.501×10^{-2}	3.47	0.295	0.766
scene albedo precision [1]	$(1.891 \pm 1.499) \times 10^{-4}$	5224794	8.757×10^{-5}	1.454×10^{-4}	4.101×10^{-5}	4.631×10^{-3}	1.119×10^{-4}	1.994×10^{-4}
apparent scene pressure [hPa]	771 ± 167	5224794	259	810	130	1.035×10^{3}	654	912
apparent scene pressure precision [hPa]	1.71 ± 1.66	5224794	1.56	1.17	5.455×10^{-2}	189	0.679	2.24
chi square [1]	$(0.737 \pm 1.347) \times 10^{4}$	5224794	8.240×10^{3}	3.763×10^{3}	0.953	4.416×10^{6}	1.231×10^{3}	9.471×10^{3}
number of iterations [1]	3.37 ± 0.99	5224794	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.392 \pm 7.278) \times 10^{-9}$	5224794	6.319×10^{-9}	1.861×10^{-9}	-1.632×10^{-6}	1.350×10^{-6}	-1.647×10^{-9}	4.671×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(2.000 \pm 0.633) \times 10^{-9}$	5224794	7.735×10^{-10}	1.912×10^{-9}	4.873×10^{-10}	5.804×10^{-9}	1.566×10^{-9}	2.340×10^{-9}
chi square fluorescence [1]	$(0.114 \pm 0.173) \times 10^{6}$	5224794	1.151×10^{5}	4.290×10^{4}	113	6.423×10^{6}	1.185×10^{4}	1.270×10^{5}
degrees of freedom fluorescence [1]	6.00 ± 0.00	5224794	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	59.0 ± 0.1	5224794	0.0	59.0	52.0	59.0	59.0	59.0
wavelength calibration offset [nm]	$(-4.609 \pm 9.525) \times 10^{-3}$	5224794	1.280×10^{-2}	-3.391×10^{-3}	-8.584×10^{-2}	6.566×10^{-2}	-1.034×10^{-2}	2.461×10^{-3}

Table 7: Correlation matrix

Viewing zenith angle	Solar zenith angle	Latitude	Cloud pressure	Cloud fraction	Scene albedo	Apparent scene pressure	χ^2	Number of iterations	Fluorescence	χ^2 of fluorescence retrieval	Number of points in the spectrum	Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)
1.000	2.203×10^{-2}	-9.749×10^{-3}	-7.042×10^{-2}	0.105	0.104	-8.457×10^{-2}	1.374×10^{-2}	2.914×10^{-2}	5.169×10^{-2}	3.864×10^{-4}	1.742×10^{-2}	-9.244×10^{-2}
2.203×10^{-2}	1.000	-1.682×10^{-2}	-0.223	0.459	0.504	-0.205	2.495×10^{-2}	0.334	0.256	-0.374	3.301×10^{-3}	0.329
-9.749×10^{-3}	-1.682×10^{-2}	1.000	-5.334×10^{-2}	-4.952×10^{-2}	-1.590×10^{-2}	-6.967×10^{-3}	-3.714×10^{-3}	2.933×10^{-2}	-2.886×10^{-2}	9.436×10^{-2}	9.678×10^{-4}	-0.130
-7.042×10^{-2}	-0.223	-5.334×10^{-2}	1.000	-0.308	-0.394	0.872	-0.117	-0.556	-0.252	0.173	-6.779×10^{-3}	-0.254
0.105	0.459	-4.952×10^{-2}	-0.308	1.000	0.927	-0.472	0.408	0.287	0.314	2.662×10^{-2}	7.776×10^{-4}	0.240
0.104	0.504	-1.590×10^{-2}	-0.394	0.927	1.000	-0.443	0.459	0.489	0.321	0.100	2.131×10^{-3}	0.215
-8.457×10^{-2}	-0.205	-6.967×10^{-3}	0.872	-0.472	-0.443	1.000	-0.119	-0.344	-0.279	0.246	-5.190×10^{-3}	-0.325
1.374×10^{-2}	2.495×10^{-2}	-3.714×10^{-3}	-0.117	0.408	0.459	-0.119	1.000	0.295	9.891×10^{-2}	0.406	5.689×10^{-4}	-9.559×10^{-3}
2.914×10^{-2}	0.334	2.933×10^{-2}	-0.556	0.287	0.489	-0.344	0.295	1.000	0.213	-7.007×10^{-3}	3.028×10^{-3}	0.125
5.169×10^{-2}	0.256	-2.886×10^{-2}	-0.252	0.314	0.321	-0.279	9.891×10^{-2}	0.213	1.000	-0.265	2.295×10^{-4}	0.299
3.864×10^{-4}	-0.374	9.436×10^{-2}	0.173	2.662×10^{-2}	0.100	0.246	0.406	-7.007×10^{-3}	-0.265	1.000	-3.670×10^{-3}	-0.376
1.742×10^{-2}	3.301×10^{-3}	9.678×10^{-4}	-6.779×10^{-3}	7.776×10^{-4}	2.131×10^{-3}	-5.190×10^{-3}	5.689×10^{-4}	3.028×10^{-3}	2.295×10^{-4}	-3.670×10^{-3}	1.000	-8.201×10^{-3}
-9.244×10^{-2}	0.329	-0.130	-0.254	0.240	0.215	-0.325	-9.559×10^{-3}	0.125	0.299	-0.376	-8.201×10^{-3}	1.000

Table 8: Covariance matrix

Viewing zenith angle	Solar zenith angle	Latitude	Cloud pressure	Cloud fraction	Scene albedo	Apparent scene pressure	χ^2	Number of iterations	Fluorescence	χ^2 of fluorescence retrieval	Number of points in the spectrum	Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)
382	8.69	−9.06	−268	0.720	0.607	−280	2.871×10^3	0.601	5.968×10^{-9}	891	3.245×10^{-2}	-2.050×10^{-2}
8.69	407	−16.1	−875	3.25	3.03	−699	5.378×10^3	7.11	3.051×10^{-8}	-8.904×10^5	6.348×10^{-3}	7.526×10^{-2}
−9.06	−16.1	2.261×10^3	−494	−0.826	−0.226	−56.0	-1.887×10^3	1.47	-8.105×10^{-9}	5.294×10^5	4.386×10^{-3}	-7.017×10^{-2}
−268	−875	−494	3.798×10^4	−21.1	−22.9	2.872×10^4	-2.426×10^5	−114	-2.895×10^{-7}	3.980×10^6	−0.126	−0.562
0.720	3.25	−0.826	−21.1	0.123	9.700×10^{-2}	−28.0	1.531×10^3	0.106	6.511×10^{-10}	1.102×10^3	2.600×10^{-5}	9.546×10^{-4}
0.607	3.03	−0.226	−22.9	9.700×10^{-2}	8.894×10^{-2}	−22.3	1.463×10^3	0.154	5.646×10^{-10}	3.530×10^3	6.056×10^{-5}	7.290×10^{-4}
−280	−699	−56.0	2.872×10^4	−28.0	−22.3	2.859×10^4	-2.148×10^5	−61.3	-2.785×10^{-7}	4.910×10^6	-8.364×10^{-2}	−0.624
2.871×10^3	5.378×10^3	-1.887×10^3	-2.426×10^5	1.531×10^3	1.463×10^3	-2.148×10^5	1.142×10^8	3.329×10^3	6.242×10^{-6}	5.118×10^8	0.579	−1.16
0.601	7.11	1.47	−114	0.106	0.154	−61.3	3.329×10^3	1.11	1.328×10^{-9}	−873	3.046×10^{-4}	1.499×10^{-3}
5.968×10^{-9}	3.051×10^{-8}	-8.105×10^{-9}	-2.895×10^{-7}	6.511×10^{-10}	5.646×10^{-10}	-2.785×10^{-7}	6.242×10^{-6}	1.328×10^{-9}	3.489×10^{-17}	-1.849×10^{-4}	1.292×10^{-13}	2.003×10^{-11}
891	-8.904×10^5	5.294×10^5	3.980×10^6	1.102×10^3	3.530×10^3	4.910×10^6	5.118×10^8	−873	-1.849×10^{-4}	1.392×10^{10}	−41.3	−503
3.245×10^{-2}	6.348×10^{-3}	4.386×10^{-3}	−0.126	2.600×10^{-5}	6.056×10^{-5}	-8.364×10^{-2}	0.579	3.046×10^{-4}	1.292×10^{-13}	−41.3	9.085×10^{-3}	-8.869×10^{-6}
-2.050×10^{-2}	7.526×10^{-2}	-7.017×10^{-2}	−0.562	9.546×10^{-4}	7.290×10^{-4}	−0.624	−1.16	1.499×10^{-3}	2.003×10^{-11}	−503	-8.869×10^{-6}	1.288×10^{-4}

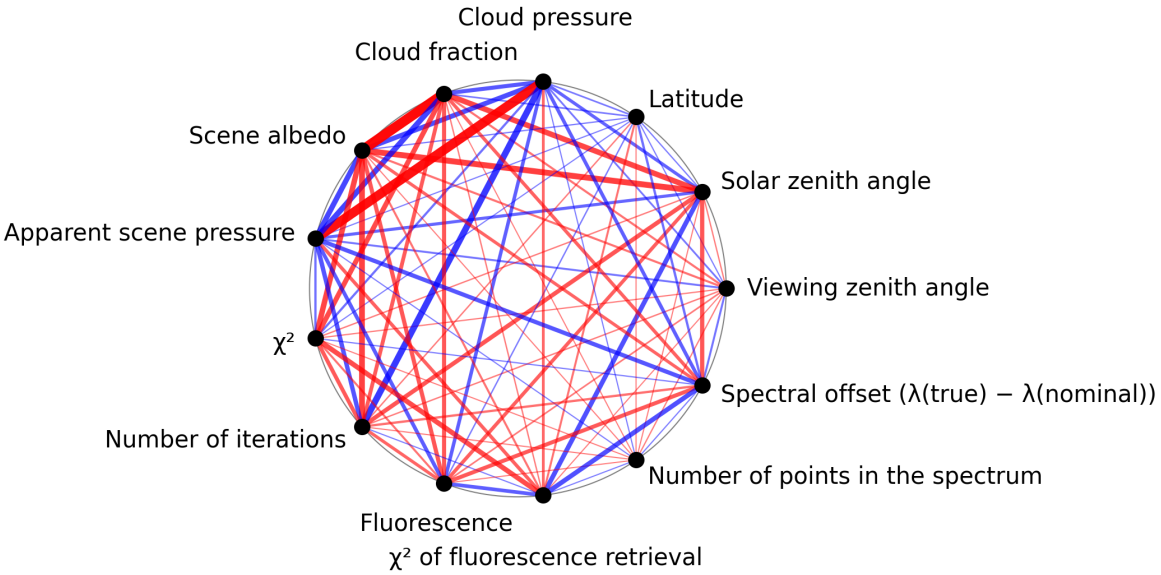

Figure 1: Map of correlation graph for 2024-09-10 to 2024-09-12.

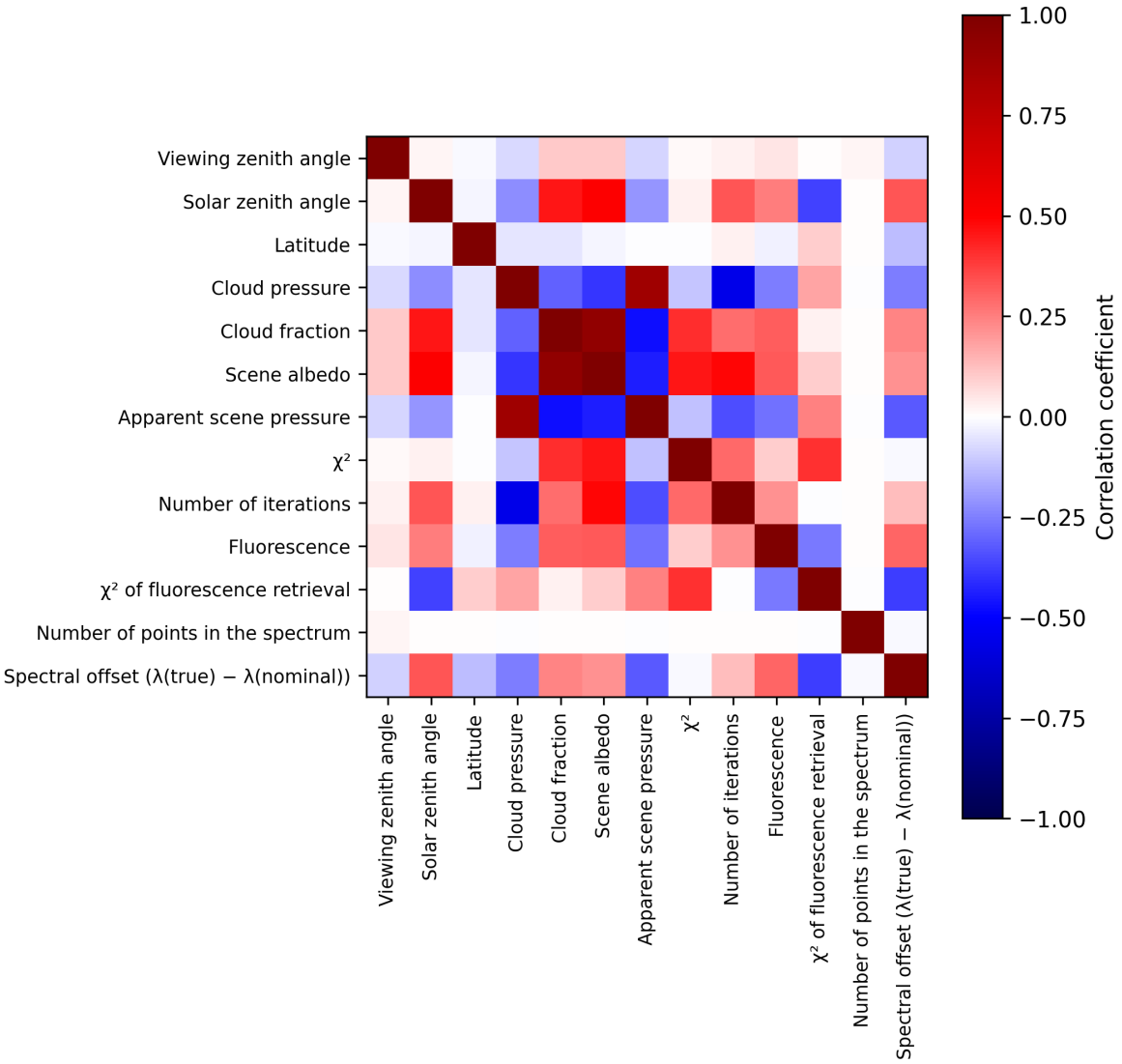

Figure 2: Map of correlation matrix for 2024-09-10 to 2024-09-12.

3 Granule outlines

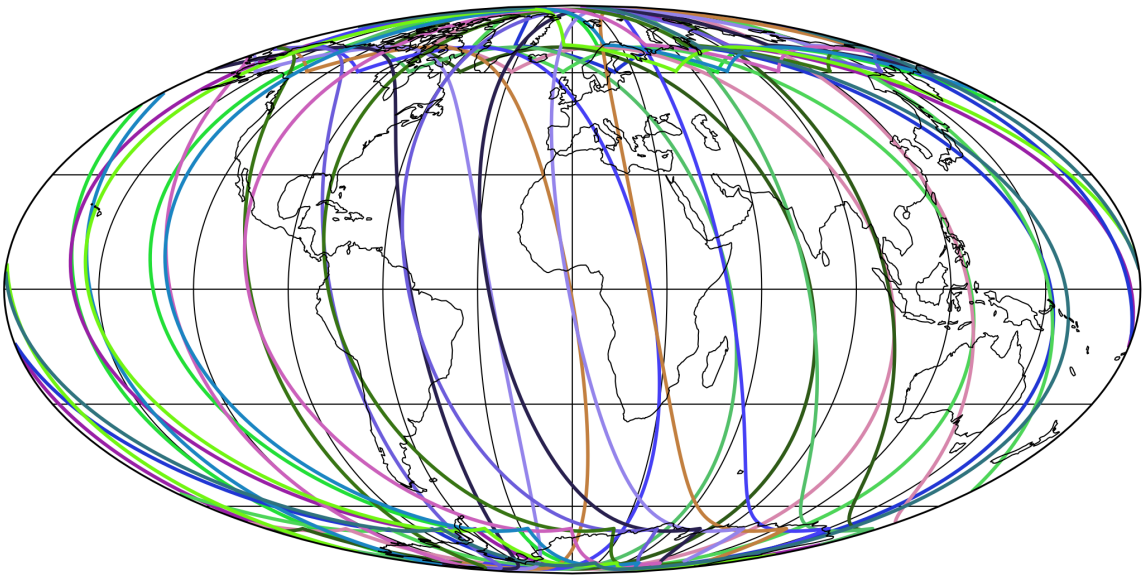

Figure 3: Outline of the granules.

4 Input data monitoring

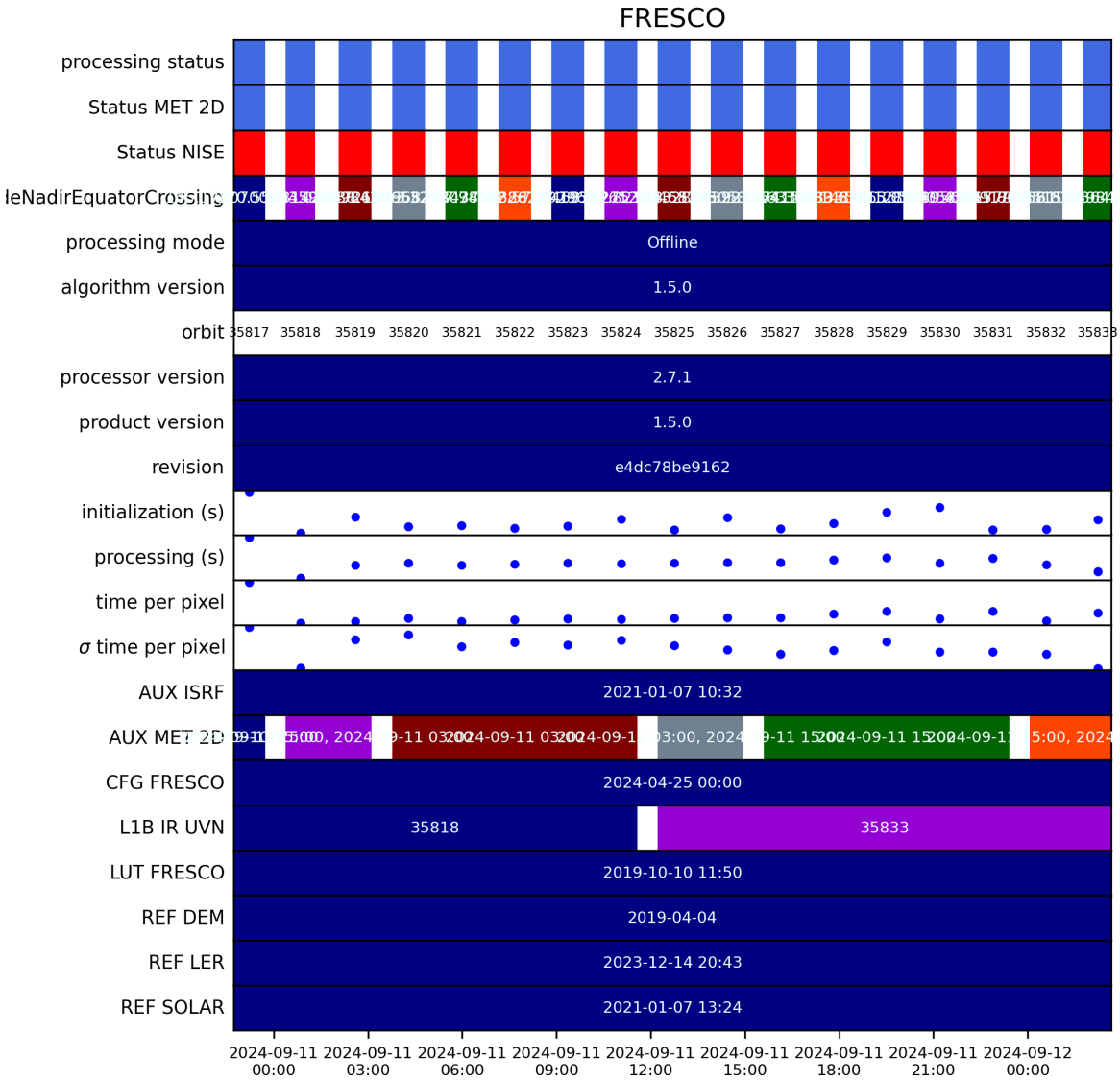

Figure 4: Input data per granule

5 Warnings and errors

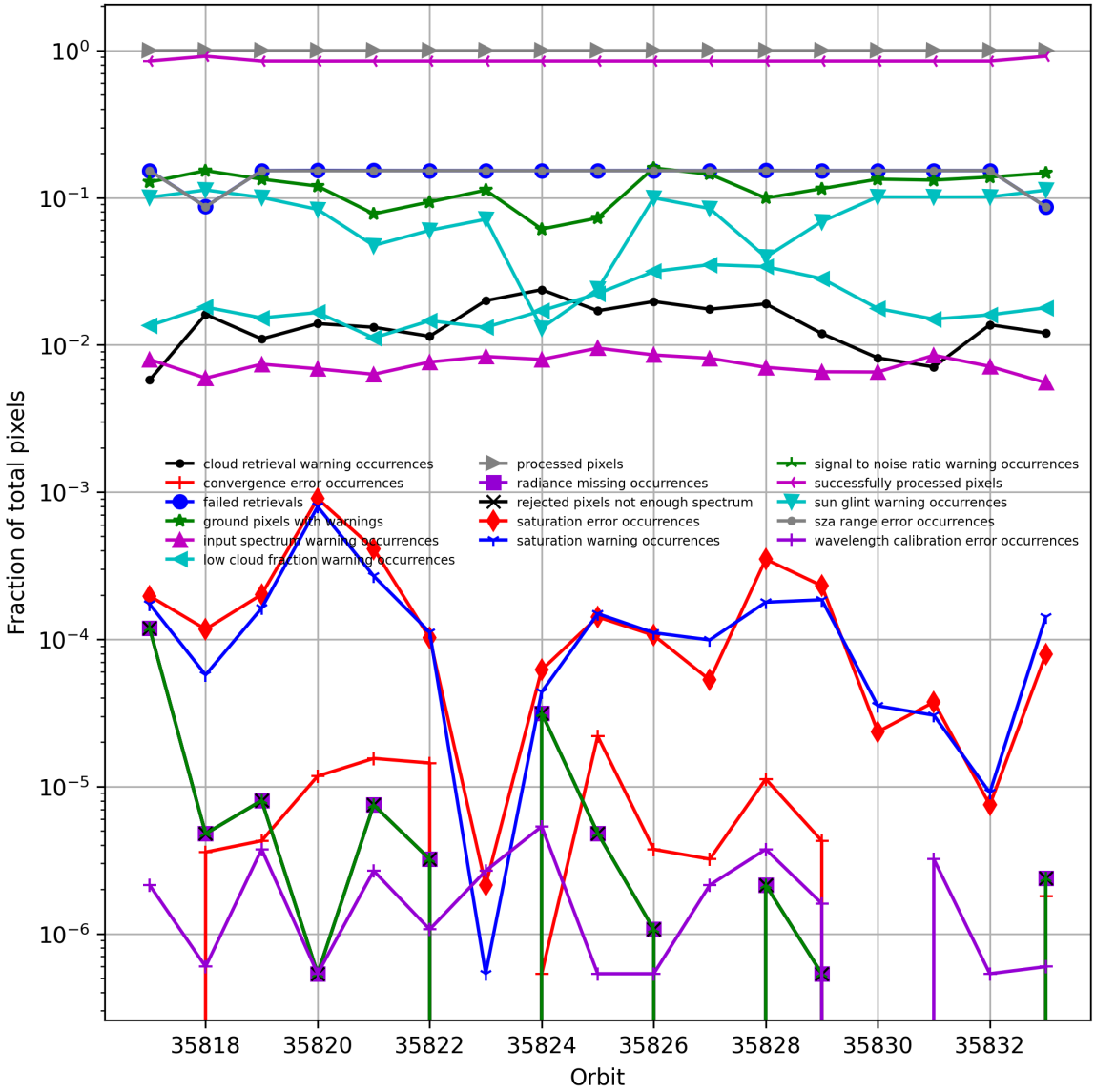

Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

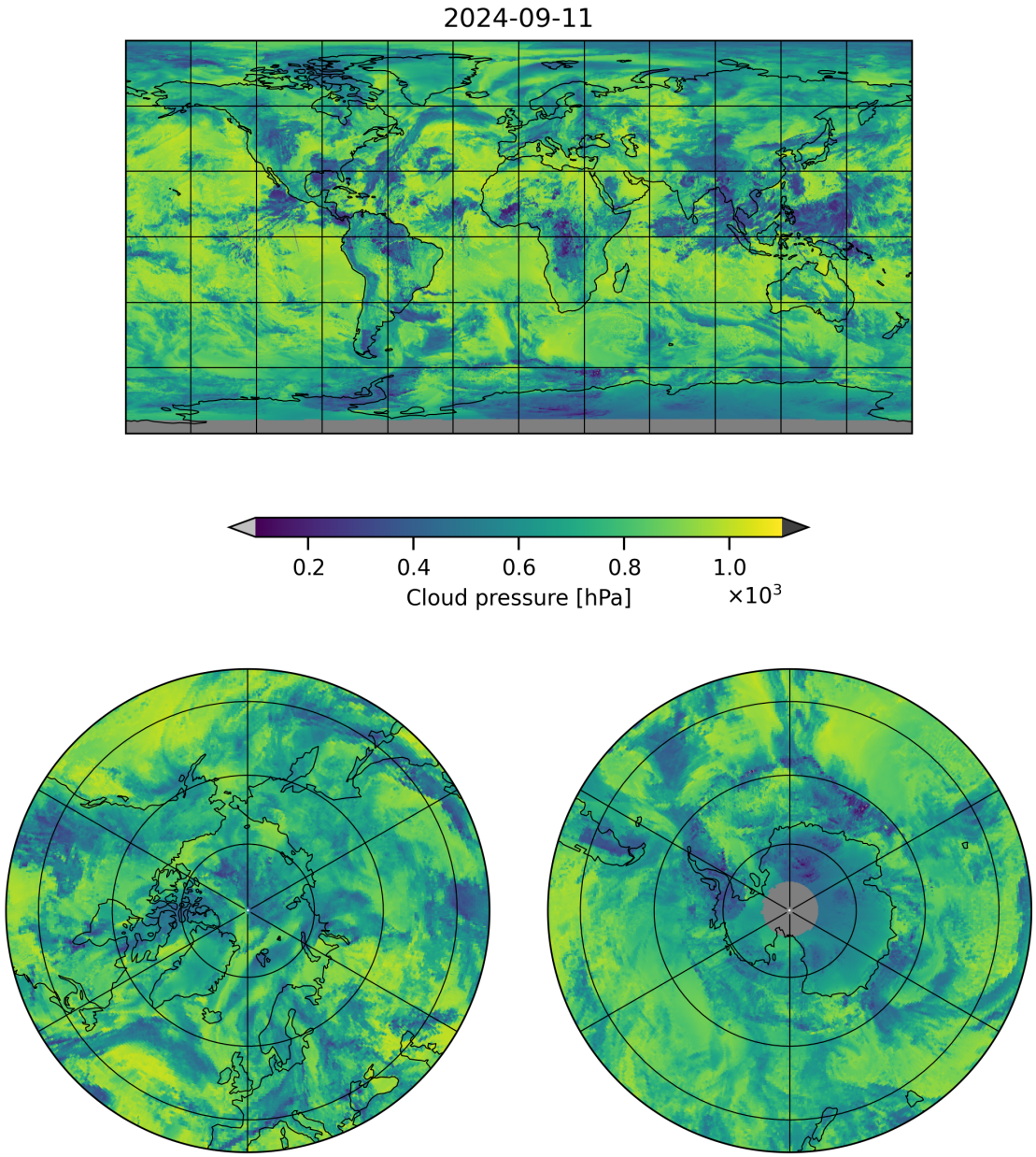

Figure 6: Map of “Cloud pressure” for 2024-09-10 to 2024-09-12

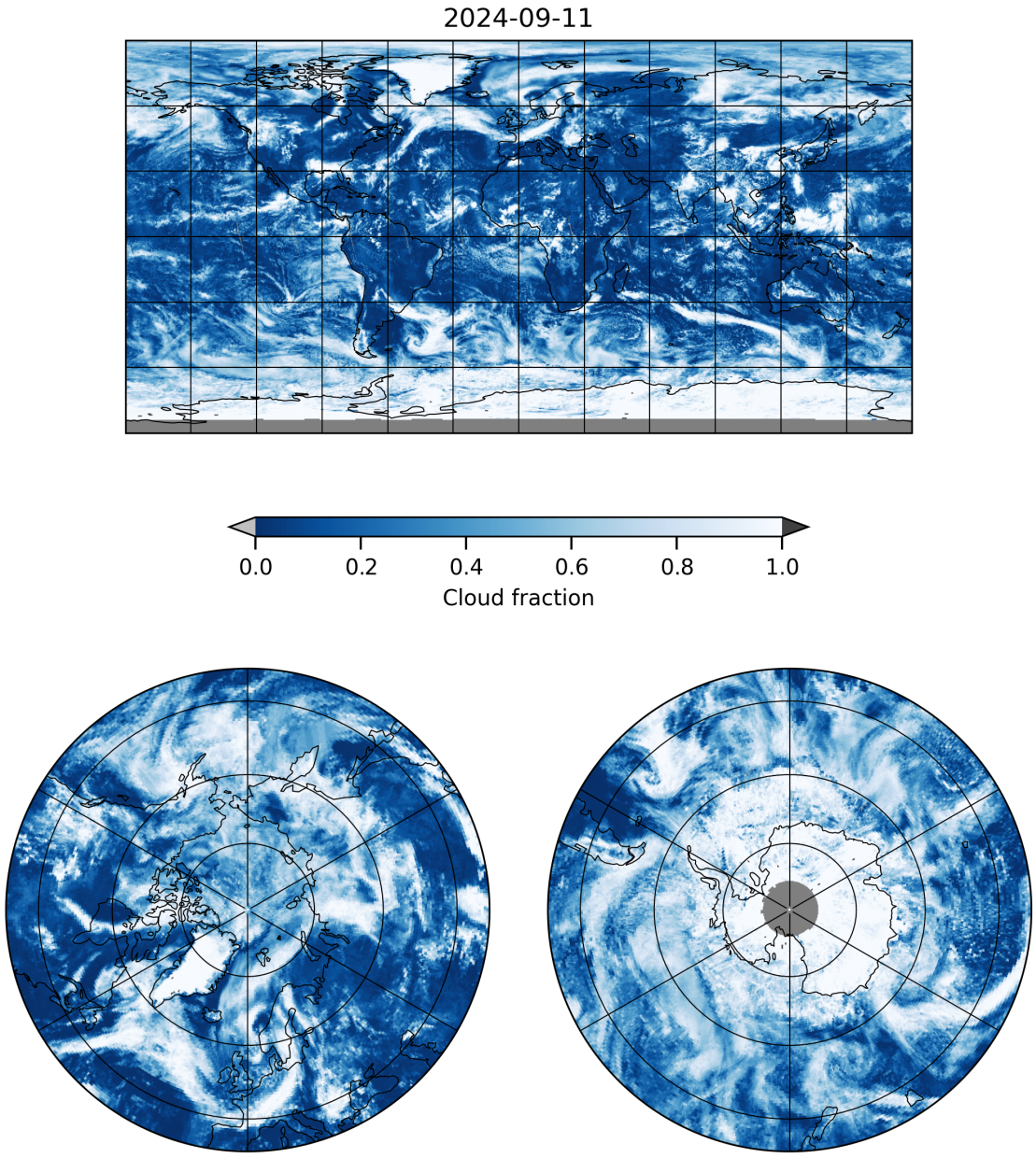

Figure 7: Map of “Cloud fraction” for 2024-09-10 to 2024-09-12

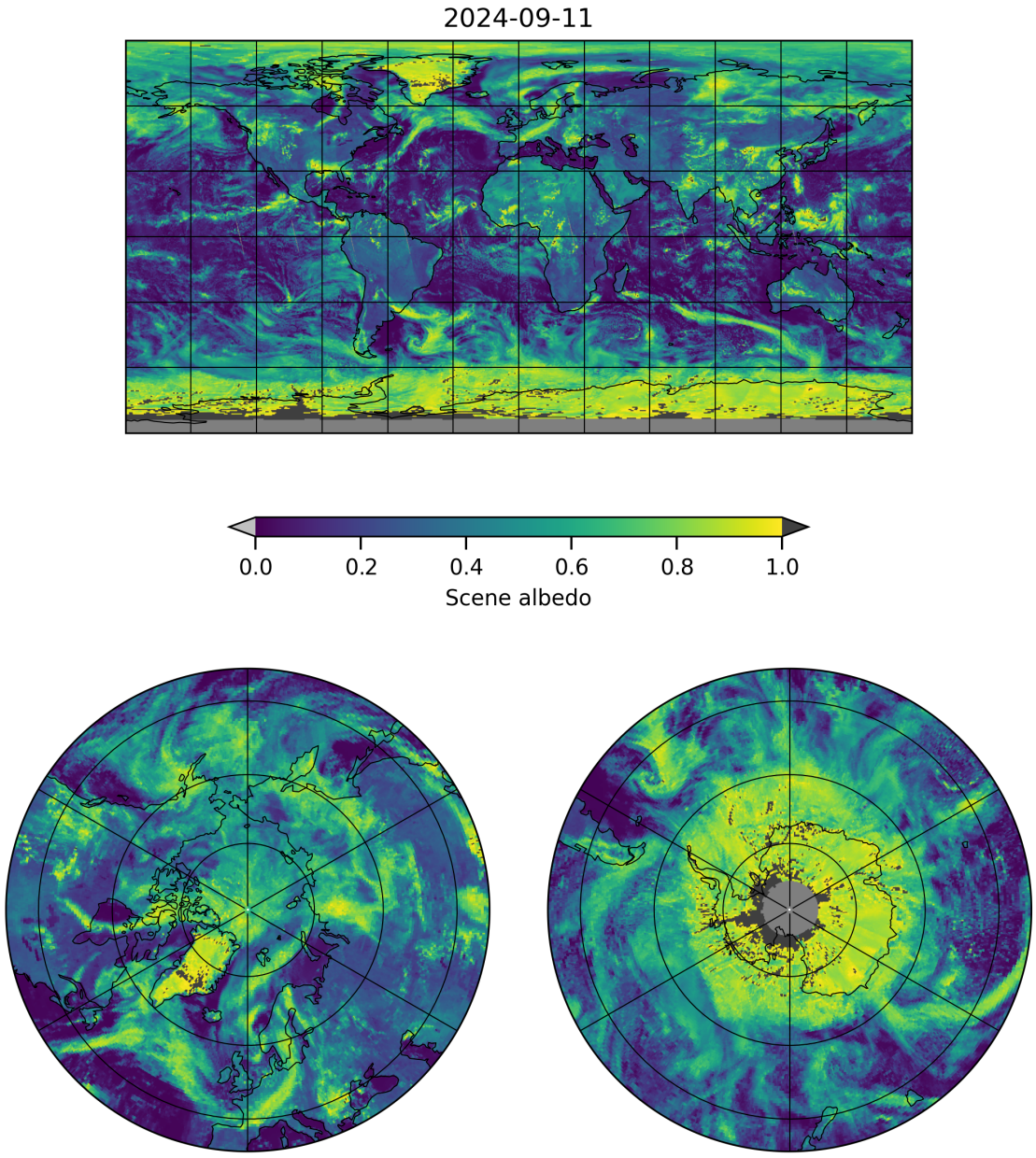

Figure 8: Map of “Scene albedo” for 2024-09-10 to 2024-09-12

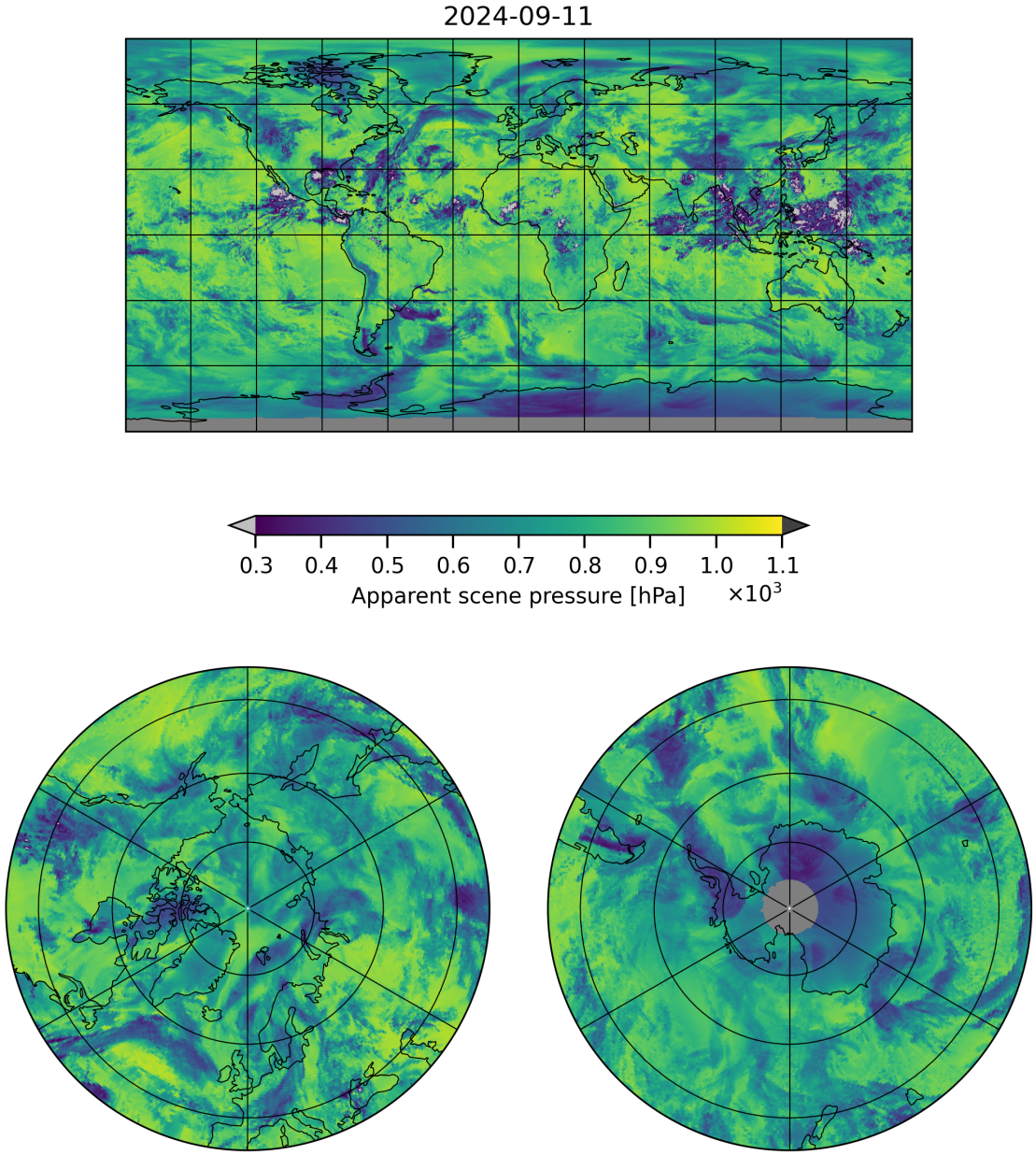

Figure 9: Map of “Apparent scene pressure” for 2024-09-10 to 2024-09-12

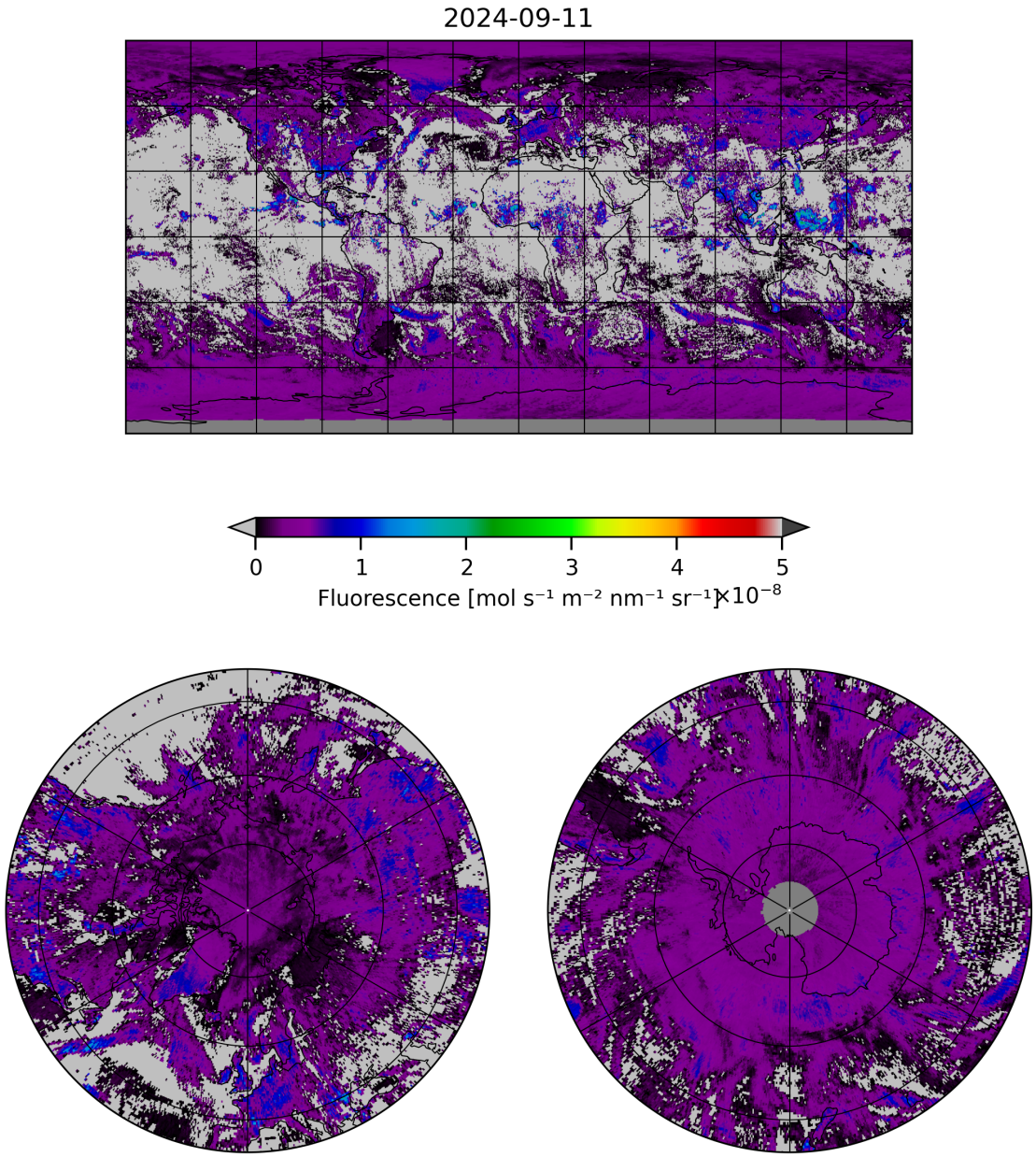

Figure 10: Map of “Fluorescence” for 2024-09-10 to 2024-09-12

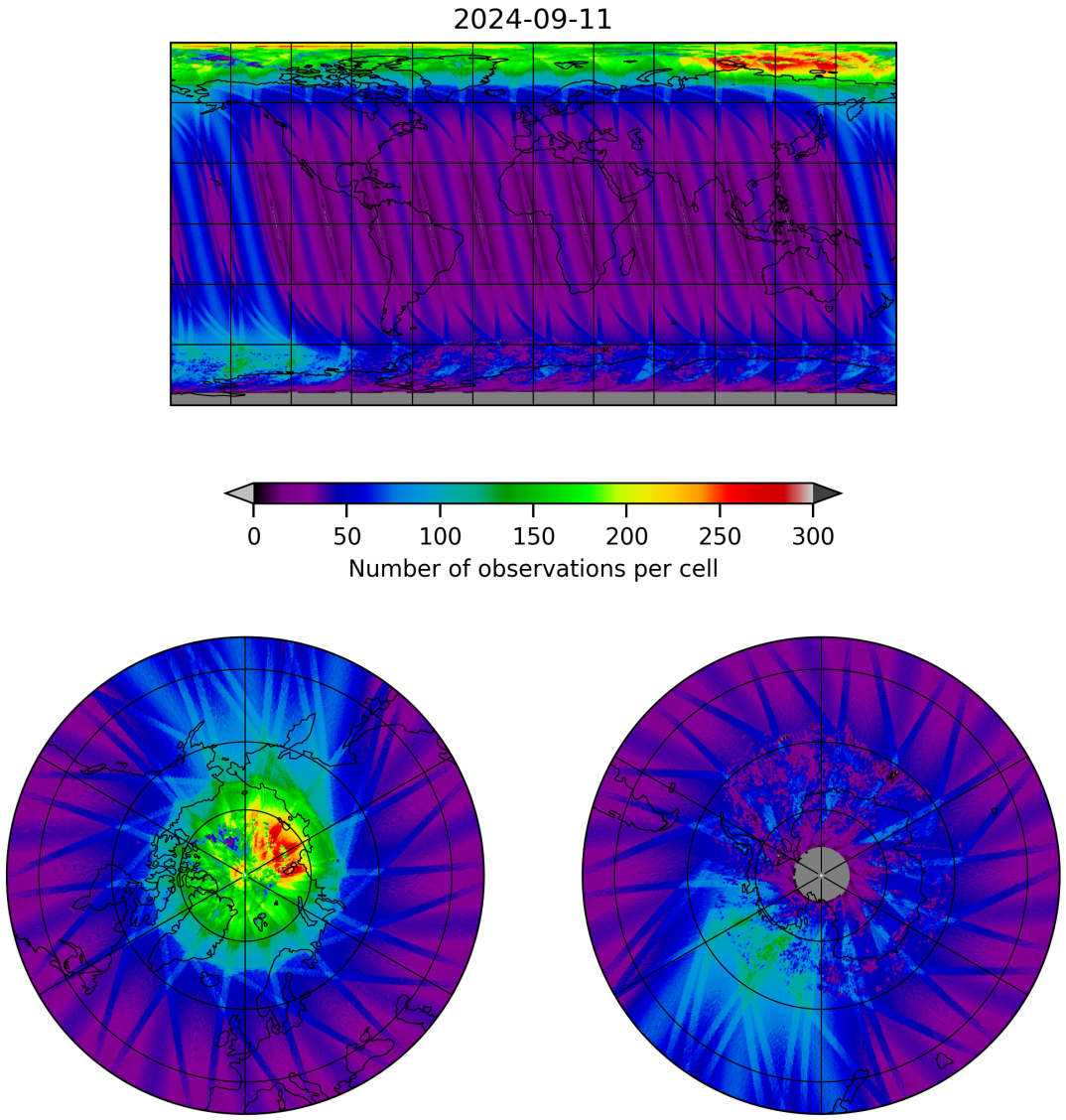

Figure 11: Map of the number of observations for 2024-09-10 to 2024-09-12

7 Zonal average

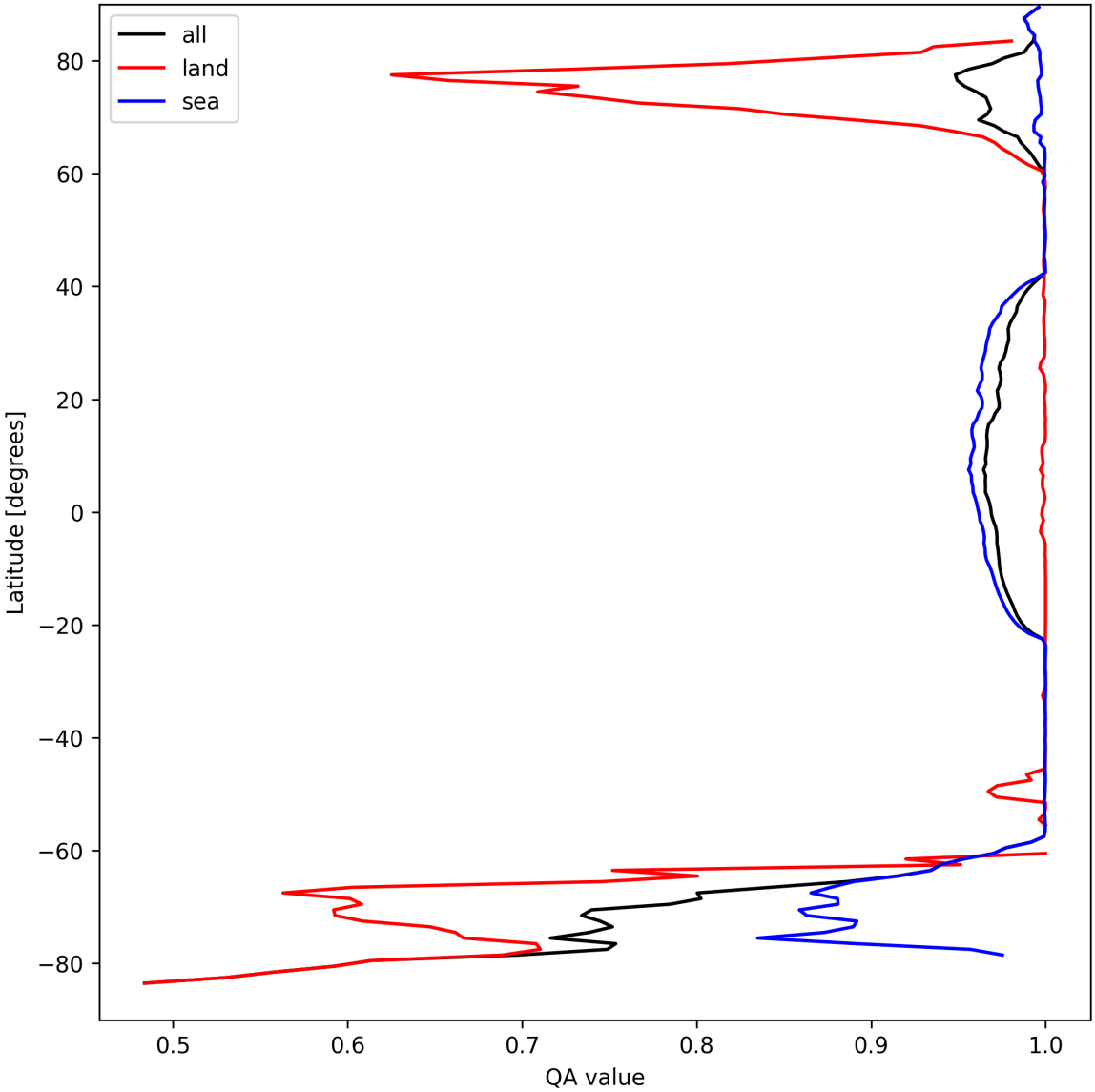

Figure 12: Zonal average of “QA value” for 2024-09-10 to 2024-09-12.

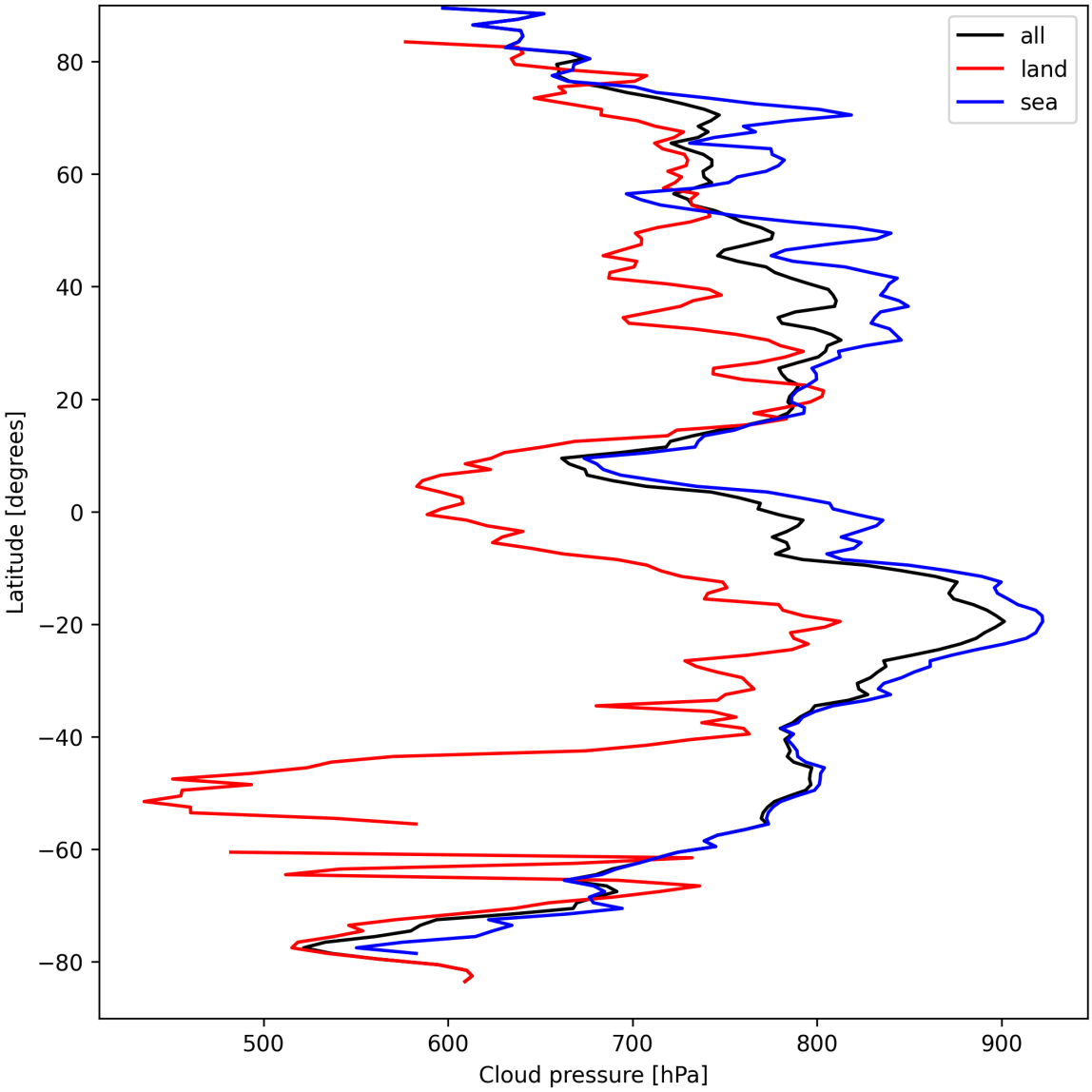

Figure 13: Zonal average of “Cloud pressure” for 2024-09-10 to 2024-09-12.

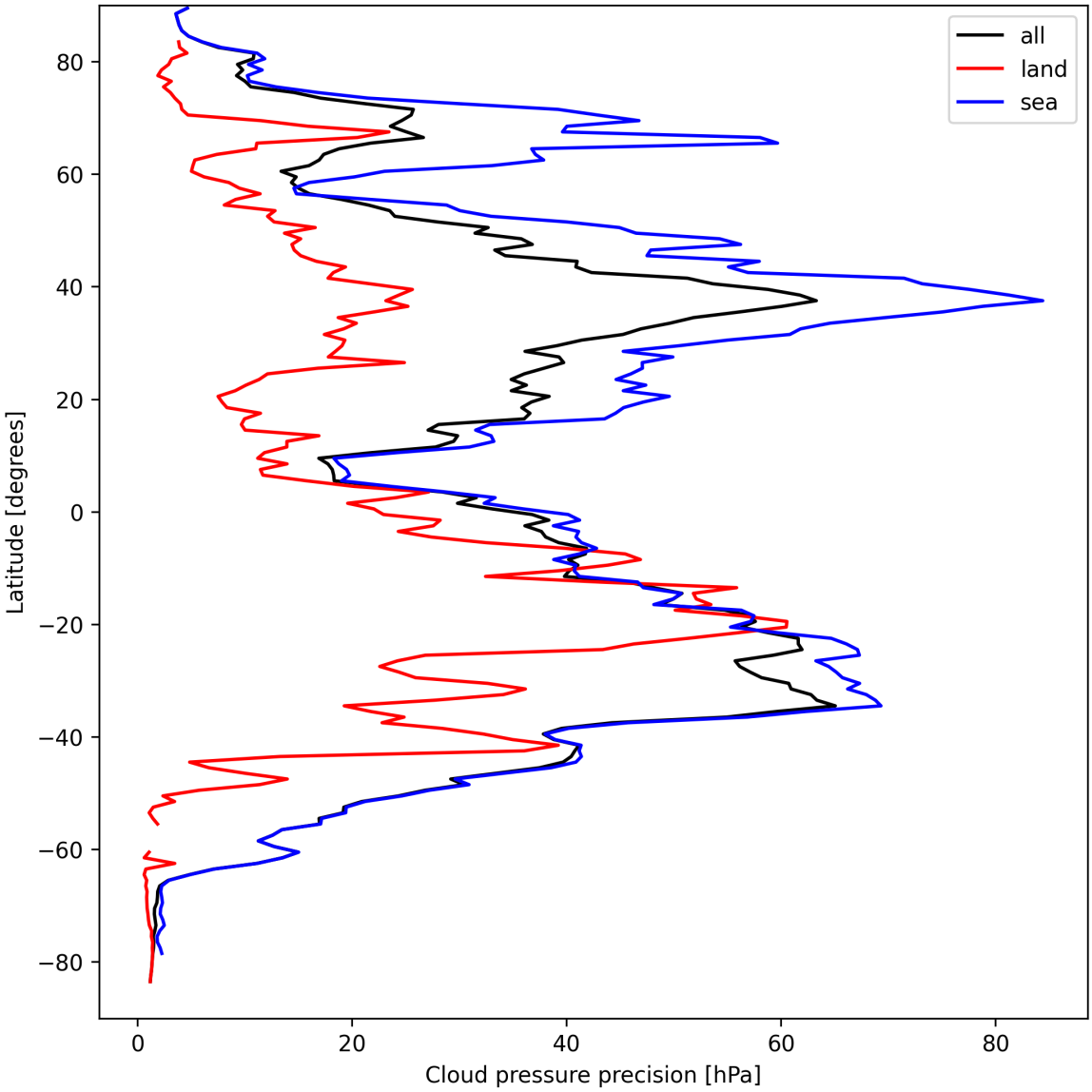

Figure 14: Zonal average of “Cloud pressure precision” for 2024-09-10 to 2024-09-12.

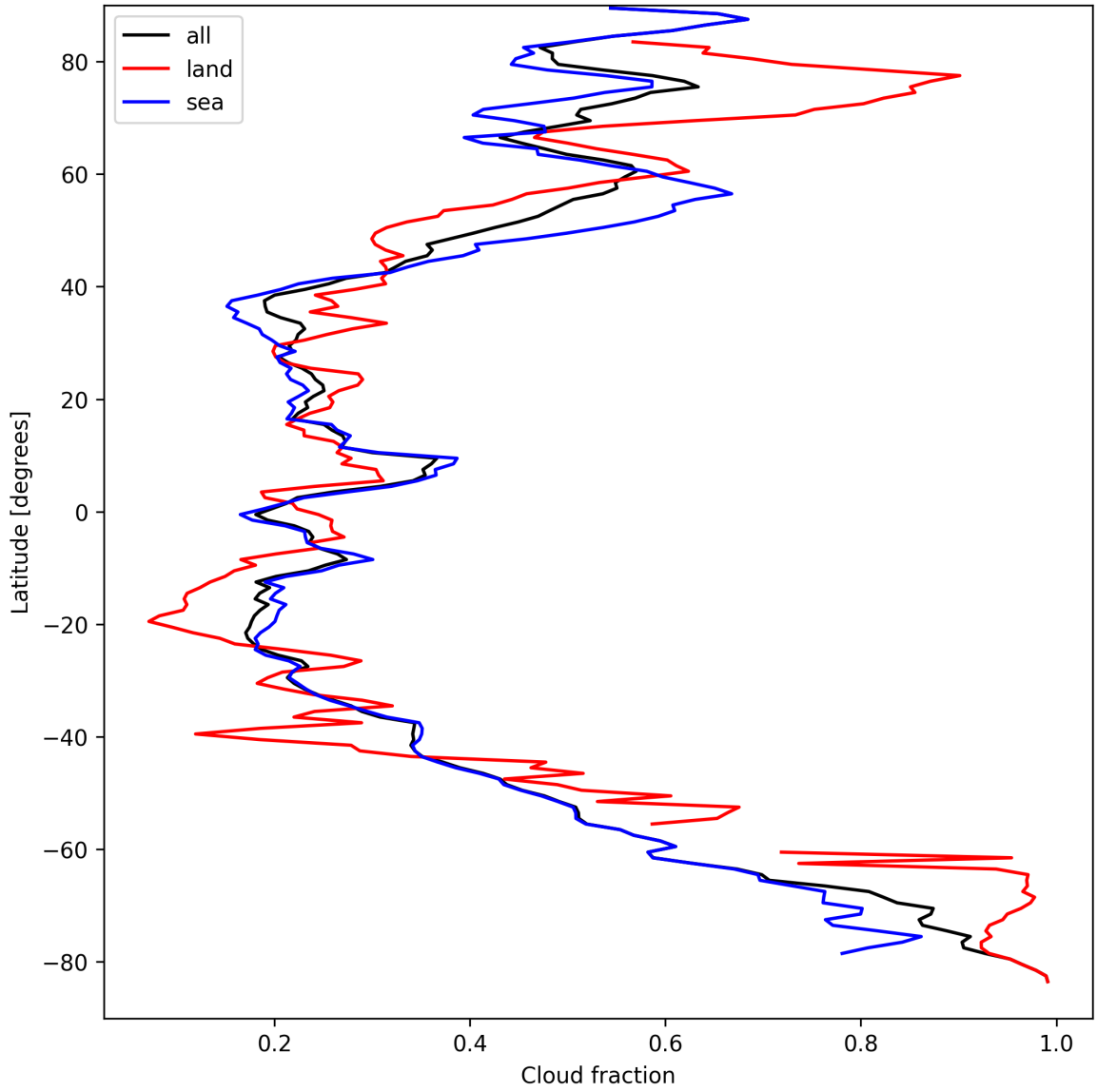

Figure 15: Zonal average of “Cloud fraction” for 2024-09-10 to 2024-09-12.

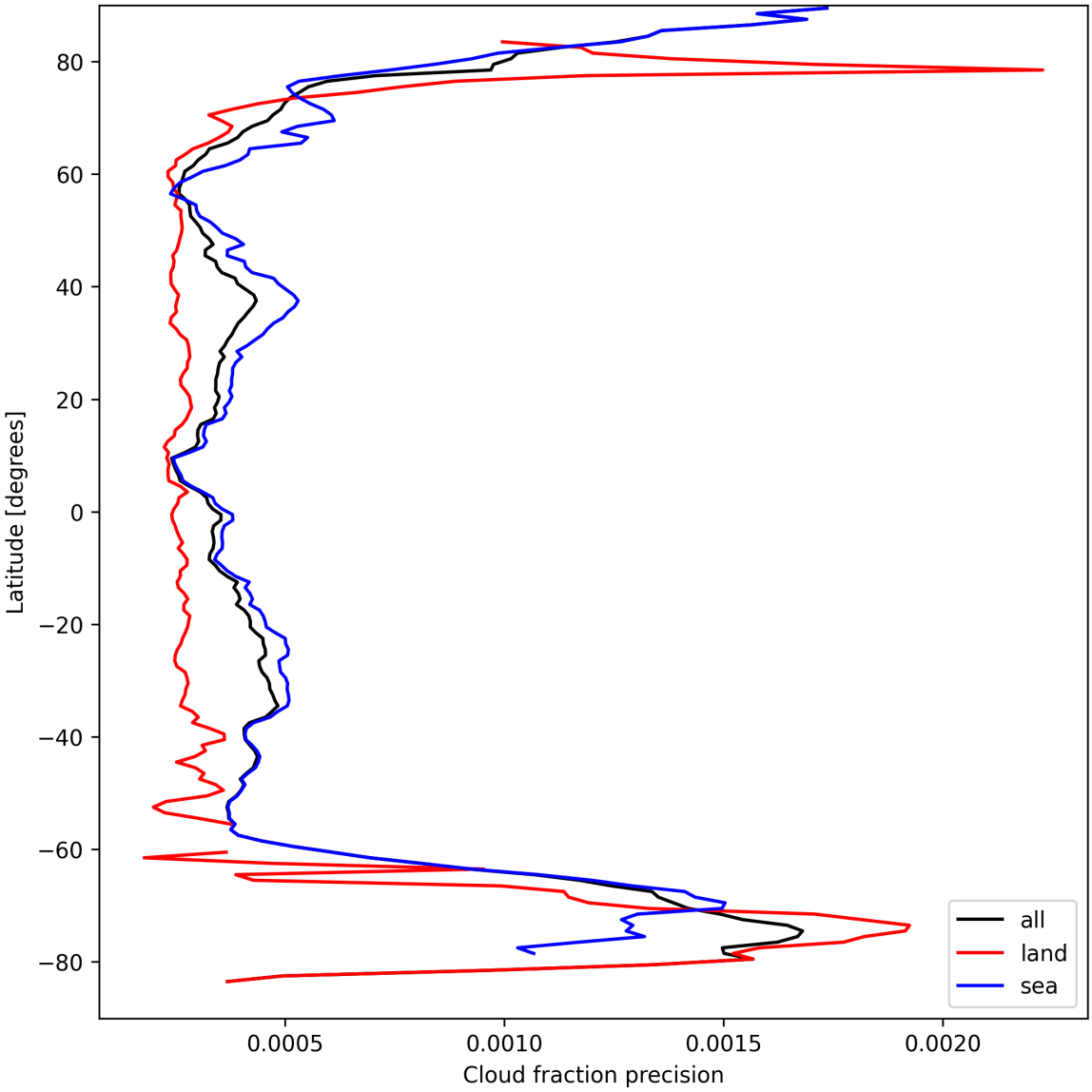

Figure 16: Zonal average of “Cloud fraction precision” for 2024-09-10 to 2024-09-12.

