

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-04-08 (02:30)

1 Short Introduction

1.1 The list of parameters

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

2 Definitions

The averages shown here are *unweighed* averages:

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

with N the number of observations in the dataset.

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 1: Parameterlist and basic statistics for the analysis

Variable	mean $\pm \sigma$	Count	Mode	IQR	Median	Minimum	Maximum
qa value [1]	0.628 ± 0.379	20102000	0.995	0.650	0.800	0.0	1.000
cloud fraction [1]	0.548 ± 0.348	20102000	0.995	0.737	0.506	0.0	1.000
cloud top height [m]	$(0.378 \pm 0.271) \times 10^4$	20102000	1.425×10^3	3.548×10^3	3.103×10^3	0.0	2.000×10^4
cloud optical thickness [1]	18.3 ± 32.0	20102000	8.91	10.3	9.45	1.000	250
cloud fraction crb [1]	0.547 ± 0.348	20102000	0.995	0.737	0.505	0.0	1.000
cloud height crb [m]	$(0.297 \pm 0.240) \times 10^4$	20102000	75.0	3.131×10^3	2.381×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.592 ± 0.206	20102000	0.995	0.260	0.568	0.0	1.000
surface albedo fitted [1]	0.230 ± 0.310	20102000	1.500×10^{-2}	0.335	3.802×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.217 ± 0.297	20102000	1.500×10^{-2}	0.348	2.812×10^{-2}	0.0	1.000
fitted root mean square [1]	$(6.382 \pm 8.288) \times 10^{-4}$	20102000	5.000×10^{-5}	7.613×10^{-4}	3.890×10^{-4}	1.251×10^{-6}	0.179
fitted root mean square crb [1]	$(5.673 \pm 6.913) \times 10^{-4}$	20102000	5.000×10^{-5}	6.835×10^{-4}	3.003×10^{-4}	9.604×10^{-7}	7.833×10^{-2}
wavelength shift [nm]	$(7.548 \pm 6.835) \times 10^{-3}$	20102000	9.000×10^{-4}	9.286×10^{-3}	6.977×10^{-3}	-4.567×10^{-2}	6.105×10^{-2}
cloud fraction apriori [1]	0.554 ± 0.351	20102000	0.995	0.777	0.514	0.0	1.000
reflectance blue ocra [1]	0.557 ± 0.228	20102000	0.255	0.390	0.533	0.133	2.01
reflectance green ocra [1]	0.506 ± 0.255	20102000	0.175	0.462	0.488	8.045×10^{-2}	1.99
reflectance continuum aband [1]	0.458 ± 0.280	20102000	4.500×10^{-2}	0.483	0.458	1.134×10^{-2}	5.92

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	0.300	0.950	1.000	1.000	1.000	1.000
cloud fraction [1]	1.875×10^{-2}	6.371×10^{-2}	9.691×10^{-2}	0.141	0.220	0.958	1.000	1.000	1.000	1.000
cloud top height [m]	158	625	996	1.289×10^3	1.681×10^3	5.229×10^3	6.573×10^3	7.763×10^3	9.223×10^3	1.176×10^4
cloud optical thickness [1]	1.05	2.93	4.05	4.87	5.95	16.2	24.2	35.7	58.9	243
cloud fraction crb [1]	1.846×10^{-2}	6.271×10^{-2}	9.611×10^{-2}	0.140	0.220	0.956	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	129	490	761	1.096×10^3	4.226×10^3	5.404×10^3	6.449×10^3	7.780×10^3	1.014×10^4
cloud albedo crb [1]	2.823×10^{-2}	0.258	0.367	0.420	0.466	0.726	0.816	0.893	0.982	1.000
surface albedo fitted [1]	0.0	7.505×10^{-3}	1.158×10^{-2}	1.479×10^{-2}	1.937×10^{-2}	0.354	0.684	0.793	0.888	0.988
surface albedo fitted crb [1]	0.0	5.339×10^{-3}	8.148×10^{-3}	1.063×10^{-2}	1.411×10^{-2}	0.362	0.657	0.743	0.831	0.929
fitted root mean square [1]	1.591×10^{-5}	3.055×10^{-5}	4.784×10^{-5}	7.429×10^{-5}	1.281×10^{-4}	8.895×10^{-4}	1.207×10^{-3}	1.542×10^{-3}	2.057×10^{-3}	3.247×10^{-3}
fitted root mean square crb [1]	1.034×10^{-5}	2.288×10^{-5}	3.859×10^{-5}	5.899×10^{-5}	9.899×10^{-5}	7.825×10^{-4}	1.126×10^{-3}	1.482×10^{-3}	2.001×10^{-3}	3.109×10^{-3}
wavelength shift [nm]	-8.783×10^{-3}	-1.376×10^{-3}	1.455×10^{-4}	1.117×10^{-3}	2.647×10^{-3}	1.193×10^{-2}	1.431×10^{-2}	1.638×10^{-2}	1.916×10^{-2}	2.518×10^{-2}
cloud fraction apriori [1]	2.896×10^{-2}	6.375×10^{-2}	9.544×10^{-2}	0.139	0.221	0.998	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.233	0.256	0.278	0.306	0.354	0.744	0.805	0.852	0.919	1.12
reflectance green ocra [1]	0.152	0.171	0.189	0.213	0.262	0.724	0.793	0.842	0.905	1.07
reflectance continuum aband [1]	2.899×10^{-2}	5.168×10^{-2}	8.179×10^{-2}	0.121	0.206	0.689	0.766	0.819	0.884	1.04

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]	0.581 ± 0.381	9828370	0.720	0.700	0.0	1.000	0.180	0.900
cloud fraction [1]	0.515 ± 0.346	9828370	0.713	0.442	0.0	1.000	0.200	0.913
cloud top height [m]	$(0.341 \pm 0.244) \times 10^4$	9828370	3.052×10^3	2.855×10^3	0.0	2.000×10^4	1.569×10^3	4.621×10^3
cloud optical thickness [1]	17.5 ± 33.3	9828370	8.59	8.84	1.000	250	5.73	14.3
cloud fraction crb [1]	0.515 ± 0.346	9828370	0.712	0.443	0.0	1.000	0.200	0.912
cloud height crb [m]	$(0.256 \pm 0.211) \times 10^4$	9828370	2.773×10^3	2.075×10^3	0.0	2.000×10^4	926	3.699×10^3
cloud albedo crb [1]	0.616 ± 0.227	9828370	0.321	0.596	0.0	1.000	0.469	0.789
surface albedo fitted [1]	0.307 ± 0.325	9828370	0.596	0.164	0.0	1.000	2.753×10^{-2}	0.623
surface albedo fitted crb [1]	0.291 ± 0.306	9828370	0.591	0.162	0.0	1.000	2.105×10^{-2}	0.612
fitted root mean square [1]	$(7.752 \pm 9.846) \times 10^{-4}$	9828370	9.141×10^{-4}	5.333×10^{-4}	3.067×10^{-6}	0.179	1.742×10^{-4}	1.088×10^{-3}
fitted root mean square crb [1]	$(6.746 \pm 7.699) \times 10^{-4}$	9828370	8.355×10^{-4}	3.925×10^{-4}	1.530×10^{-6}	7.833×10^{-2}	1.274×10^{-4}	9.629×10^{-4}
wavelength shift [nm]	$(8.543 \pm 7.019) \times 10^{-3}$	9828370	9.766×10^{-3}	8.171×10^{-3}	-4.567×10^{-2}	5.809×10^{-2}	3.491×10^{-3}	1.326×10^{-2}
cloud fraction apriori [1]	0.527 ± 0.347	9828370	0.741	0.464	0.0	1.000	0.208	0.950
reflectance blue ocrs [1]	0.570 ± 0.235	9828370	0.417	0.560	0.133	2.01	0.349	0.766
reflectance green ocrs [1]	0.524 ± 0.262	9828370	0.491	0.525	8.528×10^{-2}	1.94	0.262	0.753
reflectance continuum aband [1]	0.486 ± 0.281	9828370	0.496	0.508	1.134×10^{-2}	3.75	0.230	0.726

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]	0.674 ± 0.371	10273630	0.600	0.900	0.0	1.000	0.400	1.000
cloud fraction [1]	0.580 ± 0.348	10273630	0.736	0.581	0.0	1.000	0.244	0.980
cloud top height [m]	$(0.413 \pm 0.291) \times 10^4$	10273630	4.104×10^3	3.376×10^3	0.0	2.000×10^4	1.804×10^3	5.908×10^3
cloud optical thickness [1]	19.0 ± 30.7	10273630	11.8	10.1	1.000	250	6.27	18.1
cloud fraction crb [1]	0.578 ± 0.348	10273630	0.736	0.579	0.0	1.000	0.243	0.979
cloud height crb [m]	$(0.335 \pm 0.258) \times 10^4$	10273630	3.592×10^3	2.704×10^3	0.0	2.000×10^4	1.273×10^3	4.865×10^3
cloud albedo crb [1]	0.569 ± 0.182	10273630	0.207	0.552	0.0	1.000	0.463	0.671
surface albedo fitted [1]	0.155 ± 0.276	10273630	5.256×10^{-2}	2.620×10^{-2}	0.0	1.000	1.579×10^{-2}	6.835×10^{-2}
surface albedo fitted crb [1]	0.147 ± 0.270	10273630	3.970×10^{-2}	1.885×10^{-2}	0.0	1.000	1.117×10^{-2}	5.087×10^{-2}
fitted root mean square [1]	$(5.071 \pm 6.175) \times 10^{-4}$	10273630	5.841×10^{-4}	2.895×10^{-4}	1.251×10^{-6}	7.989×10^{-2}	1.016×10^{-4}	6.856×10^{-4}
fitted root mean square crb [1]	$(4.646 \pm 5.887) \times 10^{-4}$	10273630	5.420×10^{-4}	2.334×10^{-4}	9.604×10^{-7}	2.043×10^{-2}	8.044×10^{-5}	6.224×10^{-4}
wavelength shift [nm]	$(6.596 \pm 6.515) \times 10^{-3}$	10273630	8.562×10^{-3}	5.962×10^{-3}	-4.514×10^{-2}	6.105×10^{-2}	2.019×10^{-3}	1.058×10^{-2}
cloud fraction apriori [1]	0.579 ± 0.353	10273630	0.765	0.577	0.0	1.000	0.235	1.000
reflectance blue ocr [1]	0.546 ± 0.220	10273630	0.348	0.515	0.148	1.99	0.359	0.706
reflectance green ocr [1]	0.488 ± 0.247	10273630	0.417	0.462	8.045×10^{-2}	1.99	0.262	0.679
reflectance continuum aband [1]	0.431 ± 0.276	10273630	0.456	0.420	1.194×10^{-2}	5.92	0.184	0.640

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]	0.678 ± 0.361	14523608	0.590	0.900	0.0	1.000	0.400	0.990
cloud fraction [1]	0.561 ± 0.354	14523608	0.760	0.541	0.0	1.000	0.216	0.976
cloud top height [m]	$(0.343 \pm 0.243) \times 10^4$	14523608	3.049×10^3	2.799×10^3	0.0	2.000×10^4	1.579×10^3	4.627×10^3
cloud optical thickness [1]	18.4 ± 29.2	14523608	10.1	10.2	1.000	250	6.96	17.1
cloud fraction crb [1]	0.560 ± 0.354	14523608	0.760	0.540	0.0	1.000	0.215	0.975
cloud height crb [m]	$(0.272 \pm 0.220) \times 10^4$	14523608	2.832×10^3	2.145×10^3	0.0	2.000×10^4	1.014×10^3	3.846×10^3
cloud albedo crb [1]	0.570 ± 0.181	14523608	0.213	0.546	0.0	1.000	0.460	0.673
surface albedo fitted [1]	0.121 ± 0.241	14523608	2.982×10^{-2}	2.571×10^{-2}	0.0	1.000	1.594×10^{-2}	4.576×10^{-2}
surface albedo fitted crb [1]	0.109 ± 0.226	14523608	2.229×10^{-2}	1.887×10^{-2}	0.0	1.000	1.150×10^{-2}	3.379×10^{-2}
fitted root mean square [1]	$(5.157 \pm 6.906) \times 10^{-4}$	14523608	6.100×10^{-4}	2.677×10^{-4}	1.296×10^{-6}	9.036×10^{-2}	9.379×10^{-5}	7.038×10^{-4}
fitted root mean square crb [1]	$(4.708 \pm 6.187) \times 10^{-4}$	14523608	5.365×10^{-4}	2.201×10^{-4}	9.604×10^{-7}	7.833×10^{-2}	7.938×10^{-5}	6.159×10^{-4}
wavelength shift [nm]	$(7.014 \pm 6.838) \times 10^{-3}$	14523608	8.940×10^{-3}	6.305×10^{-3}	-4.567×10^{-2}	6.105×10^{-2}	2.296×10^{-3}	1.124×10^{-2}
cloud fraction apriori [1]	0.562 ± 0.358	14523608	0.790	0.541	0.0	1.000	0.210	1.000
reflectance blue oca [1]	0.522 ± 0.207	14523608	0.341	0.491	0.155	2.00	0.342	0.683
reflectance green oca [1]	0.463 ± 0.235	14523608	0.413	0.434	8.045×10^{-2}	1.99	0.243	0.656
reflectance continuum aband [1]	0.397 ± 0.266	14523608	0.477	0.381	1.194×10^{-2}	4.18	0.140	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]	0.491 ± 0.402	4213824	0.890	0.640	0.0	1.000	0.0	0.890
cloud fraction [1]	0.508 ± 0.328	4213824	0.608	0.439	0.0	1.000	0.229	0.836
cloud top height [m]	$(0.516 \pm 0.317) \times 10^4$	4213824	4.496×10^3	4.718×10^3	0.0	2.000×10^4	2.642×10^3	7.137×10^3
cloud optical thickness [1]	15.7 ± 34.0	4213824	7.55	6.52	1.000	250	4.46	12.0
cloud fraction crb [1]	0.509 ± 0.328	4213824	0.607	0.440	0.0	1.000	0.229	0.836
cloud height crb [m]	$(0.400 \pm 0.278) \times 10^4$	4213824	3.778×10^3	3.465×10^3	0.0	2.000×10^4	1.820×10^3	5.599×10^3
cloud albedo crb [1]	0.644 ± 0.250	4213824	0.350	0.658	0.0	1.000	0.492	0.842
surface albedo fitted [1]	0.522 ± 0.288	4213824	0.550	0.437	0.0	1.000	0.254	0.804
surface albedo fitted crb [1]	0.510 ± 0.272	4213824	0.521	0.457	2.812×10^{-3}	1.000	0.252	0.773
fitted root mean square [1]	$(9.429 \pm 10.622) \times 10^{-4}$	4213824	8.657×10^{-4}	7.076×10^{-4}	3.489×10^{-6}	0.179	3.676×10^{-4}	1.233×10^{-3}
fitted root mean square crb [1]	$(8.037 \pm 8.123) \times 10^{-4}$	4213824	9.167×10^{-4}	5.551×10^{-4}	2.351×10^{-6}	5.791×10^{-2}	2.143×10^{-4}	1.131×10^{-3}
wavelength shift [nm]	$(8.419 \pm 6.454) \times 10^{-3}$	4213824	9.247×10^{-3}	8.082×10^{-3}	-3.400×10^{-2}	5.637×10^{-2}	3.505×10^{-3}	1.275×10^{-2}
cloud fraction apriori [1]	0.521 ± 0.330	4213824	0.632	0.456	0.0	1.000	0.237	0.869
reflectance blue oca [1]	0.650 ± 0.259	4213824	0.435	0.718	0.133	1.99	0.401	0.836
reflectance green oca [1]	0.618 ± 0.278	4213824	0.487	0.696	8.059×10^{-2}	1.99	0.343	0.829
reflectance continuum aband [1]	0.620 ± 0.248	4213824	0.400	0.651	1.134×10^{-2}	5.92	0.402	0.802

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	-2.049×10^{-2}	-1.683×10^{-3}	-1.866×10^{-2}	3.633×10^{-2}	-4.950×10^{-2}	-1.892×10^{-2}	8.004×10^{-2}	-5.097×10^{-3}	-2.225×10^{-2}
-2.049×10^{-2}	1.000	-4.885×10^{-2}	0.154	-7.371×10^{-2}	0.168	0.156	-9.236×10^{-2}	0.321	0.171
-1.683×10^{-3}	-4.885×10^{-2}	1.000	-0.105	-0.153	-2.797×10^{-2}	-0.102	-0.186	0.128	-8.065×10^{-2}
-1.866×10^{-2}	0.154	-0.105	1.000	-7.594×10^{-2}	0.294	1.000	-4.704×10^{-2}	0.260	0.982
3.633×10^{-2}	-7.371×10^{-2}	-0.153	-7.594×10^{-2}	1.000	-3.217×10^{-2}	-7.572×10^{-2}	0.941	-1.832×10^{-2}	-9.006×10^{-2}
-4.950×10^{-2}	0.168	-2.797×10^{-2}	0.294	-3.217×10^{-2}	1.000	0.292	2.767×10^{-4}	0.388	0.301
-1.892×10^{-2}	0.156	-0.102	1.000	-7.572×10^{-2}	0.292	1.000	-4.738×10^{-2}	0.261	0.982
8.004×10^{-2}	-9.236×10^{-2}	-0.186	-4.704×10^{-2}	0.941	2.767×10^{-4}	-4.738×10^{-2}	1.000	-0.108	-6.240×10^{-2}
-5.097×10^{-3}	0.321	0.128	0.260	-1.832×10^{-2}	0.388	0.261	-0.108	1.000	0.290
-2.225×10^{-2}	0.171	-8.065×10^{-2}	0.982	-9.006×10^{-2}	0.301	0.982	-6.240×10^{-2}	0.290	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	-8.62	-1.70	-0.127	1.933×10^3	-31.1	-0.129	3.763×10^3	-2.065×10^{-2}	-0.153
-8.62	459	-53.8	1.15	-4.283×10^3	115	1.17	-4.742×10^3	1.42	1.28
-1.70	-53.8	2.642×10^3	-1.88	-2.137×10^4	-46.0	-1.83	-2.285×10^4	1.36	-1.45
-0.127	1.15	-1.88	0.121	-71.7	3.28	0.121	-39.2	1.872×10^{-2}	0.120
1.933×10^3	-4.283×10^3	-2.137×10^4	-71.7	7.353×10^6	-2.791×10^3	-71.5	6.117×10^6	-10.3	-85.7
-31.1	115	-46.0	3.28	-2.791×10^3	1.024×10^3	3.25	21.2	2.56	3.38
-0.129	1.17	-1.83	0.121	-71.5	3.25	0.121	-39.5	1.877×10^{-2}	0.120
3.763×10^3	-4.742×10^3	-2.285×10^4	-39.2	6.117×10^6	21.2	-39.5	5.741×10^6	-53.6	-52.4
-2.065×10^{-2}	1.42	1.36	1.872×10^{-2}	-10.3	2.56	1.877×10^{-2}	-53.6	4.264×10^{-2}	2.100×10^{-2}
-0.153	1.28	-1.45	0.120	-85.7	3.38	0.120	-52.4	2.100×10^{-2}	0.123

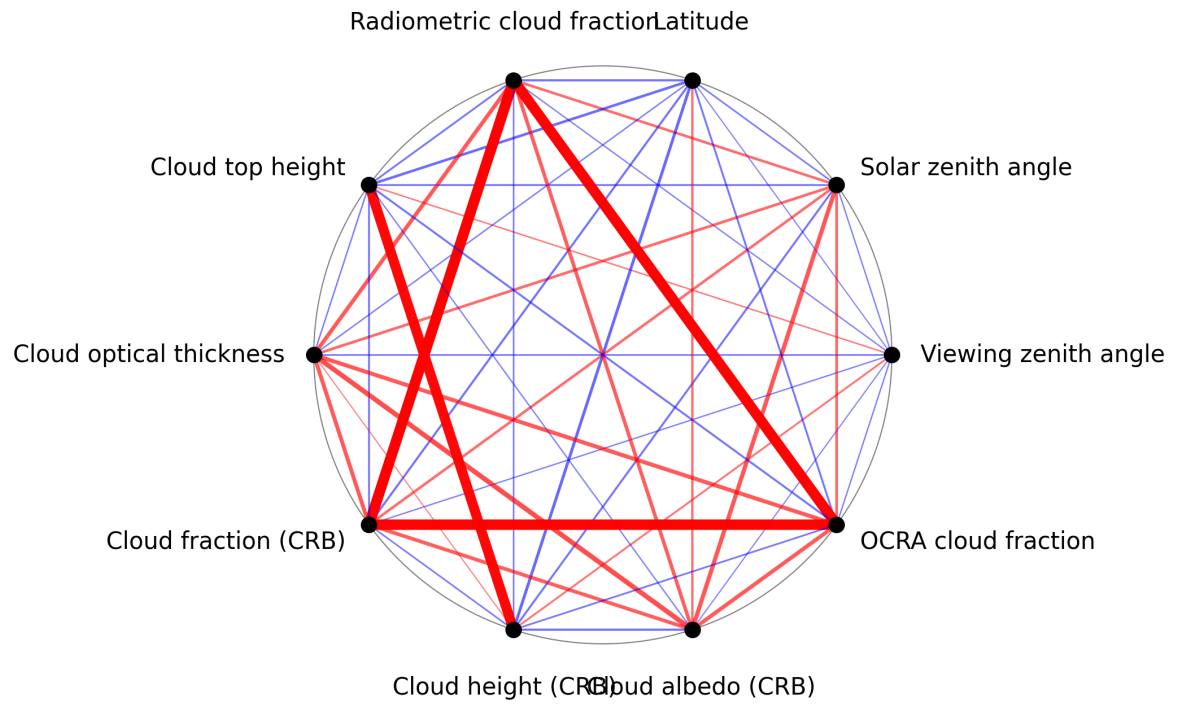


Figure 1: Map of correlation graph for 2025-03-23 to 2025-03-25.

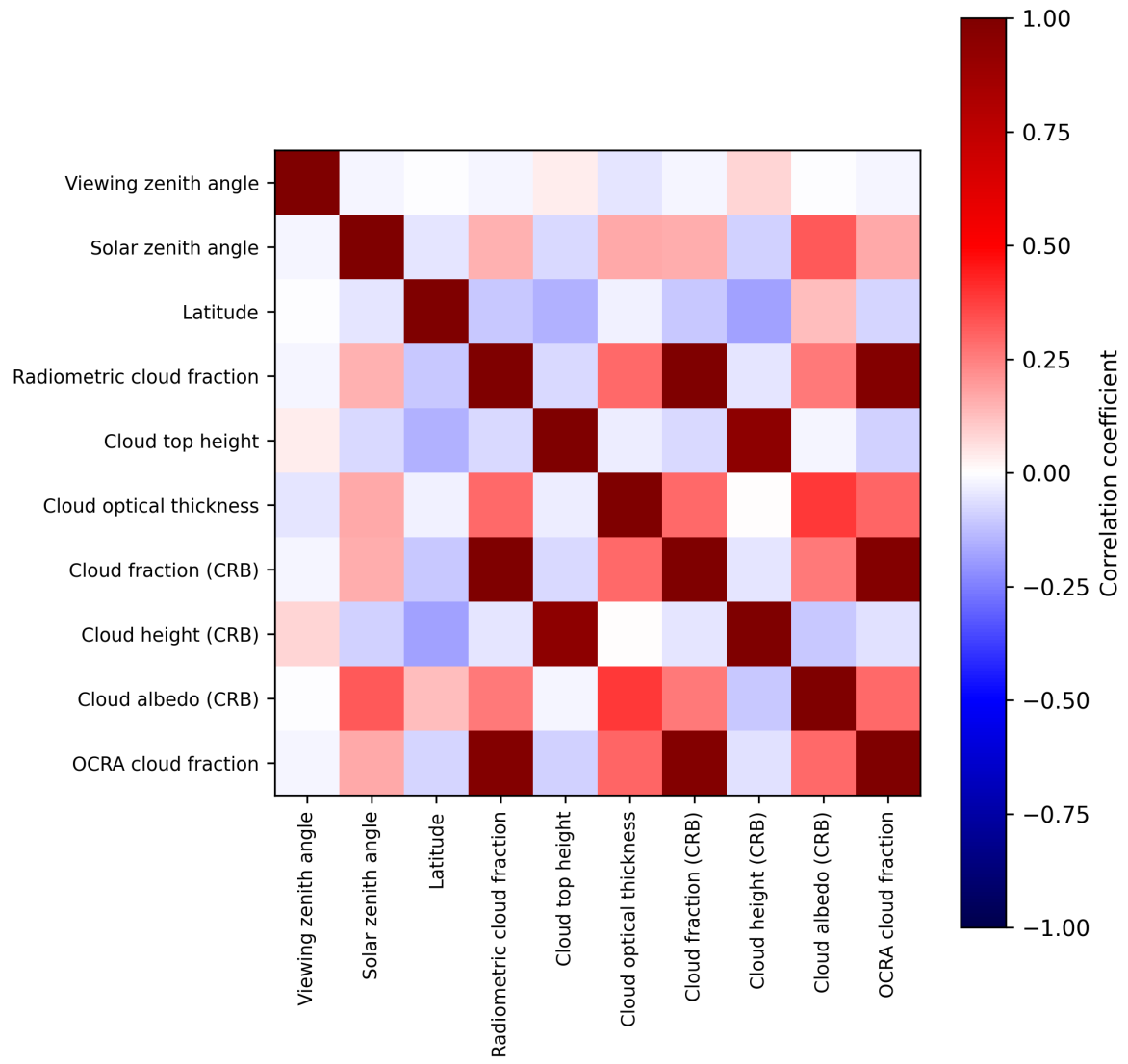


Figure 2: Map of correlation matrix for 2025-03-23 to 2025-03-25.

3 Granule outlines

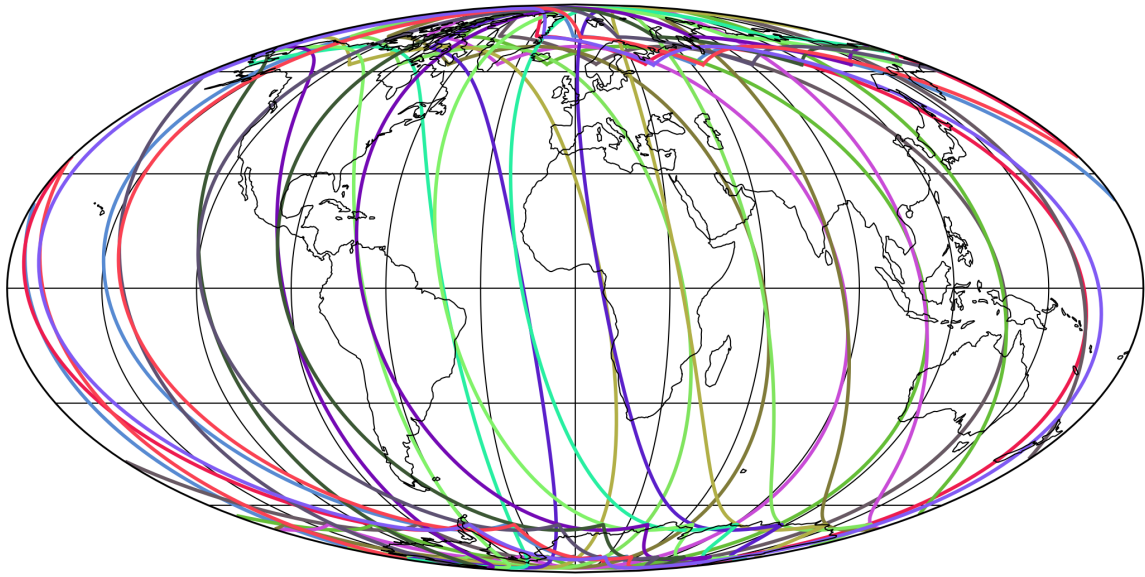


Figure 3: Outline of the granules.

