

PyCAMA report generated by tropl2-proc

tropl2-proc

2024-03-23 (01:45)

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]	0.571 ± 0.412	22052499	5.000×10^{-3}	0.850	0.800	0.0	1.000
cloud fraction [1]	0.563 ± 0.348	22052499	0.995	0.743	0.523	0.0	1.000
cloud top height [m]	$(0.382 \pm 0.275) \times 10^4$	22052499	1.425×10^3	3.703×10^3	3.108×10^3	0.0	2.000×10^4
cloud optical thickness [1]	16.9 ± 28.8	22052499	9.34	9.84	9.48	1.000	250
cloud fraction crb [1]	0.563 ± 0.348	22052499	0.995	0.743	0.522	0.0	1.000
cloud height crb [m]	$(0.297 \pm 0.236) \times 10^4$	22052499	75.0	3.229×10^3	2.383×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.597 ± 0.207	22052499	0.995	0.262	0.572	0.0	1.000
surface albedo fitted [1]	0.243 ± 0.325	22052499	1.500×10^{-2}	0.413	3.664×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.230 ± 0.311	22052499	1.500×10^{-2}	0.420	2.761×10^{-2}	0.0	1.000
fitted root mean square [1]	$(6.904 \pm 13.724) \times 10^{-4}$	22052499	5.000×10^{-5}	7.843×10^{-4}	4.483×10^{-4}	1.089×10^{-6}	0.930
fitted root mean square crb [1]	$(6.116 \pm 14.165) \times 10^{-4}$	22052499	5.000×10^{-5}	7.121×10^{-4}	3.468×10^{-4}	1.015×10^{-6}	1.21
wavelength shift [nm]	$(7.919 \pm 6.825) \times 10^{-3}$	22052499	7.500×10^{-3}	9.239×10^{-3}	7.600×10^{-3}	-9.944×10^{-2}	0.503
cloud fraction apriori [1]	0.568 ± 0.351	22052499	0.995	0.760	0.532	0.0	1.000
reflectance blue ocra [1]	0.571 ± 0.228	22052499	0.265	0.392	0.557	0.113	2.02
reflectance green ocra [1]	0.523 ± 0.255	22052499	0.175	0.461	0.517	7.068×10^{-2}	1.94
reflectance continuum aband [1]	0.478 ± 0.279	22052499	4.500×10^{-2}	0.474	0.490	1.186×10^{-2}	3.96

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	0.1000	0.950	1.000	1.000	1.000	1.000
cloud fraction [1]	2.015×10^{-2}	6.807×10^{-2}	0.106	0.155	0.240	0.983	1.000	1.000	1.000	1.000
cloud top height [m]	182	627	985	1.283×10^3	1.678×10^3	5.381×10^3	6.737×10^3	7.859×10^3	9.238×10^3	1.170×10^4
cloud optical thickness [1]	1.000	2.73	3.94	4.82	5.90	15.7	22.9	32.4	51.0	193
cloud fraction crb [1]	1.991×10^{-2}	6.721×10^{-2}	0.105	0.155	0.240	0.983	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	178	492	755	1.087×10^3	4.316×10^3	5.489×10^3	6.528×10^3	7.752×10^3	9.531×10^3
cloud albedo crb [1]	2.223×10^{-2}	0.266	0.375	0.427	0.471	0.733	0.824	0.899	0.987	1.000
surface albedo fitted [1]	0.0	7.843×10^{-3}	1.145×10^{-2}	1.437×10^{-2}	1.864×10^{-2}	0.432	0.737	0.829	0.906	0.994
surface albedo fitted crb [1]	0.0	5.719×10^{-3}	8.263×10^{-3}	1.050×10^{-2}	1.380×10^{-2}	0.434	0.703	0.778	0.856	0.937
fitted root mean square [1]	1.794×10^{-5}	3.490×10^{-5}	5.657×10^{-5}	8.921×10^{-5}	1.566×10^{-4}	9.409×10^{-4}	1.263×10^{-3}	1.605×10^{-3}	2.131×10^{-3}	3.384×10^{-3}
fitted root mean square crb [1]	1.194×10^{-5}	2.746×10^{-5}	4.578×10^{-5}	7.017×10^{-5}	1.198×10^{-4}	8.319×10^{-4}	1.182×10^{-3}	1.543×10^{-3}	2.072×10^{-3}	3.209×10^{-3}
wavelength shift [nm]	-8.685×10^{-3}	-1.281×10^{-3}	2.561×10^{-4}	1.365×10^{-3}	3.081×10^{-3}	1.232×10^{-2}	1.456×10^{-2}	1.652×10^{-2}	1.918×10^{-2}	2.520×10^{-2}
cloud fraction apriori [1]	2.956×10^{-2}	6.708×10^{-2}	0.103	0.153	0.240	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.235	0.259	0.283	0.314	0.367	0.760	0.815	0.860	0.922	1.13
reflectance green ocra [1]	0.153	0.173	0.194	0.222	0.279	0.740	0.804	0.853	0.911	1.08
reflectance continuum aband [1]	3.029×10^{-2}	5.558×10^{-2}	8.897×10^{-2}	0.134	0.232	0.706	0.780	0.833	0.894	1.05

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]	0.501 ± 0.421	10118775	0.900	0.400	0.0	1.000	0.0	0.900
cloud fraction [1]	0.522 ± 0.347	10118775	0.726	0.446	0.0	1.000	0.207	0.933
cloud top height [m]	$(0.344 \pm 0.242) \times 10^4$	10118775	3.002×10^3	2.862×10^3	0.0	2.000×10^4	1.633×10^3	4.635×10^3
cloud optical thickness [1]	17.5 ± 31.6	10118775	9.25	9.09	1.000	250	5.90	15.1
cloud fraction crb [1]	0.522 ± 0.347	10118775	0.725	0.446	0.0	1.000	0.207	0.932
cloud height crb [m]	$(0.264 \pm 0.211) \times 10^4$	10118775	2.785×10^3	2.132×10^3	0.0	2.000×10^4	1.011×10^3	3.797×10^3
cloud albedo crb [1]	0.612 ± 0.221	10118775	0.302	0.591	0.0	1.000	0.472	0.774
surface albedo fitted [1]	0.283 ± 0.313	10118775	0.537	7.967×10^{-2}	0.0	1.000	2.655×10^{-2}	0.564
surface albedo fitted crb [1]	0.268 ± 0.296	10118775	0.536	6.551×10^{-2}	0.0	1.000	2.037×10^{-2}	0.557
fitted root mean square [1]	$(7.515 \pm 15.118) \times 10^{-4}$	10118775	8.357×10^{-4}	4.795×10^{-4}	1.965×10^{-6}	0.930	1.712×10^{-4}	1.007×10^{-3}
fitted root mean square crb [1]	$(6.375 \pm 15.286) \times 10^{-4}$	10118775	7.271×10^{-4}	3.560×10^{-4}	1.471×10^{-6}	1.21	1.231×10^{-4}	8.502×10^{-4}
wavelength shift [nm]	$(8.297 \pm 6.920) \times 10^{-3}$	10118775	9.514×10^{-3}	8.028×10^{-3}	-9.944×10^{-2}	0.457	3.327×10^{-3}	1.284×10^{-2}
cloud fraction apriori [1]	0.533 ± 0.350	10118775	0.770	0.463	0.0	1.000	0.213	0.983
reflectance blue ocr [1]	0.569 ± 0.228	10118775	0.394	0.560	0.131	2.01	0.362	0.756
reflectance green ocr [1]	0.523 ± 0.253	10118775	0.465	0.524	7.373×10^{-2}	1.91	0.276	0.741
reflectance continuum aband [1]	0.484 ± 0.276	10118775	0.478	0.502	1.389×10^{-2}	3.52	0.237	0.715

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]	0.631 ± 0.395	11933724	0.800	0.870	0.0	1.000	0.180	0.980
cloud fraction [1]	0.598 ± 0.345	11933724	0.724	0.597	0.0	1.000	0.275	0.999
cloud top height [m]	$(0.414 \pm 0.296) \times 10^4$	11933724	4.410×10^3	3.388×10^3	0.0	2.000×10^4	1.723×10^3	6.133×10^3
cloud optical thickness [1]	16.4 ± 26.3	11933724	10.3	9.82	1.000	250	5.91	16.2
cloud fraction crb [1]	0.597 ± 0.345	11933724	0.723	0.597	0.0	1.000	0.275	0.998
cloud height crb [m]	$(0.325 \pm 0.251) \times 10^4$	11933724	3.728×10^3	2.641×10^3	0.0	2.000×10^4	1.163×10^3	4.891×10^3
cloud albedo crb [1]	0.585 ± 0.193	11933724	0.228	0.560	0.0	1.000	0.470	0.699
surface albedo fitted [1]	0.209 ± 0.331	11933724	0.239	2.595×10^{-2}	0.0	1.000	1.538×10^{-2}	0.254
surface albedo fitted crb [1]	0.198 ± 0.320	11933724	0.238	1.915×10^{-2}	0.0	1.000	1.105×10^{-2}	0.249
fitted root mean square [1]	$(6.386 \pm 12.395) \times 10^{-4}$	11933724	7.412×10^{-4}	4.221×10^{-4}	1.089×10^{-6}	0.694	1.462×10^{-4}	8.874×10^{-4}
fitted root mean square crb [1]	$(5.895 \pm 13.137) \times 10^{-4}$	11933724	7.007×10^{-4}	3.382×10^{-4}	1.015×10^{-6}	0.697	1.172×10^{-4}	8.179×10^{-4}
wavelength shift [nm]	$(7.598 \pm 6.727) \times 10^{-3}$	11933724	8.987×10^{-3}	7.262×10^{-3}	-4.648×10^{-2}	0.503	2.880×10^{-3}	1.187×10^{-2}
cloud fraction apriori [1]	0.599 ± 0.349	11933724	0.731	0.599	0.0	1.000	0.269	1.000
reflectance blue oca [1]	0.573 ± 0.227	11933724	0.391	0.555	0.113	2.02	0.372	0.764
reflectance green oca [1]	0.522 ± 0.256	11933724	0.456	0.513	7.068×10^{-2}	1.94	0.282	0.738
reflectance continuum aband [1]	0.473 ± 0.281	11933724	0.469	0.480	1.186×10^{-2}	3.96	0.228	0.696

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]	0.700 ± 0.356	15195253	0.600	0.900	0.0	1.000	0.400	1.000
cloud fraction [1]	0.596 ± 0.359	15195253	0.762	0.623	0.0	1.000	0.238	1.000
cloud top height [m]	$(0.339 \pm 0.246) \times 10^4$	15195253	3.016×10^3	2.705×10^3	0.0	2.000×10^4	1.554×10^3	4.570×10^3
cloud optical thickness [1]	16.9 ± 23.6	15195253	9.65	10.4	1.000	250	7.34	17.0
cloud fraction crb [1]	0.596 ± 0.359	15195253	0.763	0.621	0.0	1.000	0.237	1.000
cloud height crb [m]	$(0.271 \pm 0.223) \times 10^4$	15195253	2.856×10^3	2.077×10^3	0.0	2.000×10^4	1.005×10^3	3.861×10^3
cloud albedo crb [1]	0.563 ± 0.170	15195253	0.197	0.542	0.0	1.000	0.463	0.660
surface albedo fitted [1]	$(9.182 \pm 20.303) \times 10^{-2}$	15195253	2.440×10^{-2}	2.372×10^{-2}	0.0	1.000	1.504×10^{-2}	3.943×10^{-2}
surface albedo fitted crb [1]	$(8.287 \pm 19.283) \times 10^{-2}$	15195253	1.868×10^{-2}	1.772×10^{-2}	0.0	1.000	1.101×10^{-2}	2.969×10^{-2}
fitted root mean square [1]	$(6.166 \pm 14.457) \times 10^{-4}$	15195253	7.407×10^{-4}	3.361×10^{-4}	1.203×10^{-6}	0.930	1.088×10^{-4}	8.496×10^{-4}
fitted root mean square crb [1]	$(5.805 \pm 15.497) \times 10^{-4}$	15195253	7.003×10^{-4}	2.882×10^{-4}	1.471×10^{-6}	1.21	9.675×10^{-5}	7.971×10^{-4}
wavelength shift [nm]	$(7.442 \pm 7.018) \times 10^{-3}$	15195253	9.222×10^{-3}	6.924×10^{-3}	-8.607×10^{-2}	0.503	2.629×10^{-3}	1.185×10^{-2}
cloud fraction apriori [1]	0.596 ± 0.364	15195253	0.771	0.622	0.0	1.000	0.229	1.000
reflectance blue oca [1]	0.521 ± 0.204	15195253	0.329	0.494	0.144	2.01	0.345	0.674
reflectance green oca [1]	0.464 ± 0.230	15195253	0.399	0.440	7.967×10^{-2}	1.91	0.248	0.647
reflectance continuum aband [1]	0.402 ± 0.263	15195253	0.468	0.393	1.186×10^{-2}	3.52	0.149	0.618

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]	0.285 ± 0.386	5310537	0.720	9.000×10^{-2}	0.0	1.000	0.0	0.720
cloud fraction [1]	0.485 ± 0.303	5310537	0.460	0.416	0.0	1.000	0.247	0.707
cloud top height [m]	$(0.523 \pm 0.310) \times 10^4$	5310537	4.502×10^3	4.976×10^3	0.0	2.000×10^4	2.733×10^3	7.235×10^3
cloud optical thickness [1]	14.9 ± 34.7	5310537	6.67	5.97	1.000	250	4.19	10.9
cloud fraction crb [1]	0.486 ± 0.303	5310537	0.460	0.417	0.0	1.000	0.248	0.708
cloud height crb [m]	$(0.390 \pm 0.251) \times 10^4$	5310537	3.821×10^3	3.557×10^3	0.0	2.000×10^4	1.823×10^3	5.644×10^3
cloud albedo crb [1]	0.669 ± 0.255	5310537	0.365	0.695	0.0	1.000	0.514	0.878
surface albedo fitted [1]	0.597 ± 0.292	5310537	0.578	0.690	0.0	1.000	0.288	0.866
surface albedo fitted crb [1]	0.577 ± 0.274	5310537	0.535	0.670	0.0	1.000	0.288	0.823
fitted root mean square [1]	$(8.462 \pm 11.997) \times 10^{-4}$	5310537	7.167×10^{-4}	6.317×10^{-4}	1.089×10^{-6}	0.638	3.473×10^{-4}	1.064×10^{-3}
fitted root mean square crb [1]	$(6.770 \pm 11.397) \times 10^{-4}$	5310537	7.046×10^{-4}	4.407×10^{-4}	1.442×10^{-6}	0.794	1.923×10^{-4}	8.969×10^{-4}
wavelength shift [nm]	$(8.649 \pm 6.176) \times 10^{-3}$	5310537	8.766×10^{-3}	8.523×10^{-3}	-9.944×10^{-2}	0.135	4.024×10^{-3}	1.279×10^{-2}
cloud fraction apriori [1]	0.500 ± 0.307	5310537	0.484	0.431	0.0	1.000	0.256	0.739
reflectance blue ocrs [1]	0.687 ± 0.246	5310537	0.377	0.770	0.113	2.02	0.476	0.853
reflectance green ocrs [1]	0.660 ± 0.265	5310537	0.419	0.752	7.068×10^{-2}	1.94	0.431	0.850
reflectance continuum aband [1]	0.653 ± 0.237	5310537	0.367	0.699	1.248×10^{-2}	3.96	0.458	0.826

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	-9.163×10^{-3}	6.526×10^{-4}	-3.112×10^{-2}	5.967×10^{-2}	-3.234×10^{-2}	-3.154×10^{-2}	0.105	-2.186×10^{-3}	-3.524×10^{-2}
-9.163×10^{-3}	1.000	-2.431×10^{-2}	9.307×10^{-2}	-6.032×10^{-2}	0.110	9.595×10^{-2}	-9.380×10^{-2}	0.324	0.110
6.526×10^{-4}	-2.431×10^{-2}	1.000	-0.118	-0.150	2.594×10^{-2}	-0.117	-0.140	5.646×10^{-2}	-0.101
-3.112×10^{-2}	9.307×10^{-2}	-0.118	1.000	-0.101	0.270	1.000	-6.385×10^{-2}	0.239	0.982
5.967×10^{-2}	-6.032×10^{-2}	-0.150	-0.101	1.000	-3.033×10^{-2}	-0.100	0.933	5.411×10^{-2}	-0.111
-3.234×10^{-2}	0.110	2.594×10^{-2}	0.270	-3.033×10^{-2}	1.000	0.268	1.209×10^{-2}	0.373	0.277
-3.154×10^{-2}	9.595×10^{-2}	-0.117	1.000	-0.100	0.268	1.000	-6.390×10^{-2}	0.241	0.982
0.105	-9.380×10^{-2}	-0.140	-6.385×10^{-2}	0.933	1.209×10^{-2}	-6.390×10^{-2}	1.000	-5.250×10^{-2}	-7.670×10^{-2}
-2.186×10^{-3}	0.324	5.646×10^{-2}	0.239	5.411×10^{-2}	0.373	0.241	-5.250×10^{-2}	1.000	0.266
-3.524×10^{-2}	0.110	-0.101	0.982	-0.111	0.277	0.982	-7.670×10^{-2}	0.266	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
386	-3.88	0.660	-0.213	3.224×10^3	-18.3	-0.215	4.853×10^3	-8.875×10^{-3}	-0.243
-3.88	464	-26.9	0.697	-3.574×10^3	68.5	0.719	-4.762×10^3	1.44	0.835
0.660	-26.9	2.650×10^3	-2.11	-2.126×10^4	38.5	-2.10	-1.701×10^4	0.601	-1.82
-0.213	0.697	-2.11	0.121	-96.8	2.71	0.121	-52.4	1.722×10^{-2}	0.120
3.224×10^3	-3.574×10^3	-2.126×10^4	-96.8	7.567×10^6	-2.404×10^3	-96.0	6.047×10^6	30.8	-107
-18.3	68.5	38.5	2.71	-2.404×10^3	830	2.68	821	2.22	2.81
-0.215	0.719	-2.10	0.121	-96.0	2.68	0.121	-52.4	1.732×10^{-2}	0.120
4.853×10^3	-4.762×10^3	-1.701×10^4	-52.4	6.047×10^6	821	-52.4	5.557×10^6	-25.6	-63.5
-8.875×10^{-3}	1.44	0.601	1.722×10^{-2}	30.8	2.22	1.732×10^{-2}	-25.6	4.274×10^{-2}	1.932×10^{-2}
-0.243	0.835	-1.82	0.120	-107	2.81	0.120	-63.5	1.932×10^{-2}	0.123

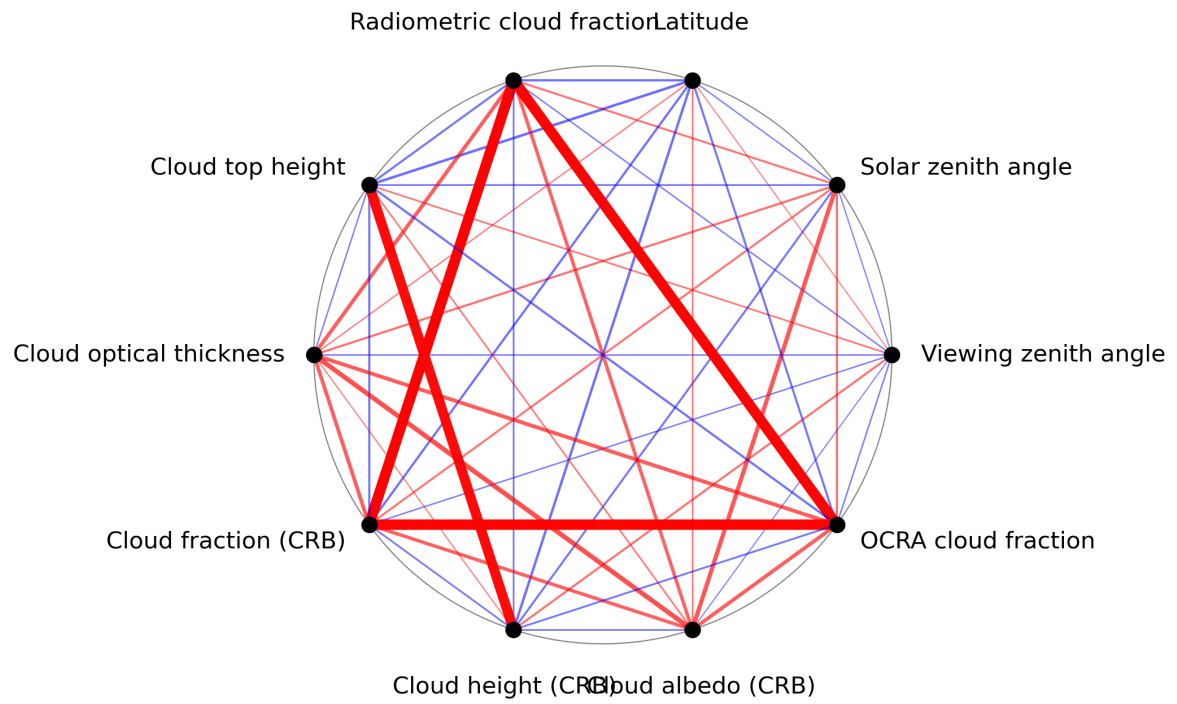


Figure 1: Map of correlation graph for 2024-03-07 to 2024-03-09.

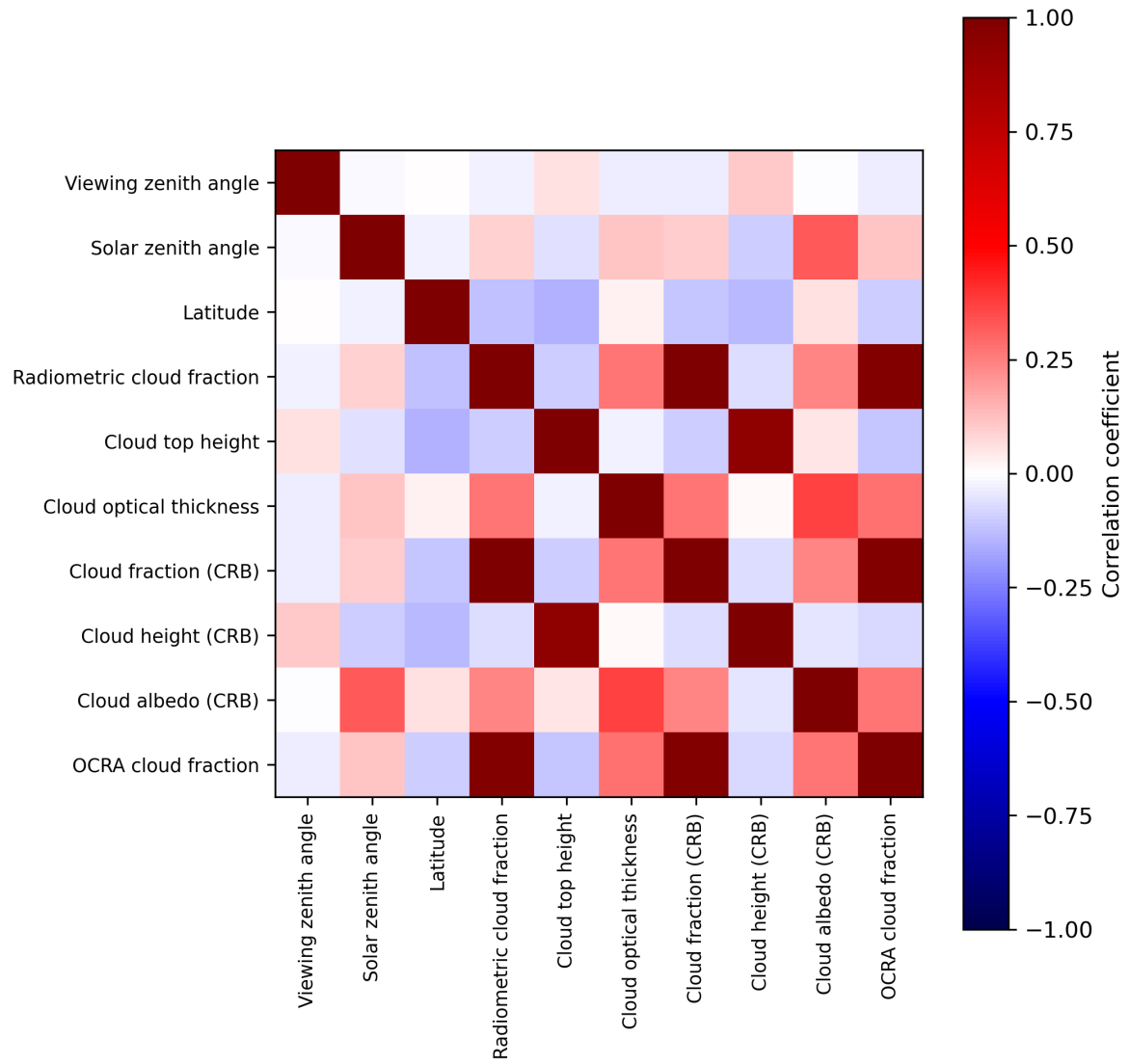


Figure 2: Map of correlation matrix for 2024-03-07 to 2024-03-09.

3 Granule outlines

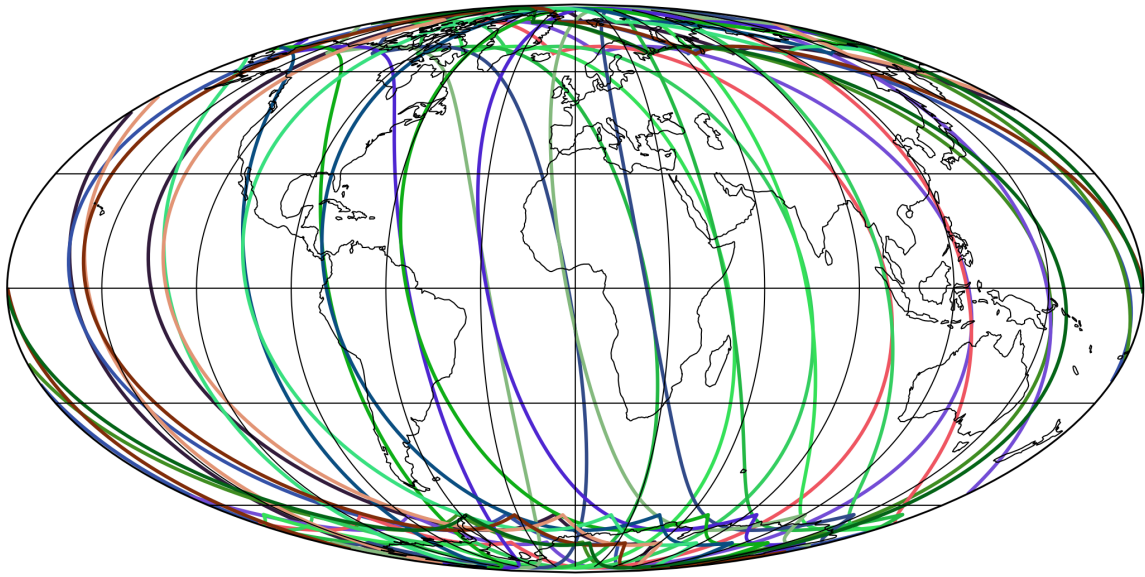


Figure 3: Outline of the granules.

