

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-04-21 (02:35)

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]	0.629 ± 0.371	19963640	0.995	0.600	0.800	0.0	1.000
cloud fraction [1]	0.562 ± 0.344	19963640	0.995	0.720	0.540	0.0	1.000
cloud top height [m]	$(0.374 \pm 0.275) \times 10^4$	19963640	1.575×10^3	3.526×10^3	3.020×10^3	0.0	2.000×10^4
cloud optical thickness [1]	19.7 ± 34.3	19963640	9.34	11.2	9.80	1.000	250
cloud fraction crb [1]	0.561 ± 0.344	19963640	0.995	0.719	0.539	0.0	1.000
cloud height crb [m]	$(0.288 \pm 0.241) \times 10^4$	19963640	75.0	3.138×10^3	2.247×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.602 ± 0.205	19963640	0.995	0.265	0.580	0.0	1.000
surface albedo fitted [1]	0.235 ± 0.314	19963640	1.500×10^{-2}	0.329	4.060×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.221 ± 0.299	19963640	1.500×10^{-2}	0.344	2.966×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.001 \pm 9.532) \times 10^{-4}$	19963640	5.000×10^{-5}	8.432×10^{-4}	4.092×10^{-4}	1.251×10^{-6}	0.263
fitted root mean square crb [1]	$(6.286 \pm 7.872) \times 10^{-4}$	19963640	5.000×10^{-5}	7.746×10^{-4}	3.211×10^{-4}	1.099×10^{-6}	0.263
wavelength shift [nm]	$(7.492 \pm 6.904) \times 10^{-3}$	19963640	9.000×10^{-4}	9.512×10^{-3}	6.958×10^{-3}	-5.728×10^{-2}	6.147×10^{-2}
cloud fraction apriori [1]	0.567 ± 0.347	19963640	0.995	0.761	0.548	0.0	1.000
reflectance blue ocra [1]	0.561 ± 0.225	19963640	0.265	0.385	0.542	0.134	1.96
reflectance green ocra [1]	0.511 ± 0.253	19963640	0.175	0.457	0.498	7.364×10^{-2}	1.94
reflectance continuum aband [1]	0.466 ± 0.280	19963640	4.500×10^{-2}	0.481	0.468	1.143×10^{-2}	4.74

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	0.0	0.350	0.950	1.000	1.000	1.000	1.000
cloud fraction [1]	1.934×10^{-2}	6.638×10^{-2}	0.103	0.150	0.239	0.959	1.000	1.000	1.000	1.000
cloud top height [m]	190	606	935	1.233×10^3	1.649×10^3	5.175×10^3	6.538×10^3	7.735×10^3	9.204×10^3	1.188×10^4
cloud optical thickness [1]	1.22	3.08	4.19	5.01	6.10	17.3	26.2	38.6	66.3	250
cloud fraction crb [1]	1.901×10^{-2}	6.530×10^{-2}	0.102	0.149	0.239	0.958	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	70.1	390	666	1.030×10^3	4.168×10^3	5.371×10^3	6.428×10^3	7.718×10^3	9.967×10^3
cloud albedo crb [1]	4.851×10^{-2}	0.276	0.376	0.428	0.473	0.739	0.828	0.902	0.984	1.000
surface albedo fitted [1]	0.0	8.138×10^{-3}	1.241×10^{-2}	1.589×10^{-2}	2.073×10^{-2}	0.350	0.711	0.807	0.900	0.992
surface albedo fitted crb [1]	0.0	5.760×10^{-3}	8.760×10^{-3}	1.144×10^{-2}	1.517×10^{-2}	0.359	0.675	0.748	0.842	0.929
fitted root mean square [1]	1.567×10^{-5}	3.035×10^{-5}	4.835×10^{-5}	7.569×10^{-5}	1.295×10^{-4}	9.726×10^{-4}	1.333×10^{-3}	1.721×10^{-3}	2.305×10^{-3}	3.692×10^{-3}
fitted root mean square crb [1]	9.635×10^{-6}	2.196×10^{-5}	3.658×10^{-5}	5.581×10^{-5}	9.570×10^{-5}	8.703×10^{-4}	1.264×10^{-3}	1.670×10^{-3}	2.253×10^{-3}	3.523×10^{-3}
wavelength shift [nm]	-9.001×10^{-3}	-1.637×10^{-3}	-1.463×10^{-5}	9.546×10^{-4}	2.480×10^{-3}	1.199×10^{-2}	1.436×10^{-2}	1.639×10^{-2}	1.912×10^{-2}	2.514×10^{-2}
cloud fraction apriori [1]	2.936×10^{-2}	6.515×10^{-2}	9.947×10^{-2}	0.147	0.239	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.236	0.259	0.282	0.310	0.360	0.745	0.806	0.855	0.916	1.10
reflectance green ocra [1]	0.153	0.173	0.192	0.218	0.270	0.727	0.795	0.847	0.905	1.06
reflectance continuum aband [1]	2.957×10^{-2}	5.216×10^{-2}	8.314×10^{-2}	0.126	0.219	0.700	0.774	0.828	0.889	1.03

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]	0.584 ± 0.369	10655816	0.640	0.700	0.0	1.000	0.260	0.900
cloud fraction [1]	0.536 ± 0.341	10655816	0.709	0.482	0.0	1.000	0.224	0.933
cloud top height [m]	$(0.347 \pm 0.265) \times 10^4$	10655816	3.254×10^3	2.803×10^3	0.0	2.000×10^4	1.485×10^3	4.739×10^3
cloud optical thickness [1]	16.3 ± 29.3	10655816	8.65	8.87	1.000	250	5.68	14.3
cloud fraction crb [1]	0.536 ± 0.341	10655816	0.708	0.483	0.0	1.000	0.225	0.933
cloud height crb [m]	$(0.250 \pm 0.223) \times 10^4$	10655816	2.817×10^3	1.928×10^3	0.0	2.000×10^4	777	3.594×10^3
cloud albedo crb [1]	0.629 ± 0.225	10655816	0.329	0.614	0.0	1.000	0.478	0.807
surface albedo fitted [1]	0.334 ± 0.346	10655816	0.672	0.187	0.0	1.000	2.918×10^{-2}	0.701
surface albedo fitted crb [1]	0.316 ± 0.325	10655816	0.646	0.183	0.0	1.000	2.233×10^{-2}	0.669
fitted root mean square [1]	$(9.003 \pm 11.362) \times 10^{-4}$	10655816	1.044×10^{-3}	6.347×10^{-4}	1.953×10^{-6}	0.263	2.059×10^{-4}	1.249×10^{-3}
fitted root mean square crb [1]	$(8.012 \pm 8.934) \times 10^{-4}$	10655816	1.003×10^{-3}	4.883×10^{-4}	1.757×10^{-6}	0.263	1.524×10^{-4}	1.155×10^{-3}
wavelength shift [nm]	$(8.781 \pm 6.940) \times 10^{-3}$	10655816	9.567×10^{-3}	8.661×10^{-3}	-5.728×10^{-2}	6.064×10^{-2}	3.861×10^{-3}	1.343×10^{-2}
cloud fraction apriori [1]	0.548 ± 0.343	10655816	0.748	0.505	0.0	1.000	0.233	0.980
reflectance blue oca [1]	0.581 ± 0.235	10655816	0.422	0.582	0.138	1.96	0.358	0.779
reflectance green oca [1]	0.539 ± 0.262	10655816	0.495	0.553	8.717×10^{-2}	1.94	0.275	0.770
reflectance continuum aband [1]	0.508 ± 0.282	10655816	0.496	0.542	1.418×10^{-2}	3.24	0.254	0.749

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]	0.679 ± 0.367	9307824	0.600	0.900	0.0	1.000	0.400	1.000
cloud fraction [1]	0.592 ± 0.345	9307824	0.714	0.617	0.0	1.000	0.261	0.975
cloud top height [m]	$(0.404 \pm 0.283) \times 10^4$	9307824	3.832×10^3	3.290×10^3	0.0	2.000×10^4	1.831×10^3	5.663×10^3
cloud optical thickness [1]	23.5 ± 38.8	9307824	14.6	11.2	1.000	250	6.83	21.4
cloud fraction crb [1]	0.590 ± 0.345	9307824	0.714	0.614	0.0	1.000	0.259	0.973
cloud height crb [m]	$(0.332 \pm 0.254) \times 10^4$	9307824	3.531×10^3	2.636×10^3	0.0	2.000×10^4	1.306×10^3	4.837×10^3
cloud albedo crb [1]	0.572 ± 0.175	9307824	0.200	0.557	0.0	1.000	0.469	0.669
surface albedo fitted [1]	0.120 ± 0.224	9307824	3.777×10^{-2}	2.673×10^{-2}	0.0	1.000	1.631×10^{-2}	5.408×10^{-2}
surface albedo fitted crb [1]	0.112 ± 0.220	9307824	2.626×10^{-2}	1.906×10^{-2}	0.0	1.000	1.148×10^{-2}	3.774×10^{-2}
fitted root mean square [1]	$(4.710 \pm 6.101) \times 10^{-4}$	9307824	5.220×10^{-4}	2.490×10^{-4}	1.251×10^{-6}	9.727×10^{-2}	9.222×10^{-5}	6.142×10^{-4}
fitted root mean square crb [1]	$(4.310 \pm 5.850) \times 10^{-4}$	9307824	4.982×10^{-4}	1.951×10^{-4}	1.099×10^{-6}	5.418×10^{-2}	6.513×10^{-5}	5.633×10^{-4}
wavelength shift [nm]	$(6.016 \pm 6.559) \times 10^{-3}$	9307824	8.433×10^{-3}	5.175×10^{-3}	-4.644×10^{-2}	6.147×10^{-2}	1.460×10^{-3}	9.893×10^{-3}
cloud fraction apriori [1]	0.589 ± 0.351	9307824	0.752	0.609	0.0	1.000	0.248	1.000
reflectance blue ocrs [1]	0.539 ± 0.211	9307824	0.319	0.513	0.134	1.96	0.363	0.682
reflectance green ocrs [1]	0.479 ± 0.238	9307824	0.384	0.457	7.364×10^{-2}	1.94	0.266	0.651
reflectance continuum aband [1]	0.419 ± 0.268	9307824	0.434	0.409	1.143×10^{-2}	4.74	0.183	0.616

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]	0.652 ± 0.367	14626404	0.550	0.850	0.0	1.000	0.400	0.950
cloud fraction [1]	0.562 ± 0.349	14626404	0.739	0.543	0.0	1.000	0.227	0.966
cloud top height [m]	$(0.343 \pm 0.252) \times 10^4$	14626404	3.125×10^3	2.728×10^3	0.0	2.000×10^4	1.548×10^3	4.673×10^3
cloud optical thickness [1]	20.4 ± 33.9	14626404	11.3	10.5	1.000	250	6.90	18.2
cloud fraction crb [1]	0.561 ± 0.349	14626404	0.738	0.542	0.0	1.000	0.226	0.965
cloud height crb [m]	$(0.268 \pm 0.227) \times 10^4$	14626404	2.882×10^3	2.031×10^3	0.0	2.000×10^4	956	3.838×10^3
cloud albedo crb [1]	0.583 ± 0.188	14626404	0.229	0.558	0.0	1.000	0.466	0.695
surface albedo fitted [1]	0.145 ± 0.270	14626404	3.376×10^{-2}	2.779×10^{-2}	0.0	1.000	1.725×10^{-2}	5.101×10^{-2}
surface albedo fitted crb [1]	0.131 ± 0.253	14626404	2.470×10^{-2}	2.035×10^{-2}	0.0	1.000	1.248×10^{-2}	3.718×10^{-2}
fitted root mean square [1]	$(5.557 \pm 8.162) \times 10^{-4}$	14626404	6.386×10^{-4}	2.733×10^{-4}	1.251×10^{-6}	9.750×10^{-2}	9.585×10^{-5}	7.345×10^{-4}
fitted root mean square crb [1]	$(4.973 \pm 6.944) \times 10^{-4}$	14626404	5.440×10^{-4}	2.196×10^{-4}	1.099×10^{-6}	5.418×10^{-2}	7.508×10^{-5}	6.191×10^{-4}
wavelength shift [nm]	$(6.855 \pm 6.855) \times 10^{-3}$	14626404	9.079×10^{-3}	6.163×10^{-3}	-4.735×10^{-2}	6.147×10^{-2}	2.062×10^{-3}	1.114×10^{-2}
cloud fraction apriori [1]	0.564 ± 0.353	14626404	0.778	0.544	0.0	1.000	0.222	1.000
reflectance blue oca [1]	0.536 ± 0.209	14626404	0.353	0.513	0.137	1.95	0.351	0.704
reflectance green oca [1]	0.479 ± 0.237	14626404	0.426	0.460	7.927×10^{-2}	1.93	0.253	0.679
reflectance continuum aband [1]	0.414 ± 0.272	14626404	0.496	0.405	1.143×10^{-2}	4.71	0.150	0.646

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]	0.573 ± 0.383	3805941	0.880	0.700	0.0	1.000	2.000×10^{-2}	0.900
cloud fraction [1]	0.553 ± 0.330	3805941	0.663	0.516	0.0	1.000	0.262	0.925
cloud top height [m]	$(0.496 \pm 0.316) \times 10^4$	3805941	4.321×10^3	4.403×10^3	0.0	2.000×10^4	2.496×10^3	6.817×10^3
cloud optical thickness [1]	16.0 ± 31.7	3805941	8.59	7.32	1.000	250	4.73	13.3
cloud fraction crb [1]	0.553 ± 0.330	3805941	0.663	0.516	0.0	1.000	0.262	0.924
cloud height crb [m]	$(0.380 \pm 0.275) \times 10^4$	3805941	3.664×10^3	3.194×10^3	0.0	2.000×10^4	1.659×10^3	5.324×10^3
cloud albedo crb [1]	0.644 ± 0.234	3805941	0.324	0.646	0.0	1.000	0.503	0.826
surface albedo fitted [1]	0.472 ± 0.283	3805941	0.515	0.333	2.404×10^{-3}	1.000	0.238	0.753
surface albedo fitted crb [1]	0.462 ± 0.267	3805941	0.496	0.339	7.016×10^{-4}	1.000	0.235	0.732
fitted root mean square [1]	$(1.074 \pm 1.190) \times 10^{-3}$	3805941	9.867×10^{-4}	8.288×10^{-4}	2.341×10^{-6}	0.263	4.340×10^{-4}	1.421×10^{-3}
fitted root mean square crb [1]	$(9.687 \pm 9.158) \times 10^{-4}$	3805941	1.046×10^{-3}	7.424×10^{-4}	2.067×10^{-6}	0.263	3.089×10^{-4}	1.355×10^{-3}
wavelength shift [nm]	$(8.701 \pm 6.576) \times 10^{-3}$	3805941	9.422×10^{-3}	8.486×10^{-3}	-3.544×10^{-2}	5.229×10^{-2}	3.756×10^{-3}	1.318×10^{-2}
cloud fraction apriori [1]	0.564 ± 0.333	3805941	0.707	0.531	0.0	1.000	0.268	0.975
reflectance blue ocrs [1]	0.620 ± 0.260	3805941	0.447	0.629	0.134	1.96	0.376	0.823
reflectance green ocrs [1]	0.587 ± 0.279	3805941	0.503	0.610	7.364×10^{-2}	1.94	0.314	0.818
reflectance continuum aband [1]	0.601 ± 0.246	3805941	0.410	0.609	1.582×10^{-2}	4.58	0.384	0.794

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	-2.005×10^{-2}	-8.788×10^{-3}	-2.536×10^{-2}	8.126×10^{-2}	-3.257×10^{-2}	-2.598×10^{-2}	0.130	1.034×10^{-2}	-3.205×10^{-2}
-2.005×10^{-2}	1.000	-7.294×10^{-2}	0.147	-8.006×10^{-2}	0.191	0.149	-0.103	0.327	0.161
-8.788×10^{-3}	-7.294×10^{-2}	1.000	-9.613×10^{-2}	-0.156	-0.133	-9.236×10^{-2}	-0.231	0.186	-6.558×10^{-2}
-2.536×10^{-2}	0.147	-9.613×10^{-2}	1.000	-5.819×10^{-2}	0.303	1.000	-2.220×10^{-2}	0.260	0.980
8.126×10^{-2}	-8.006×10^{-2}	-0.156	-5.819×10^{-2}	1.000	3.925×10^{-2}	-5.858×10^{-2}	0.942	-1.181×10^{-2}	-7.549×10^{-2}
-3.257×10^{-2}	0.191	-0.133	0.303	3.925×10^{-2}	1.000	0.300	8.342×10^{-2}	0.386	0.307
-2.598×10^{-2}	0.149	-9.236×10^{-2}	1.000	-5.858×10^{-2}	0.300	1.000	-2.316×10^{-2}	0.261	0.980
0.130	-0.103	-0.231	-2.220×10^{-2}	0.942	8.342×10^{-2}	-2.316×10^{-2}	1.000	-9.604×10^{-2}	-4.095×10^{-2}
1.034×10^{-2}	0.327	0.186	0.260	-1.181×10^{-2}	0.386	0.261	-9.604×10^{-2}	1.000	0.291
-3.205×10^{-2}	0.161	-6.558×10^{-2}	0.980	-7.549×10^{-2}	0.307	0.980	-4.095×10^{-2}	0.291	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
385	-8.51	-8.75	-0.171	4.380×10^3	-21.9	-0.175	6.136×10^3	4.165×10^{-2}	-0.218
-8.51	468	-80.0	1.09	-4.755×10^3	142	1.11	-5.386×10^3	1.45	1.21
-8.75	-80.0	2.571×10^3	-1.68	-2.166×10^4	-232	-1.61	-2.829×10^4	1.94	-1.15
-0.171	1.09	-1.68	0.118	-55.0	3.57	0.118	-18.4	1.838×10^{-2}	0.117
4.380×10^3	-4.755×10^3	-2.166×10^4	-55.0	7.539×10^6	3.693×10^3	-55.3	6.239×10^6	-6.65	-72.0
-21.9	142	-232	3.57	3.693×10^3	1.174×10^3	3.54	6.896×10^3	2.72	3.66
-0.175	1.11	-1.61	0.118	-55.3	3.54	0.118	-19.2	1.844×10^{-2}	0.117
6.136×10^3	-5.386×10^3	-2.829×10^4	-18.4	6.239×10^6	6.896×10^3	-19.2	5.820×10^6	-47.5	-34.3
4.165×10^{-2}	1.45	1.94	1.838×10^{-2}	-6.65	2.72	1.844×10^{-2}	-47.5	4.209×10^{-2}	2.073×10^{-2}
-0.218	1.21	-1.15	0.117	-72.0	3.66	0.117	-34.3	2.073×10^{-2}	0.121

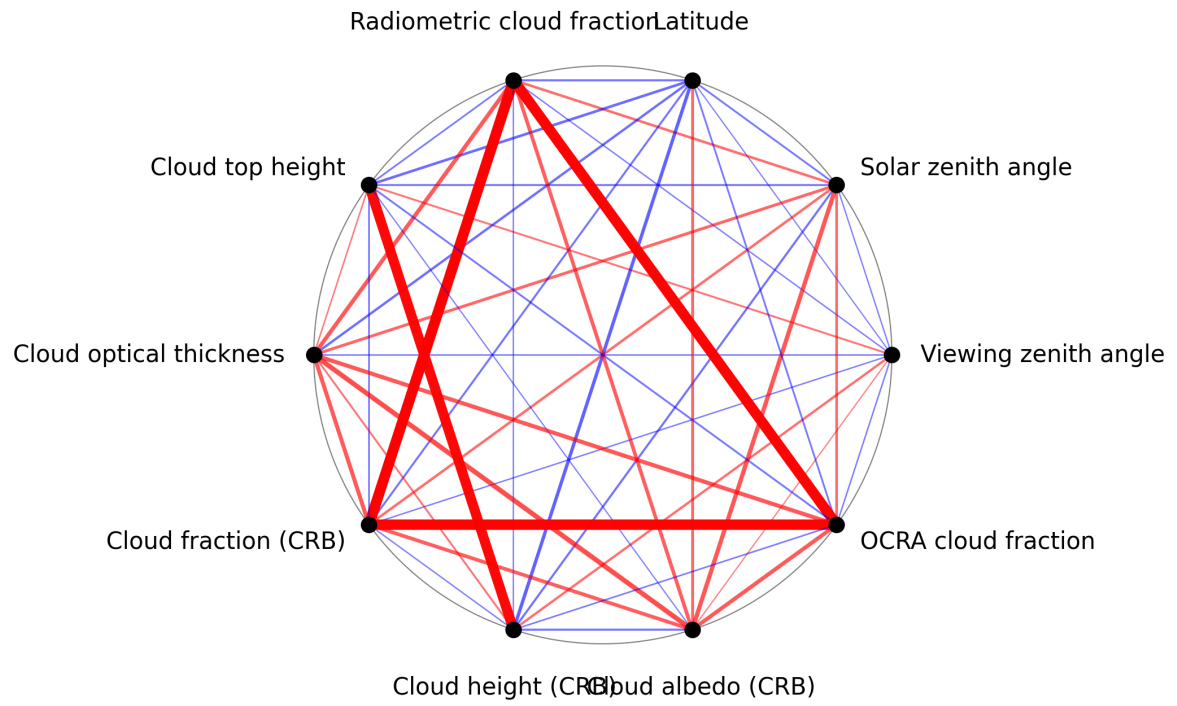


Figure 1: Map of correlation graph for 2025-04-05 to 2025-04-07.

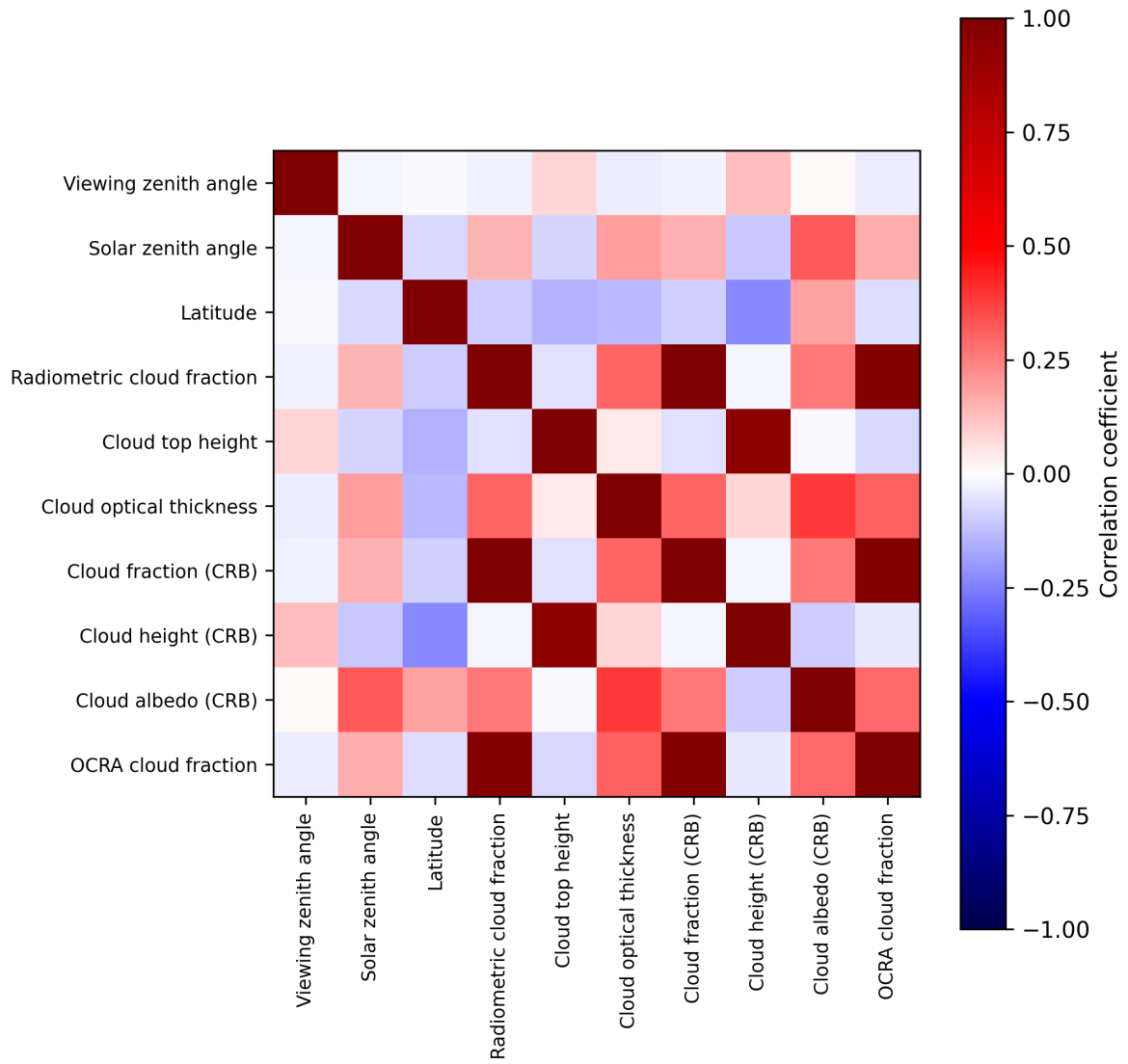


Figure 2: Map of correlation matrix for 2025-04-05 to 2025-04-07.

3 Granule outlines

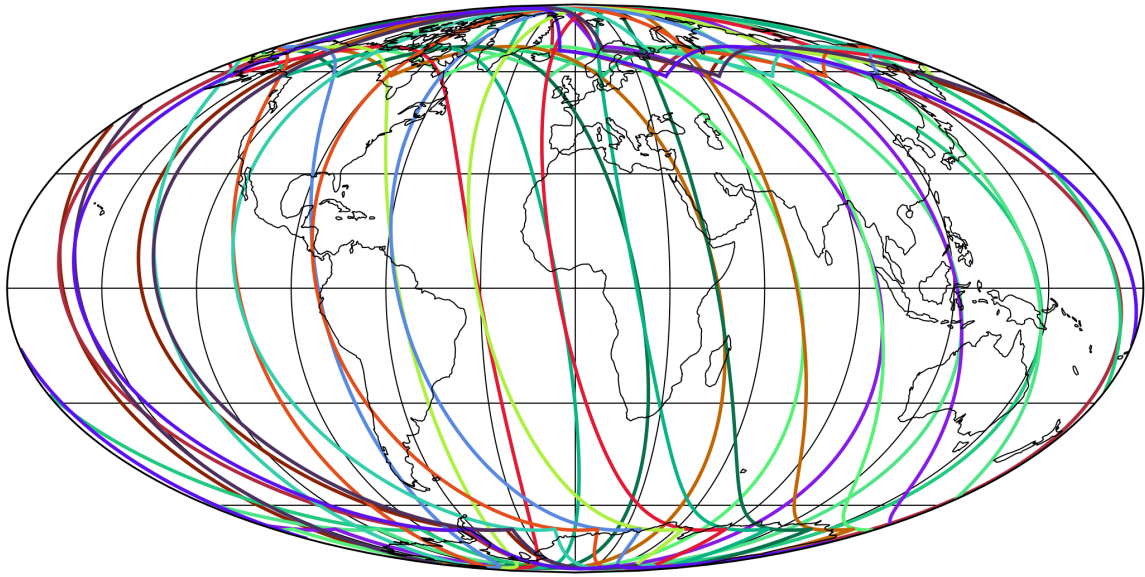


Figure 3: Outline of the granules.

