

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-08-05 (02:45)

1 Short Introduction

1.1 The list of parameters

You may want to keep the list given in table 1 at hand when viewing the results.

2 Definitions

The averages shown here are *unweighed* averages:

$$\bar{x} = \frac{1}{N} \sum_{i=1}^N x_i \quad (1)$$

with N the number of observations in the dataset.

The spread of the measurements is indicated with the variance $V(x)$, or rather the standard deviation $\sigma(x) = \sqrt{V(x)}$.

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

We also report the more robust statistics median, minimum, maximum, various percentiles and inter quartile range.

The median m is the value of parameter x for which half of the observations of x is smaller than m :

$$P(x \leq m) = P(x \geq m) = \int_{-\infty}^m f(x) dx = \frac{1}{2} \quad (3)$$

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

The median is a special case of a percentile. Instead of 1/2 in equation 3, other threshold values can be used. We report results for 1 %, 5 %, 10 %, 15.9 %, 25 %, 75 %, 84.1 %, 90 %, 95 % and 99 %. The inter quartile range is the difference between the 75 % and 25 % percentiles. Similarly the minimum and maximum values correspond to the 0 % and 100 % percentiles respectively.

For normally distributed parameters the mean and median are the same, while the $\mu \pm \sigma$ values and the 15.9 % and 84.1 % percentiles coincide.

To get a measure for the relation of one variable $x_{(k)}$ with another $x_{(l)}$, we calculate the covariance matrix C_{kl} .

$$C_{kl} = C(x_{(k)}, x_{(l)}) = \frac{1}{N-1} \sum_{i=1}^N (x_{(k),i} - \bar{x}_{(k)})(x_{(l),i} - \bar{x}_{(l)}) \quad (4)$$

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

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

The diagonal elements of the covariance matrix are the variances of the elements, $V(x_{(k)}) = C_{kk}$ and obviously $R_{kk} = 1$.

Table 1: Parameterlist and basic statistics for the analysis

Variable	mean $\pm \sigma$	Count	Mode	IQR	Median	Minimum	Maximum
qa value [1]	0.655 ± 0.356	20329422	0.995	0.550	0.800	0.0	1.000
cloud fraction [1]	0.586 ± 0.347	20329422	0.995	0.732	0.589	0.0	1.000
cloud top height [m]	$(0.372 \pm 0.257) \times 10^4$	20329422	1.575×10^3	3.539×10^3	3.177×10^3	0.0	2.000×10^4
cloud optical thickness [1]	21.0 ± 34.7	20329422	9.34	12.4	10.6	1.000	250
cloud fraction crb [1]	0.584 ± 0.347	20329422	0.995	0.733	0.586	0.0	1.000
cloud height crb [m]	$(0.291 \pm 0.223) \times 10^4$	20329422	75.0	3.152×10^3	2.433×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.562 ± 0.187	20329422	0.505	0.222	0.553	0.0	1.000
surface albedo fitted [1]	0.150 ± 0.197	20329422	1.500×10^{-2}	0.214	4.484×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.144 ± 0.200	20329422	1.500×10^{-2}	0.220	2.852×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.280 \pm 10.794) \times 10^{-4}$	20329422	5.000×10^{-5}	8.612×10^{-4}	3.541×10^{-4}	8.986×10^{-7}	0.686
fitted root mean square crb [1]	$(6.588 \pm 13.407) \times 10^{-4}$	20329422	5.000×10^{-5}	8.335×10^{-4}	2.979×10^{-4}	8.209×10^{-7}	1.35
wavelength shift [nm]	$(7.176 \pm 6.698) \times 10^{-3}$	20329422	3.000×10^{-4}	9.499×10^{-3}	6.659×10^{-3}	-0.125	8.421×10^{-2}
cloud fraction apriori [1]	0.586 ± 0.351	20329422	0.995	0.750	0.588	0.0	1.000
reflectance blue ocra [1]	0.510 ± 0.187	20329422	0.315	0.290	0.487	0.130	1.90
reflectance green ocra [1]	0.454 ± 0.214	20329422	0.185	0.349	0.430	7.787×10^{-2}	2.15
reflectance continuum aband [1]	0.410 ± 0.247	20329422	4.500×10^{-2}	0.379	0.392	9.148×10^{-3}	6.50

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	0.130	0.400	0.950	1.000	1.000	1.000	1.000
cloud fraction [1]	1.952×10^{-2}	6.634×10^{-2}	0.104	0.156	0.258	0.990	1.000	1.000	1.000	1.000
cloud top height [m]	106	535	943	1.262×10^3	1.697×10^3	5.235×10^3	6.348×10^3	7.375×10^3	8.707×10^3	1.103×10^4
cloud optical thickness [1]	1.13	2.99	4.18	5.19	6.69	19.1	28.8	42.3	72.1	238
cloud fraction crb [1]	1.911×10^{-2}	6.523×10^{-2}	0.103	0.155	0.256	0.989	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	122	473	743	1.117×10^3	4.268×10^3	5.236×10^3	6.096×10^3	7.258×10^3	9.250×10^3
cloud albedo crb [1]	3.853×10^{-2}	0.242	0.344	0.407	0.455	0.678	0.748	0.810	0.888	1.000
surface albedo fitted [1]	0.0	7.032×10^{-3}	1.107×10^{-2}	1.458×10^{-2}	2.011×10^{-2}	0.235	0.314	0.422	0.592	0.889
surface albedo fitted crb [1]	0.0	4.777×10^{-3}	7.300×10^{-3}	9.703×10^{-3}	1.333×10^{-2}	0.233	0.317	0.436	0.585	0.866
fitted root mean square [1]	1.036×10^{-5}	2.340×10^{-5}	3.945×10^{-5}	6.229×10^{-5}	1.085×10^{-4}	9.697×10^{-4}	1.450×10^{-3}	1.946×10^{-3}	2.614×10^{-3}	4.103×10^{-3}
fitted root mean square crb [1]	6.166×10^{-6}	1.512×10^{-5}	2.578×10^{-5}	4.043×10^{-5}	7.317×10^{-5}	9.067×10^{-4}	1.384×10^{-3}	1.861×10^{-3}	2.500×10^{-3}	3.753×10^{-3}
wavelength shift [nm]	-7.925×10^{-3}	-1.258×10^{-3}	-6.964×10^{-5}	6.101×10^{-4}	2.038×10^{-3}	1.154×10^{-2}	1.385×10^{-2}	1.587×10^{-2}	1.858×10^{-2}	2.461×10^{-2}
cloud fraction apriori [1]	2.889×10^{-2}	6.426×10^{-2}	9.841×10^{-2}	0.149	0.250	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.231	0.259	0.283	0.310	0.352	0.641	0.712	0.770	0.838	0.965
reflectance green ocra [1]	0.150	0.172	0.193	0.218	0.263	0.612	0.690	0.752	0.827	0.960
reflectance continuum aband [1]	2.912×10^{-2}	5.417×10^{-2}	8.710×10^{-2}	0.130	0.209	0.588	0.674	0.746	0.833	0.972

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]	0.672 ± 0.336	13217044	0.530	0.800	0.0	1.000	0.400	0.930
cloud fraction [1]	0.633 ± 0.348	13217044	0.695	0.695	0.0	1.000	0.305	1.000
cloud top height [m]	$(0.377 \pm 0.272) \times 10^4$	13217044	3.767×10^3	3.216×10^3	0.0	2.000×10^4	1.618×10^3	5.385×10^3
cloud optical thickness [1]	18.8 ± 31.2	13217044	11.2	10.1	1.000	250	6.37	17.6
cloud fraction crb [1]	0.633 ± 0.349	13217044	0.696	0.694	0.0	1.000	0.303	1.000
cloud height crb [m]	$(0.293 \pm 0.236) \times 10^4$	13217044	3.382×10^3	2.441×10^3	0.0	2.000×10^4	1.002×10^3	4.384×10^3
cloud albedo crb [1]	0.550 ± 0.197	13217044	0.237	0.541	0.0	1.000	0.439	0.676
surface albedo fitted [1]	0.192 ± 0.215	13217044	0.271	0.116	0.0	1.000	2.123×10^{-2}	0.292
surface albedo fitted crb [1]	0.190 ± 0.216	13217044	0.279	0.117	0.0	1.000	1.554×10^{-2}	0.295
fitted root mean square [1]	$(9.274 \pm 12.383) \times 10^{-4}$	13217044	1.141×10^{-3}	5.593×10^{-4}	1.689×10^{-6}	0.686	1.628×10^{-4}	1.304×10^{-3}
fitted root mean square crb [1]	$(8.487 \pm 15.917) \times 10^{-4}$	13217044	1.102×10^{-3}	4.948×10^{-4}	8.209×10^{-7}	1.35	1.383×10^{-4}	1.240×10^{-3}
wavelength shift [nm]	$(8.142 \pm 6.616) \times 10^{-3}$	13217044	9.027×10^{-3}	7.962×10^{-3}	-0.125	8.421×10^{-2}	3.420×10^{-3}	1.245×10^{-2}
cloud fraction apriori [1]	0.636 ± 0.351	13217044	0.698	0.699	0.0	1.000	0.302	1.000
reflectance blue ocra [1]	0.520 ± 0.192	13217044	0.315	0.509	0.134	1.90	0.349	0.665
reflectance green ocra [1]	0.472 ± 0.219	13217044	0.374	0.465	7.820×10^{-2}	1.89	0.269	0.643
reflectance continuum aband [1]	0.445 ± 0.244	13217044	0.369	0.439	1.238×10^{-2}	6.50	0.256	0.625

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]	0.623 ± 0.388	7112378	0.700	0.850	0.0	1.000	0.300	1.000
cloud fraction [1]	0.497 ± 0.326	7112378	0.589	0.452	0.0	1.000	0.202	0.791
cloud top height [m]	$(0.363 \pm 0.225) \times 10^4$	7112378	3.136×10^3	3.115×10^3	0.0	2.000×10^4	1.810×10^3	4.945×10^3
cloud optical thickness [1]	25.0 ± 40.1	7112378	15.1	11.7	1.000	250	7.25	22.3
cloud fraction crb [1]	0.495 ± 0.326	7112378	0.587	0.448	0.0	1.000	0.199	0.787
cloud height crb [m]	$(0.288 \pm 0.196) \times 10^4$	7112378	2.780×10^3	2.418×10^3	0.0	1.981×10^4	1.272×10^3	4.053×10^3
cloud albedo crb [1]	0.585 ± 0.164	7112378	0.196	0.569	0.0	1.000	0.484	0.680
surface albedo fitted [1]	$(7.109 \pm 12.536) \times 10^{-2}$	7112378	3.753×10^{-2}	3.264×10^{-2}	0.0	1.000	1.870×10^{-2}	5.624×10^{-2}
surface albedo fitted crb [1]	$(5.801 \pm 12.487) \times 10^{-2}$	7112378	2.040×10^{-2}	1.888×10^{-2}	0.0	1.000	1.124×10^{-2}	3.164×10^{-2}
fitted root mean square [1]	$(3.573 \pm 5.187) \times 10^{-4}$	7112378	3.563×10^{-4}	1.739×10^{-4}	8.986×10^{-7}	2.794×10^{-2}	6.399×10^{-5}	4.202×10^{-4}
fitted root mean square crb [1]	$(3.058 \pm 4.884) \times 10^{-4}$	7112378	3.187×10^{-4}	1.035×10^{-4}	1.046×10^{-6}	3.168×10^{-2}	3.699×10^{-5}	3.557×10^{-4}
wavelength shift [nm]	$(5.381 \pm 6.476) \times 10^{-3}$	7112378	8.331×10^{-3}	3.964×10^{-3}	-4.325×10^{-2}	5.908×10^{-2}	7.909×10^{-4}	9.122×10^{-3}
cloud fraction apriori [1]	0.493 ± 0.331	7112378	0.605	0.442	0.0	1.000	0.189	0.794
reflectance blue oca [1]	0.489 ± 0.177	7112378	0.238	0.456	0.130	1.90	0.355	0.593
reflectance green oca [1]	0.419 ± 0.200	7112378	0.289	0.381	7.787×10^{-2}	2.15	0.256	0.545
reflectance continuum aband [1]	0.344 ± 0.238	7112378	0.354	0.307	9.148×10^{-3}	5.52	0.145	0.499

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]	0.640 ± 0.359	14752546	0.600	0.800	0.0	1.000	0.350	0.950
cloud fraction [1]	0.560 ± 0.342	14752546	0.707	0.542	0.0	1.000	0.239	0.946
cloud top height [m]	$(0.360 \pm 0.259) \times 10^4$	14752546	3.455×10^3	2.979×10^3	0.0	2.000×10^4	1.572×10^3	5.027×10^3
cloud optical thickness [1]	22.1 ± 36.6	14752546	12.4	10.9	1.000	250	7.12	19.5
cloud fraction crb [1]	0.558 ± 0.342	14752546	0.708	0.539	0.0	1.000	0.237	0.944
cloud height crb [m]	$(0.282 \pm 0.227) \times 10^4$	14752546	3.102×10^3	2.273×10^3	0.0	2.000×10^4	1.005×10^3	4.107×10^3
cloud albedo crb [1]	0.556 ± 0.180	14752546	0.209	0.543	0.0	1.000	0.453	0.662
surface albedo fitted [1]	$(9.805 \pm 17.571) \times 10^{-2}$	14752546	3.974×10^{-2}	2.888×10^{-2}	0.0	1.000	1.600×10^{-2}	5.574×10^{-2}
surface albedo fitted crb [1]	$(9.037 \pm 17.778) \times 10^{-2}$	14752546	2.488×10^{-2}	1.869×10^{-2}	0.0	1.000	1.063×10^{-2}	3.551×10^{-2}
fitted root mean square [1]	$(5.793 \pm 9.732) \times 10^{-4}$	14752546	6.191×10^{-4}	2.464×10^{-4}	8.986×10^{-7}	0.267	8.520×10^{-5}	7.043×10^{-4}
fitted root mean square crb [1]	$(5.025 \pm 9.620) \times 10^{-4}$	14752546	5.639×10^{-4}	1.907×10^{-4}	8.209×10^{-7}	0.898	5.765×10^{-5}	6.216×10^{-4}
wavelength shift [nm]	$(6.790 \pm 6.715) \times 10^{-3}$	14752546	9.363×10^{-3}	6.049×10^{-3}	-0.125	6.854×10^{-2}	1.721×10^{-3}	1.108×10^{-2}
cloud fraction apriori [1]	0.559 ± 0.346	14752546	0.738	0.539	0.0	1.000	0.230	0.969
reflectance blue ocr [1]	0.504 ± 0.179	14752546	0.273	0.485	0.150	1.88	0.355	0.628
reflectance green ocr [1]	0.445 ± 0.205	14752546	0.334	0.426	8.700×10^{-2}	1.98	0.262	0.596
reflectance continuum aband [1]	0.373 ± 0.243	14752546	0.401	0.356	9.373×10^{-3}	5.52	0.154	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]	0.711 ± 0.331	3415802	0.360	0.850	0.0	1.000	0.590	0.950
cloud fraction [1]	0.629 ± 0.353	3415802	0.706	0.691	0.0	1.000	0.294	1.000
cloud top height [m]	$(0.435 \pm 0.251) \times 10^4$	3415802	3.542×10^3	3.989×10^3	0.0	2.000×10^4	2.395×10^3	5.936×10^3
cloud optical thickness [1]	16.9 ± 27.0	3415802	10.6	9.15	1.000	250	5.81	16.5
cloud fraction crb [1]	0.628 ± 0.353	3415802	0.706	0.690	0.0	1.000	0.293	0.999
cloud height crb [m]	$(0.334 \pm 0.211) \times 10^4$	3415802	3.113×10^3	2.943×10^3	0.0	2.000×10^4	1.668×10^3	4.781×10^3
cloud albedo crb [1]	0.596 ± 0.205	3415802	0.256	0.593	0.0	1.000	0.482	0.737
surface albedo fitted [1]	0.336 ± 0.207	3415802	0.118	0.268	0.0	1.000	0.220	0.338
surface albedo fitted crb [1]	0.332 ± 0.205	3415802	0.119	0.264	0.0	1.000	0.217	0.335
fitted root mean square [1]	$(1.225 \pm 1.190) \times 10^{-3}$	3415802	1.304×10^{-3}	9.338×10^{-4}	2.761×10^{-6}	0.548	4.400×10^{-4}	1.744×10^{-3}
fitted root mean square crb [1]	$(1.187 \pm 1.957) \times 10^{-3}$	3415802	1.300×10^{-3}	9.212×10^{-4}	1.432×10^{-6}	0.926	4.059×10^{-4}	1.705×10^{-3}
wavelength shift [nm]	$(8.310 \pm 6.339) \times 10^{-3}$	3415802	8.518×10^{-3}	8.231×10^{-3}	-0.116	8.421×10^{-2}	3.916×10^{-3}	1.243×10^{-2}
cloud fraction apriori [1]	0.635 ± 0.358	3415802	0.711	0.705	0.0	1.000	0.289	1.000
reflectance blue ocra [1]	0.523 ± 0.221	3415802	0.369	0.481	0.133	1.90	0.333	0.701
reflectance green ocra [1]	0.481 ± 0.247	3415802	0.427	0.431	7.787×10^{-2}	2.15	0.259	0.685
reflectance continuum aband [1]	0.522 ± 0.228	3415802	0.366	0.481	1.584×10^{-2}	5.27	0.333	0.699

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	3.508×10^{-5}	-2.469×10^{-2}	-6.522×10^{-2}	5.794×10^{-2}	3.011×10^{-2}	-6.593×10^{-2}	0.107	4.911×10^{-2}	-6.865×10^{-2}
3.508×10^{-5}	1.000	-0.124	0.112	-2.353×10^{-2}	0.234	0.111	-1.269×10^{-2}	6.216×10^{-2}	0.113
-2.469×10^{-2}	-0.124	1.000	0.220	-8.834×10^{-2}	-7.387×10^{-2}	0.222	-0.104	-0.103	0.229
-6.522×10^{-2}	0.112	0.220	1.000	-2.070×10^{-2}	0.297	1.000	1.581×10^{-2}	0.309	0.989
5.794×10^{-2}	-2.353×10^{-2}	-8.834×10^{-2}	-2.070×10^{-2}	1.000	0.114	-2.082×10^{-2}	0.956	5.450×10^{-2}	-2.624×10^{-2}
3.011×10^{-2}	0.234	-7.387×10^{-2}	0.297	0.114	1.000	0.293	0.162	0.536	0.294
-6.593×10^{-2}	0.111	0.222	1.000	-2.082×10^{-2}	0.293	1.000	1.582×10^{-2}	0.305	0.989
0.107	-1.269×10^{-2}	-0.104	1.581×10^{-2}	0.956	0.162	1.582×10^{-2}	1.000	3.832×10^{-2}	1.022×10^{-2}
4.911×10^{-2}	6.216×10^{-2}	-0.103	0.309	5.450×10^{-2}	0.536	0.305	3.832×10^{-2}	1.000	0.316
-6.865×10^{-2}	0.113	0.229	0.989	-2.624×10^{-2}	0.294	0.989	1.022×10^{-2}	0.316	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	1.557×10^{-2}	-23.0	-0.445	2.927×10^3	20.6	-0.451	4.709×10^3	0.181	-0.475
1.557×10^{-2}	508	-132	0.875	-1.361×10^3	183	0.866	-637	0.262	0.892
-23.0	-132	2.233×10^3	3.60	-1.071×10^4	-121	3.65	-1.100×10^4	-0.910	3.80
-0.445	0.875	3.60	0.120	-18.4	3.57	0.120	12.2	2.007×10^{-2}	0.120
2.927×10^3	-1.361×10^3	-1.071×10^4	-18.4	6.582×10^6	1.019×10^4	-18.5	5.468×10^6	26.2	-23.6
20.6	183	-121	3.57	1.019×10^4	1.204×10^3	3.52	1.250×10^4	3.48	3.59
-0.451	0.866	3.65	0.120	-18.5	3.52	0.120	12.2	1.984×10^{-2}	0.121
4.709×10^3	-637	-1.100×10^4	12.2	5.468×10^6	1.250×10^4	12.2	4.967×10^6	16.0	8.00
0.181	0.262	-0.910	2.007×10^{-2}	26.2	3.48	1.984×10^{-2}	16.0	3.506×10^{-2}	2.076×10^{-2}
-0.475	0.892	3.80	0.120	-23.6	3.59	0.121	8.00	2.076×10^{-2}	0.123

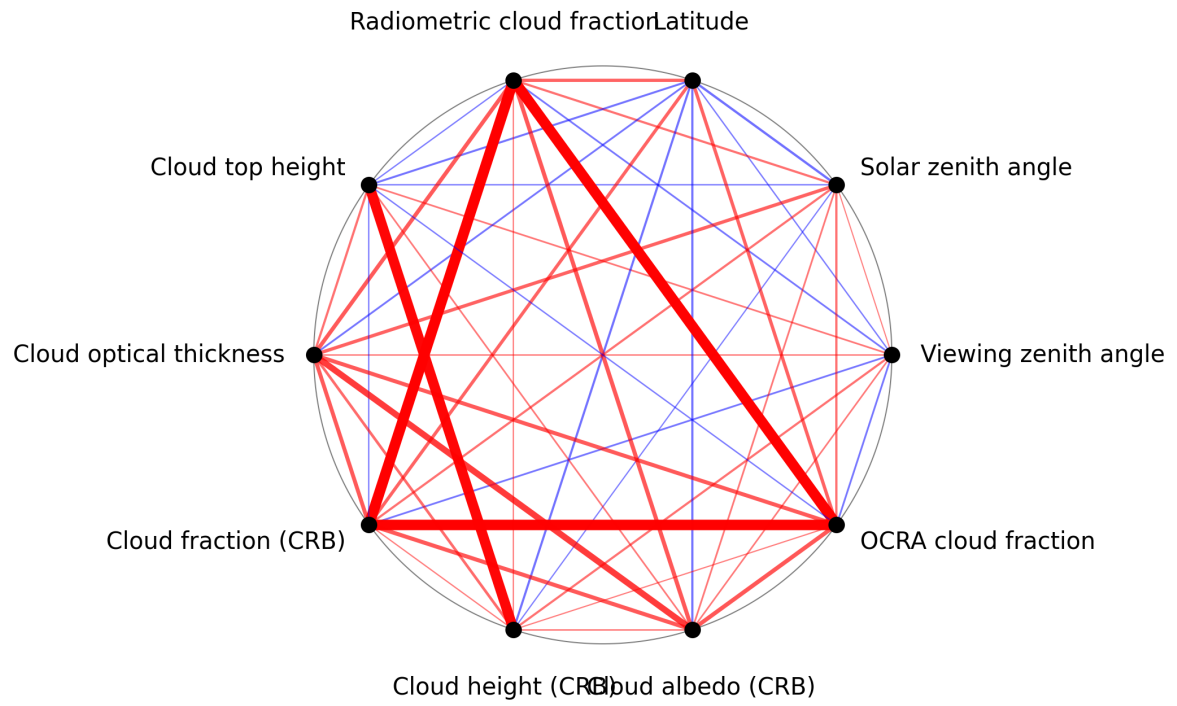


Figure 1: Map of correlation graph for 2025-07-20 to 2025-07-22.

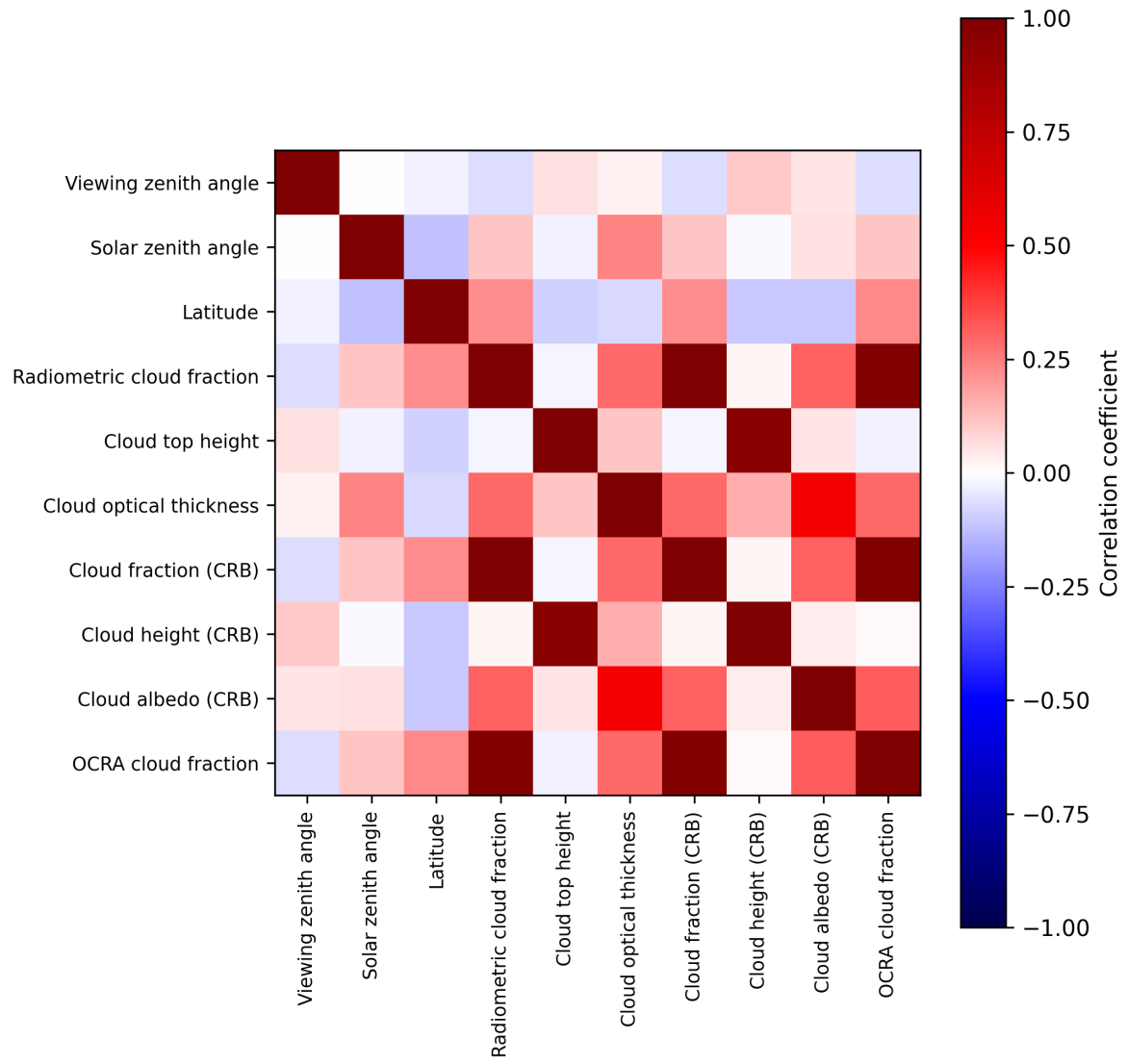


Figure 2: Map of correlation matrix for 2025-07-20 to 2025-07-22.

3 Granule outlines

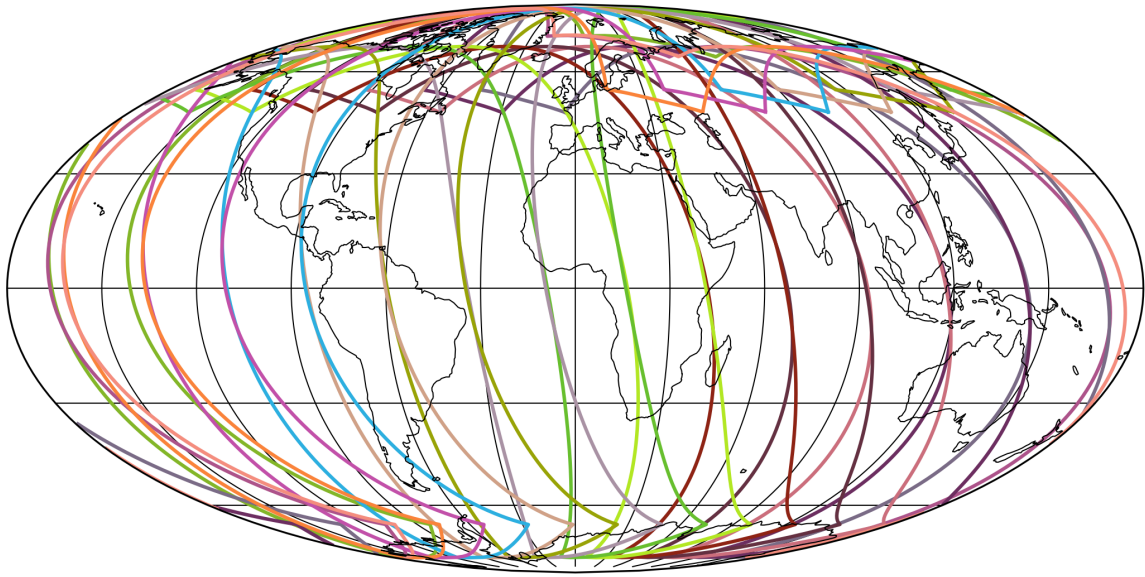


Figure 3: Outline of the granules.