4 Input data monitoring

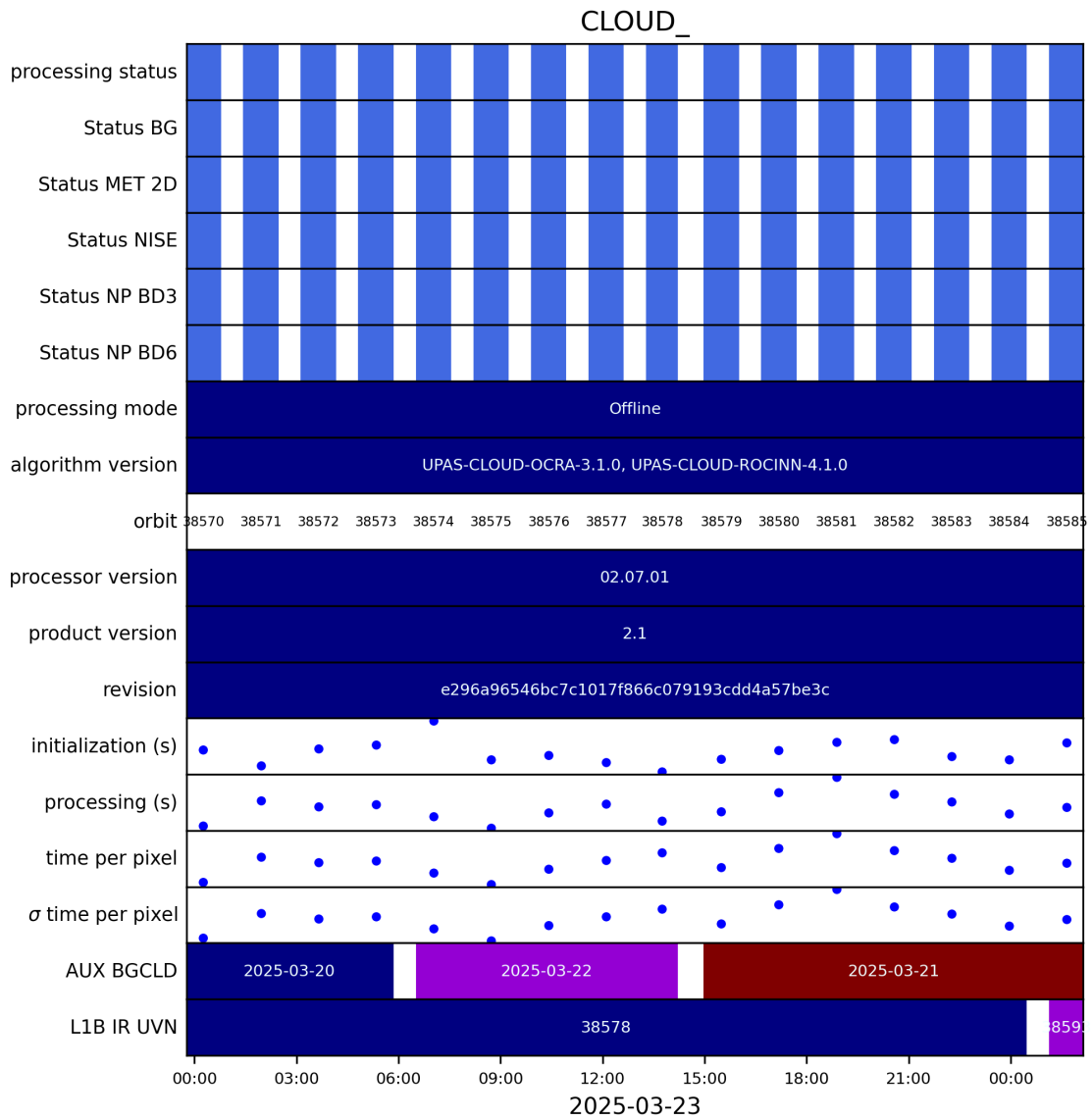


Figure 4: Input data per granule

5 Warnings and errors

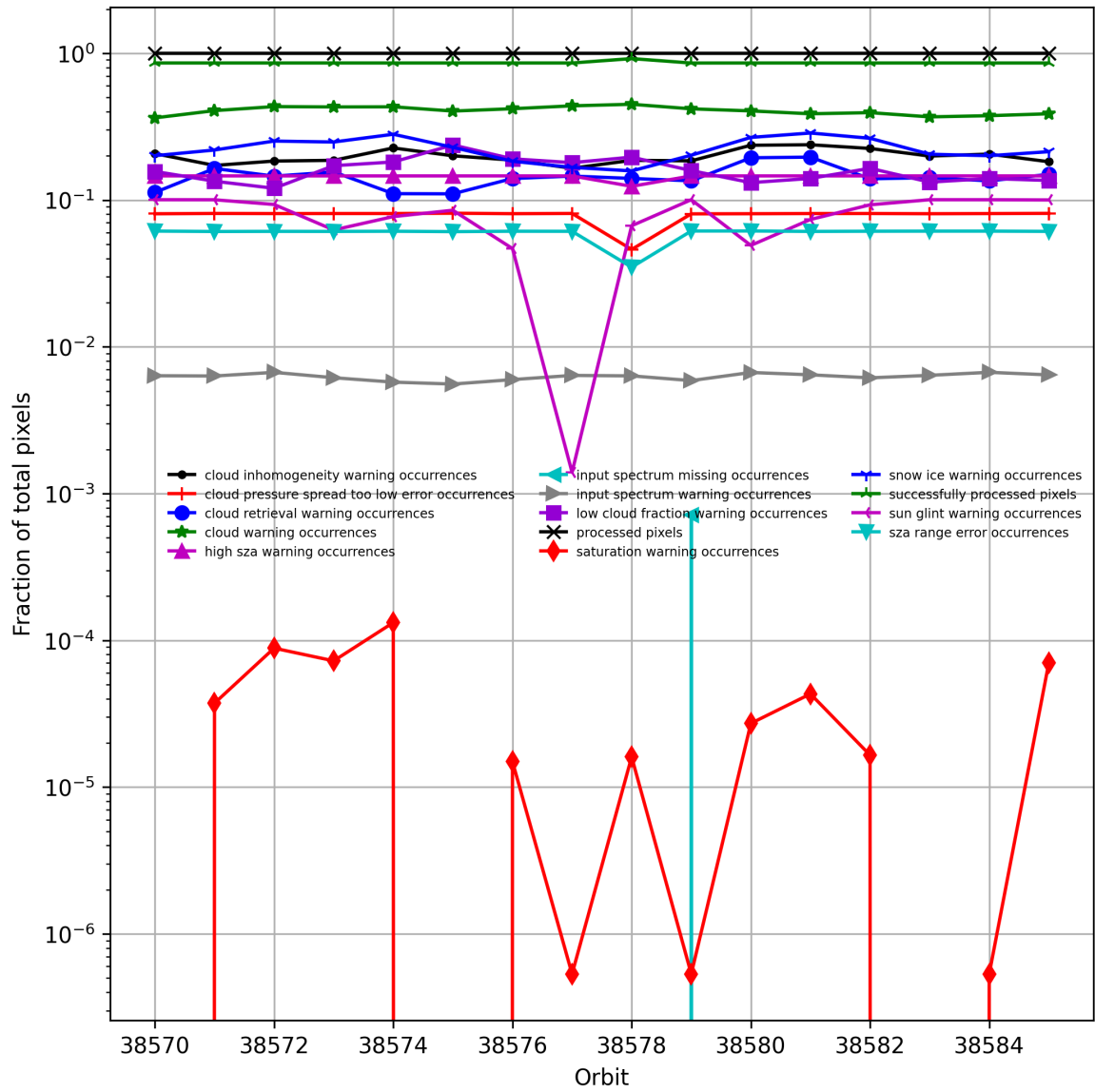


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

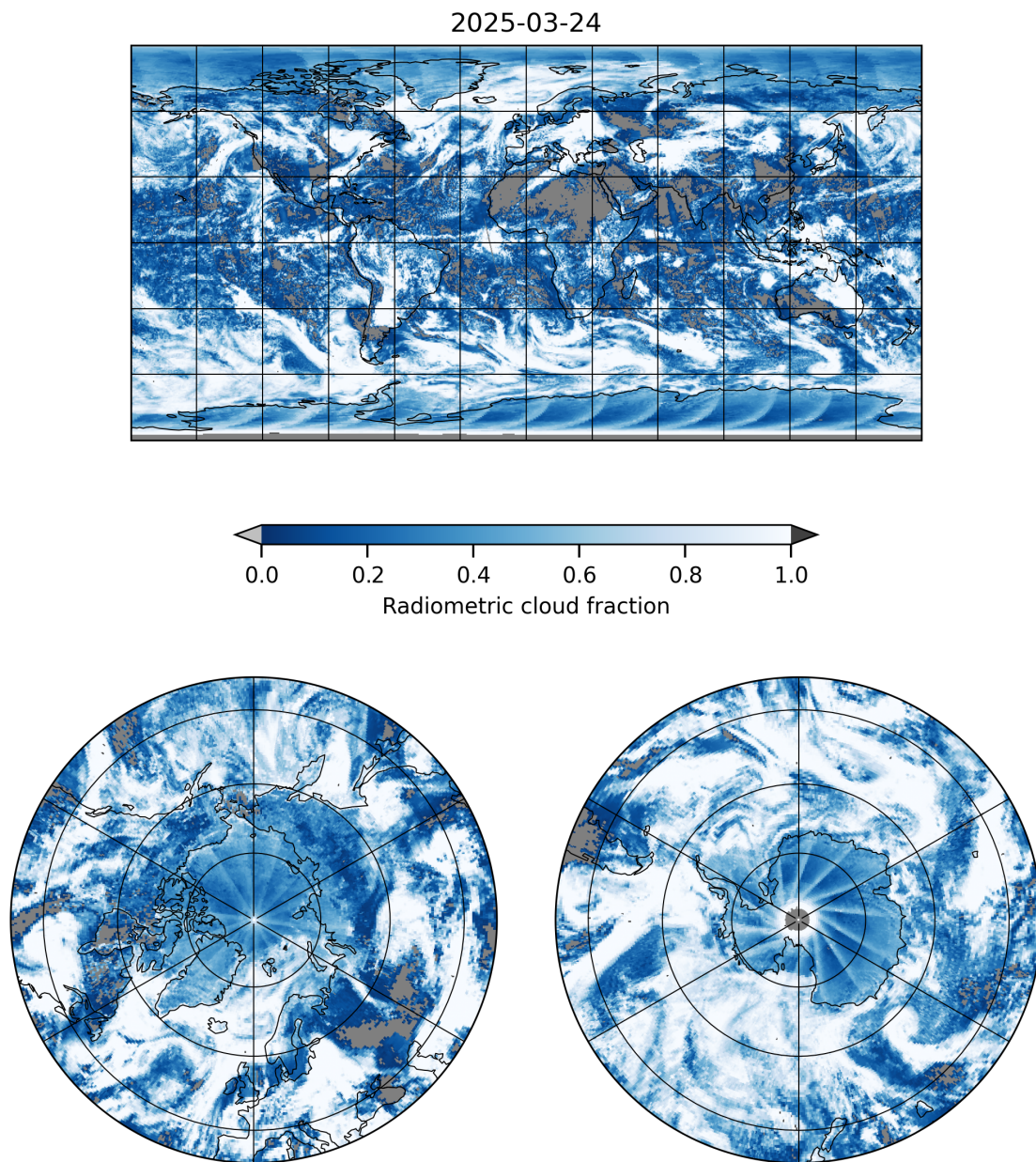


Figure 6: Map of “Radiometric cloud fraction” for 2025-03-23 to 2025-03-25

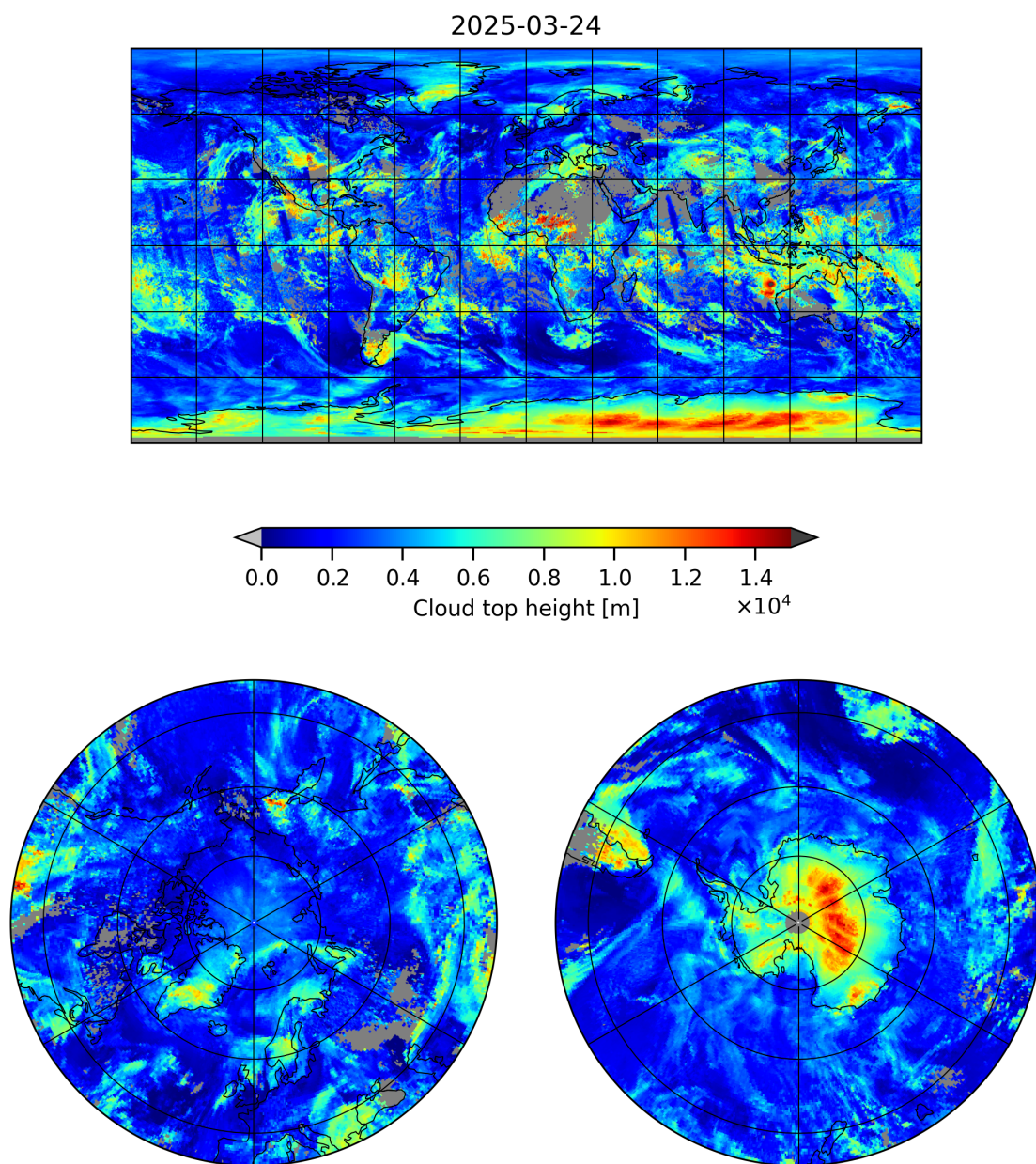


Figure 7: Map of “Cloud top height” for 2025-03-23 to 2025-03-25

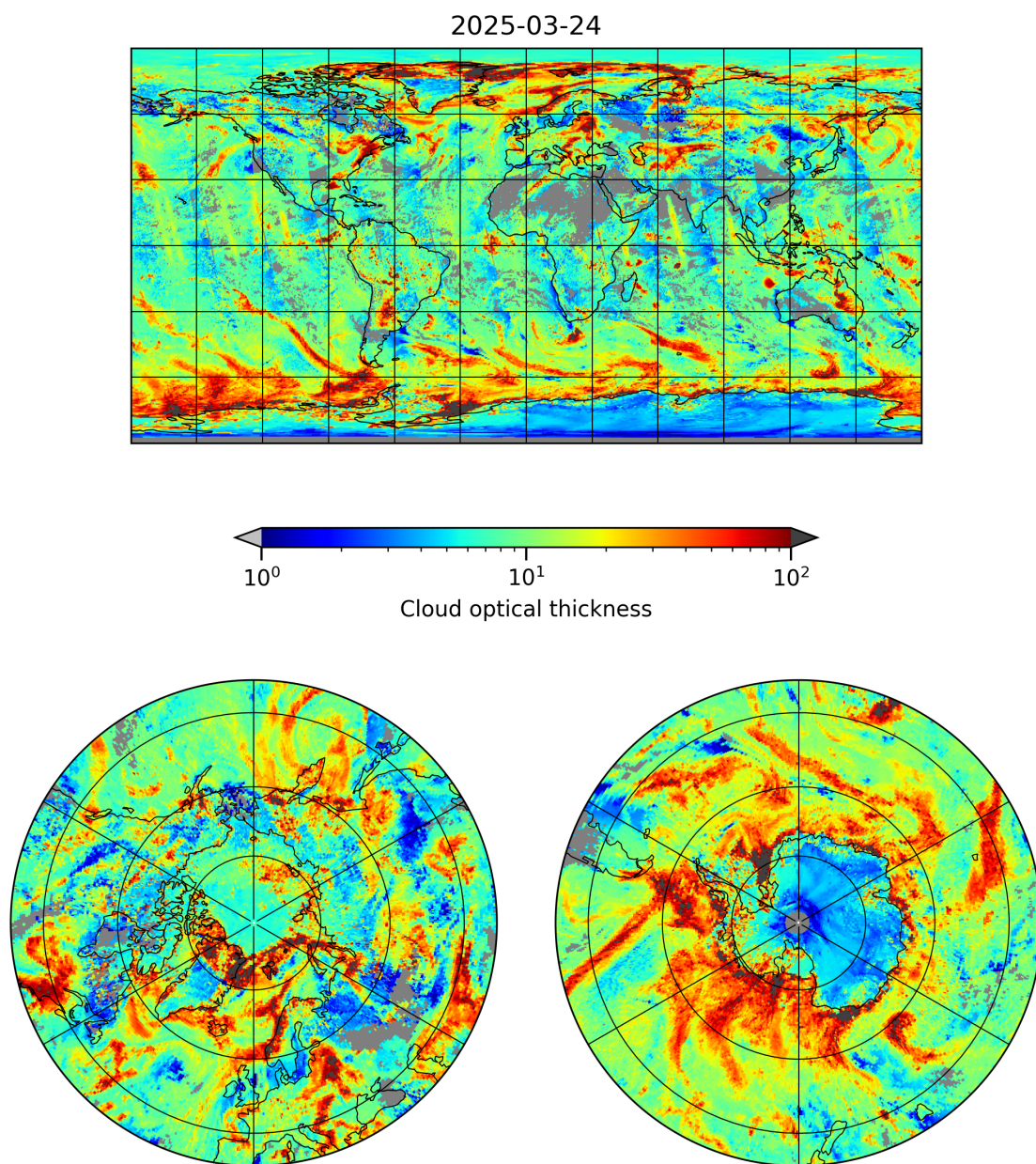


Figure 8: Map of “Cloud optical thickness” for 2025-03-23 to 2025-03-25

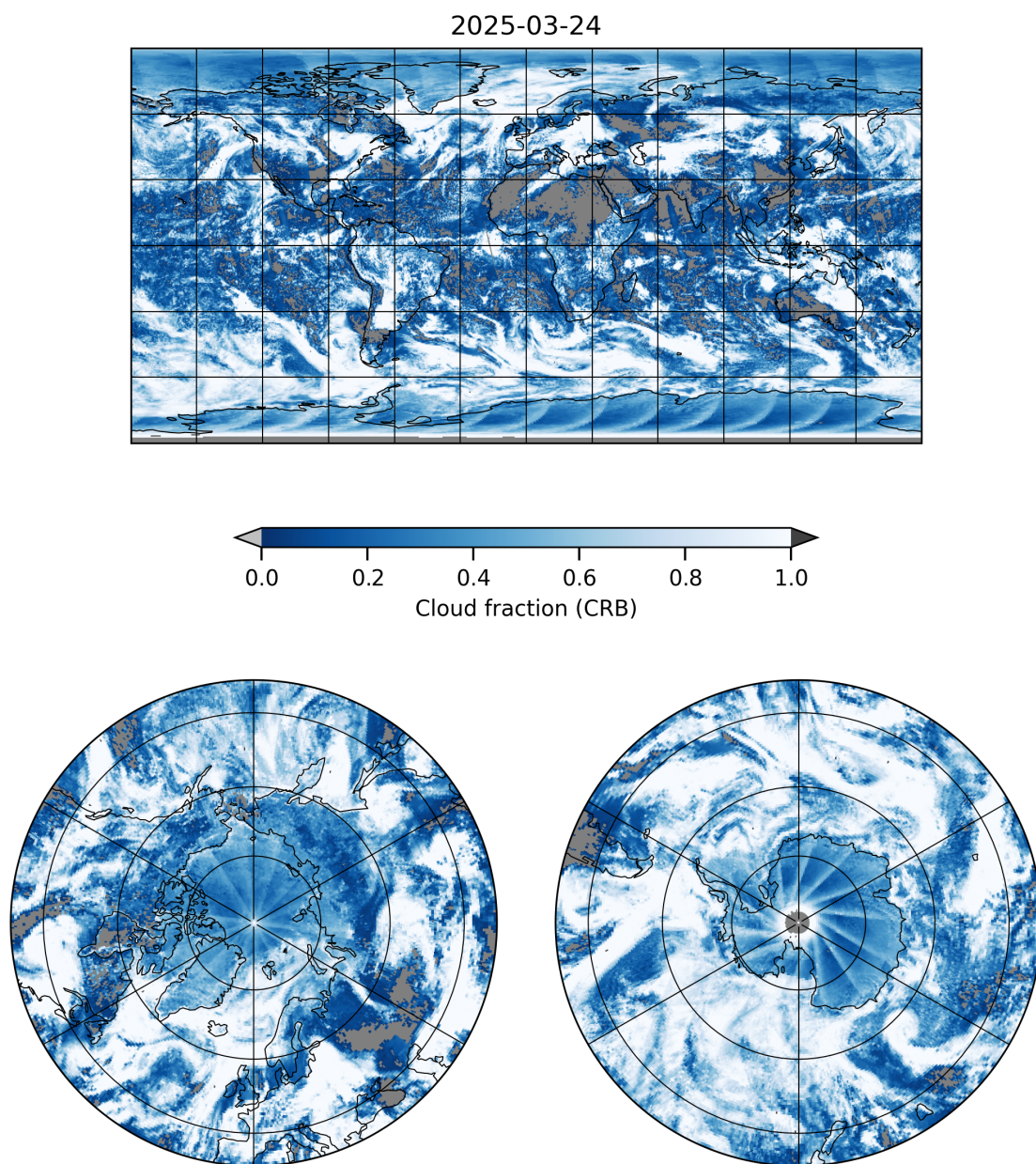


Figure 9: Map of “Cloud fraction (CRB)” for 2025-03-23 to 2025-03-25

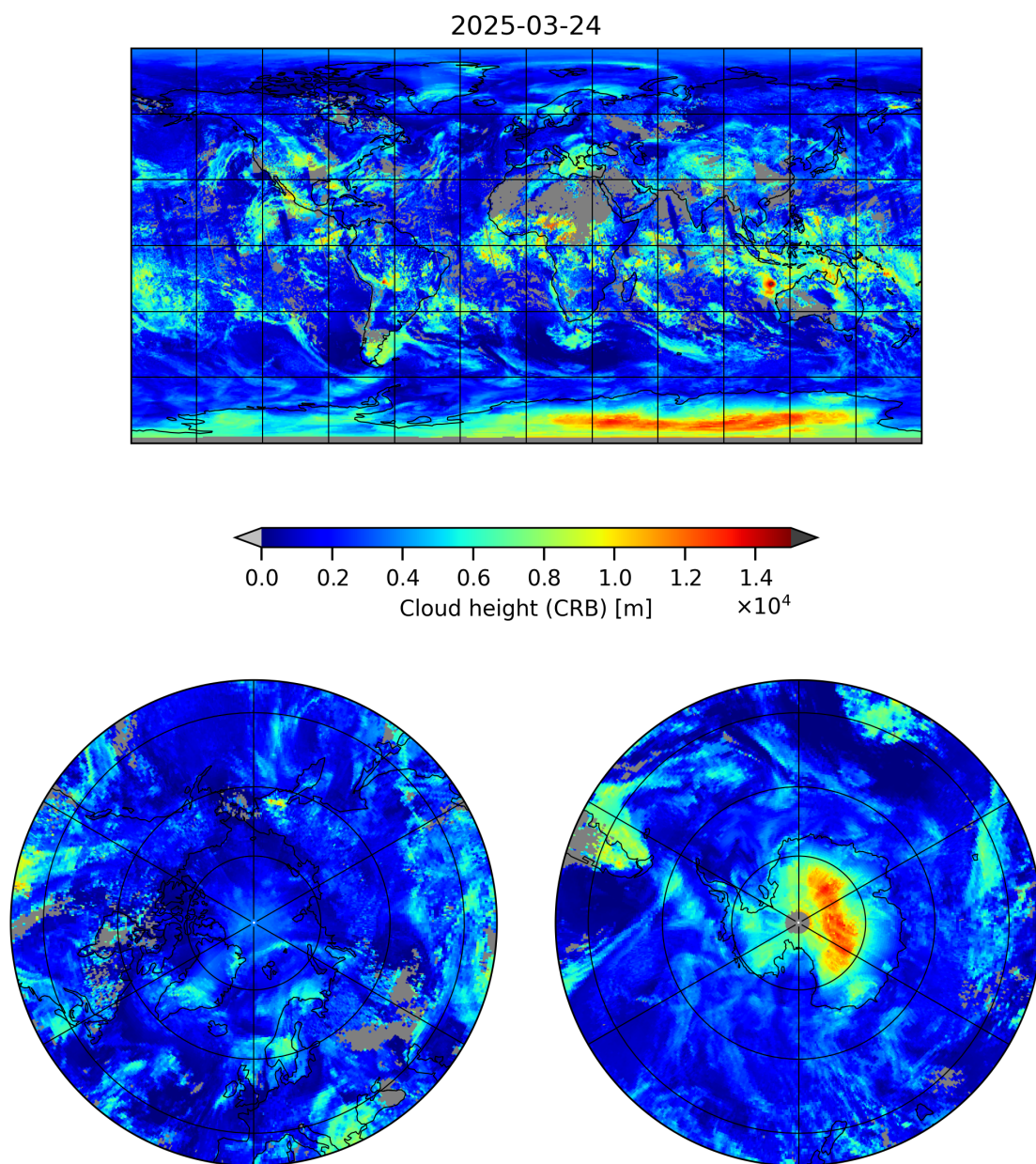


Figure 10: Map of “Cloud height (CRB)” for 2025-03-23 to 2025-03-25

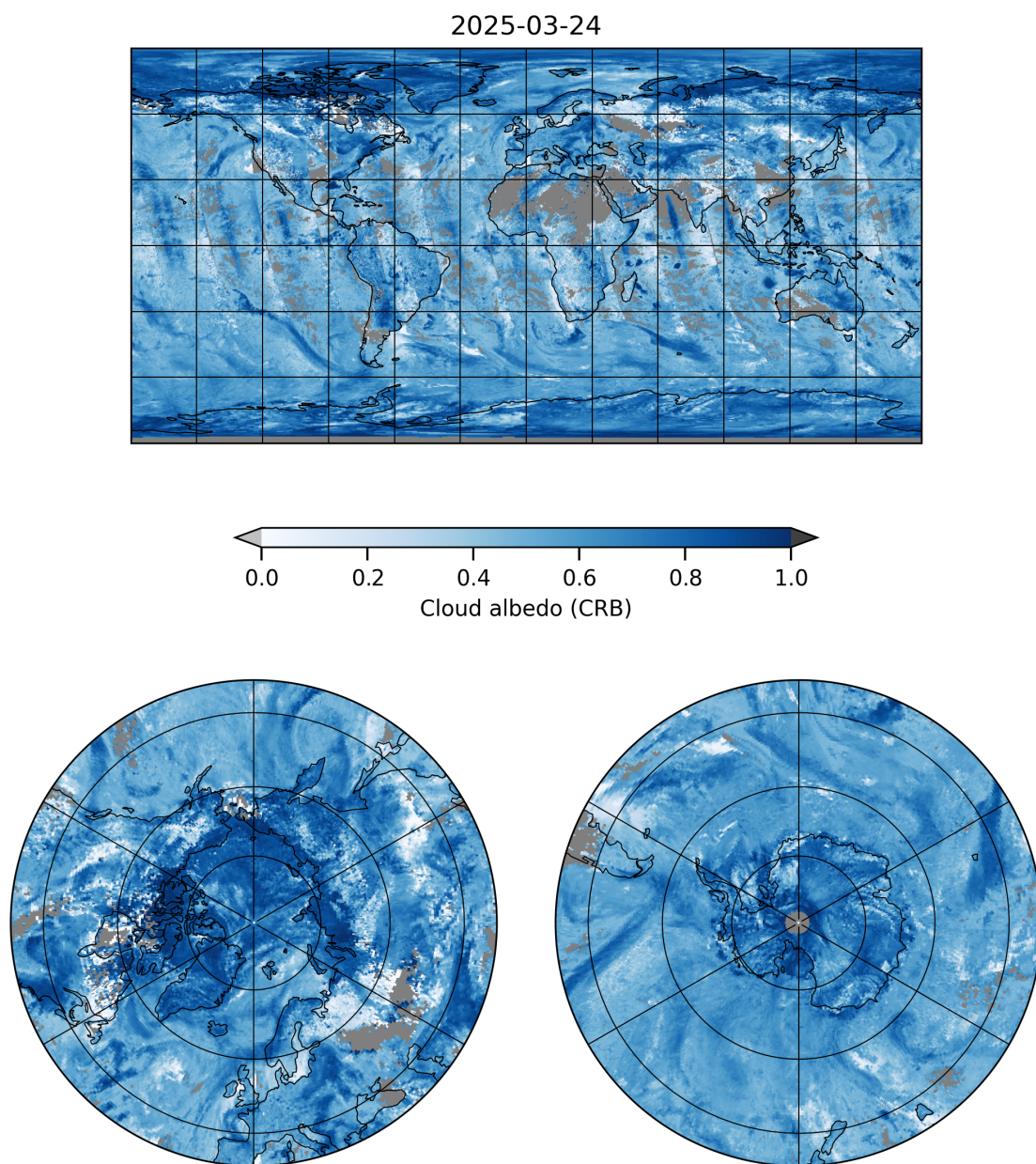


Figure 11: Map of “Cloud albedo (CRB)” for 2025-03-23 to 2025-03-25

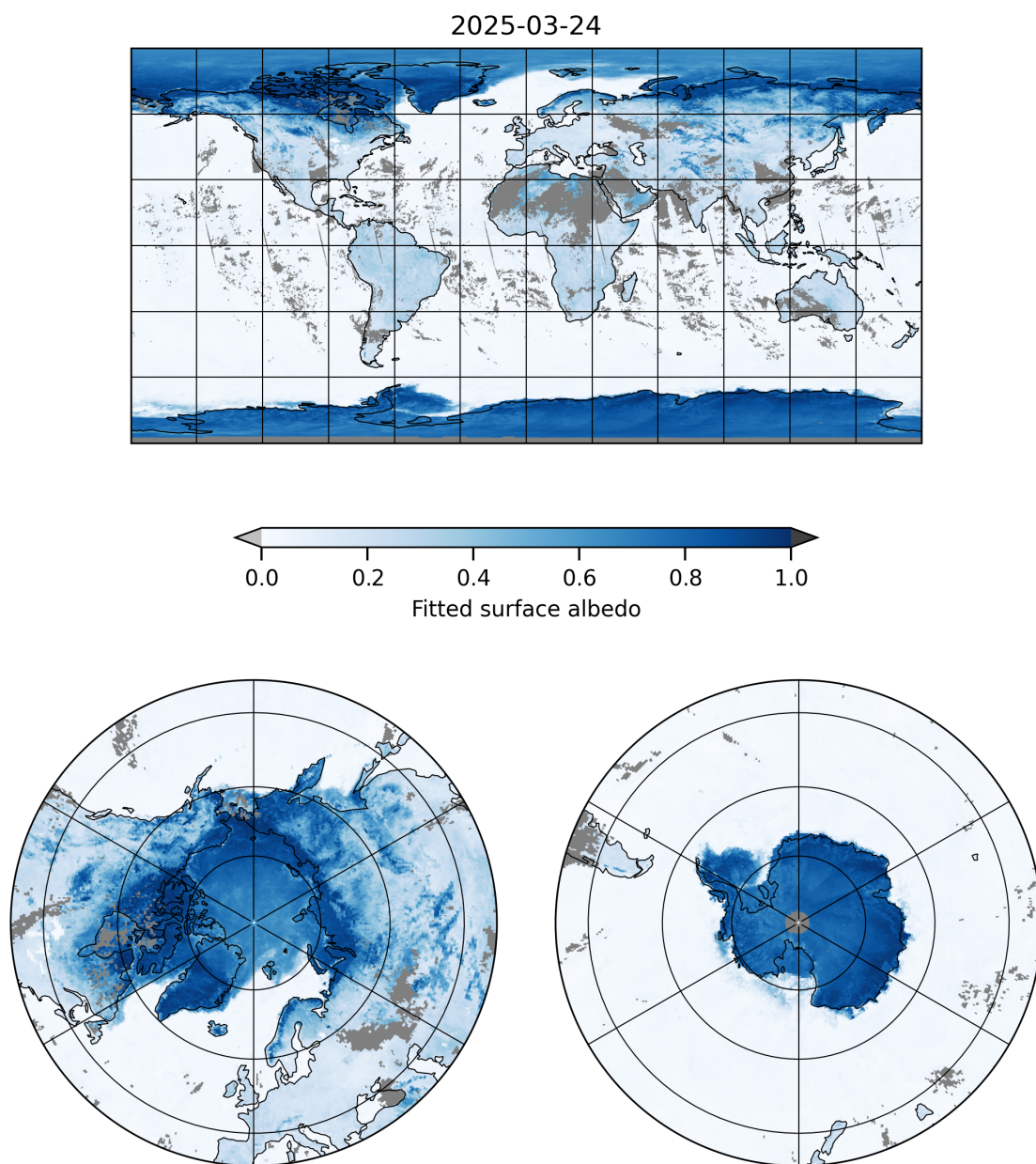


Figure 12: Map of “Fitted surface albedo” for 2025-03-23 to 2025-03-25

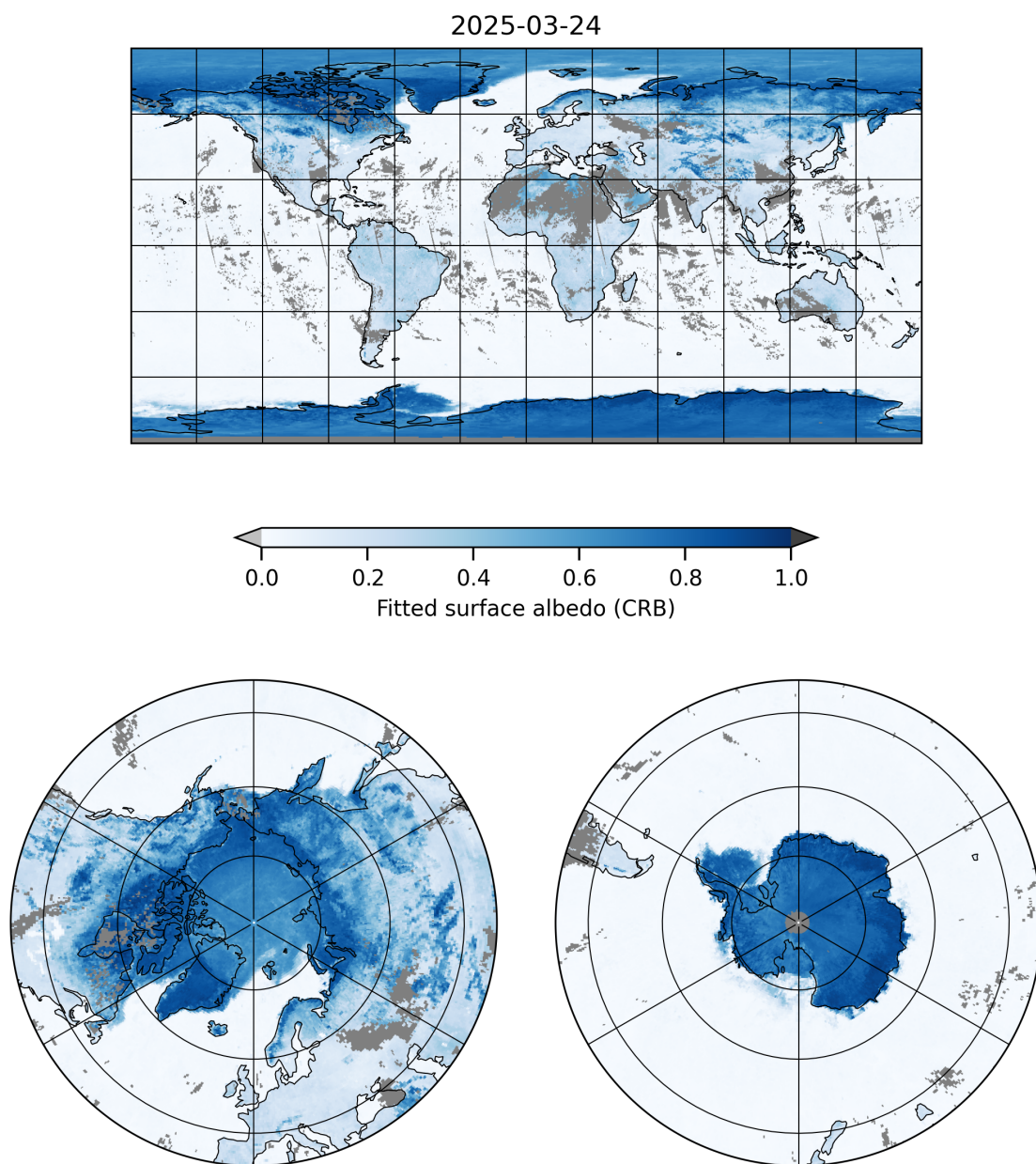


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-03-23 to 2025-03-25

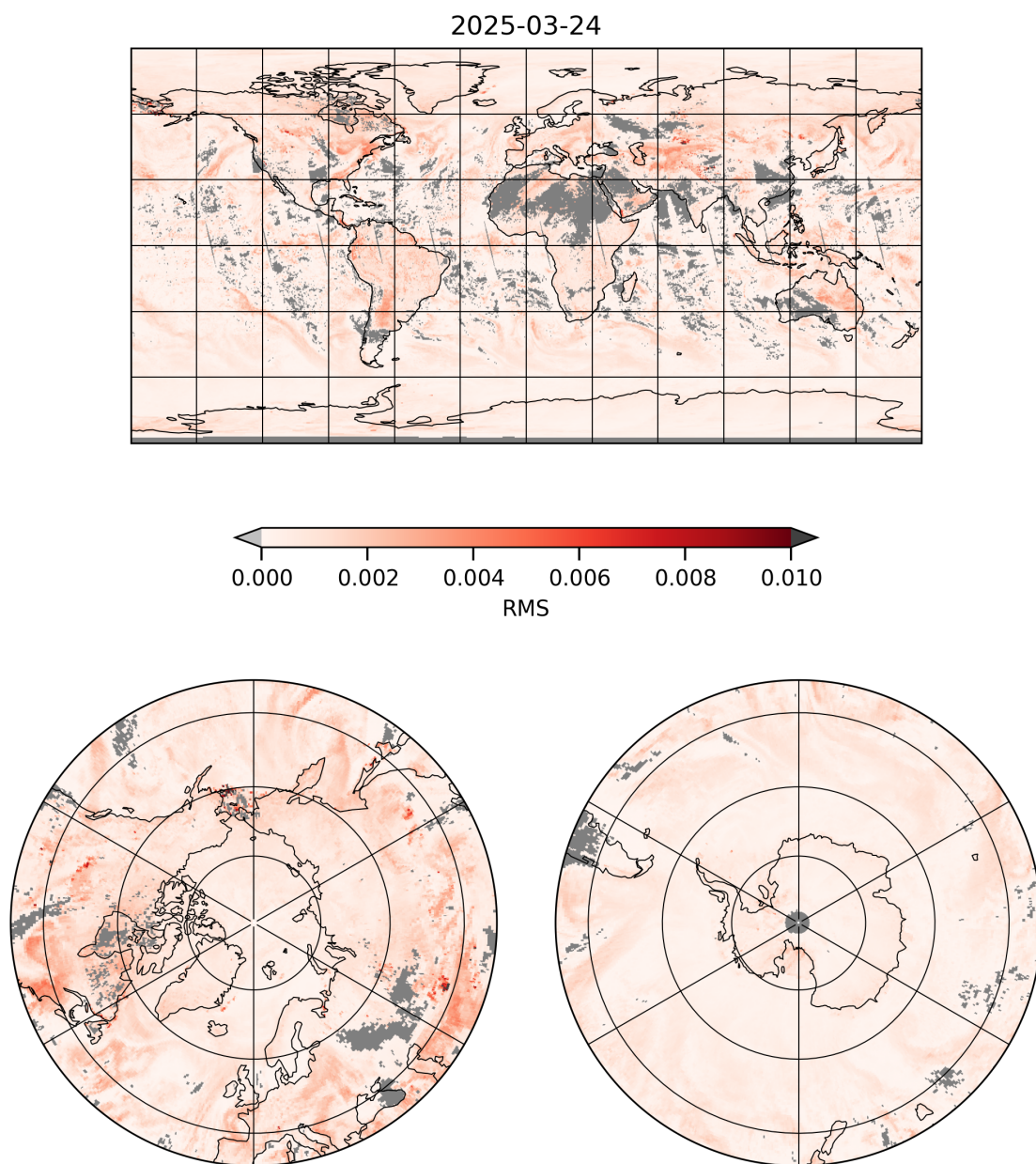


Figure 14: Map of “RMS” for 2025-03-23 to 2025-03-25

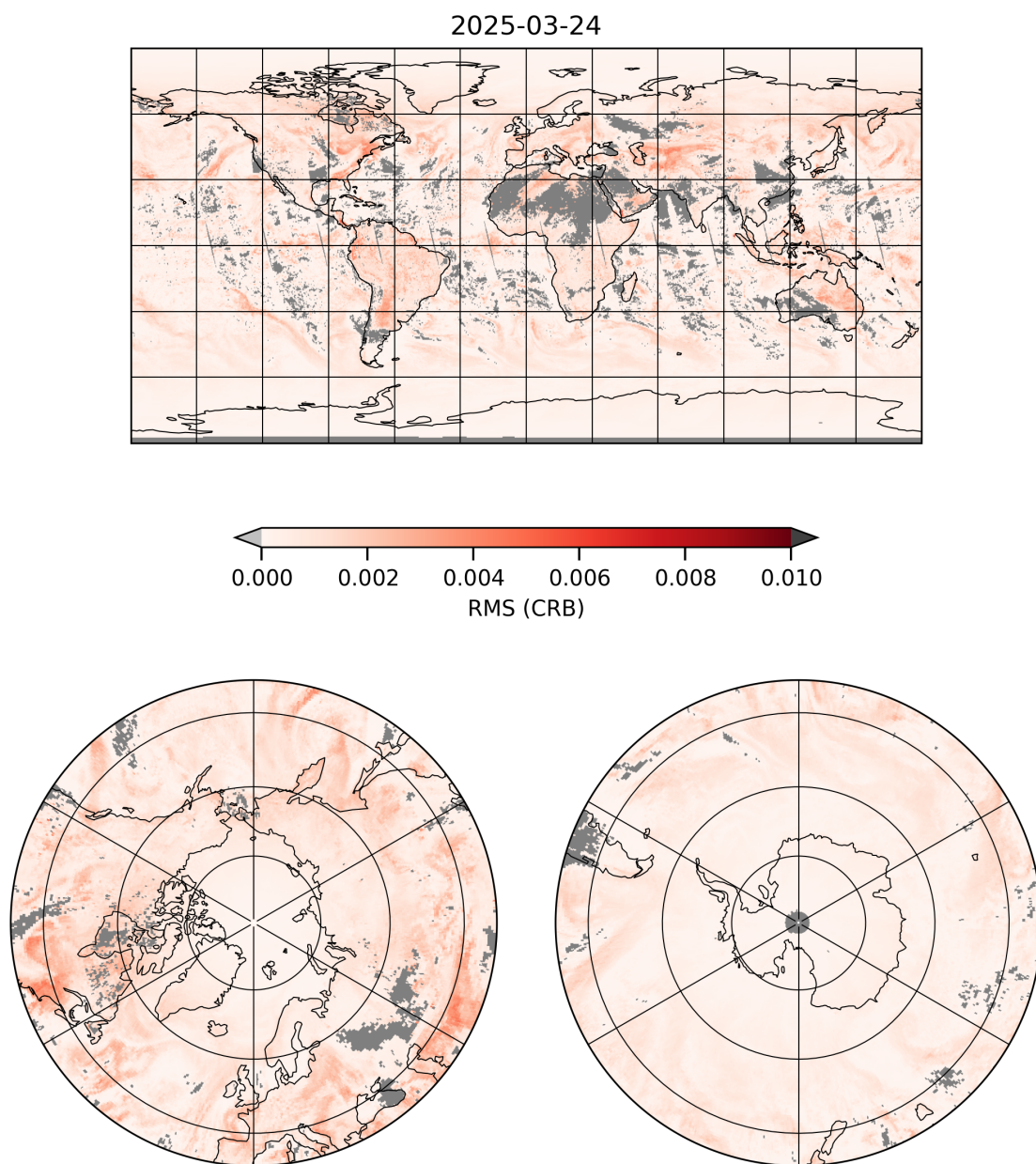


Figure 15: Map of “RMS (CRB)” for 2025-03-23 to 2025-03-25

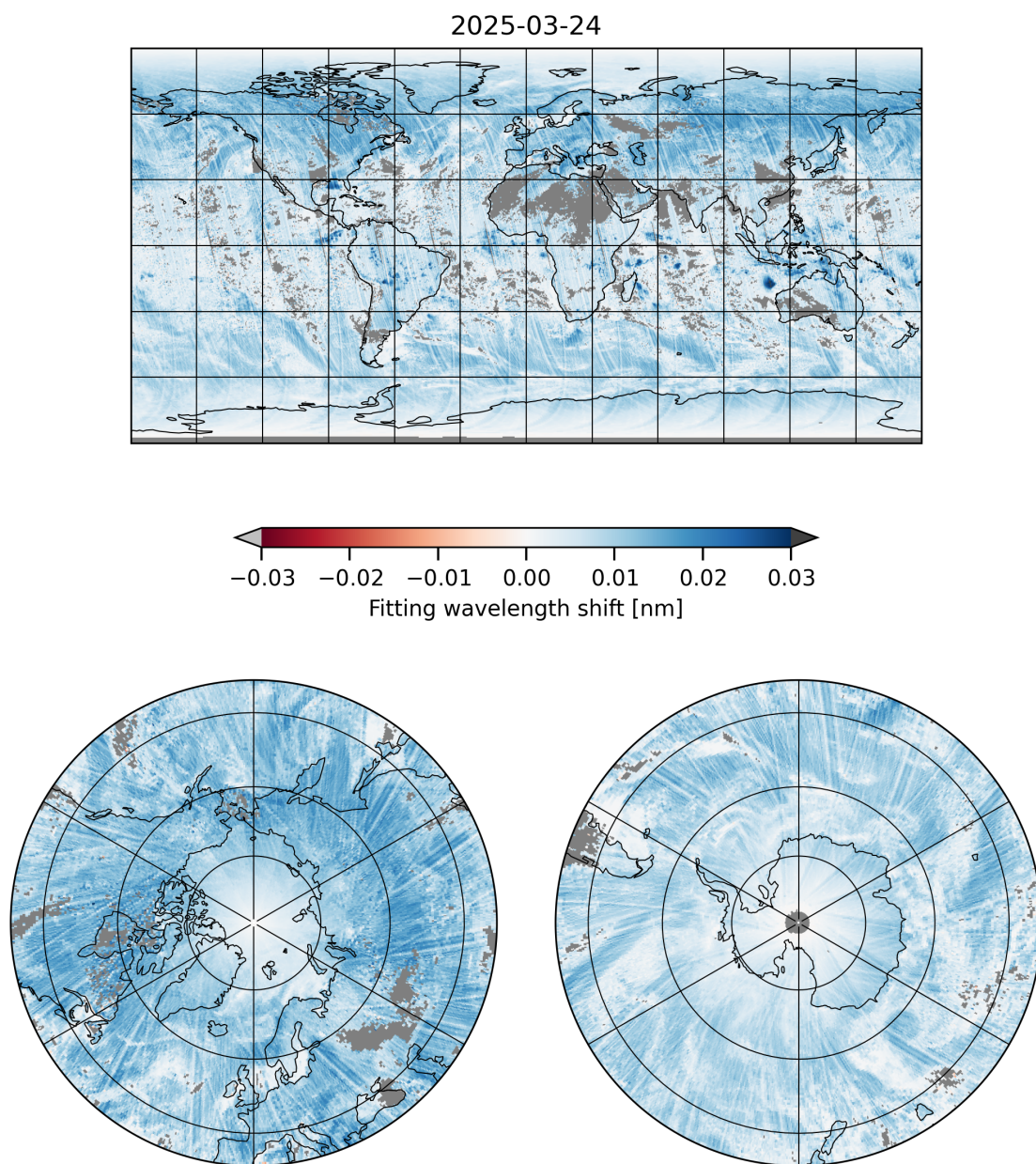


Figure 16: Map of “Fitting wavelength shift” for 2025-03-23 to 2025-03-25

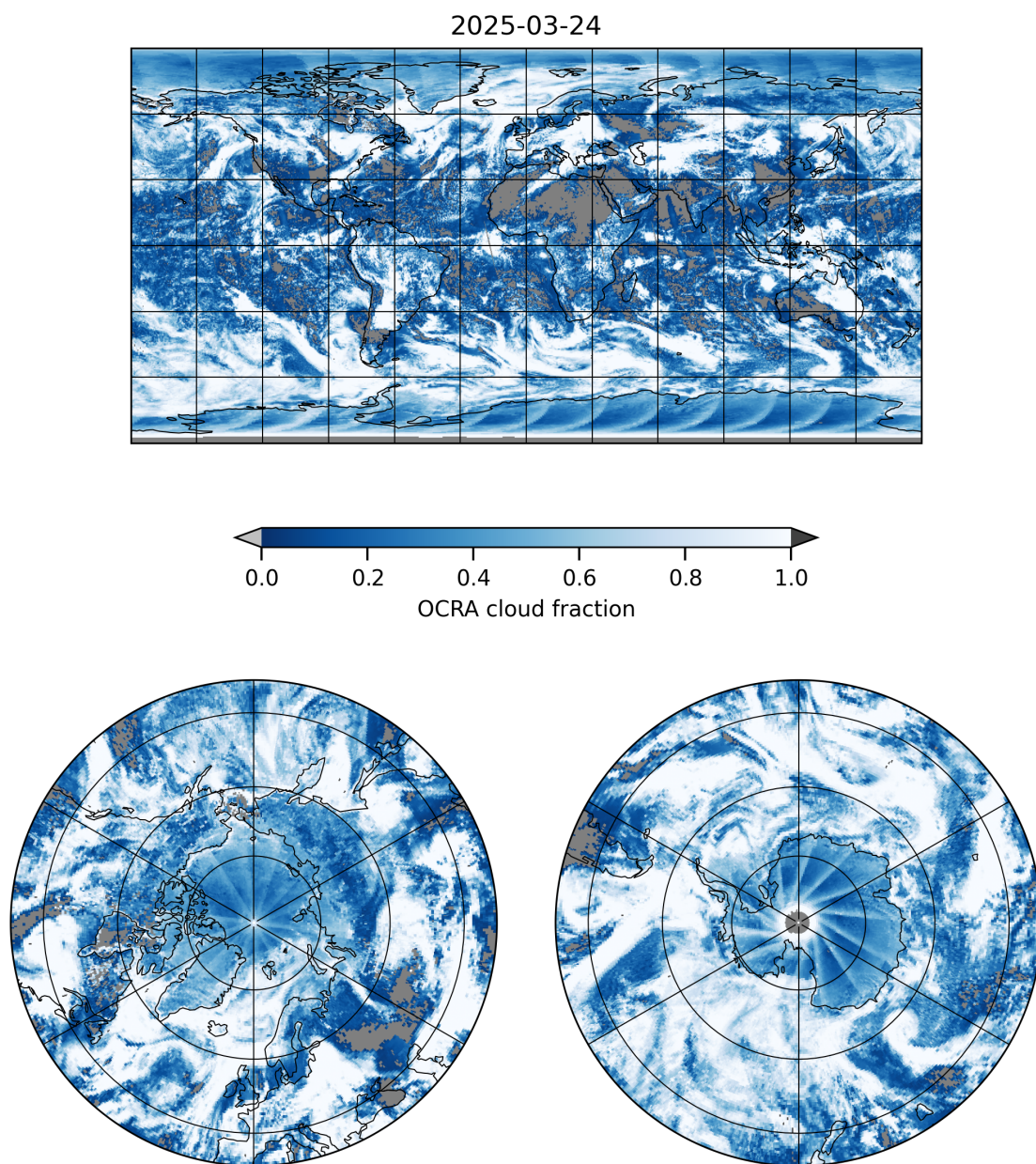


Figure 17: Map of “OCRA cloud fraction” for 2025-03-23 to 2025-03-25

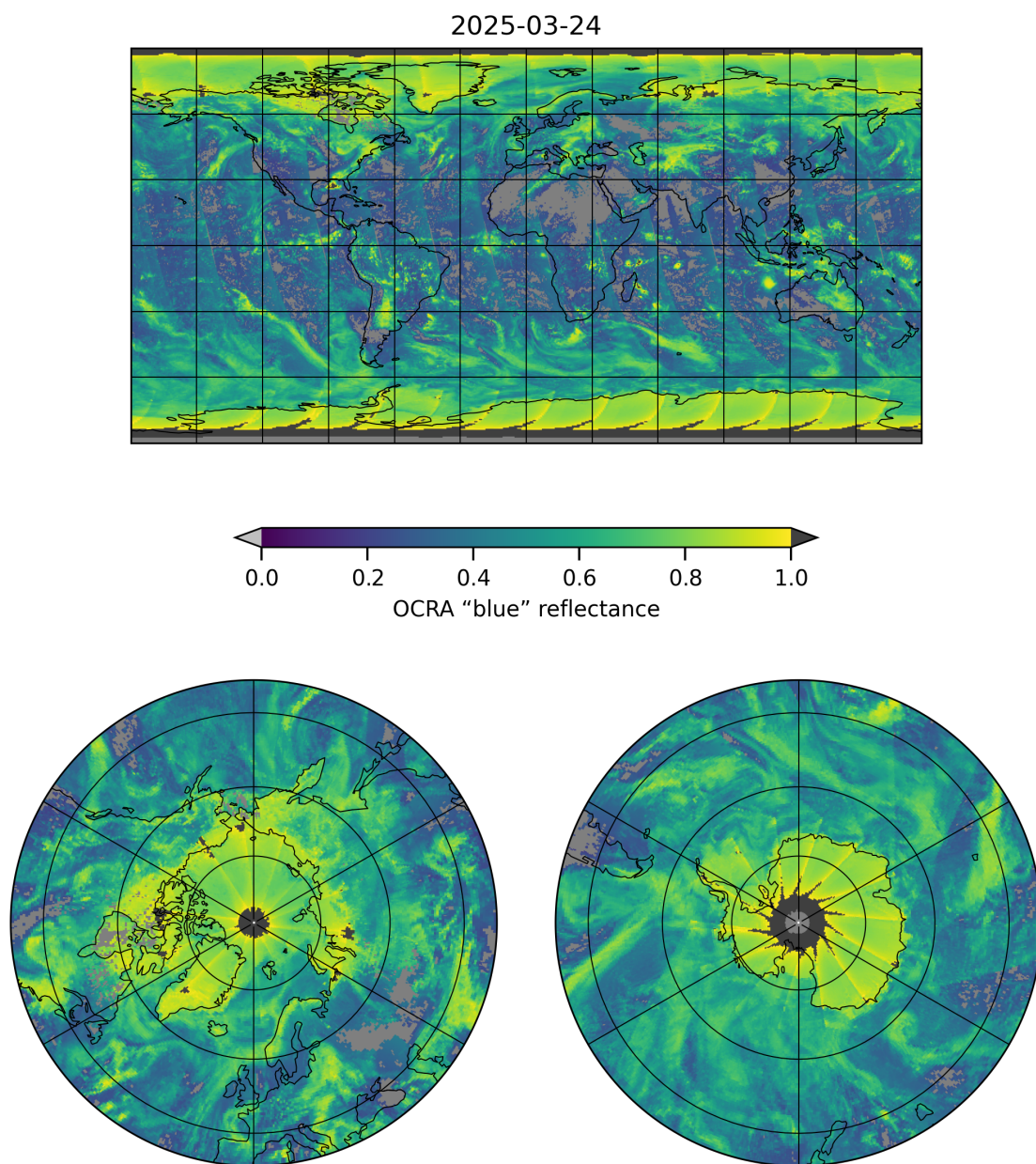


Figure 18: Map of "OCRA "blue" reflectance" for 2025-03-23 to 2025-03-25

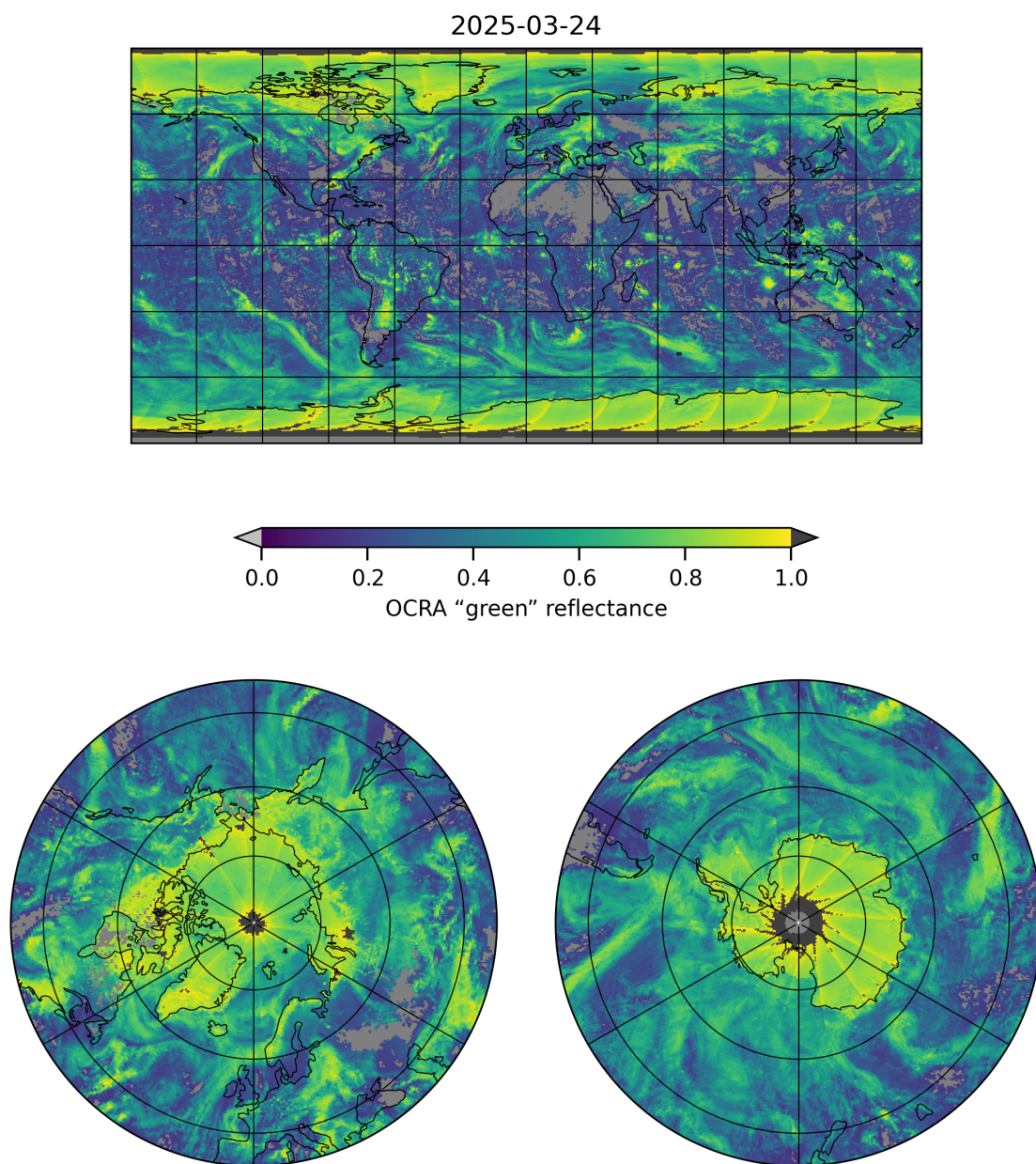


Figure 19: Map of "OCRA "green" reflectance" for 2025-03-23 to 2025-03-25

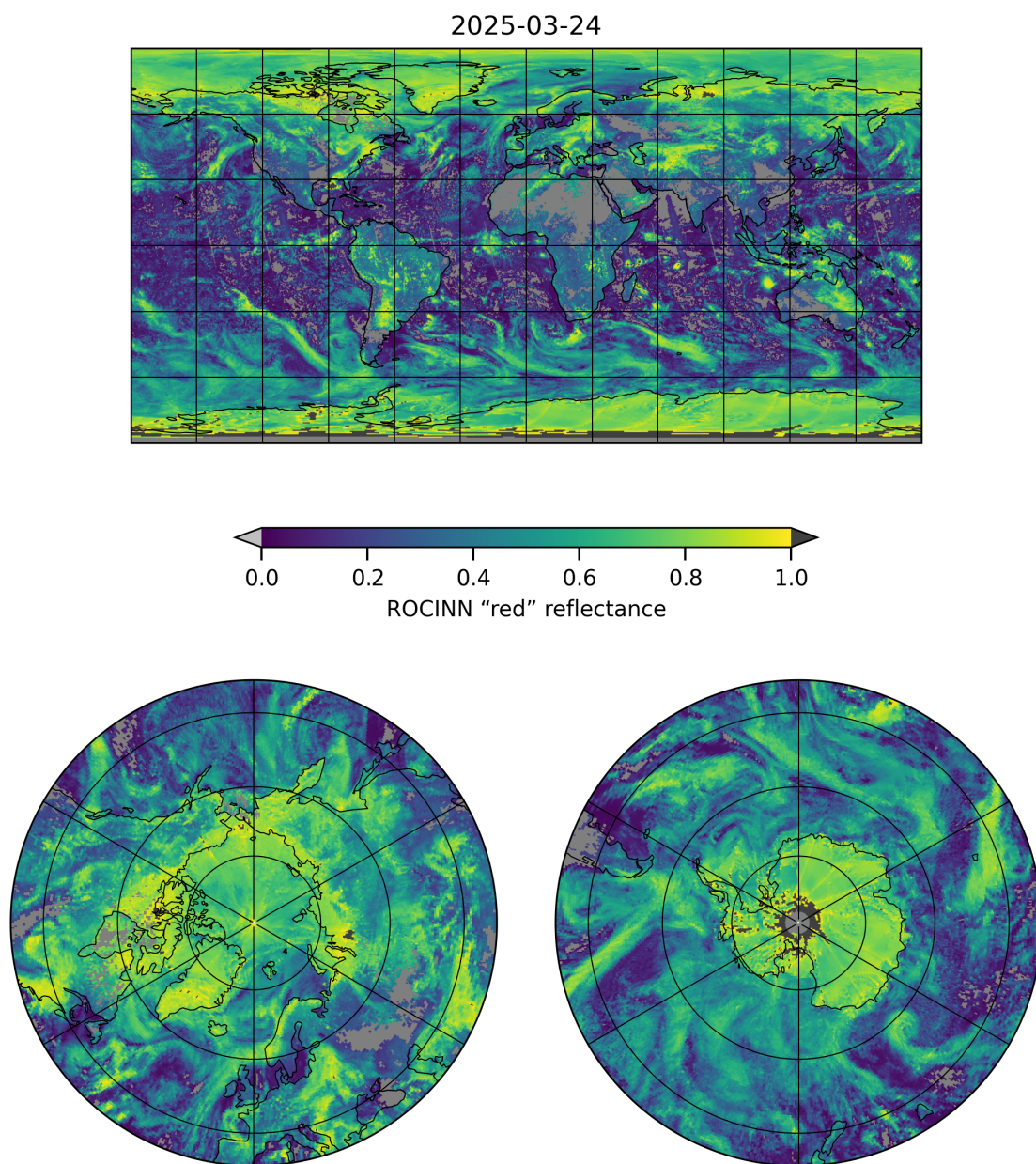


Figure 20: Map of "ROCINN "red" reflectance" for 2025-03-23 to 2025-03-25

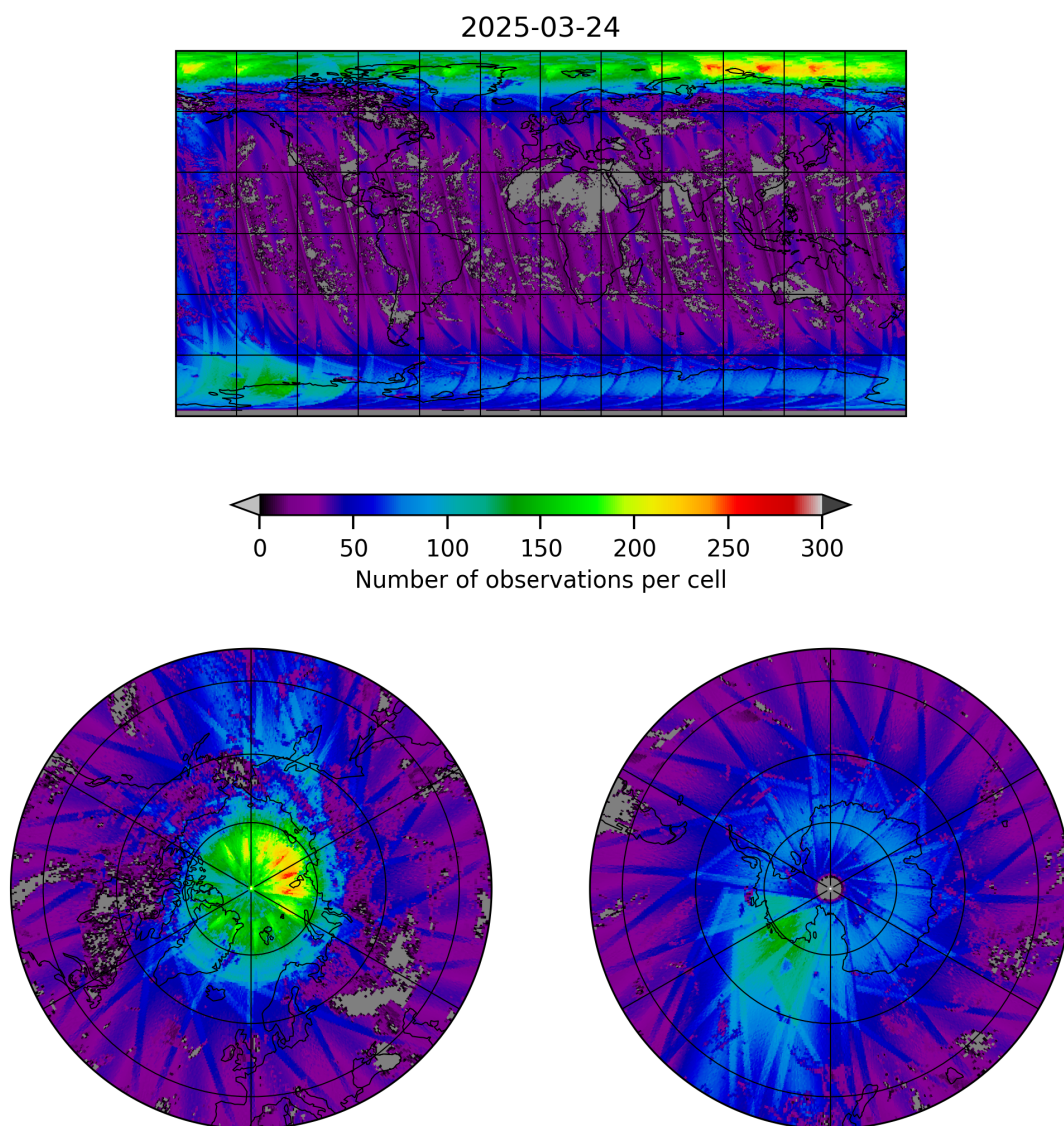


Figure 21: Map of the number of observations for 2025-03-23 to 2025-03-25

7 Zonal average

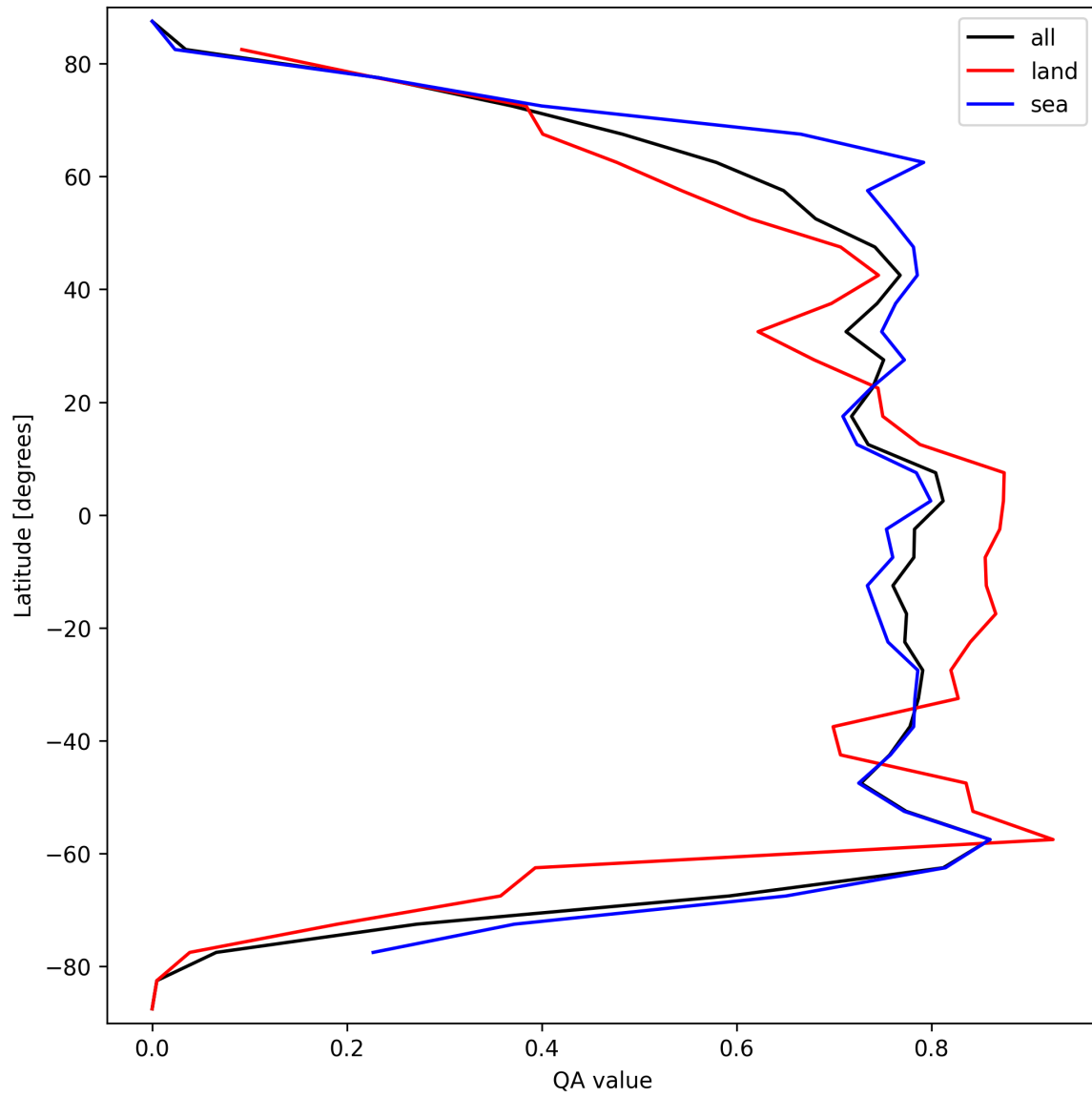


Figure 22: Zonal average of “QA value” for 2025-03-23 to 2025-03-25.

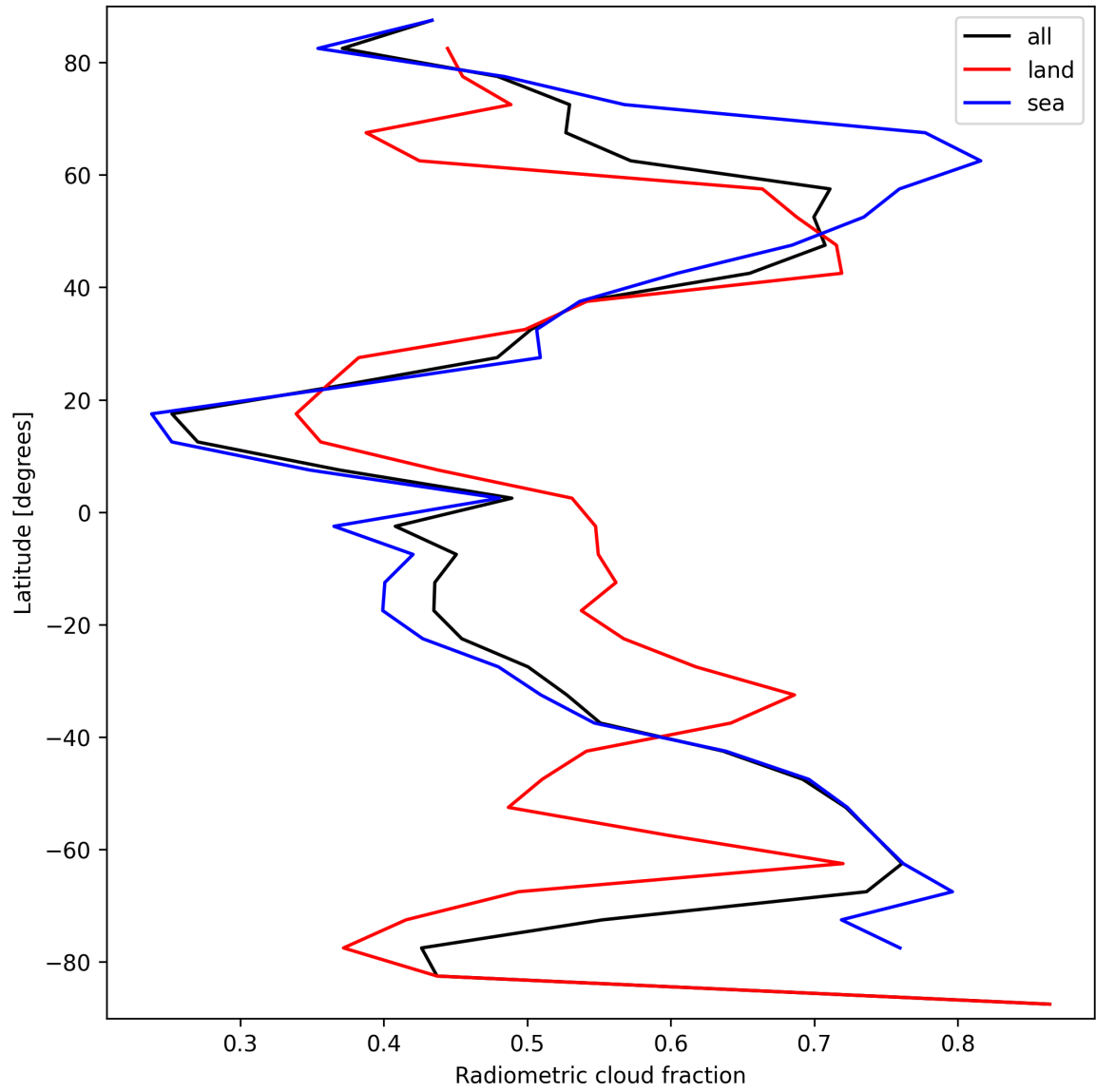


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-03-23 to 2025-03-25.

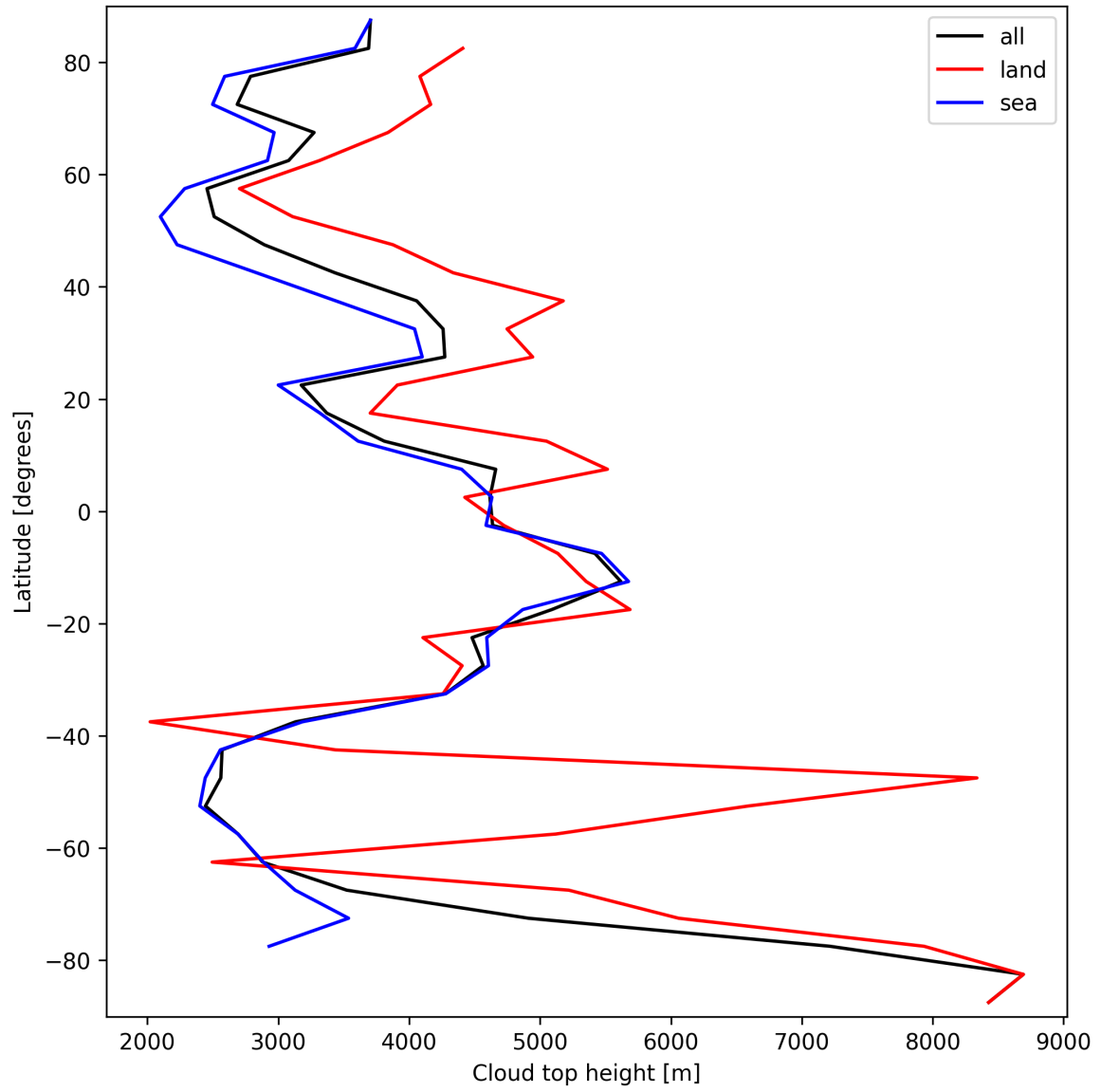


Figure 24: Zonal average of “Cloud top height” for 2025-03-23 to 2025-03-25.

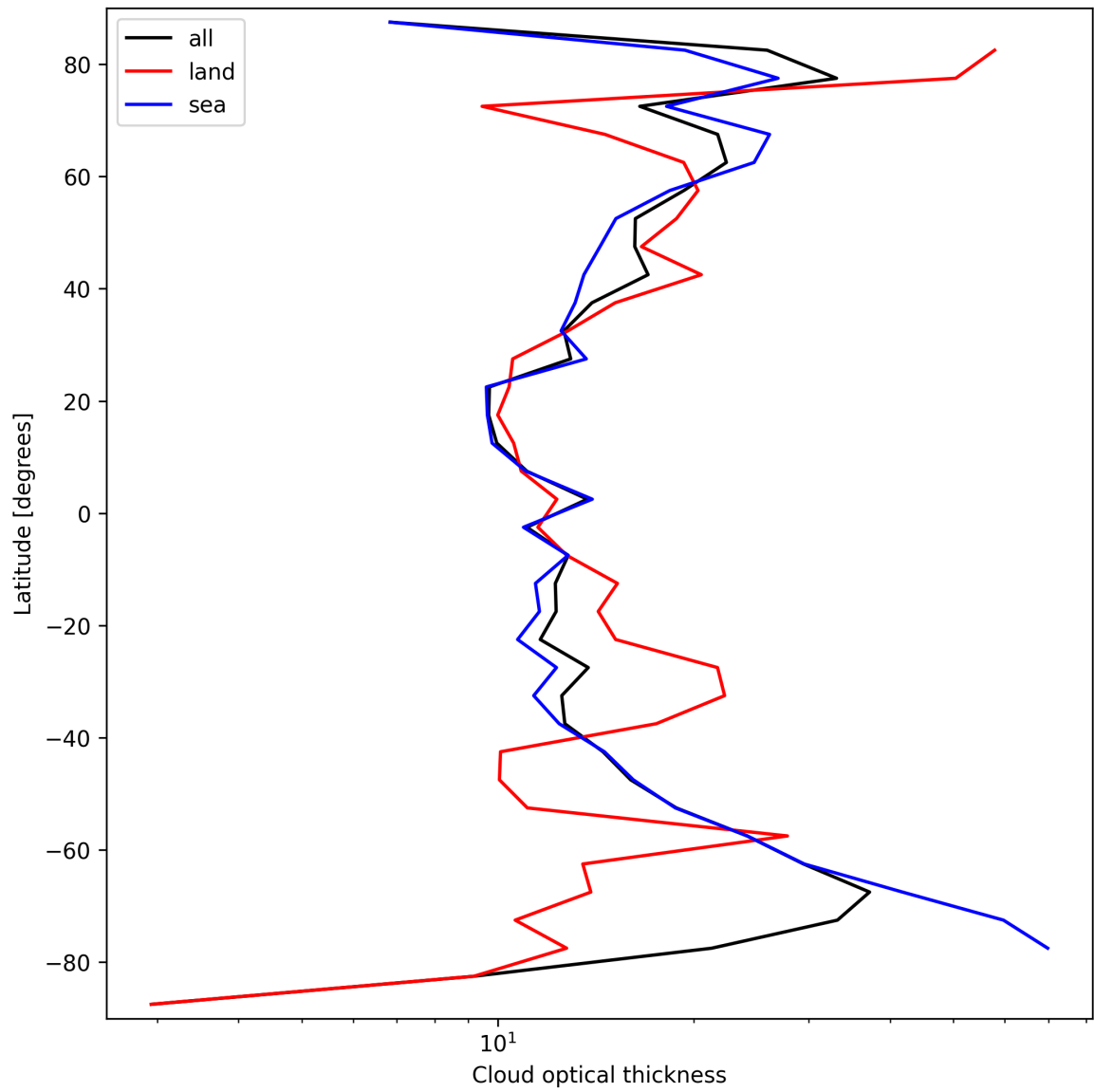


Figure 25: Zonal average of “Cloud optical thickness” for 2025-03-23 to 2025-03-25.

