

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-08-01 (02:30)

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]	0.654 ± 0.355	21435872	0.995	0.550	0.800	0.0	1.000
cloud fraction [1]	0.580 ± 0.348	21435872	0.995	0.740	0.580	0.0	1.000
cloud top height [m]	$(0.383 \pm 0.258) \times 10^4$	21435872	1.575×10^3	3.465×10^3	3.305×10^3	0.0	2.000×10^4
cloud optical thickness [1]	20.3 ± 34.2	21435872	9.34	11.9	10.3	1.000	250
cloud fraction crb [1]	0.579 ± 0.349	21435872	0.995	0.741	0.577	0.0	1.000
cloud height crb [m]	$(0.301 \pm 0.226) \times 10^4$	21435872	75.0	3.114×10^3	2.535×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.559 ± 0.188	21435872	0.505	0.225	0.552	0.0	1.000
surface albedo fitted [1]	0.152 ± 0.198	21435872	1.500×10^{-2}	0.215	4.531×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.146 ± 0.202	21435872	1.500×10^{-2}	0.221	2.895×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.046 \pm 10.585) \times 10^{-4}$	21435872	5.000×10^{-5}	8.418×10^{-4}	3.379×10^{-4}	9.733×10^{-7}	0.317
fitted root mean square crb [1]	$(6.384 \pm 9.021) \times 10^{-4}$	21435872	5.000×10^{-5}	8.243×10^{-4}	2.842×10^{-4}	7.603×10^{-7}	0.665
wavelength shift [nm]	$(7.002 \pm 6.756) \times 10^{-3}$	21435872	3.000×10^{-4}	9.619×10^{-3}	6.417×10^{-3}	-4.552×10^{-2}	0.151
cloud fraction apriori [1]	0.580 ± 0.353	21435872	0.995	0.761	0.578	0.0	1.000
reflectance blue ocra [1]	0.505 ± 0.186	21435872	0.315	0.291	0.481	0.117	1.90
reflectance green ocra [1]	0.449 ± 0.213	21435872	0.185	0.352	0.422	6.927×10^{-2}	2.42
reflectance continuum aband [1]	0.404 ± 0.247	21435872	4.500×10^{-2}	0.387	0.386	1.153×10^{-2}	6.97

Table 2: Percentile ranges

Variable	1 %	5 %	10 %	15.9 %	25 %	75 %	84.1 %	90 %	95 %	99 %
qa value [1]	0.0	0.0	0.0	0.140	0.400	0.950	1.000	1.000	1.000	1.000
cloud fraction [1]	1.947×10^{-2}	6.608×10^{-2}	0.102	0.151	0.247	0.988	1.000	1.000	1.000	1.000
cloud top height [m]	171	628	1.027×10^3	1.361×10^3	1.815×10^3	5.280×10^3	6.475×10^3	7.586×10^3	9.011×10^3	1.114×10^4
cloud optical thickness [1]	1.14	2.99	4.12	5.13	6.58	18.4	27.3	39.7	68.3	239
cloud fraction crb [1]	1.907×10^{-2}	6.495×10^{-2}	0.101	0.150	0.246	0.987	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	199	522	811	1.215×10^3	4.328×10^3	5.379×10^3	6.301×10^3	7.500×10^3	9.357×10^3
cloud albedo crb [1]	5.089×10^{-2}	0.231	0.335	0.401	0.451	0.676	0.744	0.805	0.884	1.000
surface albedo fitted [1]	0.0	6.514×10^{-3}	1.123×10^{-2}	1.504×10^{-2}	2.075×10^{-2}	0.236	0.317	0.436	0.594	0.888
surface albedo fitted crb [1]	0.0	4.704×10^{-3}	7.553×10^{-3}	1.011×10^{-2}	1.384×10^{-2}	0.234	0.320	0.444	0.591	0.878
fitted root mean square [1]	9.051×10^{-6}	2.116×10^{-5}	3.632×10^{-5}	5.736×10^{-5}	1.002×10^{-4}	9.421×10^{-4}	1.386×10^{-3}	1.864×10^{-3}	2.537×10^{-3}	4.058×10^{-3}
fitted root mean square crb [1]	5.376×10^{-6}	1.303×10^{-5}	2.332×10^{-5}	3.725×10^{-5}	6.703×10^{-5}	8.913×10^{-4}	1.332×10^{-3}	1.793×10^{-3}	2.430×10^{-3}	3.704×10^{-3}
wavelength shift [nm]	-8.172×10^{-3}	-1.376×10^{-3}	-1.420×10^{-4}	4.329×10^{-4}	1.772×10^{-3}	1.139×10^{-2}	1.372×10^{-2}	1.577×10^{-2}	1.856×10^{-2}	2.479×10^{-2}
cloud fraction apriori [1]	2.773×10^{-2}	6.374×10^{-2}	9.661×10^{-2}	0.143	0.239	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.233	0.259	0.281	0.307	0.348	0.639	0.708	0.764	0.830	0.964
reflectance green ocra [1]	0.150	0.173	0.192	0.215	0.258	0.610	0.687	0.746	0.819	0.958
reflectance continuum aband [1]	2.937×10^{-2}	5.174×10^{-2}	8.233×10^{-2}	0.122	0.198	0.585	0.668	0.737	0.824	0.973

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]	0.680 ± 0.333	14241710	0.530	0.800	0.0	1.000	0.410	0.940
cloud fraction [1]	0.634 ± 0.348	14241710	0.698	0.697	0.0	1.000	0.302	1.000
cloud top height [m]	$(0.381 \pm 0.266) \times 10^4$	14241710	3.637×10^3	3.321×10^3	0.0	2.000×10^4	1.712×10^3	5.349×10^3
cloud optical thickness [1]	17.8 ± 29.4	14241710	10.6	9.93	1.000	250	6.31	16.9
cloud fraction crb [1]	0.633 ± 0.348	14241710	0.699	0.696	0.0	1.000	0.301	1.000
cloud height crb [m]	$(0.297 \pm 0.233) \times 10^4$	14241710	3.291×10^3	2.526×10^3	0.0	2.000×10^4	1.073×10^3	4.364×10^3
cloud albedo crb [1]	0.545 ± 0.196	14241710	0.236	0.540	0.0	1.000	0.435	0.672
surface albedo fitted [1]	0.195 ± 0.217	14241710	0.273	0.122	0.0	1.000	2.143×10^{-2}	0.295
surface albedo fitted crb [1]	0.193 ± 0.219	14241710	0.281	0.122	0.0	1.000	1.585×10^{-2}	0.297
fitted root mean square [1]	$(8.956 \pm 12.069) \times 10^{-4}$	14241710	1.086×10^{-3}	5.476×10^{-4}	1.509×10^{-6}	0.317	1.515×10^{-4}	1.237×10^{-3}
fitted root mean square crb [1]	$(8.212 \pm 10.083) \times 10^{-4}$	14241710	1.054×10^{-3}	4.935×10^{-4}	7.603×10^{-7}	0.665	1.319×10^{-4}	1.186×10^{-3}
wavelength shift [nm]	$(7.983 \pm 6.633) \times 10^{-3}$	14241710	9.084×10^{-3}	7.812×10^{-3}	-4.505×10^{-2}	0.151	3.202×10^{-3}	1.229×10^{-2}
cloud fraction apriori [1]	0.636 ± 0.351	14241710	0.701	0.701	0.0	1.000	0.299	1.000
reflectance blue oca [1]	0.517 ± 0.191	14241710	0.316	0.505	0.117	1.88	0.347	0.662
reflectance green oca [1]	0.468 ± 0.217	14241710	0.375	0.459	6.927×10^{-2}	2.42	0.265	0.640
reflectance continuum aband [1]	0.441 ± 0.241	14241710	0.367	0.439	1.153×10^{-2}	6.97	0.253	0.620

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]	0.602 ± 0.390	7194162	0.720	0.810	0.0	1.000	0.260	0.980
cloud fraction [1]	0.475 ± 0.324	7194162	0.572	0.417	0.0	1.000	0.182	0.754
cloud top height [m]	$(0.387 \pm 0.242) \times 10^4$	7194162	3.158×10^3	3.277×10^3	0.0	2.000×10^4	1.966×10^3	5.125×10^3
cloud optical thickness [1]	25.4 ± 41.8	7194162	15.3	11.4	1.000	250	7.07	22.3
cloud fraction crb [1]	0.472 ± 0.324	7194162	0.570	0.412	0.0	1.000	0.180	0.749
cloud height crb [m]	$(0.308 \pm 0.210) \times 10^4$	7194162	2.841×10^3	2.553×10^3	0.0	1.882×10^4	1.408×10^3	4.249×10^3
cloud albedo crb [1]	0.586 ± 0.168	7194162	0.202	0.571	0.0	1.000	0.482	0.684
surface albedo fitted [1]	$(6.573 \pm 11.441) \times 10^{-2}$	7194162	3.553×10^{-2}	3.316×10^{-2}	0.0	1.000	1.986×10^{-2}	5.538×10^{-2}
surface albedo fitted crb [1]	$(5.214 \pm 11.416) \times 10^{-2}$	7194162	1.933×10^{-2}	1.932×10^{-2}	0.0	1.000	1.183×10^{-2}	3.117×10^{-2}
fitted root mean square [1]	$(3.264 \pm 4.895) \times 10^{-4}$	7194162	3.138×10^{-4}	1.547×10^{-4}	9.733×10^{-7}	3.658×10^{-2}	5.759×10^{-5}	3.713×10^{-4}
fitted root mean square crb [1]	$(2.766 \pm 4.639) \times 10^{-4}$	7194162	2.637×10^{-4}	8.772×10^{-5}	1.070×10^{-6}	2.756×10^{-2}	3.442×10^{-5}	2.982×10^{-4}
wavelength shift [nm]	$(5.062 \pm 6.575) \times 10^{-3}$	7194162	7.997×10^{-3}	3.428×10^{-3}	-4.552×10^{-2}	6.095×10^{-2}	5.972×10^{-4}	8.595×10^{-3}
cloud fraction apriori [1]	0.471 ± 0.331	7194162	0.587	0.405	0.0	1.000	0.169	0.756
reflectance blue oca [1]	0.483 ± 0.175	7194162	0.233	0.446	0.152	1.90	0.350	0.583
reflectance green oca [1]	0.411 ± 0.200	7194162	0.283	0.368	9.566×10^{-2}	2.07	0.249	0.532
reflectance continuum aband [1]	0.329 ± 0.240	7194162	0.349	0.285	1.333×10^{-2}	6.54	0.129	0.478

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]	0.638 ± 0.356	15517681	0.580	0.800	0.0	1.000	0.360	0.940
cloud fraction [1]	0.550 ± 0.344	15517681	0.713	0.525	0.0	1.000	0.225	0.938
cloud top height [m]	$(0.377 \pm 0.262) \times 10^4$	15517681	3.471×10^3	3.186×10^3	0.0	2.000×10^4	1.722×10^3	5.192×10^3
cloud optical thickness [1]	21.6 ± 36.4	15517681	12.2	10.7	1.000	250	7.02	19.2
cloud fraction crb [1]	0.548 ± 0.344	15517681	0.713	0.522	0.0	1.000	0.223	0.936
cloud height crb [m]	$(0.297 \pm 0.231) \times 10^4$	15517681	3.119×10^3	2.457×10^3	0.0	2.000×10^4	1.136×10^3	4.255×10^3
cloud albedo crb [1]	0.555 ± 0.183	15517681	0.217	0.544	0.0	1.000	0.449	0.666
surface albedo fitted [1]	$(9.981 \pm 17.818) \times 10^{-2}$	15517681	3.985×10^{-2}	2.929×10^{-2}	0.0	1.000	1.653×10^{-2}	5.638×10^{-2}
surface albedo fitted crb [1]	$(9.184 \pm 18.063) \times 10^{-2}$	15517681	2.458×10^{-2}	1.919×10^{-2}	0.0	1.000	1.107×10^{-2}	3.564×10^{-2}
fitted root mean square [1]	$(5.680 \pm 9.934) \times 10^{-4}$	15517681	6.076×10^{-4}	2.303×10^{-4}	9.733×10^{-7}	0.100	7.901×10^{-5}	6.866×10^{-4}
fitted root mean square crb [1]	$(4.970 \pm 7.415) \times 10^{-4}$	15517681	5.633×10^{-4}	1.777×10^{-4}	7.603×10^{-7}	2.756×10^{-2}	5.338×10^{-5}	6.167×10^{-4}
wavelength shift [nm]	$(6.609 \pm 6.814) \times 10^{-3}$	15517681	9.491×10^{-3}	5.753×10^{-3}	-4.515×10^{-2}	6.336×10^{-2}	1.453×10^{-3}	1.094×10^{-2}
cloud fraction apriori [1]	0.549 ± 0.348	15517681	0.743	0.521	0.0	1.000	0.216	0.959
reflectance blue oca [1]	0.502 ± 0.180	15517681	0.280	0.478	0.153	1.88	0.351	0.630
reflectance green oca [1]	0.441 ± 0.207	15517681	0.343	0.416	9.558×10^{-2}	1.97	0.255	0.598
reflectance continuum aband [1]	0.367 ± 0.247	15517681	0.412	0.343	1.153×10^{-2}	5.18	0.143	0.554

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]	0.714 ± 0.334	3575641	0.360	0.860	0.0	1.000	0.600	0.960
cloud fraction [1]	0.626 ± 0.353	3575641	0.713	0.687	0.0	1.000	0.287	1.000
cloud top height [m]	$(0.420 \pm 0.255) \times 10^4$	3575641	3.439×10^3	3.753×10^3	0.0	2.000×10^4	2.267×10^3	5.706×10^3
cloud optical thickness [1]	15.3 ± 24.1	3575641	9.28	8.86	1.000	250	5.69	15.0
cloud fraction crb [1]	0.625 ± 0.353	3575641	0.714	0.686	0.0	1.000	0.286	0.999
cloud height crb [m]	$(0.323 \pm 0.217) \times 10^4$	3575641	3.074×10^3	2.744×10^3	0.0	2.000×10^4	1.545×10^3	4.620×10^3
cloud albedo crb [1]	0.584 ± 0.200	3575641	0.241	0.585	0.0	1.000	0.475	0.716
surface albedo fitted [1]	0.335 ± 0.205	3575641	0.118	0.269	0.0	1.000	0.221	0.339
surface albedo fitted crb [1]	0.334 ± 0.207	3575641	0.121	0.265	0.0	1.000	0.217	0.338
fitted root mean square [1]	$(1.178 \pm 1.088) \times 10^{-3}$	3575641	1.198×10^{-3}	9.154×10^{-4}	2.629×10^{-6}	0.217	4.471×10^{-4}	1.645×10^{-3}
fitted root mean square crb [1]	$(1.136 \pm 1.196) \times 10^{-3}$	3575641	1.198×10^{-3}	9.068×10^{-4}	1.218×10^{-6}	0.665	4.183×10^{-4}	1.616×10^{-3}
wavelength shift [nm]	$(8.223 \pm 6.286) \times 10^{-3}$	3575641	8.405×10^{-3}	8.176×10^{-3}	-3.943×10^{-2}	0.151	3.888×10^{-3}	1.229×10^{-2}
cloud fraction apriori [1]	0.631 ± 0.358	3575641	0.718	0.698	0.0	1.000	0.282	1.000
reflectance blue ocra [1]	0.513 ± 0.215	3575641	0.350	0.472	0.117	1.90	0.327	0.677
reflectance green ocra [1]	0.470 ± 0.240	3575641	0.403	0.424	6.927×10^{-2}	2.42	0.256	0.659
reflectance continuum aband [1]	0.513 ± 0.218	3575641	0.341	0.472	1.576×10^{-2}	6.97	0.336	0.676

Table 7: Correlation matrix

Viewing zenith angle	Solar zenith angle	Latitude	Radiometric cloud fraction	Cloud top height	Cloud optical thickness	Cloud fraction (CRB)	Cloud height (CRB)	Cloud albedo (CRB)	OCRA cloud fraction
1.000	6.665×10^{-3}	-3.731×10^{-2}	-7.593×10^{-2}	6.641×10^{-2}	1.937×10^{-2}	-7.653×10^{-2}	0.115	2.703×10^{-2}	-7.901×10^{-2}
6.665×10^{-3}	1.000	-0.109	0.132	-5.567×10^{-2}	0.226	0.130	-4.220×10^{-2}	6.182×10^{-2}	0.132
-3.731×10^{-2}	-0.109	1.000	0.255	-0.115	-9.670×10^{-2}	0.258	-0.133	-0.116	0.264
-7.593×10^{-2}	0.132	0.255	1.000	-2.807×10^{-2}	0.294	1.000	9.310×10^{-3}	0.291	0.989
6.641×10^{-2}	-5.567×10^{-2}	-0.115	-2.807×10^{-2}	1.000	9.236×10^{-2}	-2.810×10^{-2}	0.957	2.482×10^{-2}	-3.340×10^{-2}
1.937×10^{-2}	0.226	-9.670×10^{-2}	0.294	9.236×10^{-2}	1.000	0.290	0.141	0.525	0.292
-7.653×10^{-2}	0.130	0.258	1.000	-2.810×10^{-2}	0.290	1.000	9.439×10^{-3}	0.287	0.989
0.115	-4.220×10^{-2}	-0.133	9.310×10^{-3}	0.957	0.141	9.439×10^{-3}	1.000	8.140×10^{-3}	4.383×10^{-3}
2.703×10^{-2}	6.182×10^{-2}	-0.116	0.291	2.482×10^{-2}	0.525	0.287	8.140×10^{-3}	1.000	0.299
-7.901×10^{-2}	0.132	0.264	0.989	-3.340×10^{-2}	0.292	0.989	4.383×10^{-3}	0.299	1.000

Table 8: Covariance matrix

Viewing zenith angle	Solar zenith angle	Latitude	Radiometric cloud fraction	Cloud top height	Cloud optical thickness	Cloud fraction (CRB)	Cloud height (CRB)	Cloud albedo (CRB)	OCRA cloud fraction
388	3.01	-34.4	-0.521	3.379×10^3	13.1	-0.526	5.110×10^3	0.100	-0.550
3.01	524	-117	1.05	-3.292×10^3	177	1.04	-2.182×10^3	0.266	1.07
-34.4	-117	2.184×10^3	4.15	-1.385×10^4	-155	4.20	-1.403×10^4	-1.02	4.35
-0.521	1.05	4.15	0.121	-25.2	3.50	0.121	7.32	1.905×10^{-2}	0.122
3.379×10^3	-3.292×10^3	-1.385×10^4	-25.2	6.665×10^6	8.162×10^3	-25.3	5.580×10^6	12.0	-30.4
13.1	177	-155	3.50	8.162×10^3	1.172×10^3	3.46	1.089×10^4	3.38	3.53
-0.526	1.04	4.20	0.121	-25.3	3.46	0.122	7.43	1.882×10^{-2}	0.122
5.110×10^3	-2.182×10^3	-1.403×10^4	7.32	5.580×10^6	1.089×10^4	7.43	5.099×10^6	3.45	3.49
0.100	0.266	-1.02	1.905×10^{-2}	12.0	3.38	1.882×10^{-2}	3.45	3.532×10^{-2}	1.983×10^{-2}
-0.550	1.07	4.35	0.122	-30.4	3.53	0.122	3.49	1.983×10^{-2}	0.125

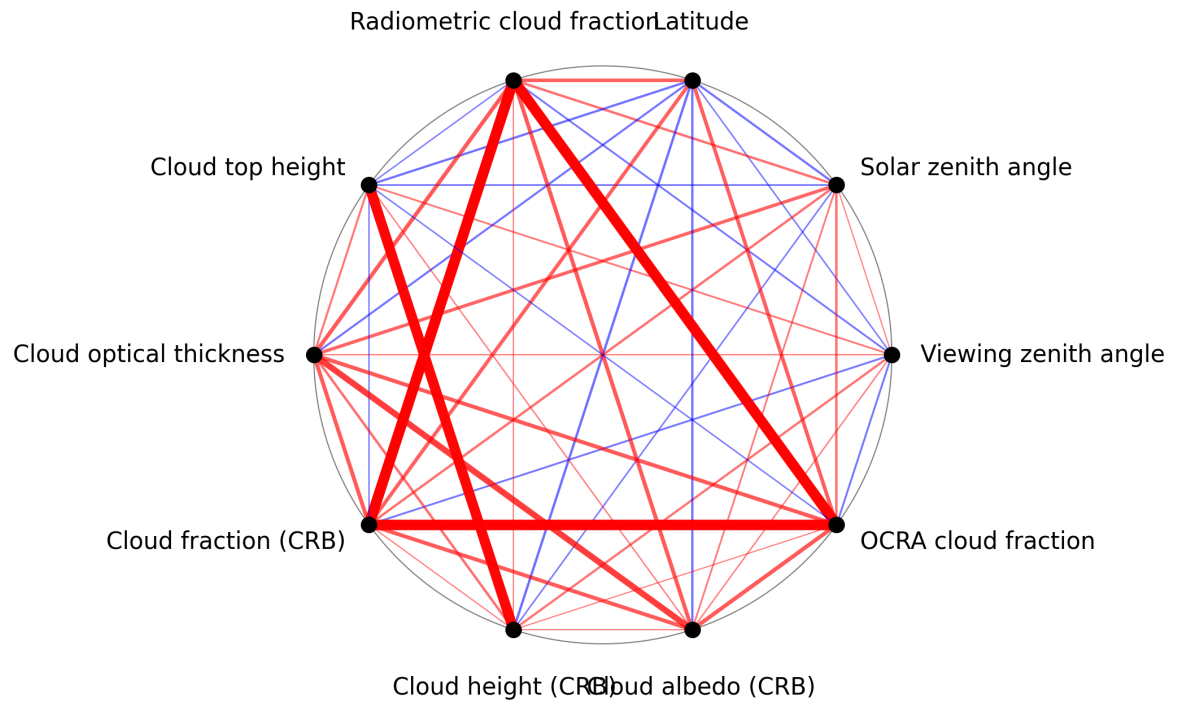


Figure 1: Map of correlation graph for 2025-07-16 to 2025-07-18.

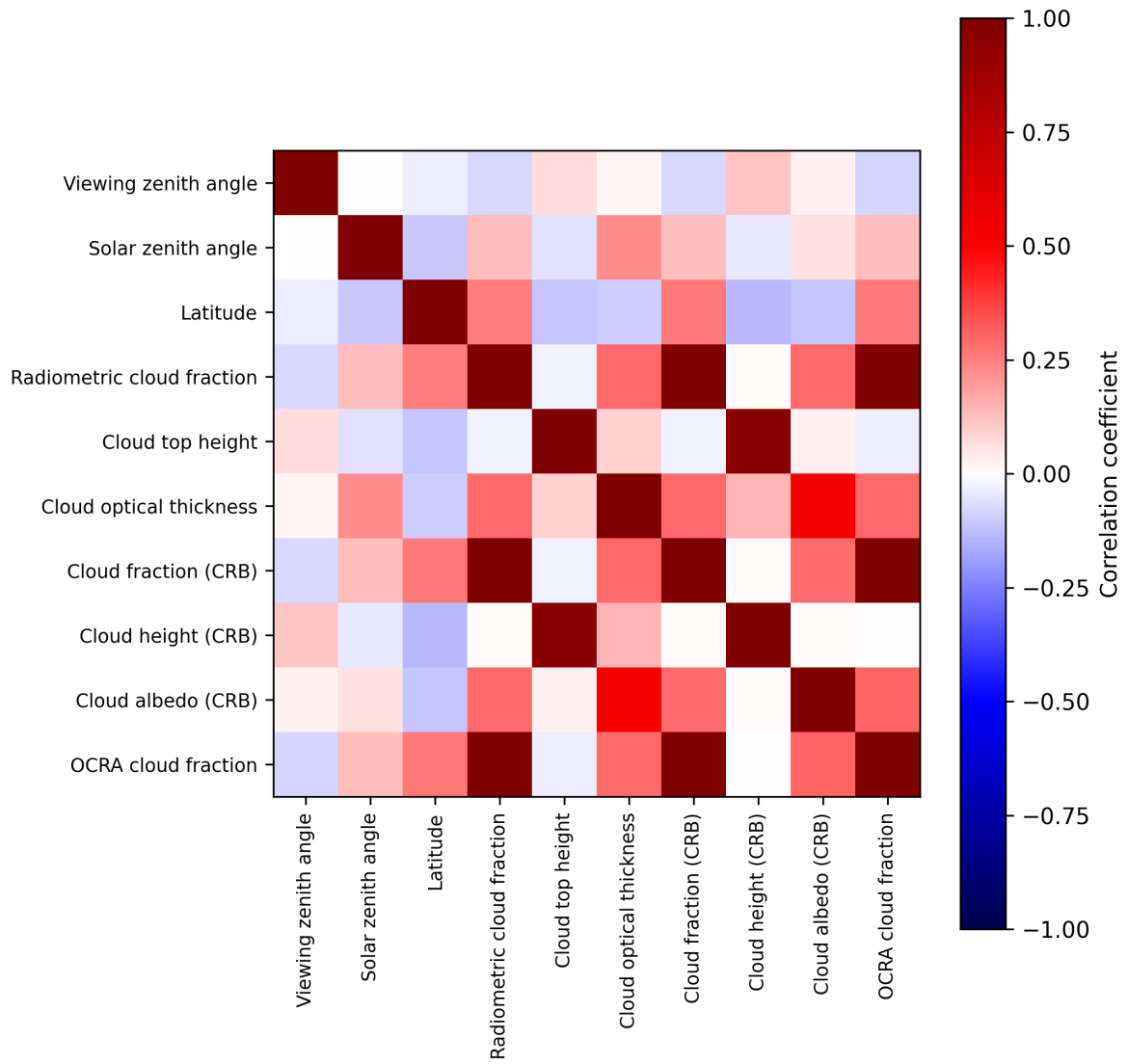


Figure 2: Map of correlation matrix for 2025-07-16 to 2025-07-18.

3 Granule outlines

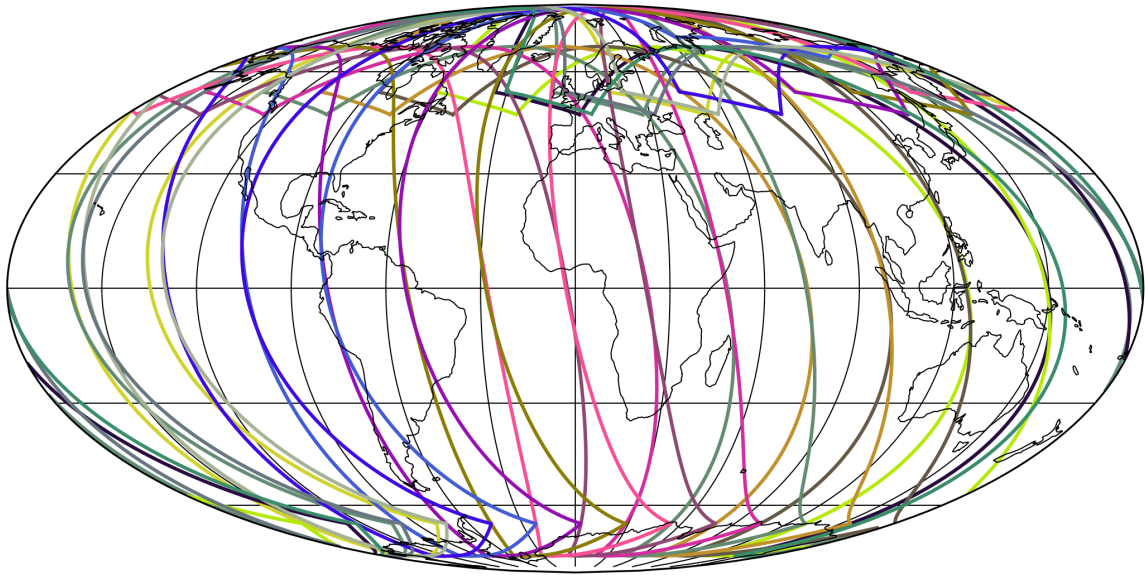


Figure 3: Outline of the granules.

4 Input data monitoring

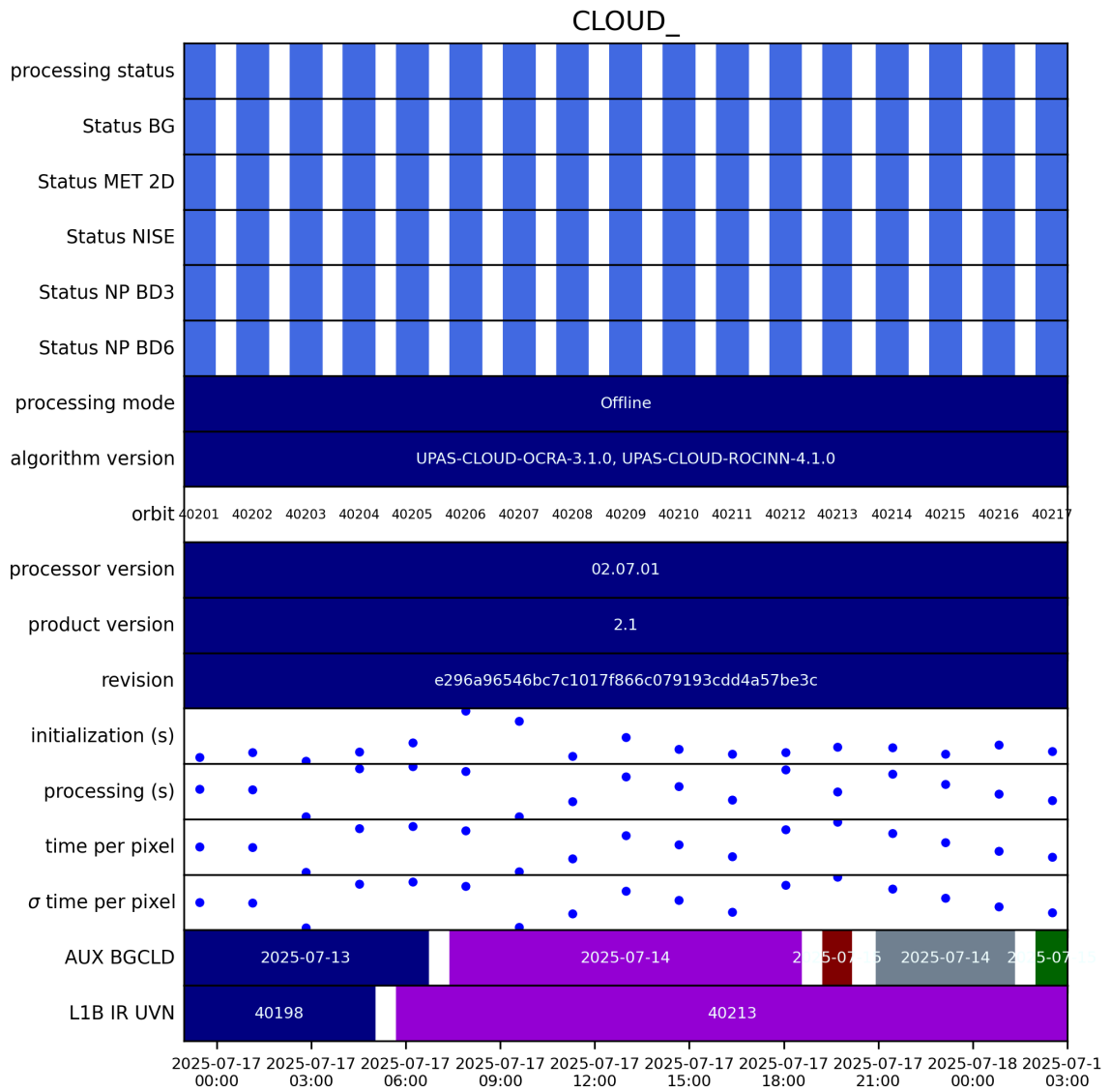


Figure 4: Input data per granule

5 Warnings and errors

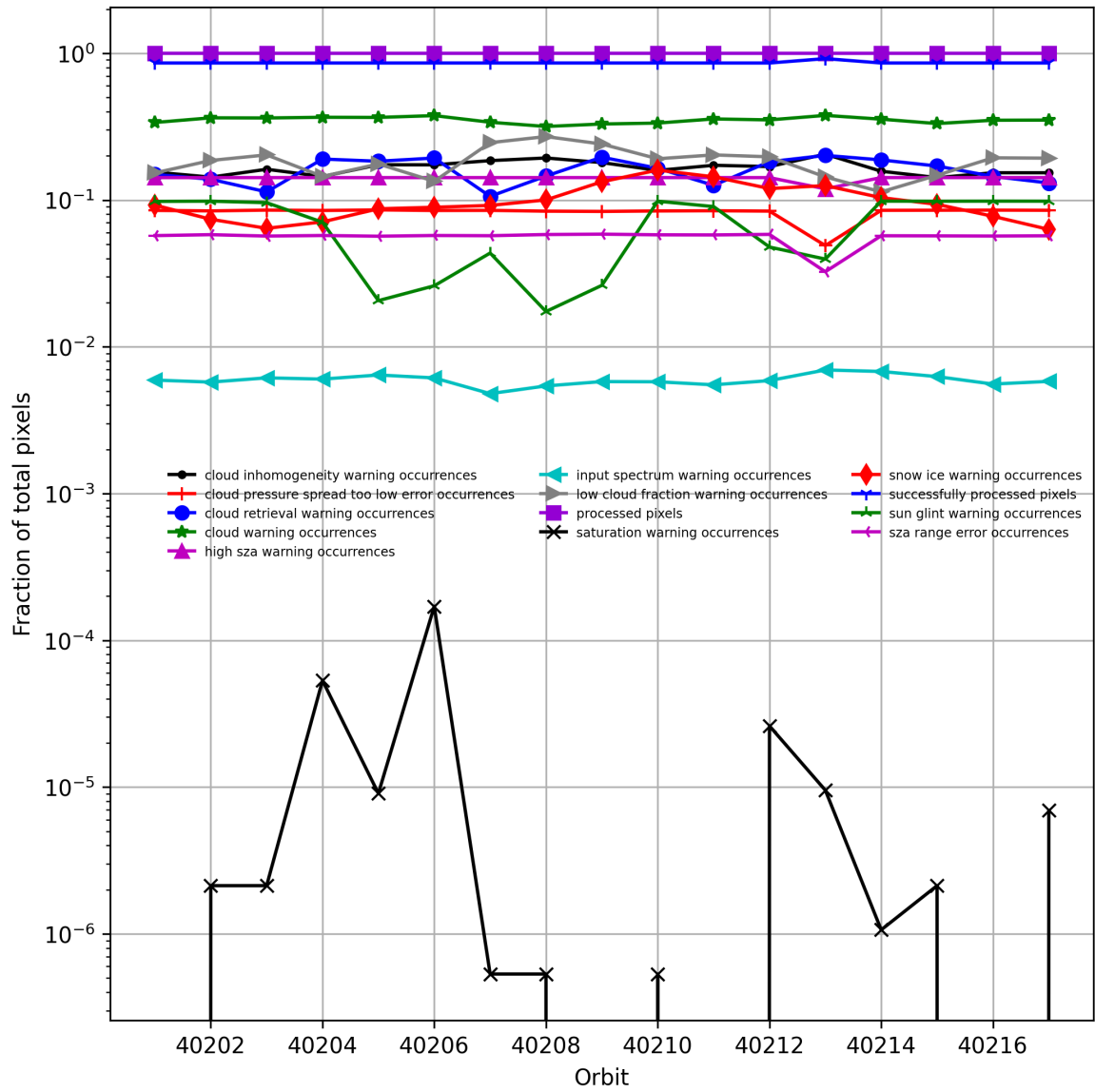


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

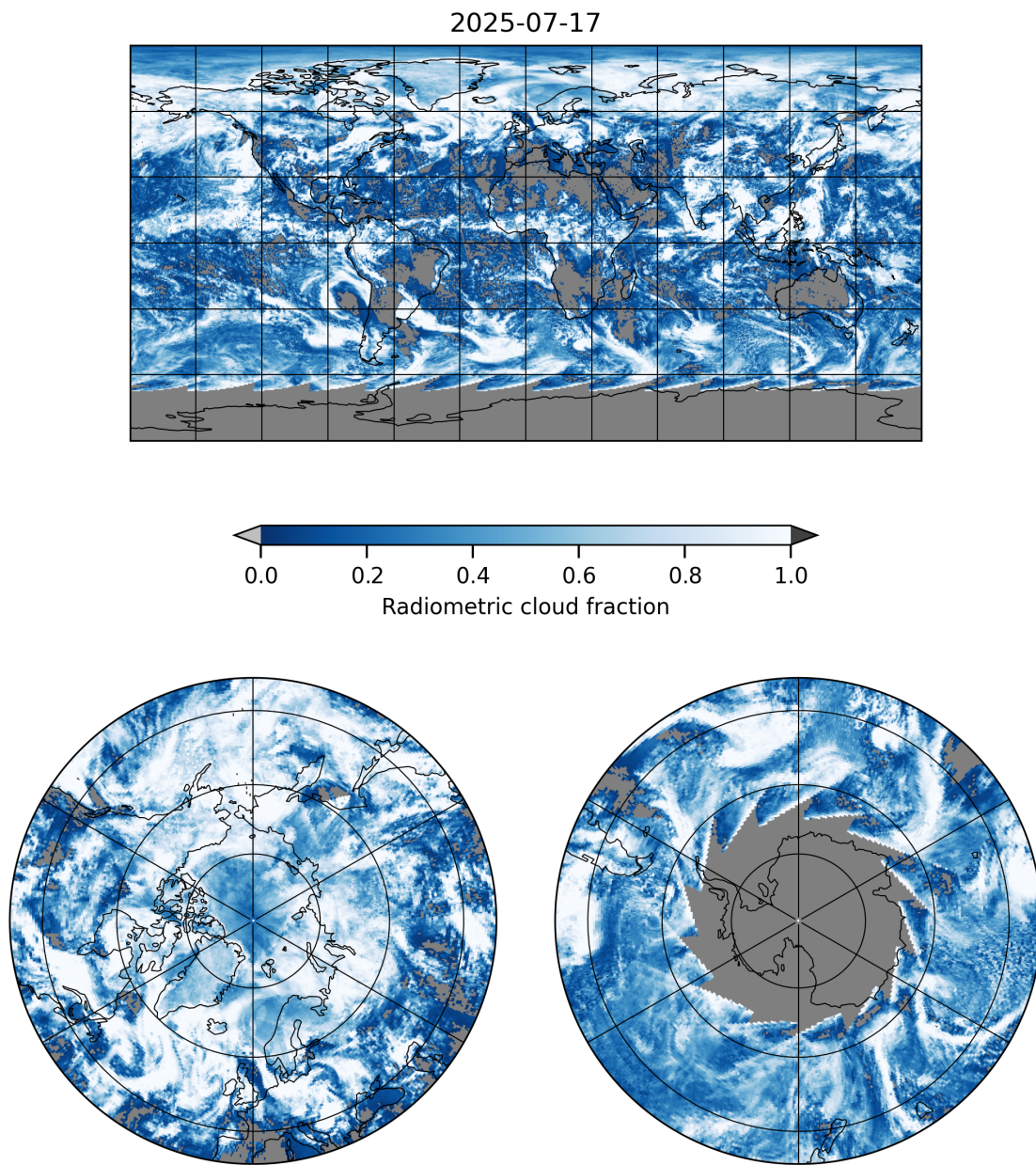


Figure 6: Map of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18

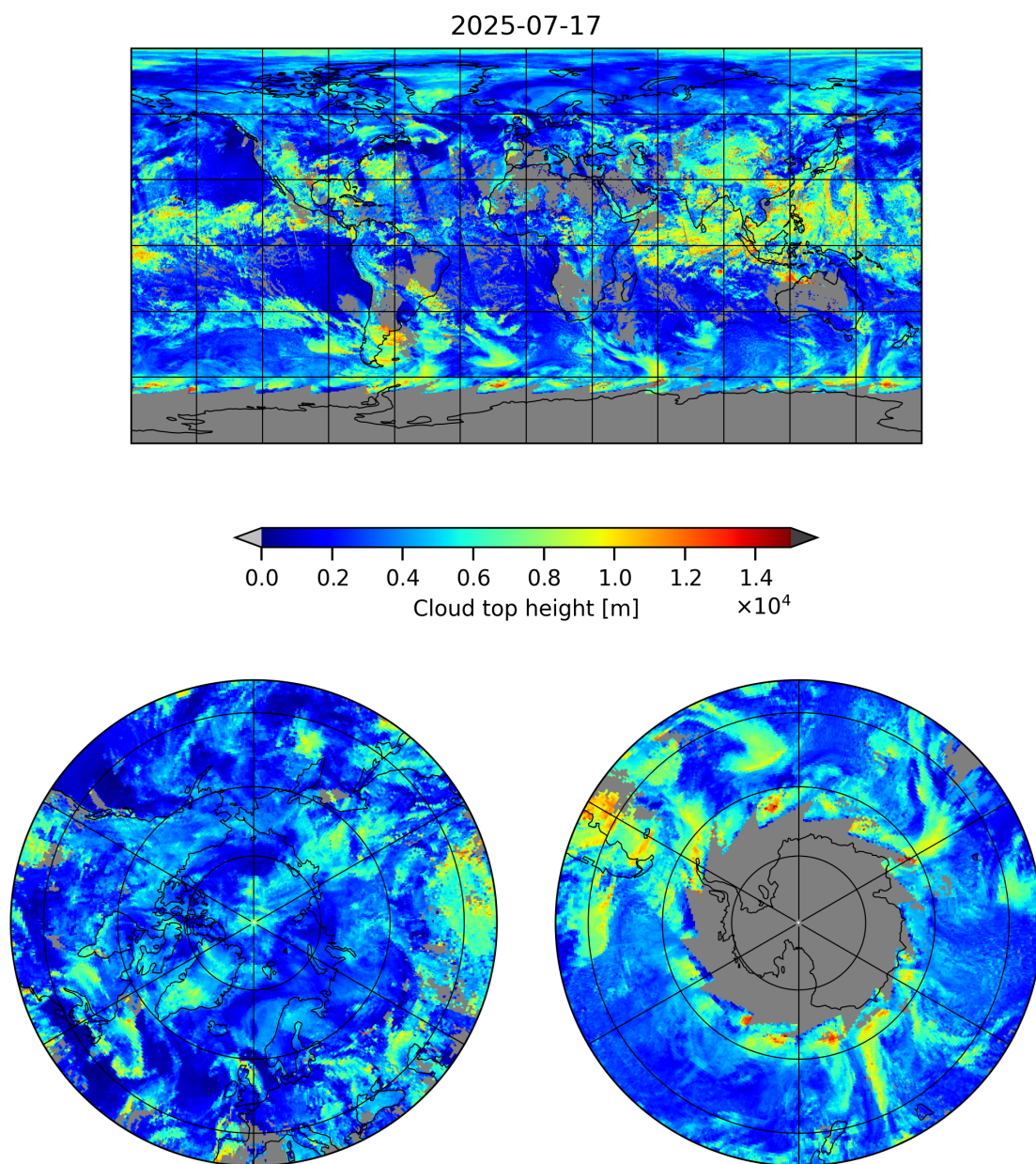


Figure 7: Map of “Cloud top height” for 2025-07-16 to 2025-07-18

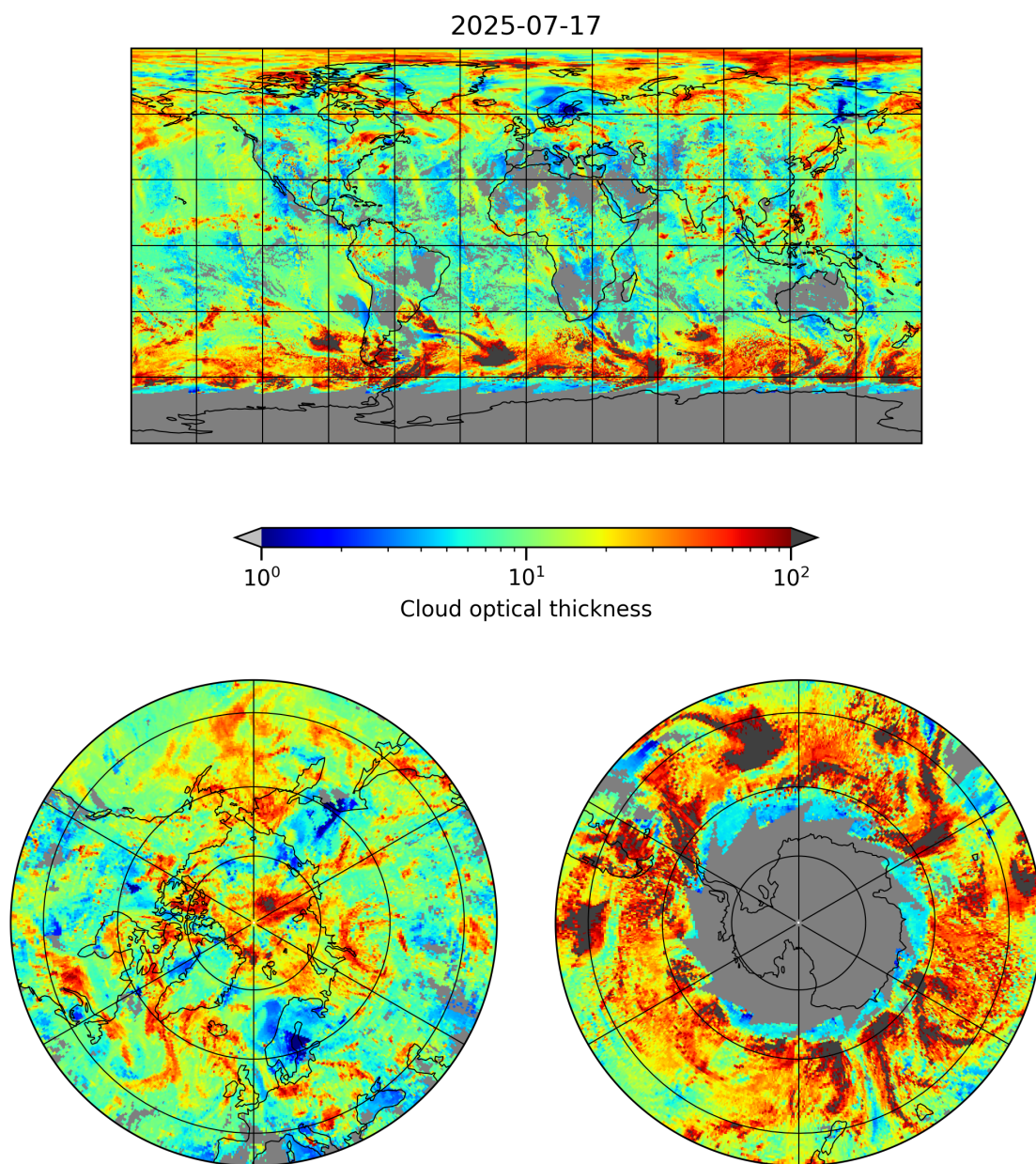


Figure 8: Map of “Cloud optical thickness” for 2025-07-16 to 2025-07-18

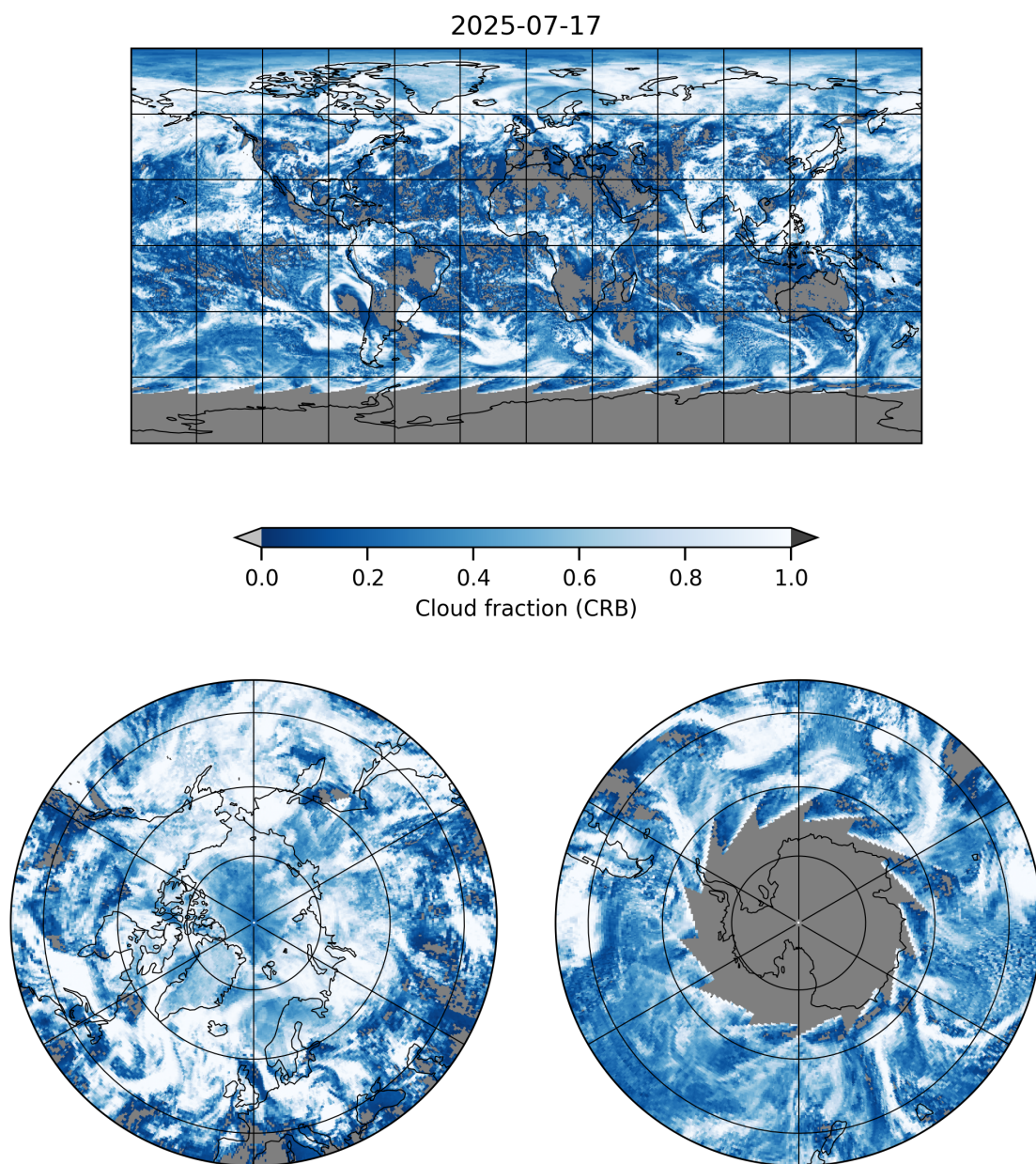


Figure 9: Map of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18

2025-07-17

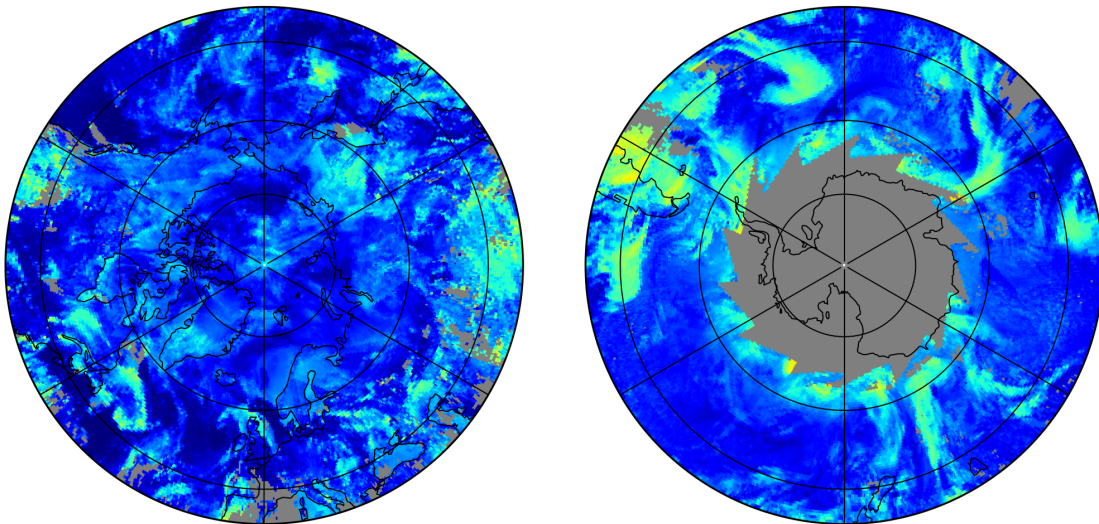
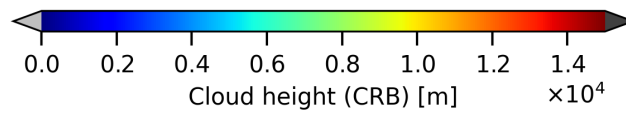
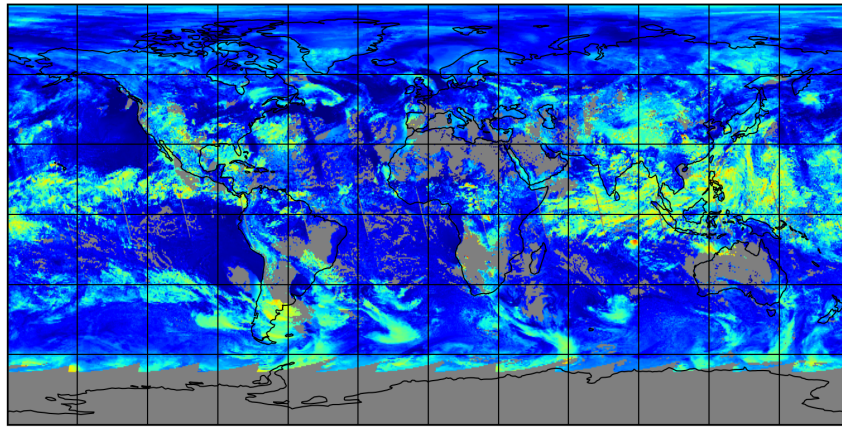