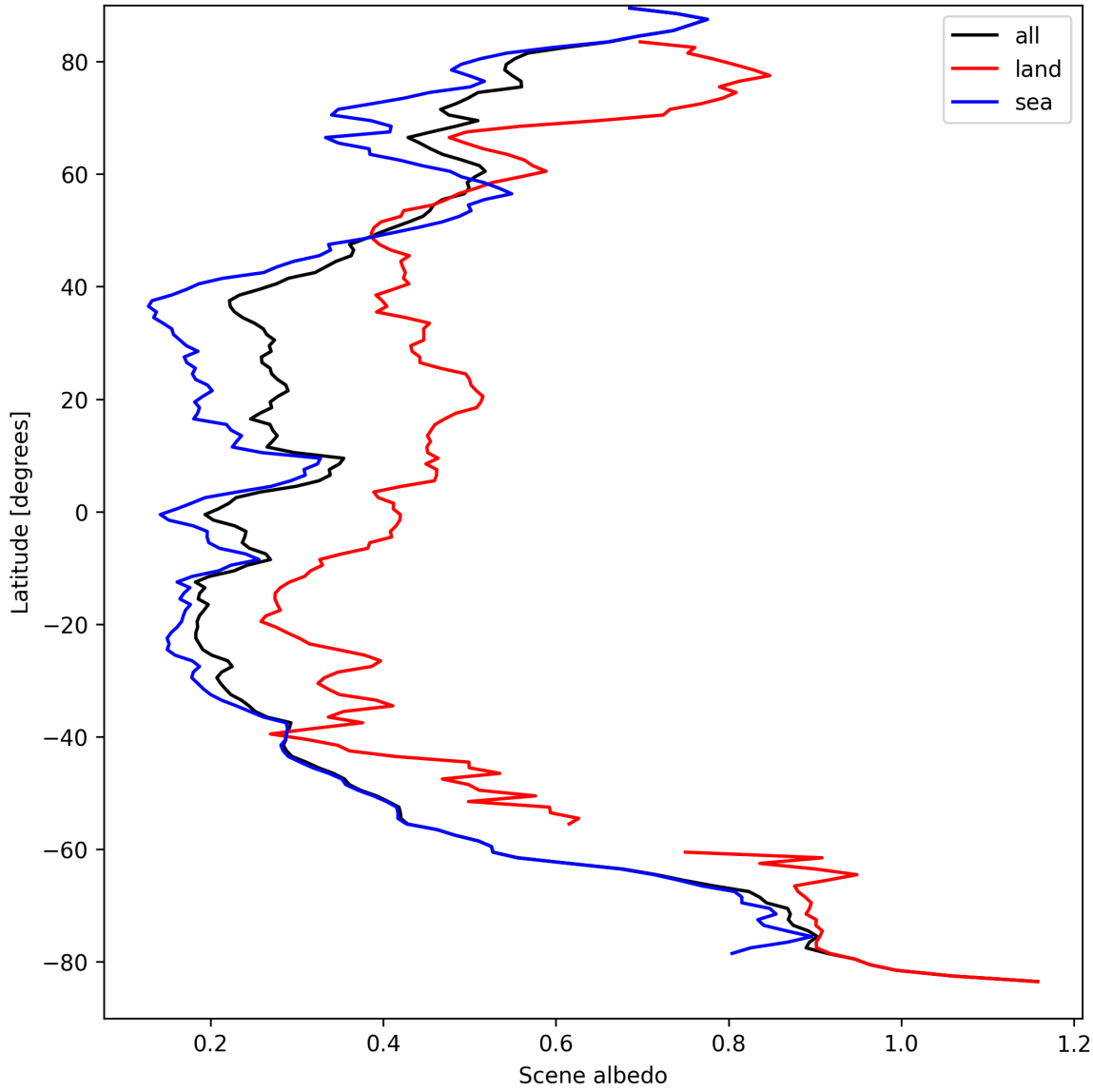

Figure 17: Zonal average of “Scene albedo” for 2024-09-10 to 2024-09-12.

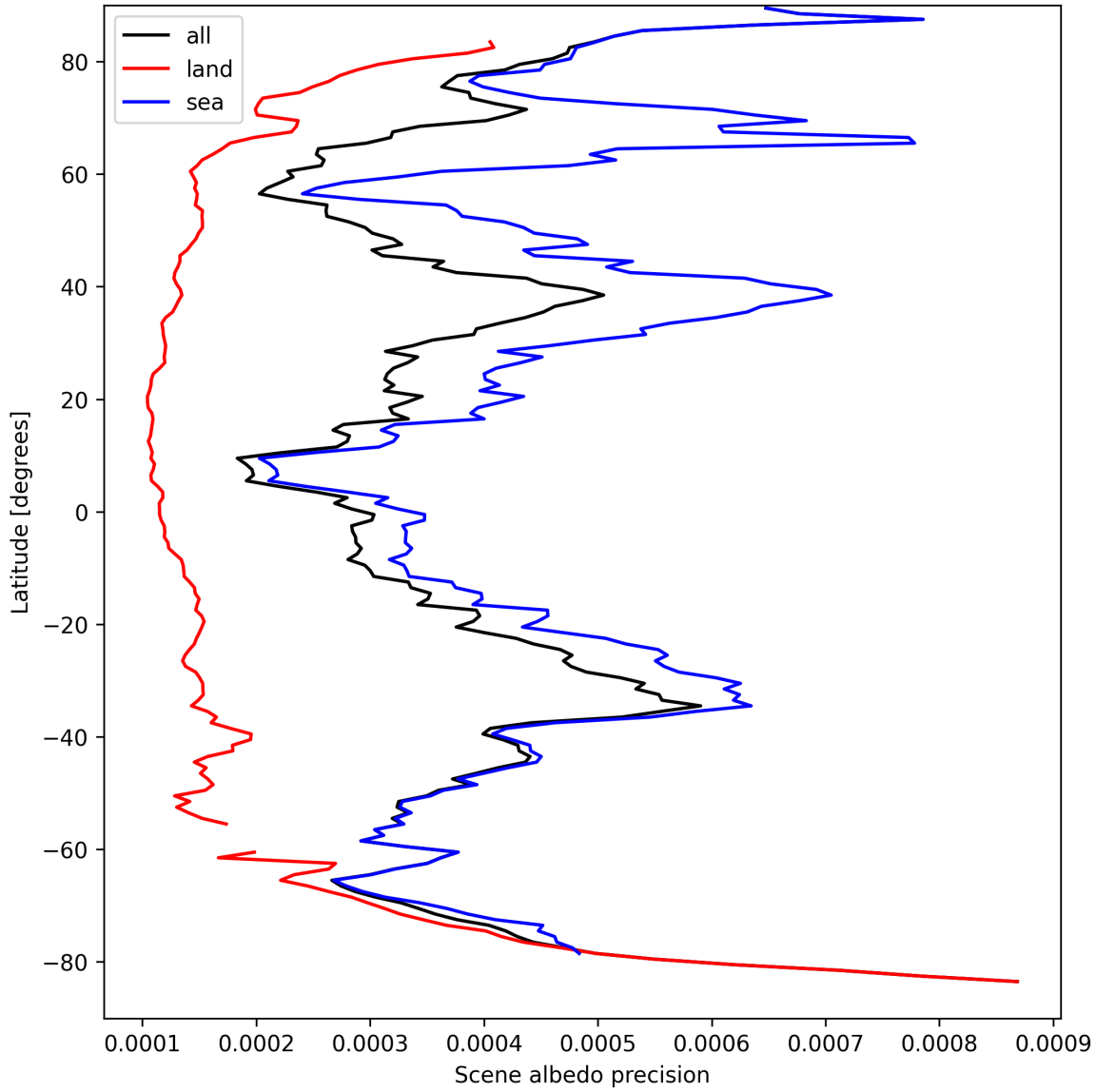

Figure 18: Zonal average of “Scene albedo precision” for 2024-09-10 to 2024-09-12.

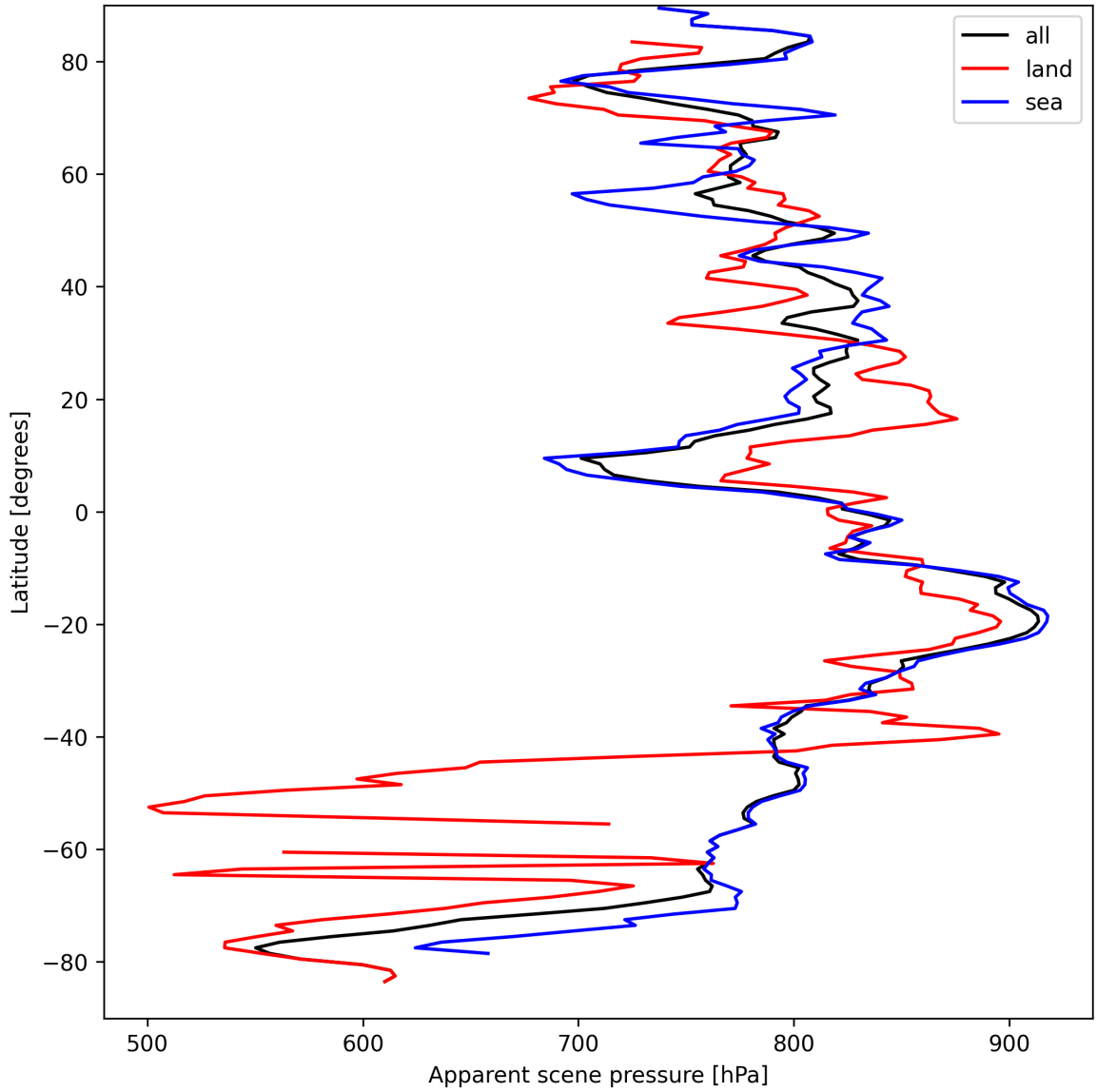

Figure 19: Zonal average of “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

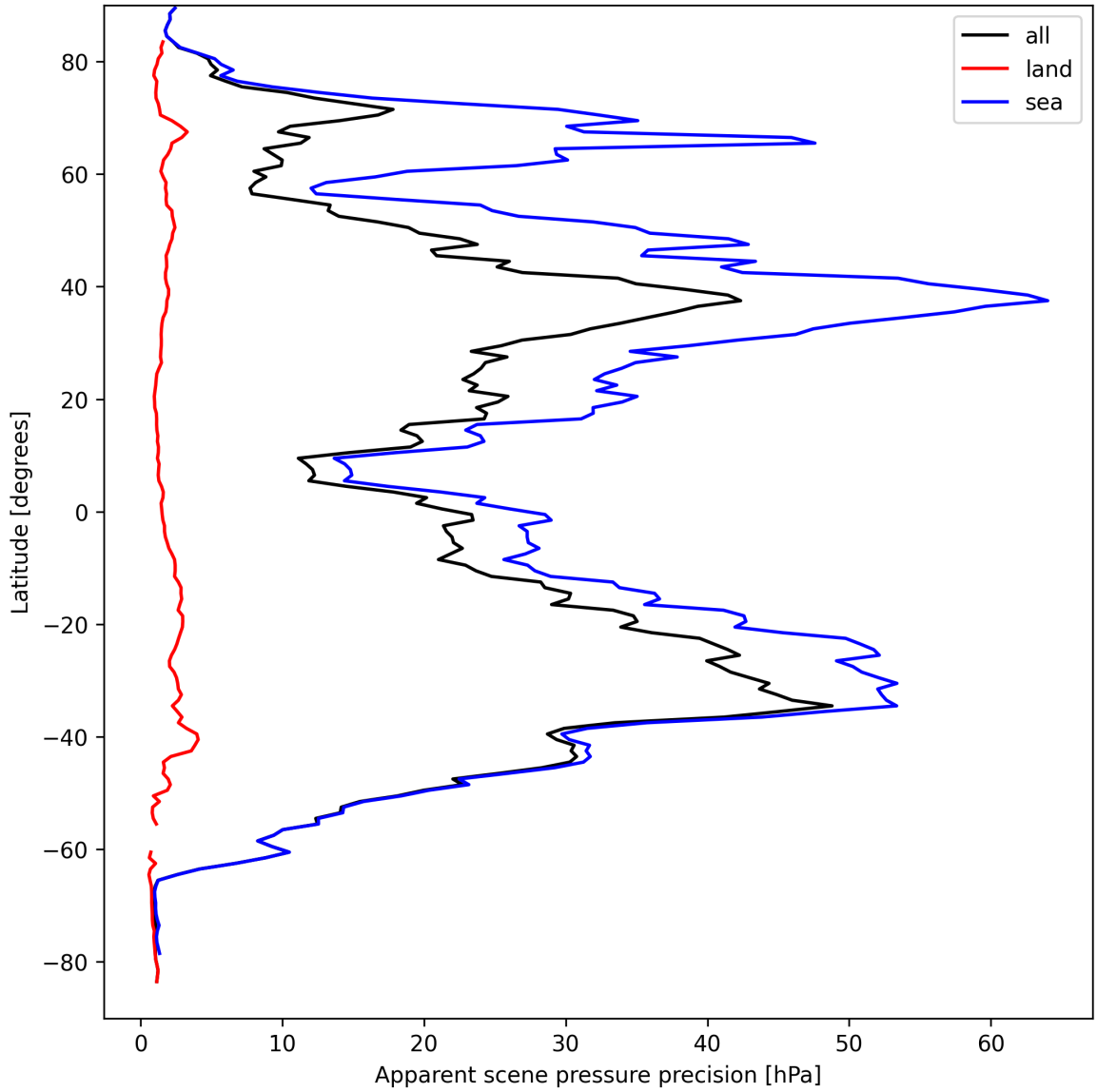

Figure 20: Zonal average of “Apparent scene pressure precision” for 2024-09-10 to 2024-09-12.

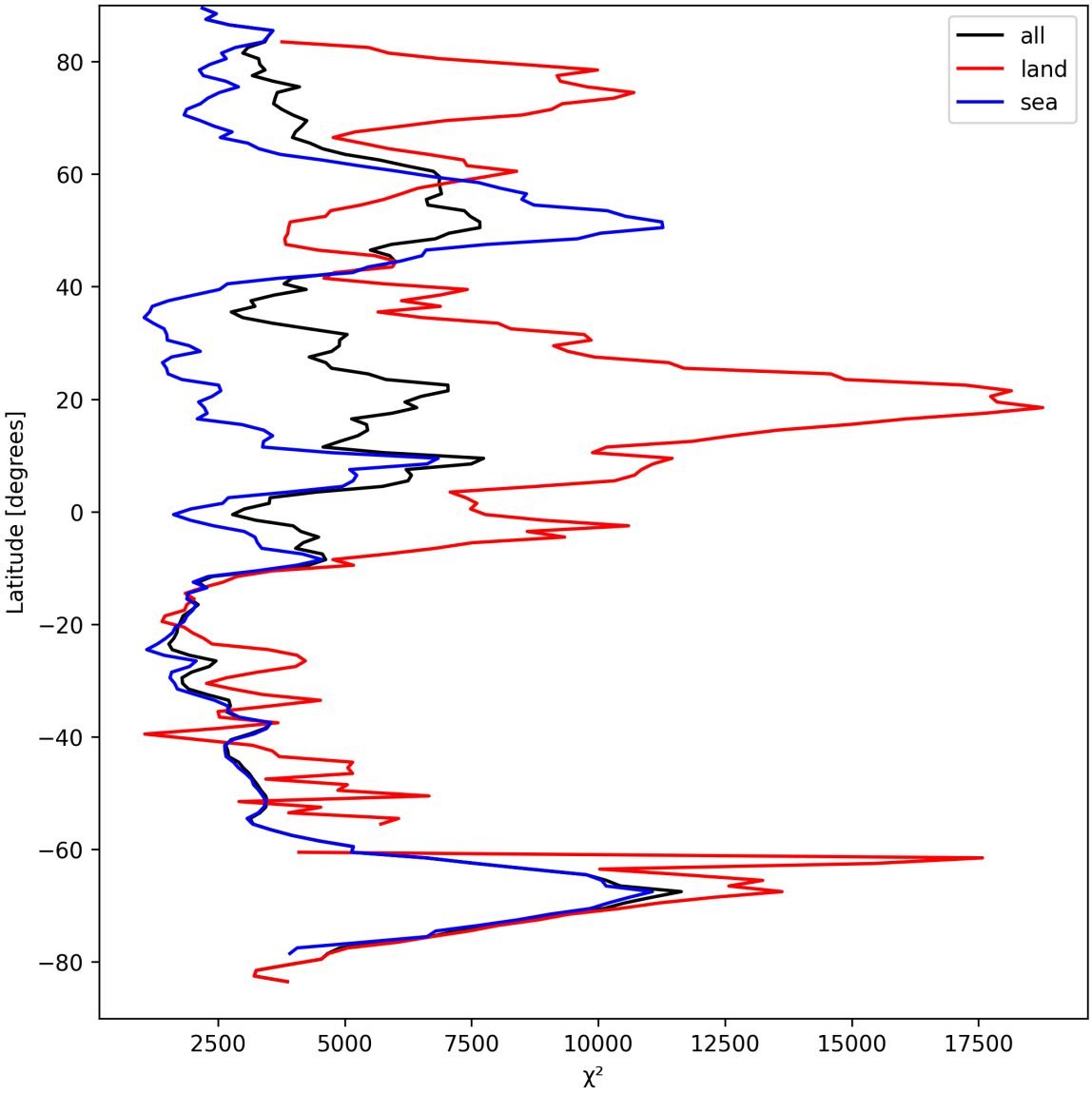

Figure 21: Zonal average of "χ^2" for 2024-09-10 to 2024-09-12.

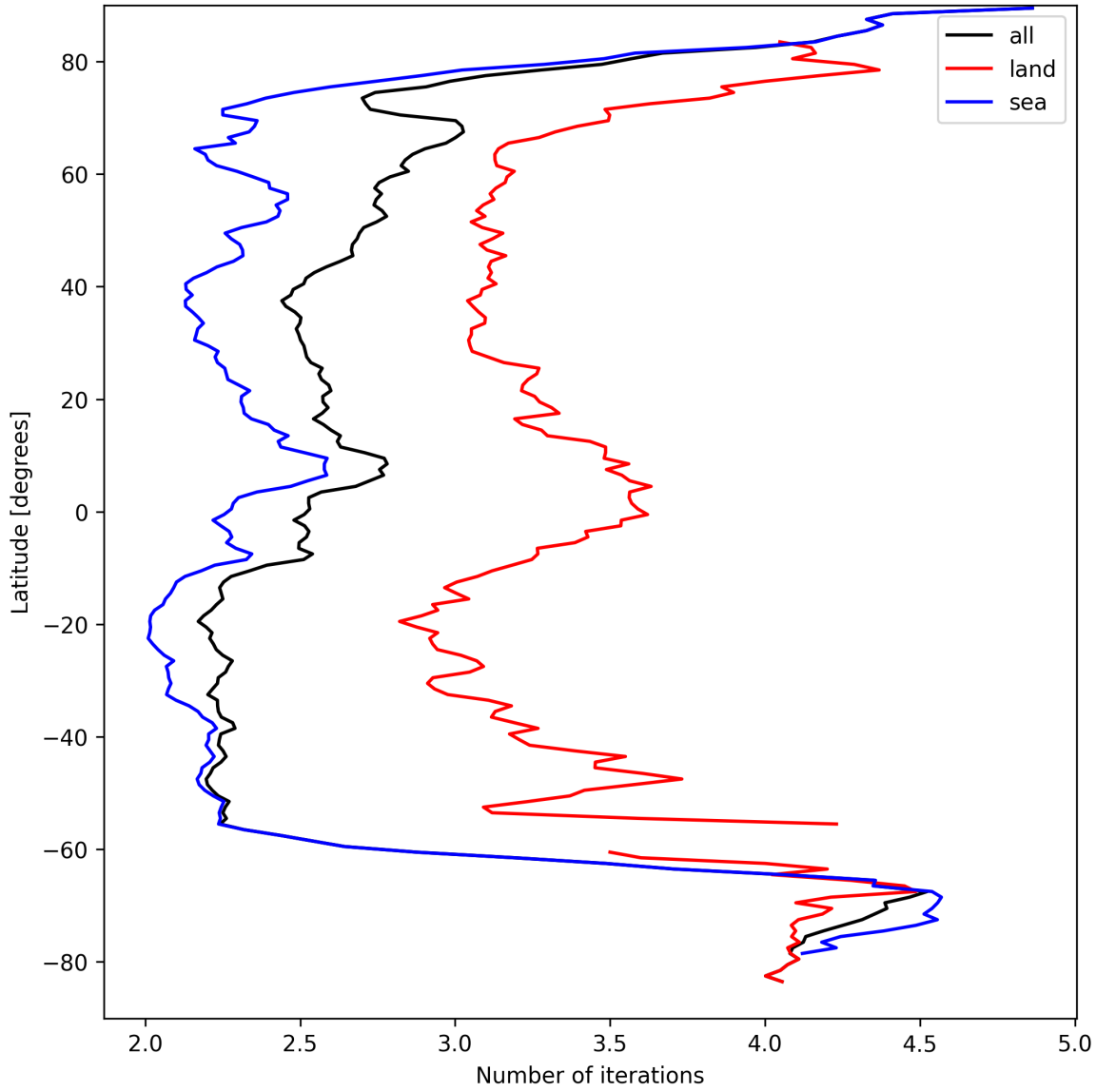

Figure 22: Zonal average of “Number of iterations” for 2024-09-10 to 2024-09-12.

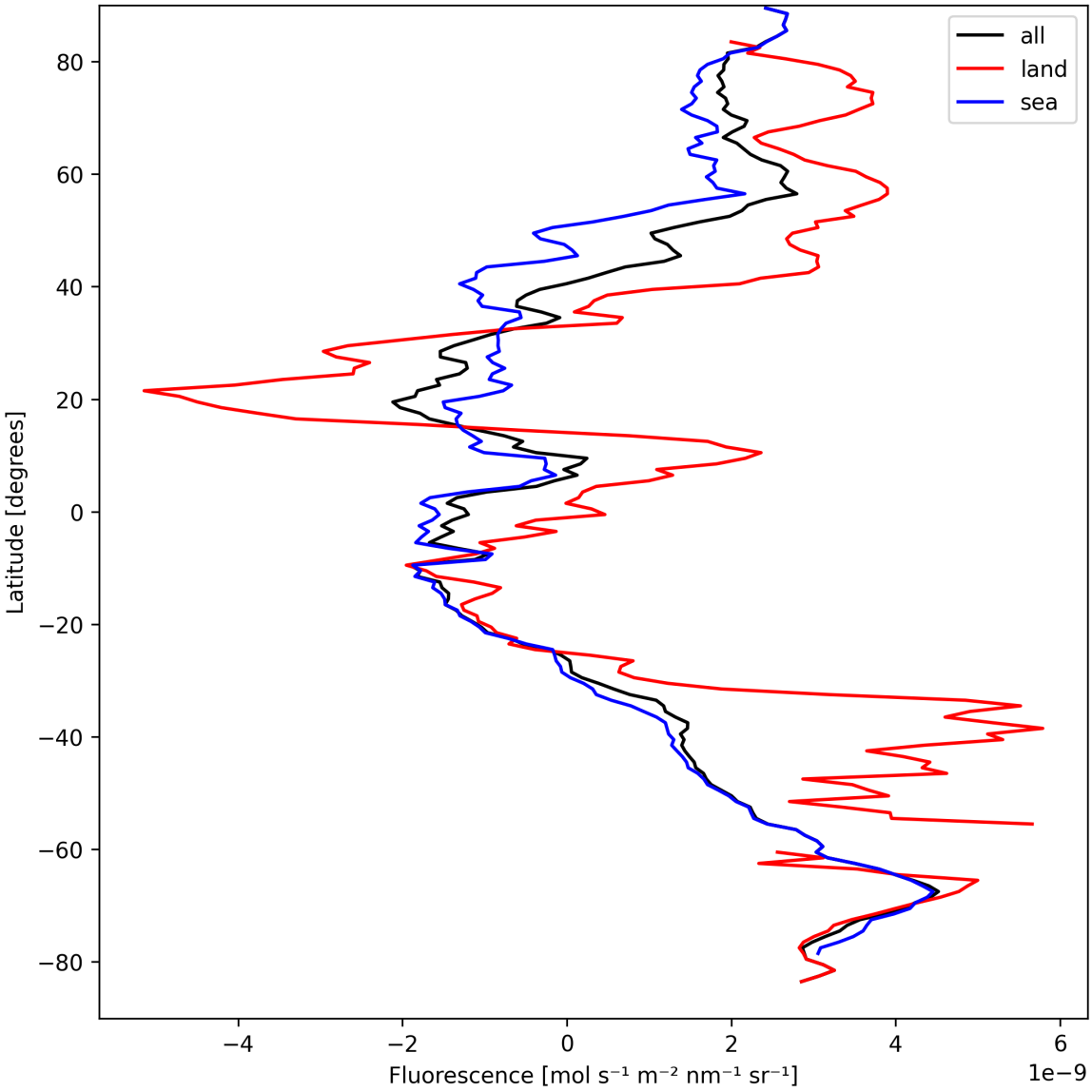

Figure 23: Zonal average of “Fluorescence” for 2024-09-10 to 2024-09-12.

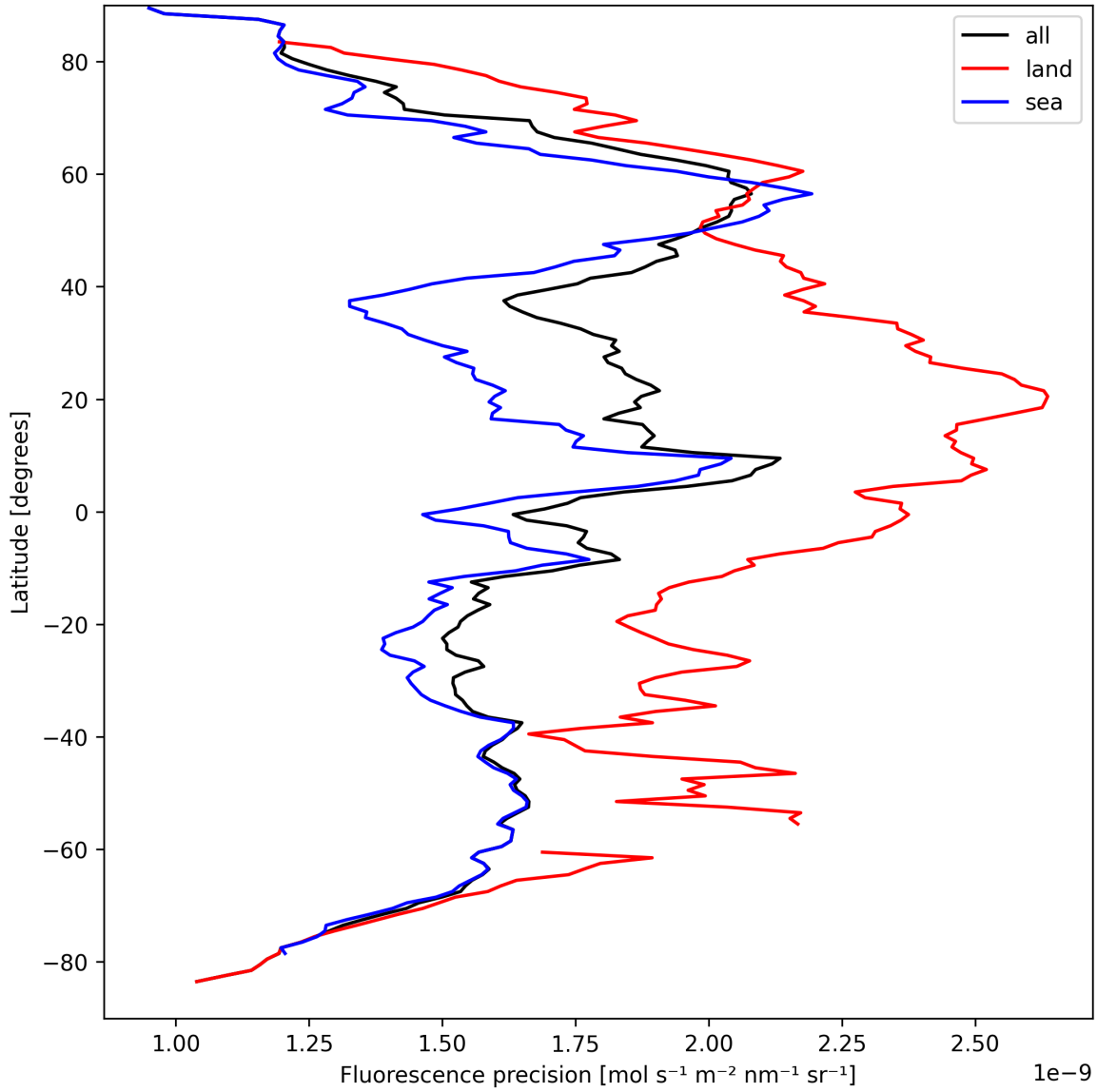

Figure 24: Zonal average of “Fluorescence precision” for 2024-09-10 to 2024-09-12.

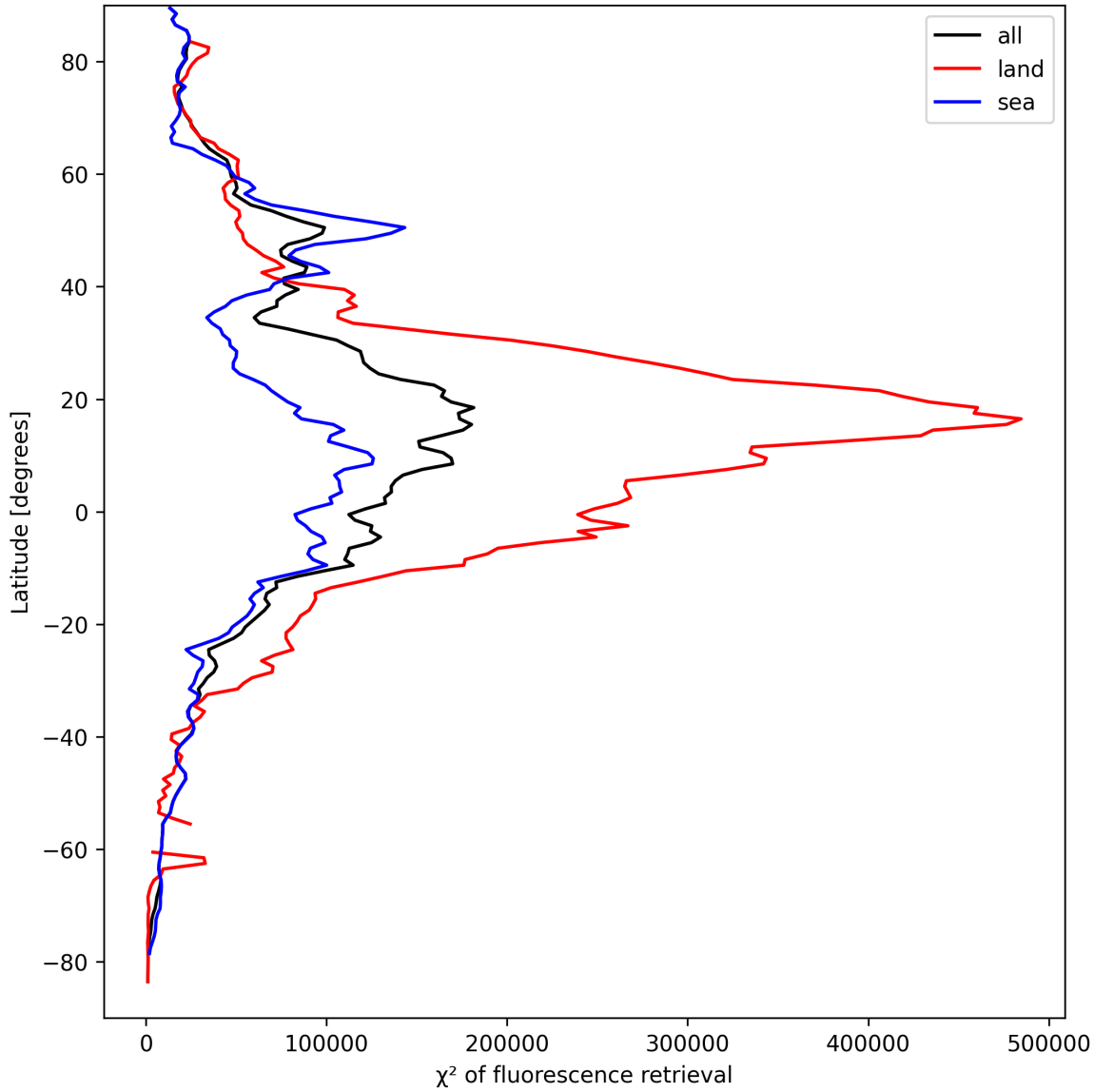

Figure 25: Zonal average of "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

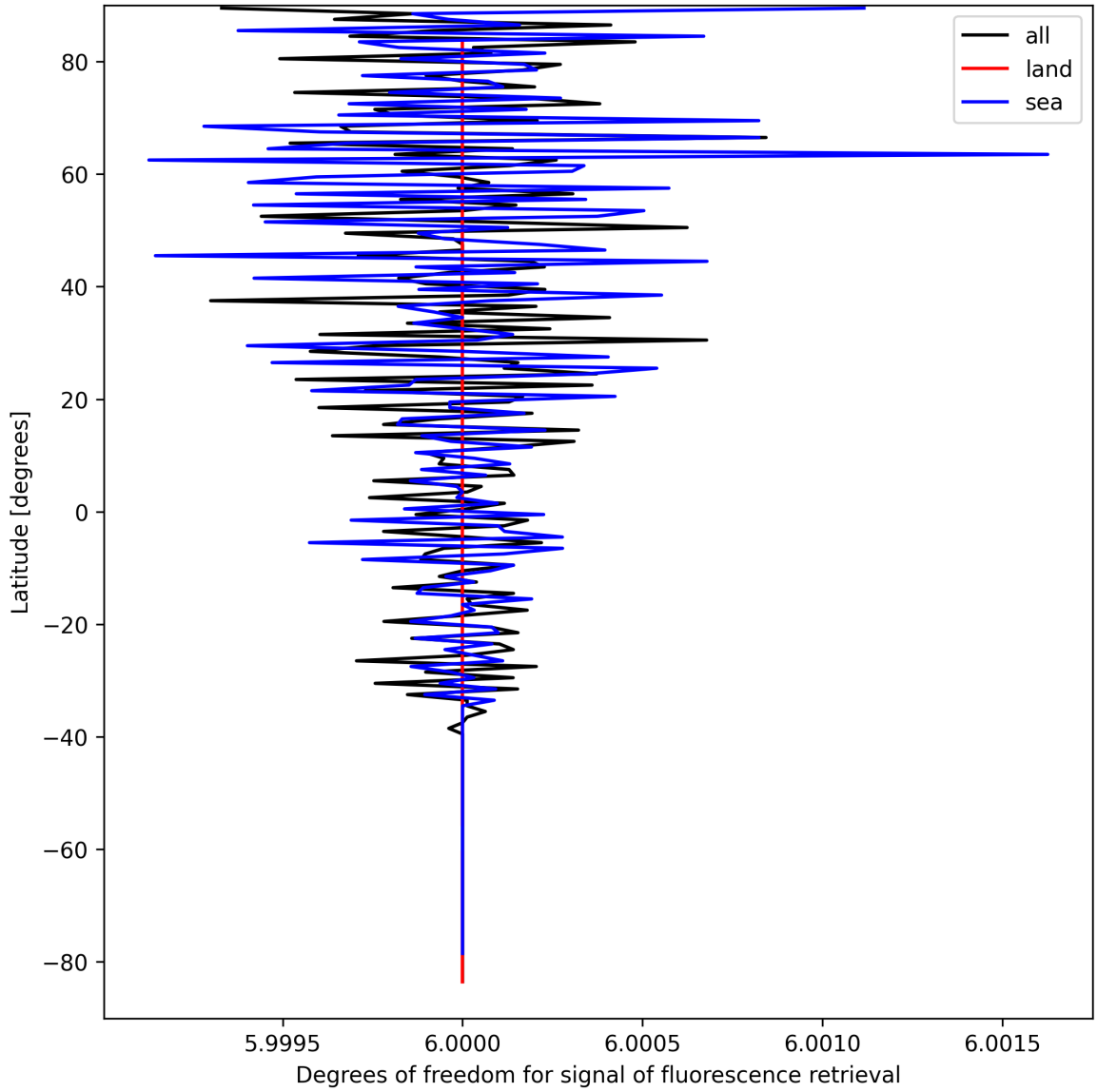

Figure 26: Zonal average of “Degrees of freedom for signal of fluorescence retrieval” for 2024-09-10 to 2024-09-12.

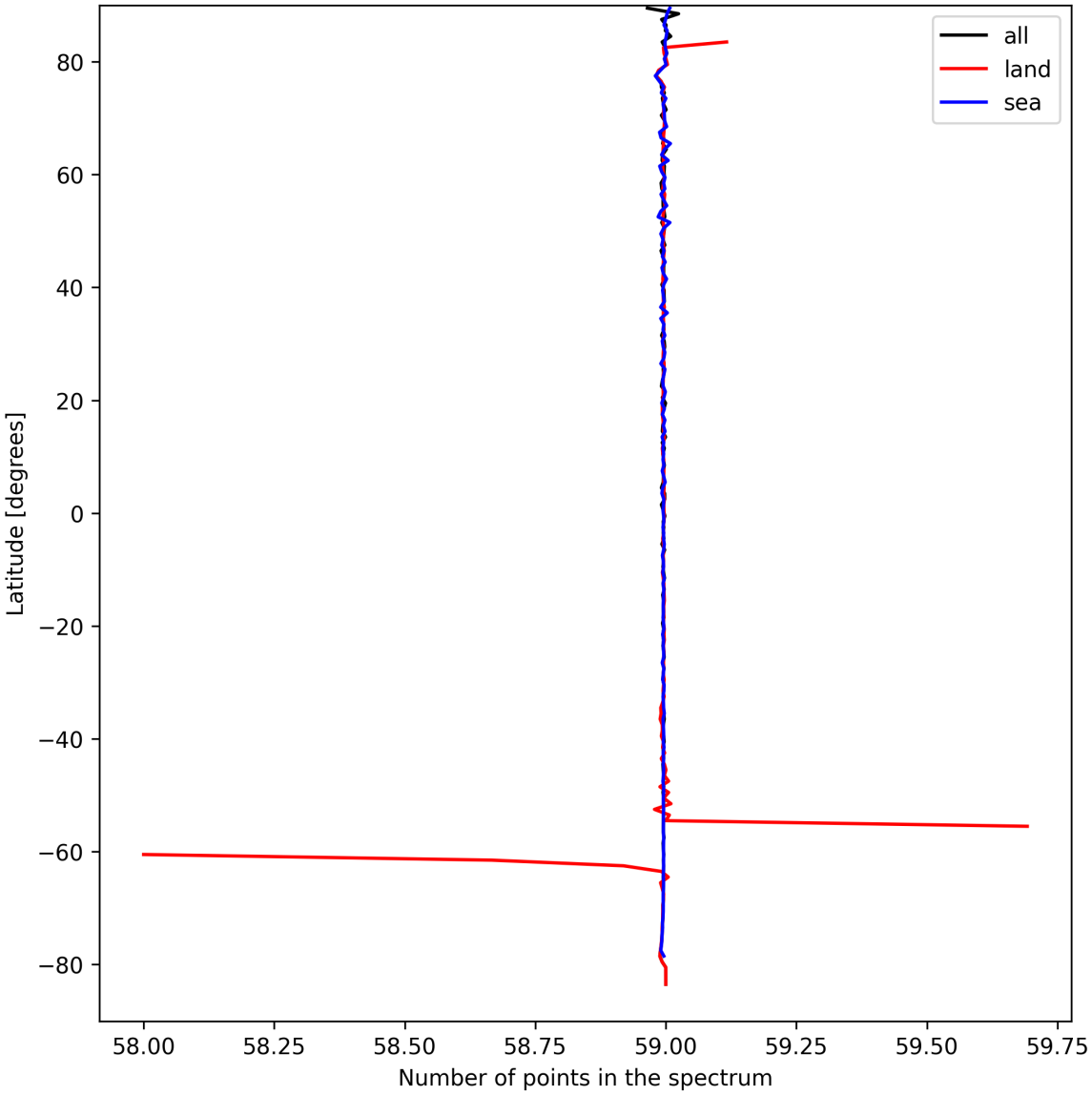

Figure 27: Zonal average of “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

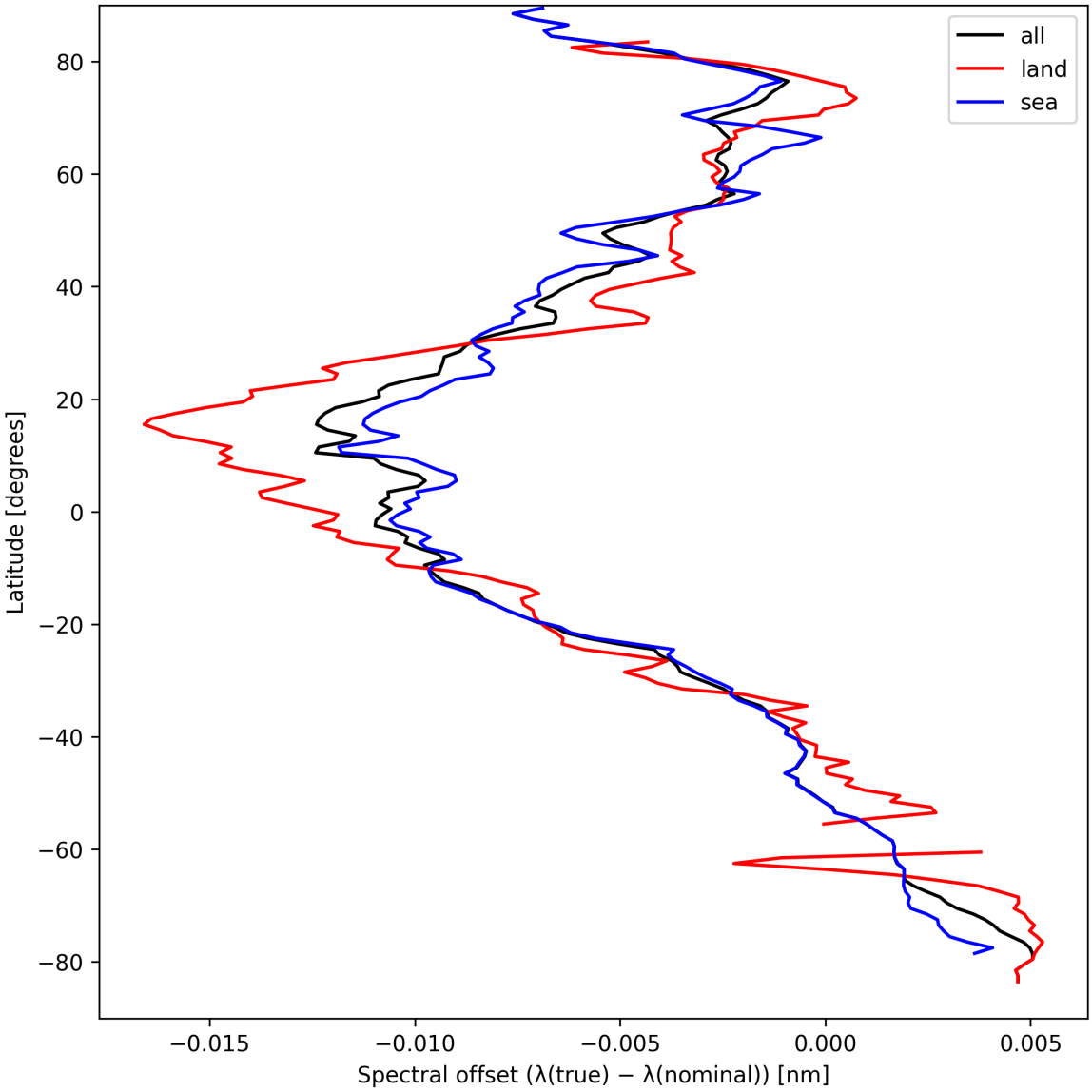

Figure 28: Zonal average of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12.

8 Histograms

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

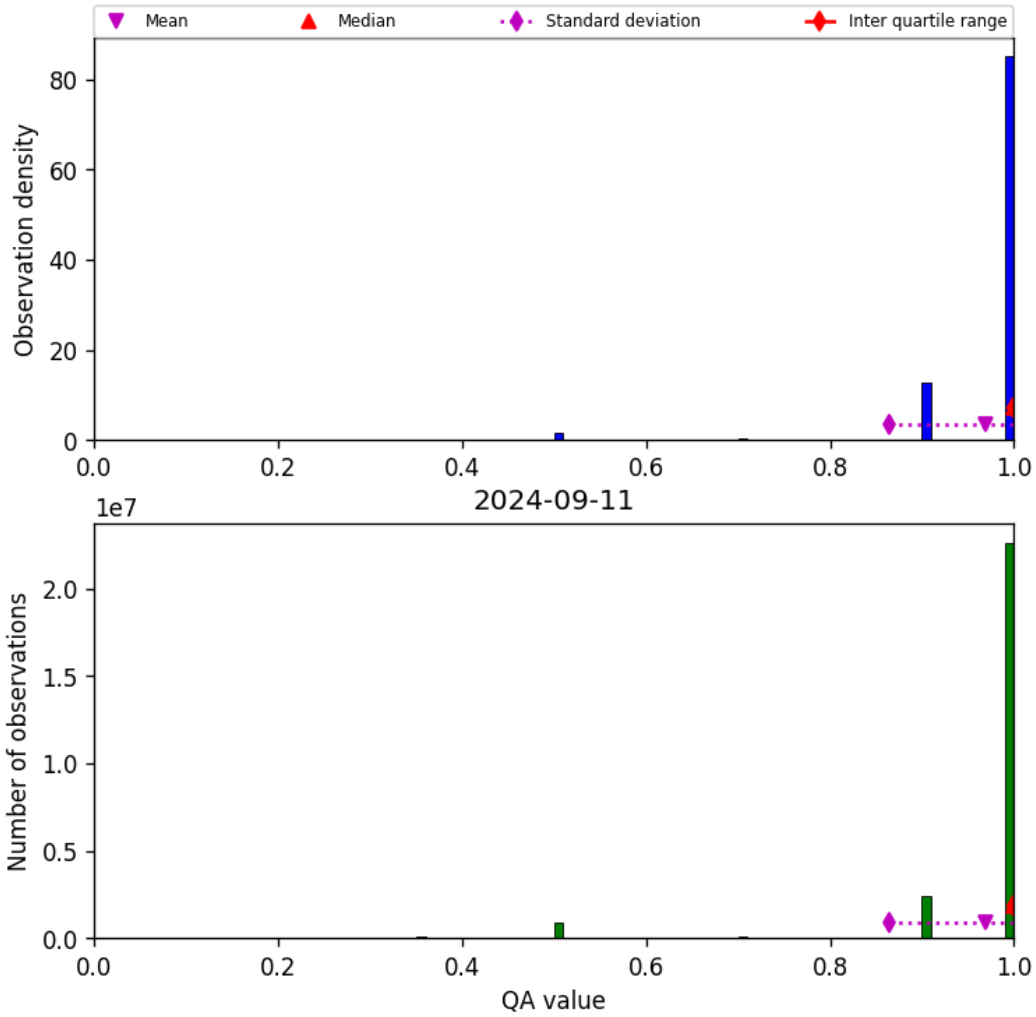

Figure 29: Histogram of “QA value” for 2024-09-10 to 2024-09-12

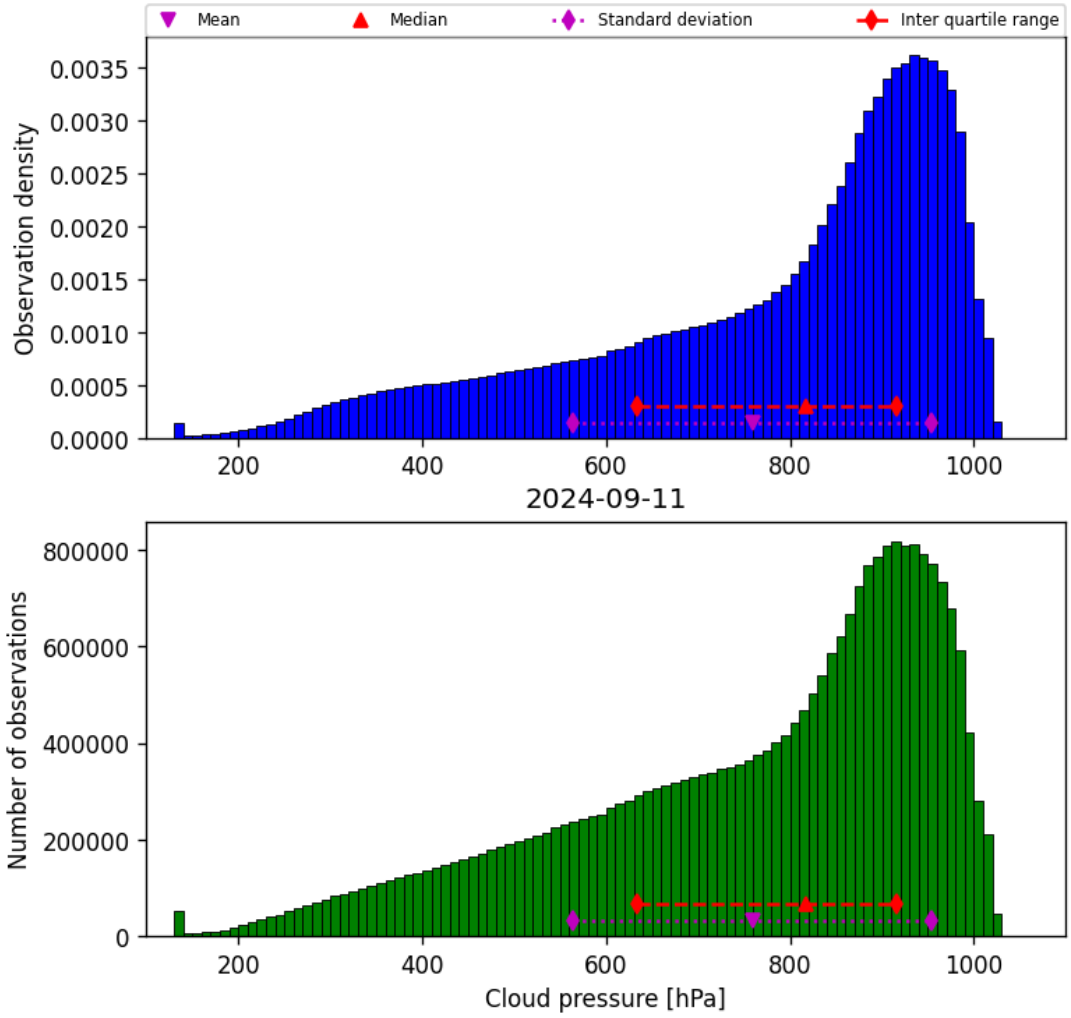

Figure 30: Histogram of “Cloud pressure” for 2024-09-10 to 2024-09-12

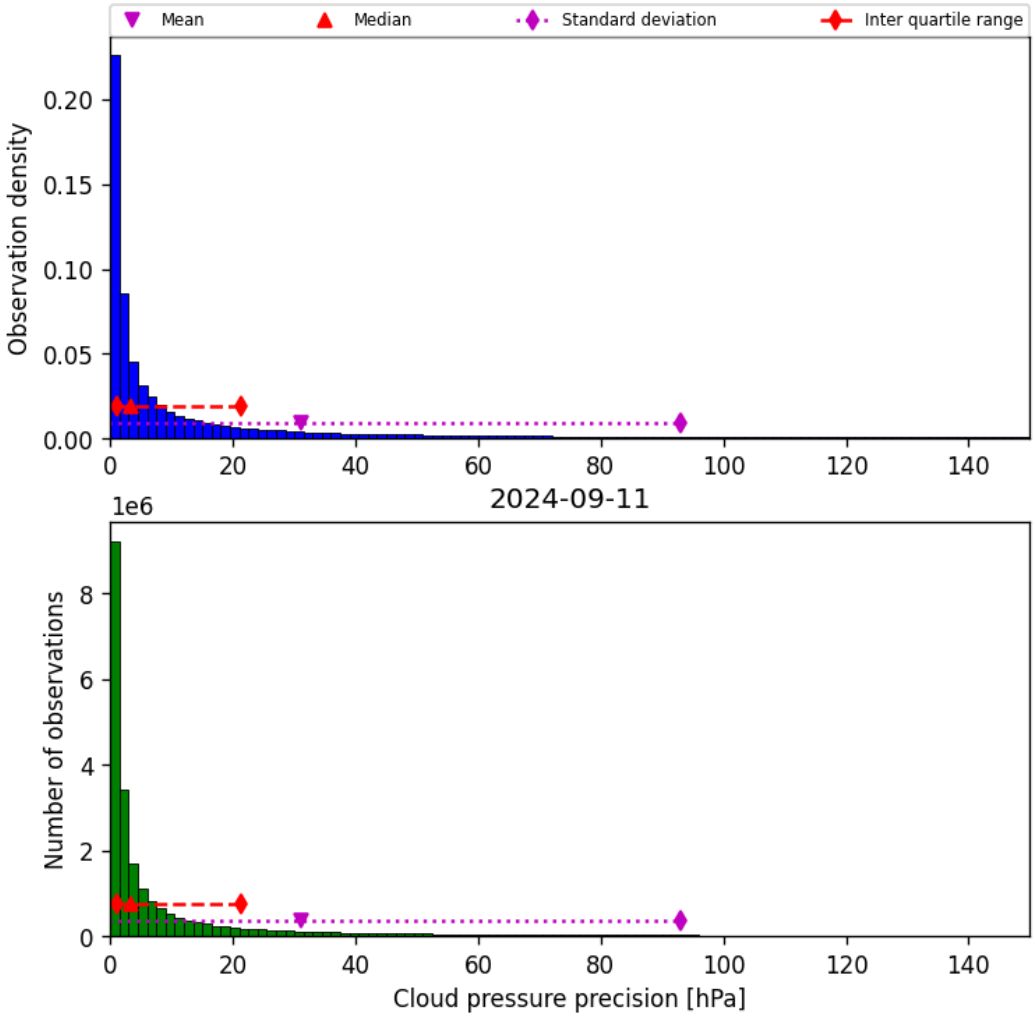

Figure 31: Histogram of “Cloud pressure precision” for 2024-09-10 to 2024-09-12

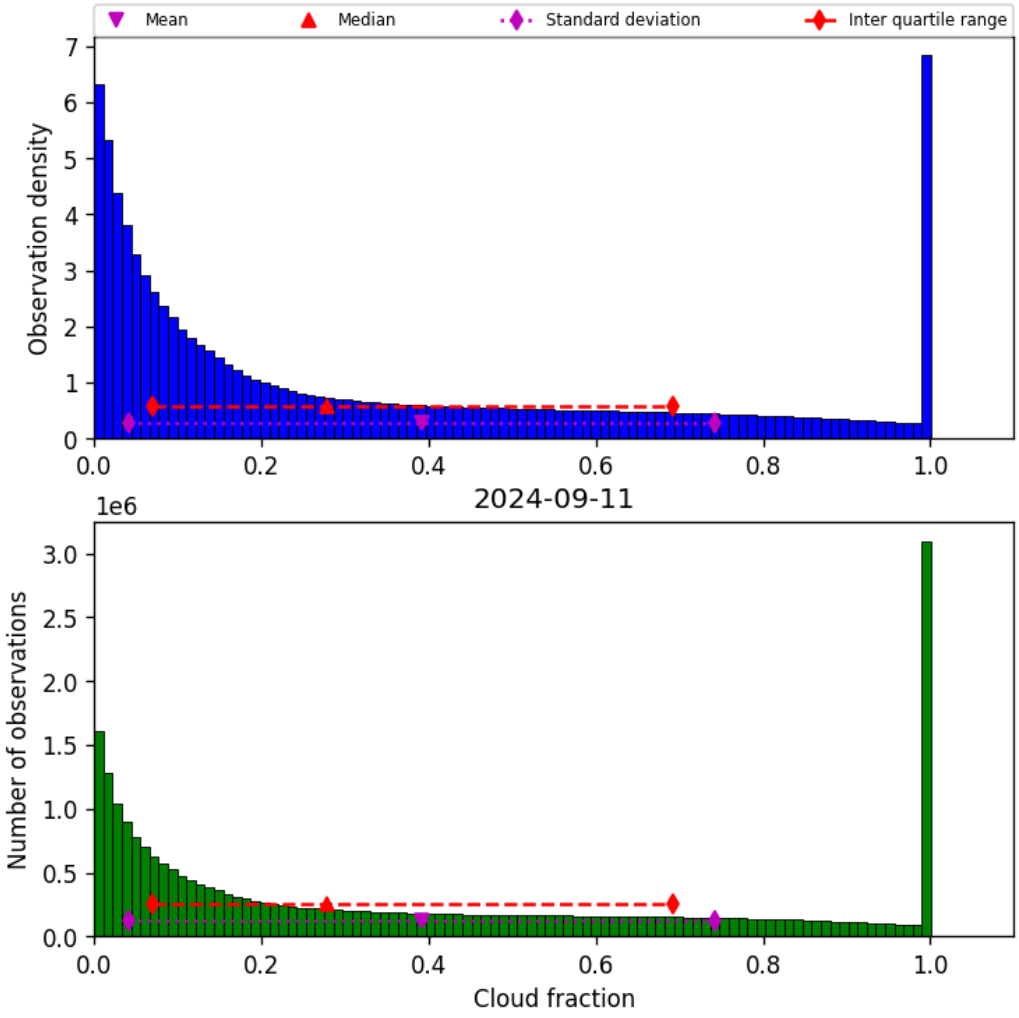

Figure 32: Histogram of “Cloud fraction” for 2024-09-10 to 2024-09-12

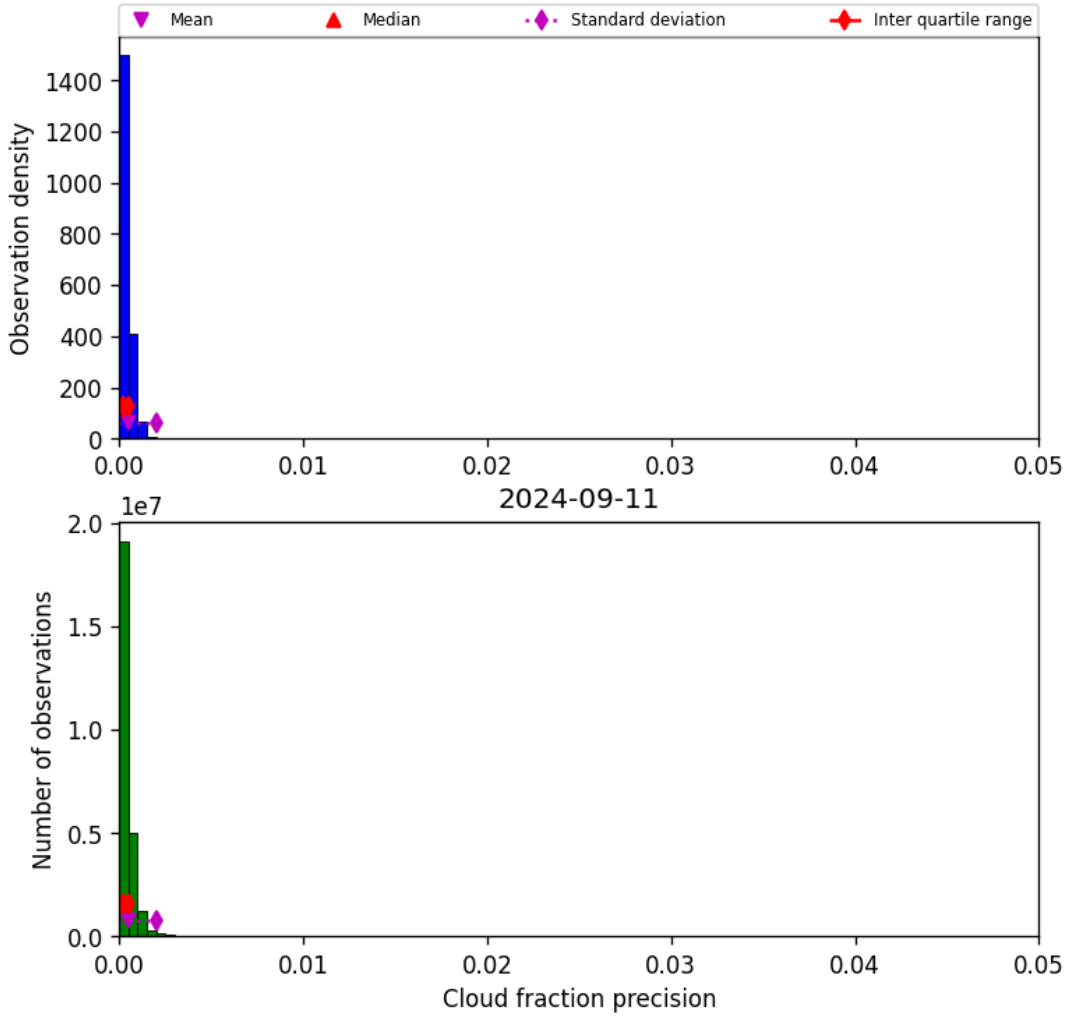

Figure 33: Histogram of “Cloud fraction precision” for 2024-09-10 to 2024-09-12

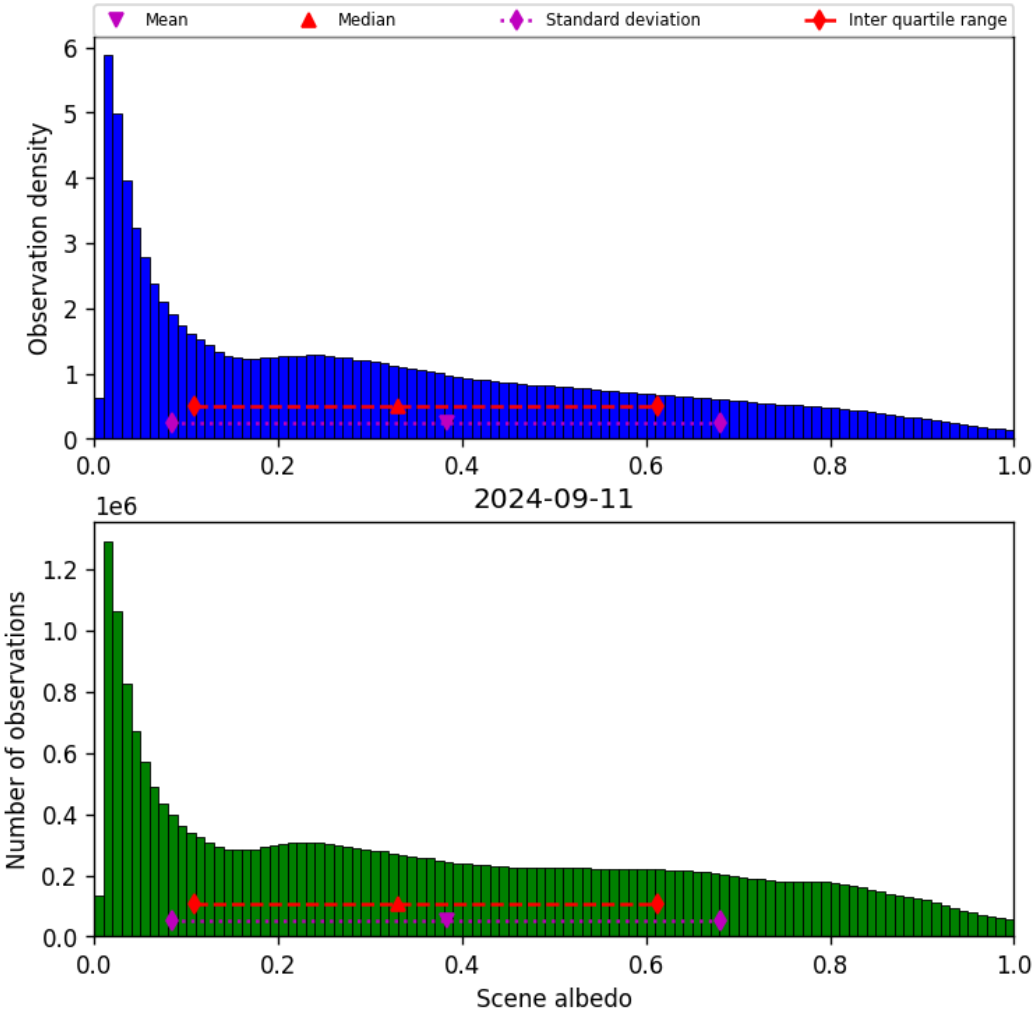

Figure 34: Histogram of “Scene albedo” for 2024-09-10 to 2024-09-12

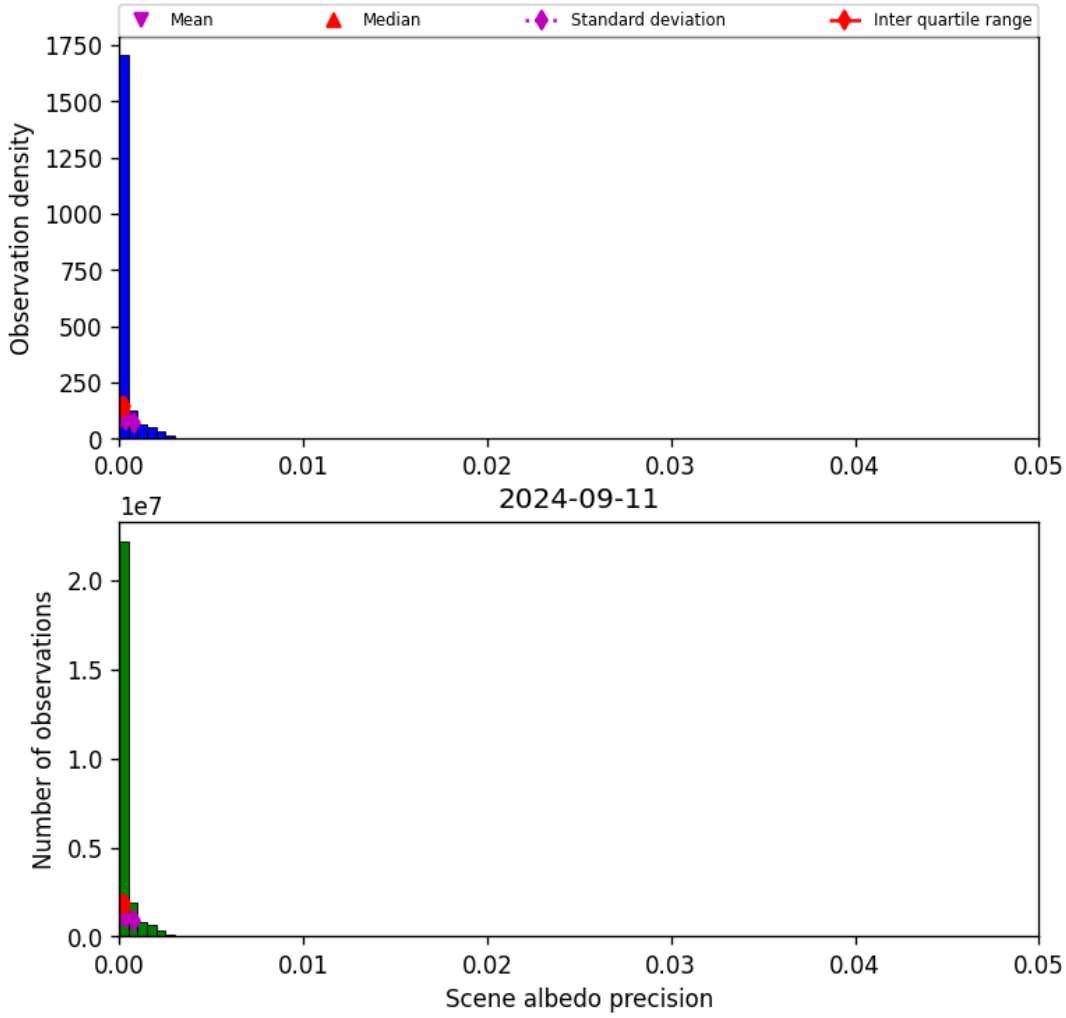

Figure 35: Histogram of “Scene albedo precision” for 2024-09-10 to 2024-09-12

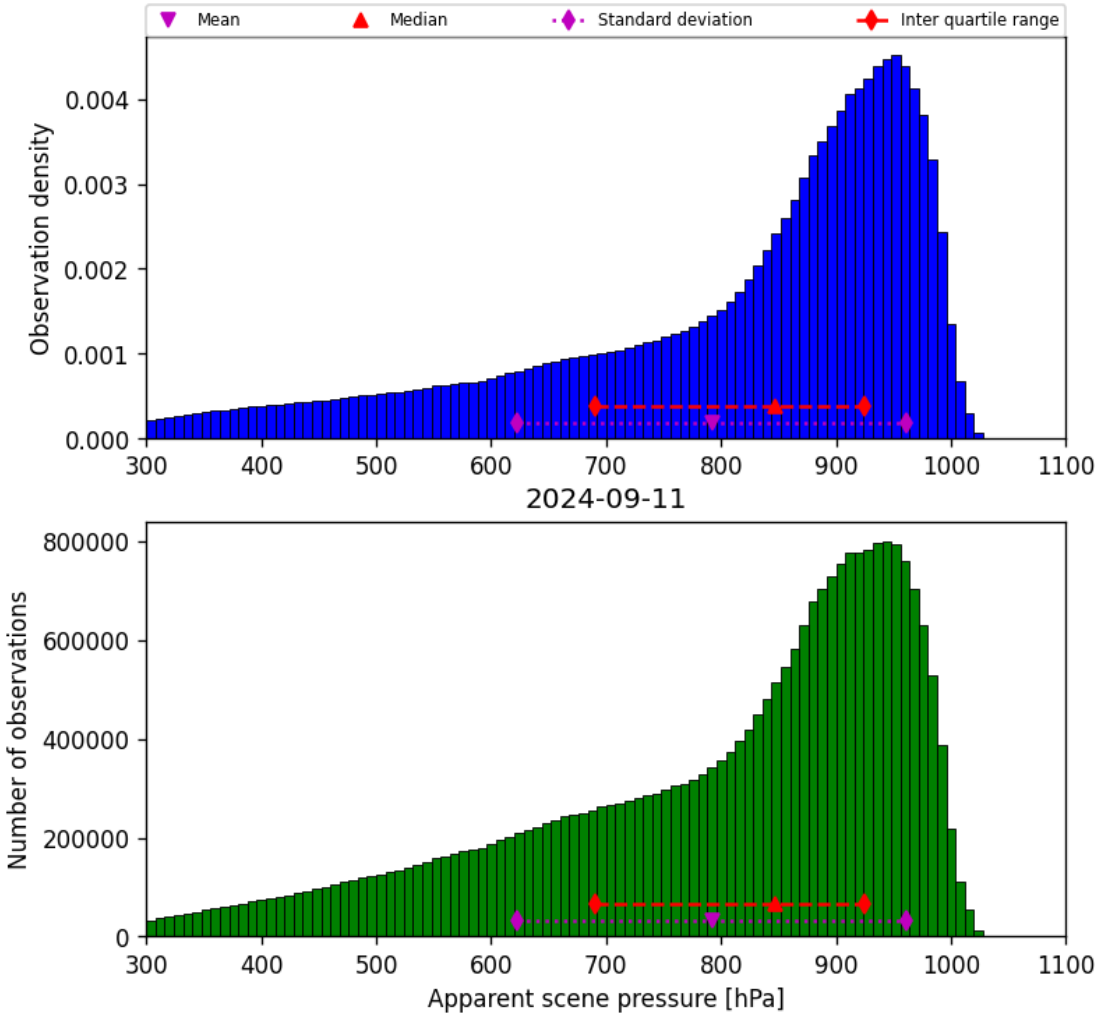

Figure 36: Histogram of “Apparent scene pressure” for 2024-09-10 to 2024-09-12

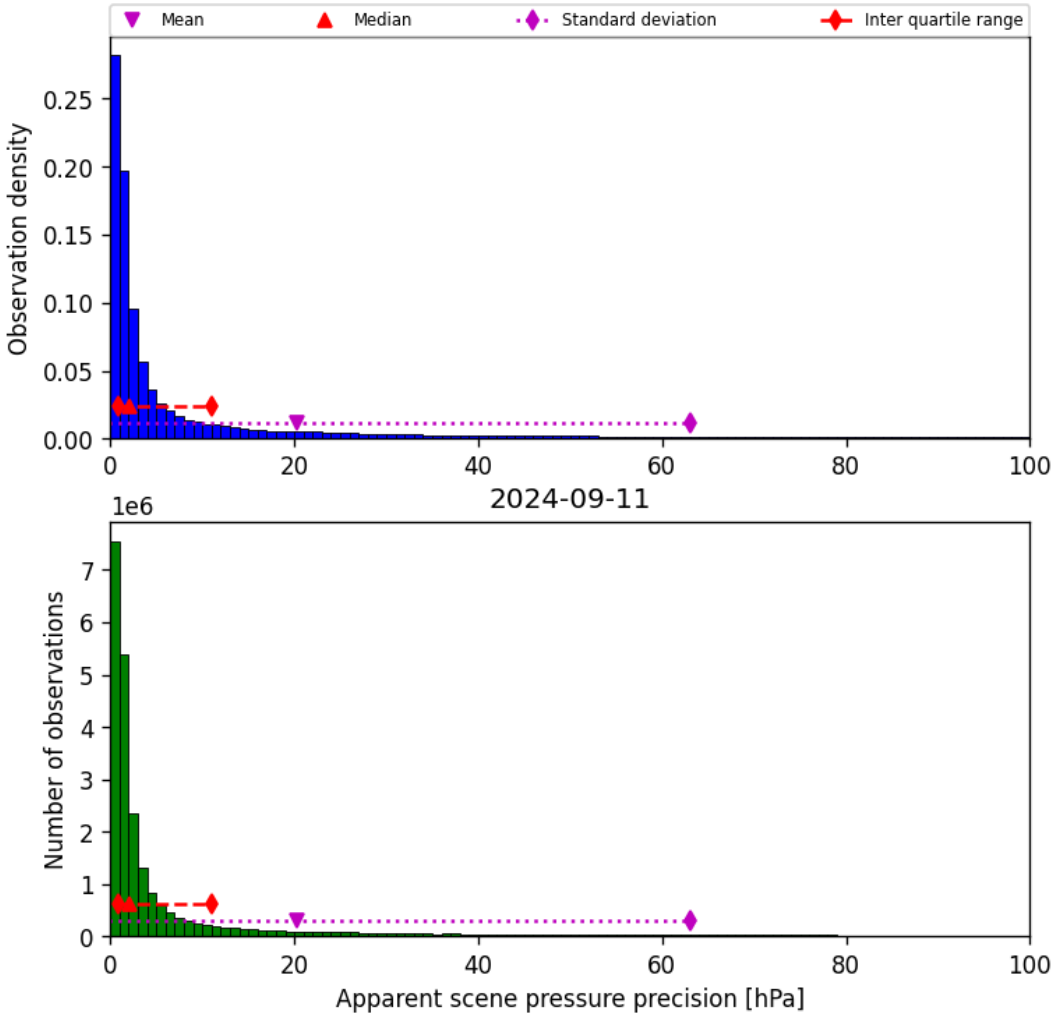

Figure 37: Histogram of “Apparent scene pressure precision” for 2024-09-10 to 2024-09-12