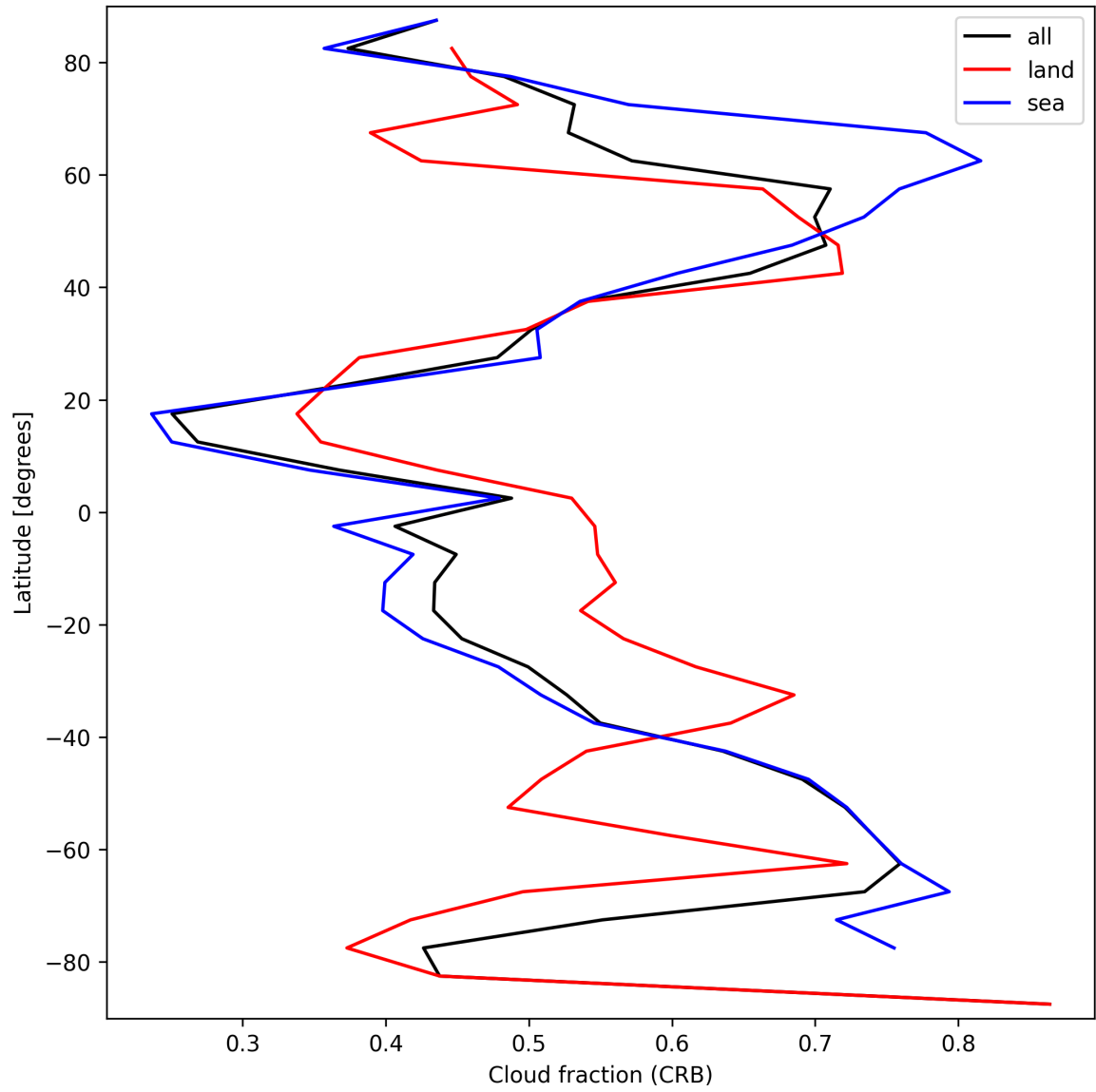


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-03-23 to 2025-03-25.

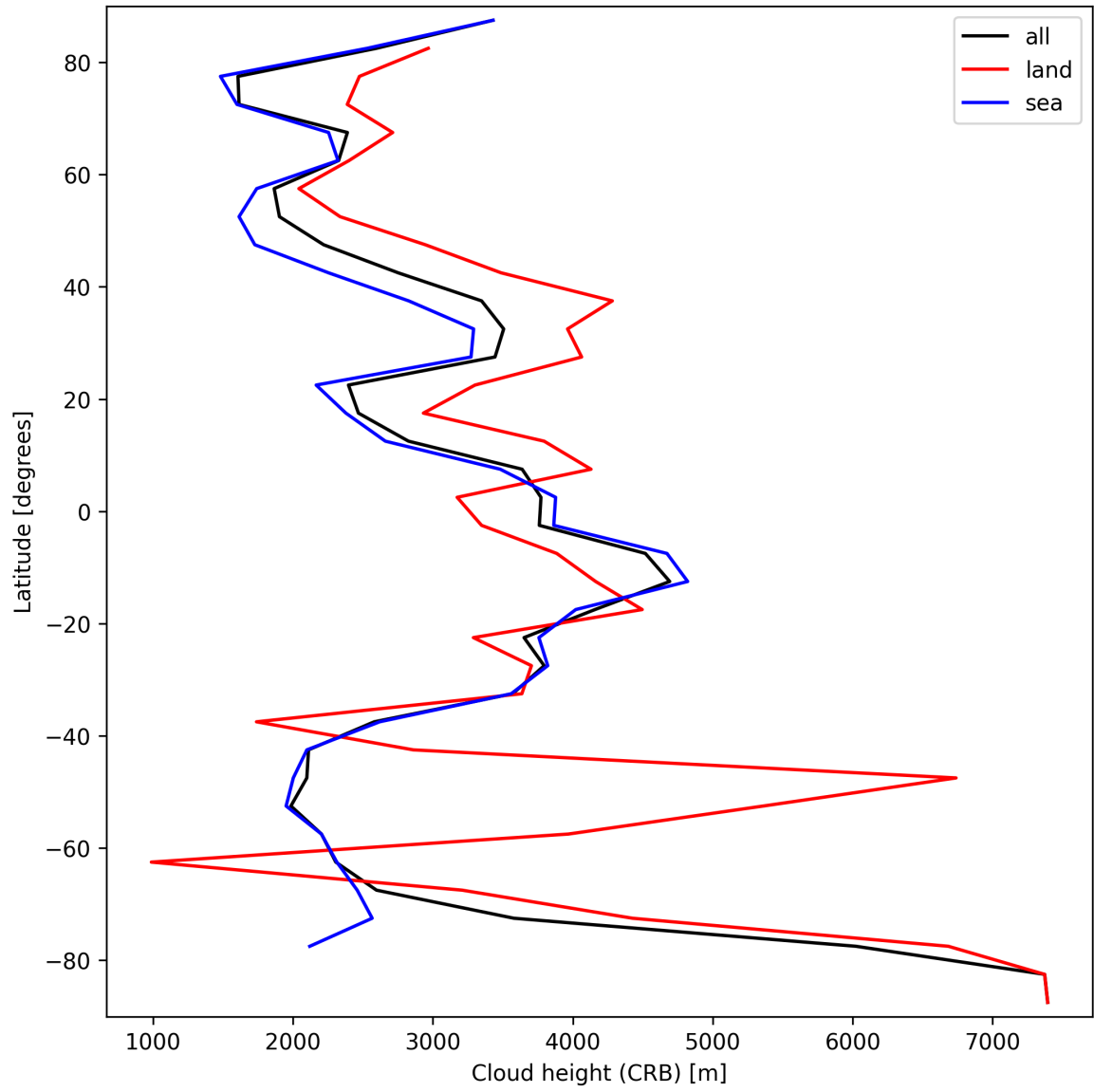


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-03-23 to 2025-03-25.

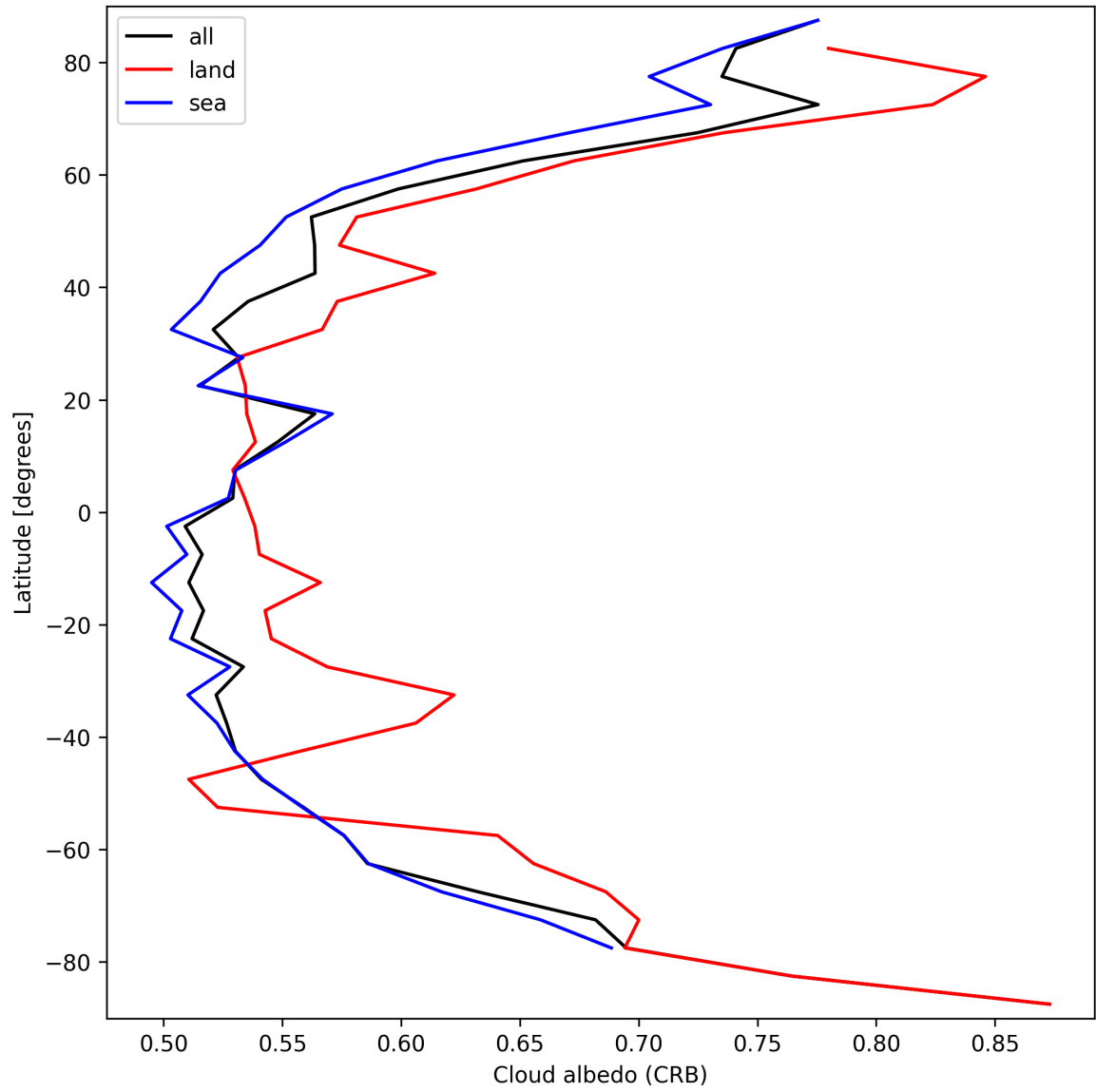


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-03-23 to 2025-03-25.

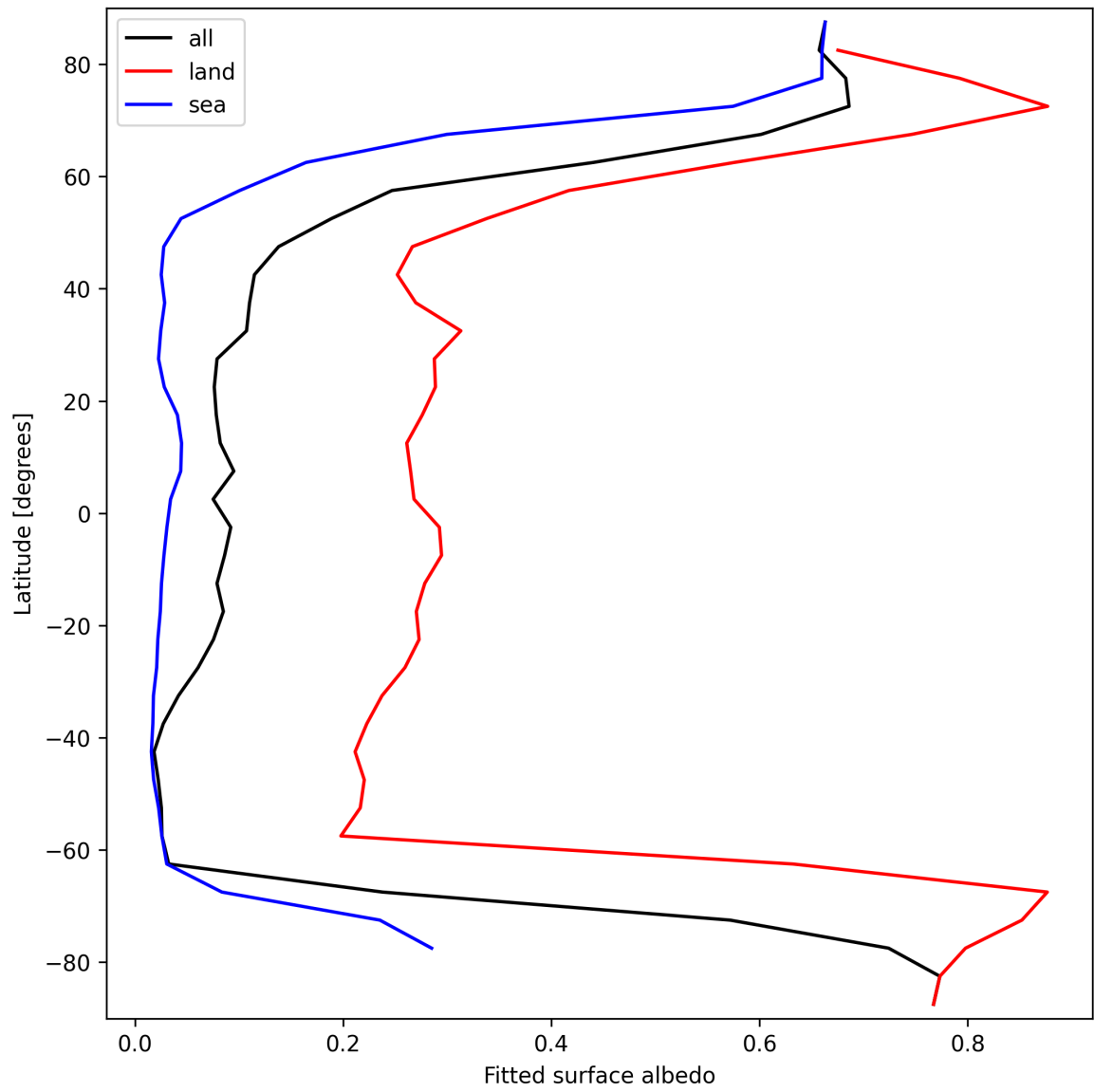


Figure 29: Zonal average of “Fitted surface albedo” for 2025-03-23 to 2025-03-25.

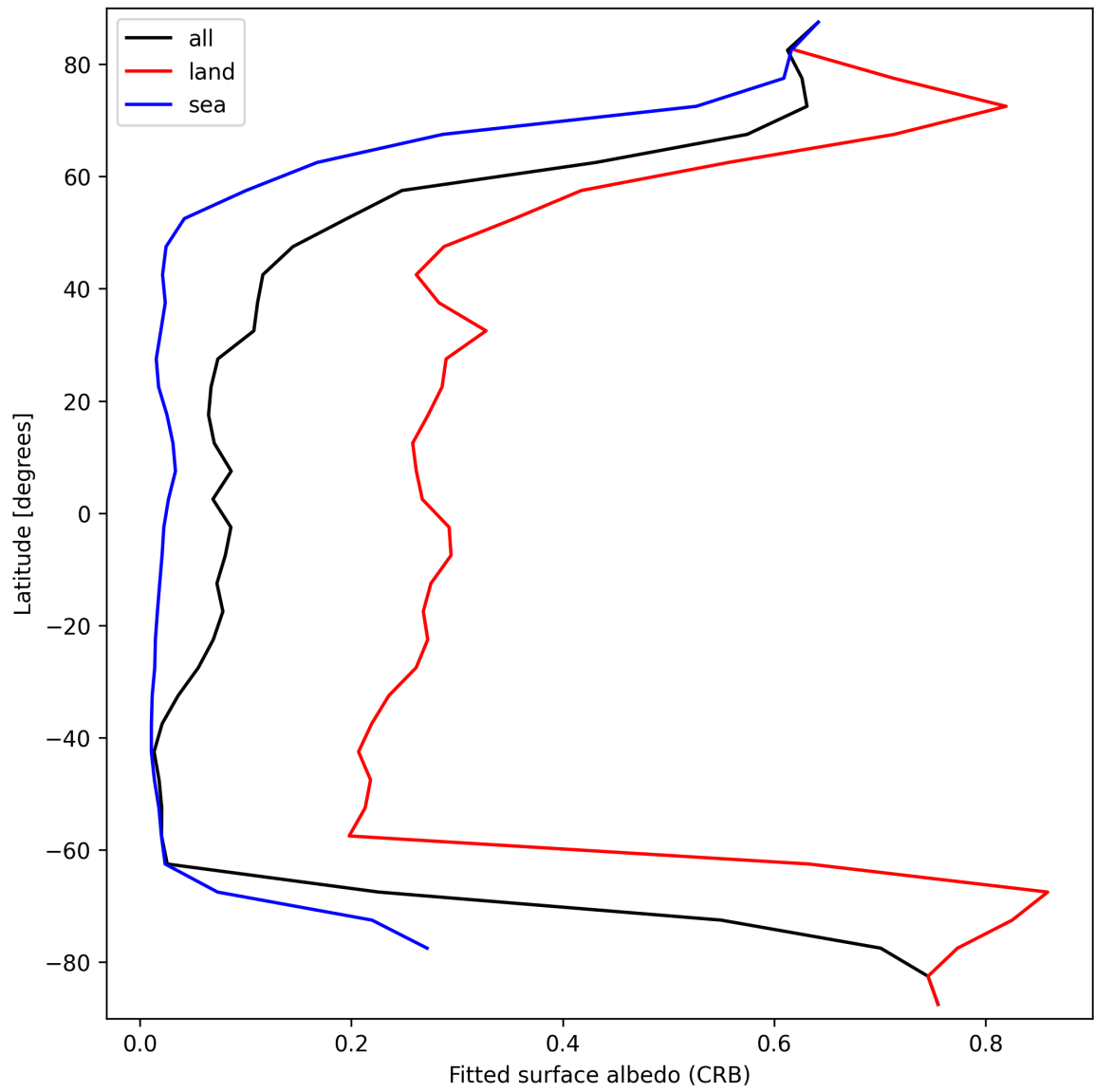


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-03-23 to 2025-03-25.

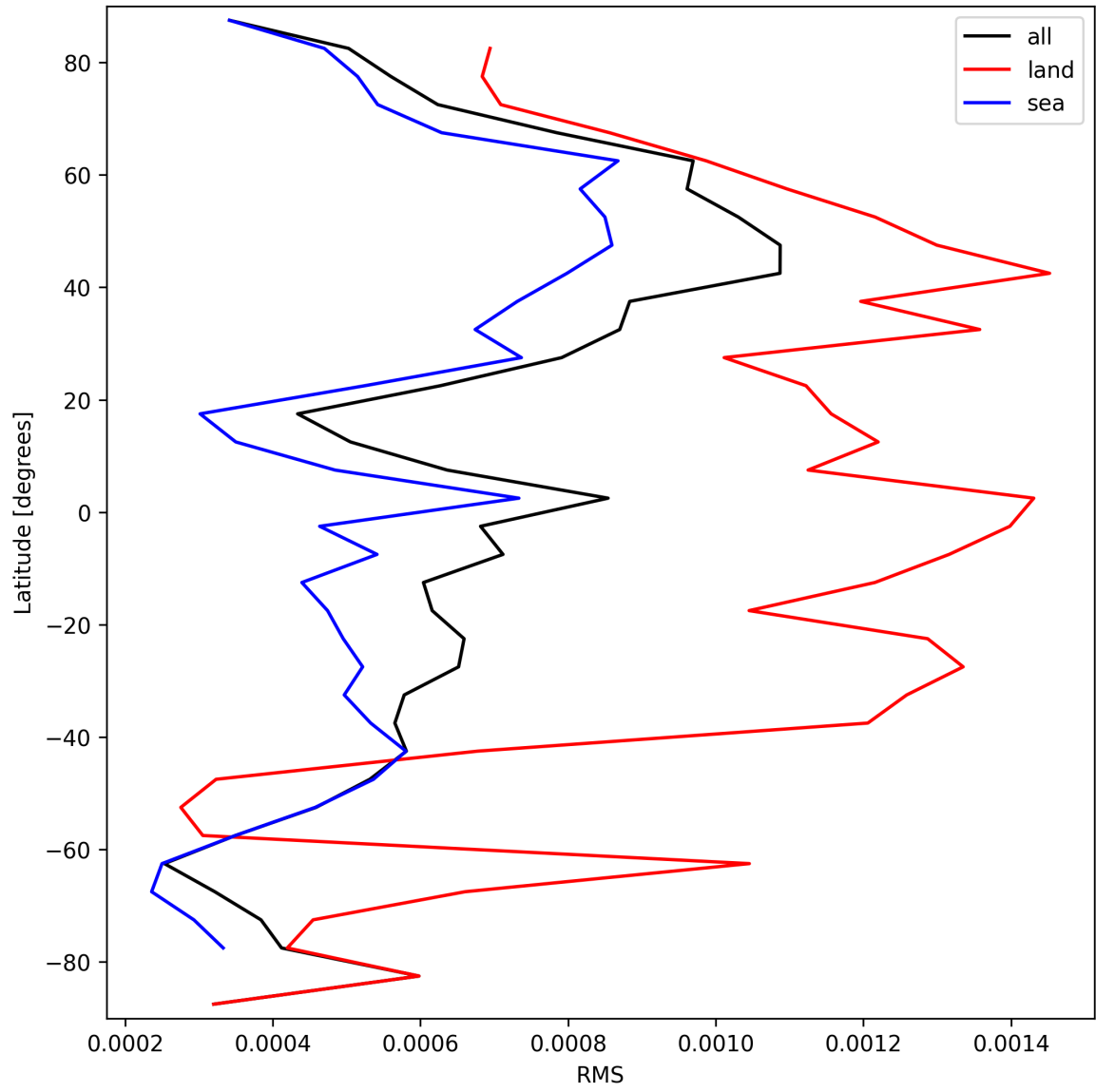


Figure 31: Zonal average of “RMS” for 2025-03-23 to 2025-03-25.

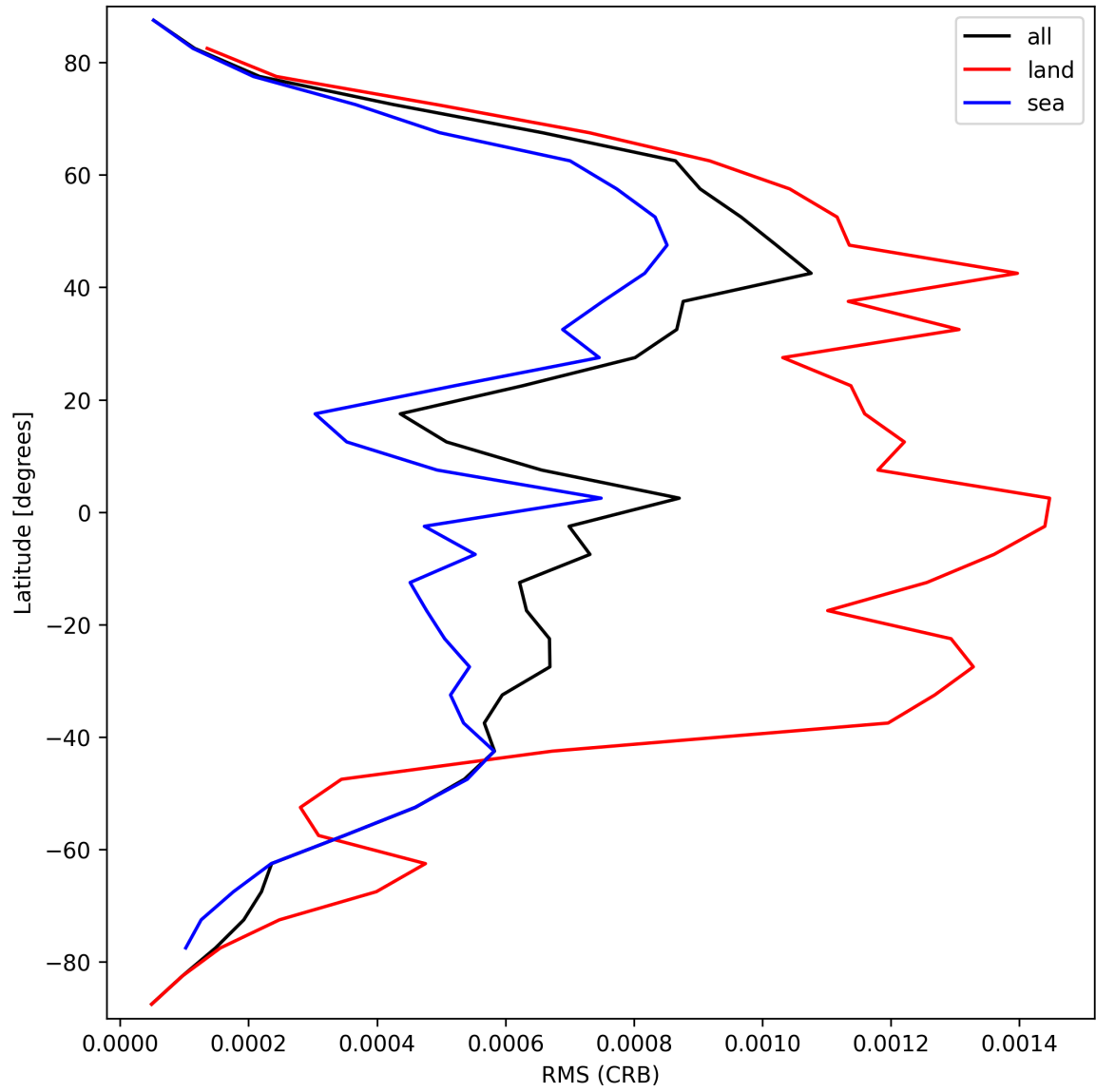


Figure 32: Zonal average of “RMS (CRB)” for 2025-03-23 to 2025-03-25.

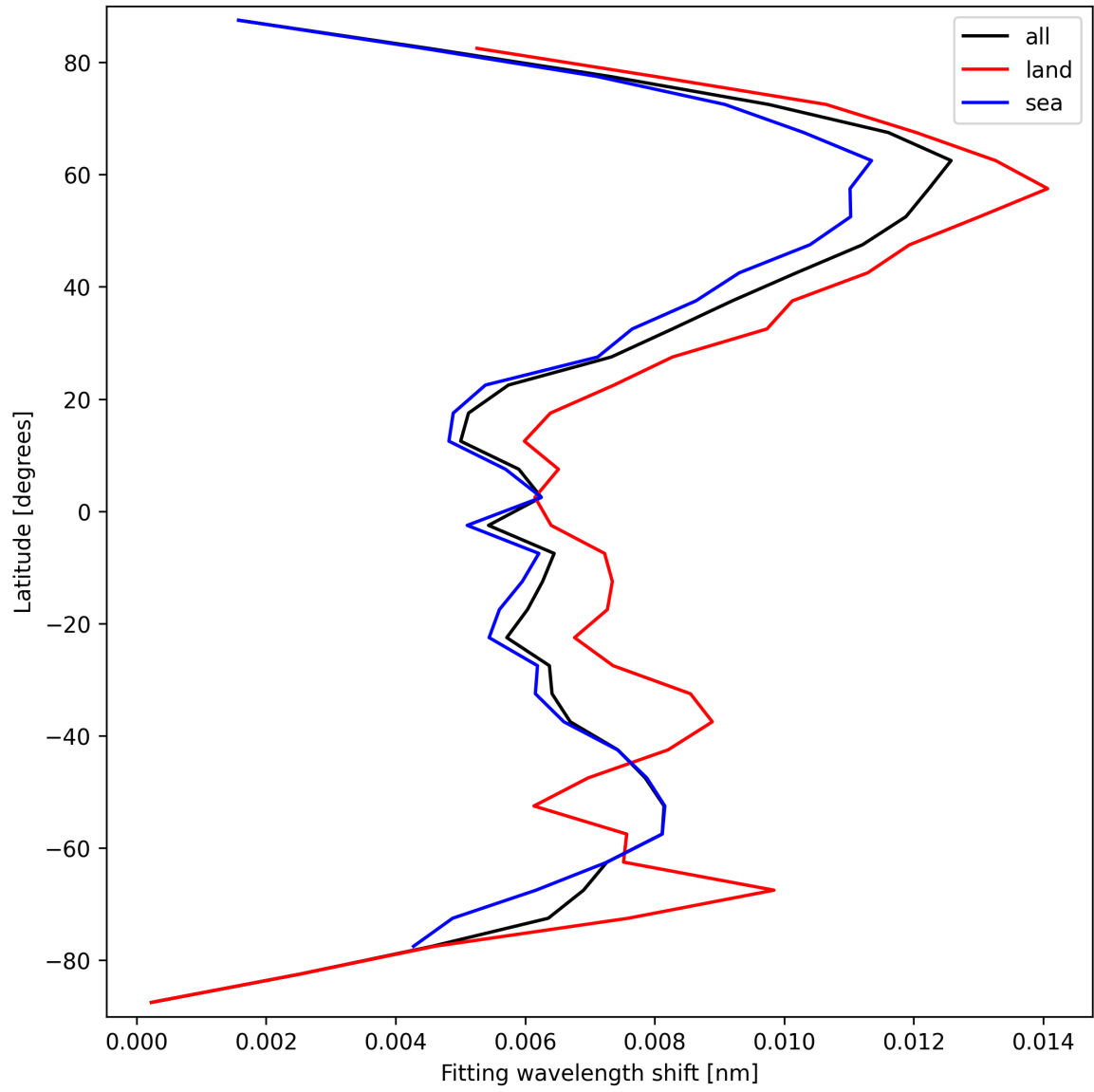


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-03-23 to 2025-03-25.

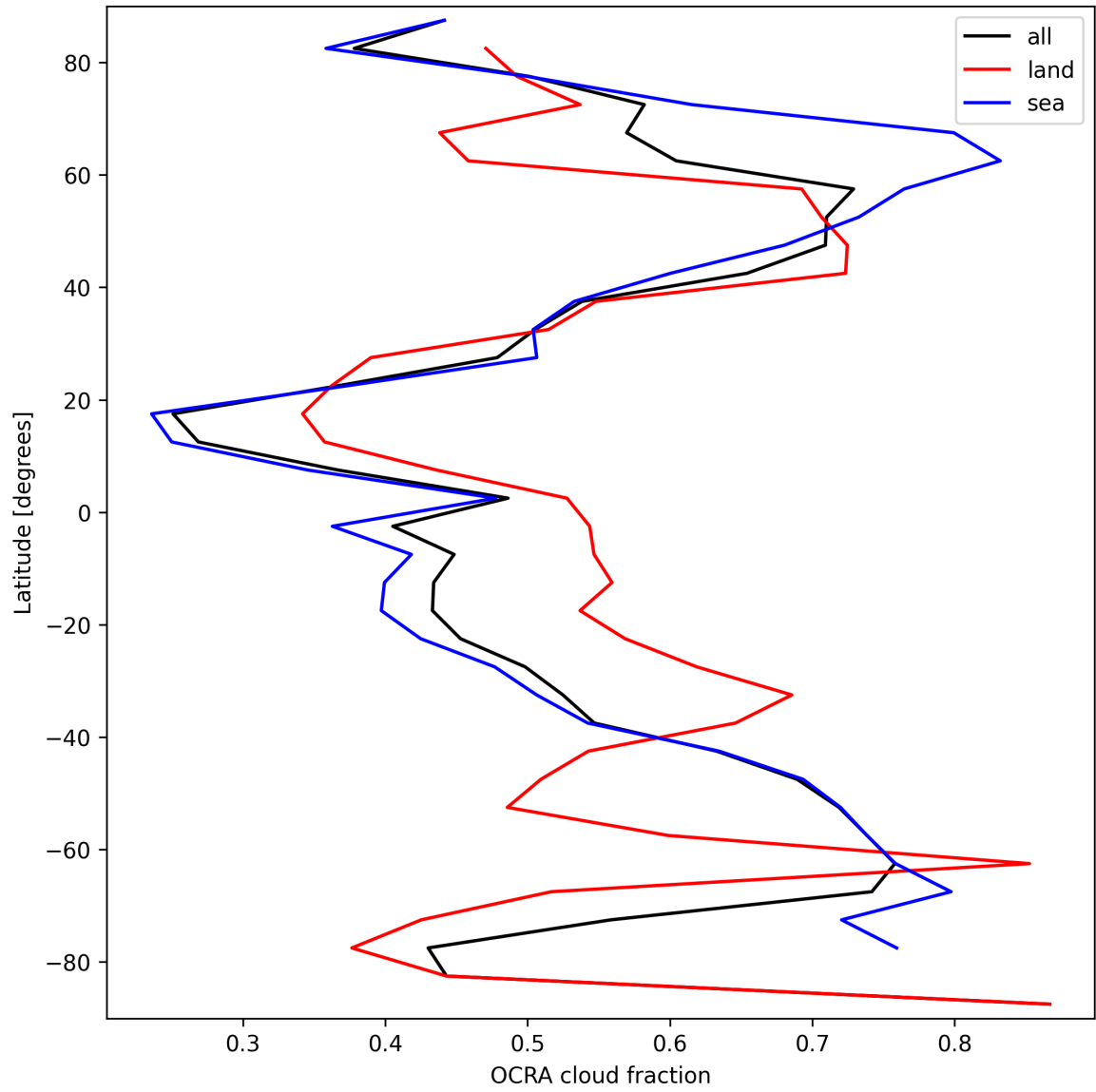


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-03-23 to 2025-03-25.

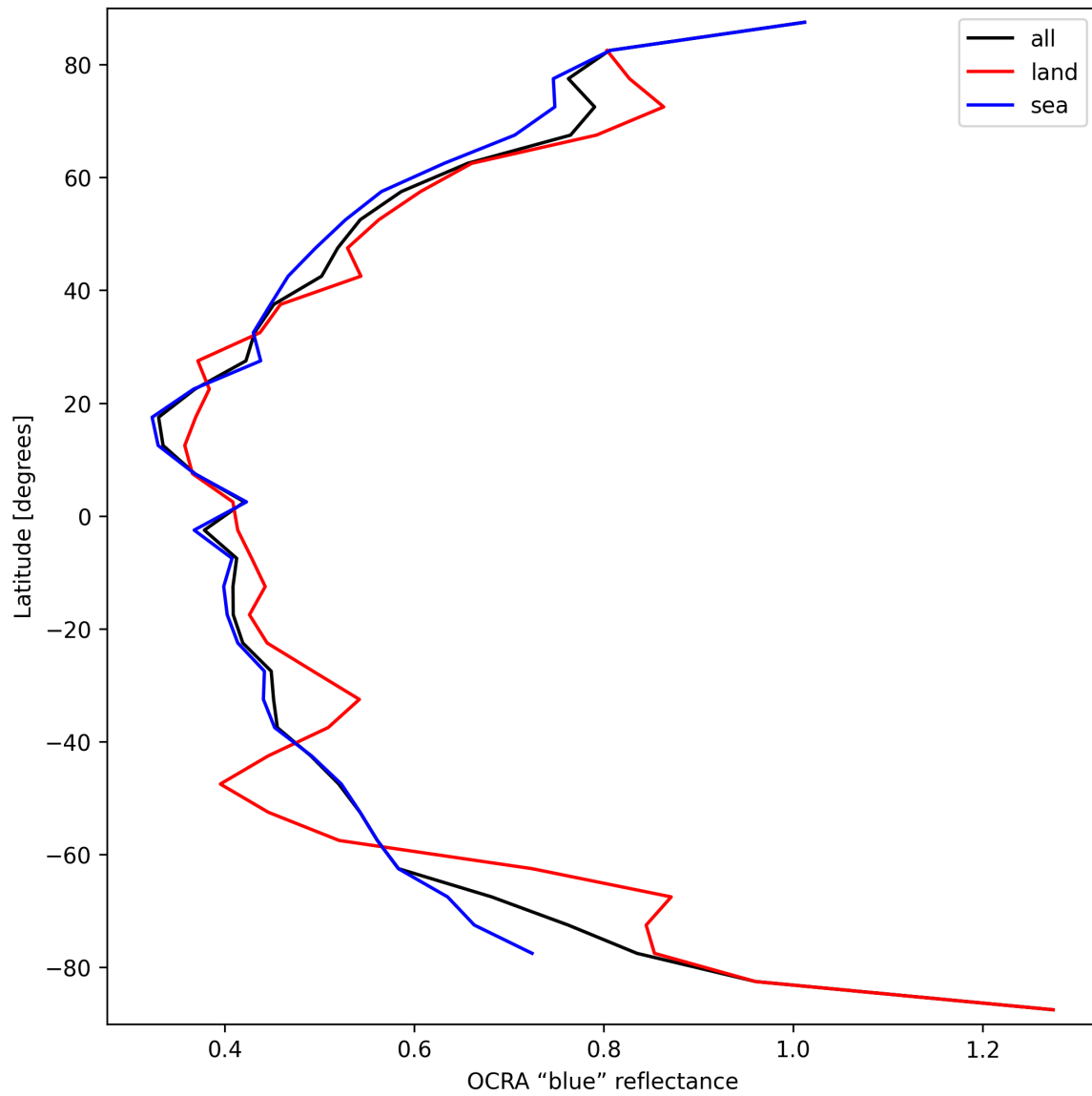


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-03-23 to 2025-03-25.

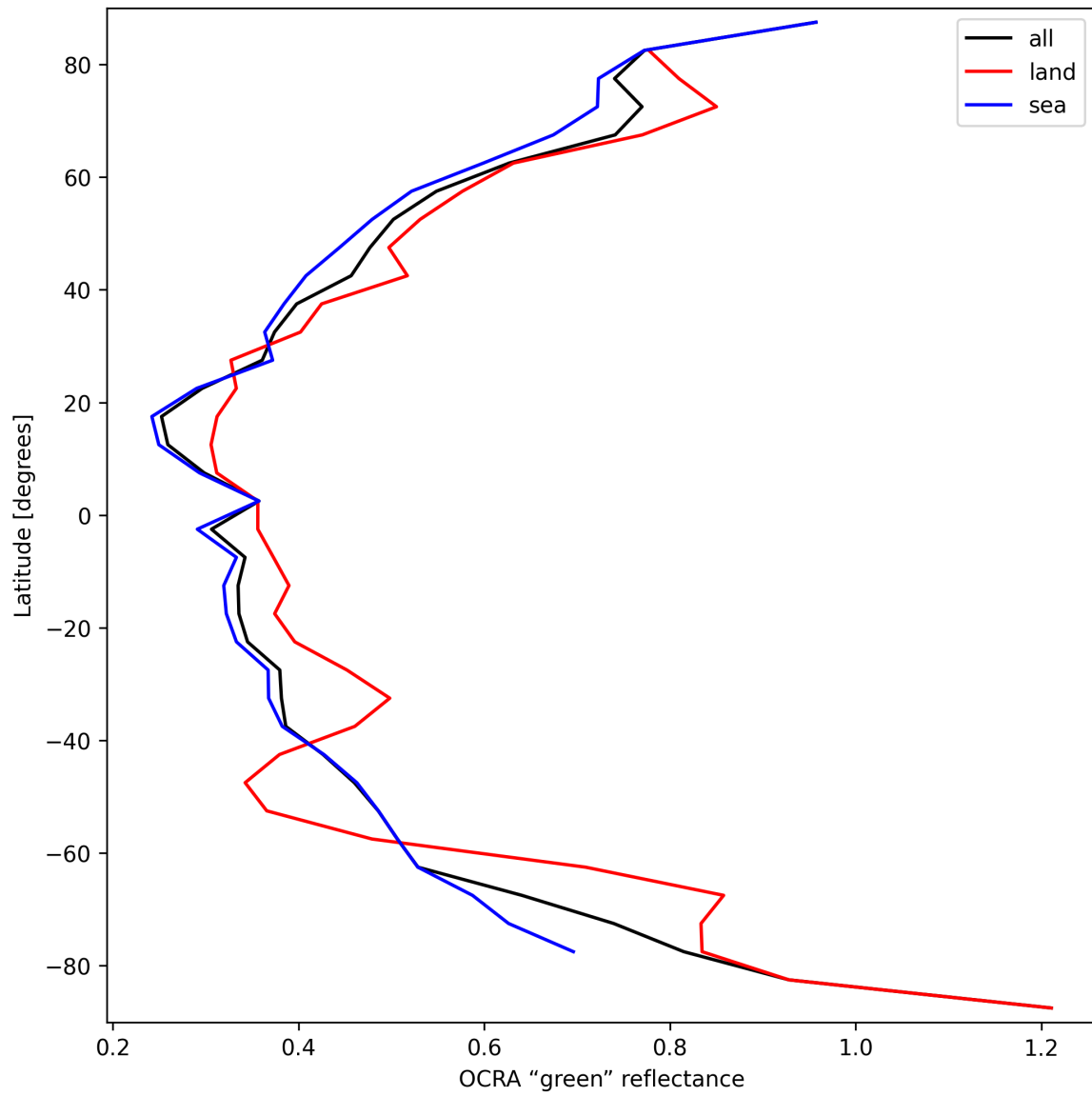


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-03-23 to 2025-03-25.

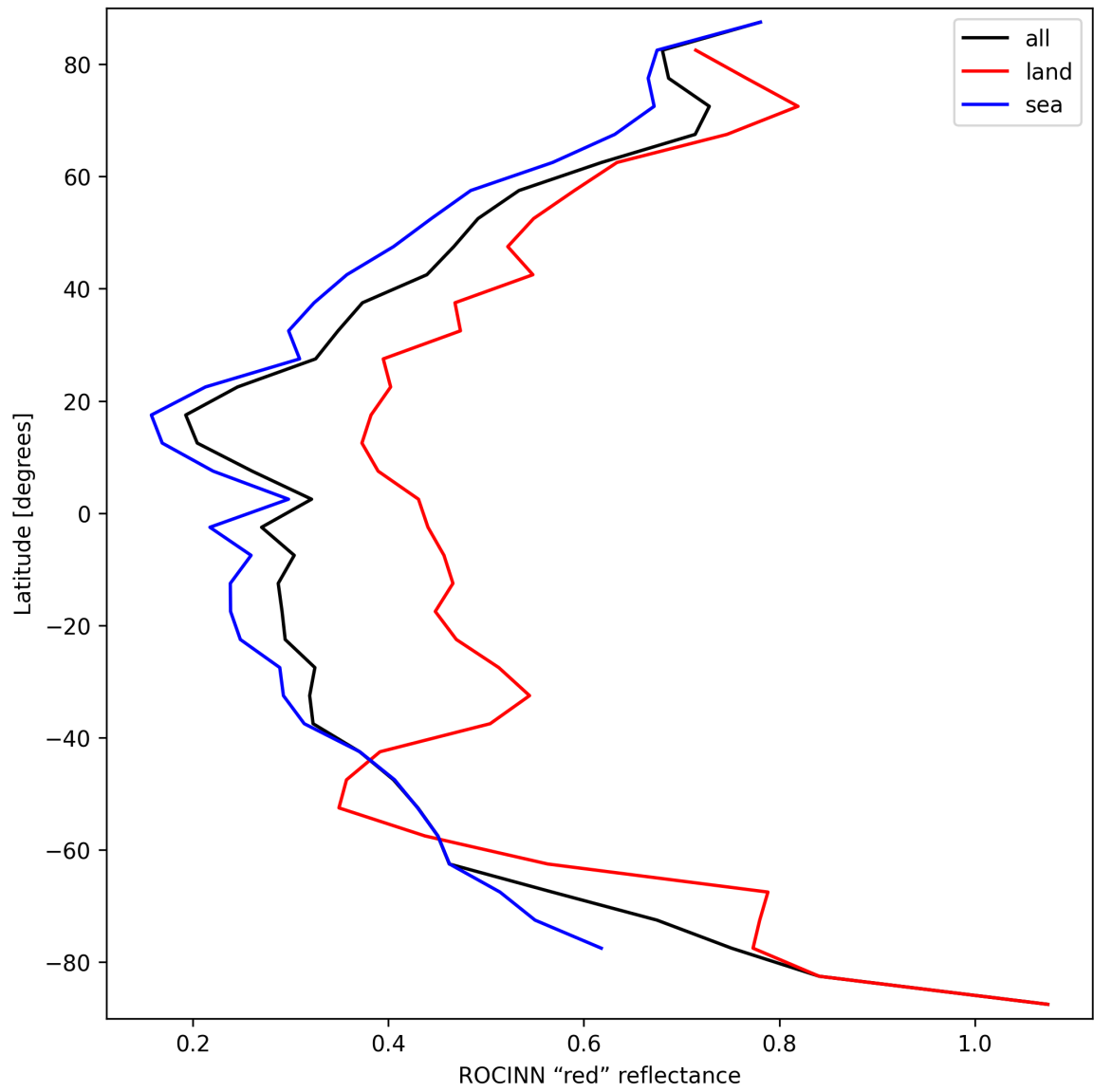


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-03-23 to 2025-03-25.