Figure 10: Map of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18

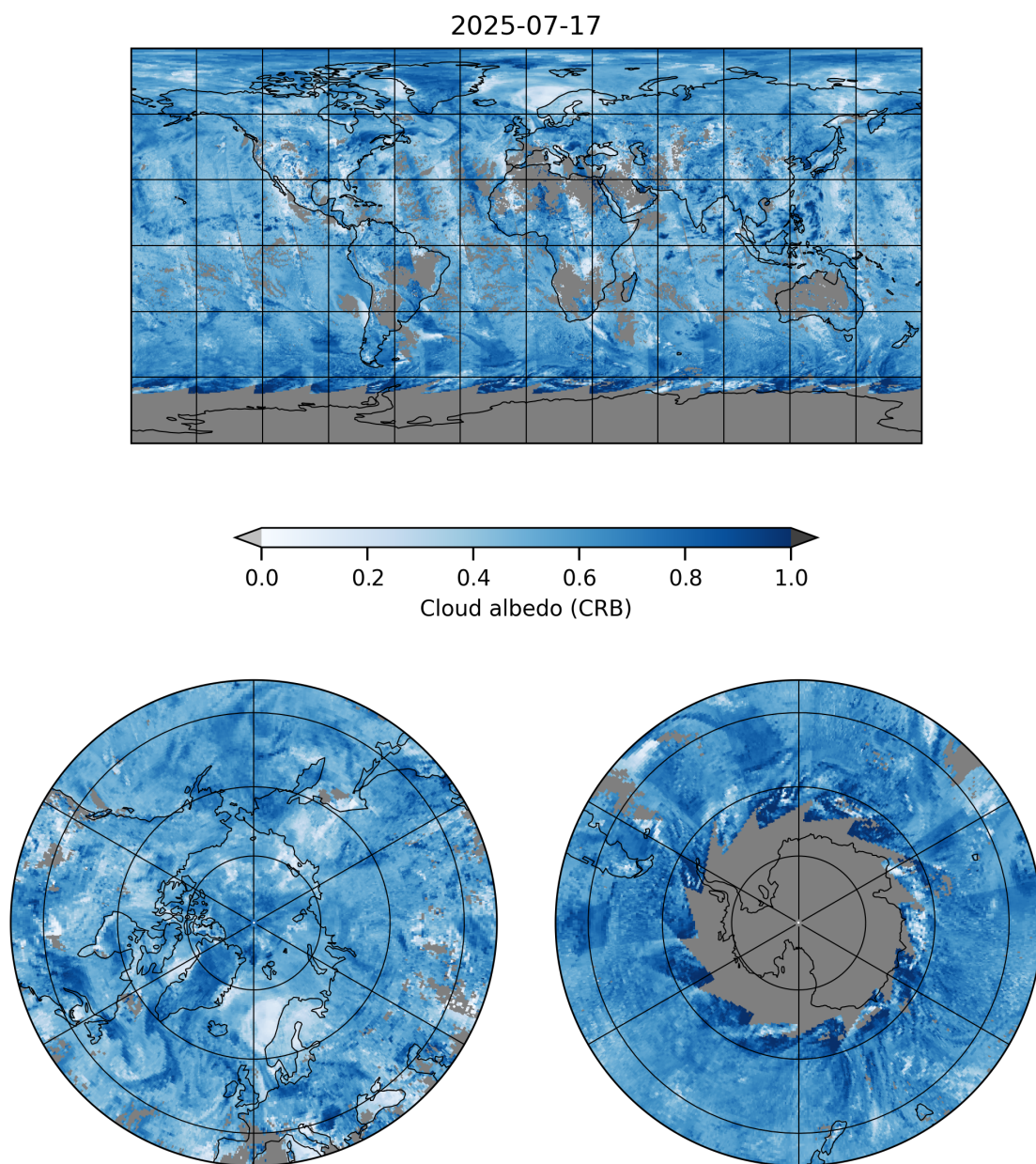


Figure 11: Map of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18

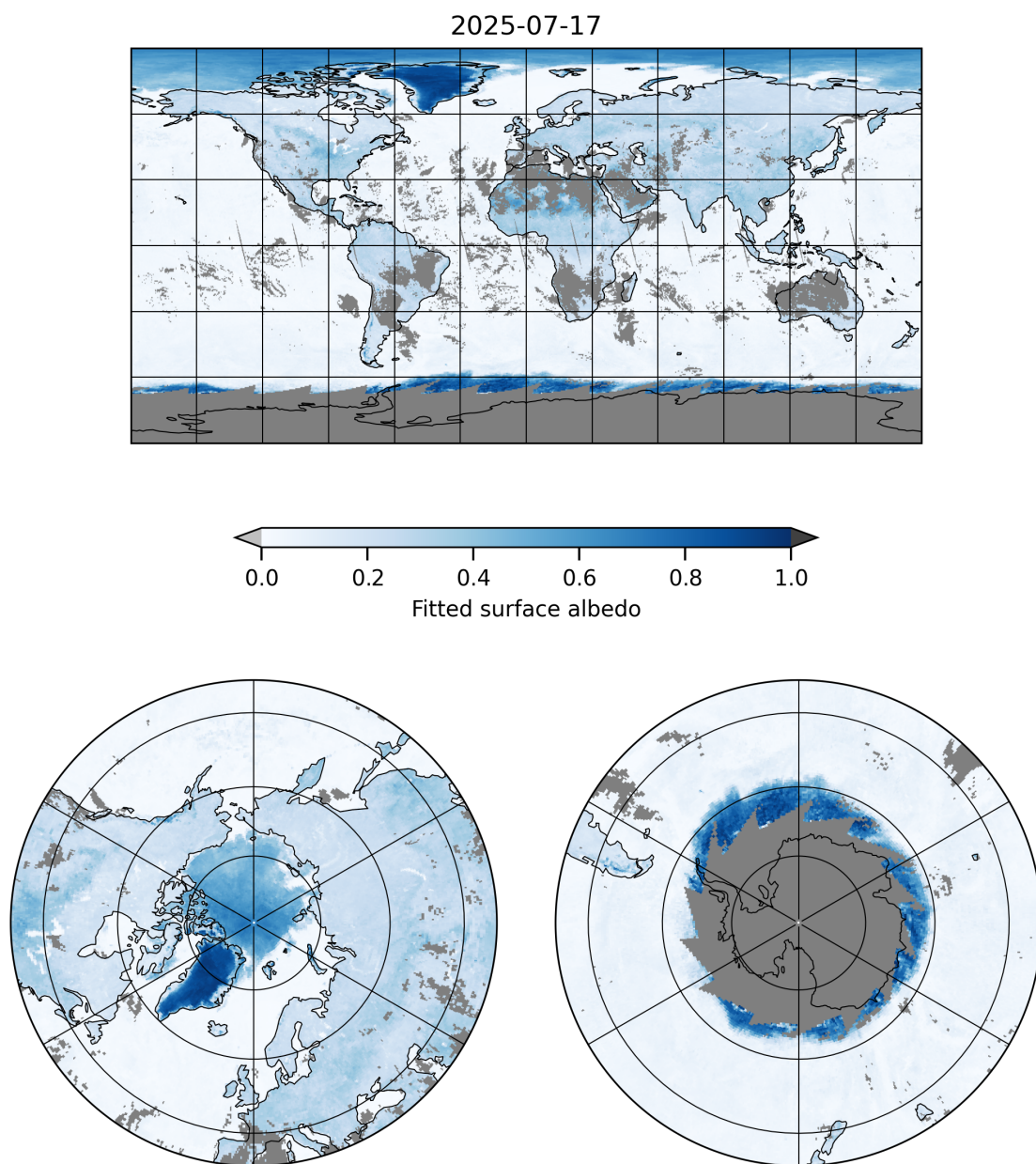


Figure 12: Map of “Fitted surface albedo” for 2025-07-16 to 2025-07-18

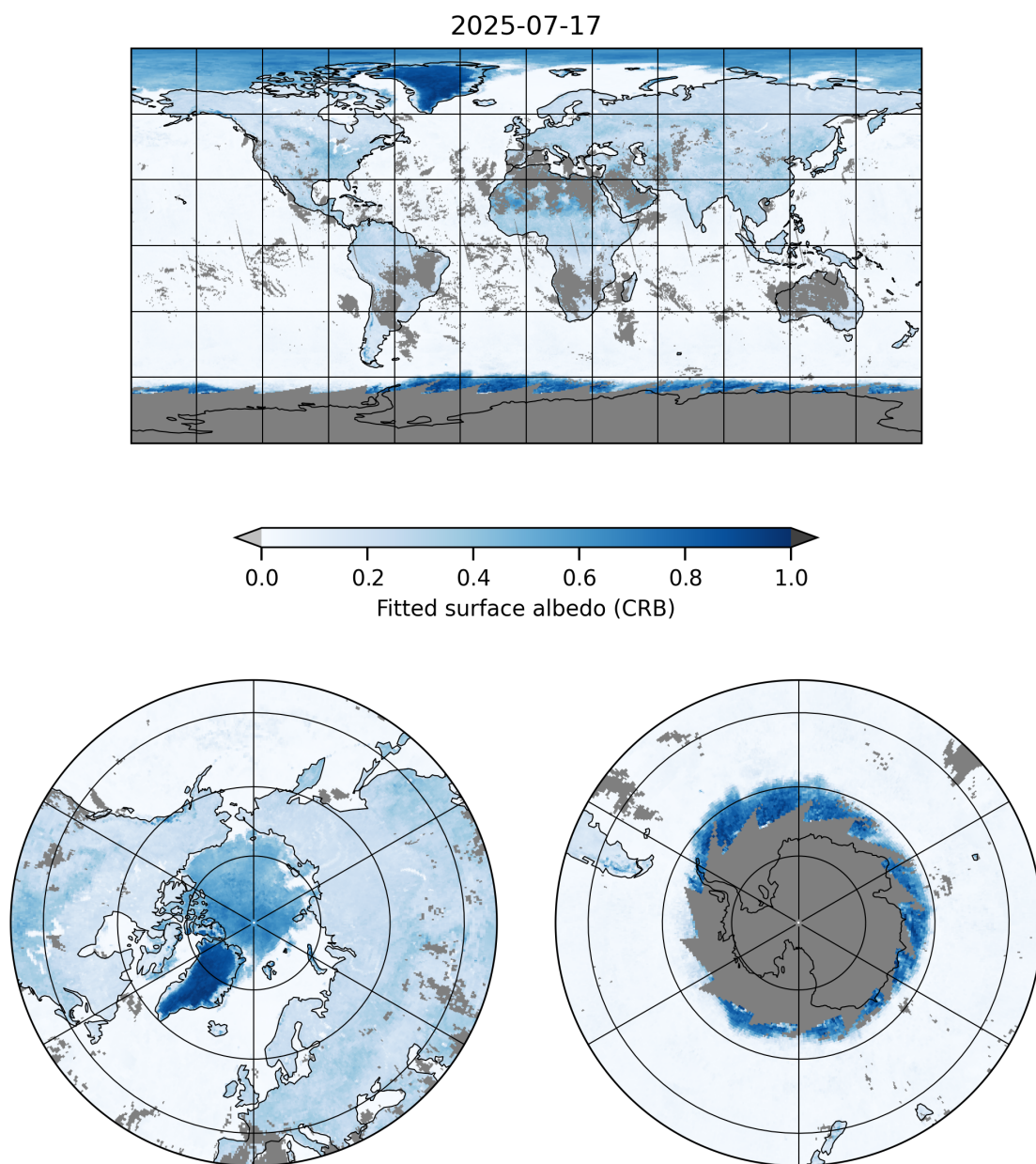


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18

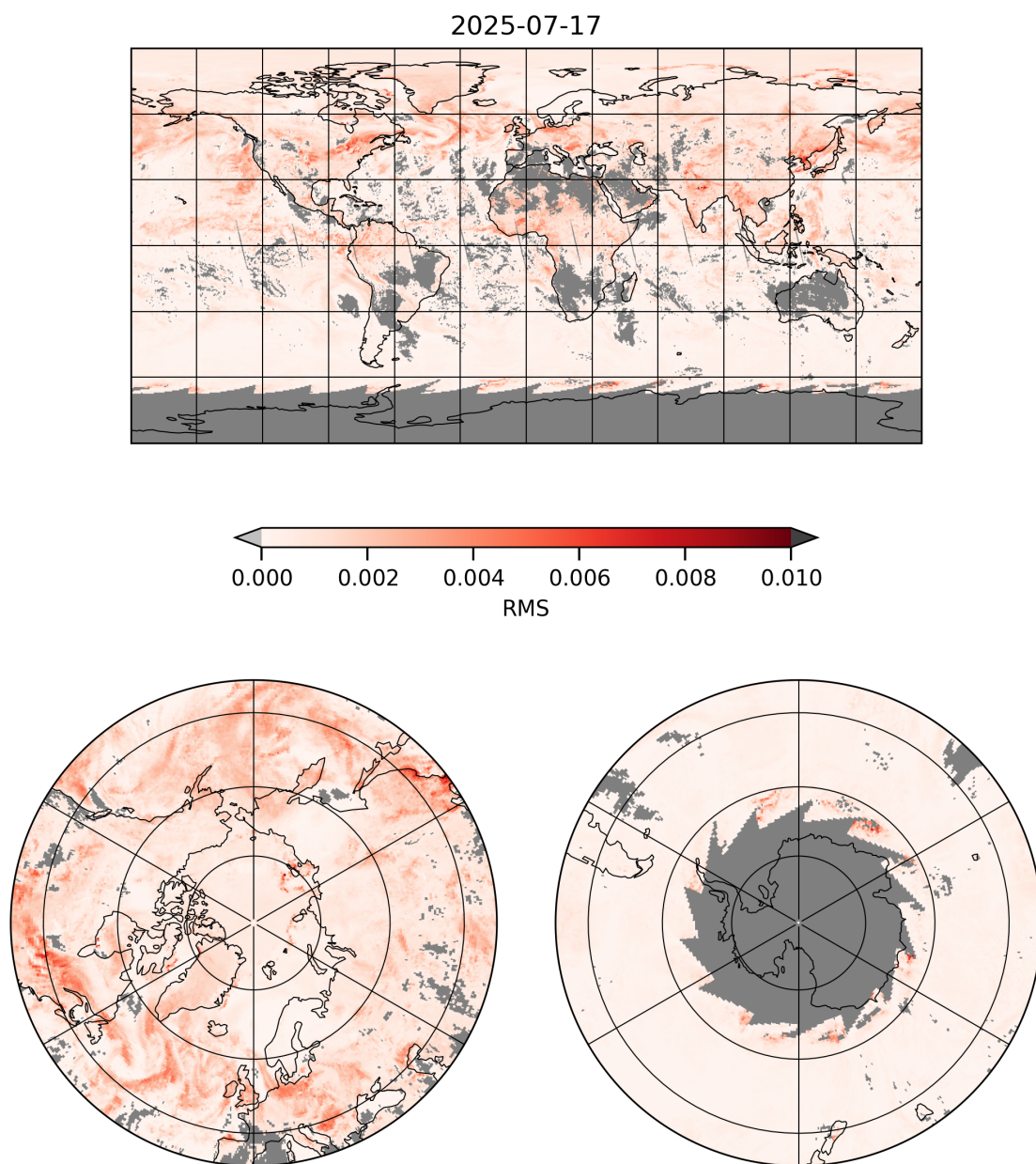


Figure 14: Map of “RMS” for 2025-07-16 to 2025-07-18

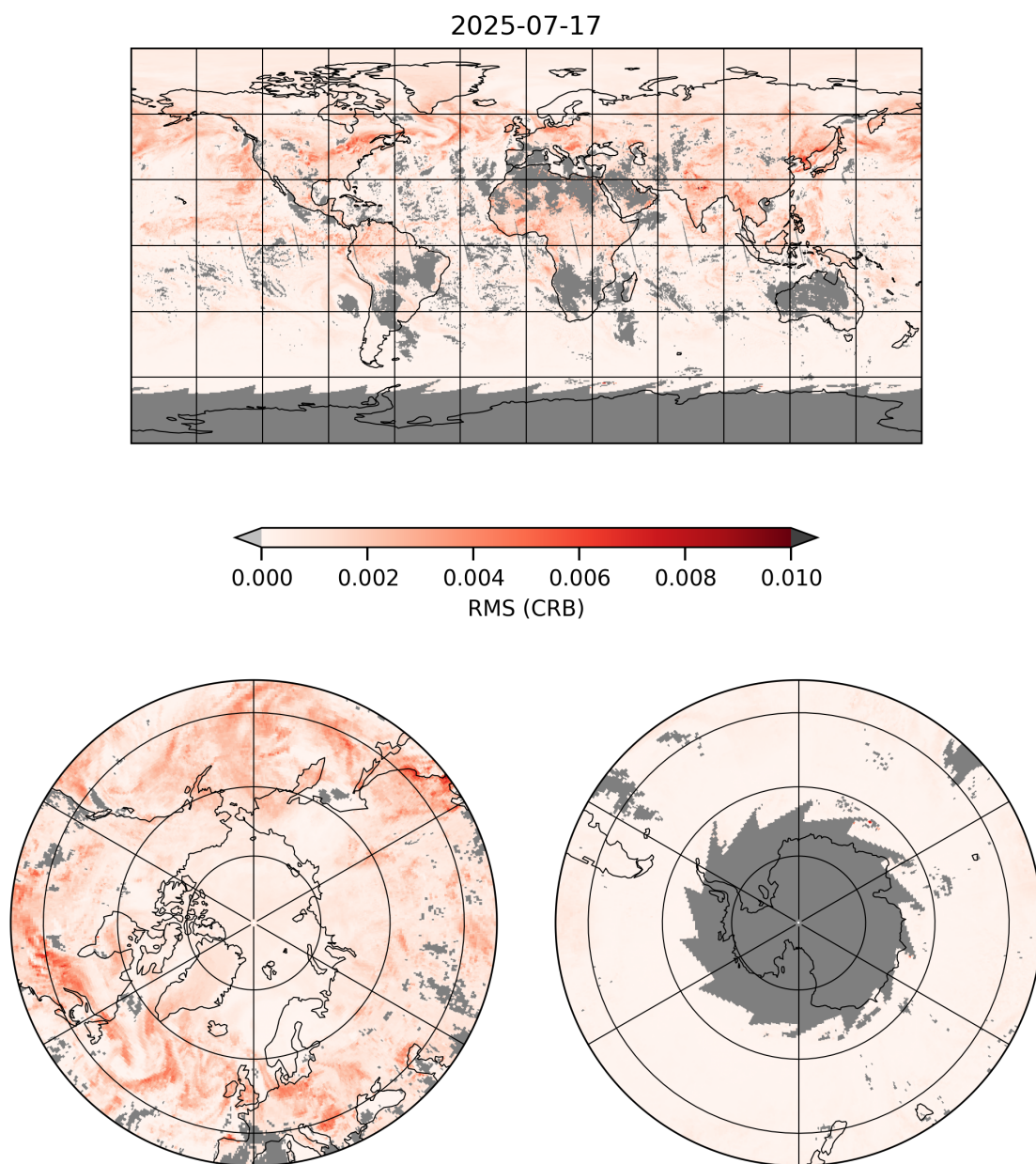


Figure 15: Map of “RMS (CRB)” for 2025-07-16 to 2025-07-18

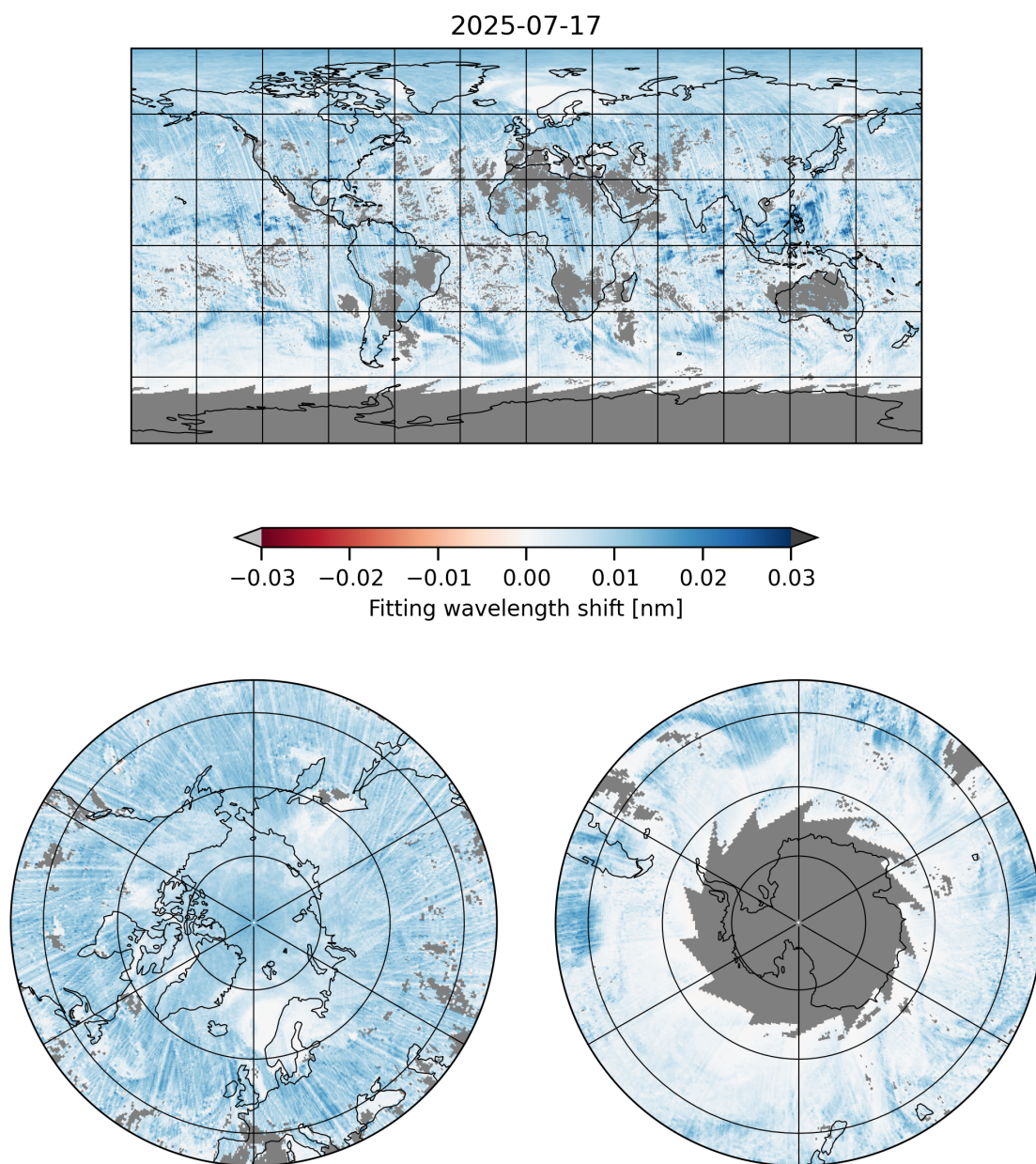


Figure 16: Map of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18

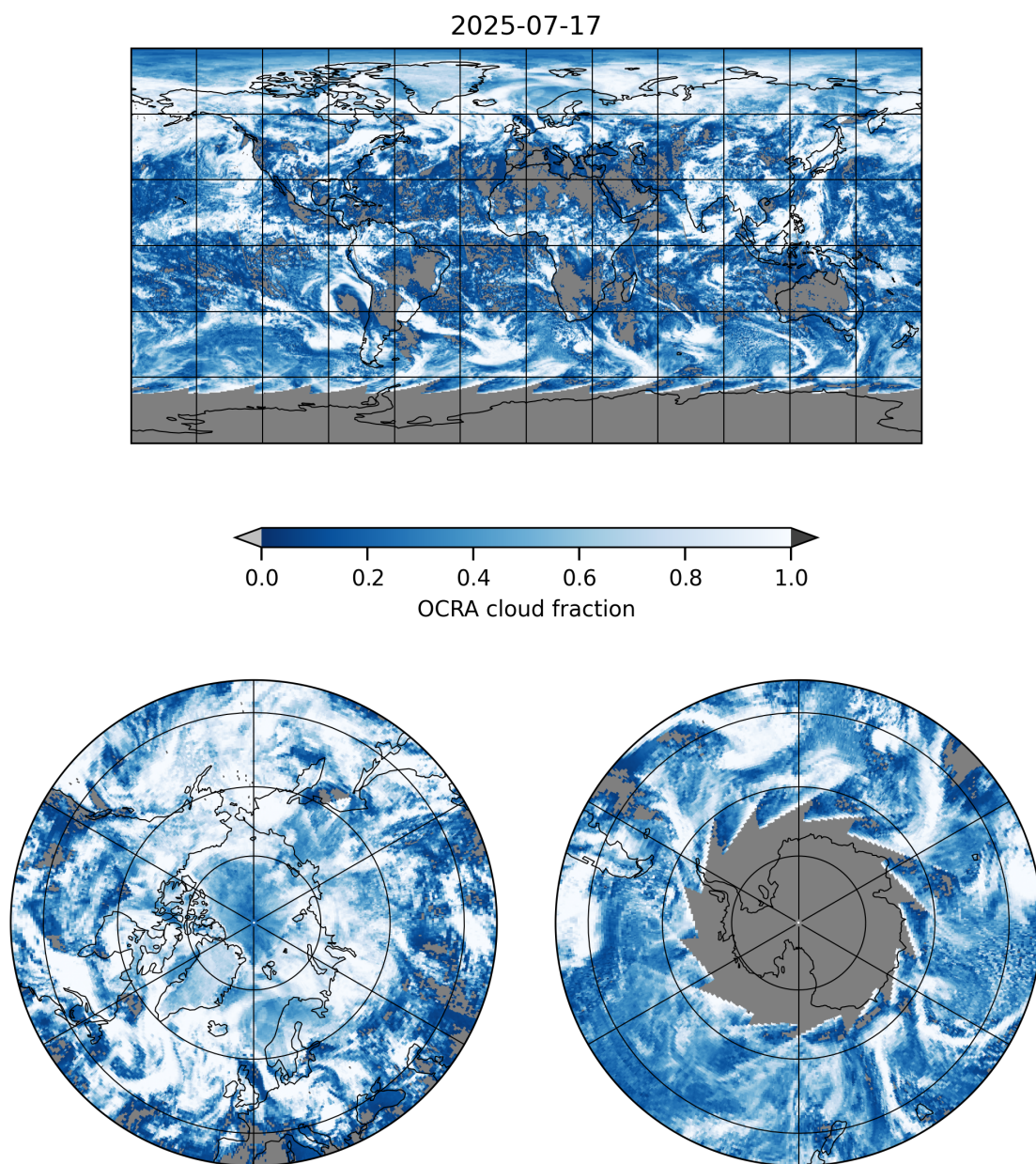


Figure 17: Map of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18

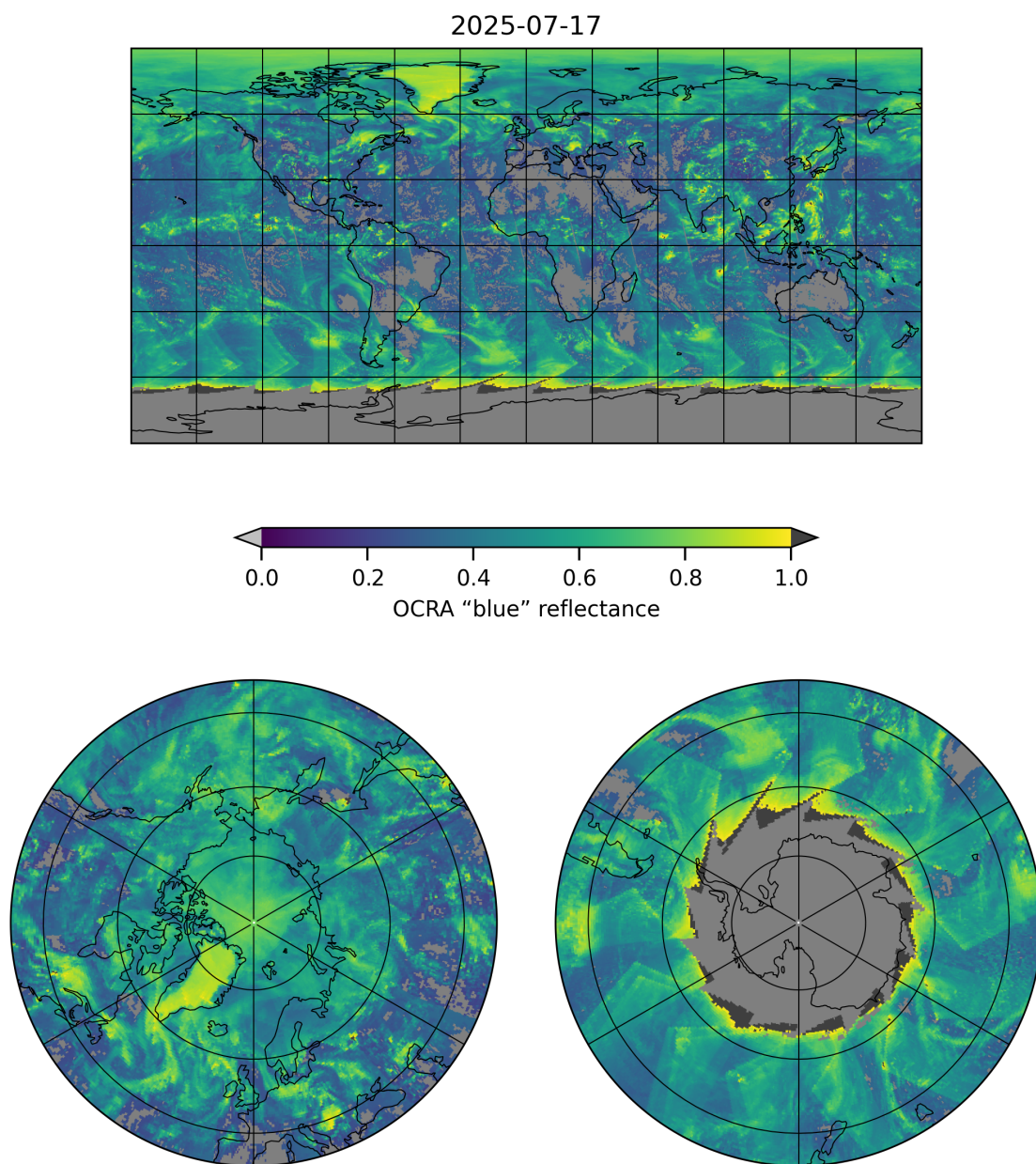


Figure 18: Map of "OCRA "blue" reflectance" for 2025-07-16 to 2025-07-18

2025-07-17

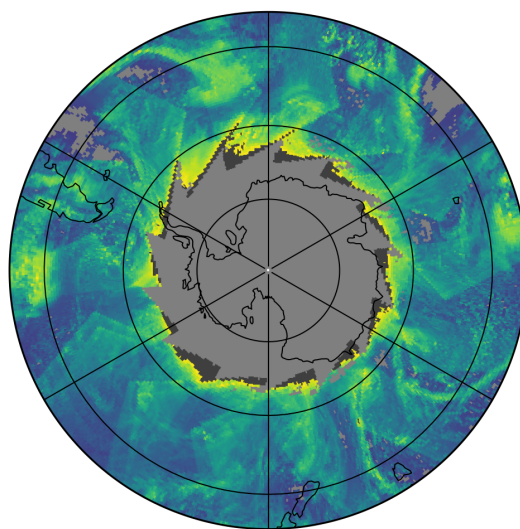
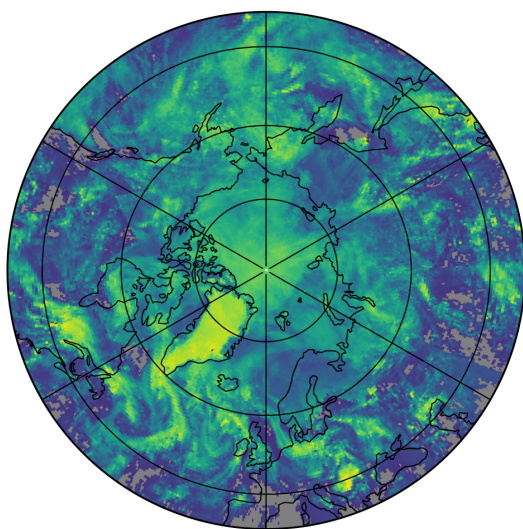
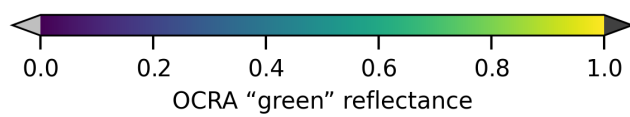
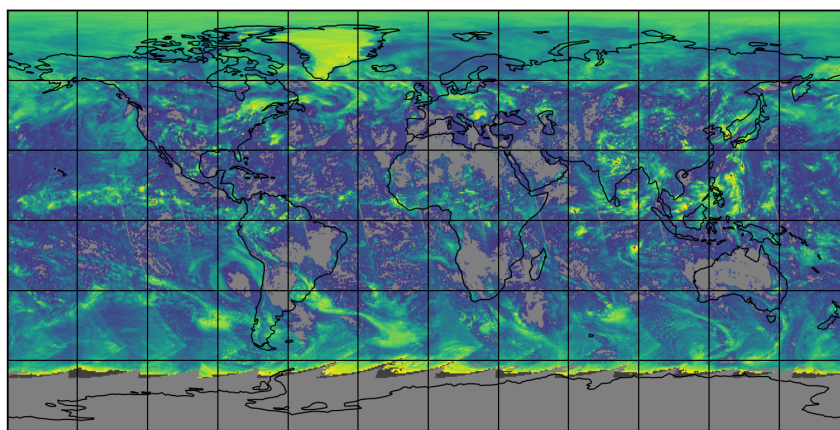


Figure 19: Map of "OCRA "green" reflectance" for 2025-07-16 to 2025-07-18

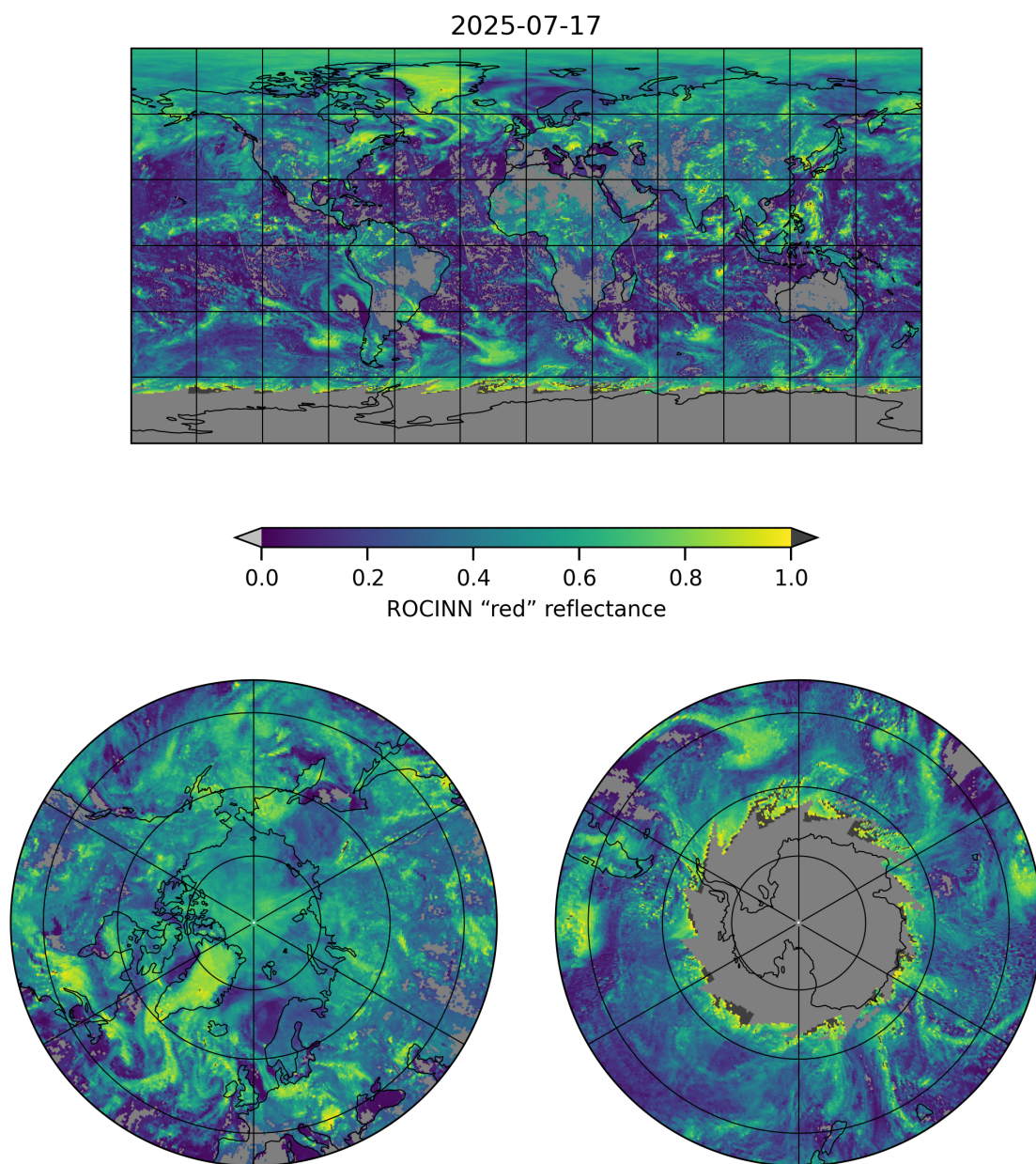


Figure 20: Map of "ROCINN "red" reflectance" for 2025-07-16 to 2025-07-18

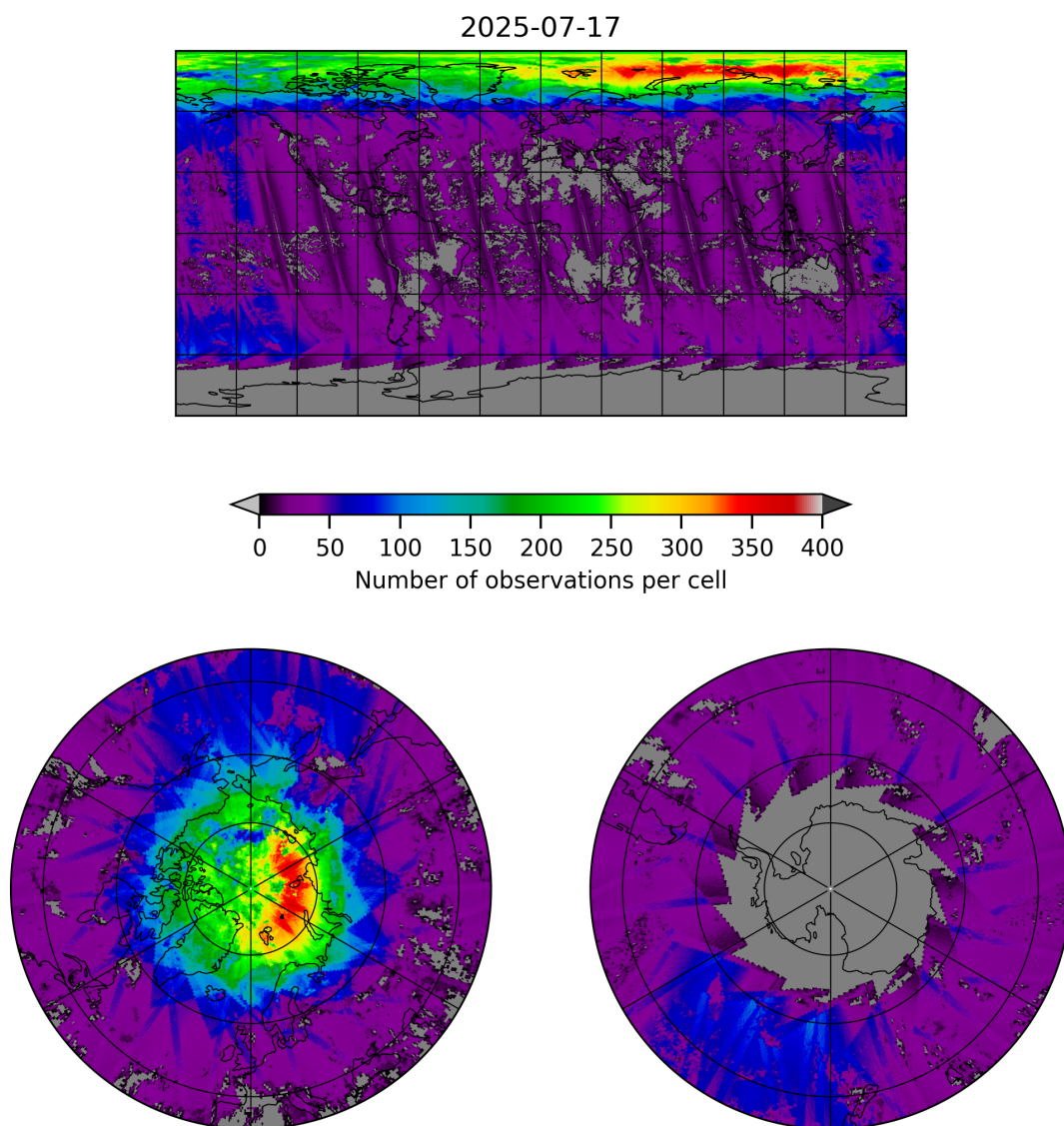


Figure 21: Map of the number of observations for 2025-07-16 to 2025-07-18

7 Zonal average

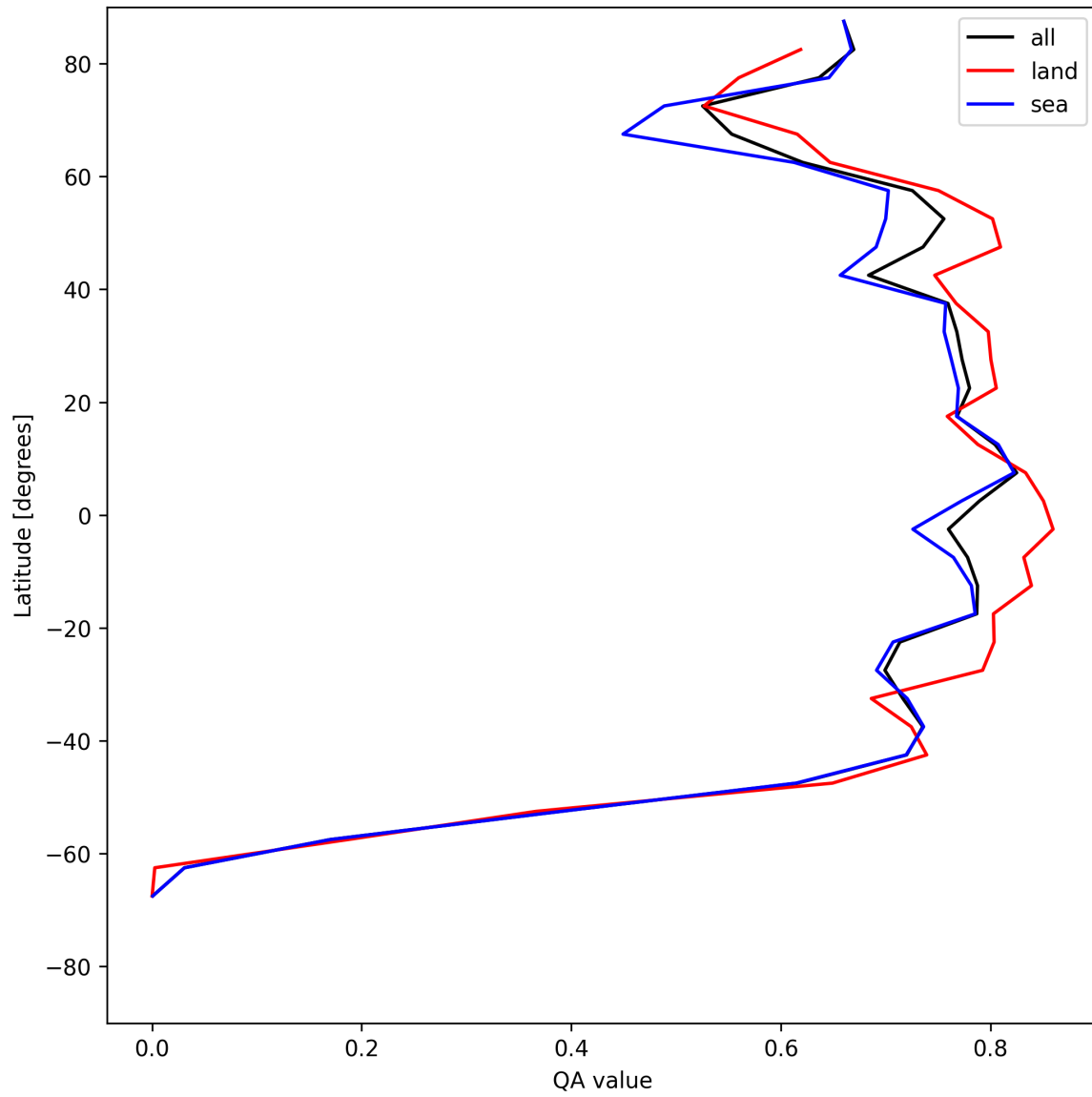


Figure 22: Zonal average of “QA value” for 2025-07-16 to 2025-07-18.

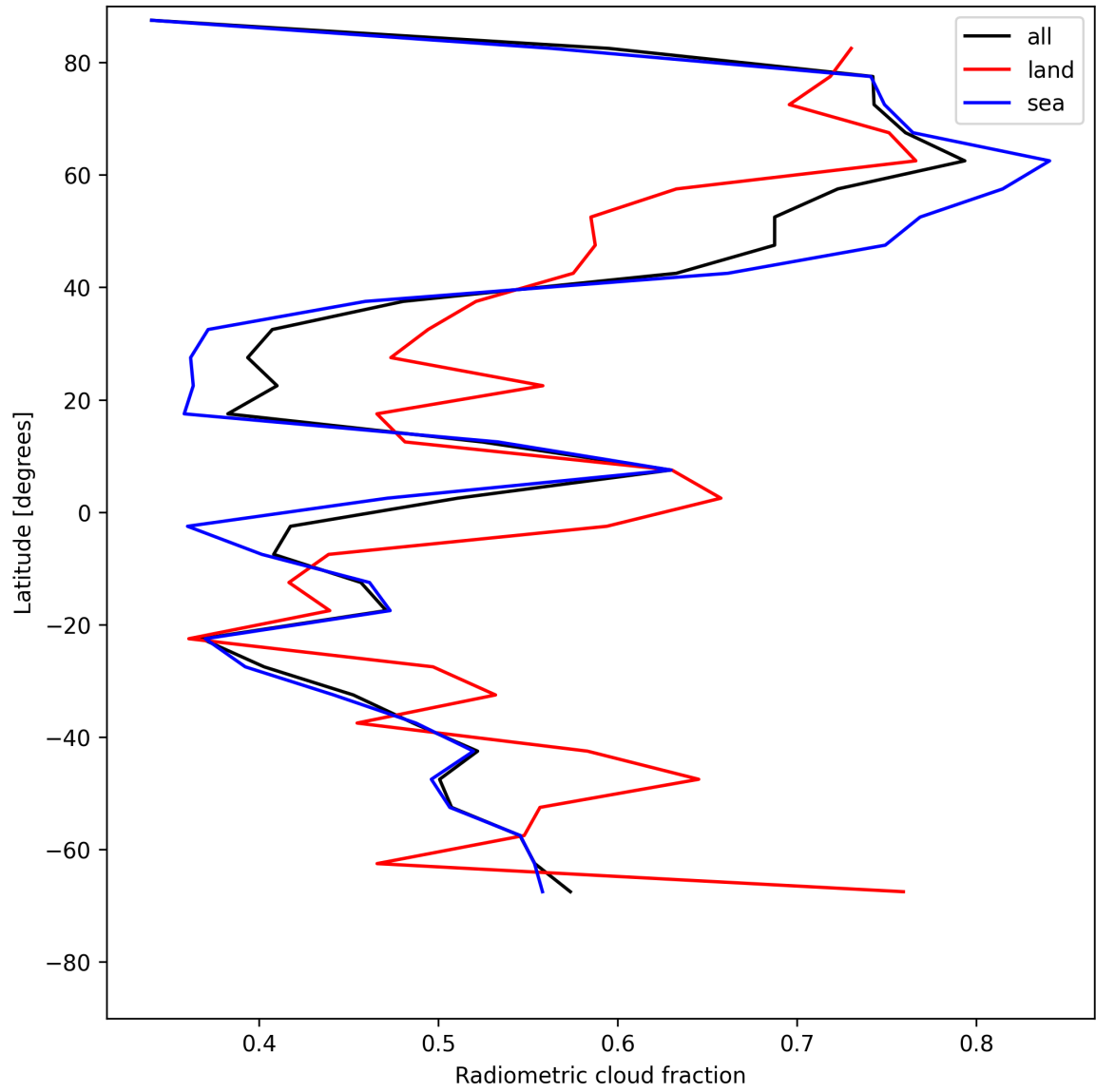


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.

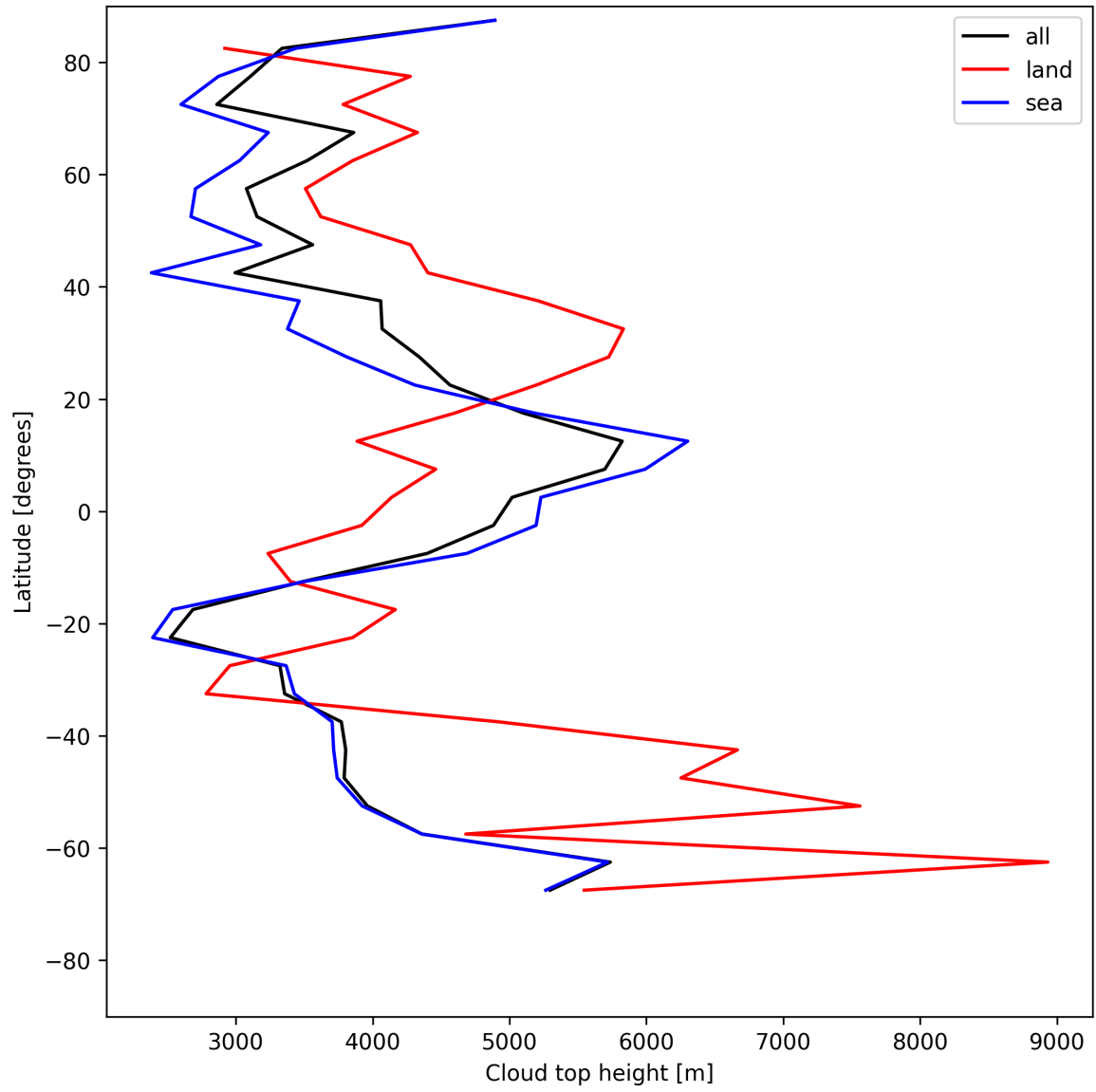


Figure 24: Zonal average of “Cloud top height” for 2025-07-16 to 2025-07-18.

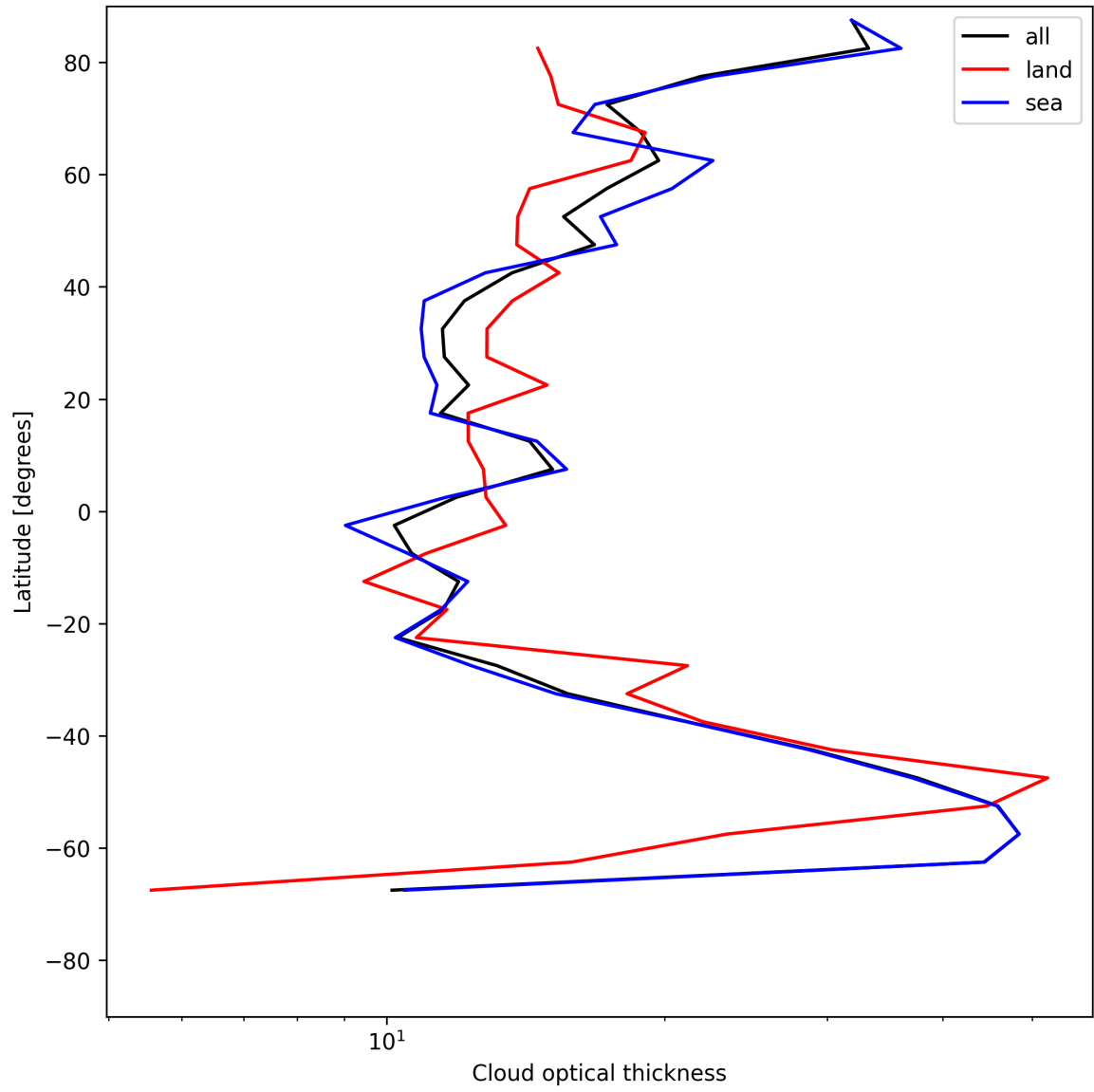


Figure 25: Zonal average of “Cloud optical thickness” for 2025-07-16 to 2025-07-18.

