

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-02-07 (01:30)

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]	0.637 ± 0.359	21130979	0.995	0.530	0.770	0.0	1.000
cloud fraction [1]	0.573 ± 0.341	21130979	0.995	0.709	0.561	0.0	1.000
cloud top height [m]	$(0.401 \pm 0.263) \times 10^4$	21130979	1.425×10^3	3.795×10^3	3.520×10^3	0.0	2.000×10^4
cloud optical thickness [1]	18.8 ± 35.7	21130979	9.34	9.71	9.10	1.000	250
cloud fraction crb [1]	0.572 ± 0.341	21130979	0.995	0.710	0.560	0.0	1.000
cloud height crb [m]	$(0.305 \pm 0.225) \times 10^4$	21130979	975	3.151×10^3	2.580×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.602 ± 0.211	21130979	0.995	0.290	0.580	0.0	1.000
surface albedo fitted [1]	0.270 ± 0.351	21130979	1.500×10^{-2}	0.480	4.148×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.258 ± 0.339	21130979	1.500×10^{-2}	0.475	3.066×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.354 \pm 9.914) \times 10^{-4}$	21130979	5.000×10^{-5}	8.887×10^{-4}	4.503×10^{-4}	1.028×10^{-6}	0.302
fitted root mean square crb [1]	$(6.478 \pm 8.236) \times 10^{-4}$	21130979	5.000×10^{-5}	8.359×10^{-4}	3.534×10^{-4}	7.616×10^{-7}	0.476
wavelength shift [nm]	$(8.274 \pm 6.969) \times 10^{-3}$	21130979	9.000×10^{-4}	9.839×10^{-3}	7.986×10^{-3}	-4.761×10^{-2}	0.155
cloud fraction apriori [1]	0.577 ± 0.344	21130979	0.995	0.746	0.569	0.0	1.000
reflectance blue ocra [1]	0.580 ± 0.233	21130979	0.265	0.412	0.562	0.144	1.99
reflectance green ocra [1]	0.531 ± 0.263	21130979	0.185	0.483	0.520	7.952×10^{-2}	2.20
reflectance continuum aband [1]	0.484 ± 0.290	21130979	3.500×10^{-2}	0.503	0.489	1.218×10^{-2}	6.78

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	2.000×10^{-2}	0.400	0.930	1.000	1.000	1.000	1.000
cloud fraction [1]	2.157×10^{-2}	6.933×10^{-2}	0.107	0.157	0.255	0.964	1.000	1.000	1.000	1.000
cloud top height [m]	279	798	1.139×10^3	1.426×10^3	1.853×10^3	5.647×10^3	6.718×10^3	7.698×10^3	8.996×10^3	1.134×10^4
cloud optical thickness [1]	1.000	2.57	3.74	4.63	5.56	15.3	22.9	34.4	63.3	250
cloud fraction crb [1]	2.123×10^{-2}	6.841×10^{-2}	0.106	0.156	0.254	0.964	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	327	628	880	1.232×10^3	4.383×10^3	5.392×10^3	6.297×10^3	7.462×10^3	9.399×10^3
cloud albedo crb [1]	2.336×10^{-2}	0.256	0.366	0.422	0.466	0.755	0.841	0.898	0.966	1.000
surface albedo fitted [1]	0.0	6.471×10^{-3}	1.037×10^{-2}	1.372×10^{-2}	1.869×10^{-2}	0.499	0.824	0.918	0.967	1.000
surface albedo fitted crb [1]	0.0	4.885×10^{-3}	7.383×10^{-3}	9.778×10^{-3}	1.353×10^{-2}	0.489	0.813	0.876	0.910	0.954
fitted root mean square [1]	1.618×10^{-5}	3.125×10^{-5}	5.187×10^{-5}	8.372×10^{-5}	1.489×10^{-4}	1.038×10^{-3}	1.428×10^{-3}	1.812×10^{-3}	2.318×10^{-3}	3.447×10^{-3}
fitted root mean square crb [1]	1.065×10^{-5}	2.347×10^{-5}	3.992×10^{-5}	6.183×10^{-5}	1.071×10^{-4}	9.430×10^{-4}	1.322×10^{-3}	1.689×10^{-3}	2.197×10^{-3}	3.253×10^{-3}
wavelength shift [nm]	-8.146×10^{-3}	-9.896×10^{-4}	2.918×10^{-4}	1.337×10^{-3}	3.110×10^{-3}	1.295×10^{-2}	1.518×10^{-2}	1.710×10^{-2}	1.970×10^{-2}	2.570×10^{-2}
cloud fraction apriori [1]	3.136×10^{-2}	6.728×10^{-2}	0.103	0.153	0.254	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.235	0.260	0.284	0.315	0.368	0.780	0.852	0.897	0.932	1.07
reflectance green ocra [1]	0.153	0.174	0.194	0.221	0.279	0.762	0.843	0.893	0.932	1.04
reflectance continuum aband [1]	2.954×10^{-2}	5.319×10^{-2}	8.701×10^{-2}	0.132	0.226	0.729	0.814	0.863	0.908	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]	0.611 ± 0.386	7794524	0.650	0.800	0.0	1.000	0.300	0.950
cloud fraction [1]	0.549 ± 0.347	7794524	0.725	0.523	0.0	1.000	0.217	0.942
cloud top height [m]	$(0.407 \pm 0.270) \times 10^4$	7794524	4.072×10^3	3.401×10^3	0.0	2.000×10^4	1.845×10^3	5.917×10^3
cloud optical thickness [1]	28.0 ± 49.9	7794524	15.6	10.4	1.000	250	6.46	22.1
cloud fraction crb [1]	0.547 ± 0.347	7794524	0.724	0.520	0.0	1.000	0.216	0.940
cloud height crb [m]	$(0.335 \pm 0.232) \times 10^4$	7794524	3.635×10^3	2.824×10^3	0.0	2.000×10^4	1.363×10^3	4.998×10^3
cloud albedo crb [1]	0.595 ± 0.203	7794524	0.249	0.578	0.0	1.000	0.472	0.721
surface albedo fitted [1]	0.180 ± 0.224	7794524	0.271	4.498×10^{-2}	0.0	1.000	2.280×10^{-2}	0.294
surface albedo fitted crb [1]	0.170 ± 0.217	7794524	0.272	3.352×10^{-2}	0.0	1.000	1.664×10^{-2}	0.289
fitted root mean square [1]	$(5.124 \pm 6.674) \times 10^{-4}$	7794524	5.418×10^{-4}	2.869×10^{-4}	1.028×10^{-6}	9.963×10^{-2}	1.125×10^{-4}	6.543×10^{-4}
fitted root mean square crb [1]	$(4.290 \pm 5.897) \times 10^{-4}$	7794524	4.547×10^{-4}	1.996×10^{-4}	7.616×10^{-7}	3.834×10^{-2}	7.324×10^{-5}	5.279×10^{-4}
wavelength shift [nm]	$(7.027 \pm 6.723) \times 10^{-3}$	7794524	9.117×10^{-3}	6.271×10^{-3}	-4.657×10^{-2}	5.734×10^{-2}	2.139×10^{-3}	1.126×10^{-2}
cloud fraction apriori [1]	0.551 ± 0.351	7794524	0.759	0.523	0.0	1.000	0.213	0.972
reflectance blue ocr [1]	0.541 ± 0.206	7794524	0.320	0.522	0.148	1.99	0.367	0.687
reflectance green ocr [1]	0.485 ± 0.231	7794524	0.386	0.470	8.222×10^{-2}	1.95	0.275	0.661
reflectance continuum aband [1]	0.439 ± 0.268	7794524	0.421	0.430	1.396×10^{-2}	4.94	0.215	0.637

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]	0.652 ± 0.341	13336455	0.500	0.760	0.0	1.000	0.400	0.900
cloud fraction [1]	0.587 ± 0.336	13336455	0.693	0.580	0.0	1.000	0.283	0.976
cloud top height [m]	$(0.398 \pm 0.259) \times 10^4$	13336455	3.658×10^3	3.582×10^3	0.0	2.000×10^4	1.859×10^3	5.517×10^3
cloud optical thickness [1]	13.4 ± 22.0	13336455	7.68	8.54	1.000	250	5.22	12.9
cloud fraction crb [1]	0.587 ± 0.337	13336455	0.694	0.581	0.0	1.000	0.282	0.976
cloud height crb [m]	$(0.288 \pm 0.218) \times 10^4$	13336455	2.868×10^3	2.471×10^3	0.0	2.000×10^4	1.146×10^3	4.014×10^3
cloud albedo crb [1]	0.606 ± 0.215	13336455	0.314	0.581	0.0	1.000	0.463	0.777
surface albedo fitted [1]	0.323 ± 0.397	13336455	0.798	3.838×10^{-2}	0.0	1.000	1.653×10^{-2}	0.814
surface albedo fitted crb [1]	0.309 ± 0.384	13336455	0.796	2.848×10^{-2}	0.0	1.000	1.179×10^{-2}	0.808
fitted root mean square [1]	$(8.658 \pm 11.185) \times 10^{-4}$	13336455	1.059×10^{-3}	6.041×10^{-4}	1.105×10^{-6}	0.302	1.897×10^{-4}	1.249×10^{-3}
fitted root mean square crb [1]	$(7.757 \pm 9.095) \times 10^{-4}$	13336455	1.011×10^{-3}	5.191×10^{-4}	9.100×10^{-7}	0.476	1.487×10^{-4}	1.159×10^{-3}
wavelength shift [nm]	$(9.002 \pm 7.007) \times 10^{-3}$	13336455	9.794×10^{-3}	9.038×10^{-3}	-4.761×10^{-2}	0.155	3.914×10^{-3}	1.371×10^{-2}
cloud fraction apriori [1]	0.593 ± 0.340	13336455	0.716	0.593	0.0	1.000	0.284	1.000
reflectance blue oca [1]	0.603 ± 0.244	13336455	0.460	0.598	0.144	1.94	0.369	0.829
reflectance green oca [1]	0.559 ± 0.276	13336455	0.537	0.565	7.952×10^{-2}	2.20	0.281	0.818
reflectance continuum aband [1]	0.510 ± 0.298	13336455	0.545	0.536	1.218×10^{-2}	6.78	0.235	0.780

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]	0.737 ± 0.315	13322029	0.470	0.900	0.0	1.000	0.520	0.990
cloud fraction [1]	0.600 ± 0.362	13322029	0.772	0.643	0.0	1.000	0.228	1.000
cloud top height [m]	$(0.349 \pm 0.251) \times 10^4$	13322029	3.264×10^3	2.709×10^3	0.0	2.000×10^4	1.581×10^3	4.846×10^3
cloud optical thickness [1]	17.5 ± 27.5	13322029	9.13	10.1	1.000	250	7.24	16.4
cloud fraction crb [1]	0.599 ± 0.362	13322029	0.774	0.641	0.0	1.000	0.226	1.000
cloud height crb [m]	$(0.280 \pm 0.227) \times 10^4$	13322029	3.000×10^3	2.082×10^3	0.0	2.000×10^4	1.043×10^3	4.044×10^3
cloud albedo crb [1]	0.548 ± 0.164	13322029	0.198	0.529	0.0	1.000	0.451	0.649
surface albedo fitted [1]	$(6.283 \pm 14.518) \times 10^{-2}$	13322029	2.379×10^{-2}	2.272×10^{-2}	0.0	1.000	1.371×10^{-2}	3.750×10^{-2}
surface albedo fitted crb [1]	$(5.714 \pm 14.659) \times 10^{-2}$	13322029	1.794×10^{-2}	1.662×10^{-2}	0.0	1.000	9.766×10^{-3}	2.771×10^{-2}
fitted root mean square [1]	$(6.677 \pm 10.782) \times 10^{-4}$	13322029	8.334×10^{-4}	3.267×10^{-4}	1.028×10^{-6}	0.302	9.741×10^{-5}	9.308×10^{-4}
fitted root mean square crb [1]	$(6.326 \pm 8.869) \times 10^{-4}$	13322029	8.203×10^{-4}	3.047×10^{-4}	7.616×10^{-7}	0.476	8.790×10^{-5}	9.082×10^{-4}
wavelength shift [nm]	$(7.842 \pm 7.401) \times 10^{-3}$	13322029	1.023×10^{-2}	7.247×10^{-3}	-4.761×10^{-2}	0.155	2.491×10^{-3}	1.272×10^{-2}
cloud fraction apriori [1]	0.598 ± 0.367	13322029	0.784	0.639	0.0	1.000	0.216	1.000
reflectance blue oca [1]	0.497 ± 0.190	13322029	0.302	0.463	0.155	1.93	0.334	0.636
reflectance green oca [1]	0.436 ± 0.218	13322029	0.370	0.400	7.952×10^{-2}	2.04	0.236	0.606
reflectance continuum aband [1]	0.373 ± 0.258	13322029	0.448	0.344	1.218×10^{-2}	4.65	0.133	0.581

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]	0.476 ± 0.358	6490501	0.700	0.610	0.0	1.000	0.0	0.700
cloud fraction [1]	0.522 ± 0.288	6490501	0.455	0.489	0.0	1.000	0.295	0.750
cloud top height [m]	$(0.495 \pm 0.252) \times 10^4$	6490501	3.055×10^3	4.817×10^3	0.0	2.000×10^4	3.250×10^3	6.305×10^3
cloud optical thickness [1]	16.6 ± 38.9	6490501	6.21	5.89	1.000	250	4.35	10.6
cloud fraction crb [1]	0.522 ± 0.288	6490501	0.457	0.490	0.0	1.000	0.296	0.753
cloud height crb [m]	$(0.342 \pm 0.209) \times 10^4$	6490501	2.681×10^3	3.183×10^3	0.0	2.000×10^4	1.917×10^3	4.598×10^3
cloud albedo crb [1]	0.700 ± 0.247	6490501	0.339	0.760	0.0	1.000	0.554	0.893
surface albedo fitted [1]	0.672 ± 0.307	6490501	0.612	0.825	0.0	1.000	0.328	0.940
surface albedo fitted crb [1]	0.647 ± 0.291	6490501	0.566	0.815	0.0	1.000	0.325	0.891
fitted root mean square [1]	$(8.929 \pm 8.086) \times 10^{-4}$	6490501	9.084×10^{-4}	6.711×10^{-4}	1.105×10^{-6}	0.105	3.341×10^{-4}	1.243×10^{-3}
fitted root mean square crb [1]	$(7.213 \pm 7.029) \times 10^{-4}$	6490501	8.773×10^{-4}	5.012×10^{-4}	9.100×10^{-7}	7.693×10^{-2}	1.854×10^{-4}	1.063×10^{-3}
wavelength shift [nm]	$(9.407 \pm 5.947) \times 10^{-3}$	6490501	8.531×10^{-3}	9.518×10^{-3}	-4.442×10^{-2}	7.471×10^{-2}	5.001×10^{-3}	1.353×10^{-2}
cloud fraction apriori [1]	0.538 ± 0.291	6490501	0.465	0.511	0.0	1.000	0.310	0.776
reflectance blue ocrs [1]	0.737 ± 0.229	6490501	0.303	0.817	0.144	1.99	0.596	0.900
reflectance green ocrs [1]	0.713 ± 0.252	6490501	0.336	0.806	8.222×10^{-2}	2.20	0.562	0.898
reflectance continuum aband [1]	0.694 ± 0.232	6490501	0.331	0.764	1.802×10^{-2}	6.78	0.533	0.864

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	-1.616×10^{-2}	1.445×10^{-2}	-3.739×10^{-2}	4.028×10^{-2}	-6.786×10^{-3}	-3.781×10^{-2}	0.111	-1.722×10^{-3}	-4.178×10^{-2}
-1.616×10^{-2}	1.000	5.622×10^{-2}	0.104	7.275×10^{-2}	0.183	0.105	1.816×10^{-2}	0.285	0.119
1.445×10^{-2}	5.622×10^{-2}	1.000	-9.229×10^{-2}	4.951×10^{-2}	0.236	-9.518×10^{-2}	0.169	-0.101	-0.103
-3.739×10^{-2}	0.104	-9.229×10^{-2}	1.000	-6.101×10^{-2}	0.246	1.000	-5.321×10^{-2}	0.300	0.982
4.028×10^{-2}	7.275×10^{-2}	4.951×10^{-2}	-6.101×10^{-2}	1.000	7.248×10^{-2}	-6.002×10^{-2}	0.919	9.403×10^{-2}	-6.450×10^{-2}
-6.786×10^{-3}	0.183	0.236	0.246	7.248×10^{-2}	1.000	0.242	0.133	0.366	0.245
-3.781×10^{-2}	0.105	-9.518×10^{-2}	1.000	-6.002×10^{-2}	0.242	1.000	-5.347×10^{-2}	0.301	0.982
0.111	1.816×10^{-2}	0.169	-5.321×10^{-2}	0.919	0.133	-5.347×10^{-2}	1.000	-4.665×10^{-2}	-6.248×10^{-2}
-1.722×10^{-3}	0.285	-0.101	0.300	9.403×10^{-2}	0.366	0.301	-4.665×10^{-2}	1.000	0.325
-4.178×10^{-2}	0.119	-0.103	0.982	-6.450×10^{-2}	0.245	0.982	-6.248×10^{-2}	0.325	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	-6.75	13.9	-0.250	2.078×10^3	-4.76	-0.253	4.914×10^3	-7.118×10^{-3}	-0.282
-6.75	454	58.6	0.752	4.075×10^3	140	0.764	870	1.28	0.874
13.9	58.6	2.396×10^3	-1.54	6.372×10^3	413	-1.59	1.860×10^4	-1.04	-1.74
-0.250	0.752	-1.54	0.116	-54.7	2.99	0.116	-40.8	2.157×10^{-2}	0.115
2.078×10^3	4.075×10^3	6.372×10^3	-54.7	6.914×10^6	6.808×10^3	-53.8	5.433×10^6	52.1	-58.4
-4.76	140	413	2.99	6.808×10^3	1.276×10^3	2.94	1.066×10^4	2.75	3.02
-0.253	0.764	-1.59	0.116	-53.8	2.94	0.116	-41.0	2.160×10^{-2}	0.115
4.914×10^3	870	1.860×10^4	-40.8	5.433×10^6	1.066×10^4	-41.0	5.055×10^6	-22.1	-48.4
-7.118×10^{-3}	1.28	-1.04	2.157×10^{-2}	52.1	2.75	2.160×10^{-2}	-22.1	4.441×10^{-2}	2.358×10^{-2}
-0.282	0.874	-1.74	0.115	-58.4	3.02	0.115	-48.4	2.358×10^{-2}	0.119

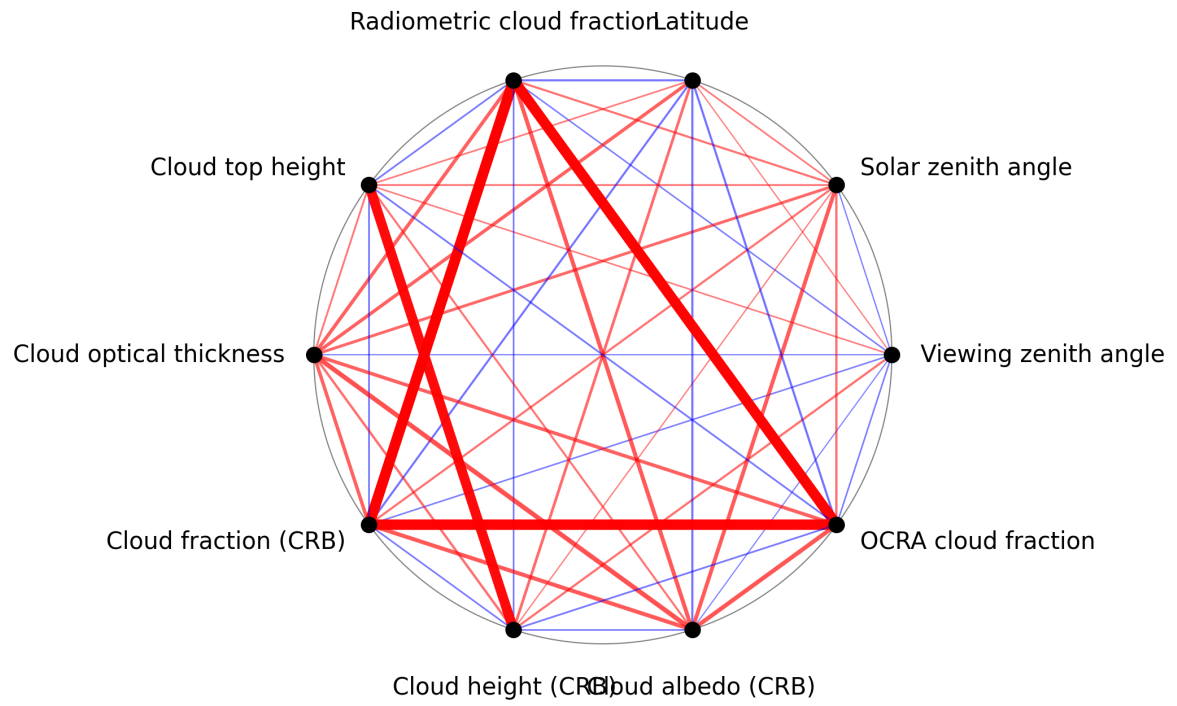


Figure 1: Map of correlation graph for 2025-01-23 to 2025-01-24.

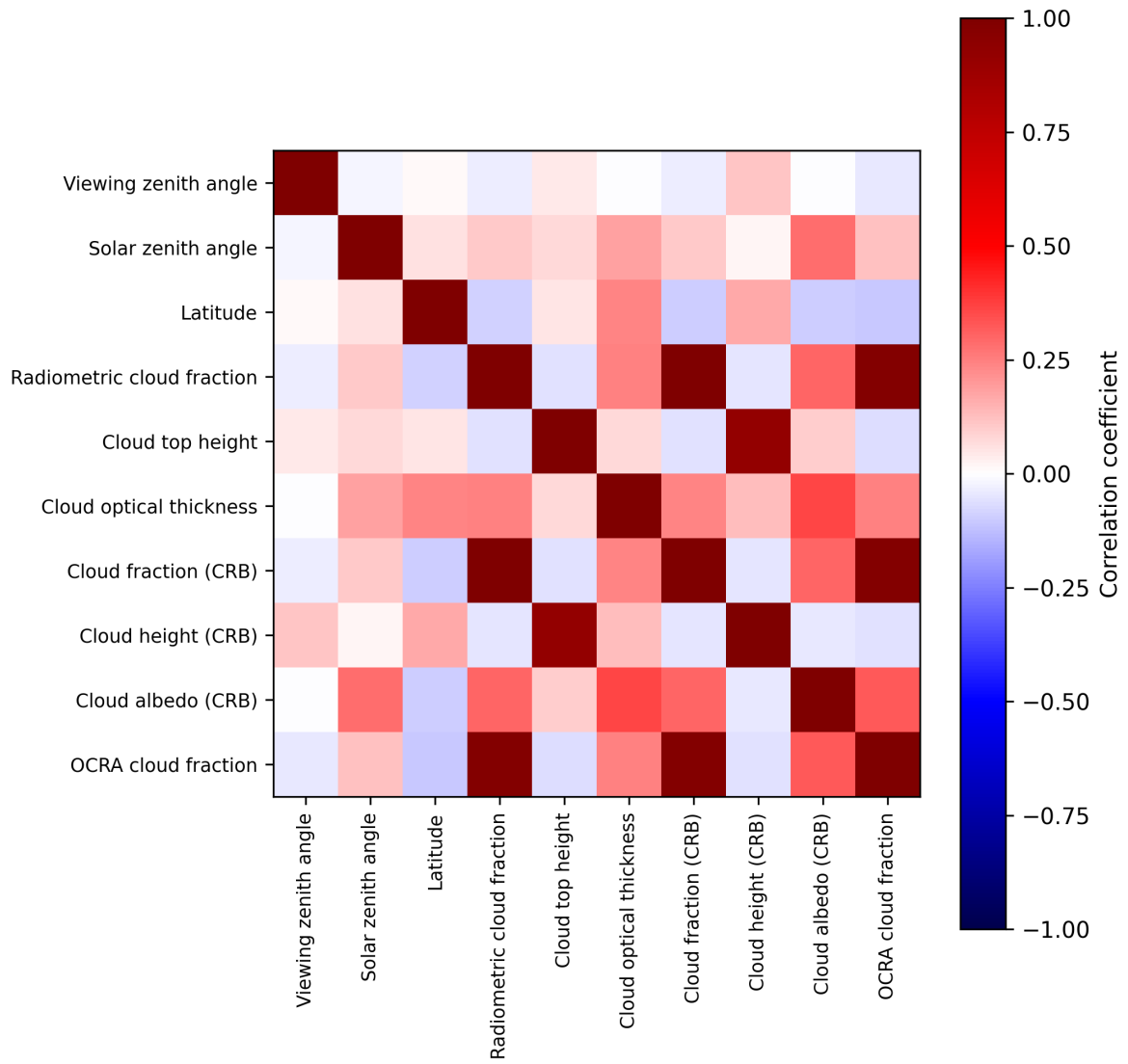


Figure 2: Map of correlation matrix for 2025-01-23 to 2025-01-24.

3 Granule outlines

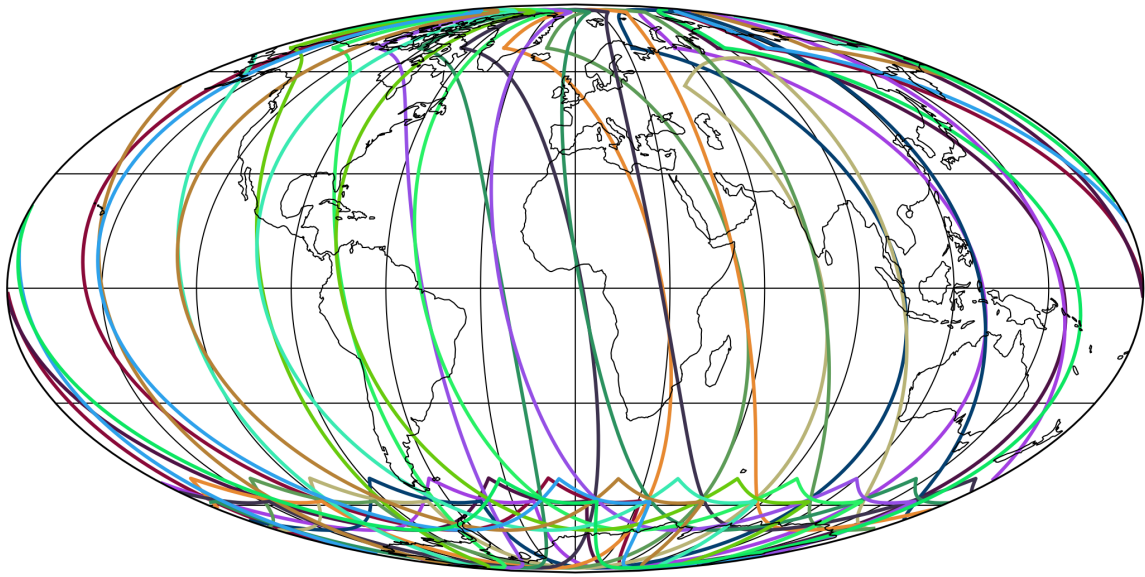


Figure 3: Outline of the granules.