4 Input data monitoring

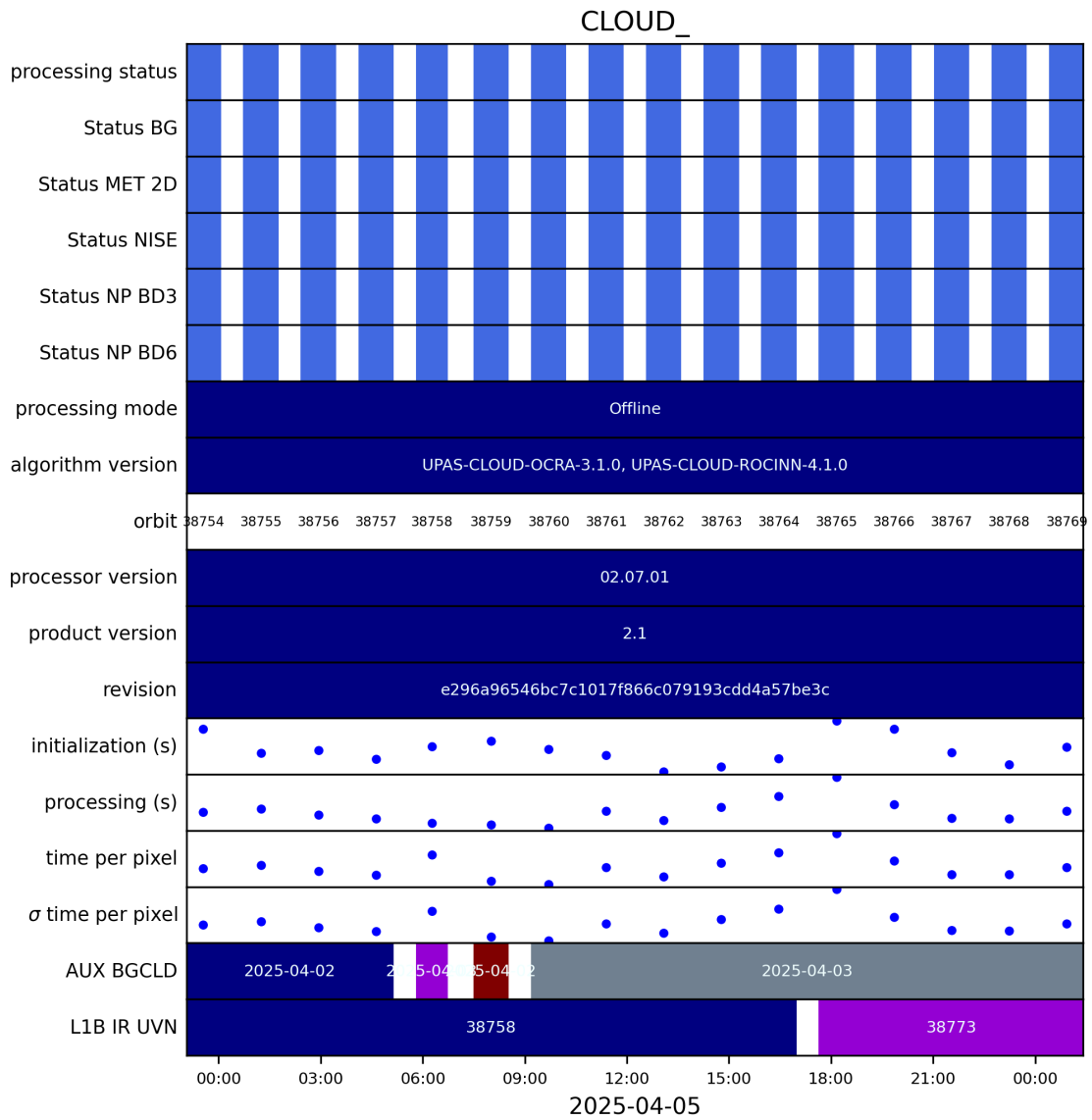


Figure 4: Input data per granule

5 Warnings and errors

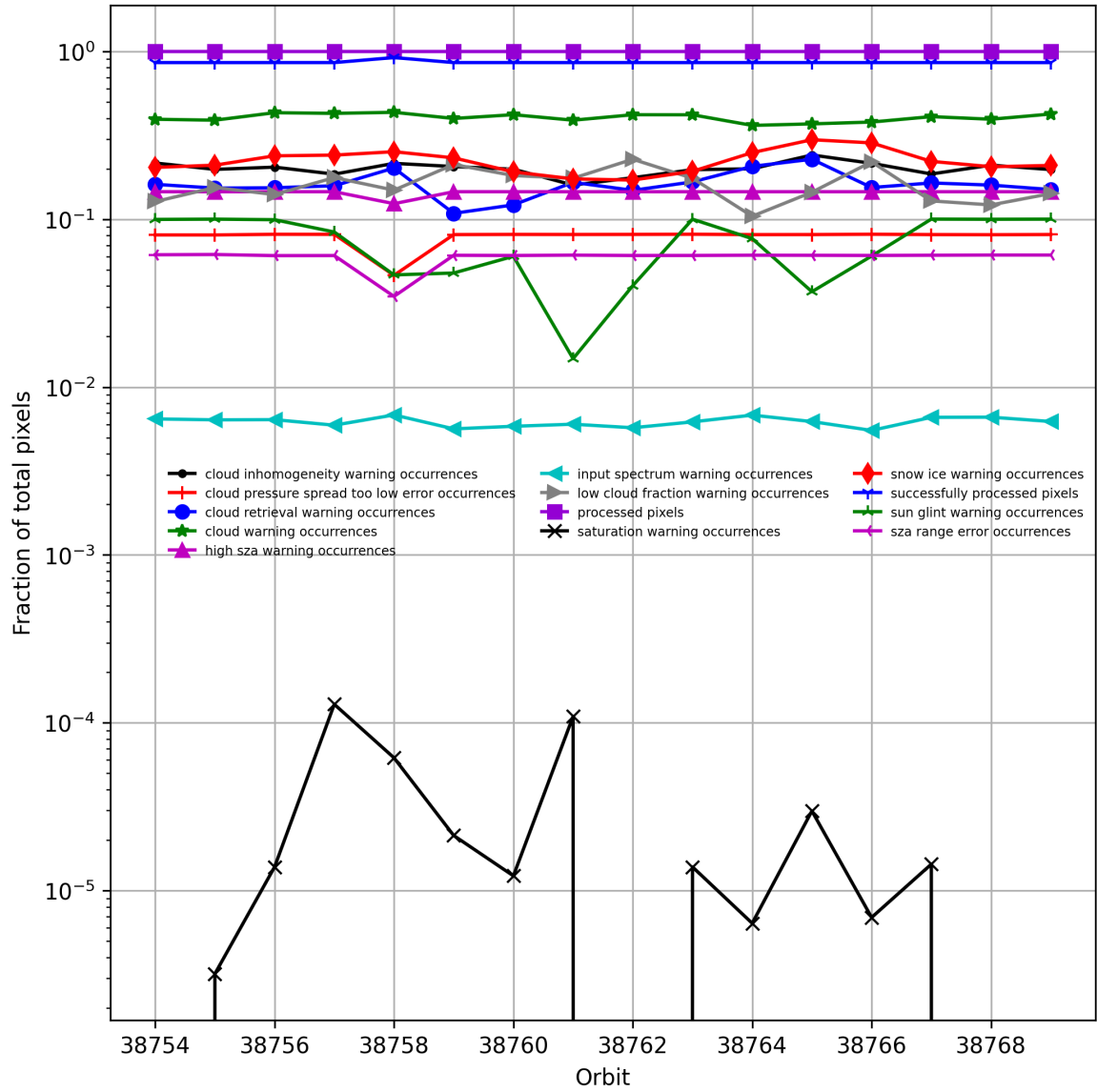


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

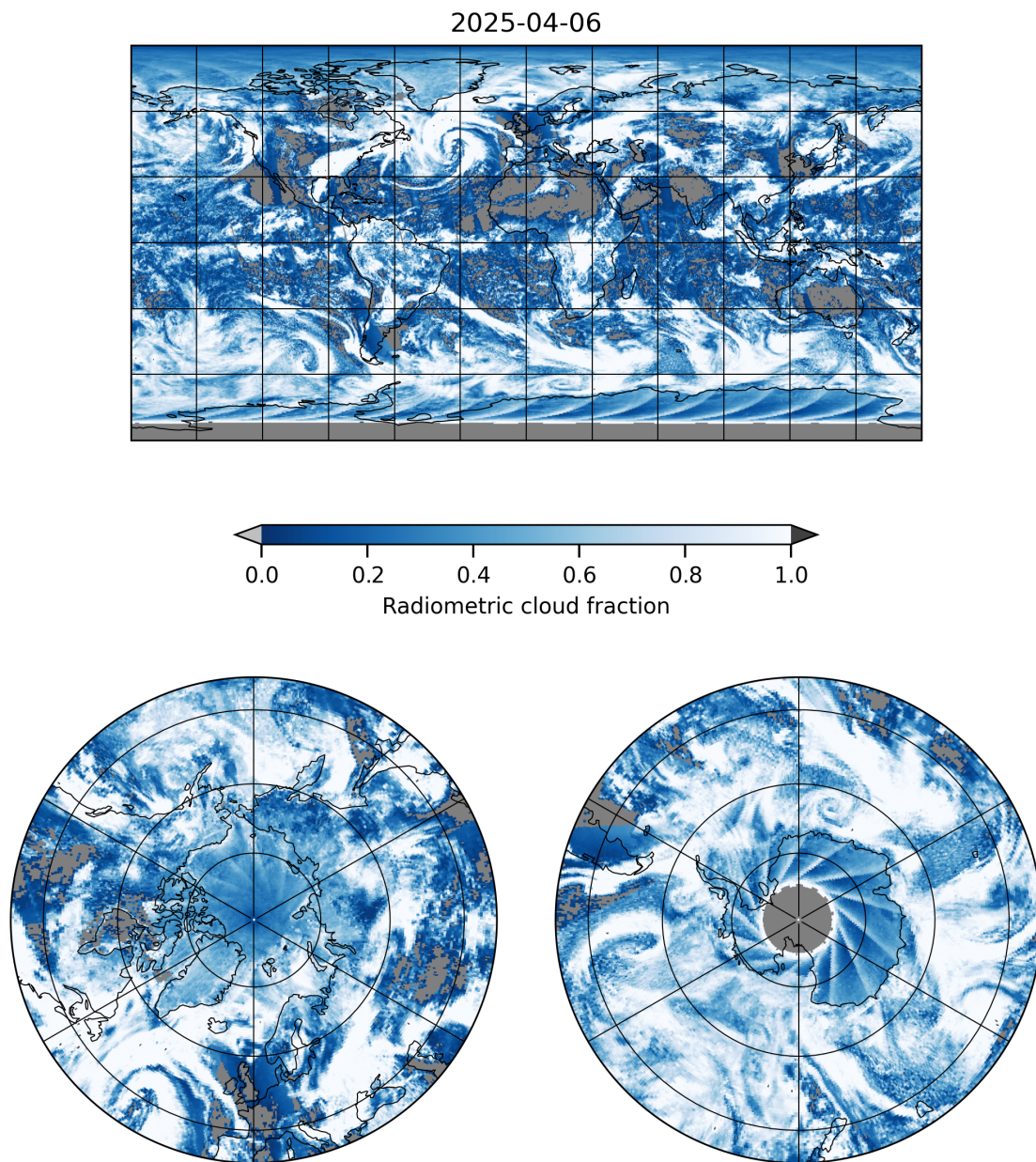


Figure 6: Map of “Radiometric cloud fraction” for 2025-04-05 to 2025-04-07

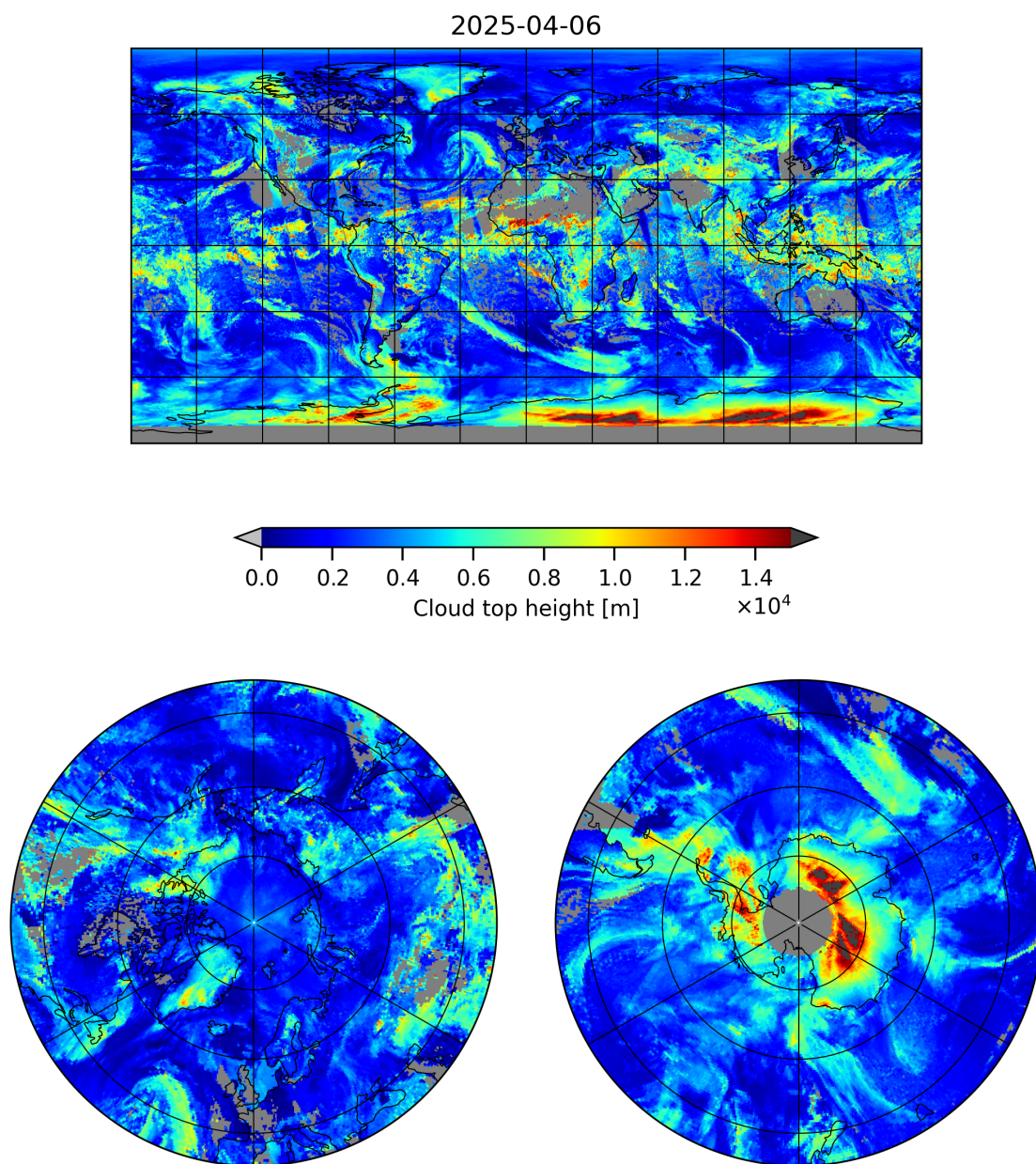


Figure 7: Map of “Cloud top height” for 2025-04-05 to 2025-04-07

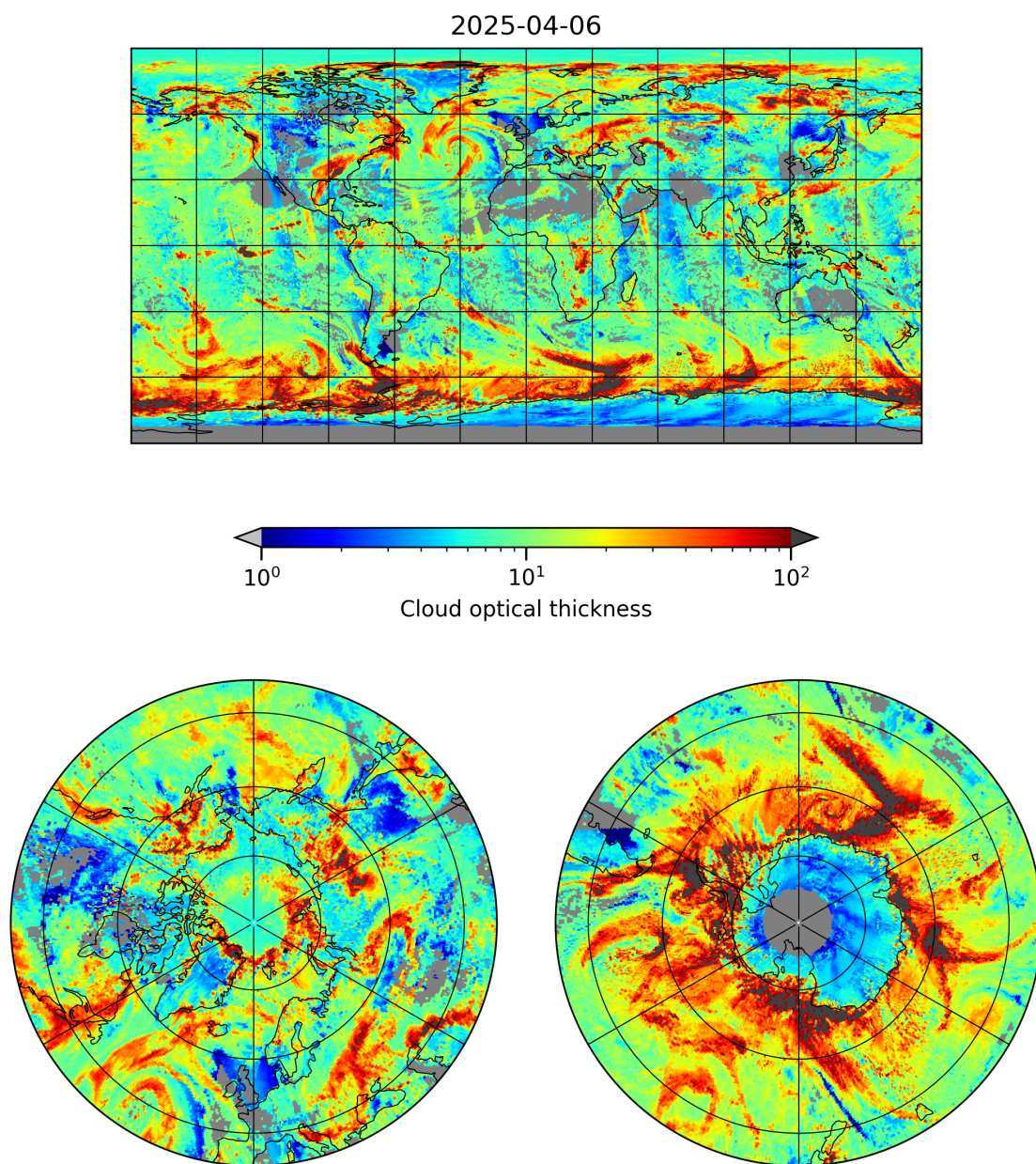


Figure 8: Map of “Cloud optical thickness” for 2025-04-05 to 2025-04-07

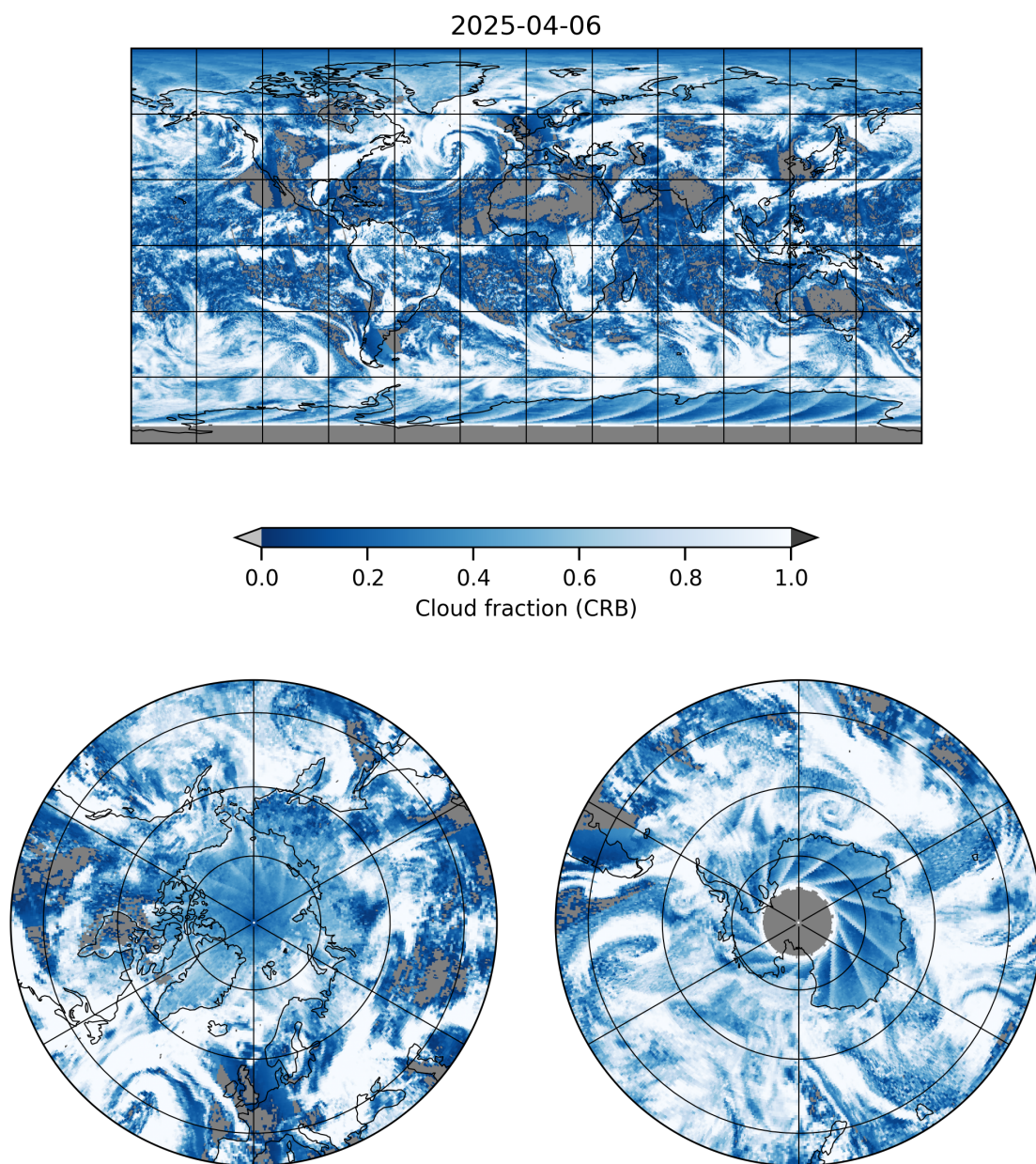


Figure 9: Map of “Cloud fraction (CRB)” for 2025-04-05 to 2025-04-07

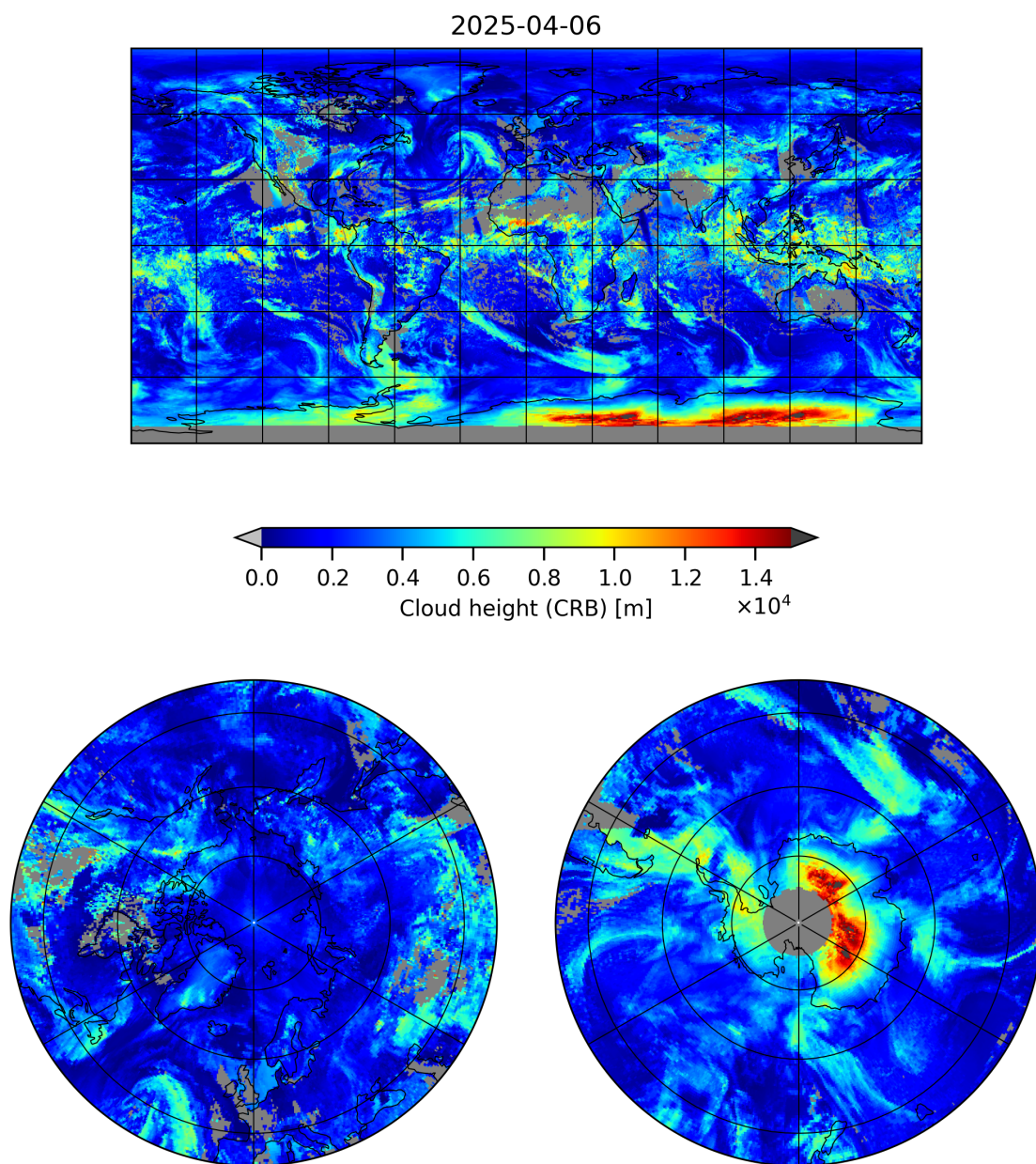


Figure 10: Map of “Cloud height (CRB)” for 2025-04-05 to 2025-04-07

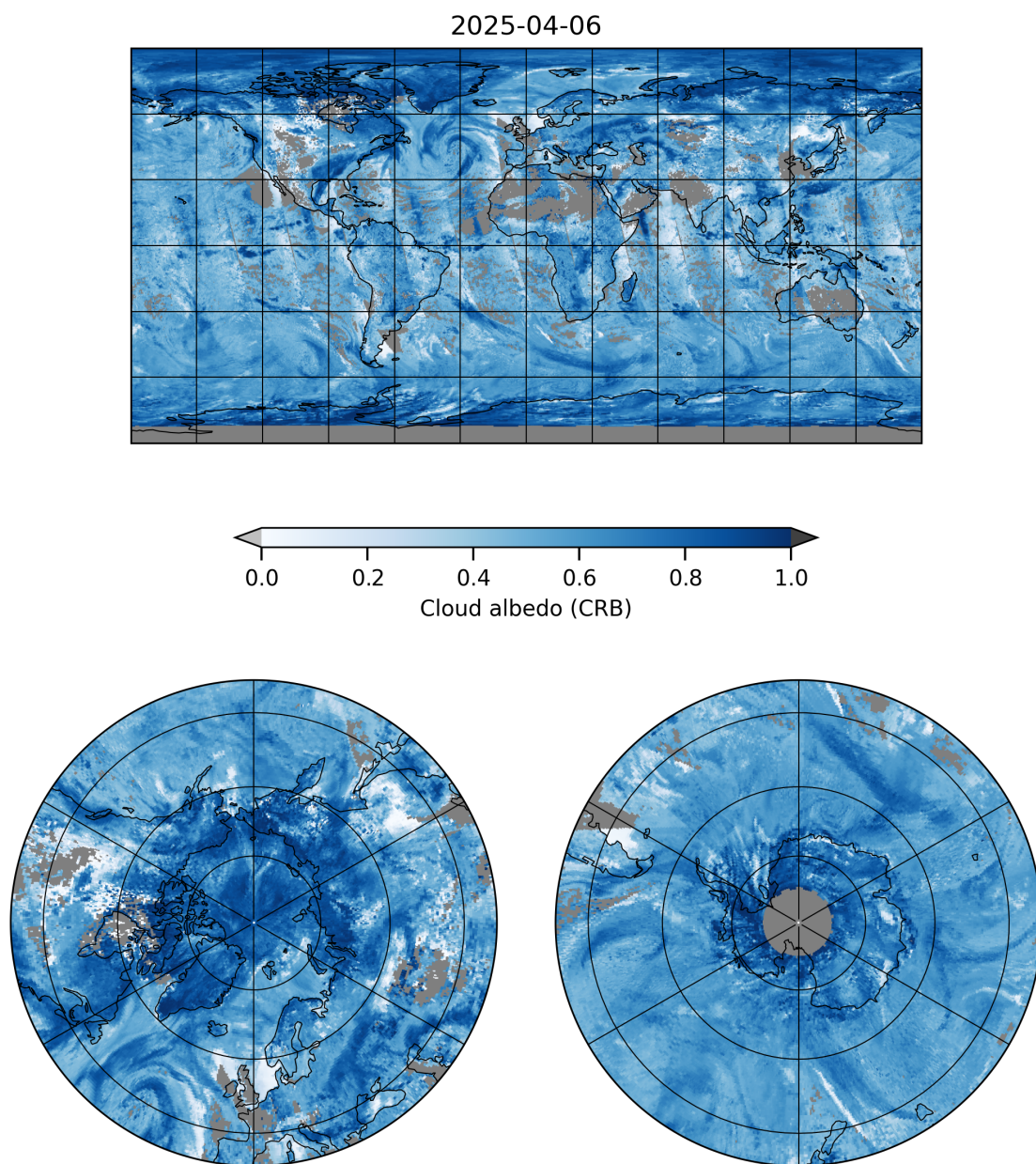


Figure 11: Map of “Cloud albedo (CRB)” for 2025-04-05 to 2025-04-07

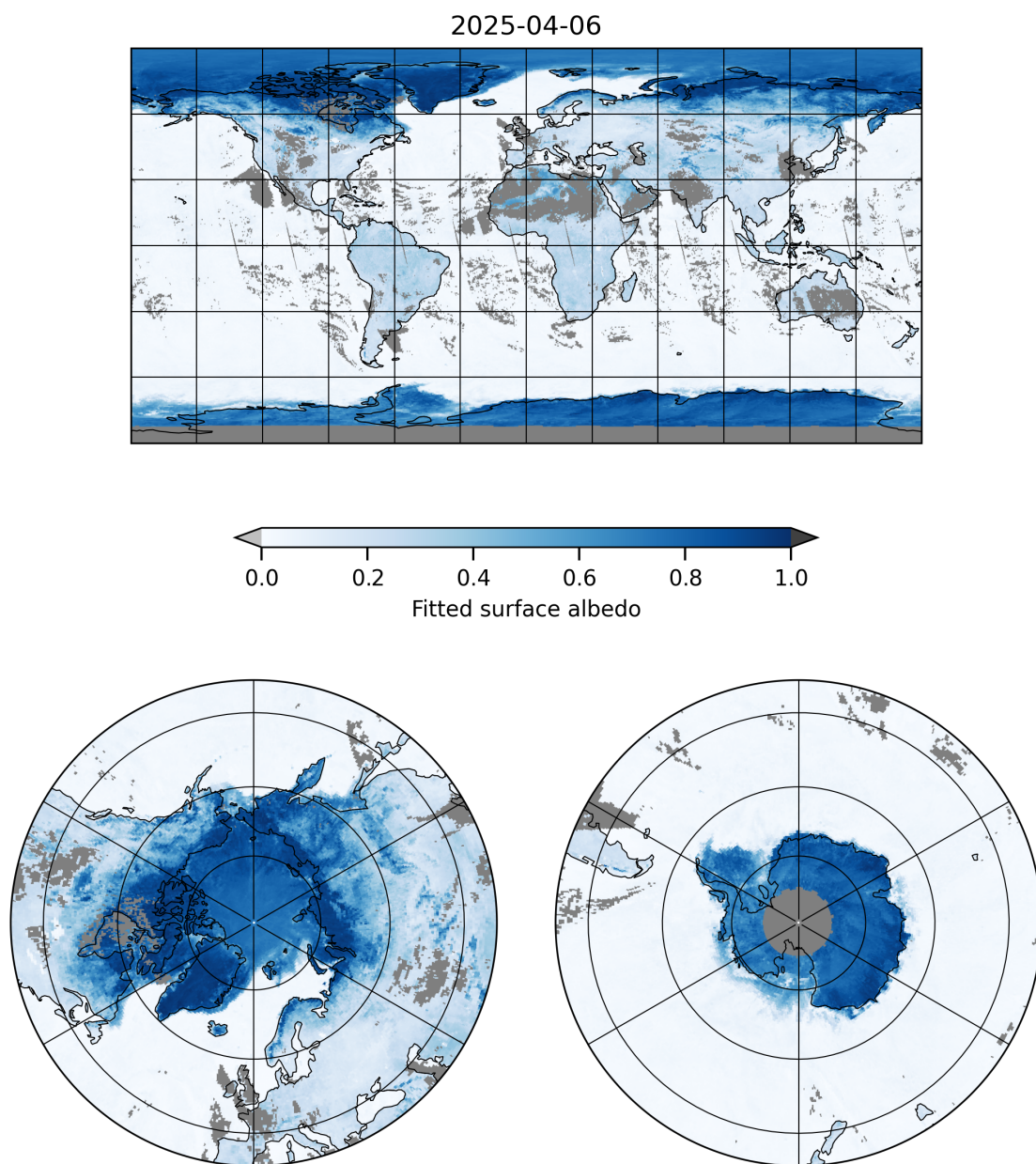


Figure 12: Map of “Fitted surface albedo” for 2025-04-05 to 2025-04-07

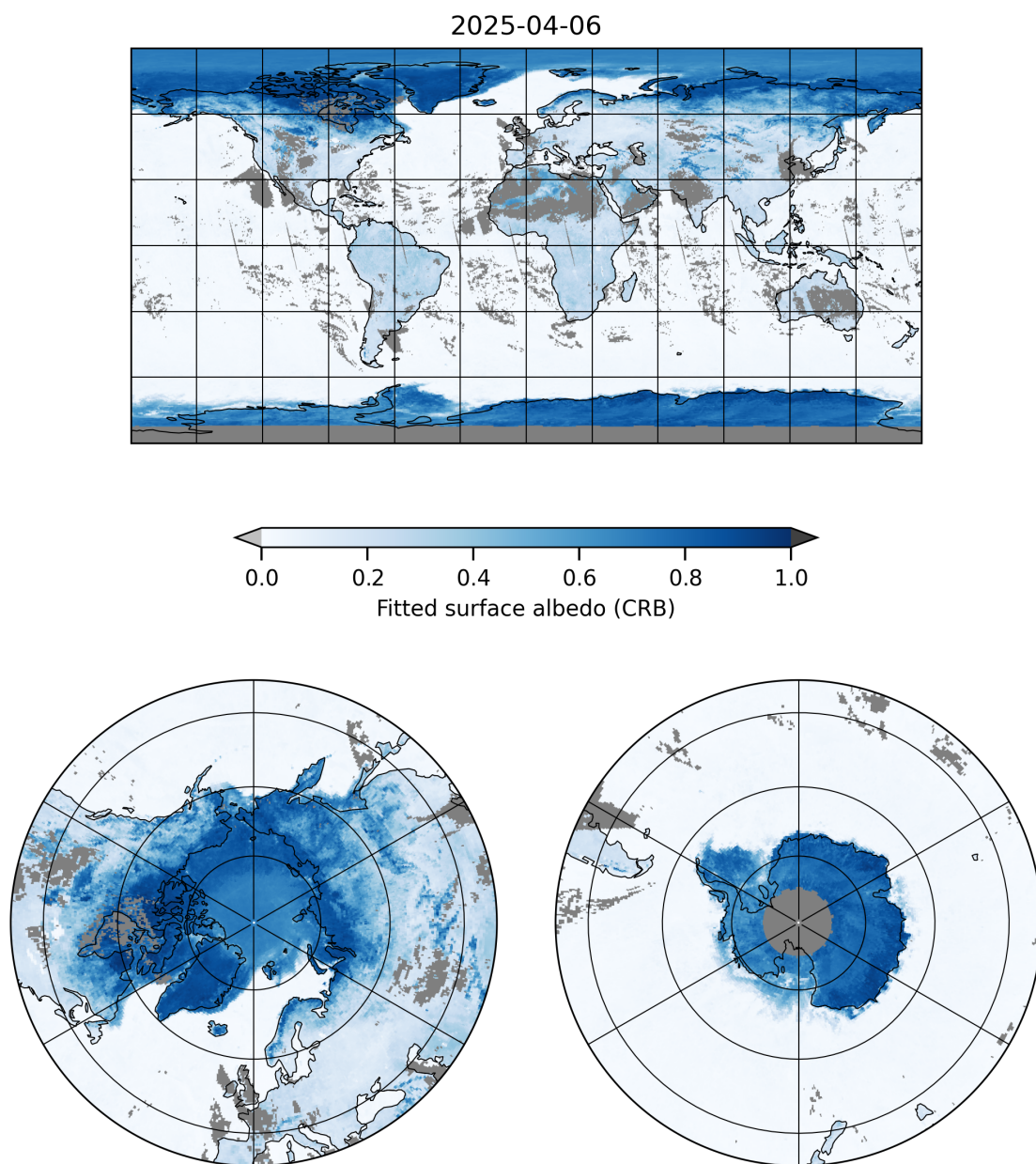


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-04-05 to 2025-04-07

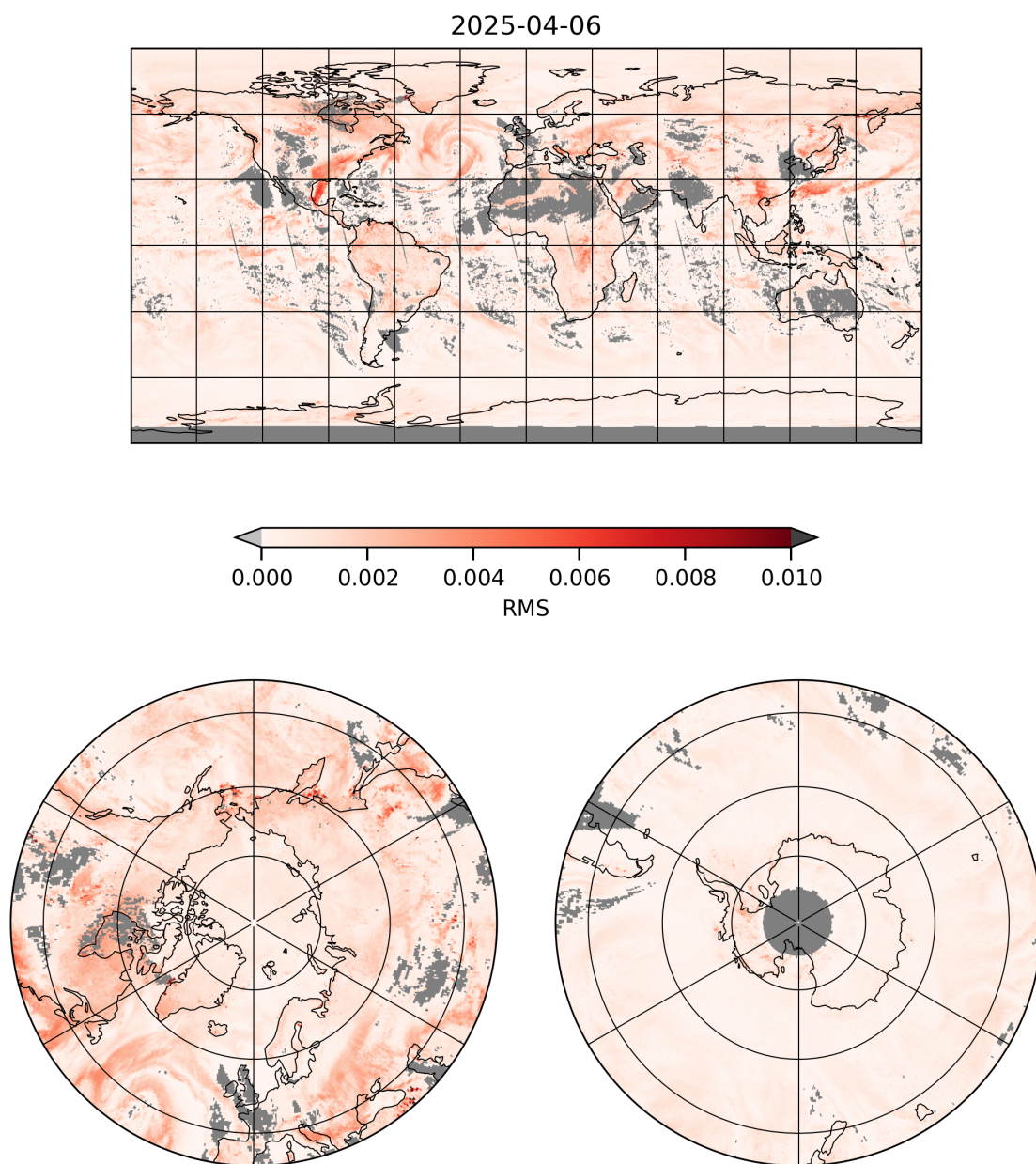


Figure 14: Map of “RMS” for 2025-04-05 to 2025-04-07

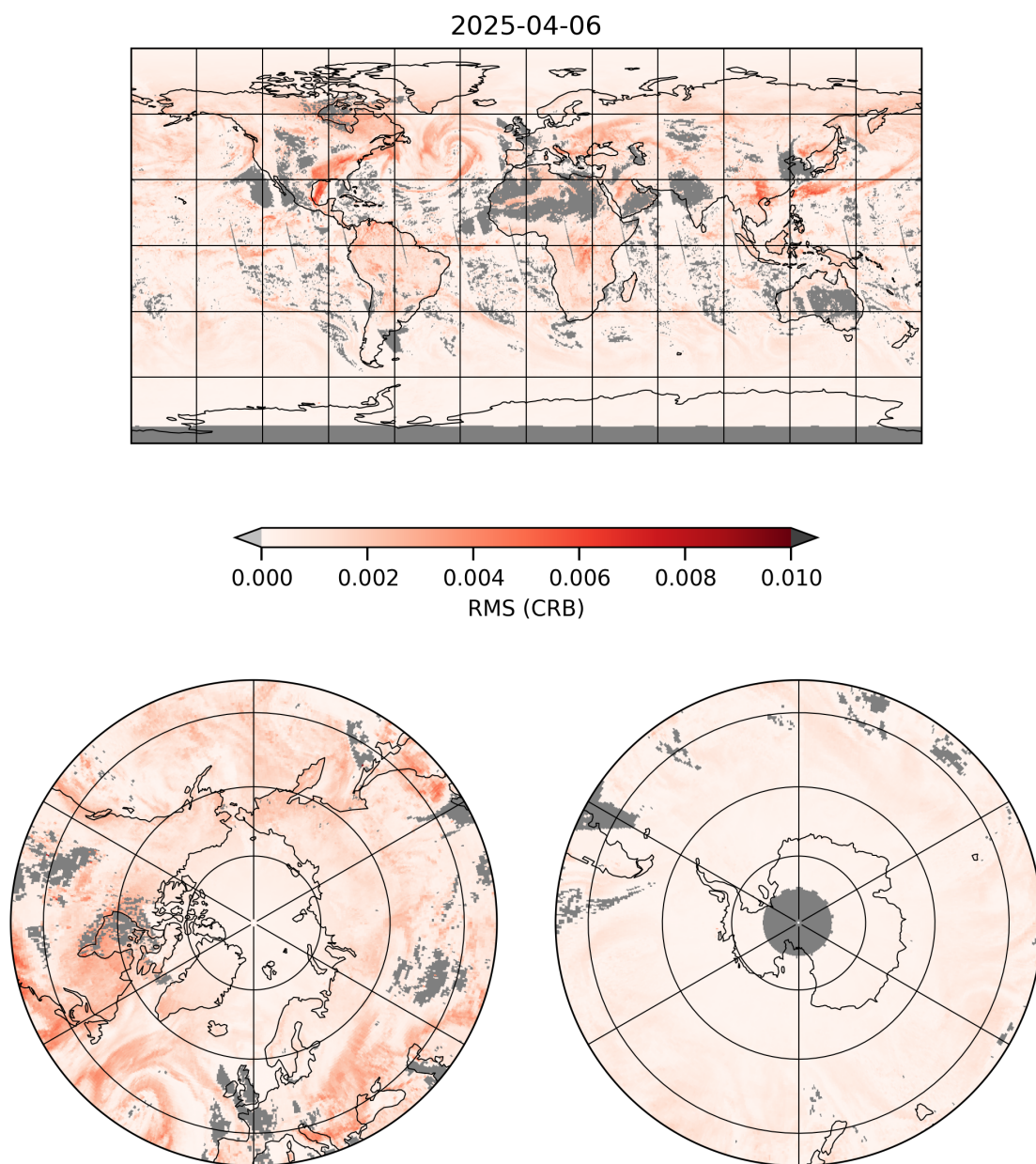


Figure 15: Map of “RMS (CRB)” for 2025-04-05 to 2025-04-07

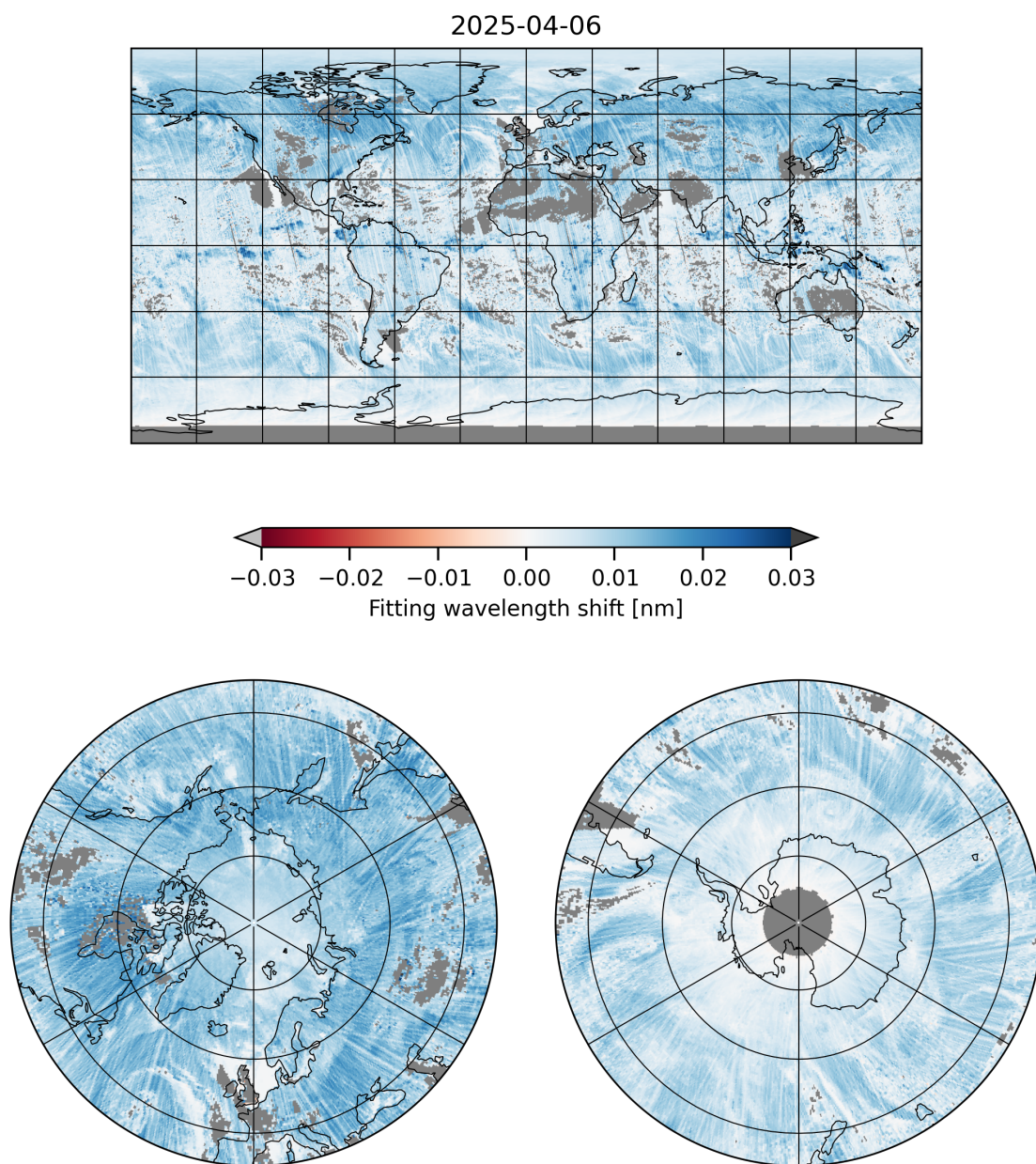


Figure 16: Map of "Fitting wavelength shift" for 2025-04-05 to 2025-04-07

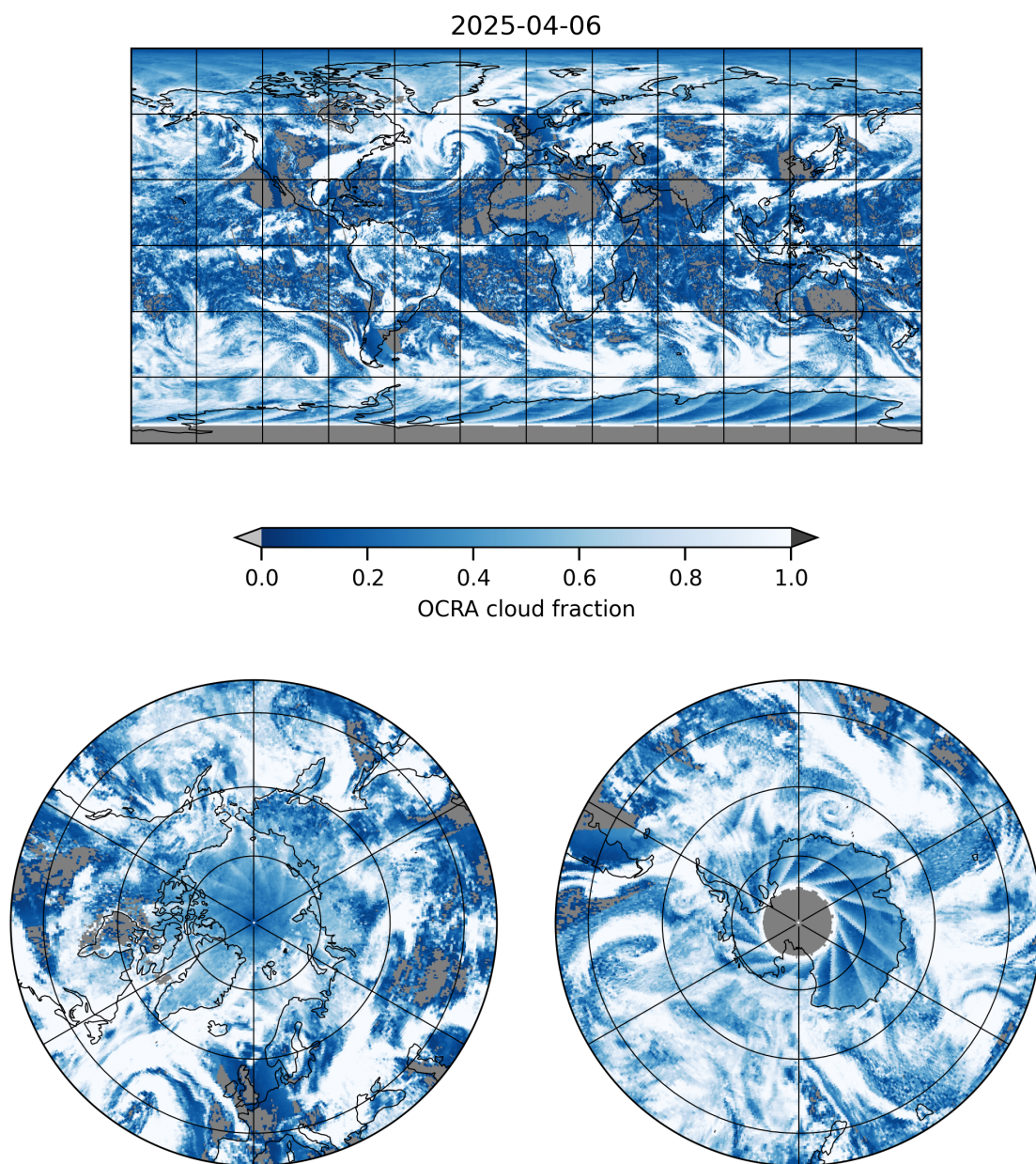


Figure 17: Map of “OCRA cloud fraction” for 2025-04-05 to 2025-04-07

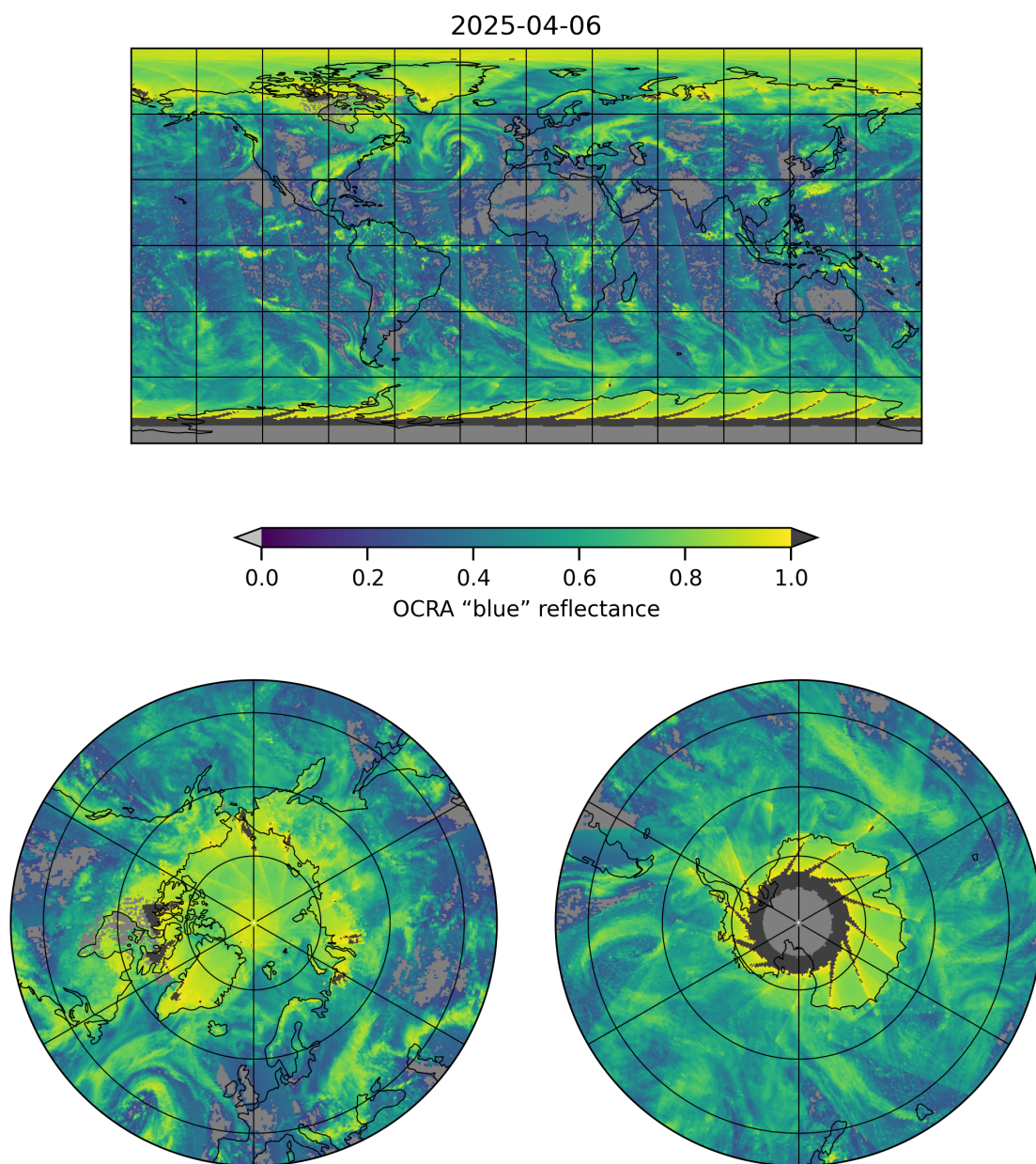


Figure 18: Map of "OCRA "blue" reflectance" for 2025-04-05 to 2025-04-07

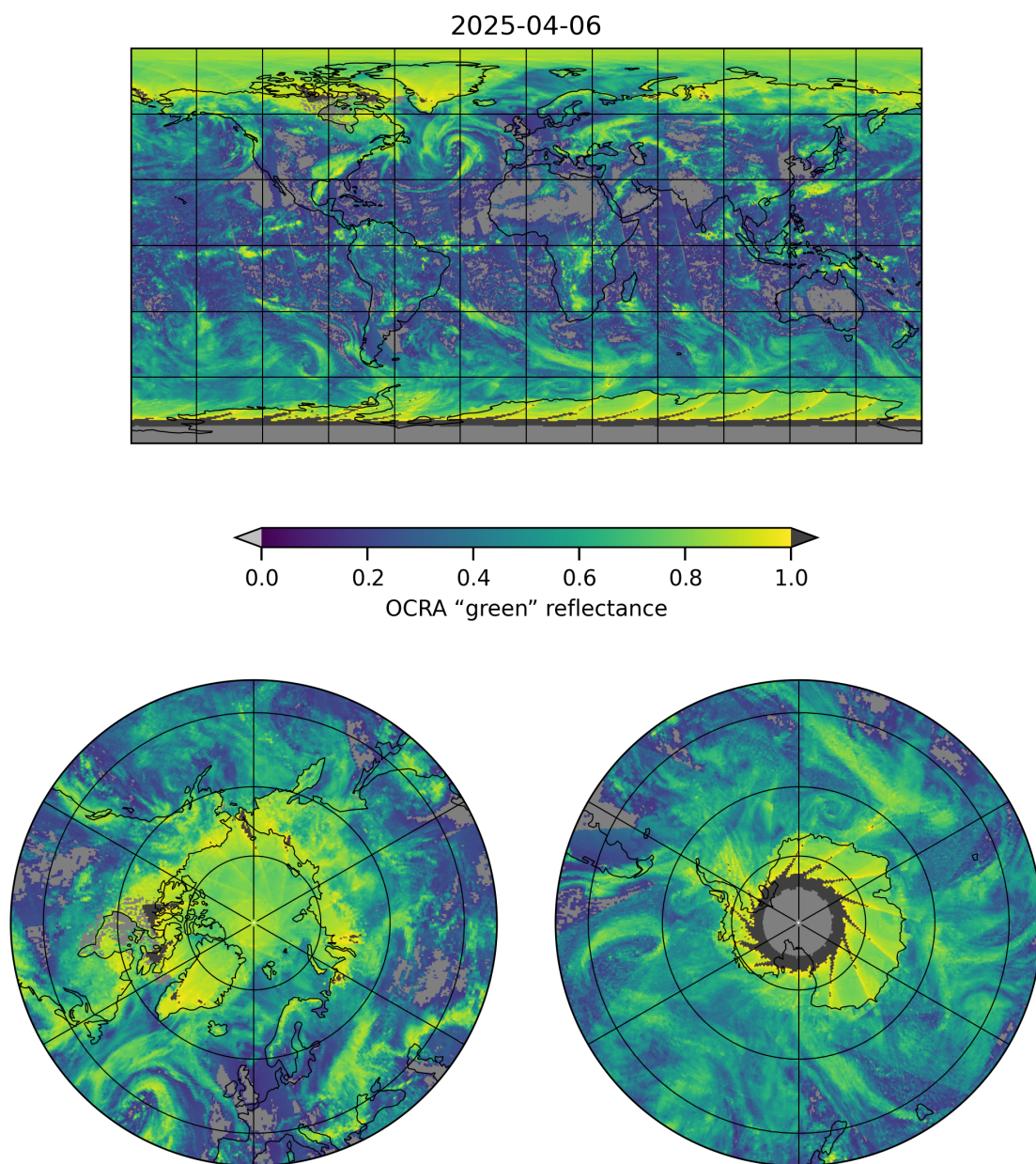


Figure 19: Map of "OCRA "green" reflectance" for 2025-04-05 to 2025-04-07

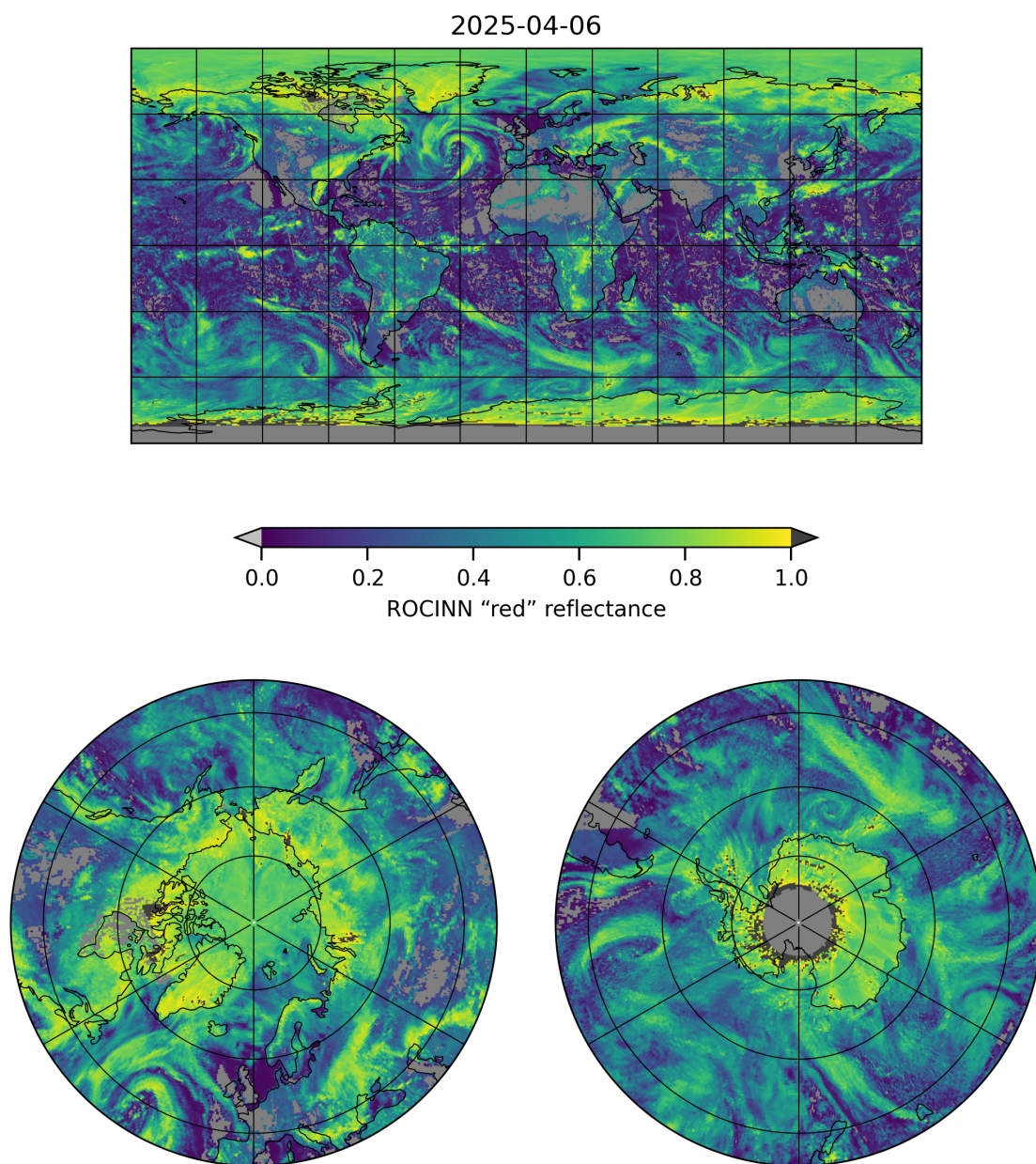


Figure 20: Map of "ROCINN "red" reflectance" for 2025-04-05 to 2025-04-07

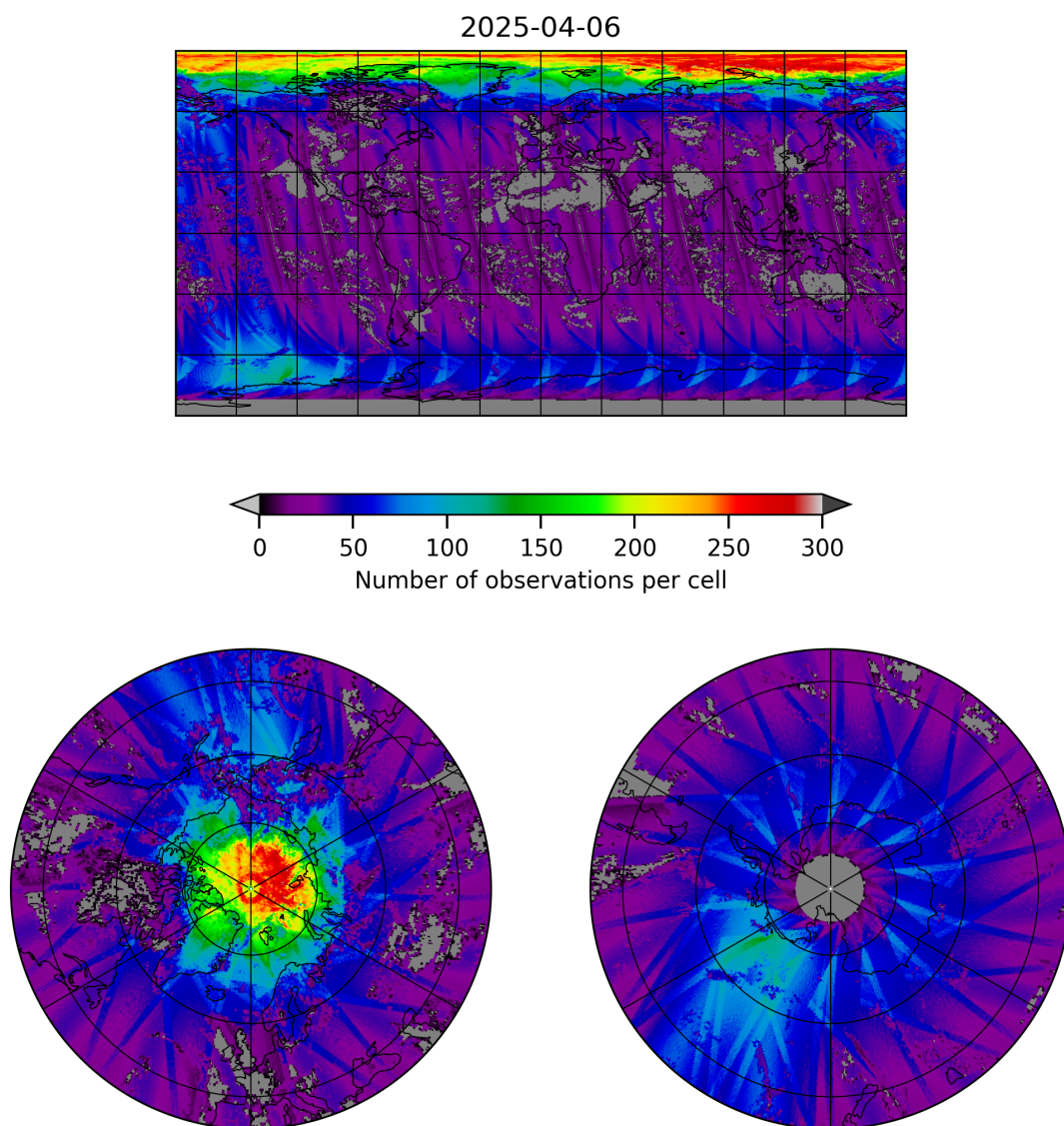


Figure 21: Map of the number of observations for 2025-04-05 to 2025-04-07

7 Zonal average

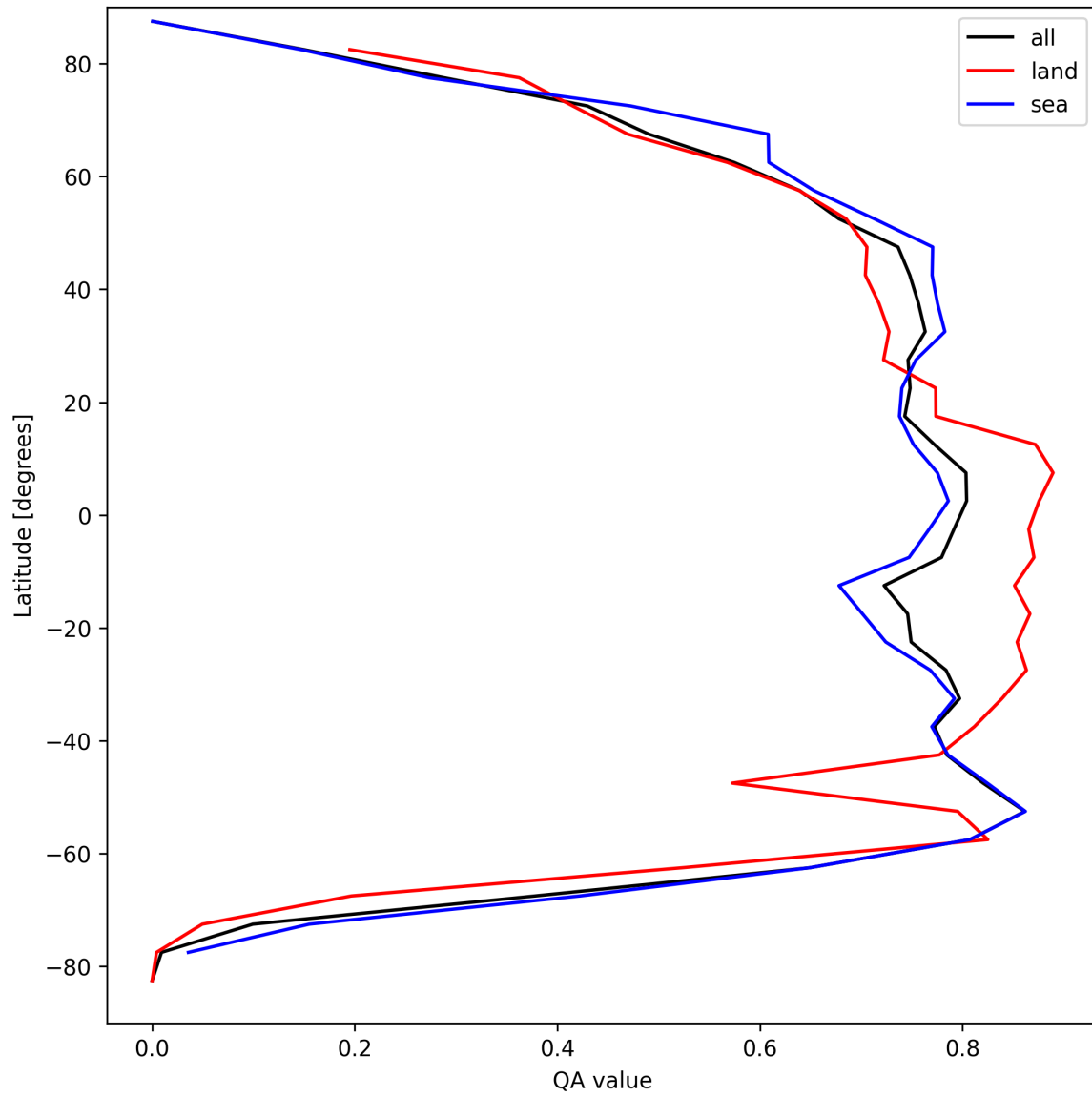


Figure 22: Zonal average of “QA value” for 2025-04-05 to 2025-04-07.

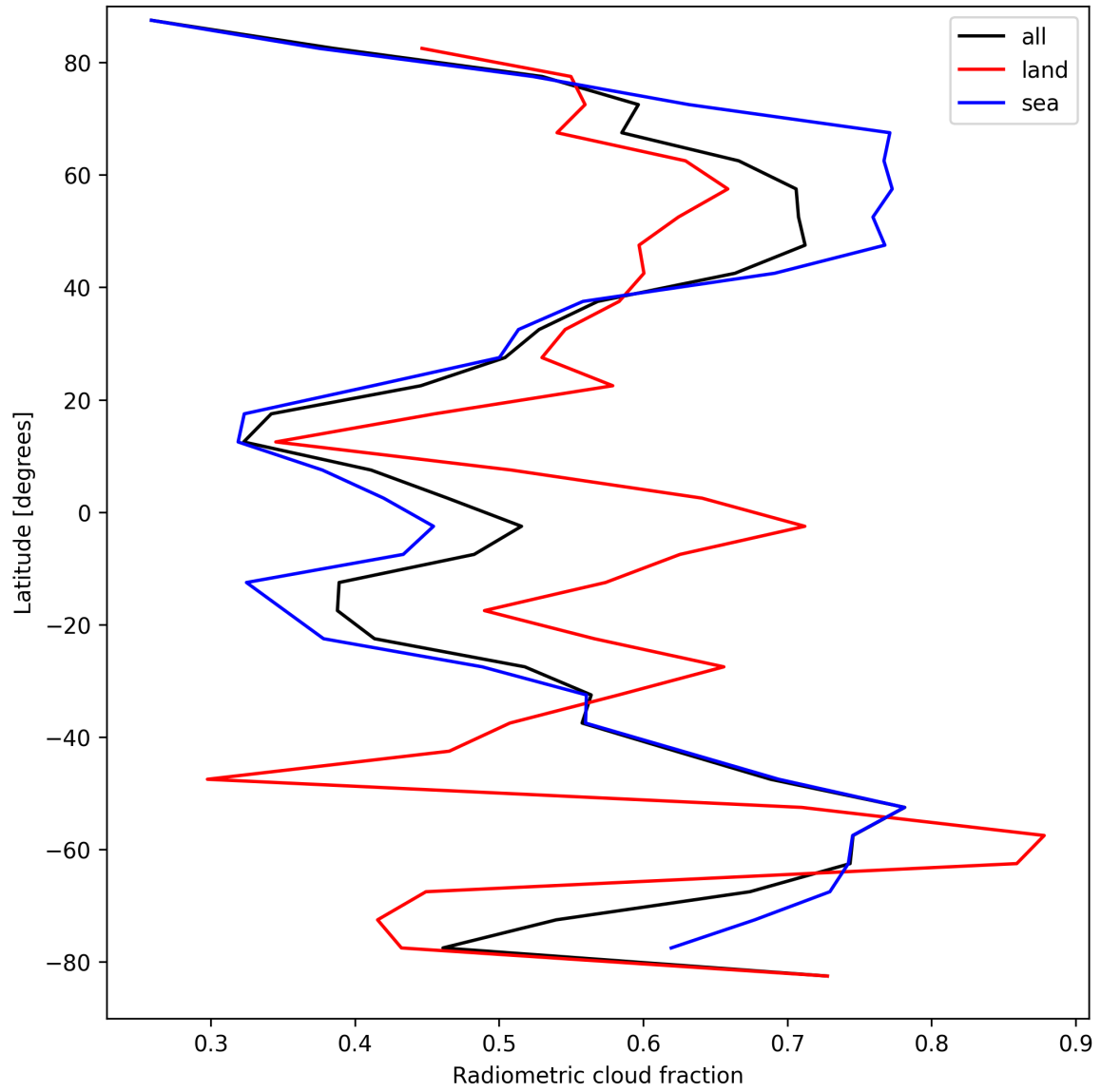


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-04-05 to 2025-04-07.

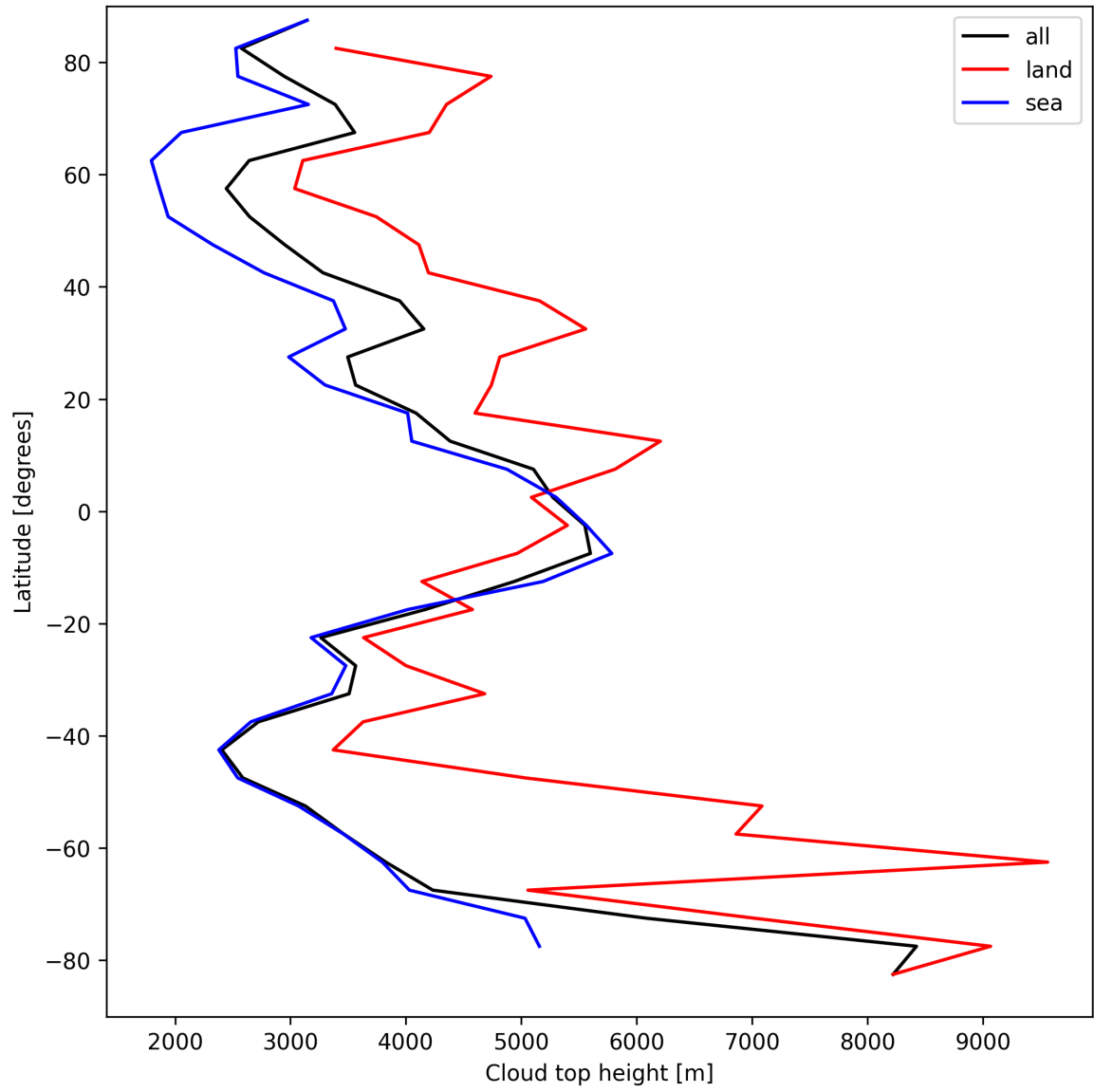


Figure 24: Zonal average of “Cloud top height” for 2025-04-05 to 2025-04-07.

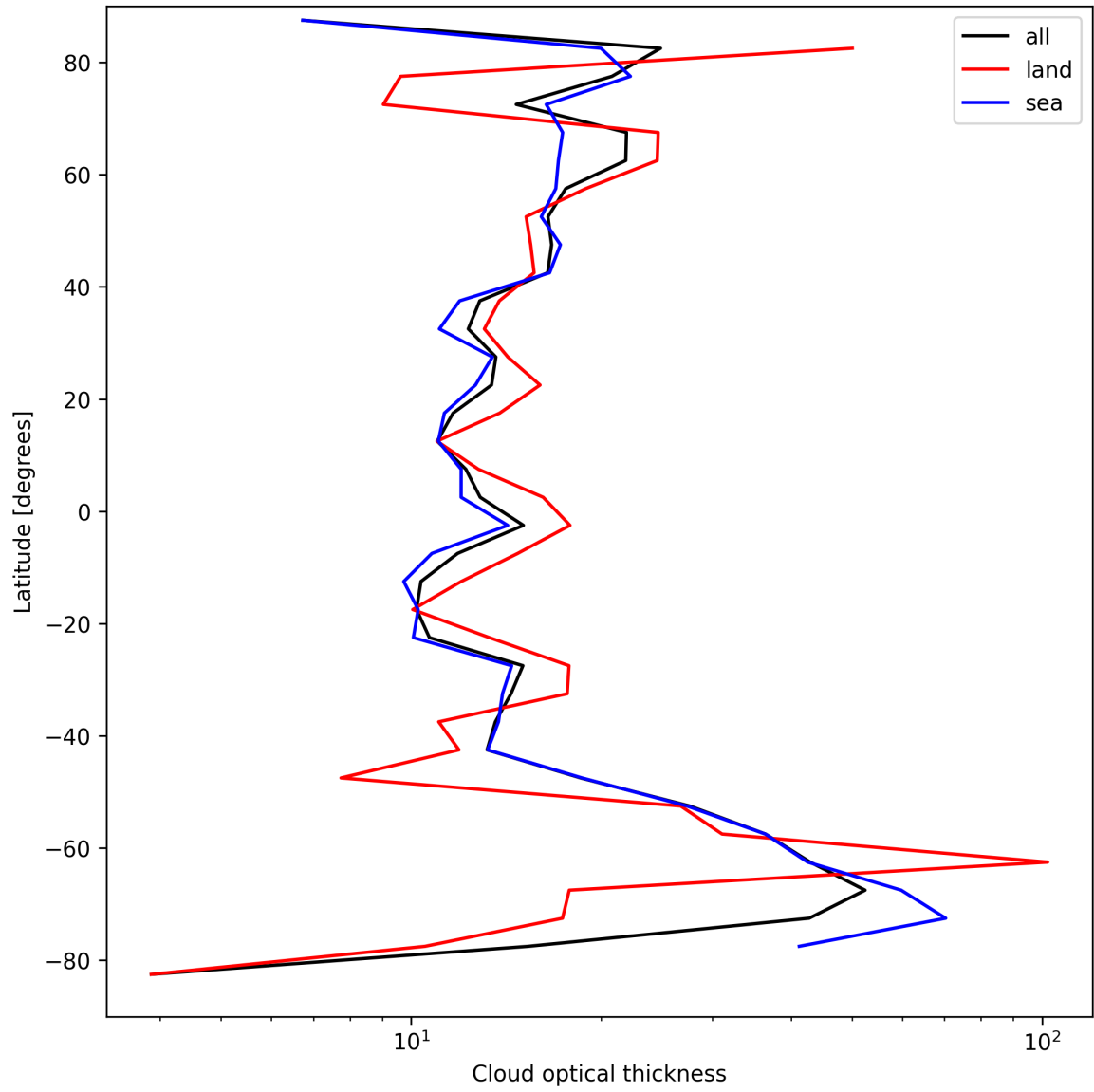


Figure 25: Zonal average of “Cloud optical thickness” for 2025-04-05 to 2025-04-07.