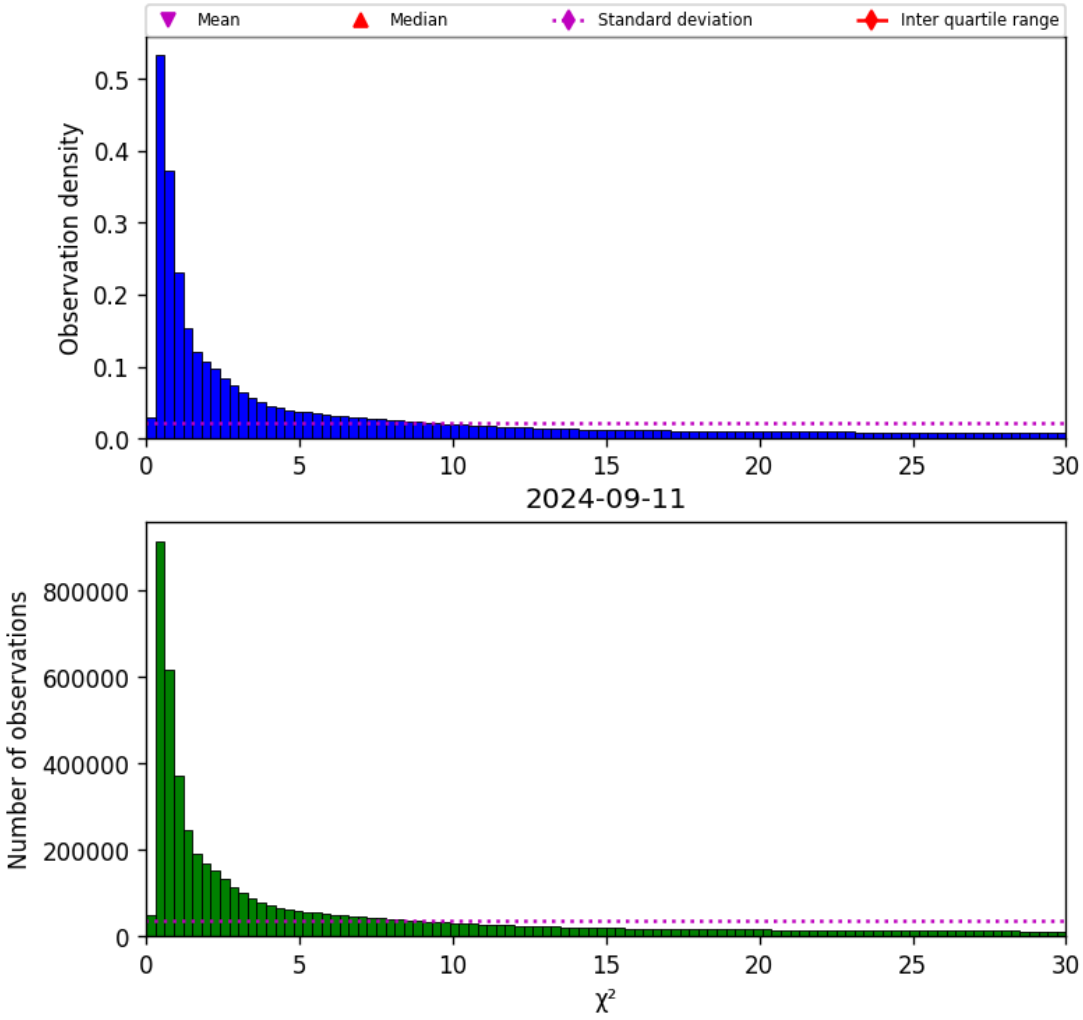

Figure 38: Histogram of "χ^2" for 2024-09-10 to 2024-09-12

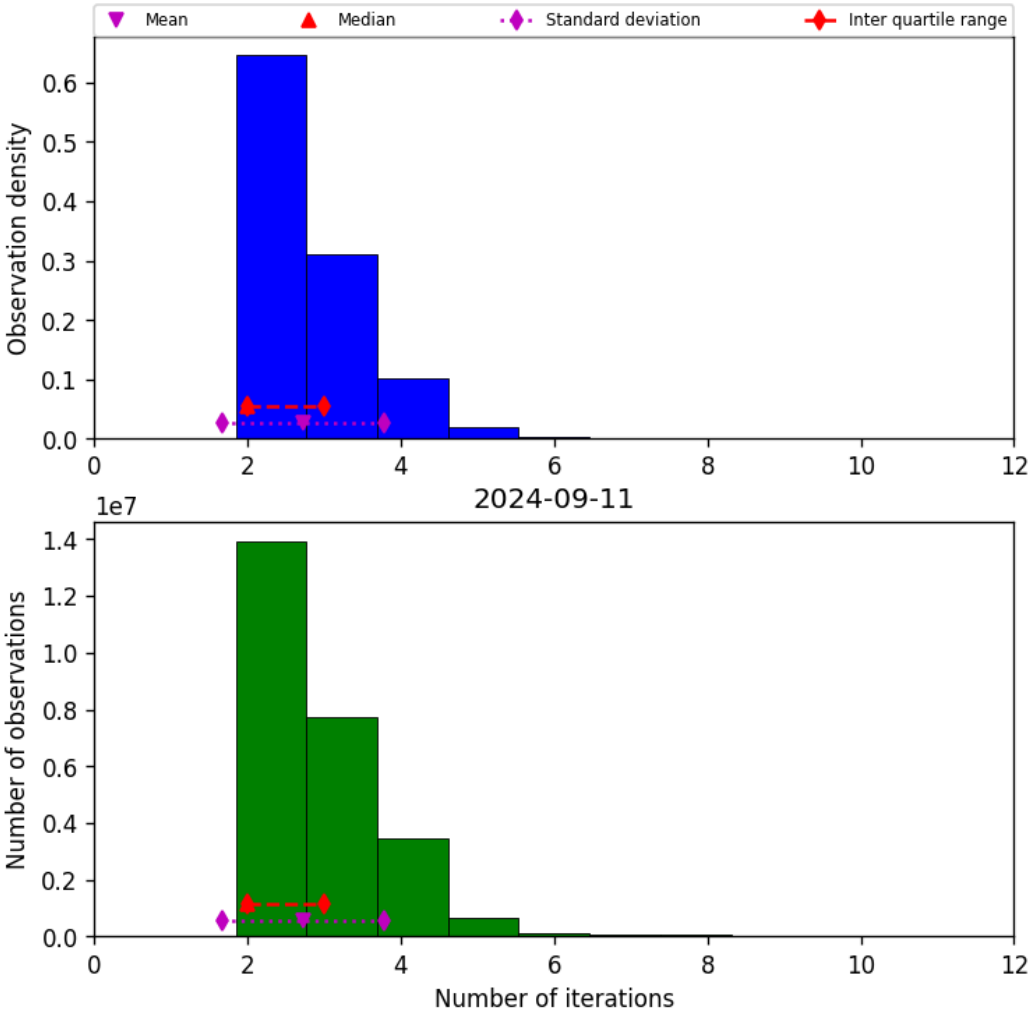

Figure 39: Histogram of “Number of iterations” for 2024-09-10 to 2024-09-12

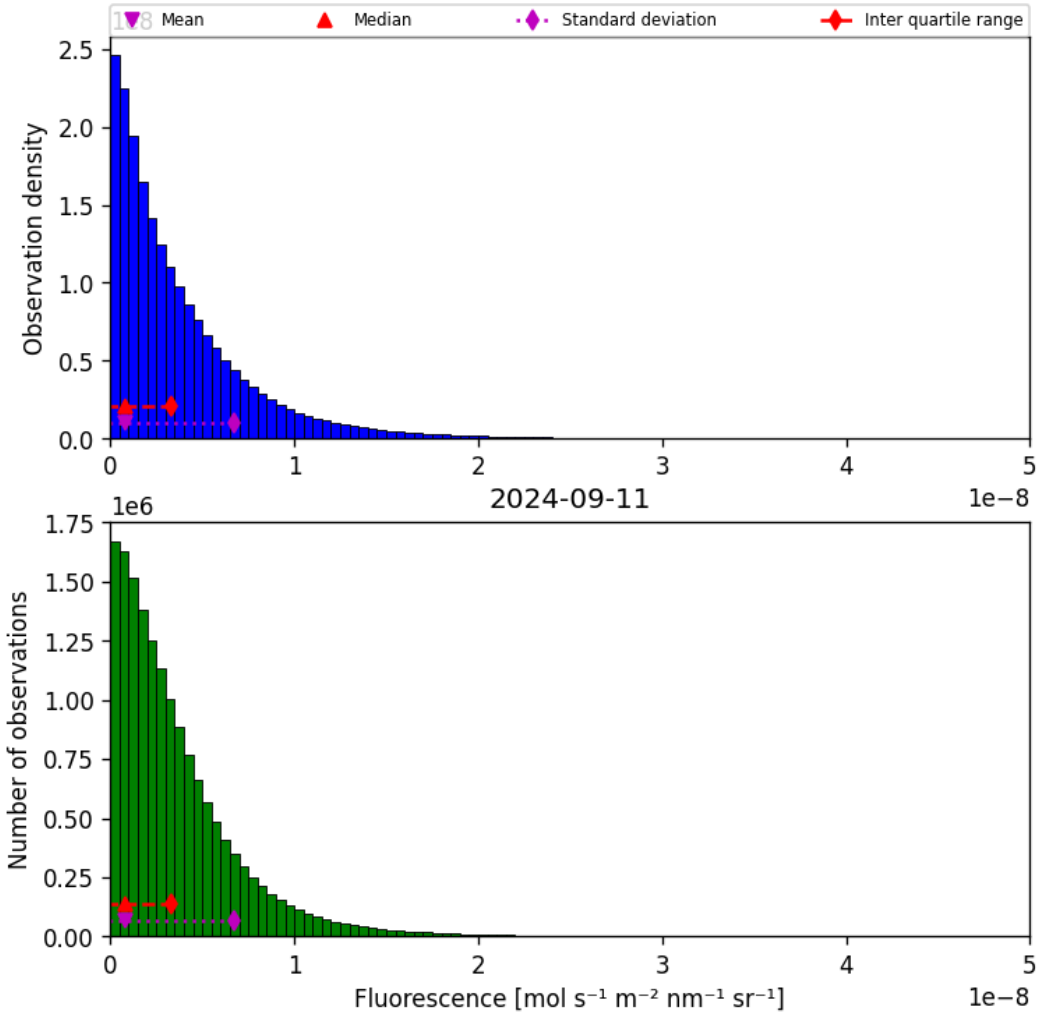

Figure 40: Histogram of “Fluorescence” for 2024-09-10 to 2024-09-12

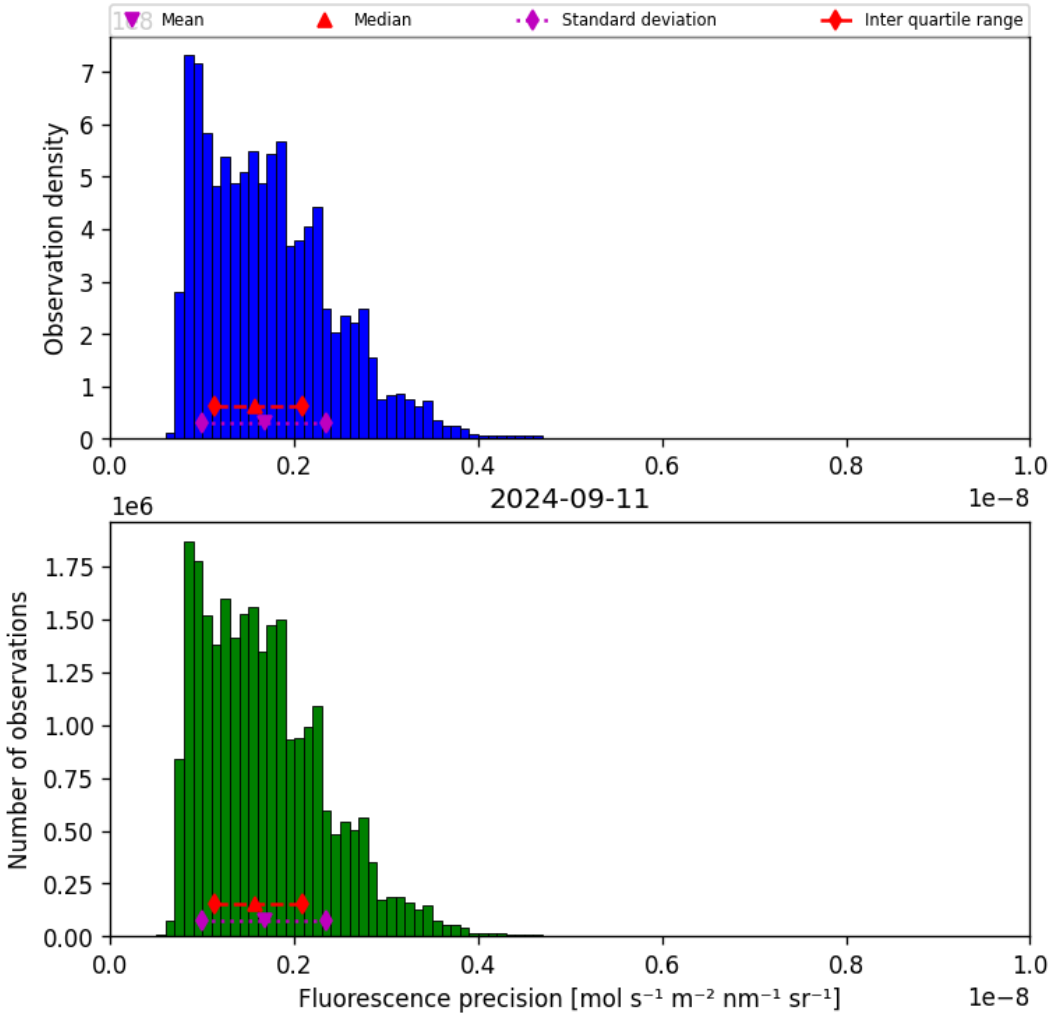

Figure 41: Histogram of “Fluorescence precision” for 2024-09-10 to 2024-09-12

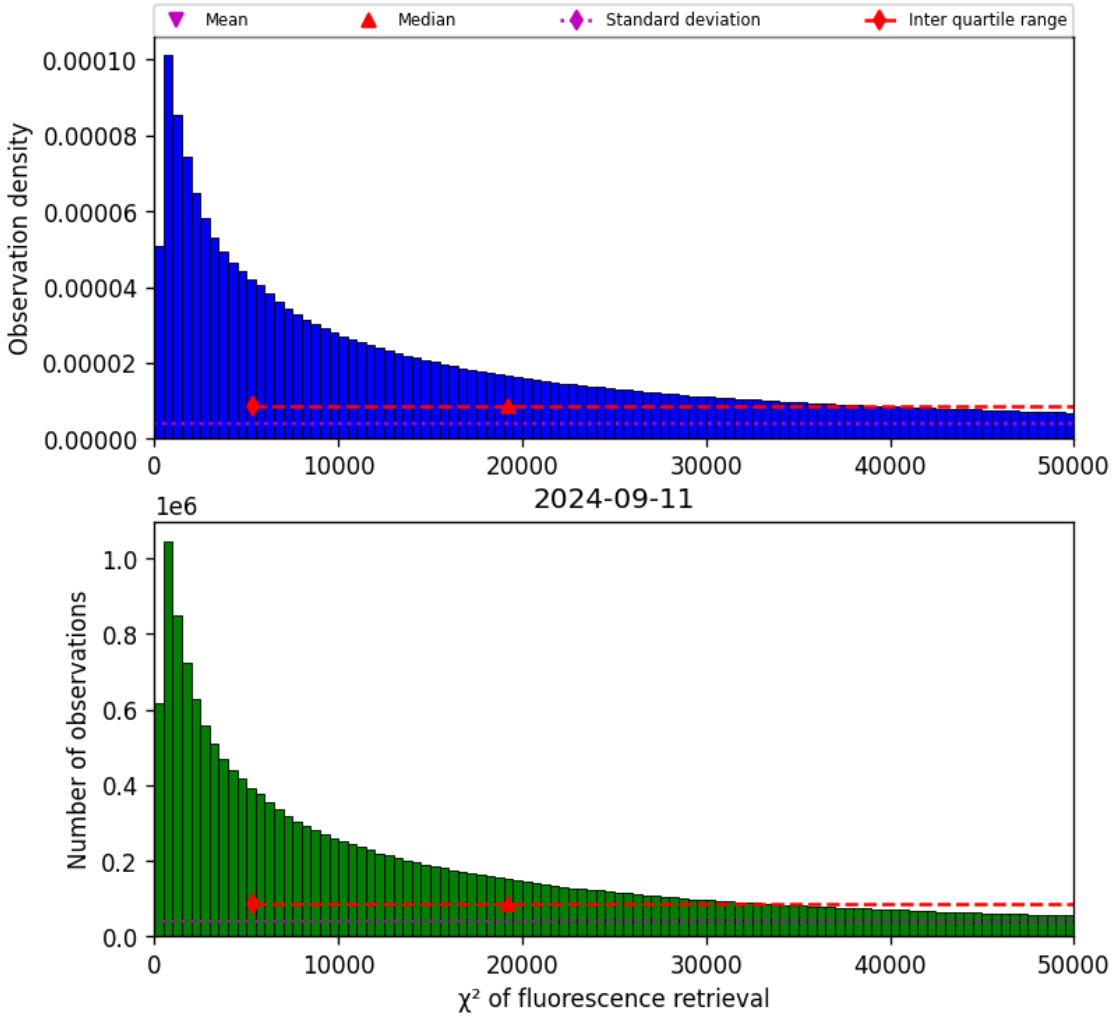

Figure 42: Histogram of "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12

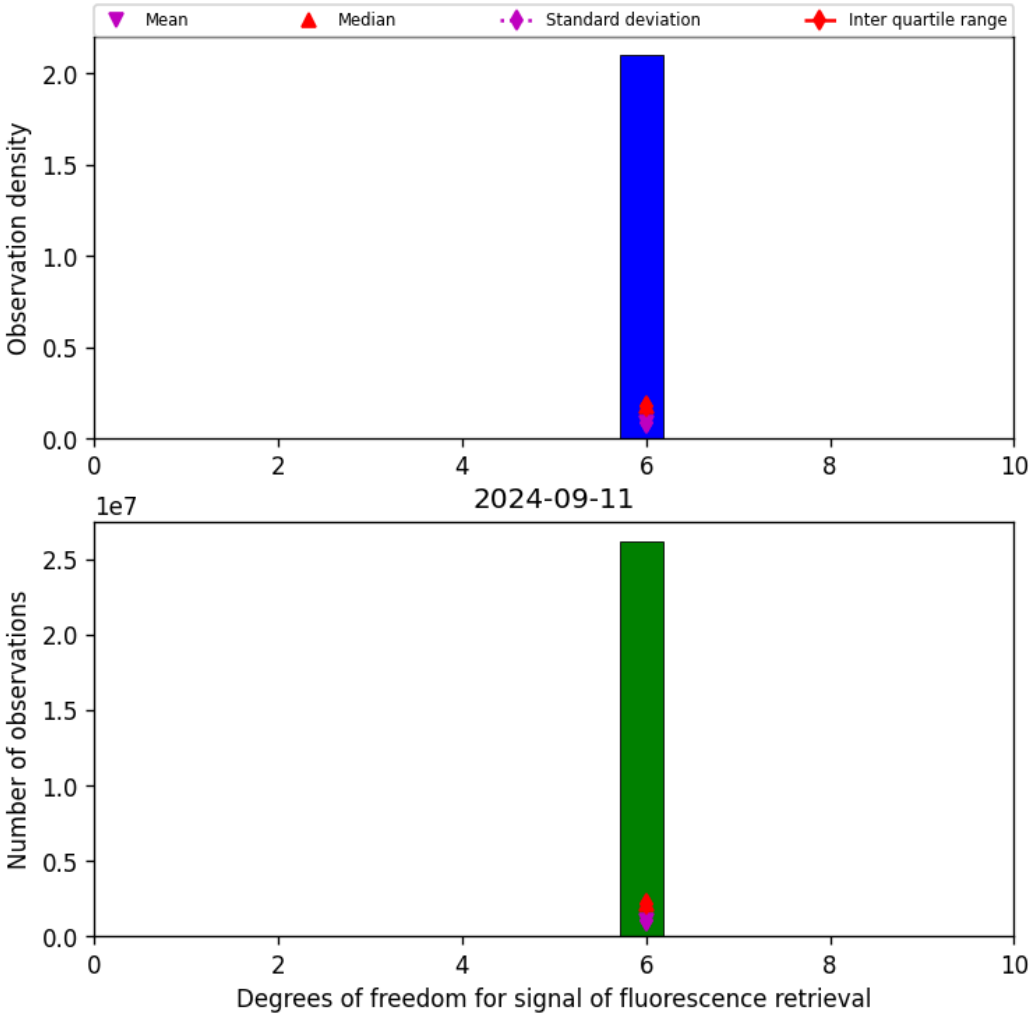

Figure 43: Histogram of “Degrees of freedom for signal of fluorescence retrieval” for 2024-09-10 to 2024-09-12

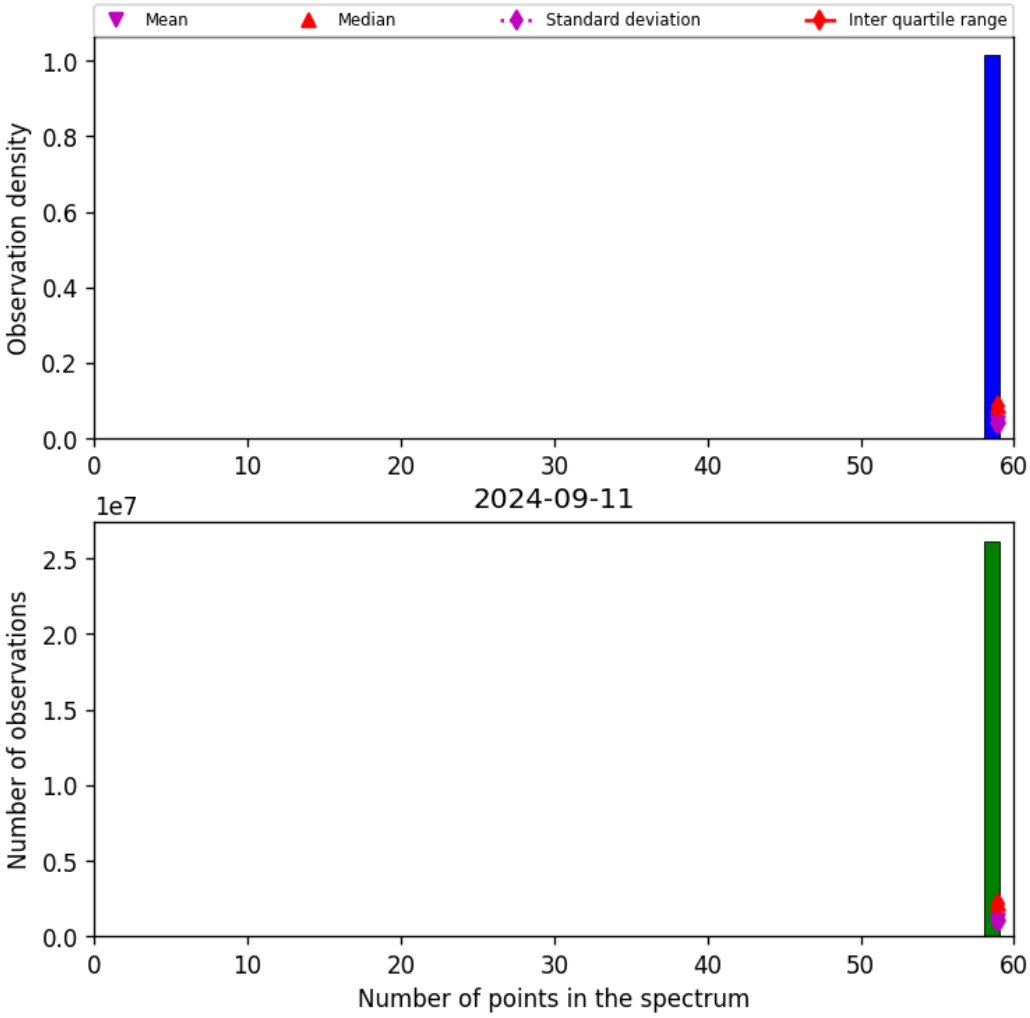

Figure 44: Histogram of “Number of points in the spectrum” for 2024-09-10 to 2024-09-12

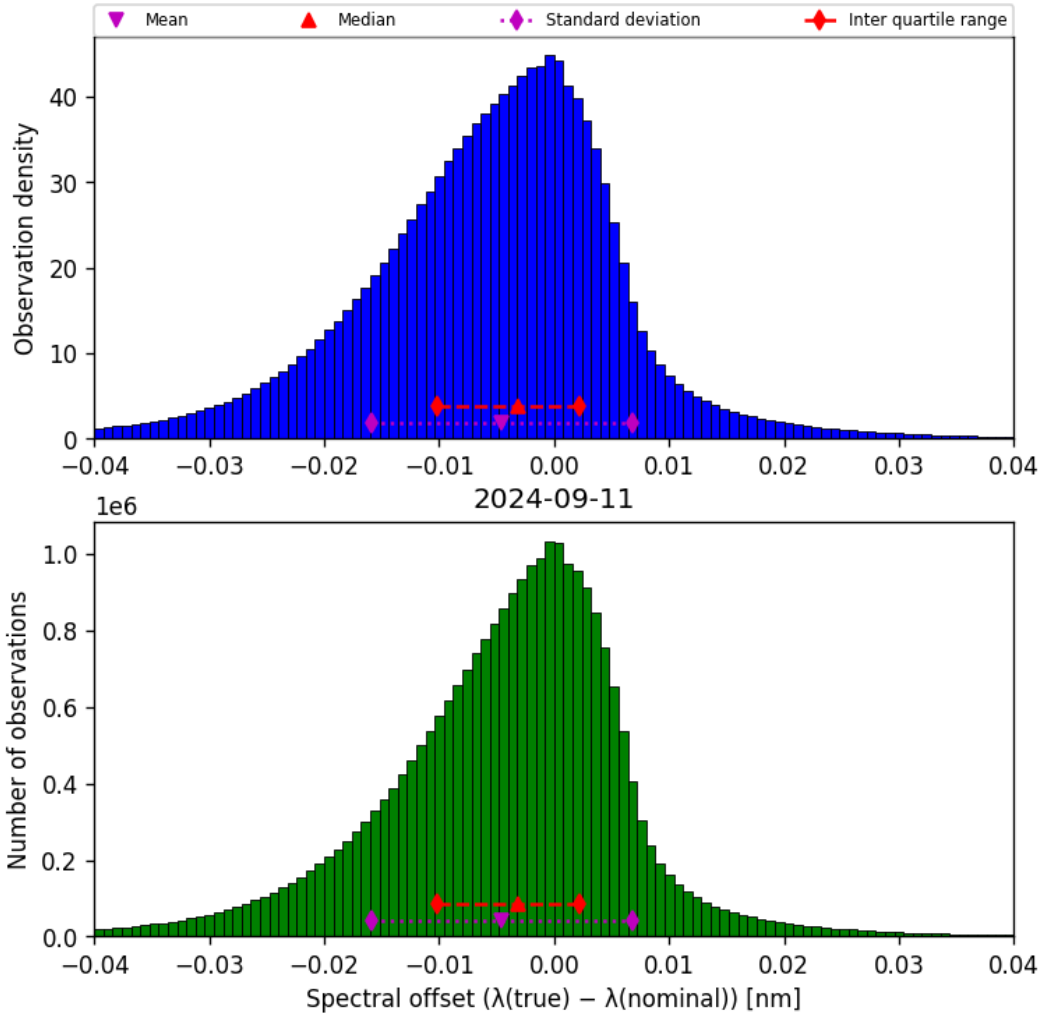

Figure 45: Histogram of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12

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.

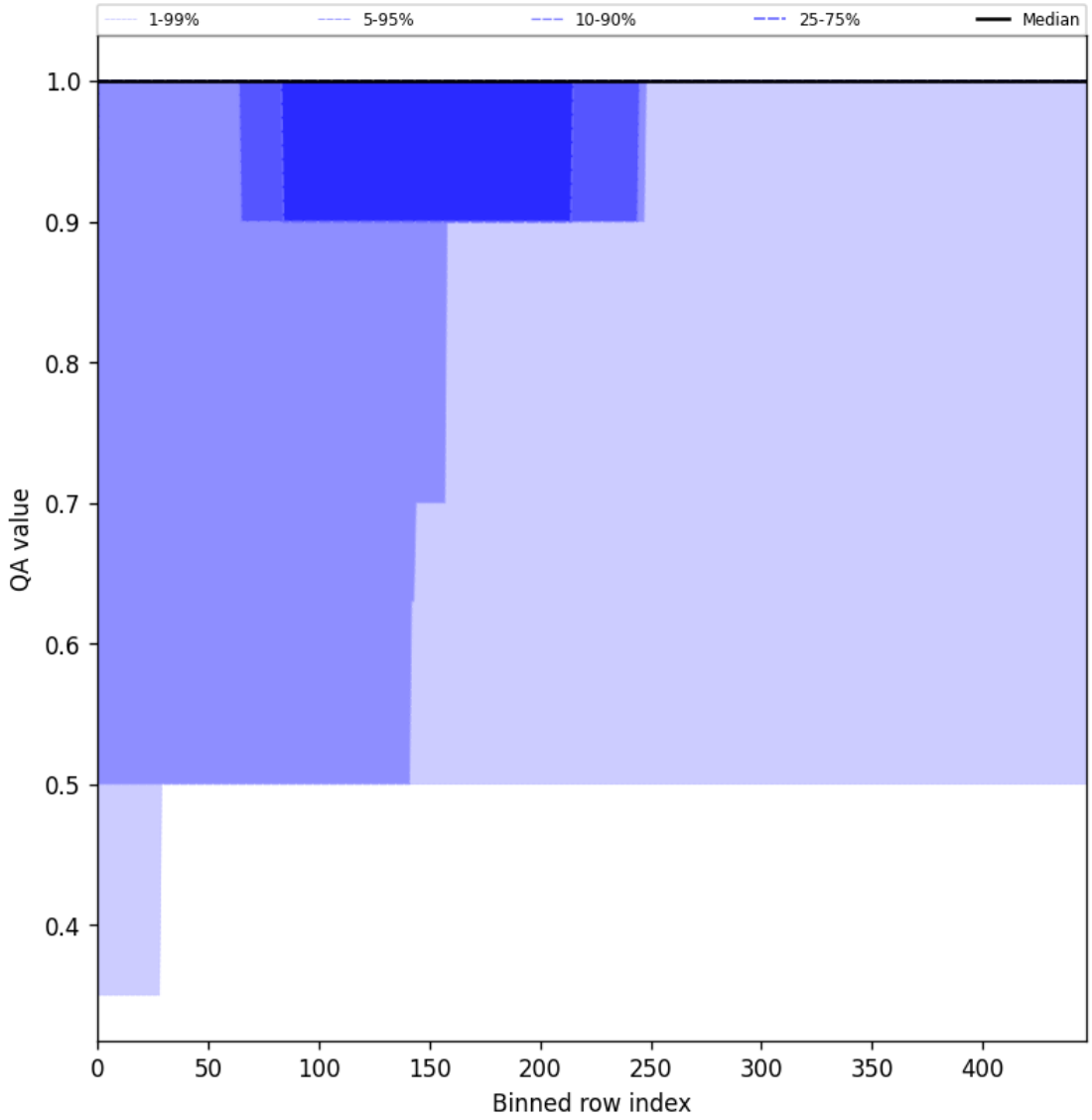

Figure 46: Along track statistics of “QA value” for 2024-09-10 to 2024-09-12

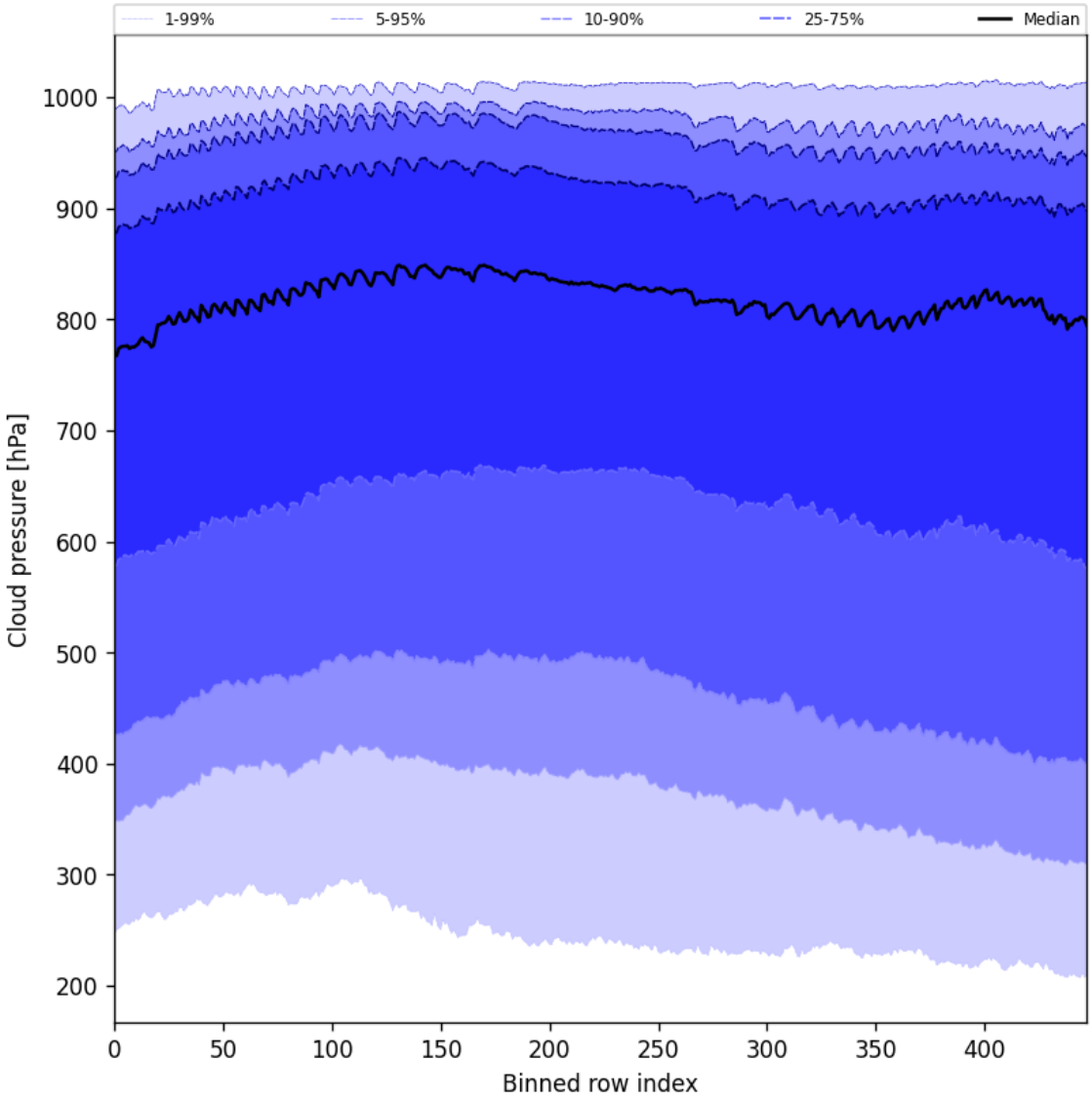

Figure 47: Along track statistics of “Cloud pressure” for 2024-09-10 to 2024-09-12

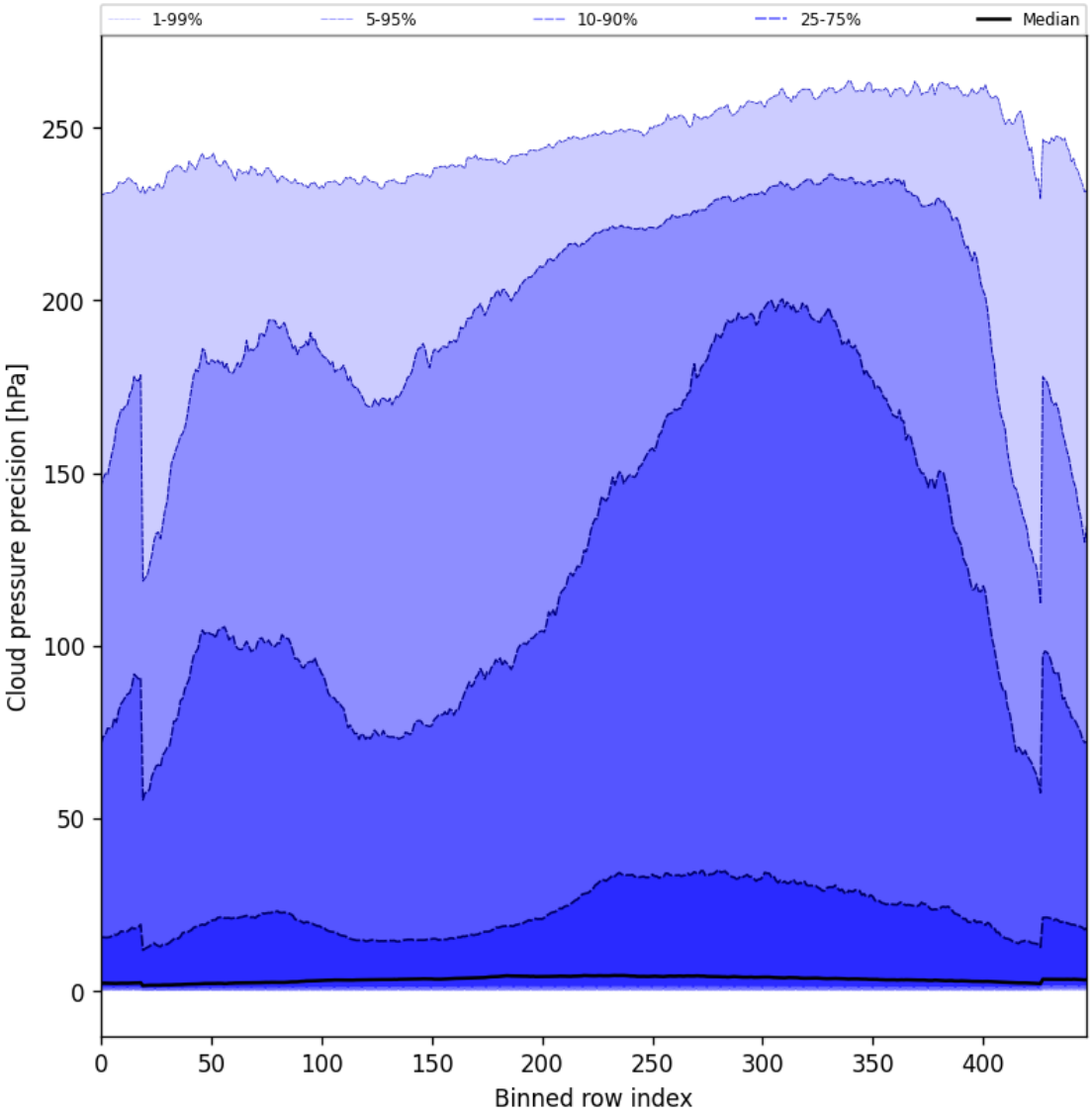

Figure 48: Along track statistics of “Cloud pressure precision” for 2024-09-10 to 2024-09-12

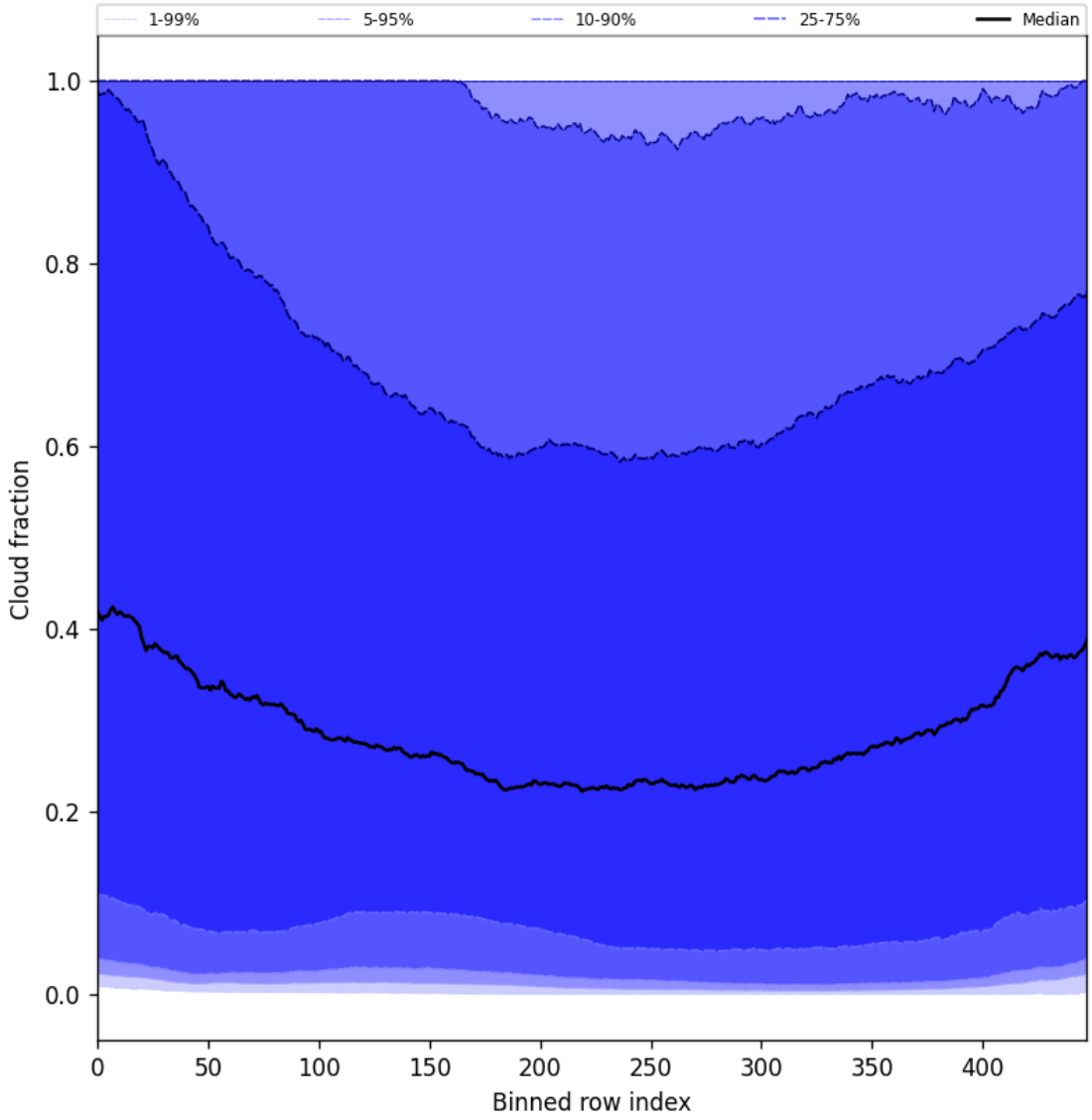

Figure 49: Along track statistics of “Cloud fraction” for 2024-09-10 to 2024-09-12

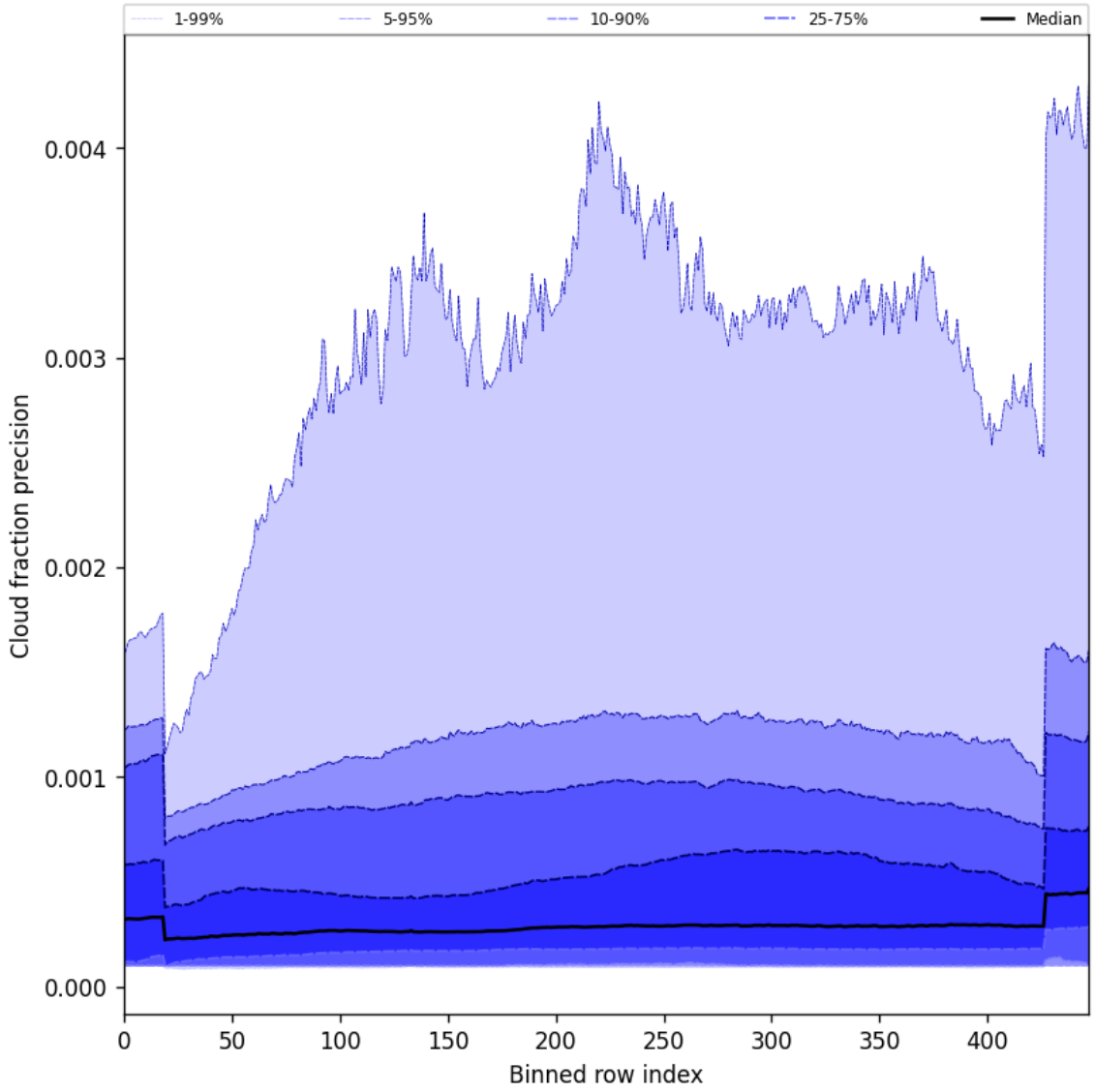

Figure 50: Along track statistics of “Cloud fraction precision” for 2024-09-10 to 2024-09-12

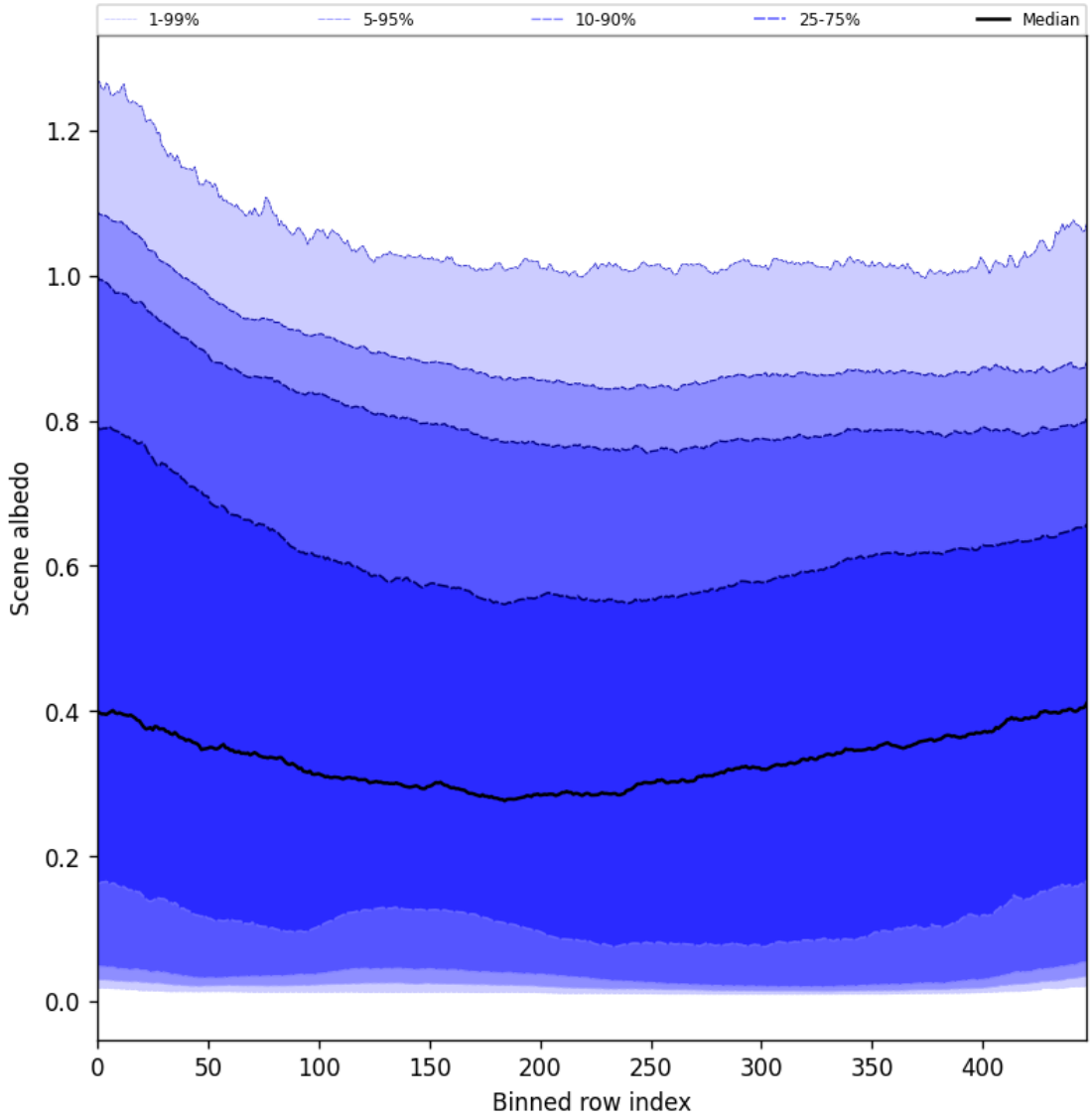

Figure 51: Along track statistics of “Scene albedo” for 2024-09-10 to 2024-09-12

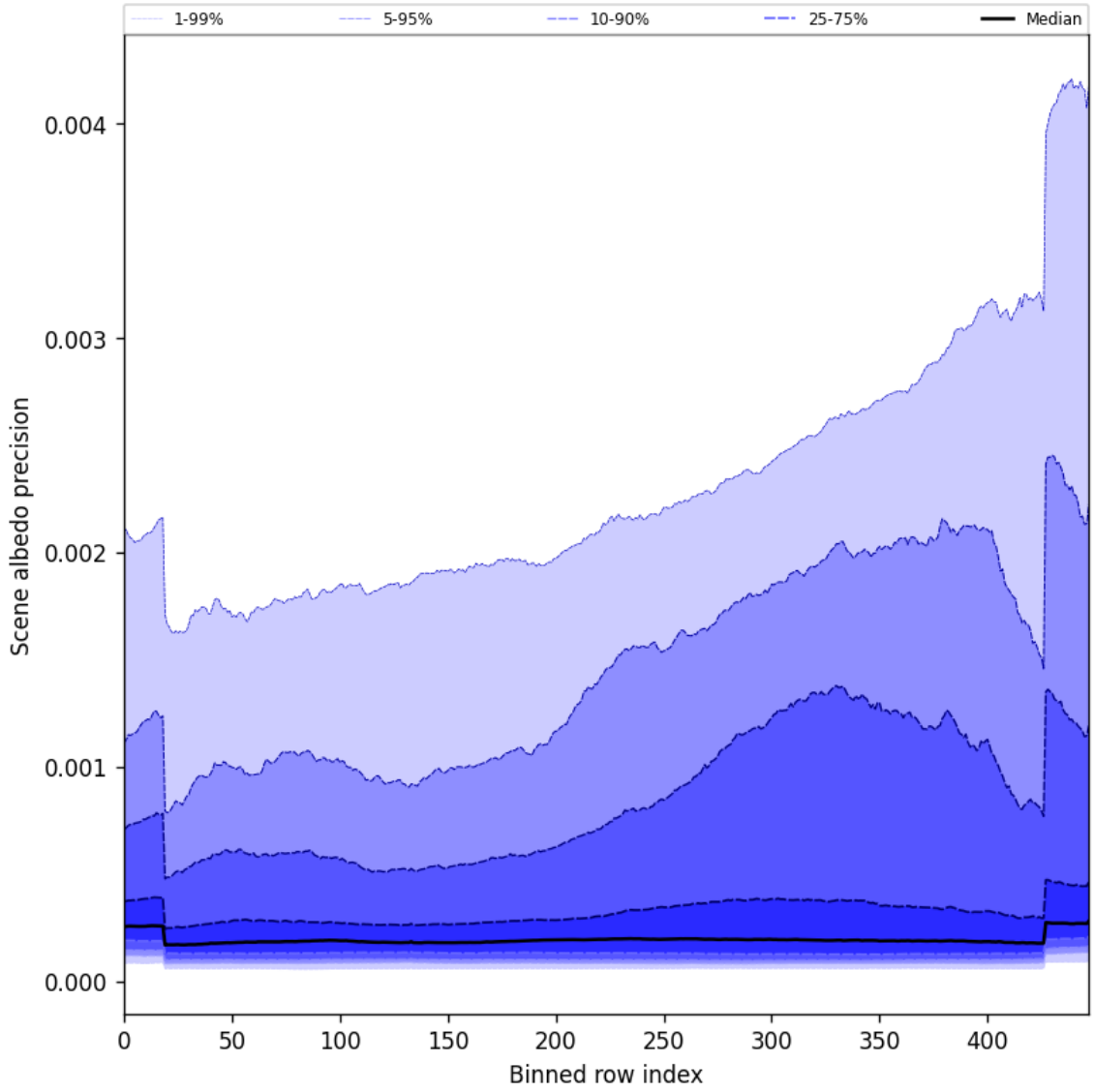

Figure 52: Along track statistics of “Scene albedo precision” for 2024-09-10 to 2024-09-12

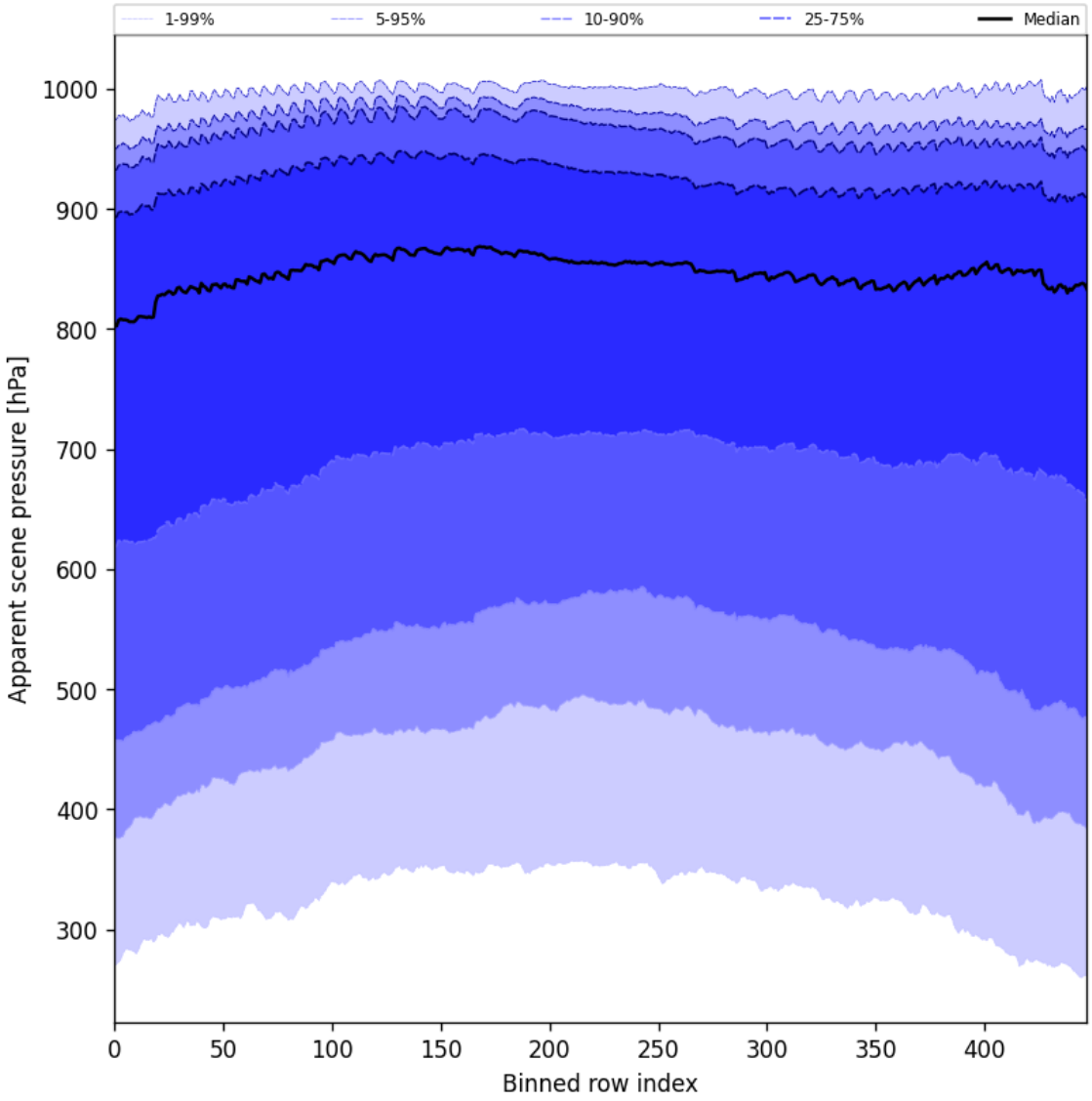

Figure 53: Along track statistics of “Apparent scene pressure” for 2024-09-10 to 2024-09-12