4 Input data monitoring

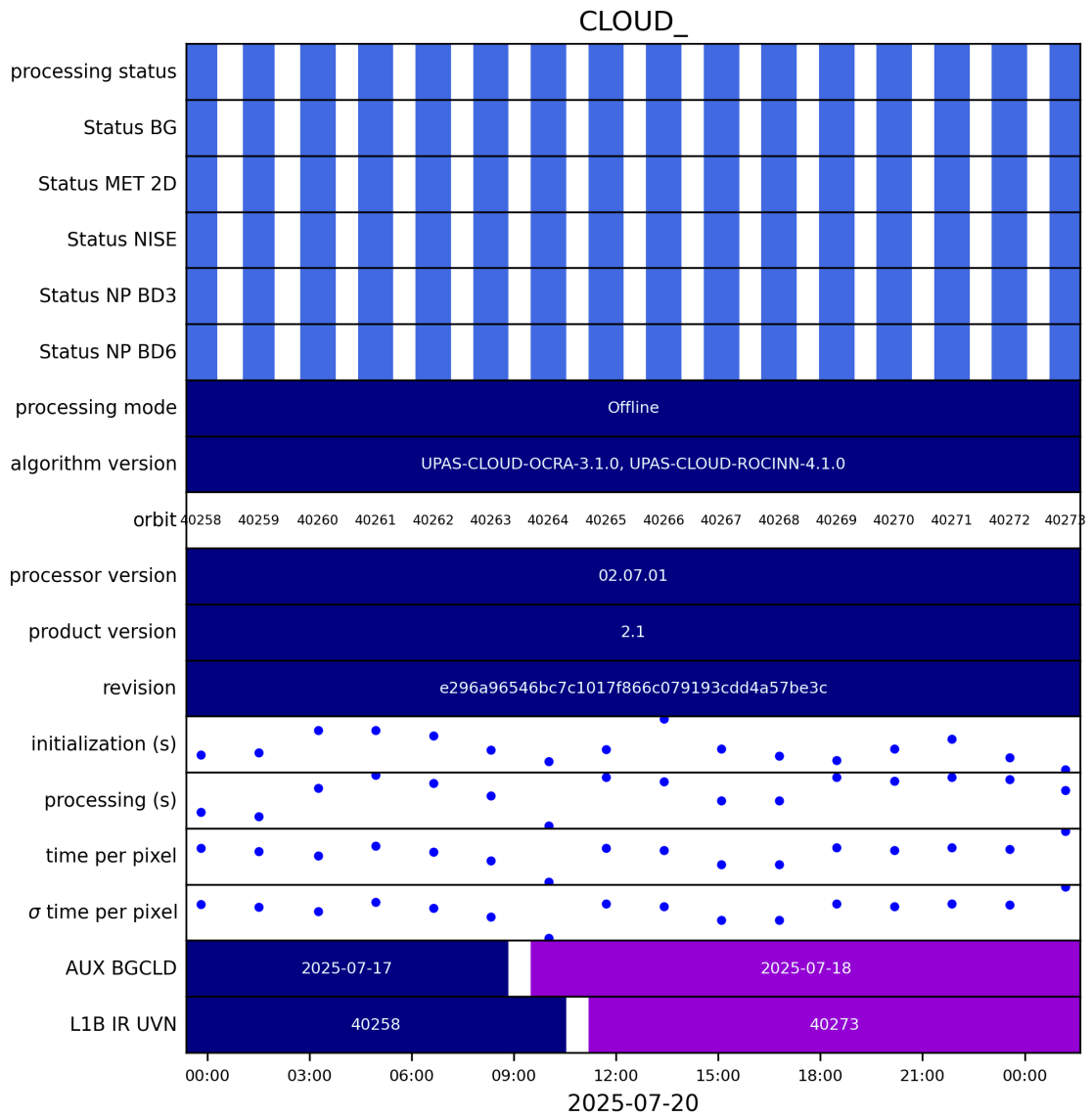


Figure 4: Input data per granule

5 Warnings and errors

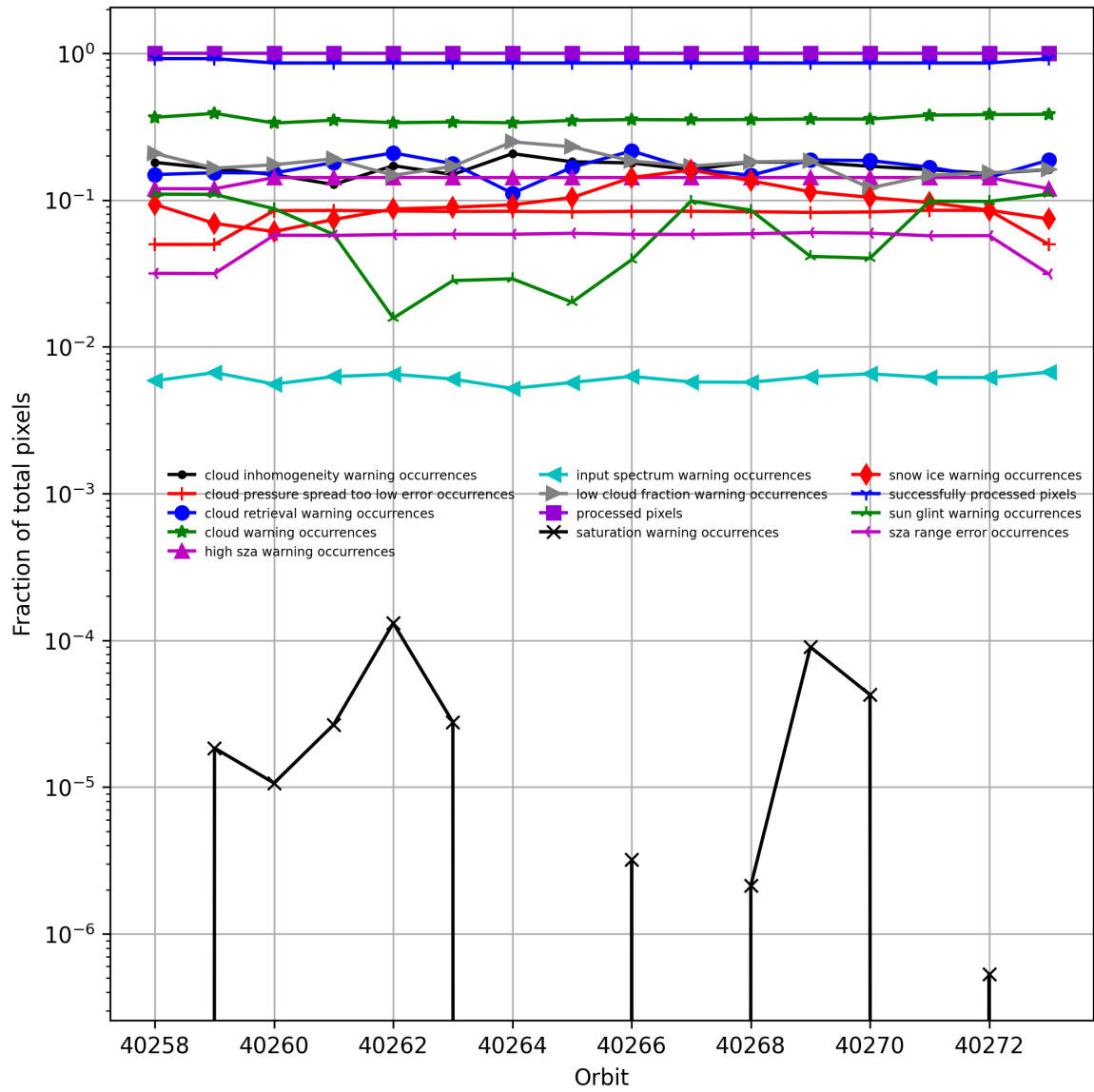


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

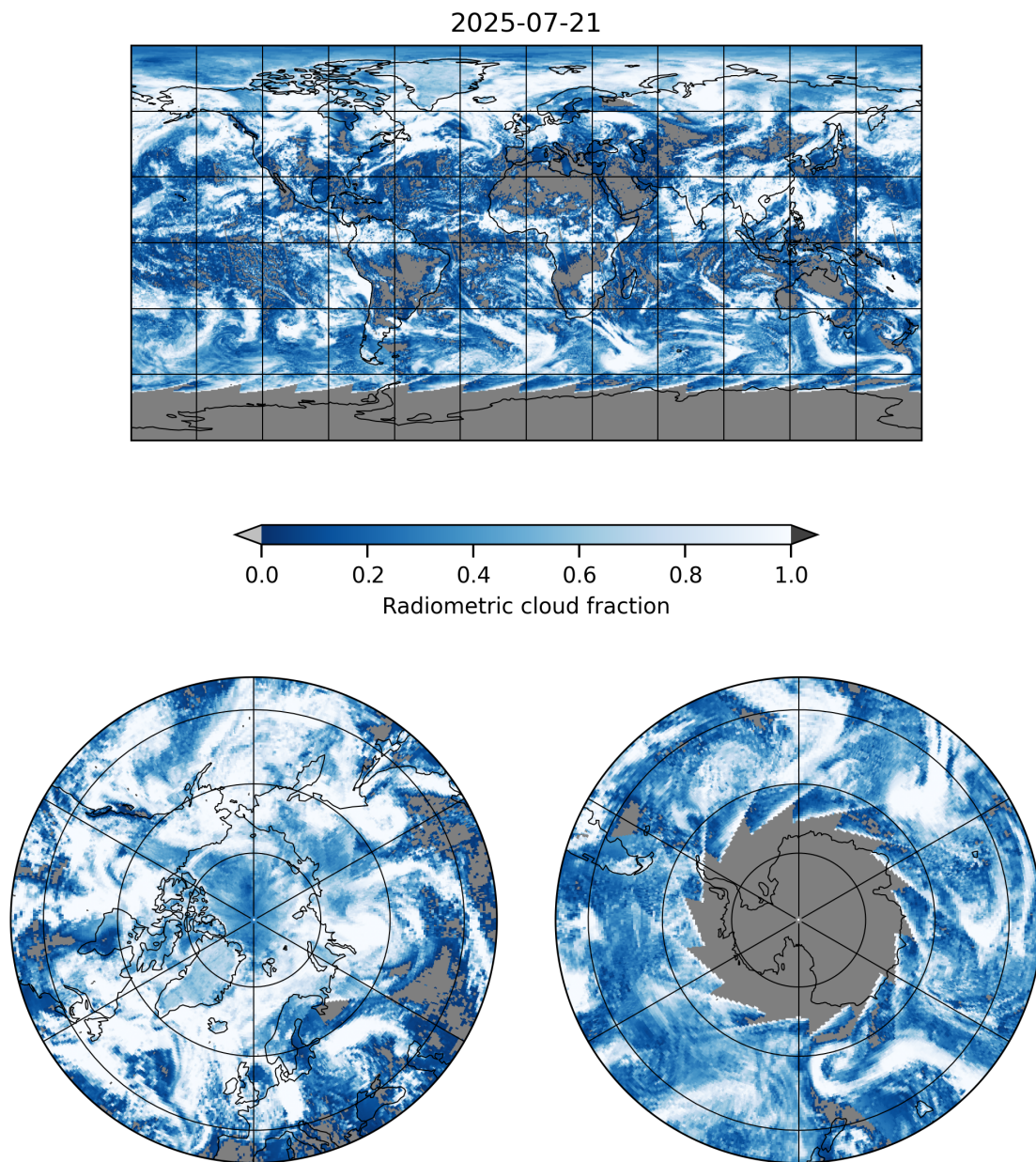


Figure 6: Map of “Radiometric cloud fraction” for 2025-07-20 to 2025-07-22

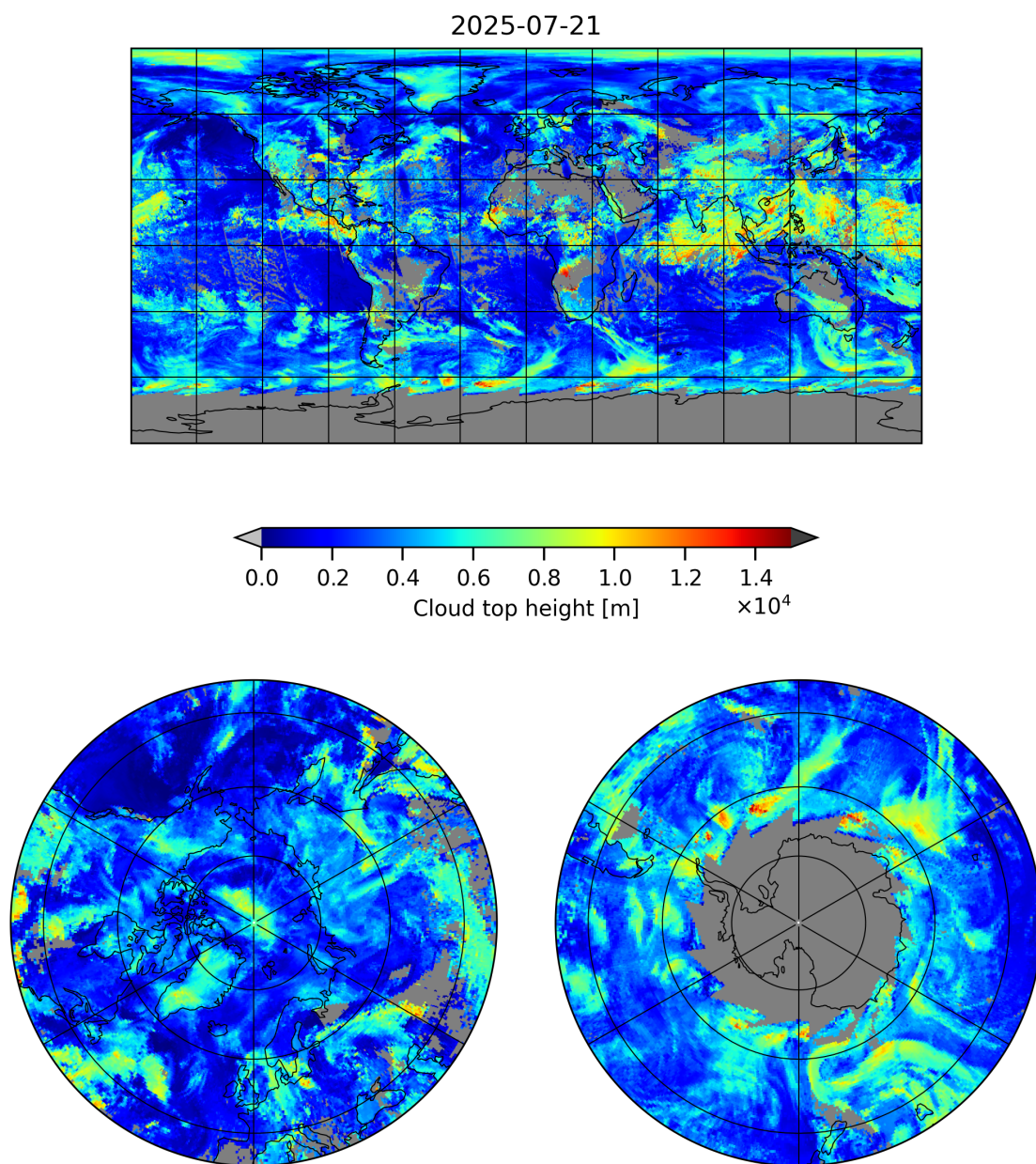


Figure 7: Map of “Cloud top height” for 2025-07-20 to 2025-07-22

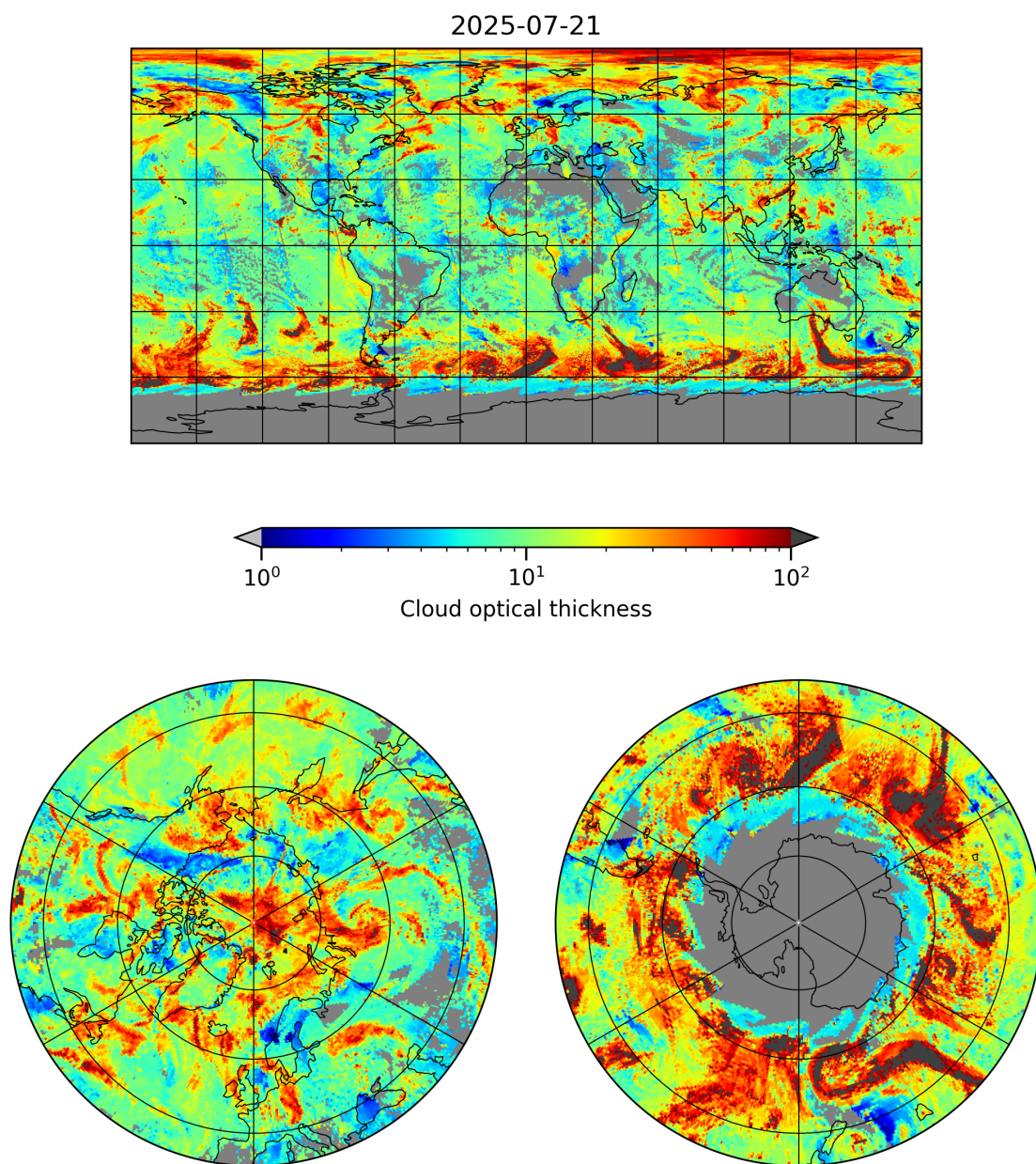


Figure 8: Map of “Cloud optical thickness” for 2025-07-20 to 2025-07-22

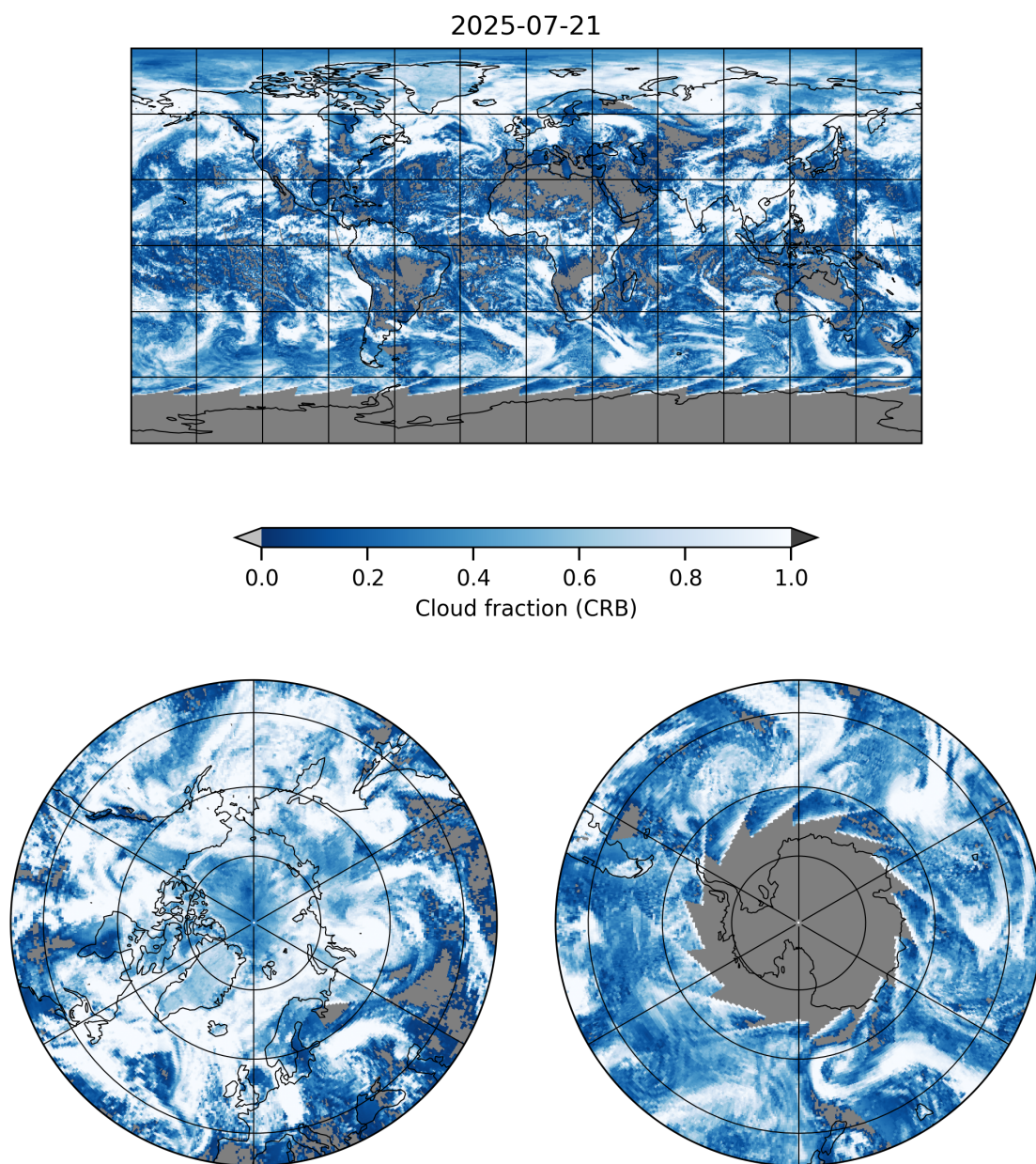


Figure 9: Map of “Cloud fraction (CRB)” for 2025-07-20 to 2025-07-22

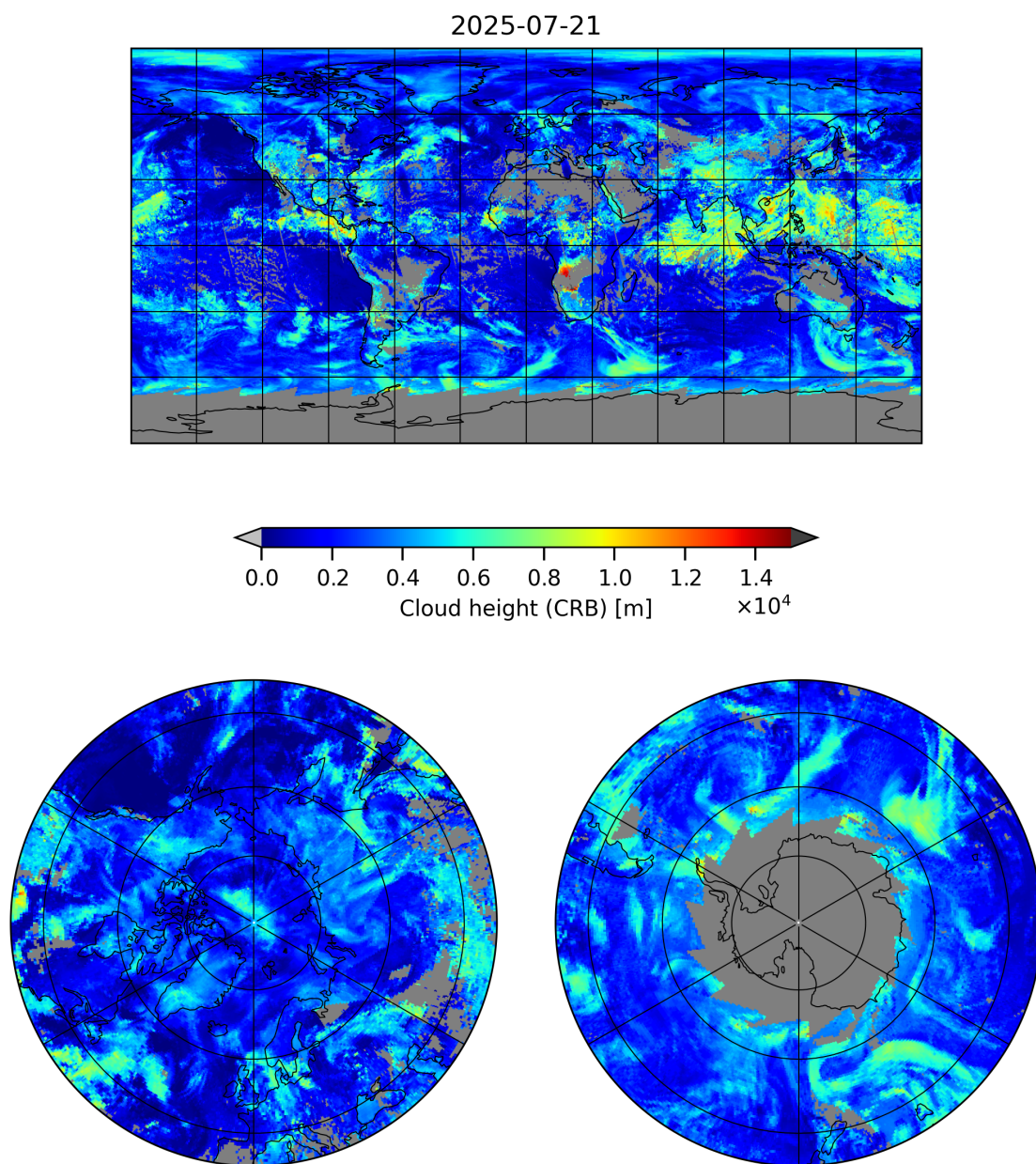


Figure 10: Map of “Cloud height (CRB)” for 2025-07-20 to 2025-07-22

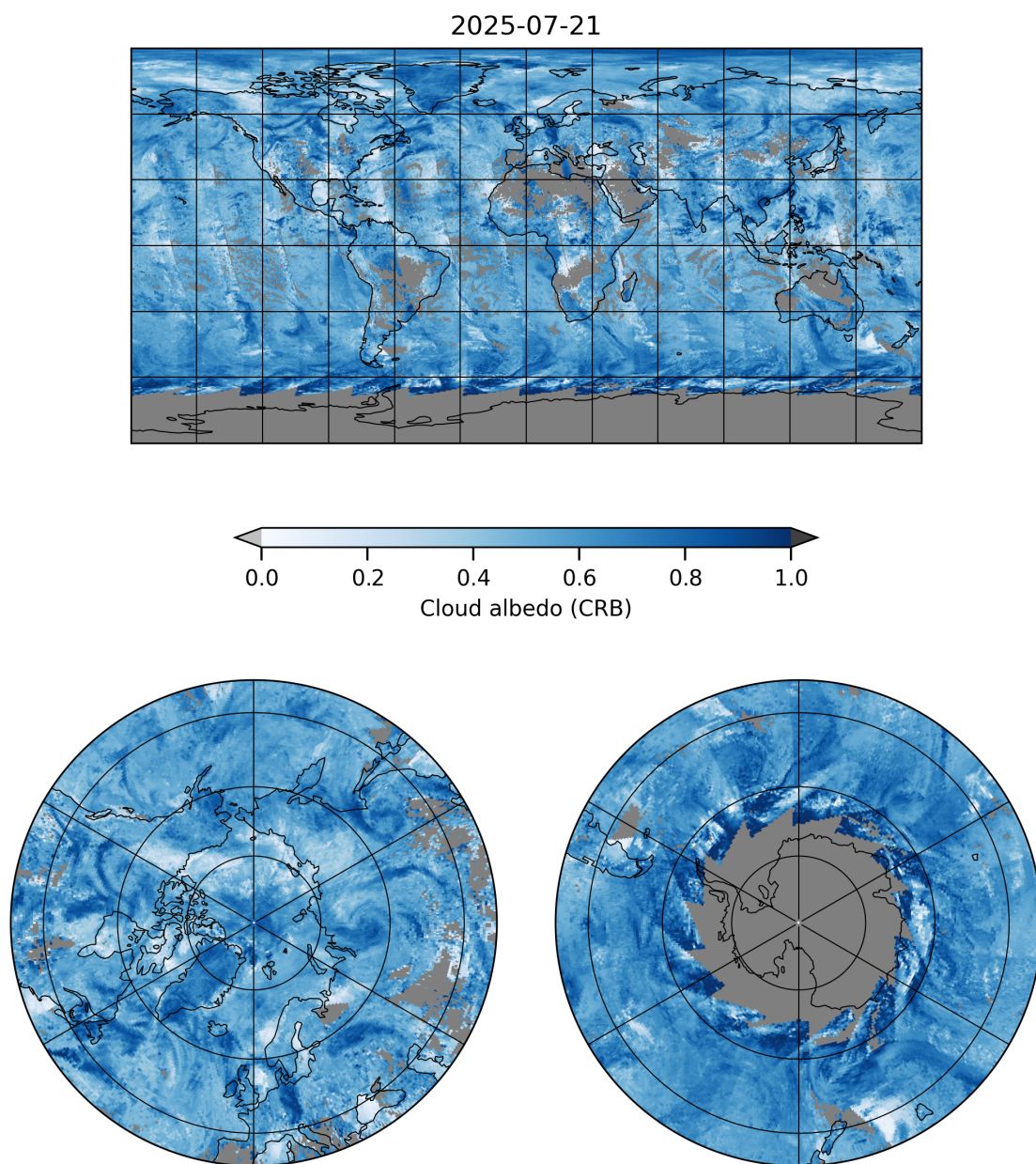


Figure 11: Map of “Cloud albedo (CRB)” for 2025-07-20 to 2025-07-22

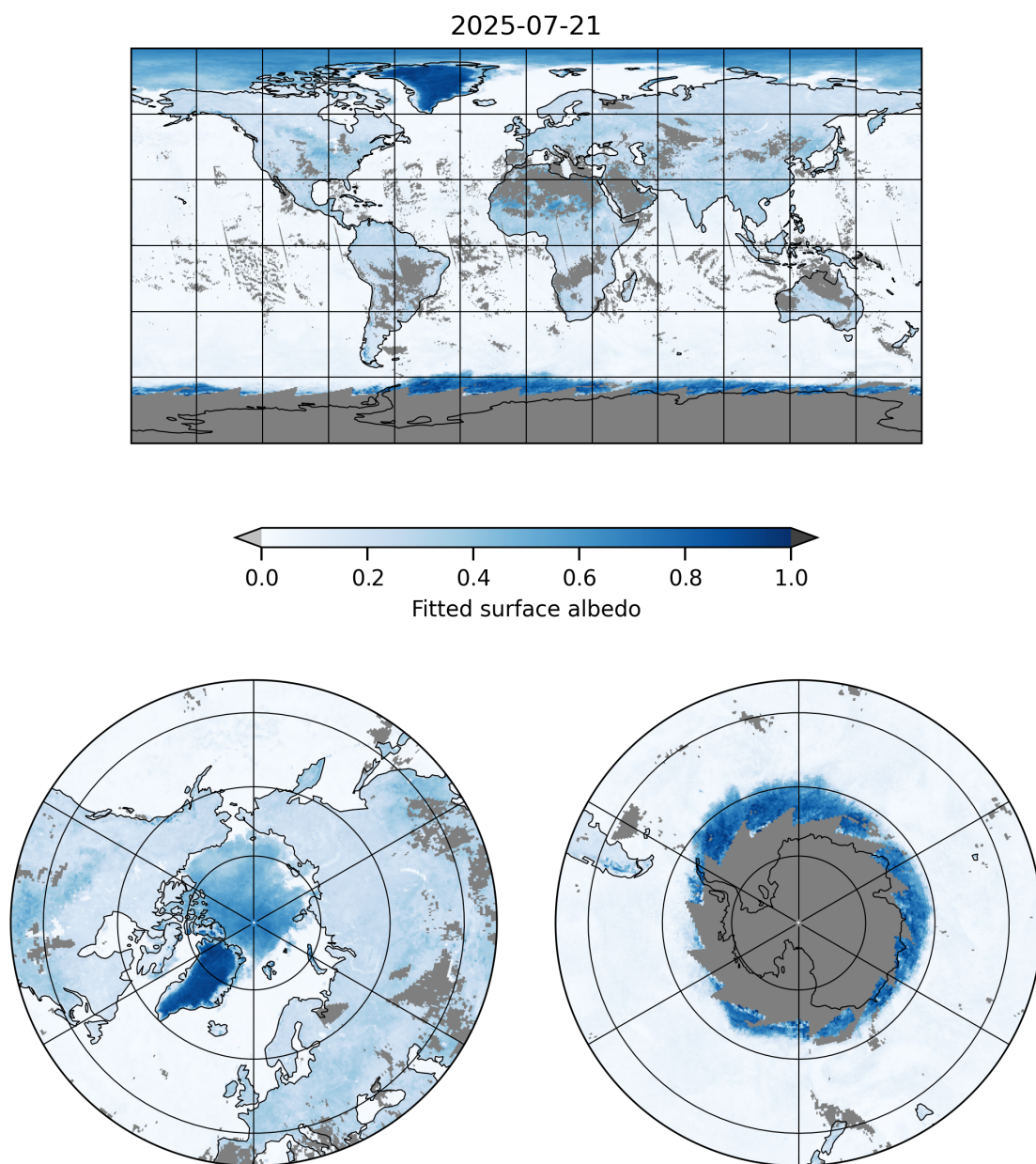


Figure 12: Map of “Fitted surface albedo” for 2025-07-20 to 2025-07-22

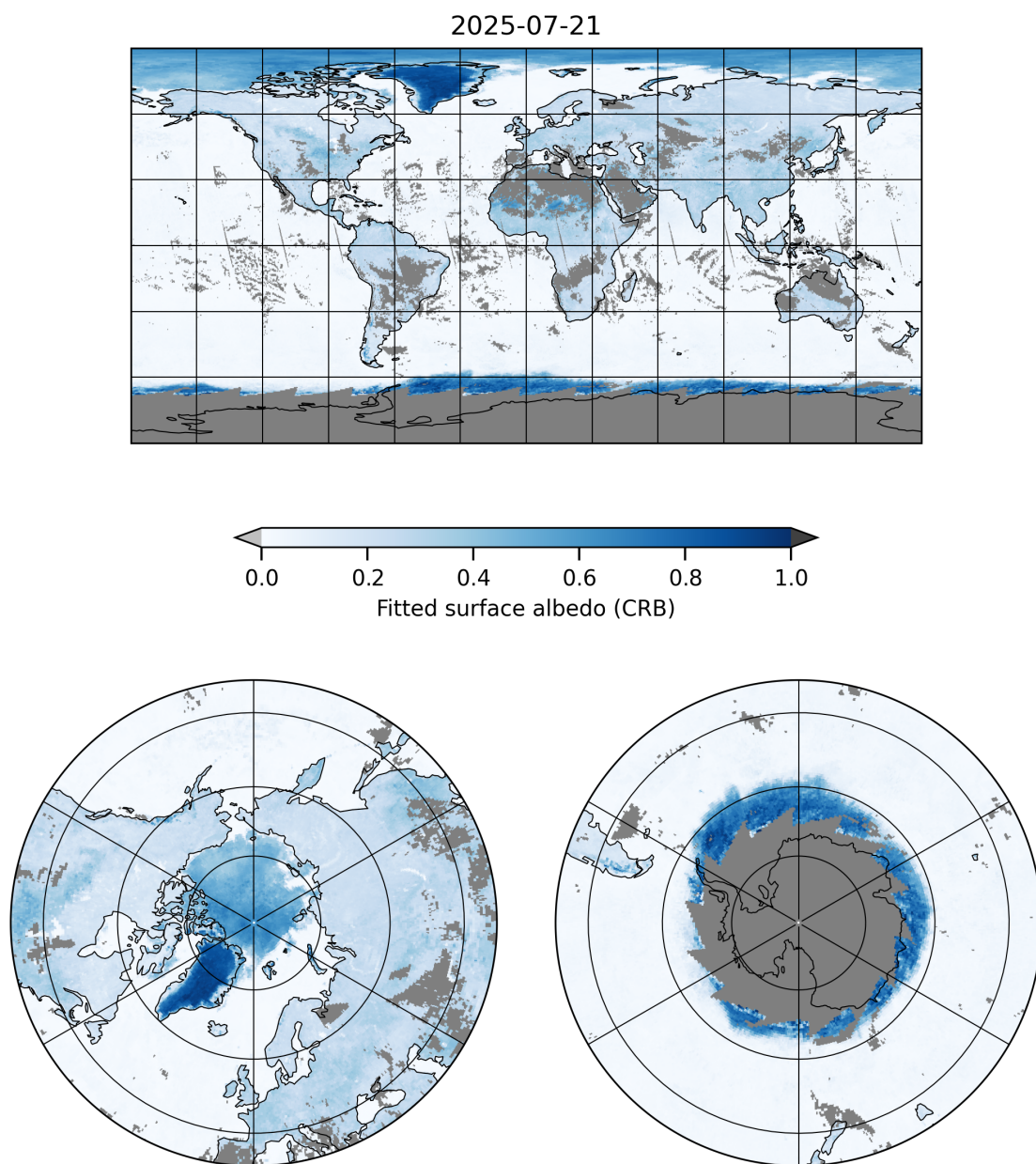


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-07-20 to 2025-07-22

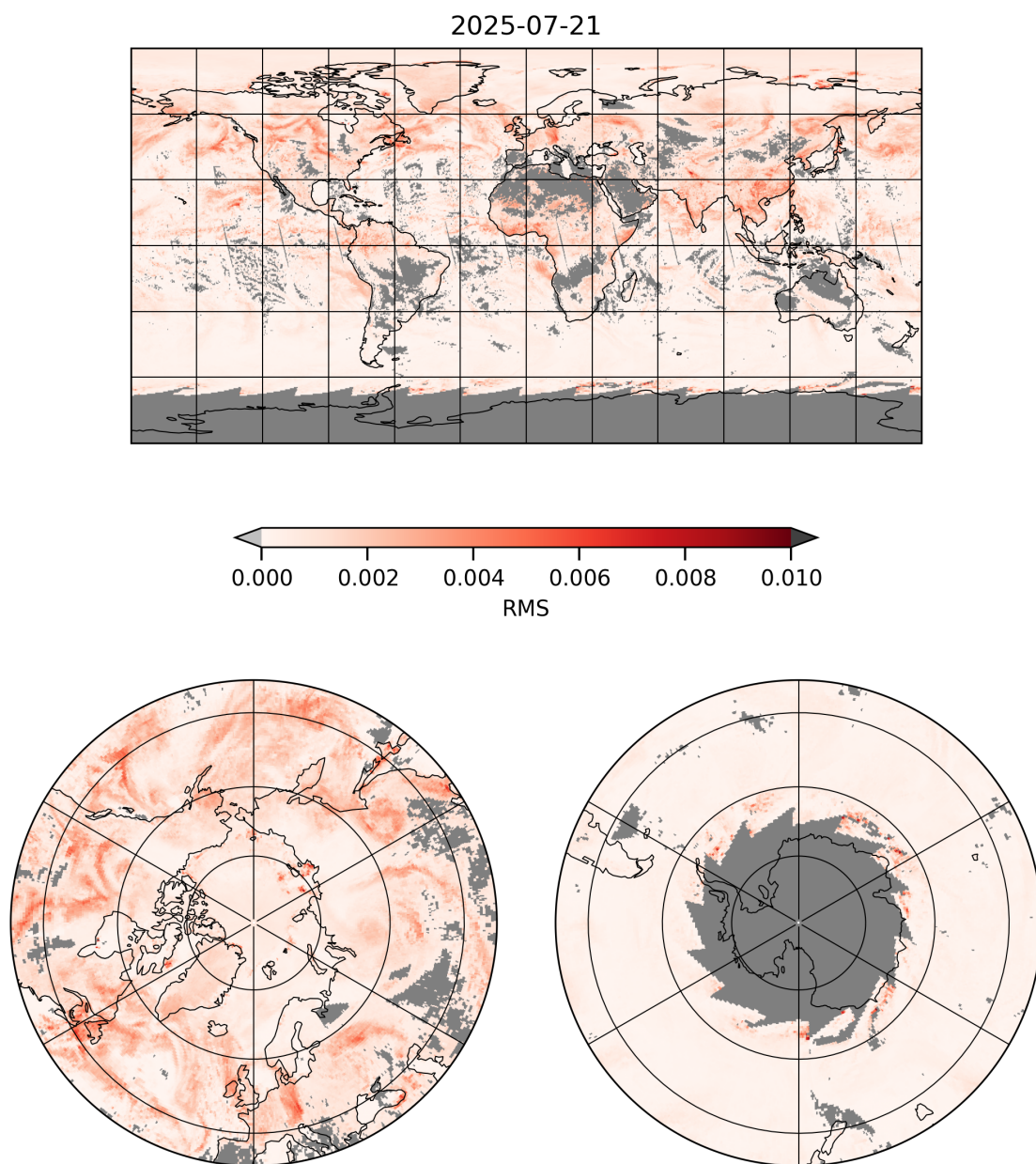


Figure 14: Map of “RMS” for 2025-07-20 to 2025-07-22

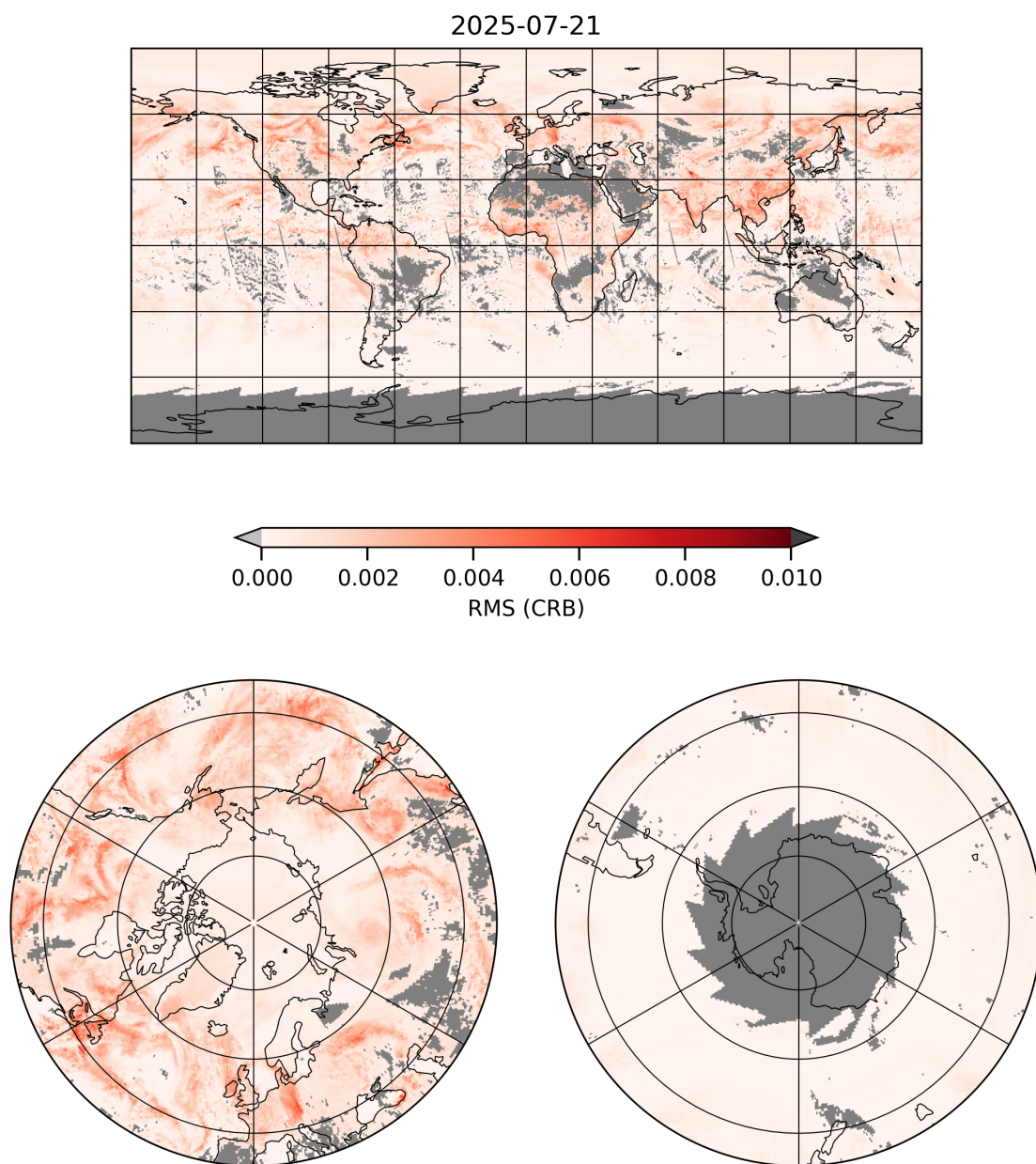


Figure 15: Map of “RMS (CRB)” for 2025-07-20 to 2025-07-22

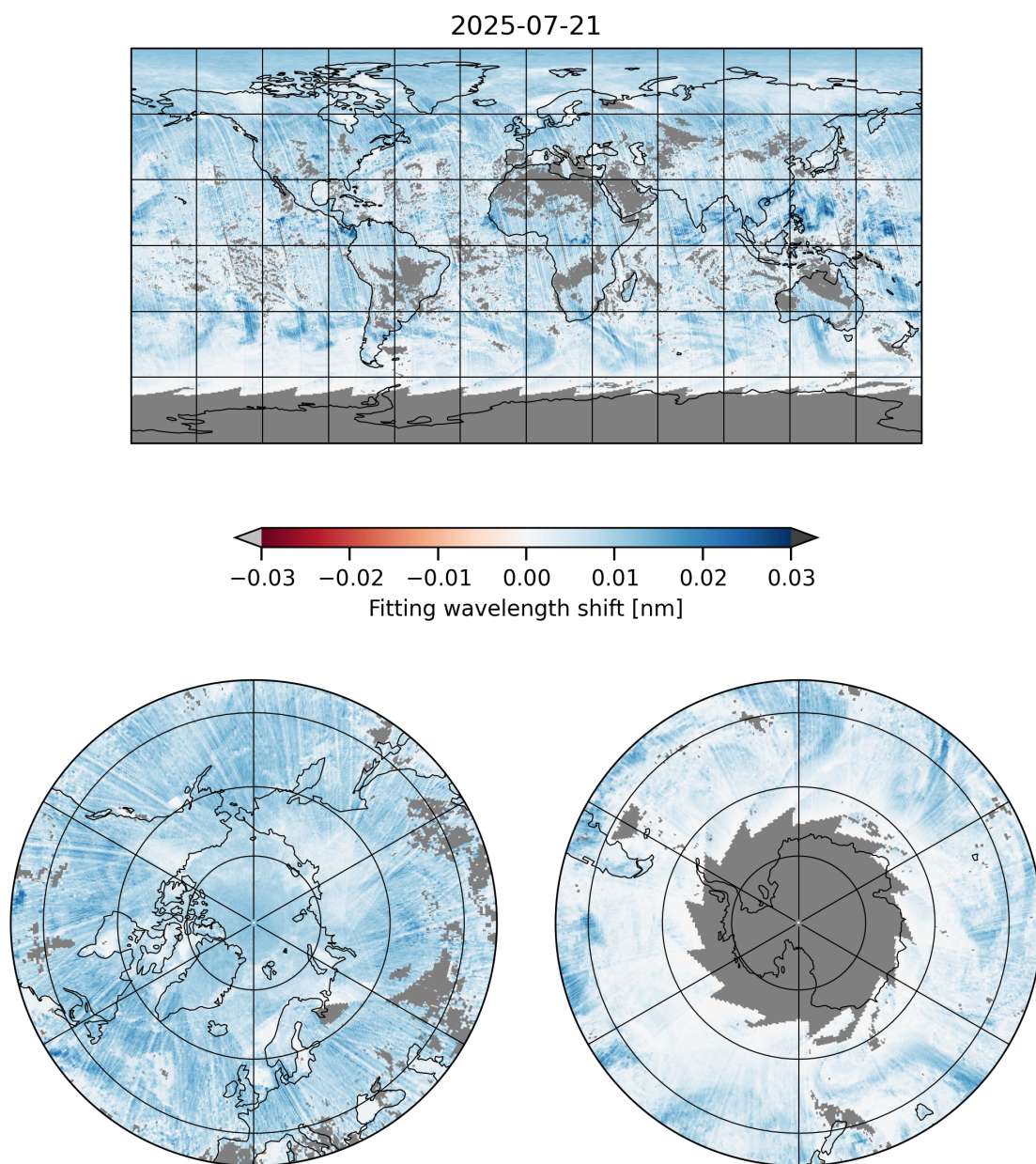


Figure 16: Map of "Fitting wavelength shift" for 2025-07-20 to 2025-07-22

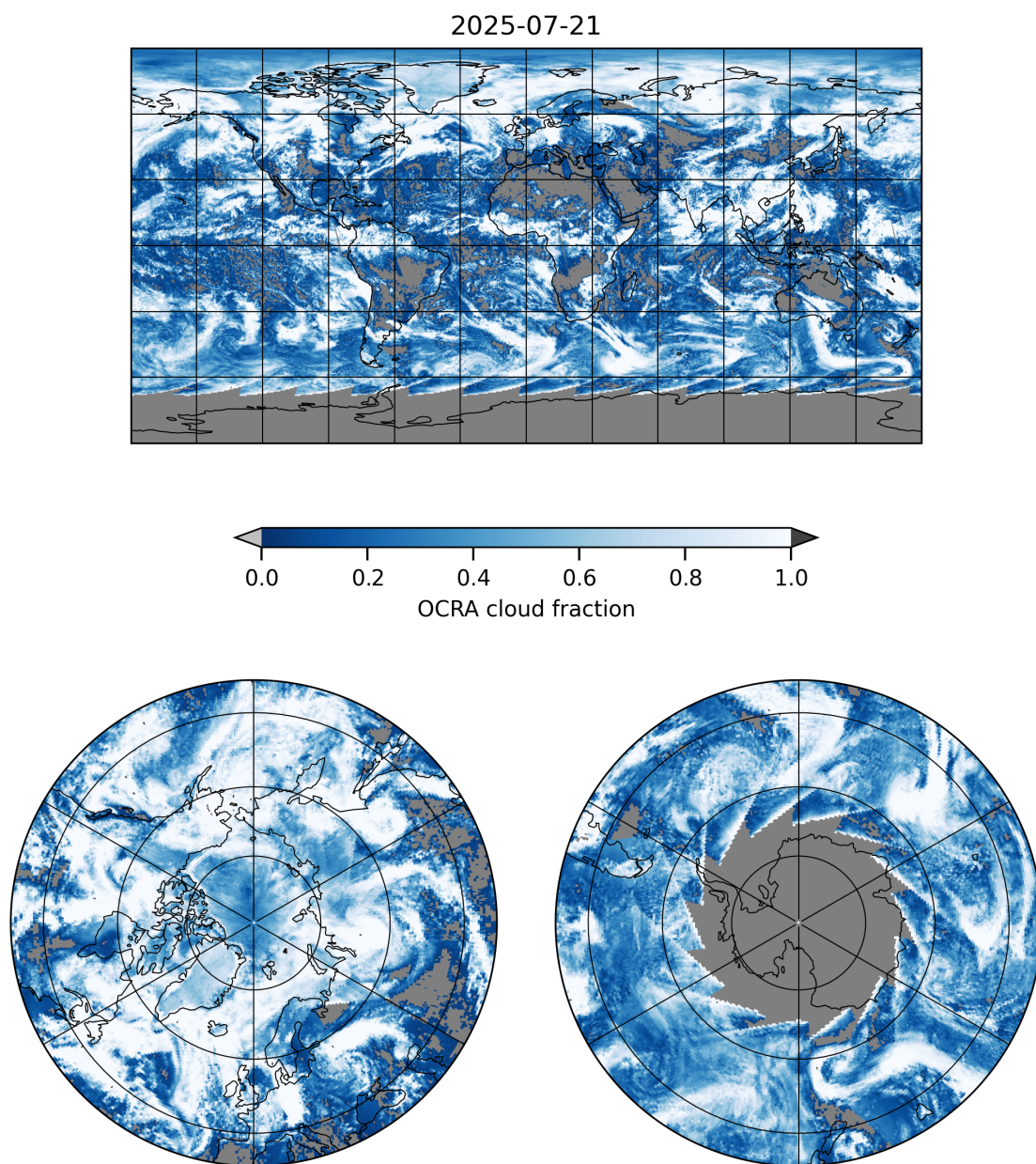


Figure 17: Map of “OCRA cloud fraction” for 2025-07-20 to 2025-07-22

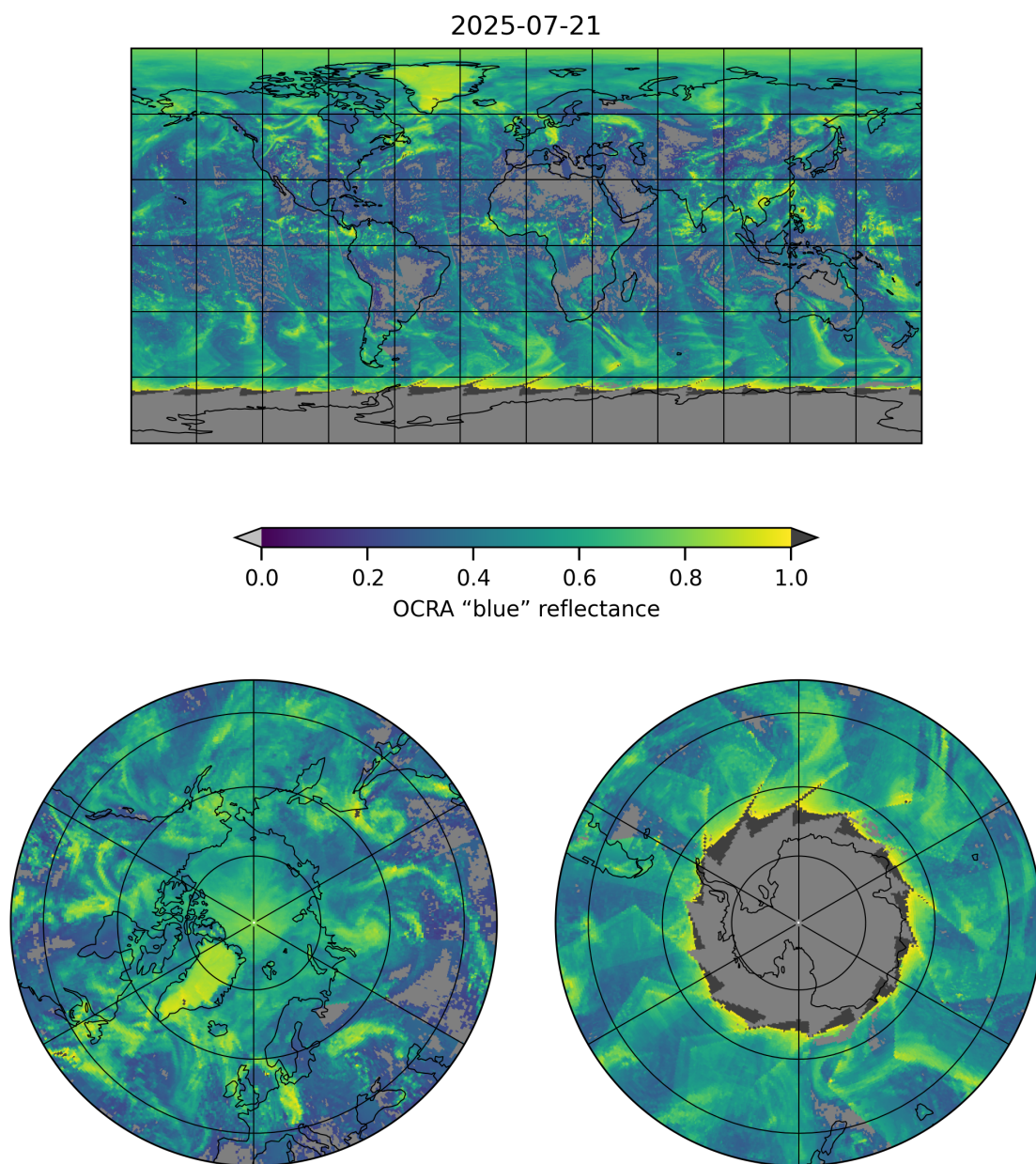


Figure 18: Map of "OCRA "blue" reflectance" for 2025-07-20 to 2025-07-22

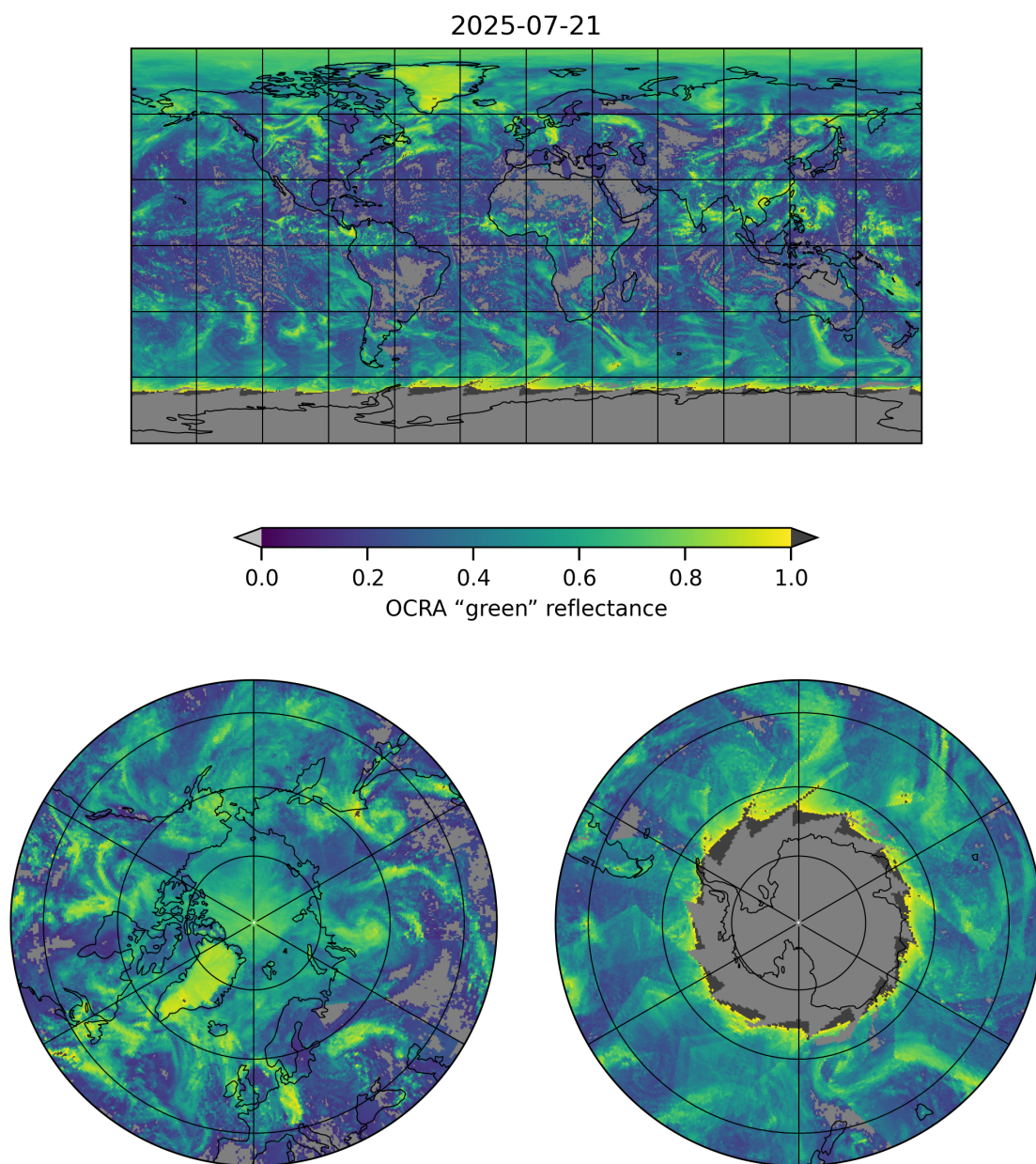


Figure 19: Map of "OCRA "green" reflectance" for 2025-07-20 to 2025-07-22

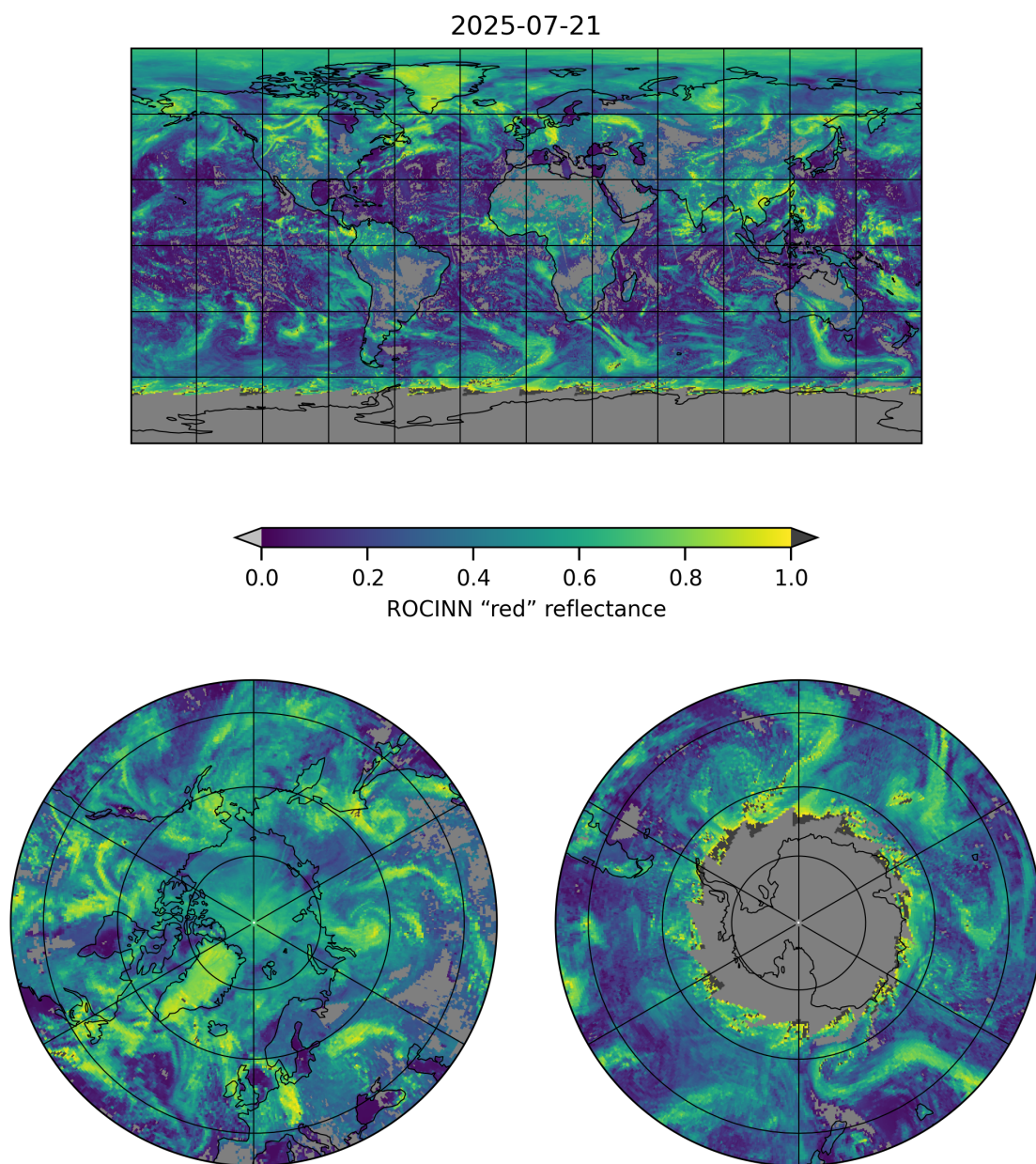


Figure 20: Map of "ROCINN "red" reflectance" for 2025-07-20 to 2025-07-22

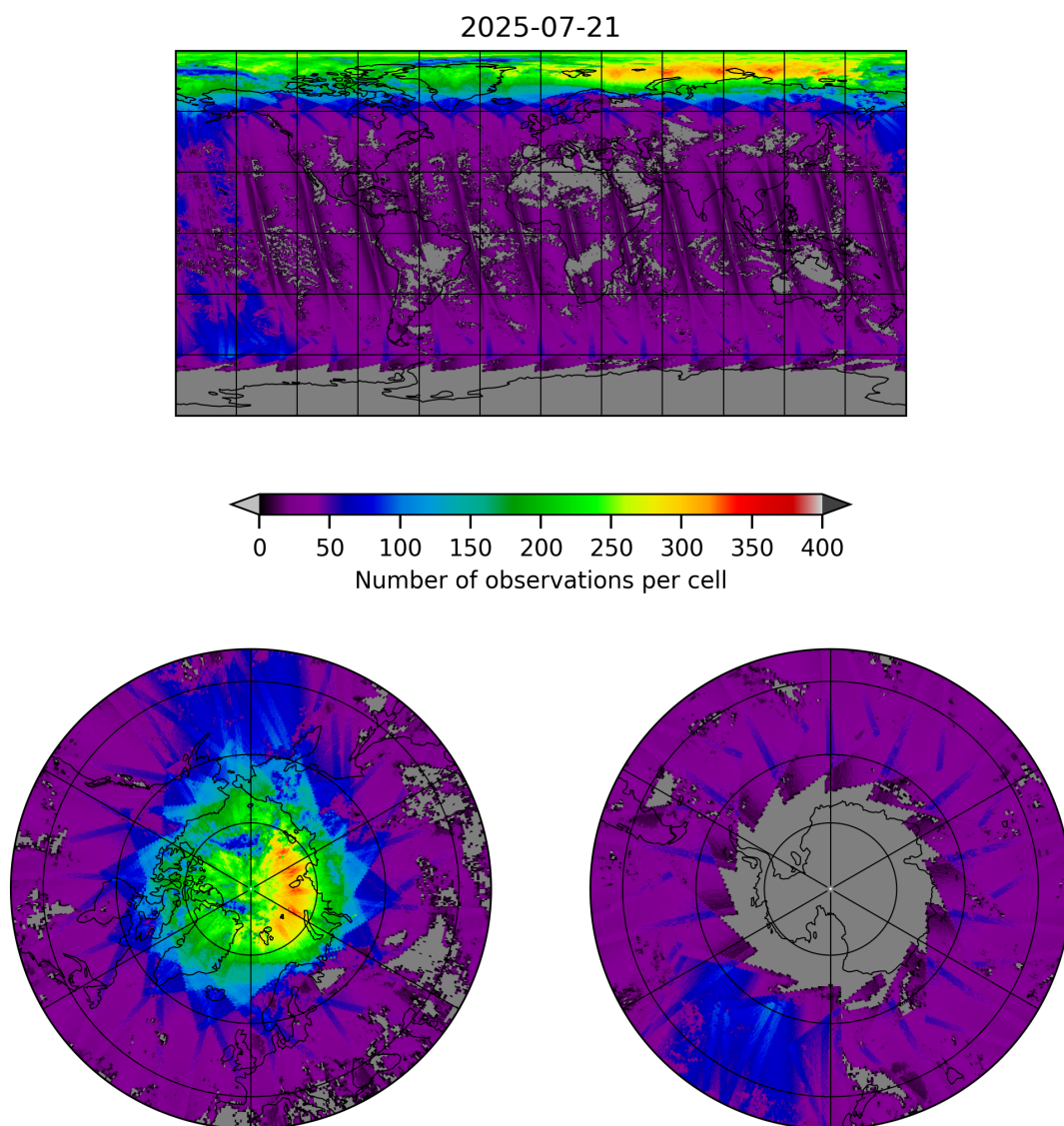


Figure 21: Map of the number of observations for 2025-07-20 to 2025-07-22

7 Zonal average

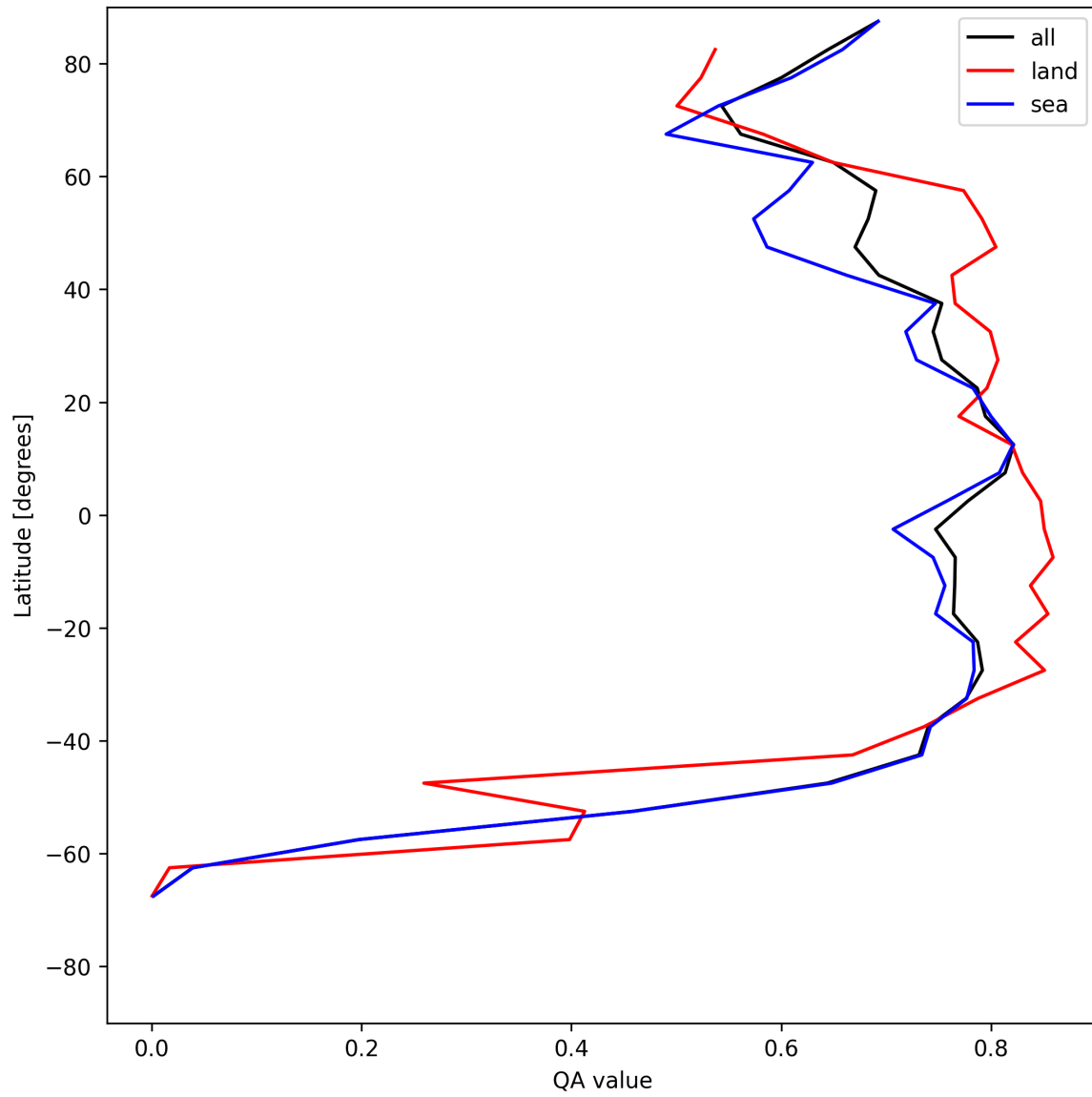


Figure 22: Zonal average of “QA value” for 2025-07-20 to 2025-07-22.

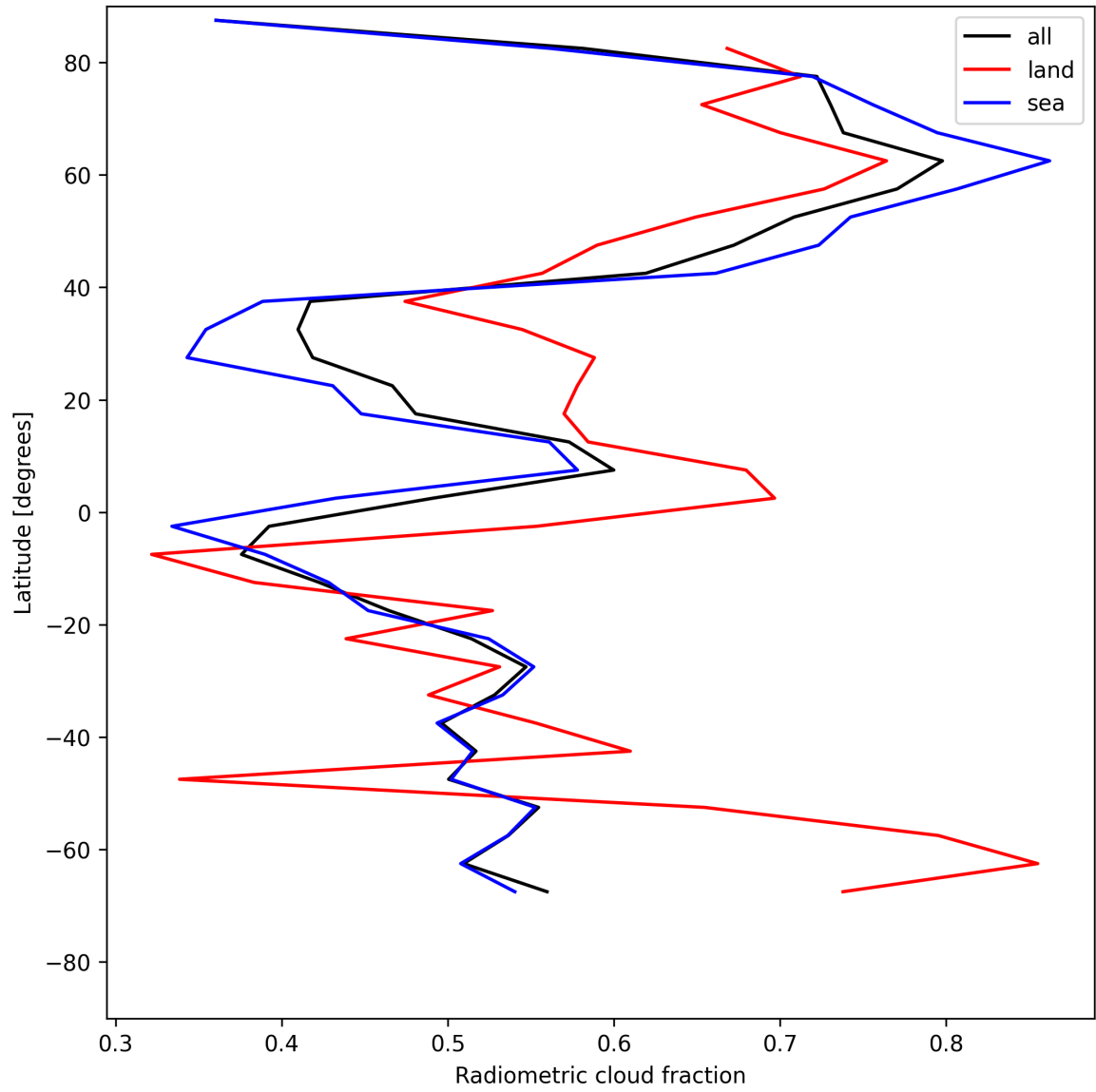


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-07-20 to 2025-07-22.

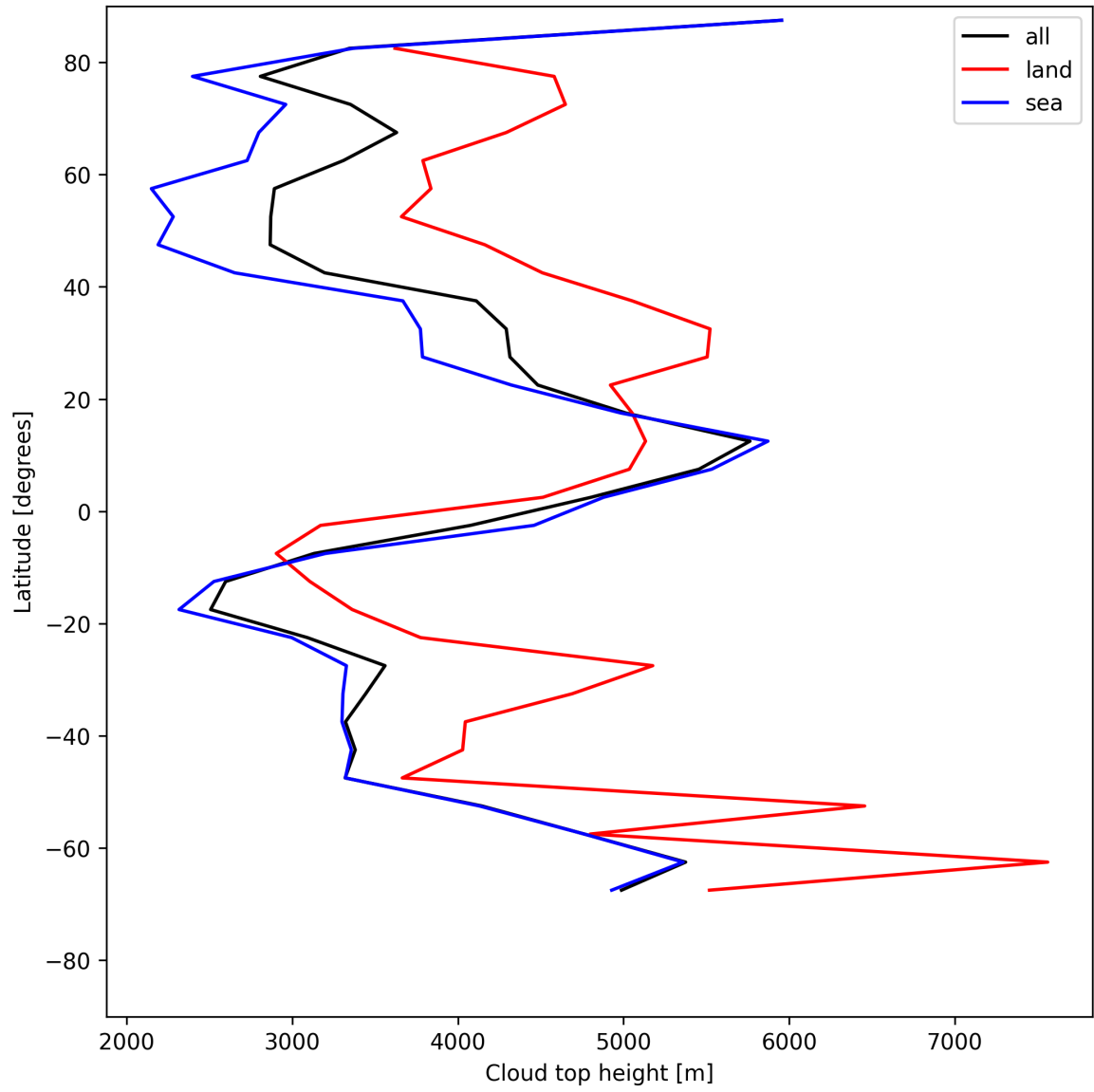


Figure 24: Zonal average of “Cloud top height” for 2025-07-20 to 2025-07-22.

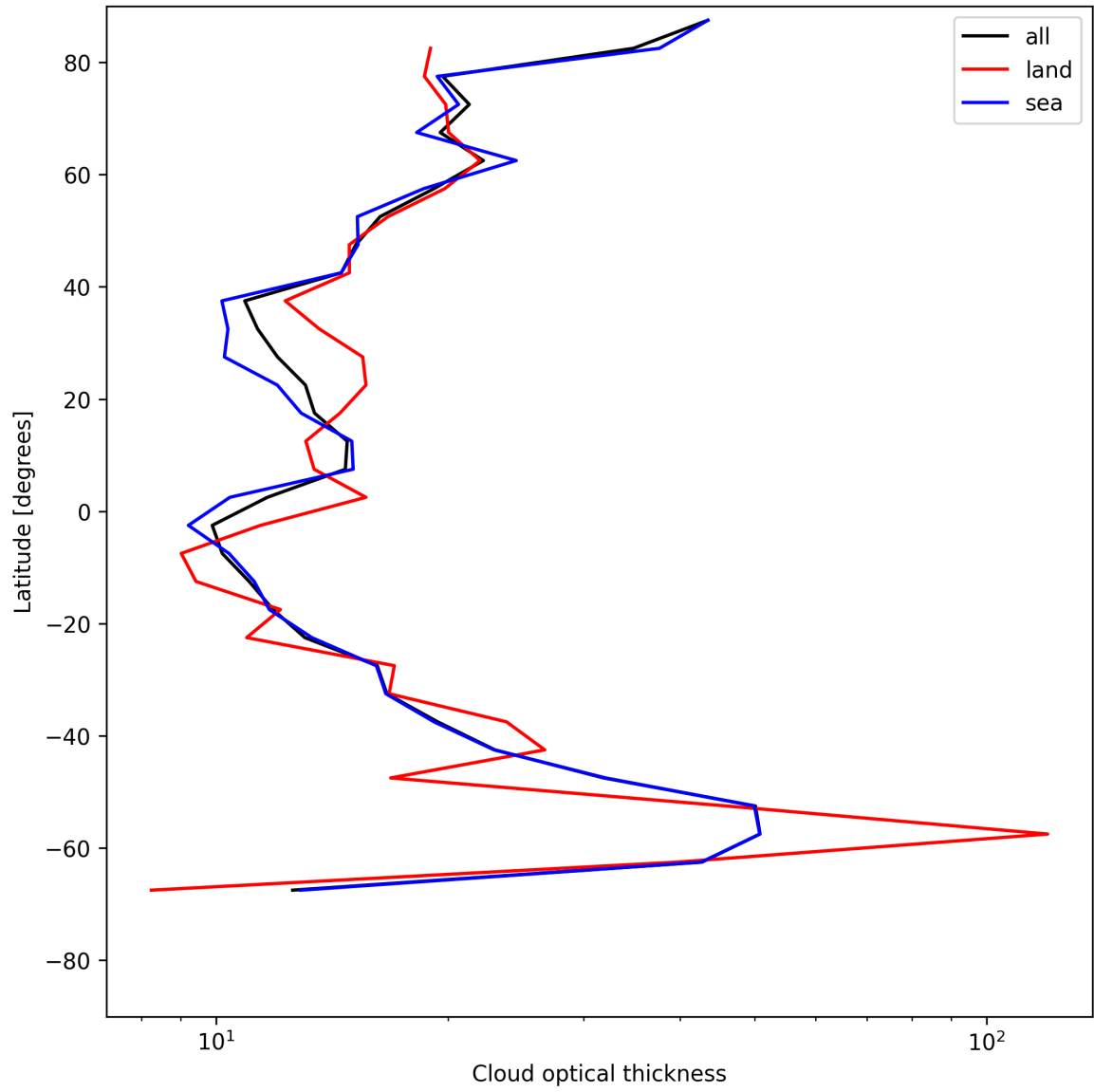


Figure 25: Zonal average of “Cloud optical thickness” for 2025-07-20 to 2025-07-22.