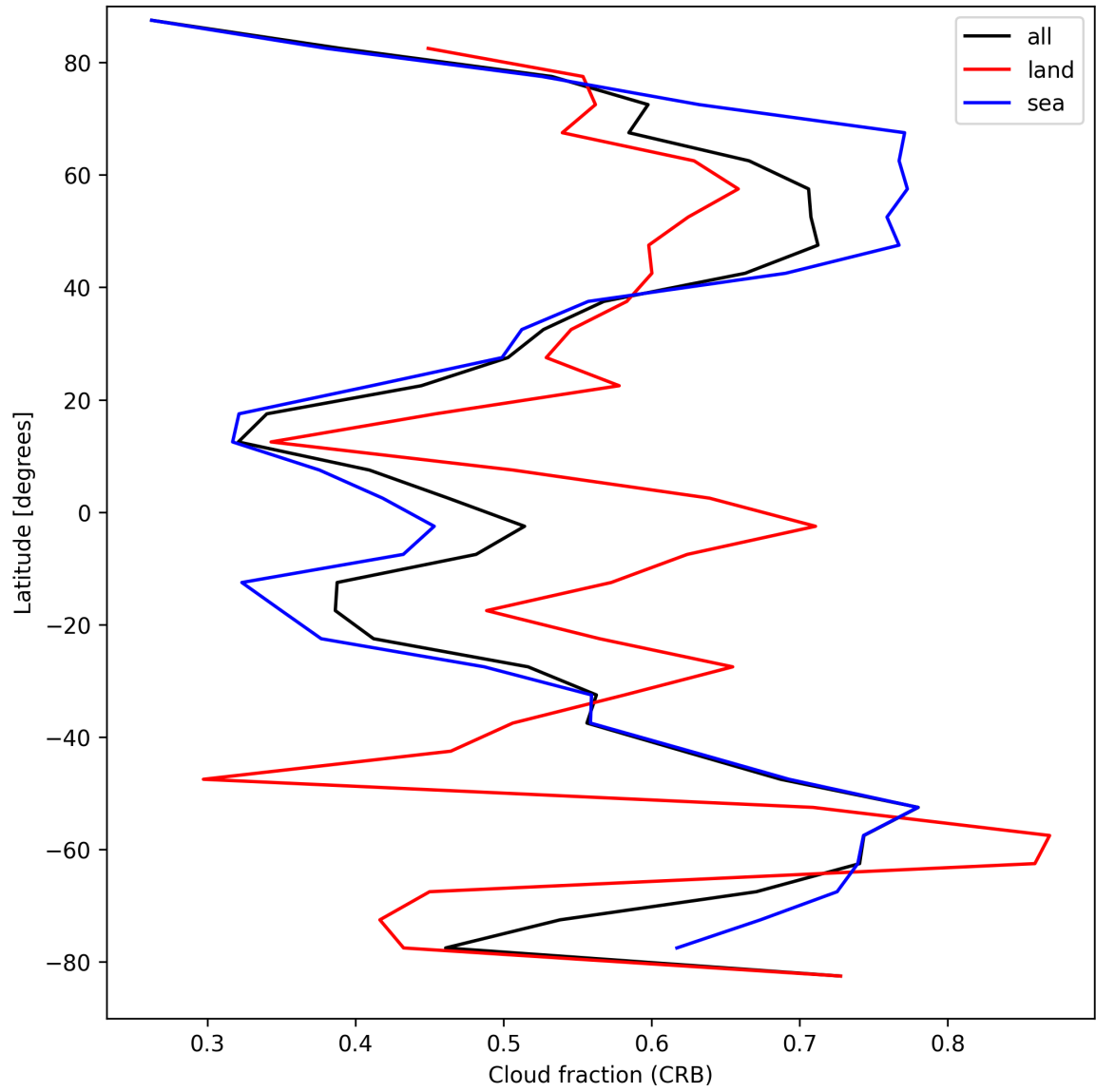


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-04-05 to 2025-04-07.

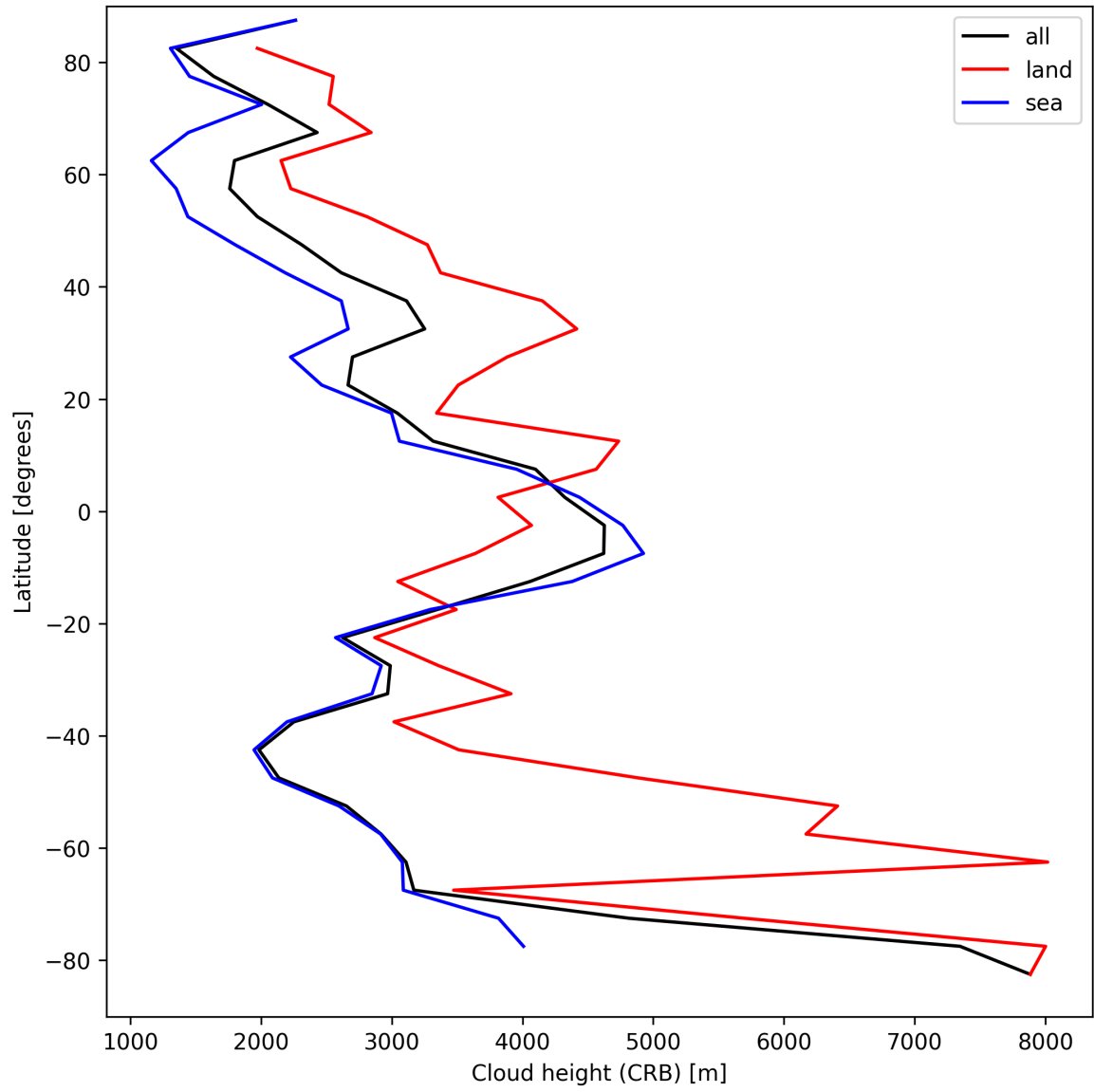


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-04-05 to 2025-04-07.

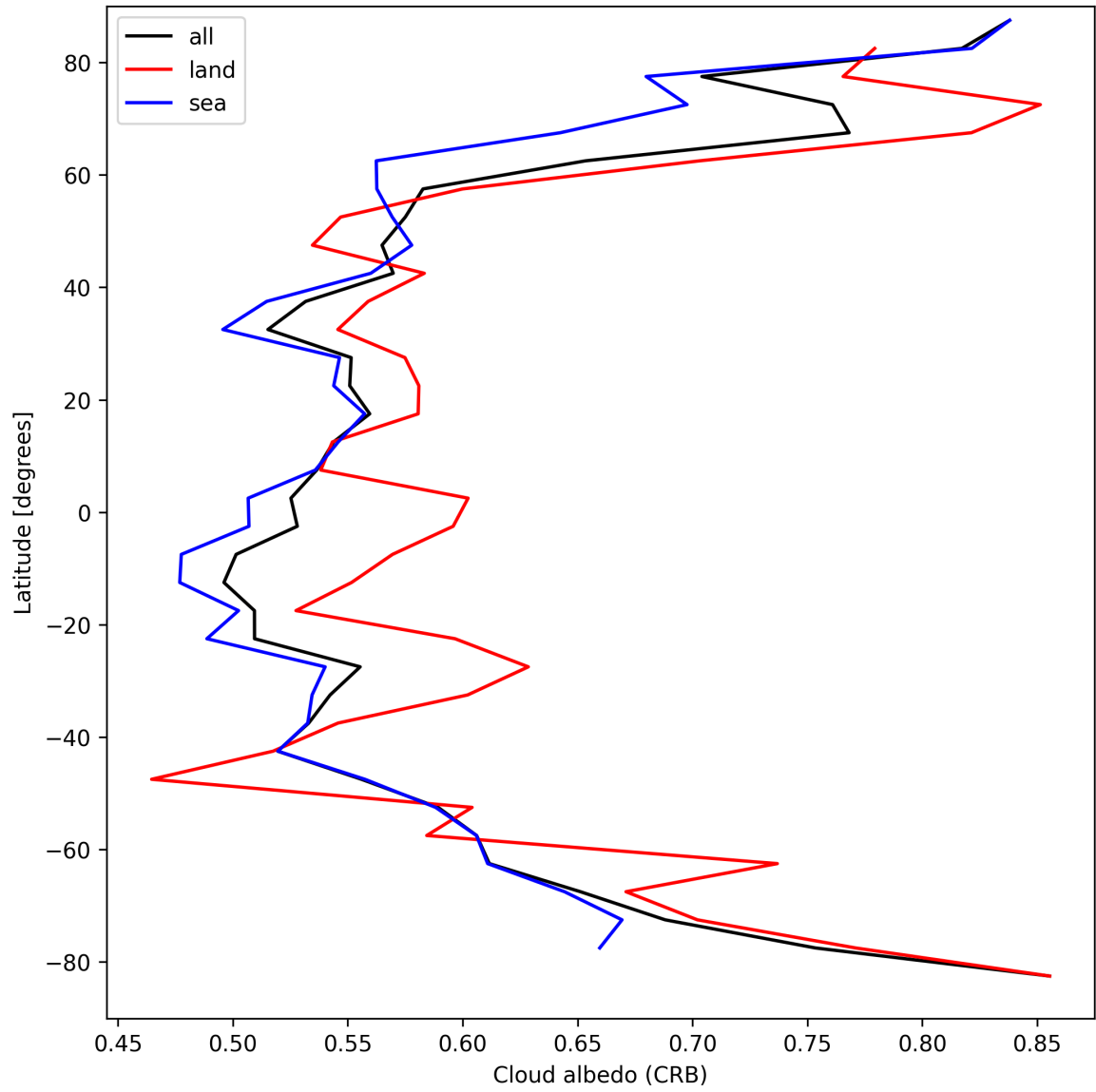


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-04-05 to 2025-04-07.

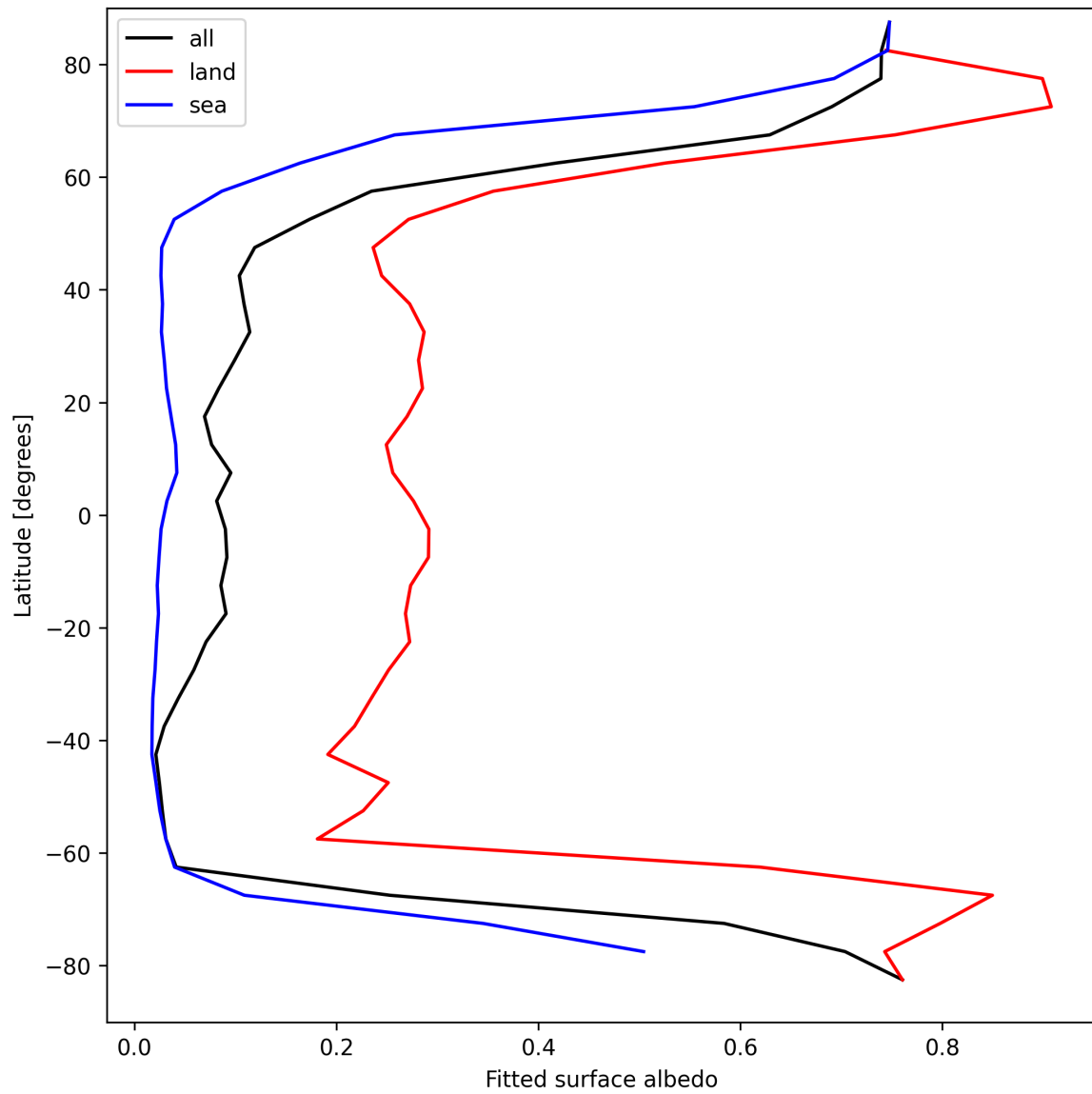


Figure 29: Zonal average of “Fitted surface albedo” for 2025-04-05 to 2025-04-07.

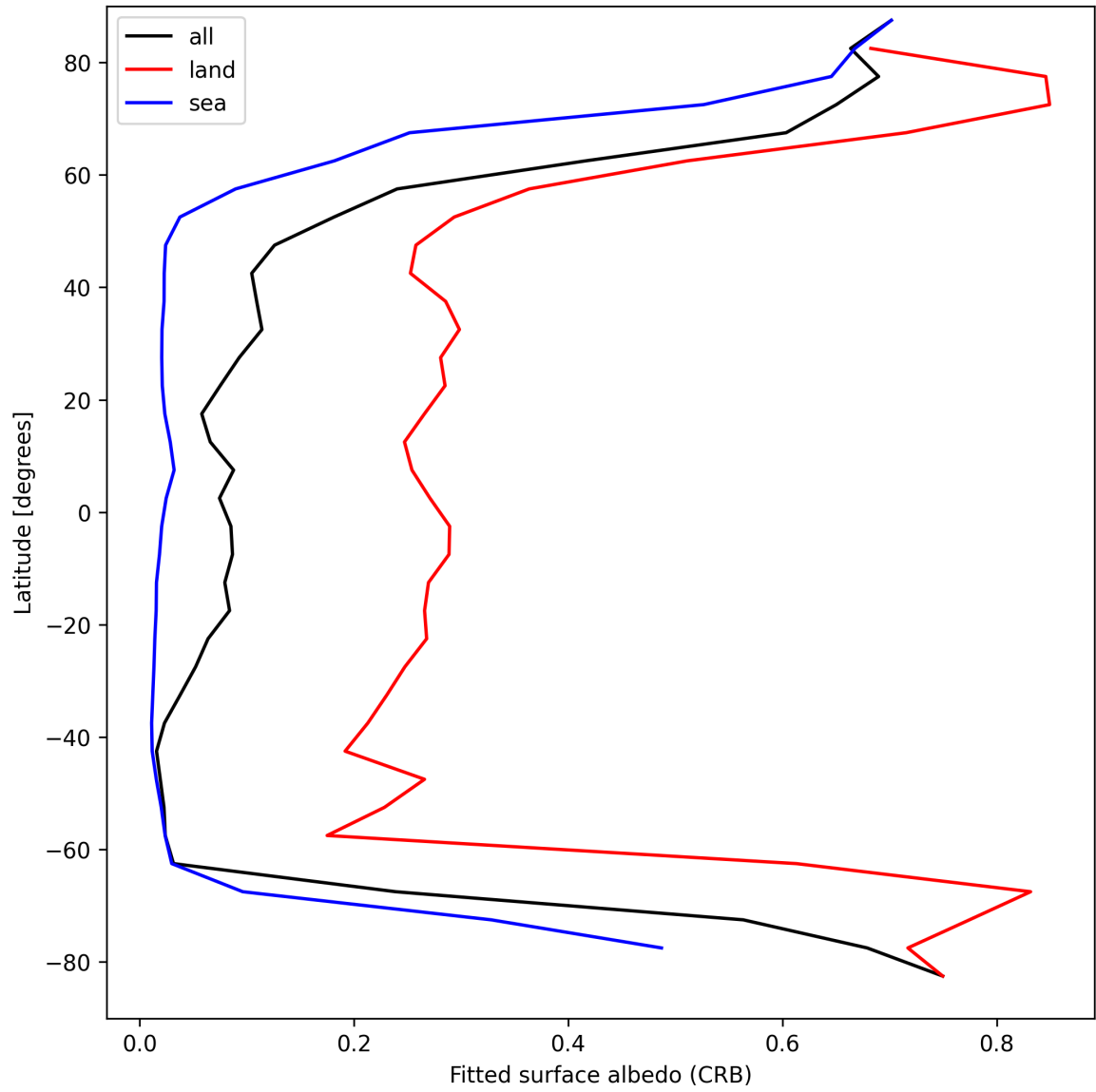


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-04-05 to 2025-04-07.

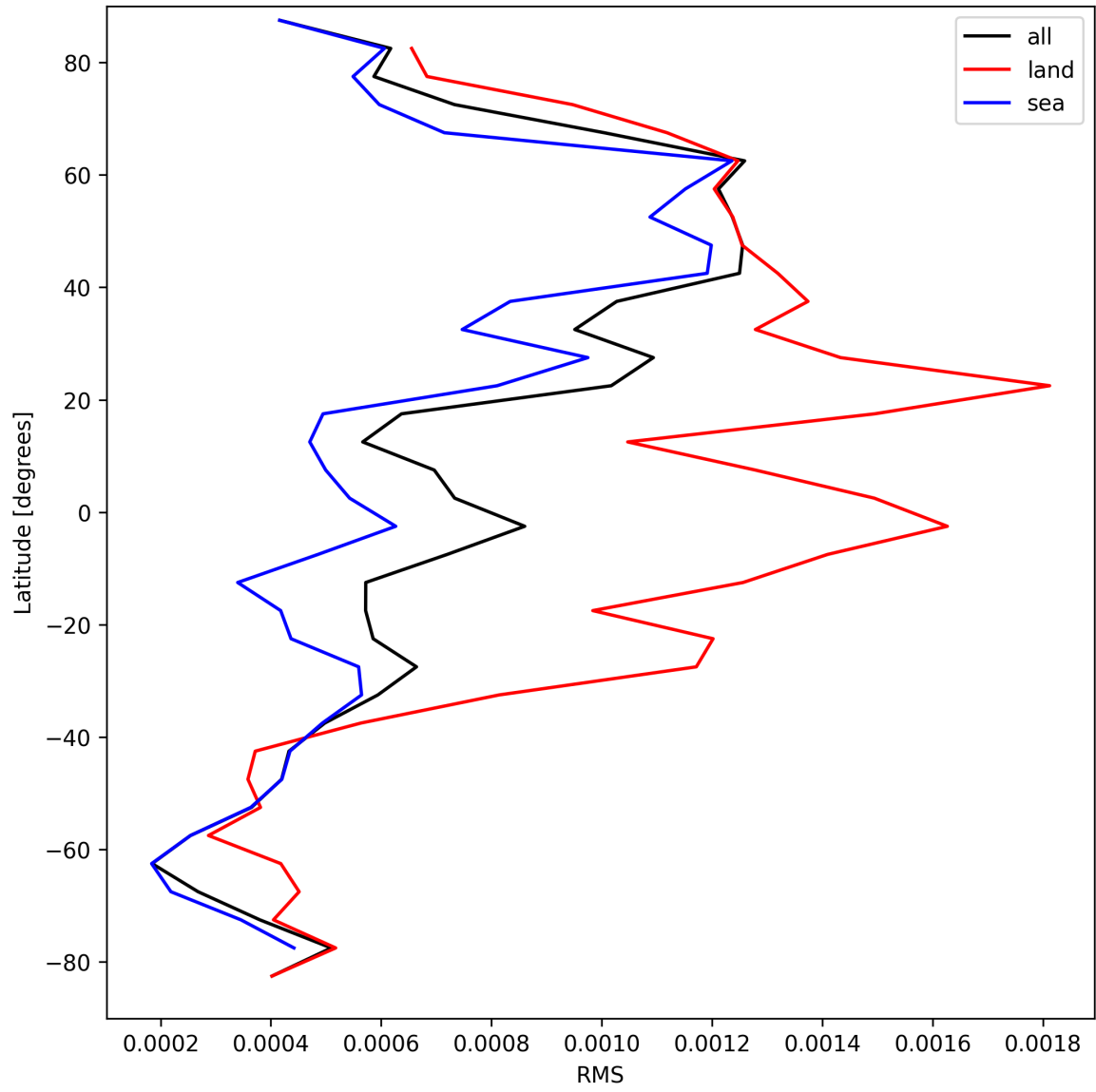


Figure 31: Zonal average of “RMS” for 2025-04-05 to 2025-04-07.

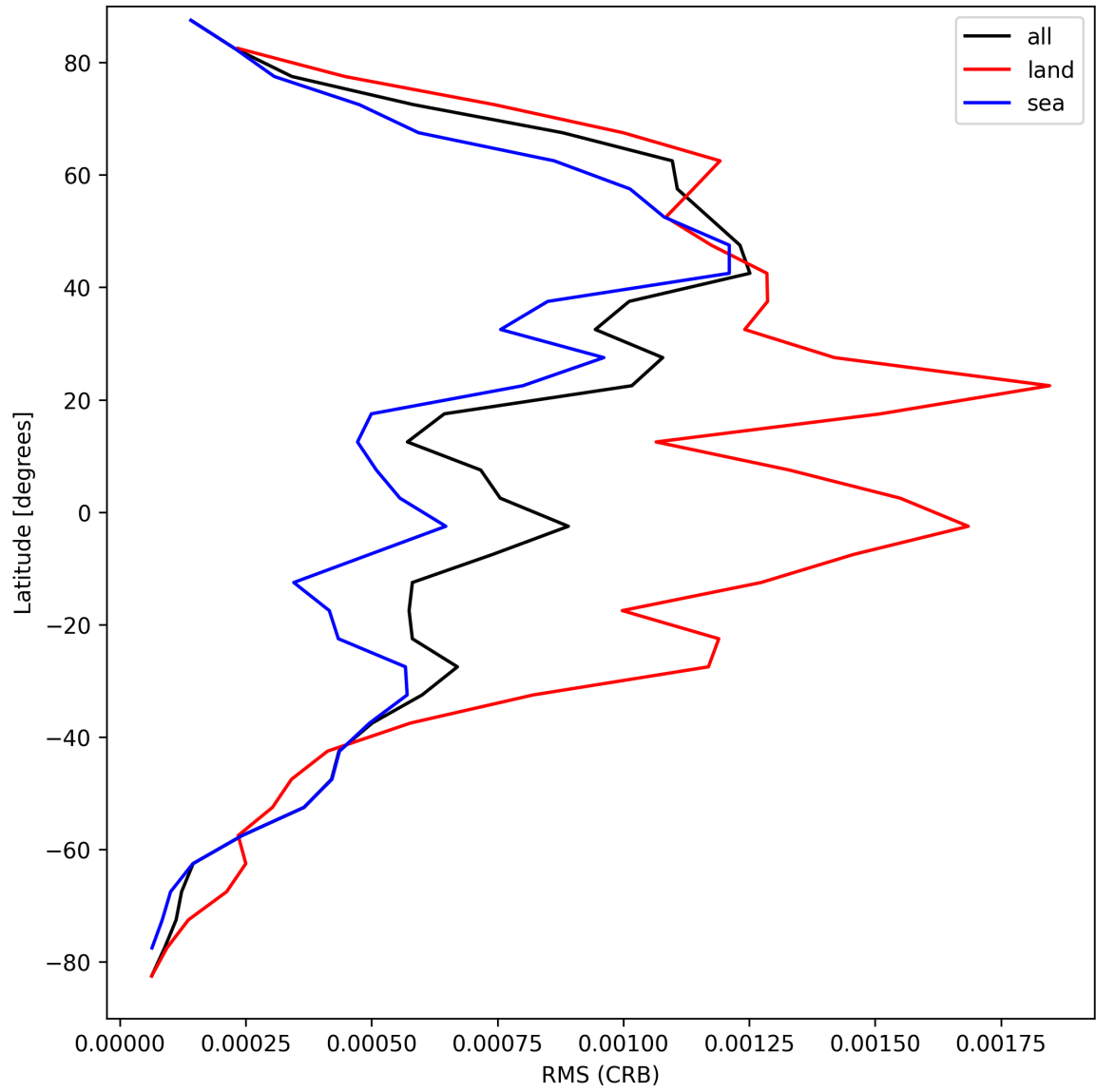


Figure 32: Zonal average of “RMS (CRB)” for 2025-04-05 to 2025-04-07.

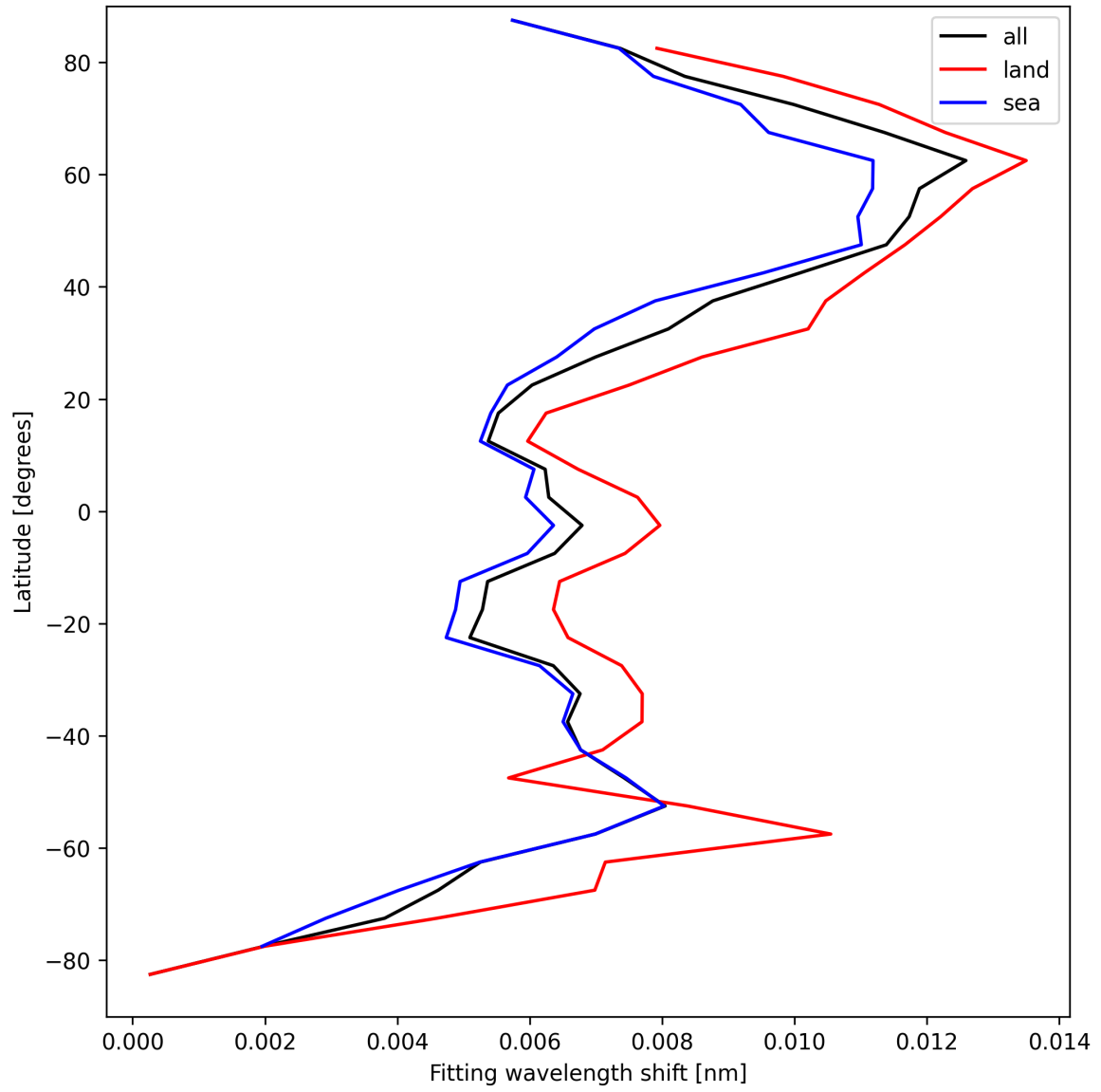


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-04-05 to 2025-04-07.

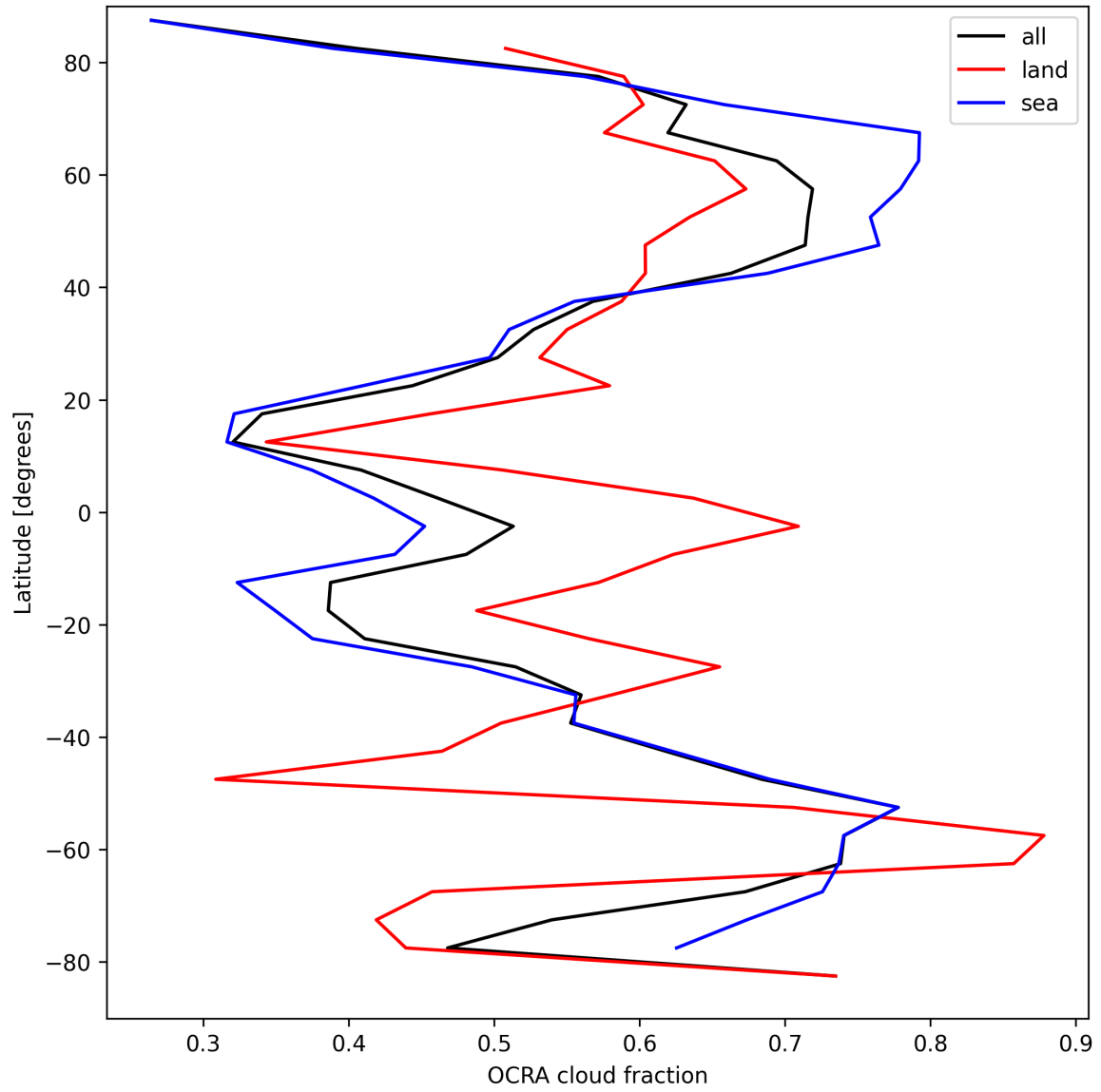


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-04-05 to 2025-04-07.

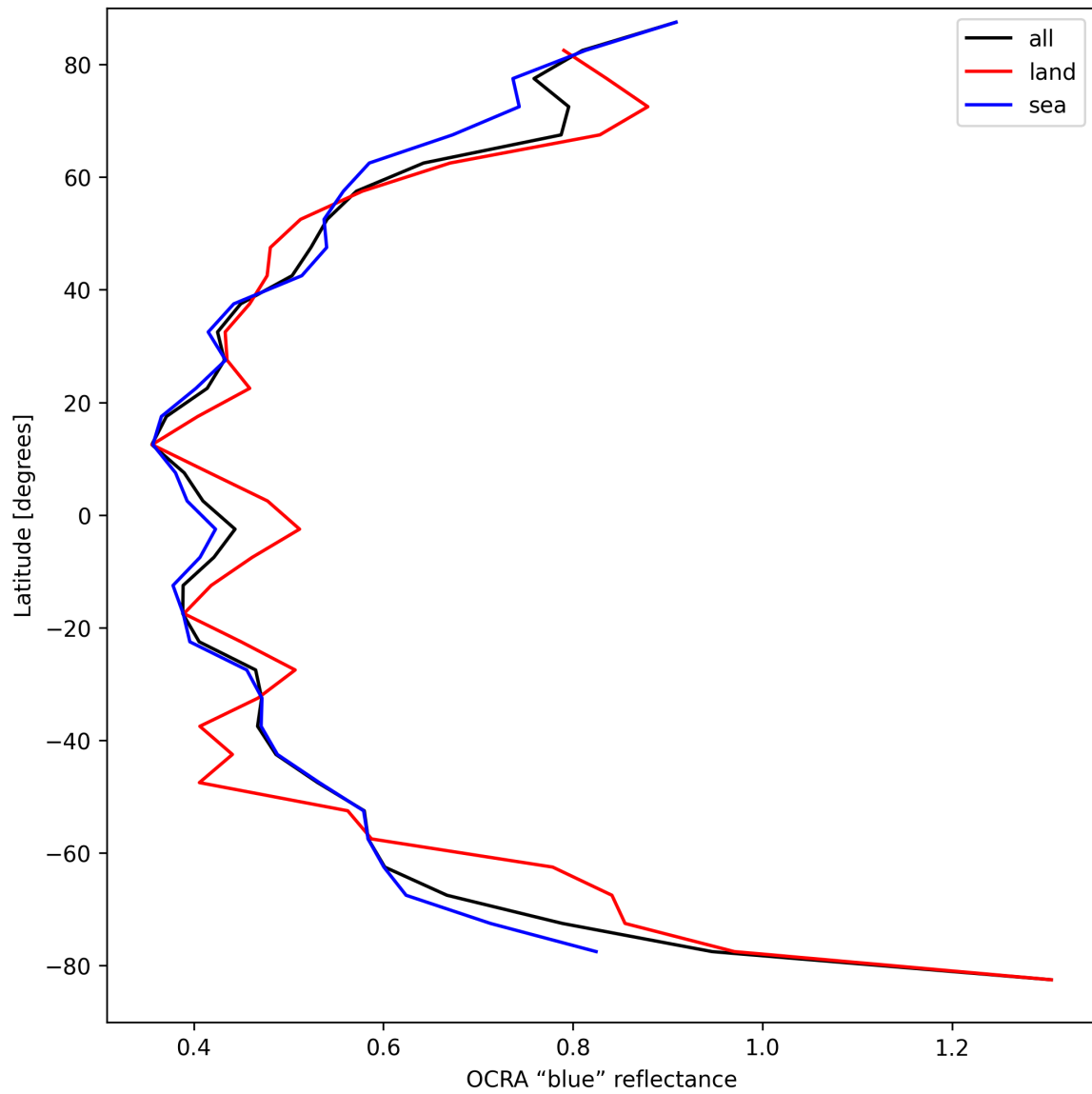


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-04-05 to 2025-04-07.

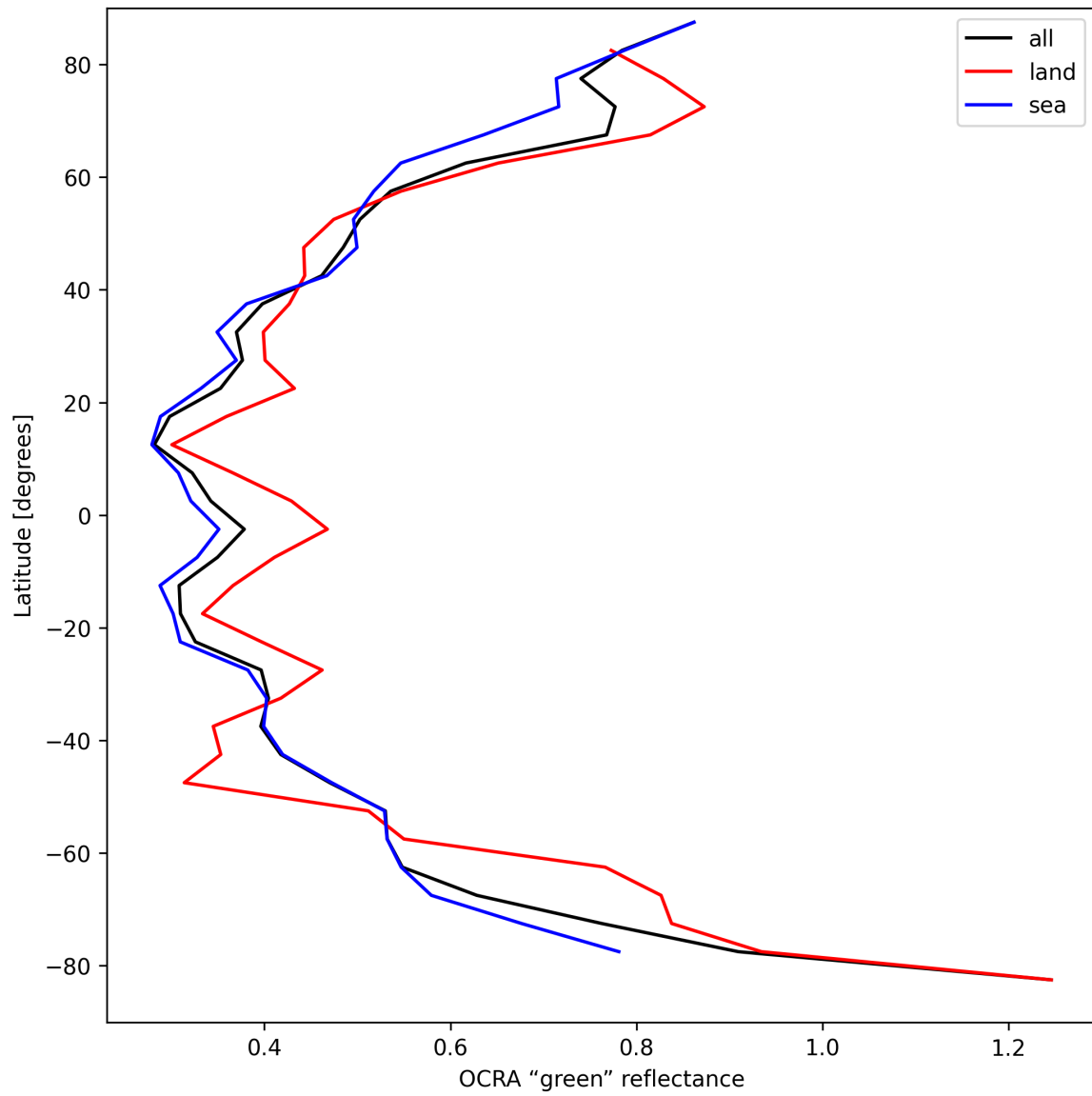


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-04-05 to 2025-04-07.

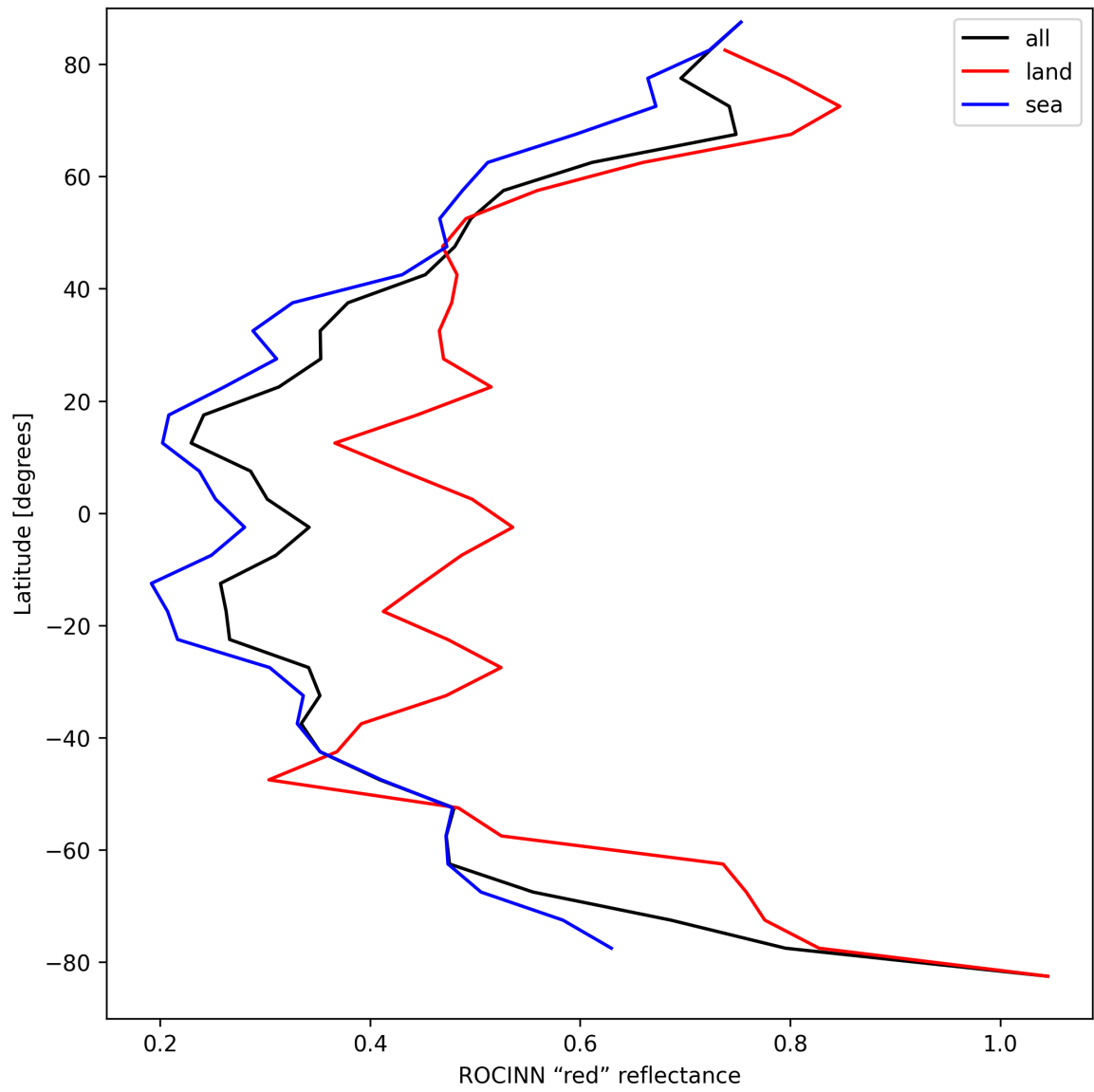


Figure 37: Zonal average of "ROCINN "red" reflectance" for 2025-04-05 to 2025-04-07.