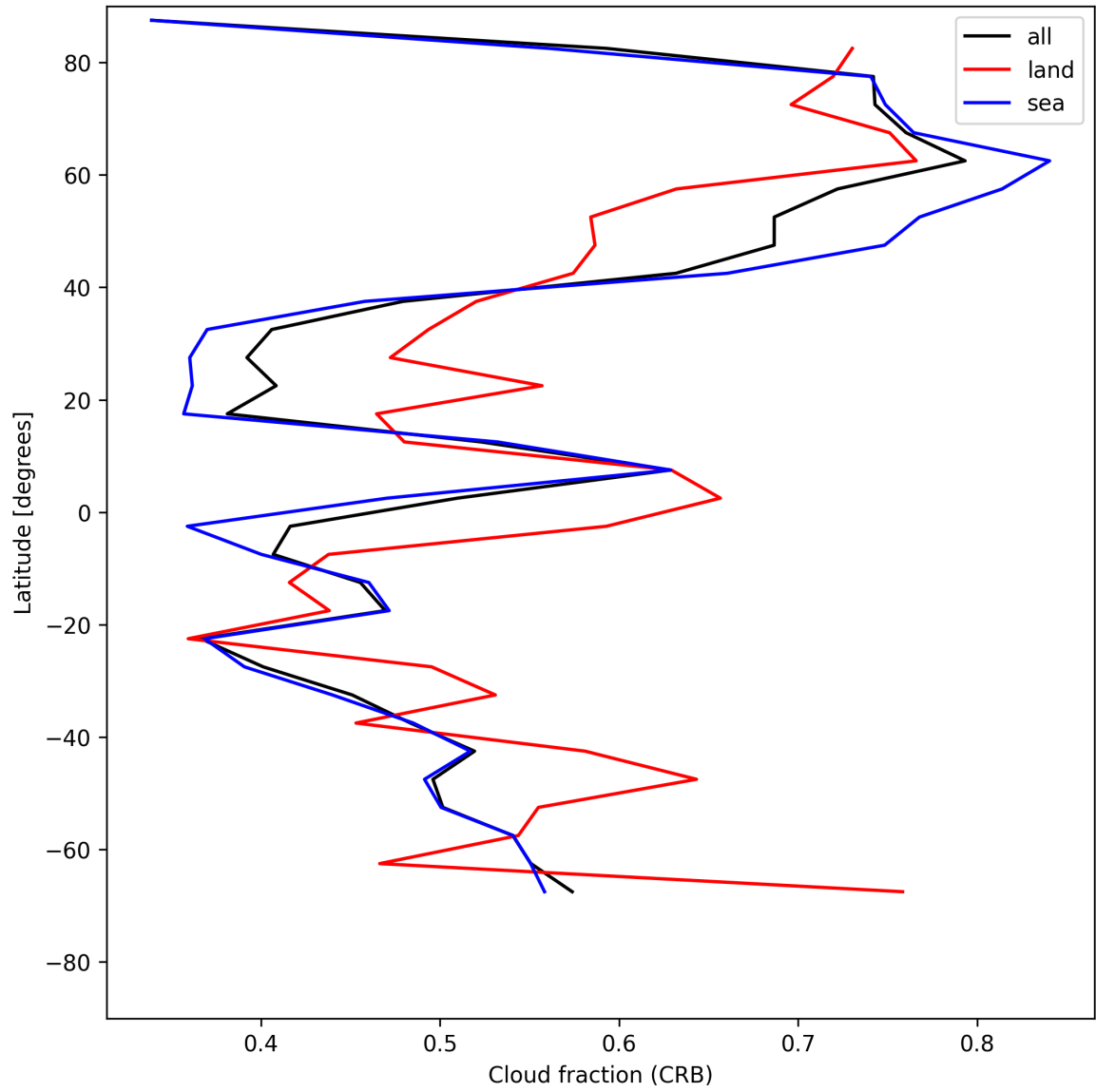


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

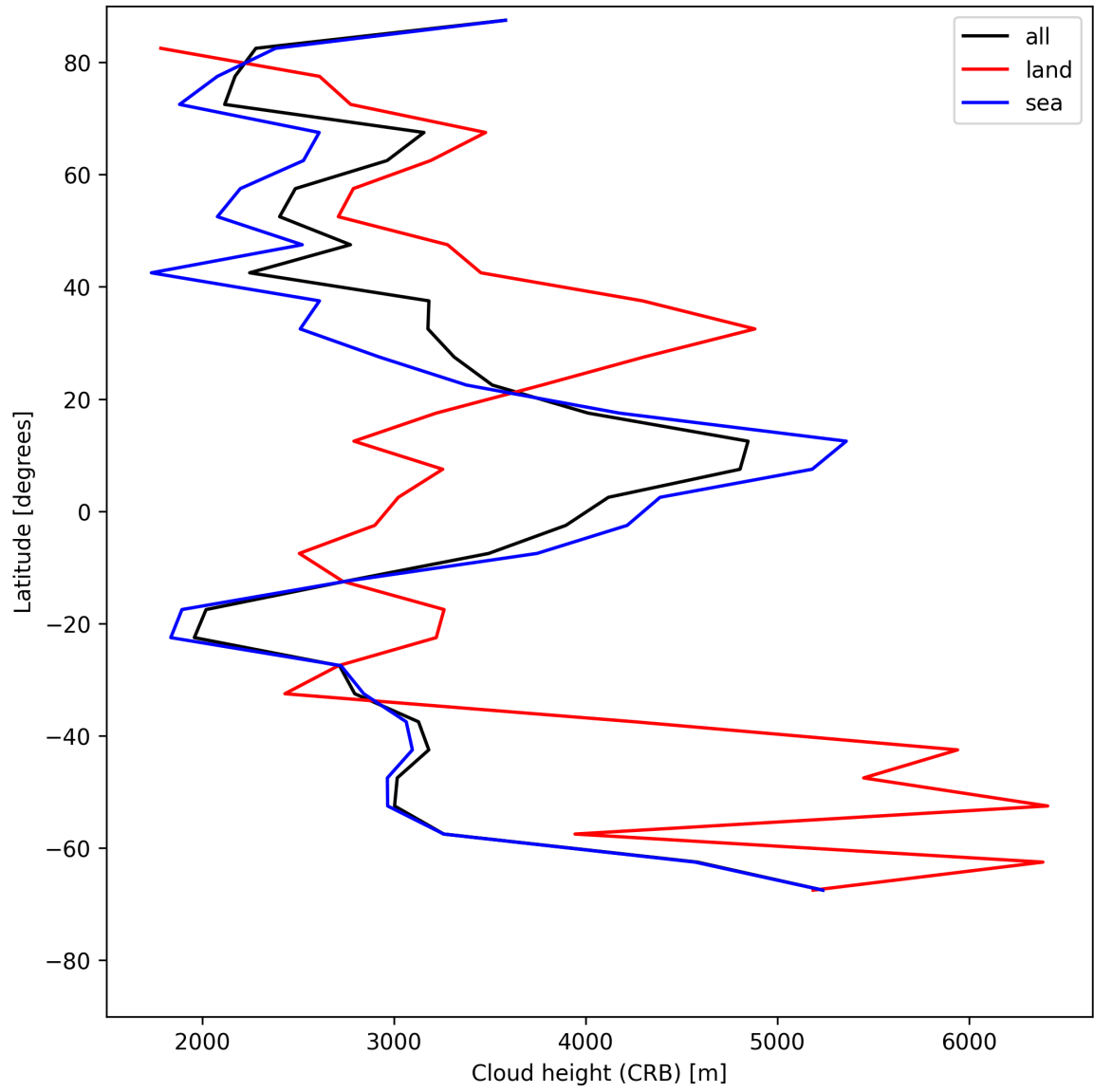


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

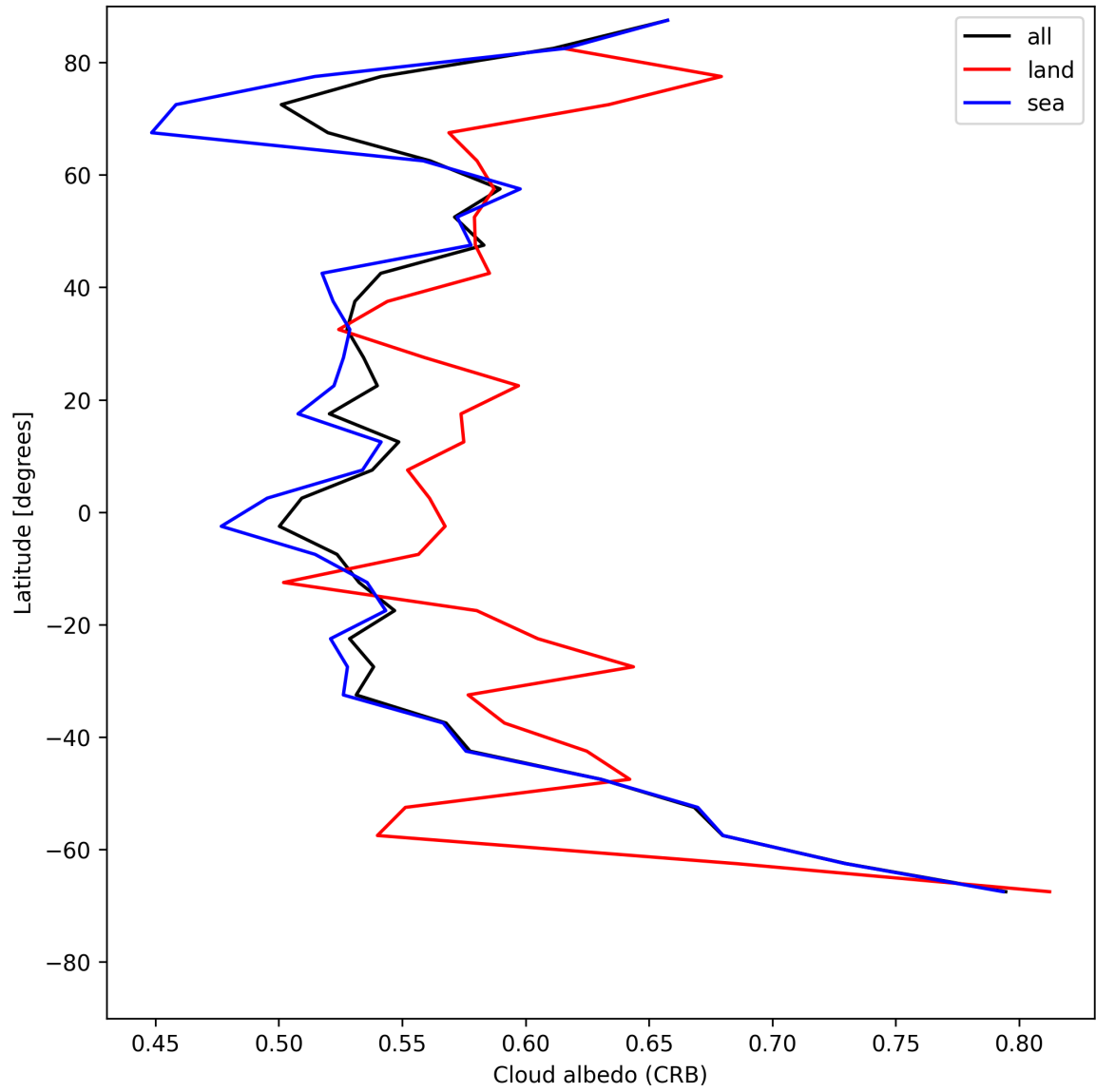


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

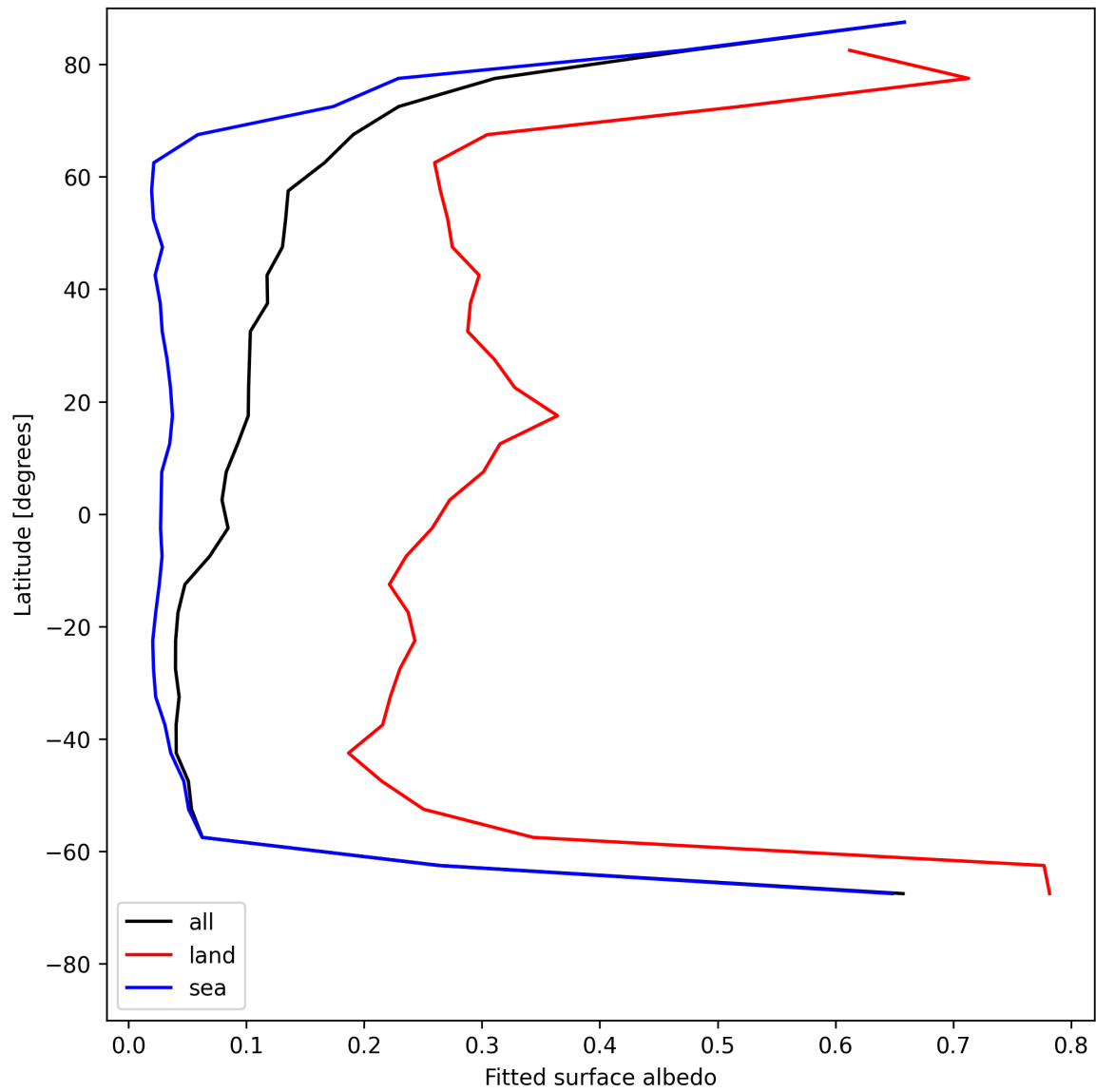


Figure 29: Zonal average of “Fitted surface albedo” for 2025-07-16 to 2025-07-18.

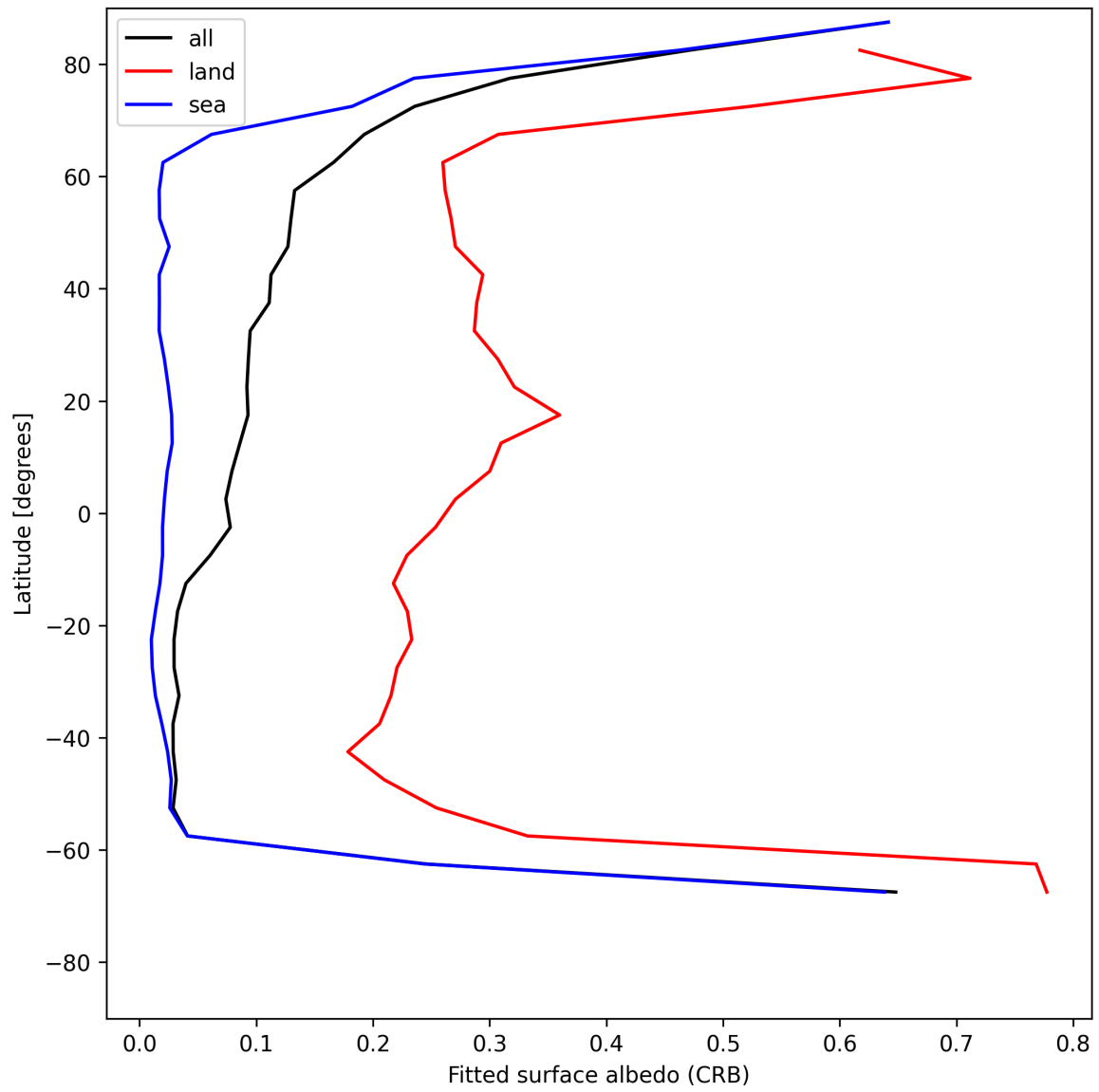


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18.

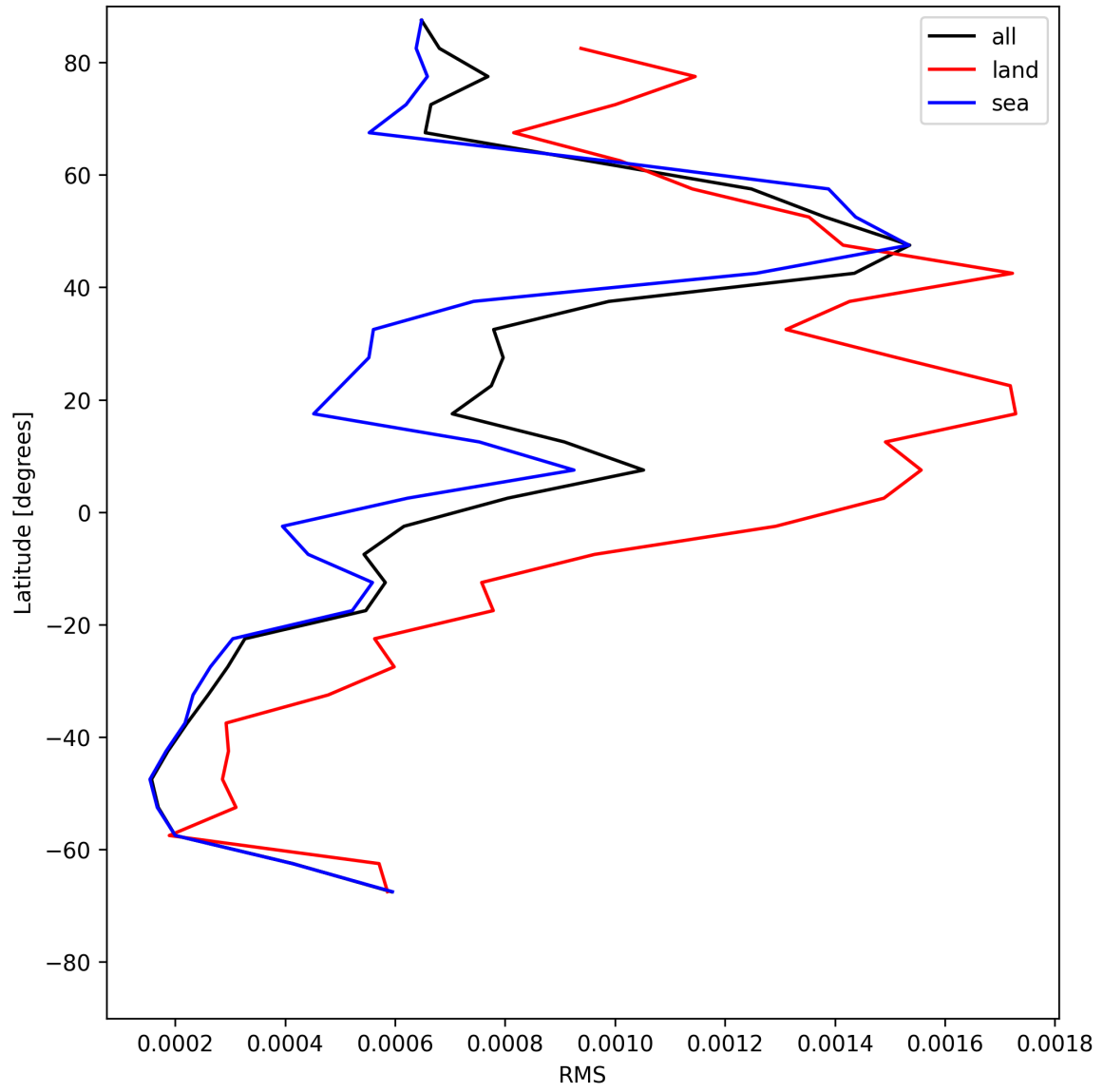


Figure 31: Zonal average of “RMS” for 2025-07-16 to 2025-07-18.

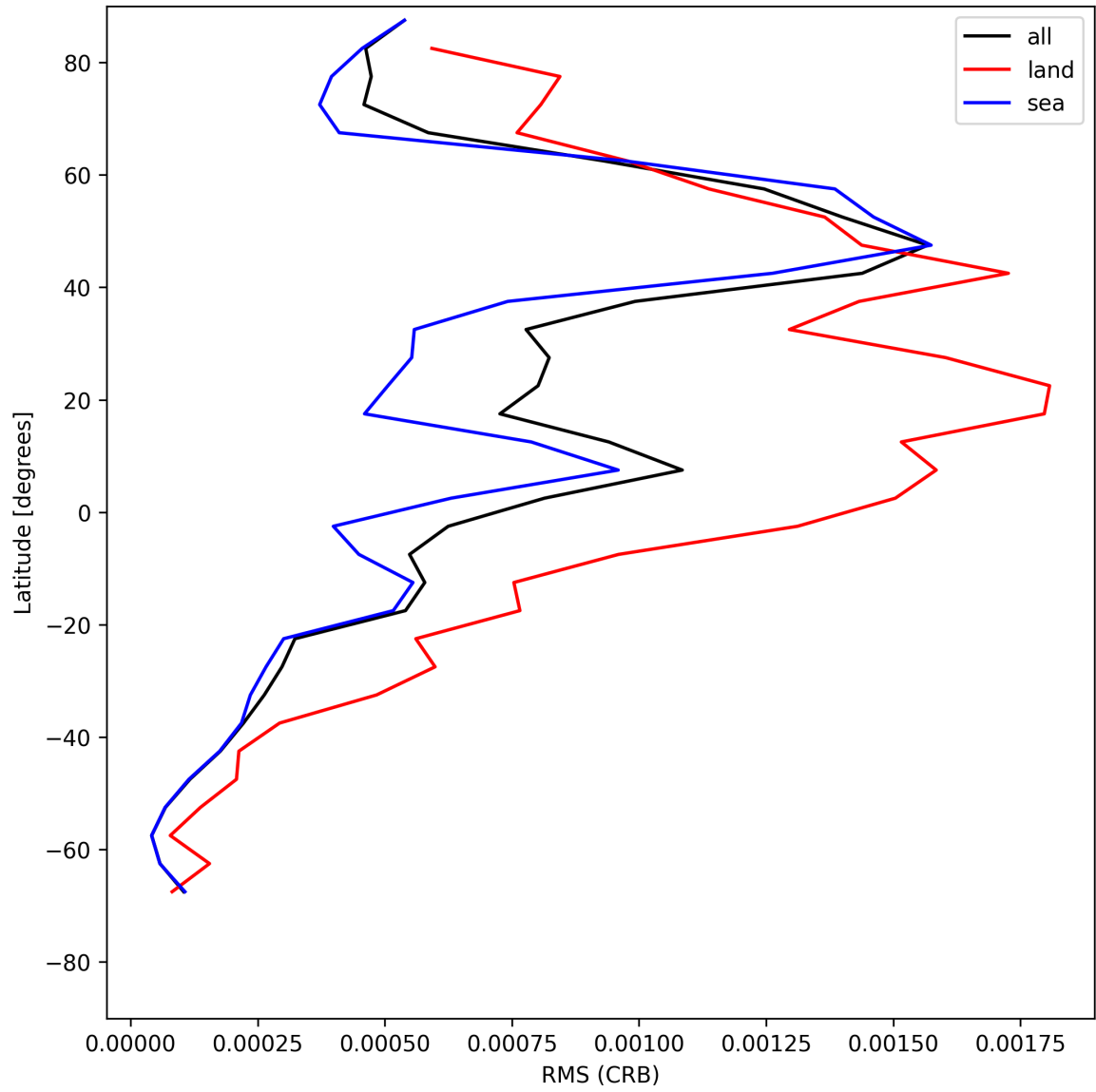


Figure 32: Zonal average of “RMS (CRB)” for 2025-07-16 to 2025-07-18.

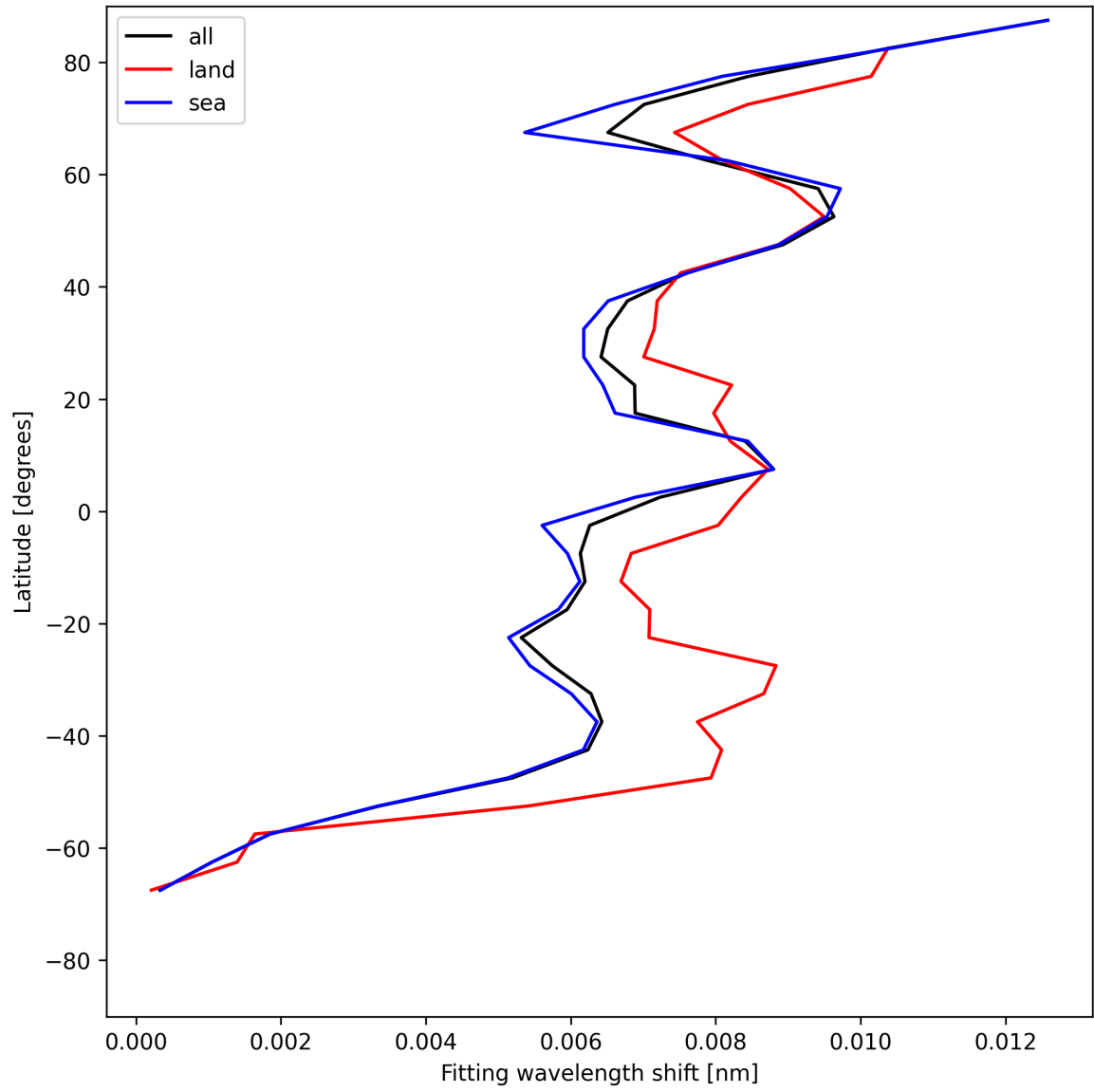


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18.

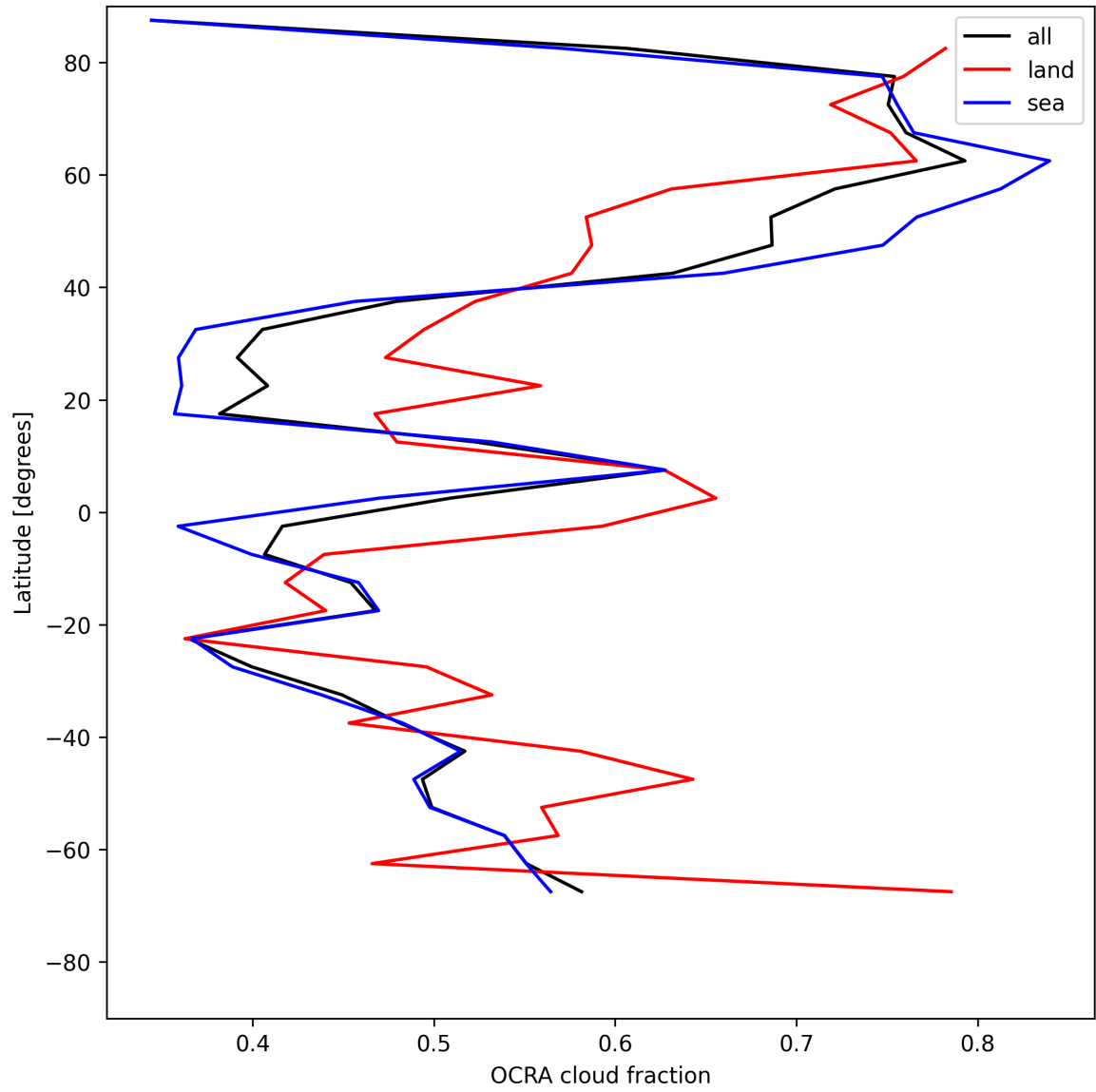


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

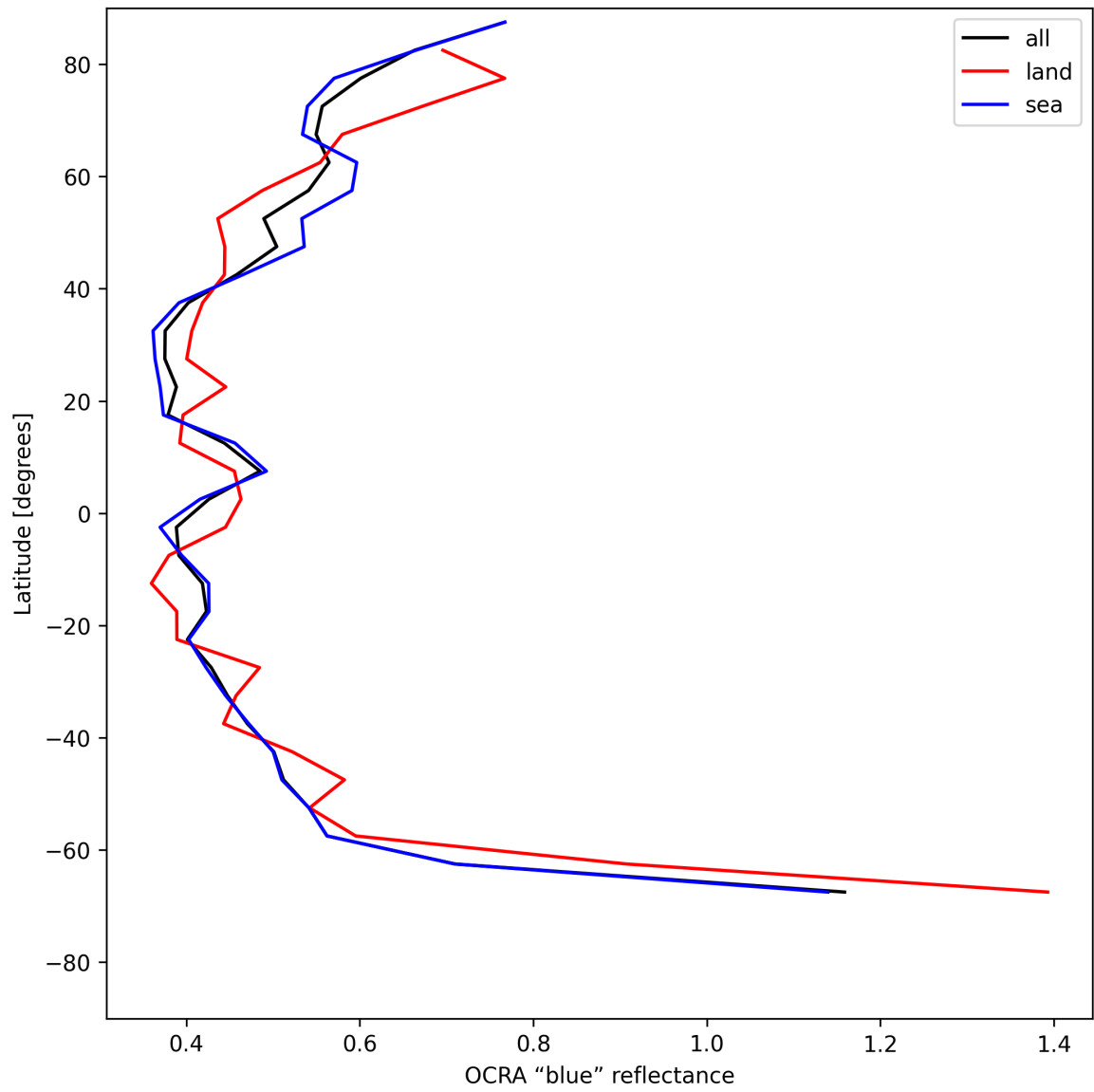


Figure 35: Zonal average of "OCRA "blue" reflectance" for 2025-07-16 to 2025-07-18.

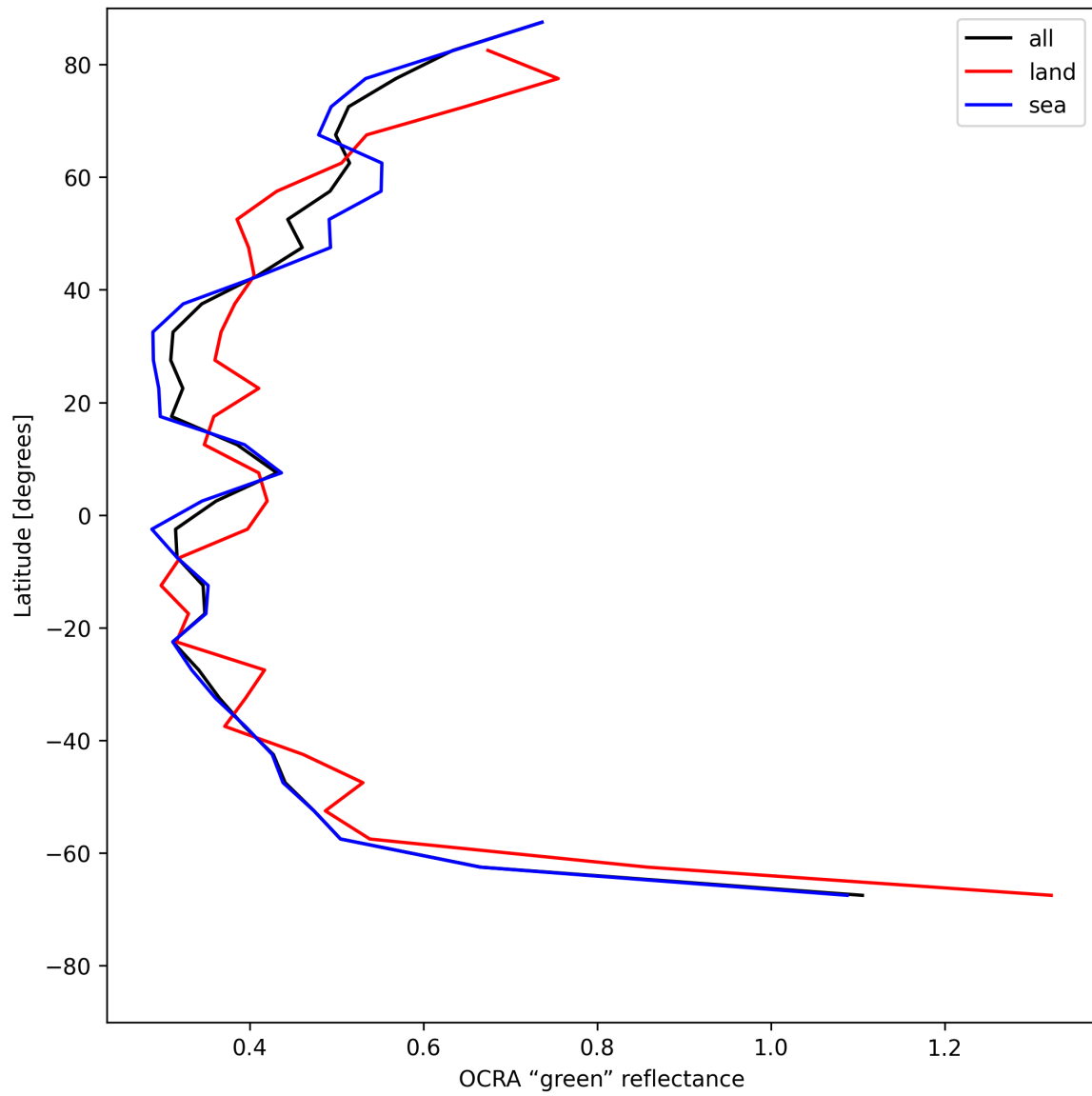


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18.

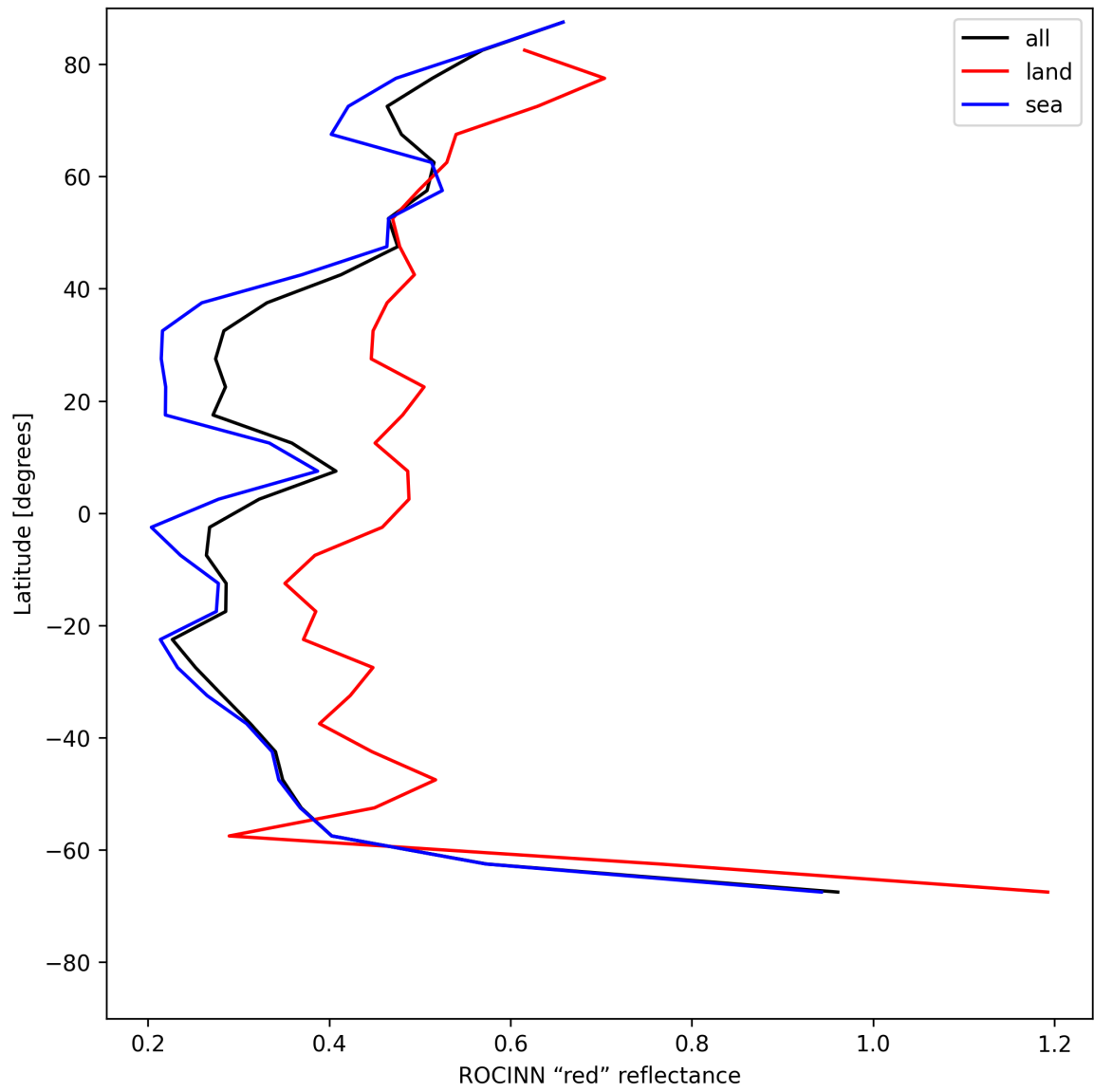


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-07-16 to 2025-07-18.