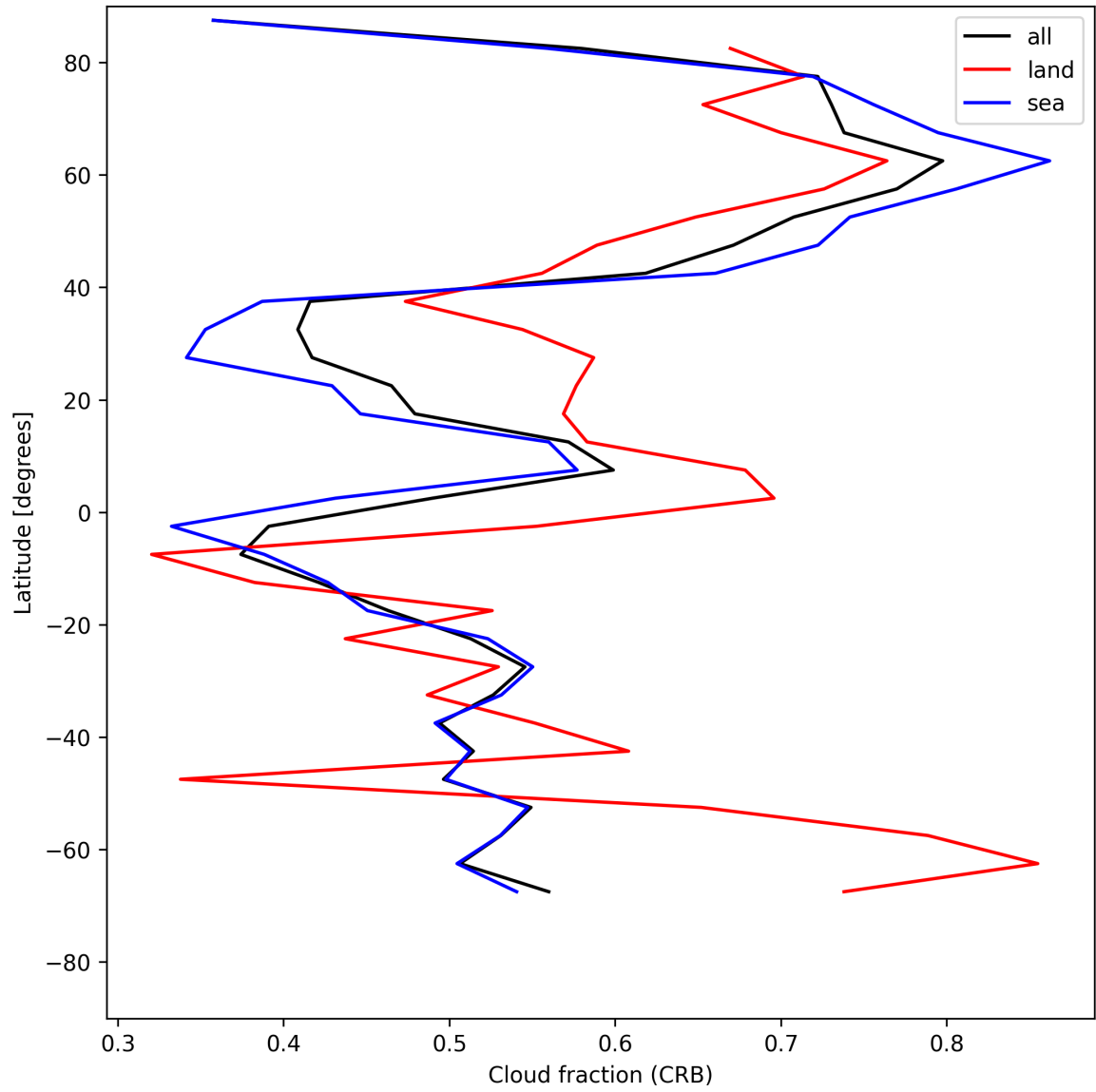


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-07-20 to 2025-07-22.

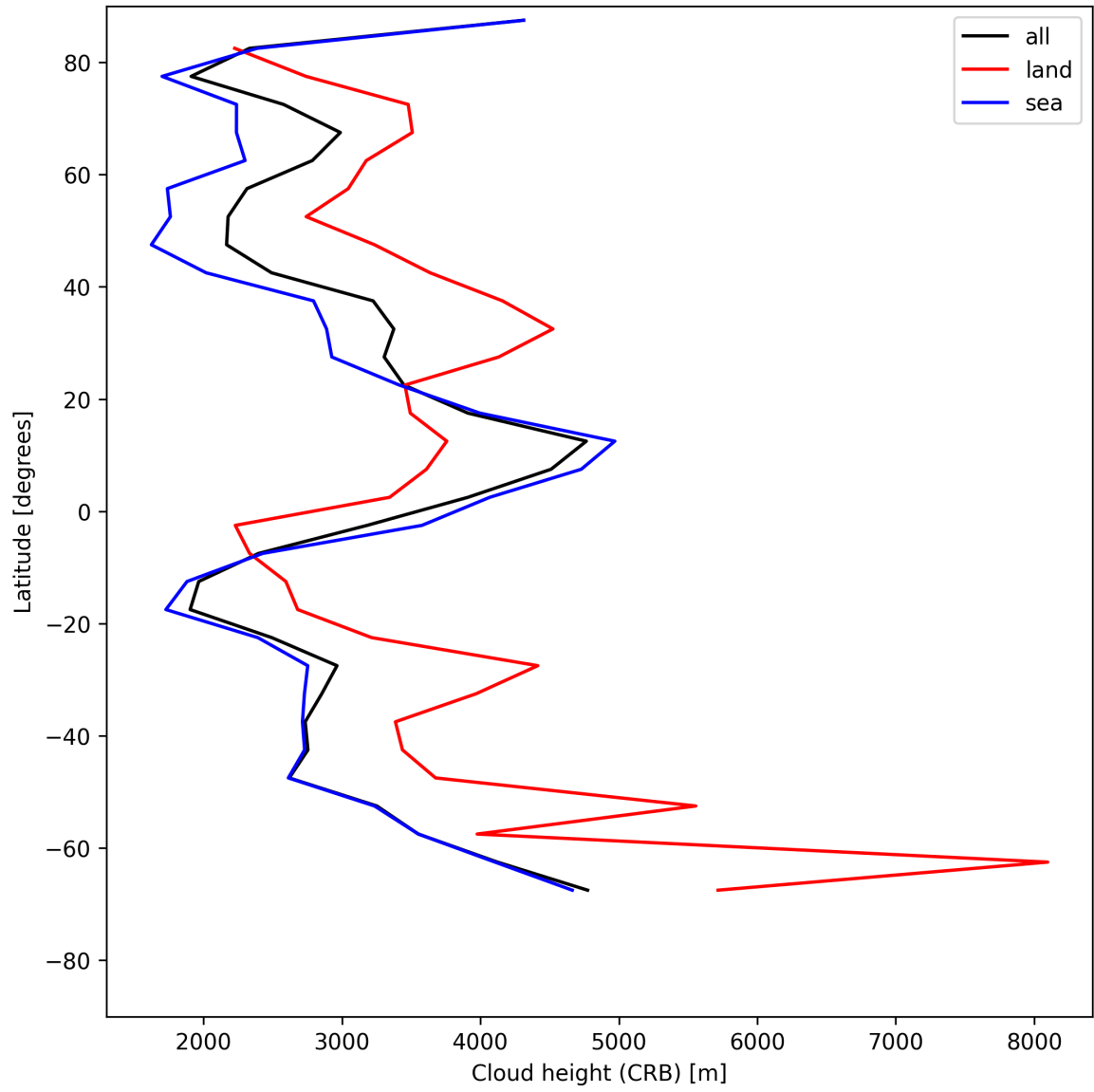


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-07-20 to 2025-07-22.

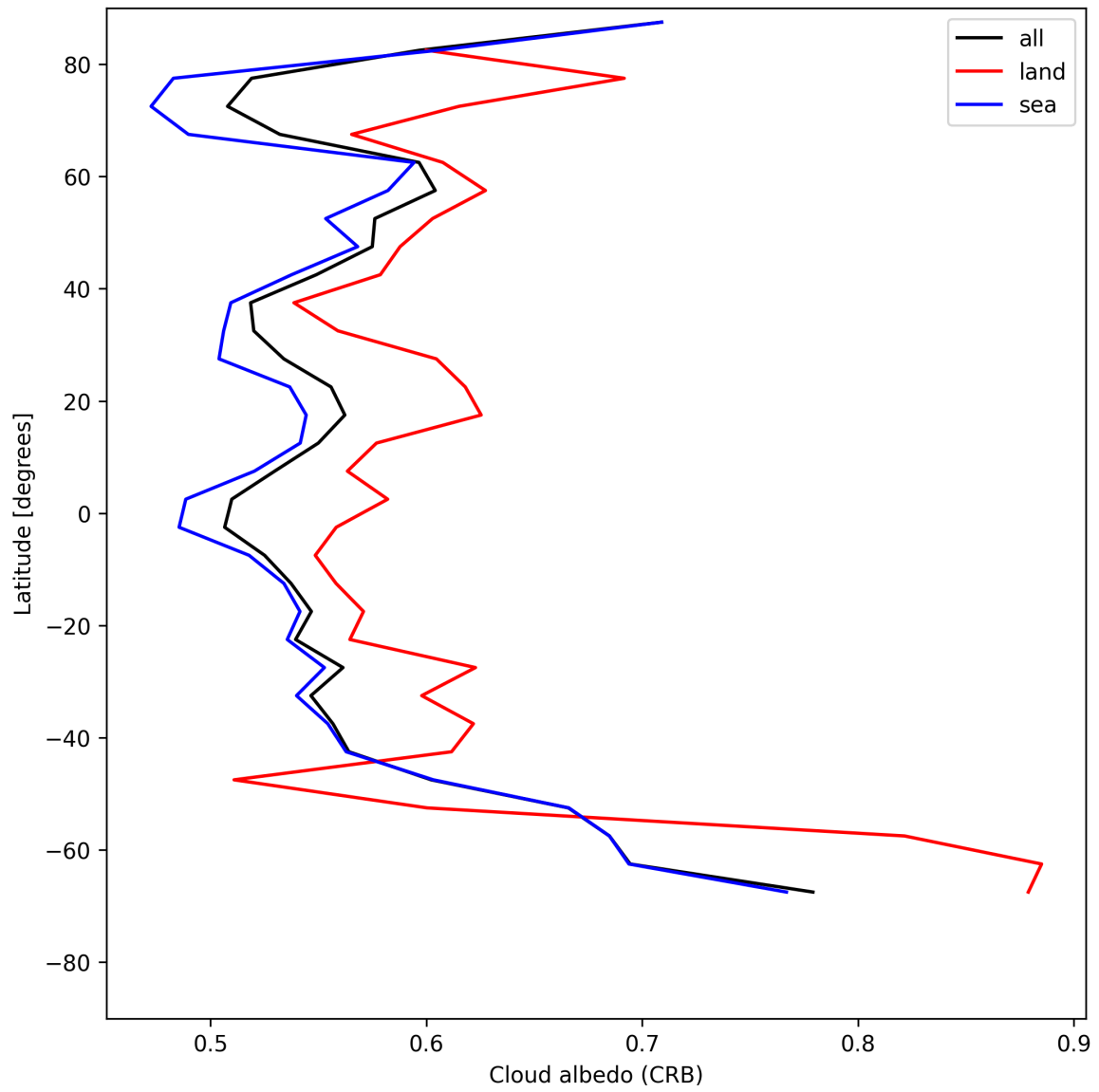


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-07-20 to 2025-07-22.

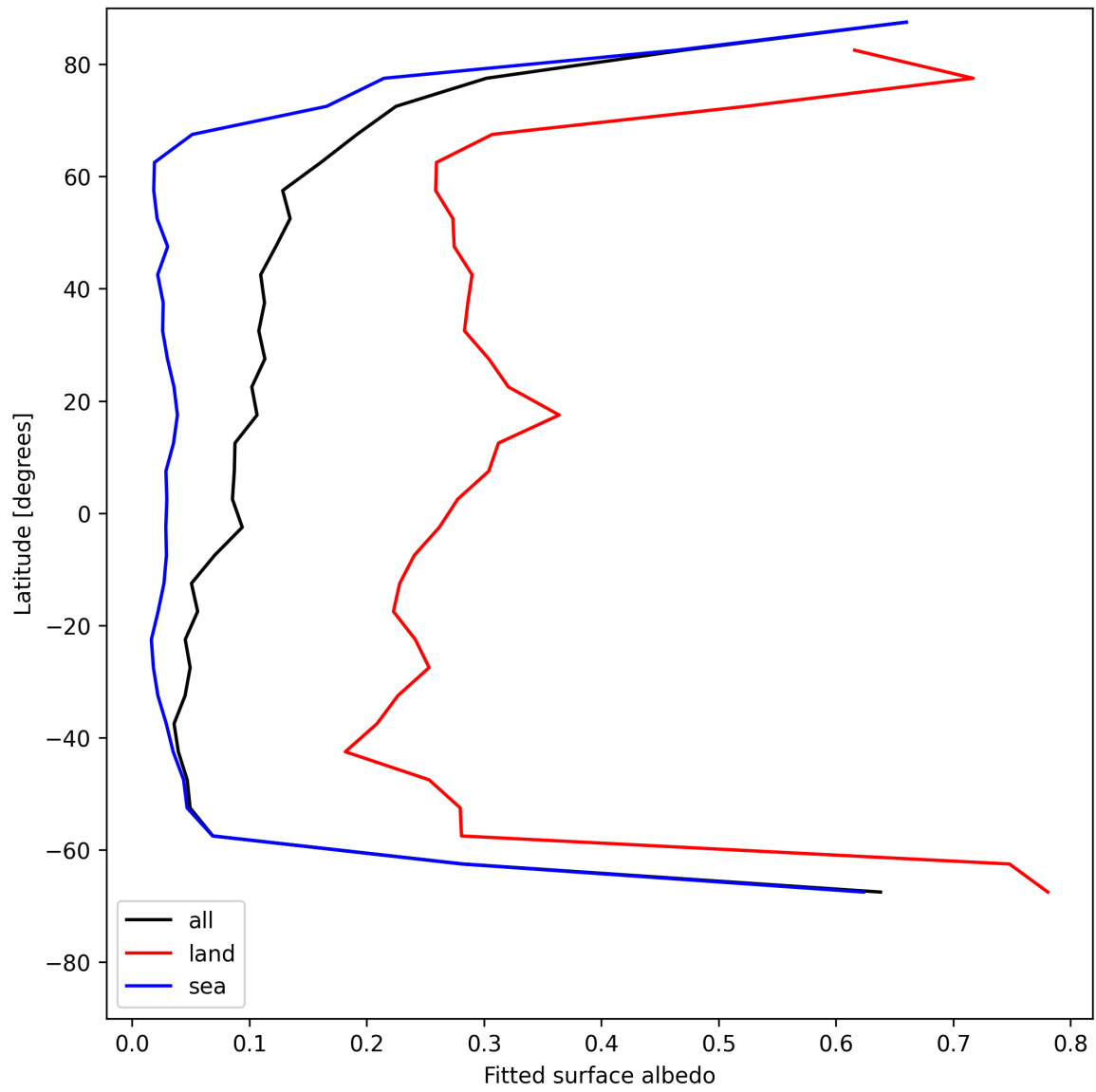


Figure 29: Zonal average of “Fitted surface albedo” for 2025-07-20 to 2025-07-22.

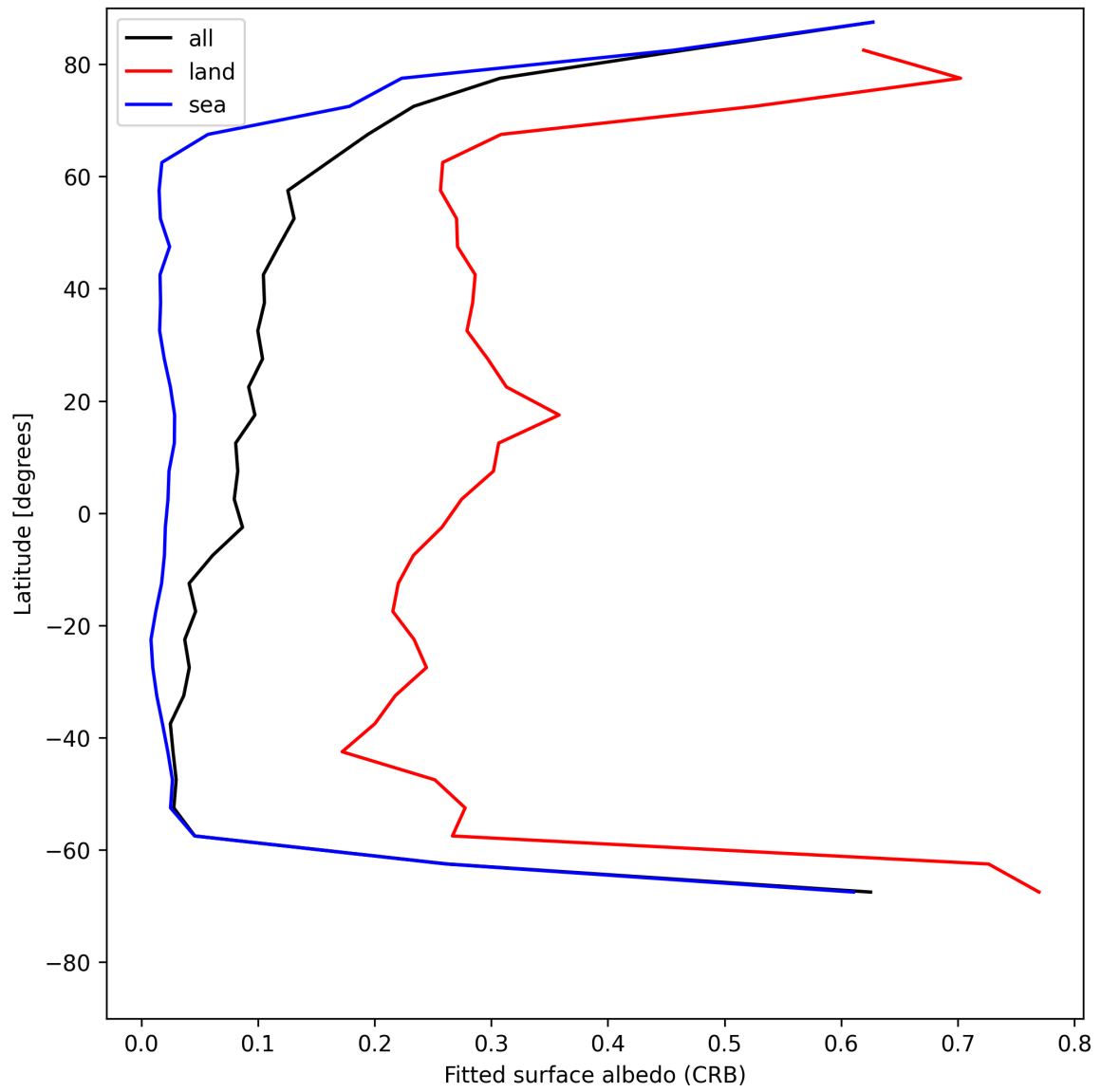


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-07-20 to 2025-07-22.

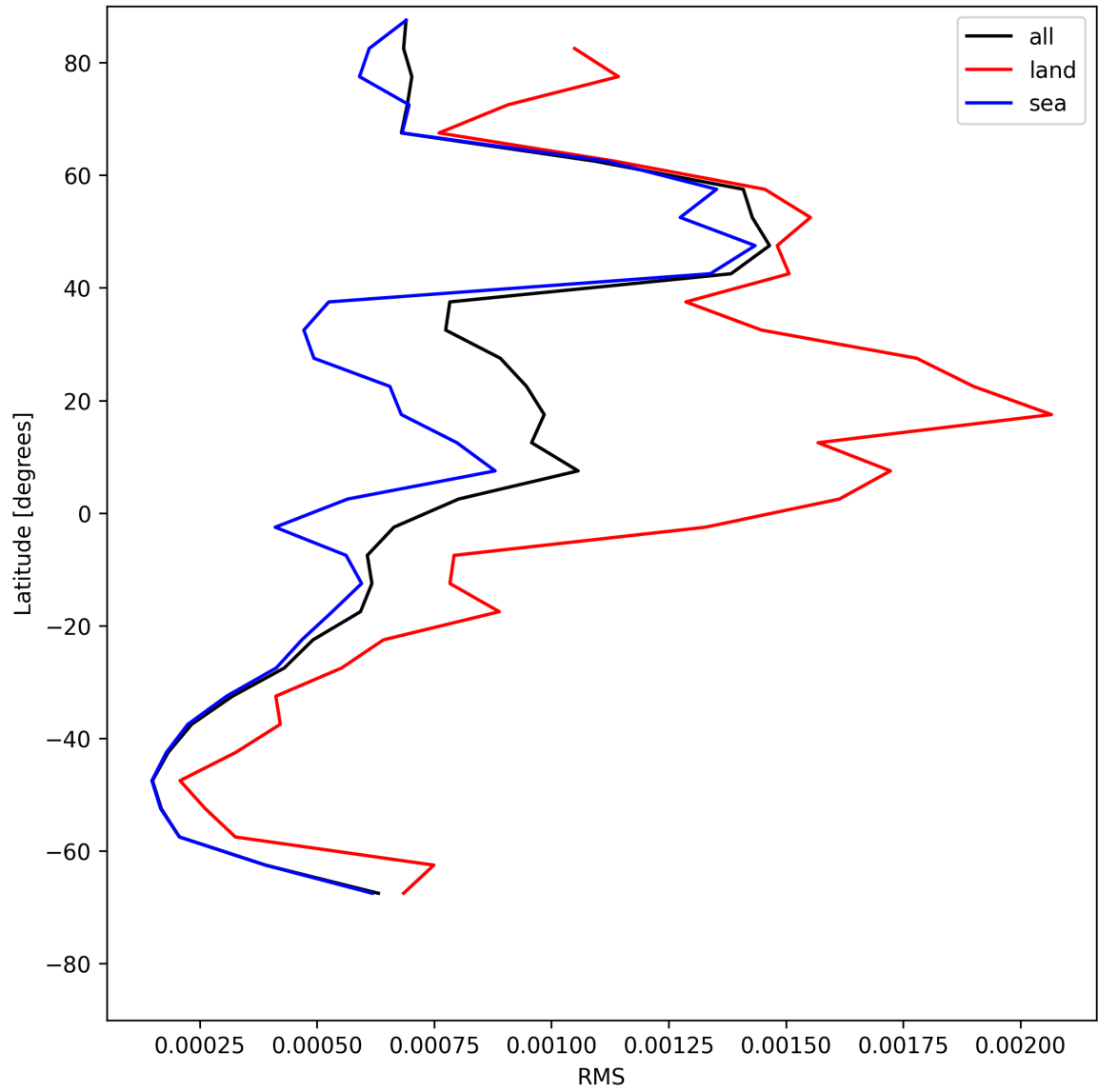


Figure 31: Zonal average of “RMS” for 2025-07-20 to 2025-07-22.

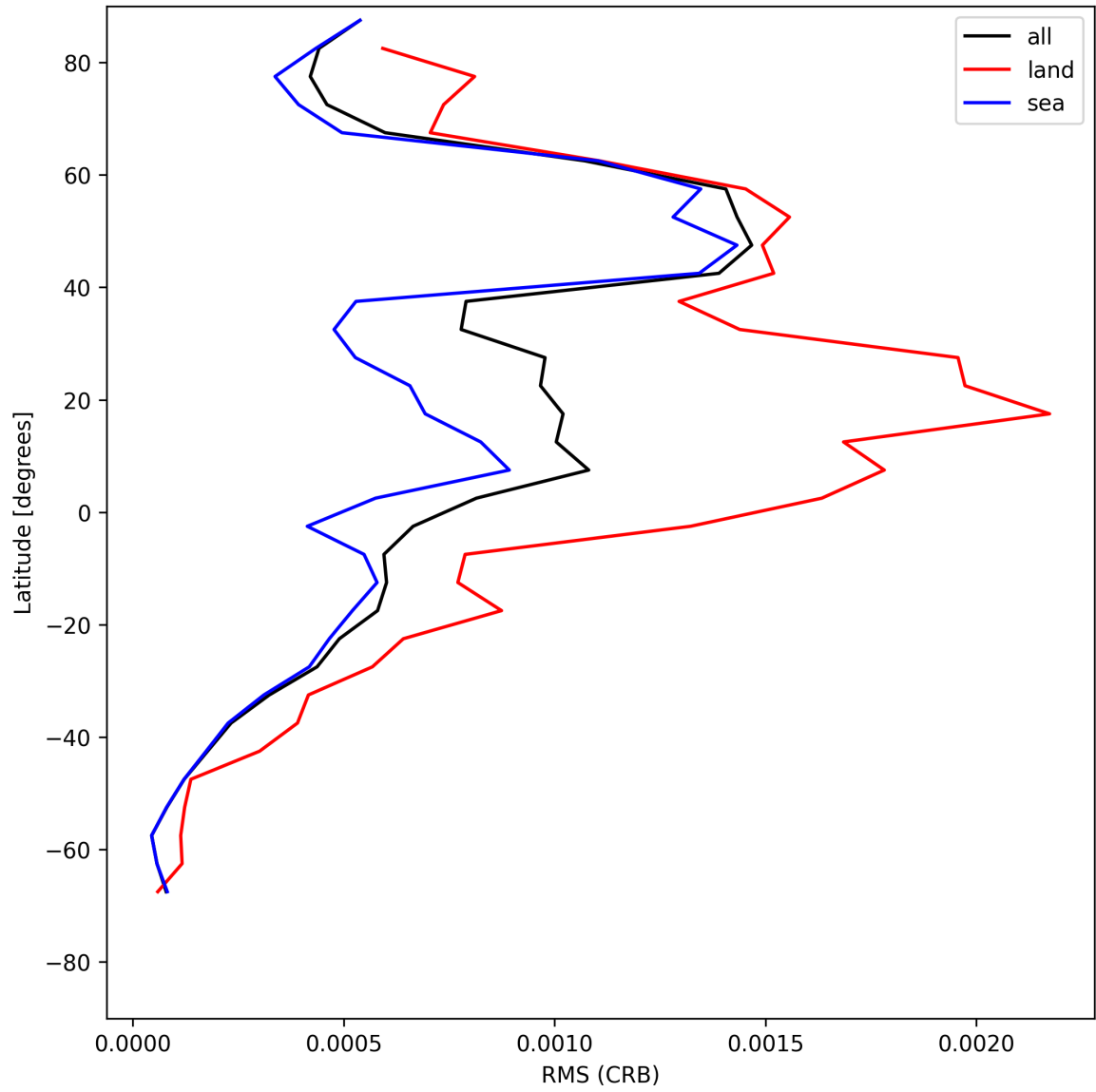


Figure 32: Zonal average of “RMS (CRB)” for 2025-07-20 to 2025-07-22.

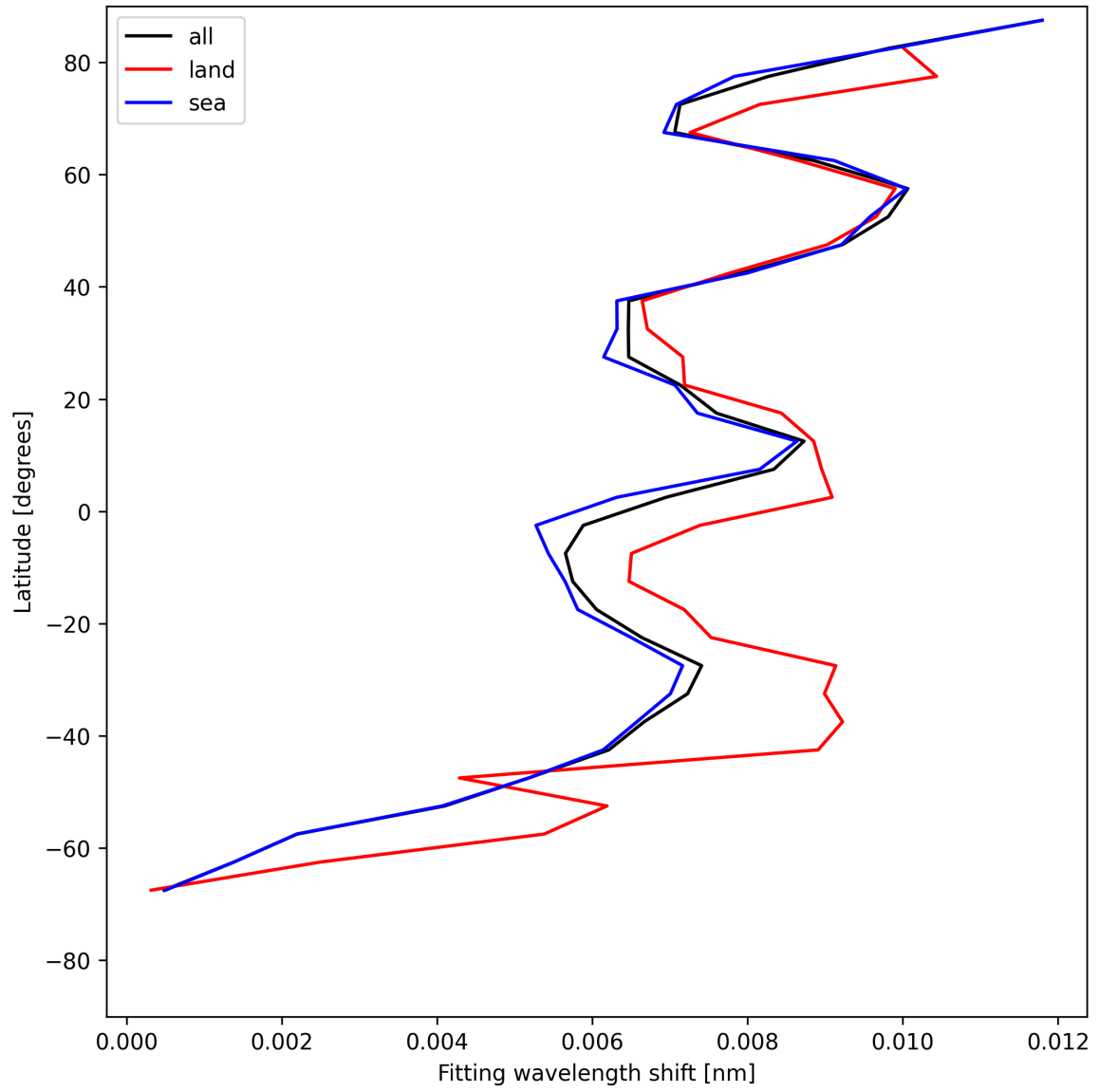


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-07-20 to 2025-07-22.

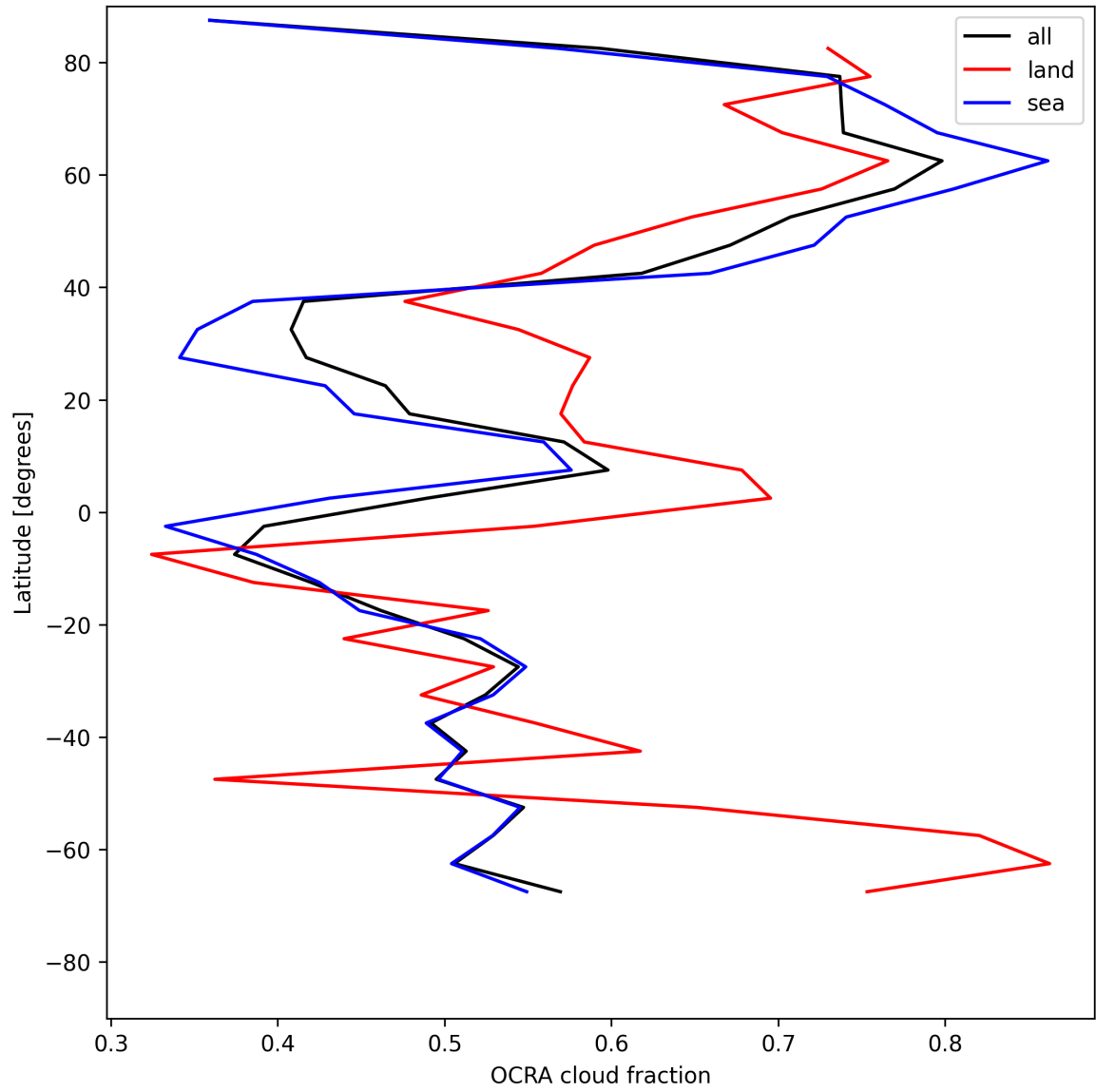


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-07-20 to 2025-07-22.

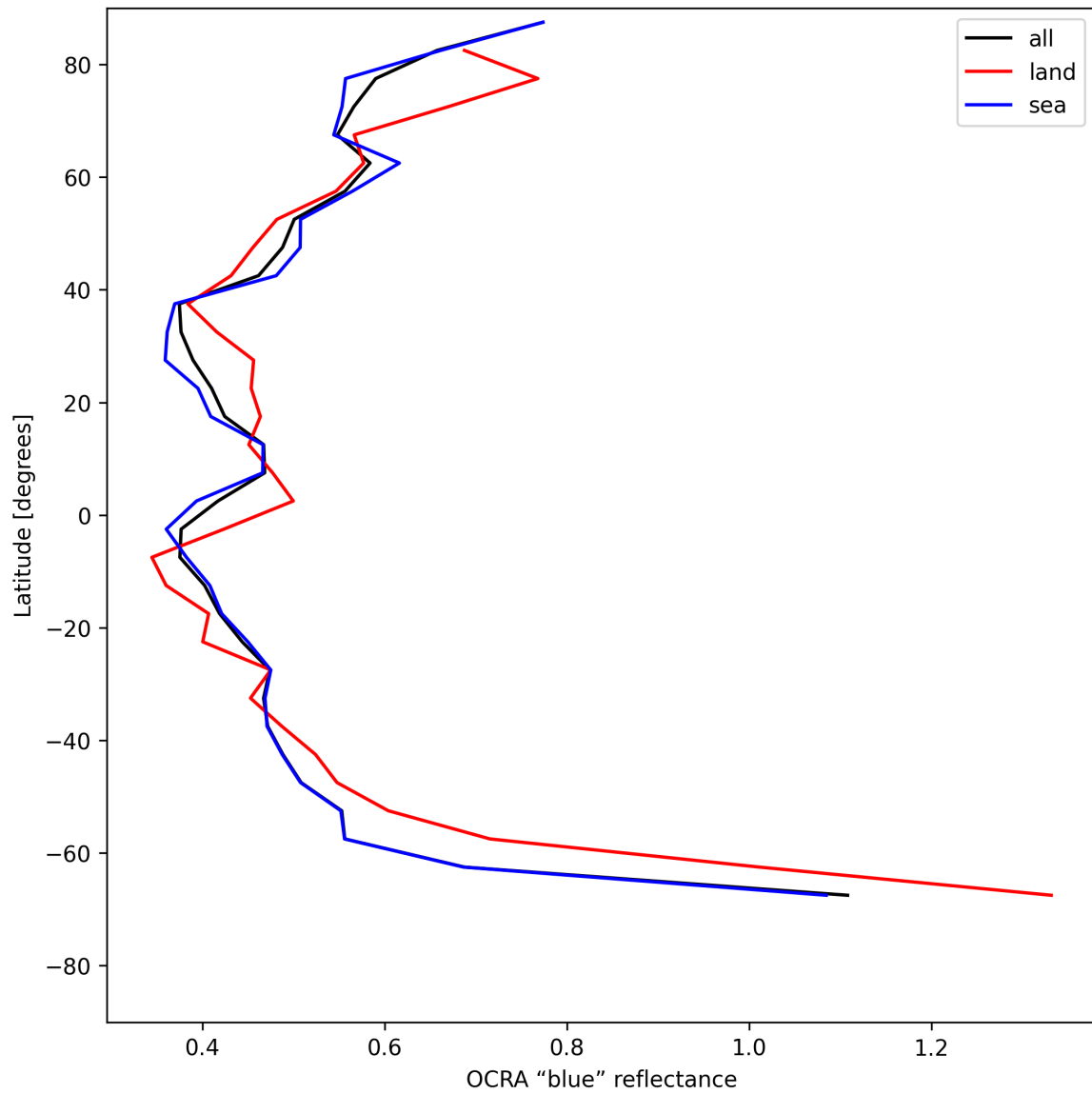


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-07-20 to 2025-07-22.

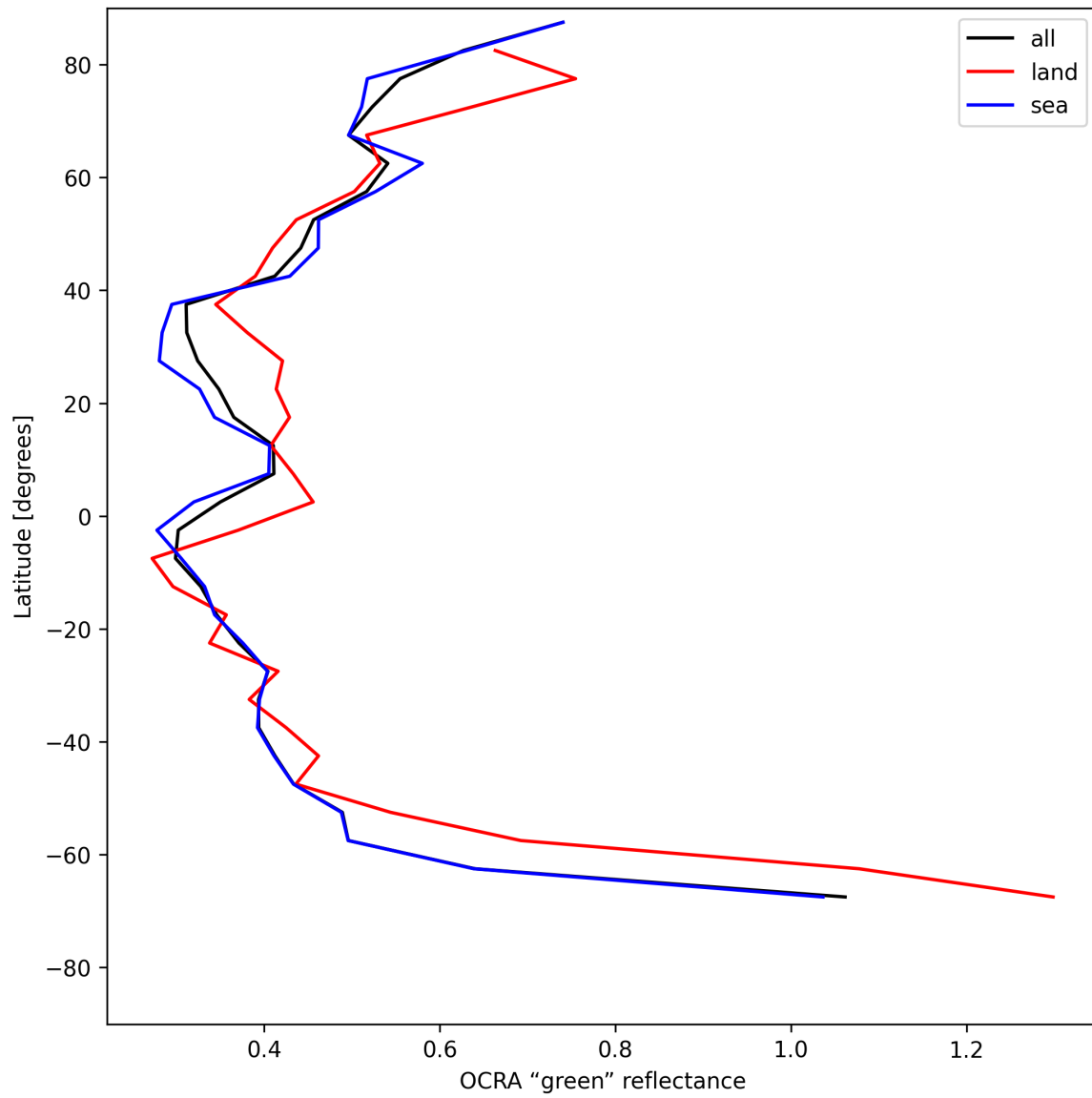


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-07-20 to 2025-07-22.

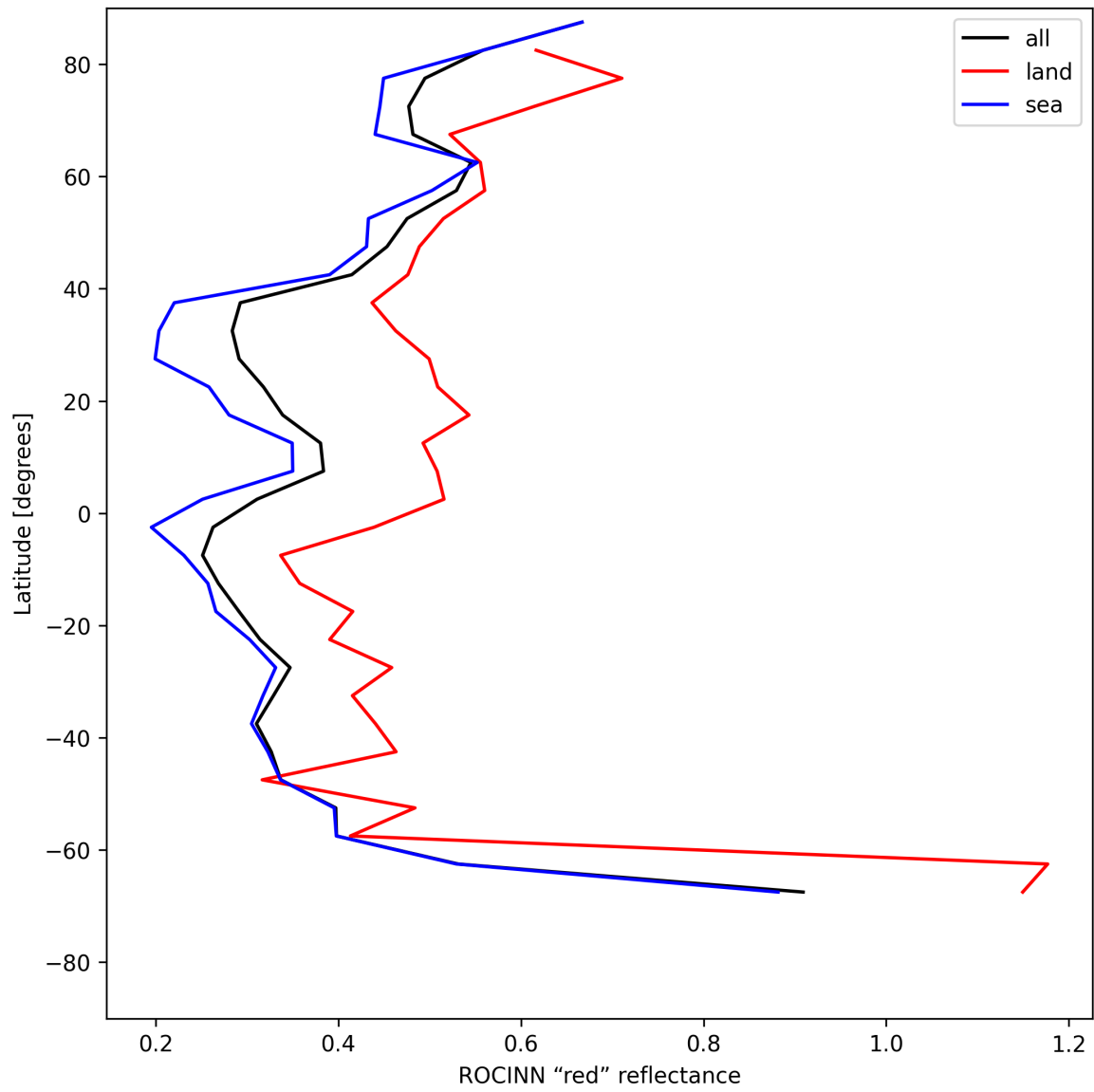


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-07-20 to 2025-07-22.

