

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-07-20 (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 $\frac{1}{2}$ 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 ± 0.355	20391907	0.995	0.550	0.800	0.0	1.000
cloud fraction [1]	0.589 ± 0.345	20391907	0.995	0.725	0.597	0.0	1.000
cloud top height [m]	$(0.380 \pm 0.258) \times 10^4$	20391907	1.425×10^3	3.621×10^3	3.251×10^3	0.0	2.000×10^4
cloud optical thickness [1]	21.4 ± 35.1	20391907	9.77	13.2	10.7	1.000	250
cloud fraction crb [1]	0.588 ± 0.345	20391907	0.995	0.726	0.594	0.0	1.000
cloud height crb [m]	$(0.298 \pm 0.226) \times 10^4$	20391907	75.0	3.260×10^3	2.488×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.563 ± 0.186	20391907	0.515	0.221	0.556	0.0	1.000
surface albedo fitted [1]	0.159 ± 0.208	20391907	1.500×10^{-2}	0.214	4.640×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.155 ± 0.214	20391907	1.500×10^{-2}	0.220	3.028×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.485 \pm 19.120) \times 10^{-4}$	20391907	5.000×10^{-5}	8.735×10^{-4}	3.470×10^{-4}	8.423×10^{-7}	1.11
fitted root mean square crb [1]	$(6.710 \pm 19.182) \times 10^{-4}$	20391907	5.000×10^{-5}	8.414×10^{-4}	2.990×10^{-4}	8.808×10^{-7}	1.18
wavelength shift [nm]	$(7.150 \pm 6.716) \times 10^{-3}$	20391907	3.000×10^{-4}	9.572×10^{-3}	6.601×10^{-3}	-4.933×10^{-2}	0.601
cloud fraction apriori [1]	0.592 ± 0.350	20391907	0.995	0.743	0.602	0.0	1.000
reflectance blue ocra [1]	0.512 ± 0.190	20391907	0.295	0.302	0.491	0.128	1.94
reflectance green ocra [1]	0.458 ± 0.217	20391907	0.195	0.363	0.436	8.085×10^{-2}	2.79
reflectance continuum aband [1]	0.415 ± 0.246	20391907	4.500×10^{-2}	0.381	0.398	1.246×10^{-2}	7.38

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]	2.388×10^{-2}	6.833×10^{-2}	0.108	0.162	0.263	0.988	1.000	1.000	1.000	1.000
cloud top height [m]	173	596	997	1.311×10^3	1.734×10^3	5.355×10^3	6.511×10^3	7.507×10^3	8.818×10^3	1.105×10^4
cloud optical thickness [1]	1.07	2.90	4.12	5.18	6.69	19.9	29.8	43.4	74.3	241
cloud fraction crb [1]	2.333×10^{-2}	6.717×10^{-2}	0.107	0.161	0.261	0.987	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	131	491	787	1.153×10^3	4.413×10^3	5.438×10^3	6.275×10^3	7.320×10^3	9.222×10^3
cloud albedo crb [1]	3.226×10^{-2}	0.239	0.344	0.408	0.458	0.679	0.746	0.804	0.881	1.000
surface albedo fitted [1]	0.0	8.126×10^{-3}	1.269×10^{-2}	1.649×10^{-2}	2.206×10^{-2}	0.236	0.325	0.459	0.653	0.905
surface albedo fitted crb [1]	0.0	5.603×10^{-3}	8.575×10^{-3}	1.120×10^{-2}	1.492×10^{-2}	0.235	0.331	0.476	0.662	0.884
fitted root mean square [1]	9.744×10^{-6}	2.359×10^{-5}	3.983×10^{-5}	6.269×10^{-5}	1.072×10^{-4}	9.807×10^{-4}	1.439×10^{-3}	1.962×10^{-3}	2.705×10^{-3}	4.335×10^{-3}
fitted root mean square crb [1]	5.812×10^{-6}	1.444×10^{-5}	2.556×10^{-5}	4.016×10^{-5}	7.193×10^{-5}	9.133×10^{-4}	1.355×10^{-3}	1.856×10^{-3}	2.558×10^{-3}	3.911×10^{-3}
wavelength shift [nm]	-7.819×10^{-3}	-1.216×10^{-3}	-1.127×10^{-4}	5.440×10^{-4}	1.977×10^{-3}	1.155×10^{-2}	1.386×10^{-2}	1.587×10^{-2}	1.857×10^{-2}	2.453×10^{-2}
cloud fraction apriori [1]	2.920×10^{-2}	6.524×10^{-2}	0.101	0.154	0.257	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.230	0.258	0.281	0.307	0.349	0.651	0.722	0.776	0.839	0.958
reflectance green ocra [1]	0.149	0.172	0.192	0.216	0.261	0.624	0.703	0.760	0.827	0.955
reflectance continuum aband [1]	2.980×10^{-2}	5.518×10^{-2}	9.006×10^{-2}	0.136	0.218	0.598	0.682	0.748	0.830	0.963

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]	0.659 ± 0.338	13291434	0.520	0.800	0.0	1.000	0.400	0.920
cloud fraction [1]	0.621 ± 0.351	13291434	0.719	0.668	0.0	1.000	0.281	1.000
cloud top height [m]	$(0.379 \pm 0.264) \times 10^4$	13291434	3.645×10^3	3.305×10^3	0.0	2.000×10^4	1.713×10^3	5.358×10^3
cloud optical thickness [1]	18.4 ± 30.8	13291434	11.3	9.90	1.000	250	6.06	17.3
cloud fraction crb [1]	0.620 ± 0.351	13291434	0.720	0.667	0.0	1.000	0.280	1.000
cloud height crb [m]	$(0.294 \pm 0.230) \times 10^4$	13291434	3.322×10^3	2.490×10^3	0.0	2.000×10^4	1.071×10^3	4.393×10^3
cloud albedo crb [1]	0.551 ± 0.200	13291434	0.242	0.546	0.0	1.000	0.439	0.682
surface albedo fitted [1]	0.214 ± 0.233	13291434	0.286	0.161	0.0	1.000	2.463×10^{-2}	0.311
surface albedo fitted crb [1]	0.214 ± 0.237	13291434	0.297	0.161	0.0	1.000	1.843×10^{-2}	0.315
fitted root mean square [1]	$(9.693 \pm 23.134) \times 10^{-4}$	13291434	1.160×10^{-3}	5.860×10^{-4}	1.311×10^{-6}	1.11	1.520×10^{-4}	1.312×10^{-3}
fitted root mean square crb [1]	$(8.731 \pm 23.280) \times 10^{-4}$	13291434	1.096×10^{-3}	5.255×10^{-4}	8.808×10^{-7}	1.18	1.290×10^{-4}	1.225×10^{-3}
wavelength shift [nm]	$(8.112 \pm 6.677) \times 10^{-3}$	13291434	9.289×10^{-3}	7.949×10^{-3}	-4.933×10^{-2}	0.601	3.228×10^{-3}	1.252×10^{-2}
cloud fraction apriori [1]	0.626 ± 0.354	13291434	0.719	0.681	0.0	1.000	0.281	1.000
reflectance blue oca [1]	0.521 ± 0.197	13291434	0.334	0.508	0.128	1.84	0.342	0.676
reflectance green oca [1]	0.473 ± 0.225	13291434	0.398	0.464	8.530×10^{-2}	2.79	0.260	0.658
reflectance continuum aband [1]	0.447 ± 0.247	13291434	0.385	0.441	1.246×10^{-2}	7.38	0.251	0.636

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]	0.647 ± 0.385	7100473	0.680	0.890	0.0	1.000	0.320	1.000
cloud fraction [1]	0.530 ± 0.324	7100473	0.600	0.509	0.0	1.000	0.234	0.835
cloud top height [m]	$(0.381 \pm 0.247) \times 10^4$	7100473	3.585×10^3	3.151×10^3	0.0	2.000×10^4	1.762×10^3	5.347×10^3
cloud optical thickness [1]	27.1 ± 41.5	7100473	17.8	12.8	1.000	250	7.86	25.6
cloud fraction crb [1]	0.527 ± 0.324	7100473	0.599	0.504	0.0	1.000	0.232	0.831
cloud height crb [m]	$(0.307 \pm 0.218) \times 10^4$	7100473	3.199×10^3	2.484×10^3	0.0	1.796×10^4	1.259×10^3	4.458×10^3
cloud albedo crb [1]	0.587 ± 0.155	7100473	0.187	0.570	0.0	1.000	0.488	0.675
surface albedo fitted [1]	$(5.659 \pm 8.375) \times 10^{-2}$	7100473	3.098×10^{-2}	3.152×10^{-2}	0.0	1.000	1.958×10^{-2}	5.056×10^{-2}
surface albedo fitted crb [1]	$(4.448 \pm 8.380) \times 10^{-2}$	7100473	1.732×10^{-2}	1.898×10^{-2}	0.0	1.000	1.238×10^{-2}	2.971×10^{-2}
fitted root mean square [1]	$(3.353 \pm 4.678) \times 10^{-4}$	7100473	3.191×10^{-4}	1.729×10^{-4}	8.423×10^{-7}	5.871×10^{-2}	7.317×10^{-5}	3.923×10^{-4}
fitted root mean square crb [1]	$(2.927 \pm 4.498) \times 10^{-4}$	7100473	3.036×10^{-4}	1.081×10^{-4}	9.898×10^{-7}	2.168×10^{-2}	3.983×10^{-5}	3.435×10^{-4}
wavelength shift [nm]	$(5.350 \pm 6.412) \times 10^{-3}$	7100473	8.162×10^{-3}	4.056×10^{-3}	-4.332×10^{-2}	6.202×10^{-2}	7.962×10^{-4}	8.958×10^{-3}
cloud fraction apriori [1]	0.527 ± 0.331	7100473	0.623	0.502	0.0	1.000	0.220	0.843
reflectance blue ocr [1]	0.496 ± 0.175	7100473	0.245	0.469	0.133	1.94	0.359	0.604
reflectance green ocr [1]	0.428 ± 0.198	7100473	0.295	0.400	8.085×10^{-2}	1.87	0.263	0.557
reflectance continuum aband [1]	0.356 ± 0.233	7100473	0.345	0.328	1.391×10^{-2}	4.76	0.165	0.510

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]	0.649 ± 0.354	14495391	0.550	0.800	0.0	1.000	0.400	0.950
cloud fraction [1]	0.566 ± 0.339	14495391	0.695	0.556	0.0	1.000	0.248	0.943
cloud top height [m]	$(0.368 \pm 0.264) \times 10^4$	14495391	3.648×10^3	3.026×10^3	0.0	2.000×10^4	1.578×10^3	5.226×10^3
cloud optical thickness [1]	22.9 ± 37.1	14495391	13.7	11.3	1.000	250	7.27	21.0
cloud fraction crb [1]	0.564 ± 0.339	14495391	0.695	0.552	0.0	1.000	0.246	0.941
cloud height crb [m]	$(0.289 \pm 0.232) \times 10^4$	14495391	3.248×10^3	2.319×10^3	0.0	2.000×10^4	1.027×10^3	4.275×10^3
cloud albedo crb [1]	0.561 ± 0.176	14495391	0.208	0.550	0.0	1.000	0.460	0.668
surface albedo fitted [1]	0.107 ± 0.192	14495391	3.724×10^{-2}	2.986×10^{-2}	0.0	1.000	1.772×10^{-2}	5.496×10^{-2}
surface albedo fitted crb [1]	0.101 ± 0.198	14495391	2.397×10^{-2}	1.977×10^{-2}	0.0	1.000	1.203×10^{-2}	3.600×10^{-2}
fitted root mean square [1]	$(6.089 \pm 21.142) \times 10^{-4}$	14495391	6.566×10^{-4}	2.426×10^{-4}	8.423×10^{-7}	1.11	8.825×10^{-5}	7.449×10^{-4}
fitted root mean square crb [1]	$(5.249 \pm 20.843) \times 10^{-4}$	14495391	6.089×10^{-4}	1.932×10^{-4}	8.808×10^{-7}	1.18	5.961×10^{-5}	6.685×10^{-4}
wavelength shift [nm]	$(6.806 \pm 6.755) \times 10^{-3}$	14495391	9.405×10^{-3}	6.068×10^{-3}	-4.379×10^{-2}	0.601	1.740×10^{-3}	1.115×10^{-2}
cloud fraction apriori [1]	0.567 ± 0.344	14495391	0.727	0.559	0.0	1.000	0.242	0.969
reflectance blue oca [1]	0.511 ± 0.182	14495391	0.287	0.492	0.153	1.94	0.356	0.642
reflectance green oca [1]	0.453 ± 0.209	14495391	0.349	0.437	8.562×10^{-2}	1.94	0.263	0.612
reflectance continuum aband [1]	0.382 ± 0.245	14495391	0.411	0.369	1.246×10^{-2}	6.27	0.159	0.570

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]	0.690 ± 0.343	3539064	0.430	0.840	0.0	1.000	0.520	0.950
cloud fraction [1]	0.620 ± 0.355	3539064	0.723	0.675	0.0	1.000	0.277	1.000
cloud top height [m]	$(0.425 \pm 0.245) \times 10^4$	3539064	3.339×10^3	3.820×10^3	0.0	2.000×10^4	2.397×10^3	5.736×10^3
cloud optical thickness [1]	16.2 ± 26.5	3539064	9.86	8.85	1.000	250	5.62	15.5
cloud fraction crb [1]	0.620 ± 0.356	3539064	0.723	0.674	0.0	1.000	0.276	0.999
cloud height crb [m]	$(0.330 \pm 0.213) \times 10^4$	3539064	3.085×10^3	2.804×10^3	0.0	2.000×10^4	1.648×10^3	4.734×10^3
cloud albedo crb [1]	0.584 ± 0.208	3539064	0.256	0.583	0.0	1.000	0.470	0.725
surface albedo fitted [1]	0.334 ± 0.213	3539064	0.120	0.262	0.0	1.000	0.214	0.335
surface albedo fitted crb [1]	0.331 ± 0.211	3539064	0.123	0.258	4.196×10^{-3}	1.000	0.211	0.334
fitted root mean square [1]	$(1.192 \pm 1.150) \times 10^{-3}$	3539064	1.286×10^{-3}	8.694×10^{-4}	2.291×10^{-6}	0.270	4.004×10^{-4}	1.686×10^{-3}
fitted root mean square crb [1]	$(1.151 \pm 1.226) \times 10^{-3}$	3539064	1.288×10^{-3}	8.612×10^{-4}	1.097×10^{-6}	0.777	3.708×10^{-4}	1.659×10^{-3}
wavelength shift [nm]	$(8.264 \pm 6.394) \times 10^{-3}$	3539064	8.871×10^{-3}	8.143×10^{-3}	-4.933×10^{-2}	5.397×10^{-2}	3.629×10^{-3}	1.250×10^{-2}
cloud fraction apriori [1]	0.627 ± 0.361	3539064	0.728	0.694	0.0	1.000	0.272	1.000
reflectance blue ocr [1]	0.516 ± 0.221	3539064	0.369	0.470	0.128	1.86	0.323	0.692
reflectance green ocr [1]	0.472 ± 0.247	3539064	0.427	0.418	8.085×10^{-2}	2.43	0.248	0.676
reflectance continuum aband [1]	0.512 ± 0.228	3539064	0.365	0.462	1.592×10^{-2}	6.46	0.323	0.688

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	-9.248×10^{-3}	-2.141×10^{-2}	-5.751×10^{-2}	6.932×10^{-2}	2.555×10^{-2}	-5.814×10^{-2}	0.115	5.080×10^{-2}	-6.329×10^{-2}
-9.248×10^{-3}	1.000	-0.142	0.167	1.727×10^{-2}	0.248	0.166	3.841×10^{-2}	6.443×10^{-2}	0.167
-2.141×10^{-2}	-0.142	1.000	0.176	-9.224×10^{-2}	-0.113	0.179	-0.122	-8.896×10^{-2}	0.189
-5.751×10^{-2}	0.167	0.176	1.000	-2.494×10^{-2}	0.312	1.000	5.415×10^{-3}	0.337	0.988
6.932×10^{-2}	1.727×10^{-2}	-9.224×10^{-2}	-2.494×10^{-2}	1.000	0.141	-2.514×10^{-2}	0.955	2.401×10^{-2}	-3.616×10^{-2}
2.555×10^{-2}	0.248	-0.113	0.312	0.141	1.000	0.308	0.194	0.528	0.307
-5.814×10^{-2}	0.166	0.179	1.000	-2.514×10^{-2}	0.308	1.000	5.242×10^{-3}	0.334	0.988
0.115	3.841×10^{-2}	-0.122	5.415×10^{-3}	0.955	0.194	5.242×10^{-3}	1.000	3.207×10^{-3}	-6.092×10^{-3}
5.080×10^{-2}	6.443×10^{-2}	-8.896×10^{-2}	0.337	2.401×10^{-2}	0.528	0.334	3.207×10^{-3}	1.000	0.342
-6.329×10^{-2}	0.167	0.189	0.988	-3.616×10^{-2}	0.307	0.988	-6.092×10^{-3}	0.342	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
389	-4.15	-19.7	-0.391	3.532×10^3	17.7	-0.396	5.120×10^3	0.187	-0.437
-4.15	516	-150	1.31	1.013×10^3	198	1.30	1.972×10^3	0.272	1.32
-19.7	-150	2.172×10^3	2.82	-1.110×10^4	-184	2.87	-1.287×10^4	-0.771	3.08
-0.391	1.31	2.82	0.119	-22.2	3.78	0.119	4.22	2.164×10^{-2}	0.119
3.532×10^3	1.013×10^3	-1.110×10^4	-22.2	6.666×10^6	1.278×10^4	-22.4	5.571×10^6	11.5	-32.6
17.7	198	-184	3.78	1.278×10^4	1.235×10^3	3.74	1.545×10^4	3.45	3.78
-0.396	1.30	2.87	0.119	-22.4	3.74	0.119	4.09	2.142×10^{-2}	0.119
5.120×10^3	1.972×10^3	-1.287×10^4	4.22	5.571×10^6	1.545×10^4	4.09	5.109×10^6	1.35	-4.82
0.187	0.272	-0.771	2.164×10^{-2}	11.5	3.45	2.142×10^{-2}	1.35	3.462×10^{-2}	2.222×10^{-2}
-0.437	1.32	3.08	0.119	-32.6	3.78	0.119	-4.82	2.222×10^{-2}	0.122

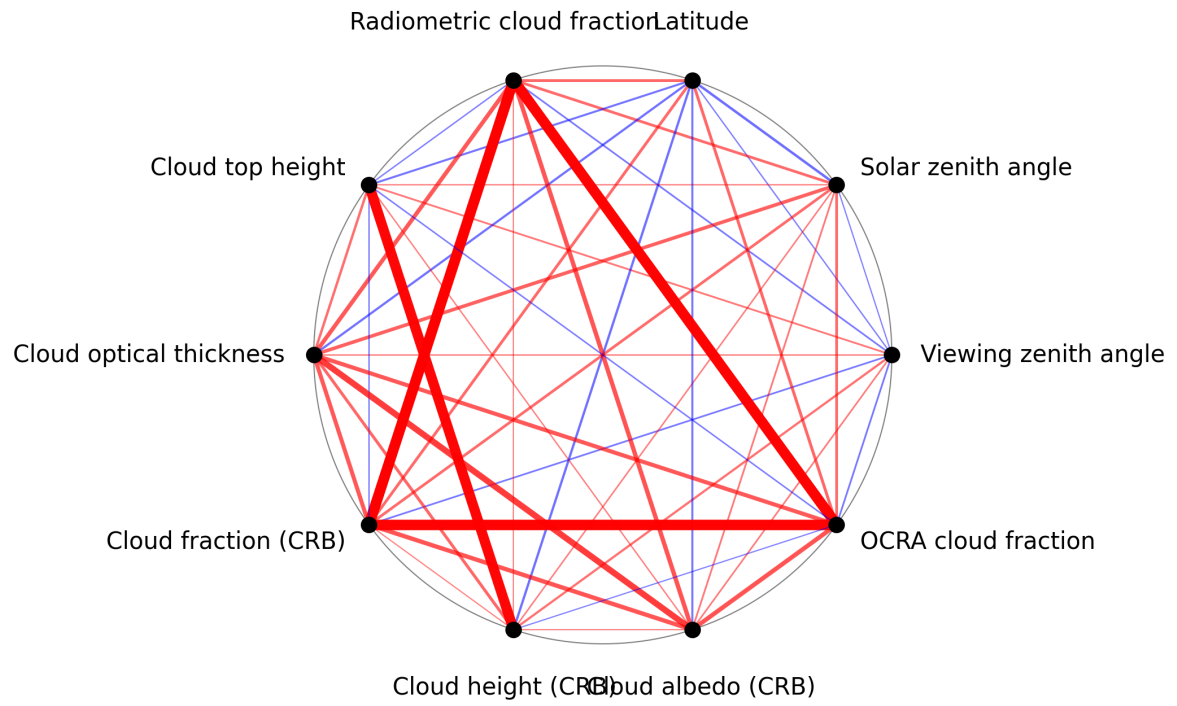


Figure 1: Map of correlation graph for 2025-07-04 to 2025-07-06.

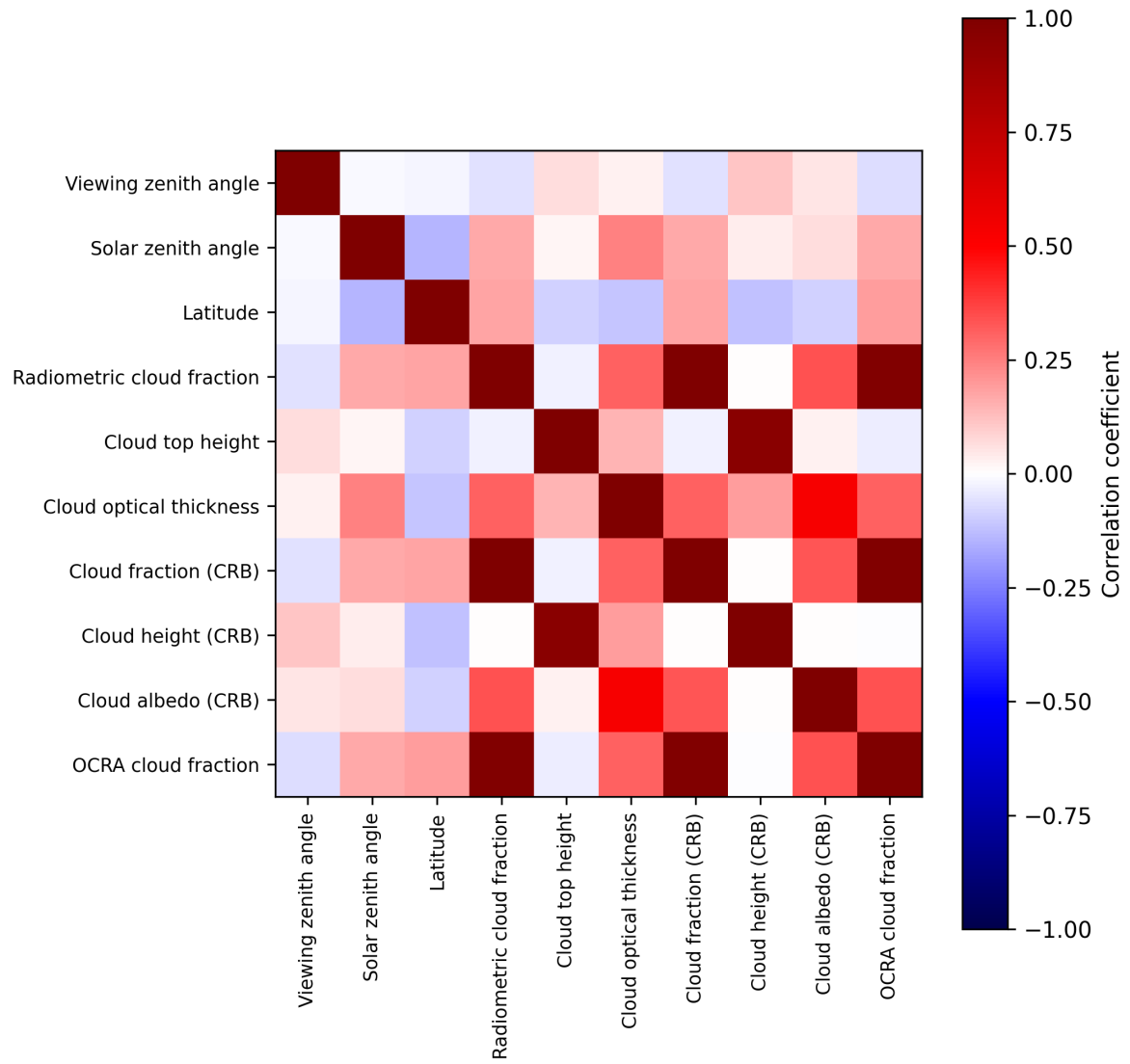


Figure 2: Map of correlation matrix for 2025-07-04 to 2025-07-06.

3 Granule outlines

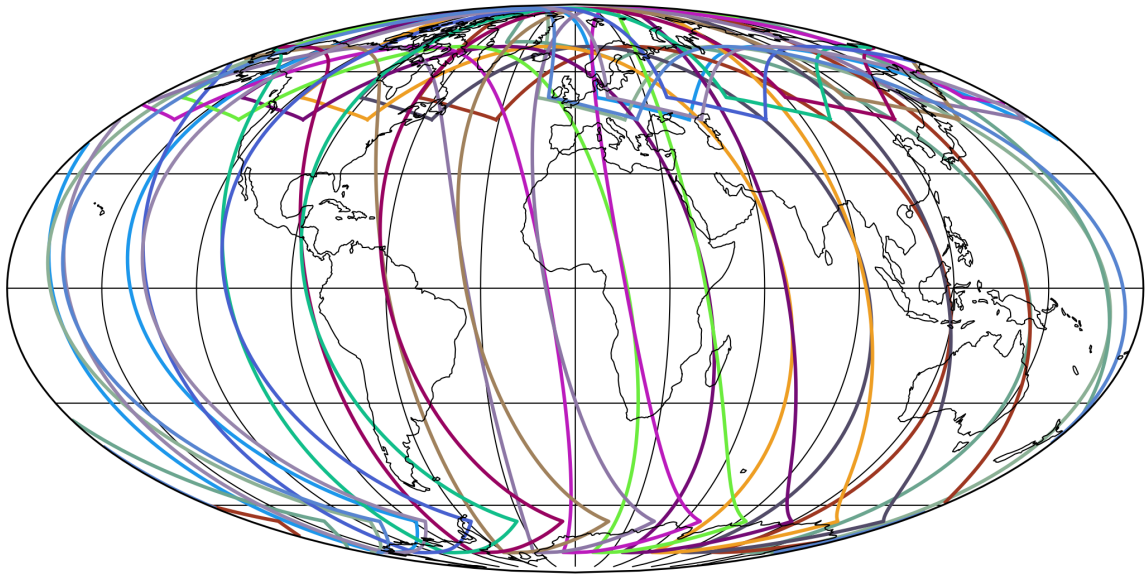


Figure 3: Outline of the granules.