8 Histograms

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

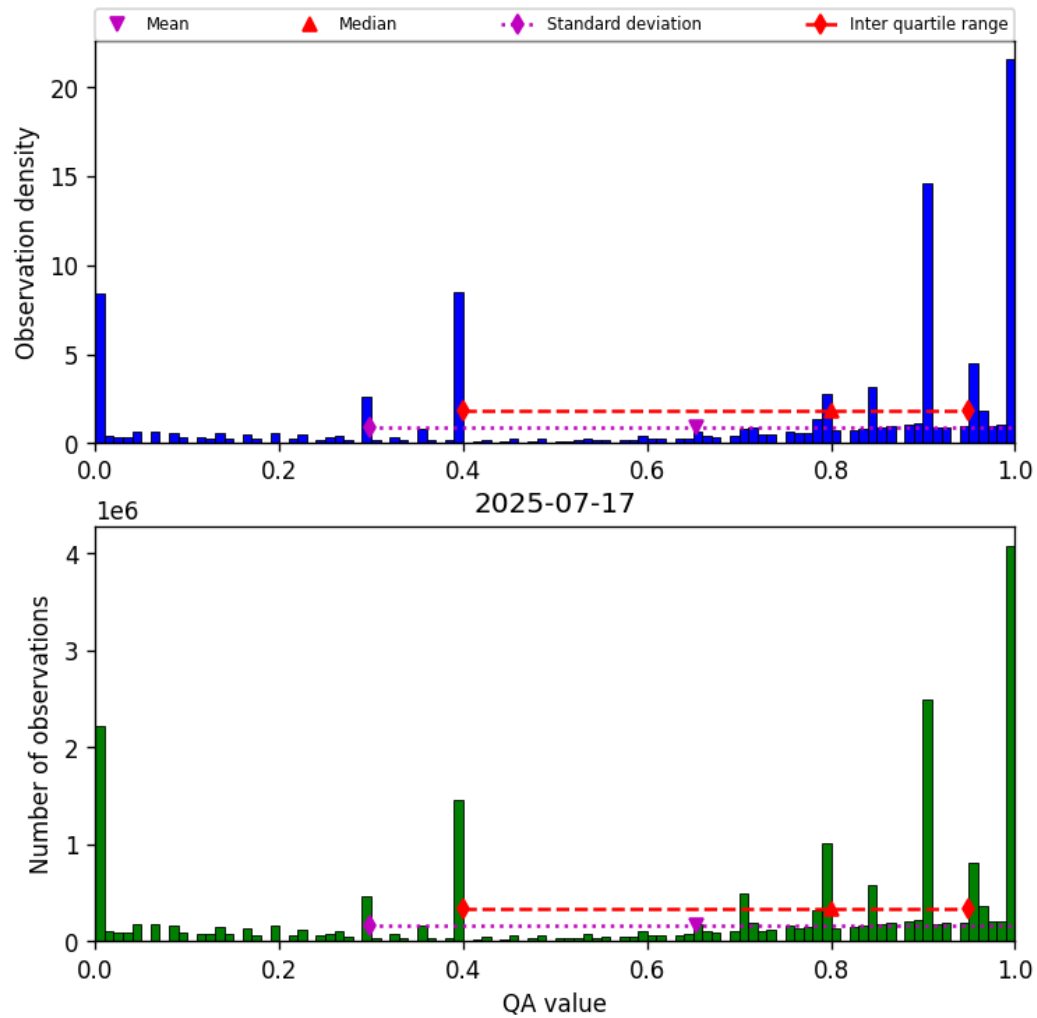


Figure 38: Histogram of “QA value” for 2025-07-16 to 2025-07-18

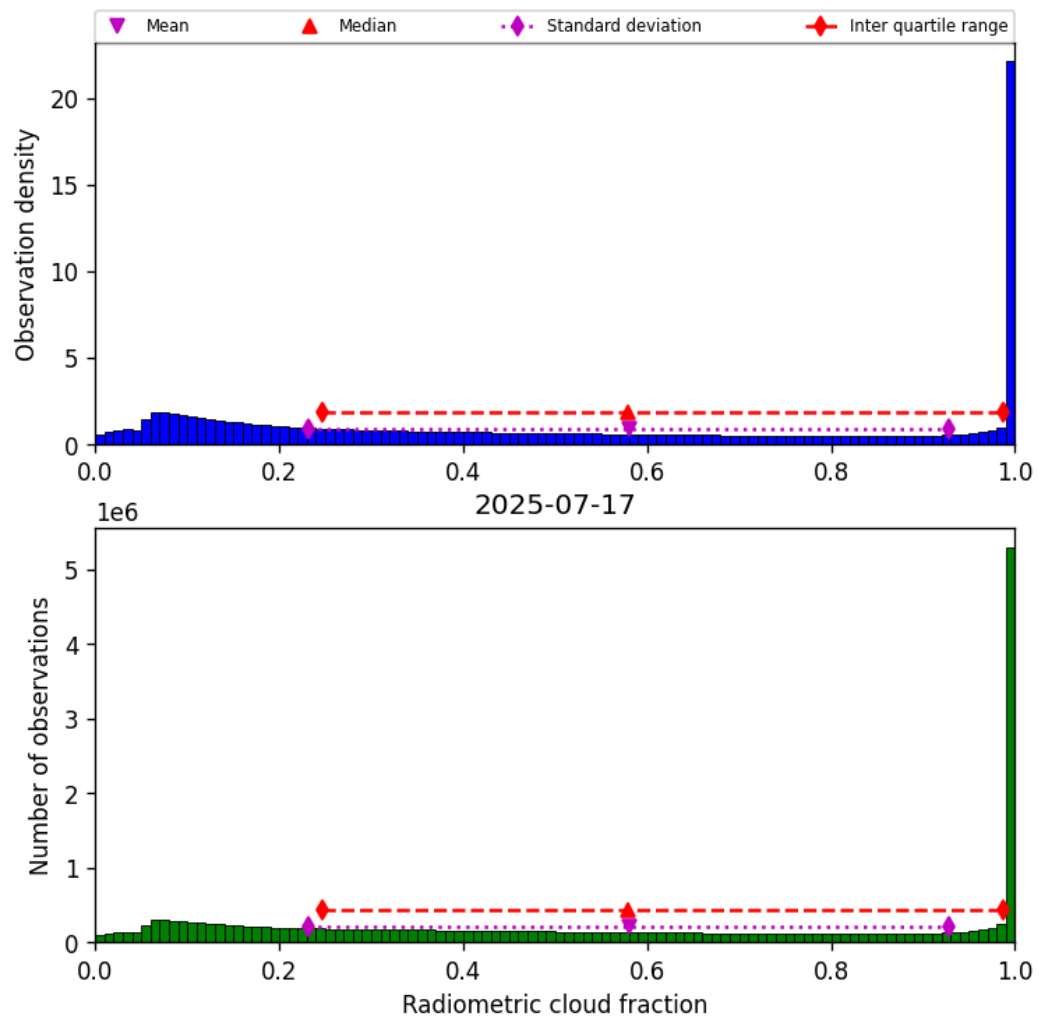


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18

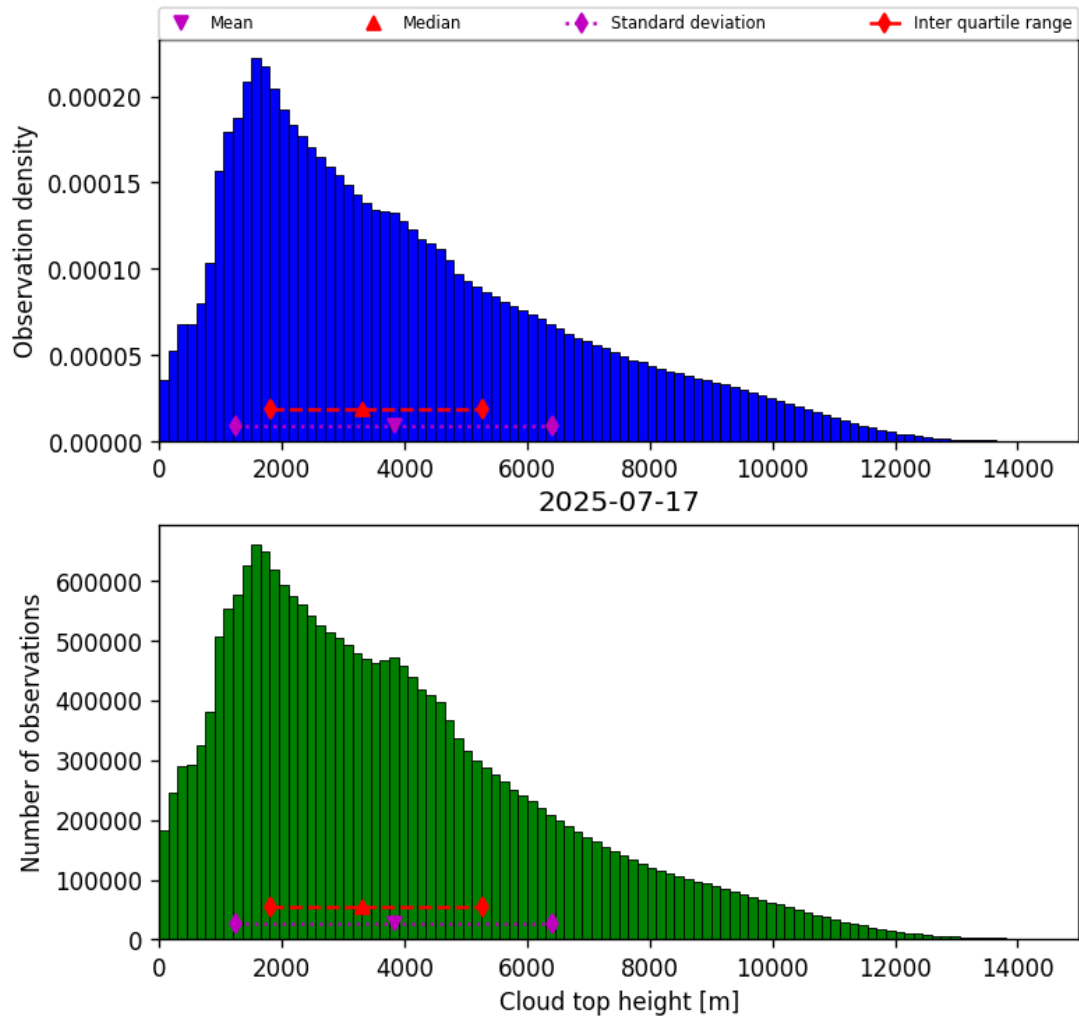


Figure 40: Histogram of “Cloud top height” for 2025-07-16 to 2025-07-18

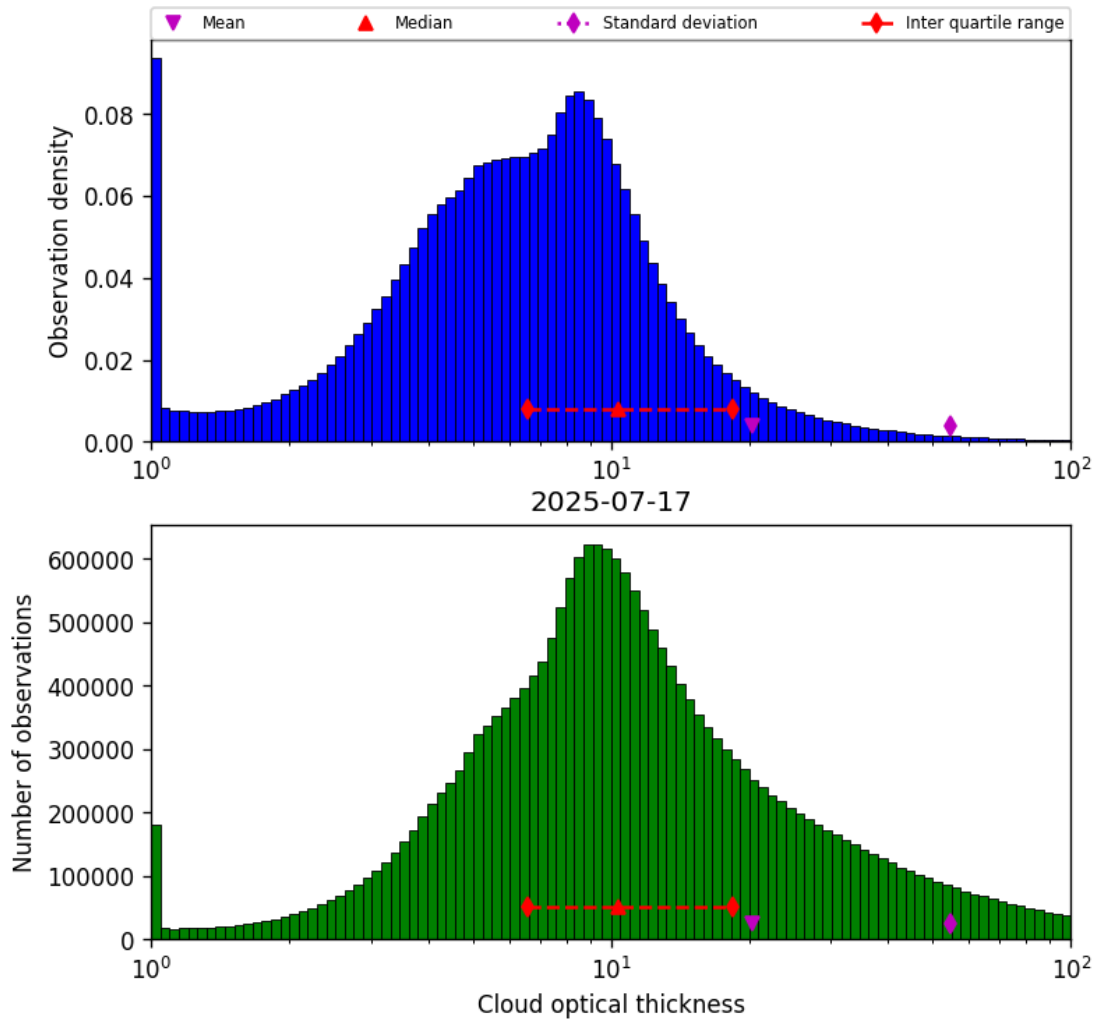


Figure 41: Histogram of “Cloud optical thickness” for 2025-07-16 to 2025-07-18

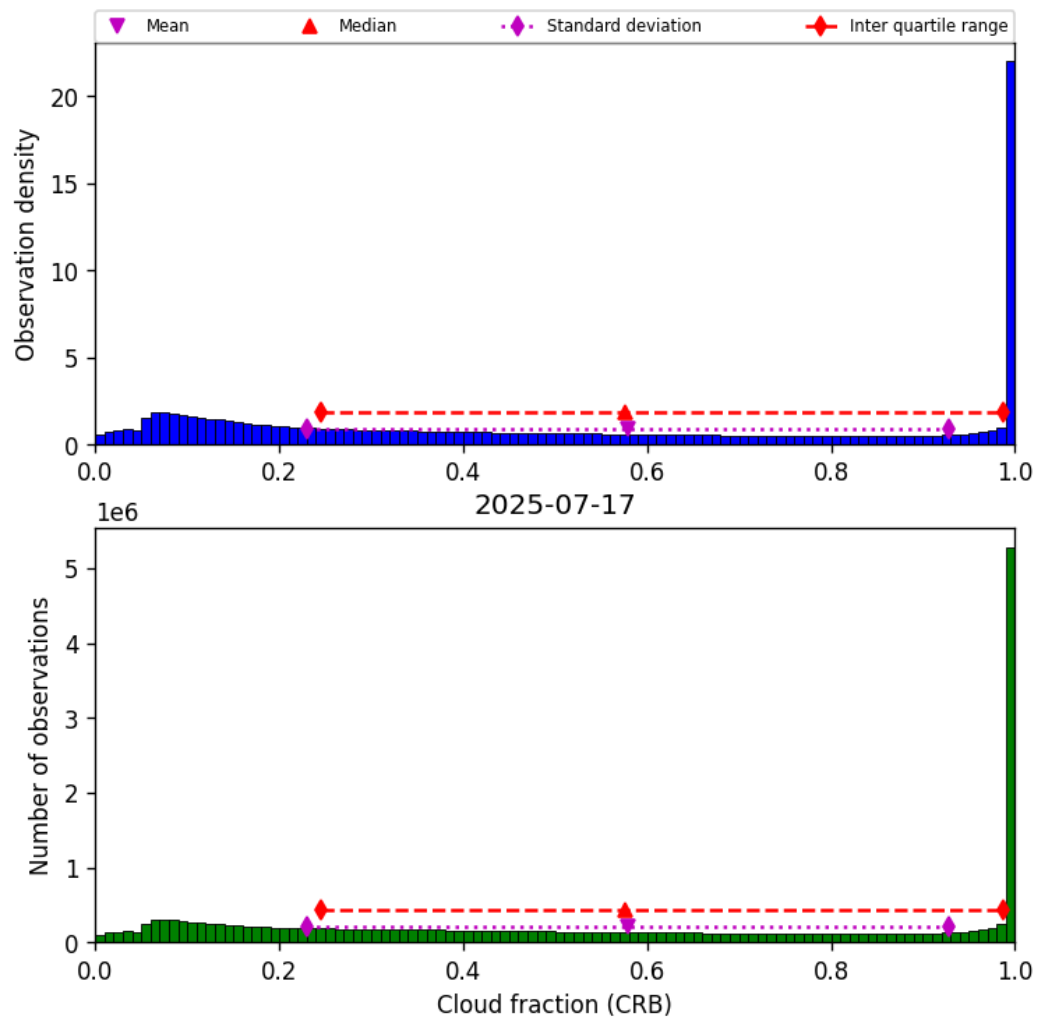


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18

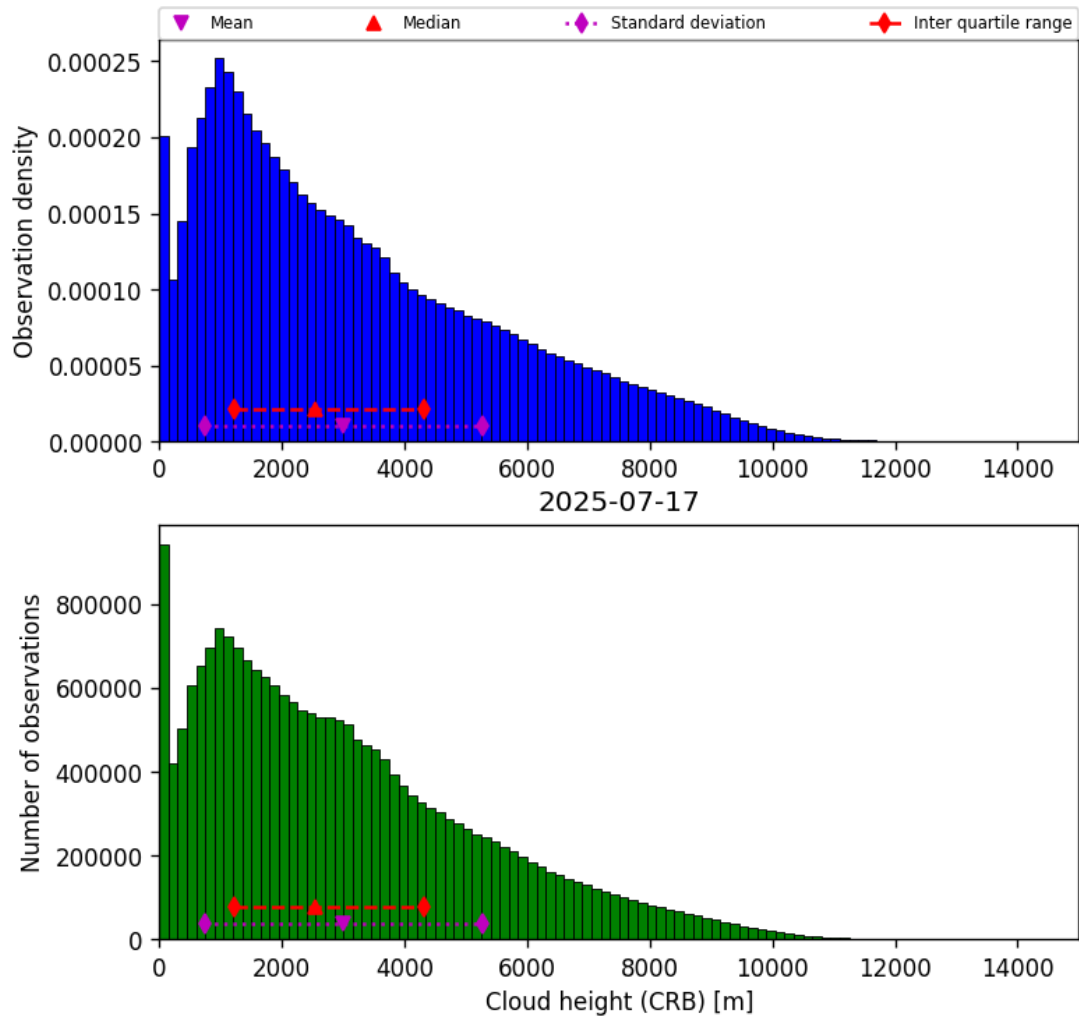


Figure 43: Histogram of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18

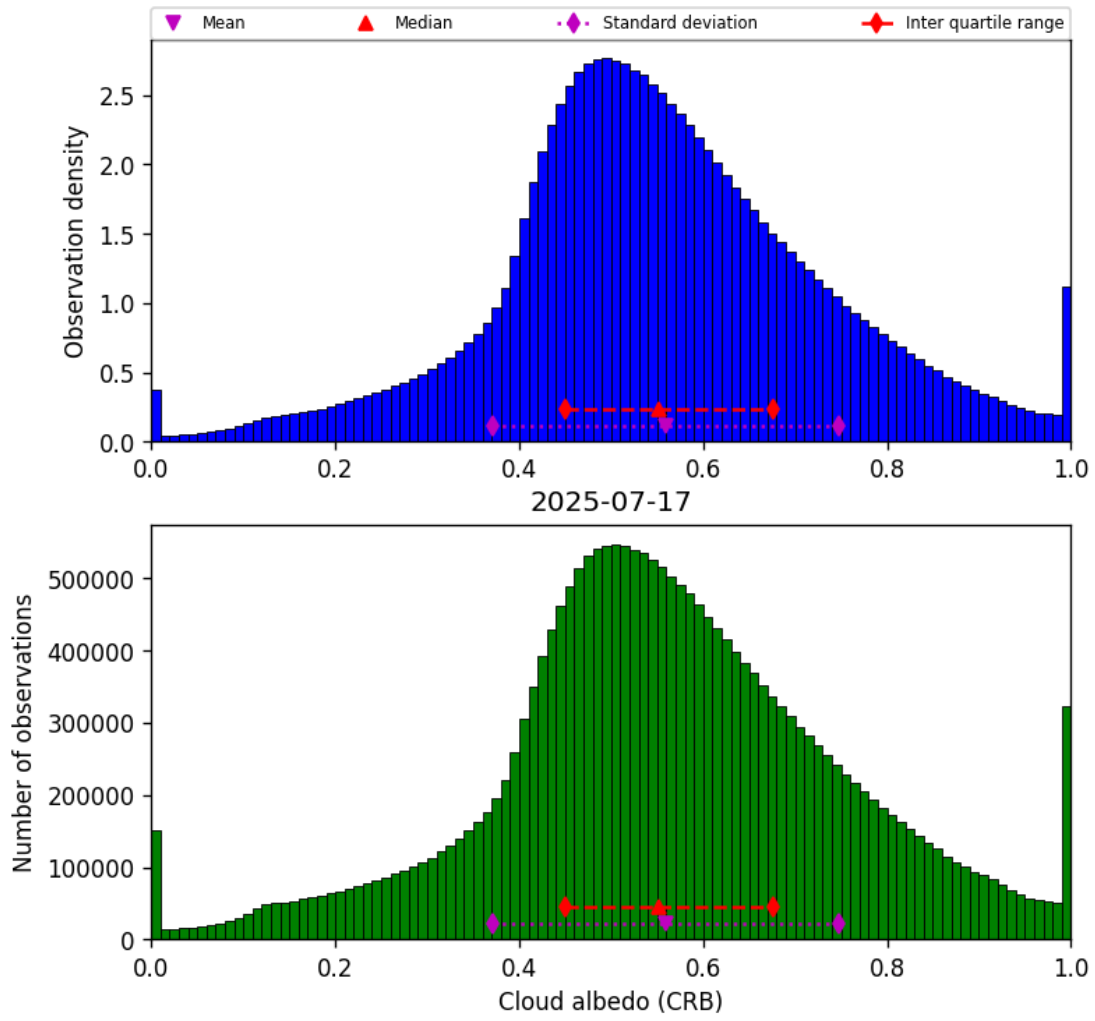


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18

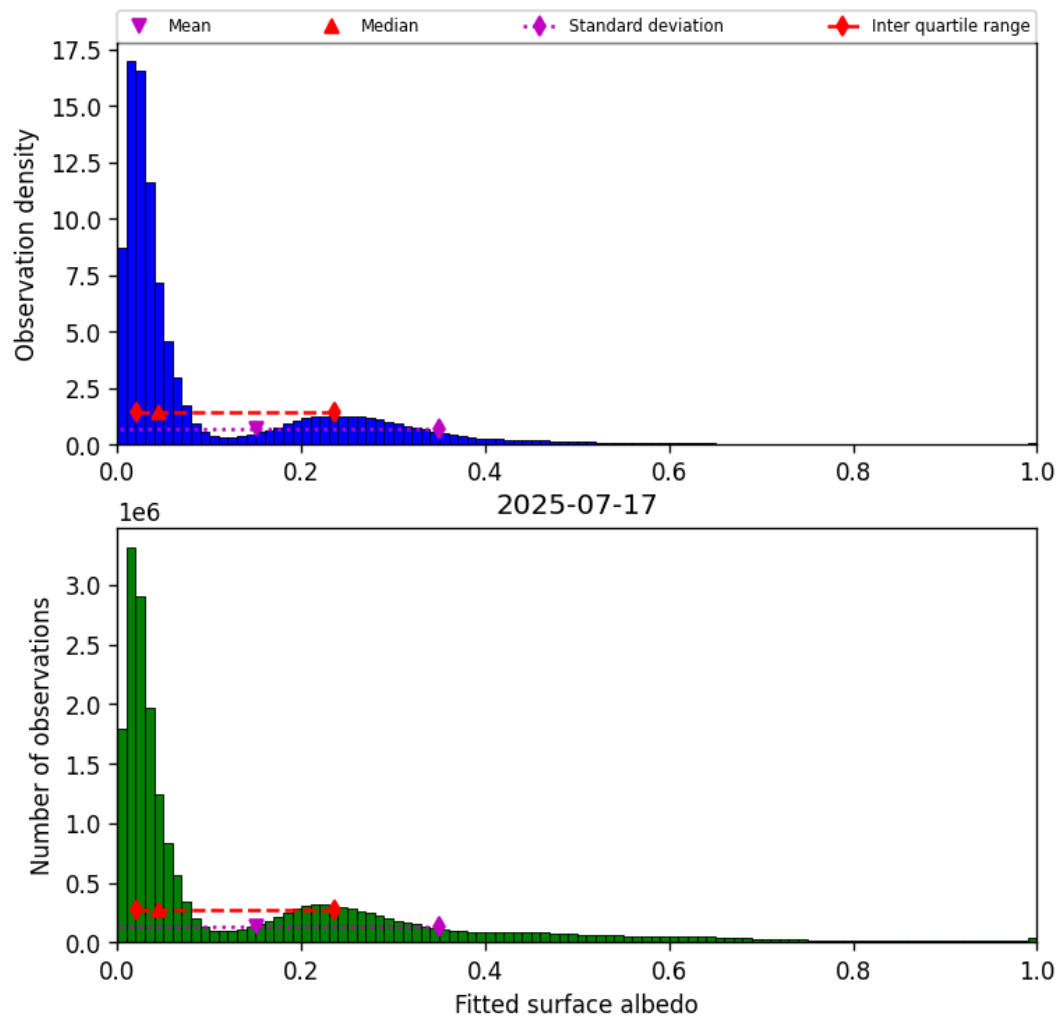


Figure 45: Histogram of “Fitted surface albedo” for 2025-07-16 to 2025-07-18

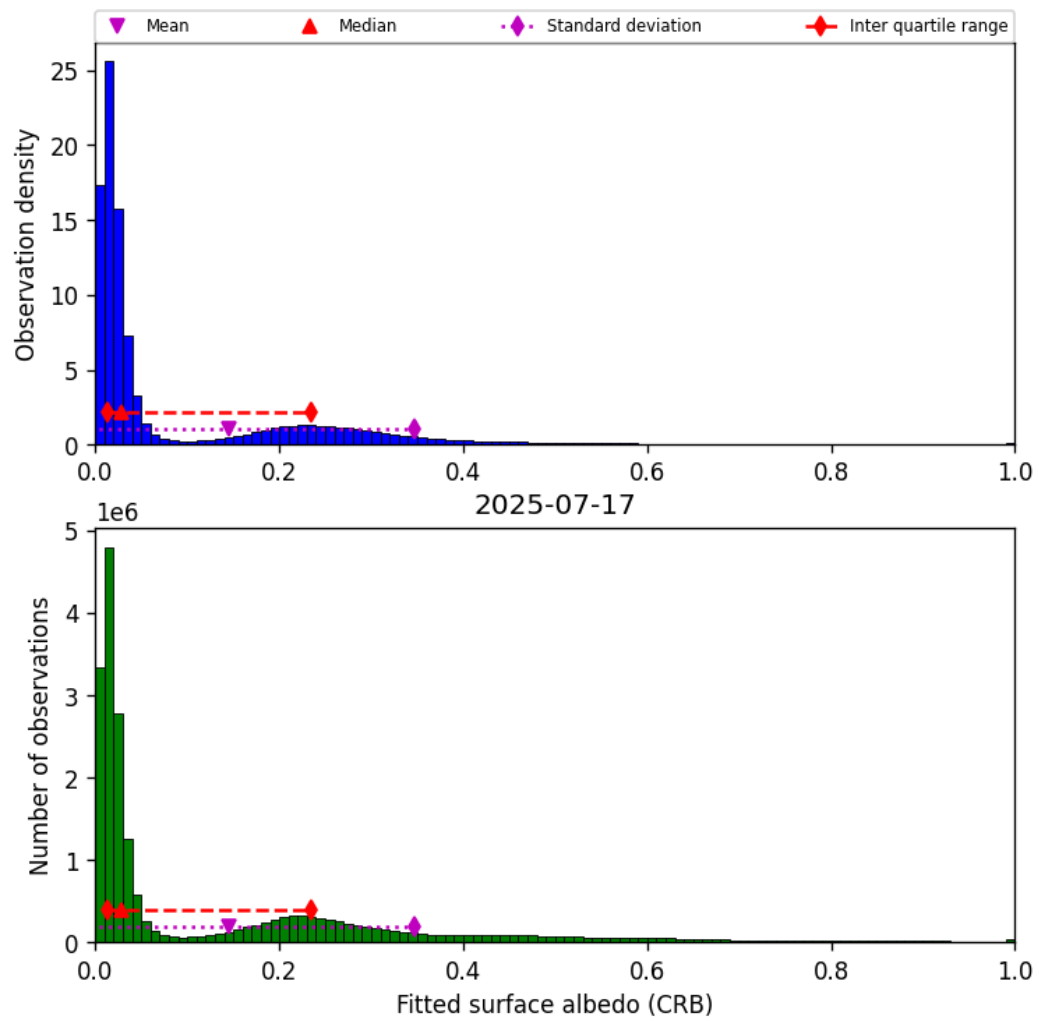


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18

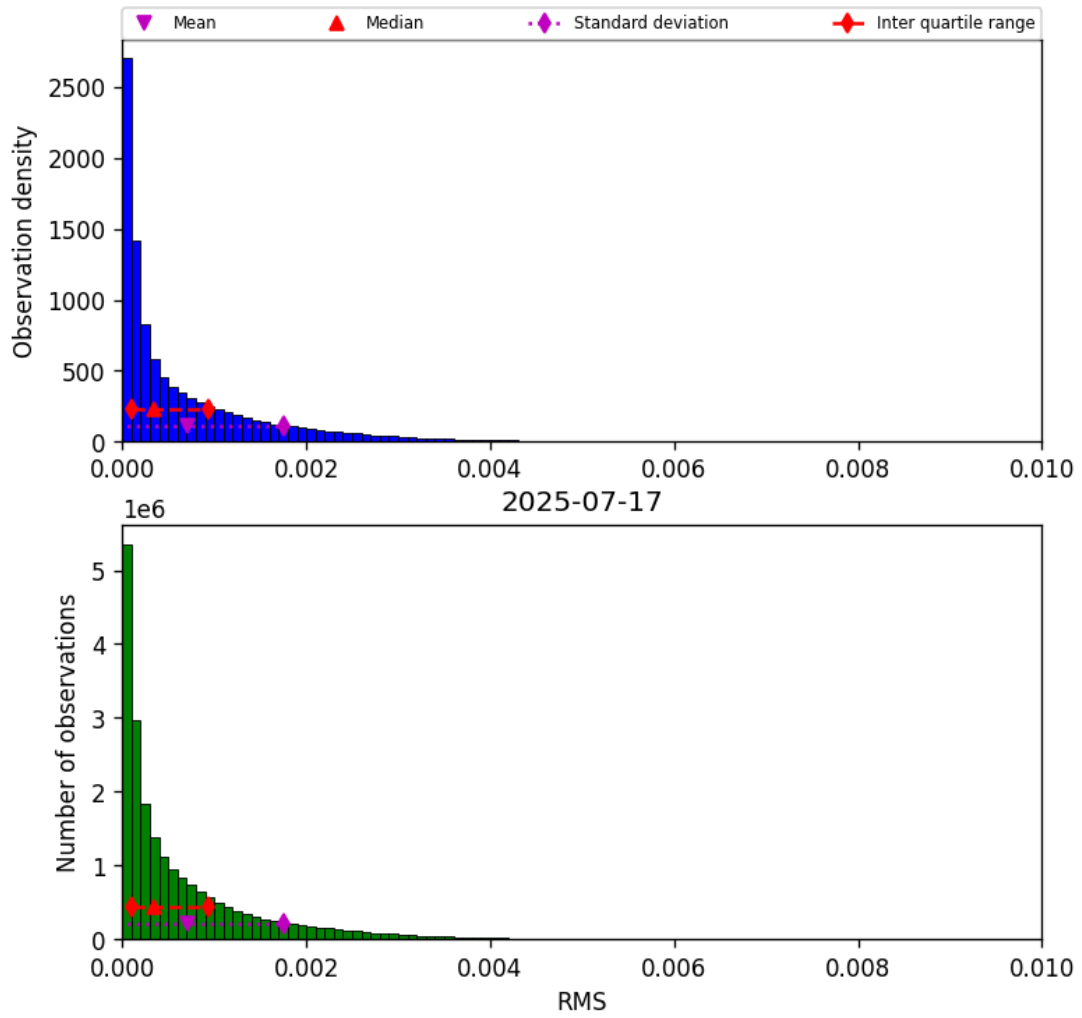


Figure 47: Histogram of “RMS” for 2025-07-16 to 2025-07-18

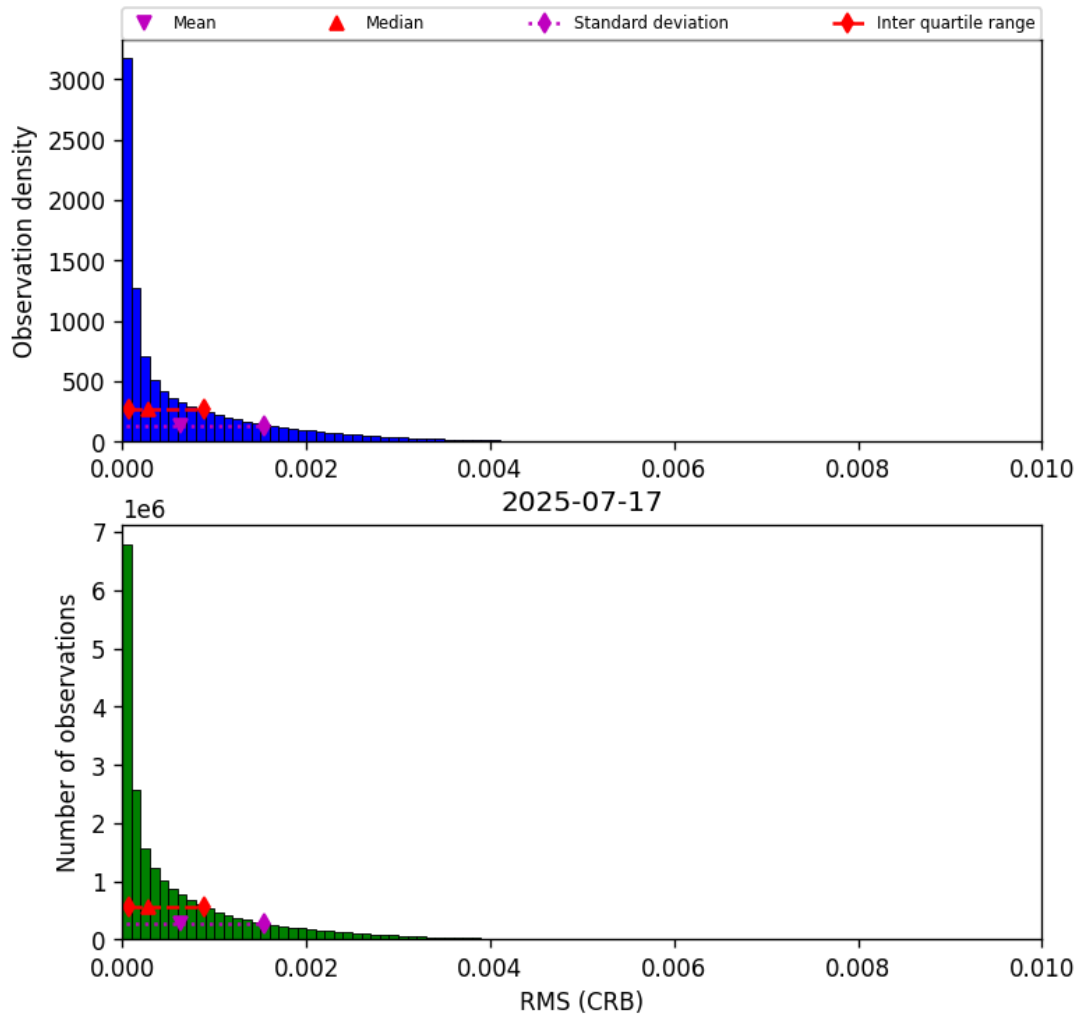


Figure 48: Histogram of “RMS (CRB)” for 2025-07-16 to 2025-07-18

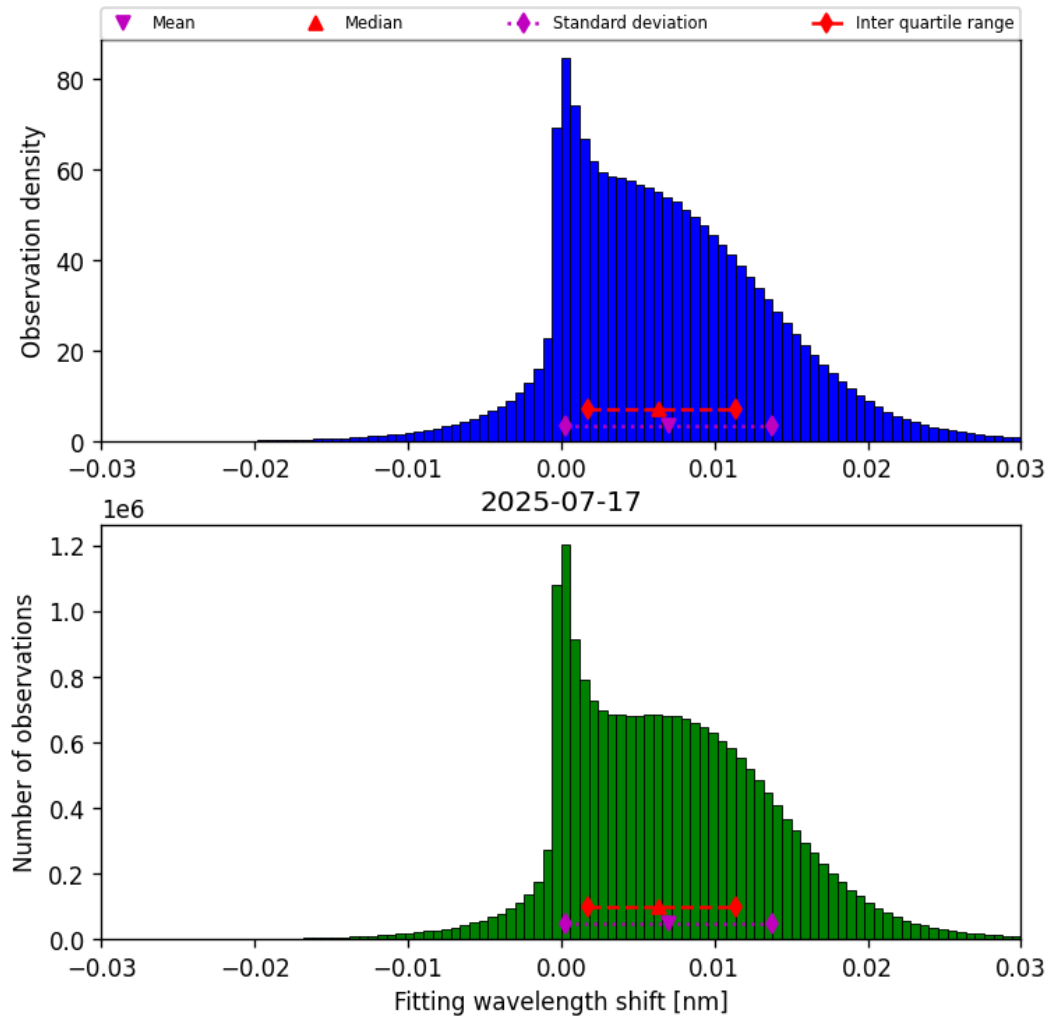


Figure 49: Histogram of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18

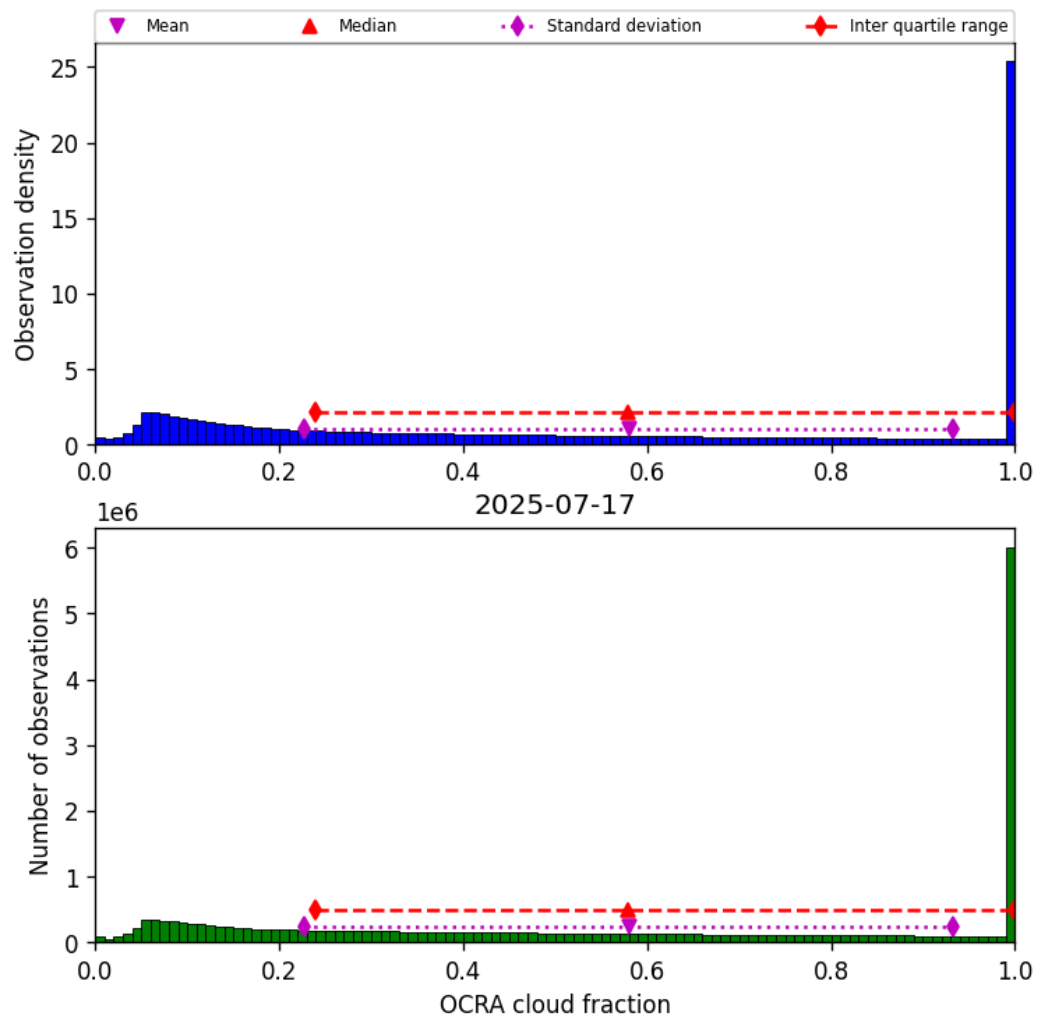


Figure 50: Histogram of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18

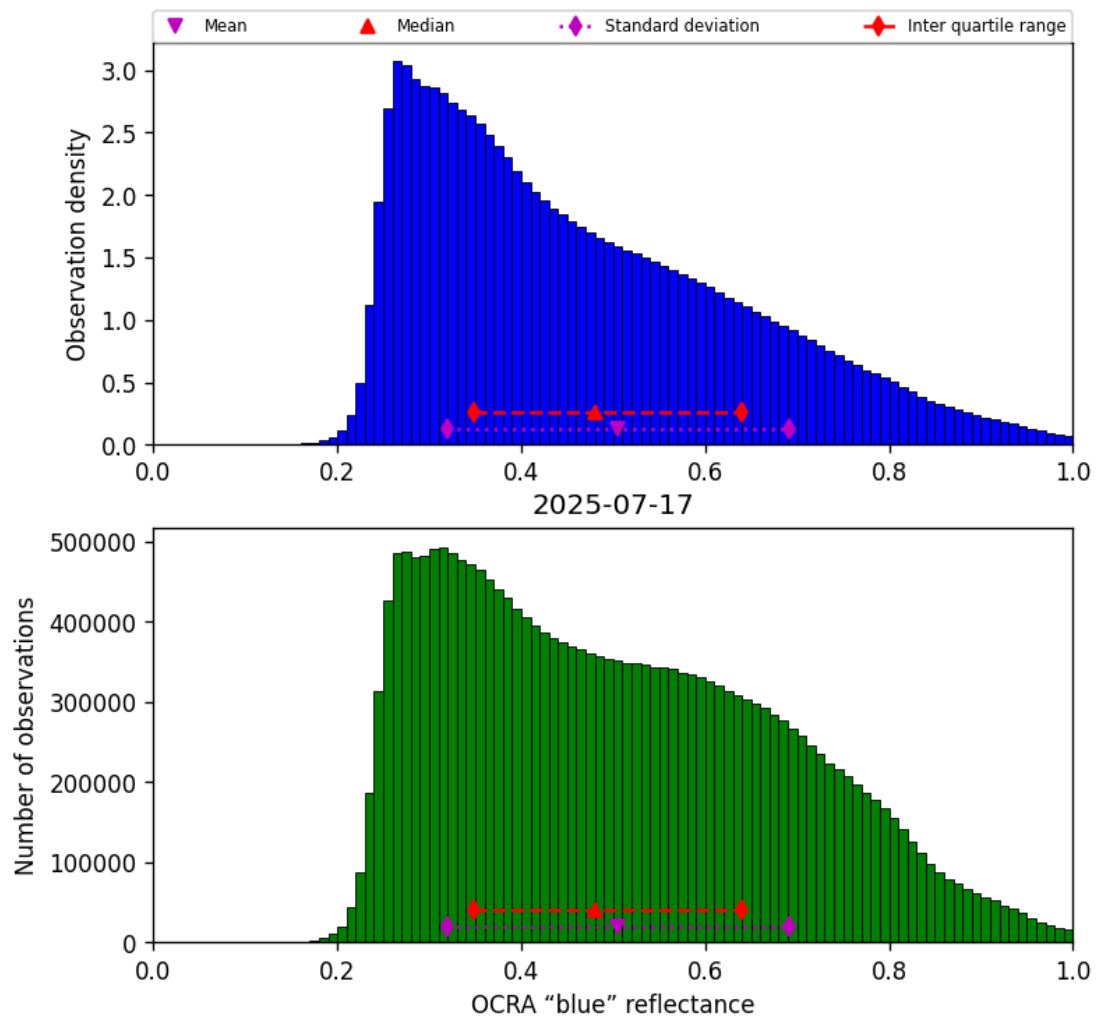


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-07-16 to 2025-07-18

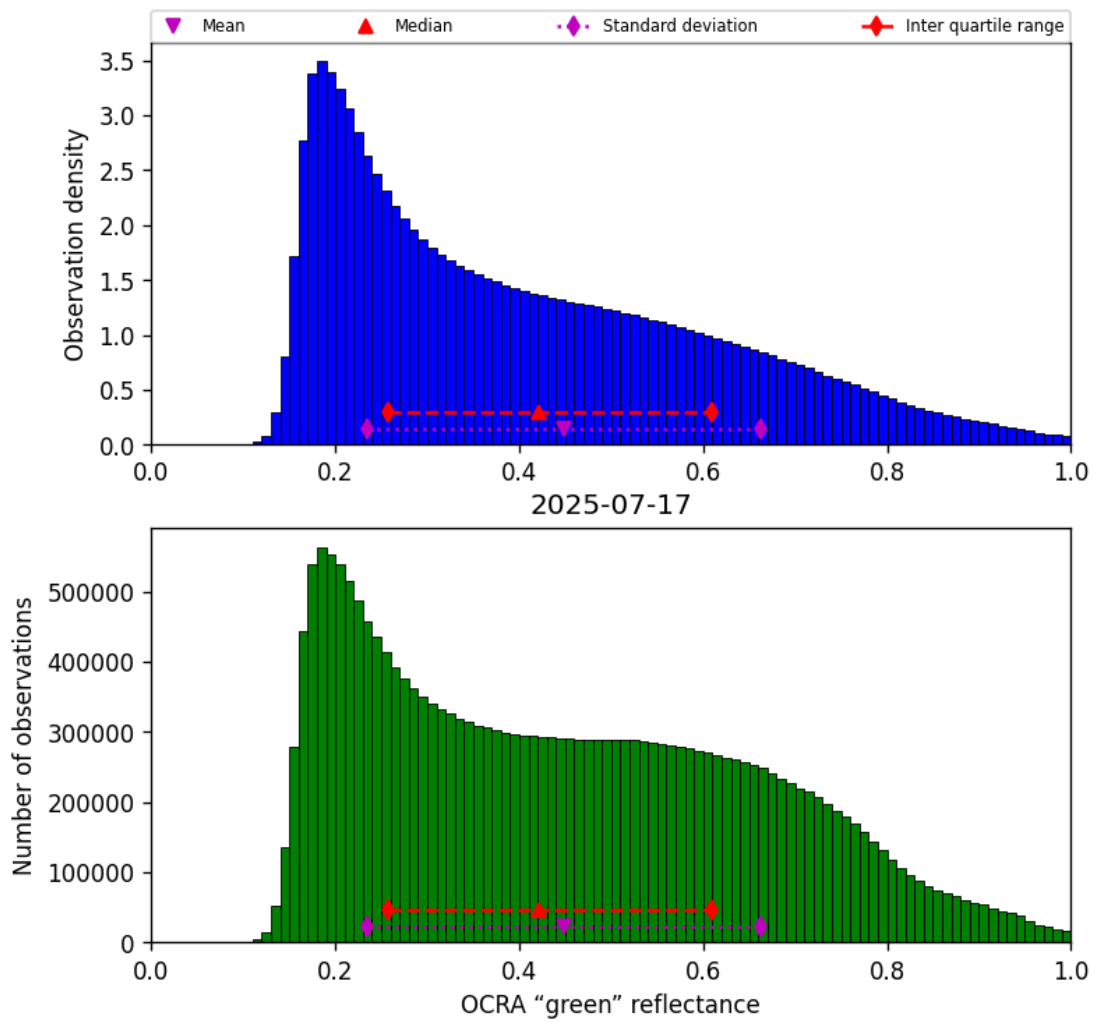


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18

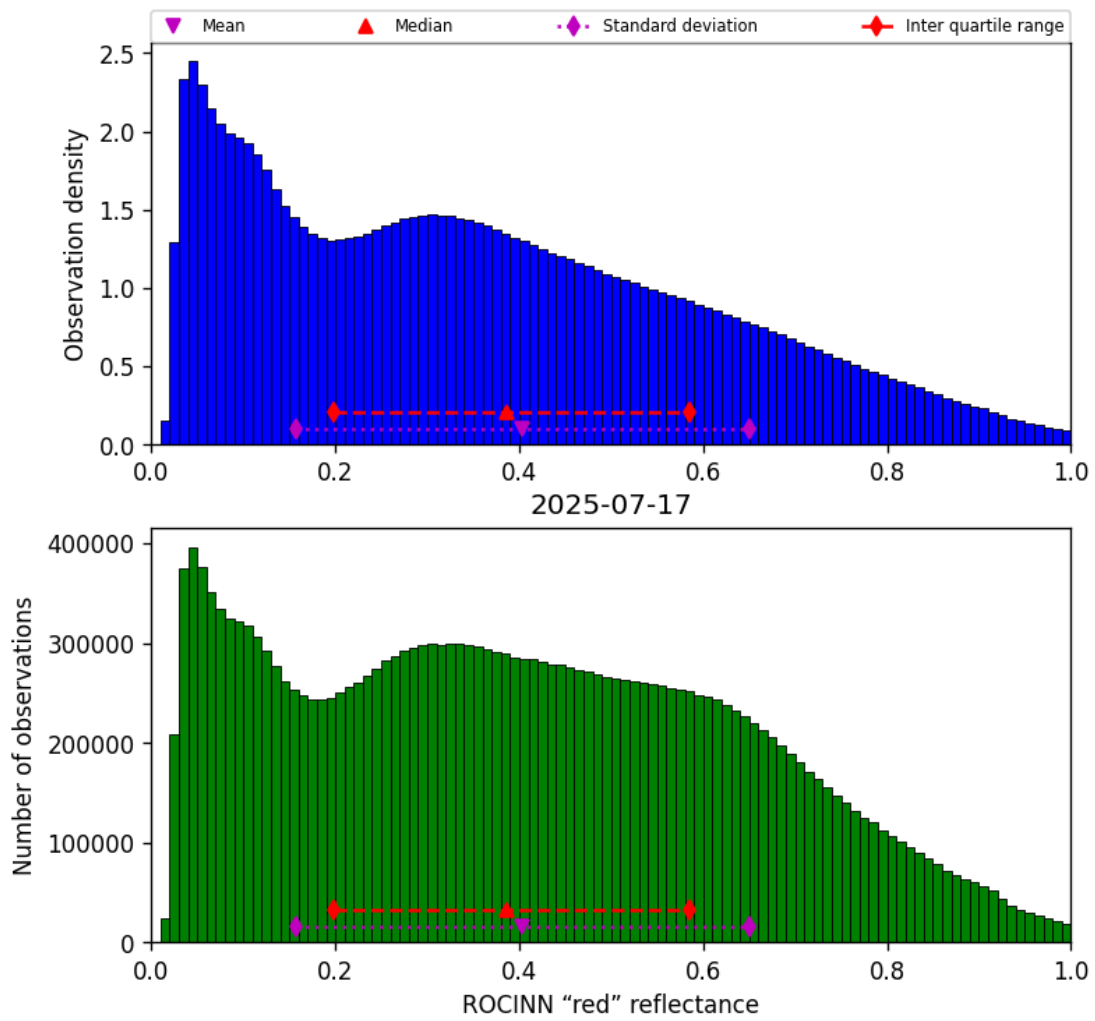


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-07-16 to 2025-07-18

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.

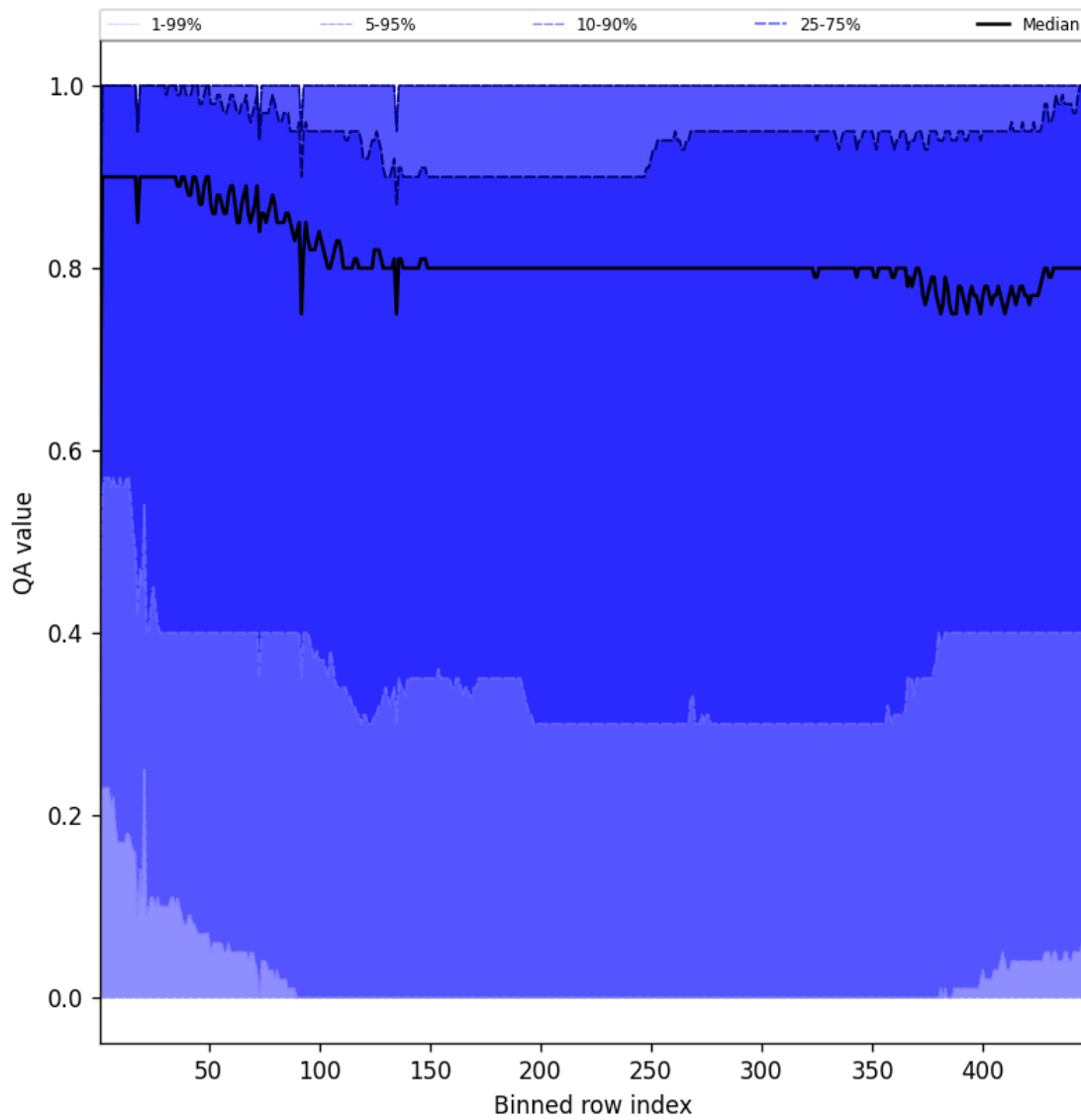


Figure 54: Along track statistics of “QA value” for 2025-07-16 to 2025-07-18

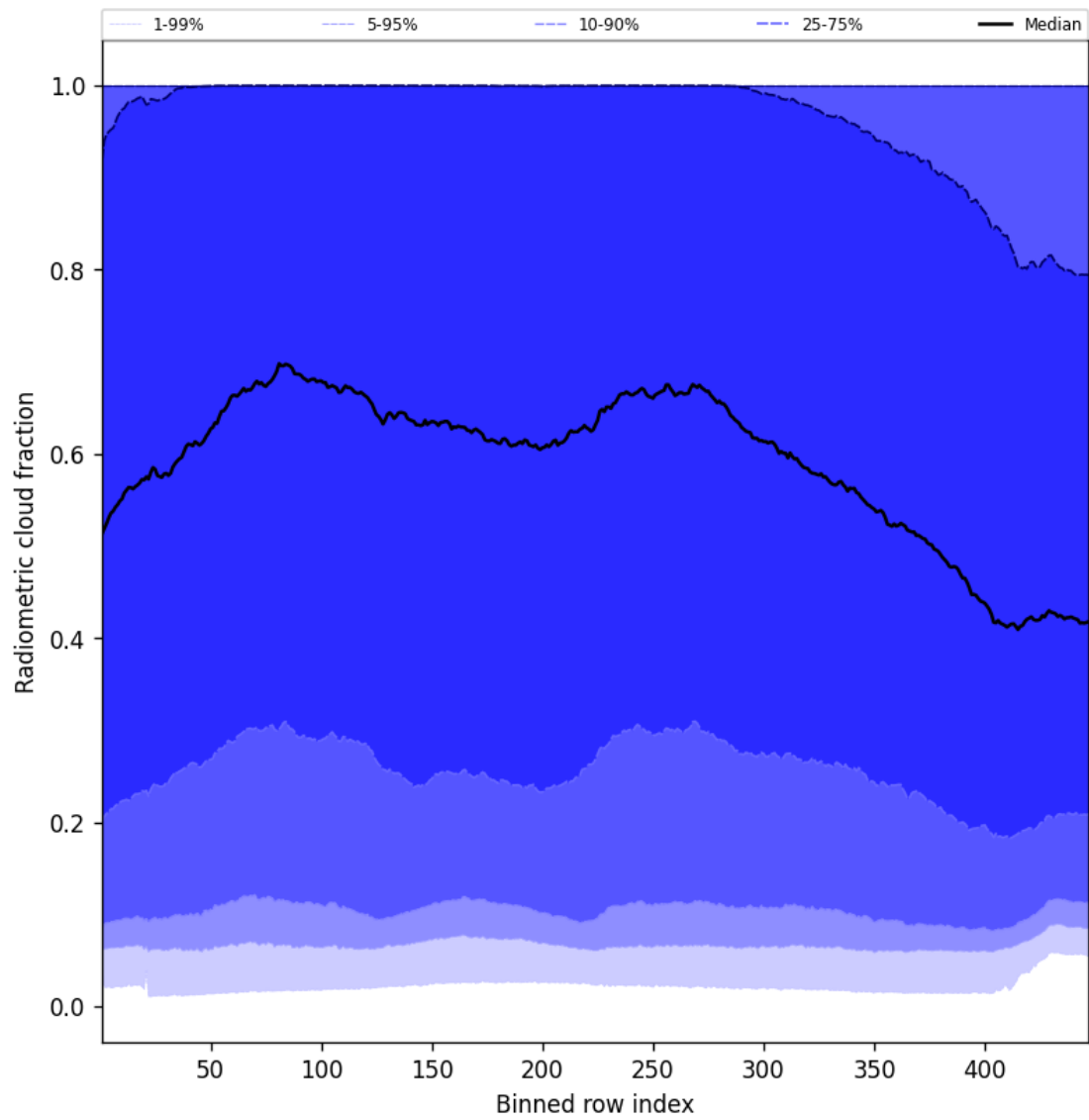


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18

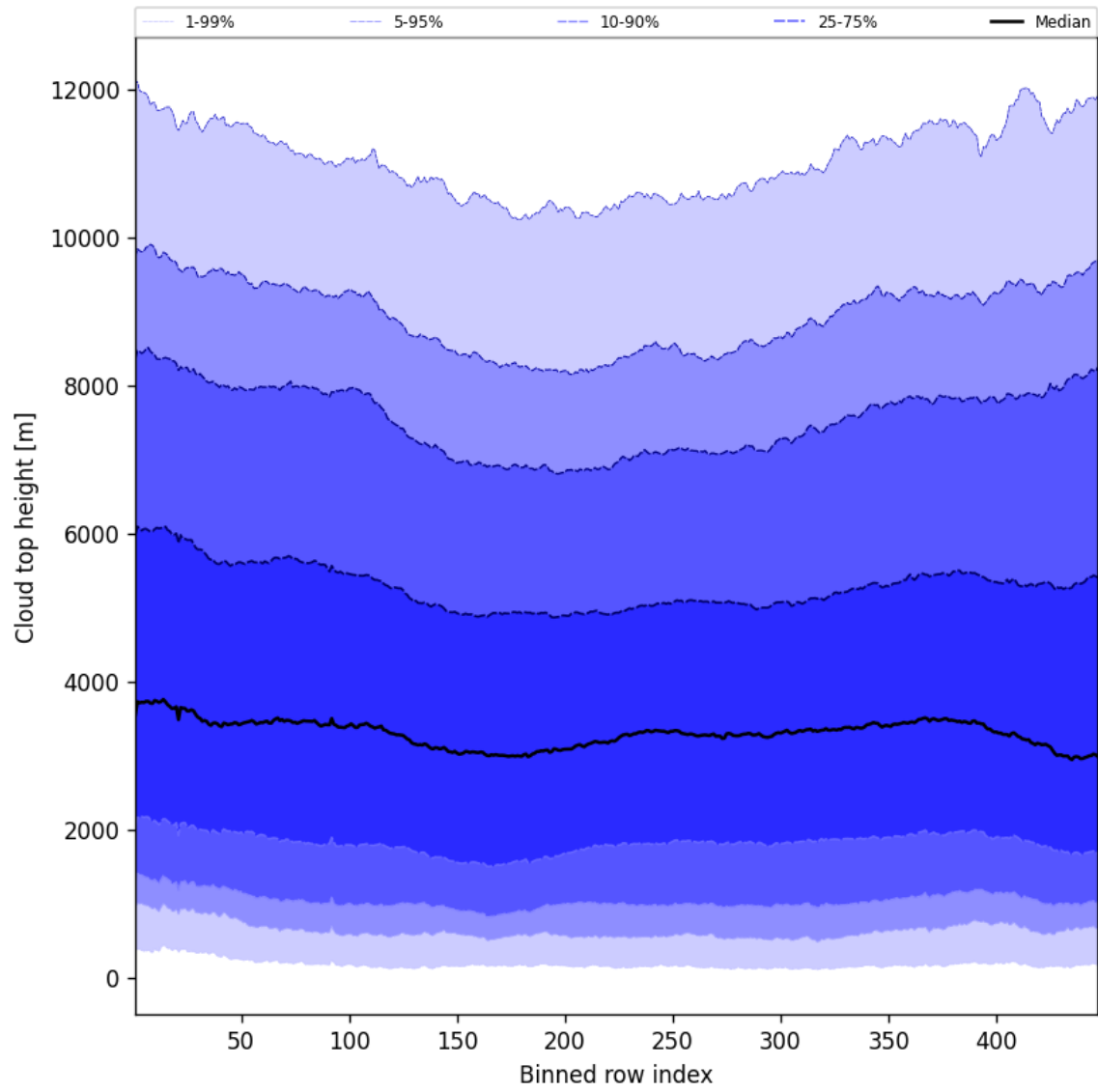


Figure 56: Along track statistics of “Cloud top height” for 2025-07-16 to 2025-07-18