8 Histograms

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

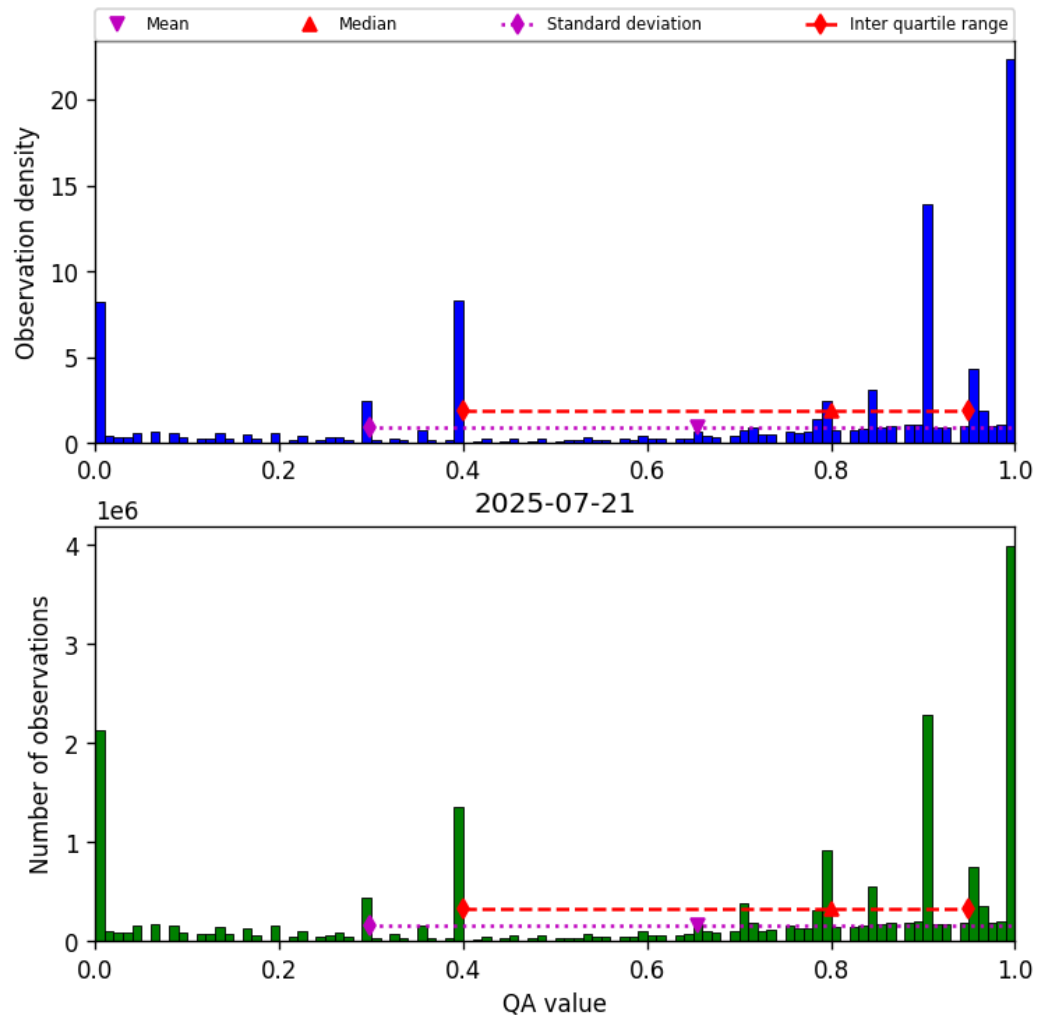


Figure 38: Histogram of “QA value” for 2025-07-20 to 2025-07-22

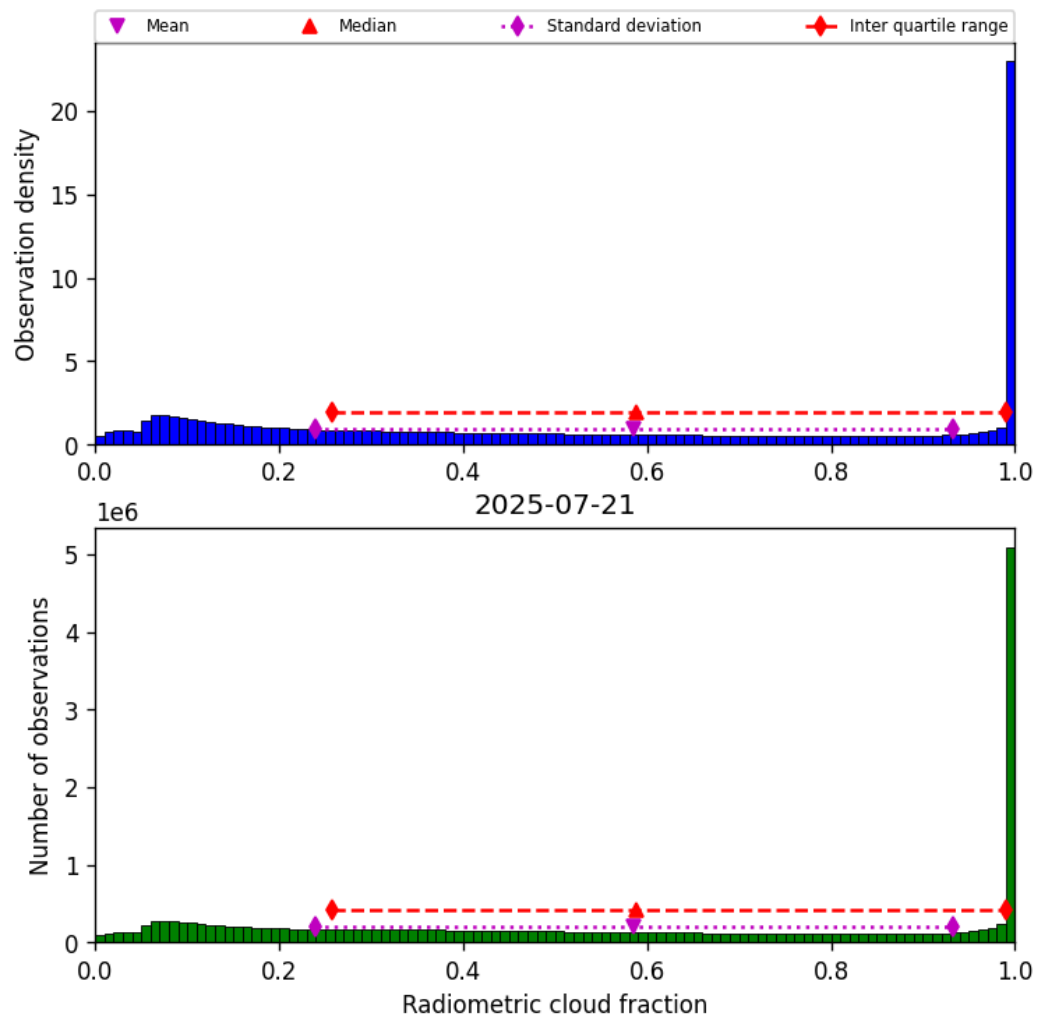


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-07-20 to 2025-07-22

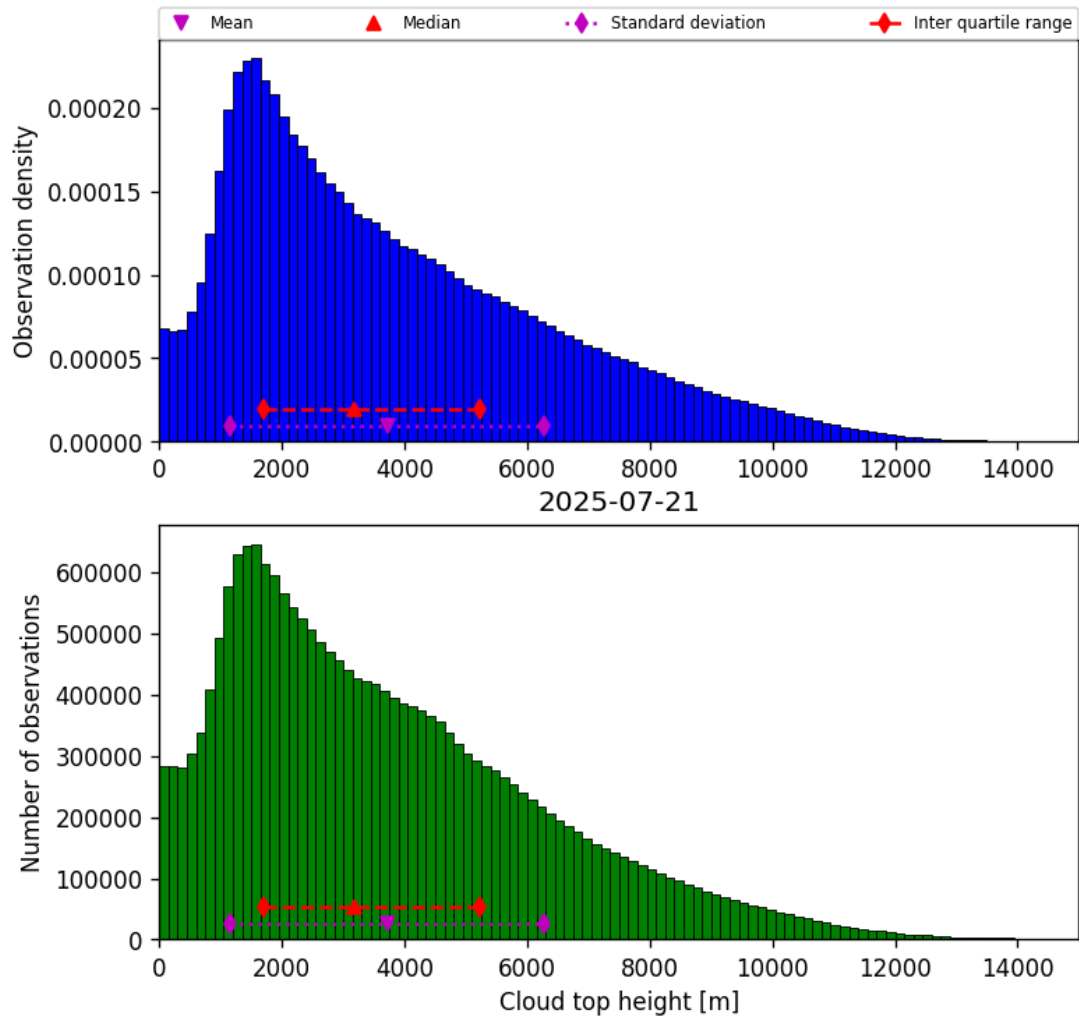


Figure 40: Histogram of “Cloud top height” for 2025-07-20 to 2025-07-22

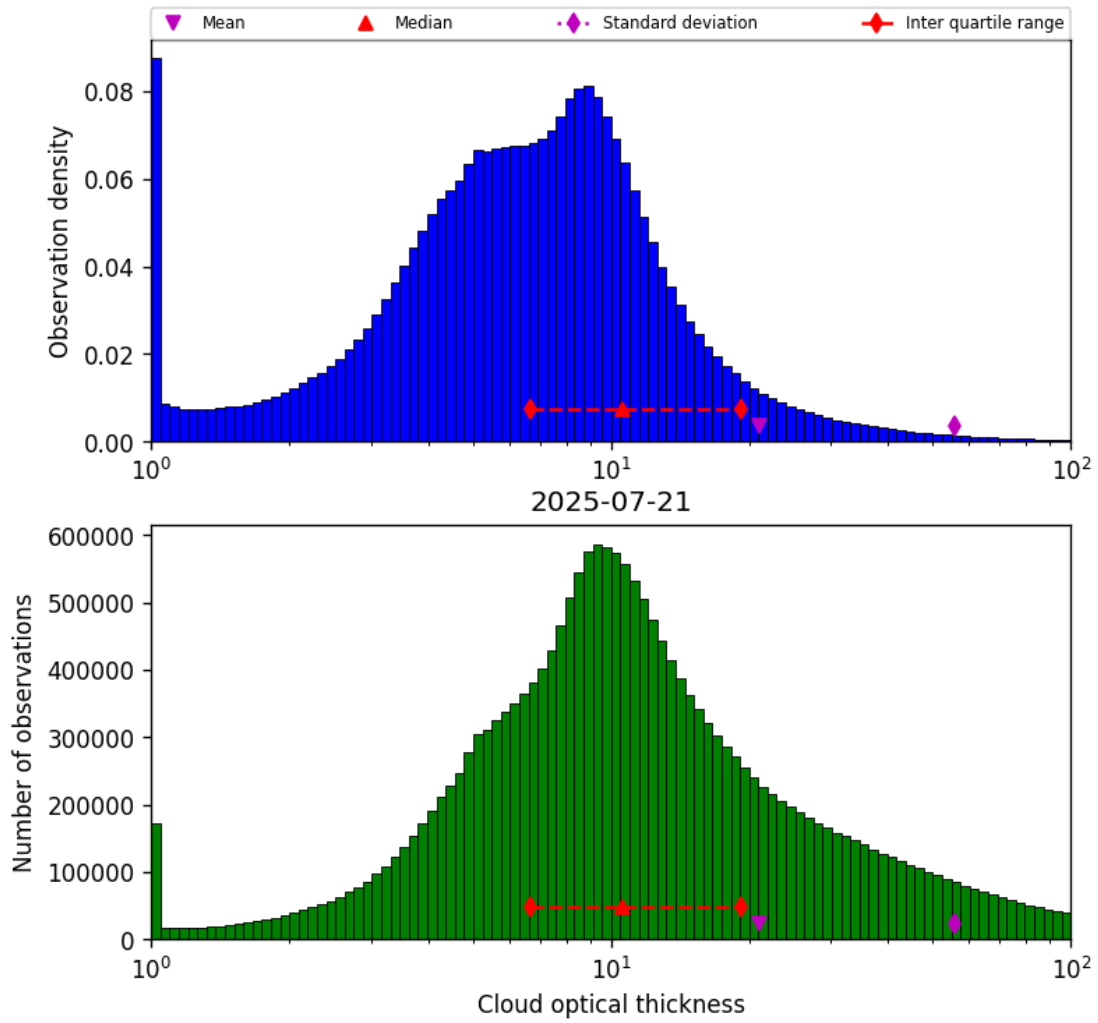


Figure 41: Histogram of “Cloud optical thickness” for 2025-07-20 to 2025-07-22

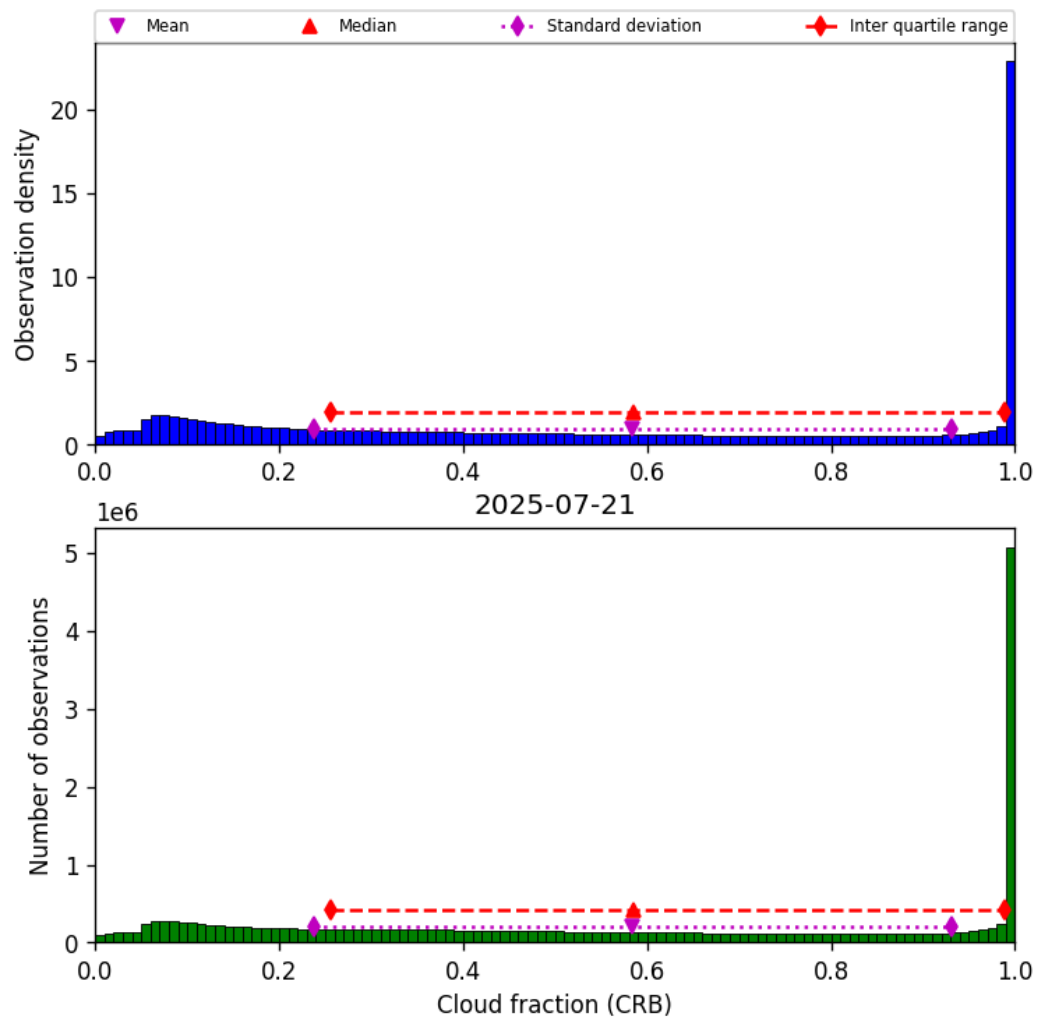


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-07-20 to 2025-07-22

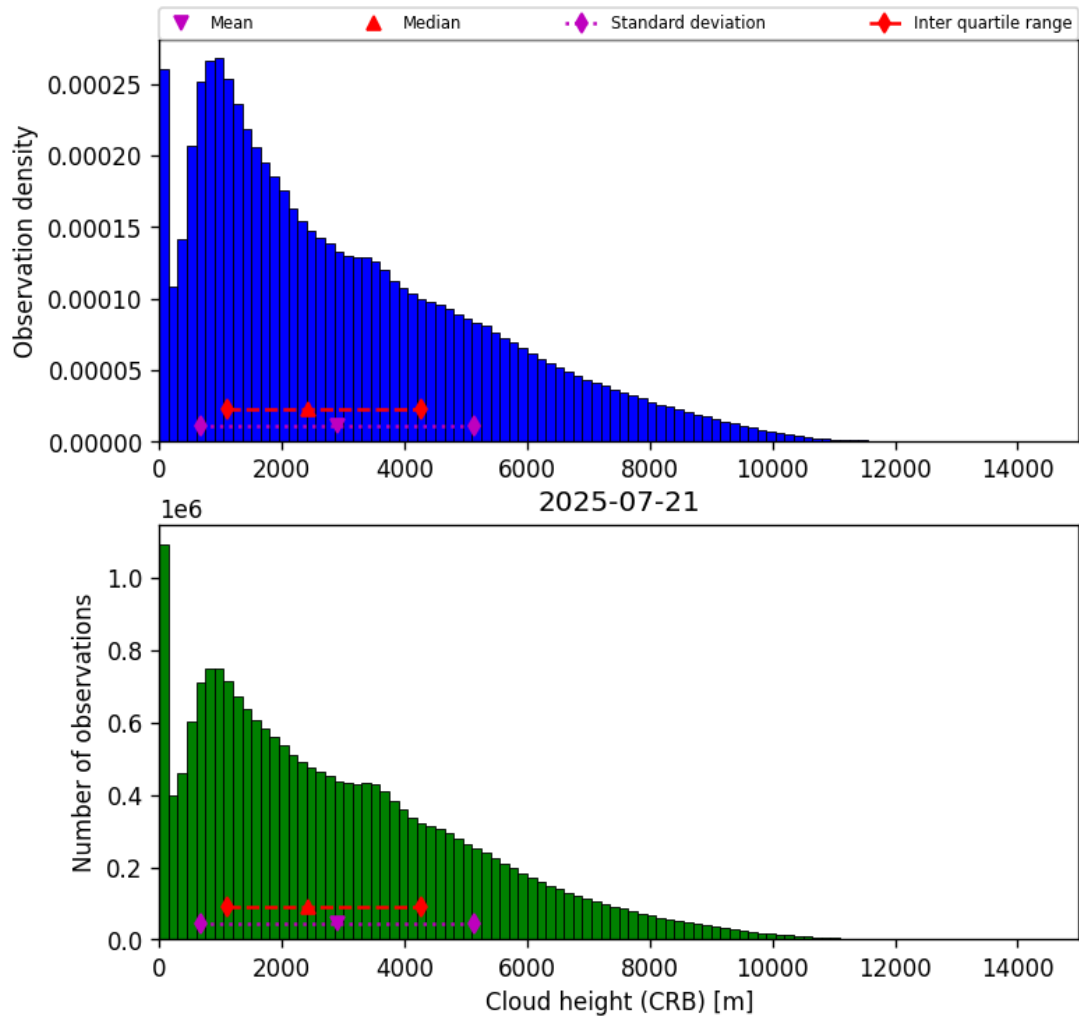


Figure 43: Histogram of “Cloud height (CRB)” for 2025-07-20 to 2025-07-22

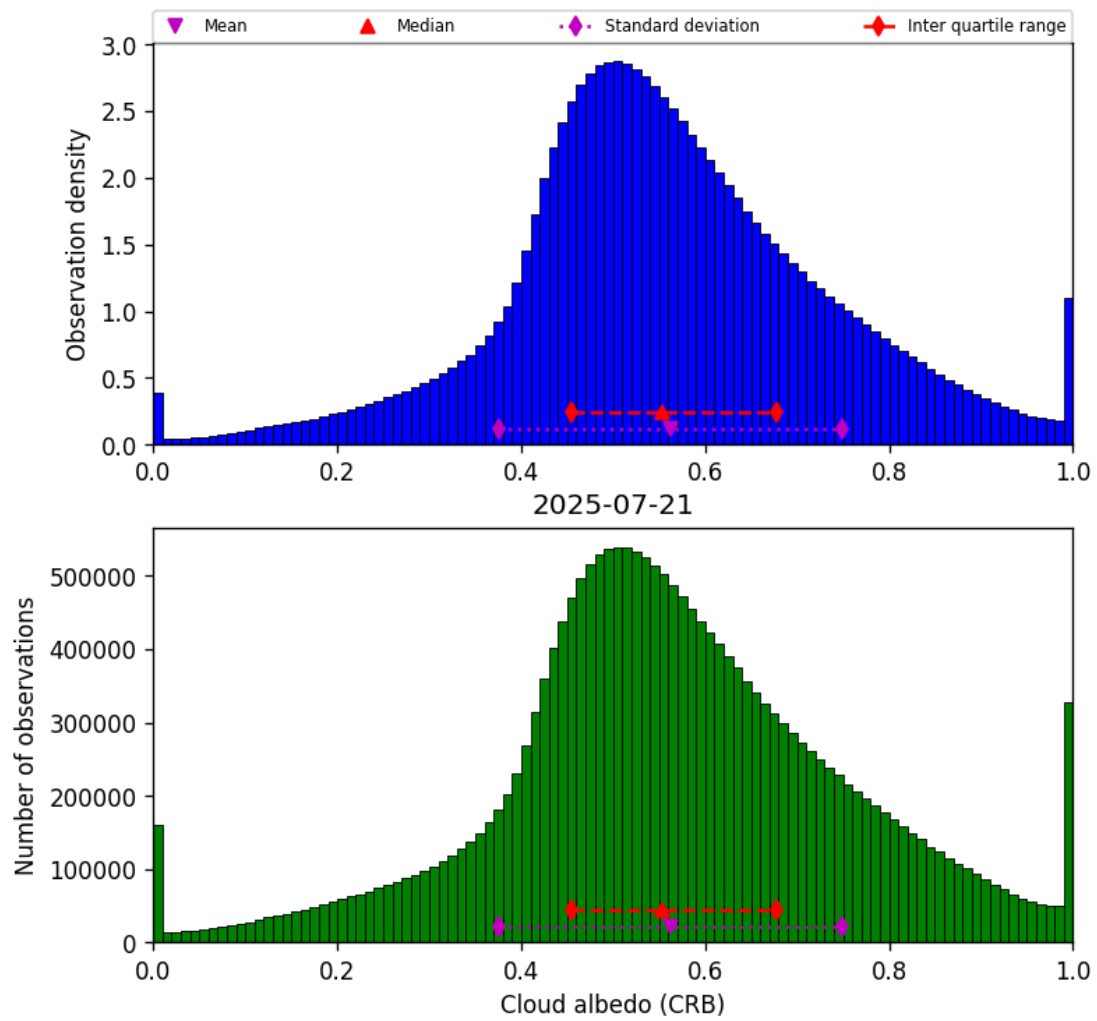


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-07-20 to 2025-07-22

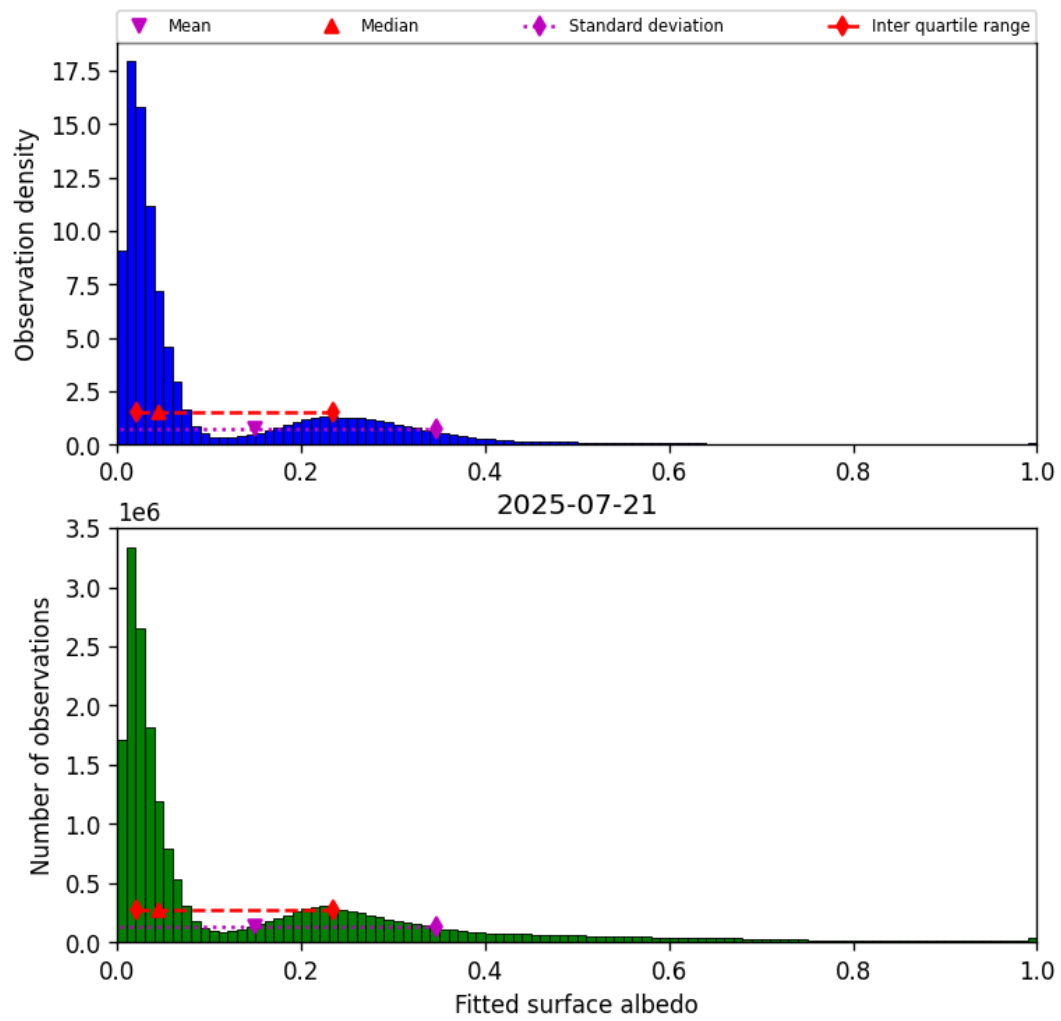


Figure 45: Histogram of “Fitted surface albedo” for 2025-07-20 to 2025-07-22

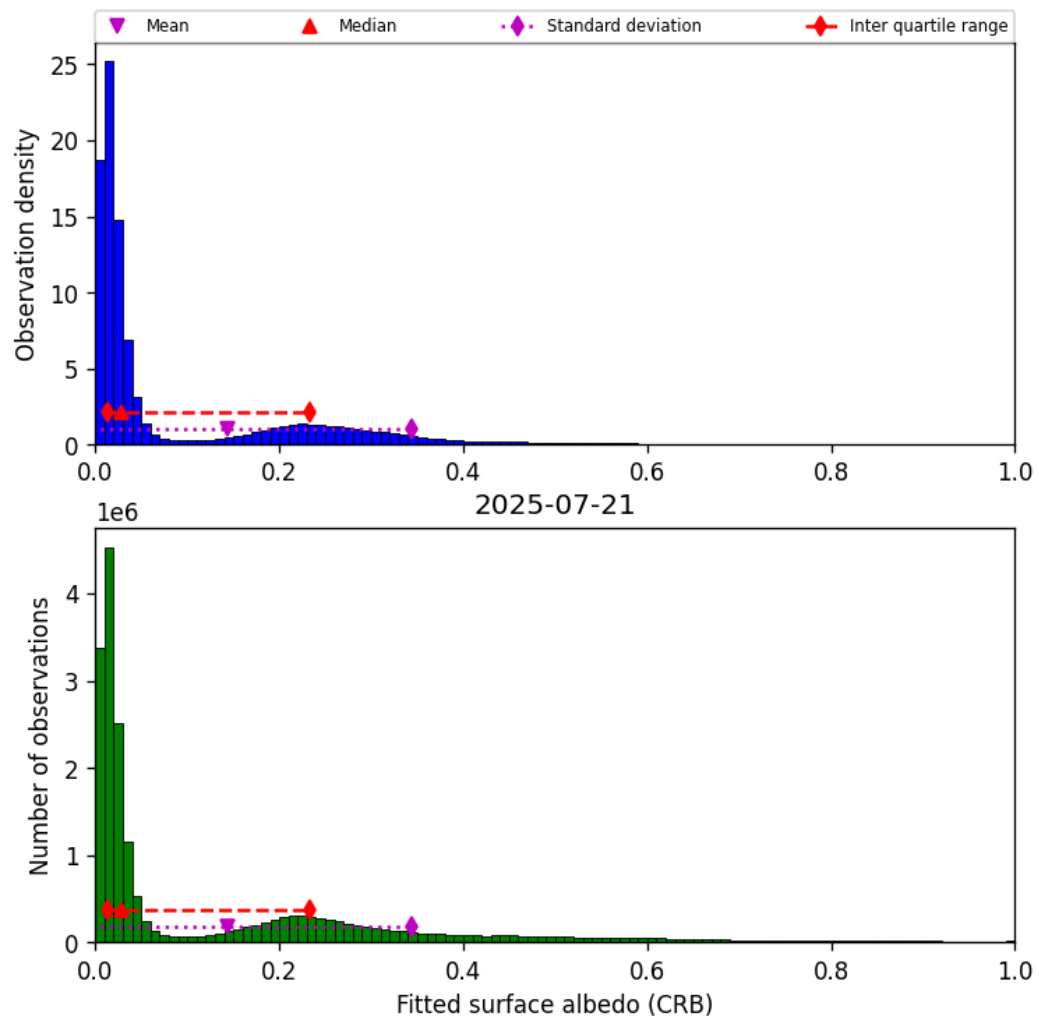


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-07-20 to 2025-07-22

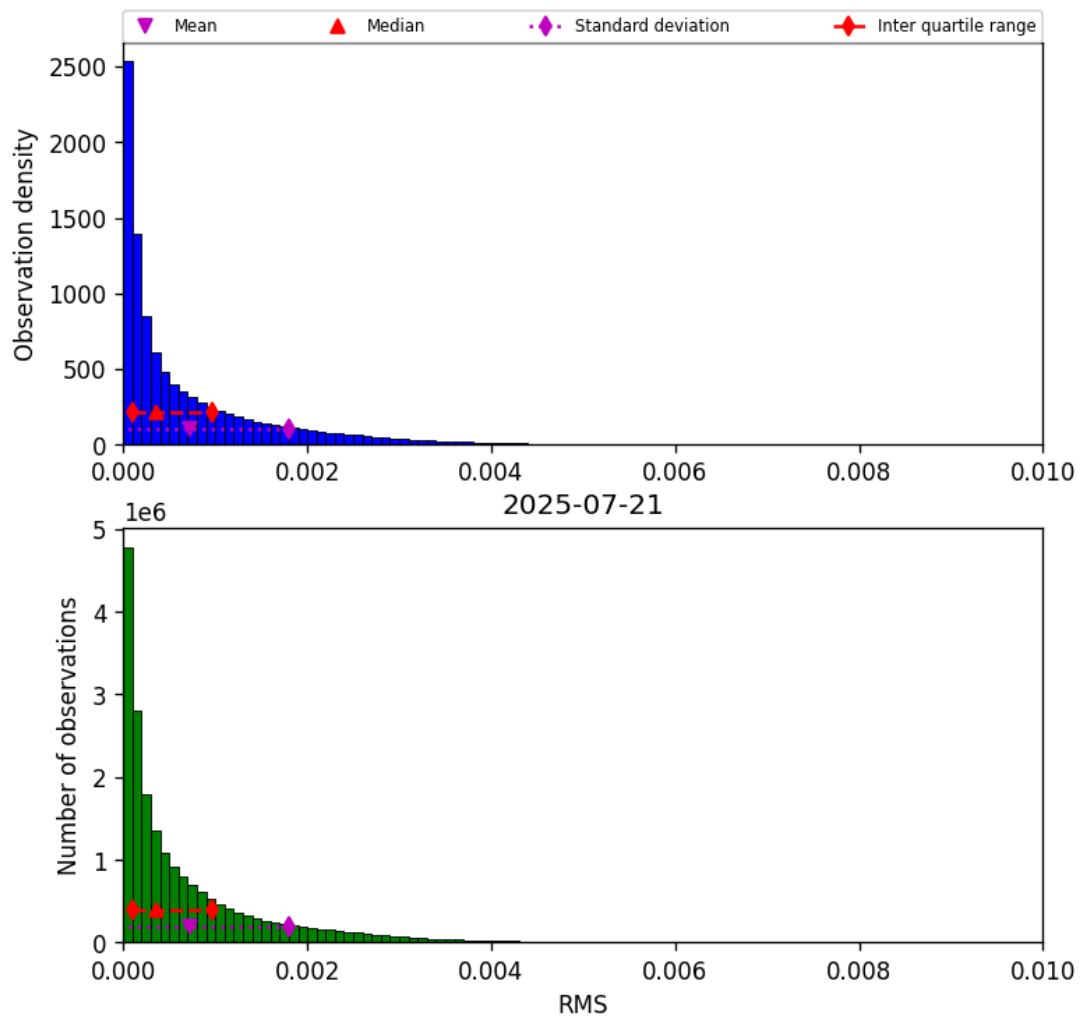


Figure 47: Histogram of “RMS” for 2025-07-20 to 2025-07-22

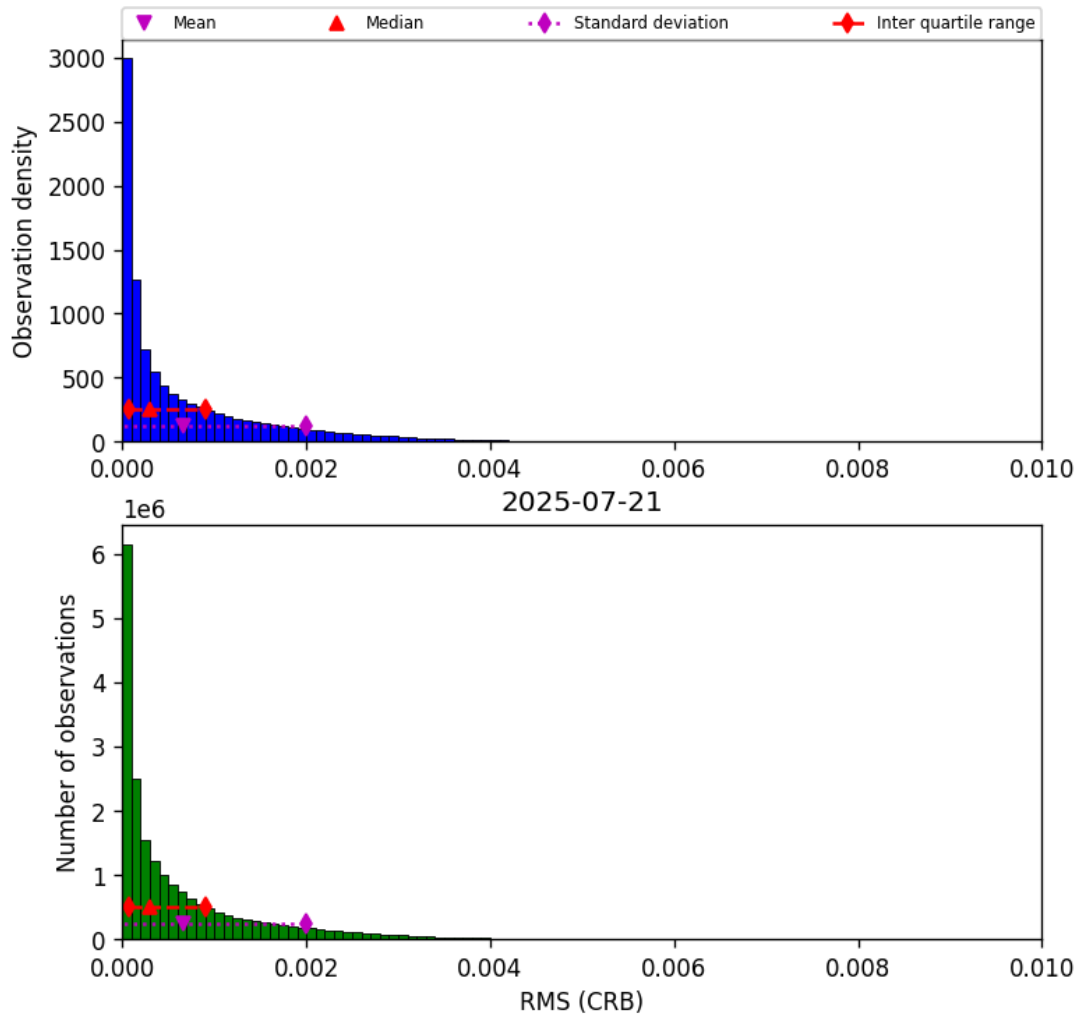


Figure 48: Histogram of “RMS (CRB)” for 2025-07-20 to 2025-07-22

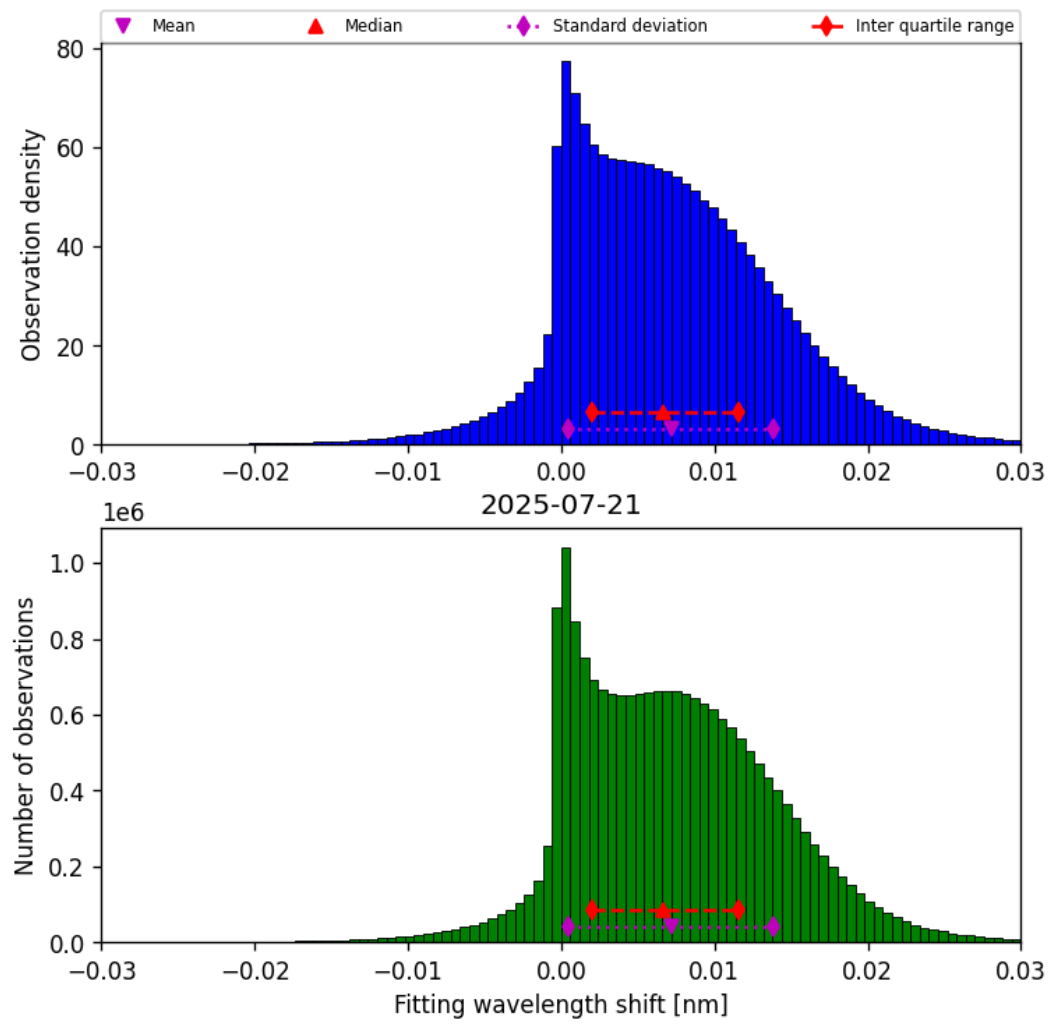


Figure 49: Histogram of “Fitting wavelength shift” for 2025-07-20 to 2025-07-22

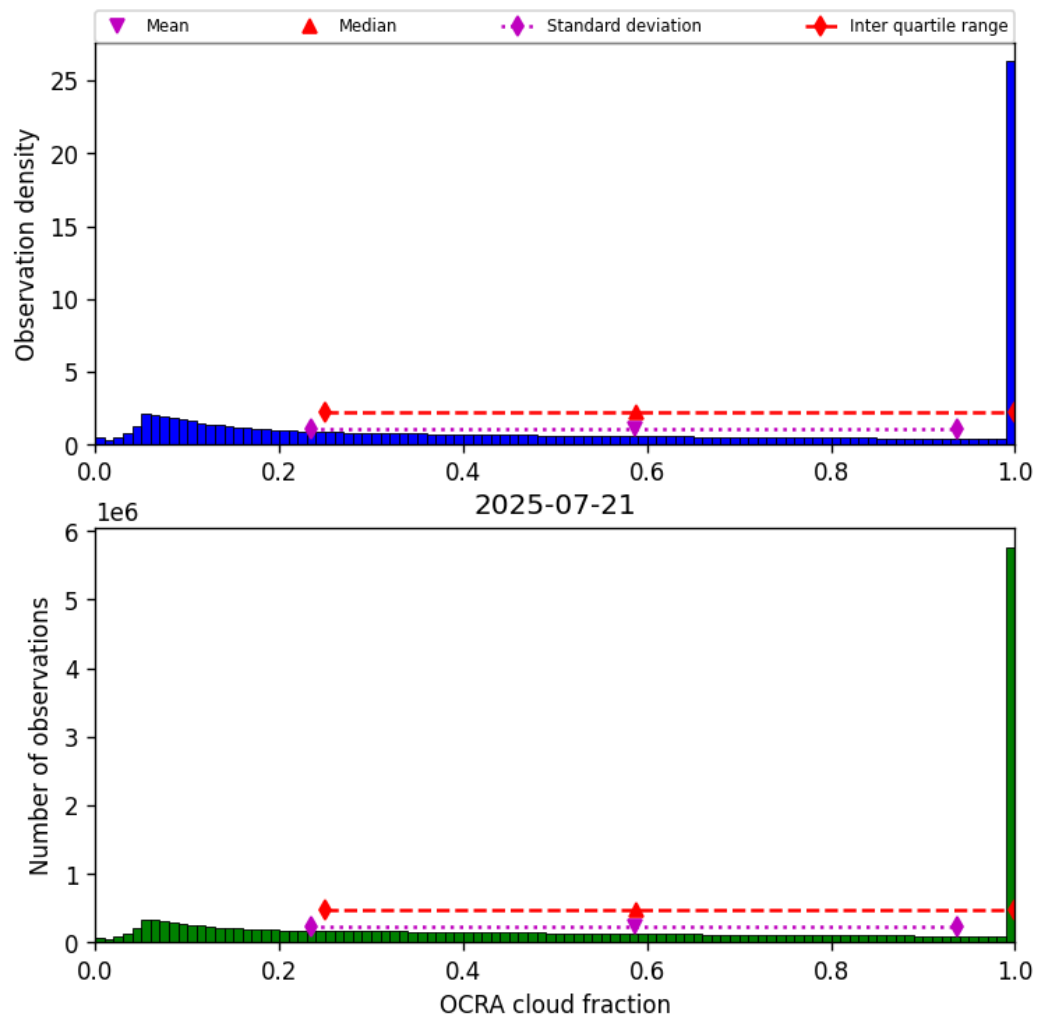


Figure 50: Histogram of “OCRA cloud fraction” for 2025-07-20 to 2025-07-22

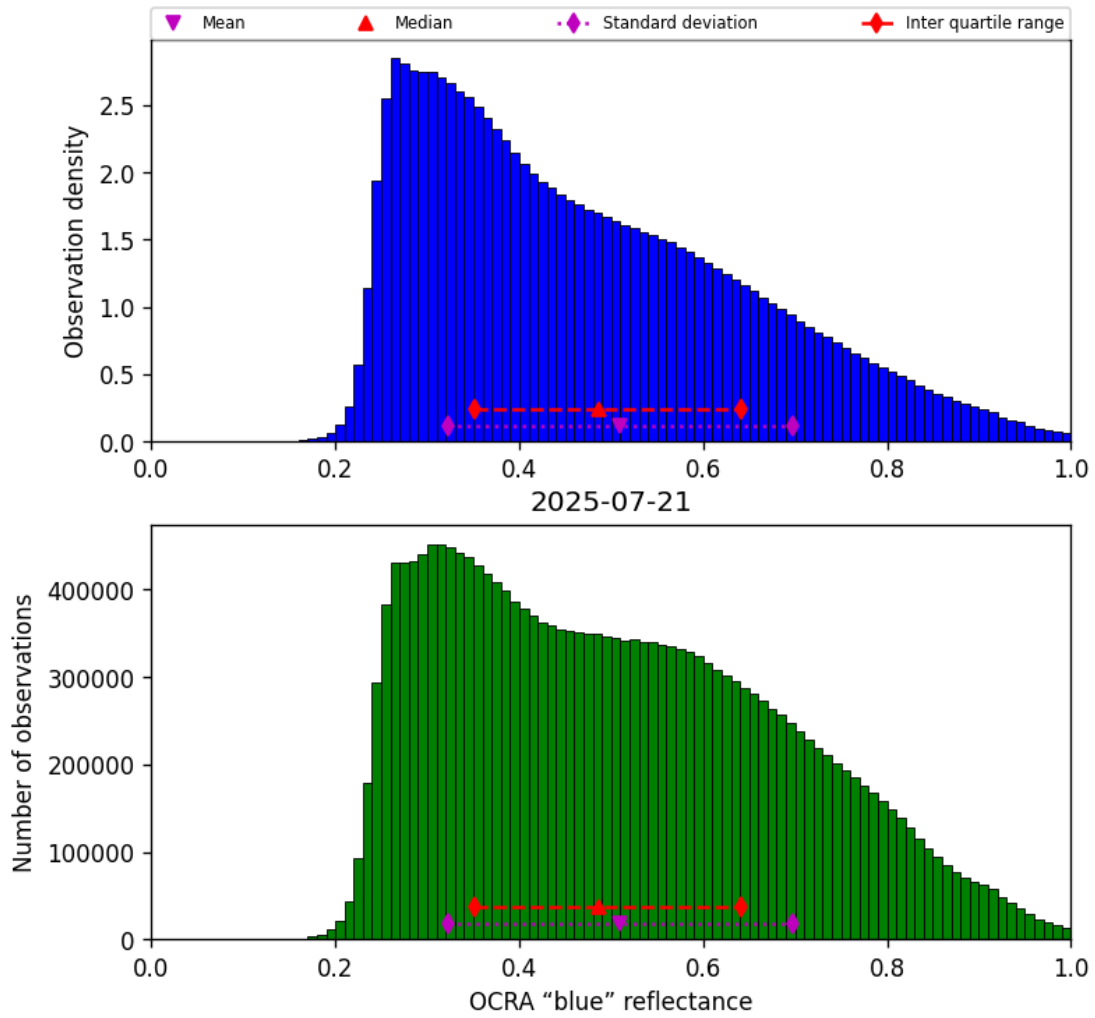


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-07-20 to 2025-07-22

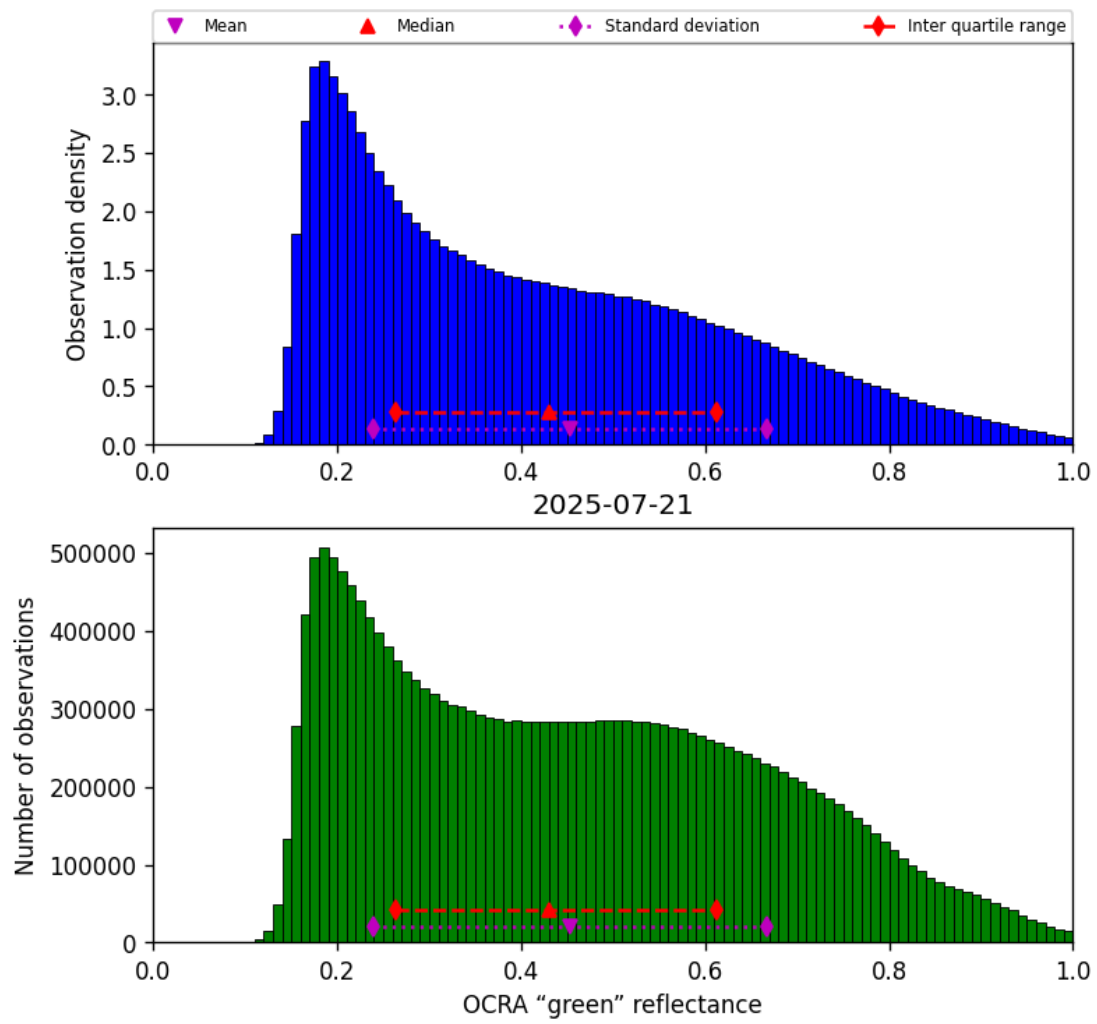


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-07-20 to 2025-07-22

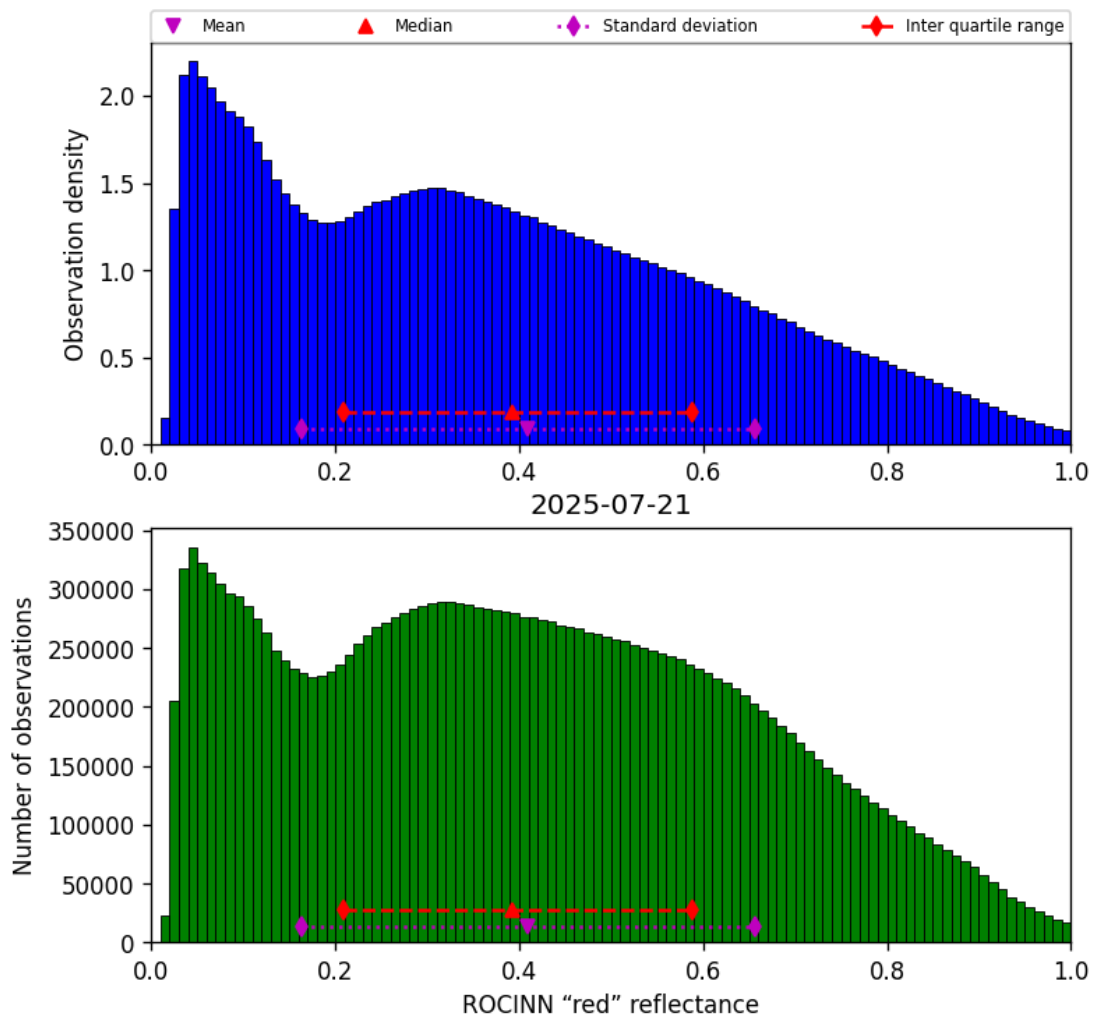


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-07-20 to 2025-07-22

9 Along track statistics

The TROPOMI instrument uses different binned detector rows for different viewing directions. In this section statistics are presented for each of the binned rows in the instrument.