4 Input data monitoring

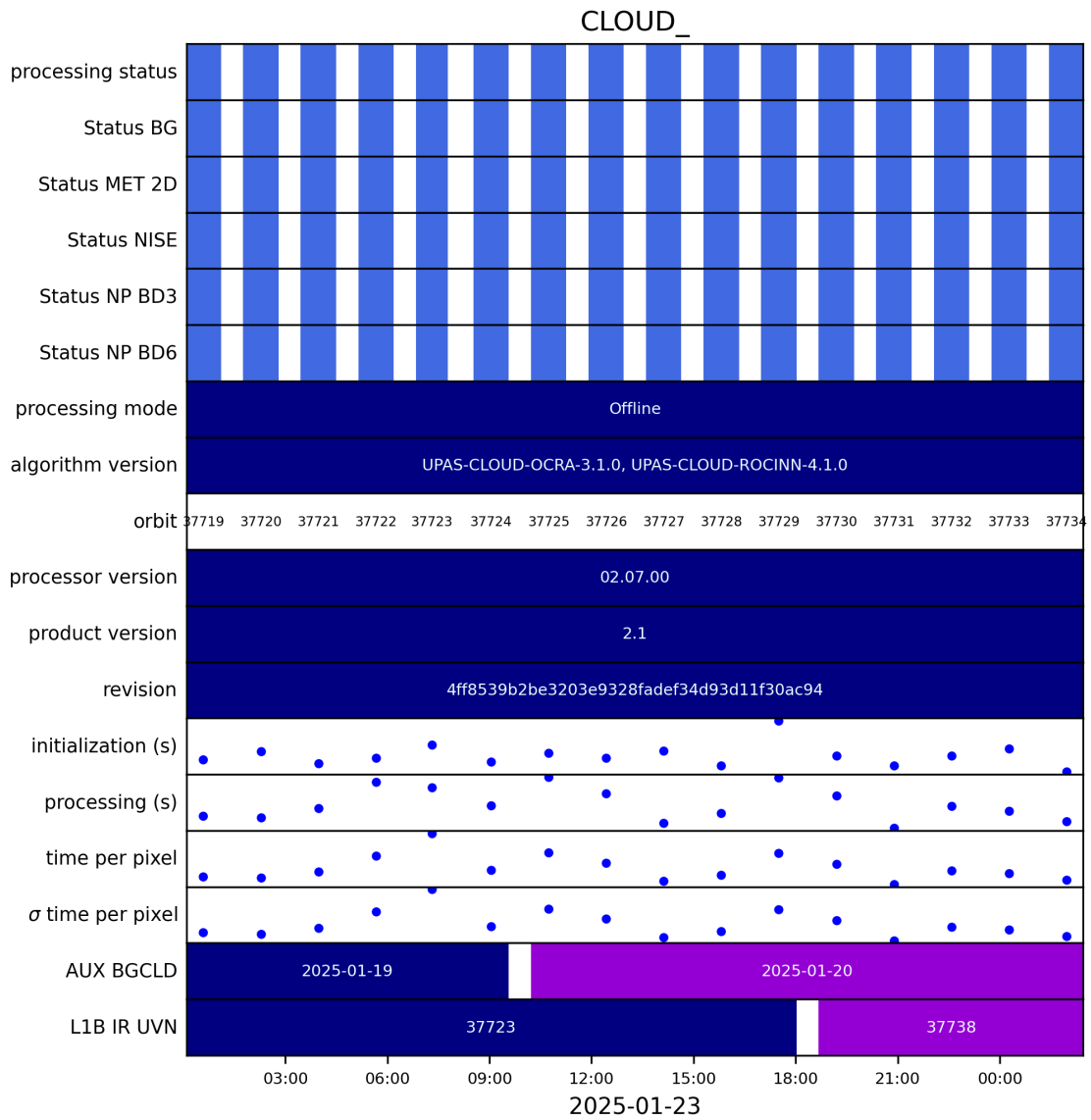


Figure 4: Input data per granule

5 Warnings and errors

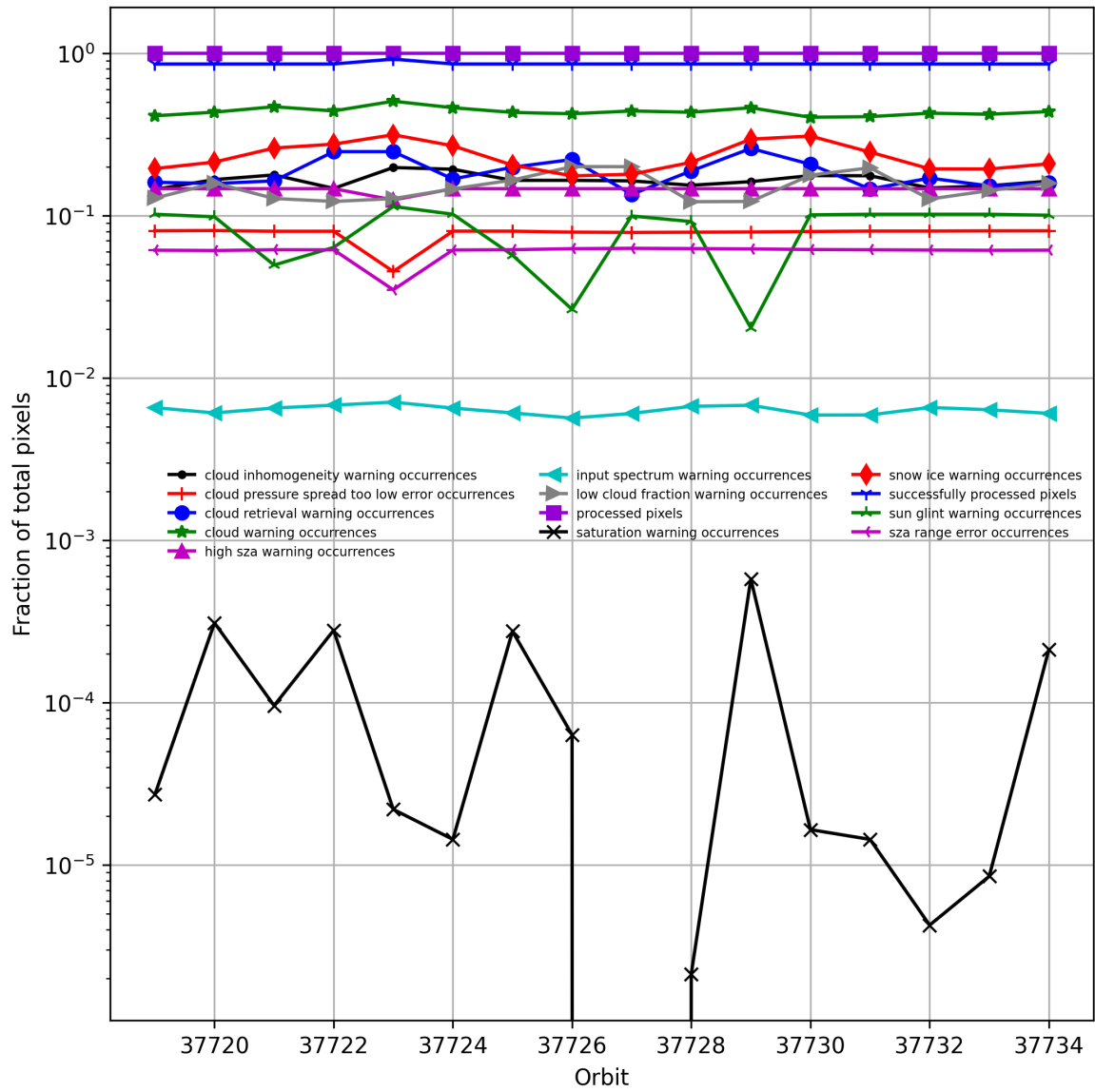


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

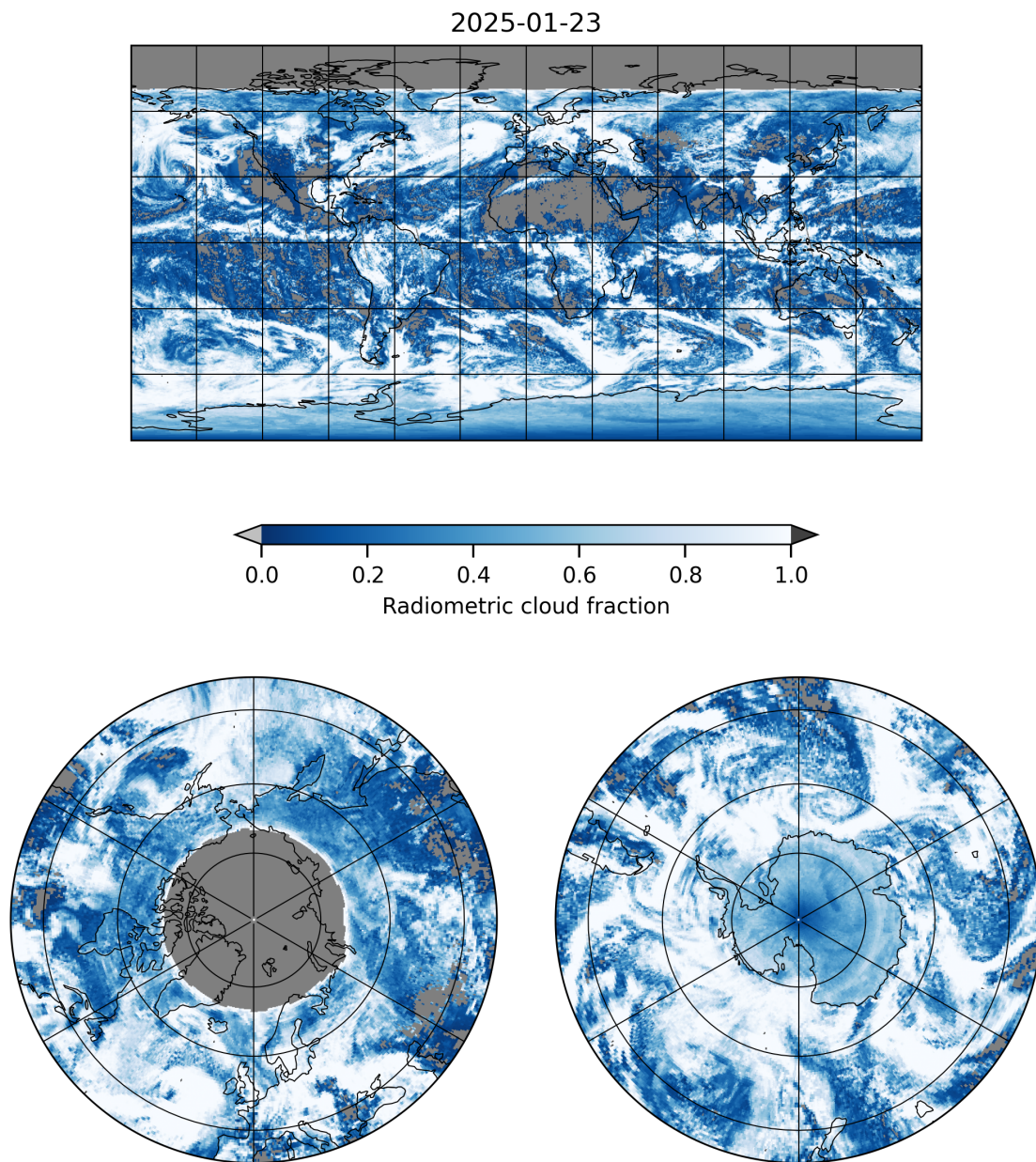


Figure 6: Map of “Radiometric cloud fraction” for 2025-01-23 to 2025-01-24

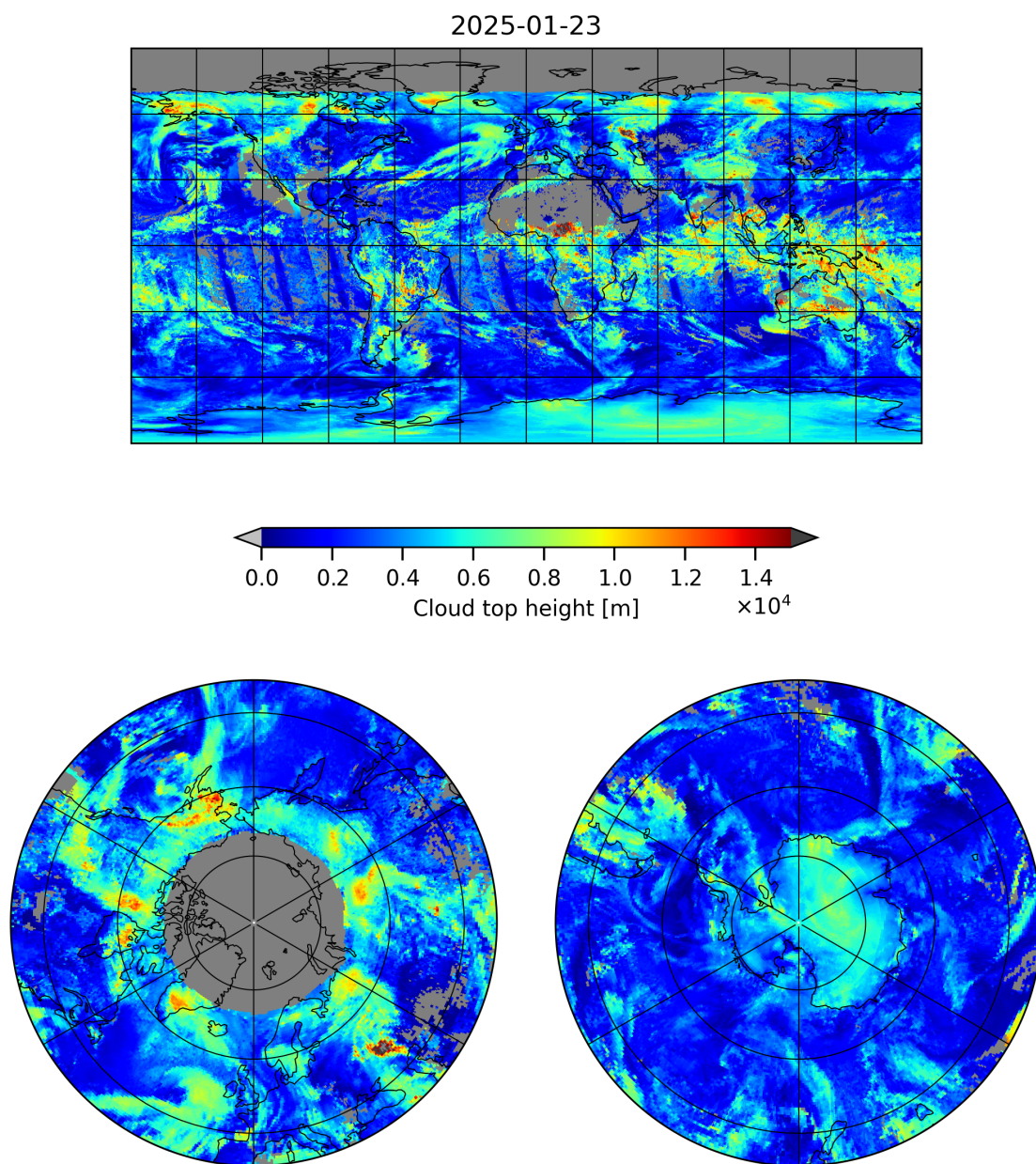


Figure 7: Map of “Cloud top height” for 2025-01-23 to 2025-01-24

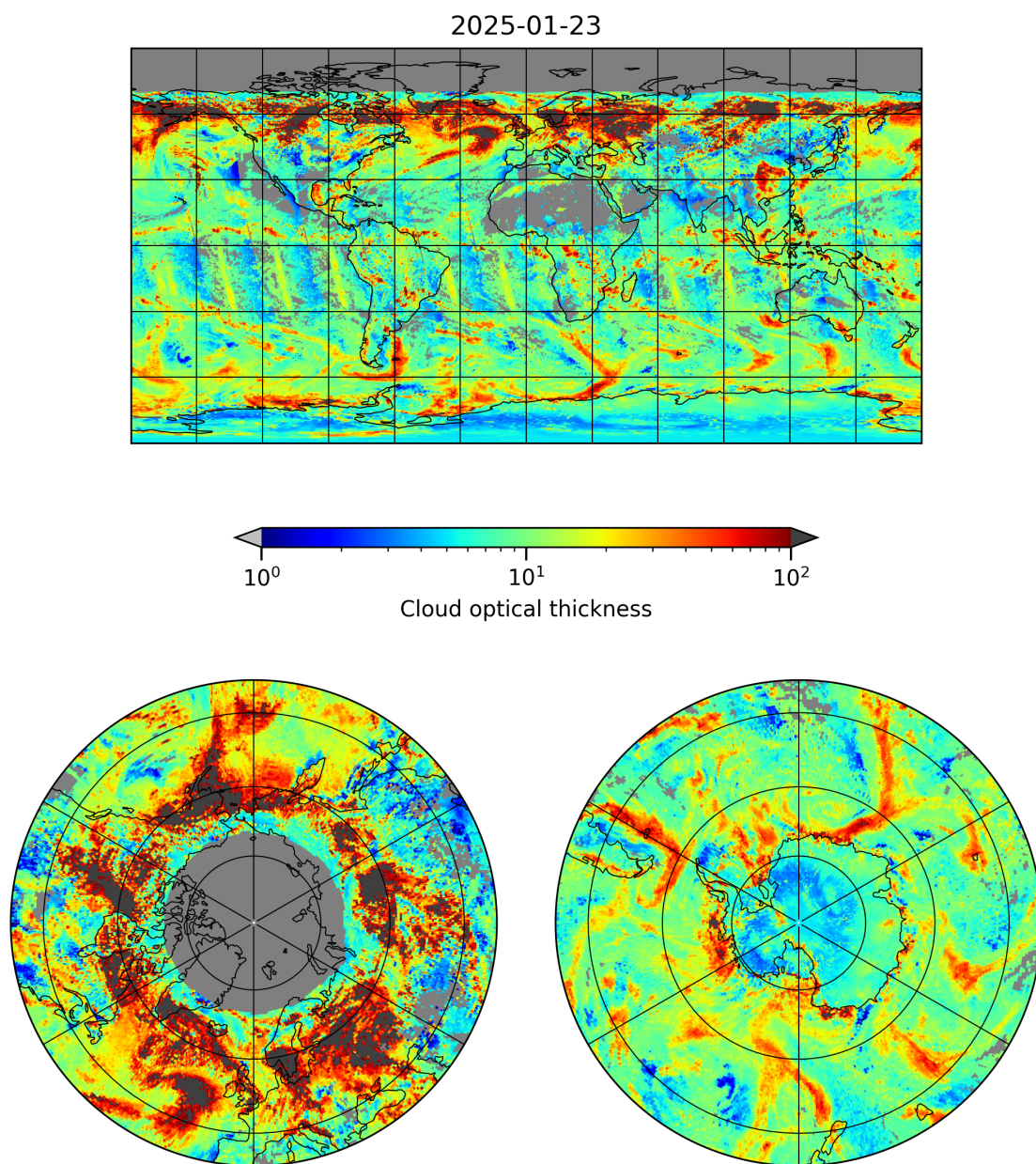


Figure 8: Map of “Cloud optical thickness” for 2025-01-23 to 2025-01-24

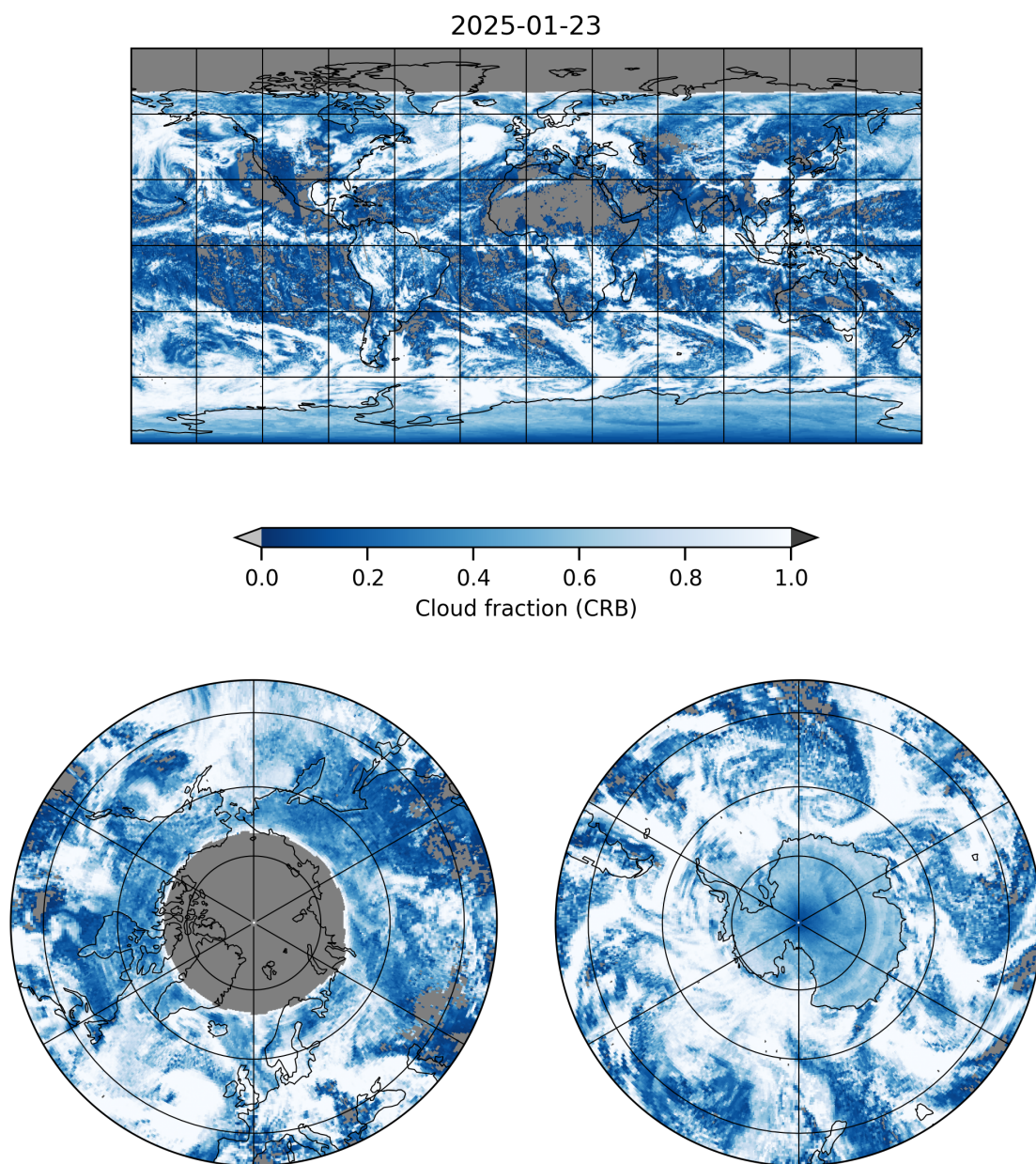


Figure 9: Map of “Cloud fraction (CRB)” for 2025-01-23 to 2025-01-24

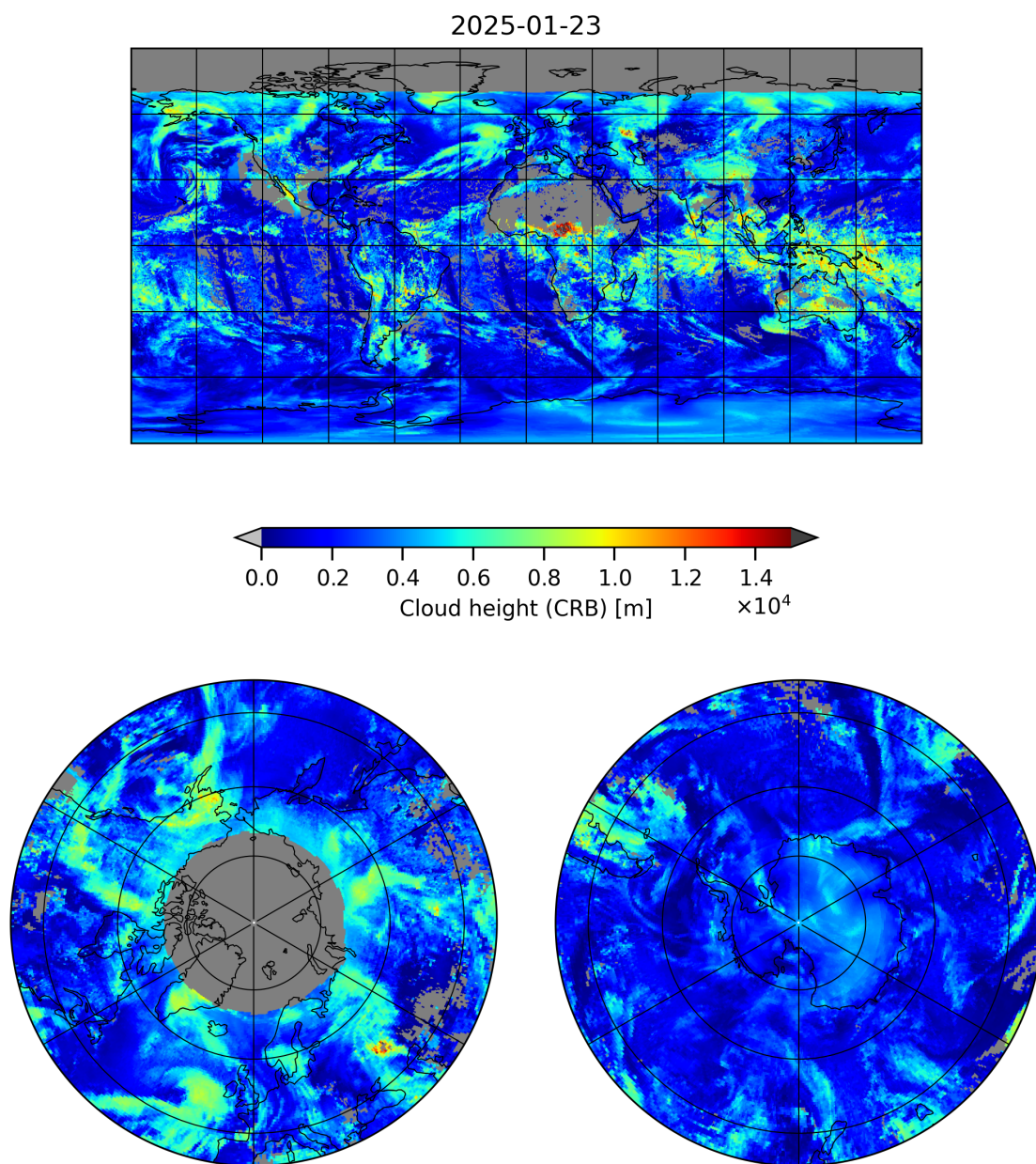


Figure 10: Map of “Cloud height (CRB)” for 2025-01-23 to 2025-01-24

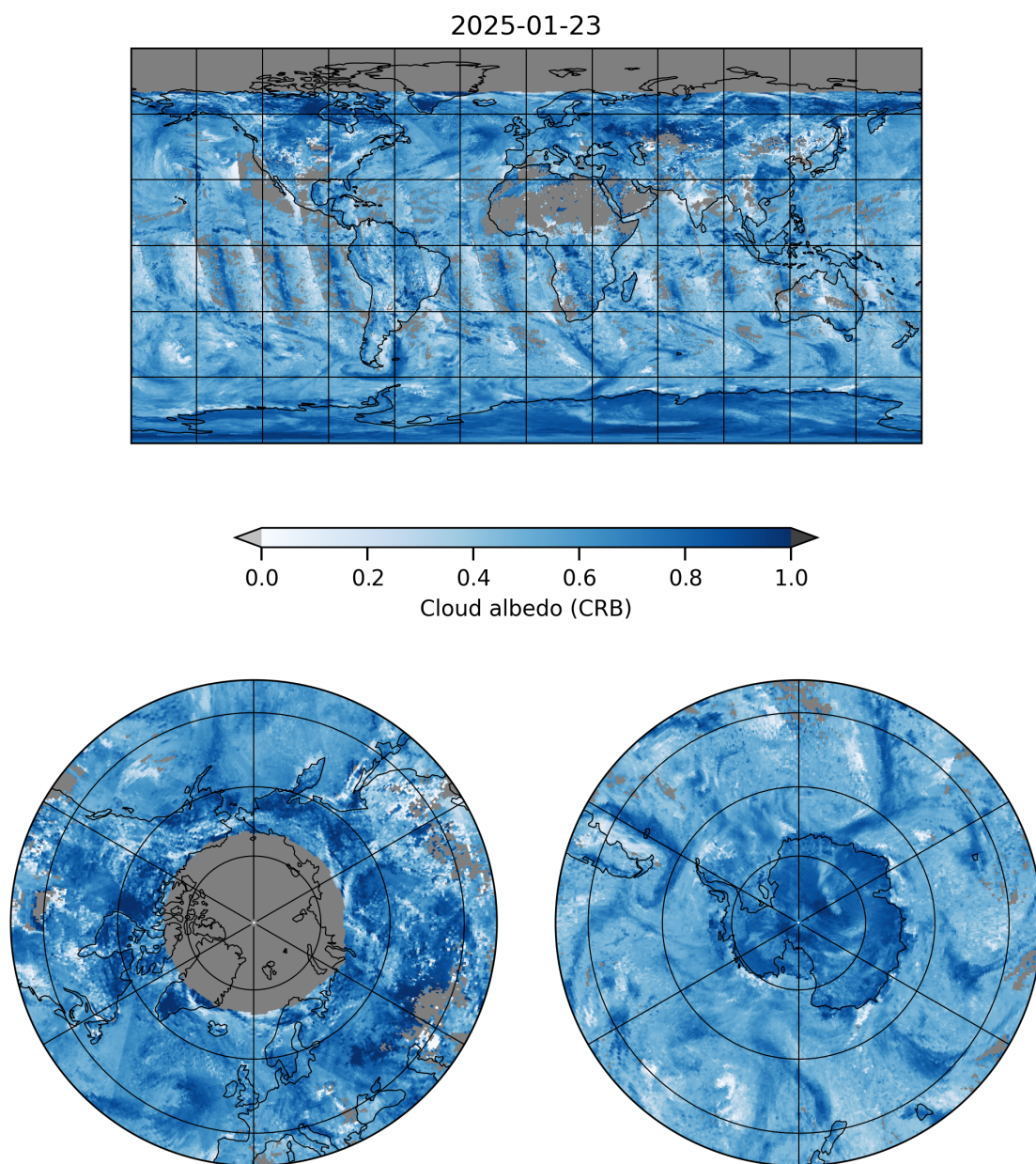


Figure 11: Map of “Cloud albedo (CRB)” for 2025-01-23 to 2025-01-24

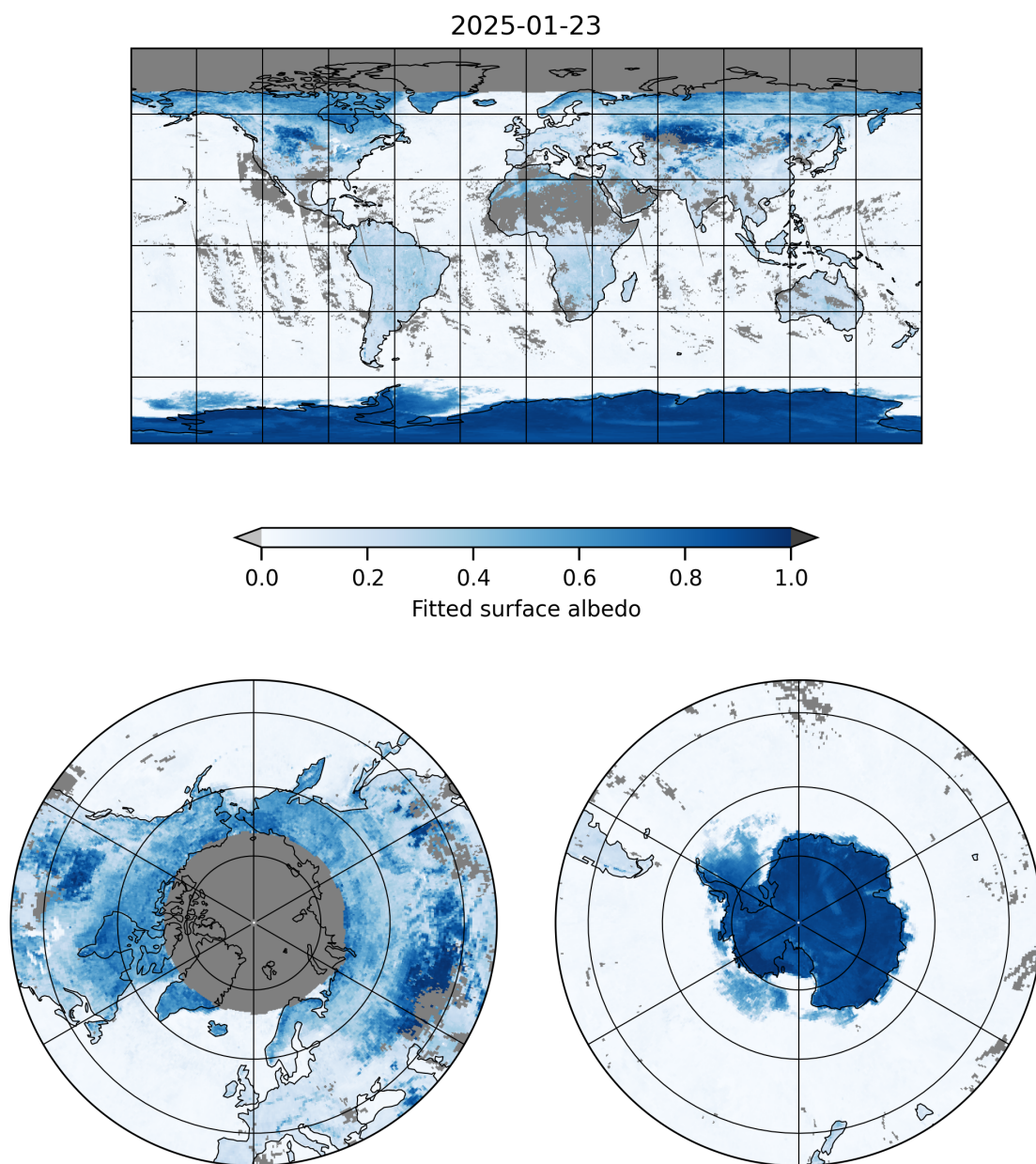


Figure 12: Map of “Fitted surface albedo” for 2025-01-23 to 2025-01-24

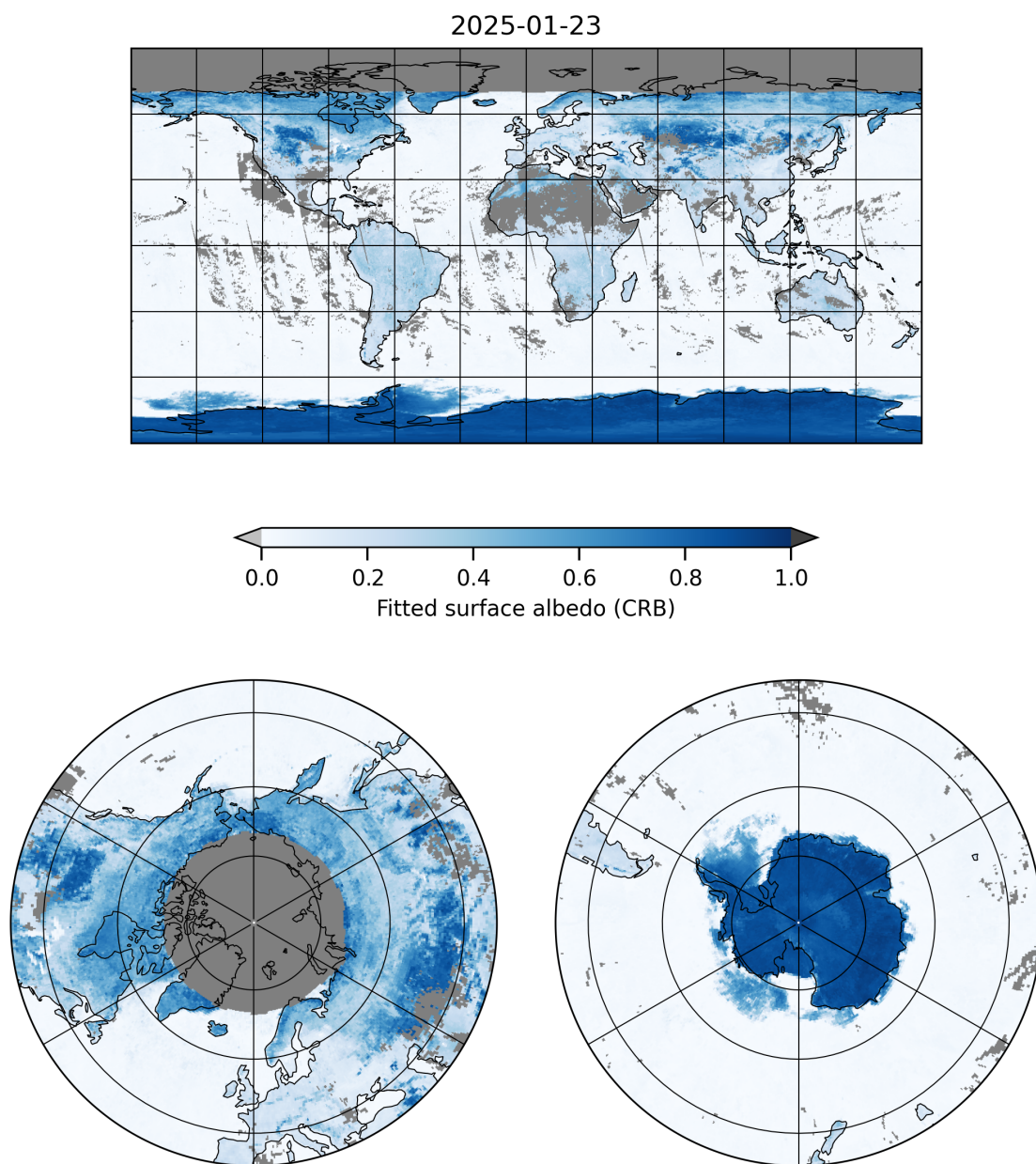


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-01-23 to 2025-01-24

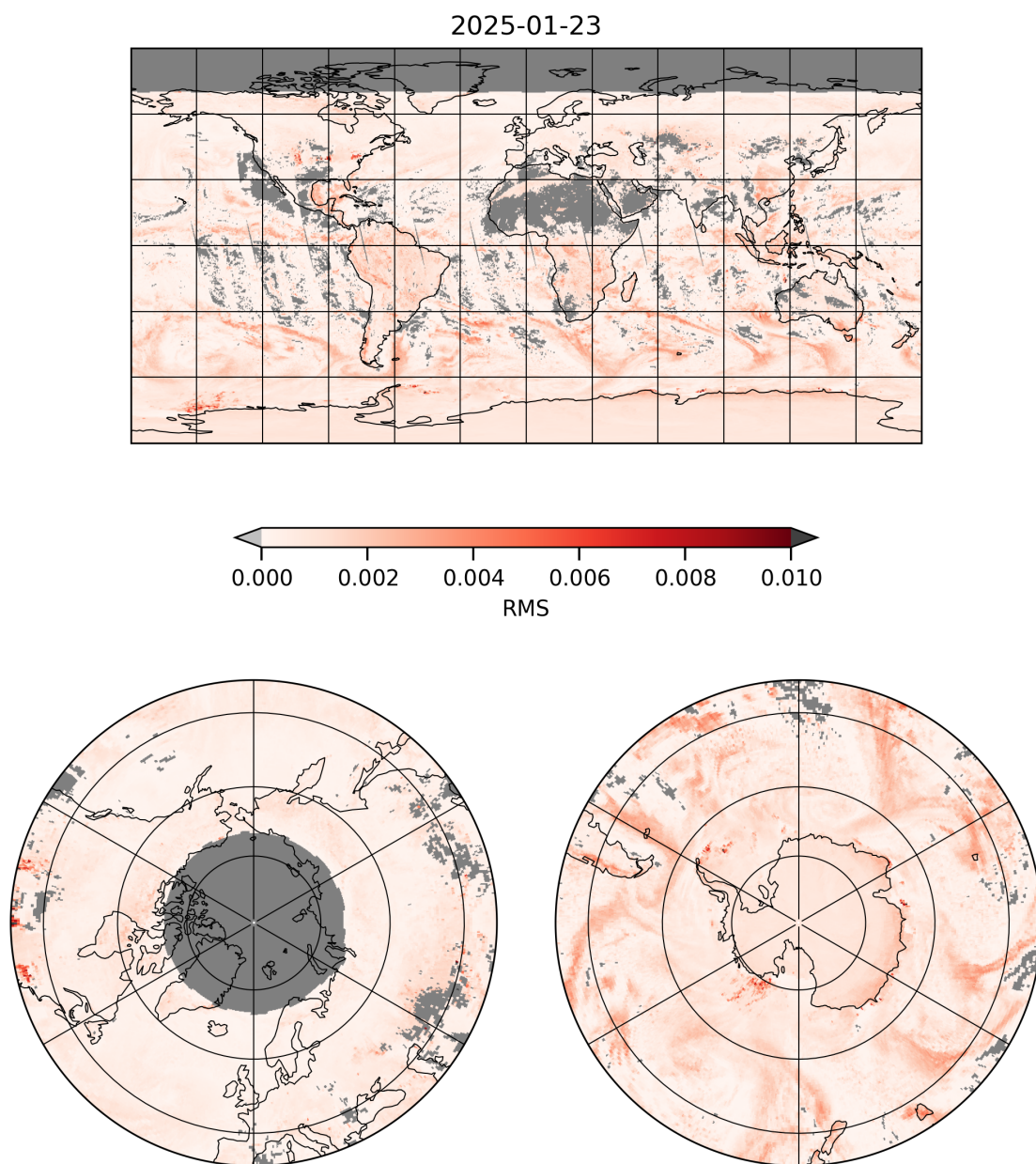


Figure 14: Map of “RMS” for 2025-01-23 to 2025-01-24

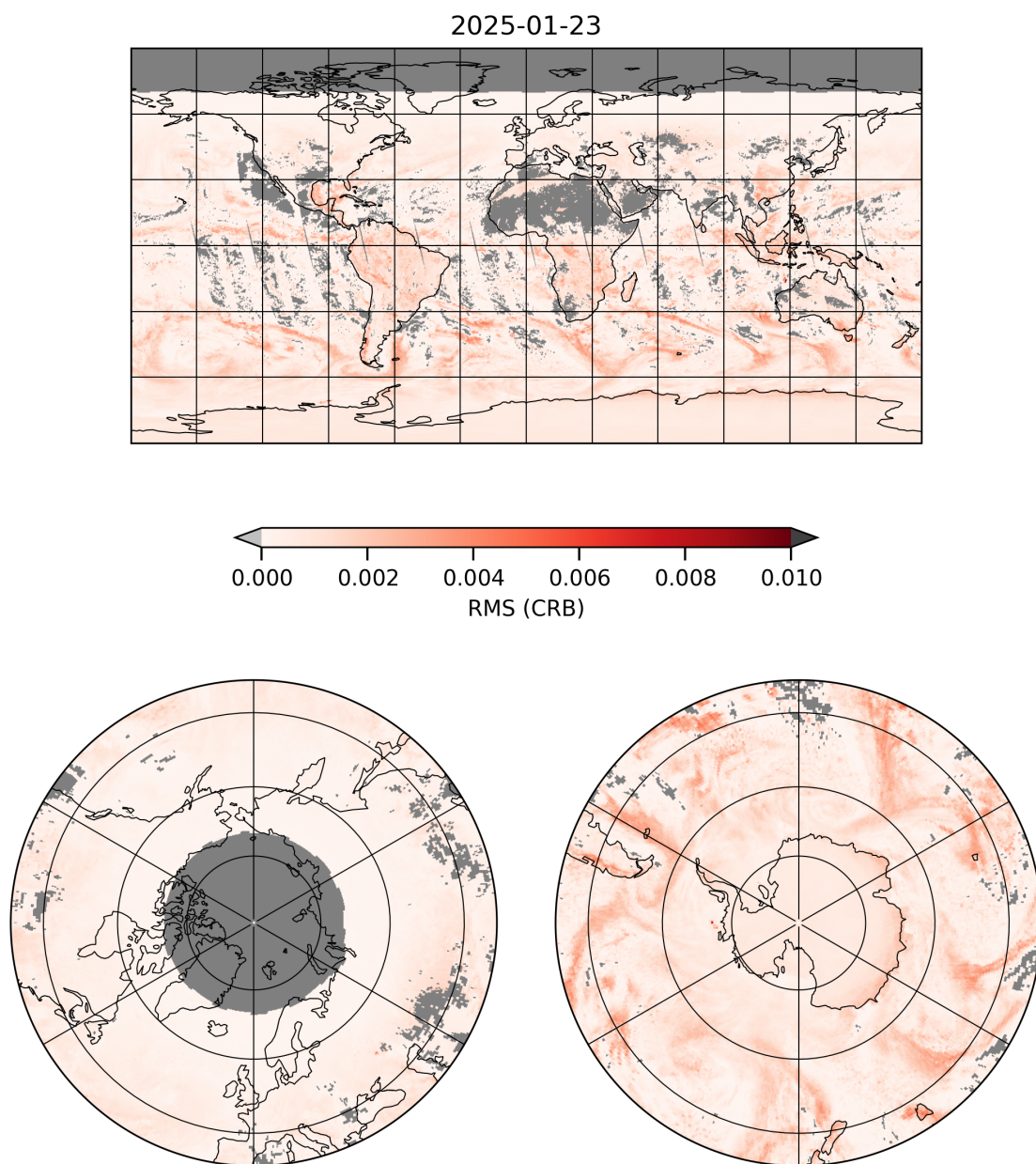


Figure 15: Map of “RMS (CRB)” for 2025-01-23 to 2025-01-24

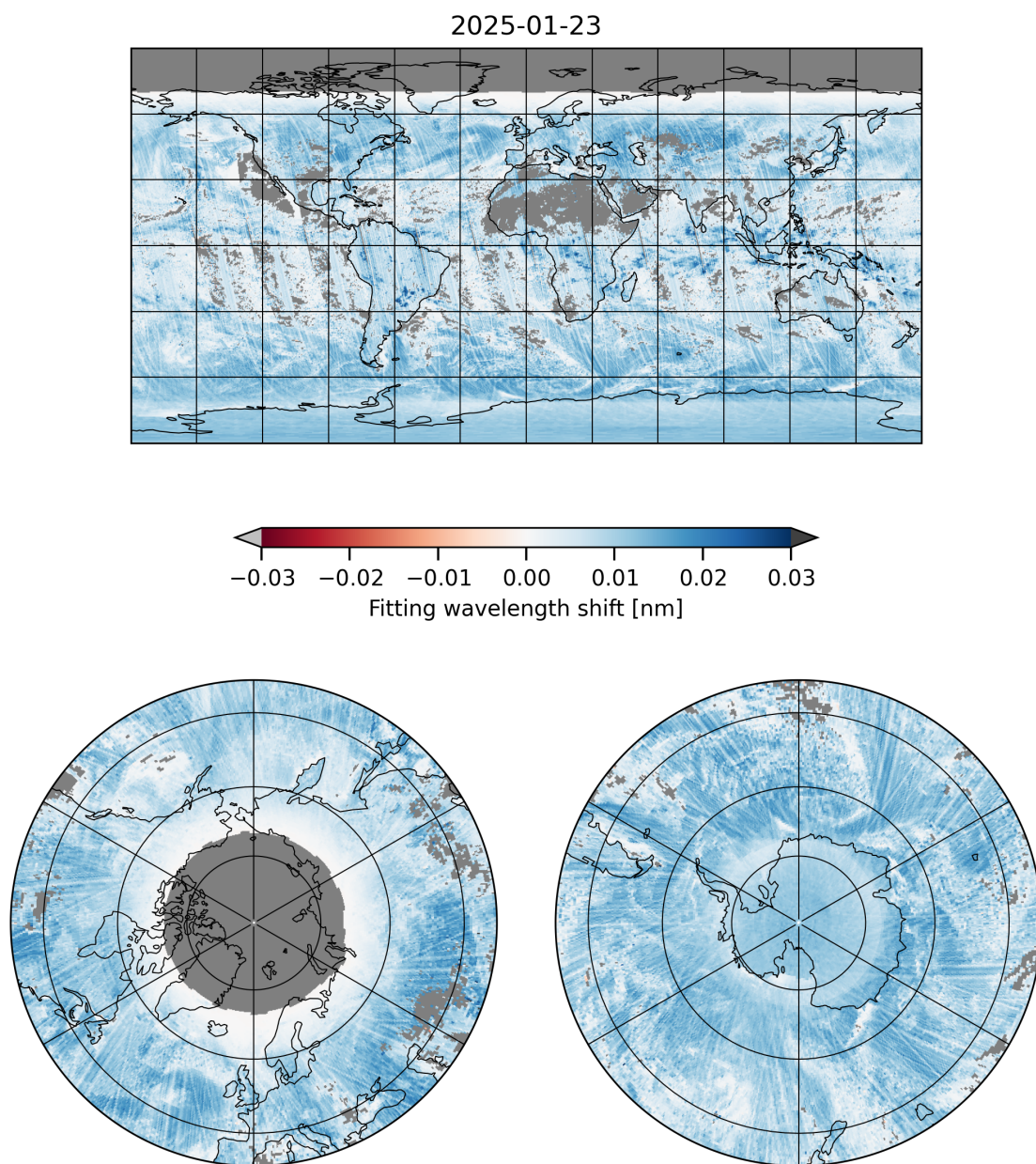


Figure 16: Map of “Fitting wavelength shift” for 2025-01-23 to 2025-01-24

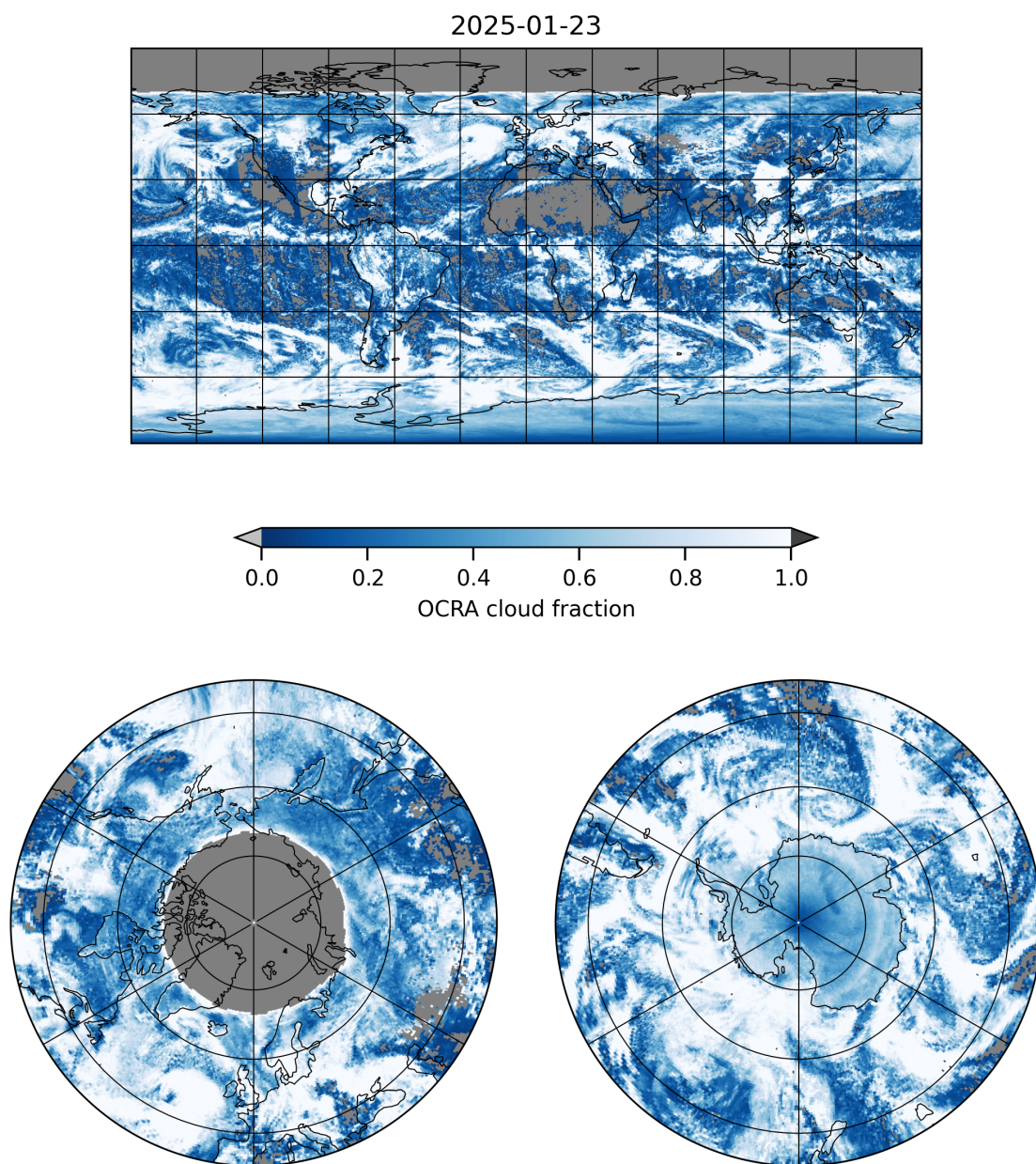


Figure 17: Map of “OCRA cloud fraction” for 2025-01-23 to 2025-01-24

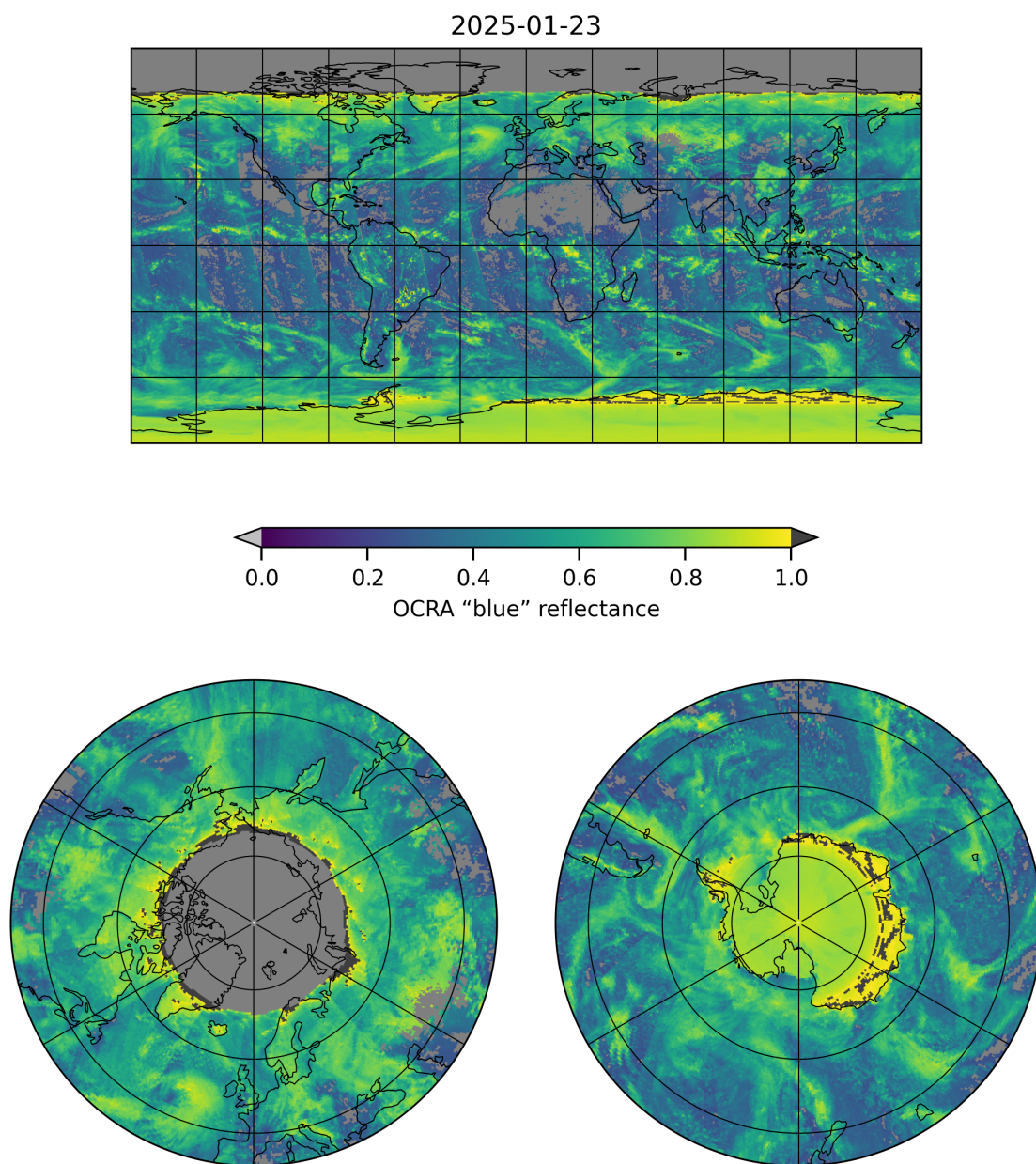