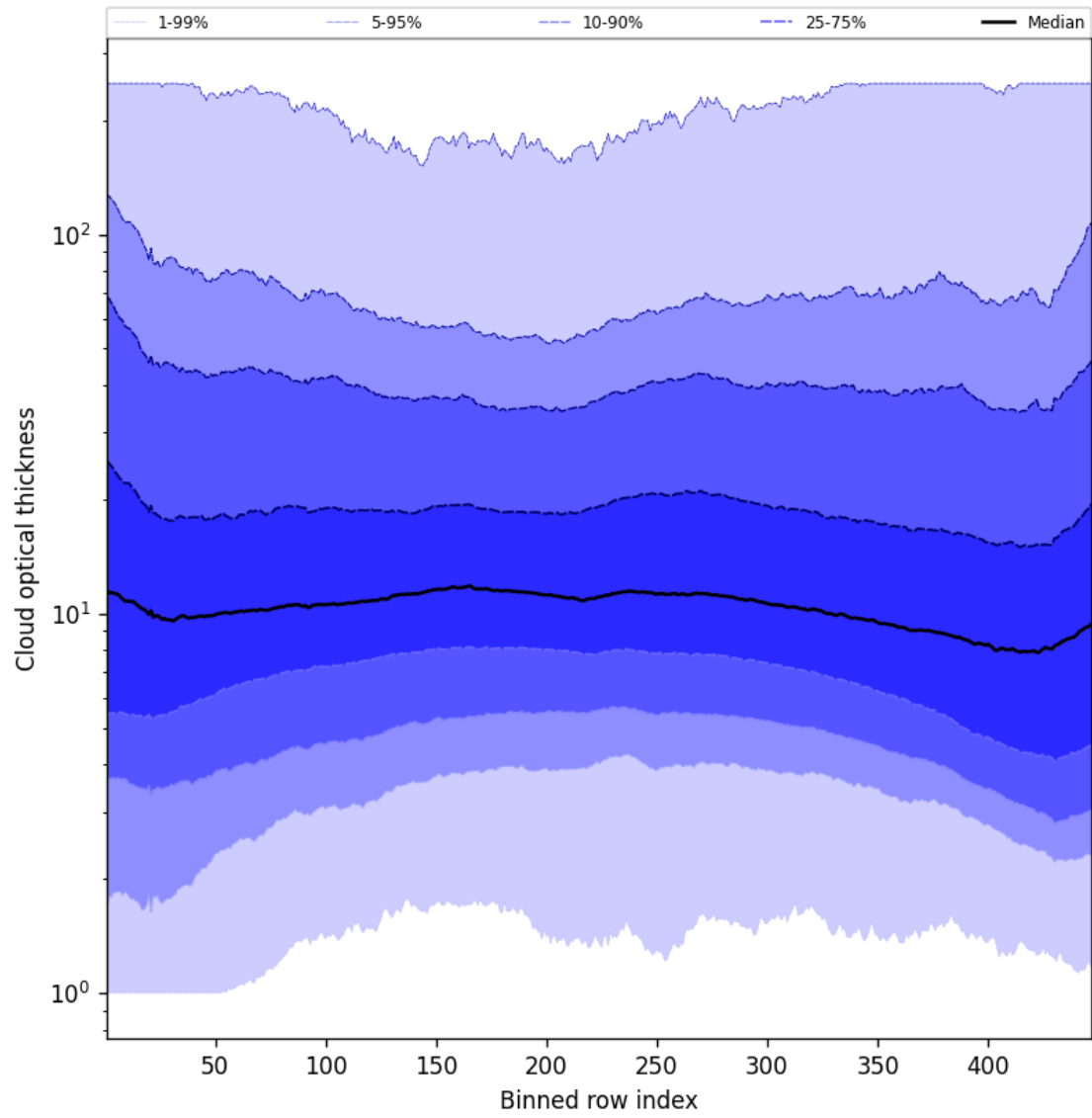


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-07-16 to 2025-07-18

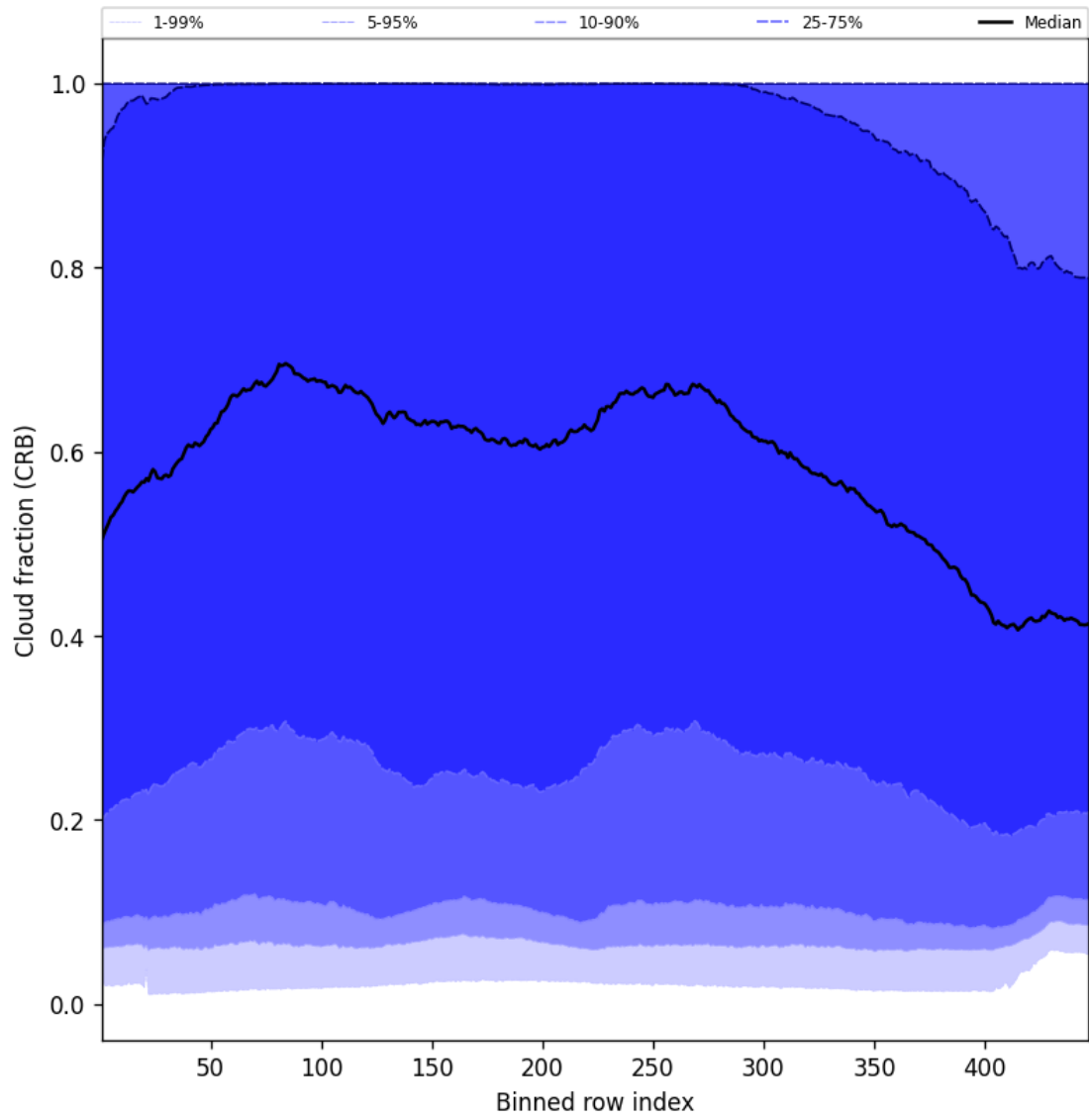


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18

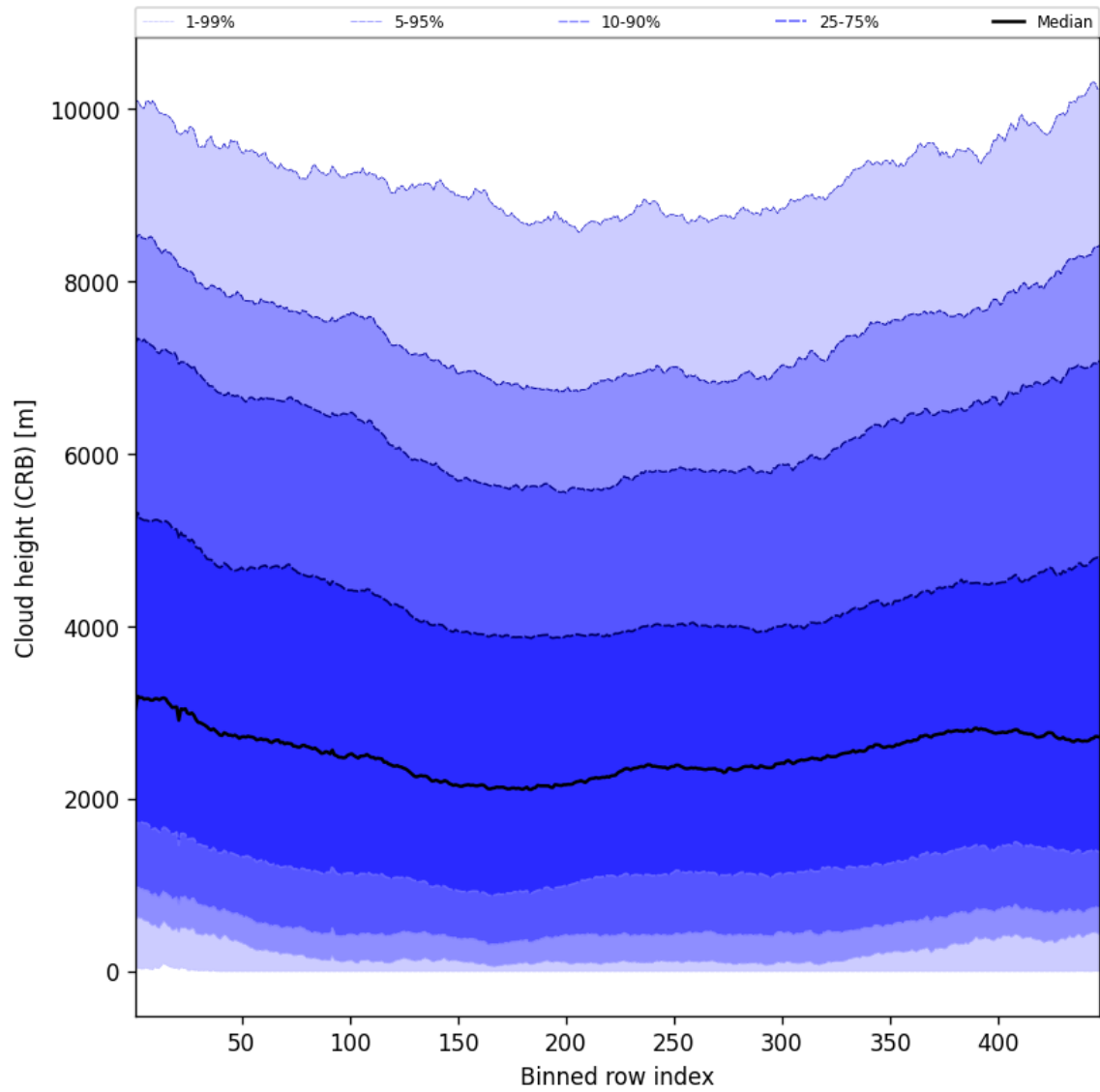


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18

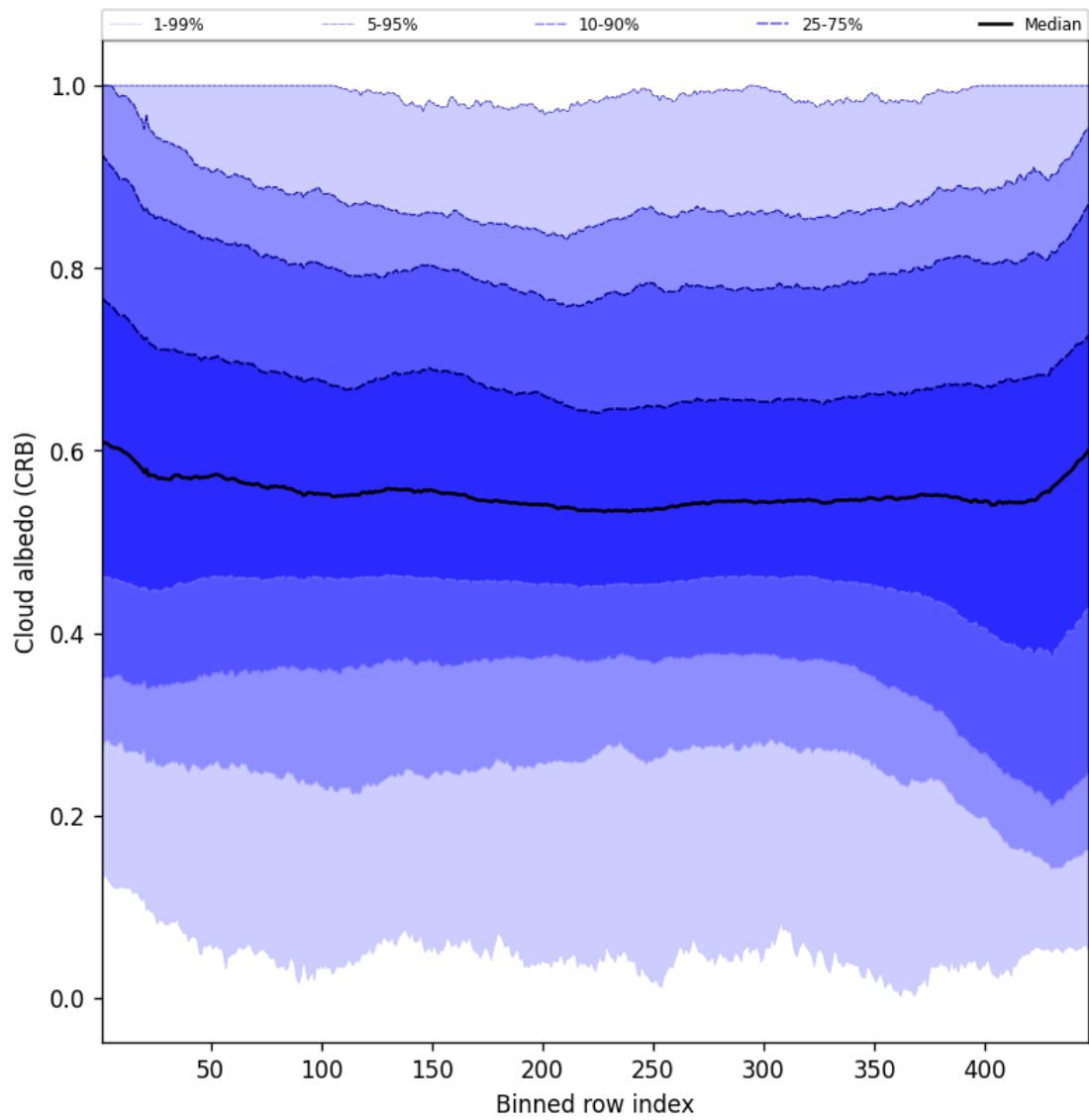


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18

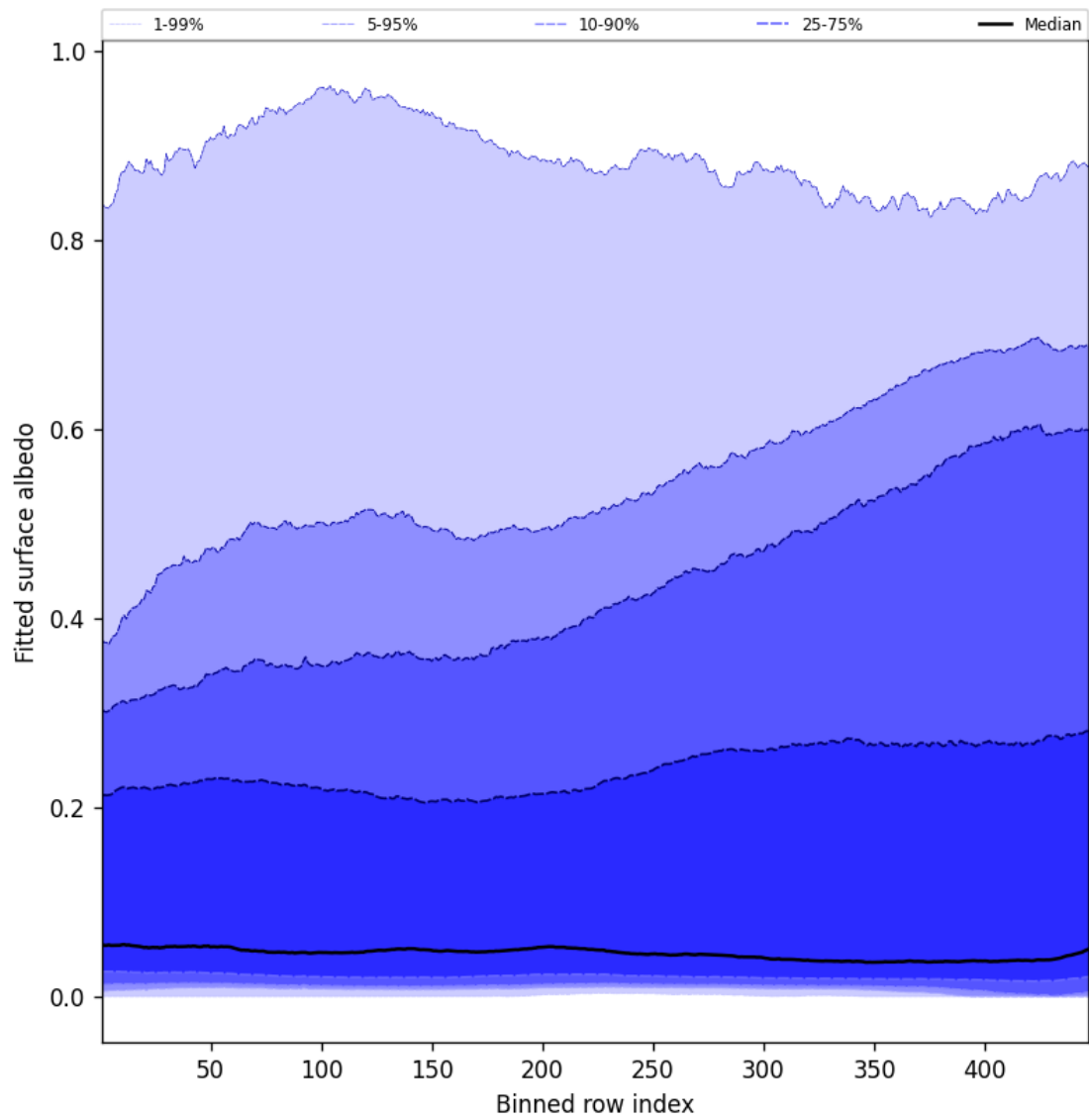


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-07-16 to 2025-07-18

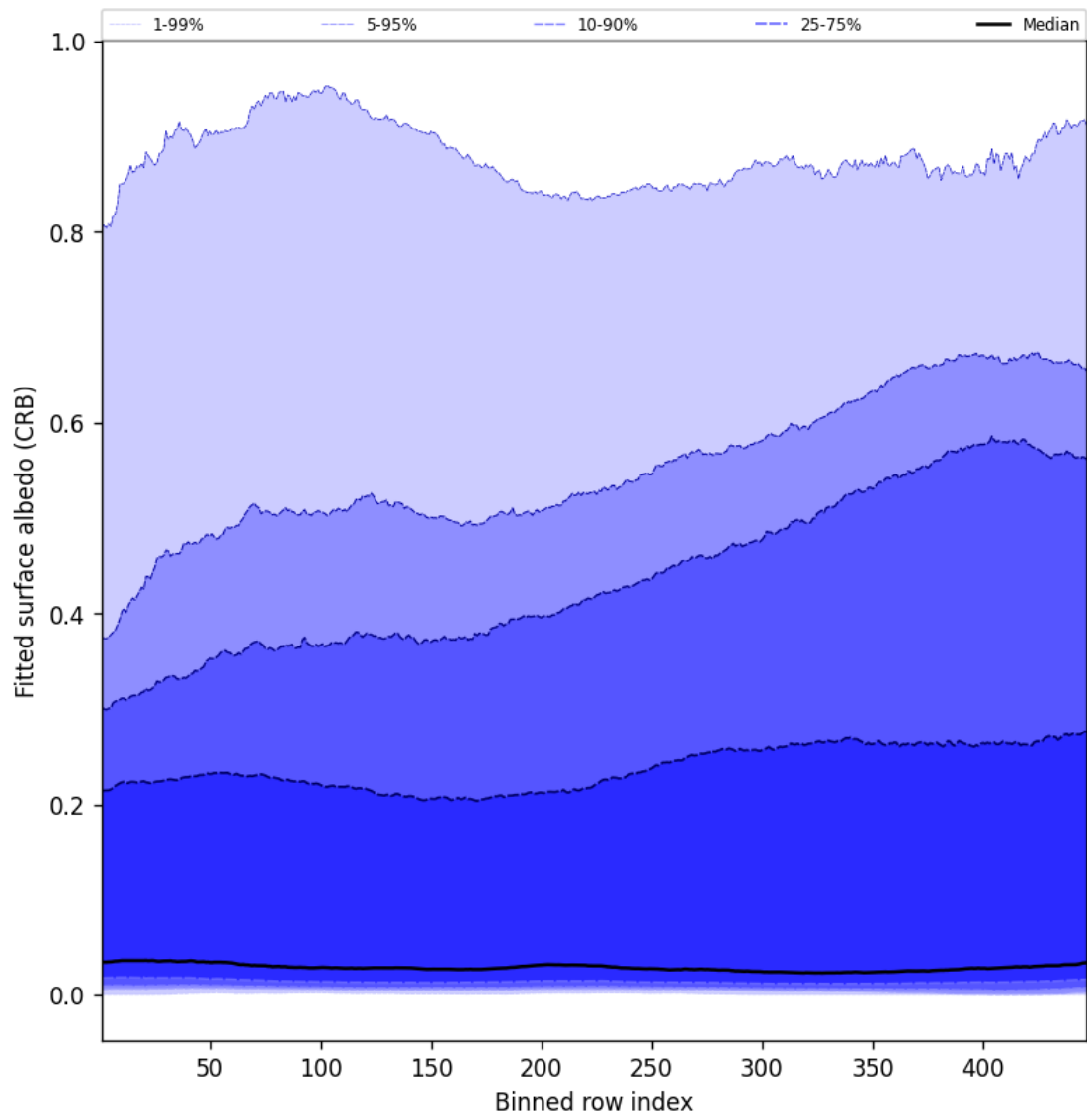


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18

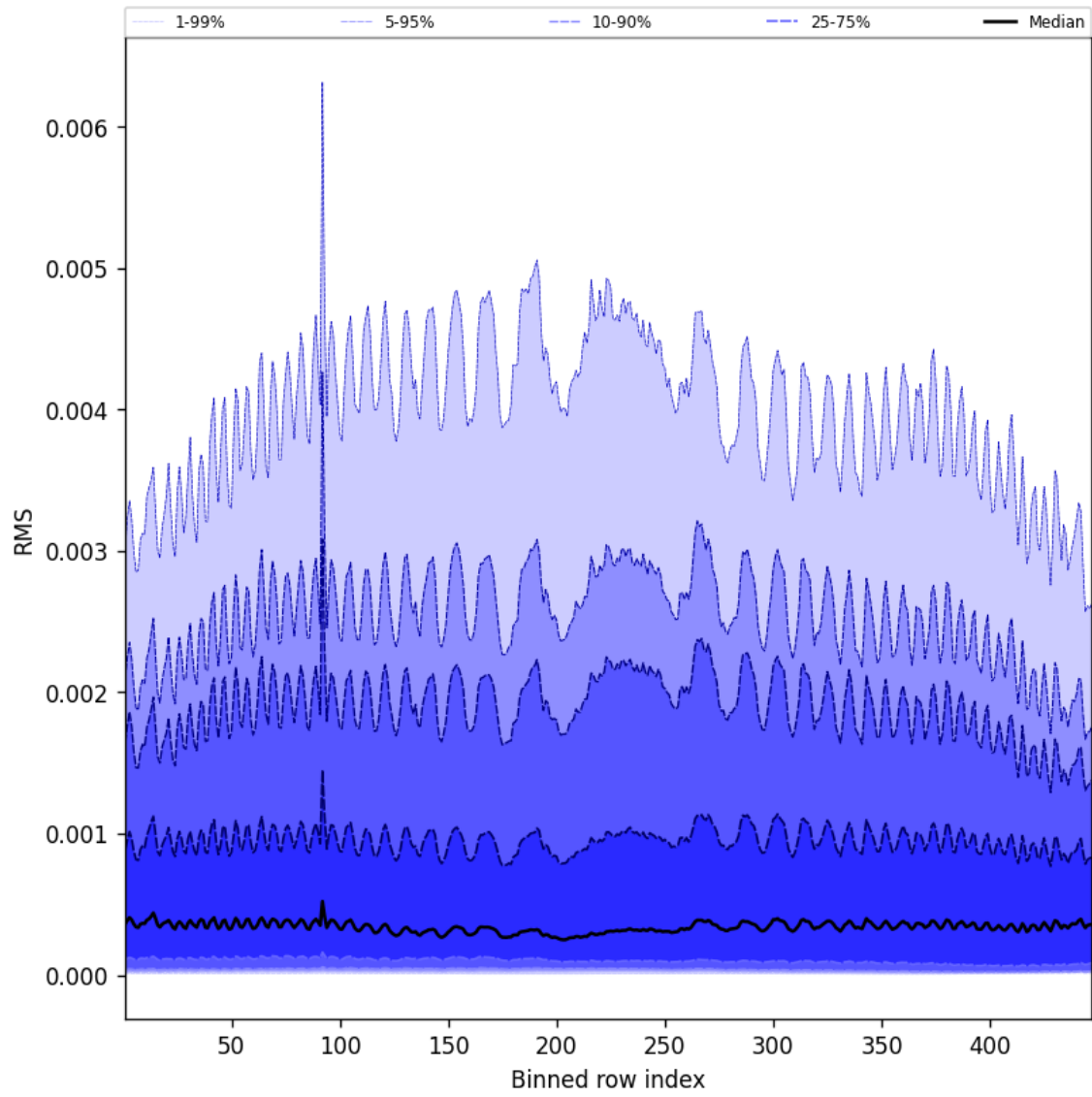


Figure 63: Along track statistics of “RMS” for 2025-07-16 to 2025-07-18

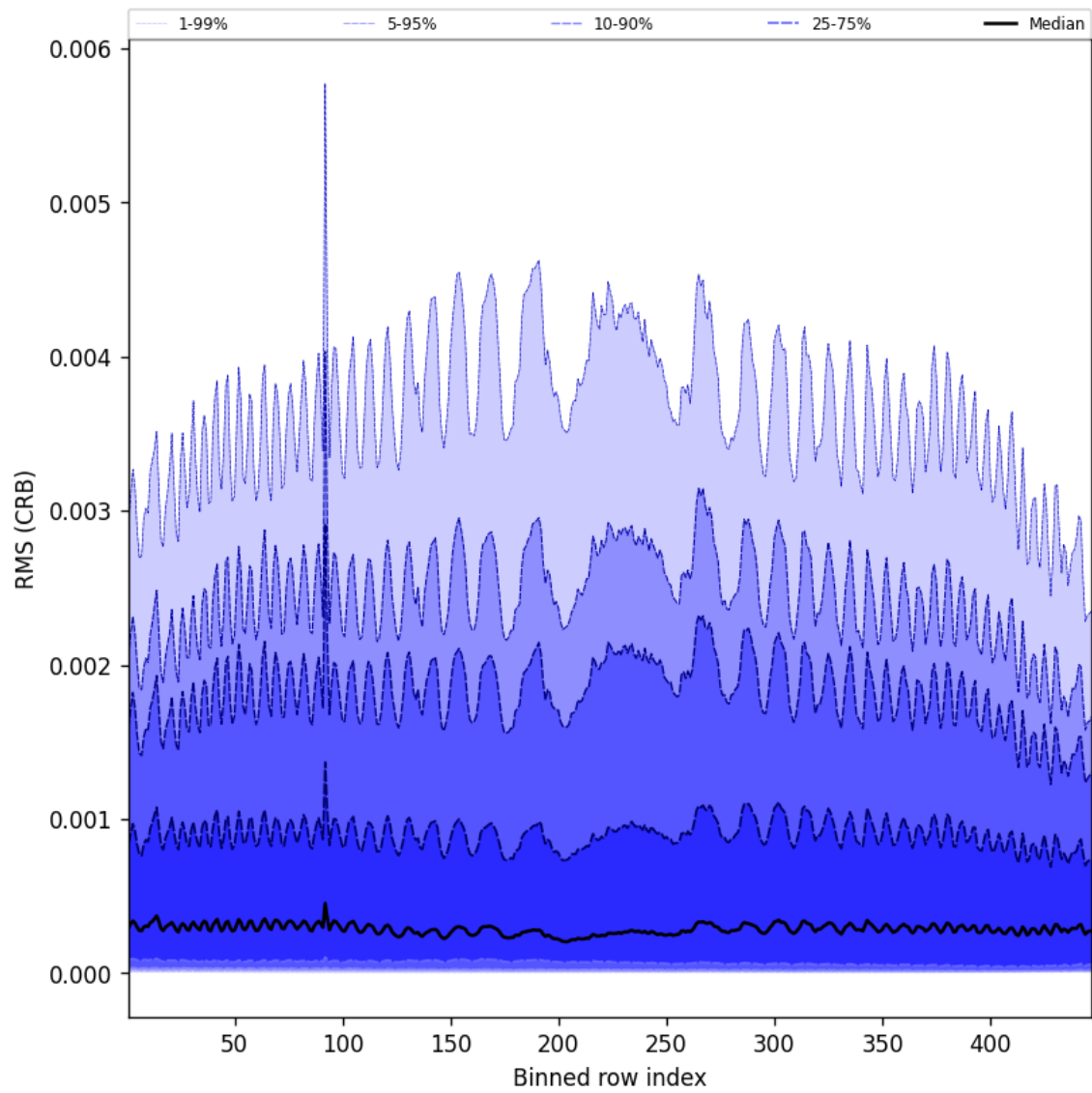


Figure 64: Along track statistics of “RMS (CRB)” for 2025-07-16 to 2025-07-18

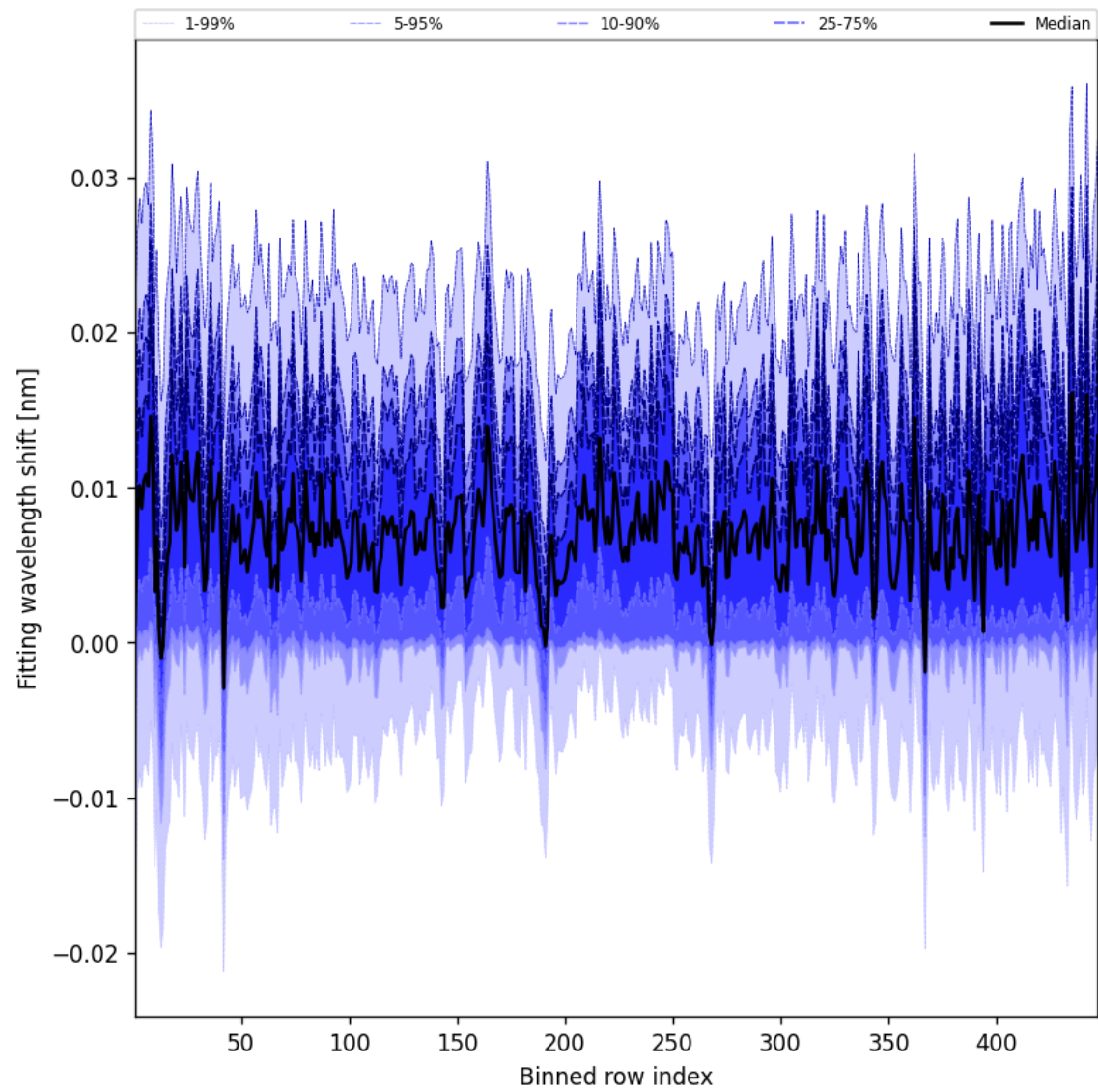


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18

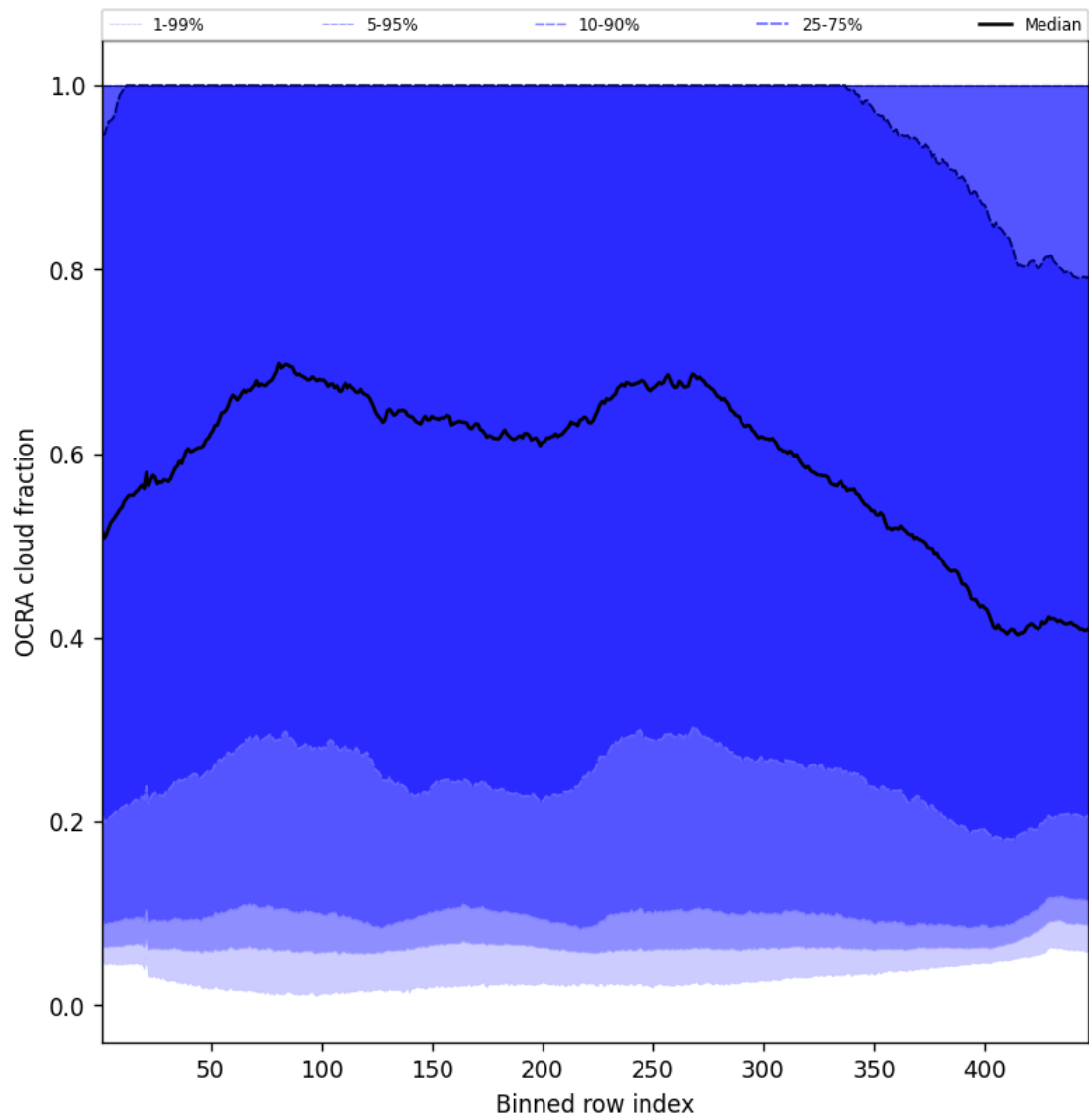


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18

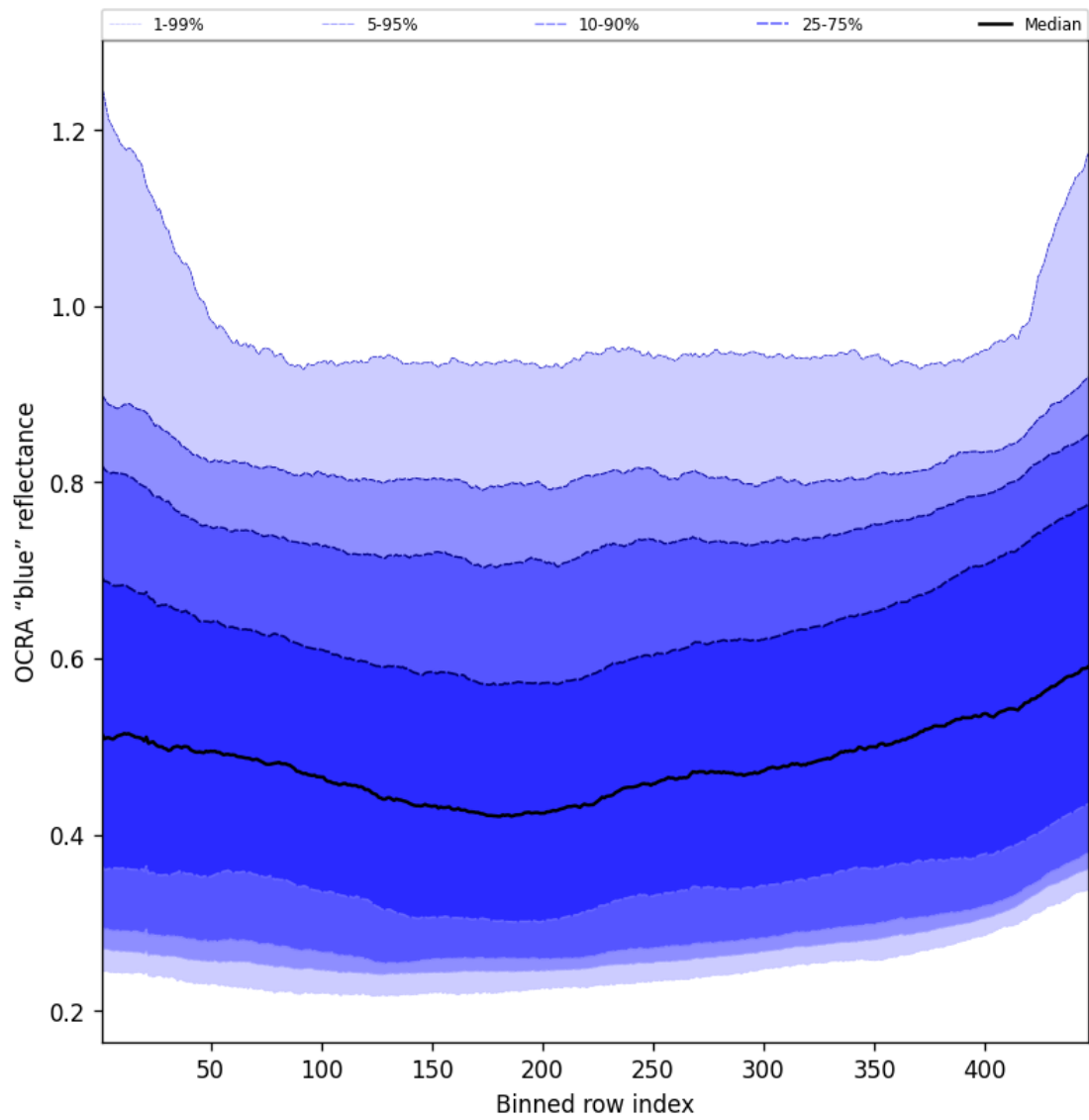


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-07-16 to 2025-07-18

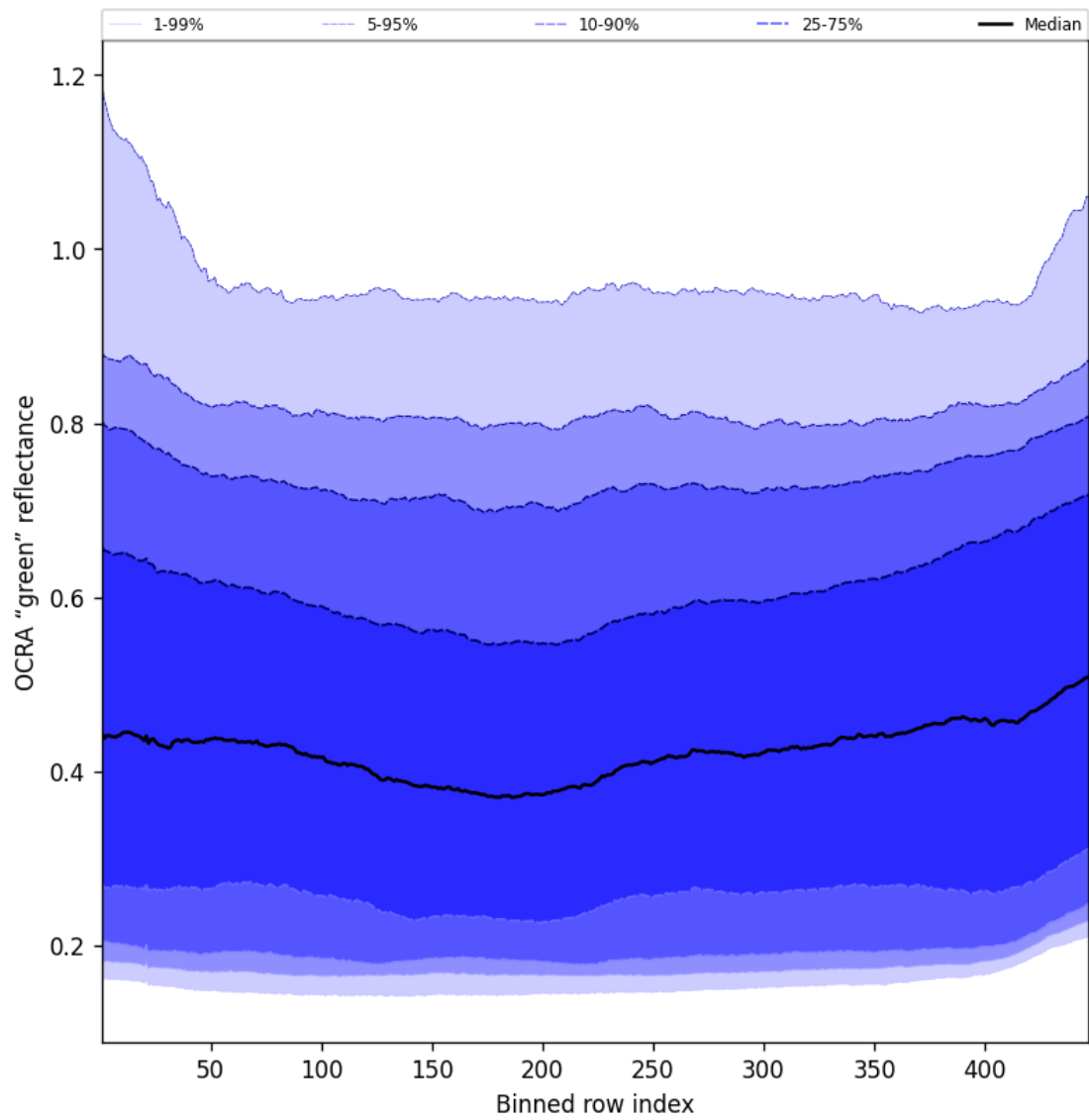


Figure 68: Along track statistics of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18

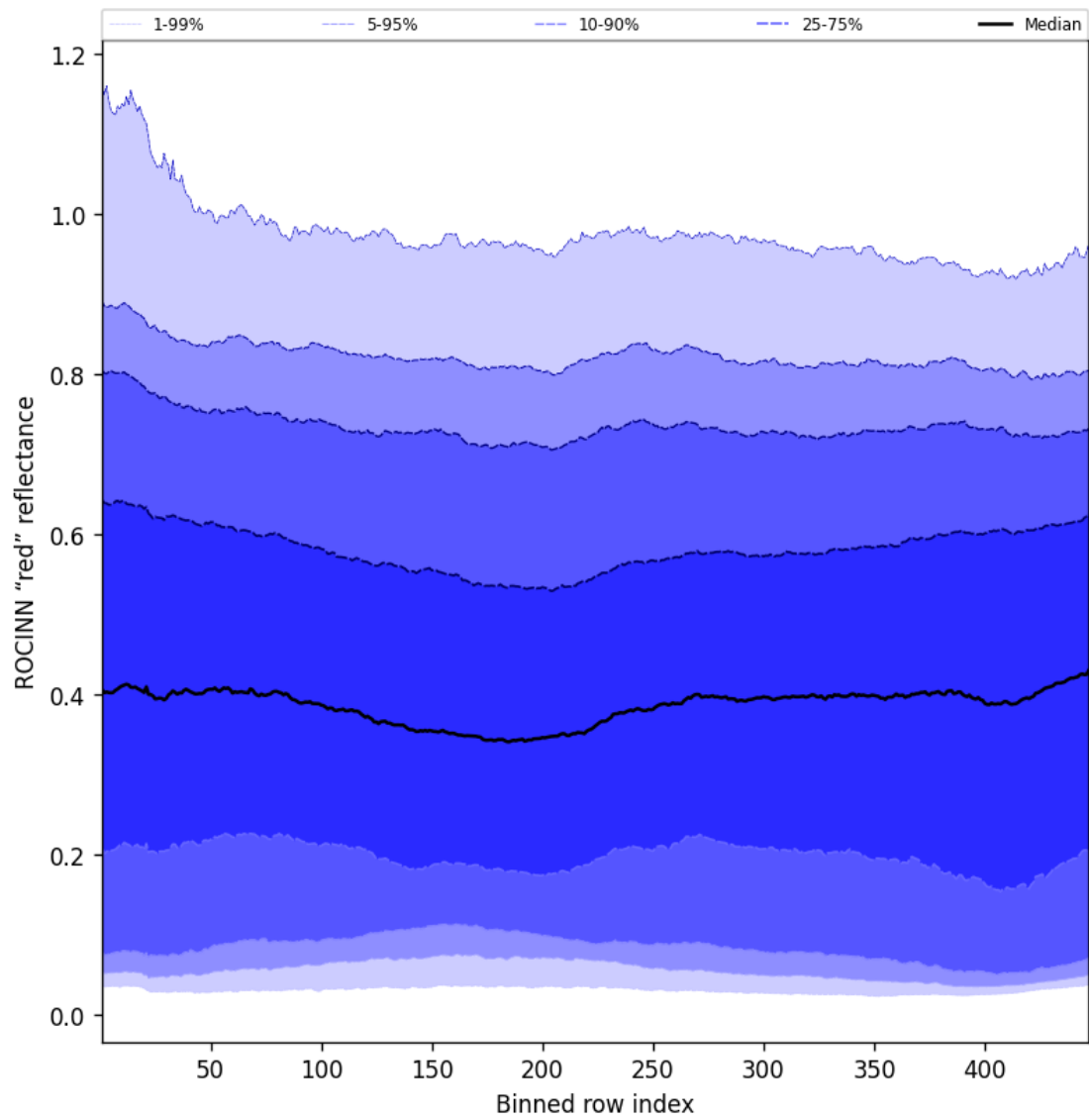


Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2025-07-16 to 2025-07-18

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.

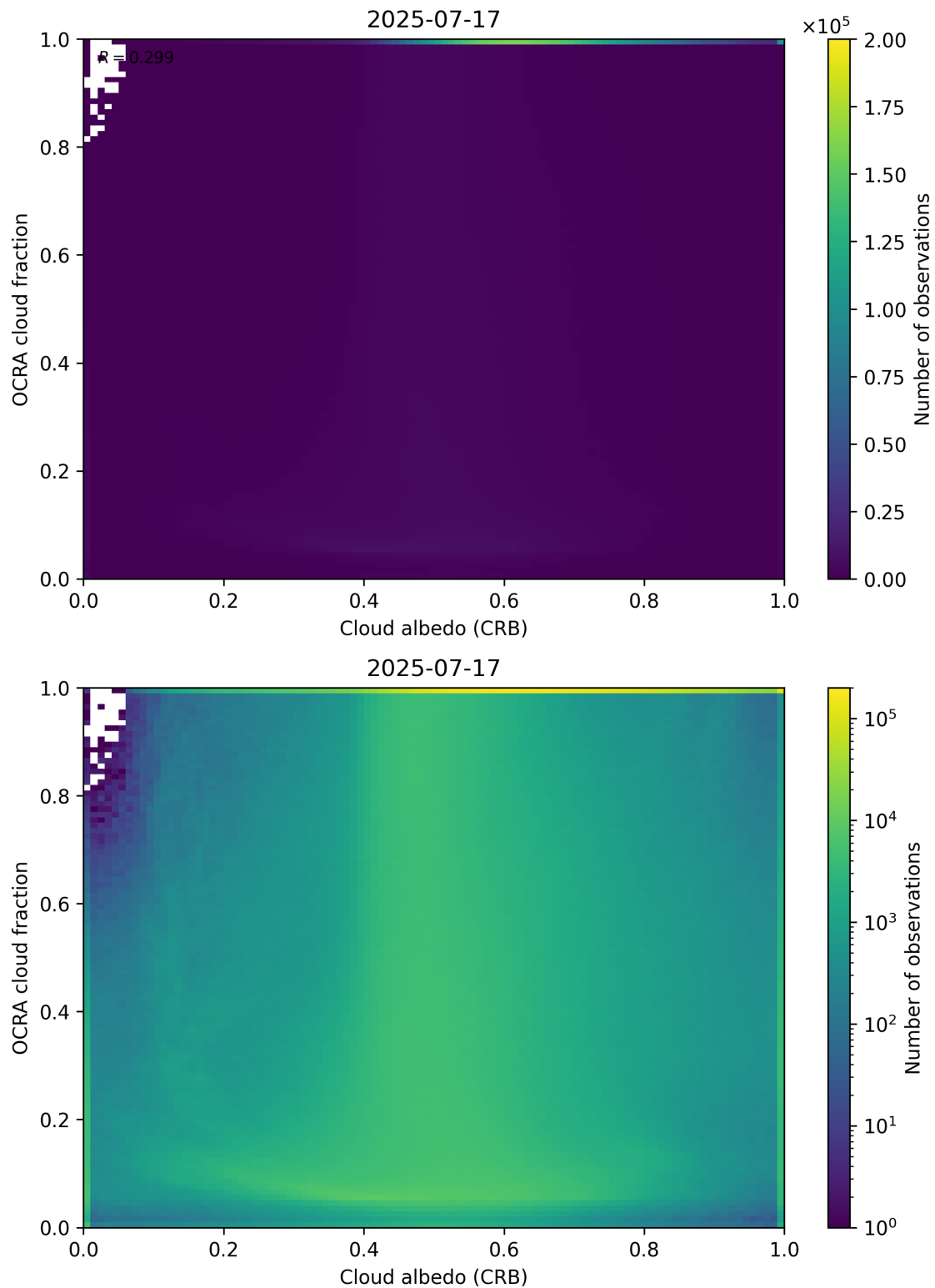


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

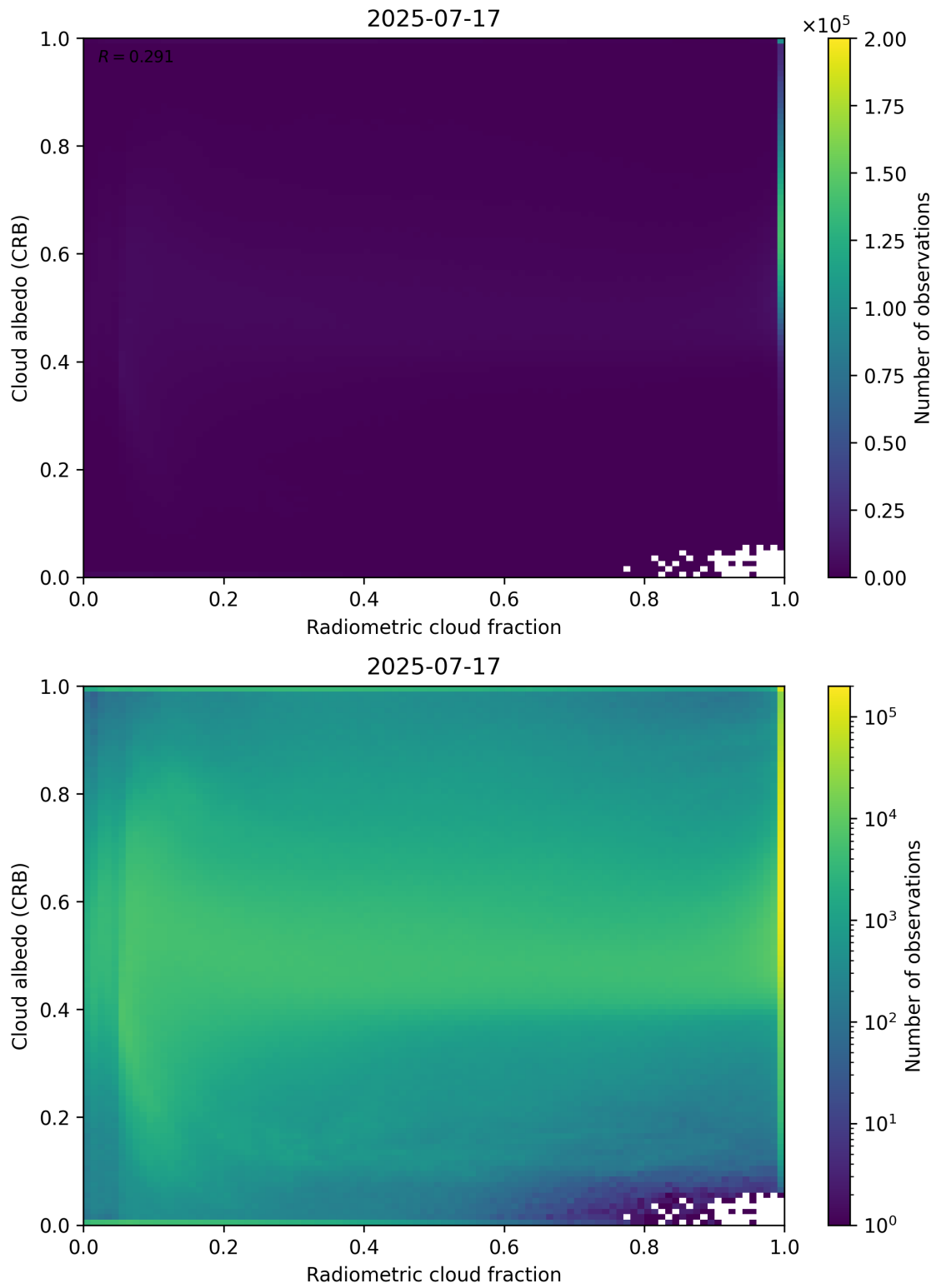


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

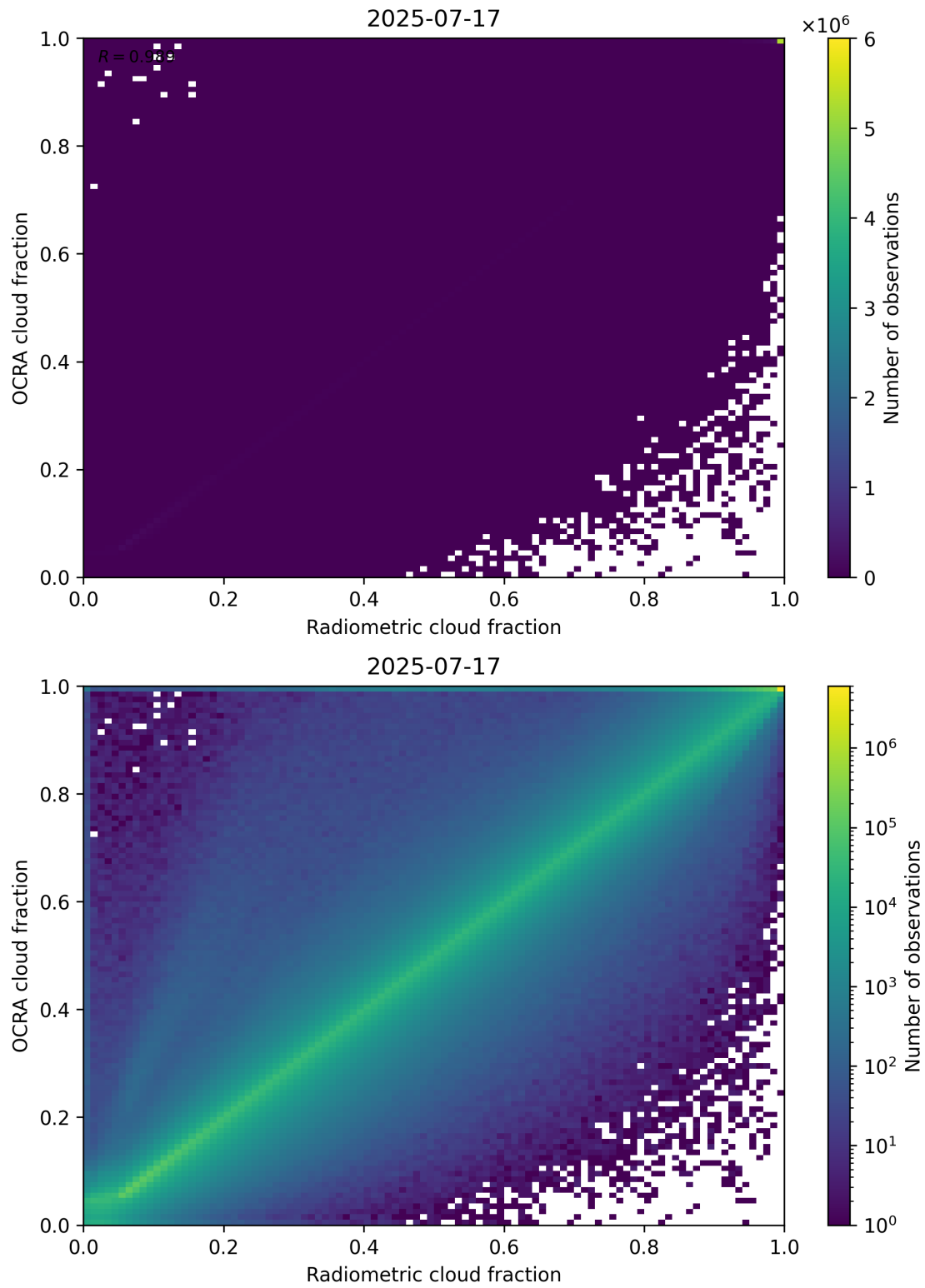


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

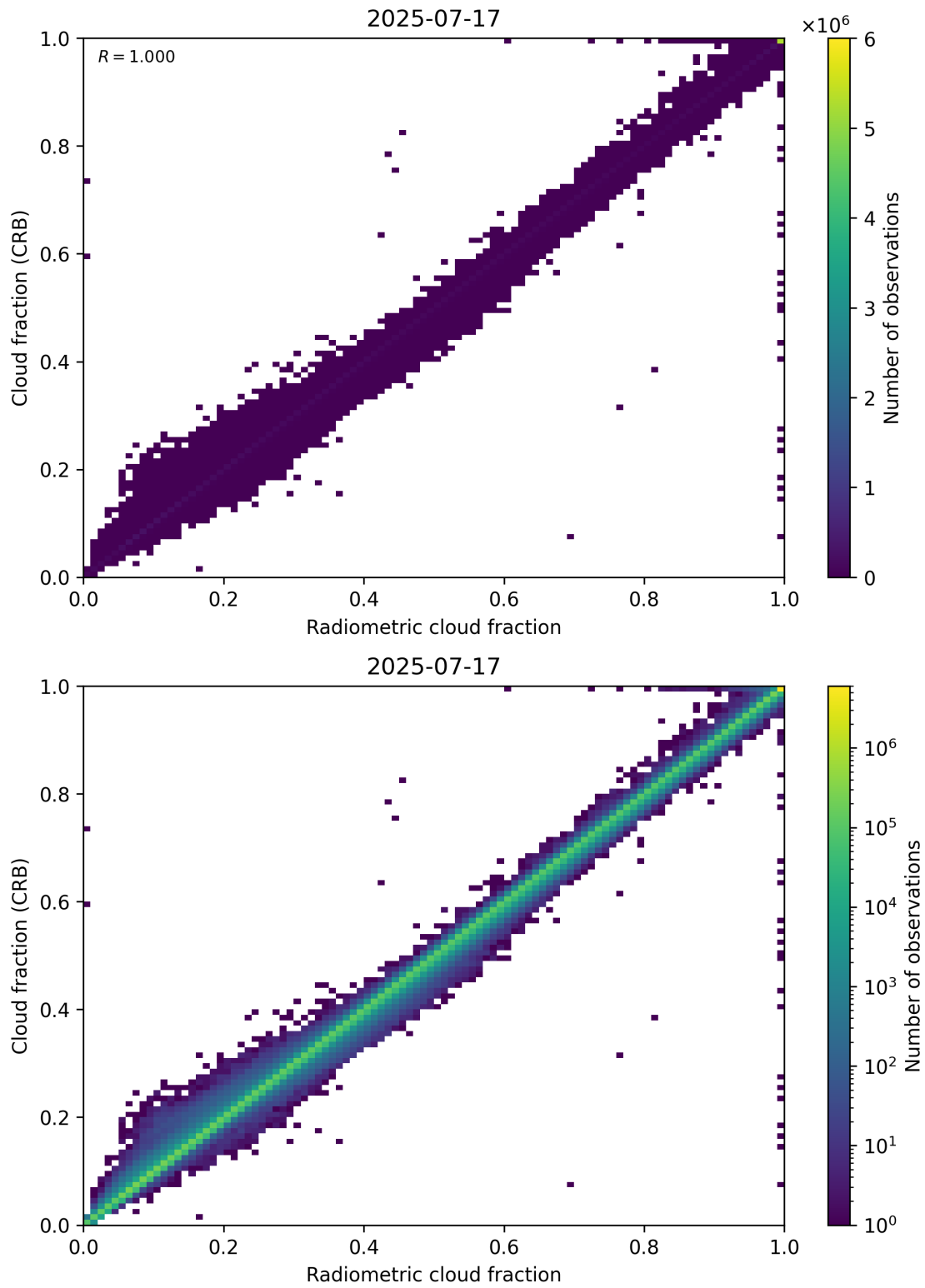


Figure 73: Scatter density plot of “Radiometric cloud fraction” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