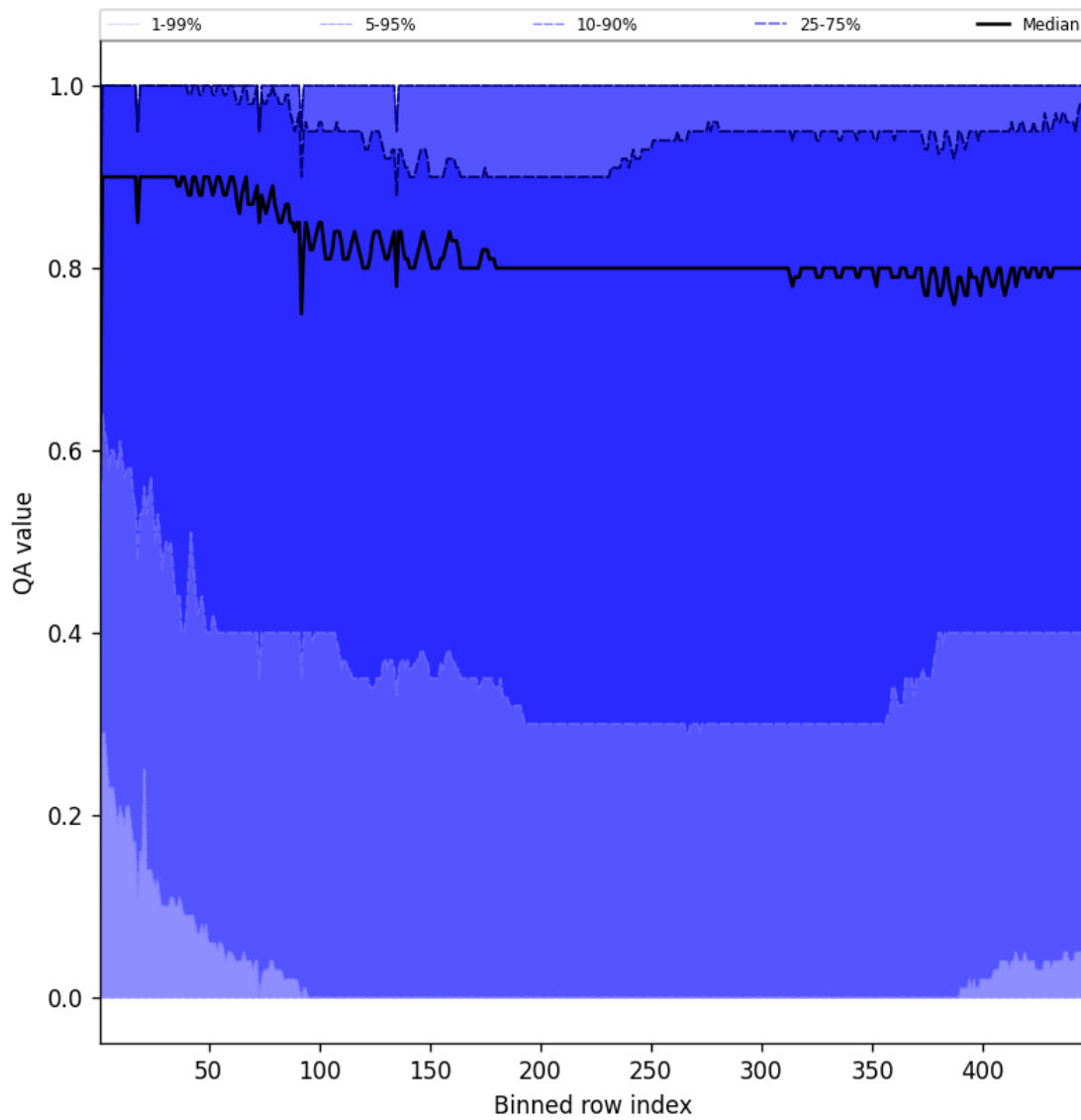


Figure 54: Along track statistics of “QA value” for 2025-07-20 to 2025-07-22

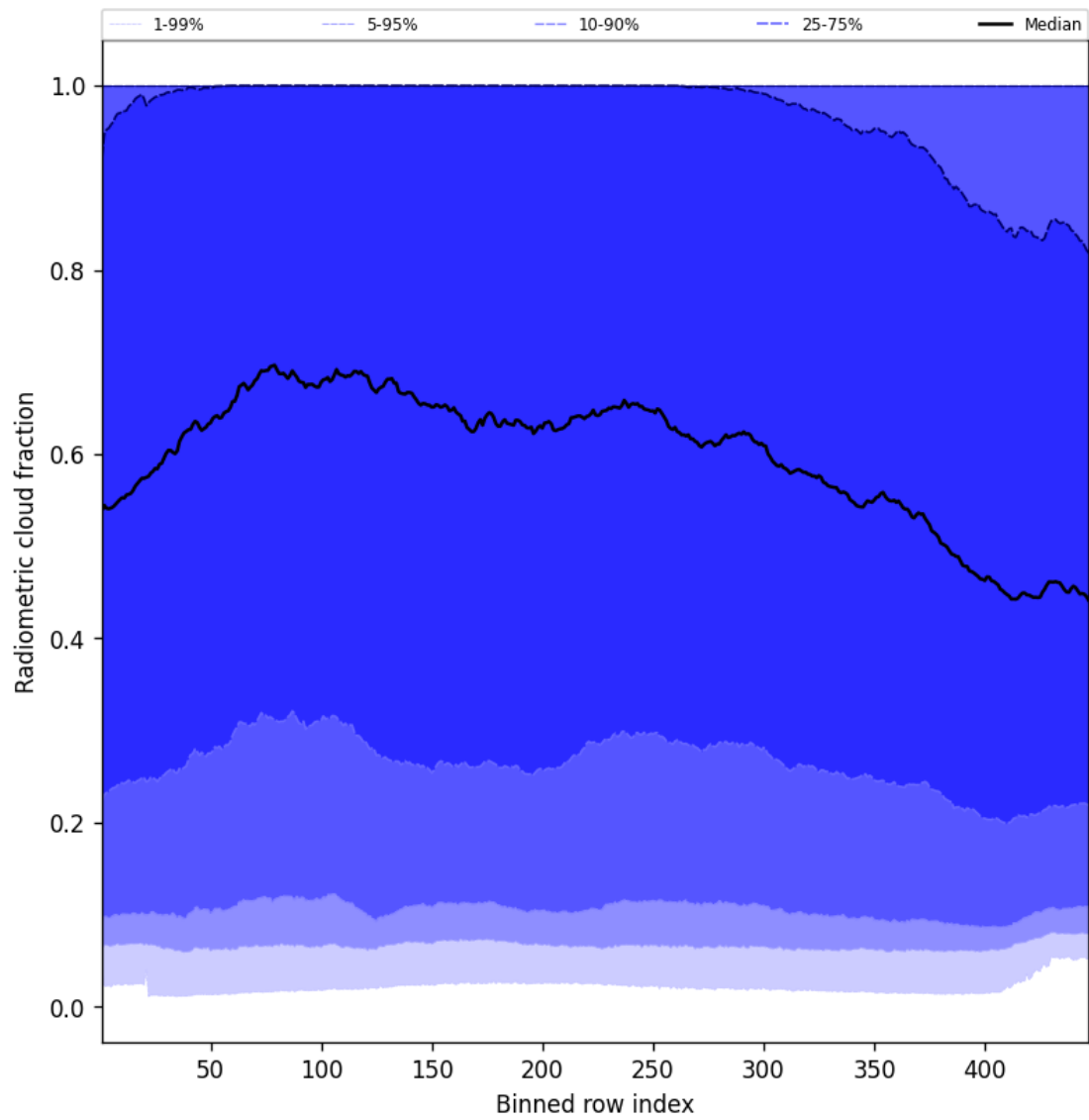


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-07-20 to 2025-07-22

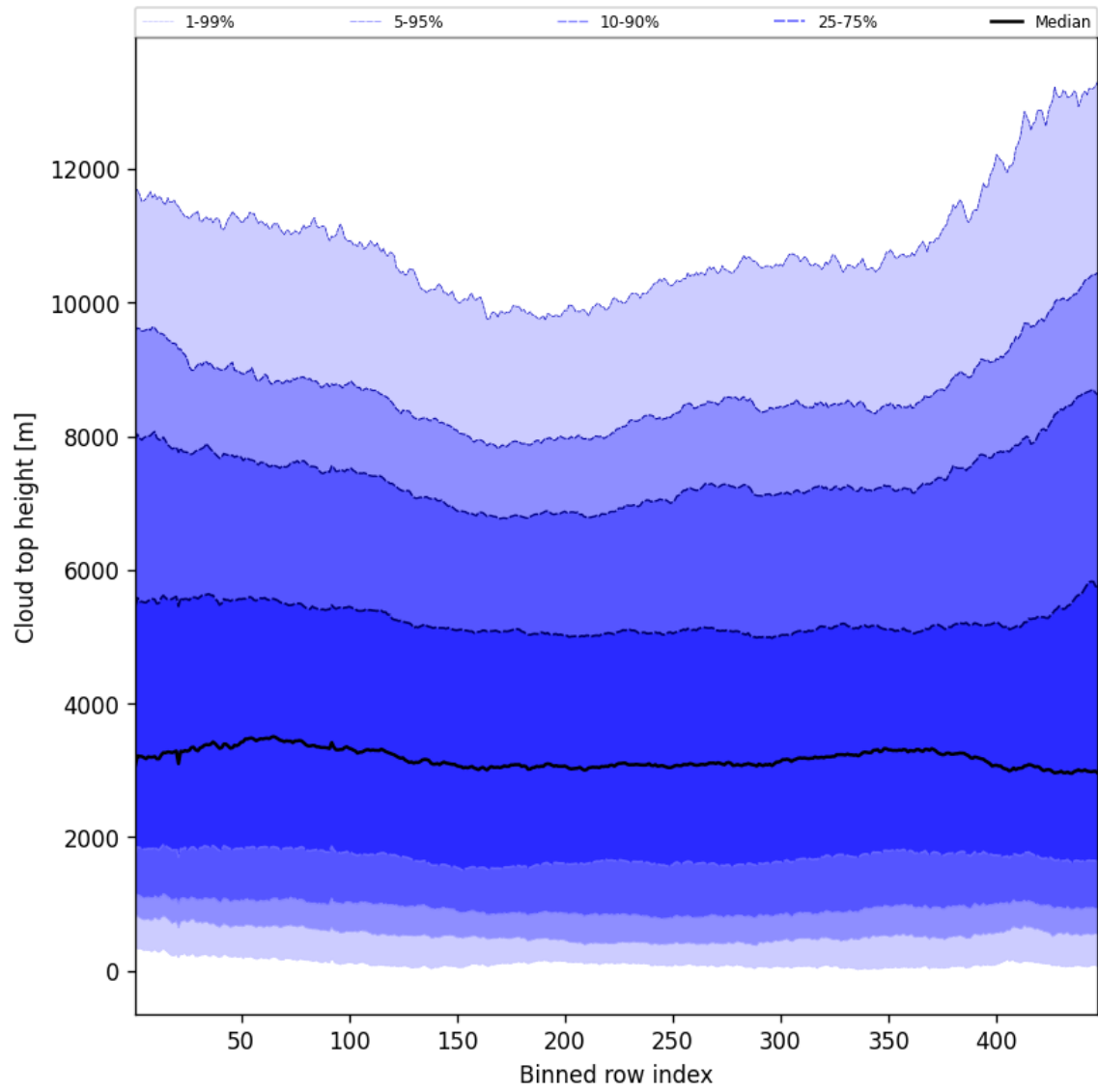


Figure 56: Along track statistics of “Cloud top height” for 2025-07-20 to 2025-07-22

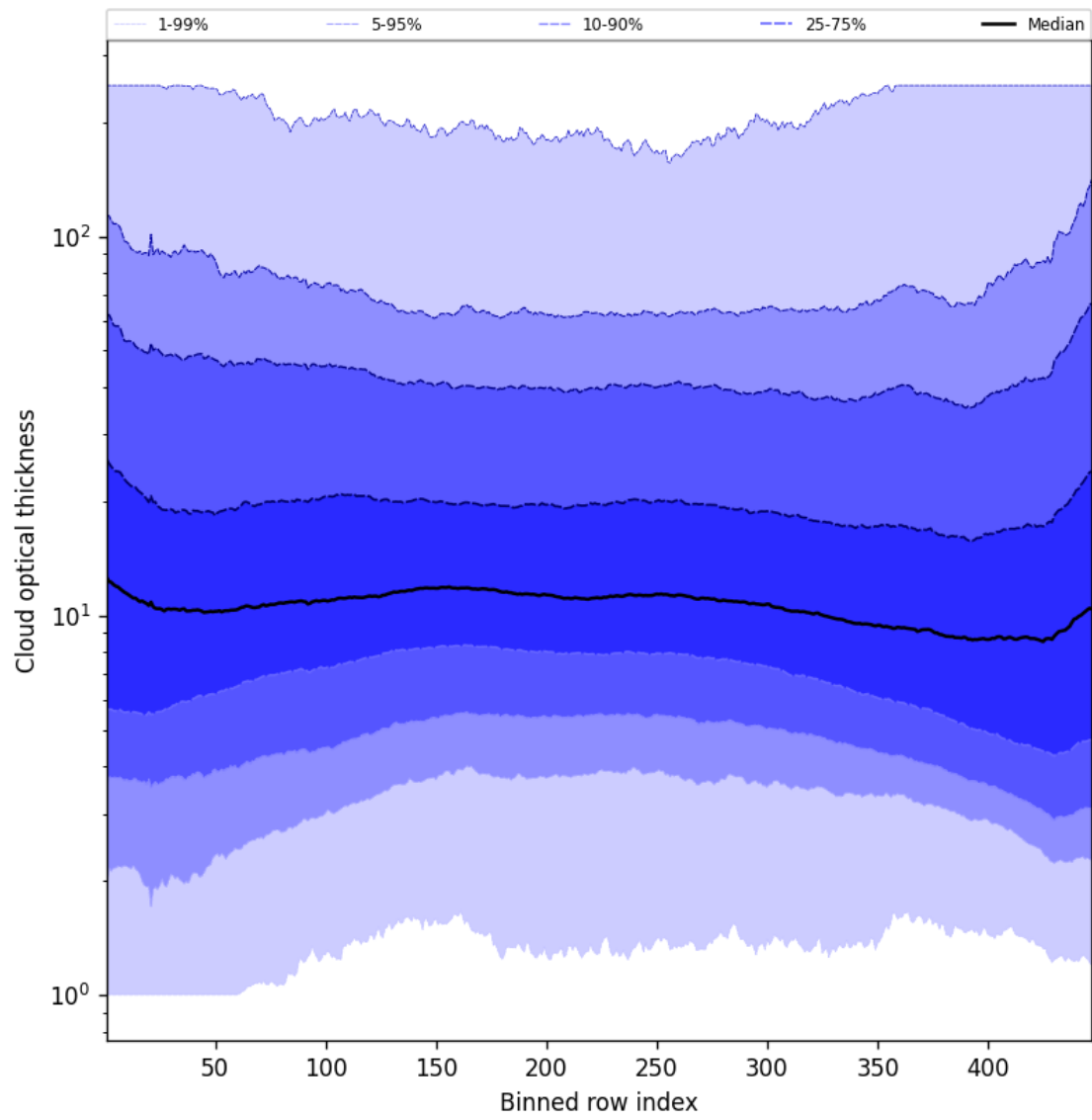


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-07-20 to 2025-07-22

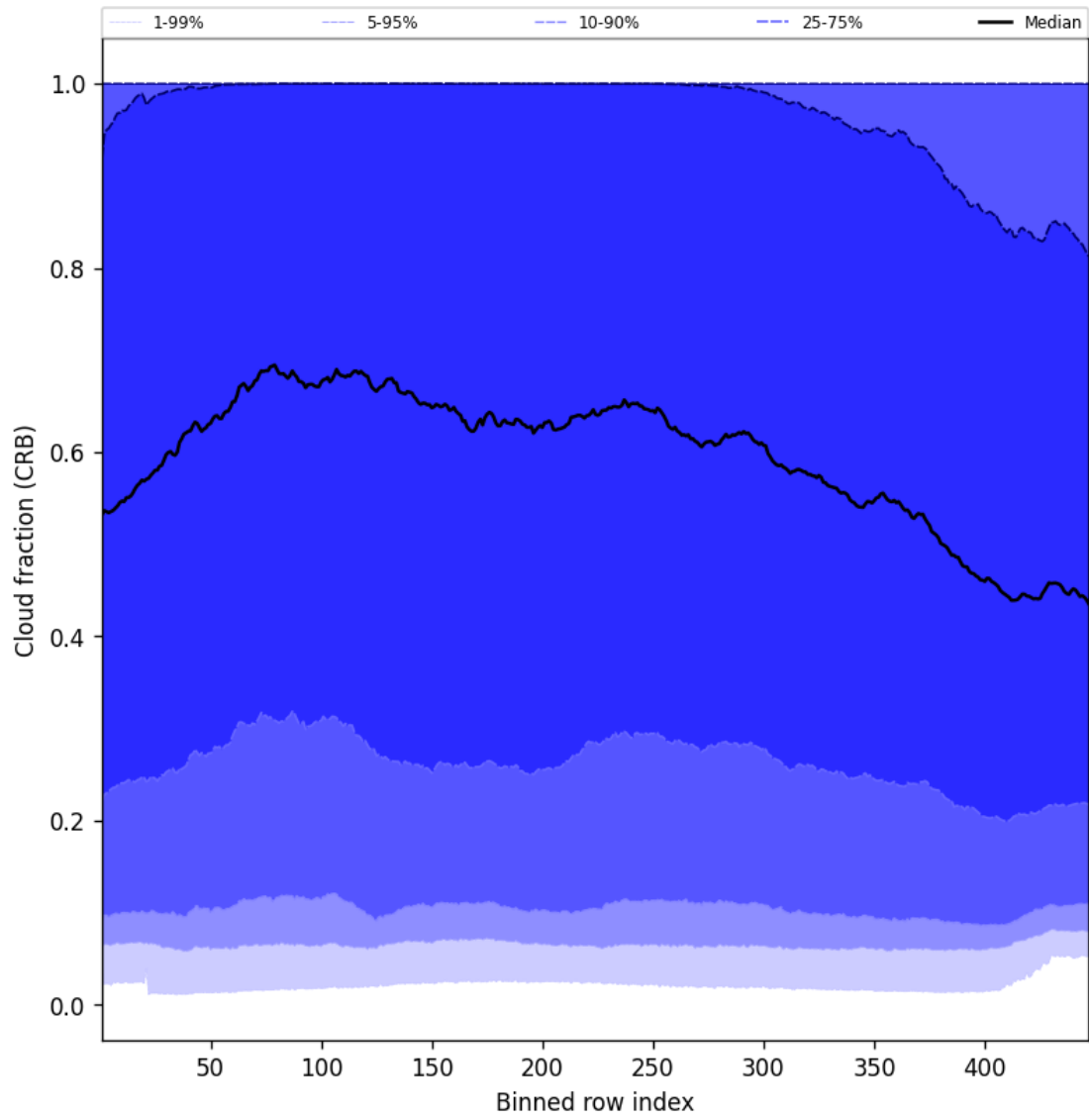


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-07-20 to 2025-07-22

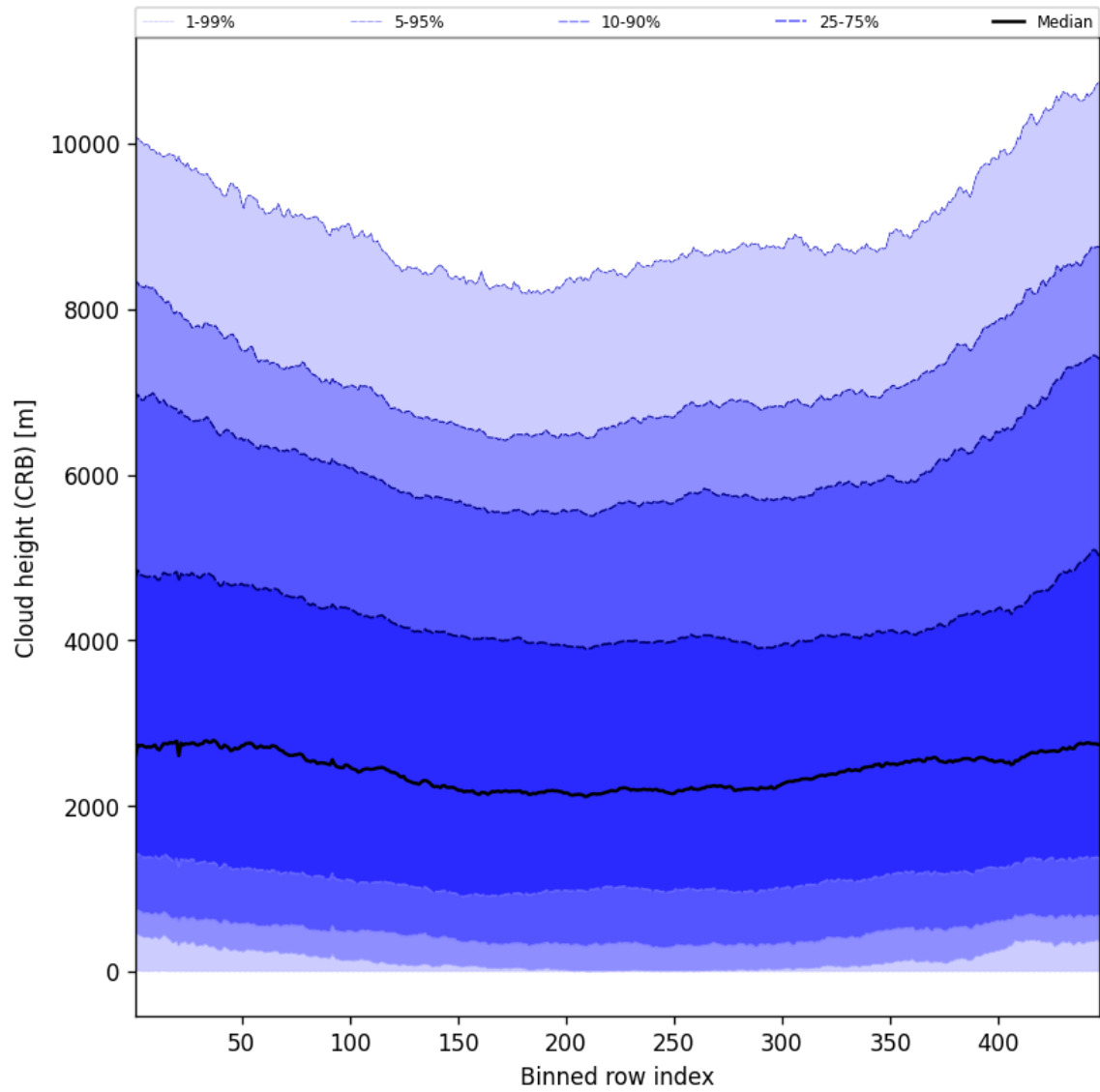


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-07-20 to 2025-07-22

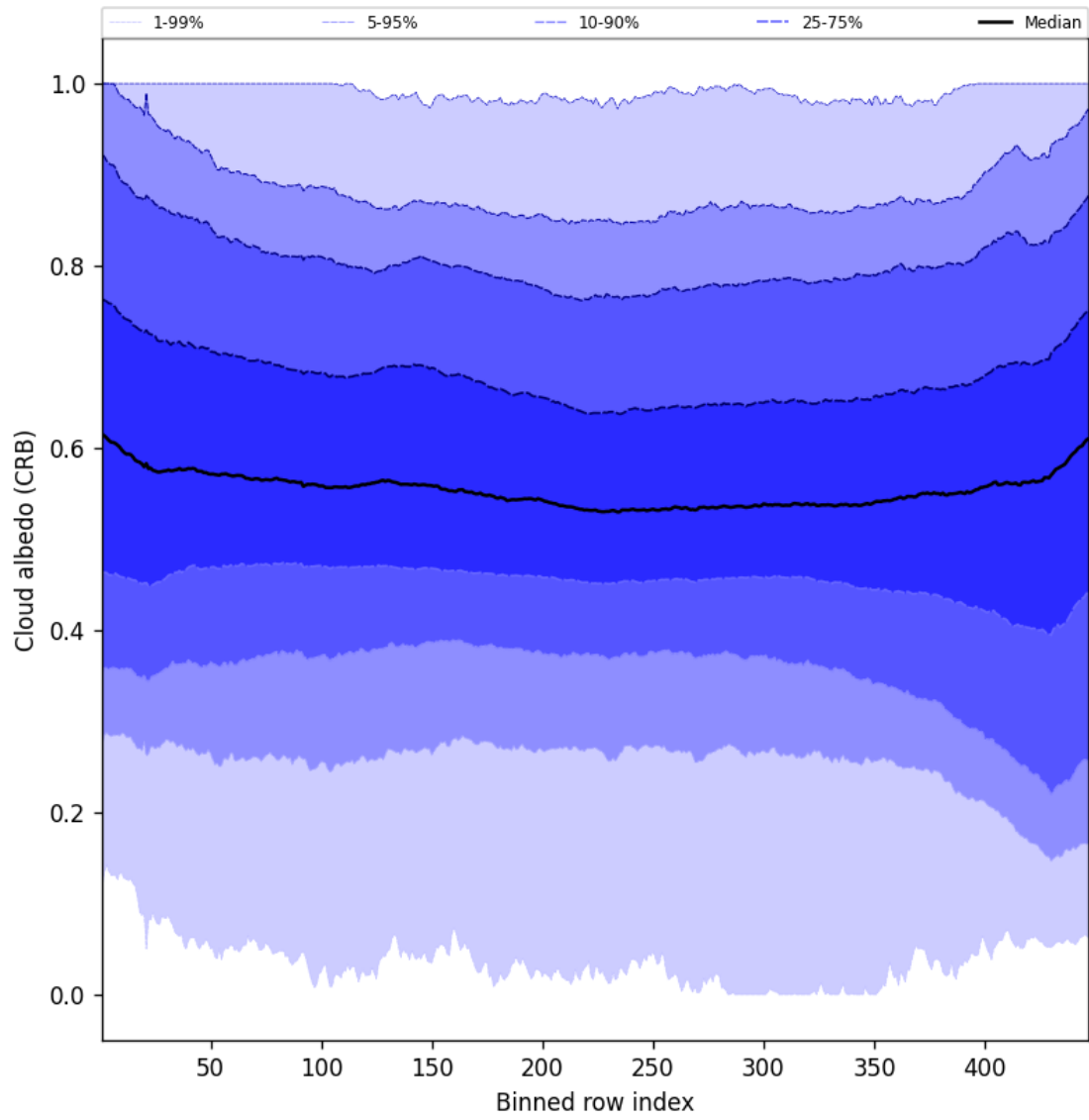


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-07-20 to 2025-07-22

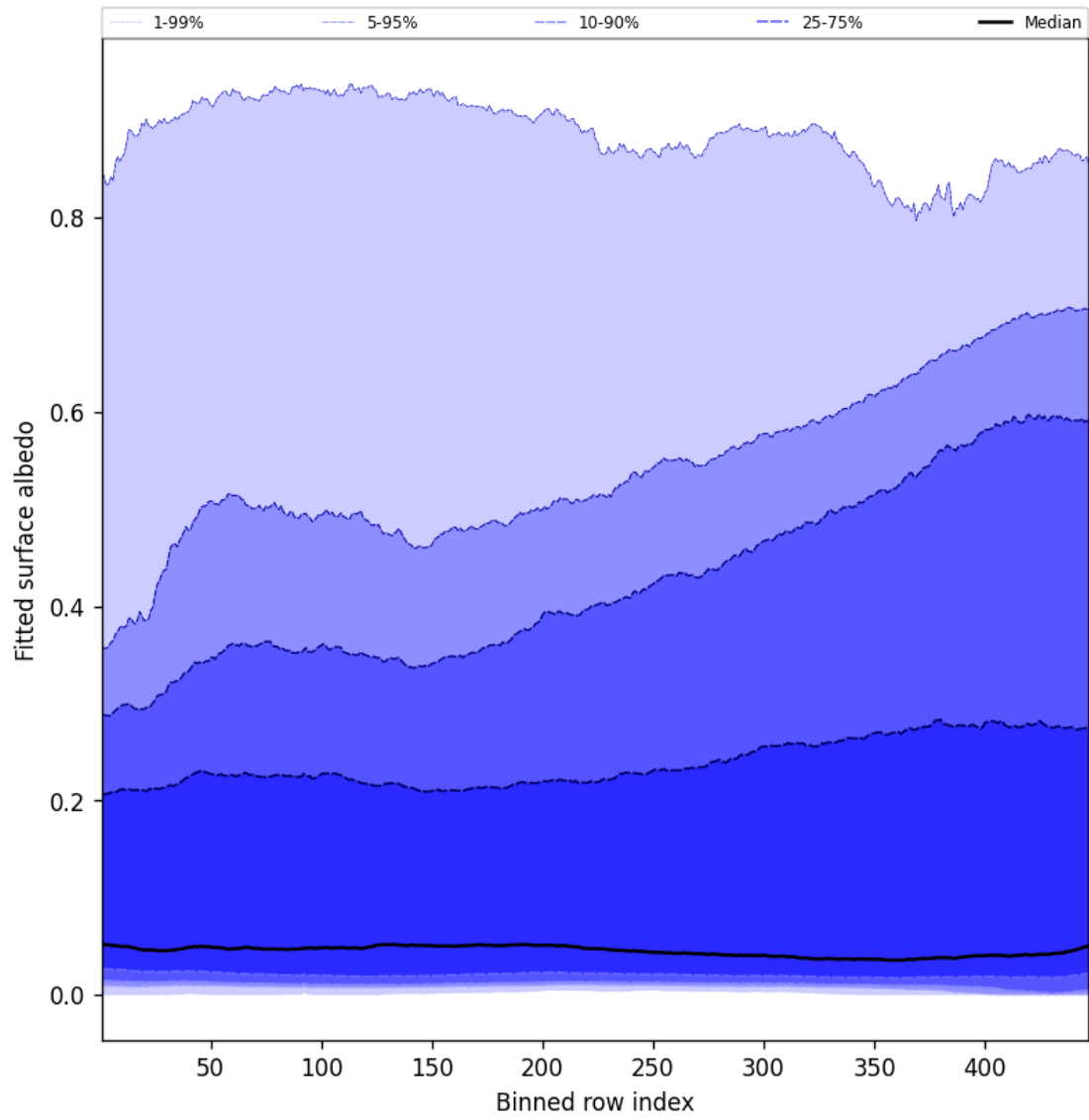


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-07-20 to 2025-07-22

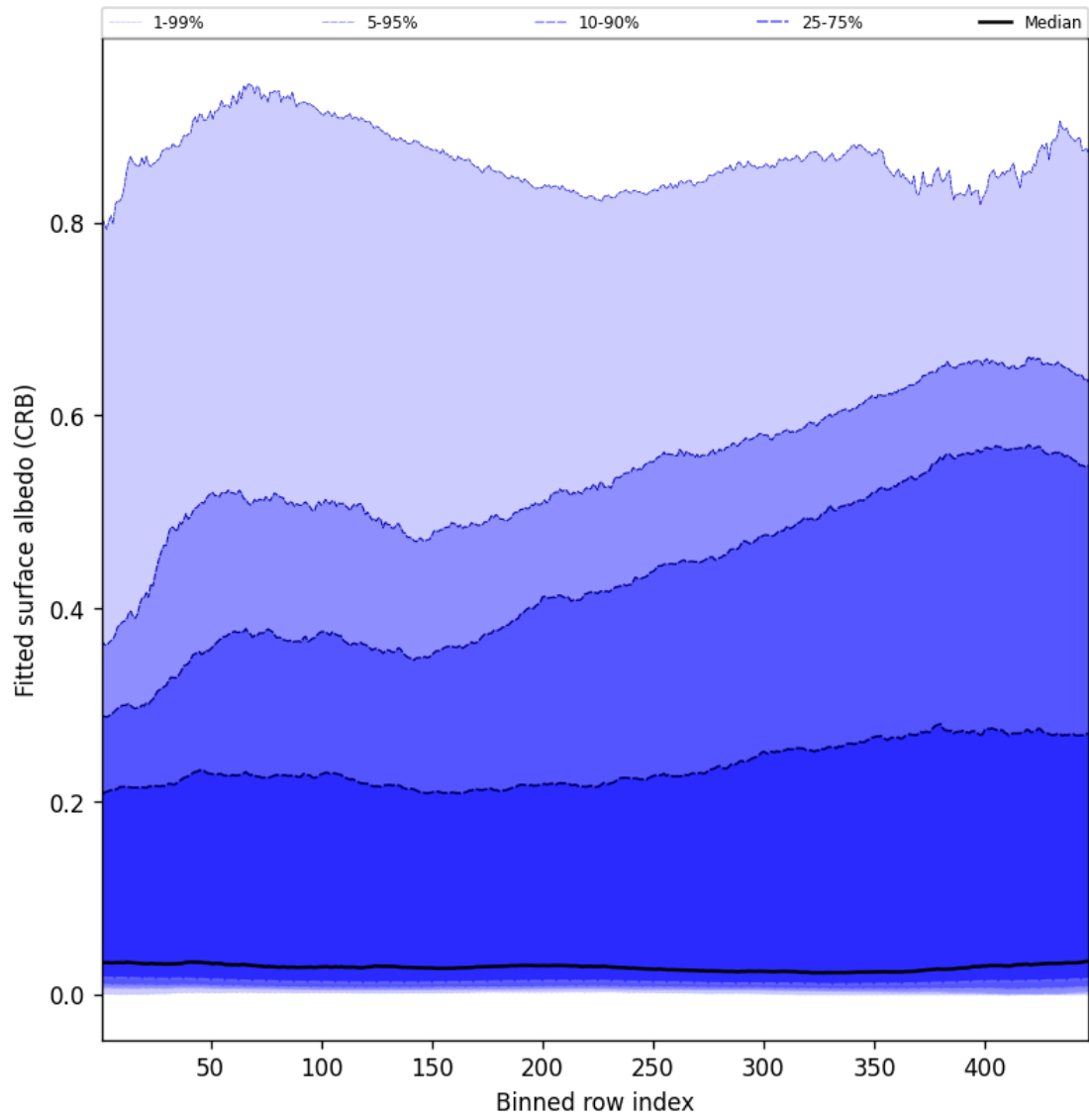


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-07-20 to 2025-07-22

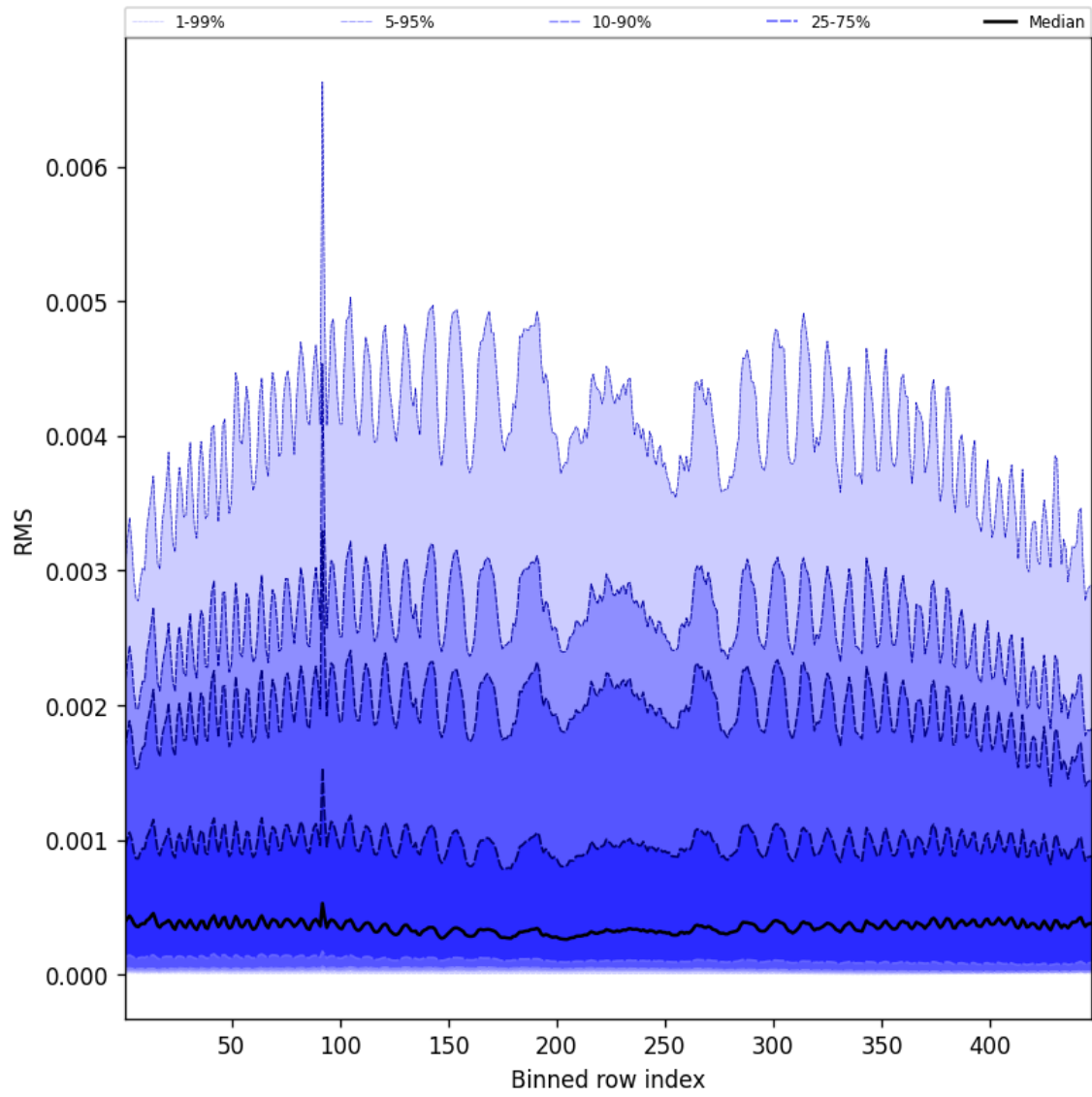


Figure 63: Along track statistics of “RMS” for 2025-07-20 to 2025-07-22

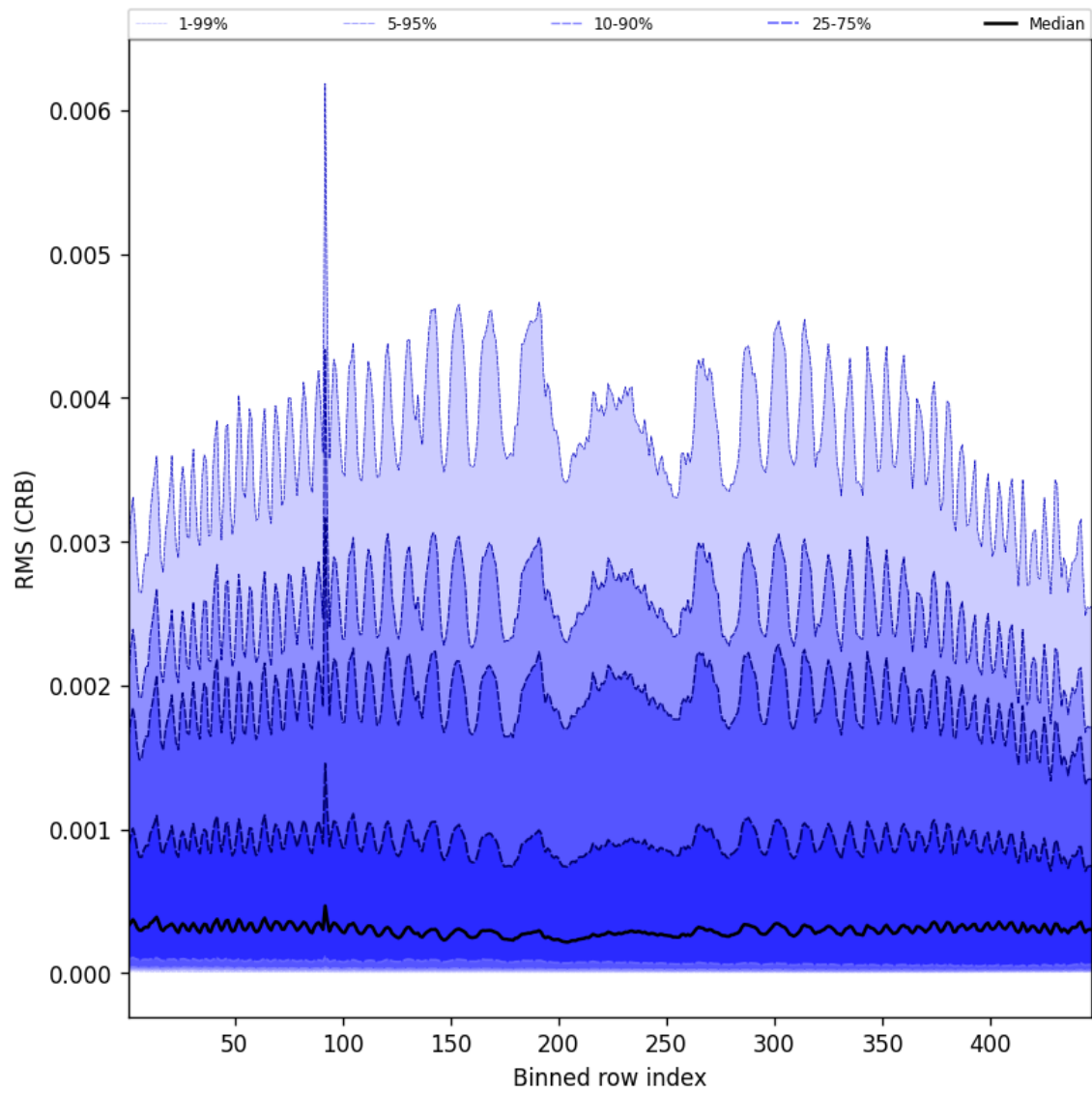


Figure 64: Along track statistics of “RMS (CRB)” for 2025-07-20 to 2025-07-22

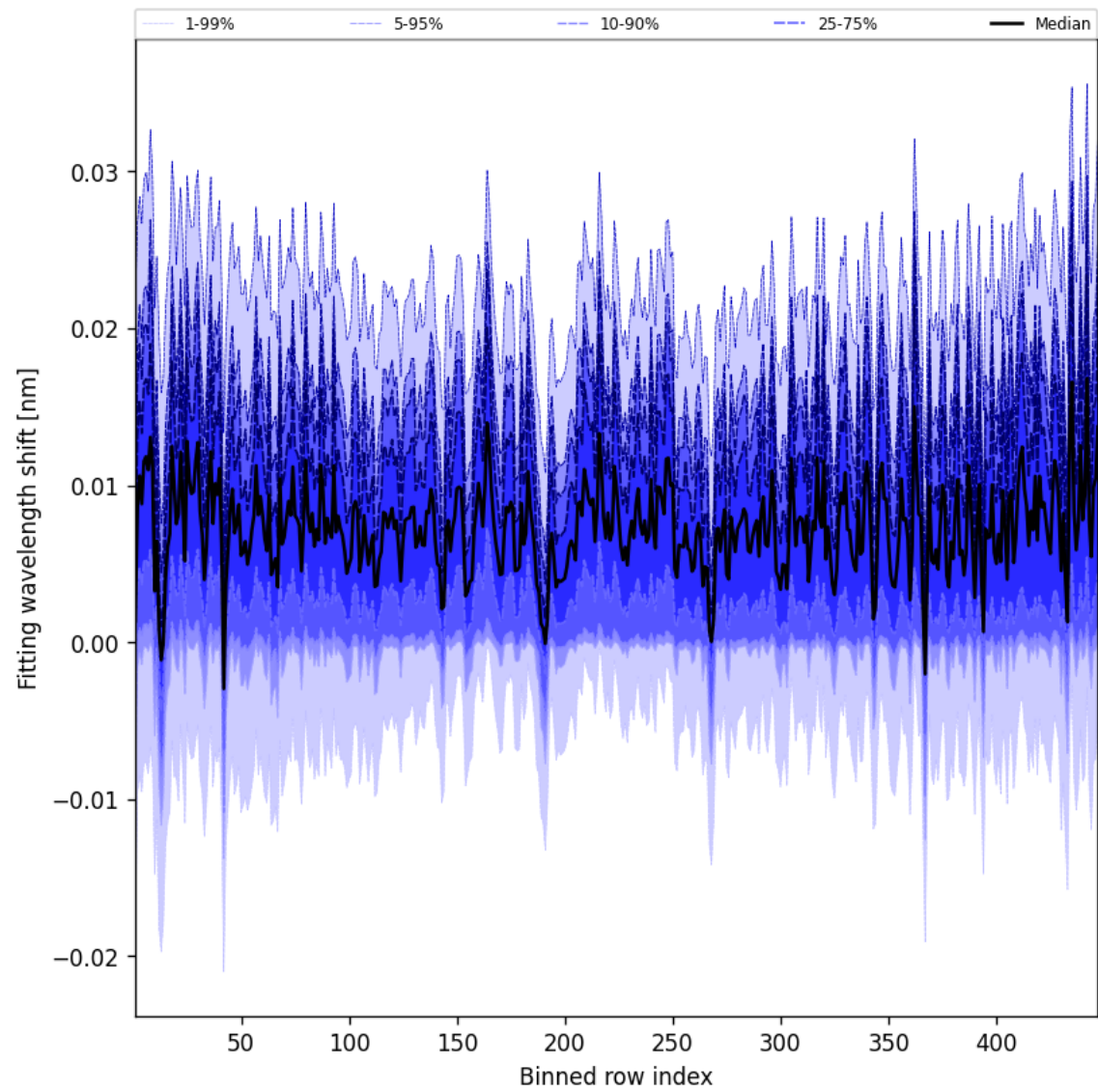


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-07-20 to 2025-07-22

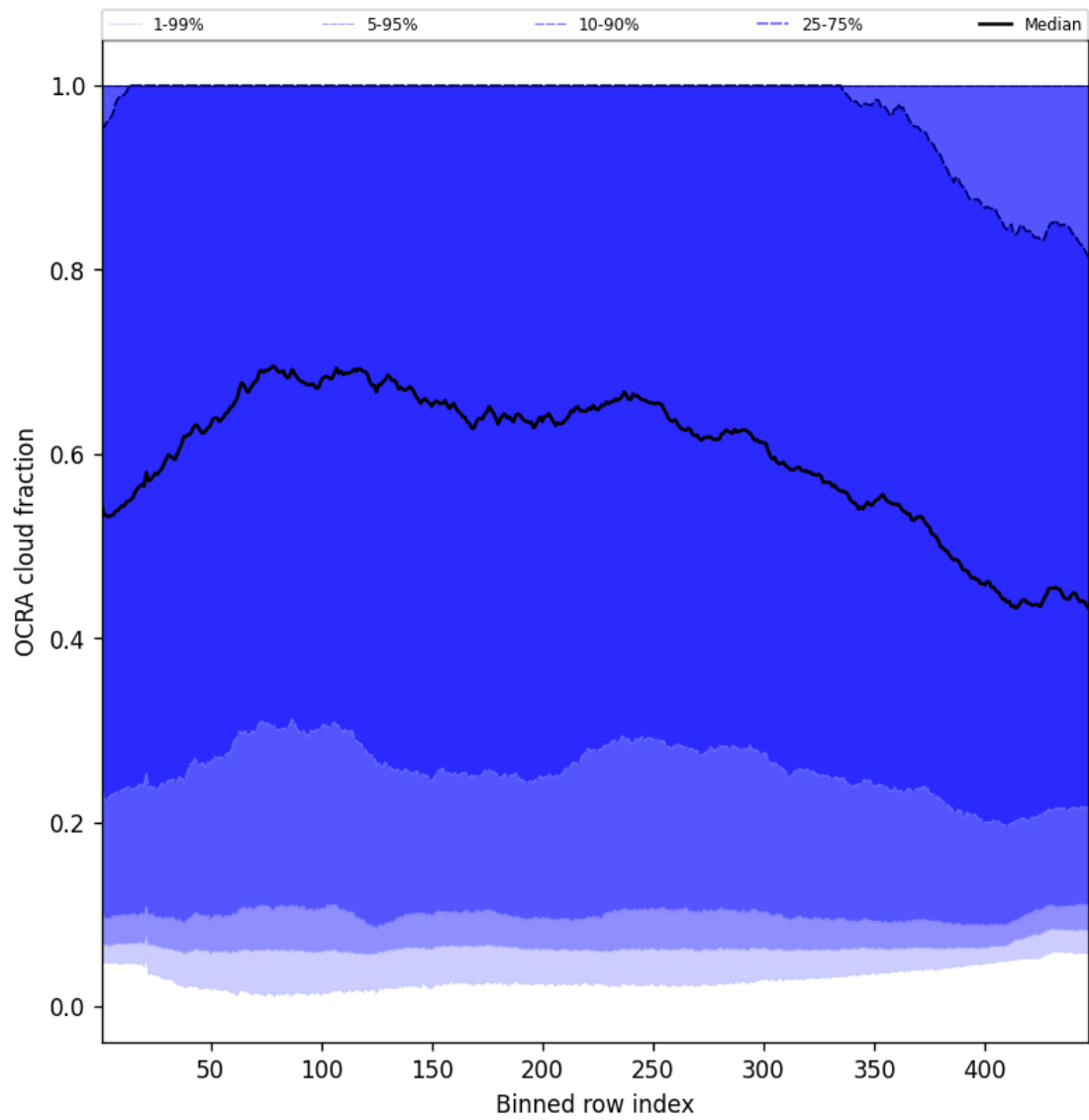


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-07-20 to 2025-07-22

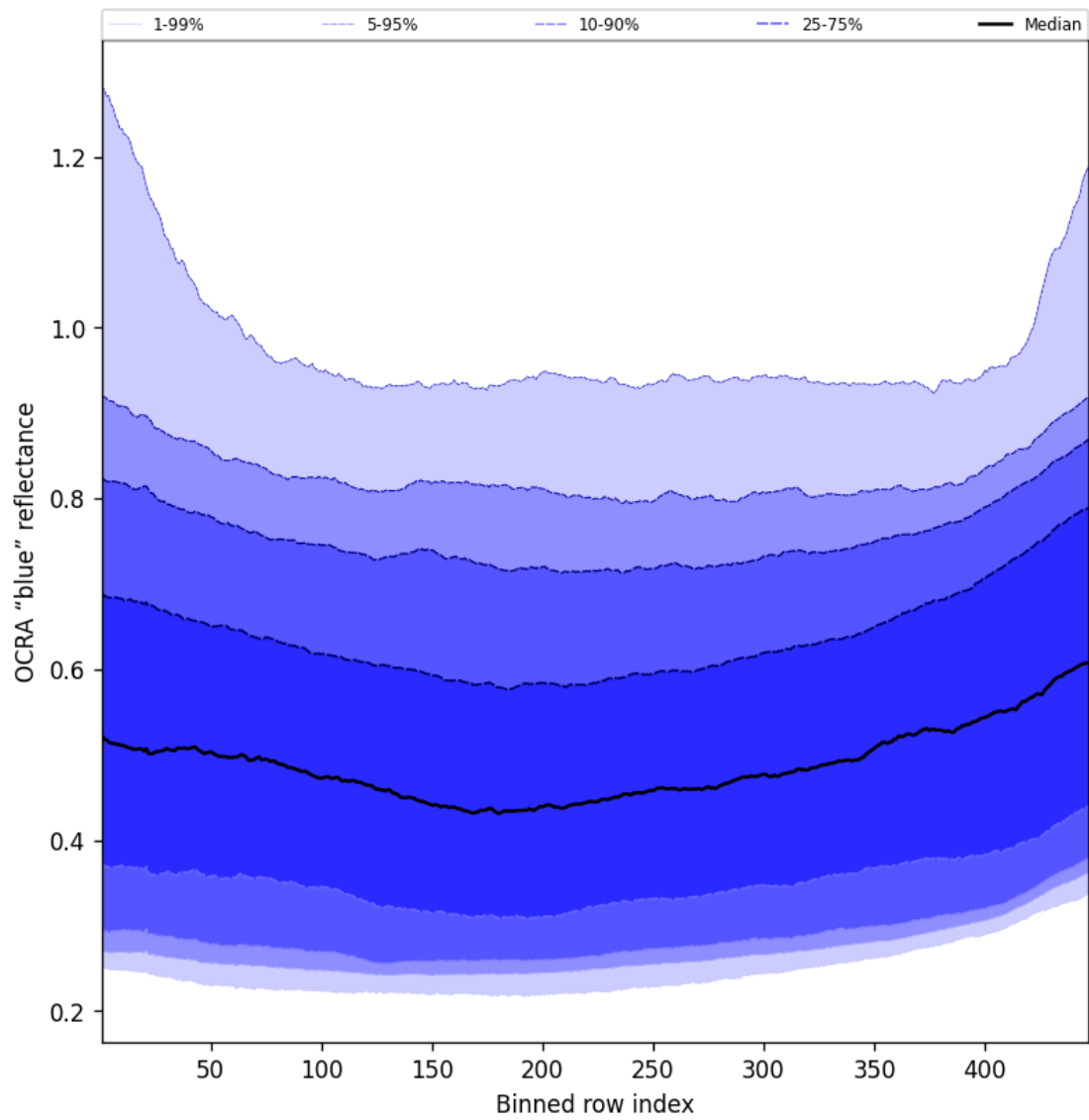


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-07-20 to 2025-07-22

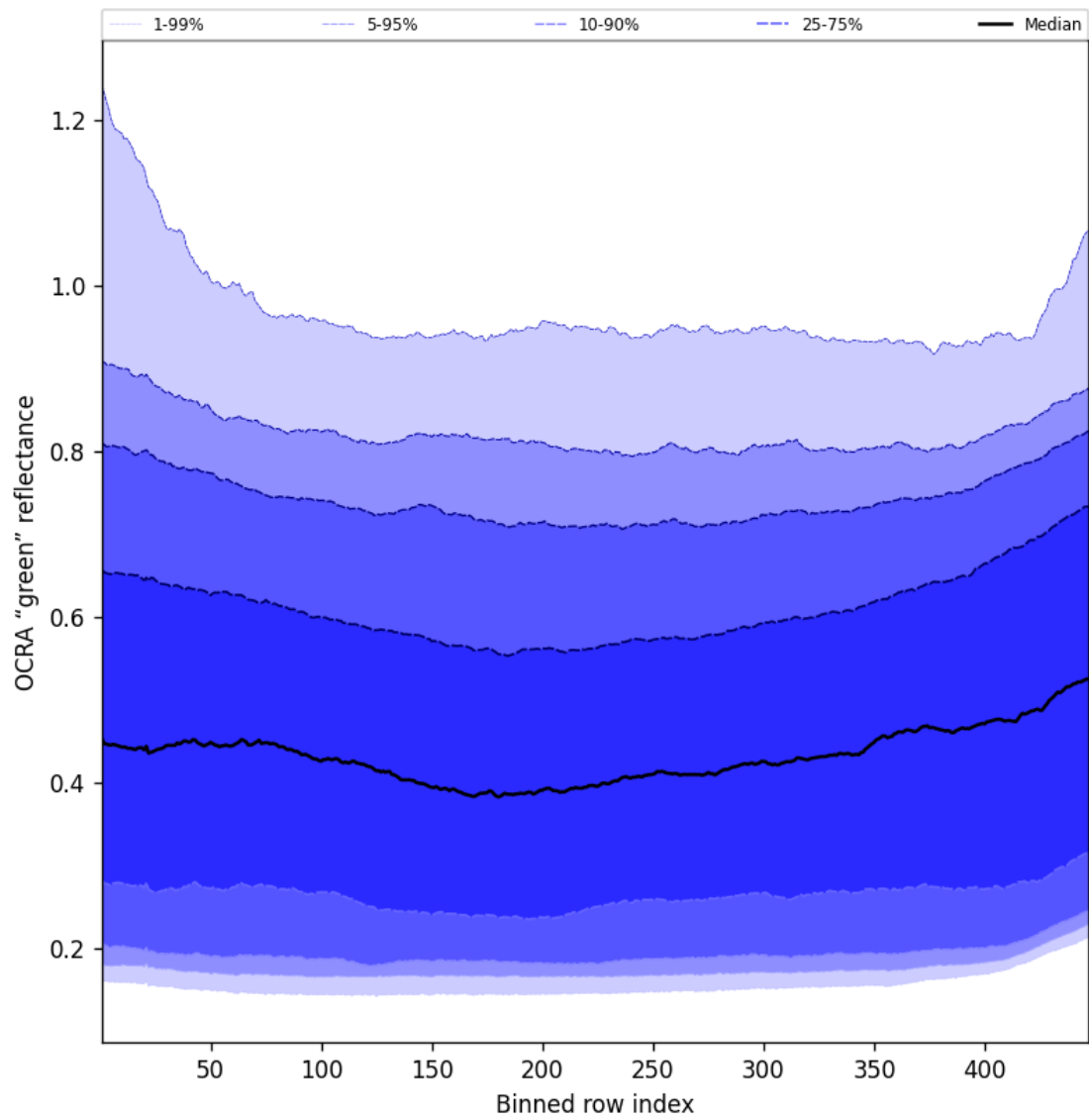


Figure 68: Along track statistics of “OCRA “green” reflectance” for 2025-07-20 to 2025-07-22

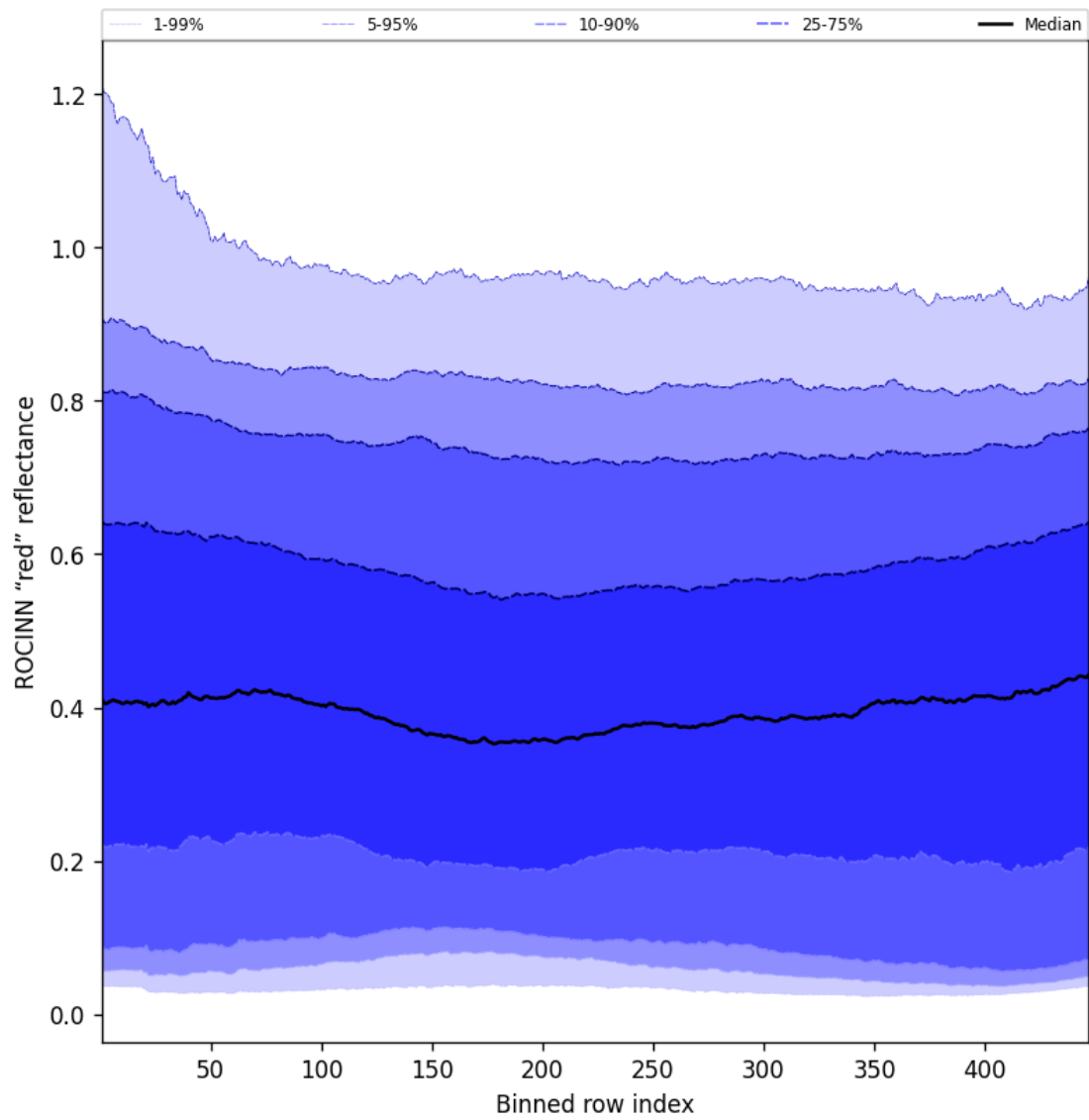


Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2025-07-20 to 2025-07-22

10 Coincidence density

To investigate the relation between parameters scatter density plots are produced. These include some ‘hidden’ parameters, latitude and the solar- and viewing geometries, in addition to all configured parameters. All combinations of pairs of parameters are included *once*, in one direction alone.

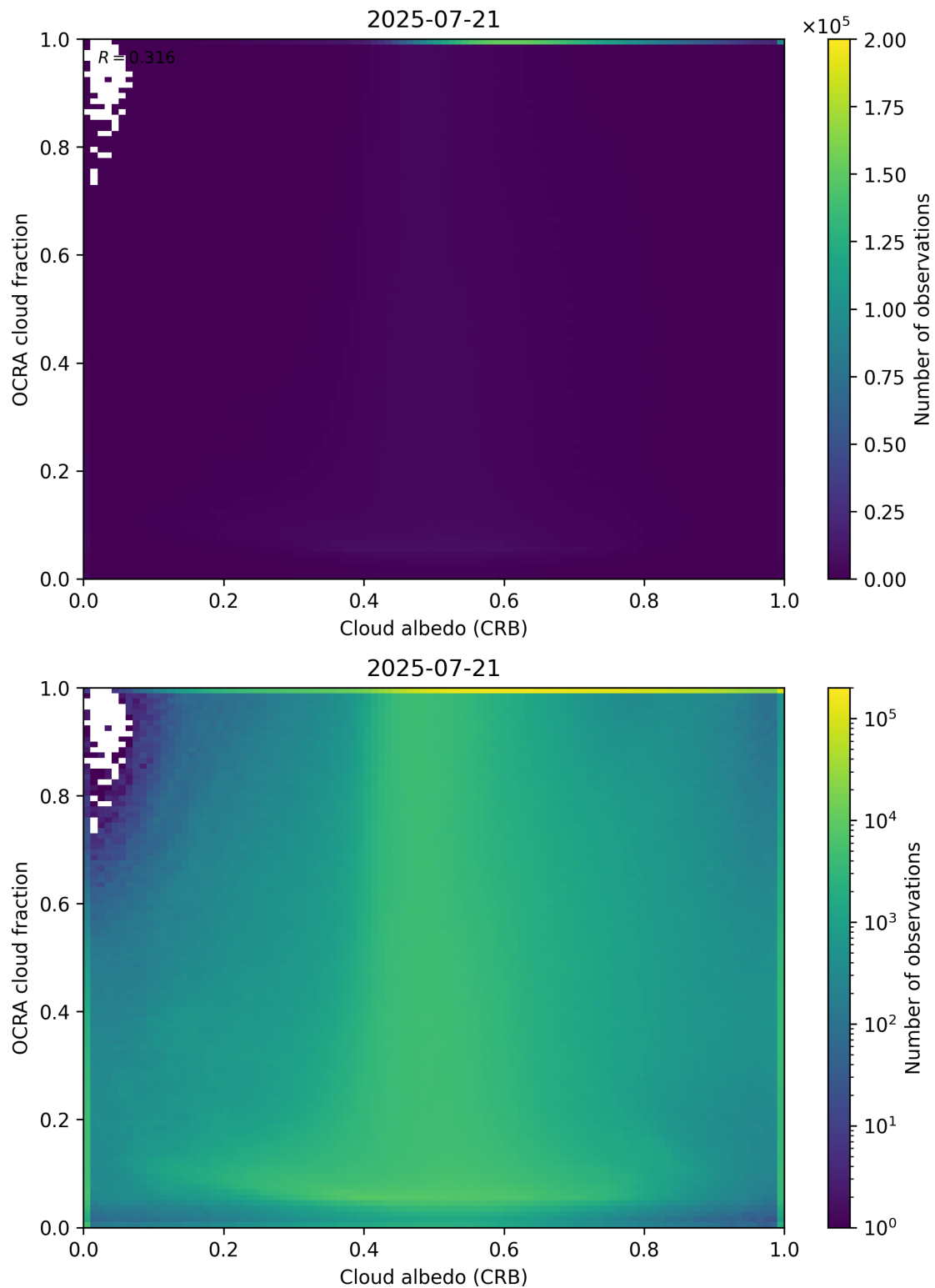


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-07-20 to 2025-07-22.