Figure 18: Map of "OCRA "blue" reflectance" for 2025-01-23 to 2025-01-24

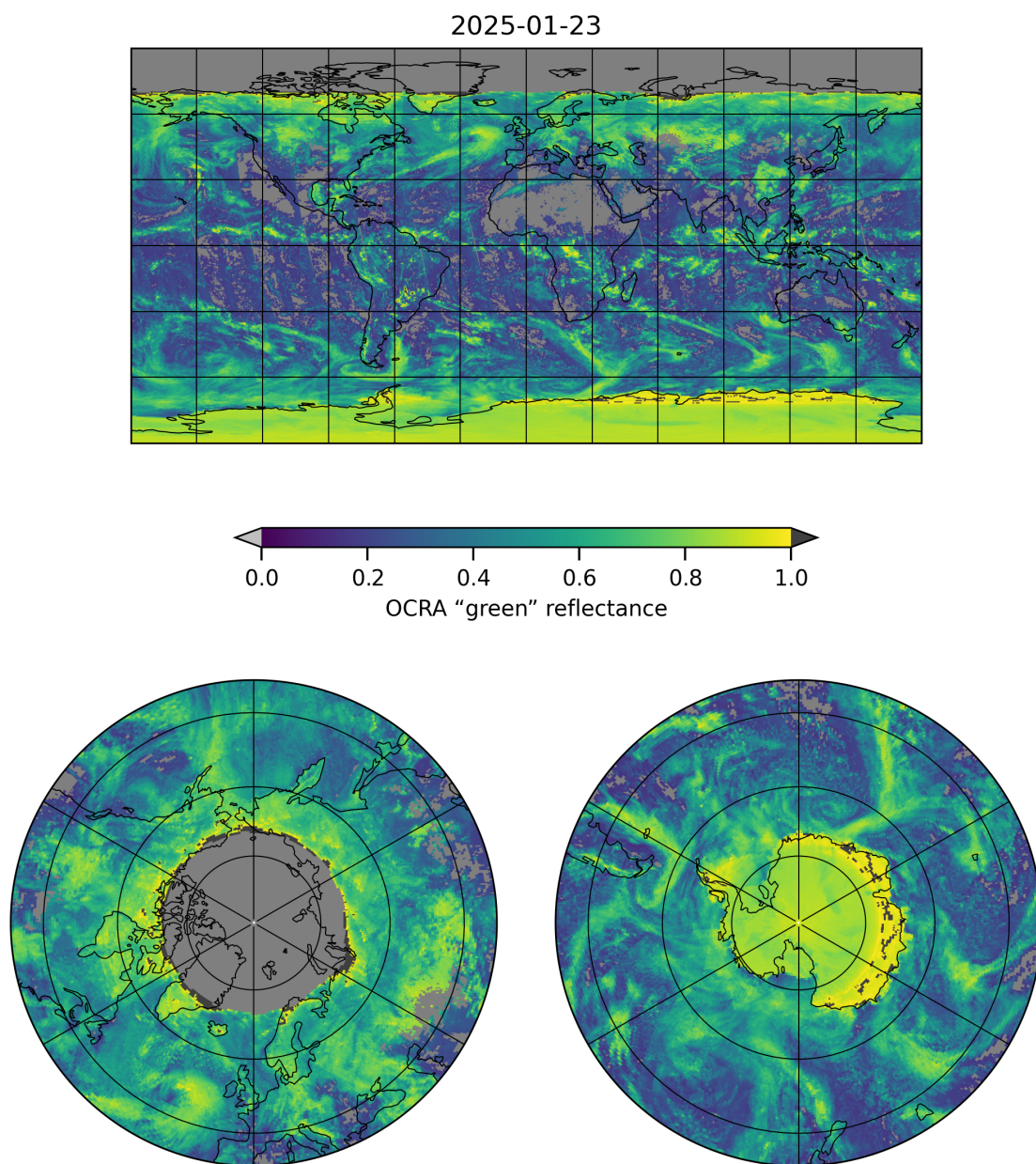


Figure 19: Map of "OCRA "green" reflectance" for 2025-01-23 to 2025-01-24

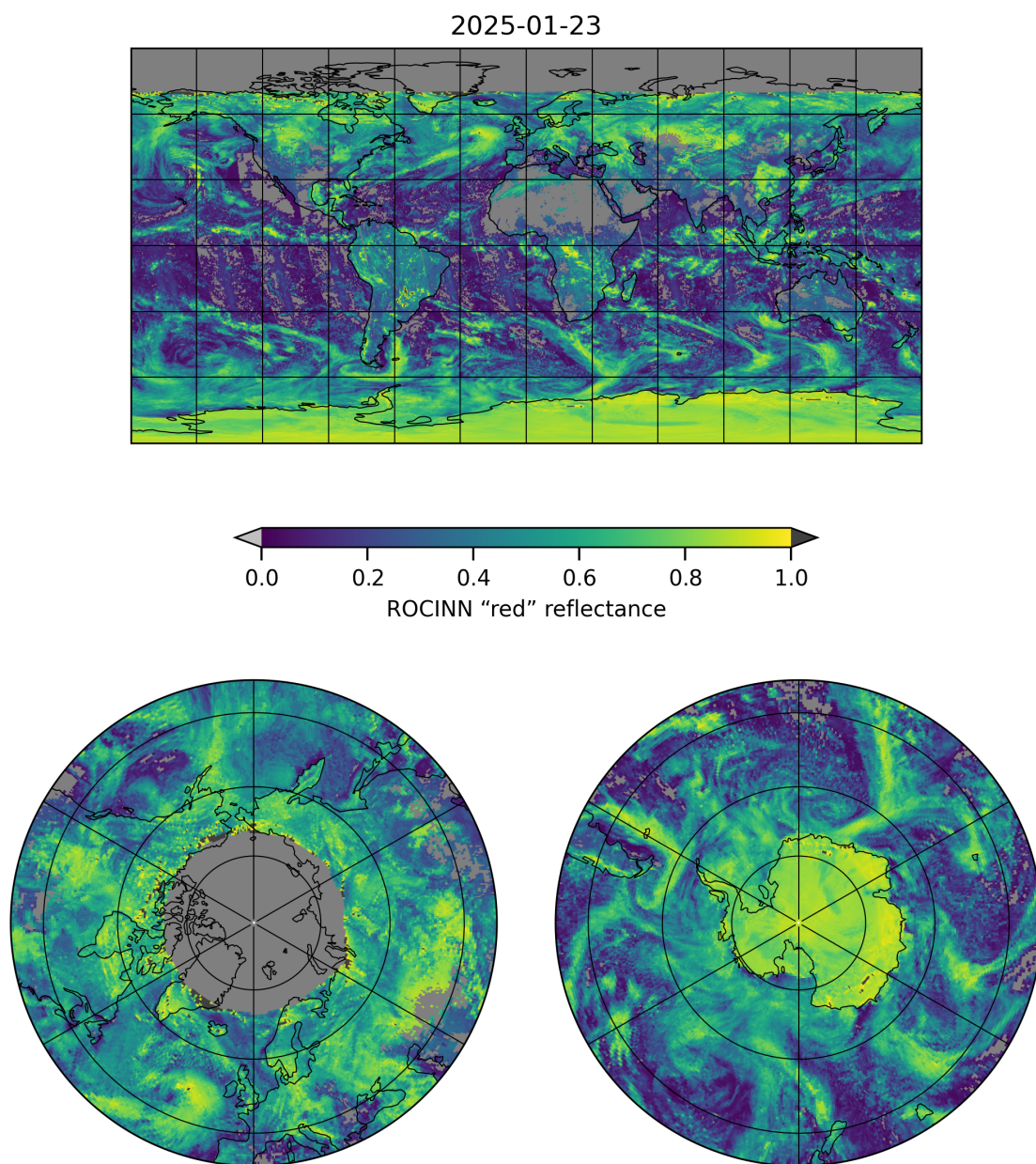


Figure 20: Map of "ROCINN "red" reflectance" for 2025-01-23 to 2025-01-24

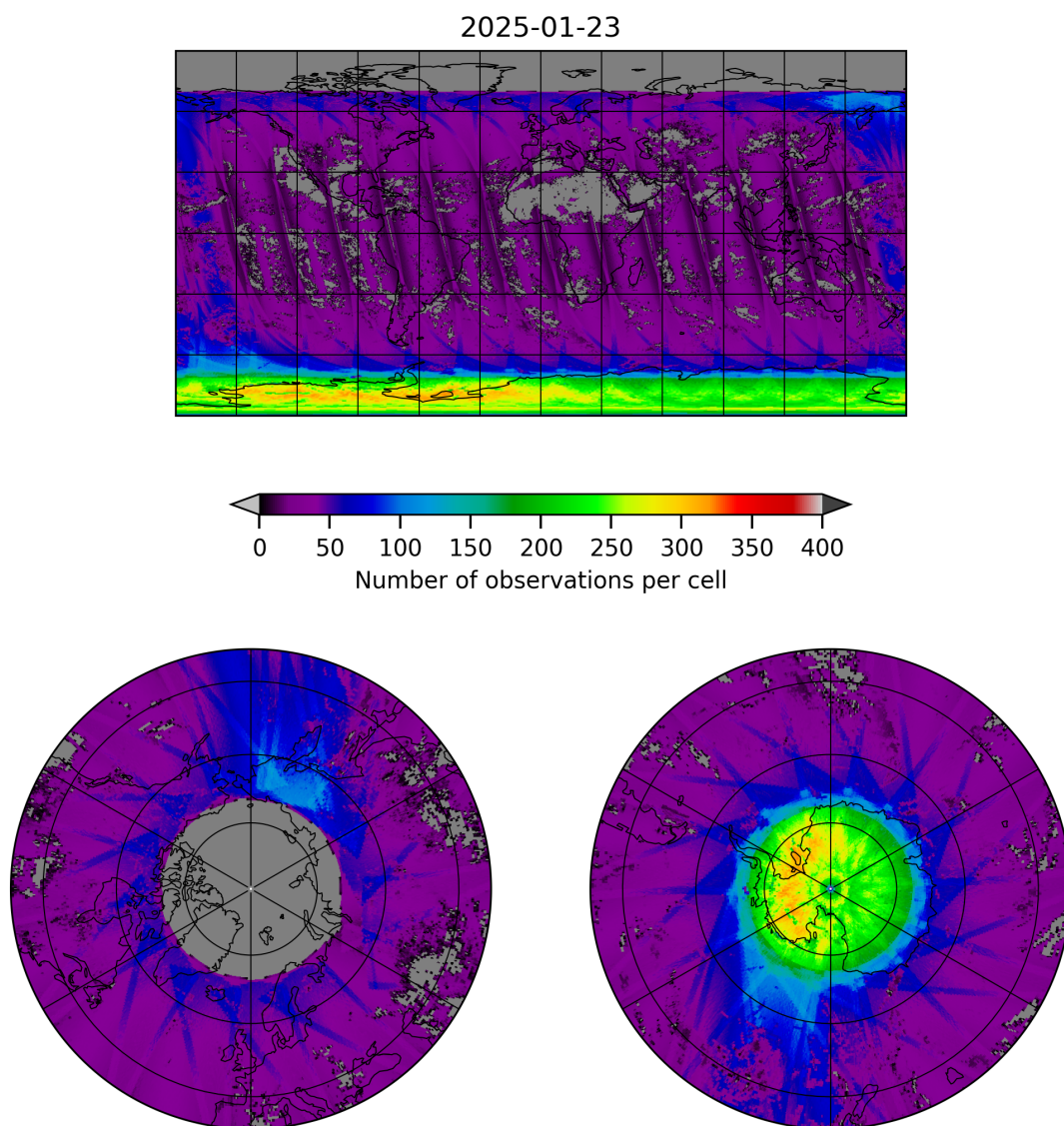


Figure 21: Map of the number of observations for 2025-01-23 to 2025-01-24

7 Zonal average

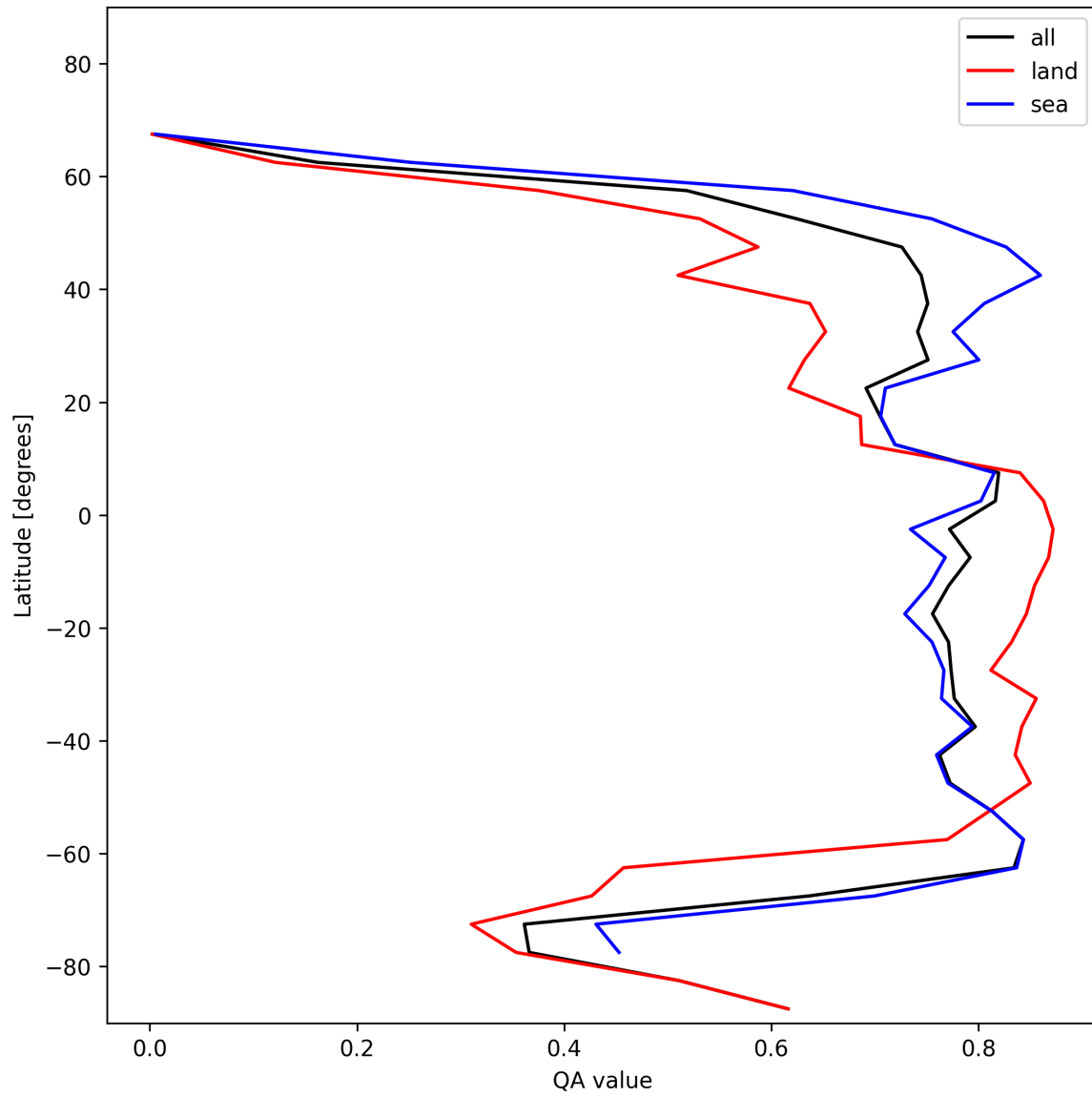


Figure 22: Zonal average of “QA value” for 2025-01-23 to 2025-01-24.

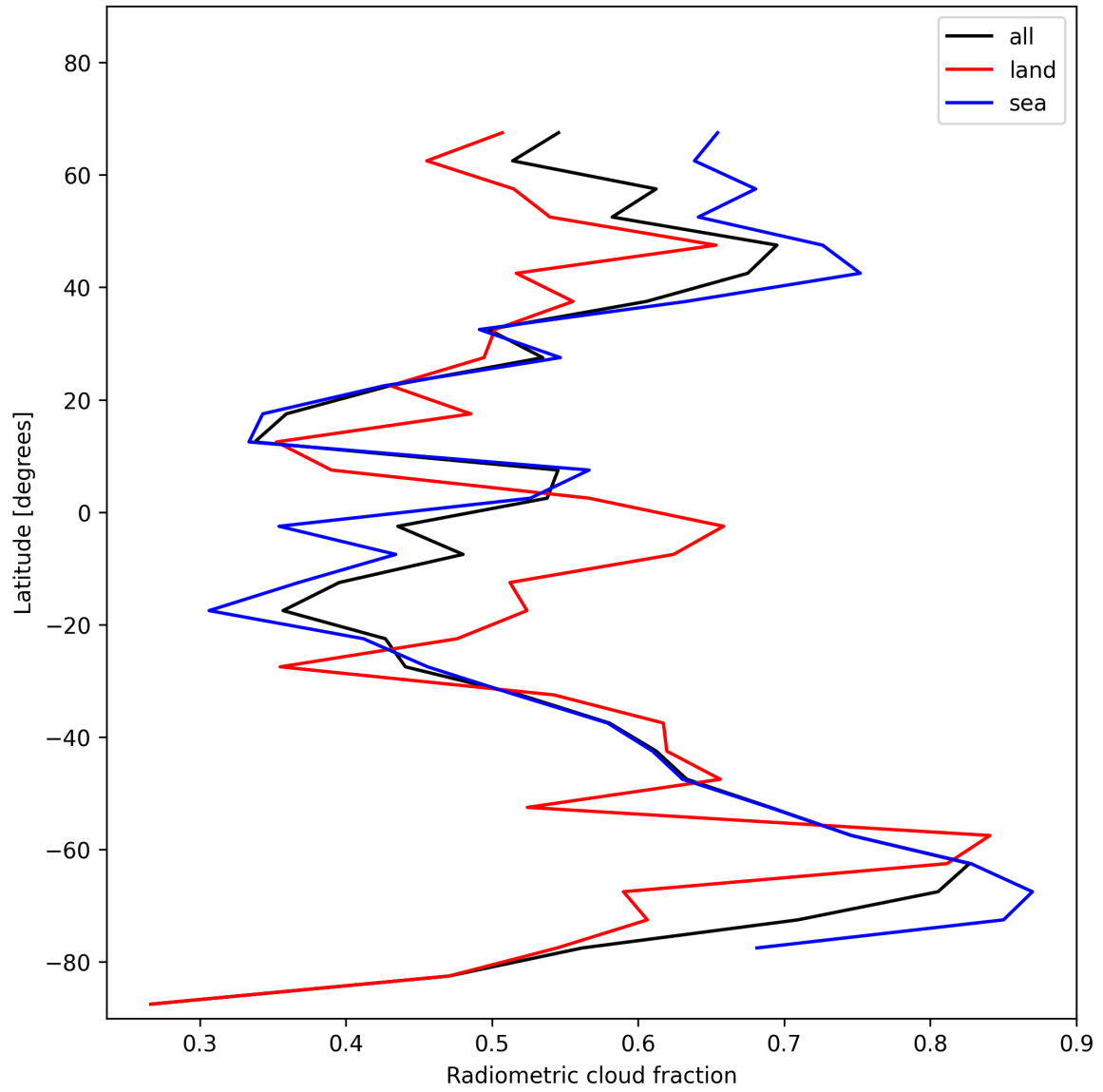


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-01-23 to 2025-01-24.

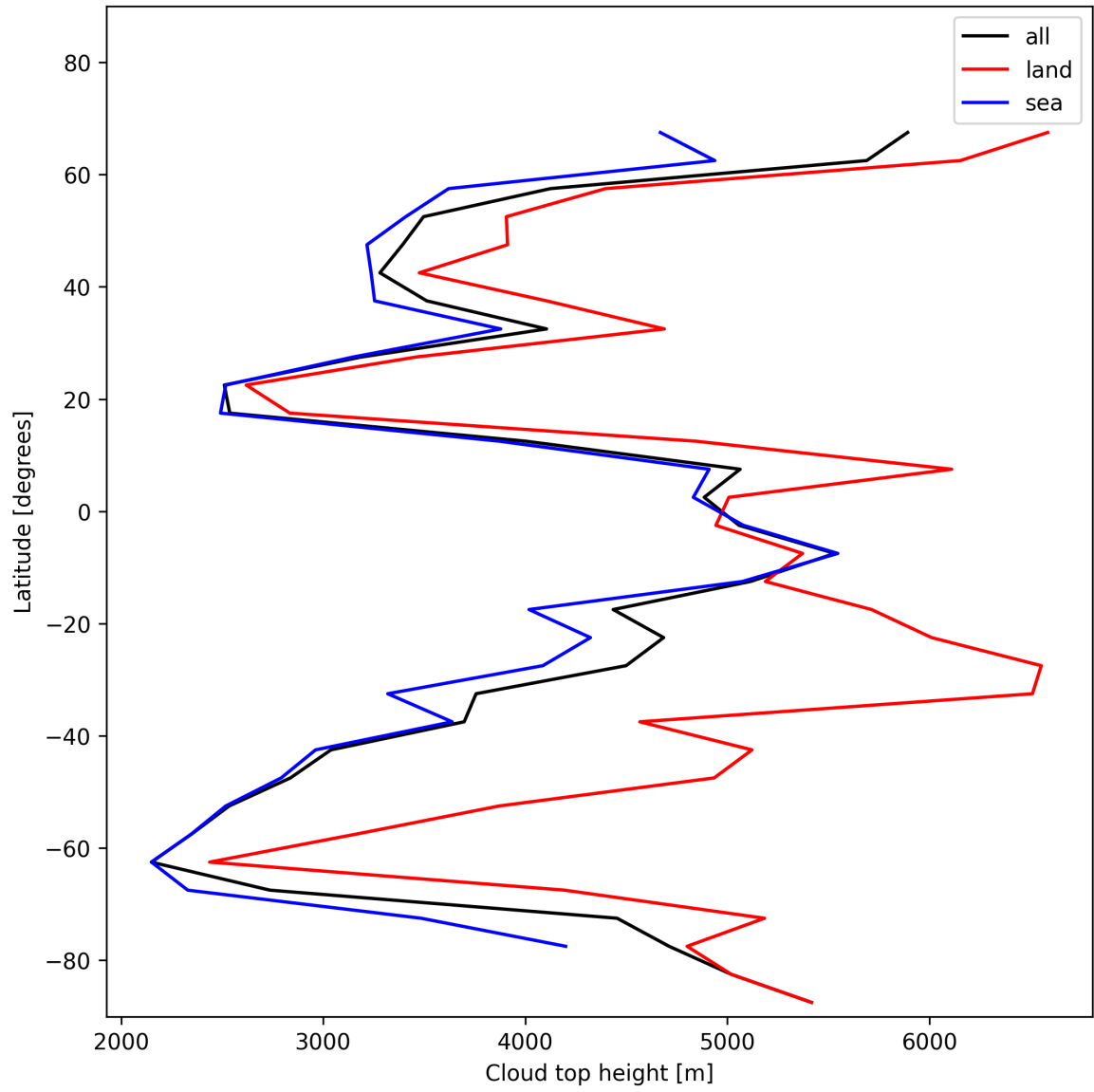


Figure 24: Zonal average of “Cloud top height” for 2025-01-23 to 2025-01-24.

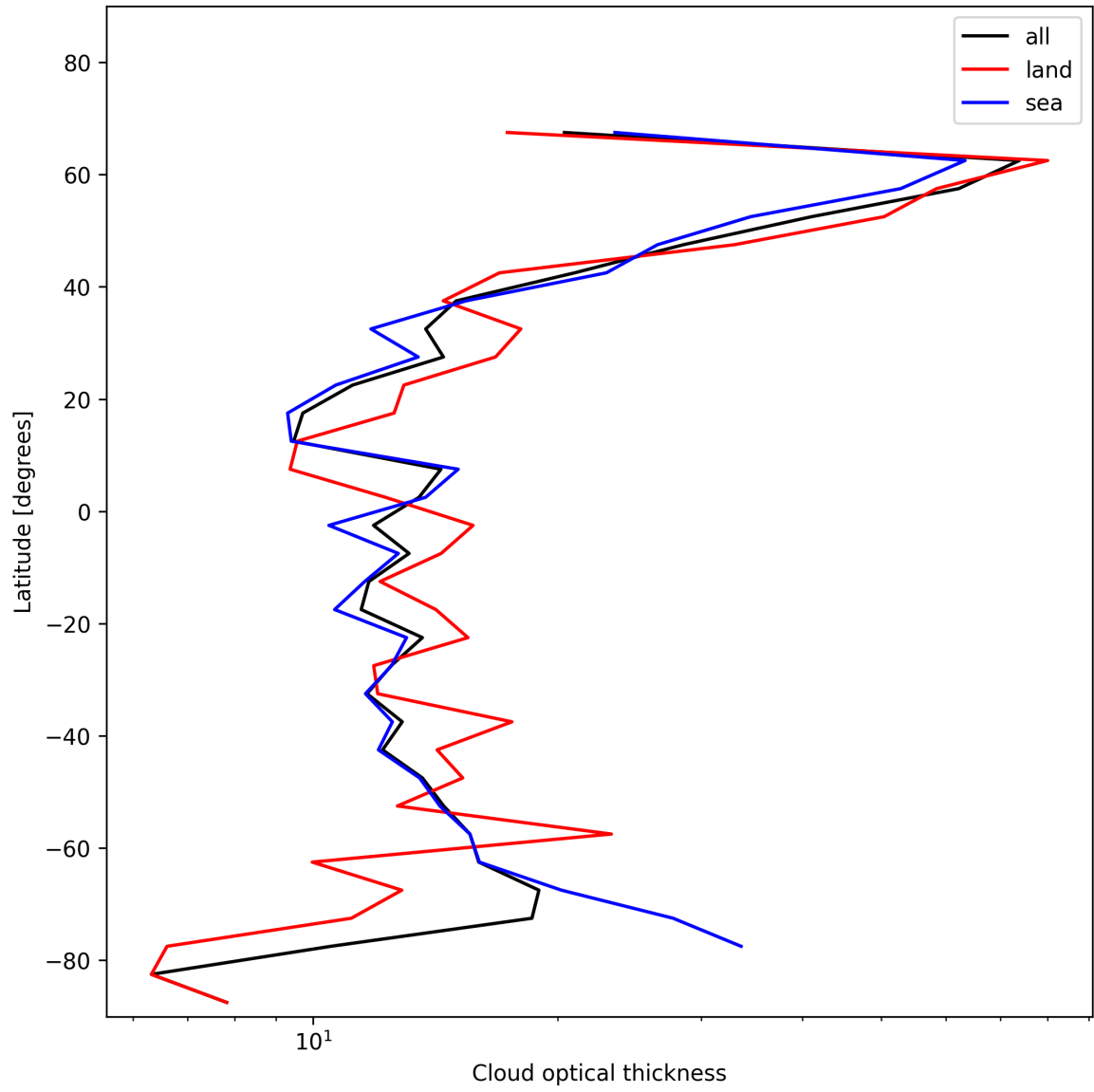


Figure 25: Zonal average of “Cloud optical thickness” for 2025-01-23 to 2025-01-24.

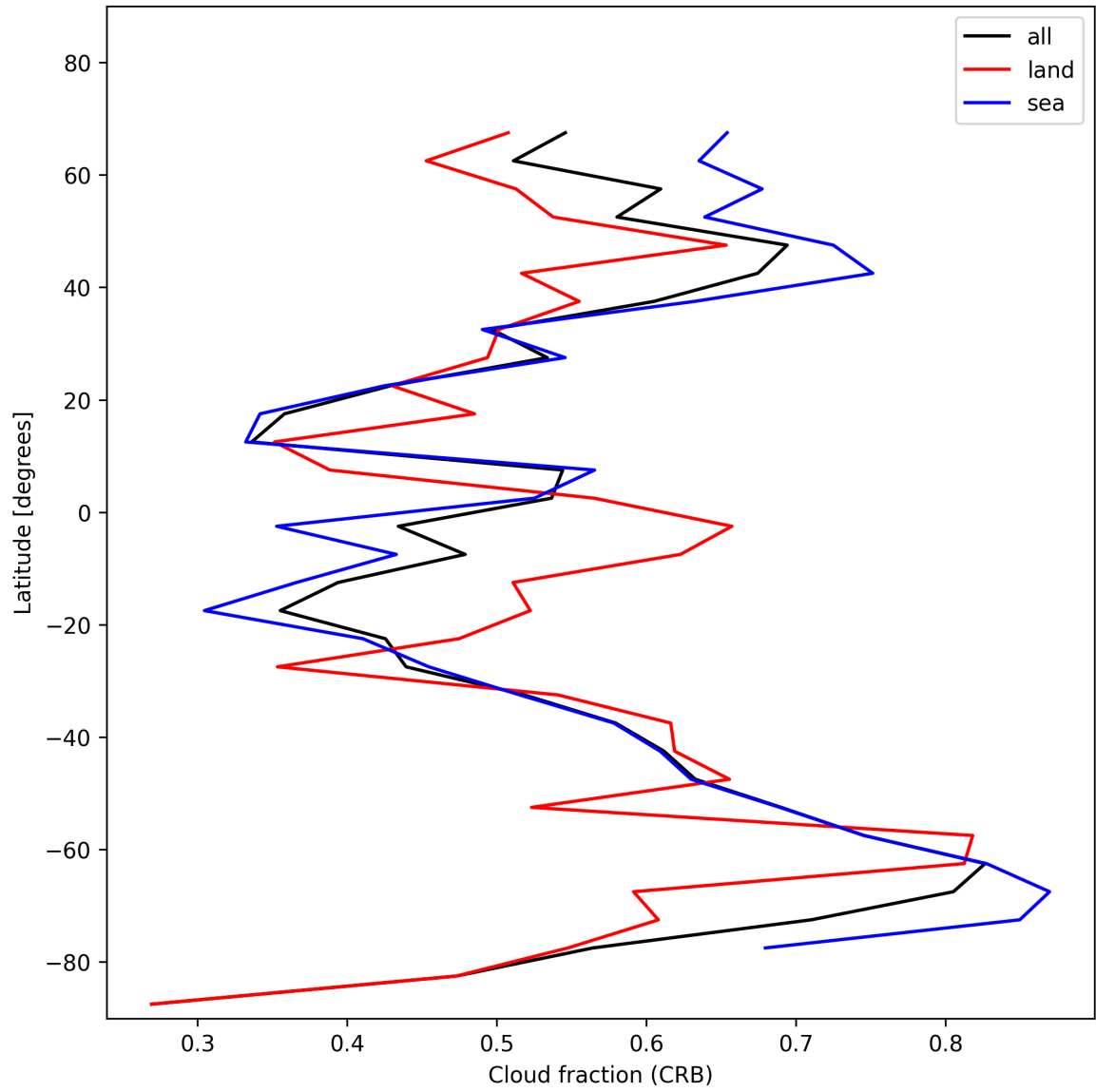


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-01-23 to 2025-01-24.

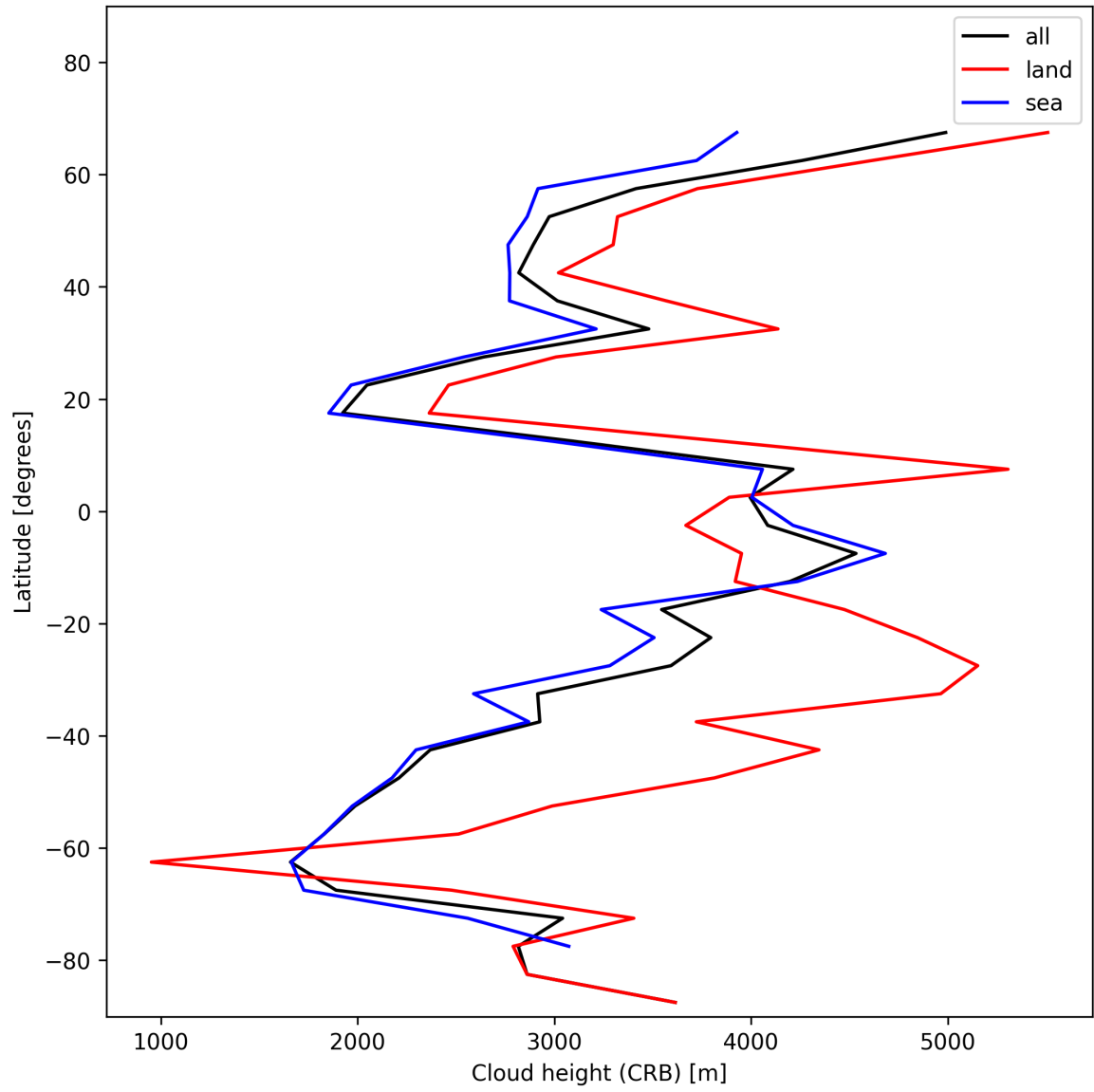


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-01-23 to 2025-01-24.

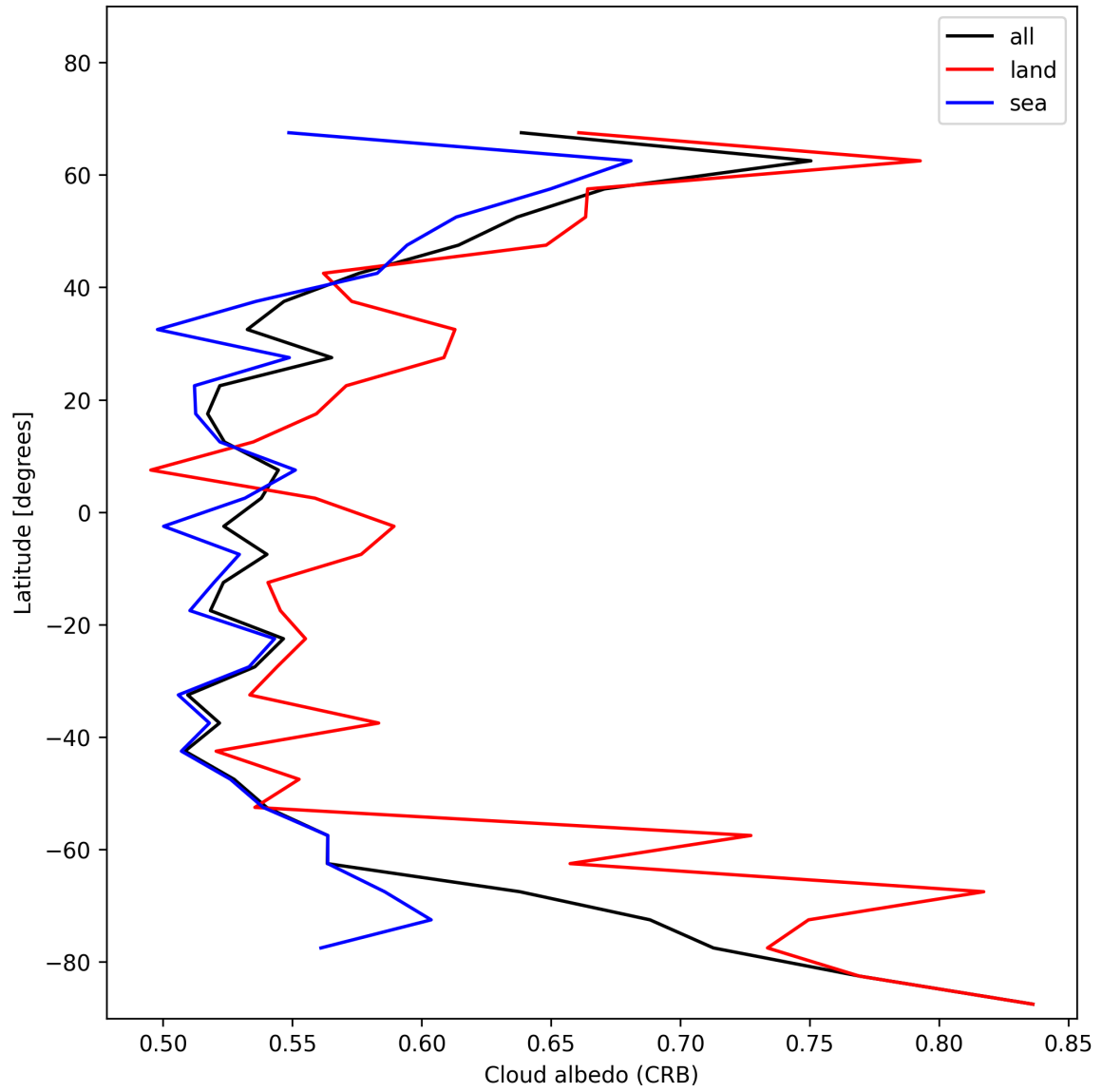


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-01-23 to 2025-01-24.

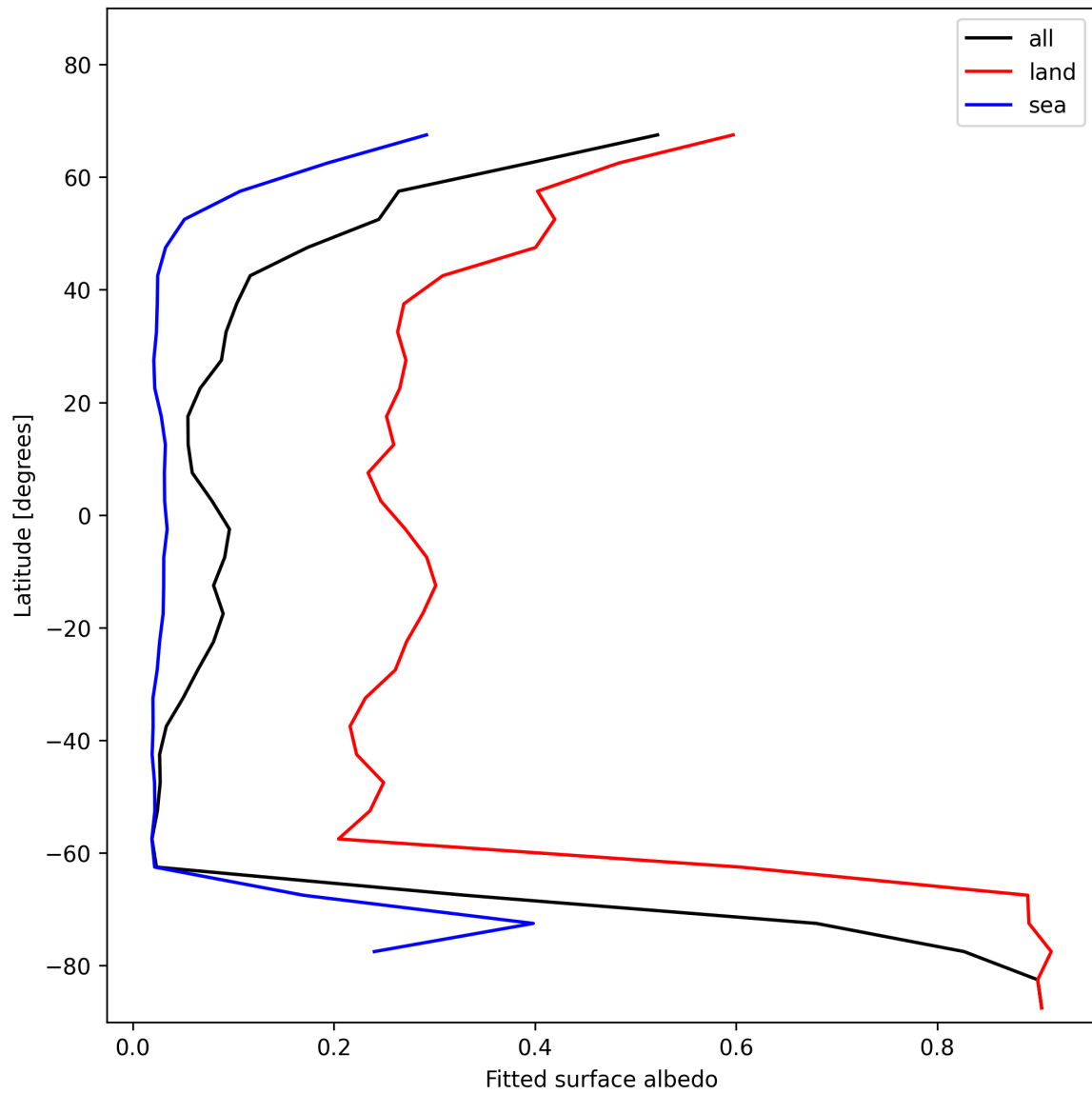


Figure 29: Zonal average of “Fitted surface albedo” for 2025-01-23 to 2025-01-24.

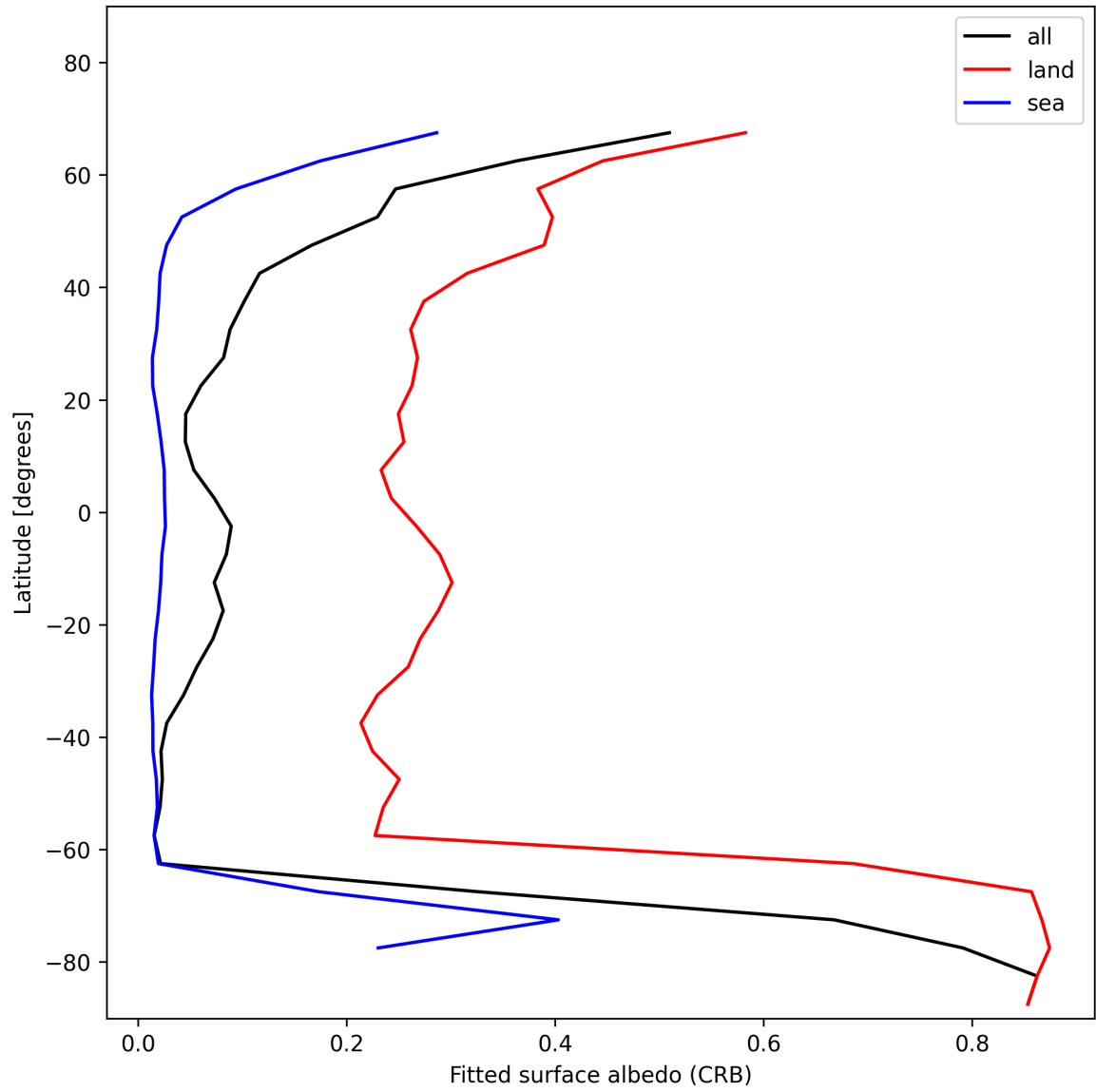


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-01-23 to 2025-01-24.

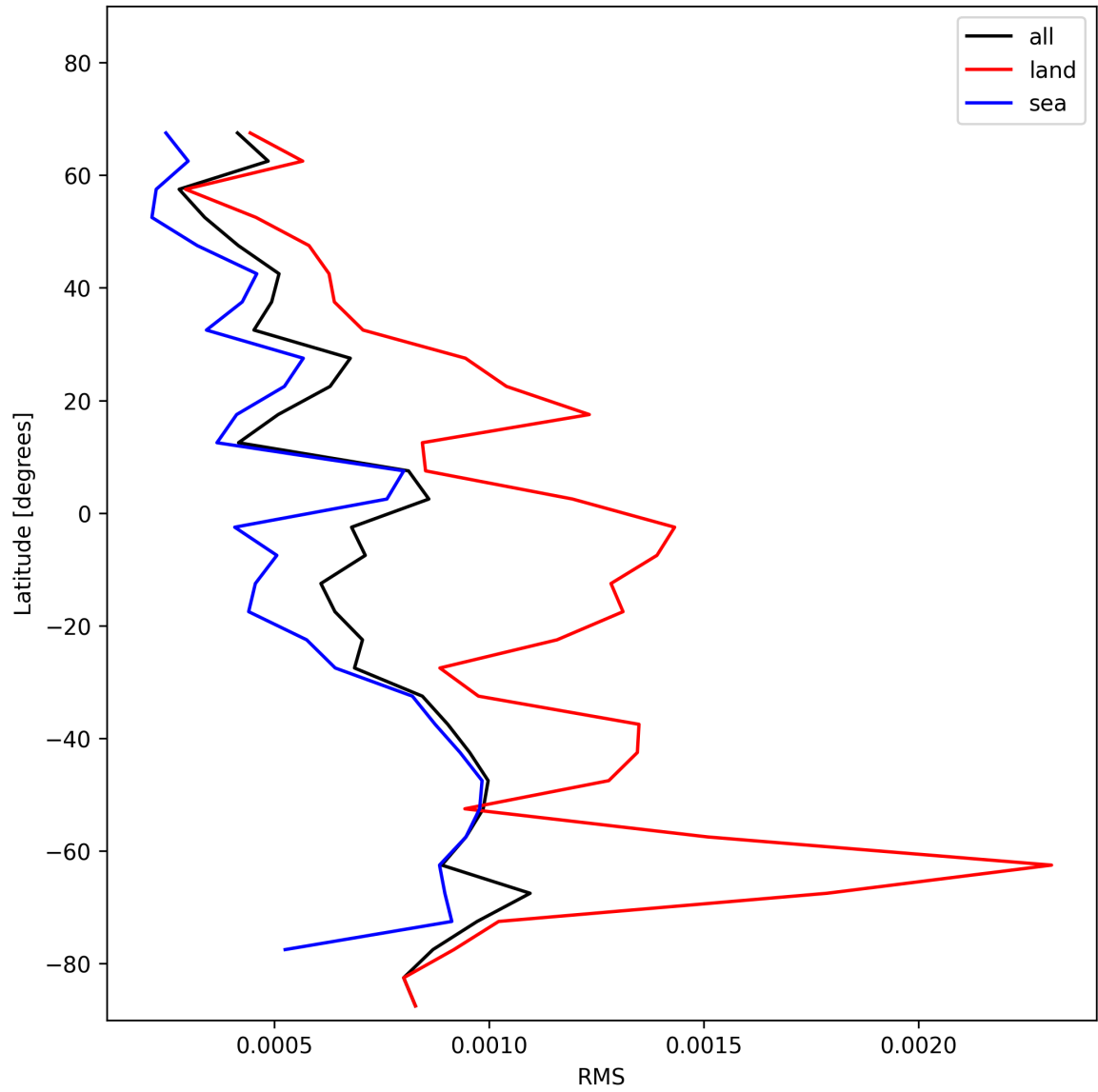


Figure 31: Zonal average of “RMS” for 2025-01-23 to 2025-01-24.