8 Histograms

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

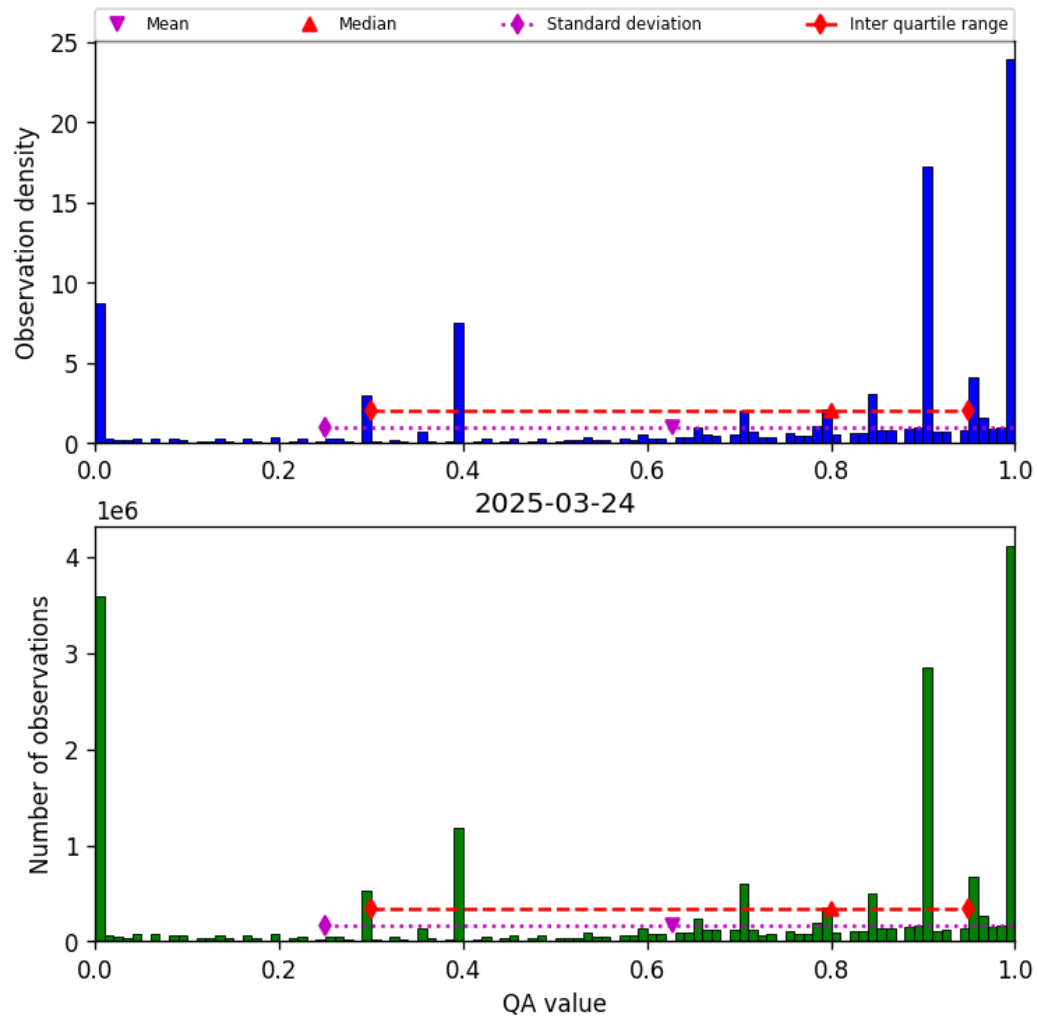


Figure 38: Histogram of “QA value” for 2025-03-23 to 2025-03-25

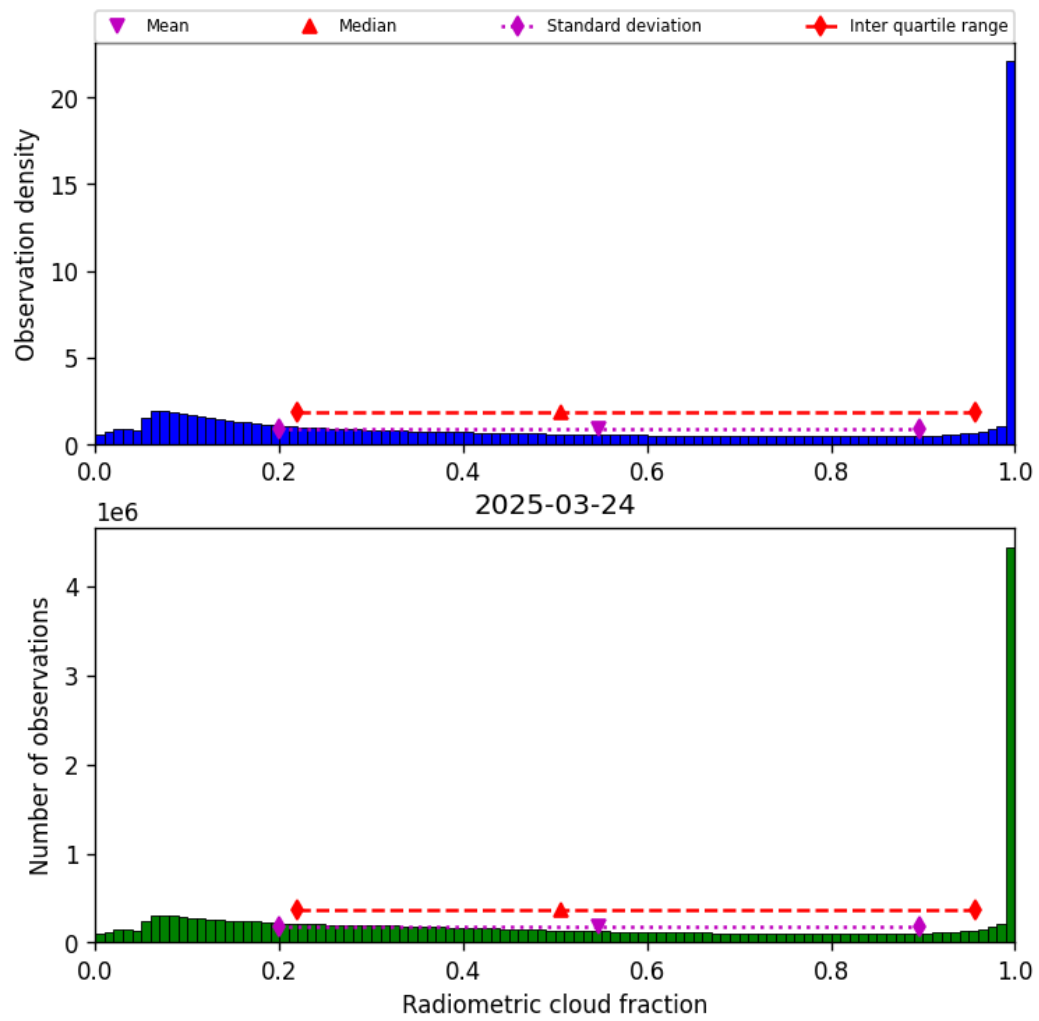


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-03-23 to 2025-03-25

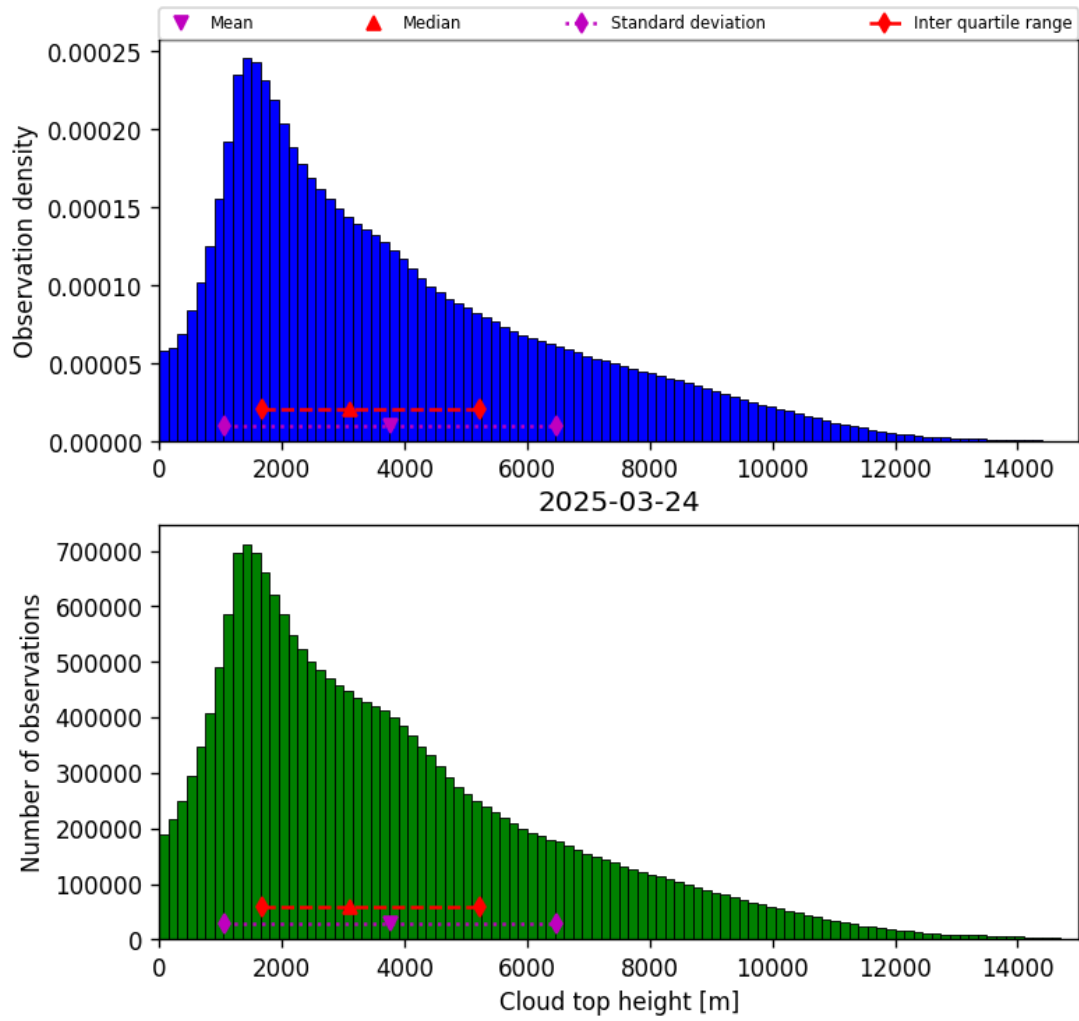


Figure 40: Histogram of “Cloud top height” for 2025-03-23 to 2025-03-25

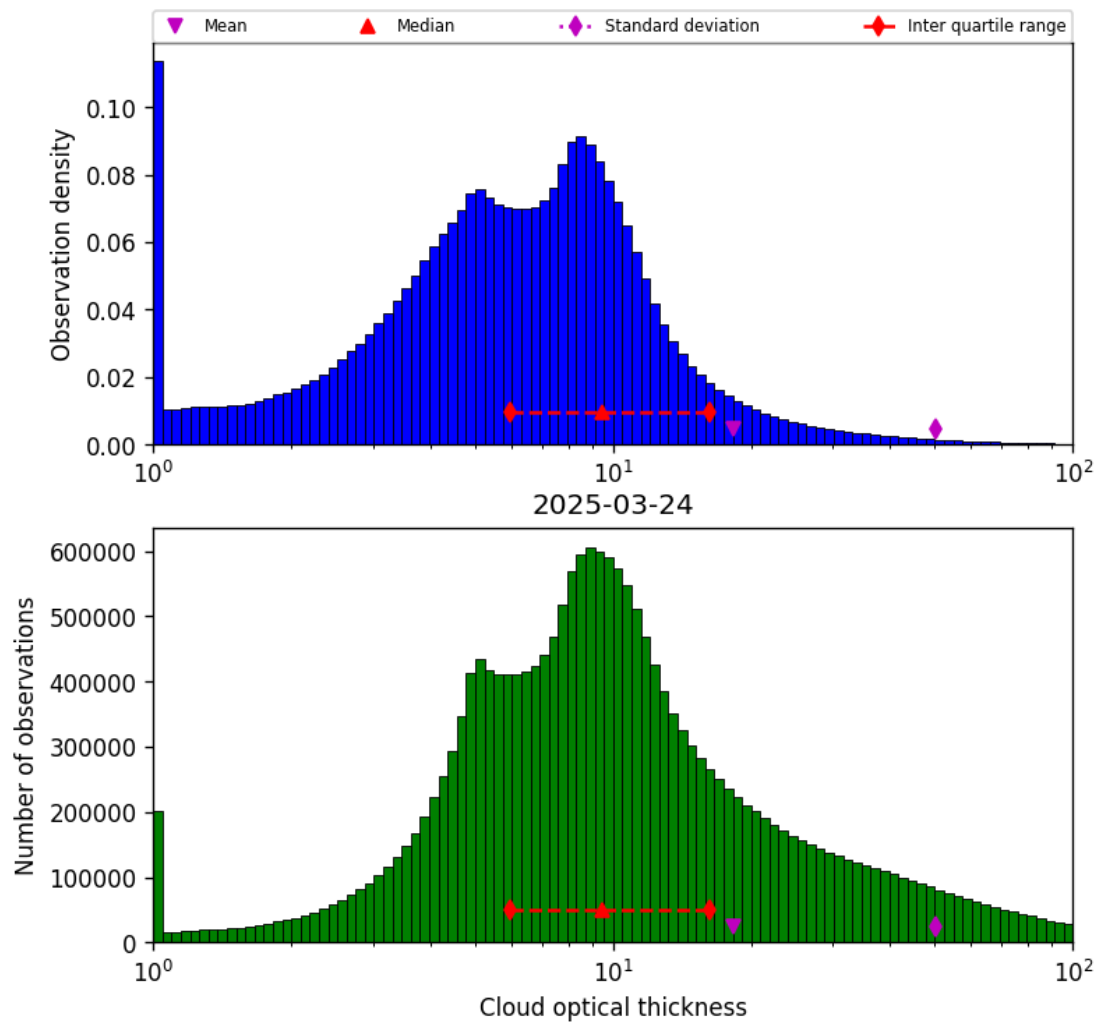


Figure 41: Histogram of “Cloud optical thickness” for 2025-03-23 to 2025-03-25

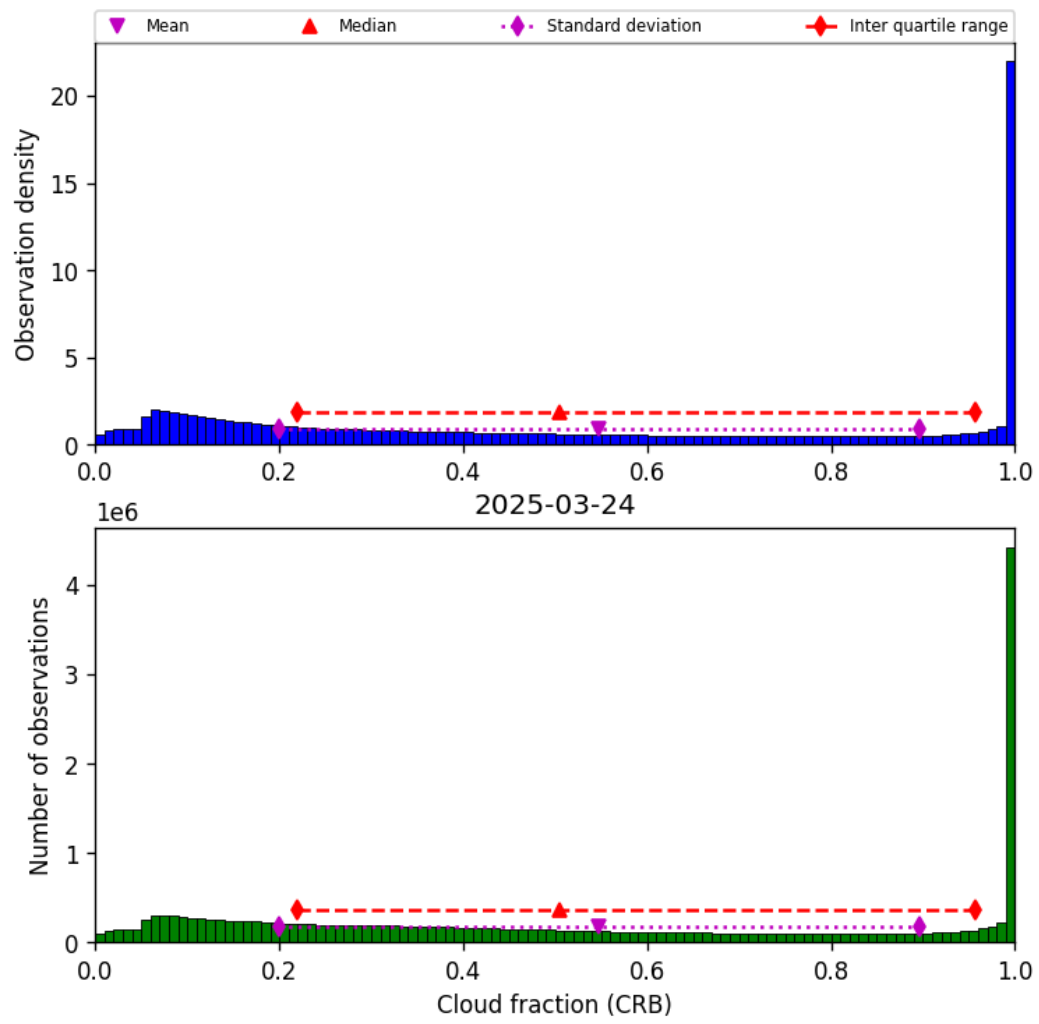


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-03-23 to 2025-03-25

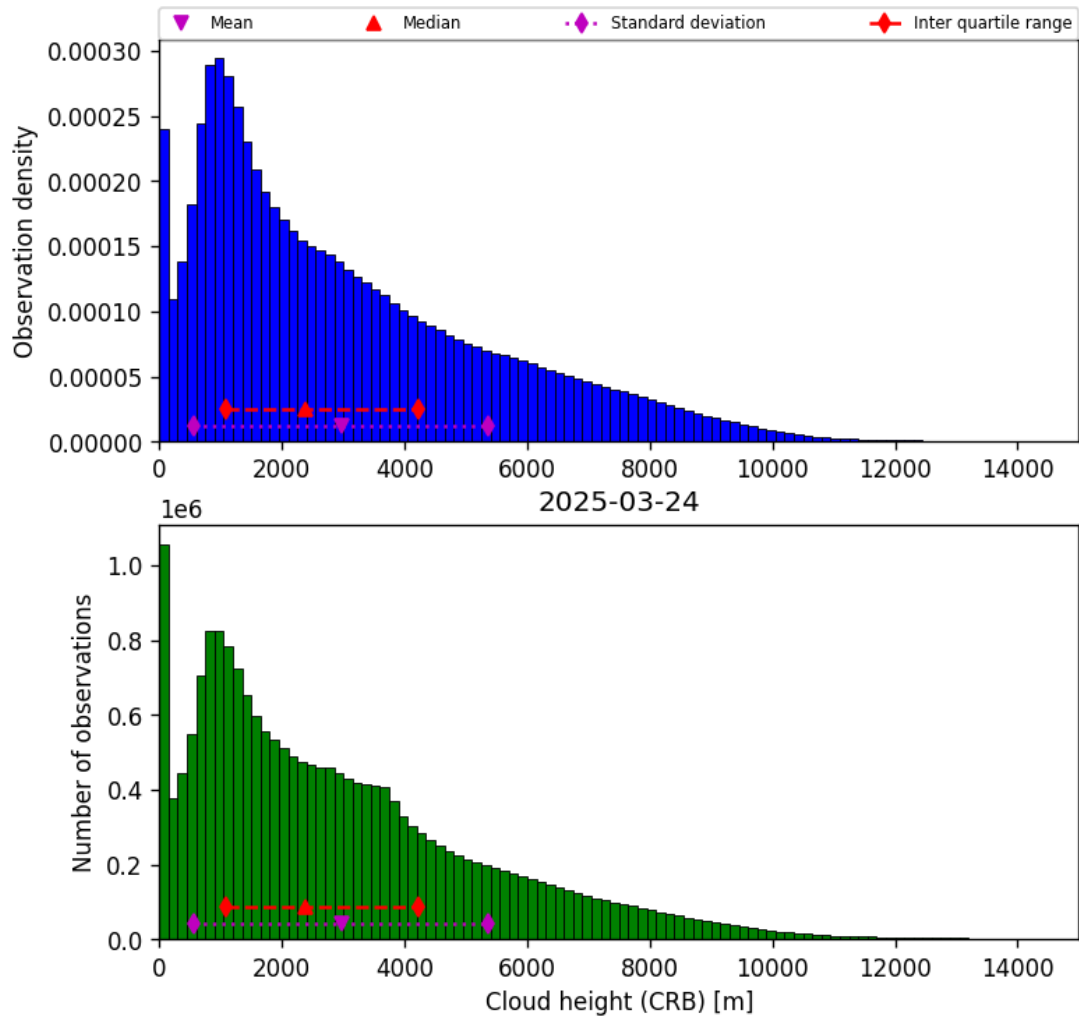


Figure 43: Histogram of “Cloud height (CRB)” for 2025-03-23 to 2025-03-25

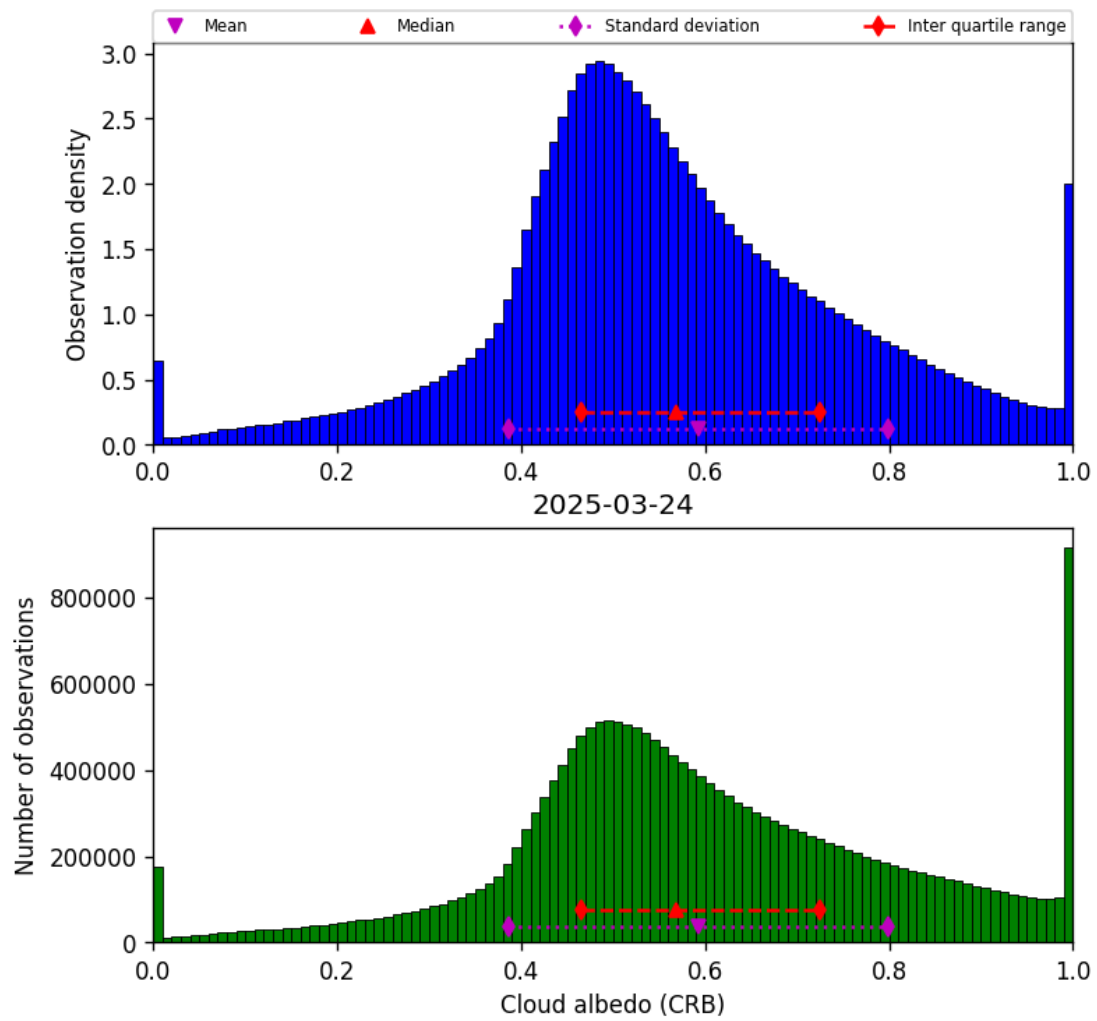


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-03-23 to 2025-03-25

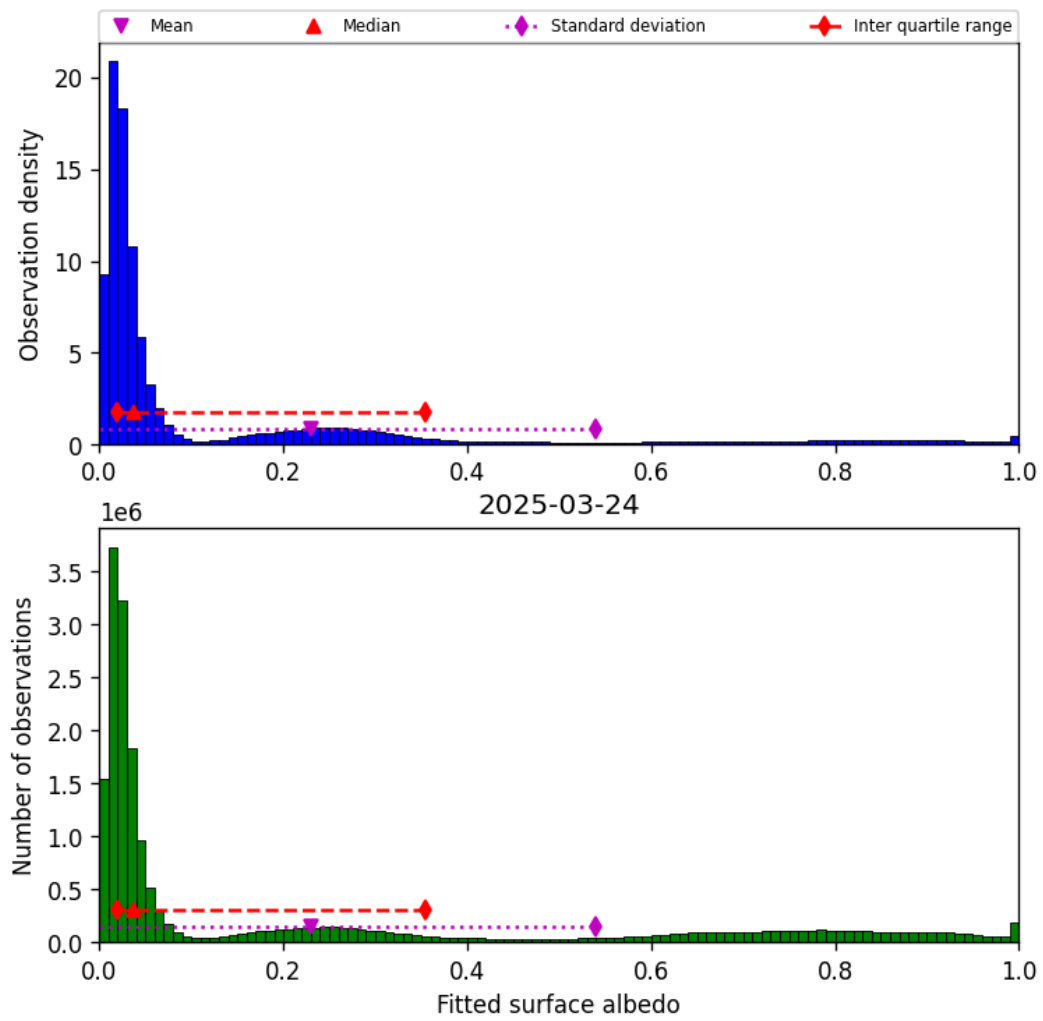


Figure 45: Histogram of “Fitted surface albedo” for 2025-03-23 to 2025-03-25

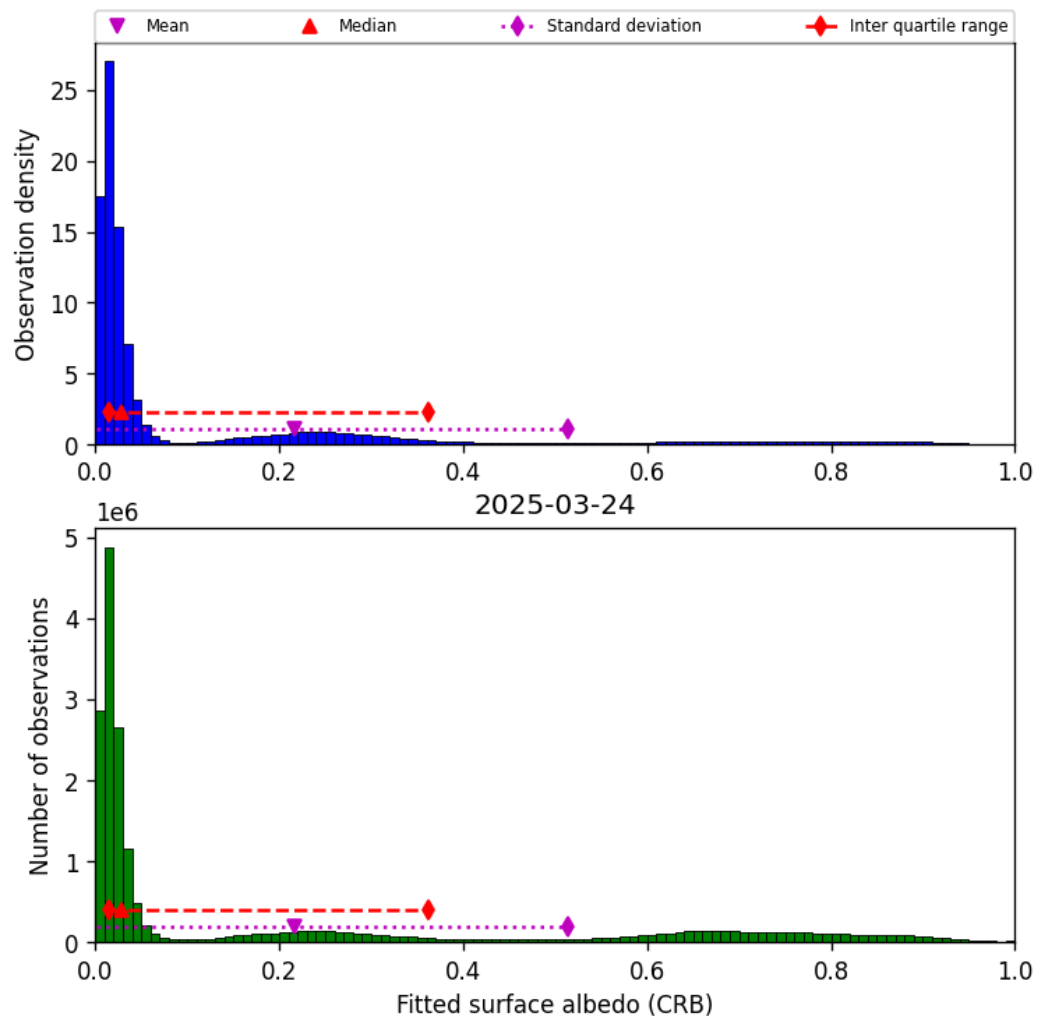


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-03-23 to 2025-03-25

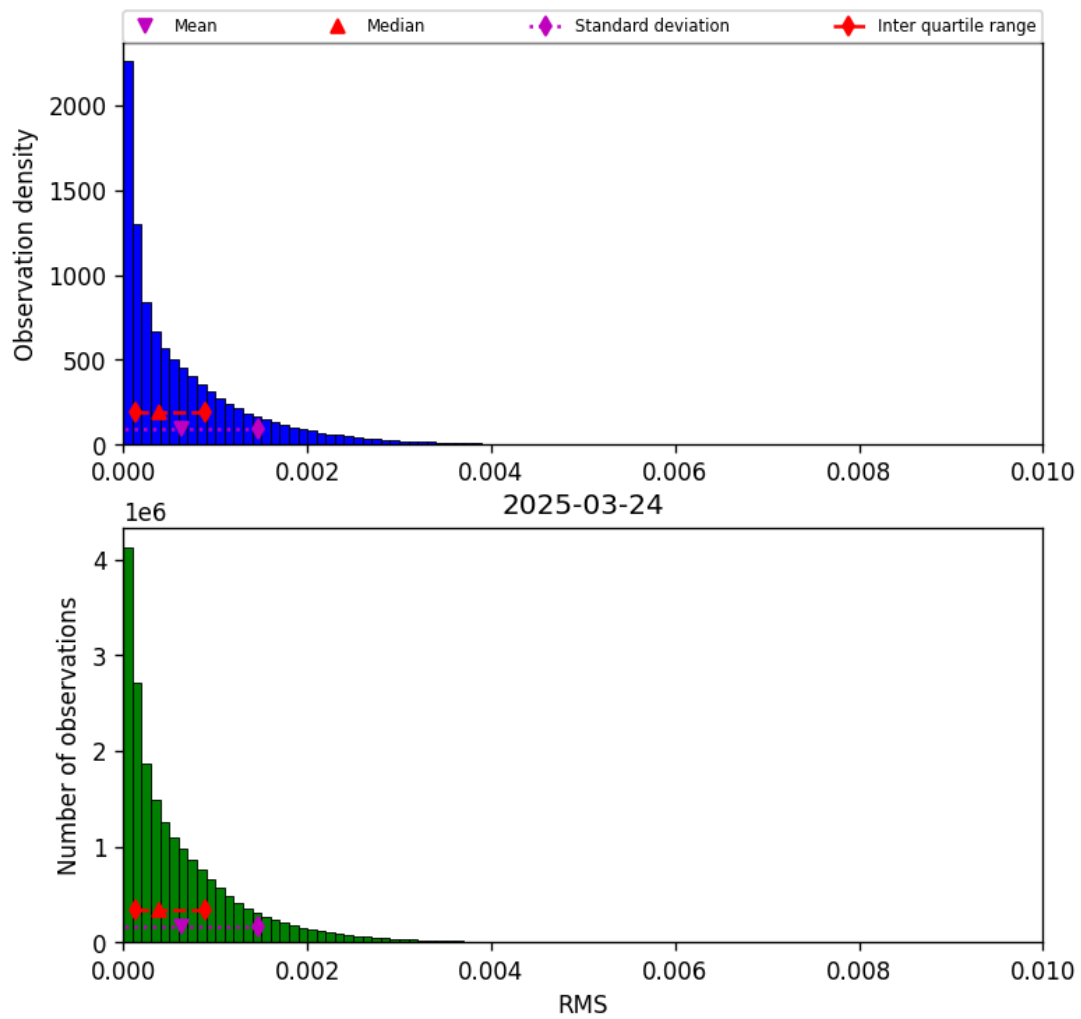


Figure 47: Histogram of “RMS” for 2025-03-23 to 2025-03-25

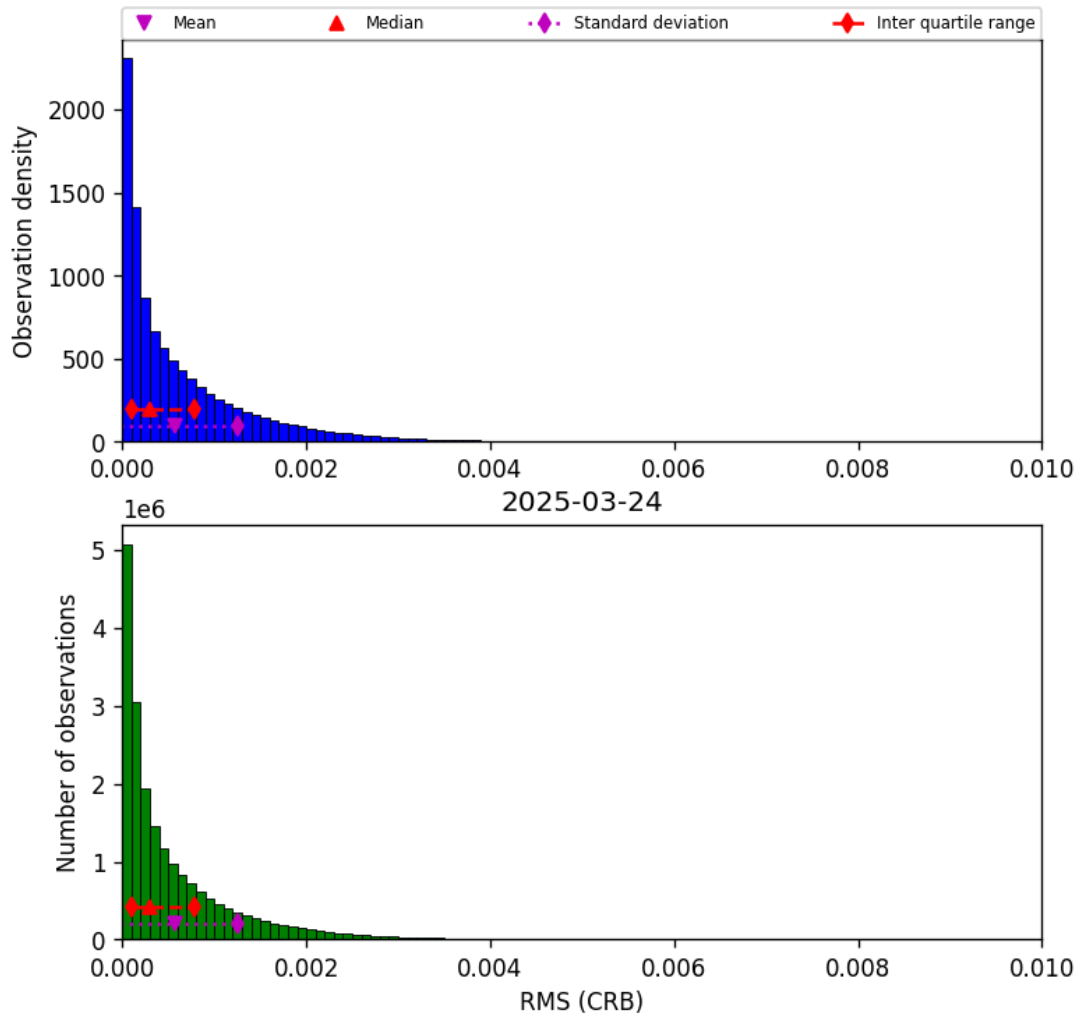


Figure 48: Histogram of “RMS (CRB)” for 2025-03-23 to 2025-03-25

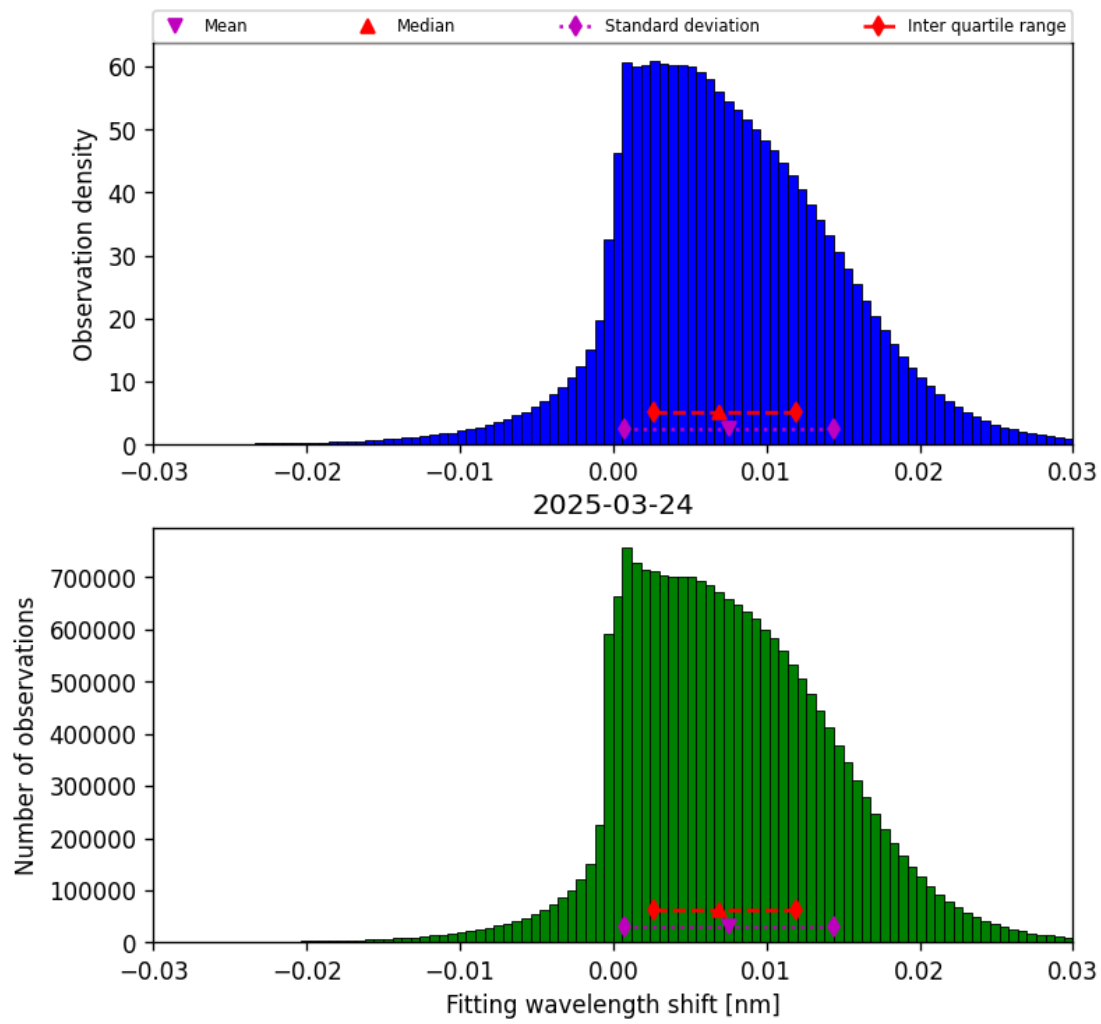


Figure 49: Histogram of “Fitting wavelength shift” for 2025-03-23 to 2025-03-25

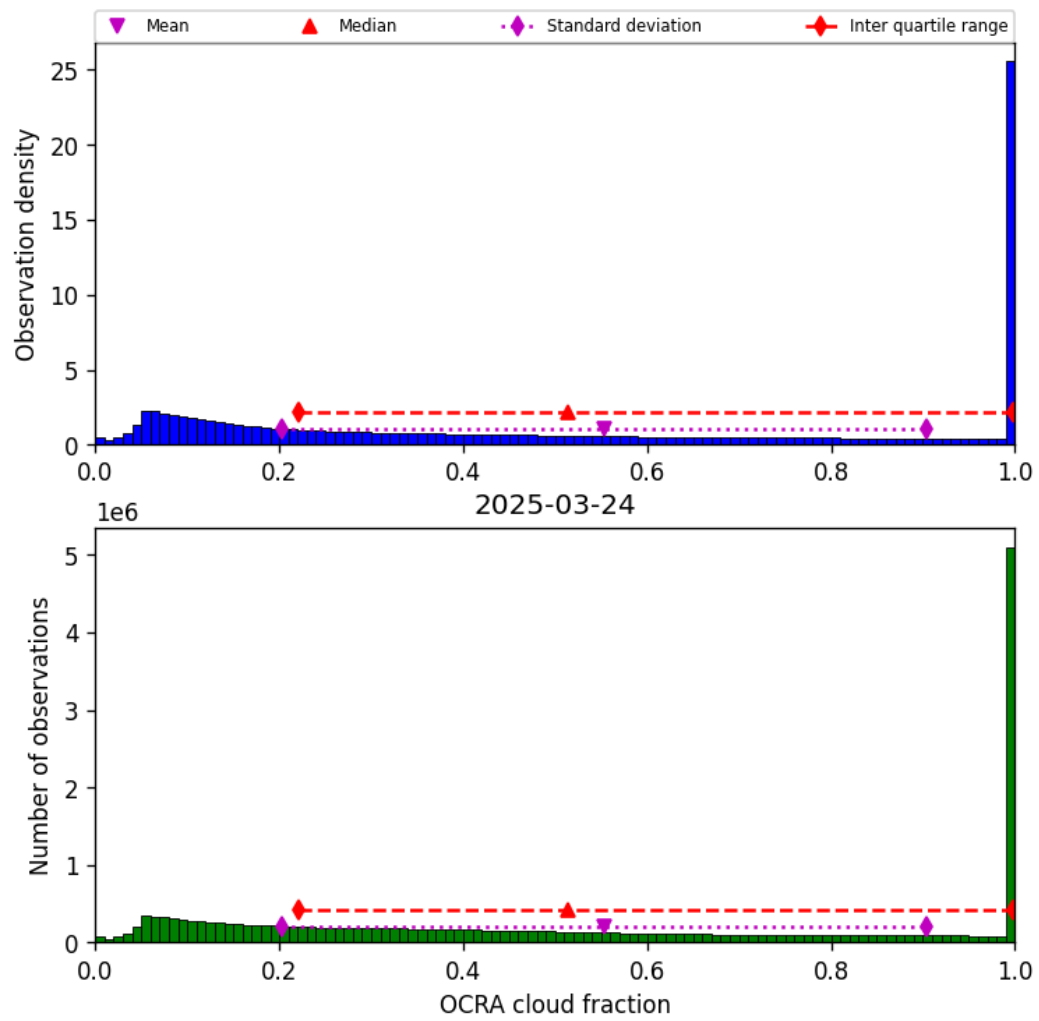


Figure 50: Histogram of “OCRA cloud fraction” for 2025-03-23 to 2025-03-25

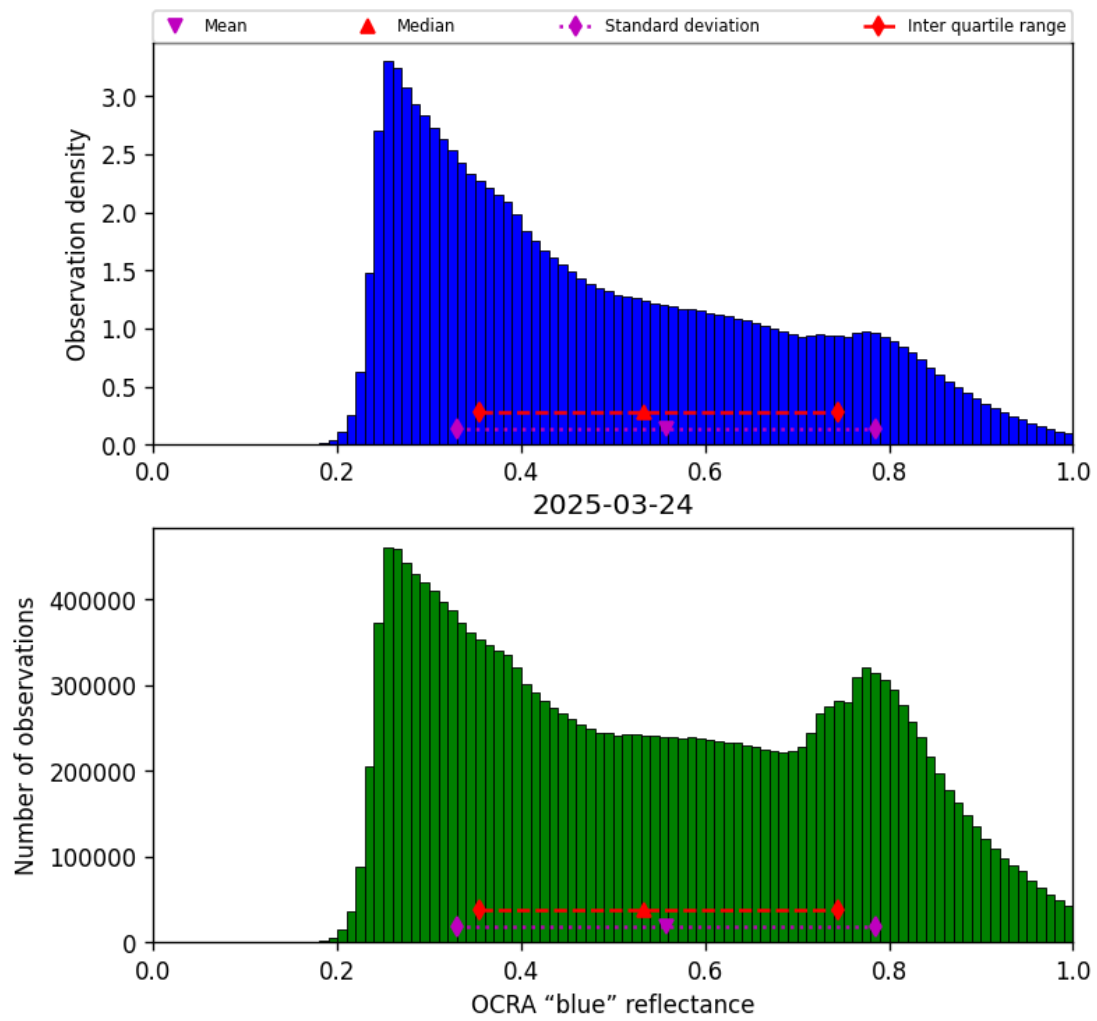


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-03-23 to 2025-03-25

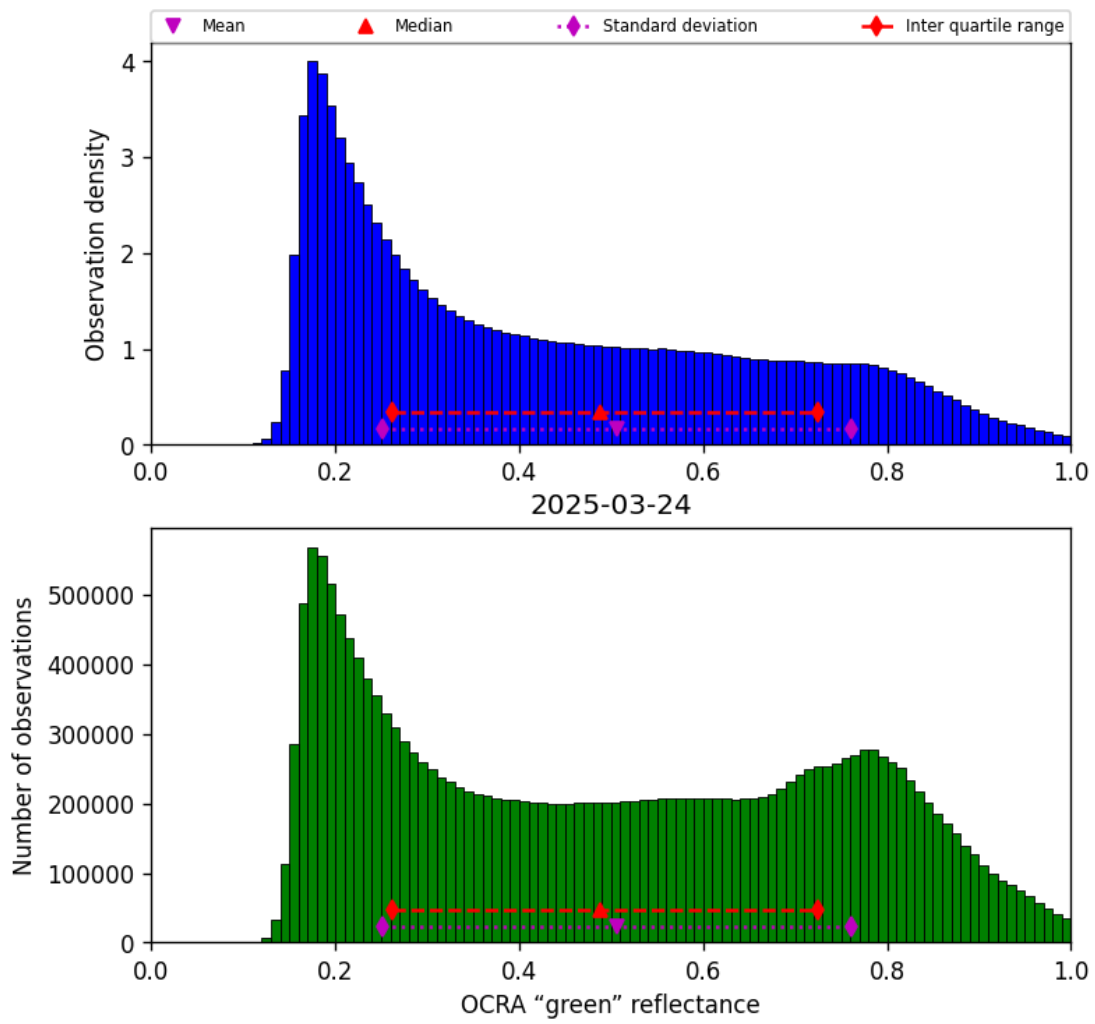


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-03-23 to 2025-03-25

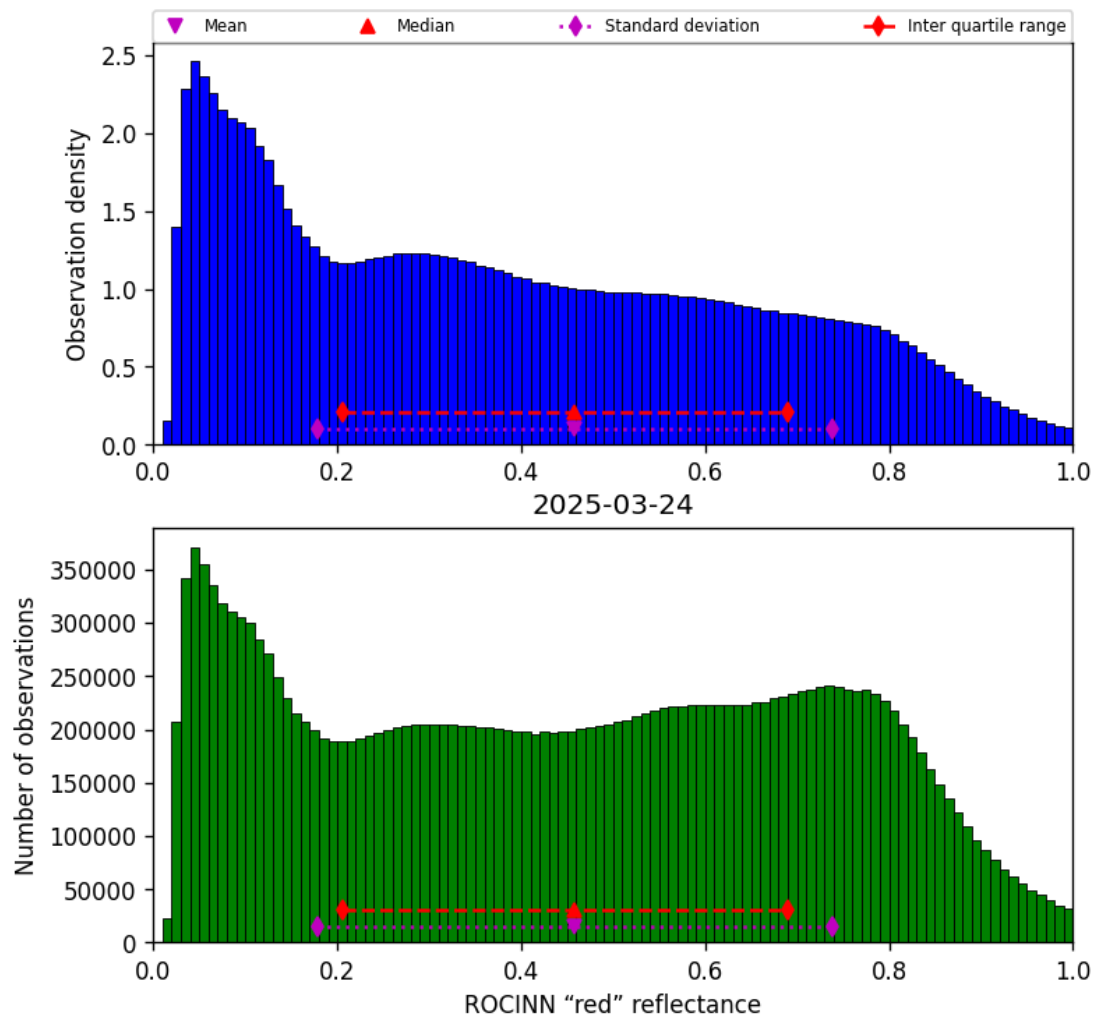


Figure 53: Histogram of "ROCINN "red" reflectance" for 2025-03-23 to 2025-03-25

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.