8 Histograms

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

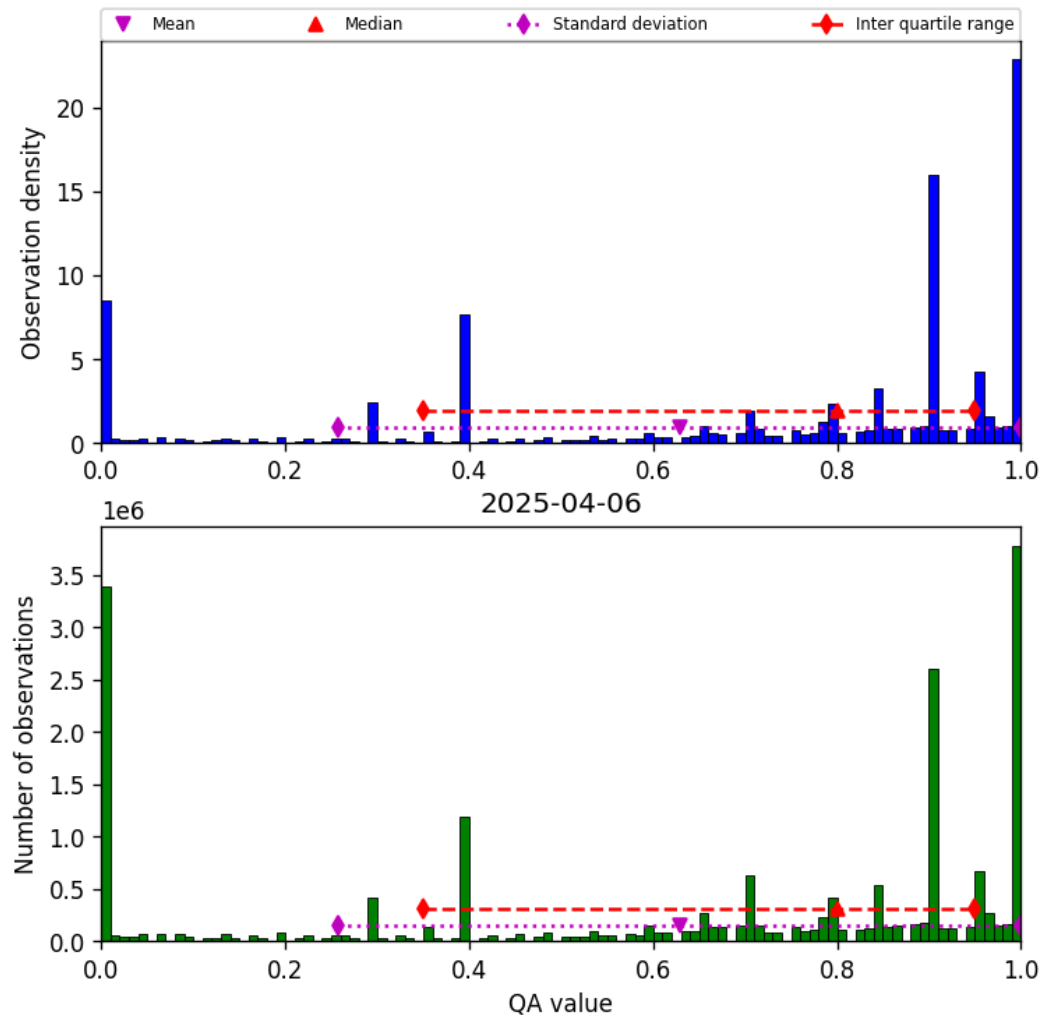


Figure 38: Histogram of “QA value” for 2025-04-05 to 2025-04-07

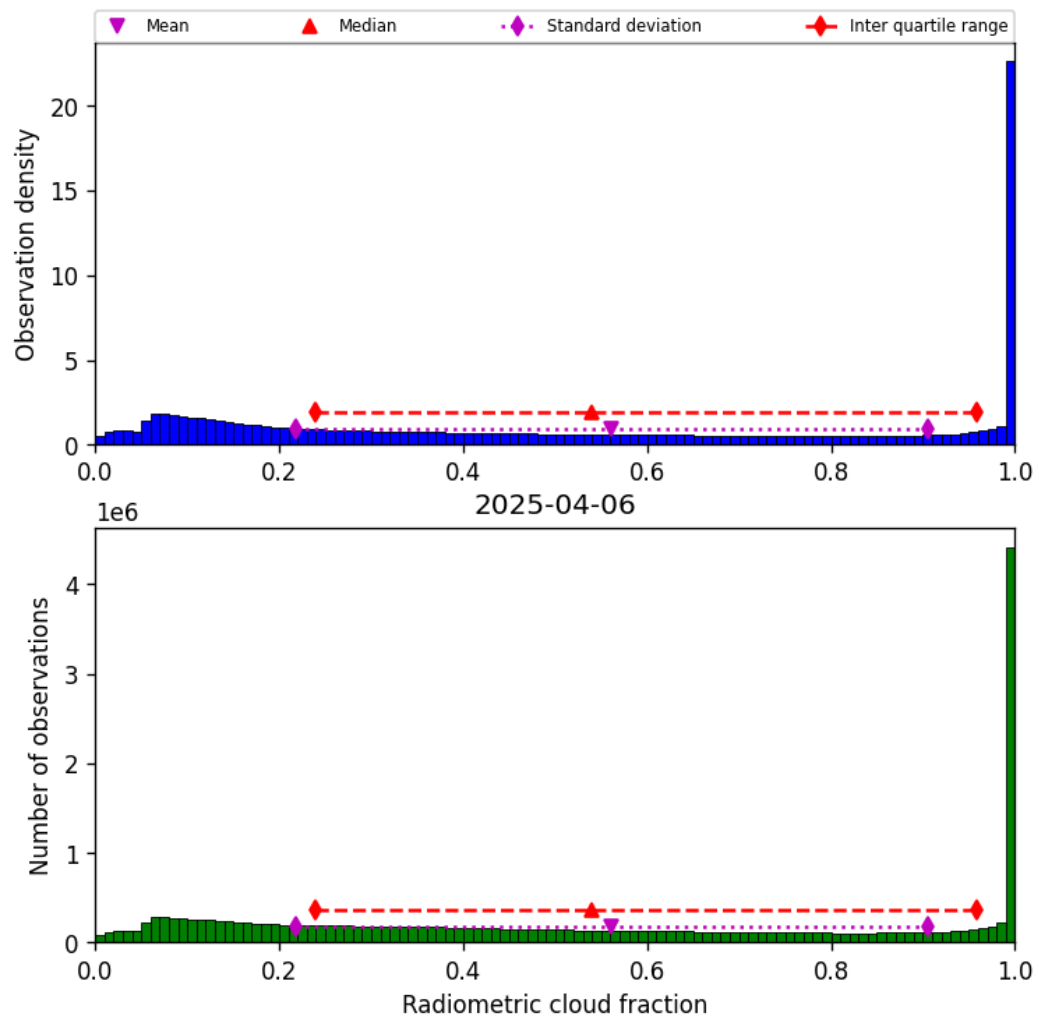


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-04-05 to 2025-04-07

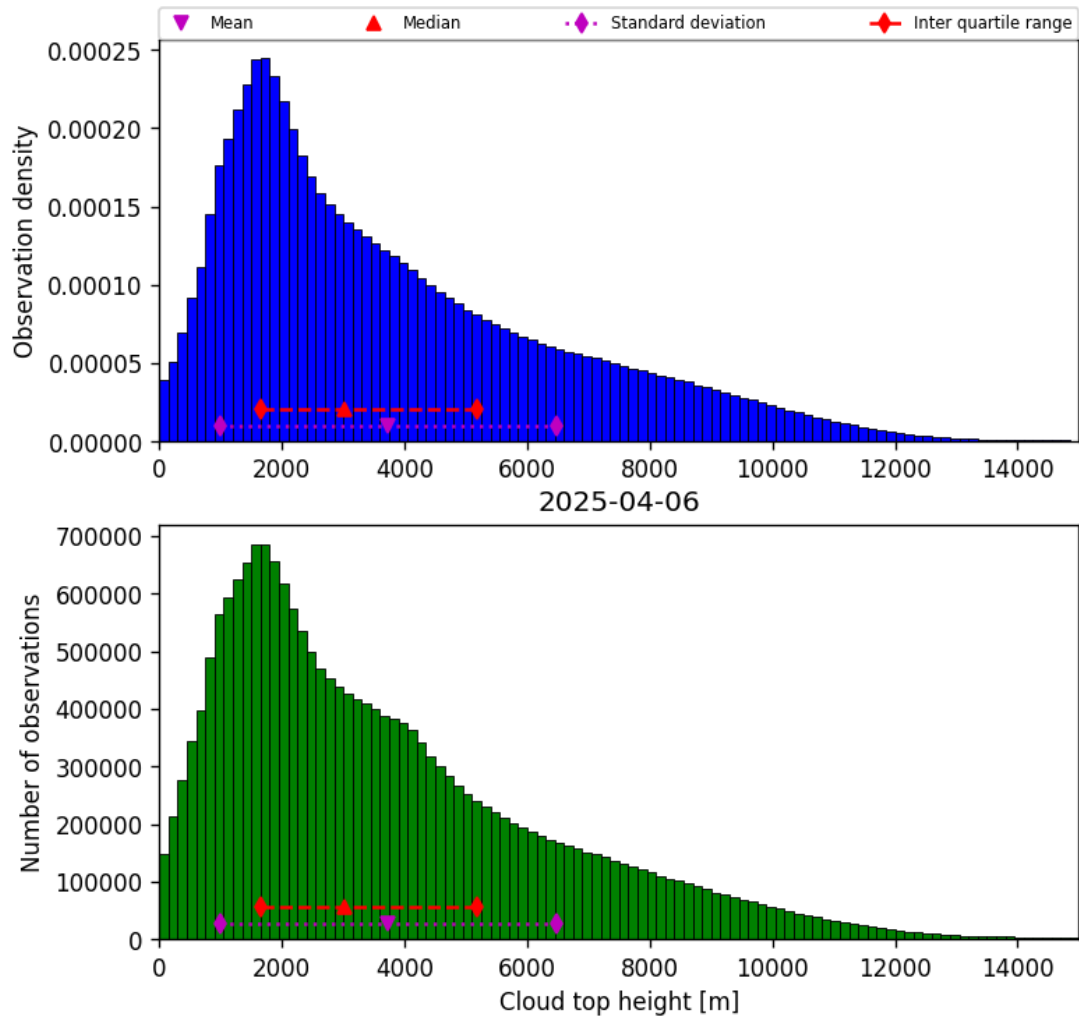


Figure 40: Histogram of “Cloud top height” for 2025-04-05 to 2025-04-07

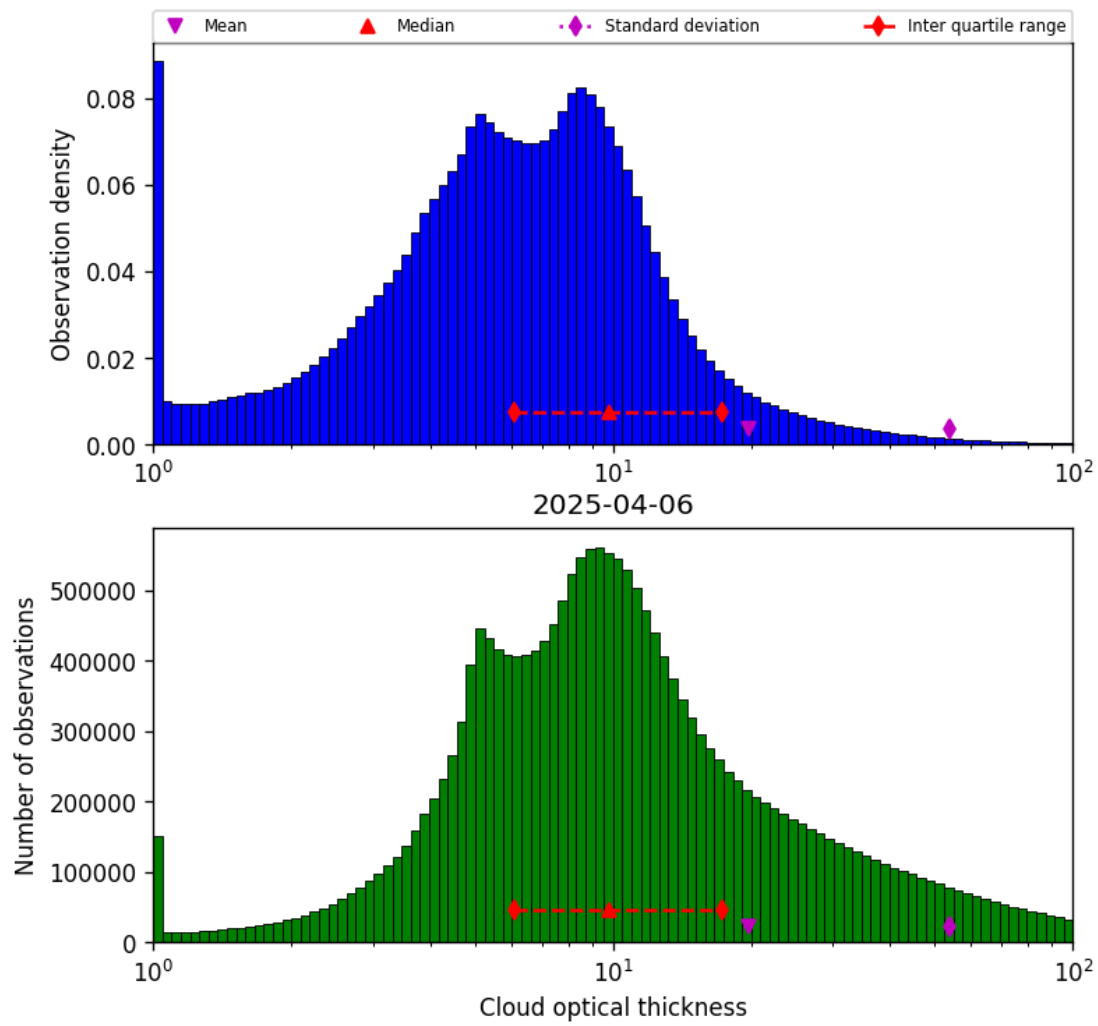


Figure 41: Histogram of “Cloud optical thickness” for 2025-04-05 to 2025-04-07

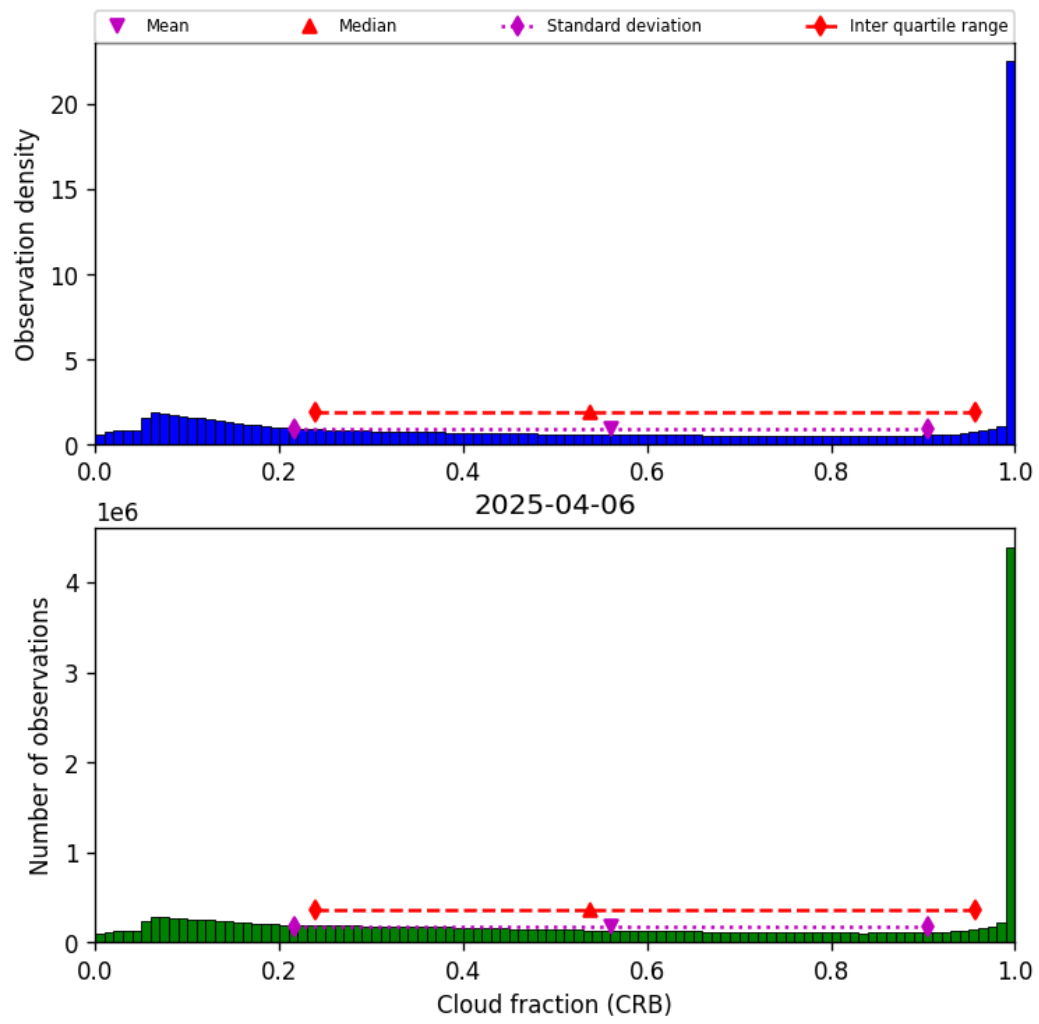


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-04-05 to 2025-04-07

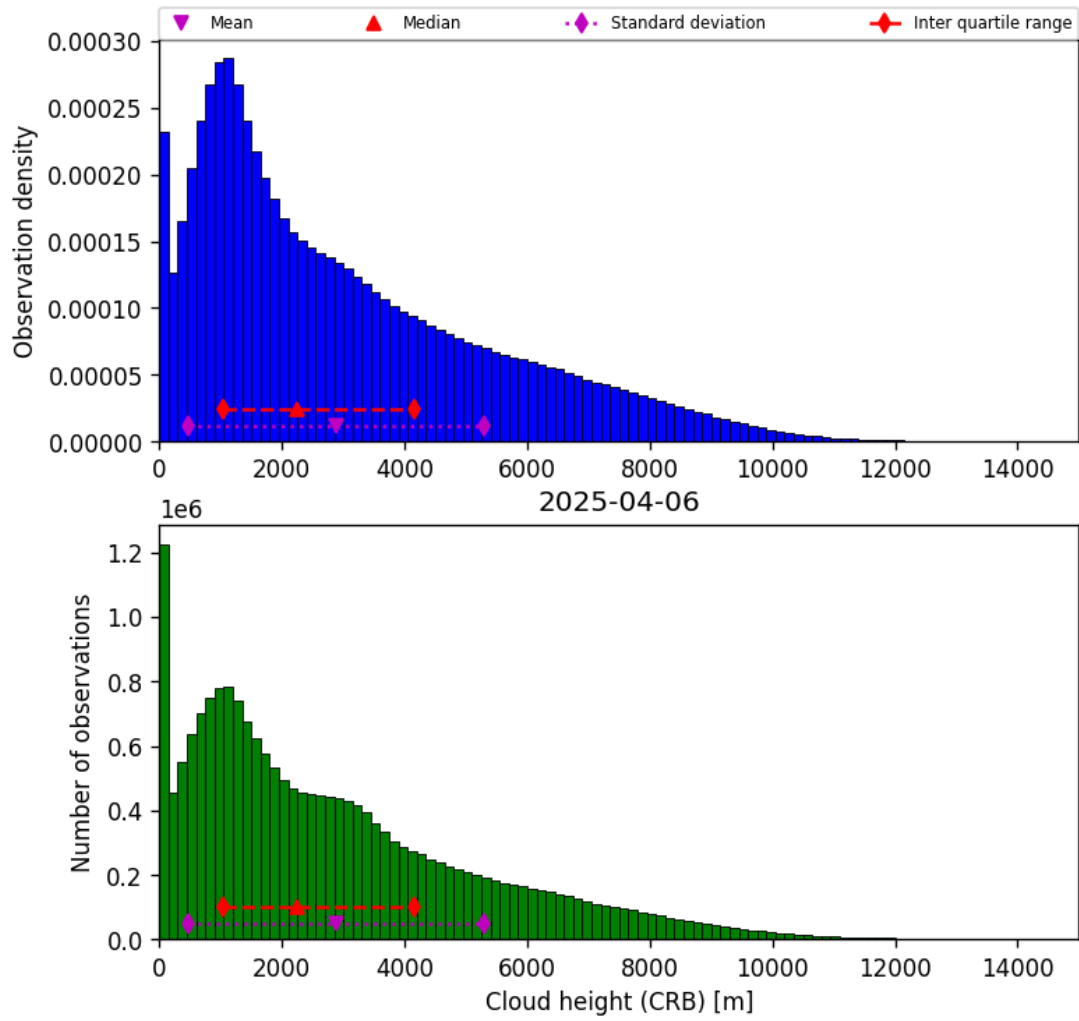


Figure 43: Histogram of “Cloud height (CRB)” for 2025-04-05 to 2025-04-07

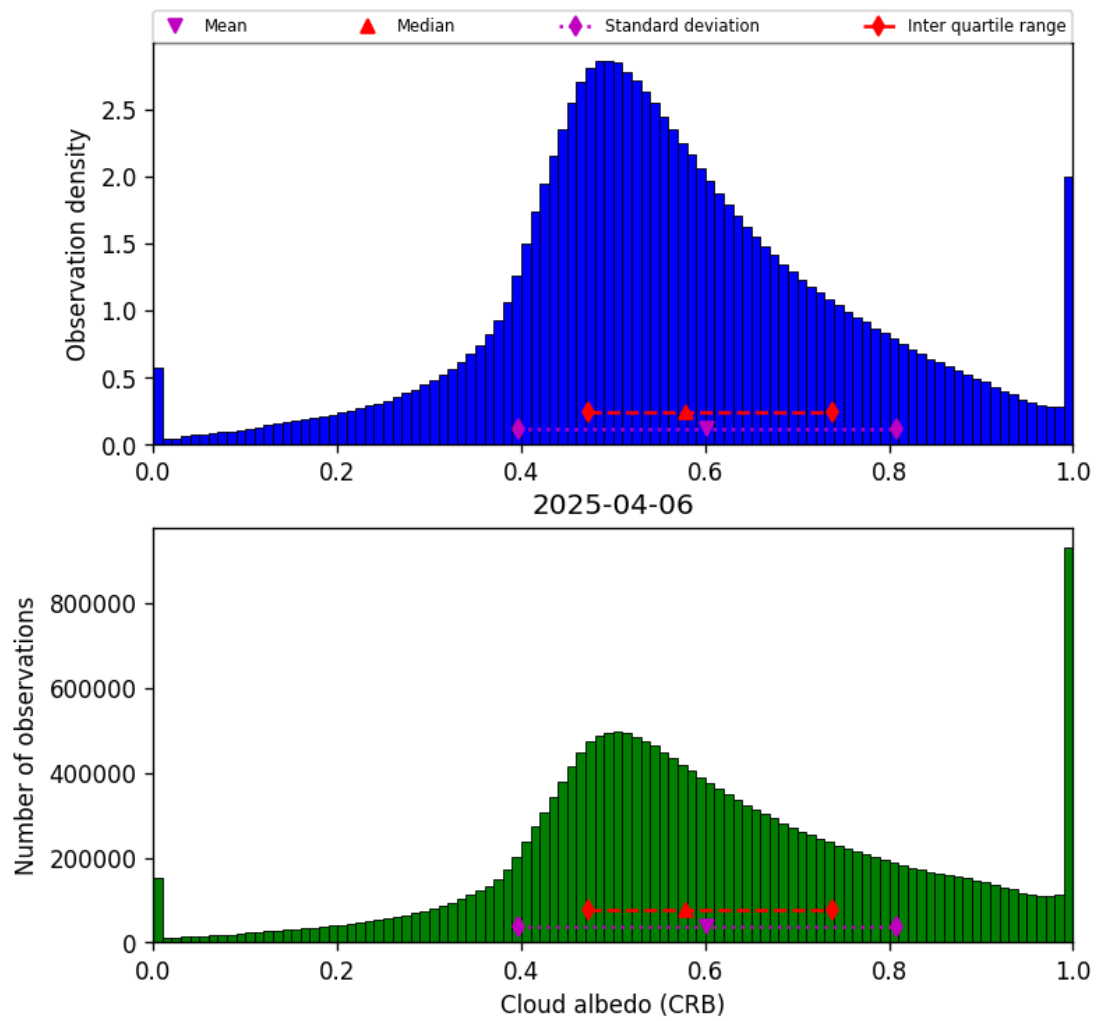


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-04-05 to 2025-04-07

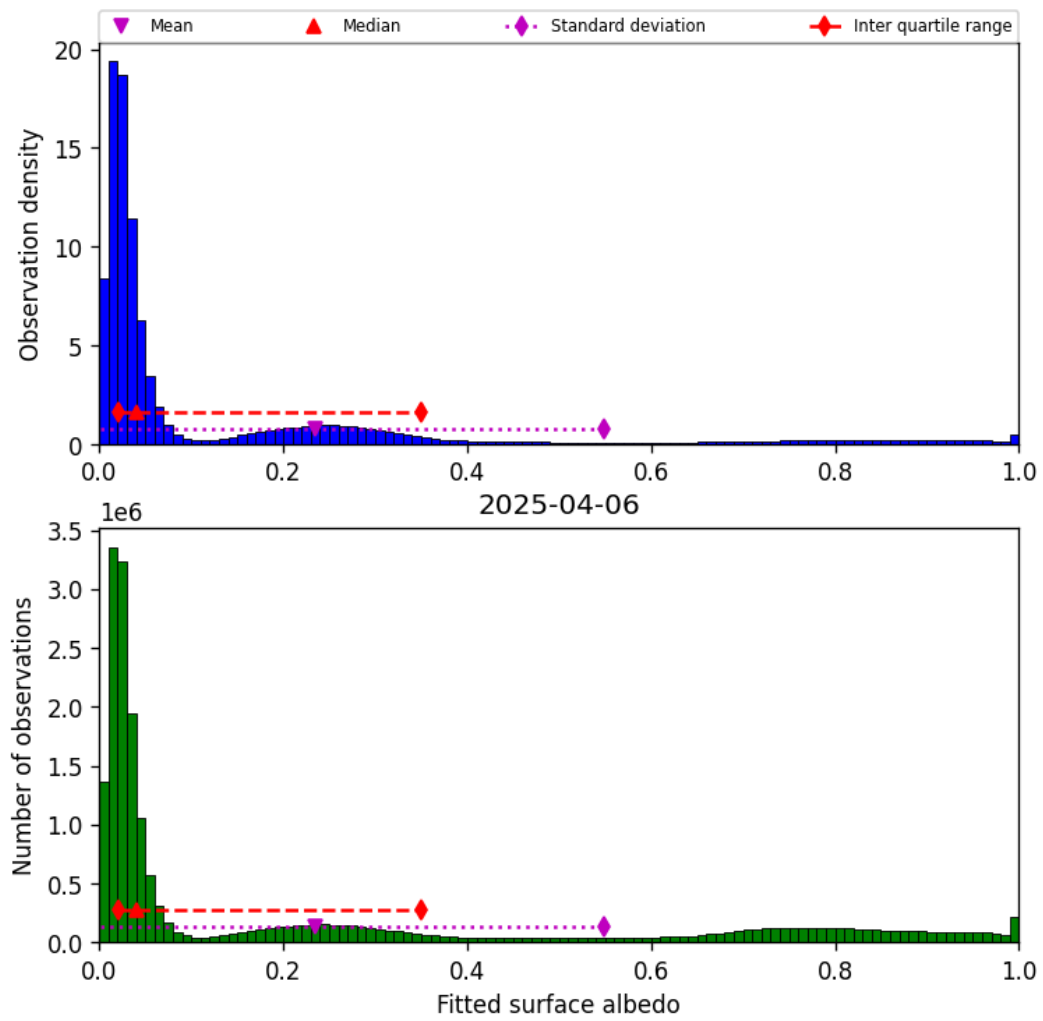


Figure 45: Histogram of “Fitted surface albedo” for 2025-04-05 to 2025-04-07

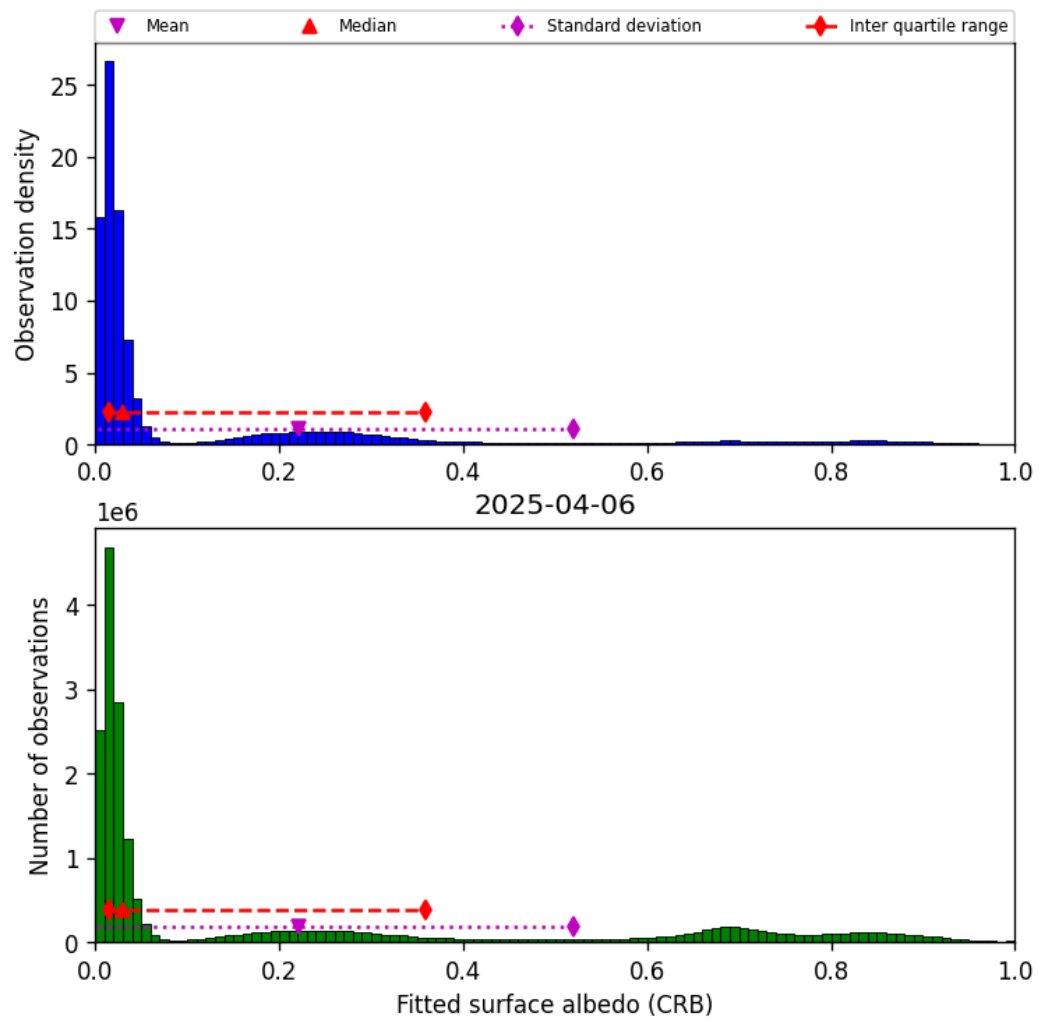


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-04-05 to 2025-04-07

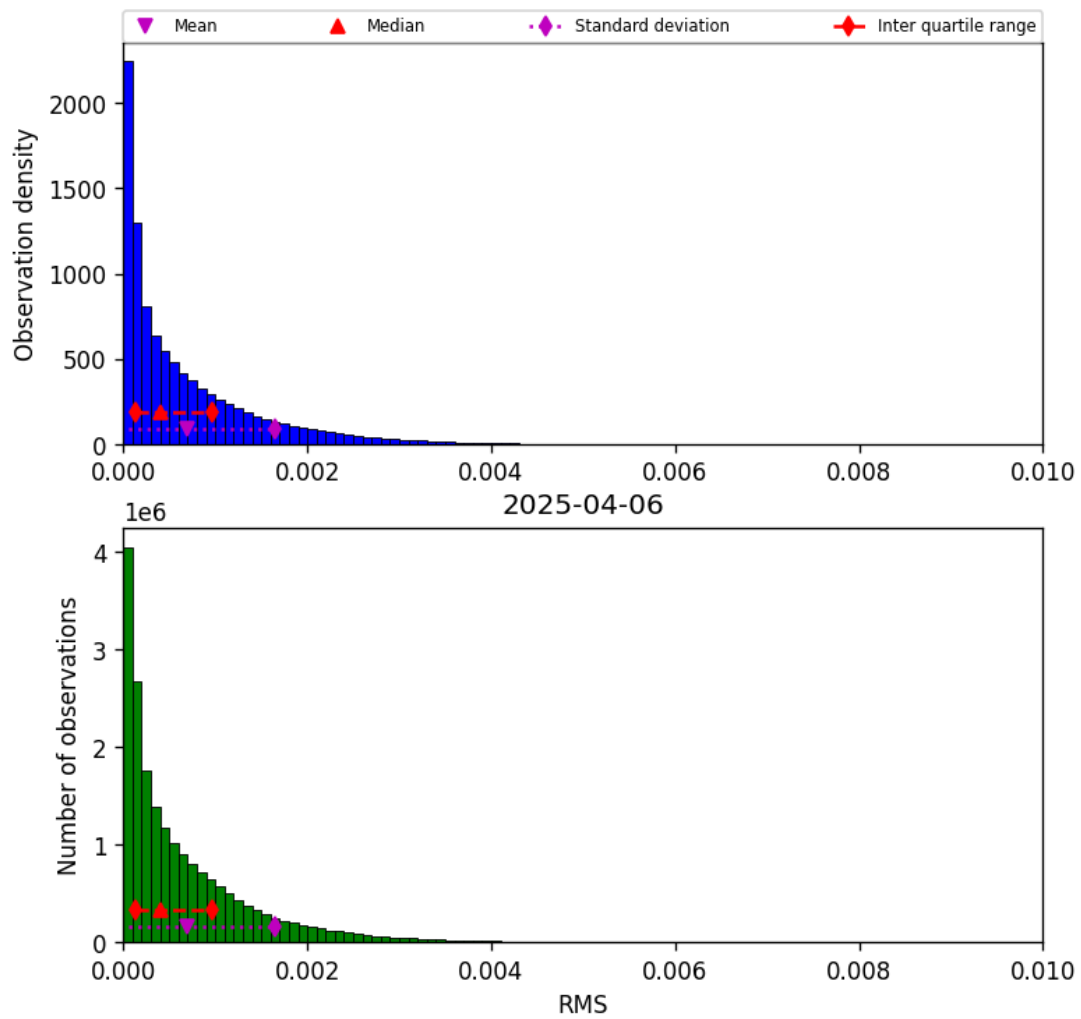


Figure 47: Histogram of “RMS” for 2025-04-05 to 2025-04-07

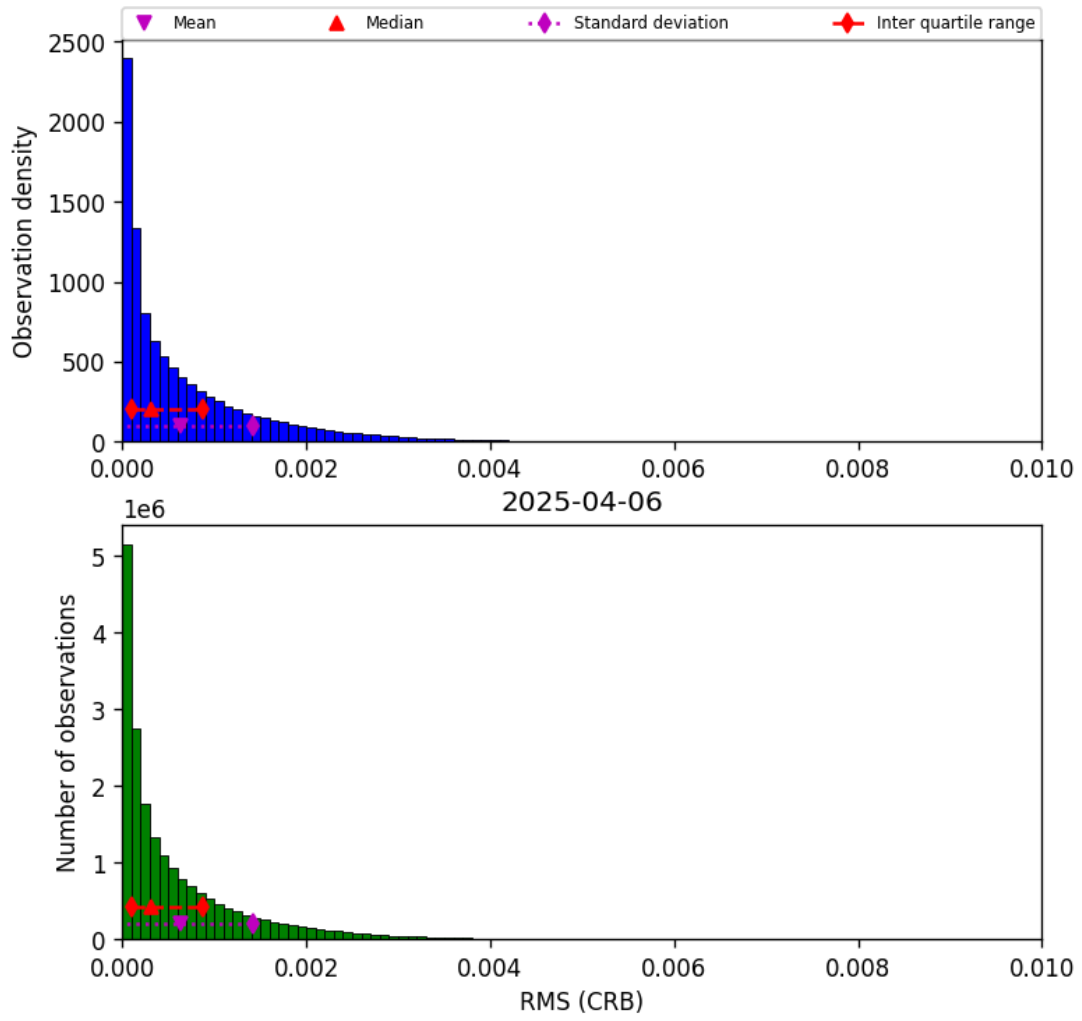


Figure 48: Histogram of “RMS (CRB)” for 2025-04-05 to 2025-04-07

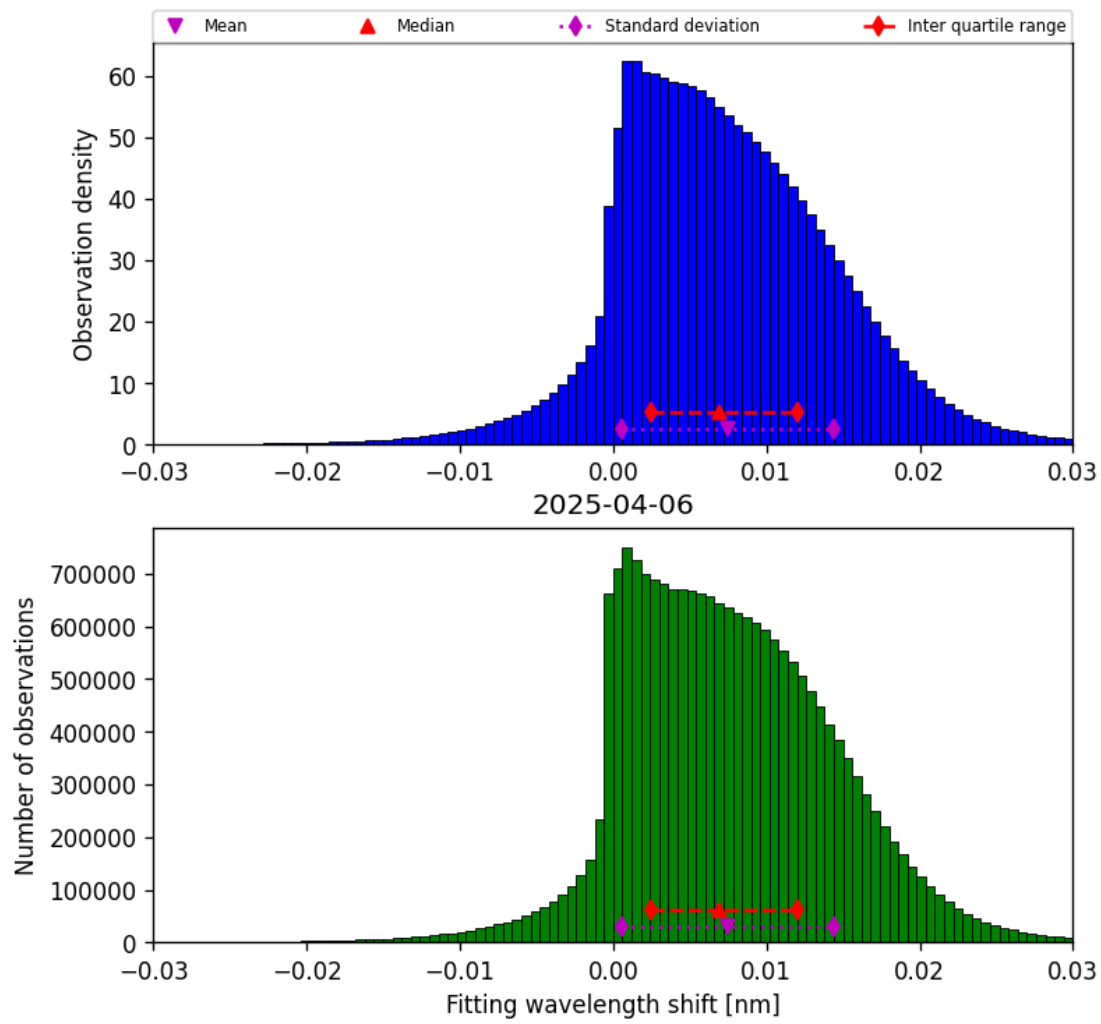


Figure 49: Histogram of “Fitting wavelength shift” for 2025-04-05 to 2025-04-07

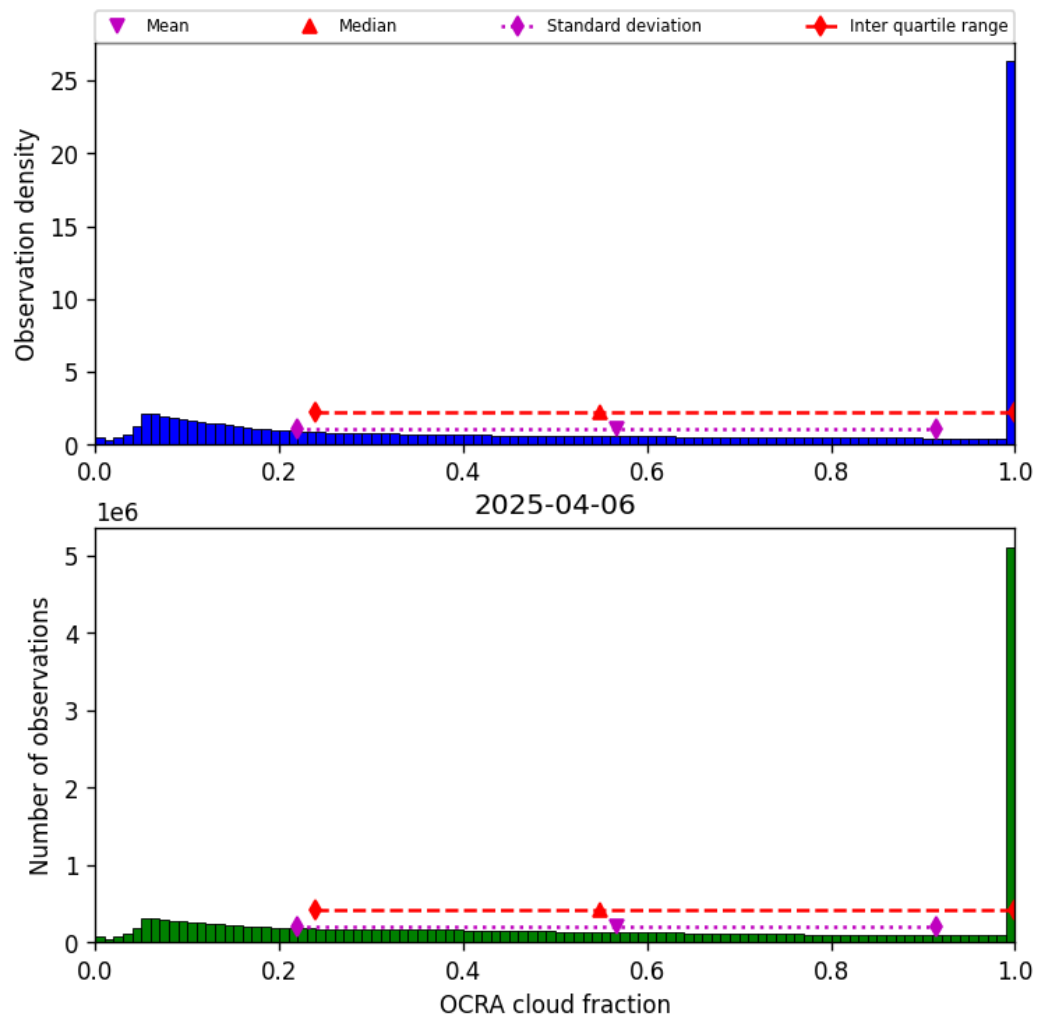


Figure 50: Histogram of “OCRA cloud fraction” for 2025-04-05 to 2025-04-07

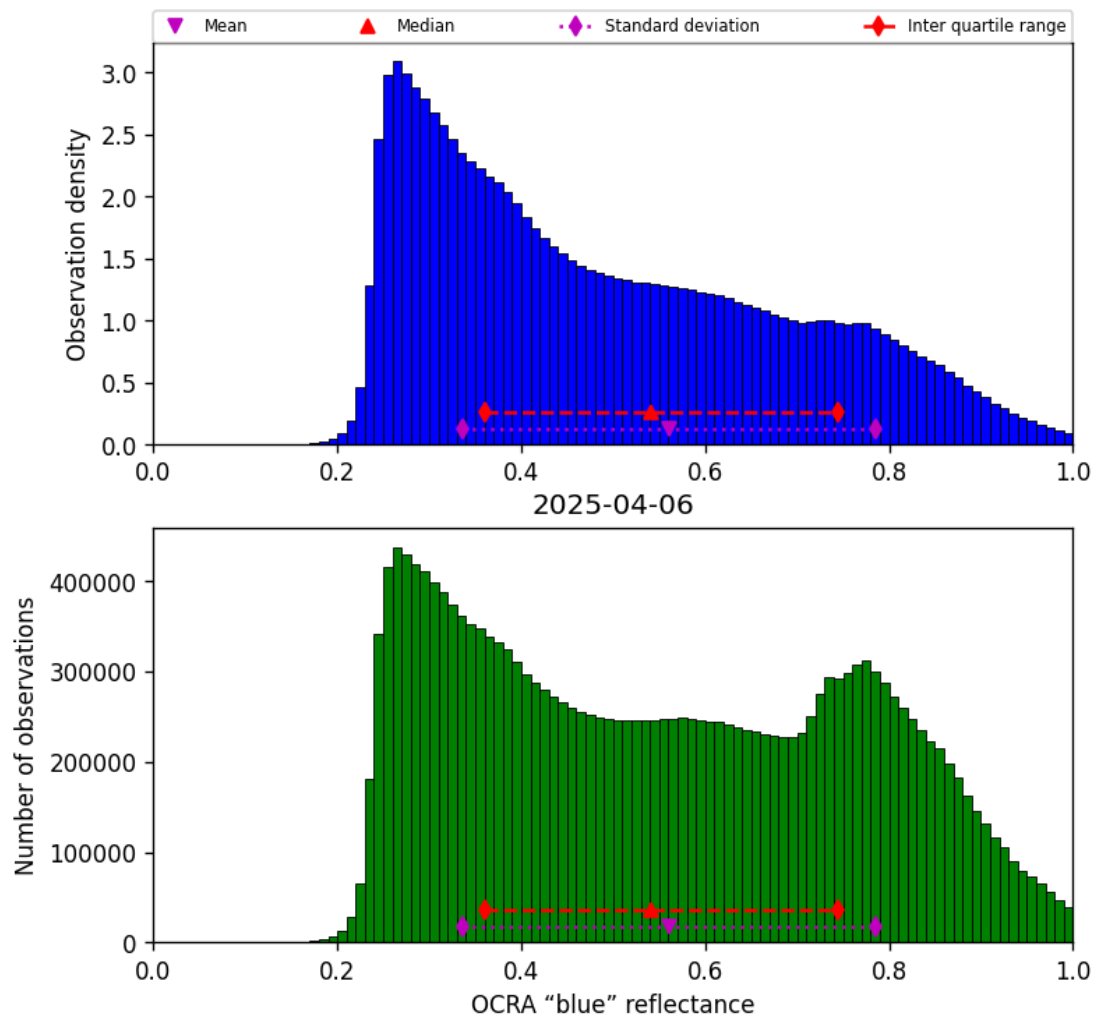


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-04-05 to 2025-04-07

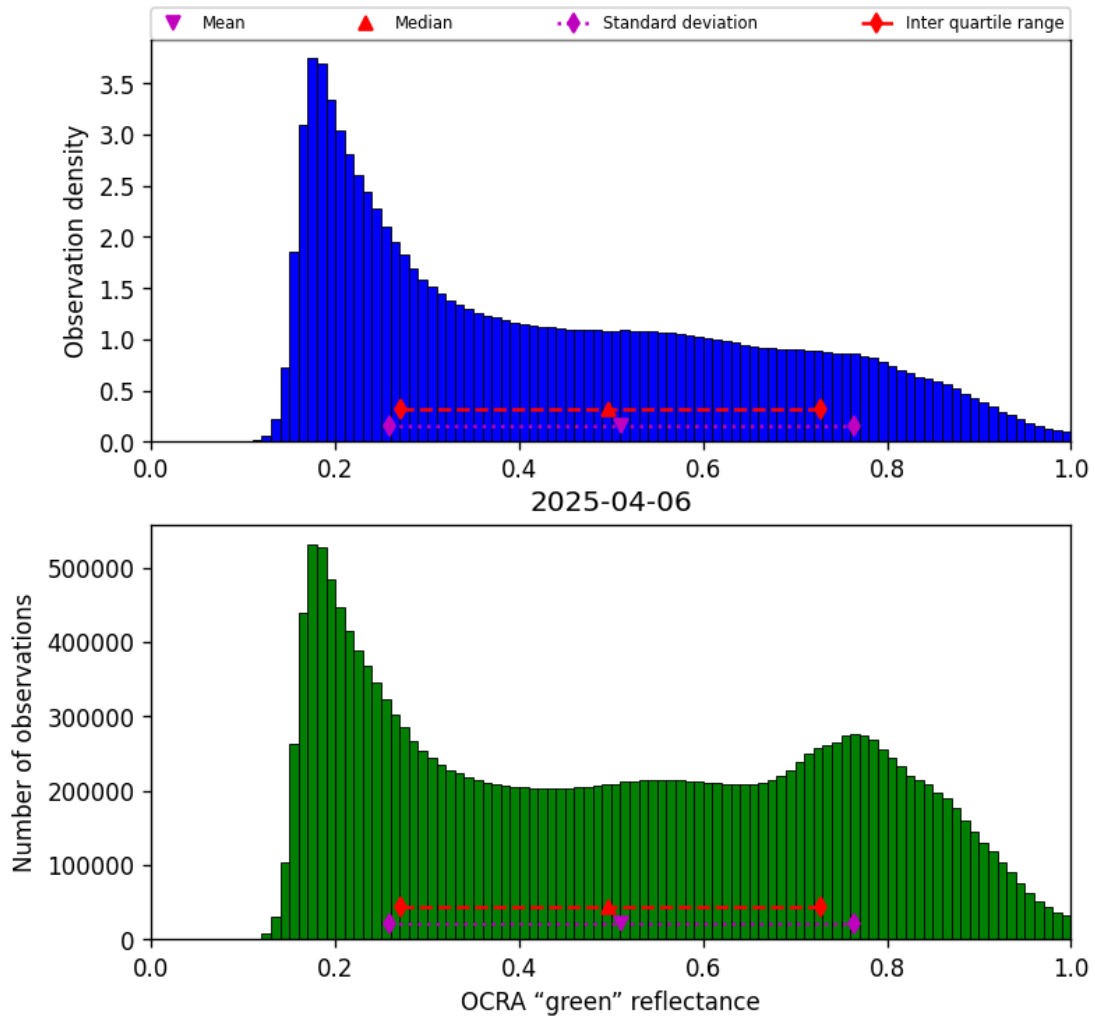


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-04-05 to 2025-04-07

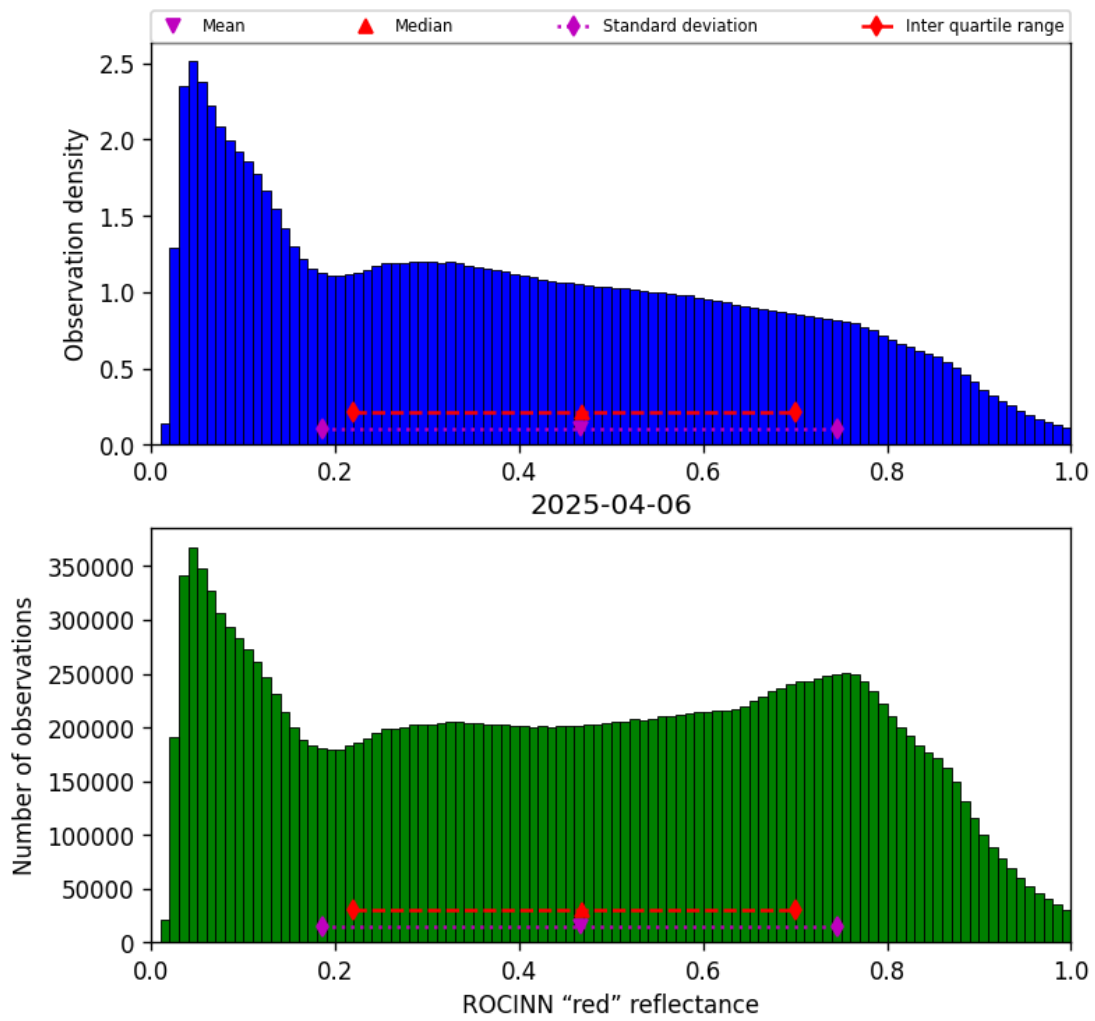


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-04-05 to 2025-04-07

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.

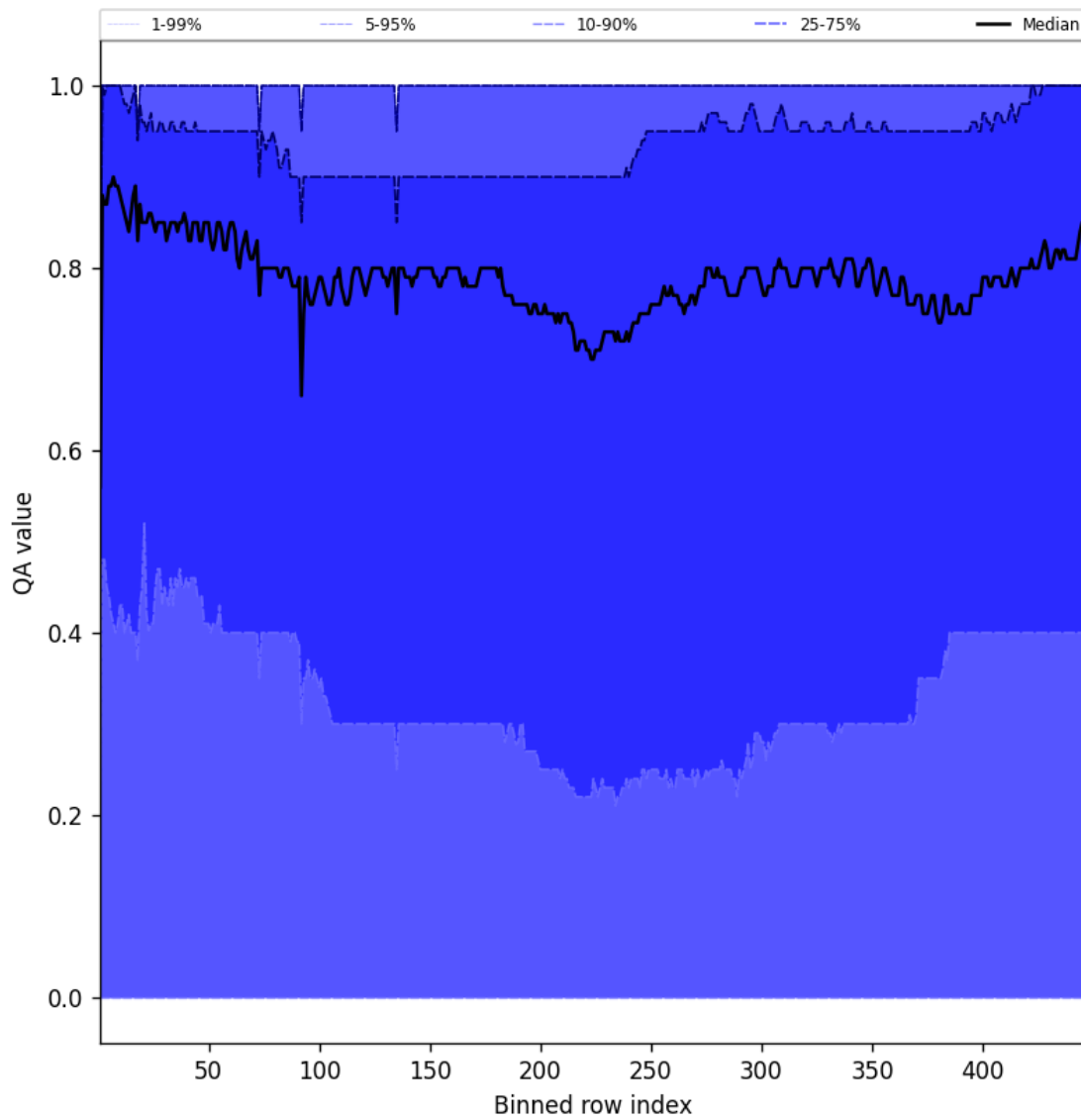


Figure 54: Along track statistics of “QA value” for 2025-04-05 to 2025-04-07

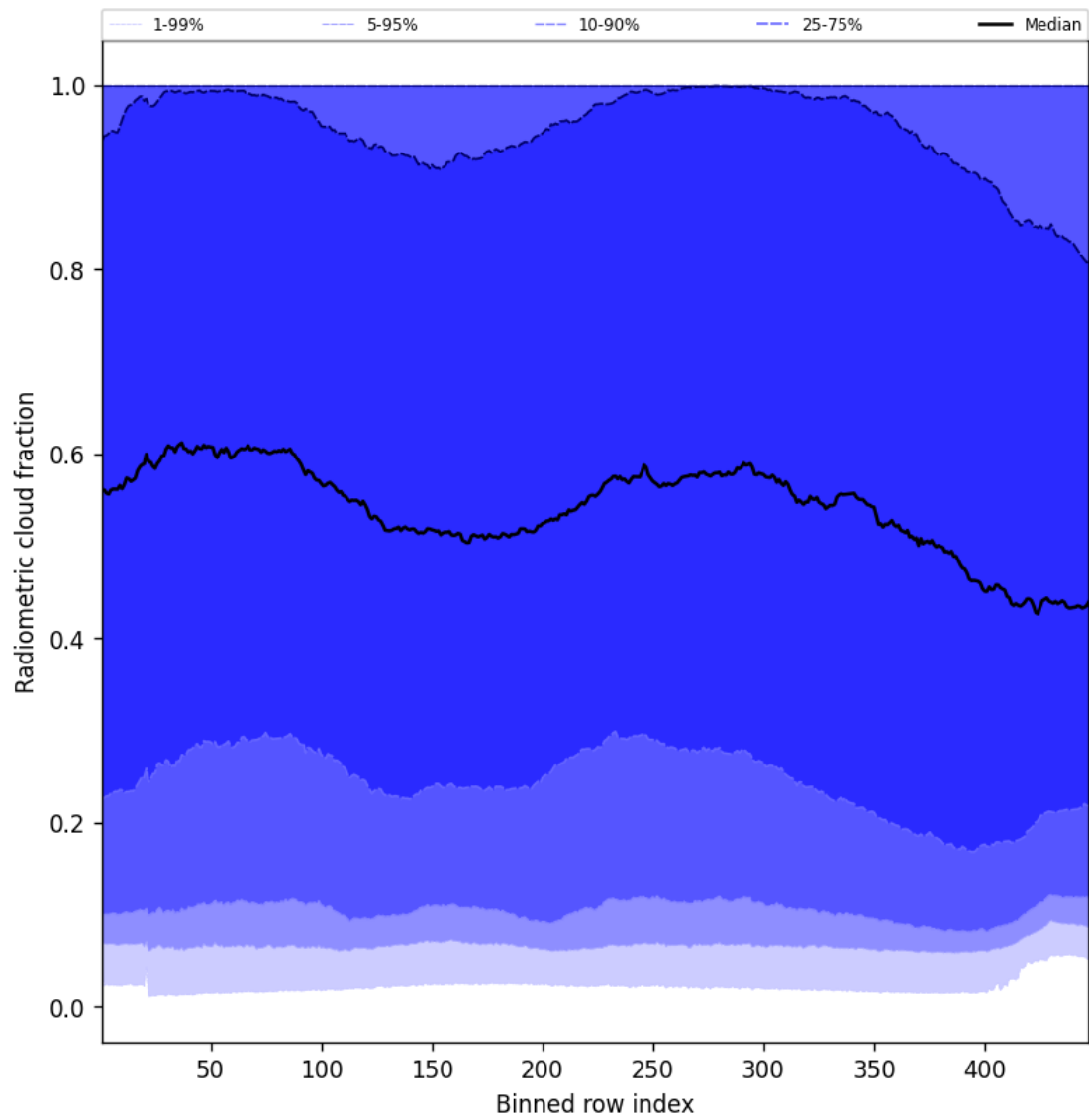


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-04-05 to 2025-04-07

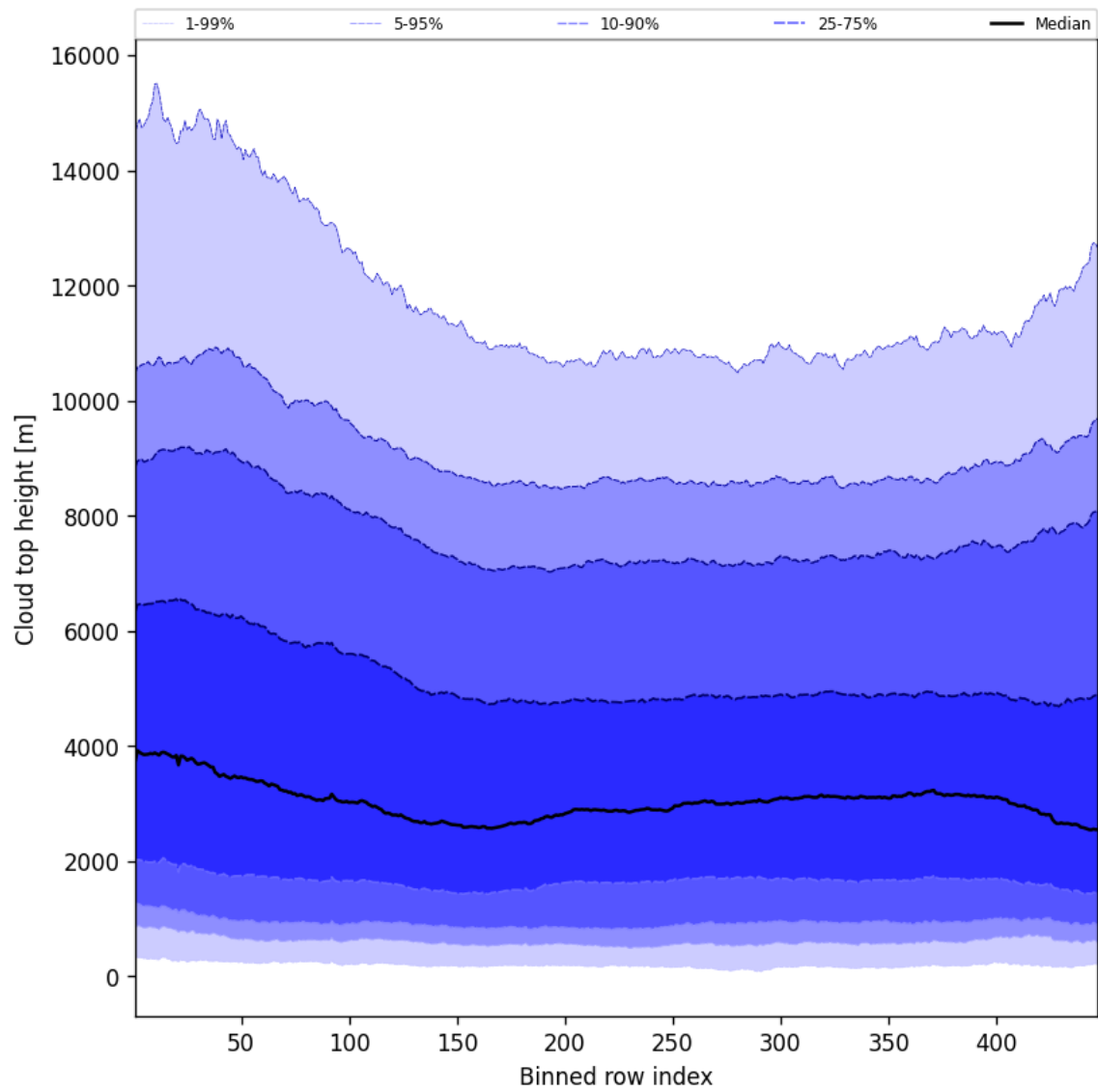


Figure 56: Along track statistics of “Cloud top height” for 2025-04-05 to 2025-04-07