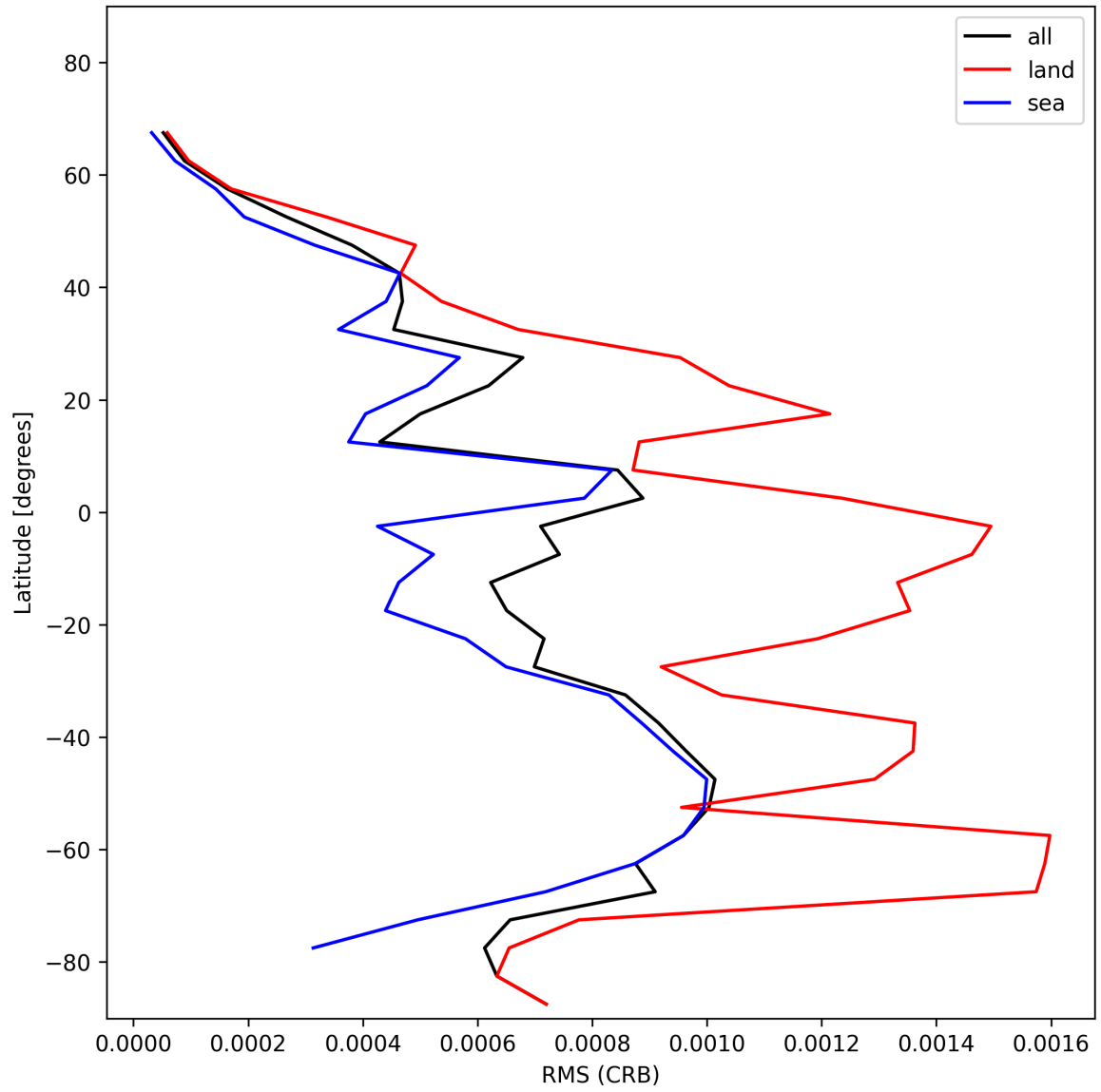


Figure 32: Zonal average of “RMS (CRB)” for 2025-01-23 to 2025-01-24.

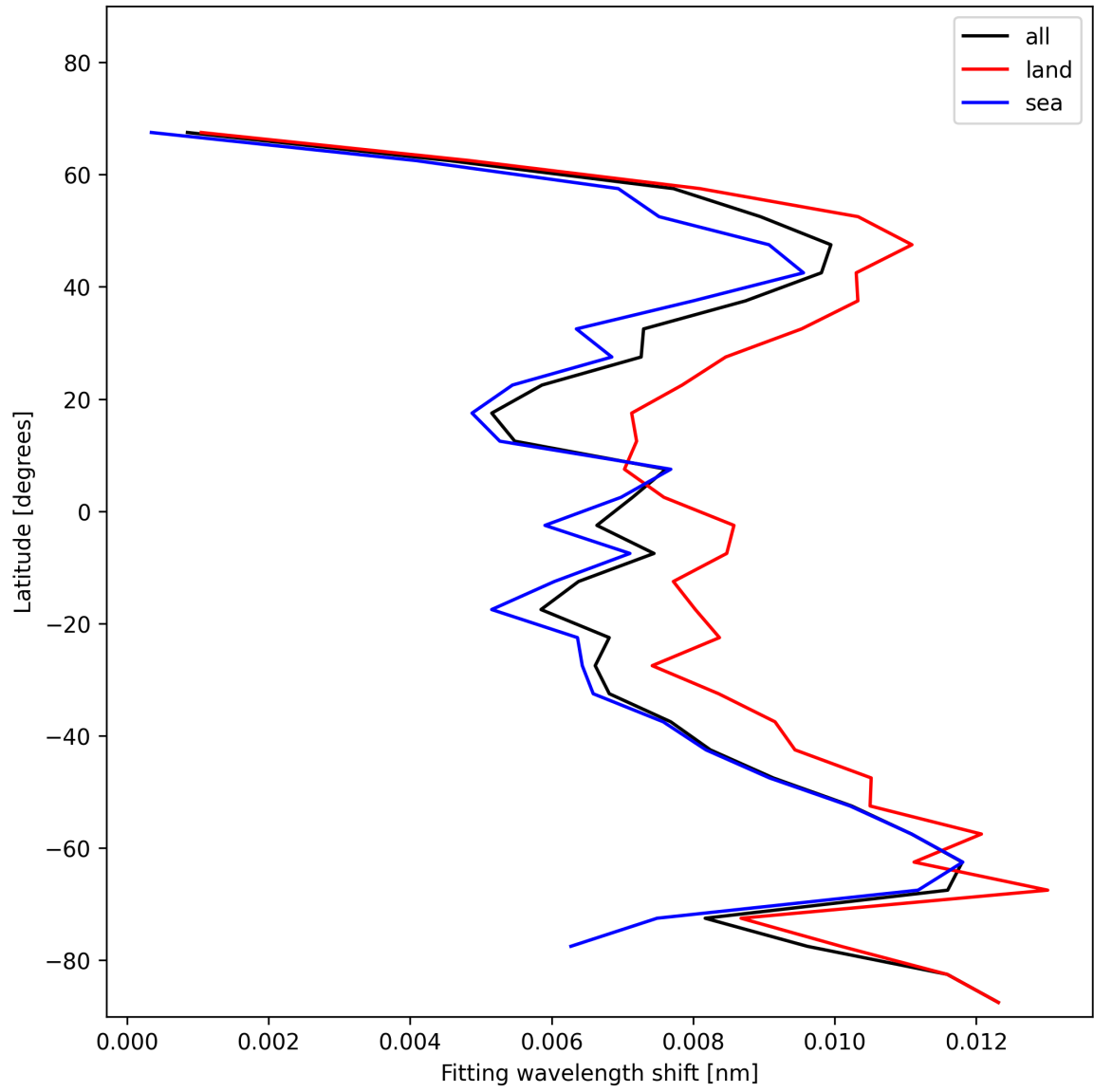


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-01-23 to 2025-01-24.

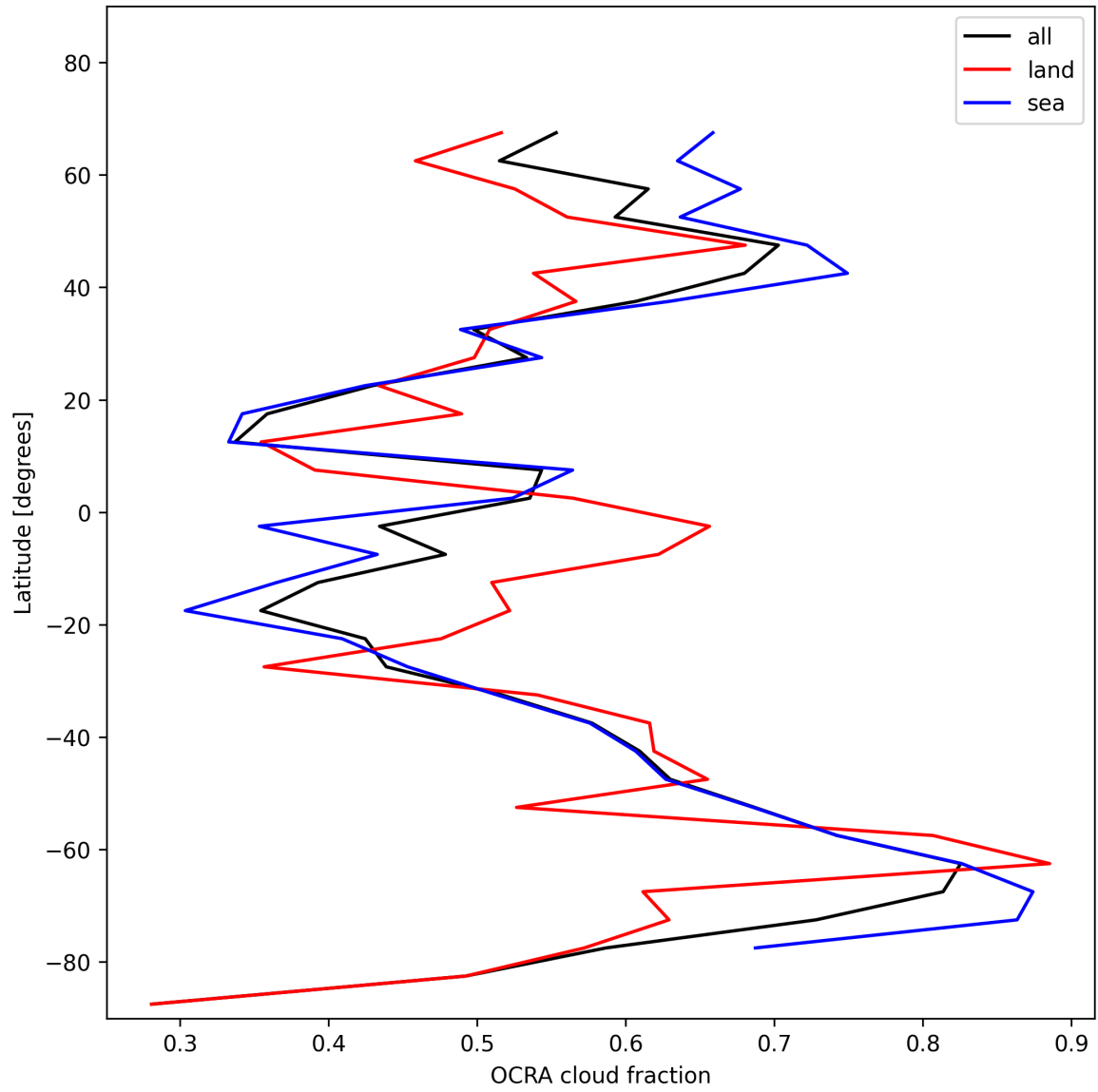


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-01-23 to 2025-01-24.

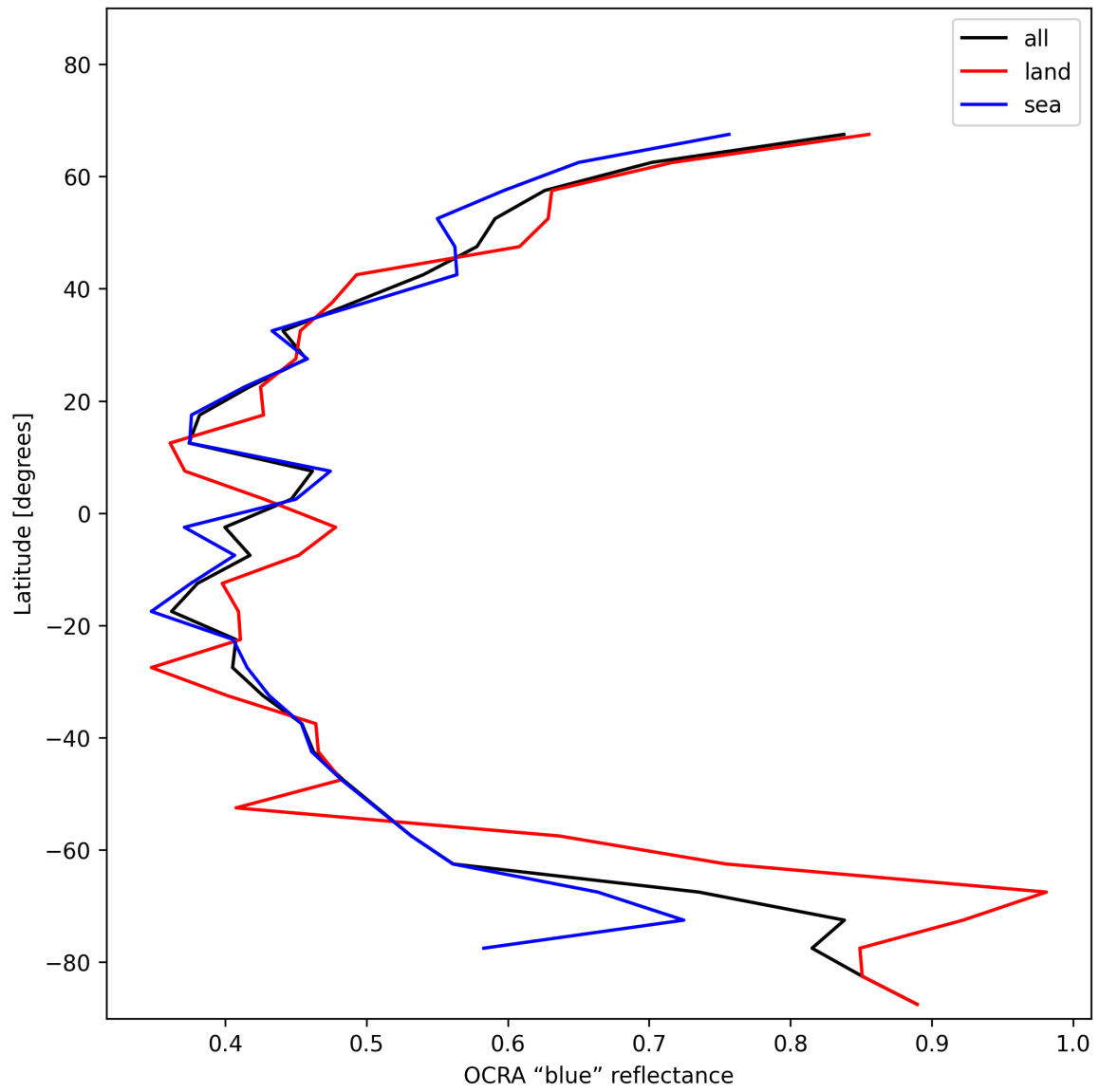


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-01-23 to 2025-01-24.

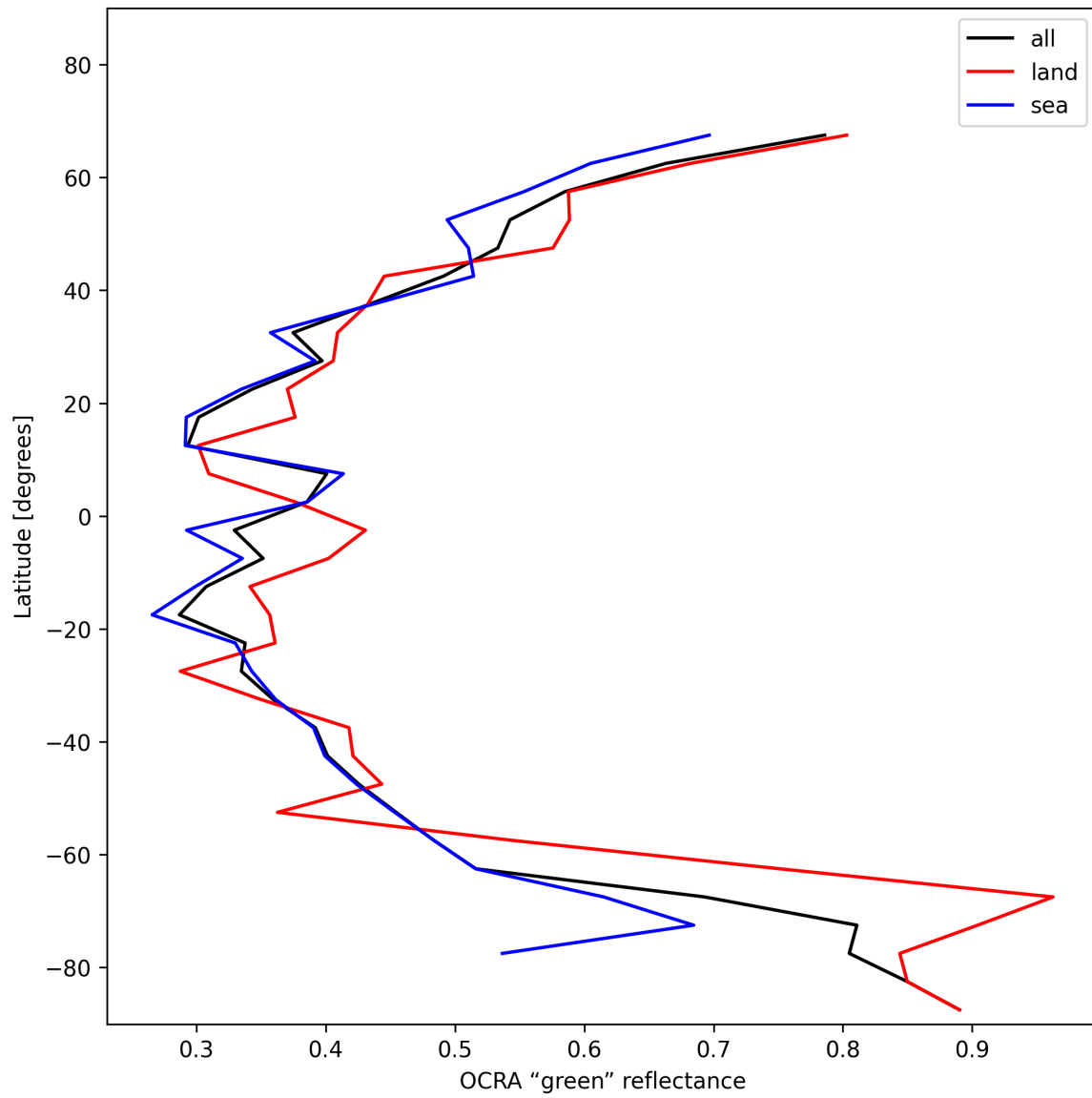


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-01-23 to 2025-01-24.

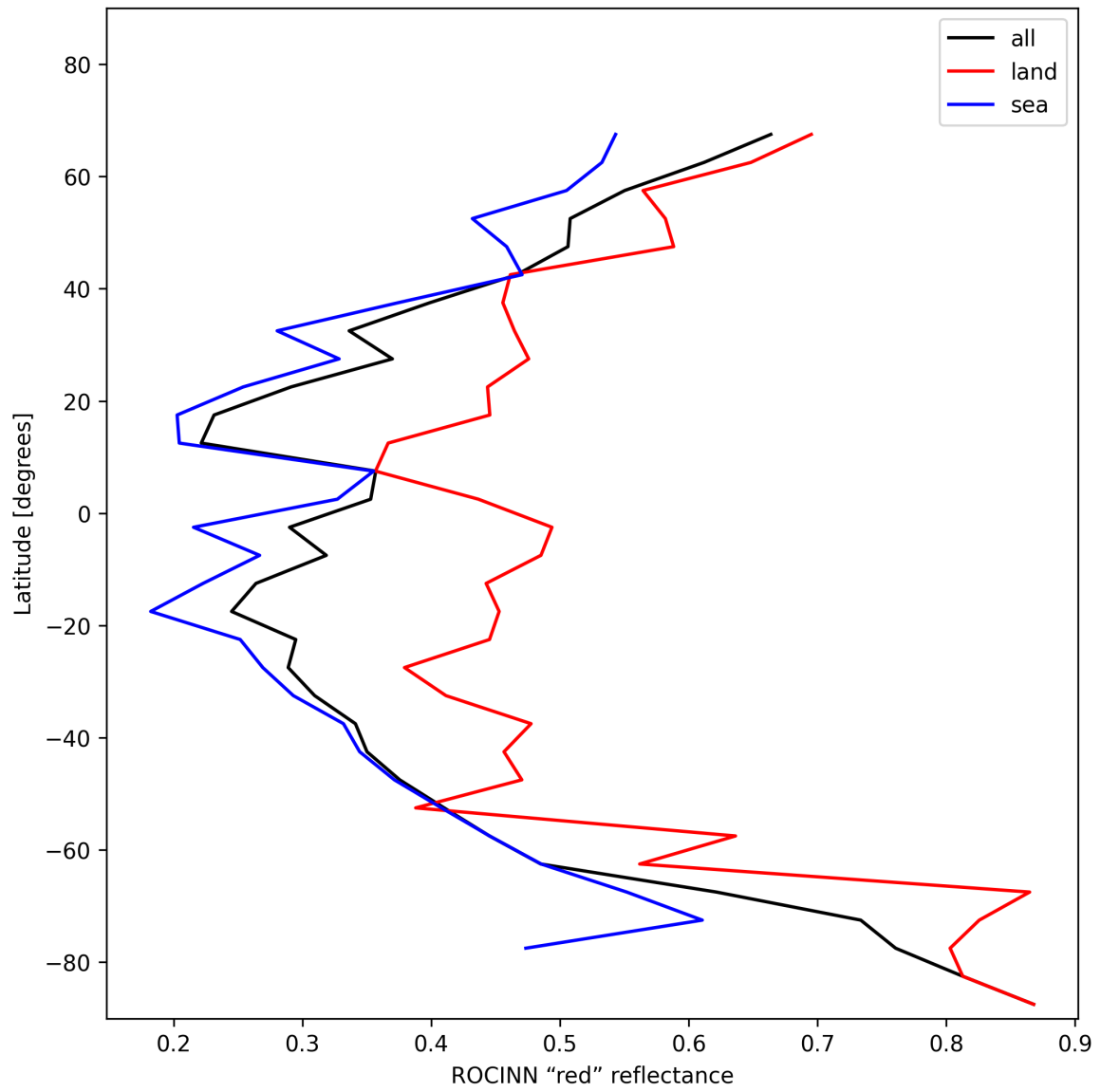


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-01-23 to 2025-01-24.