4 Input data monitoring

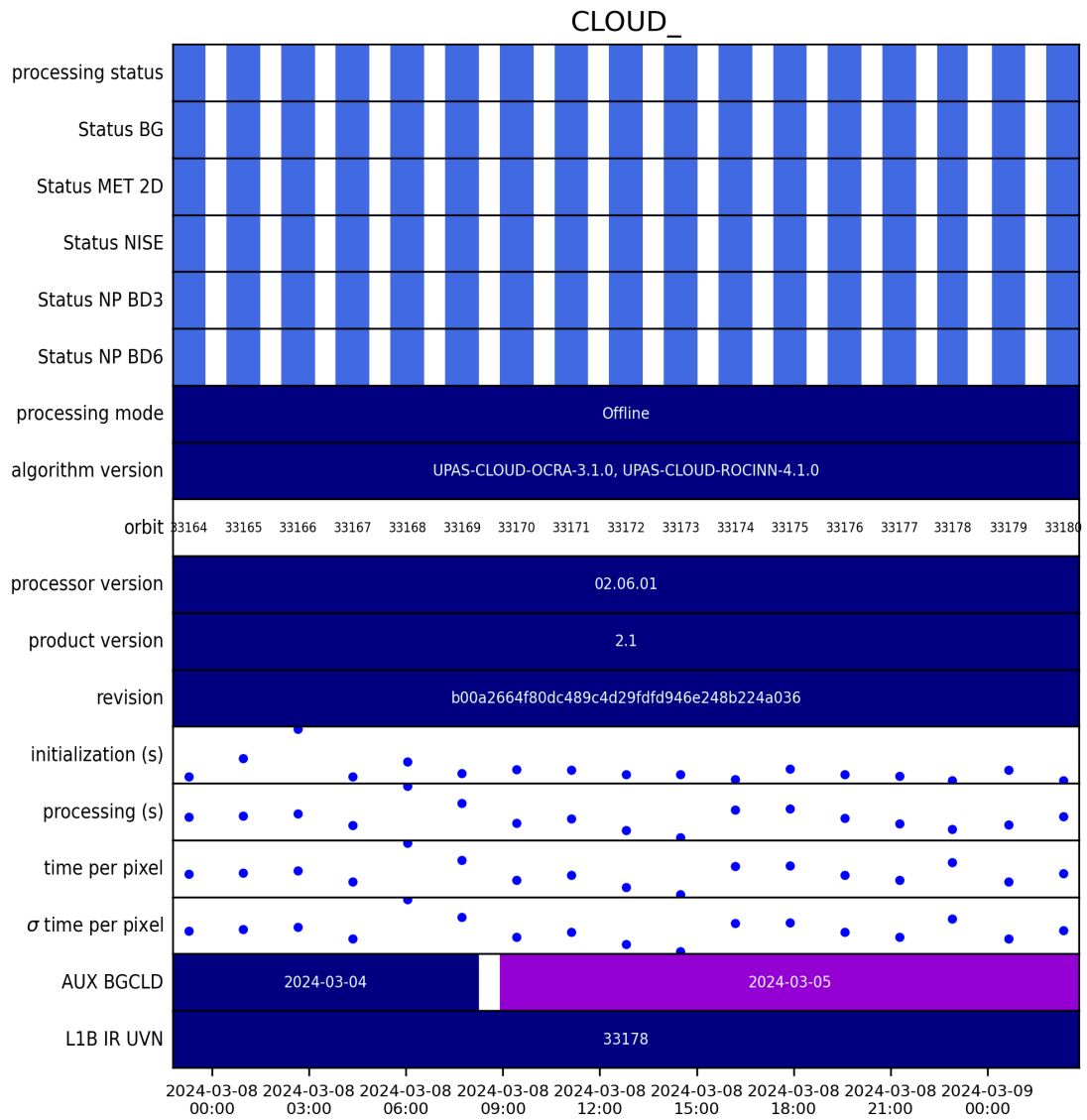


Figure 4: Input data per granule

5 Warnings and errors

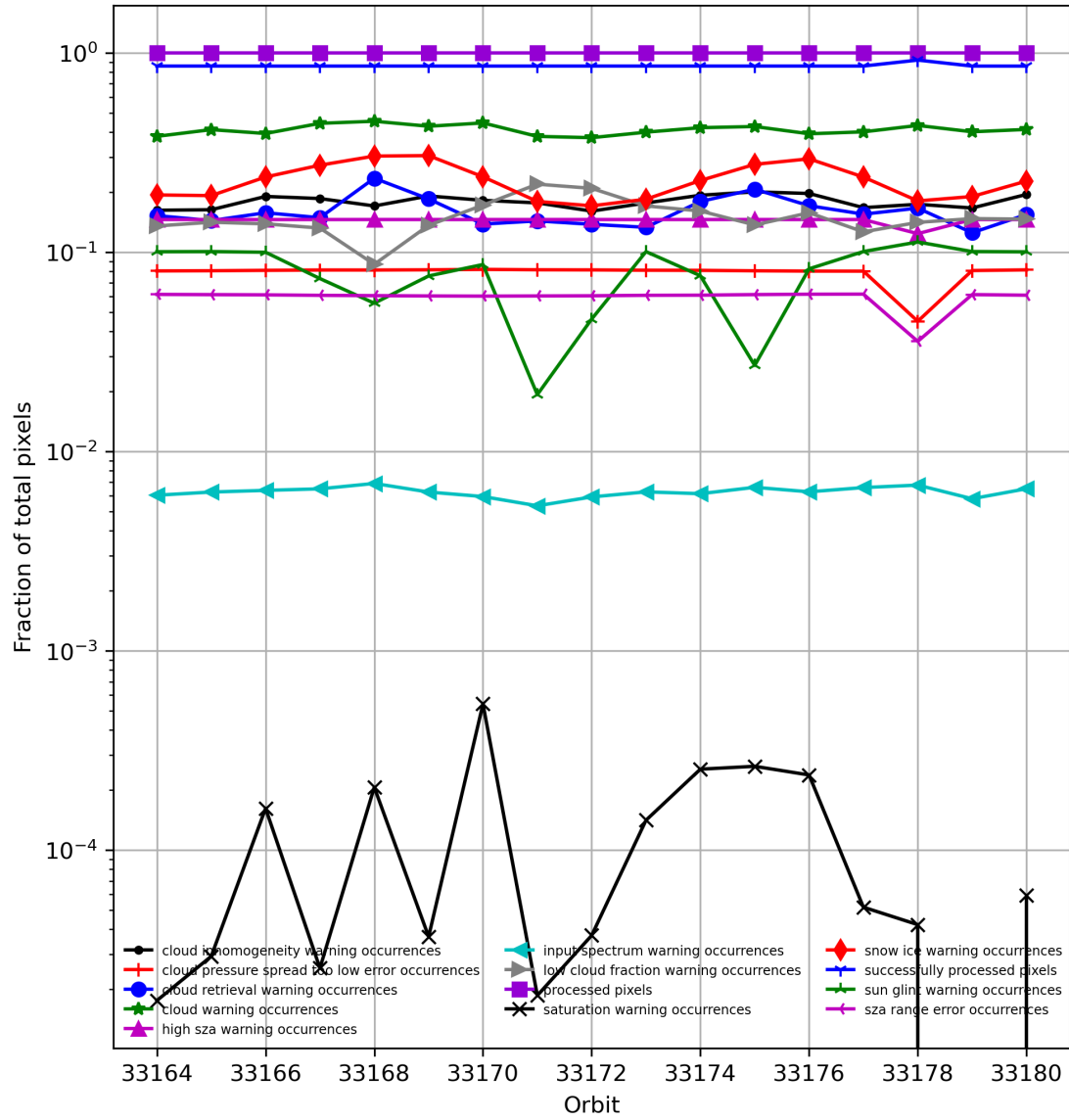


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

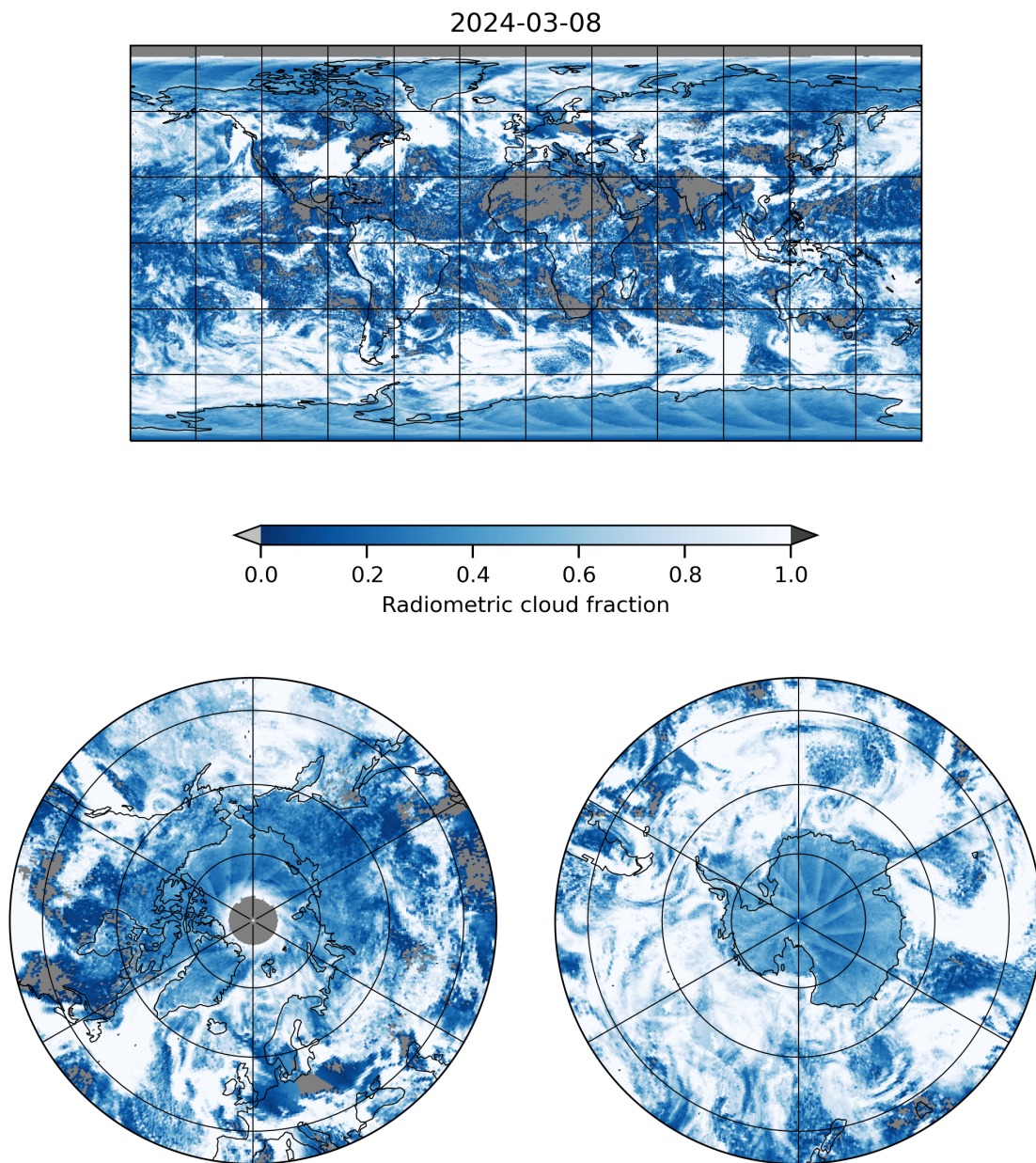


Figure 6: Map of “Radiometric cloud fraction” for 2024-03-07 to 2024-03-09

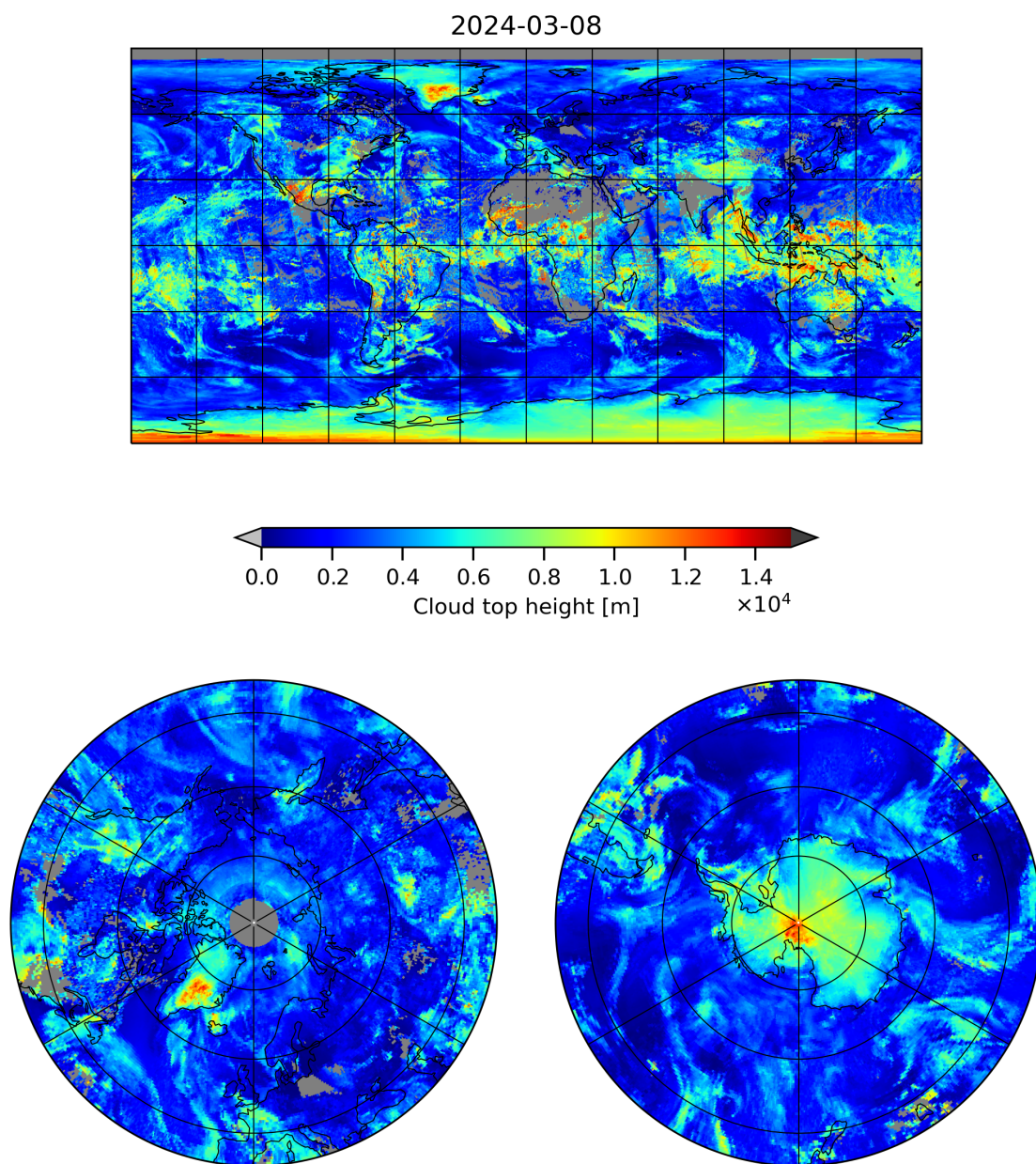


Figure 7: Map of “Cloud top height” for 2024-03-07 to 2024-03-09

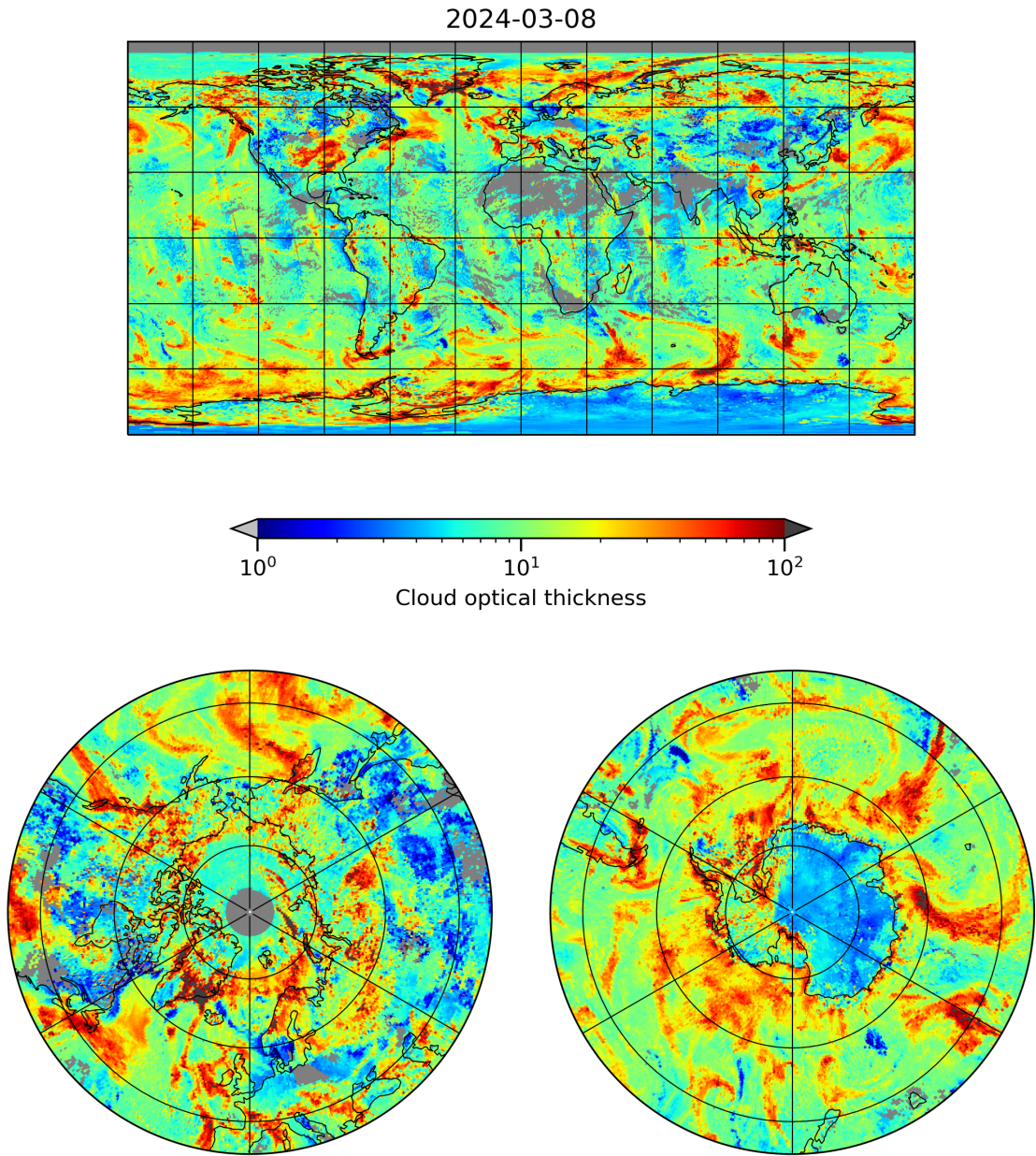


Figure 8: Map of “Cloud optical thickness” for 2024-03-07 to 2024-03-09

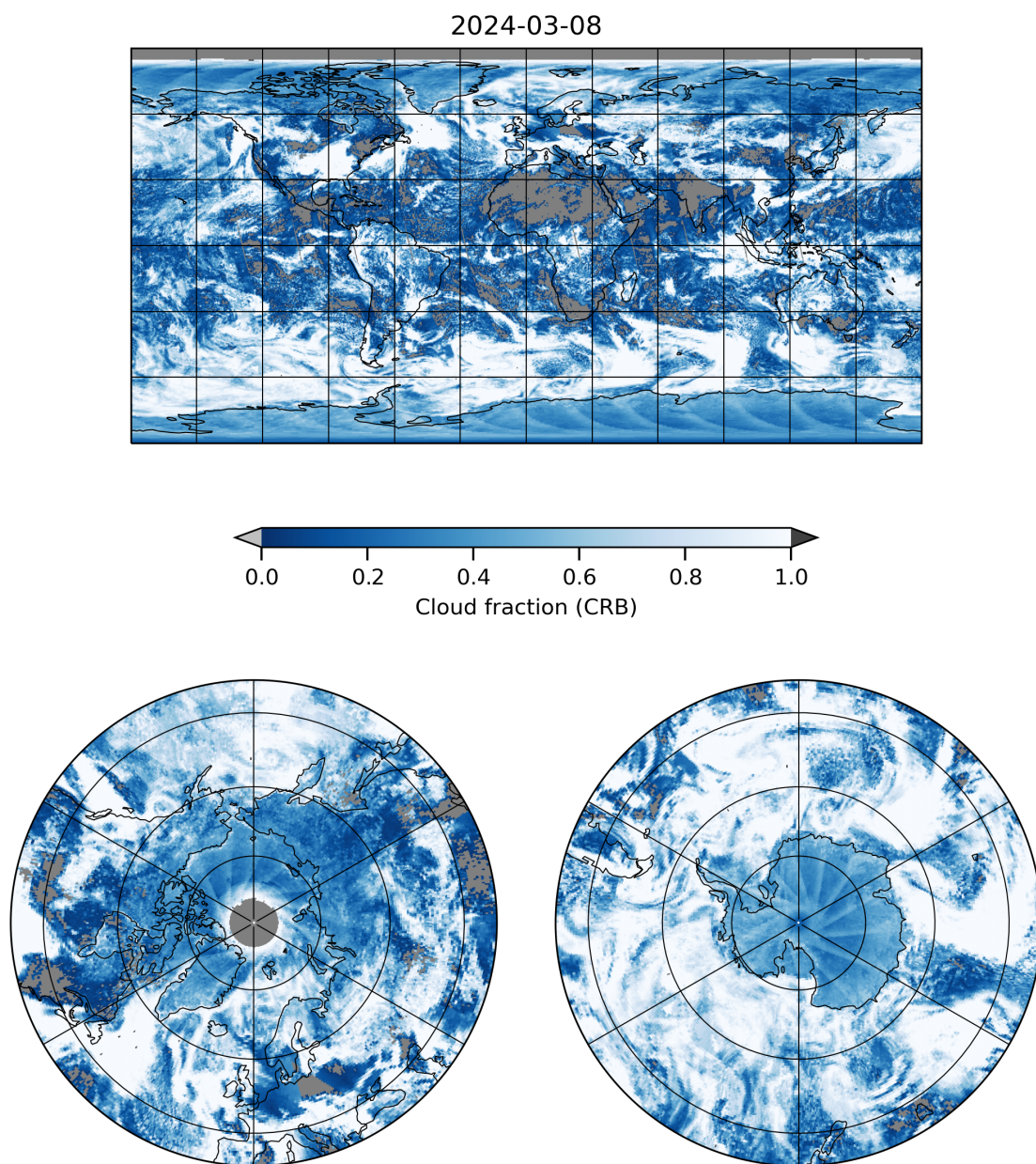


Figure 9: Map of “Cloud fraction (CRB)” for 2024-03-07 to 2024-03-09

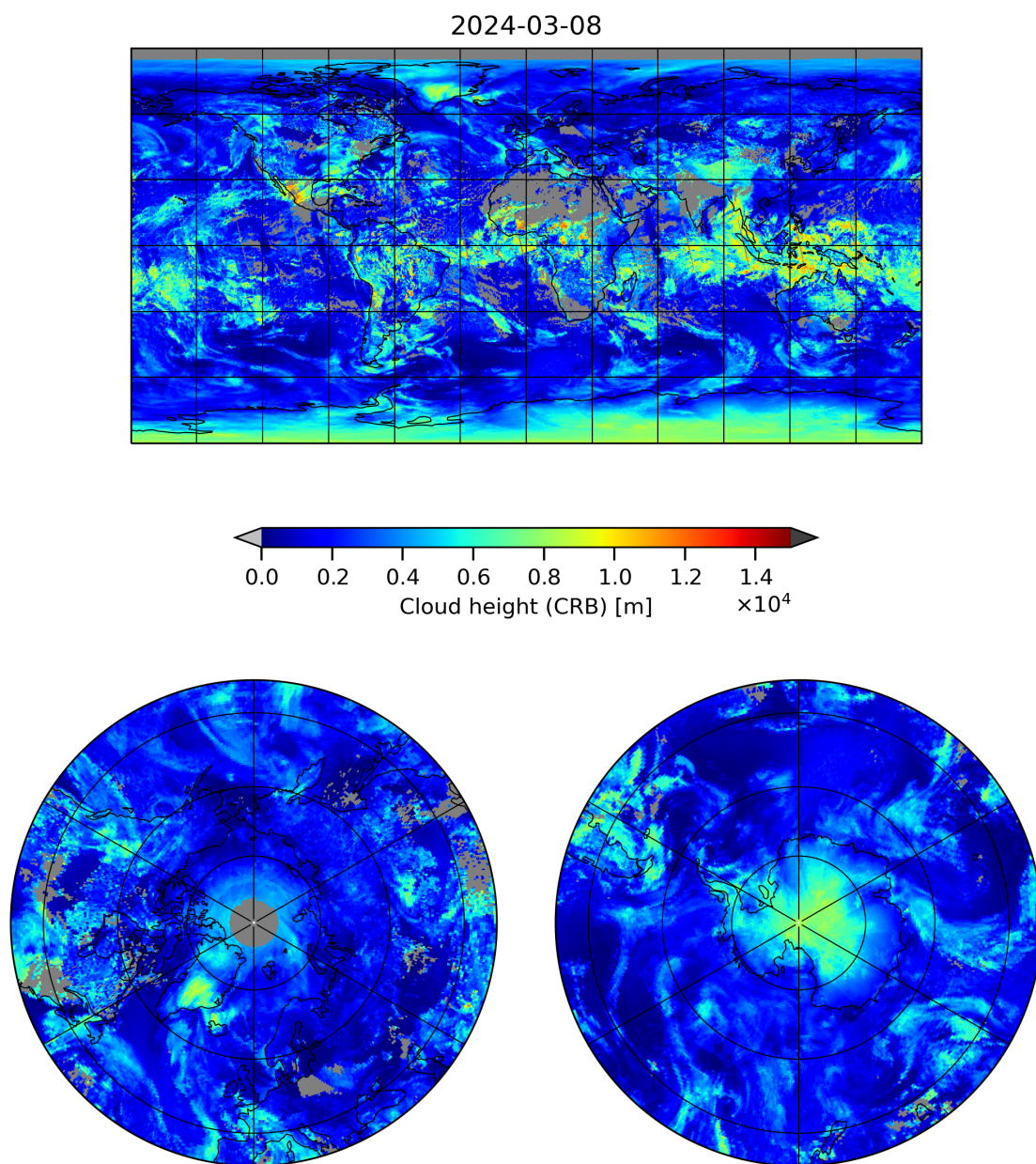


Figure 10: Map of “Cloud height (CRB)” for 2024-03-07 to 2024-03-09

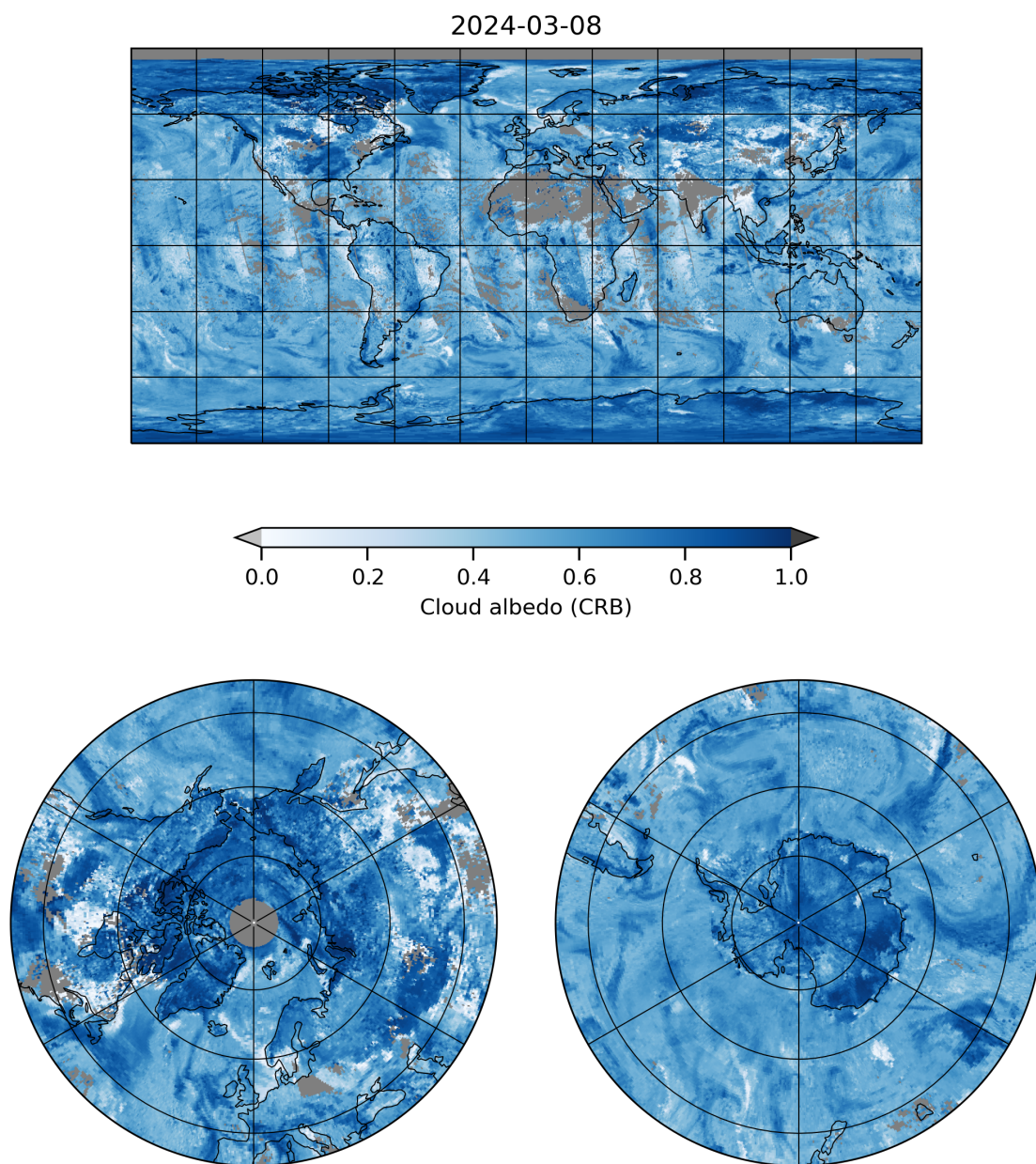


Figure 11: Map of “Cloud albedo (CRB)” for 2024-03-07 to 2024-03-09

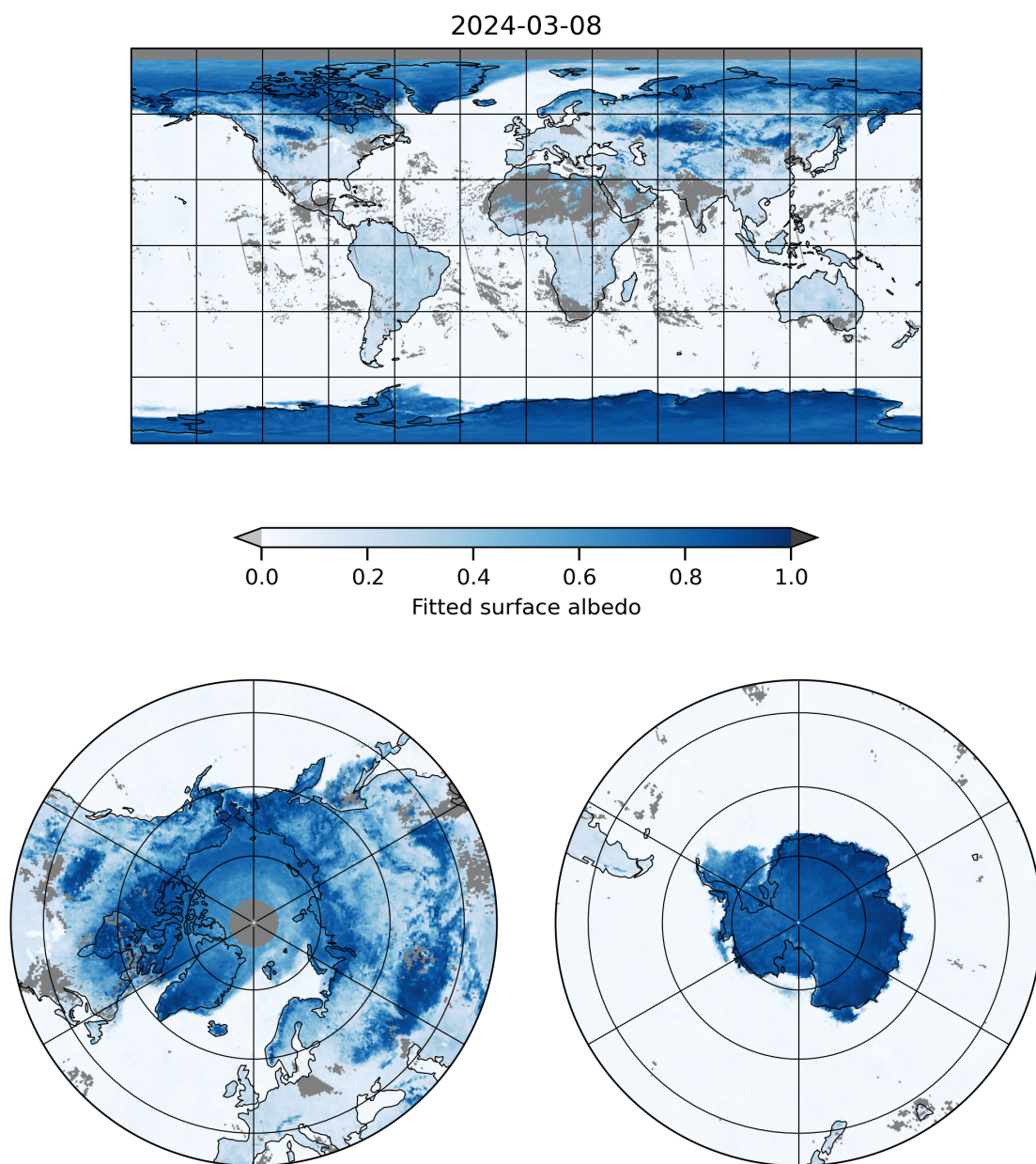


Figure 12: Map of “Fitted surface albedo” for 2024-03-07 to 2024-03-09

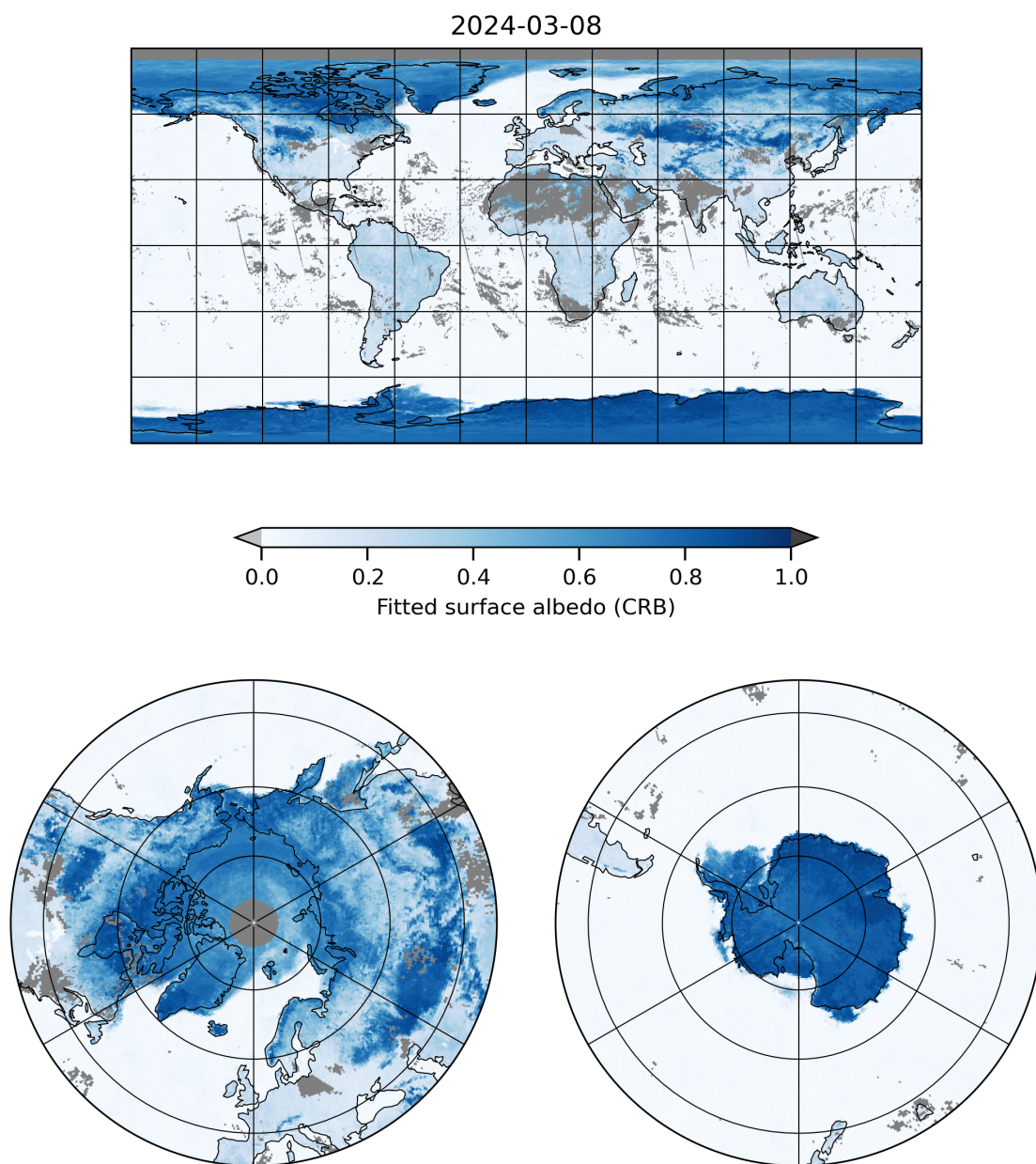


Figure 13: Map of “Fitted surface albedo (CRB)” for 2024-03-07 to 2024-03-09

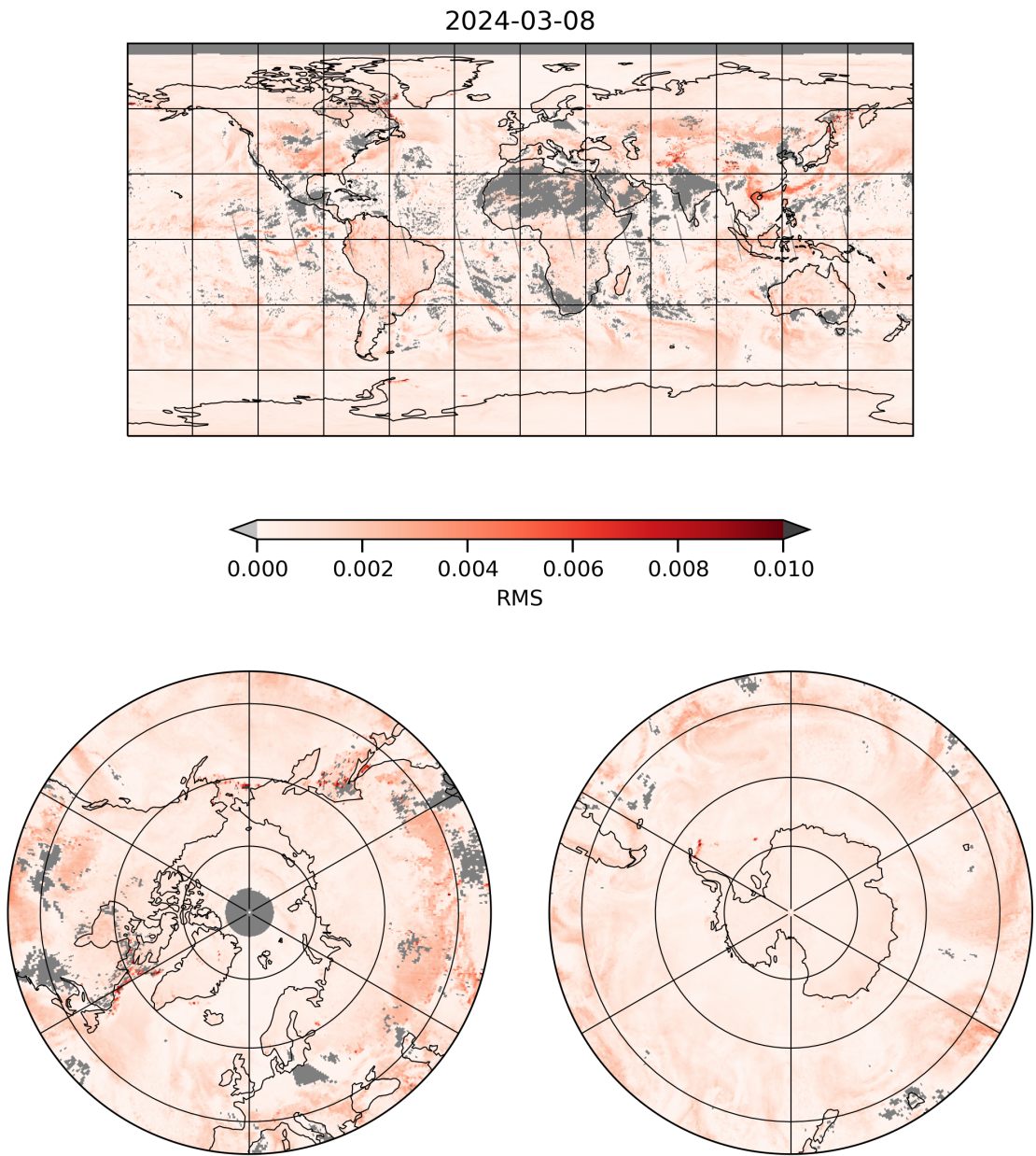


Figure 14: Map of “RMS” for 2024-03-07 to 2024-03-09

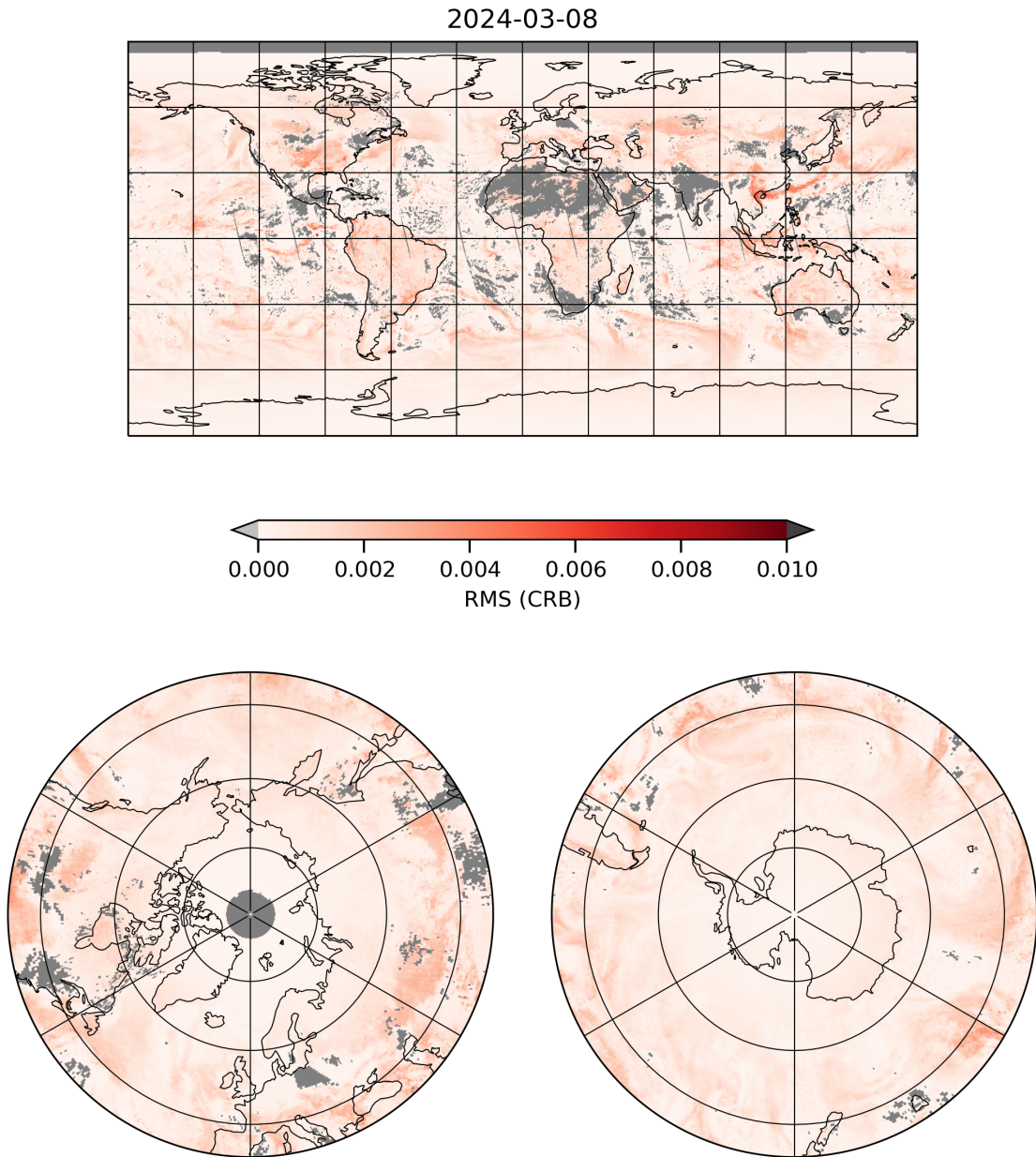


Figure 15: Map of “RMS (CRB)” for 2024-03-07 to 2024-03-09

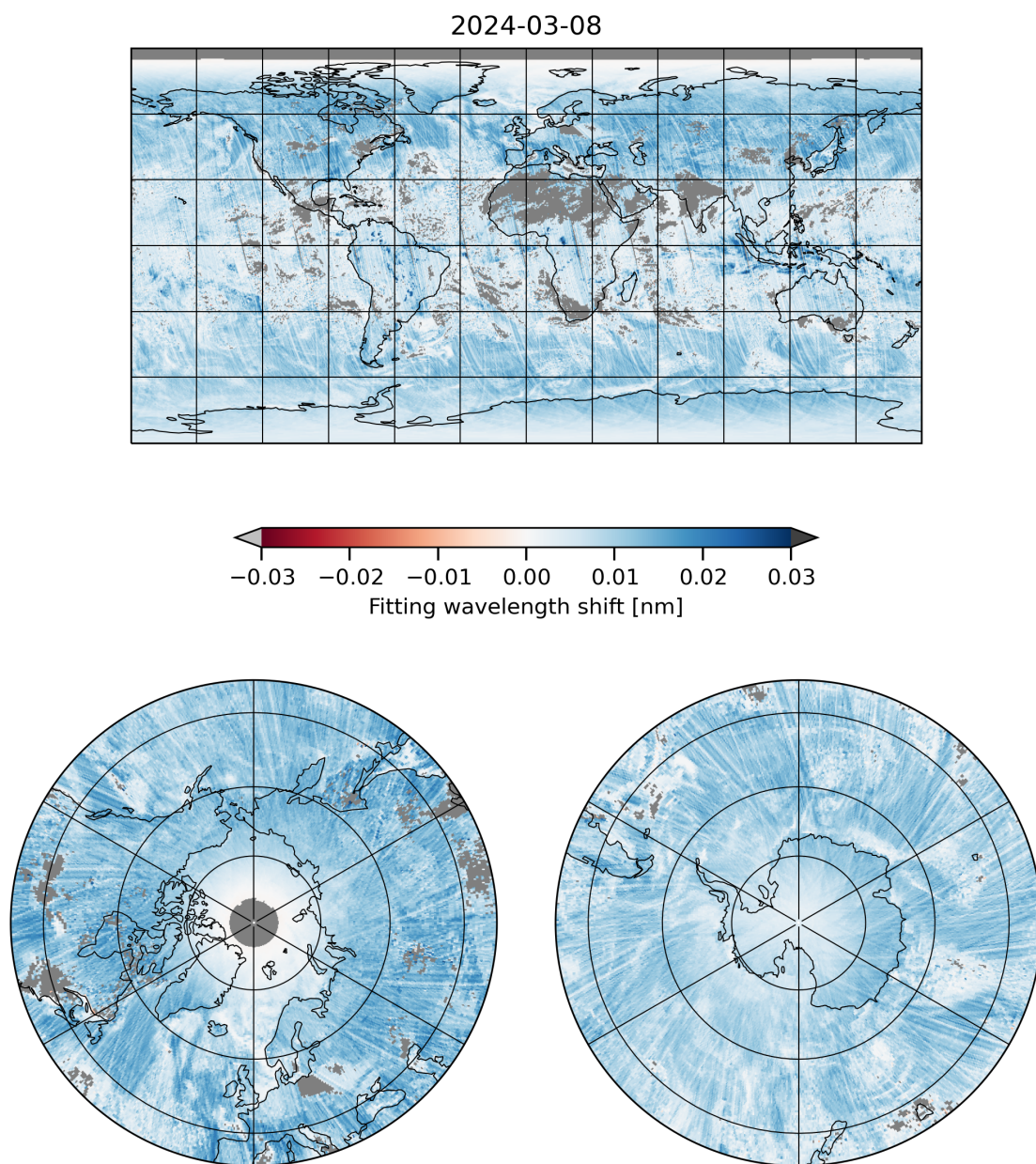


Figure 16: Map of “Fitting wavelength shift” for 2024-03-07 to 2024-03-09

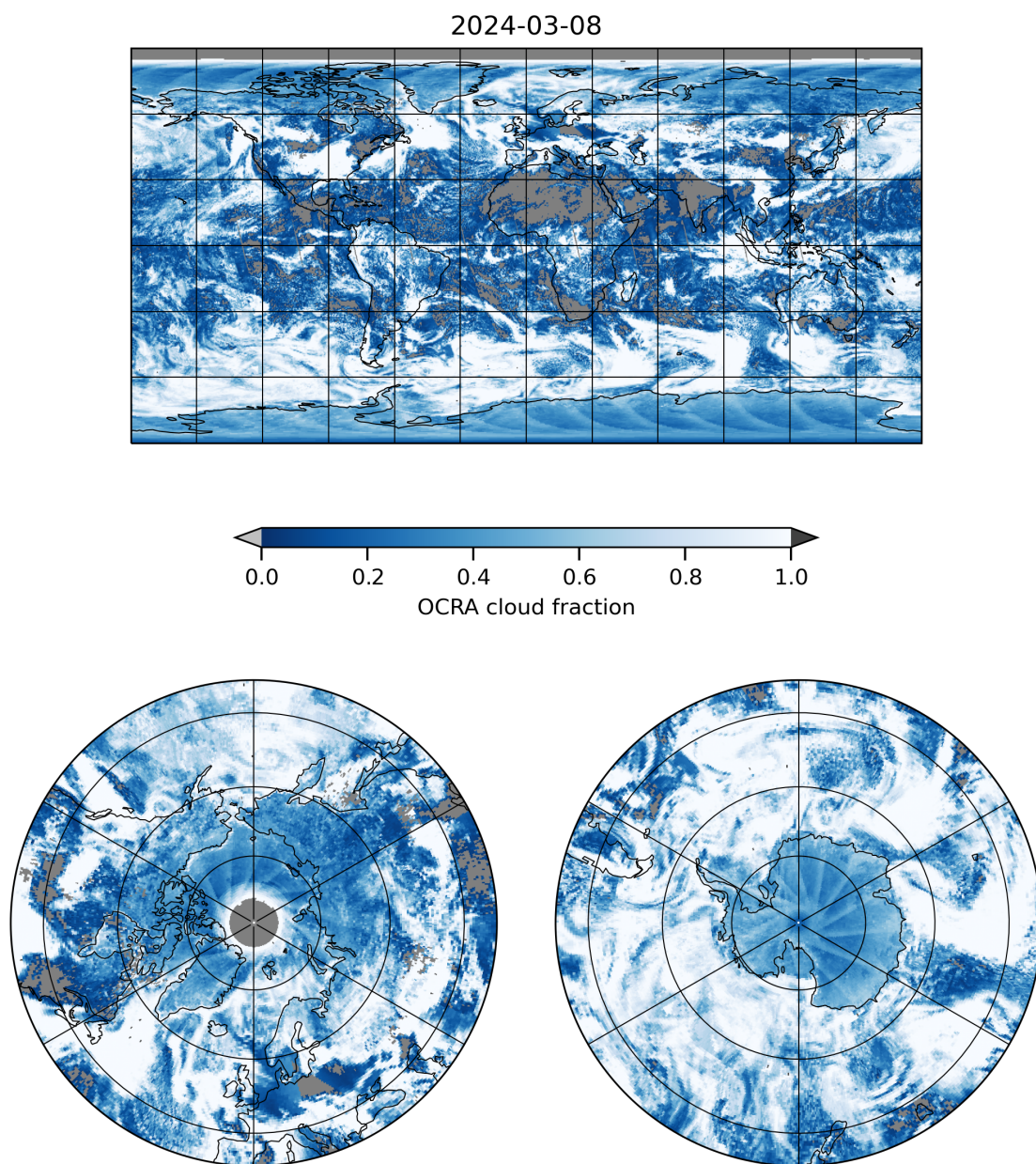


Figure 17: Map of “OCRA cloud fraction” for 2024-03-07 to 2024-03-09

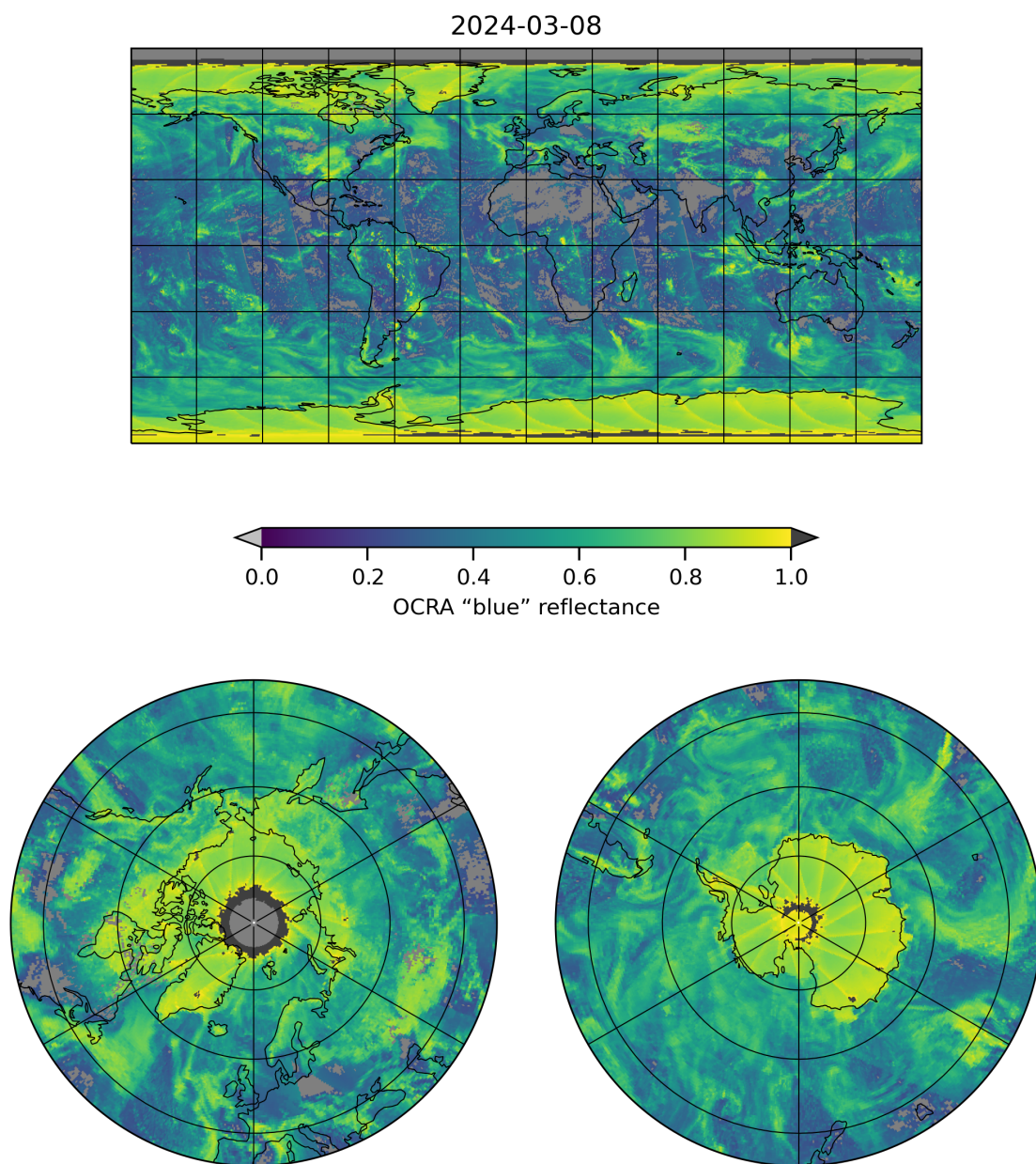


Figure 18: Map of "OCRA "blue" reflectance" for 2024-03-07 to 2024-03-09

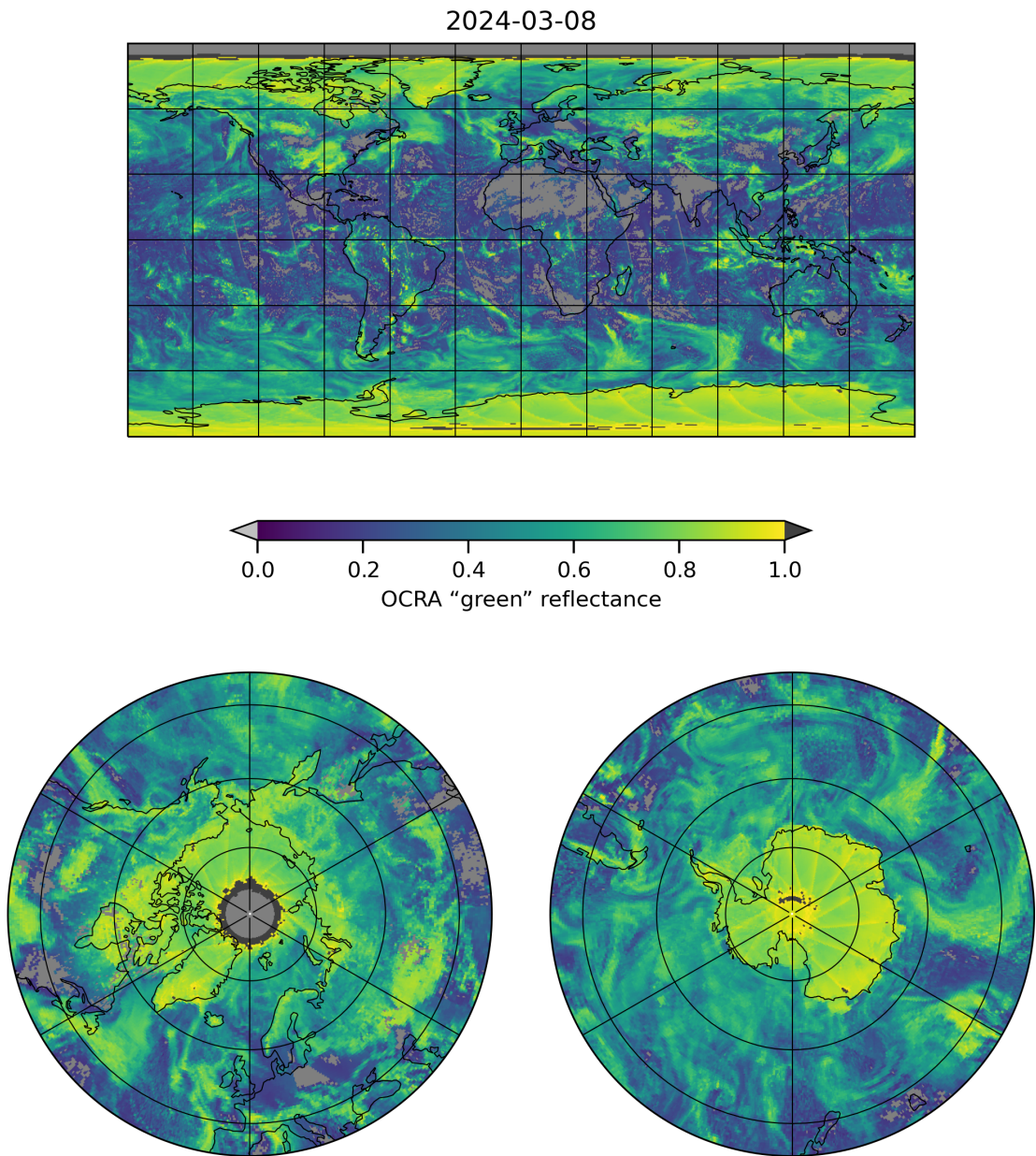


Figure 19: Map of "OCRA "green" reflectance" for 2024-03-07 to 2024-03-09

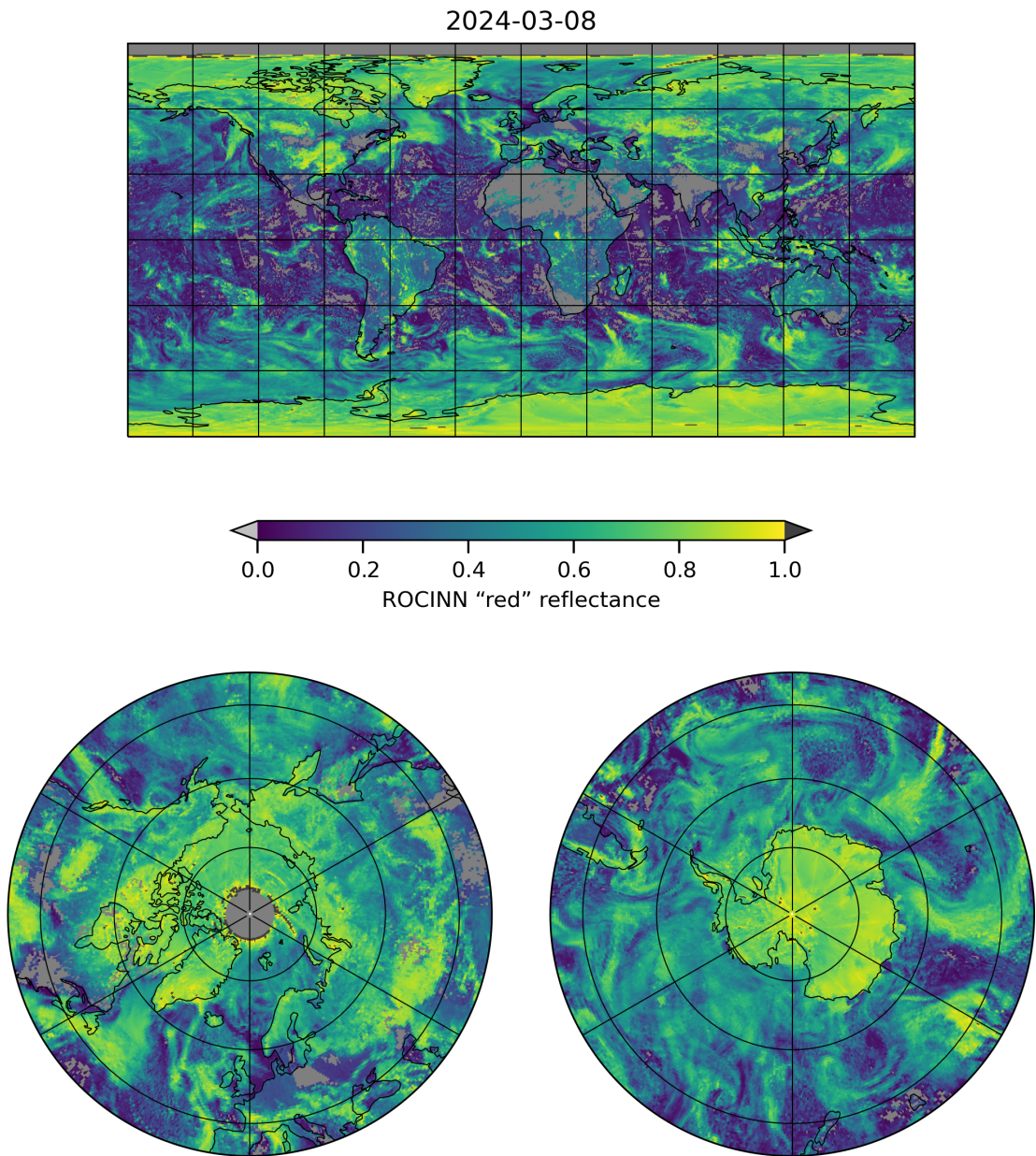


Figure 20: Map of "ROCINN "red" reflectance" for 2024-03-07 to 2024-03-09

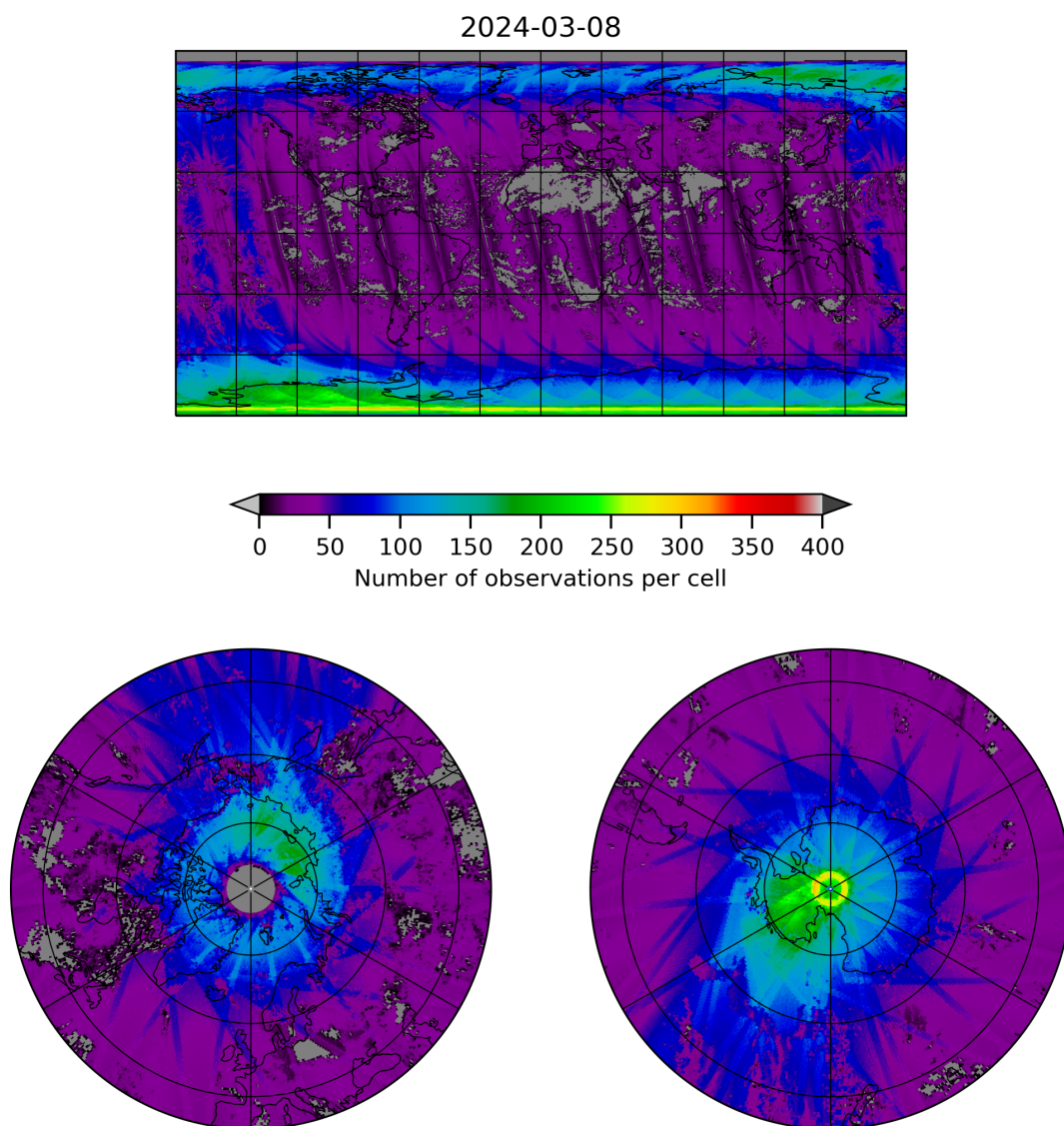


Figure 21: Map of the number of observations for 2024-03-07 to 2024-03-09

7 Zonal average

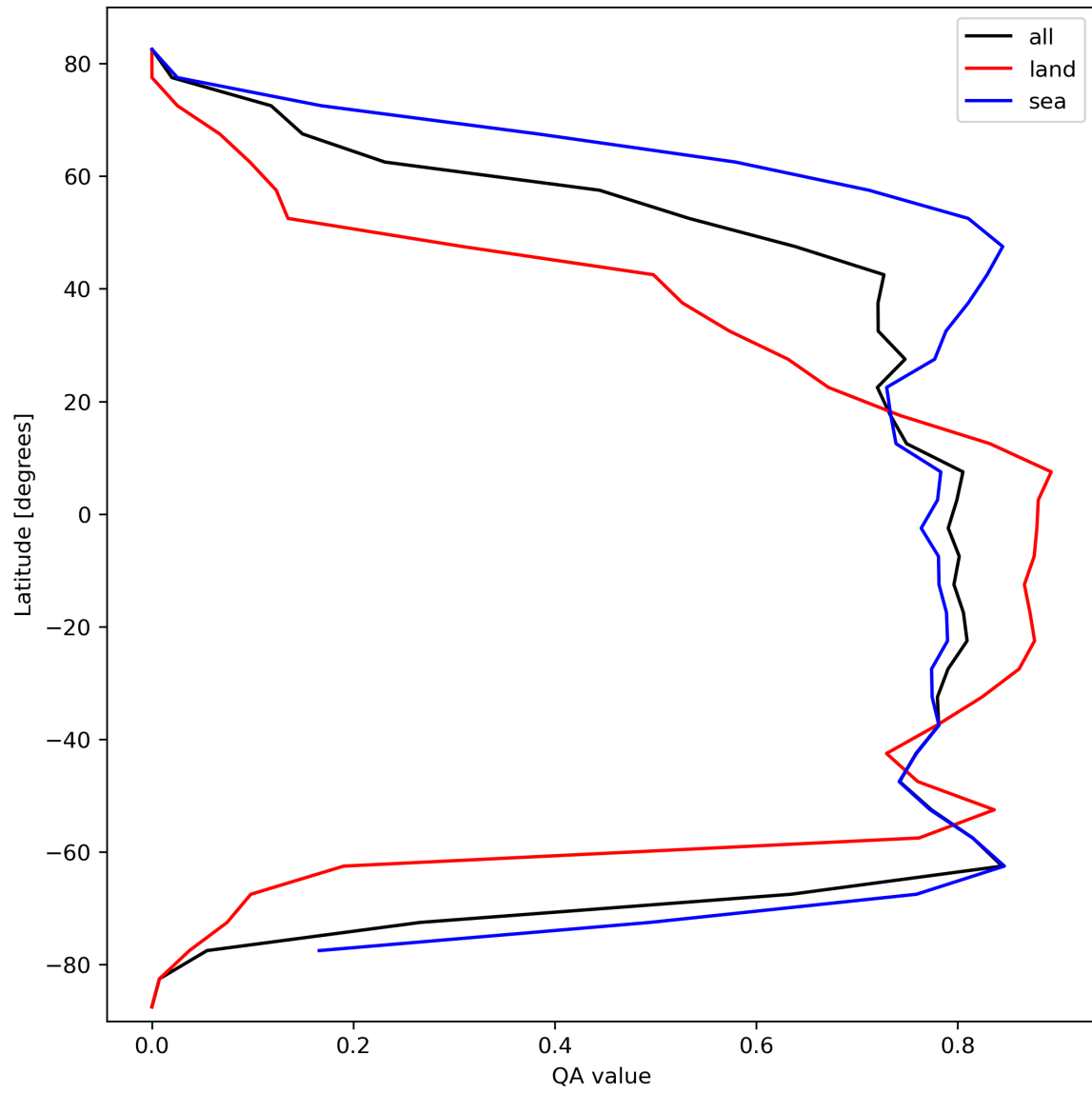


Figure 22: Zonal average of “QA value” for 2024-03-07 to 2024-03-09.

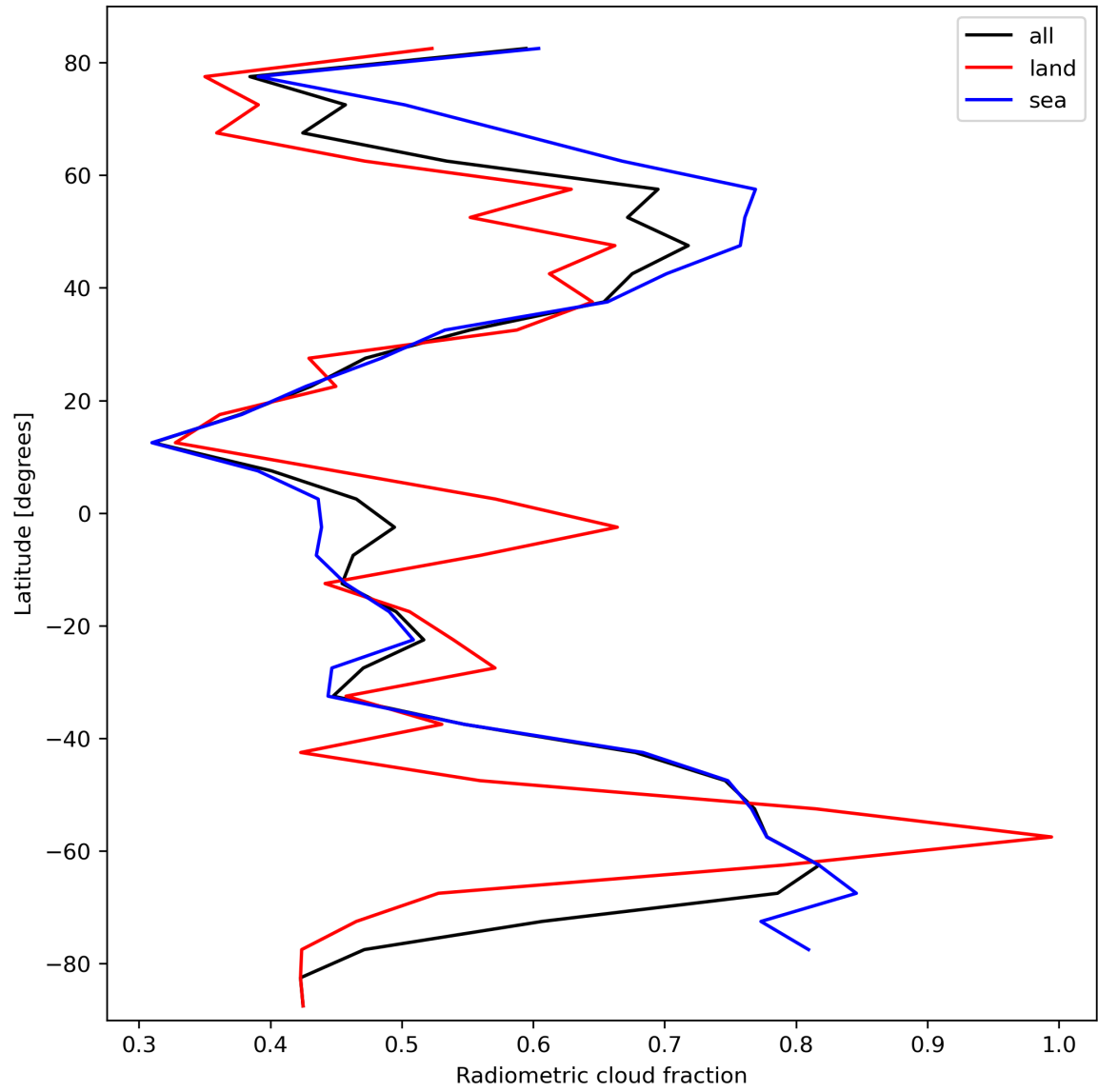


Figure 23: Zonal average of “Radiometric cloud fraction” for 2024-03-07 to 2024-03-09.

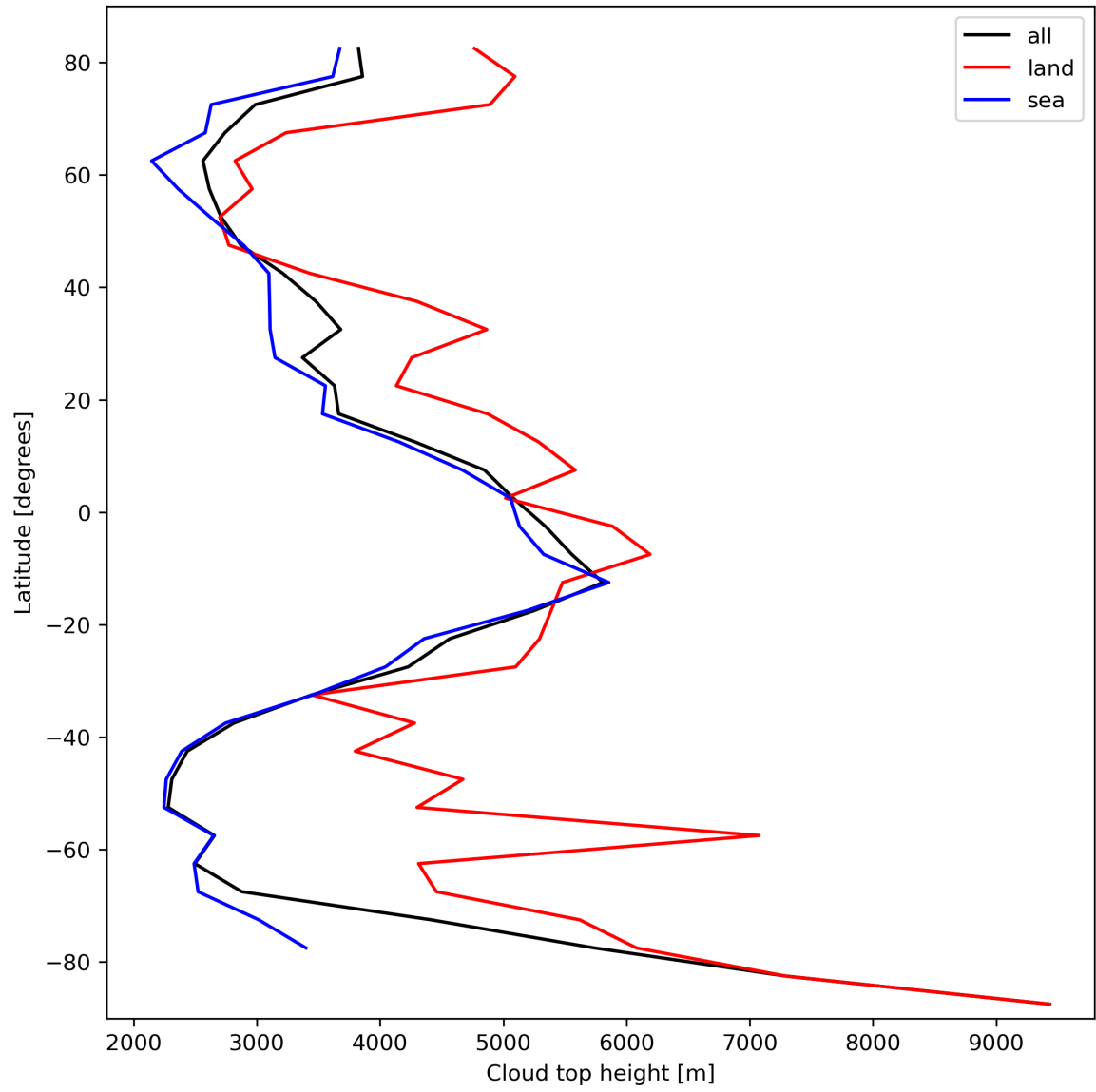


Figure 24: Zonal average of “Cloud top height” for 2024-03-07 to 2024-03-09.

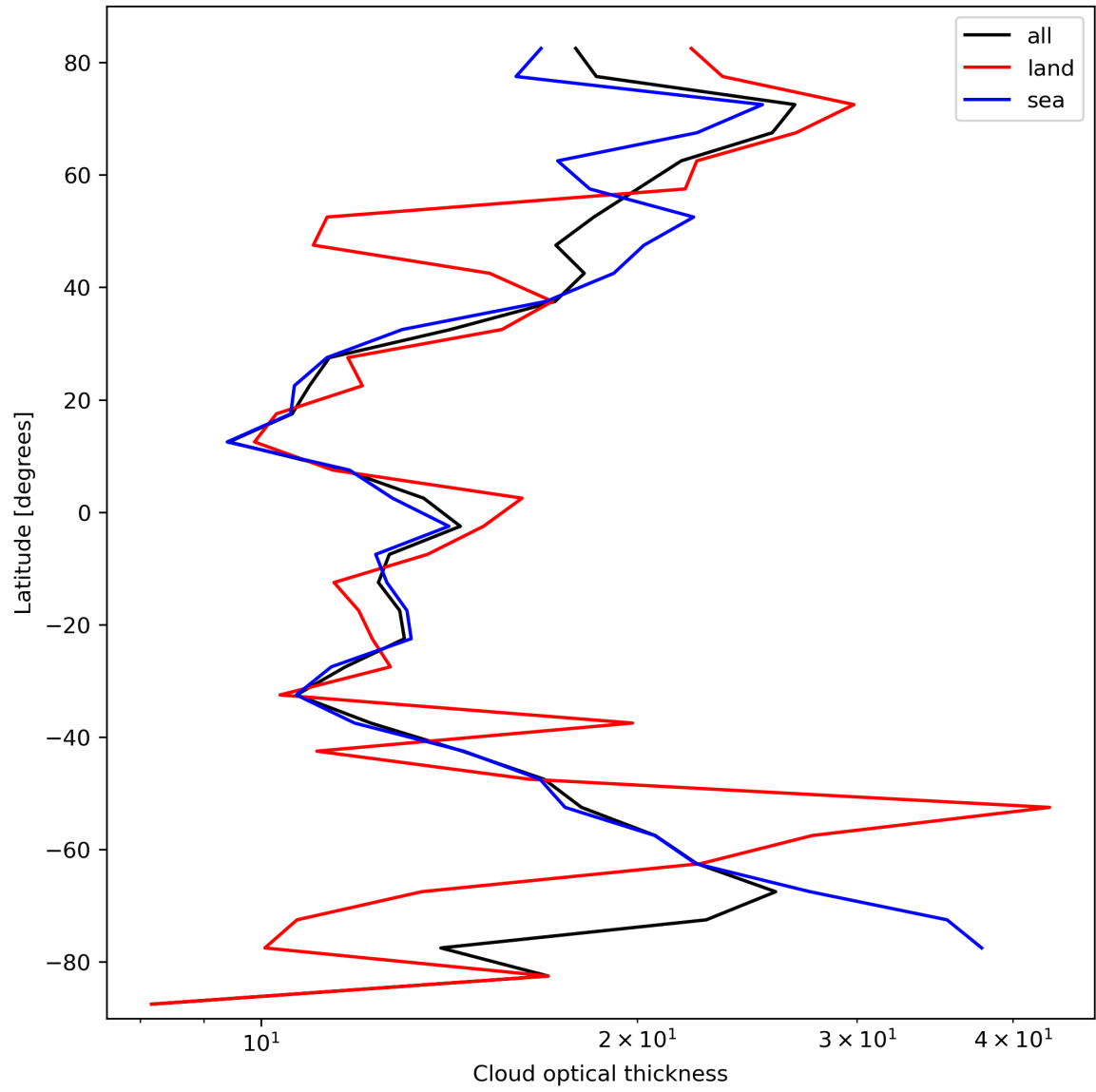


Figure 25: Zonal average of “Cloud optical thickness” for 2024-03-07 to 2024-03-09.