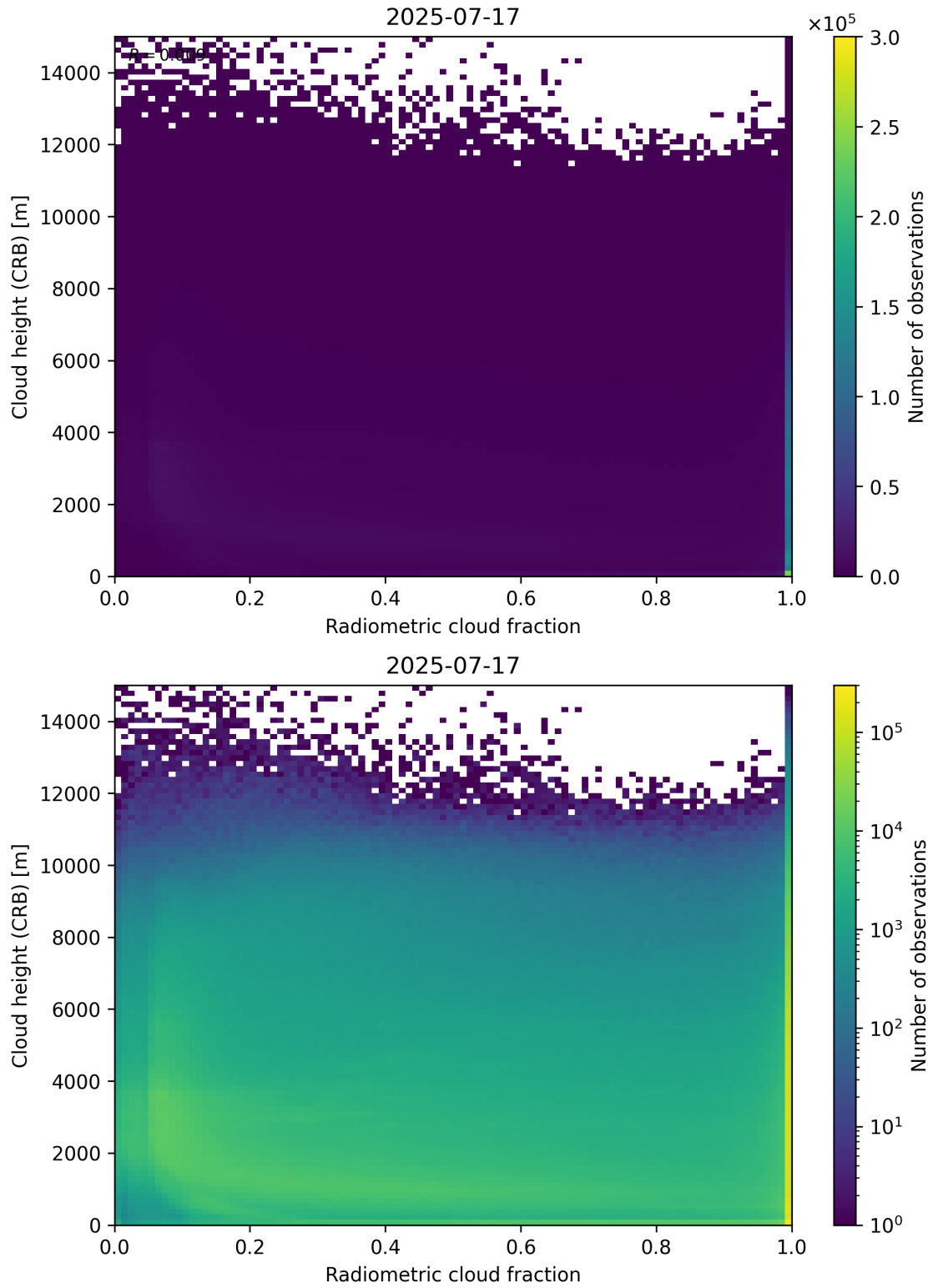


Figure 74: Scatter density plot of “Radiometric cloud fraction” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

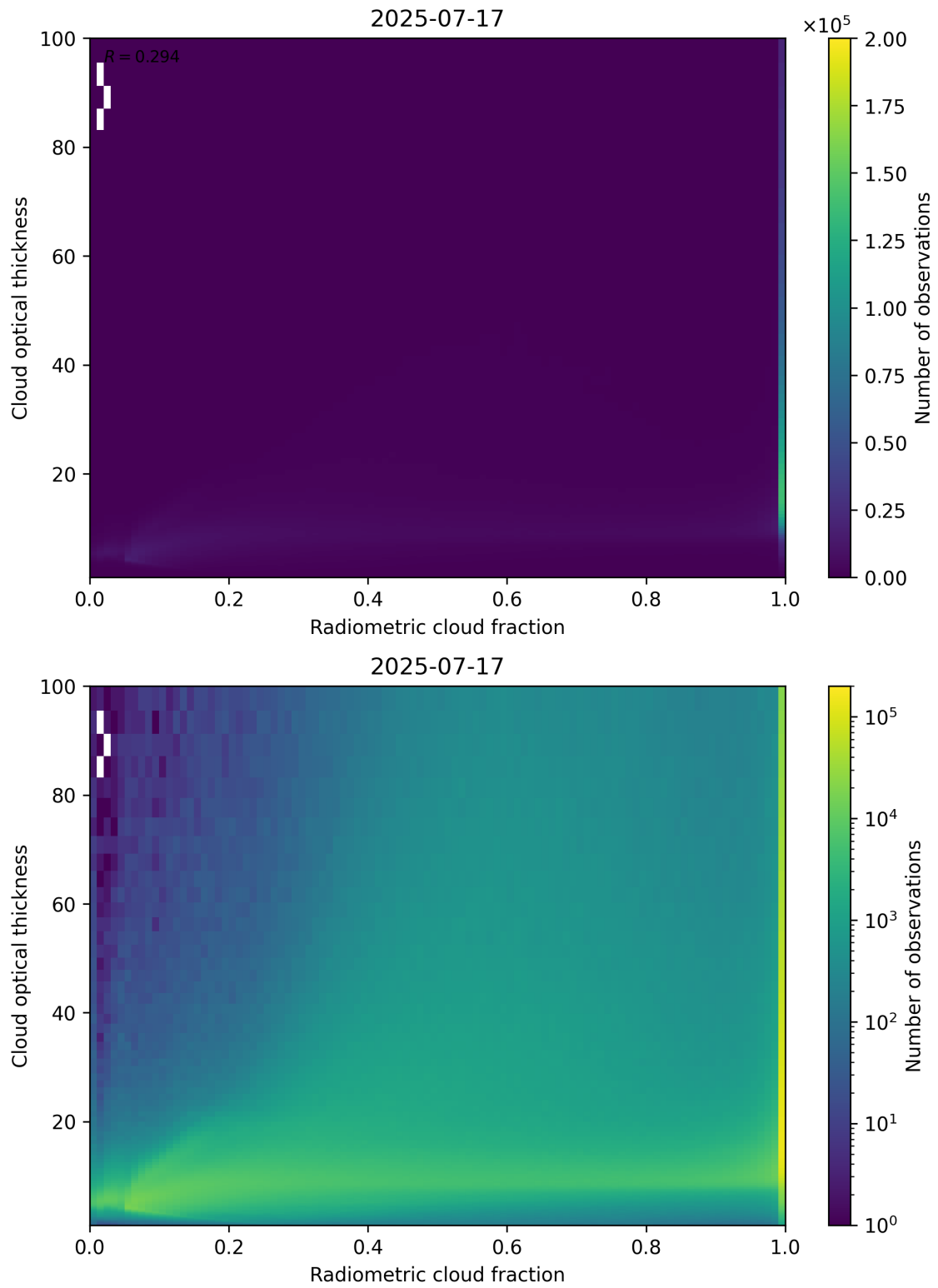


Figure 75: Scatter density plot of “Radiometric cloud fraction” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.

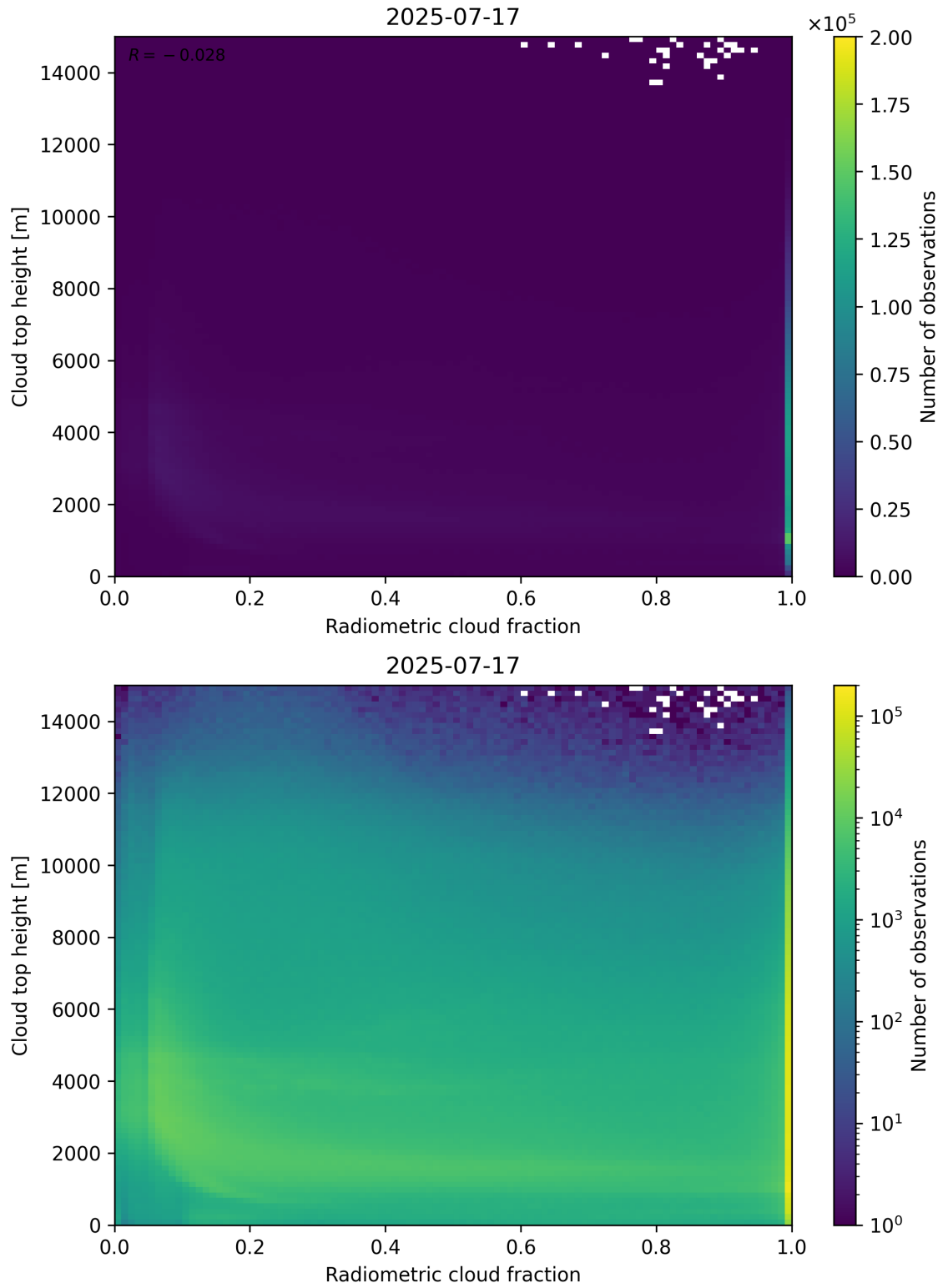


Figure 76: Scatter density plot of “Radiometric cloud fraction” against “Cloud top height” for 2025-07-16 to 2025-07-18.

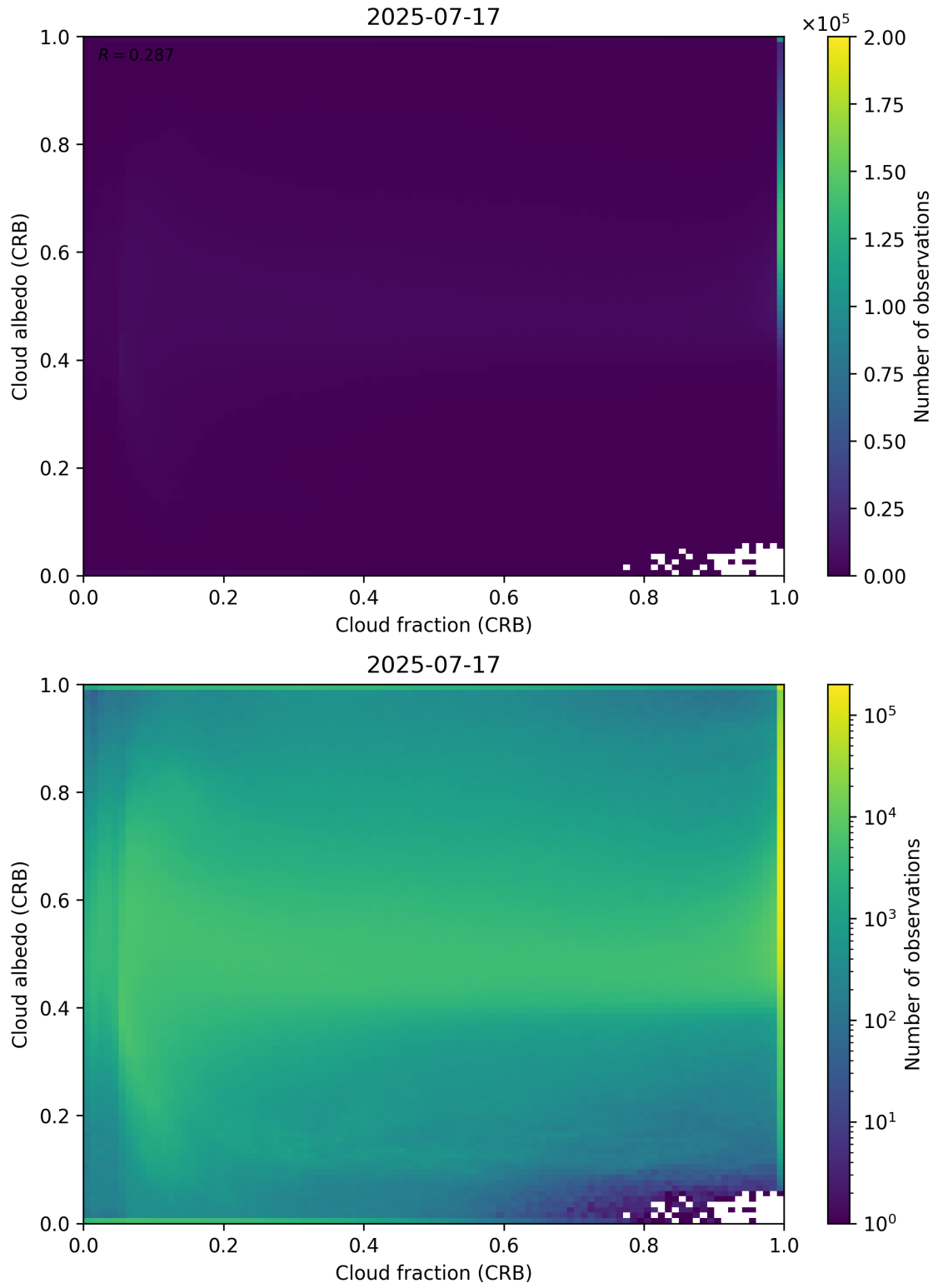


Figure 77: Scatter density plot of “Cloud fraction (CRB)” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

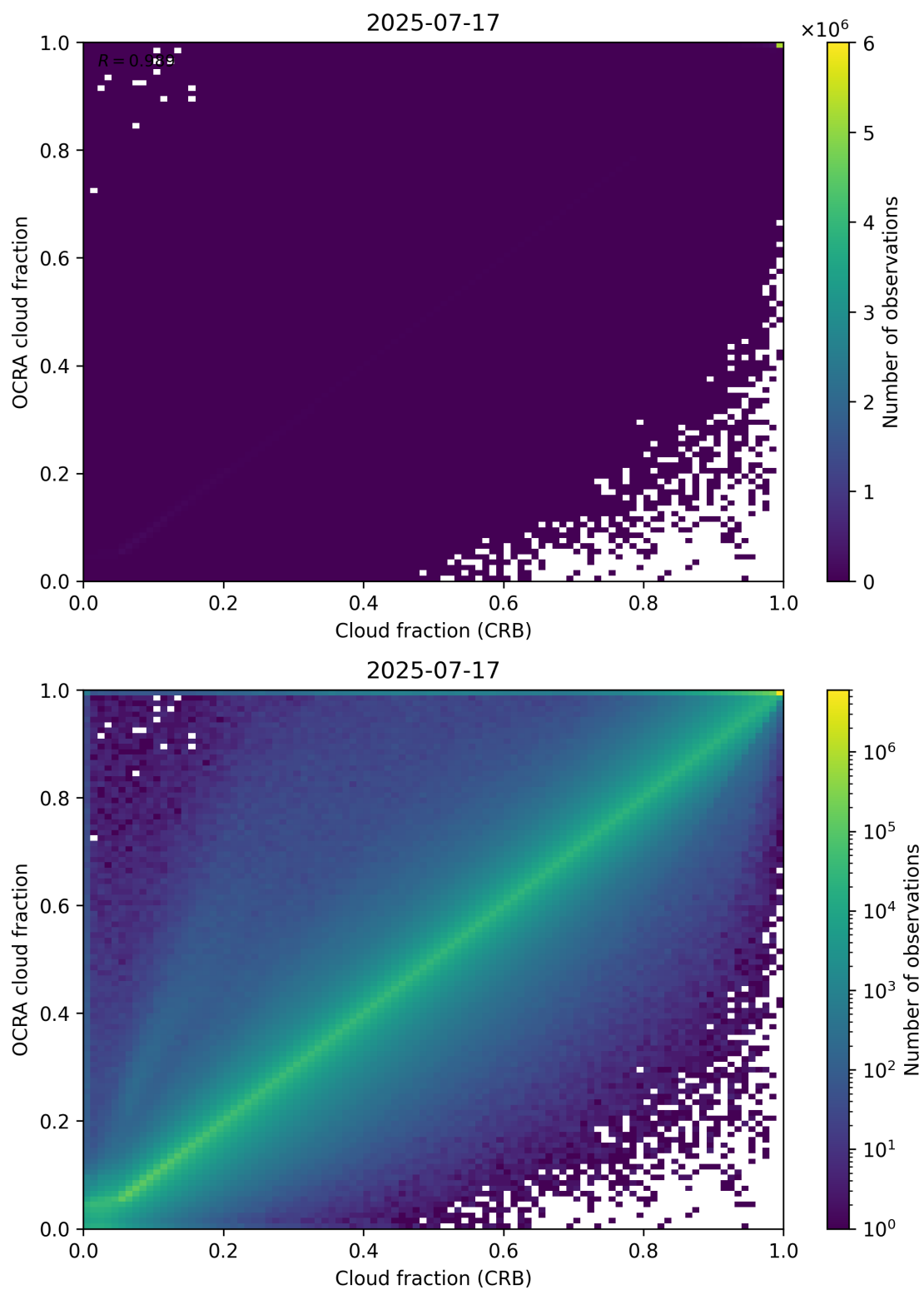


Figure 78: Scatter density plot of “Cloud fraction (CRB)” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

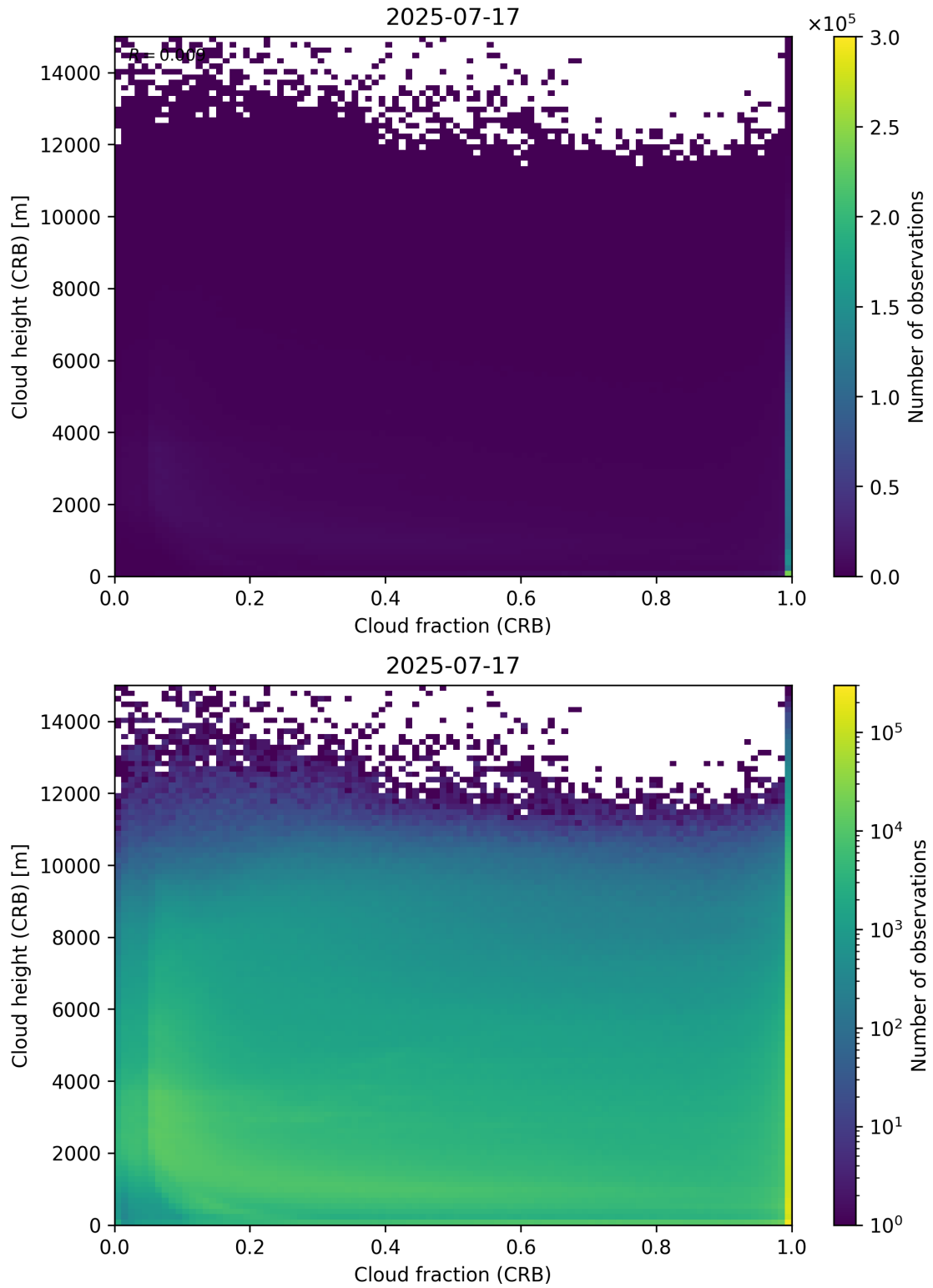


Figure 79: Scatter density plot of “Cloud fraction (CRB)” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

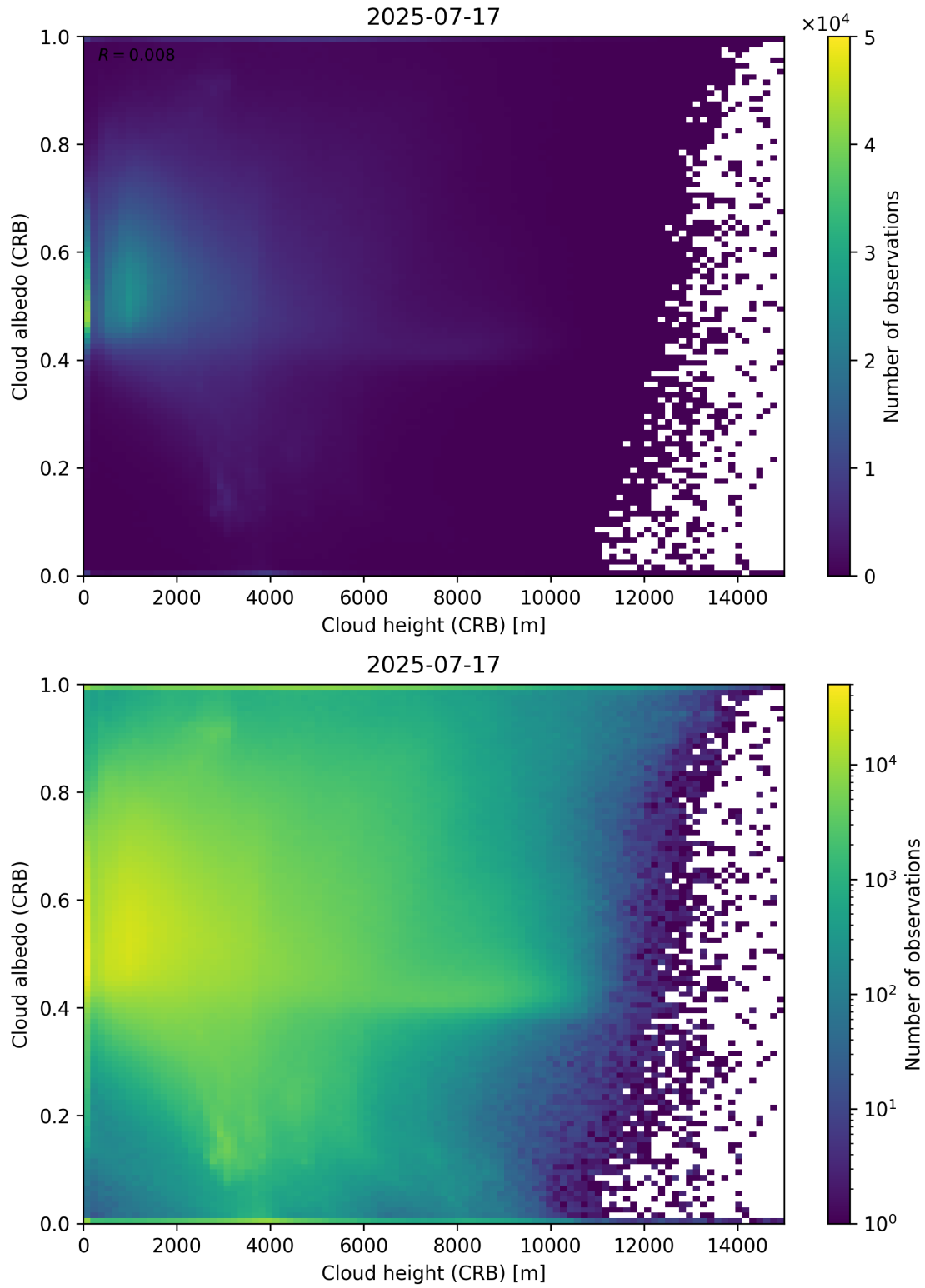


Figure 80: Scatter density plot of “Cloud height (CRB)” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

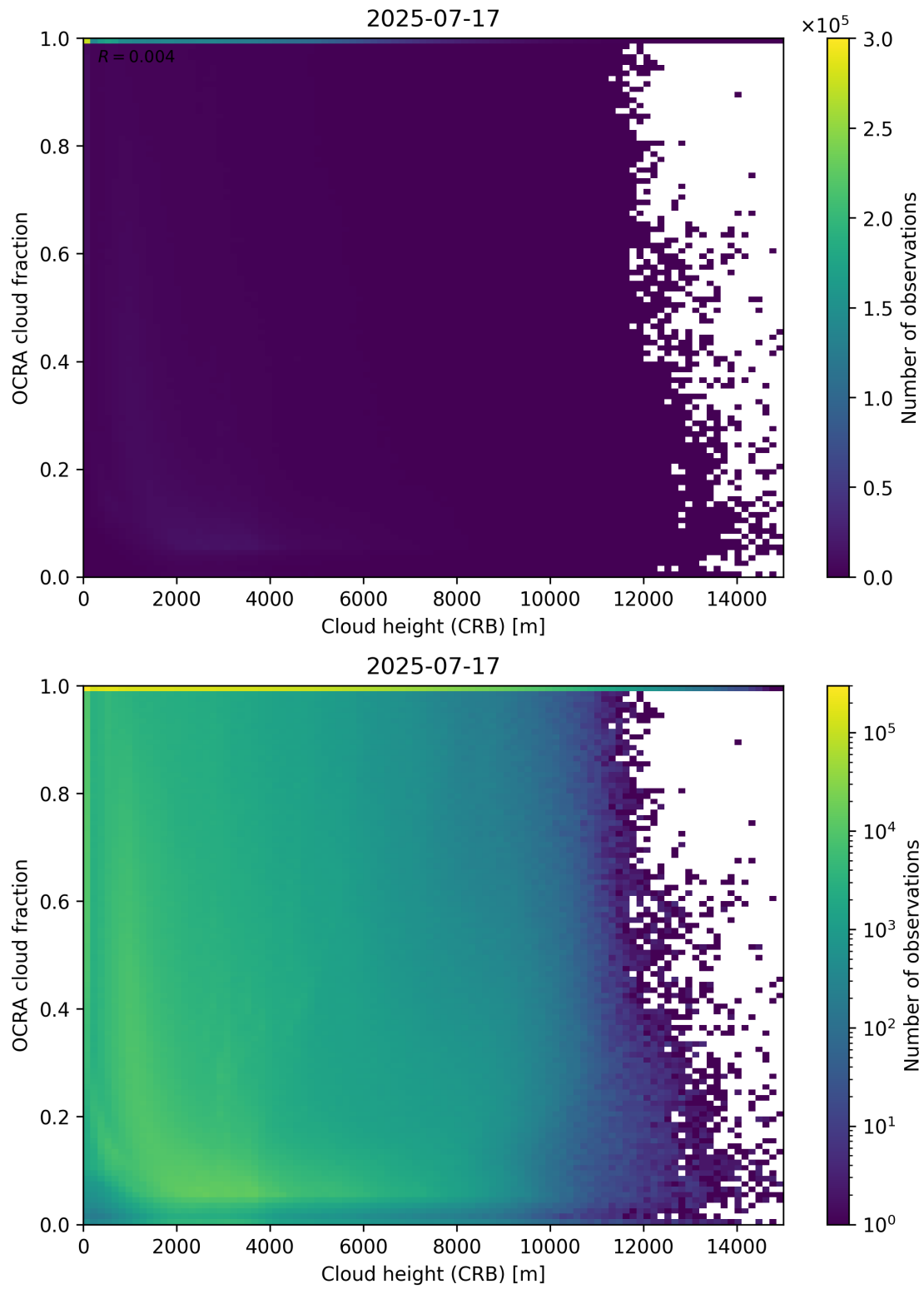


Figure 81: Scatter density plot of “Cloud height (CRB)” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

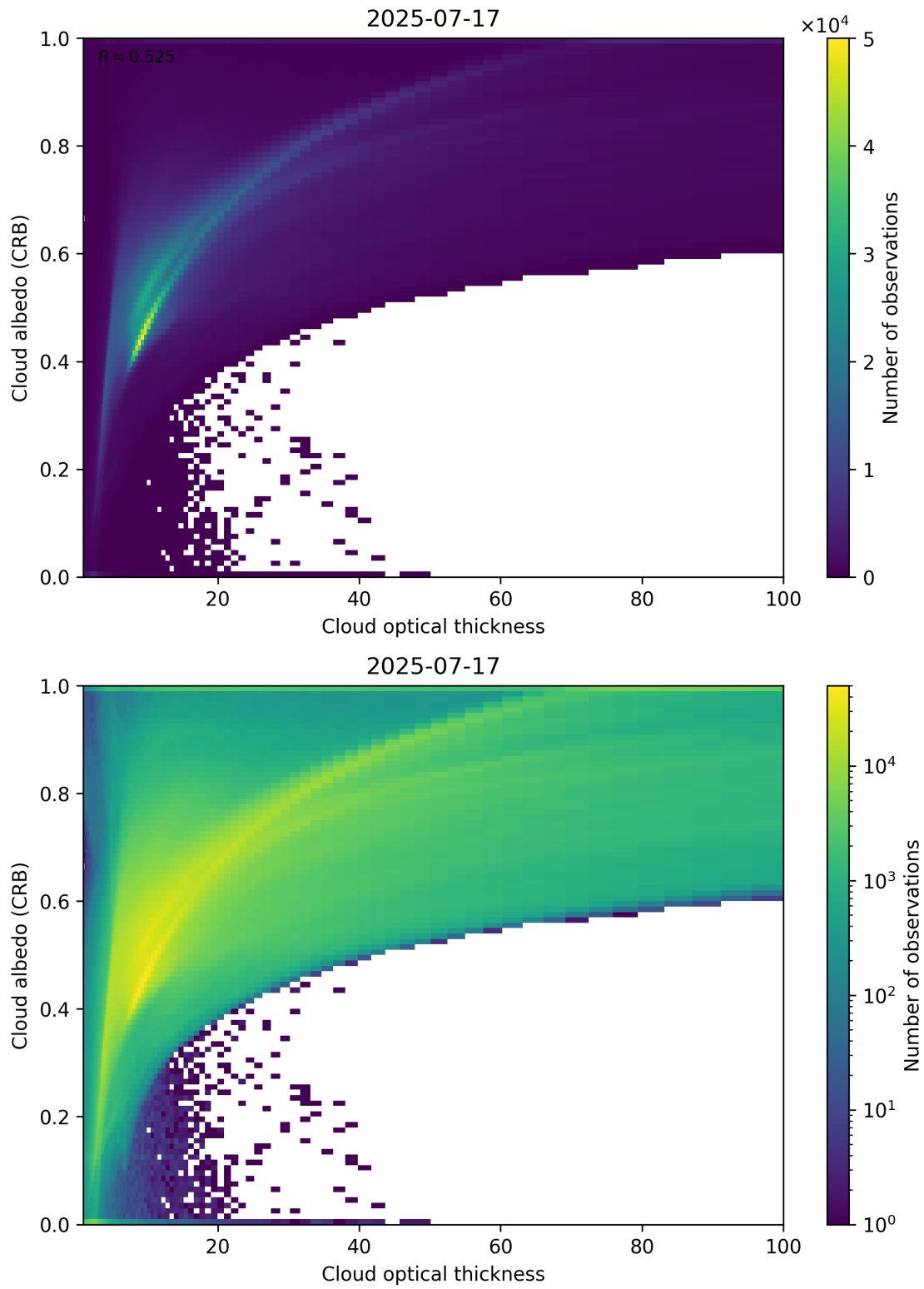


Figure 82: Scatter density plot of “Cloud optical thickness” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

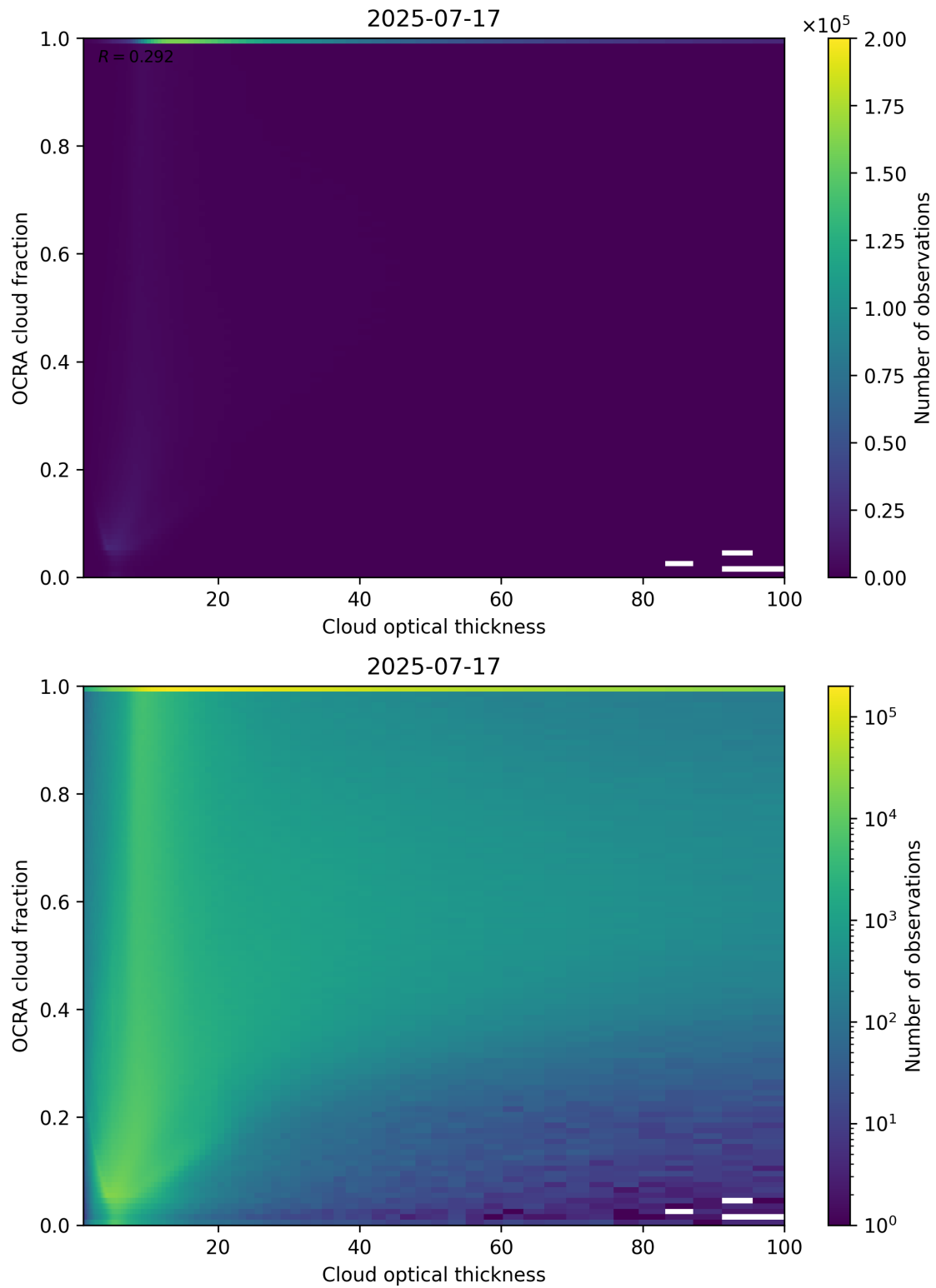


Figure 83: Scatter density plot of “Cloud optical thickness” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

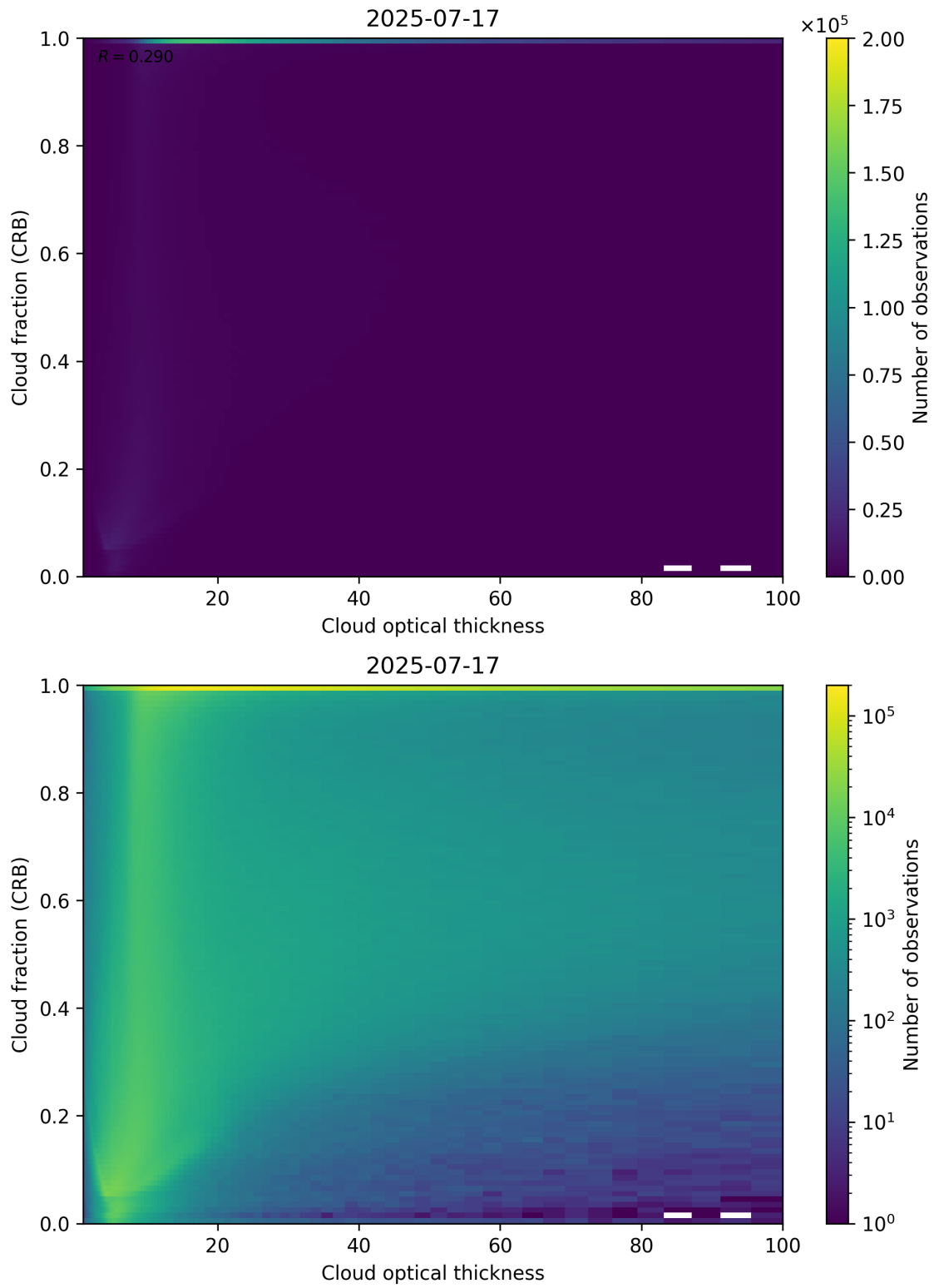


Figure 84: Scatter density plot of “Cloud optical thickness” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

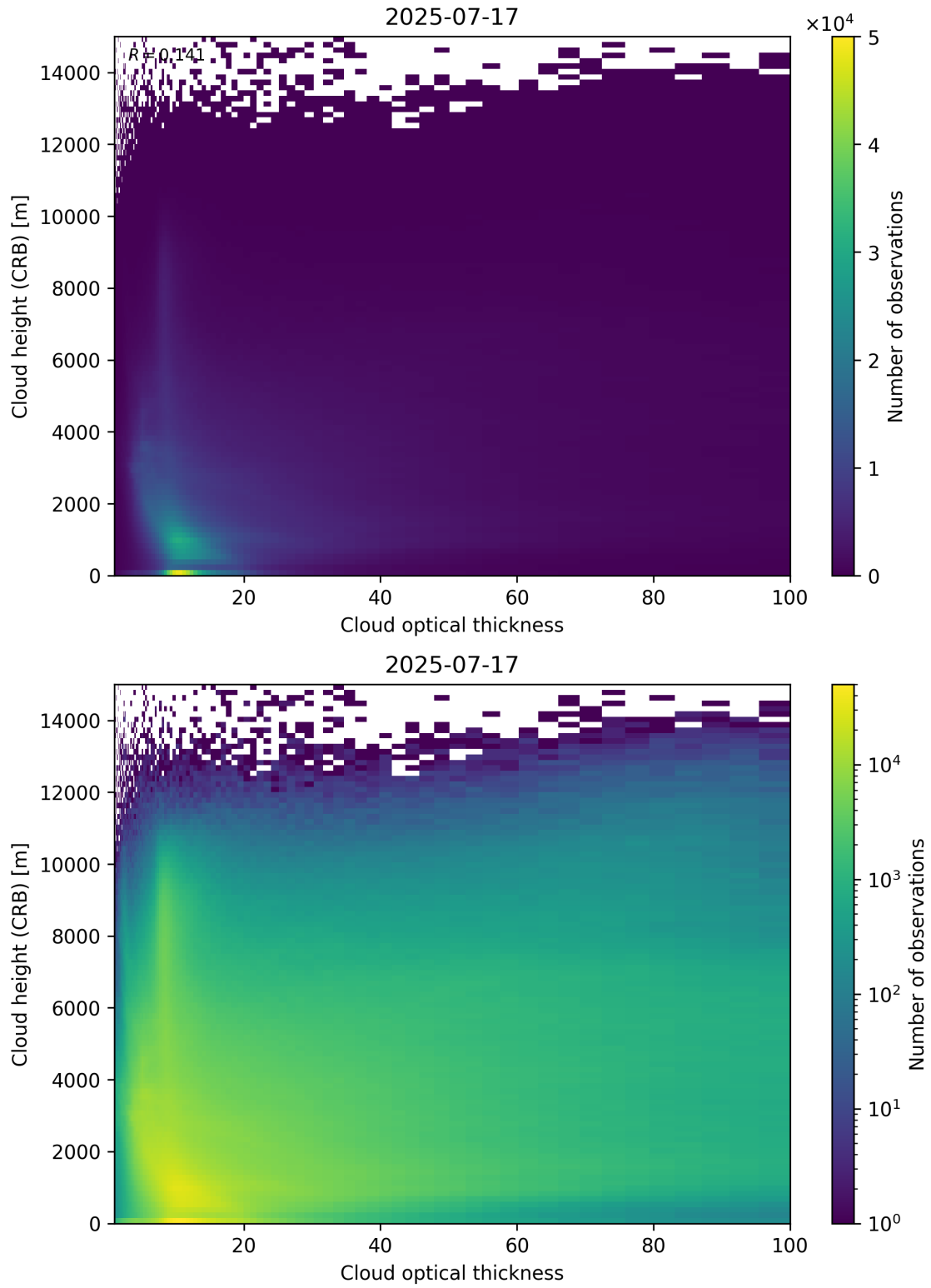


Figure 85: Scatter density plot of “Cloud optical thickness” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

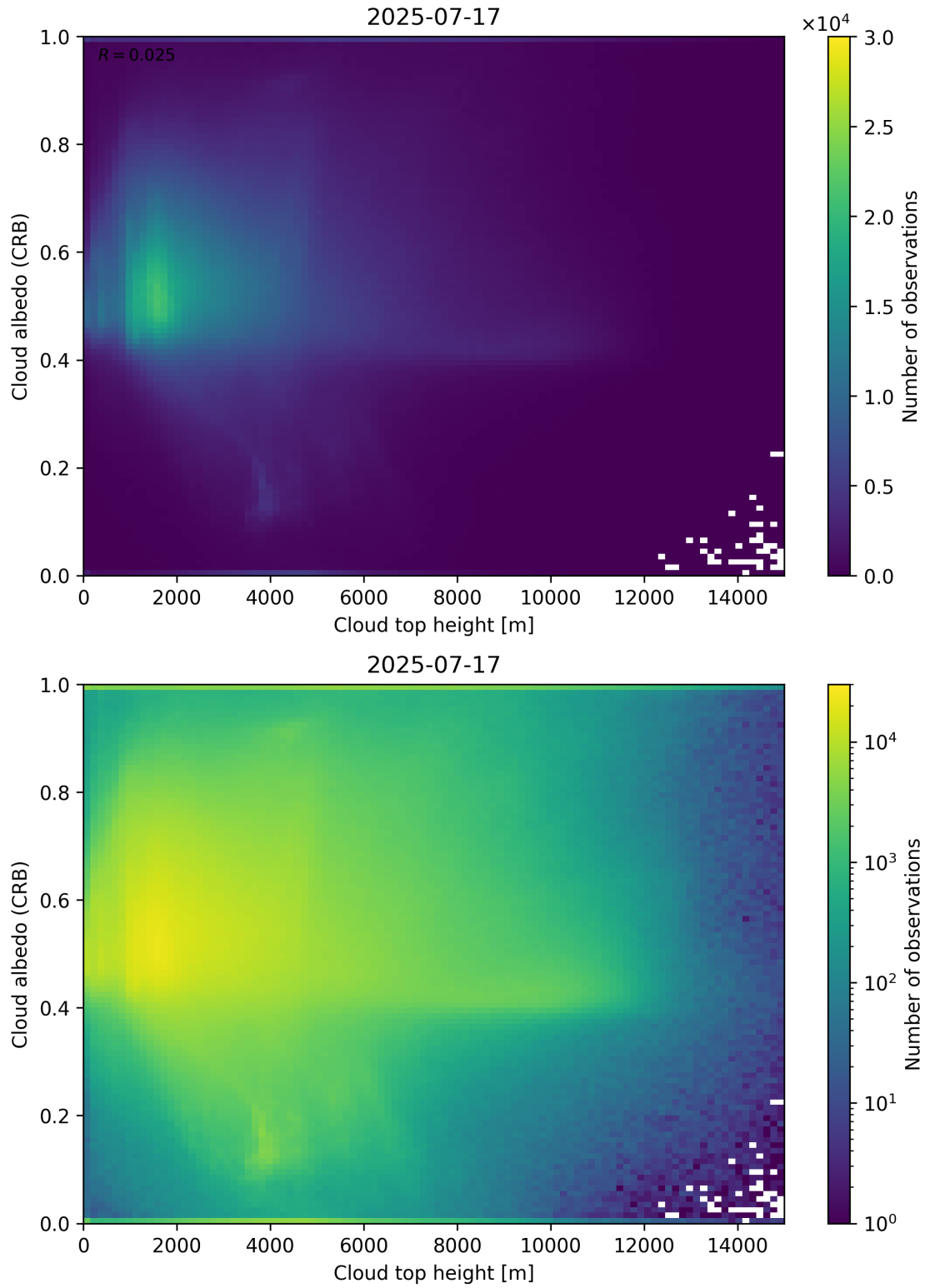


Figure 86: Scatter density plot of “Cloud top height” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

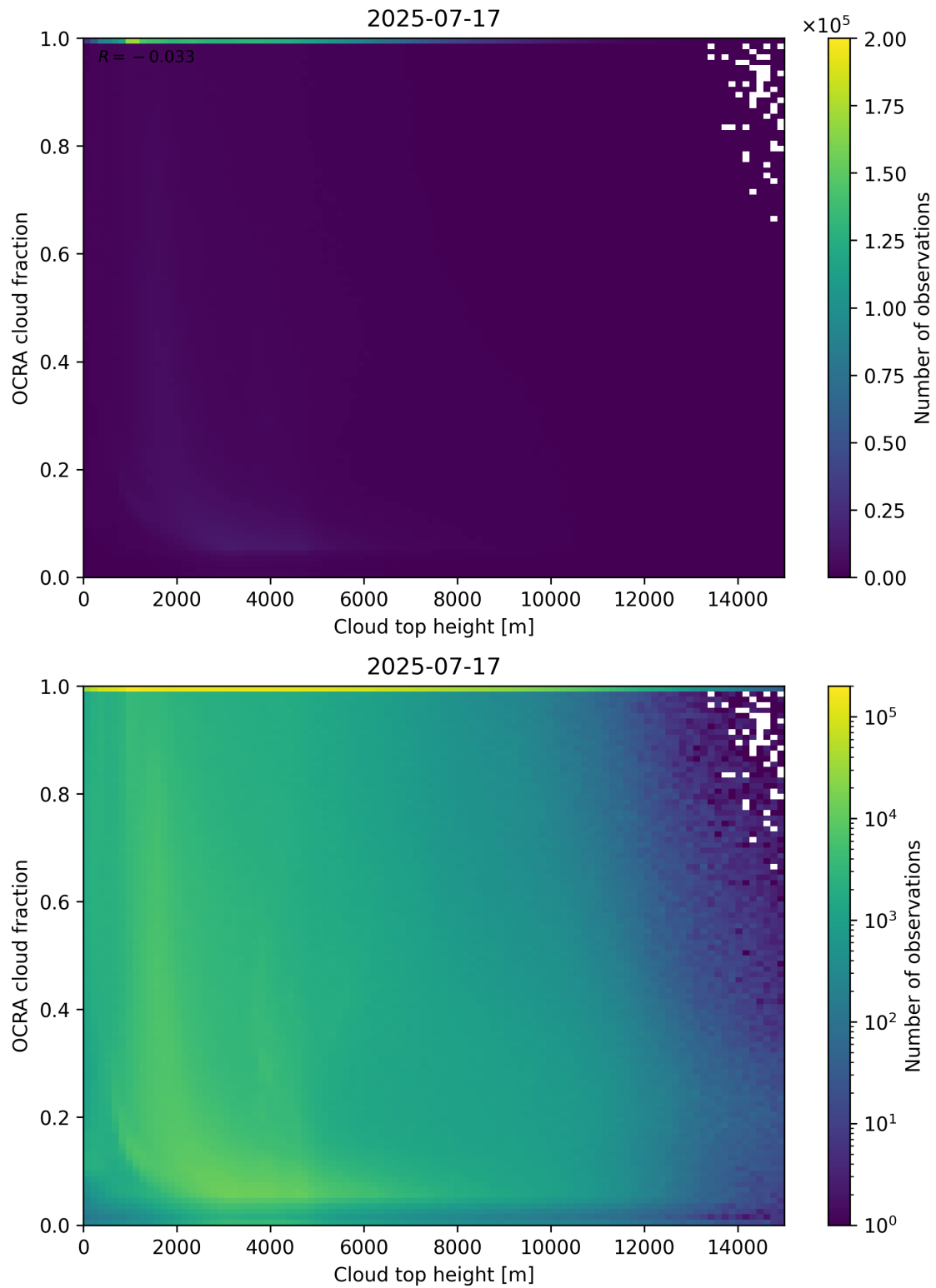


Figure 87: Scatter density plot of “Cloud top height” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