8 Histograms

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

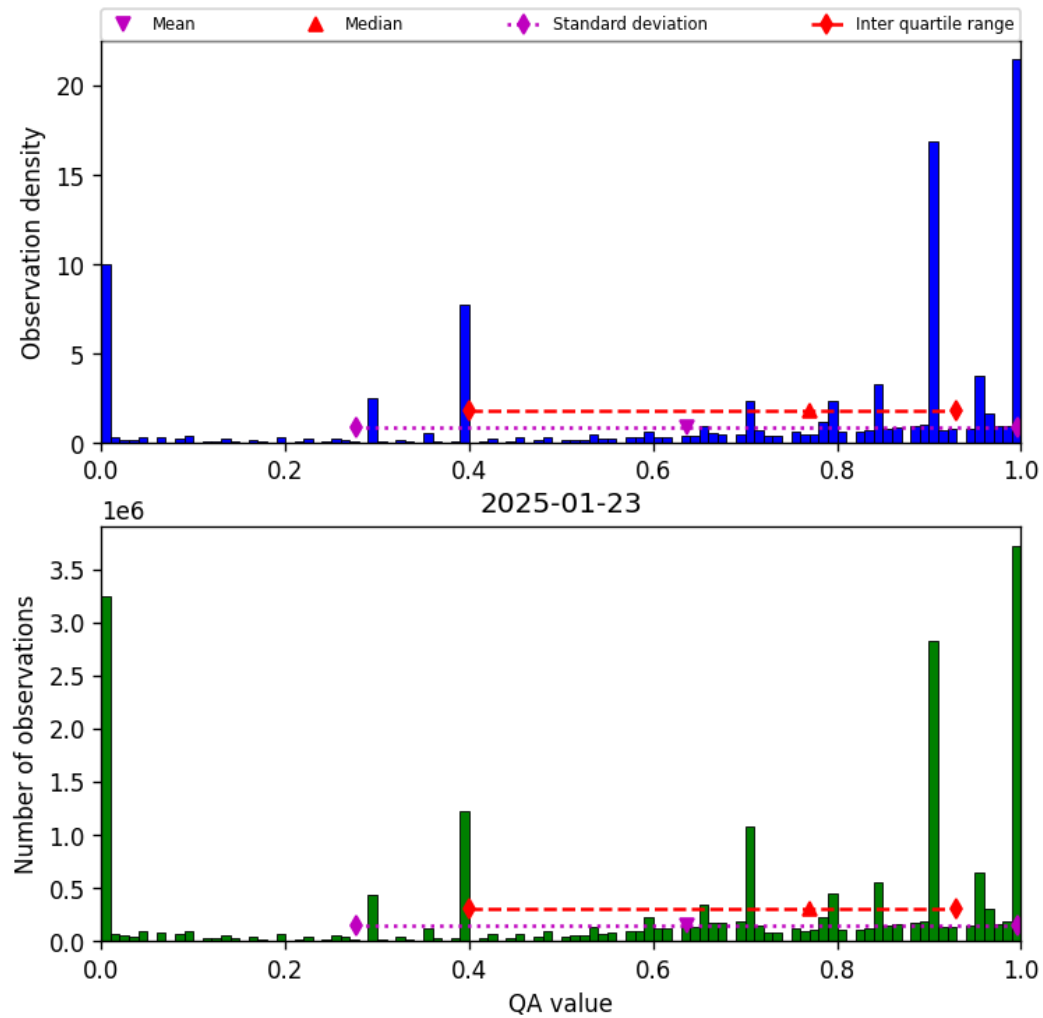


Figure 38: Histogram of “QA value” for 2025-01-23 to 2025-01-24

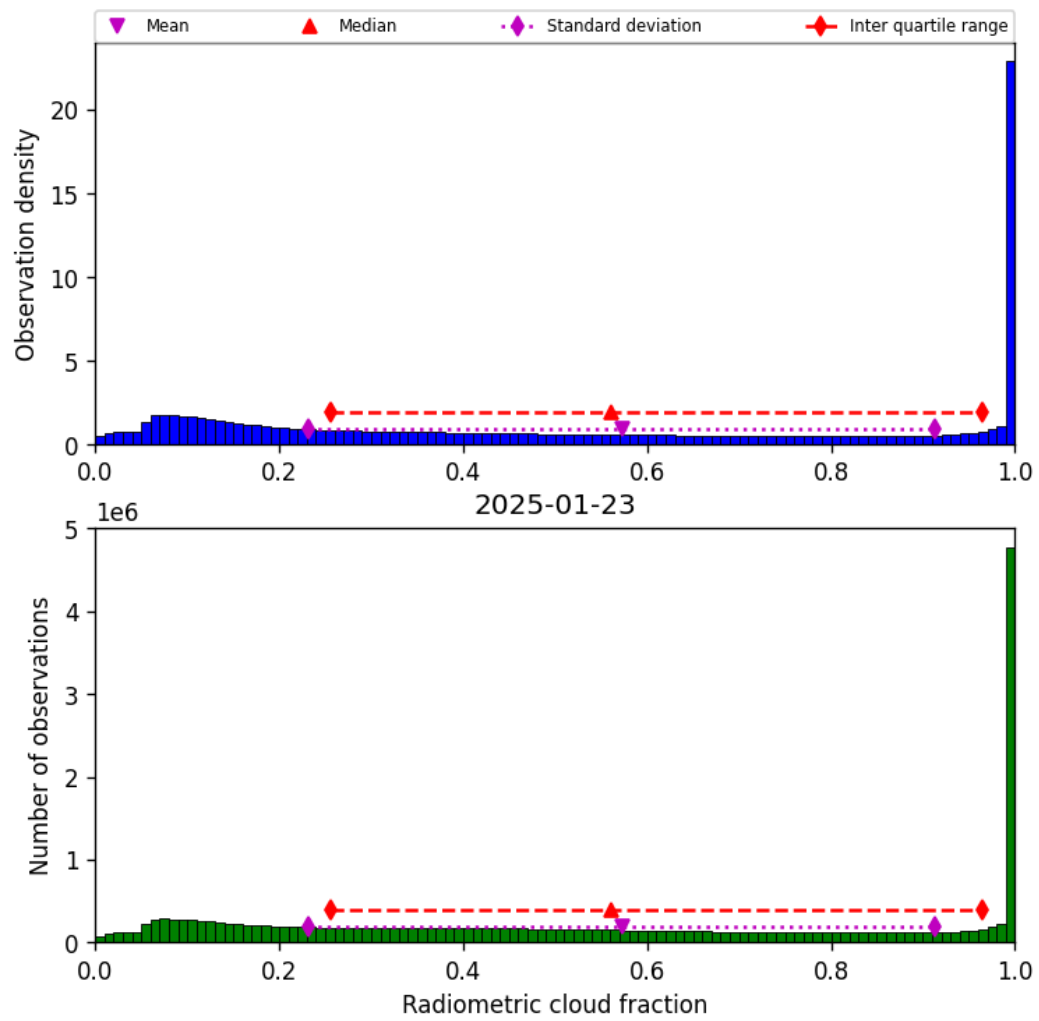


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-01-23 to 2025-01-24

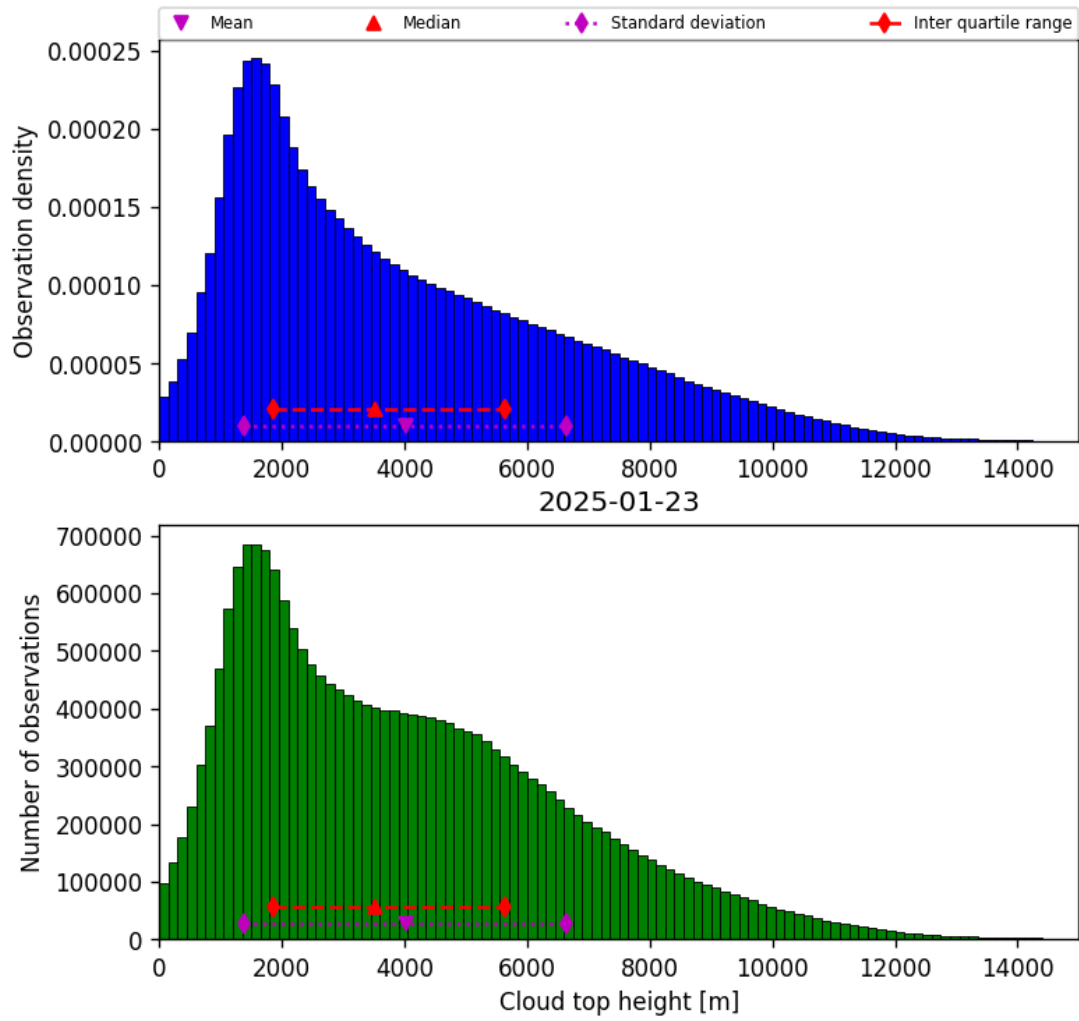


Figure 40: Histogram of “Cloud top height” for 2025-01-23 to 2025-01-24

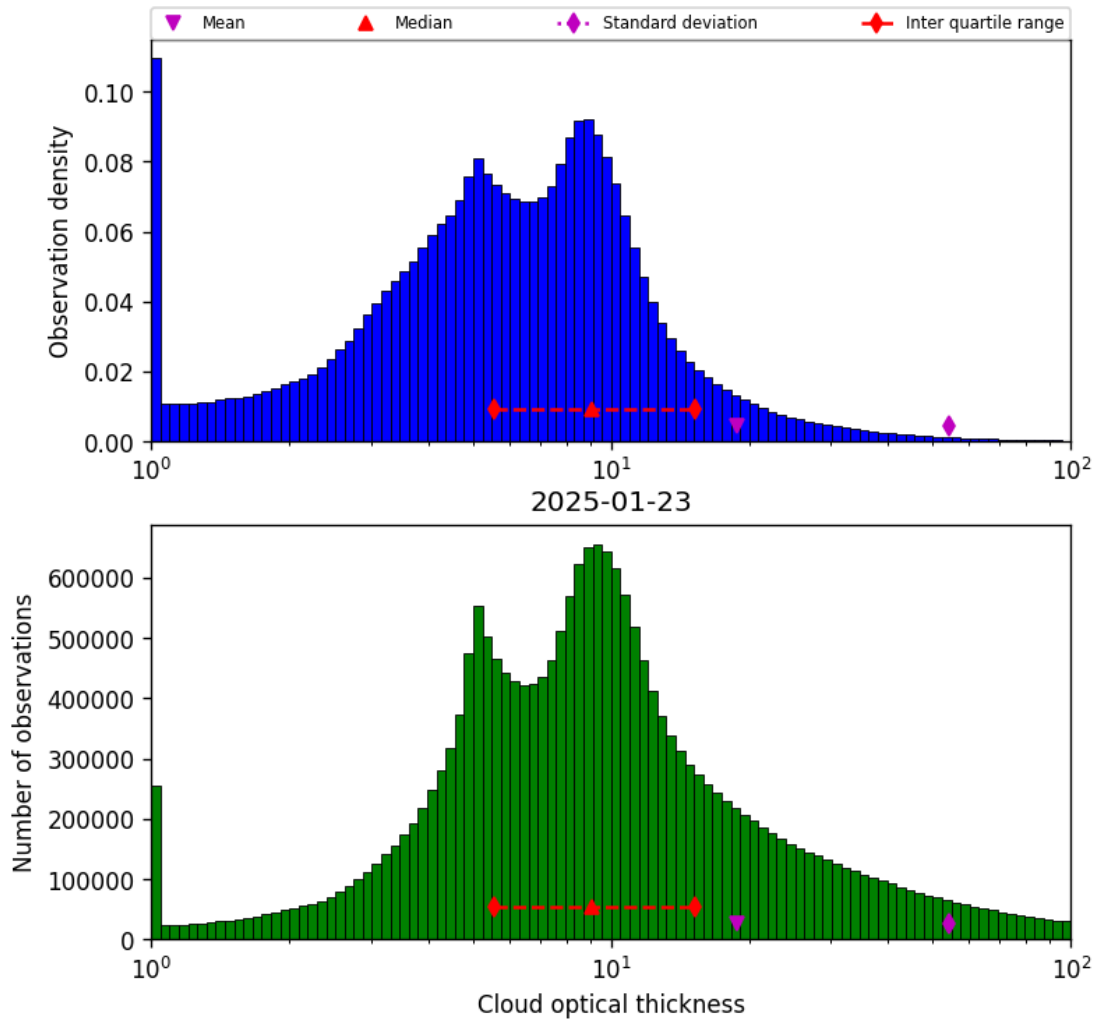


Figure 41: Histogram of “Cloud optical thickness” for 2025-01-23 to 2025-01-24

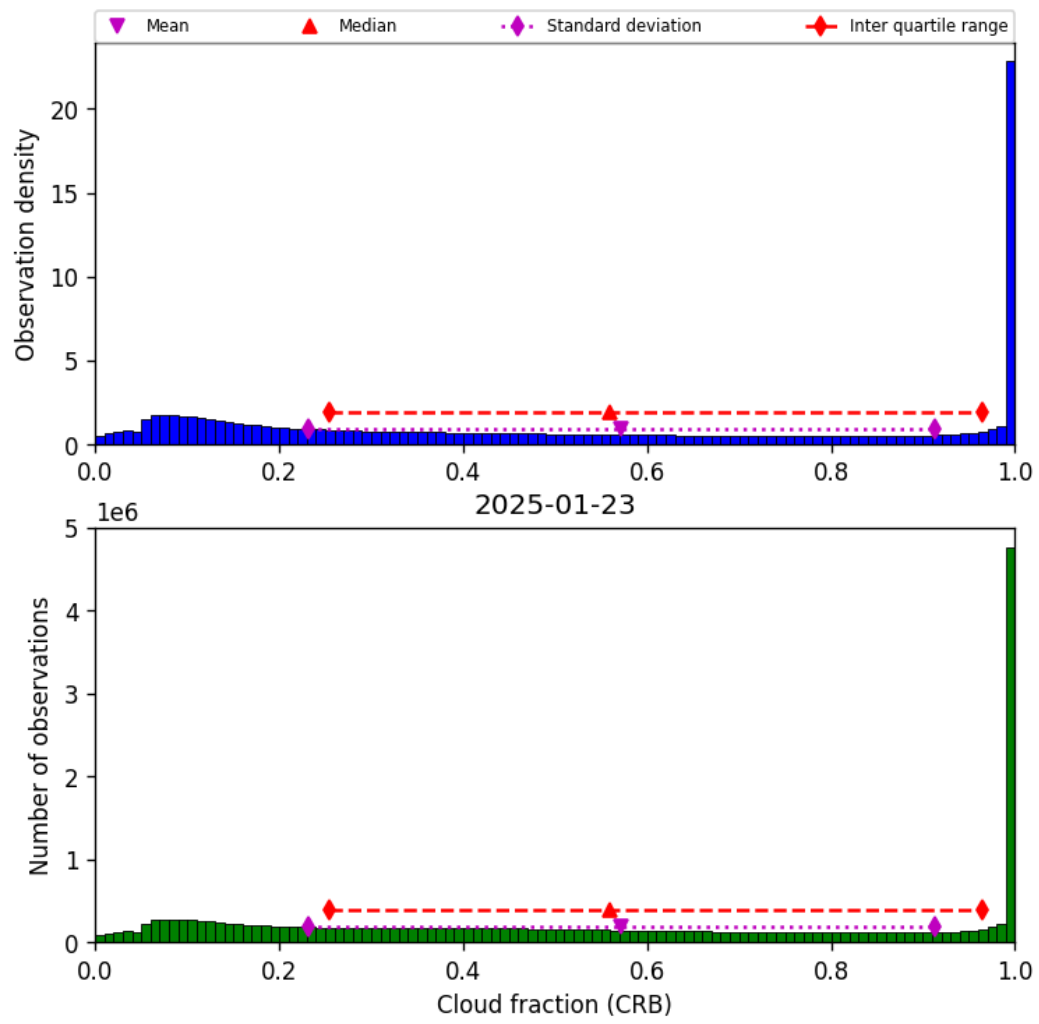


Figure 42: Histogram of "Cloud fraction (CRB)" for 2025-01-23 to 2025-01-24

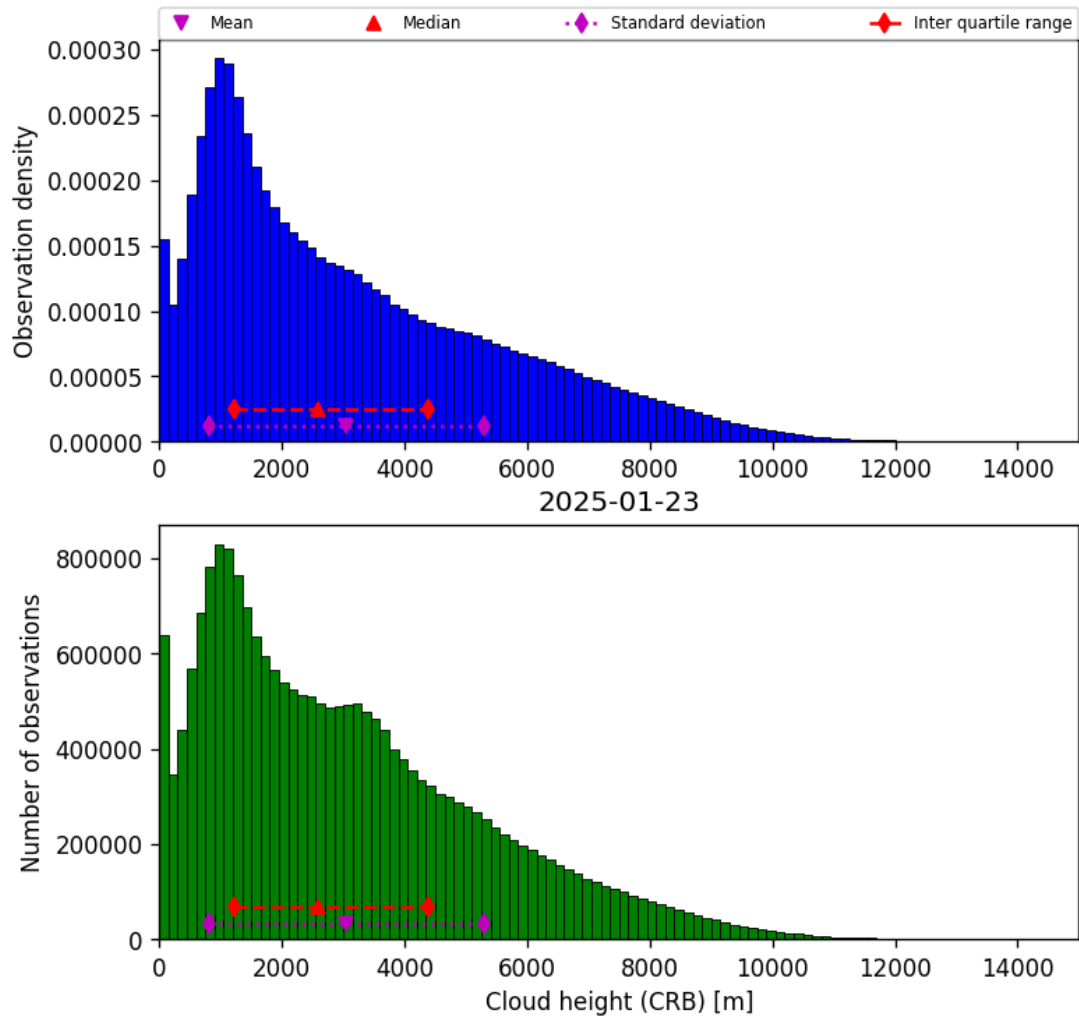


Figure 43: Histogram of “Cloud height (CRB)” for 2025-01-23 to 2025-01-24

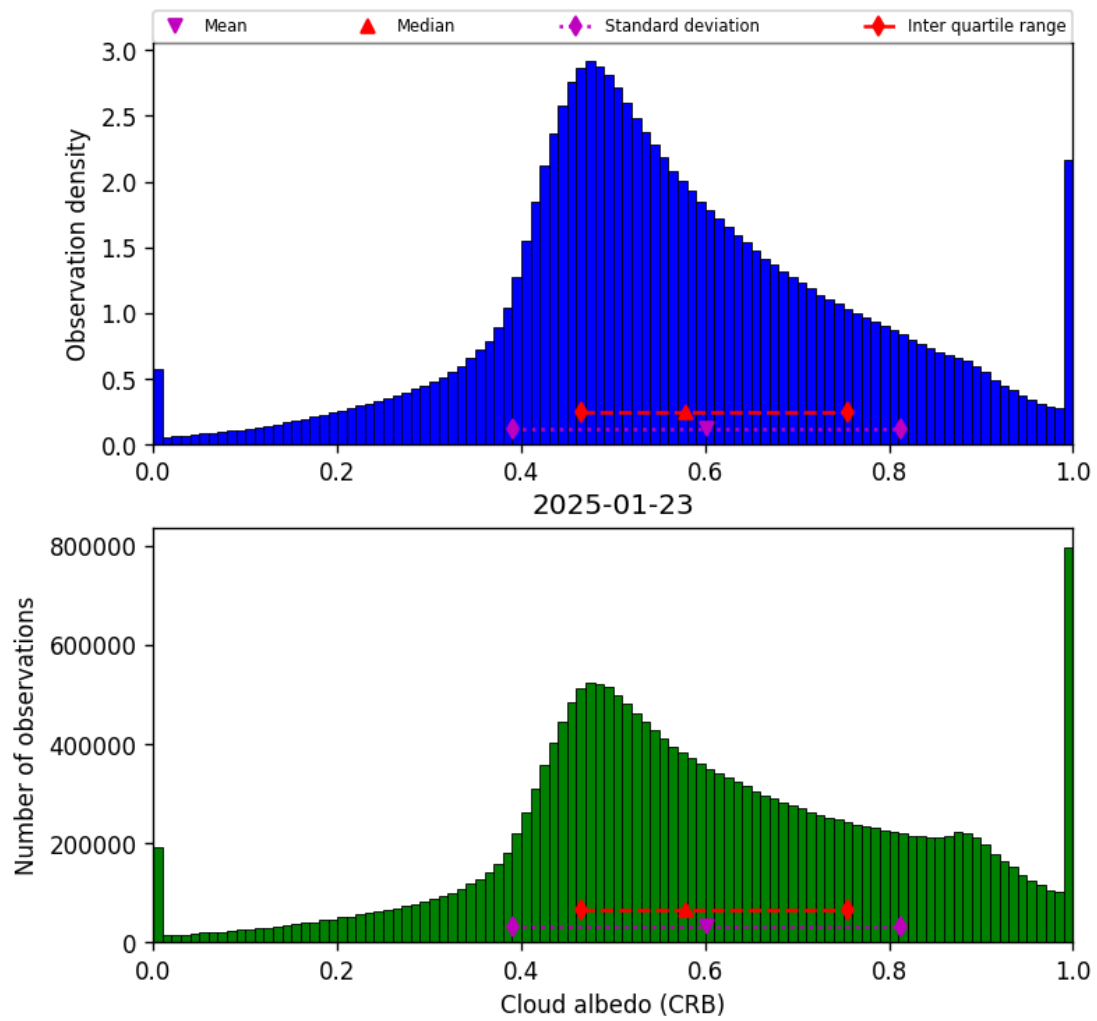


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-01-23 to 2025-01-24

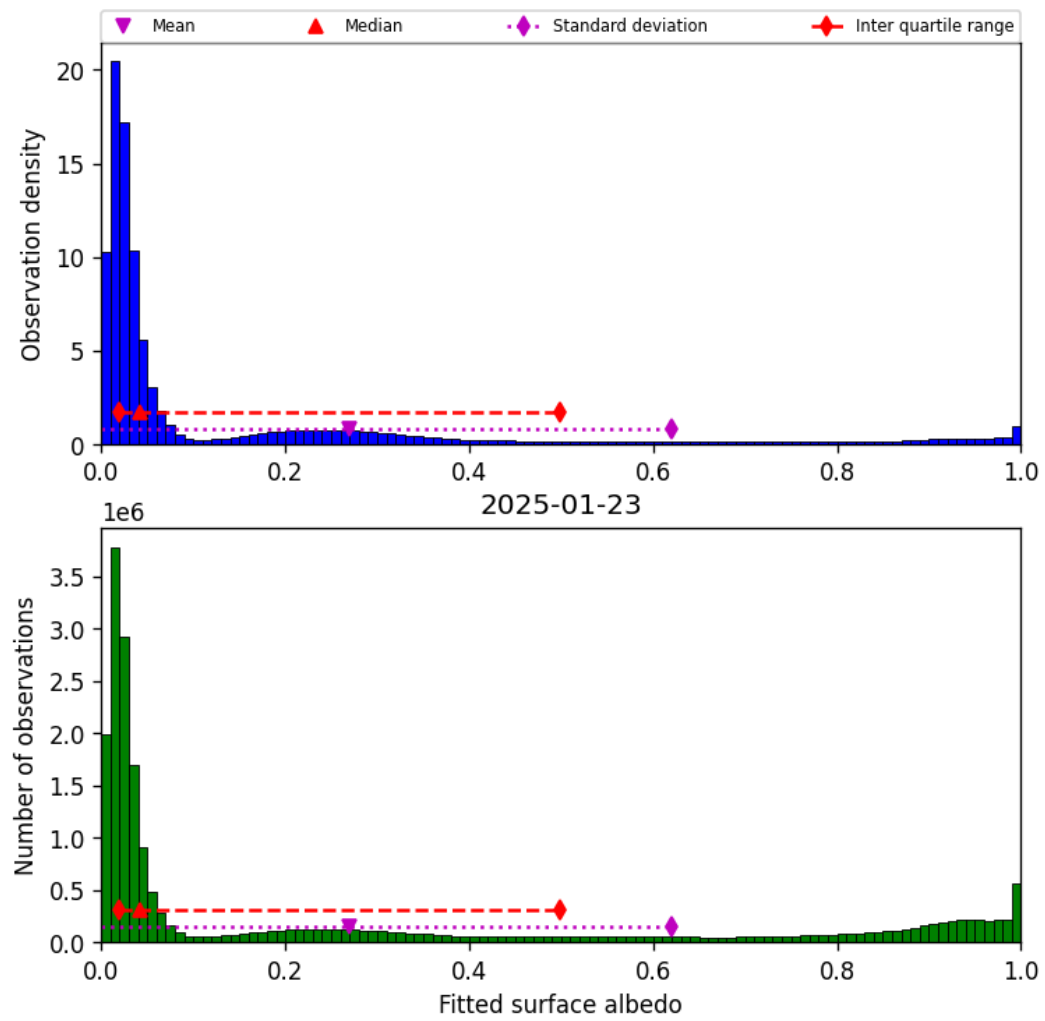


Figure 45: Histogram of “Fitted surface albedo” for 2025-01-23 to 2025-01-24

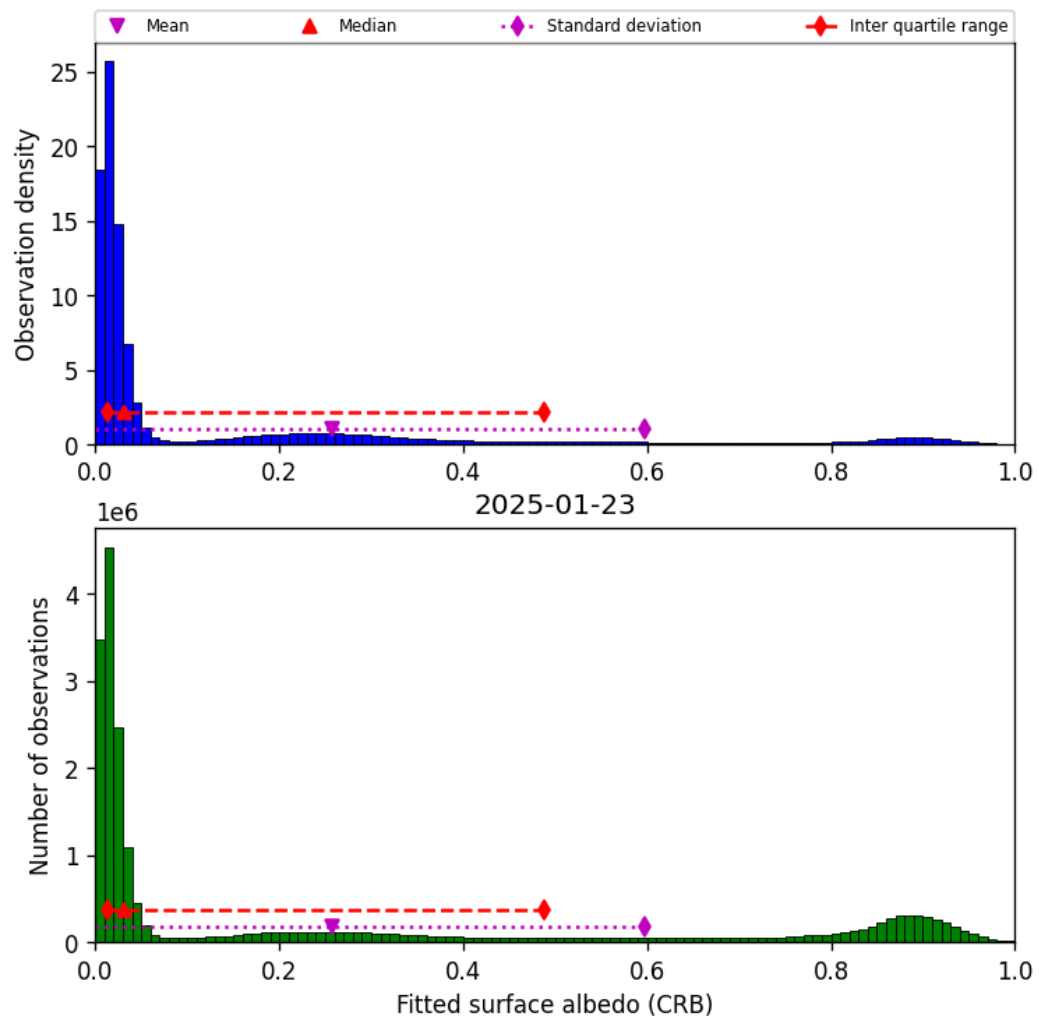


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-01-23 to 2025-01-24

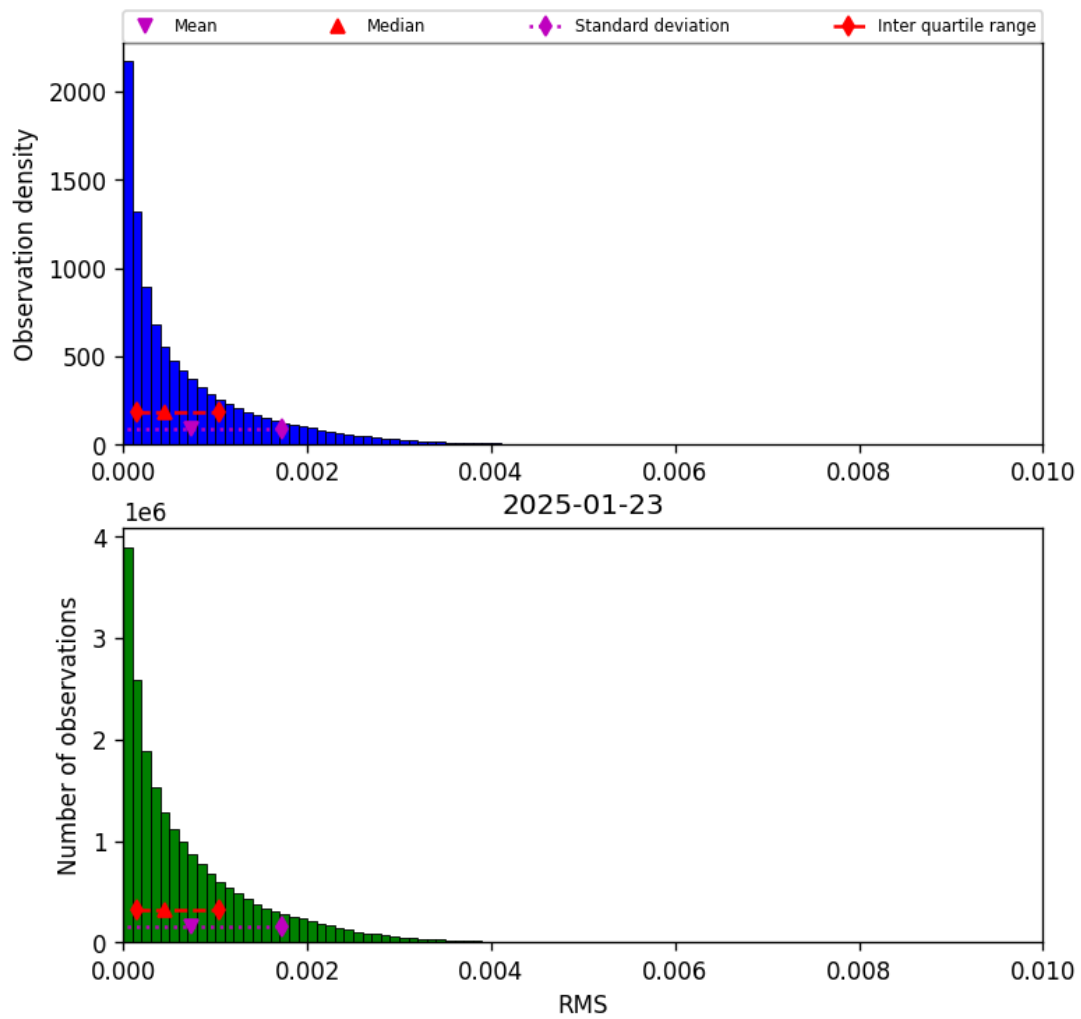


Figure 47: Histogram of “RMS” for 2025-01-23 to 2025-01-24

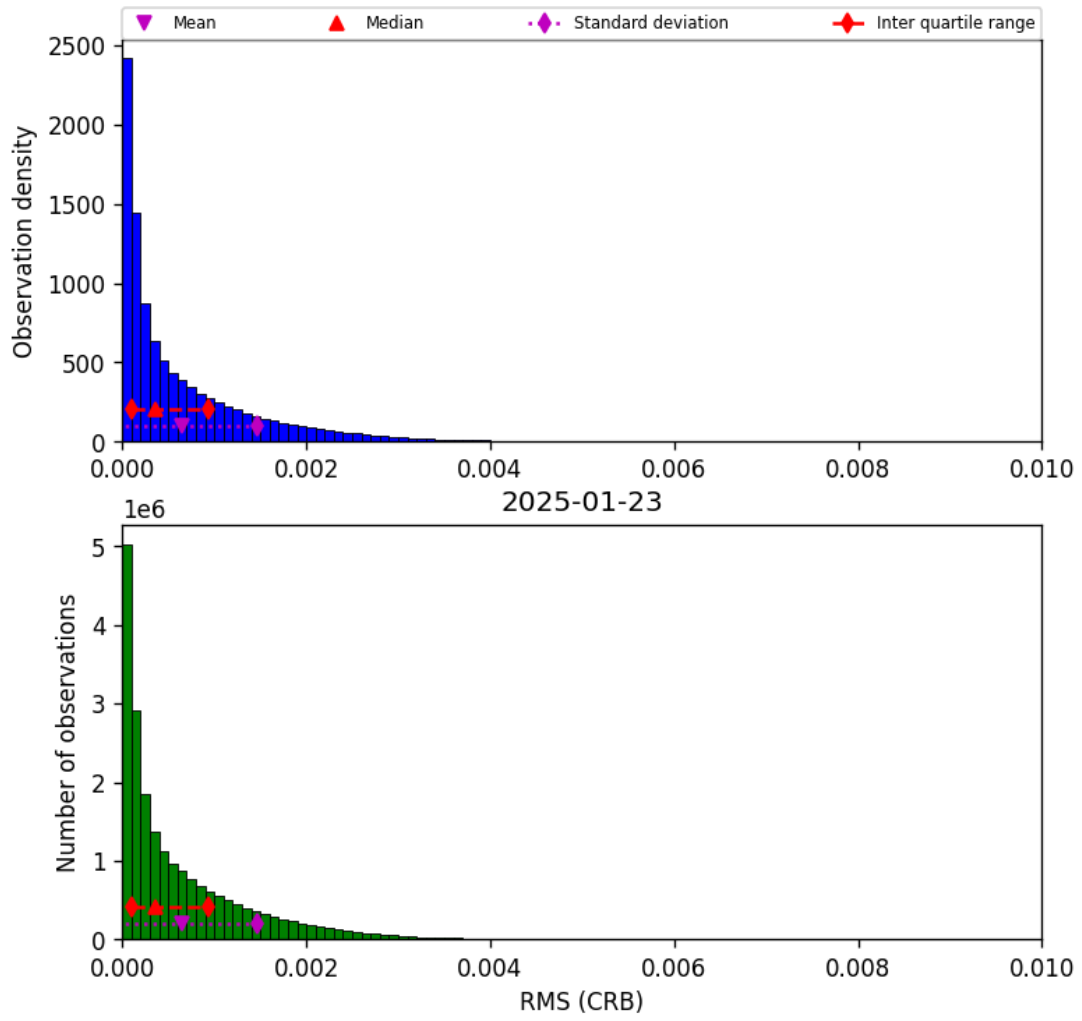


Figure 48: Histogram of “RMS (CRB)” for 2025-01-23 to 2025-01-24

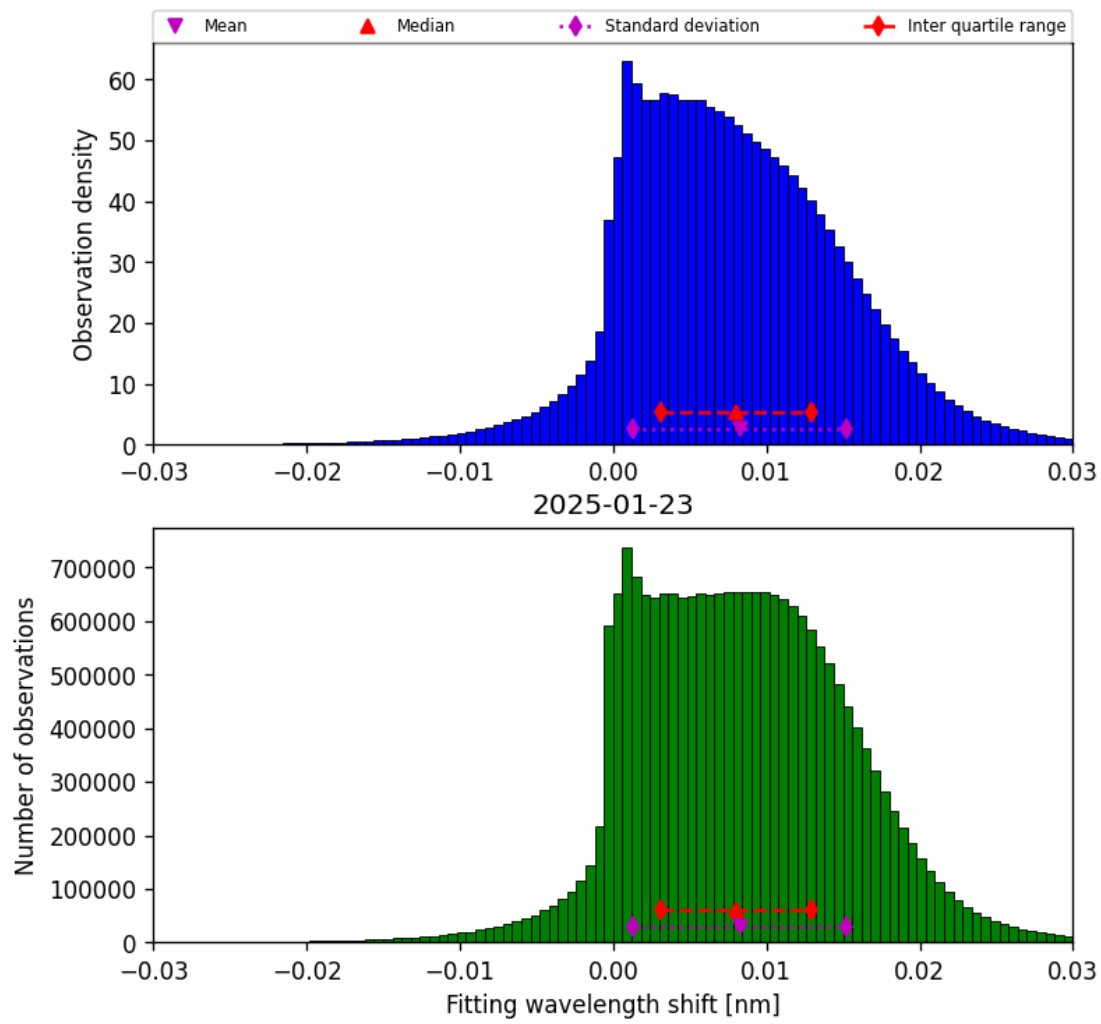


Figure 49: Histogram of “Fitting wavelength shift” for 2025-01-23 to 2025-01-24

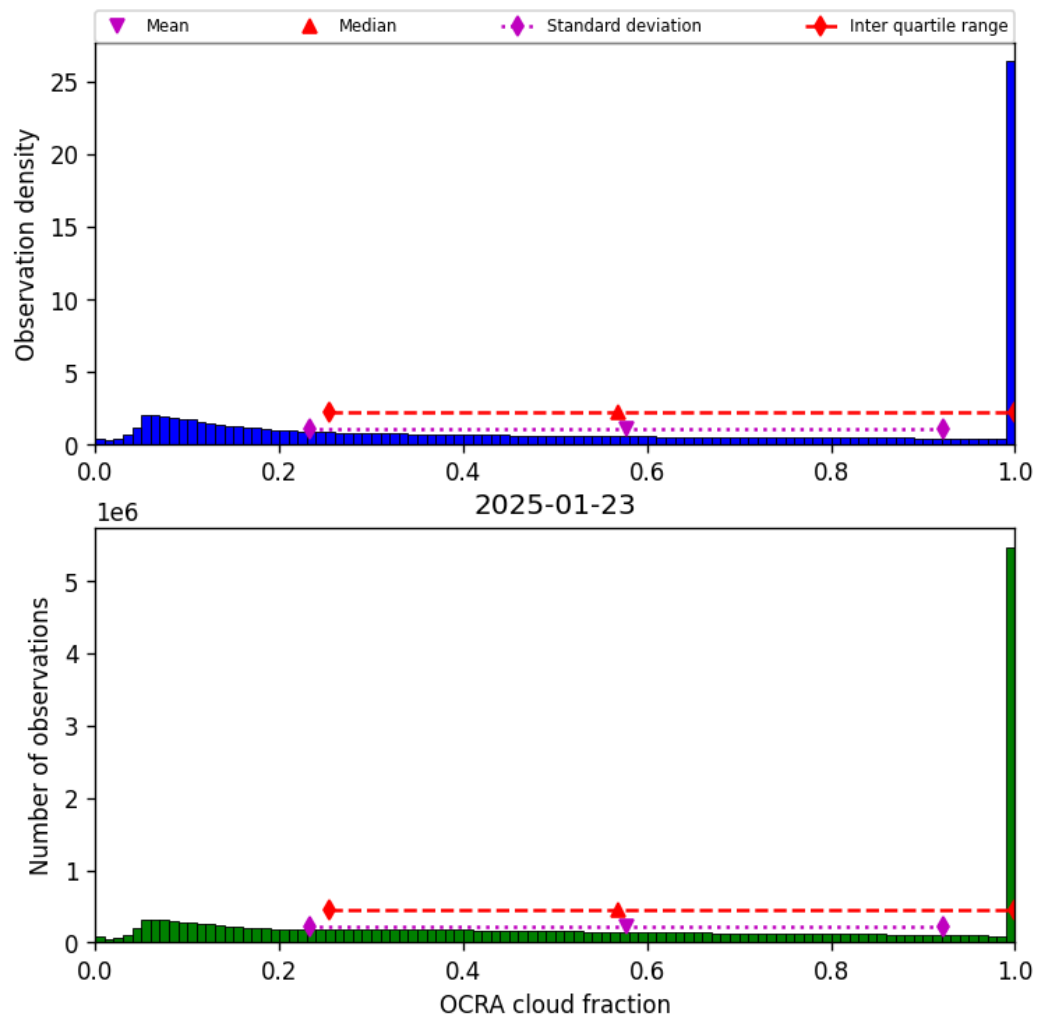


Figure 50: Histogram of “OCRA cloud fraction” for 2025-01-23 to 2025-01-24

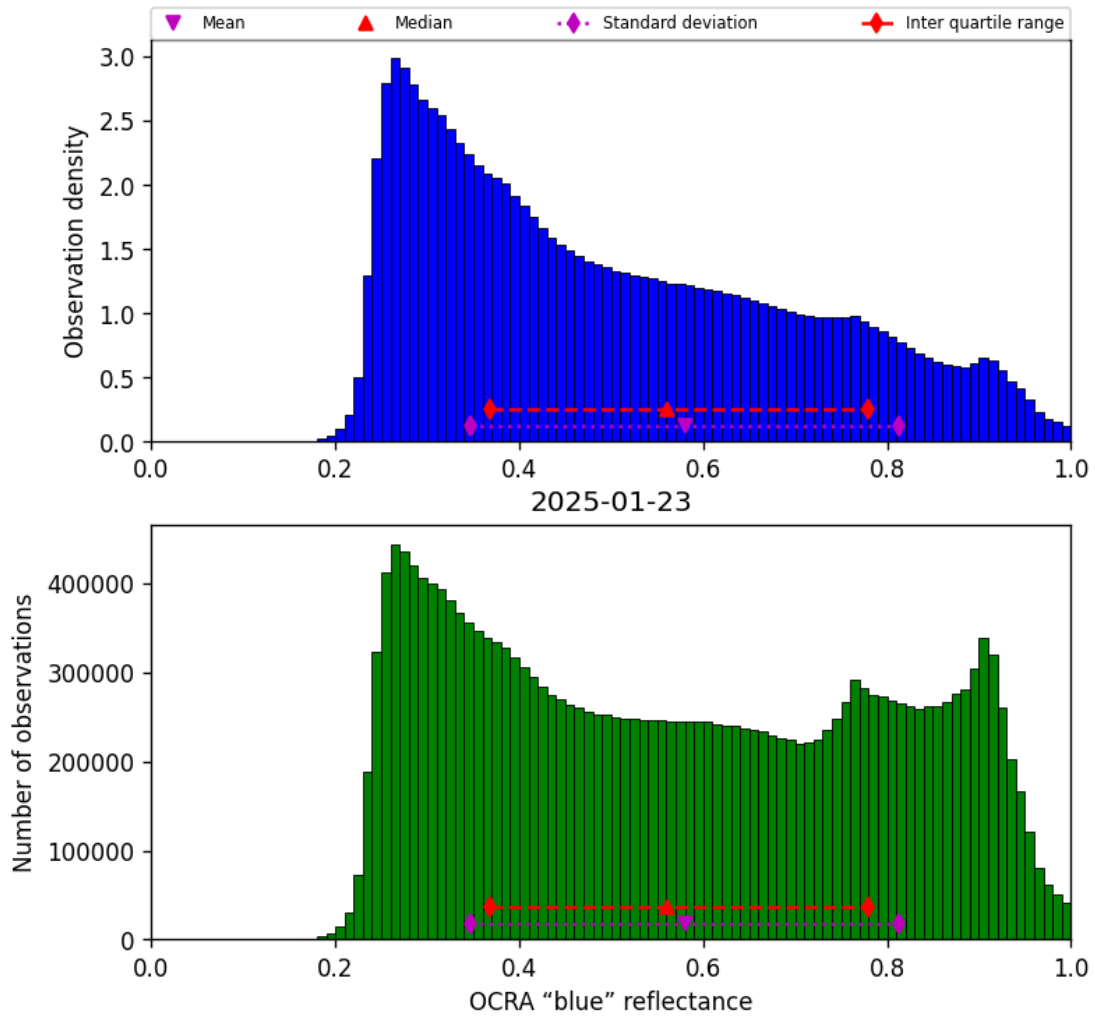


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-01-23 to 2025-01-24

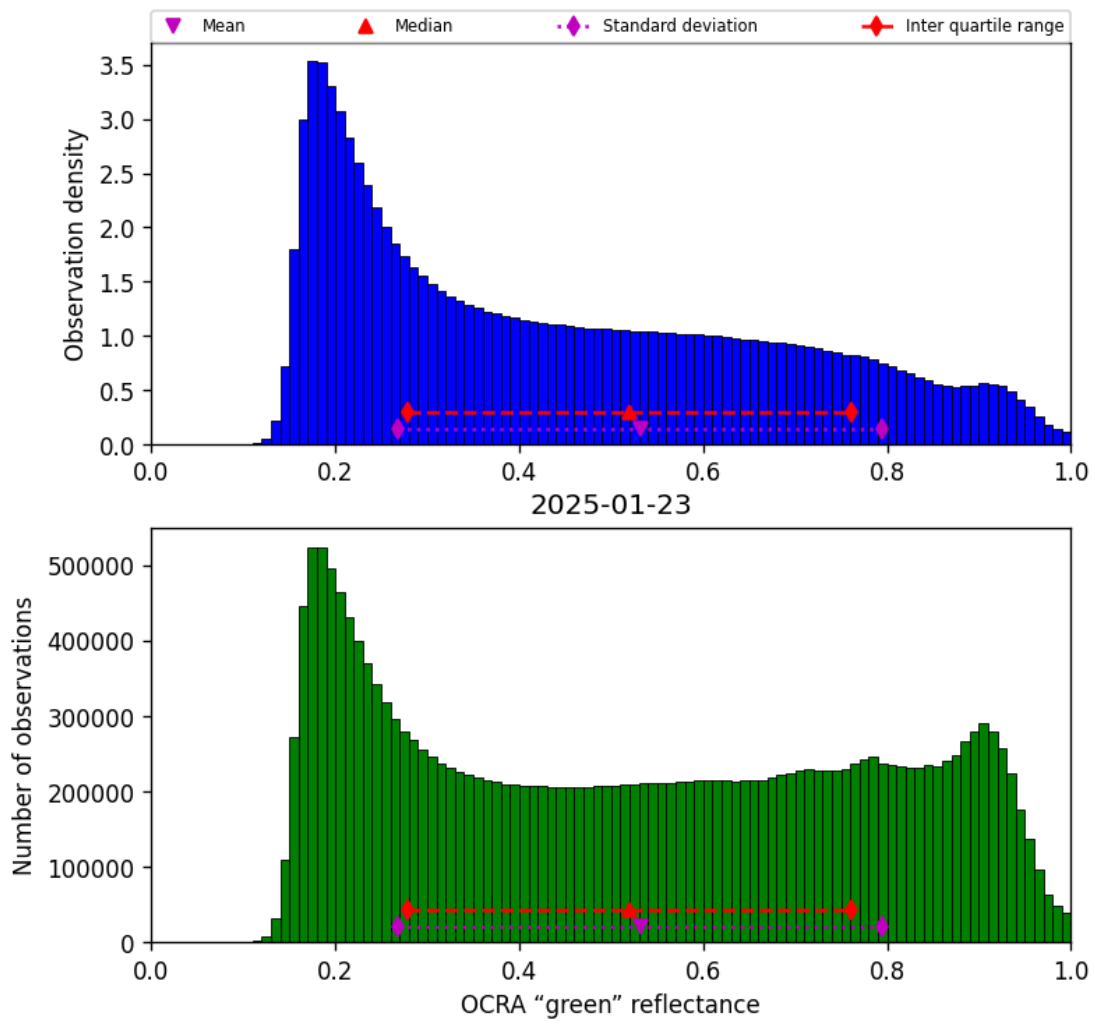


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-01-23 to 2025-01-24

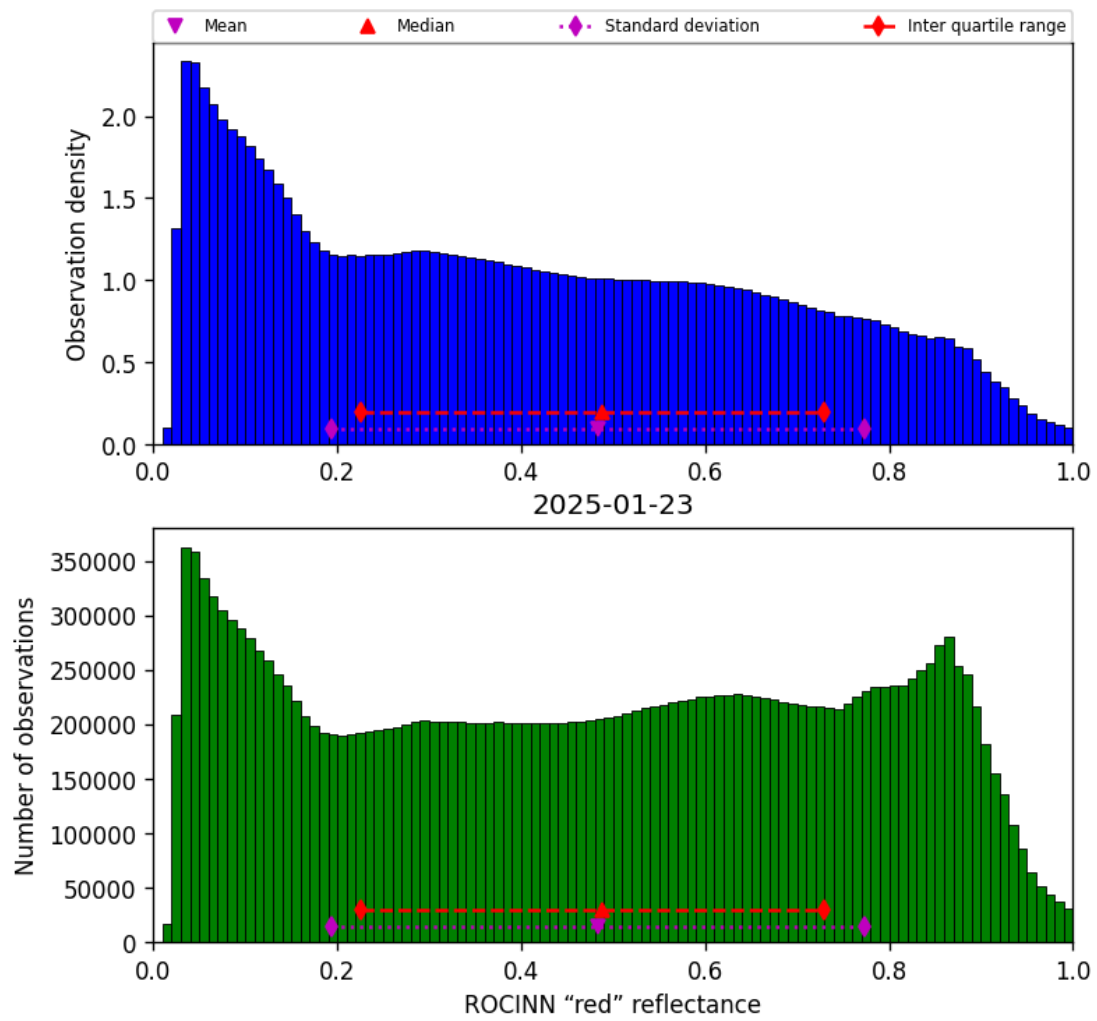


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-01-23 to 2025-01-24

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.

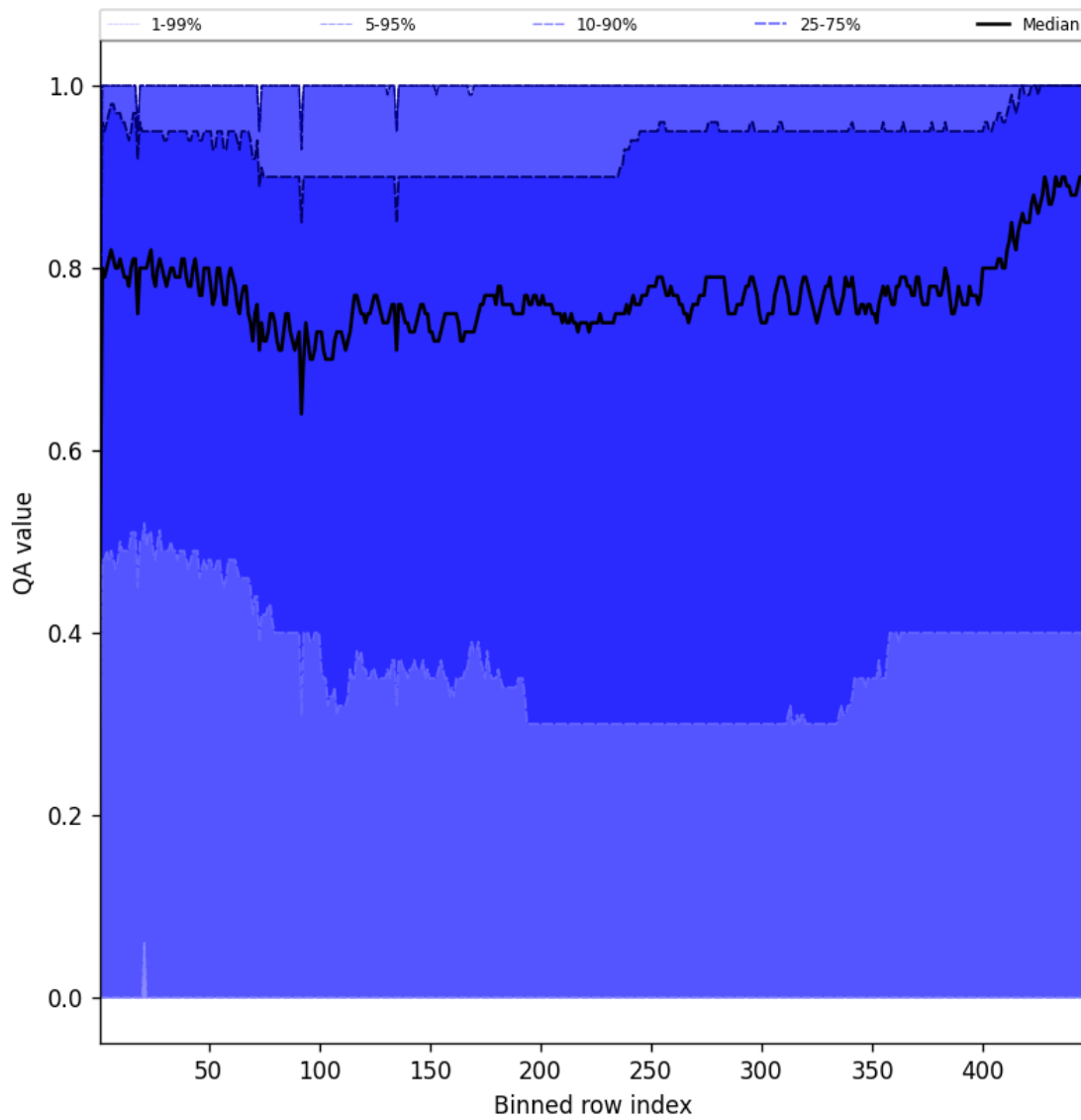


Figure 54: Along track statistics of “QA value” for 2025-01-23 to 2025-01-24

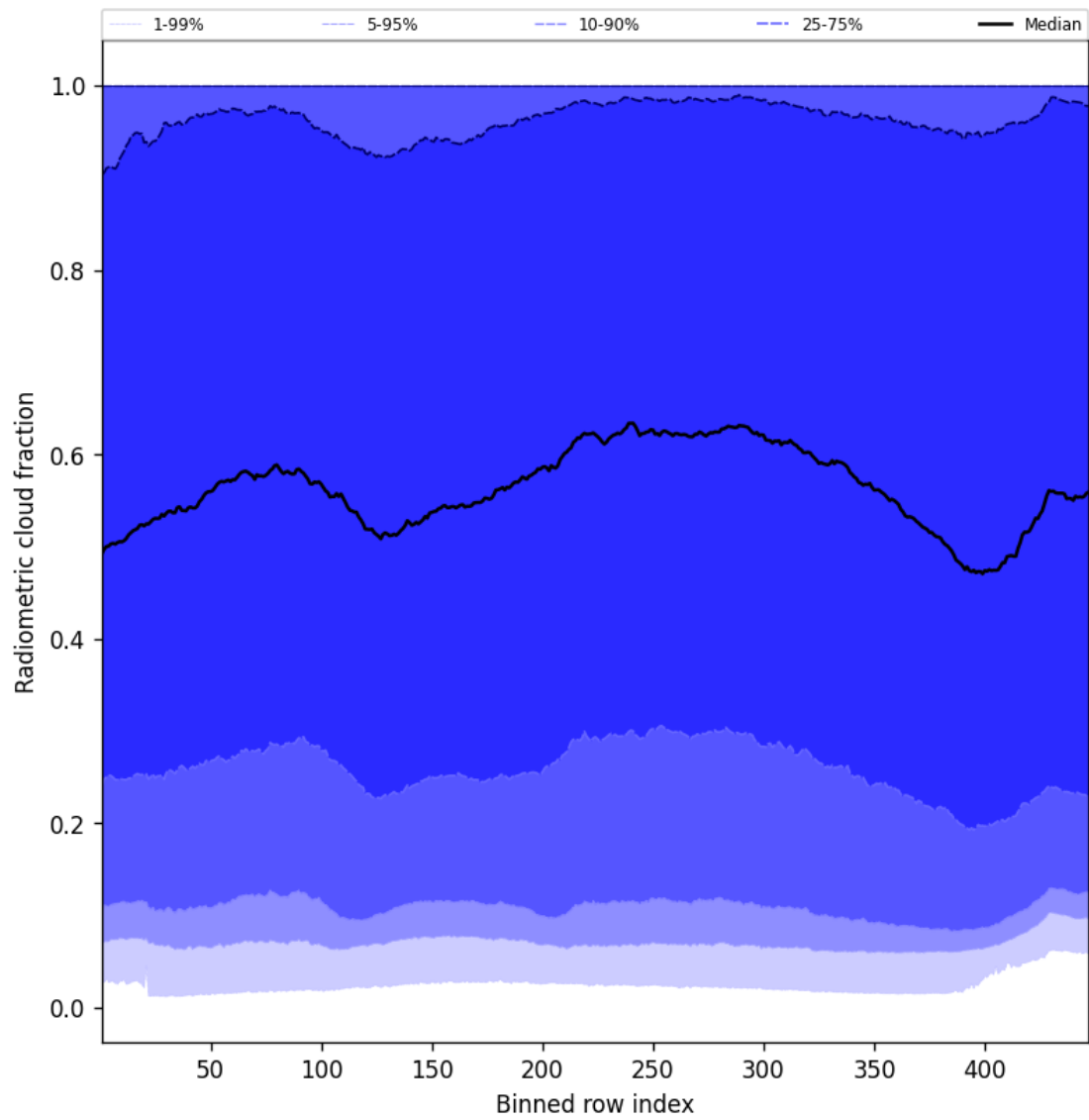


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-01-23 to 2025-01-24

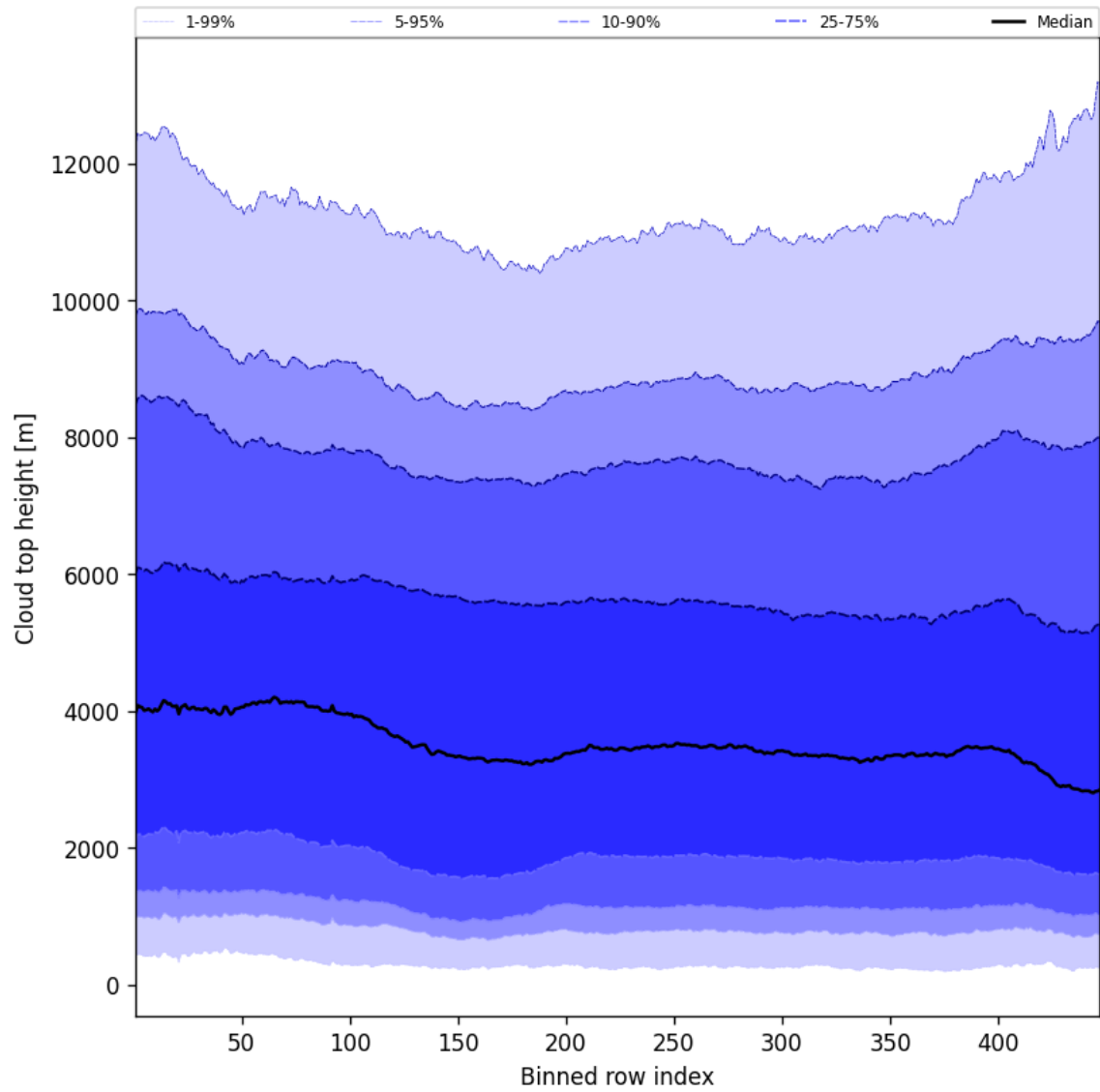


Figure 56: Along track statistics of “Cloud top height” for 2025-01-23 to 2025-01-24