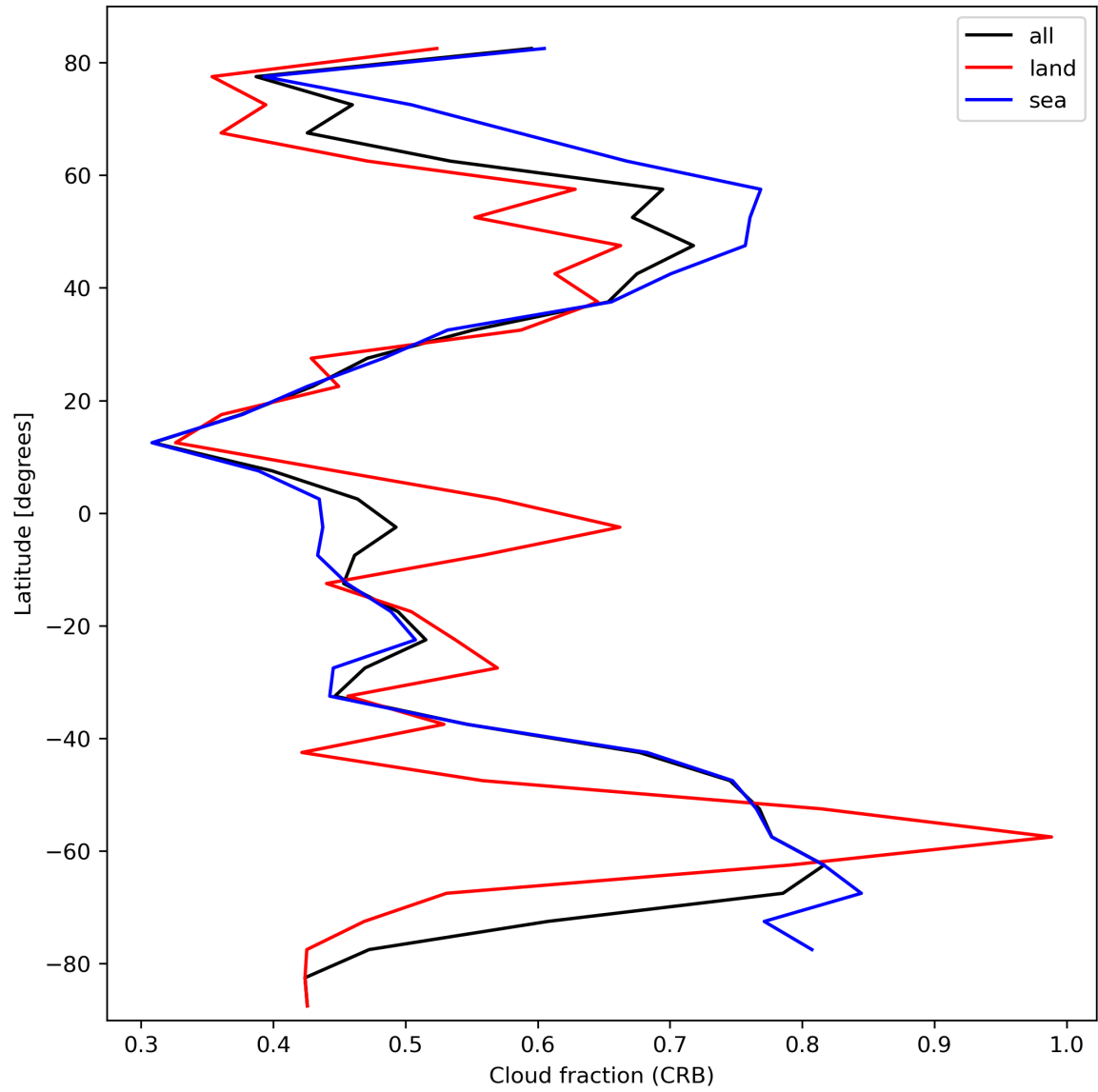


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2024-03-07 to 2024-03-09.

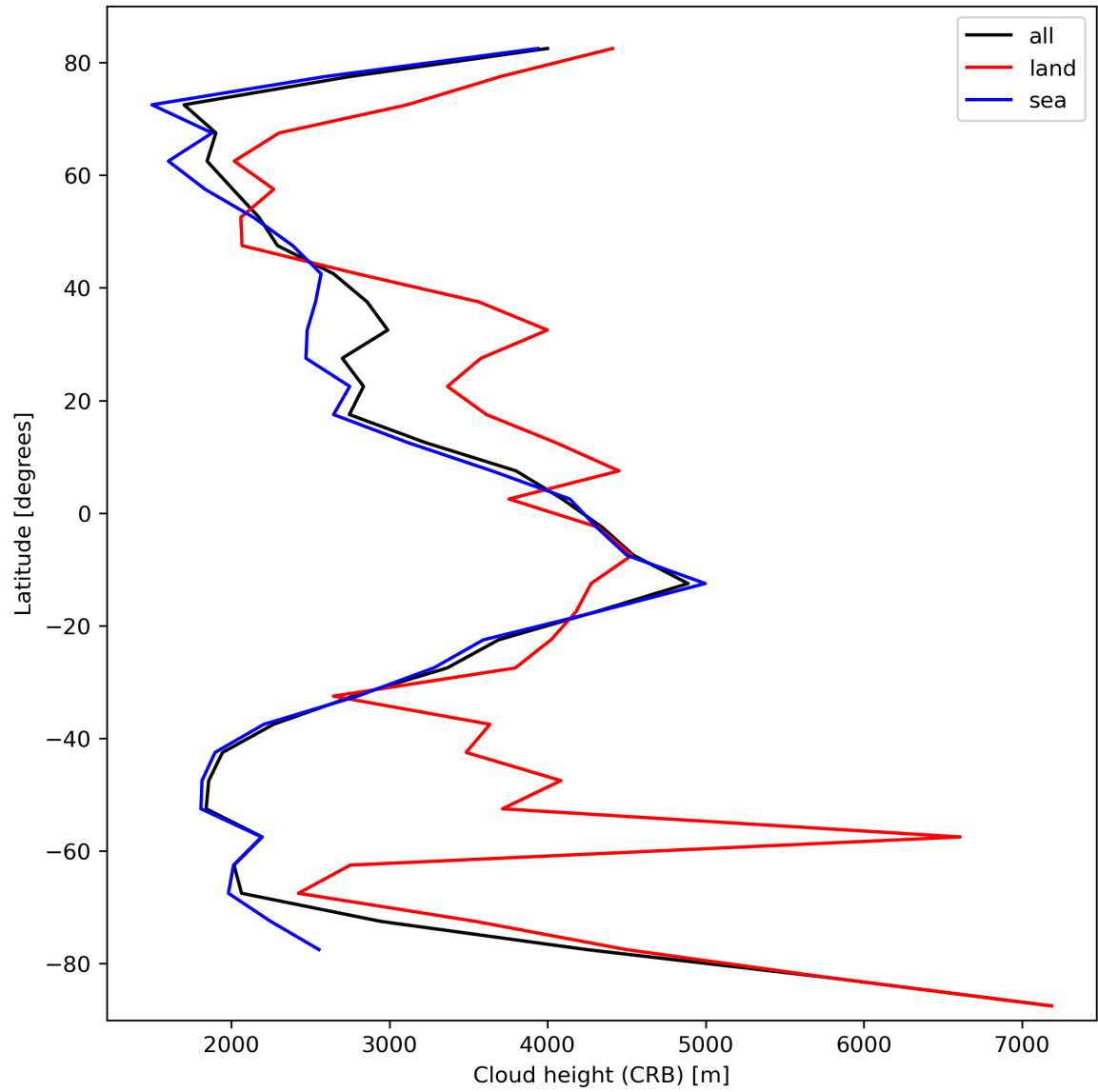


Figure 27: Zonal average of “Cloud height (CRB)” for 2024-03-07 to 2024-03-09.

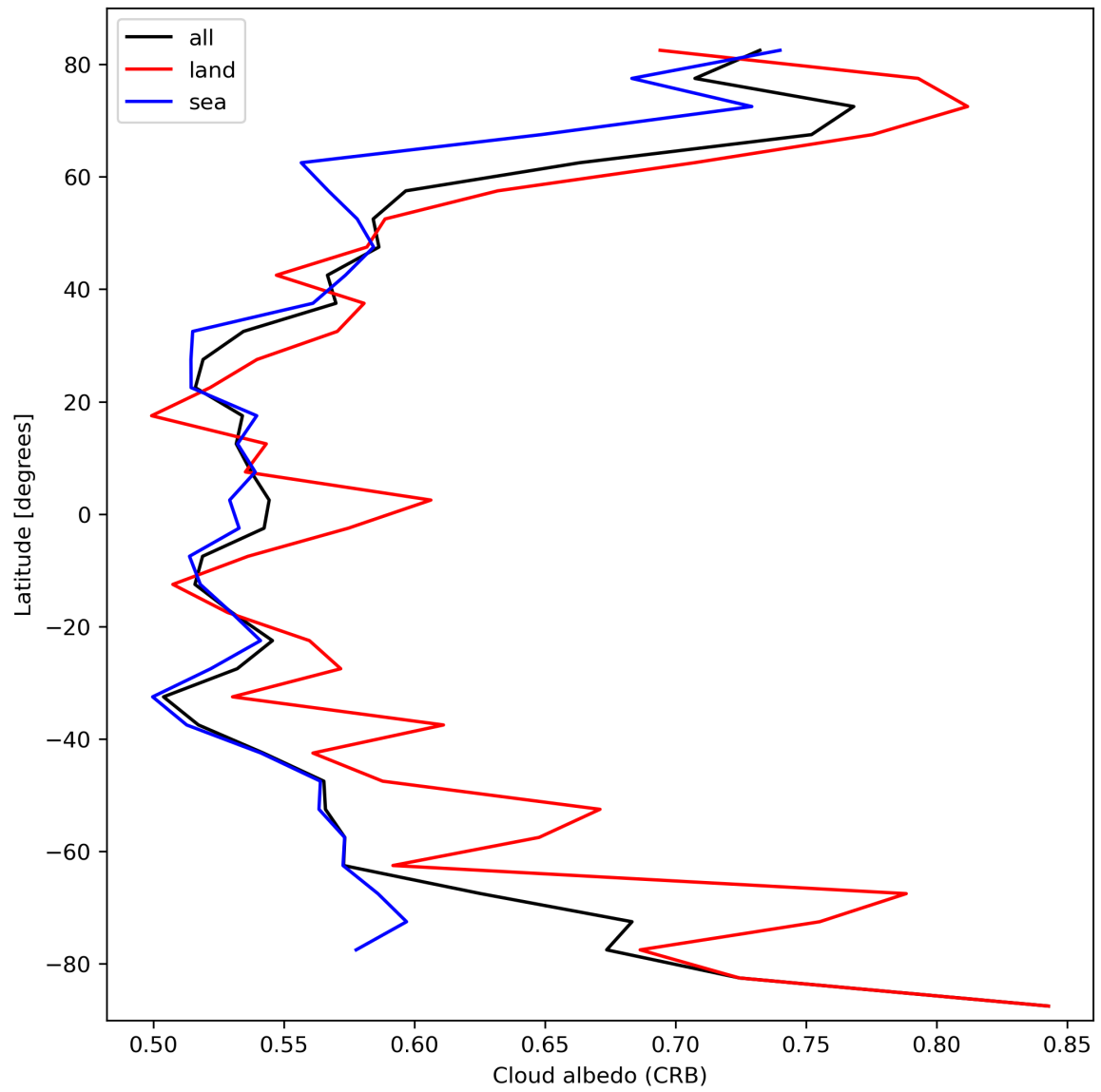


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2024-03-07 to 2024-03-09.

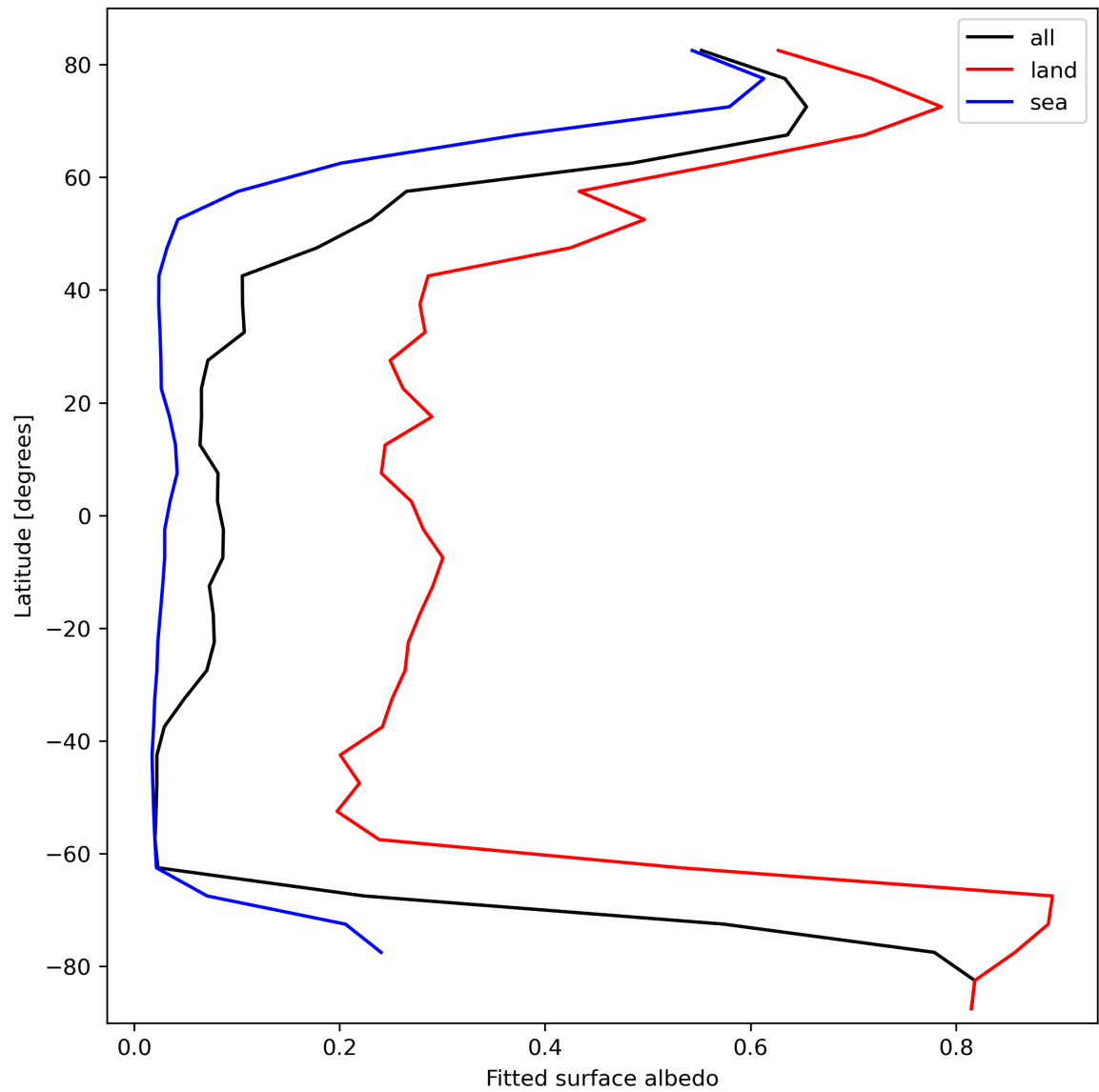


Figure 29: Zonal average of “Fitted surface albedo” for 2024-03-07 to 2024-03-09.

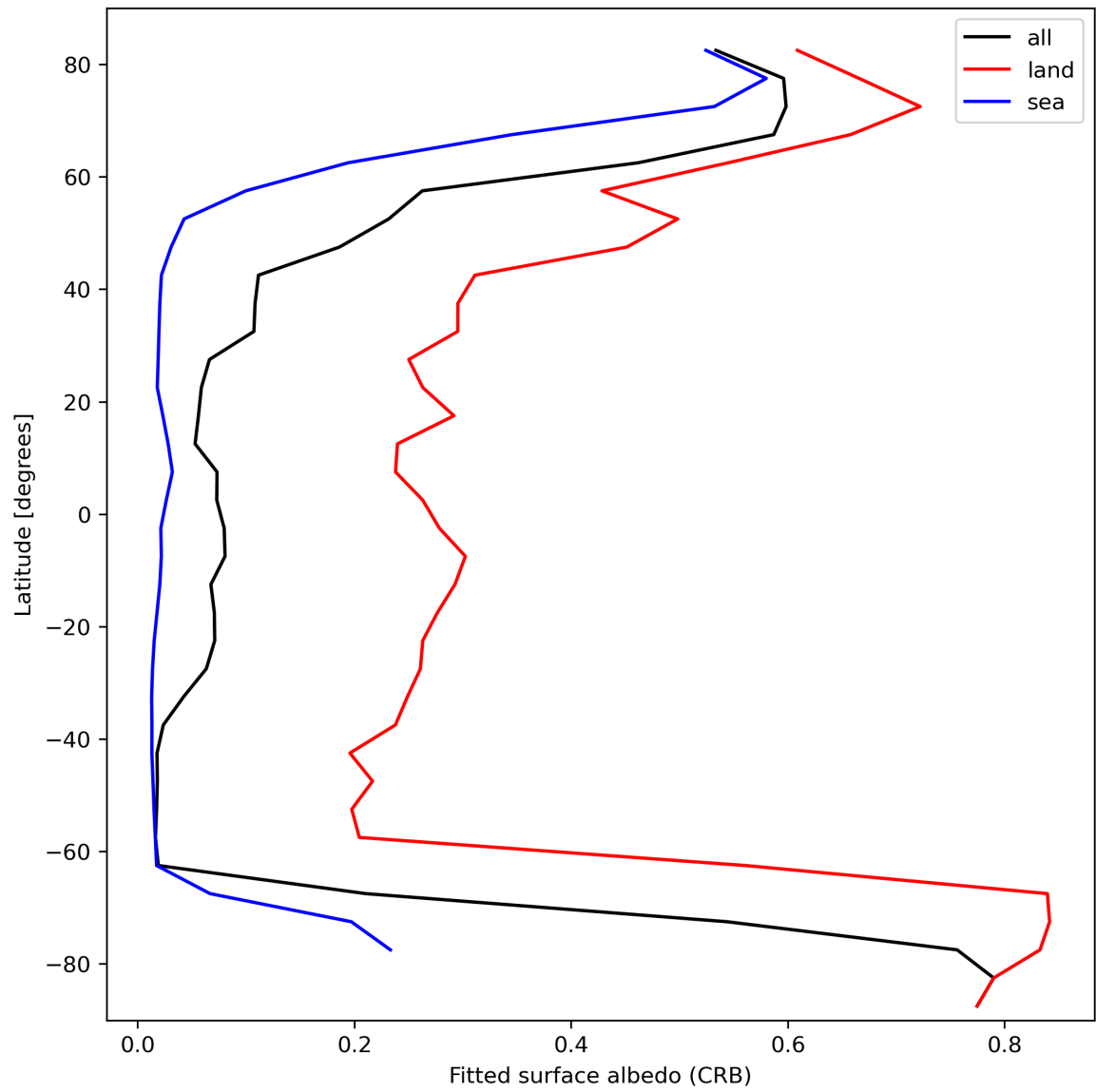


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2024-03-07 to 2024-03-09.

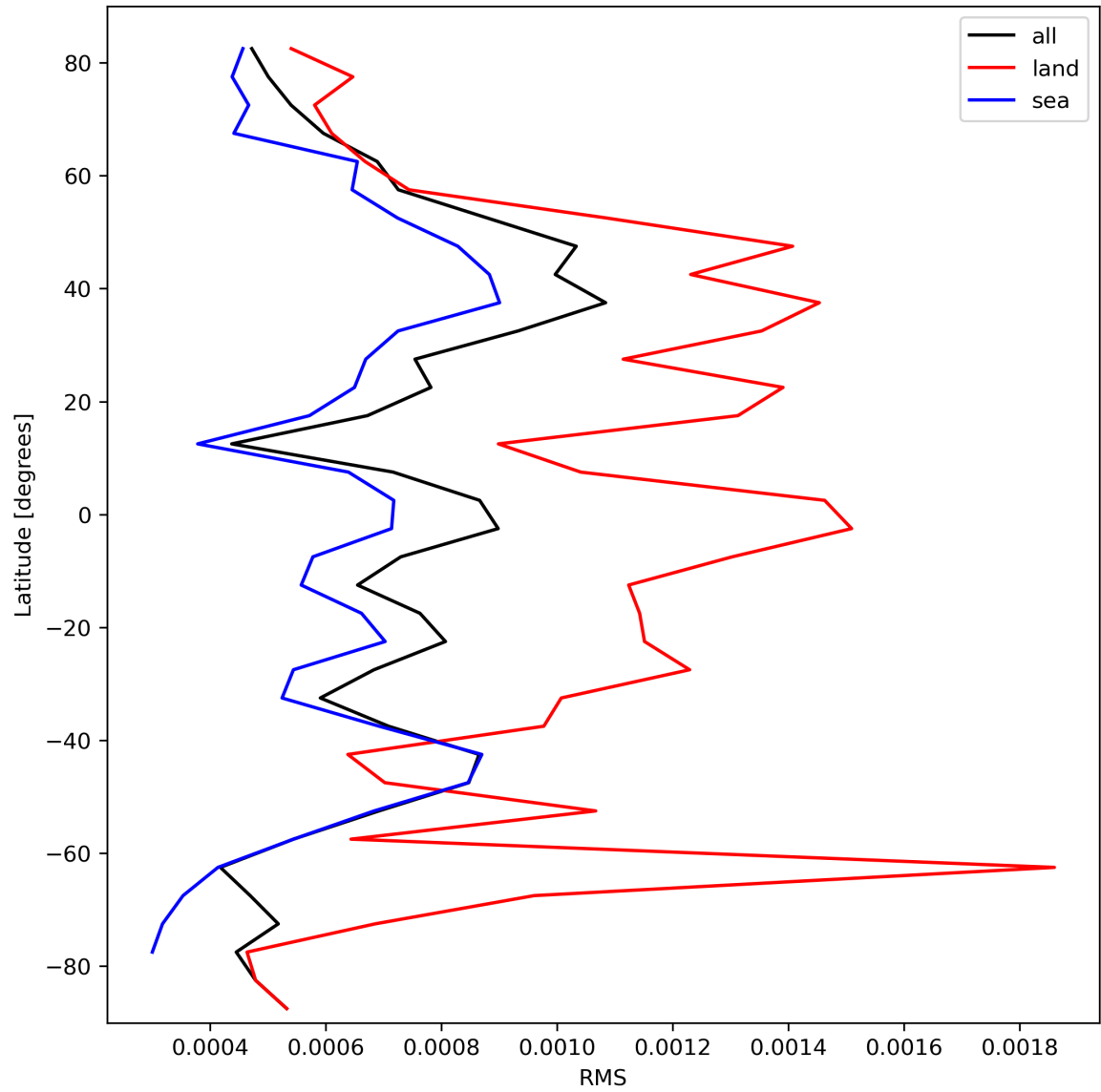


Figure 31: Zonal average of “RMS” for 2024-03-07 to 2024-03-09.

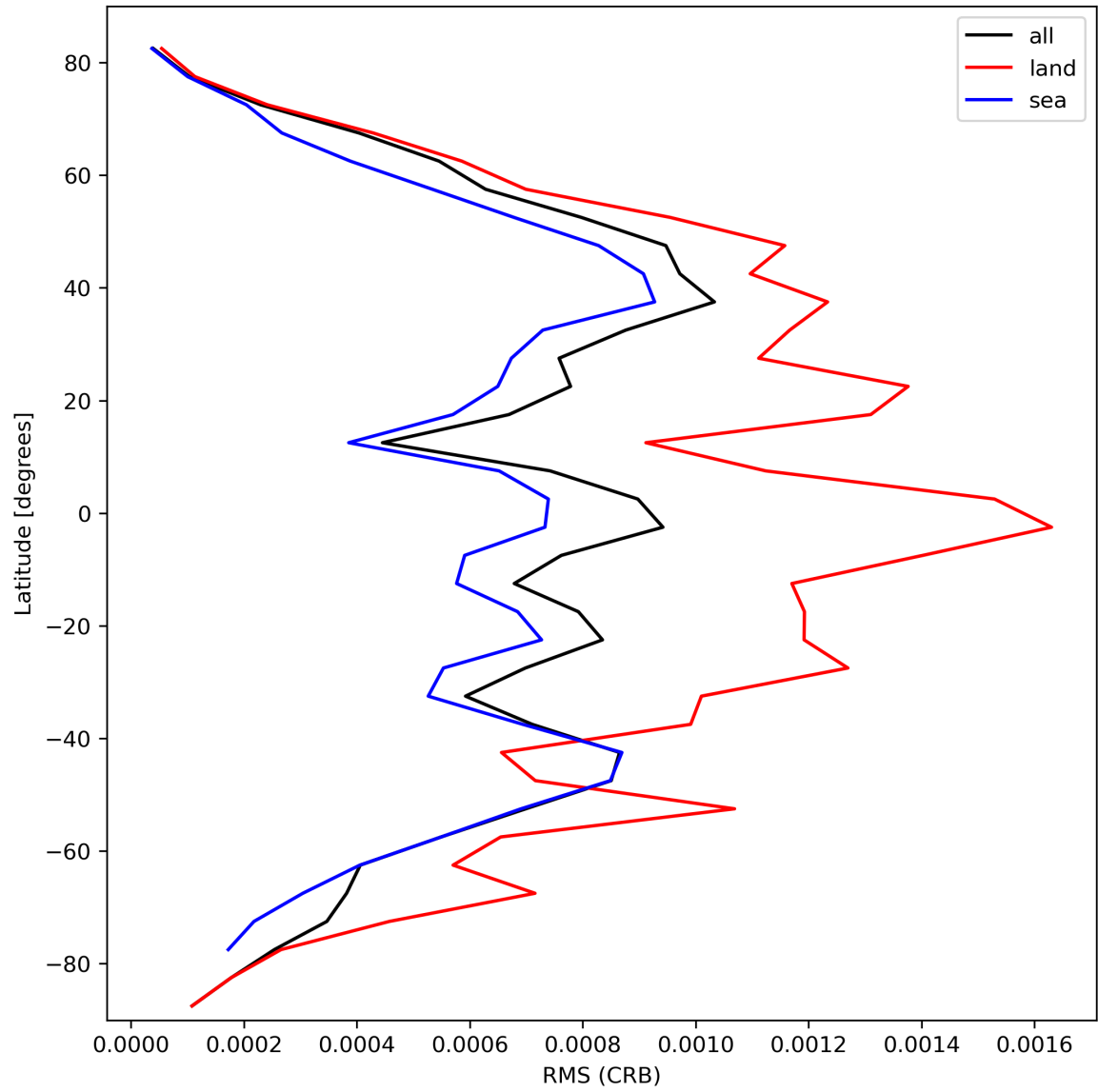


Figure 32: Zonal average of “RMS (CRB)” for 2024-03-07 to 2024-03-09.

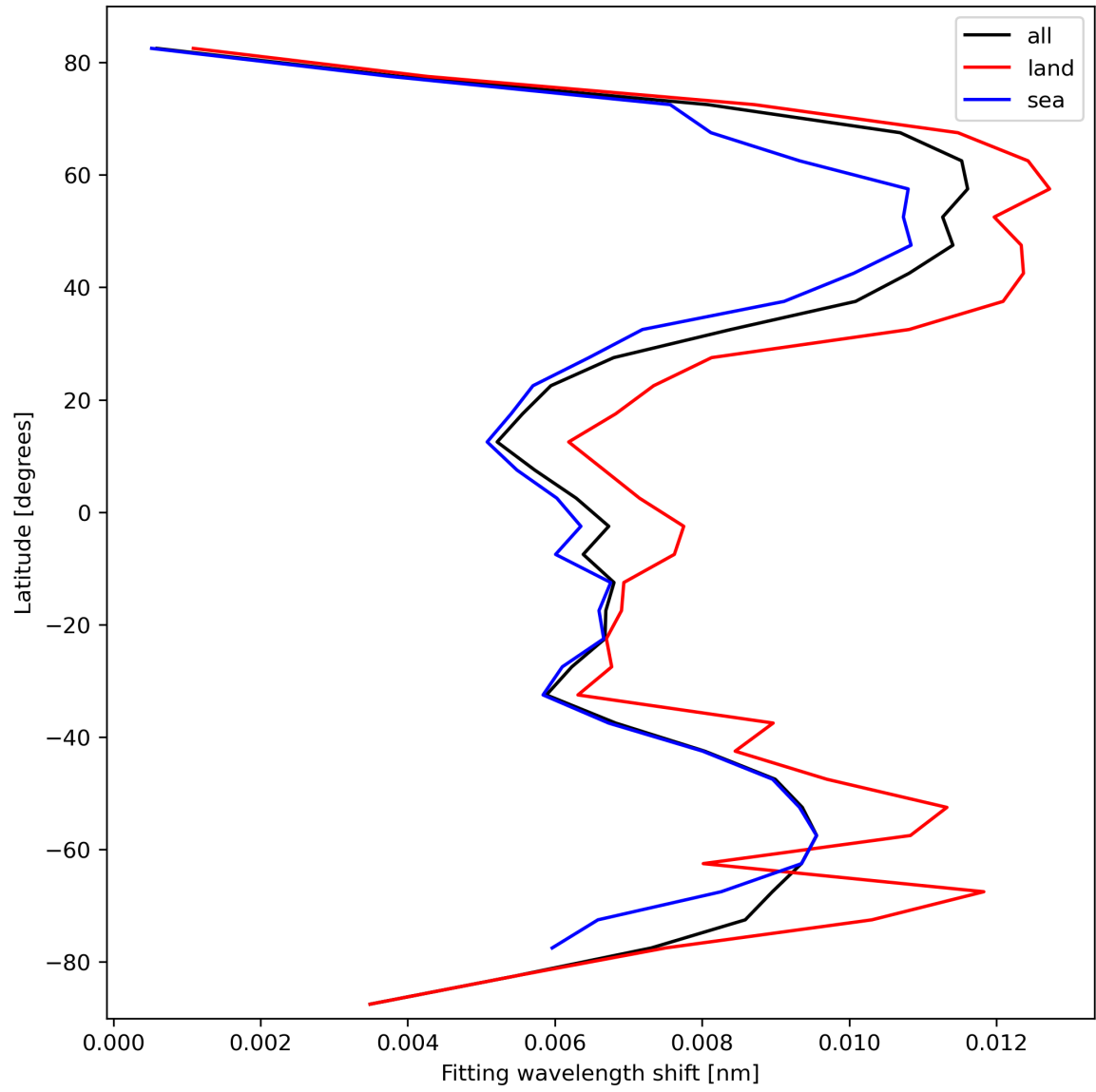


Figure 33: Zonal average of “Fitting wavelength shift” for 2024-03-07 to 2024-03-09.

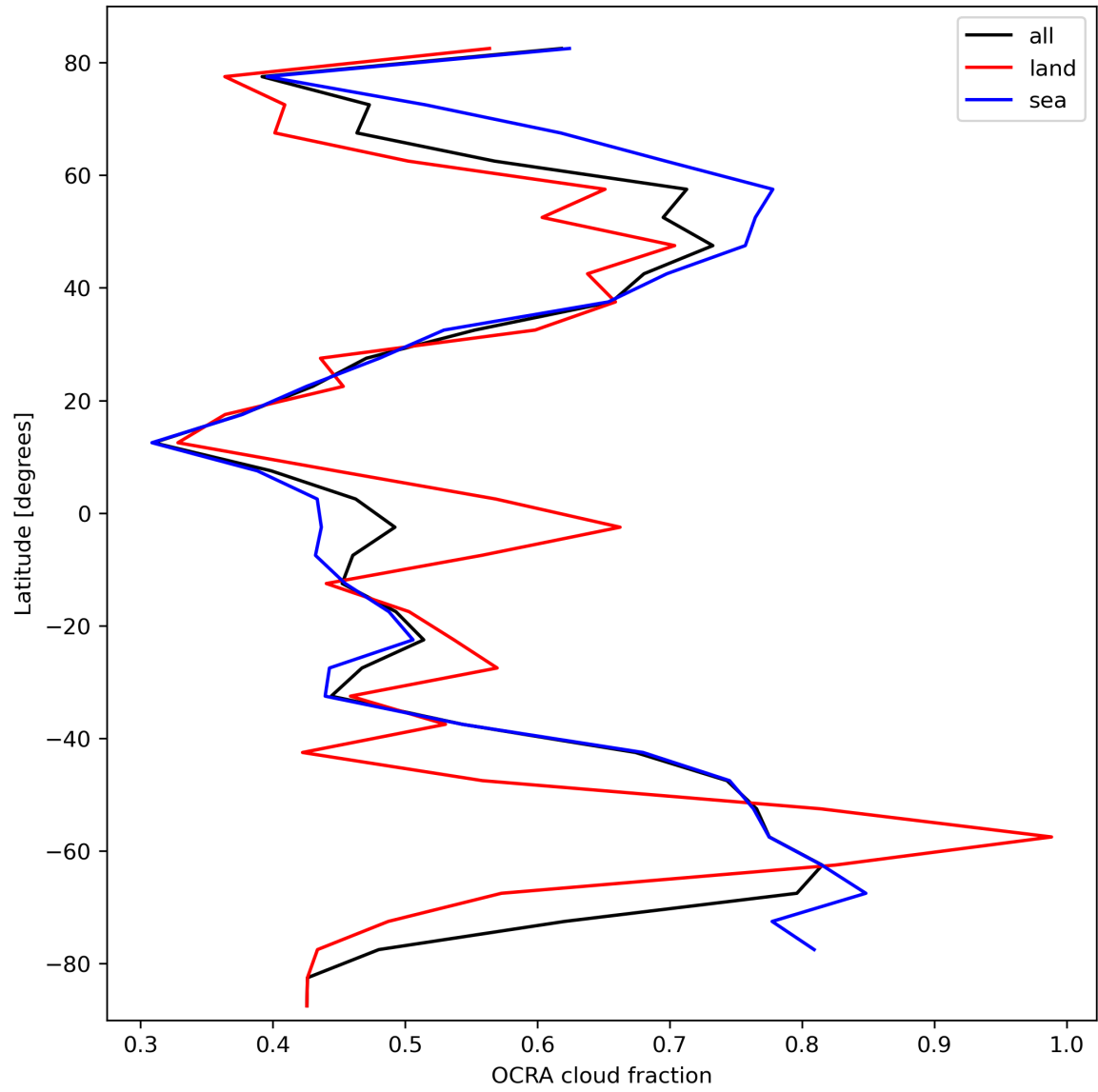


Figure 34: Zonal average of “OCRA cloud fraction” for 2024-03-07 to 2024-03-09.

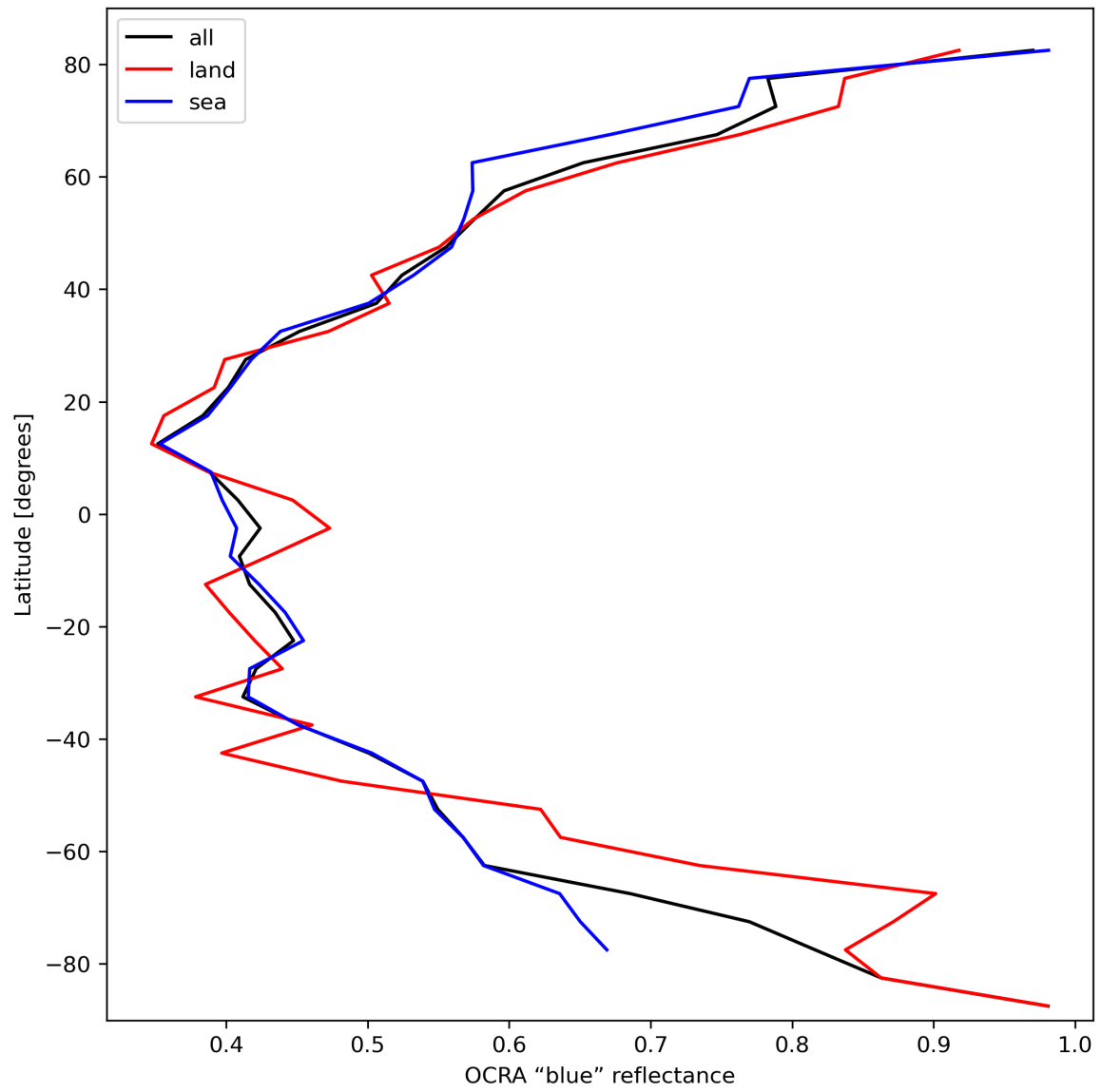


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2024-03-07 to 2024-03-09.

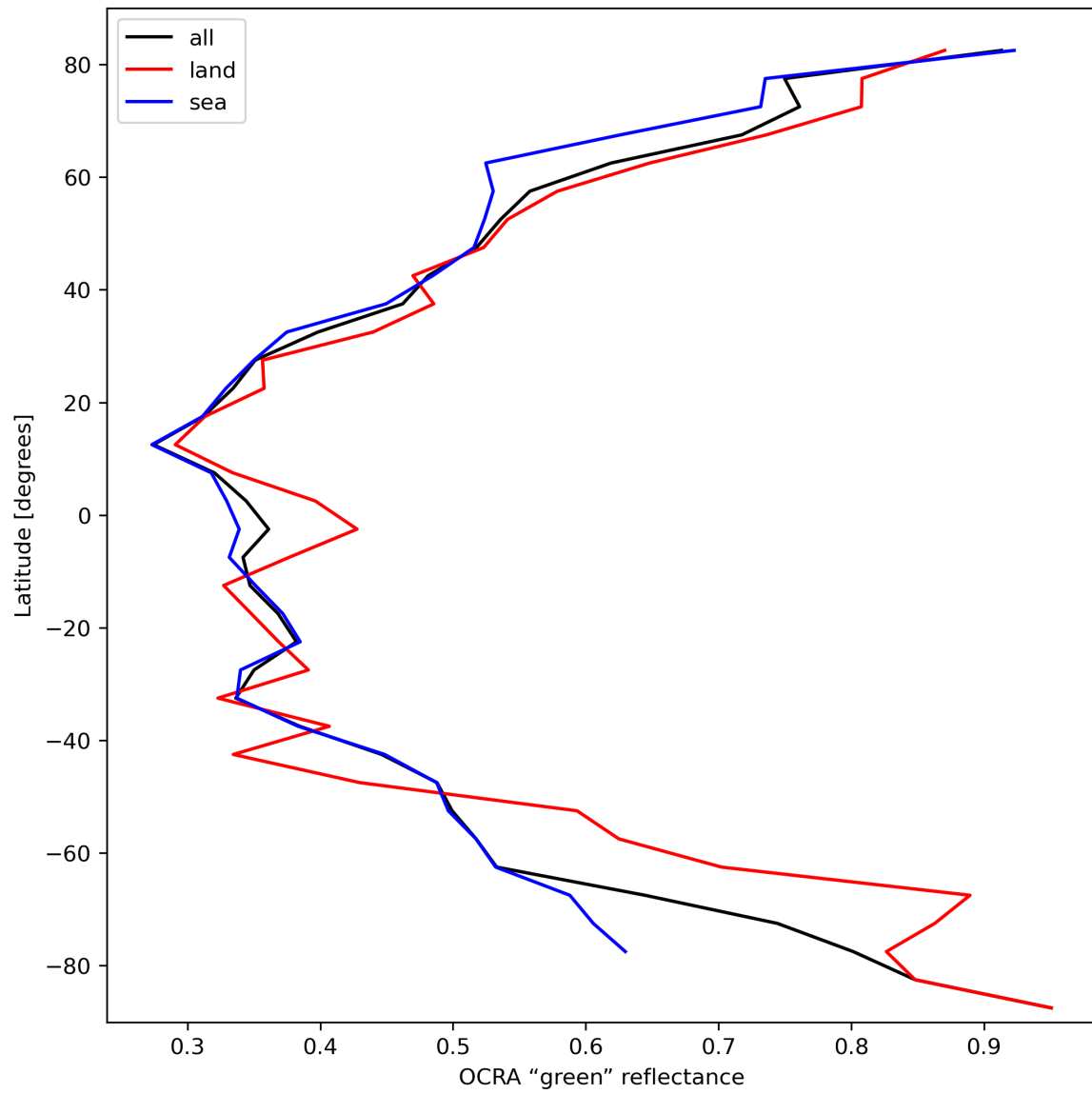


Figure 36: Zonal average of “OCRA “green” reflectance” for 2024-03-07 to 2024-03-09.

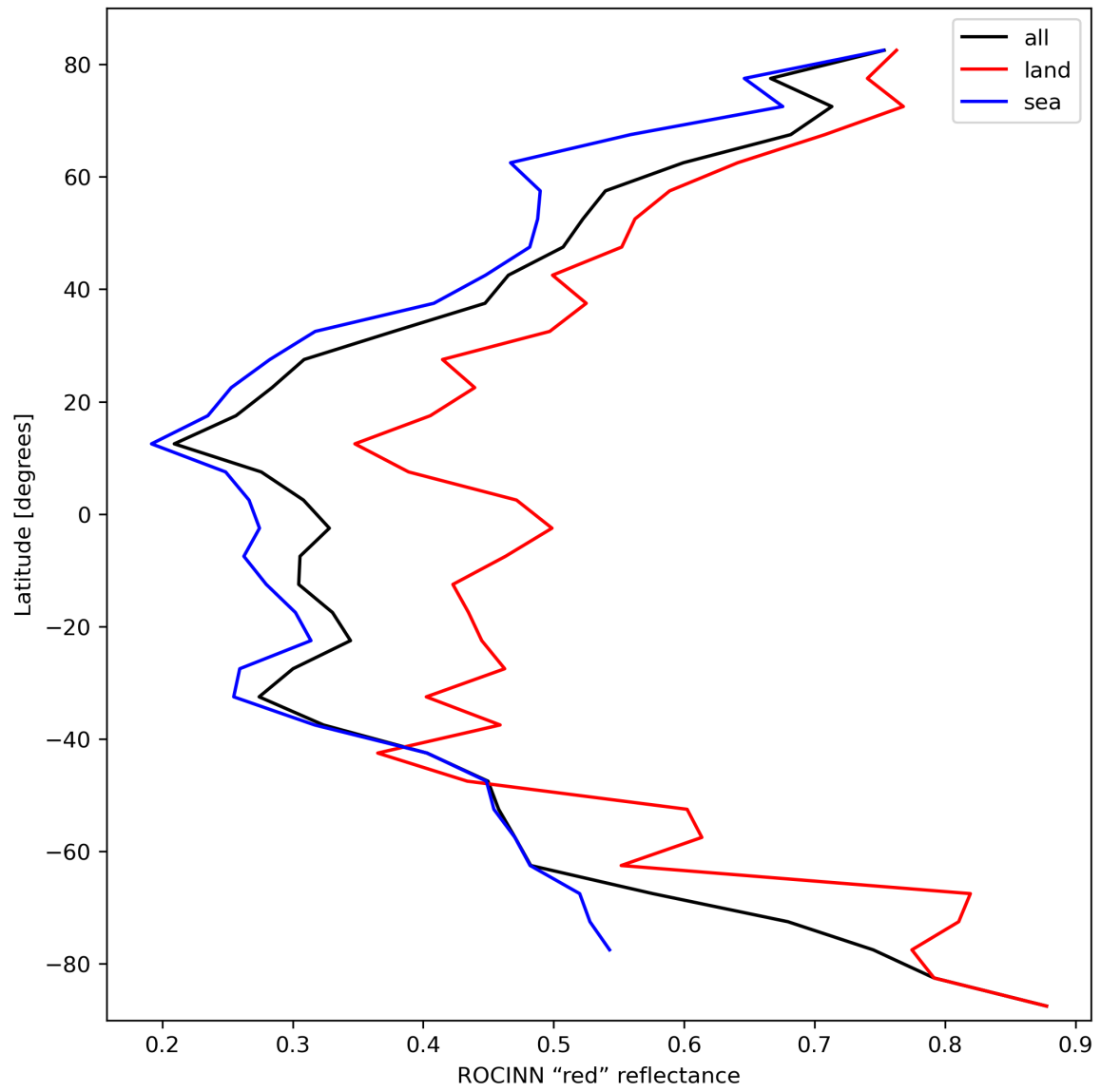


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2024-03-07 to 2024-03-09.

8 Histograms

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

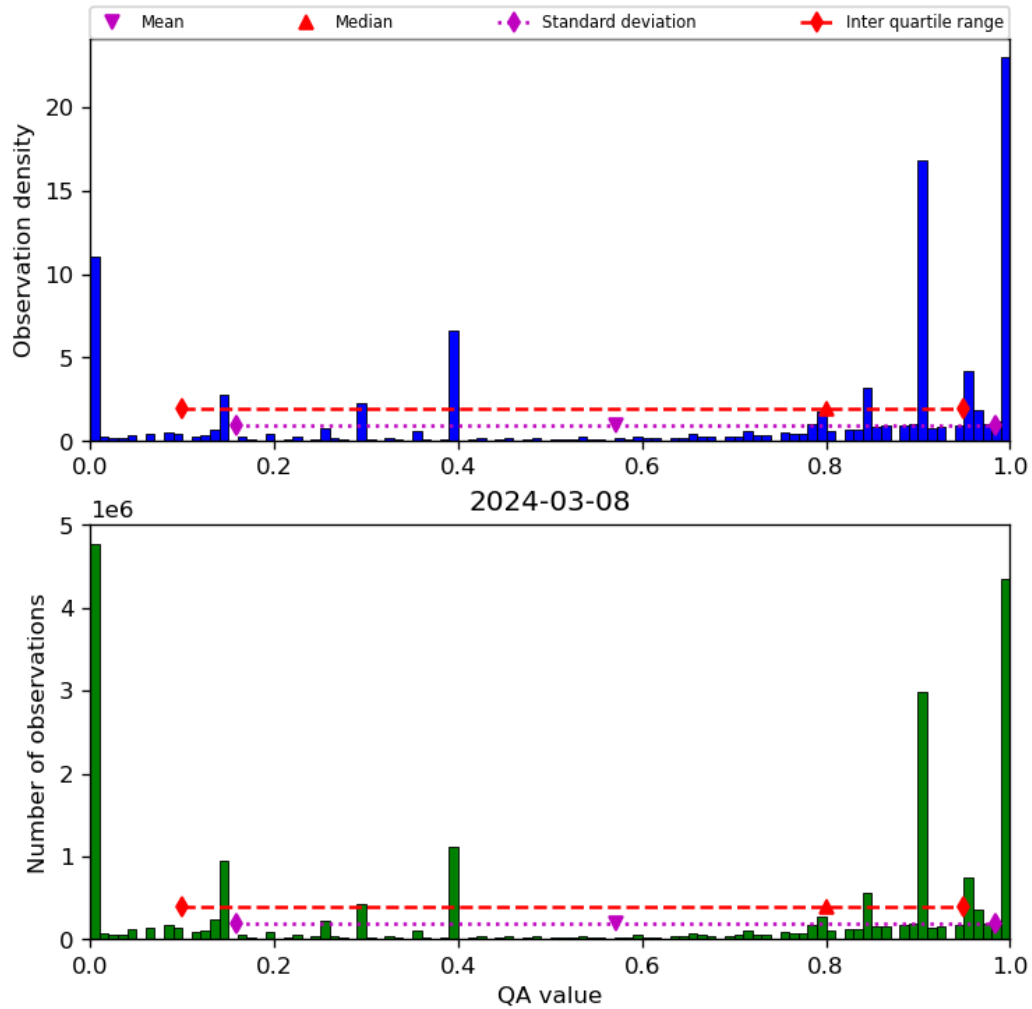


Figure 38: Histogram of “QA value” for 2024-03-07 to 2024-03-09

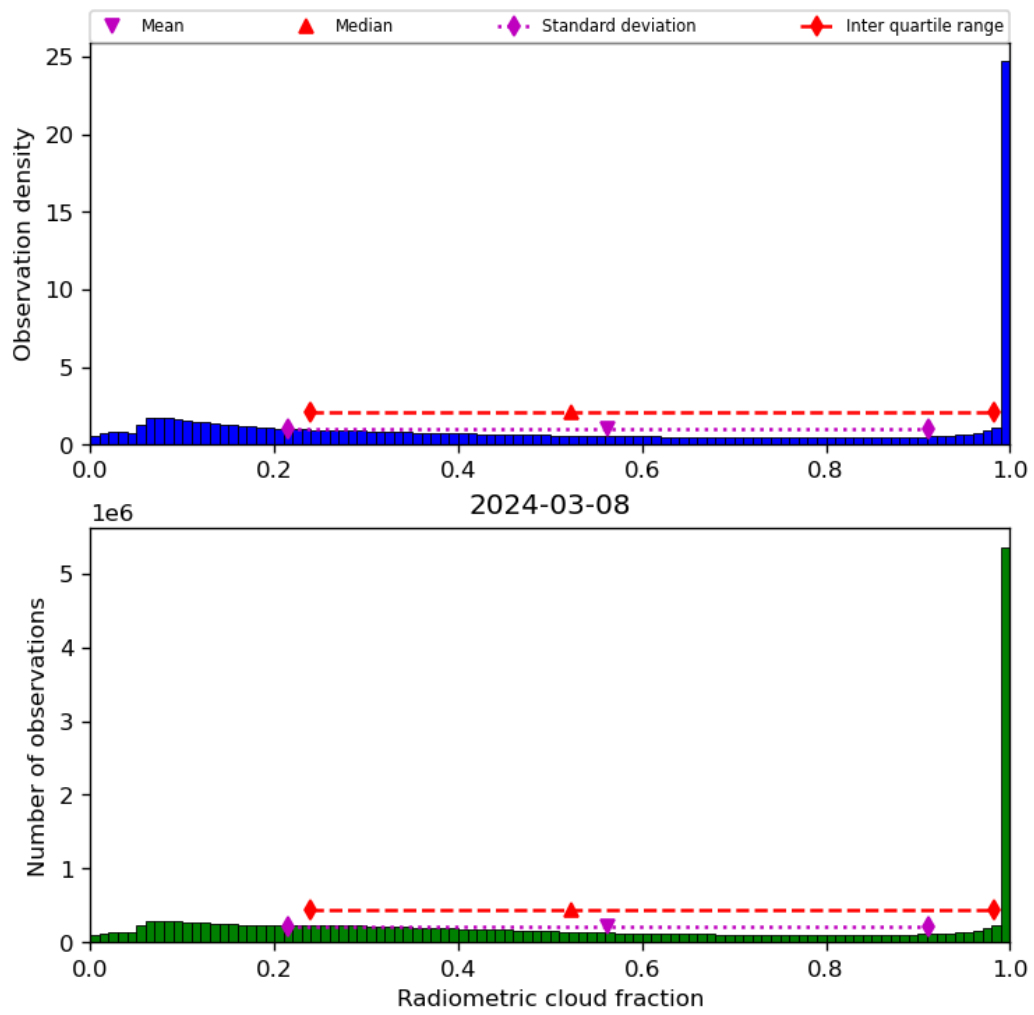


Figure 39: Histogram of “Radiometric cloud fraction” for 2024-03-07 to 2024-03-09