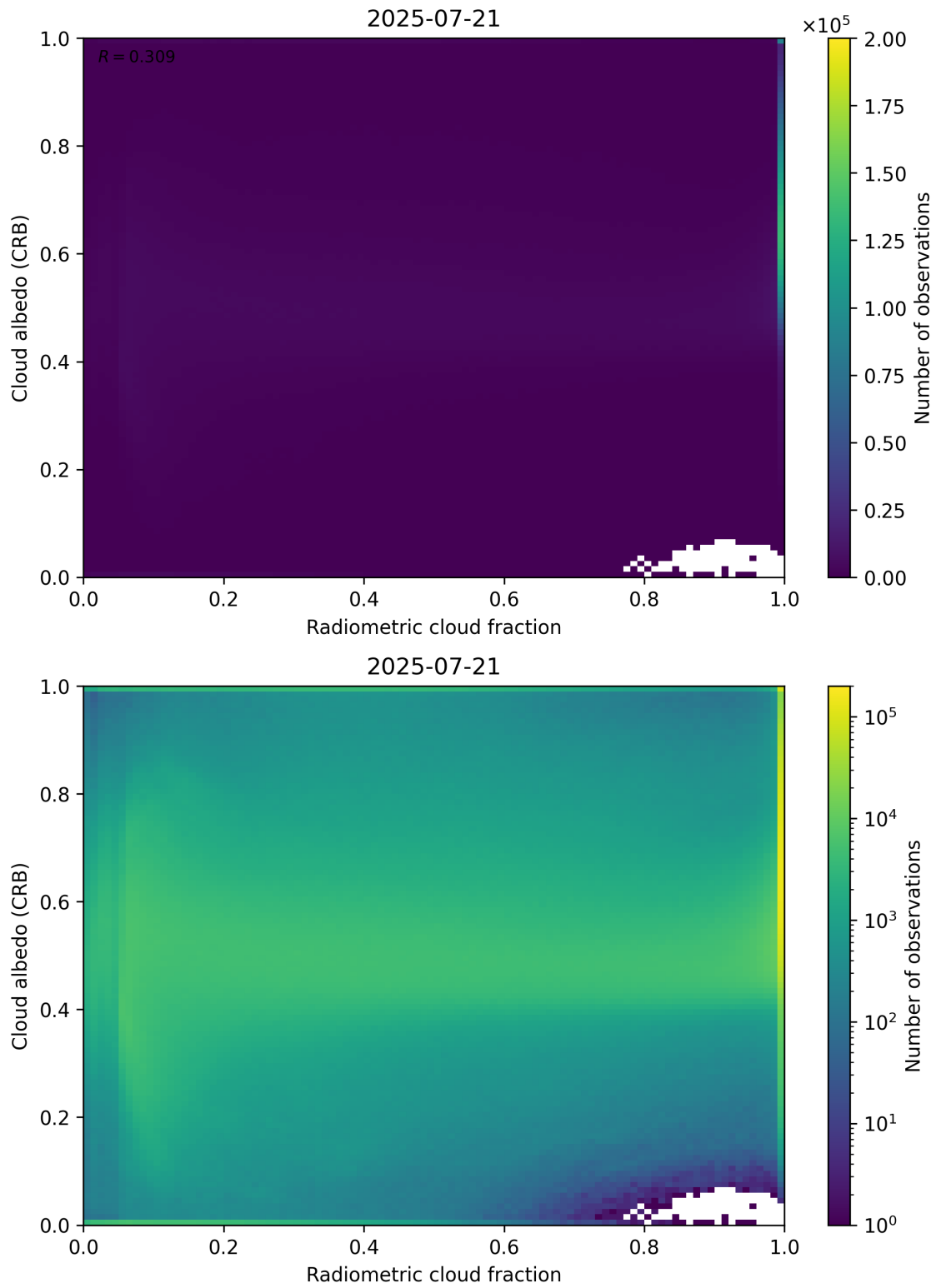


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-07-20 to 2025-07-22.

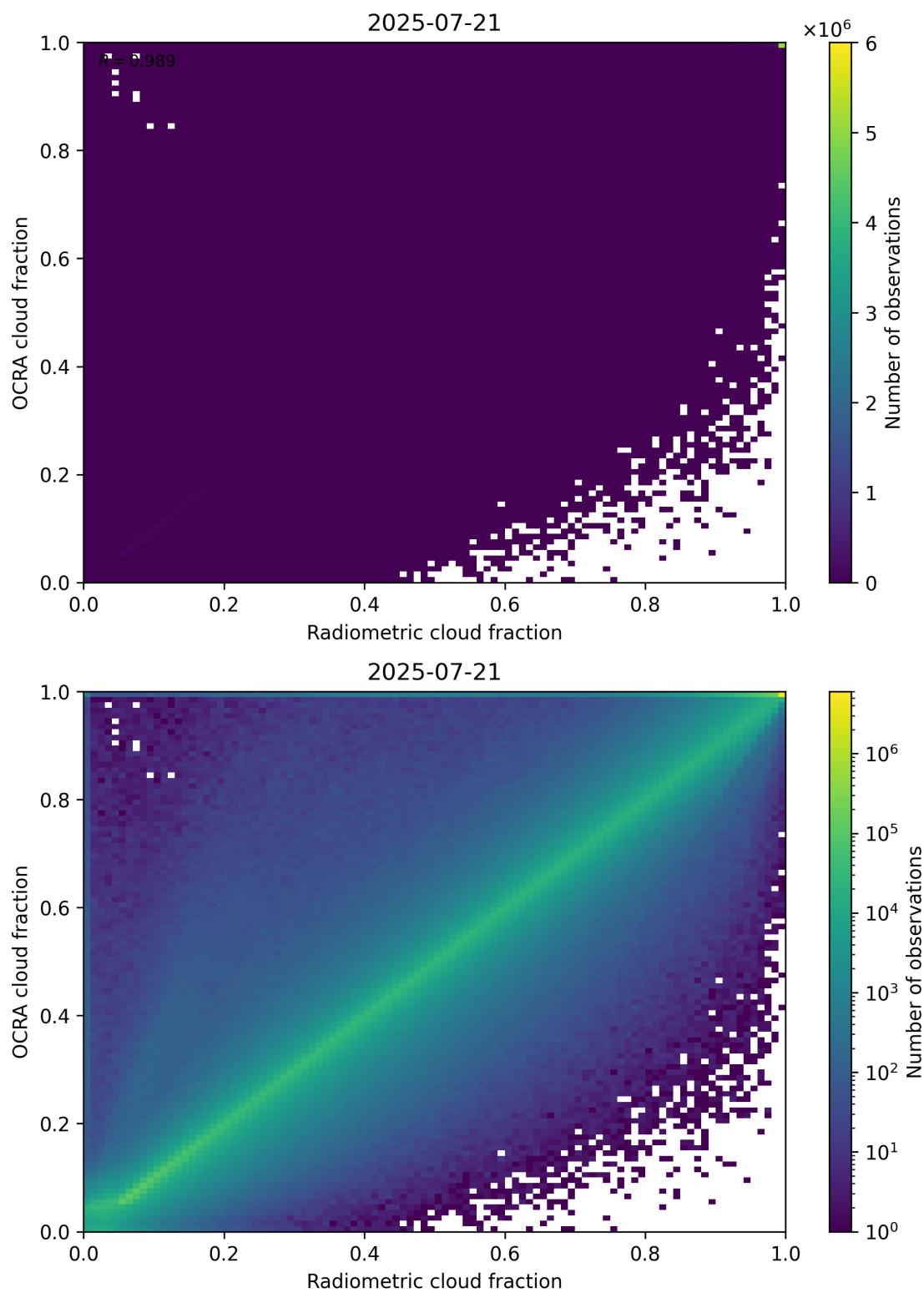


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-07-20 to 2025-07-22.

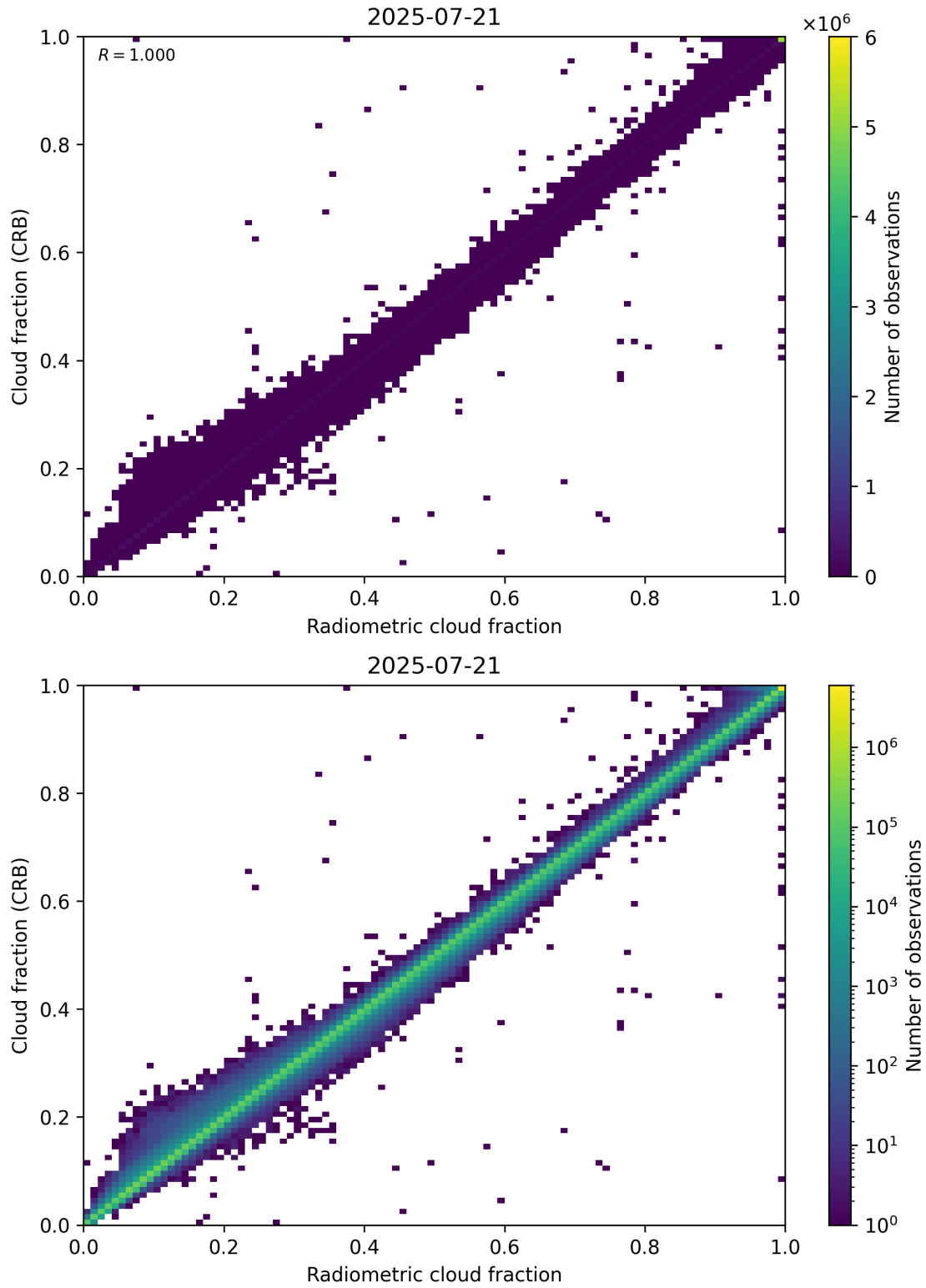


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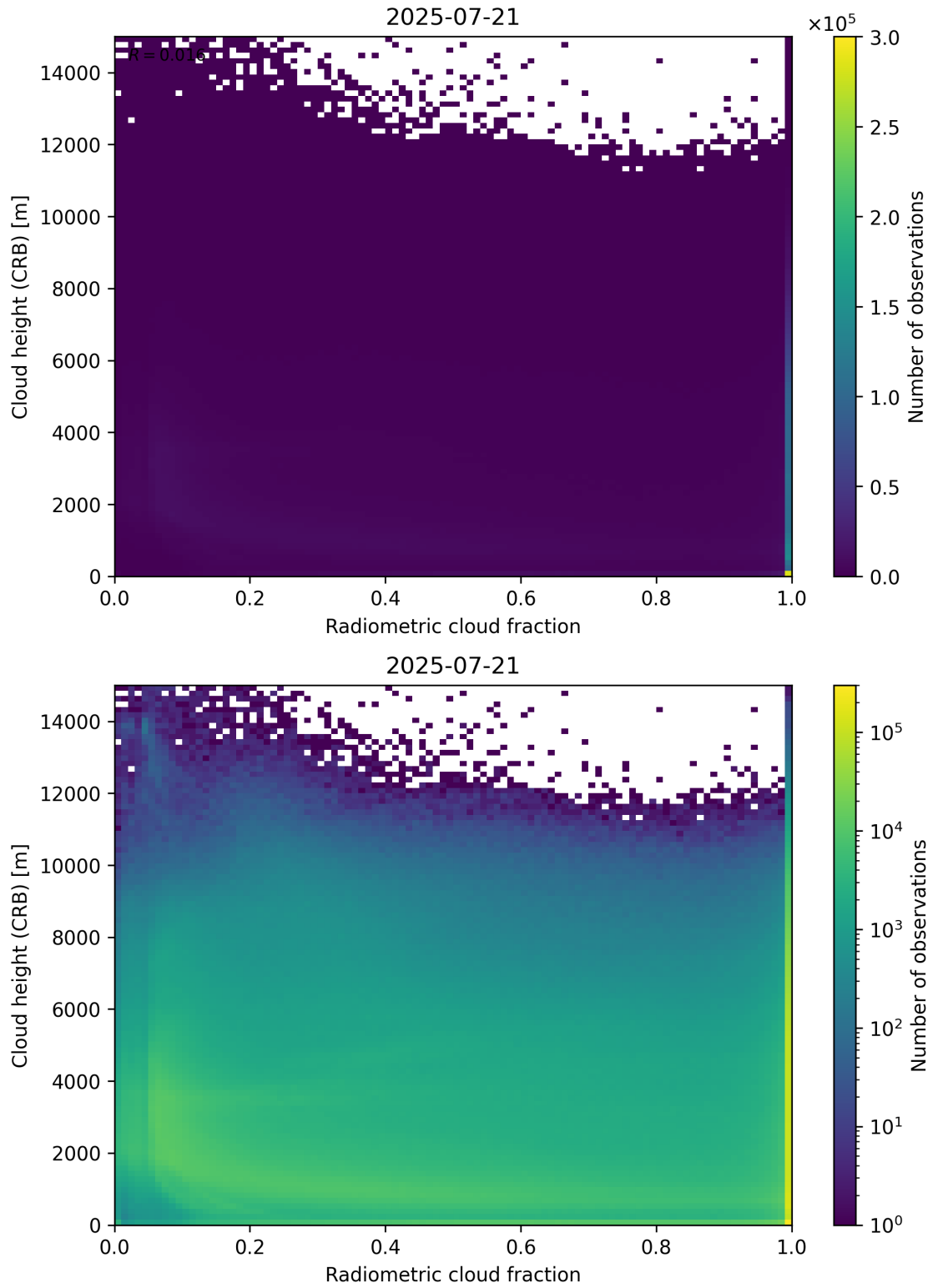


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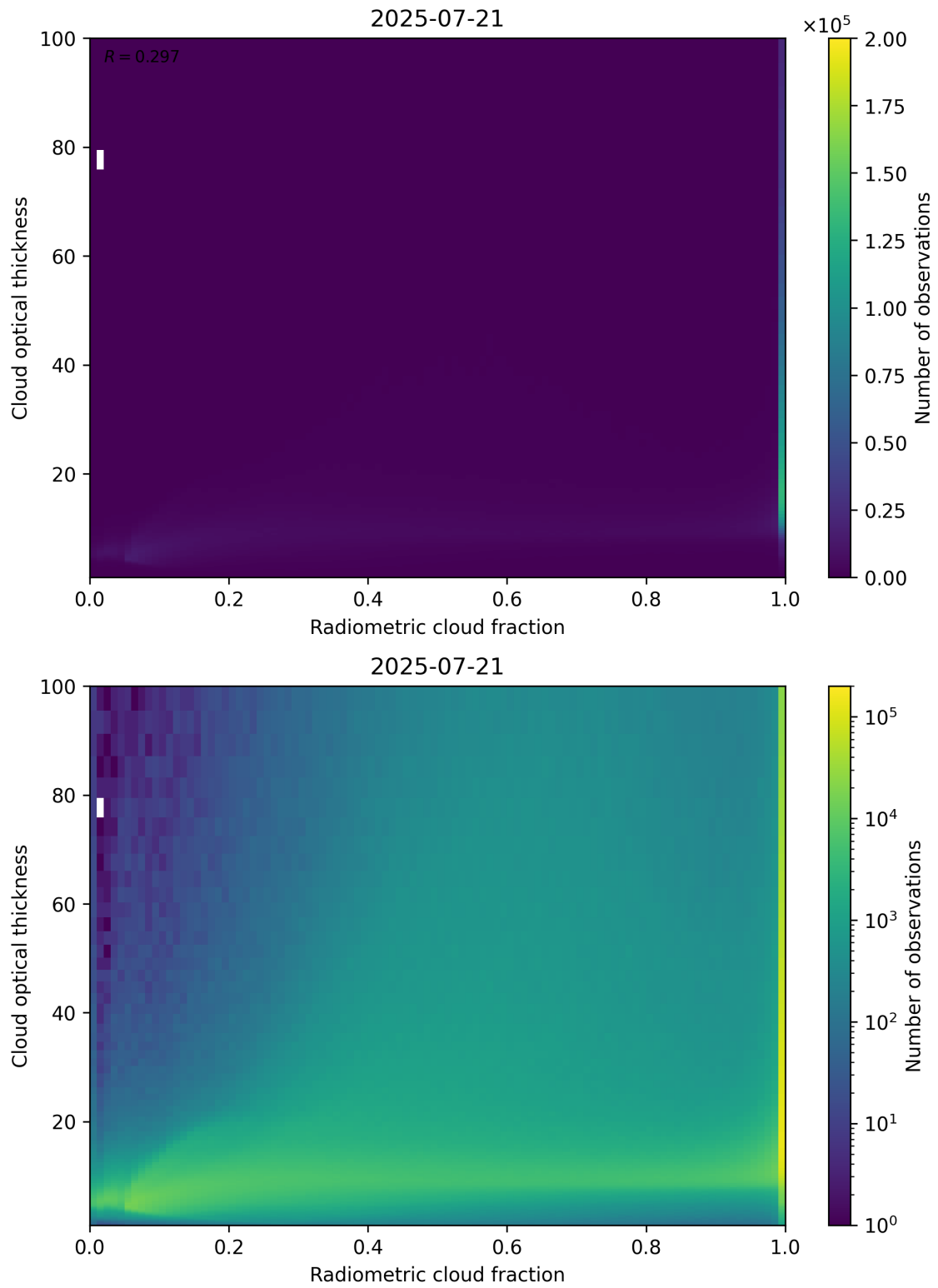


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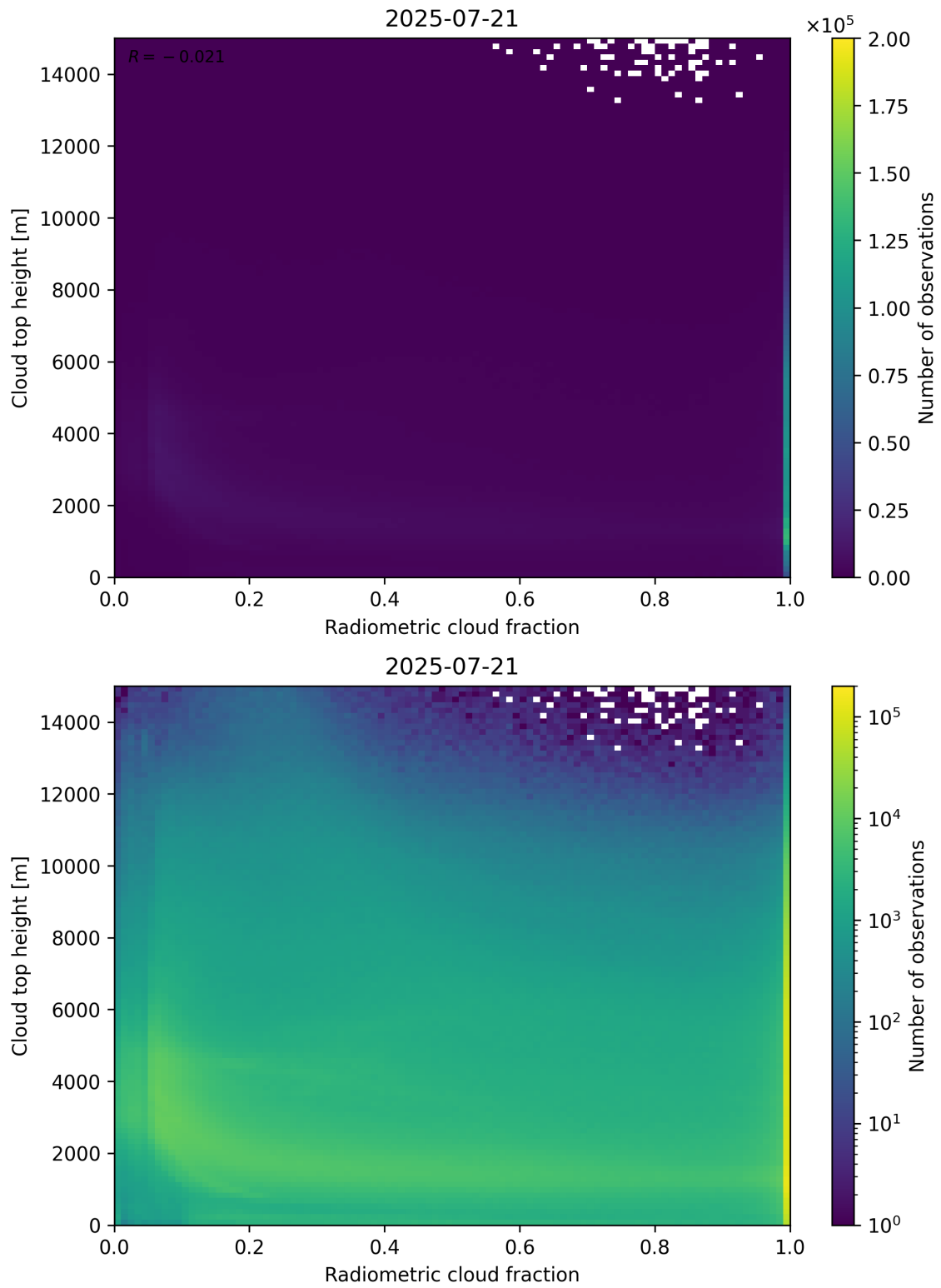


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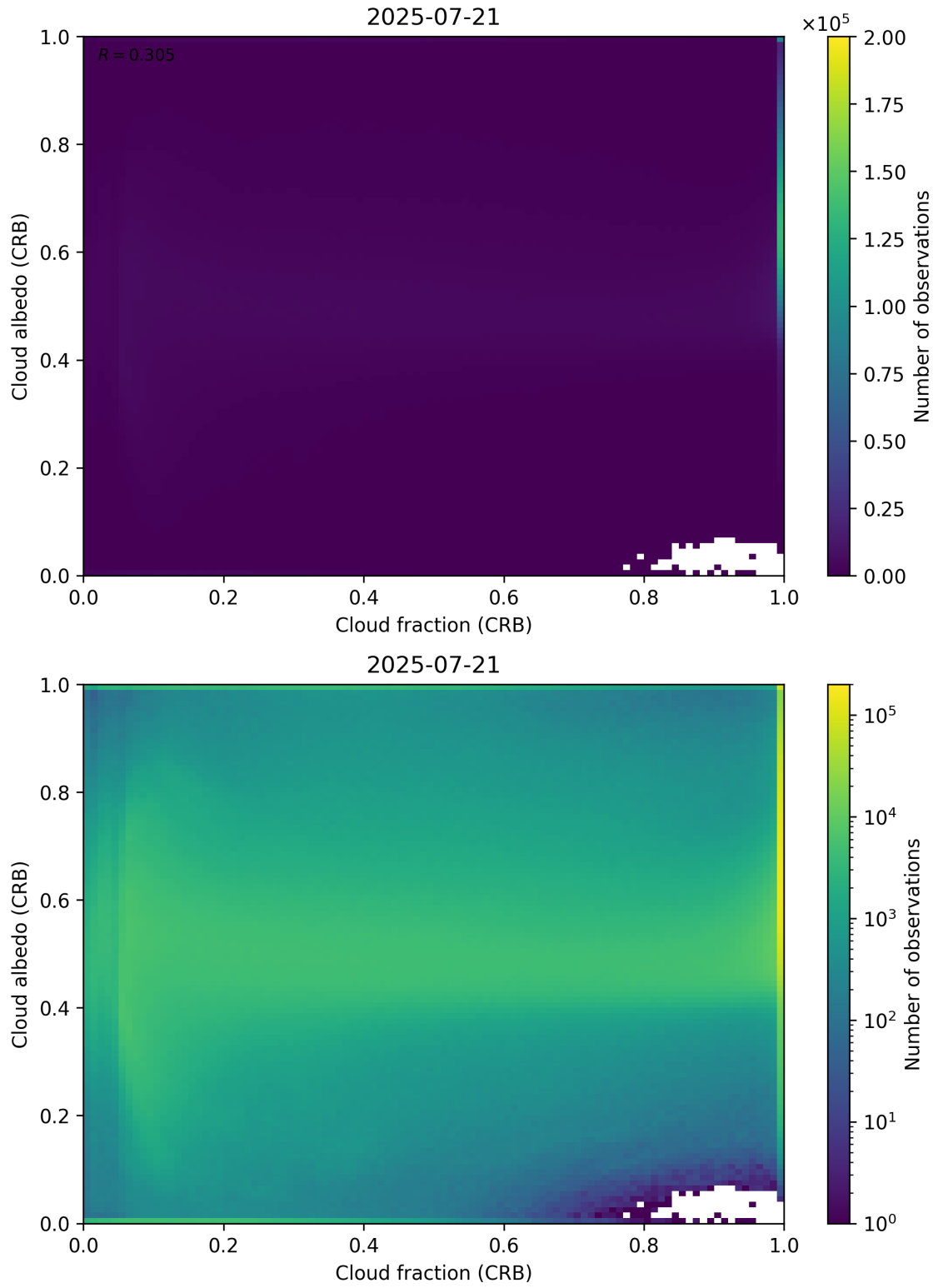


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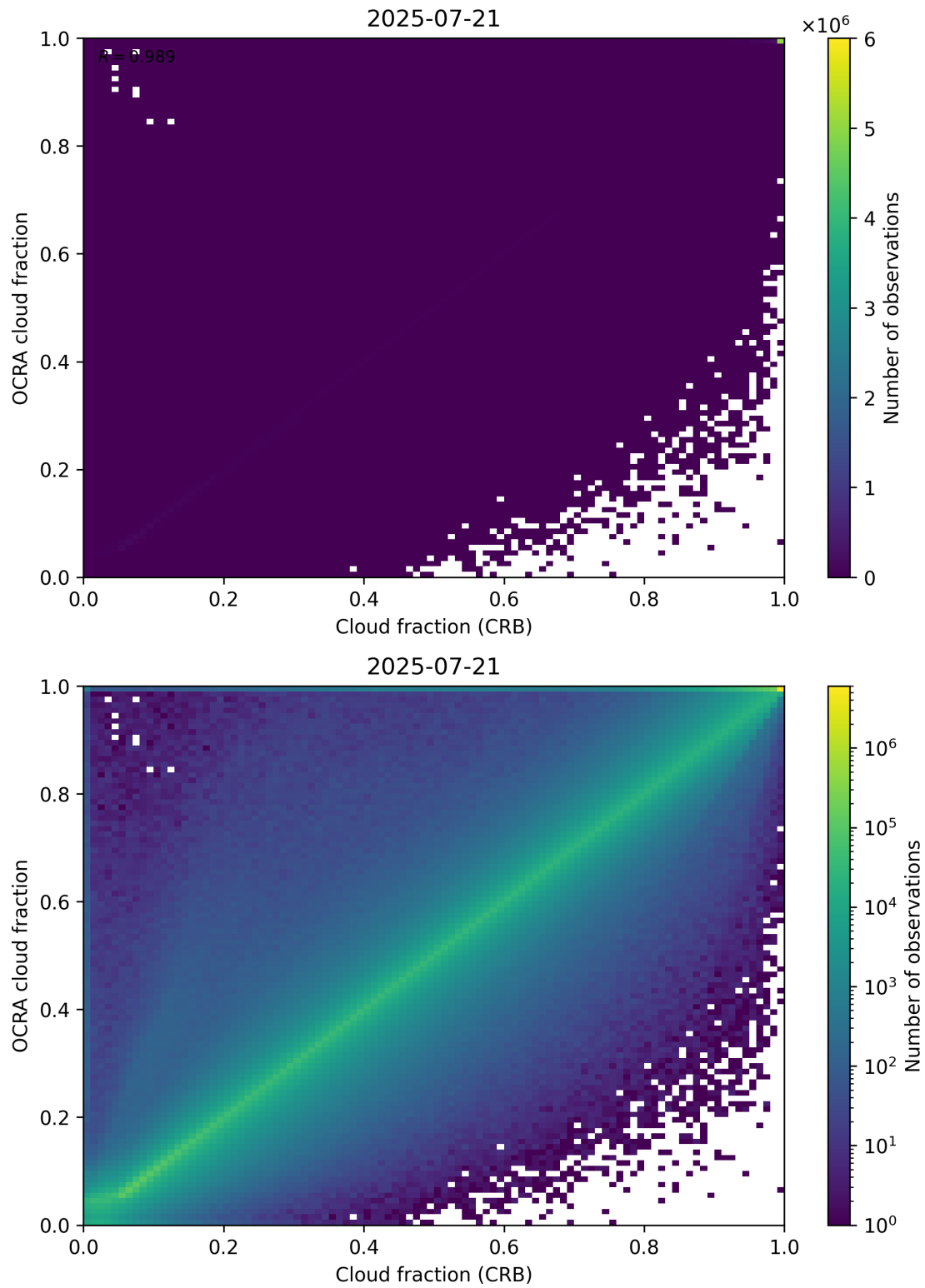


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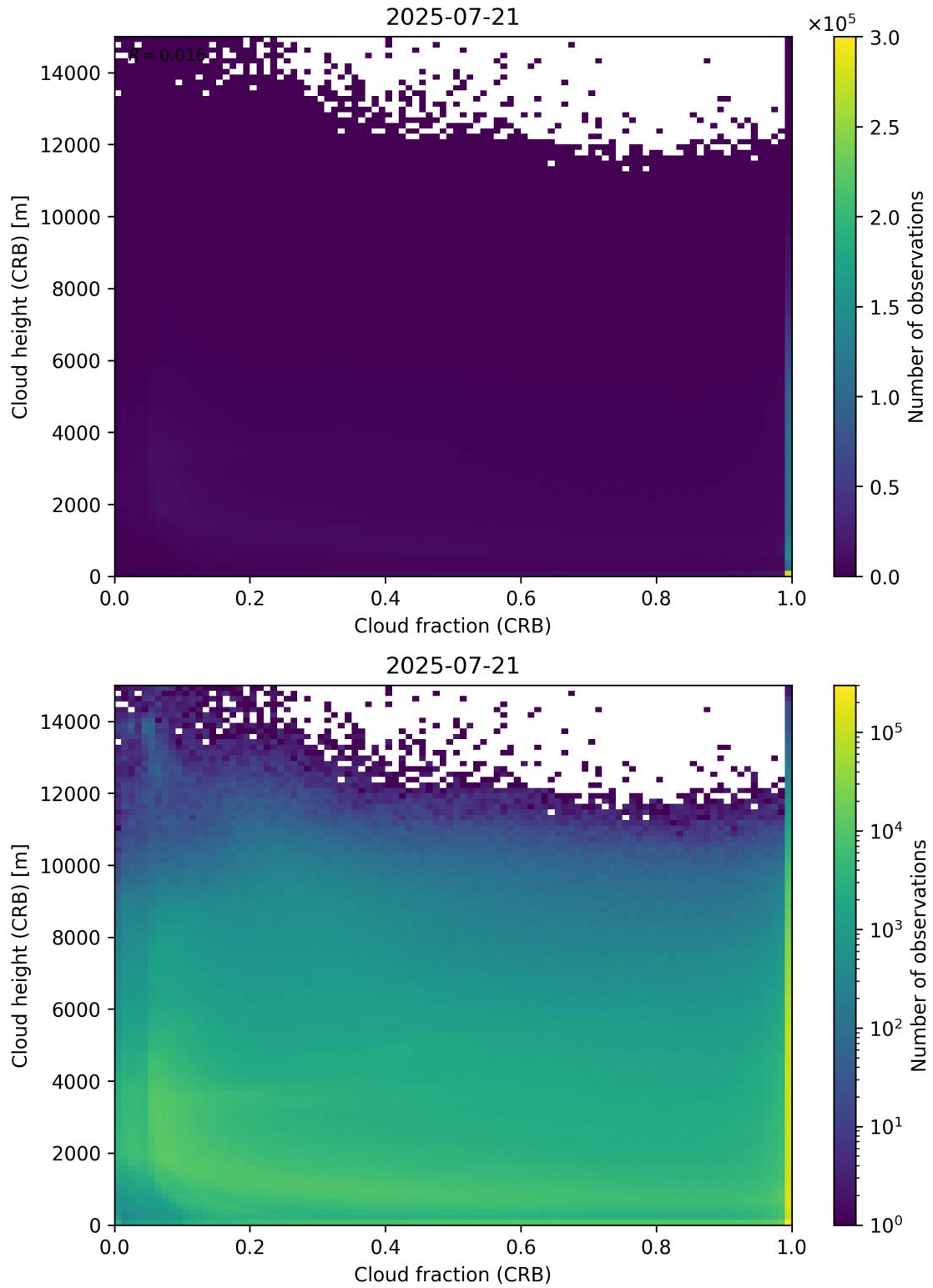


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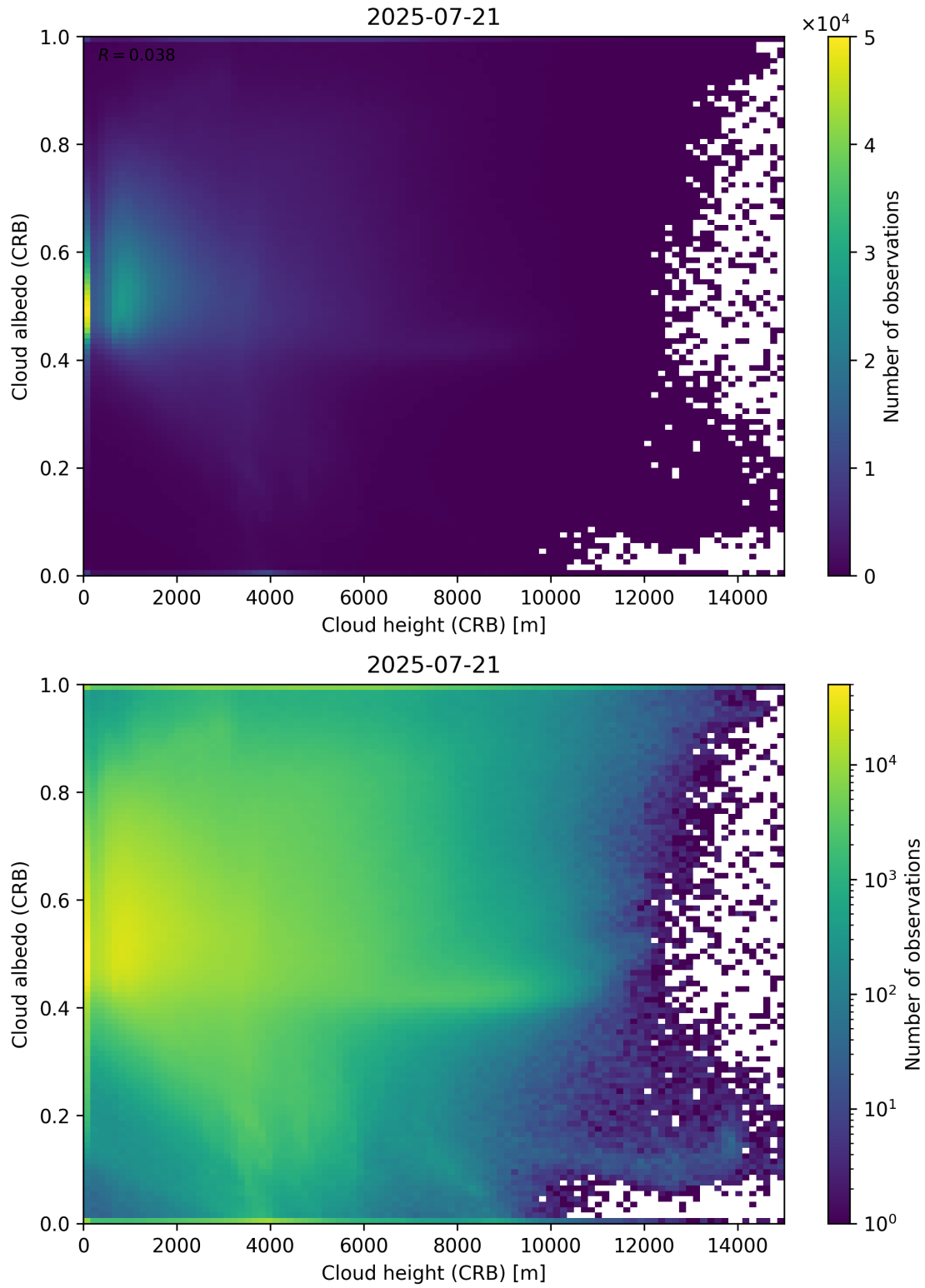


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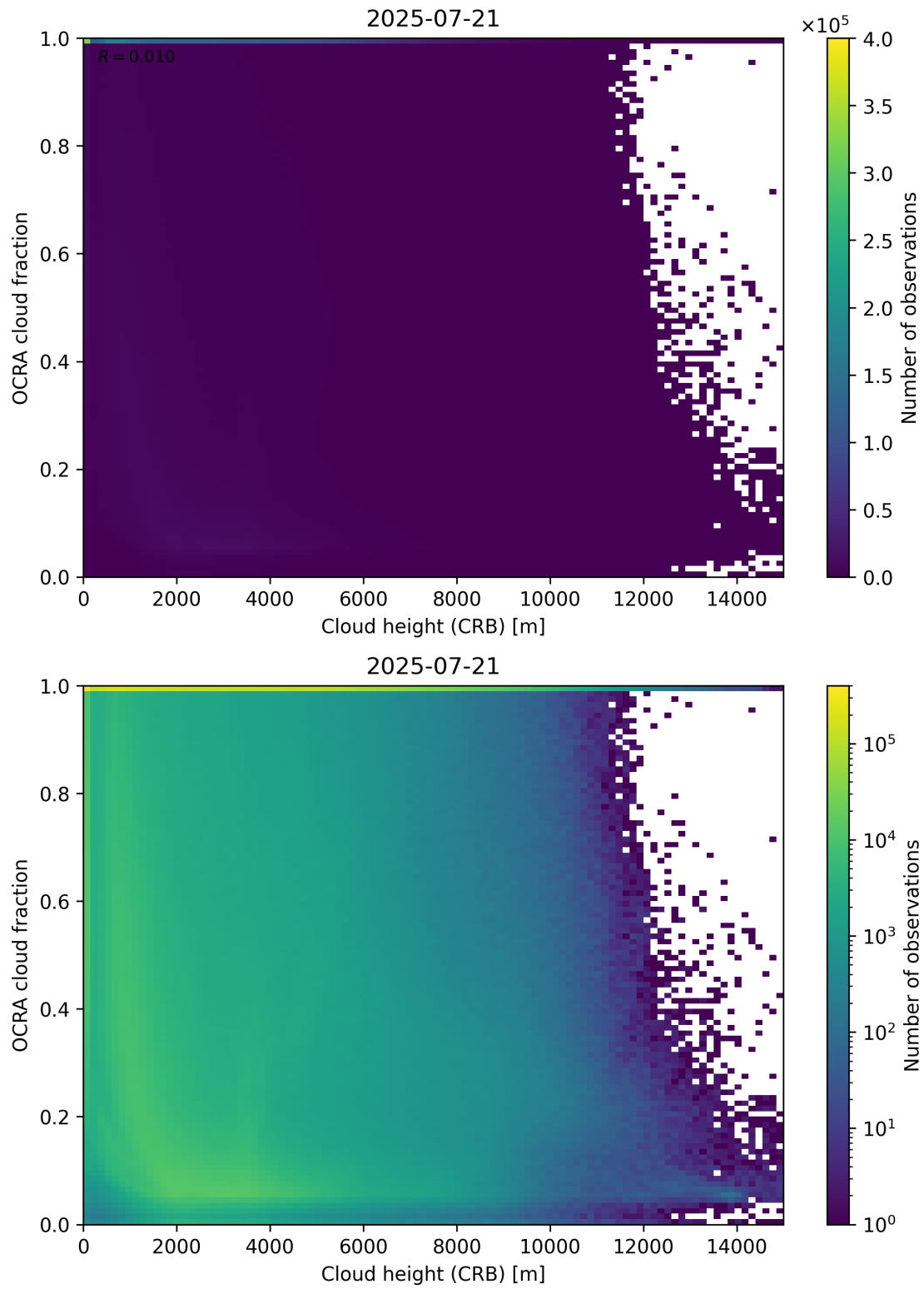


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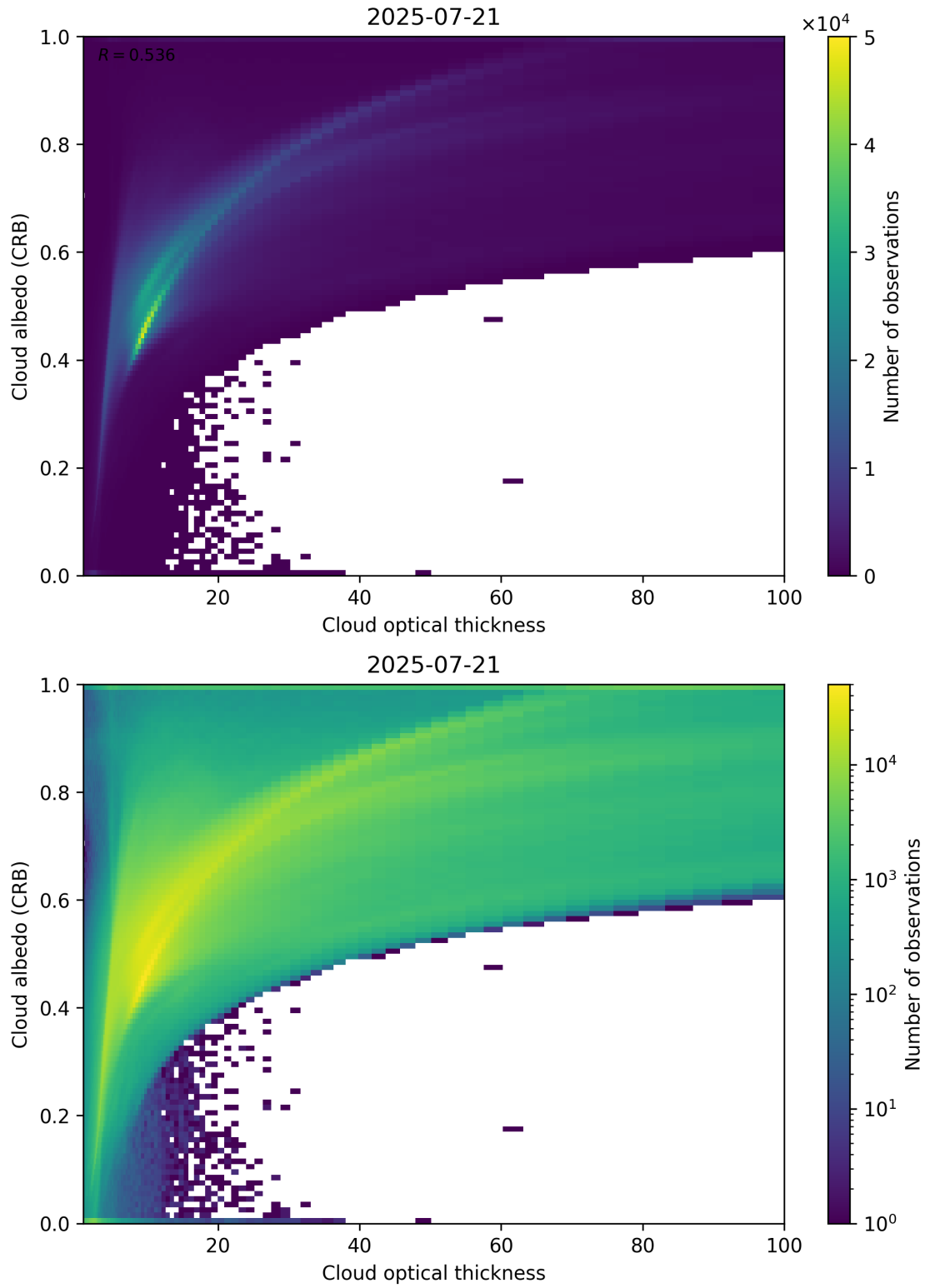


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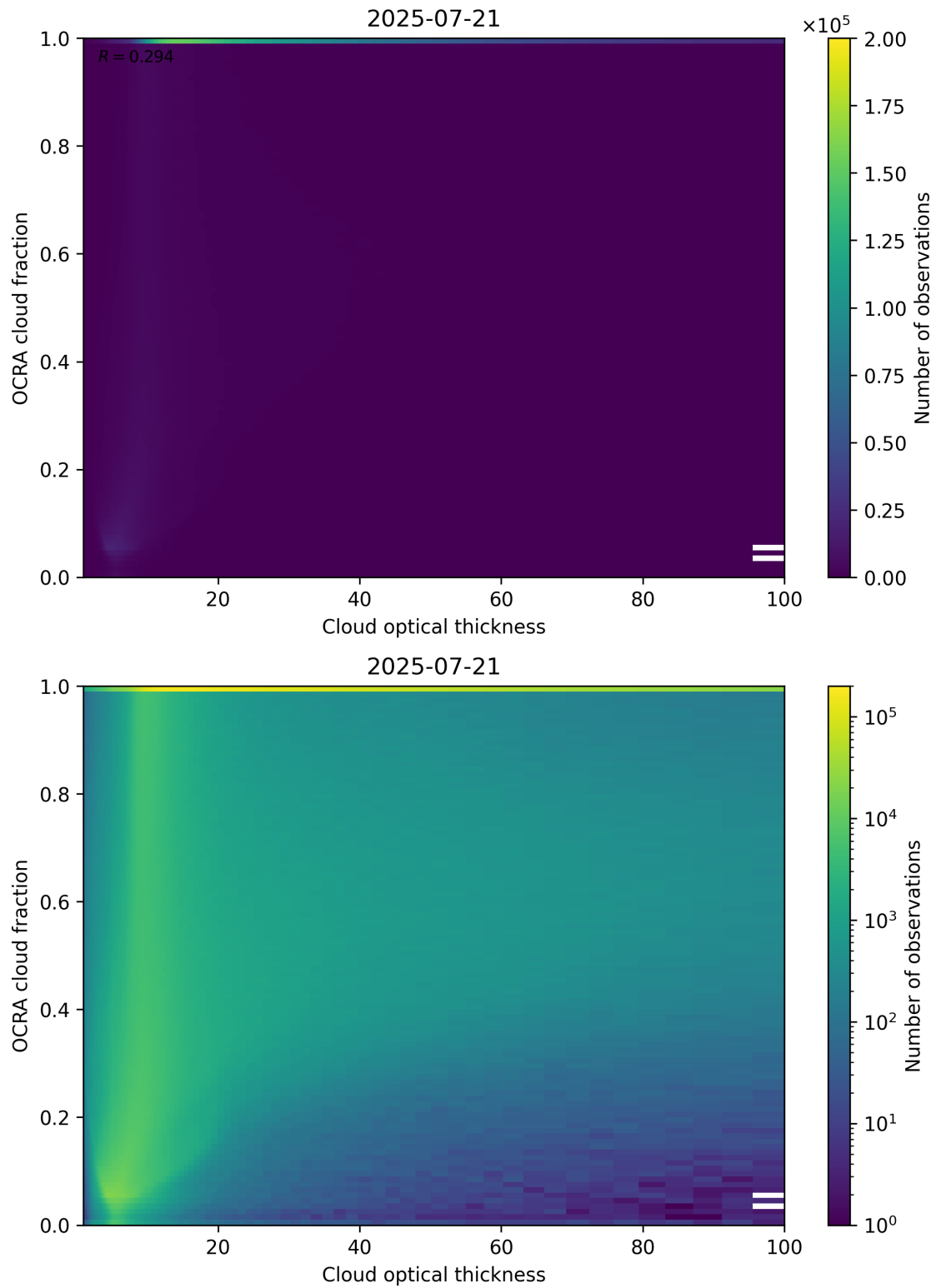


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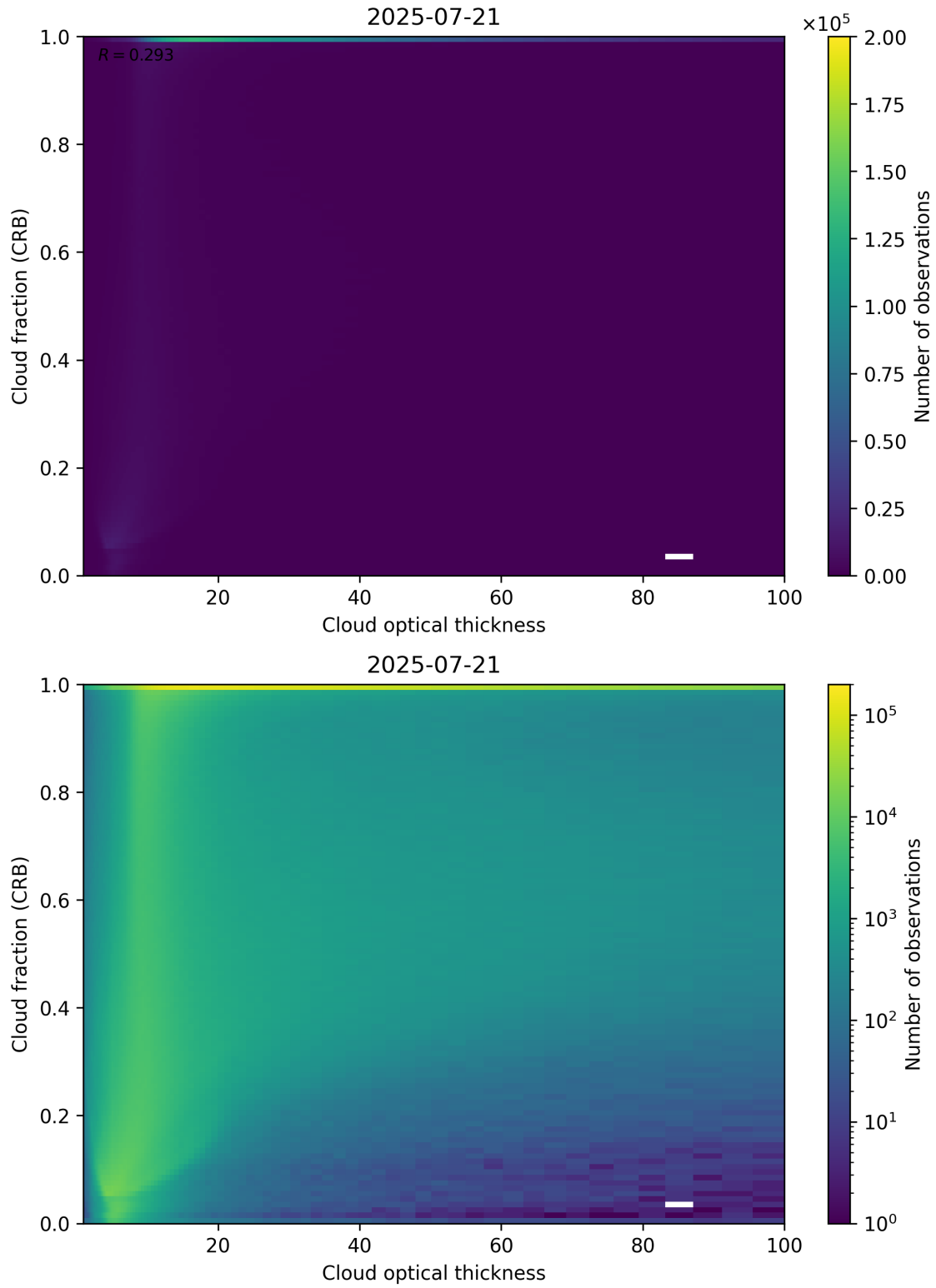