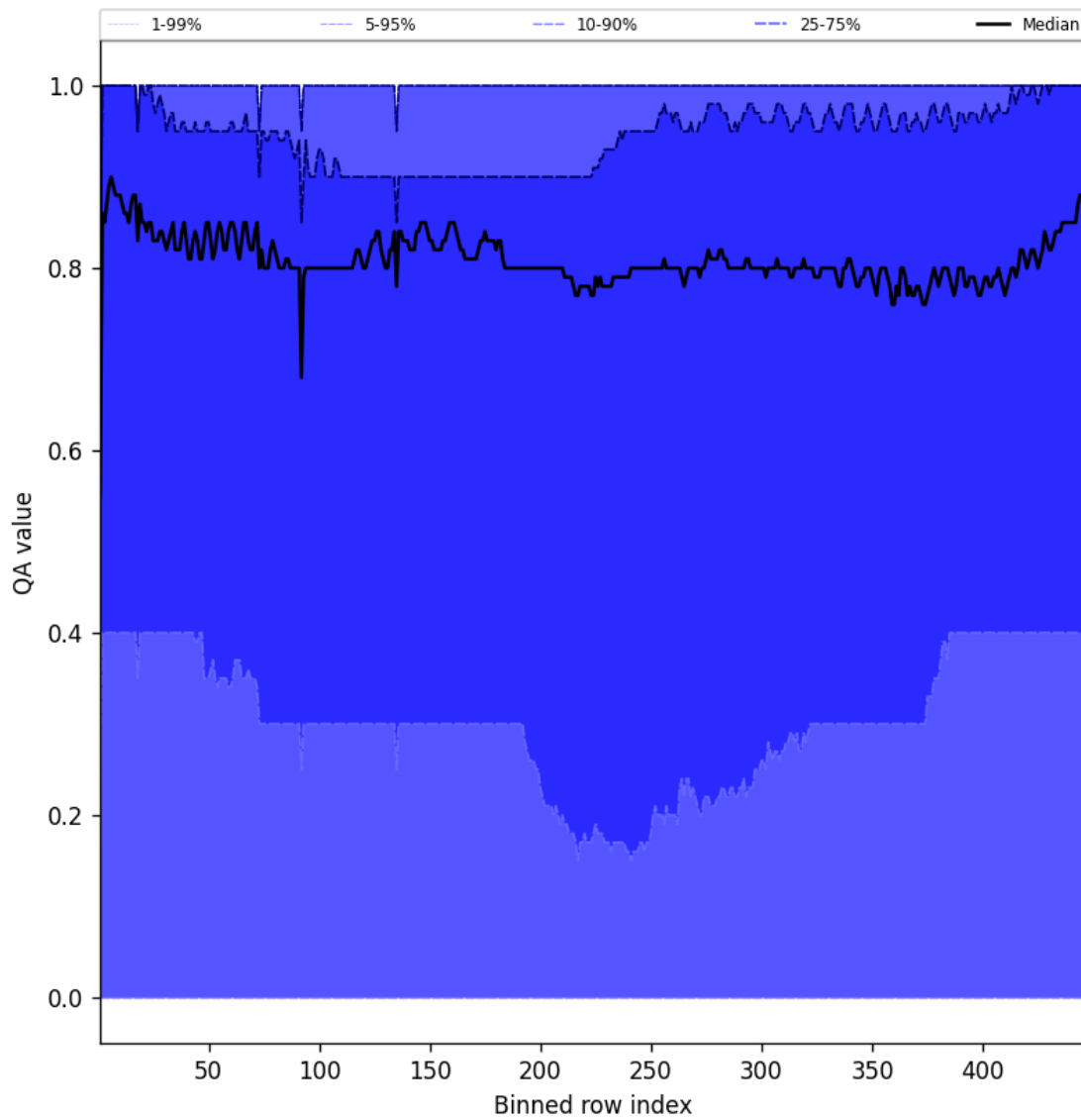


Figure 54: Along track statistics of "QA value" for 2025-03-23 to 2025-03-25

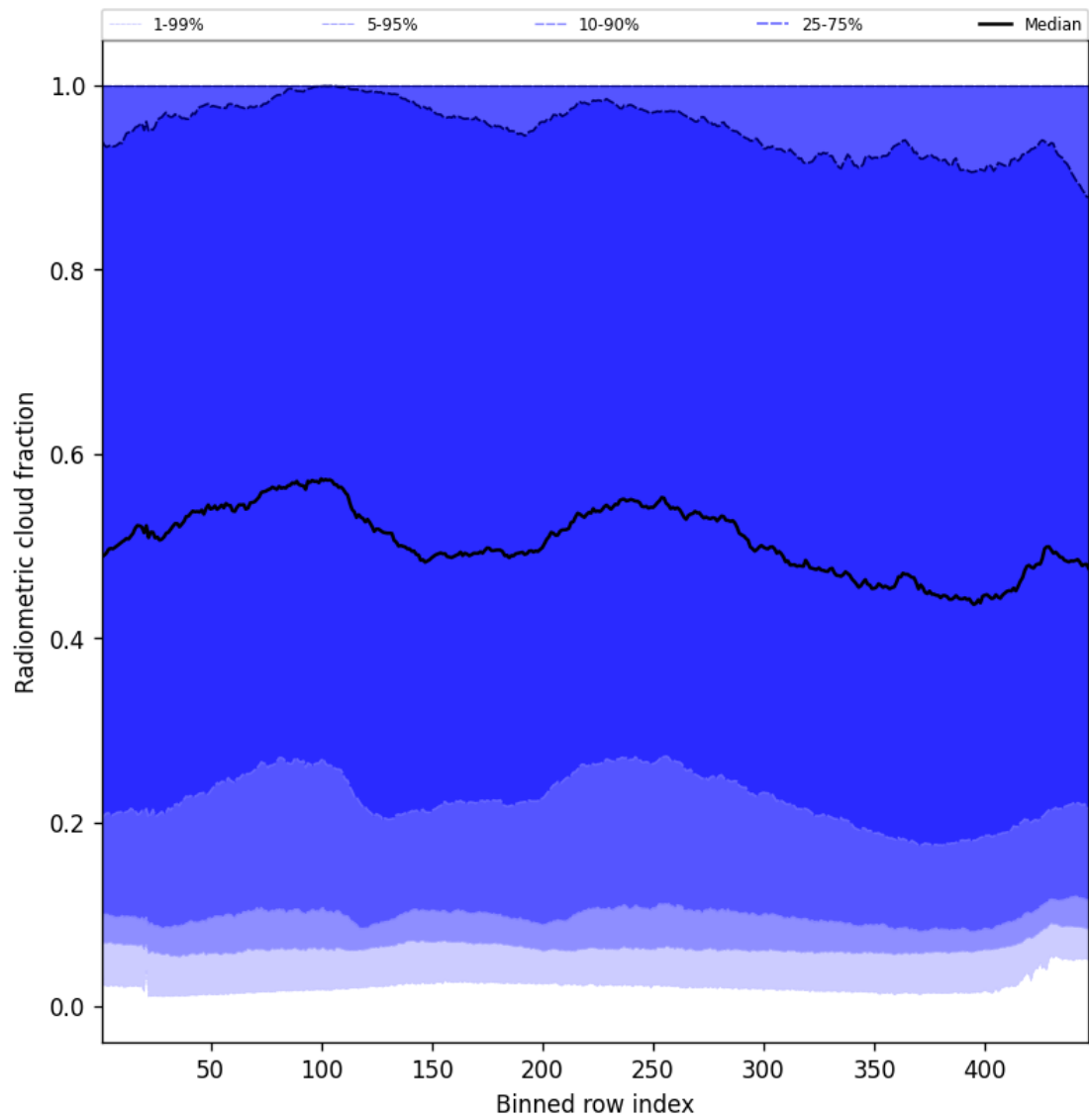


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-03-23 to 2025-03-25

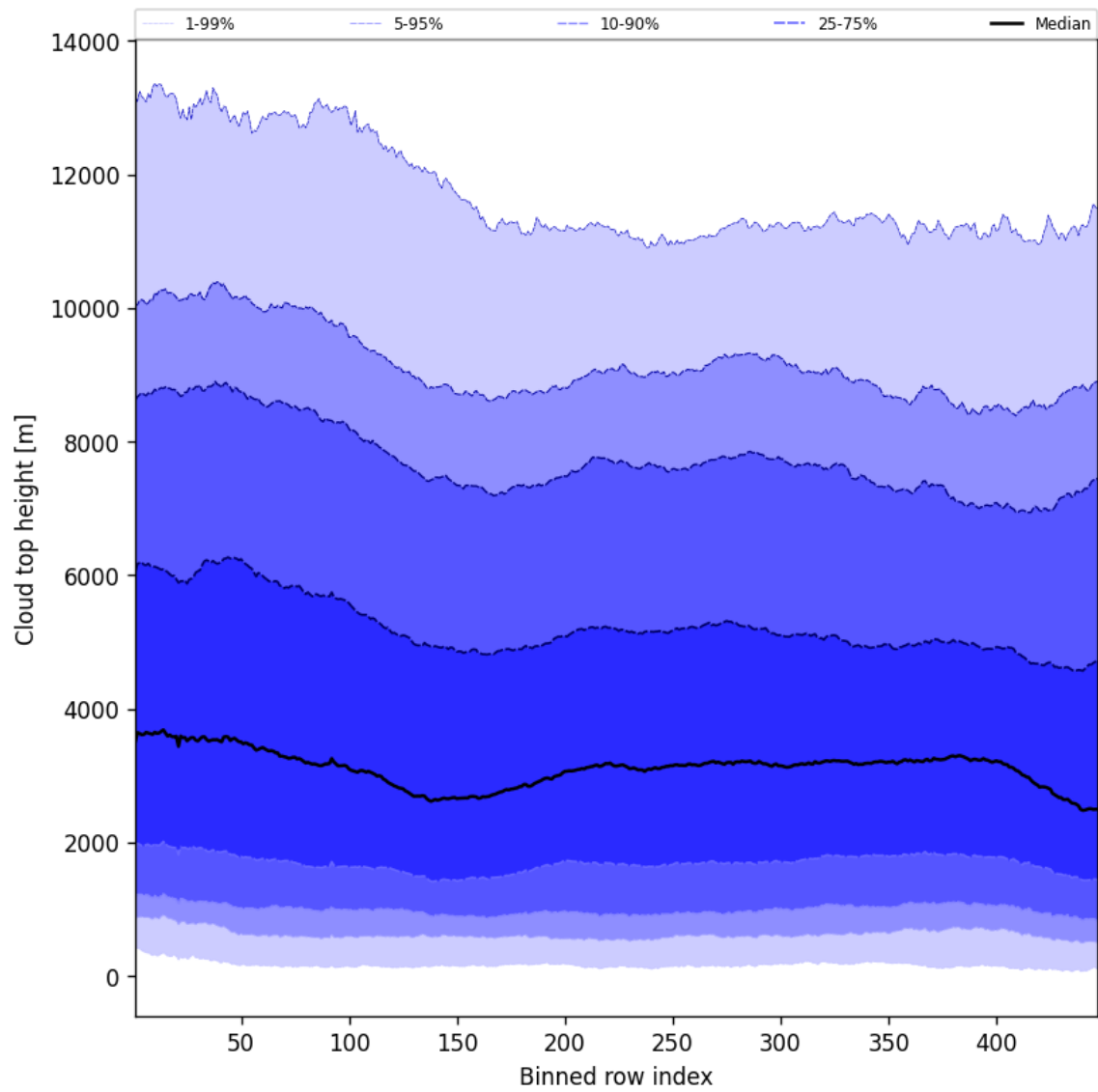


Figure 56: Along track statistics of “Cloud top height” for 2025-03-23 to 2025-03-25

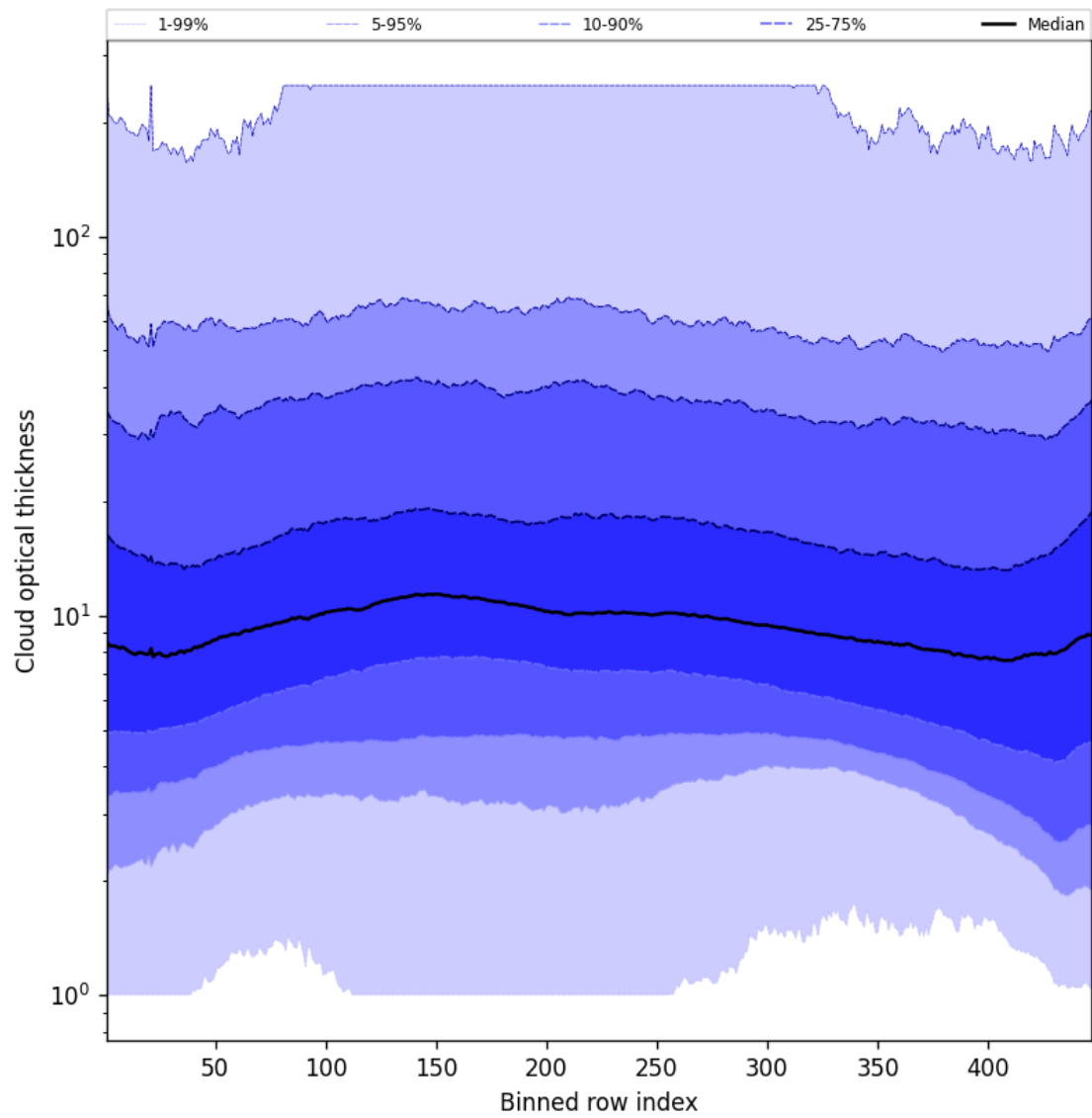


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-03-23 to 2025-03-25

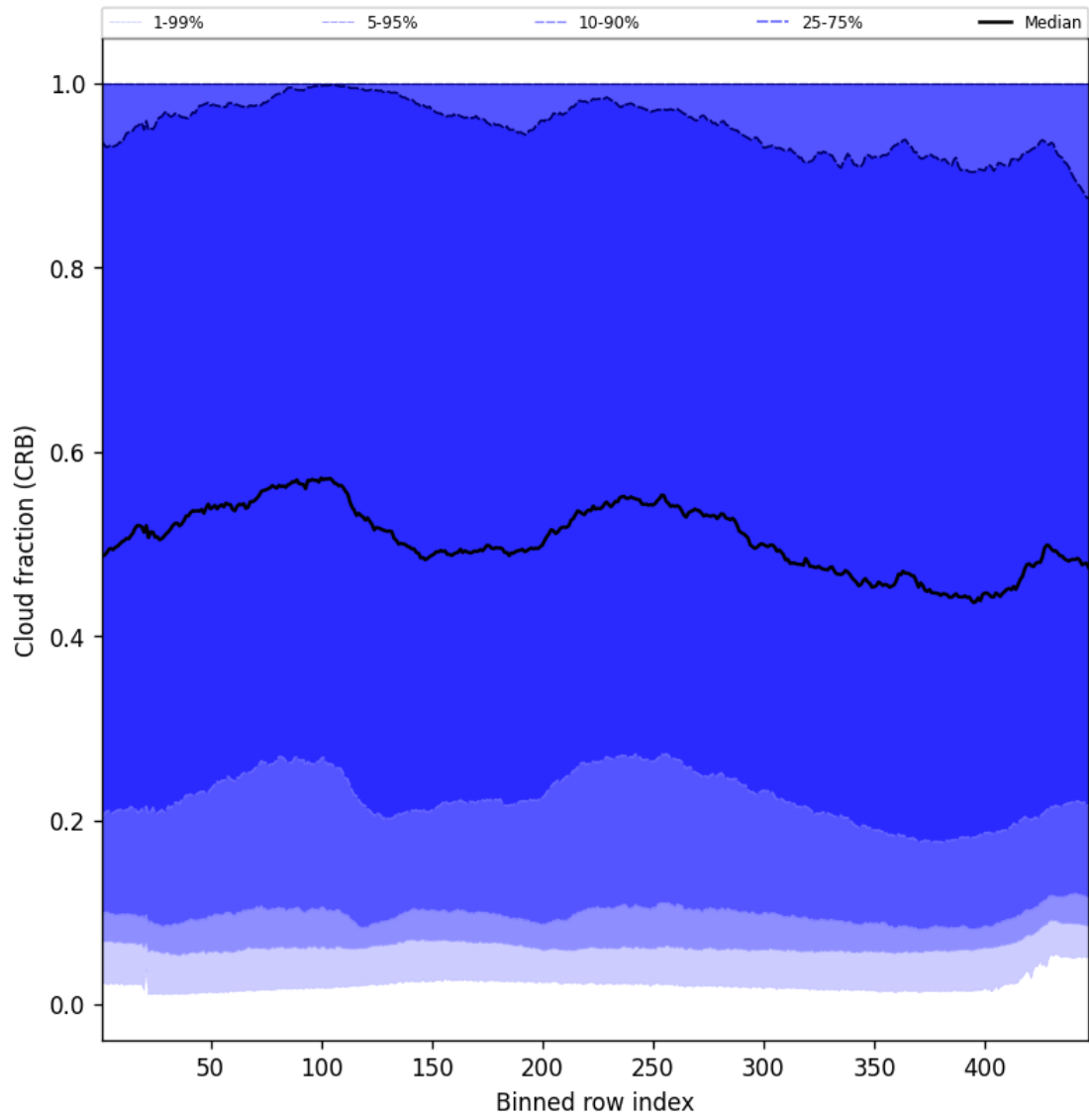


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-03-23 to 2025-03-25

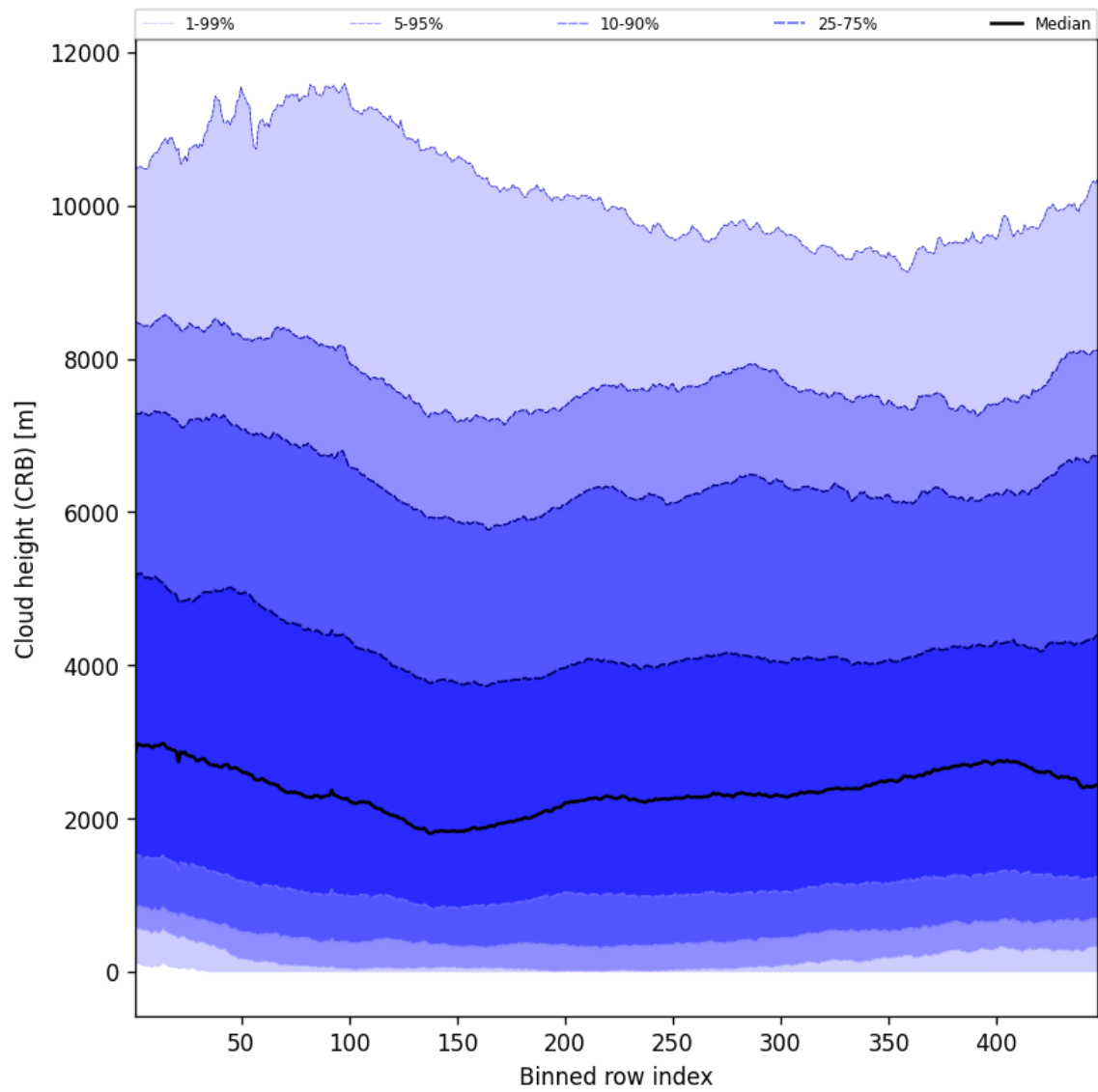


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-03-23 to 2025-03-25

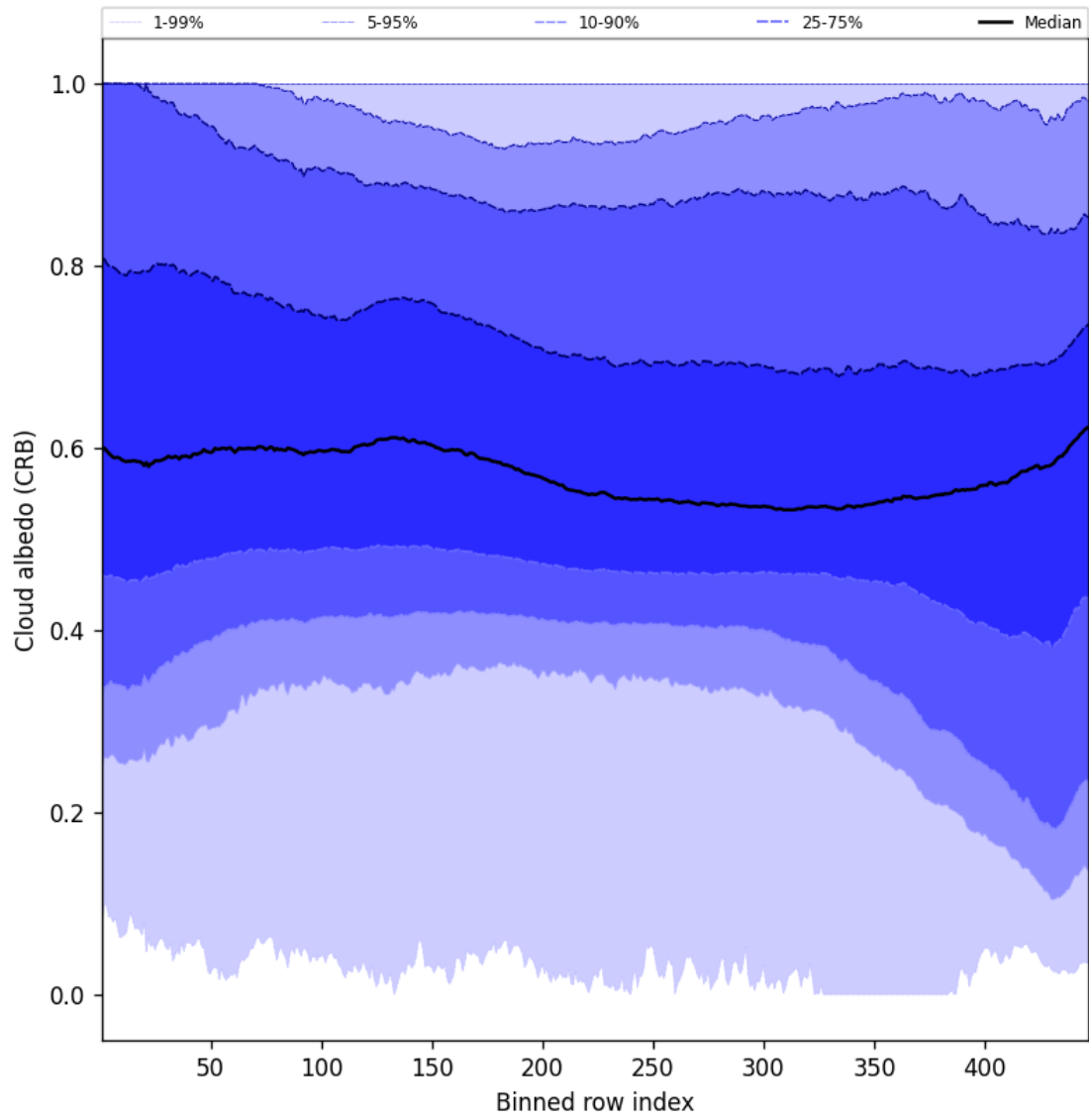


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-03-23 to 2025-03-25

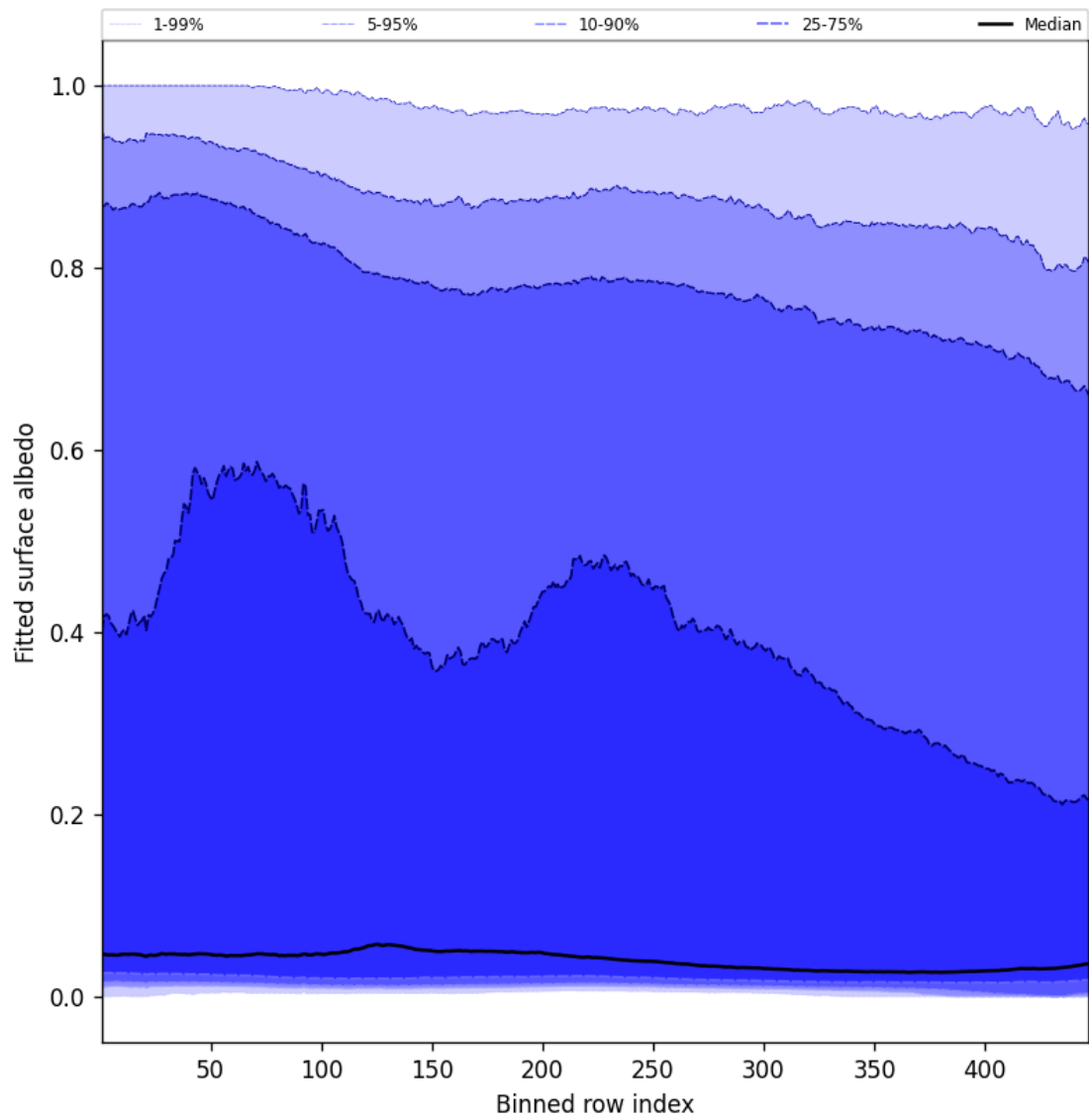


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-03-23 to 2025-03-25

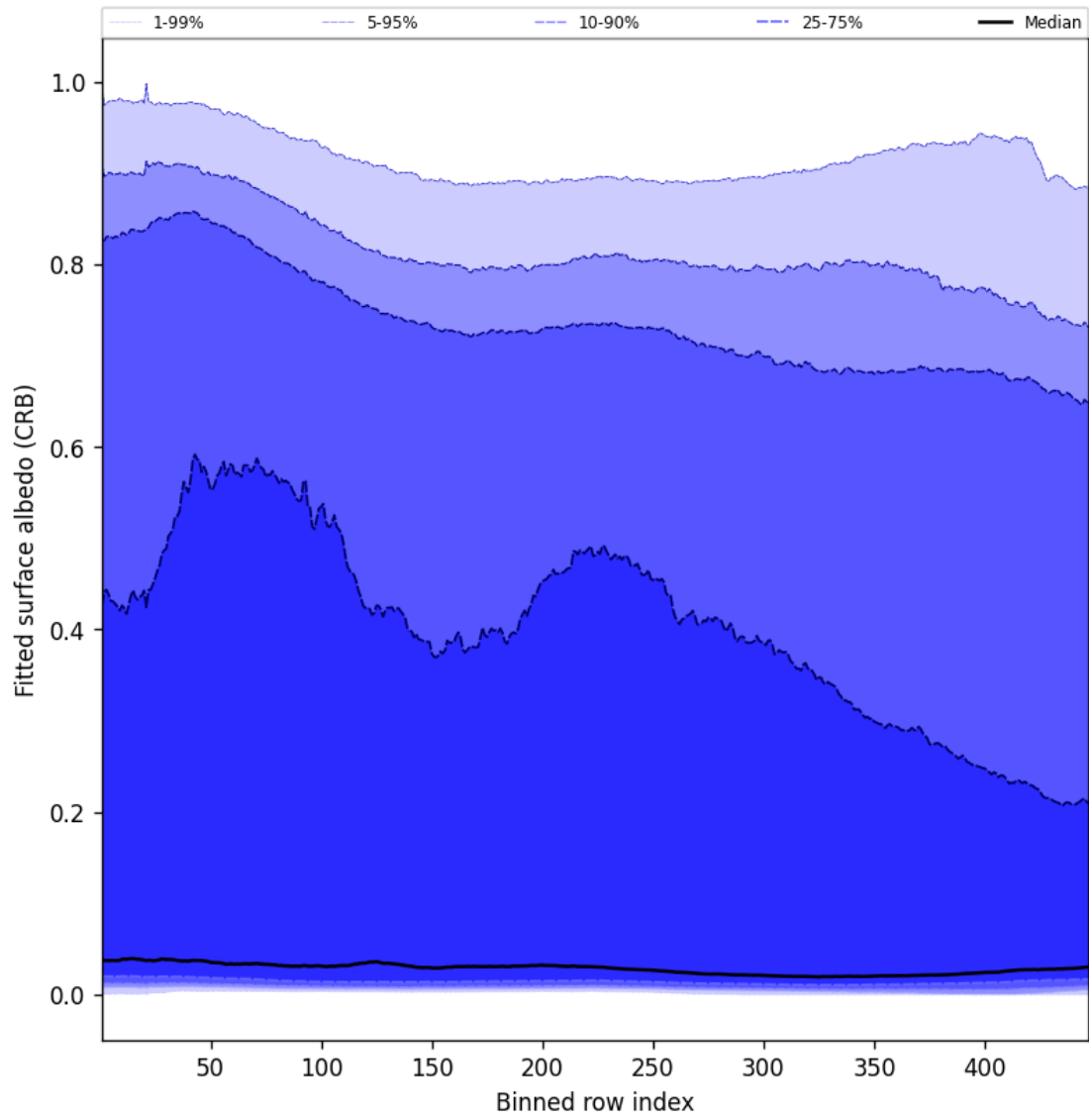


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-03-23 to 2025-03-25

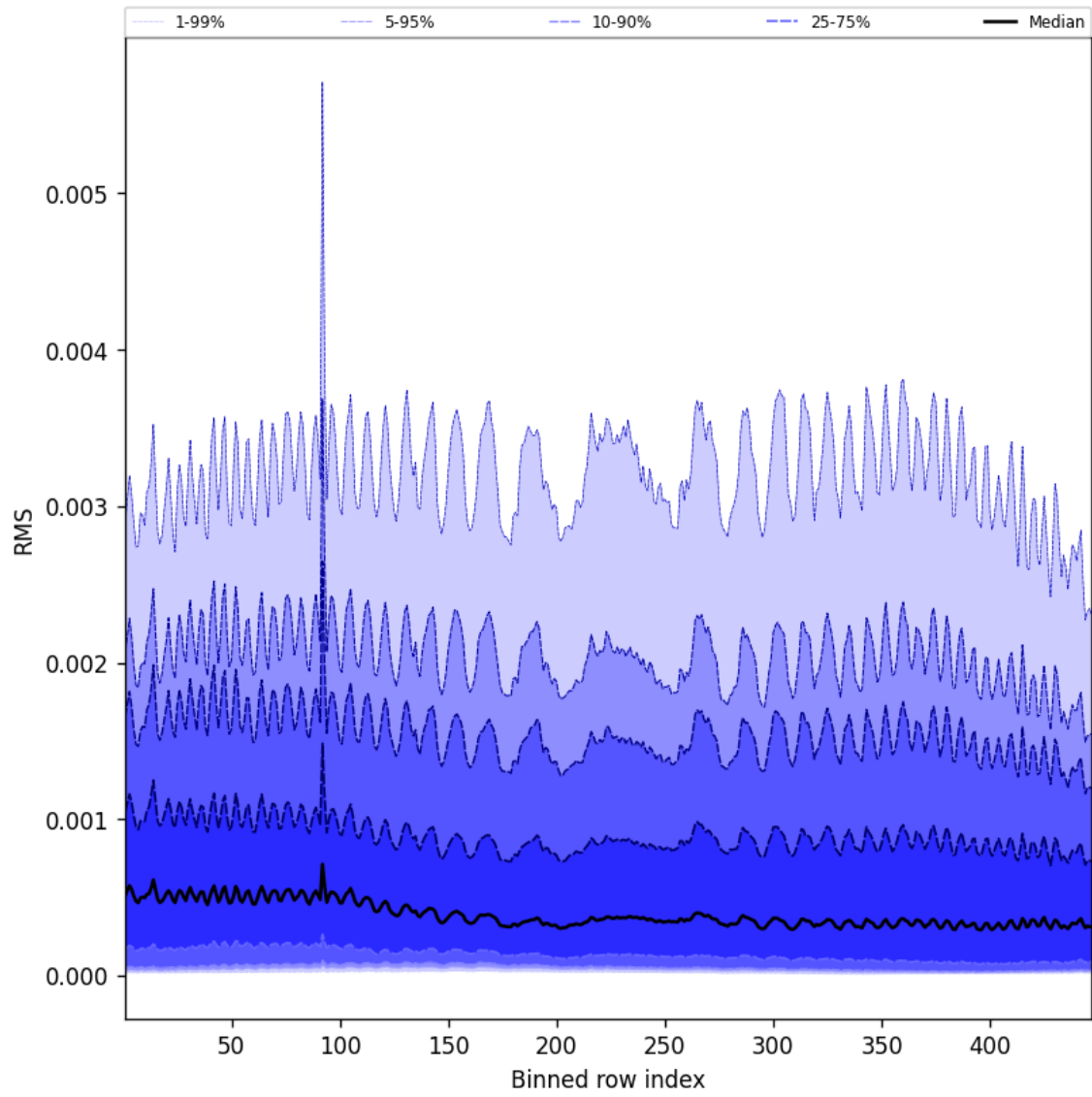


Figure 63: Along track statistics of “RMS” for 2025-03-23 to 2025-03-25

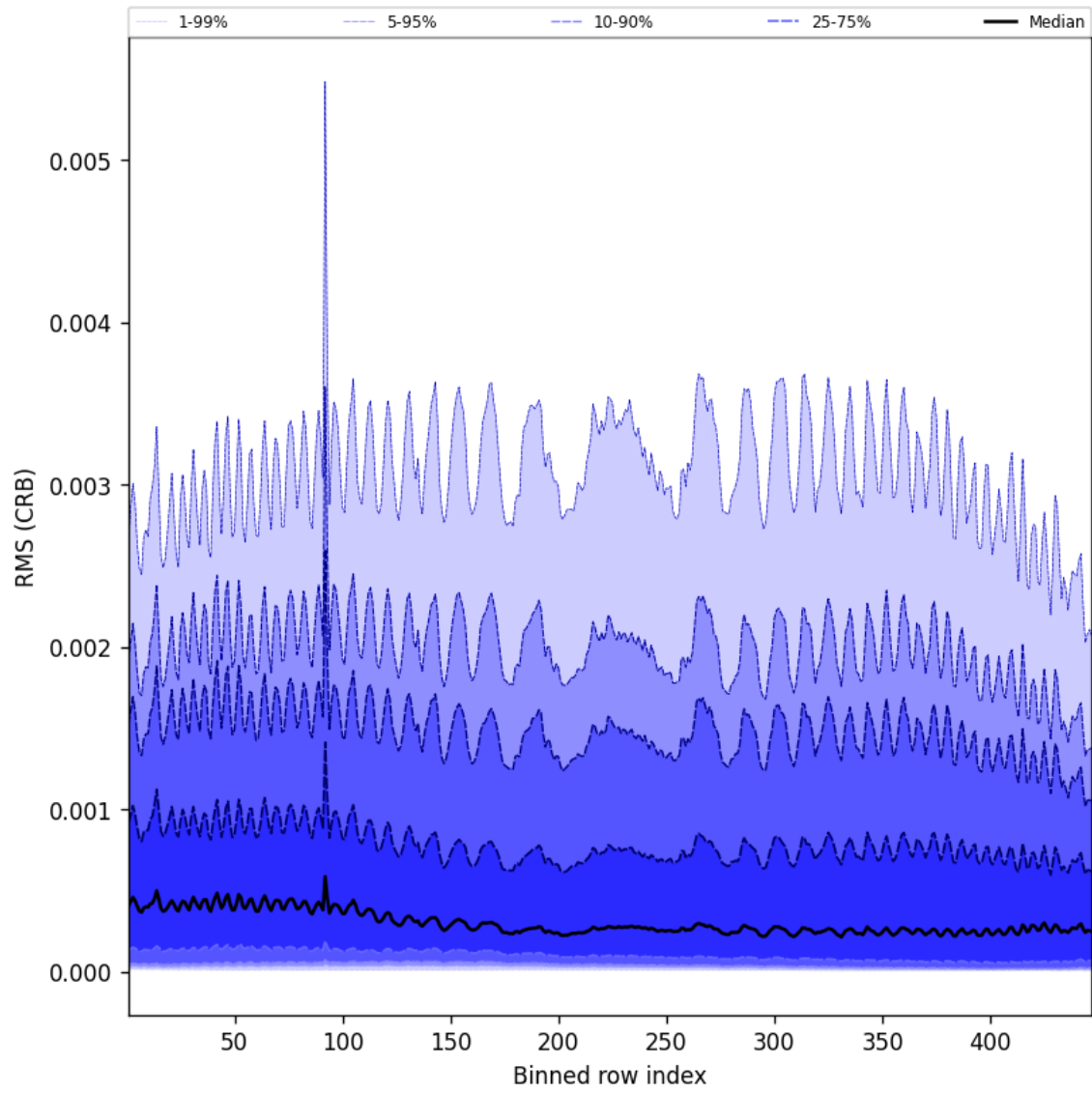


Figure 64: Along track statistics of “RMS (CRB)” for 2025-03-23 to 2025-03-25

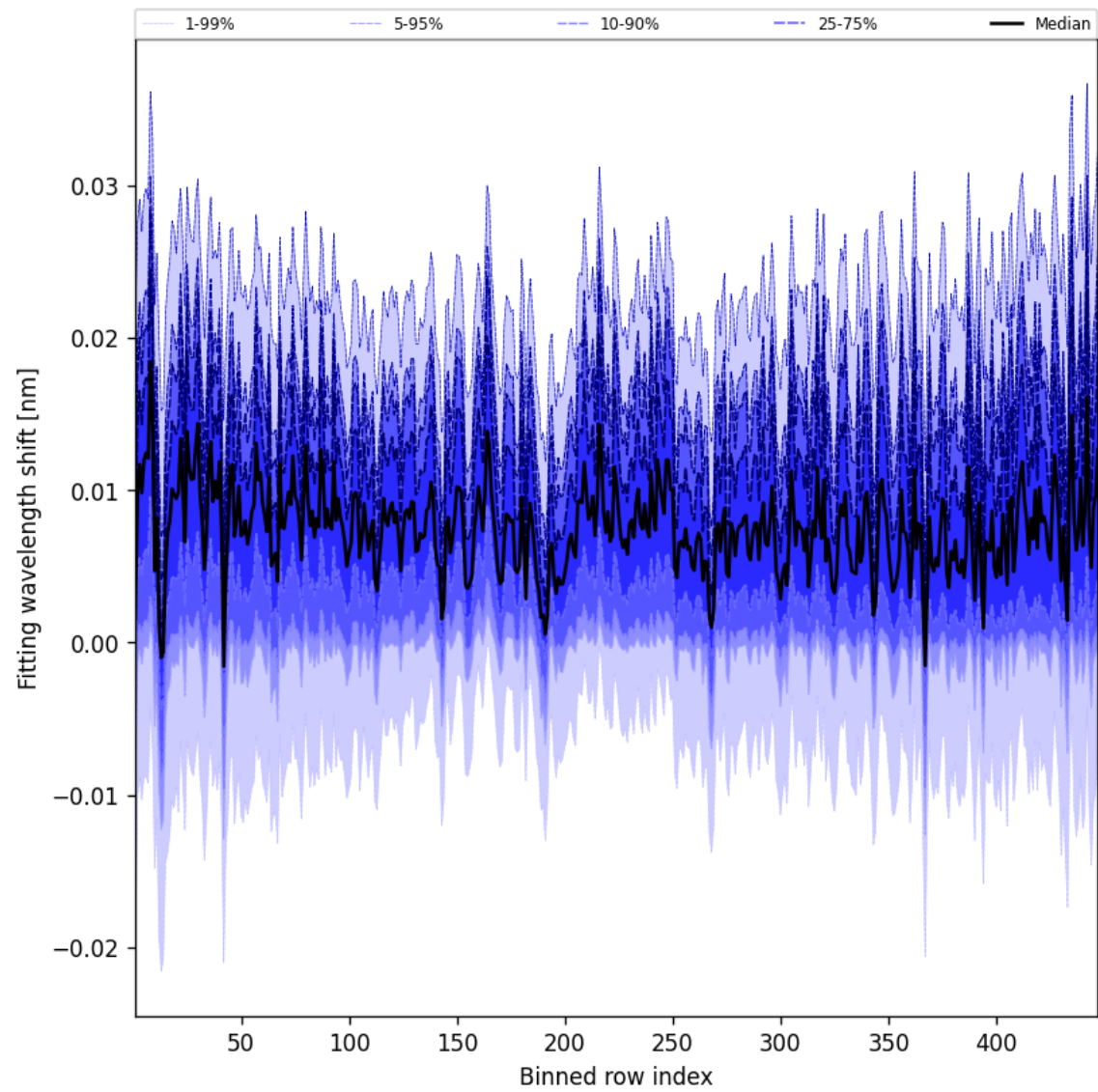


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-03-23 to 2025-03-25

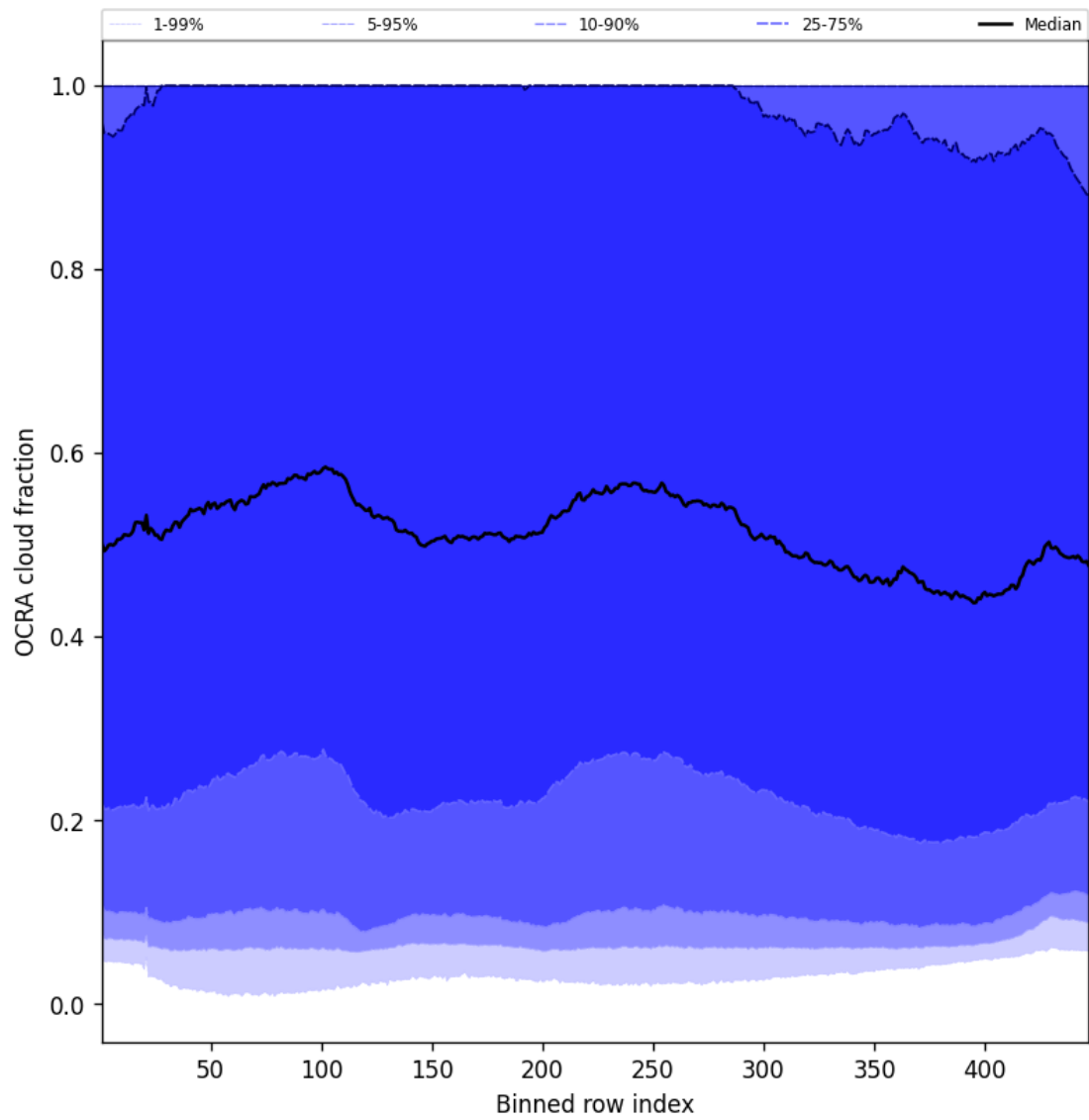


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-03-23 to 2025-03-25

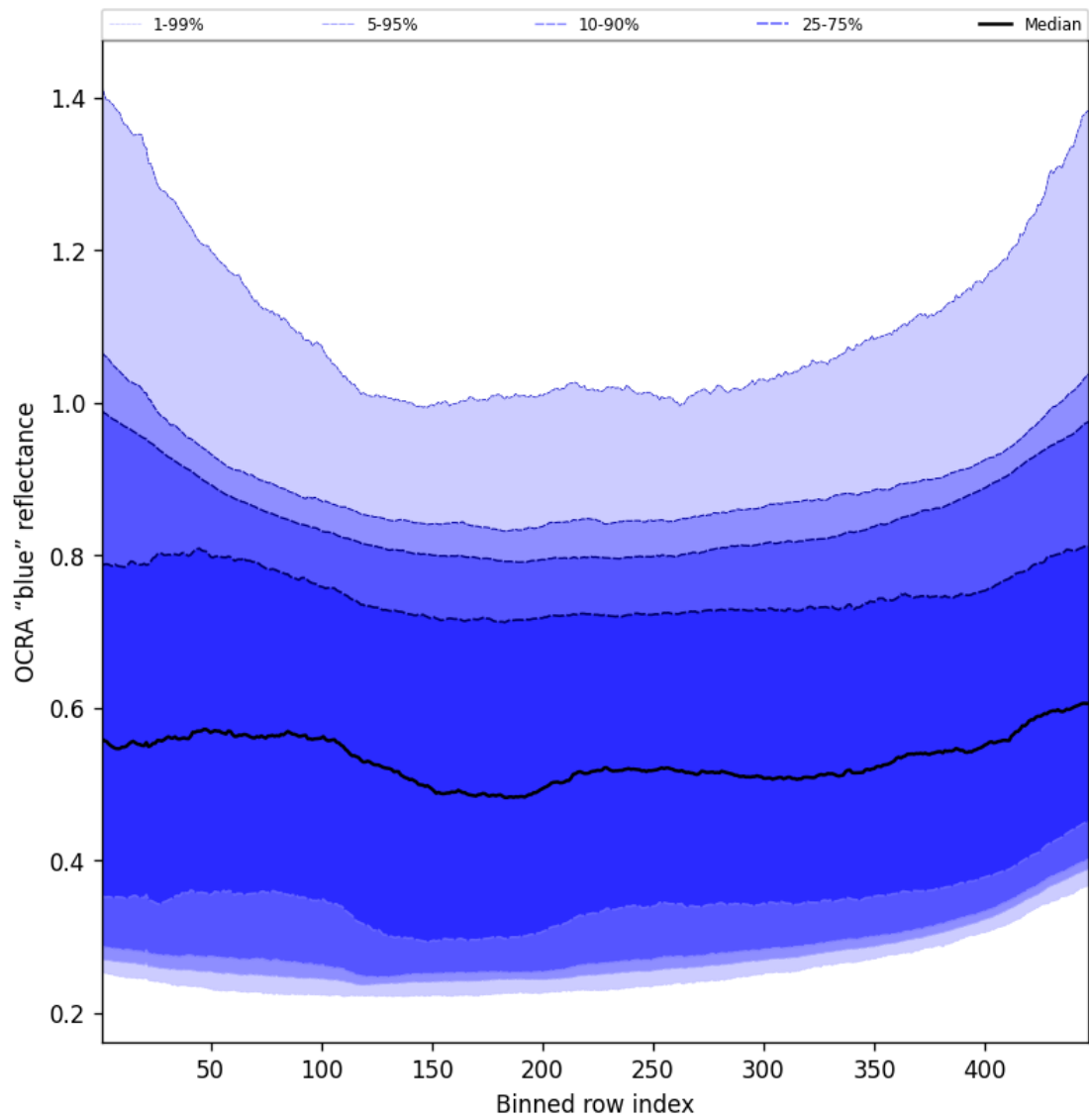


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-03-23 to 2025-03-25

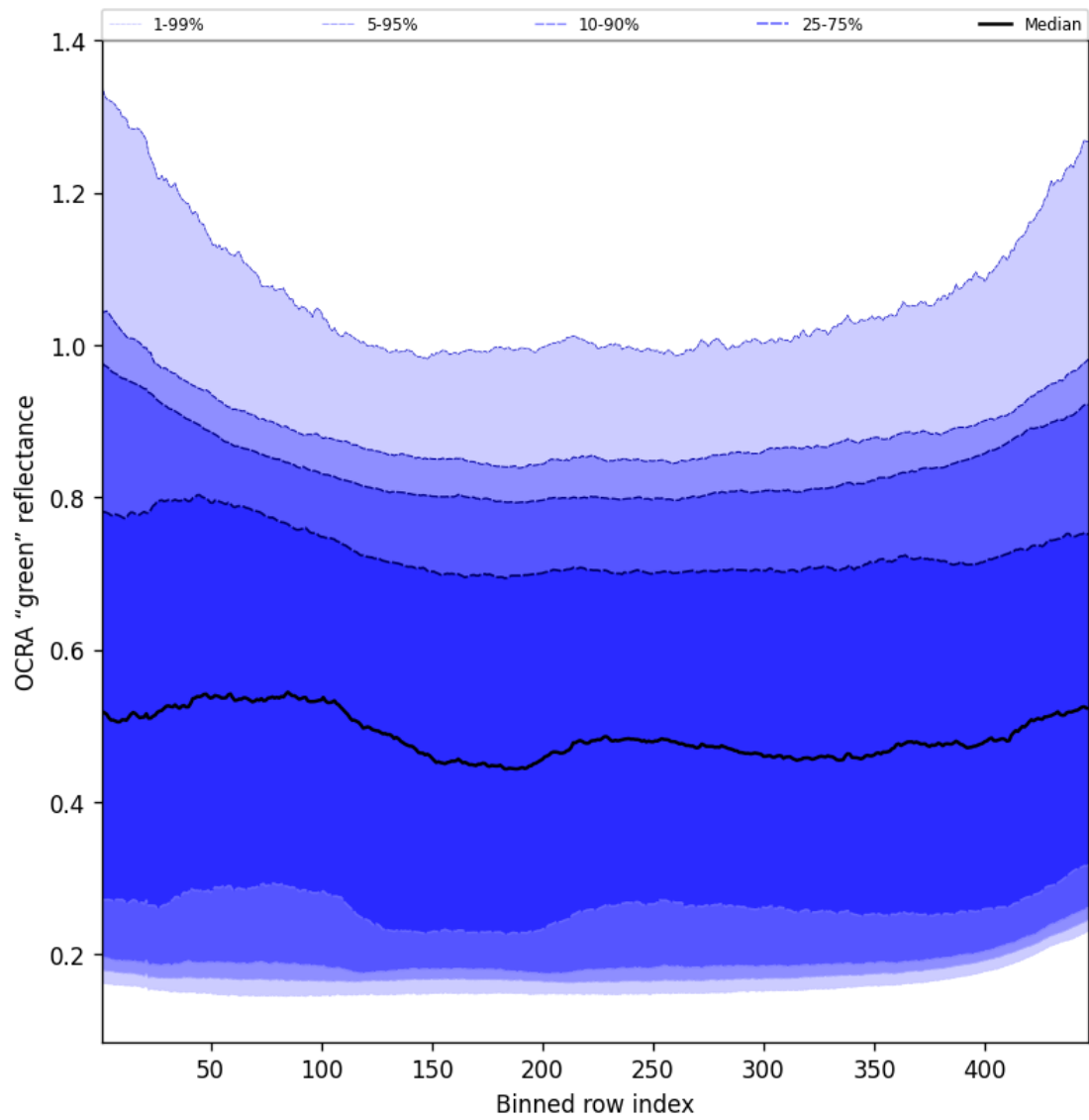


Figure 68: Along track statistics of "OCRA "green" reflectance" for 2025-03-23 to 2025-03-25

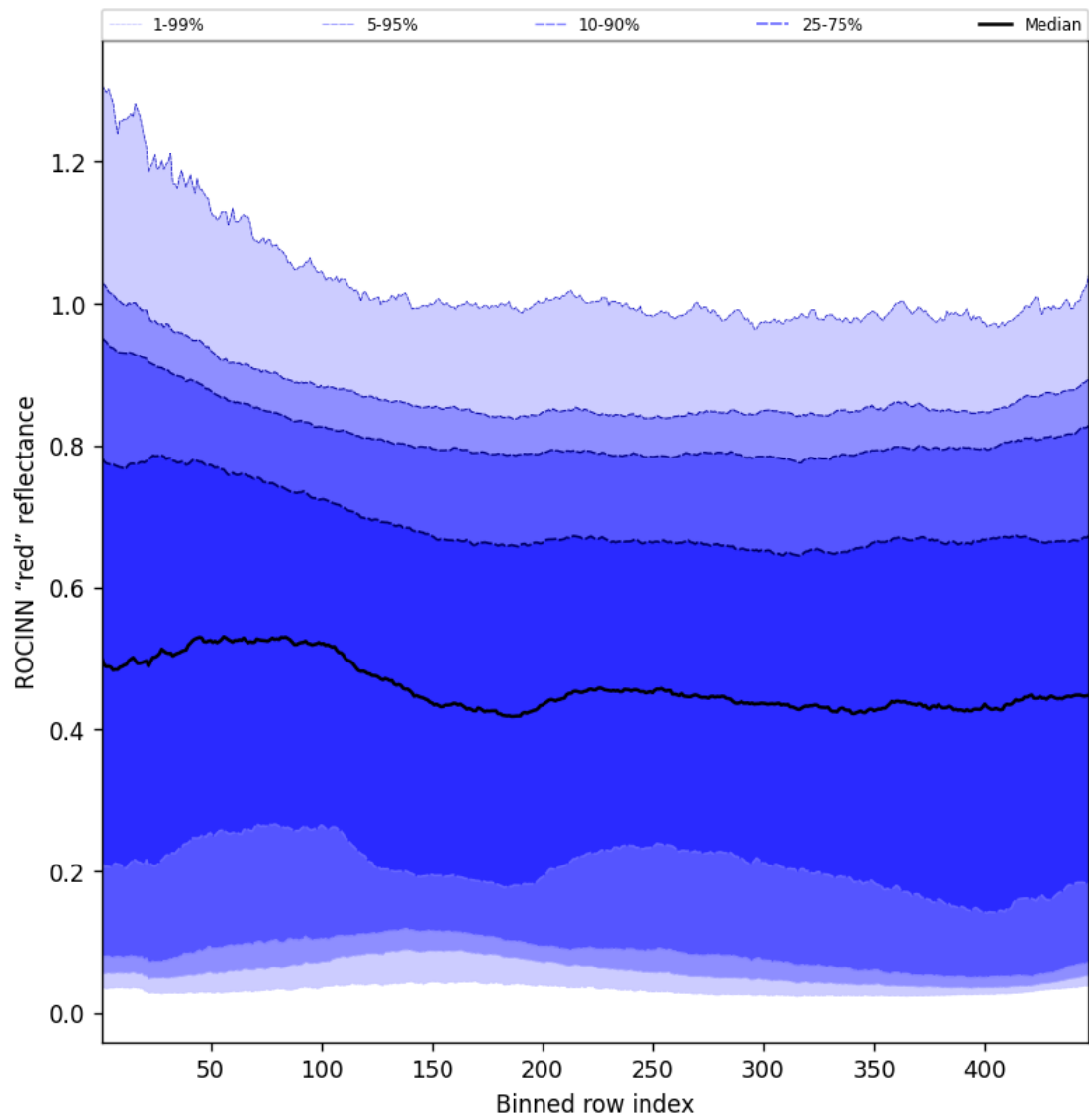


Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2025-03-23 to 2025-03-25

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.

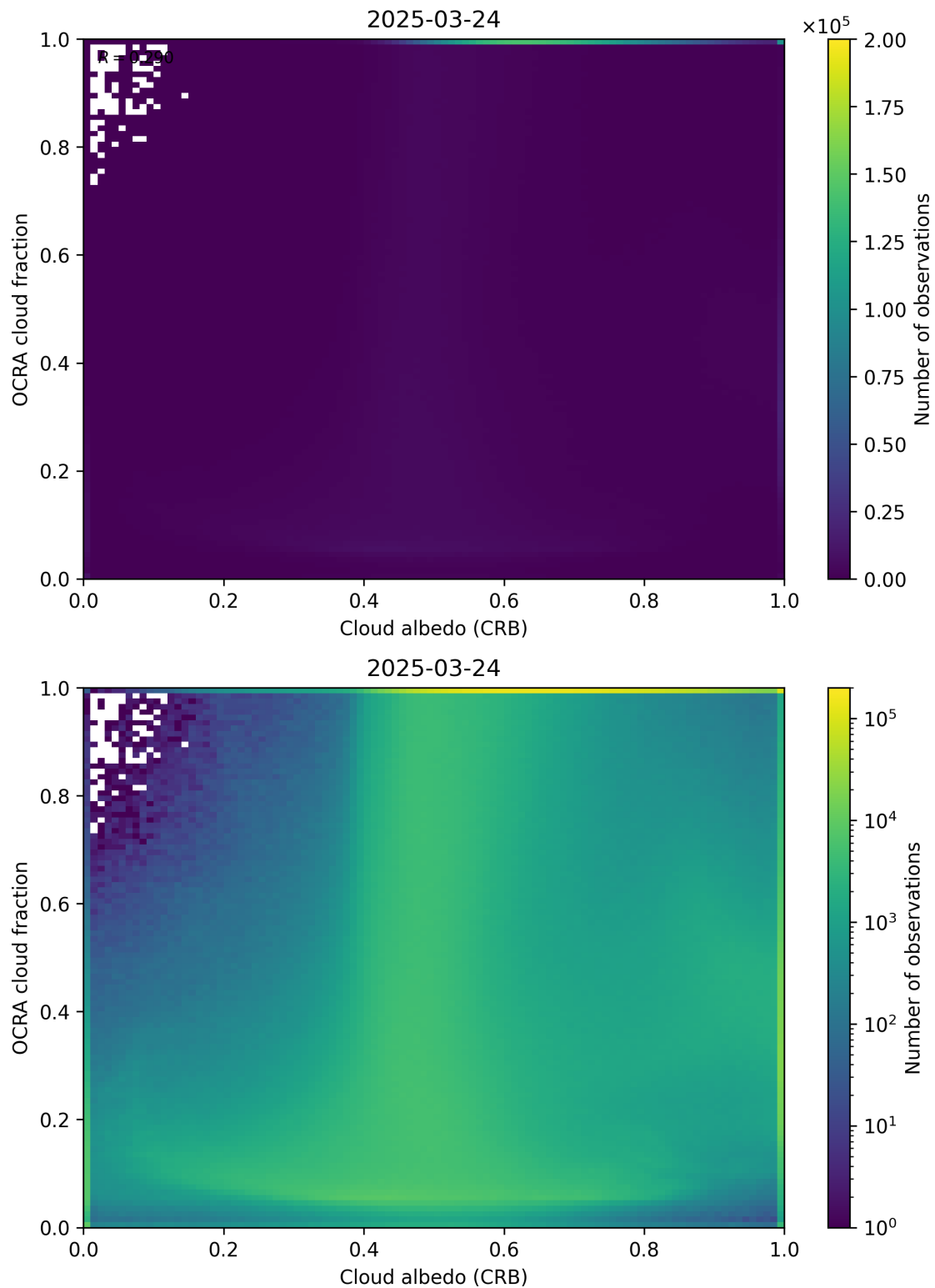


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-03-23 to 2025-03-25.