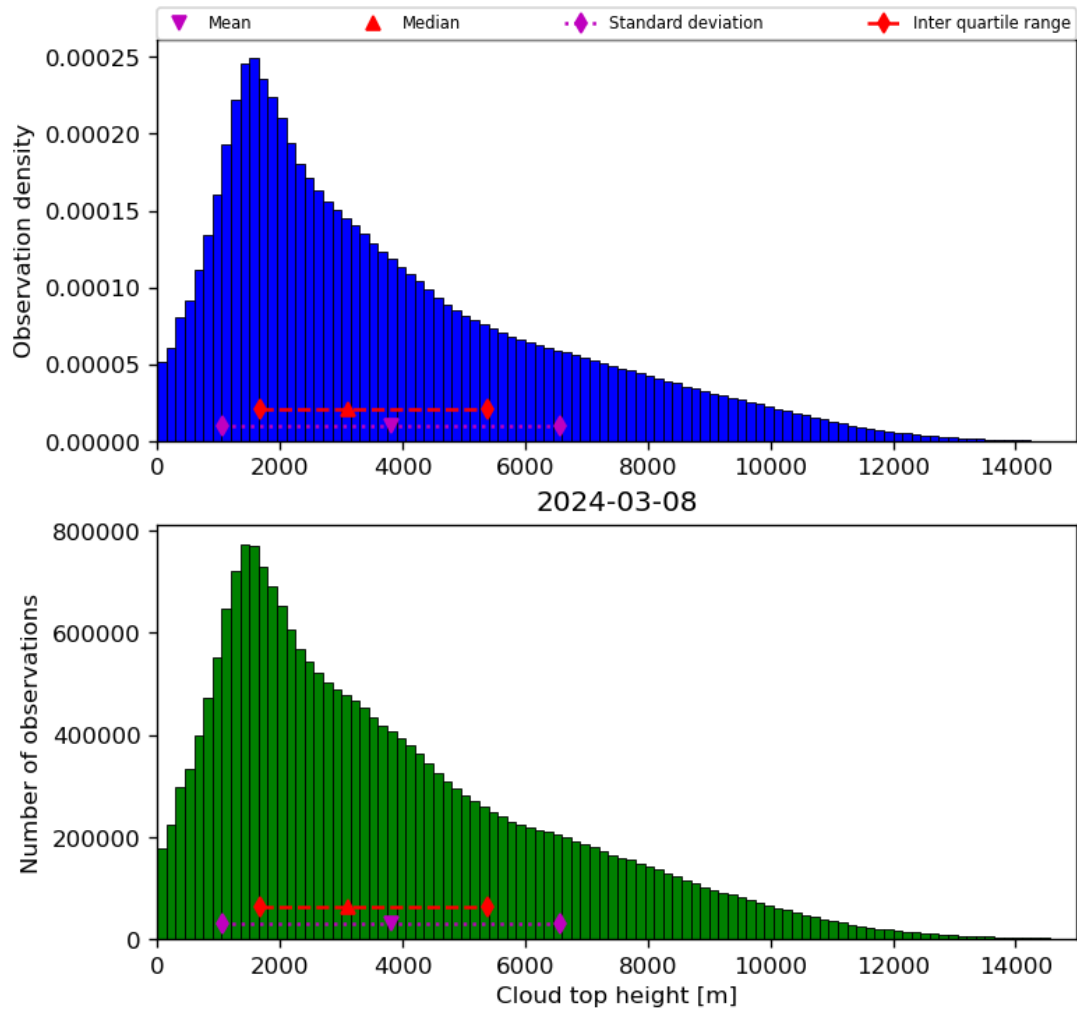


Figure 40: Histogram of “Cloud top height” for 2024-03-07 to 2024-03-09

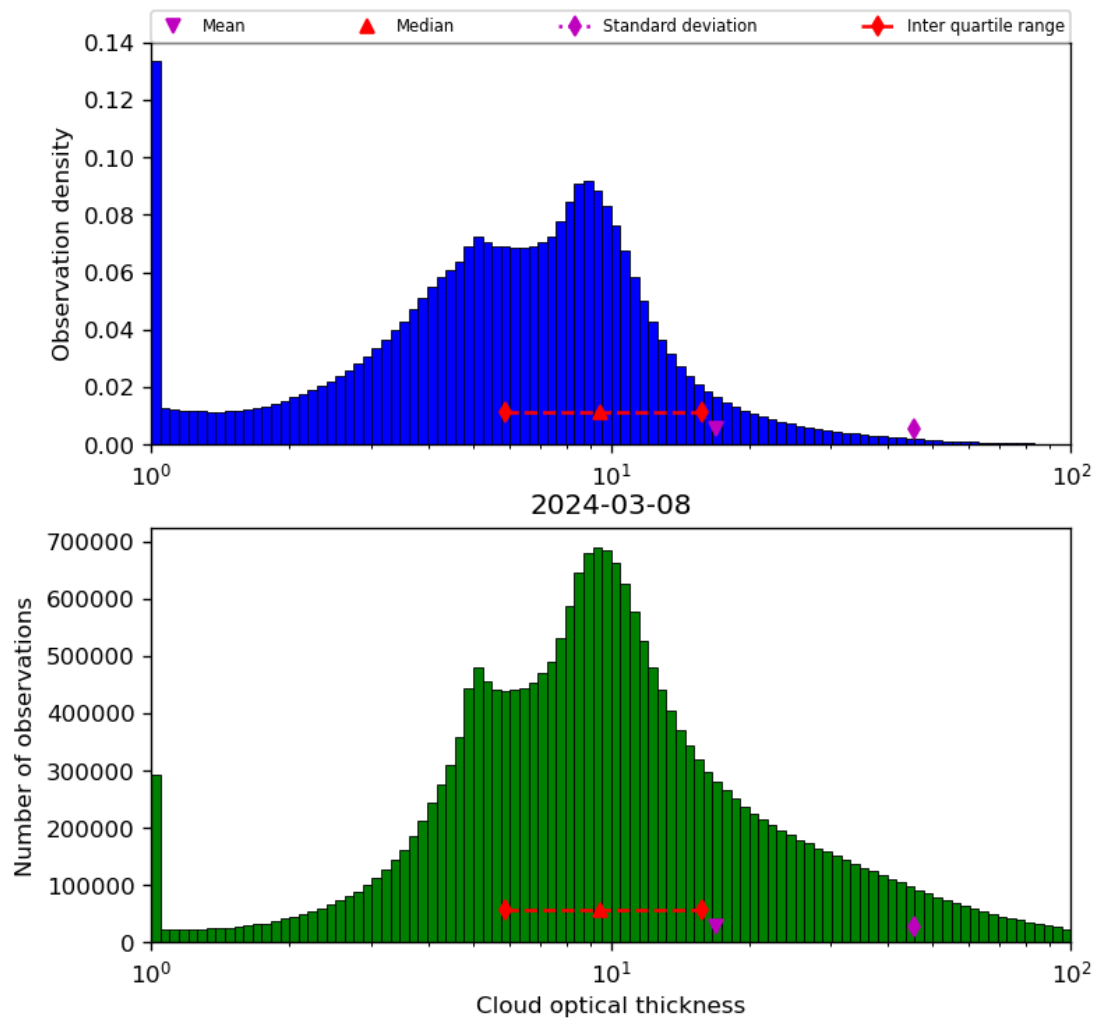


Figure 41: Histogram of “Cloud optical thickness” for 2024-03-07 to 2024-03-09

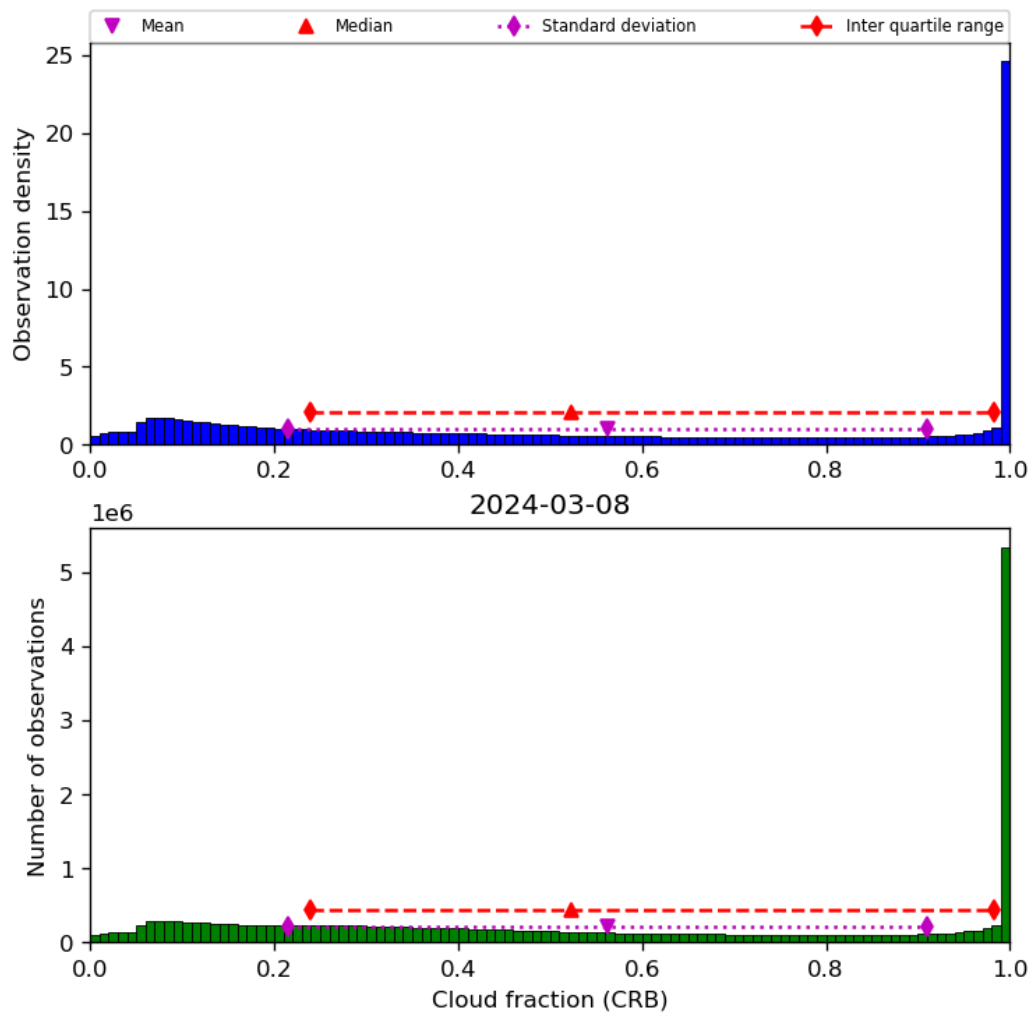


Figure 42: Histogram of “Cloud fraction (CRB)” for 2024-03-07 to 2024-03-09

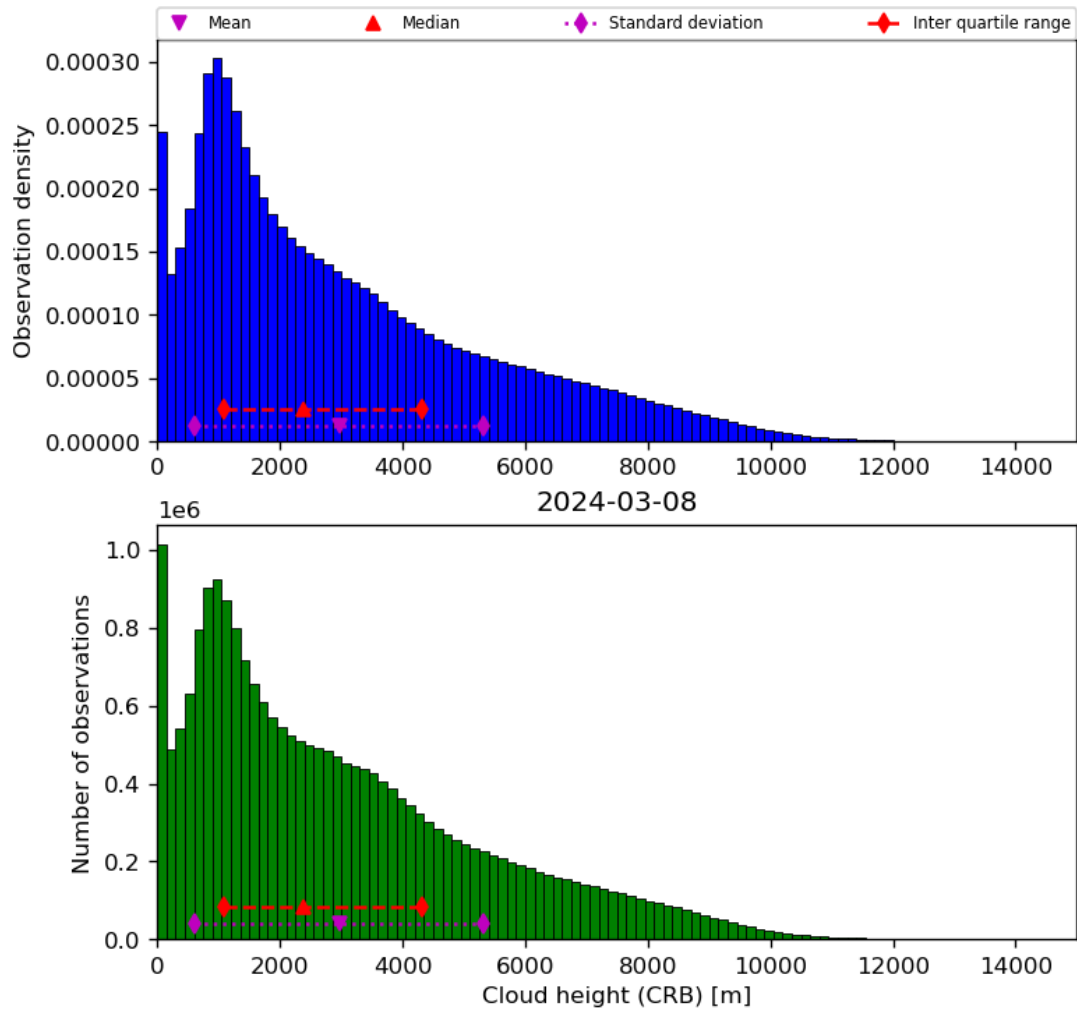


Figure 43: Histogram of “Cloud height (CRB)” for 2024-03-07 to 2024-03-09

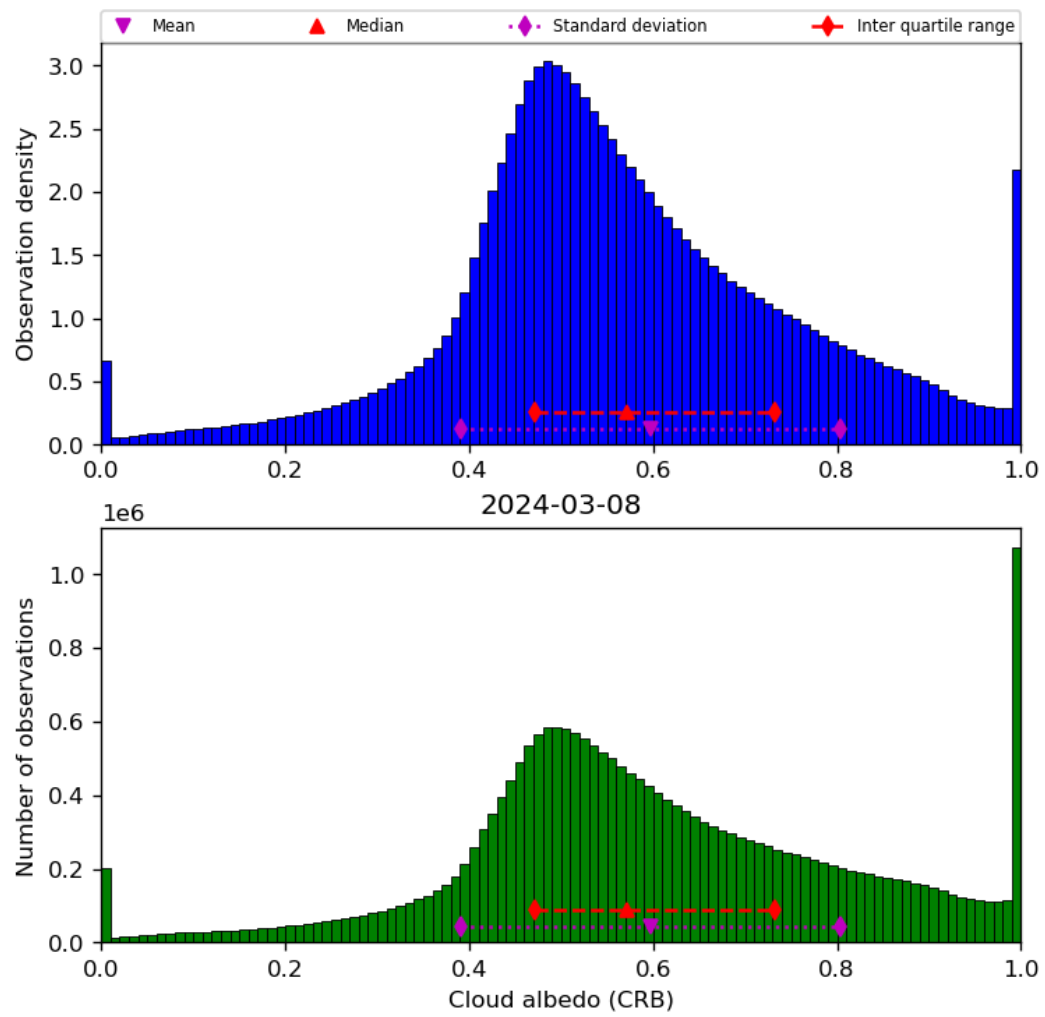


Figure 44: Histogram of “Cloud albedo (CRB)” for 2024-03-07 to 2024-03-09

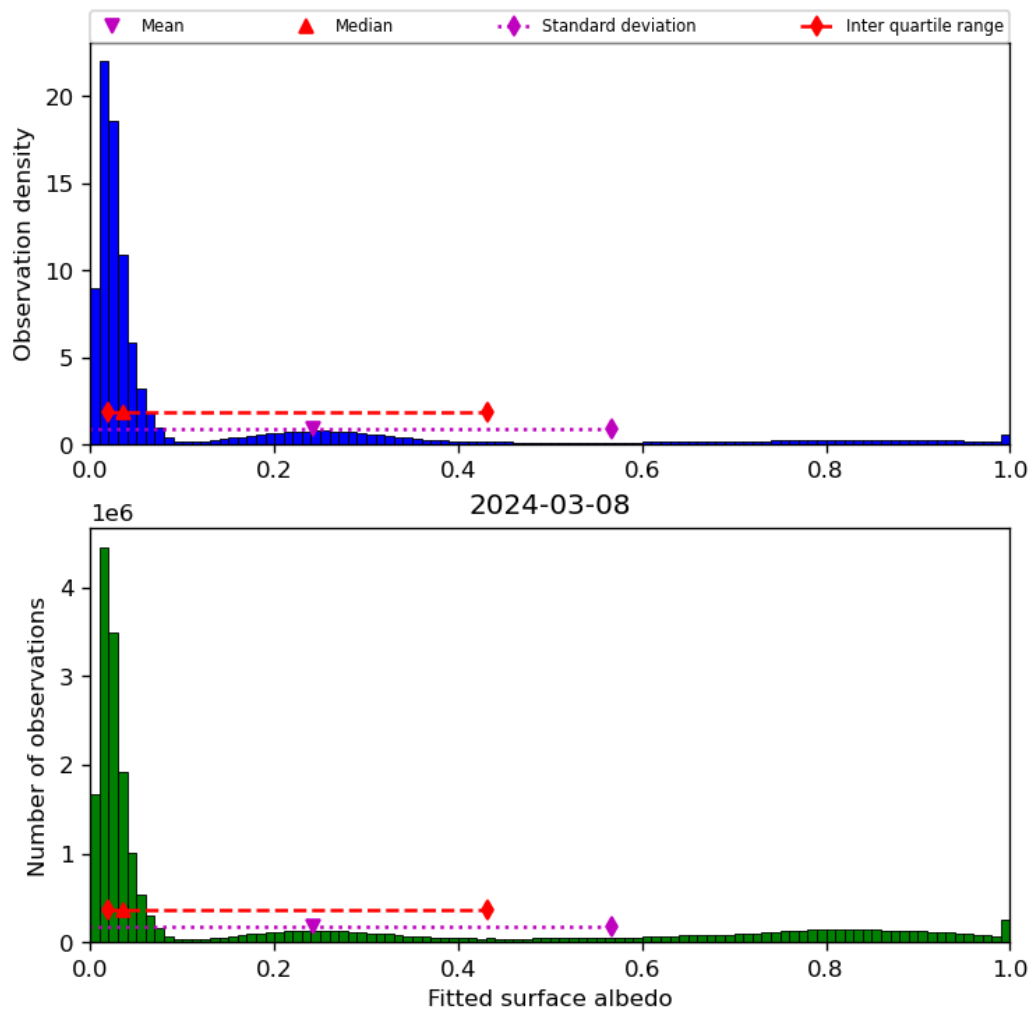


Figure 45: Histogram of “Fitted surface albedo” for 2024-03-07 to 2024-03-09

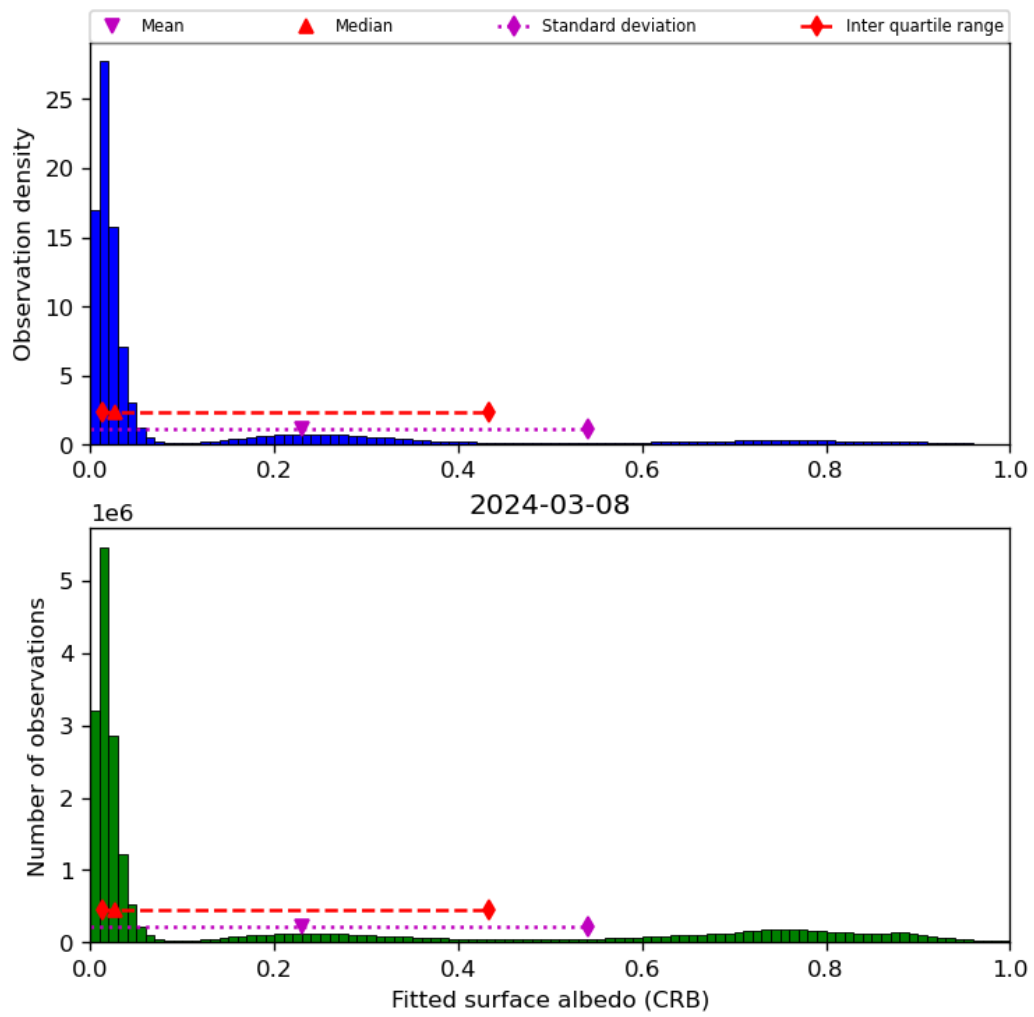


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2024-03-07 to 2024-03-09

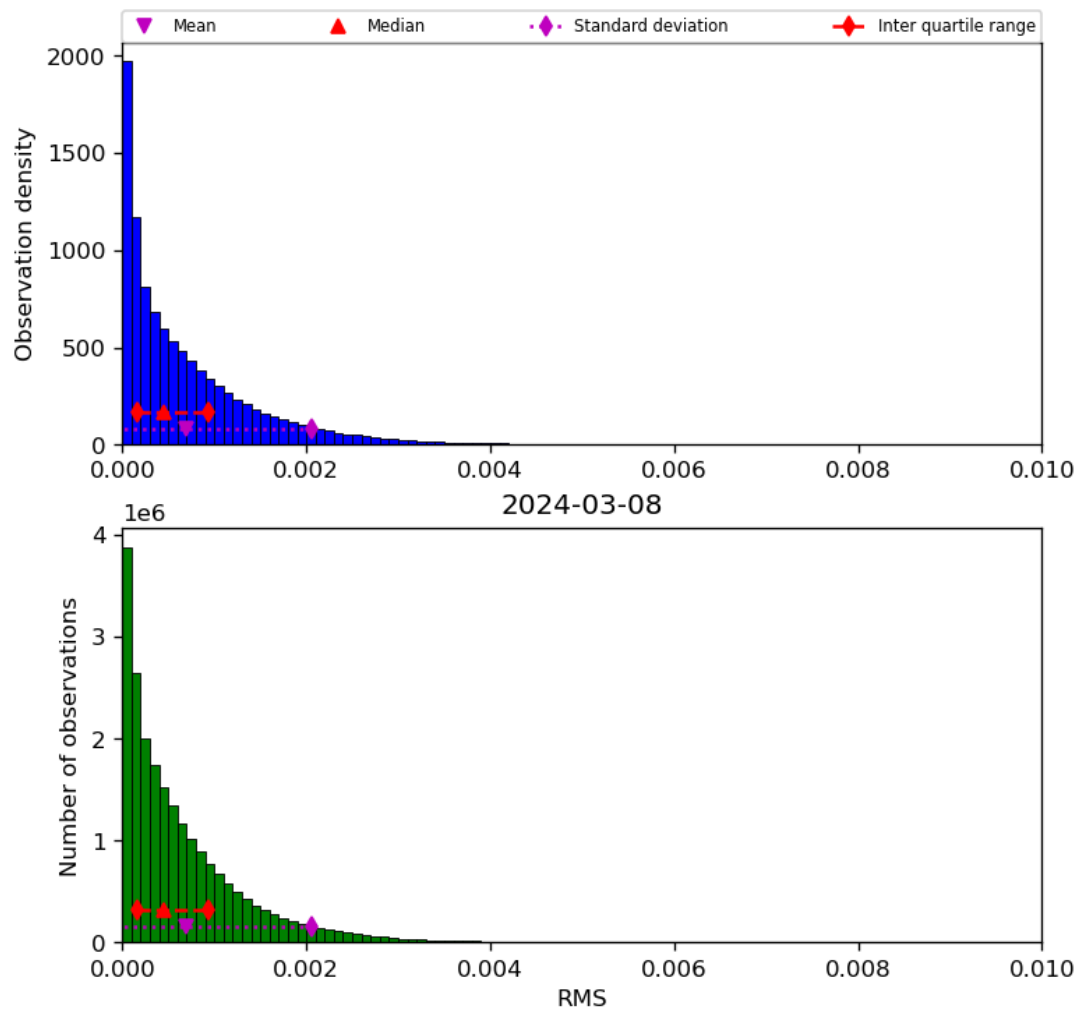


Figure 47: Histogram of “RMS” for 2024-03-07 to 2024-03-09

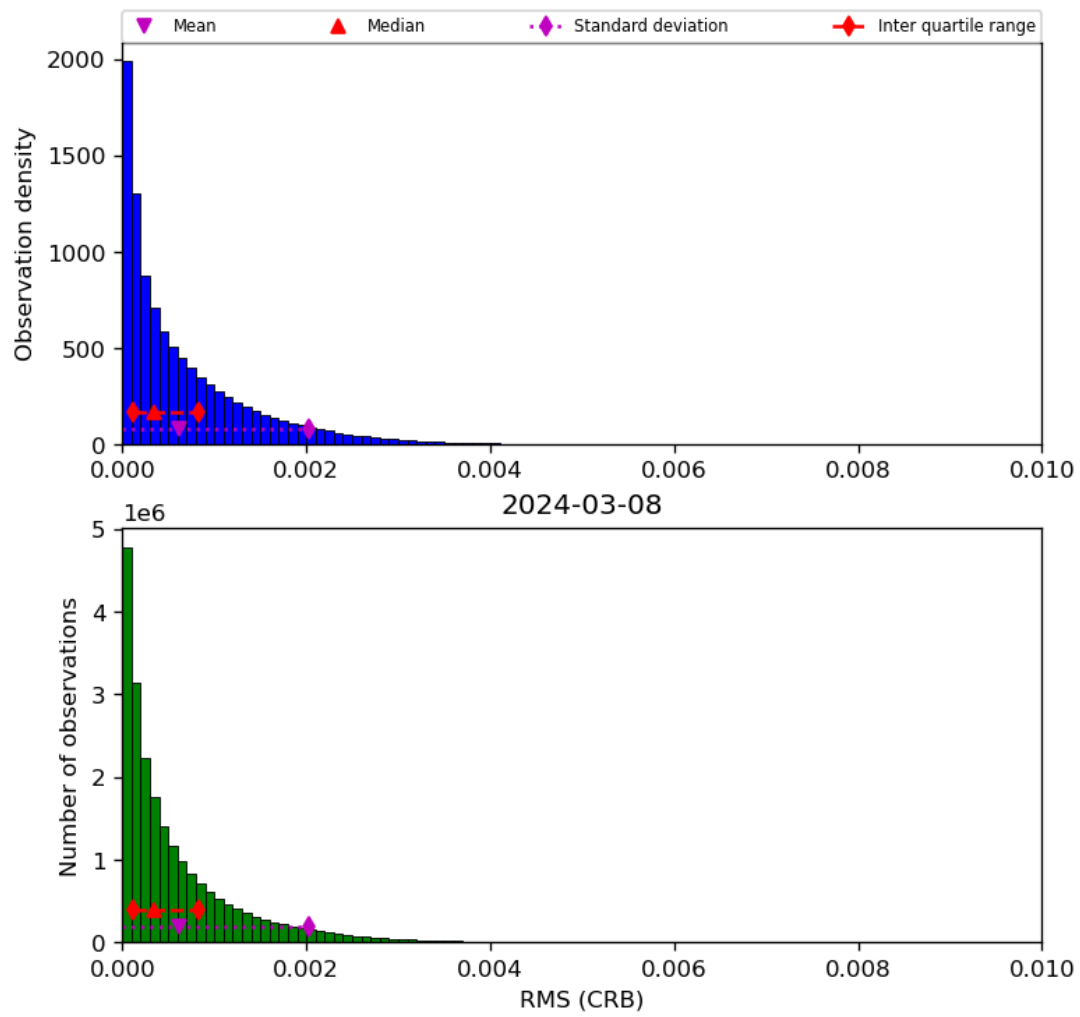


Figure 48: Histogram of “RMS (CRB)” for 2024-03-07 to 2024-03-09

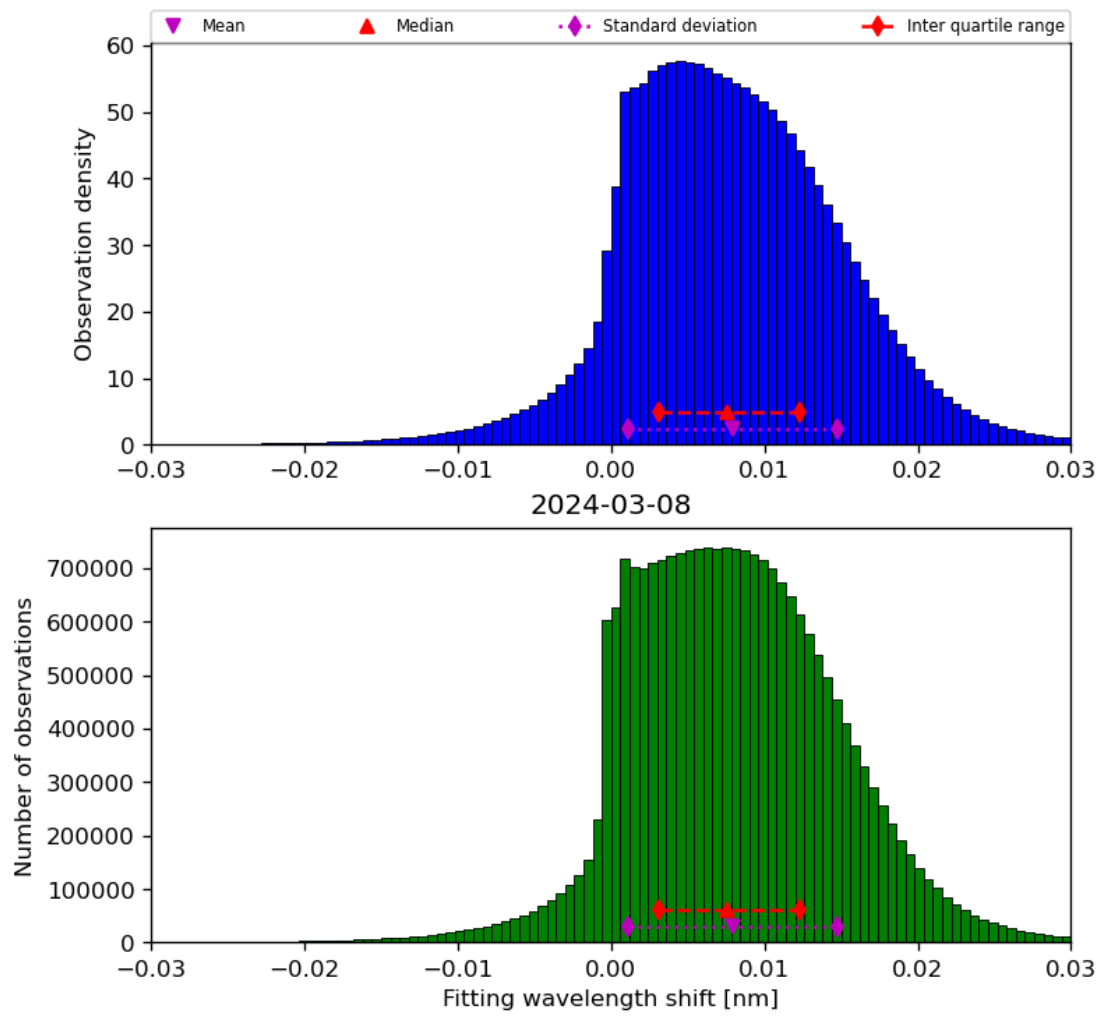


Figure 49: Histogram of “Fitting wavelength shift” for 2024-03-07 to 2024-03-09

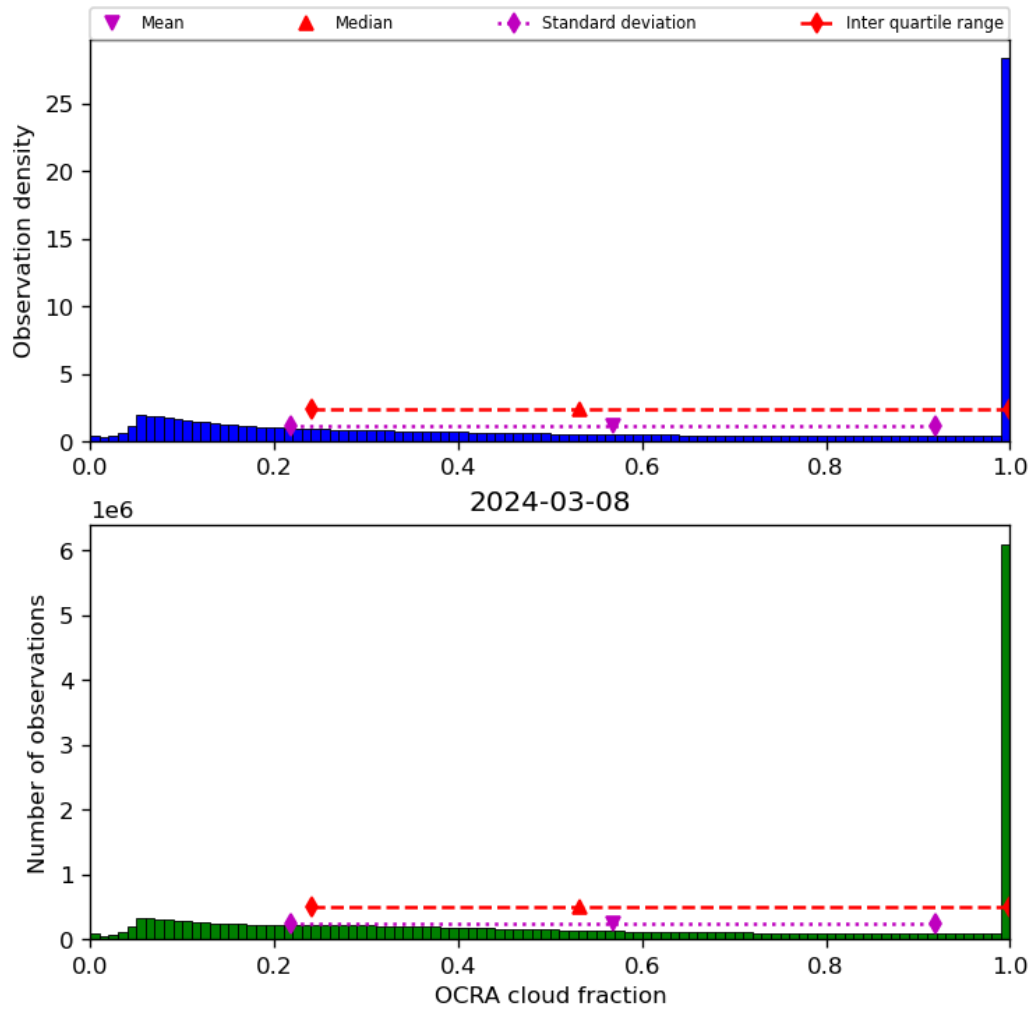


Figure 50: Histogram of “OCRA cloud fraction” for 2024-03-07 to 2024-03-09

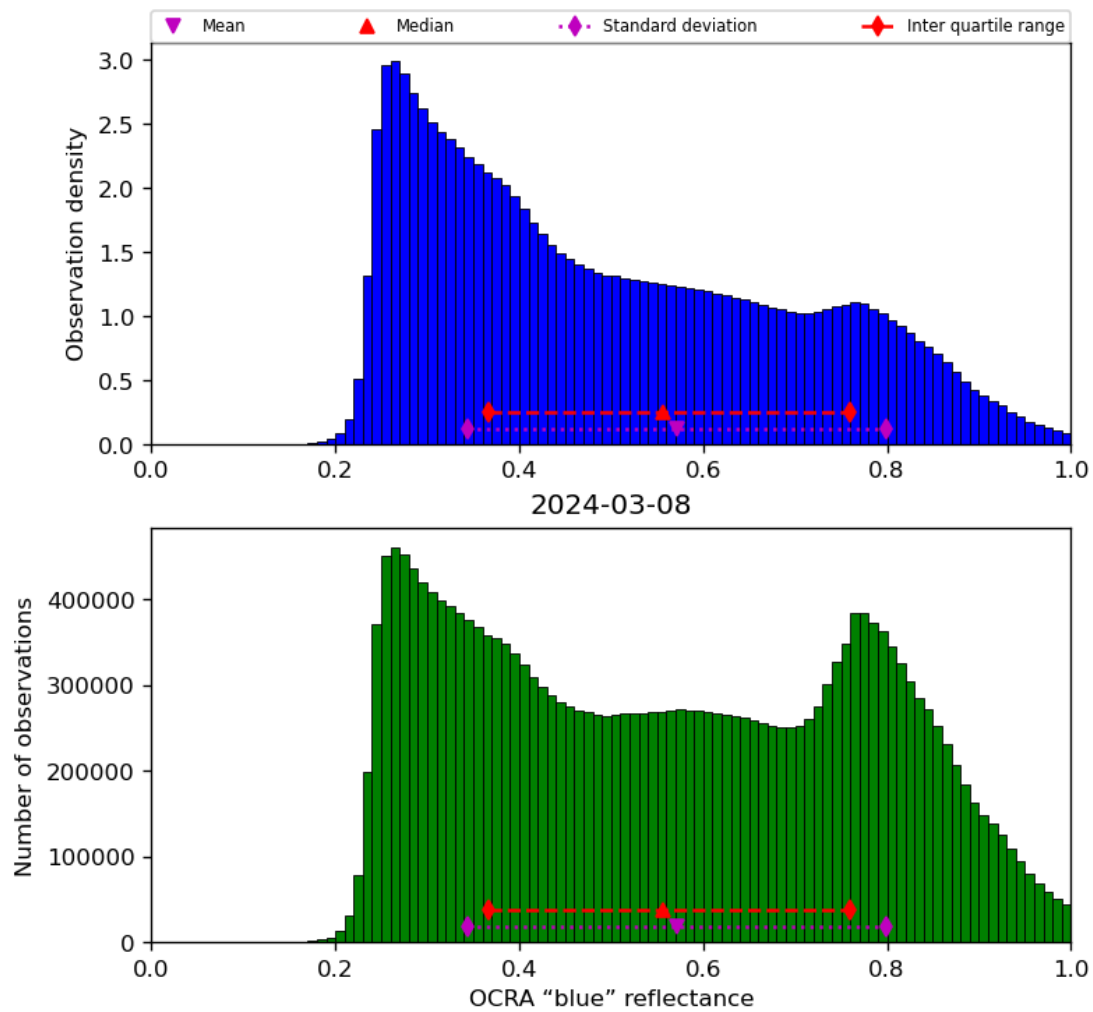


Figure 51: Histogram of “OCRA “blue” reflectance” for 2024-03-07 to 2024-03-09

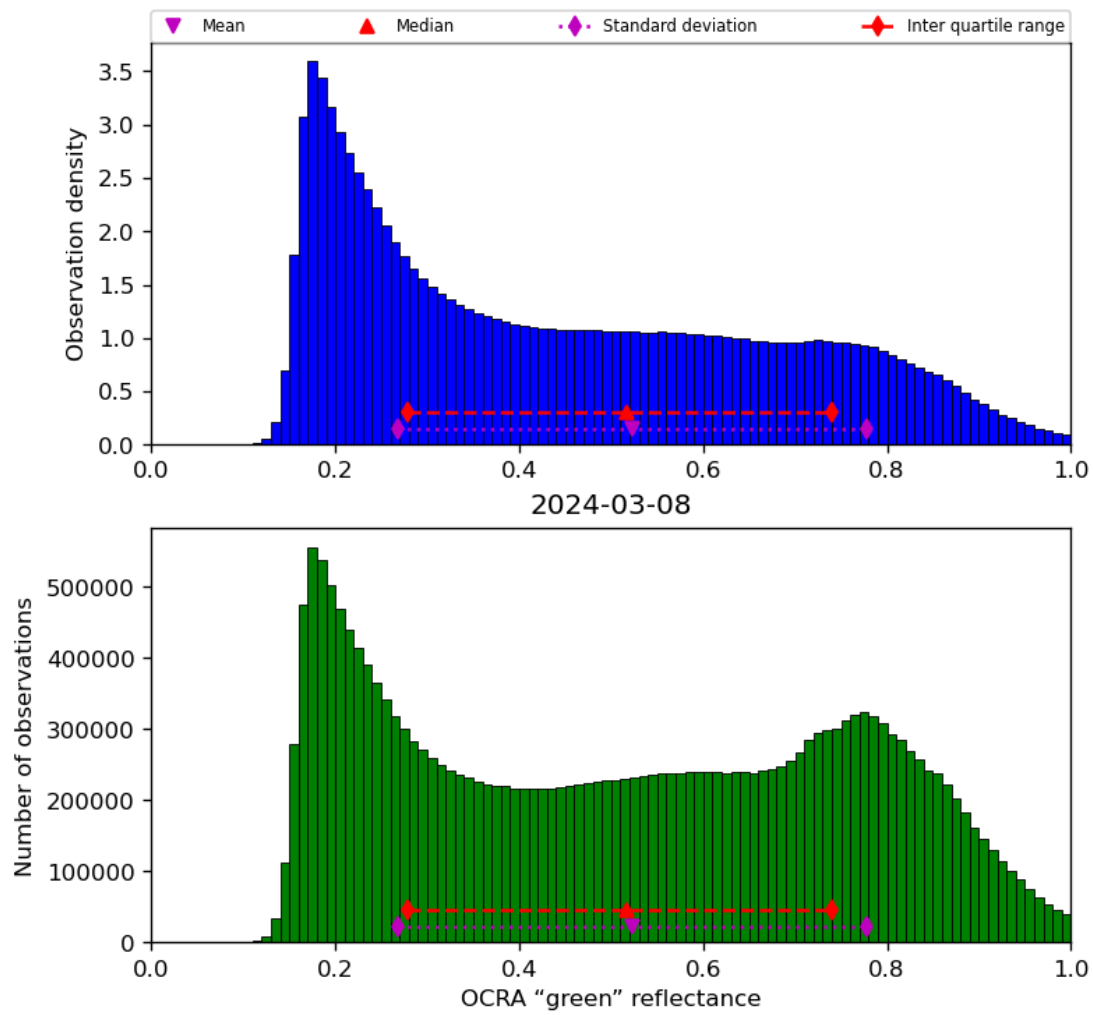


Figure 52: Histogram of “OCRA “green” reflectance” for 2024-03-07 to 2024-03-09

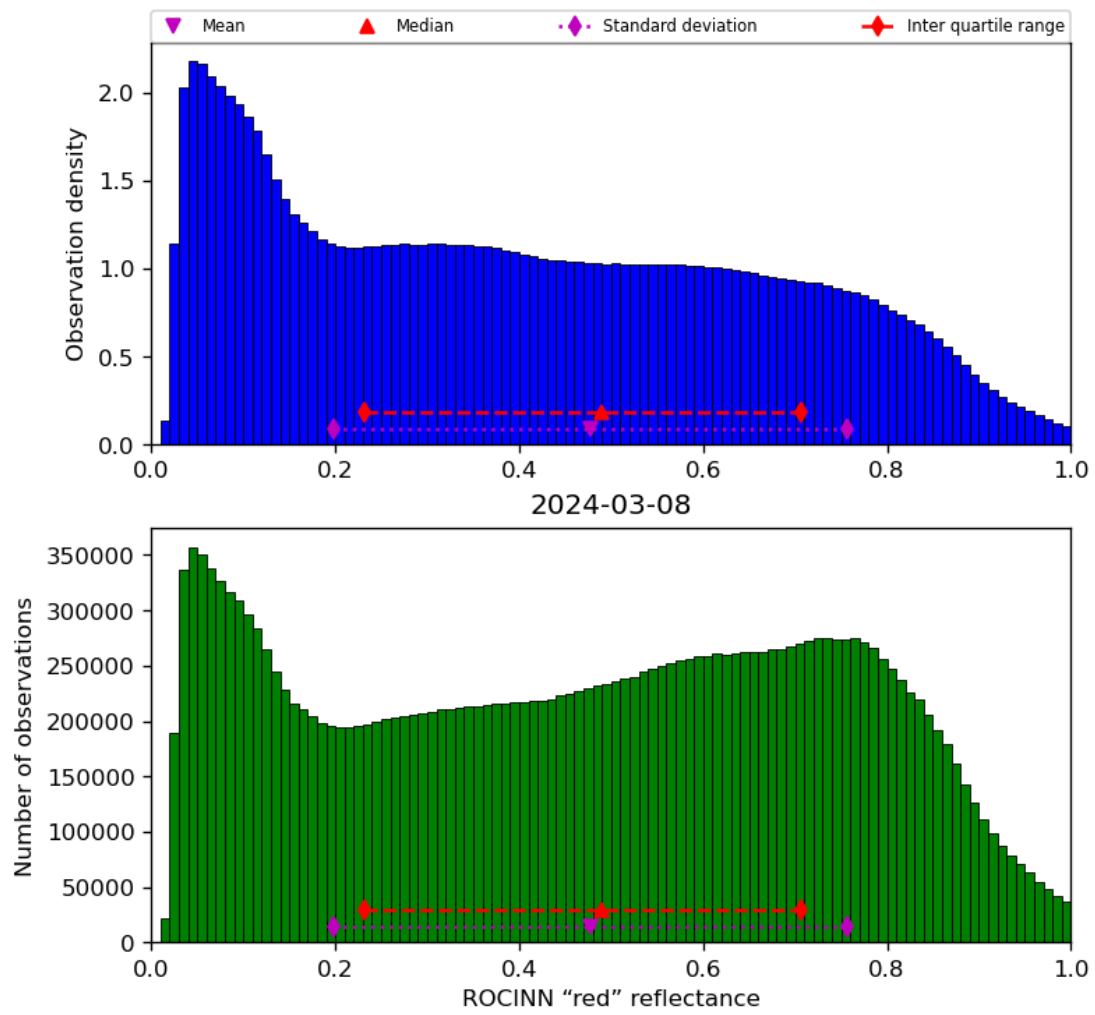


Figure 53: Histogram of “ROCINN “red” reflectance” for 2024-03-07 to 2024-03-09

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.

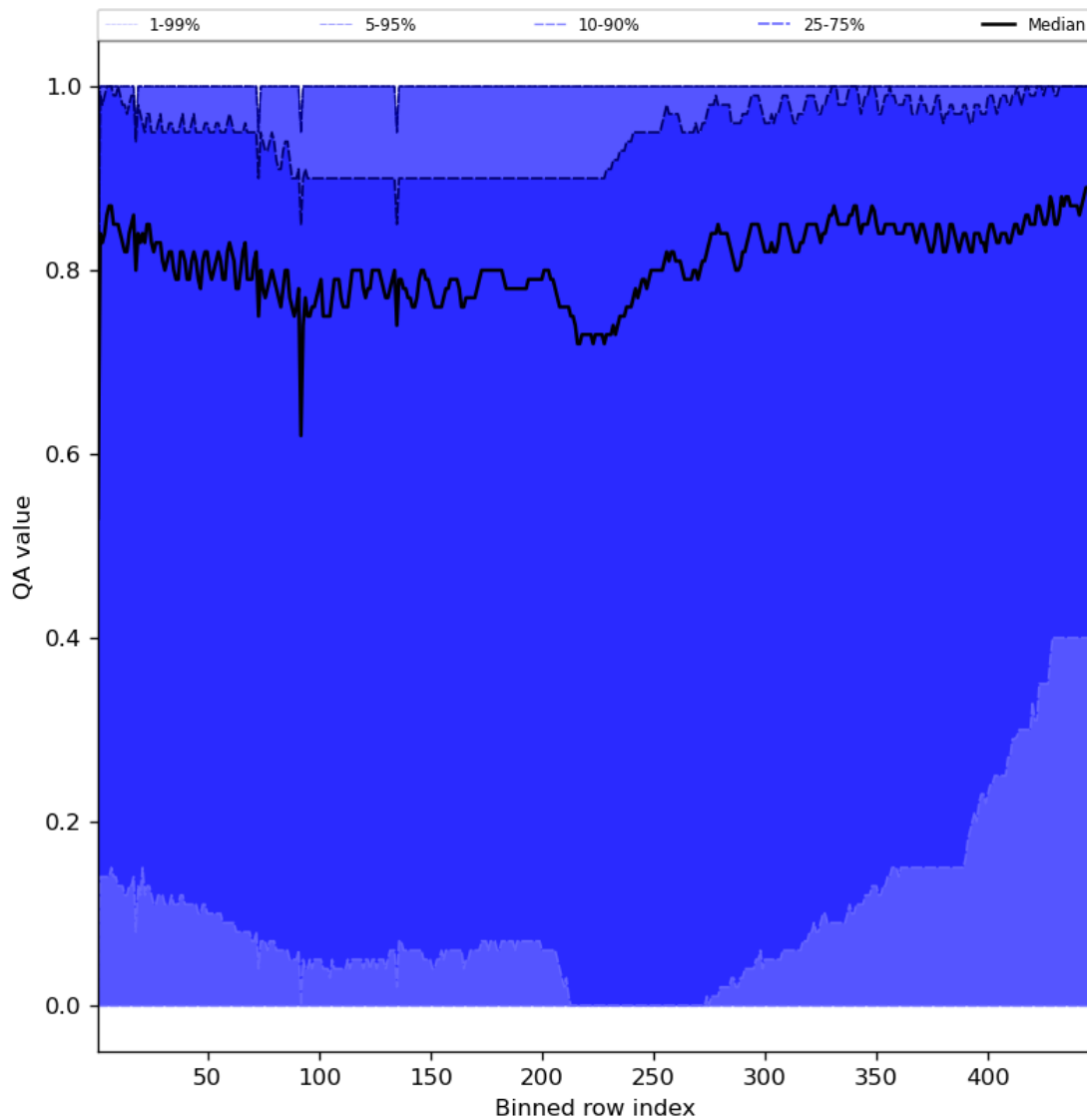


Figure 54: Along track statistics of “QA value” for 2024-03-07 to 2024-03-09

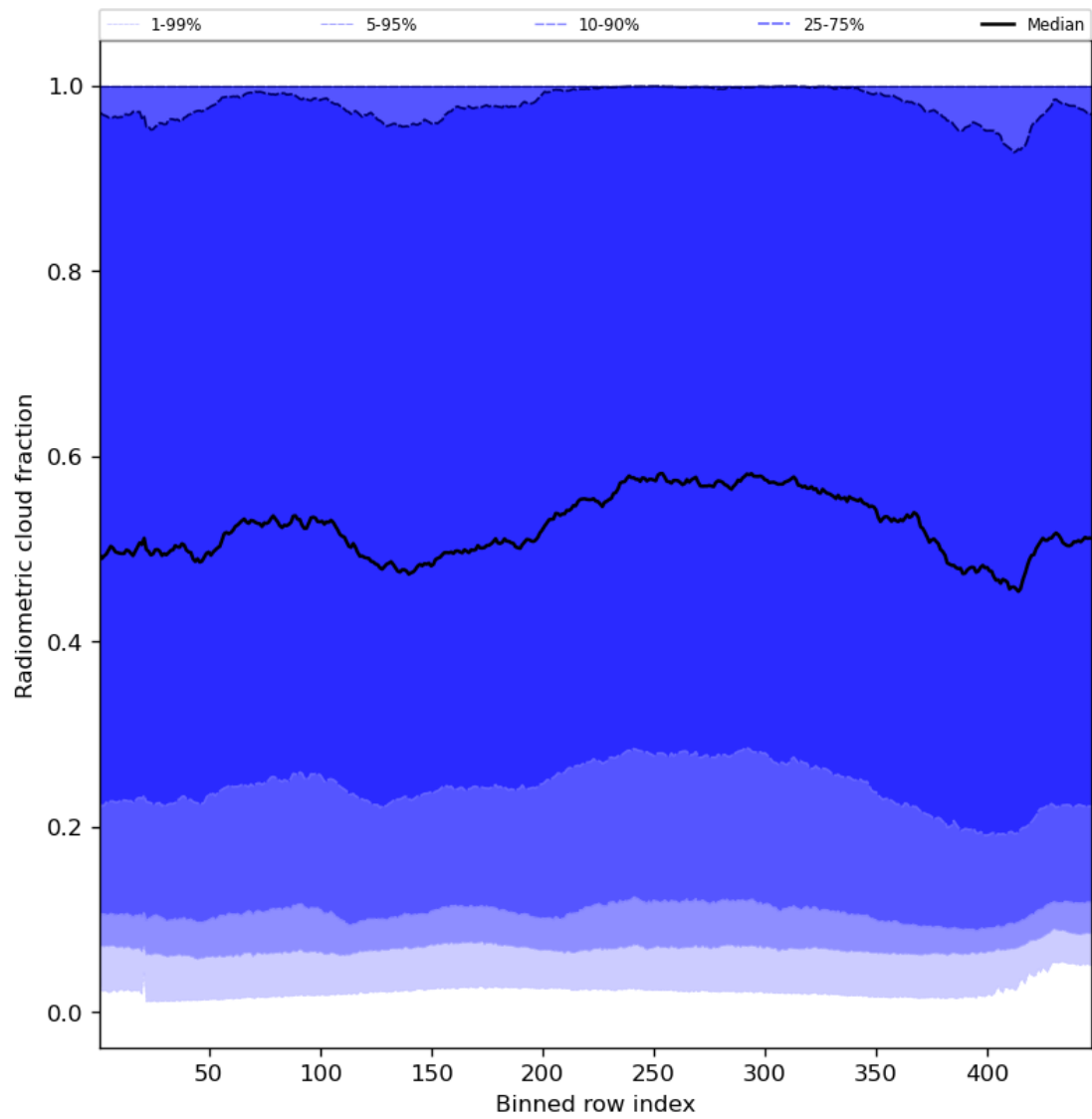


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2024-03-07 to 2024-03-09

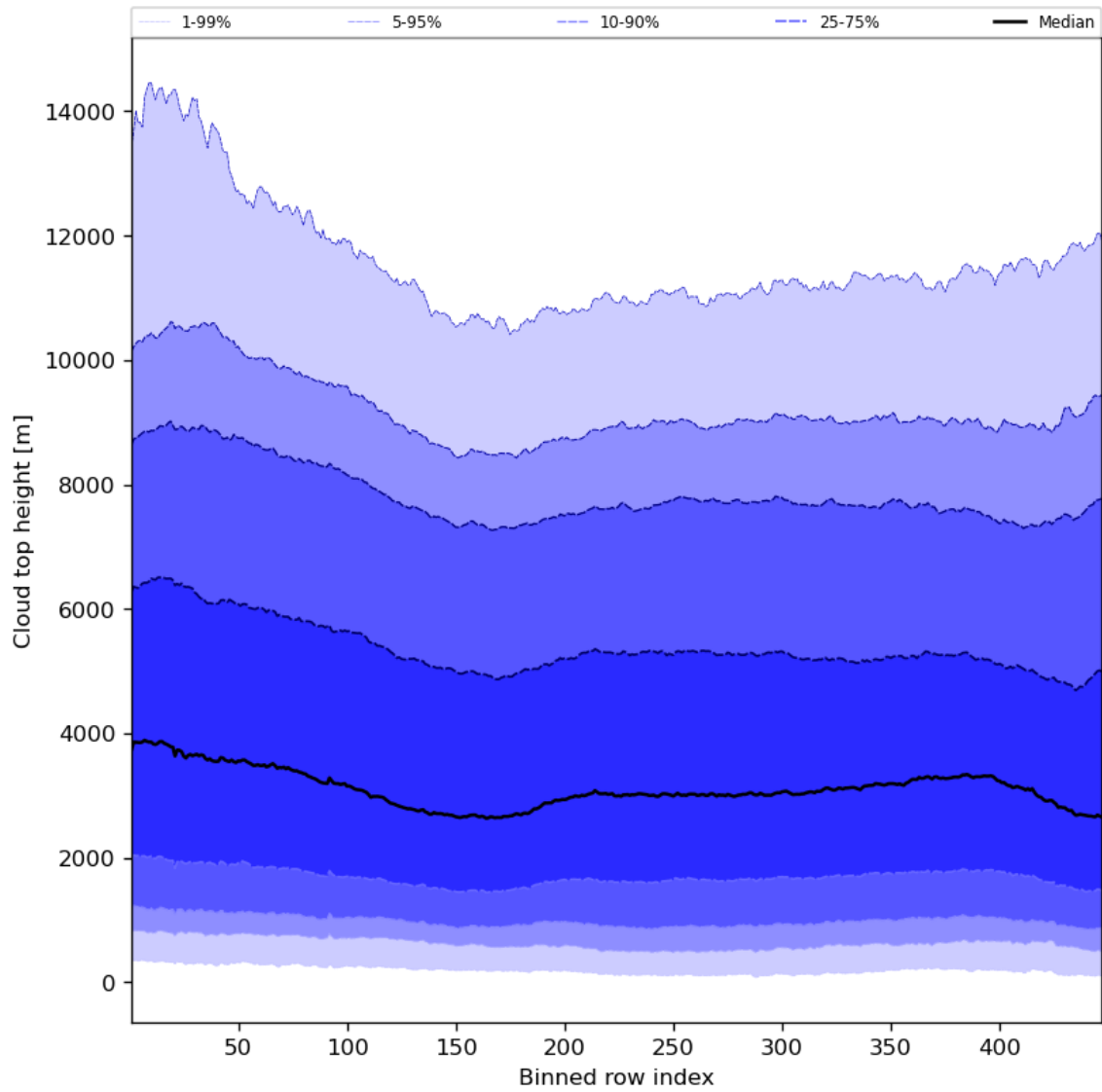


Figure 56: Along track statistics of “Cloud top height” for 2024-03-07 to 2024-03-09