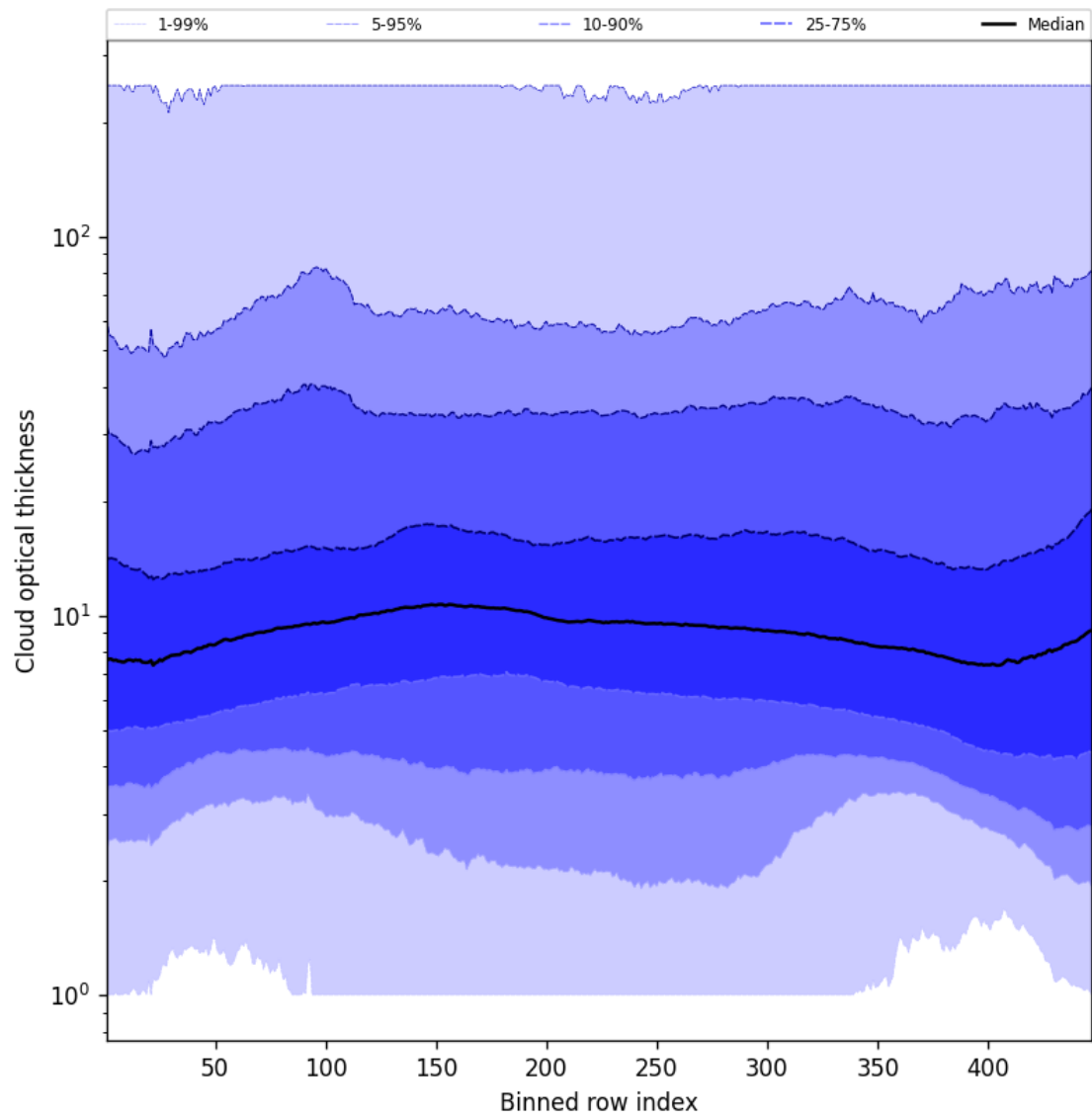


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-01-23 to 2025-01-24

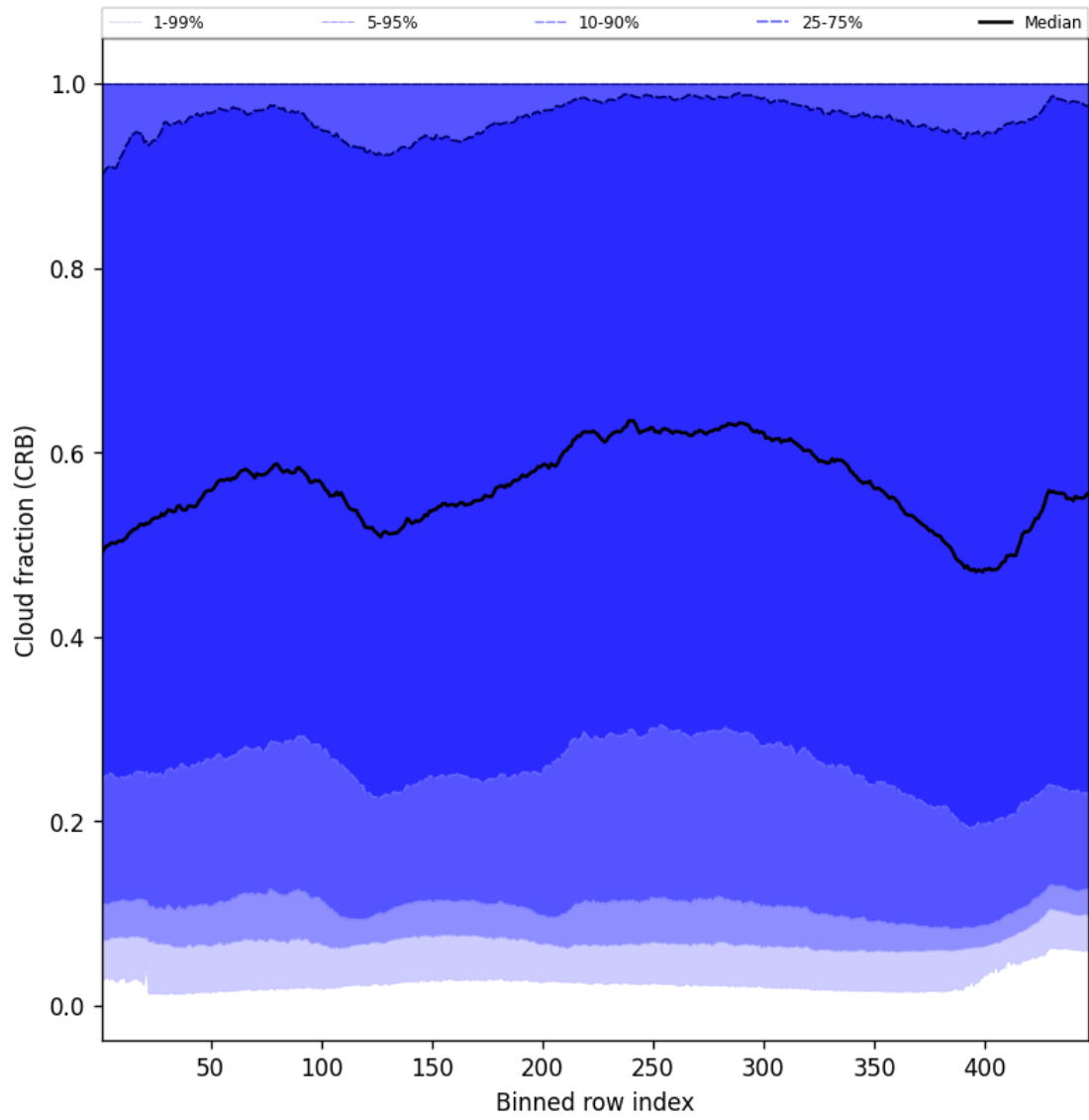


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-01-23 to 2025-01-24

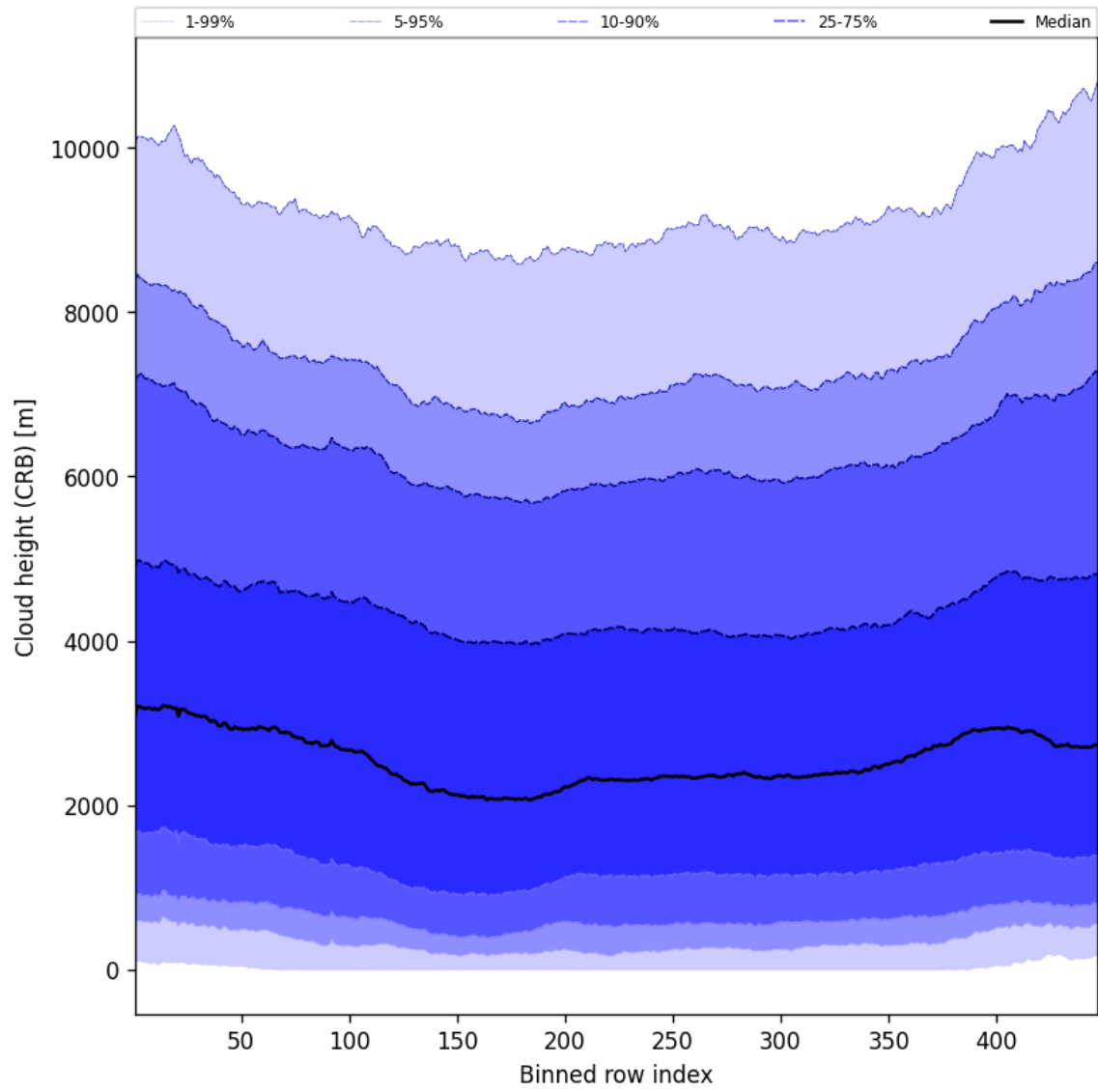


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-01-23 to 2025-01-24

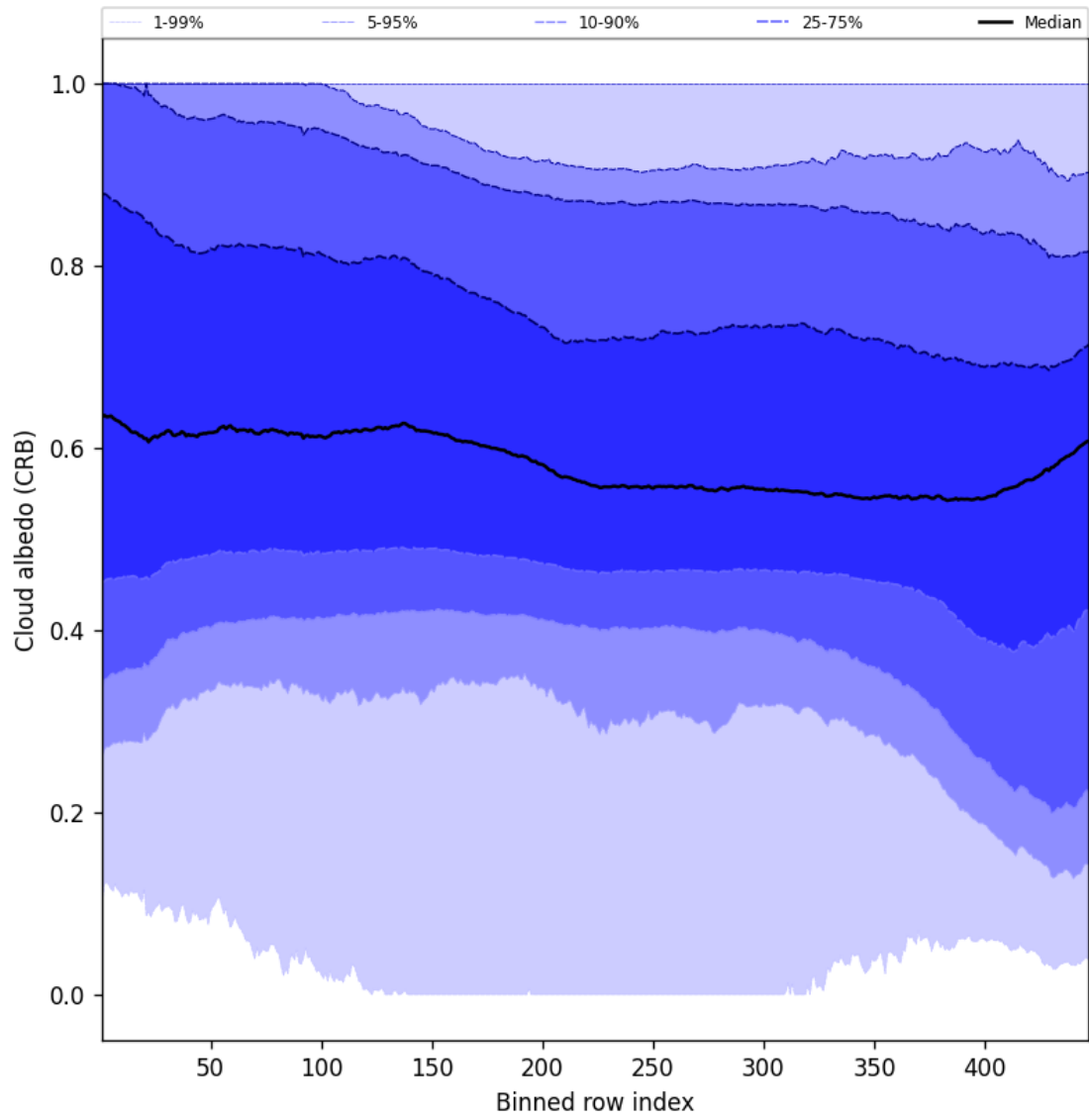


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-01-23 to 2025-01-24

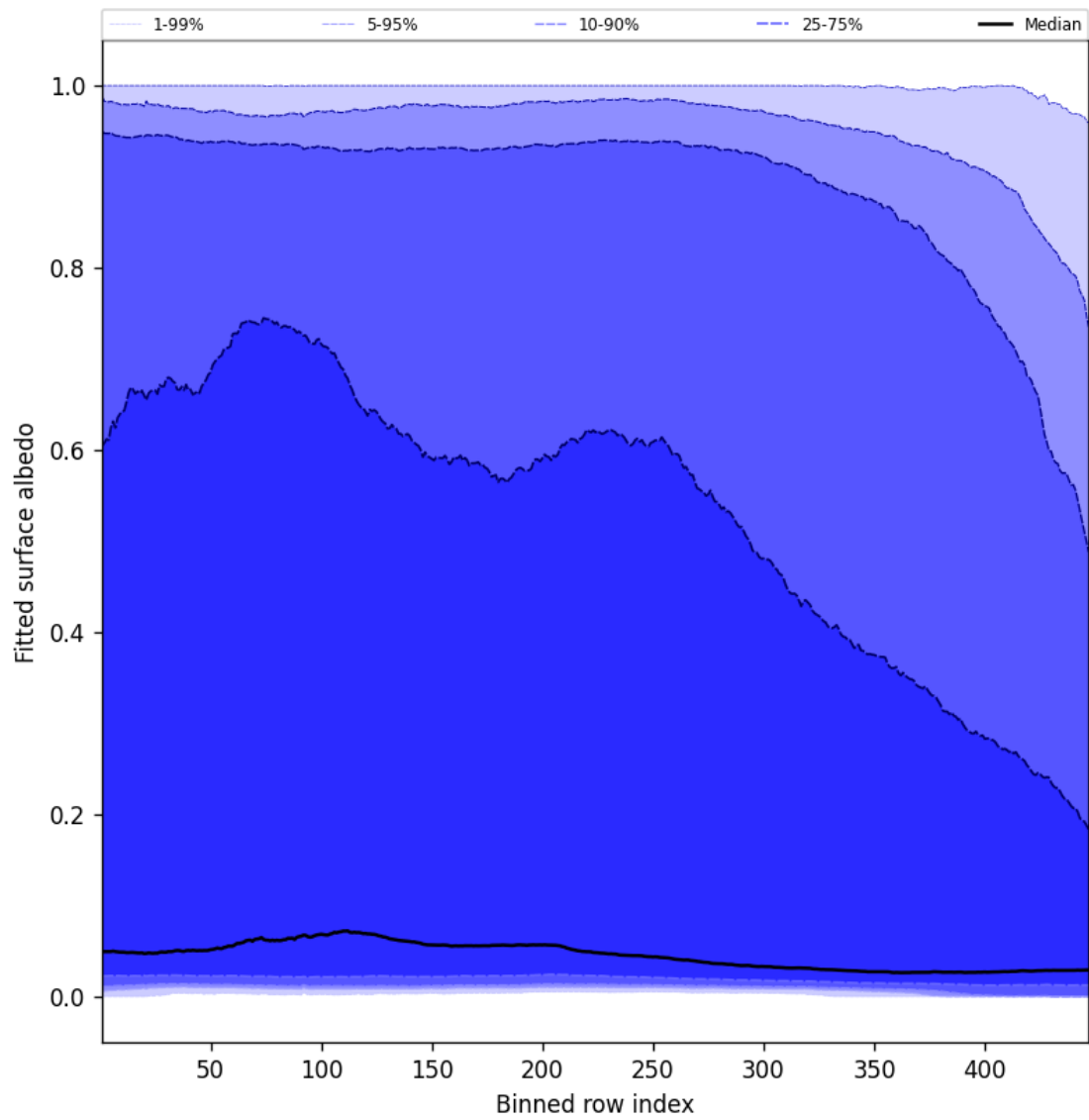


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-01-23 to 2025-01-24

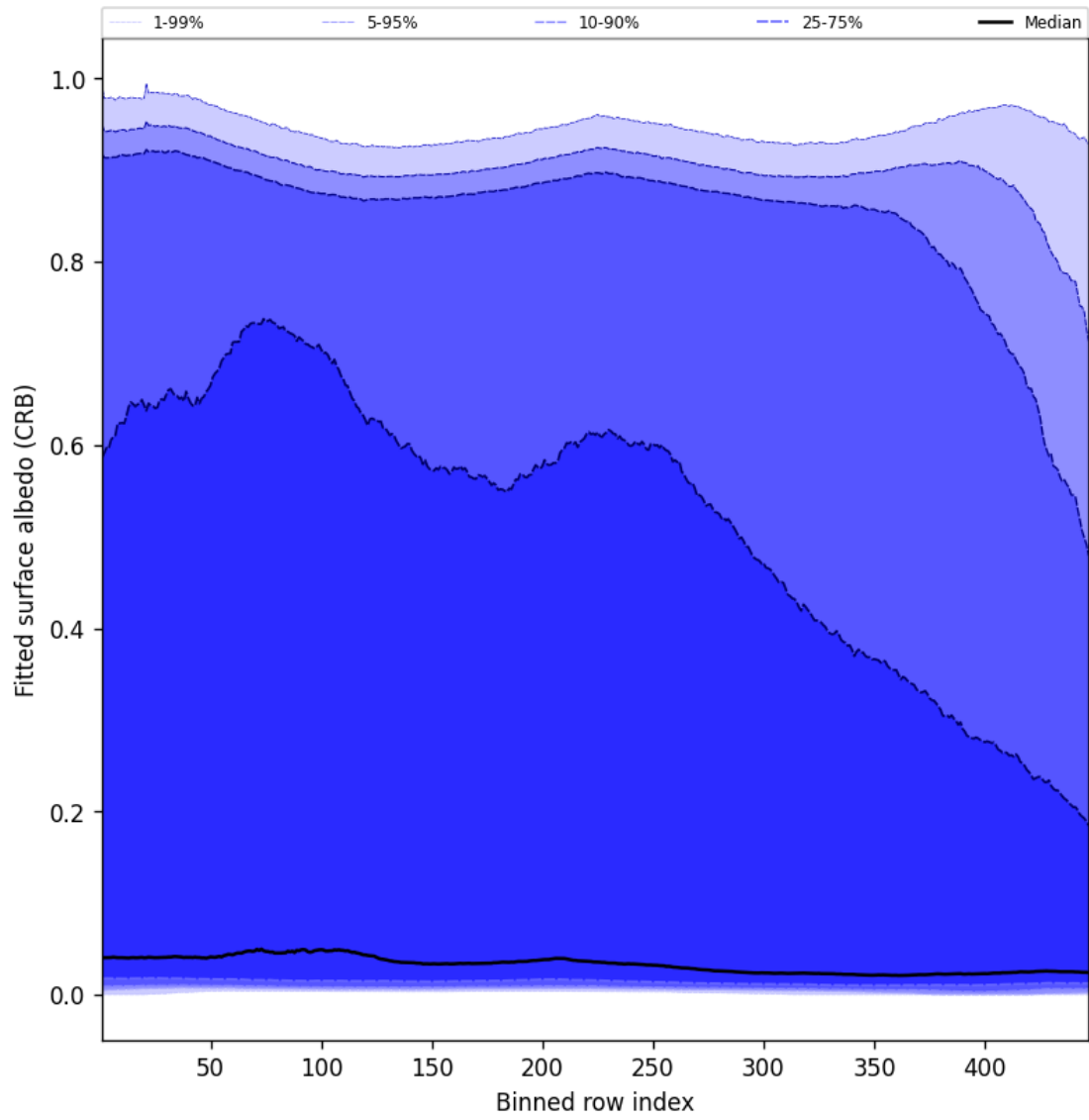


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-01-23 to 2025-01-24

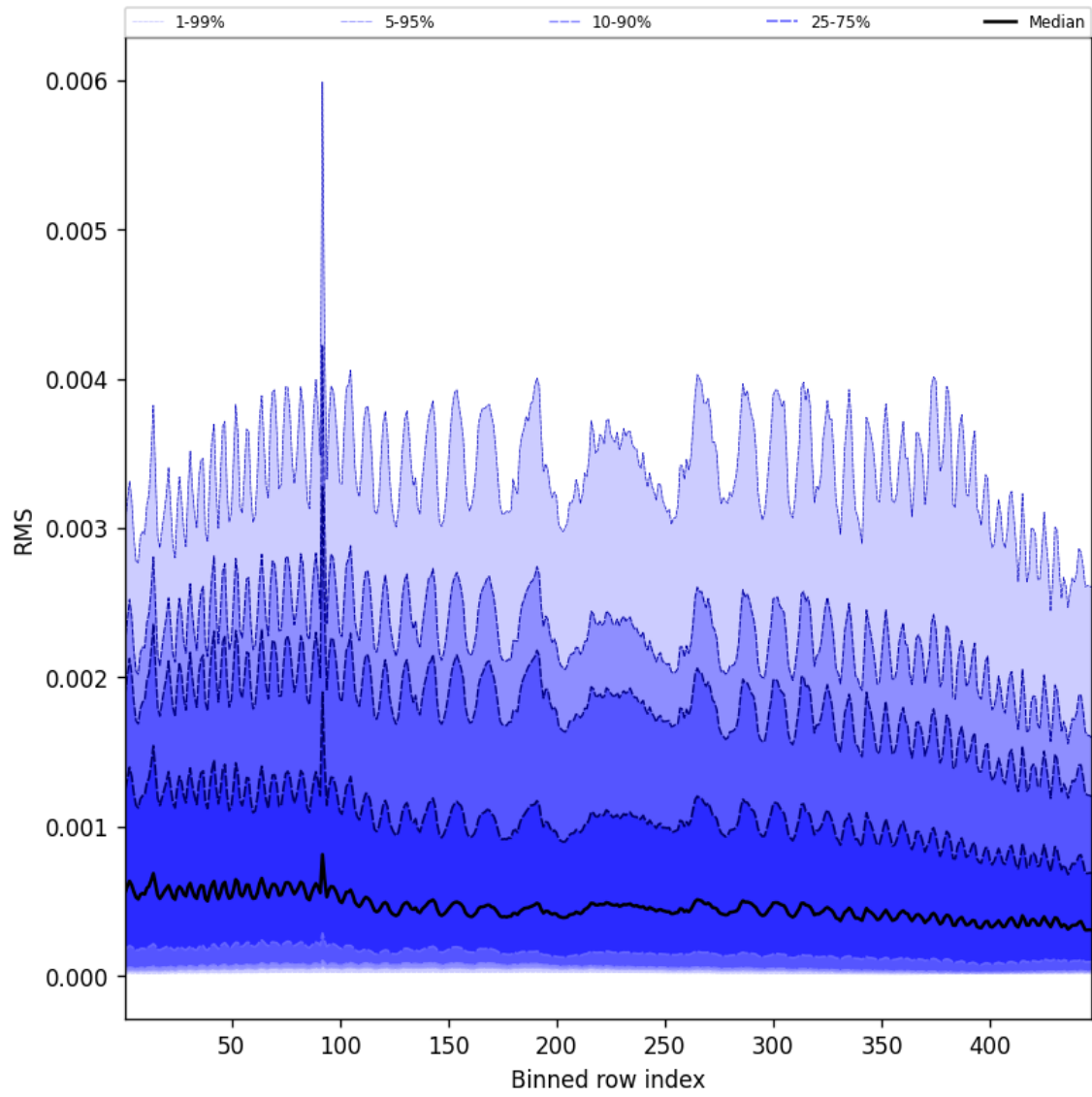


Figure 63: Along track statistics of “RMS” for 2025-01-23 to 2025-01-24

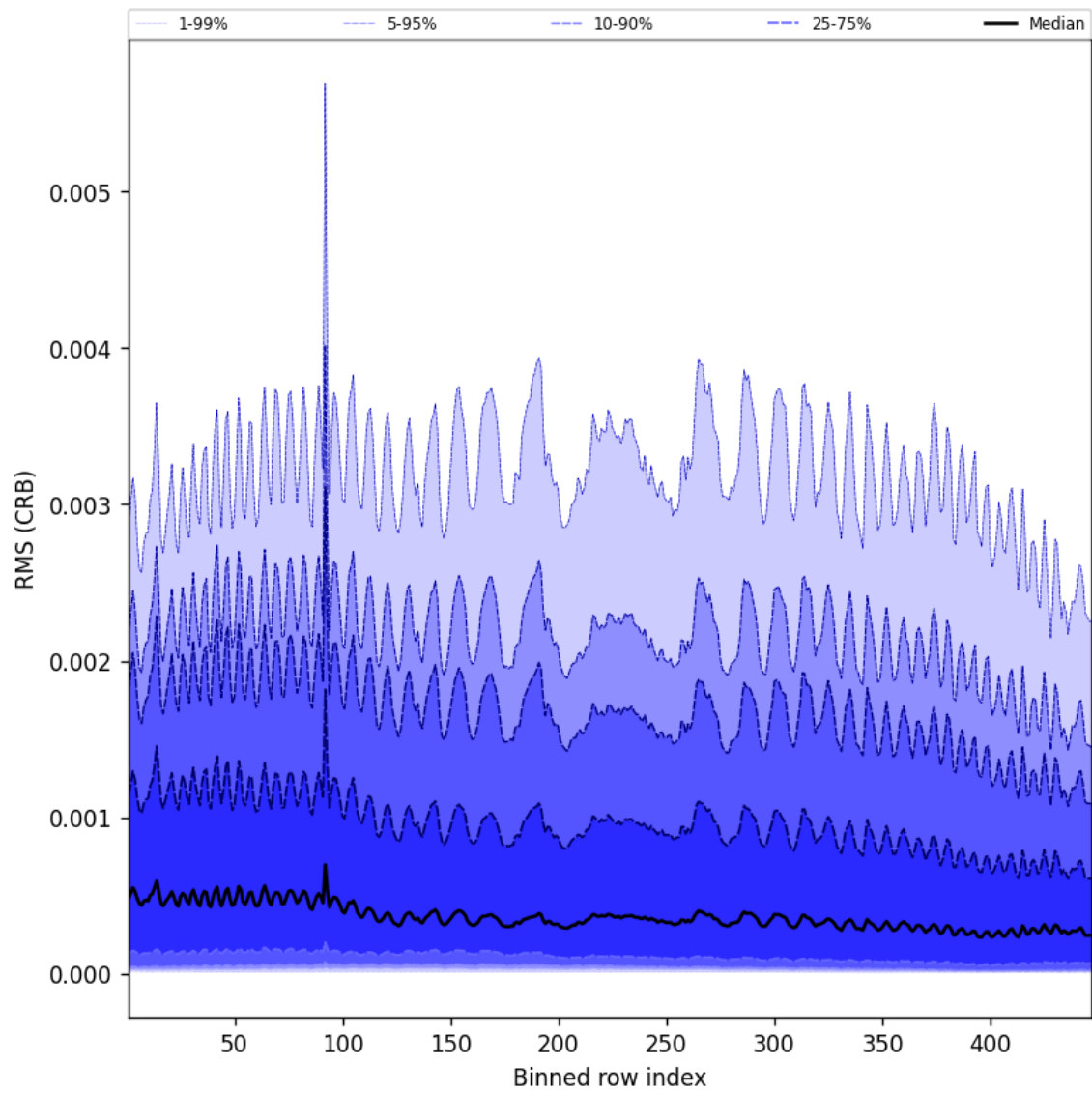


Figure 64: Along track statistics of “RMS (CRB)” for 2025-01-23 to 2025-01-24

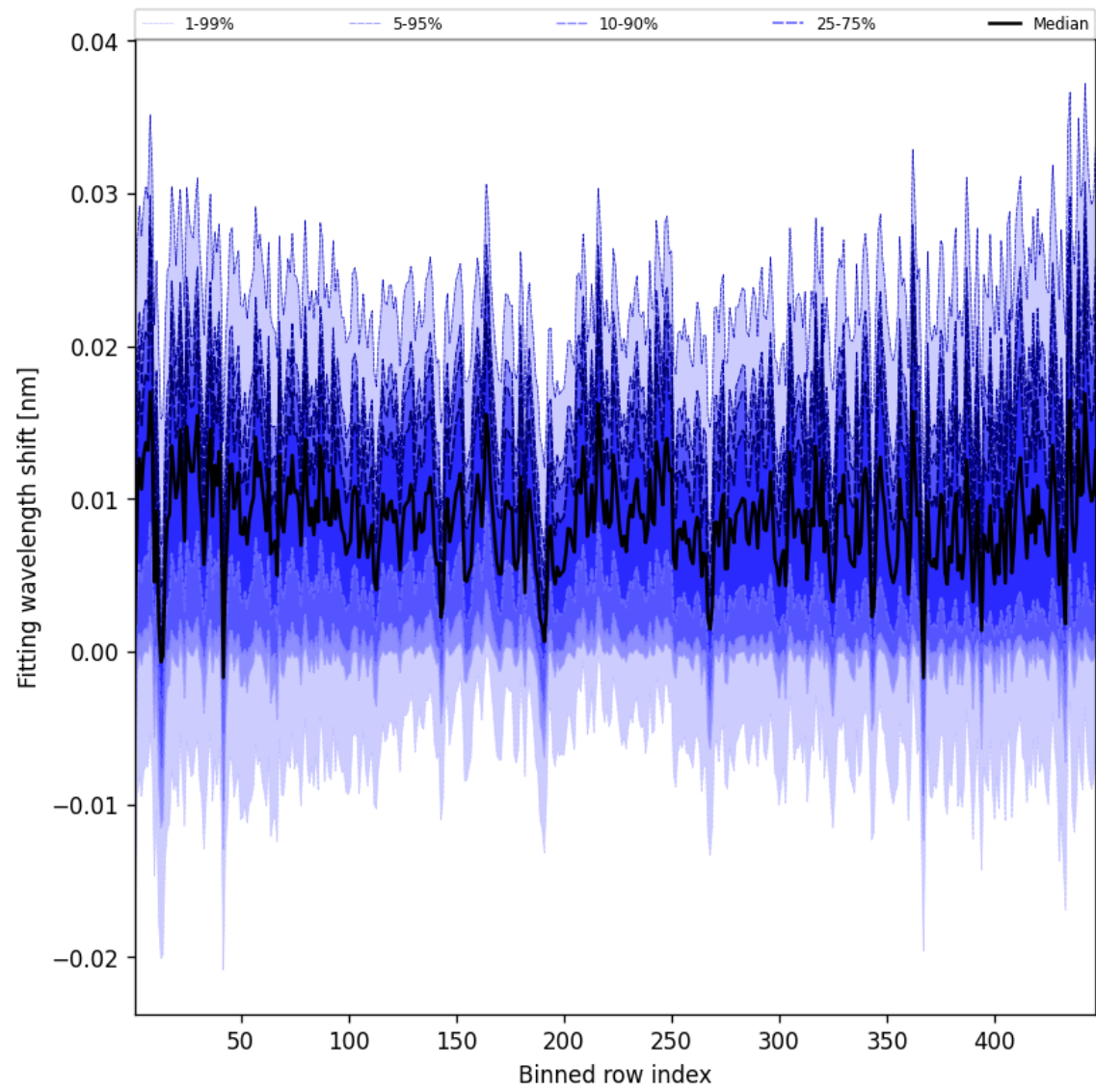


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-01-23 to 2025-01-24

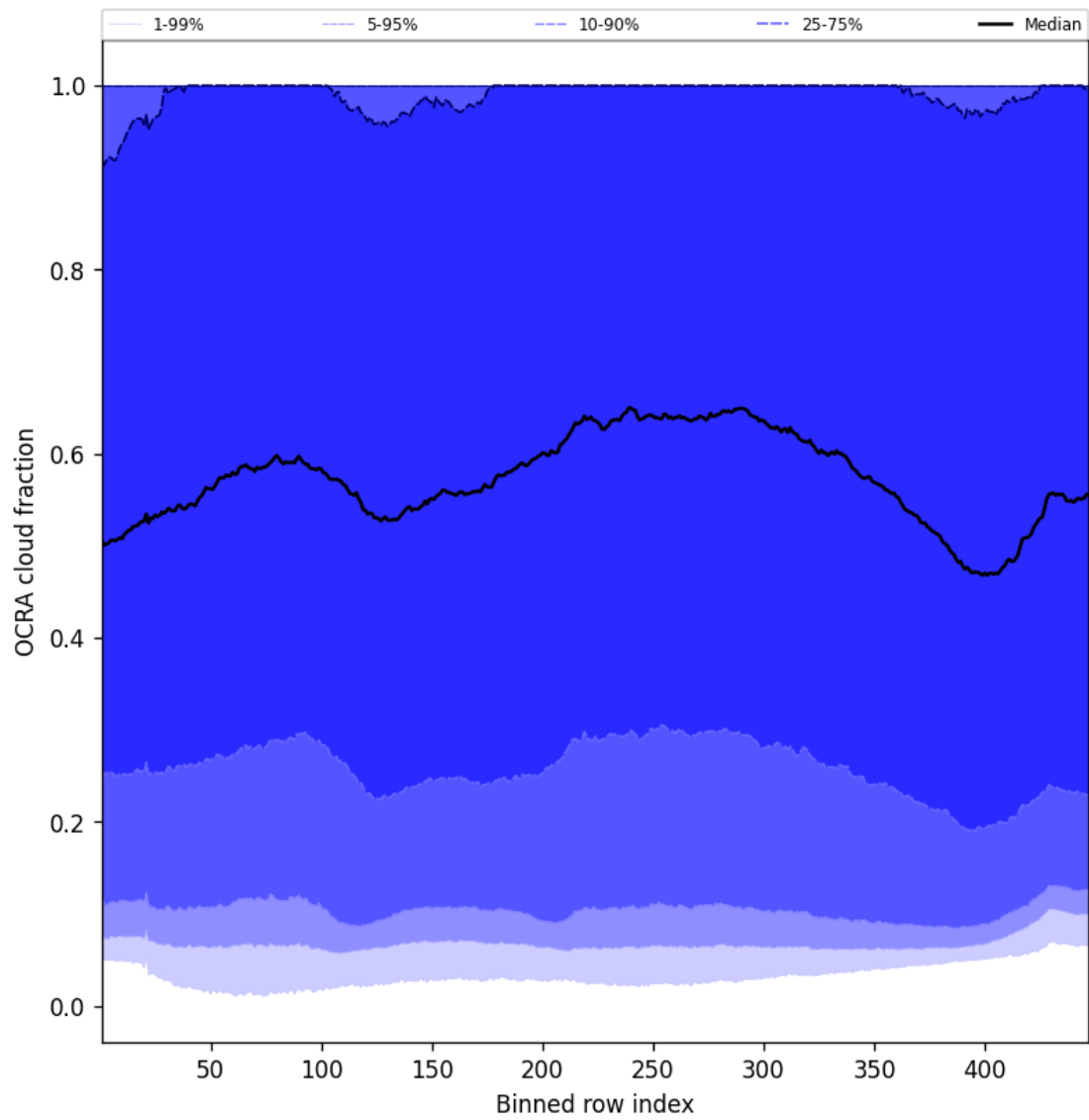


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-01-23 to 2025-01-24

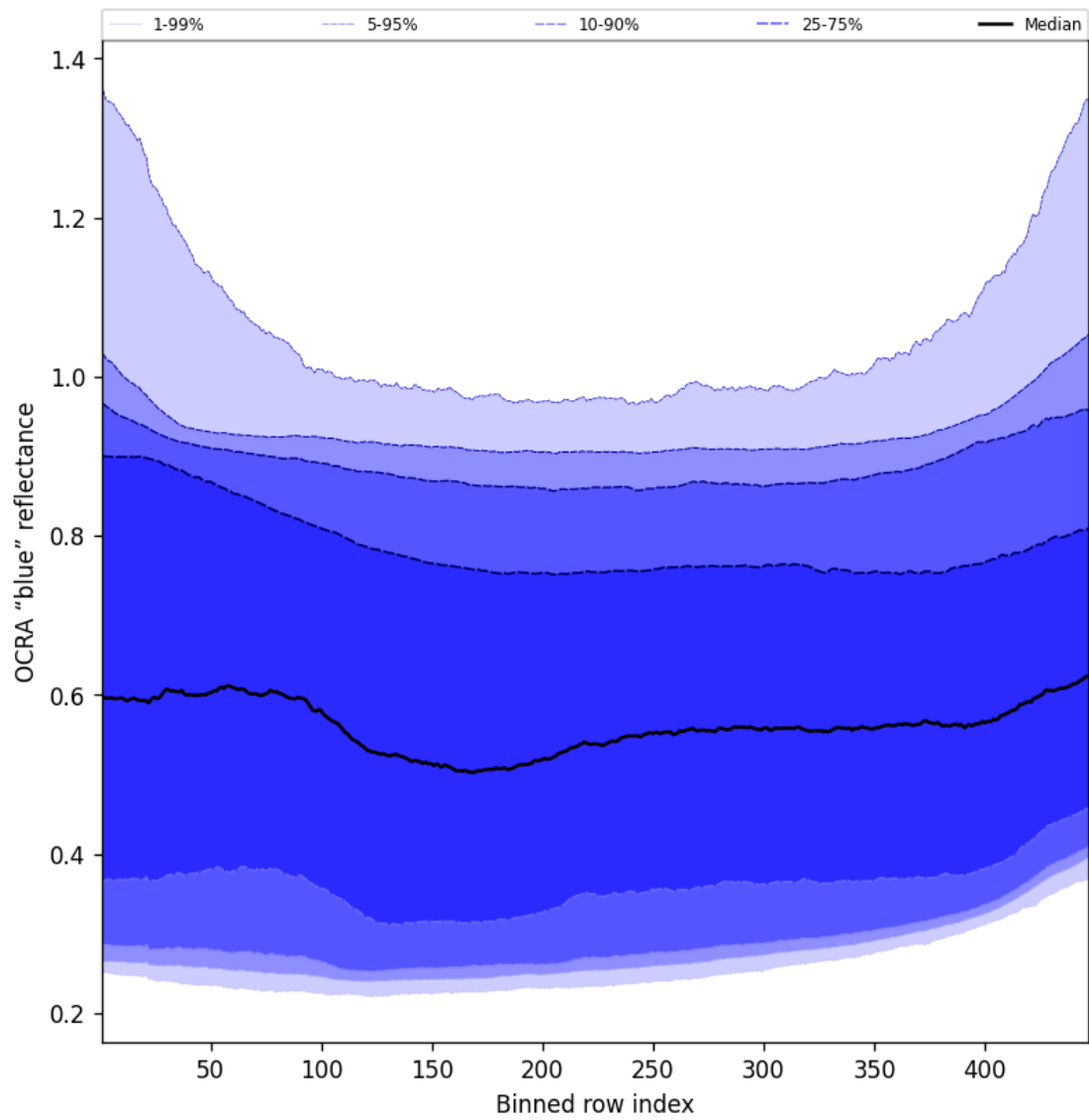


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-01-23 to 2025-01-24

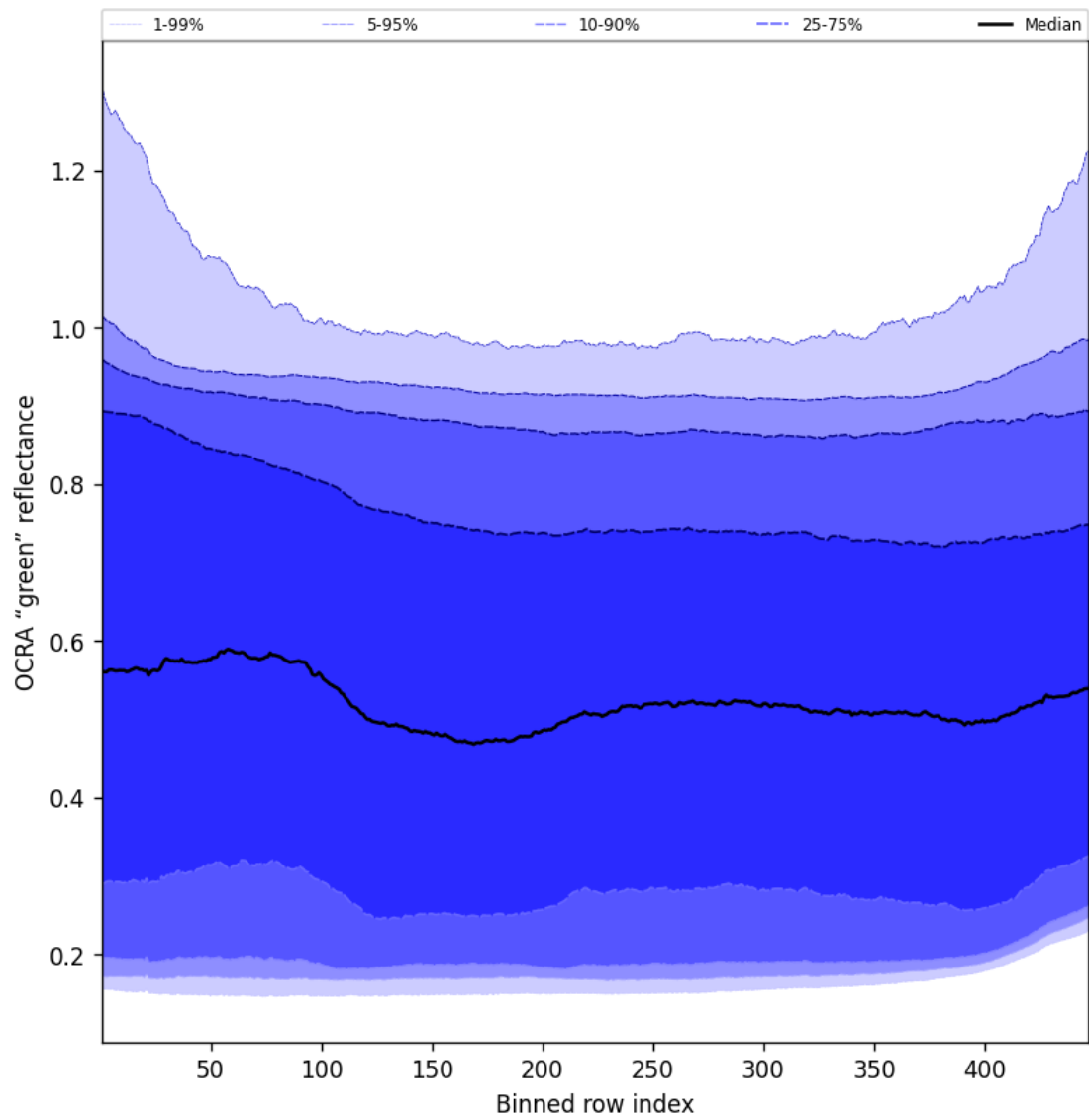


Figure 68: Along track statistics of “OCRA “green” reflectance” for 2025-01-23 to 2025-01-24

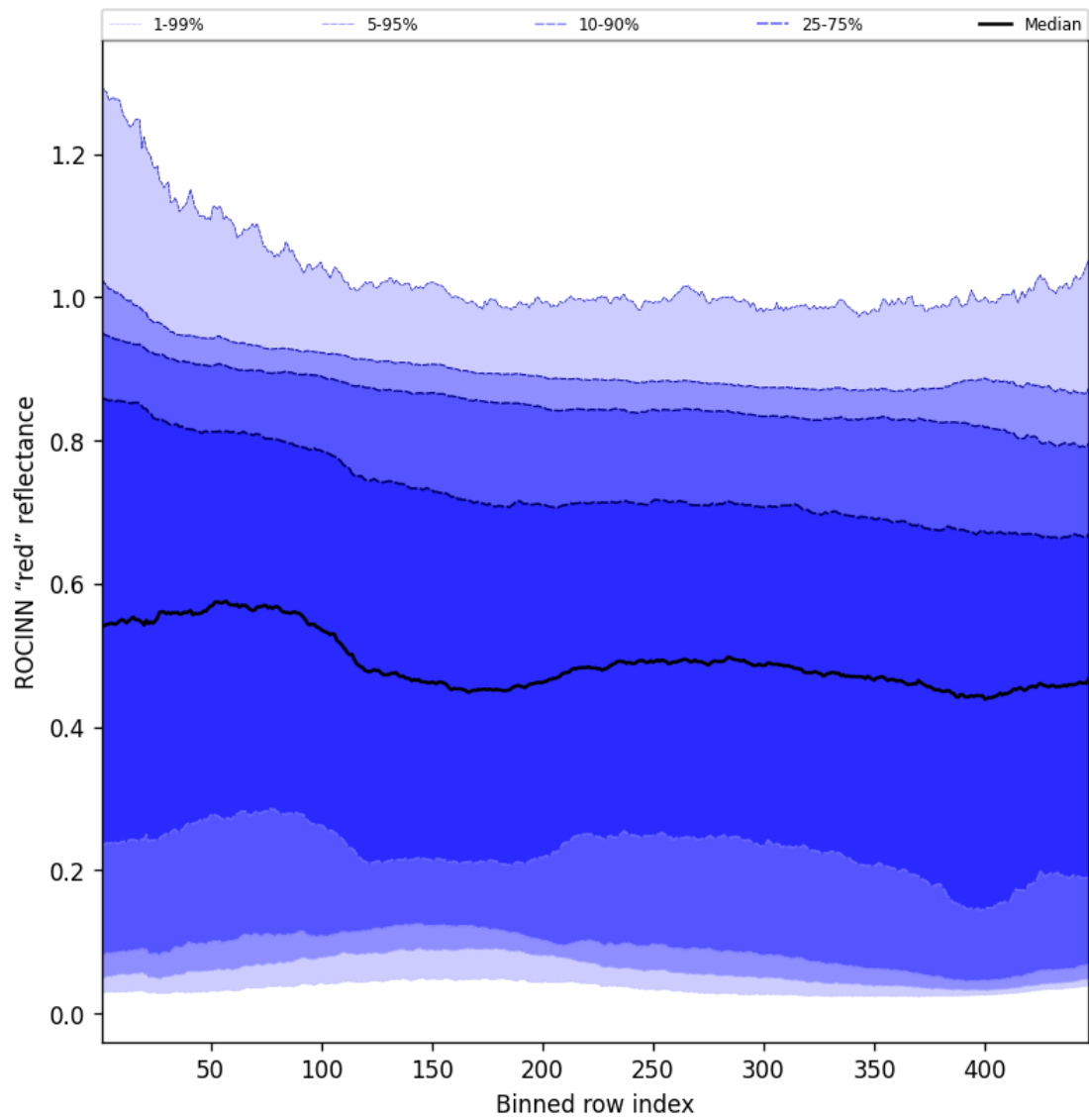


Figure 69: Along track statistics of “ROCINN “red” reflectance” for 2025-01-23 to 2025-01-24

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.