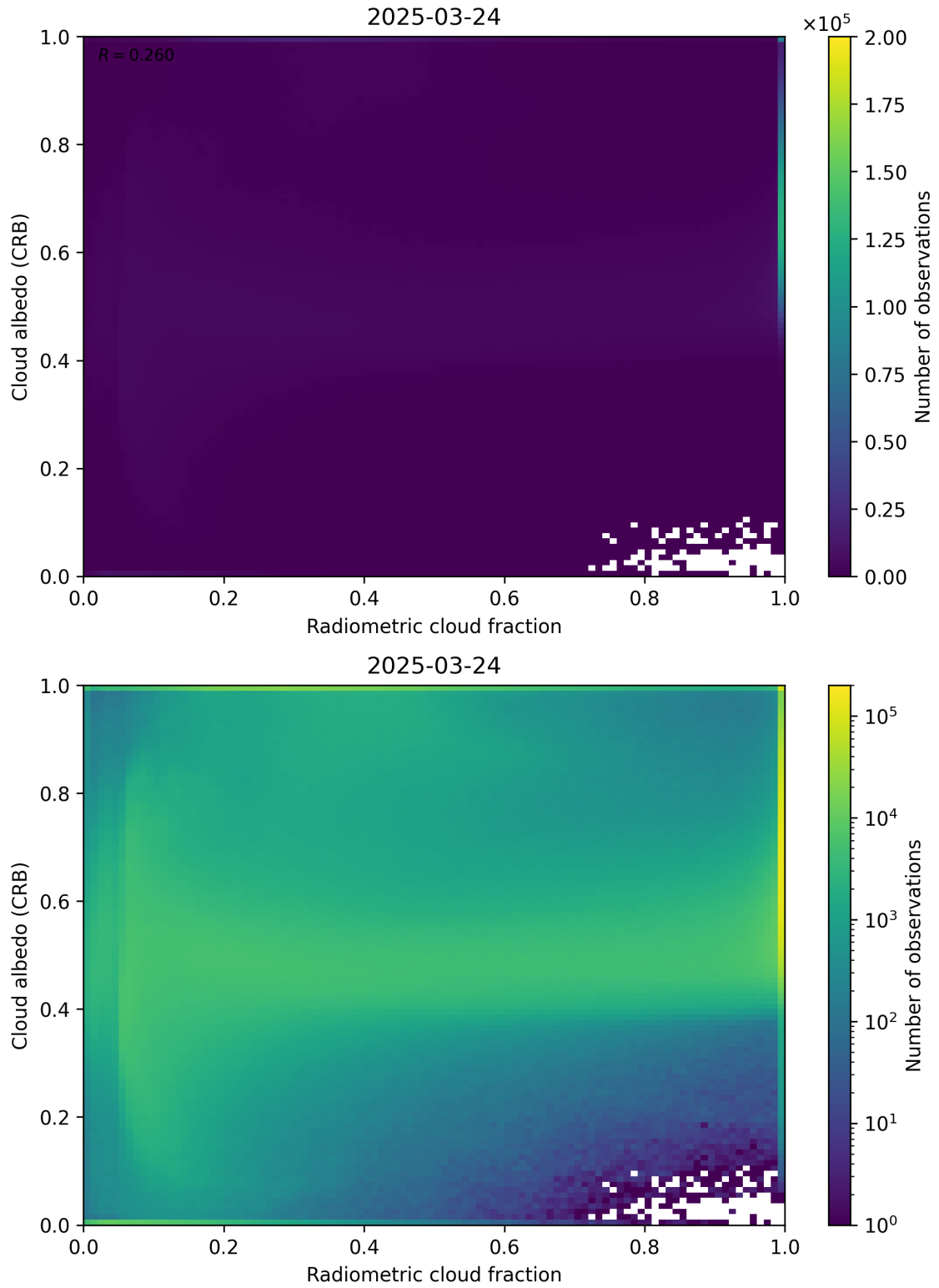


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-03-23 to 2025-03-25.

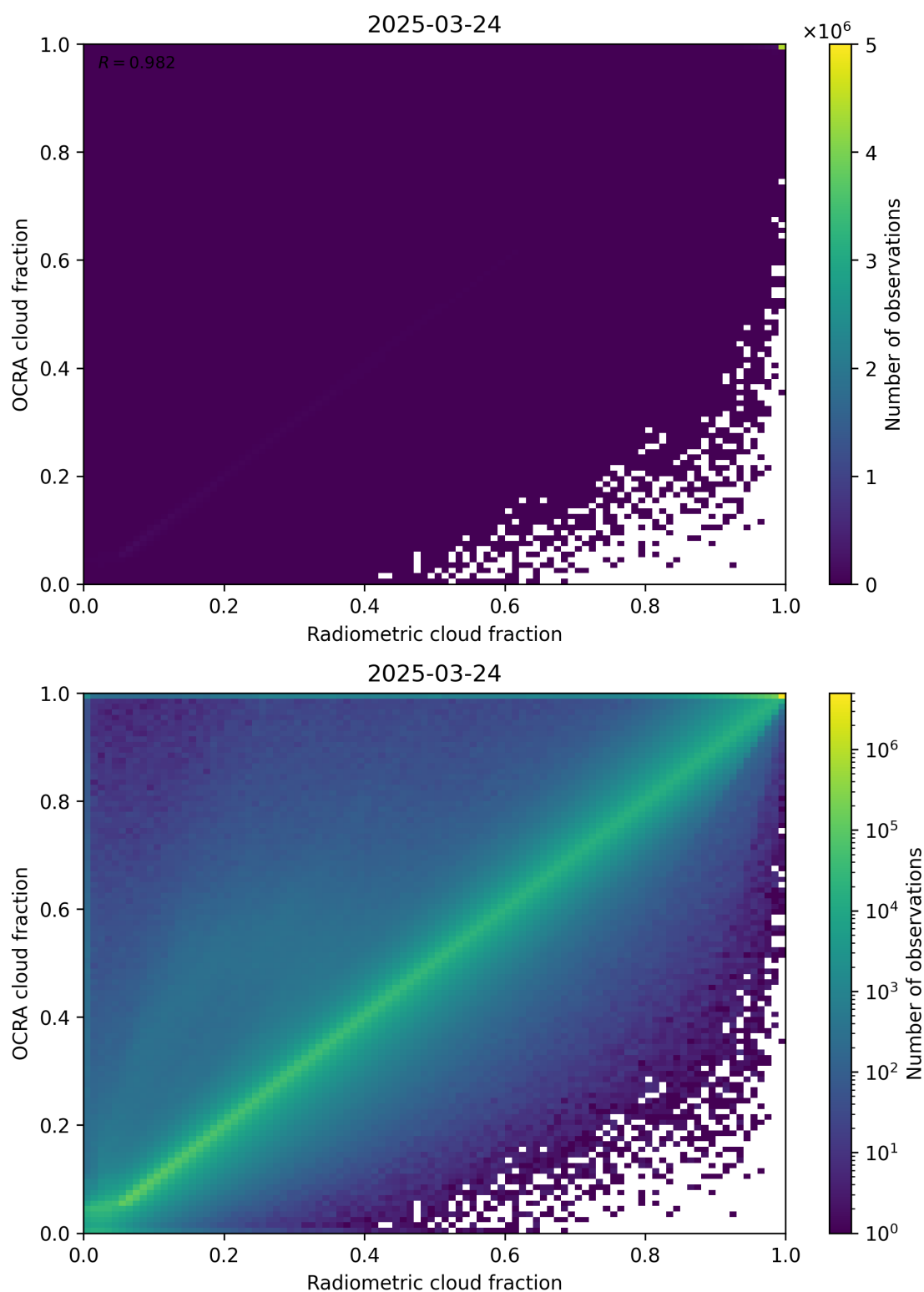


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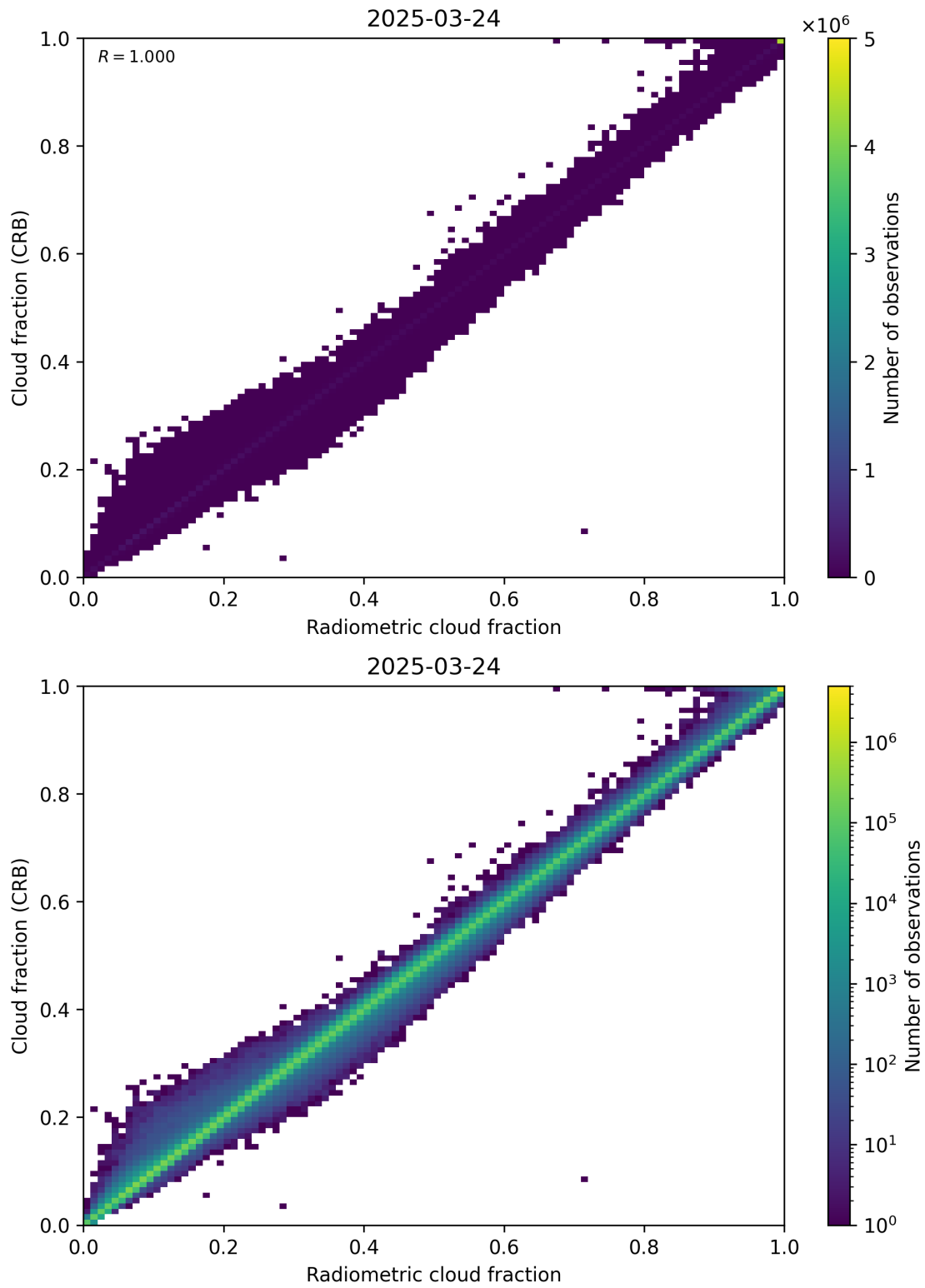


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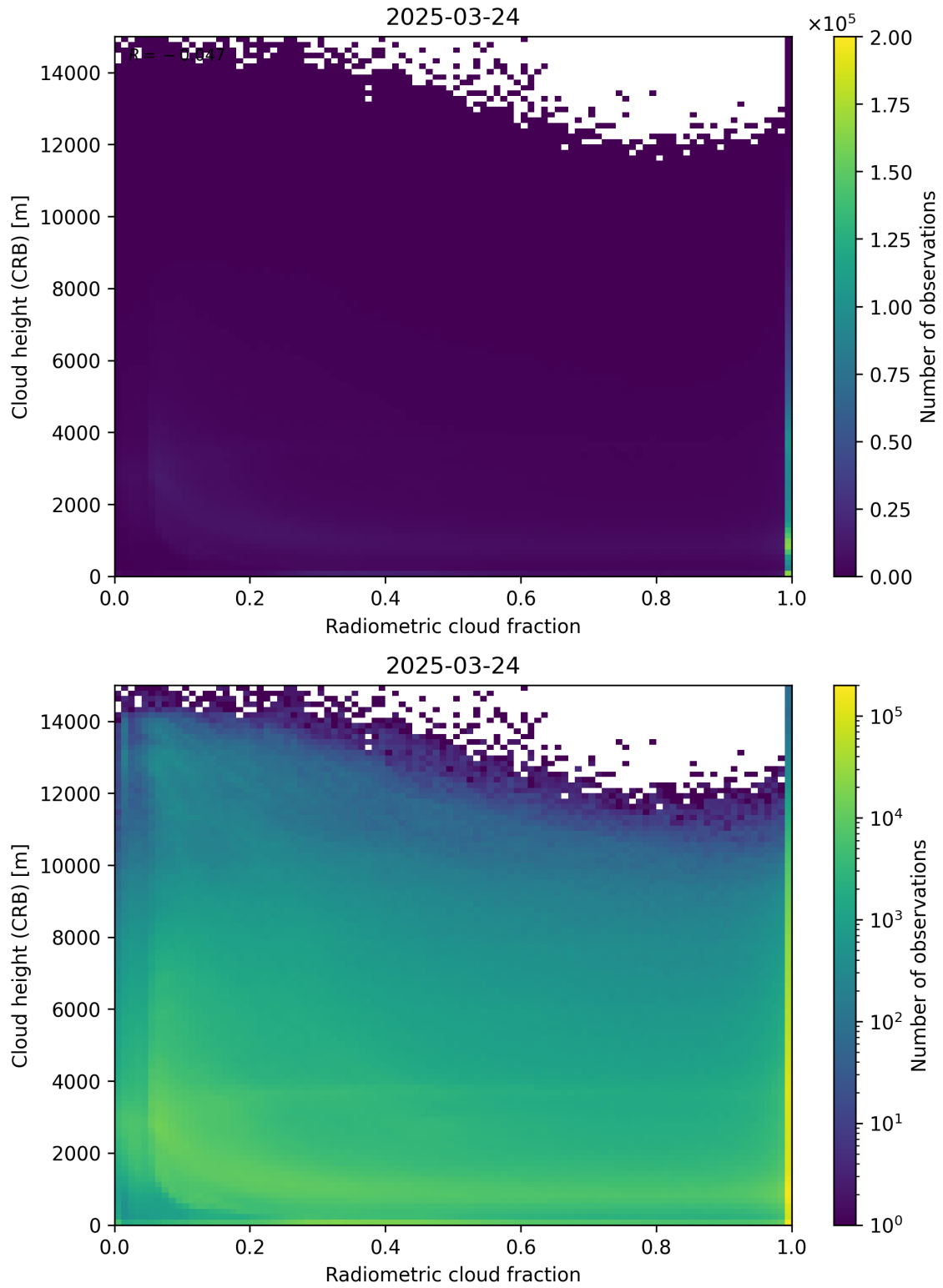


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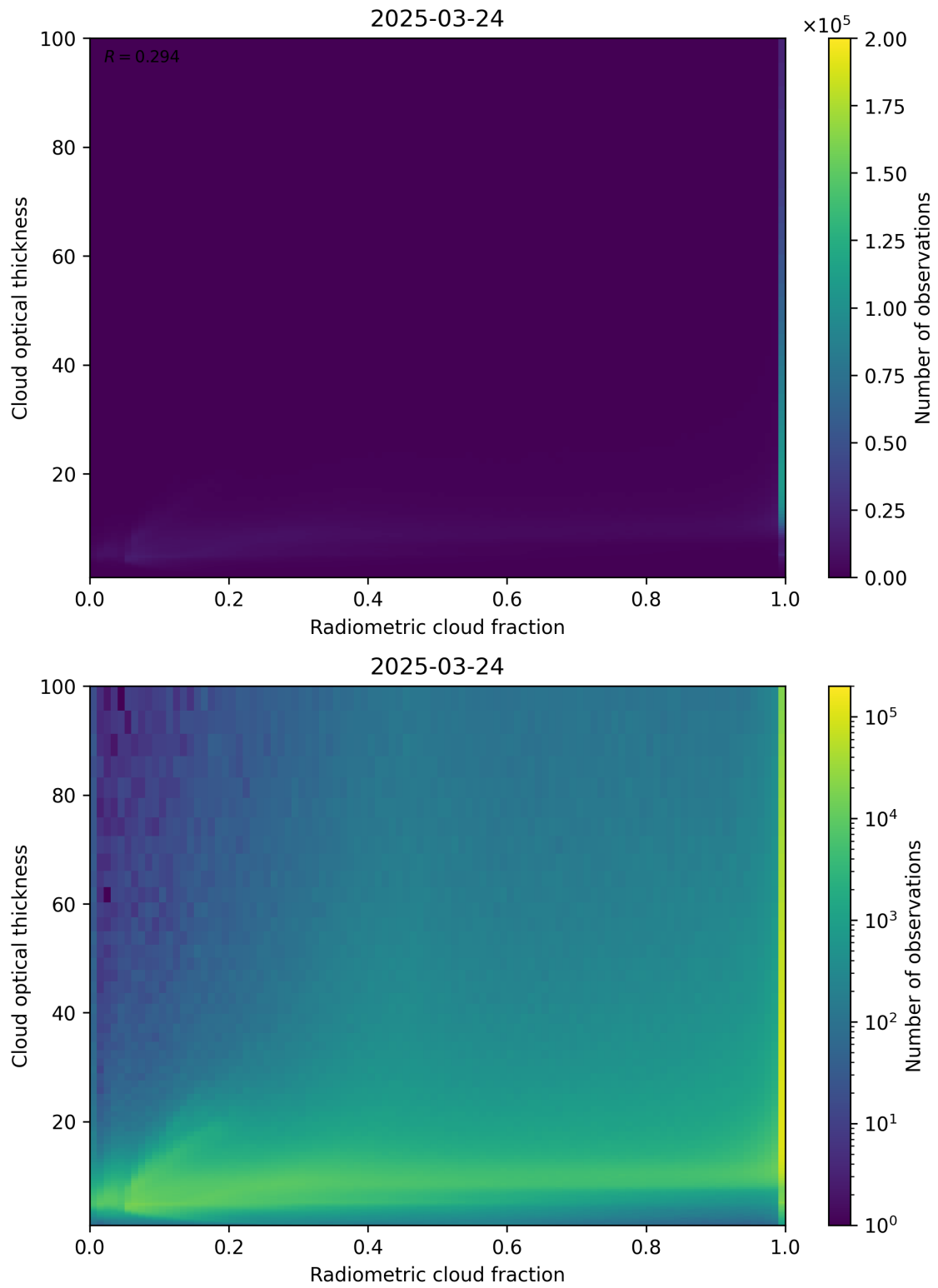


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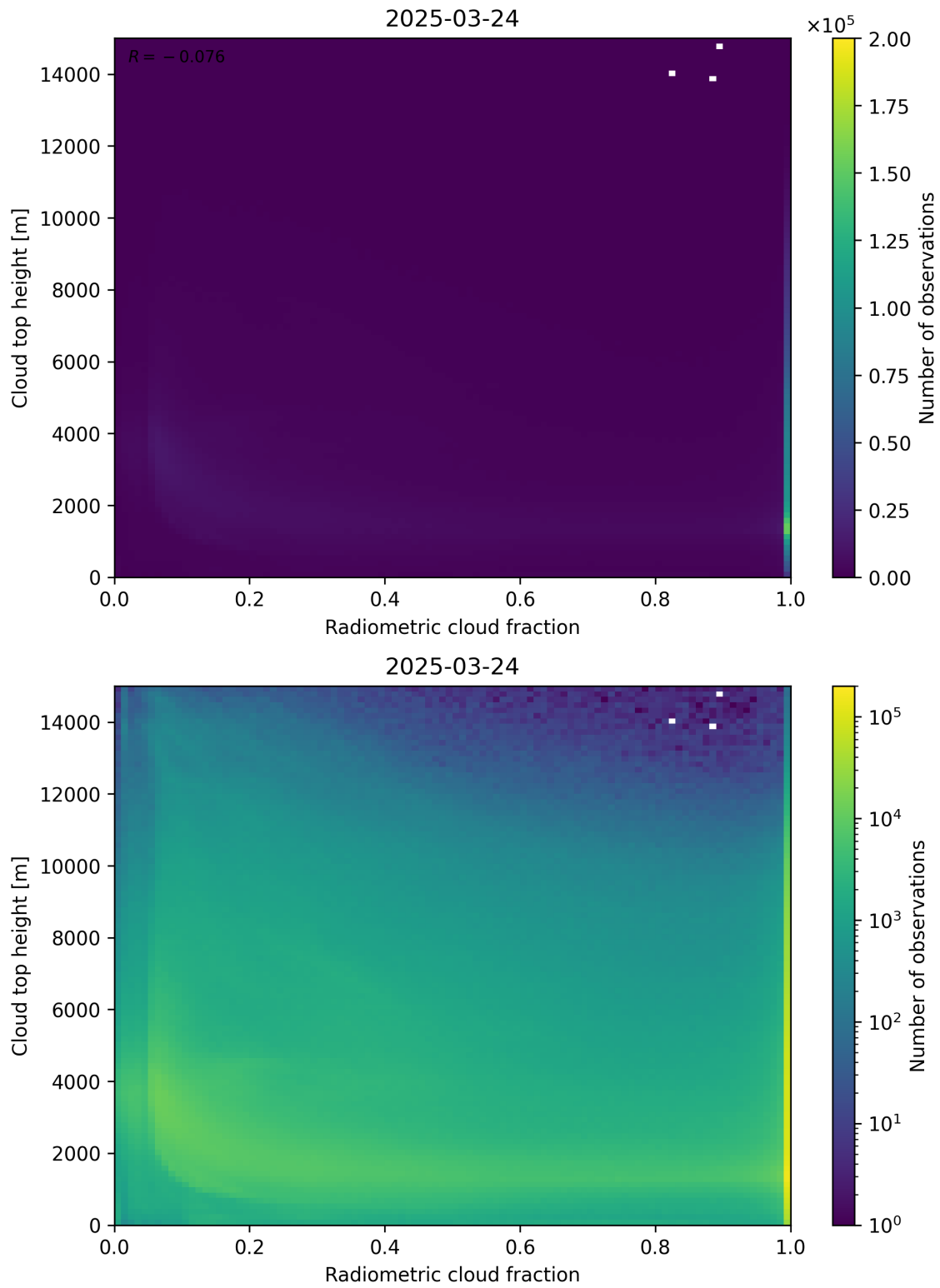


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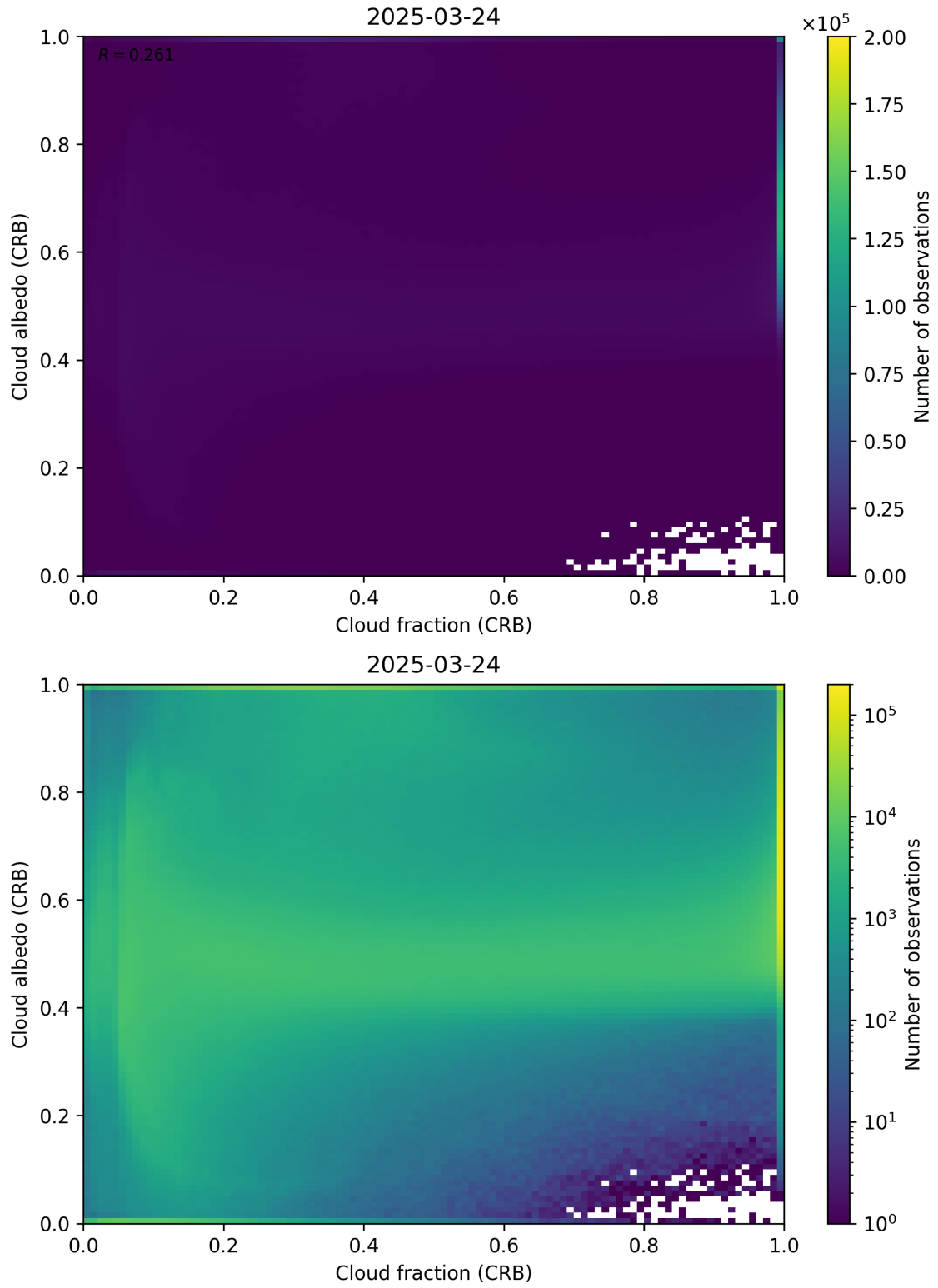


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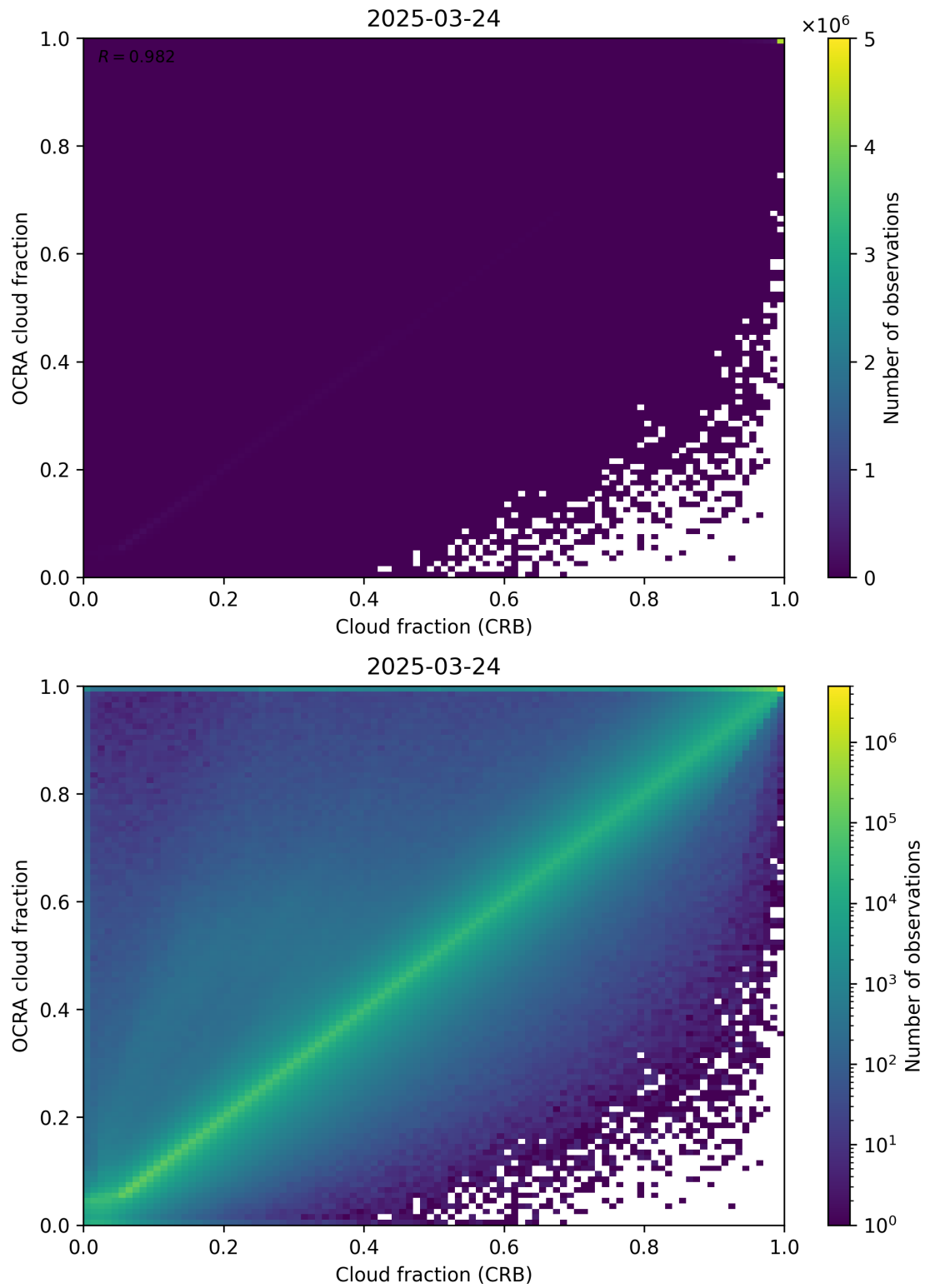


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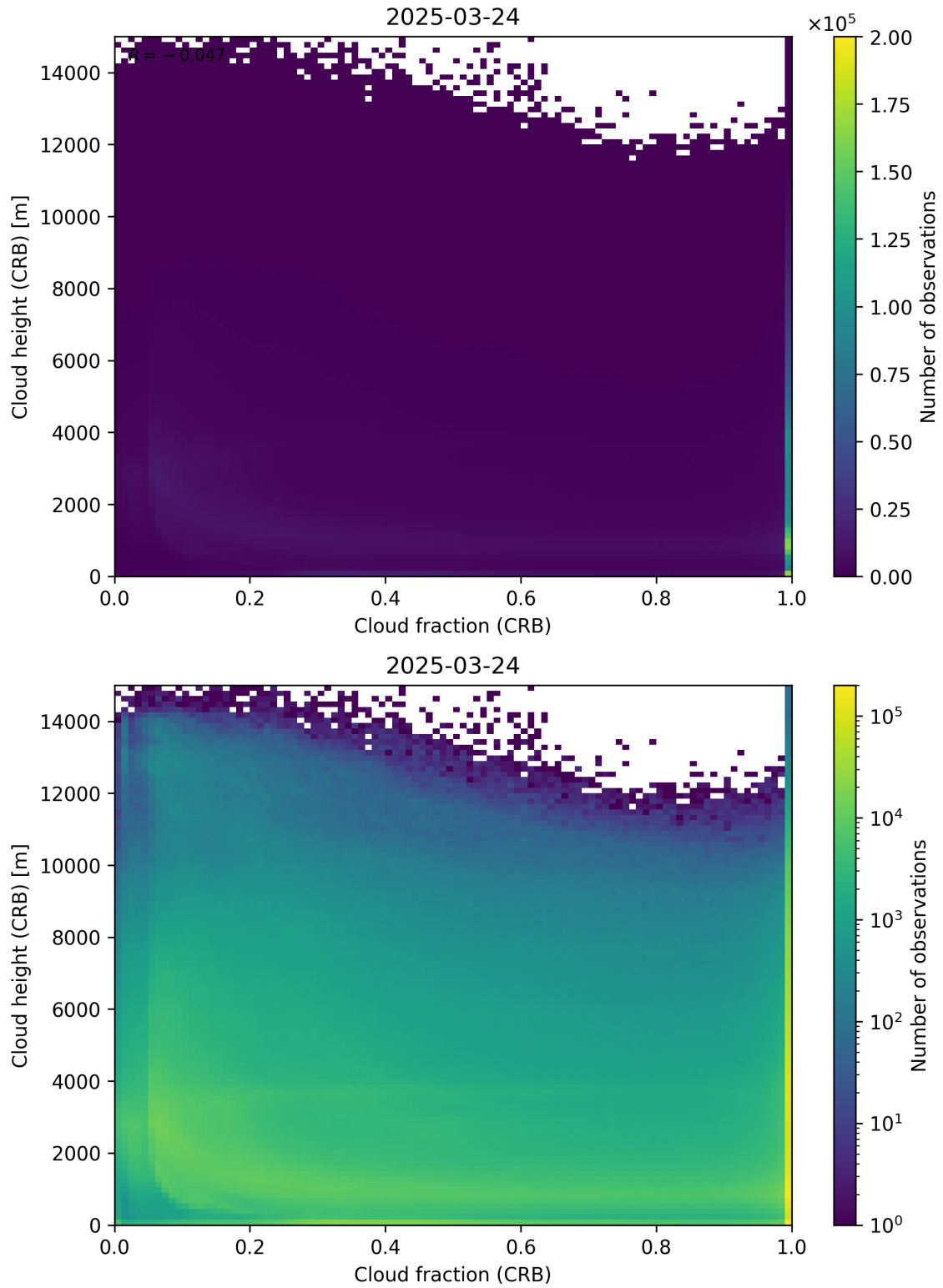


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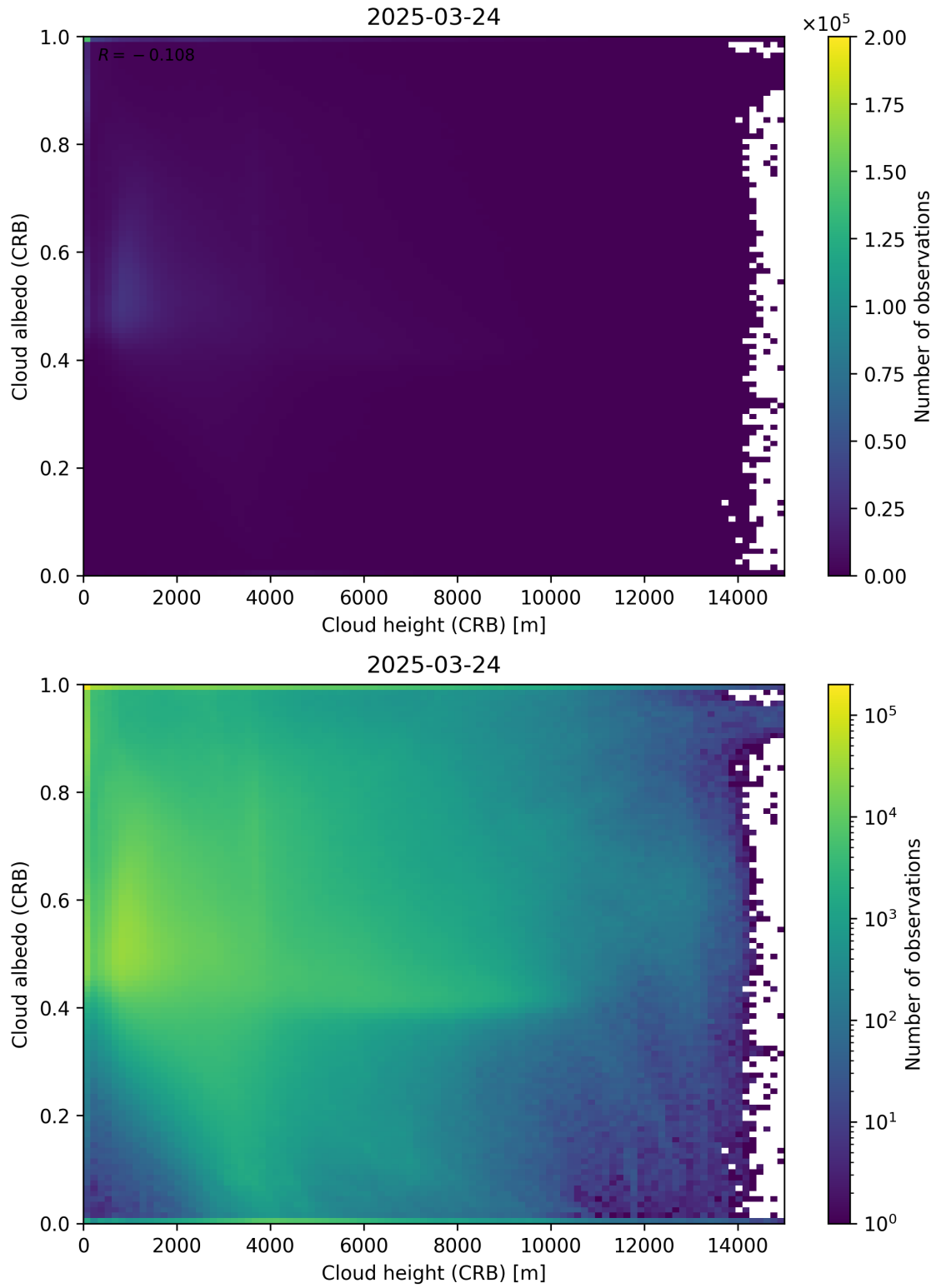


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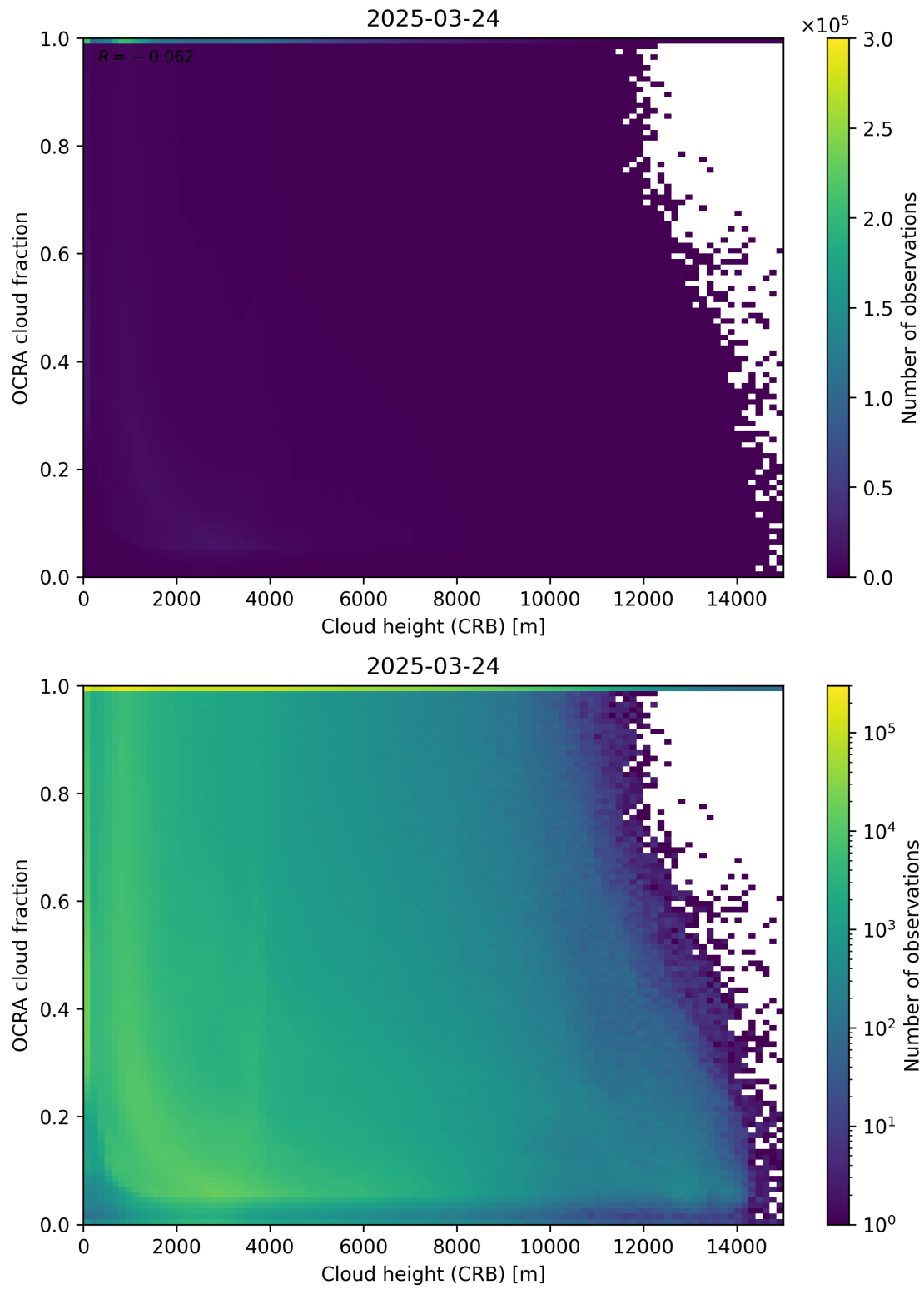


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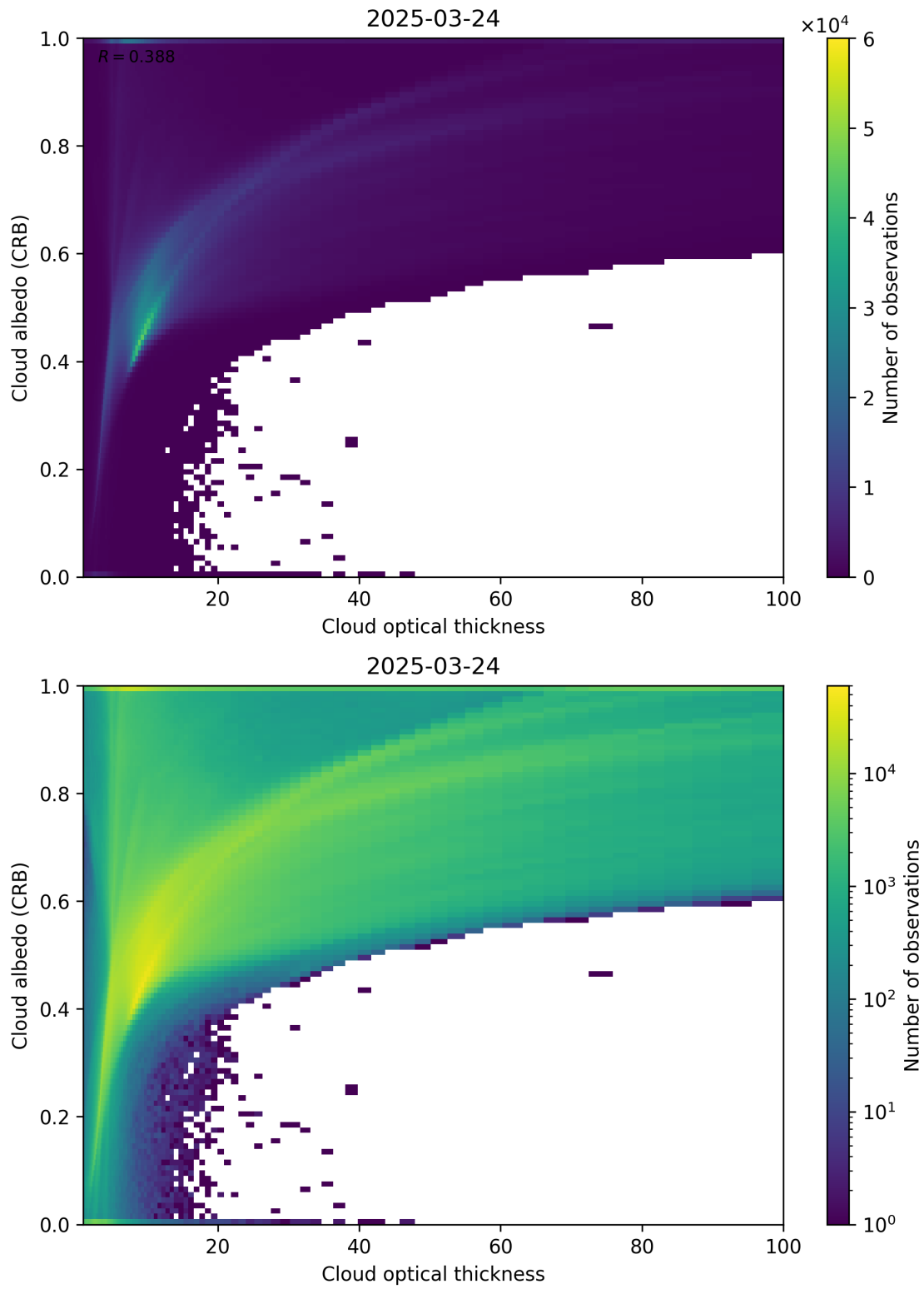


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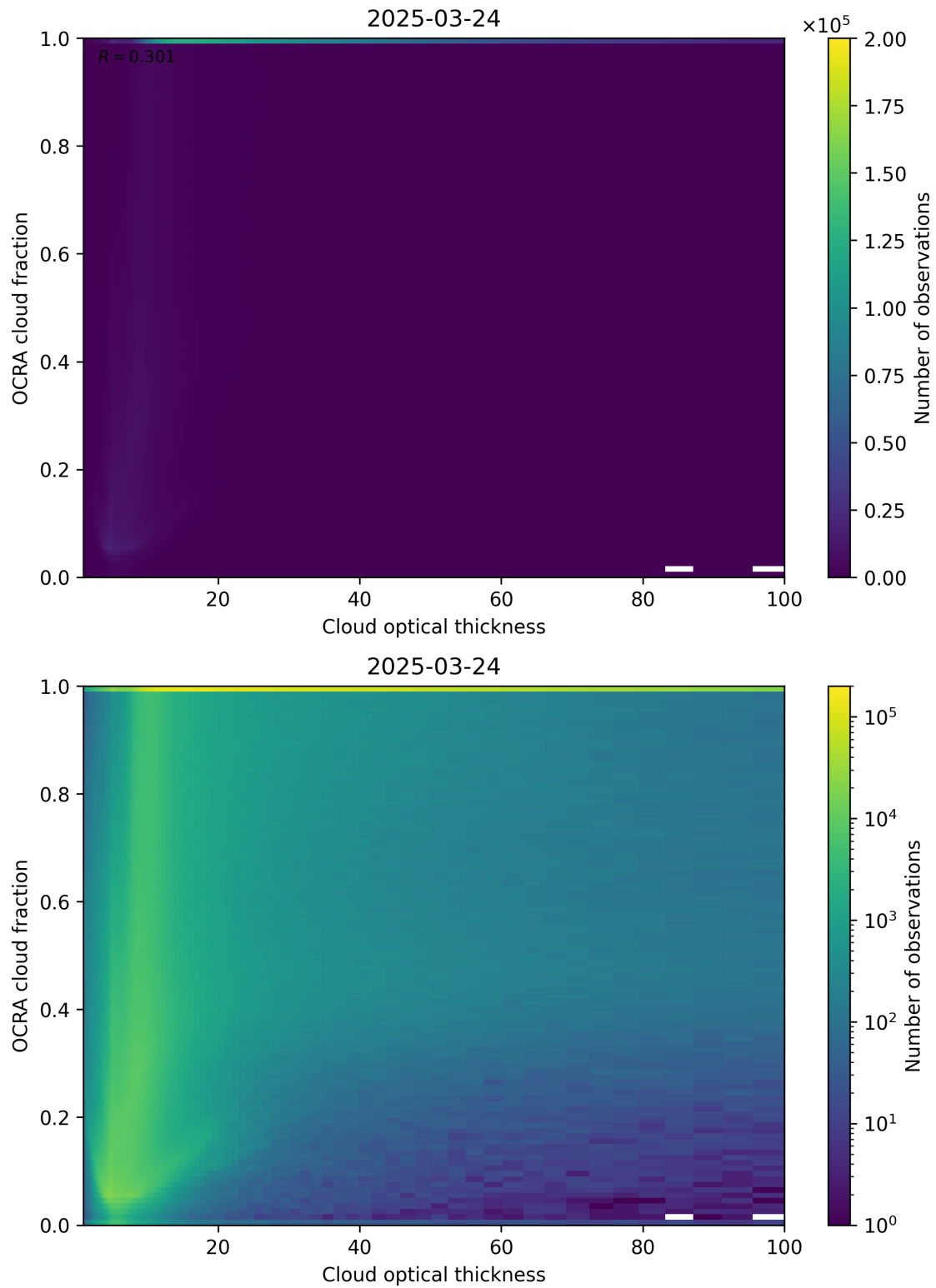


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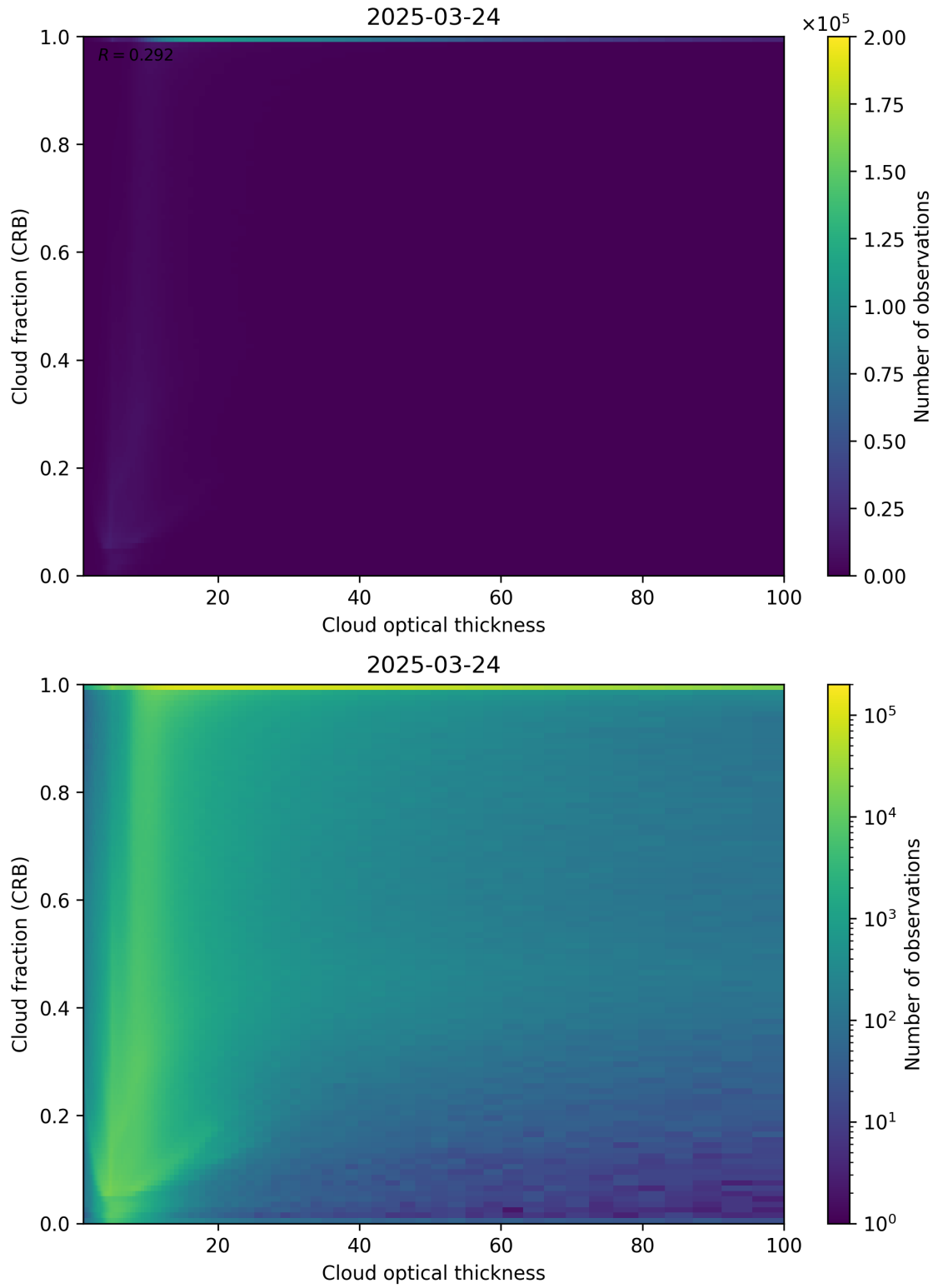