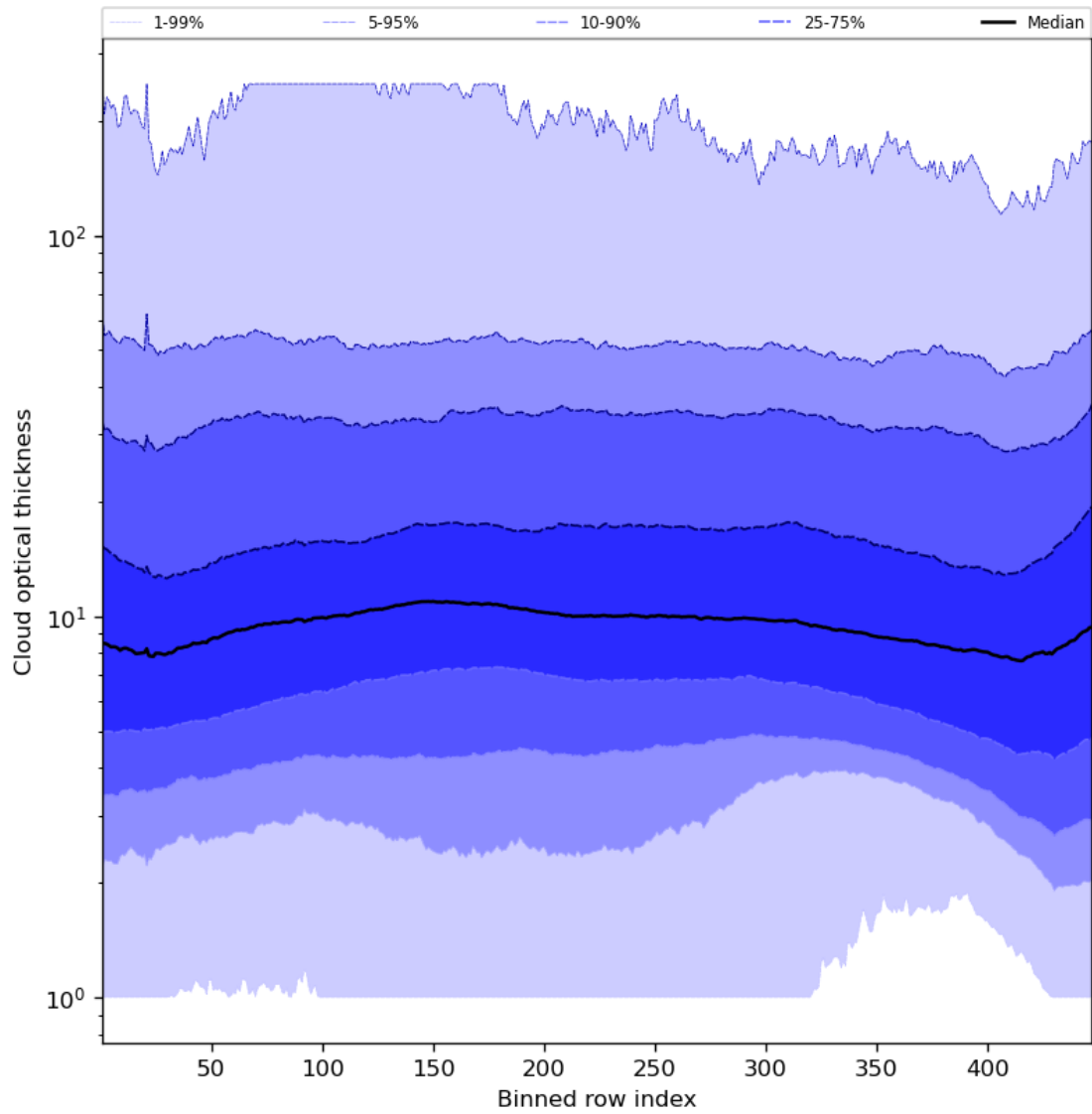


Figure 57: Along track statistics of “Cloud optical thickness” for 2024-03-07 to 2024-03-09

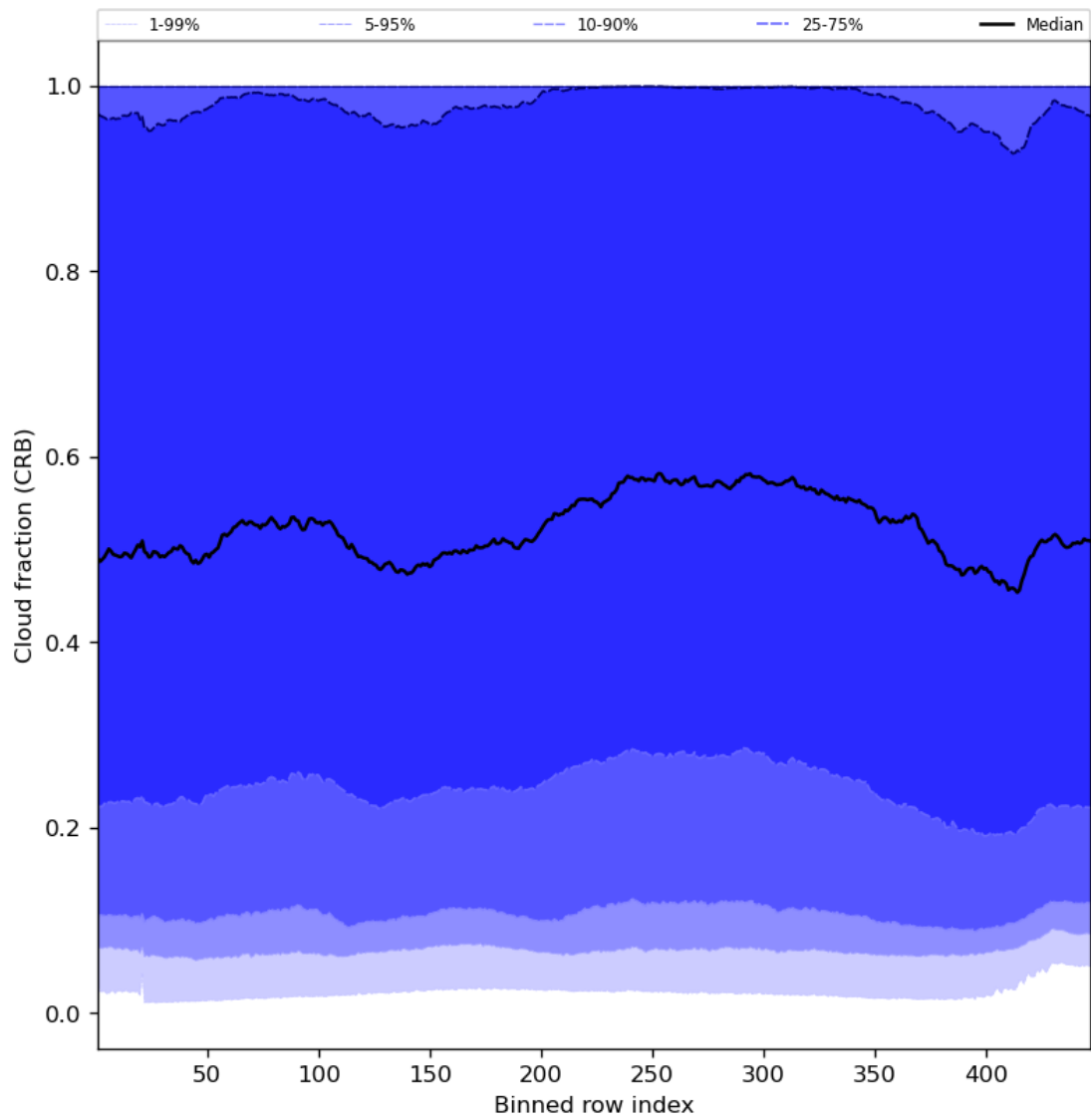


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2024-03-07 to 2024-03-09

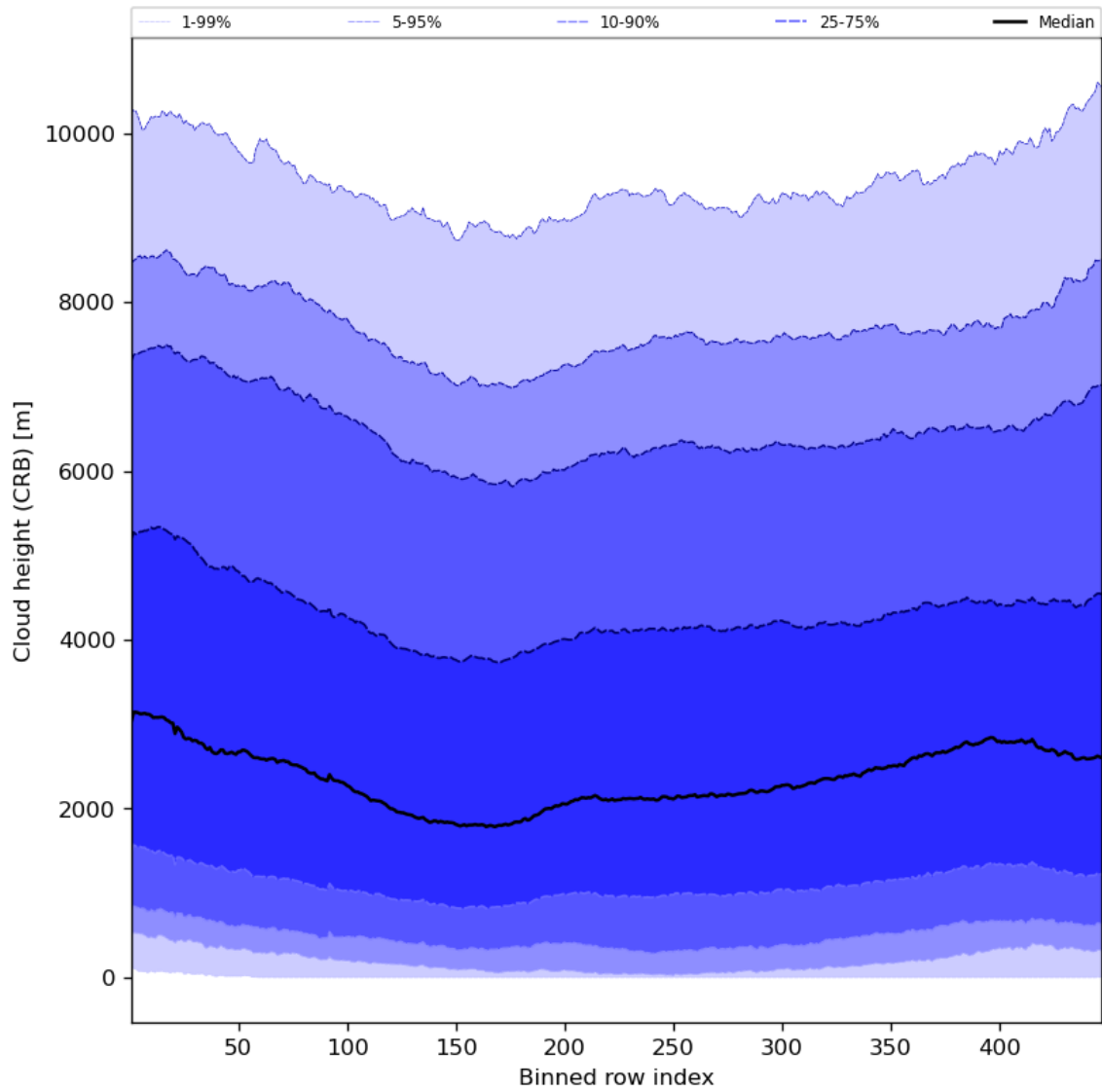


Figure 59: Along track statistics of “Cloud height (CRB)” for 2024-03-07 to 2024-03-09

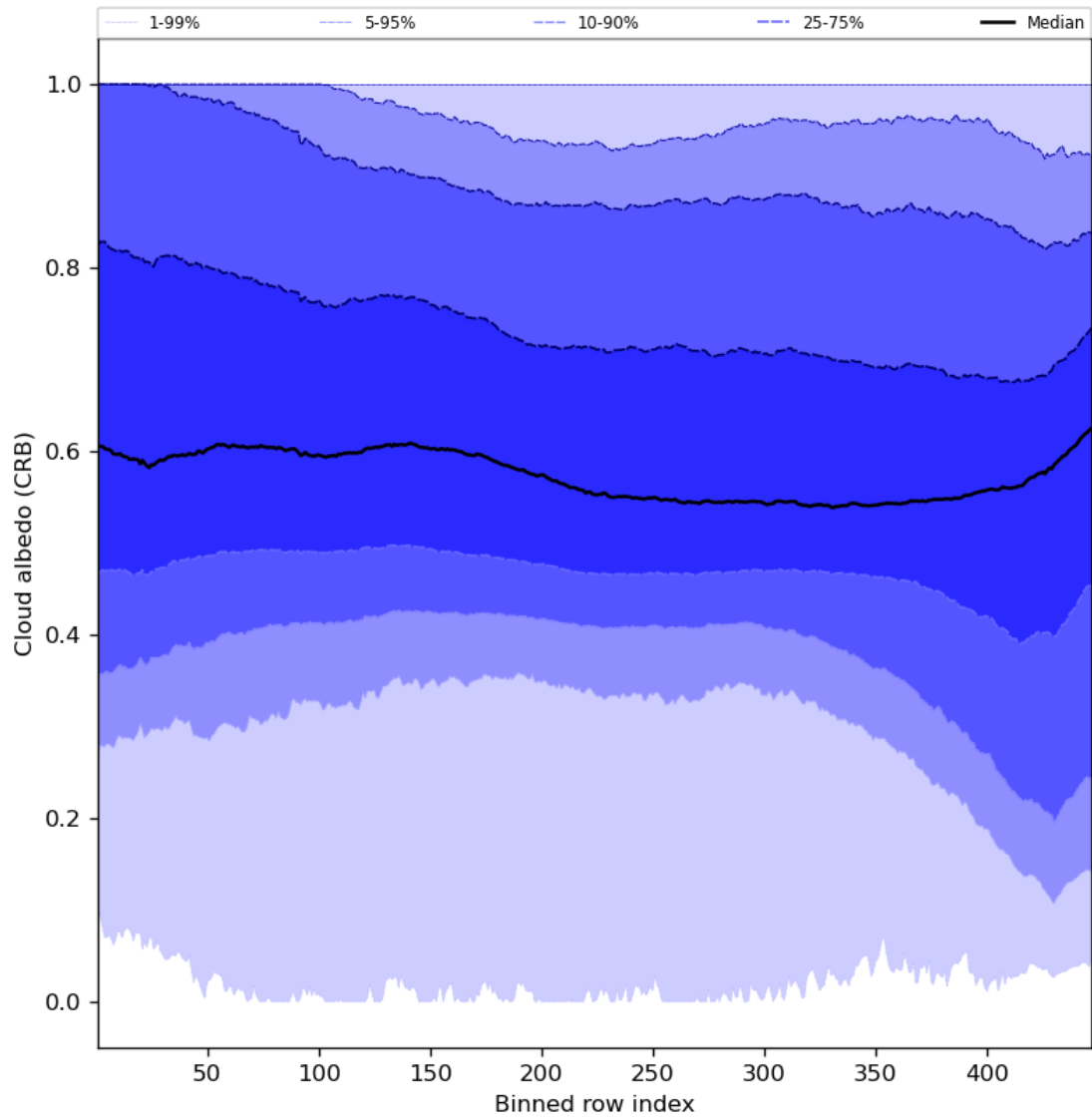


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2024-03-07 to 2024-03-09

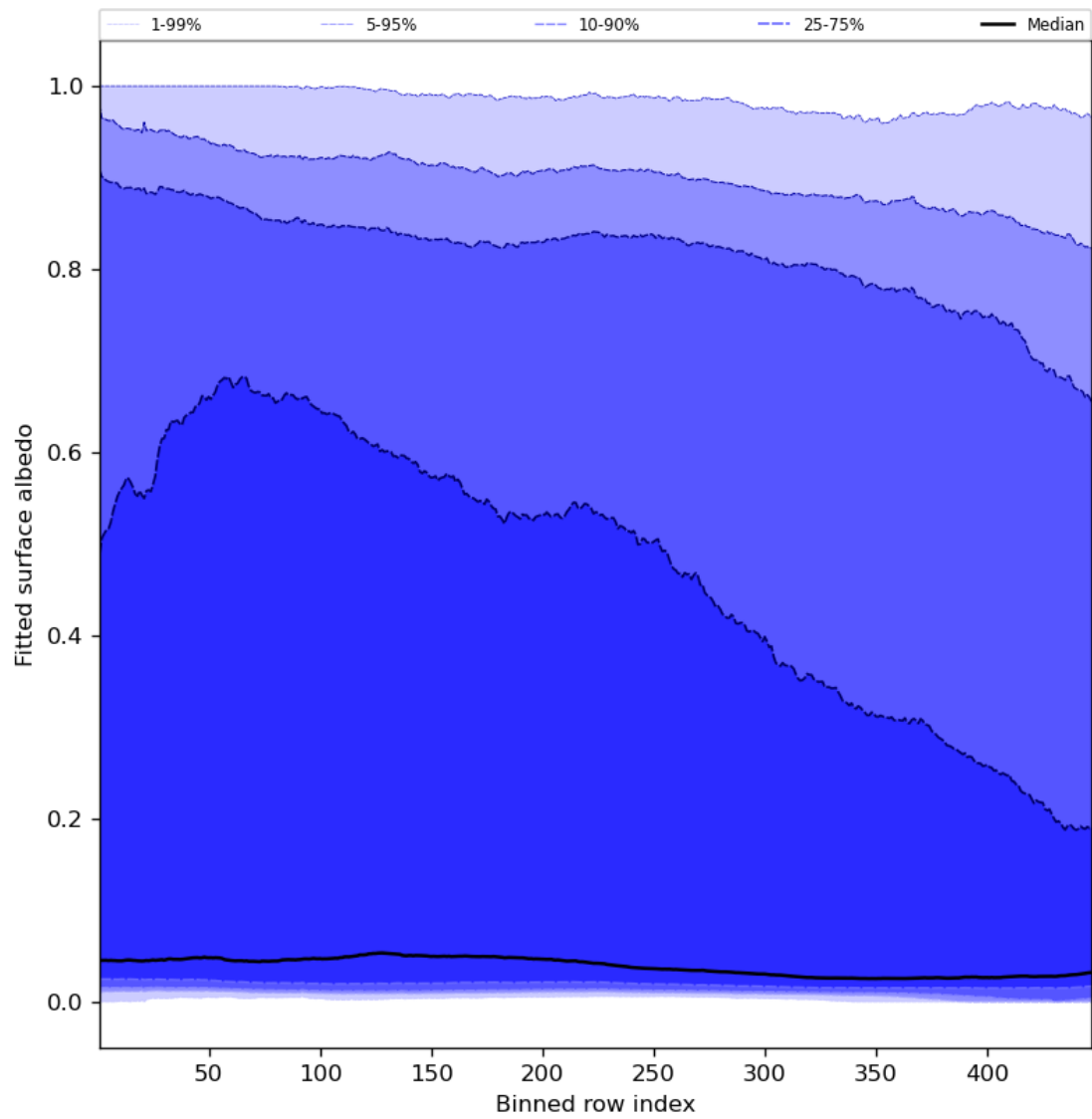


Figure 61: Along track statistics of “Fitted surface albedo” for 2024-03-07 to 2024-03-09

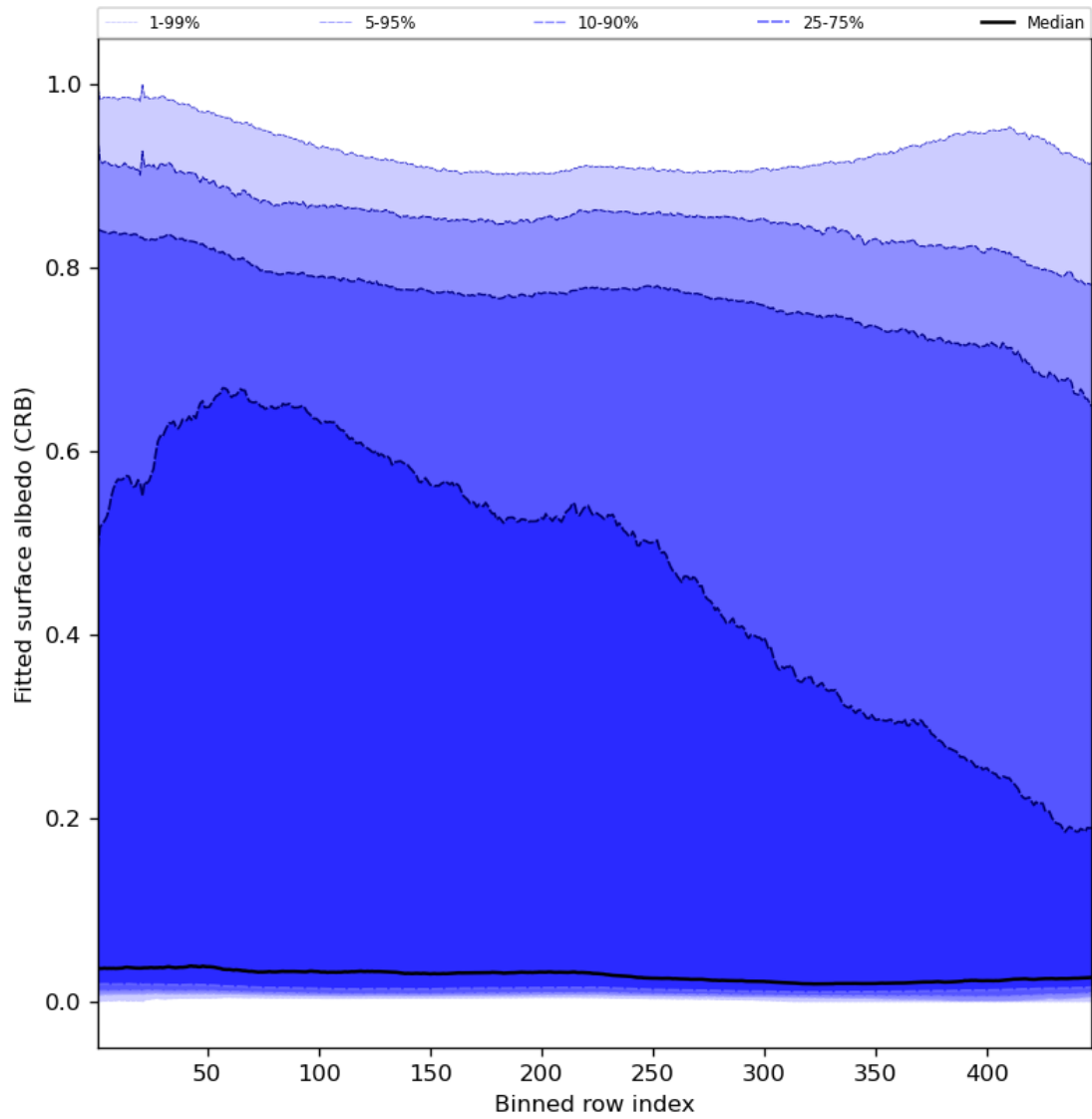


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2024-03-07 to 2024-03-09

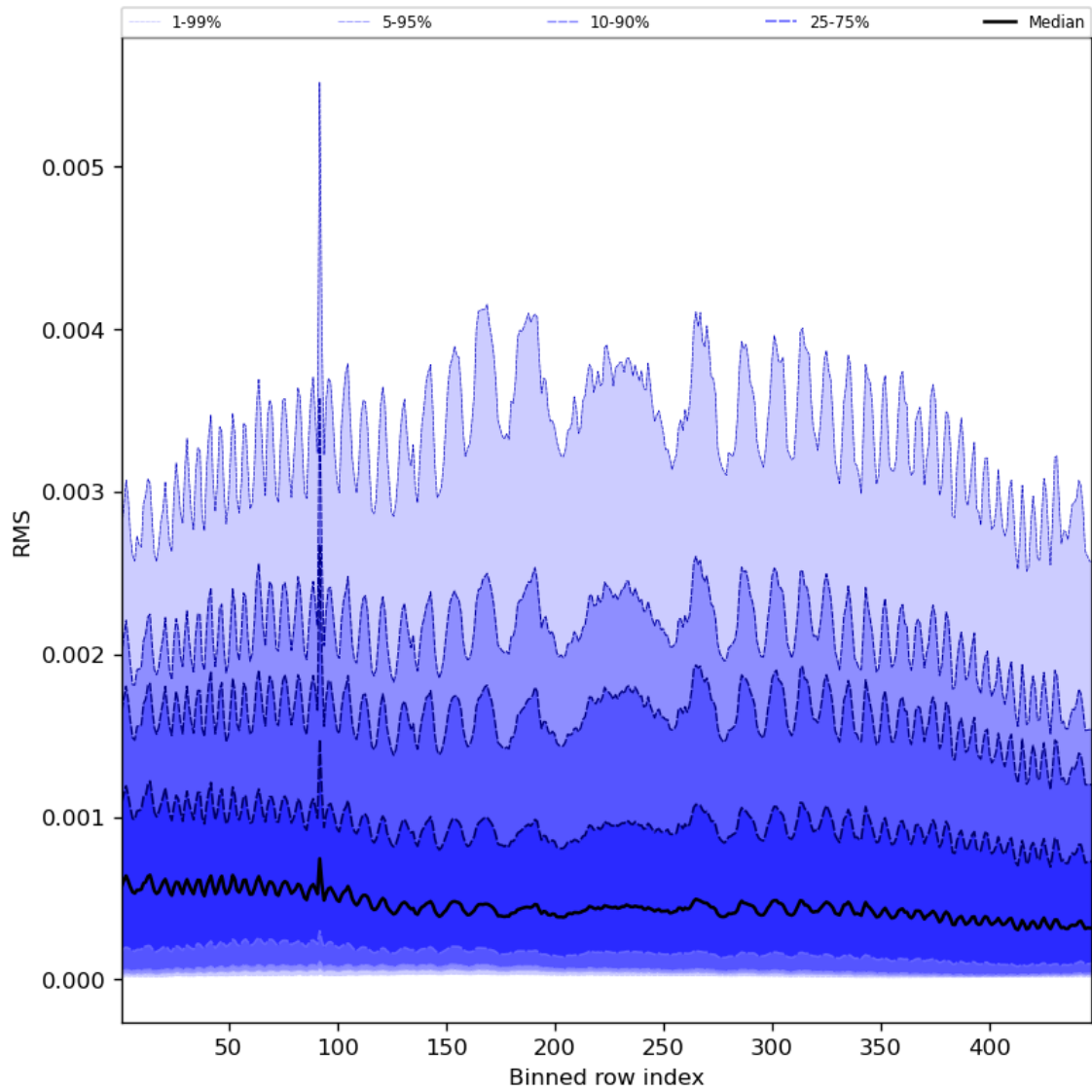


Figure 63: Along track statistics of “RMS” for 2024-03-07 to 2024-03-09

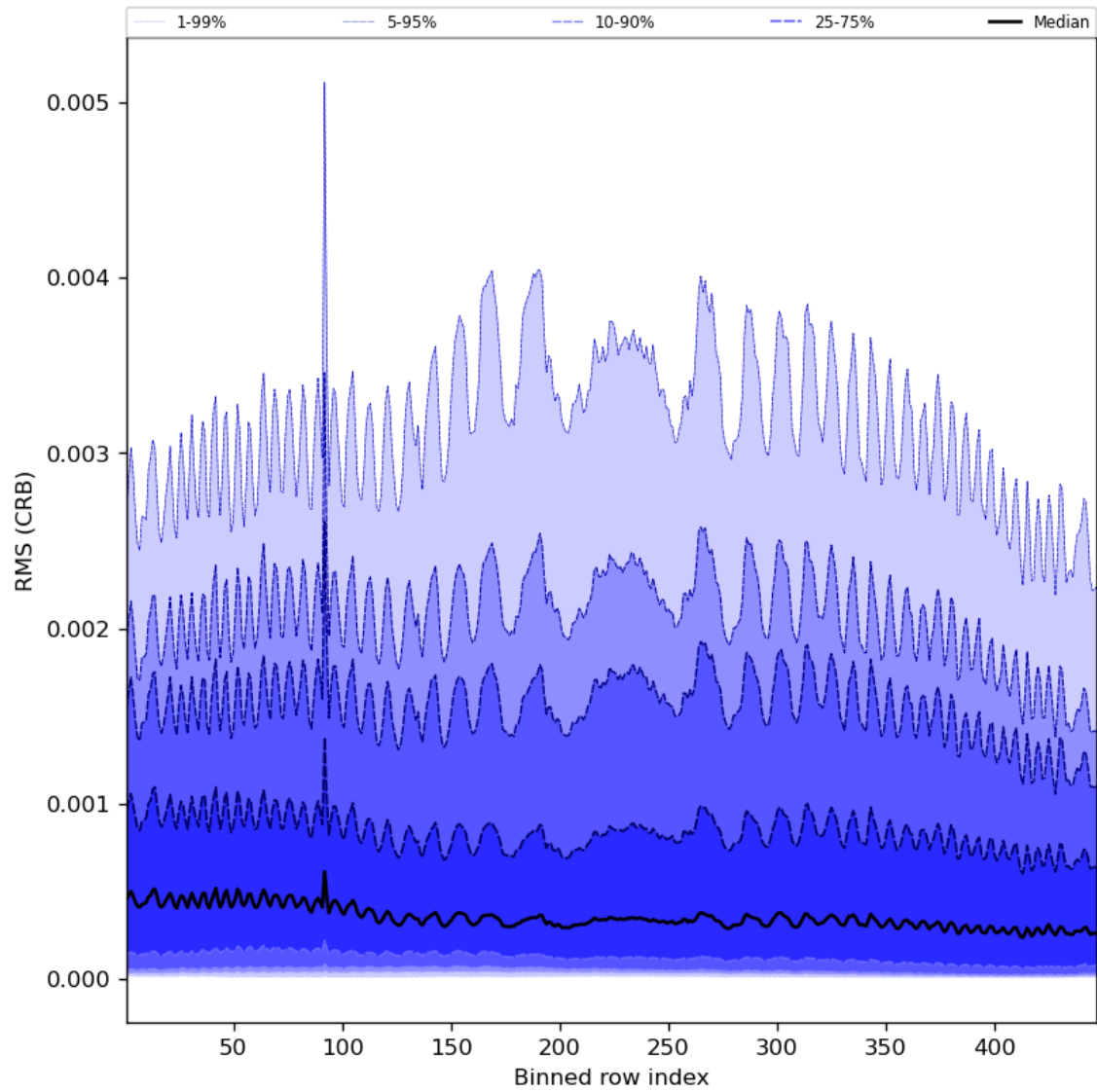


Figure 64: Along track statistics of “RMS (CRB)” for 2024-03-07 to 2024-03-09

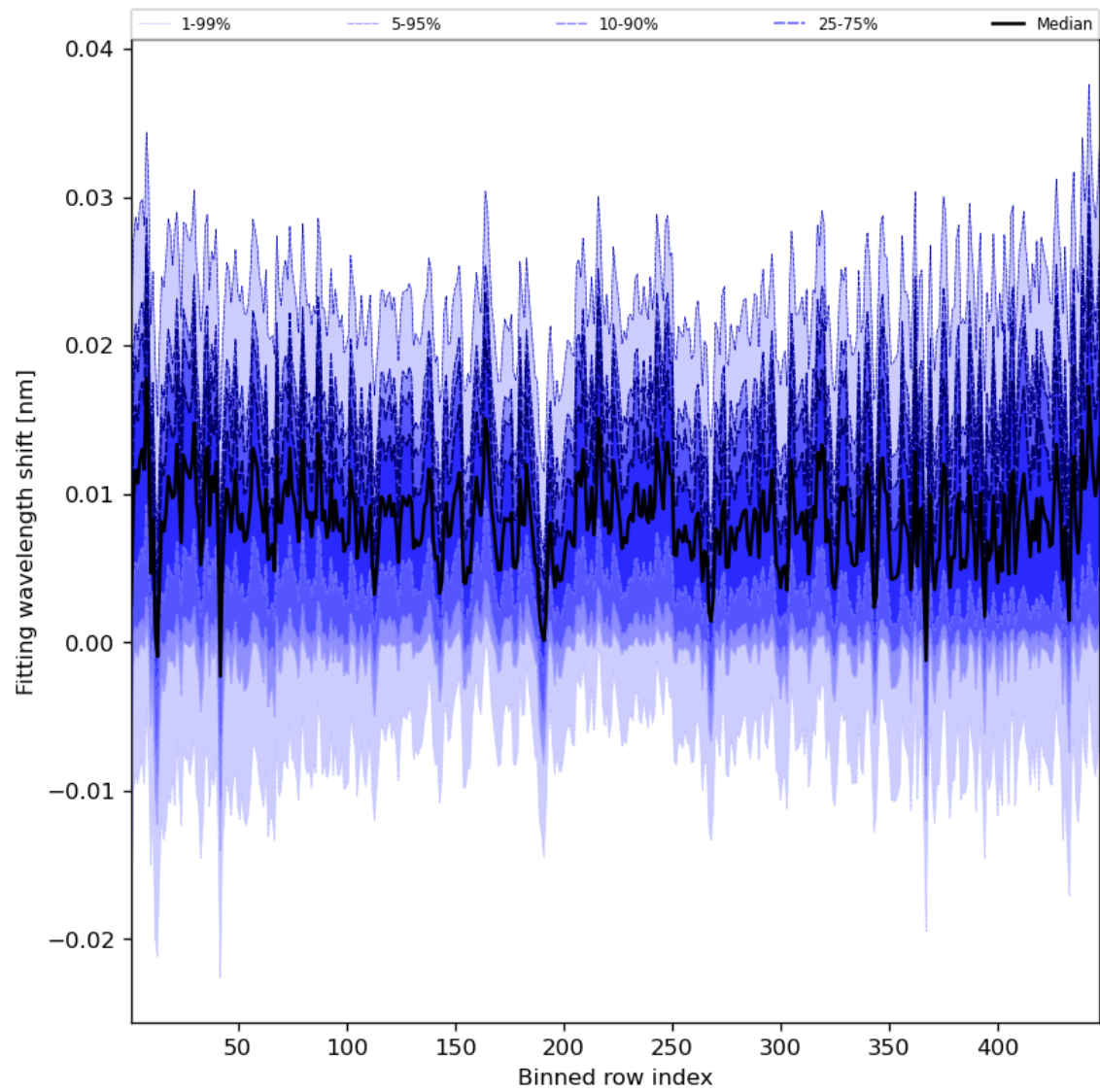


Figure 65: Along track statistics of “Fitting wavelength shift” for 2024-03-07 to 2024-03-09

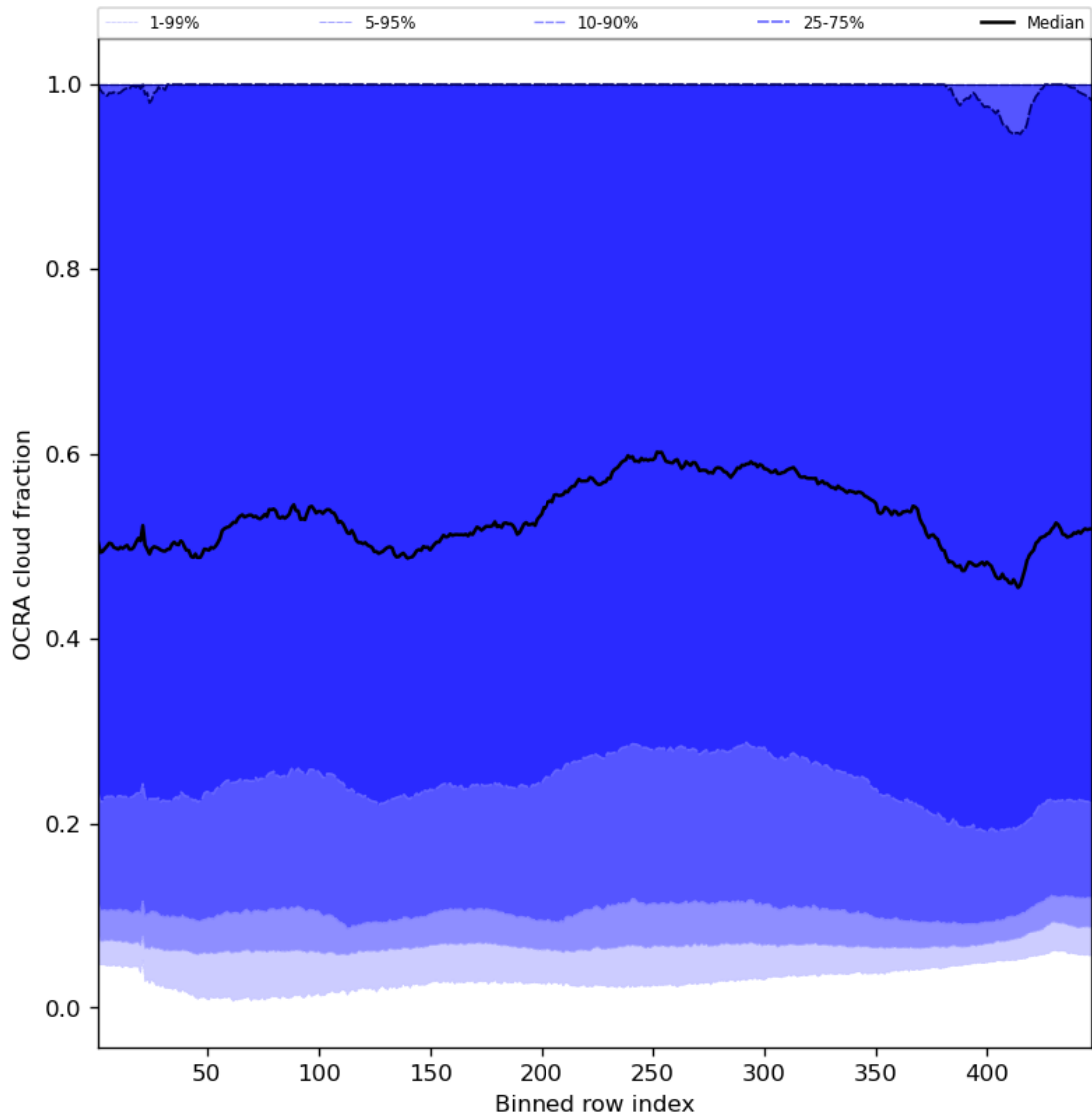


Figure 66: Along track statistics of “OCRA cloud fraction” for 2024-03-07 to 2024-03-09

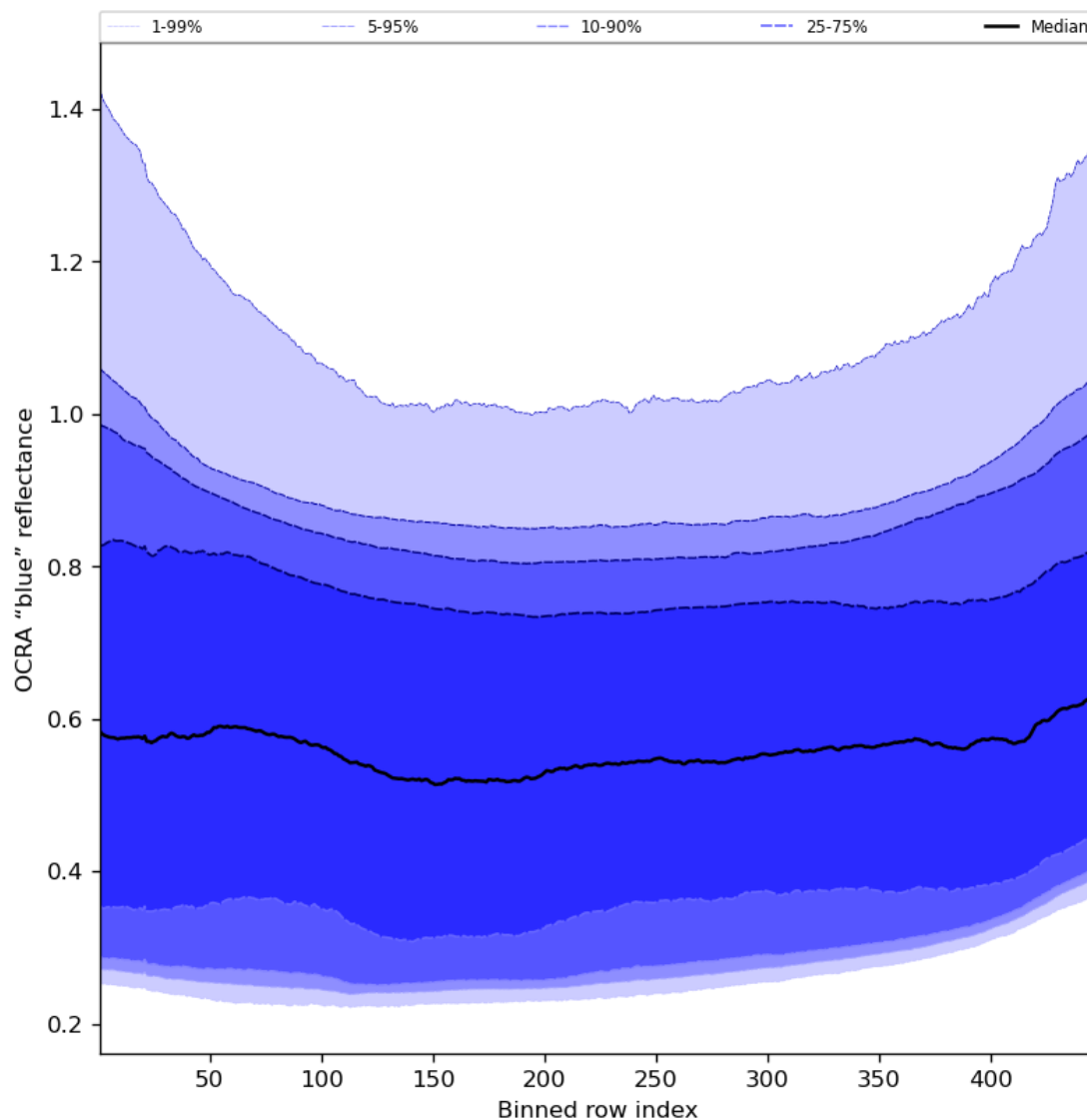


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2024-03-07 to 2024-03-09

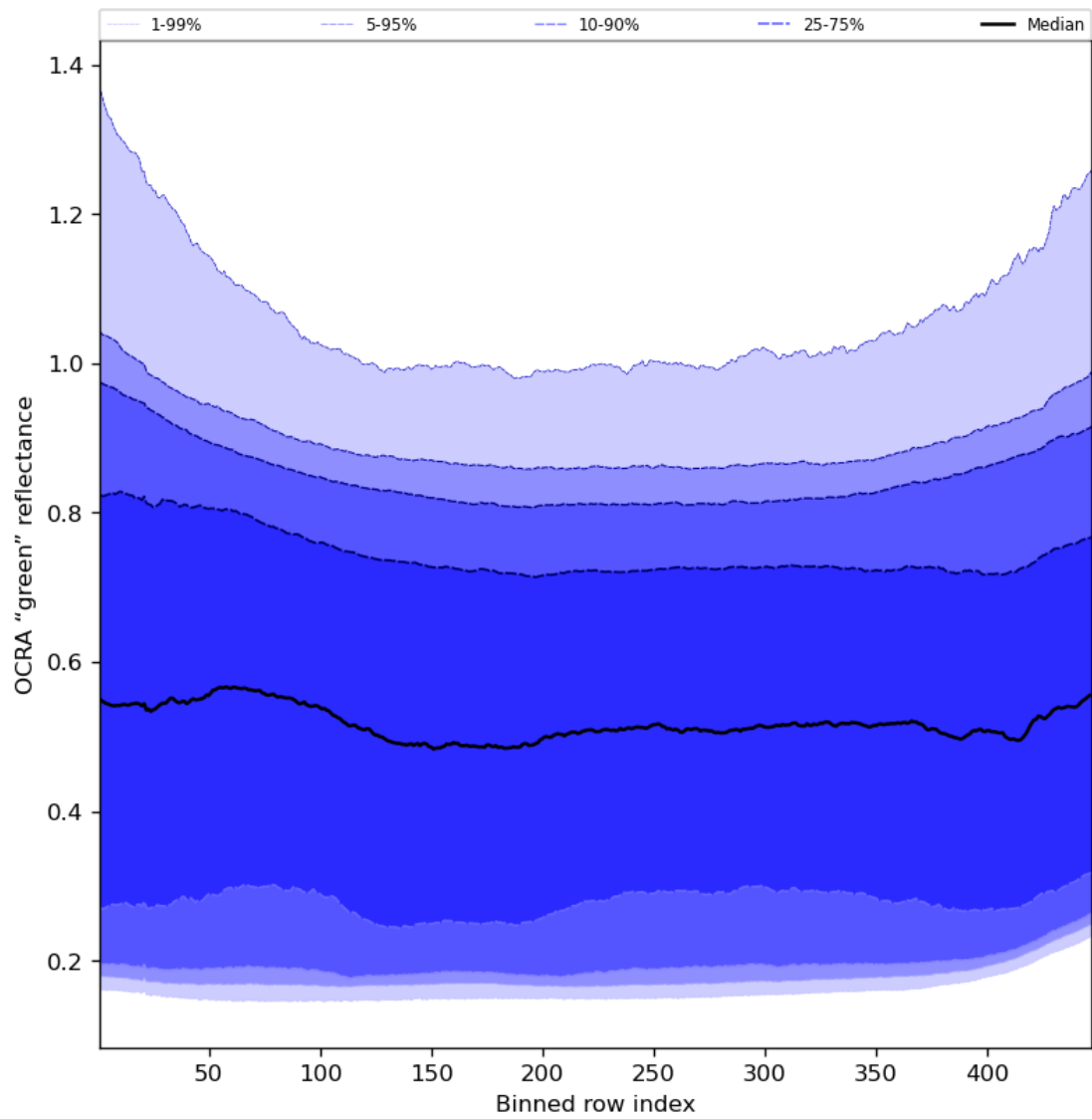


Figure 68: Along track statistics of “OCRA “green” reflectance” for 2024-03-07 to 2024-03-09

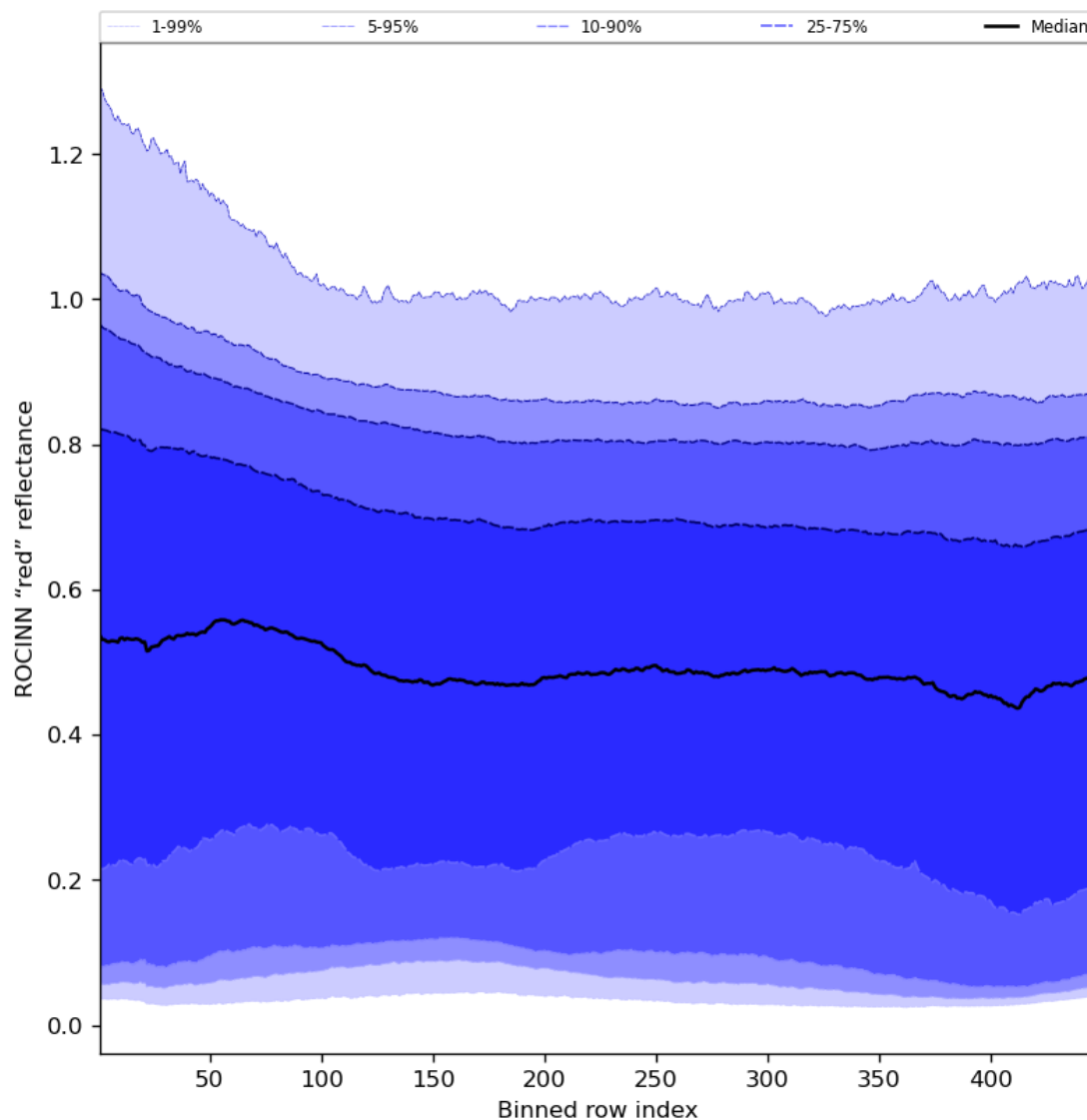


Figure 69: Along track statistics of “ROCINN “red” reflectance” for 2024-03-07 to 2024-03-09

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.

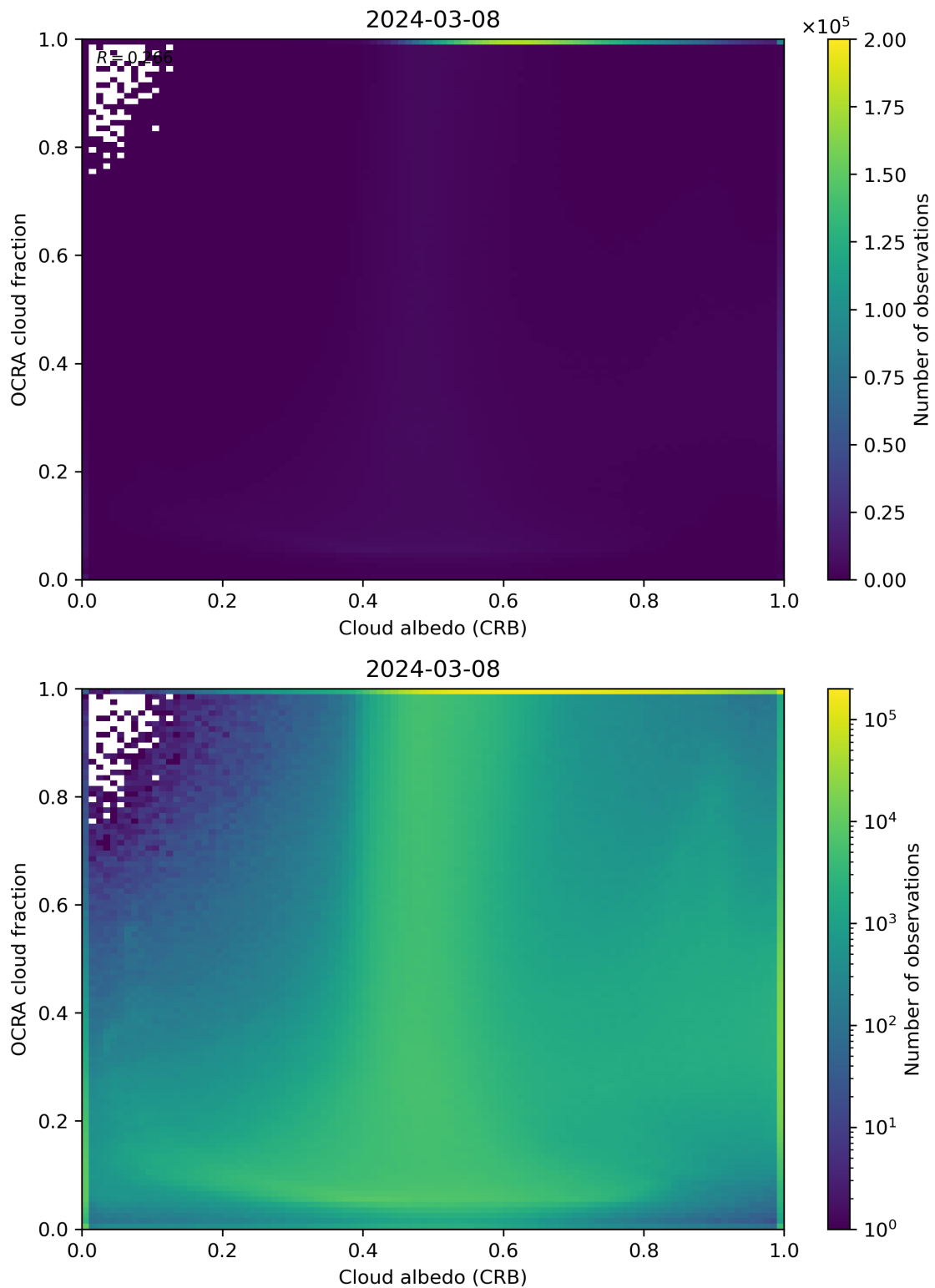


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2024-03-07 to 2024-03-09.