4 Input data monitoring

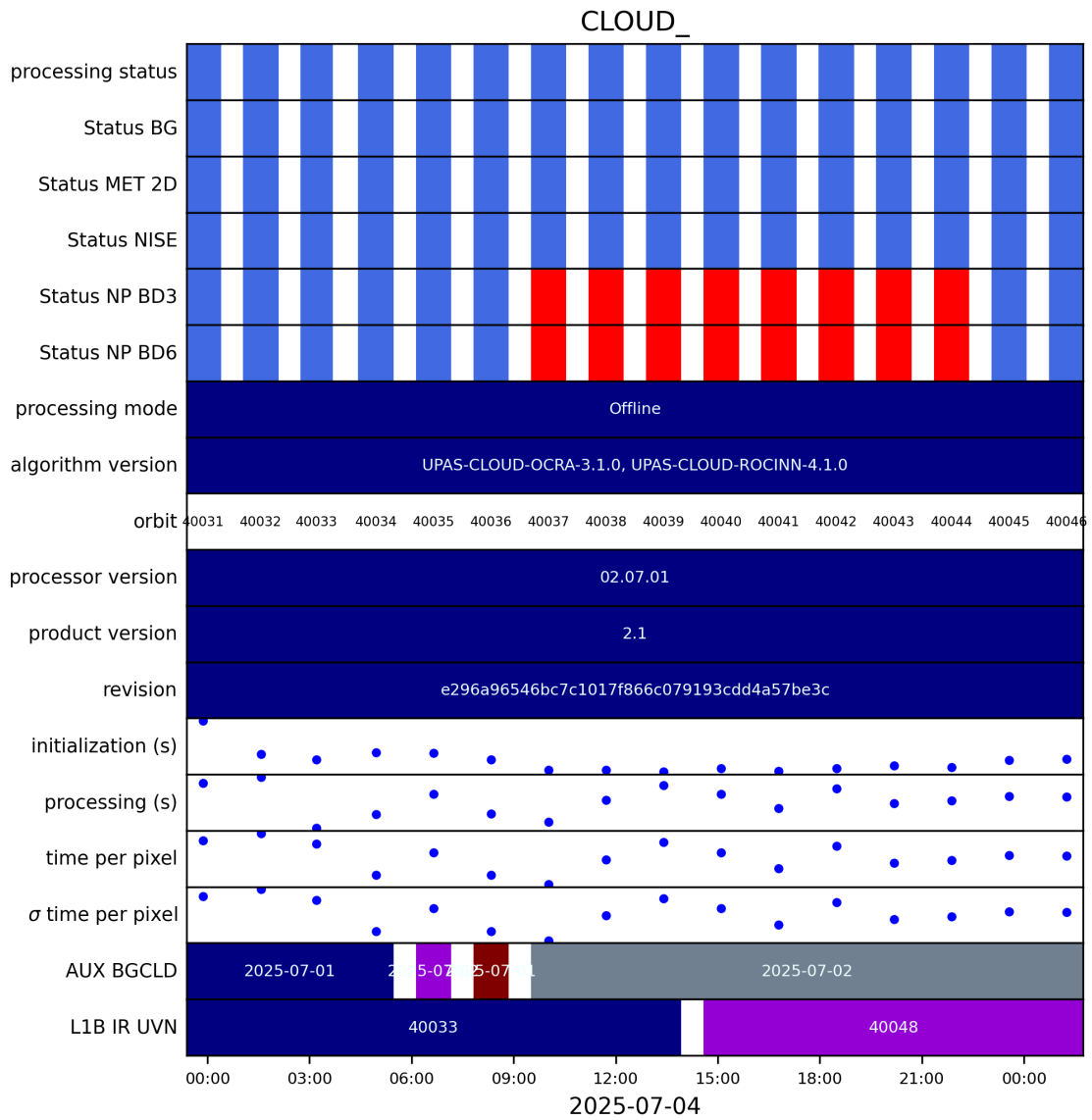


Figure 4: Input data per granule

5 Warnings and errors

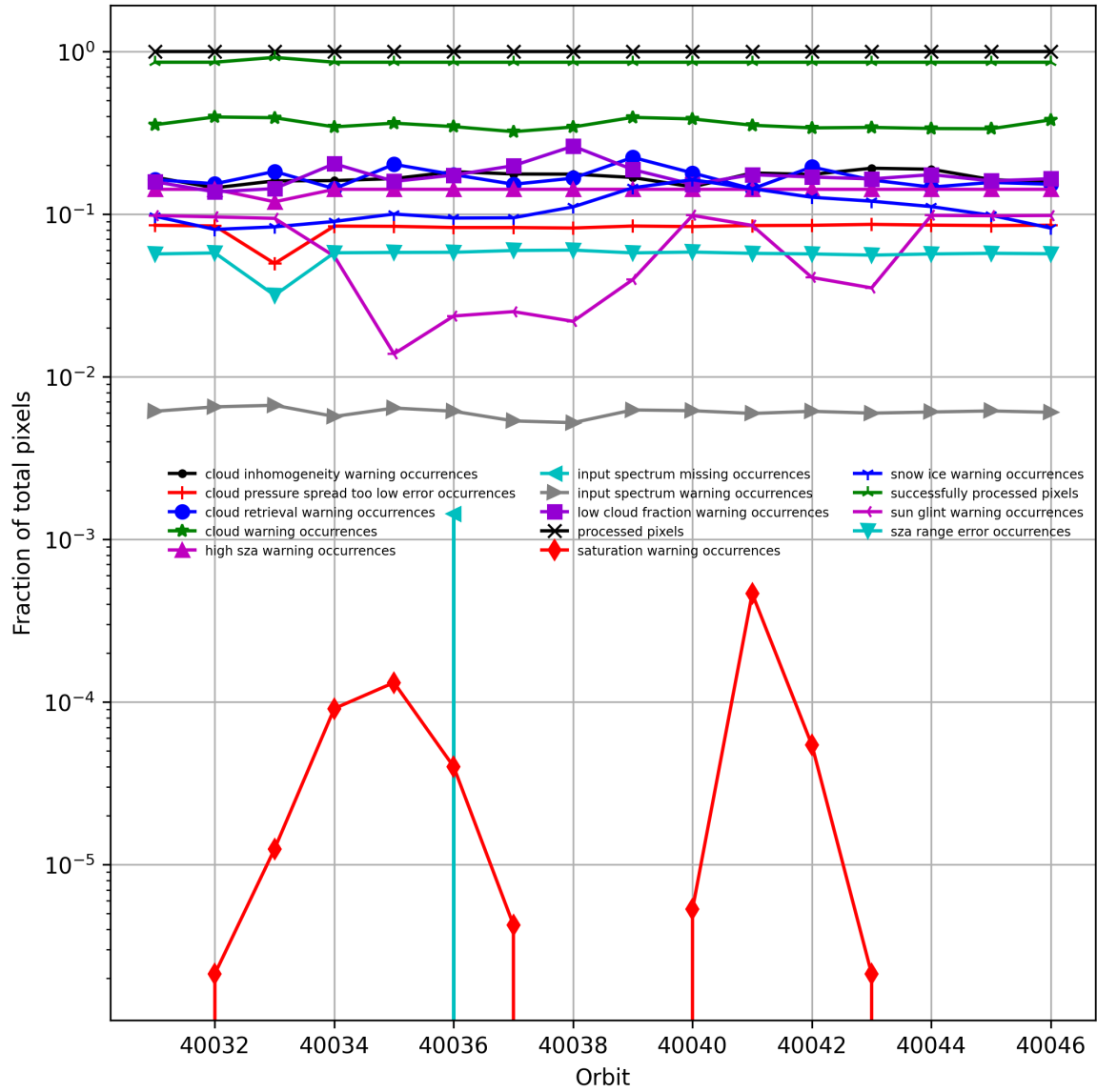


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

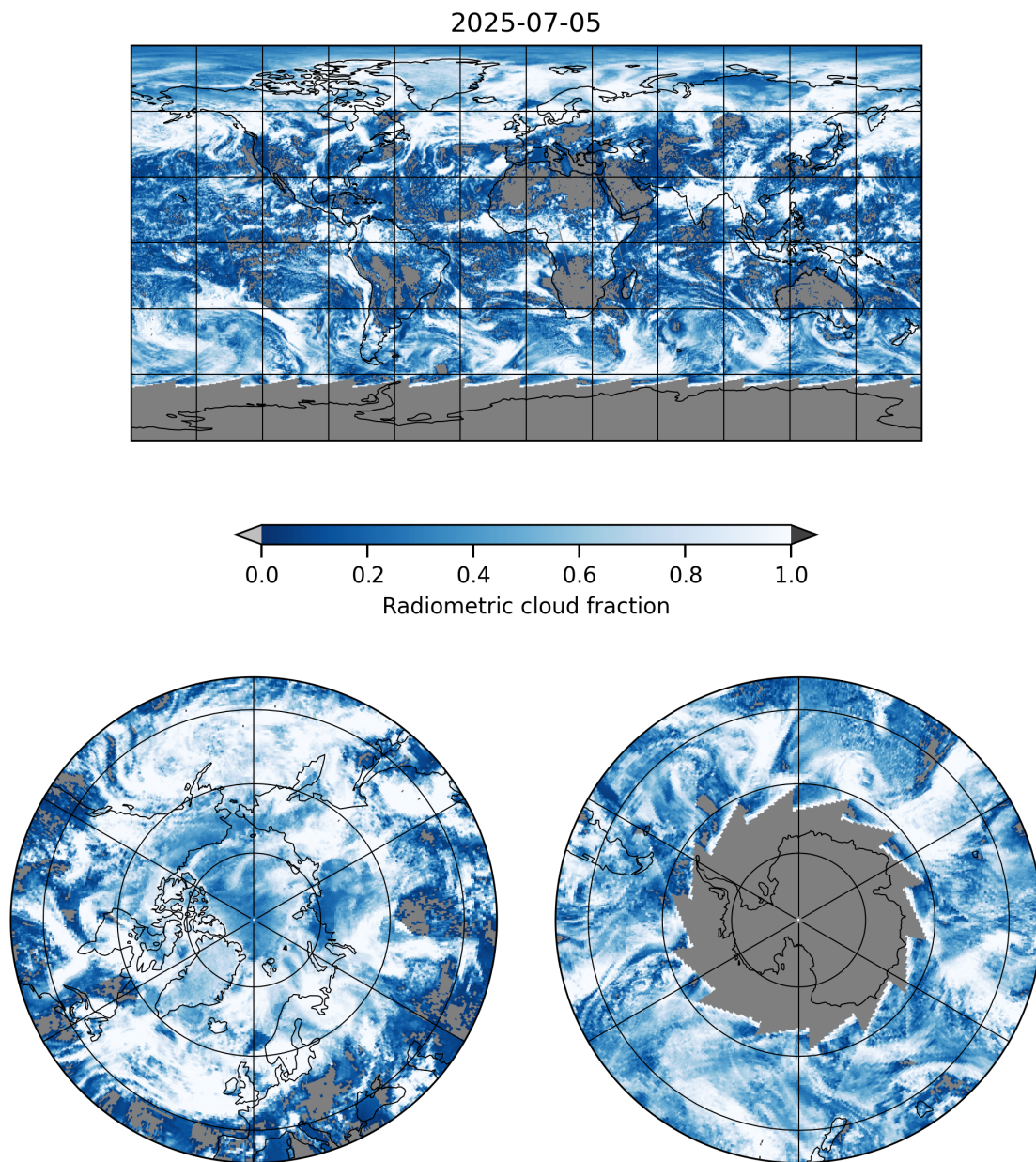


Figure 6: Map of “Radiometric cloud fraction” for 2025-07-04 to 2025-07-06

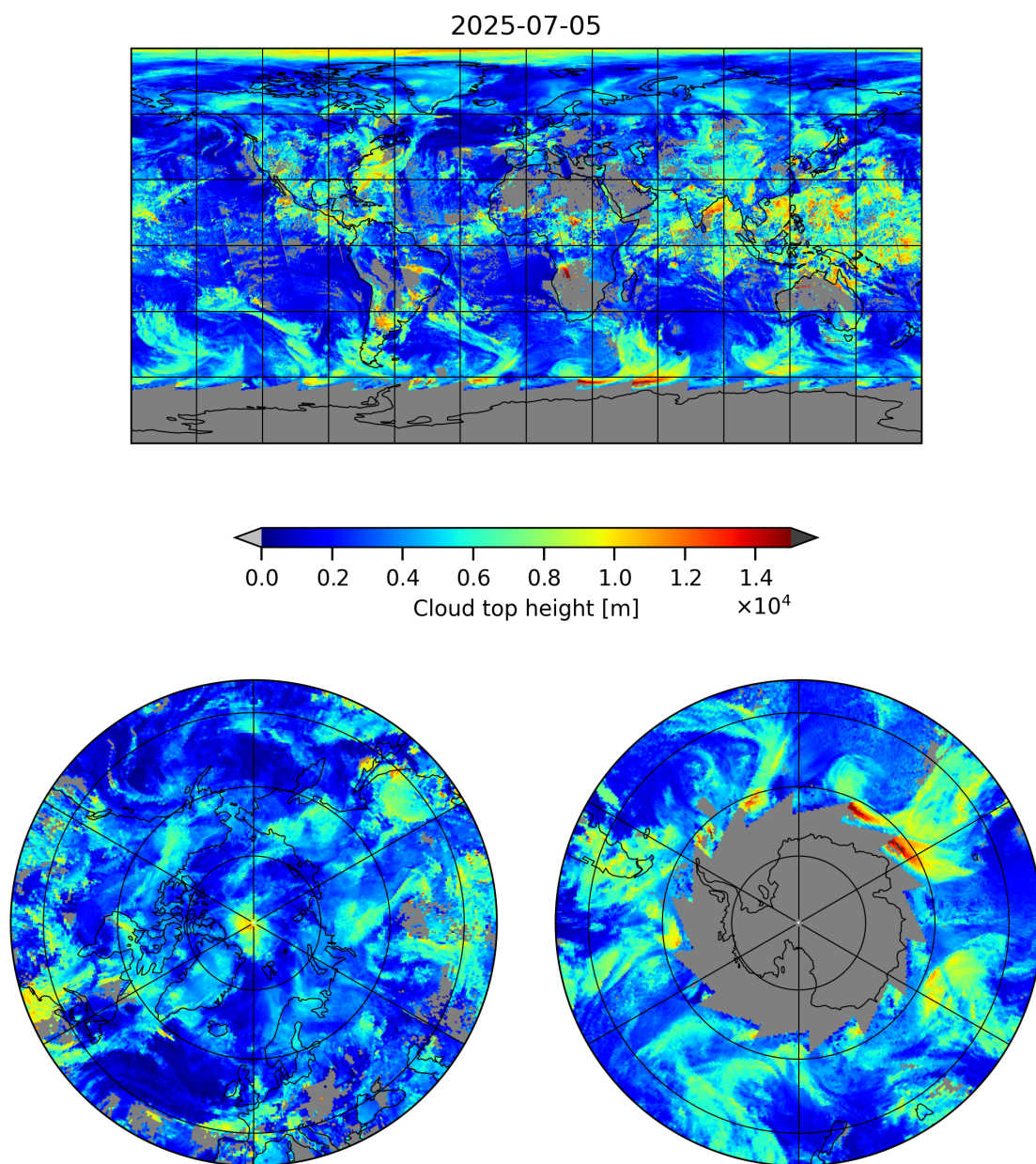


Figure 7: Map of “Cloud top height” for 2025-07-04 to 2025-07-06

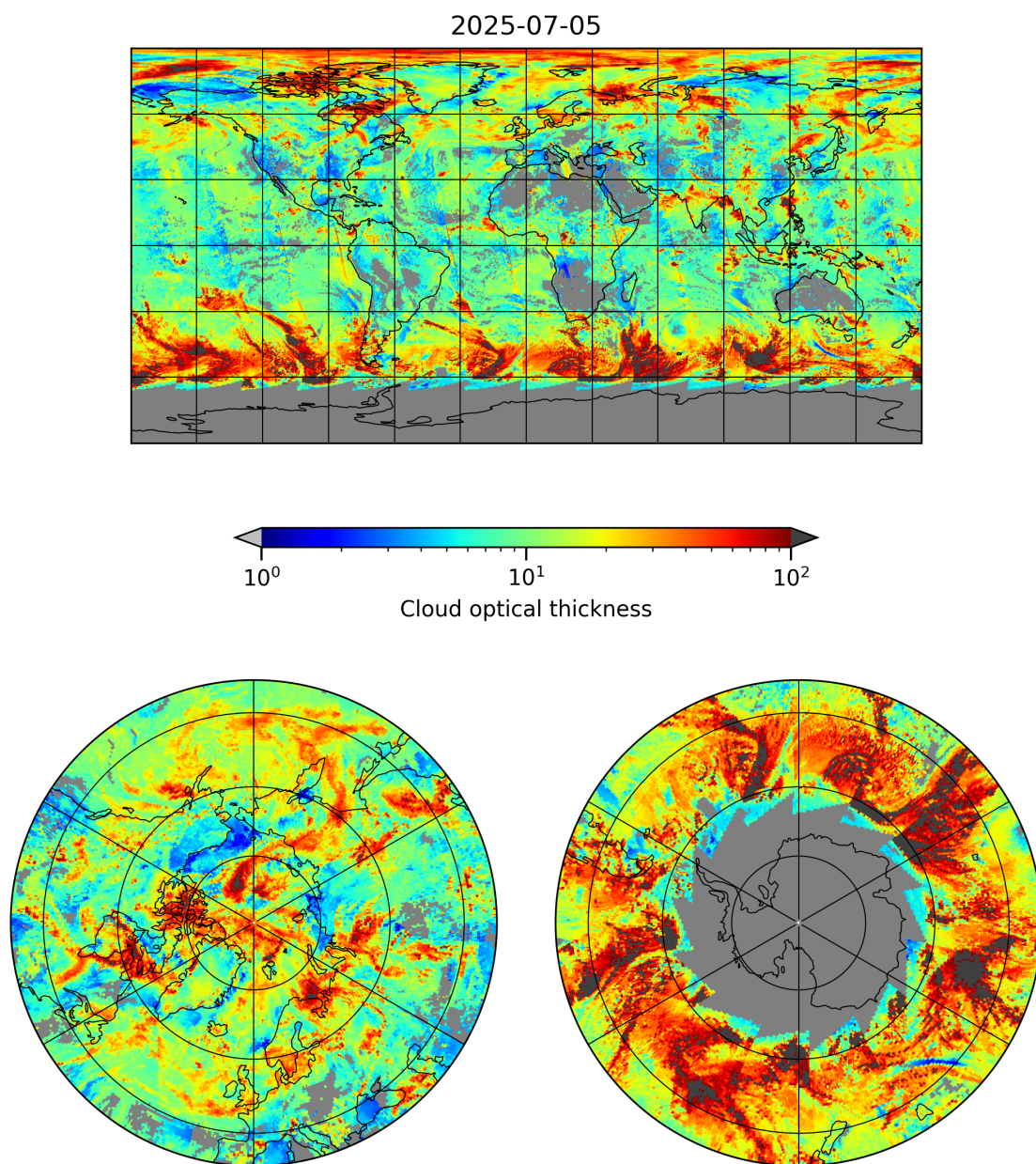


Figure 8: Map of “Cloud optical thickness” for 2025-07-04 to 2025-07-06

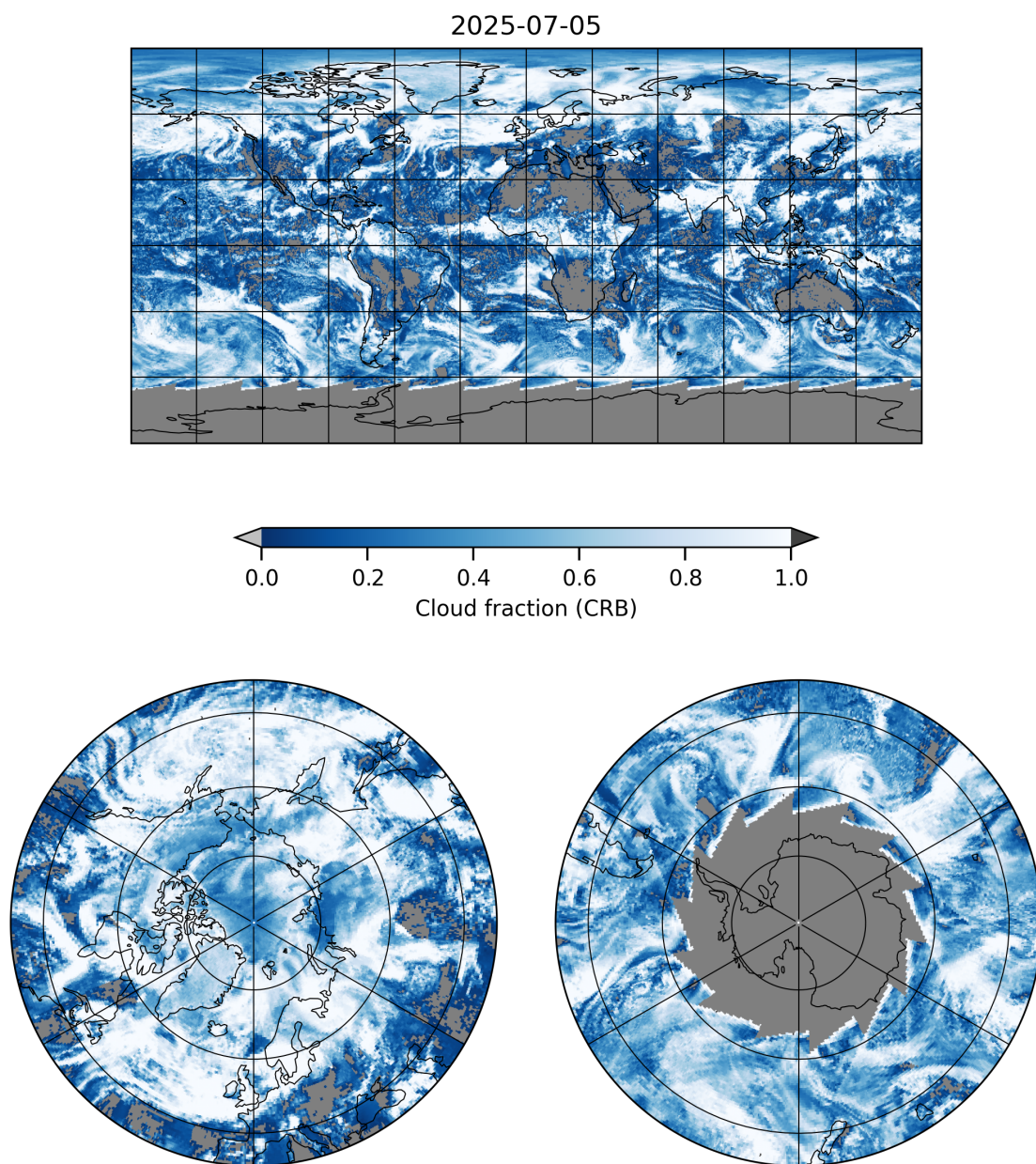


Figure 9: Map of “Cloud fraction (CRB)” for 2025-07-04 to 2025-07-06

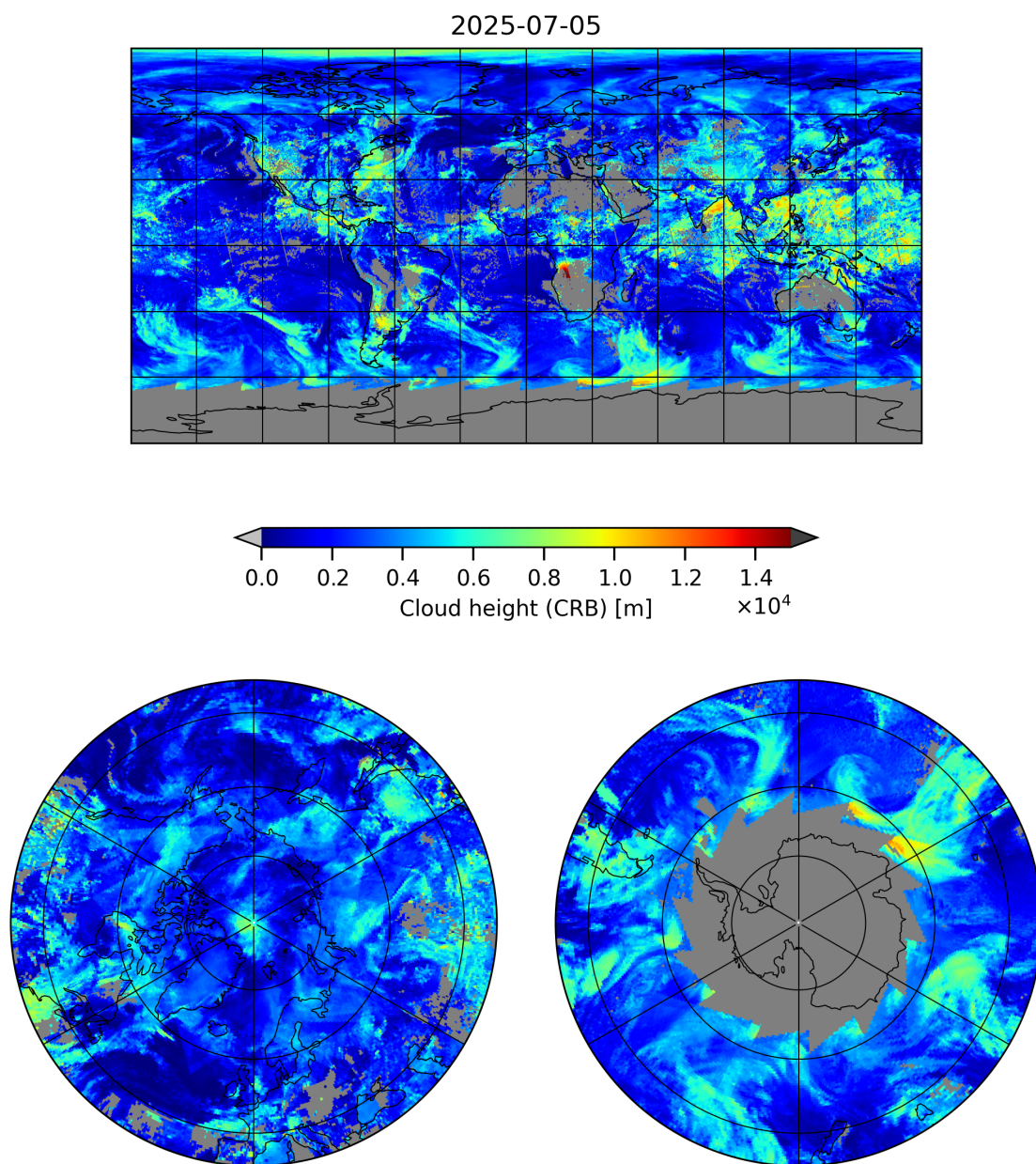


Figure 10: Map of “Cloud height (CRB)” for 2025-07-04 to 2025-07-06

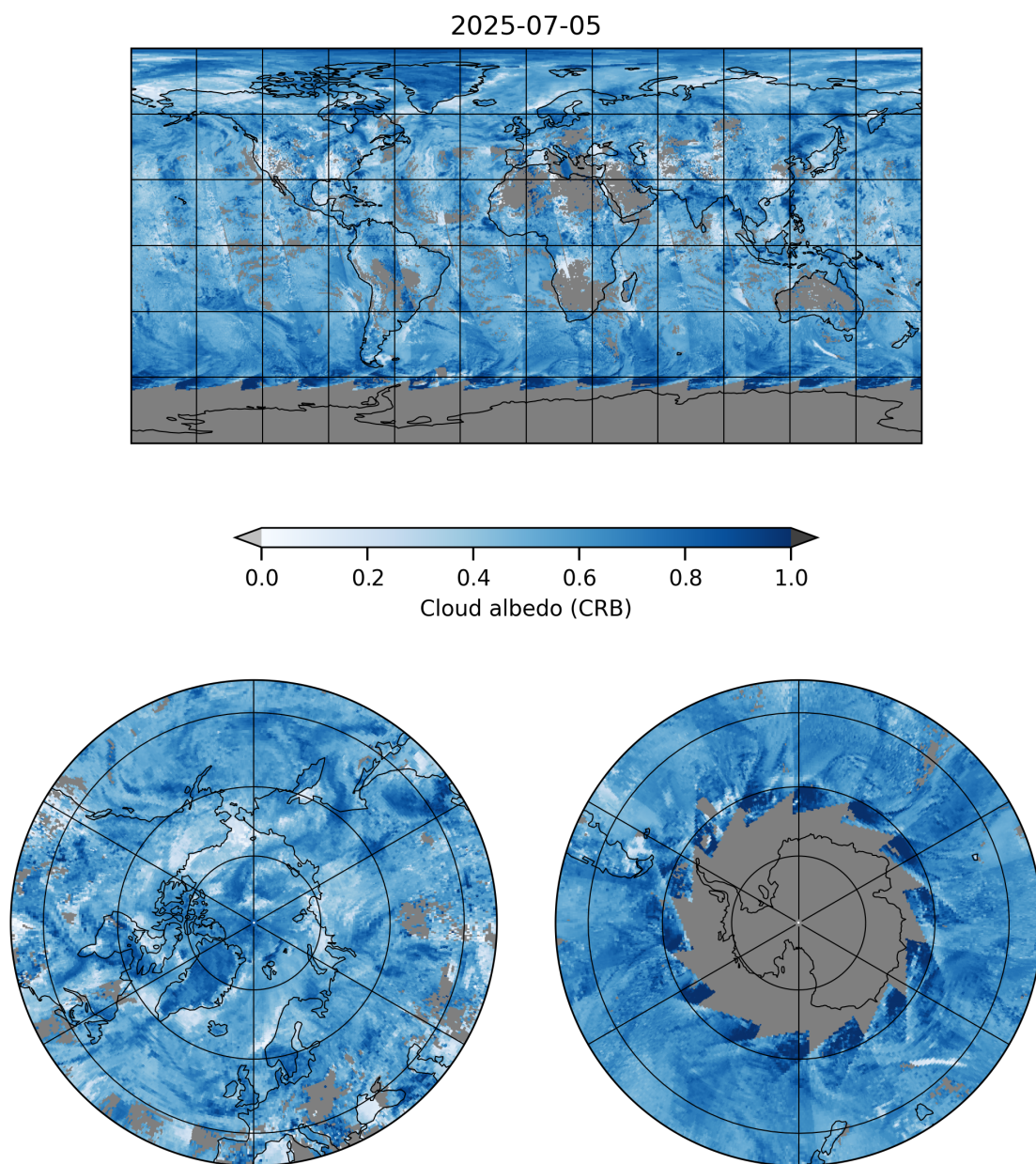


Figure 11: Map of “Cloud albedo (CRB)” for 2025-07-04 to 2025-07-06

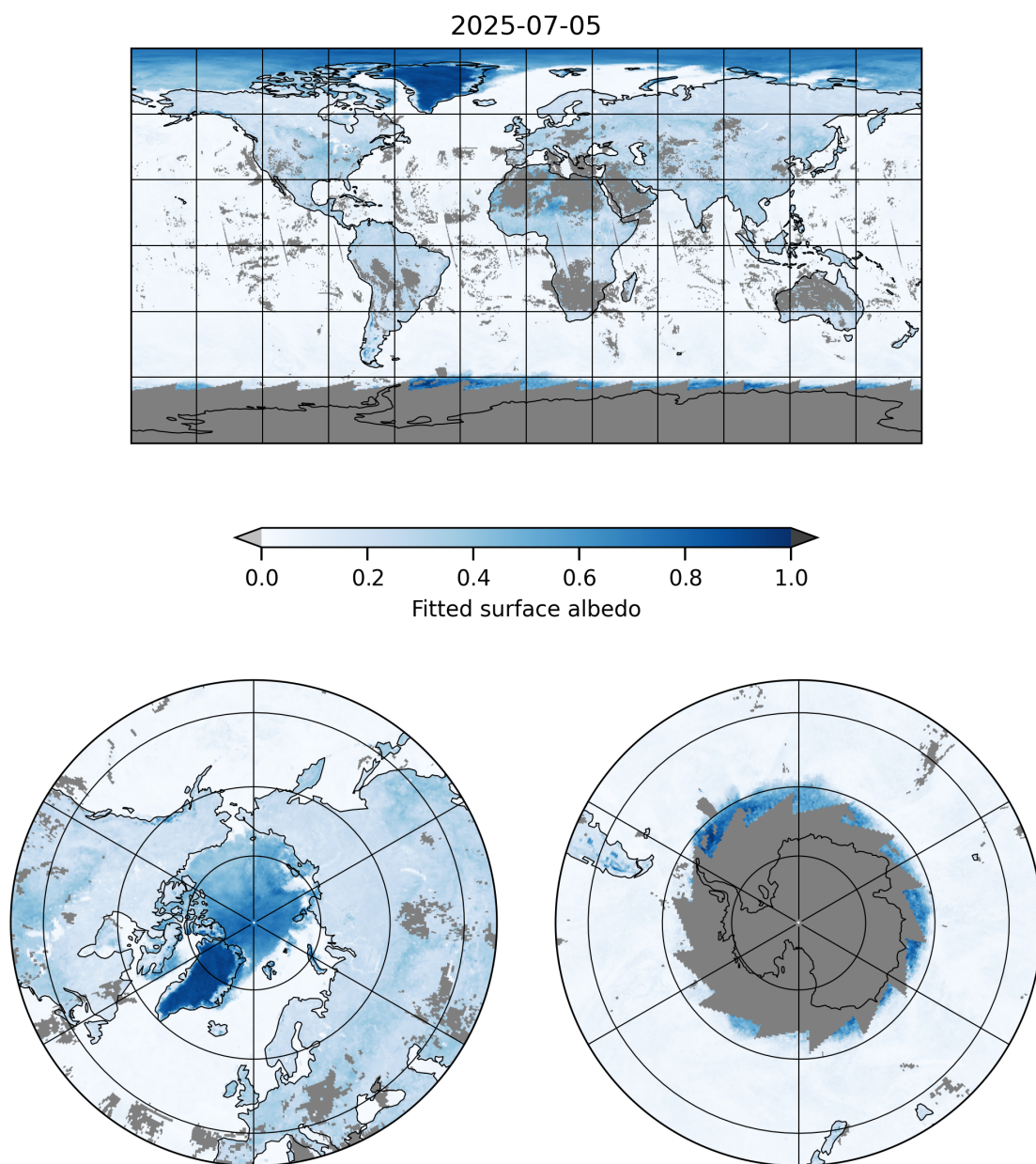


Figure 12: Map of “Fitted surface albedo” for 2025-07-04 to 2025-07-06

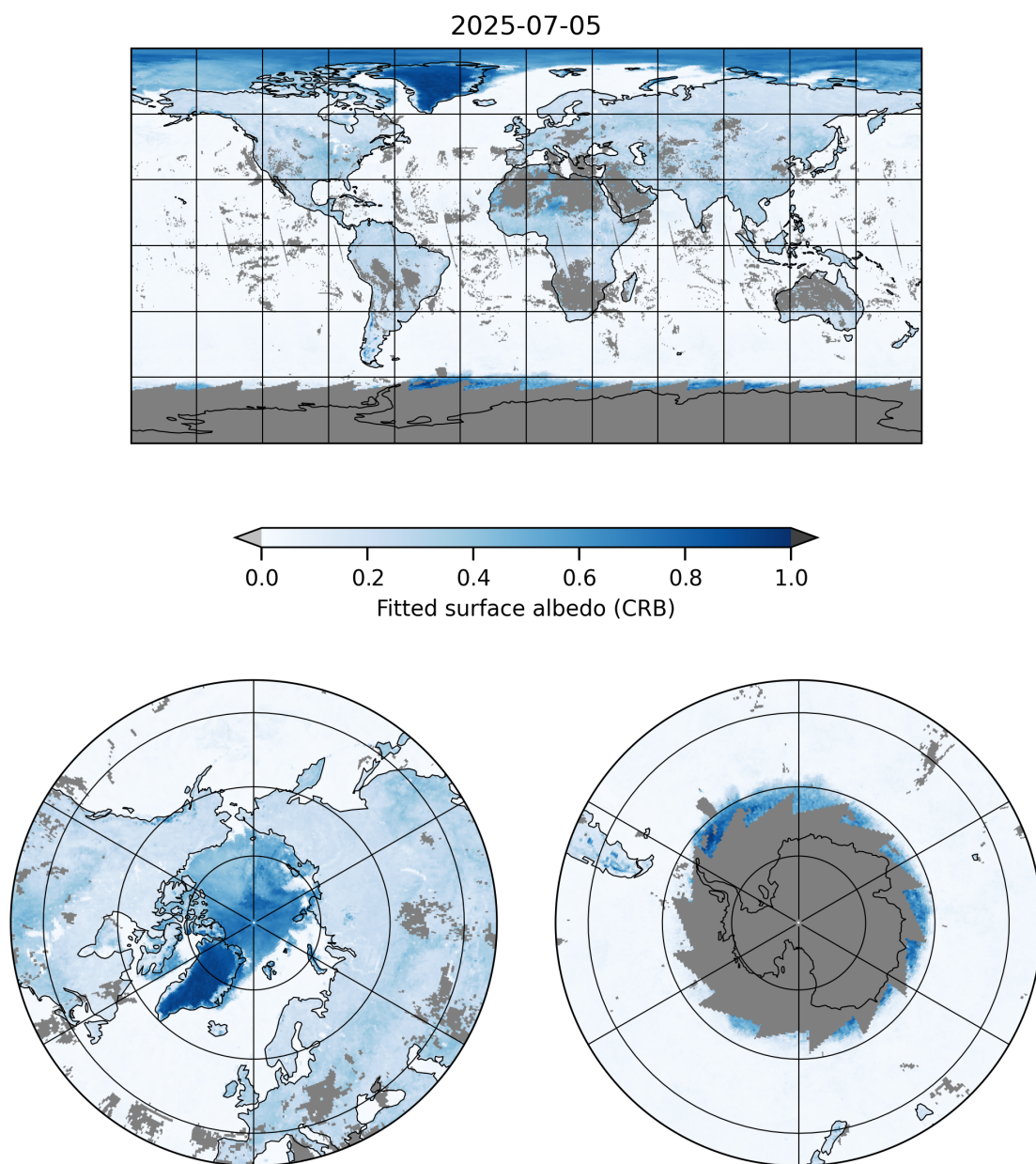


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-07-04 to 2025-07-06

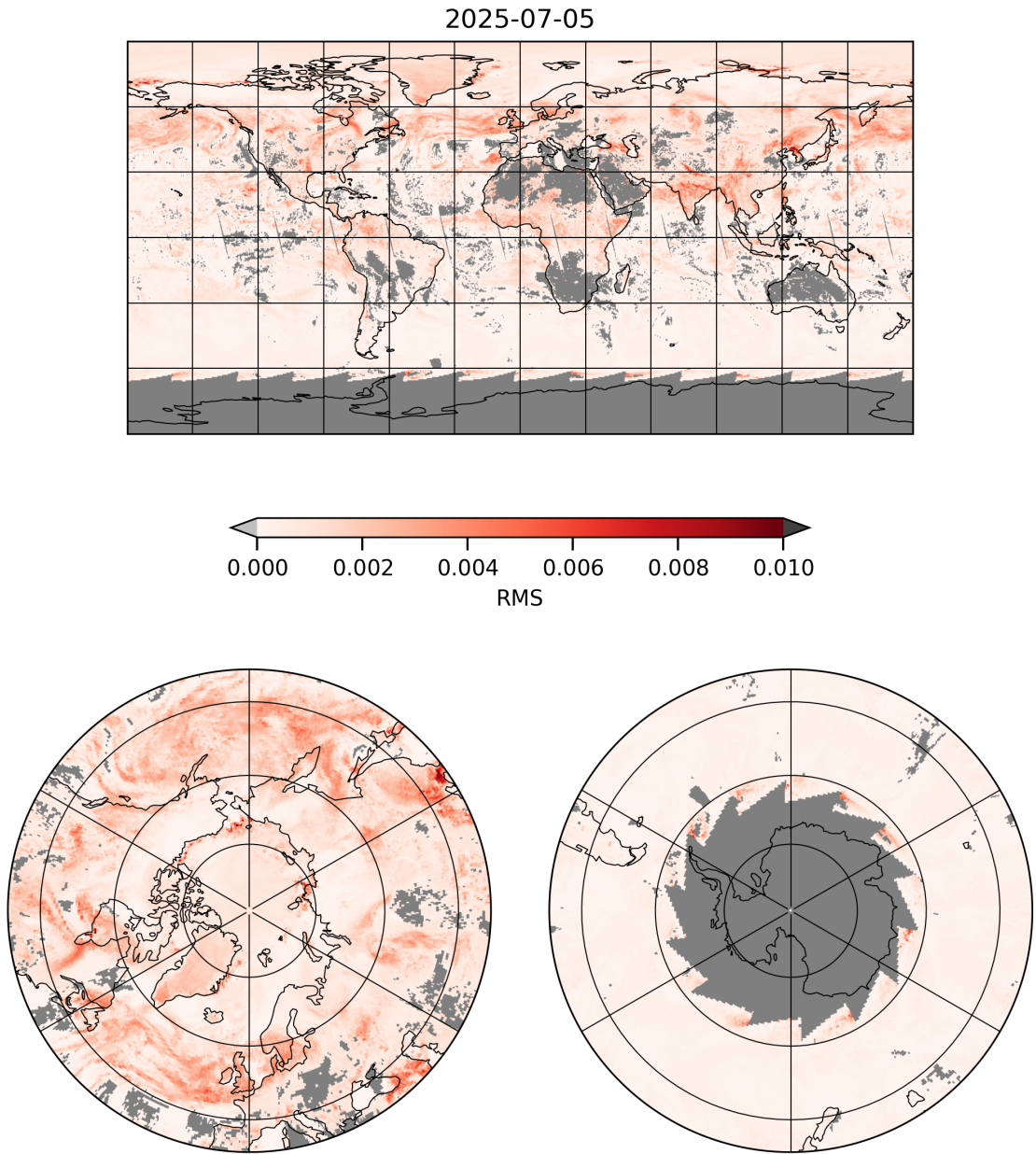


Figure 14: Map of “RMS” for 2025-07-04 to 2025-07-06

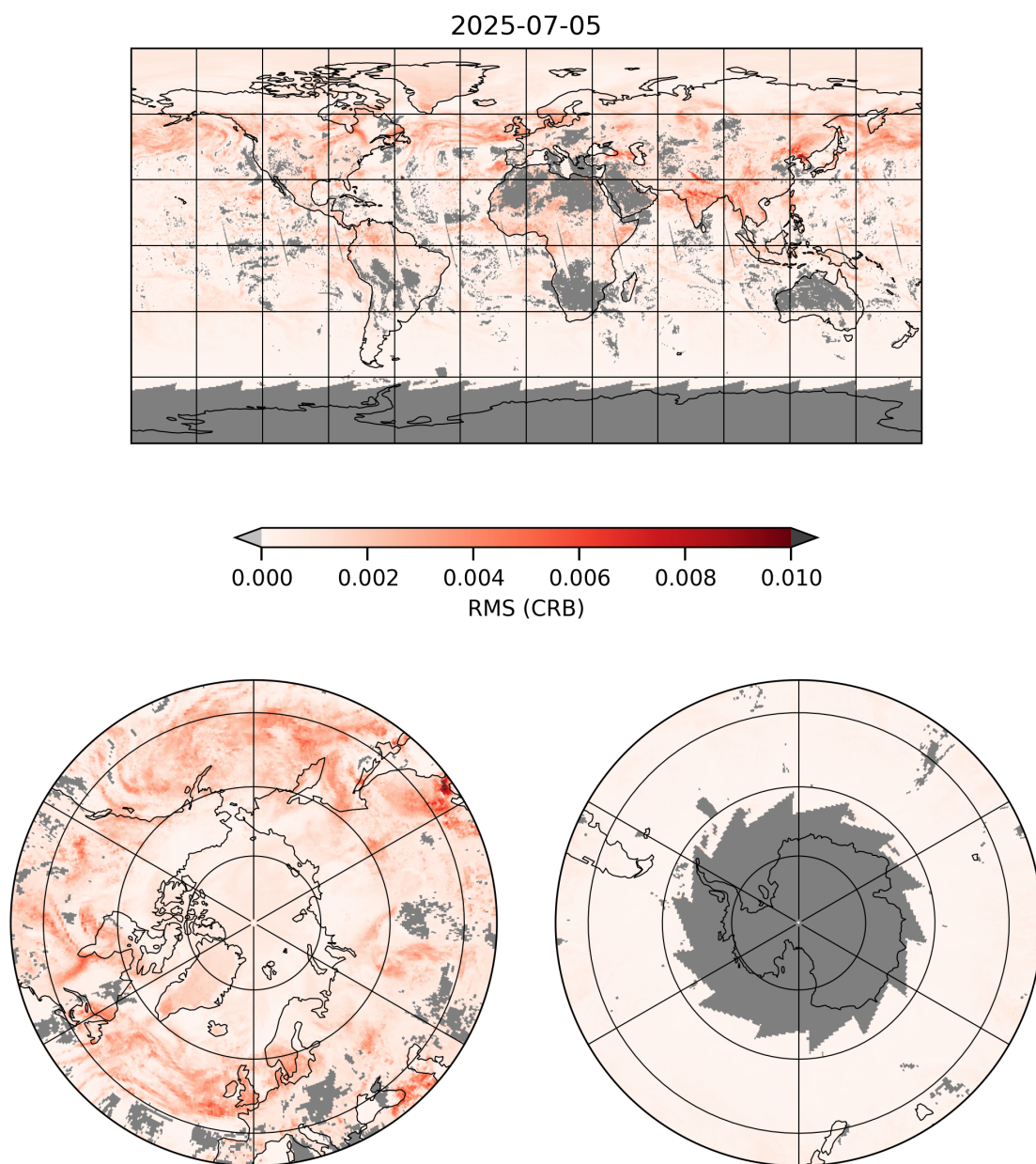


Figure 15: Map of “RMS (CRB)” for 2025-07-04 to 2025-07-06

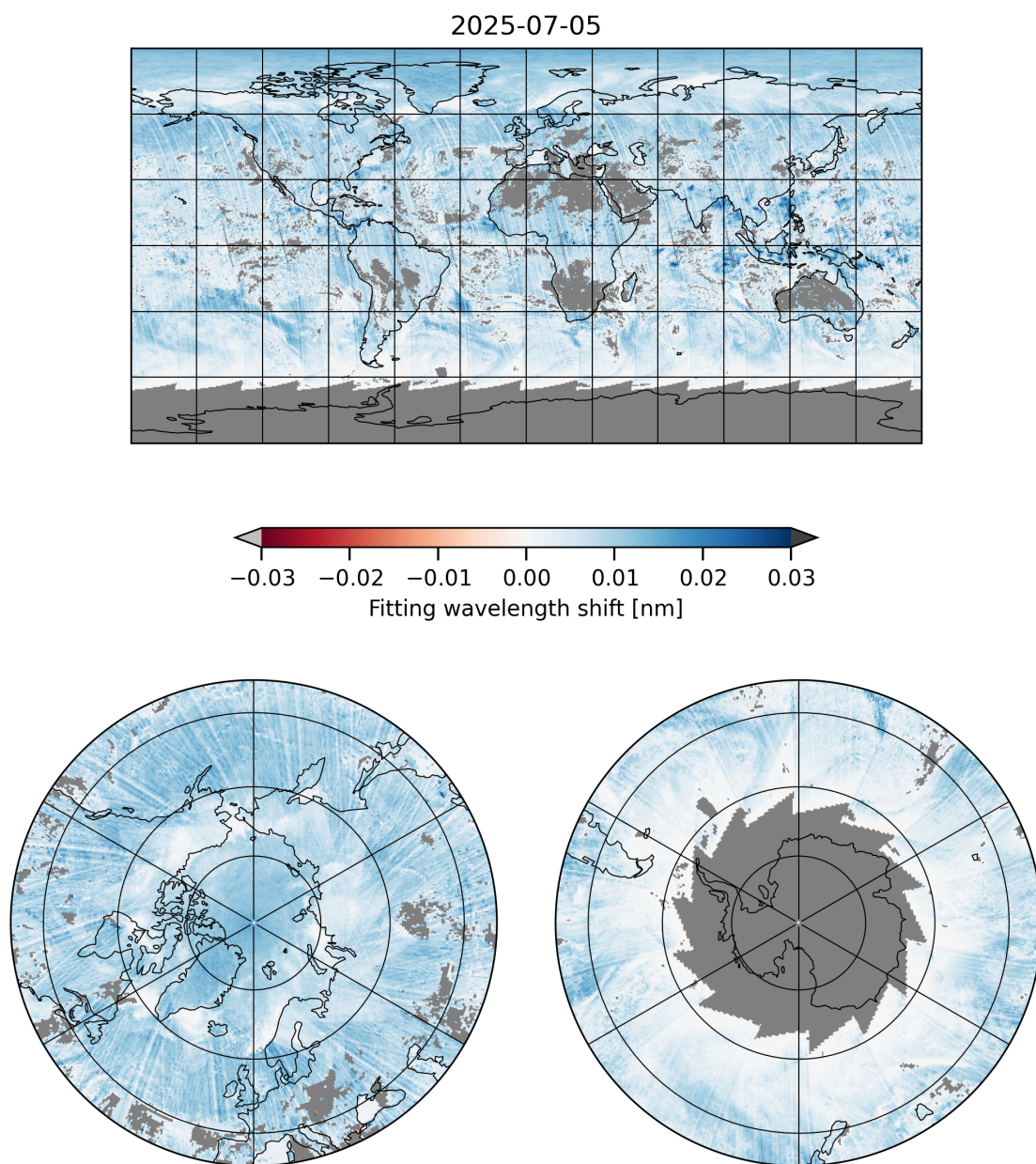


Figure 16: Map of “Fitting wavelength shift” for 2025-07-04 to 2025-07-06

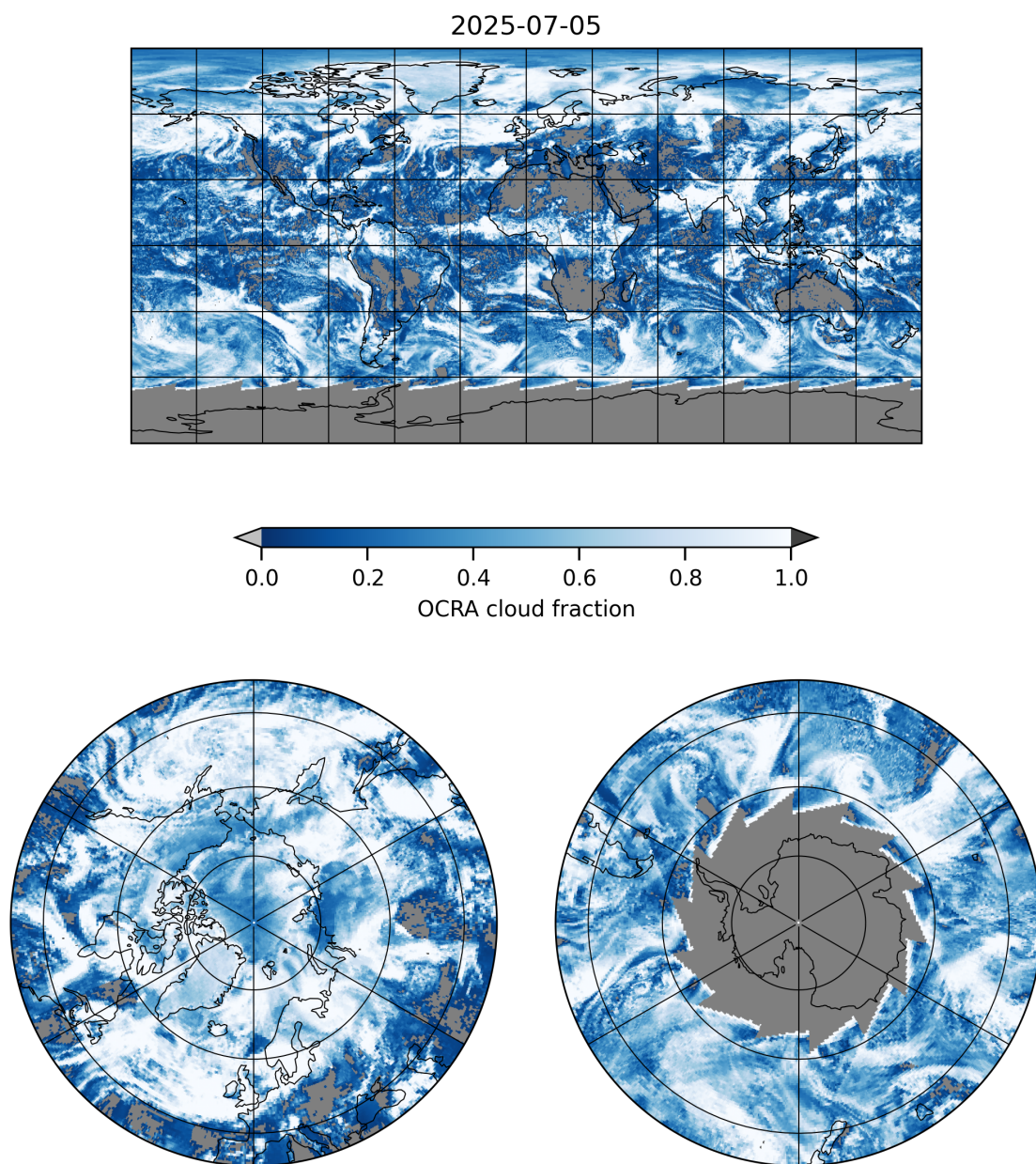


Figure 17: Map of “OCRA cloud fraction” for 2025-07-04 to 2025-07-06

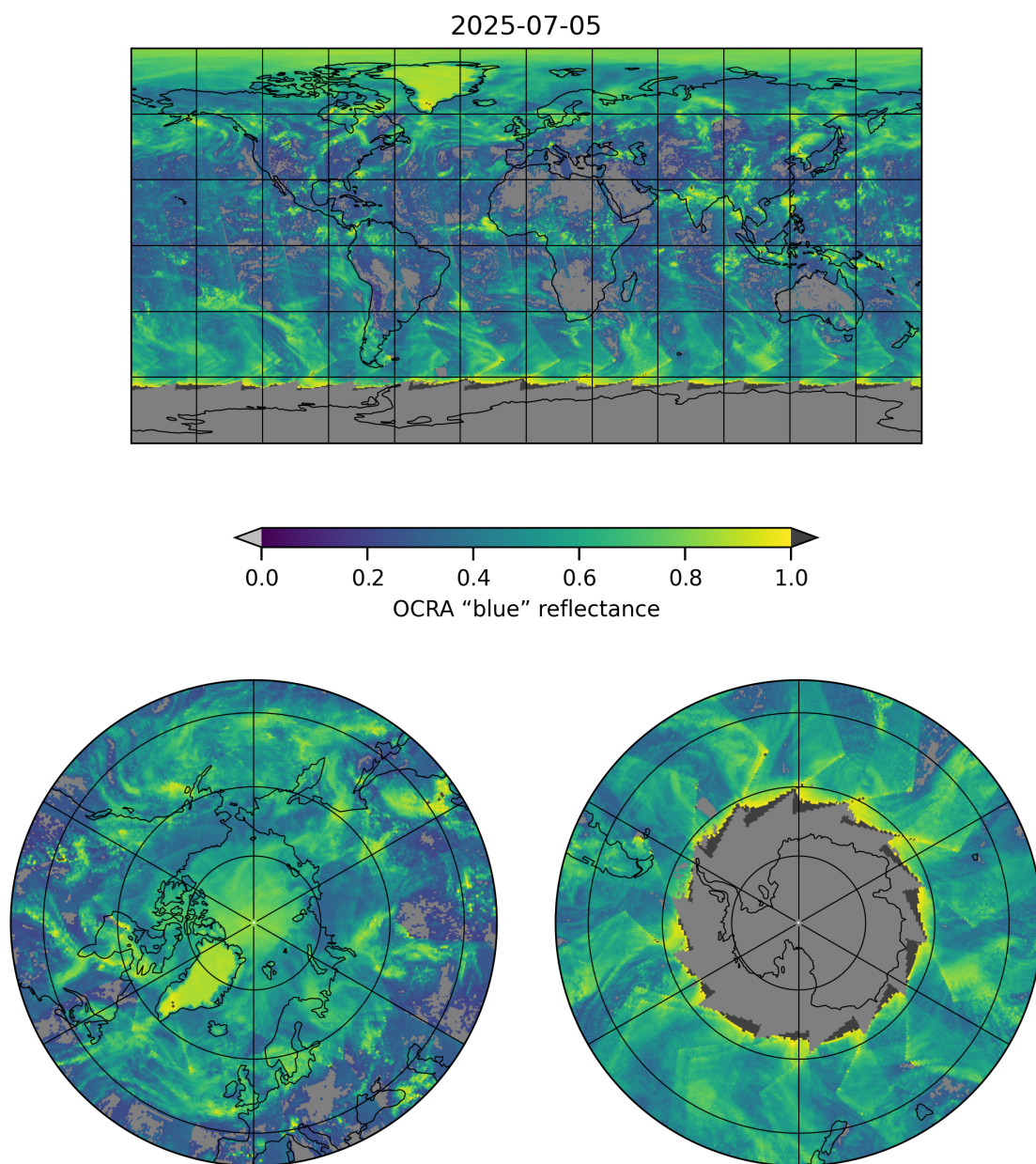


Figure 18: Map of "OCRA "blue" reflectance" for 2025-07-04 to 2025-07-06

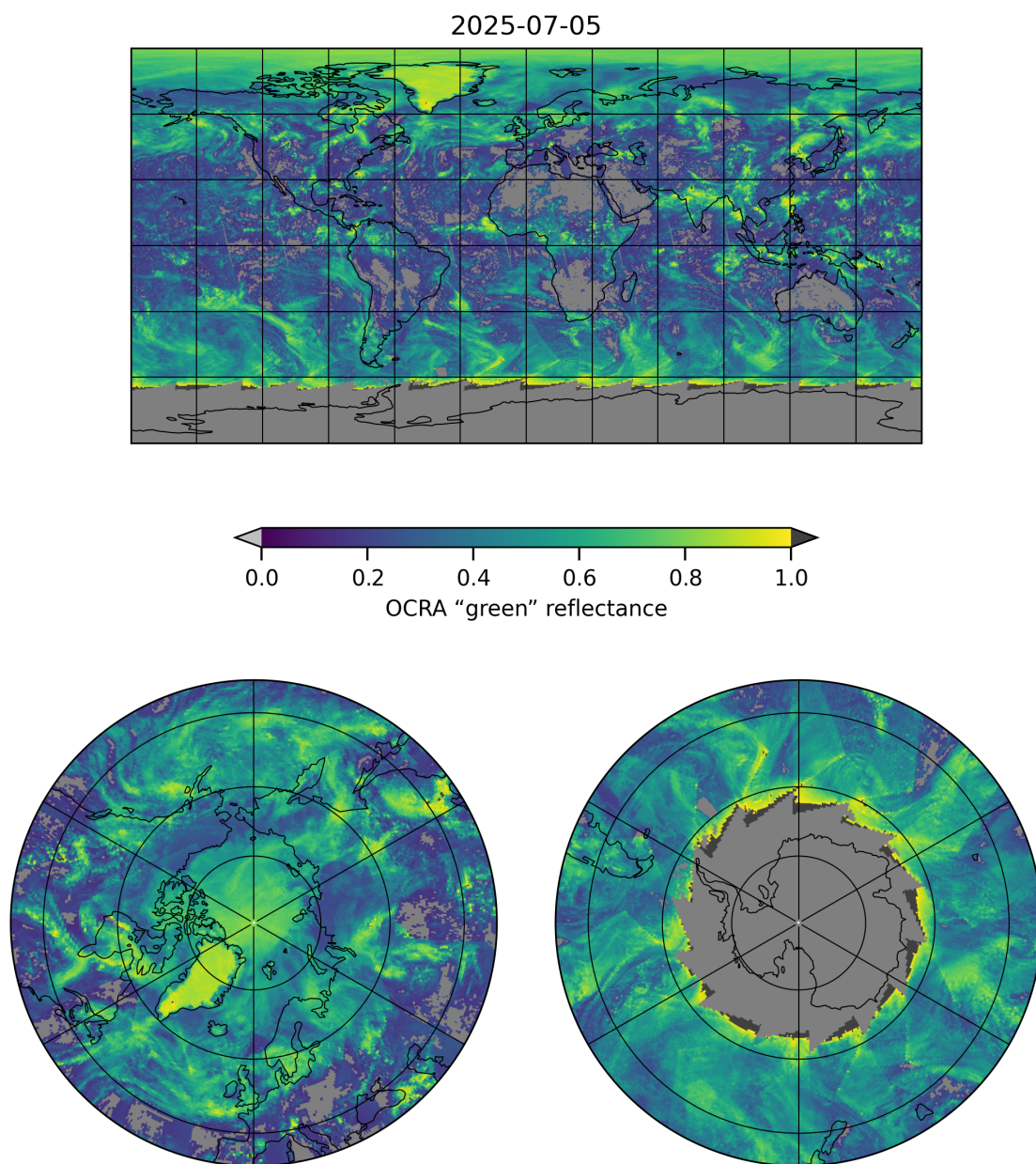


Figure 19: Map of "OCRA "green" reflectance" for 2025-07-04 to 2025-07-06

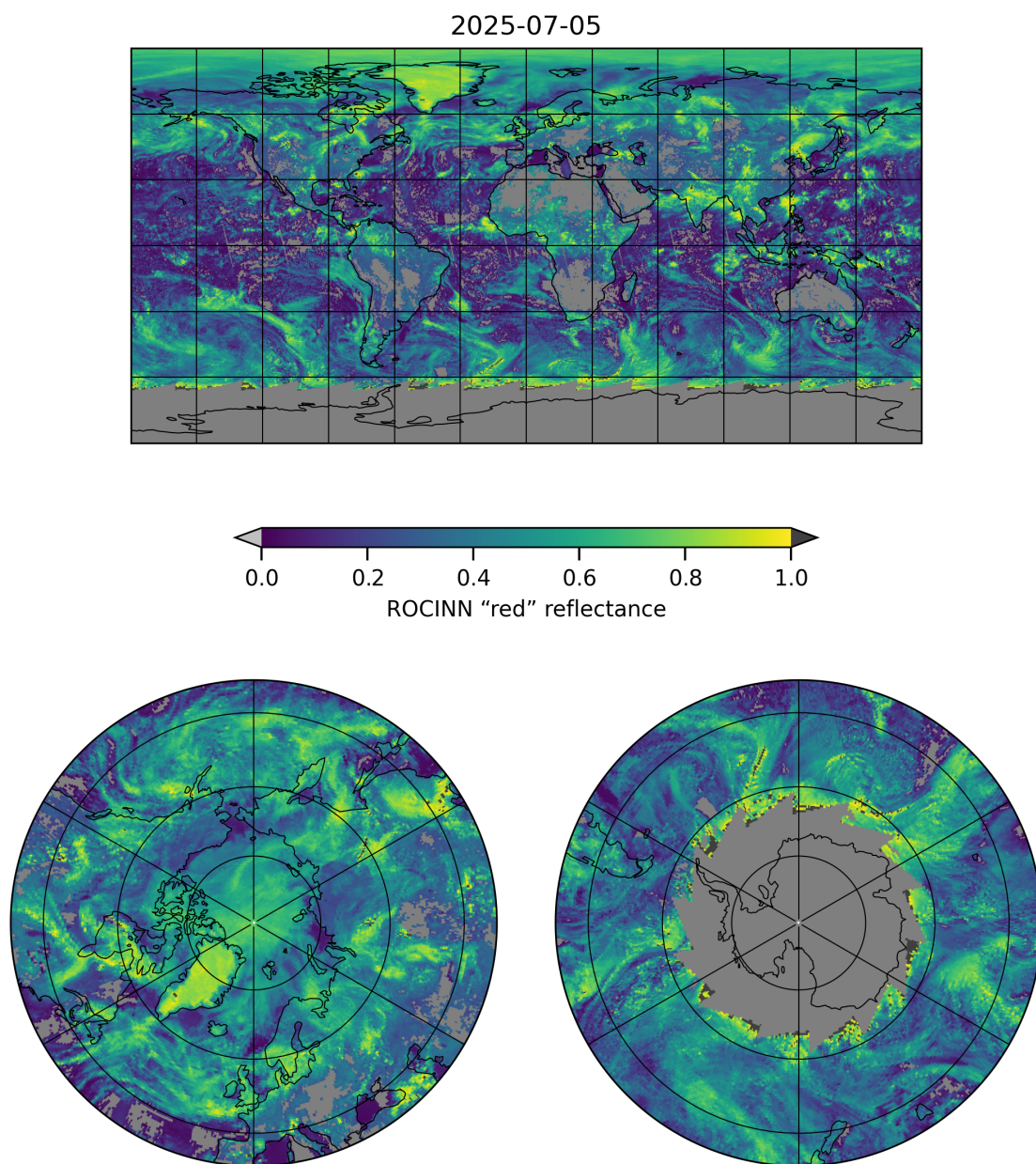


Figure 20: Map of "ROCINN "red" reflectance" for 2025-07-04 to 2025-07-06

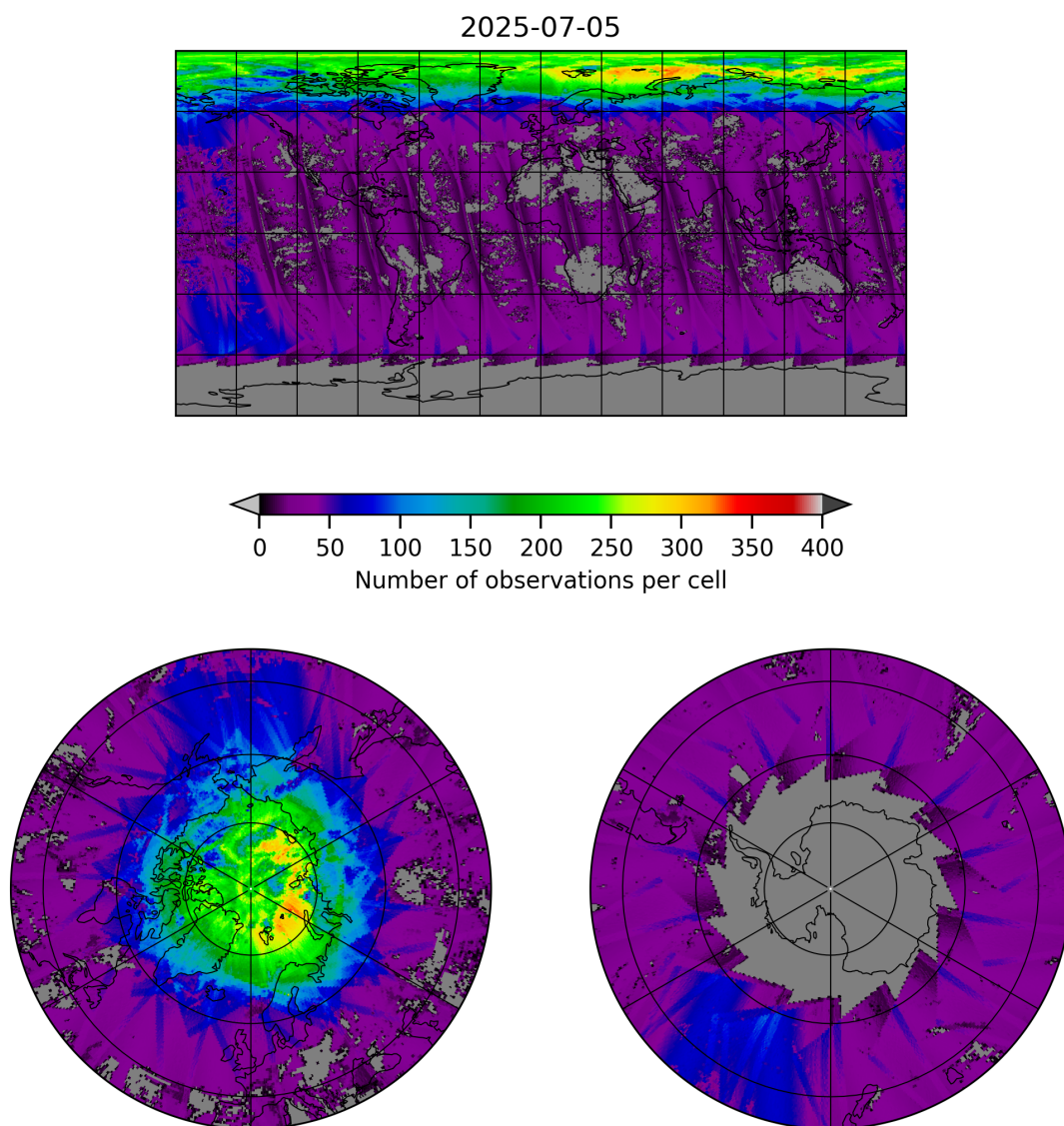


Figure 21: Map of the number of observations for 2025-07-04 to 2025-07-06

7 Zonal average

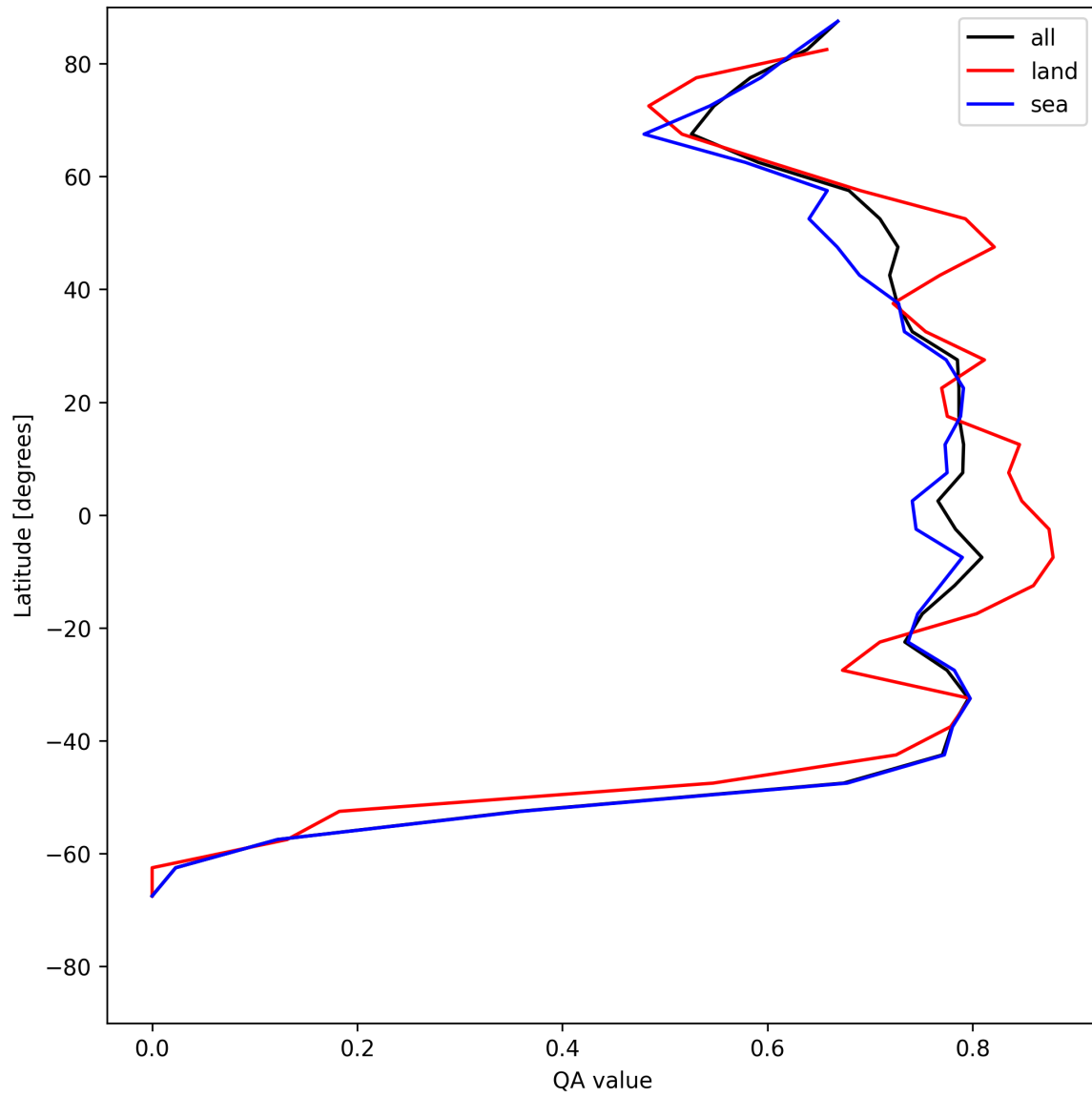


Figure 22: Zonal average of “QA value” for 2025-07-04 to 2025-07-06.

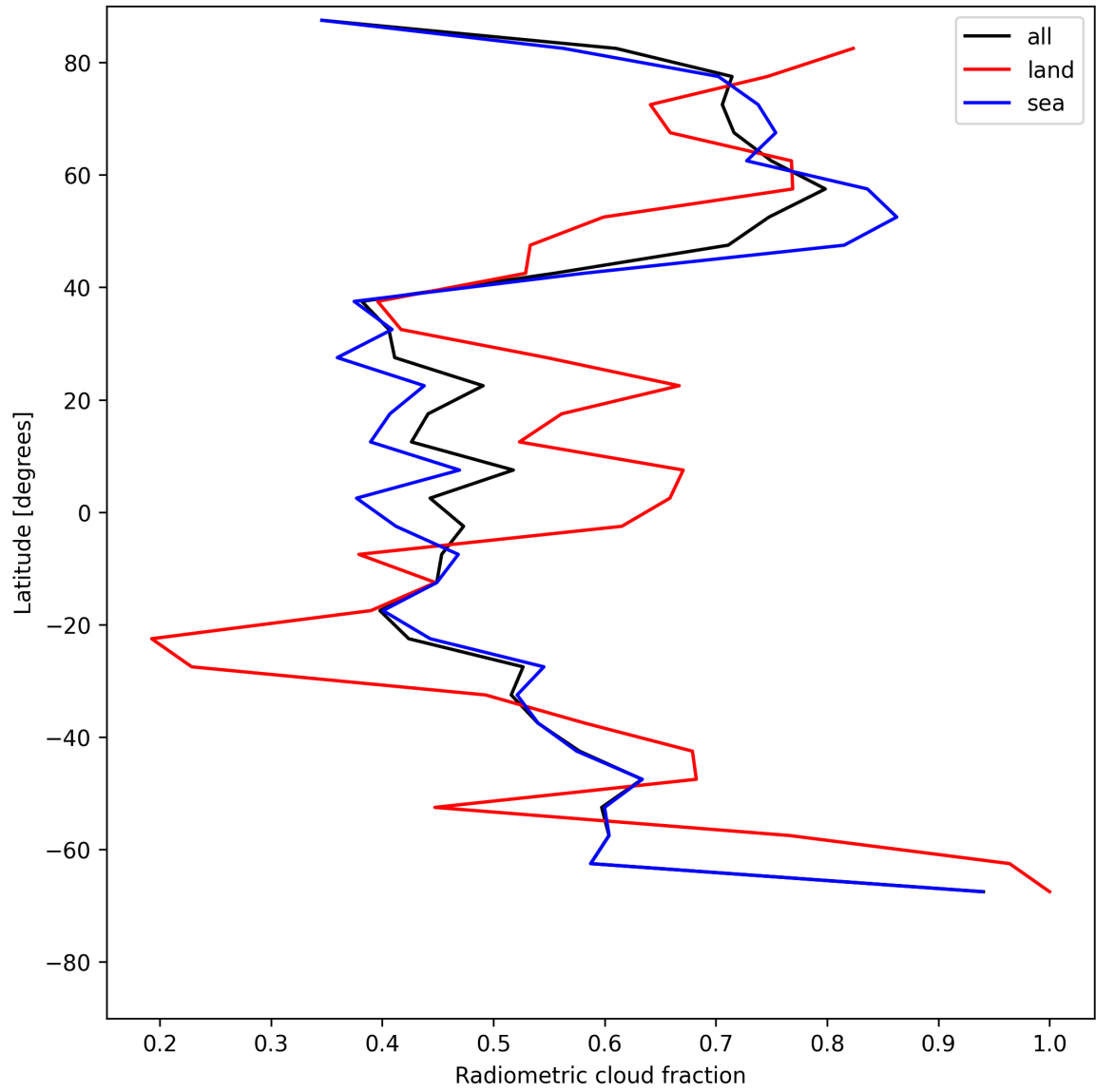


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-07-04 to 2025-07-06.

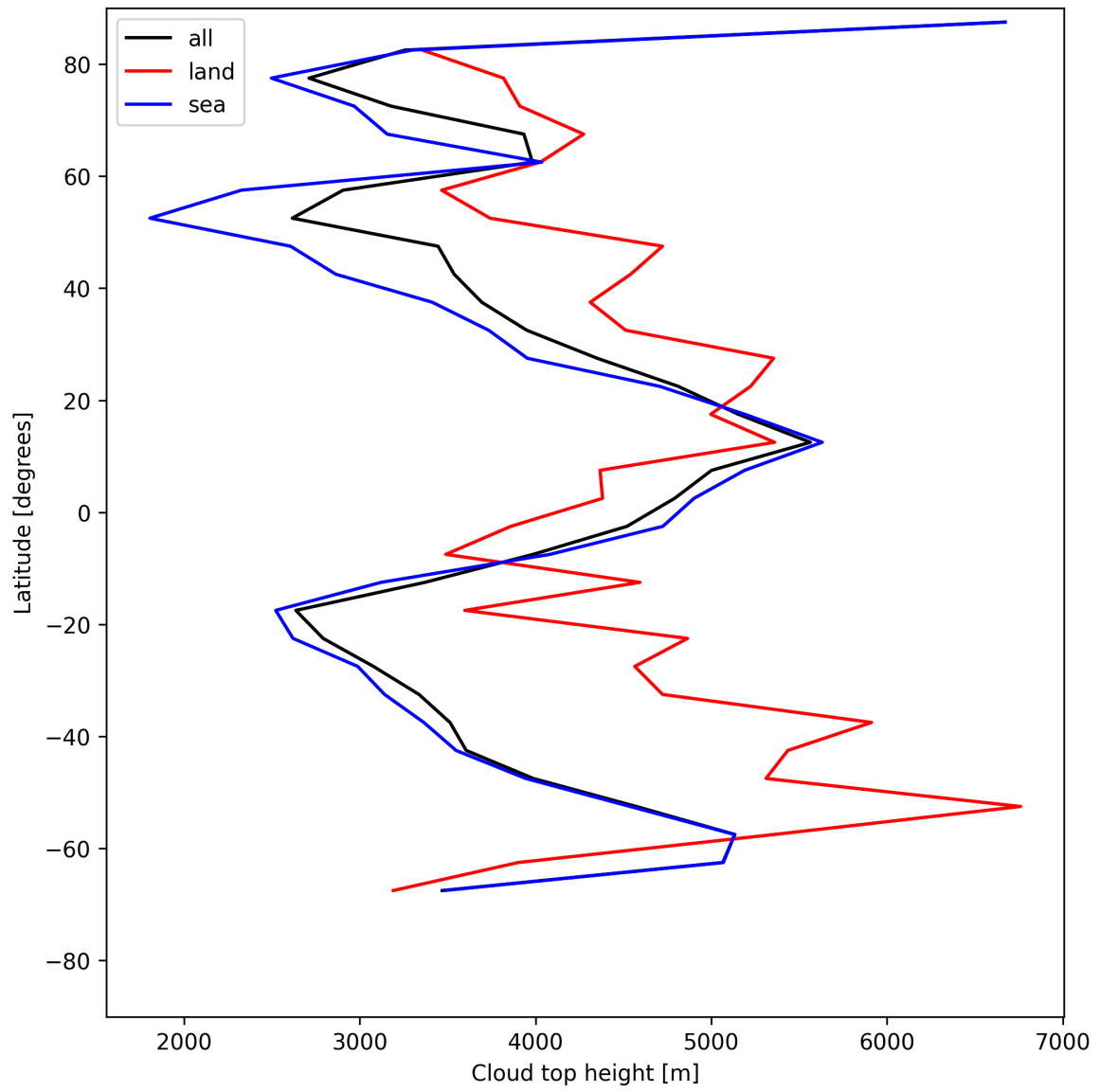


Figure 24: Zonal average of “Cloud top height” for 2025-07-04 to 2025-07-06.

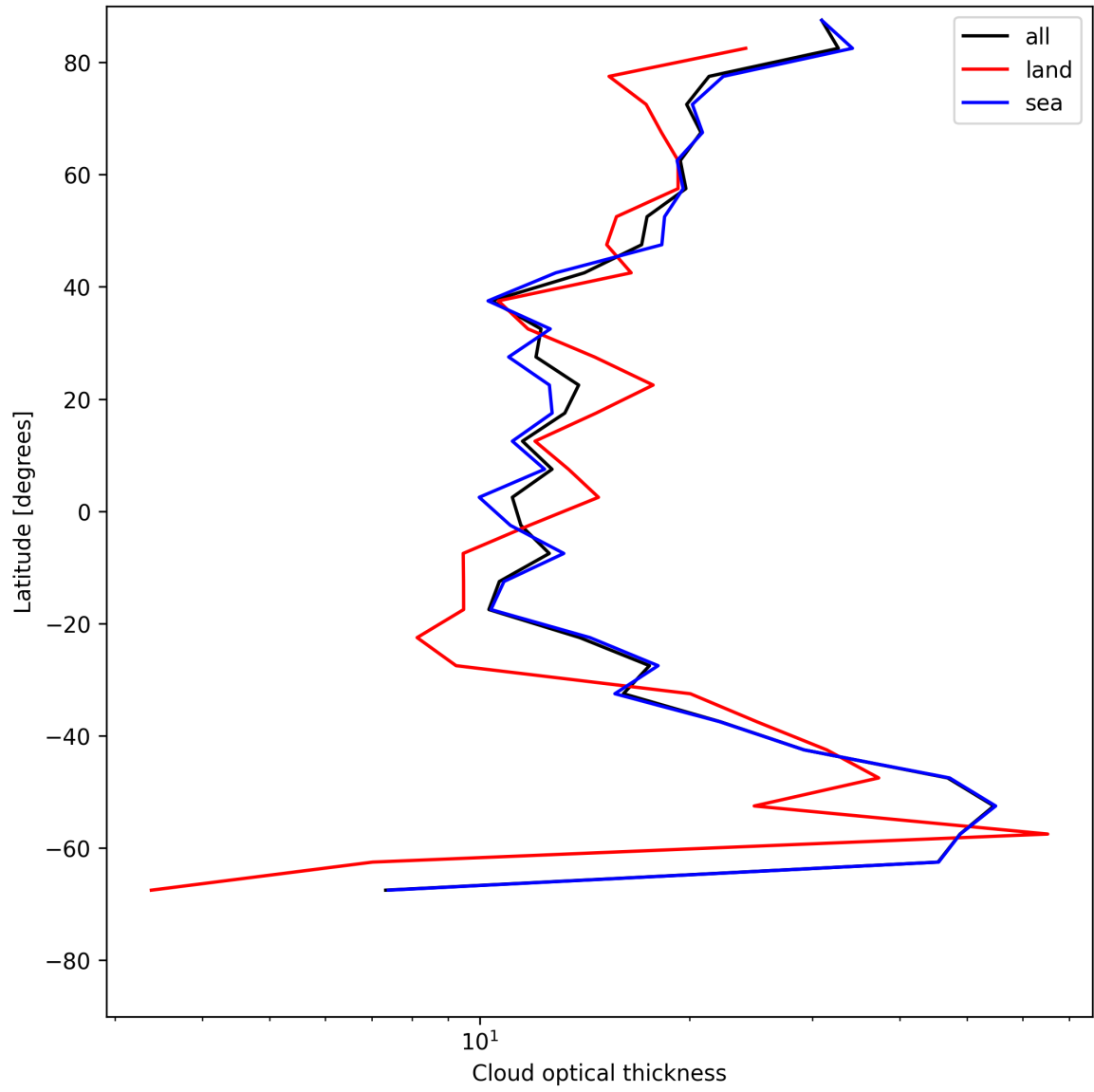


Figure 25: Zonal average of “Cloud optical thickness” for 2025-07-04 to 2025-07-06.