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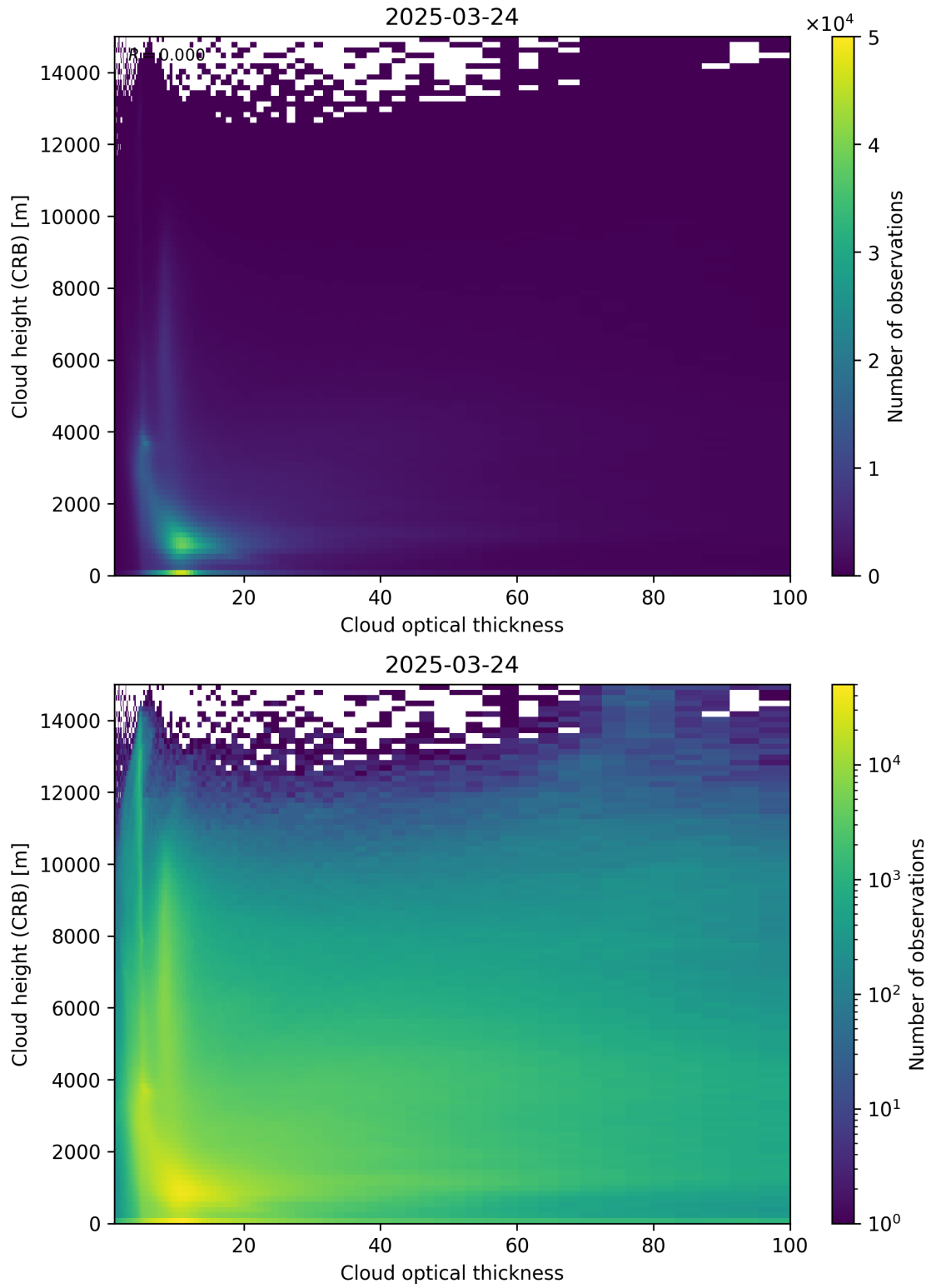


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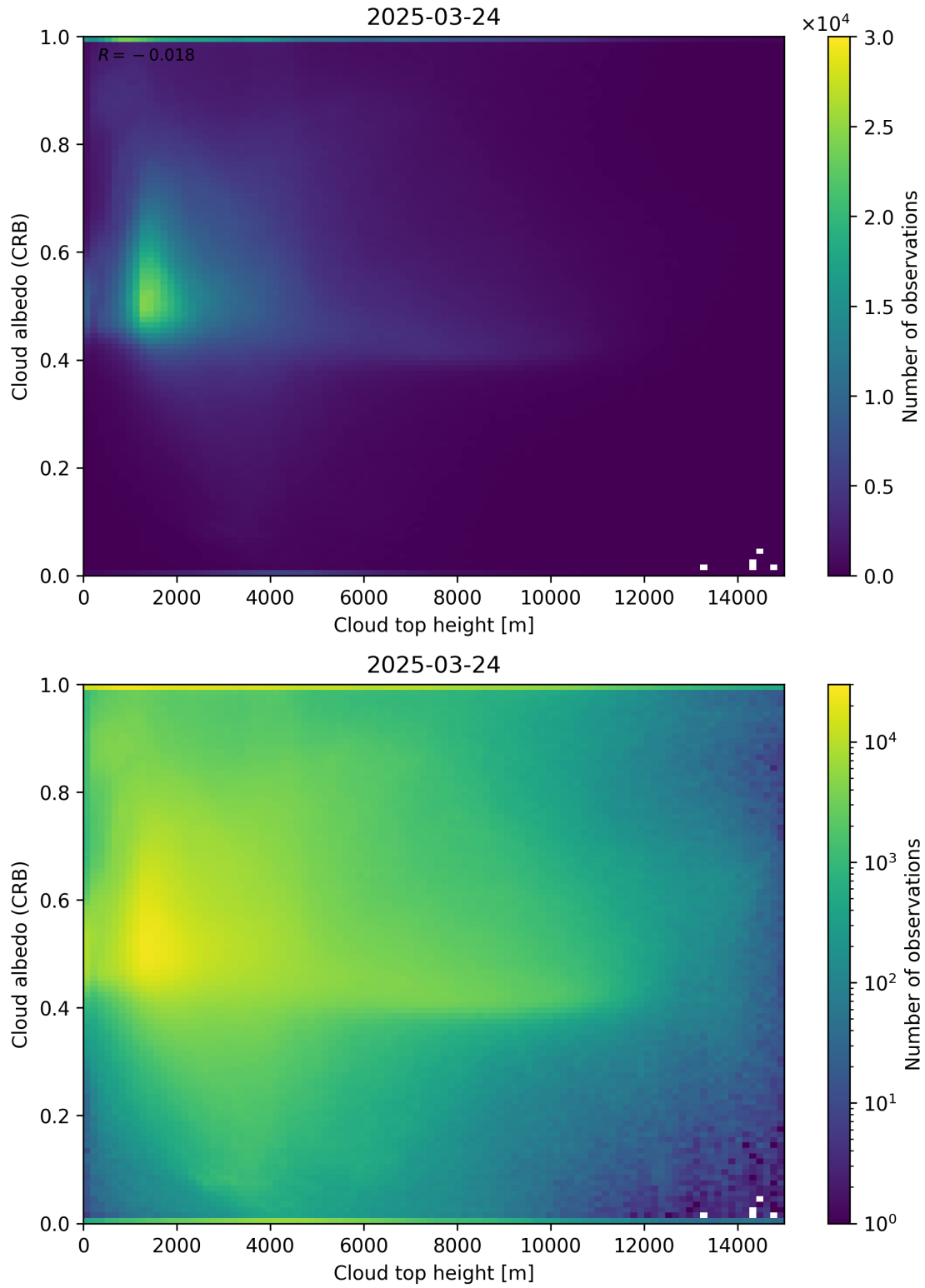


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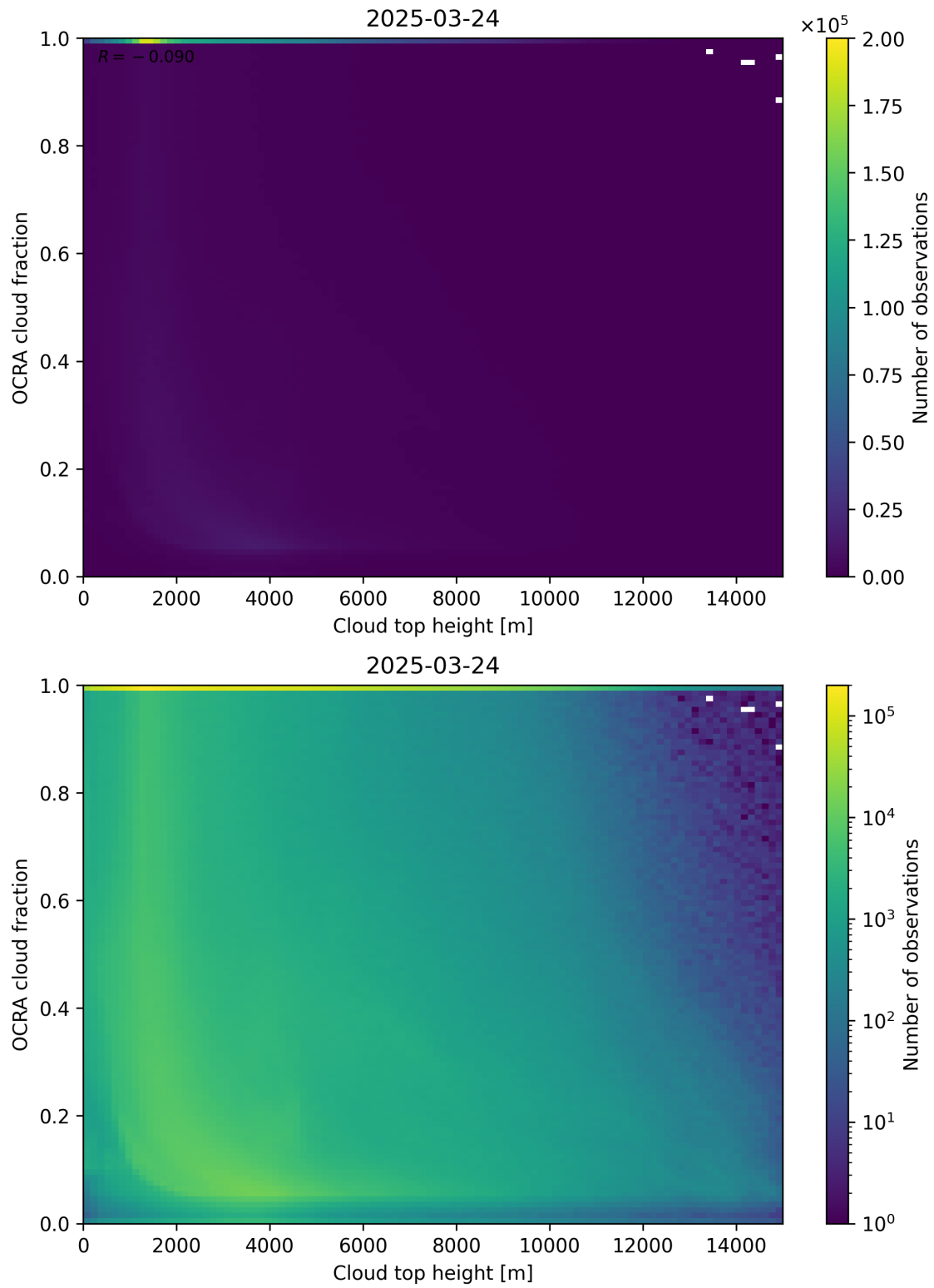


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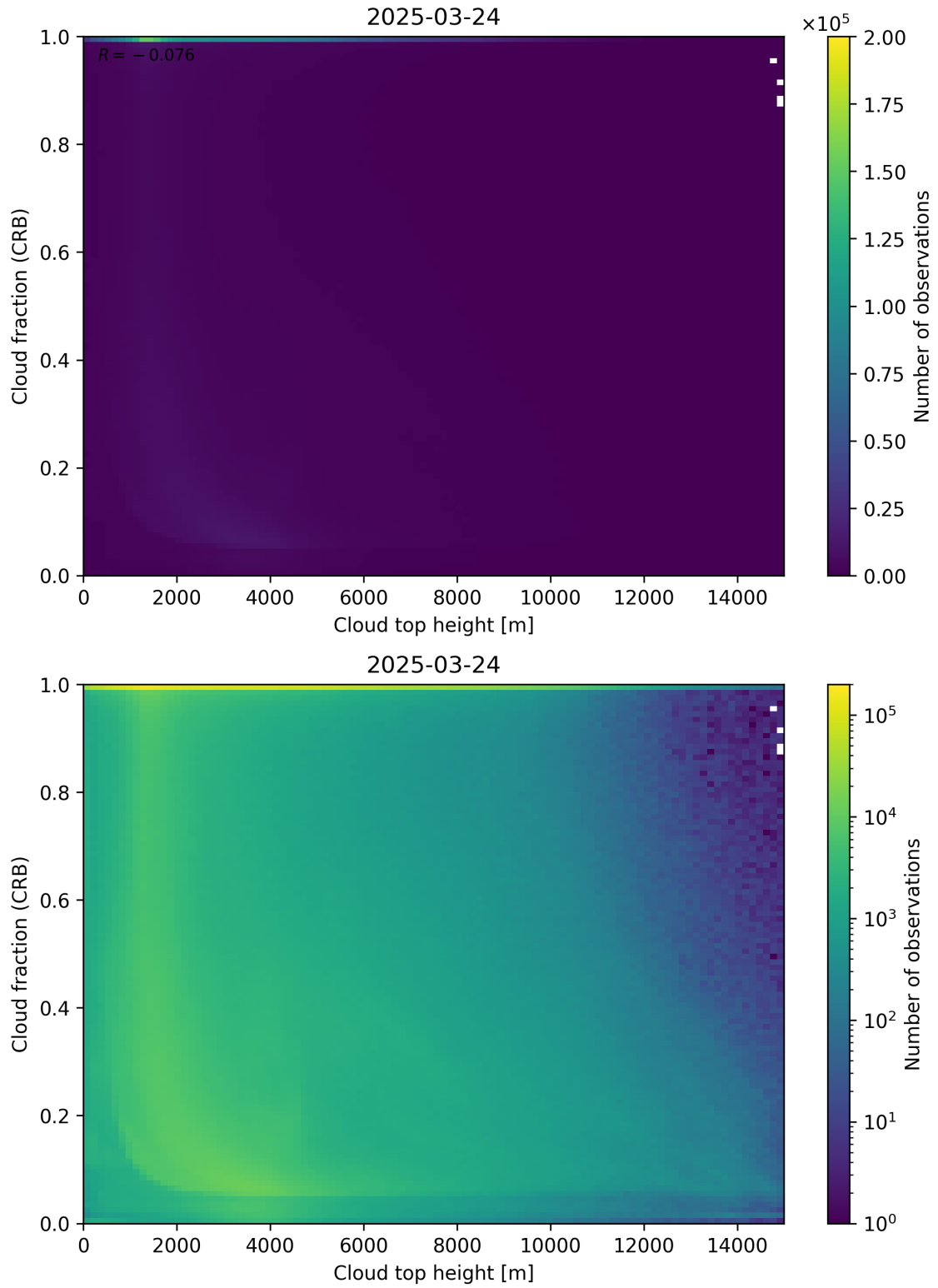


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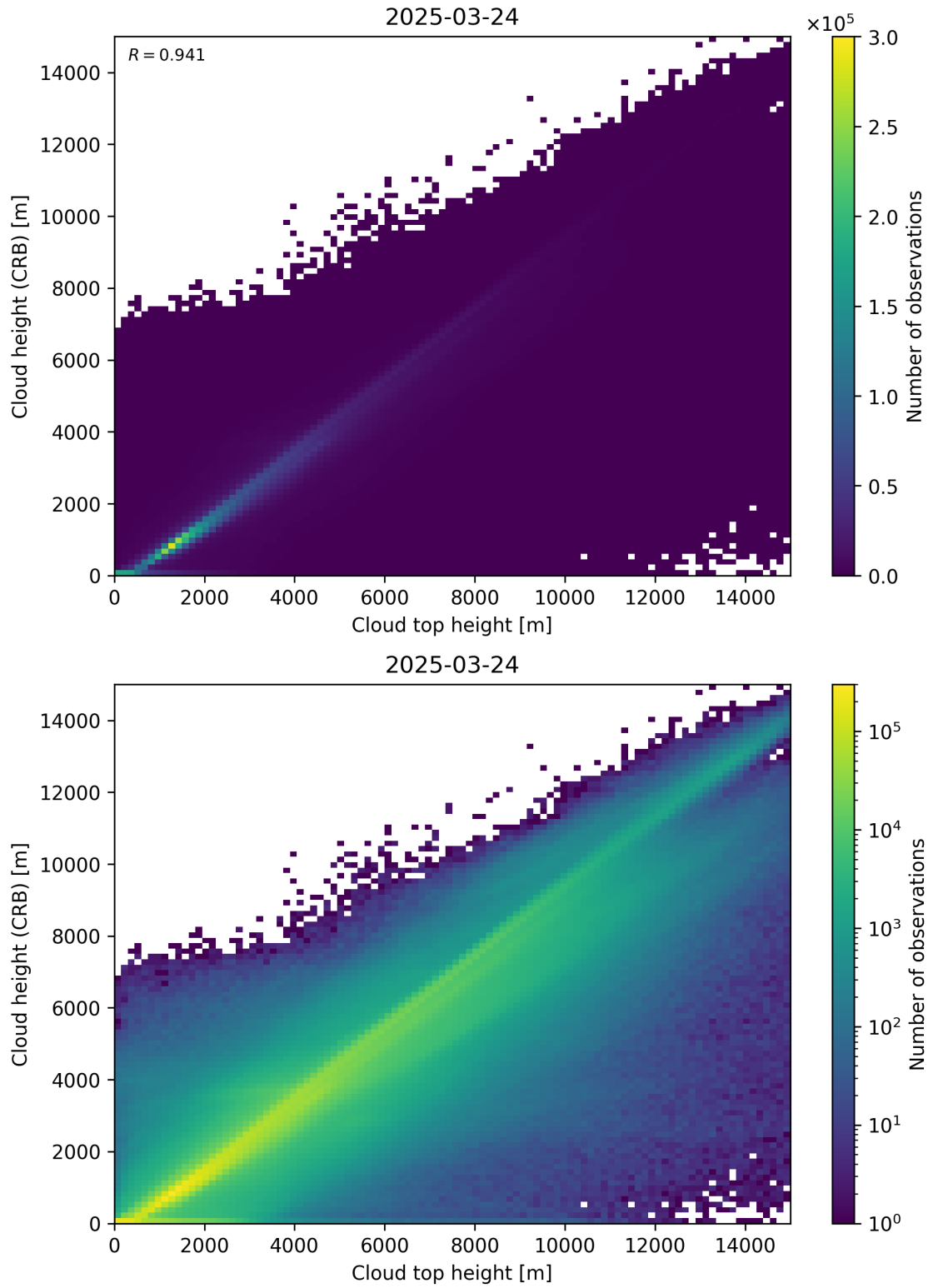


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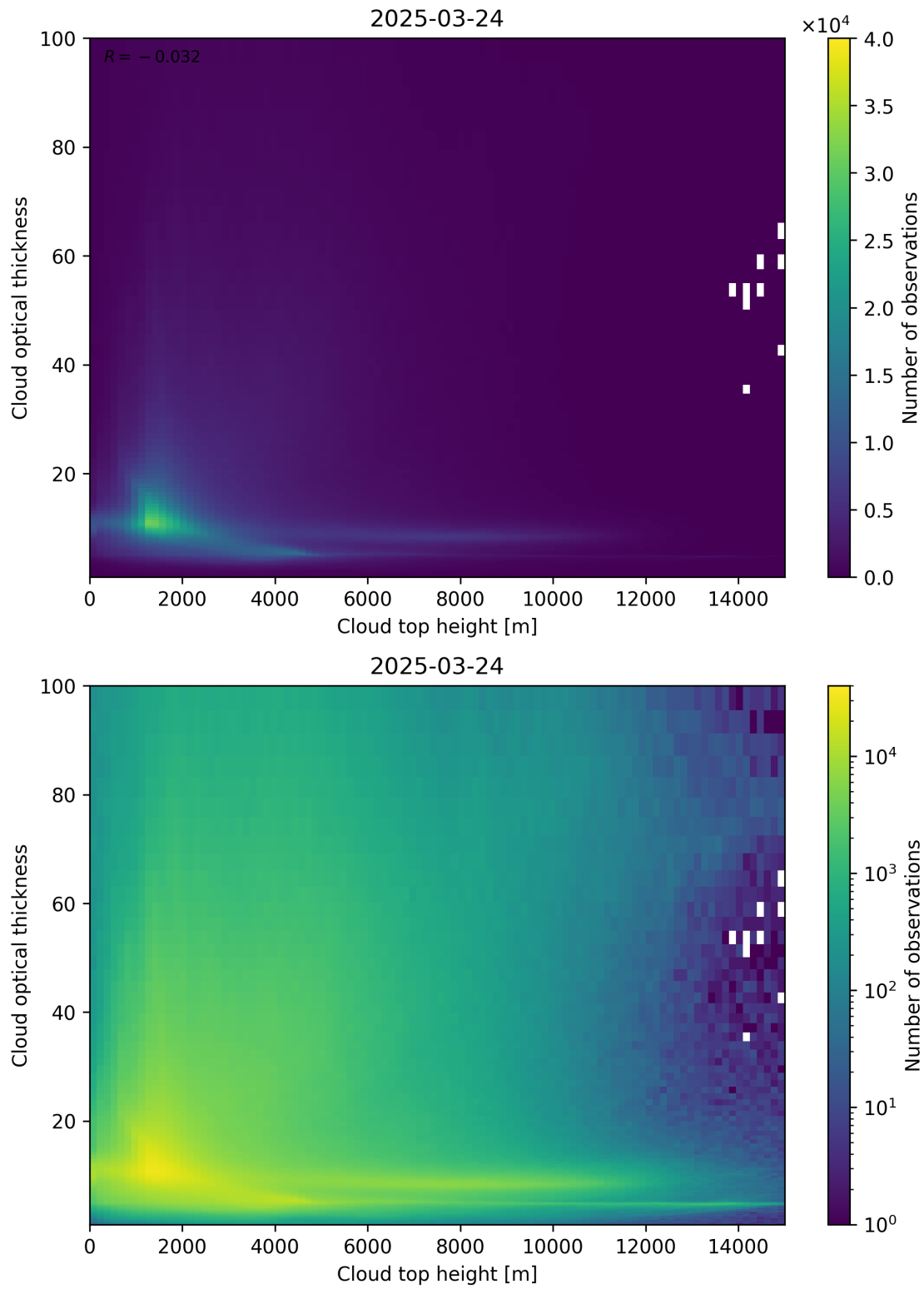


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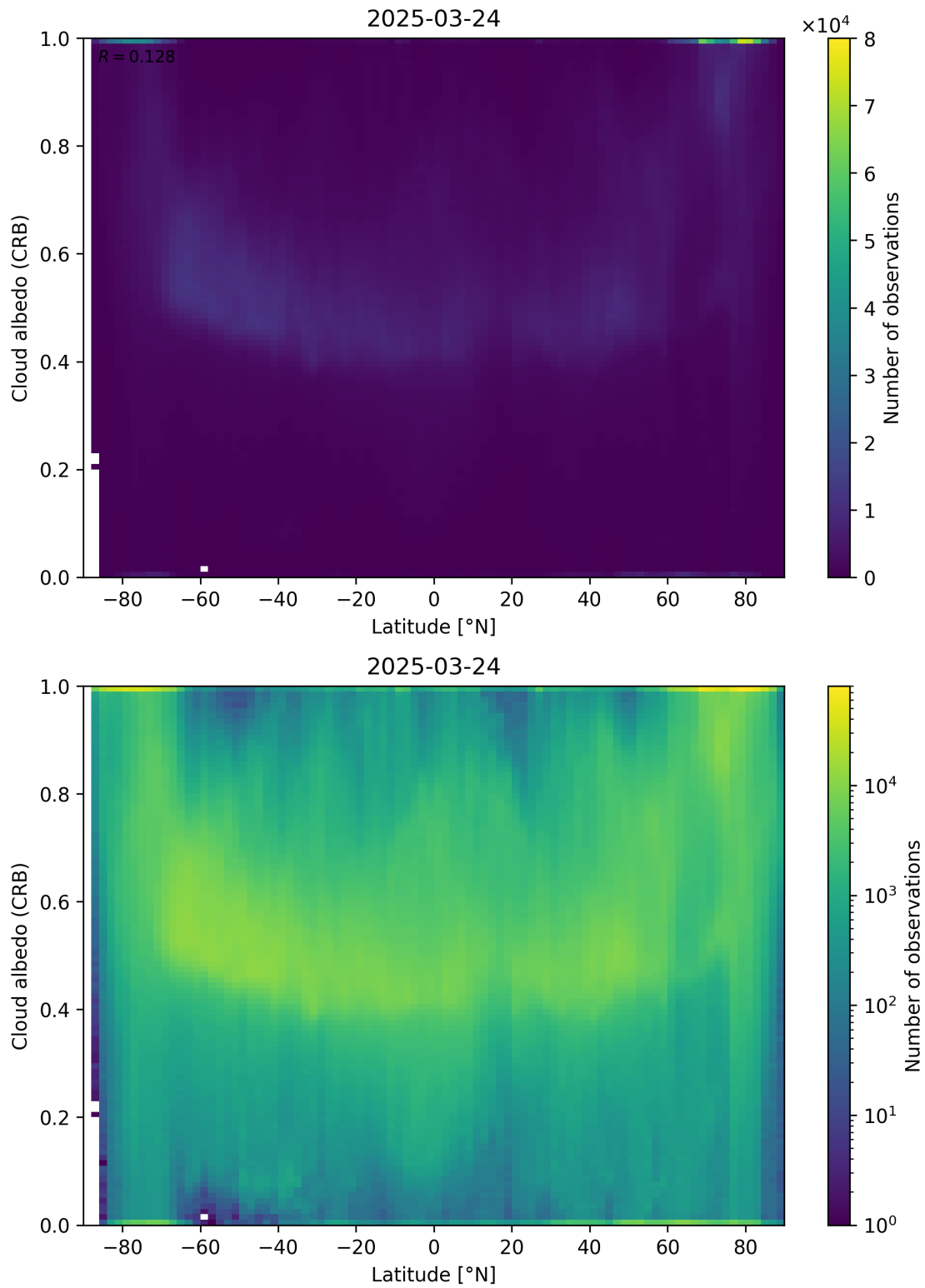


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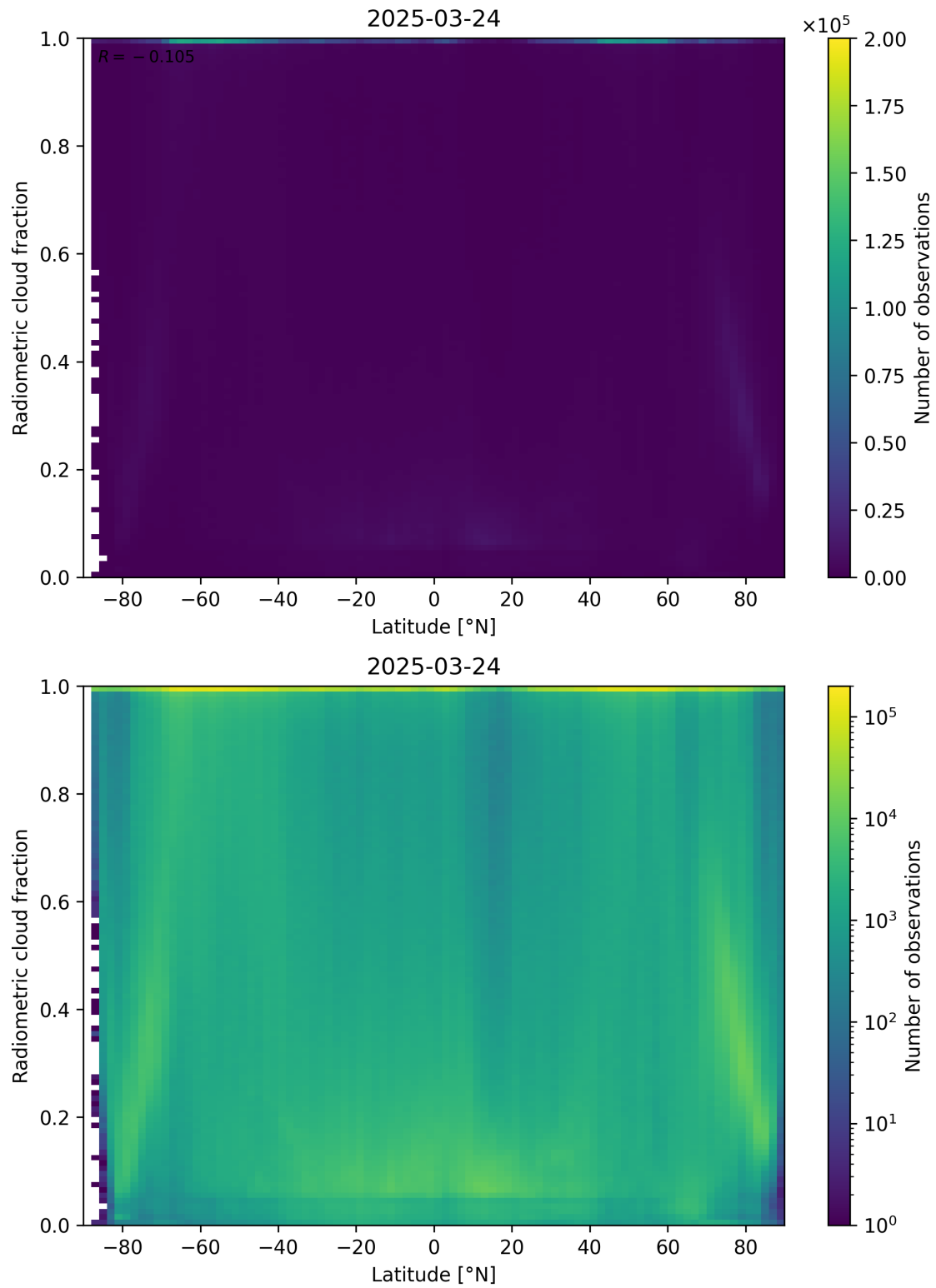


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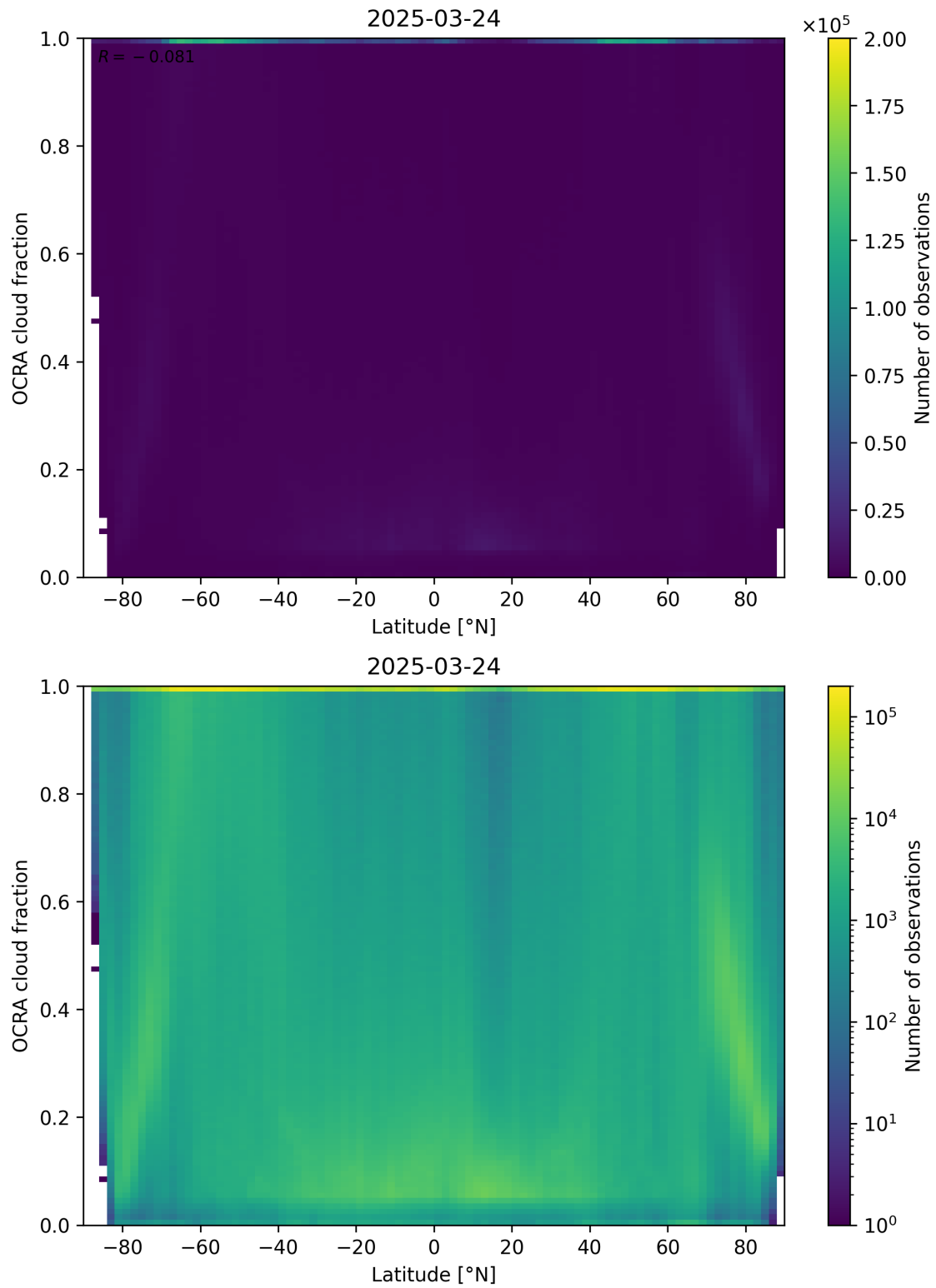


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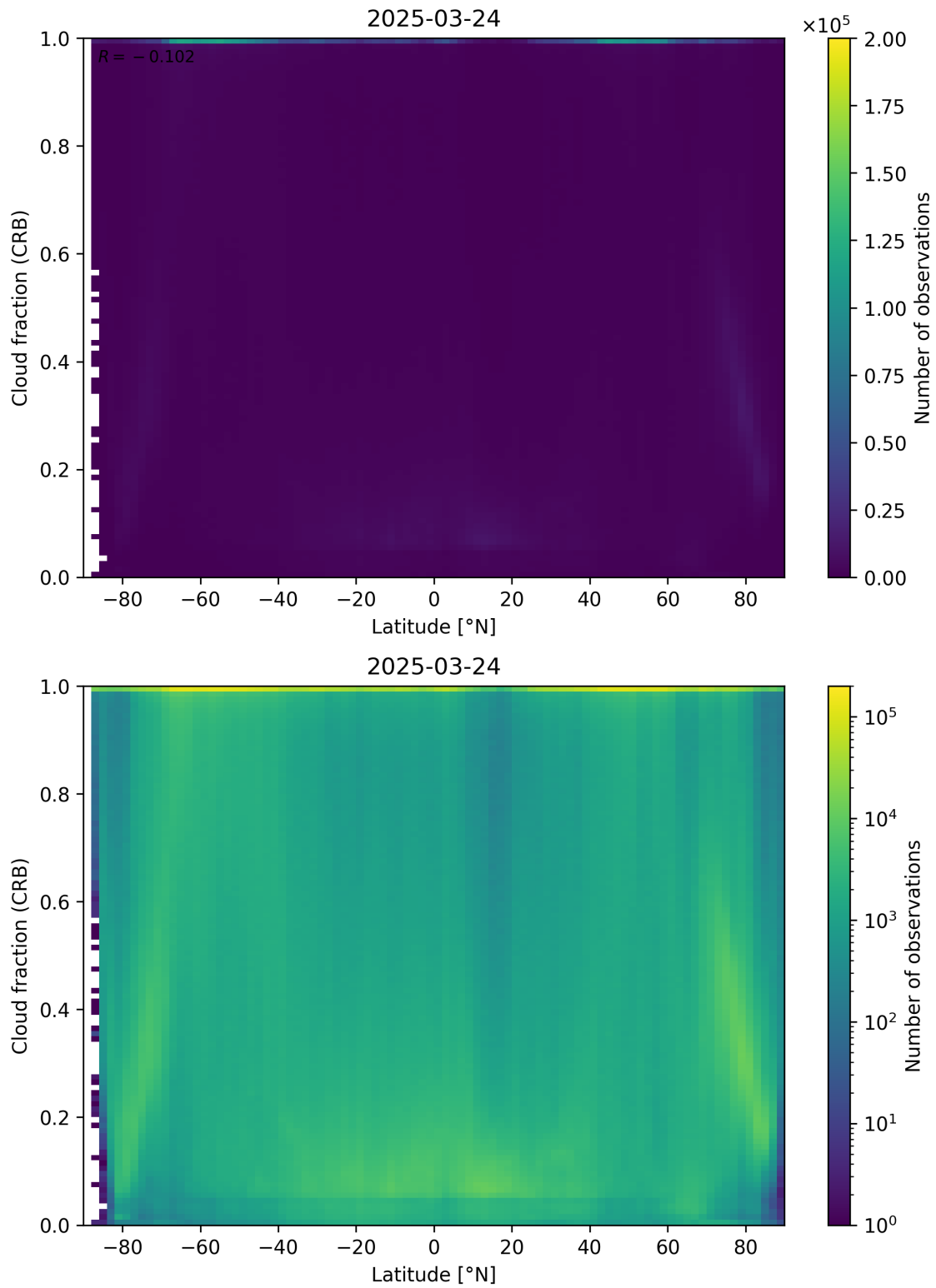


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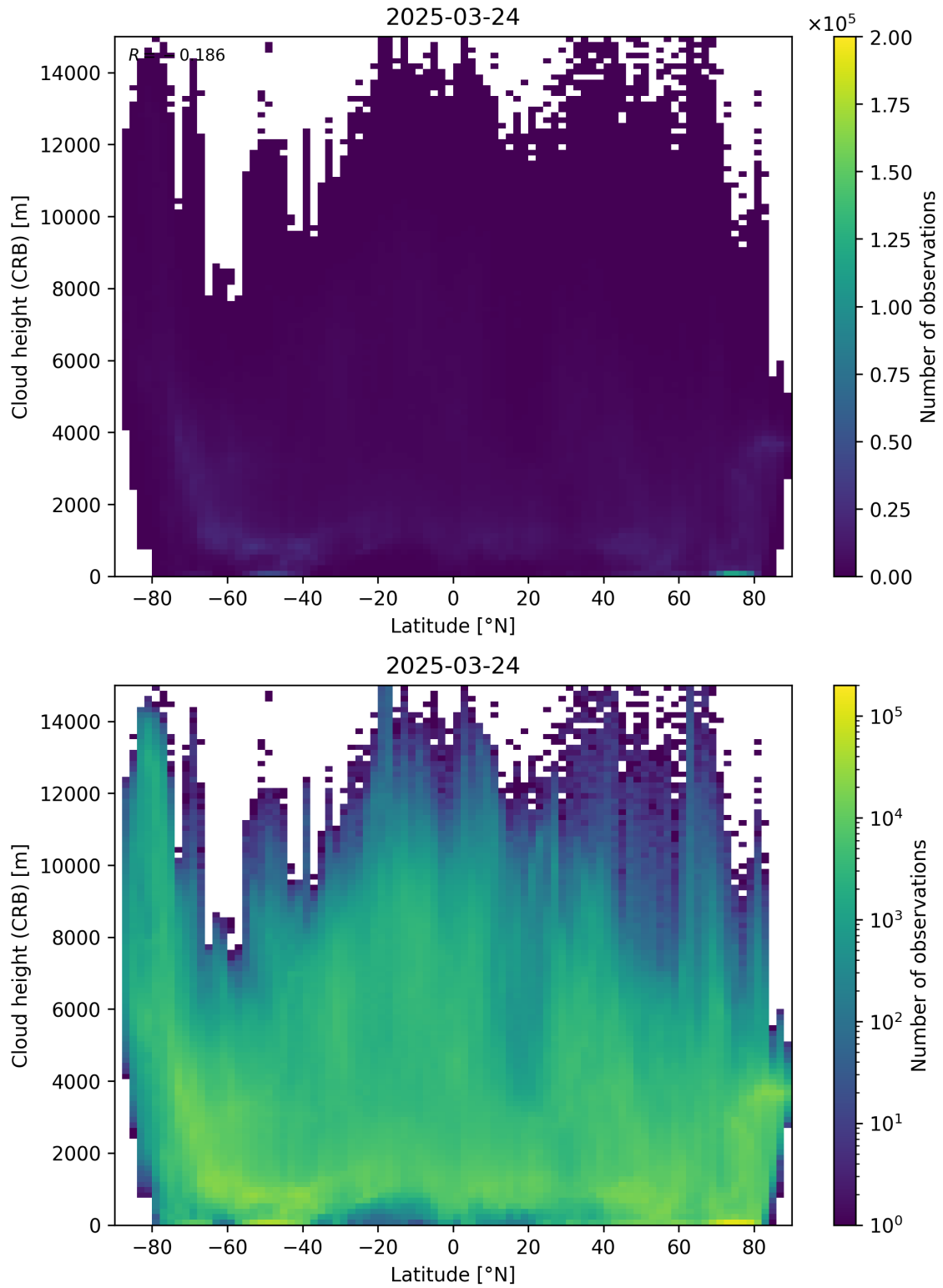


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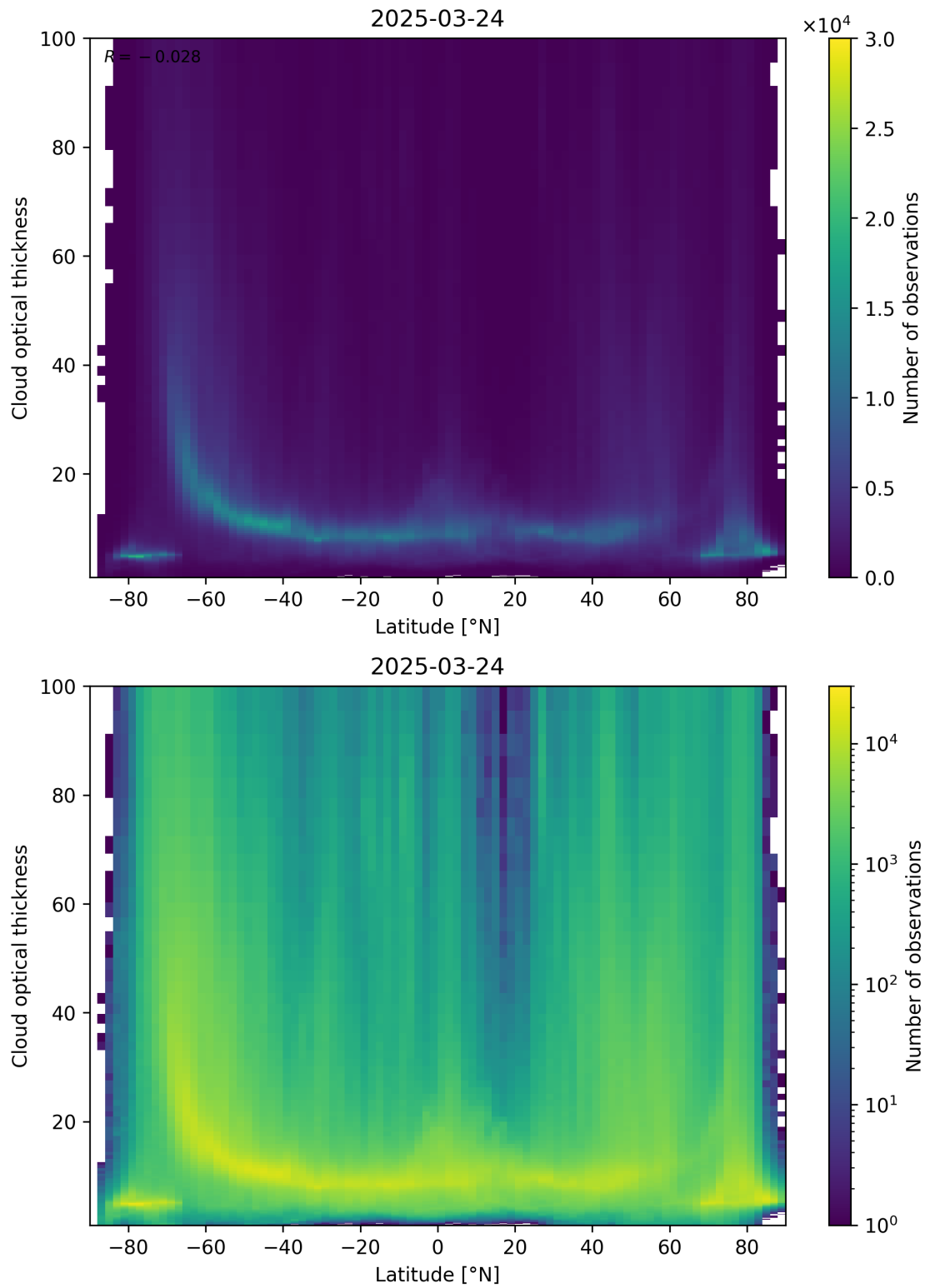


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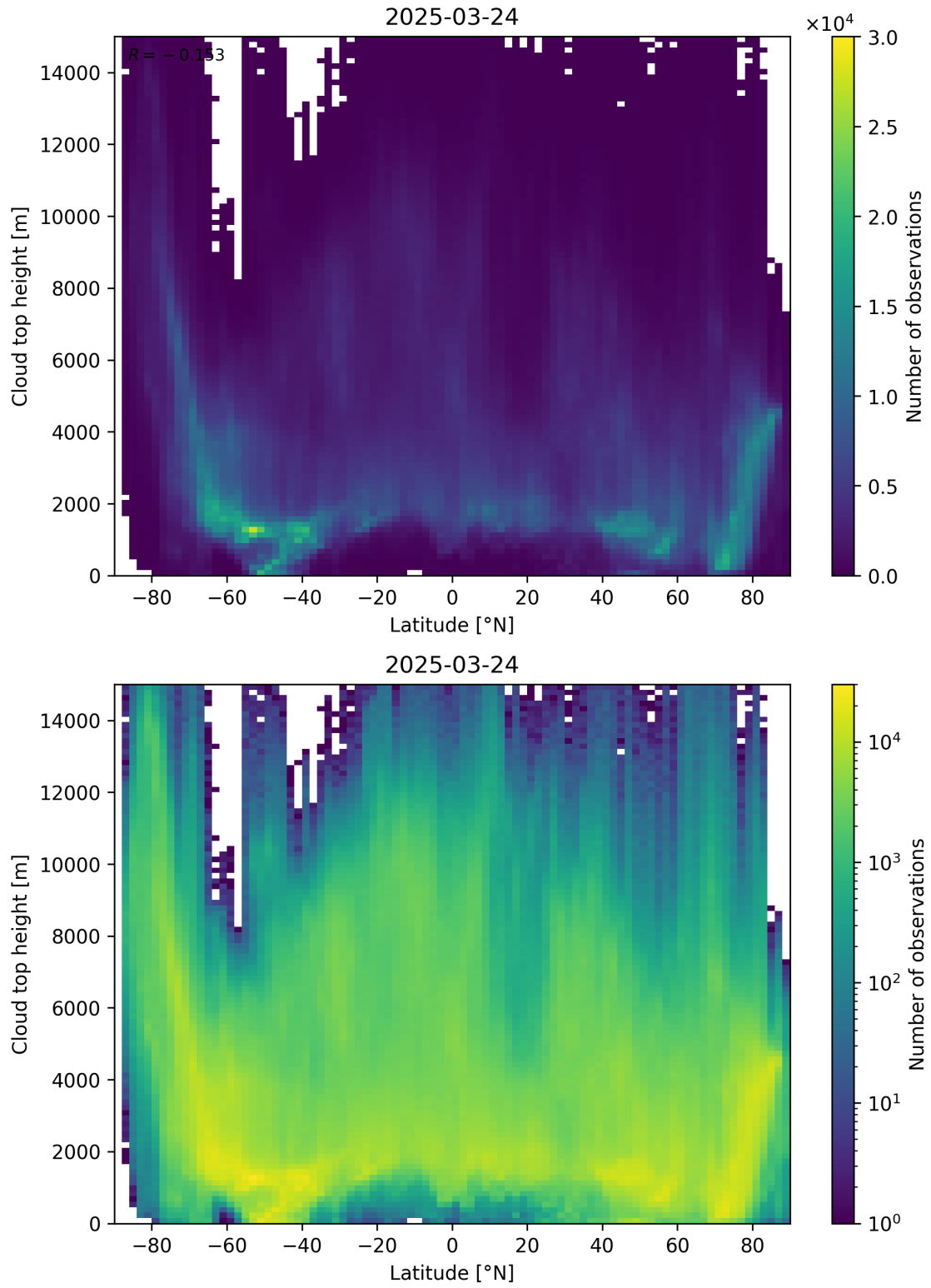


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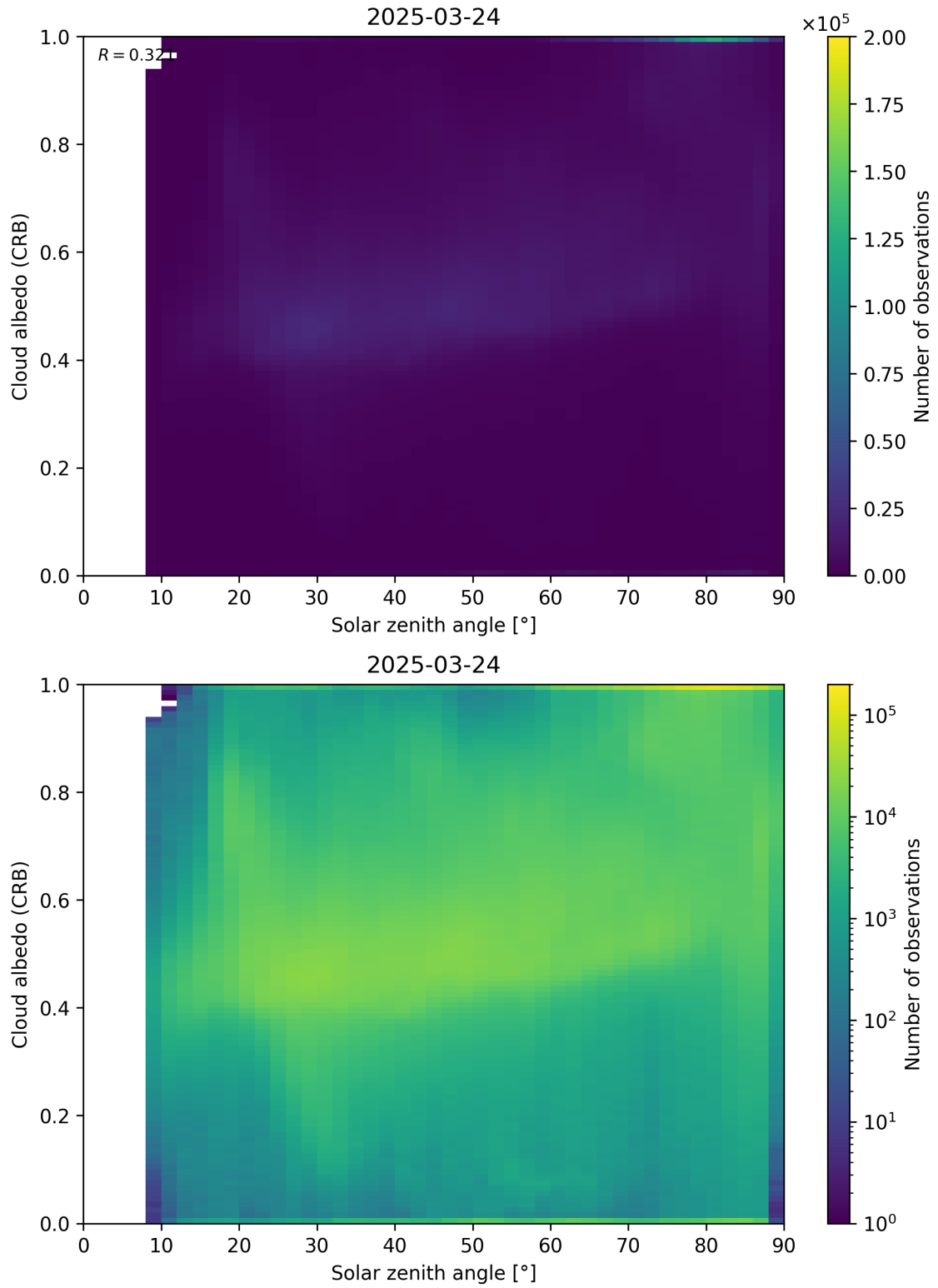


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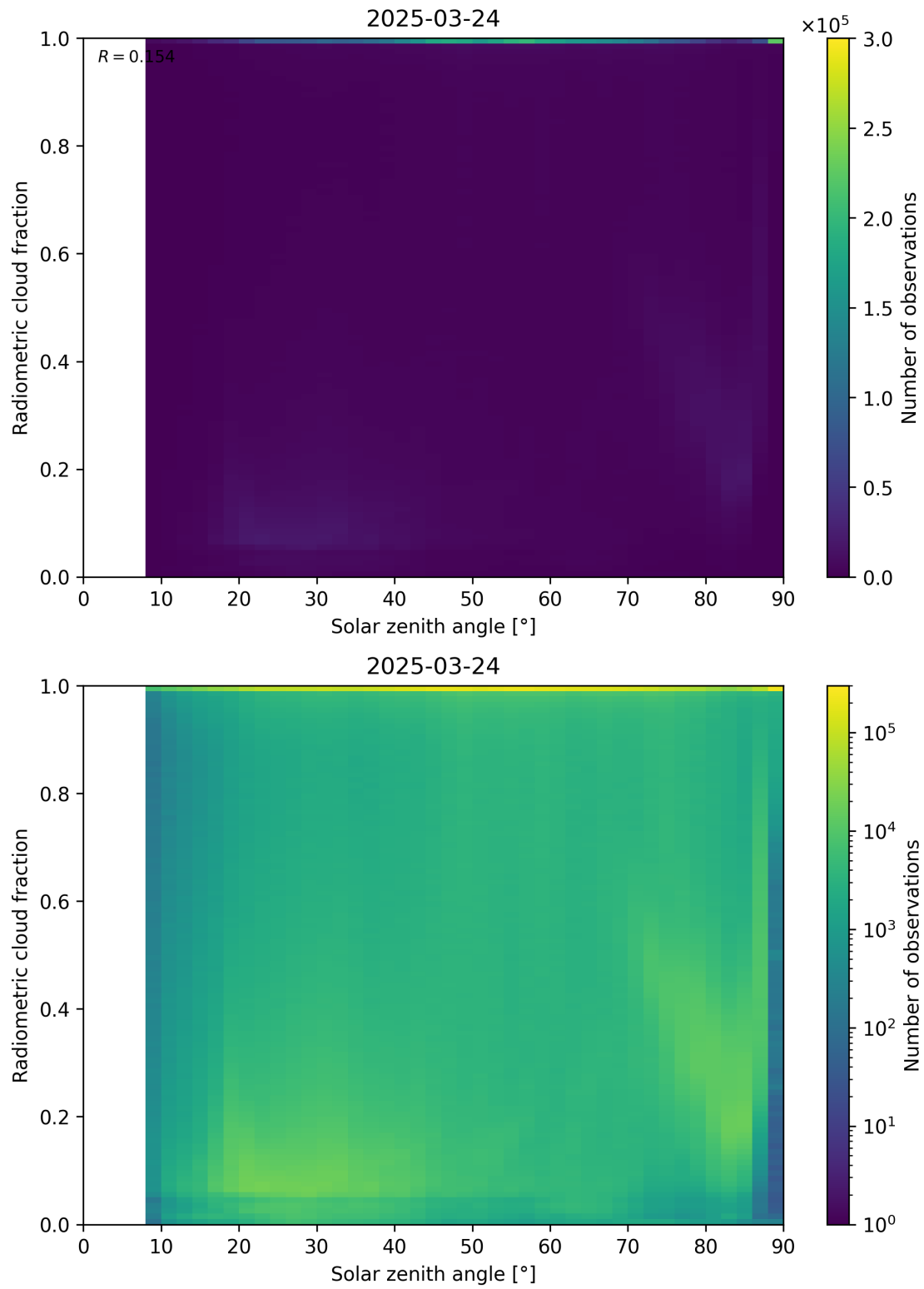