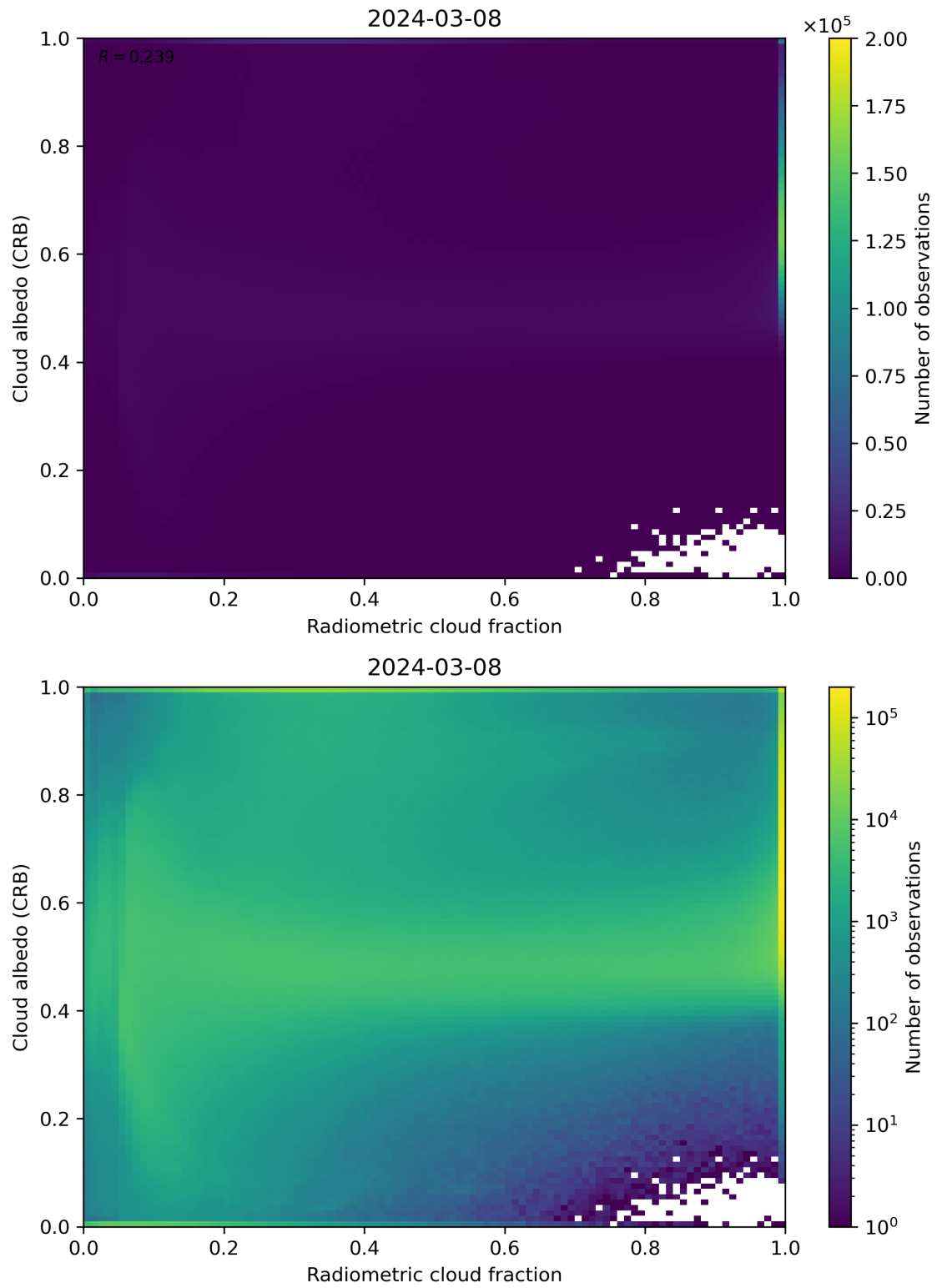


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2024-03-07 to 2024-03-09.

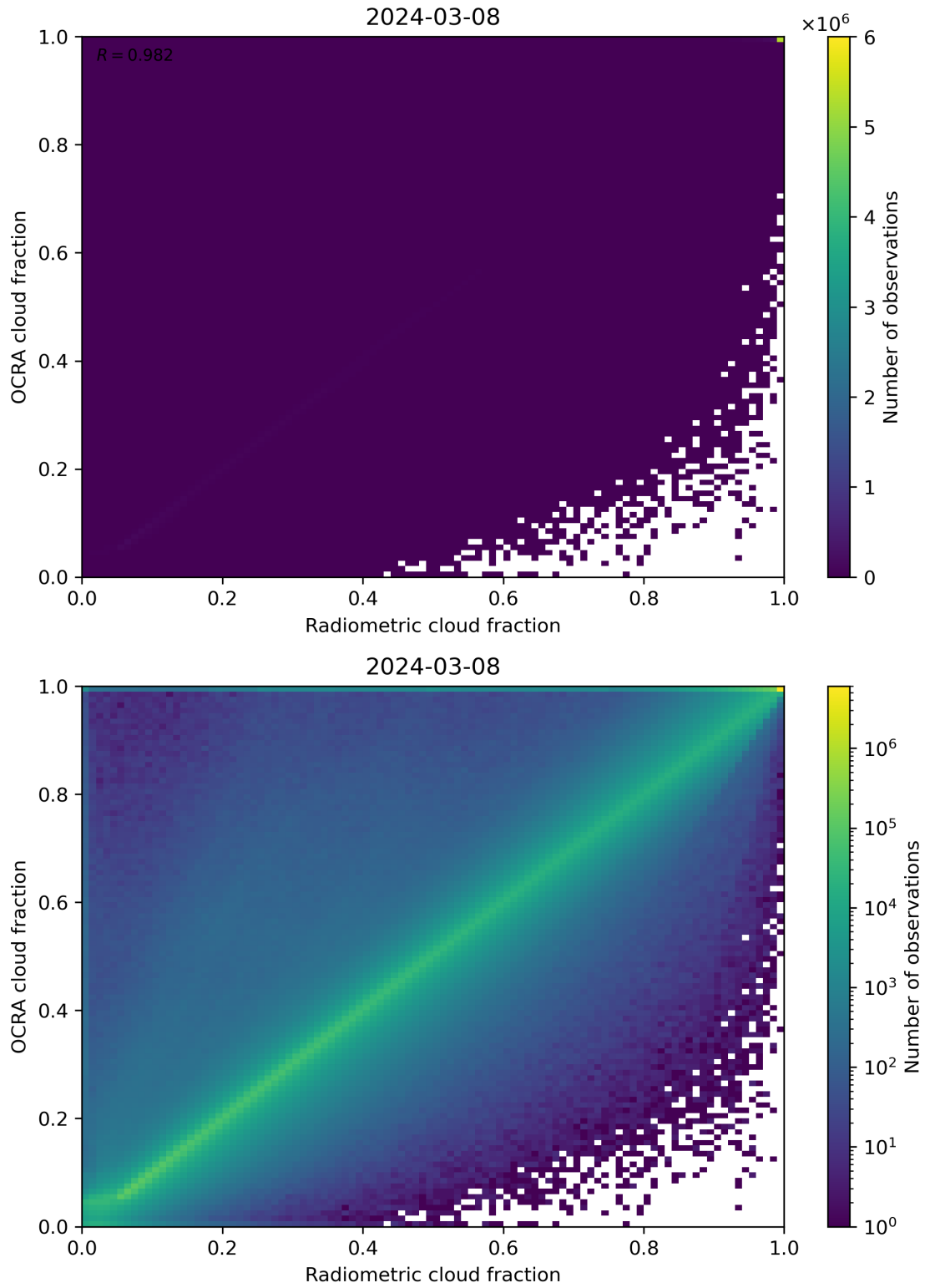


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2024-03-07 to 2024-03-09.

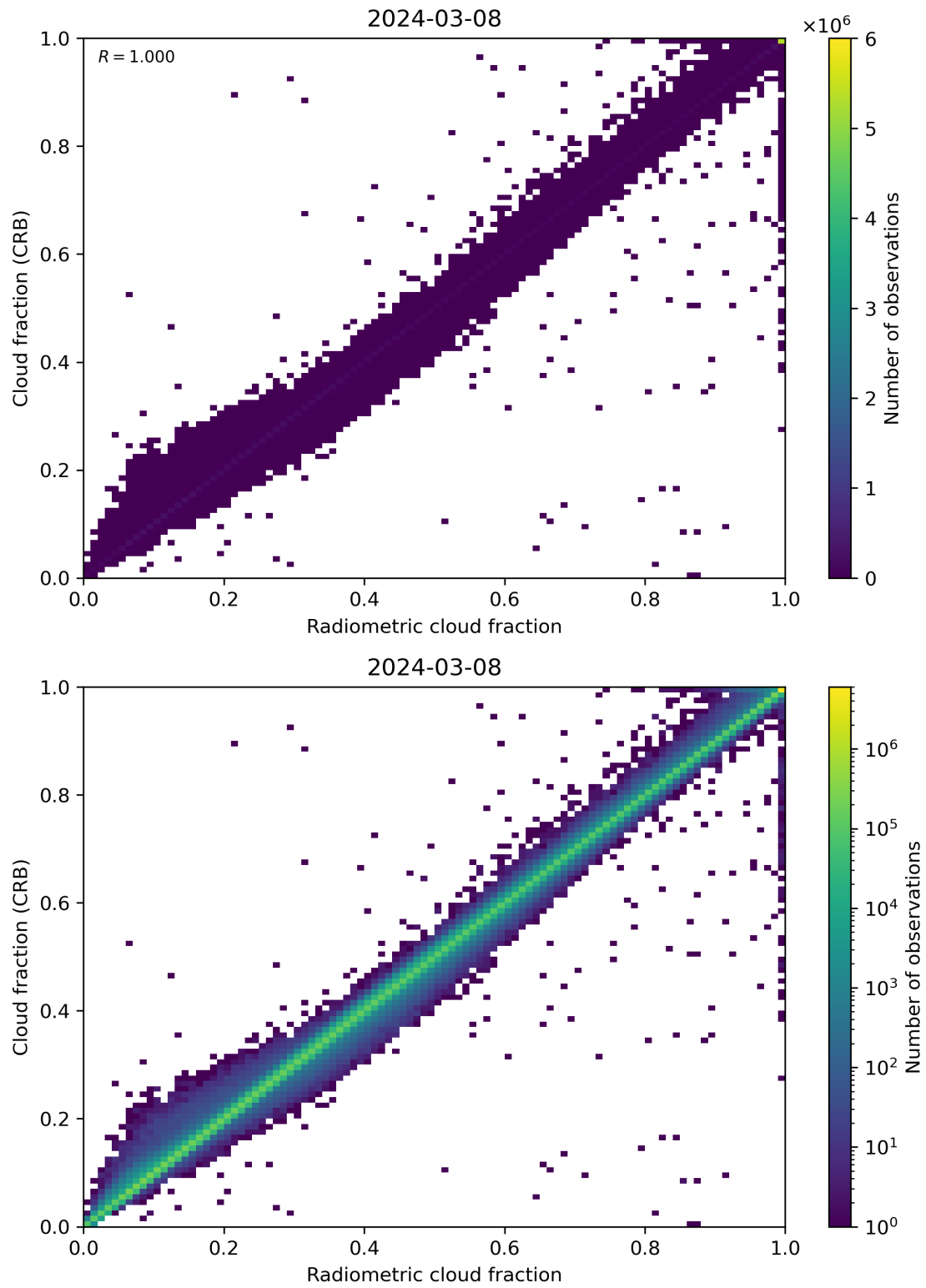


Figure 73: Scatter density plot of “Radiometric cloud fraction” against “Cloud fraction (CRB)” for 2024-03-07 to 2024-03-09.

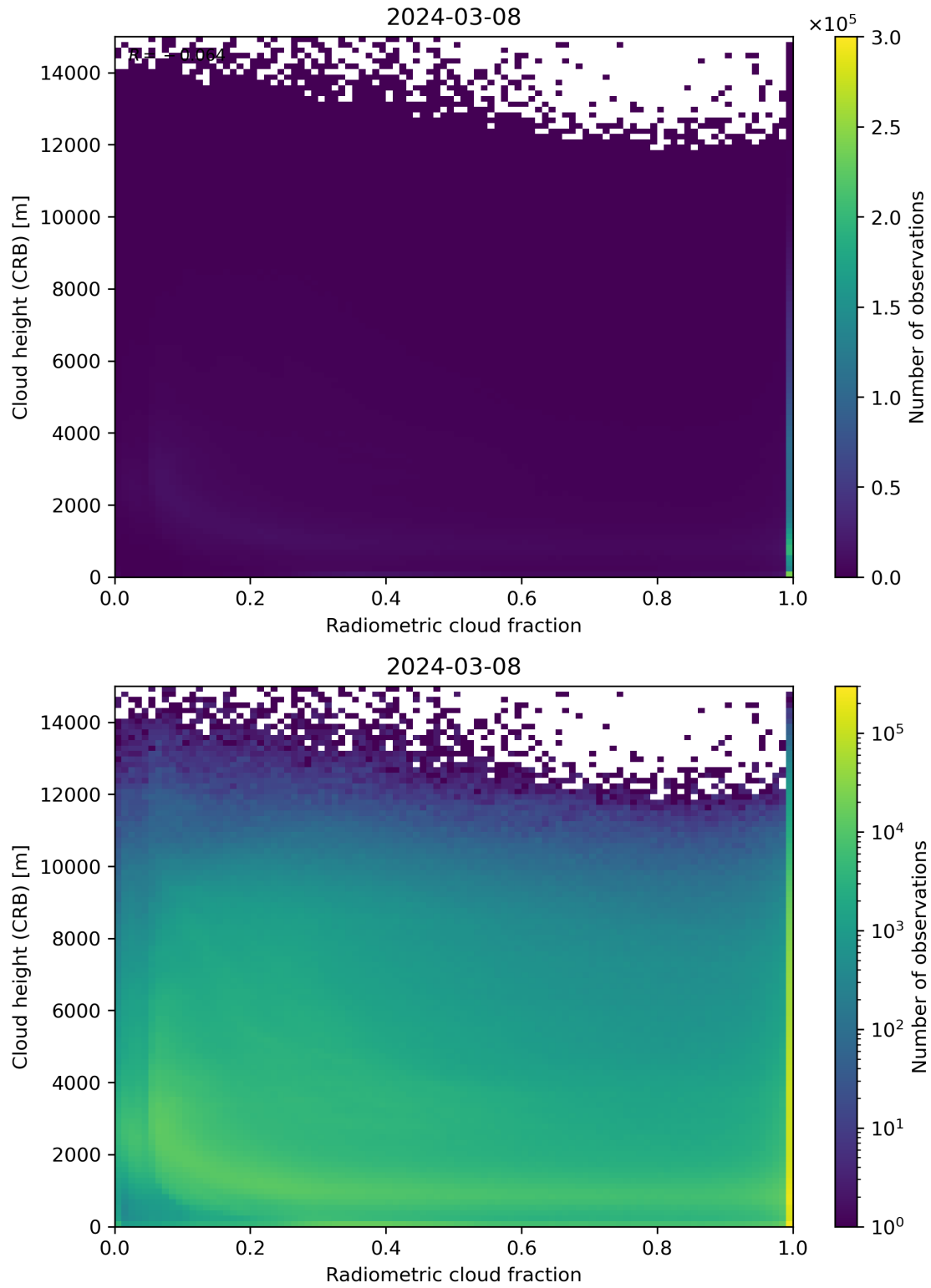


Figure 74: Scatter density plot of “Radiometric cloud fraction” against “Cloud height (CRB)” for 2024-03-07 to 2024-03-09.

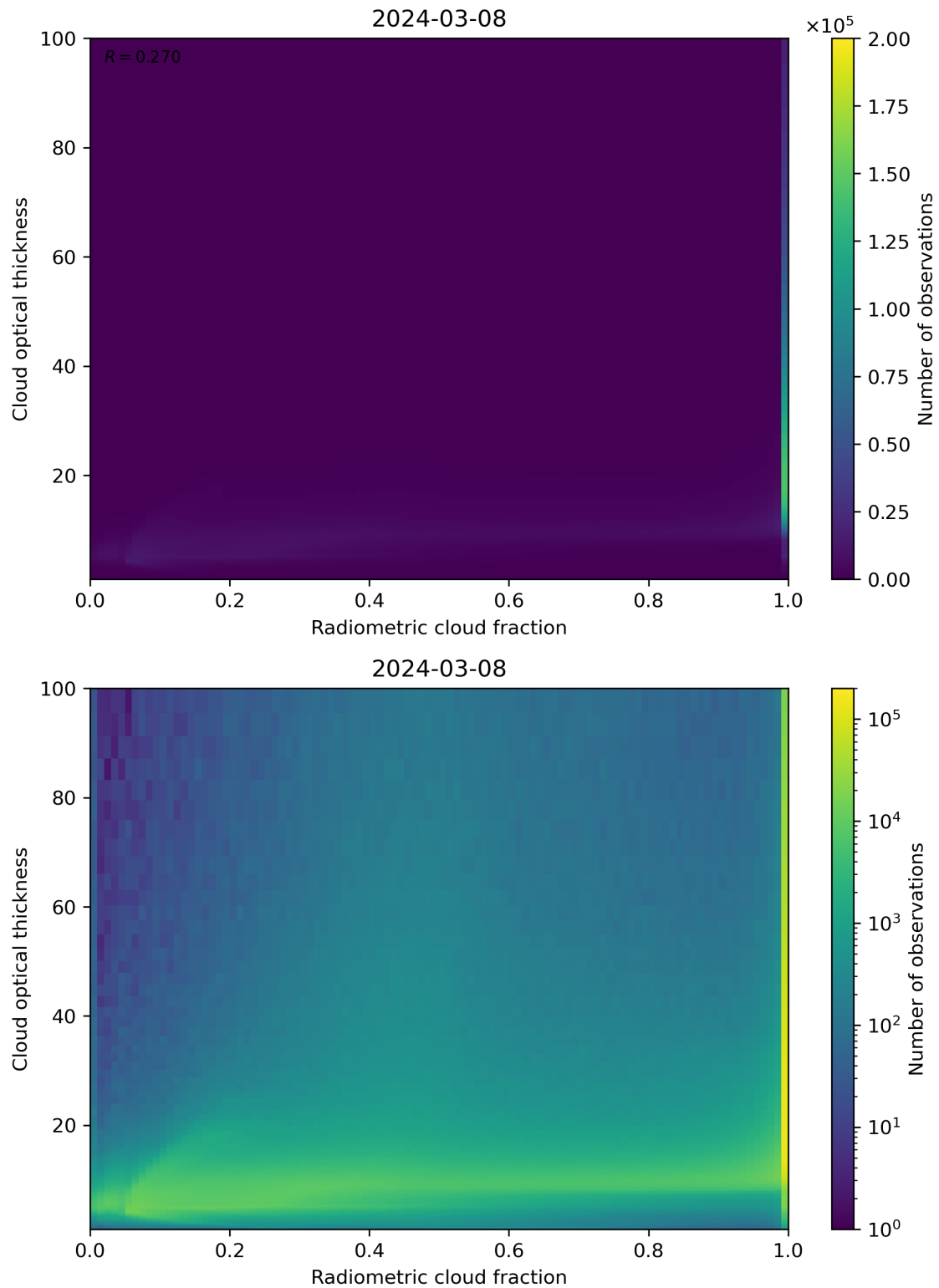


Figure 75: Scatter density plot of “Radiometric cloud fraction” against “Cloud optical thickness” for 2024-03-07 to 2024-03-09.

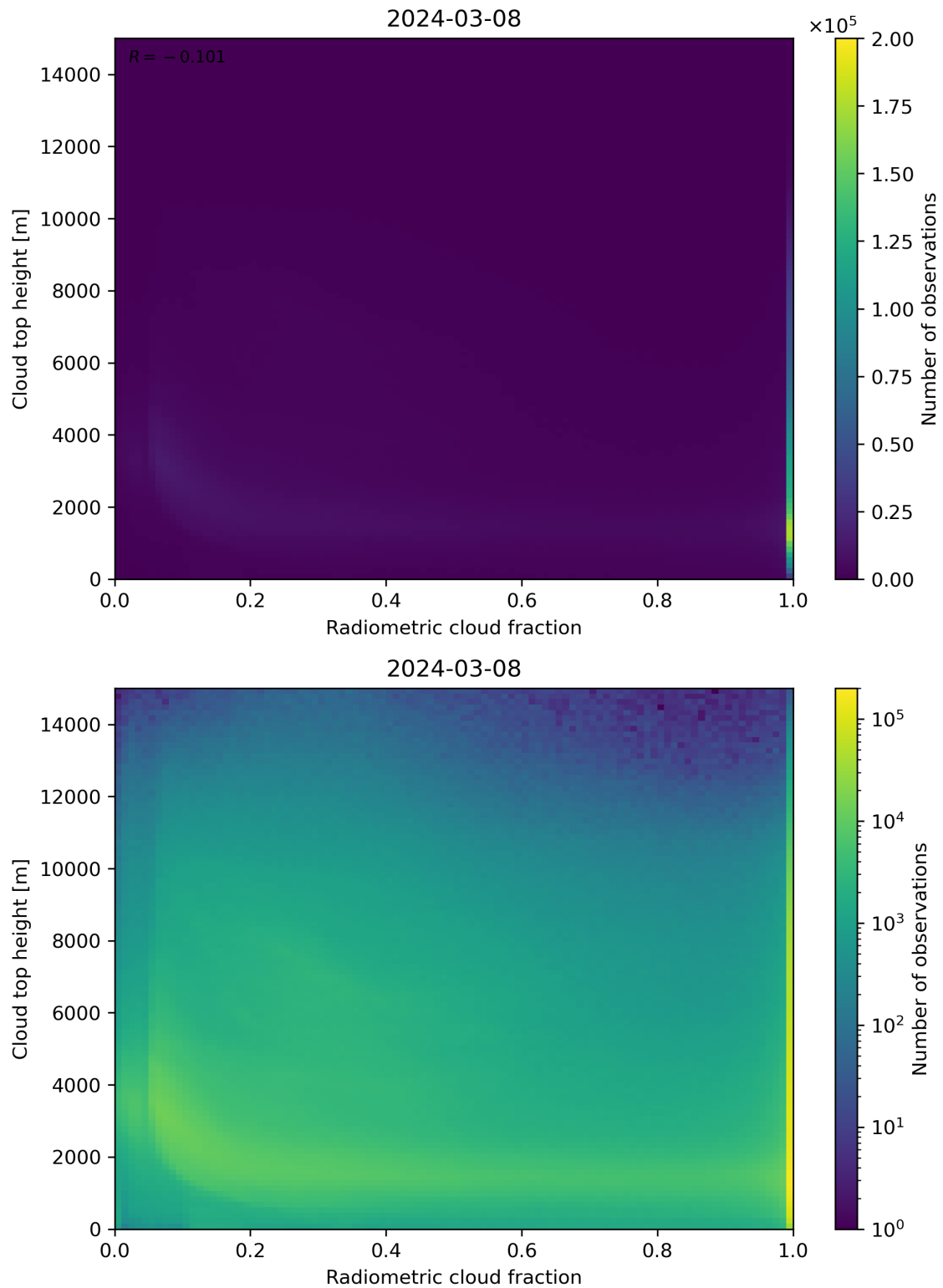


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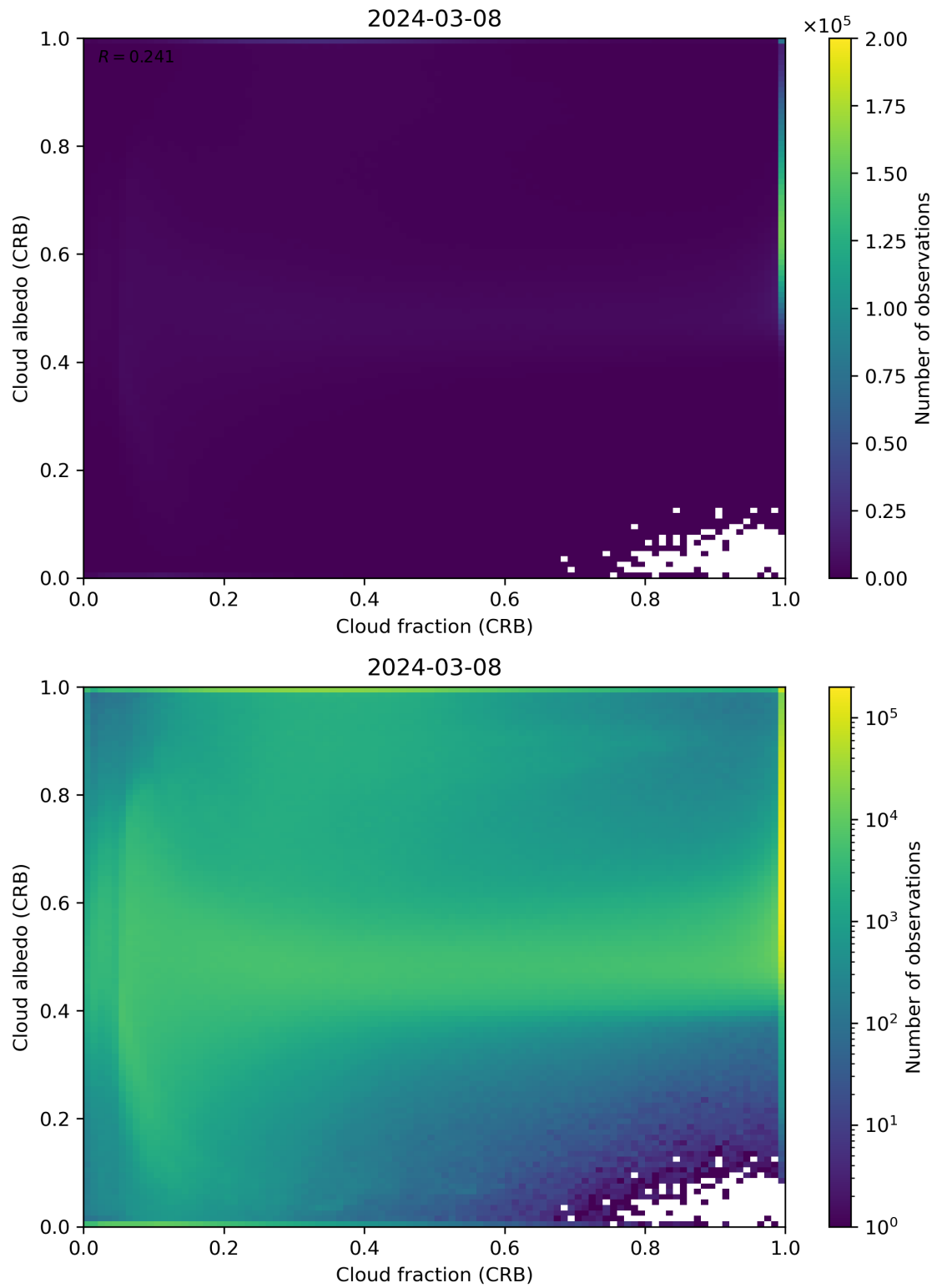


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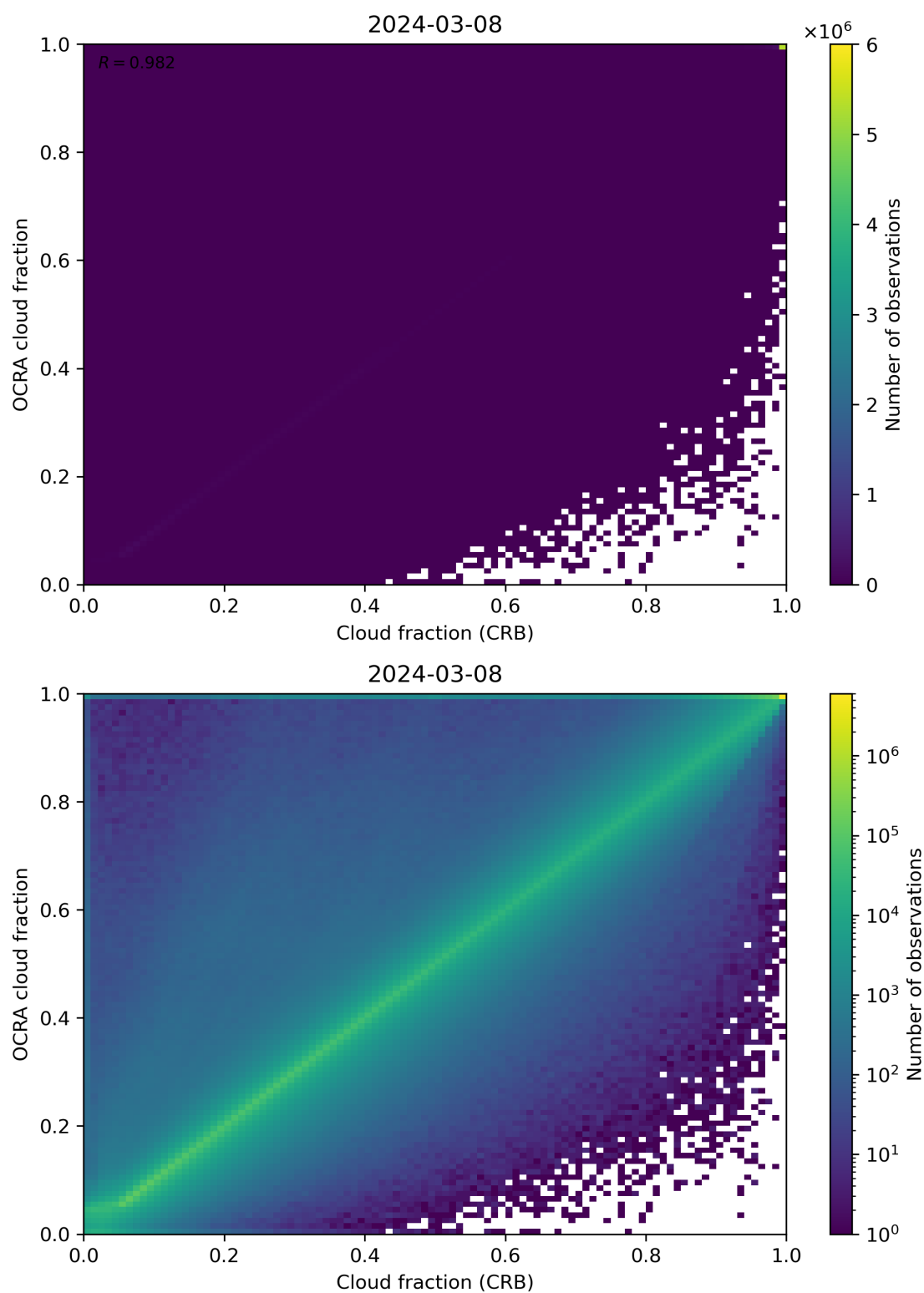


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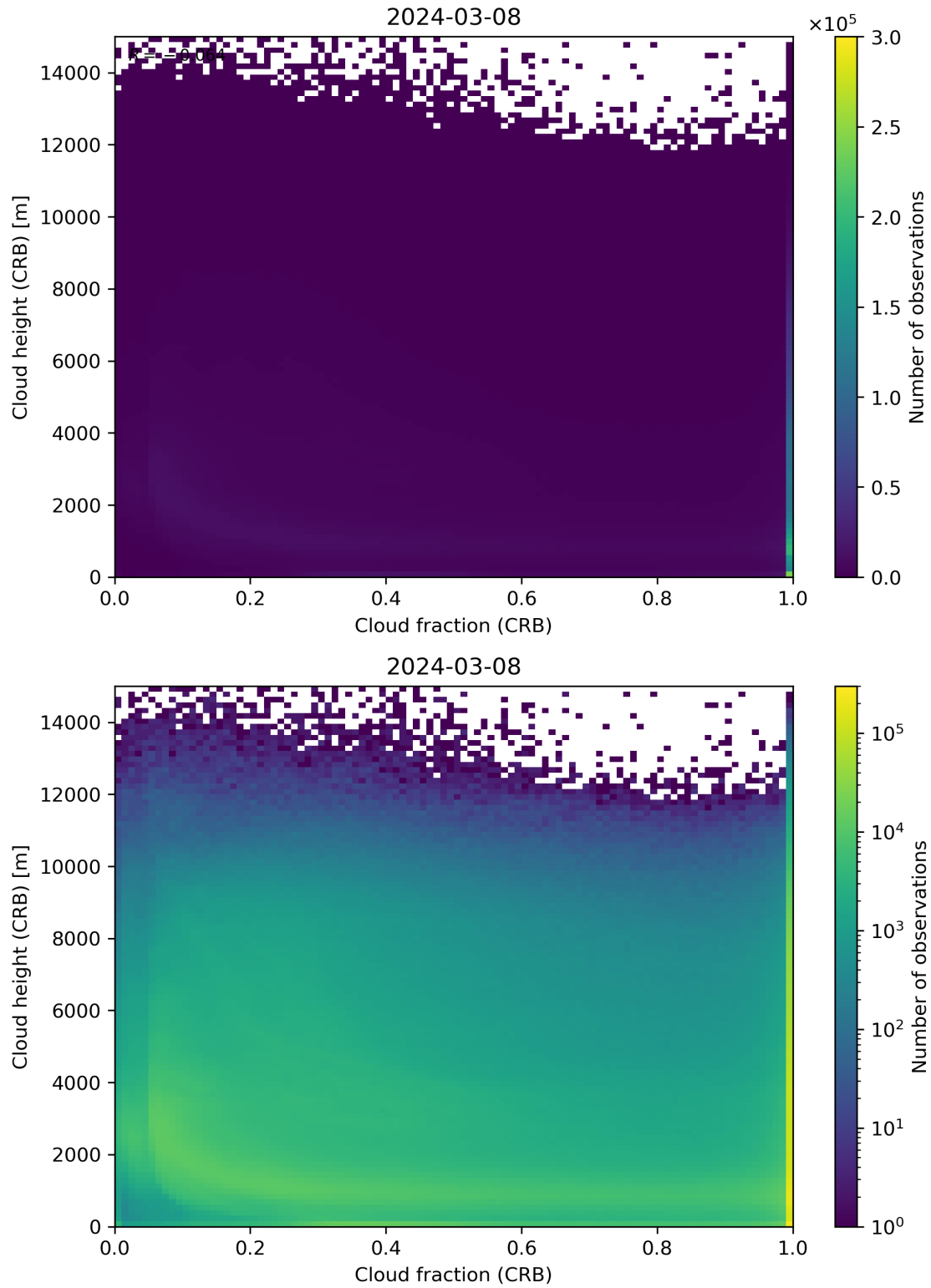


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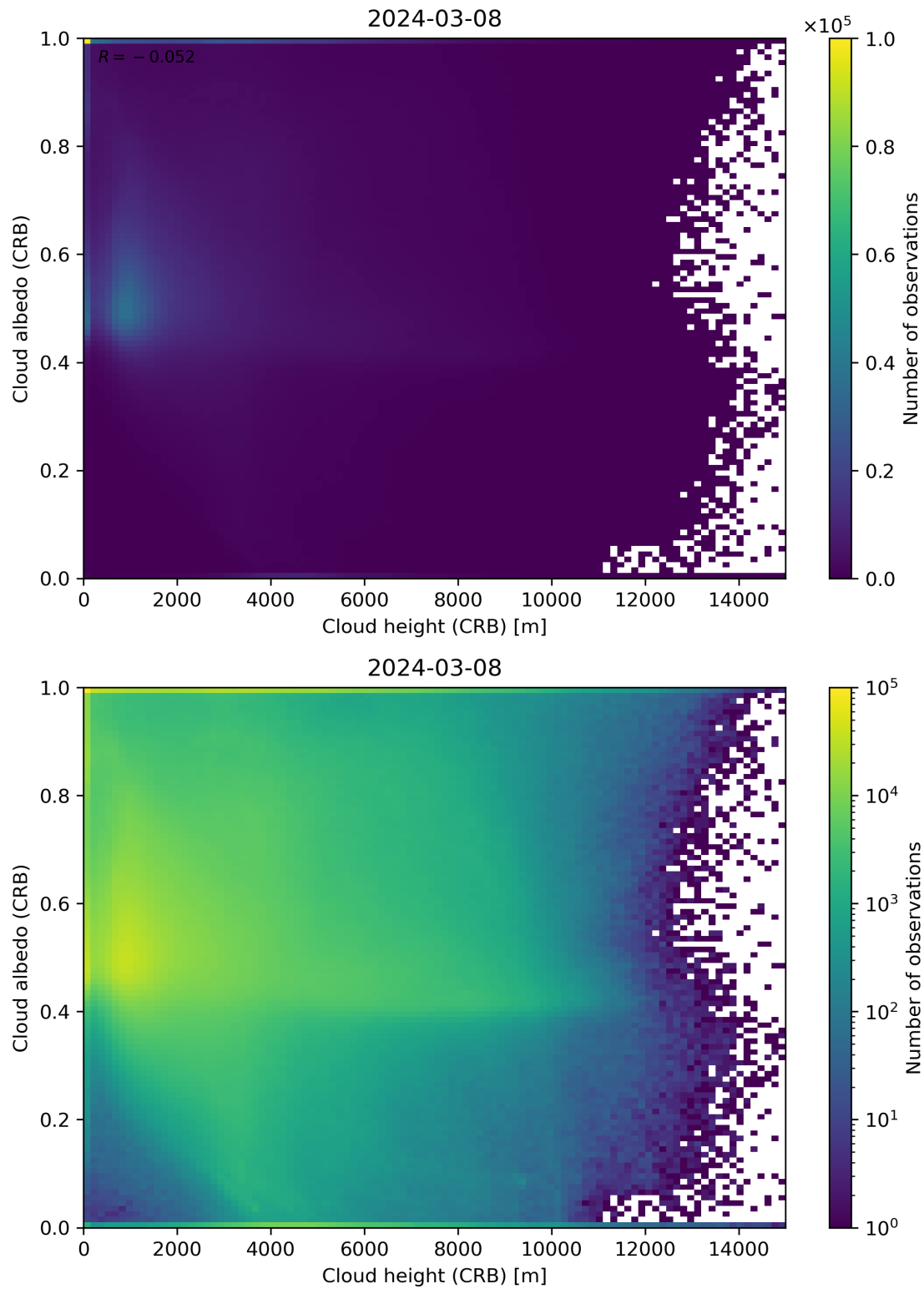


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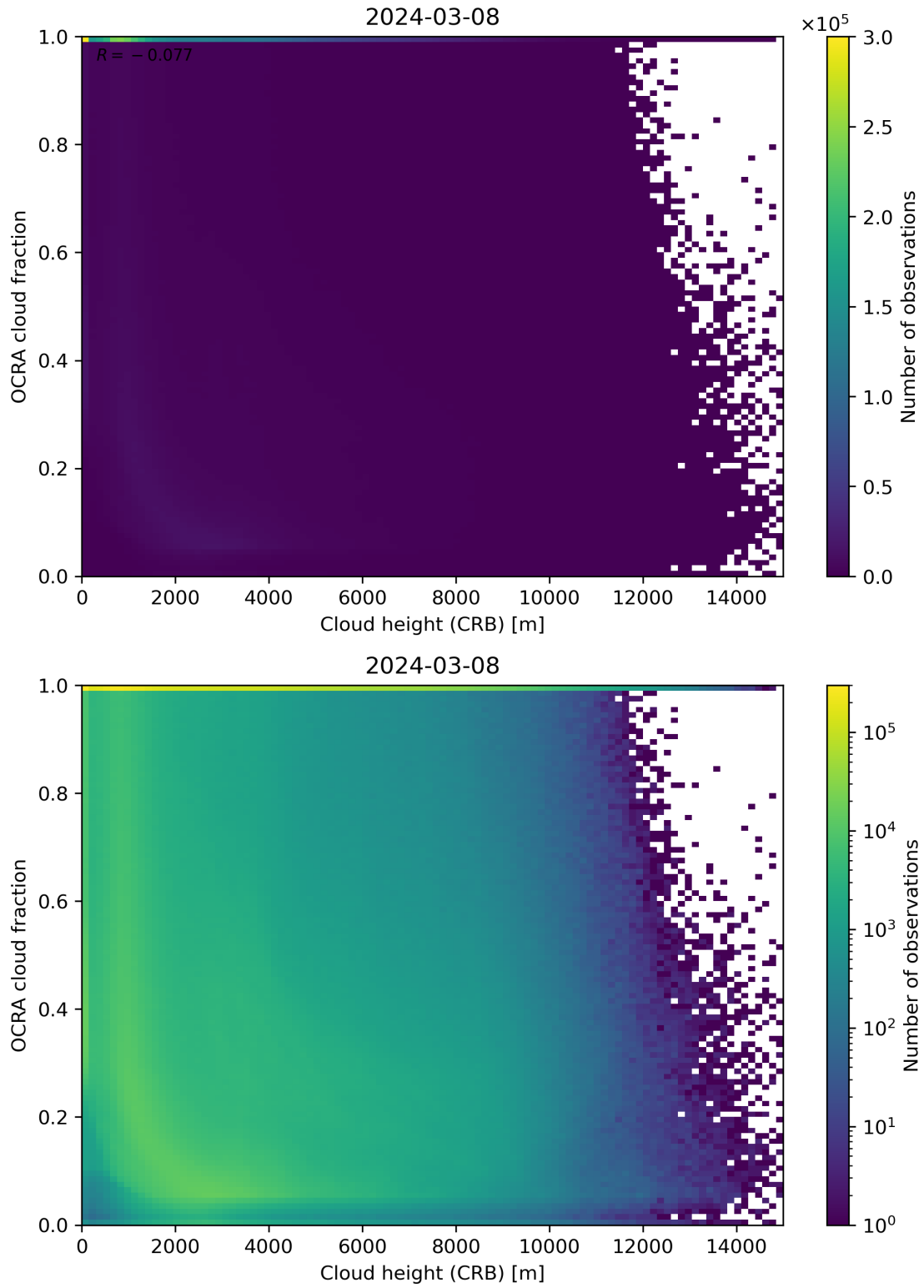


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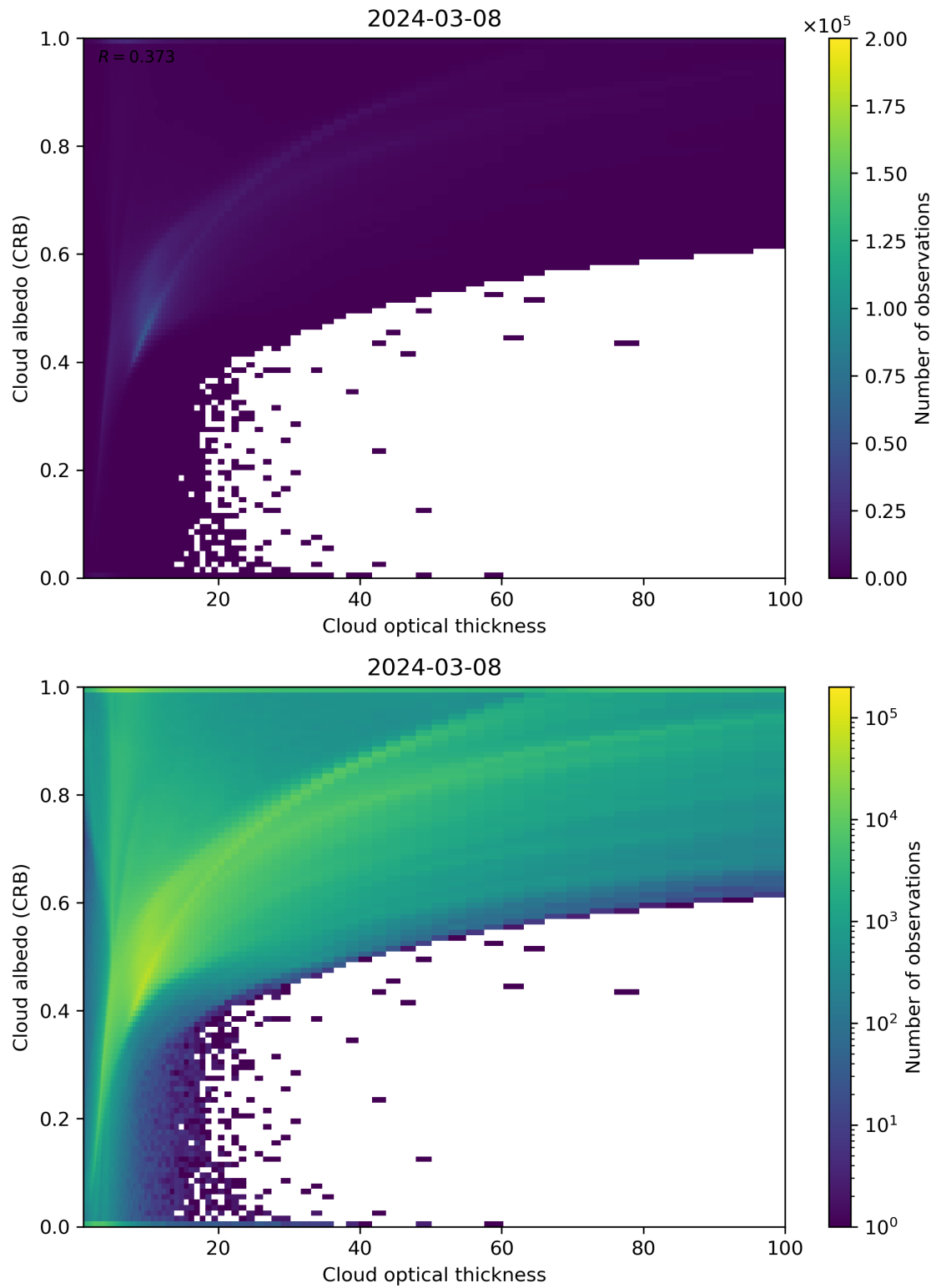


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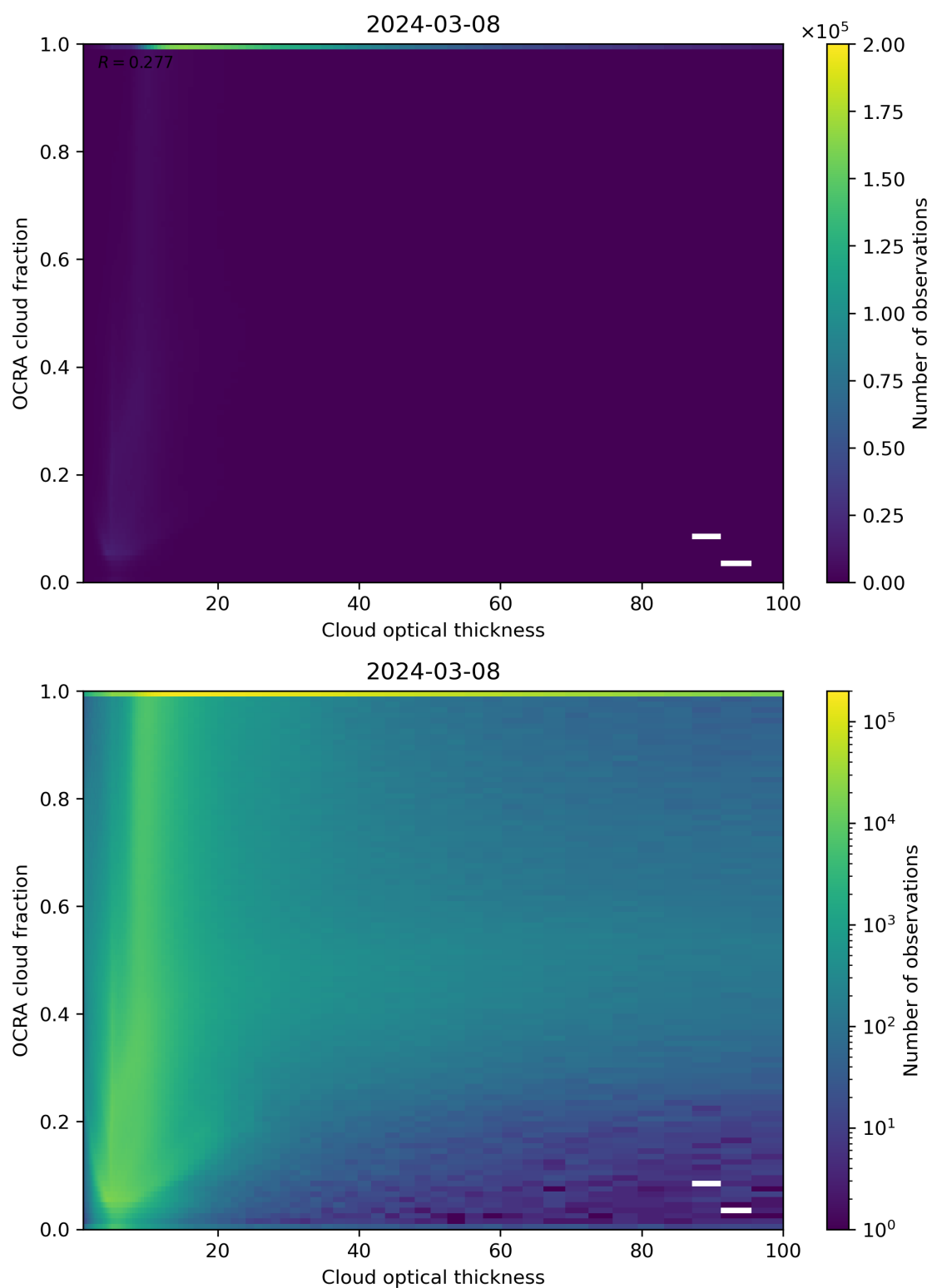


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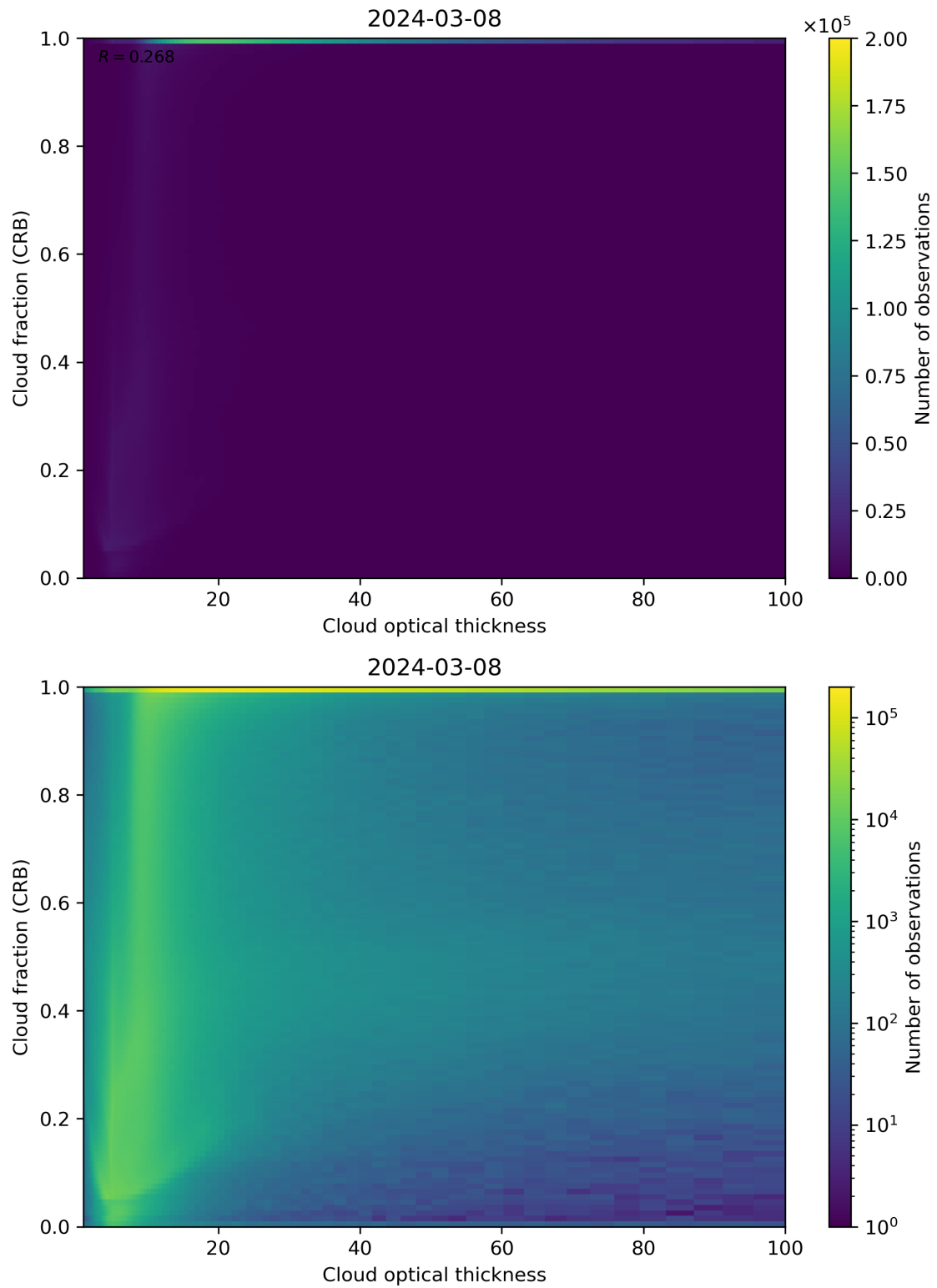