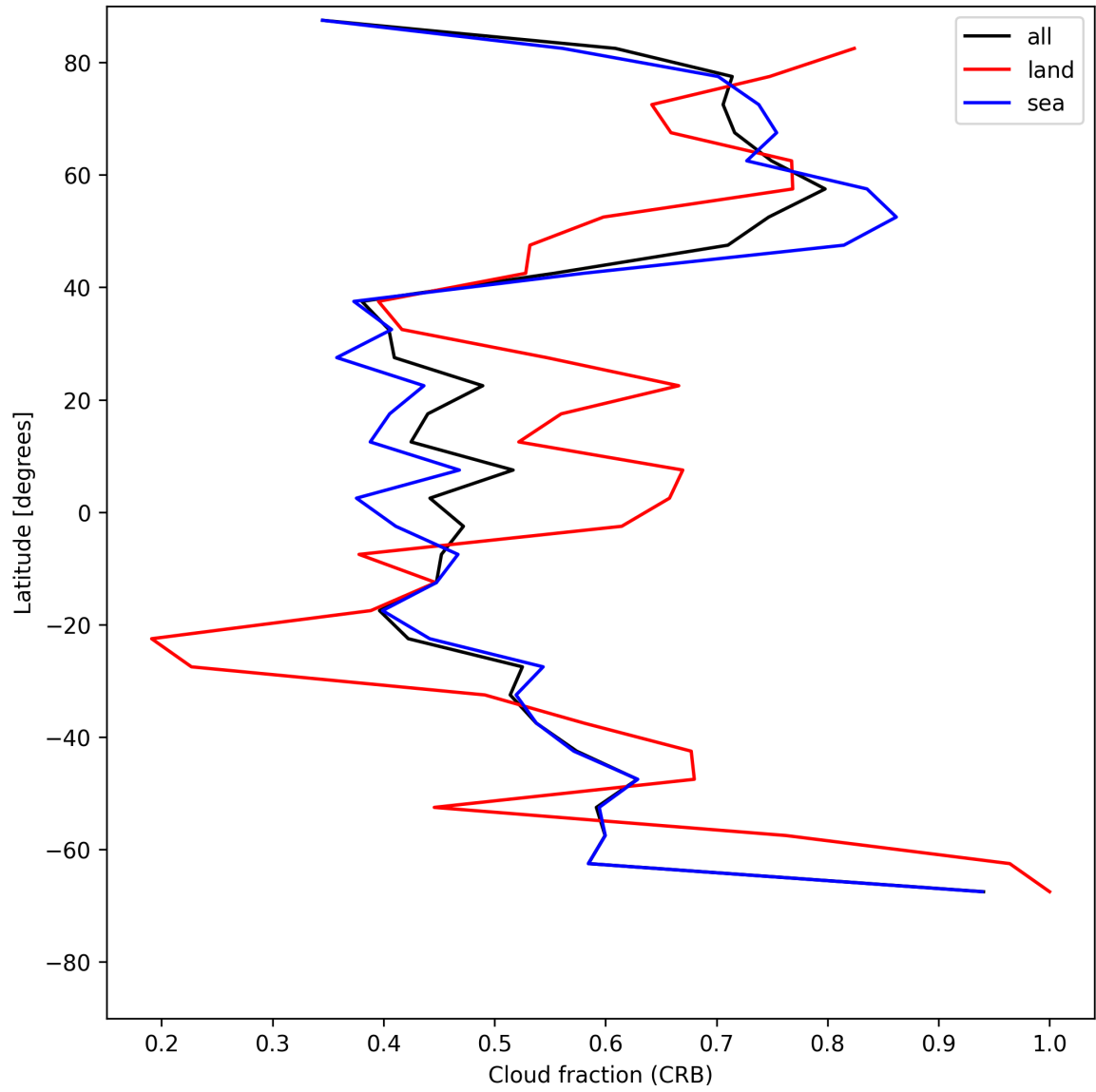


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-07-04 to 2025-07-06.

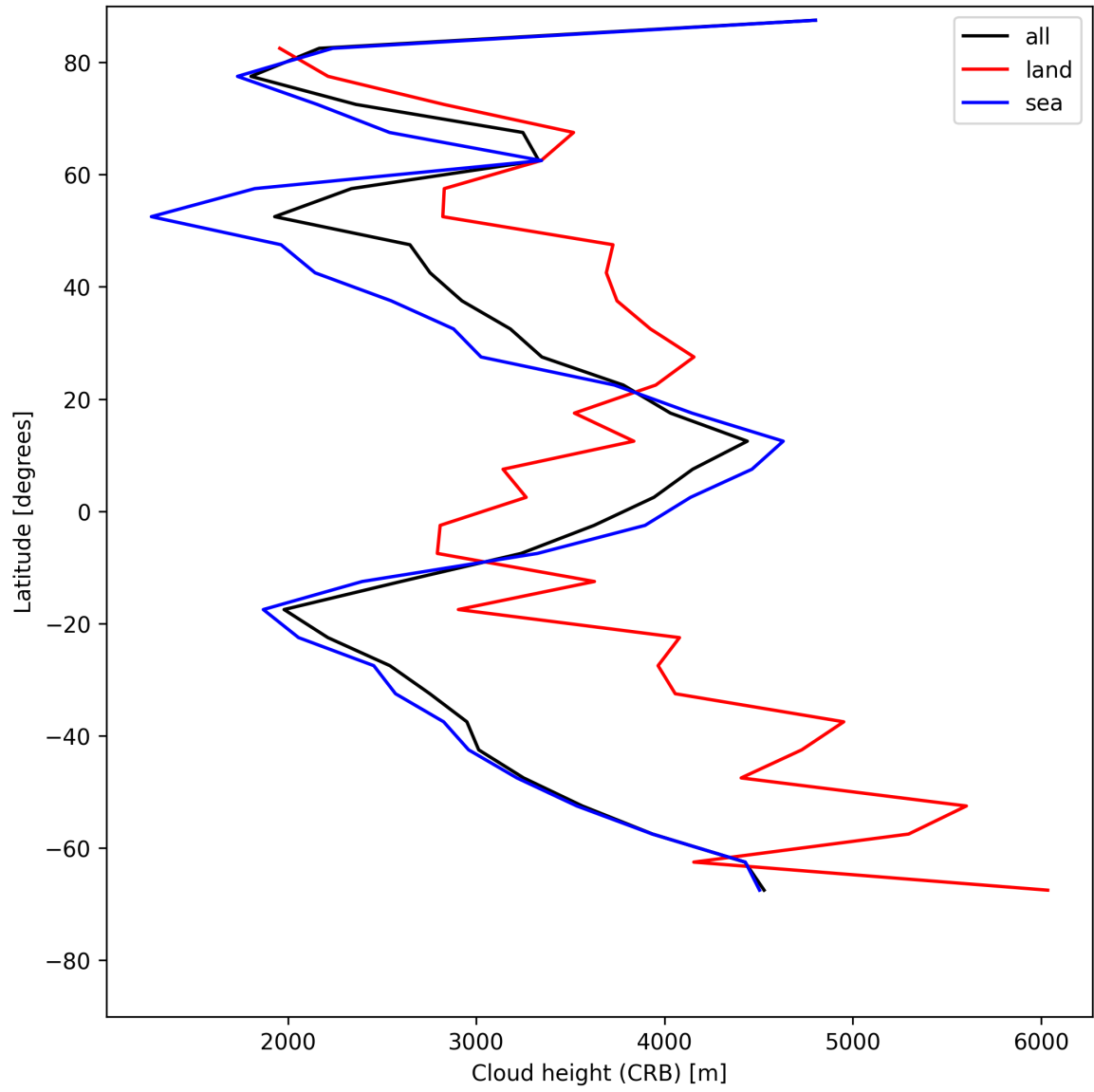


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-07-04 to 2025-07-06.

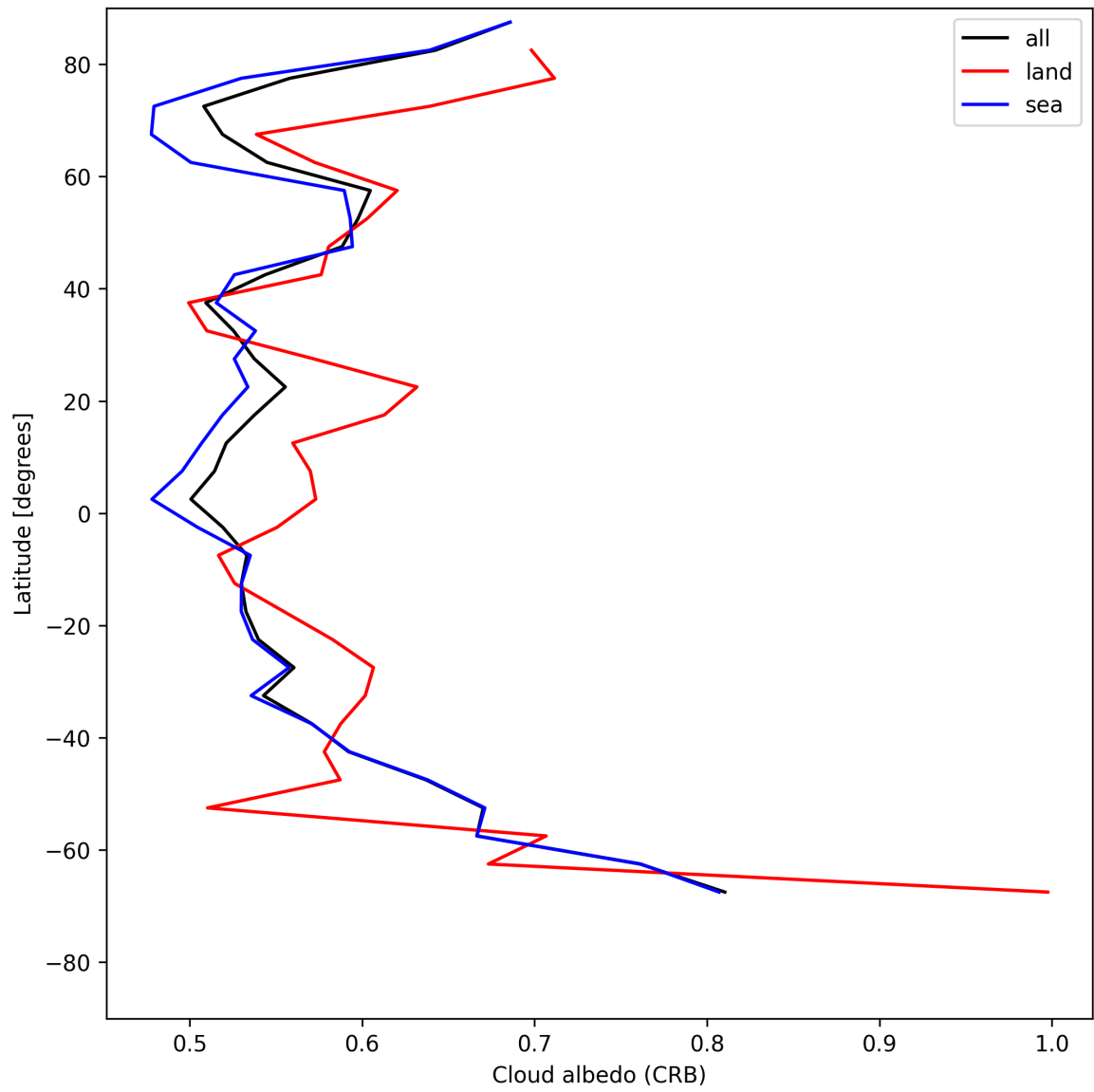


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-07-04 to 2025-07-06.

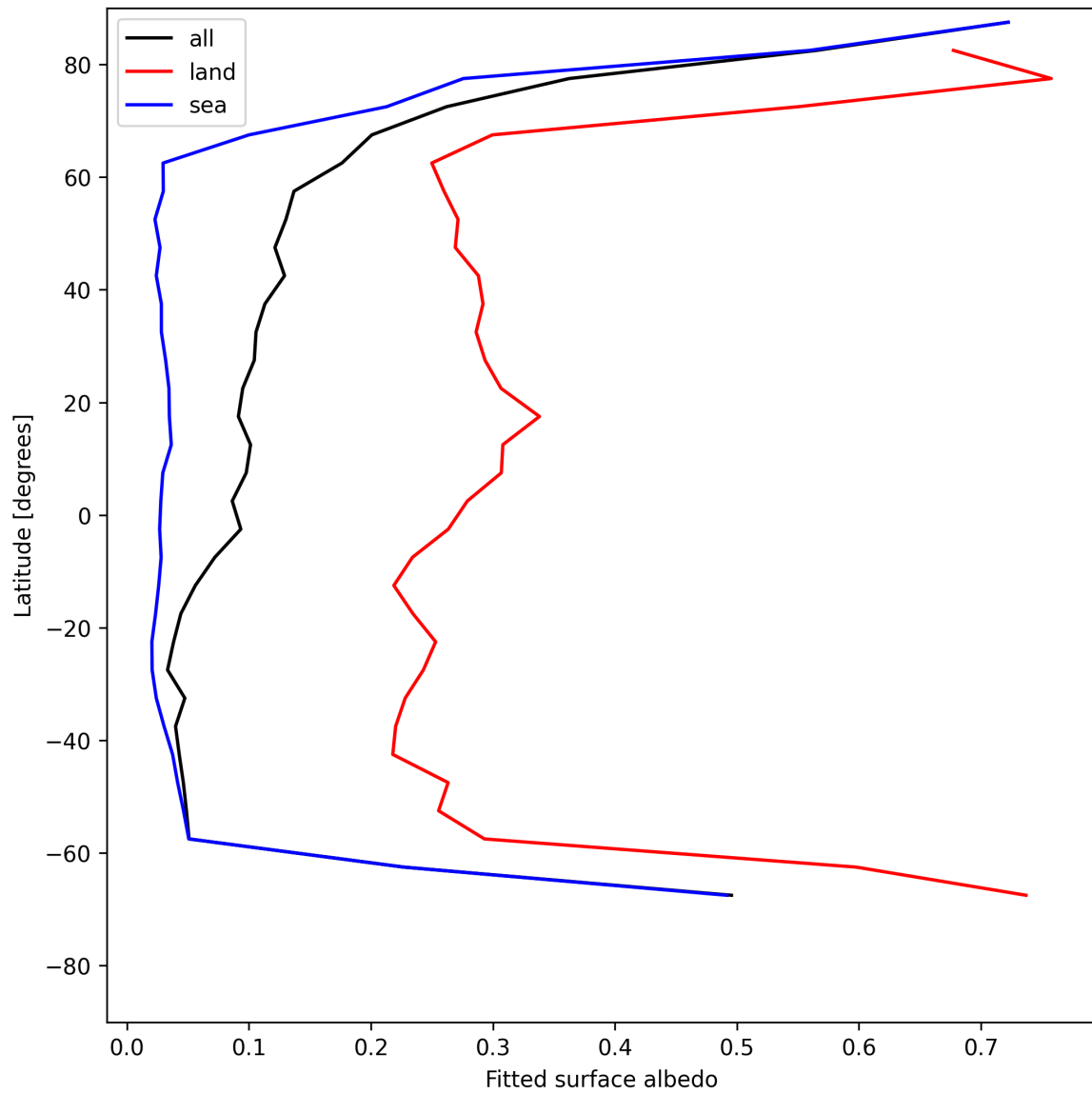


Figure 29: Zonal average of “Fitted surface albedo” for 2025-07-04 to 2025-07-06.

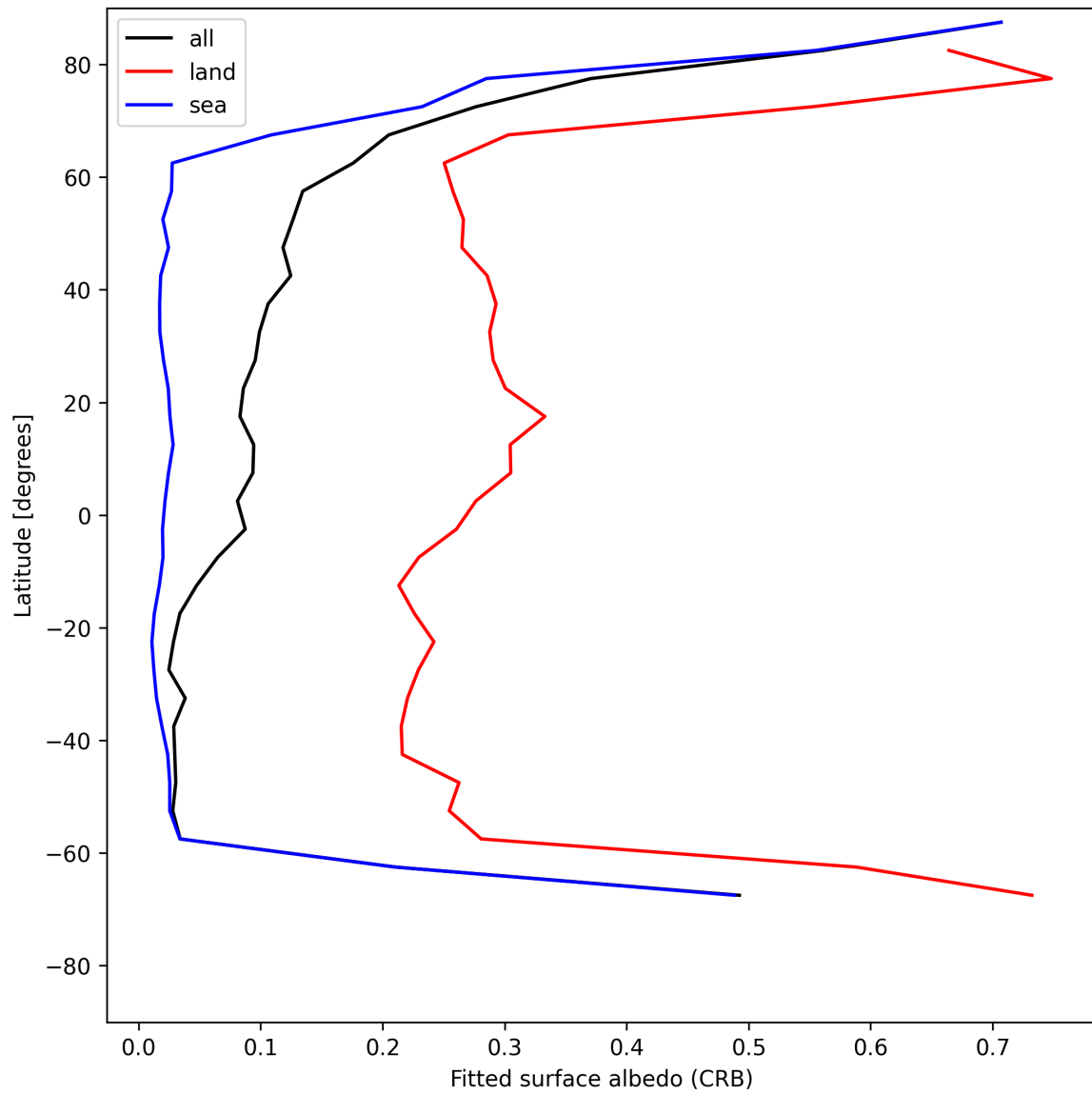


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-07-04 to 2025-07-06.

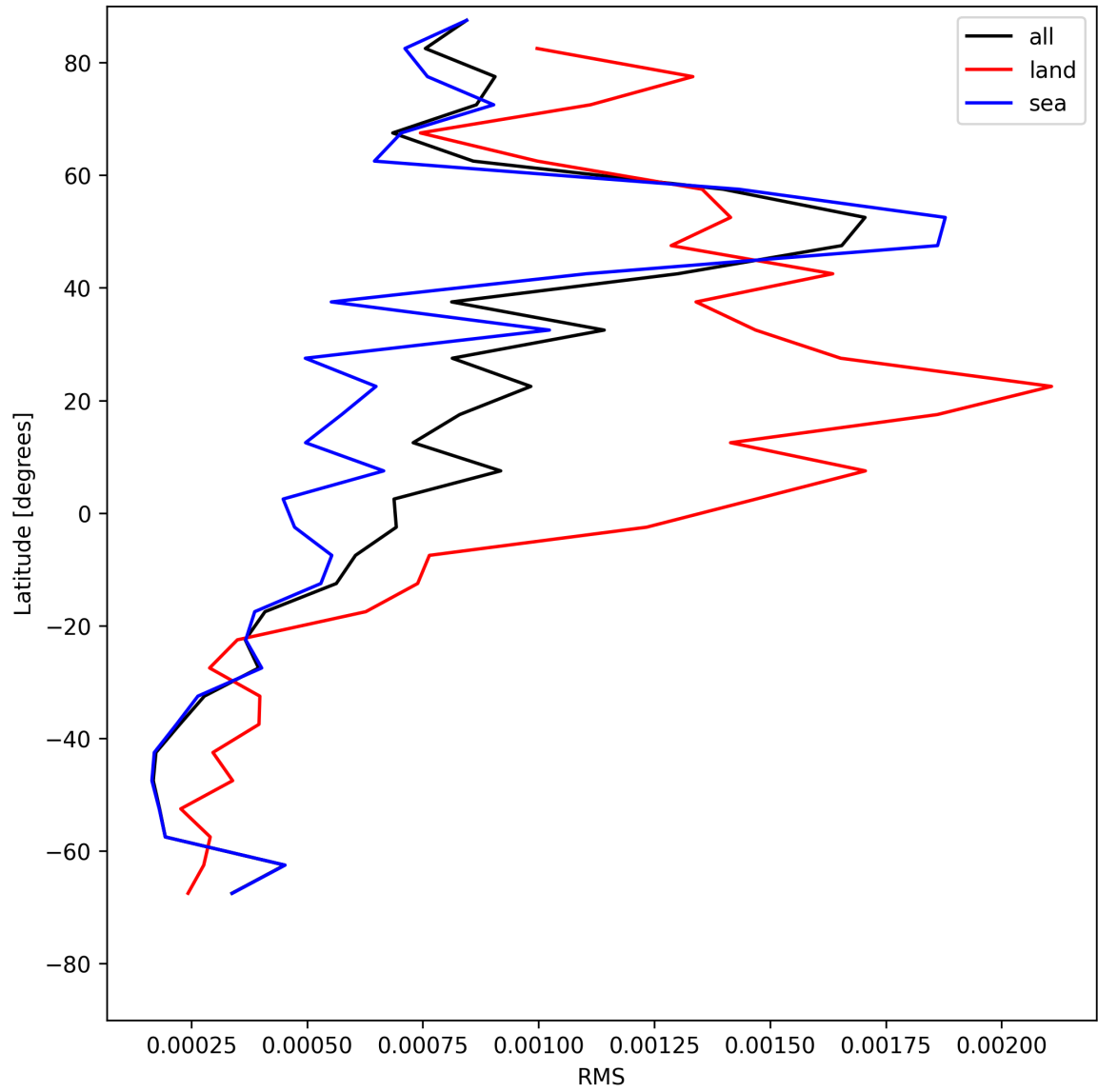


Figure 31: Zonal average of “RMS” for 2025-07-04 to 2025-07-06.

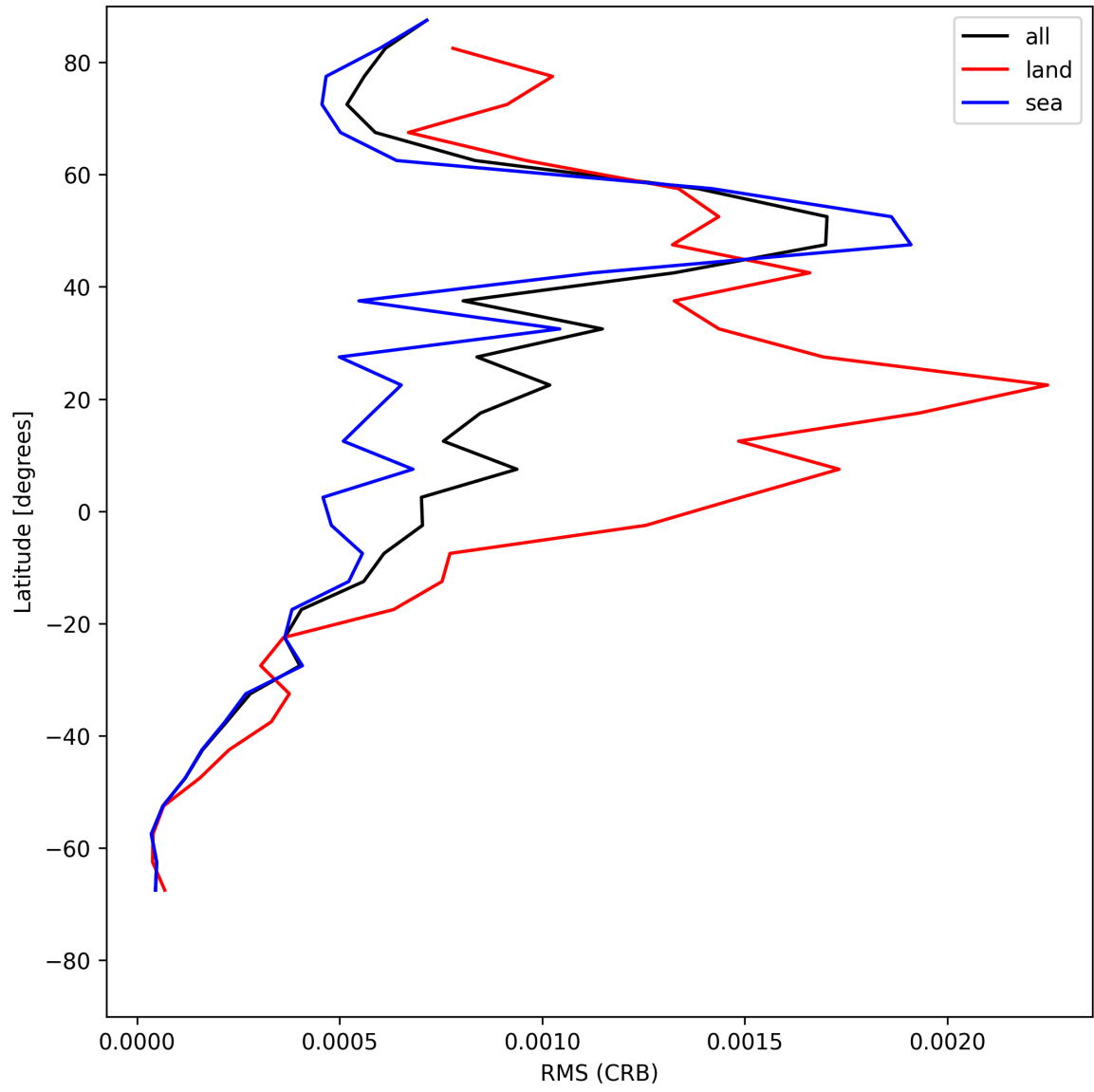


Figure 32: Zonal average of “RMS (CRB)” for 2025-07-04 to 2025-07-06.

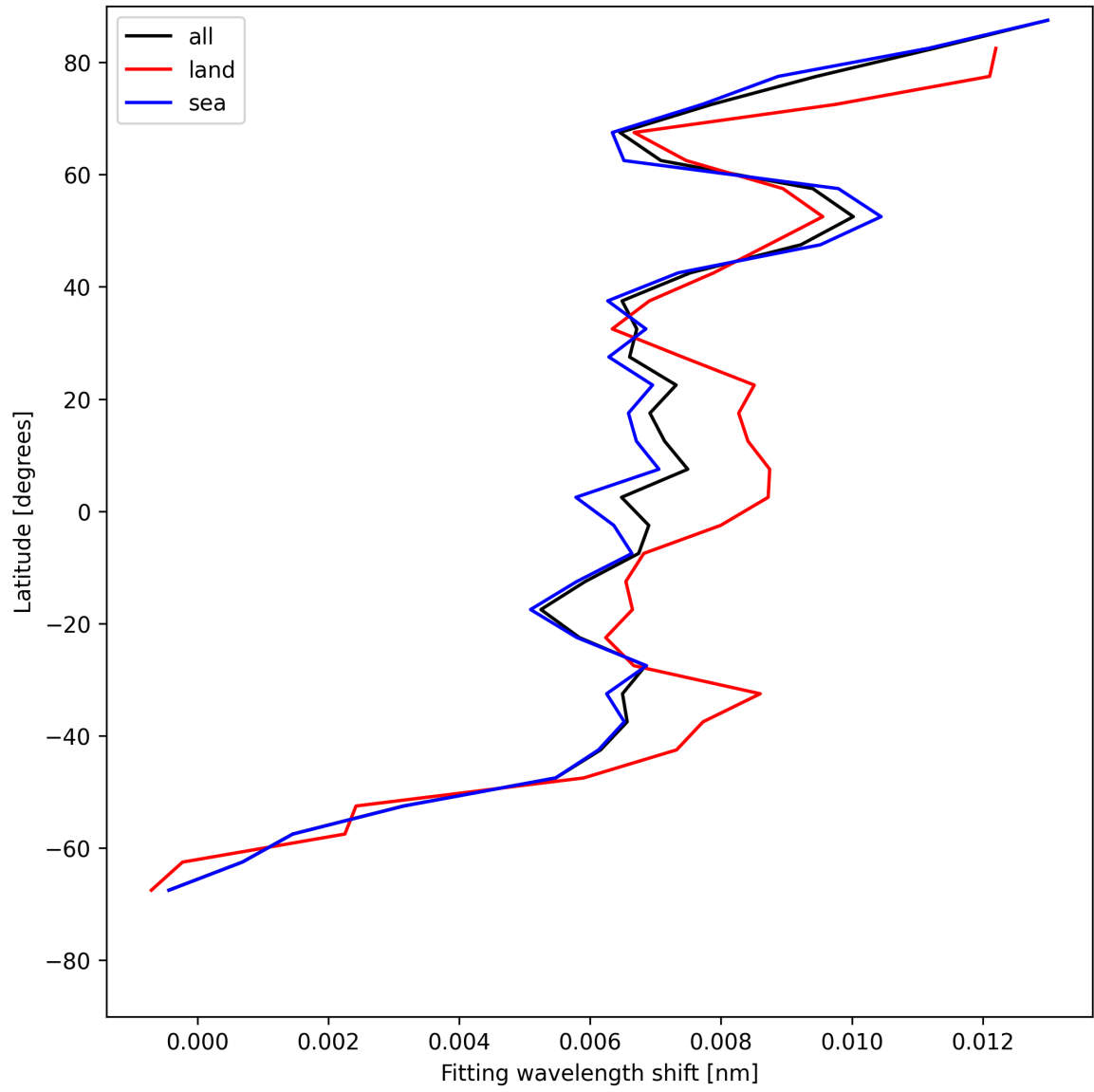


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-07-04 to 2025-07-06.

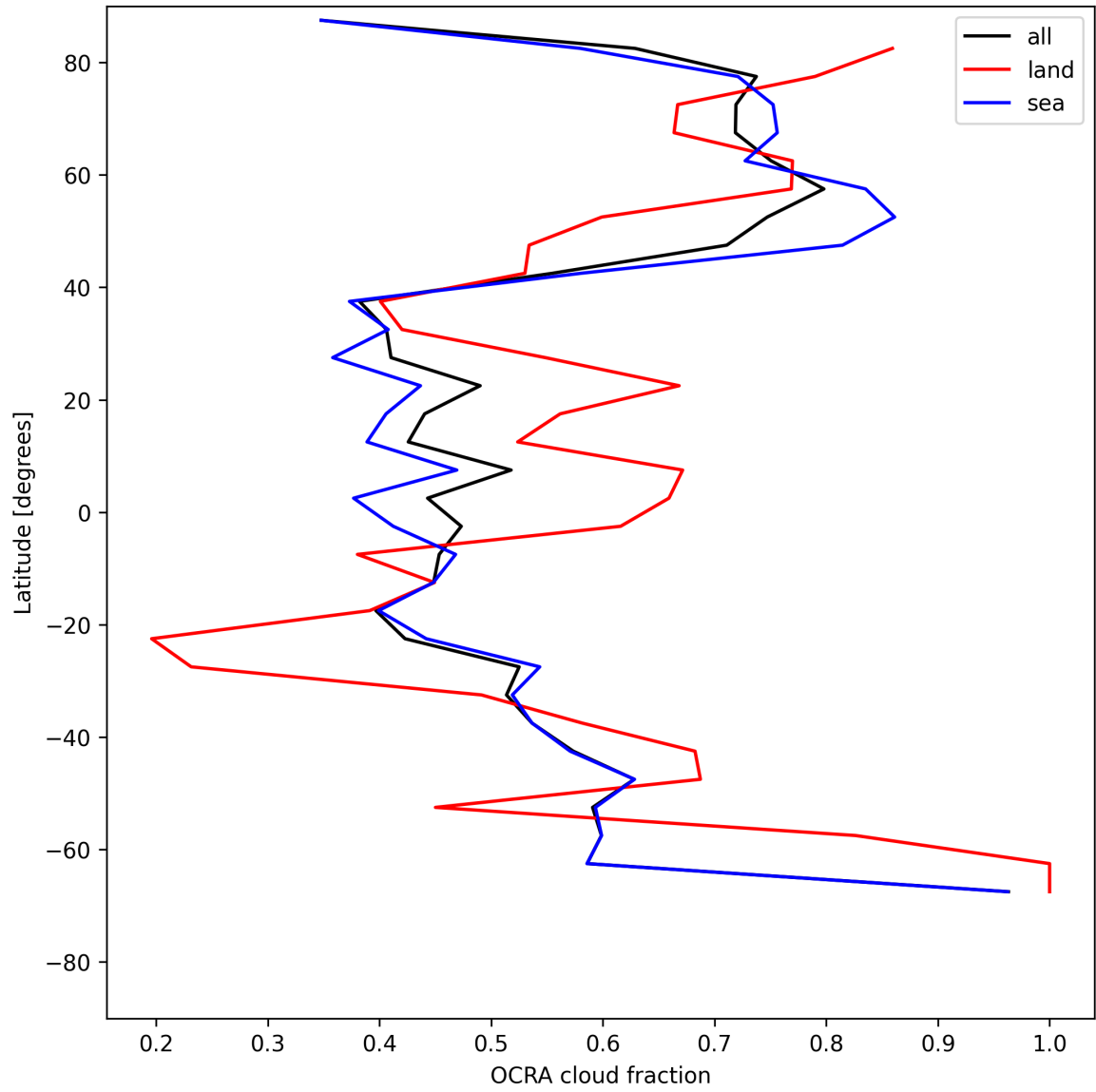


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-07-04 to 2025-07-06.

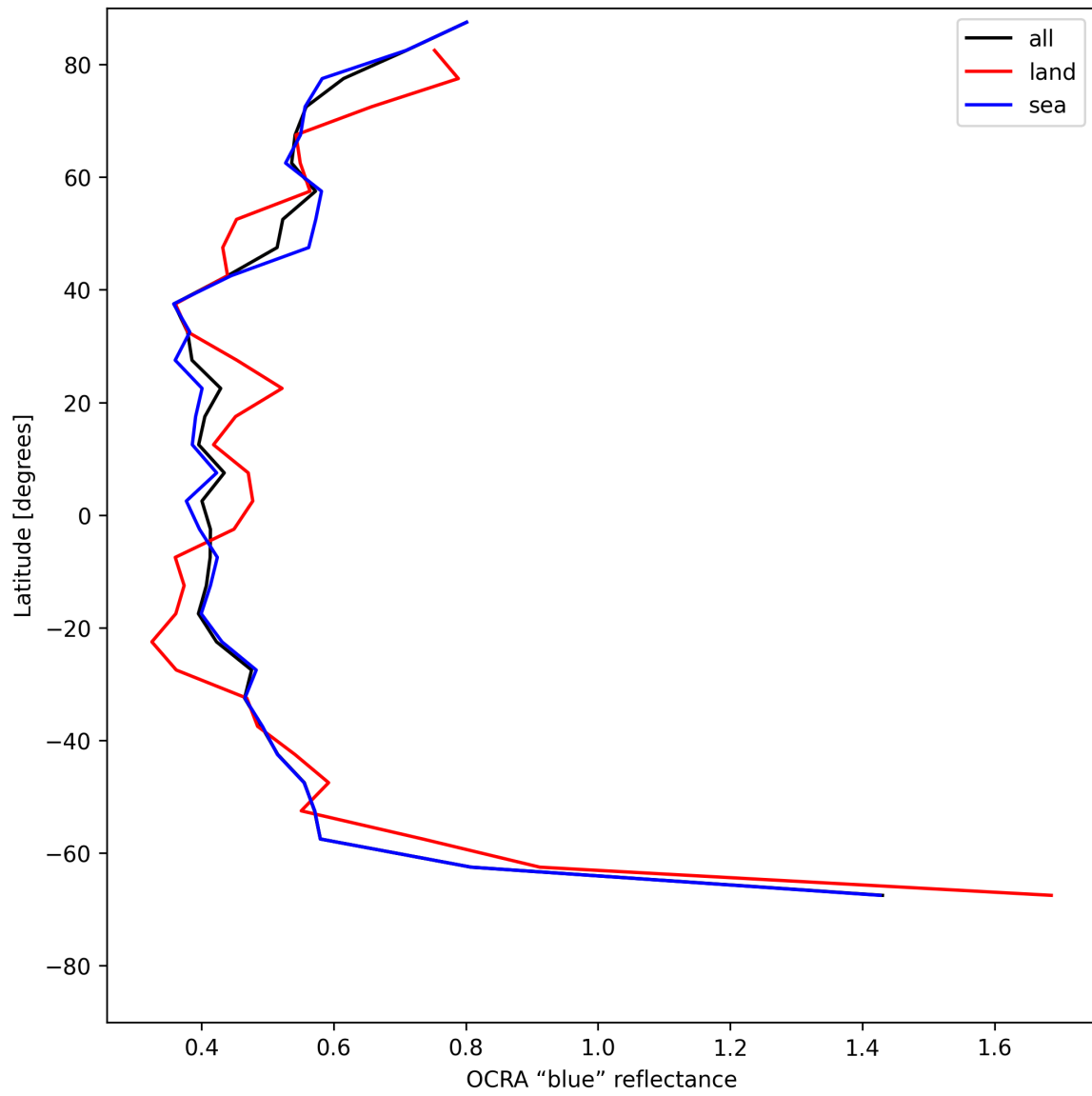


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-07-04 to 2025-07-06.

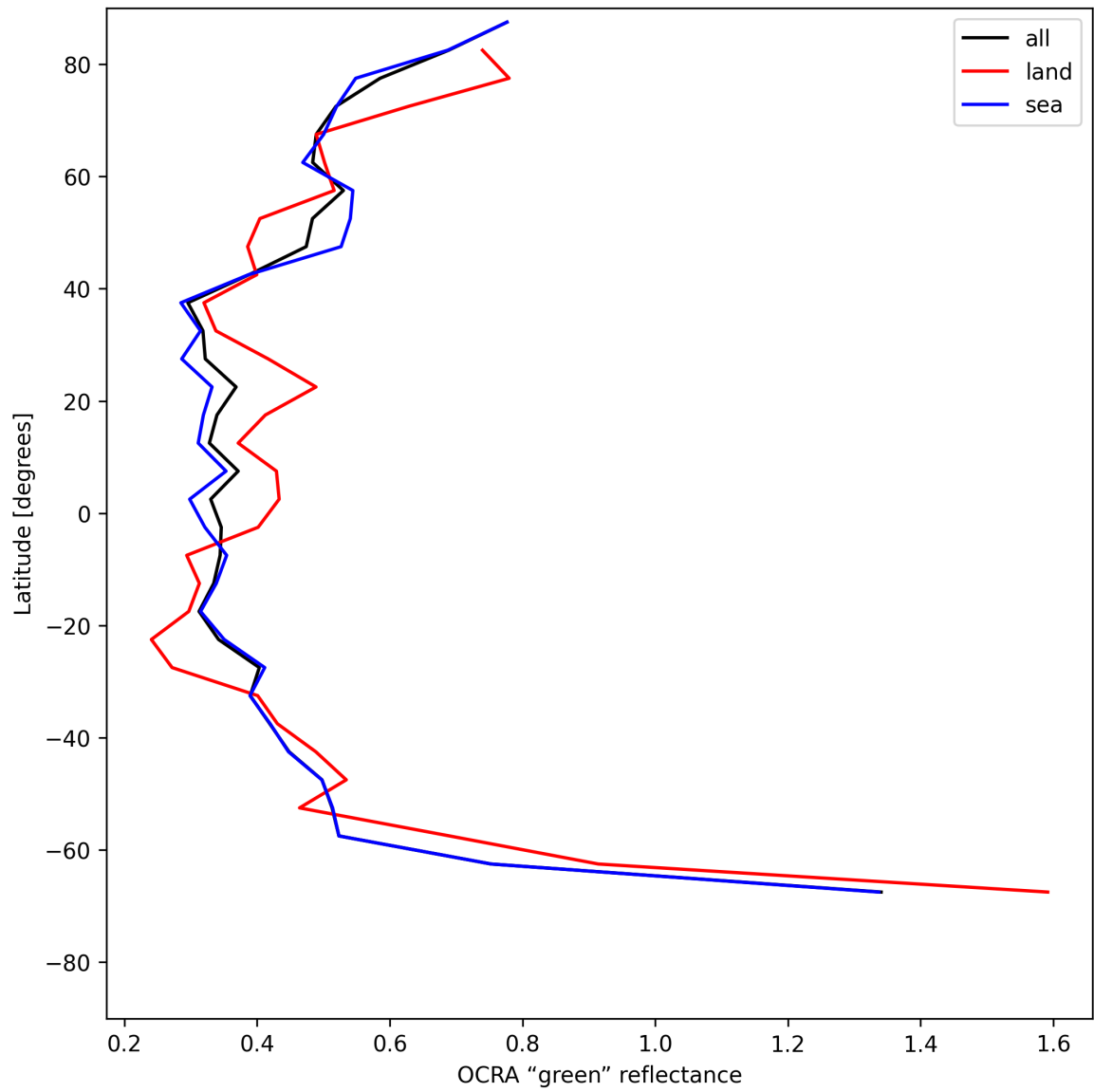


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-07-04 to 2025-07-06.

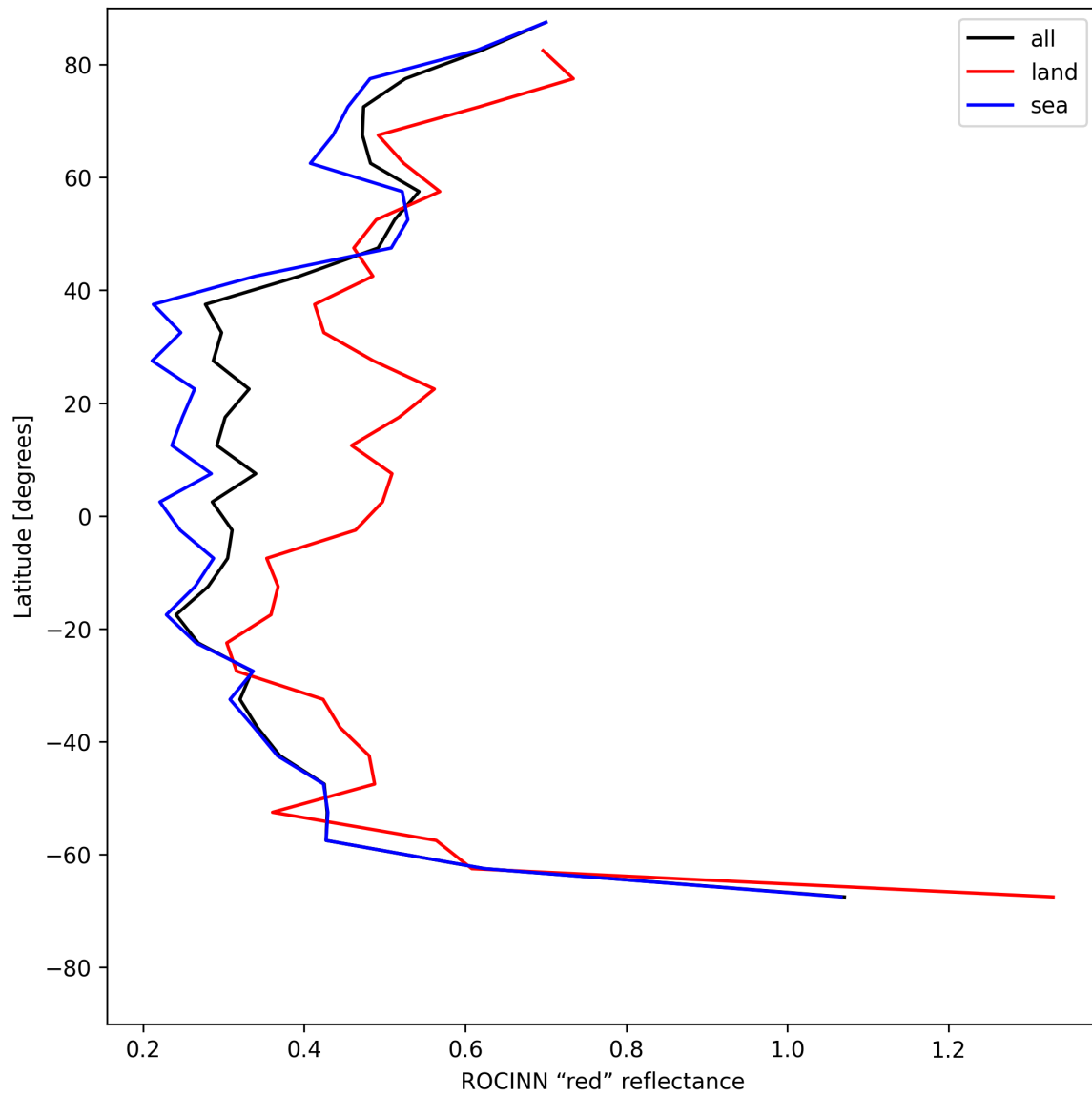


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-07-04 to 2025-07-06.