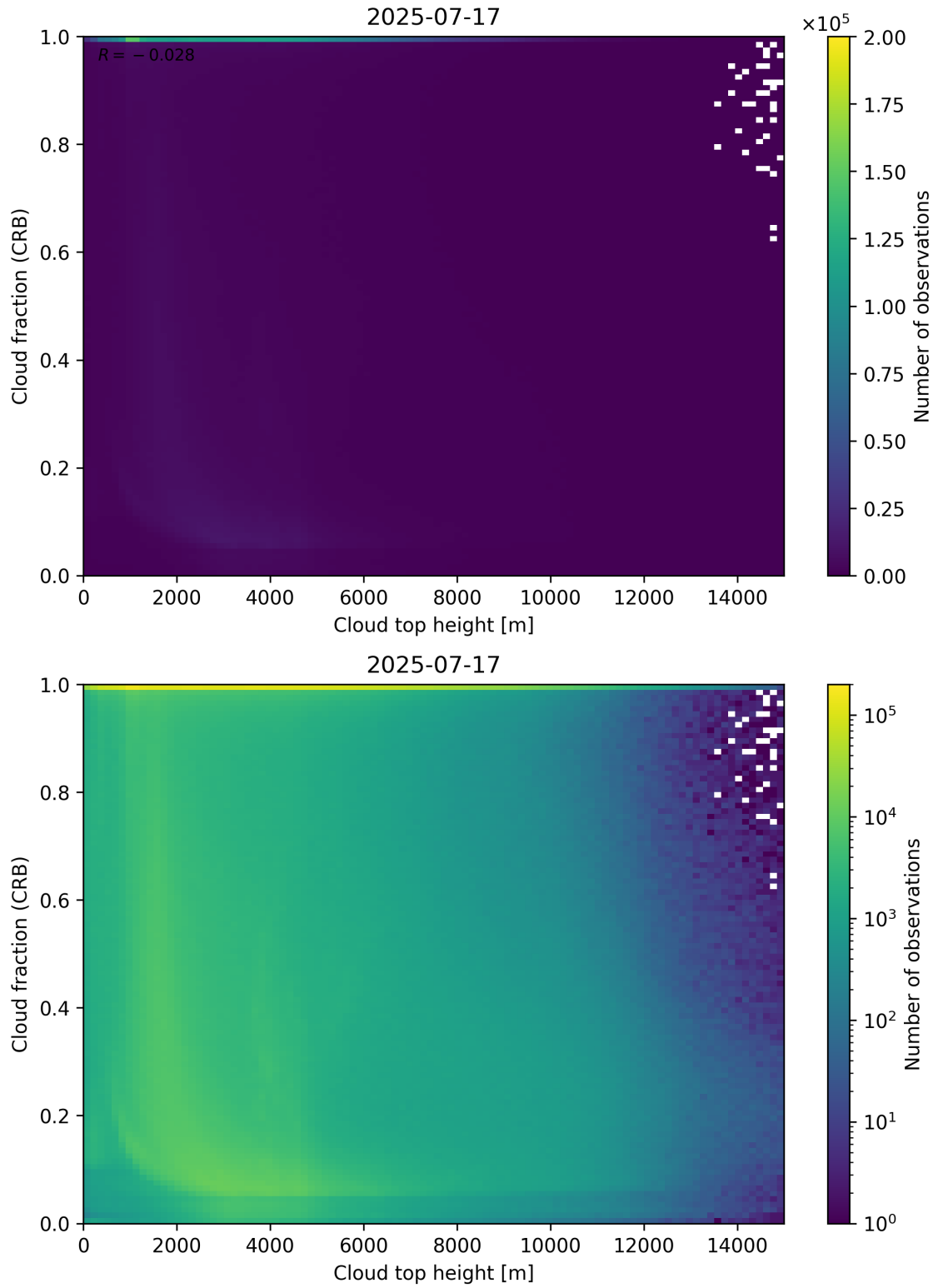


Figure 88: Scatter density plot of “Cloud top height” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

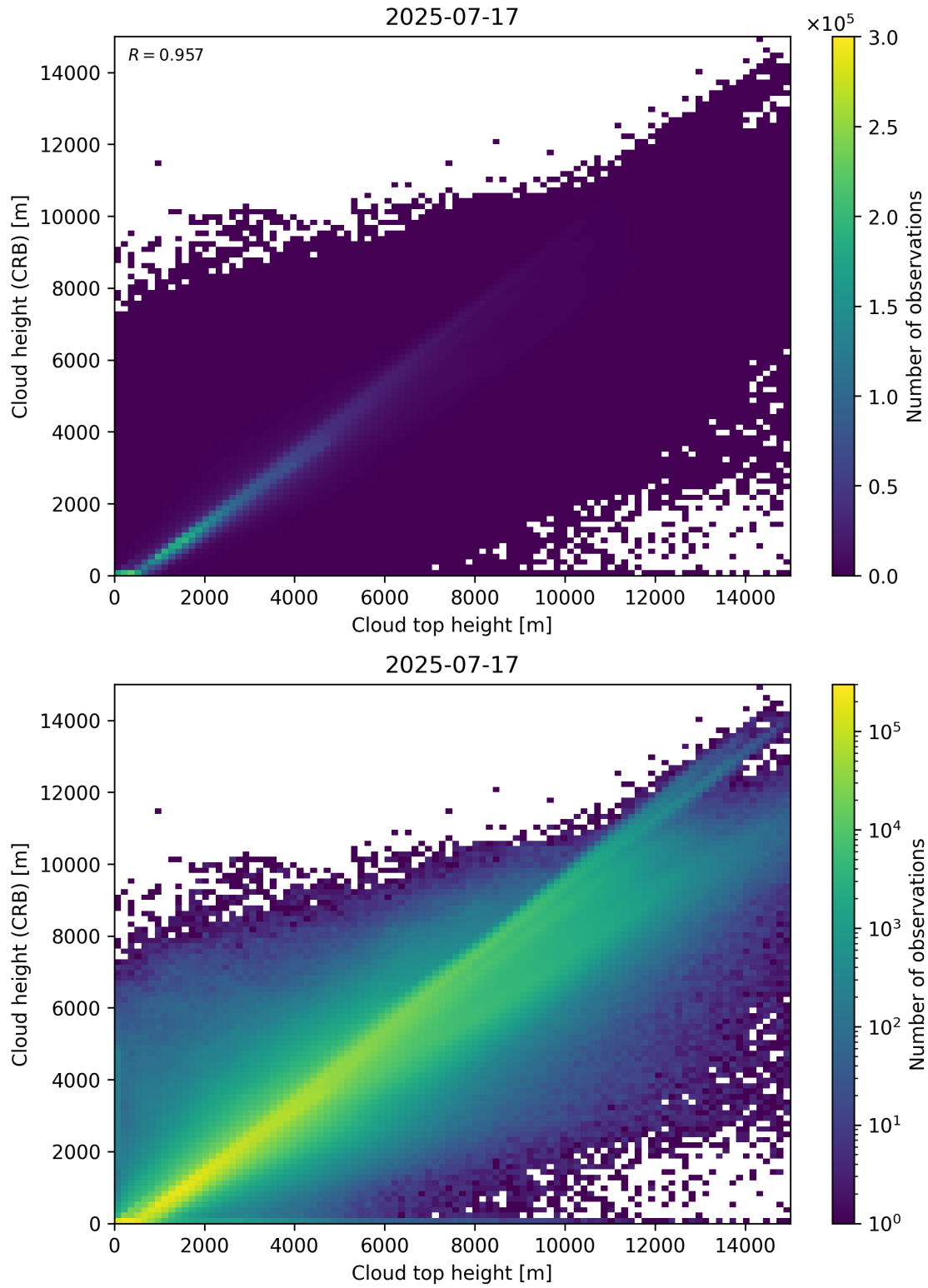


Figure 89: Scatter density plot of “Cloud top height” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

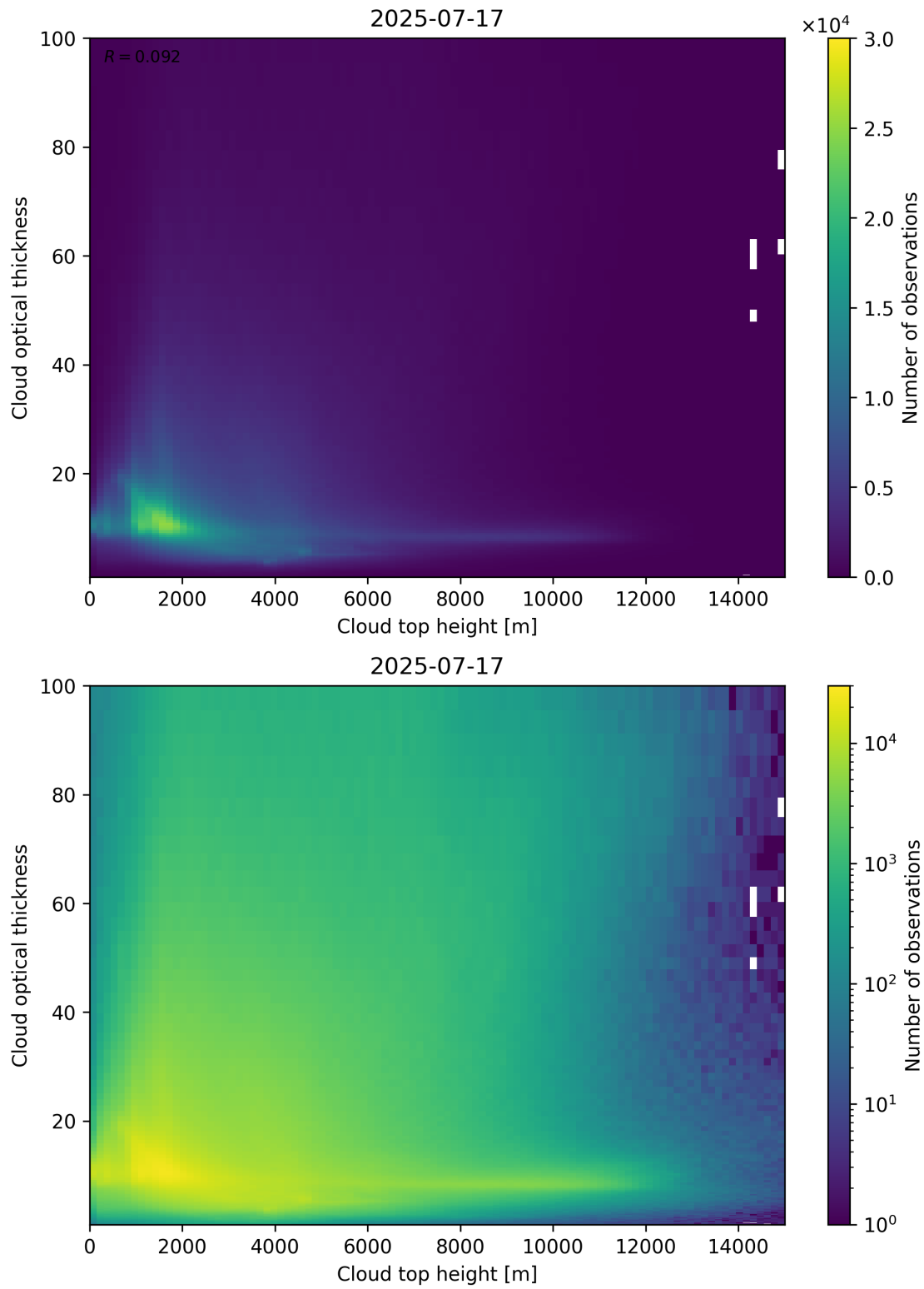


Figure 90: Scatter density plot of “Cloud top height” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.

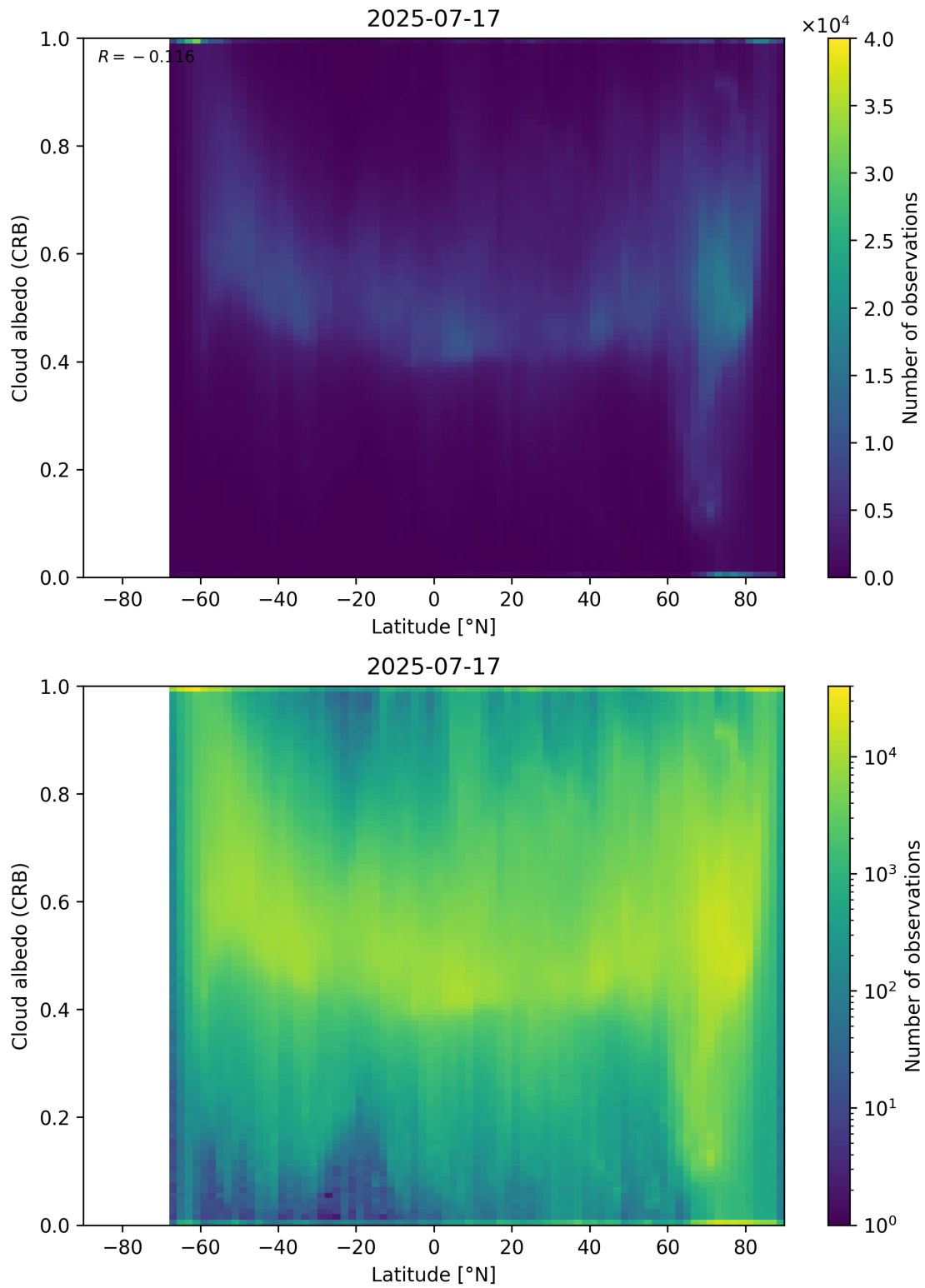


Figure 91: Scatter density plot of “Latitude” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

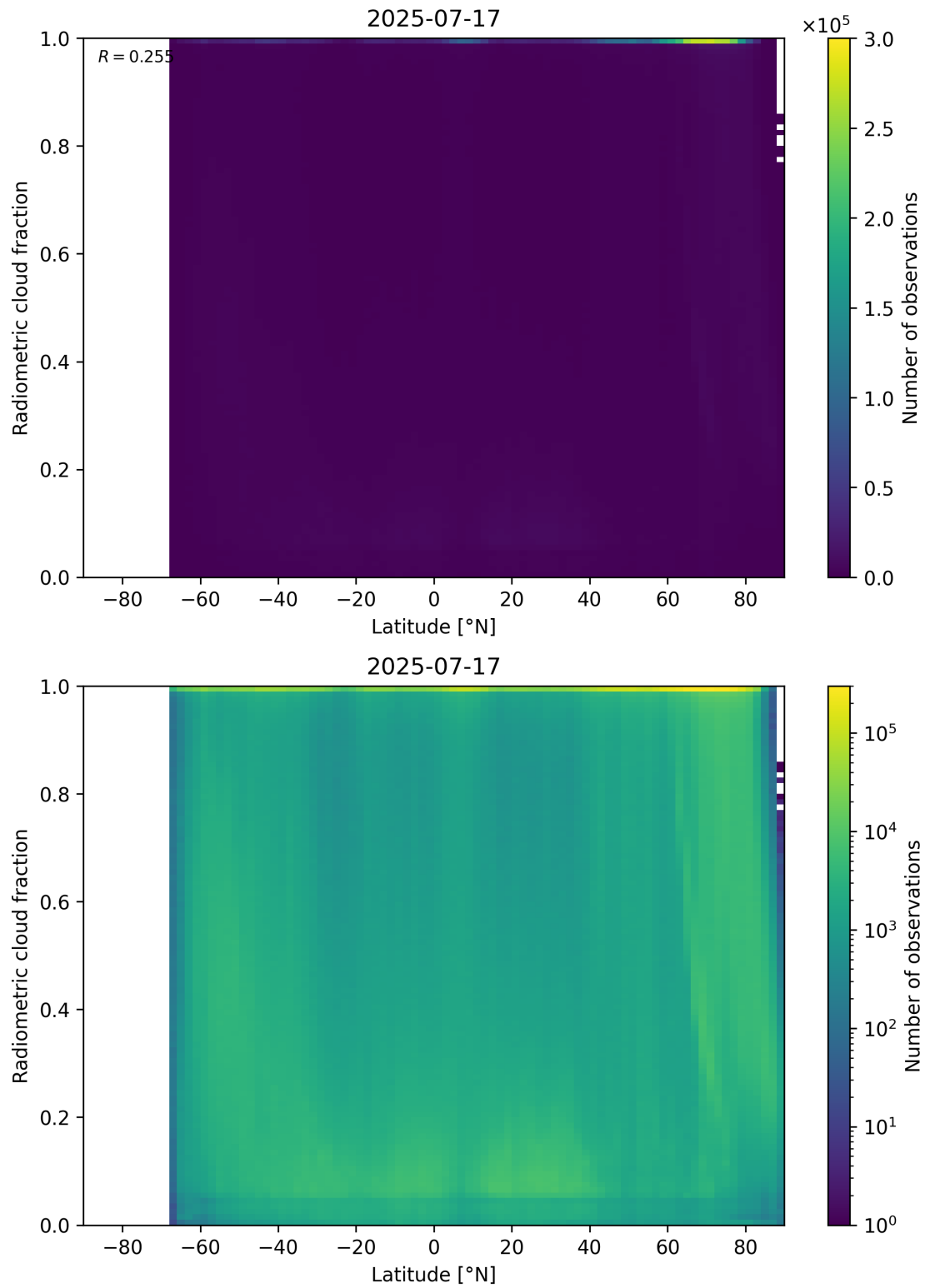


Figure 92: Scatter density plot of “Latitude” against “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.

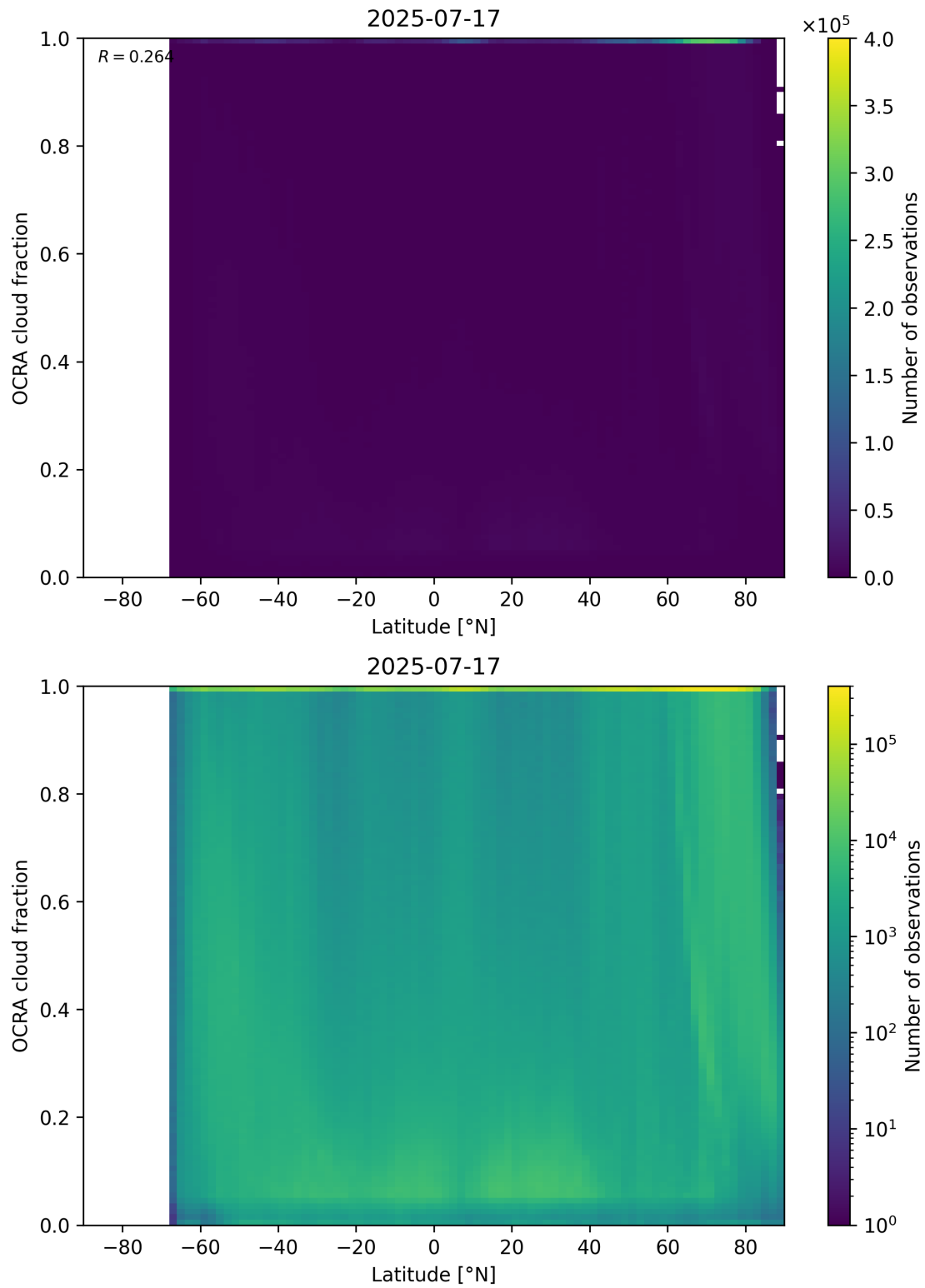


Figure 93: Scatter density plot of “Latitude” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

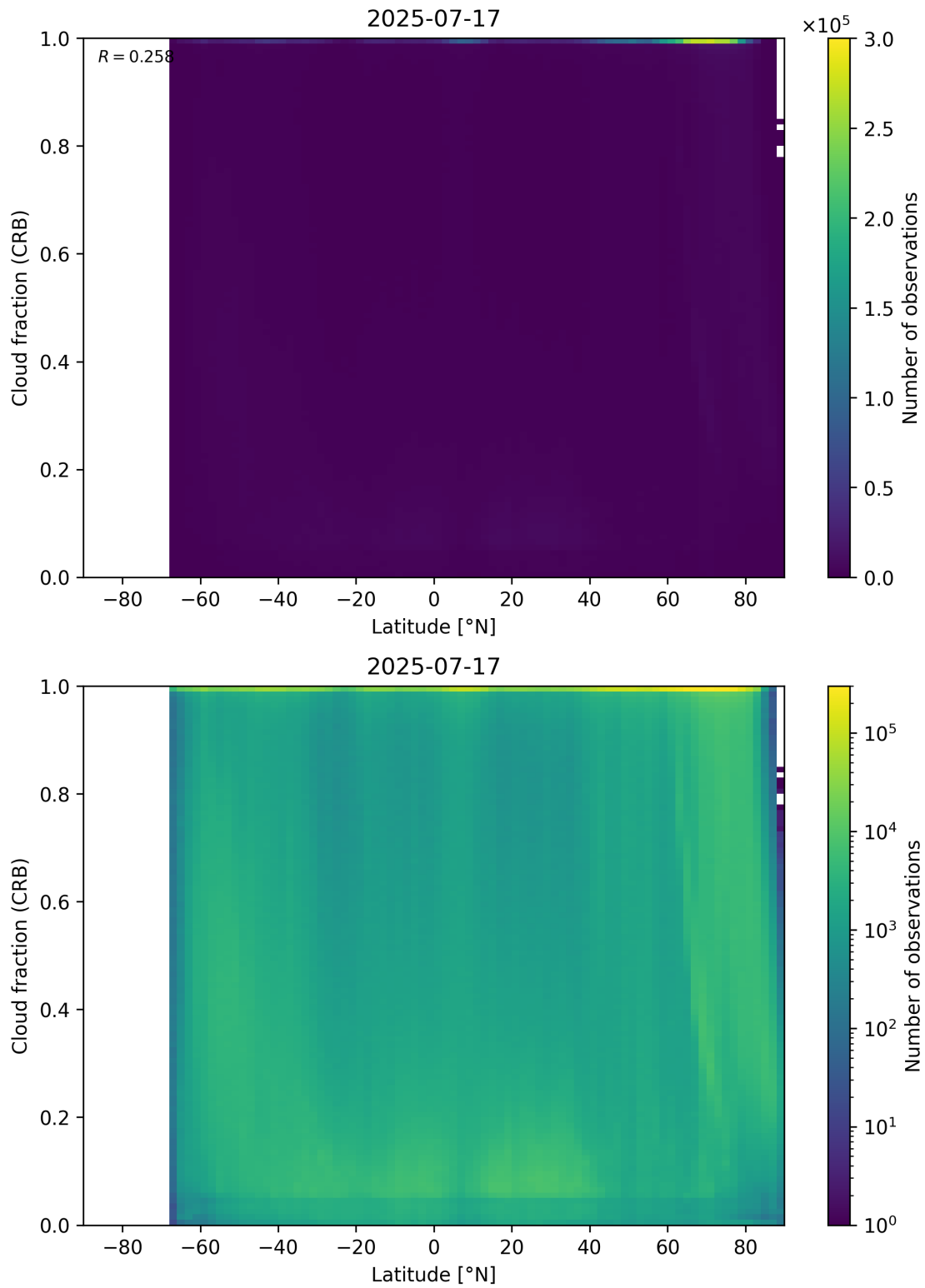


Figure 94: Scatter density plot of “Latitude” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

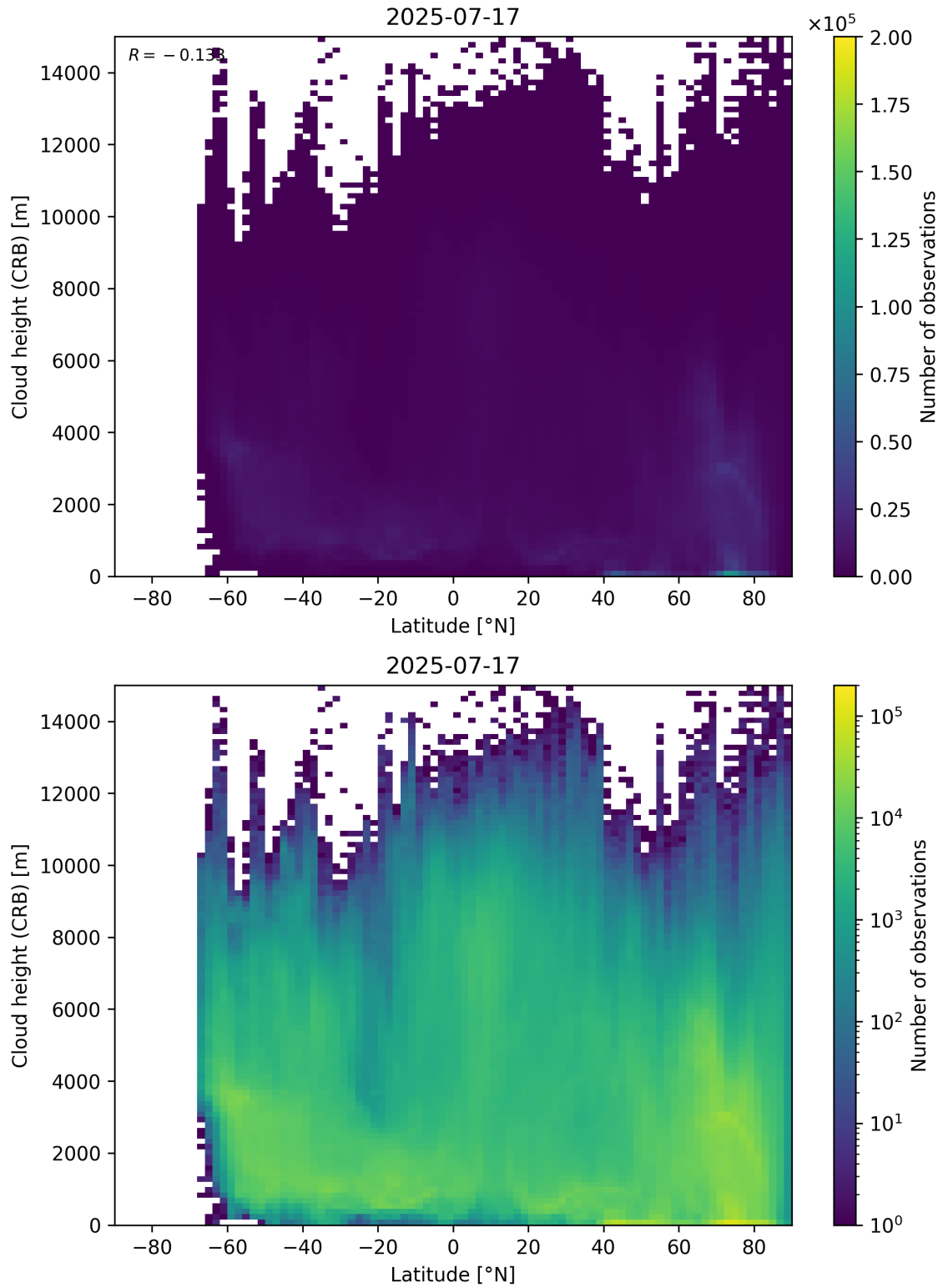


Figure 95: Scatter density plot of “Latitude” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

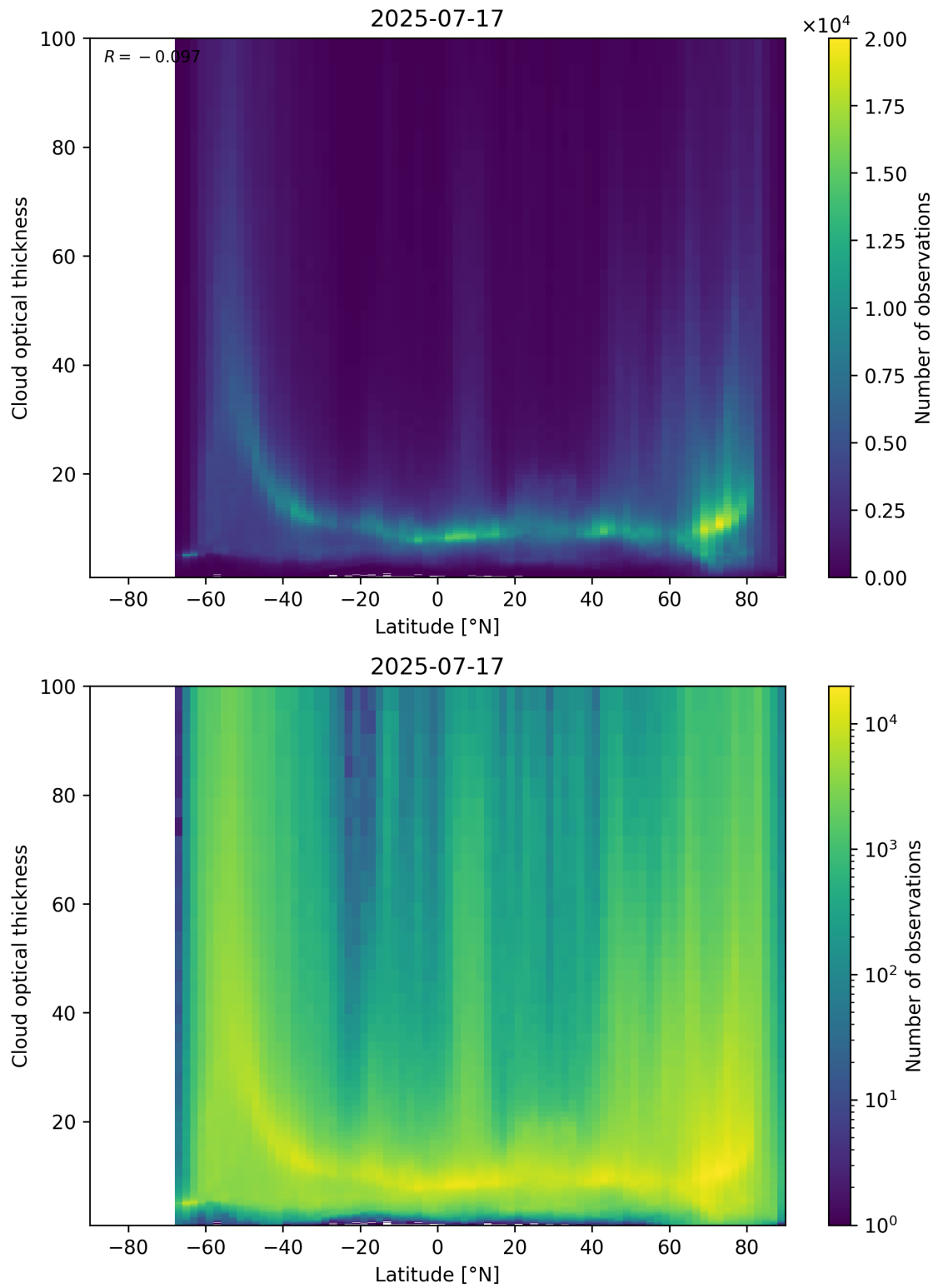


Figure 96: Scatter density plot of “Latitude” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.

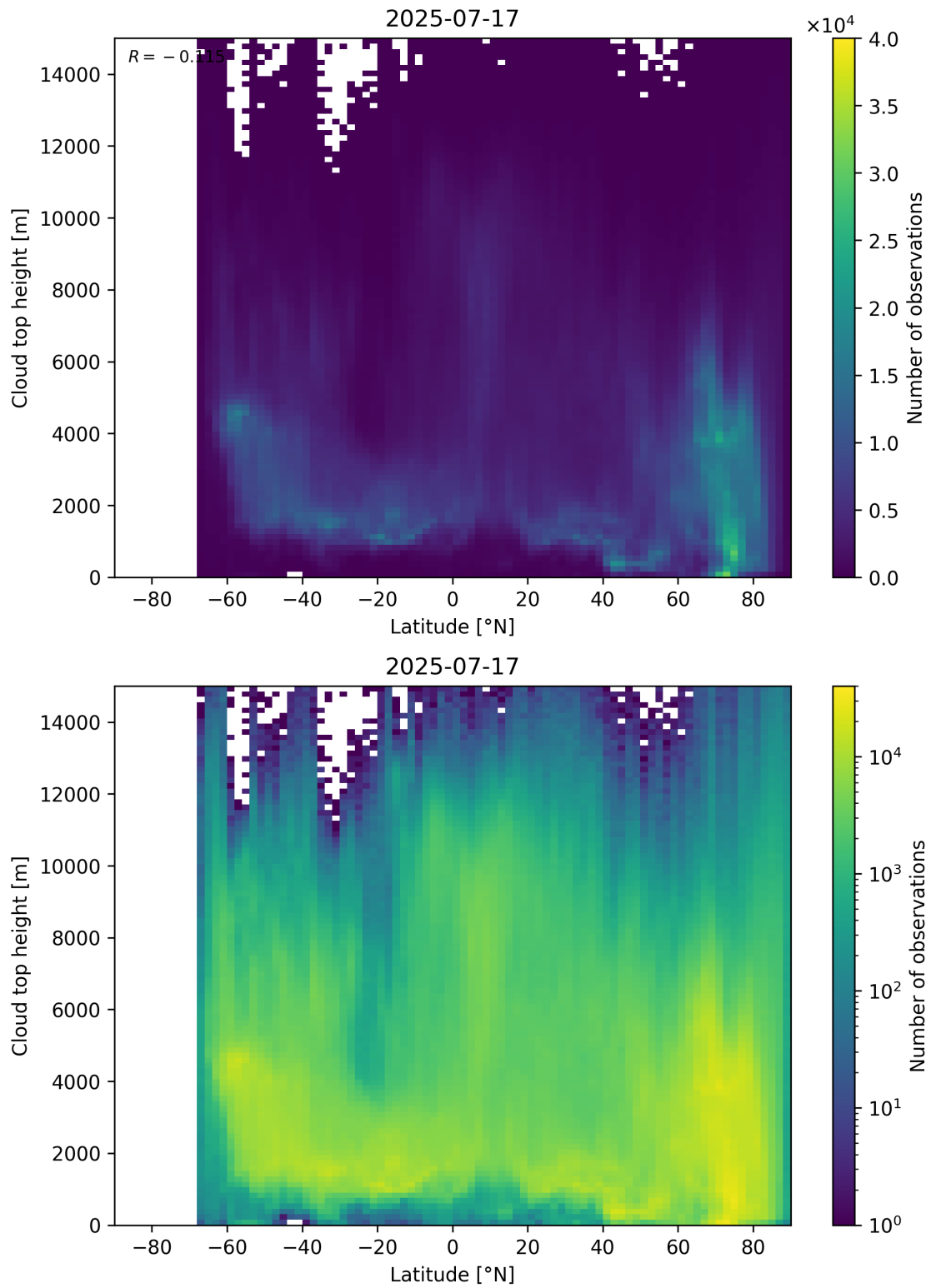


Figure 97: Scatter density plot of “Latitude” against “Cloud top height” for 2025-07-16 to 2025-07-18.

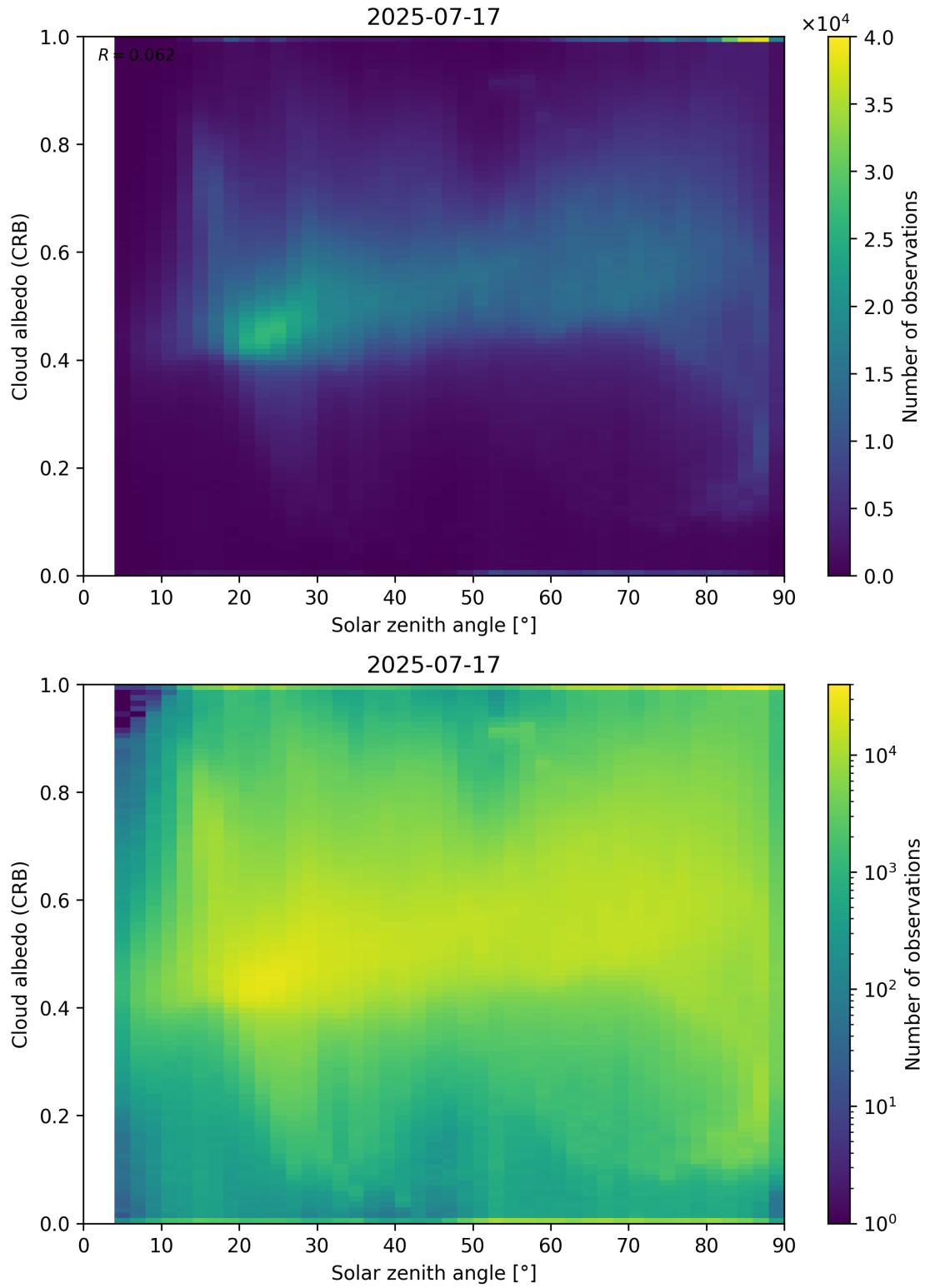


Figure 98: Scatter density plot of “Solar zenith angle” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

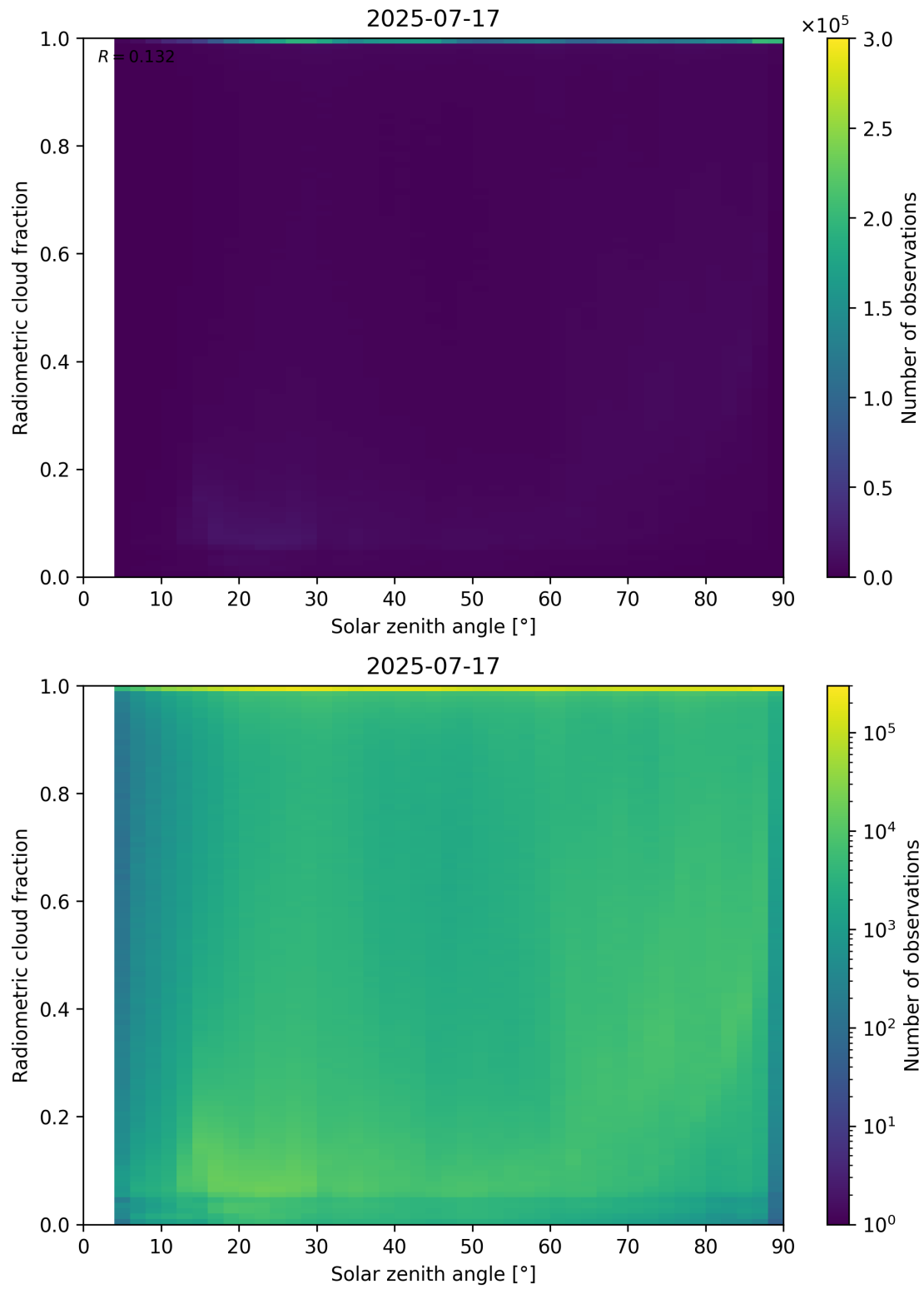


Figure 99: Scatter density plot of “Solar zenith angle” against “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.

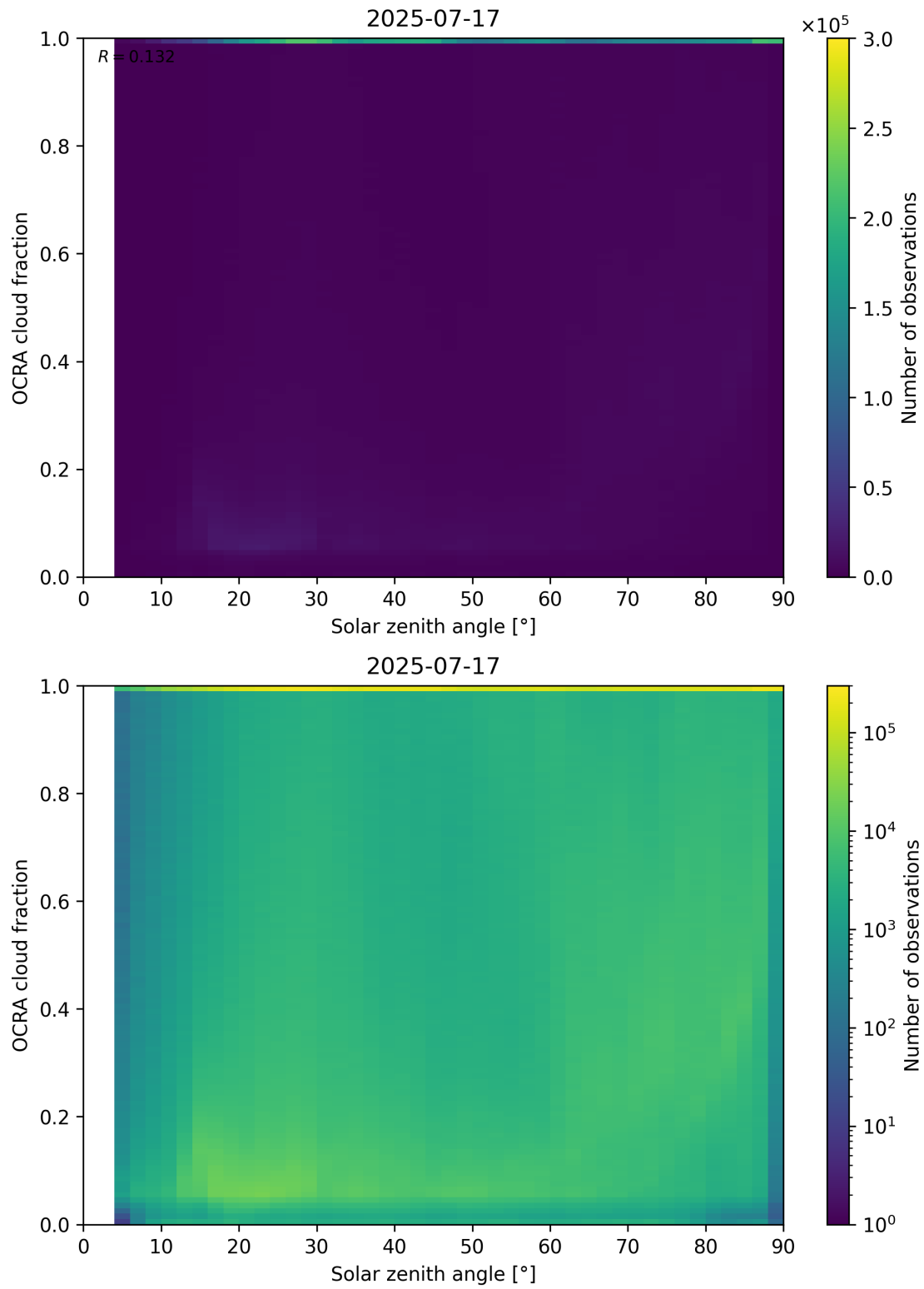


Figure 100: Scatter density plot of “Solar zenith angle” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

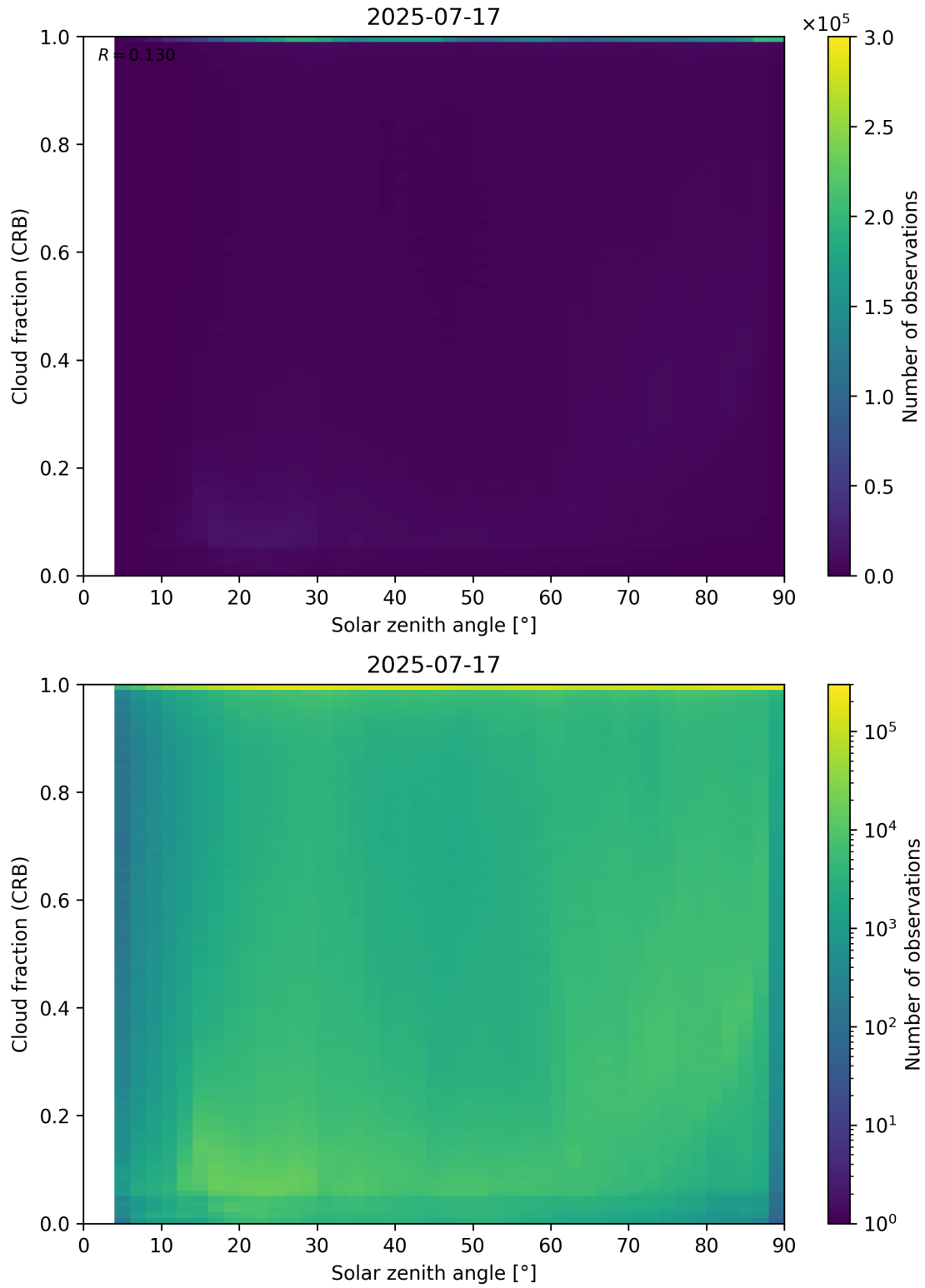


Figure 101: Scatter density plot of “Solar zenith angle” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

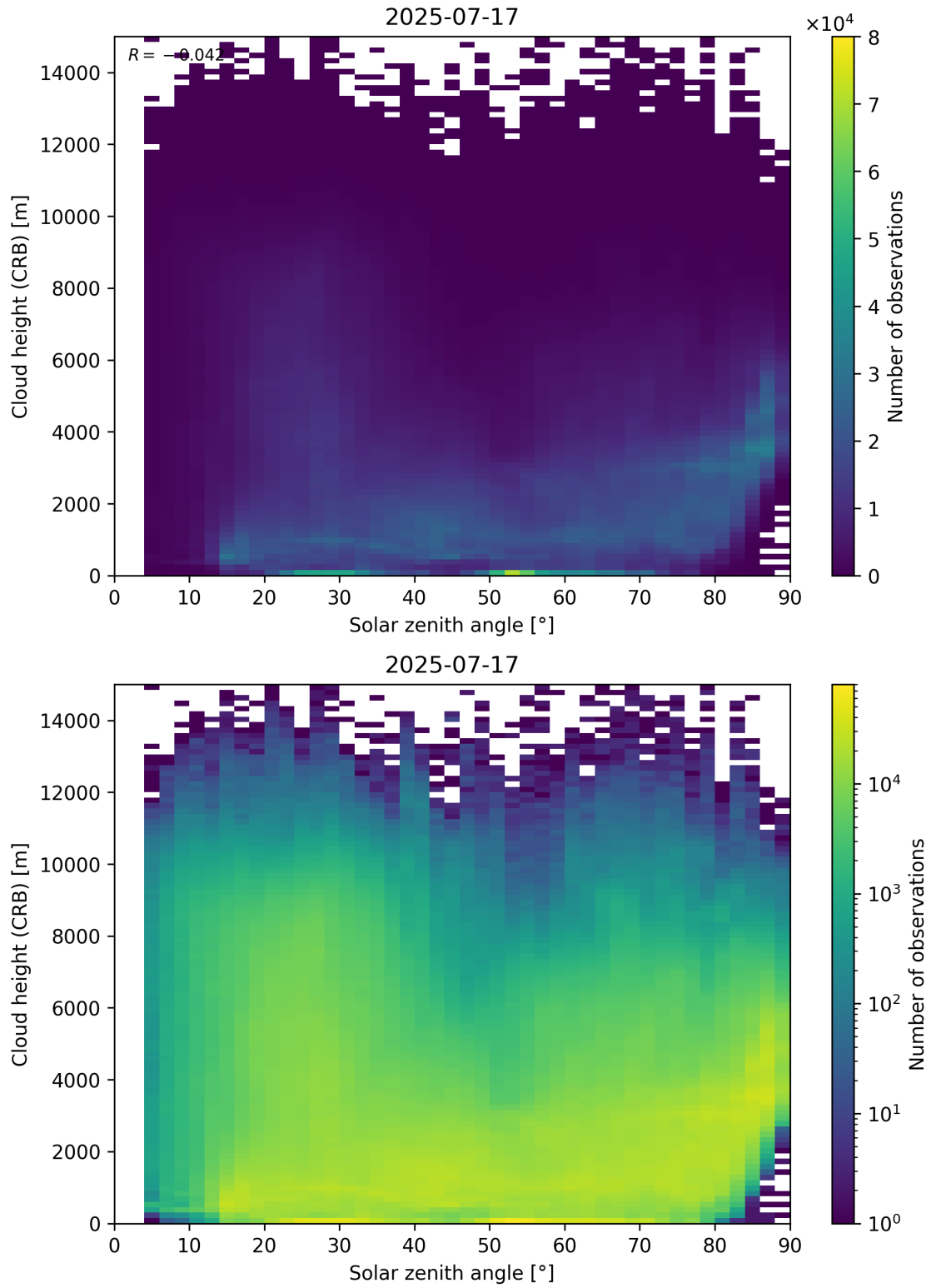


Figure 102: Scatter density plot of “Solar zenith angle” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

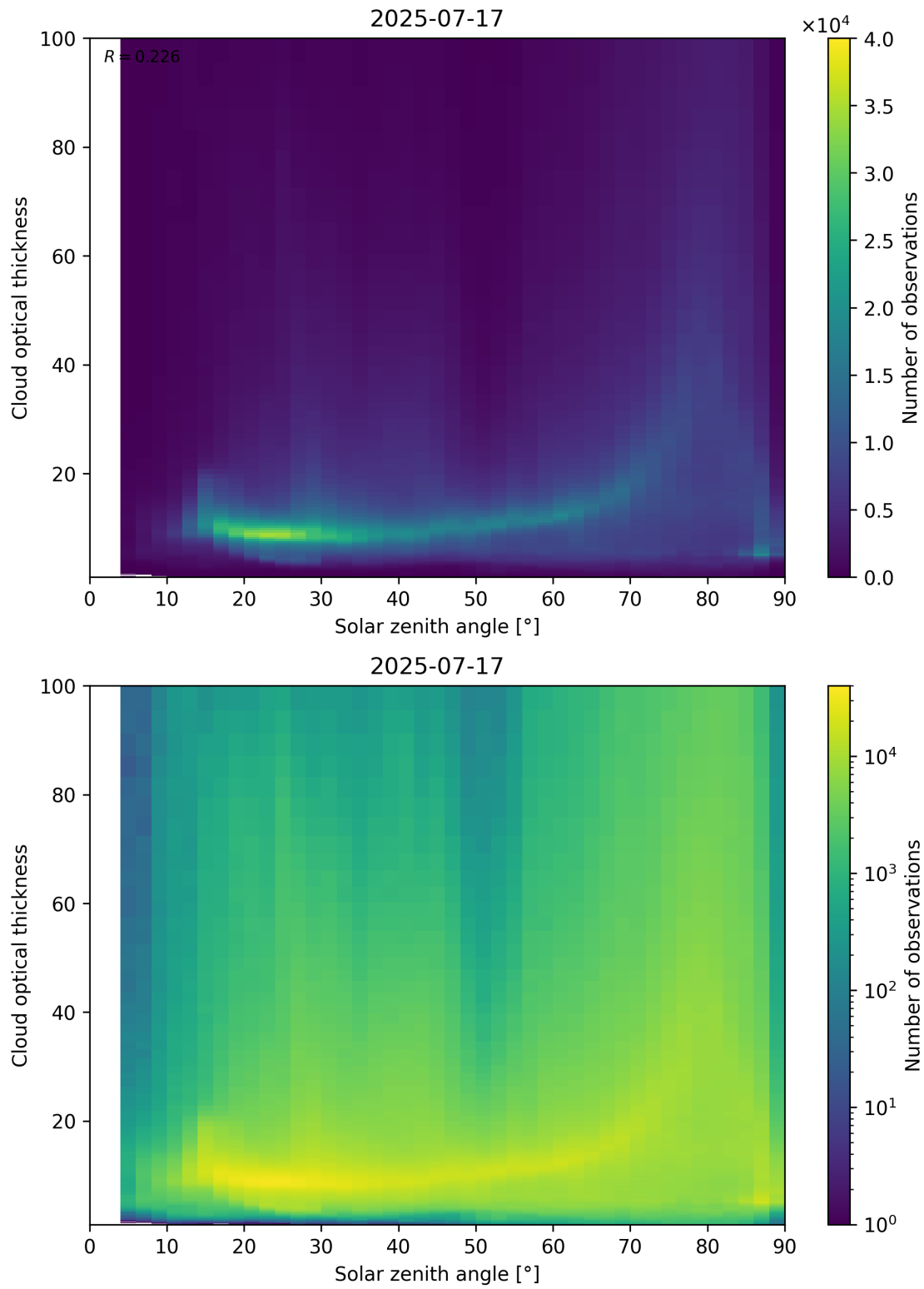


Figure 103: Scatter density plot of “Solar zenith angle” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.