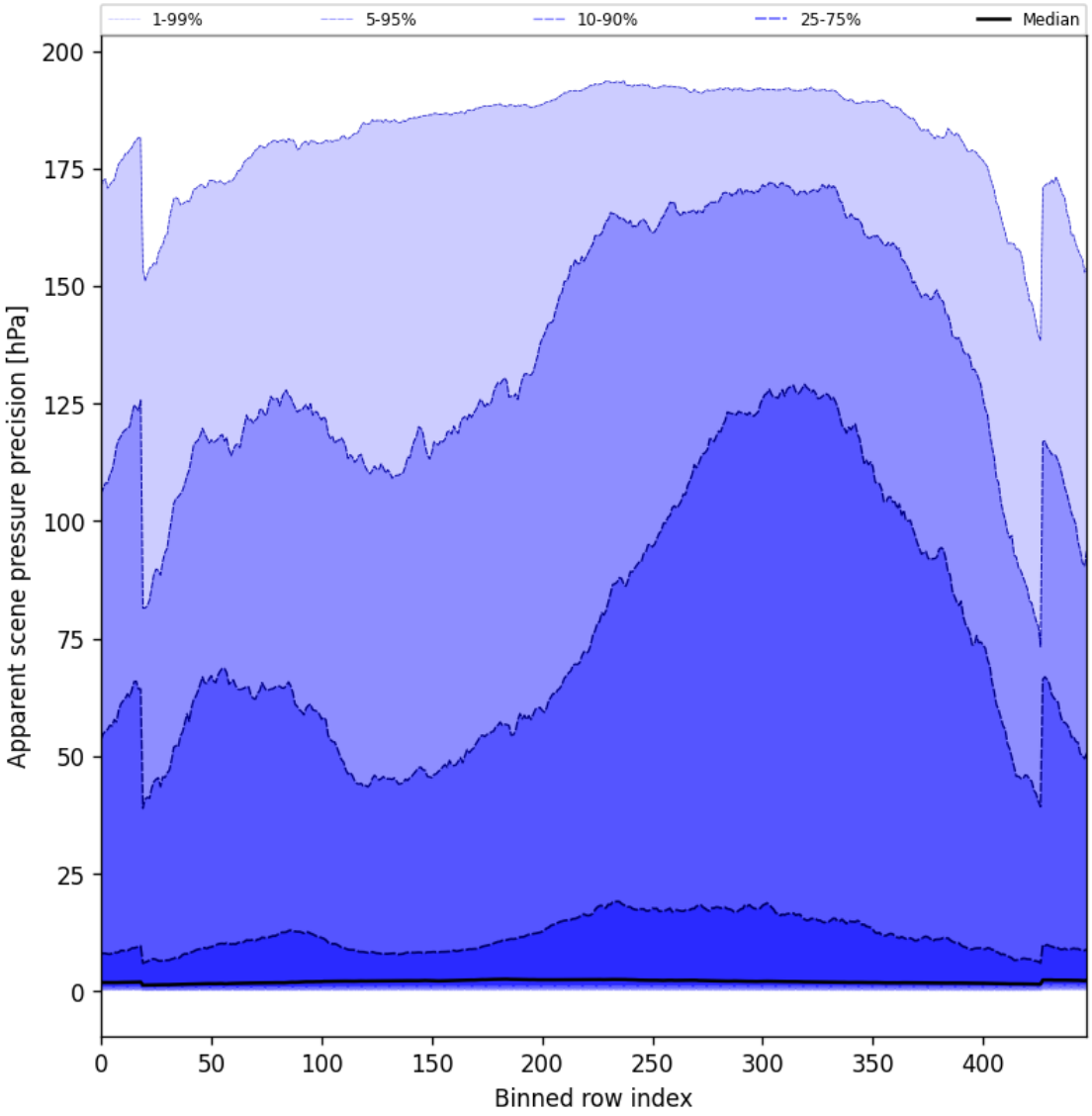

Figure 54: Along track statistics of “Apparent scene pressure precision” for 2024-09-10 to 2024-09-12

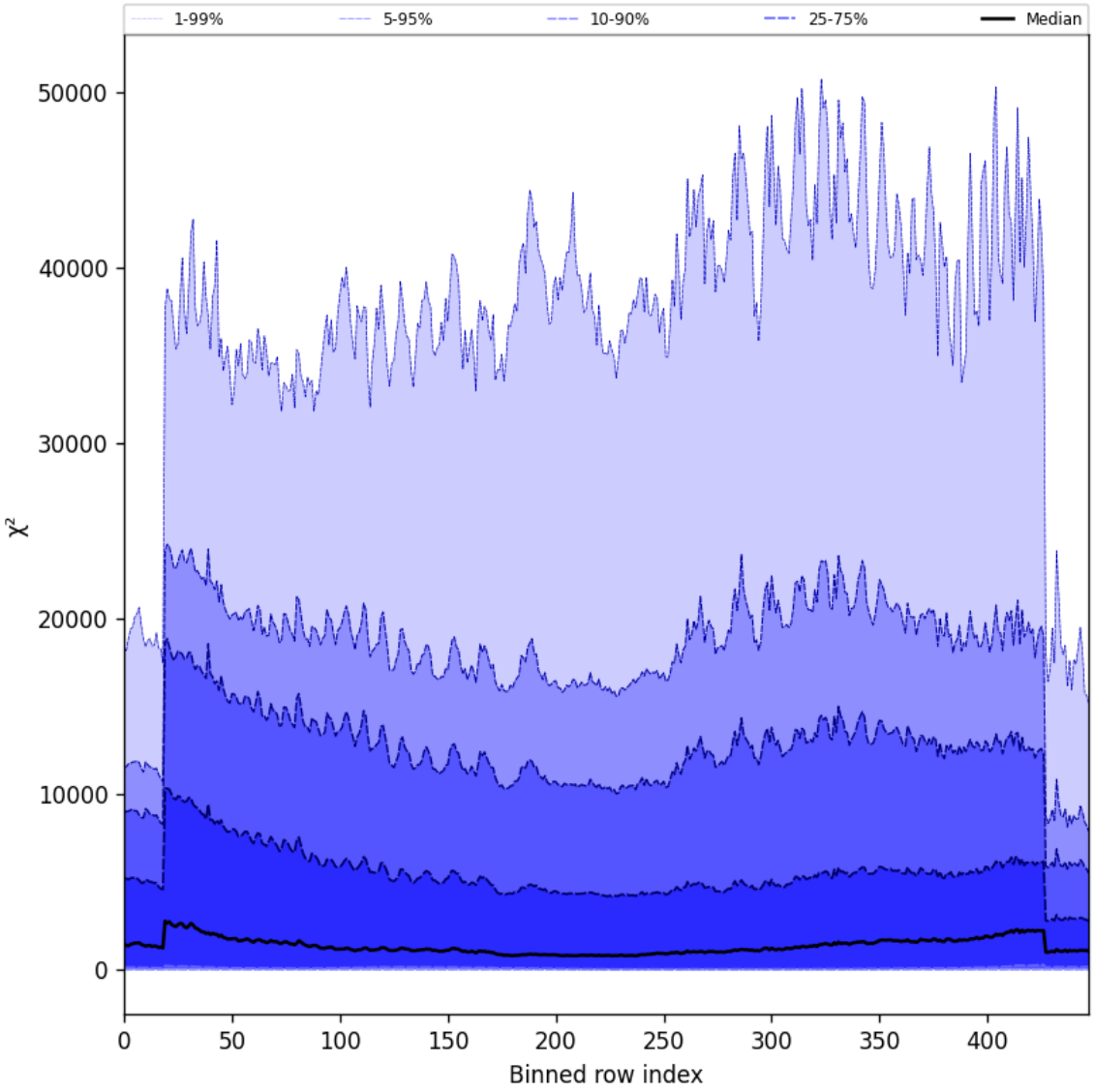

Figure 55: Along track statistics of "χ^2" for 2024-09-10 to 2024-09-12

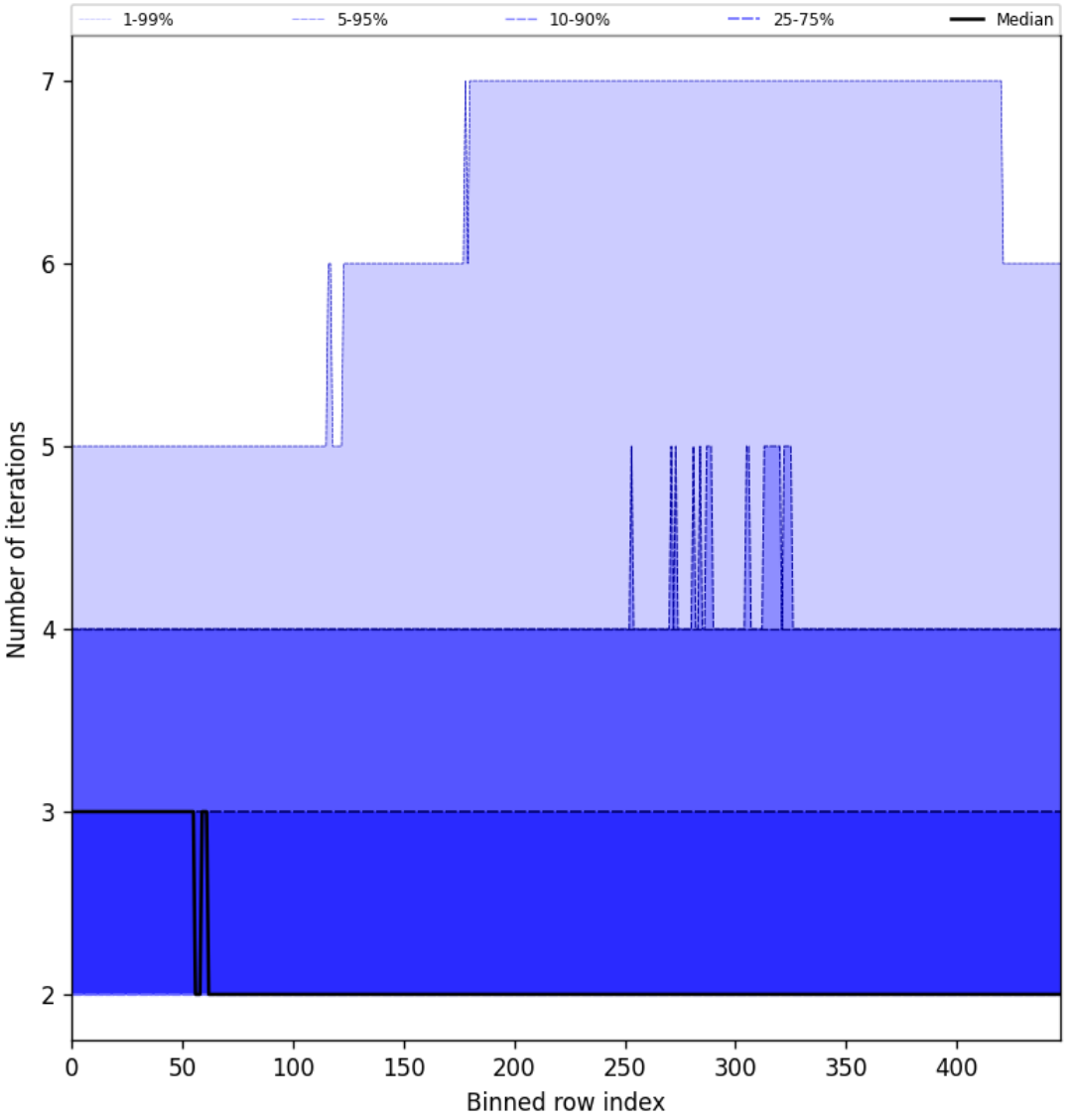

Figure 56: Along track statistics of “Number of iterations” for 2024-09-10 to 2024-09-12

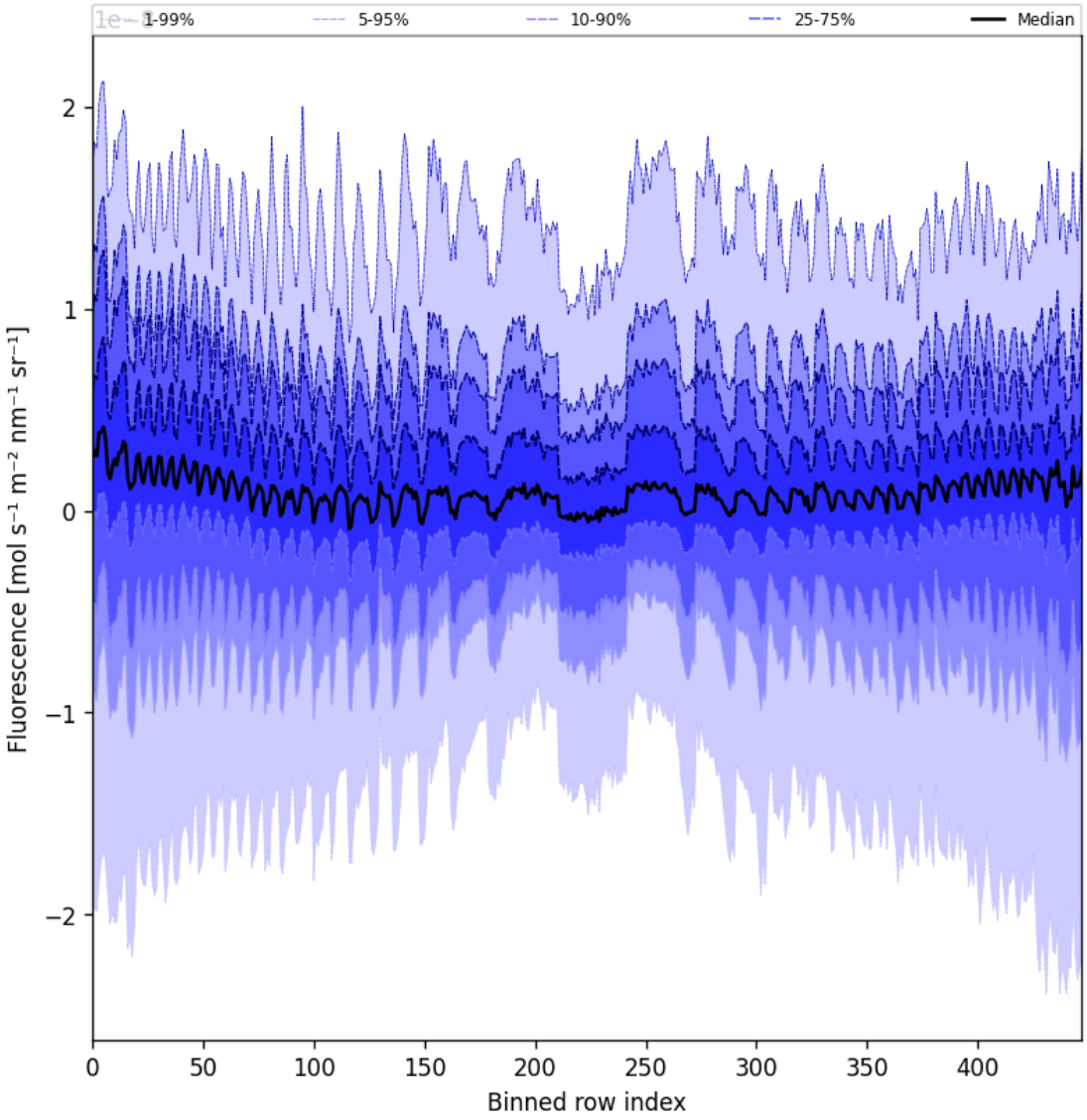

Figure 57: Along track statistics of “Fluorescence” for 2024-09-10 to 2024-09-12

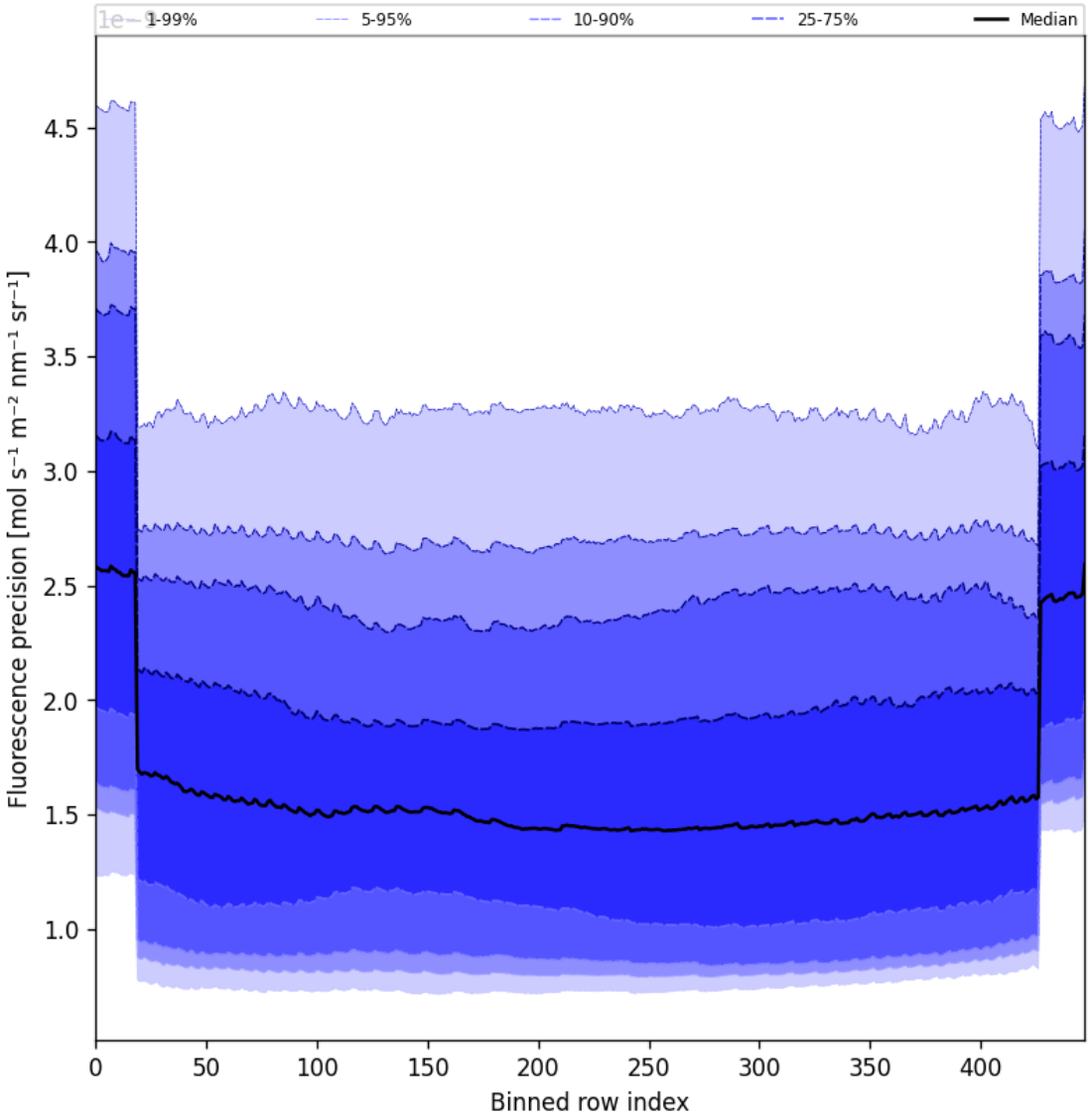

Figure 58: Along track statistics of “Fluorescence precision” for 2024-09-10 to 2024-09-12

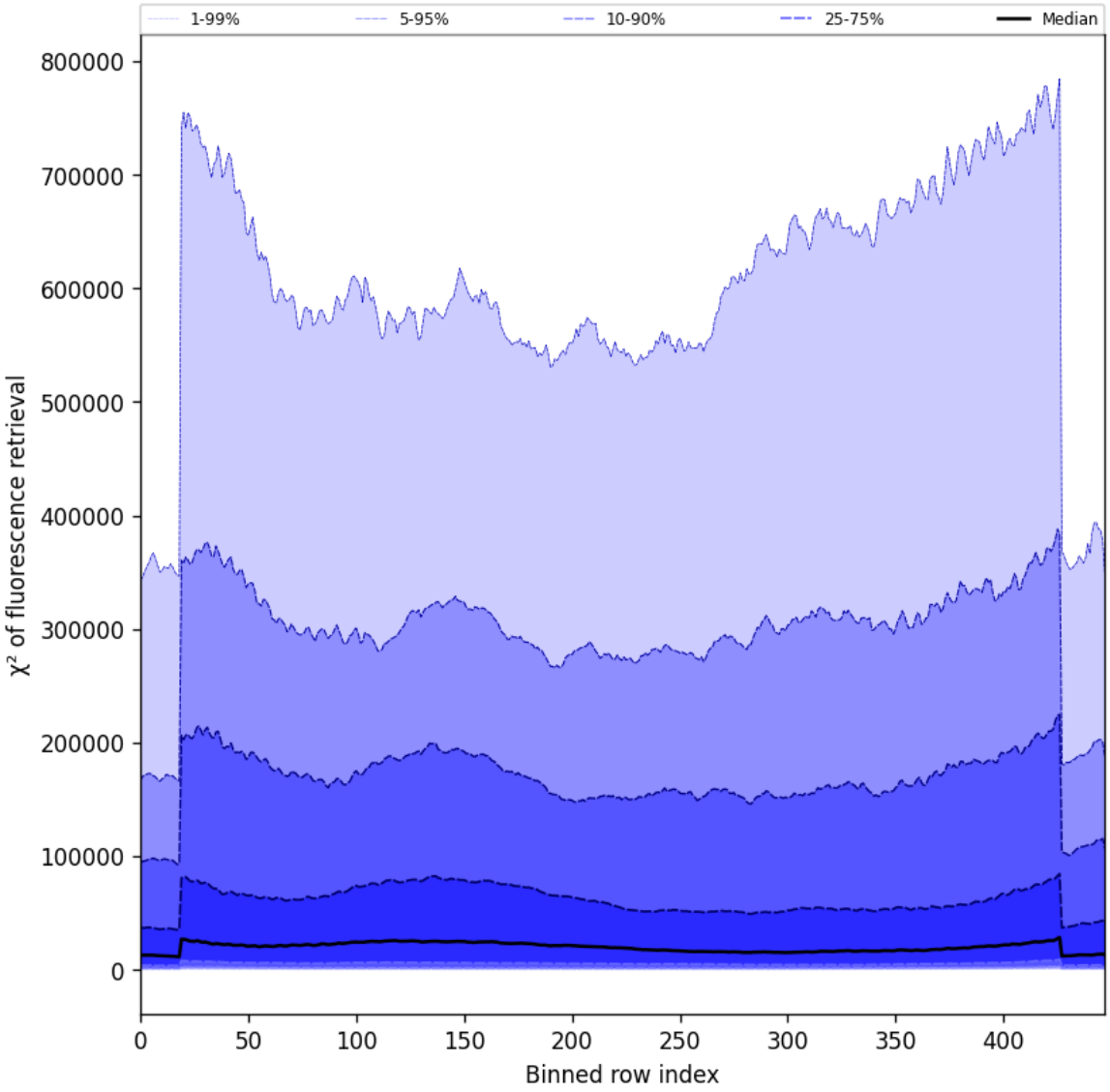

Figure 59: Along track statistics of "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12

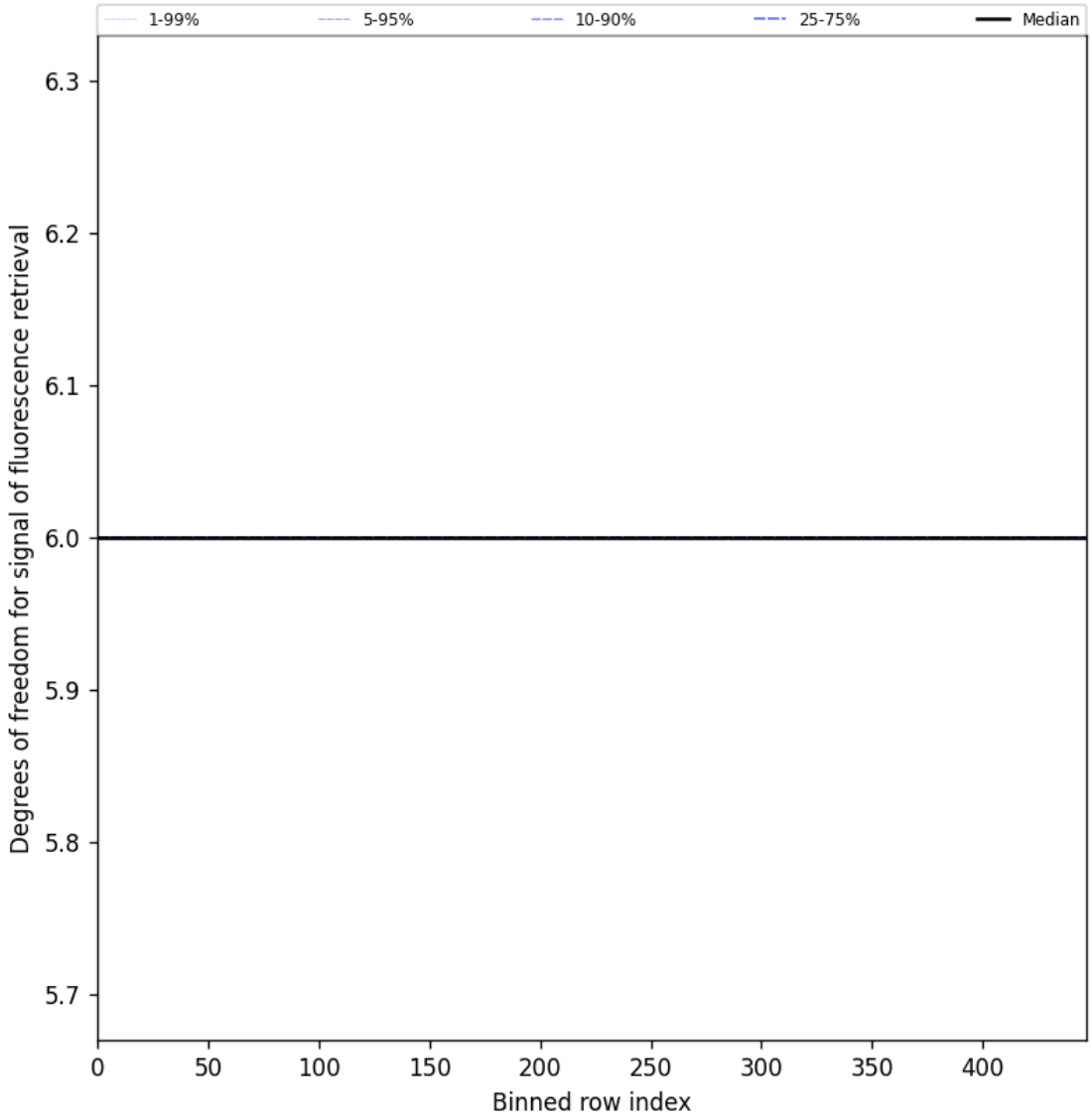

Figure 60: Along track statistics of “Degrees of freedom for signal of fluorescence retrieval” for 2024-09-10 to 2024-09-12

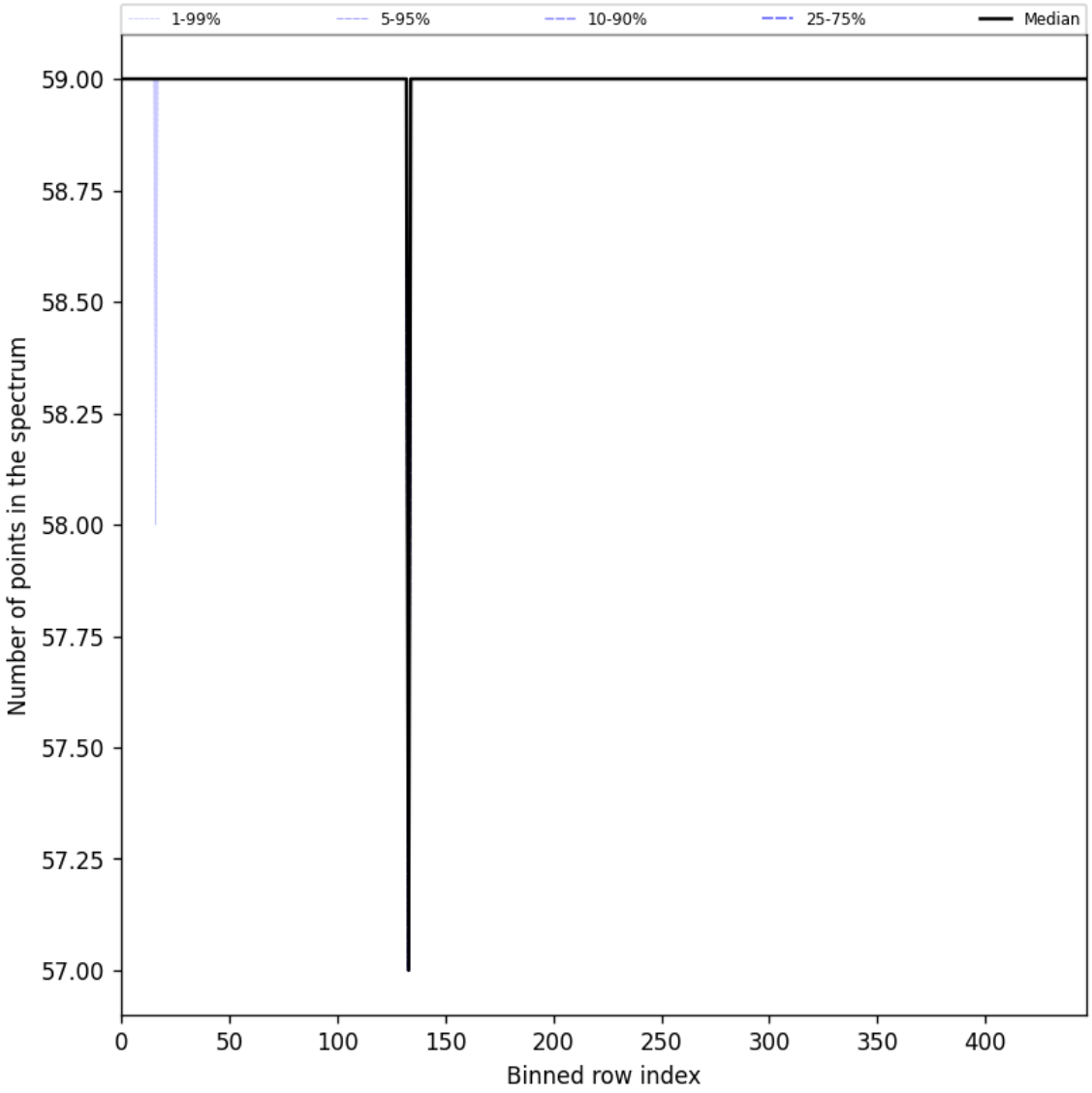

Figure 61: Along track statistics of “Number of points in the spectrum” for 2024-09-10 to 2024-09-12

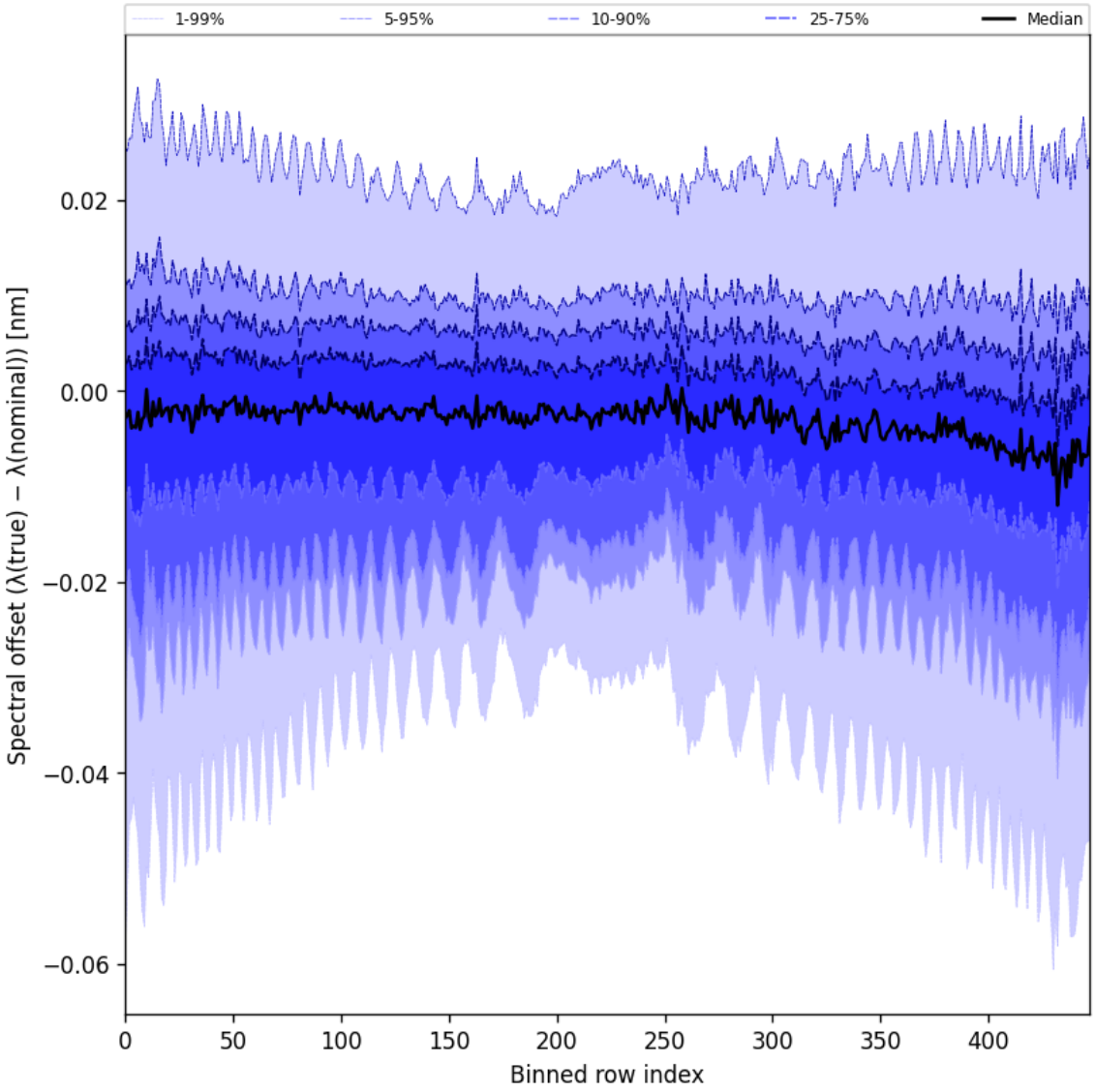

Figure 62: Along track statistics of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12

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.

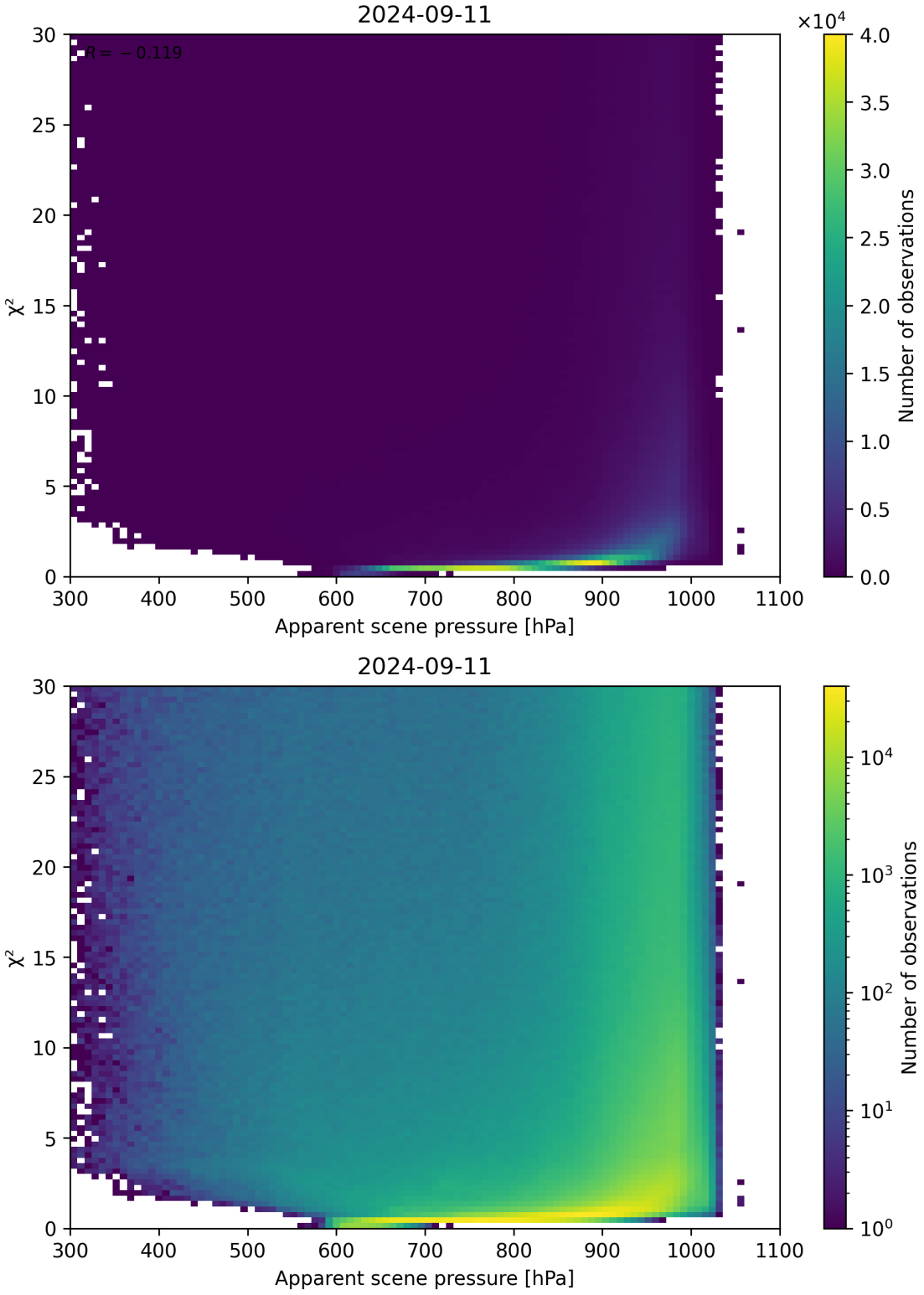

Figure 63: Scatter density plot of "Apparent scene pressure" against "χ^2" for 2024-09-10 to 2024-09-12.

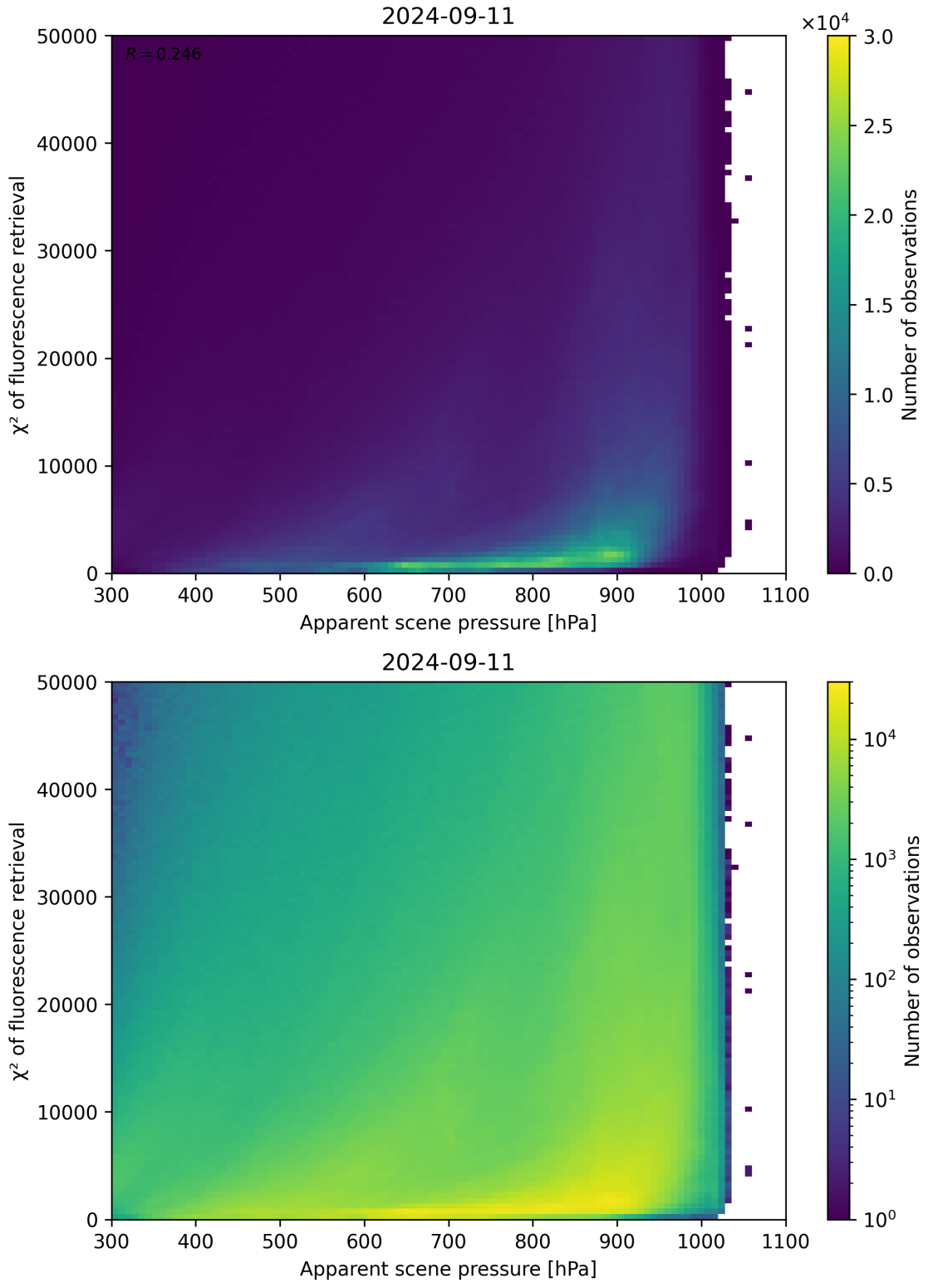

Figure 64: Scatter density plot of "Apparent scene pressure" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

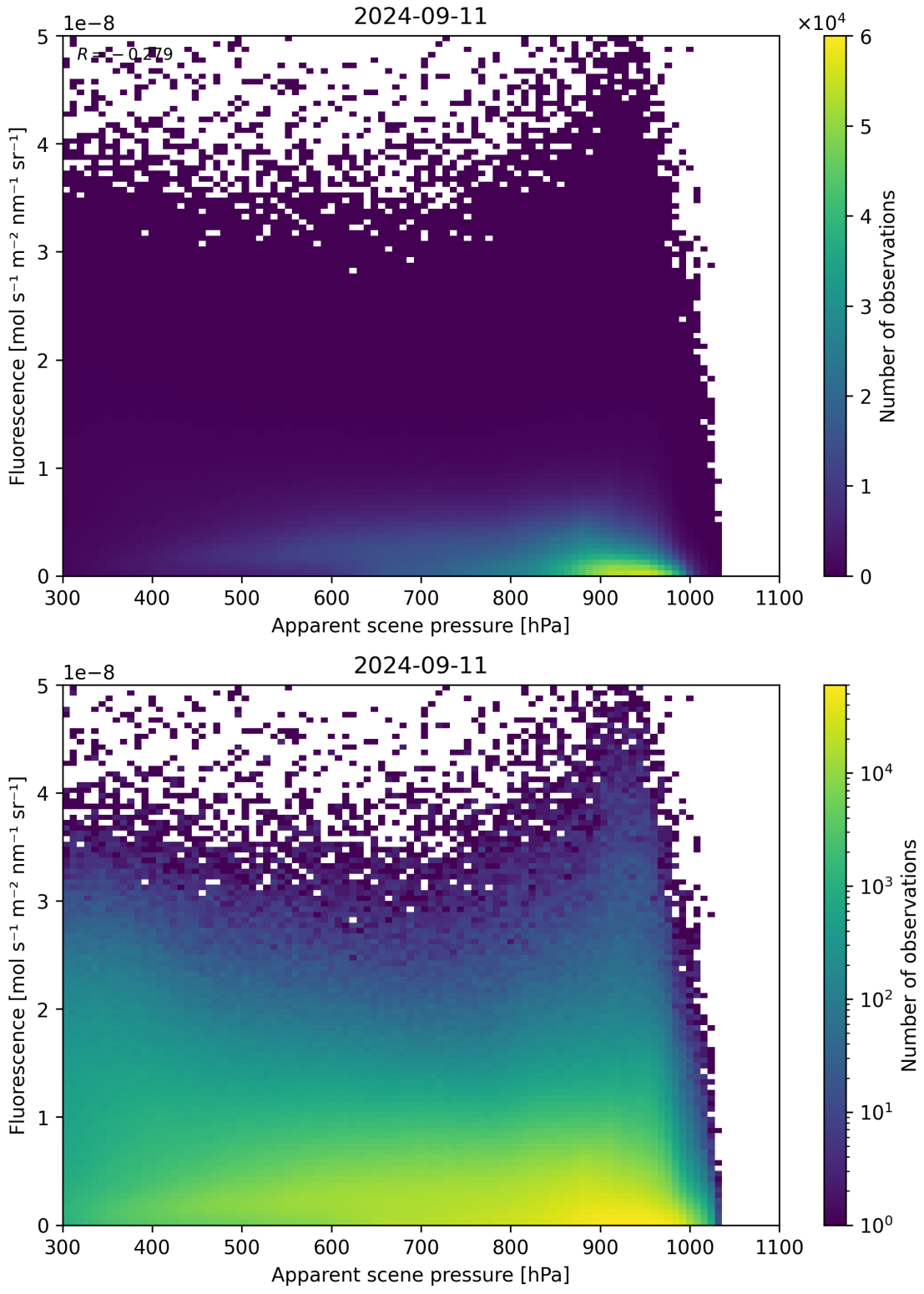

Figure 65: Scatter density plot of “Apparent scene pressure” against “Fluorescence” for 2024-09-10 to 2024-09-12.

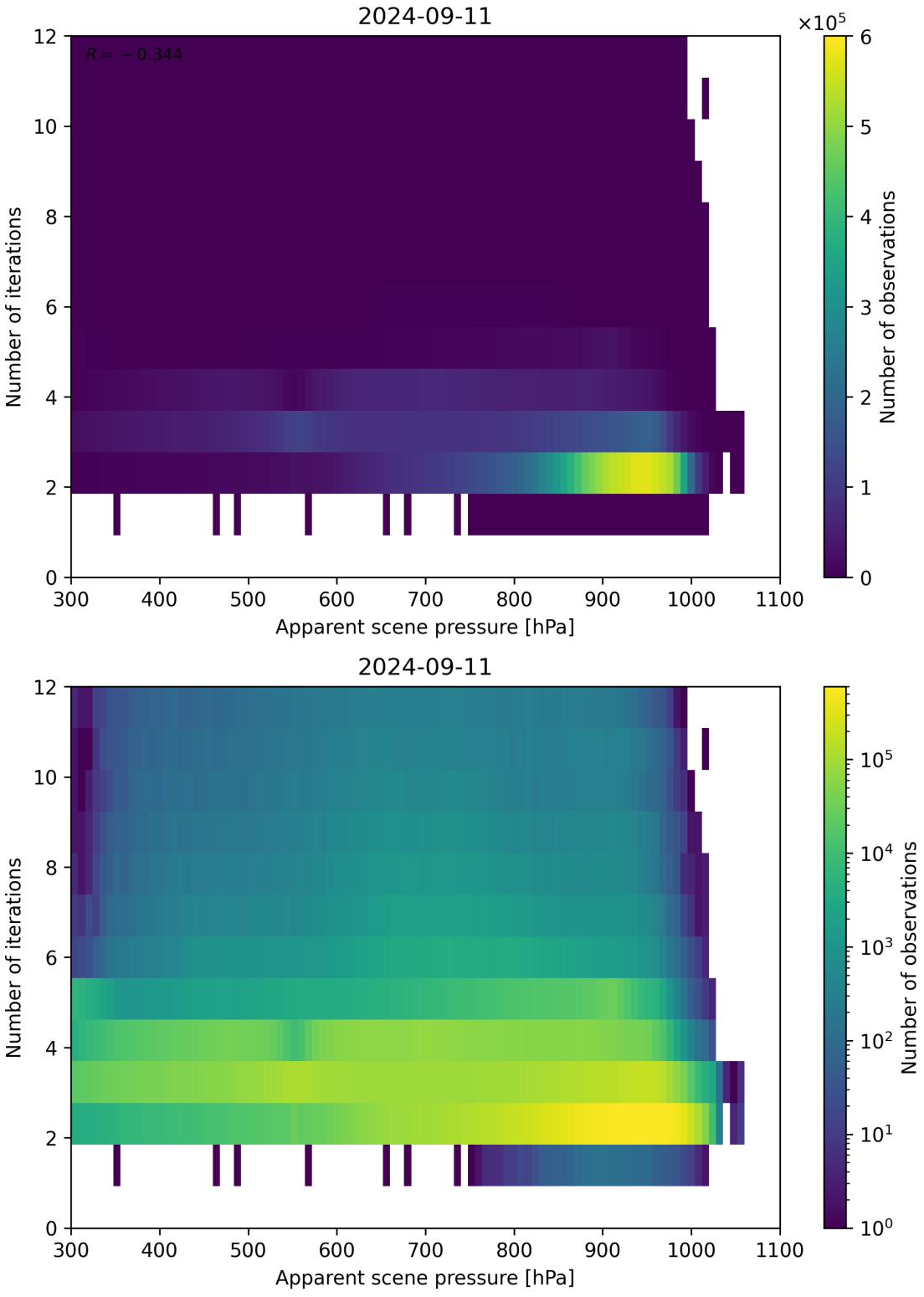

Figure 66: Scatter density plot of “Apparent scene pressure” against “Number of iterations” for 2024-09-10 to 2024-09-12.

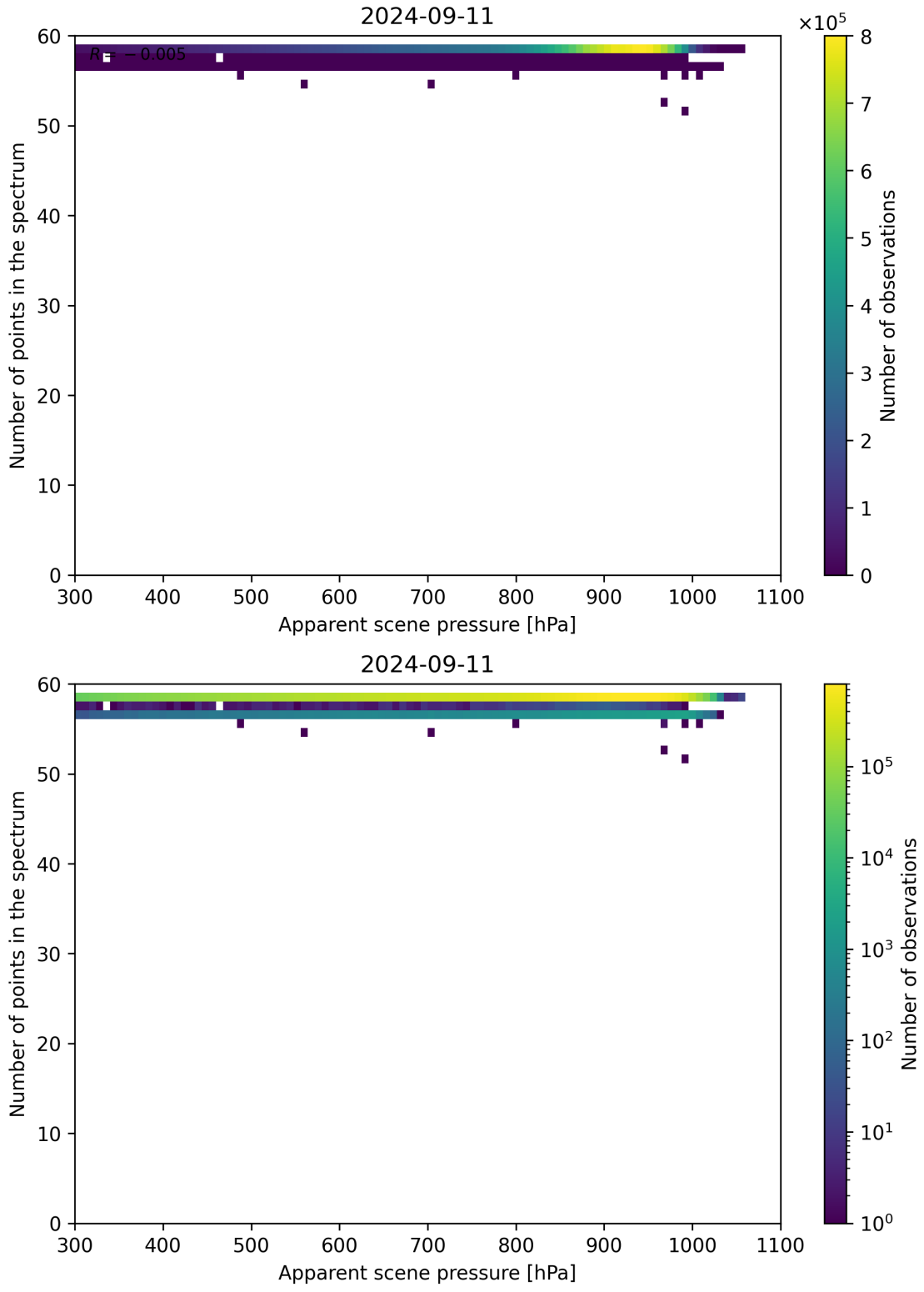

Figure 67: Scatter density plot of “Apparent scene pressure” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

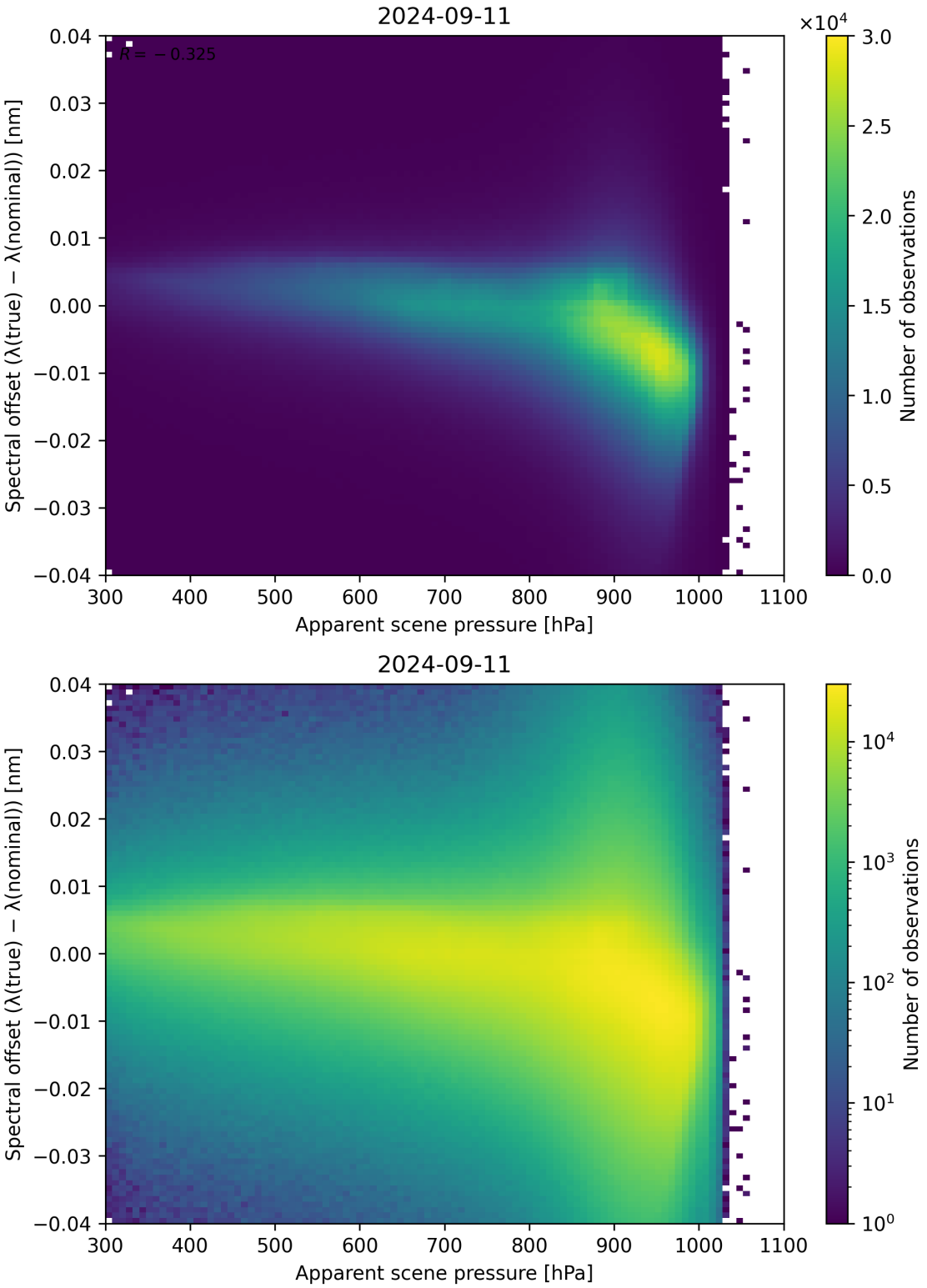

Figure 68: Scatter density plot of “Apparent scene pressure” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

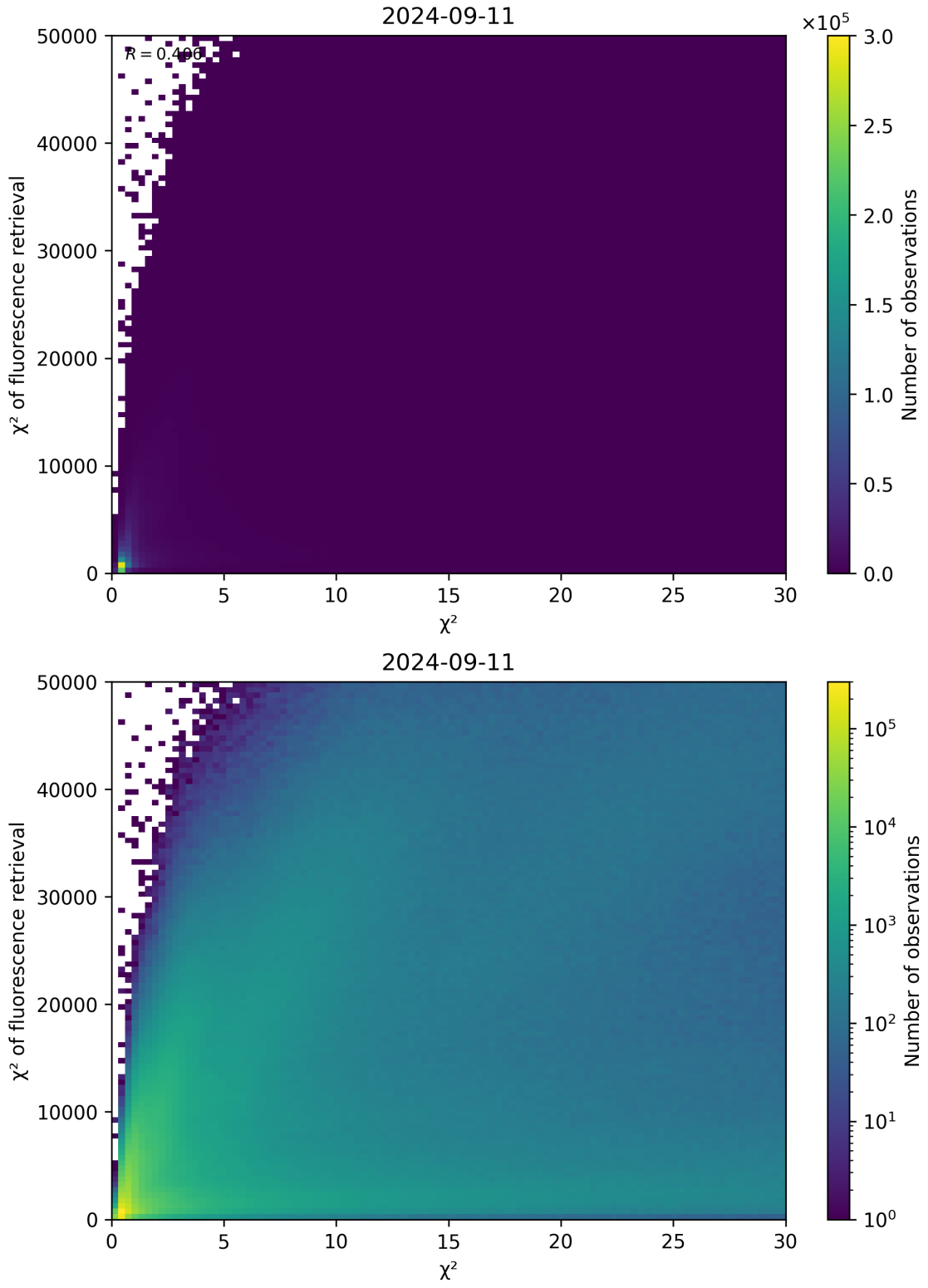

Figure 69: Scatter density plot of "χ^2" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

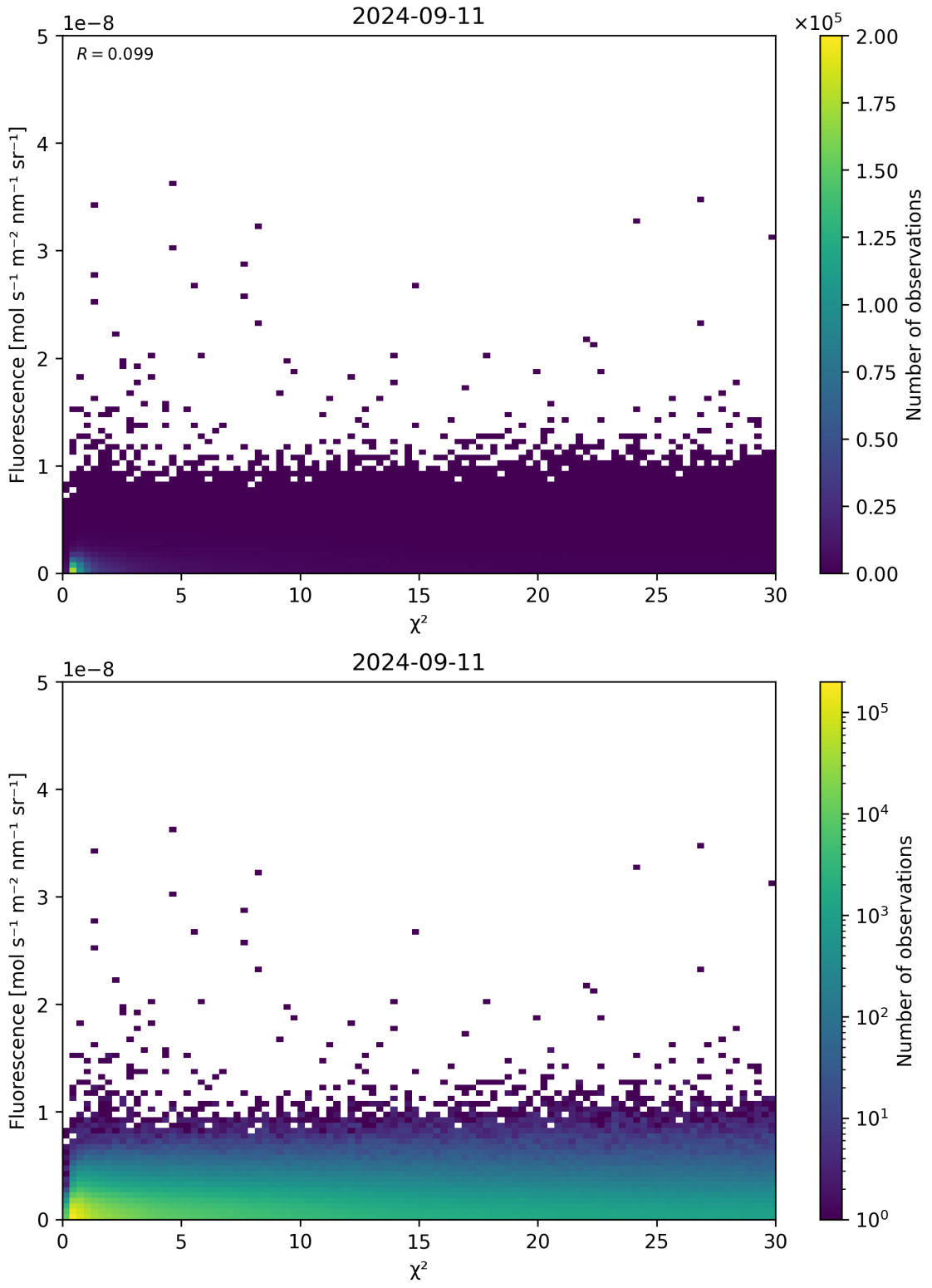

Figure 70: Scatter density plot of "χ^2" against "Fluorescence" for 2024-09-10 to 2024-09-12.