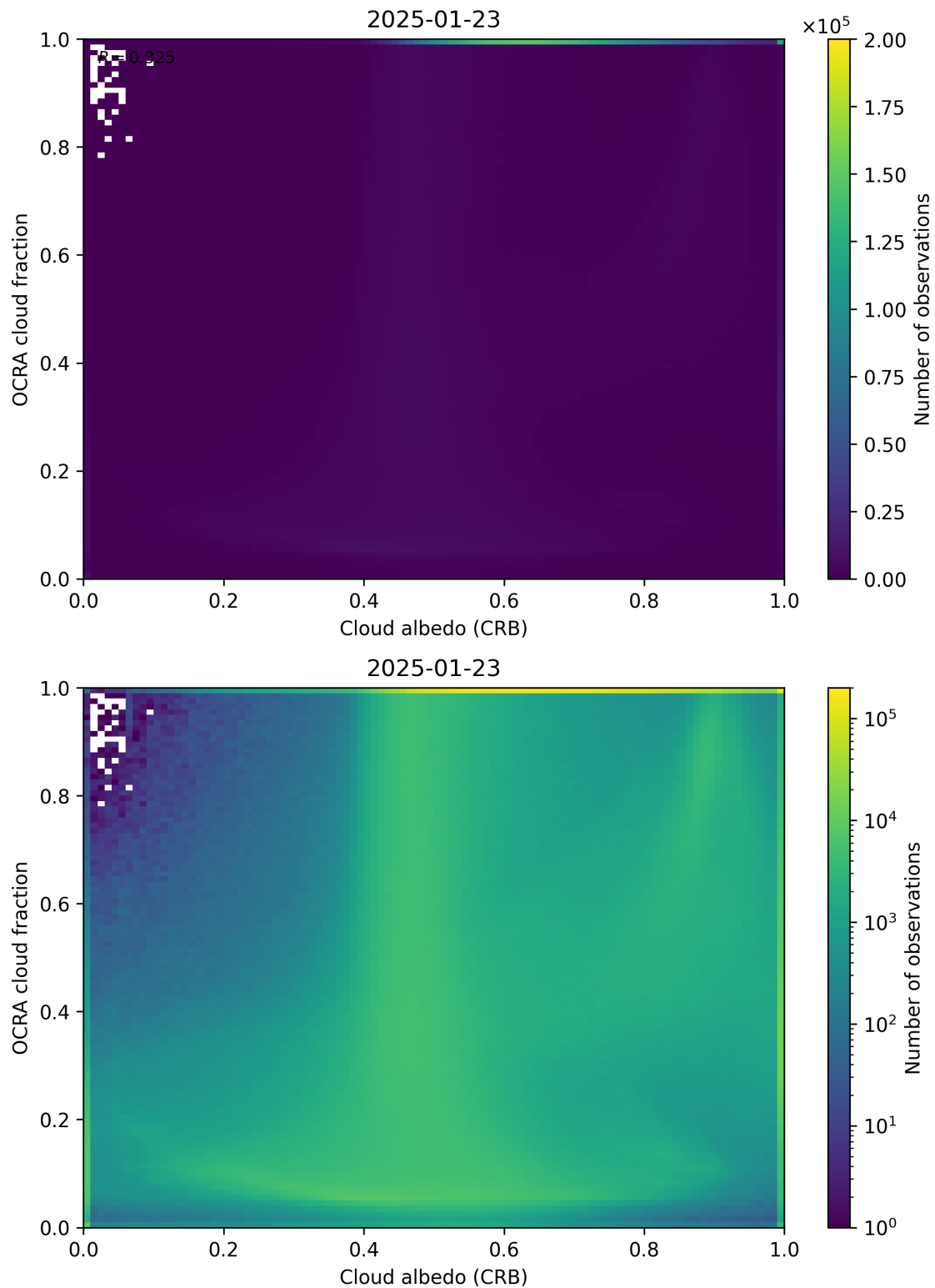


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-01-23 to 2025-01-24.

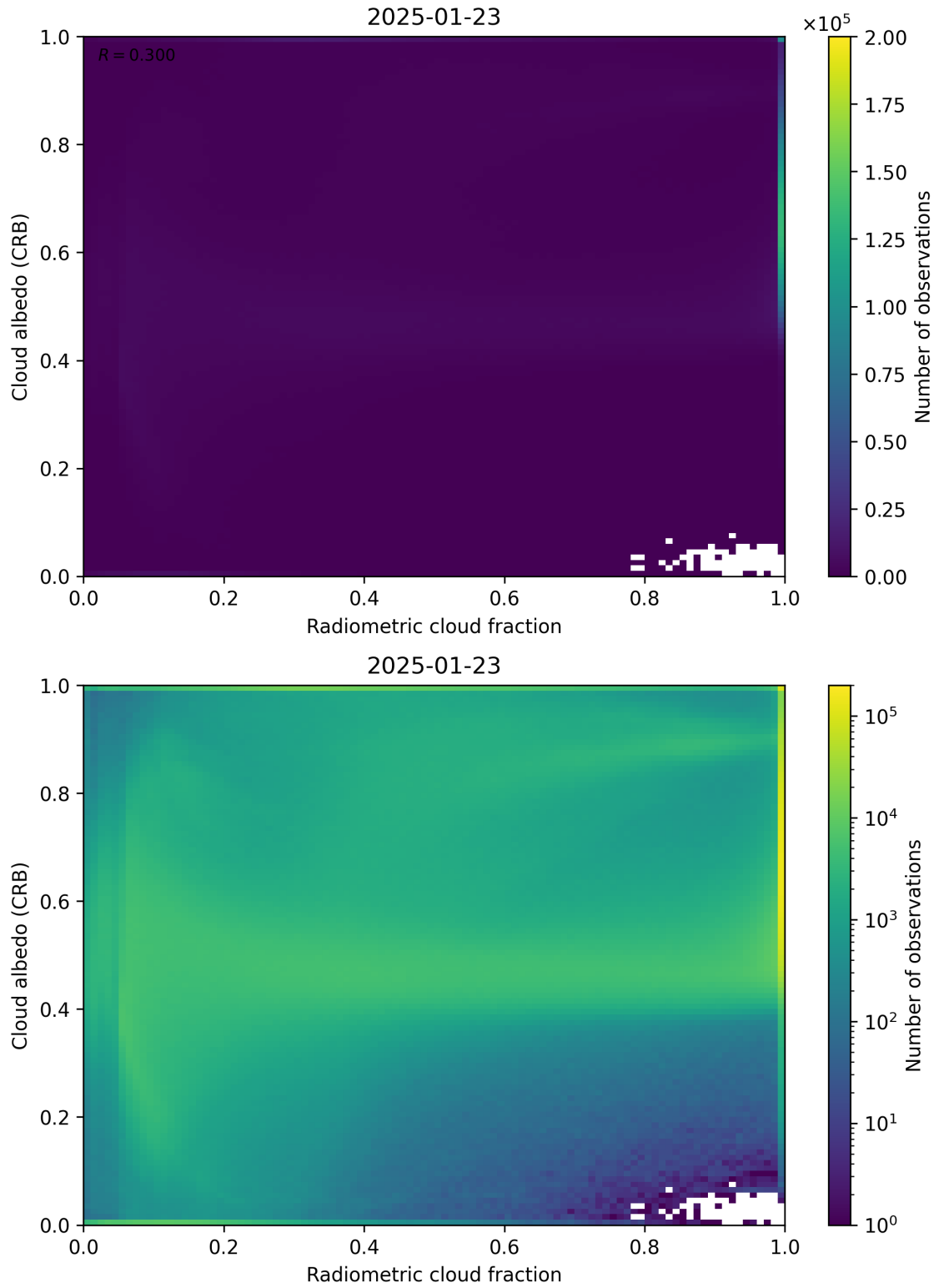


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-01-23 to 2025-01-24.

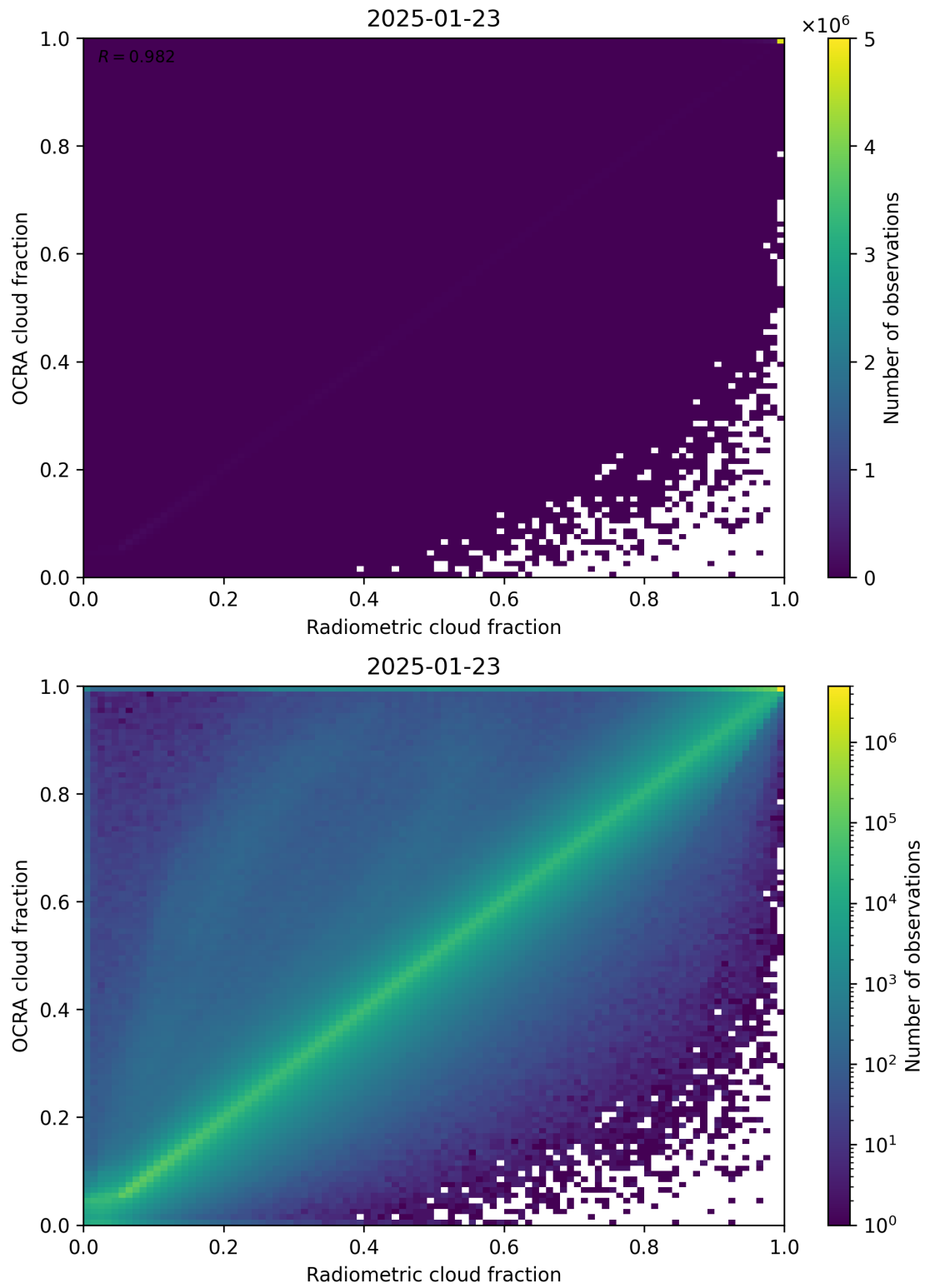


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-01-23 to 2025-01-24.

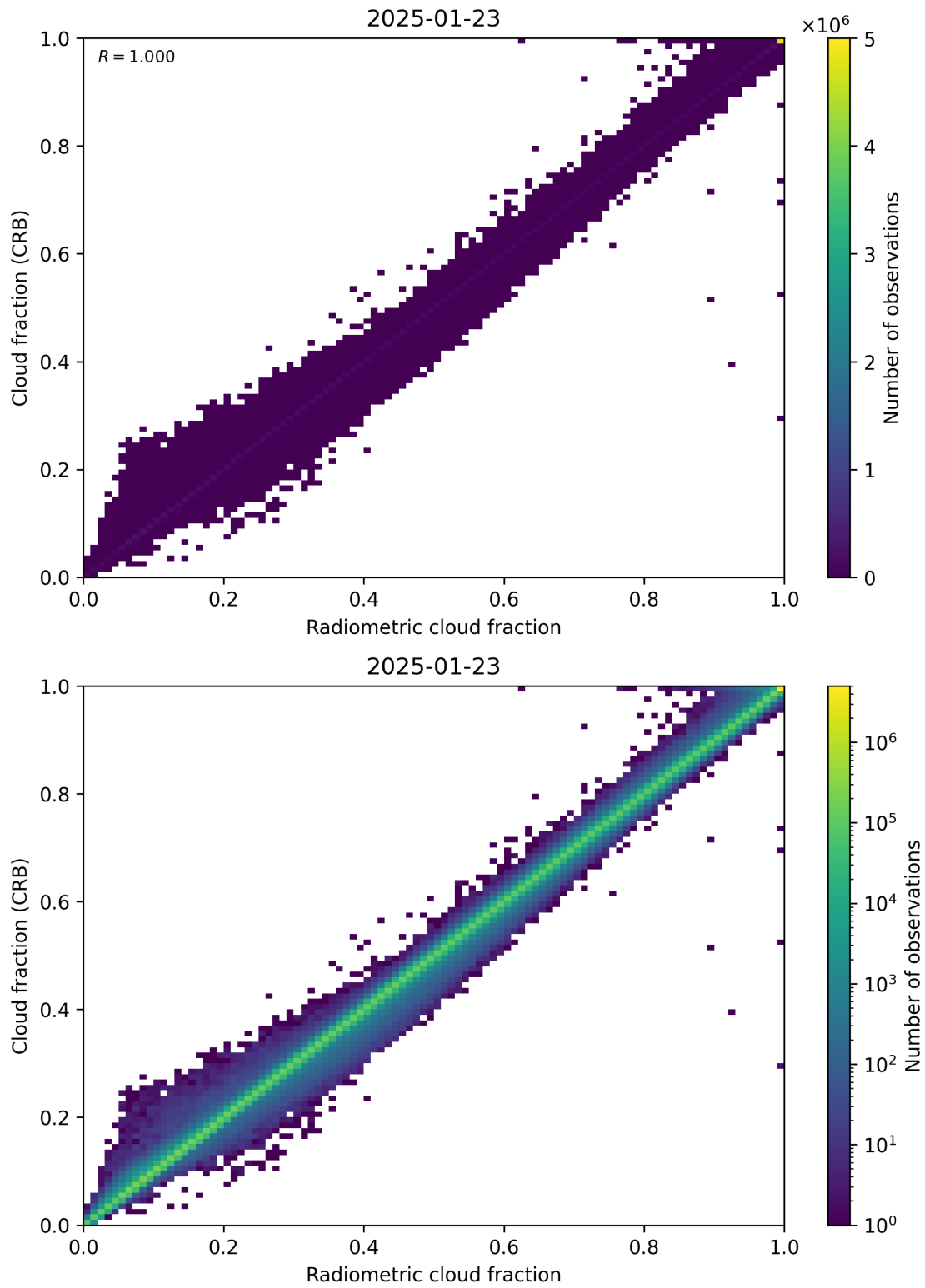


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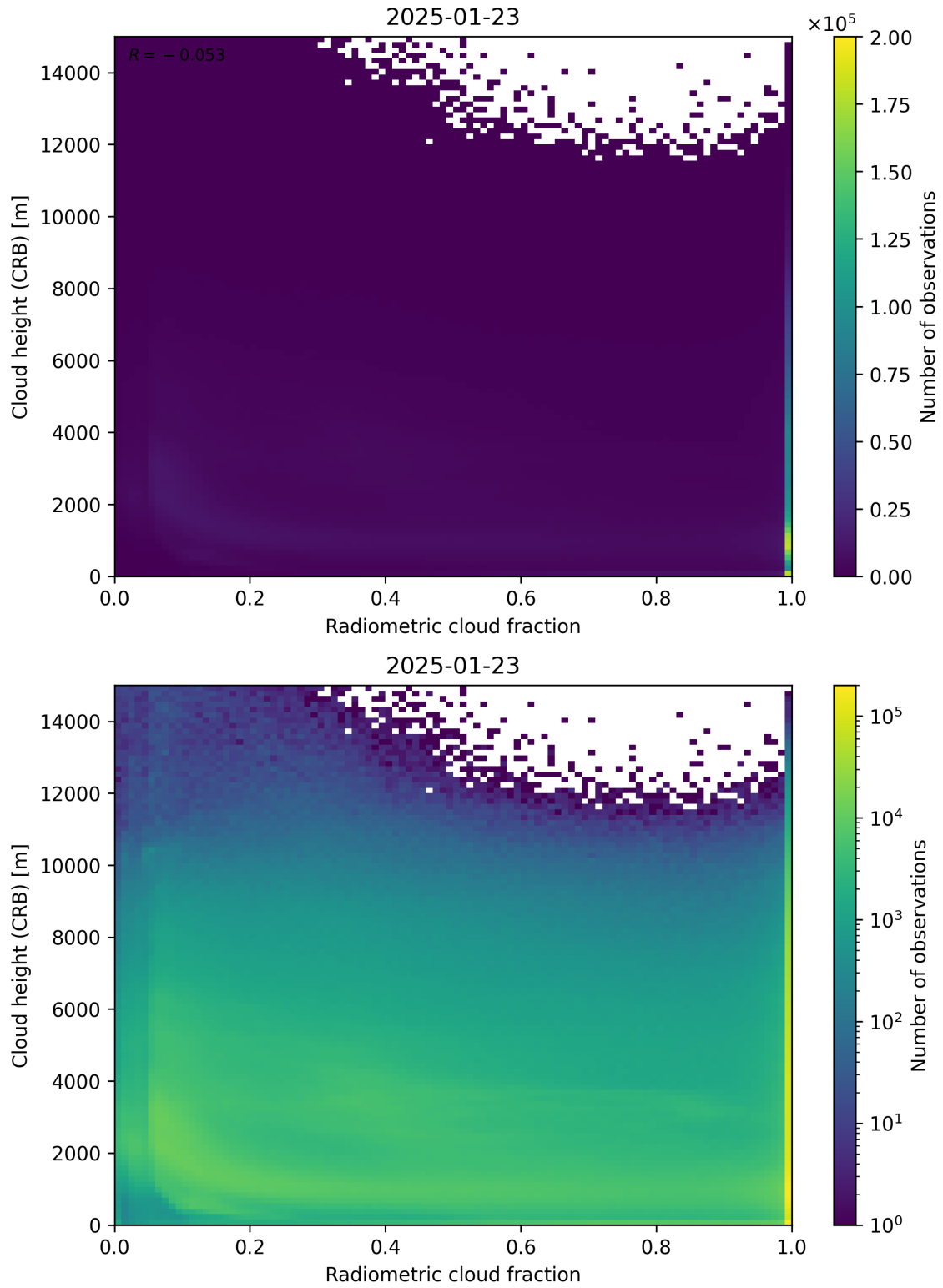


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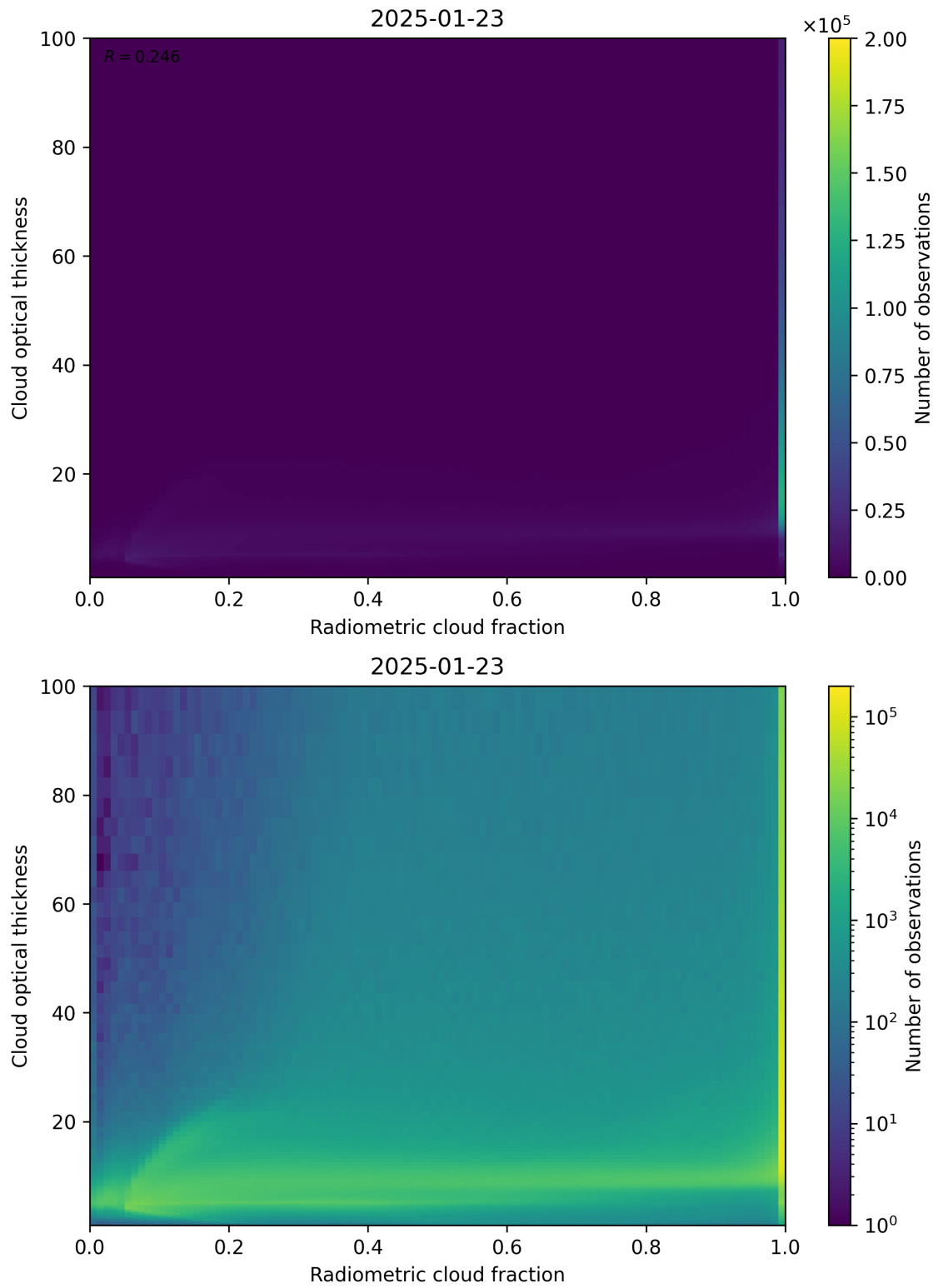


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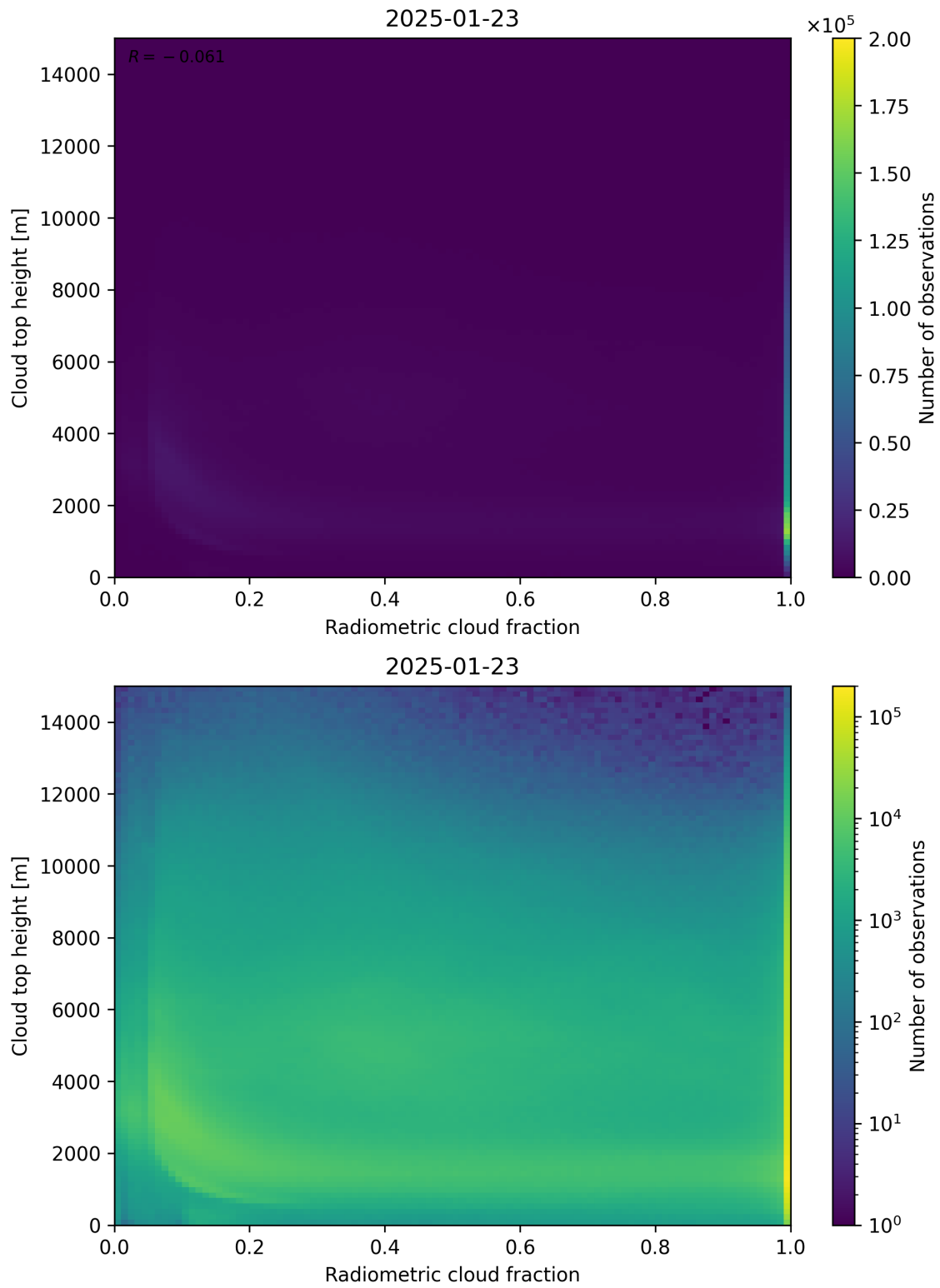


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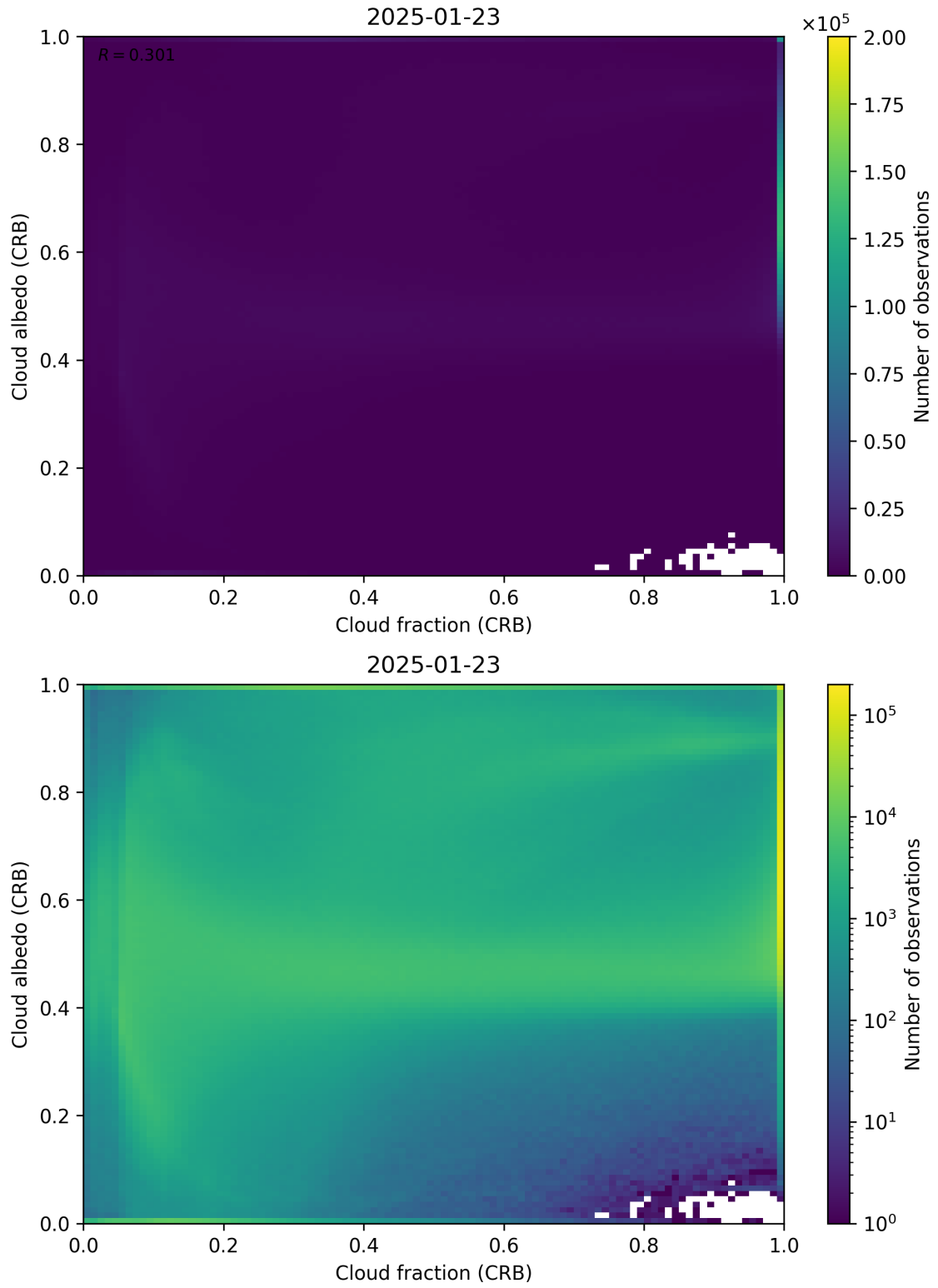


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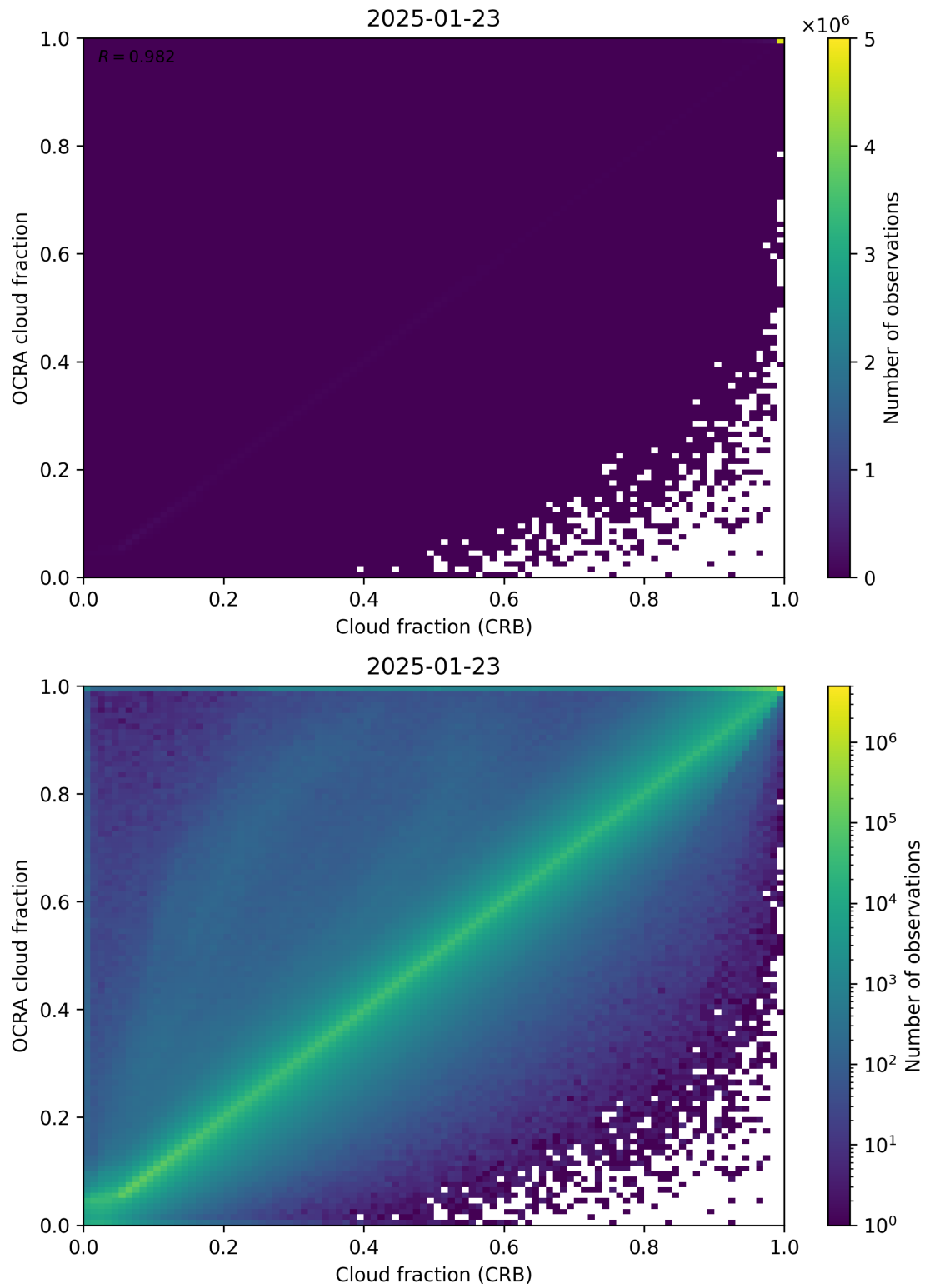


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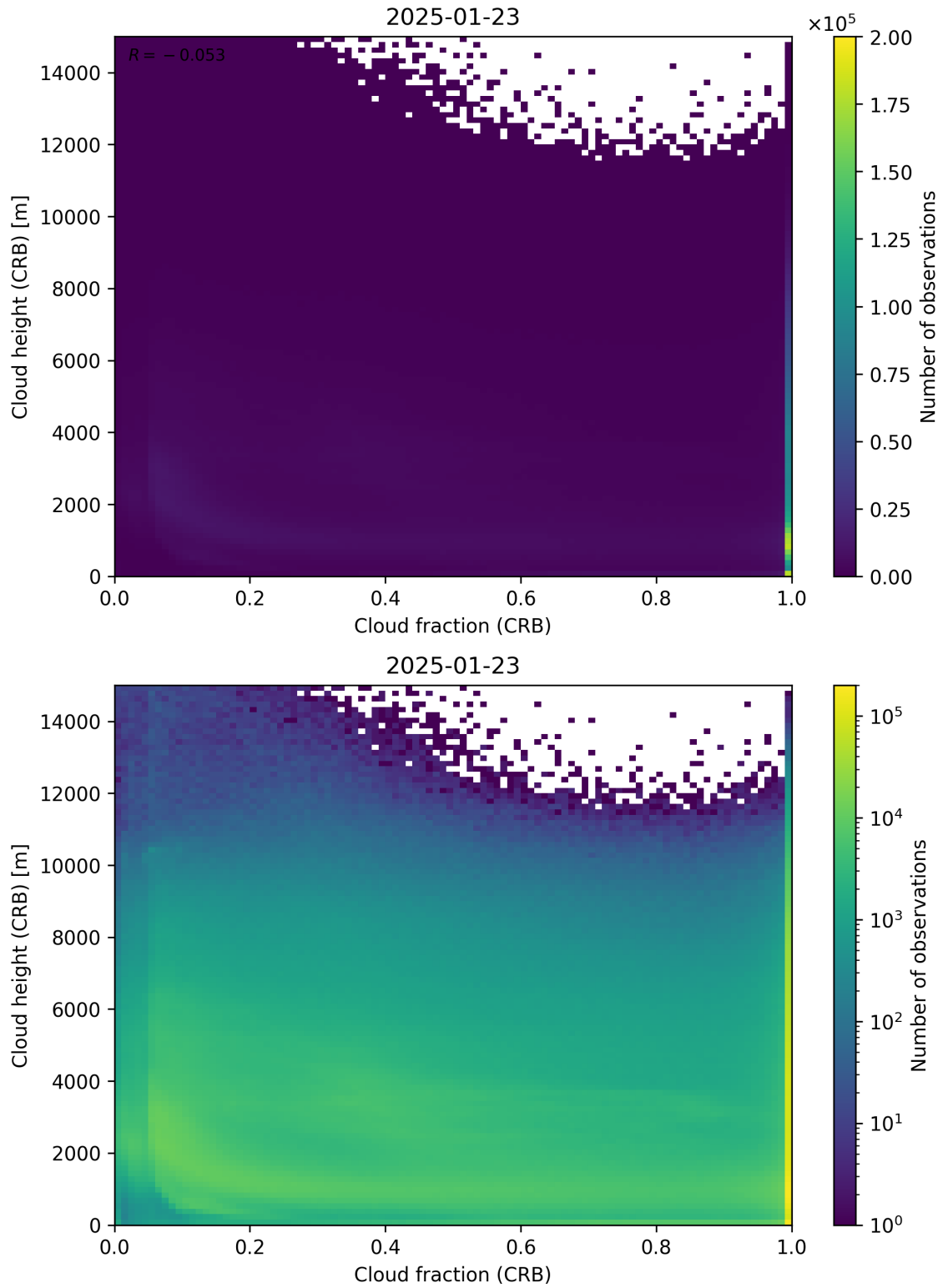


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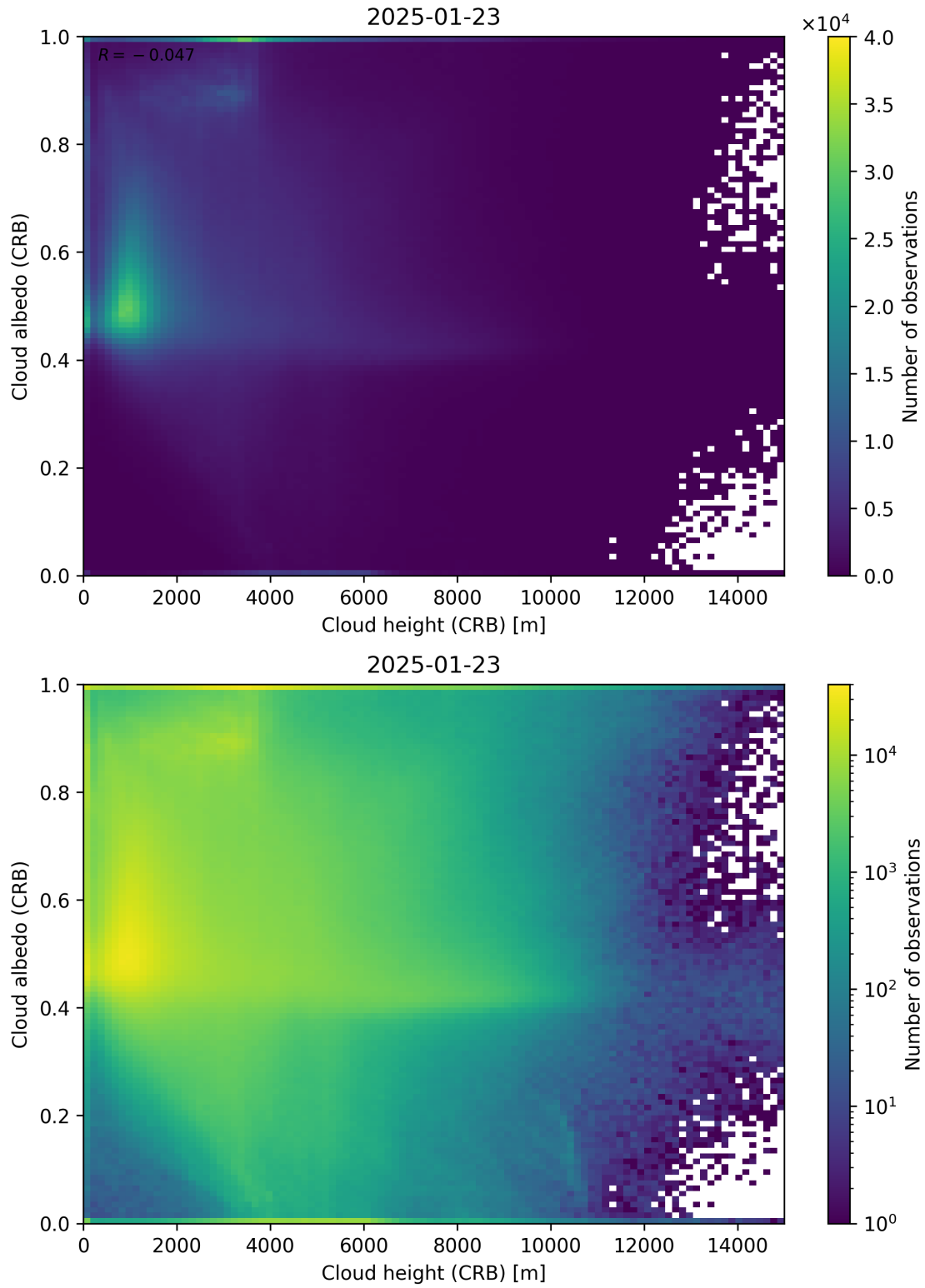