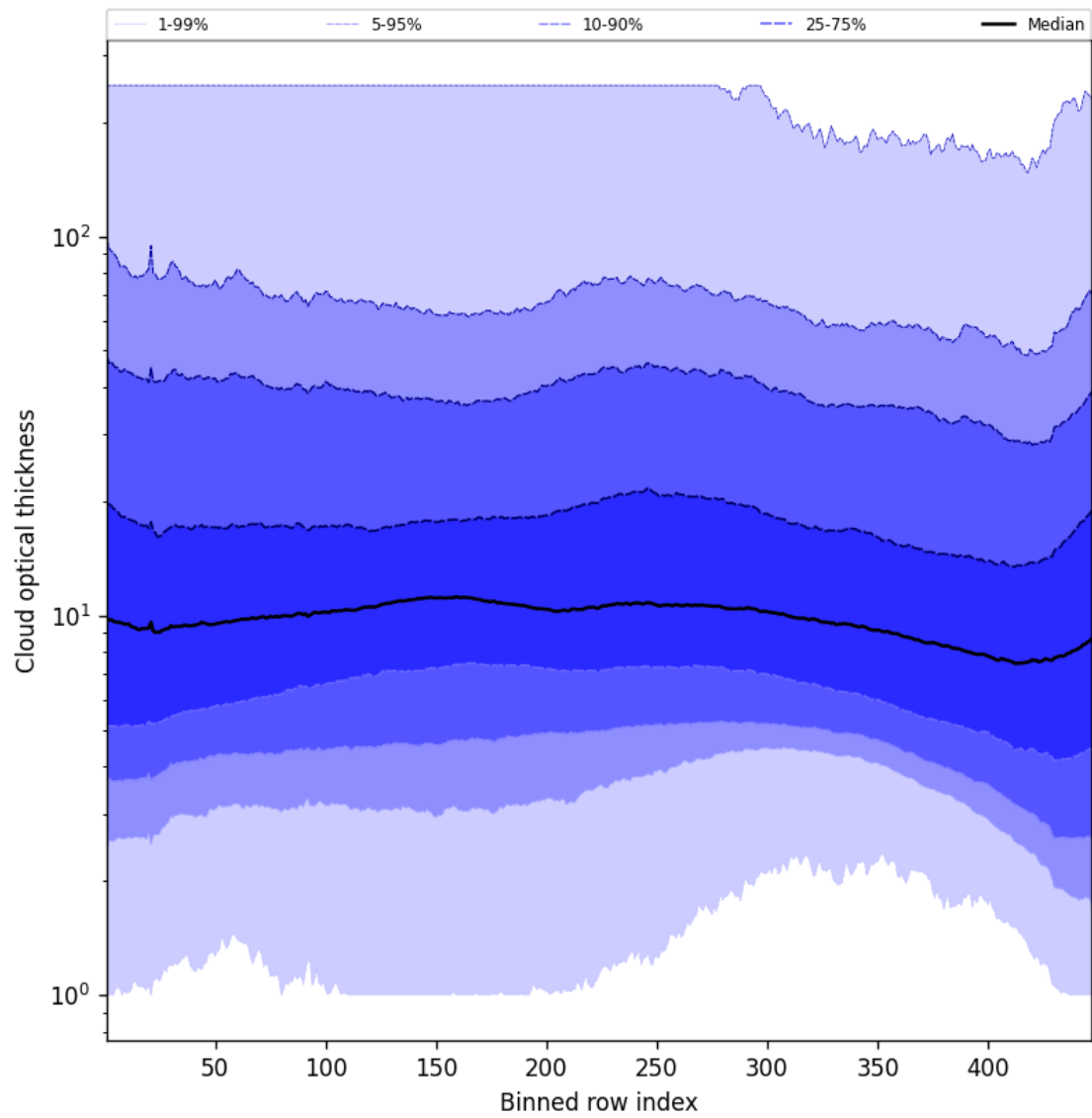


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-04-05 to 2025-04-07

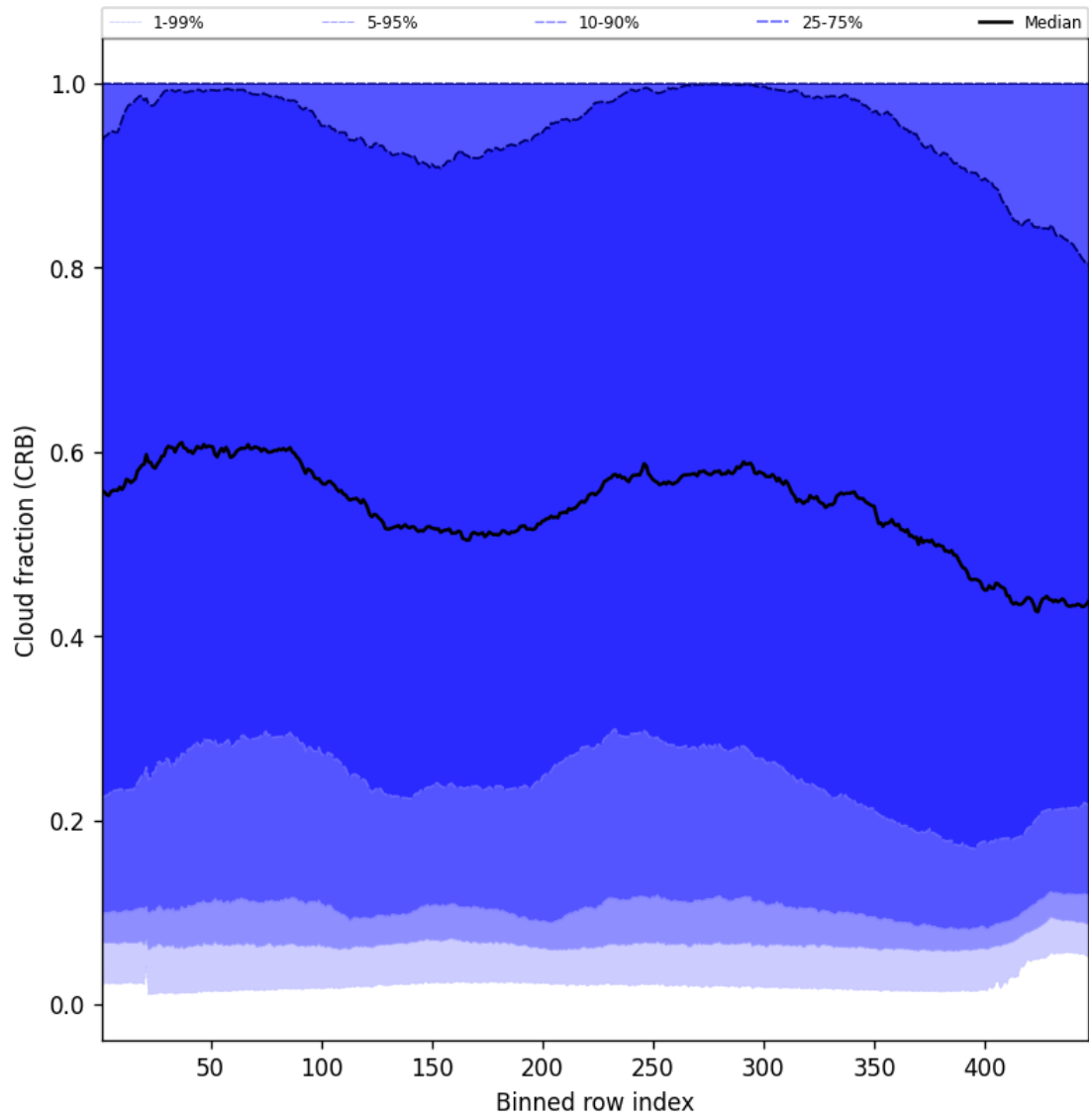


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-04-05 to 2025-04-07

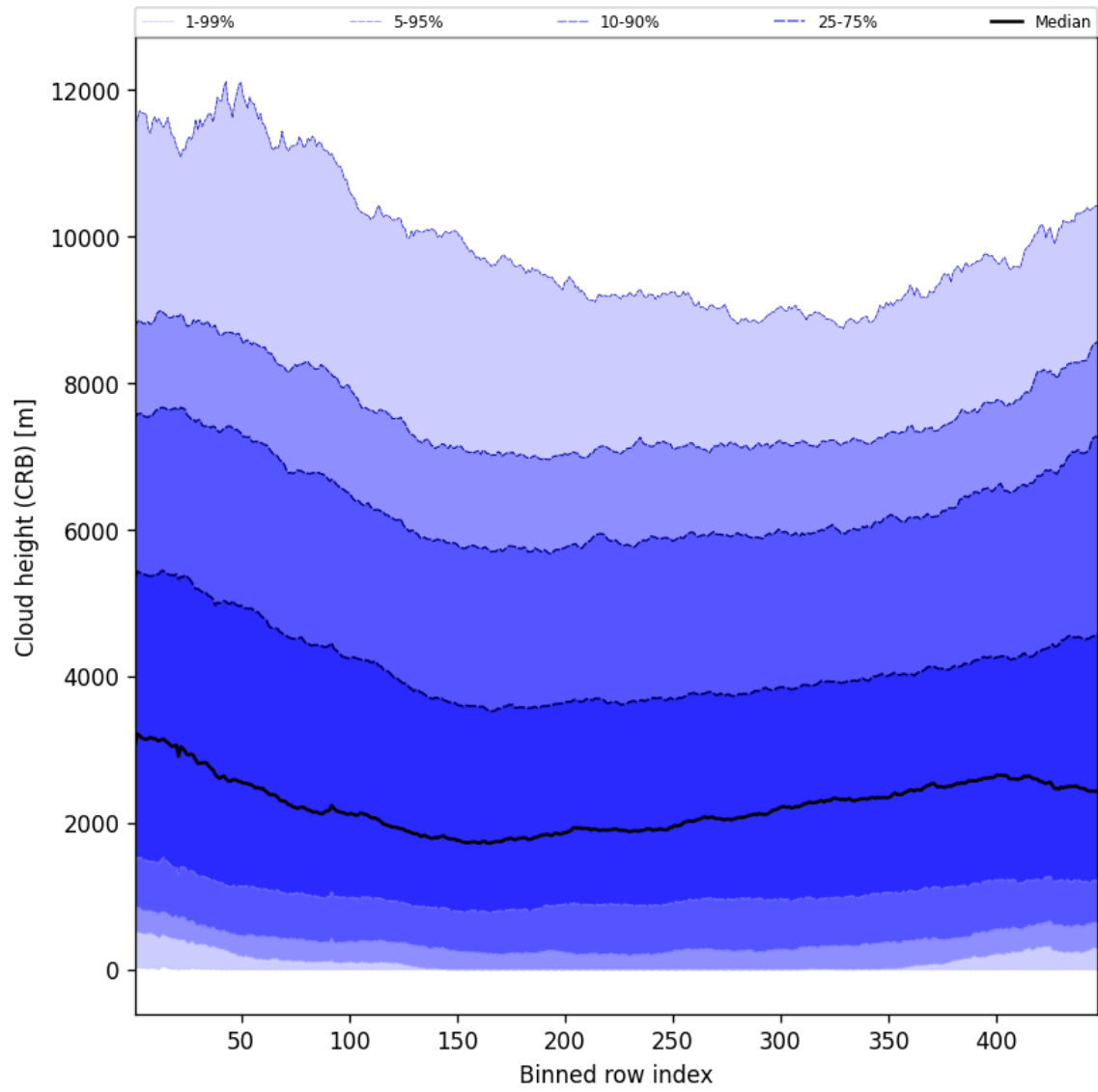


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-04-05 to 2025-04-07

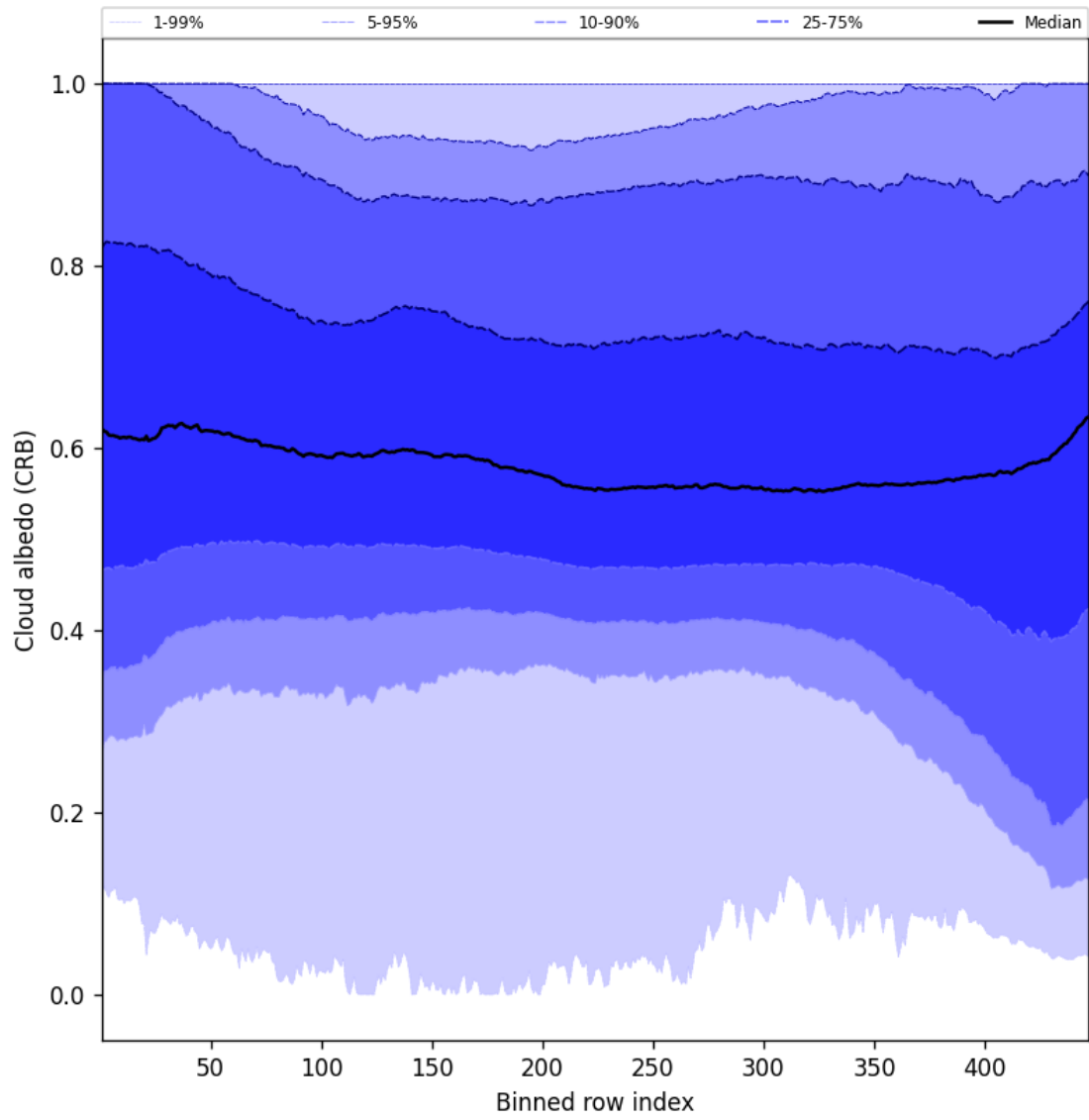


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-04-05 to 2025-04-07

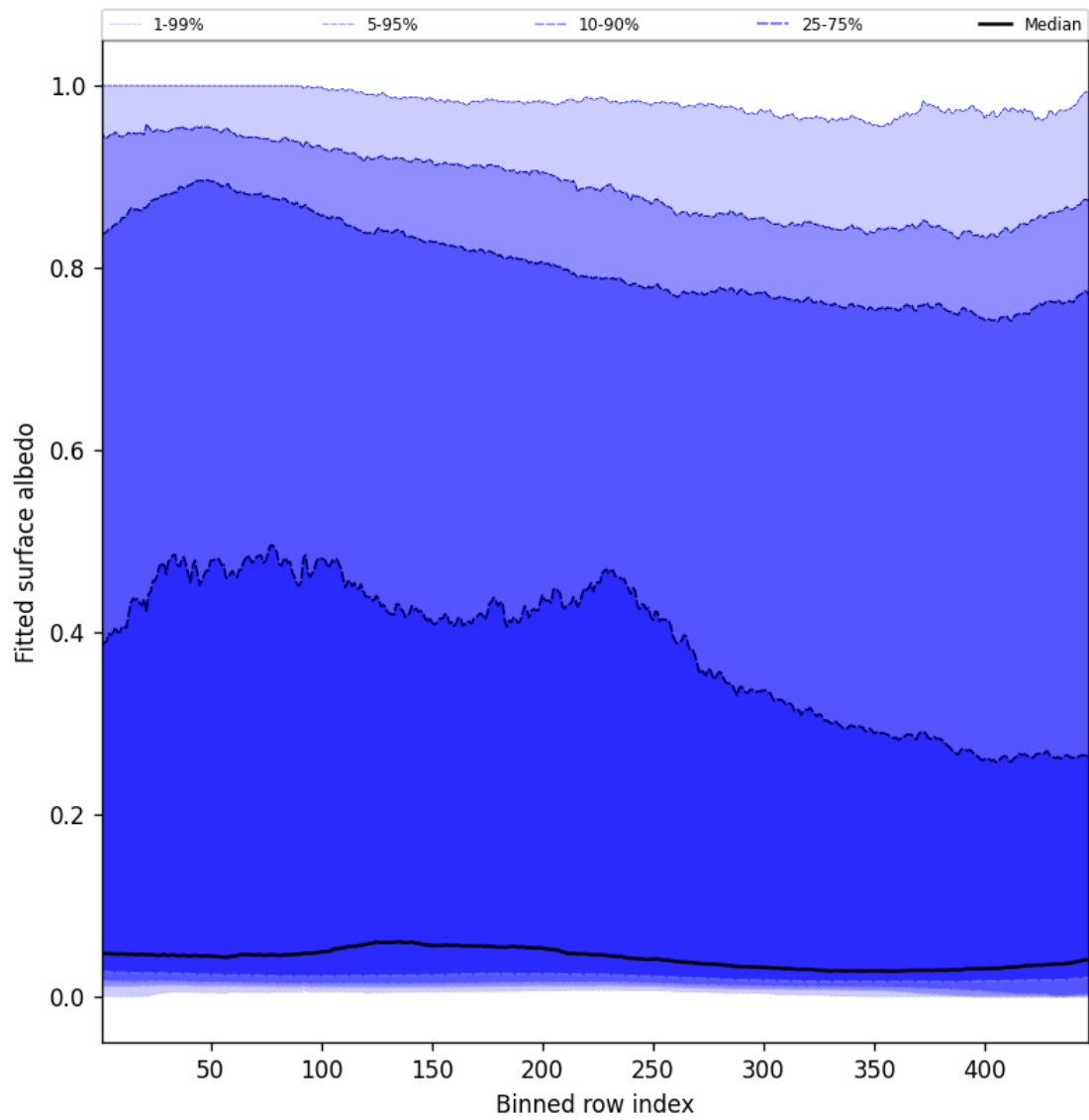


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-04-05 to 2025-04-07

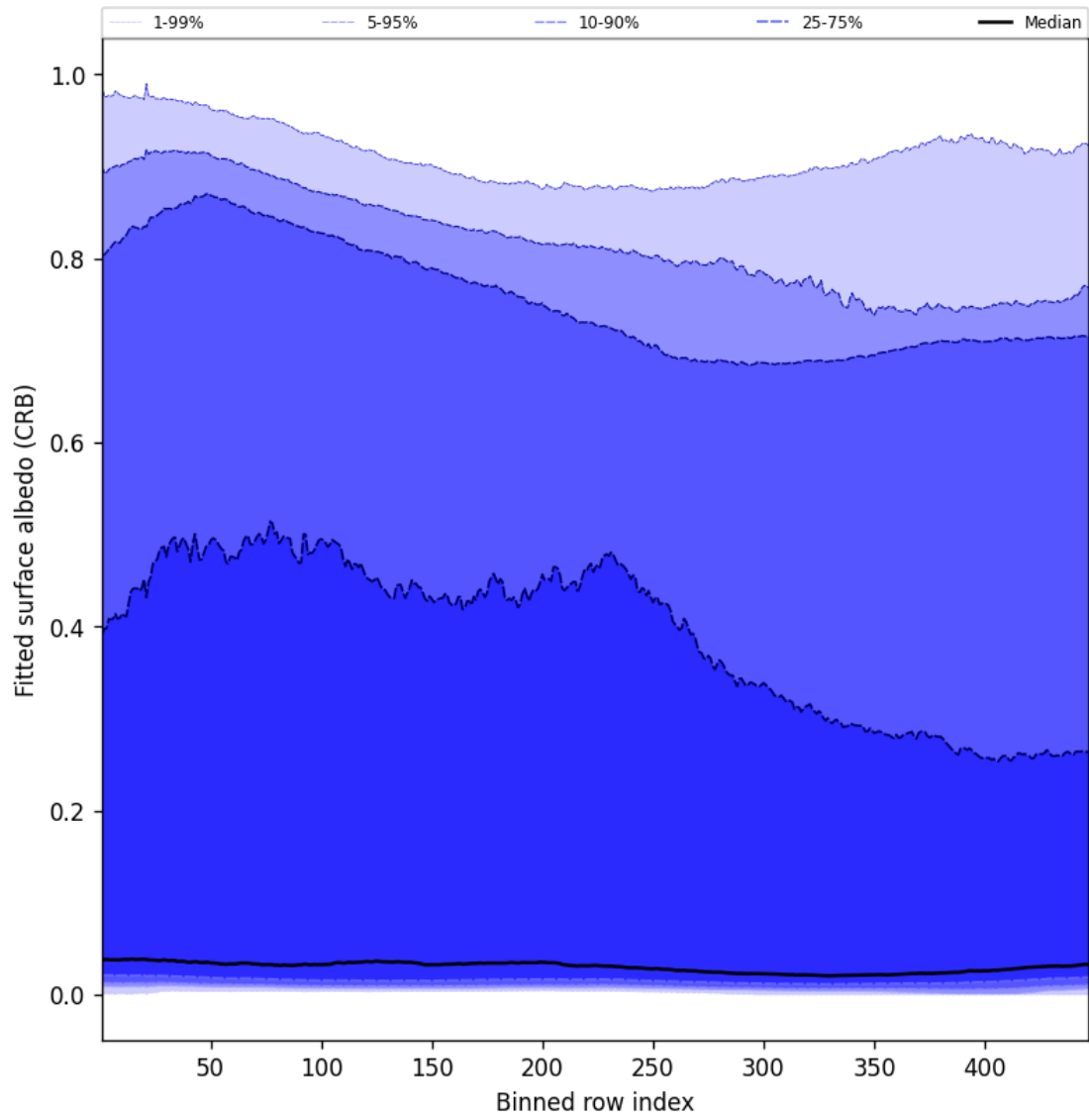


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-04-05 to 2025-04-07

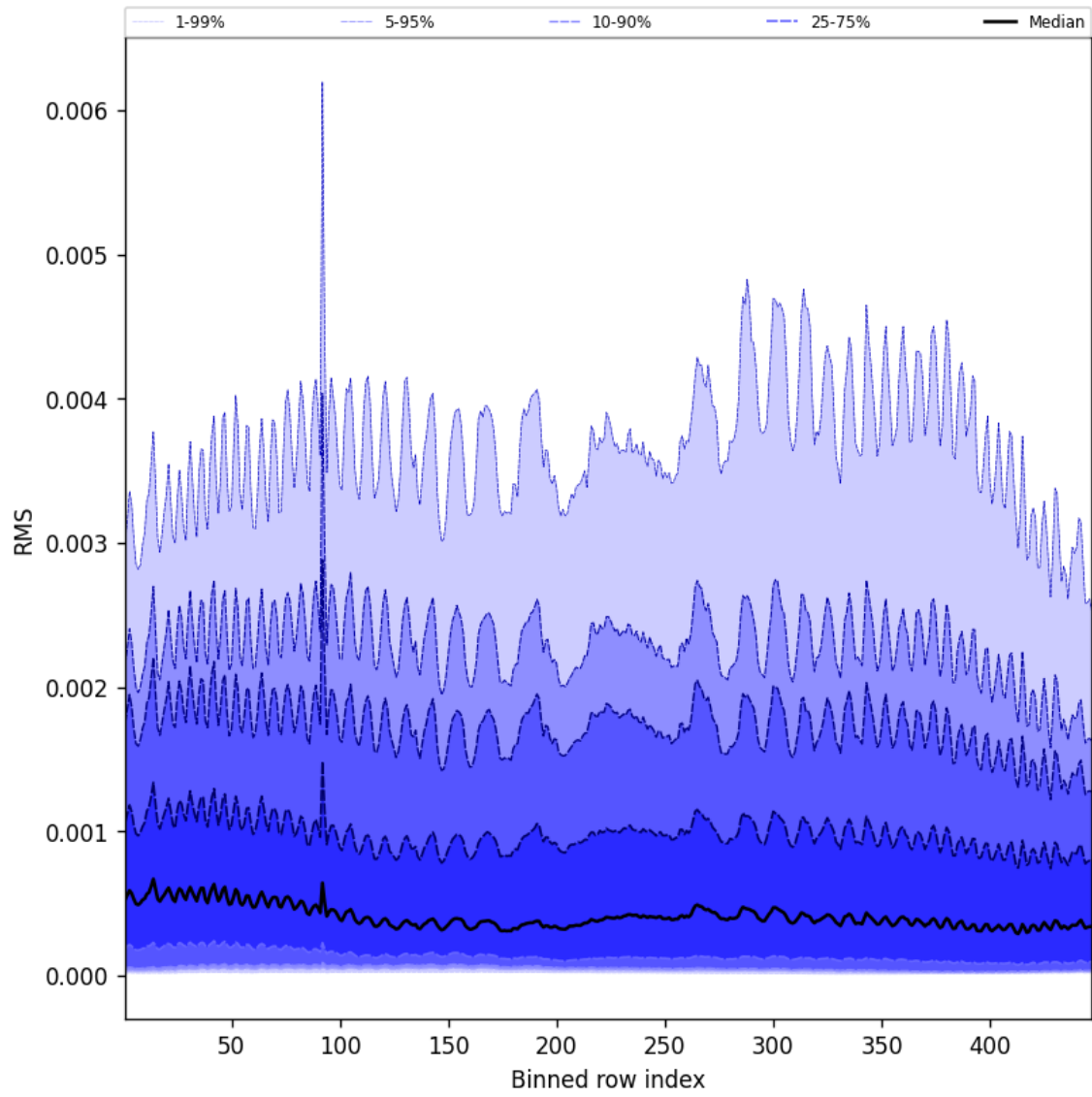


Figure 63: Along track statistics of “RMS” for 2025-04-05 to 2025-04-07

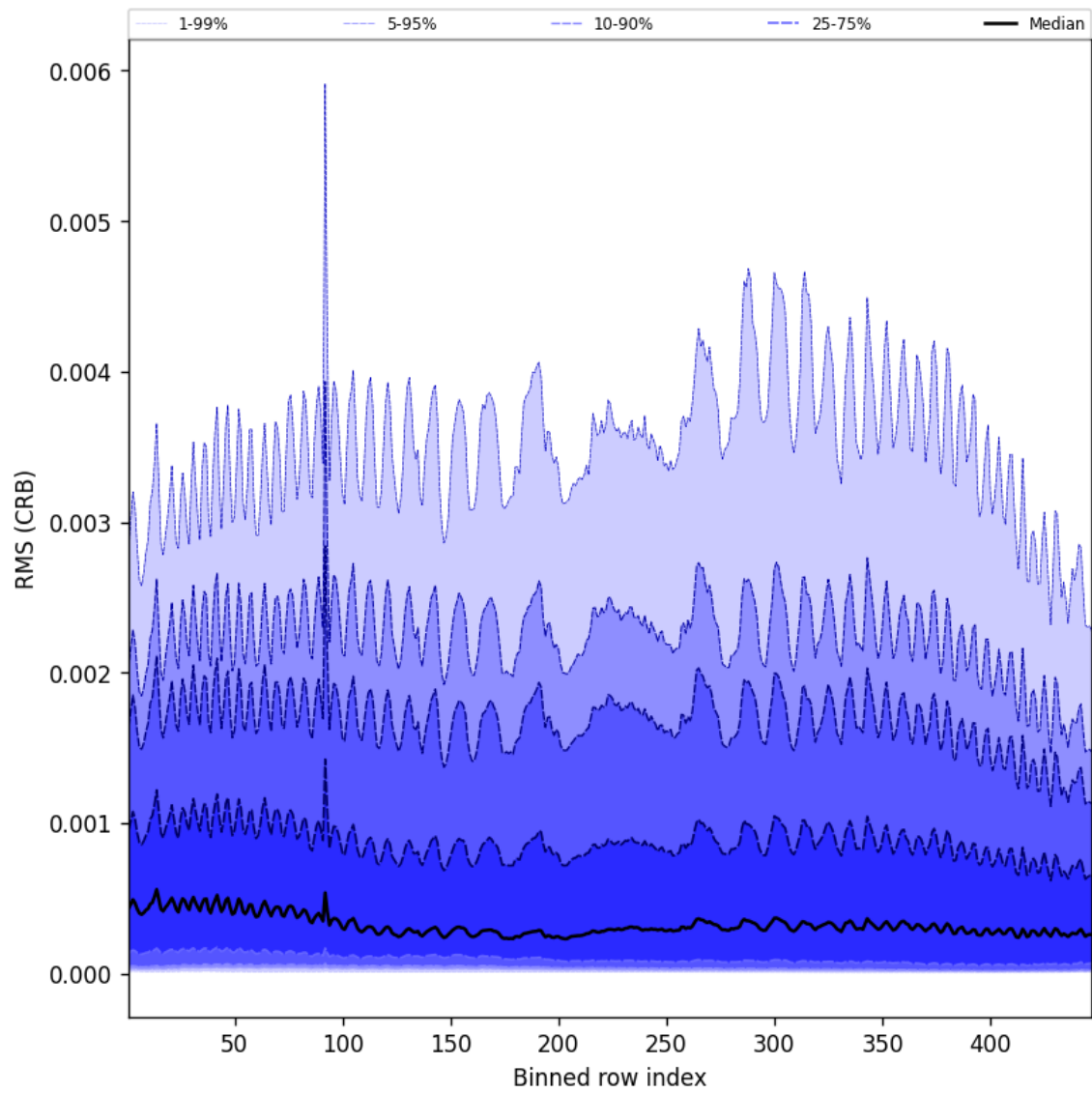


Figure 64: Along track statistics of “RMS (CRB)” for 2025-04-05 to 2025-04-07

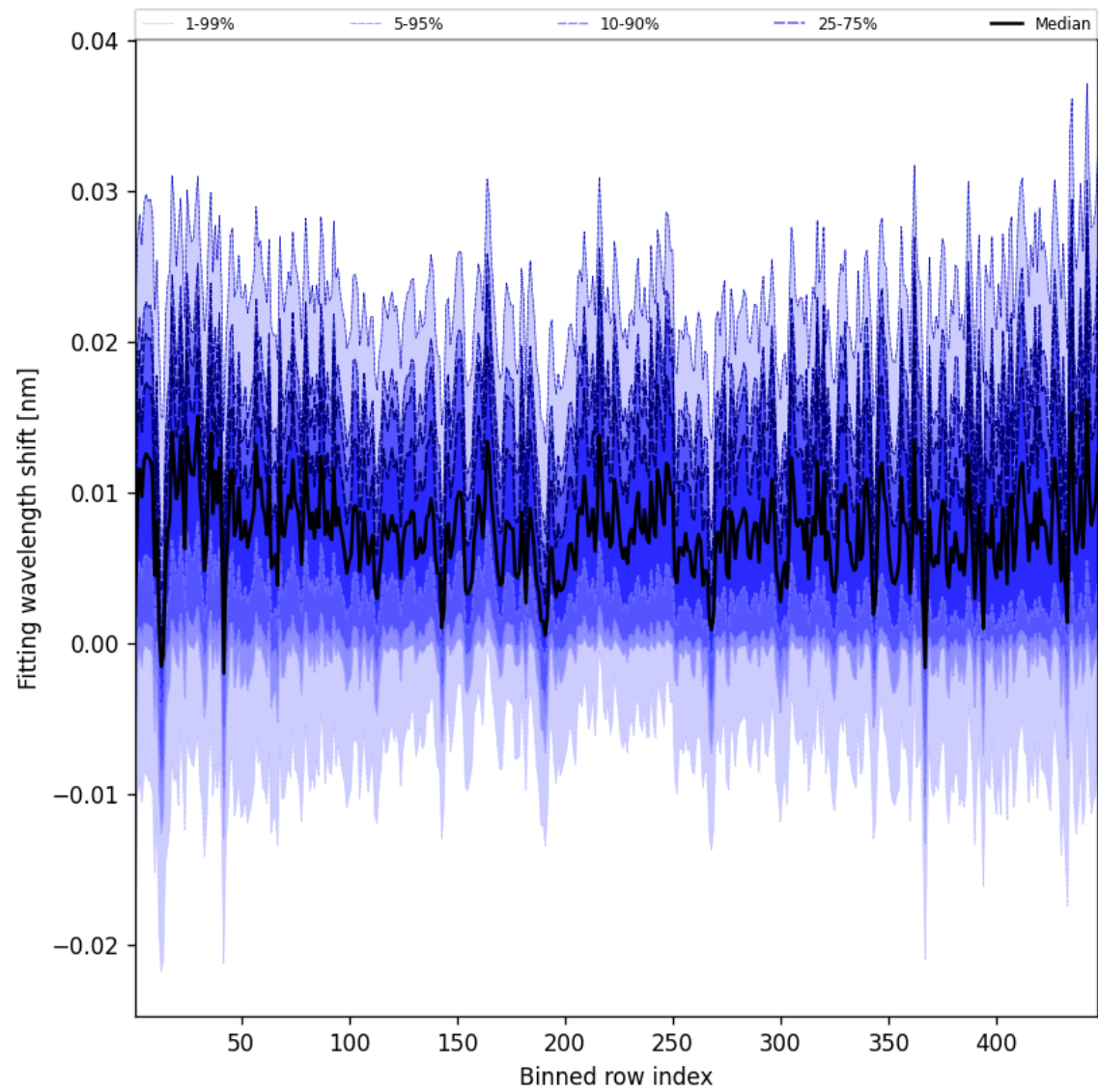


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-04-05 to 2025-04-07

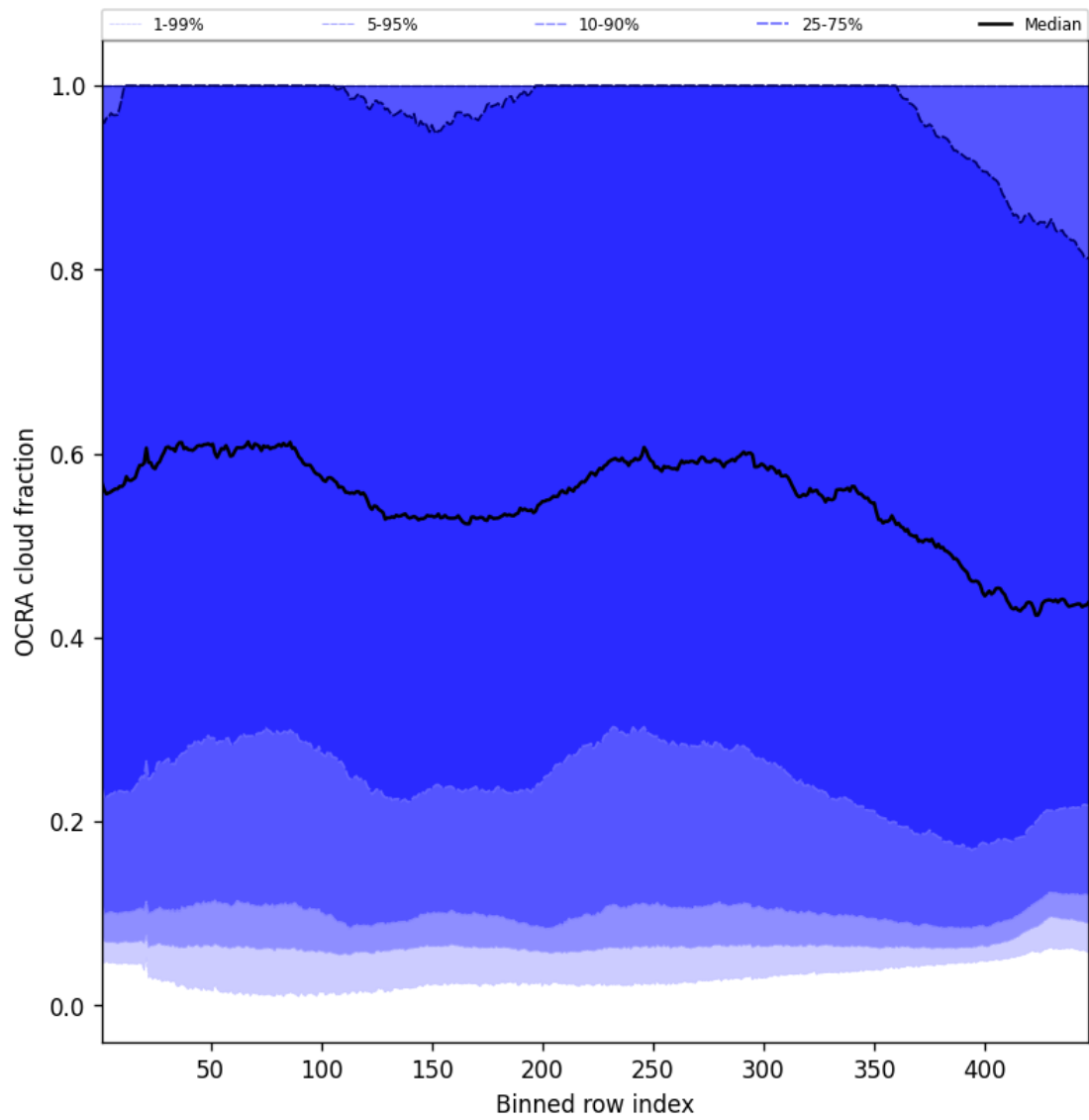


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-04-05 to 2025-04-07

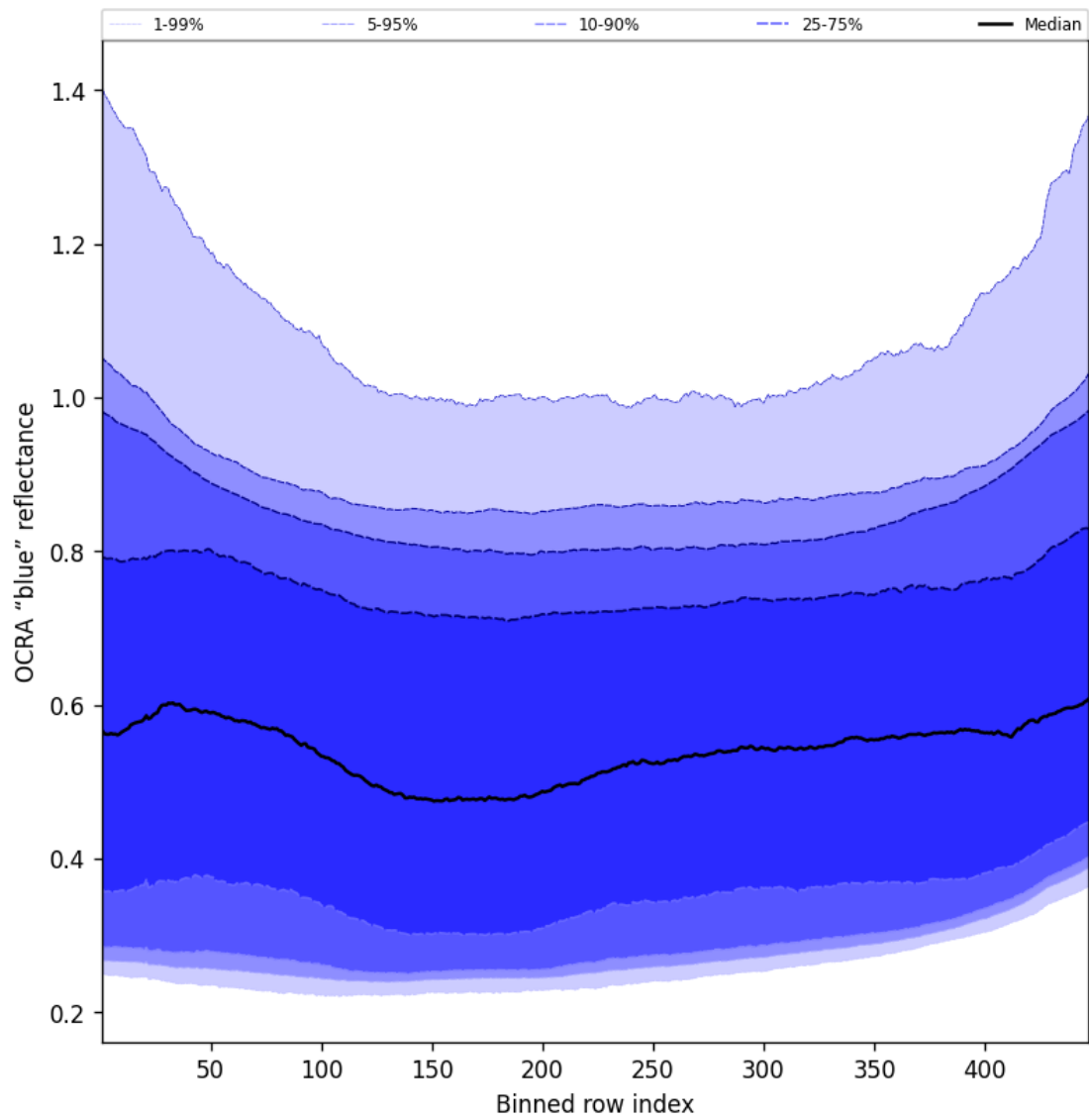


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-04-05 to 2025-04-07

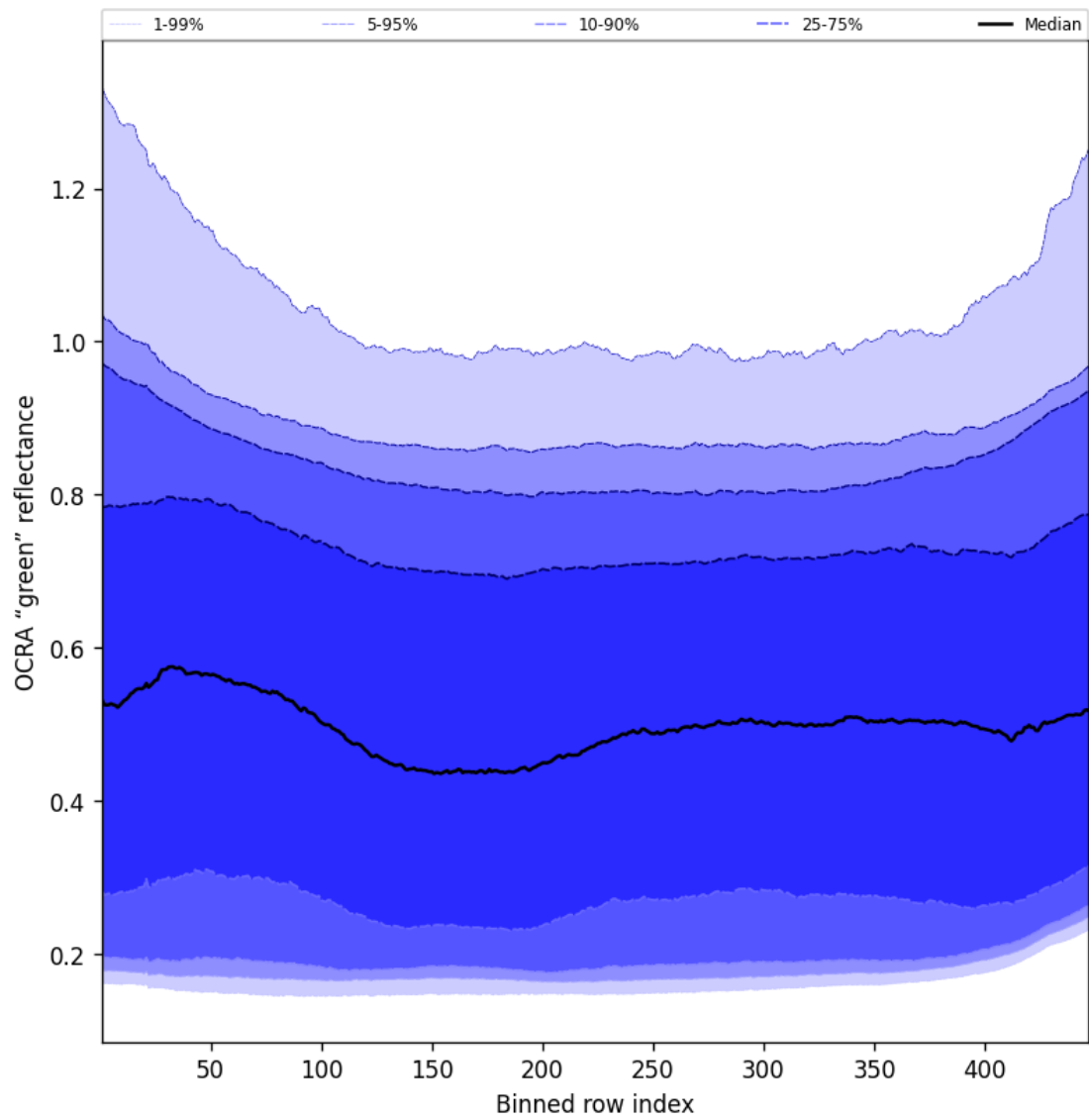


Figure 68: Along track statistics of "OCRA "green" reflectance" for 2025-04-05 to 2025-04-07

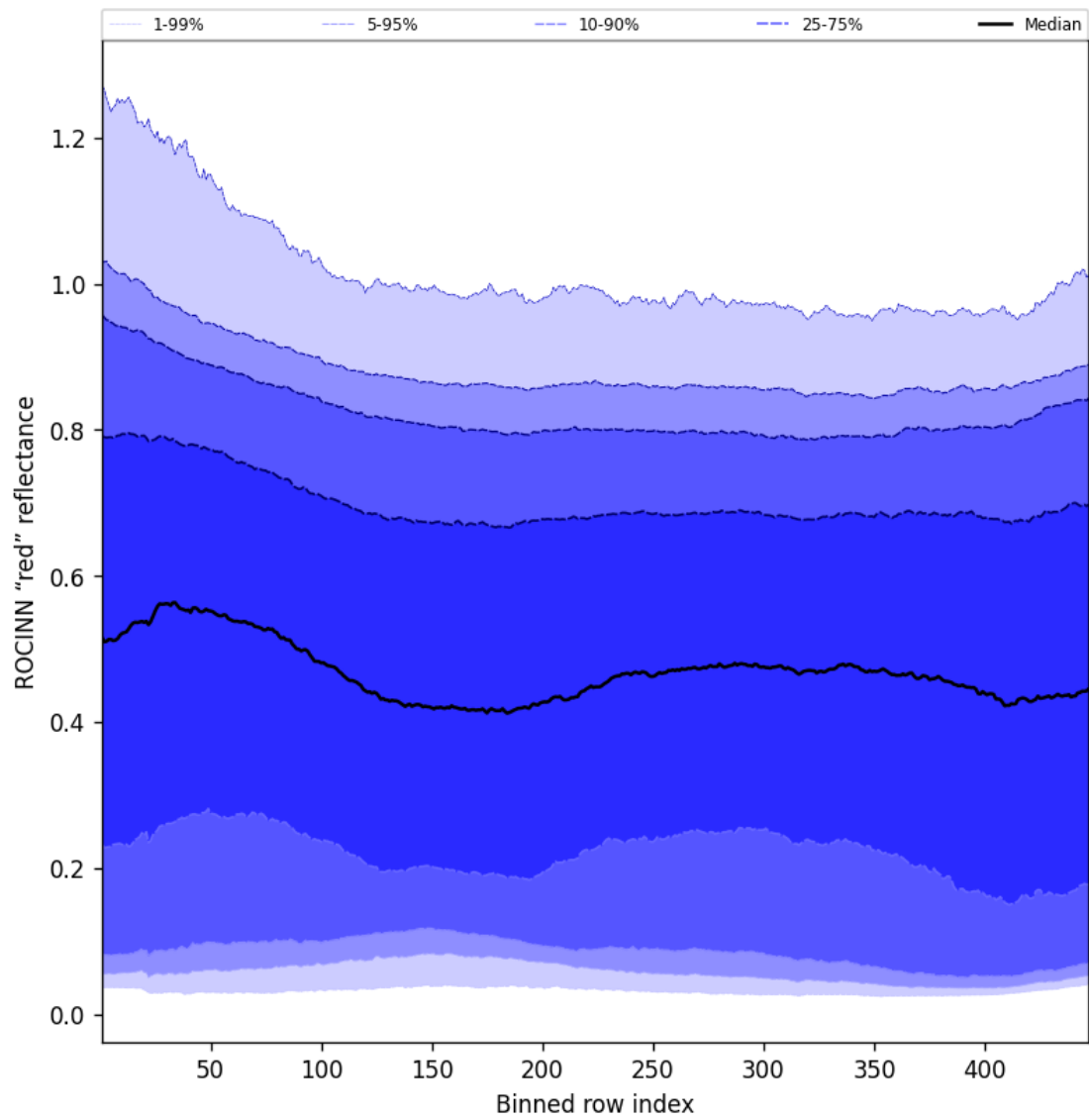


Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2025-04-05 to 2025-04-07

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.

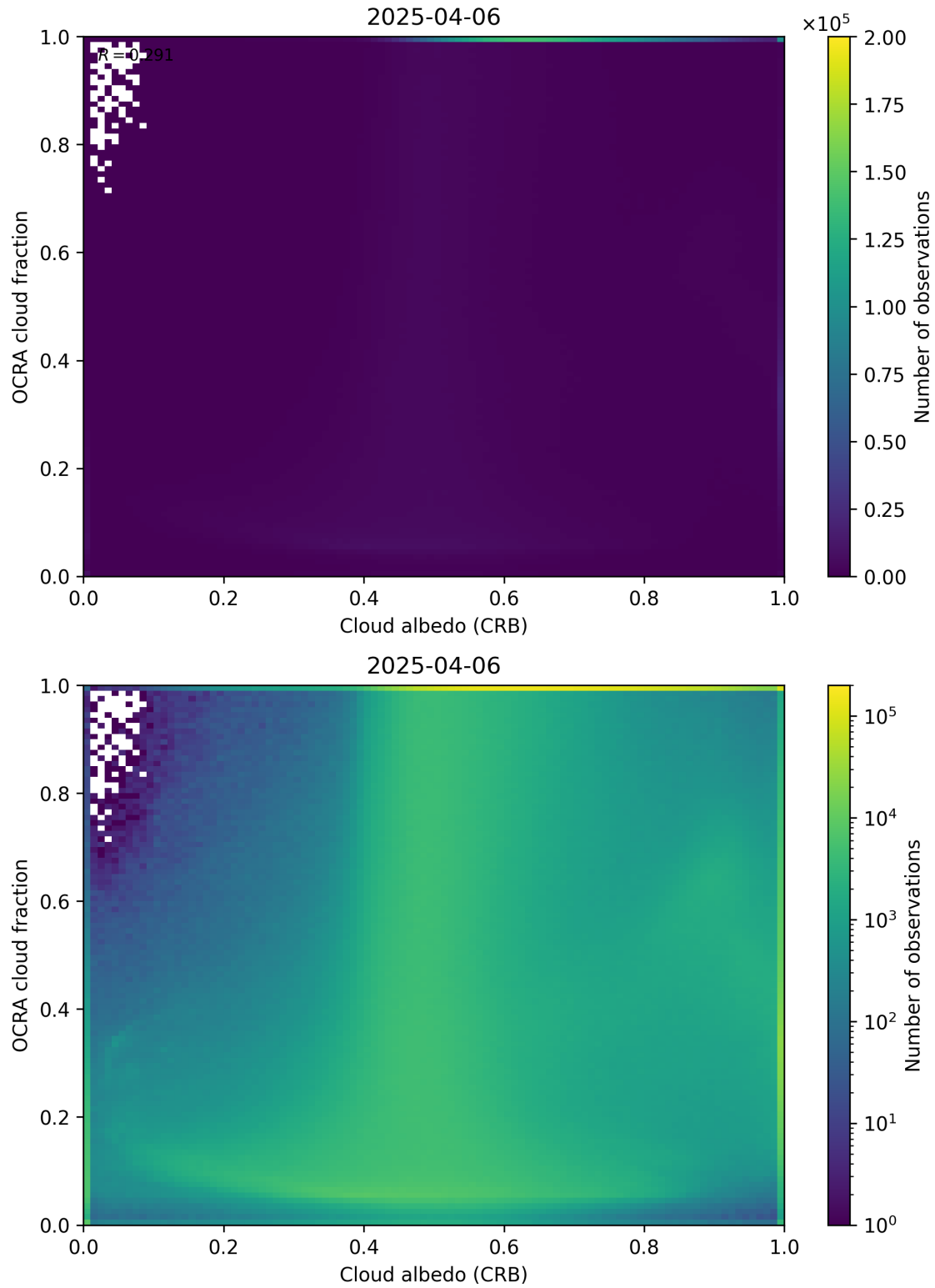


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-04-05 to 2025-04-07.