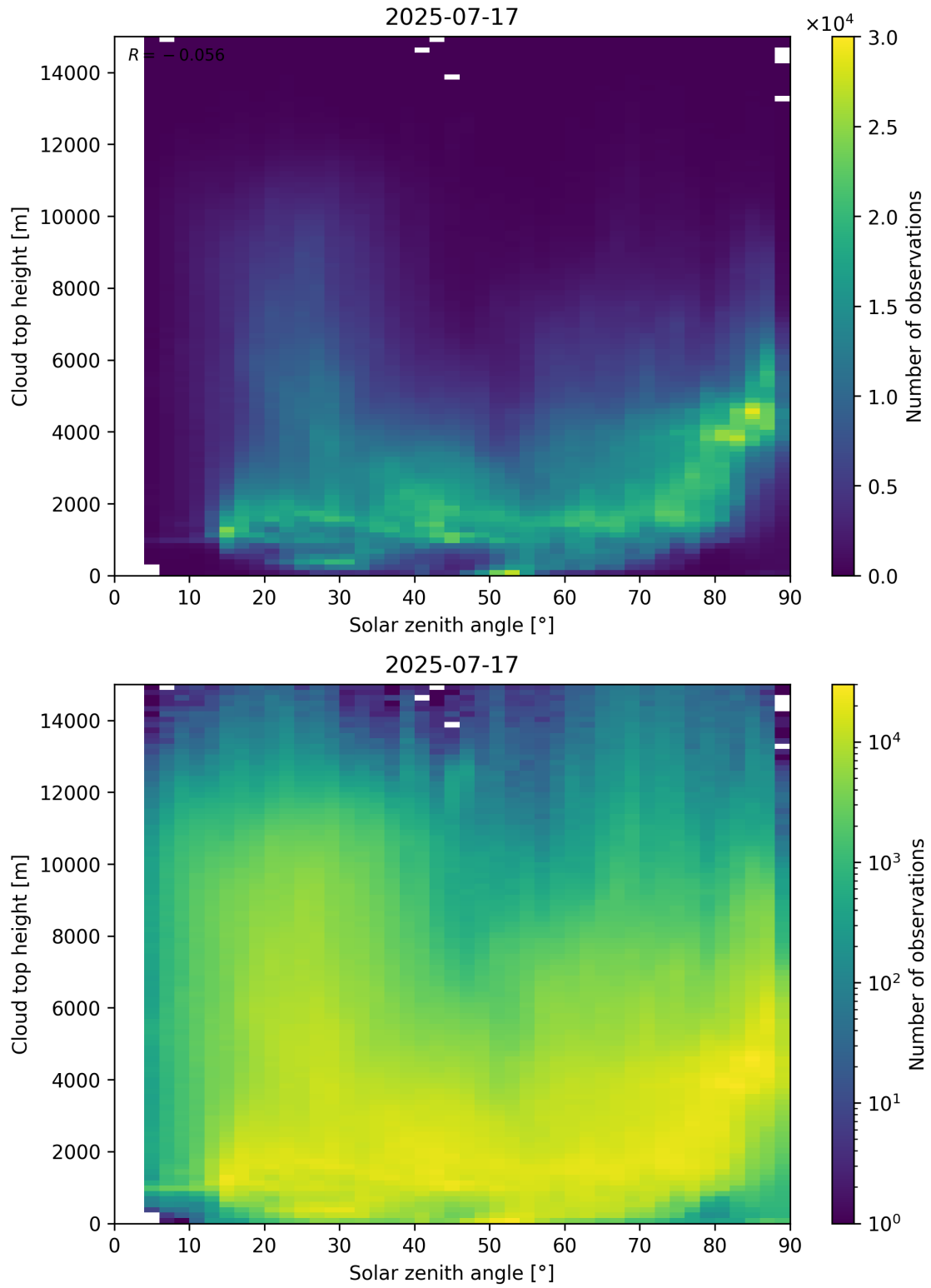


Figure 104: Scatter density plot of “Solar zenith angle” against “Cloud top height” for 2025-07-16 to 2025-07-18.

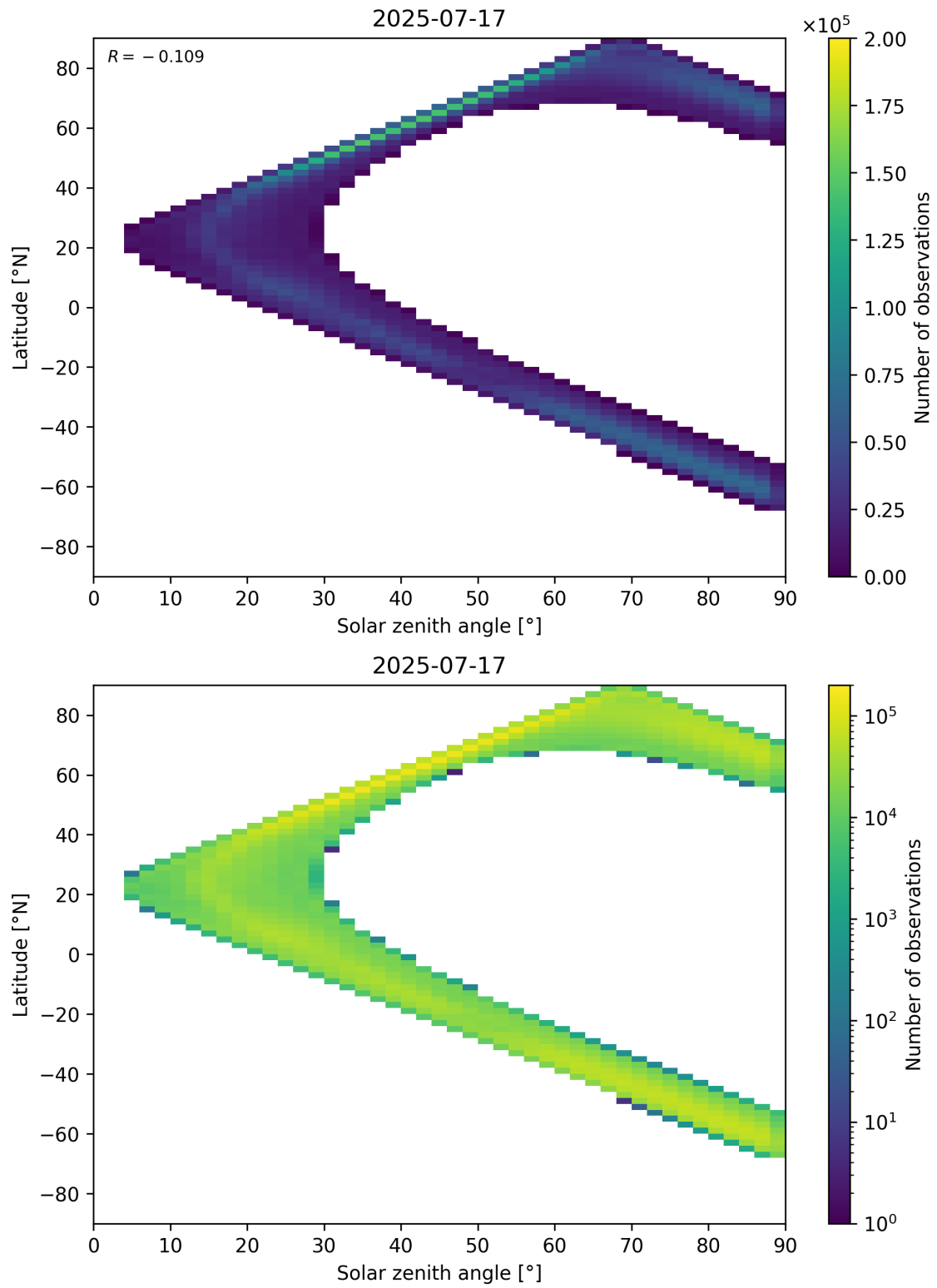


Figure 105: Scatter density plot of “Solar zenith angle” against “Latitude” for 2025-07-16 to 2025-07-18.

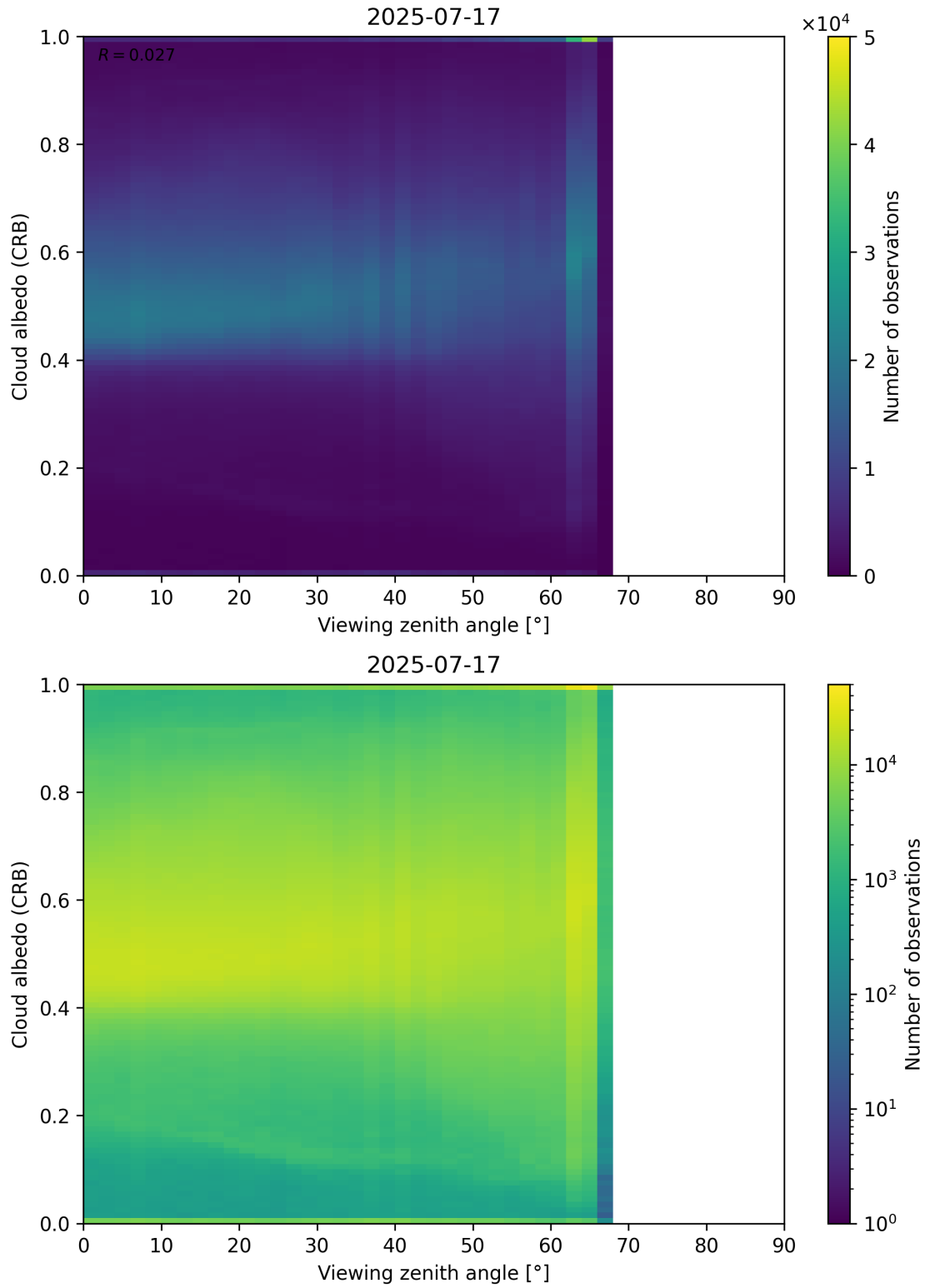


Figure 106: Scatter density plot of “Viewing zenith angle” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.

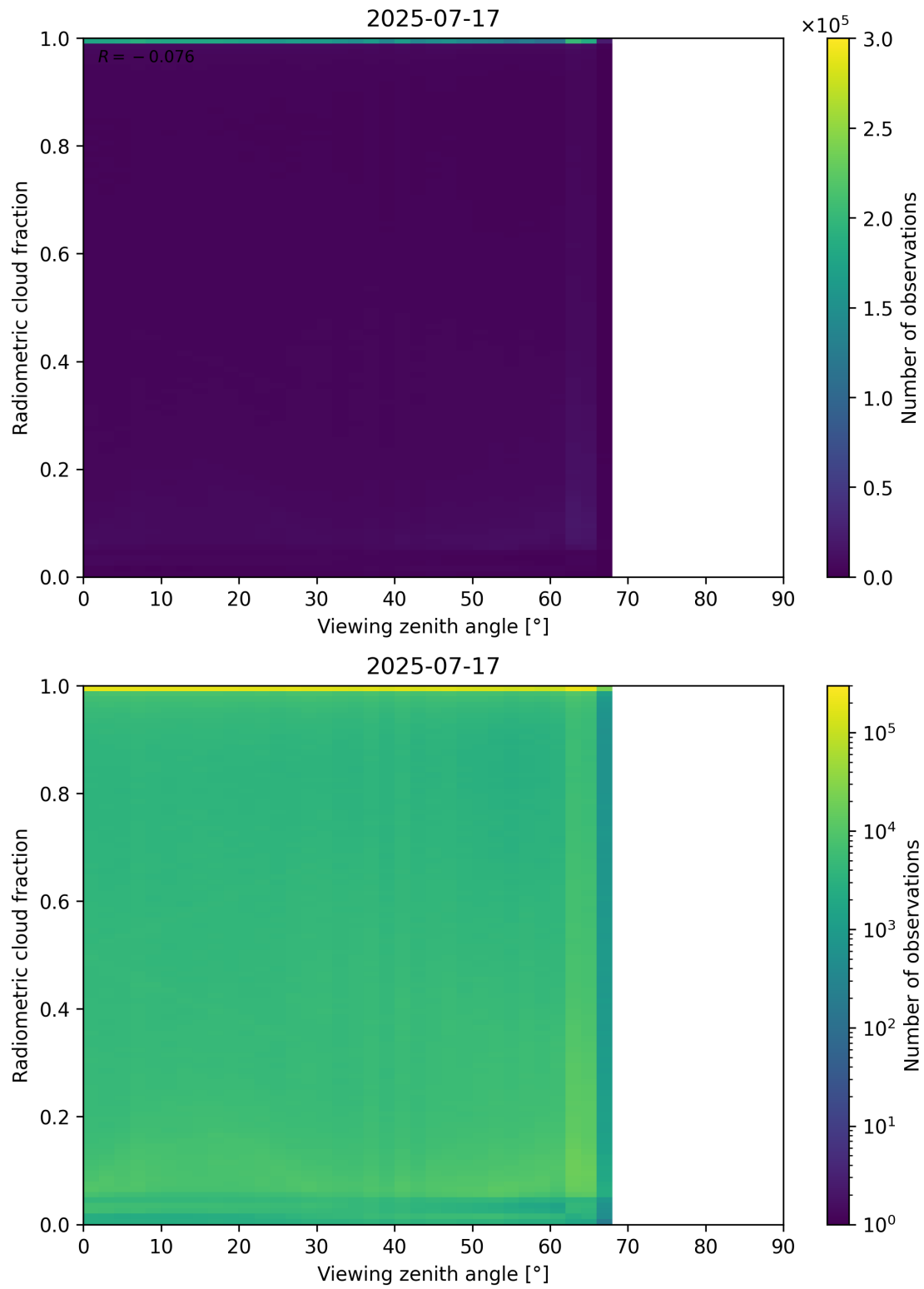


Figure 107: Scatter density plot of “Viewing zenith angle” against “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.

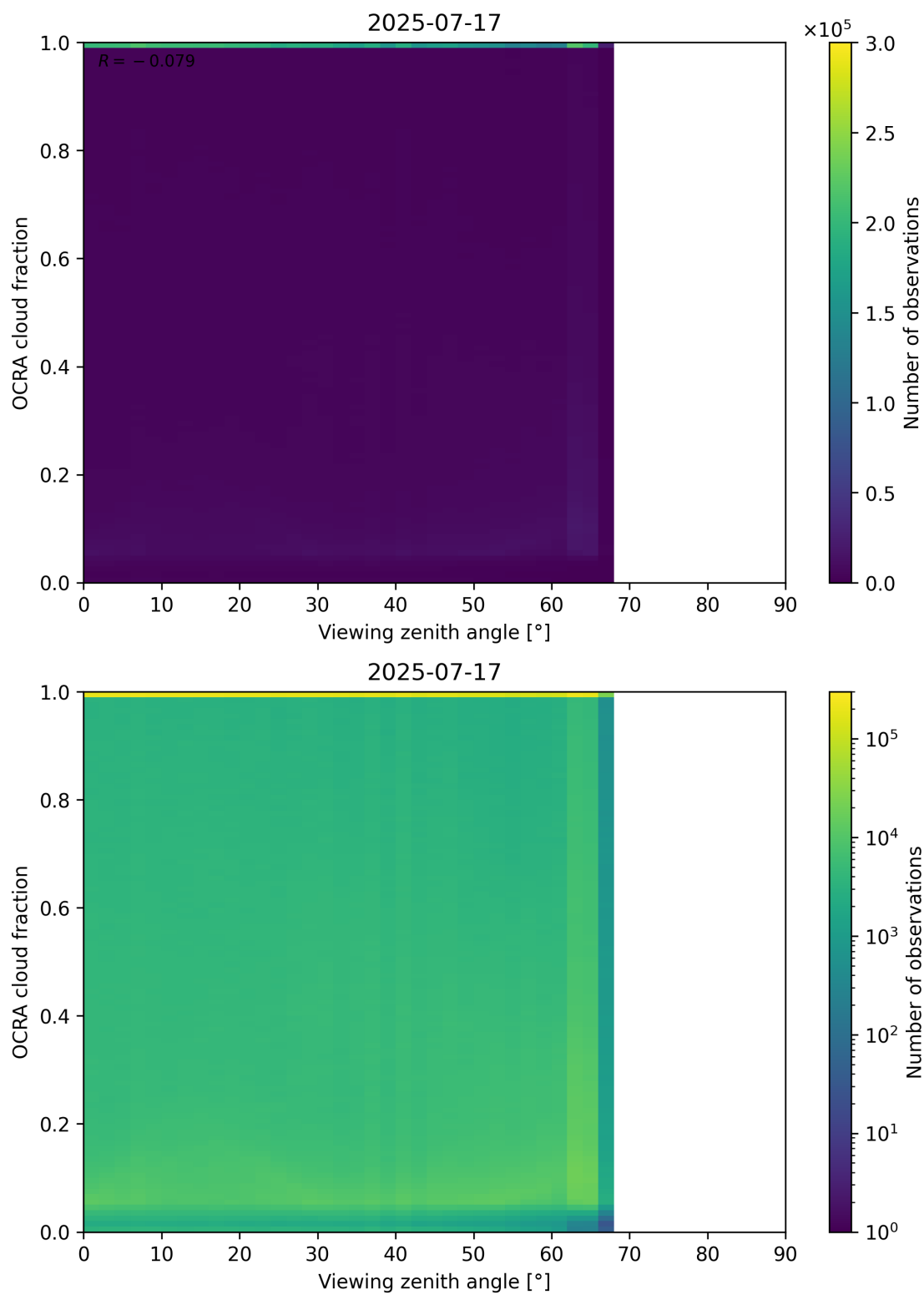


Figure 108: Scatter density plot of “Viewing zenith angle” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.

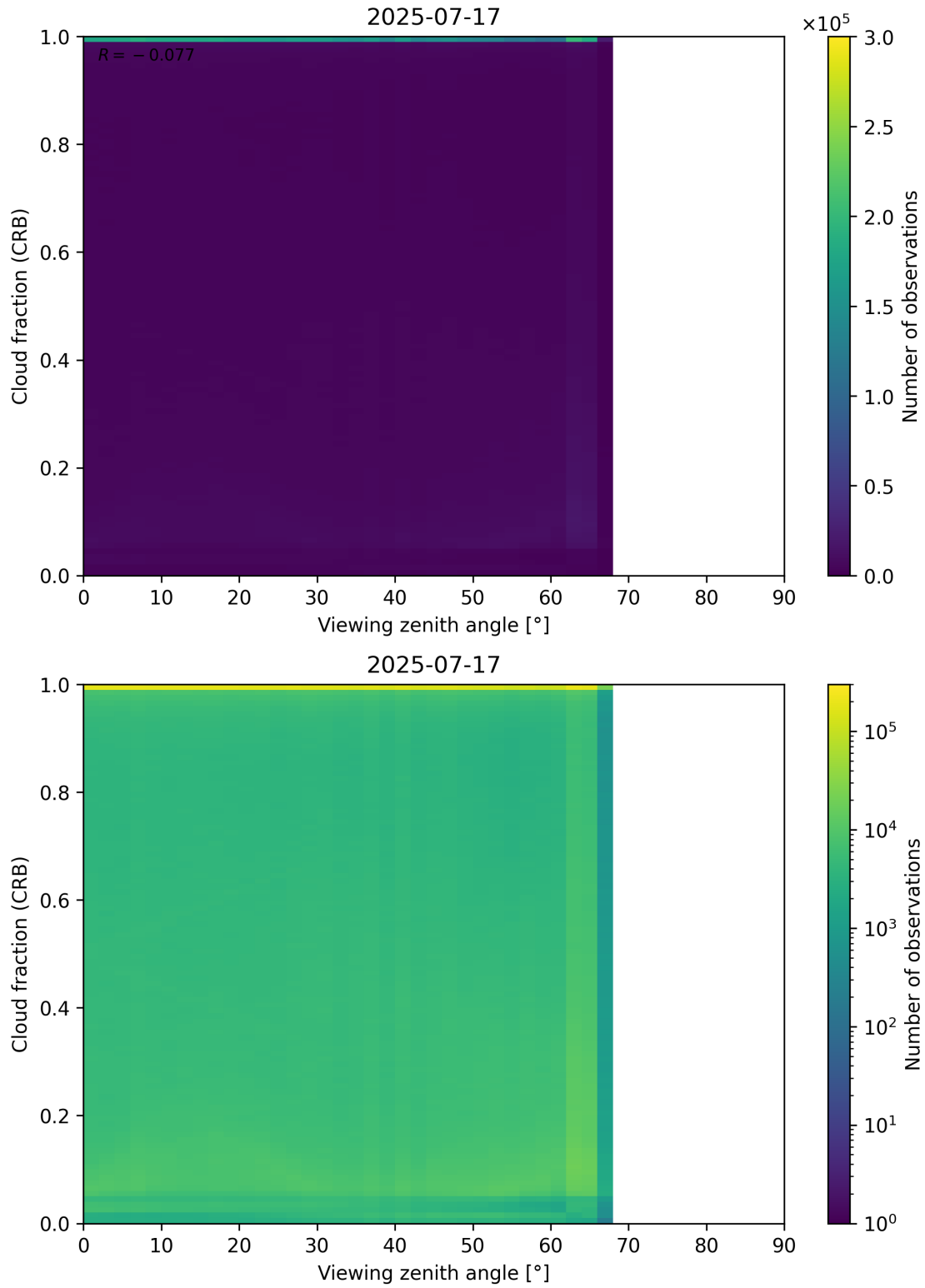


Figure 109: Scatter density plot of “Viewing zenith angle” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.

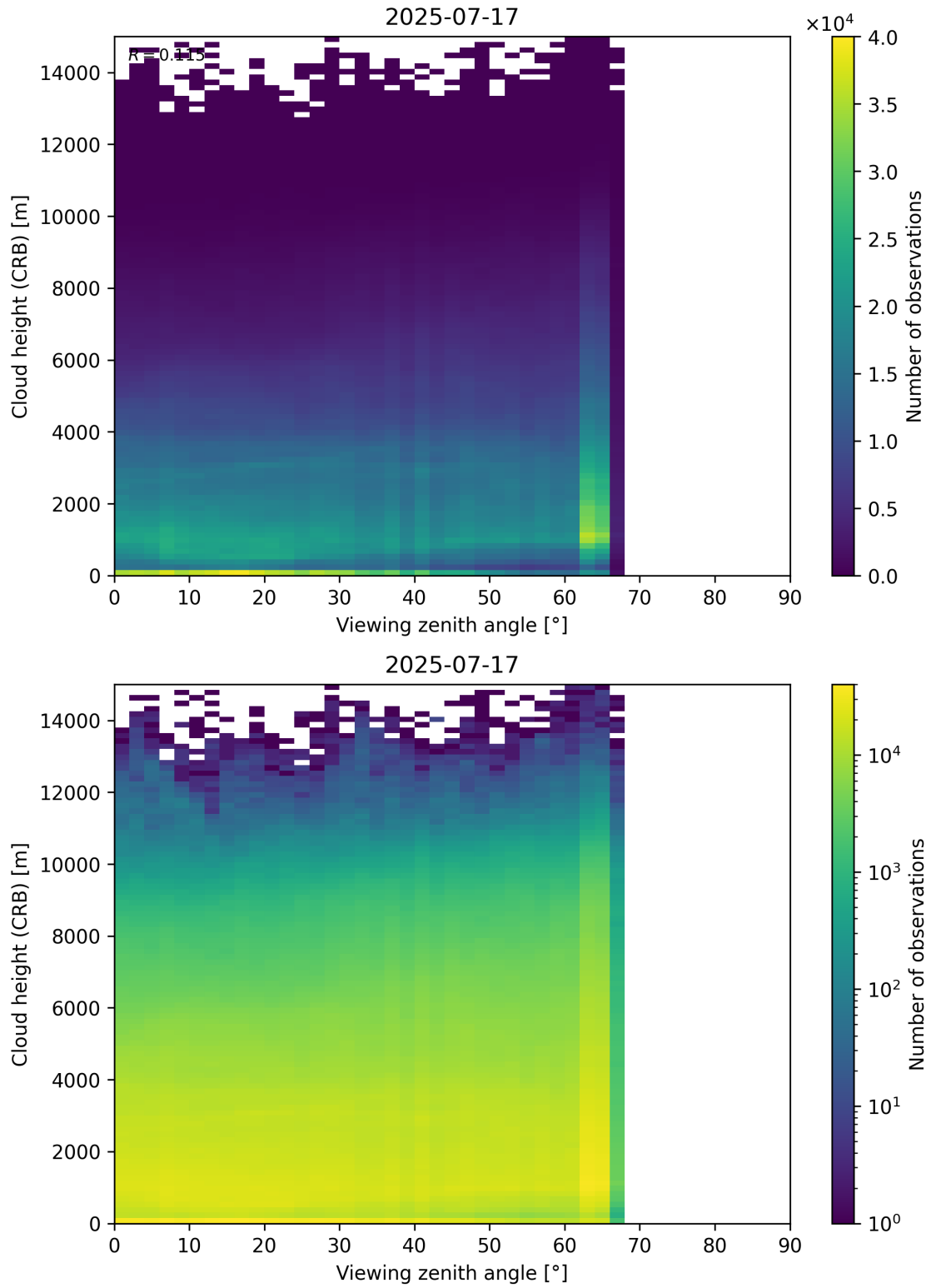


Figure 110: Scatter density plot of “Viewing zenith angle” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.

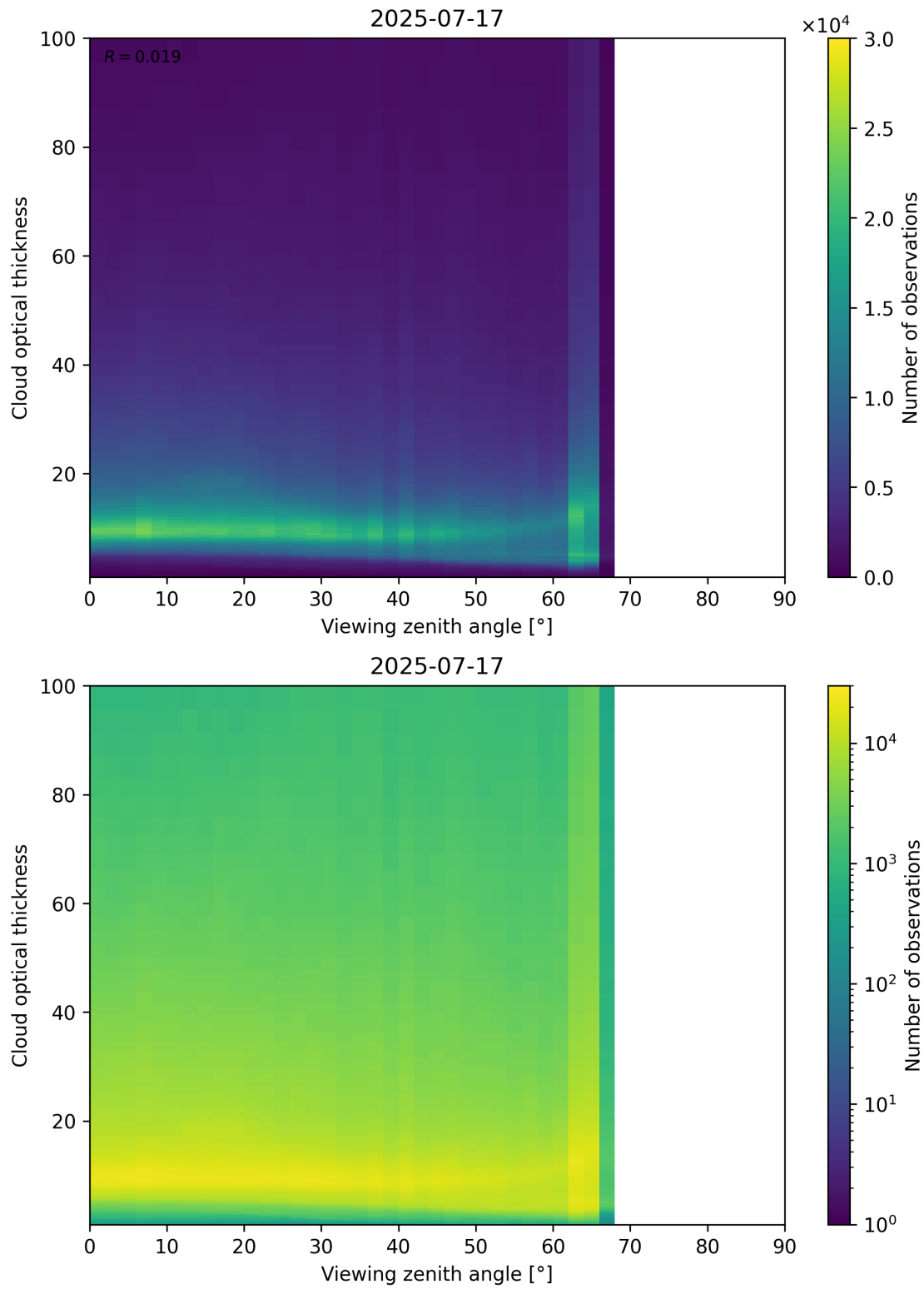


Figure 111: Scatter density plot of “Viewing zenith angle” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.

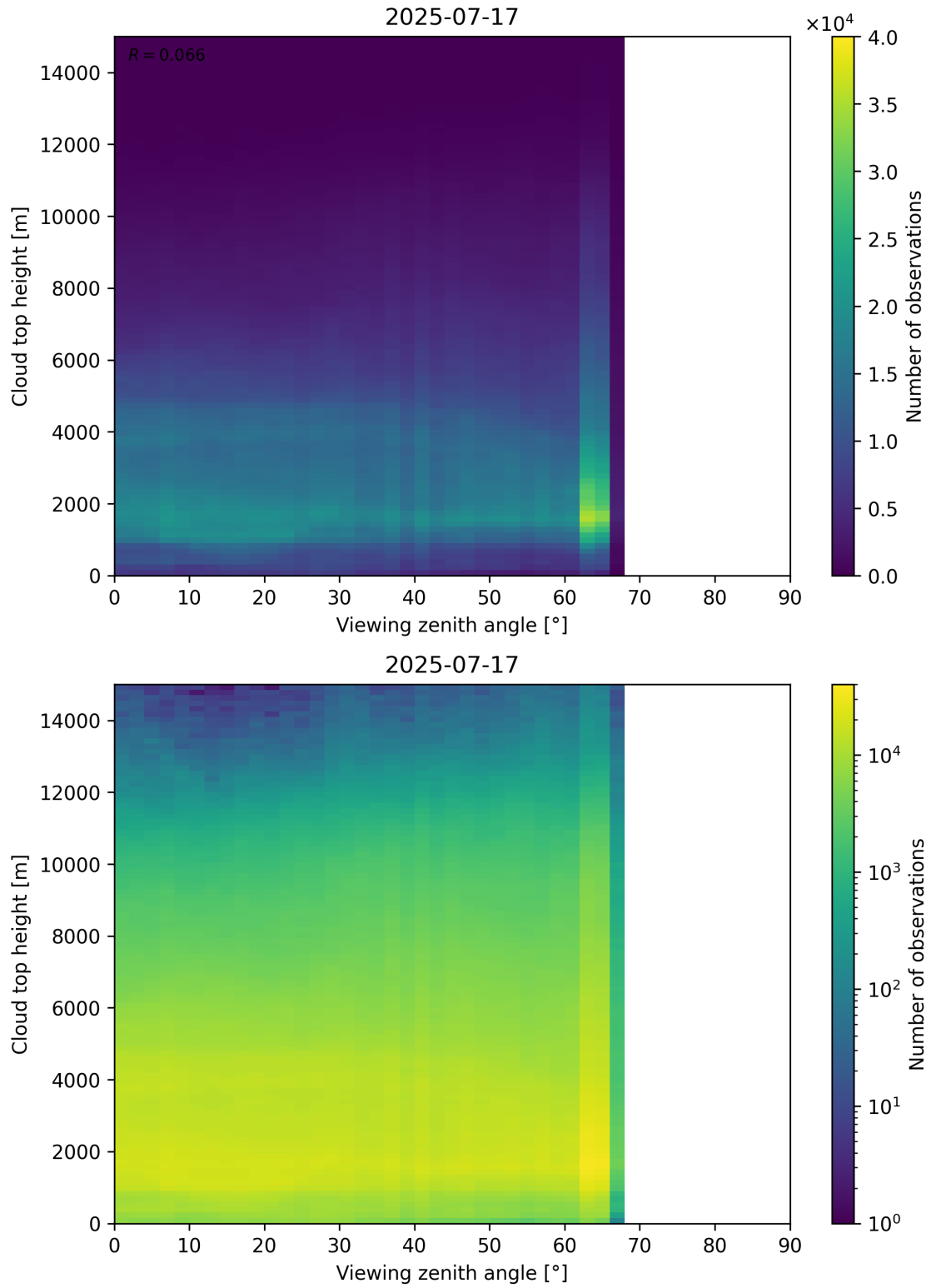


Figure 112: Scatter density plot of “Viewing zenith angle” against “Cloud top height” for 2025-07-16 to 2025-07-18.

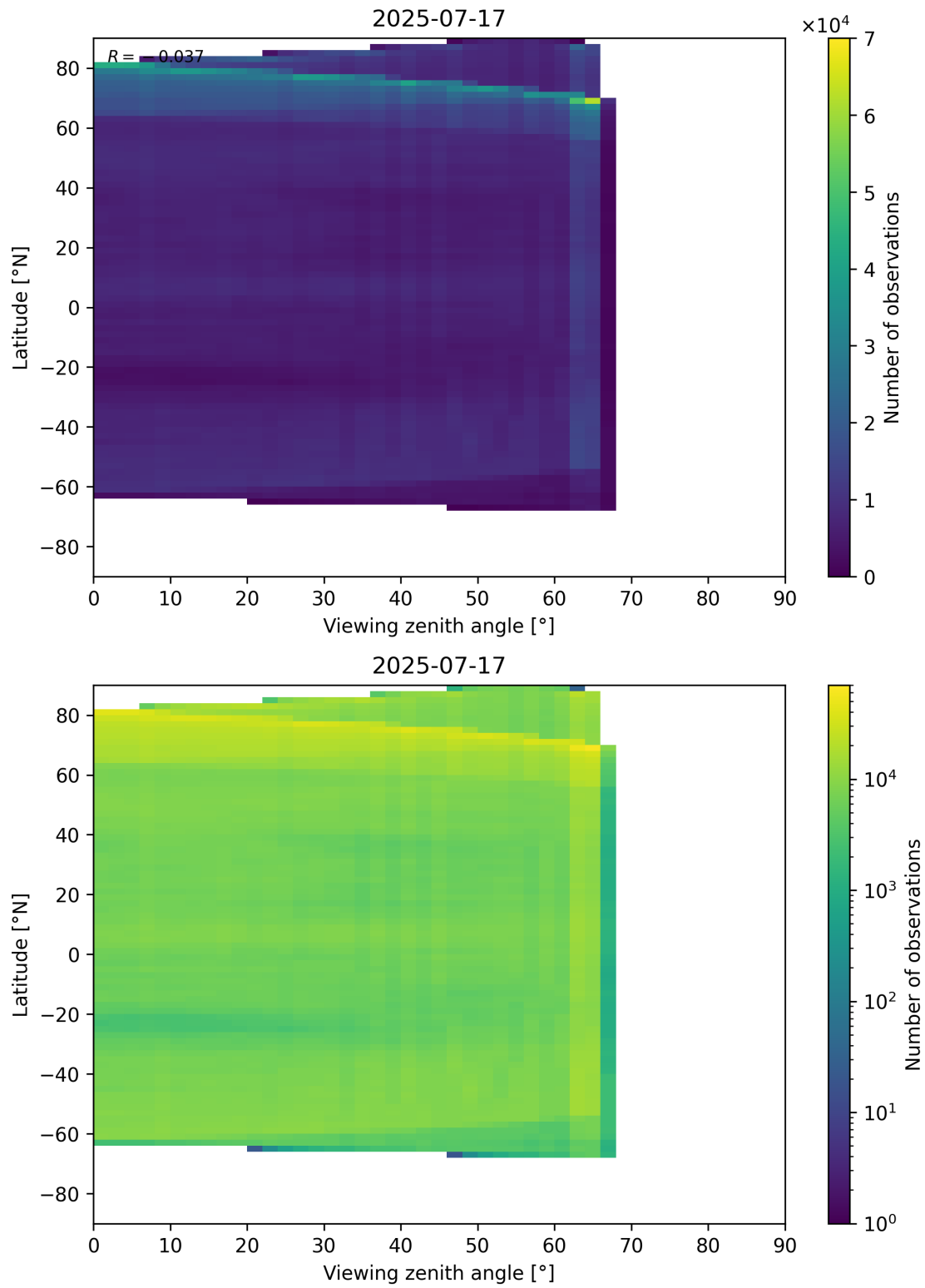


Figure 113: Scatter density plot of “Viewing zenith angle” against “Latitude” for 2025-07-16 to 2025-07-18.

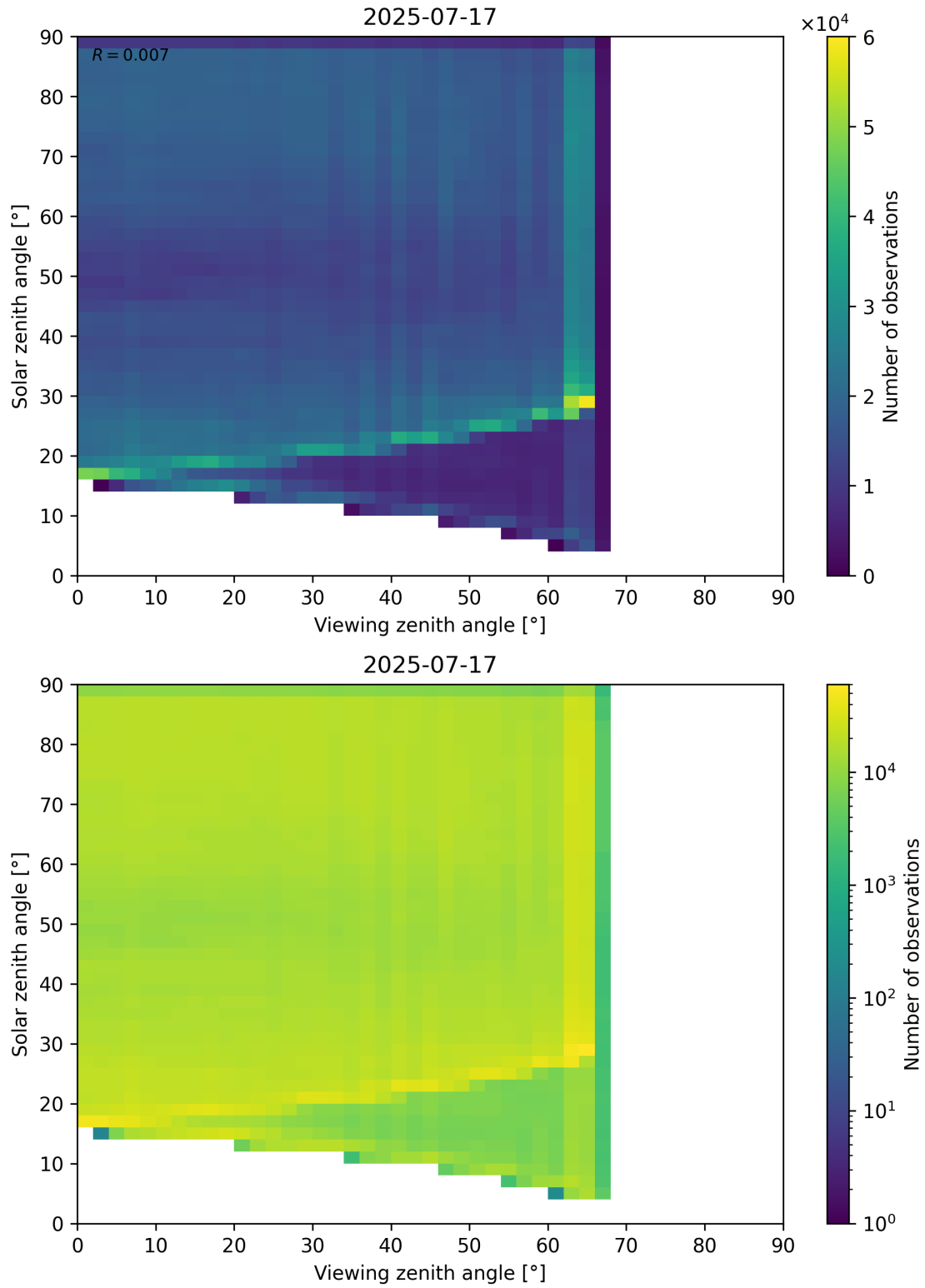


Figure 114: Scatter density plot of “Viewing zenith angle” against “Solar zenith angle” for 2025-07-16 to 2025-07-18.

Contents

1	Short Introduction	1
1.1	The list of parameters	1
2	Definitions	1
3	Granule outlines	12
4	Input data monitoring	13
5	Warnings and errors	14
6	World maps	15
7	Zonal average	31
8	Histograms	47
9	Along track statistics	63
10	Coincidence density	79
11	Copyright information of ‘PyCAMA’	124

List of Figures

1	Map of correlation graph for 2025-07-16 to 2025-07-18.	10
2	Map of correlation matrix for 2025-07-16 to 2025-07-18.	11
3	Outline of the granules.	12
4	Input data per granule	13
5	Fraction of pixels with specific warnings and errors during processing	14
6	Map of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18	15
7	Map of “Cloud top height” for 2025-07-16 to 2025-07-18	16
8	Map of “Cloud optical thickness” for 2025-07-16 to 2025-07-18	17
9	Map of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18	18
10	Map of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18	19
11	Map of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18	20
12	Map of “Fitted surface albedo” for 2025-07-16 to 2025-07-18	21
13	Map of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18	22
14	Map of “RMS” for 2025-07-16 to 2025-07-18	23
15	Map of “RMS (CRB)” for 2025-07-16 to 2025-07-18	24
16	Map of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18	25
17	Map of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18	26
18	Map of “OCRA “blue” reflectance” for 2025-07-16 to 2025-07-18	27
19	Map of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18	28
20	Map of “ROCINN “red” reflectance” for 2025-07-16 to 2025-07-18	29
21	Map of the number of observations for 2025-07-16 to 2025-07-18	30
22	Zonal average of “QA value” for 2025-07-16 to 2025-07-18.	31
23	Zonal average of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.	32
24	Zonal average of “Cloud top height” for 2025-07-16 to 2025-07-18.	33
25	Zonal average of “Cloud optical thickness” for 2025-07-16 to 2025-07-18.	34
26	Zonal average of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	35
27	Zonal average of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	36
28	Zonal average of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	37
29	Zonal average of “Fitted surface albedo” for 2025-07-16 to 2025-07-18.	38
30	Zonal average of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18.	39
31	Zonal average of “RMS” for 2025-07-16 to 2025-07-18.	40
32	Zonal average of “RMS (CRB)” for 2025-07-16 to 2025-07-18.	41
33	Zonal average of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18.	42
34	Zonal average of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	43
35	Zonal average of “OCRA “blue” reflectance” for 2025-07-16 to 2025-07-18.	44
36	Zonal average of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18.	45

37	Zonal average of “ROCINN “red” reflectance” for 2025-07-16 to 2025-07-18.	46
38	Histogram of “QA value” for 2025-07-16 to 2025-07-18	47
39	Histogram of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18	48
40	Histogram of “Cloud top height” for 2025-07-16 to 2025-07-18	49
41	Histogram of “Cloud optical thickness” for 2025-07-16 to 2025-07-18	50
42	Histogram of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18	51
43	Histogram of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18	52
44	Histogram of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18	53
45	Histogram of “Fitted surface albedo” for 2025-07-16 to 2025-07-18	54
46	Histogram of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18	55
47	Histogram of “RMS” for 2025-07-16 to 2025-07-18	56
48	Histogram of “RMS (CRB)” for 2025-07-16 to 2025-07-18	57
49	Histogram of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18	58
50	Histogram of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18	59
51	Histogram of “OCRA “blue” reflectance” for 2025-07-16 to 2025-07-18	60
52	Histogram of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18	61
53	Histogram of “ROCINN “red” reflectance” for 2025-07-16 to 2025-07-18	62
54	Along track statistics of “QA value” for 2025-07-16 to 2025-07-18	63
55	Along track statistics of “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18	64
56	Along track statistics of “Cloud top height” for 2025-07-16 to 2025-07-18	65
57	Along track statistics of “Cloud optical thickness” for 2025-07-16 to 2025-07-18	66
58	Along track statistics of “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18	67
59	Along track statistics of “Cloud height (CRB)” for 2025-07-16 to 2025-07-18	68
60	Along track statistics of “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18	69
61	Along track statistics of “Fitted surface albedo” for 2025-07-16 to 2025-07-18	70
62	Along track statistics of “Fitted surface albedo (CRB)” for 2025-07-16 to 2025-07-18	71
63	Along track statistics of “RMS” for 2025-07-16 to 2025-07-18	72
64	Along track statistics of “RMS (CRB)” for 2025-07-16 to 2025-07-18	73
65	Along track statistics of “Fitting wavelength shift” for 2025-07-16 to 2025-07-18	74
66	Along track statistics of “OCRA cloud fraction” for 2025-07-16 to 2025-07-18	75
67	Along track statistics of “OCRA “blue” reflectance” for 2025-07-16 to 2025-07-18	76
68	Along track statistics of “OCRA “green” reflectance” for 2025-07-16 to 2025-07-18	77
69	Along track statistics of “ROCINN “red” reflectance” for 2025-07-16 to 2025-07-18	78
70	Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	79
71	Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	80
72	Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	81
73	Scatter density plot of “Radiometric cloud fraction” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	82
74	Scatter density plot of “Radiometric cloud fraction” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	83
75	Scatter density plot of “Radiometric cloud fraction” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.	84
76	Scatter density plot of “Radiometric cloud fraction” against “Cloud top height” for 2025-07-16 to 2025-07-18.	85
77	Scatter density plot of “Cloud fraction (CRB)” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	86
78	Scatter density plot of “Cloud fraction (CRB)” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	87
79	Scatter density plot of “Cloud fraction (CRB)” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	88
80	Scatter density plot of “Cloud height (CRB)” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	89
81	Scatter density plot of “Cloud height (CRB)” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	90
82	Scatter density plot of “Cloud optical thickness” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	91
83	Scatter density plot of “Cloud optical thickness” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	92
84	Scatter density plot of “Cloud optical thickness” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	93
85	Scatter density plot of “Cloud optical thickness” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	94
86	Scatter density plot of “Cloud top height” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	95
87	Scatter density plot of “Cloud top height” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	96
88	Scatter density plot of “Cloud top height” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	97
89	Scatter density plot of “Cloud top height” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	98
90	Scatter density plot of “Cloud top height” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.	99
91	Scatter density plot of “Latitude” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	100
92	Scatter density plot of “Latitude” against “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.	101
93	Scatter density plot of “Latitude” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	102

94	Scatter density plot of “Latitude” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	103
95	Scatter density plot of “Latitude” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	104
96	Scatter density plot of “Latitude” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.	105
97	Scatter density plot of “Latitude” against “Cloud top height” for 2025-07-16 to 2025-07-18.	106
98	Scatter density plot of “Solar zenith angle” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	107
99	Scatter density plot of “Solar zenith angle” against “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.	108
100	Scatter density plot of “Solar zenith angle” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	109
101	Scatter density plot of “Solar zenith angle” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	110
102	Scatter density plot of “Solar zenith angle” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	111
103	Scatter density plot of “Solar zenith angle” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.	112
104	Scatter density plot of “Solar zenith angle” against “Cloud top height” for 2025-07-16 to 2025-07-18.	113
105	Scatter density plot of “Solar zenith angle” against “Latitude” for 2025-07-16 to 2025-07-18.	114
106	Scatter density plot of “Viewing zenith angle” against “Cloud albedo (CRB)” for 2025-07-16 to 2025-07-18.	115
107	Scatter density plot of “Viewing zenith angle” against “Radiometric cloud fraction” for 2025-07-16 to 2025-07-18.	116
108	Scatter density plot of “Viewing zenith angle” against “OCRA cloud fraction” for 2025-07-16 to 2025-07-18.	117
109	Scatter density plot of “Viewing zenith angle” against “Cloud fraction (CRB)” for 2025-07-16 to 2025-07-18.	118
110	Scatter density plot of “Viewing zenith angle” against “Cloud height (CRB)” for 2025-07-16 to 2025-07-18.	119
111	Scatter density plot of “Viewing zenith angle” against “Cloud optical thickness” for 2025-07-16 to 2025-07-18.	120
112	Scatter density plot of “Viewing zenith angle” against “Cloud top height” for 2025-07-16 to 2025-07-18.	121
113	Scatter density plot of “Viewing zenith angle” against “Latitude” for 2025-07-16 to 2025-07-18.	122
114	Scatter density plot of “Viewing zenith angle” against “Solar zenith angle” for 2025-07-16 to 2025-07-18.	123

List of Tables

1	Parameterlist and basic statistics for the analysis	2
2	Percentile ranges	3
3	Parameterlist and basic statistics for the analysis for observations in the northern hemisphere	4
4	Parameterlist and basic statistics for the analysis for observations in the southern hemisphere	5
5	Parameterlist and basic statistics for the analysis for observations over water	6
6	Parameterlist and basic statistics for the analysis for observations over land	7
7	Correlation matrix	8
8	Covariance matrix	9

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