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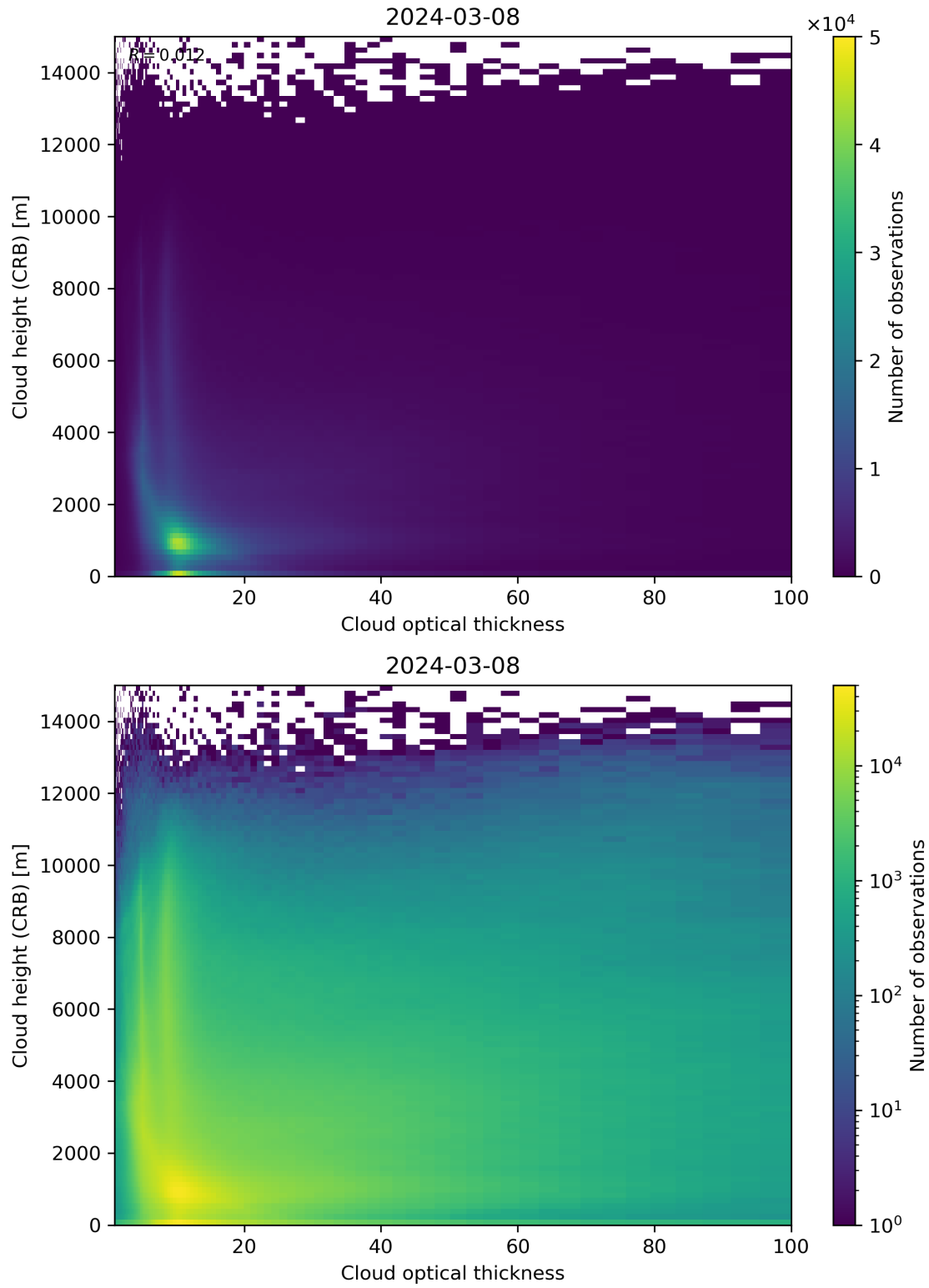


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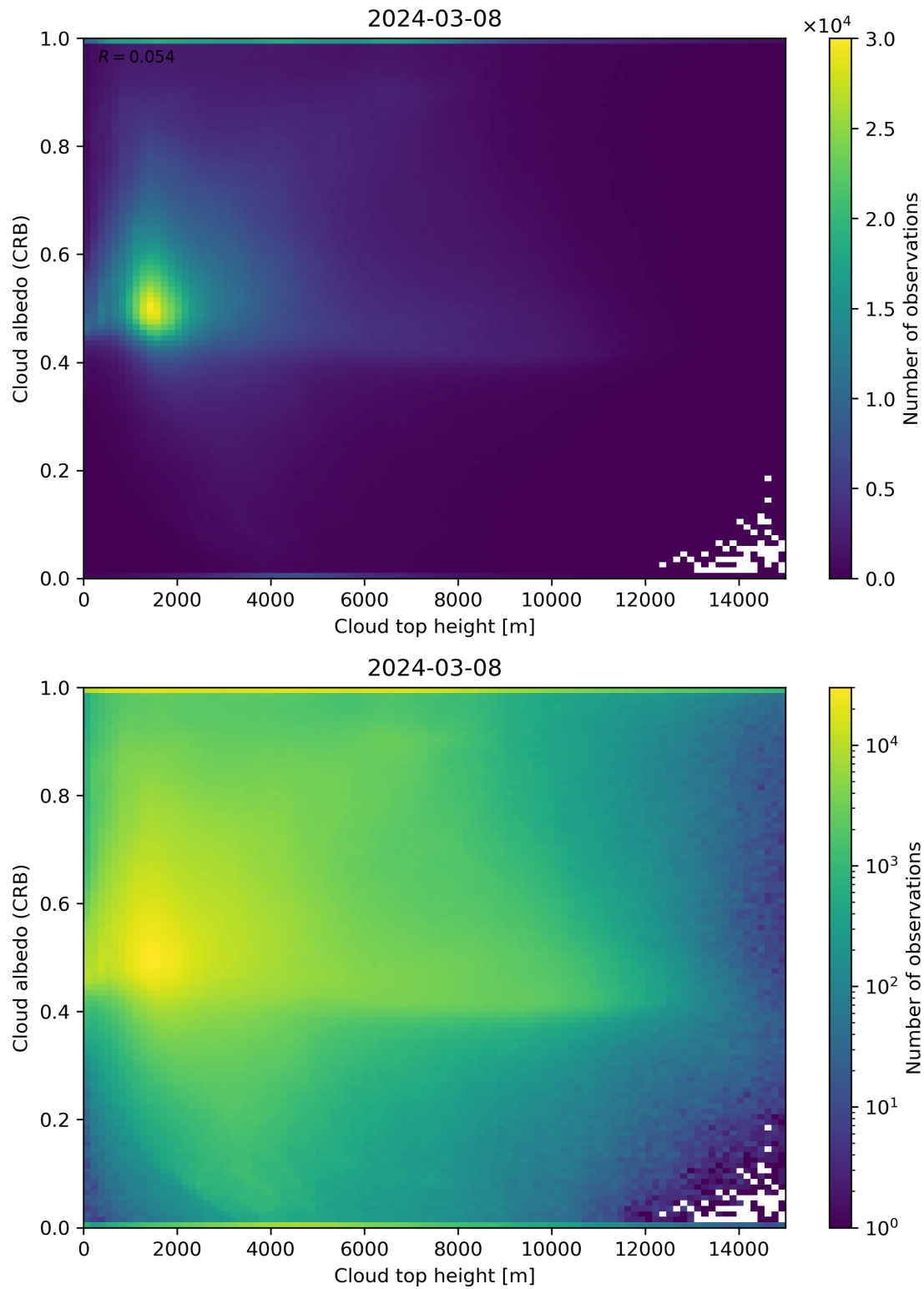


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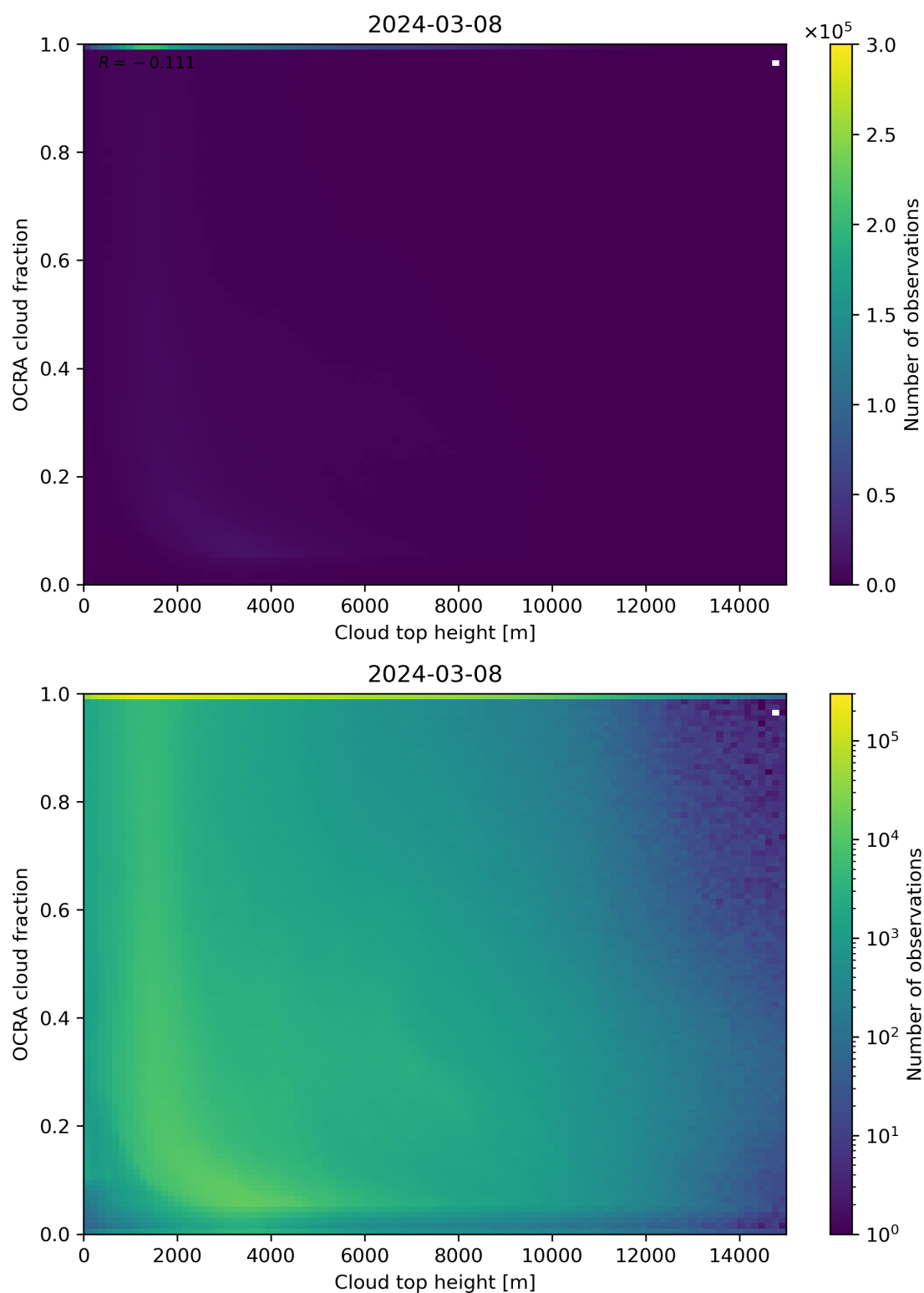


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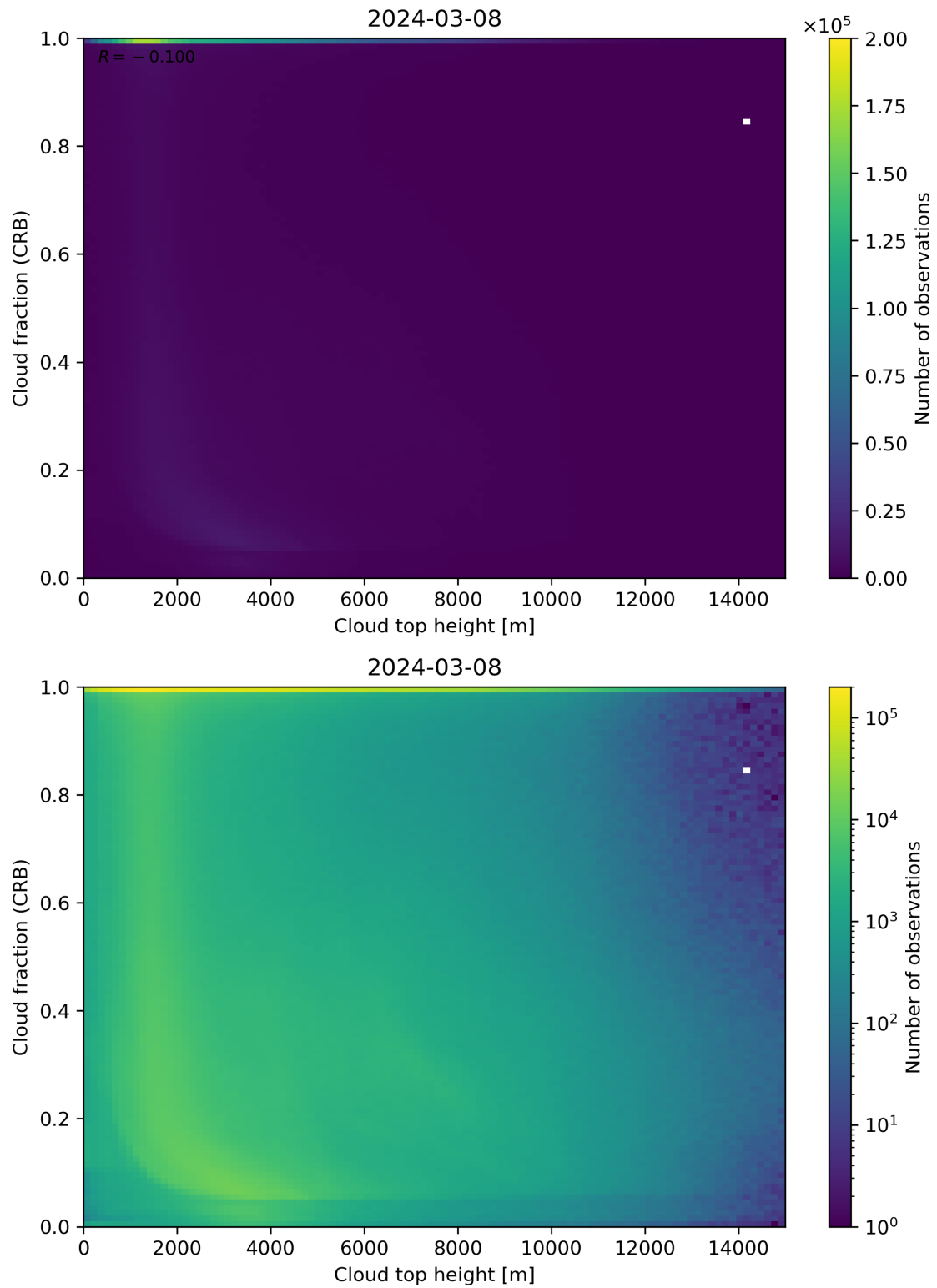


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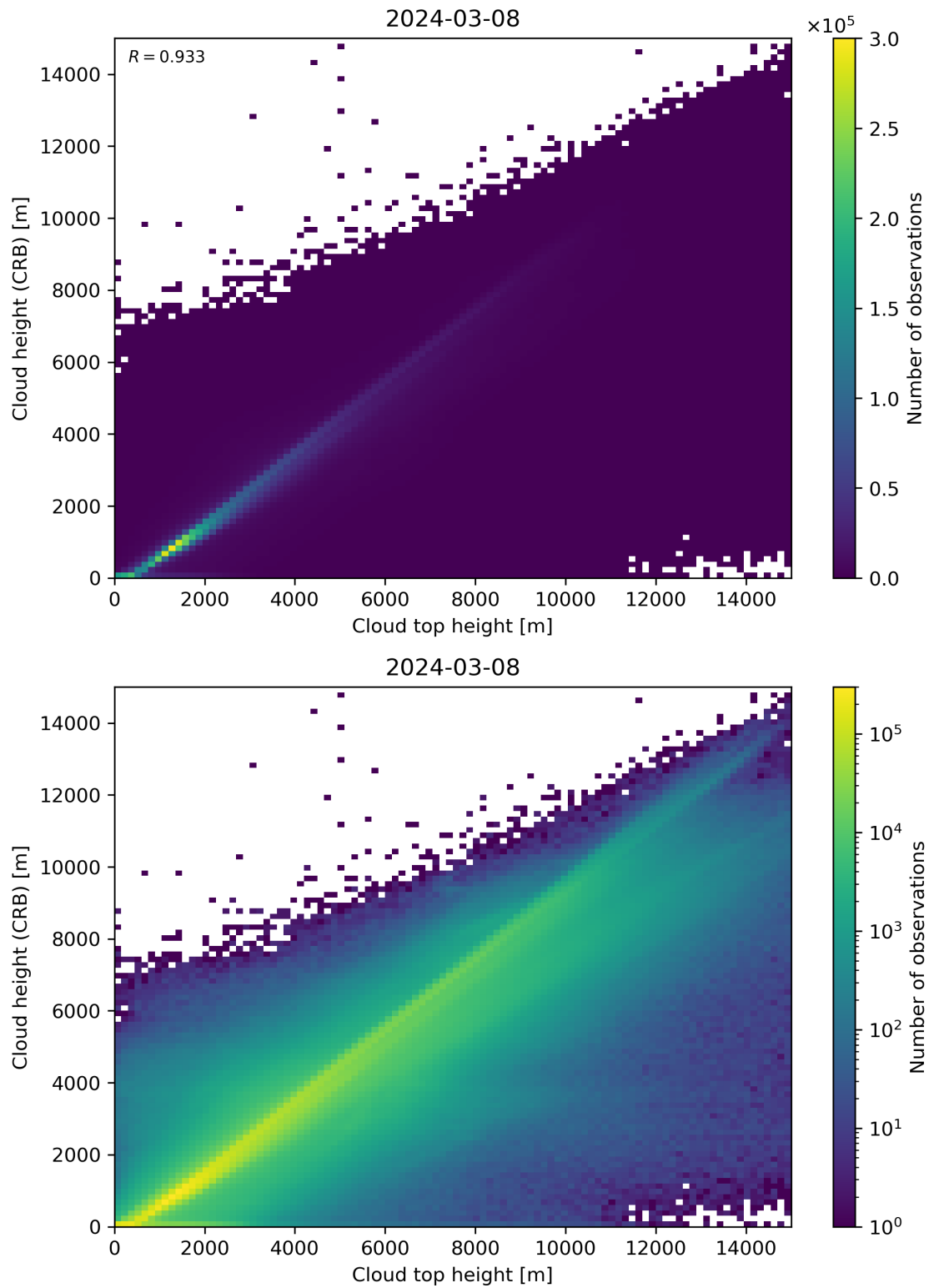


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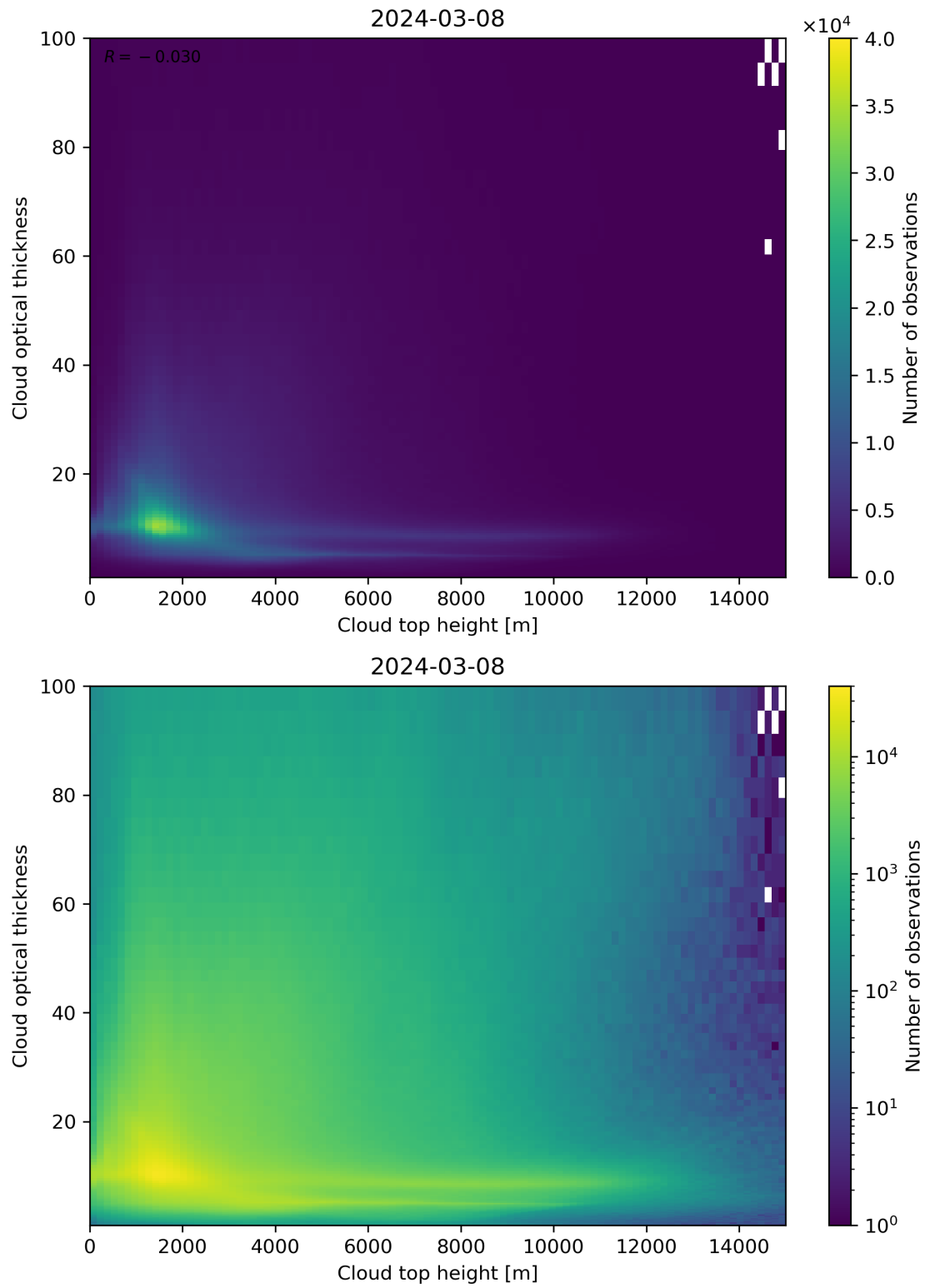


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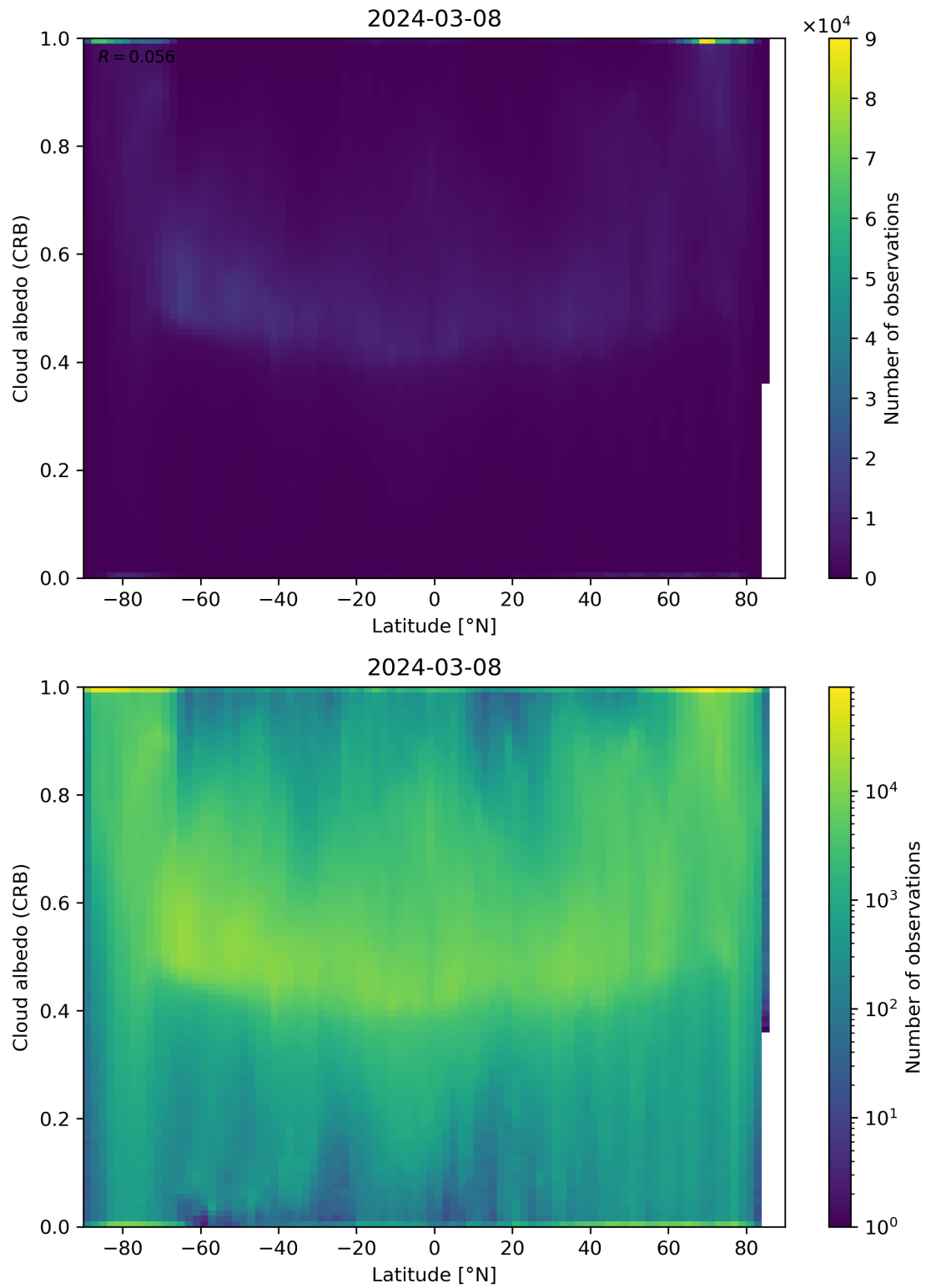


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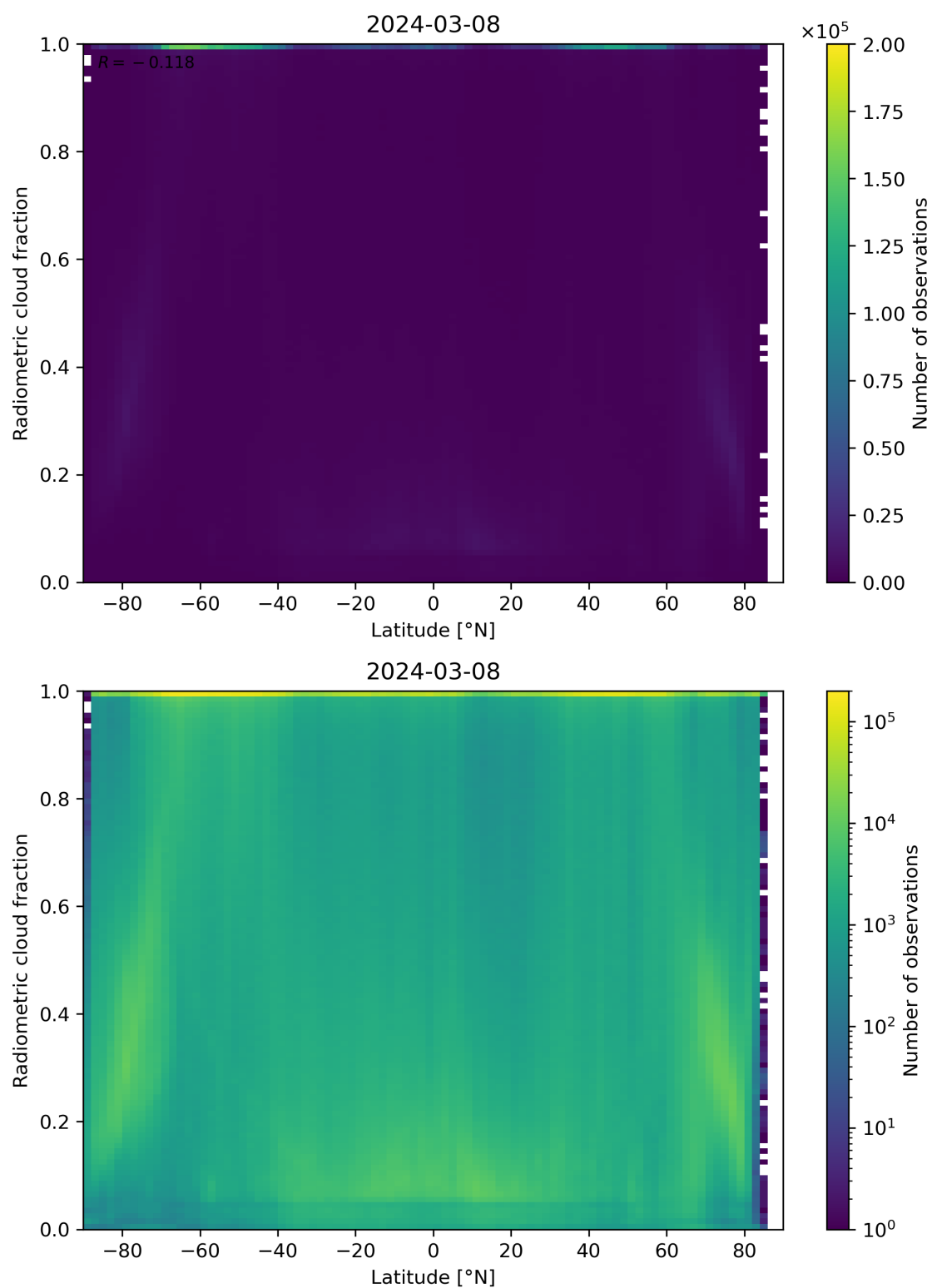


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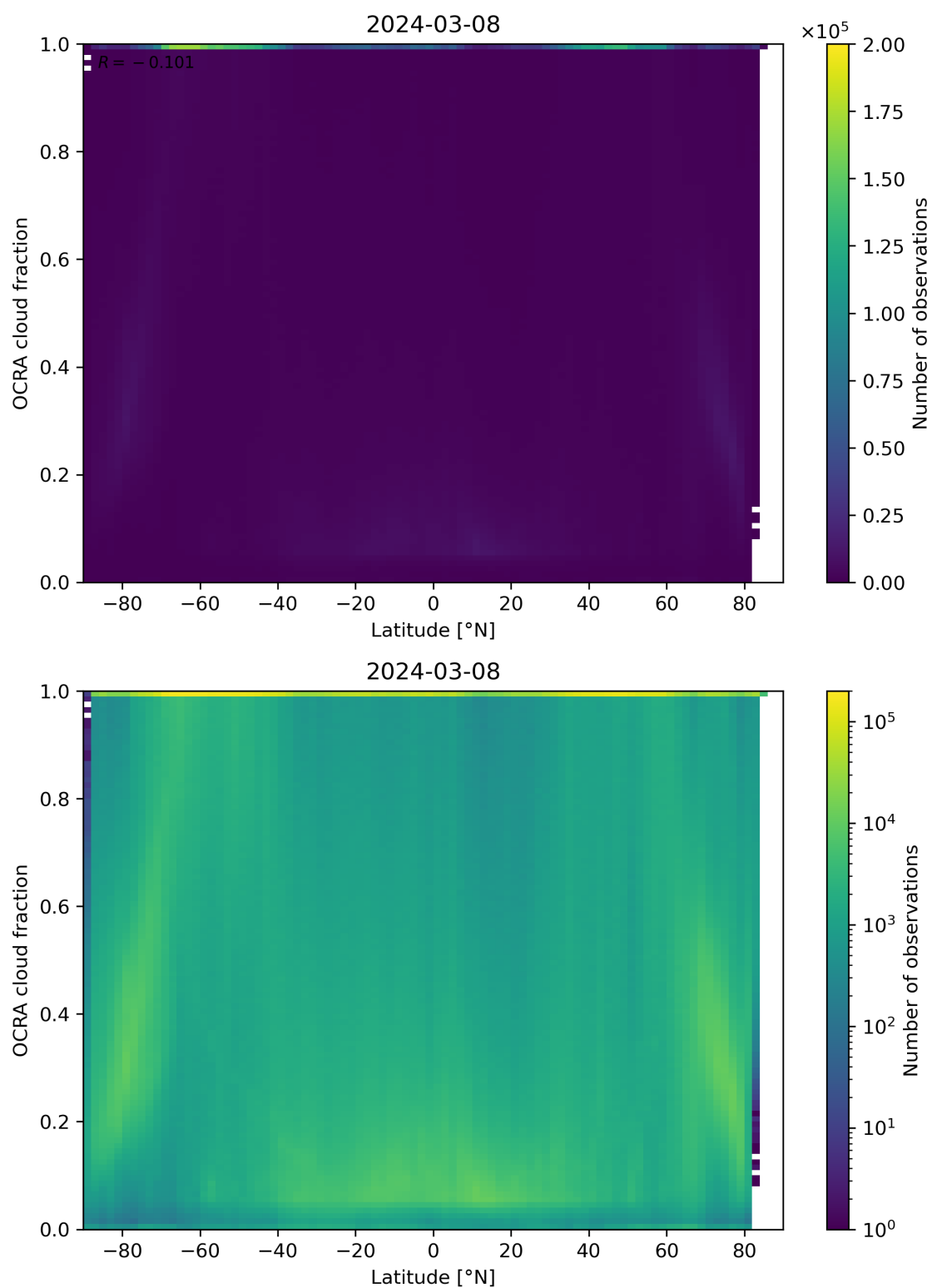


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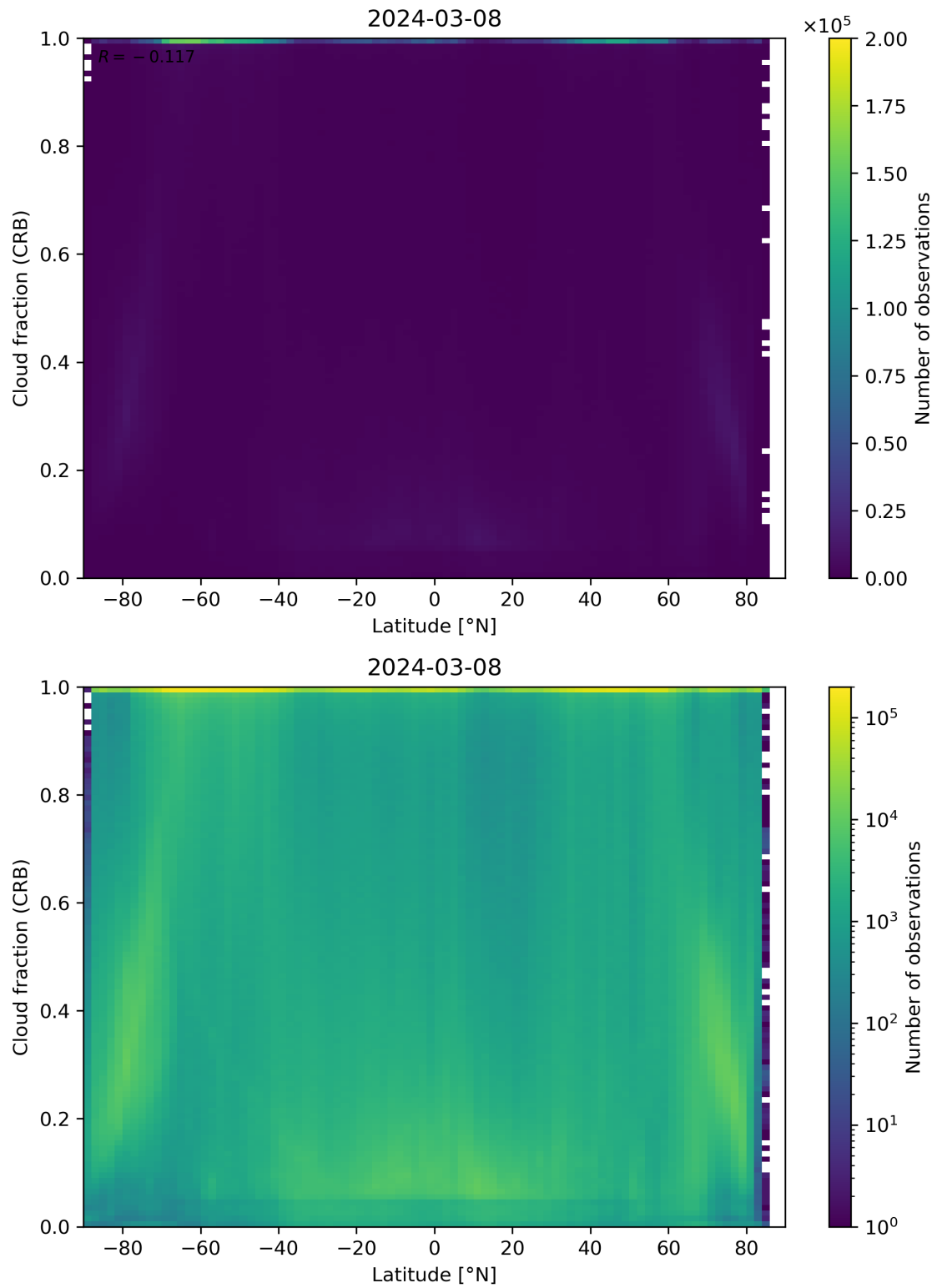


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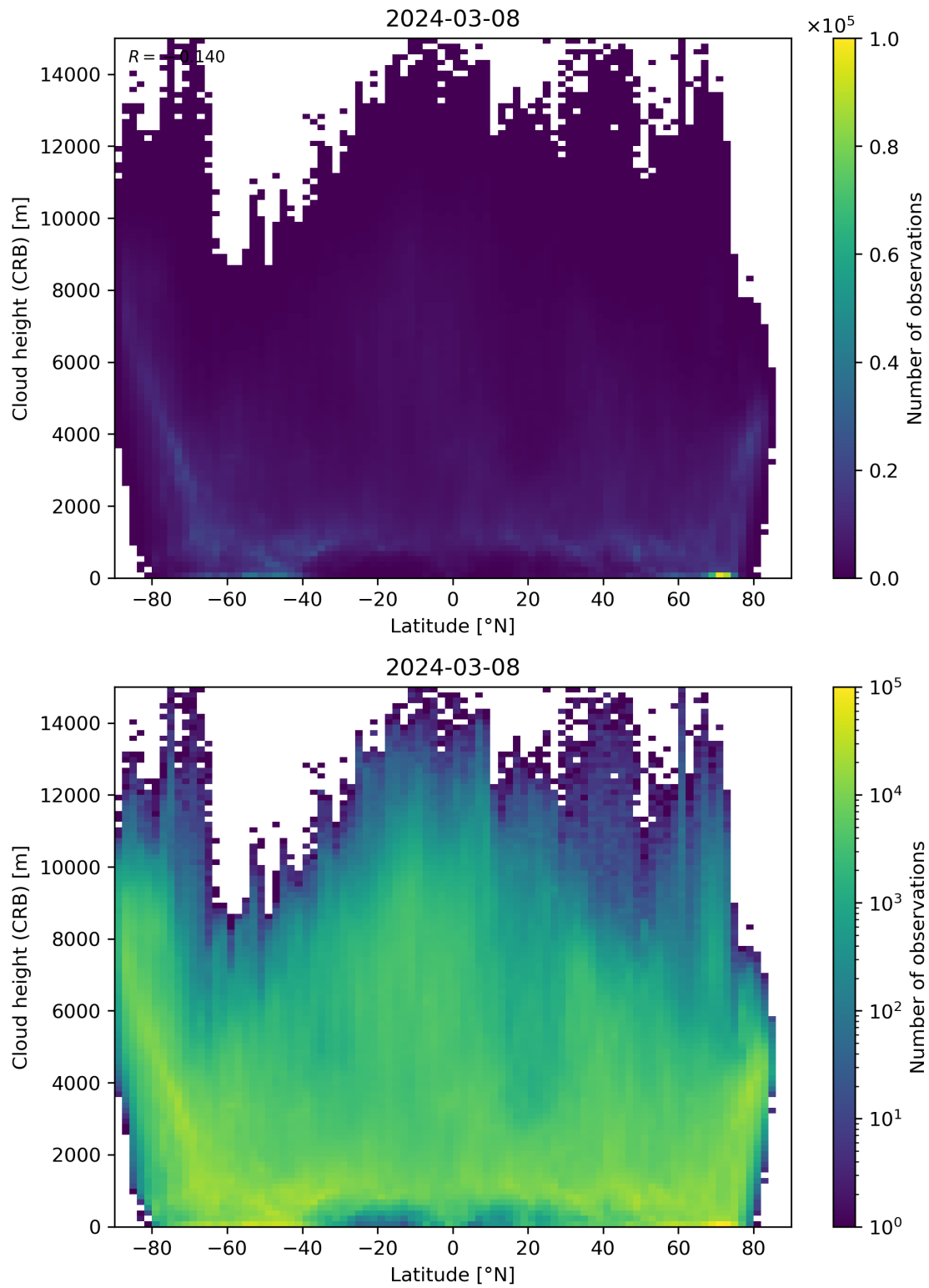


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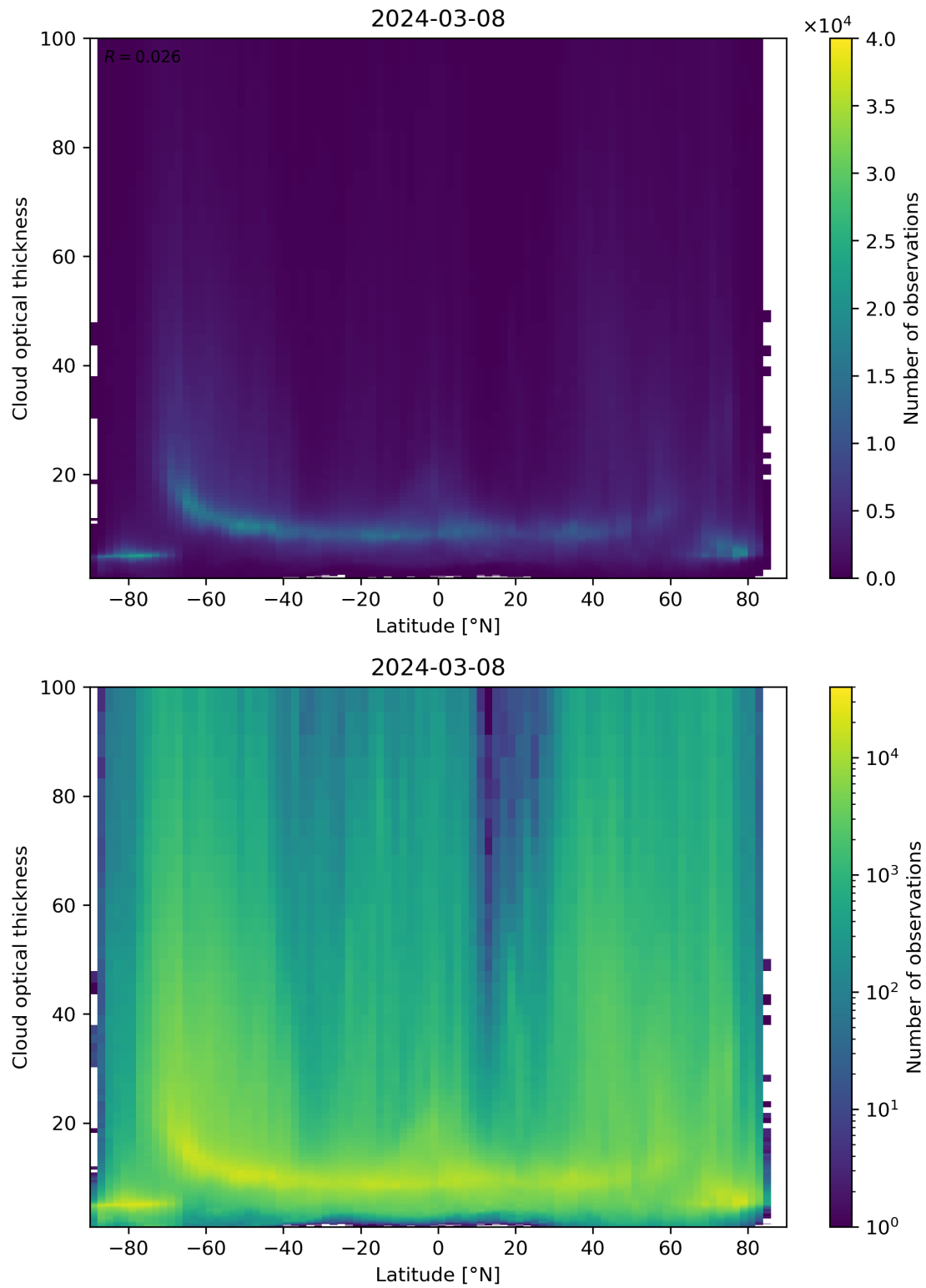


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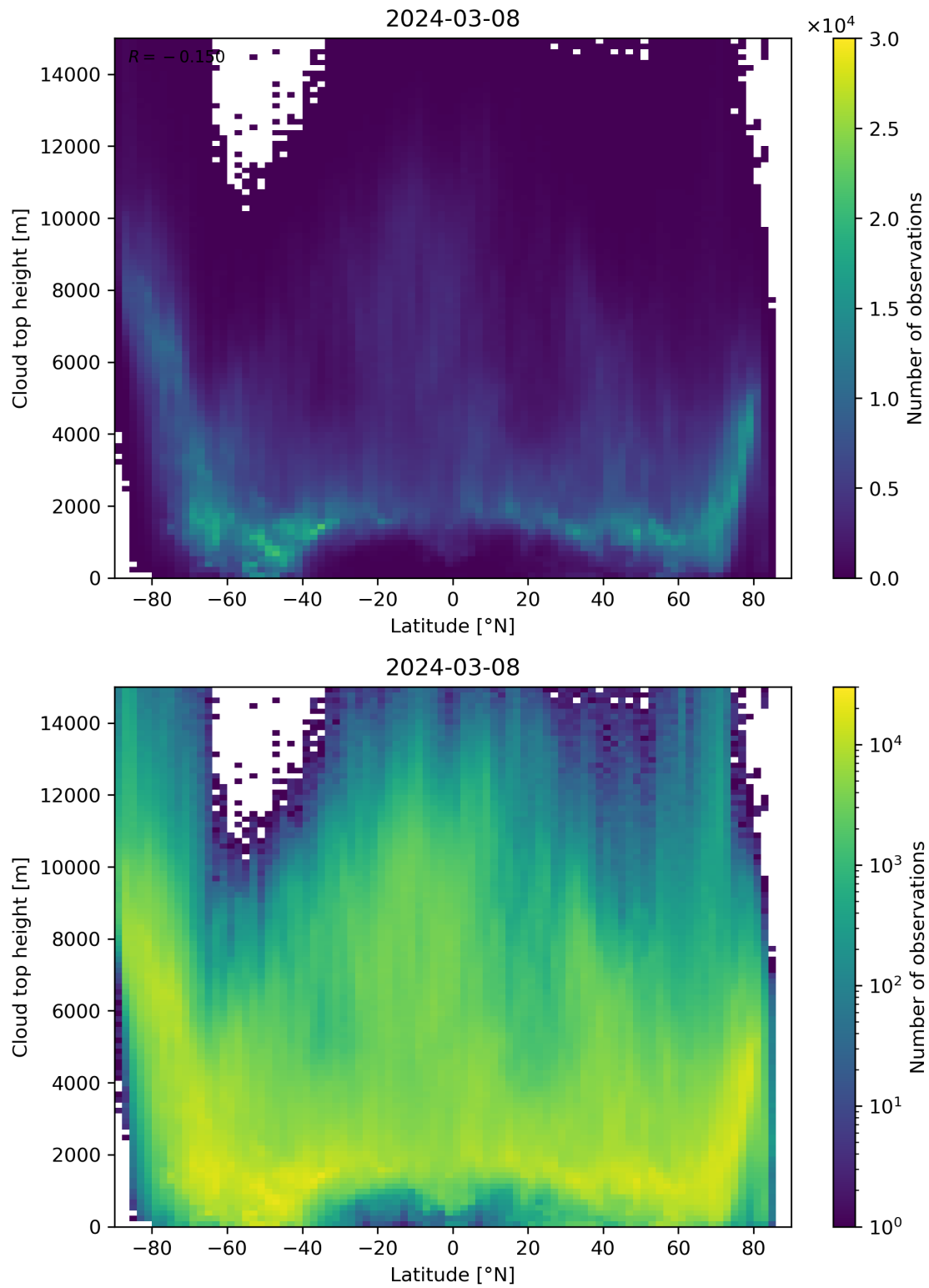


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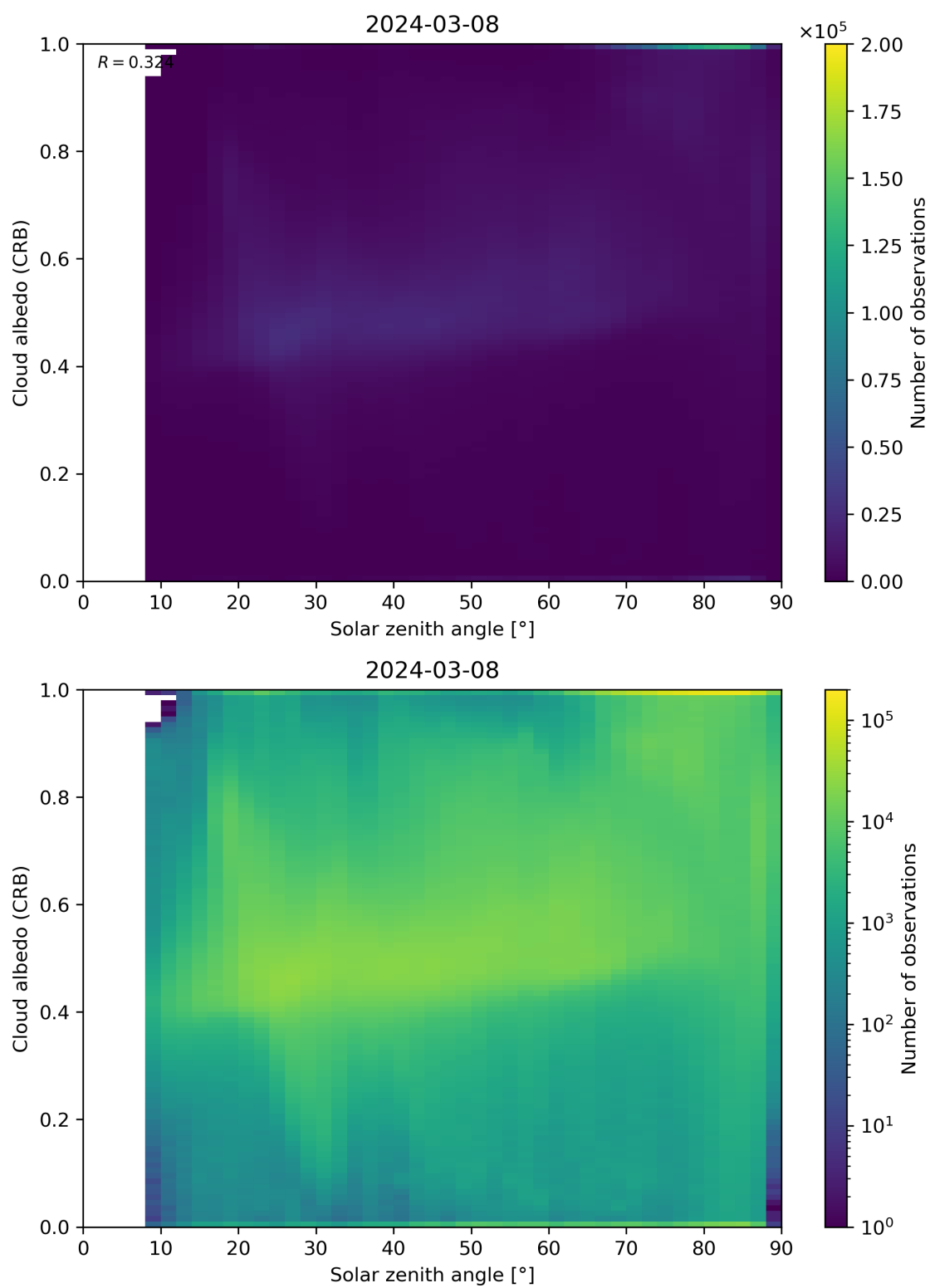


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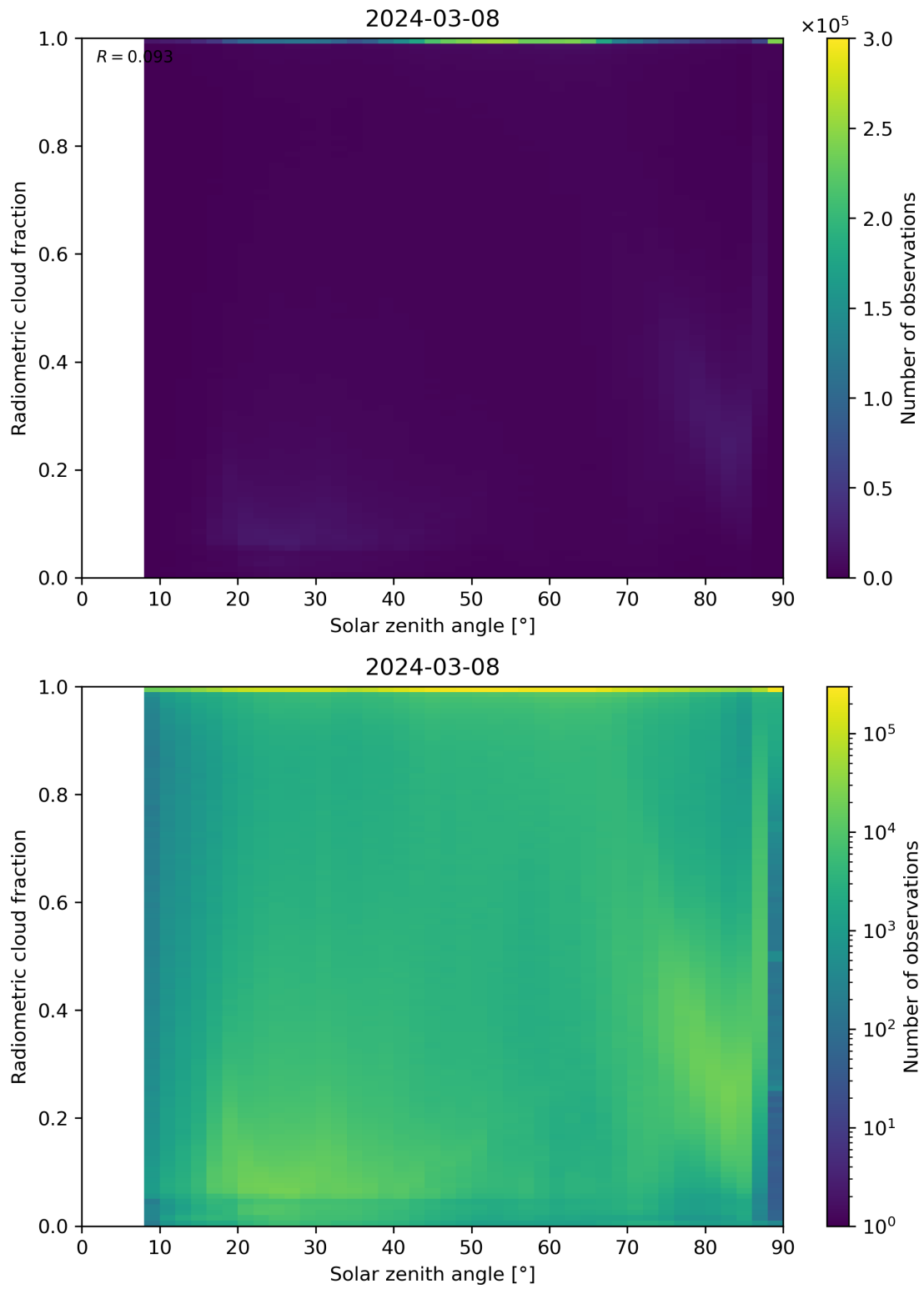