8 Histograms

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

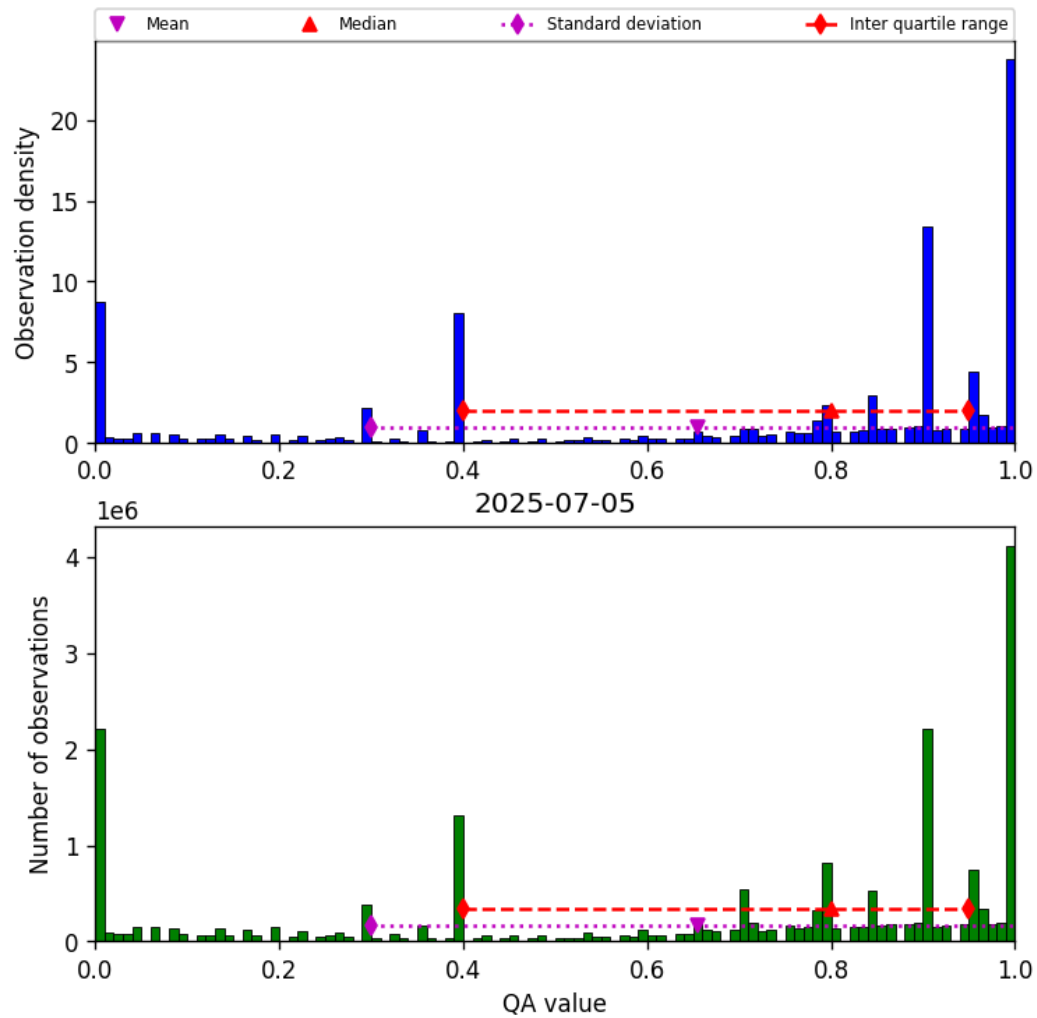


Figure 38: Histogram of “QA value” for 2025-07-04 to 2025-07-06

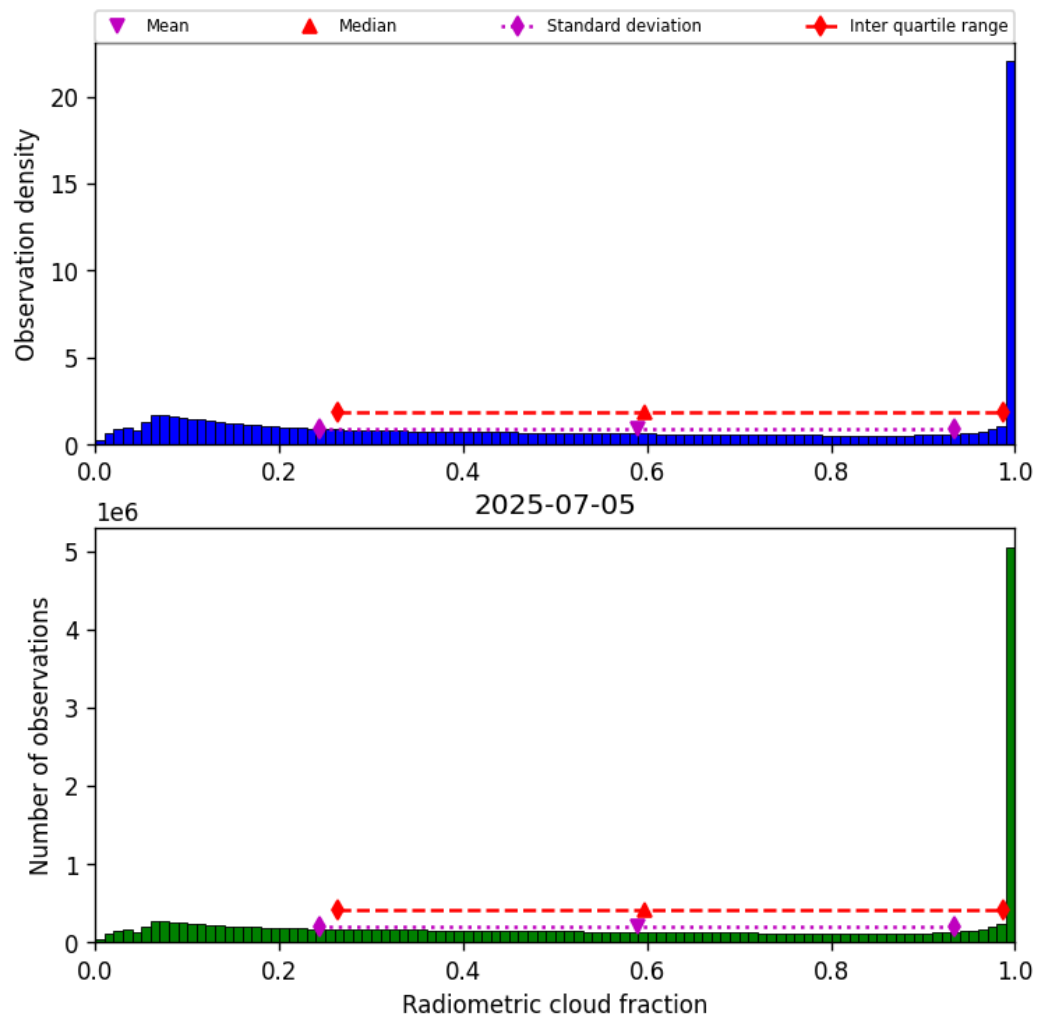


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-07-04 to 2025-07-06

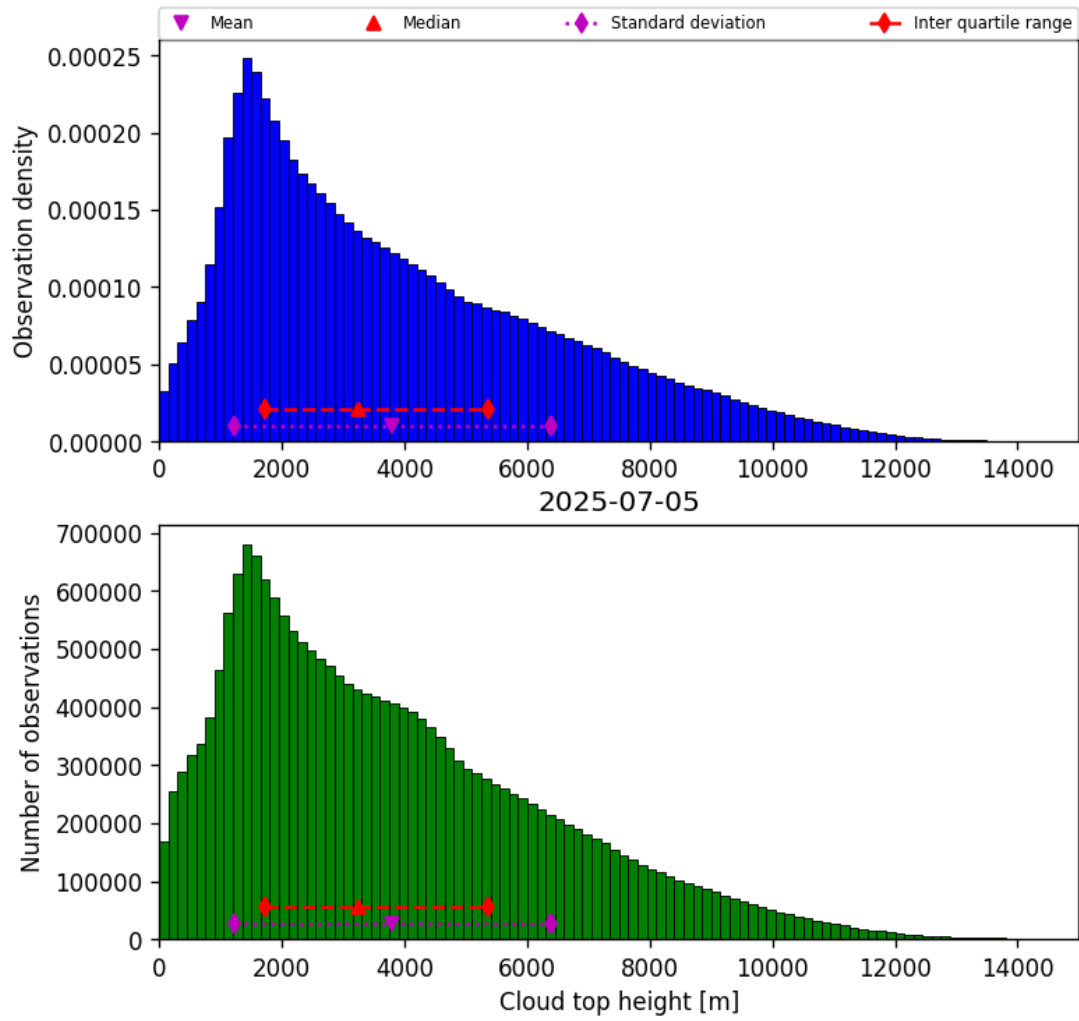


Figure 40: Histogram of “Cloud top height” for 2025-07-04 to 2025-07-06

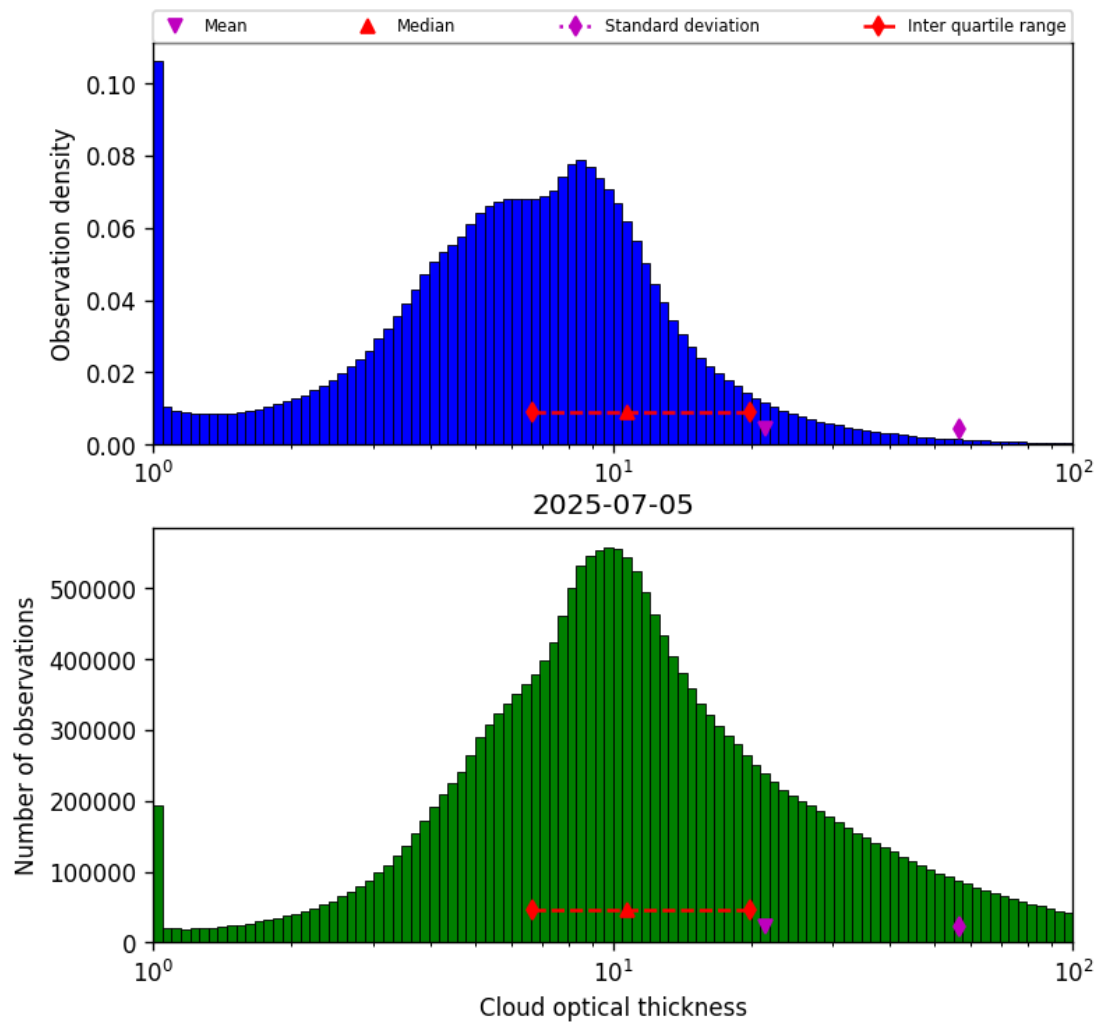


Figure 41: Histogram of “Cloud optical thickness” for 2025-07-04 to 2025-07-06

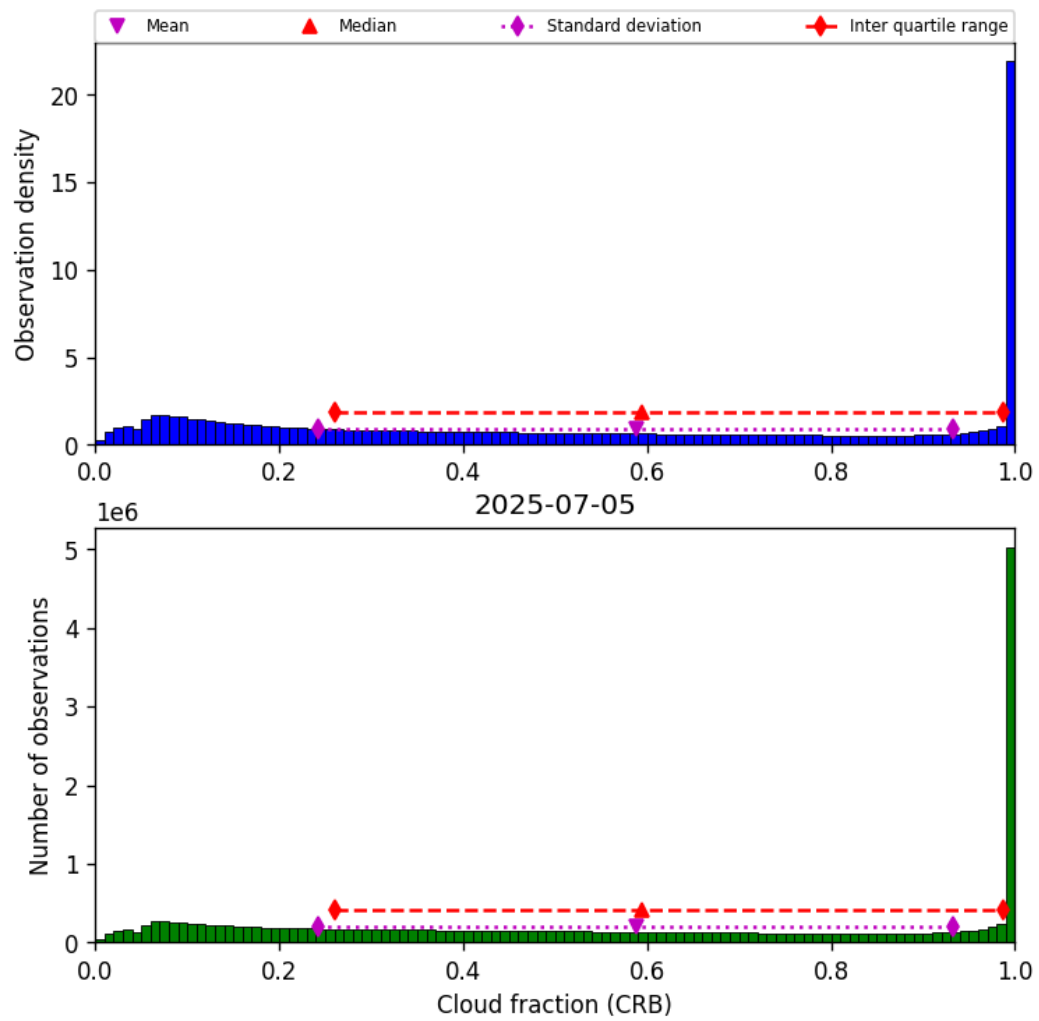


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-07-04 to 2025-07-06

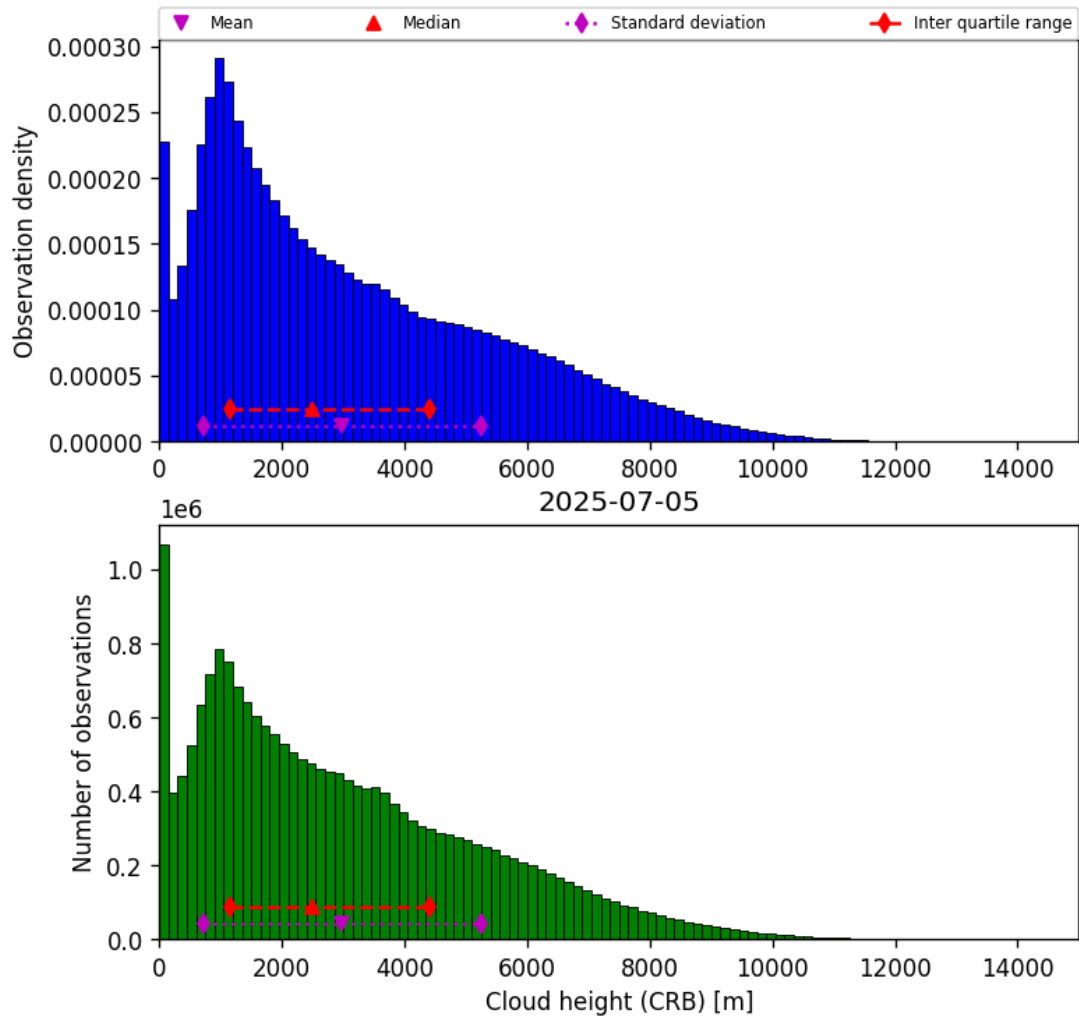


Figure 43: Histogram of “Cloud height (CRB)” for 2025-07-04 to 2025-07-06

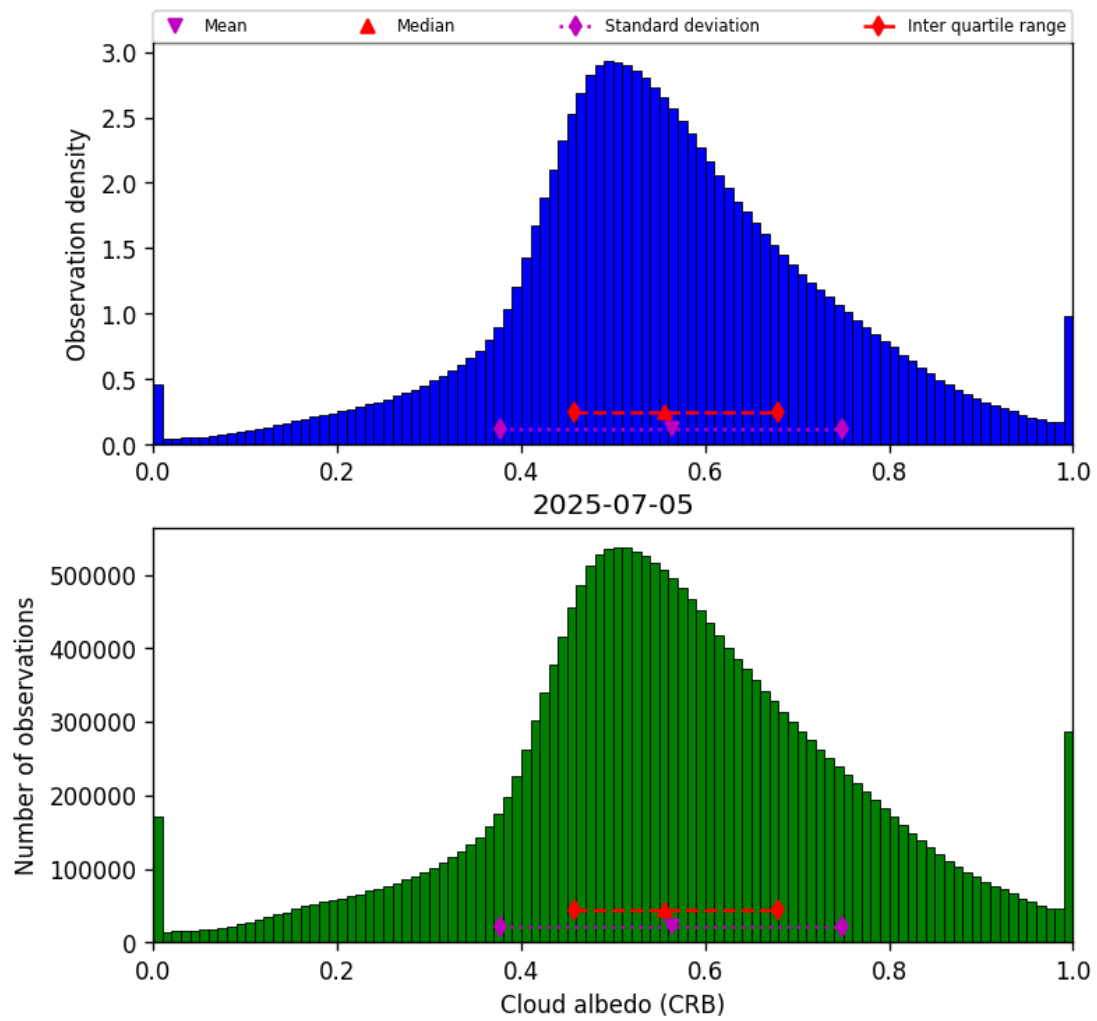


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-07-04 to 2025-07-06

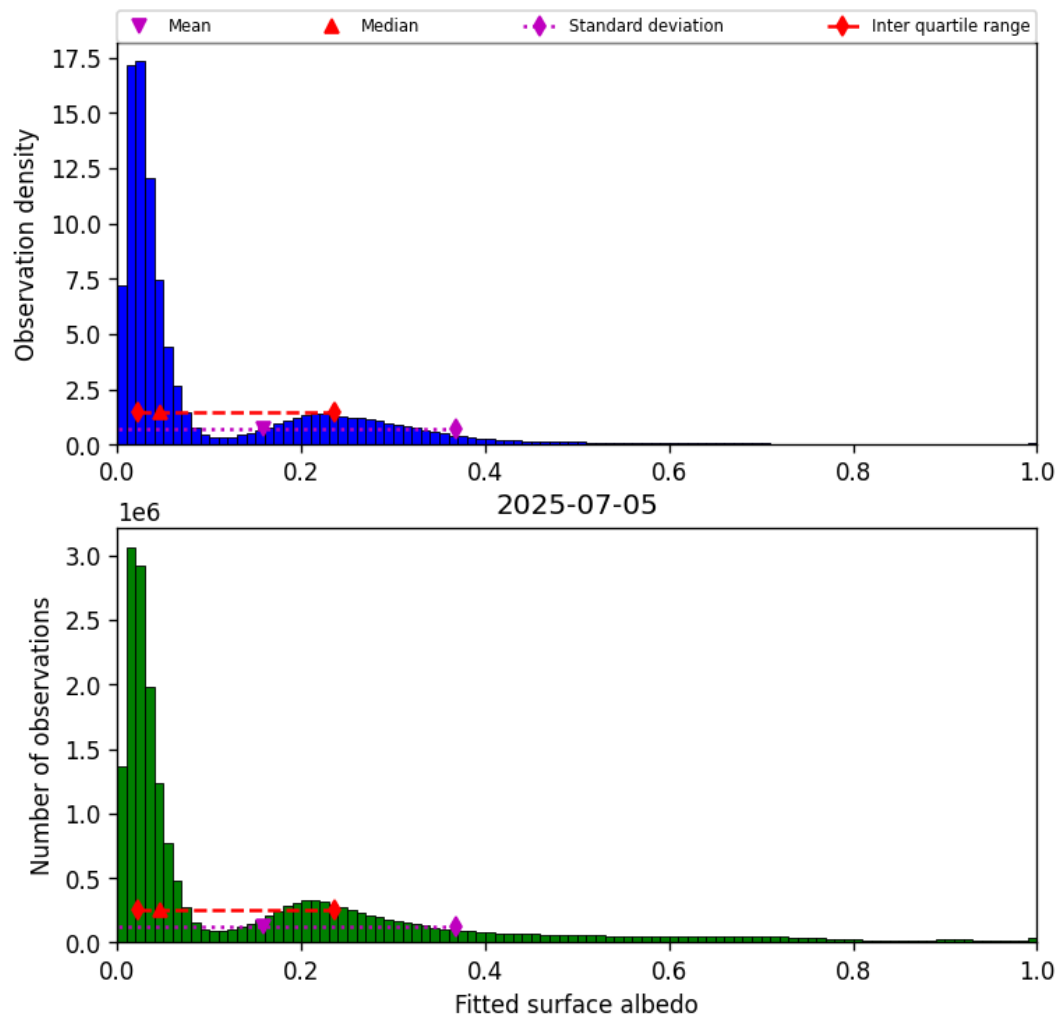


Figure 45: Histogram of “Fitted surface albedo” for 2025-07-04 to 2025-07-06

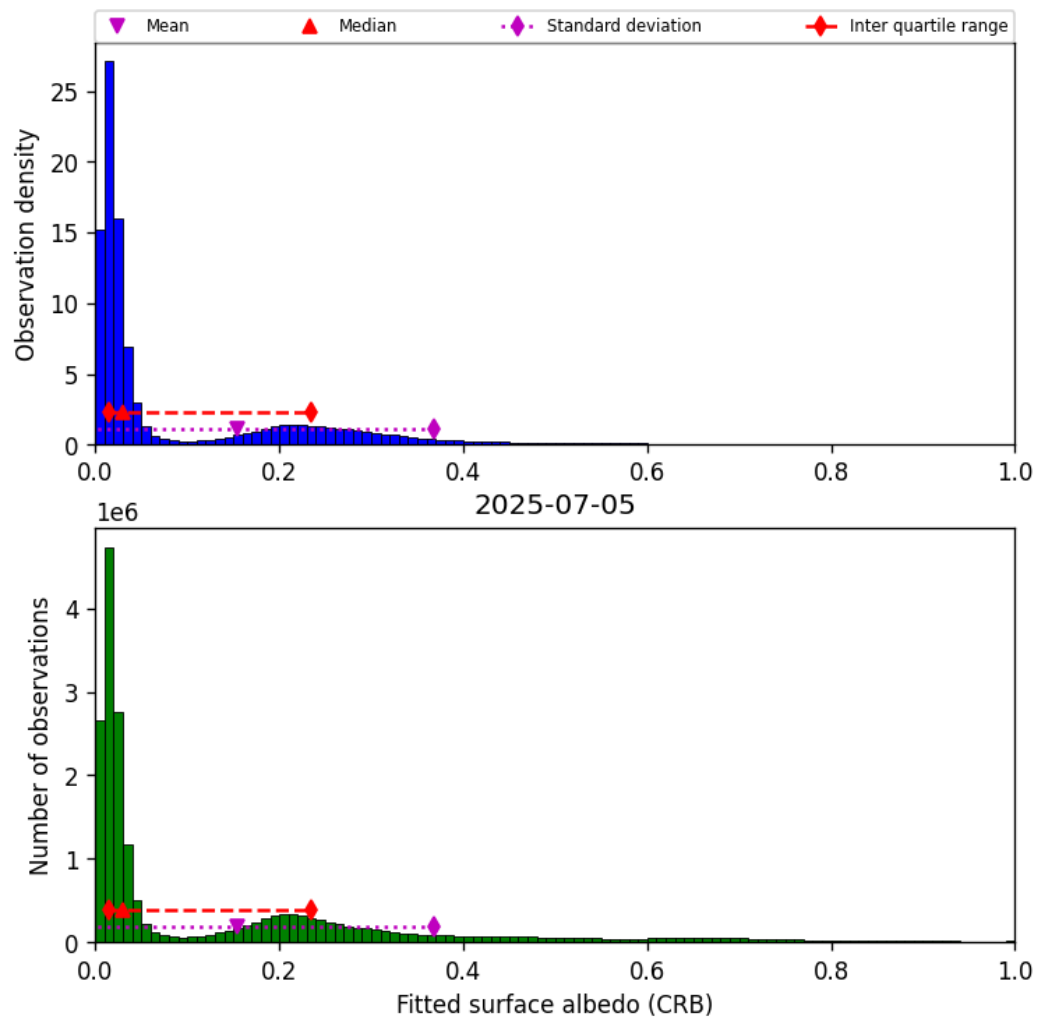


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-07-04 to 2025-07-06

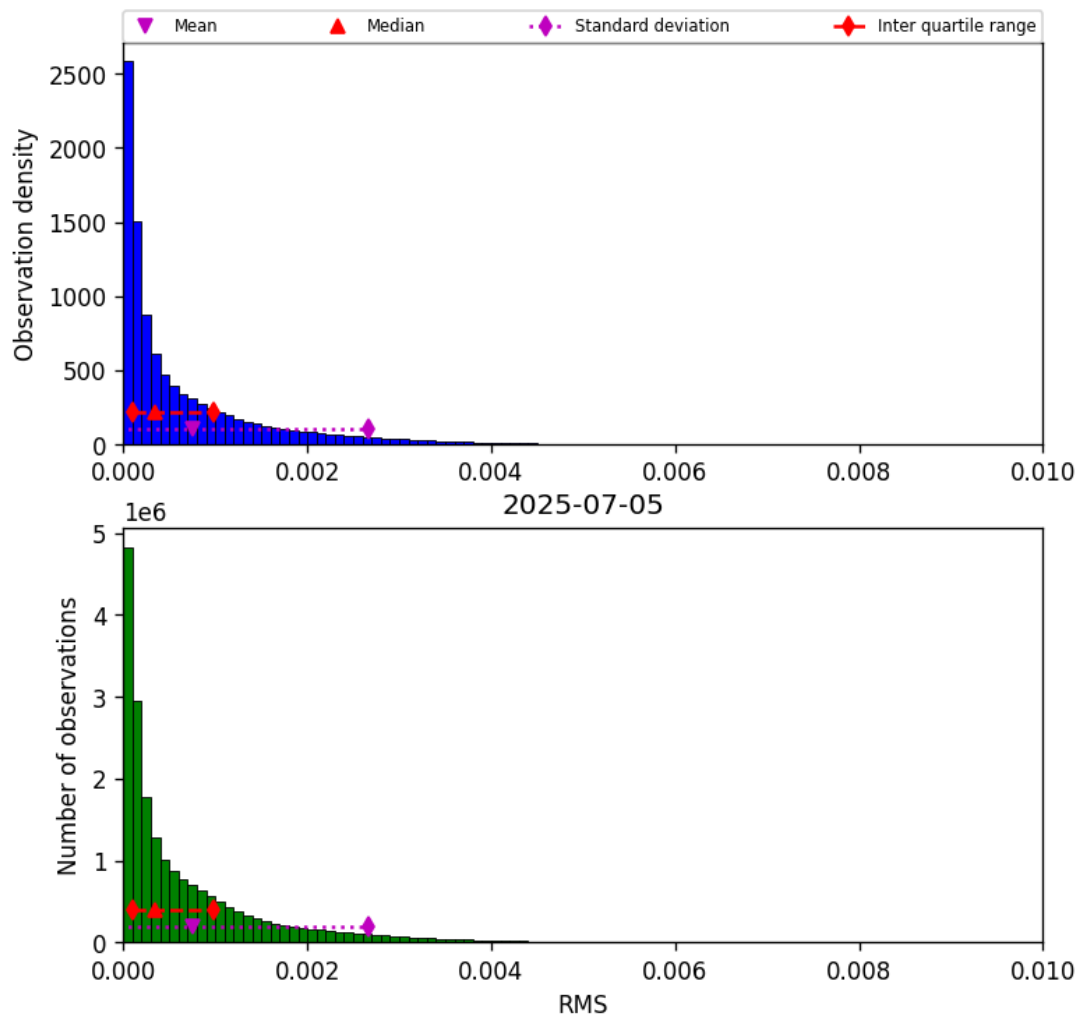


Figure 47: Histogram of “RMS” for 2025-07-04 to 2025-07-06

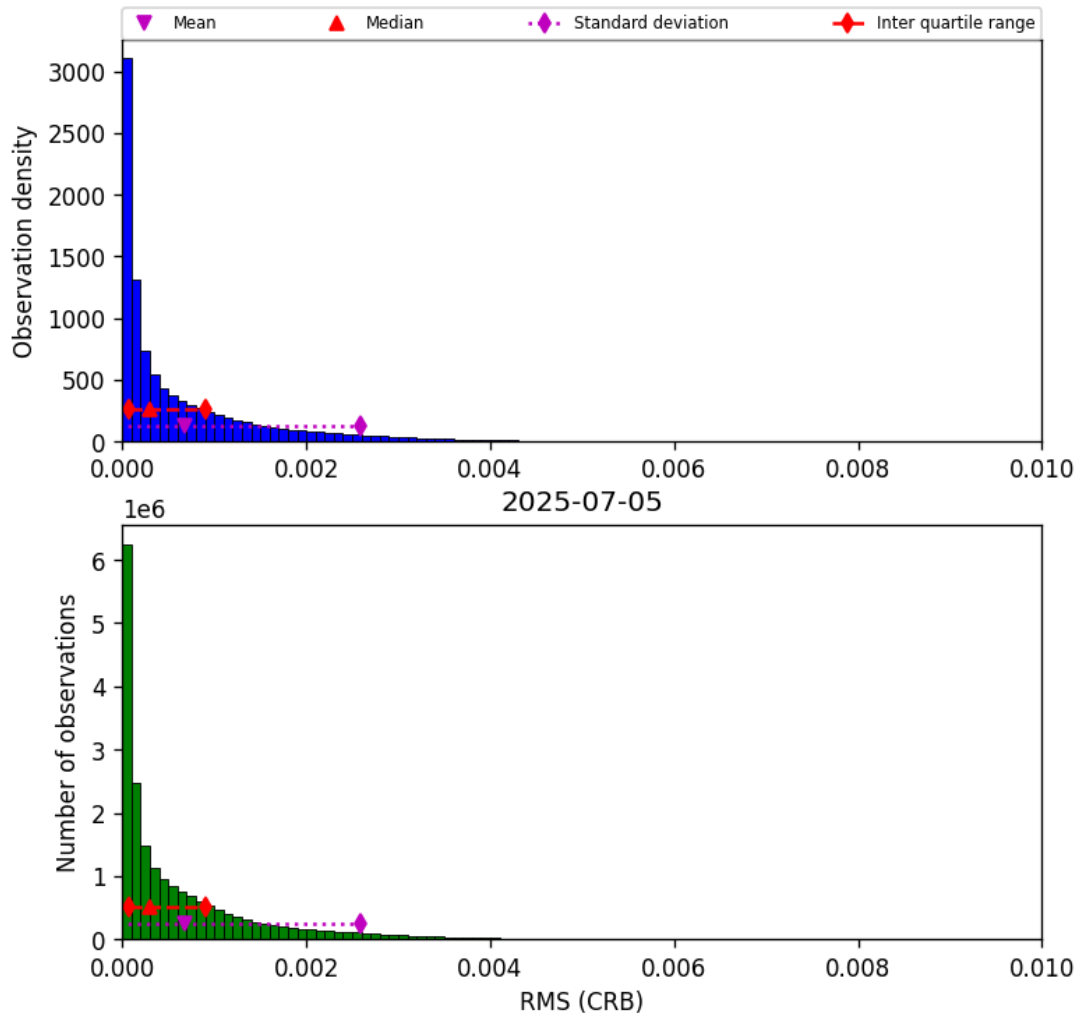


Figure 48: Histogram of “RMS (CRB)” for 2025-07-04 to 2025-07-06

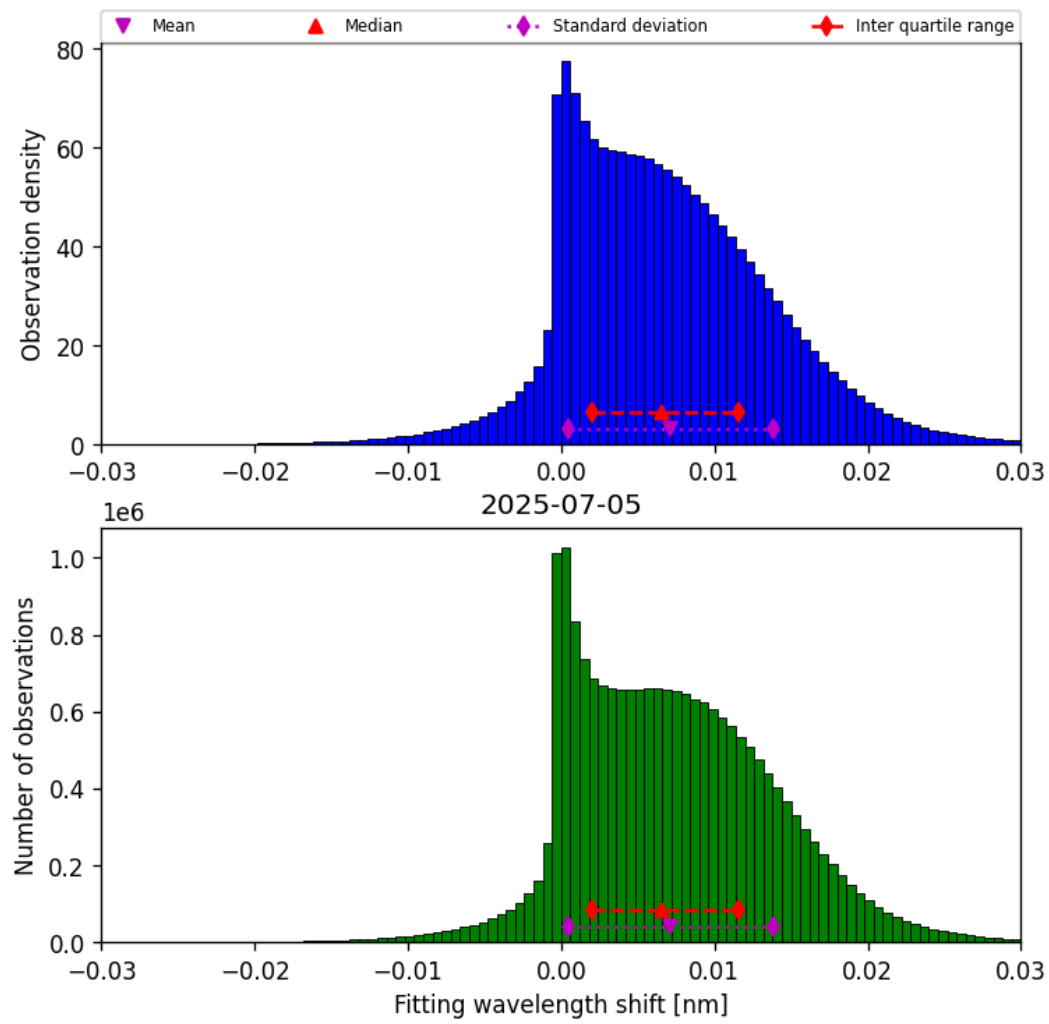


Figure 49: Histogram of “Fitting wavelength shift” for 2025-07-04 to 2025-07-06

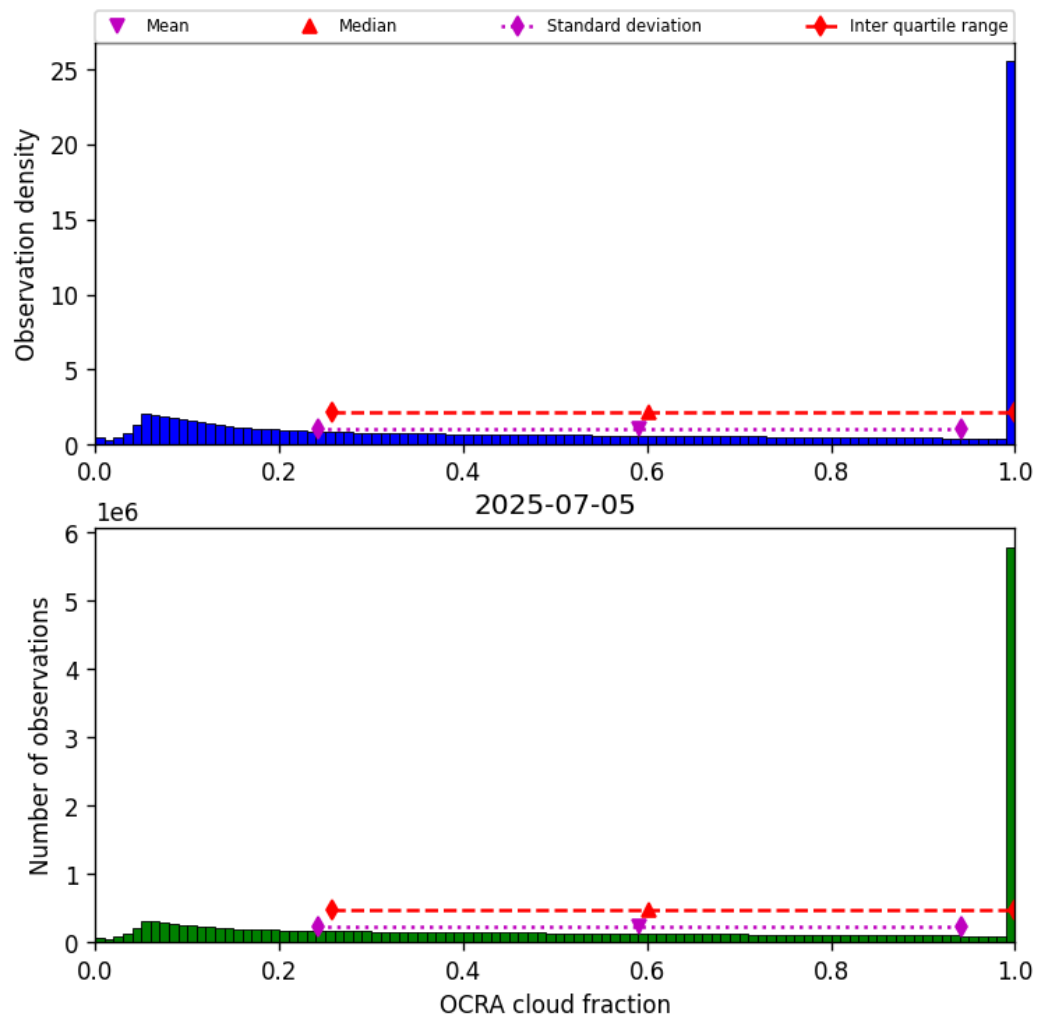


Figure 50: Histogram of “OCRA cloud fraction” for 2025-07-04 to 2025-07-06

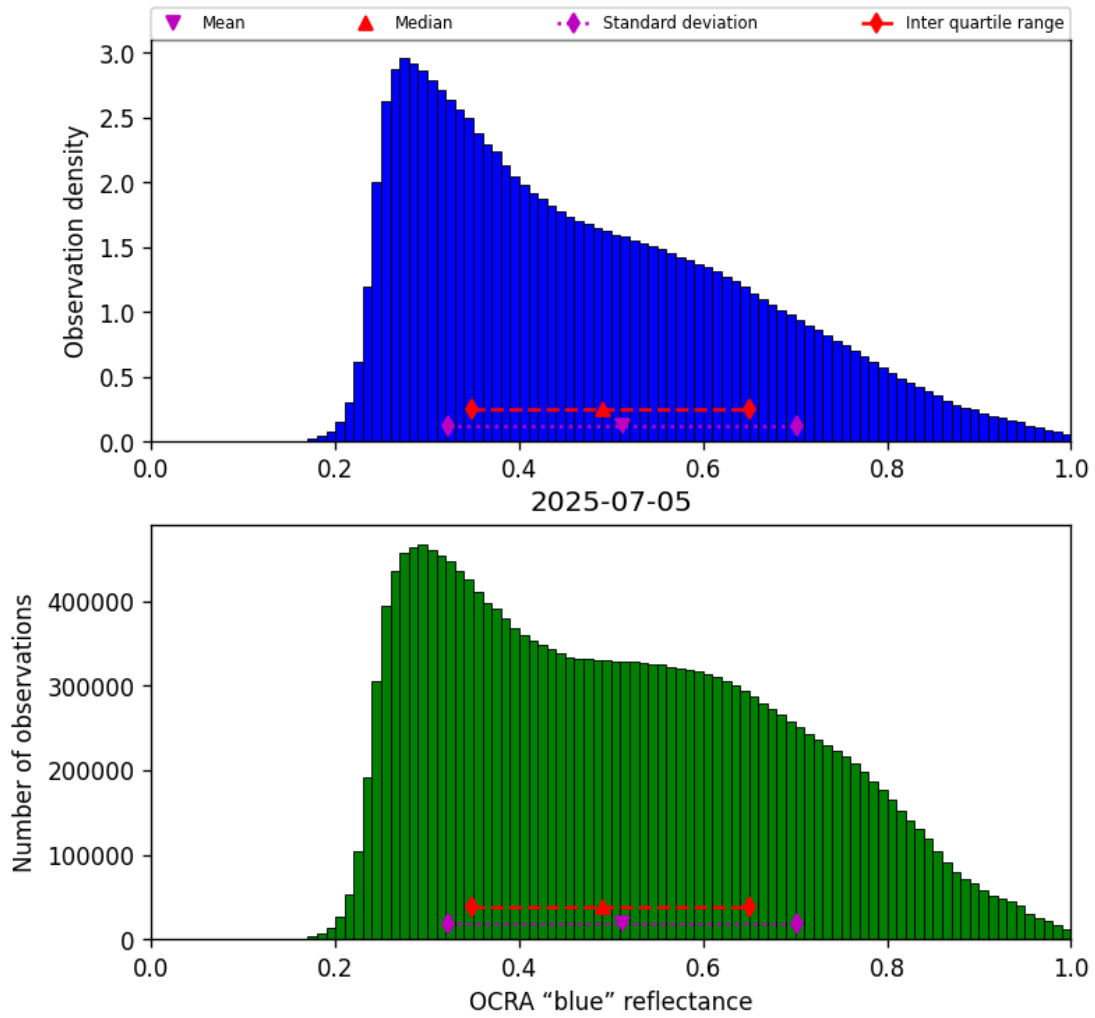


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-07-04 to 2025-07-06

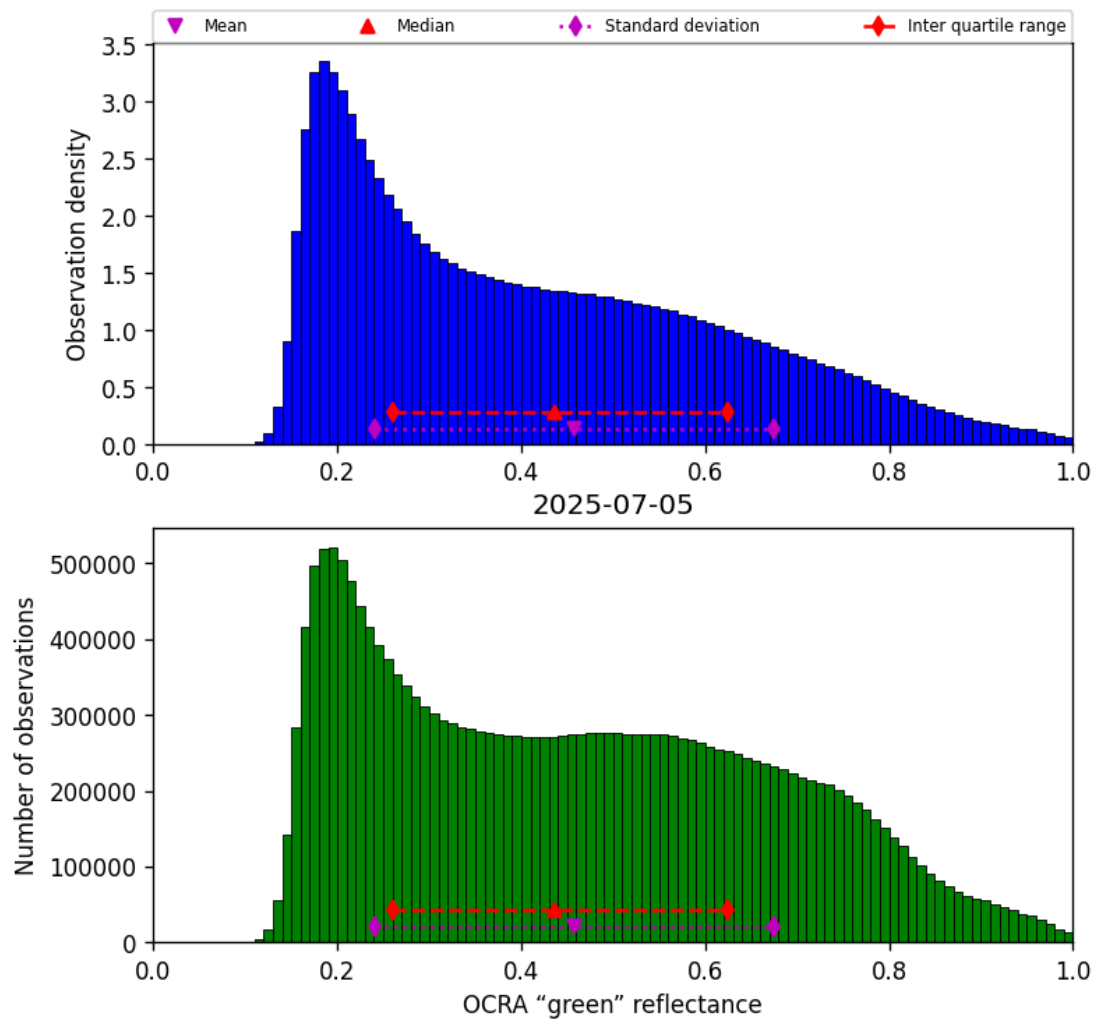


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-07-04 to 2025-07-06

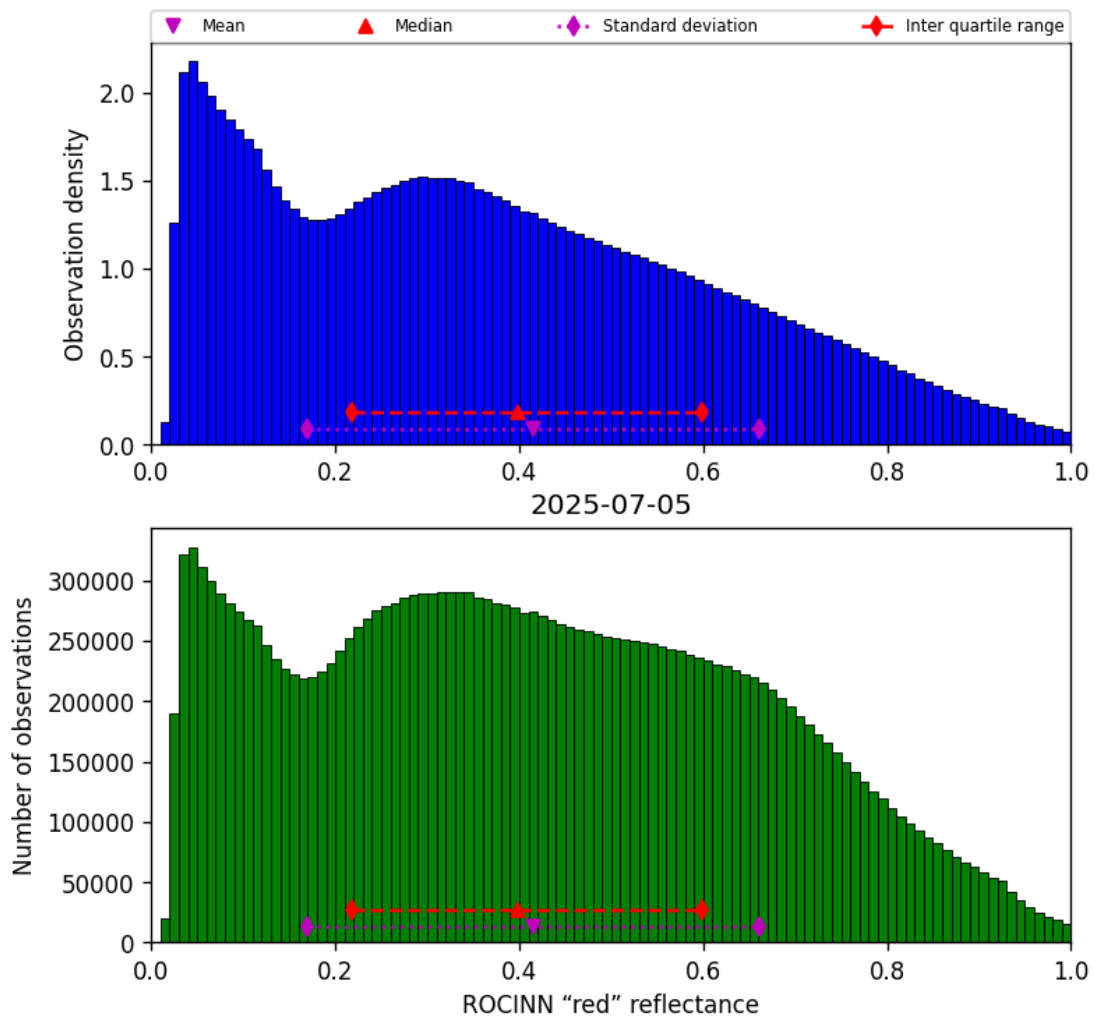


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-07-04 to 2025-07-06

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.

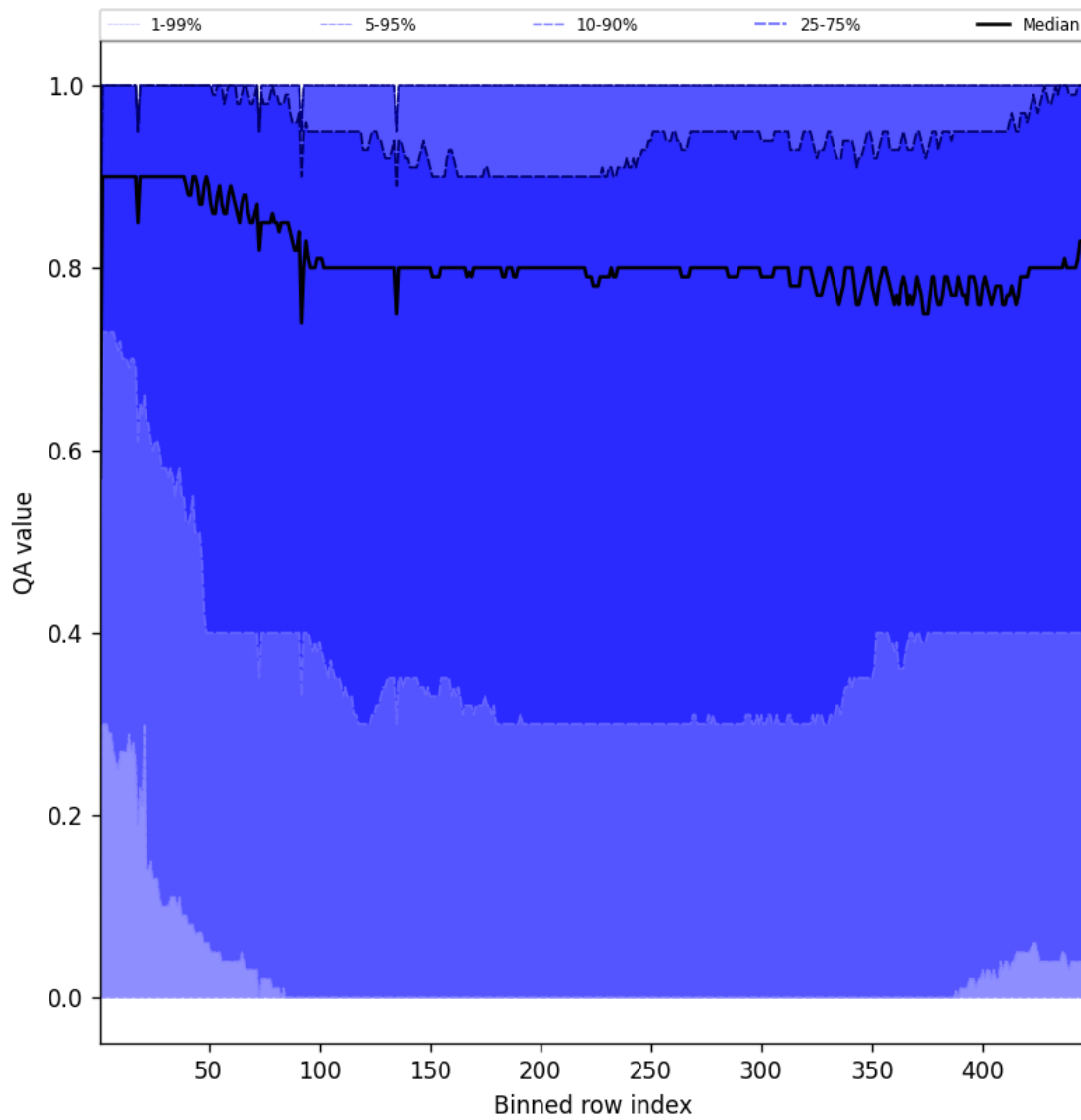


Figure 54: Along track statistics of “QA value” for 2025-07-04 to 2025-07-06

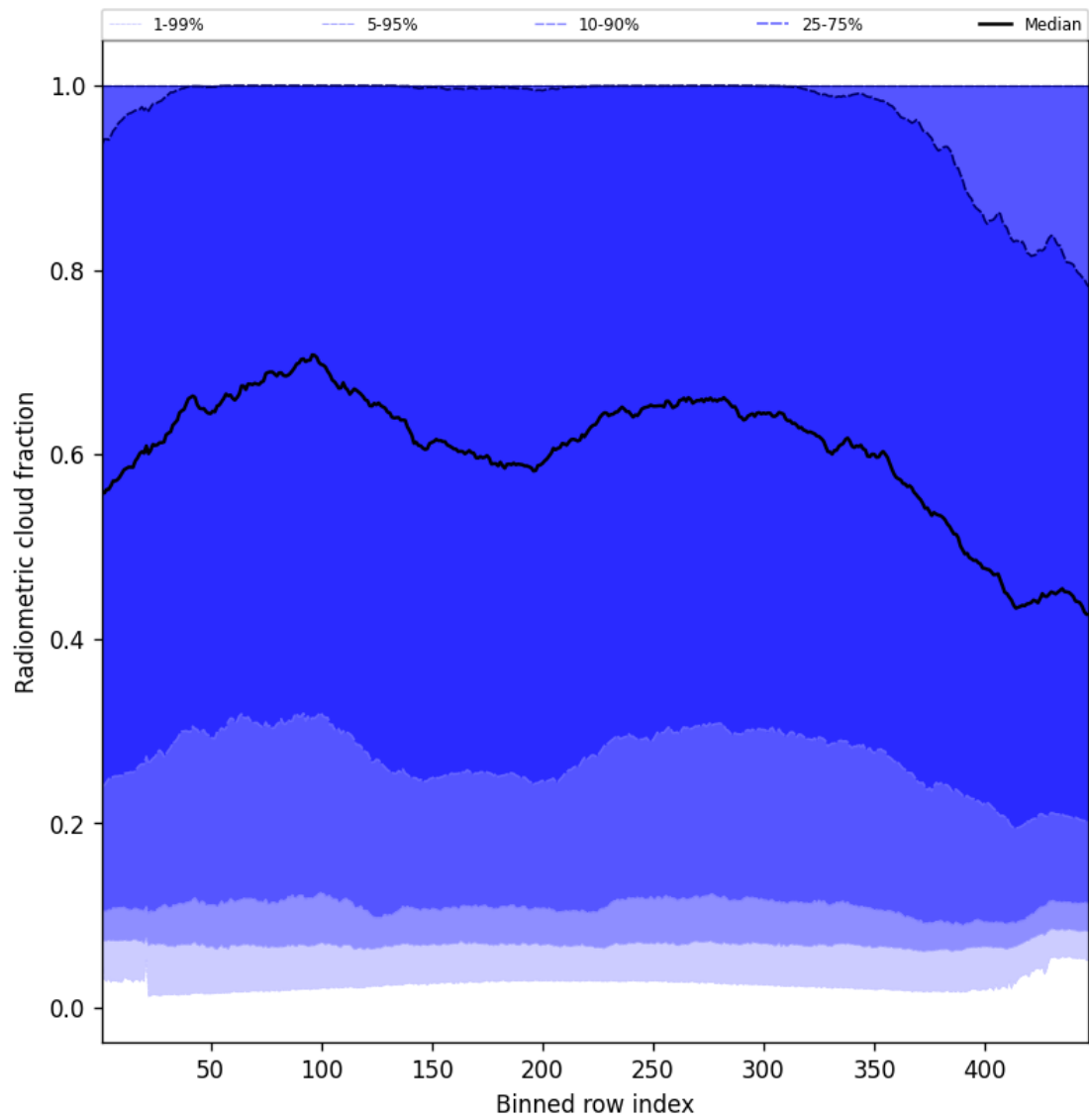


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-07-04 to 2025-07-06

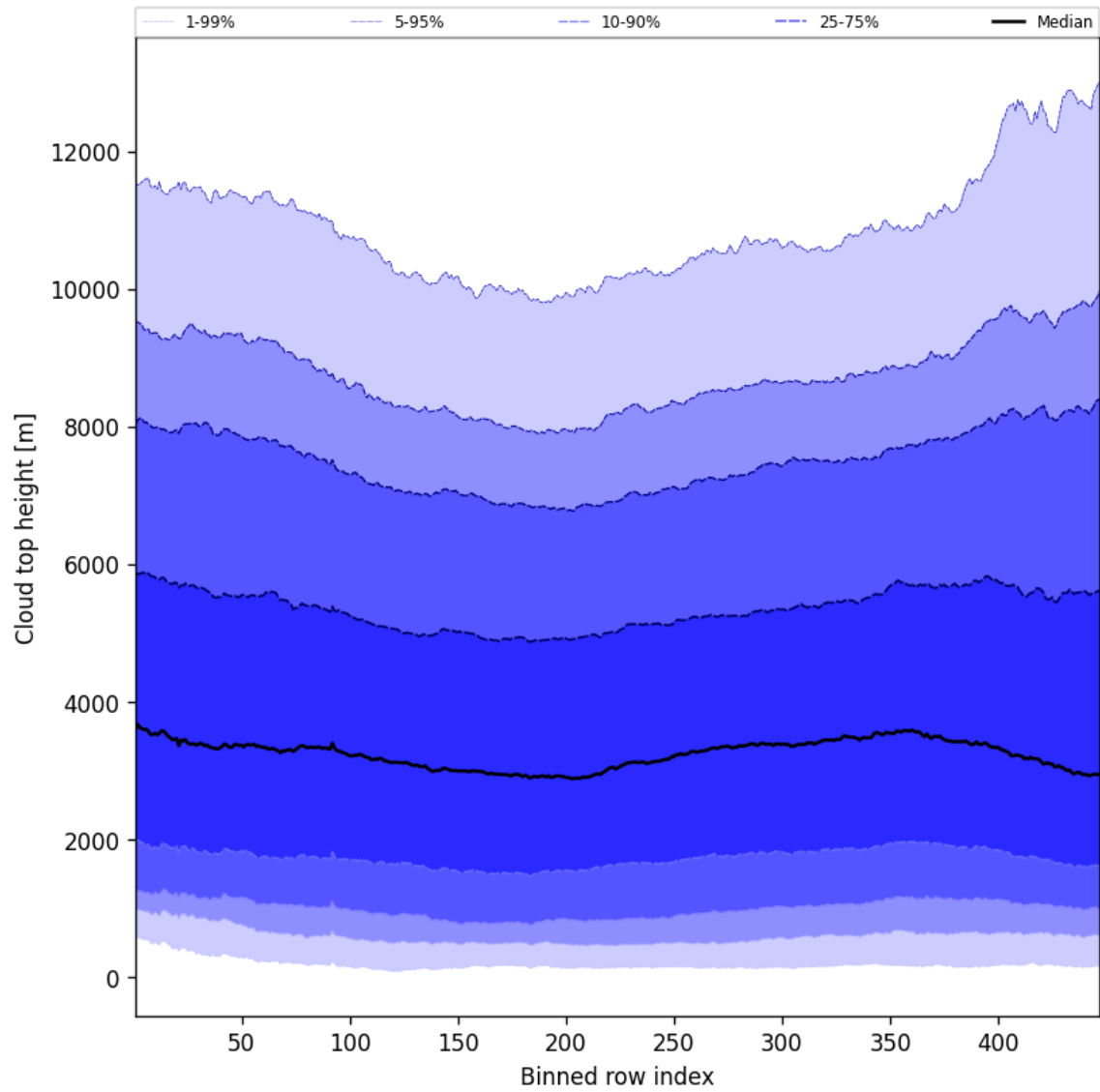


Figure 56: Along track statistics of “Cloud top height” for 2025-07-04 to 2025-07-06