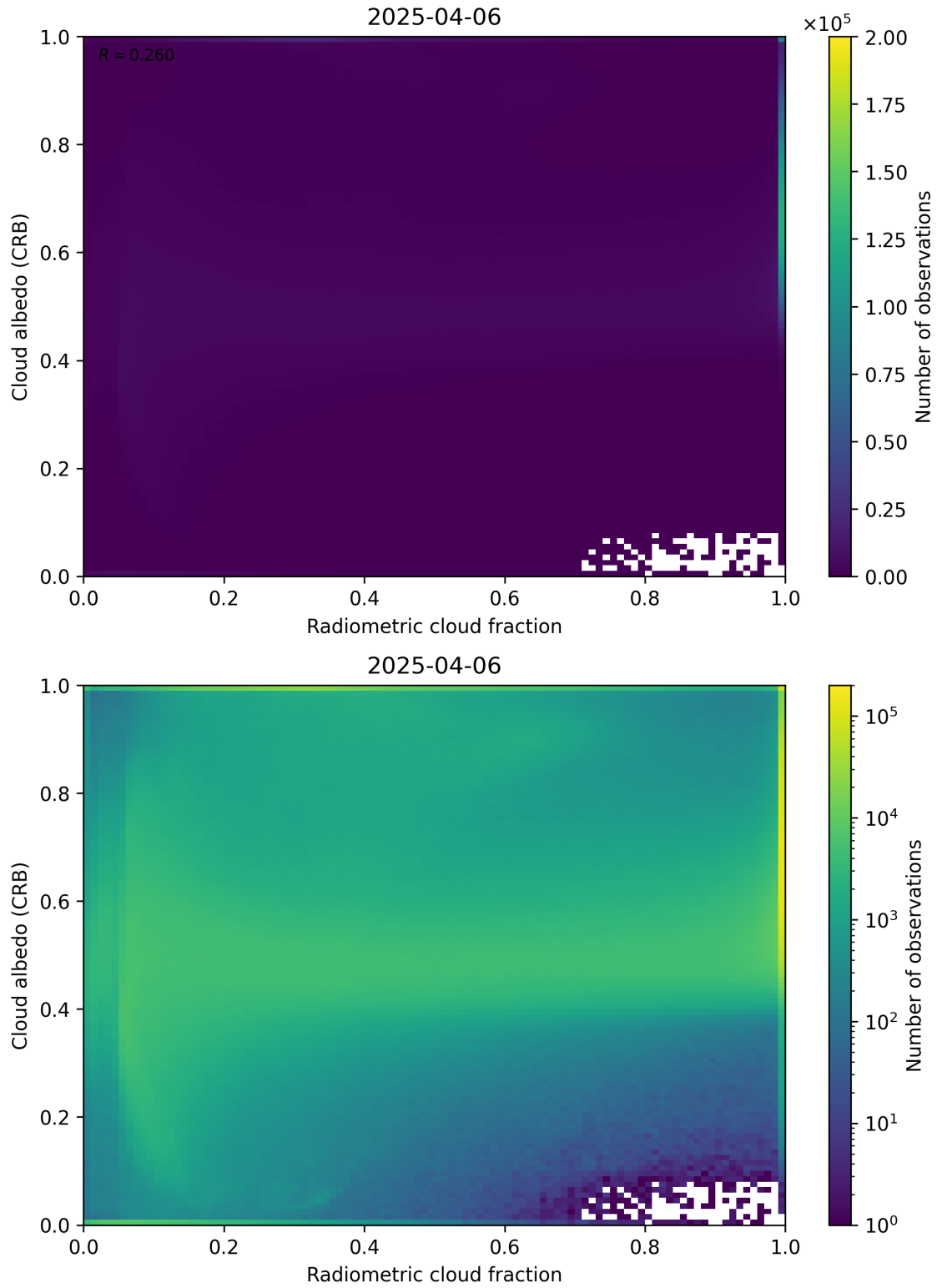


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-04-05 to 2025-04-07.

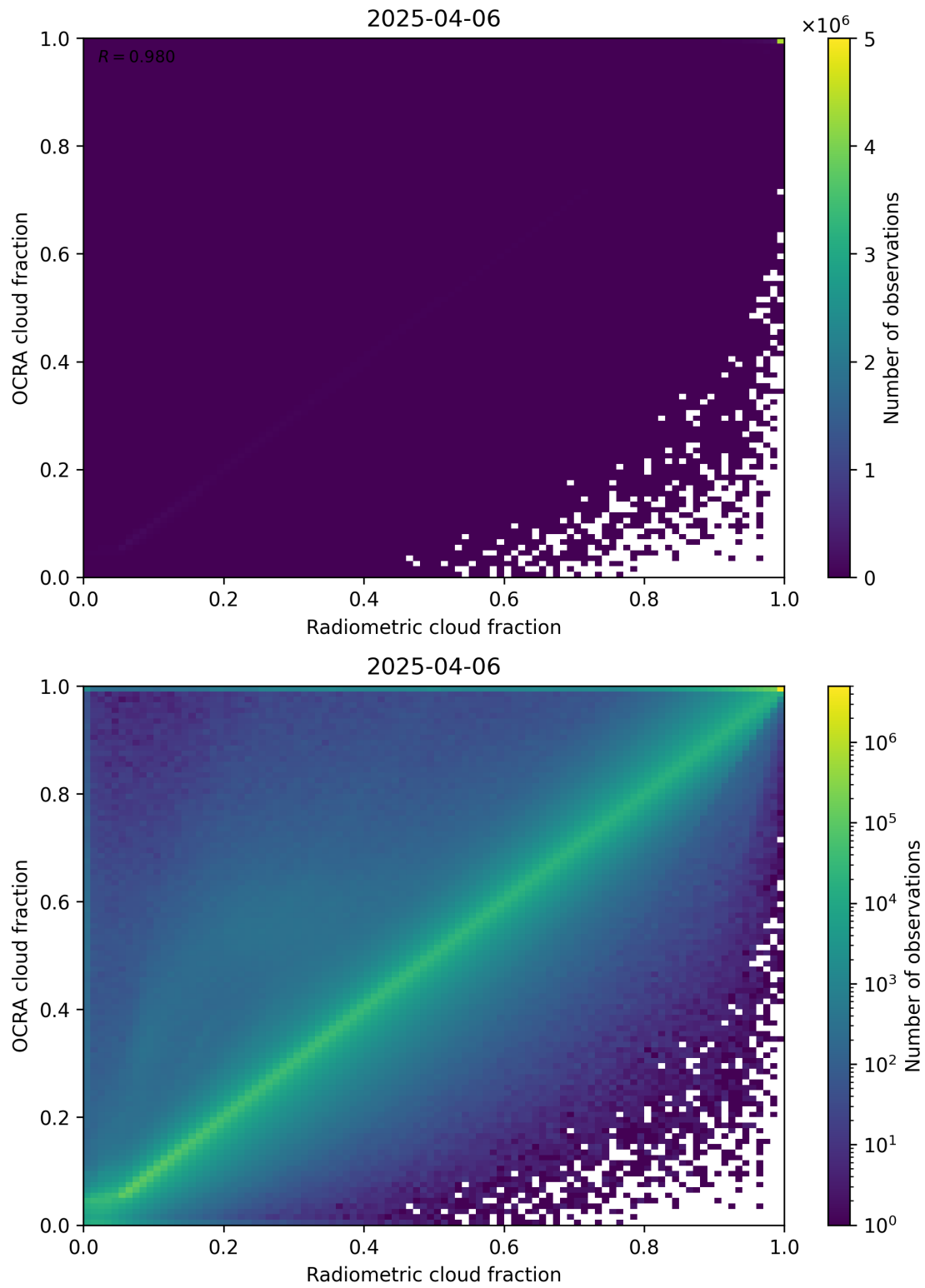


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-04-05 to 2025-04-07.

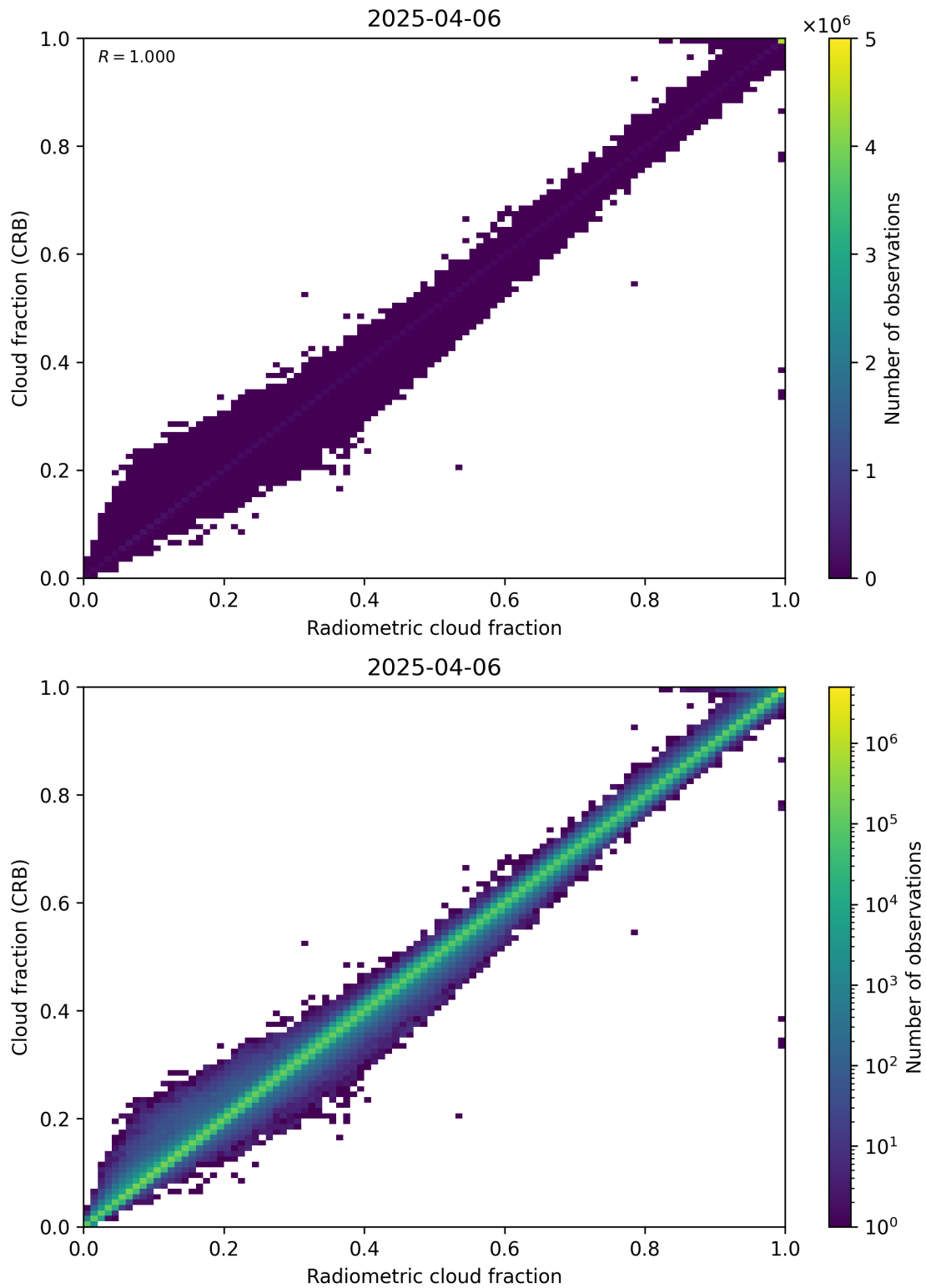


Figure 73: Scatter density plot of “Radiometric cloud fraction” against “Cloud fraction (CRB)” for 2025-04-05 to 2025-04-07.

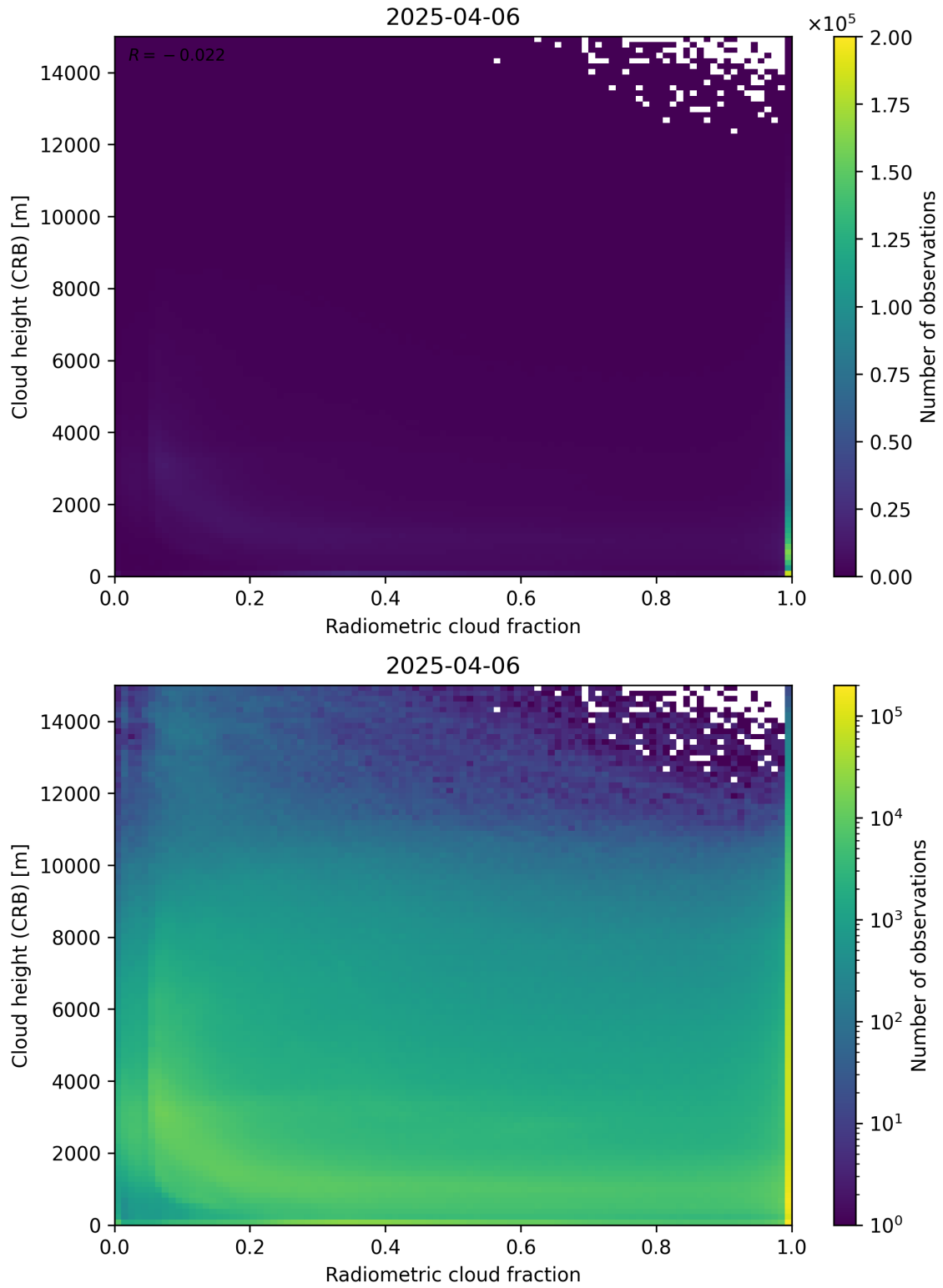


Figure 74: Scatter density plot of “Radiometric cloud fraction” against “Cloud height (CRB)” for 2025-04-05 to 2025-04-07.

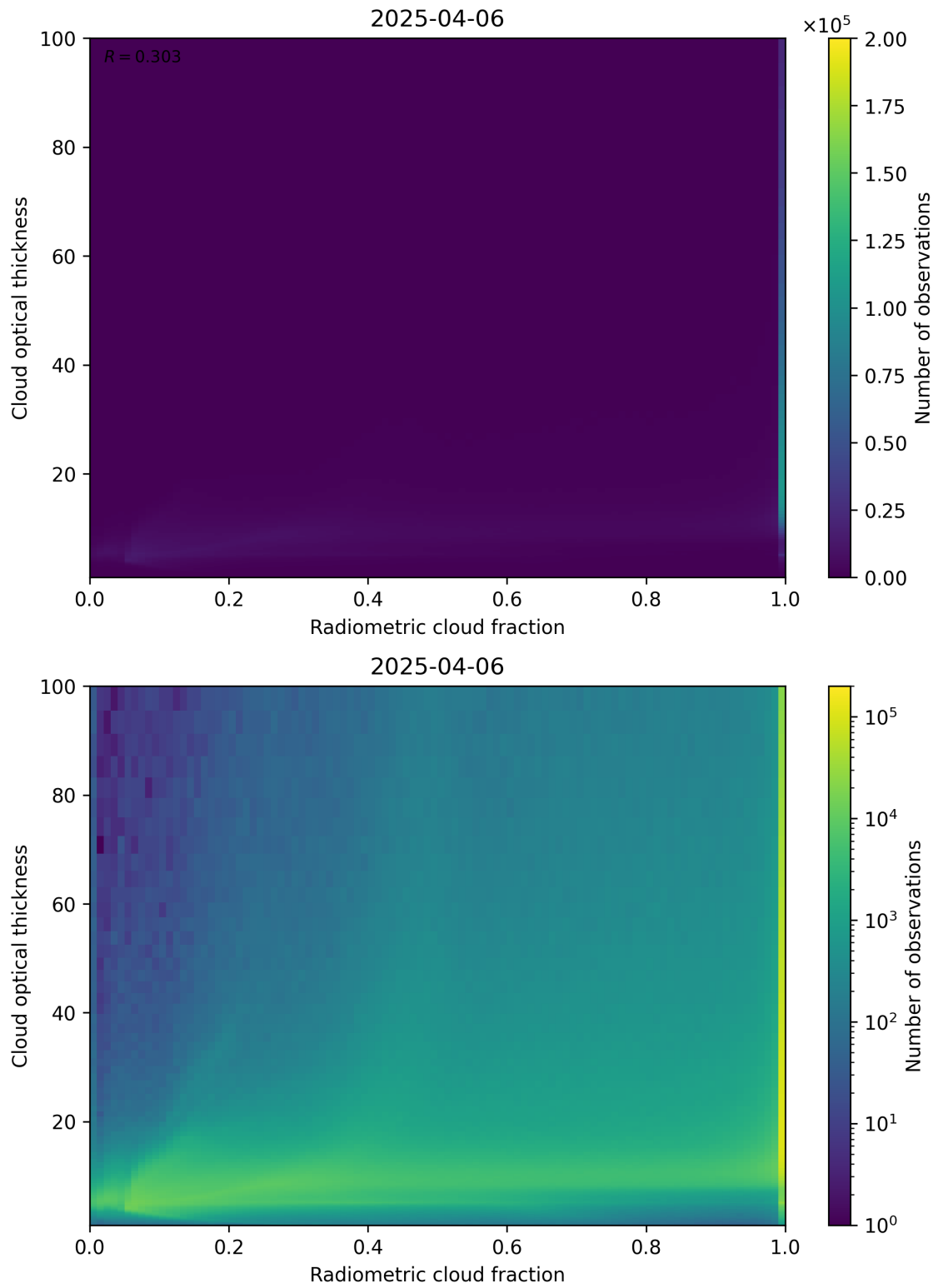


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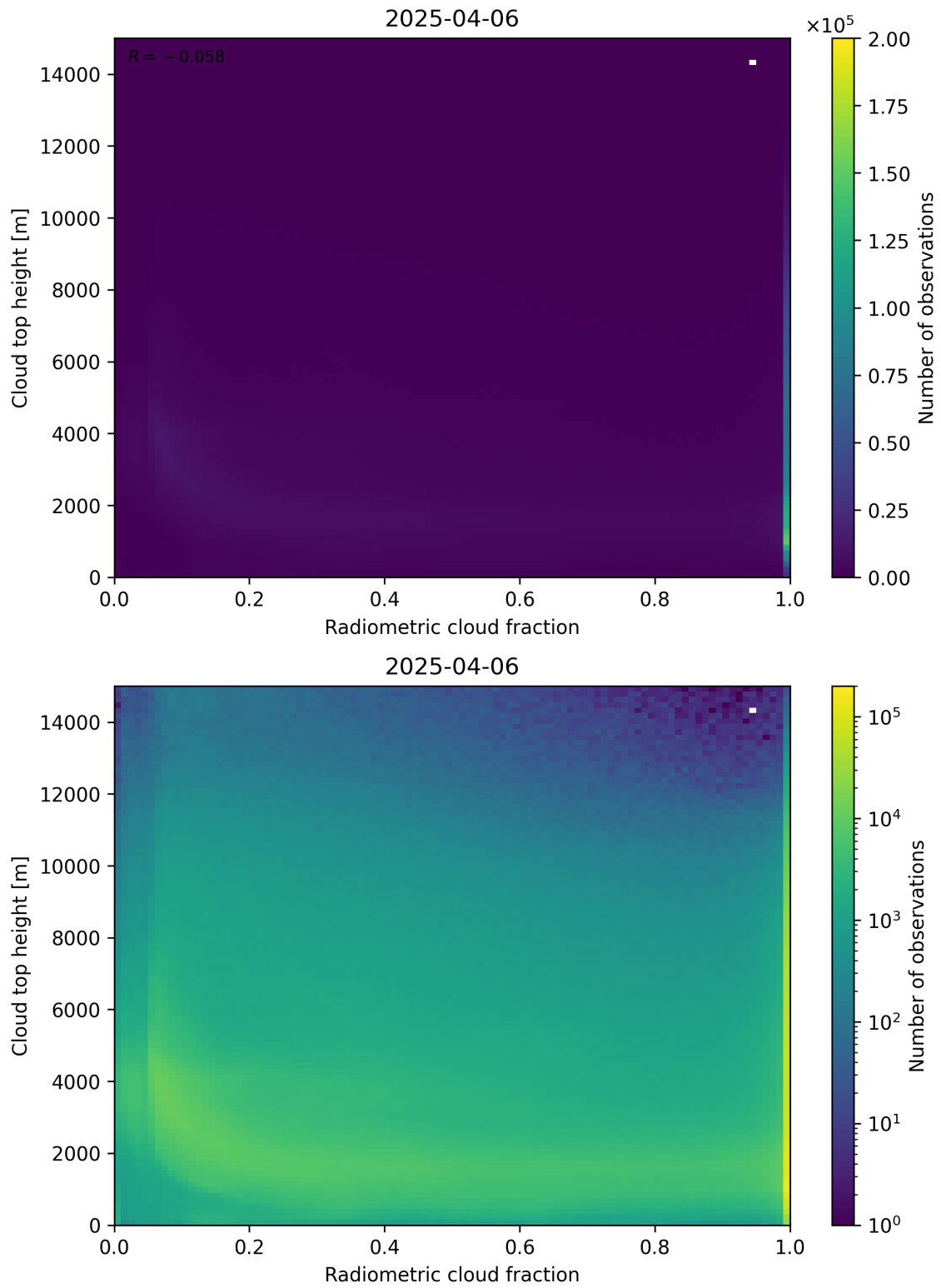


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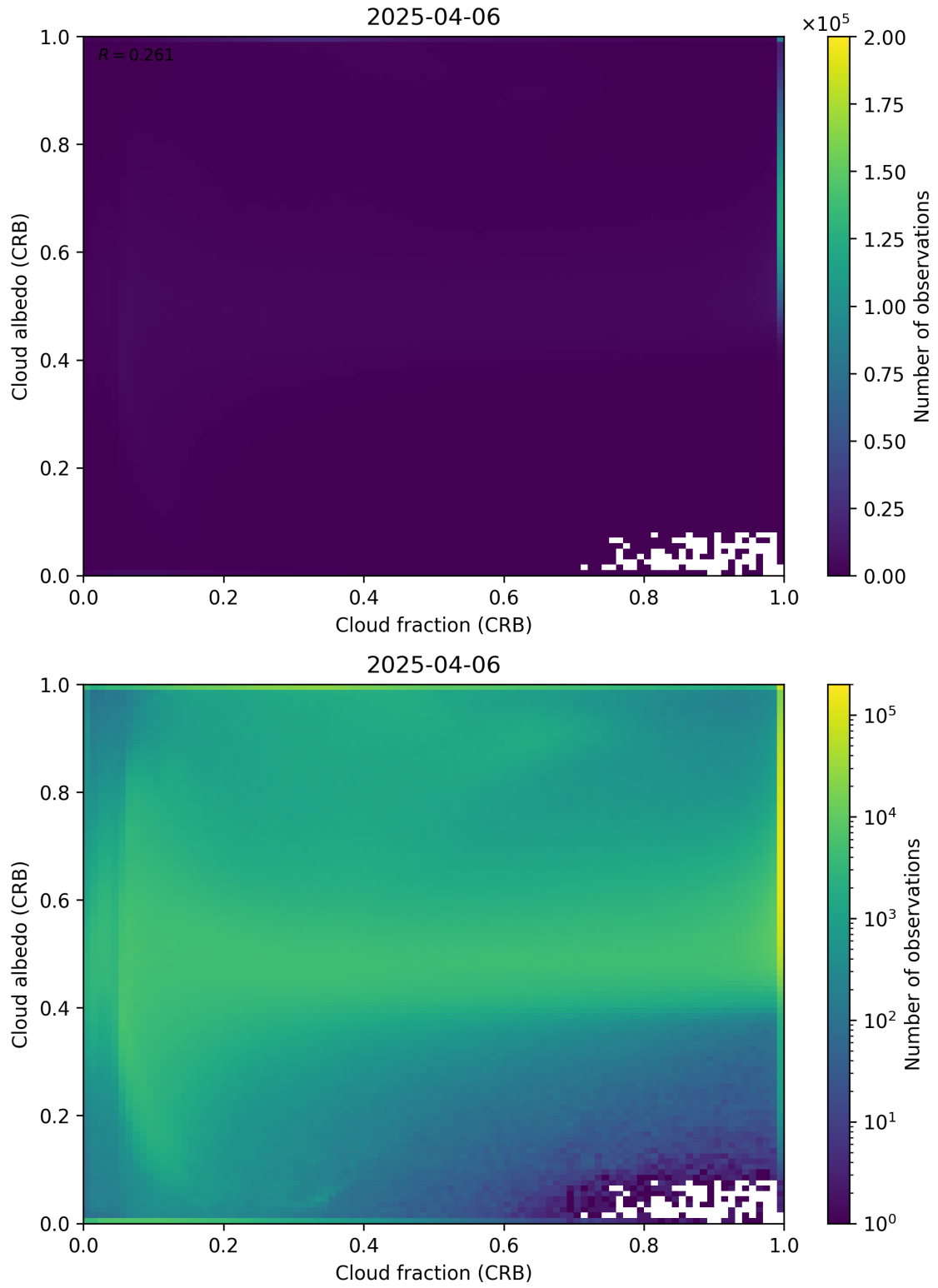


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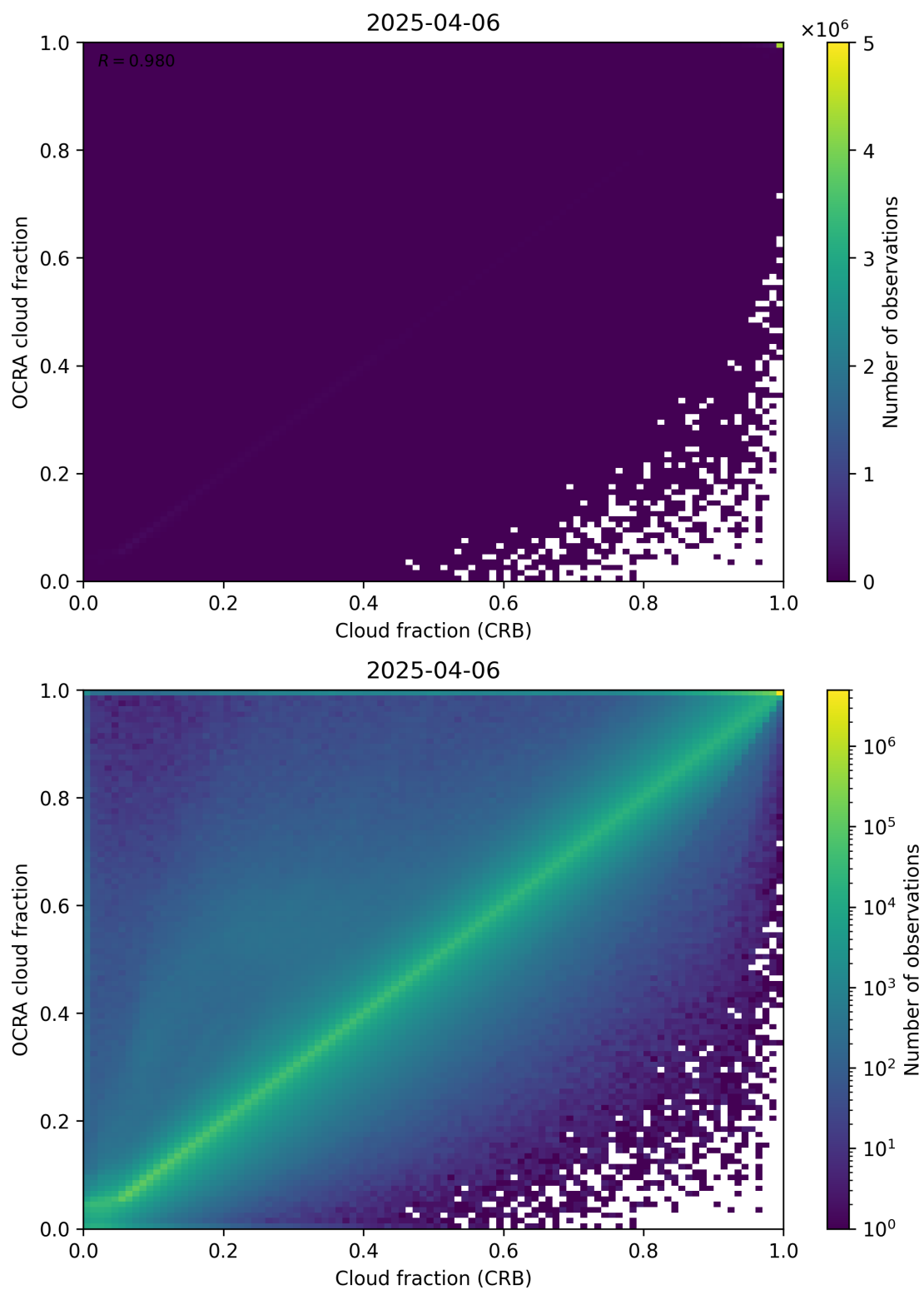


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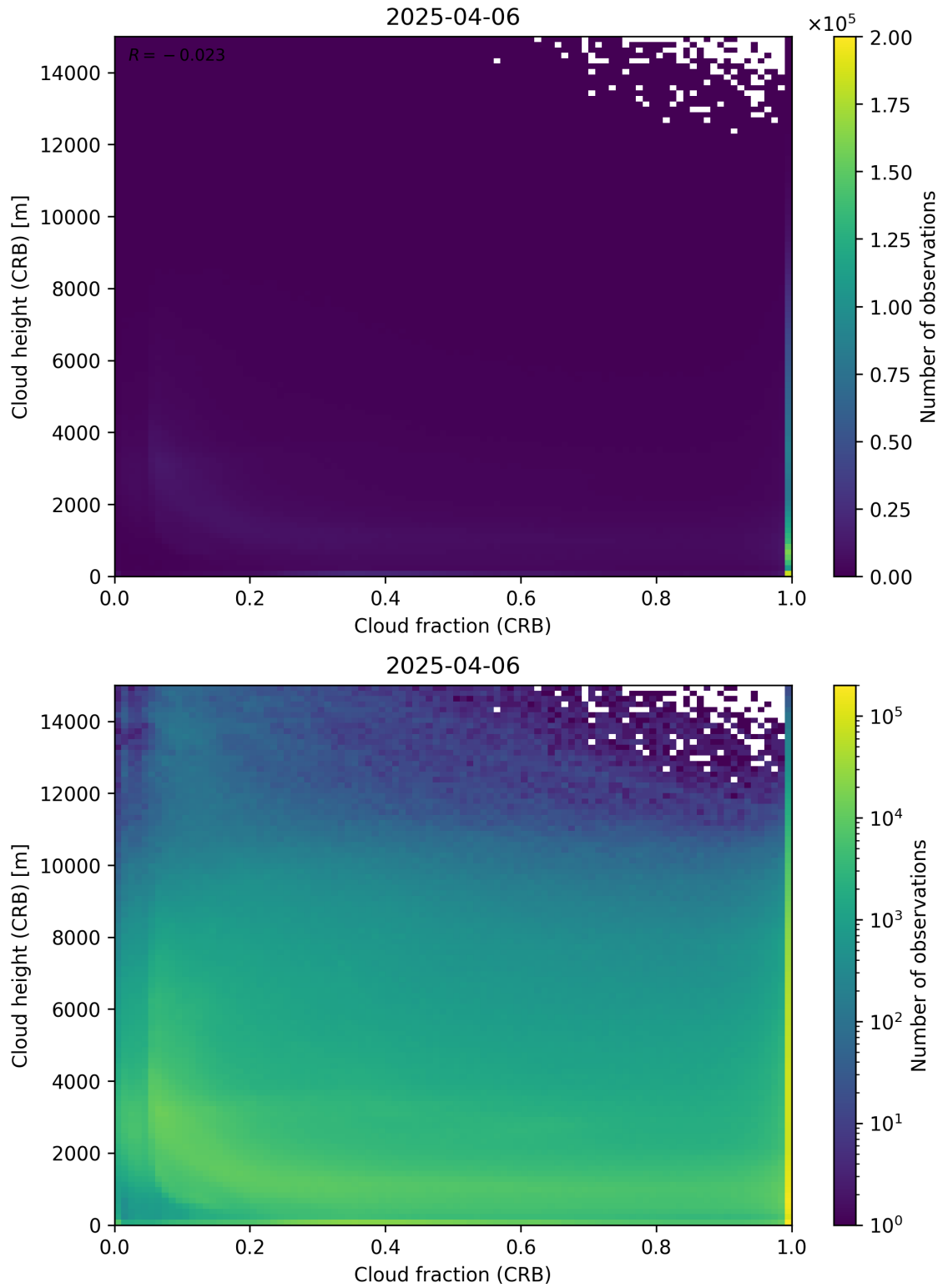


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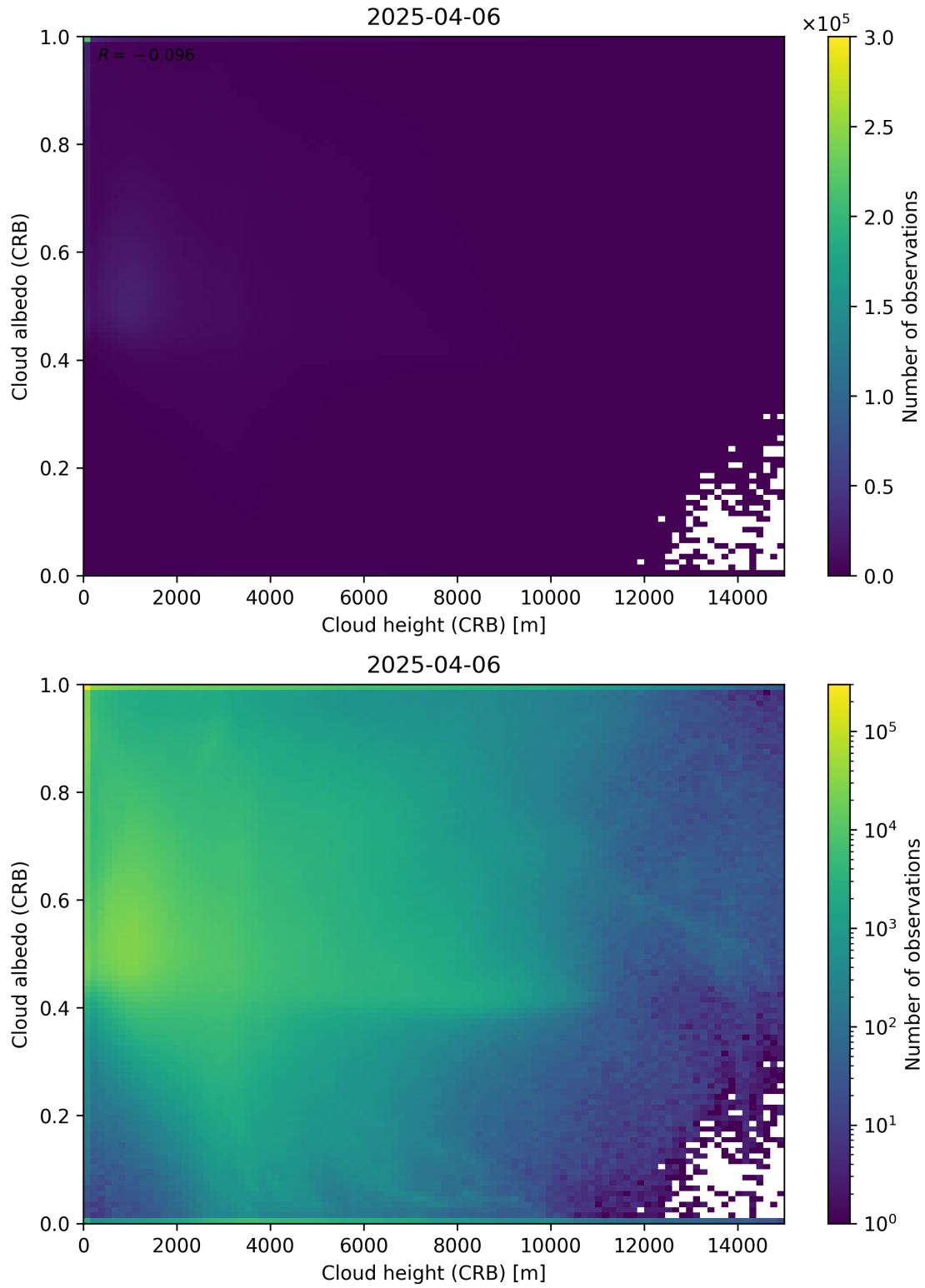


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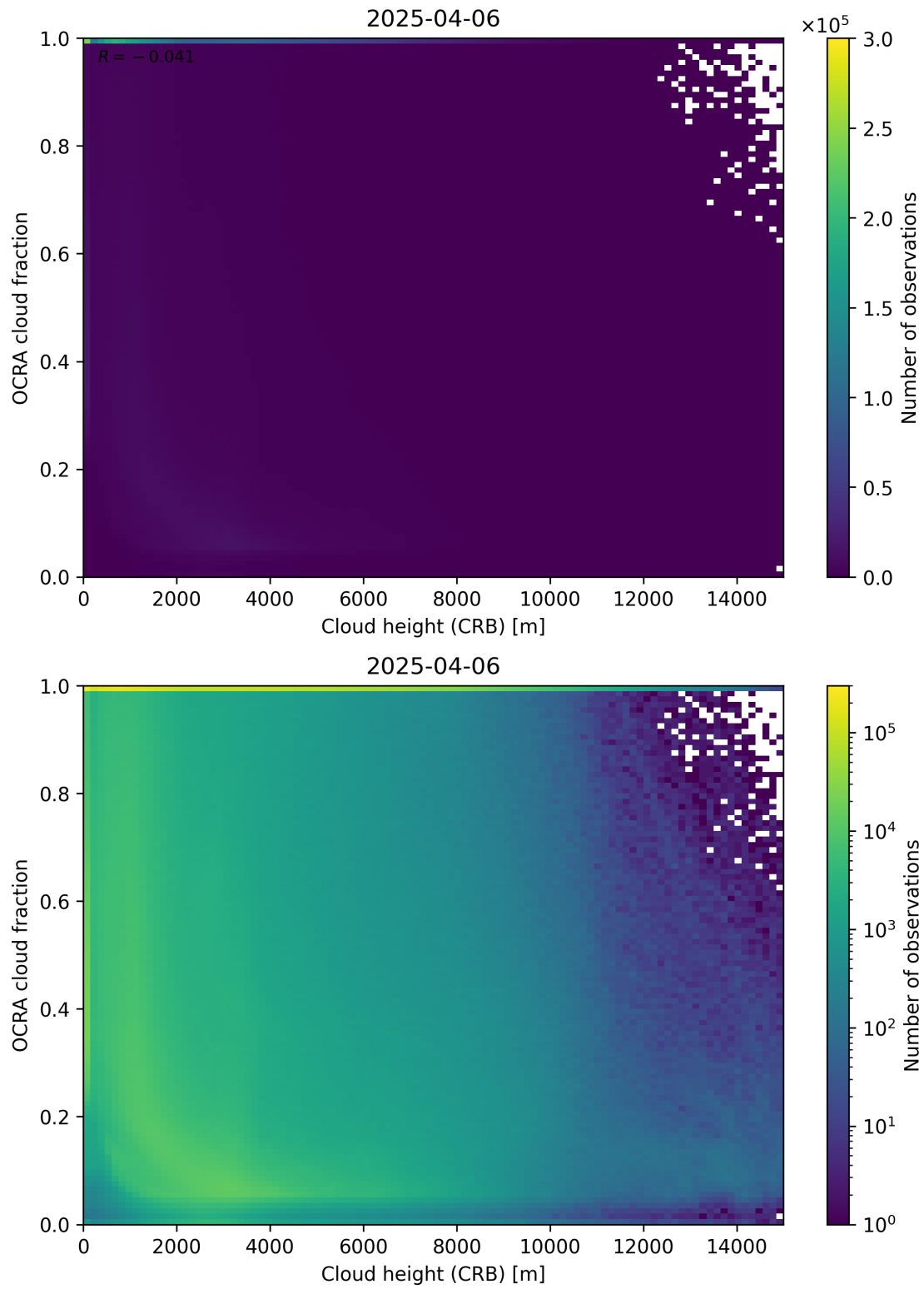


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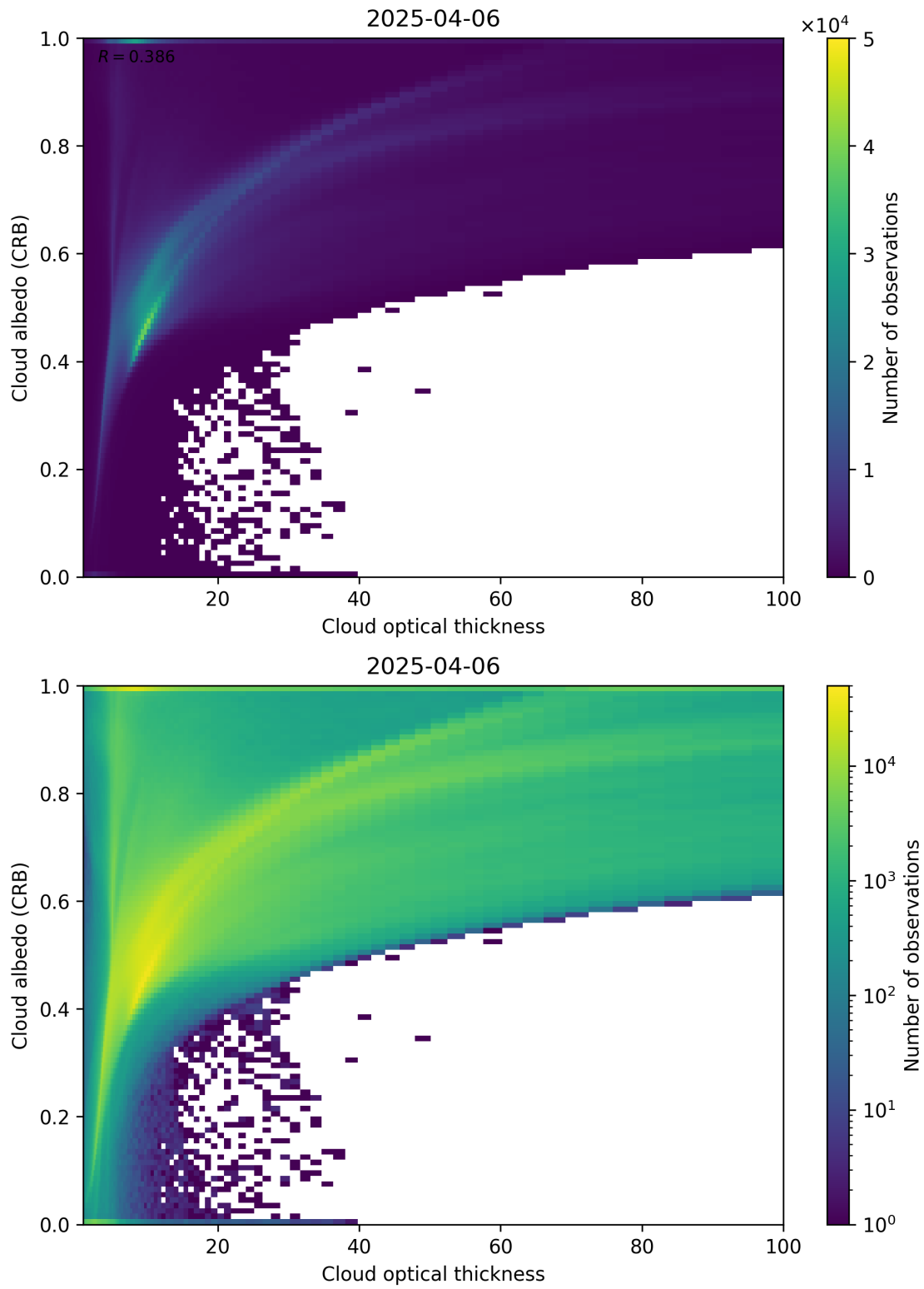


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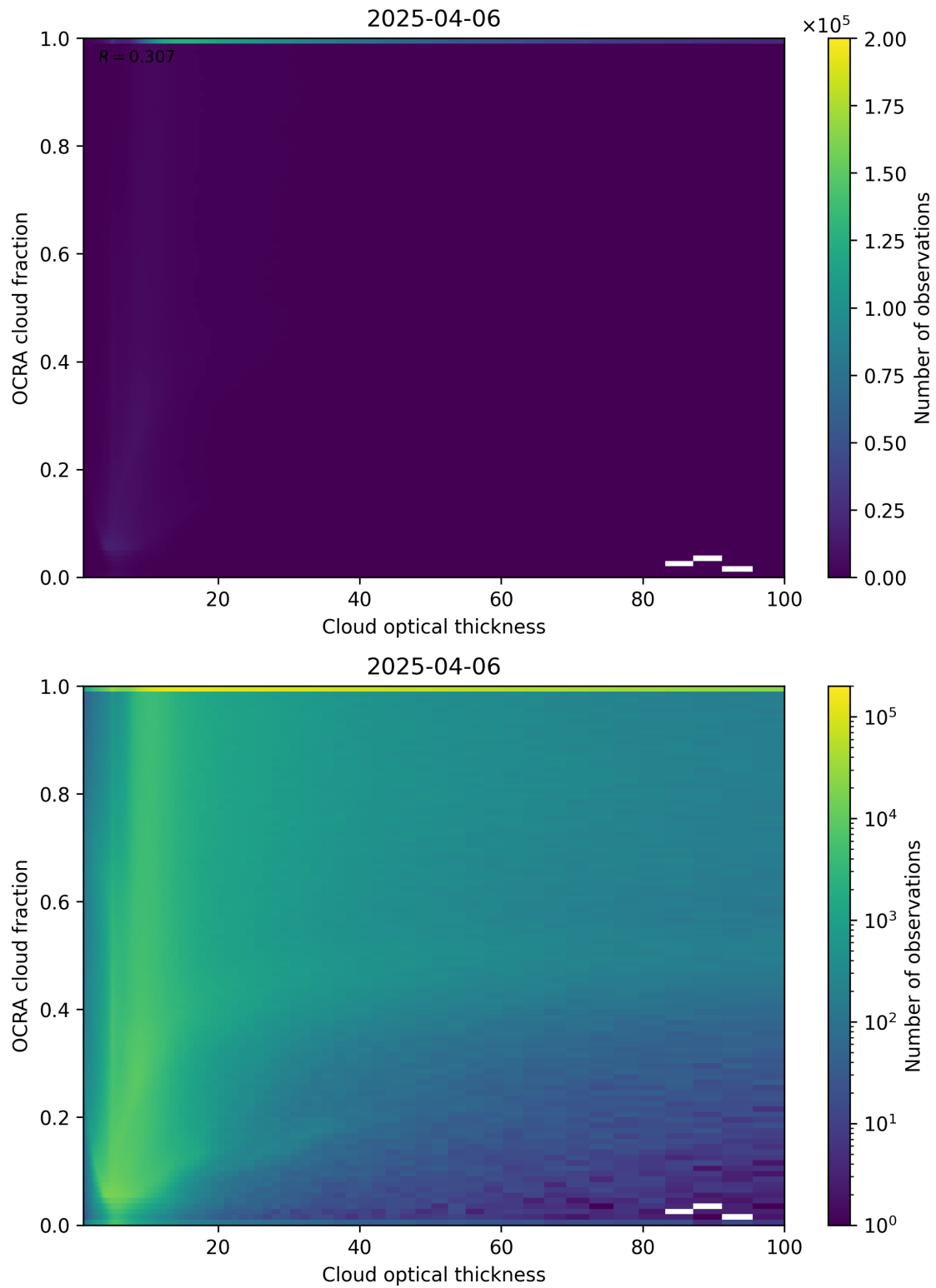


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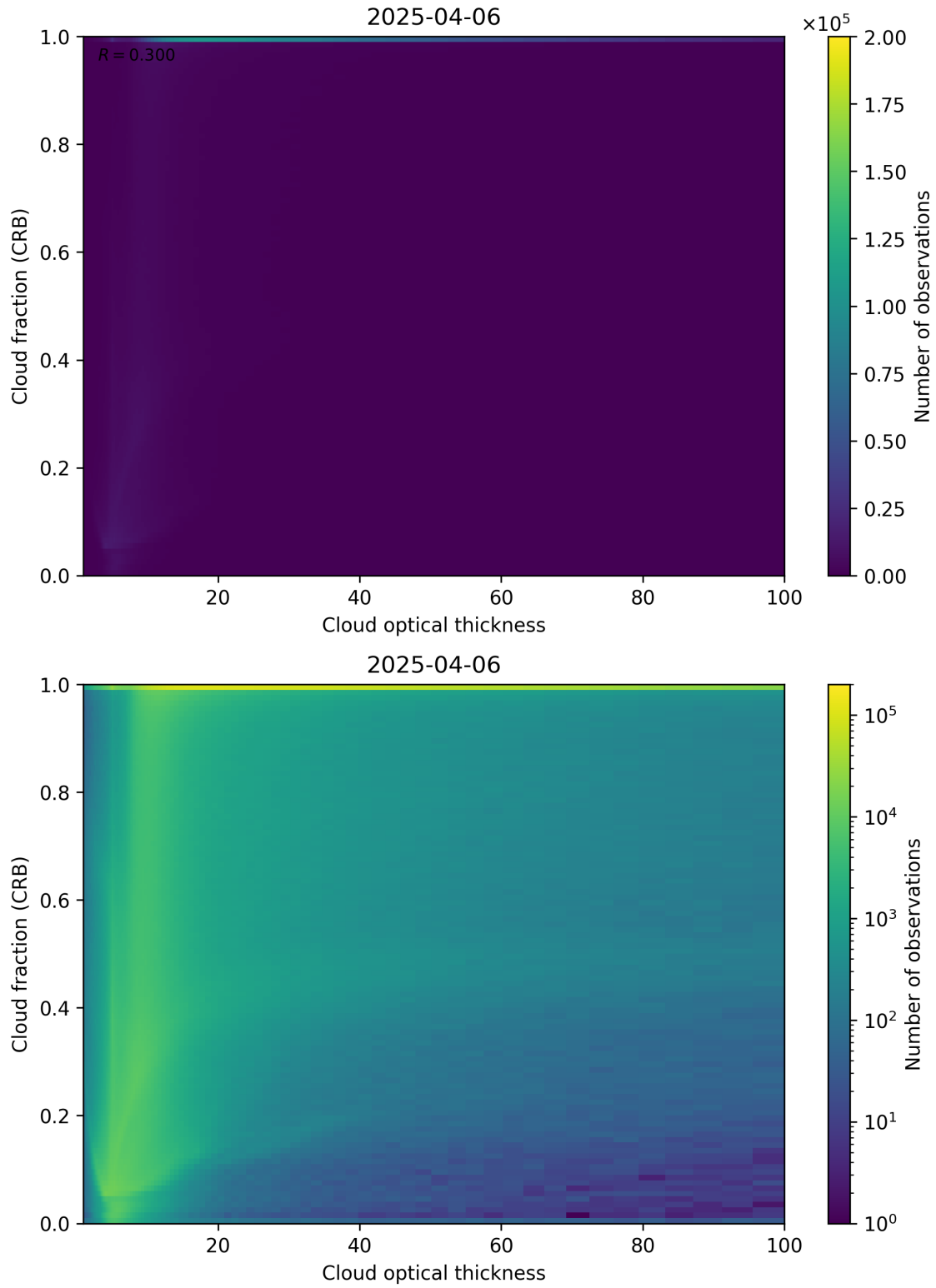