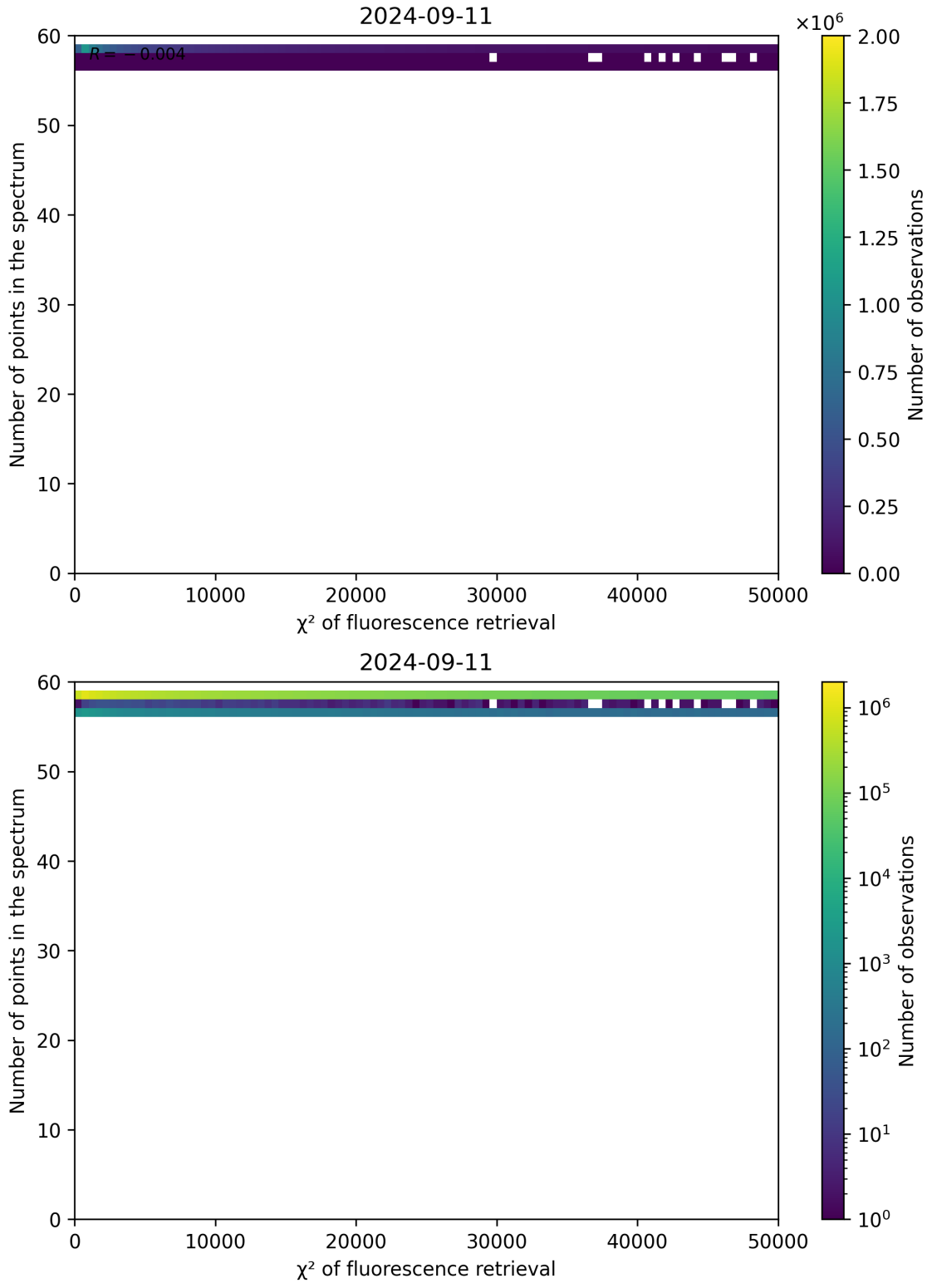

Figure 71: Scatter density plot of "χ^2 of fluorescence retrieval" against "Number of points in the spectrum" for 2024-09-10 to 2024-09-12.

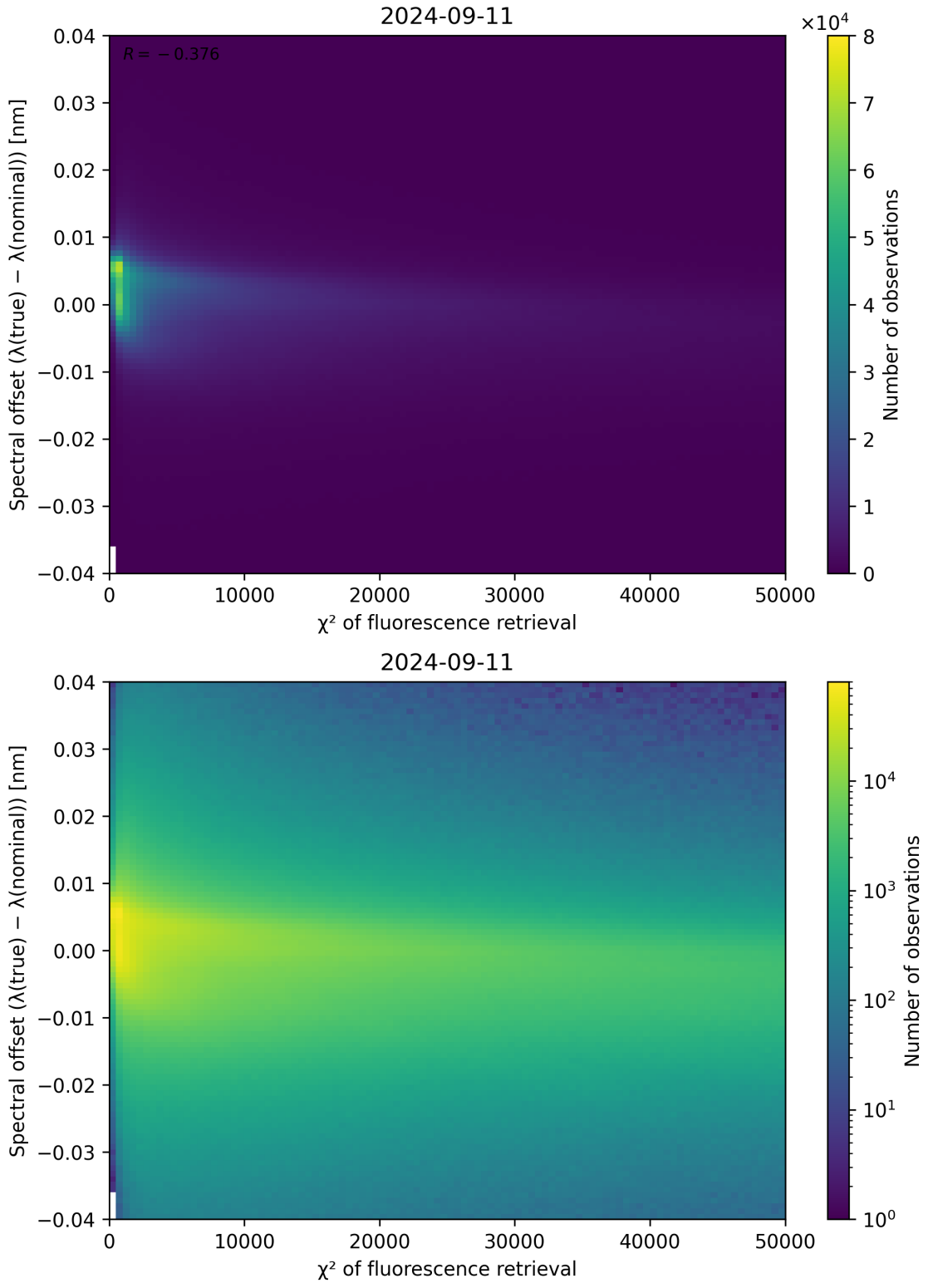

Figure 72: Scatter density plot of "χ^2 of fluorescence retrieval" against "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12.

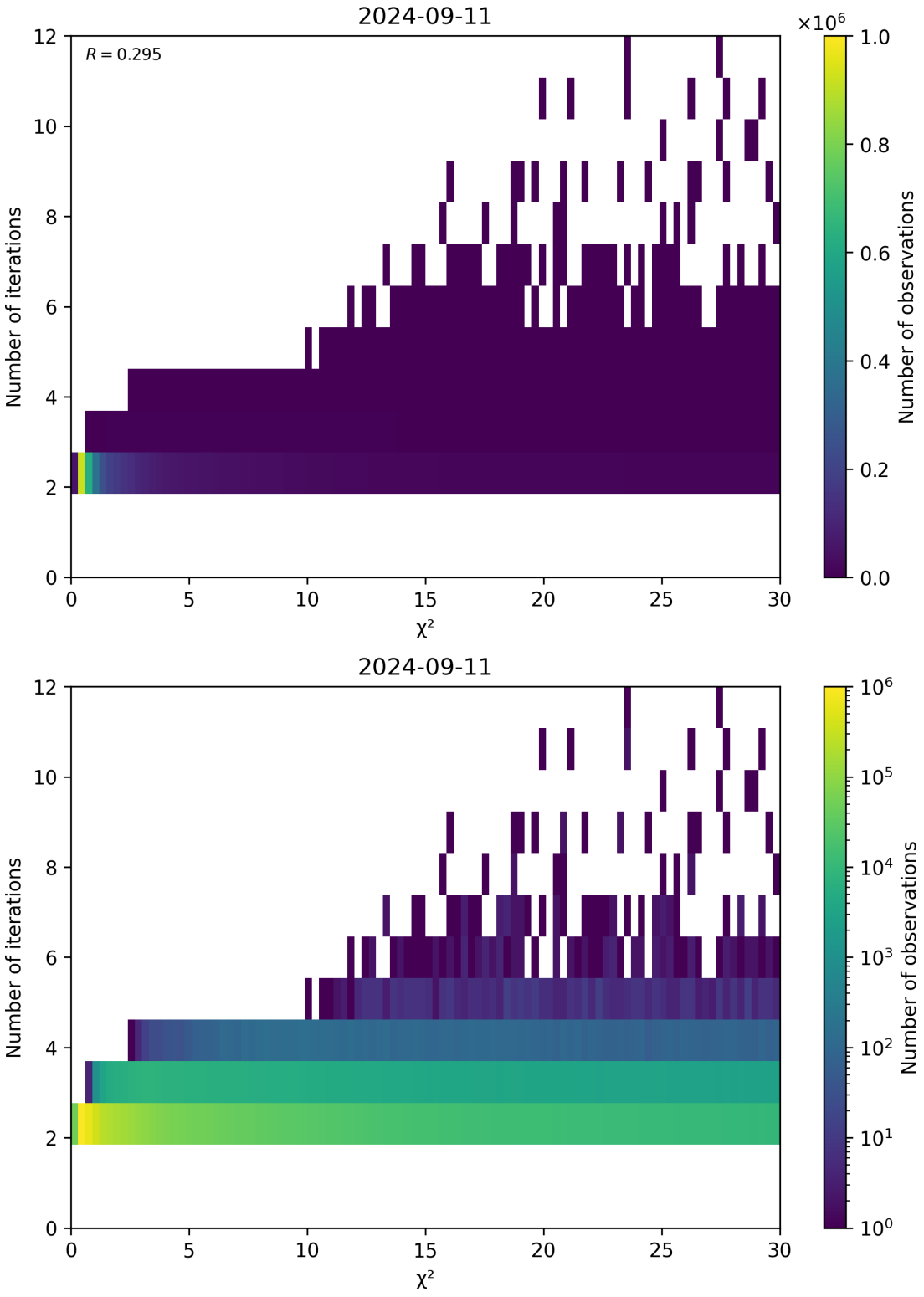

Figure 73: Scatter density plot of "χ^2" against "Number of iterations" for 2024-09-10 to 2024-09-12.

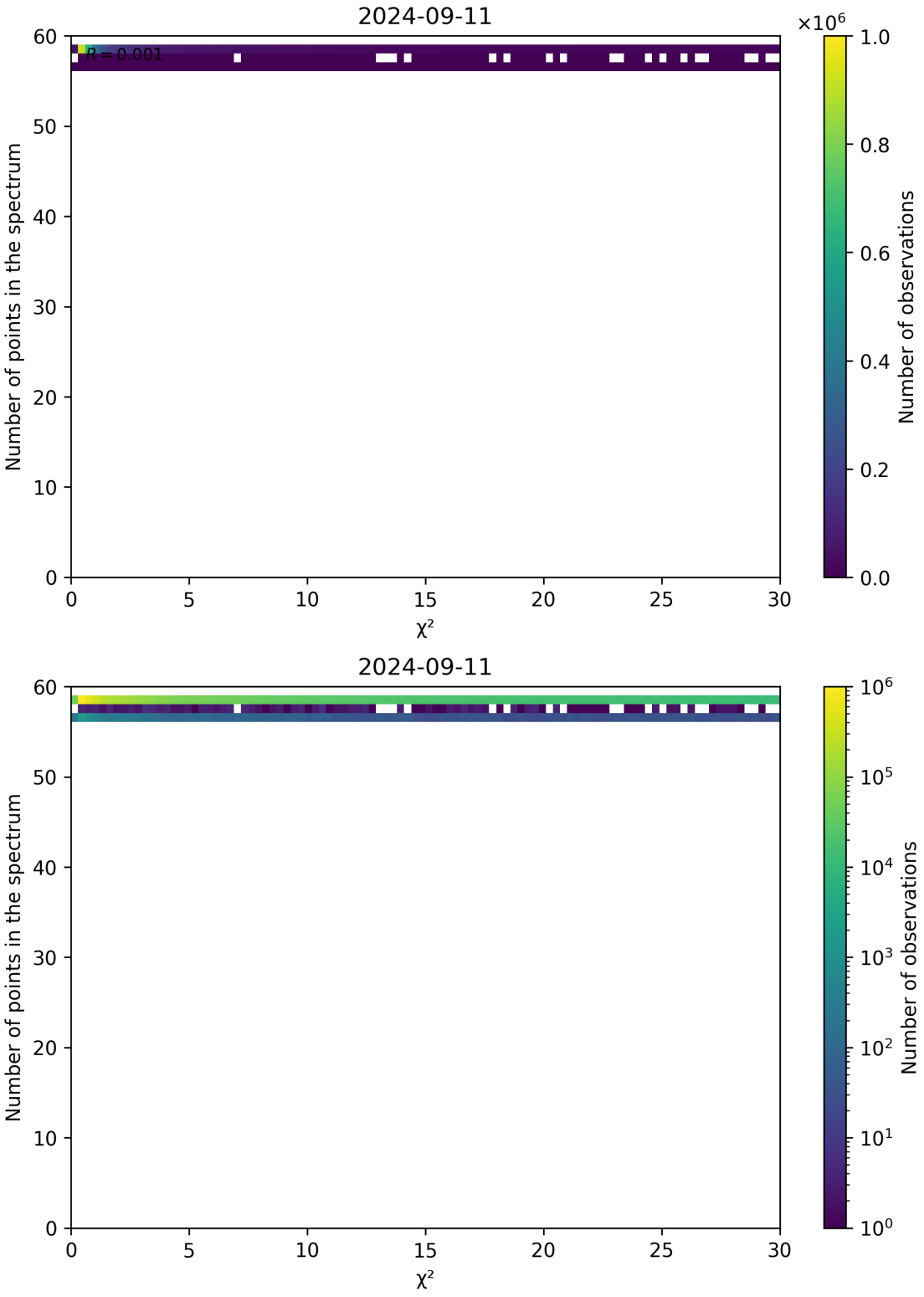

Figure 74: Scatter density plot of "χ^2" against "Number of points in the spectrum" for 2024-09-10 to 2024-09-12.

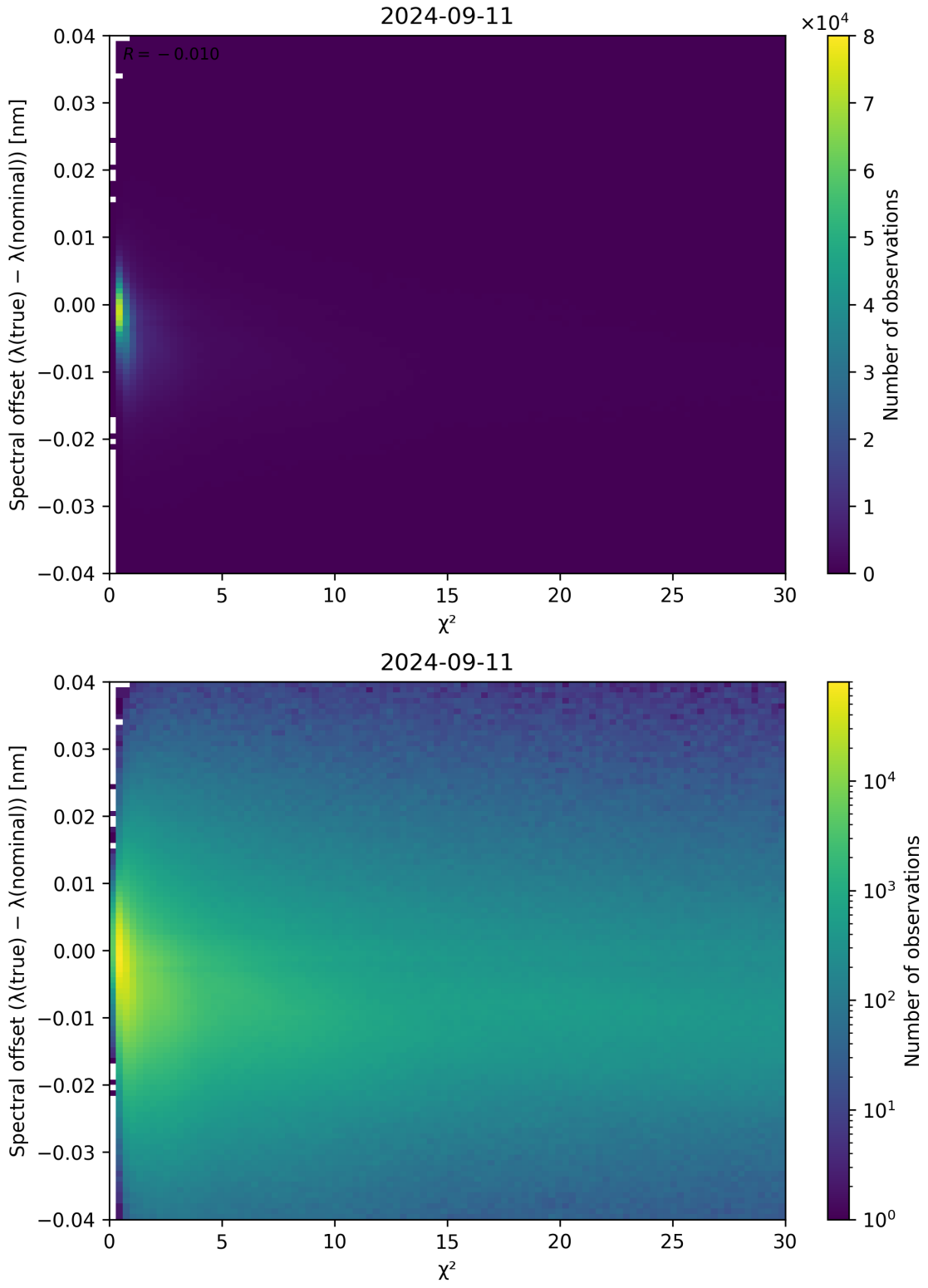

Figure 75: Scatter density plot of "χ^2" against "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12.

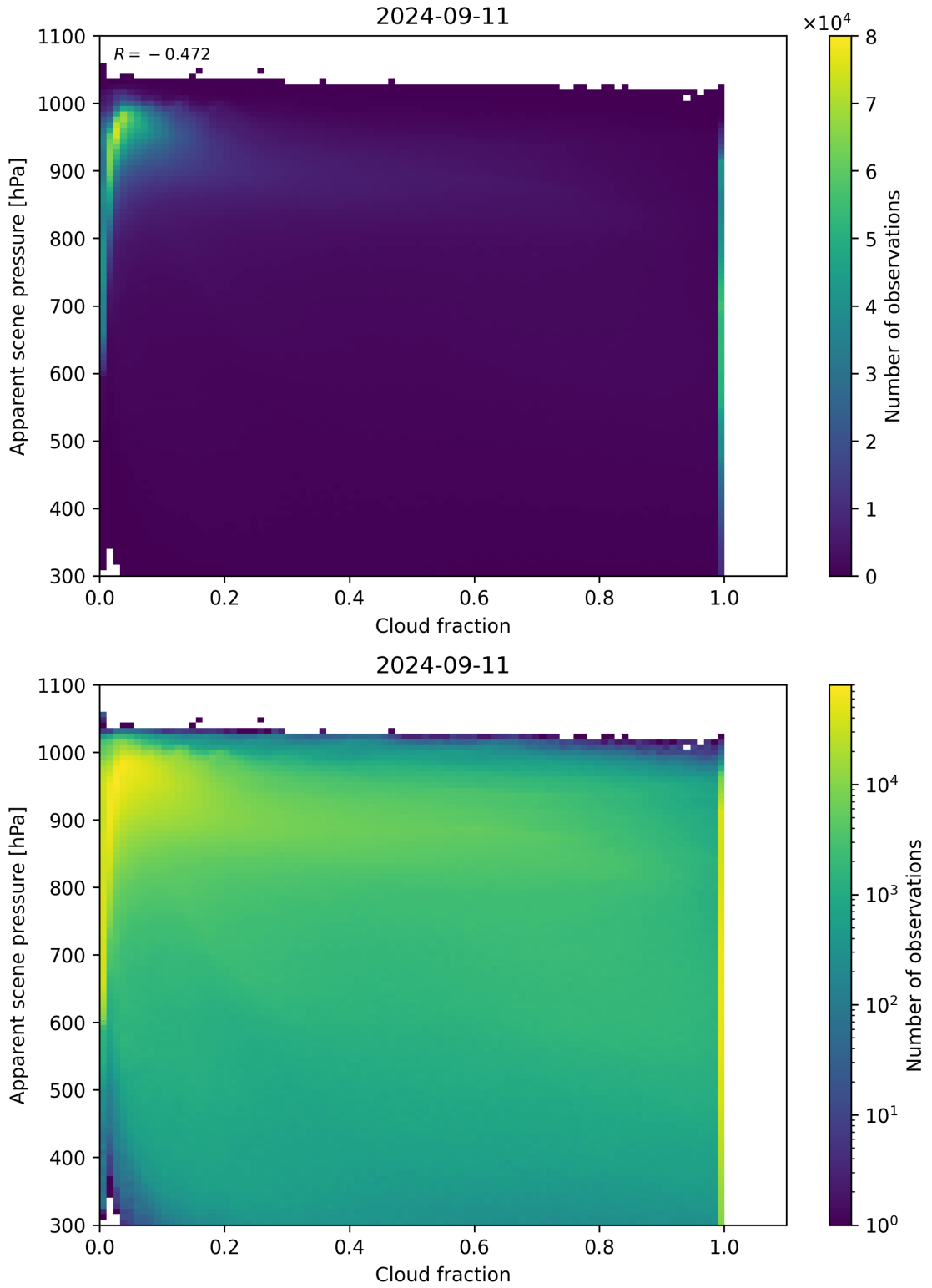

Figure 76: Scatter density plot of “Cloud fraction” against “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

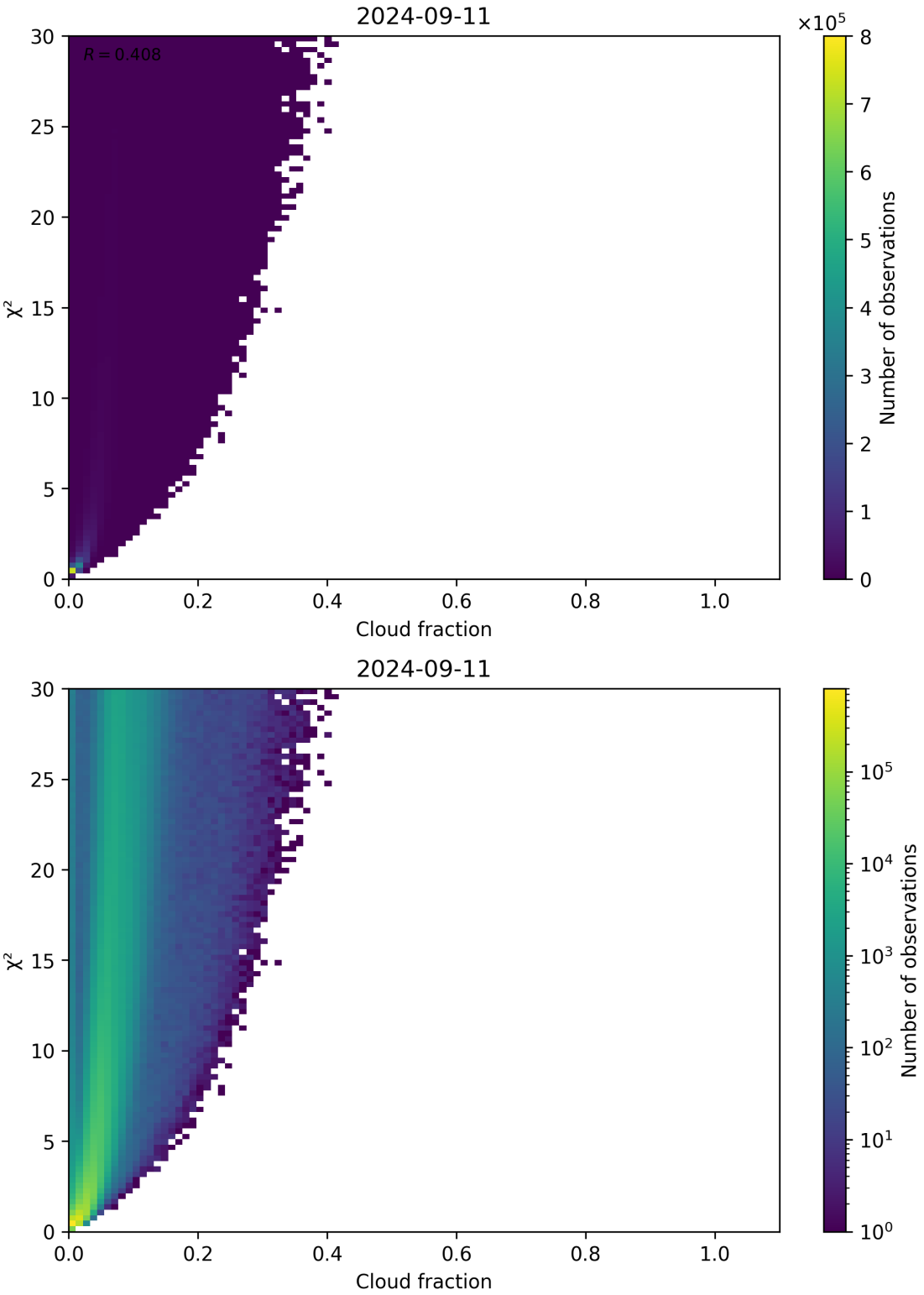

Figure 77: Scatter density plot of "Cloud fraction" against "χ^2" for 2024-09-10 to 2024-09-12.

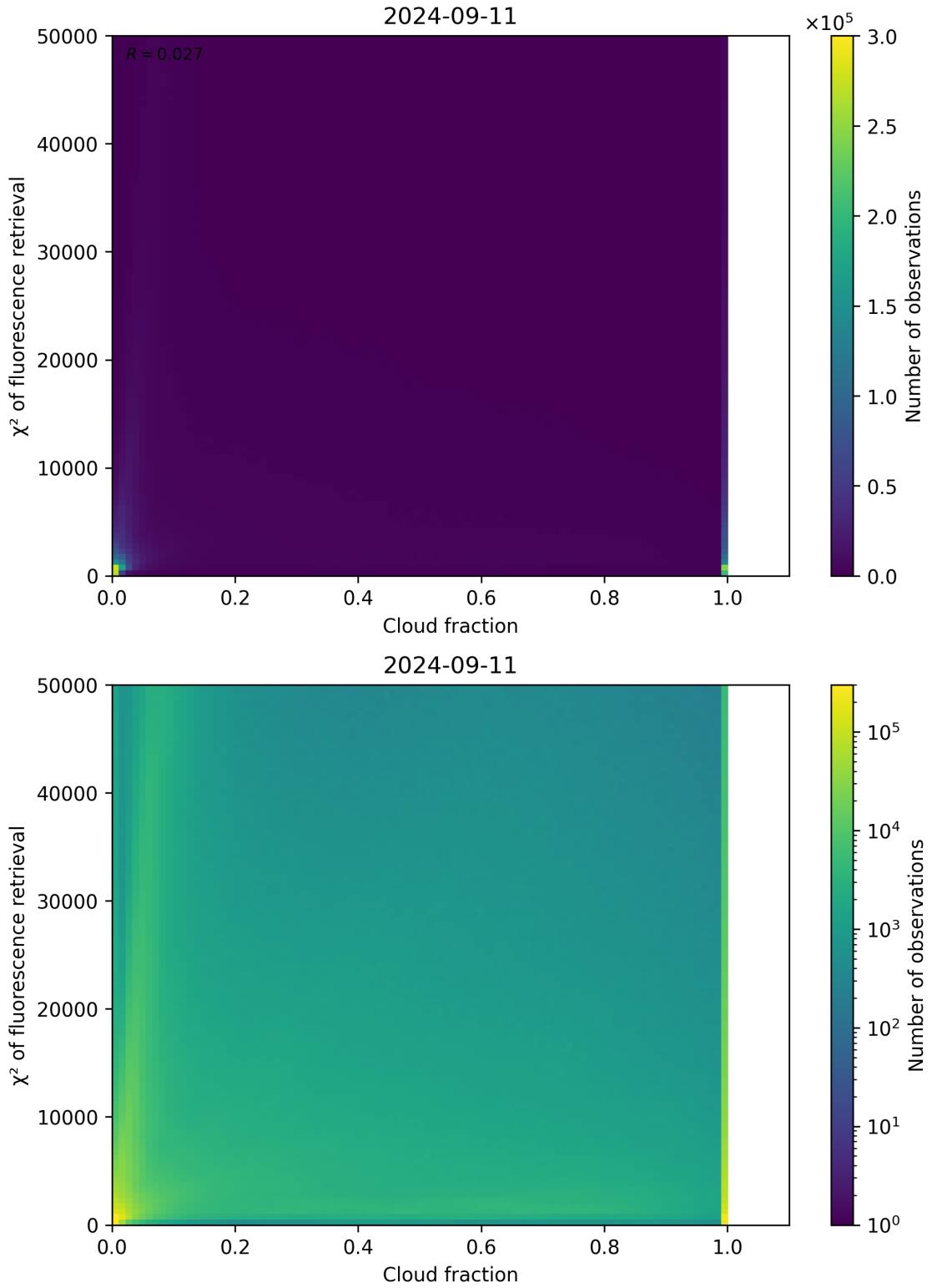

Figure 78: Scatter density plot of “Cloud fraction” against “χ^2 of fluorescence retrieval” for 2024-09-10 to 2024-09-12.

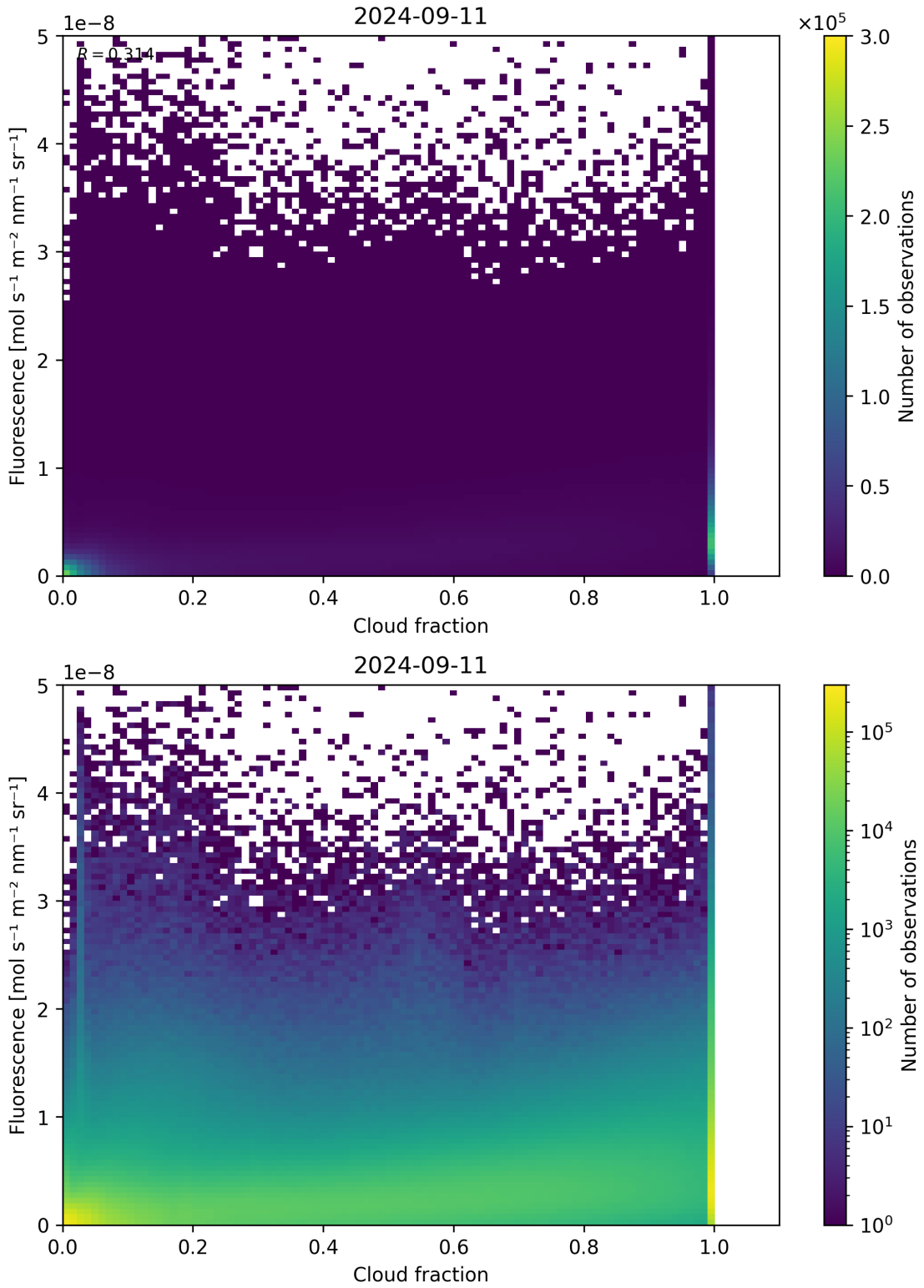

Figure 79: Scatter density plot of “Cloud fraction” against “Fluorescence” for 2024-09-10 to 2024-09-12.

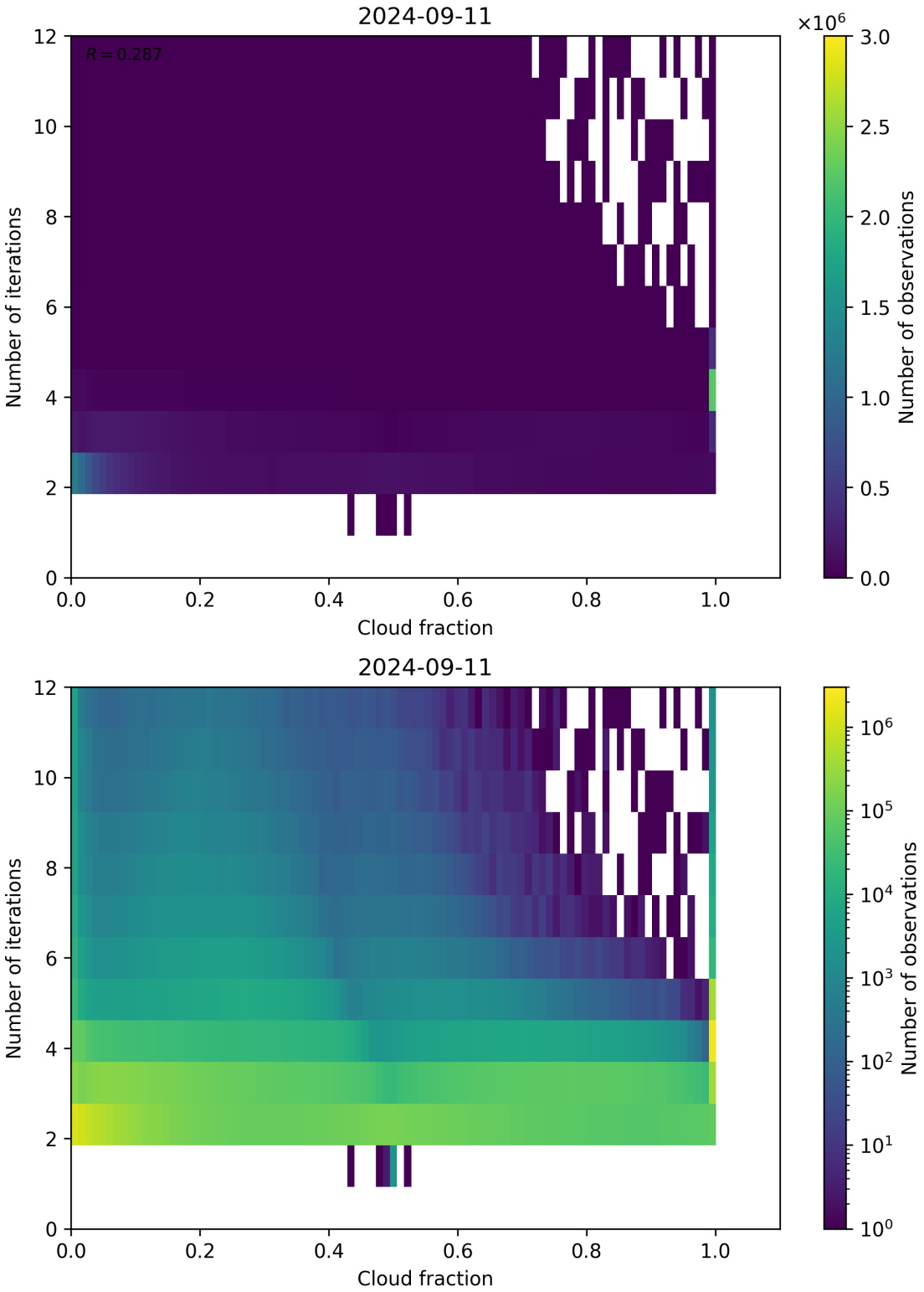

Figure 80: Scatter density plot of “Cloud fraction” against “Number of iterations” for 2024-09-10 to 2024-09-12.

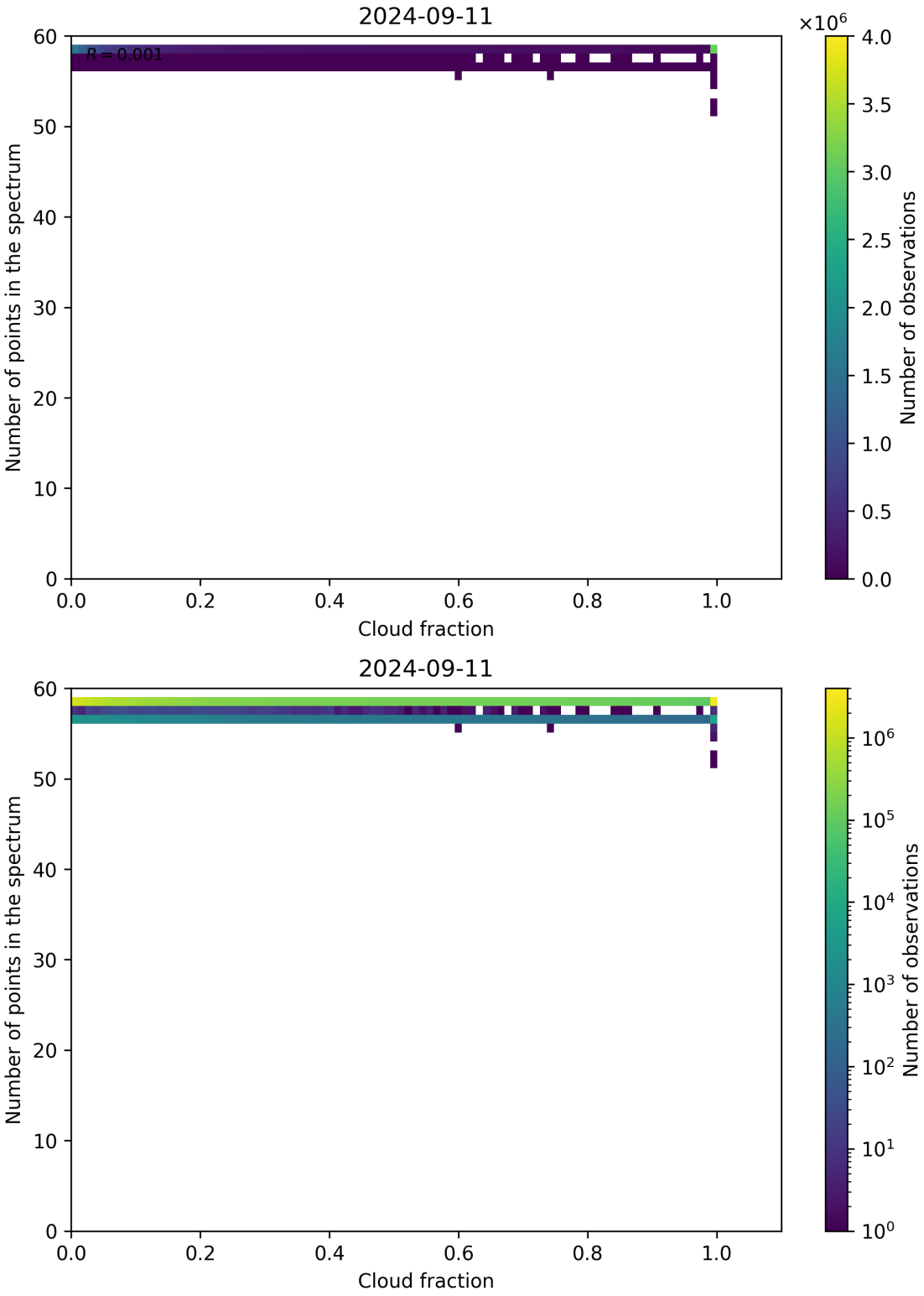

Figure 81: Scatter density plot of “Cloud fraction” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

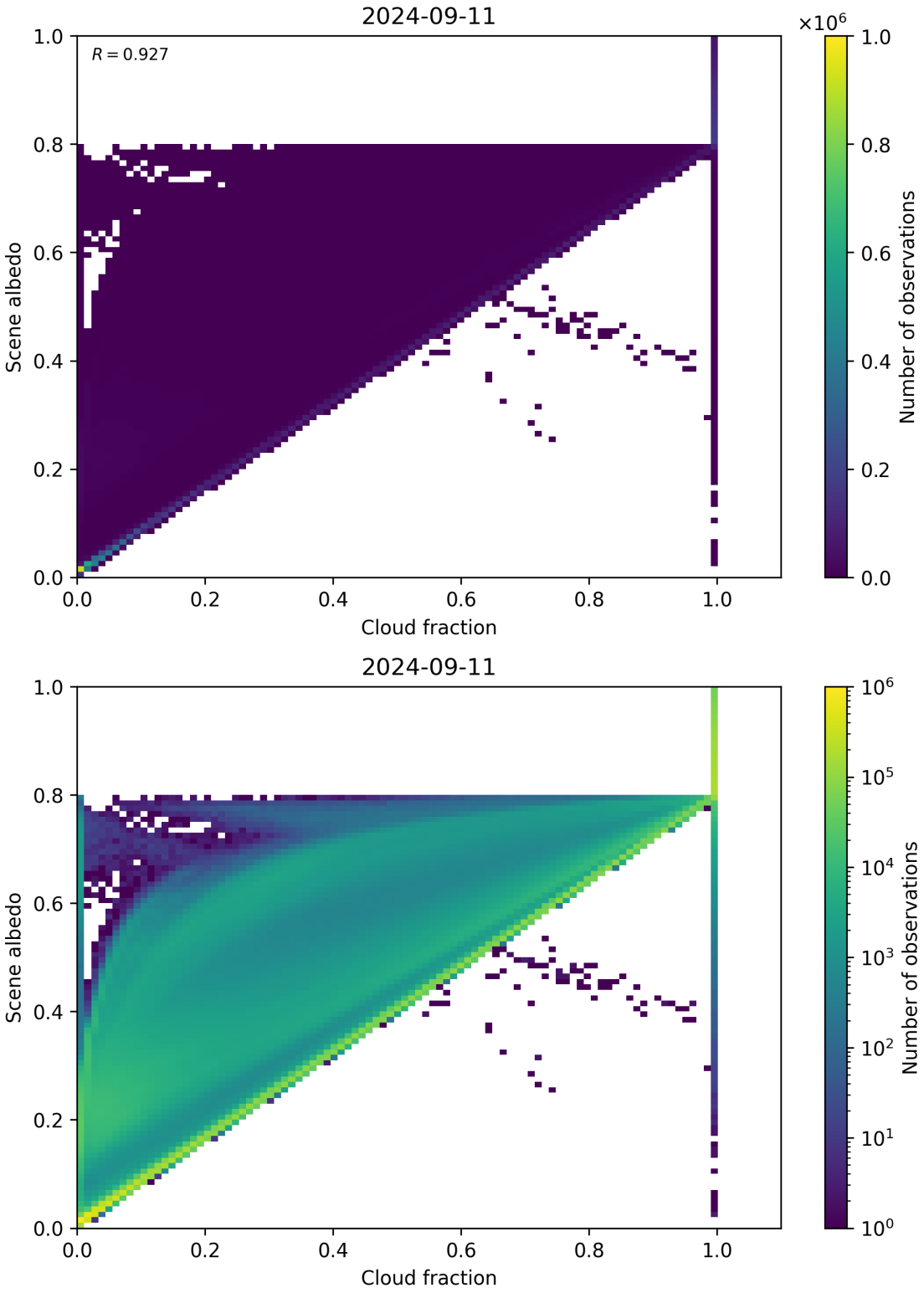

Figure 82: Scatter density plot of “Cloud fraction” against “Scene albedo” for 2024-09-10 to 2024-09-12.

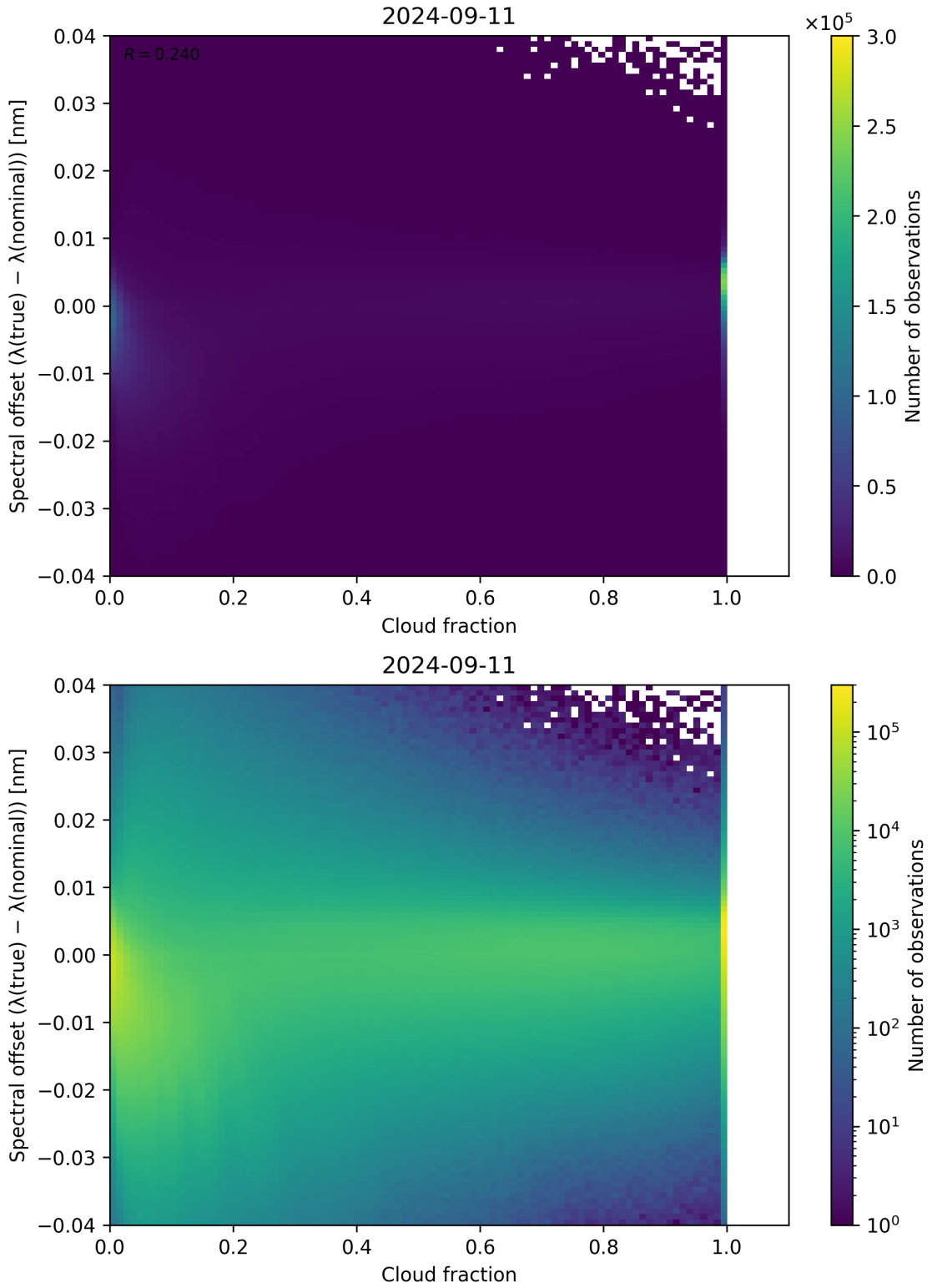

Figure 83: Scatter density plot of “Cloud fraction” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

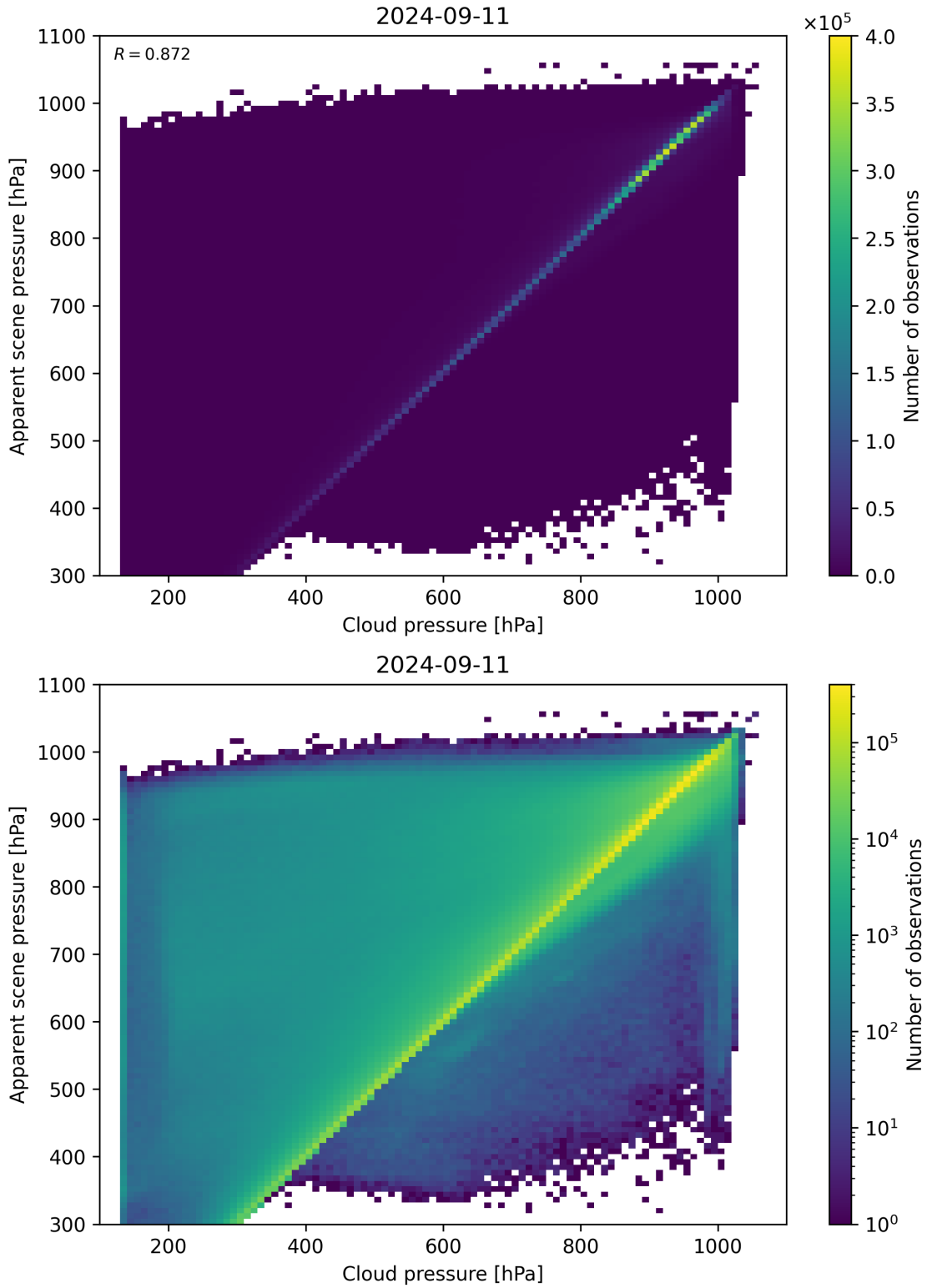

Figure 84: Scatter density plot of “Cloud pressure” against “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

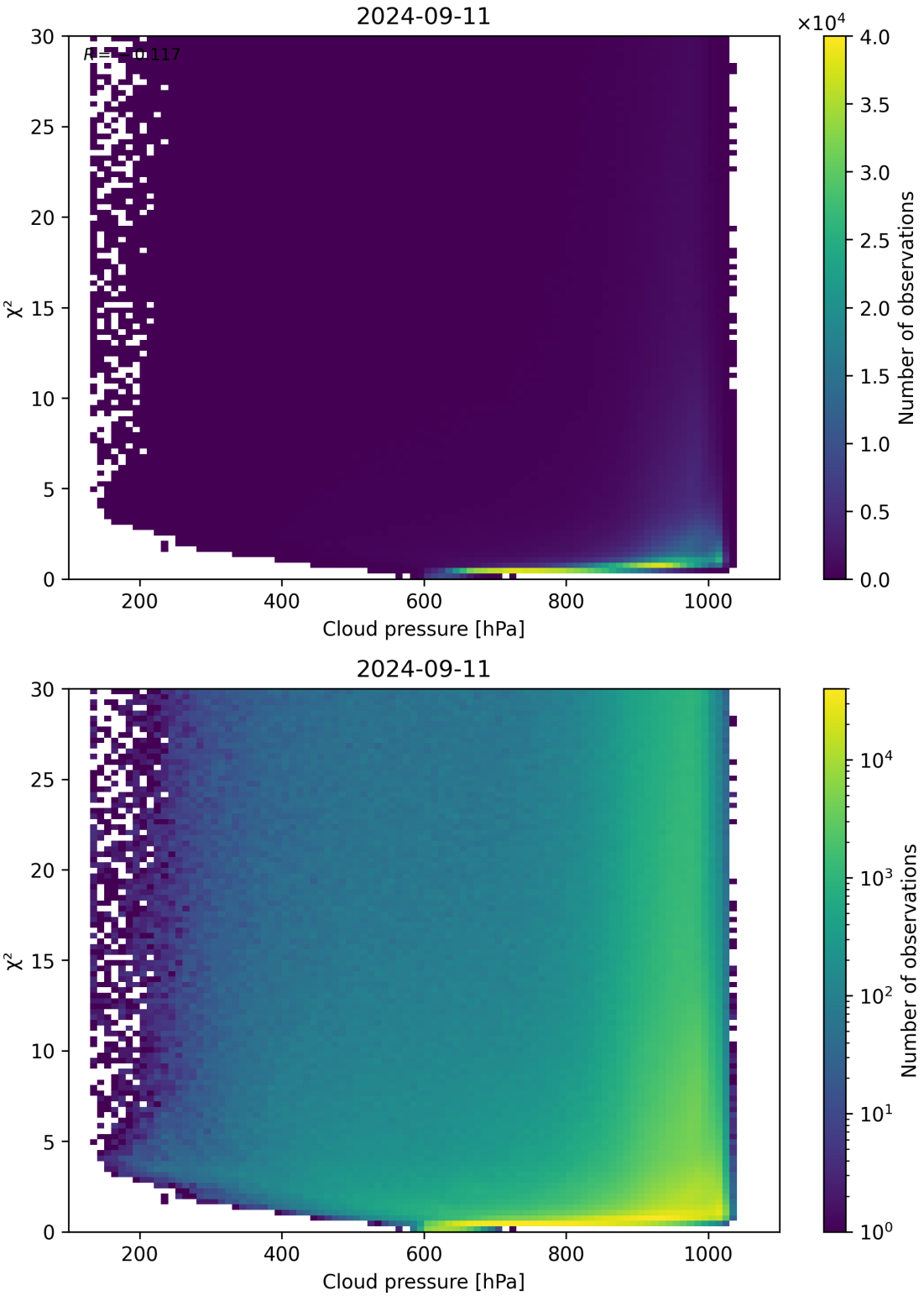

Figure 85: Scatter density plot of "Cloud pressure" against "χ^2" for 2024-09-10 to 2024-09-12.

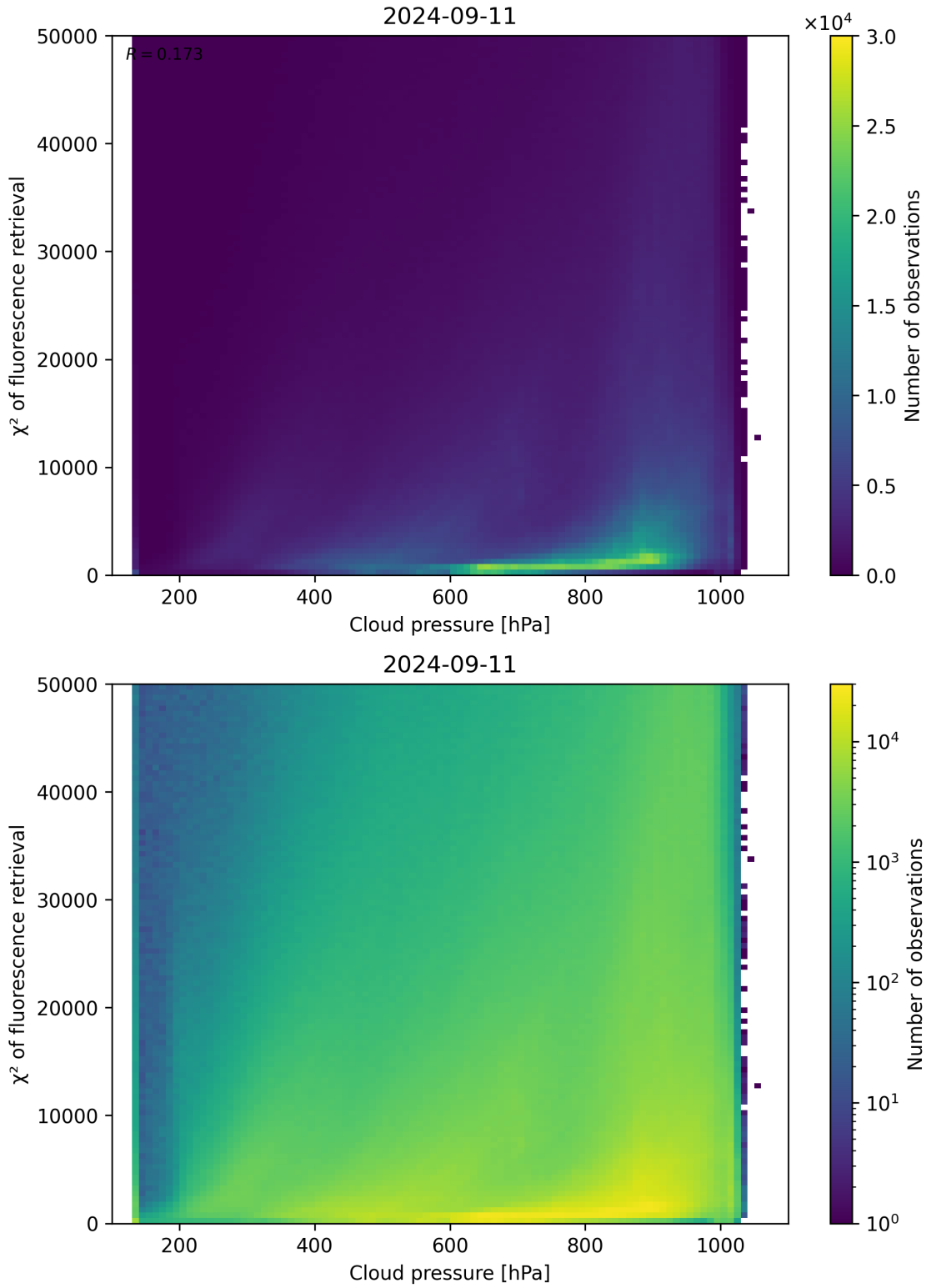

Figure 86: Scatter density plot of “Cloud pressure” against “χ^2 of fluorescence retrieval” for 2024-09-10 to 2024-09-12.

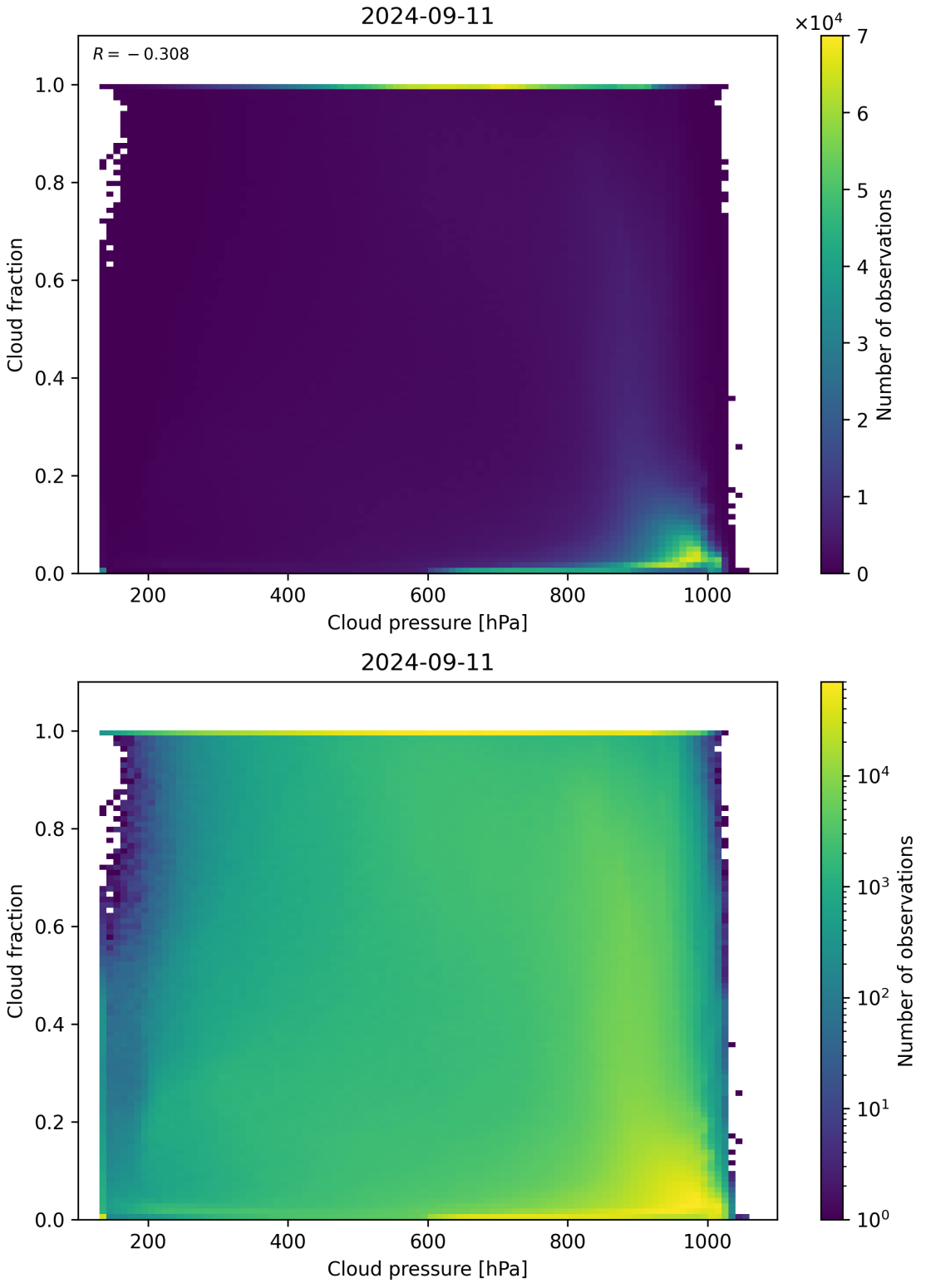

Figure 87: Scatter density plot of “Cloud pressure” against “Cloud fraction” for 2024-09-10 to 2024-09-12.

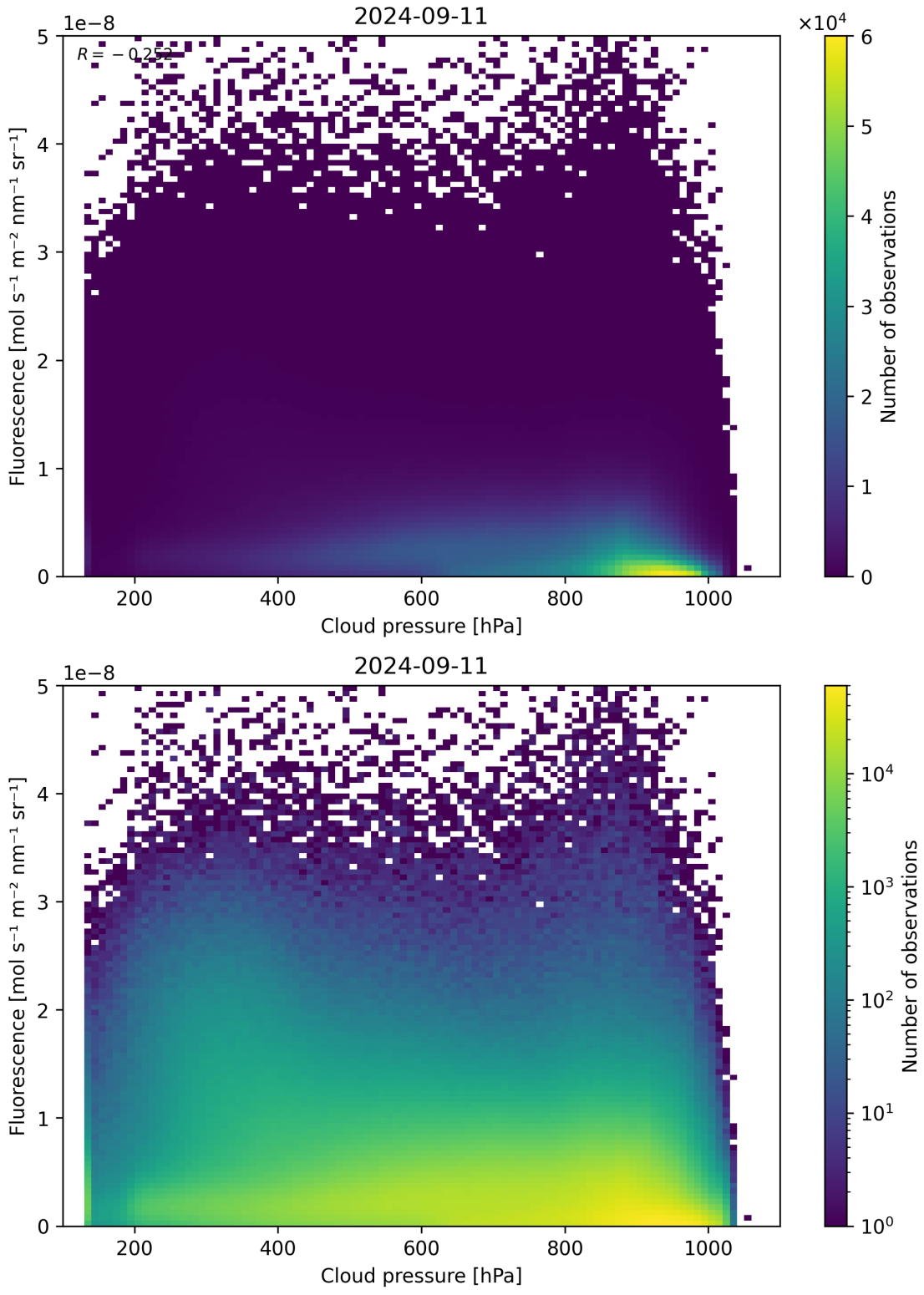

Figure 88: Scatter density plot of “Cloud pressure” against “Fluorescence” for 2024-09-10 to 2024-09-12.