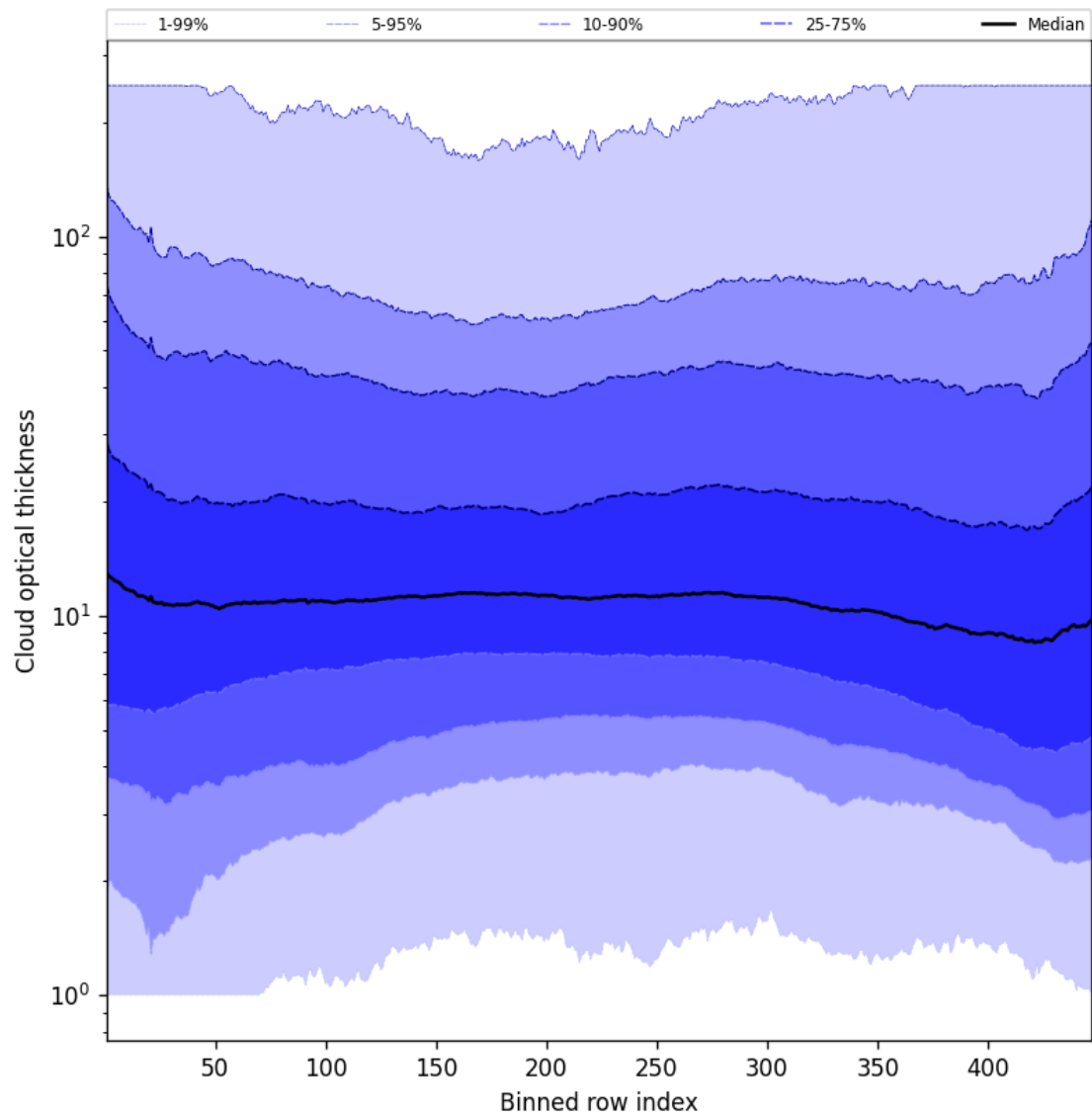


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-07-04 to 2025-07-06

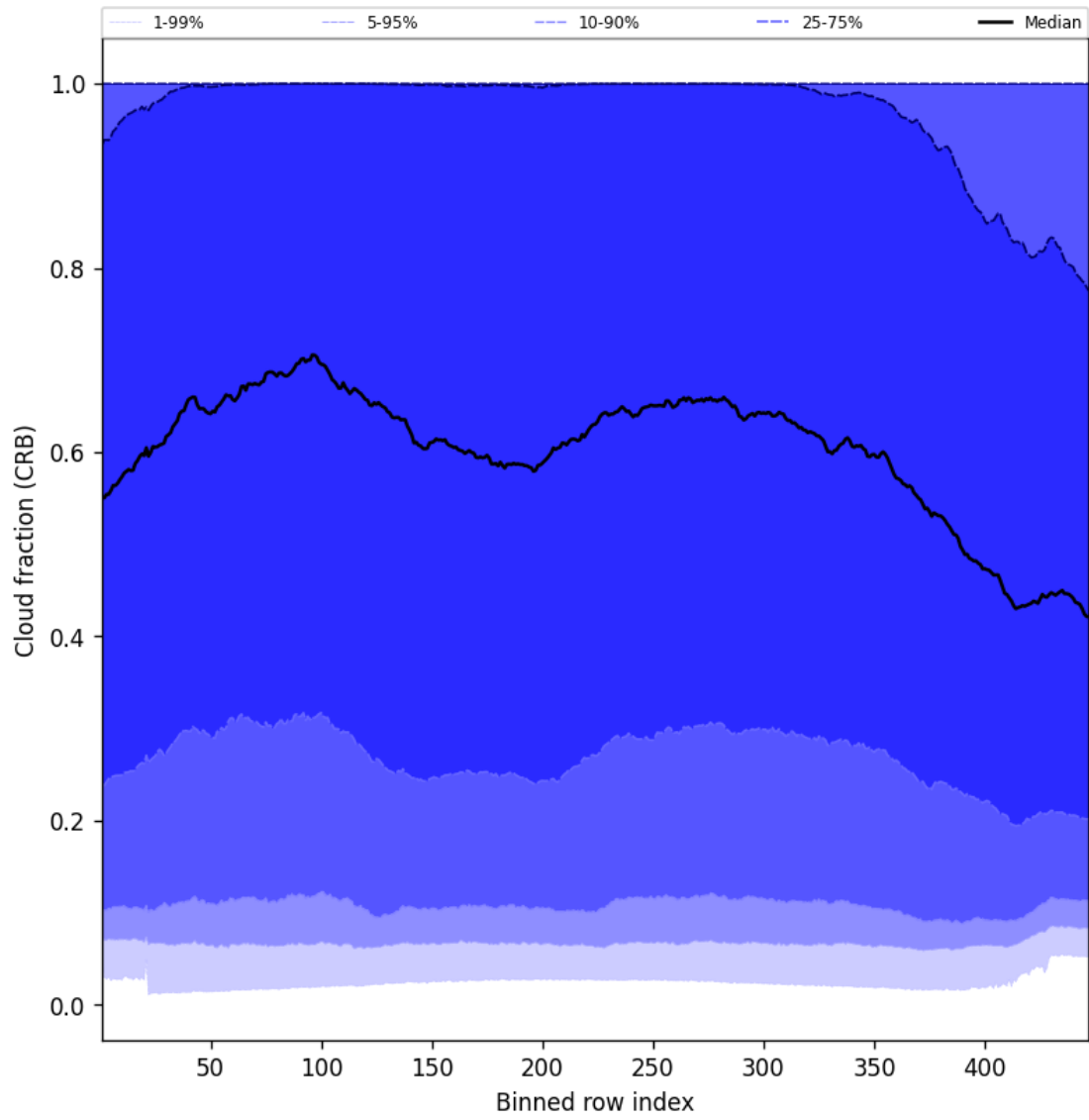


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-07-04 to 2025-07-06

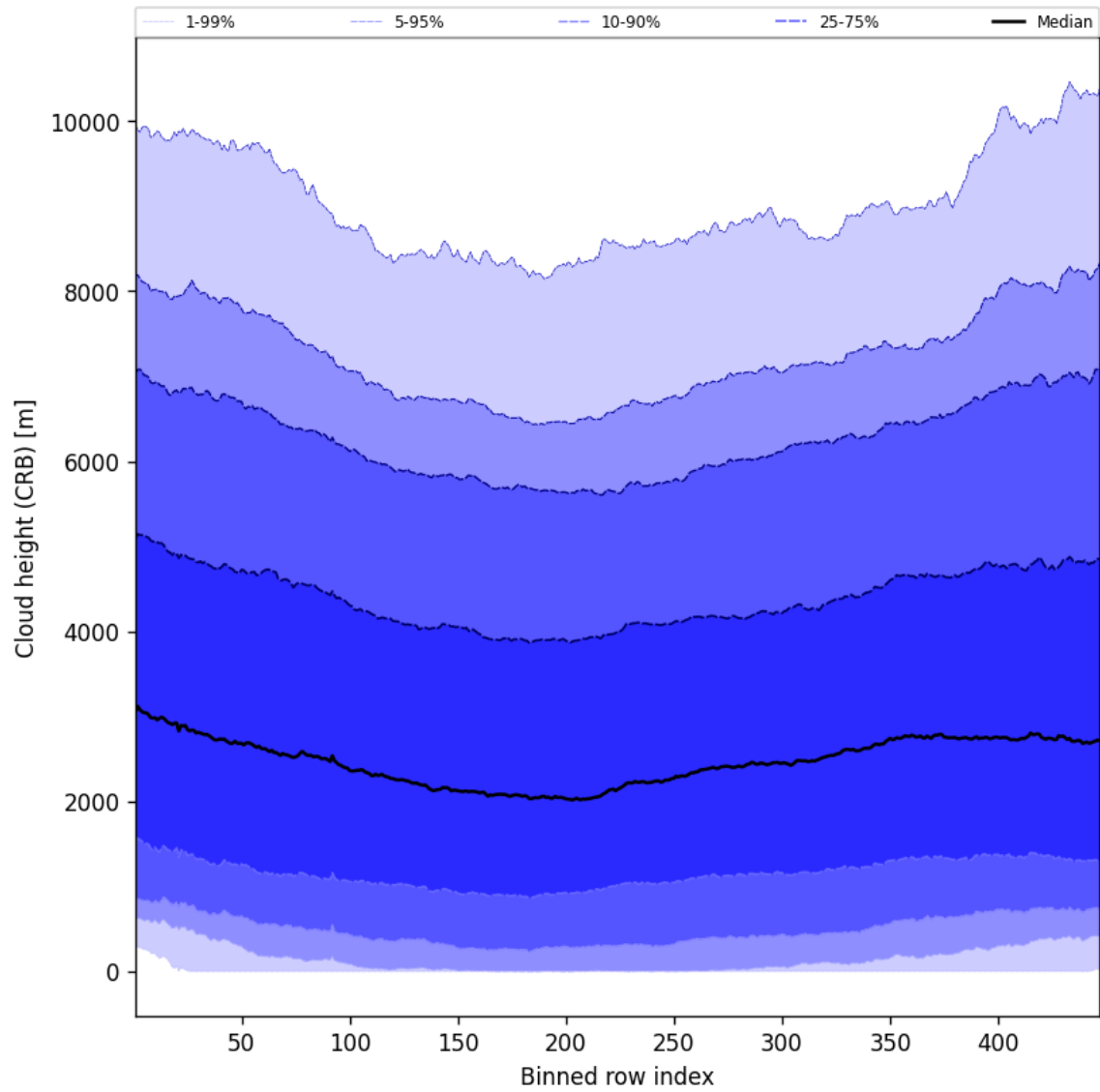


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-07-04 to 2025-07-06

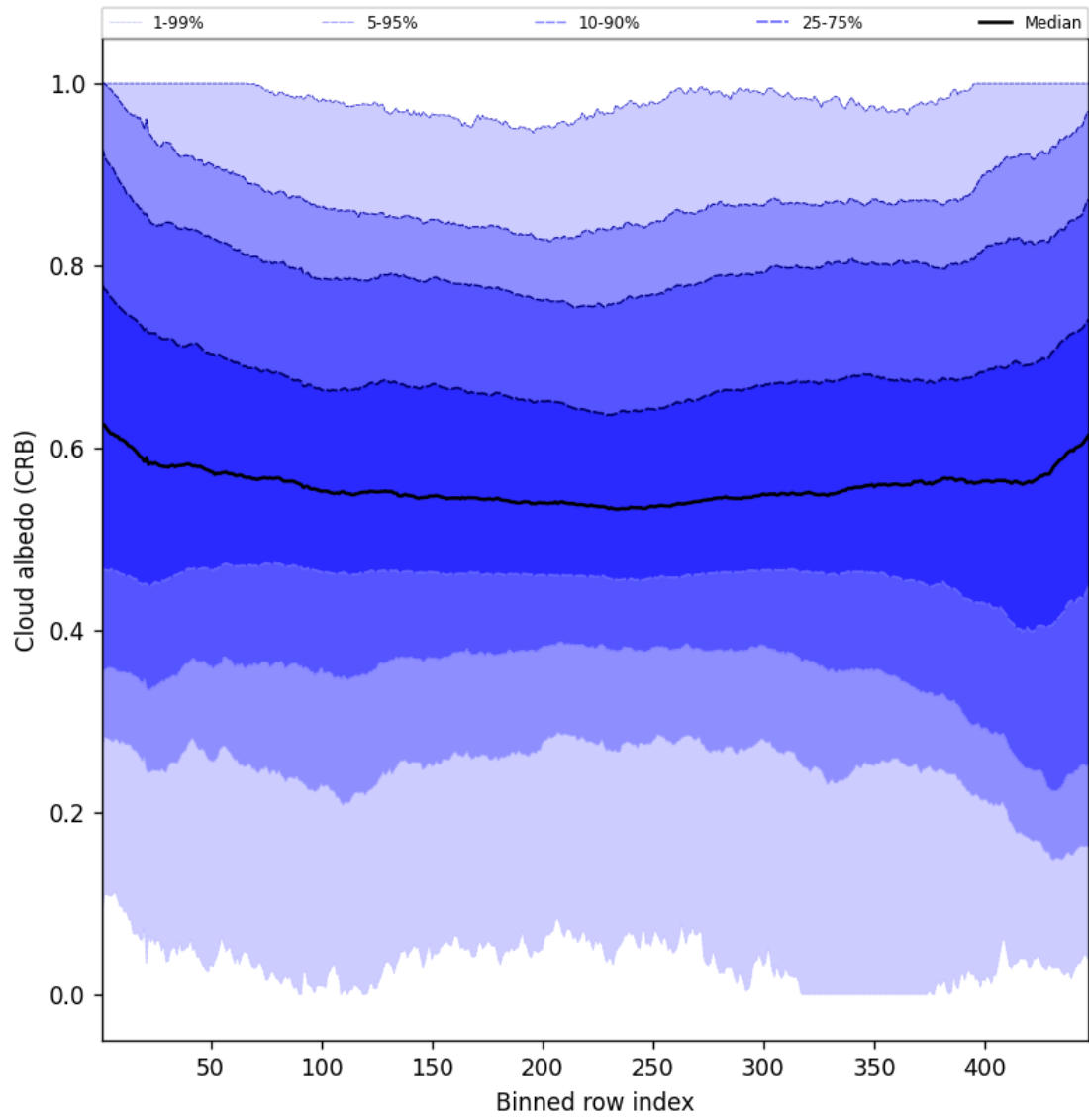


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-07-04 to 2025-07-06

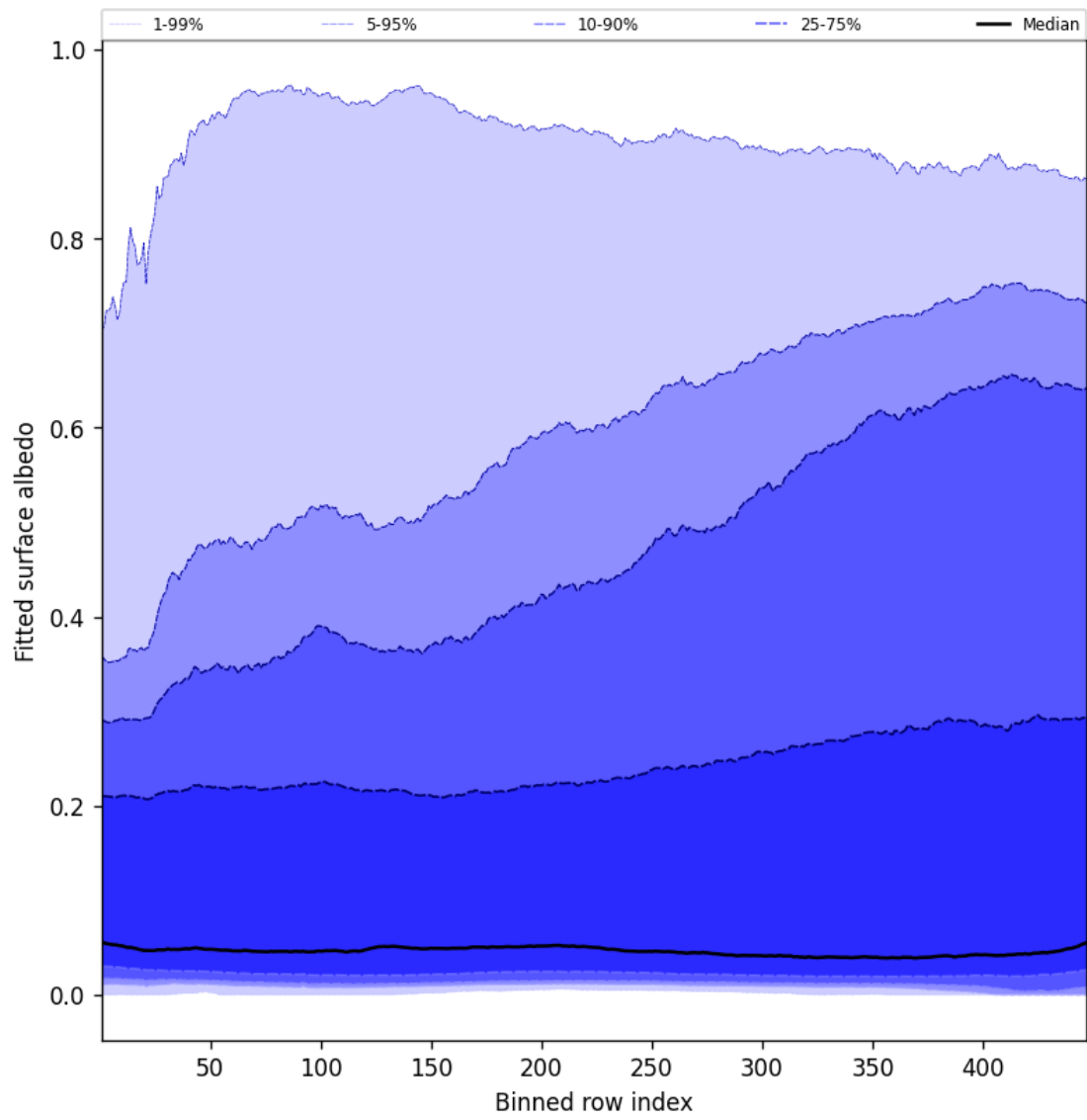


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-07-04 to 2025-07-06

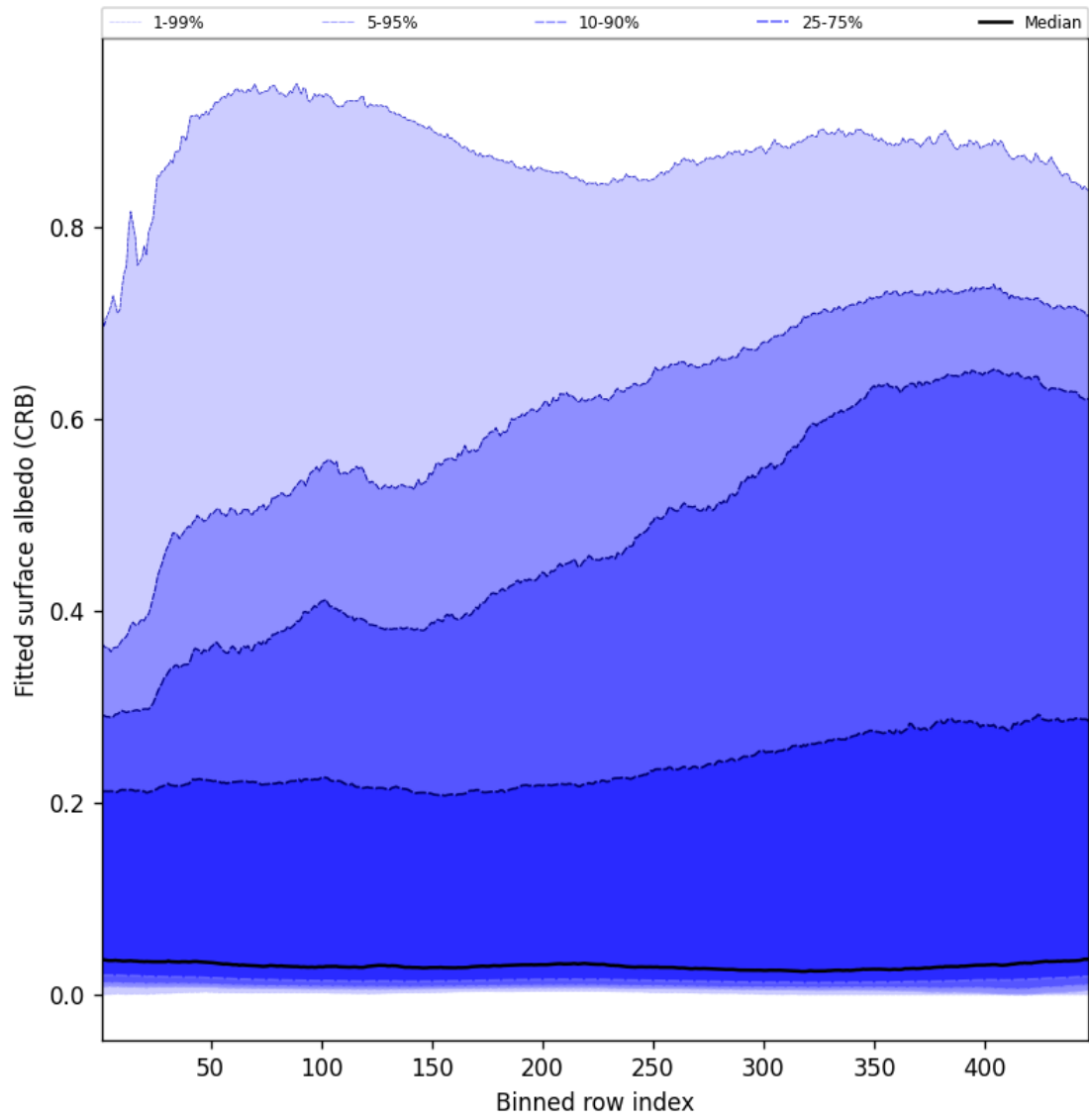


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-07-04 to 2025-07-06

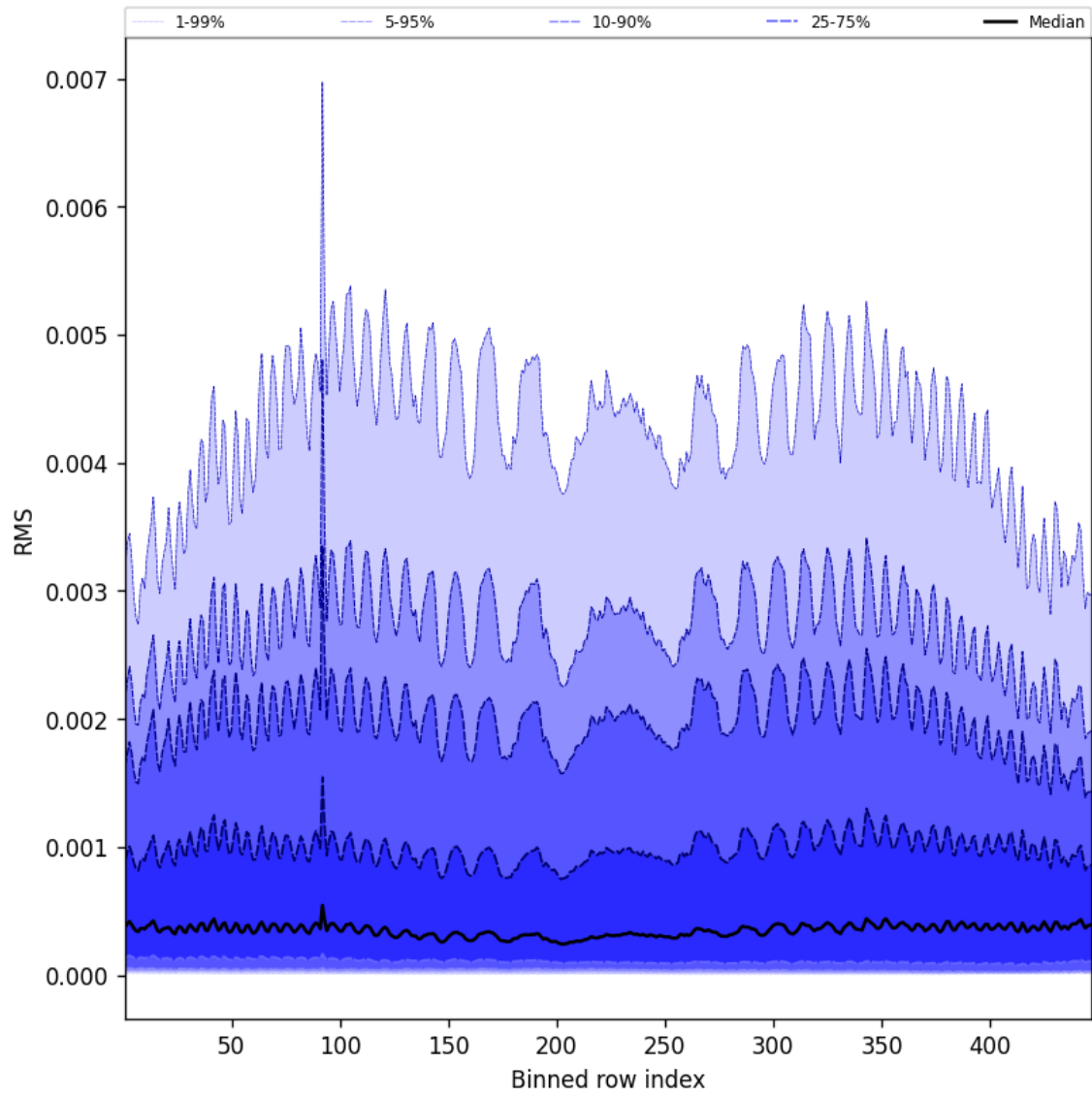


Figure 63: Along track statistics of “RMS” for 2025-07-04 to 2025-07-06

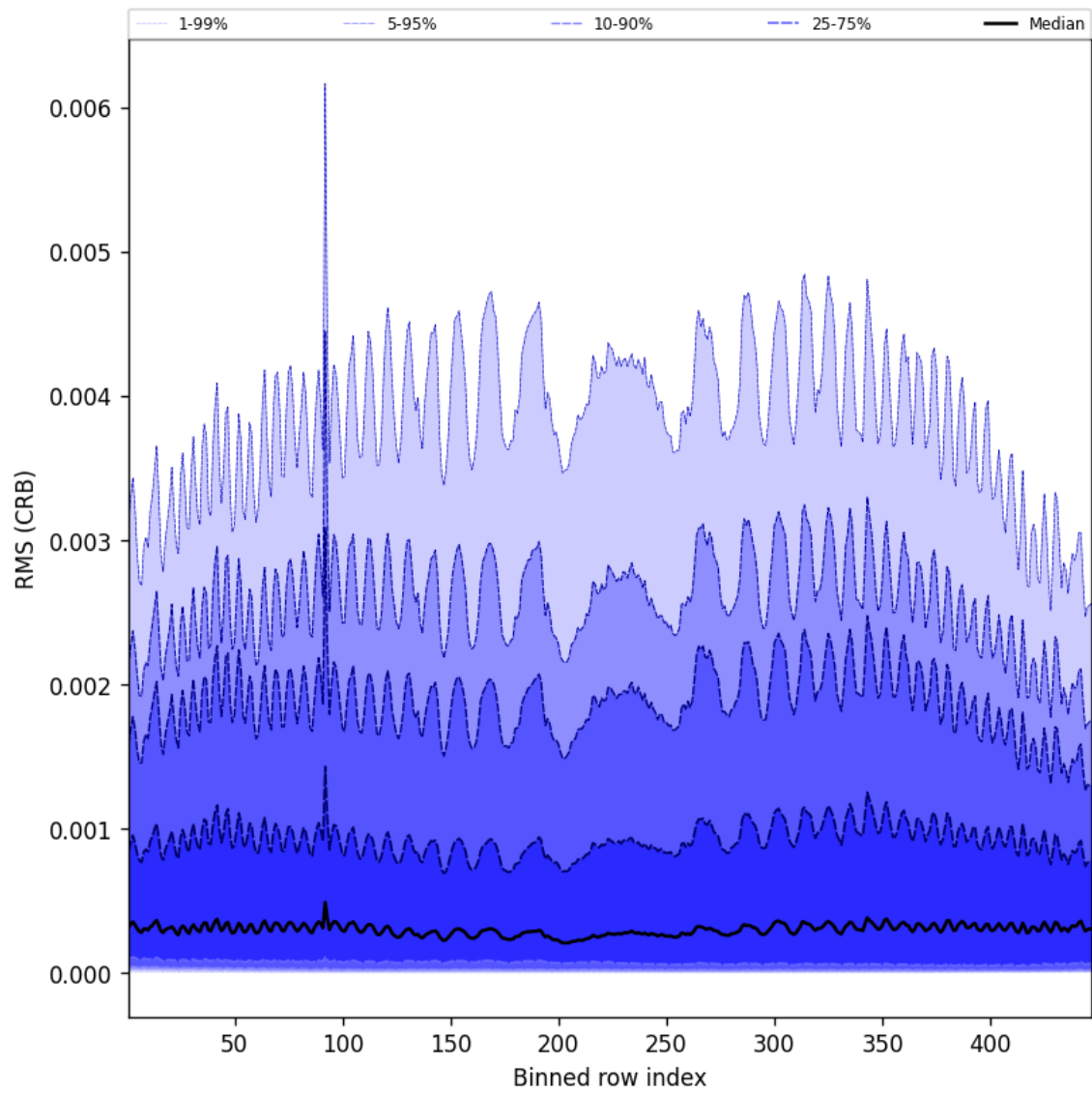


Figure 64: Along track statistics of “RMS (CRB)” for 2025-07-04 to 2025-07-06

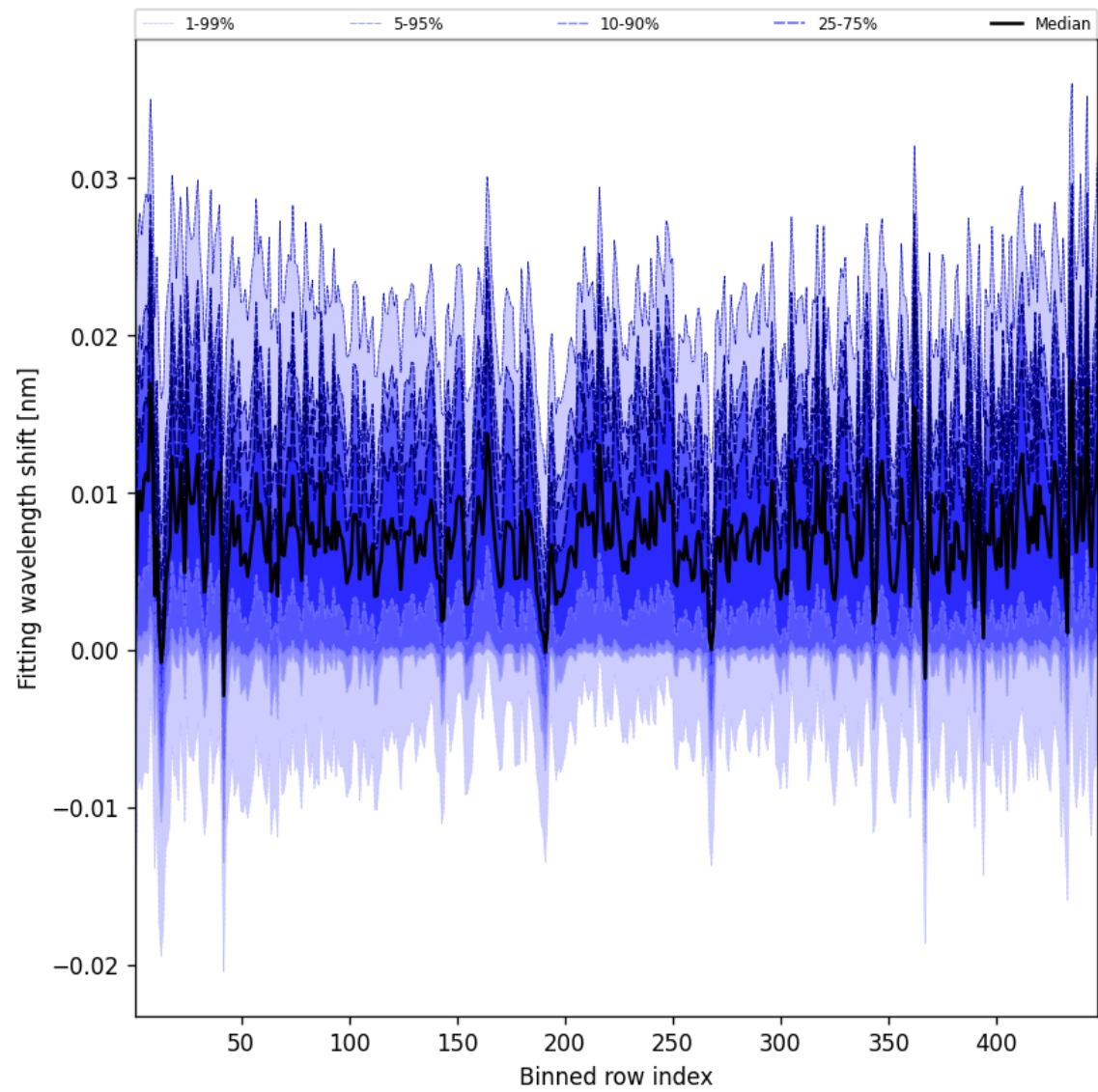


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-07-04 to 2025-07-06

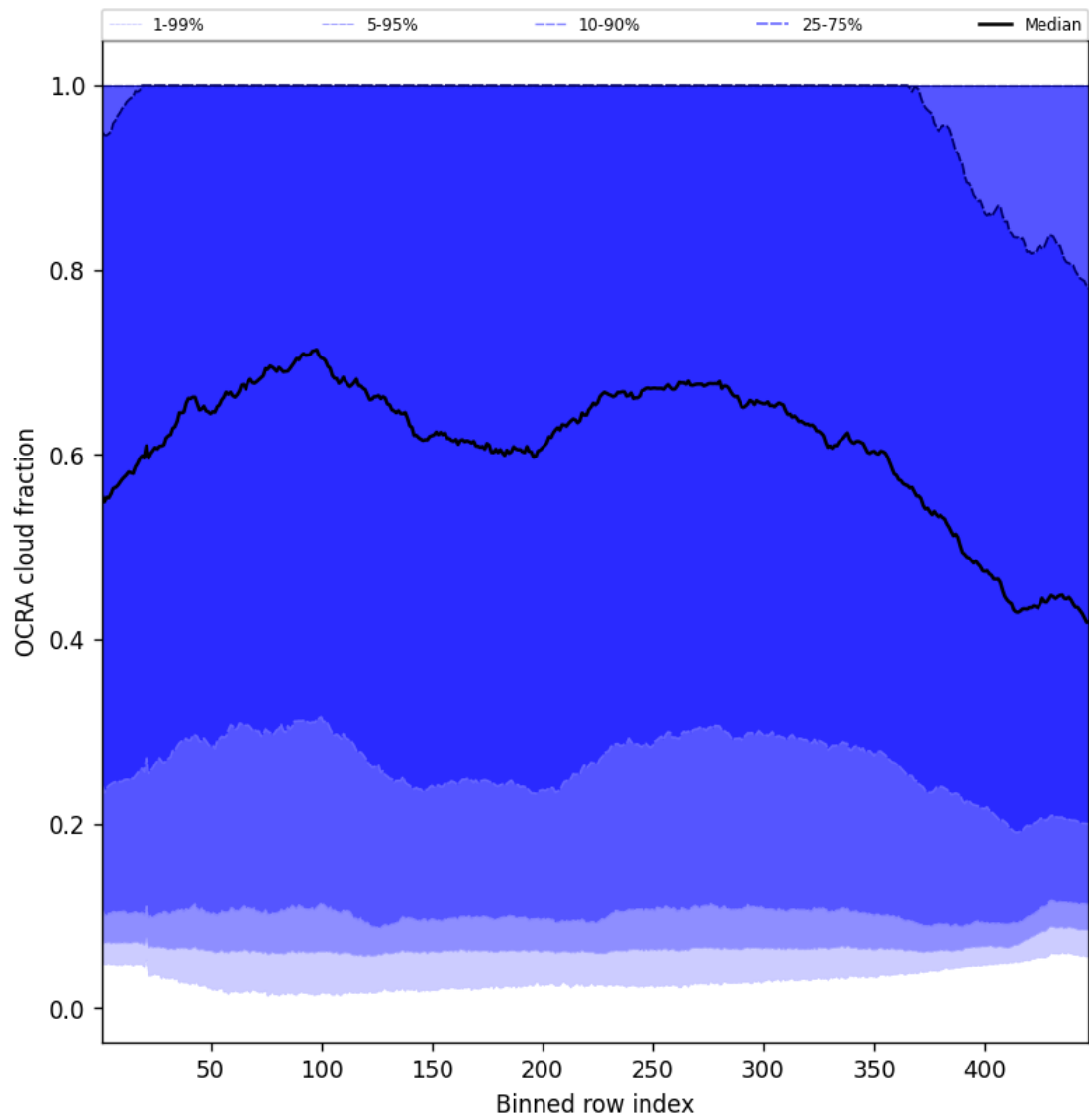


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-07-04 to 2025-07-06

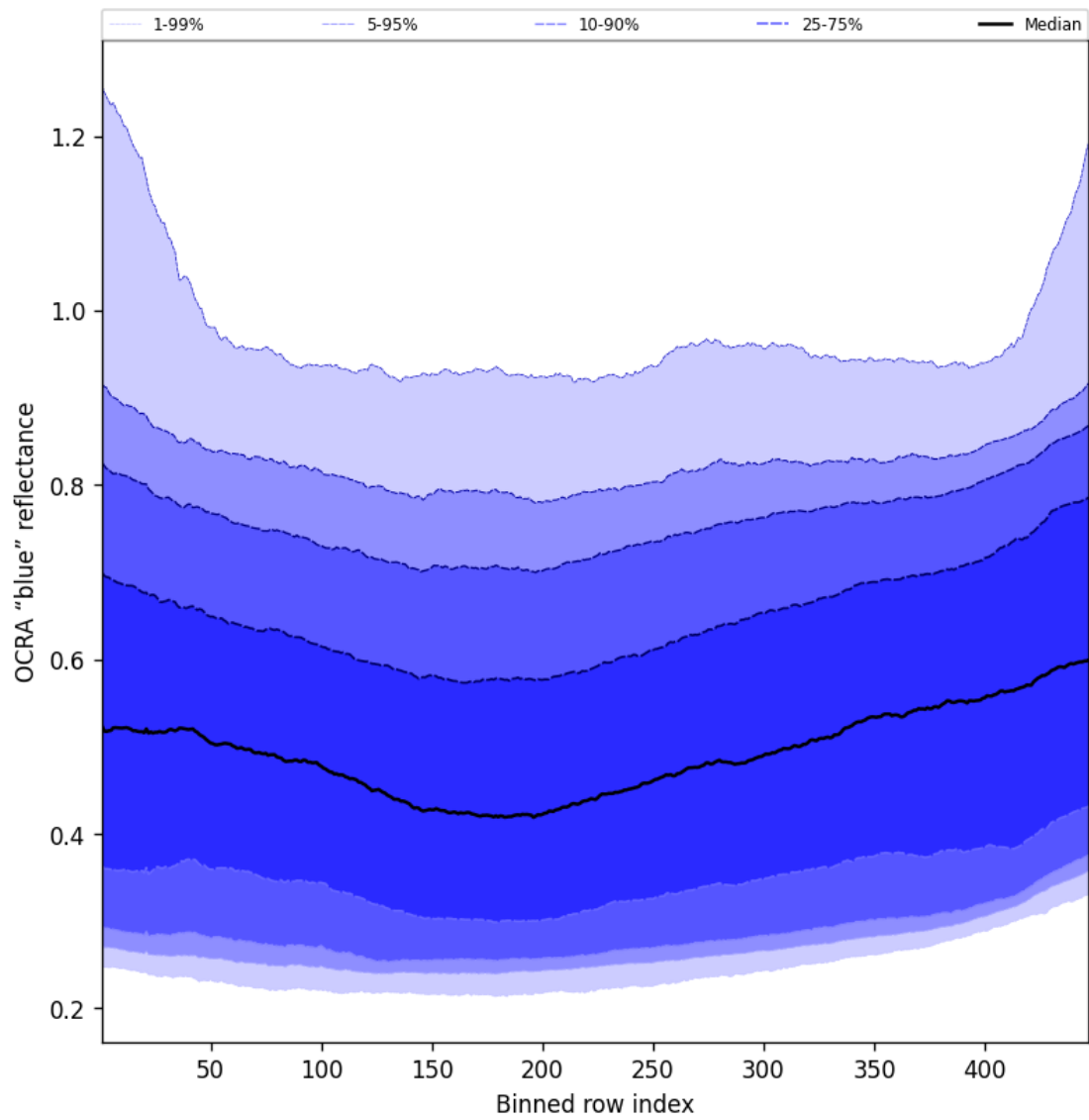


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-07-04 to 2025-07-06

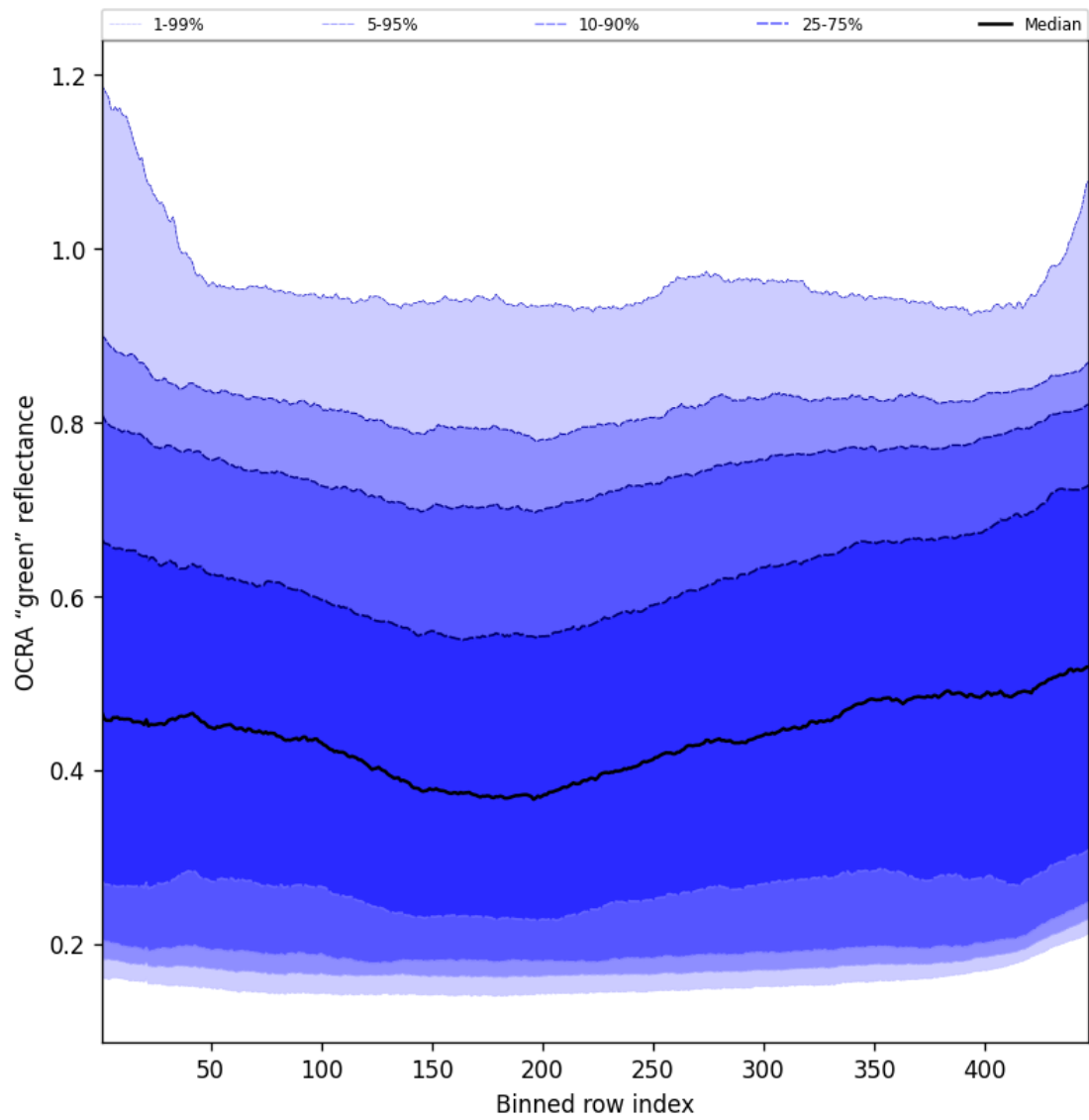


Figure 68: Along track statistics of "OCRA "green" reflectance" for 2025-07-04 to 2025-07-06

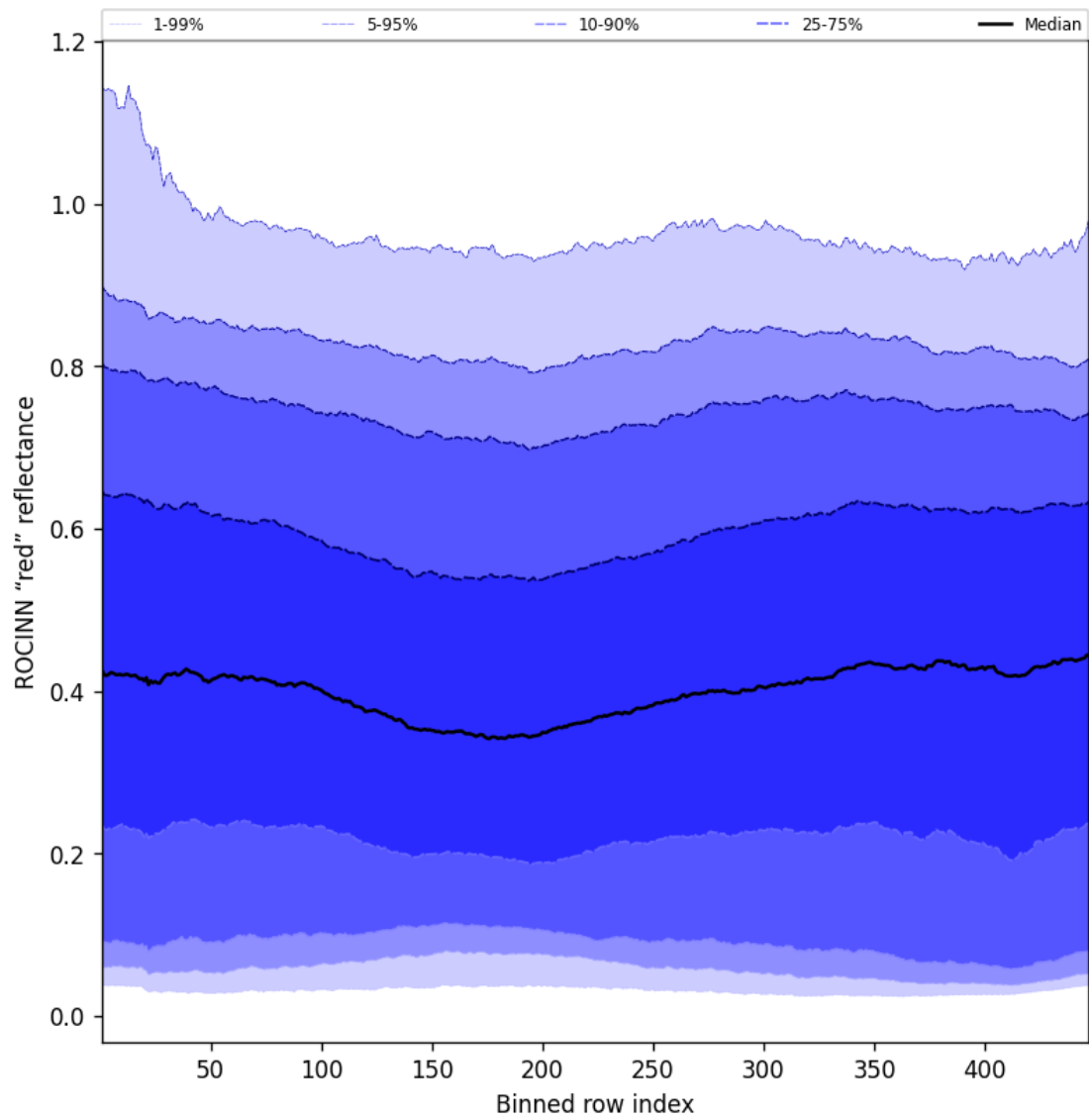


Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2025-07-04 to 2025-07-06

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.

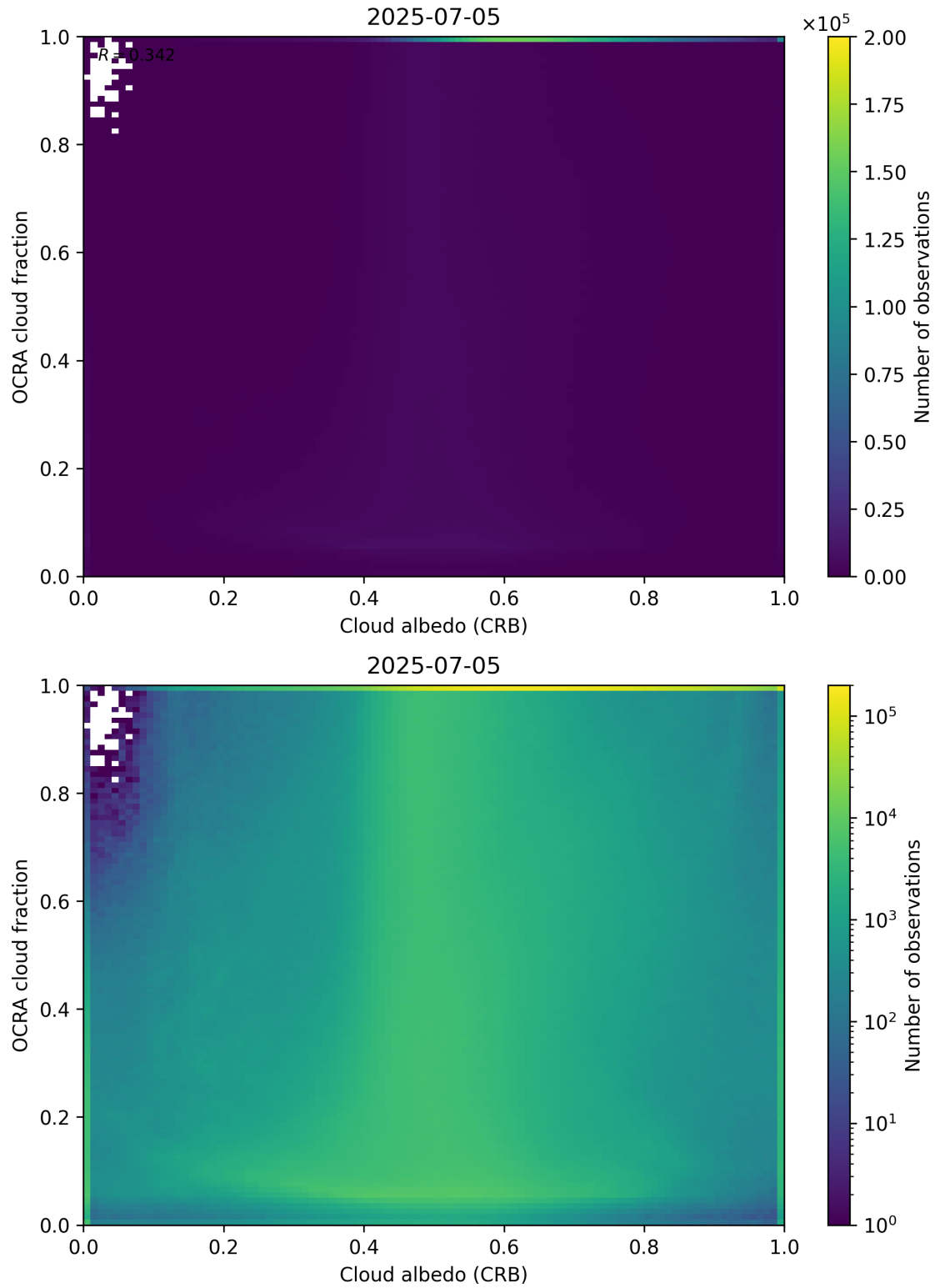


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-07-04 to 2025-07-06.