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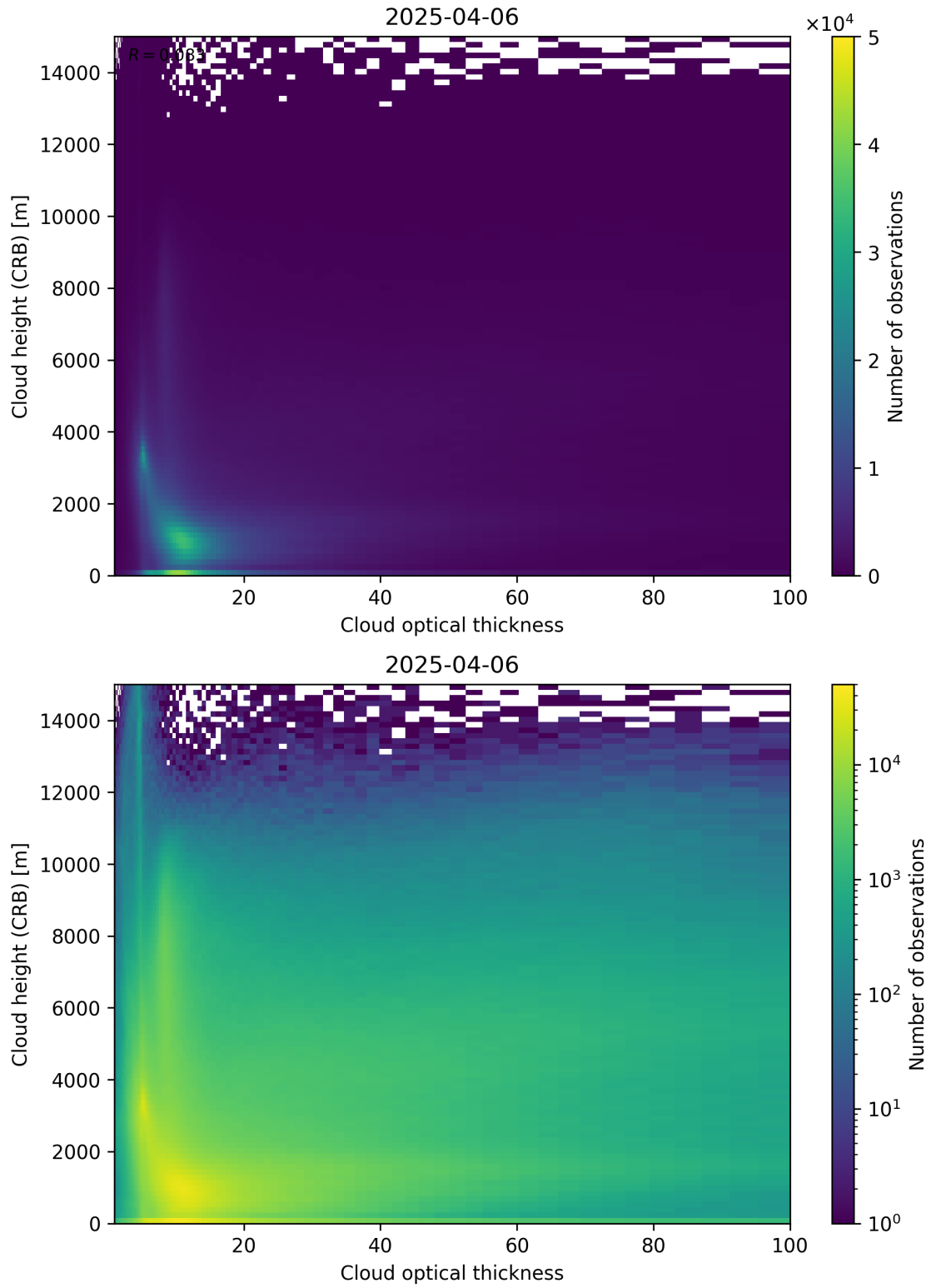


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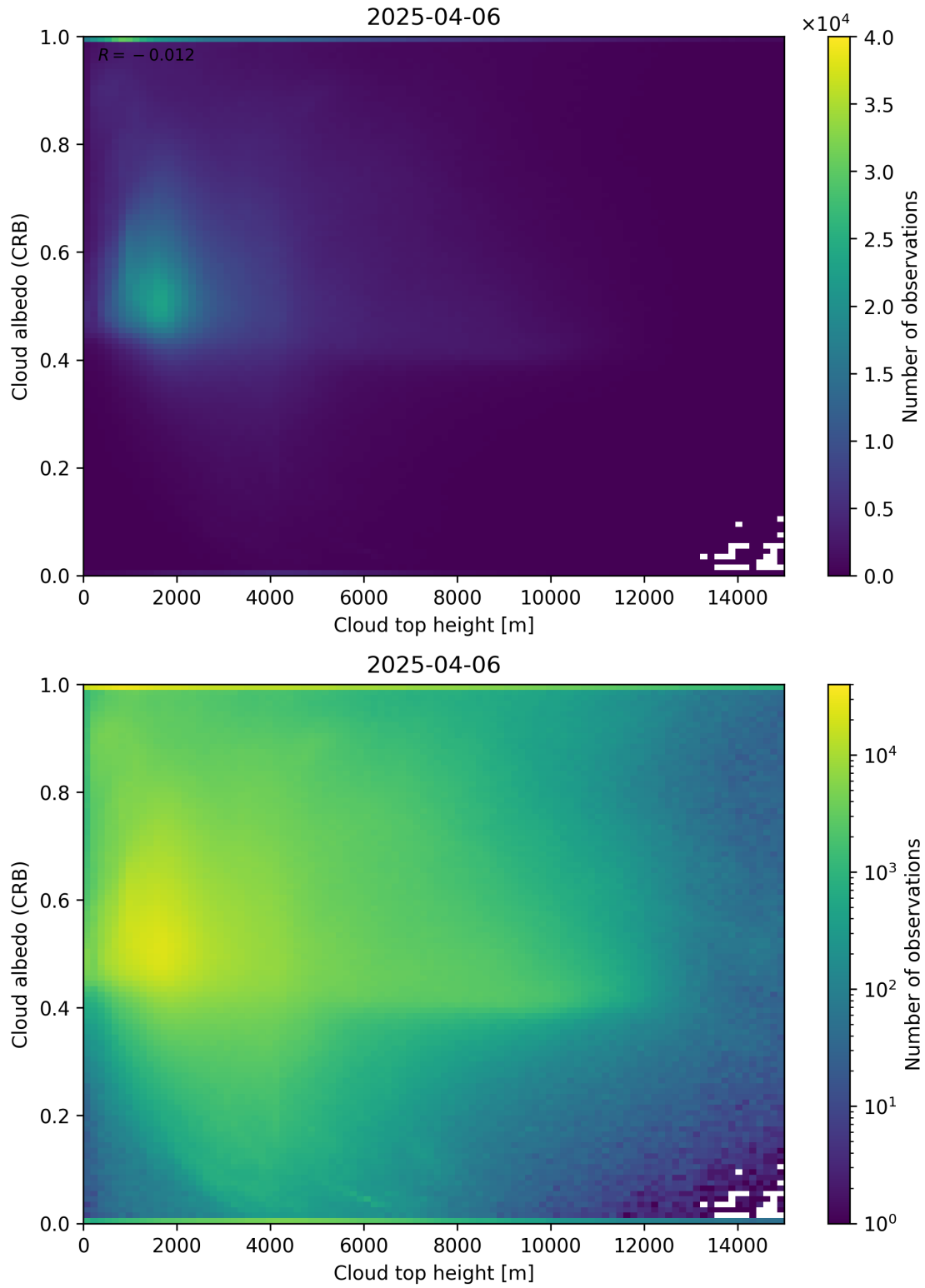


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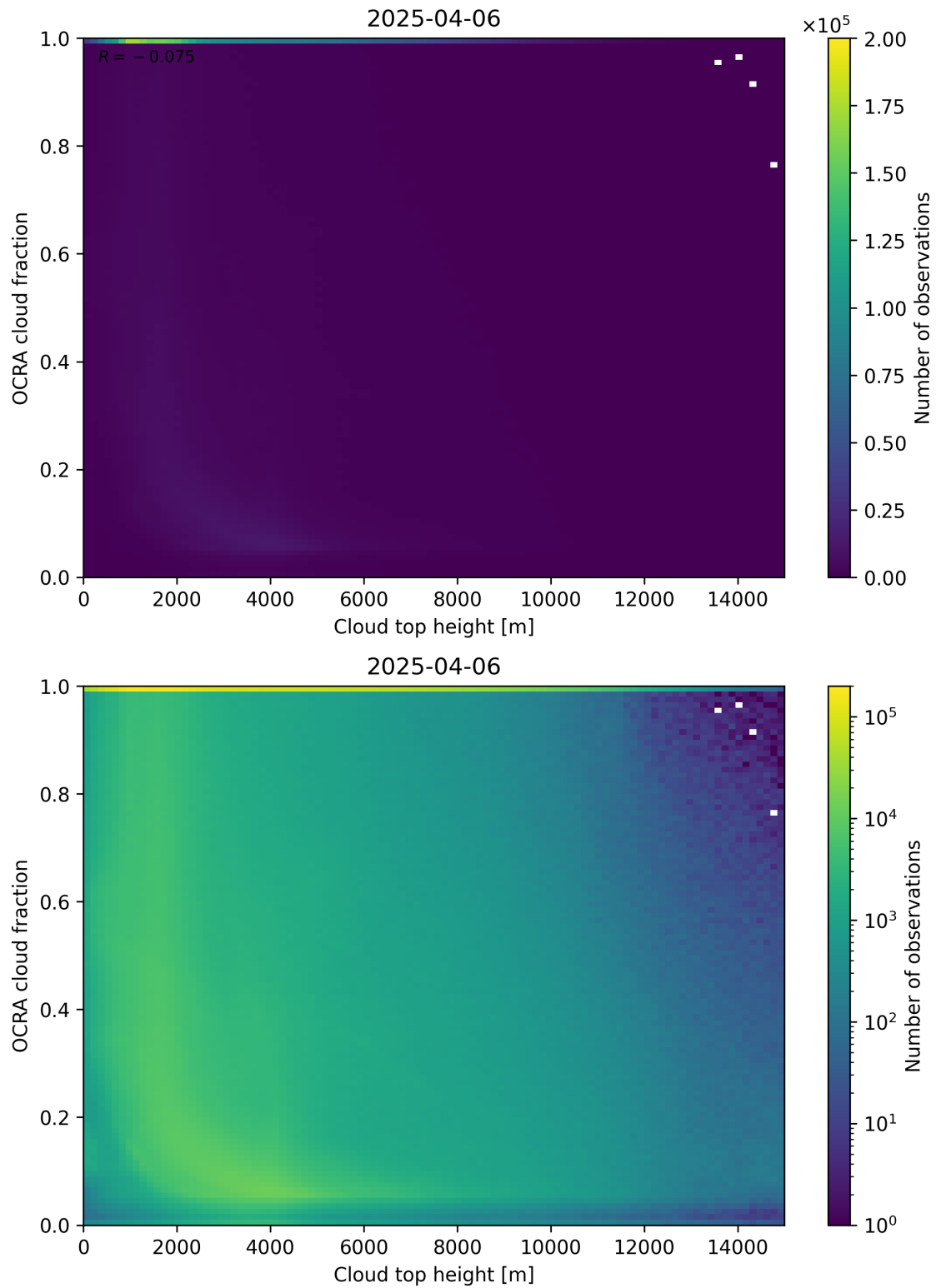


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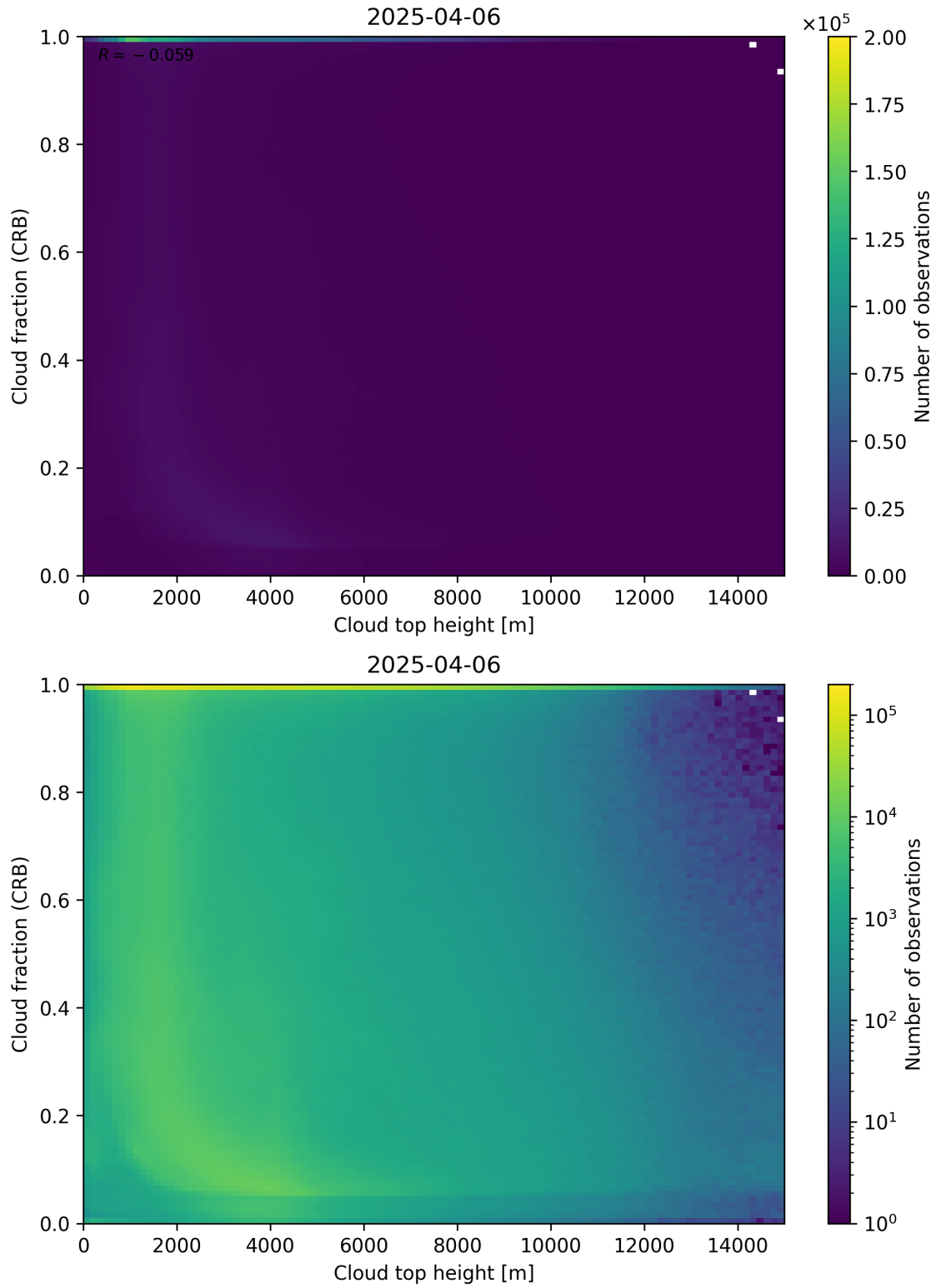


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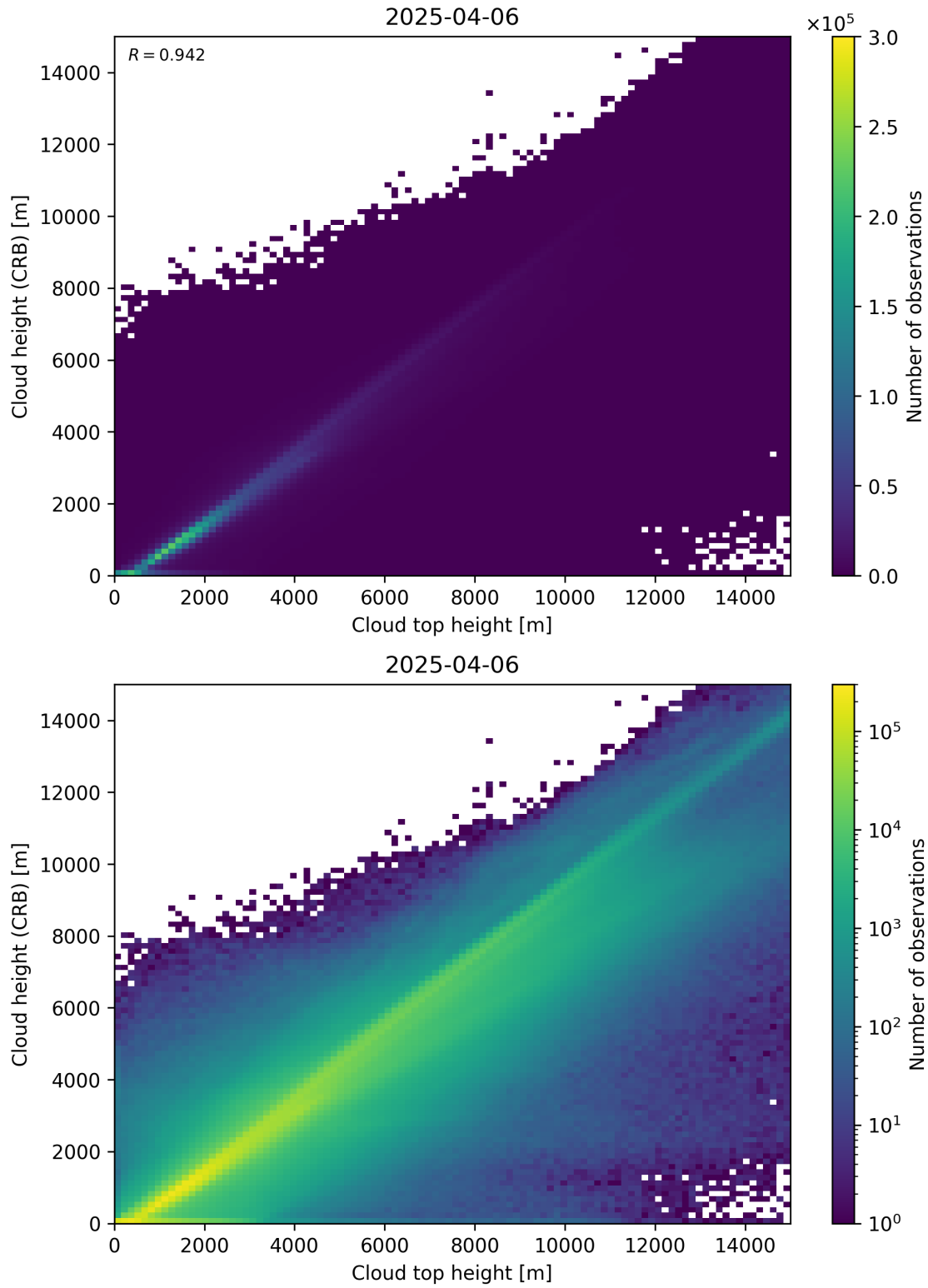


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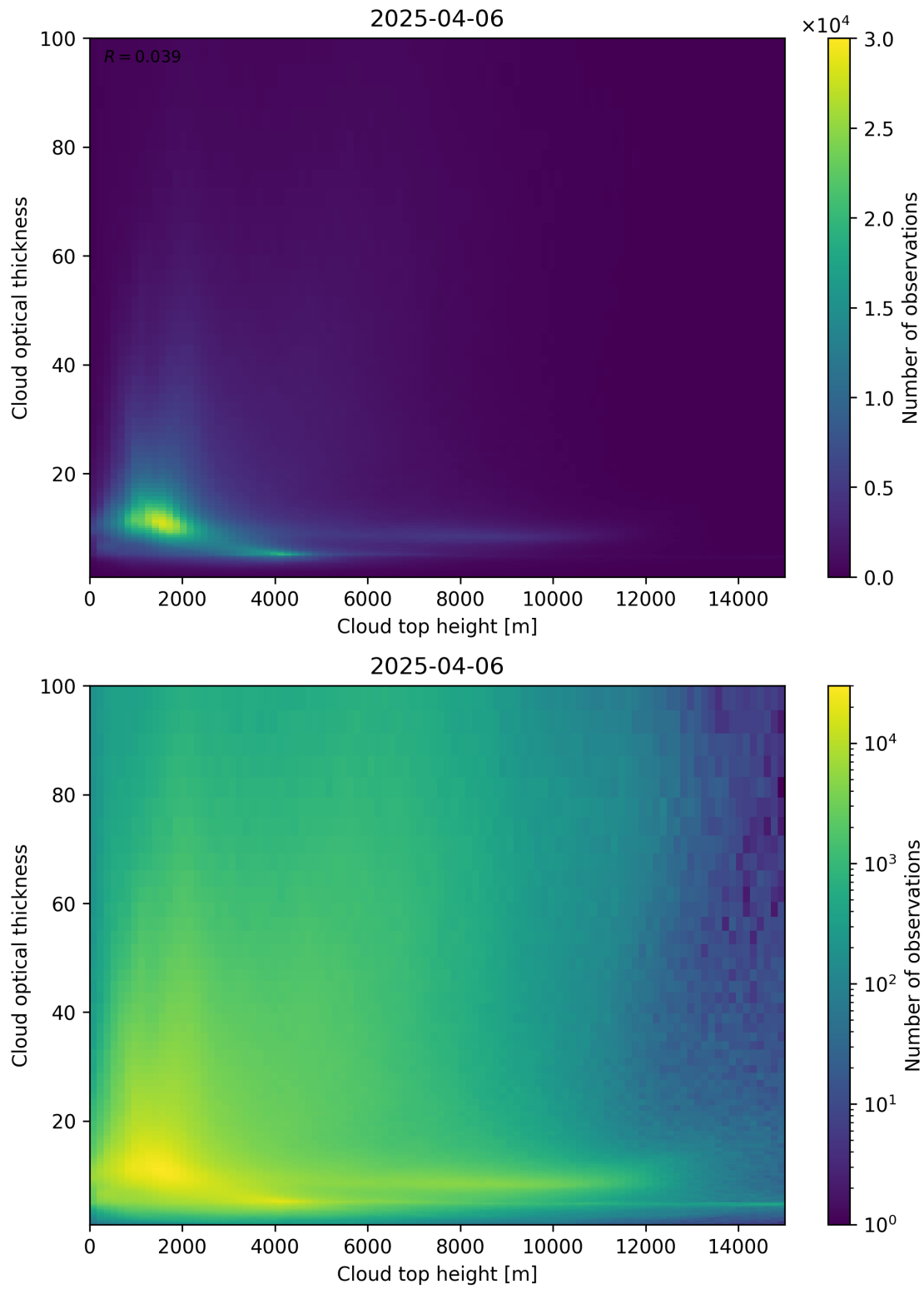


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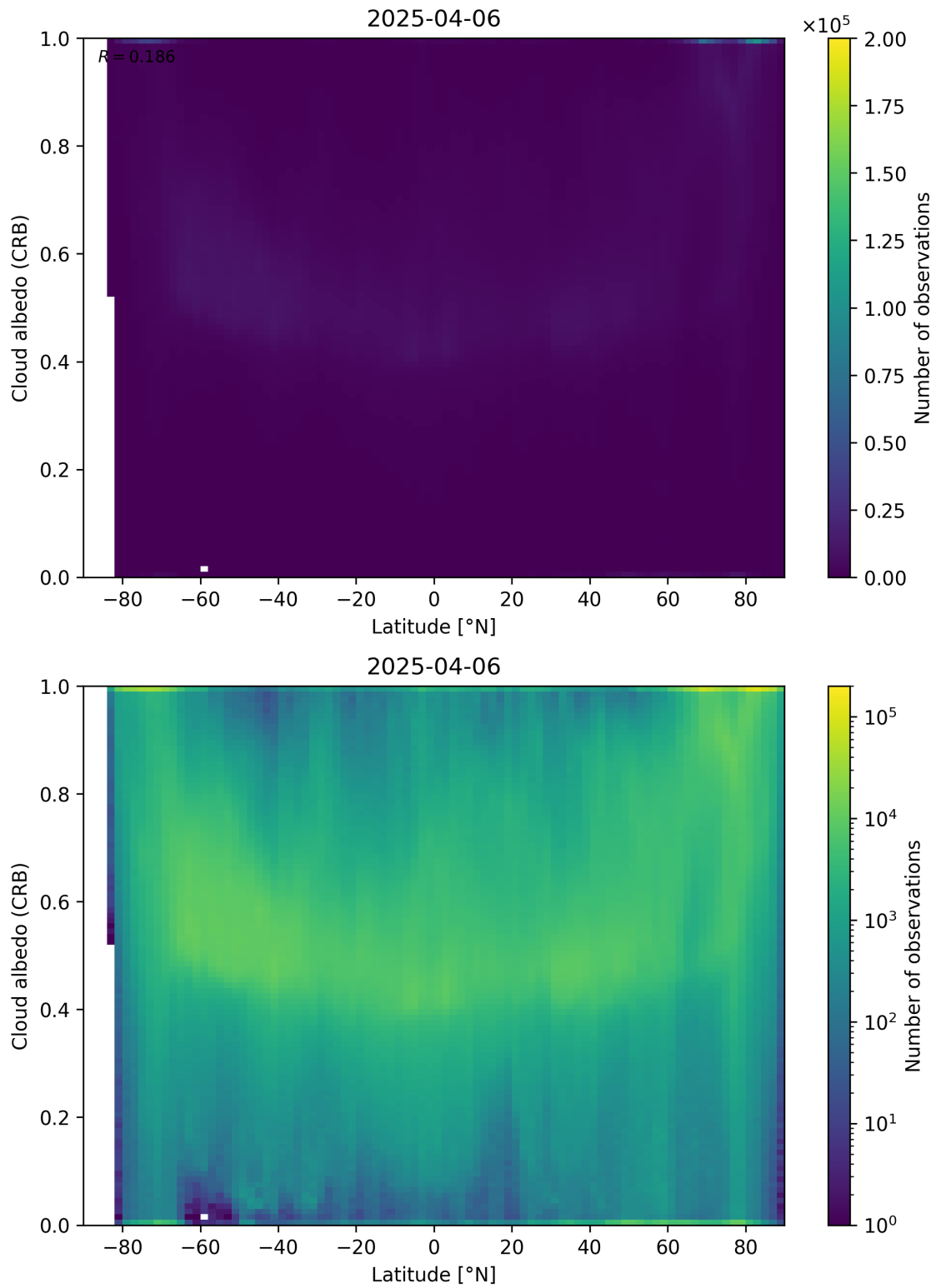


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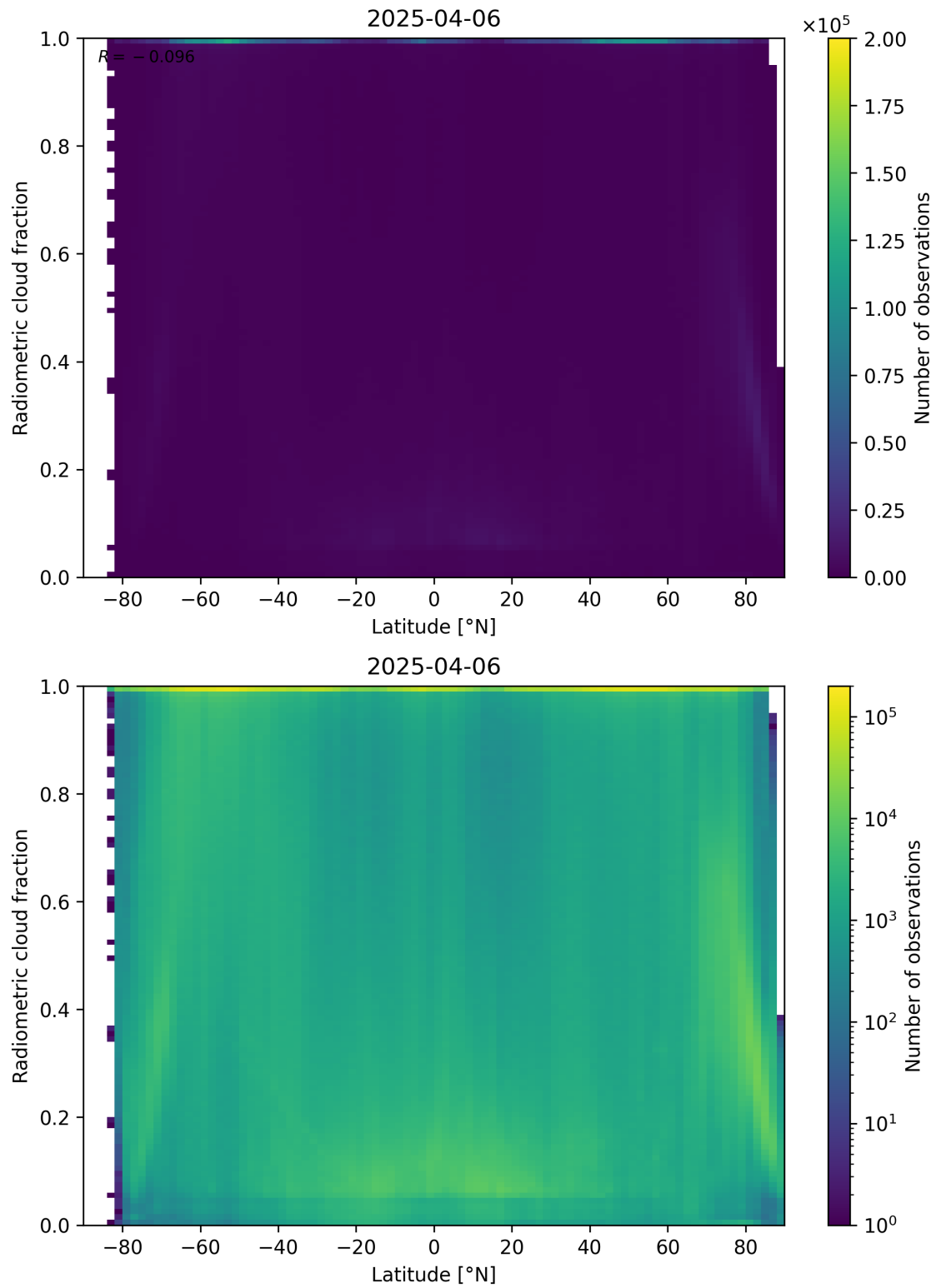


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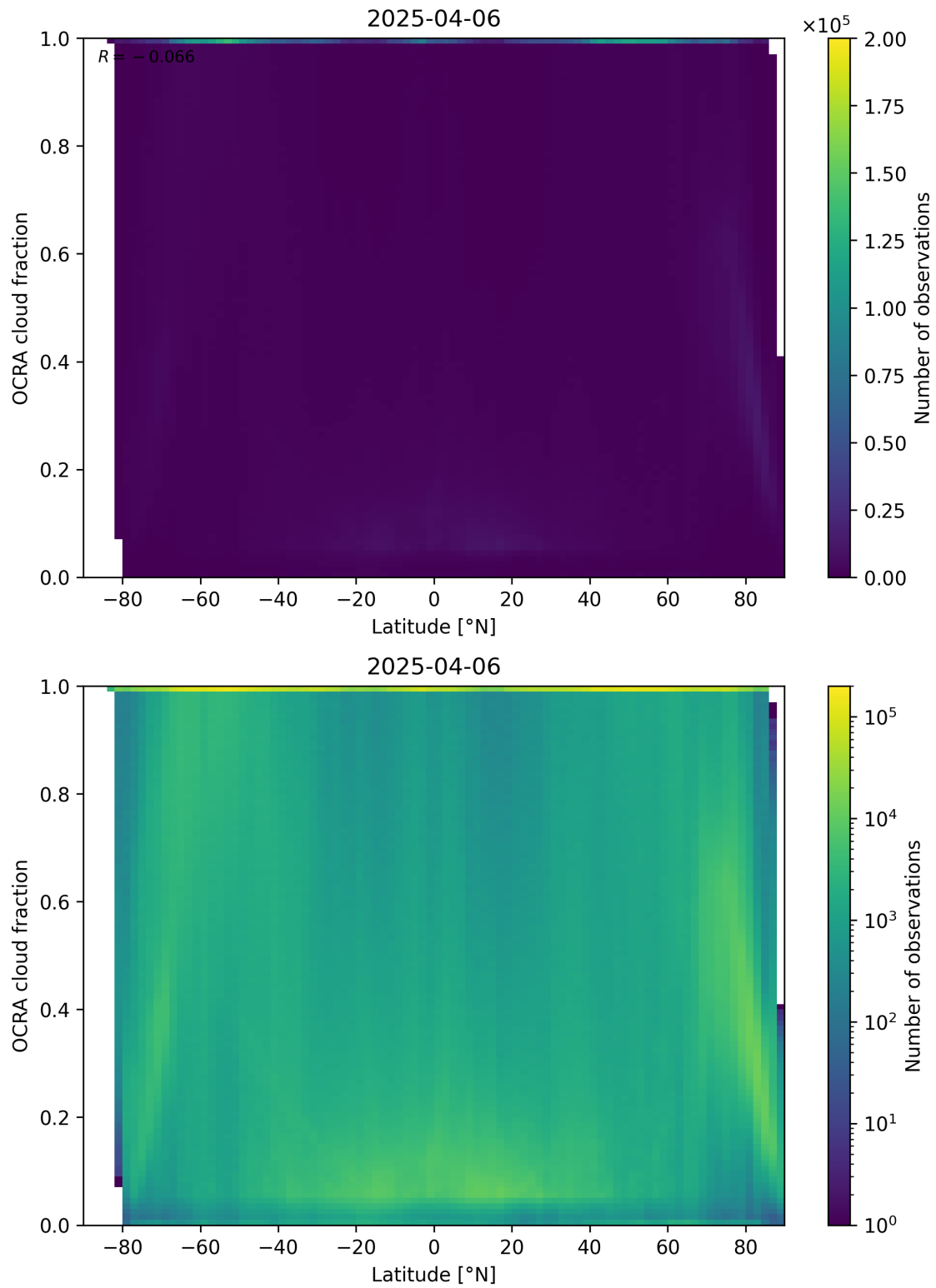


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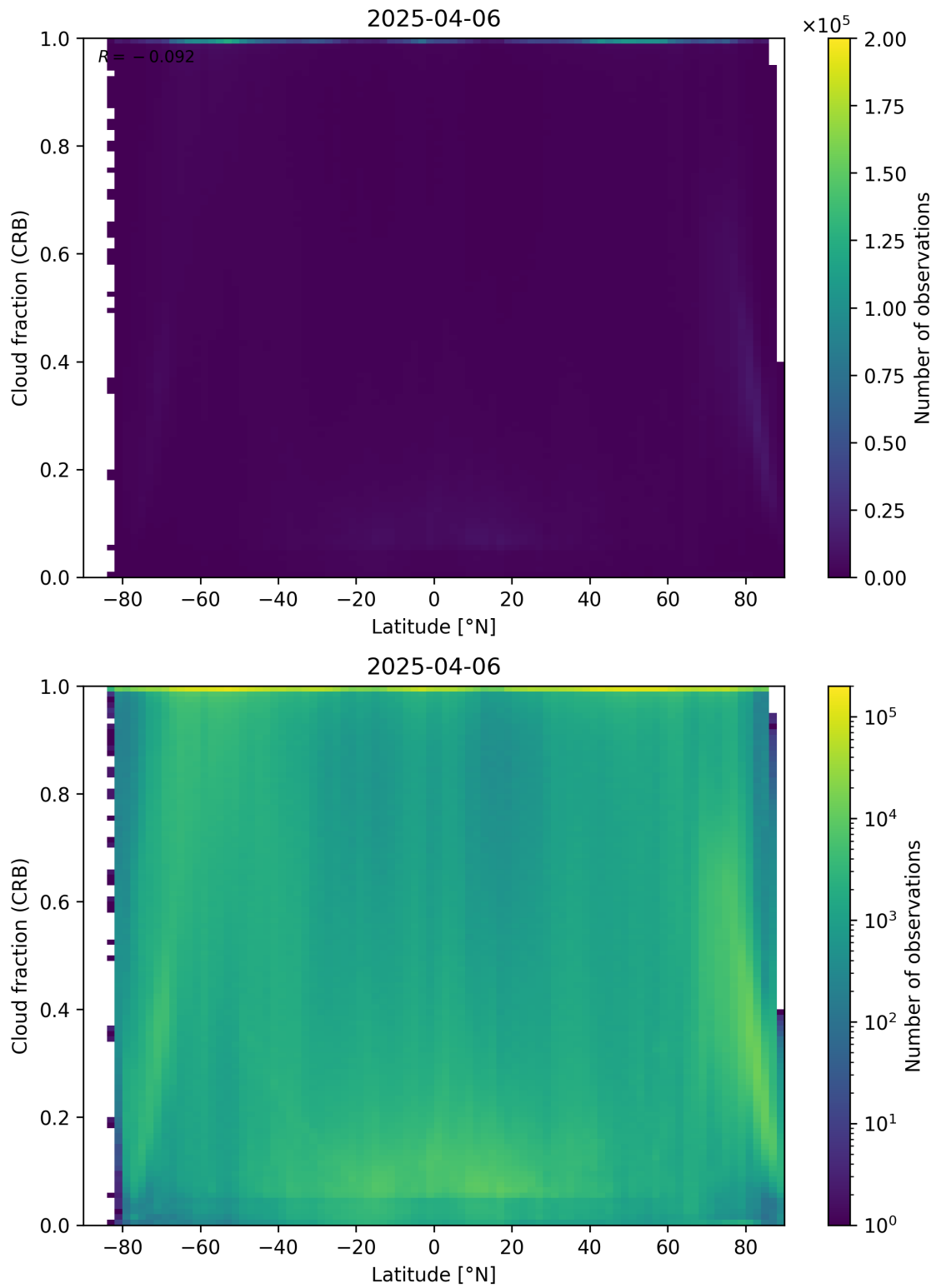


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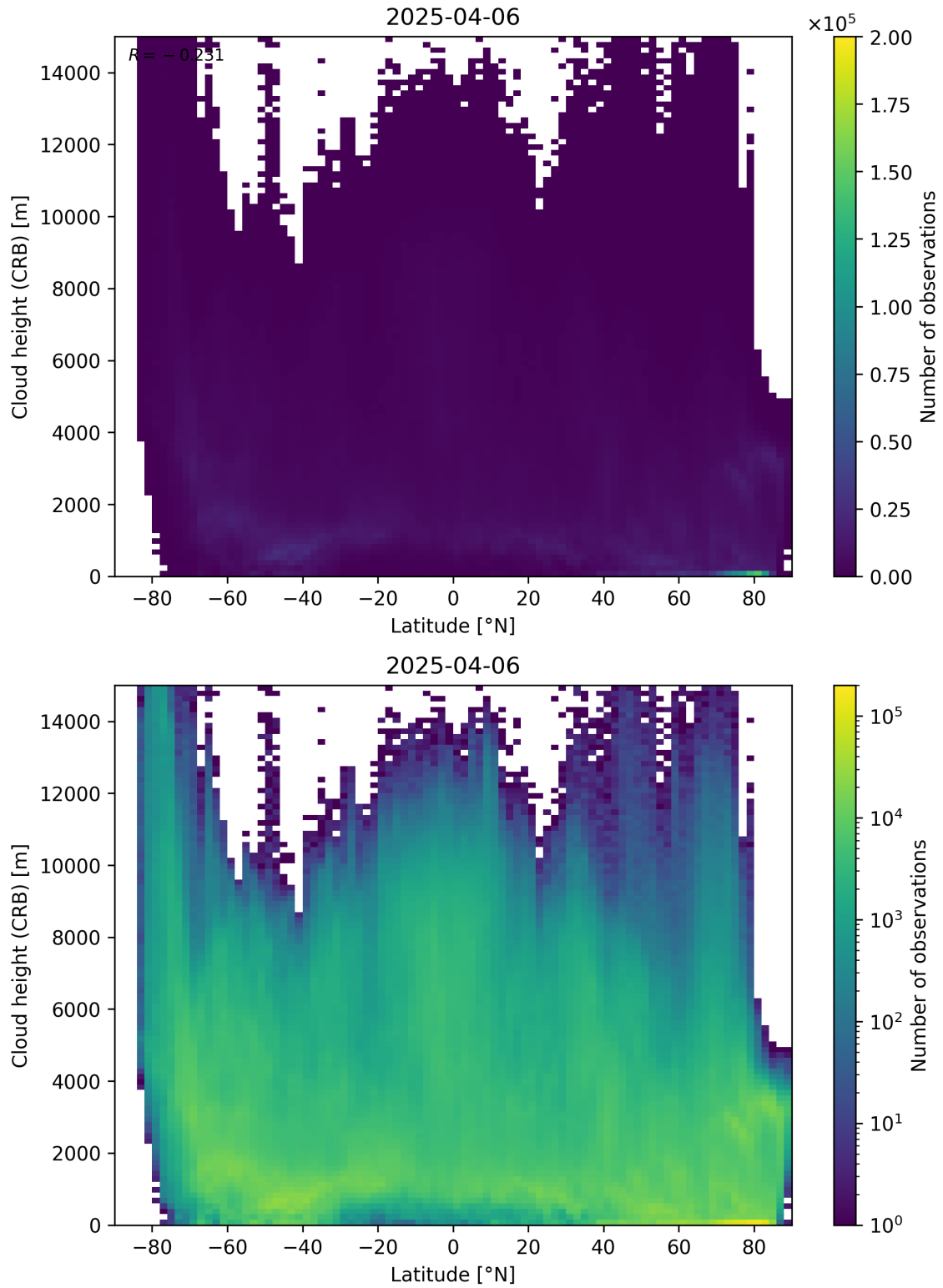


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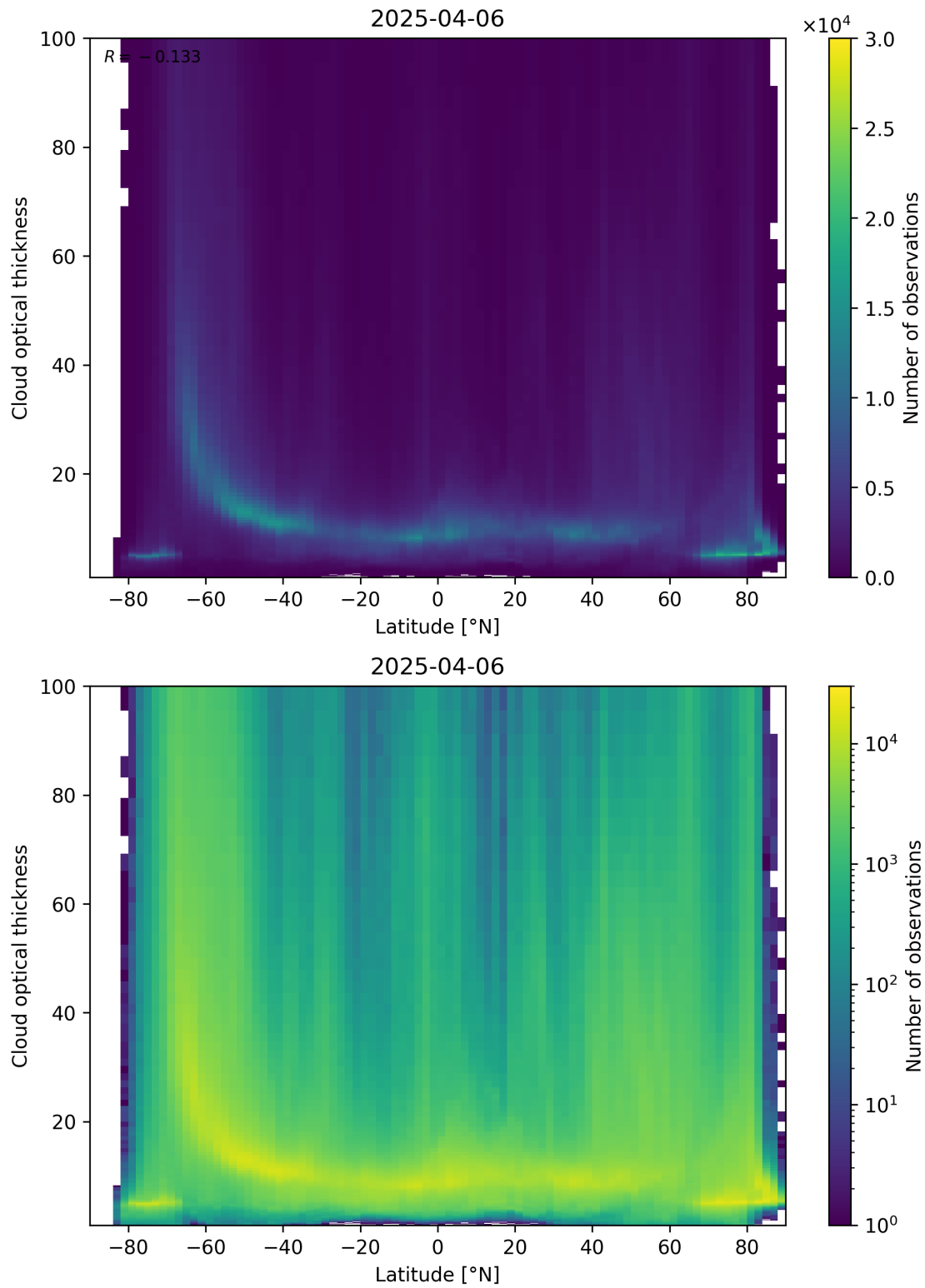


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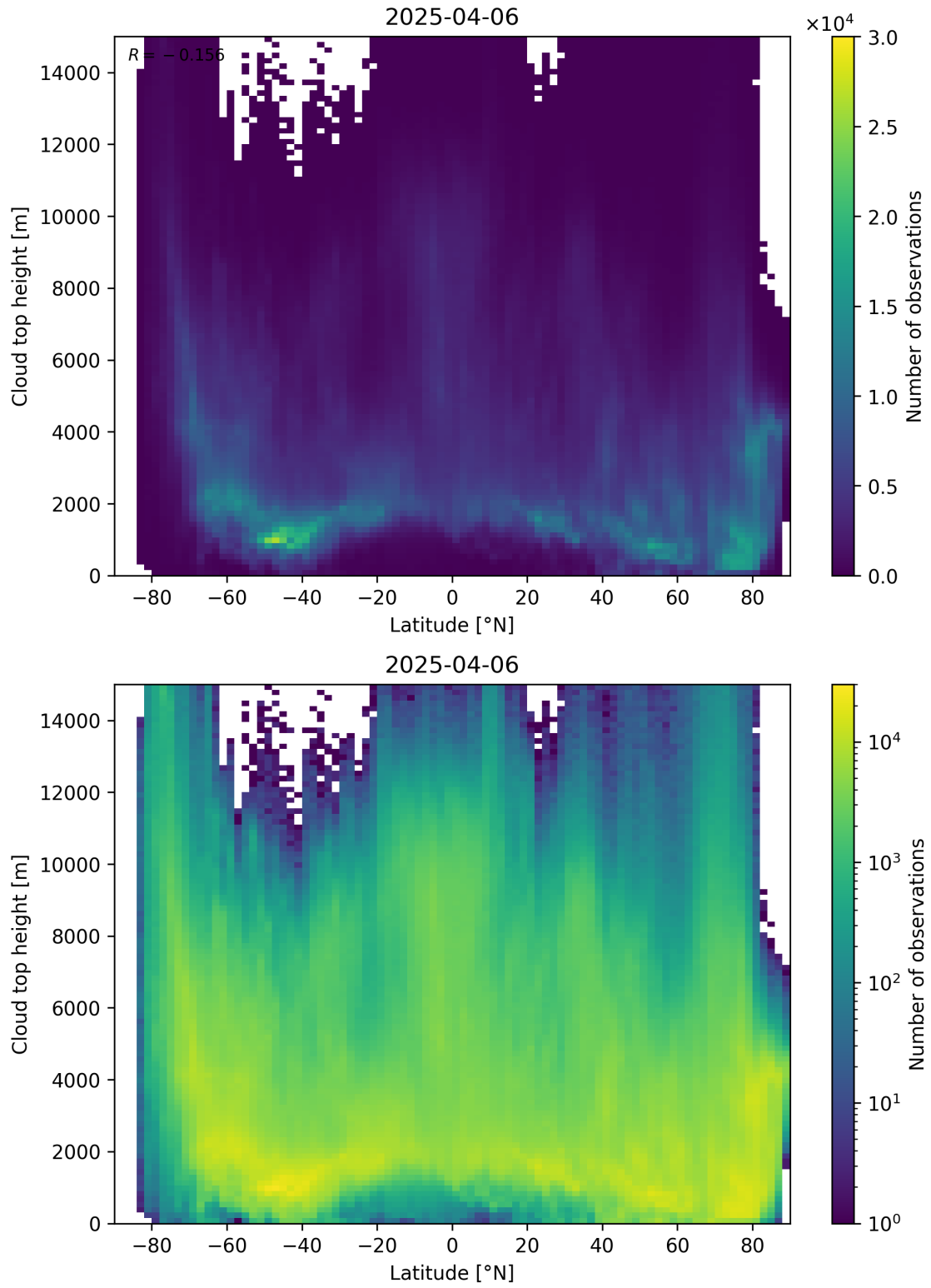


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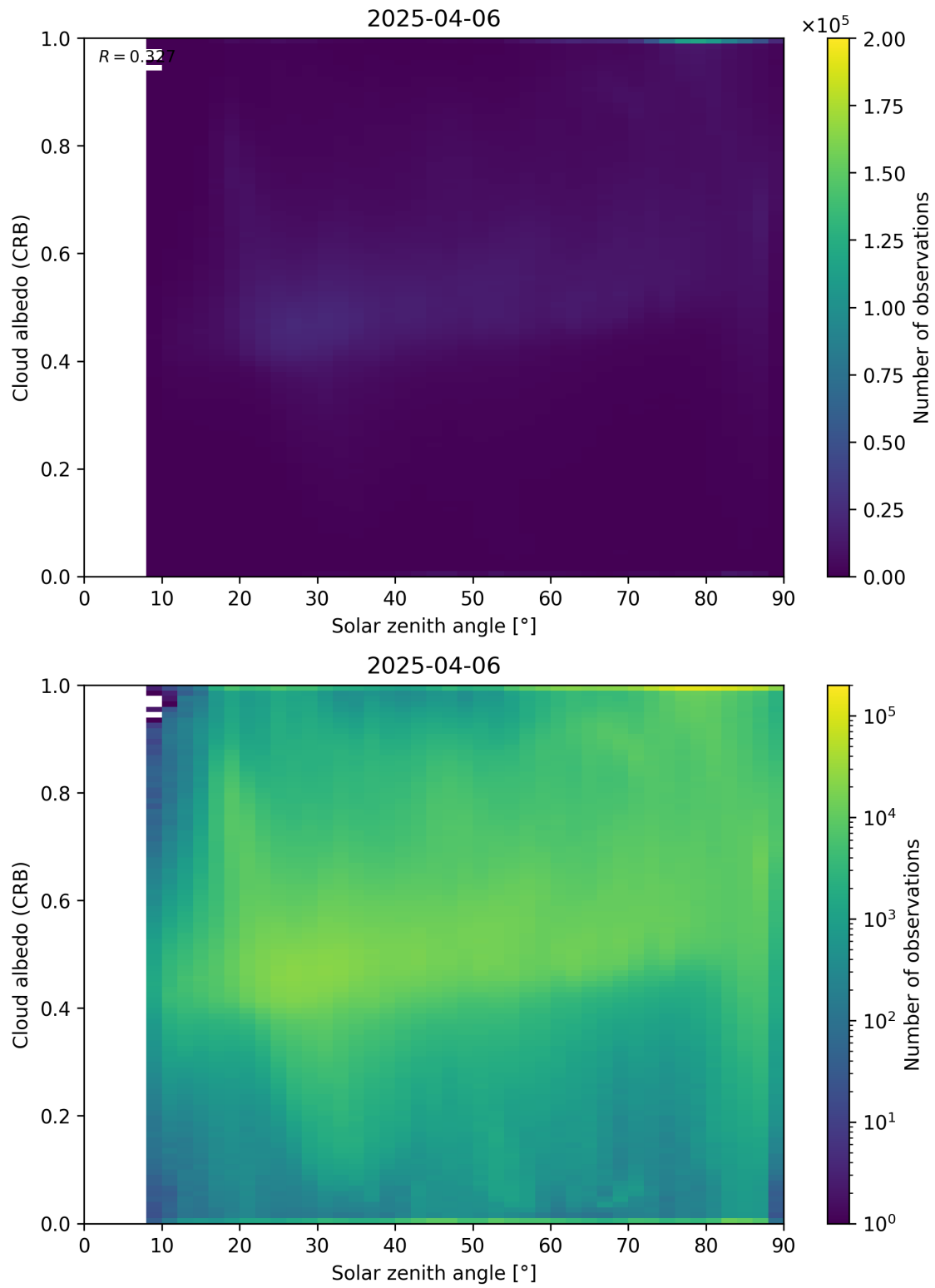


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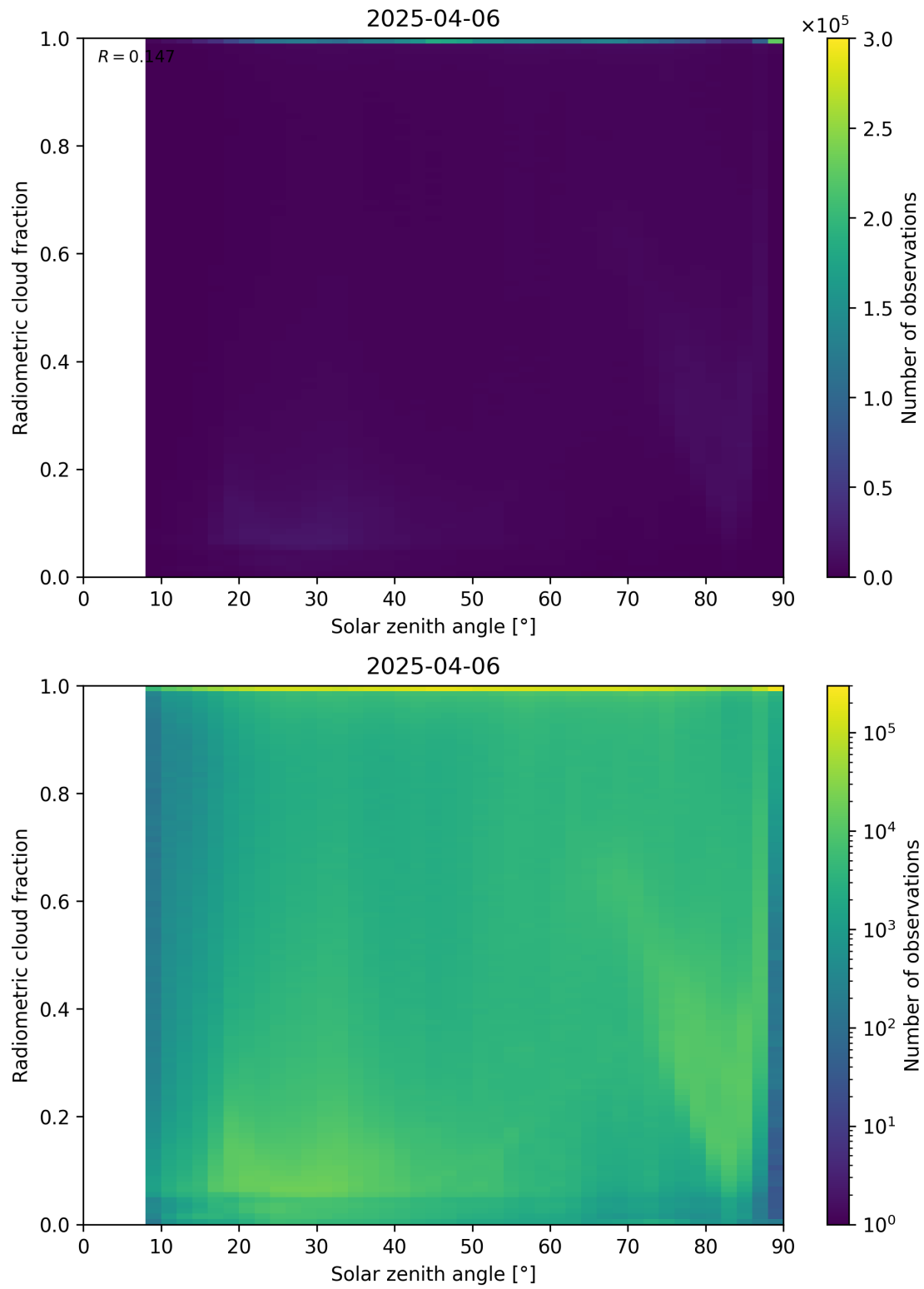