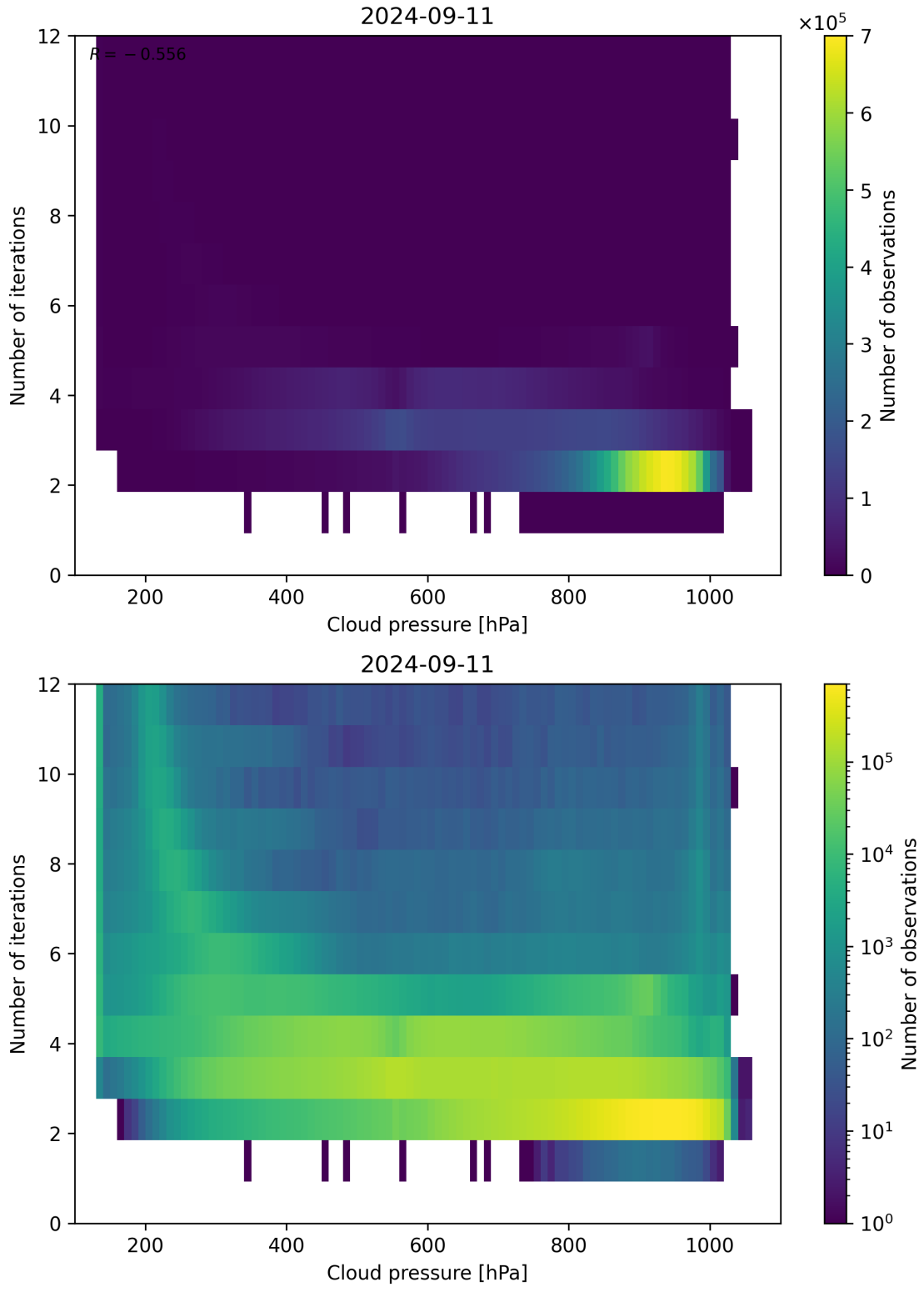

Figure 89: Scatter density plot of “Cloud pressure” against “Number of iterations” for 2024-09-10 to 2024-09-12.

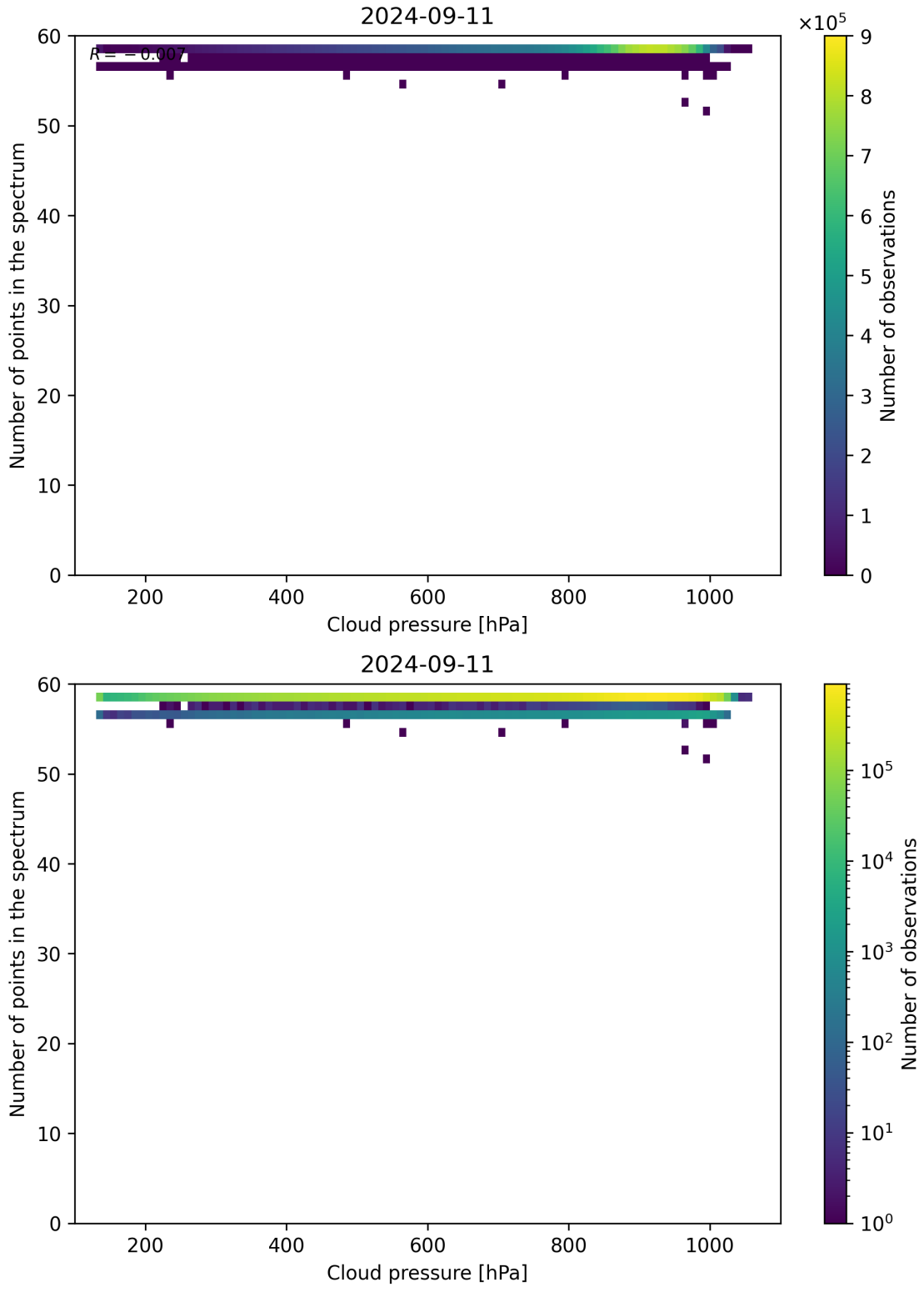

Figure 90: Scatter density plot of “Cloud pressure” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

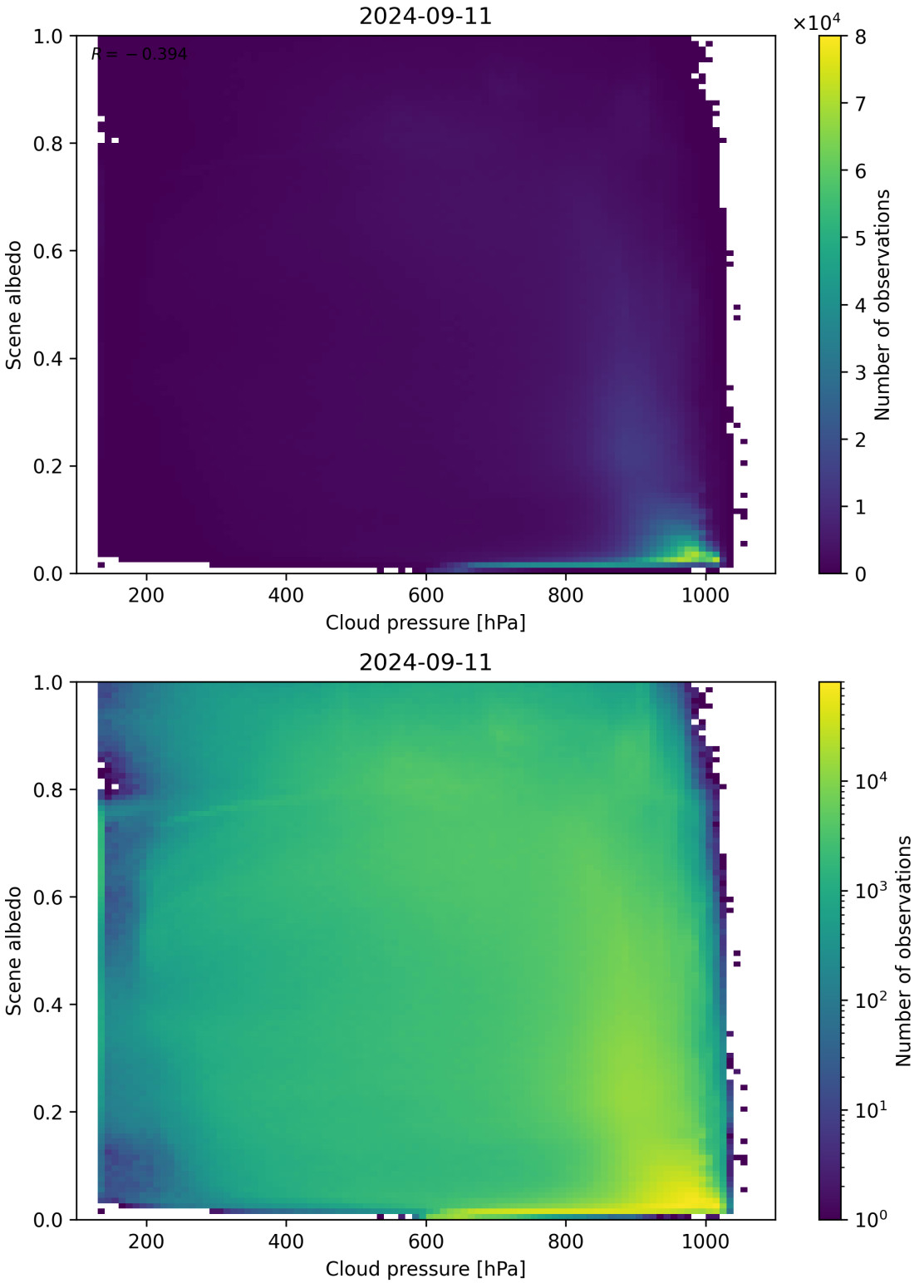

Figure 91: Scatter density plot of “Cloud pressure” against “Scene albedo” for 2024-09-10 to 2024-09-12.

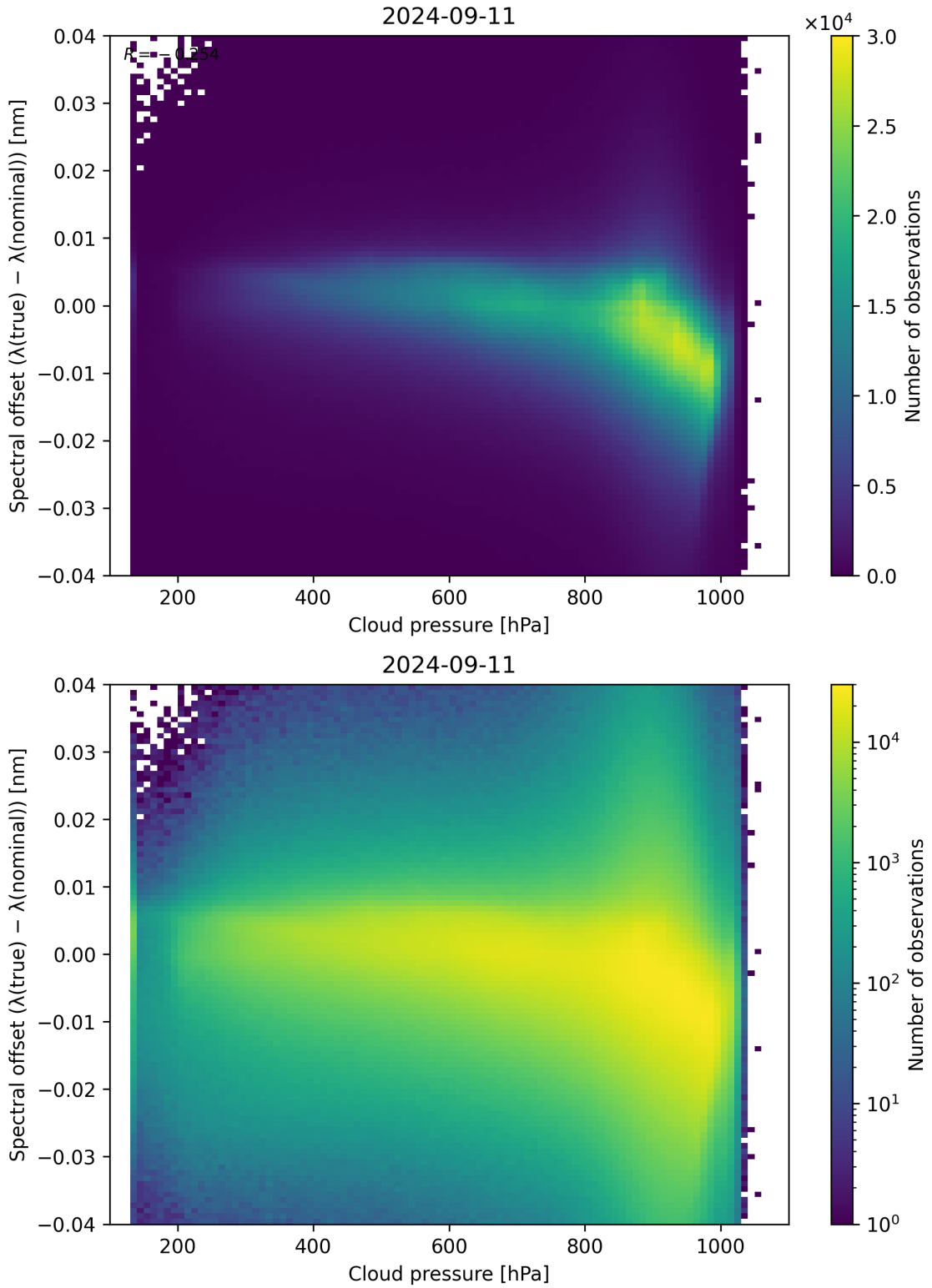

Figure 92: Scatter density plot of “Cloud pressure” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

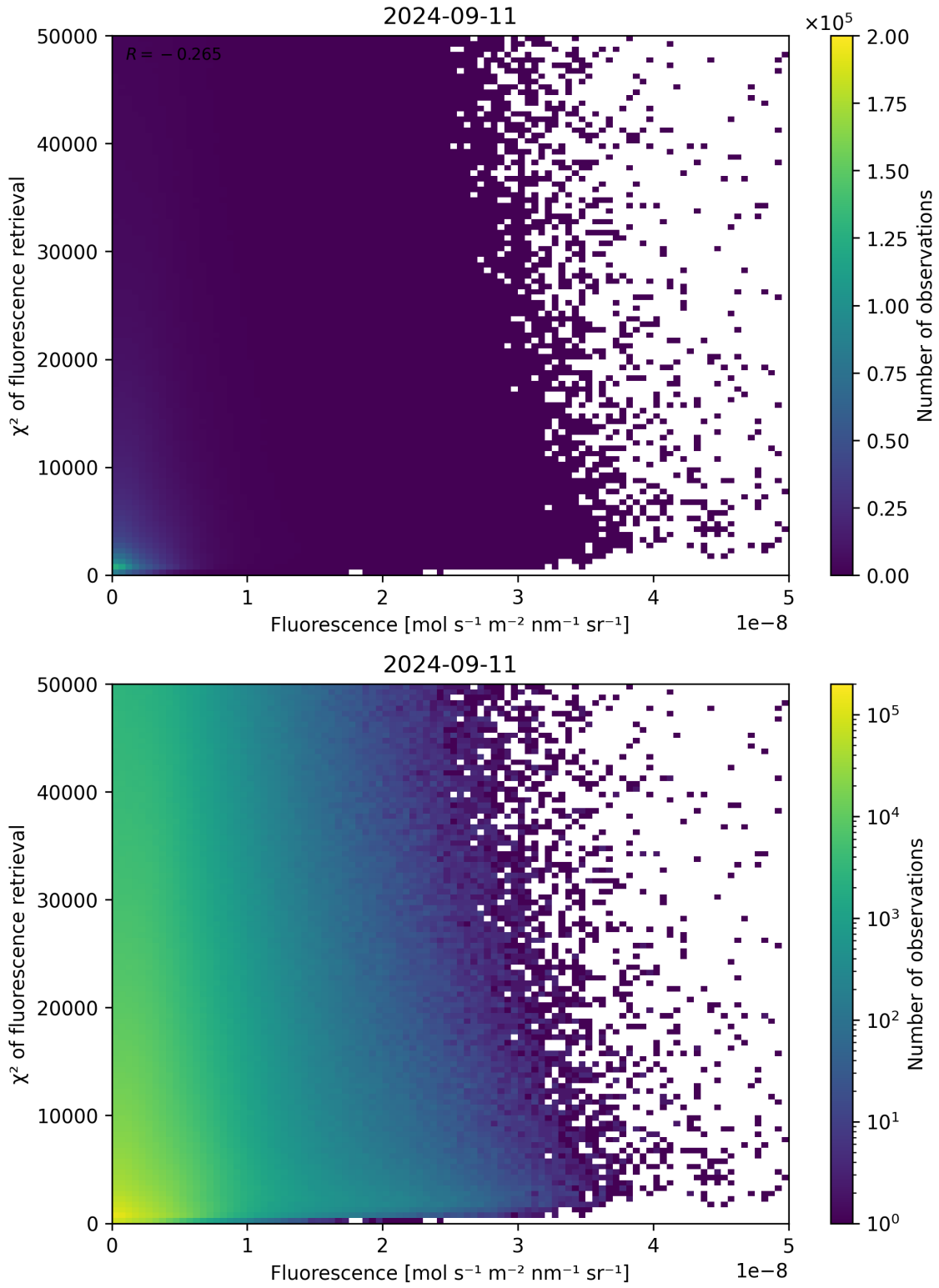

Figure 93: Scatter density plot of "Fluorescence" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

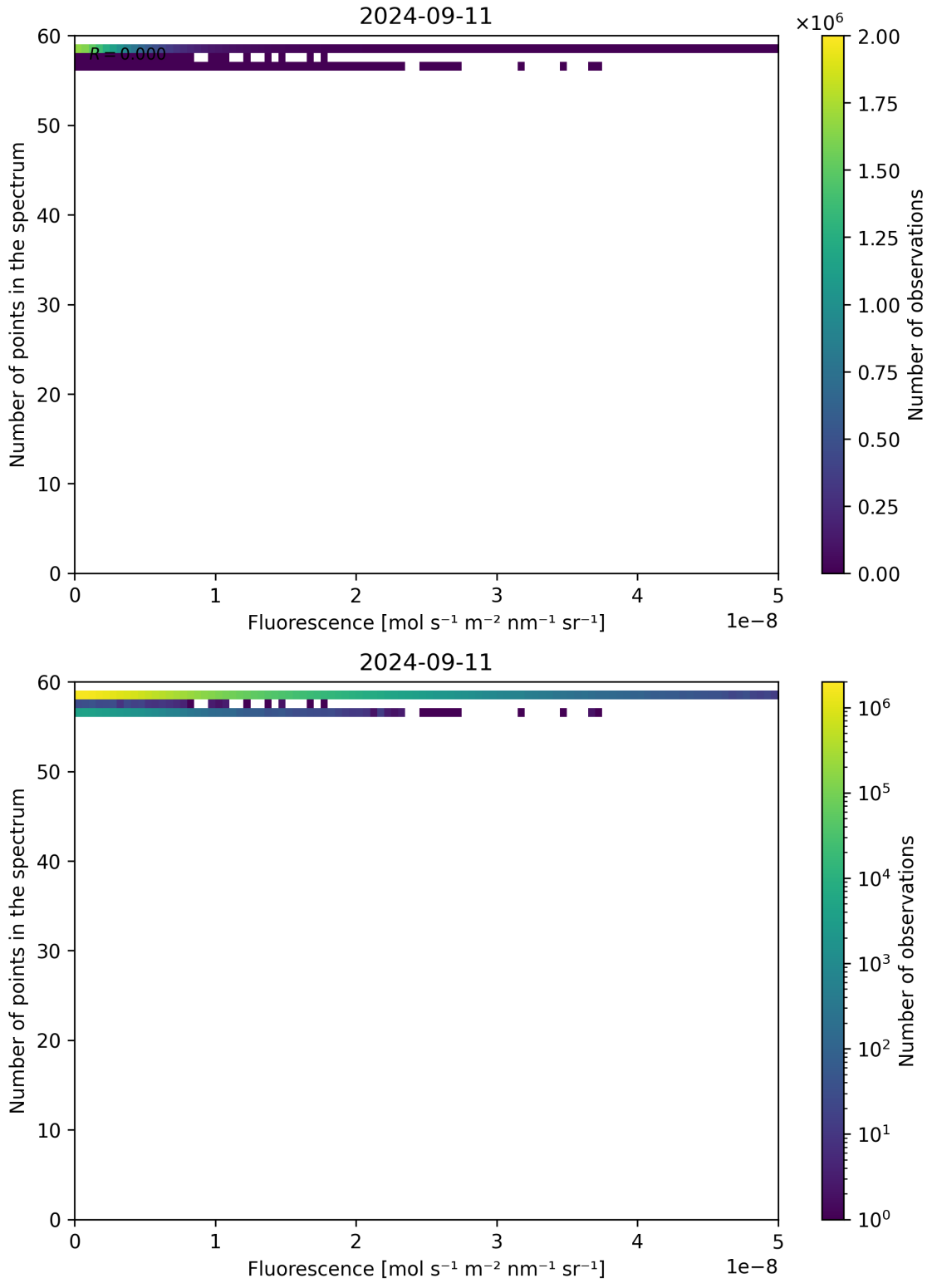

Figure 94: Scatter density plot of “Fluorescence” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

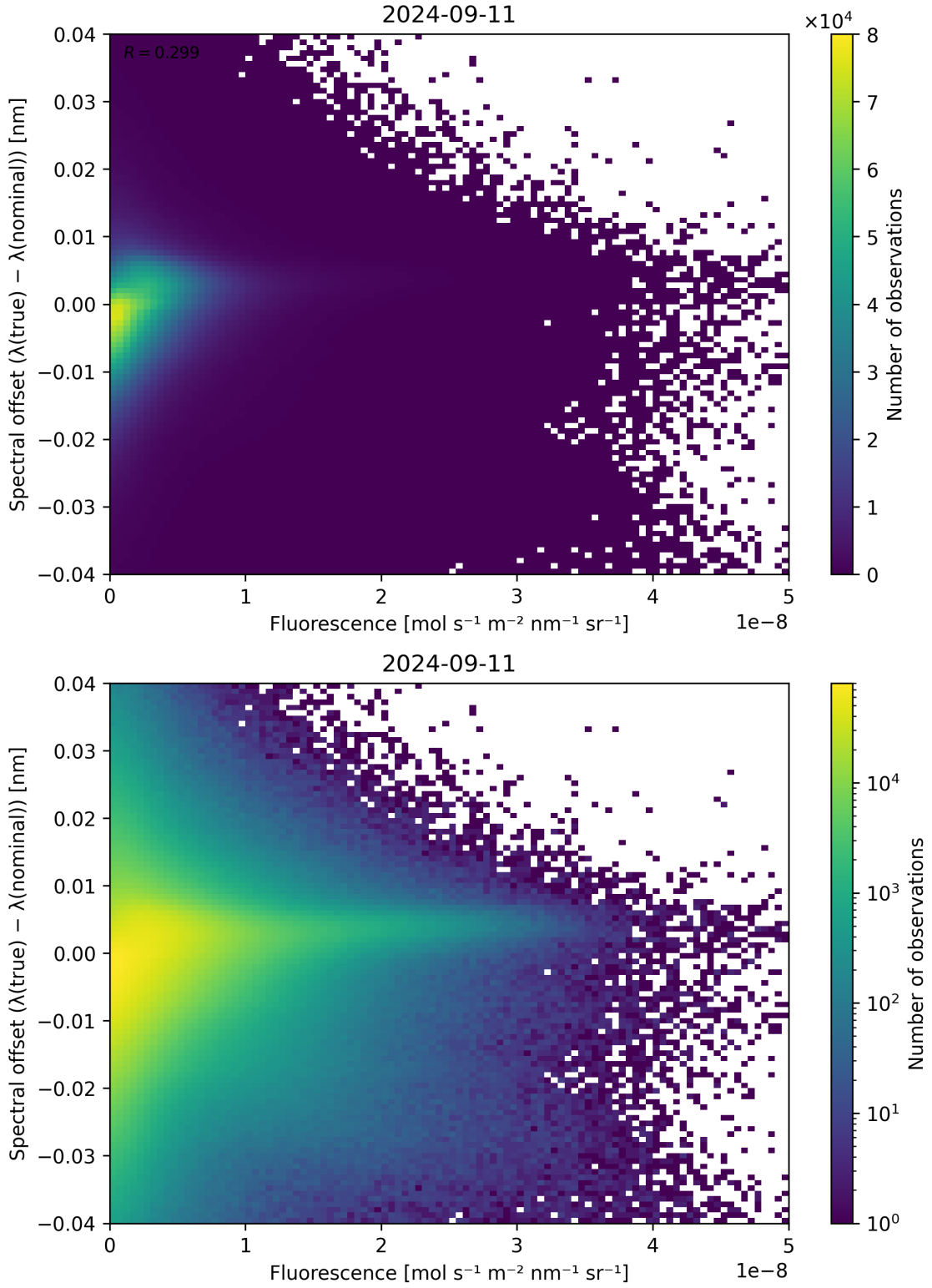

Figure 95: Scatter density plot of “Fluorescence” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

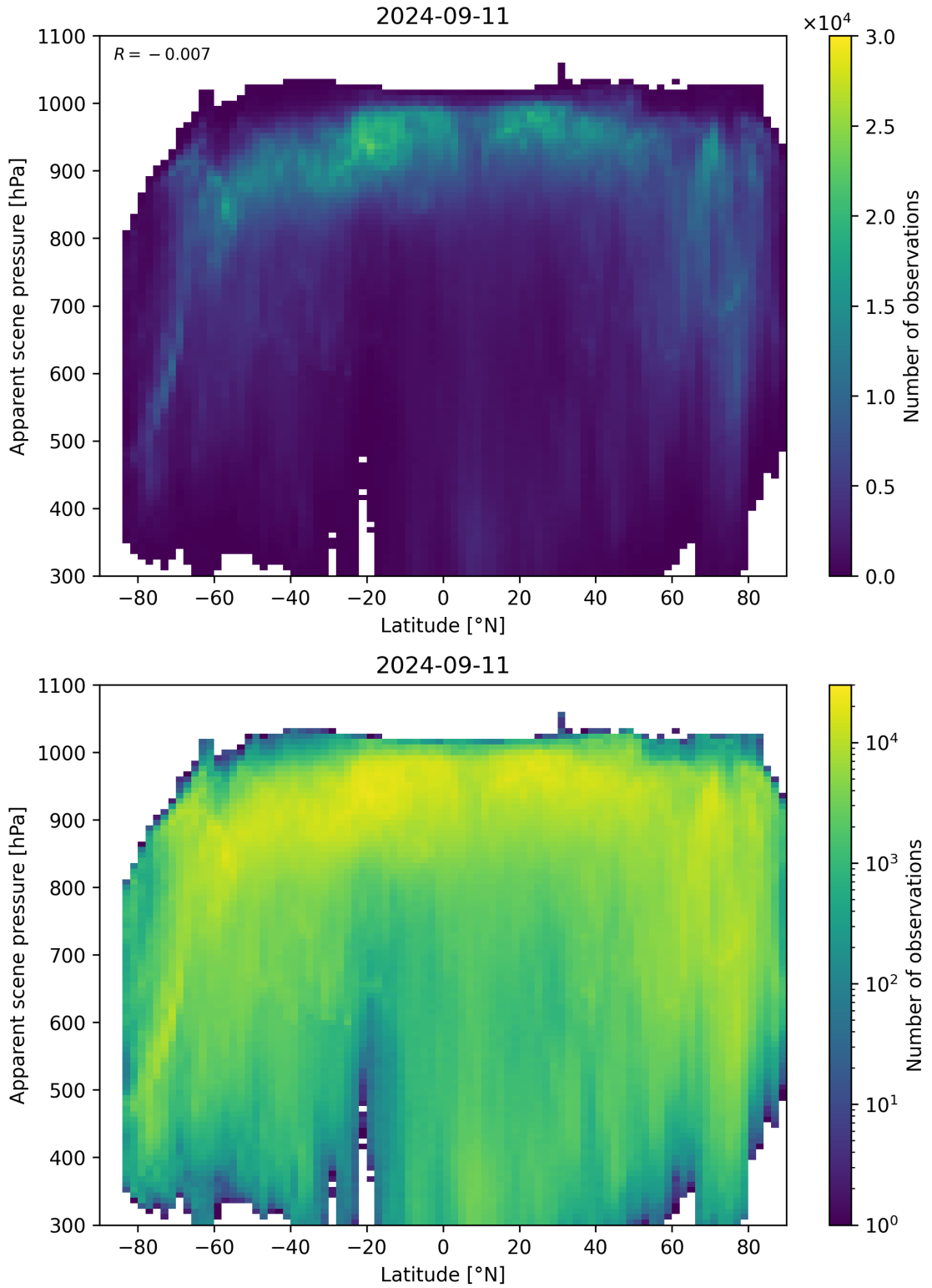

Figure 96: Scatter density plot of “Latitude” against “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

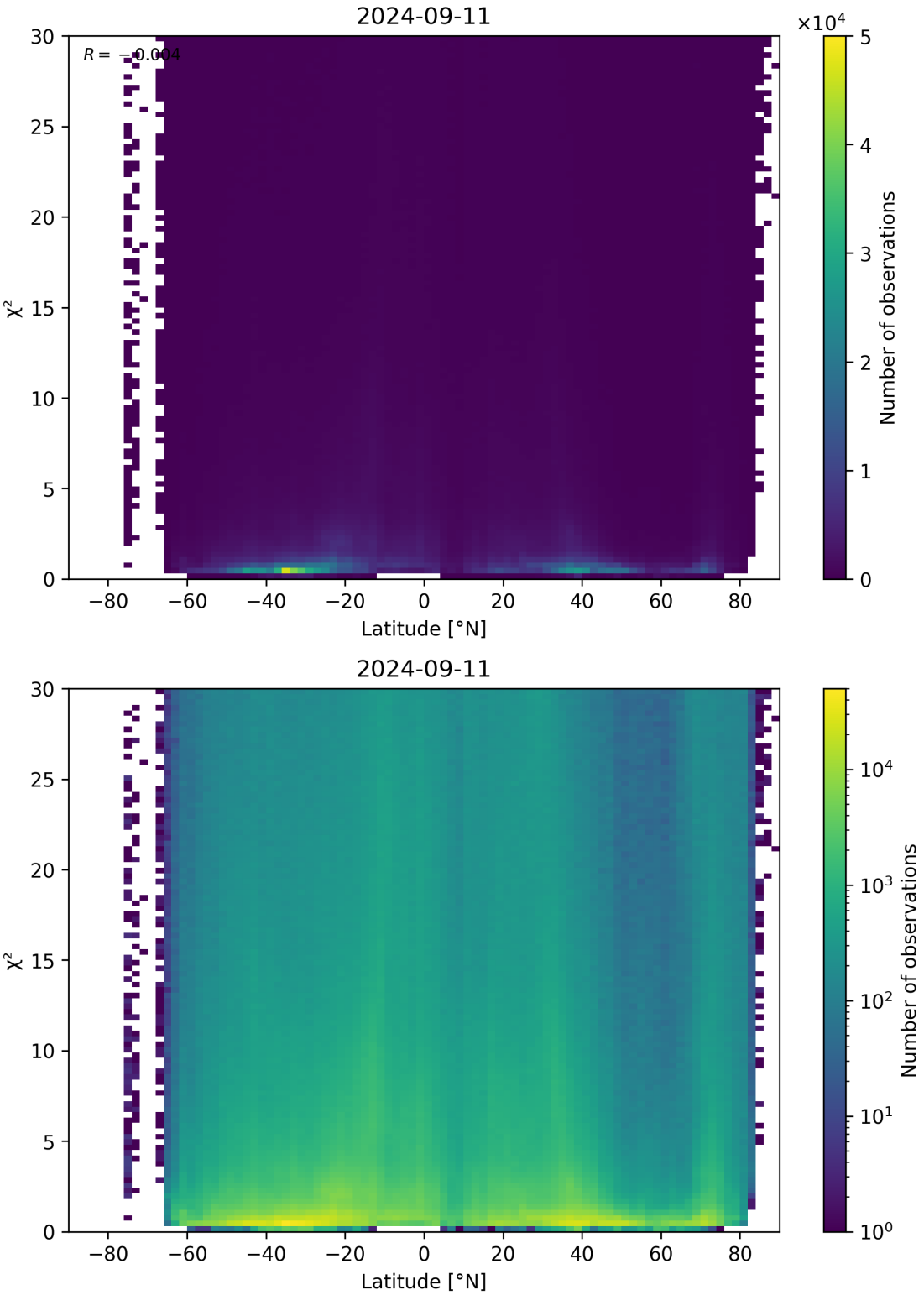

Figure 97: Scatter density plot of "Latitude" against "χ^2" for 2024-09-10 to 2024-09-12.

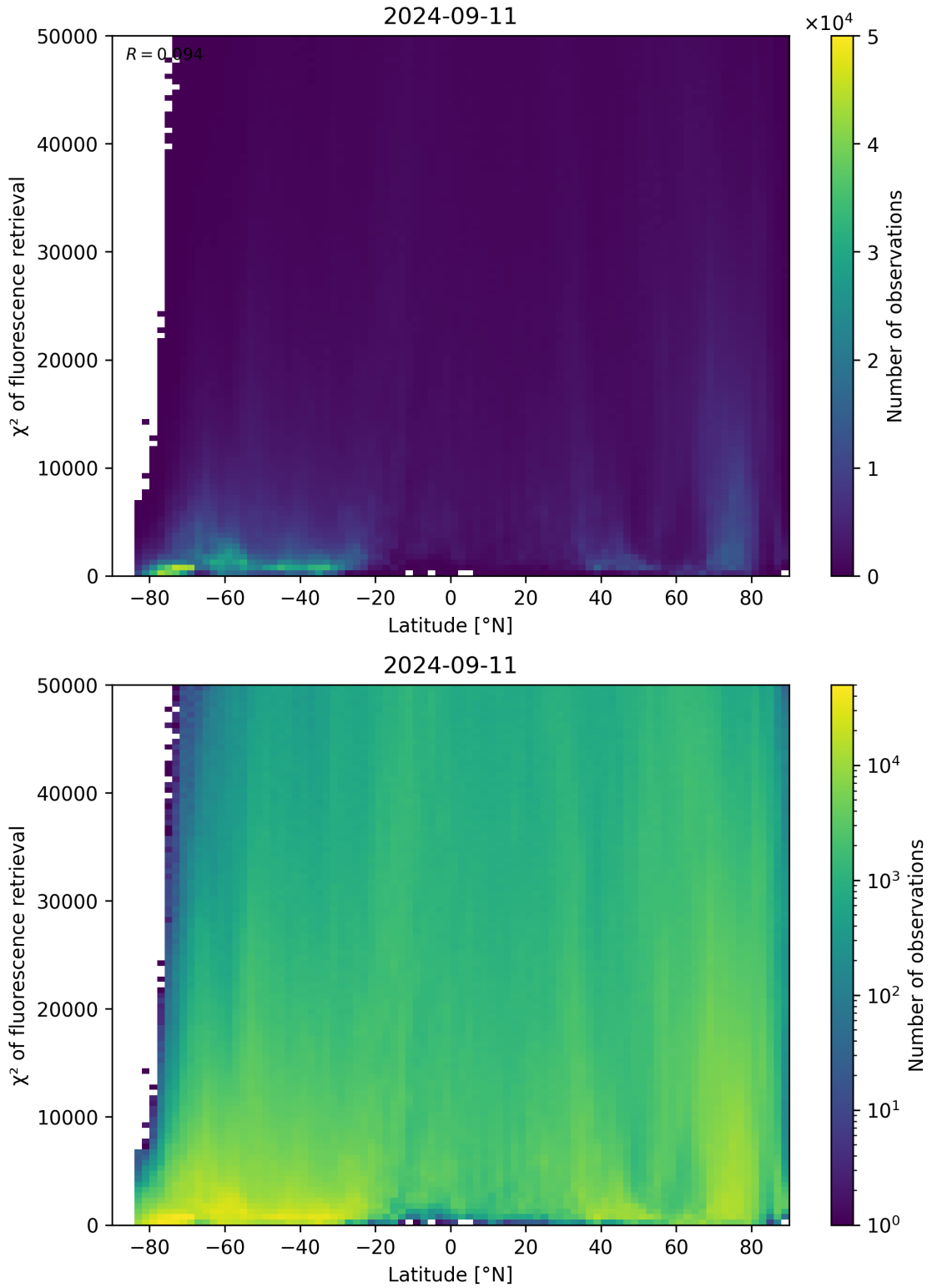

Figure 98: Scatter density plot of “Latitude” against “χ^2 of fluorescence retrieval” for 2024-09-10 to 2024-09-12.

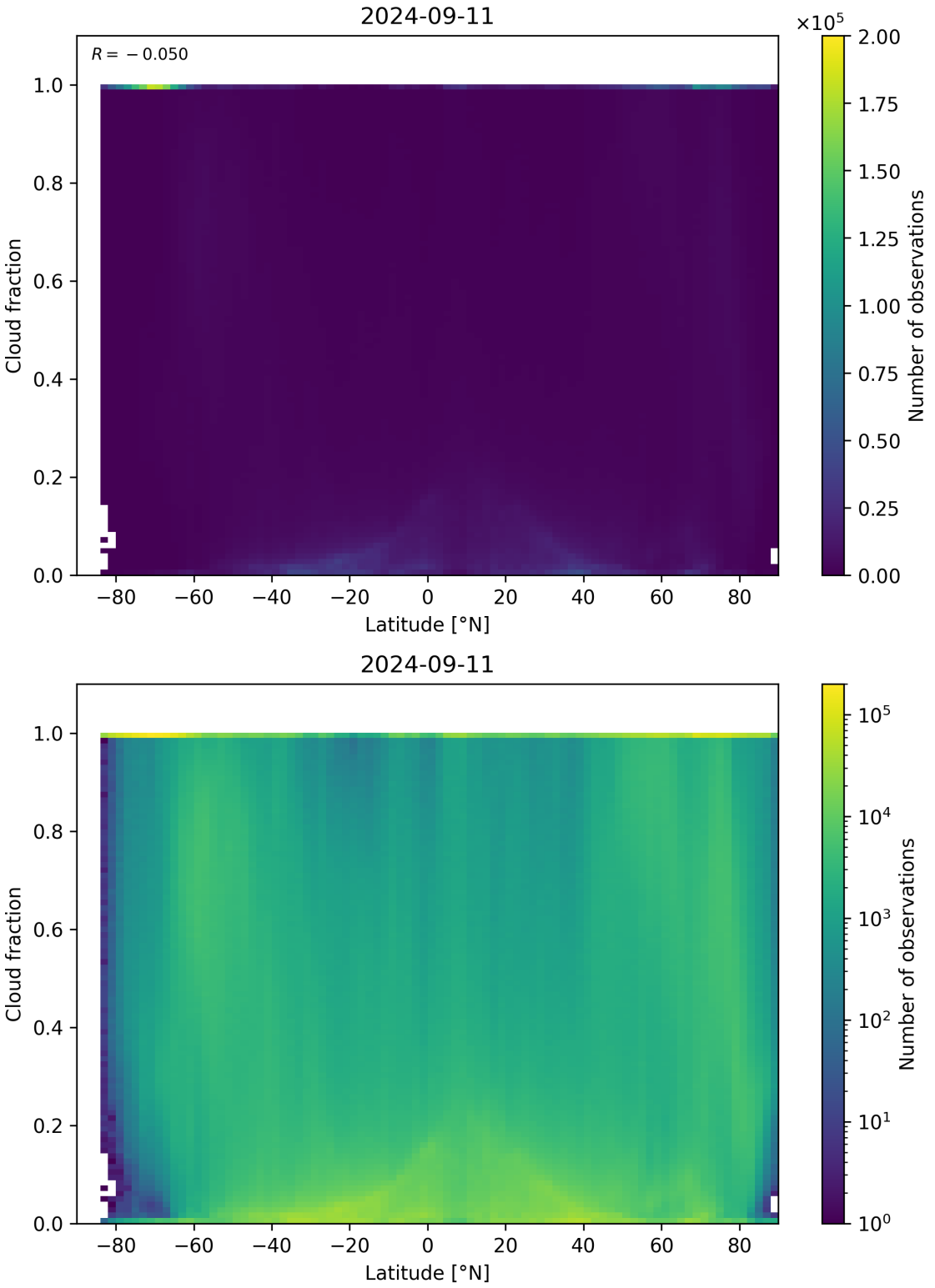

Figure 99: Scatter density plot of “Latitude” against “Cloud fraction” for 2024-09-10 to 2024-09-12.

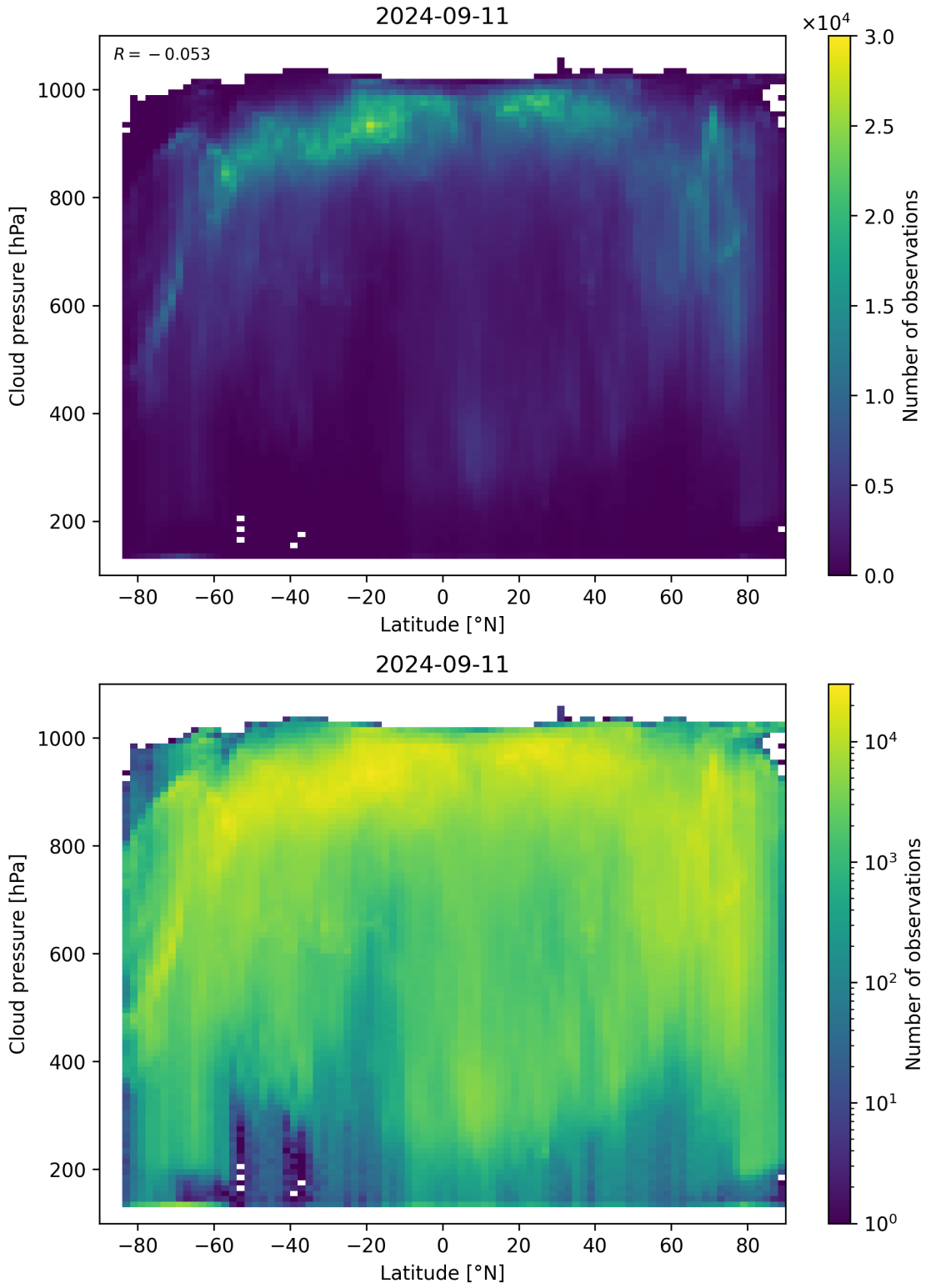

Figure 100: Scatter density plot of “Latitude” against “Cloud pressure” for 2024-09-10 to 2024-09-12.

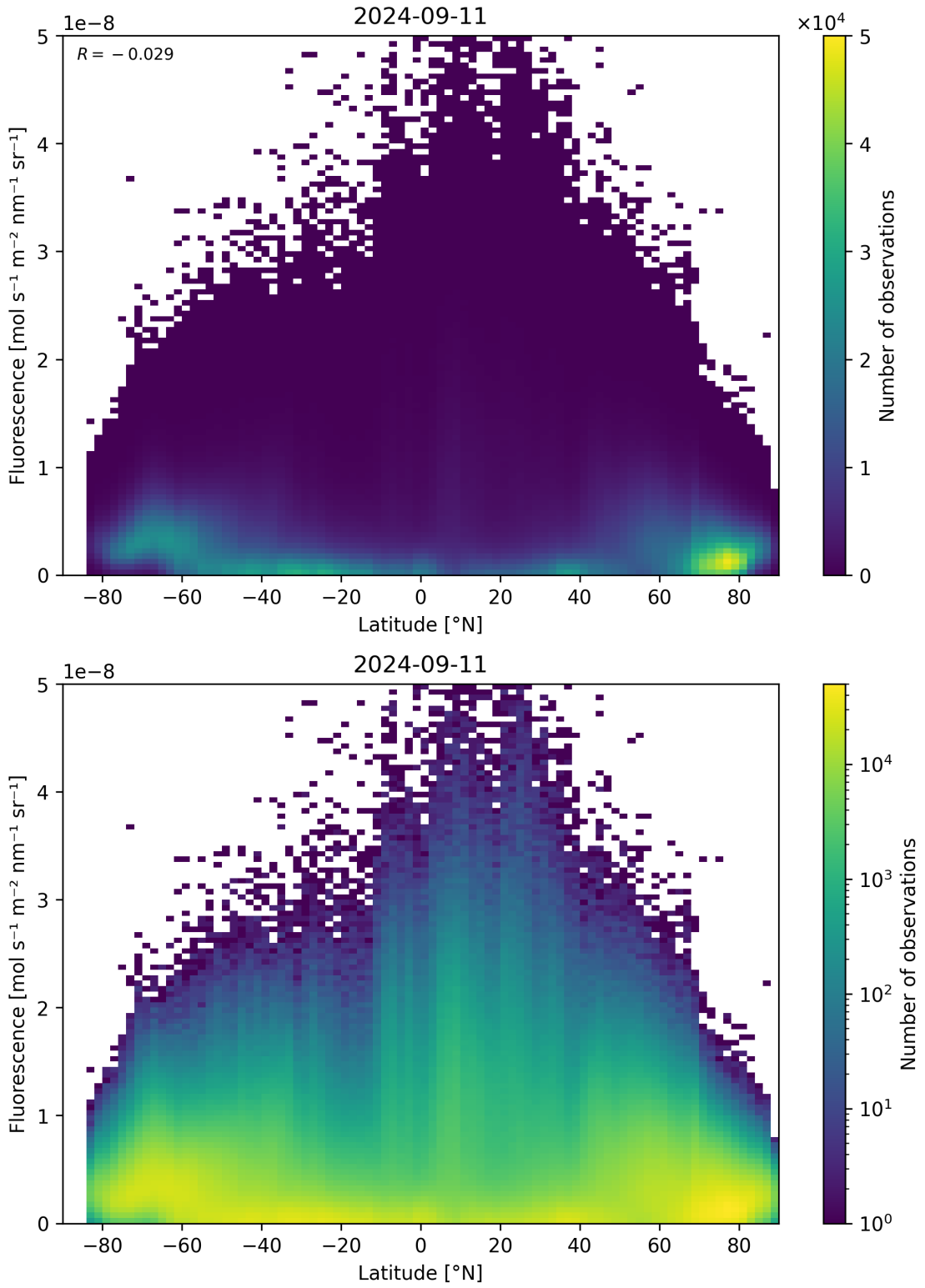

Figure 101: Scatter density plot of “Latitude” against “Fluorescence” for 2024-09-10 to 2024-09-12.

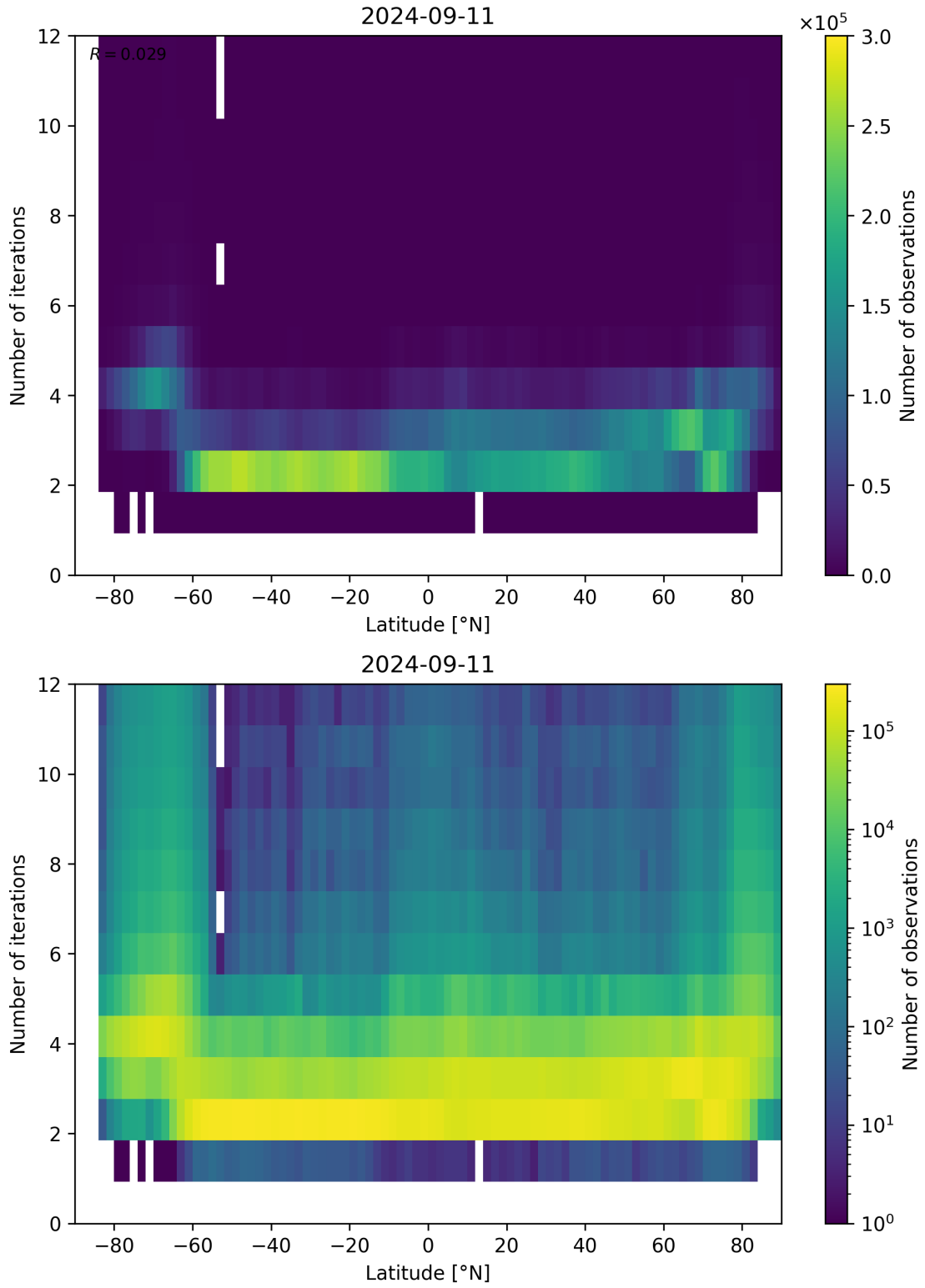

Figure 102: Scatter density plot of “Latitude” against “Number of iterations” for 2024-09-10 to 2024-09-12.

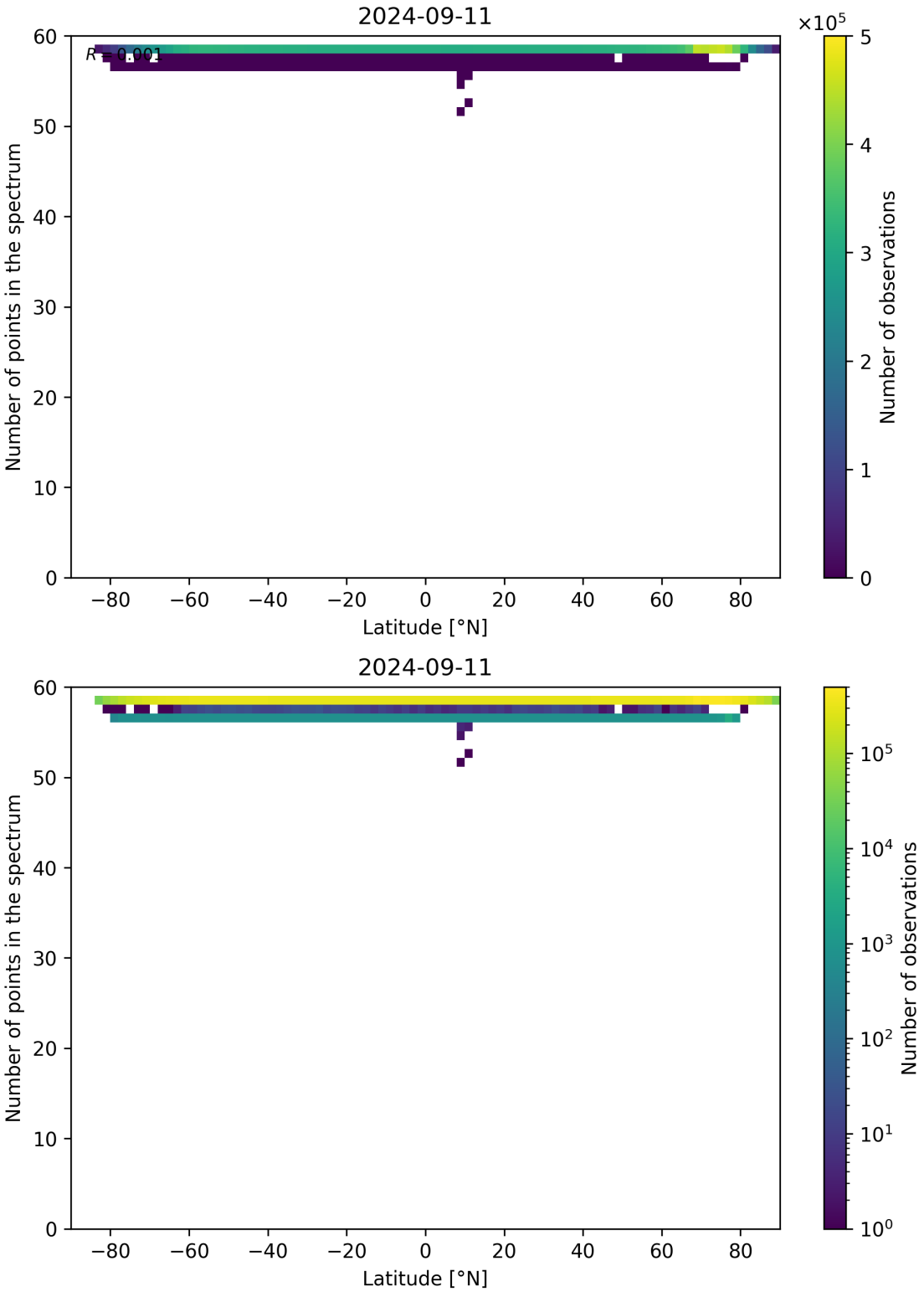

Figure 103: Scatter density plot of “Latitude” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

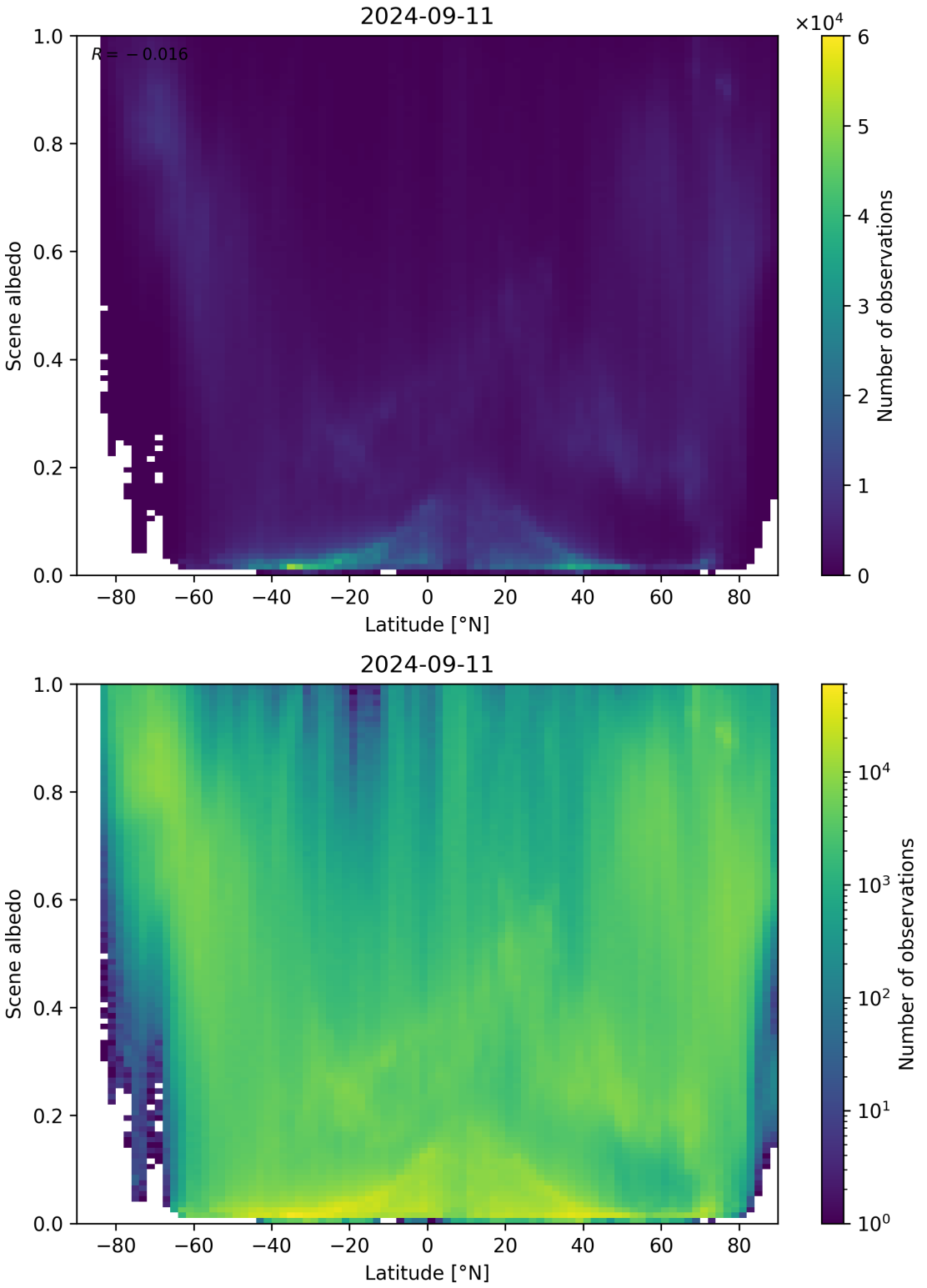

Figure 104: Scatter density plot of “Latitude” against “Scene albedo” for 2024-09-10 to 2024-09-12.