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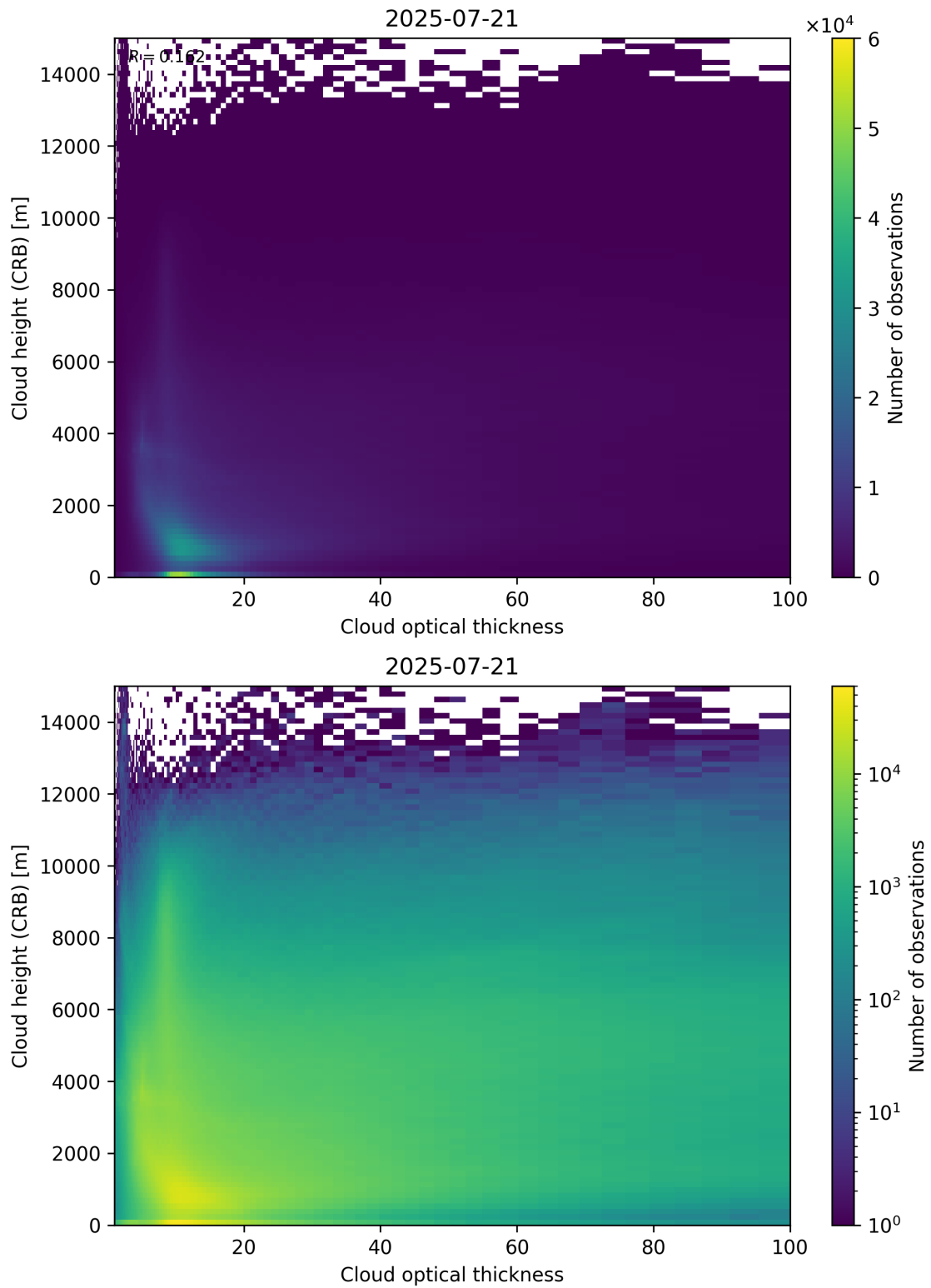


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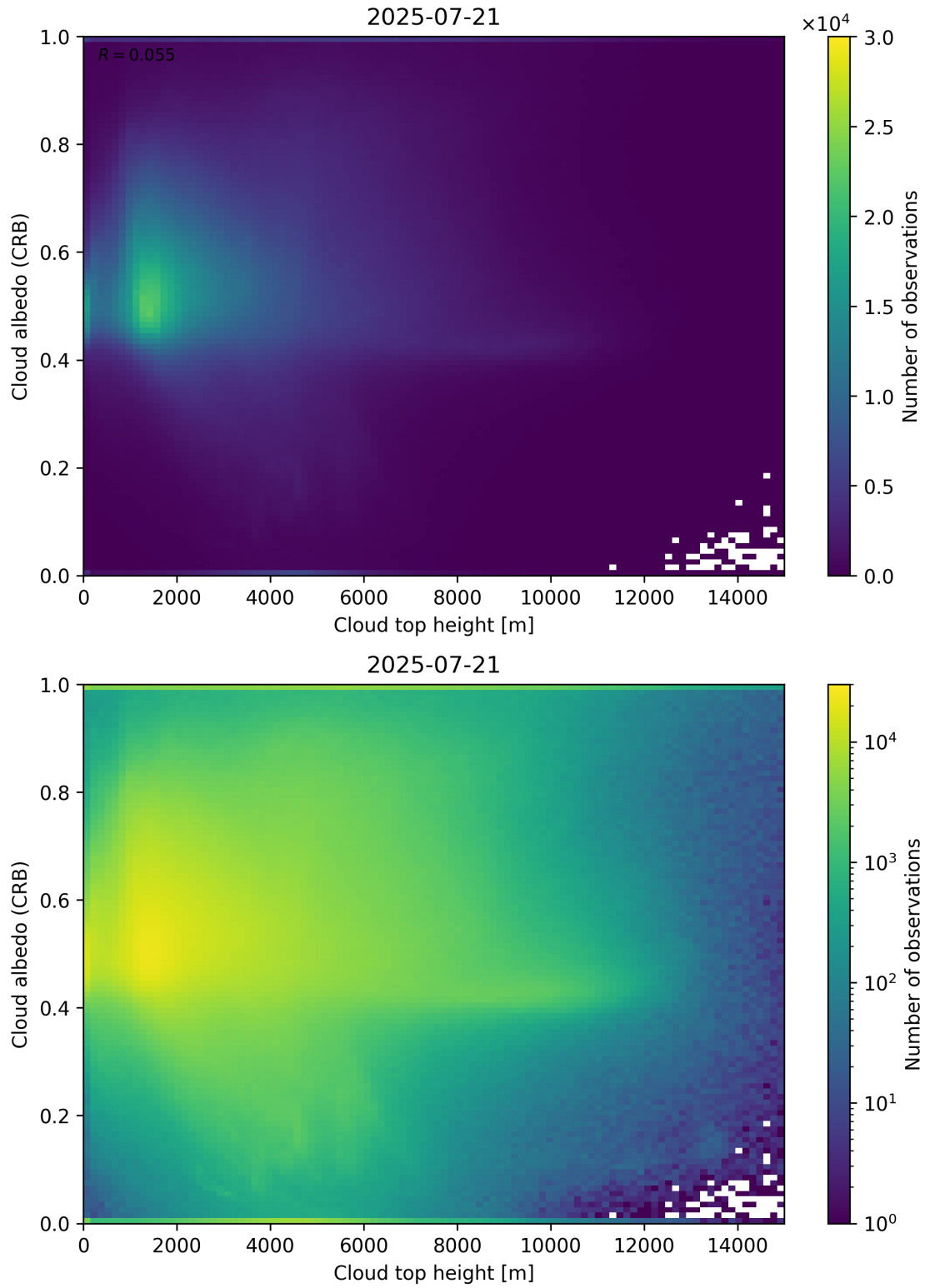


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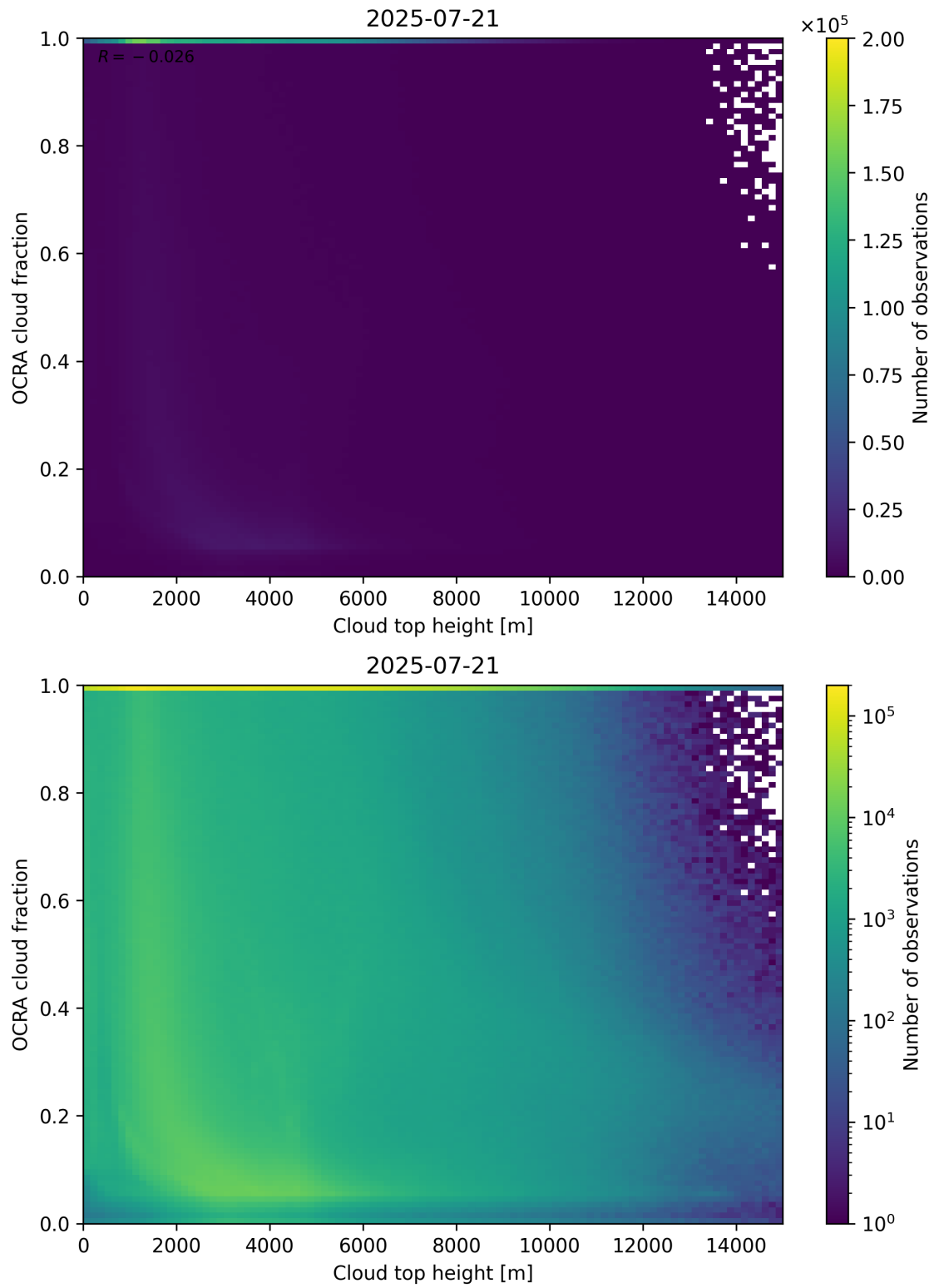


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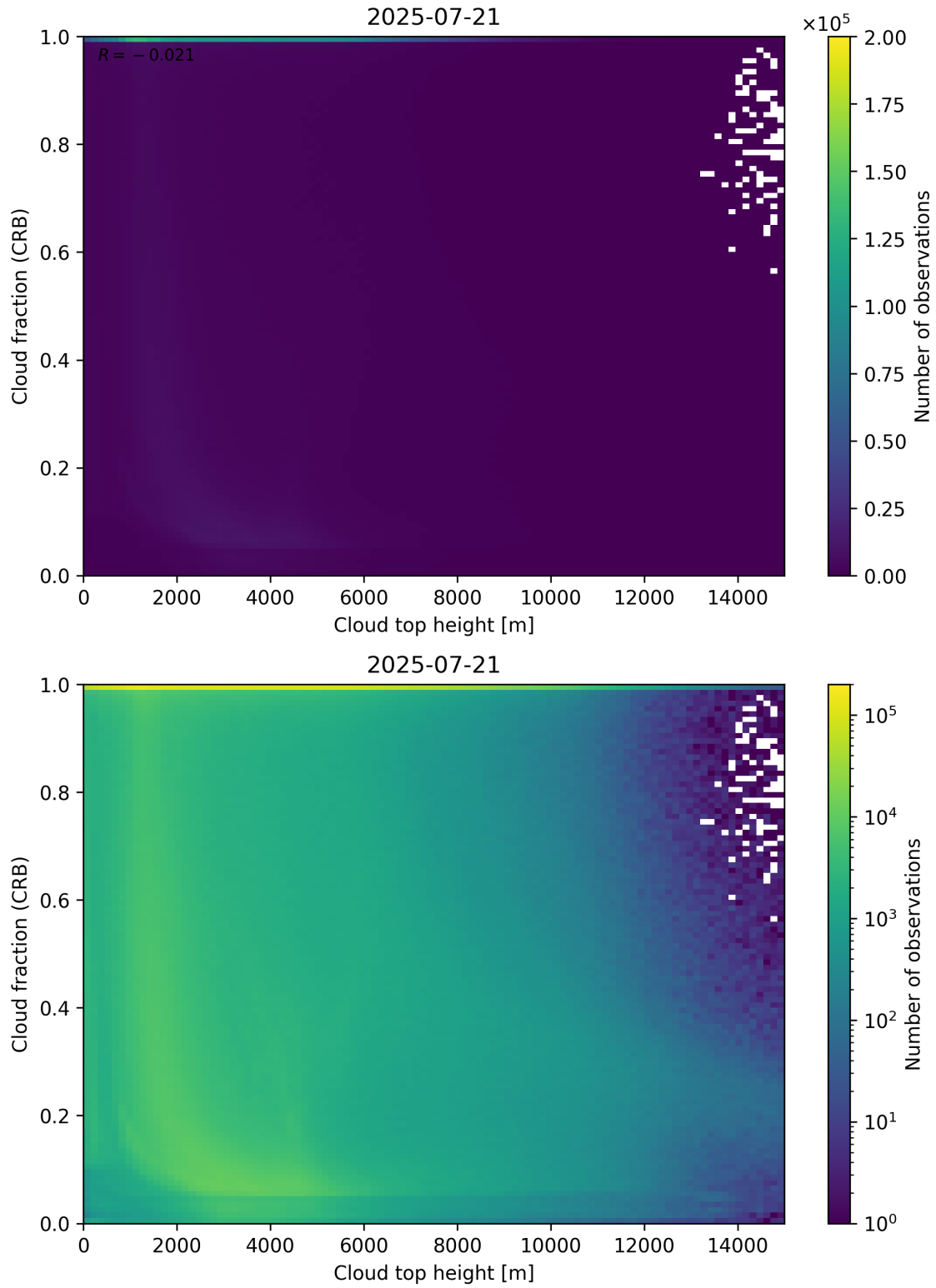


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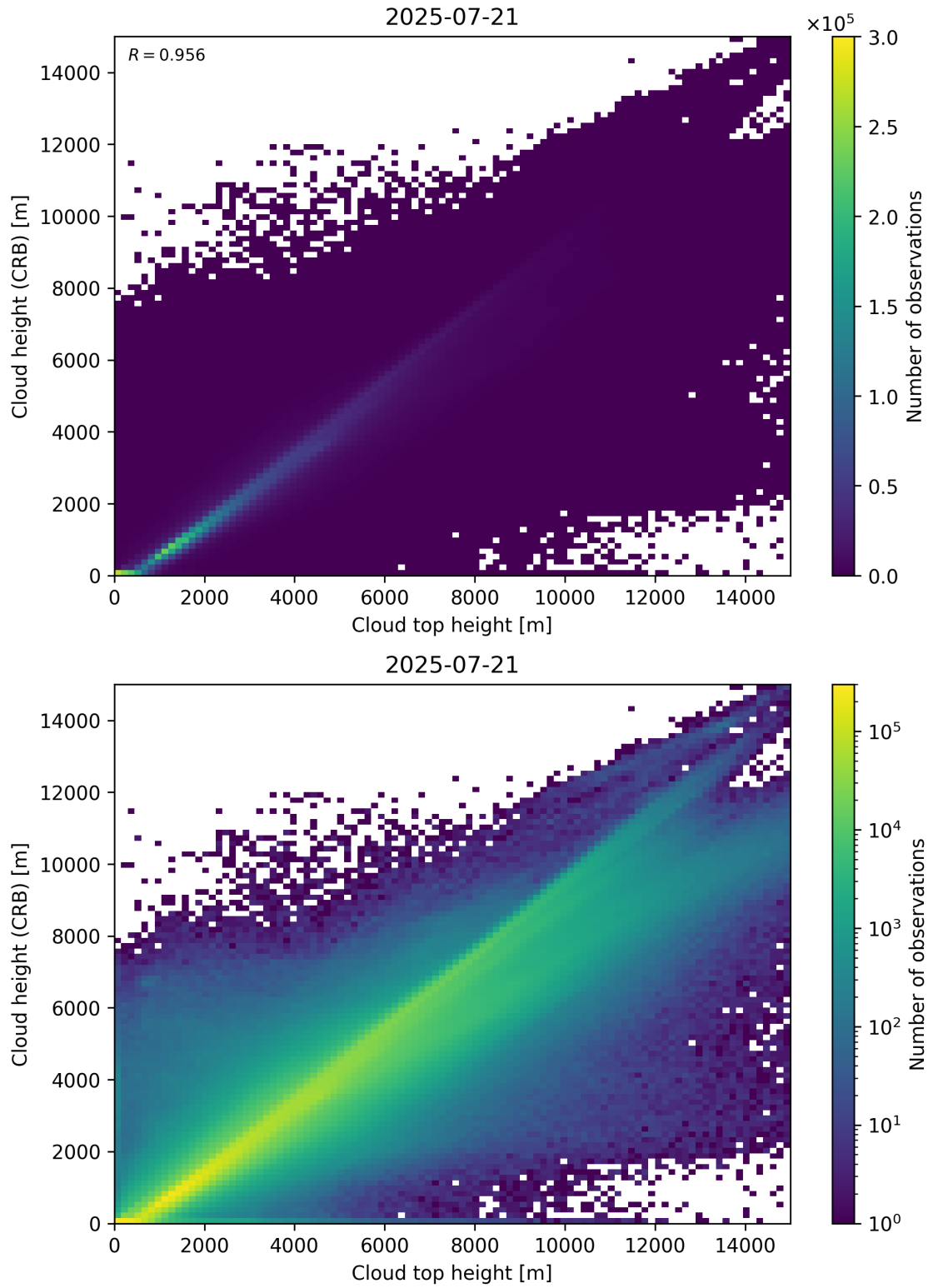


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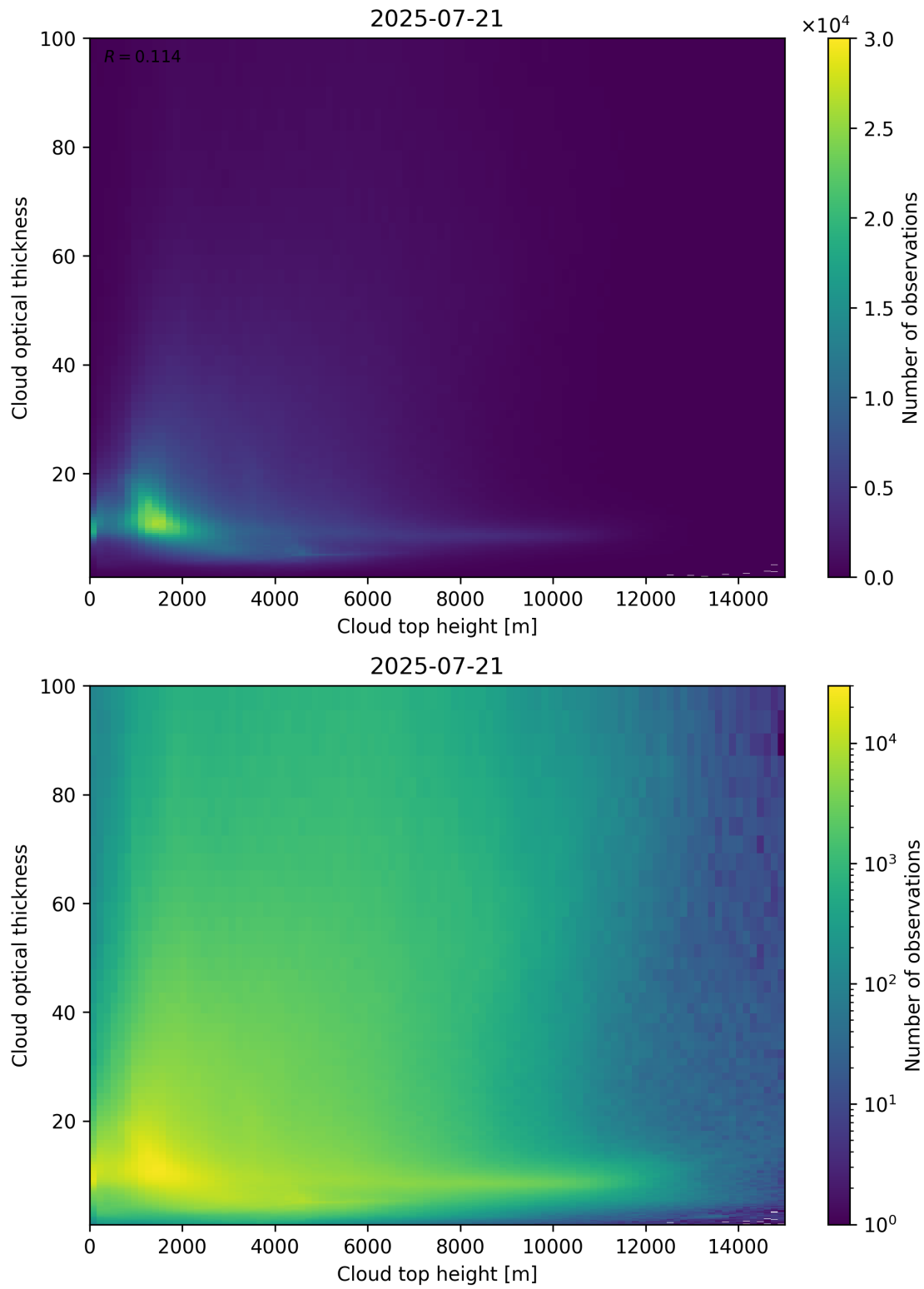


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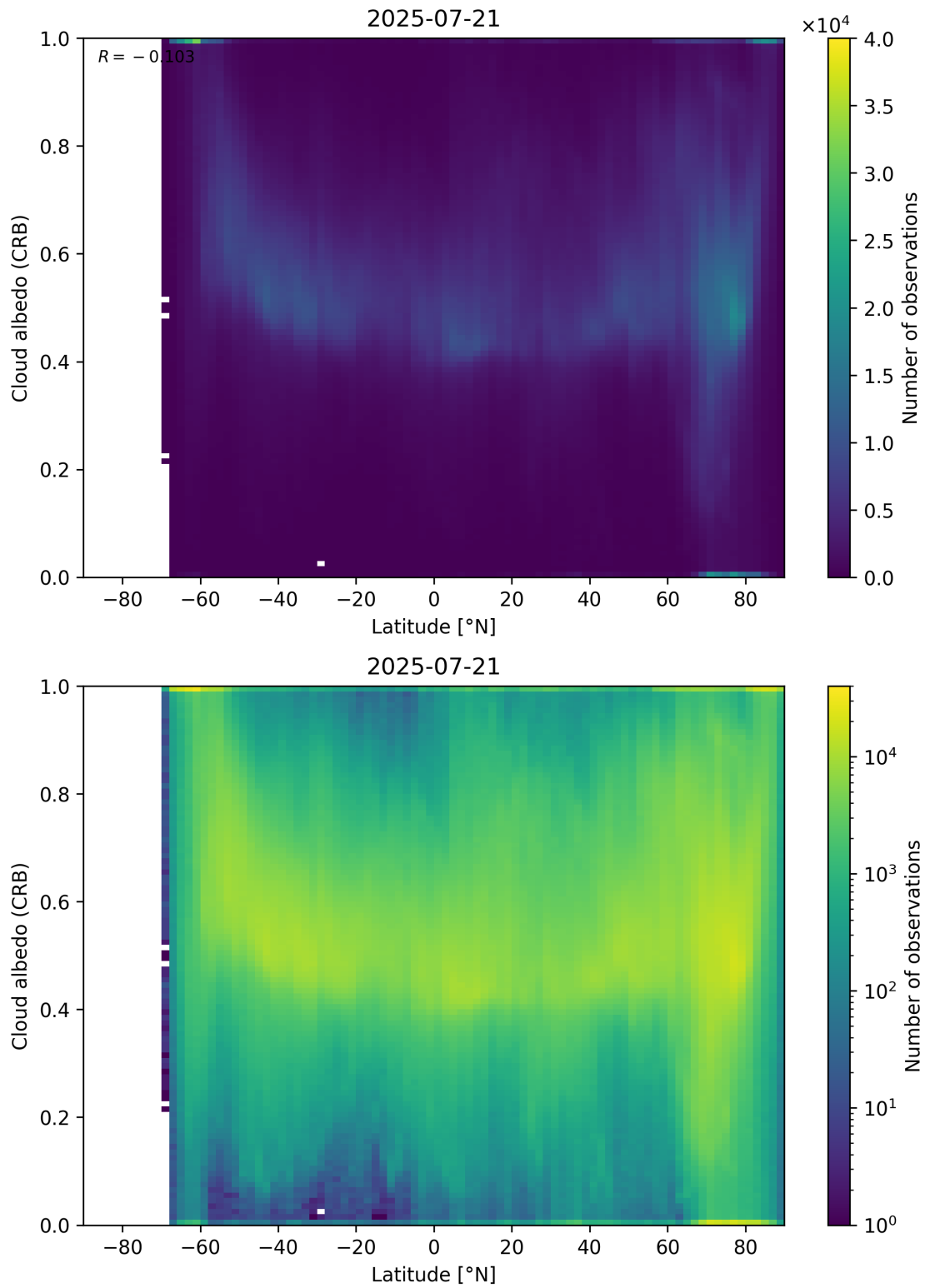


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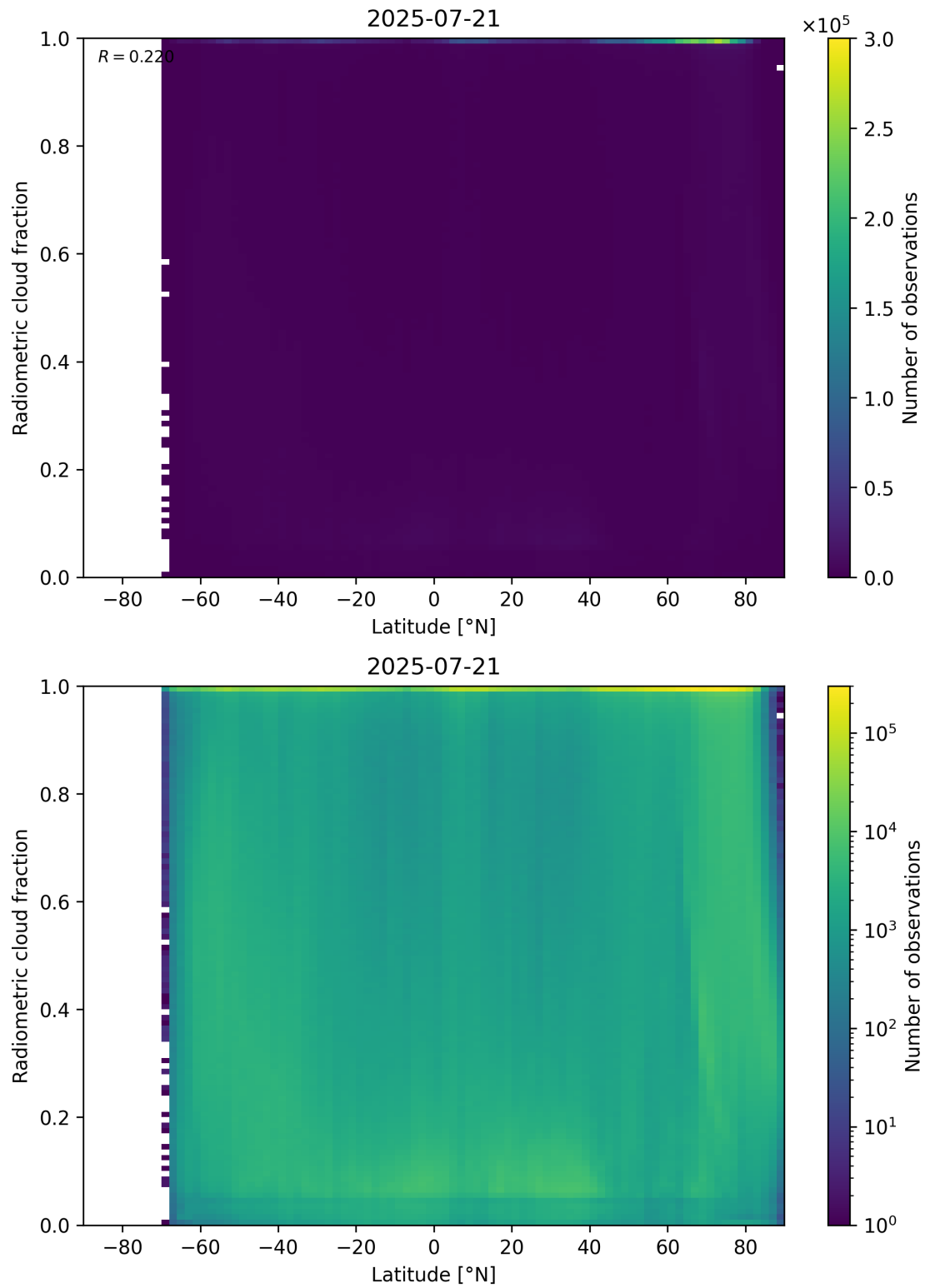


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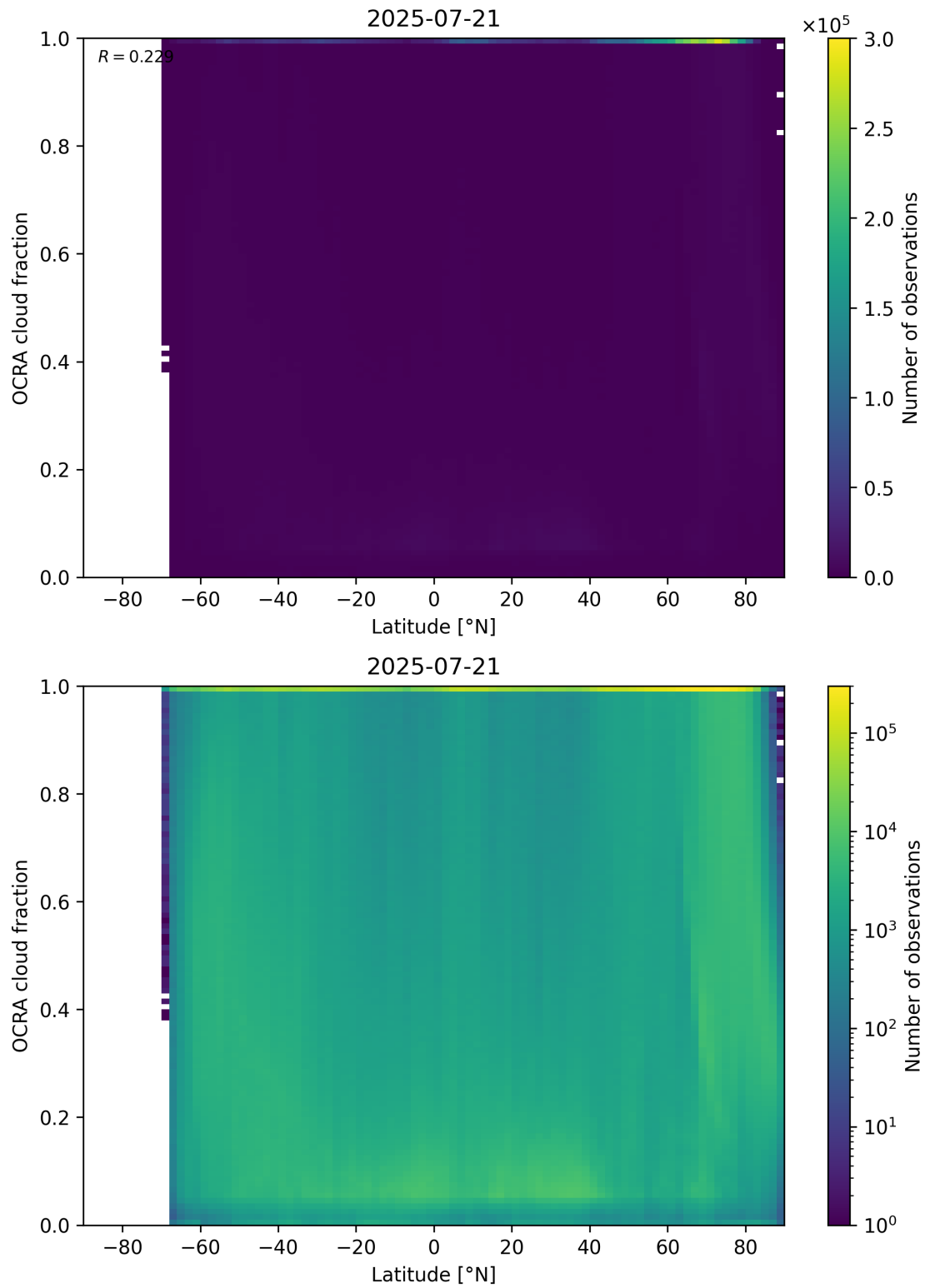


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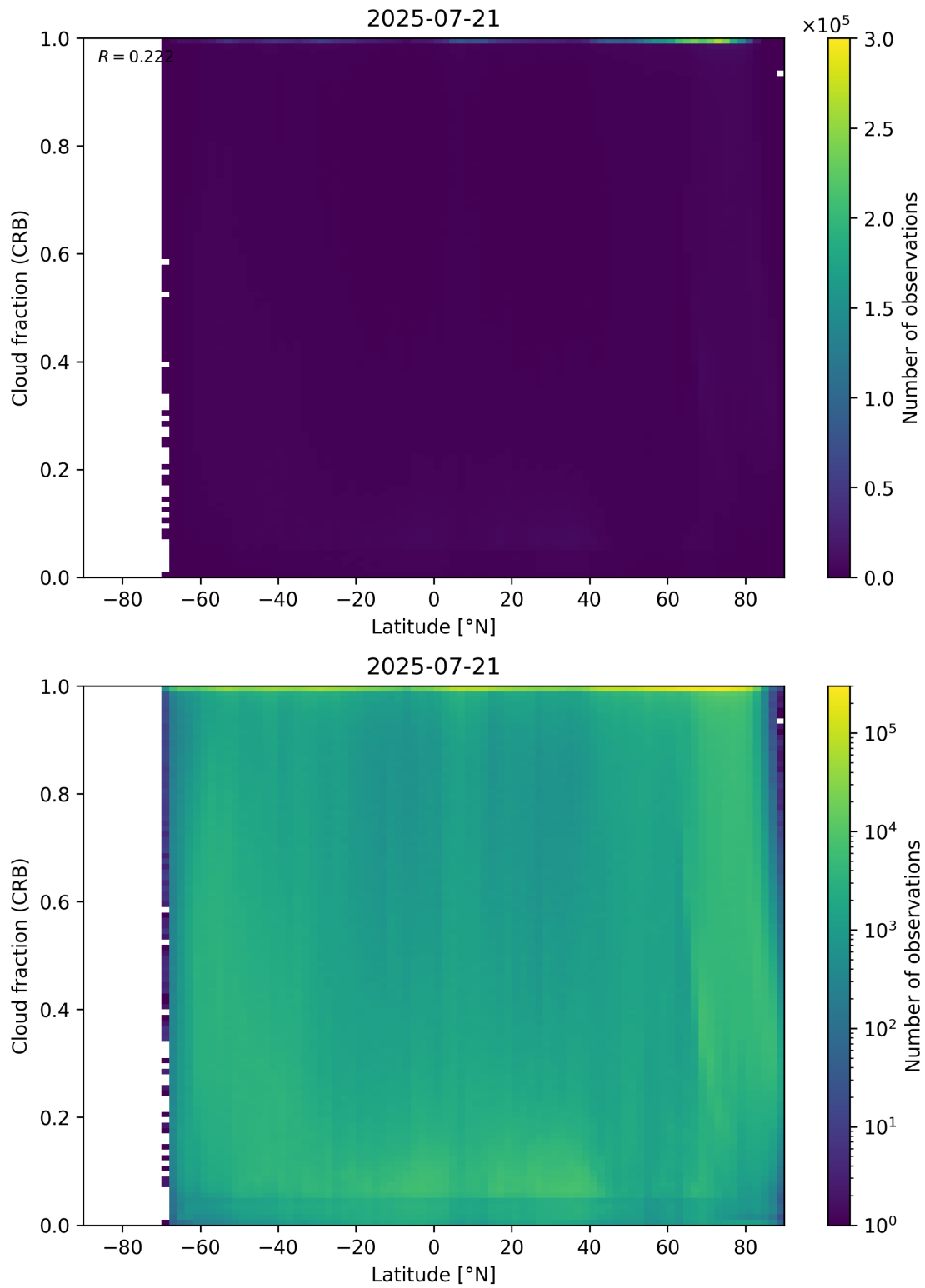


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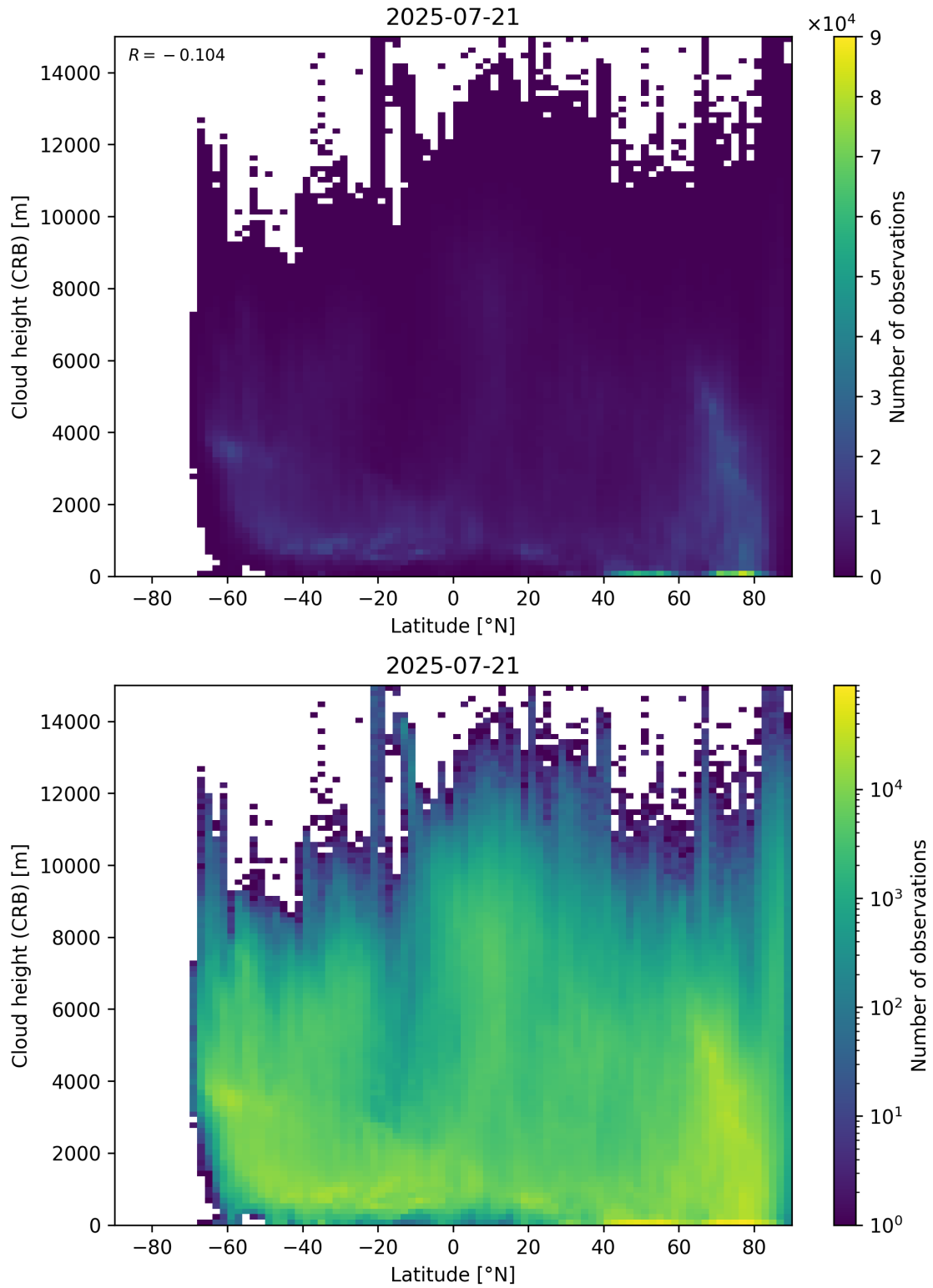


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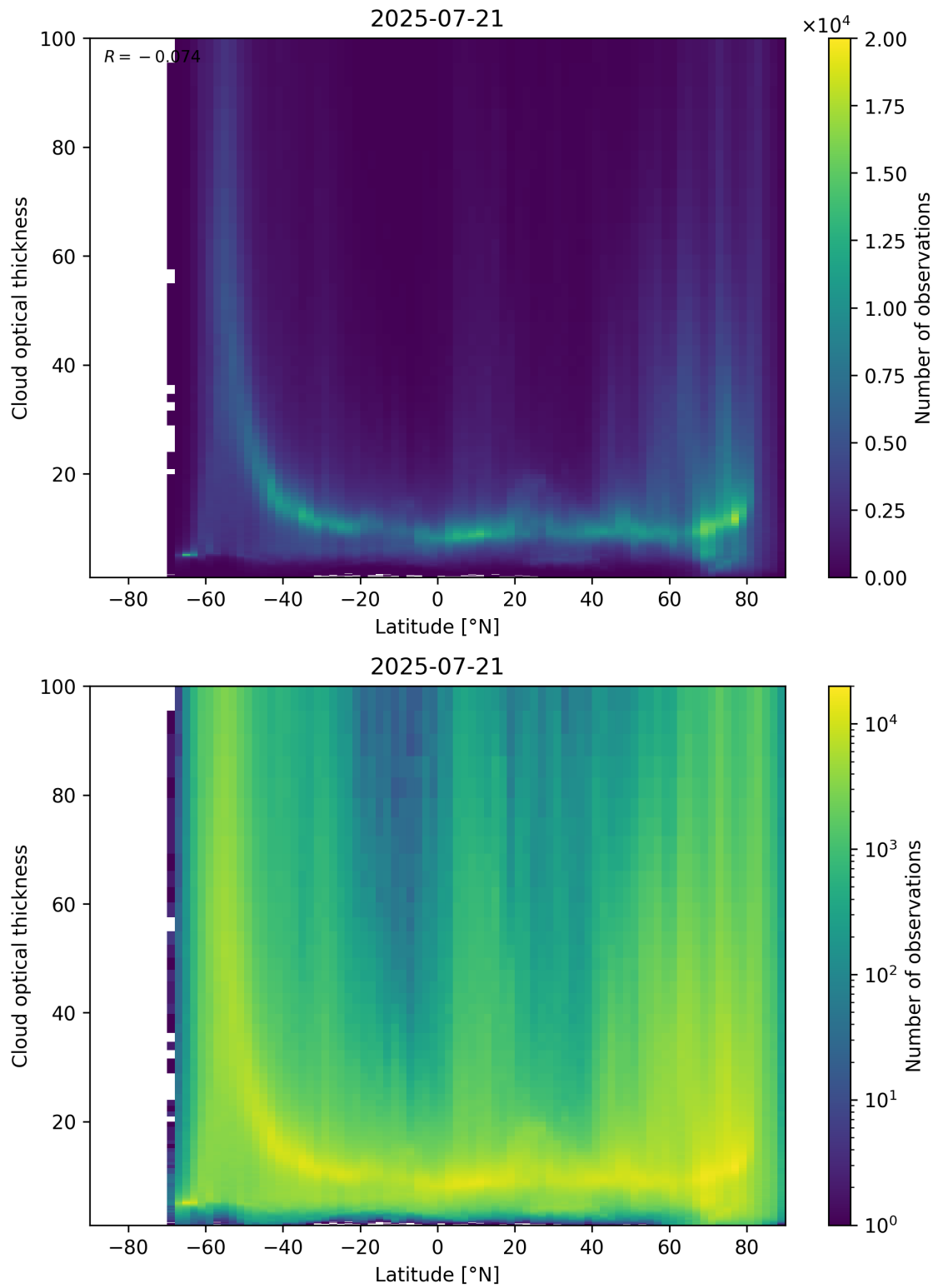


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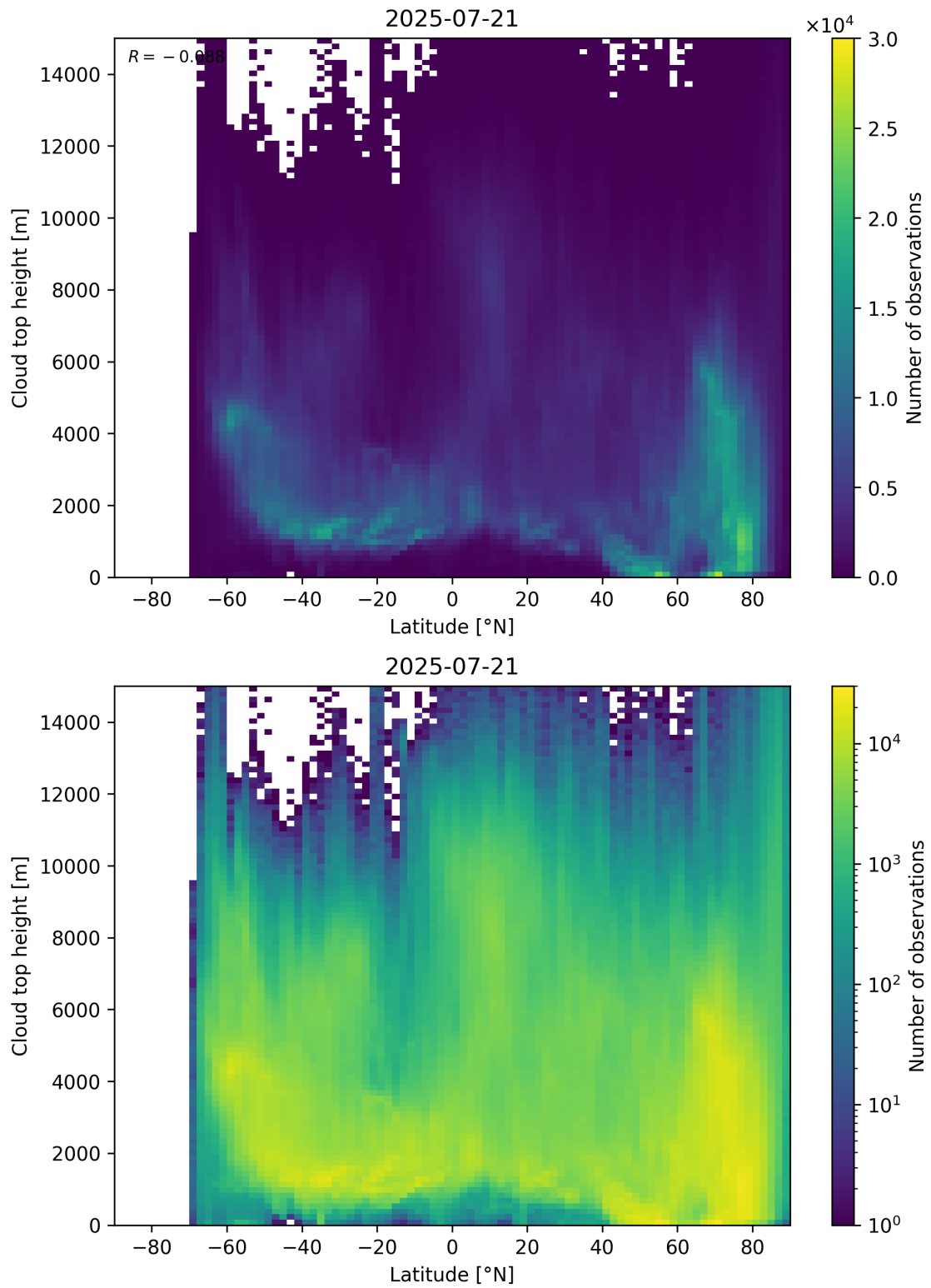


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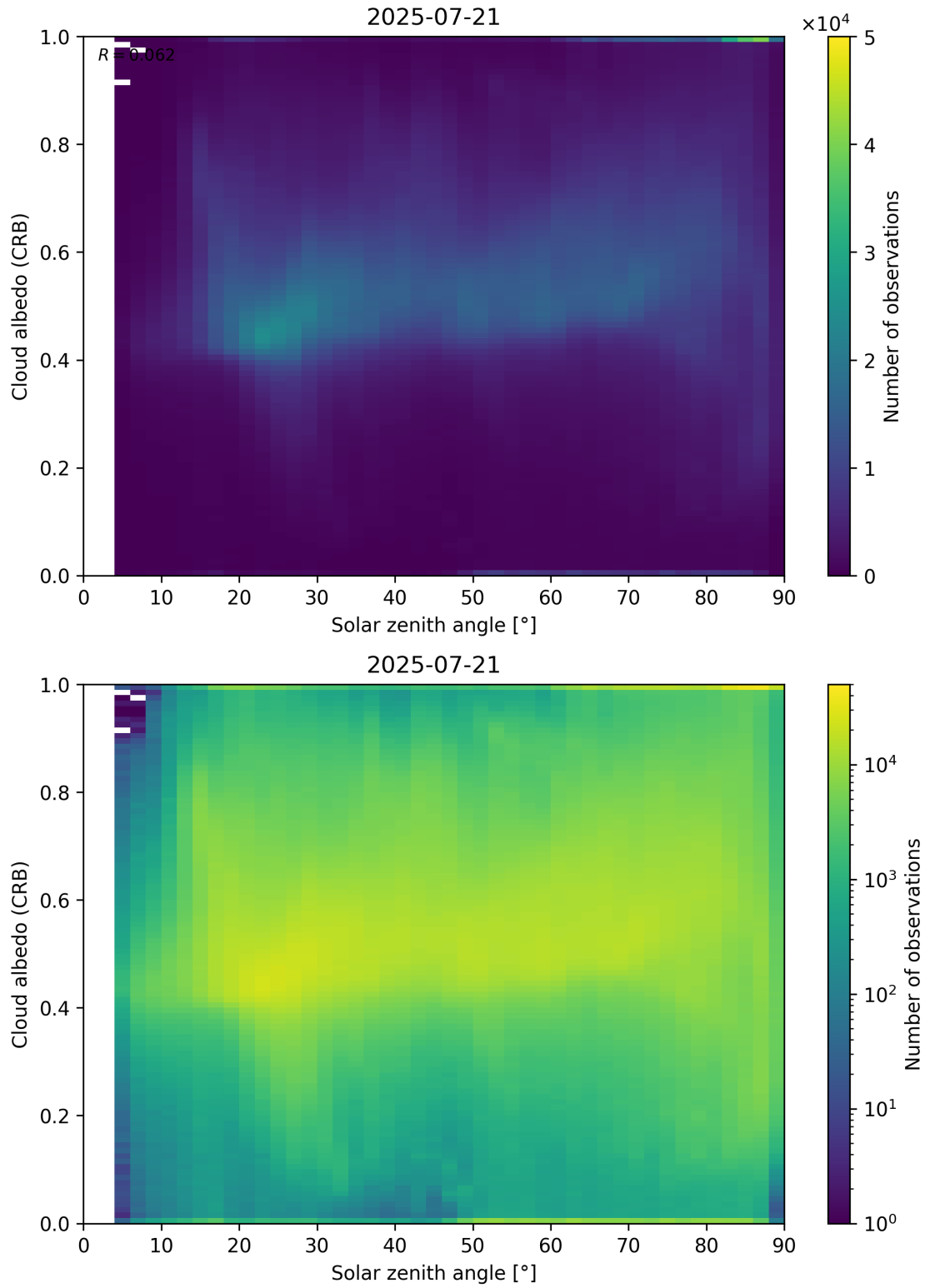


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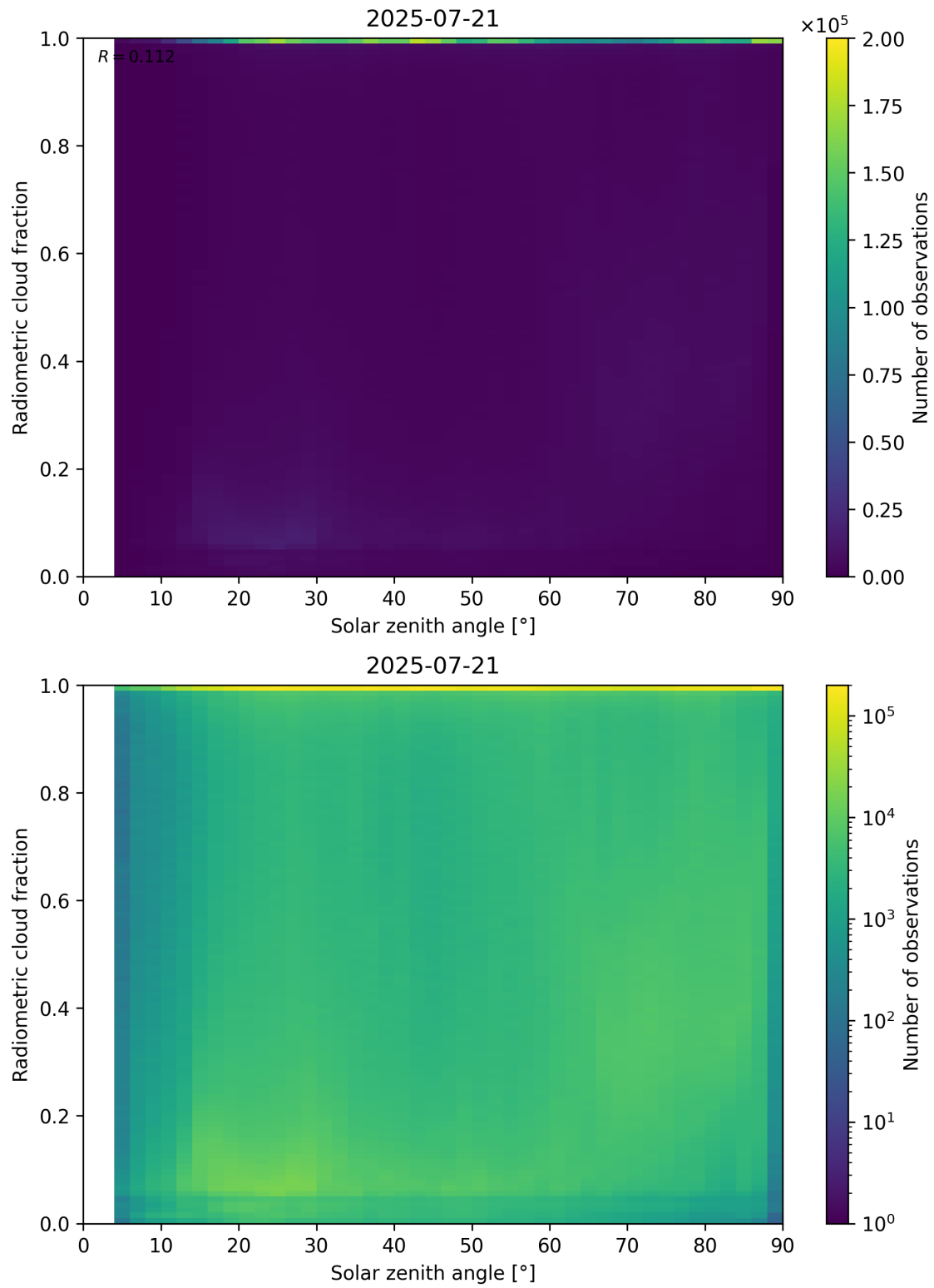