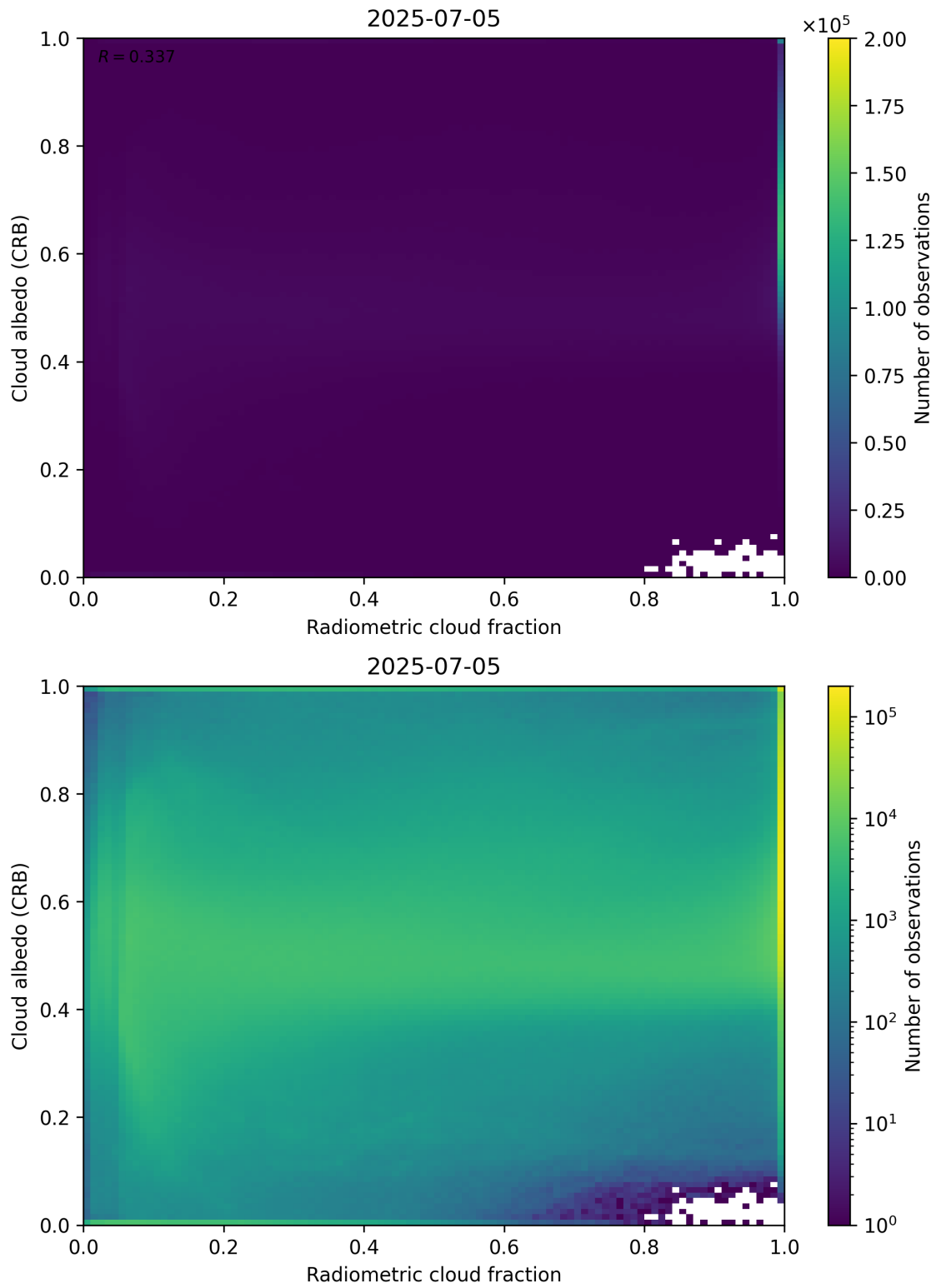


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-07-04 to 2025-07-06.

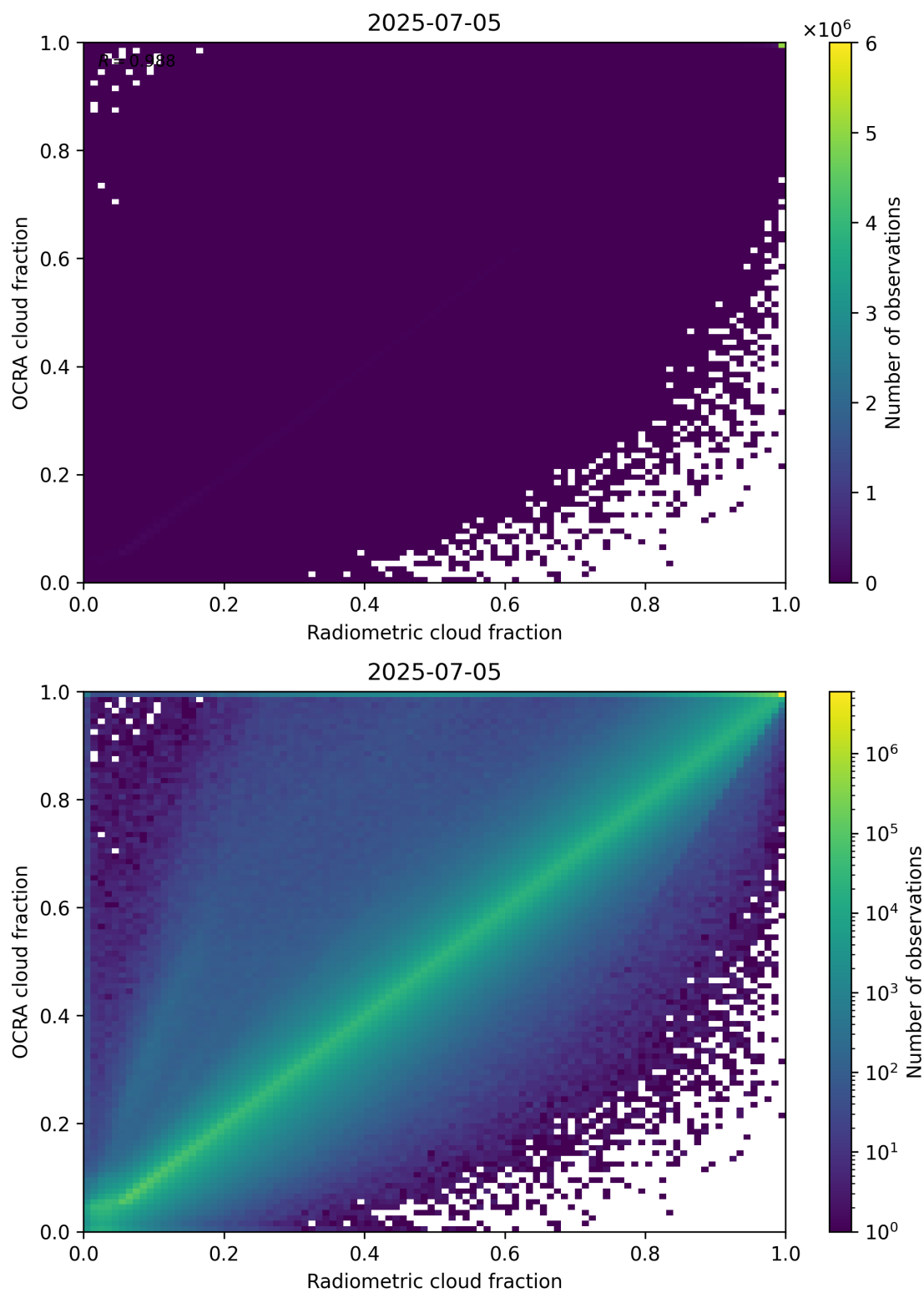


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-07-04 to 2025-07-06.

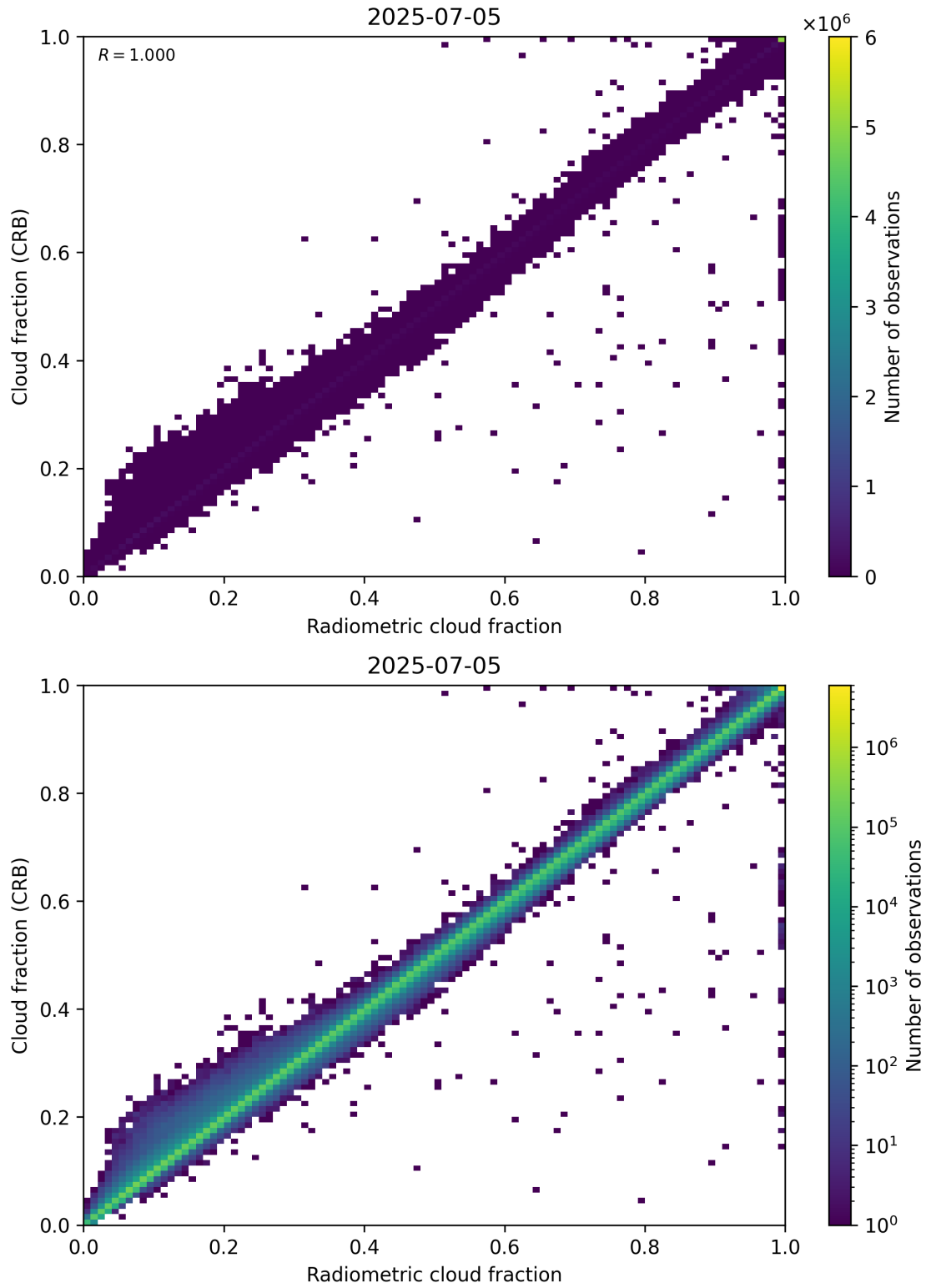


Figure 73: Scatter density plot of “Radiometric cloud fraction” against “Cloud fraction (CRB)” for 2025-07-04 to 2025-07-06.

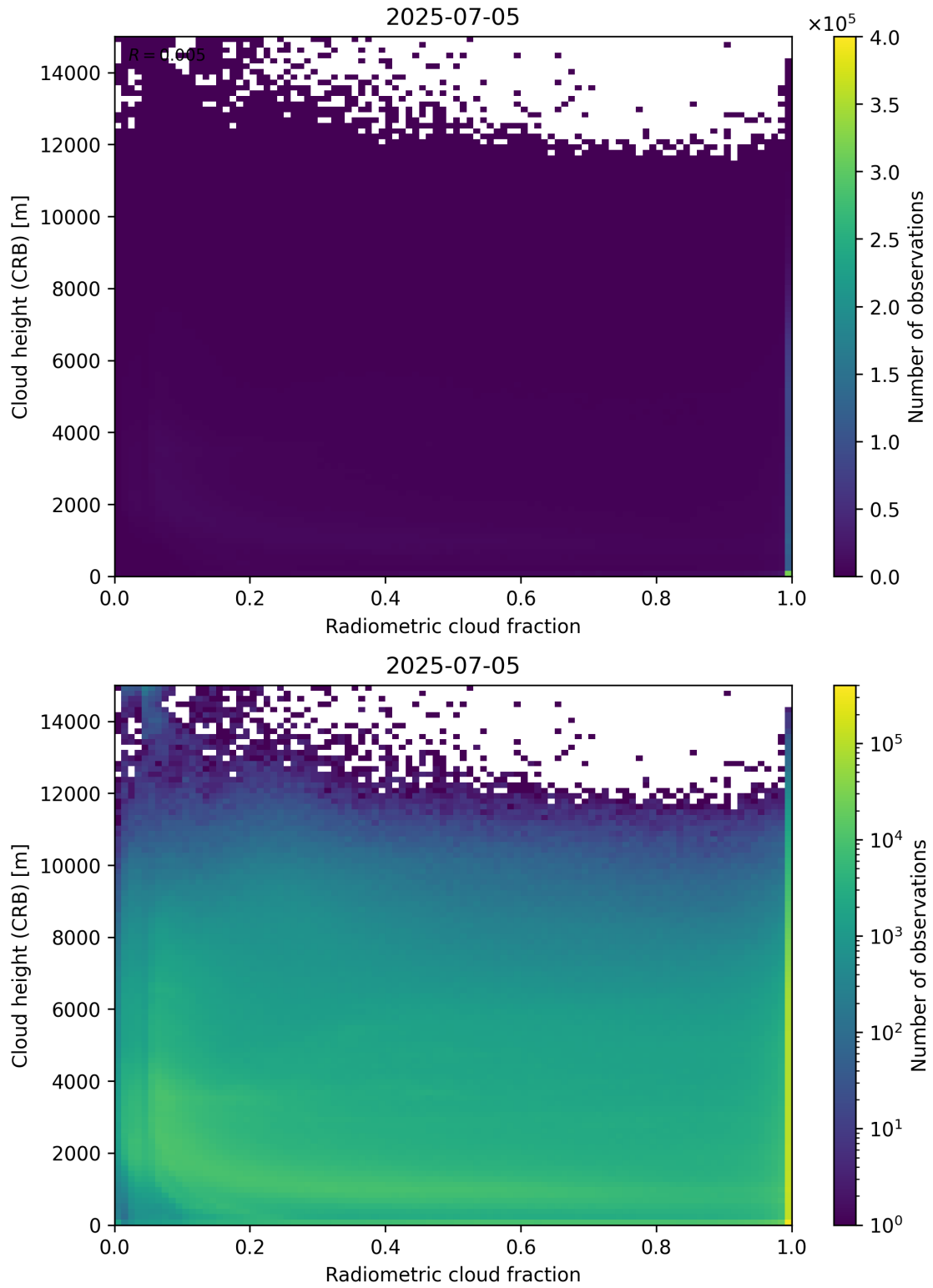


Figure 74: Scatter density plot of “Radiometric cloud fraction” against “Cloud height (CRB)” for 2025-07-04 to 2025-07-06.

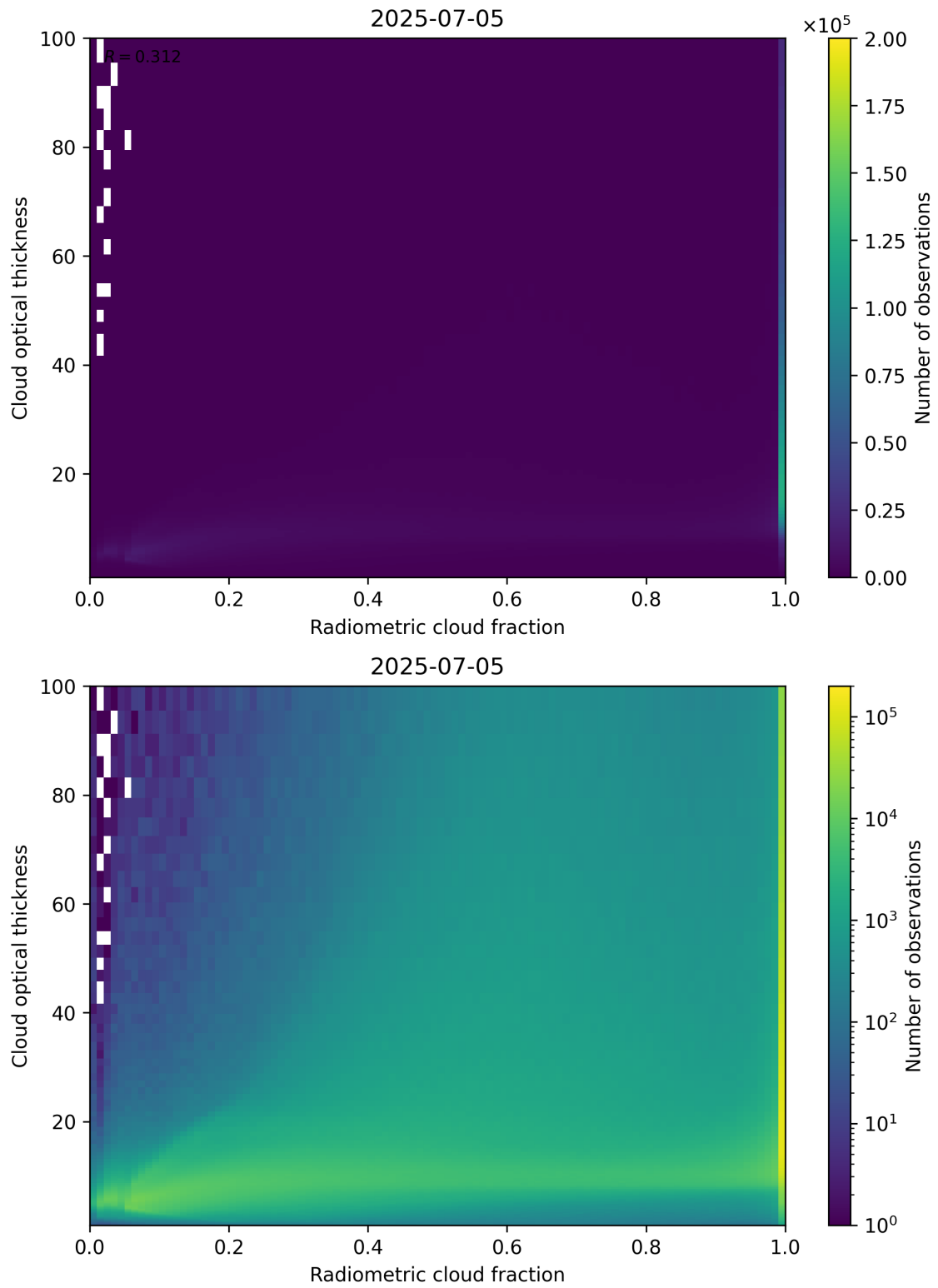


Figure 75: Scatter density plot of “Radiometric cloud fraction” against “Cloud optical thickness” for 2025-07-04 to 2025-07-06.

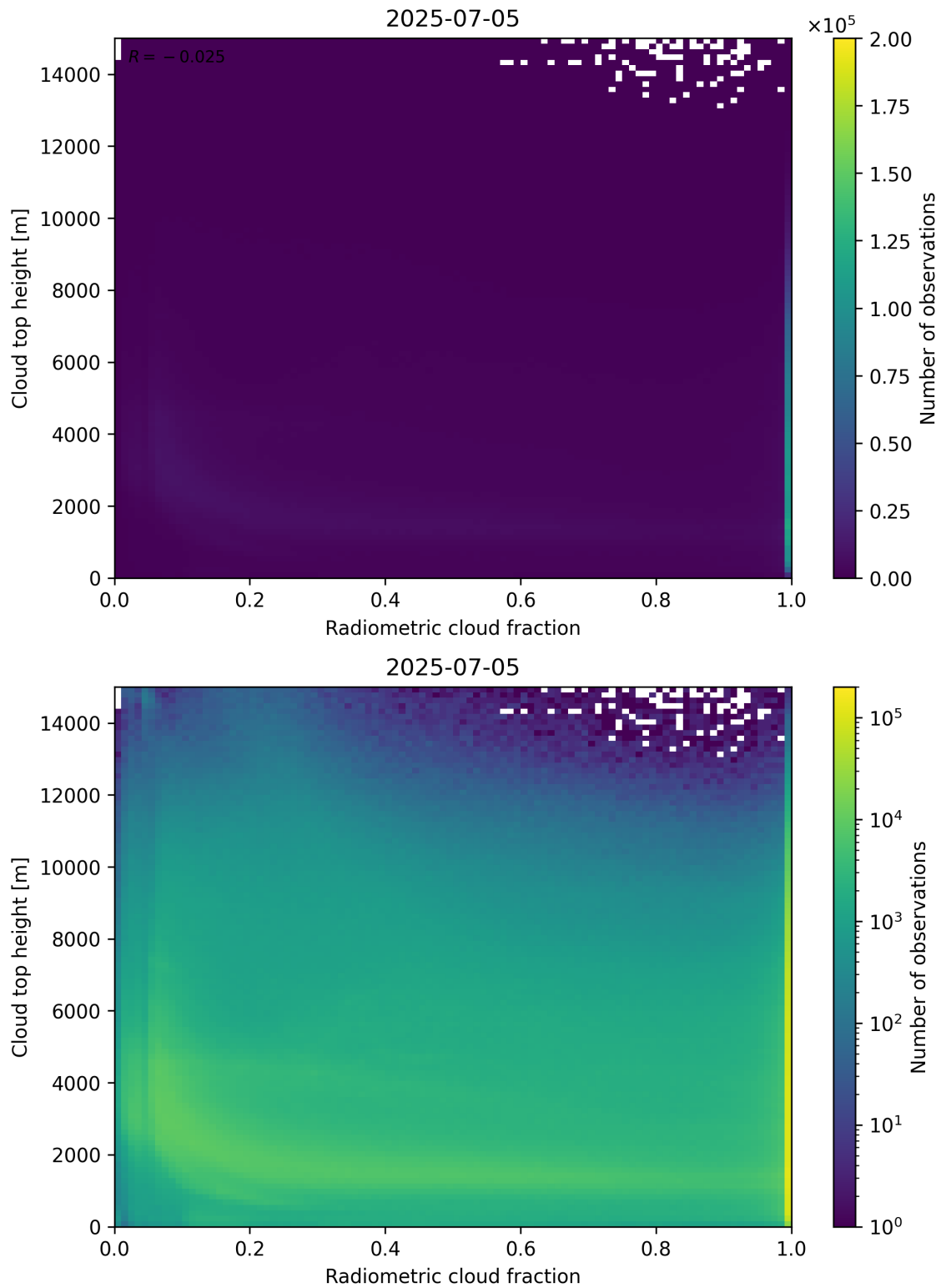


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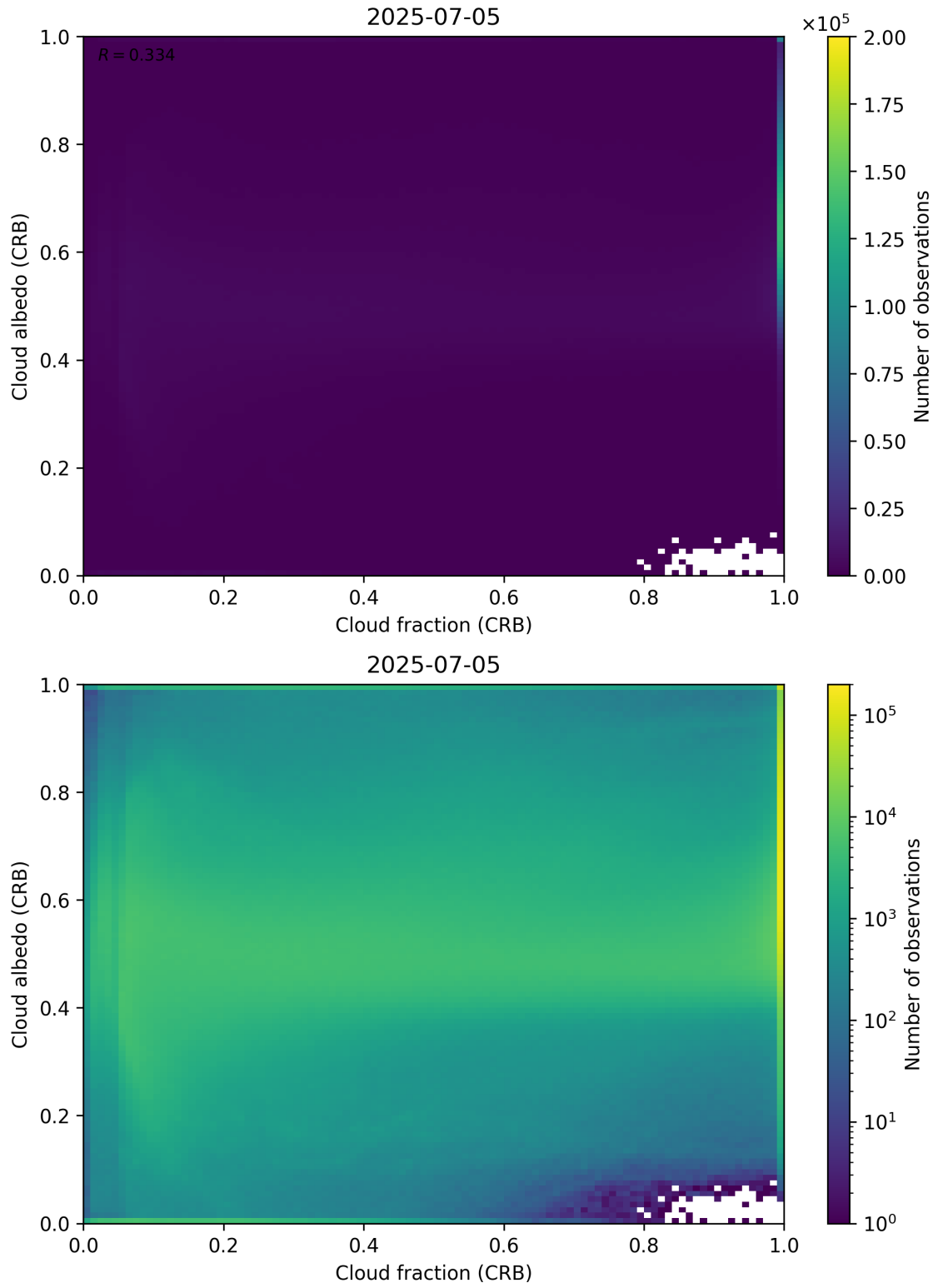


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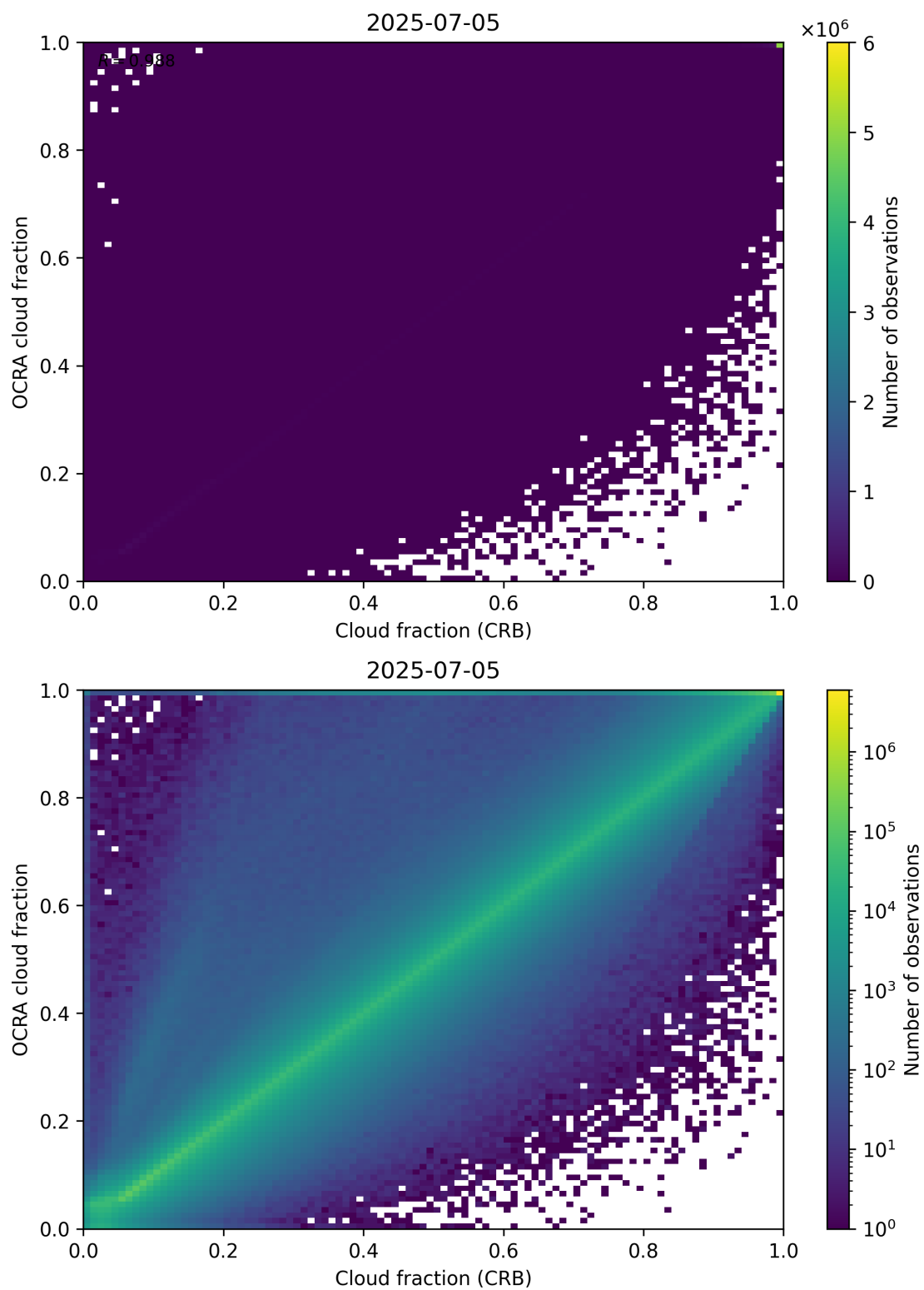


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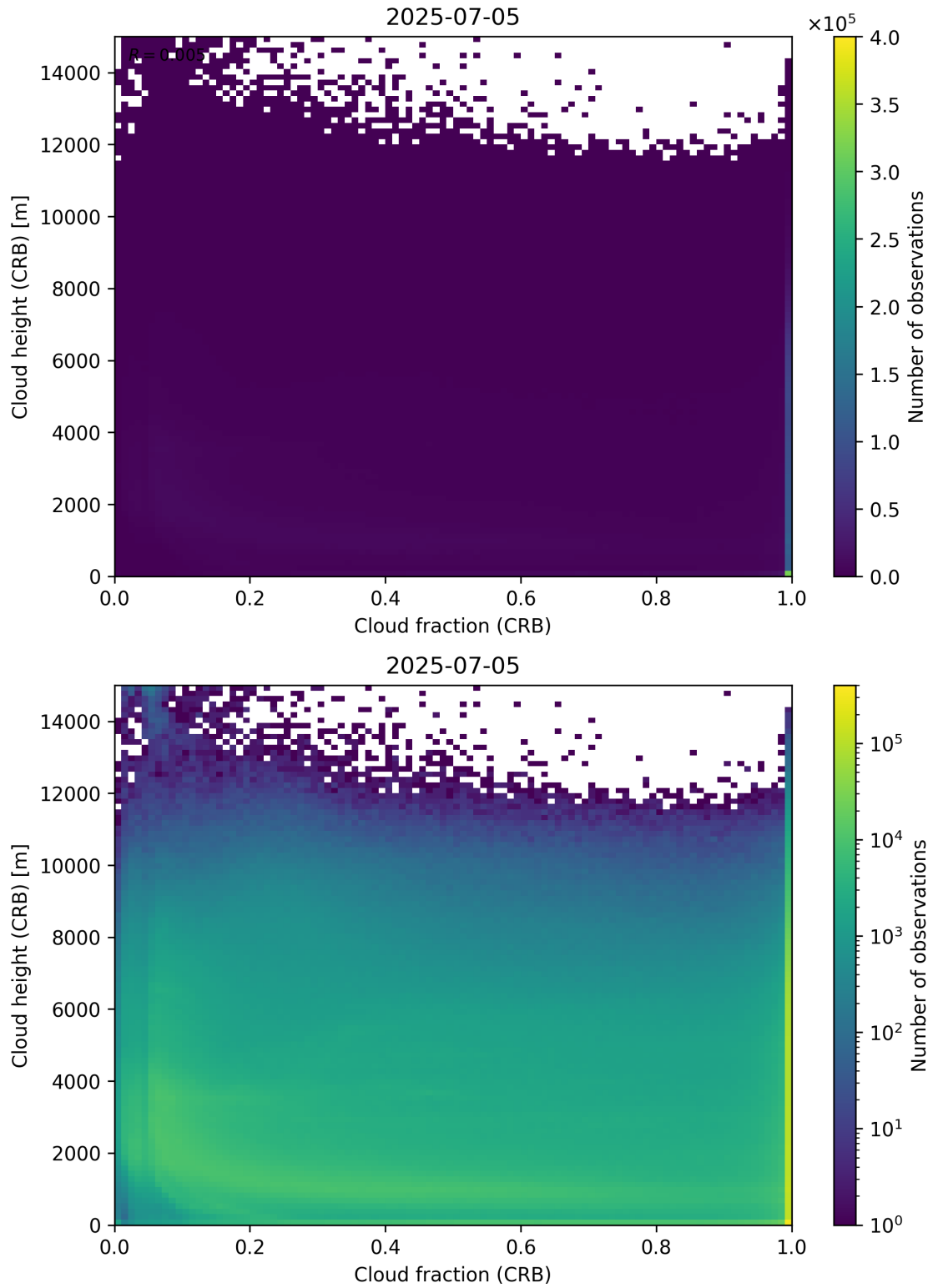


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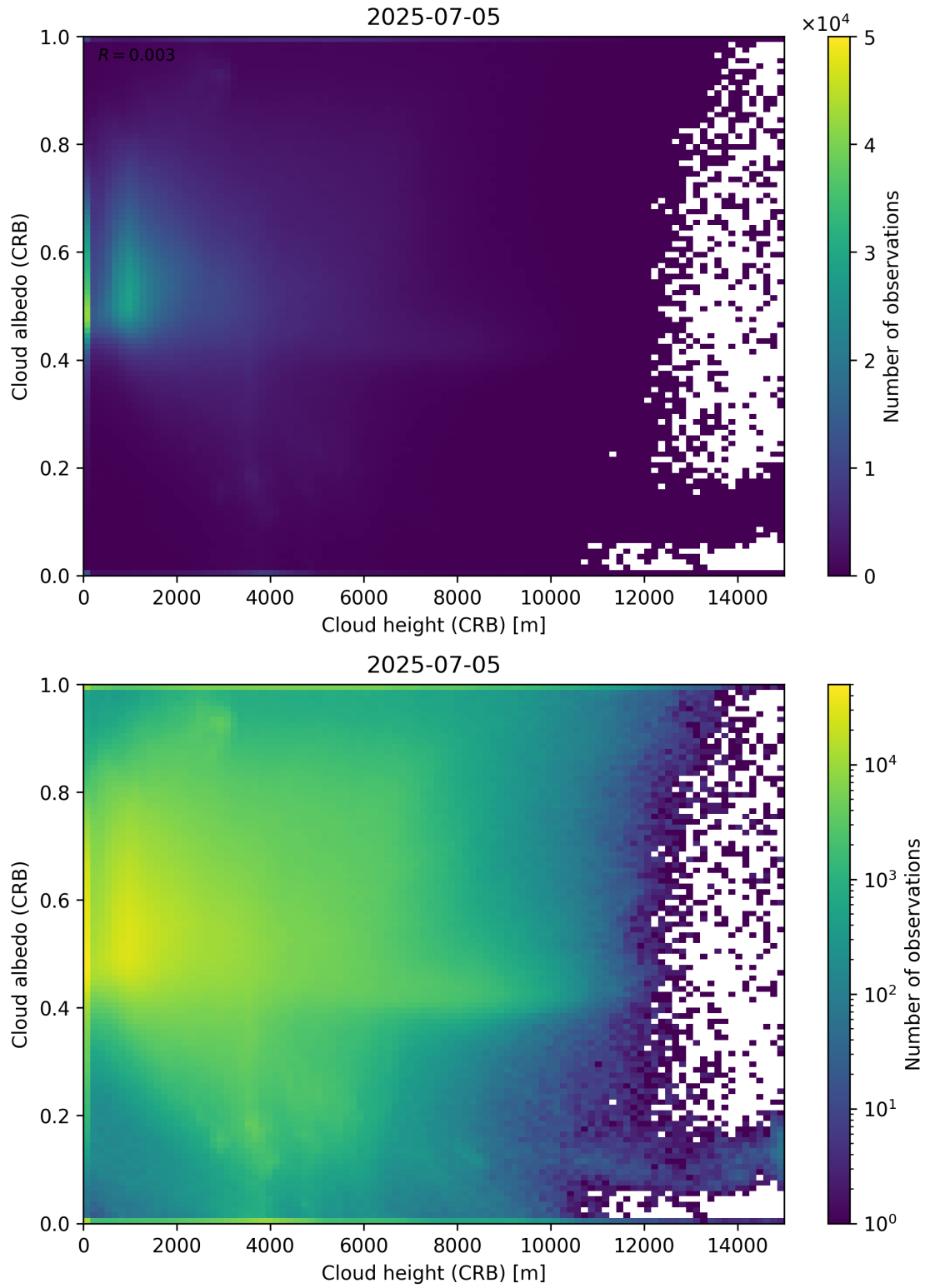


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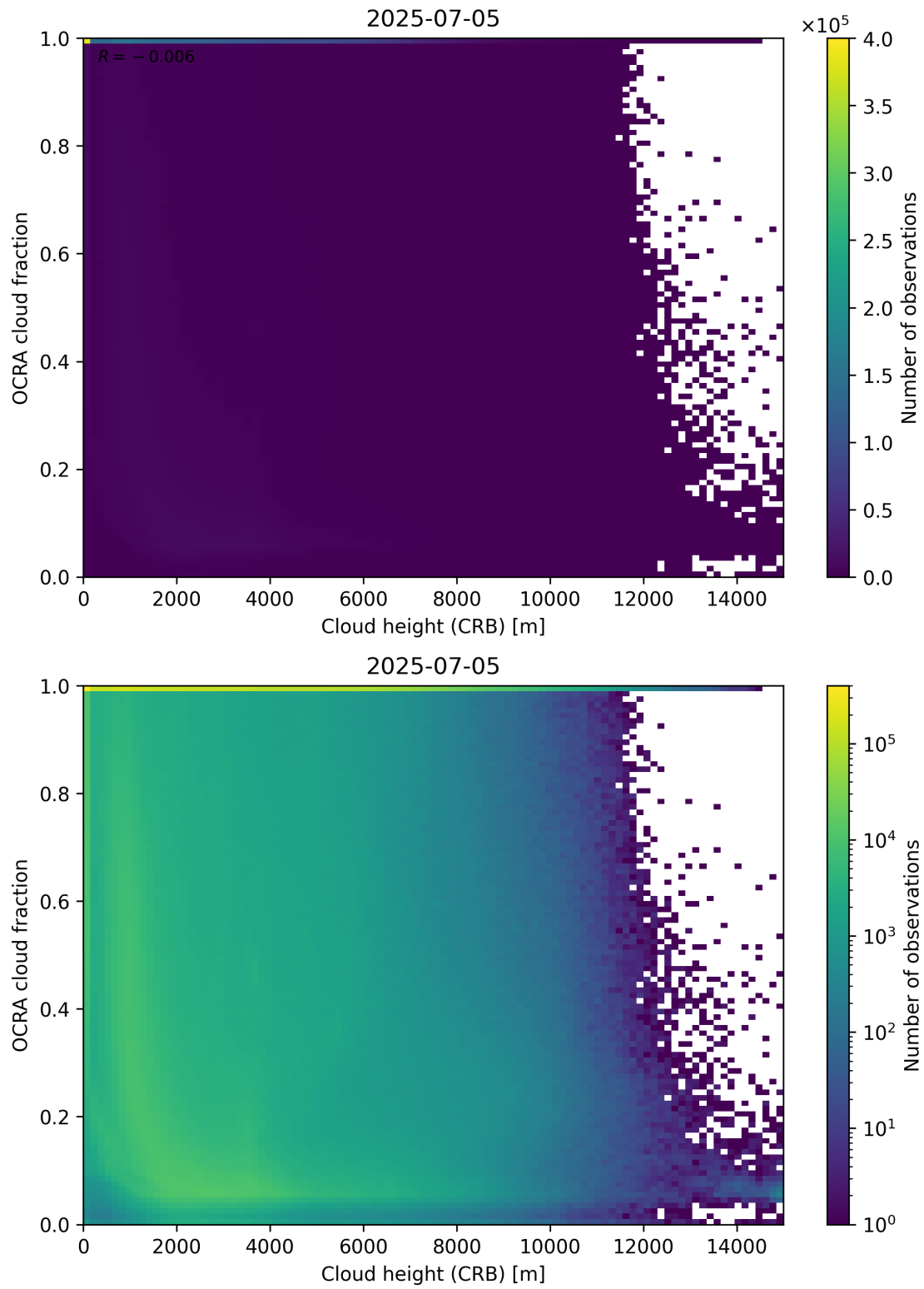


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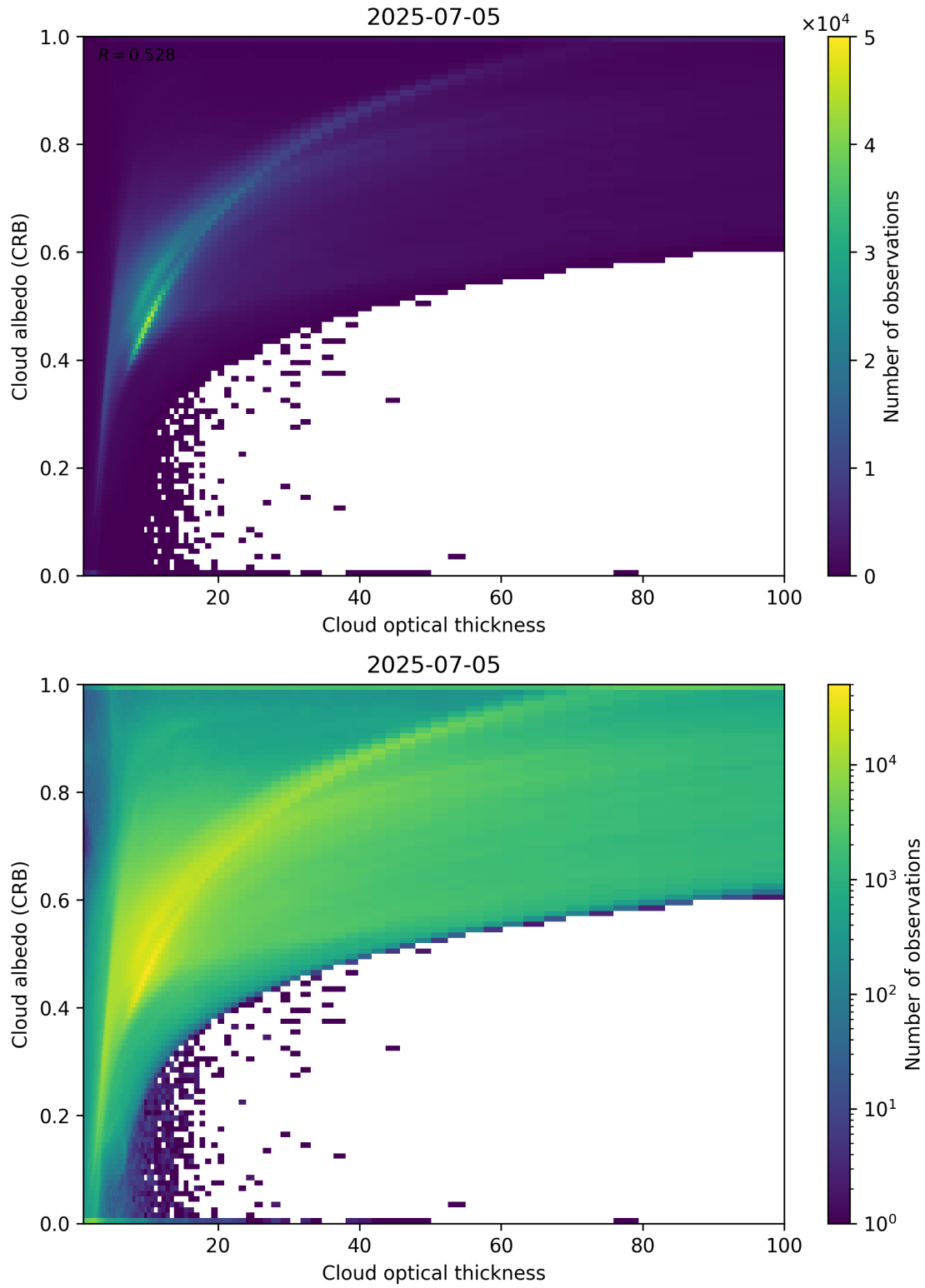


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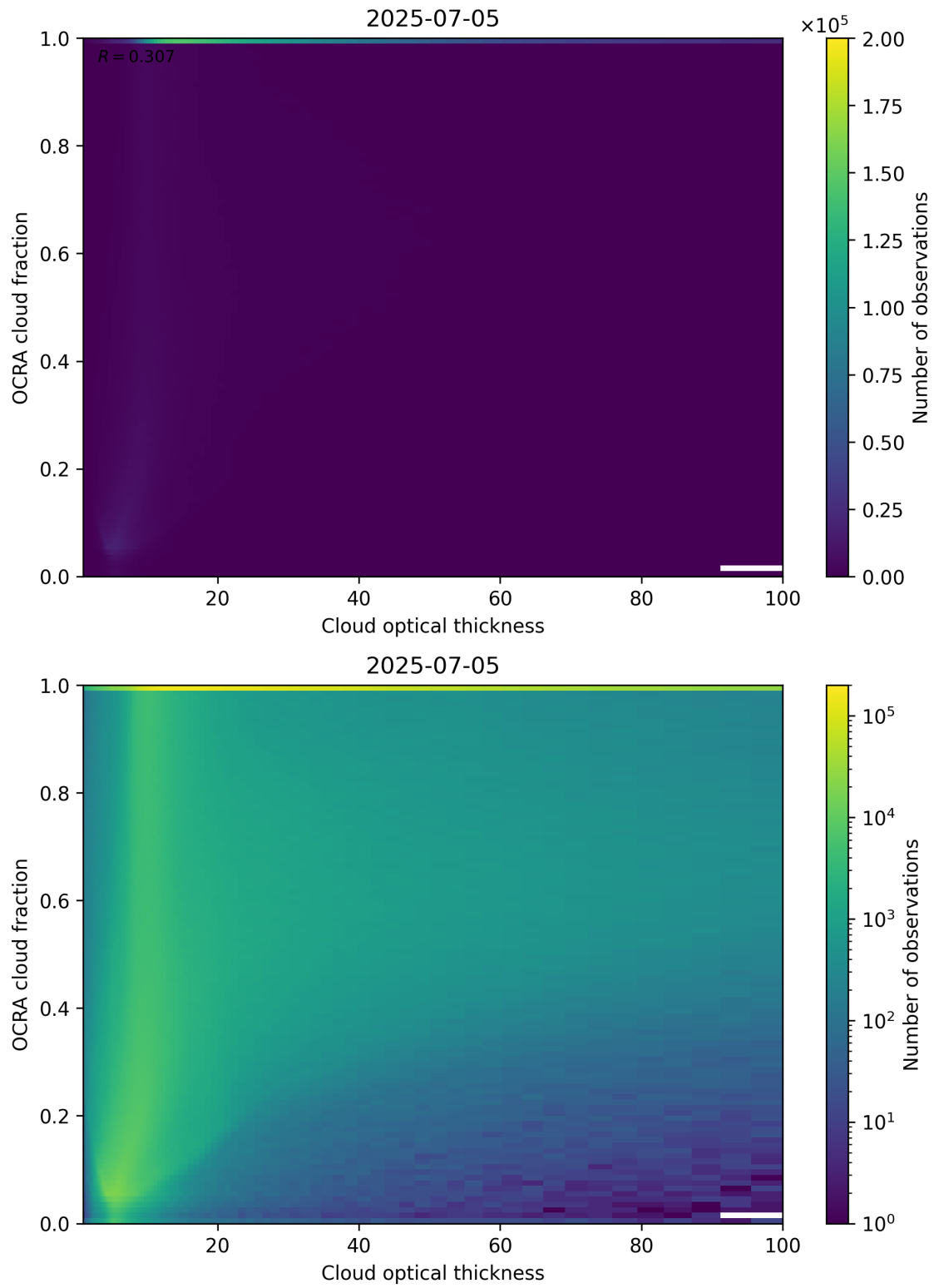


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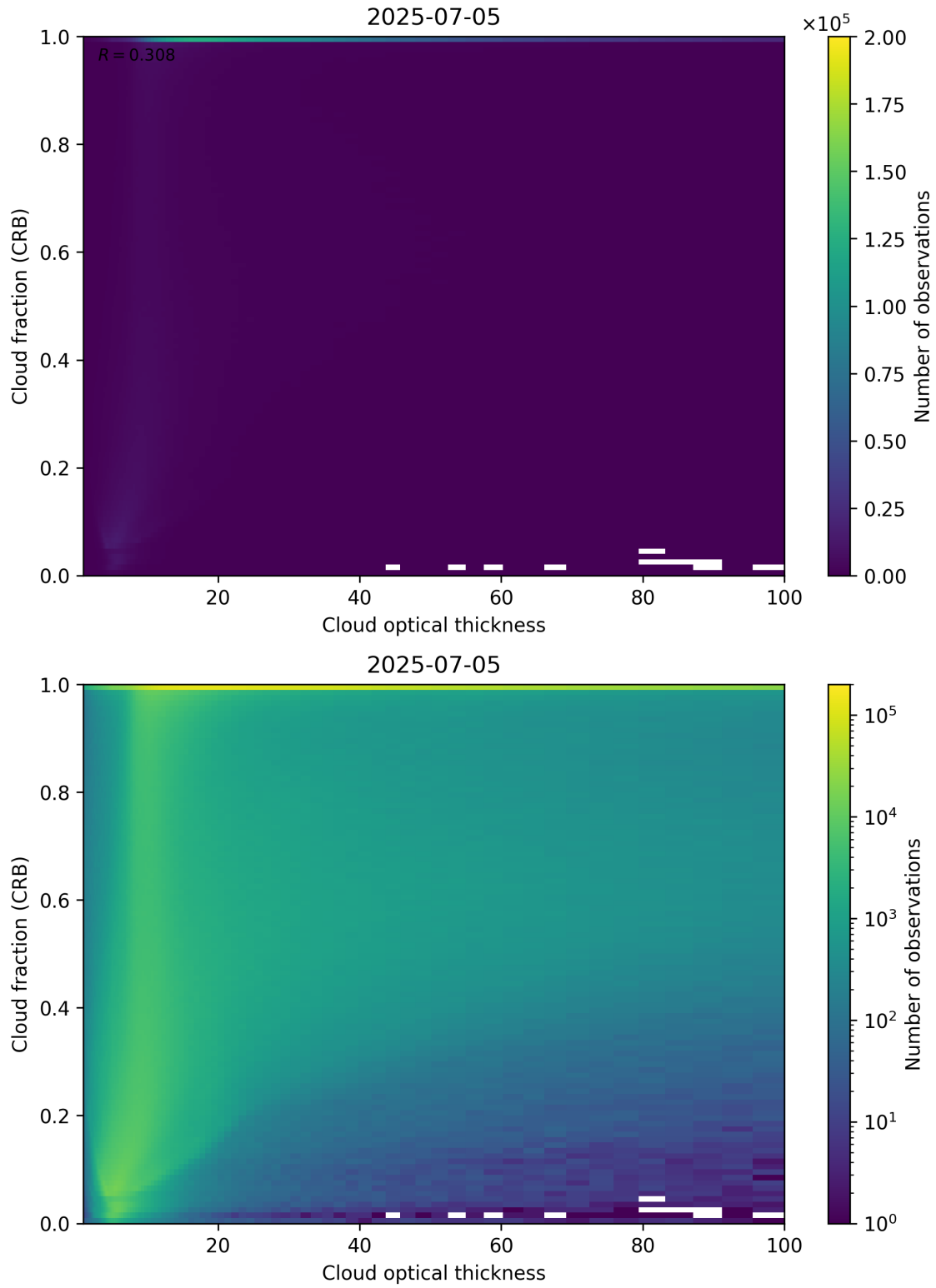