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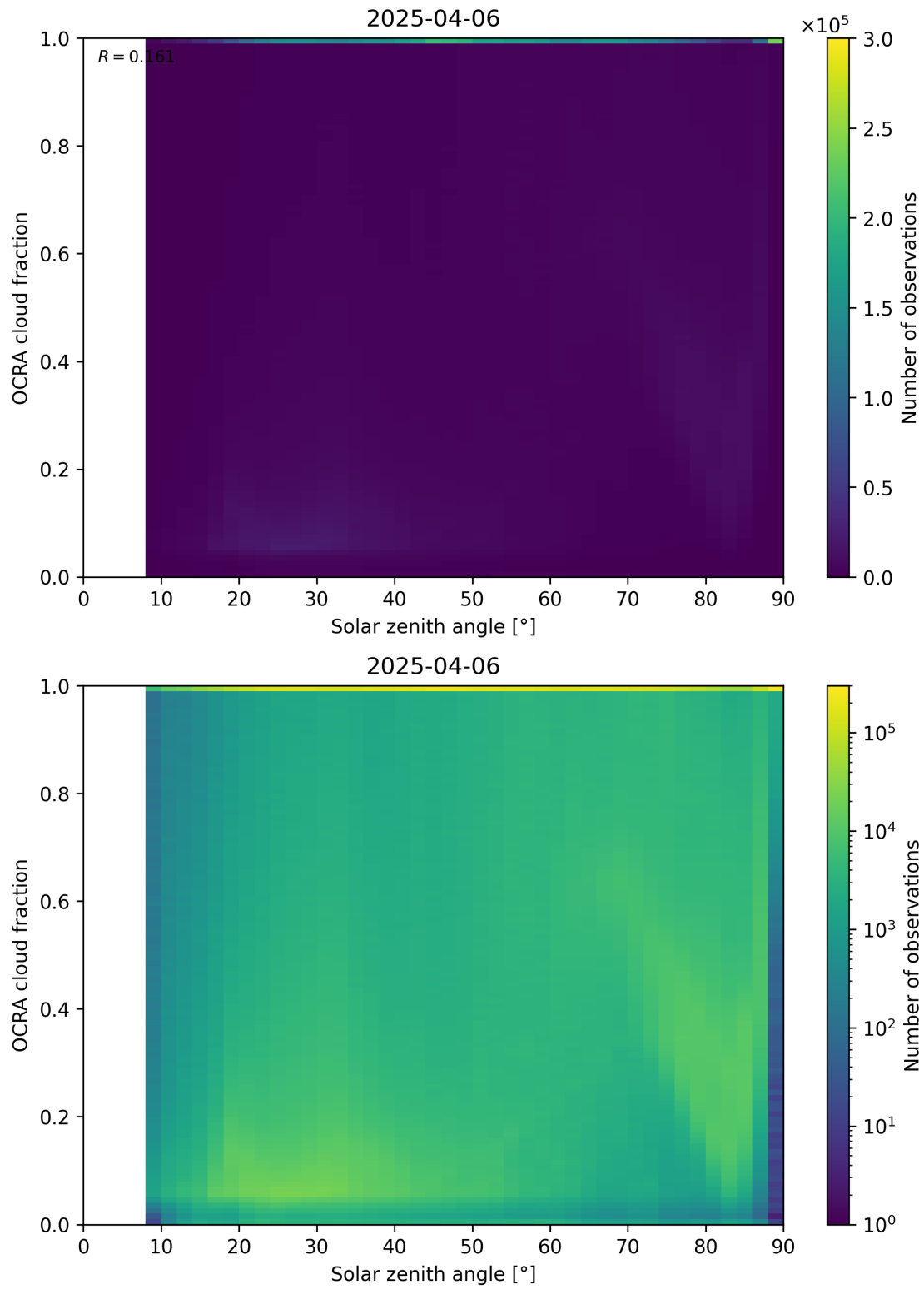


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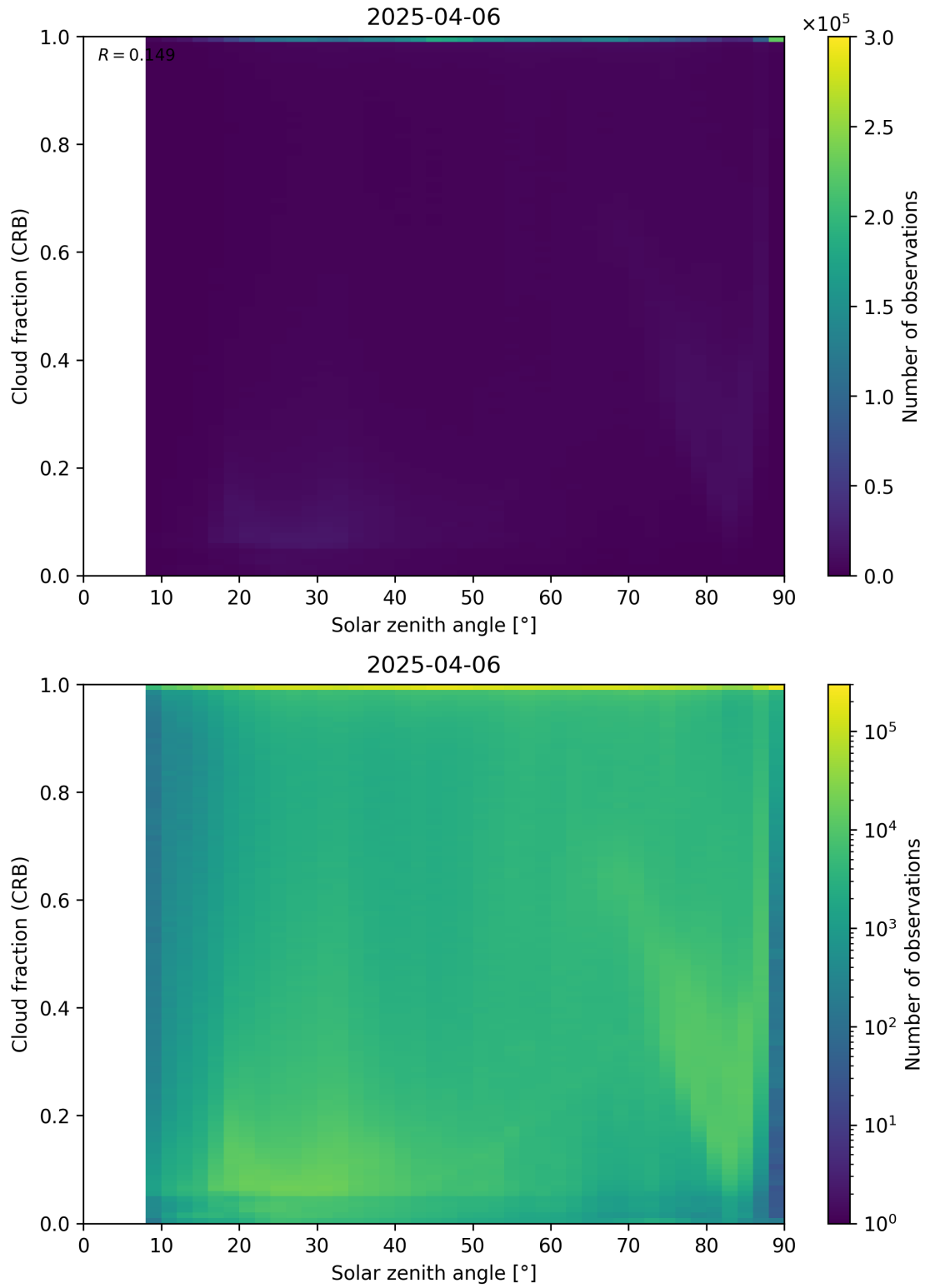


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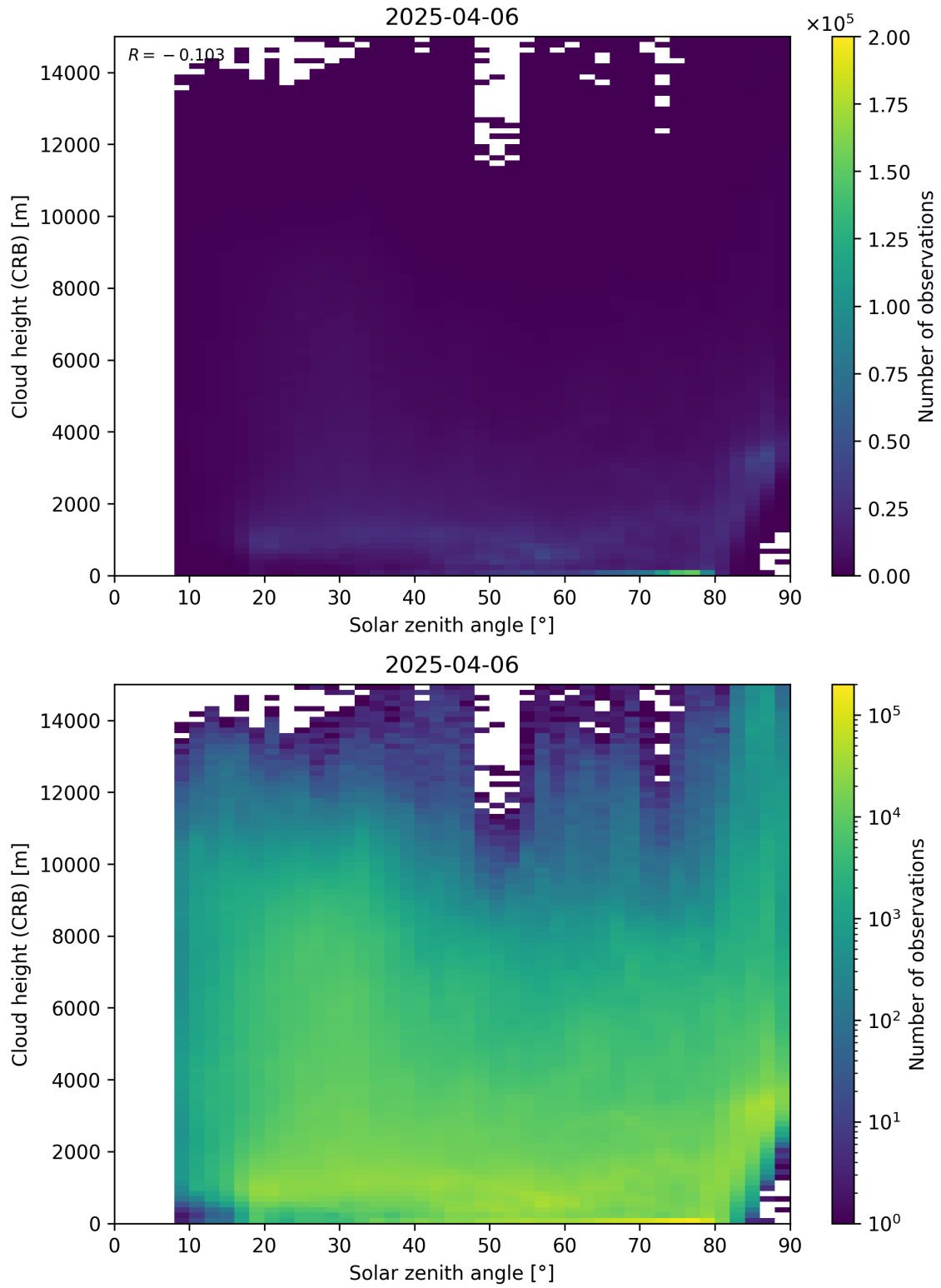


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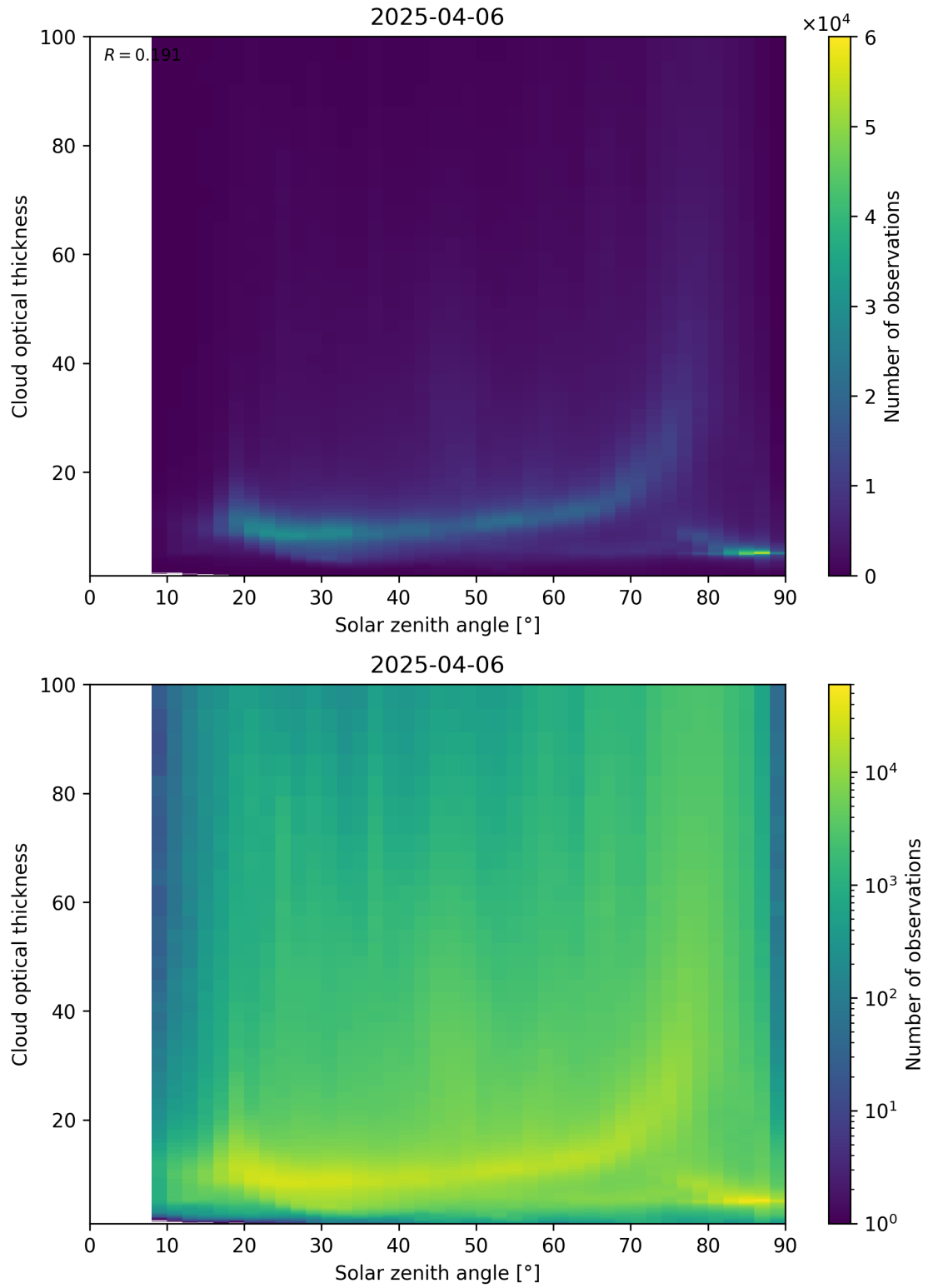


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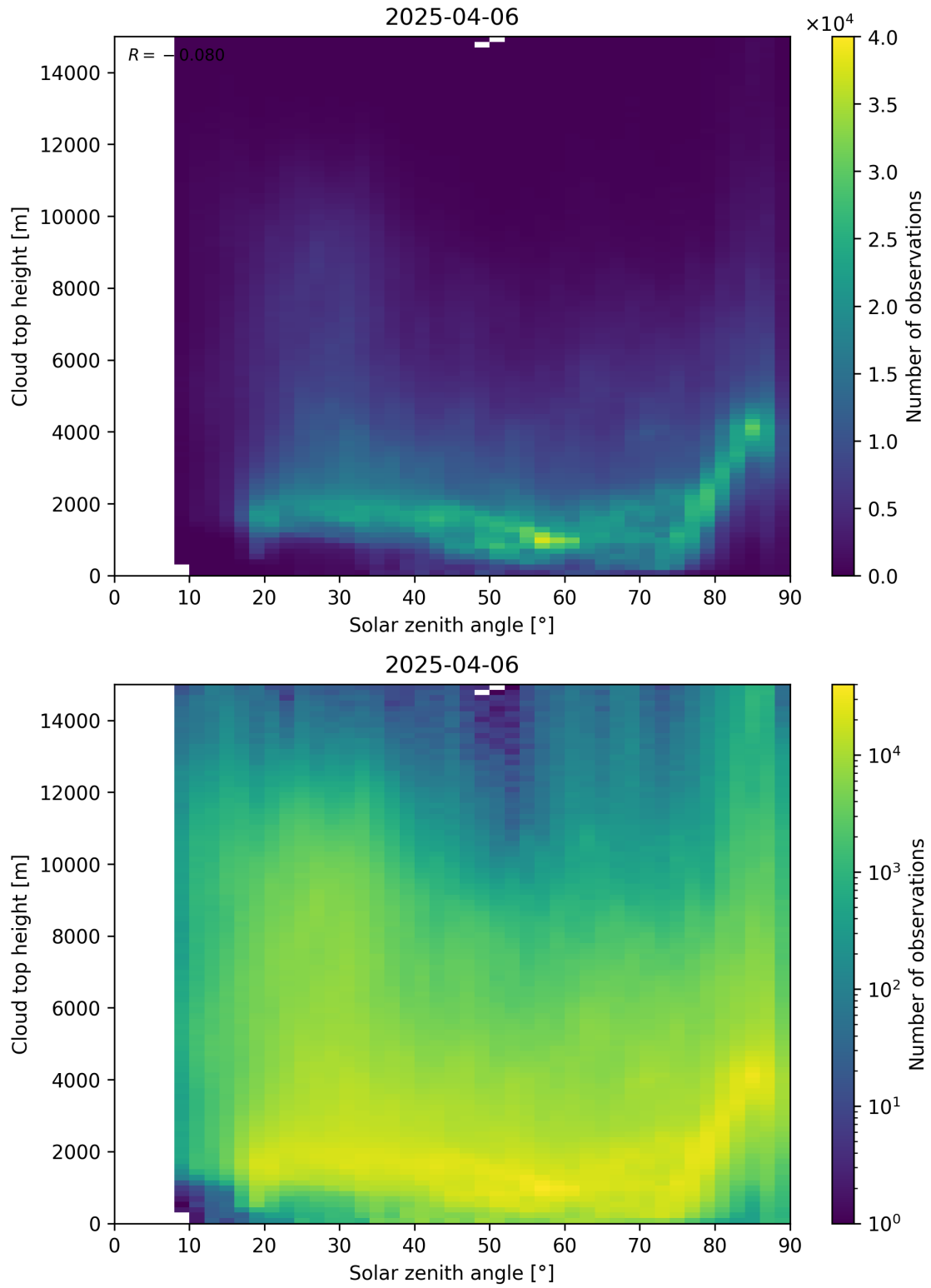


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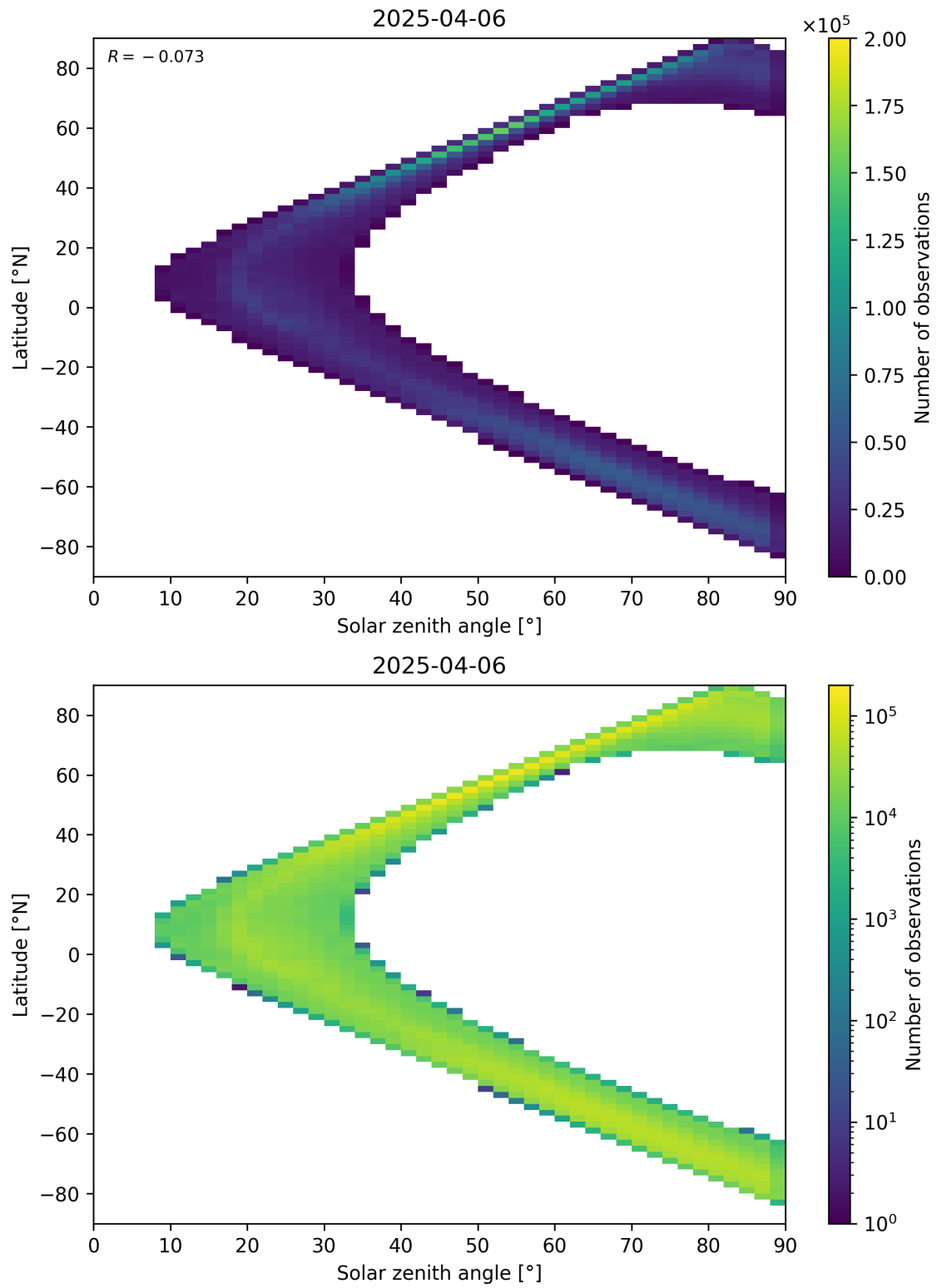


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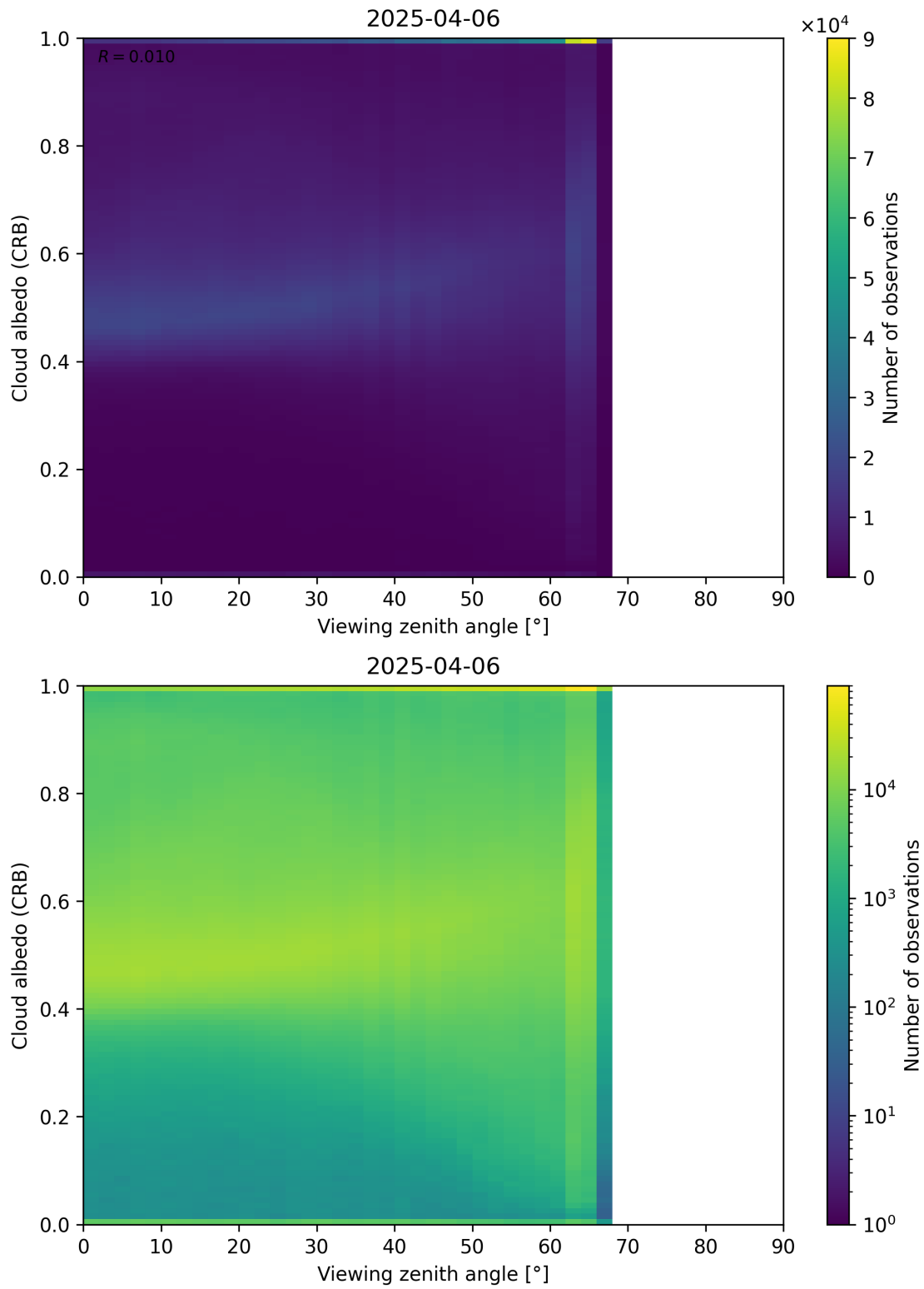


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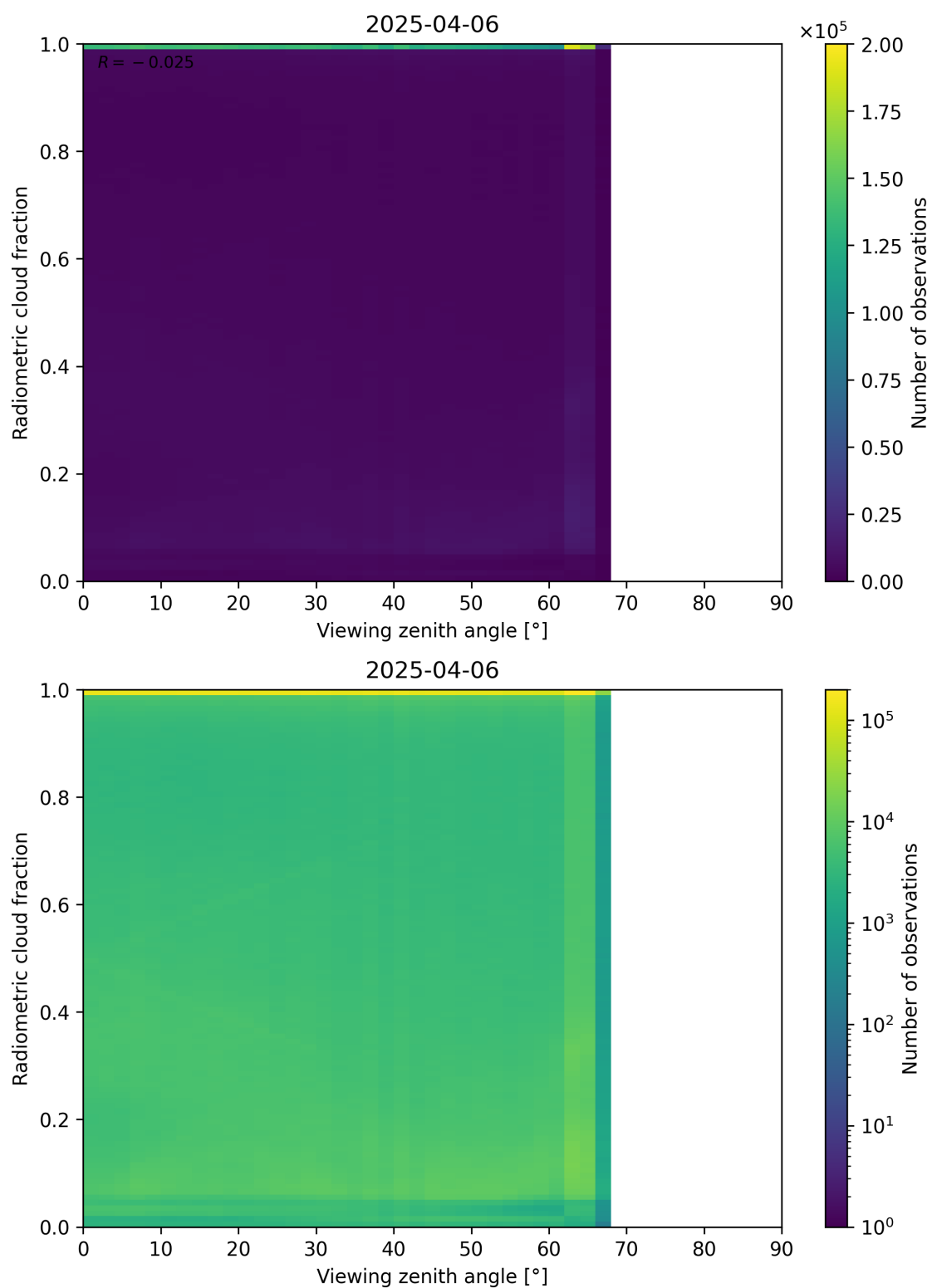


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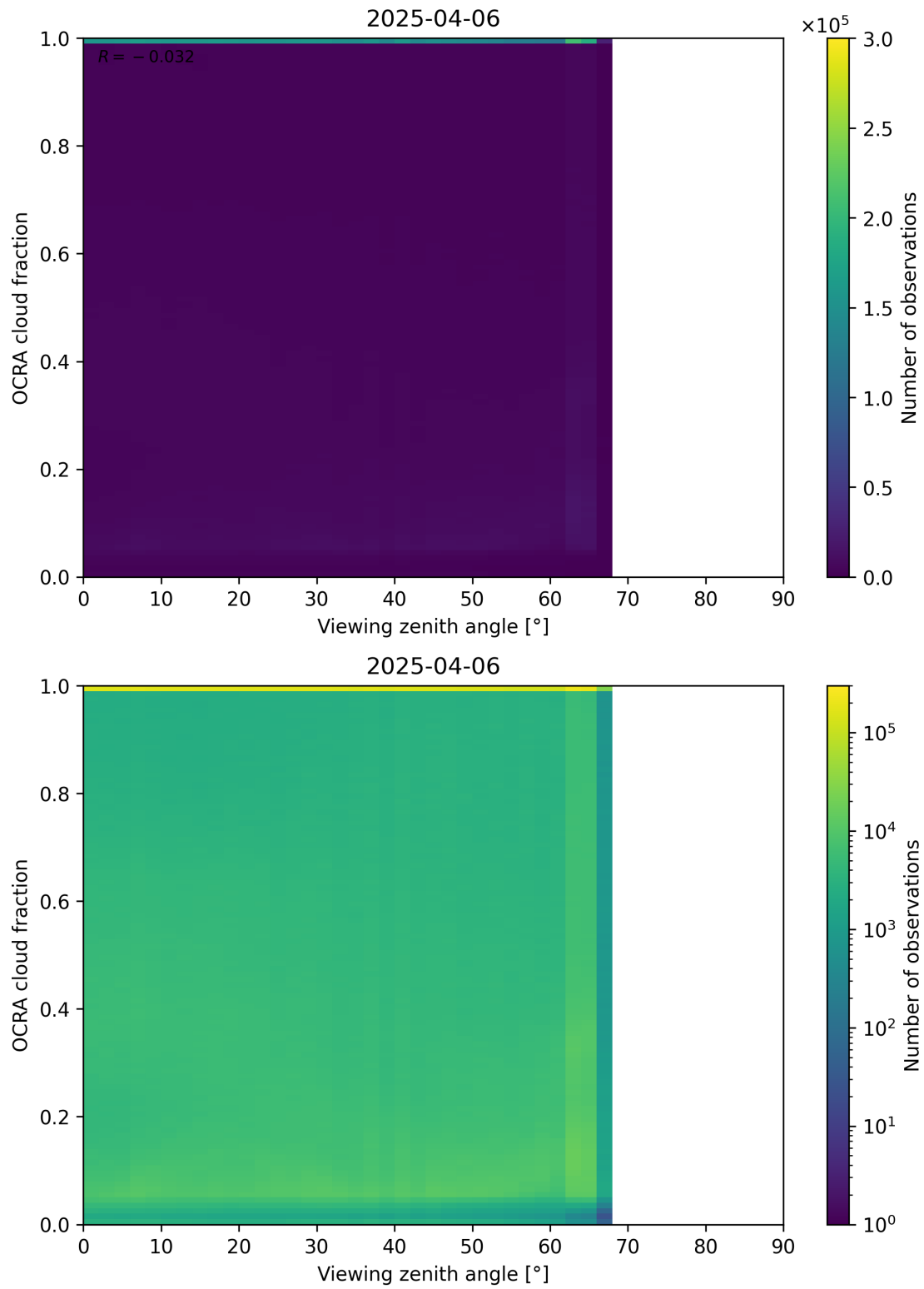


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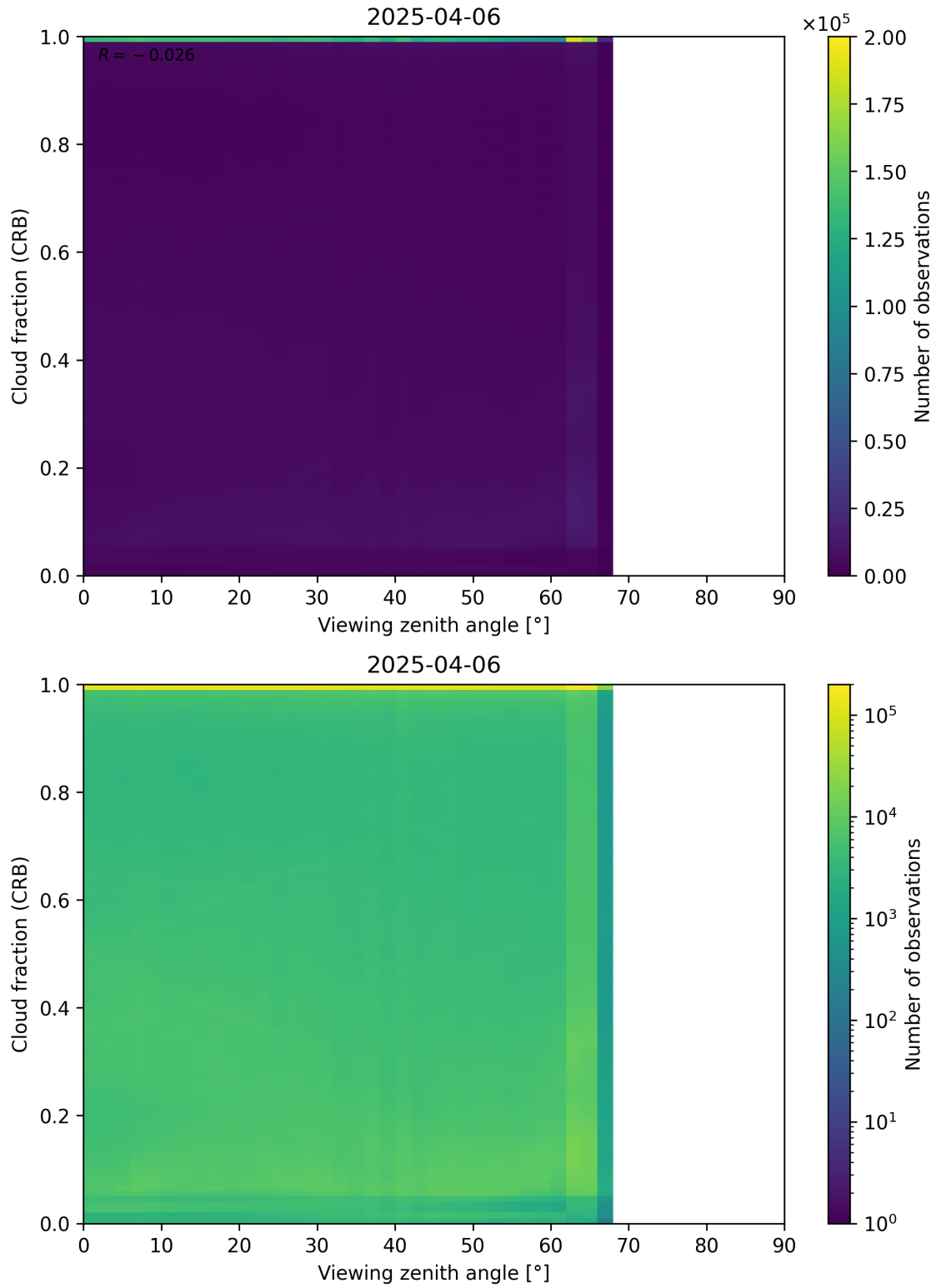


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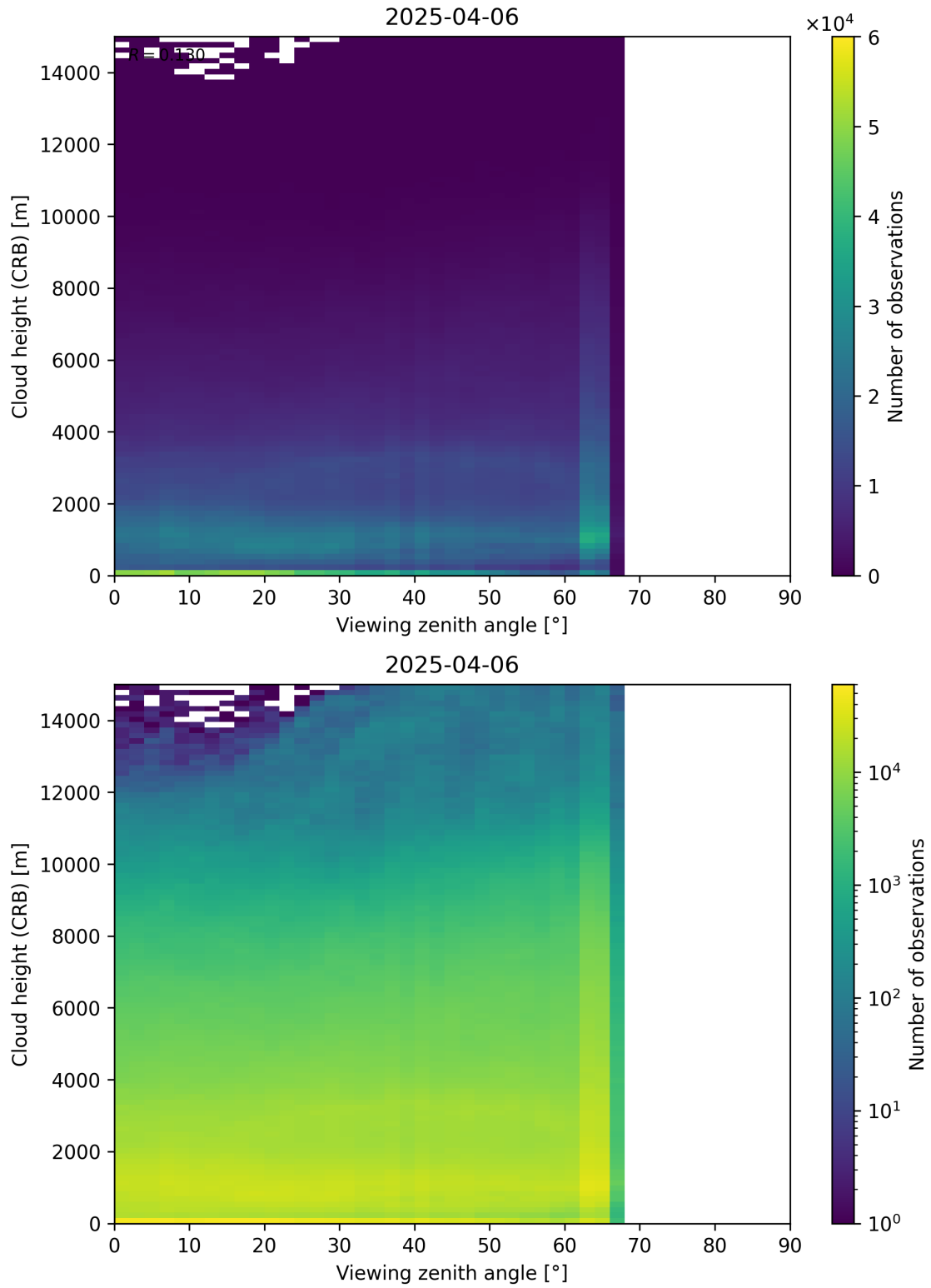


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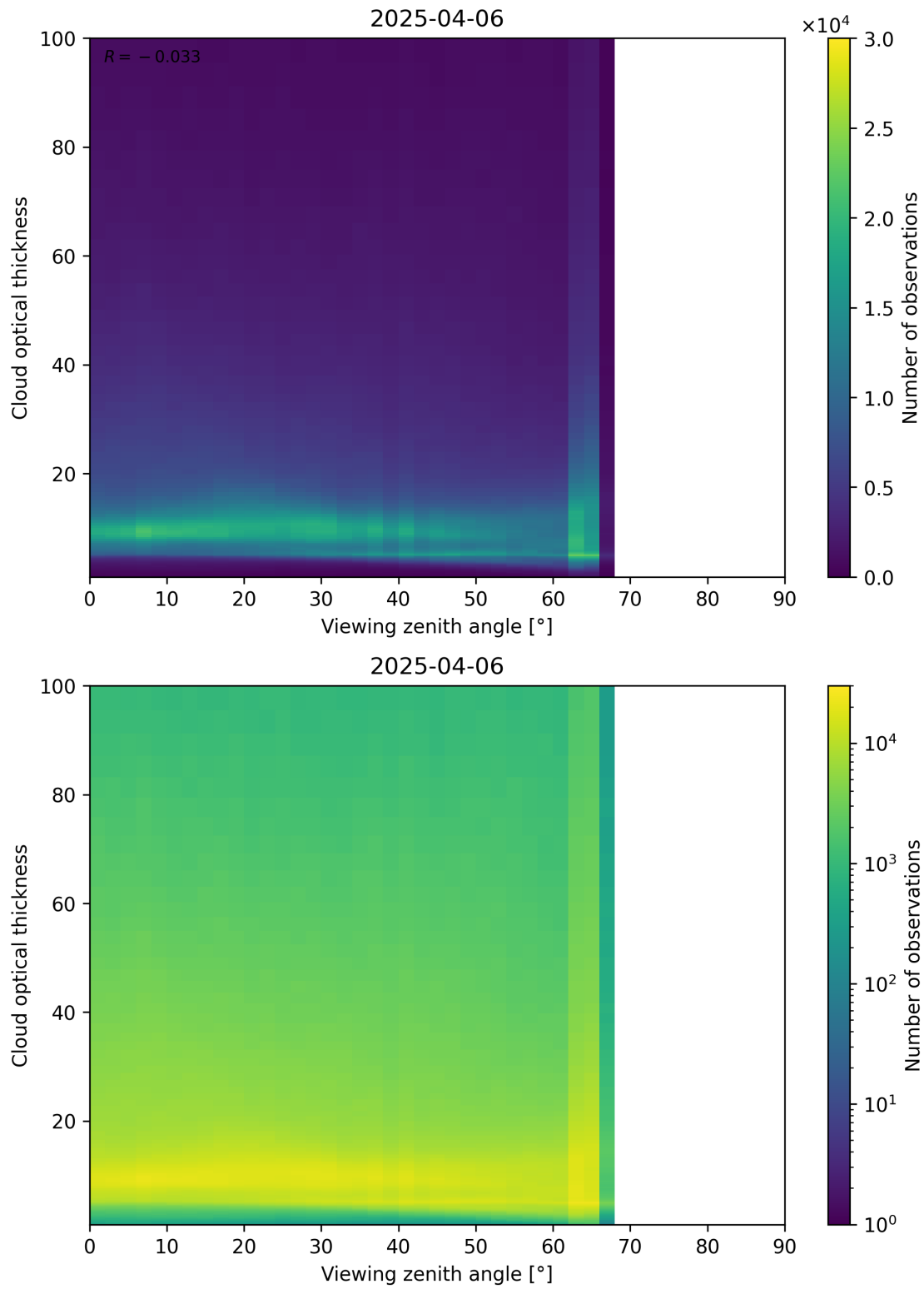


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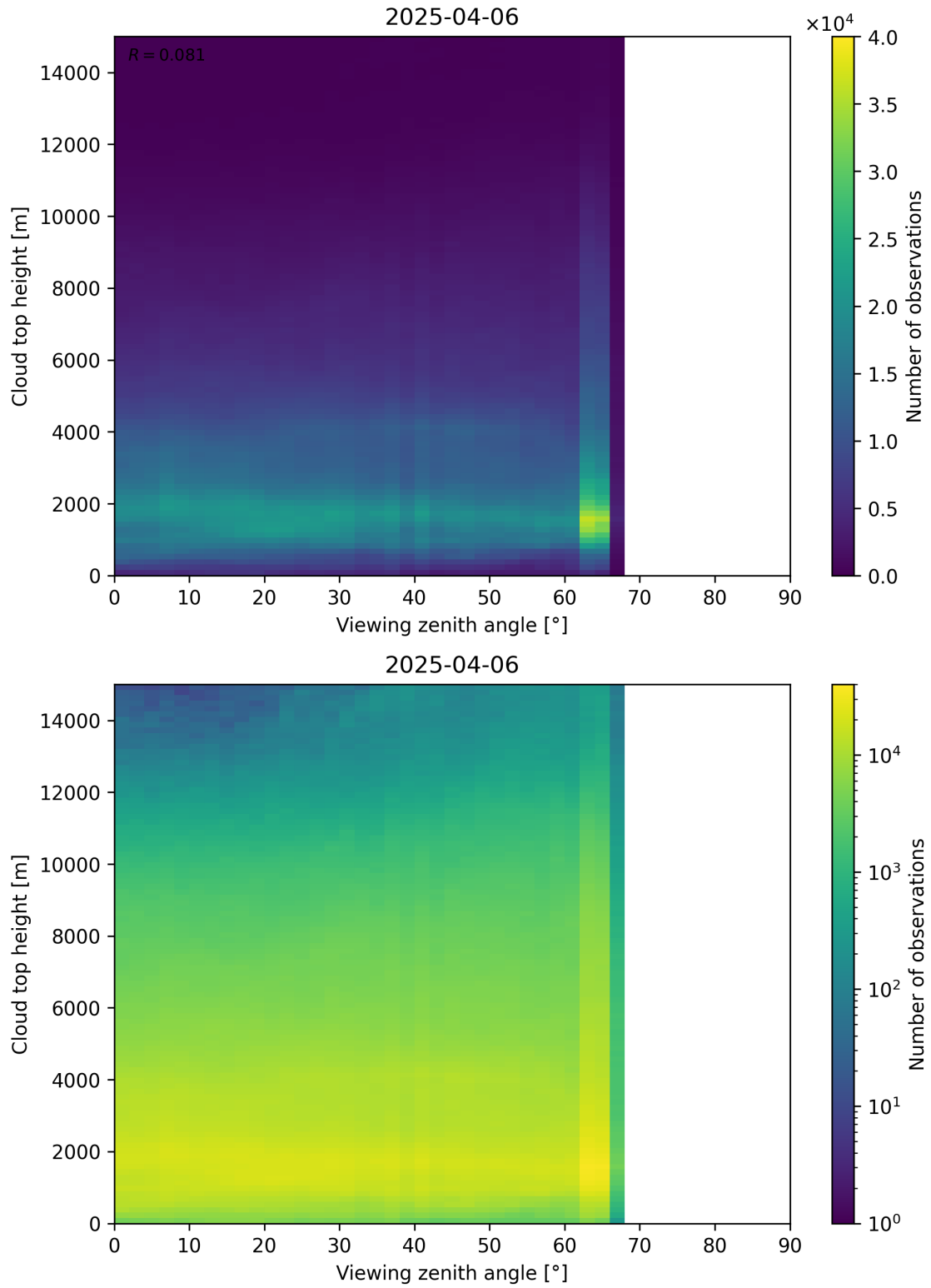


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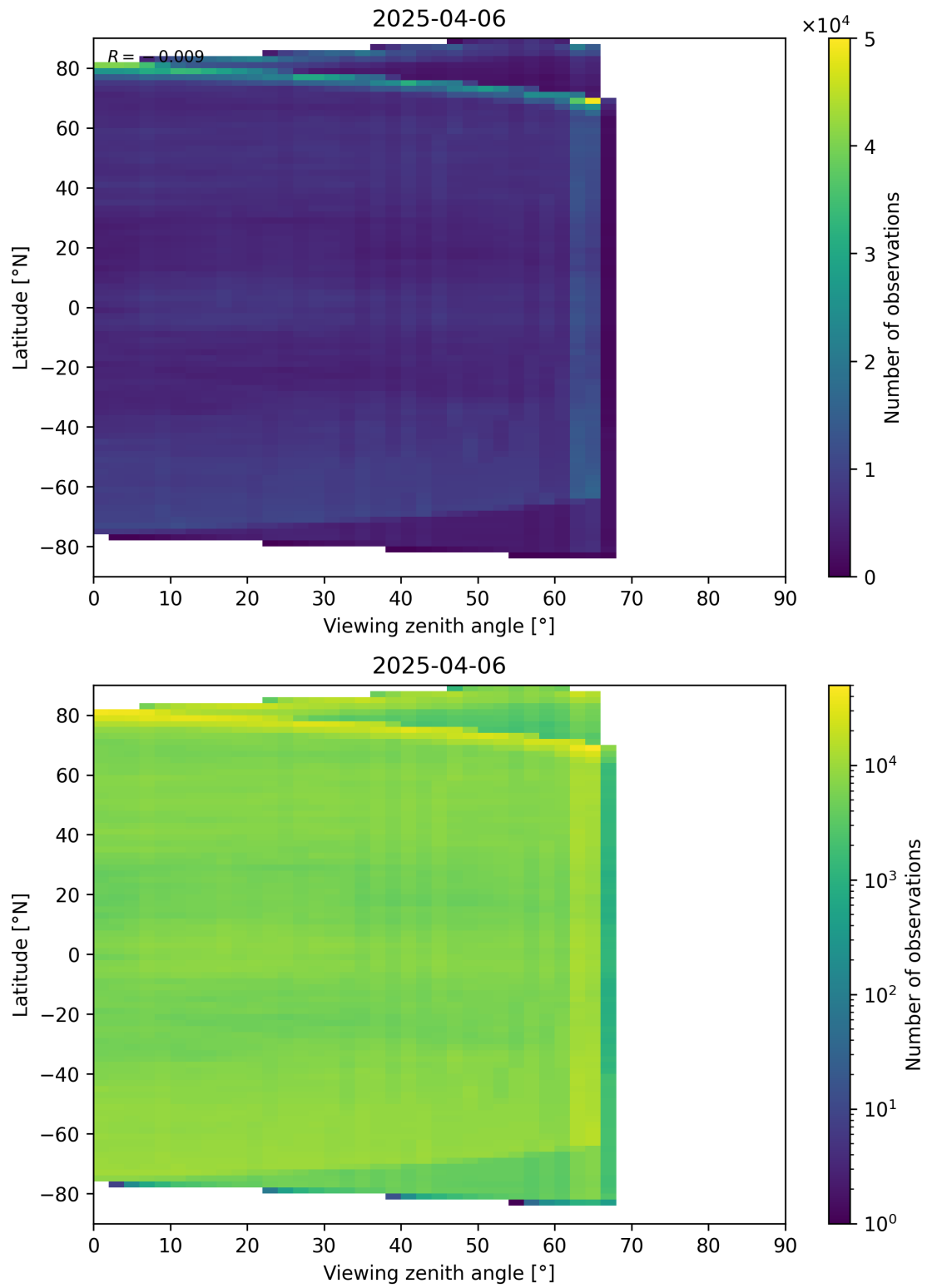


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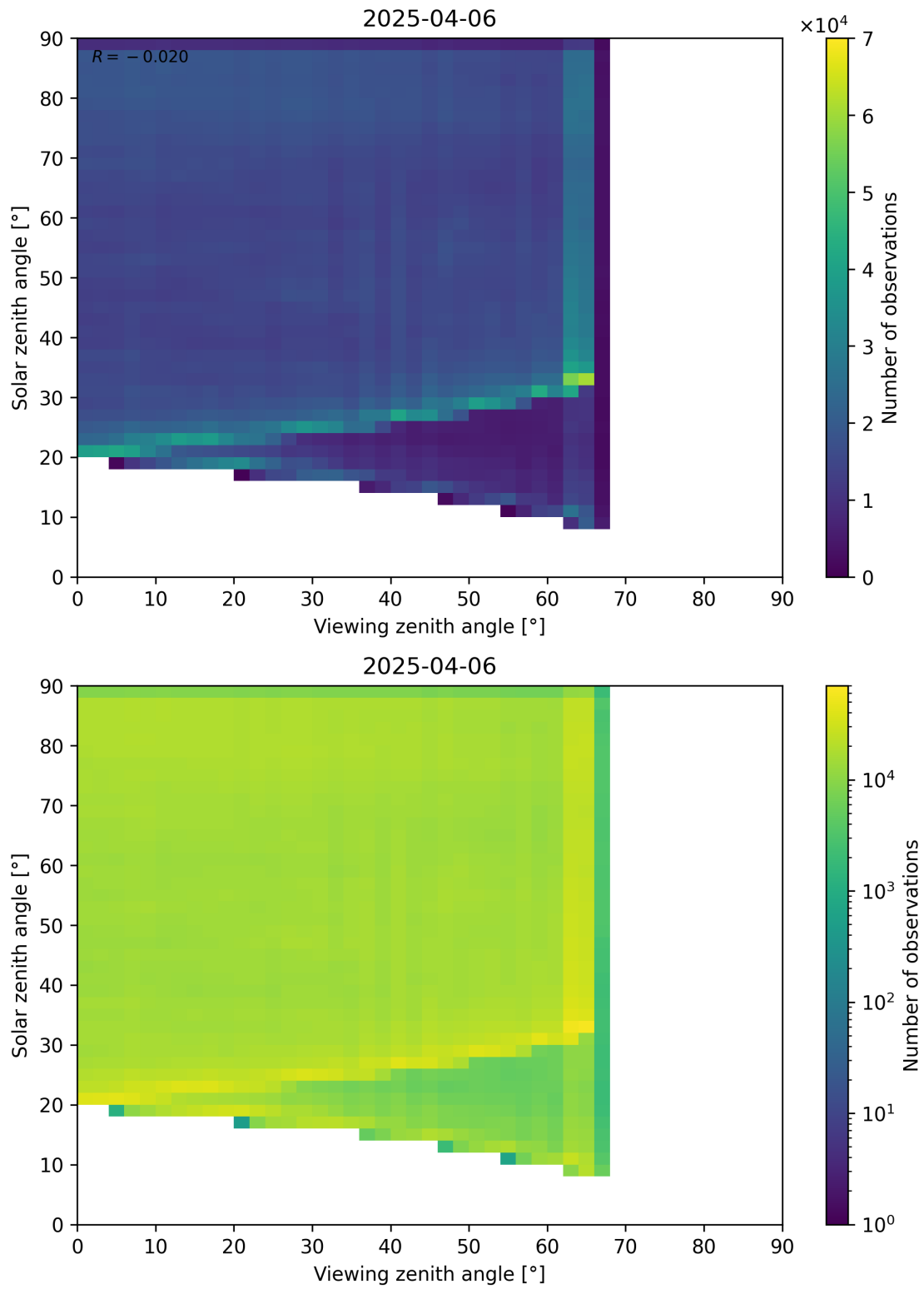


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