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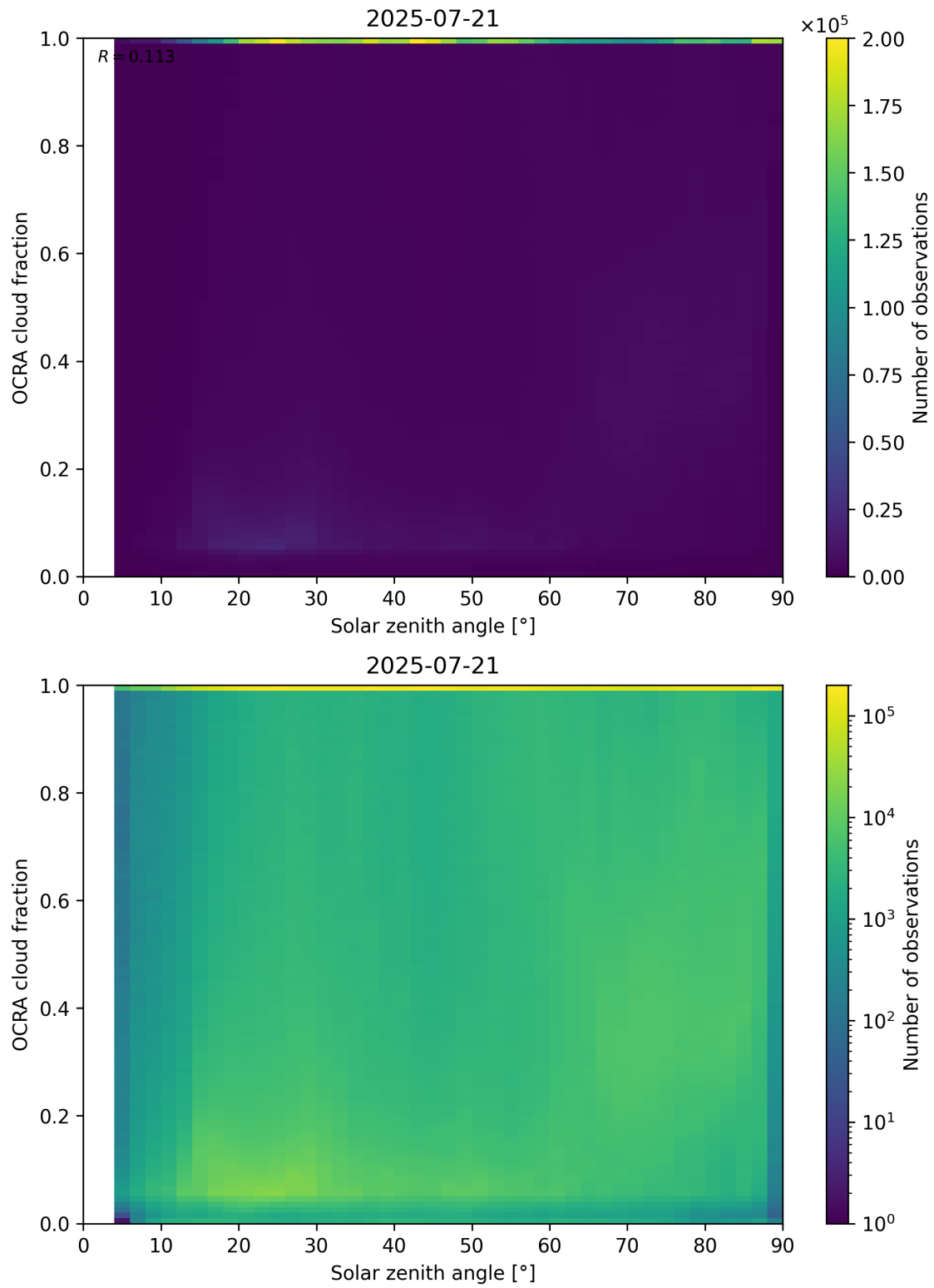


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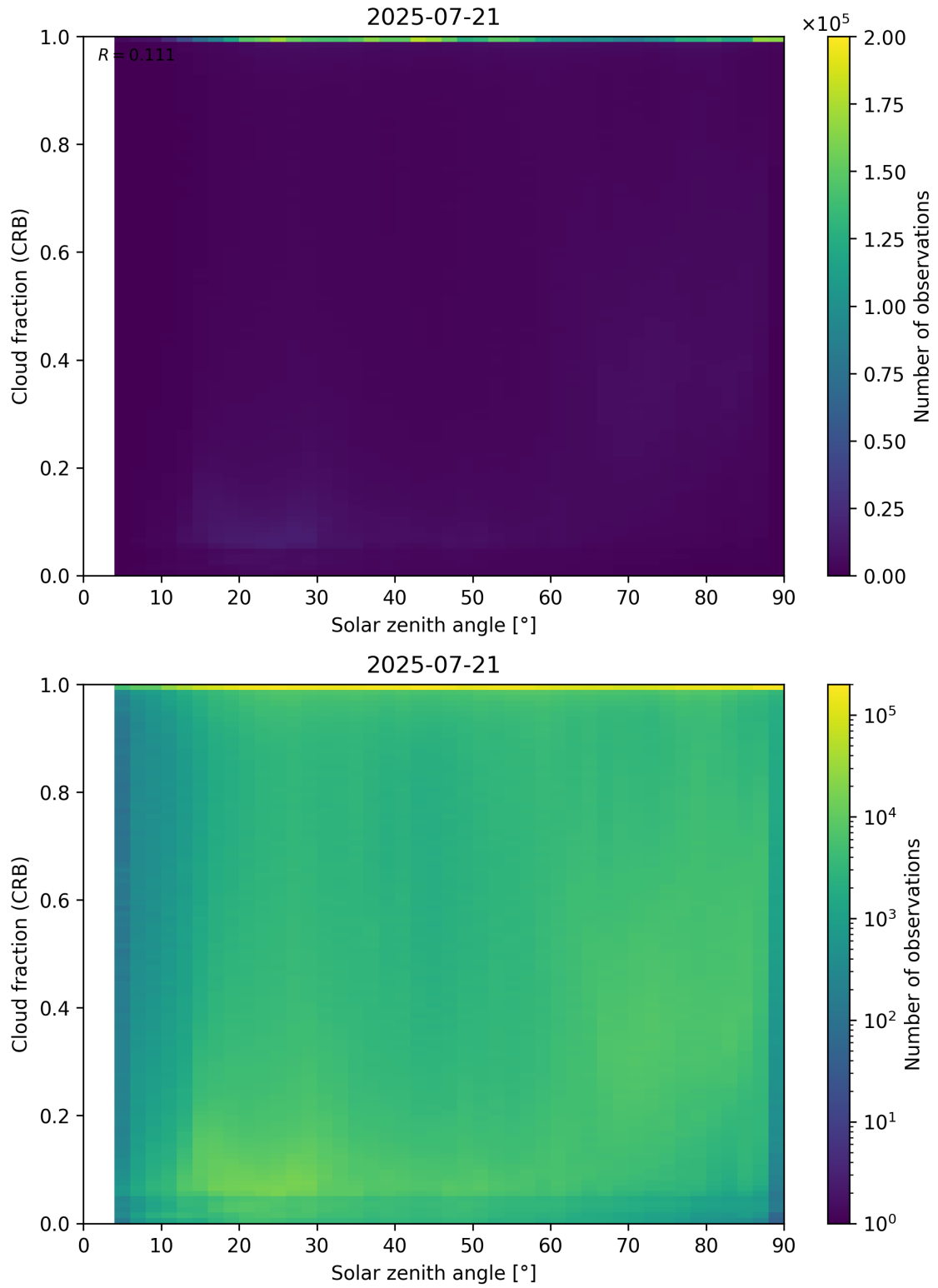


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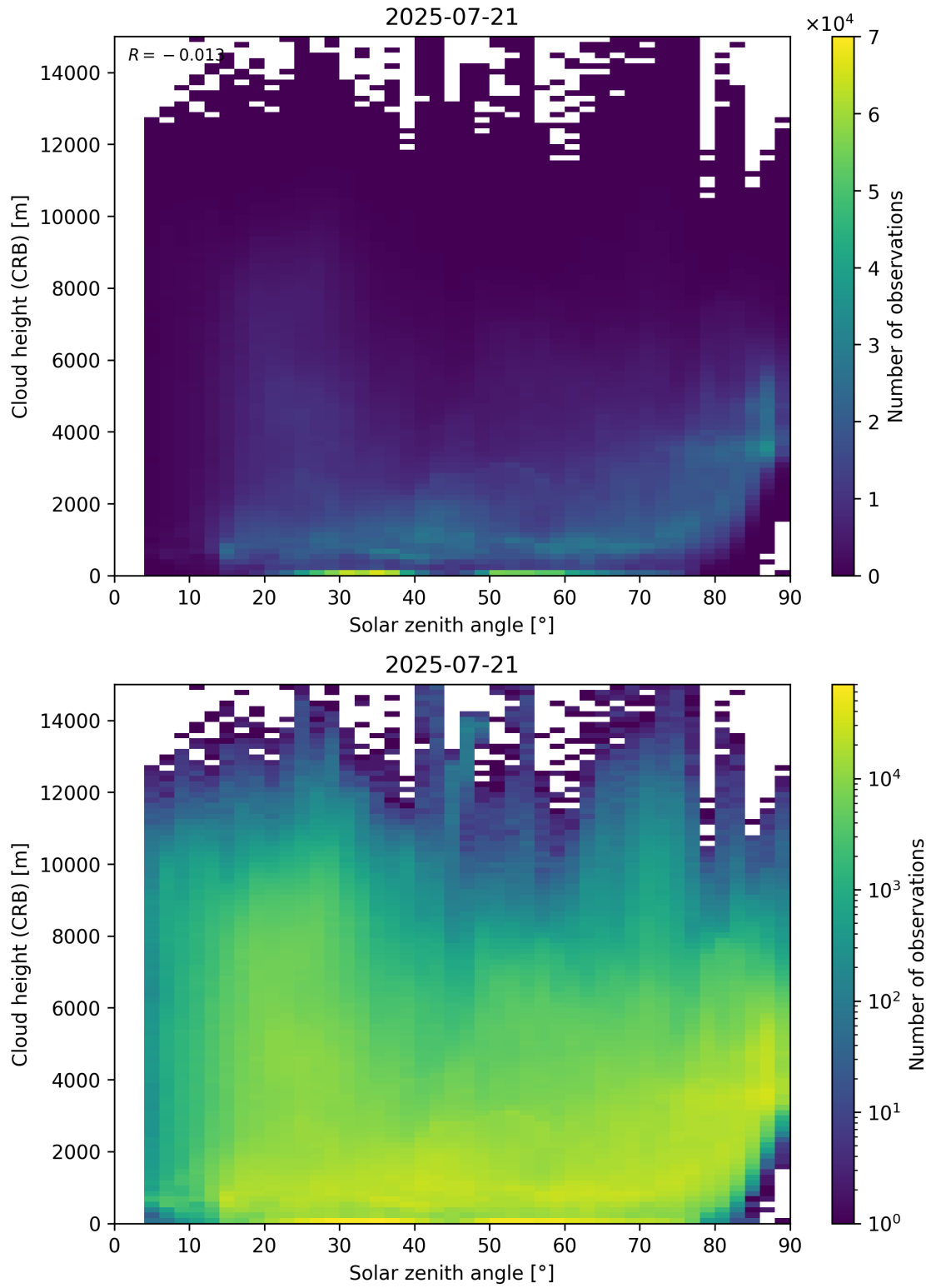


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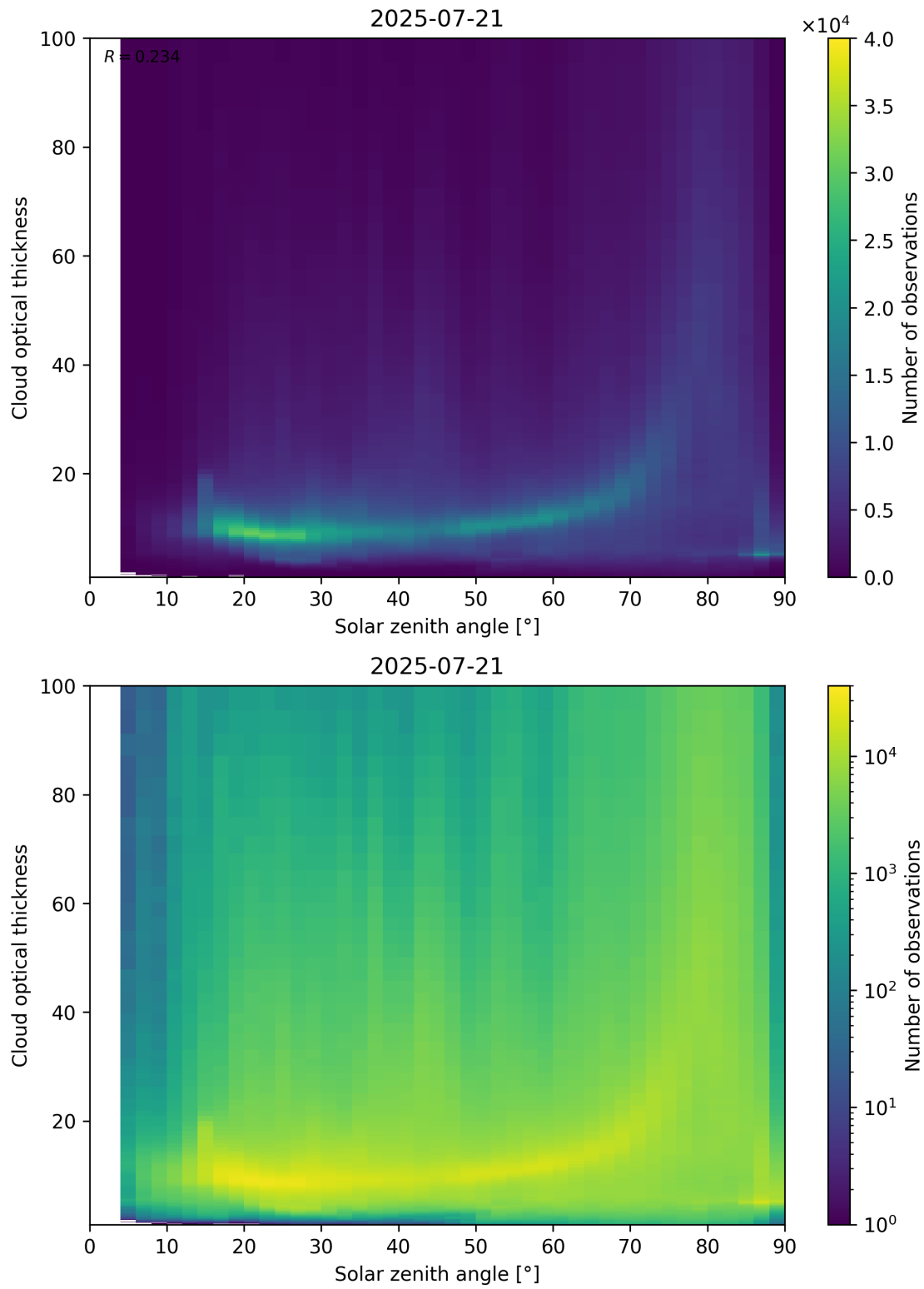


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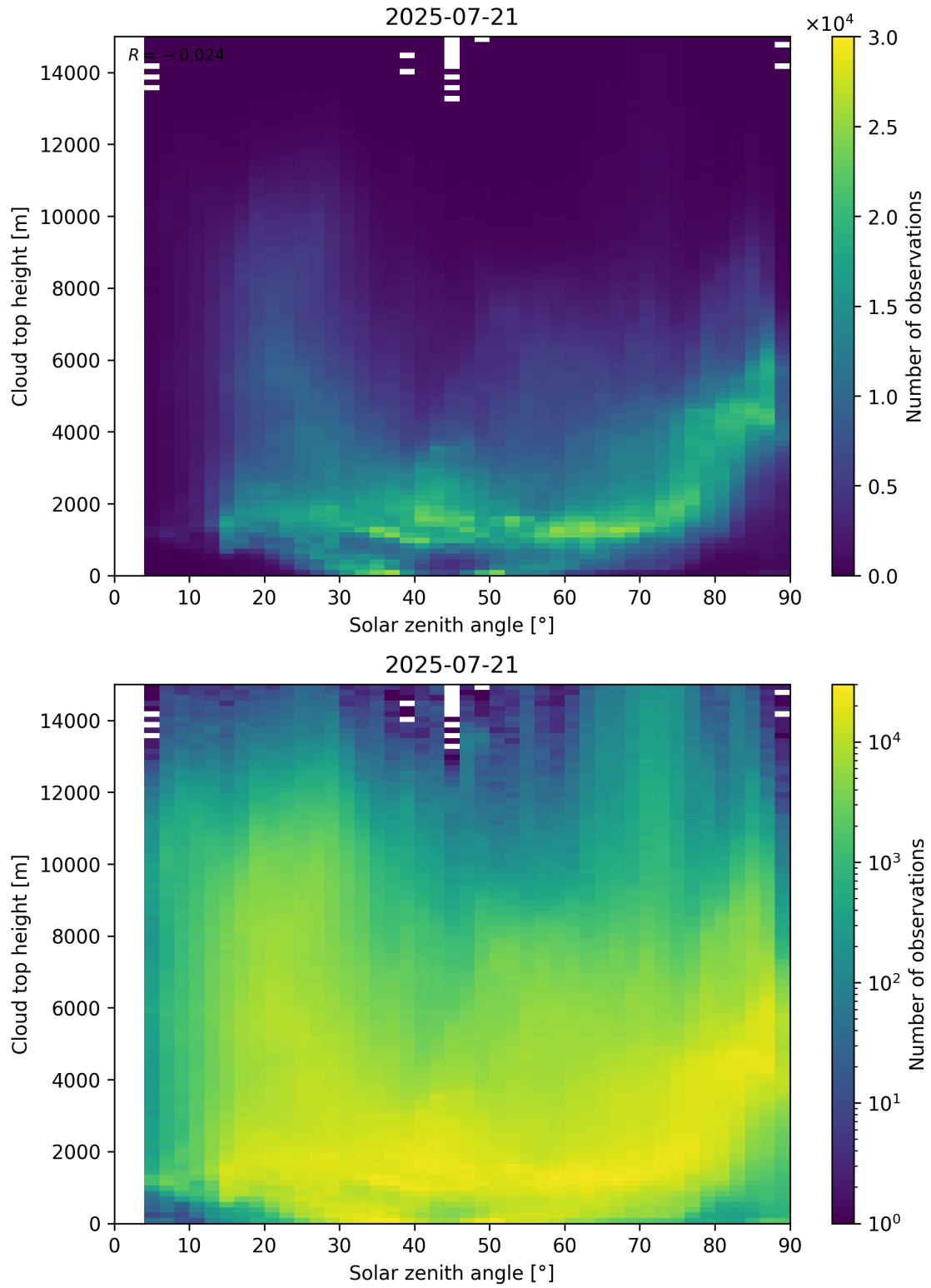


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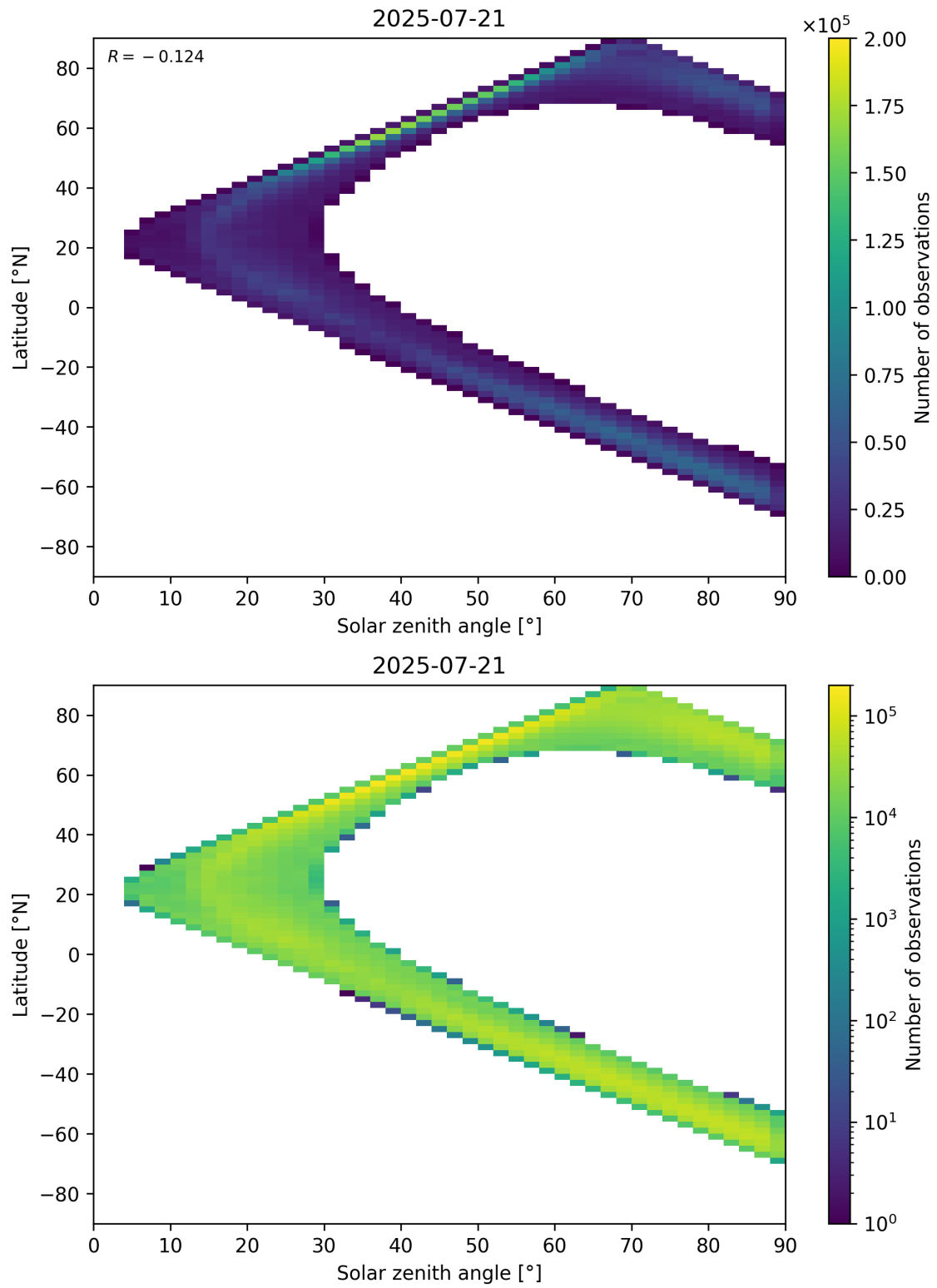


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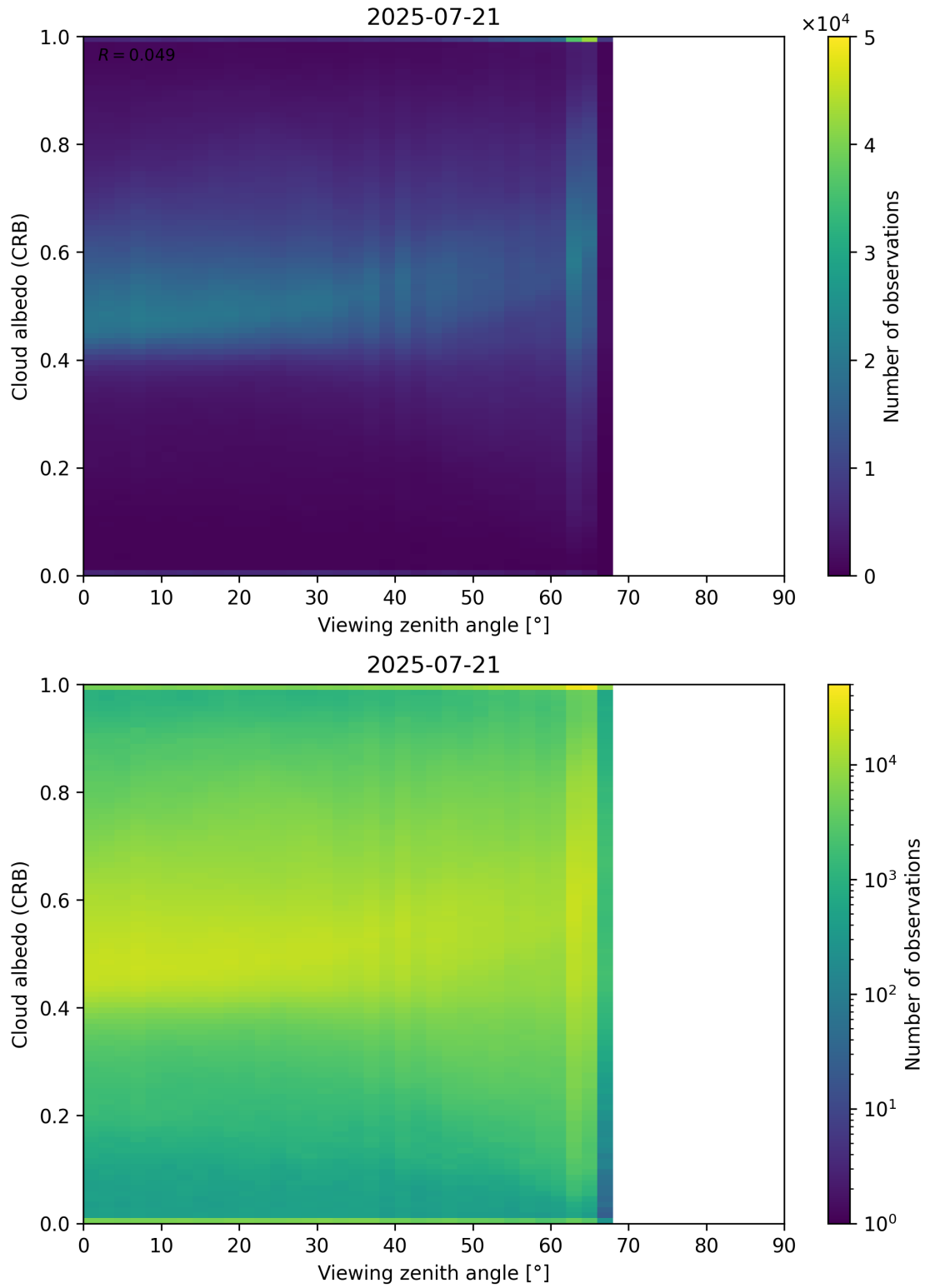


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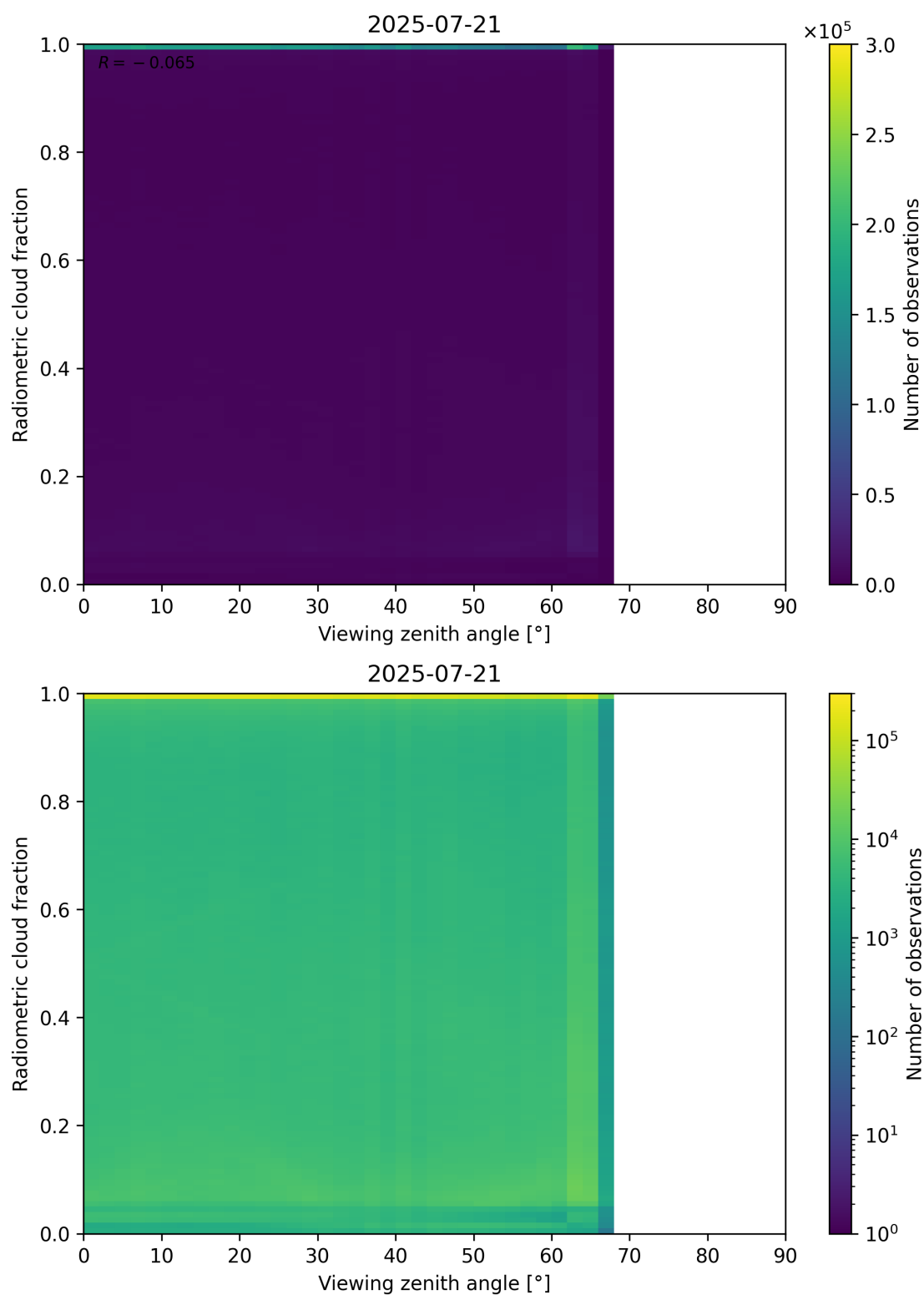


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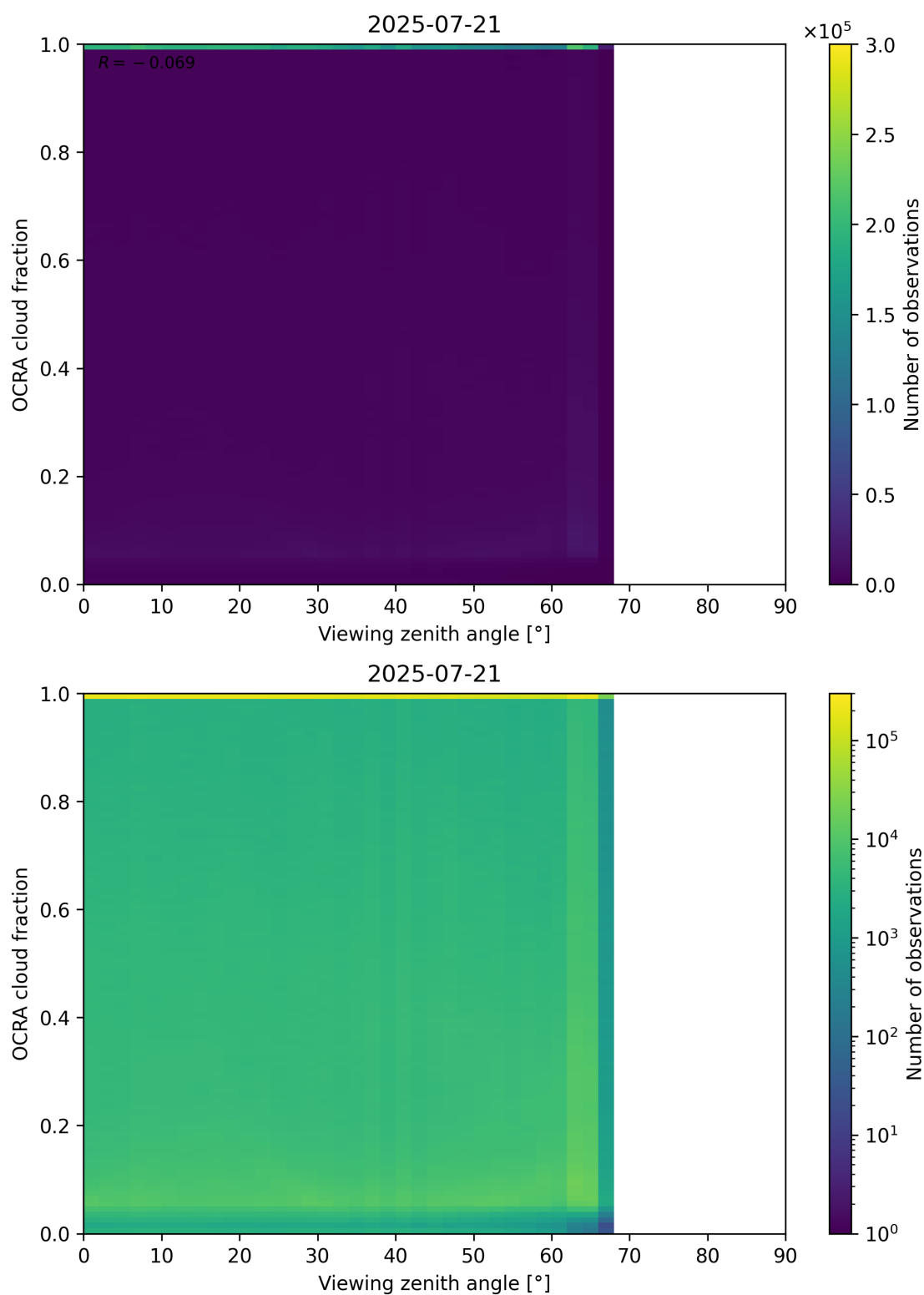


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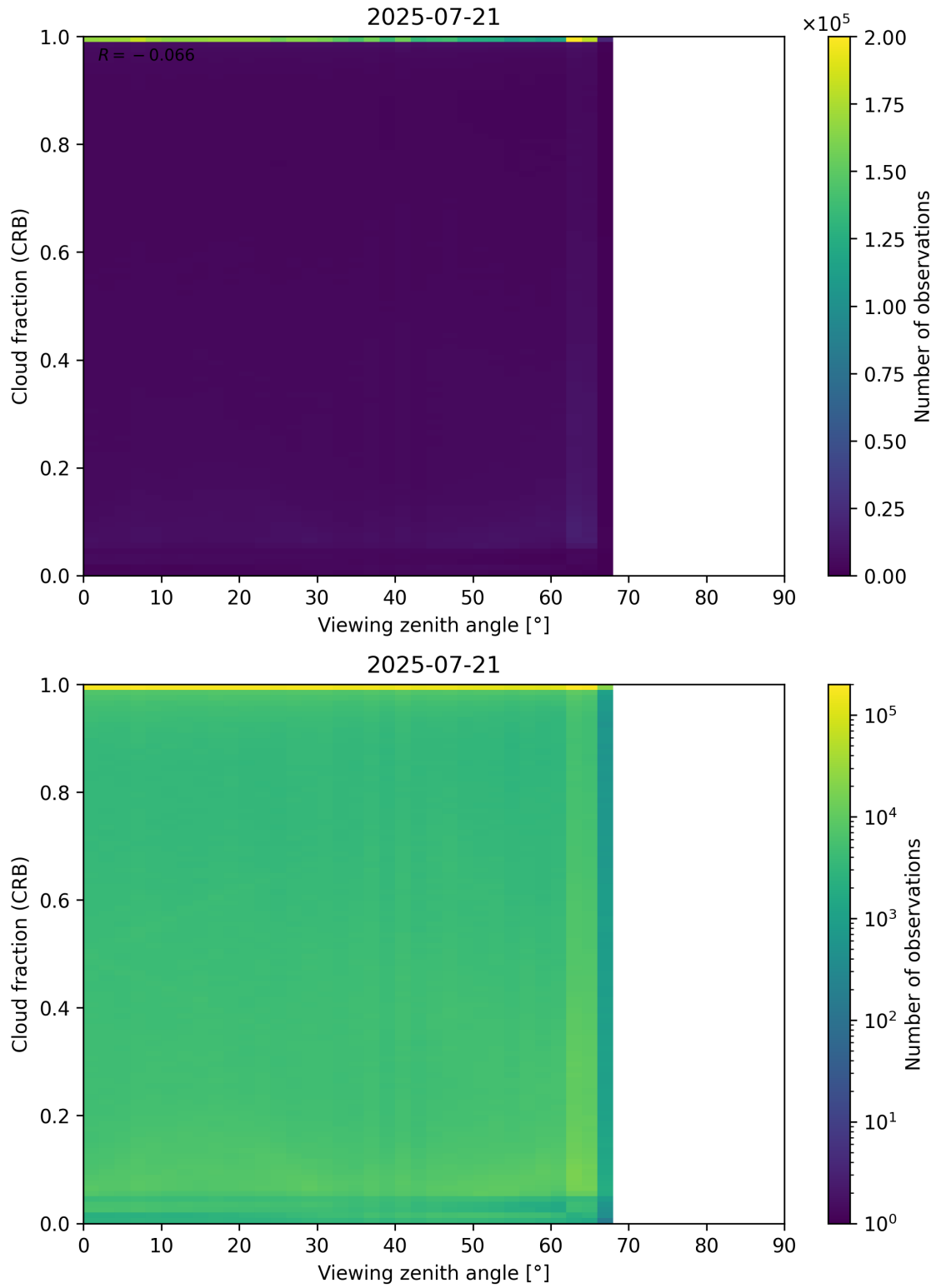


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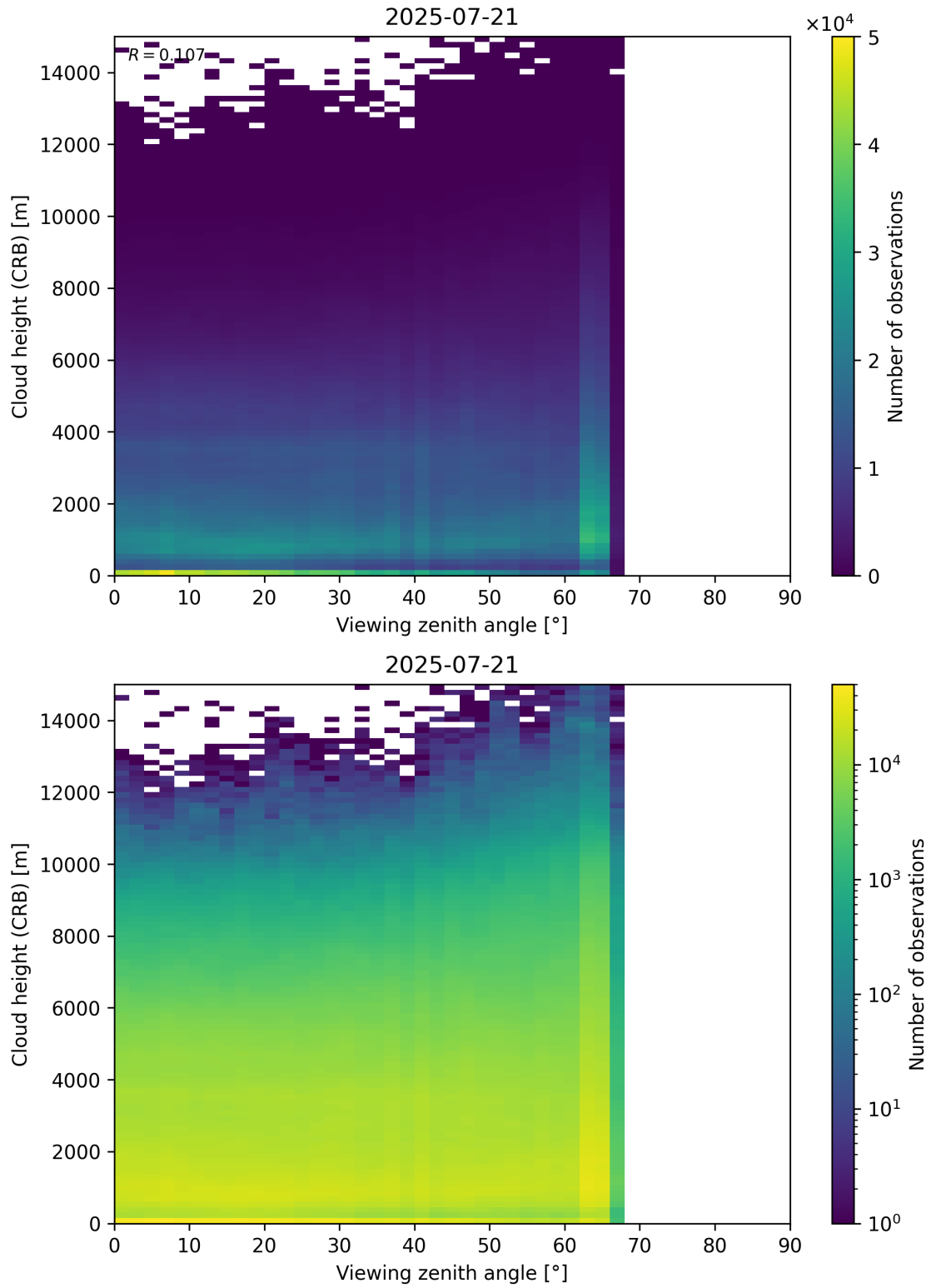


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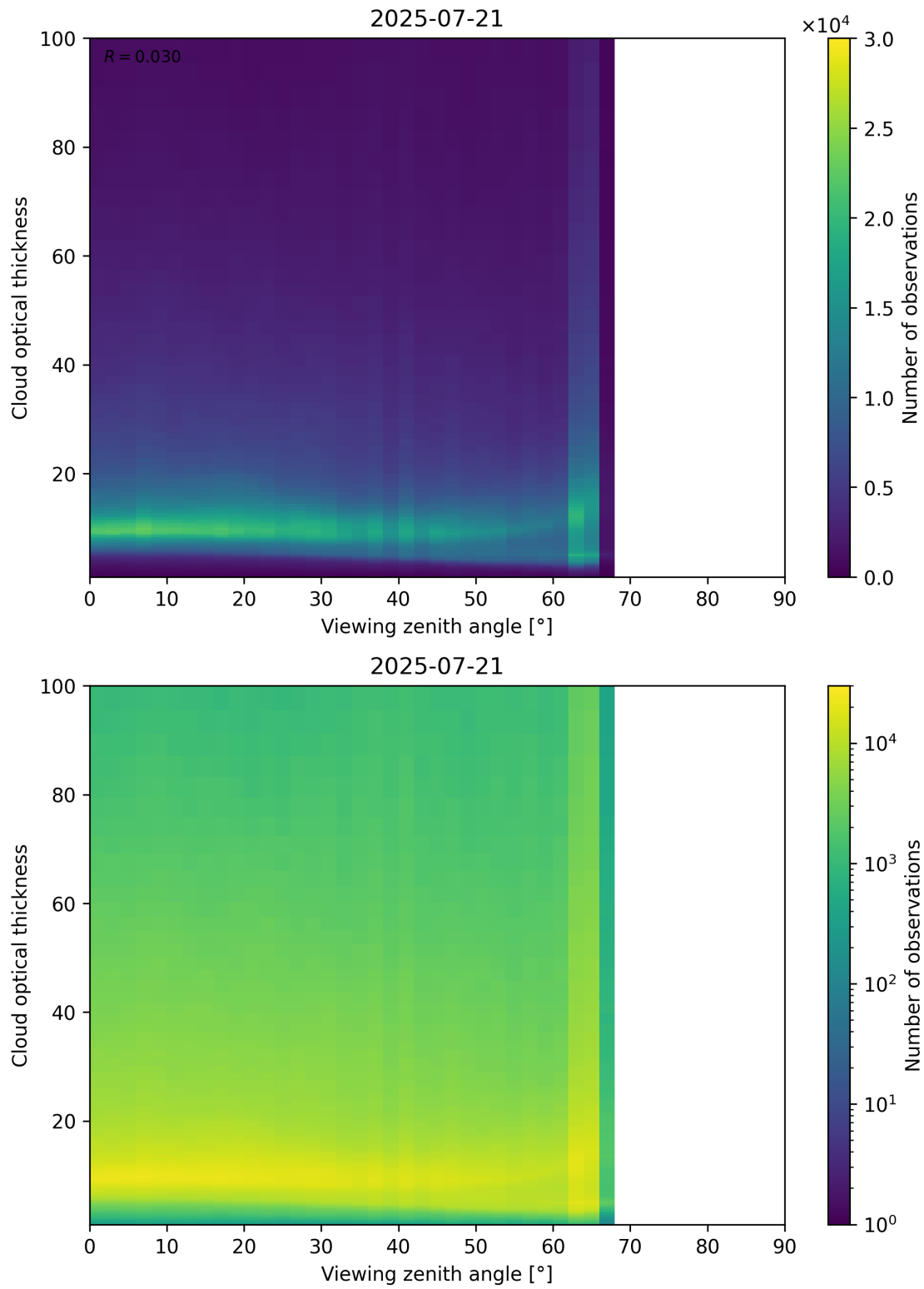


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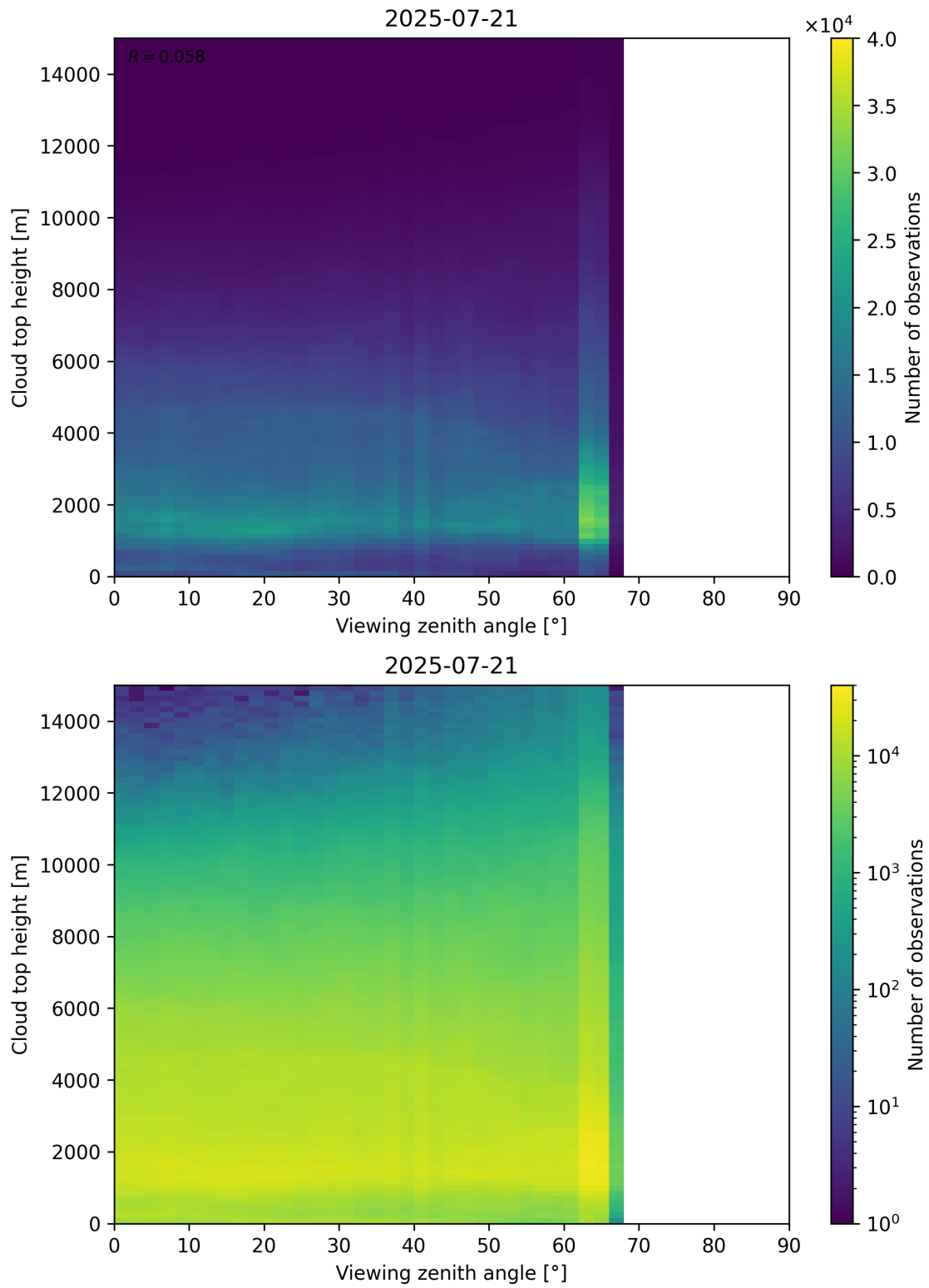


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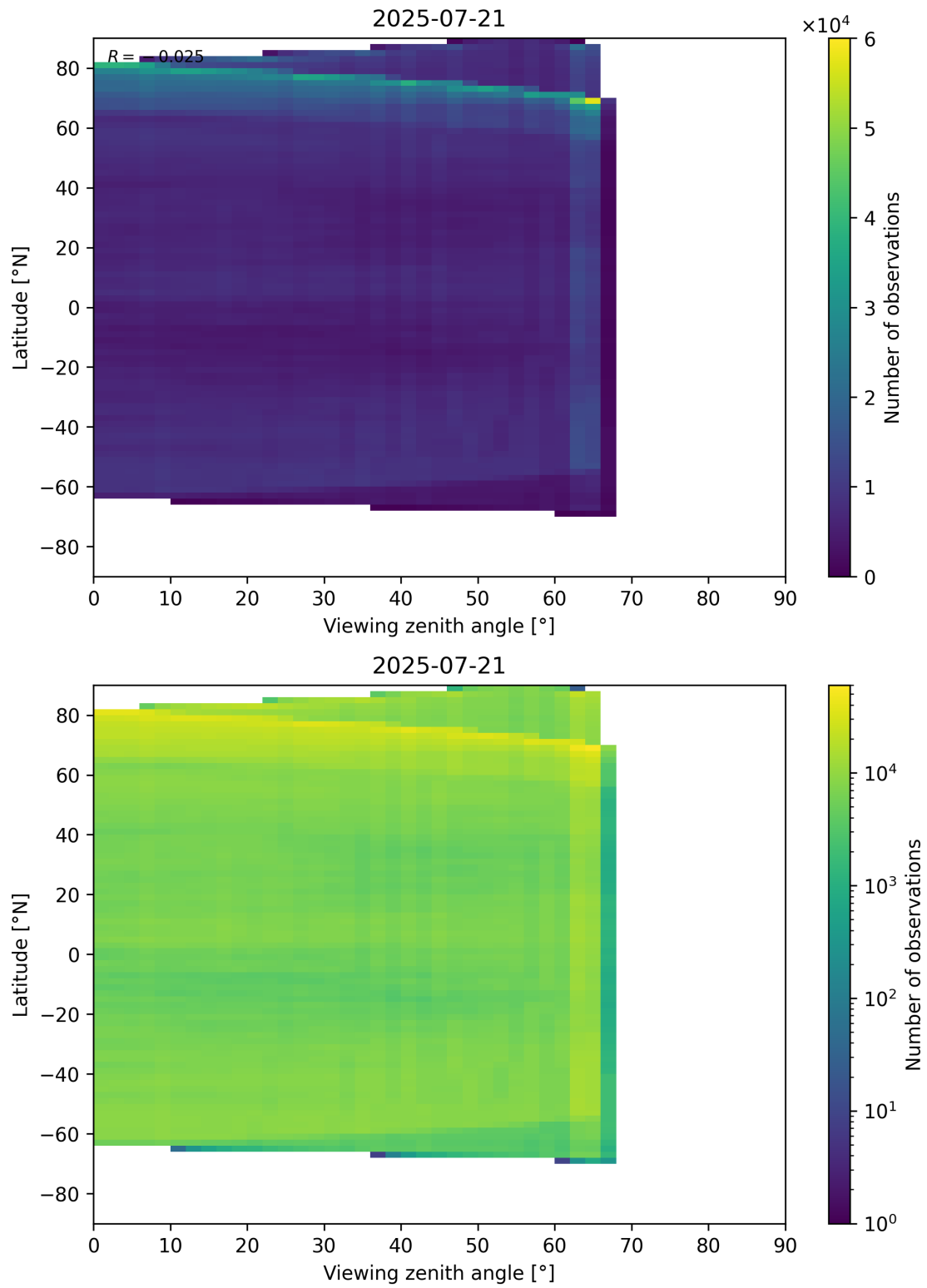


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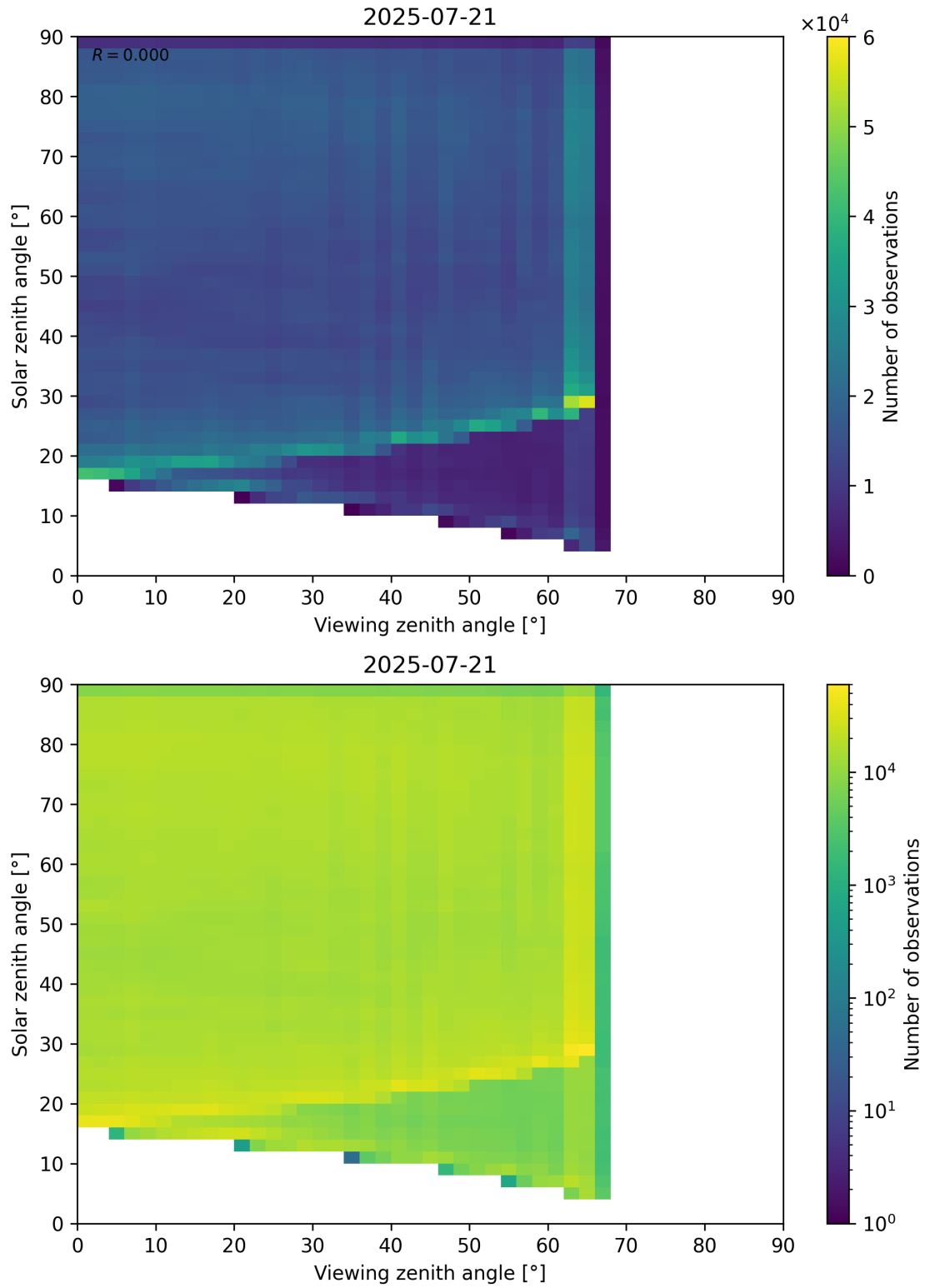


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Maarten Sneep (maarten.sneep@knmi.nl).