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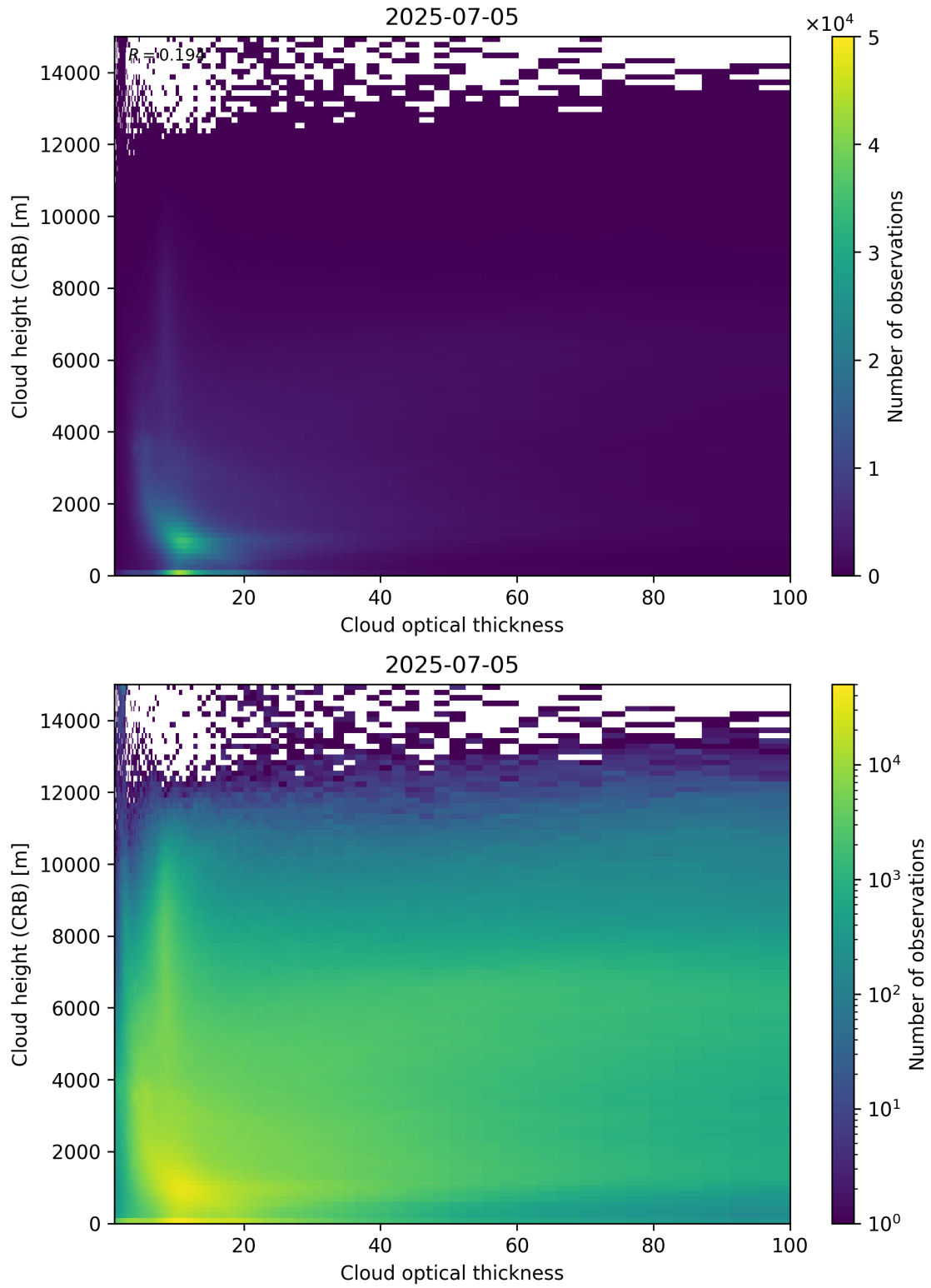


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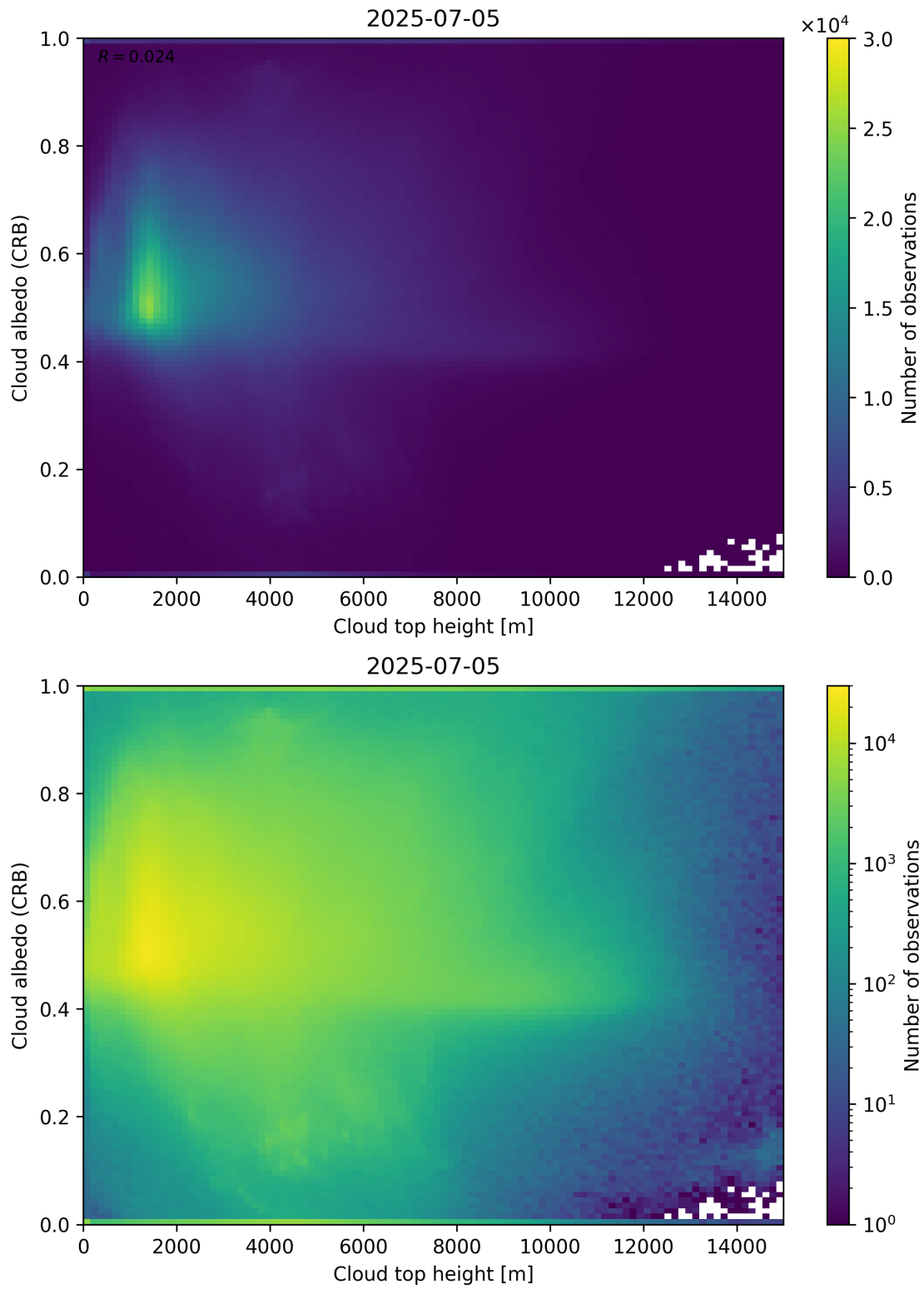


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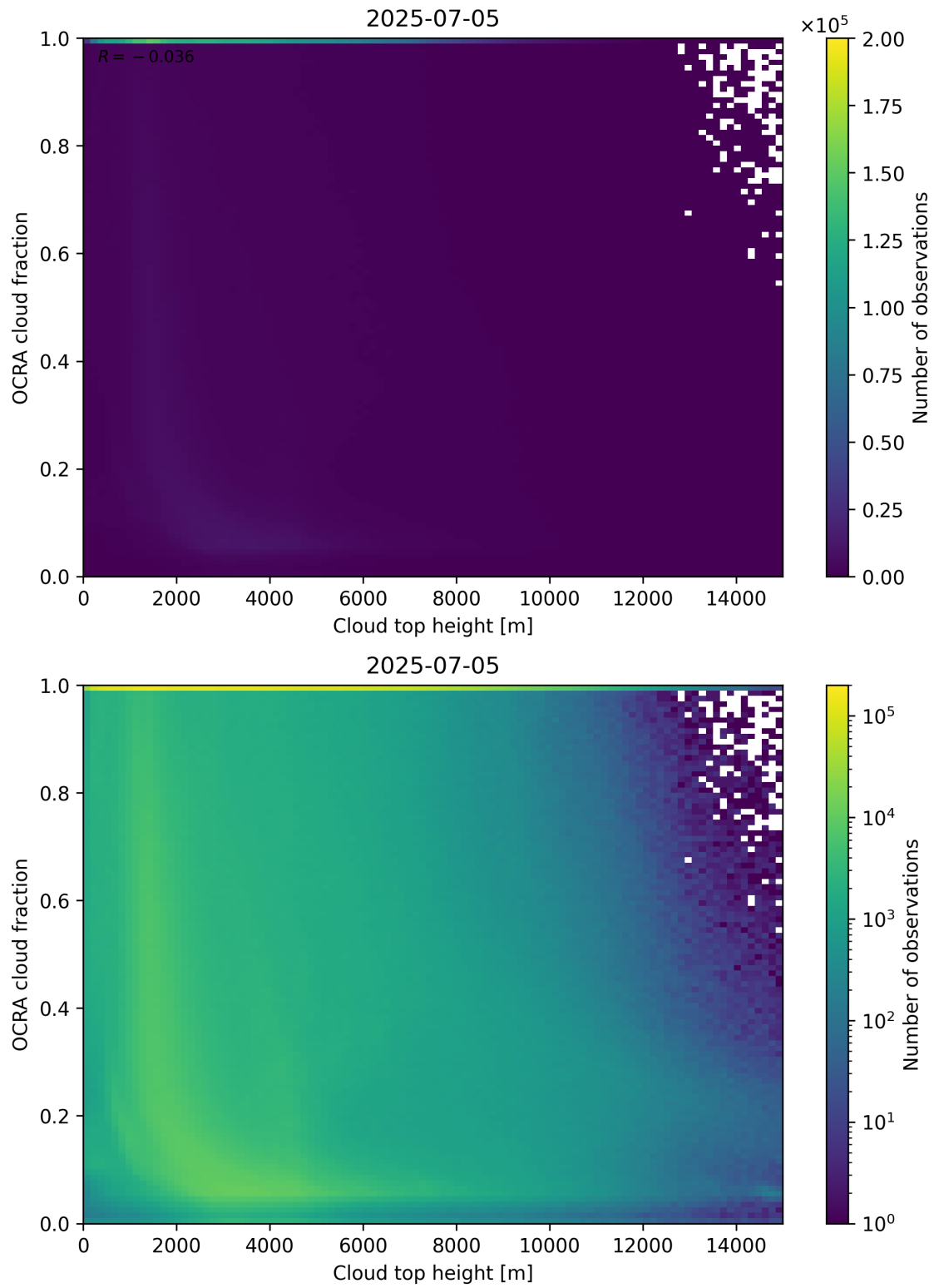


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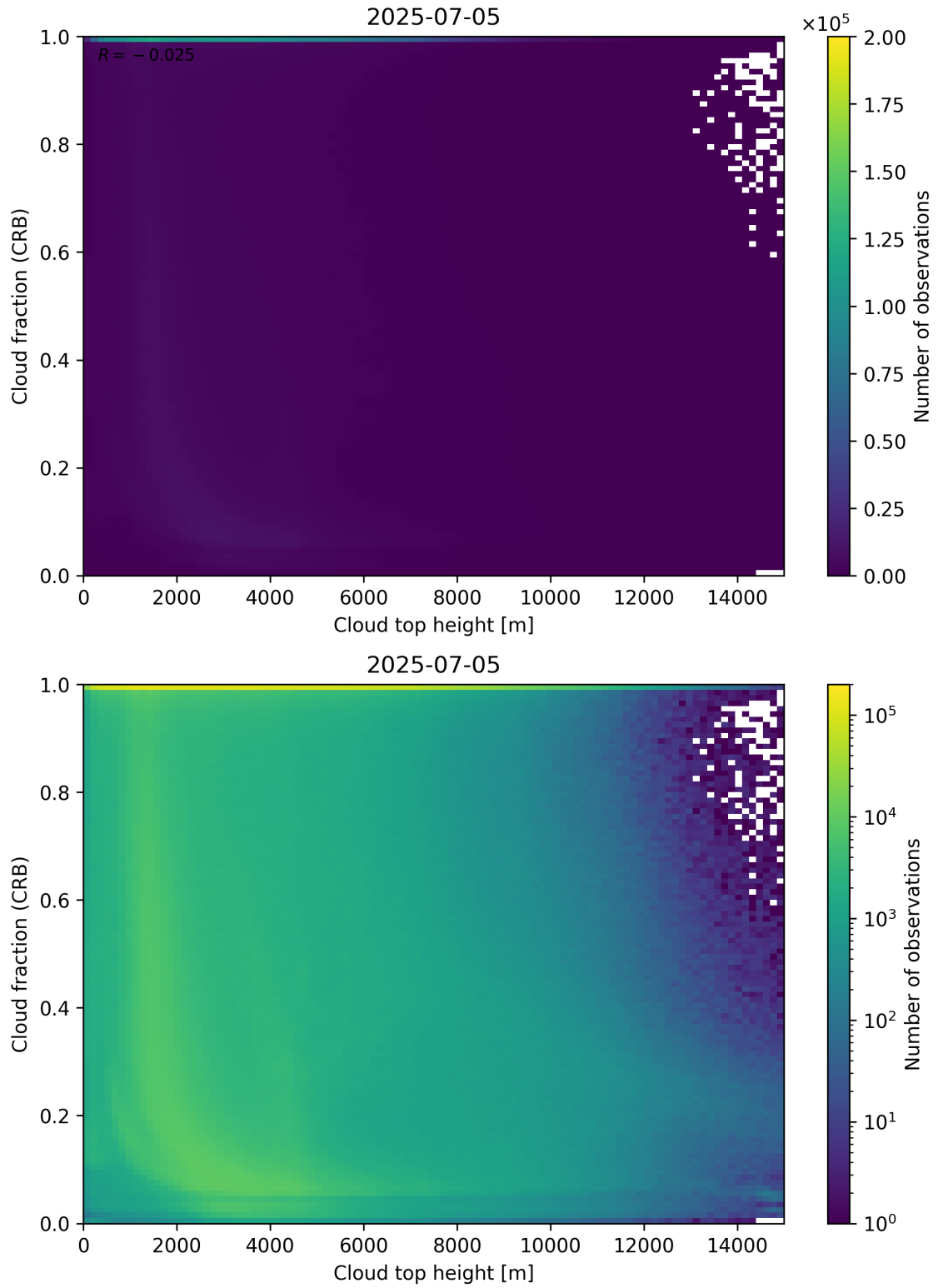


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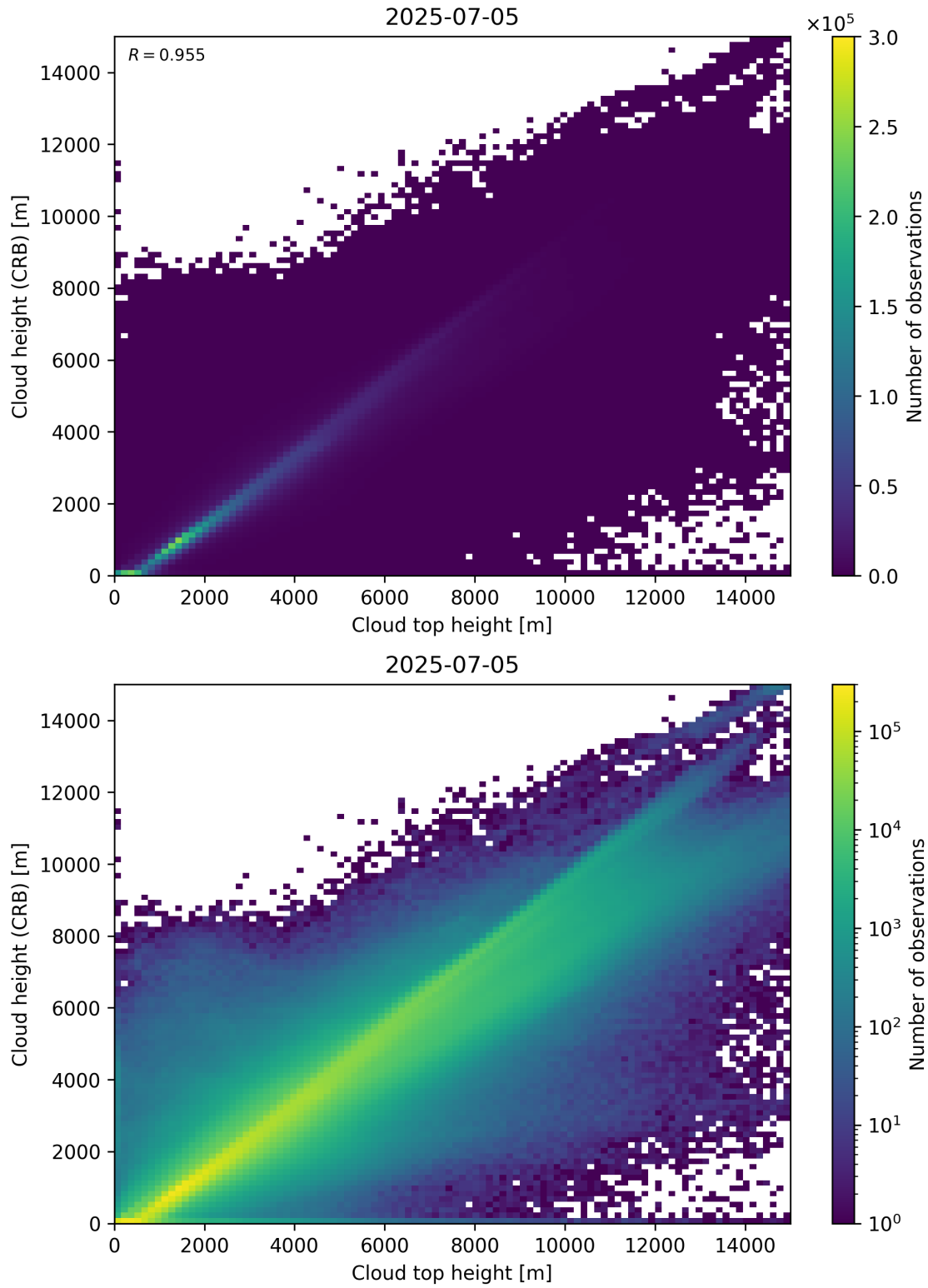


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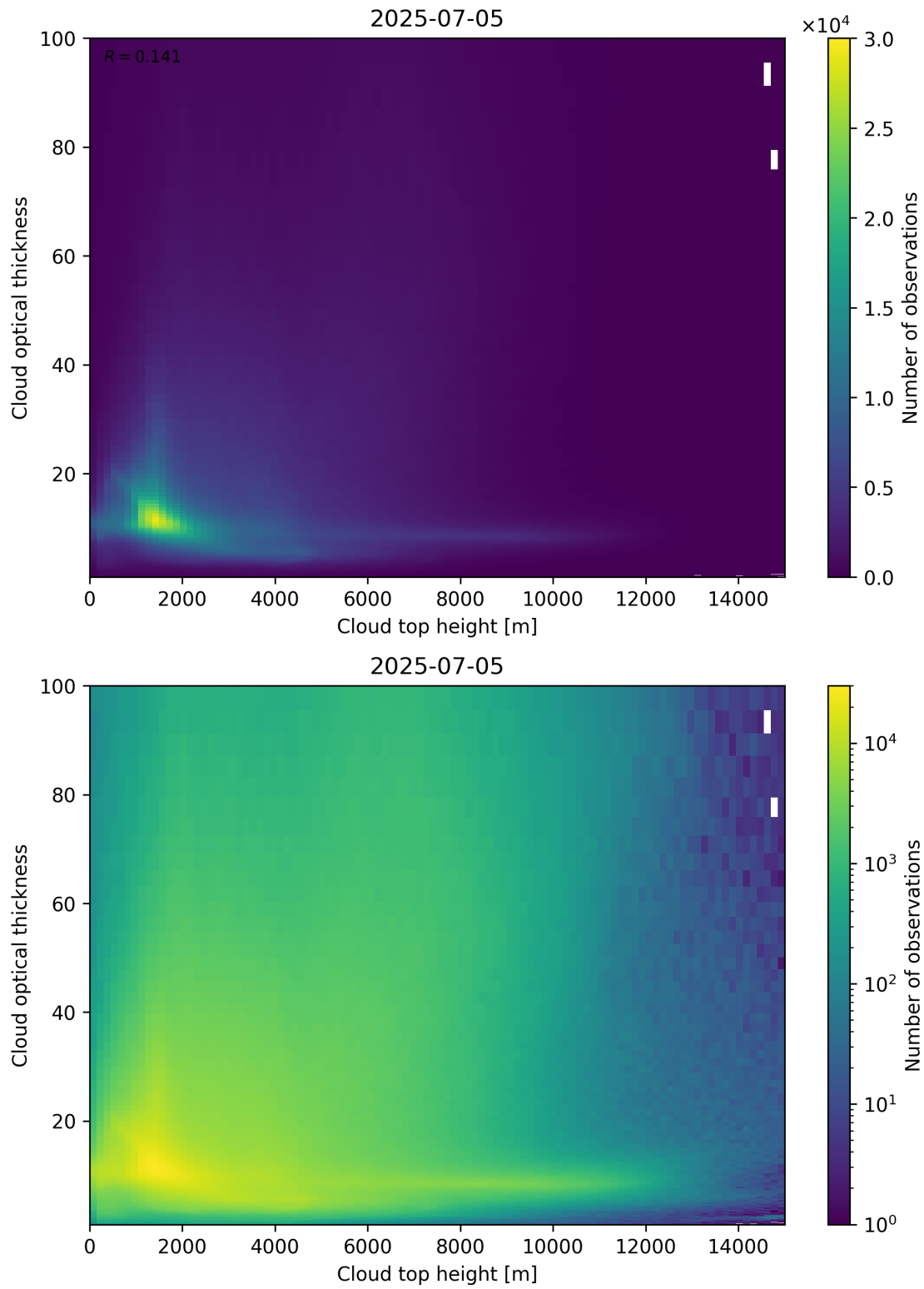


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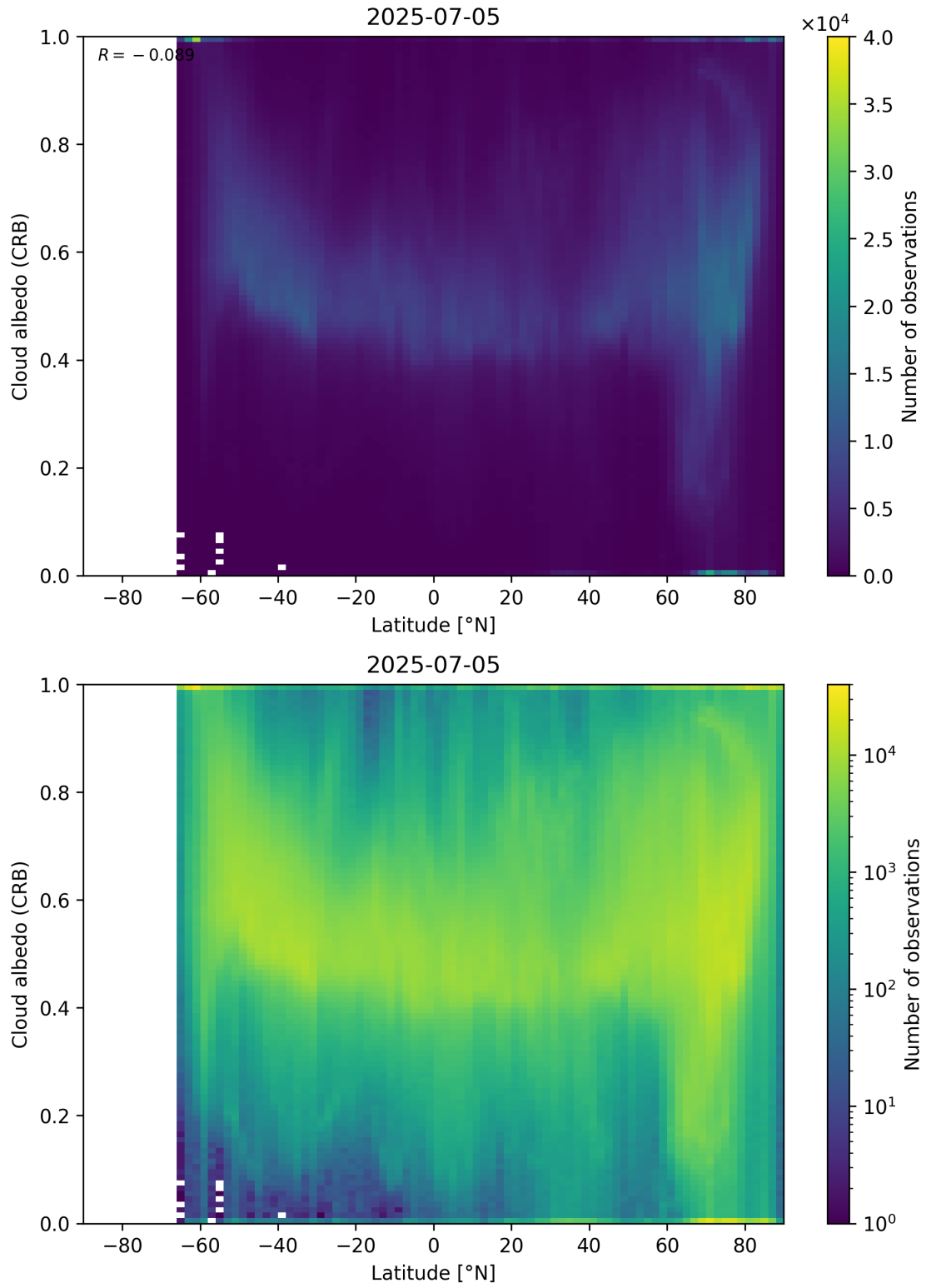


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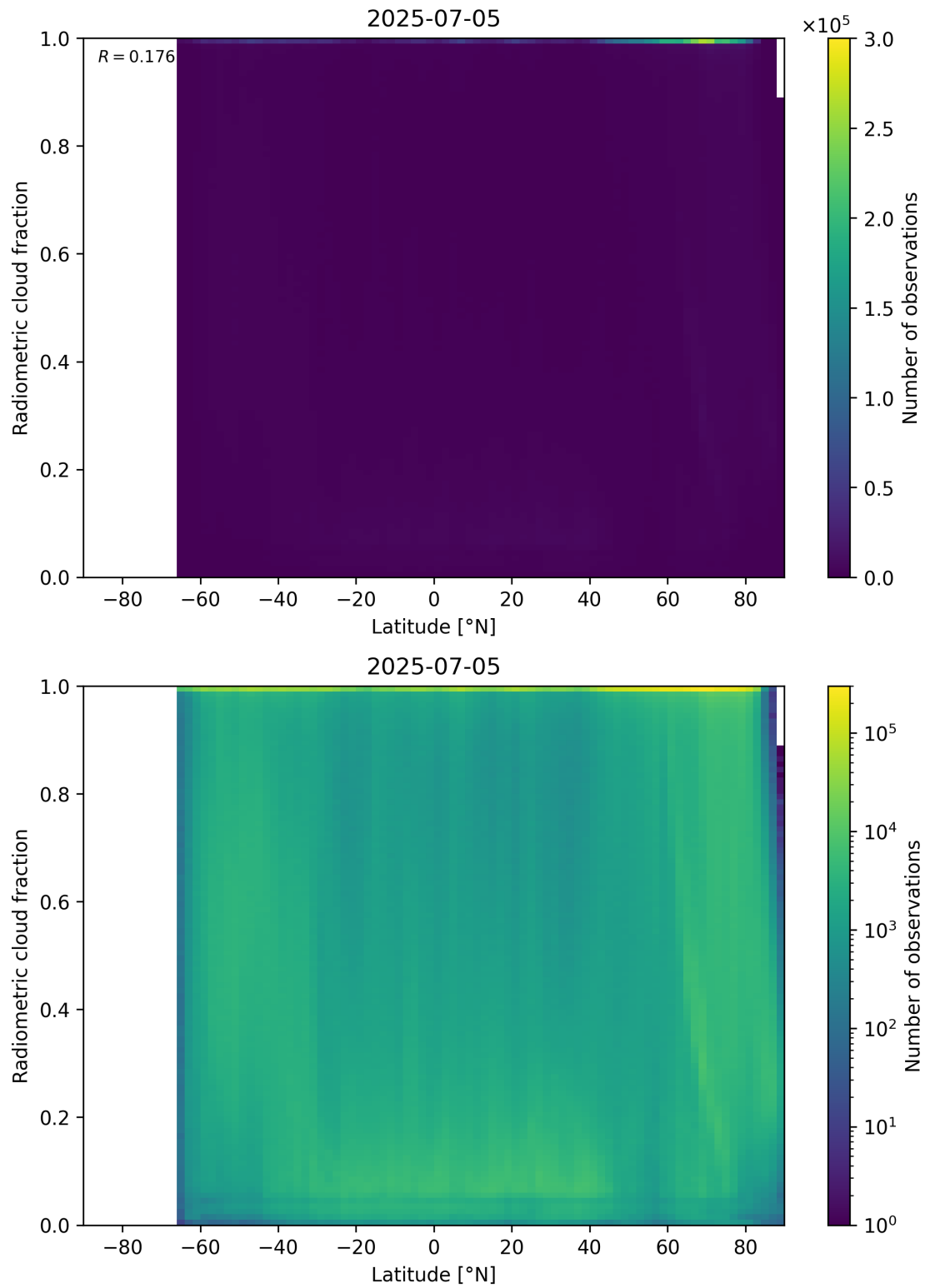


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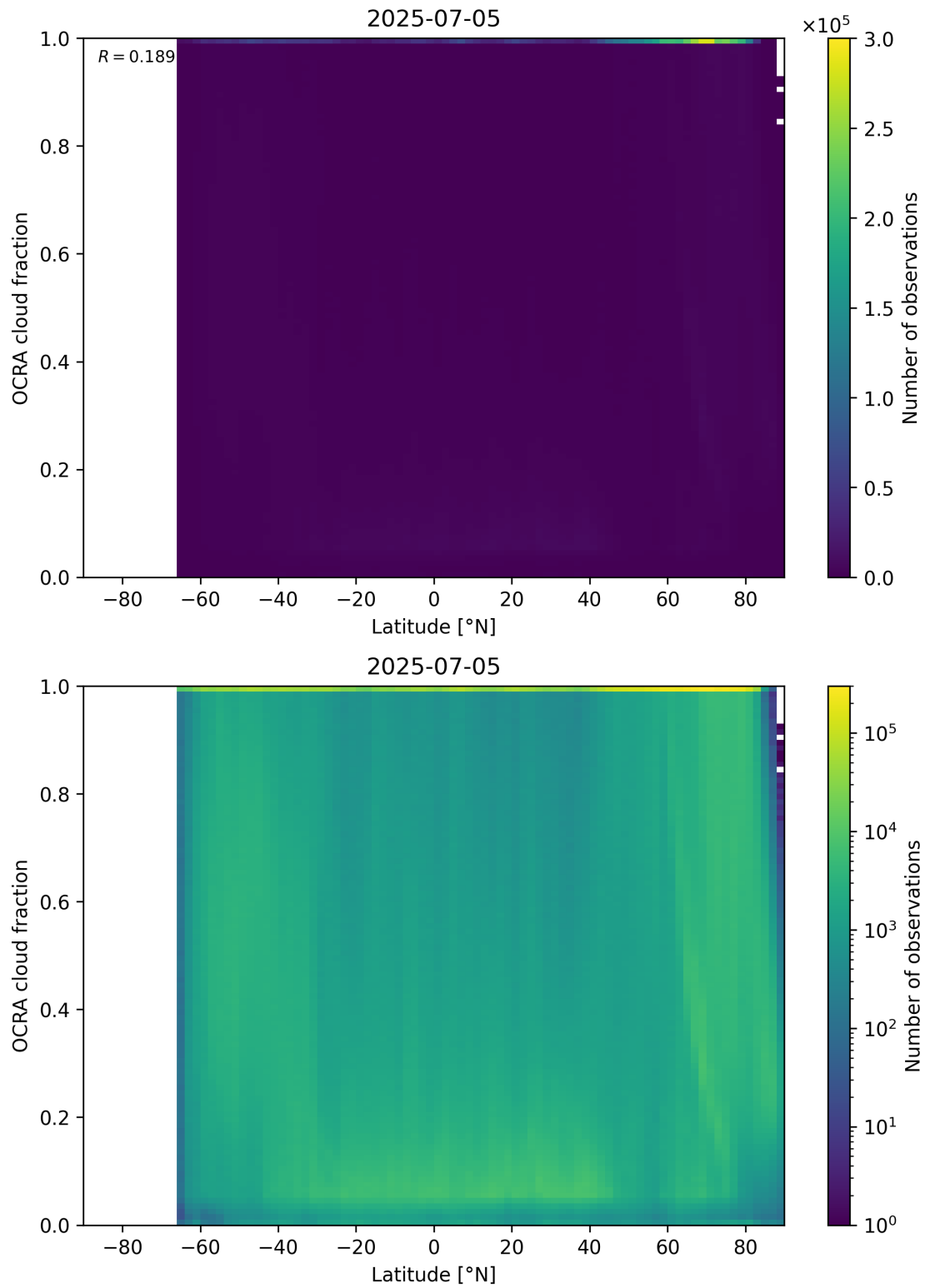


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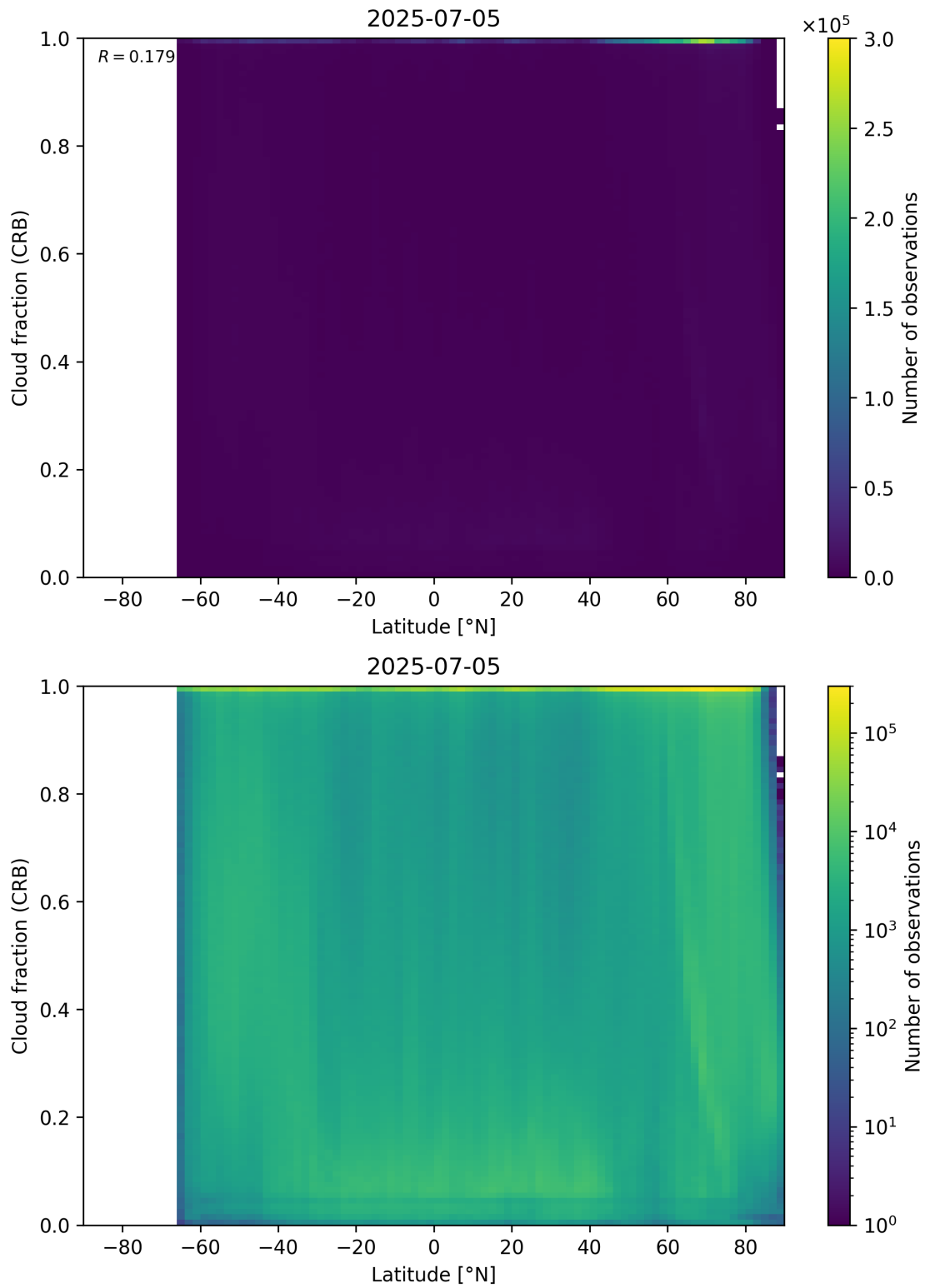


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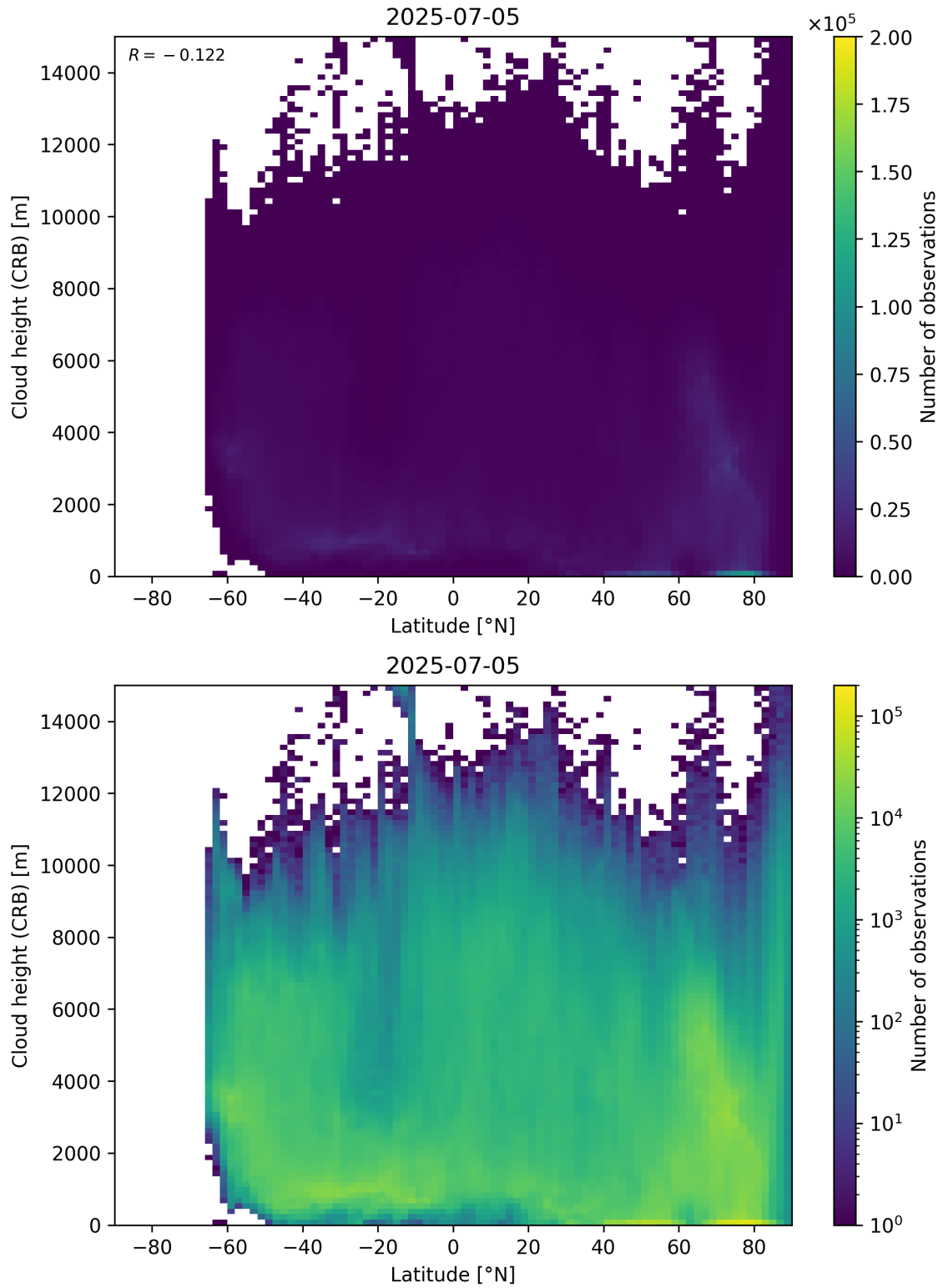


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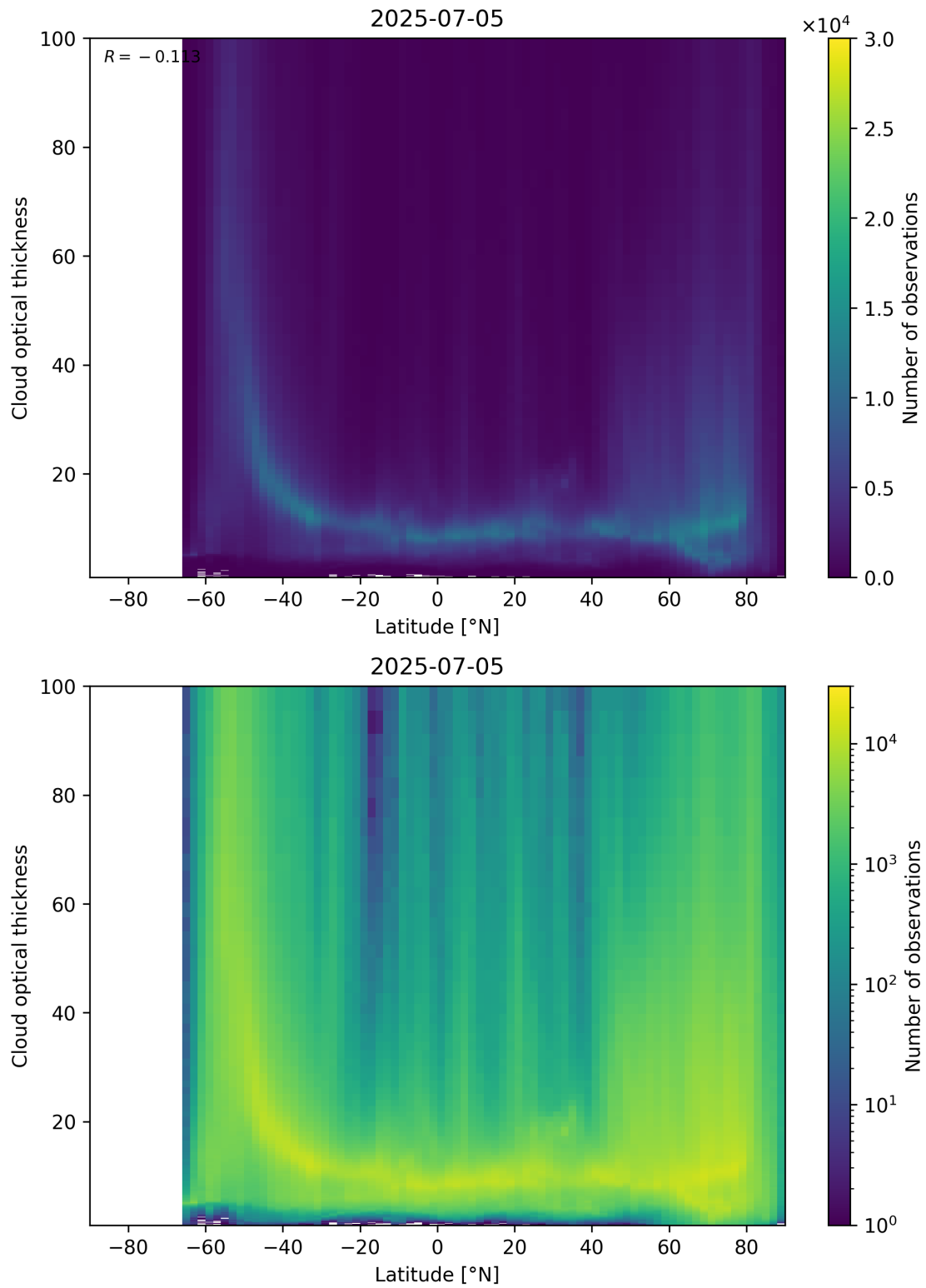


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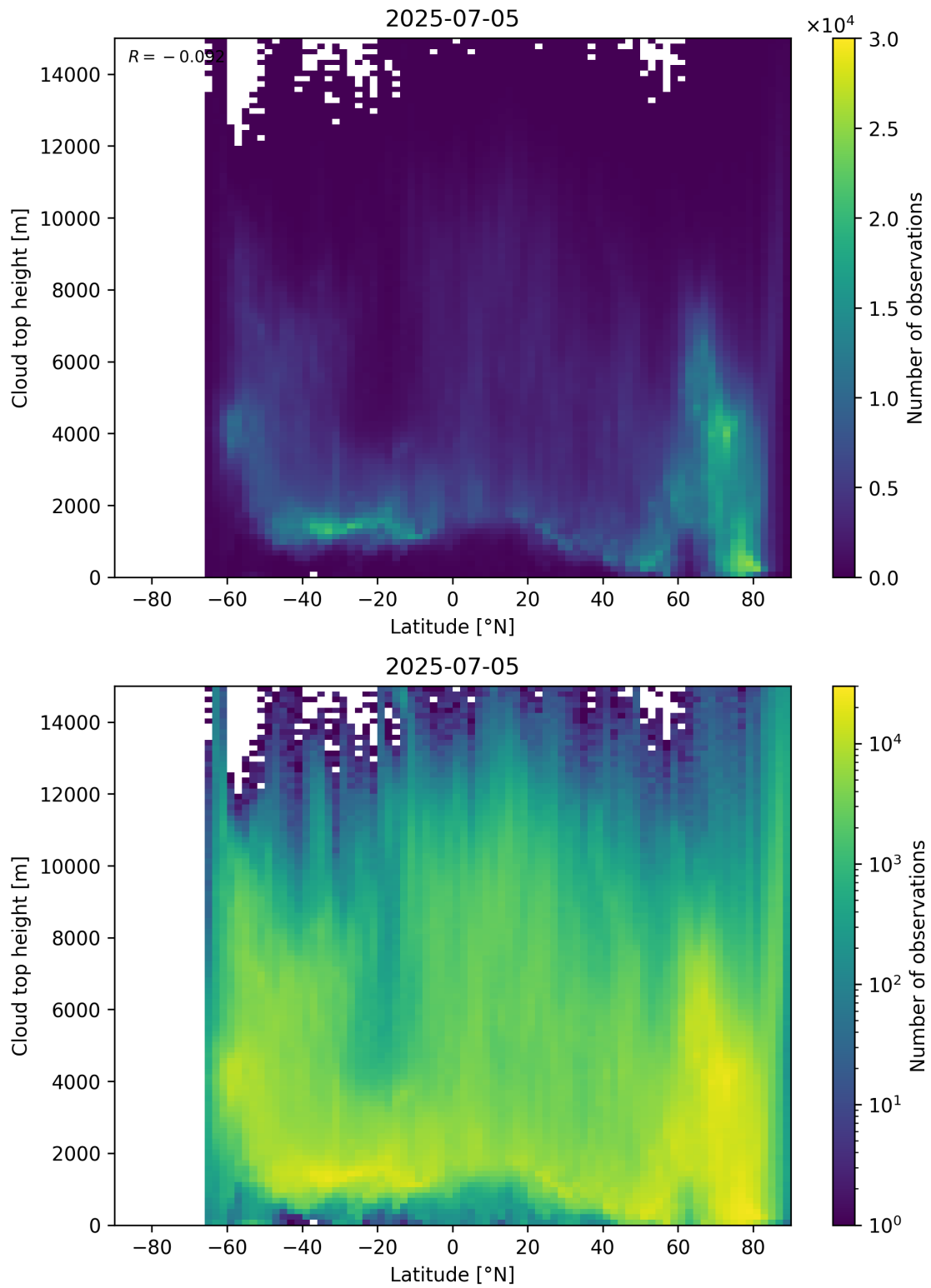


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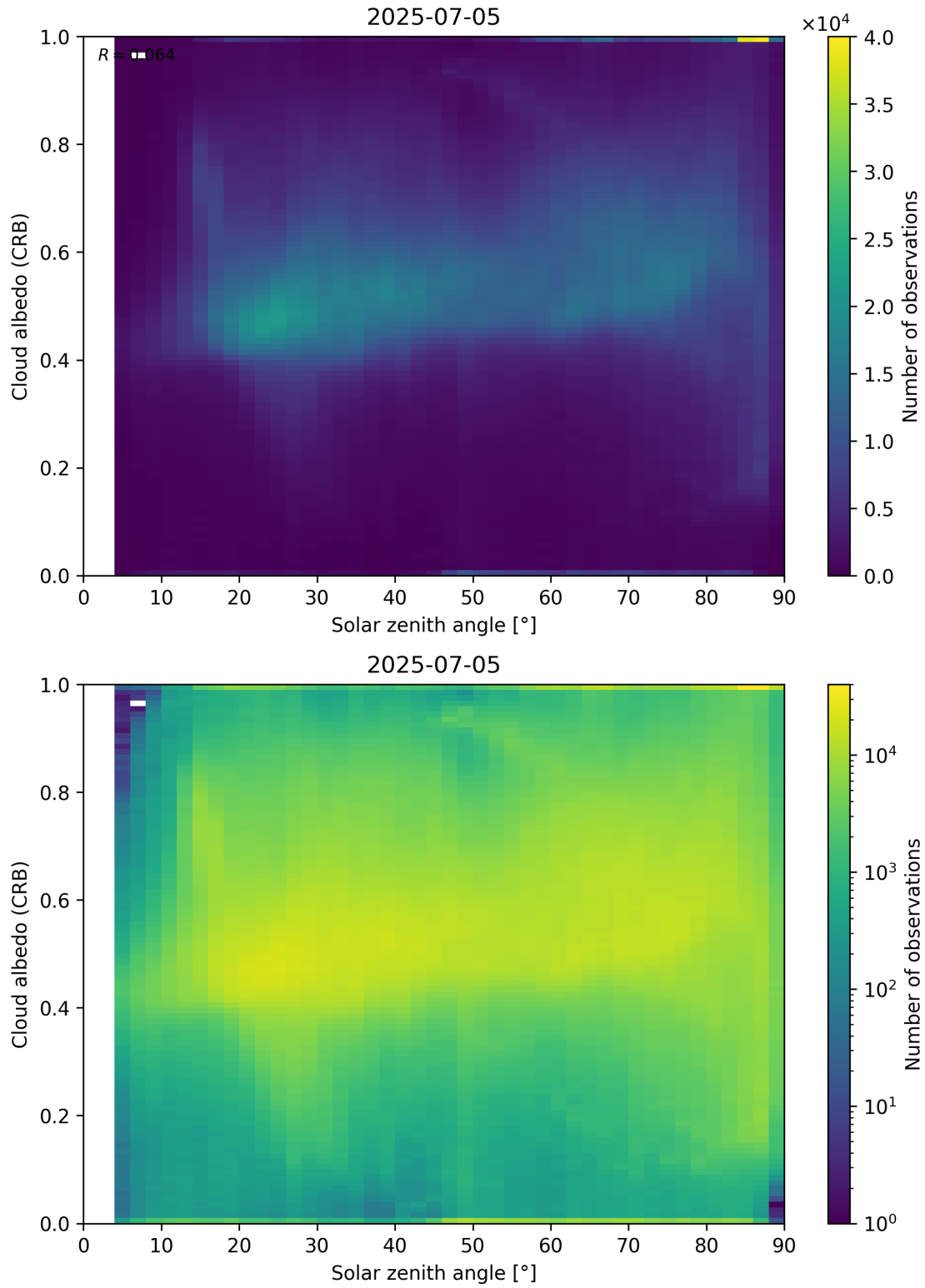


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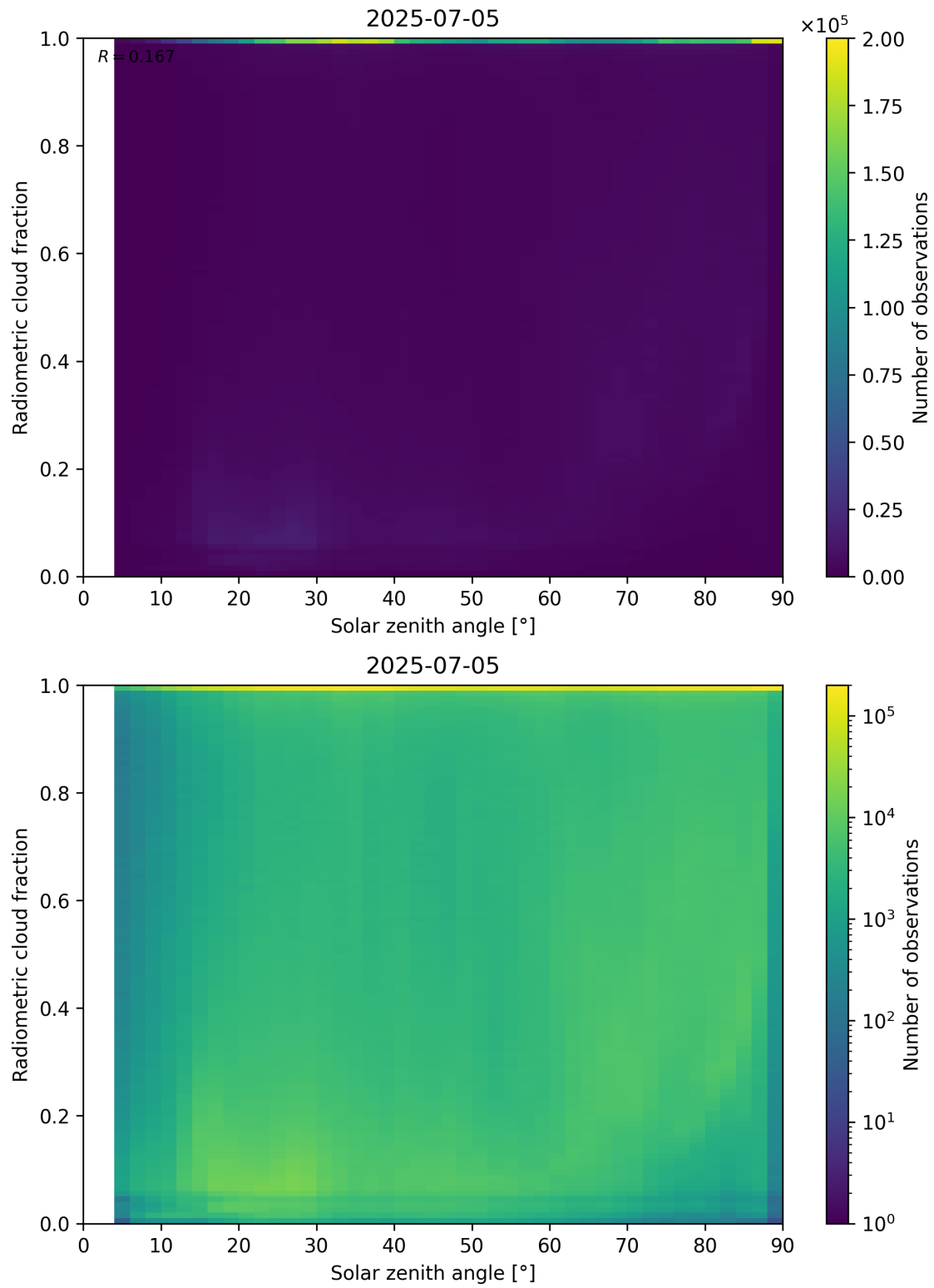