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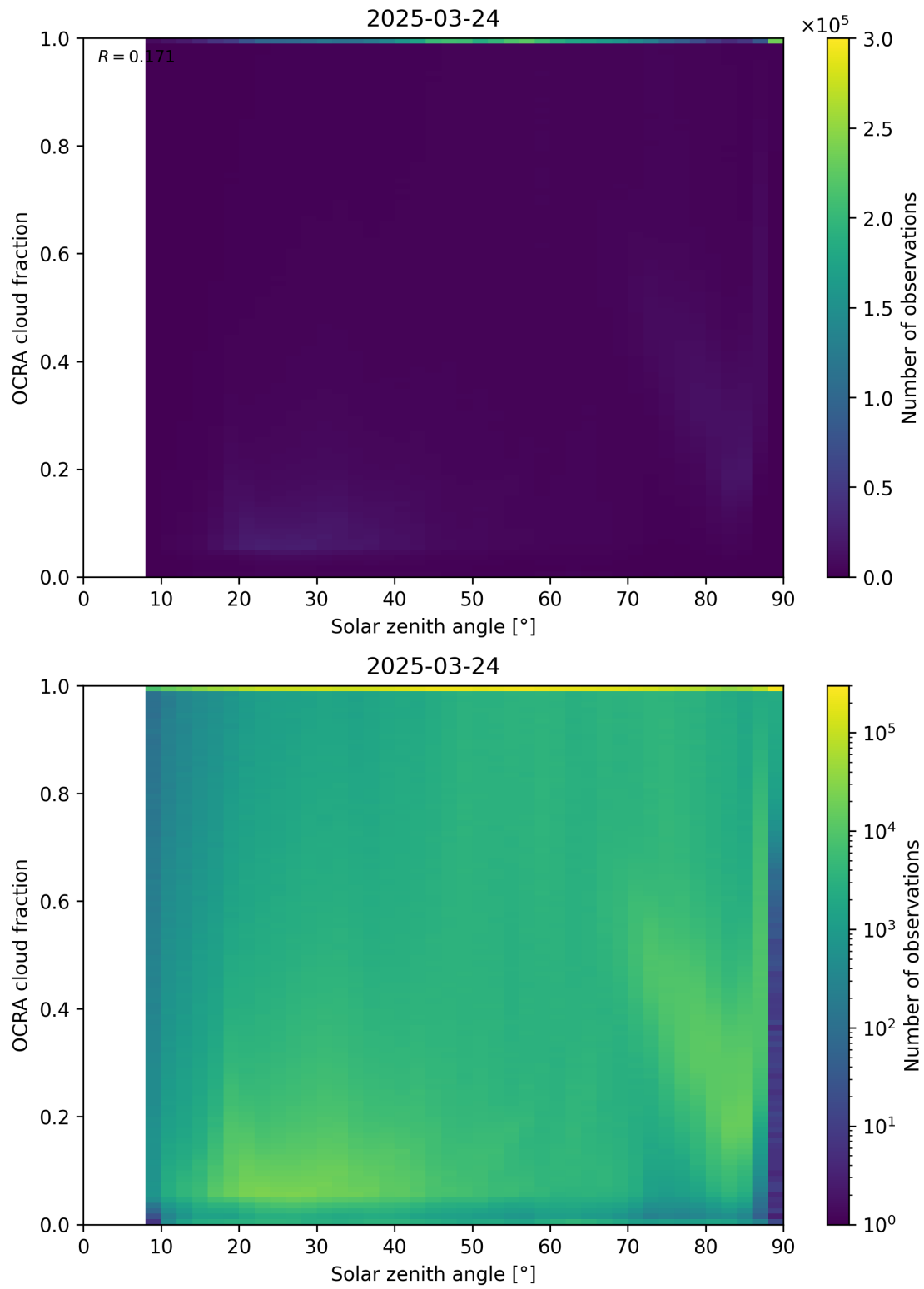


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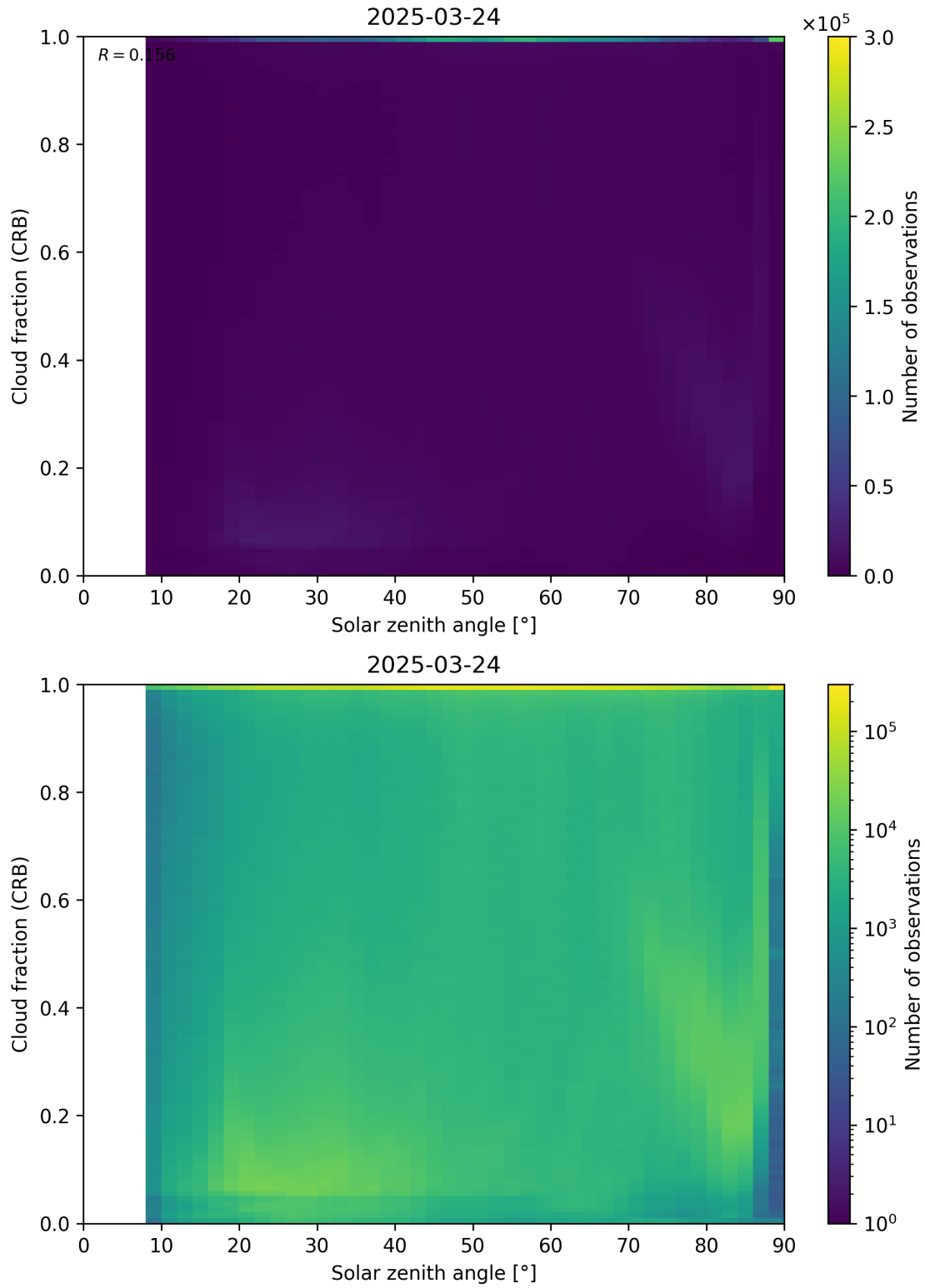


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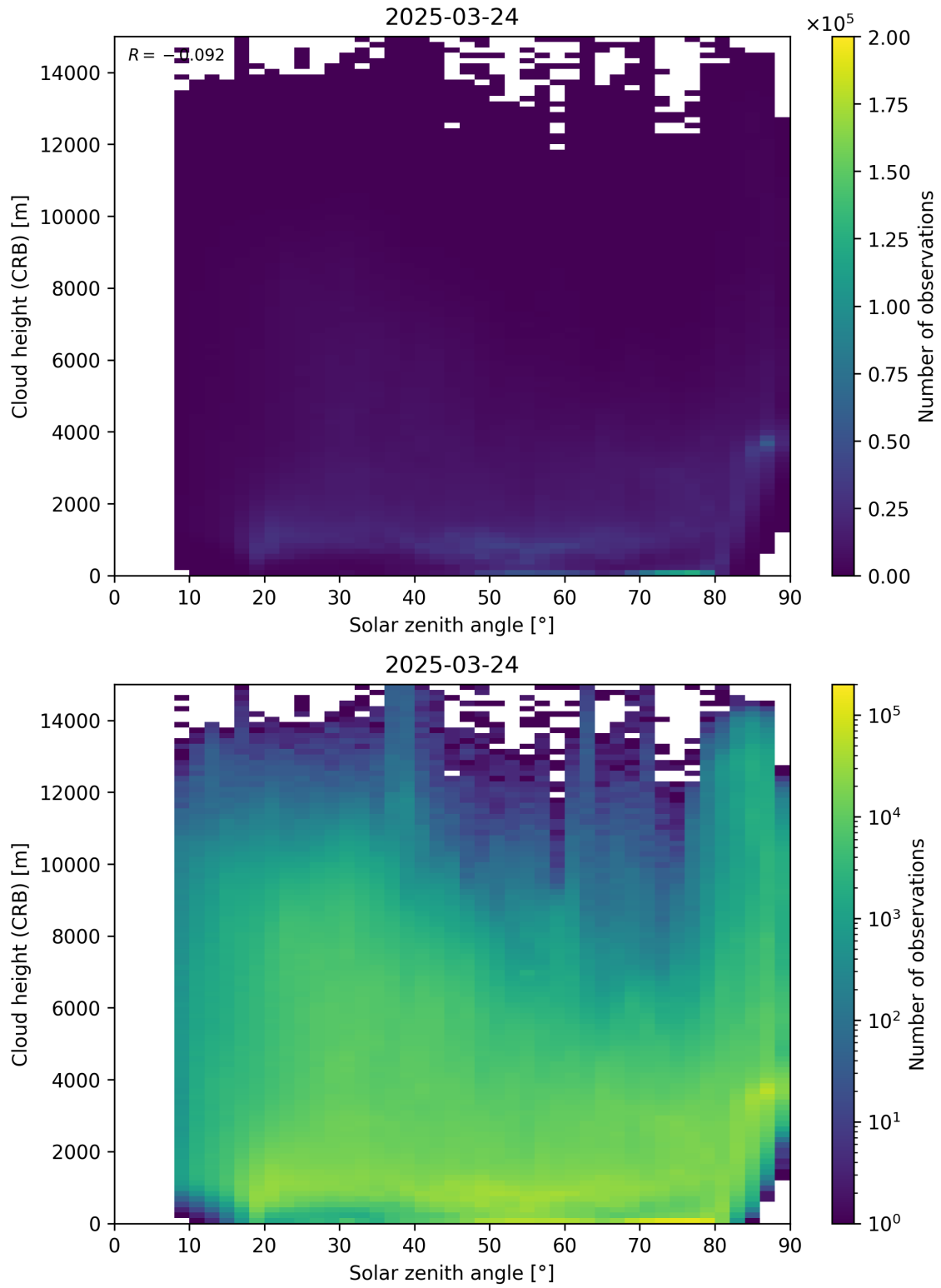


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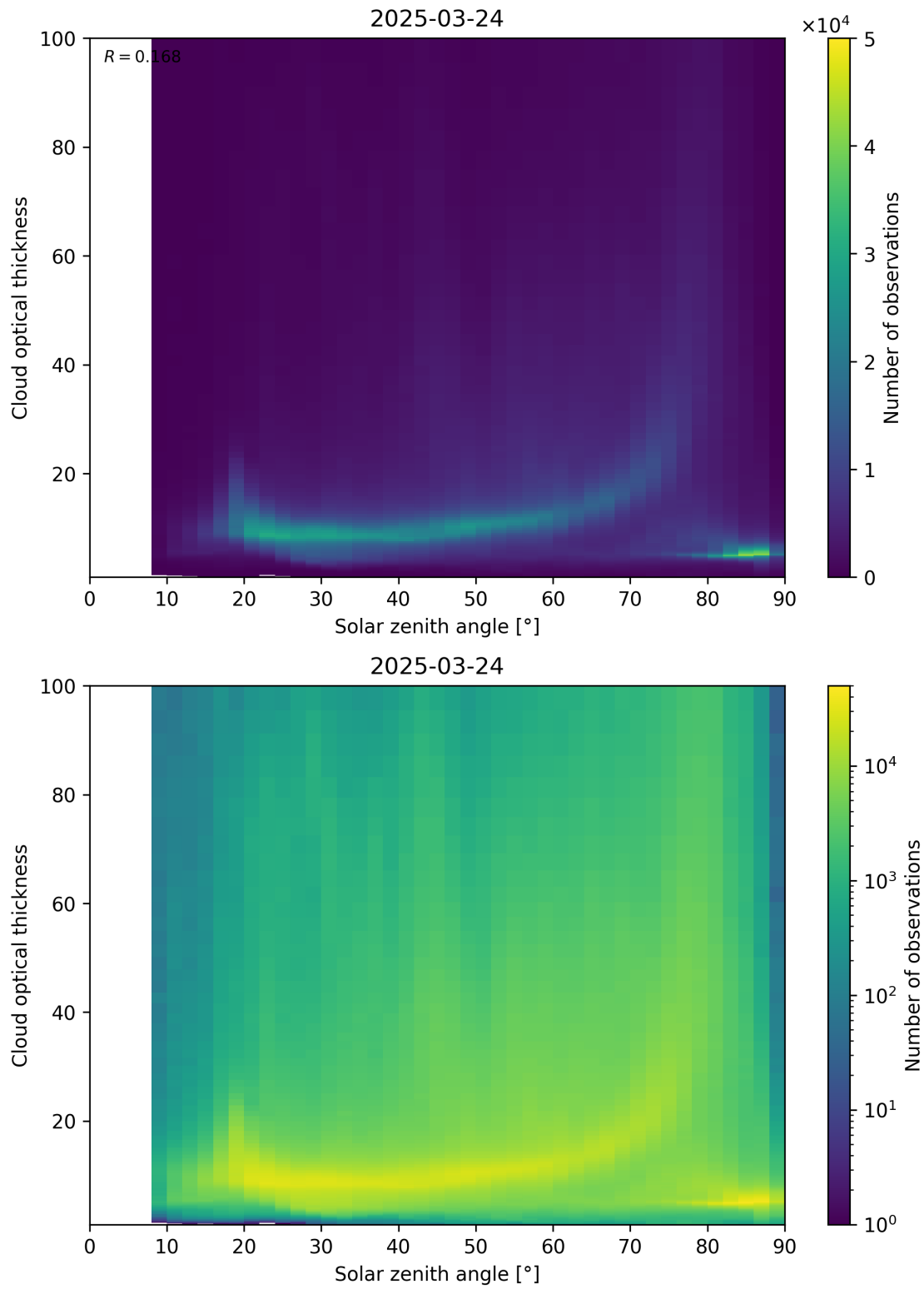


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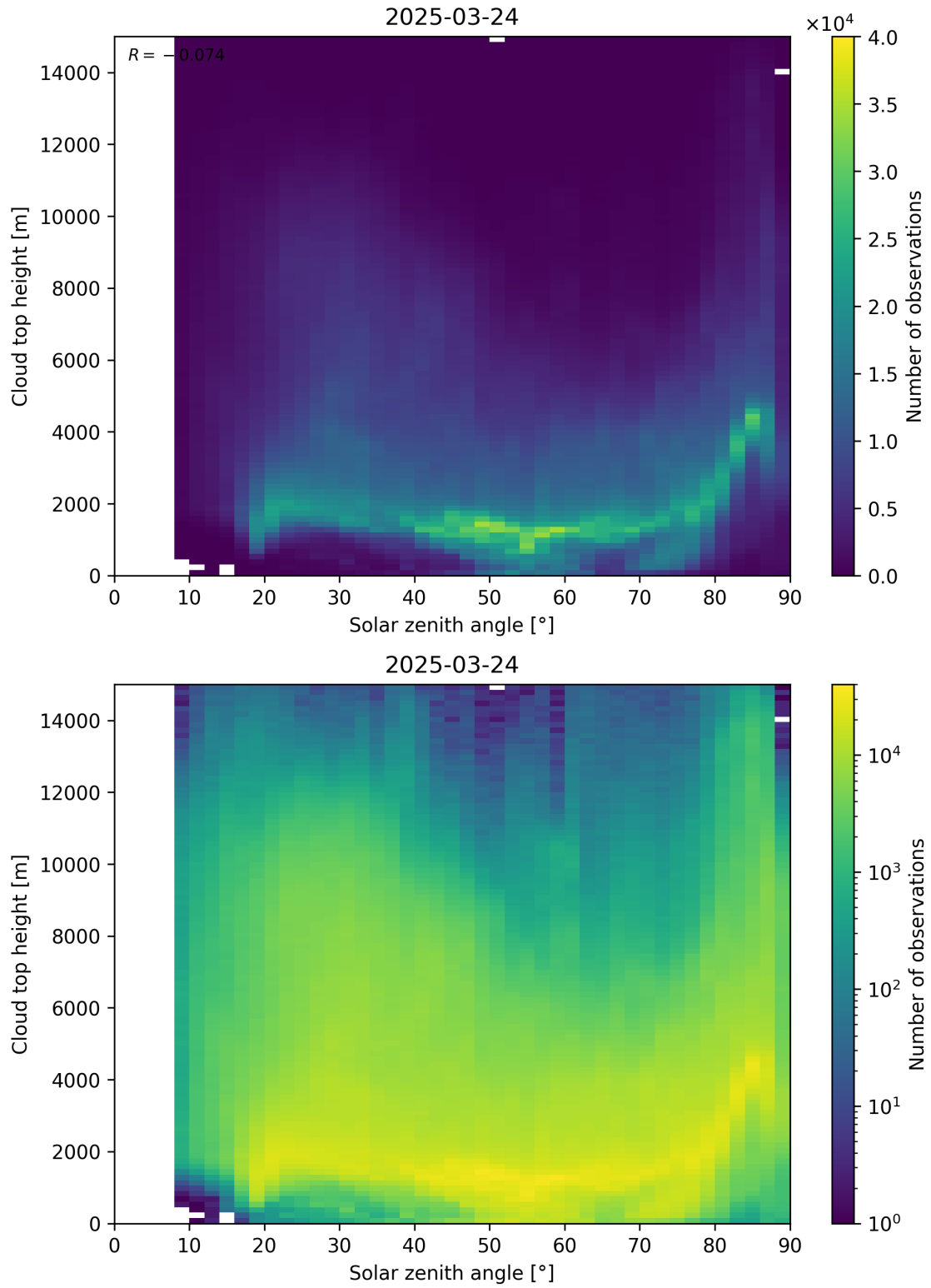


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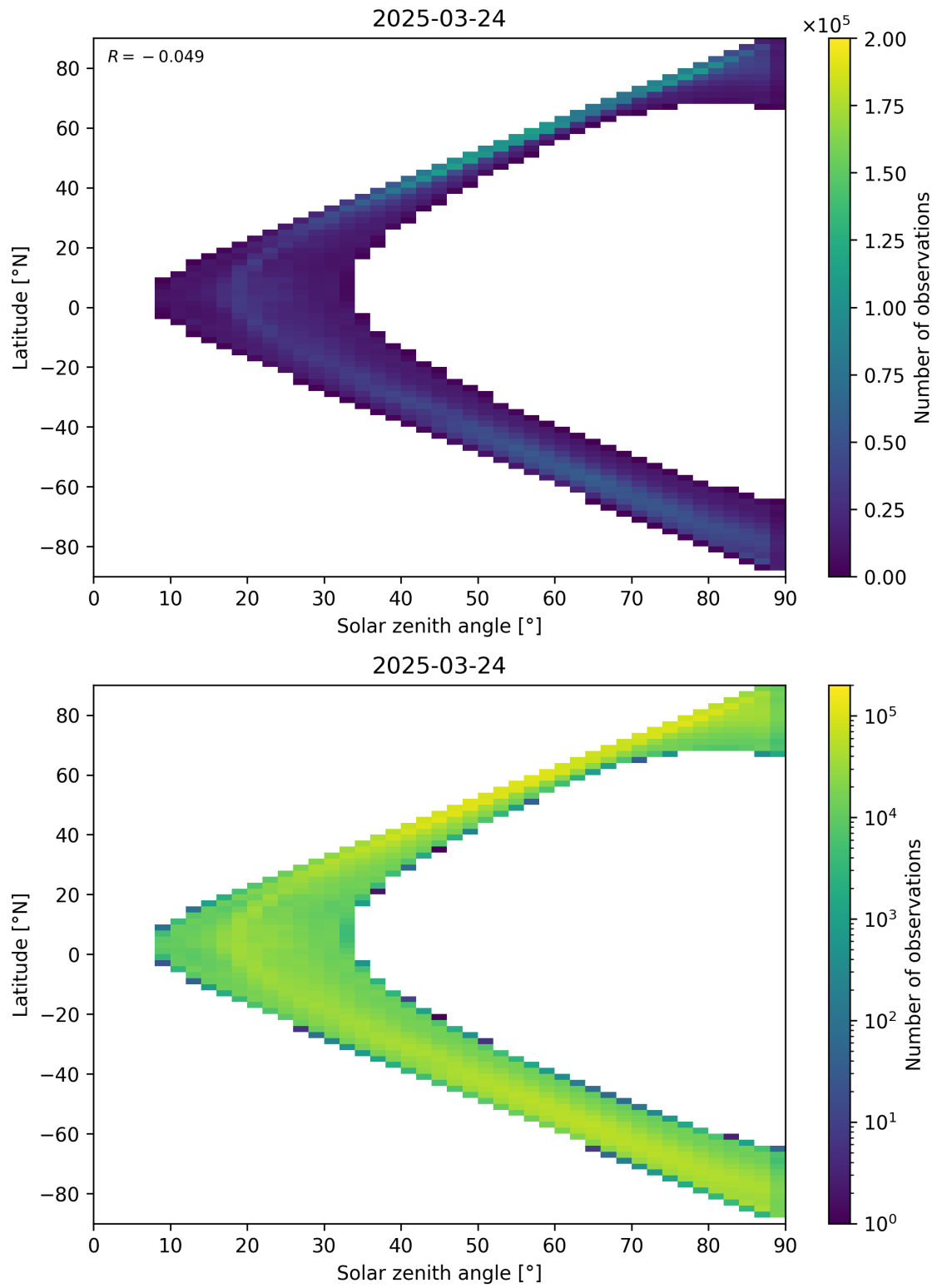


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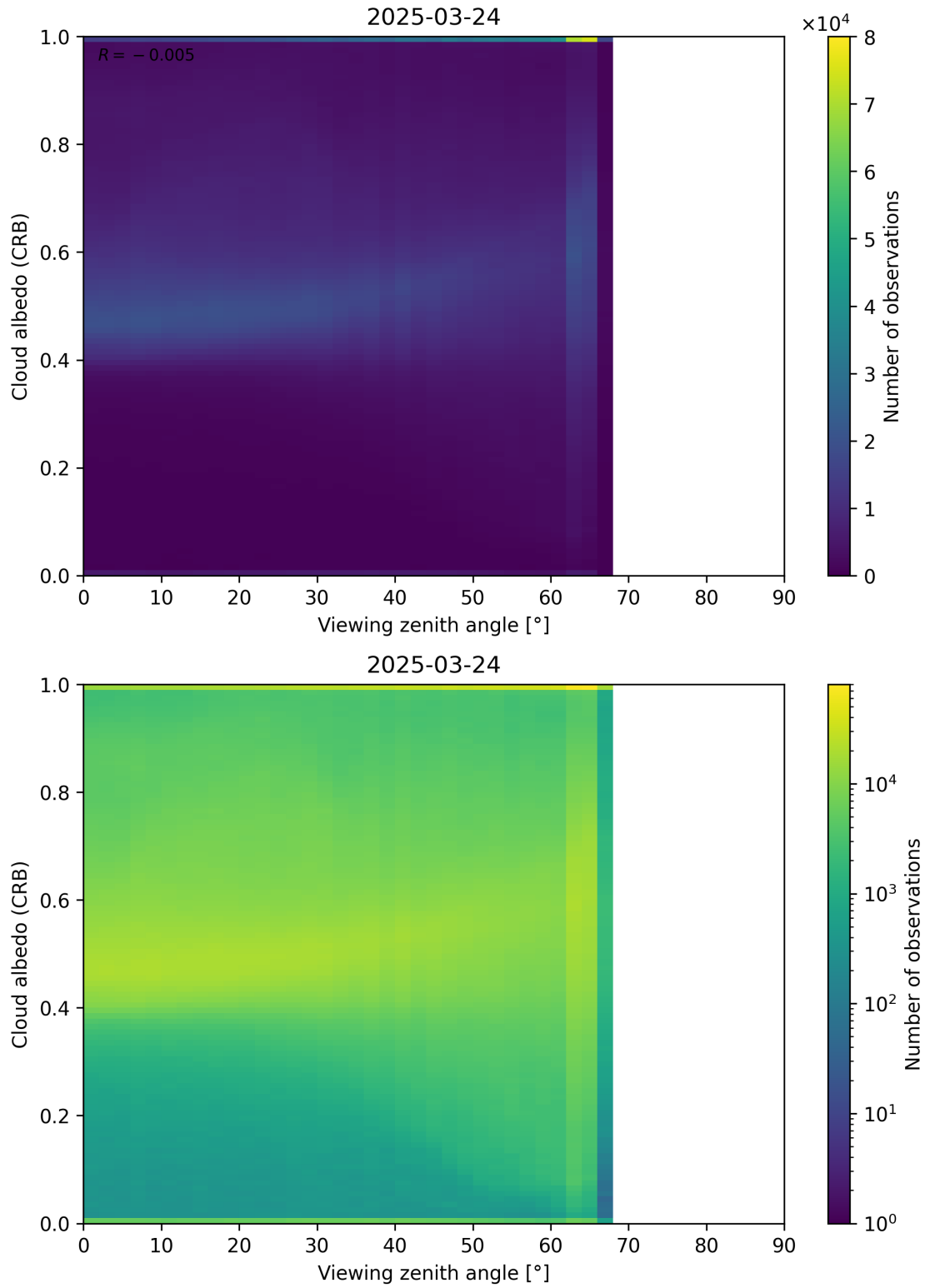


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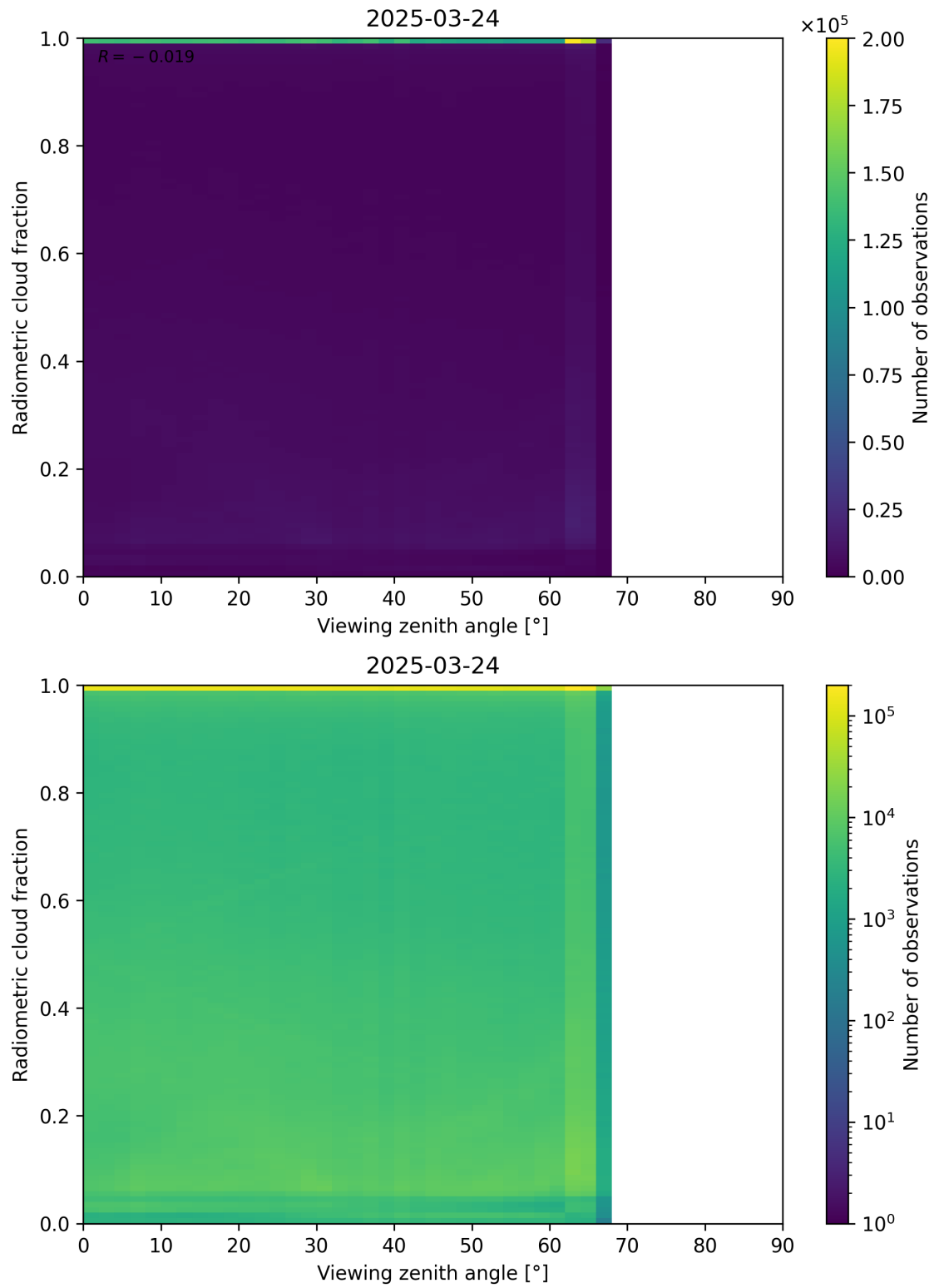


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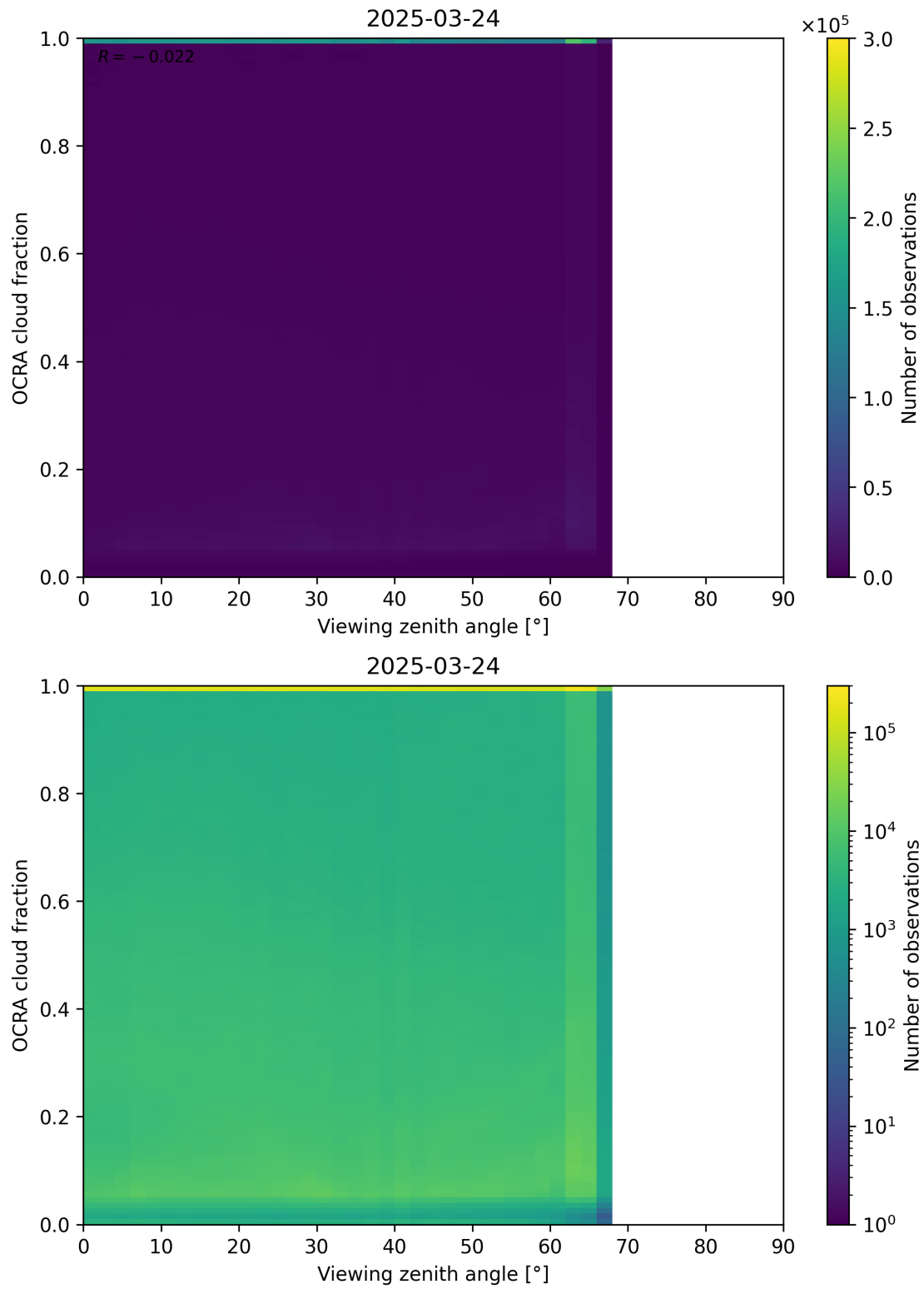


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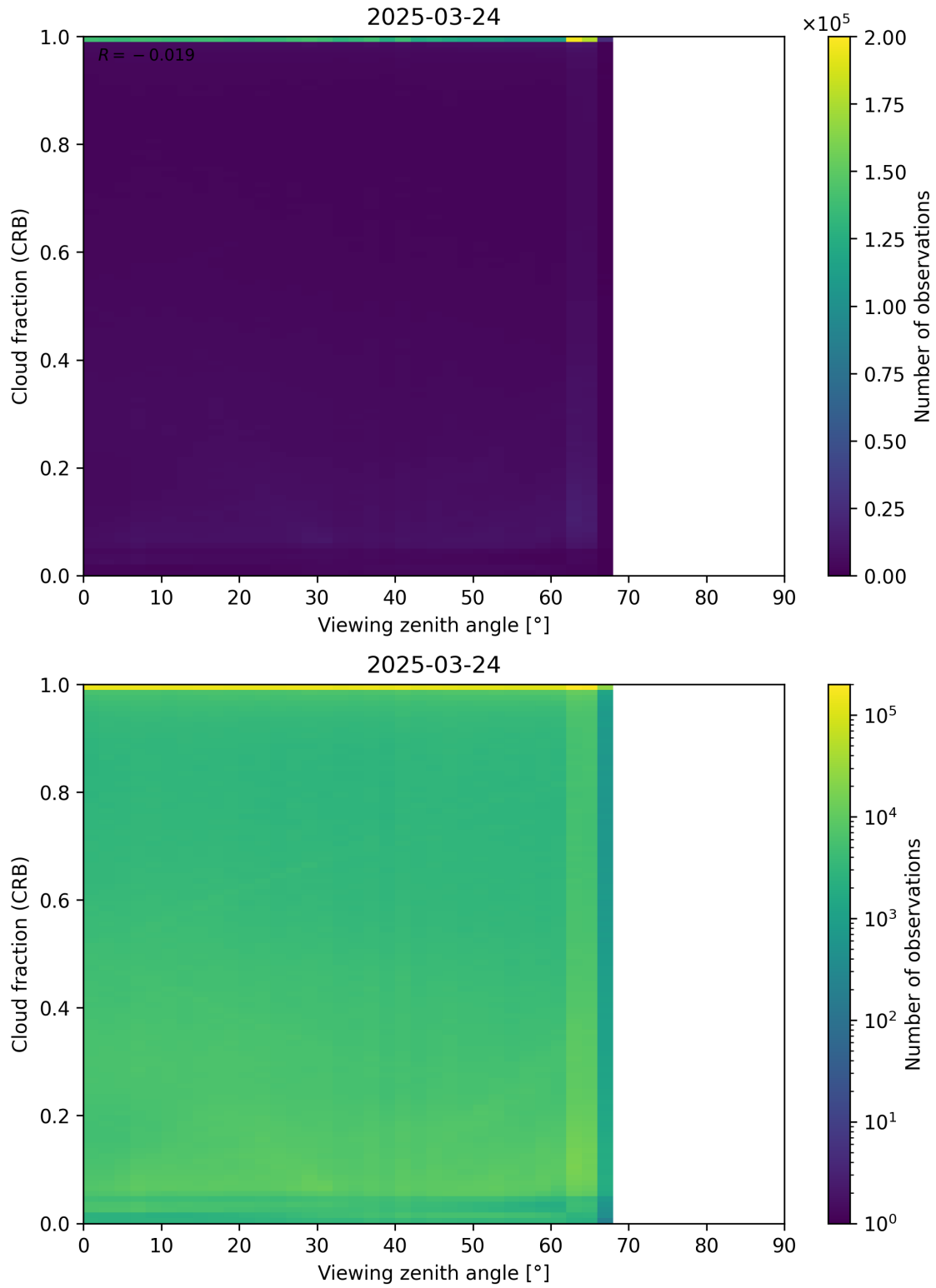


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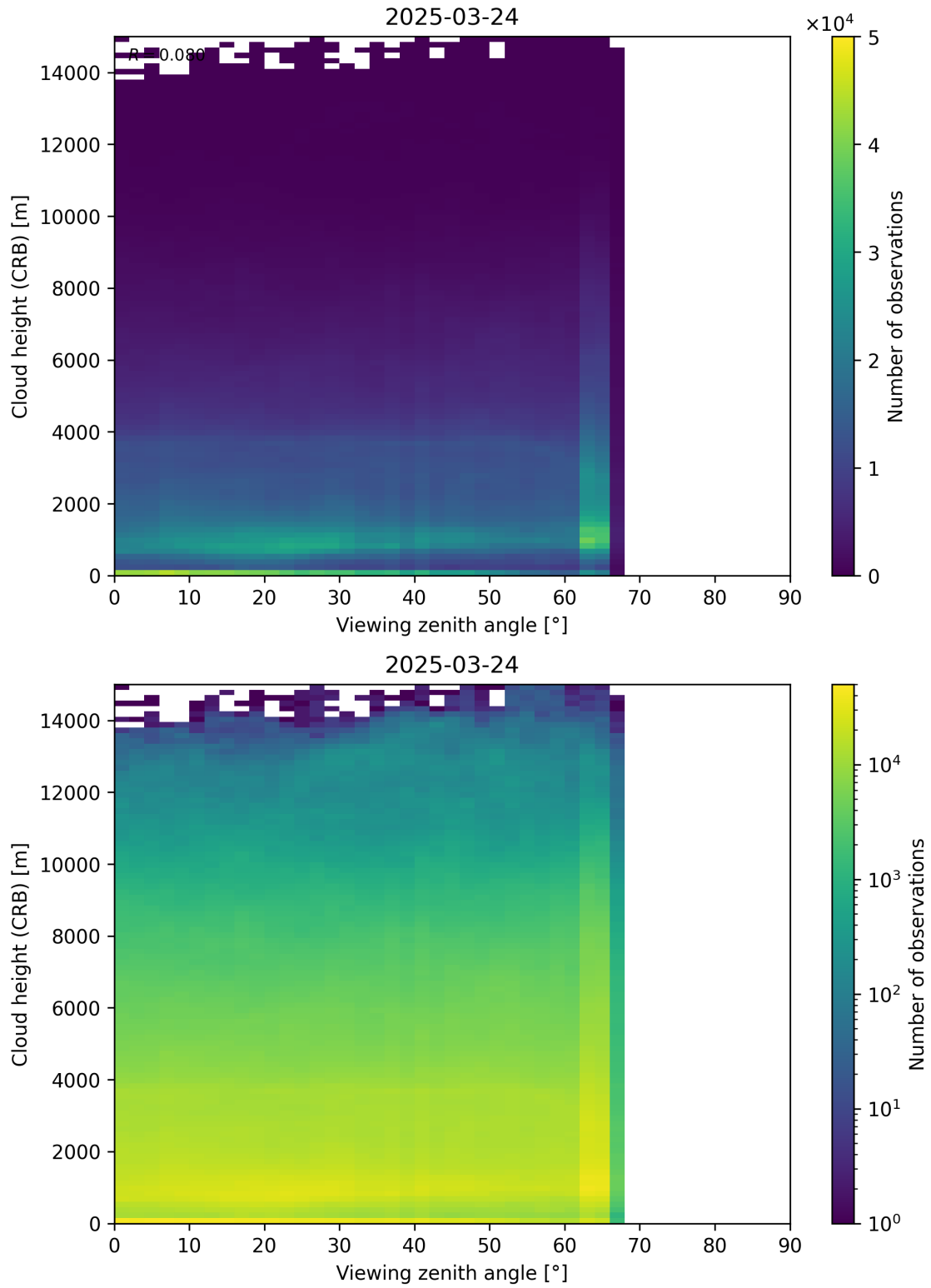


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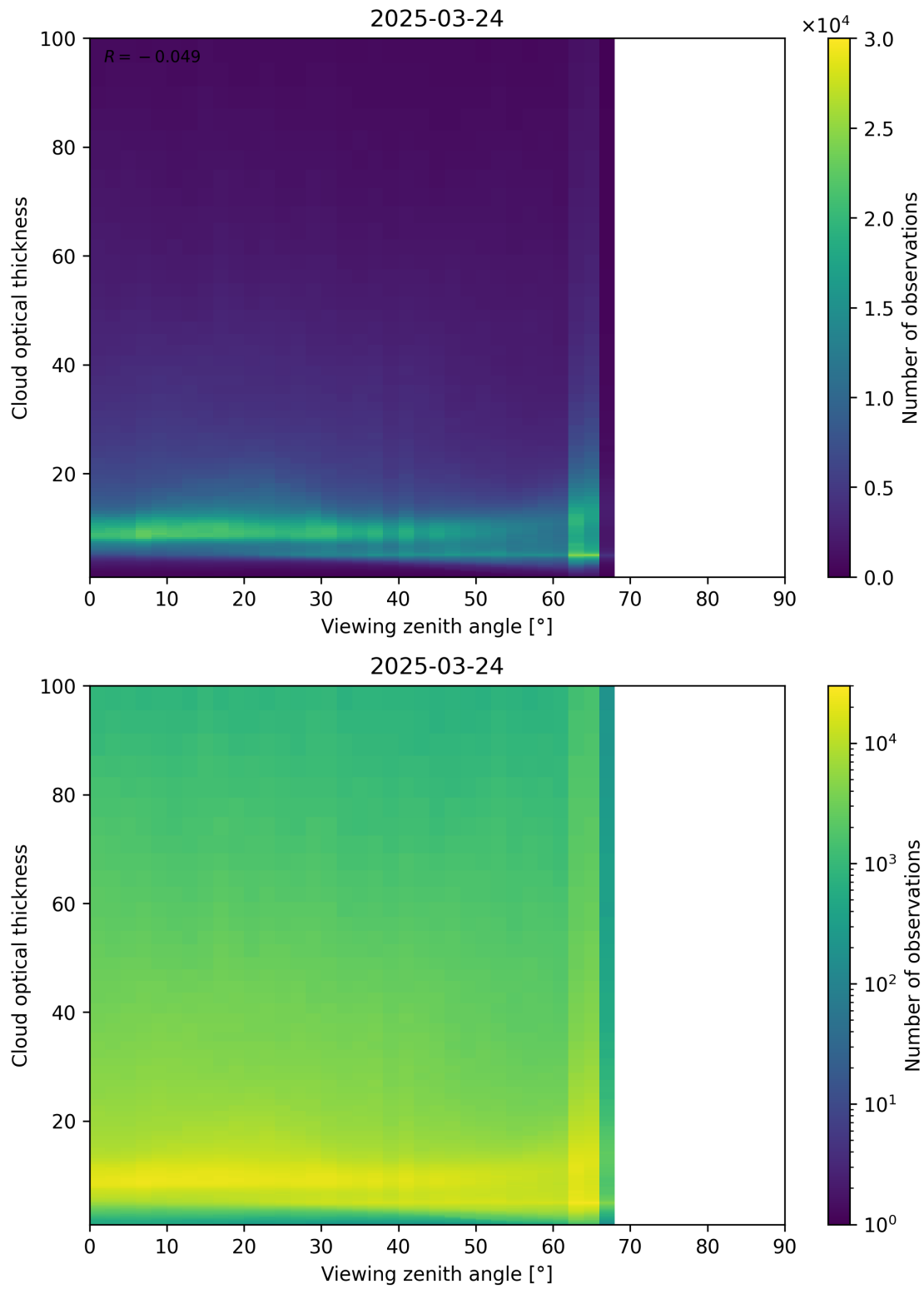


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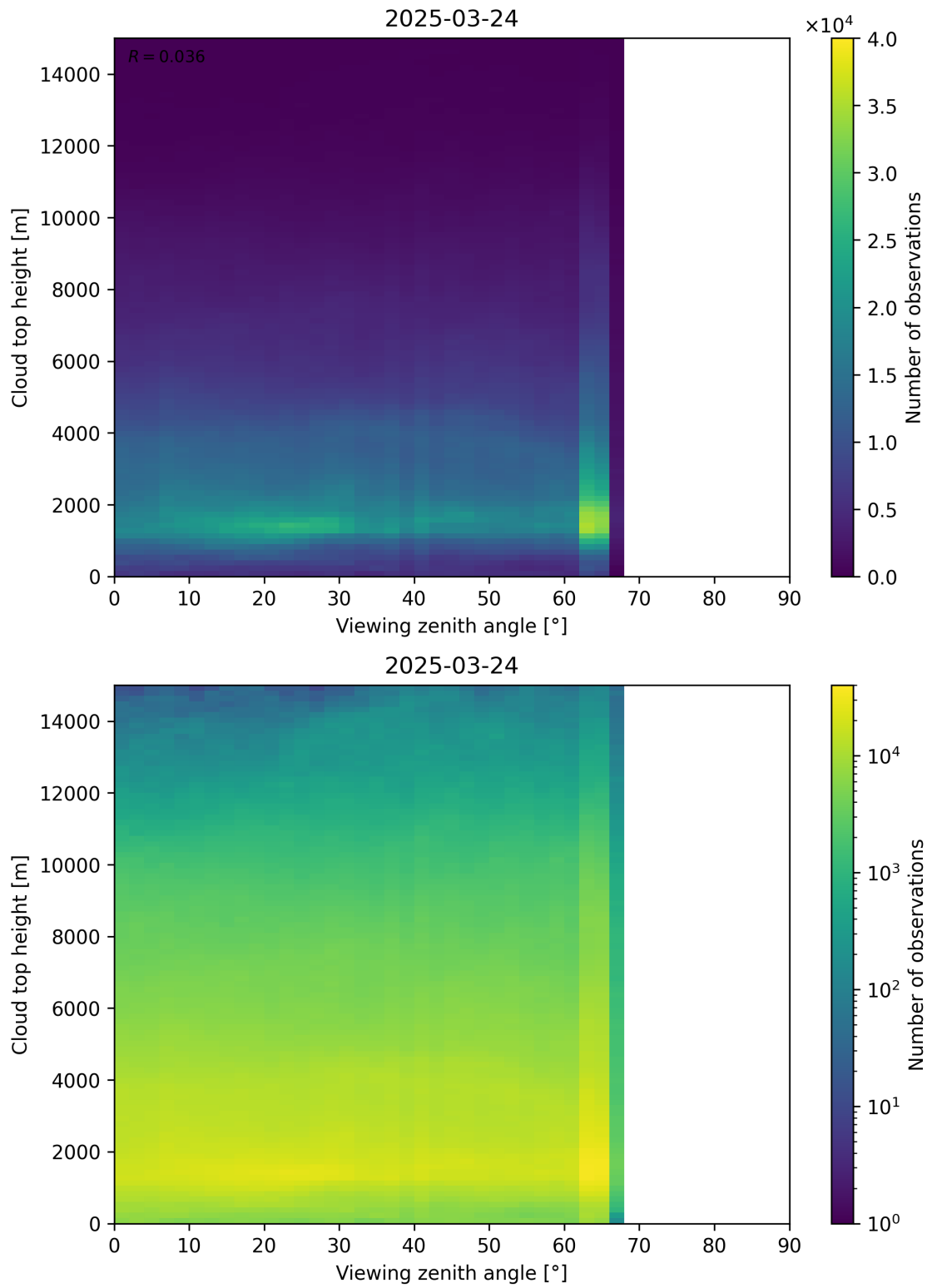


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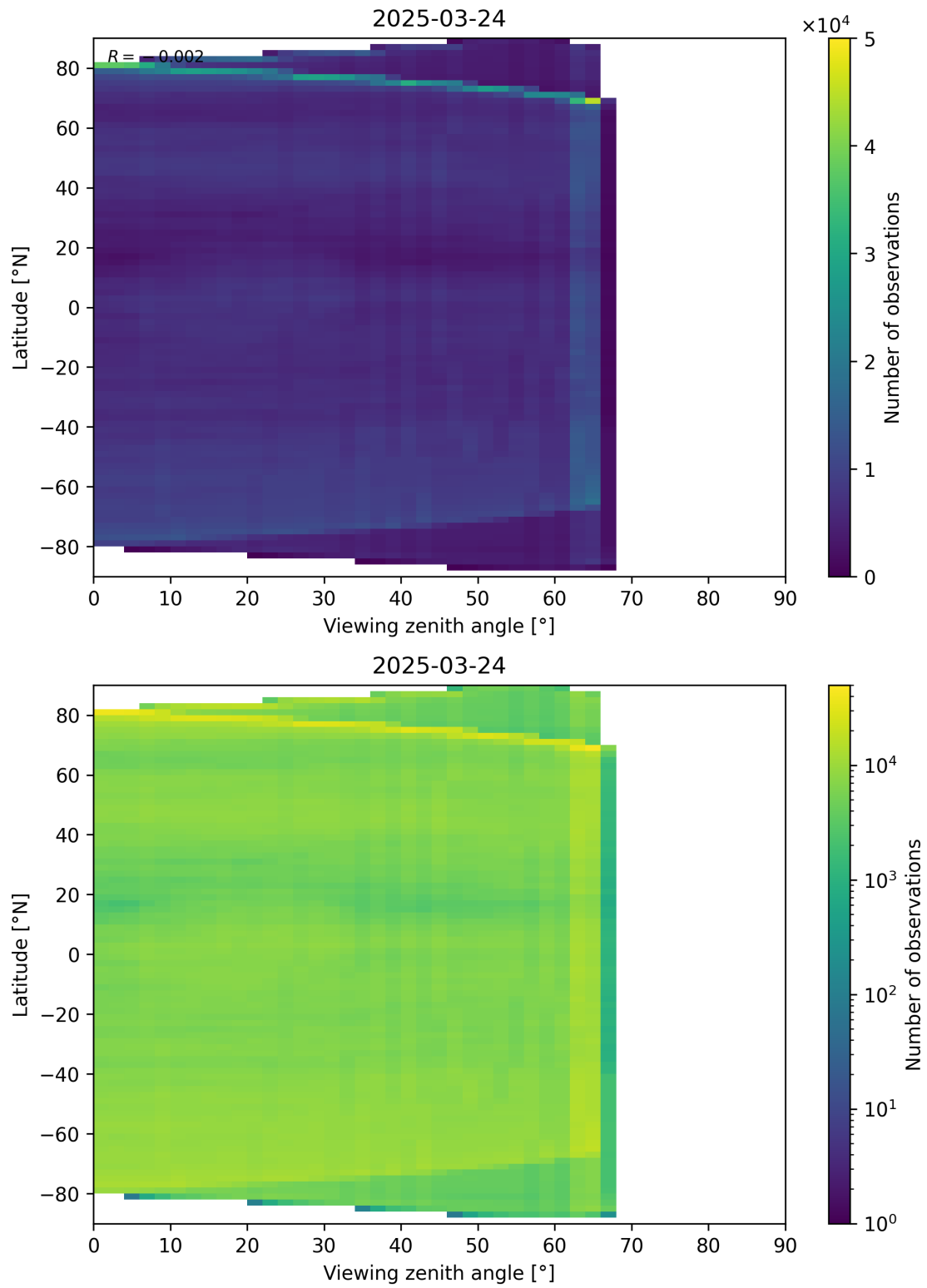


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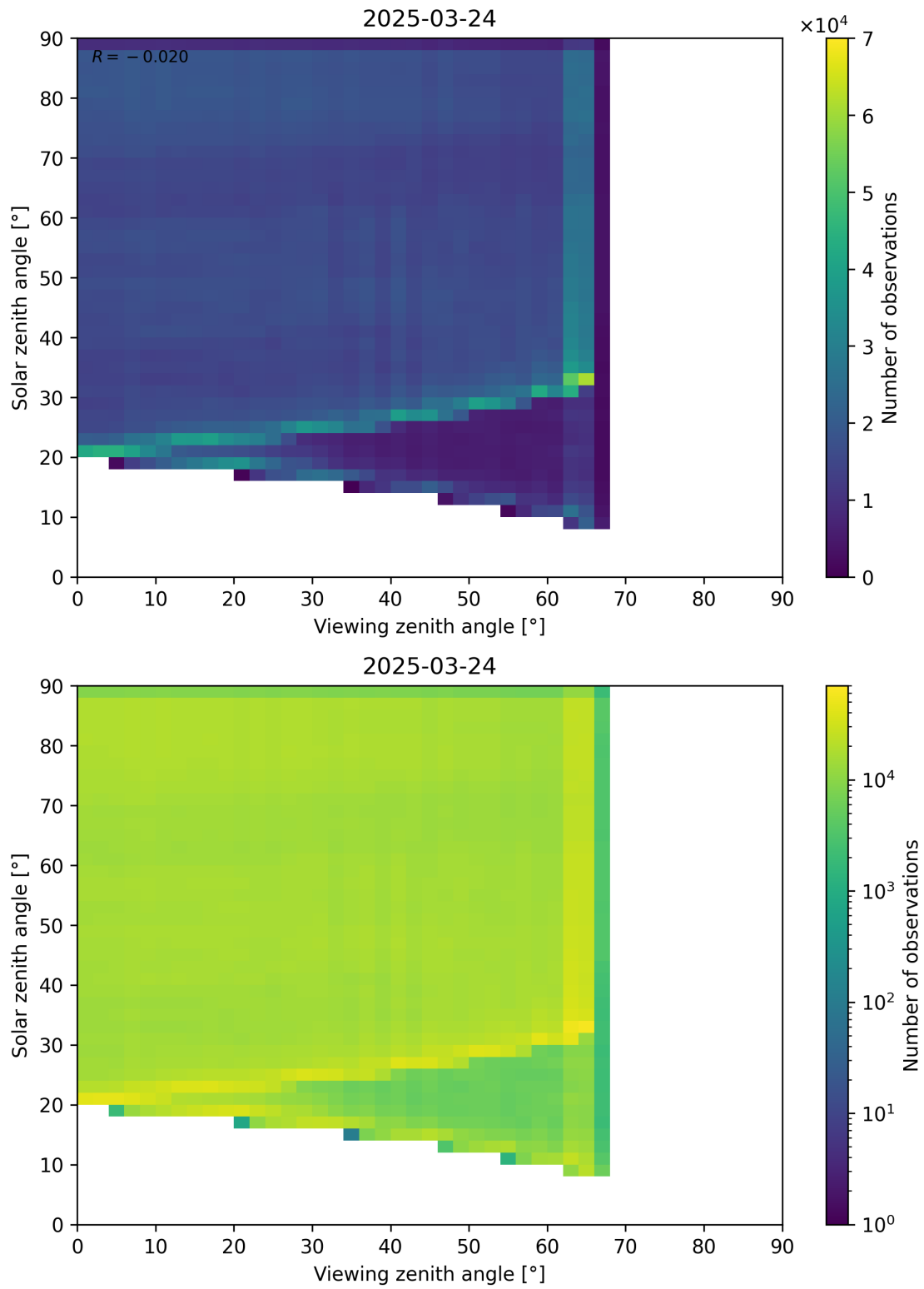


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