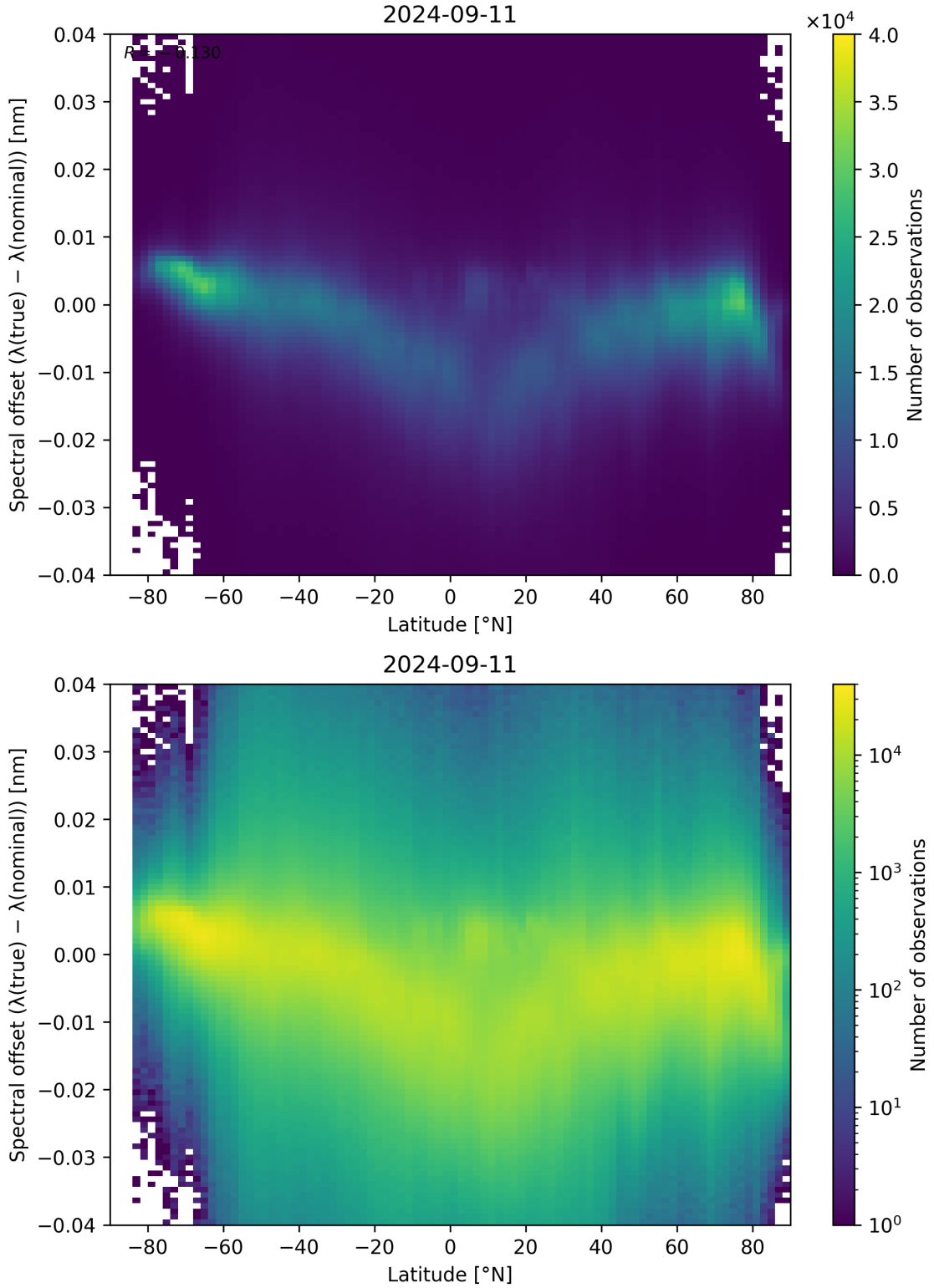

Figure 105: Scatter density plot of “Latitude” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

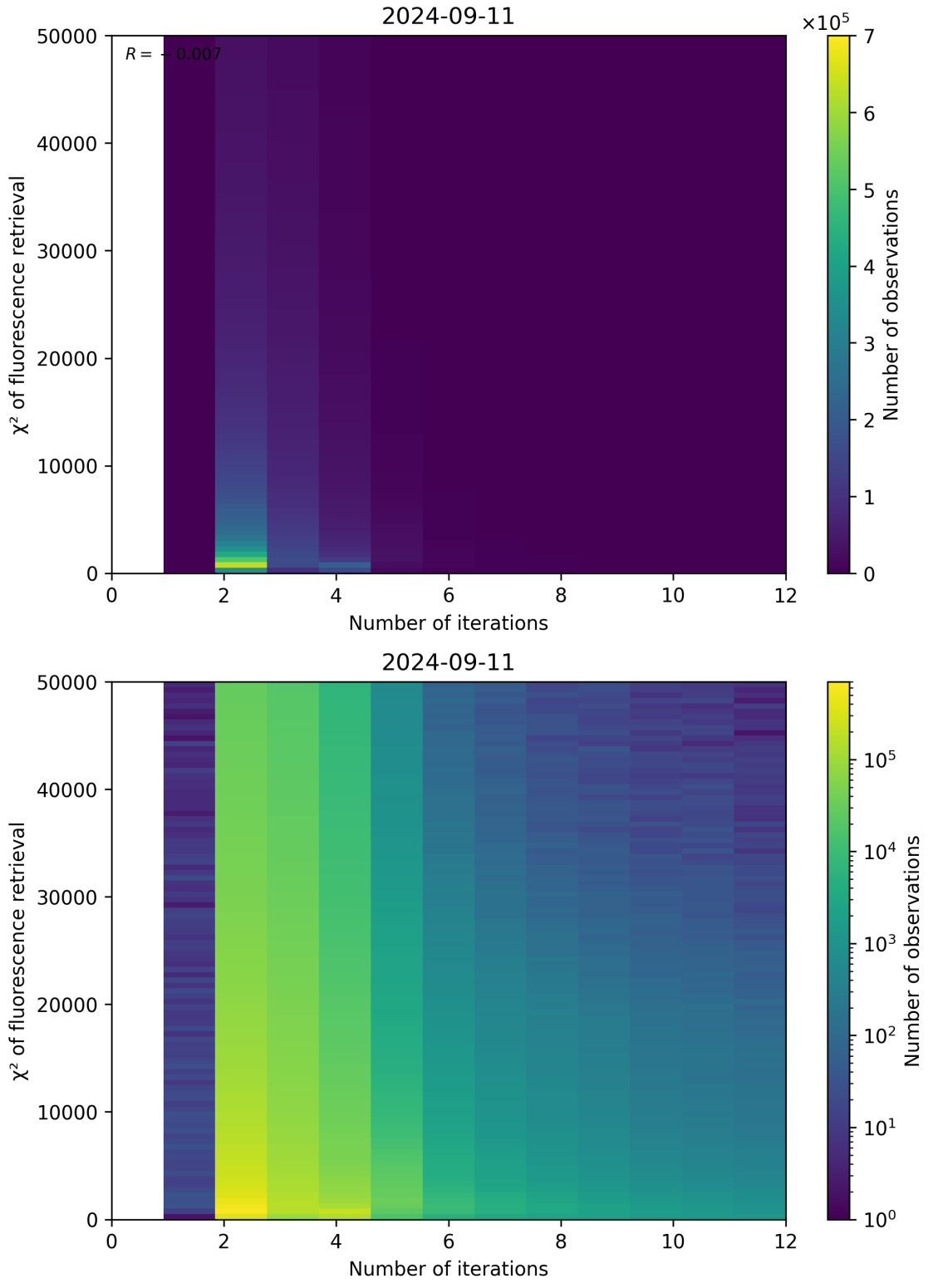

Figure 106: Scatter density plot of "Number of iterations" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

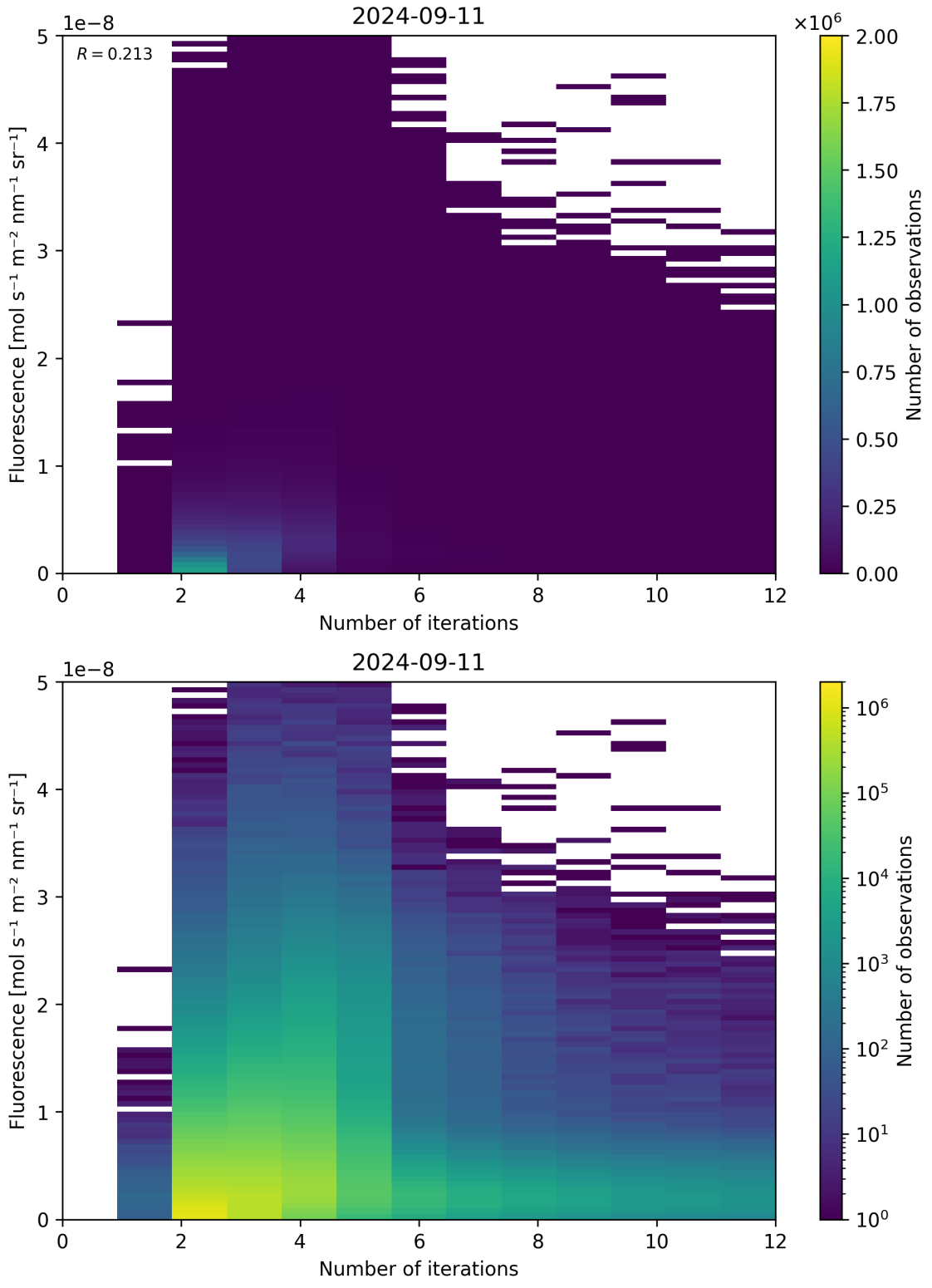

Figure 107: Scatter density plot of “Number of iterations” against “Fluorescence” for 2024-09-10 to 2024-09-12.

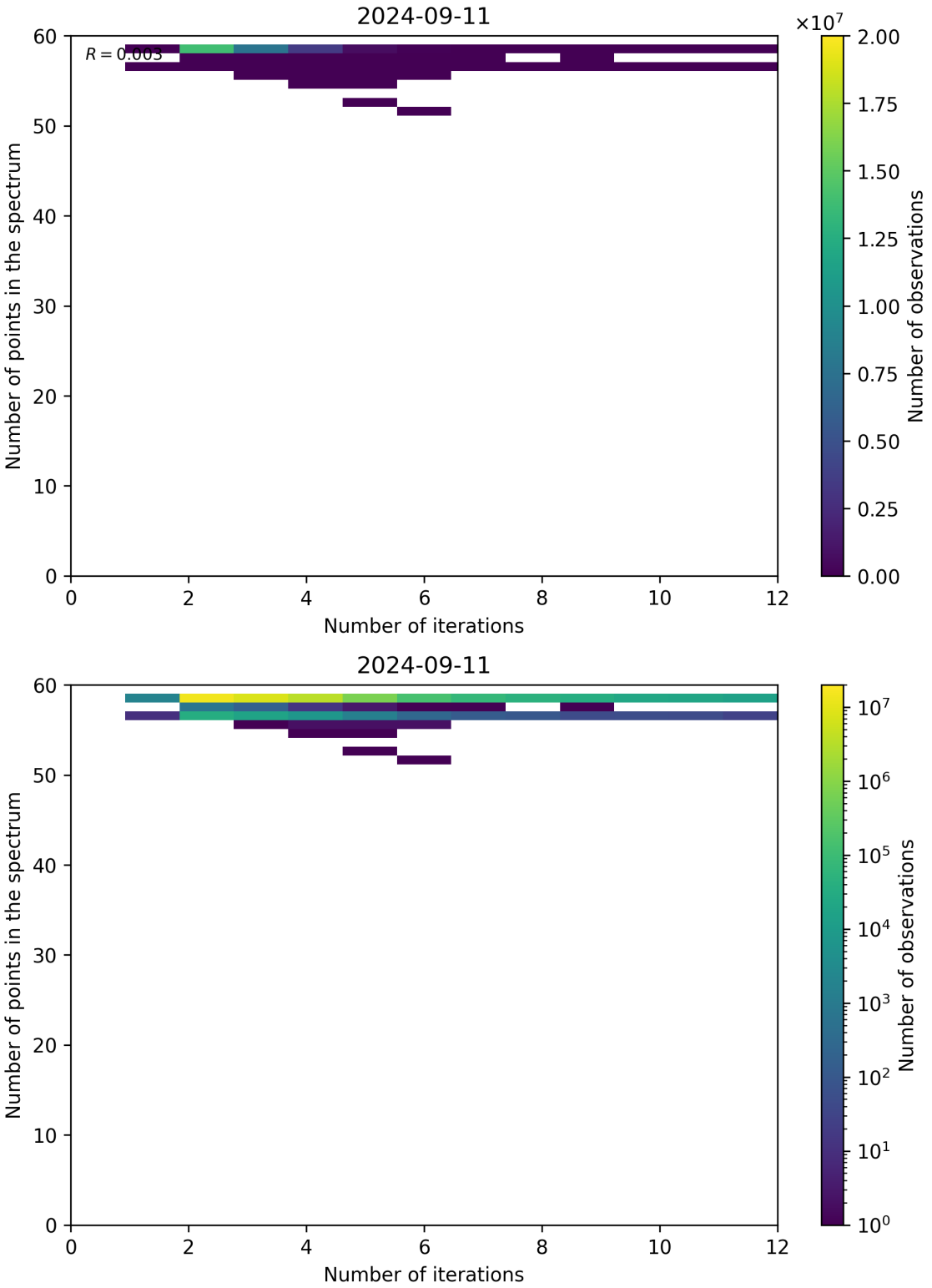

Figure 108: Scatter density plot of “Number of iterations” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

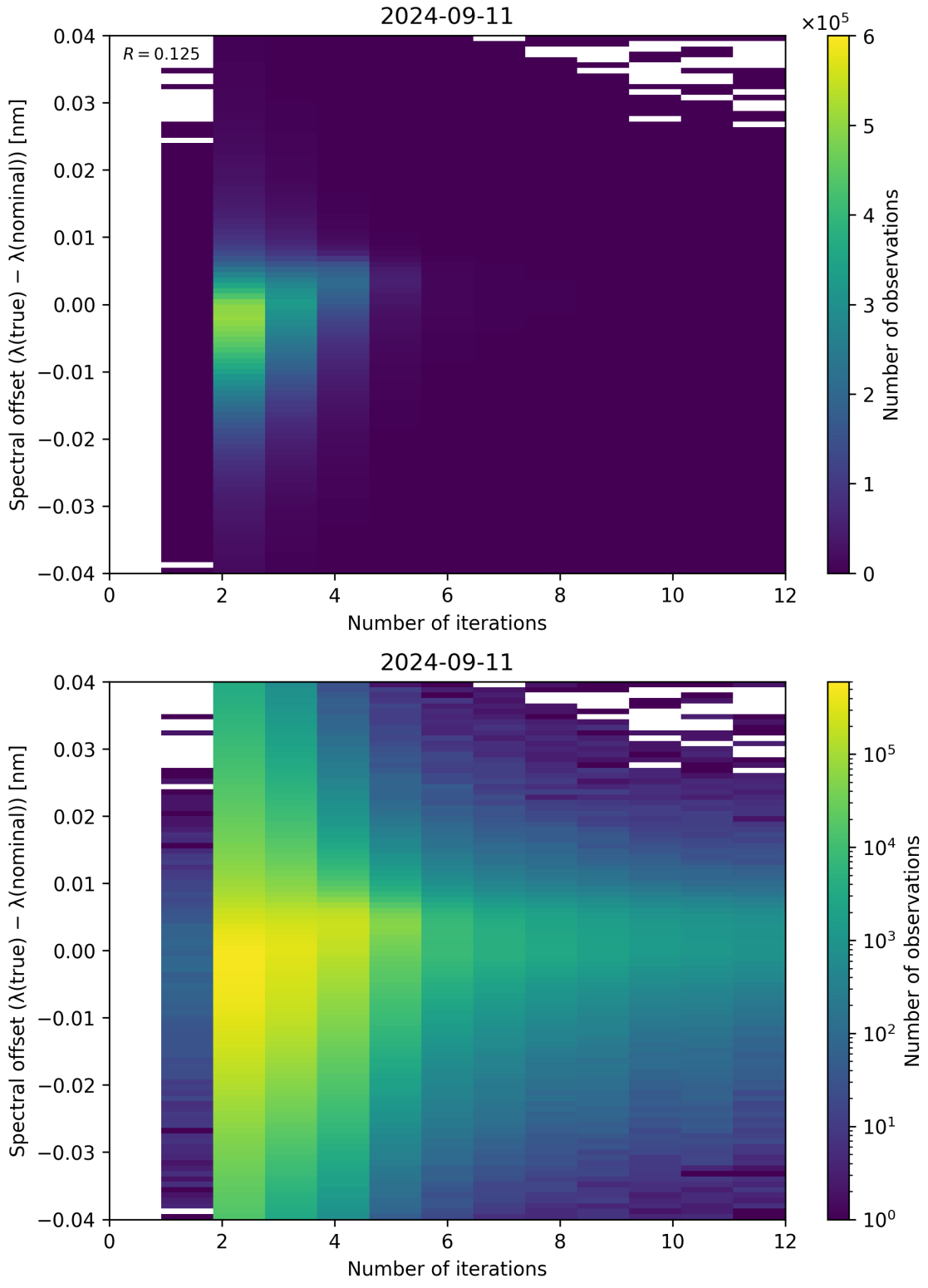

Figure 109: Scatter density plot of “Number of iterations” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

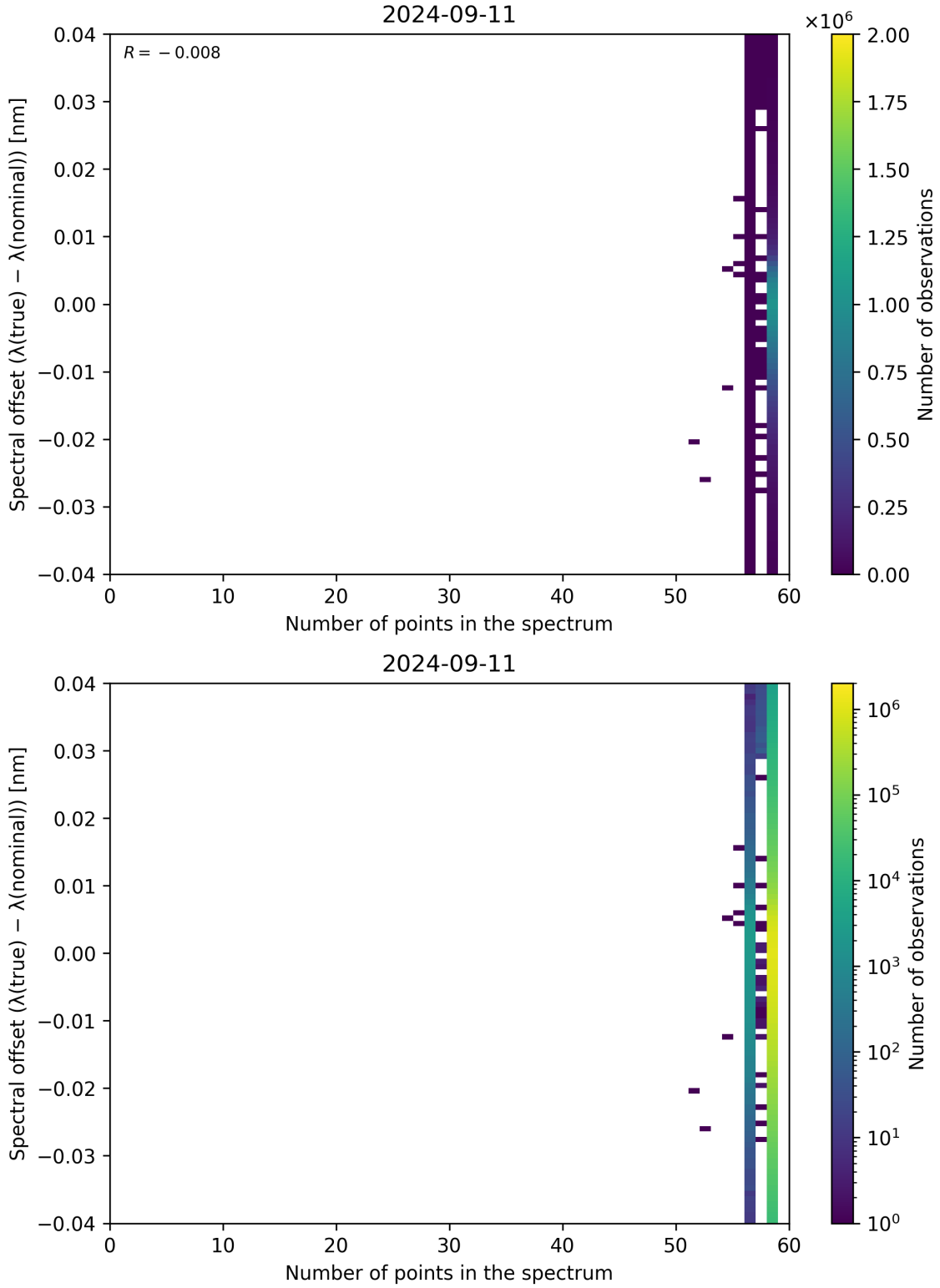

Figure 110: Scatter density plot of "Number of points in the spectrum" against "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12.

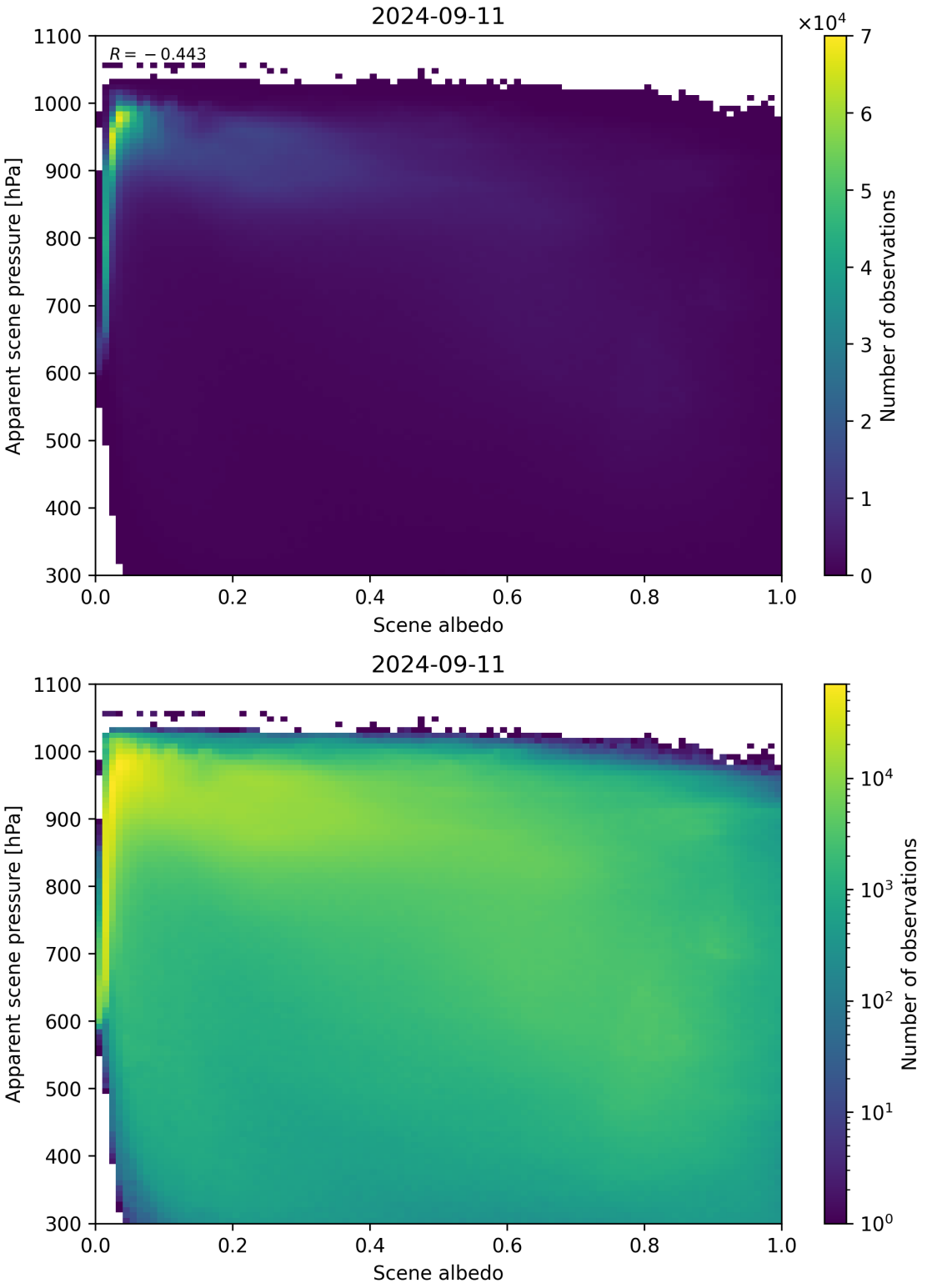

Figure 111: Scatter density plot of “Scene albedo” against “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

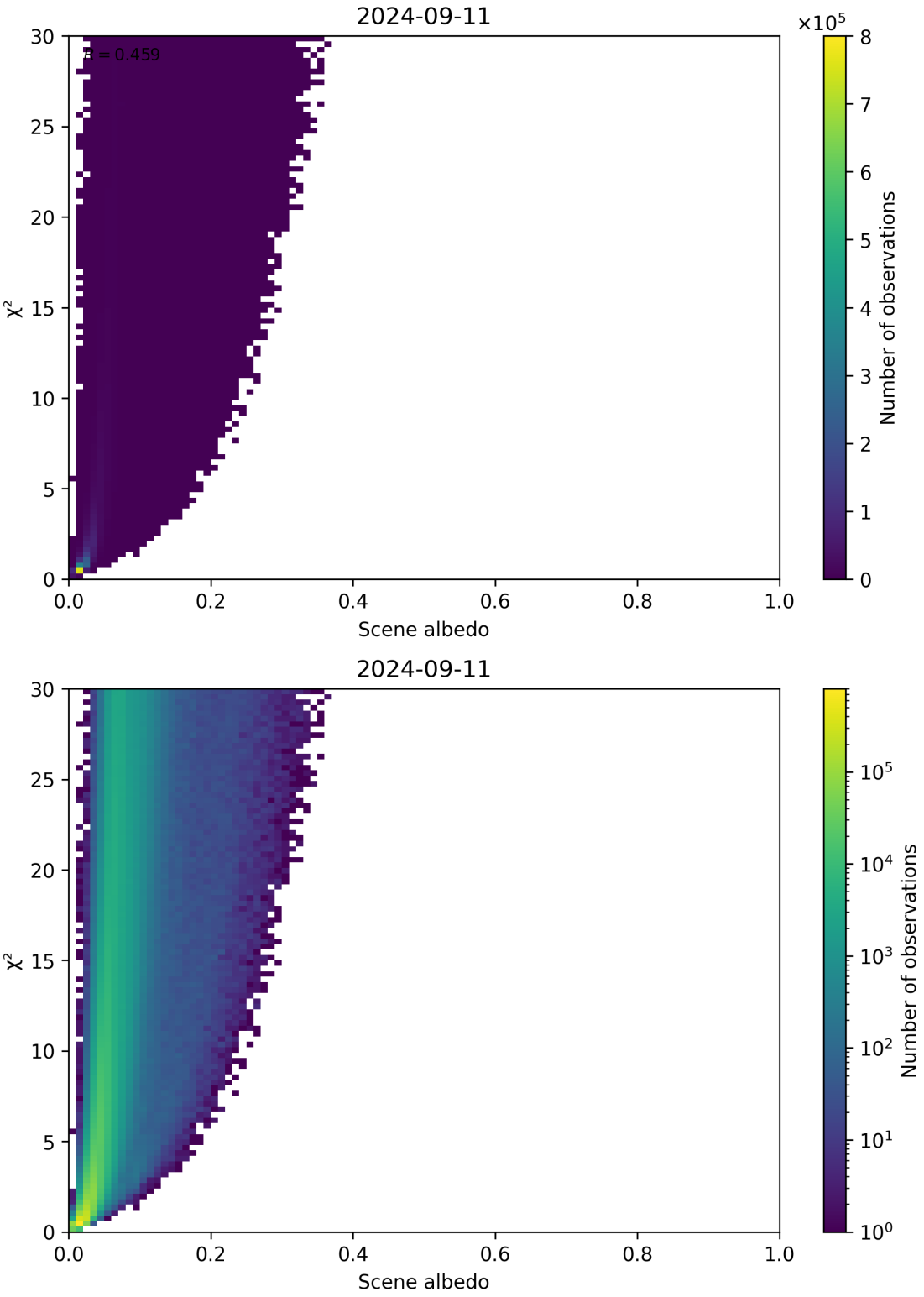

Figure 112: Scatter density plot of “Scene albedo” against “χ^2” for 2024-09-10 to 2024-09-12.

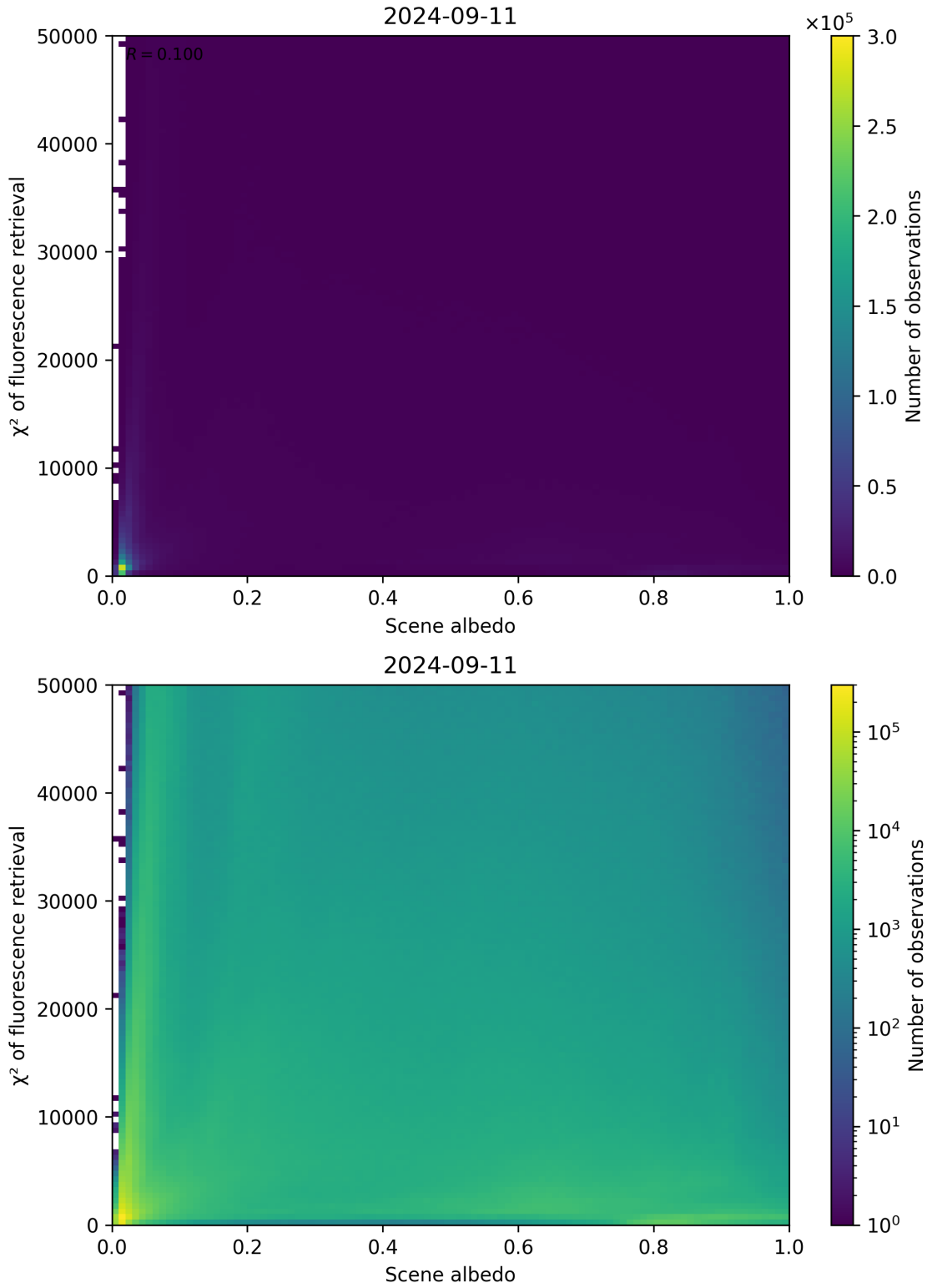

Figure 113: Scatter density plot of "Scene albedo" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

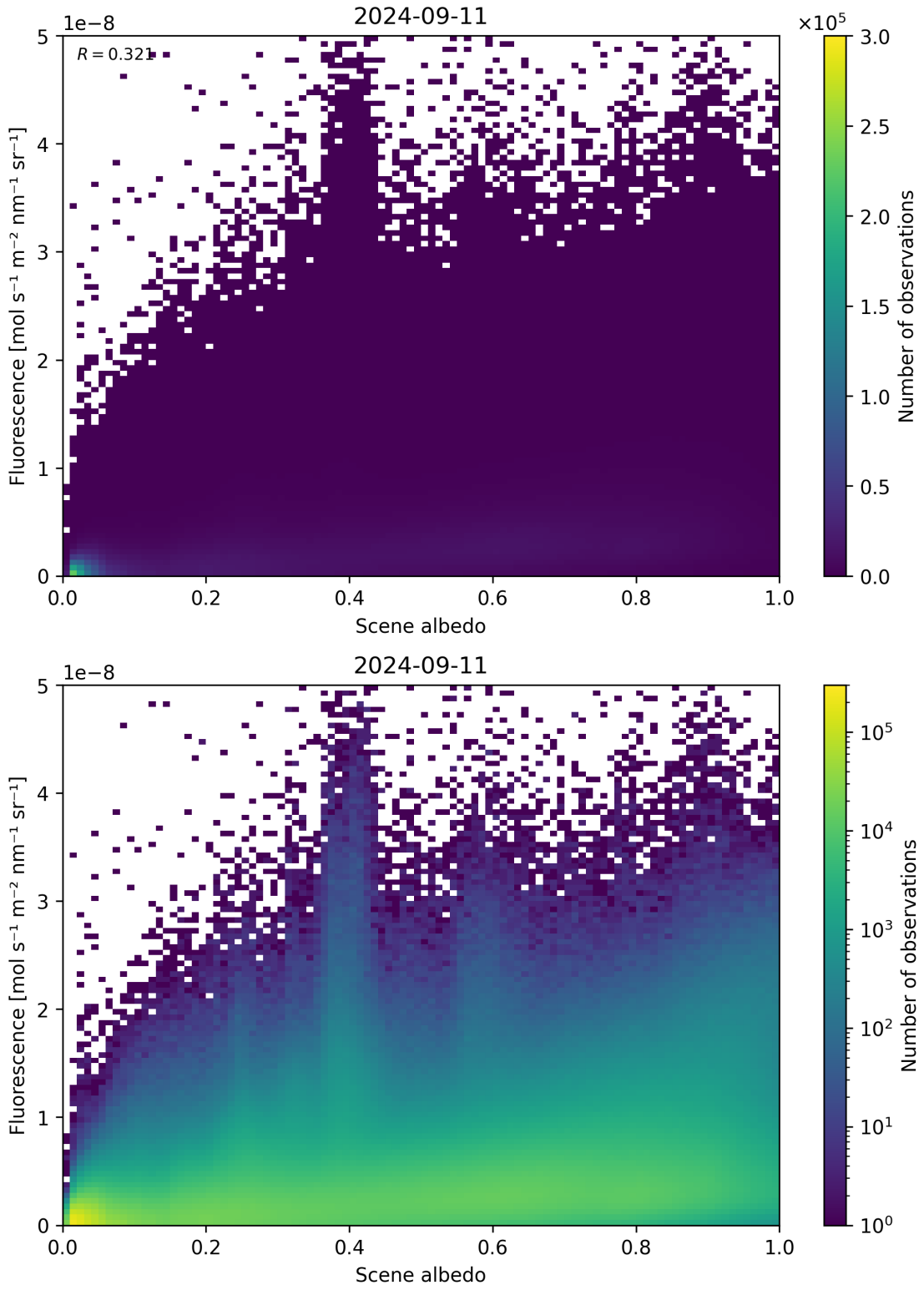

Figure 114: Scatter density plot of “Scene albedo” against “Fluorescence” for 2024-09-10 to 2024-09-12.

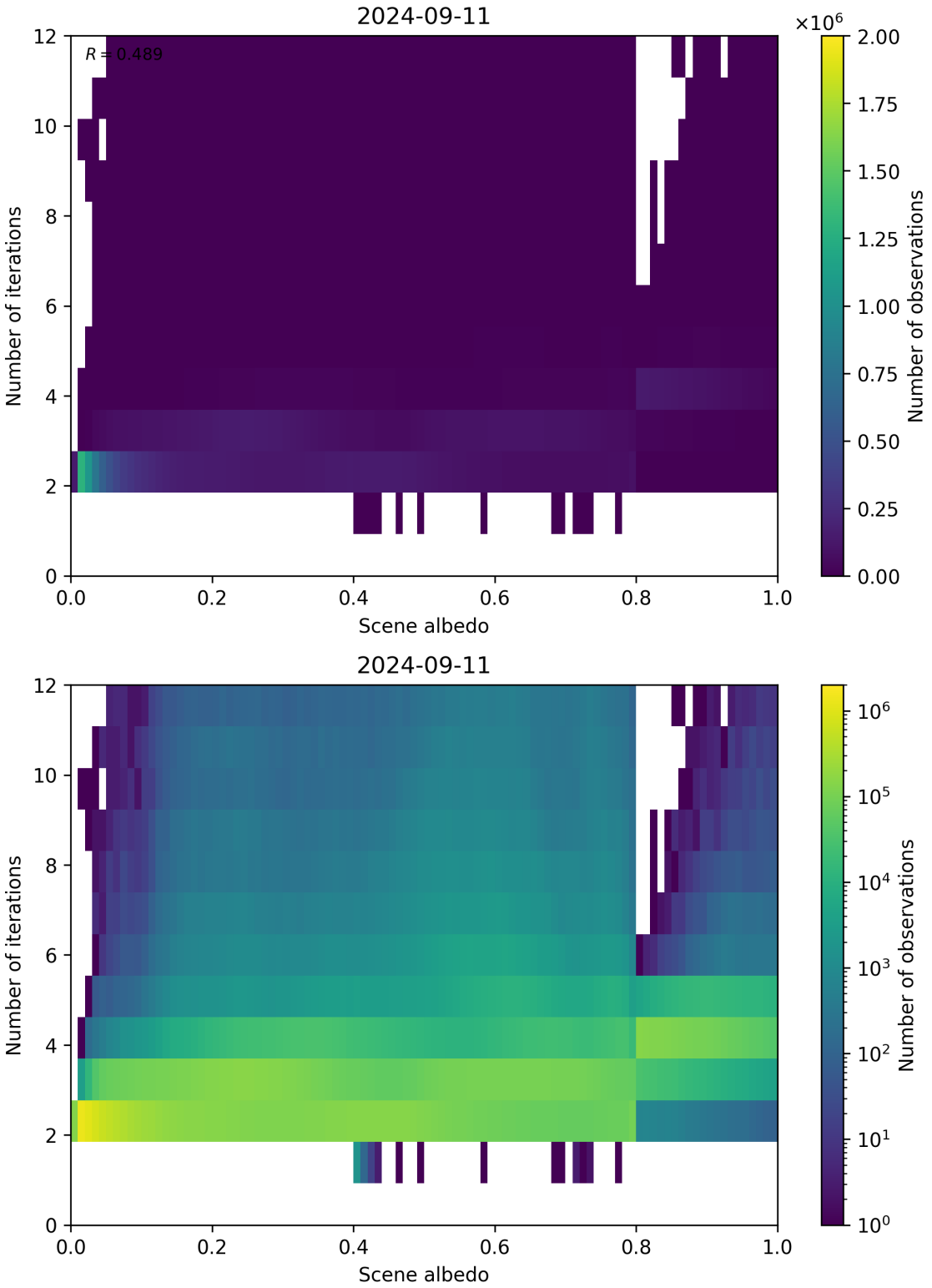

Figure 115: Scatter density plot of “Scene albedo” against “Number of iterations” for 2024-09-10 to 2024-09-12.

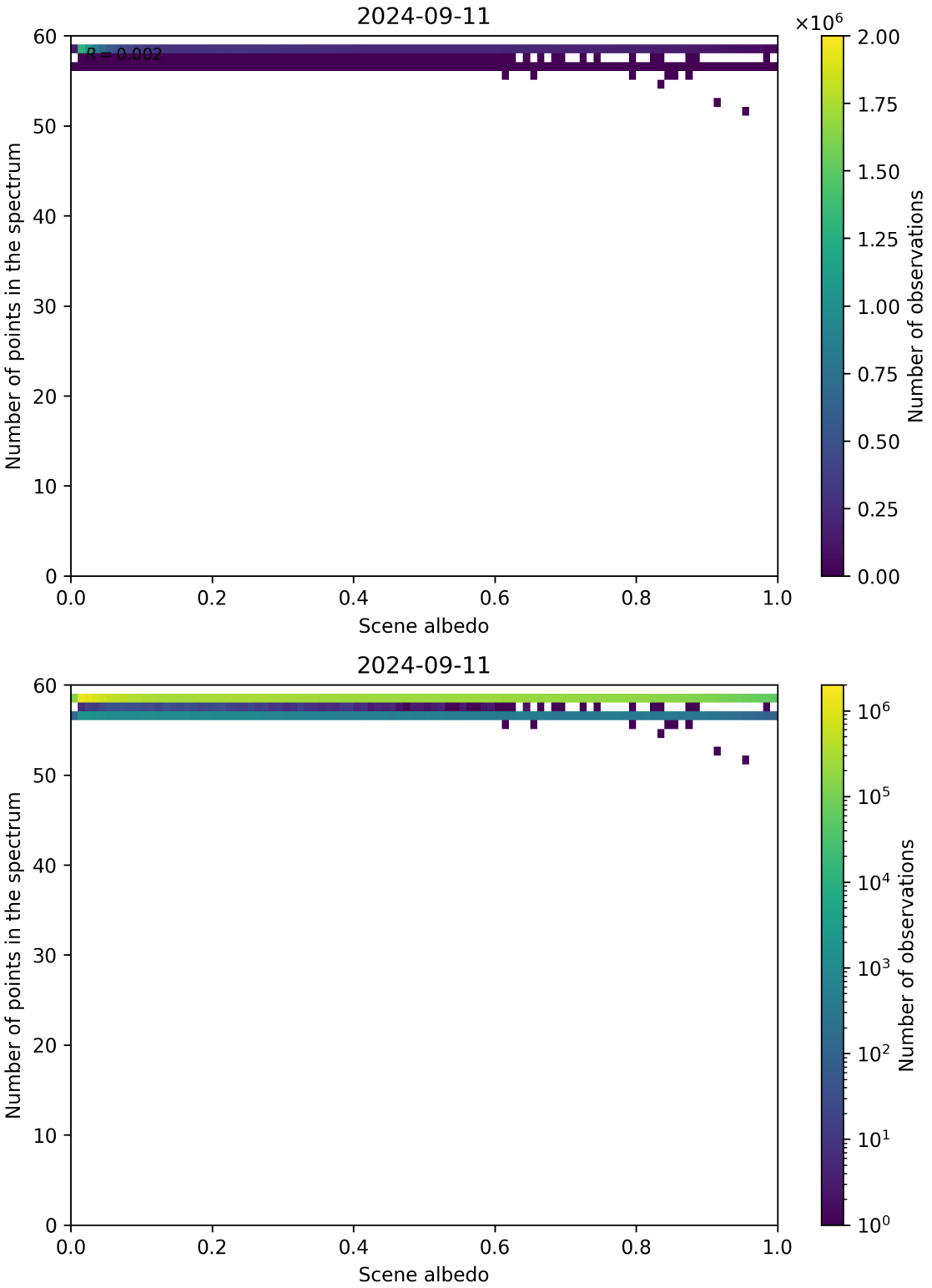

Figure 116: Scatter density plot of “Scene albedo” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

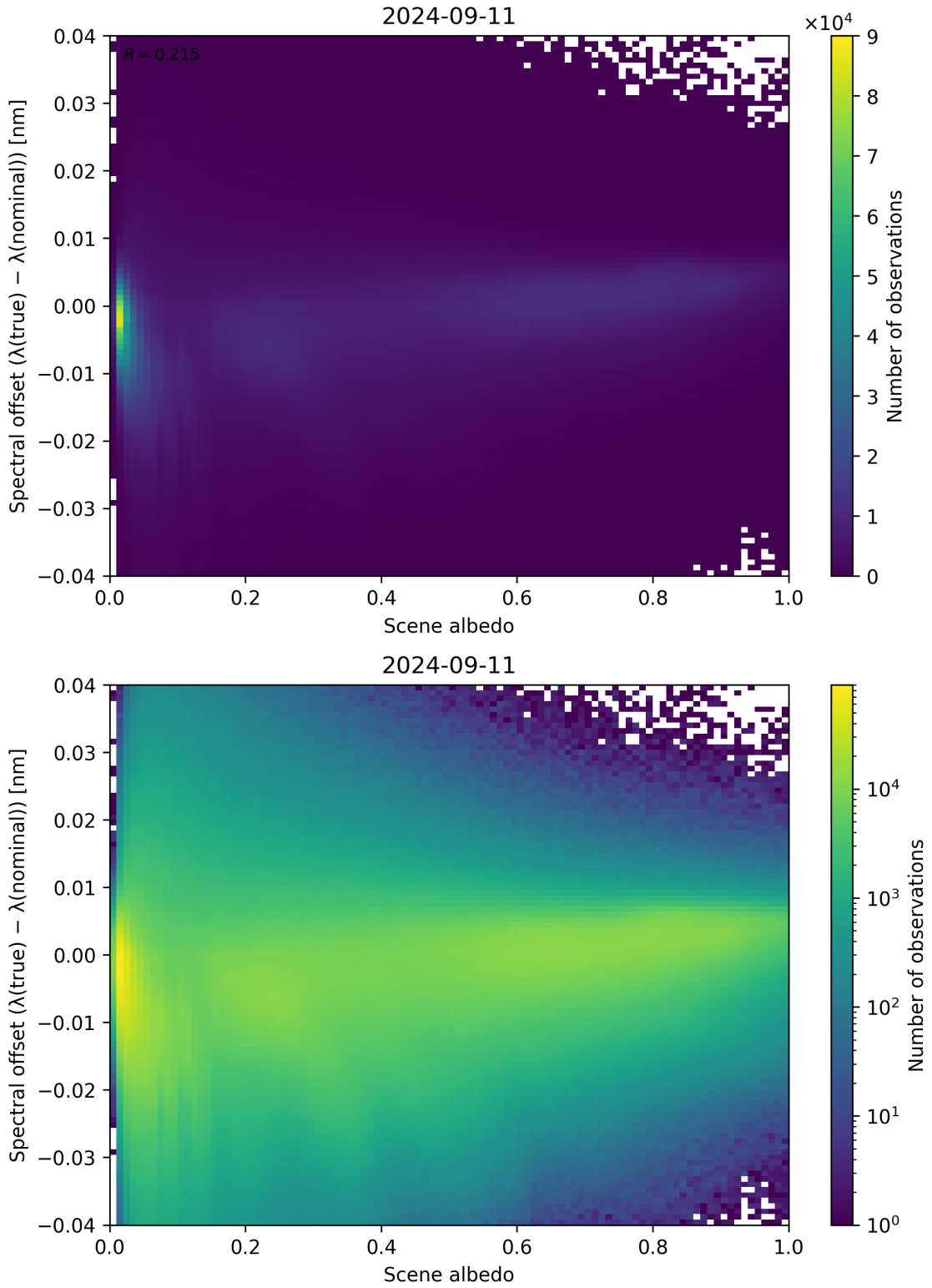

Figure 117: Scatter density plot of “Scene albedo” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

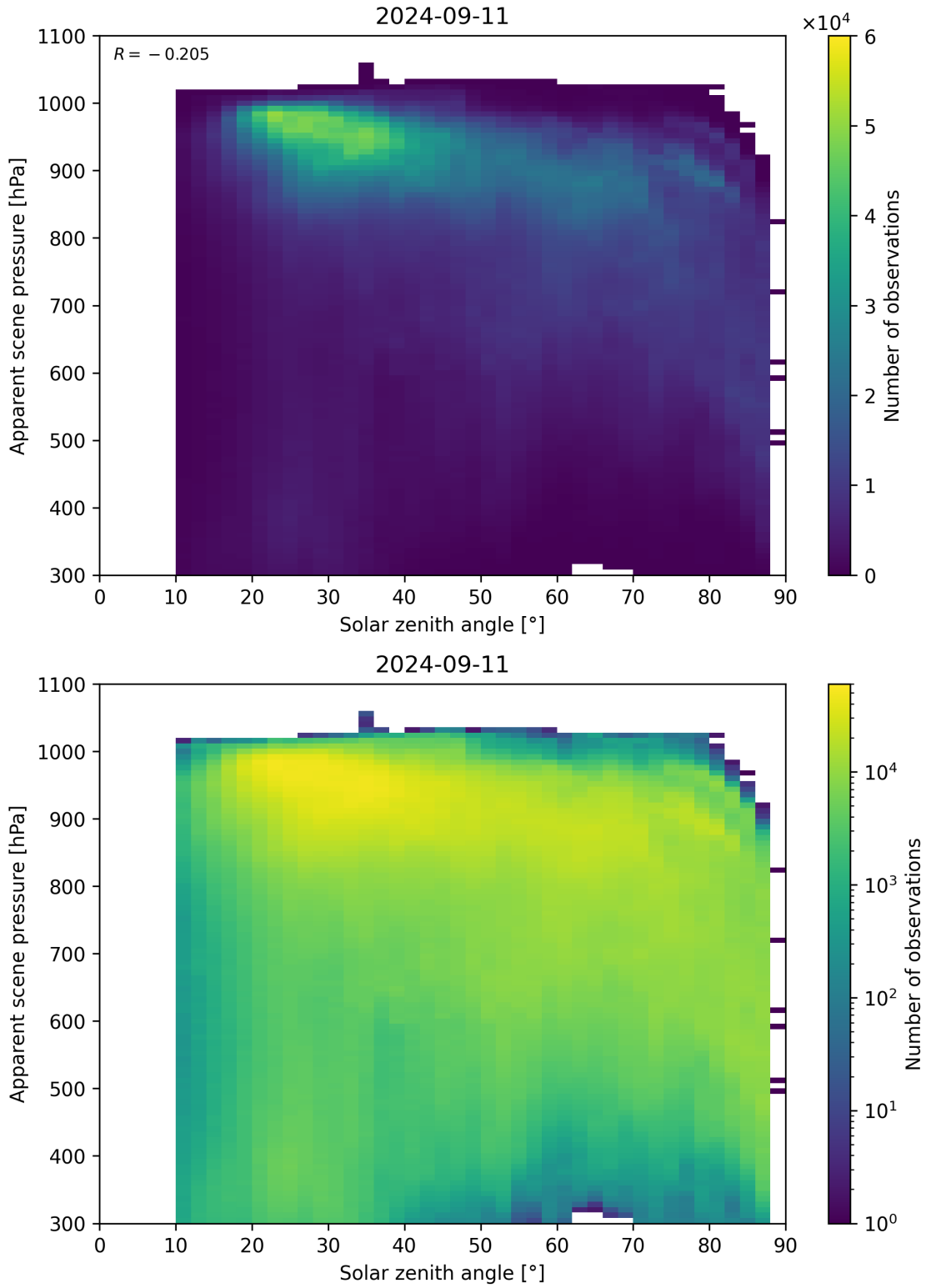

Figure 118: Scatter density plot of “Solar zenith angle” against “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

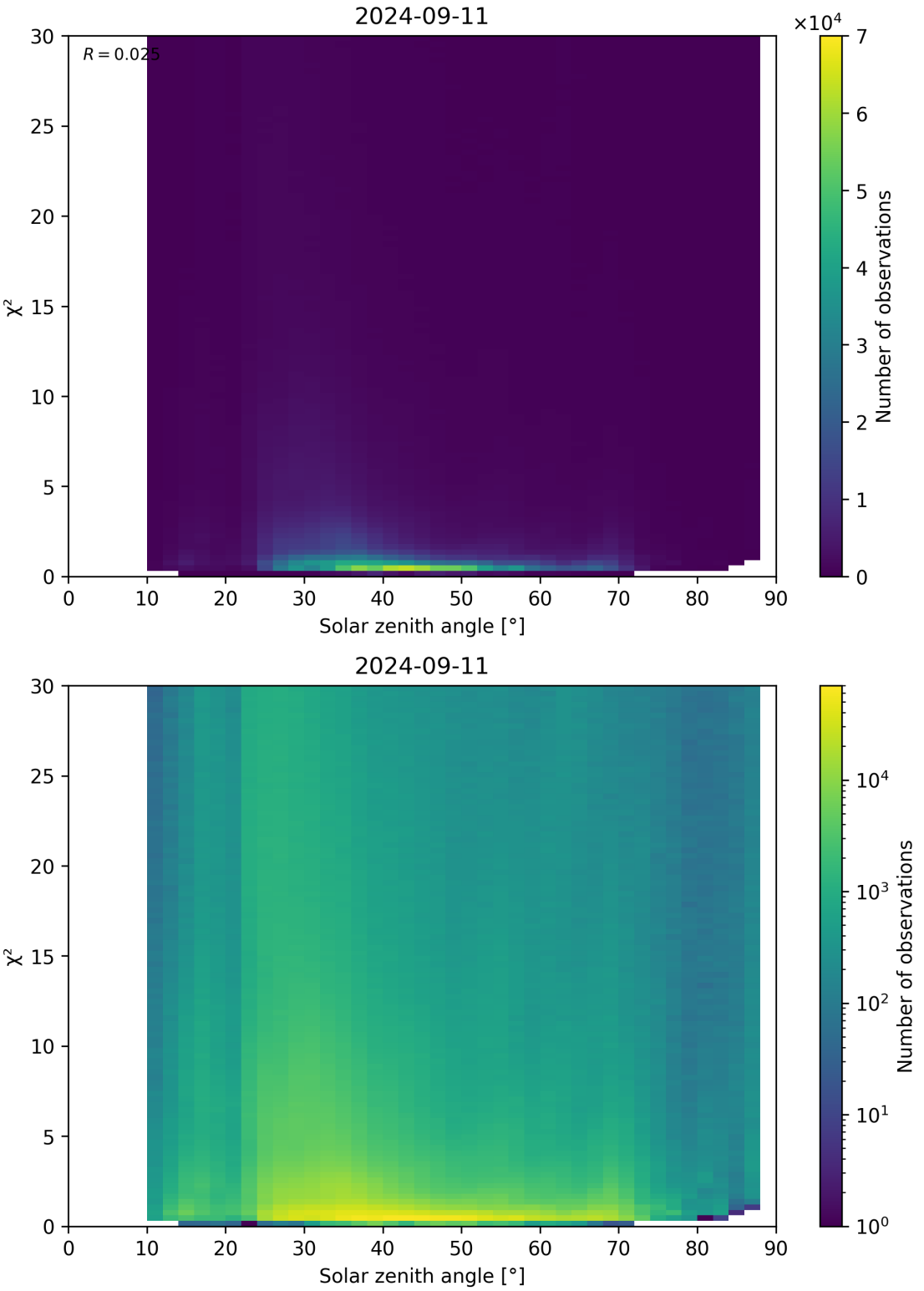

Figure 119: Scatter density plot of "Solar zenith angle" against "χ^2" for 2024-09-10 to 2024-09-12.

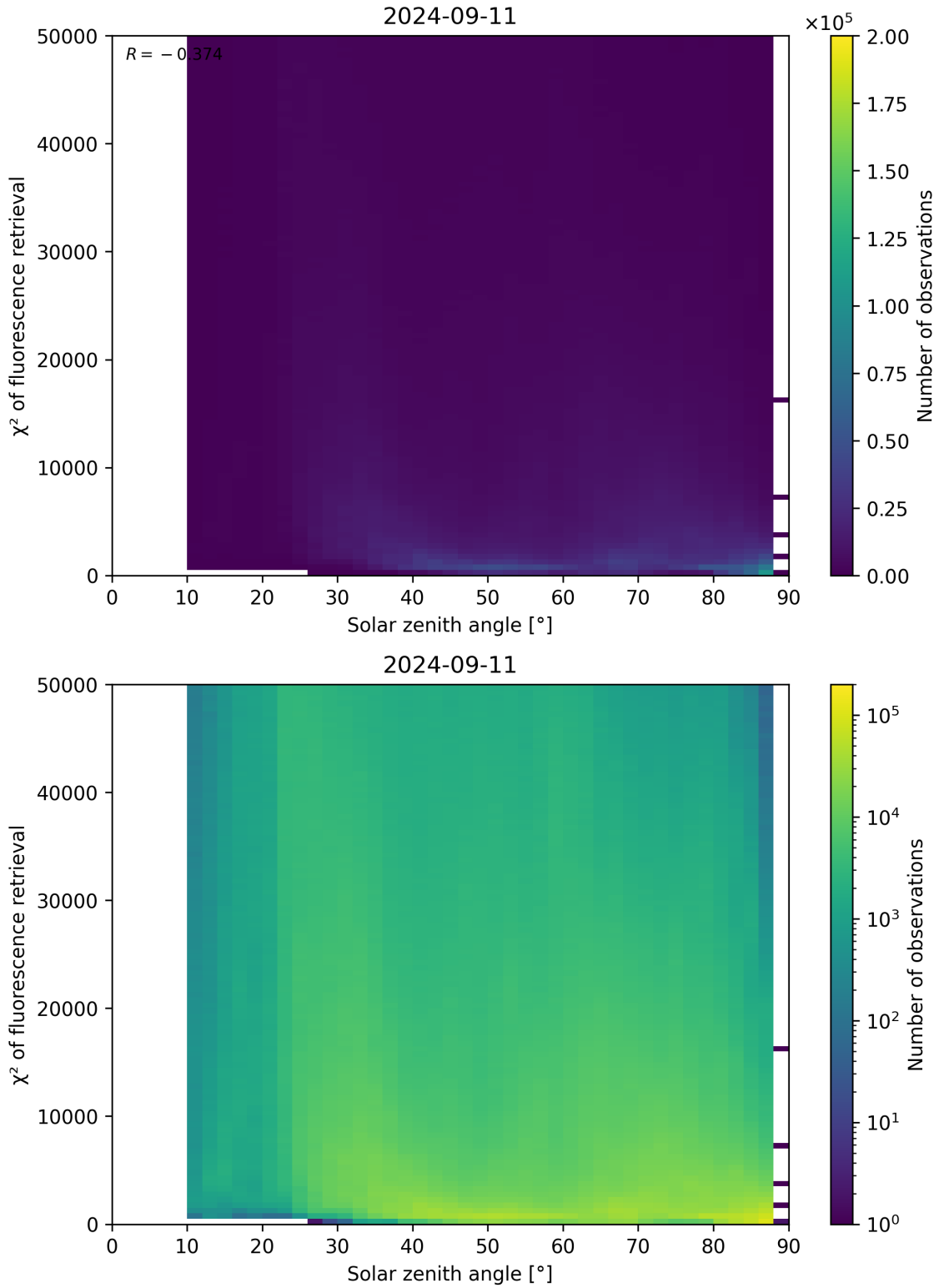

Figure 120: Scatter density plot of "Solar zenith angle" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

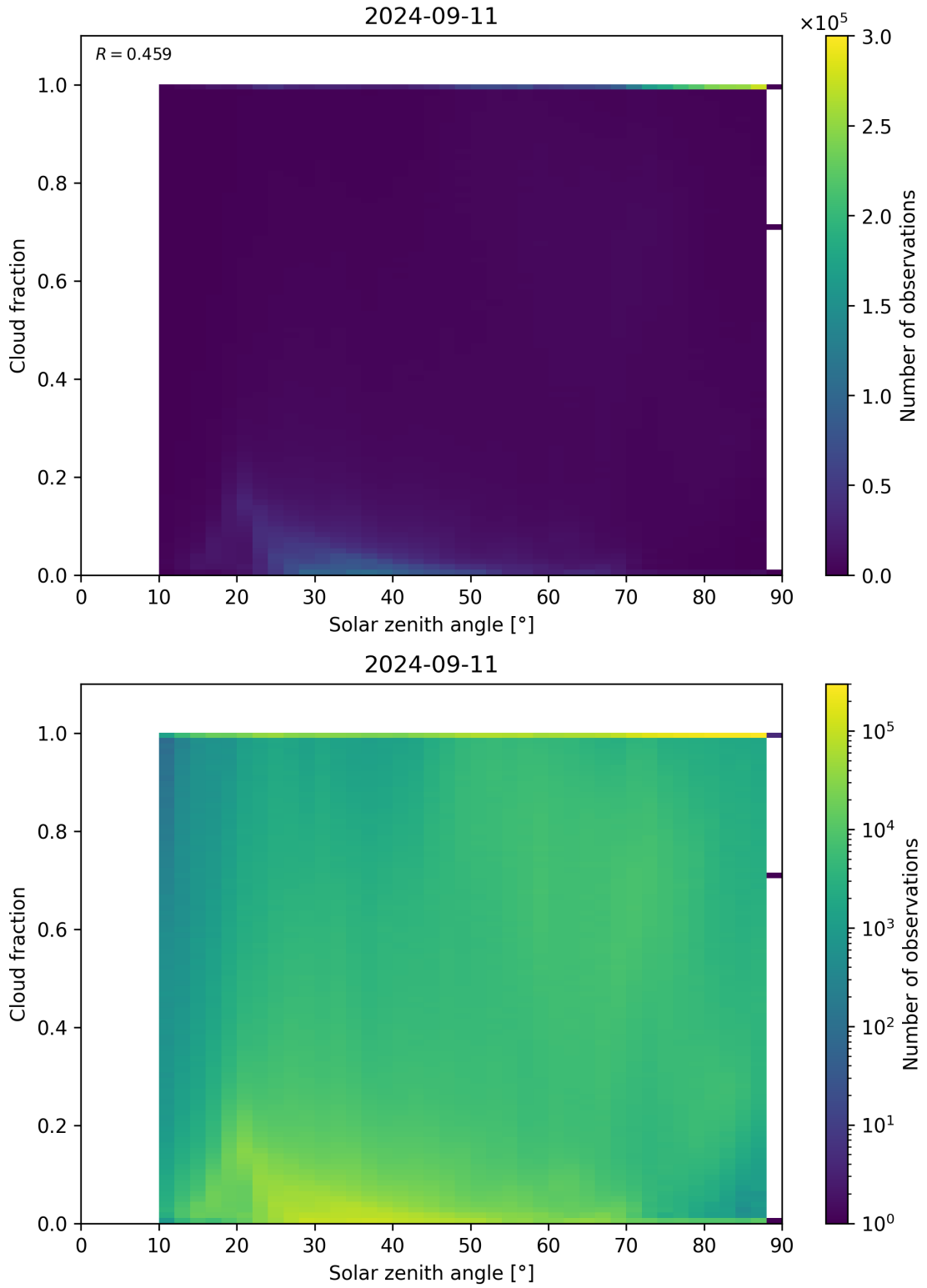

Figure 121: Scatter density plot of “Solar zenith angle” against “Cloud fraction” for 2024-09-10 to 2024-09-12.

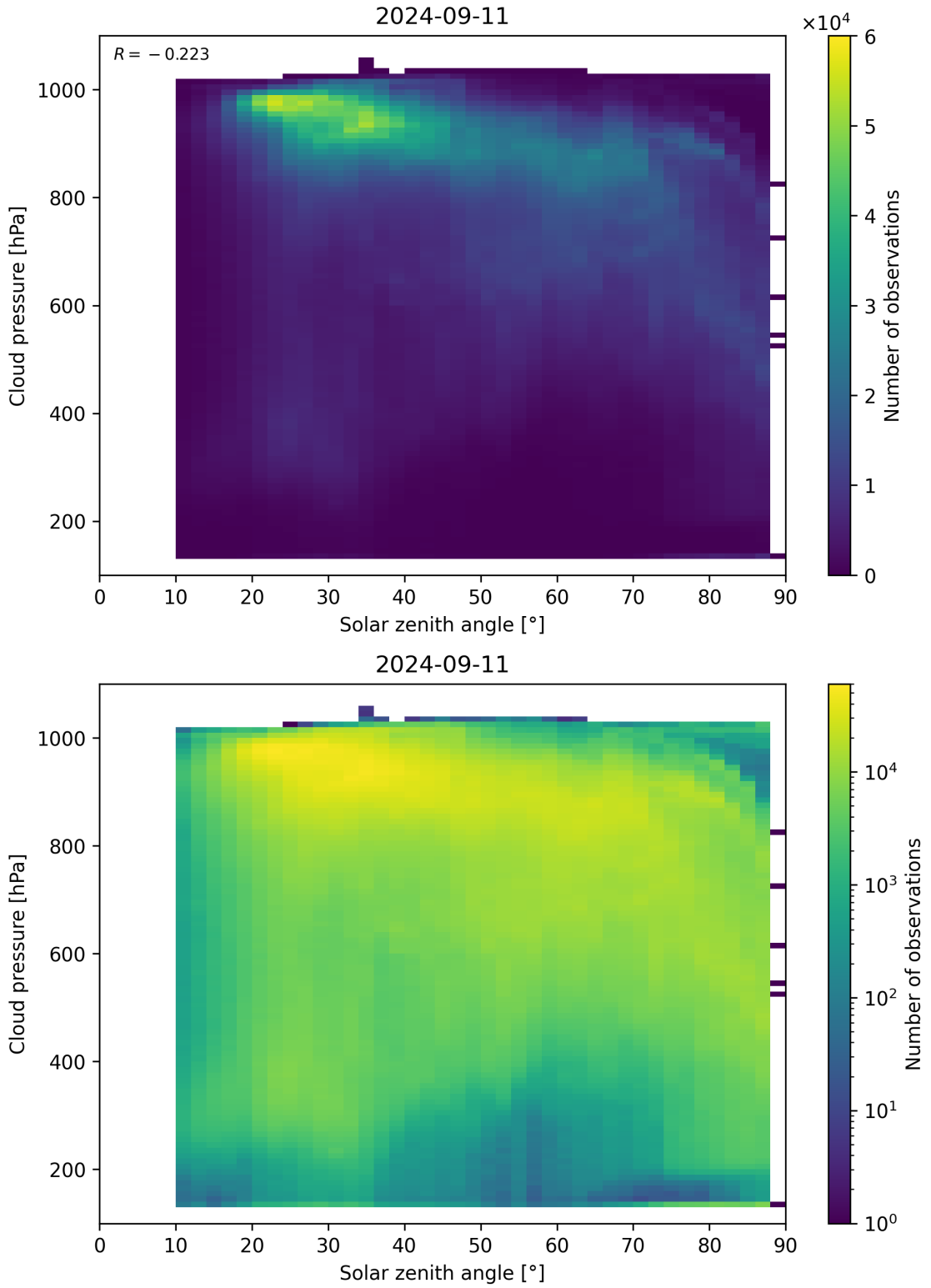

Figure 122: Scatter density plot of “Solar zenith angle” against “Cloud pressure” for 2024-09-10 to 2024-09-12.

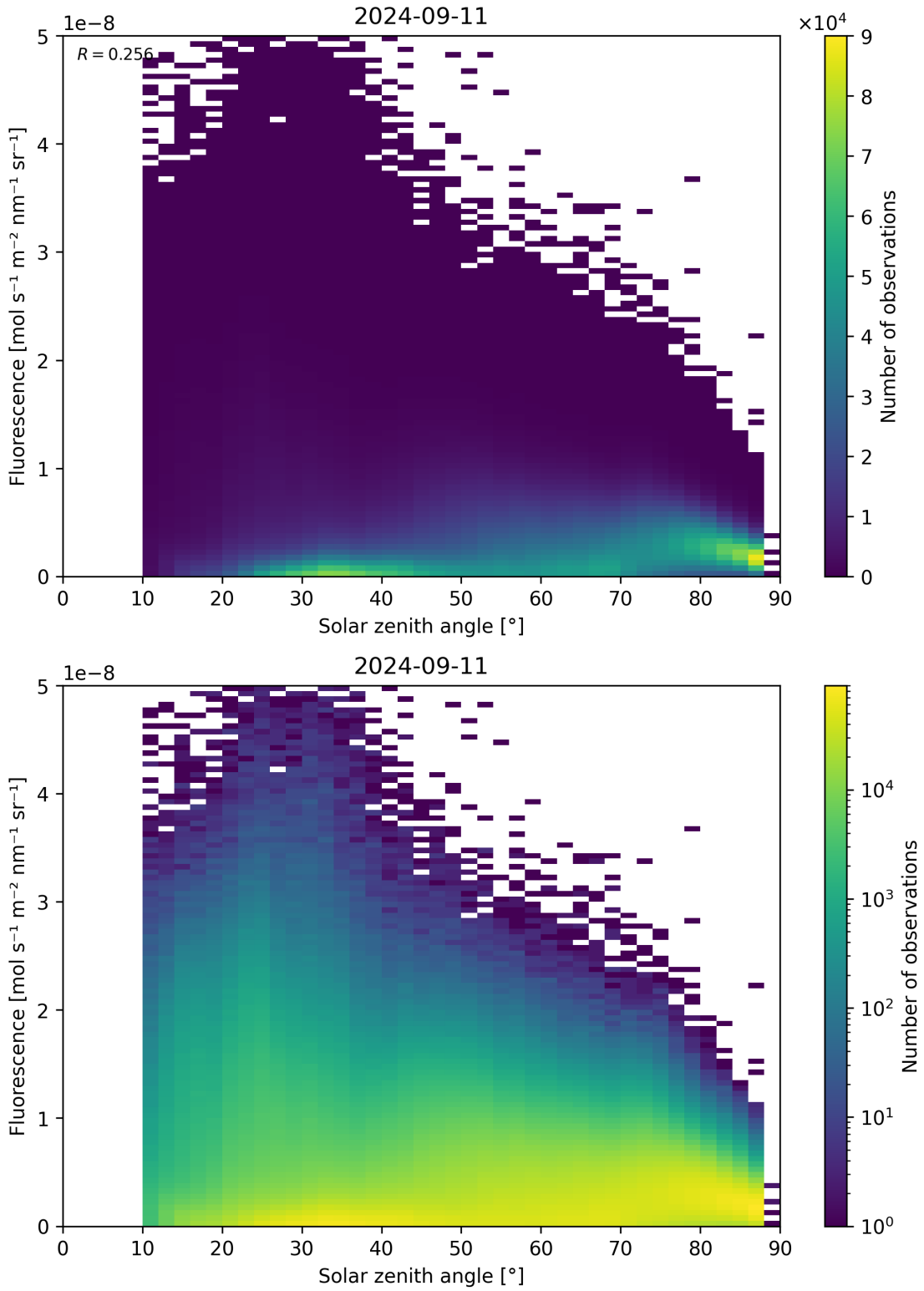

Figure 123: Scatter density plot of “Solar zenith angle” against “Fluorescence” for 2024-09-10 to 2024-09-12.