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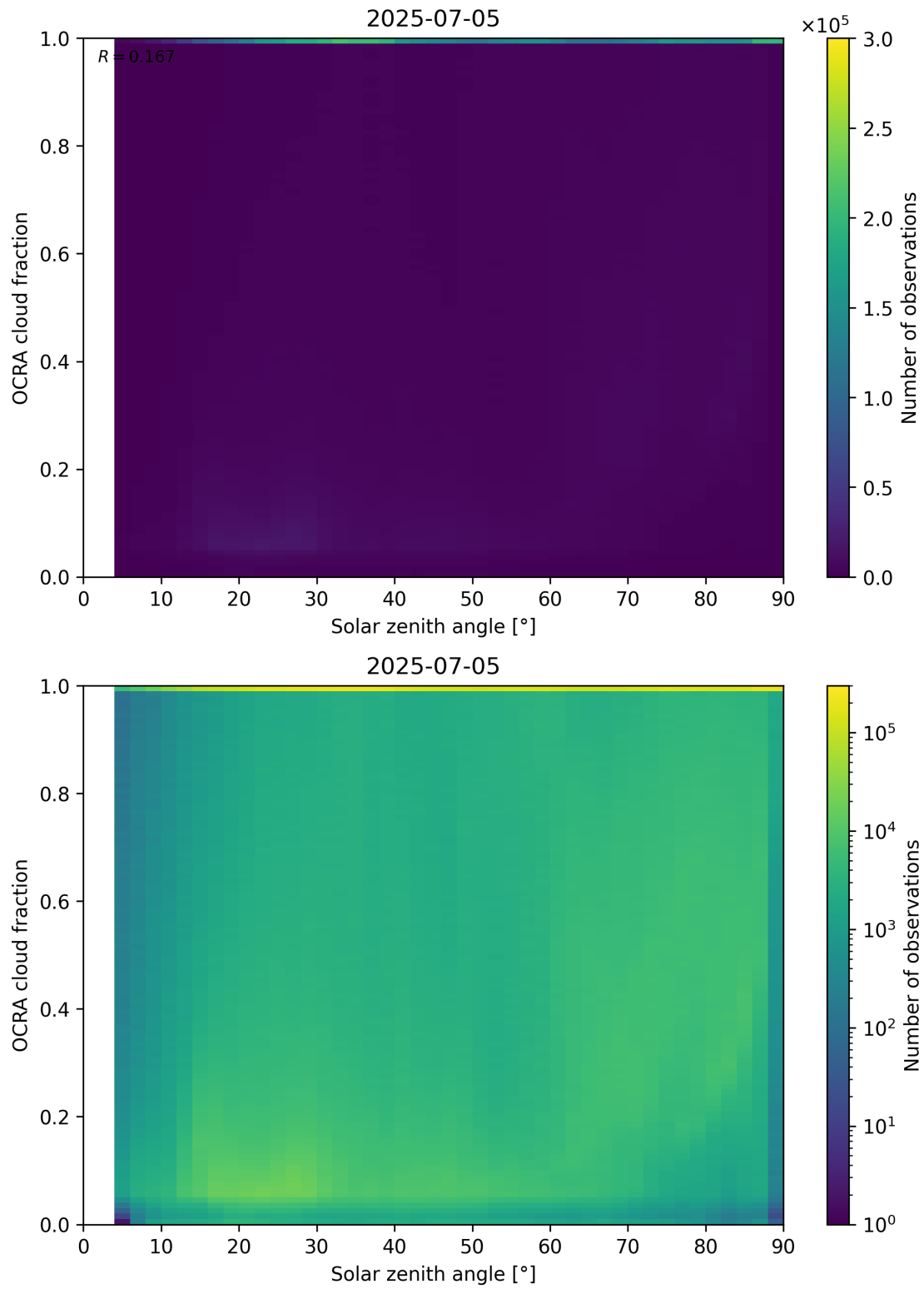


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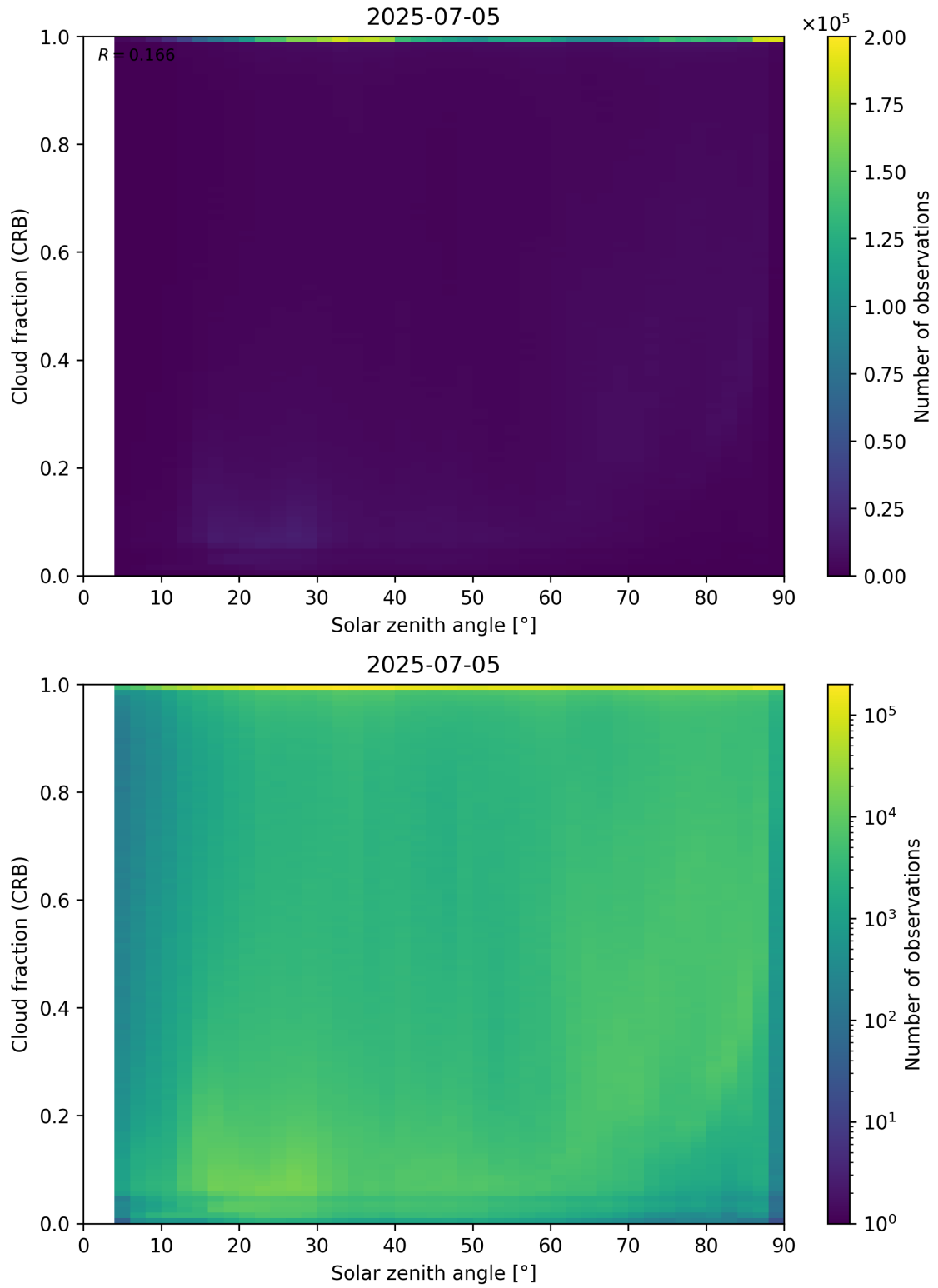


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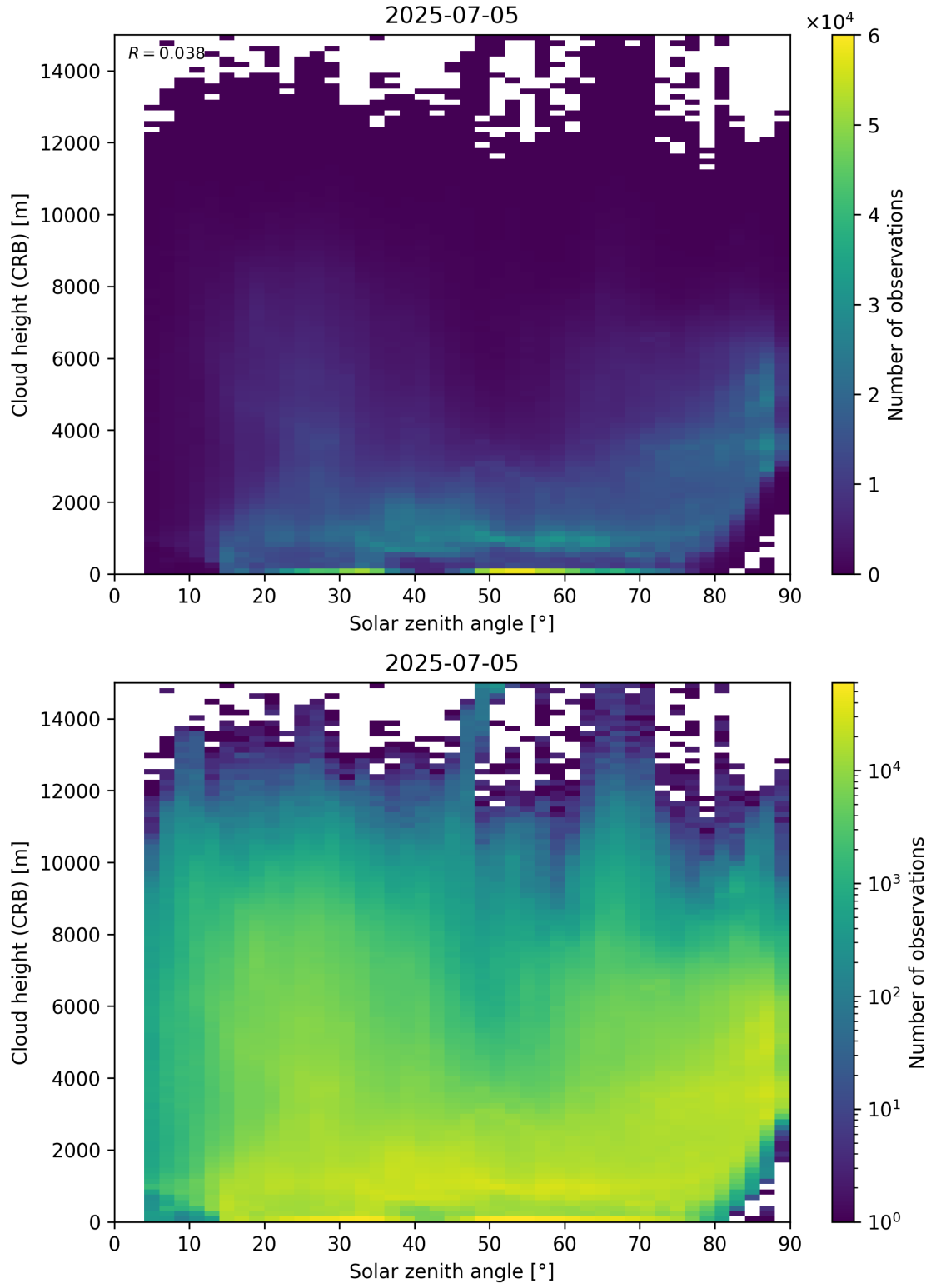


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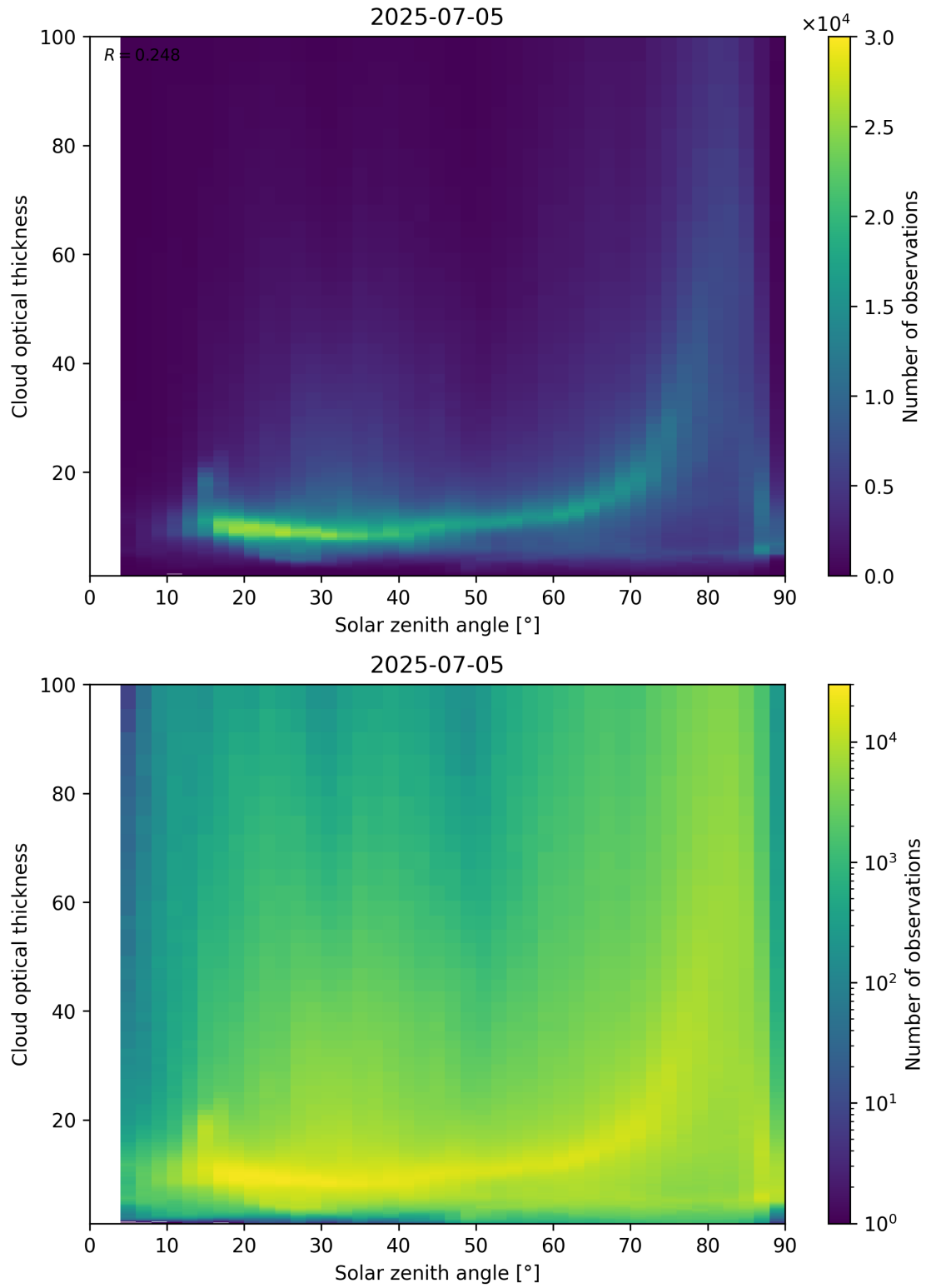


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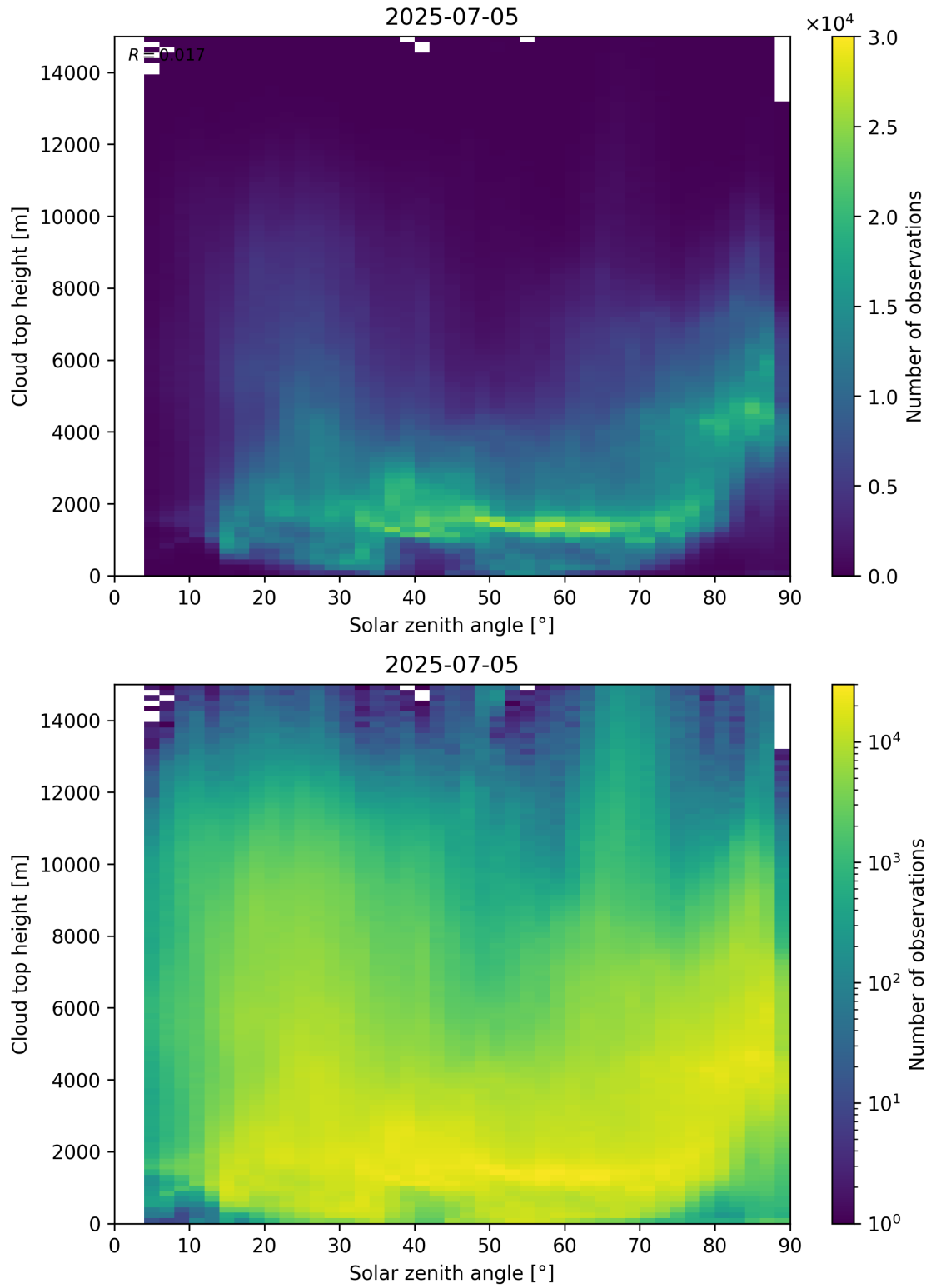


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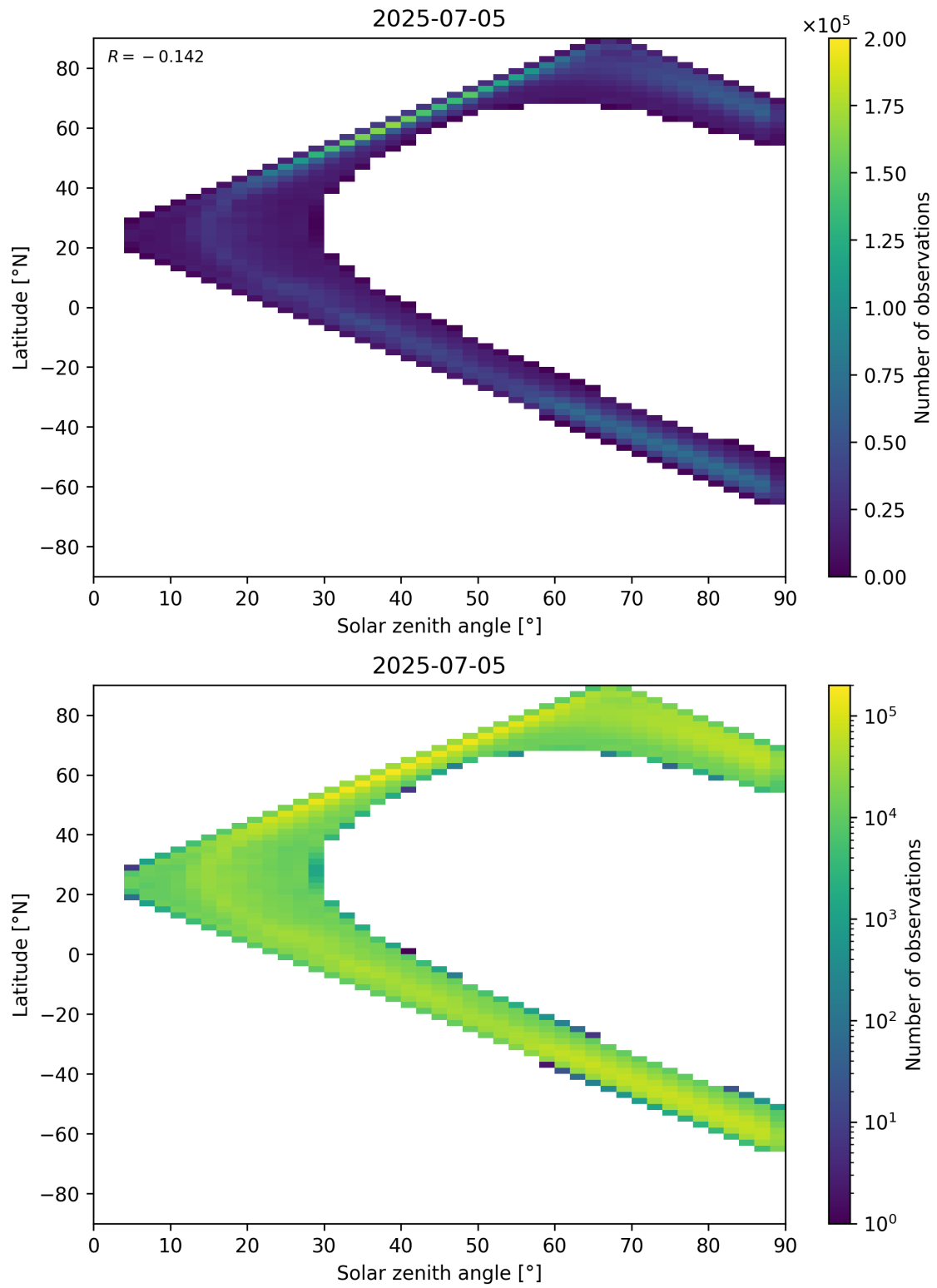


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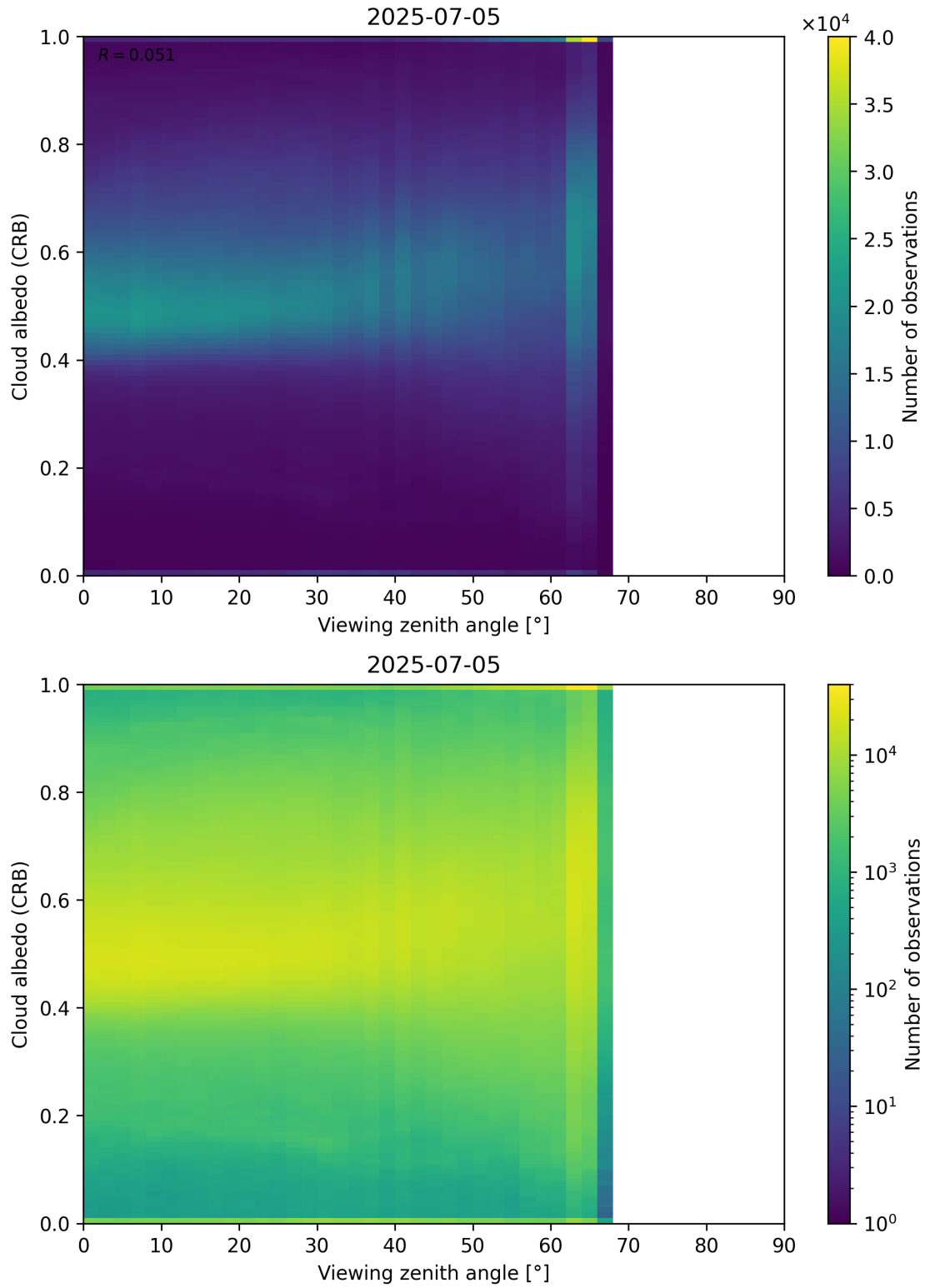


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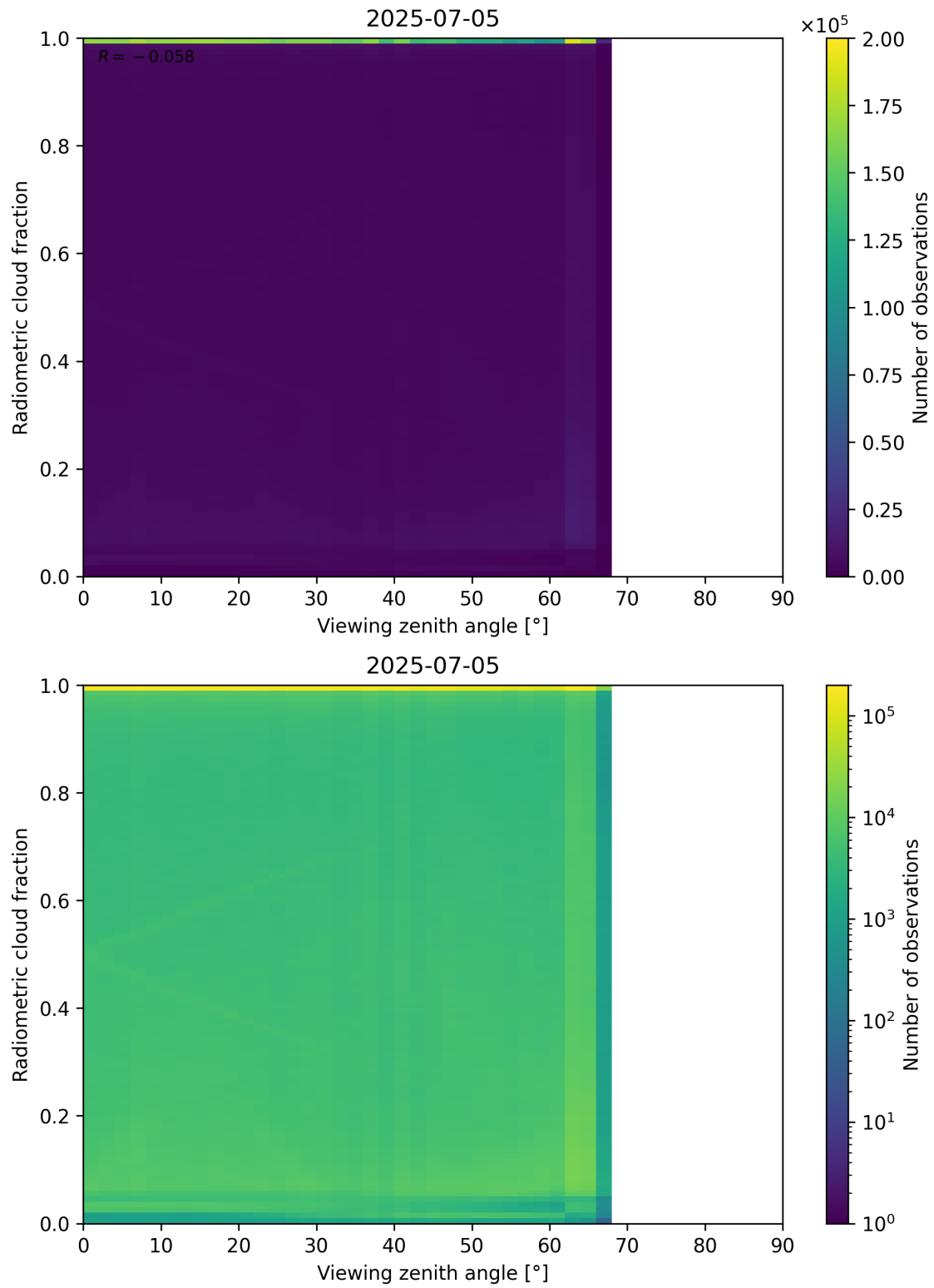


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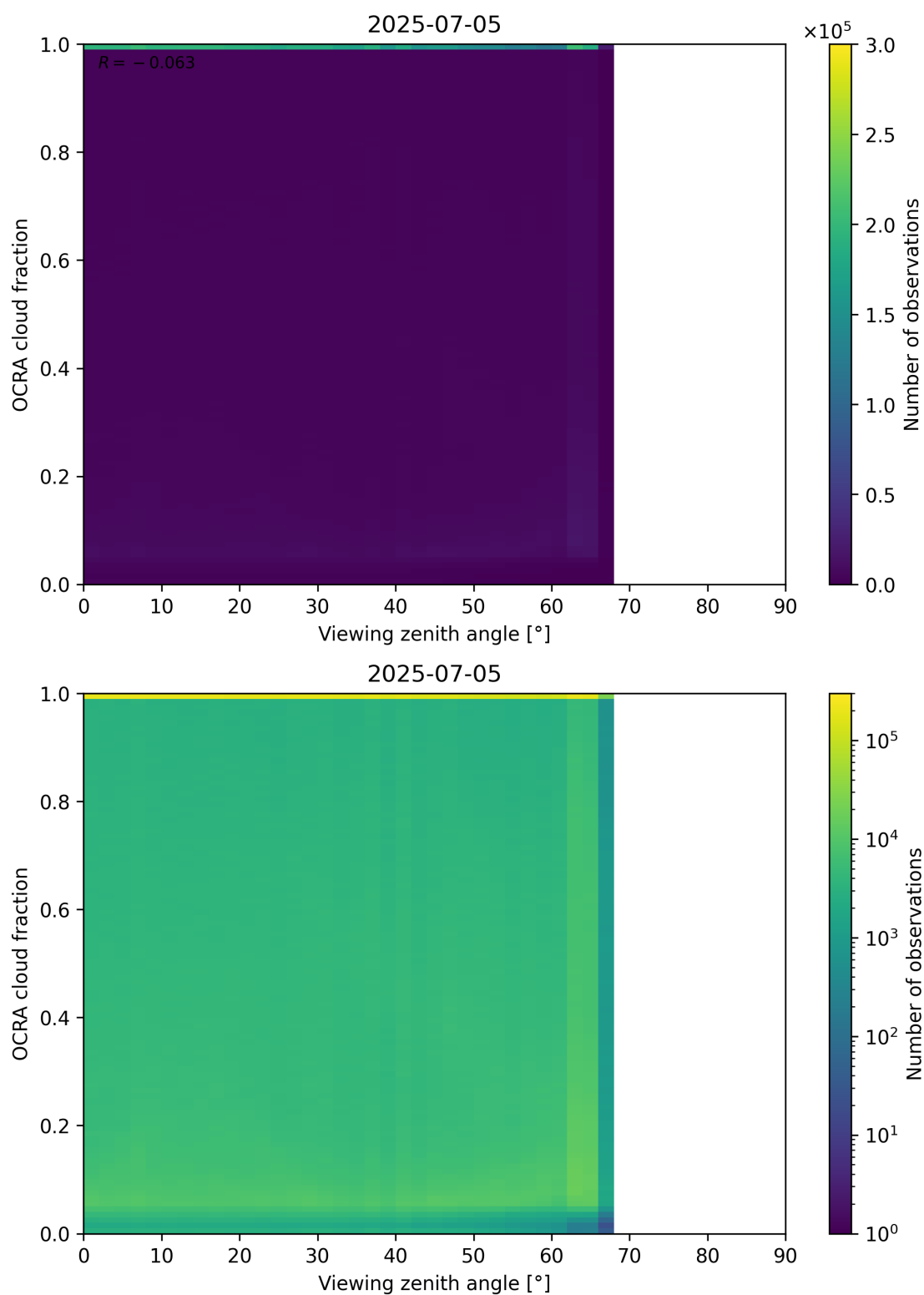


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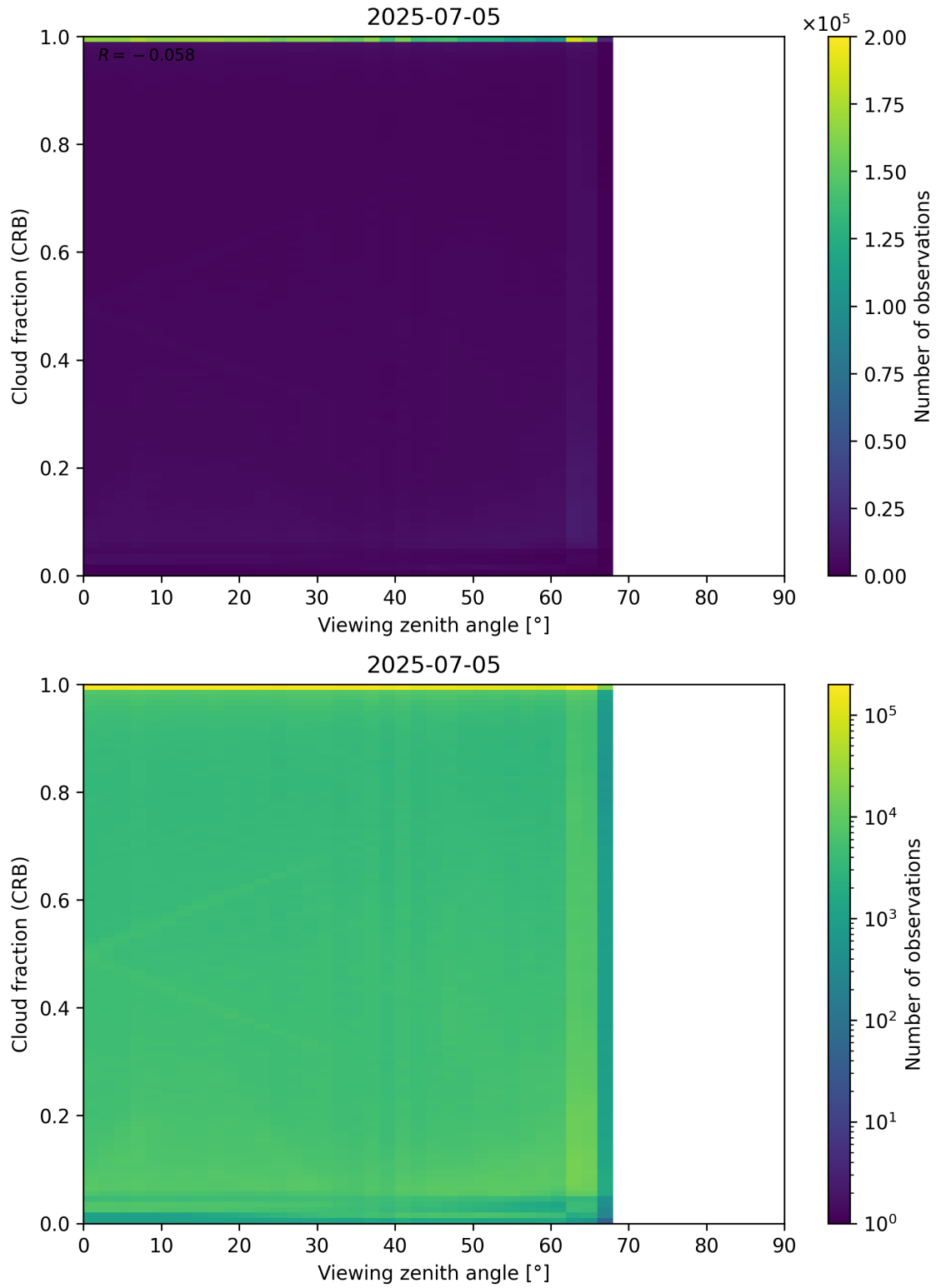


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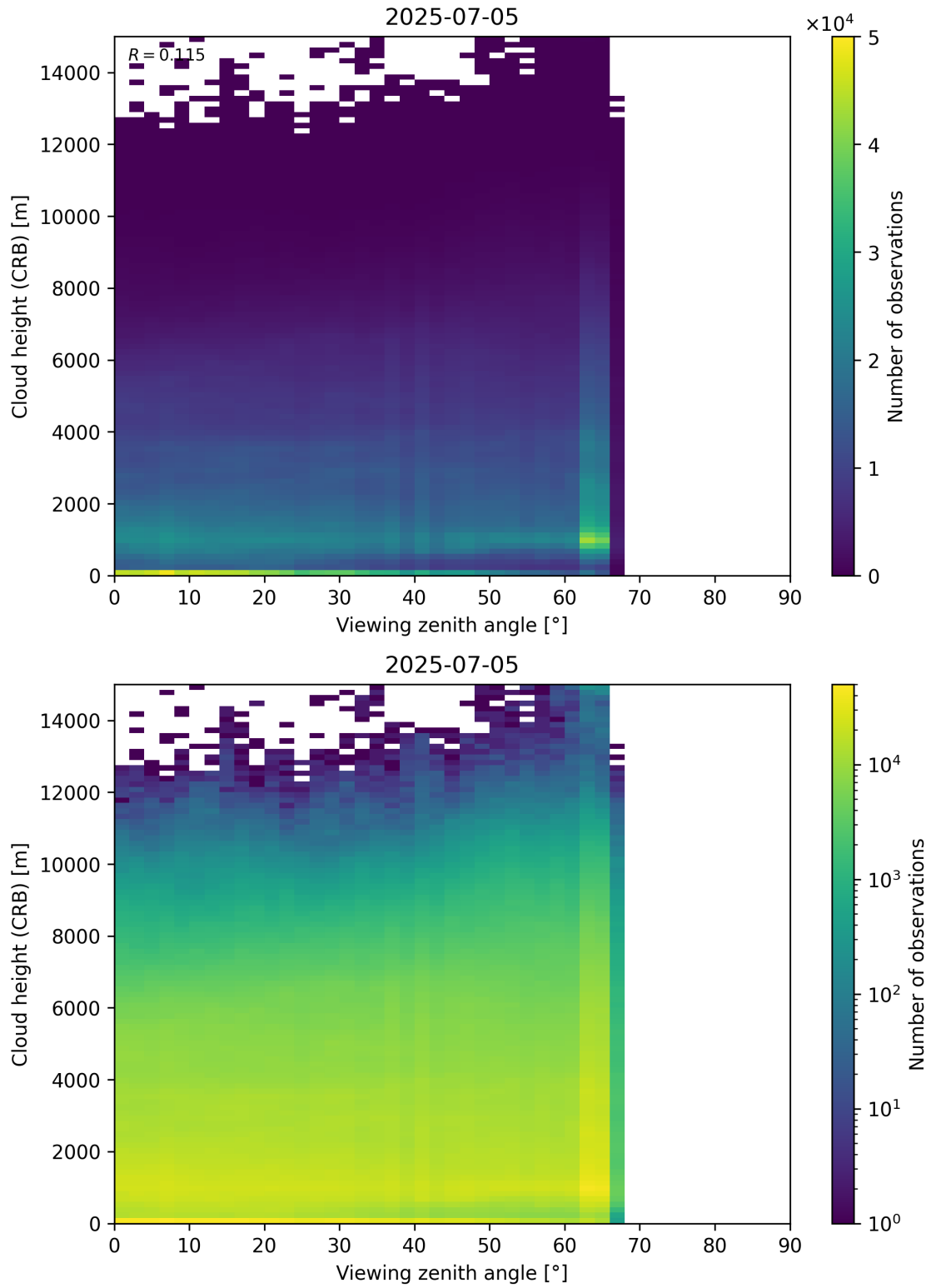


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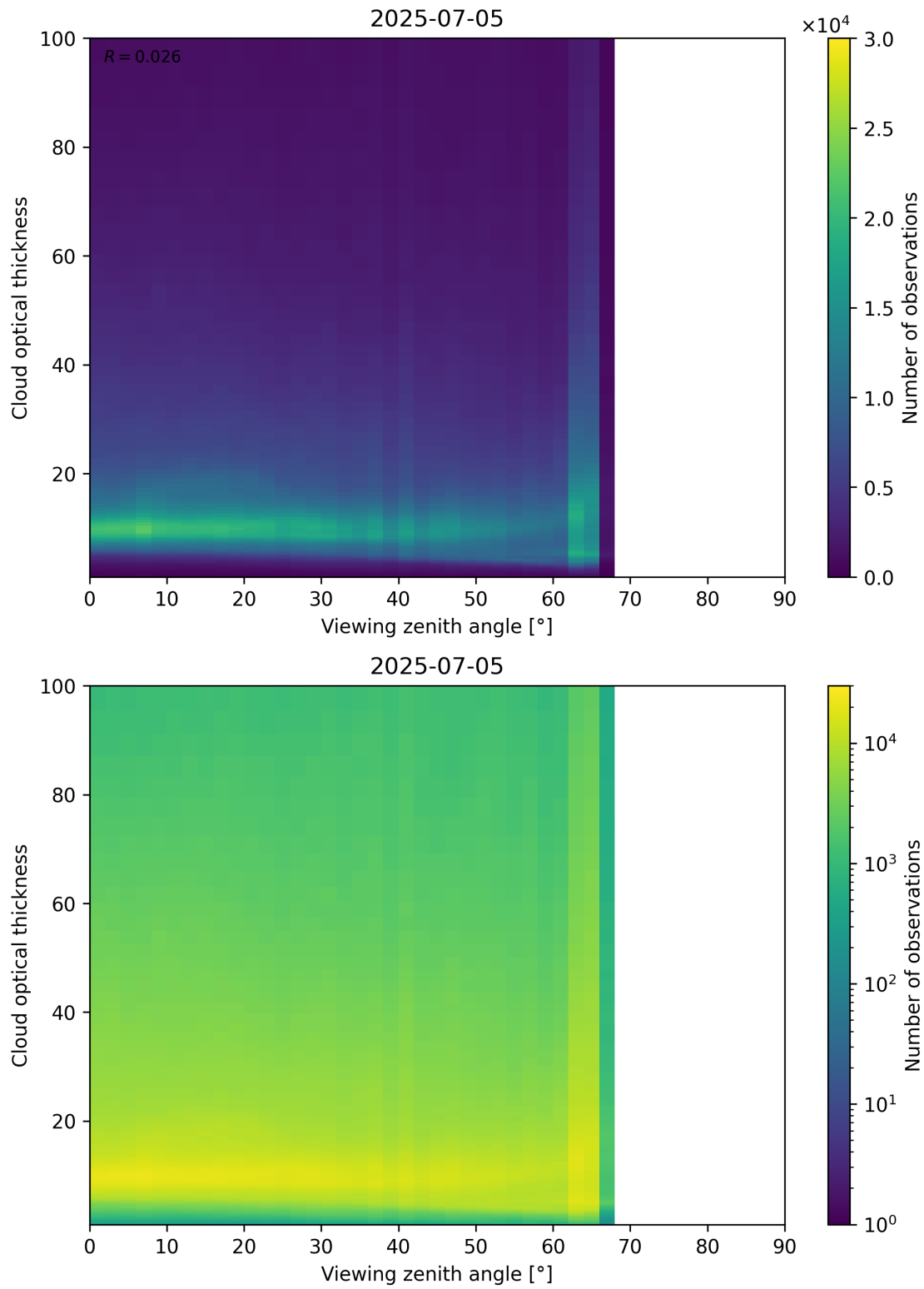


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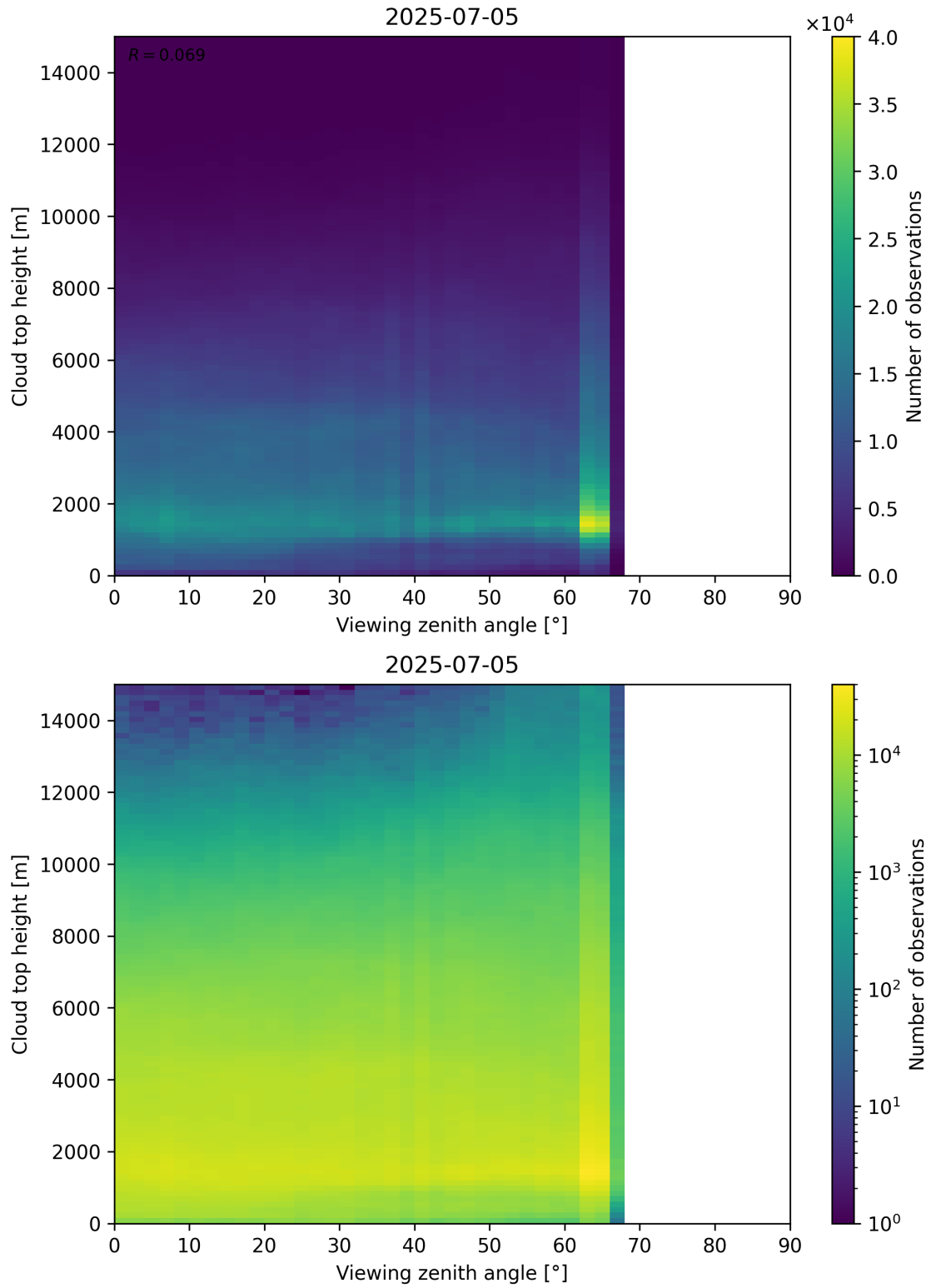


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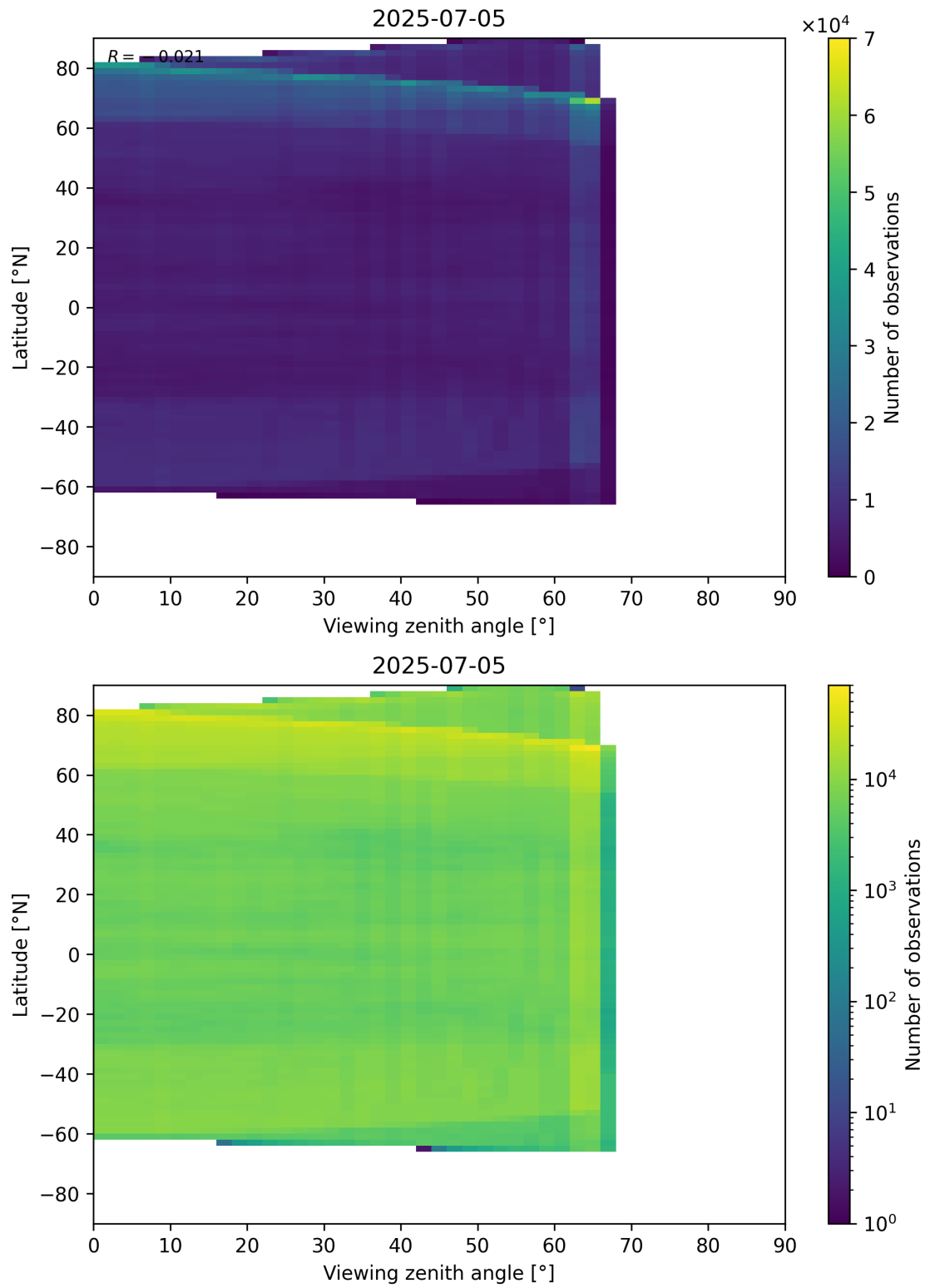


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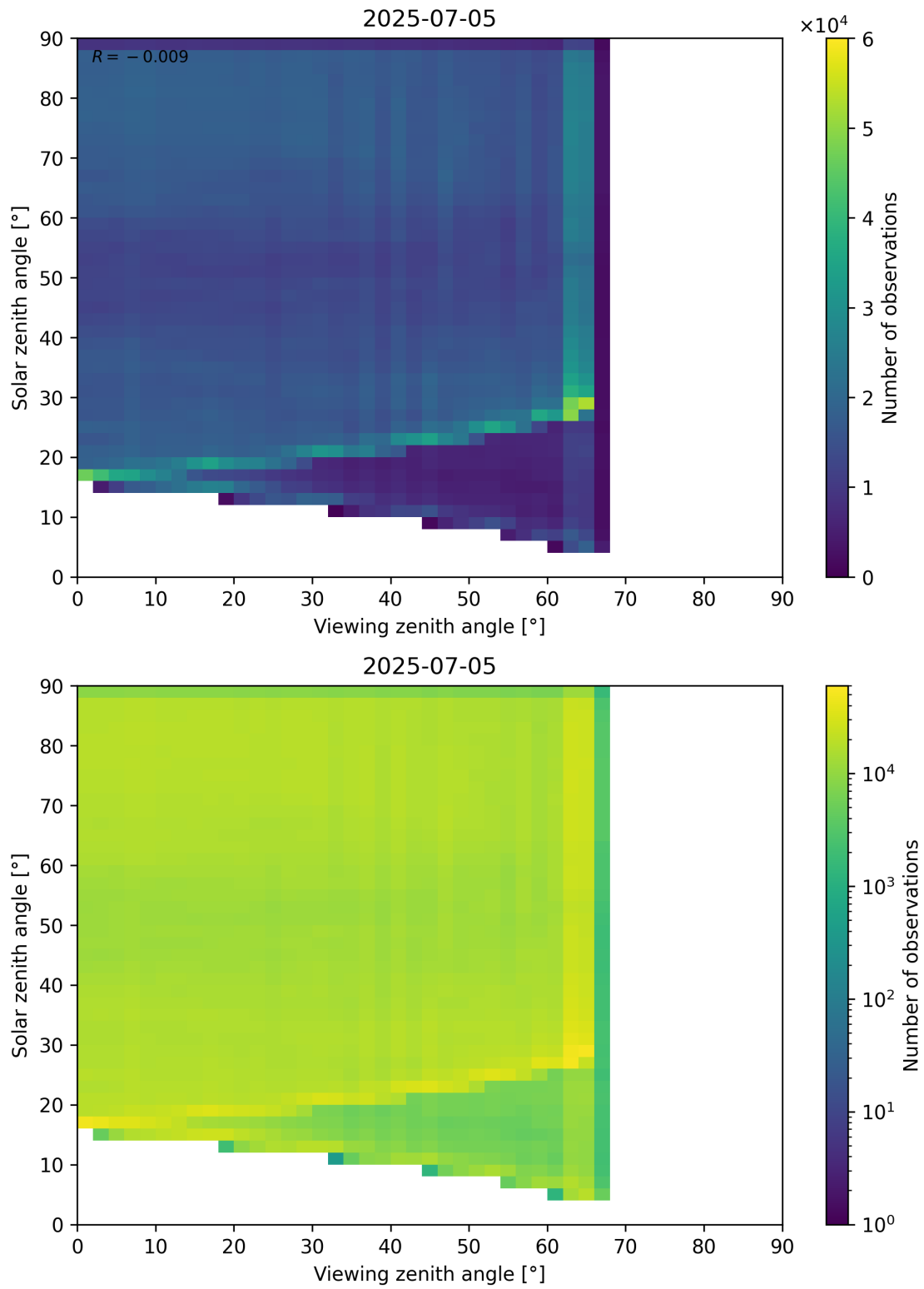


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