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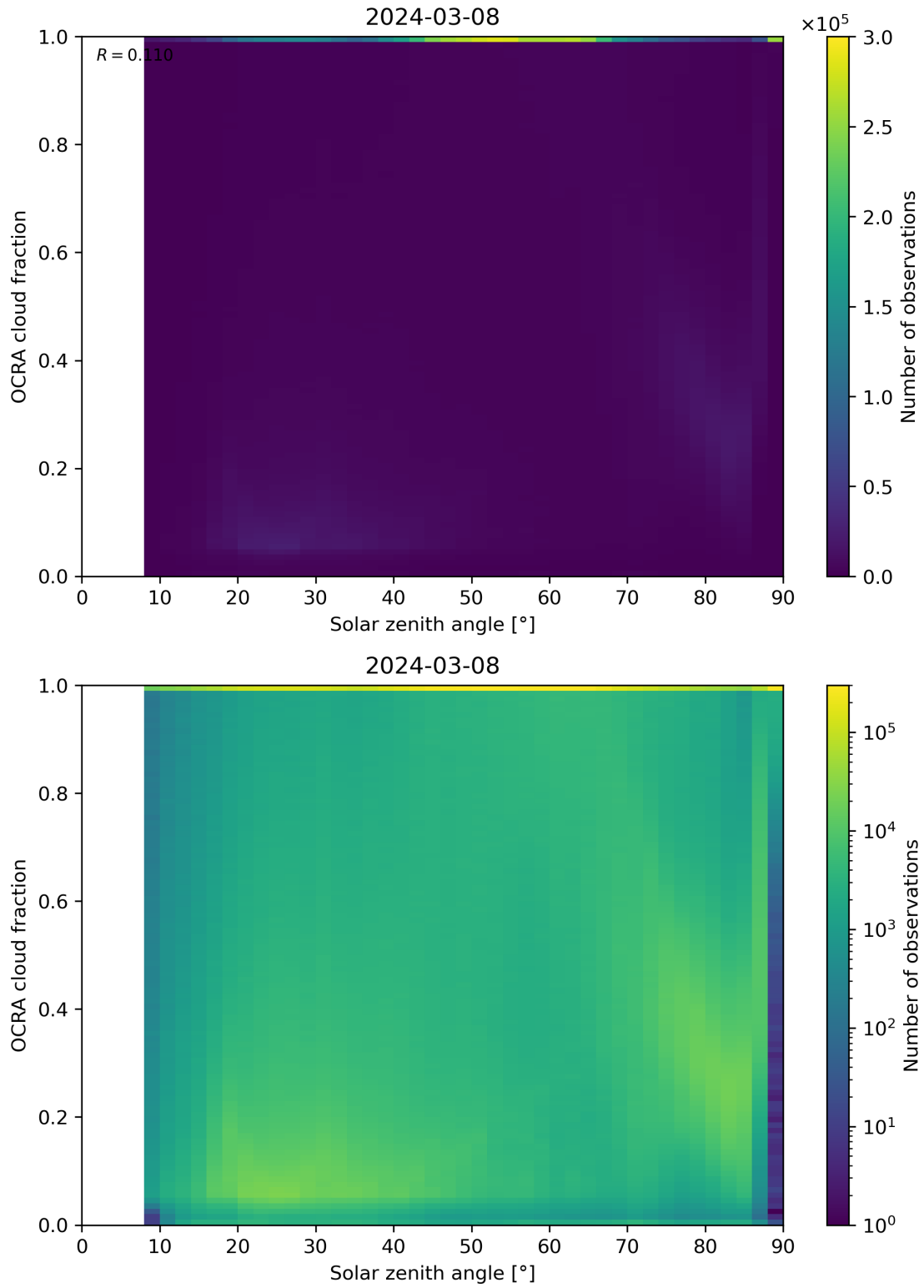


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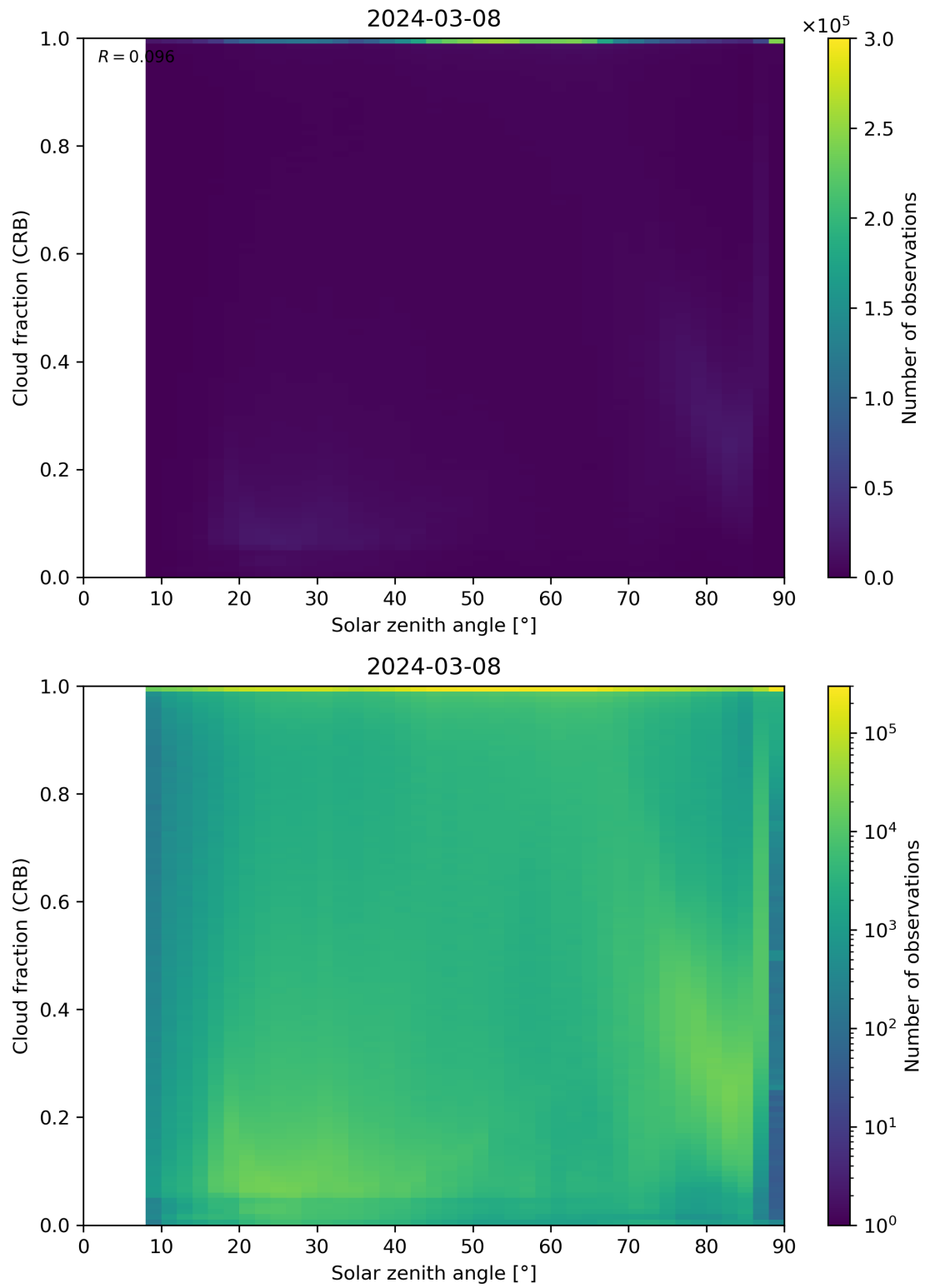


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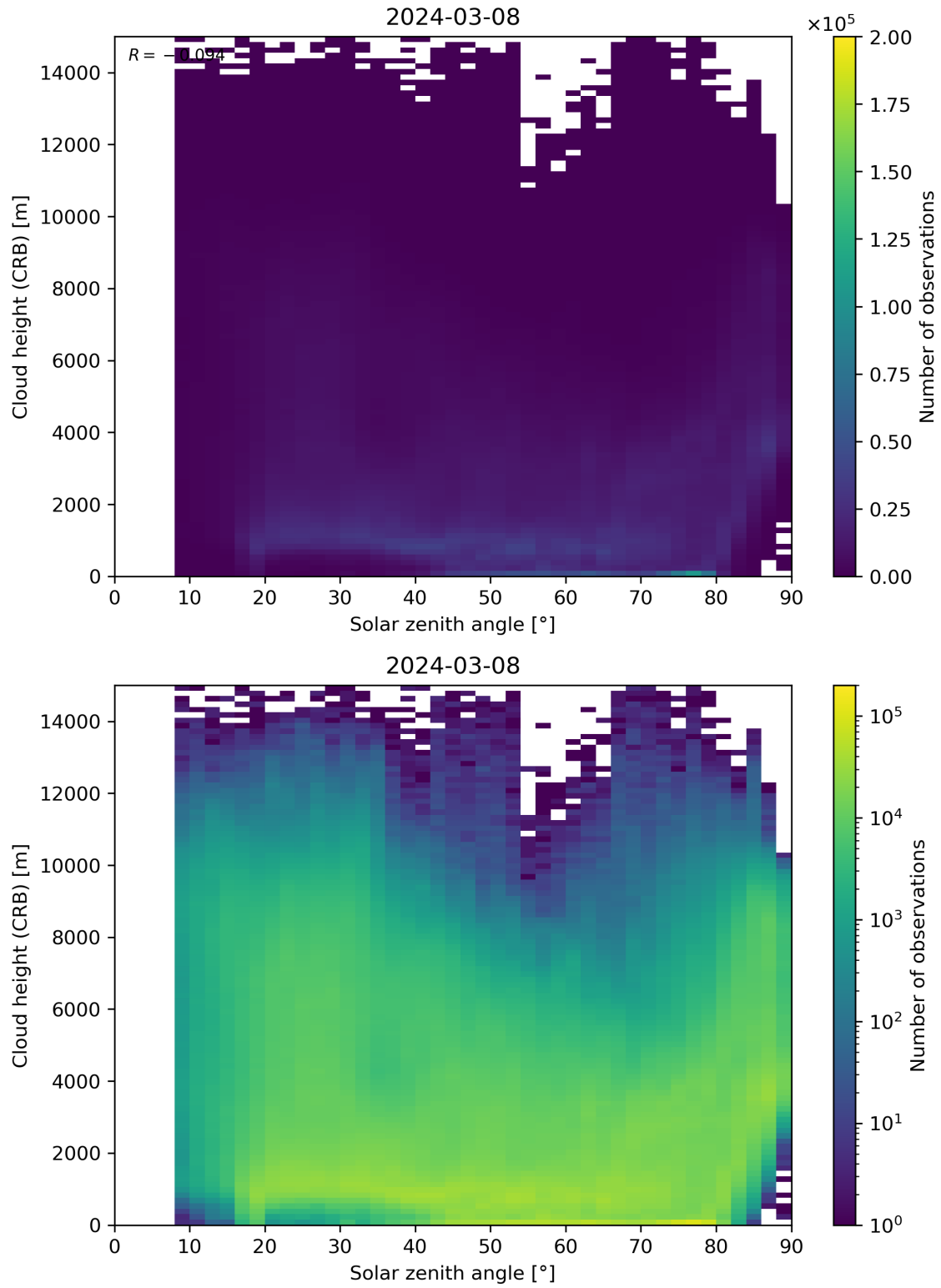


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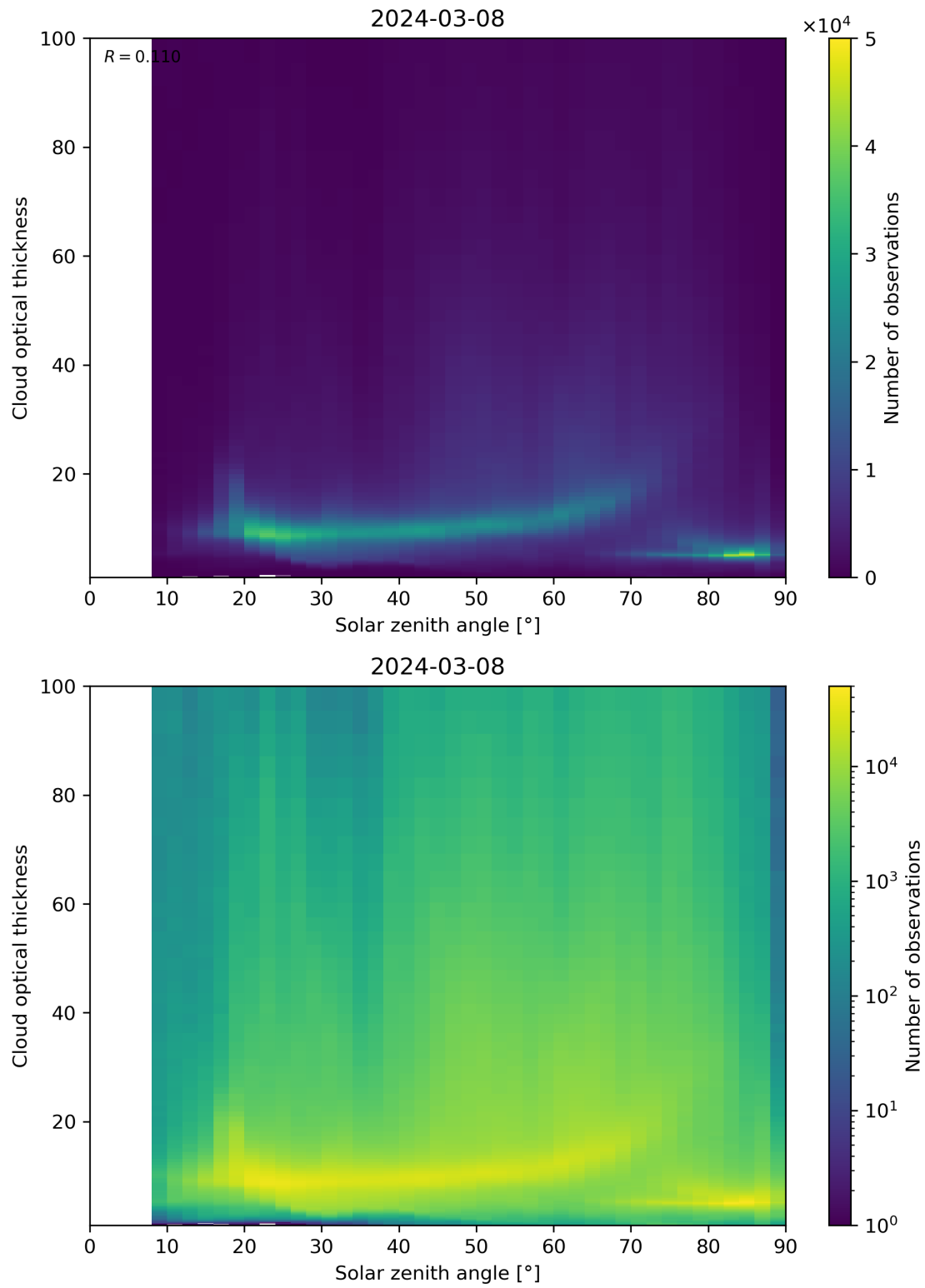


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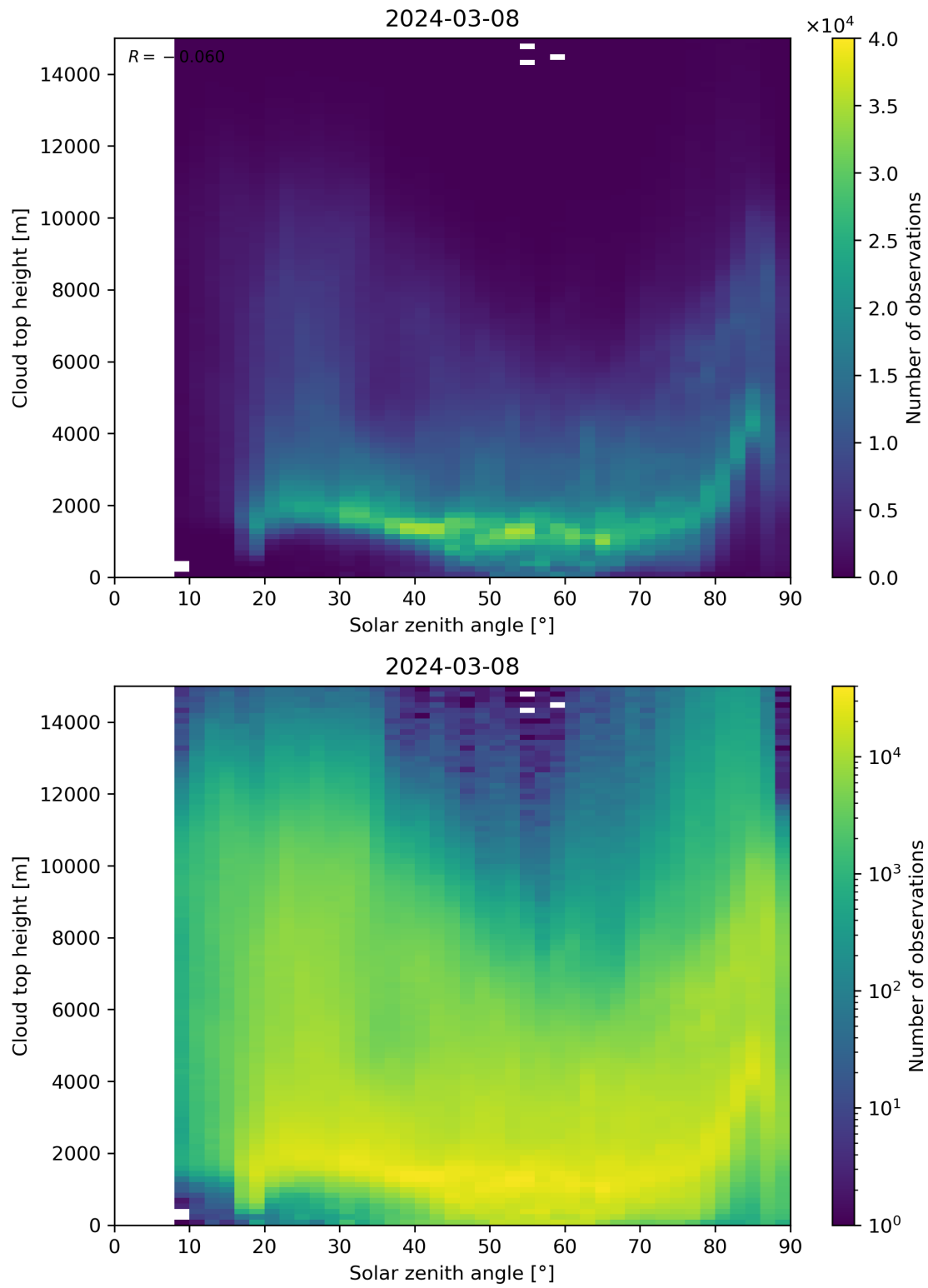


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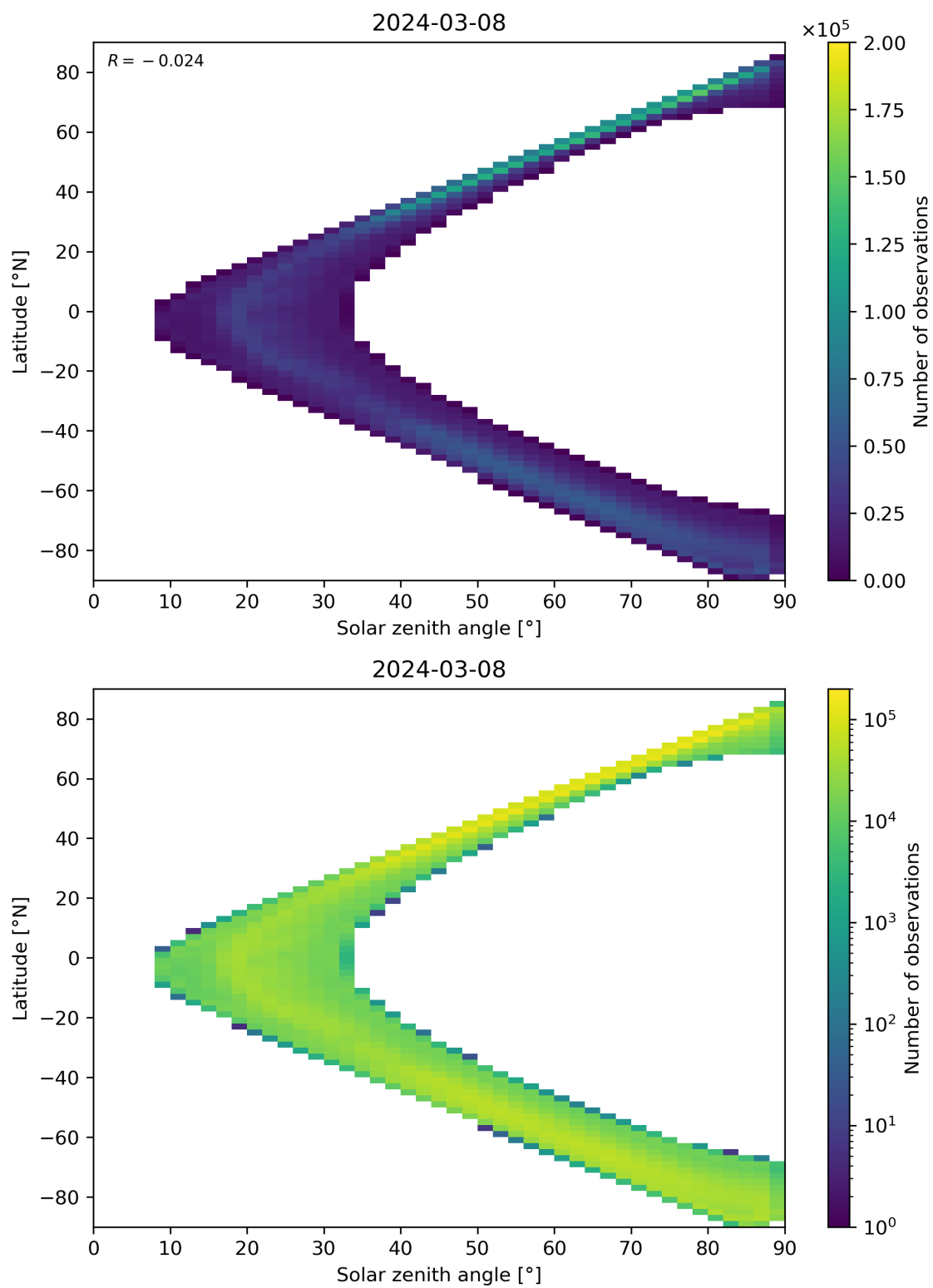


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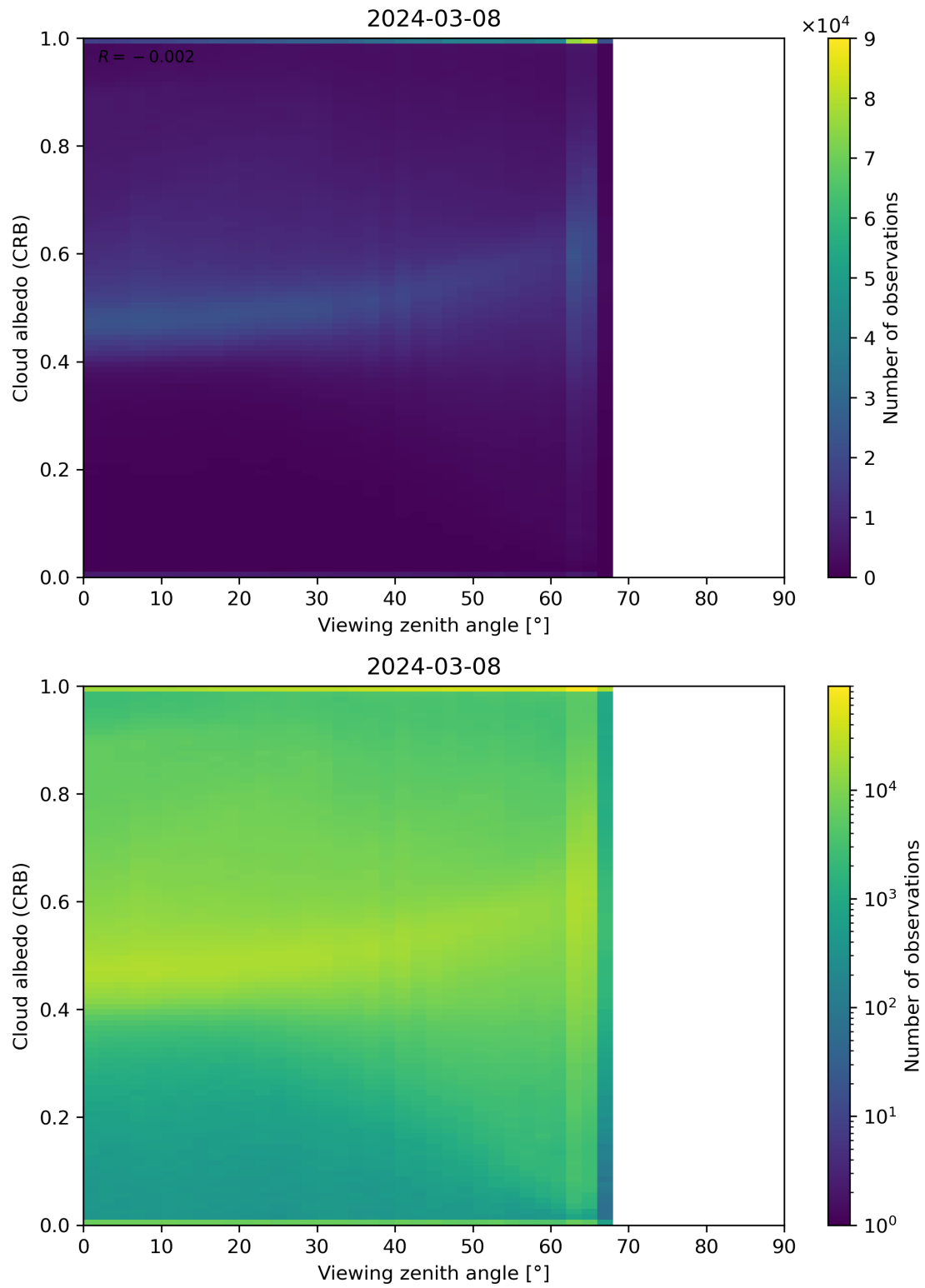


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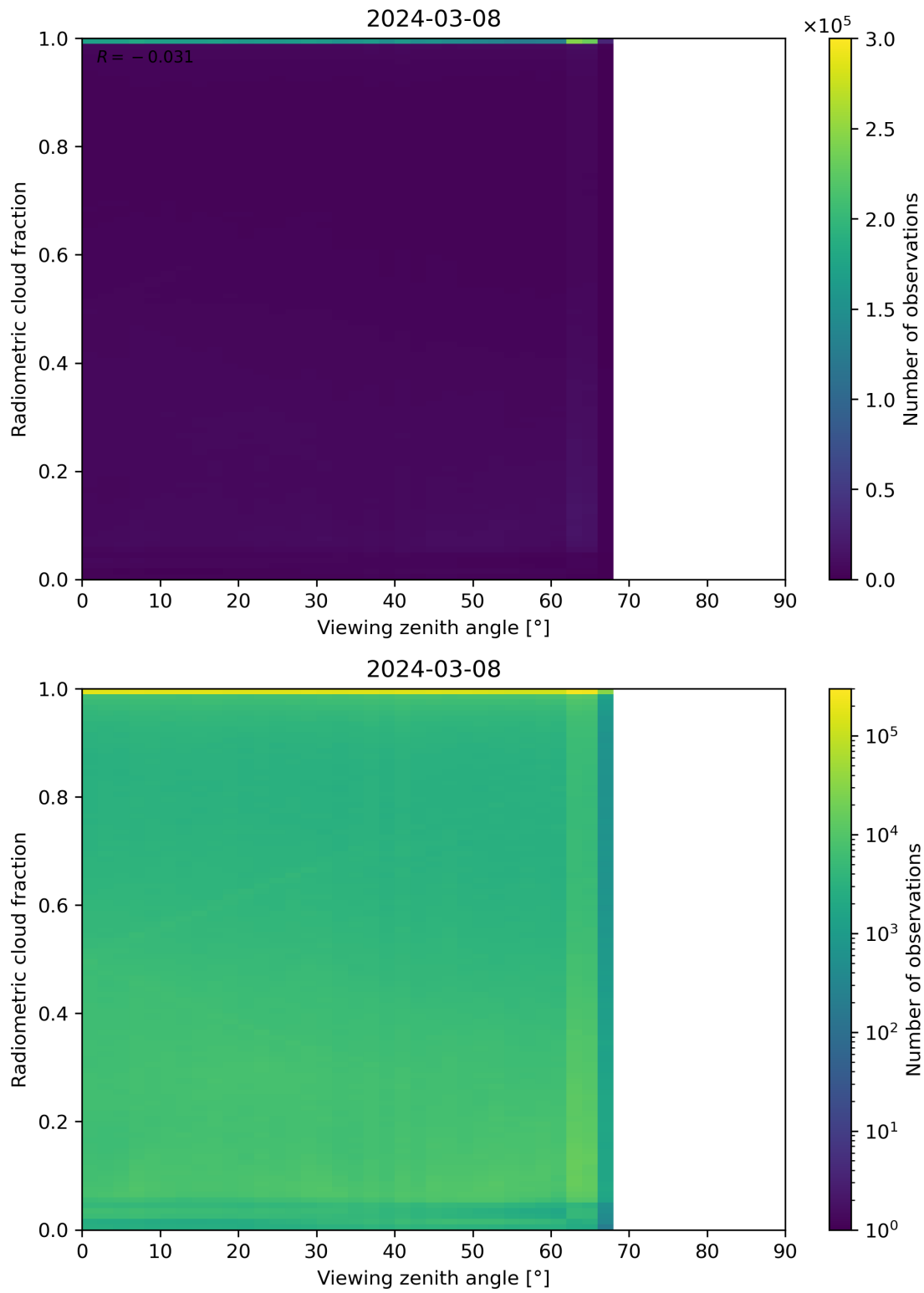


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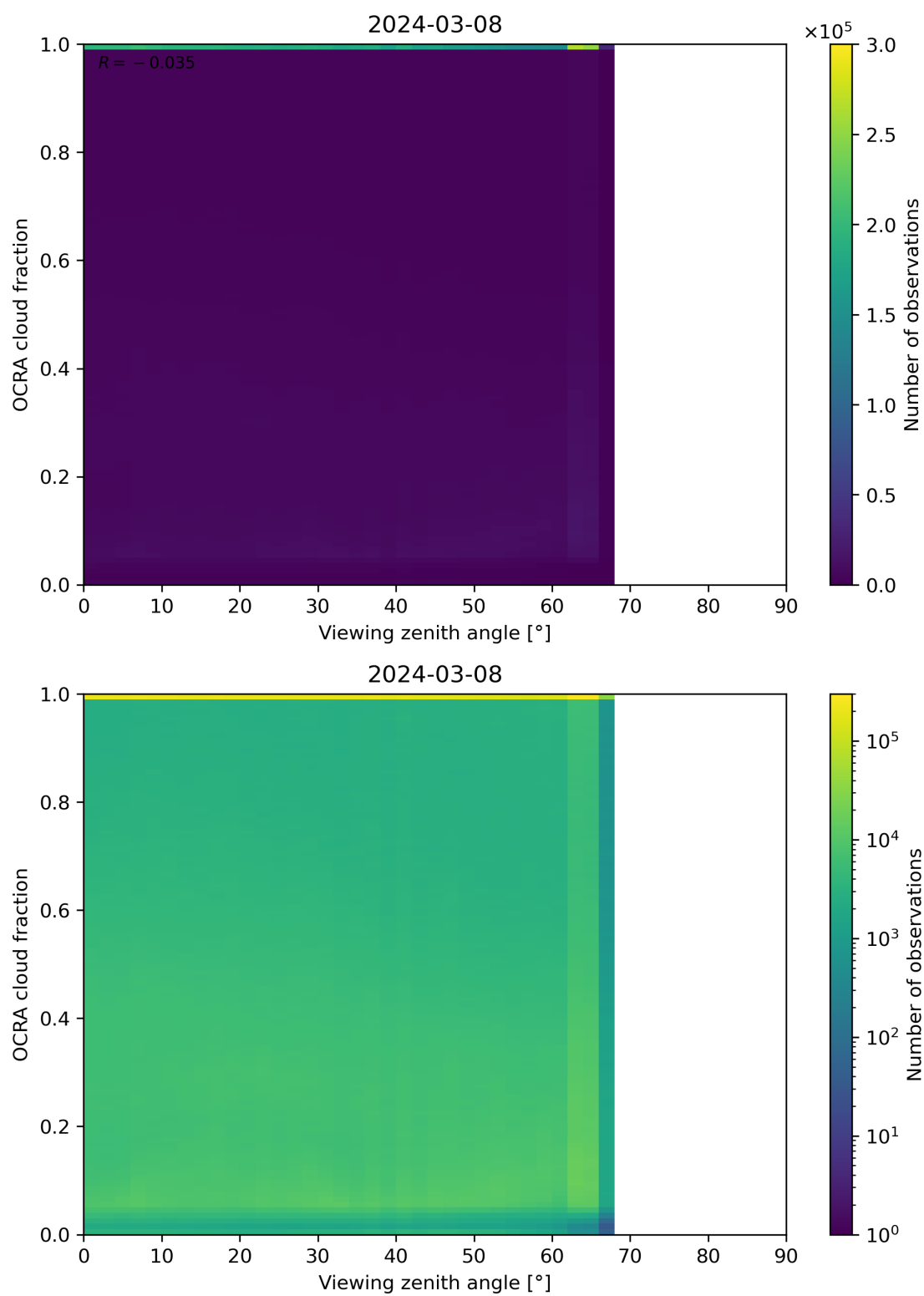


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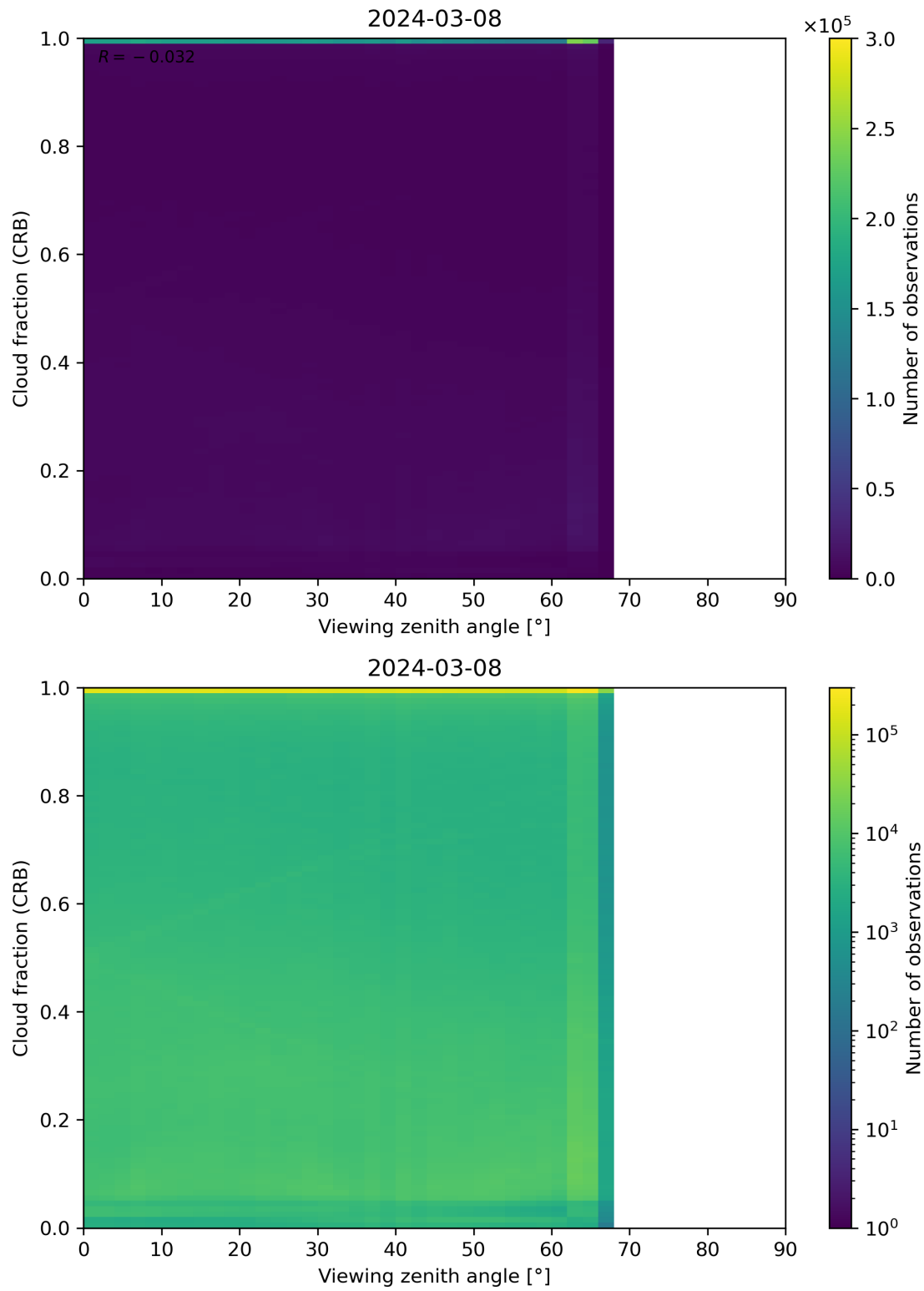


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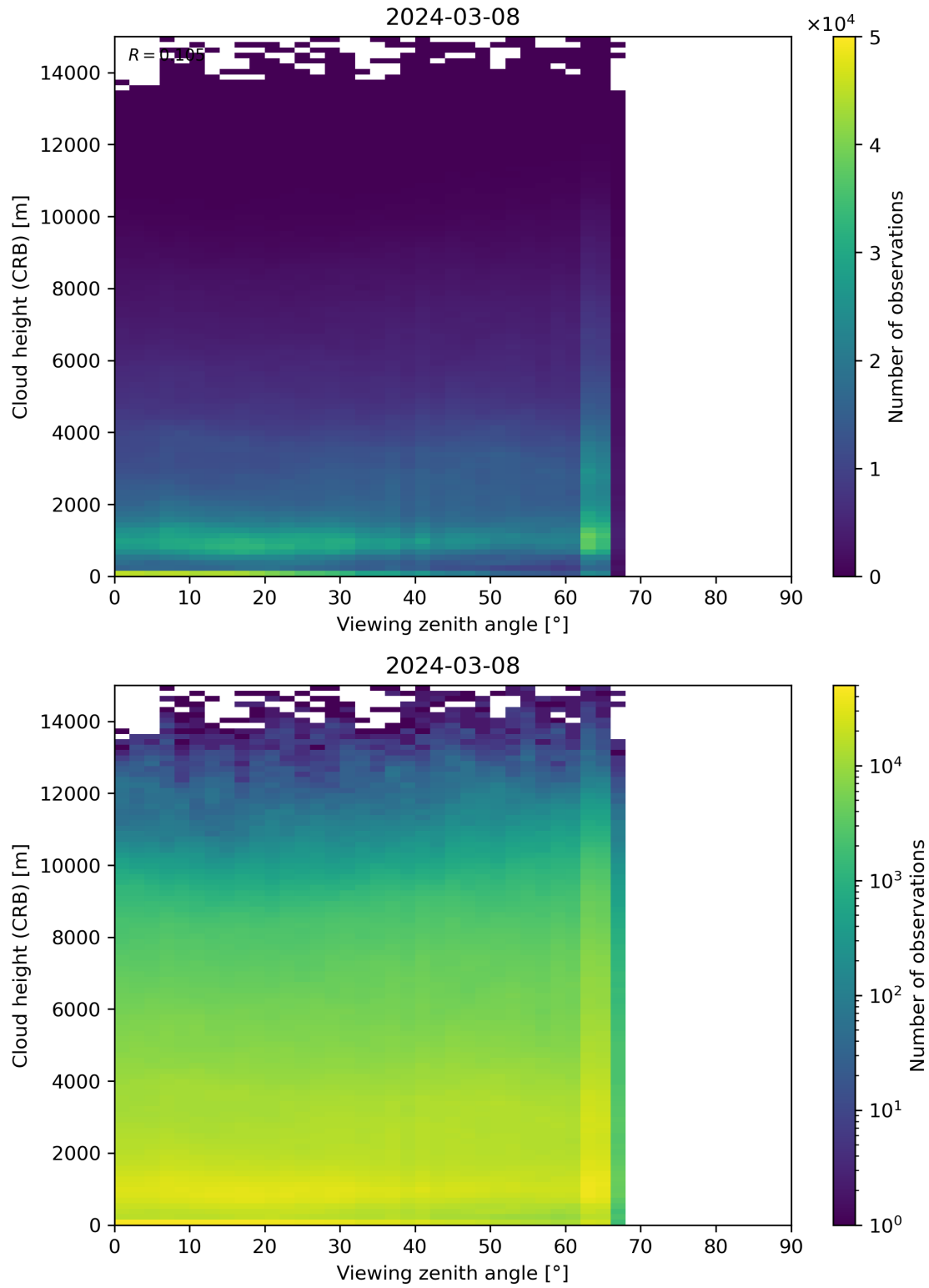


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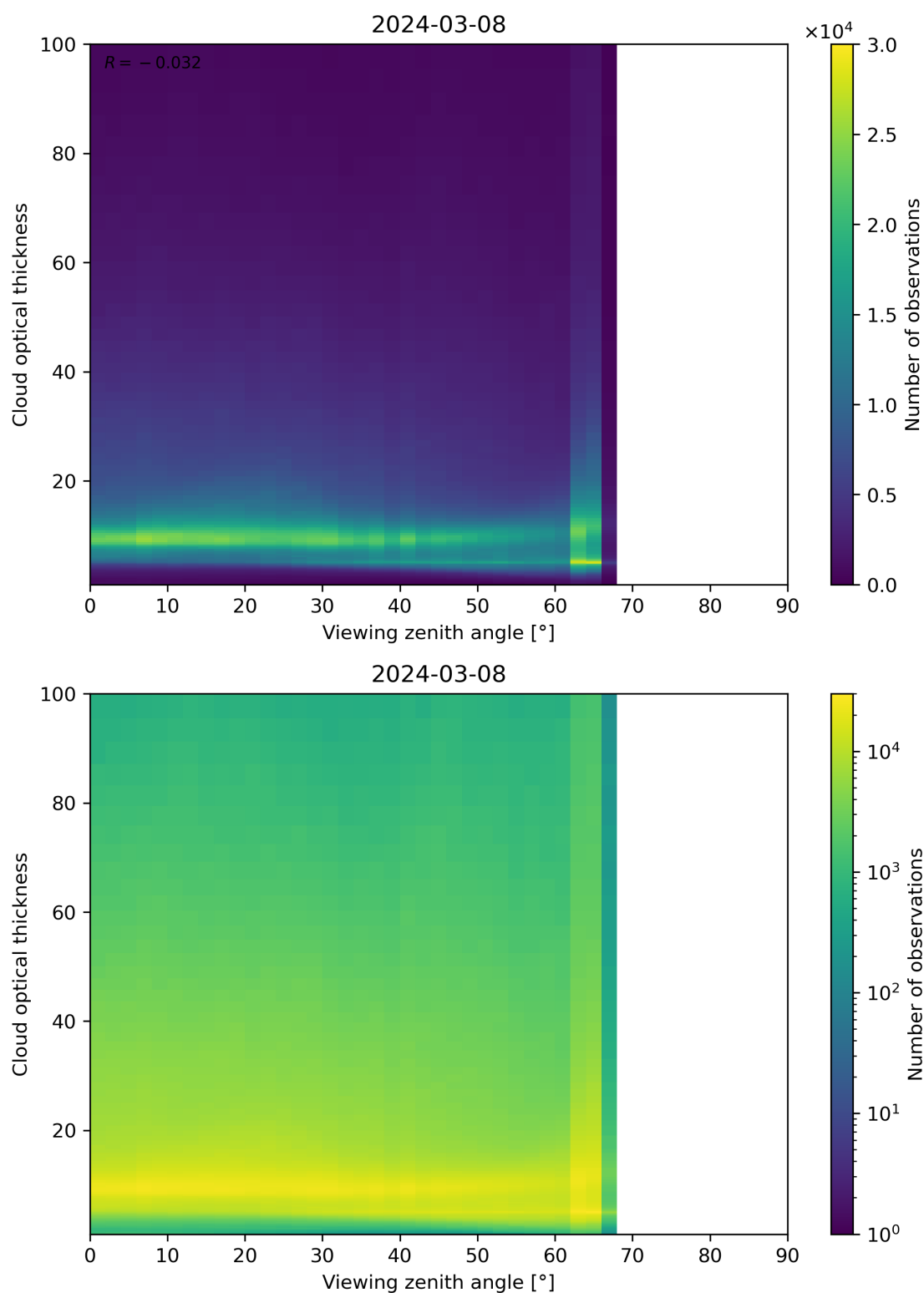


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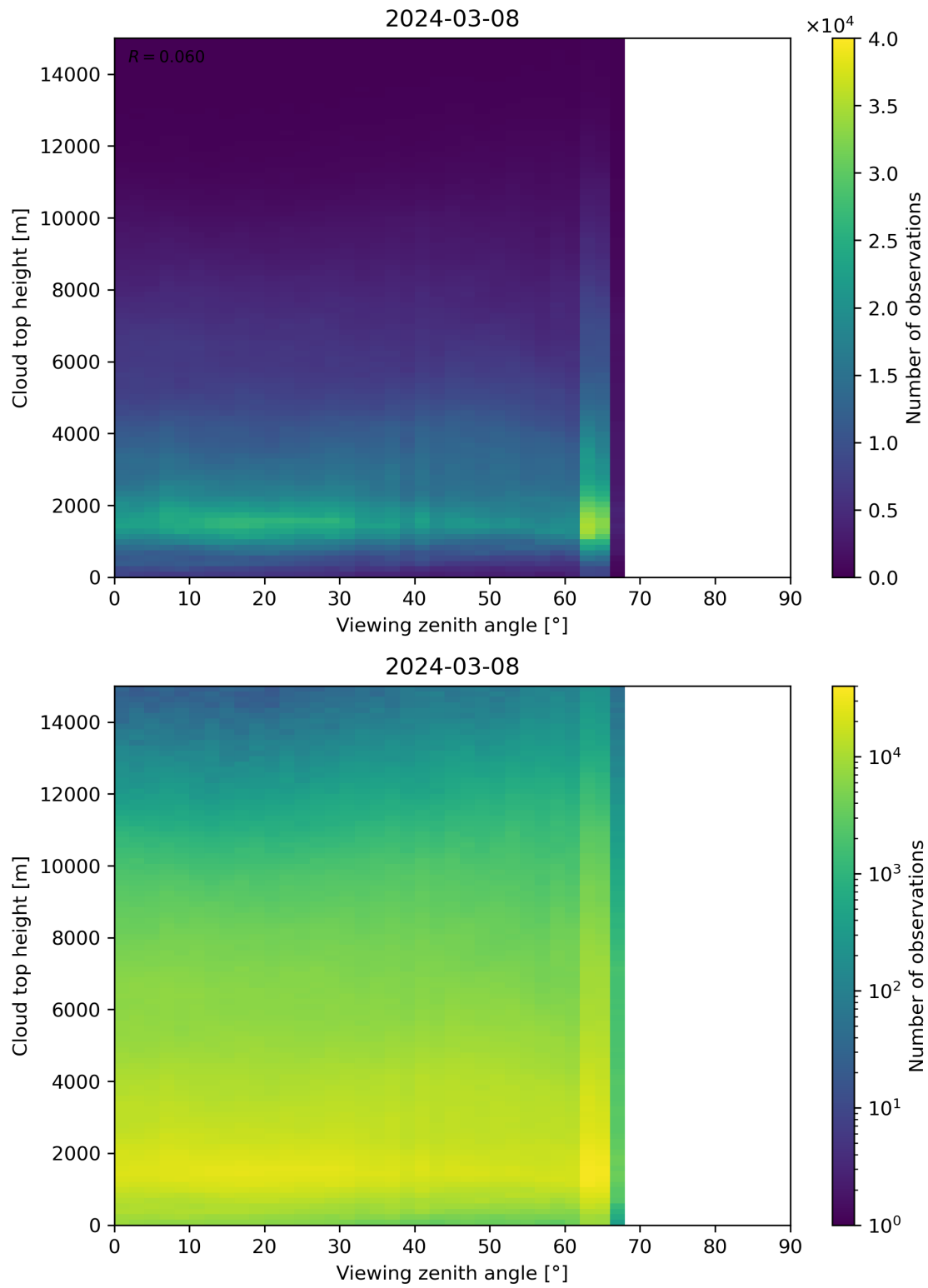


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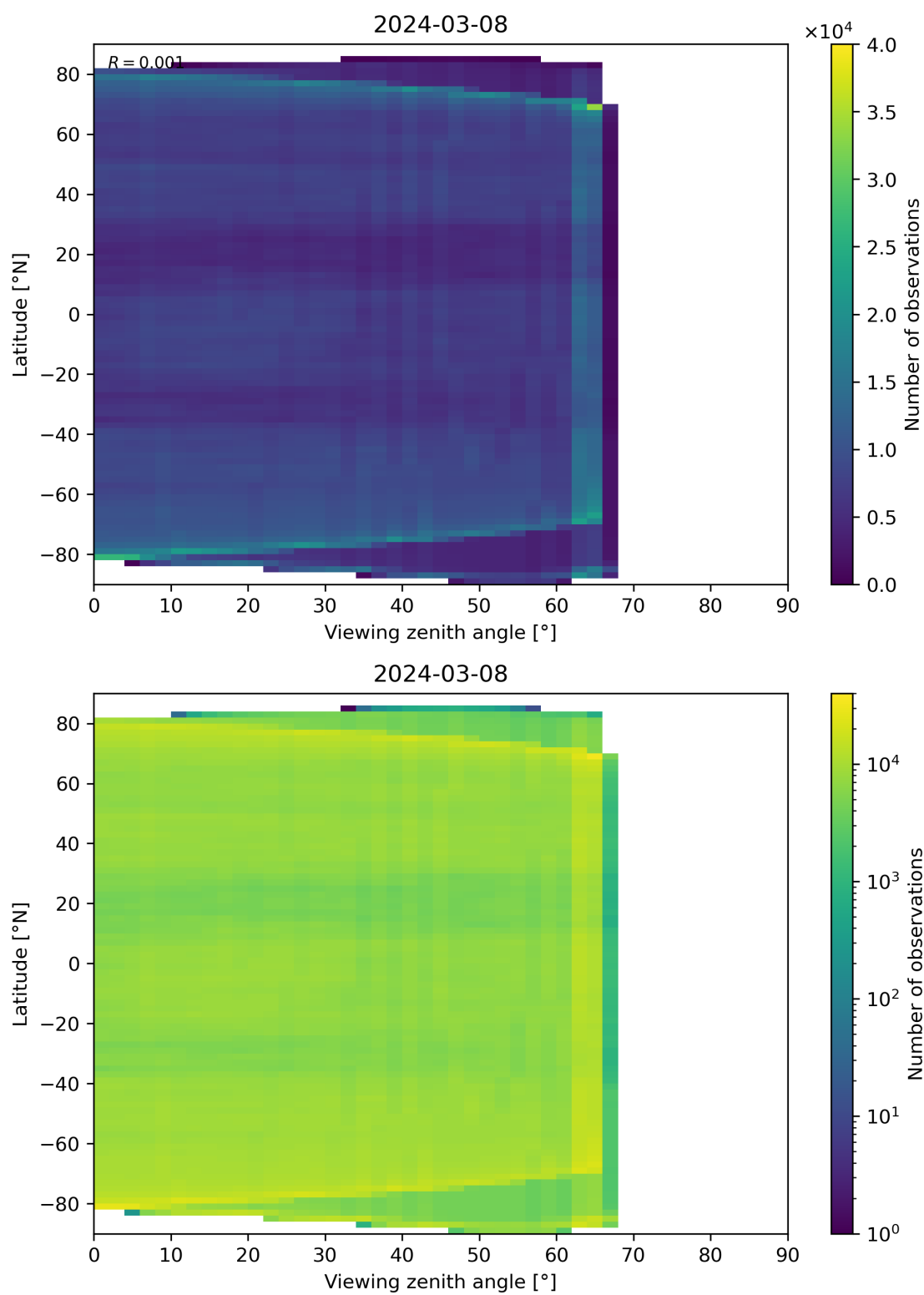


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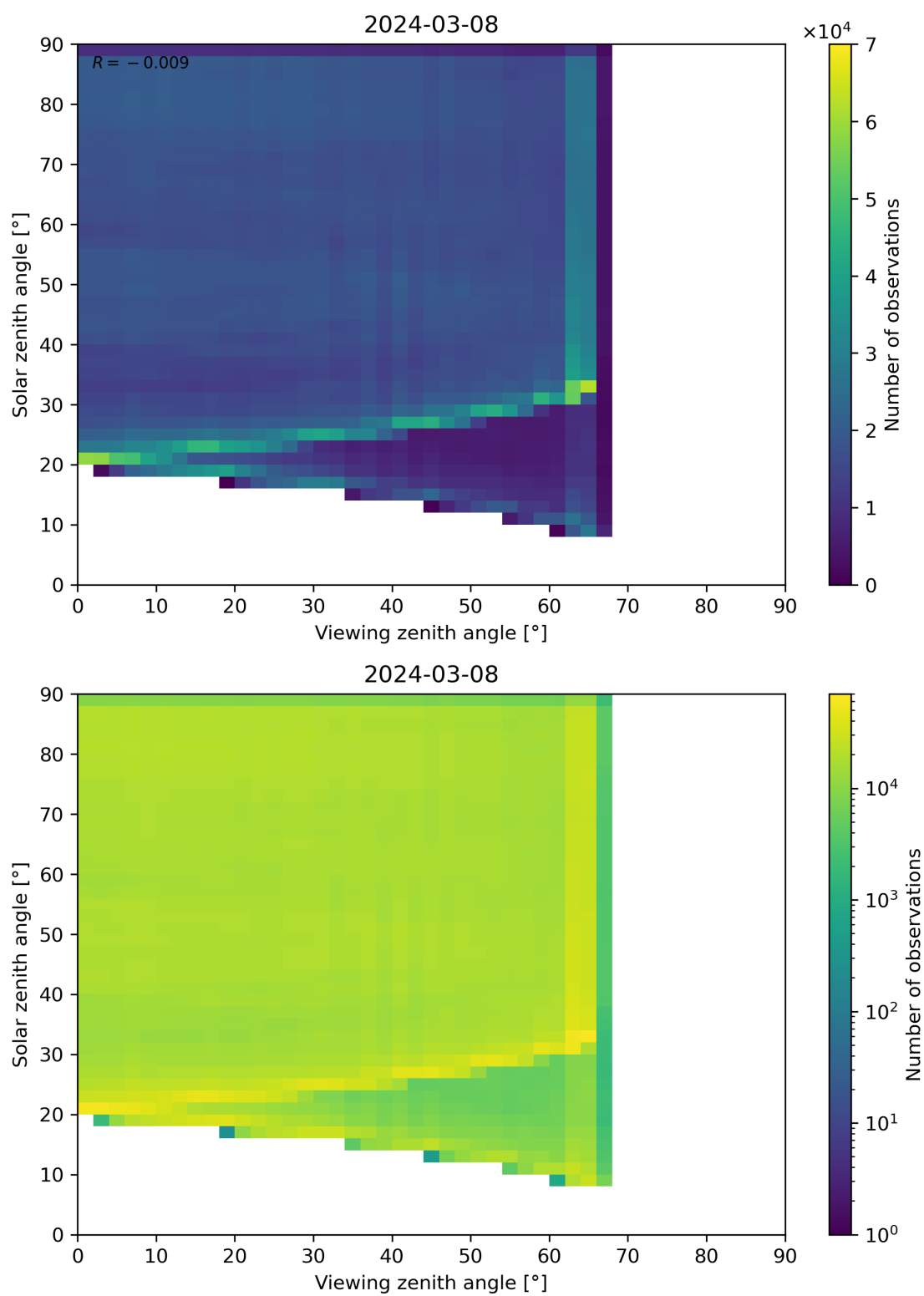


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