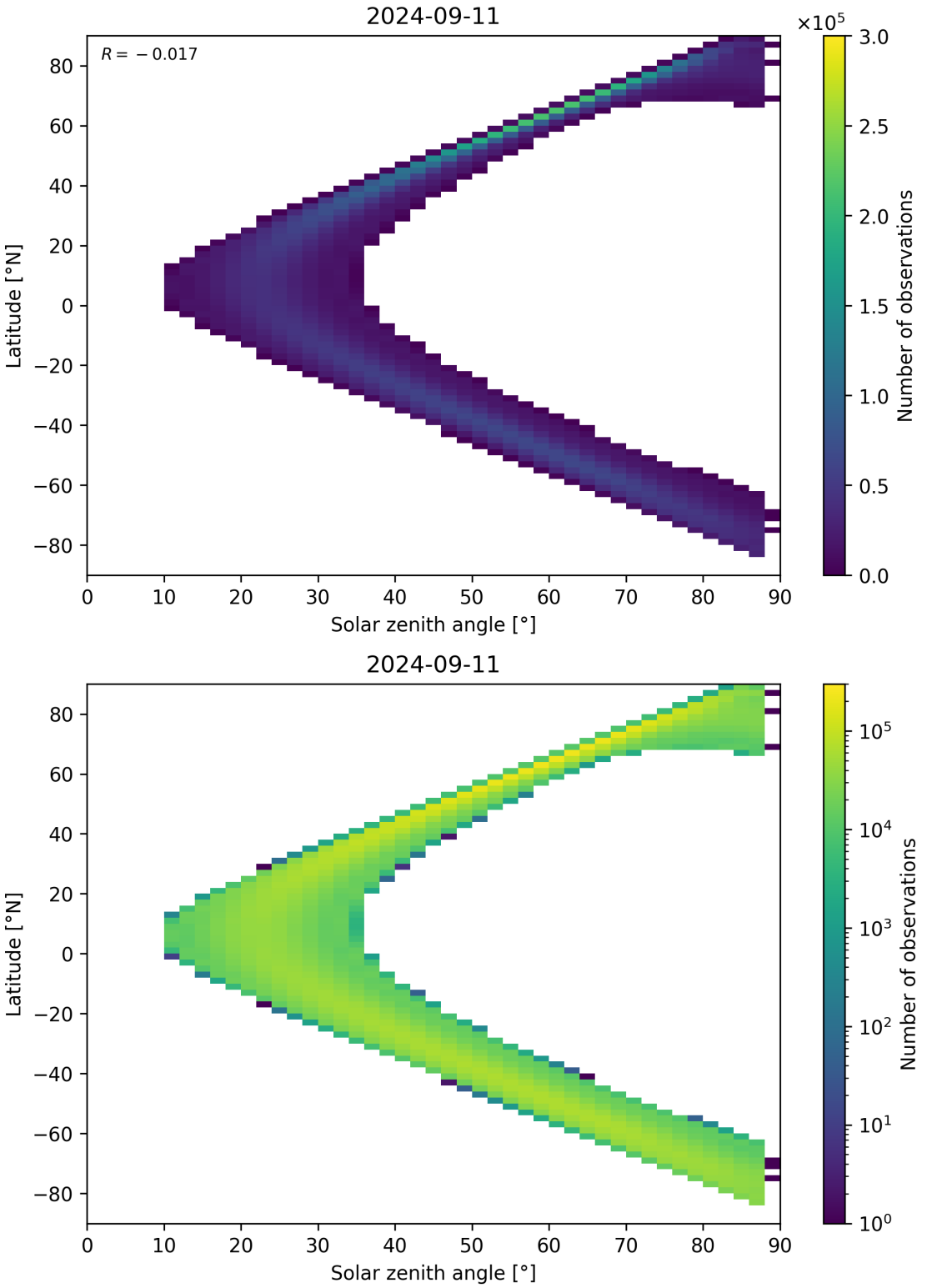

Figure 124: Scatter density plot of “Solar zenith angle” against “Latitude” for 2024-09-10 to 2024-09-12.

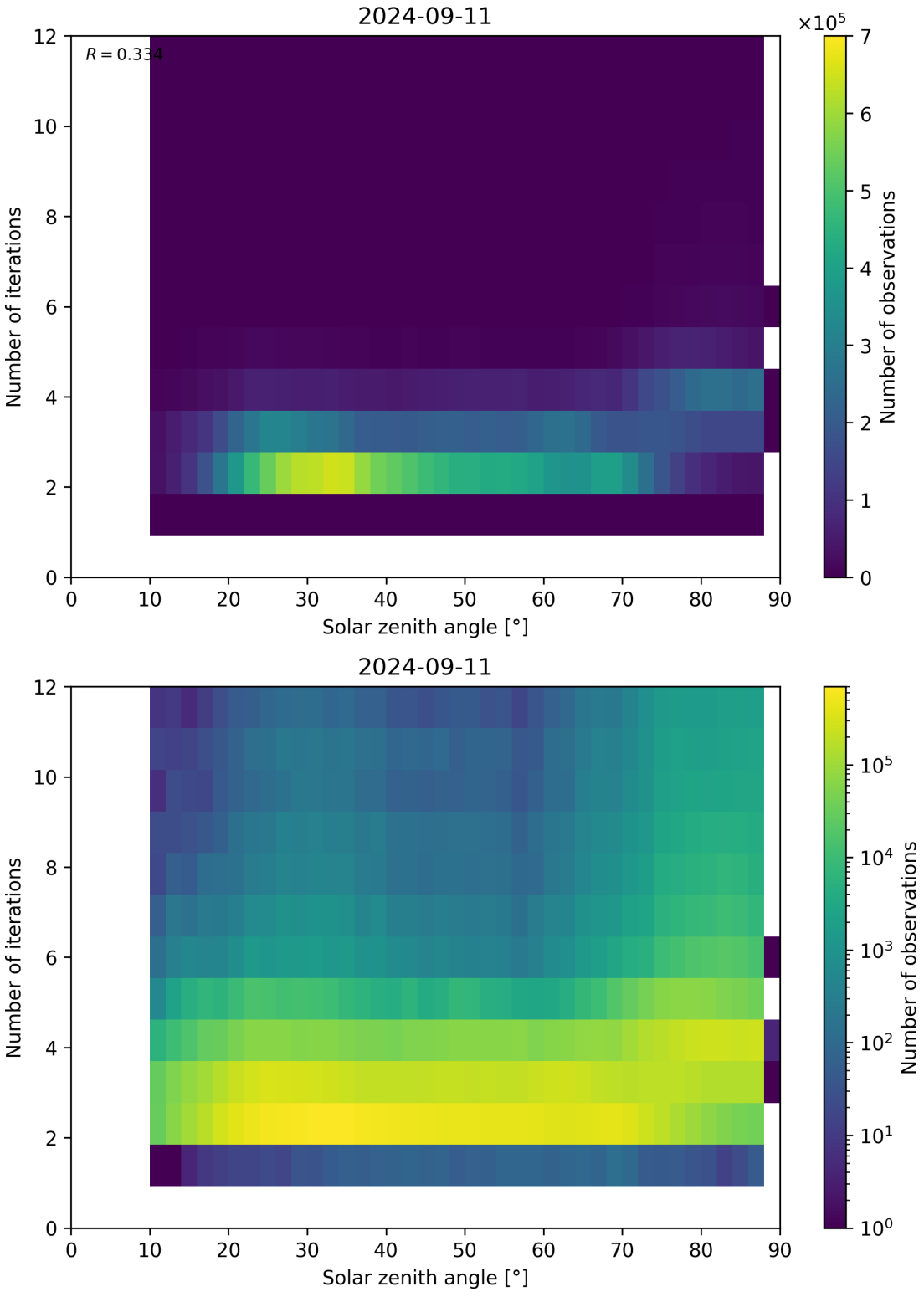

Figure 125: Scatter density plot of “Solar zenith angle” against “Number of iterations” for 2024-09-10 to 2024-09-12.

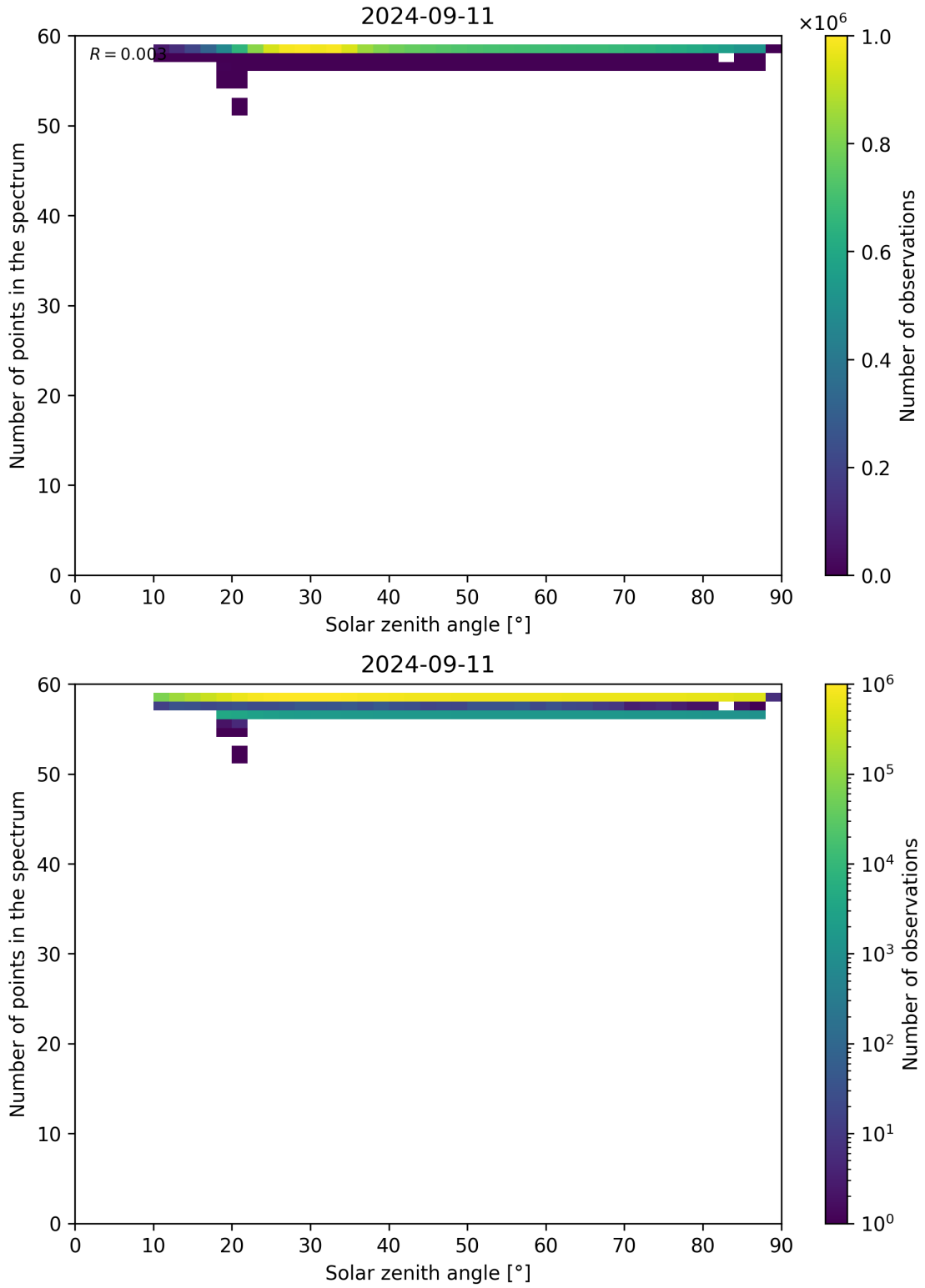

Figure 126: Scatter density plot of “Solar zenith angle” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

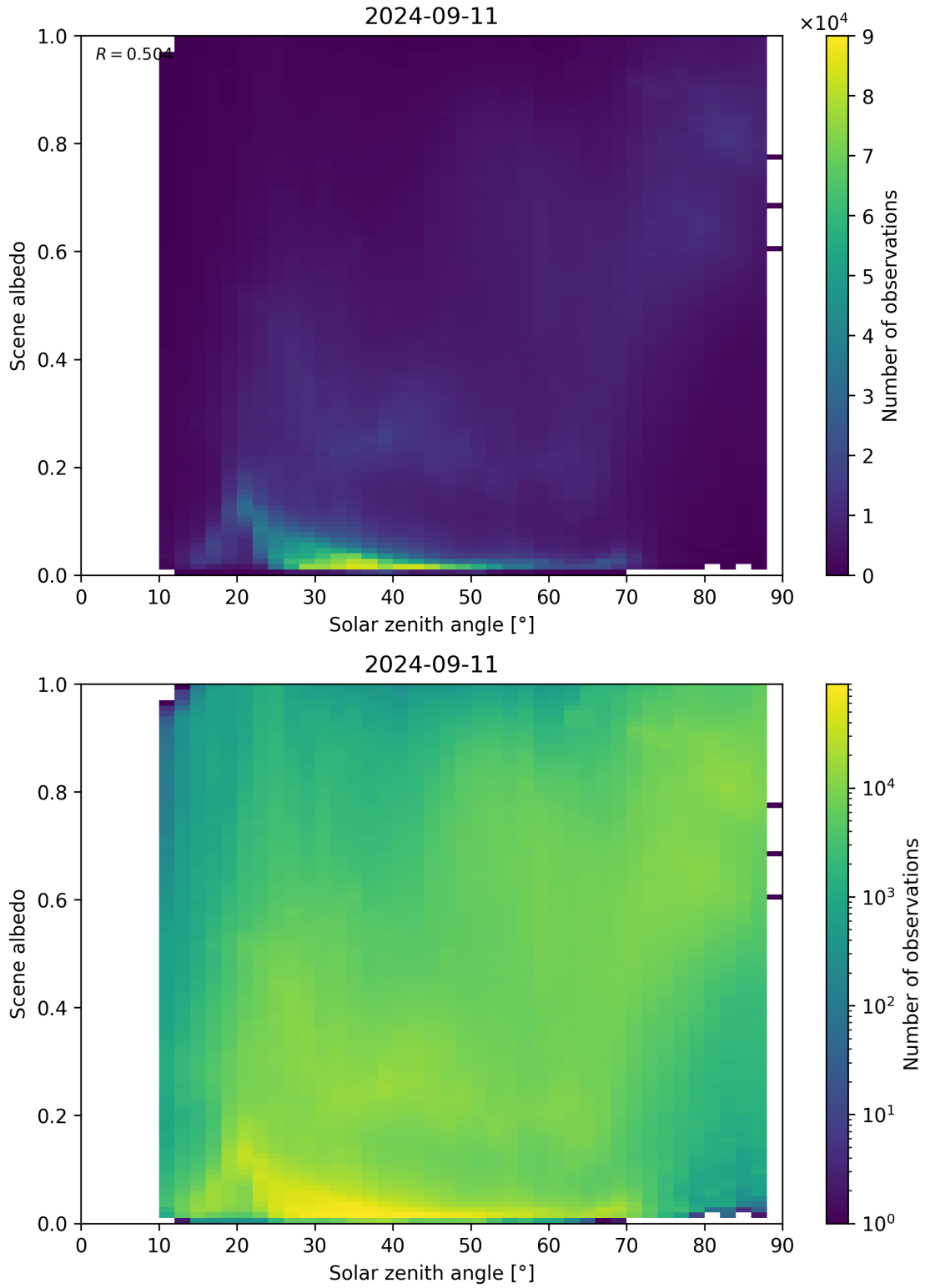

Figure 127: Scatter density plot of “Solar zenith angle” against “Scene albedo” for 2024-09-10 to 2024-09-12.

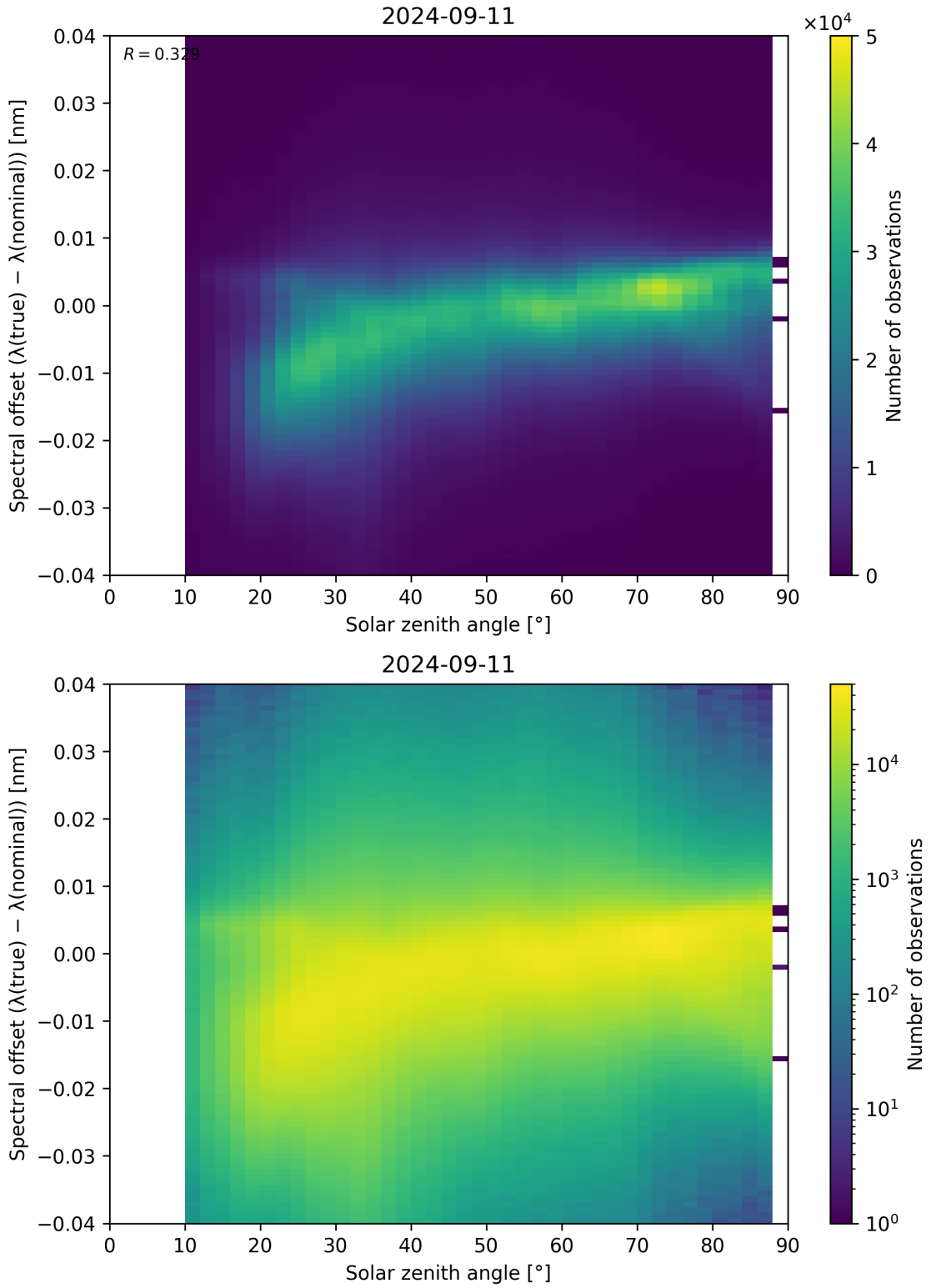

Figure 128: Scatter density plot of “Solar zenith angle” against “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-09-10 to 2024-09-12.

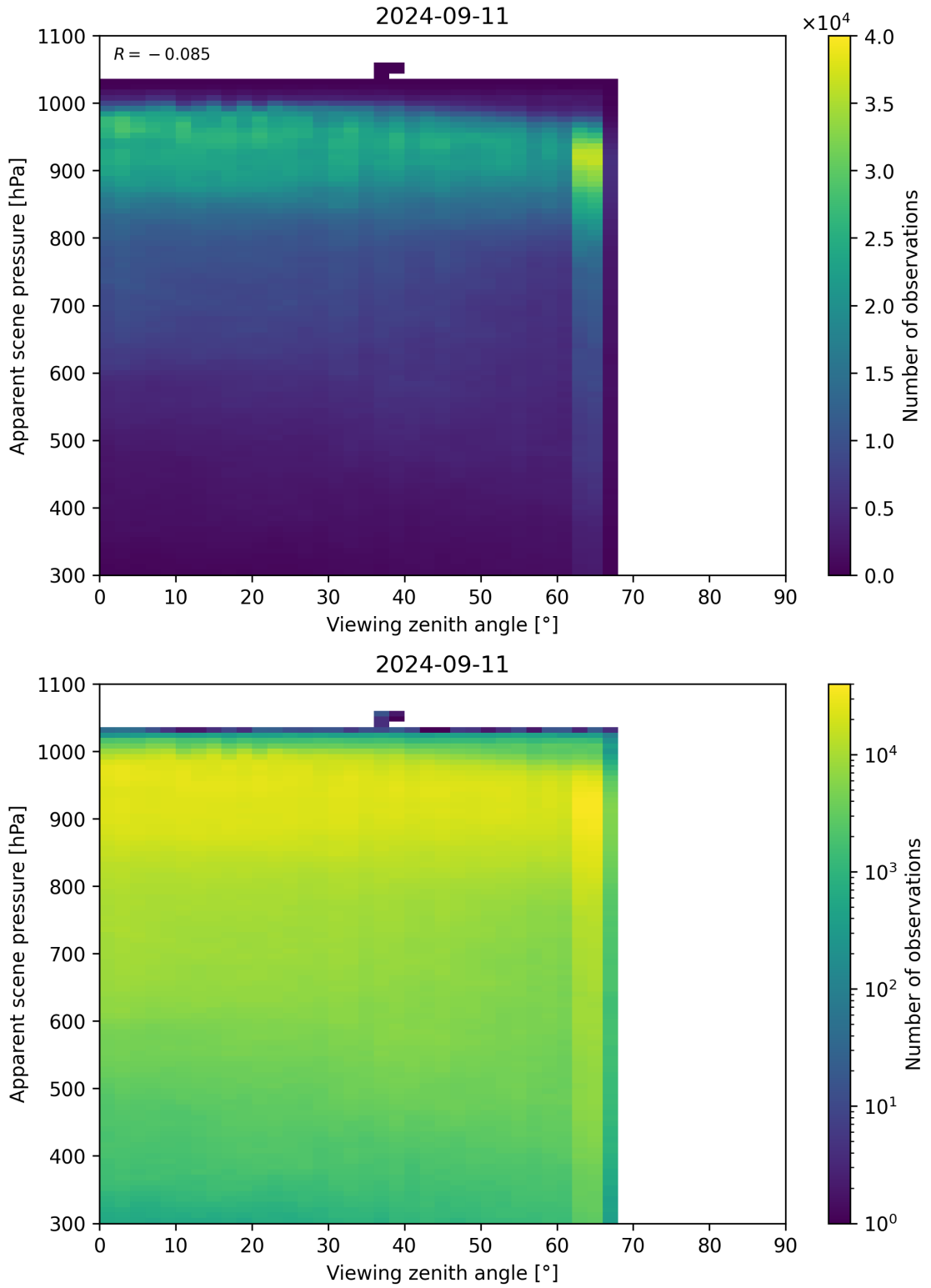

Figure 129: Scatter density plot of “Viewing zenith angle” against “Apparent scene pressure” for 2024-09-10 to 2024-09-12.

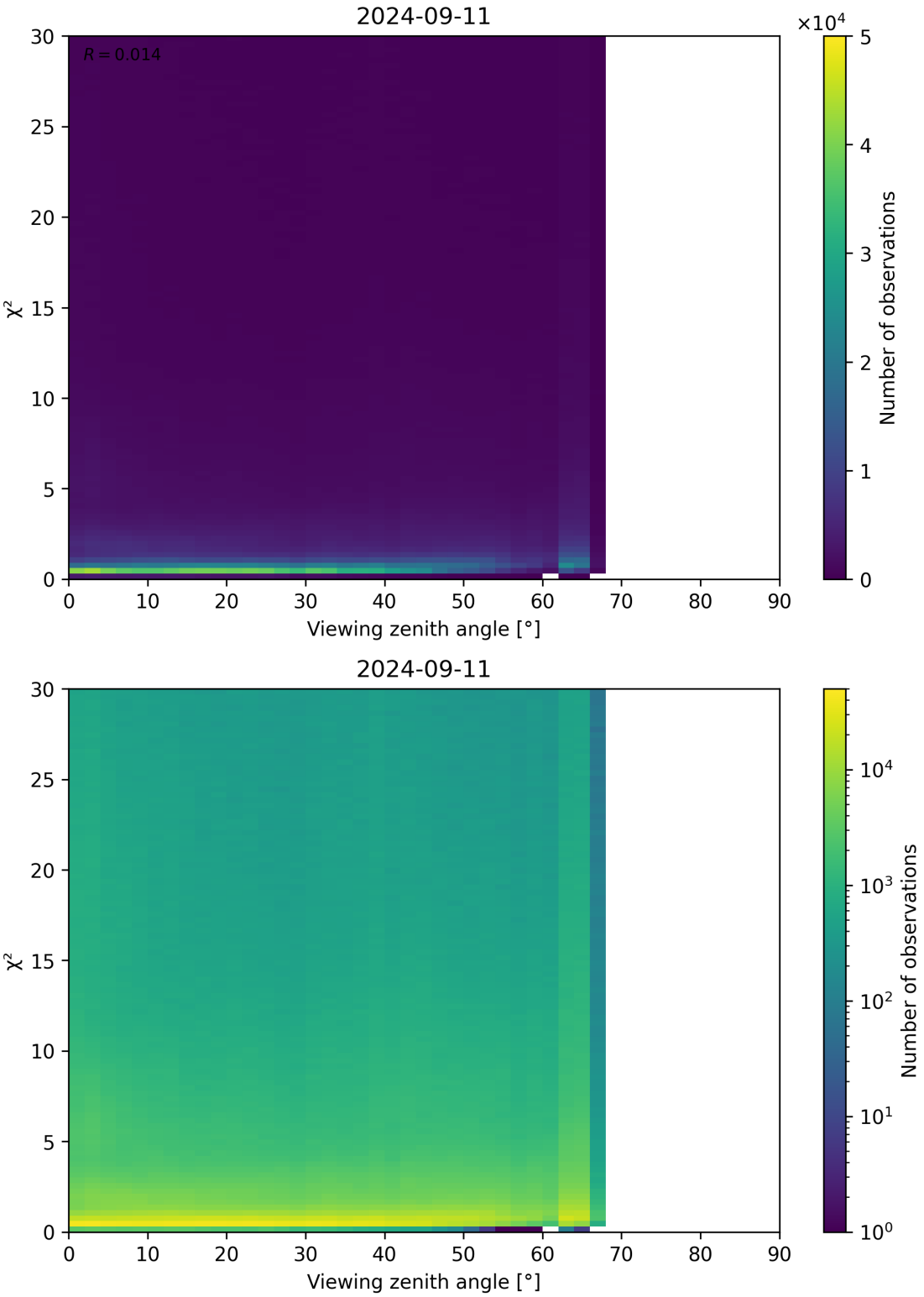

Figure 130: Scatter density plot of "Viewing zenith angle" against "χ^2" for 2024-09-10 to 2024-09-12.

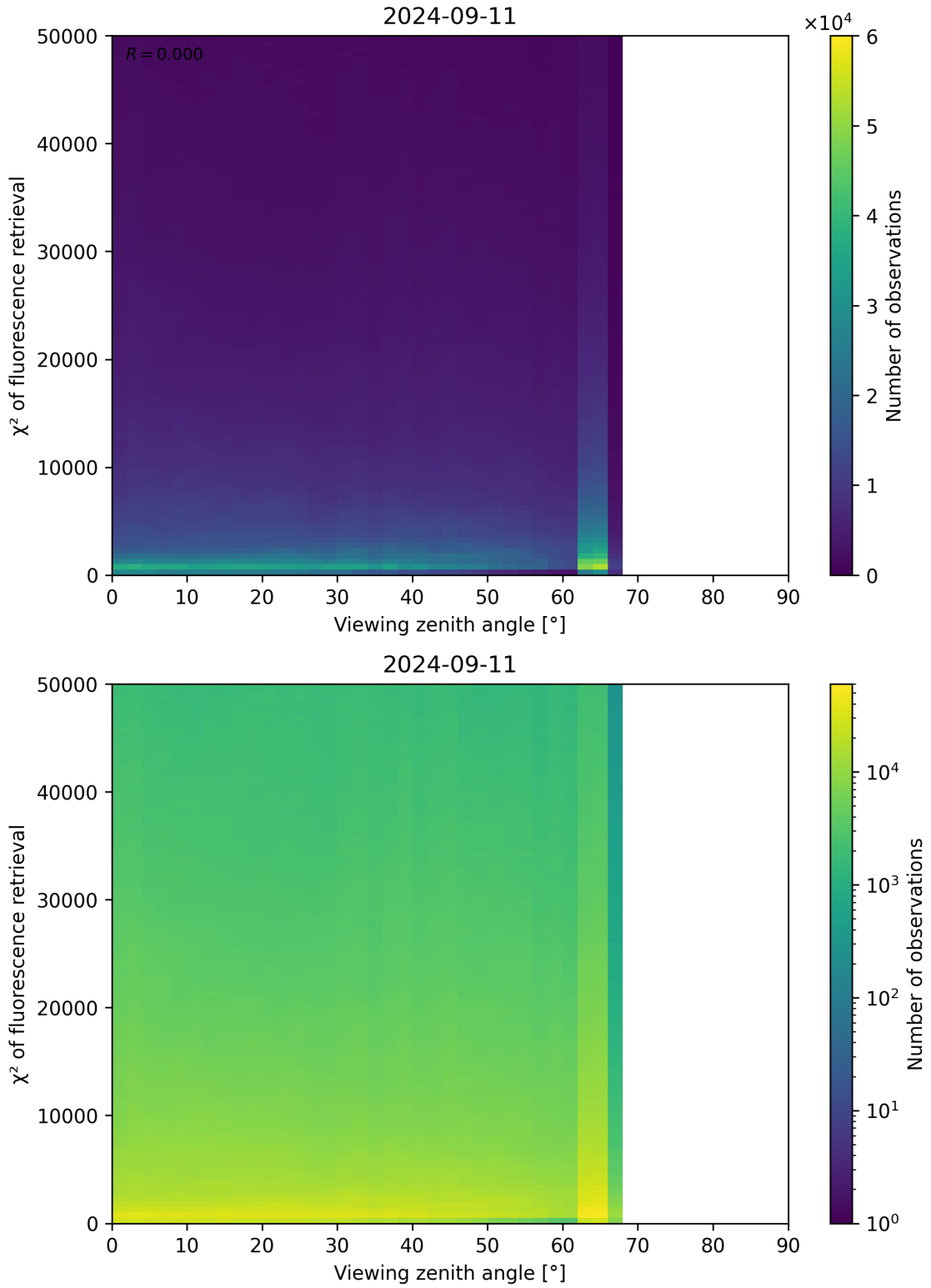

Figure 131: Scatter density plot of "Viewing zenith angle" against "χ^2 of fluorescence retrieval" for 2024-09-10 to 2024-09-12.

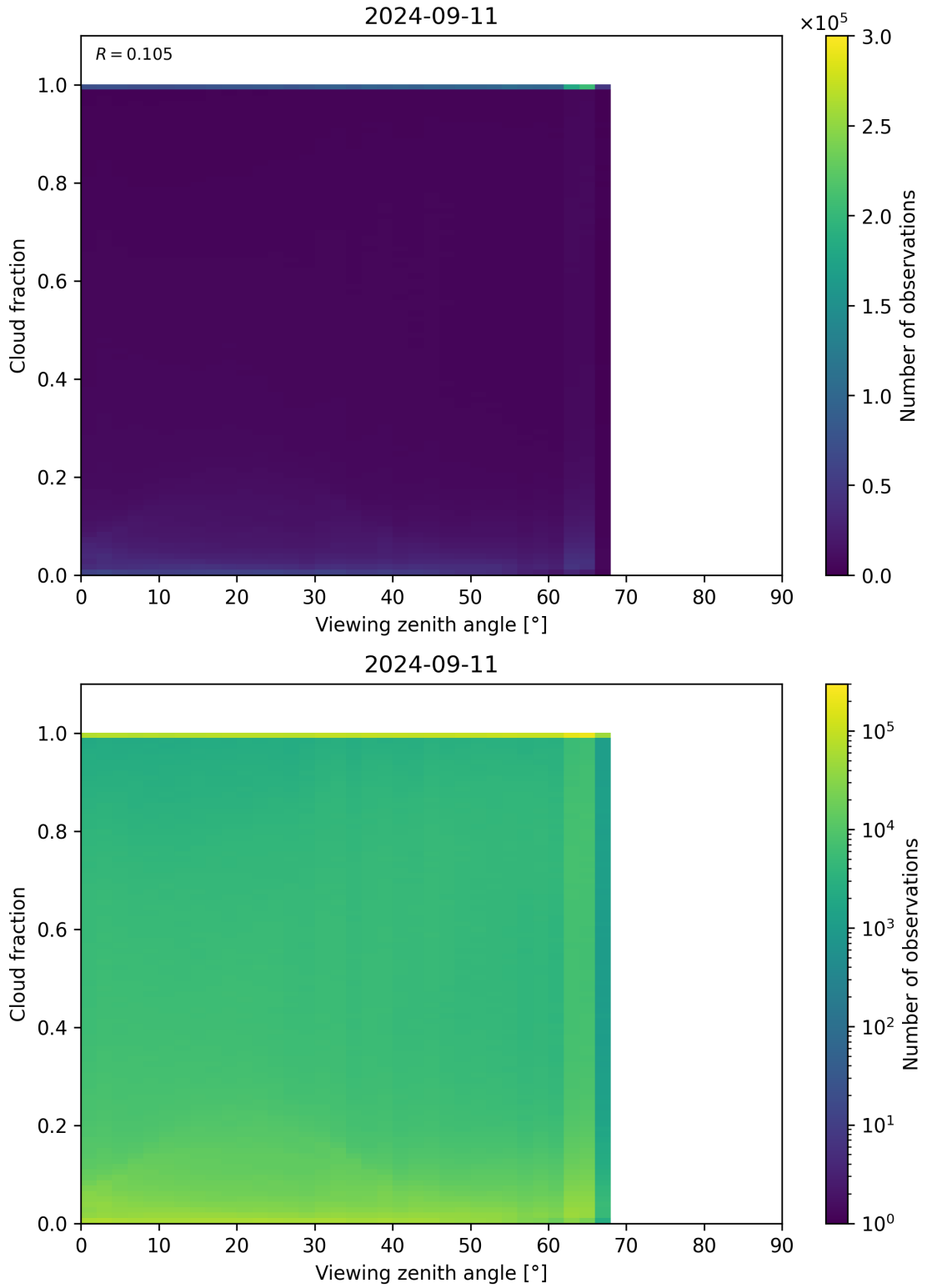

Figure 132: Scatter density plot of “Viewing zenith angle” against “Cloud fraction” for 2024-09-10 to 2024-09-12.

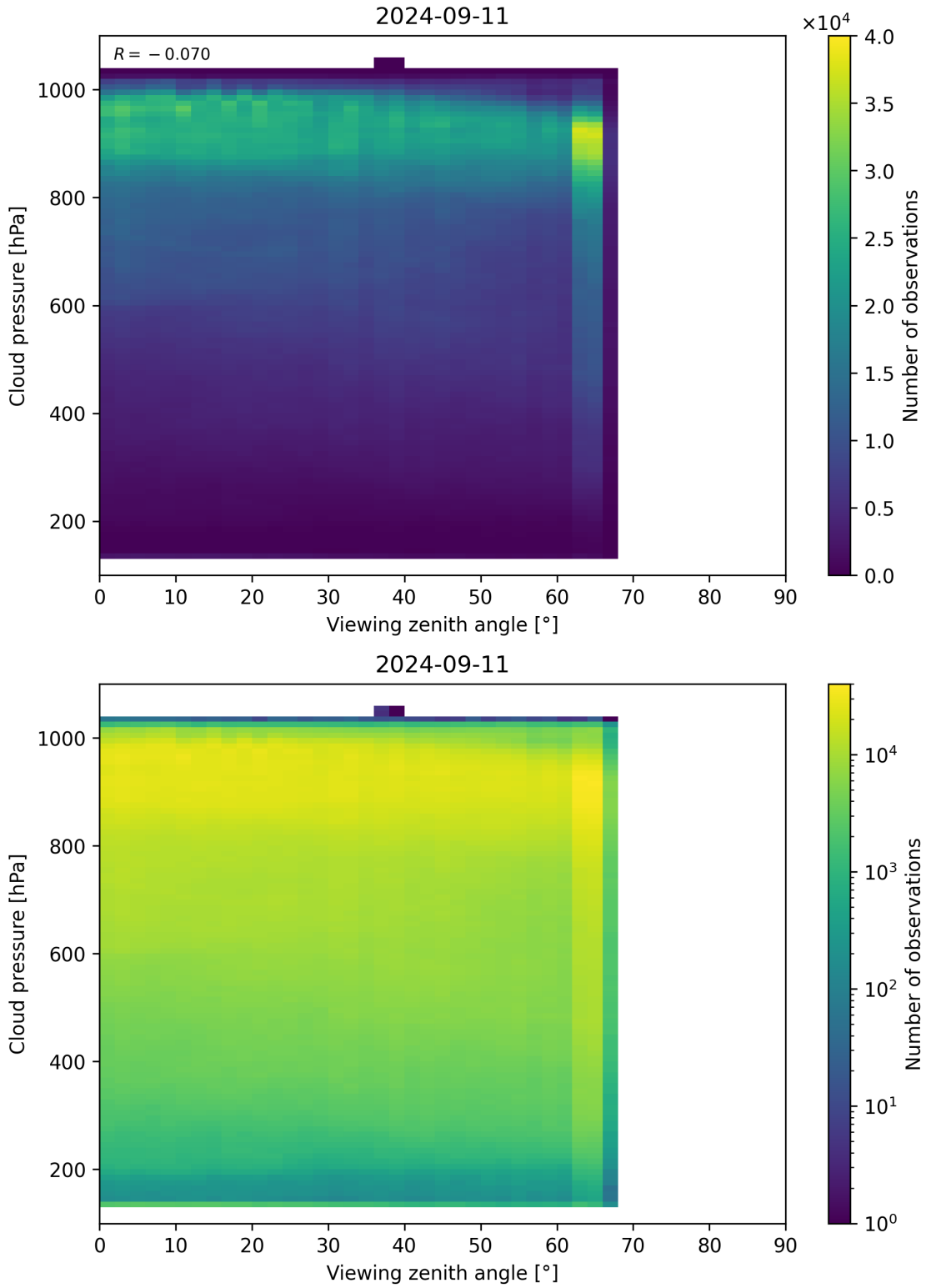

Figure 133: Scatter density plot of “Viewing zenith angle” against “Cloud pressure” for 2024-09-10 to 2024-09-12.

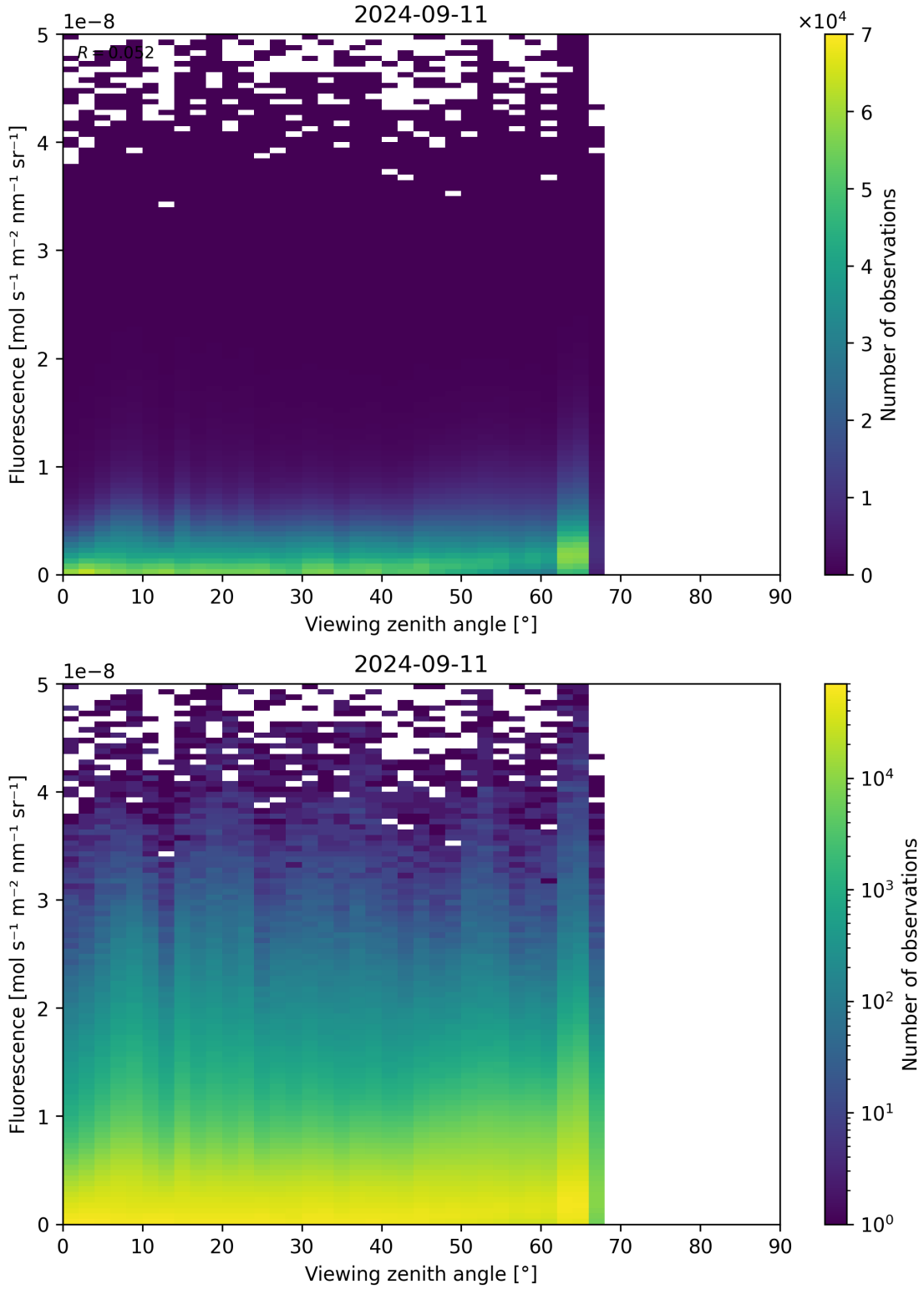

Figure 134: Scatter density plot of “Viewing zenith angle” against “Fluorescence” for 2024-09-10 to 2024-09-12.

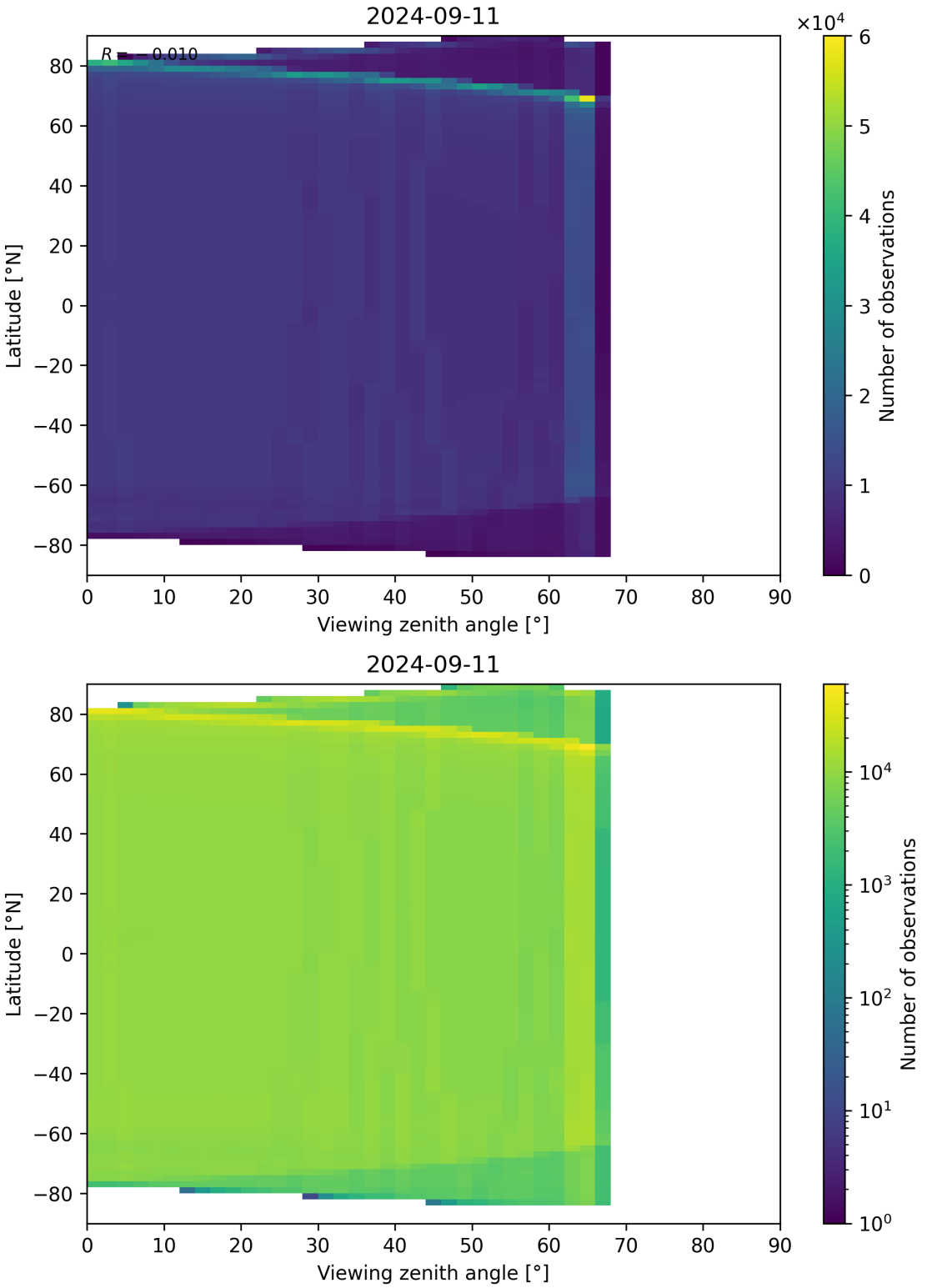

Figure 135: Scatter density plot of “Viewing zenith angle” against “Latitude” for 2024-09-10 to 2024-09-12.

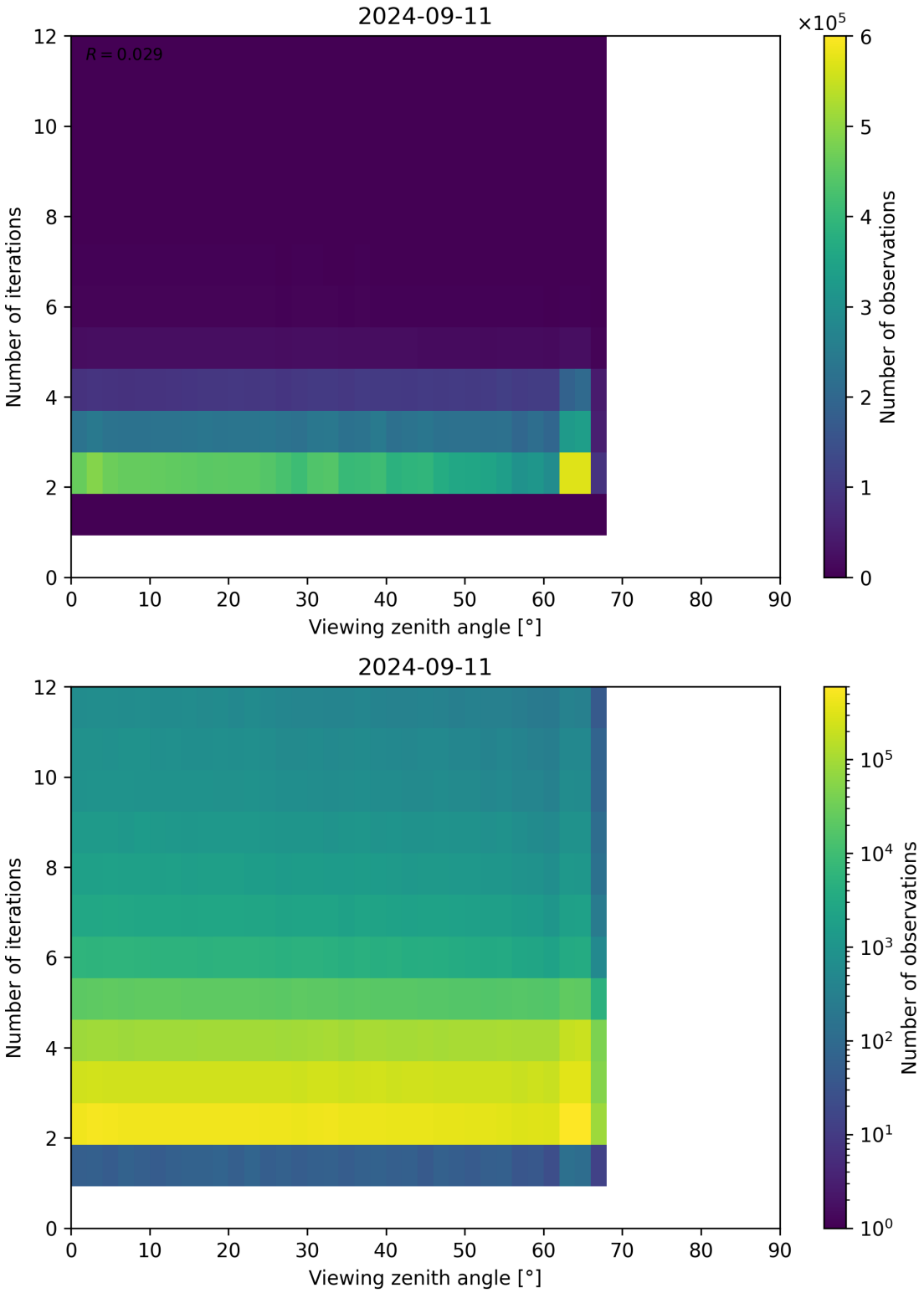

Figure 136: Scatter density plot of “Viewing zenith angle” against “Number of iterations” for 2024-09-10 to 2024-09-12.

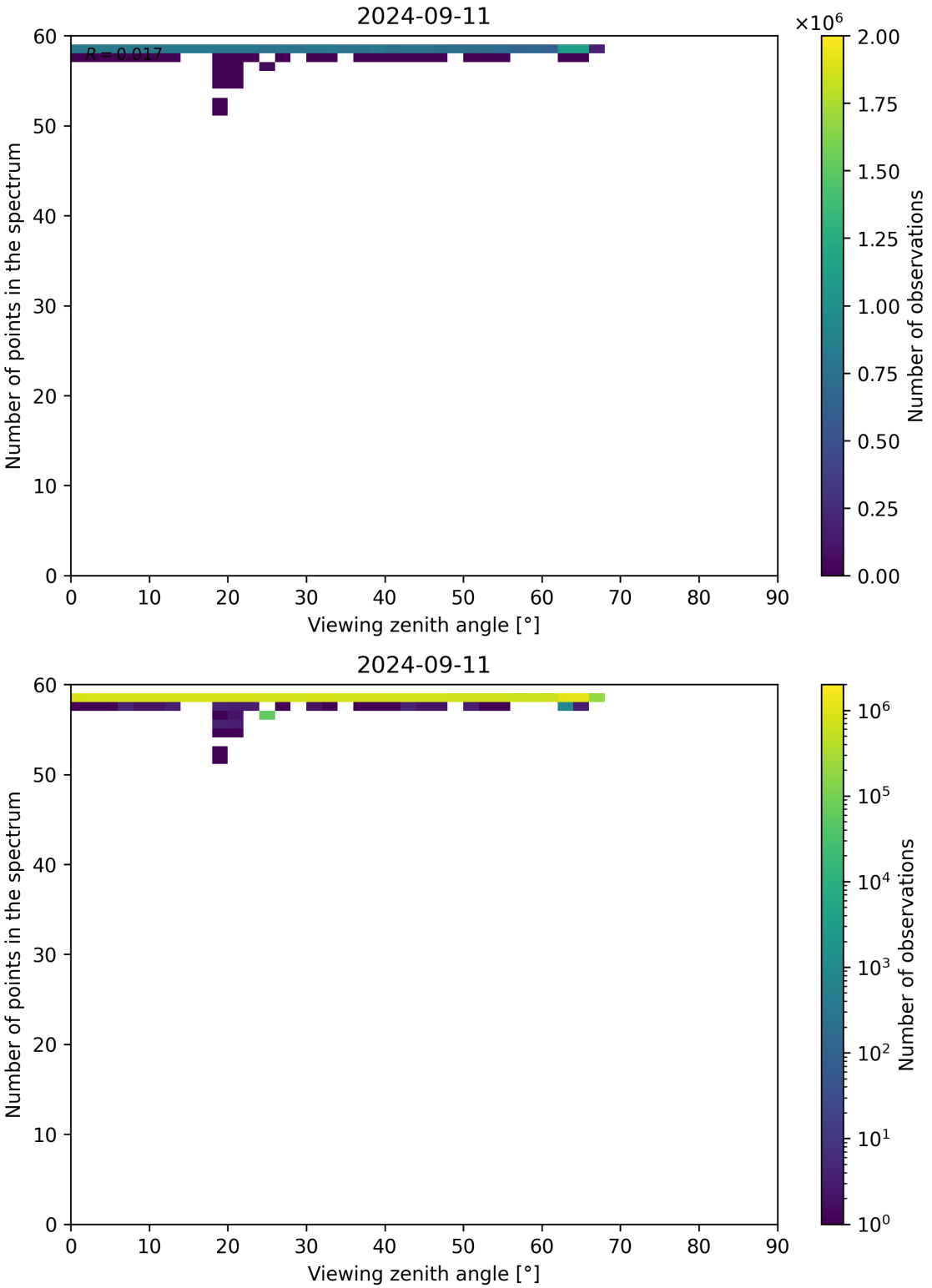

Figure 137: Scatter density plot of “Viewing zenith angle” against “Number of points in the spectrum” for 2024-09-10 to 2024-09-12.

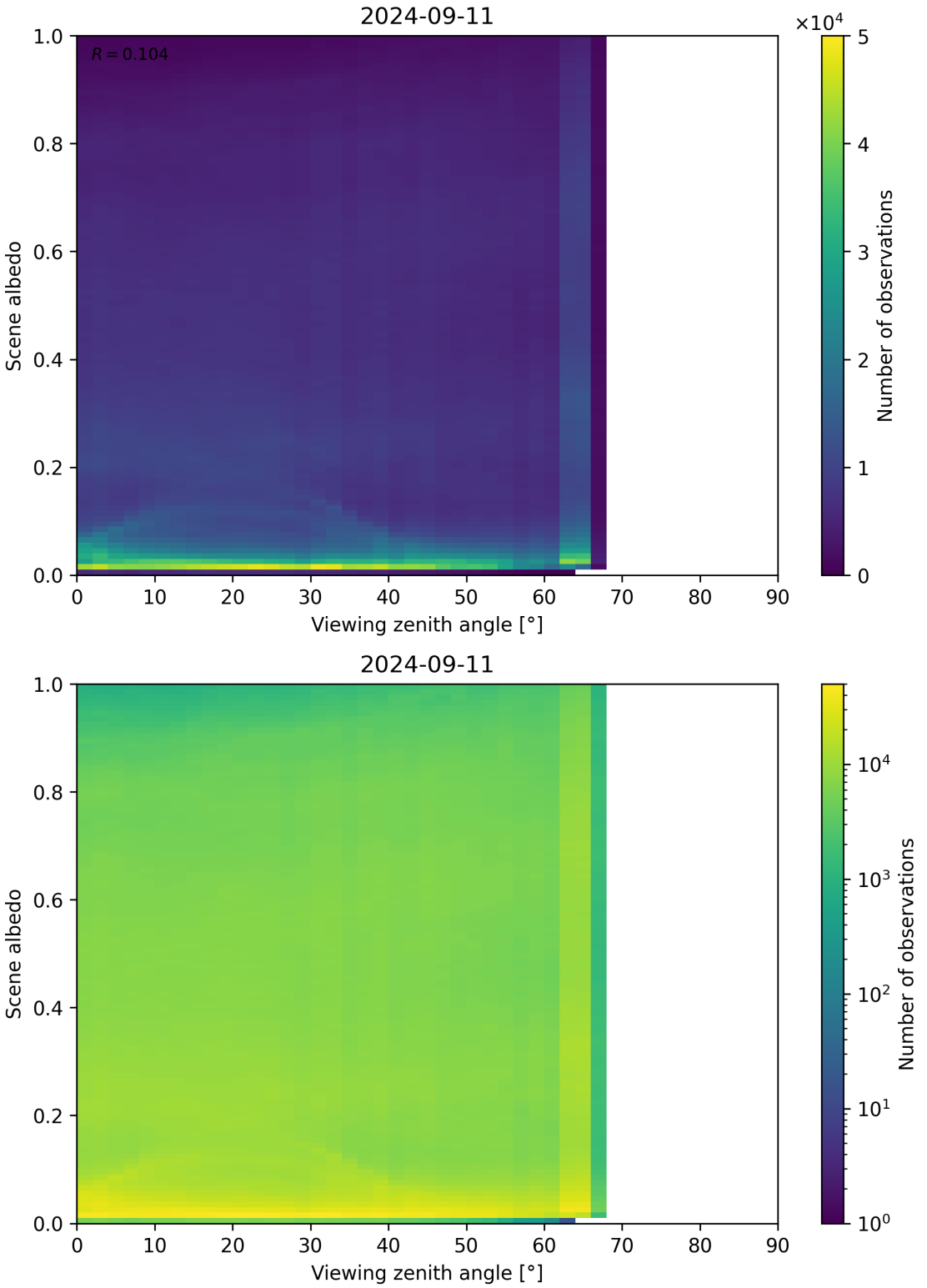

Figure 138: Scatter density plot of “Viewing zenith angle” against “Scene albedo” for 2024-09-10 to 2024-09-12.

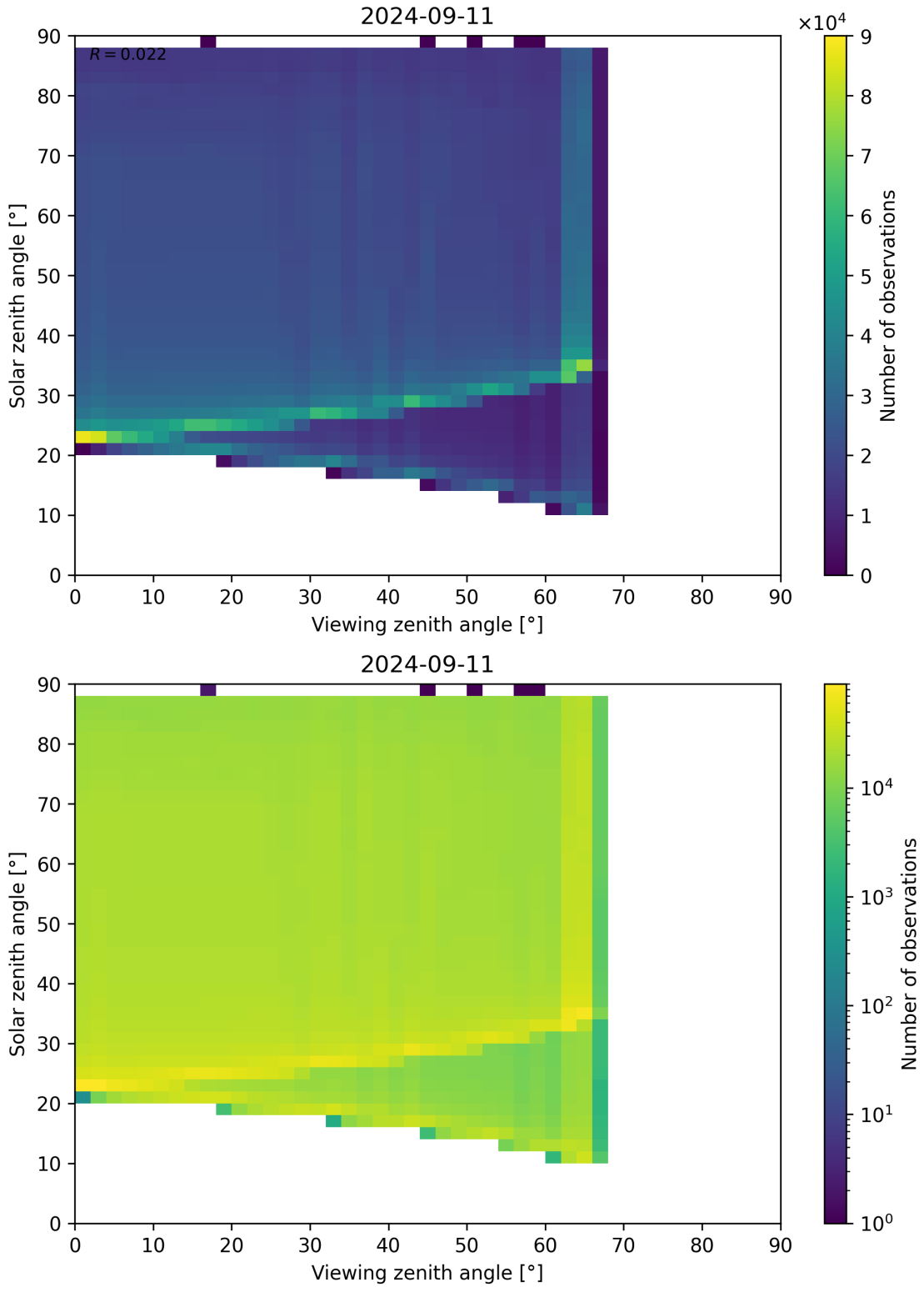

Figure 139: Scatter density plot of “Viewing zenith angle” against “Solar zenith angle” for 2024-09-10 to 2024-09-12.

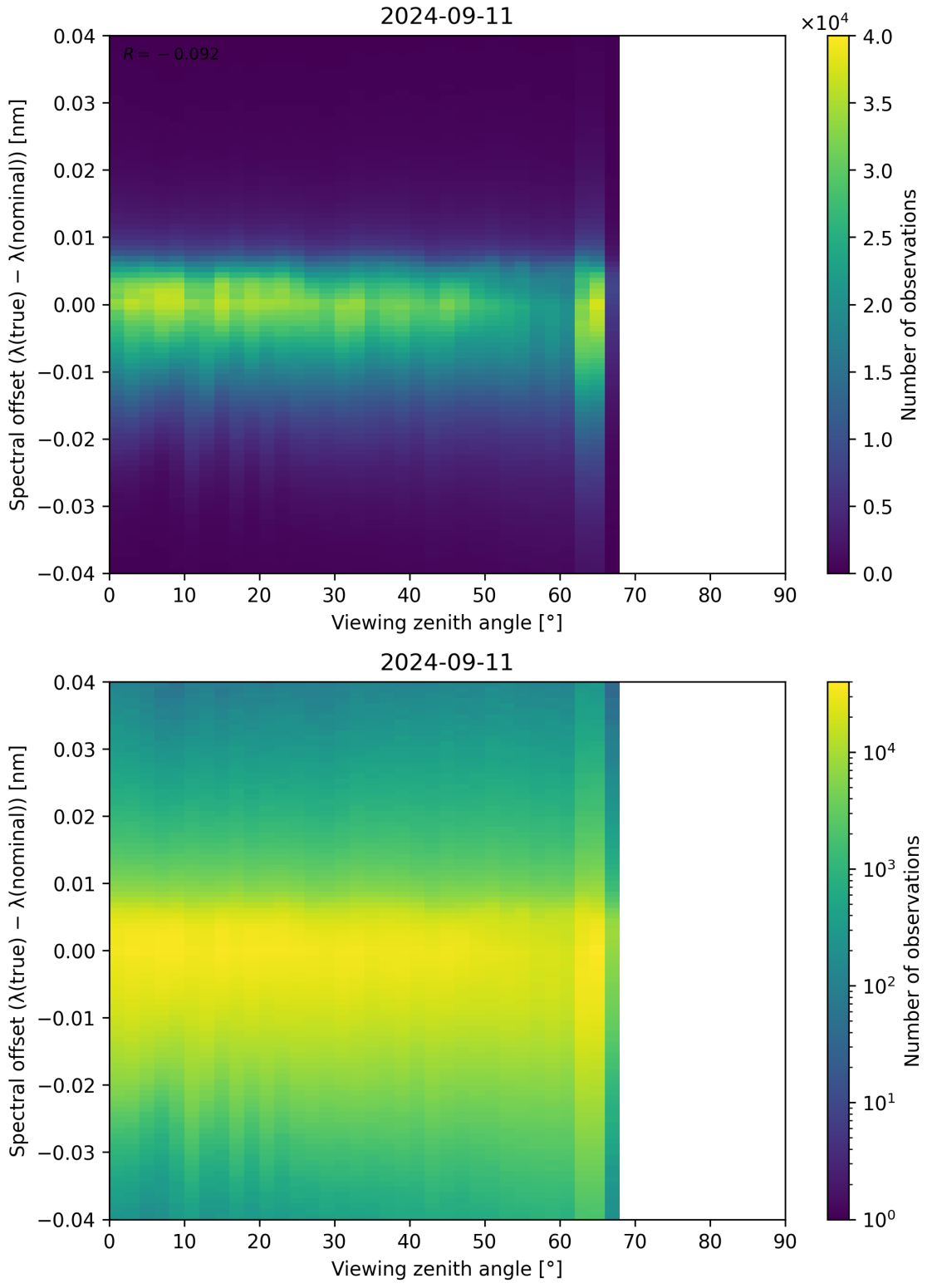

Figure 140: Scatter density plot of "Viewing zenith angle" against "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-09-10 to 2024-09-12.

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