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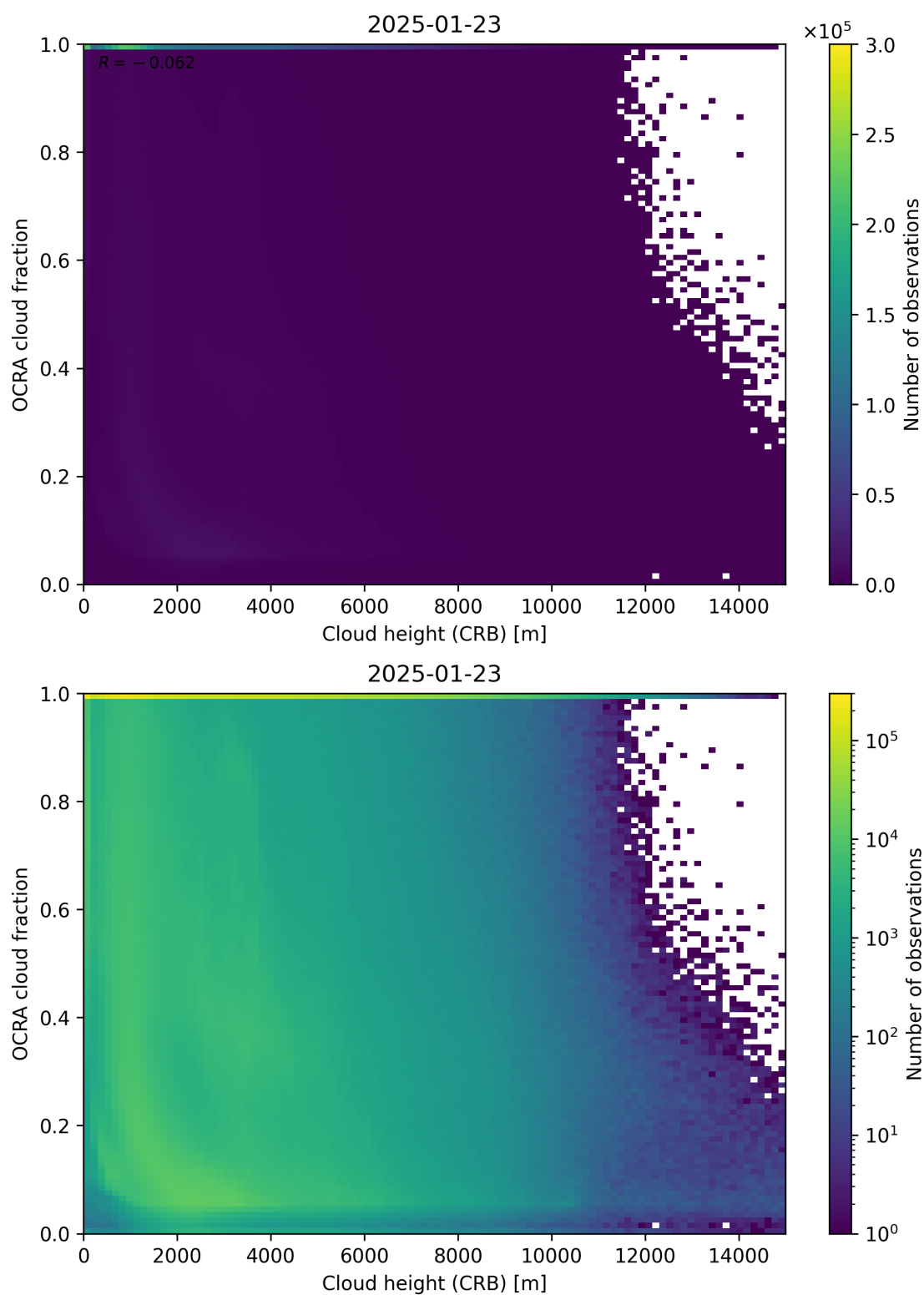


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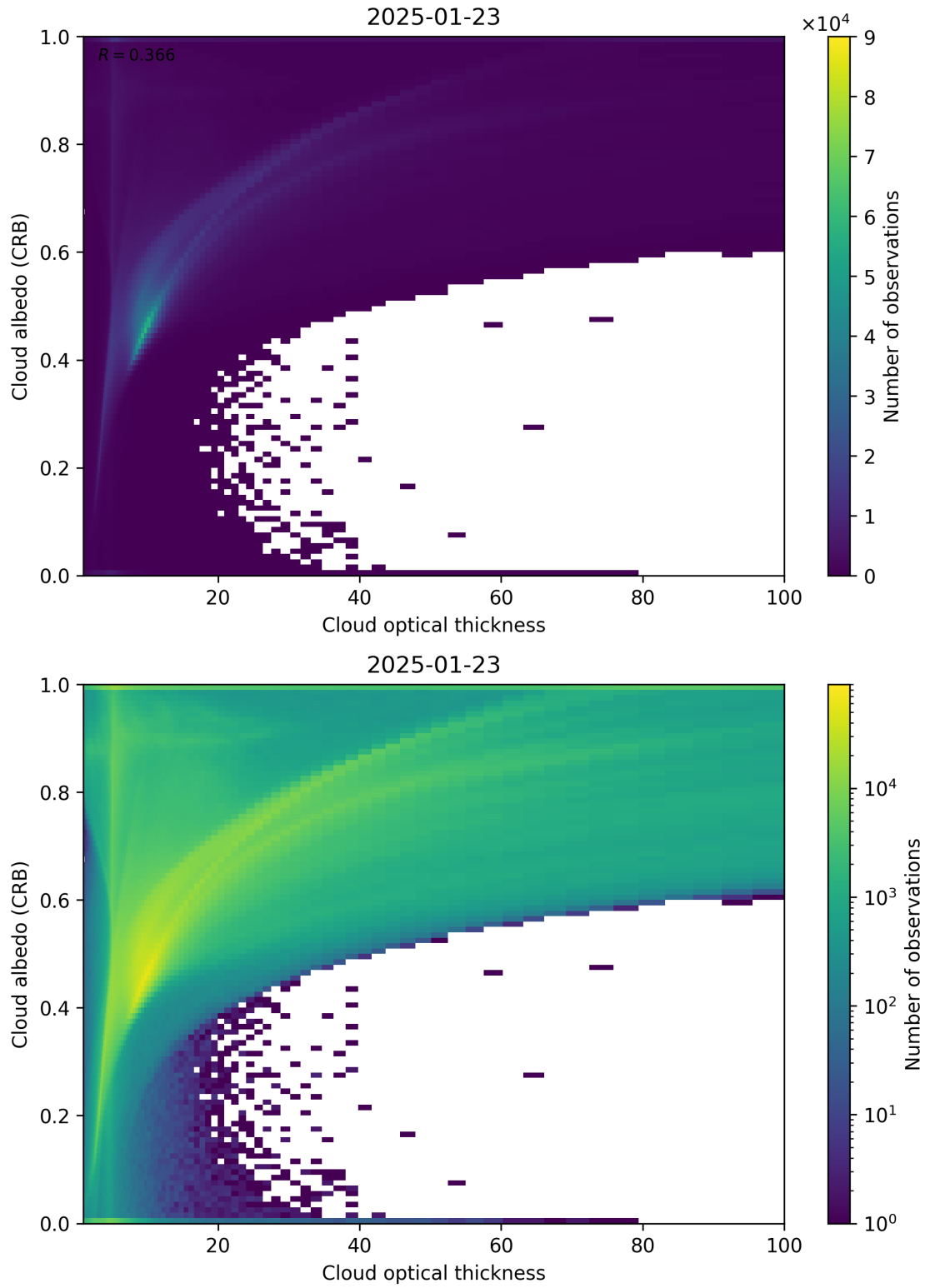


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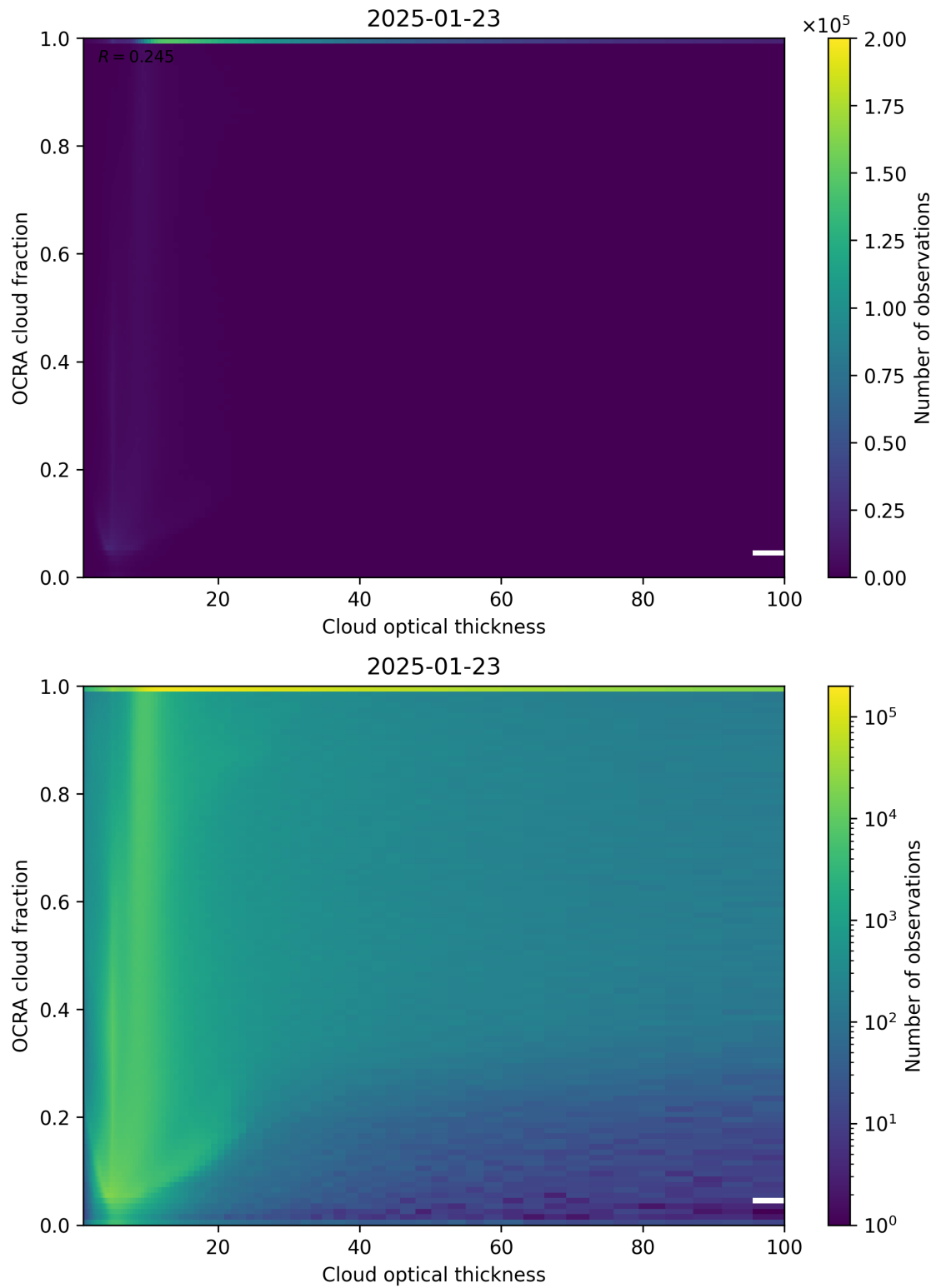


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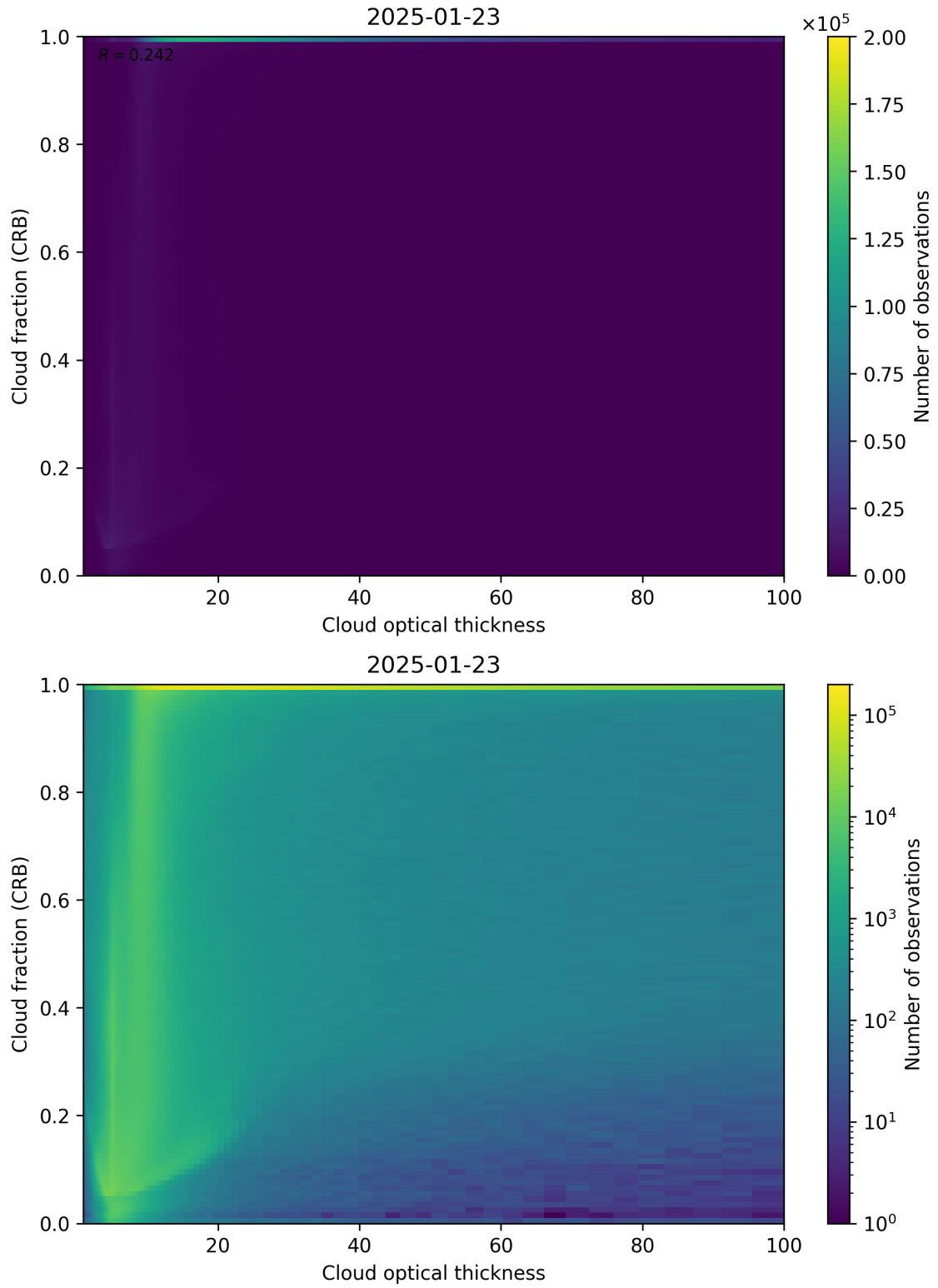


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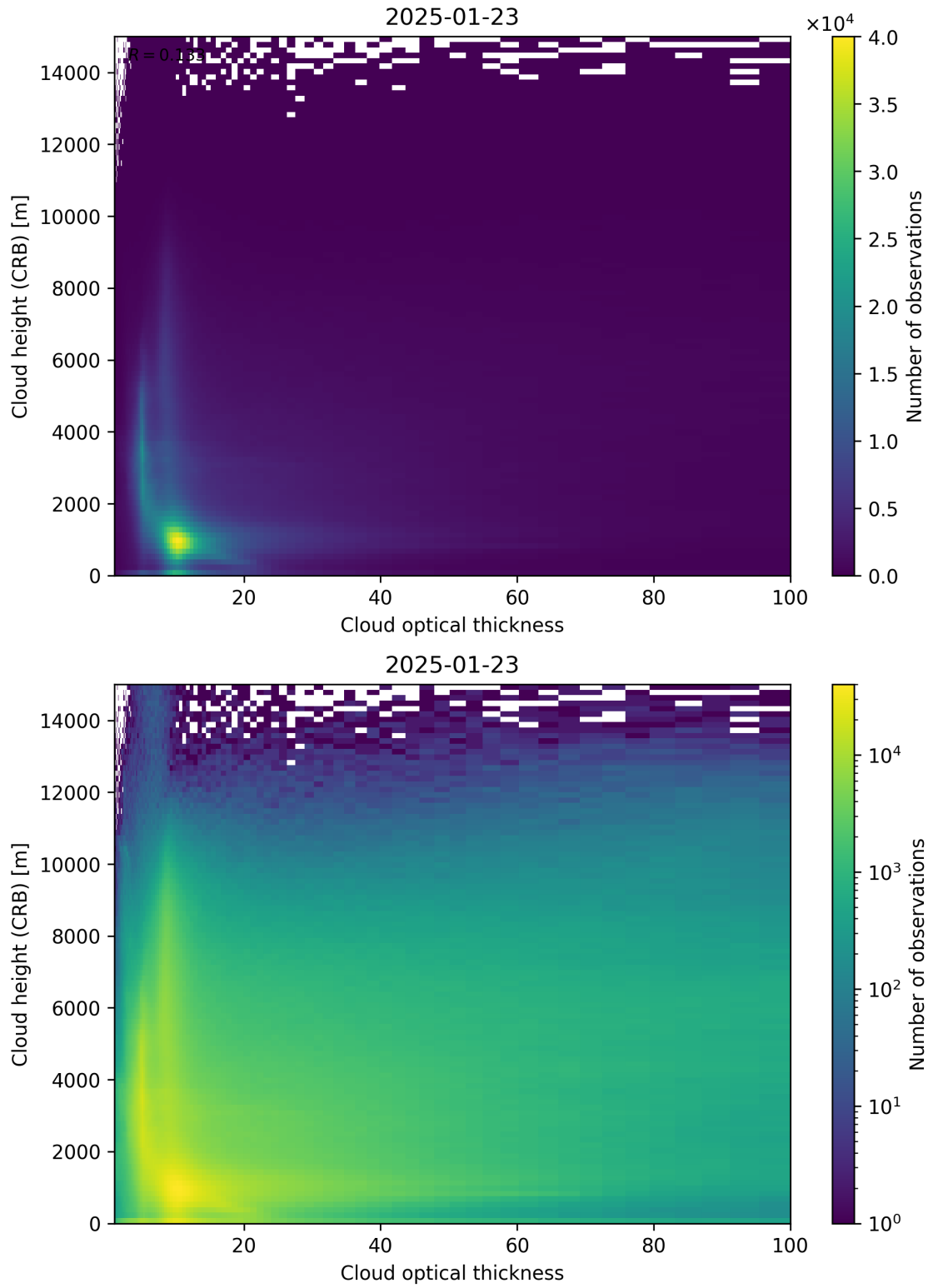


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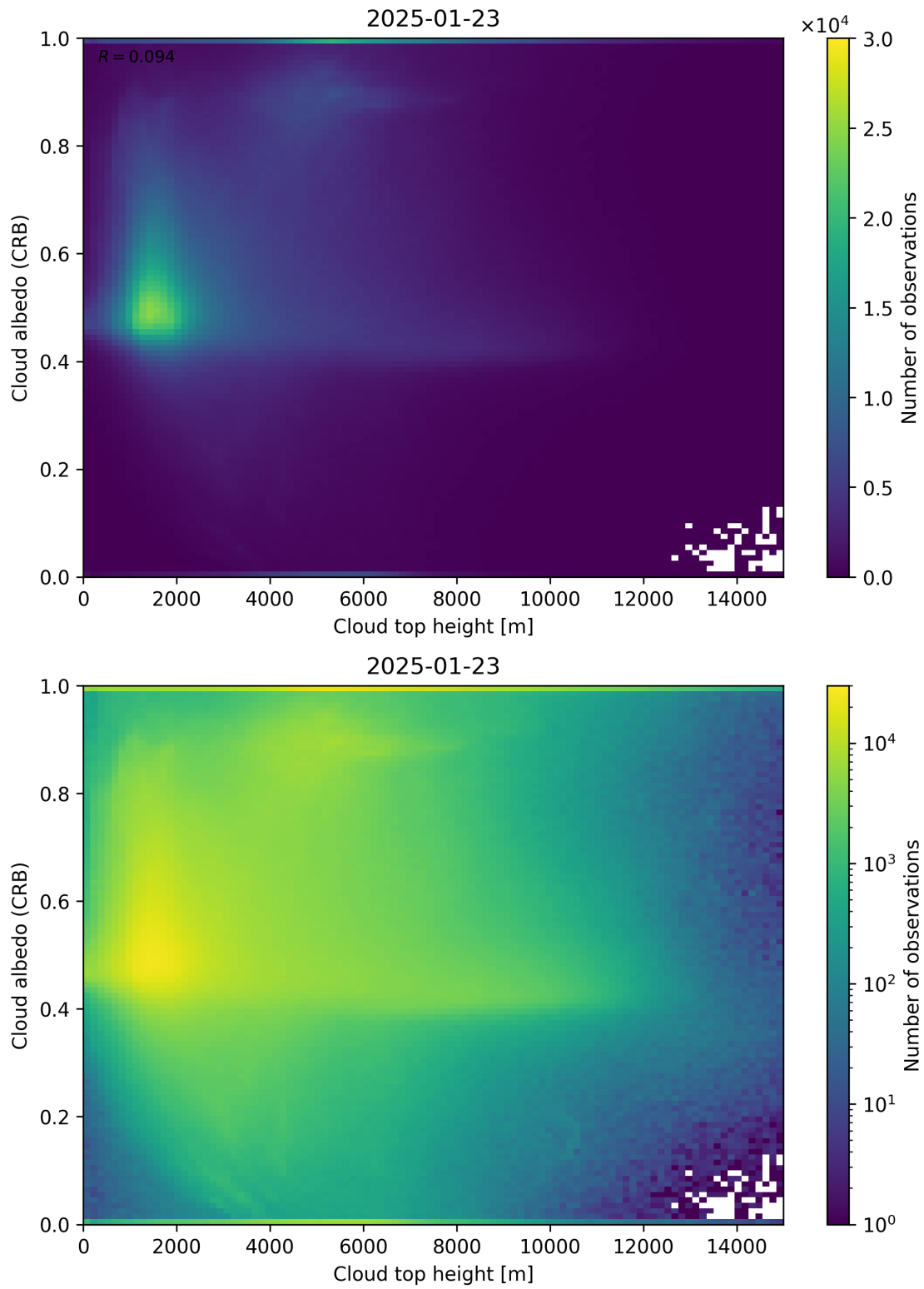


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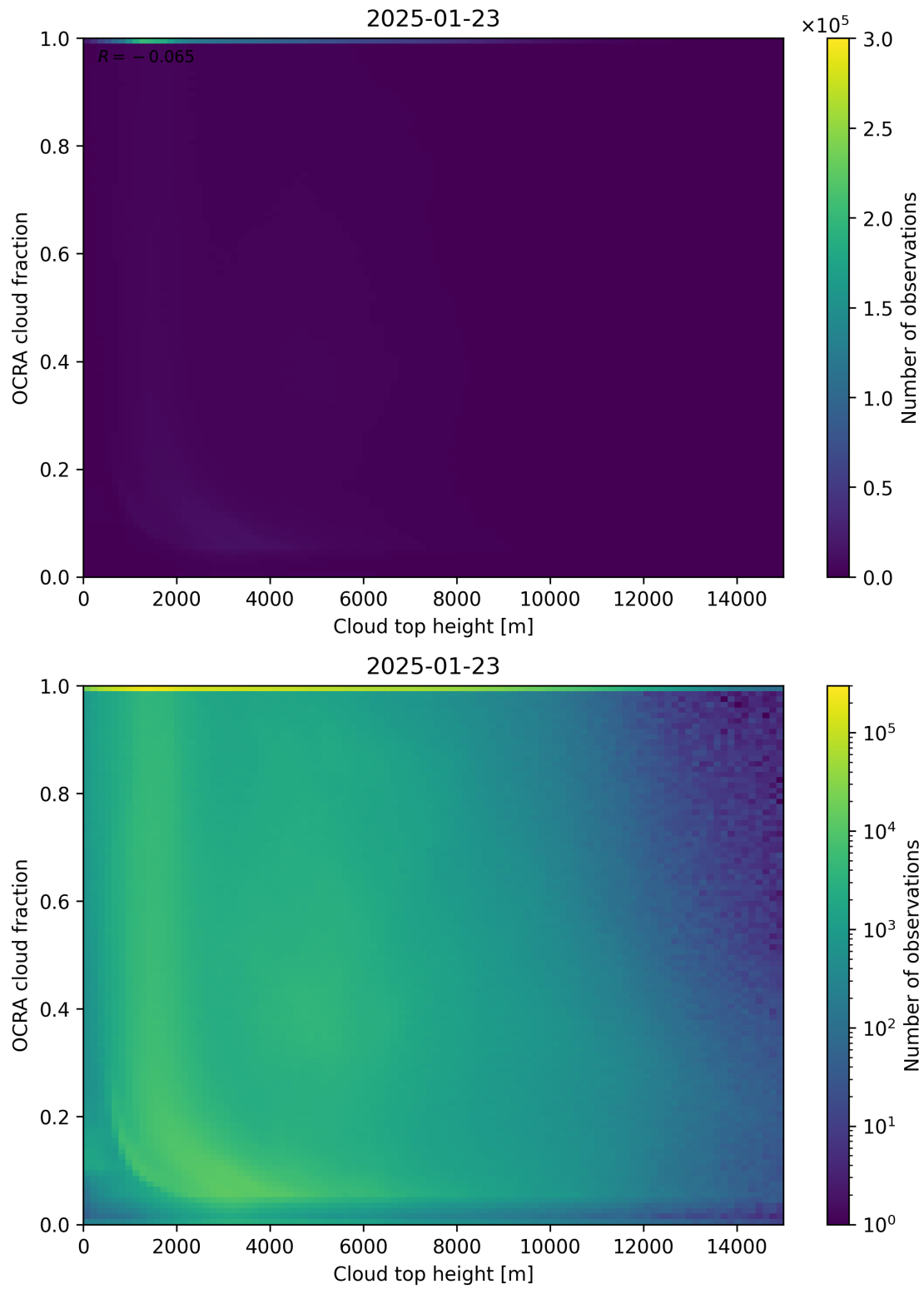


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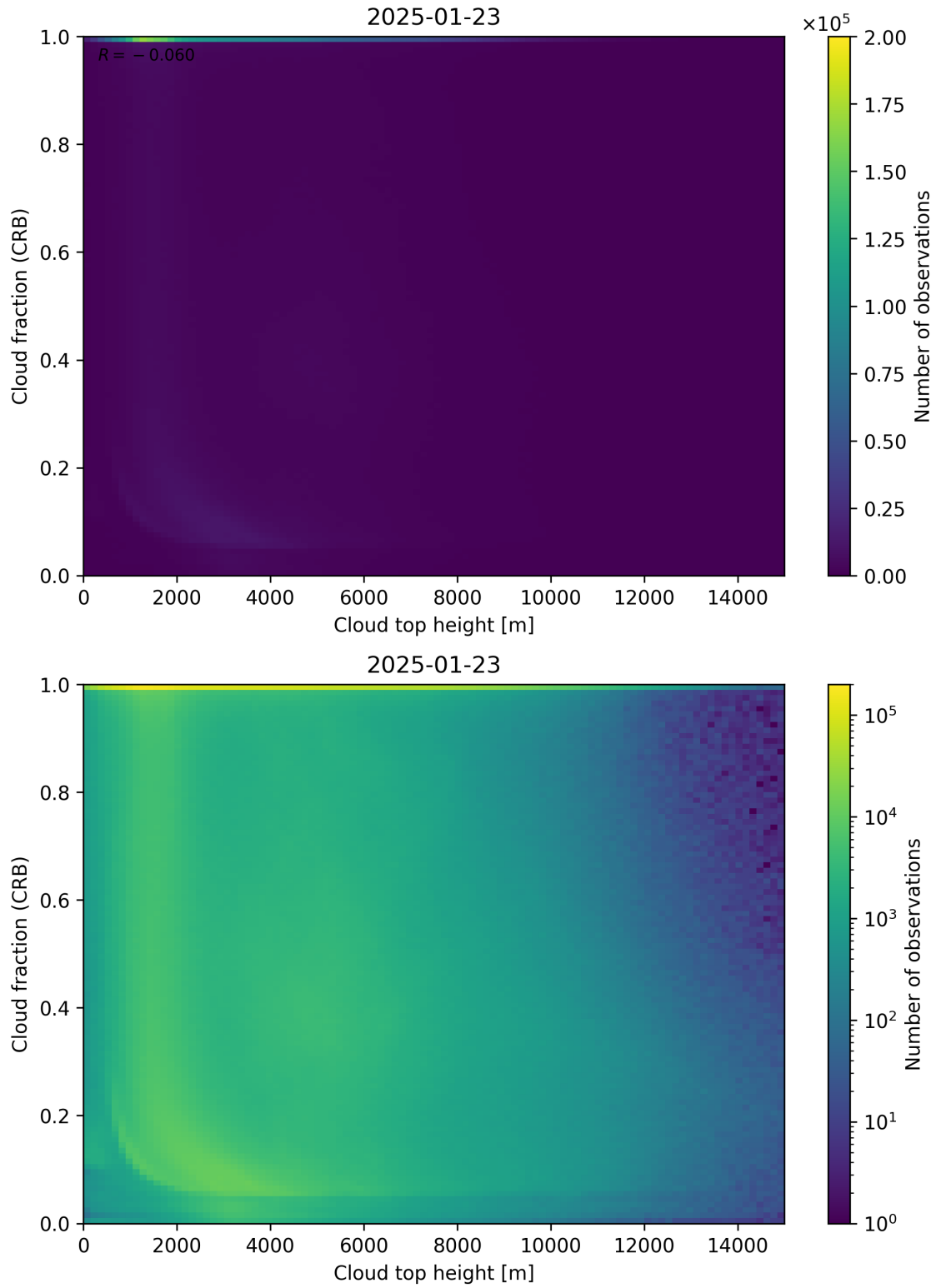


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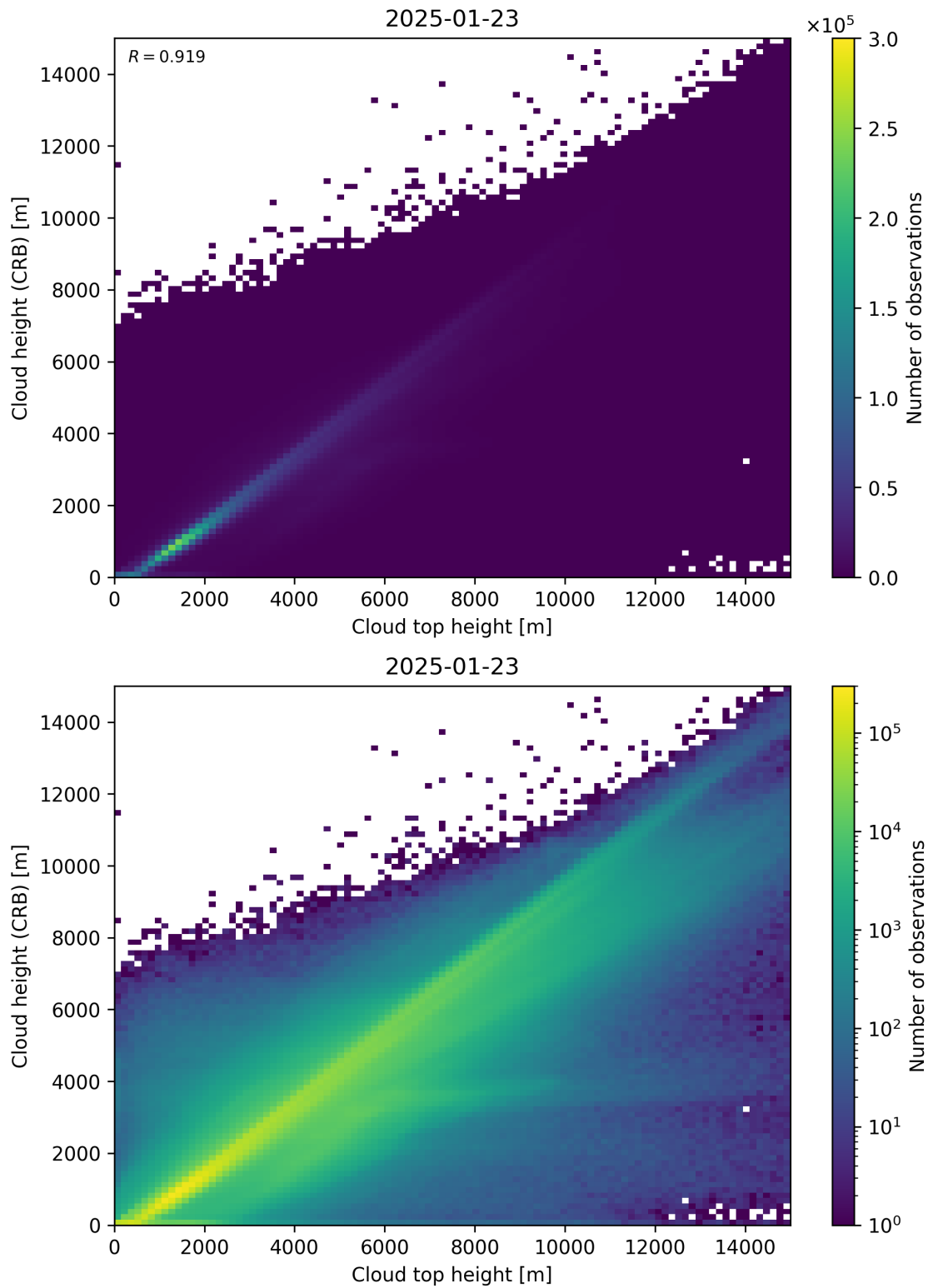


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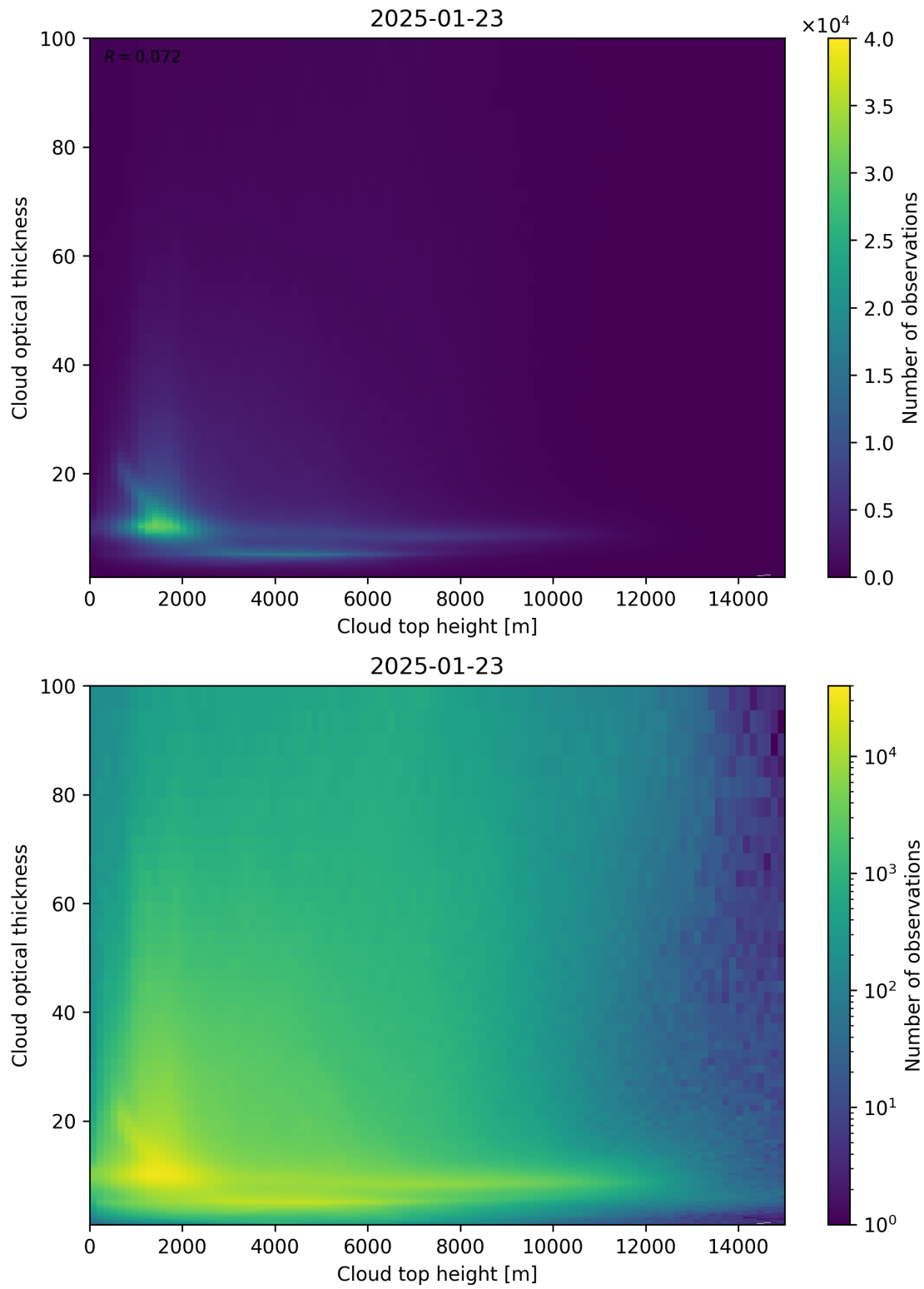


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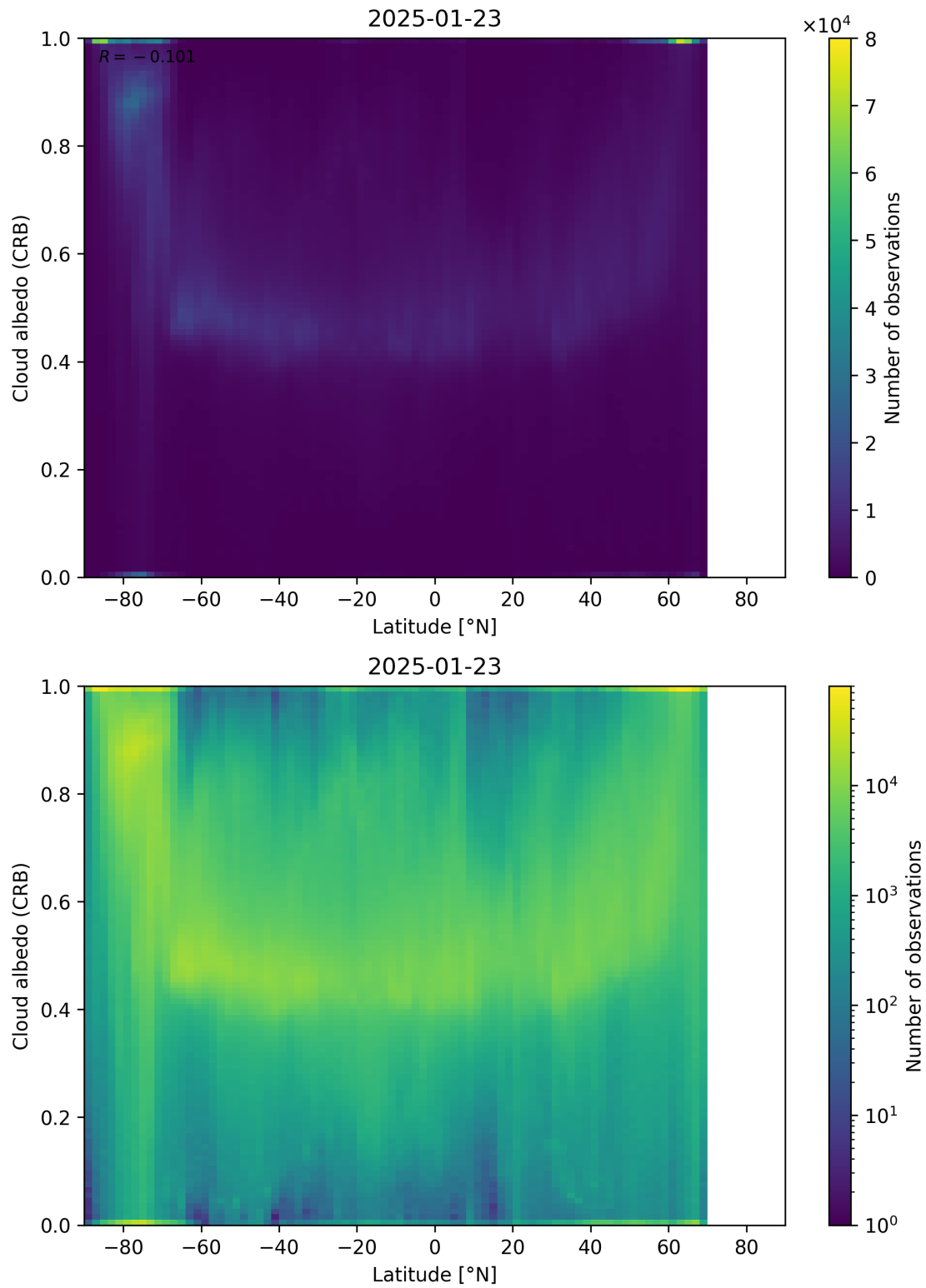


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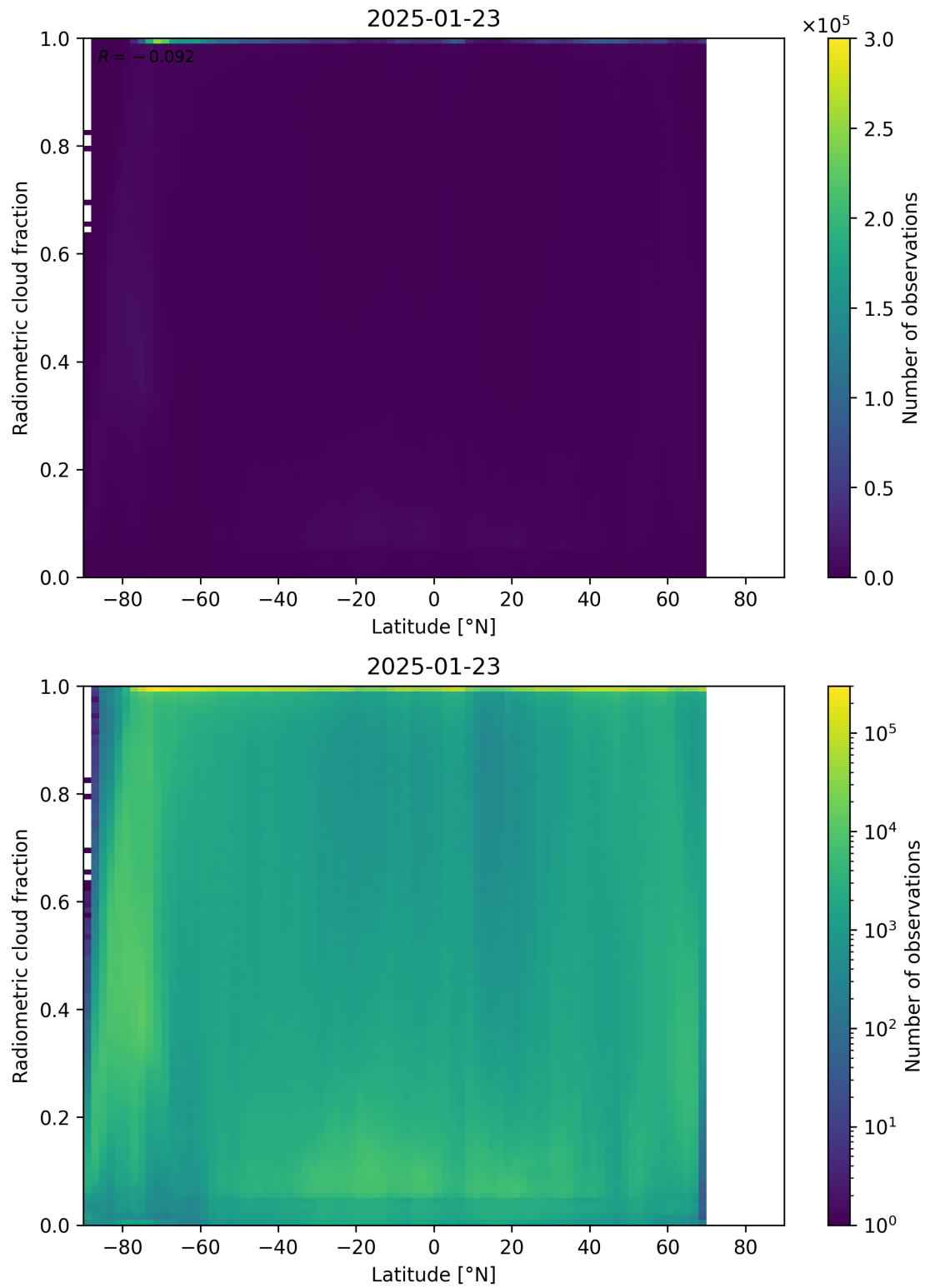


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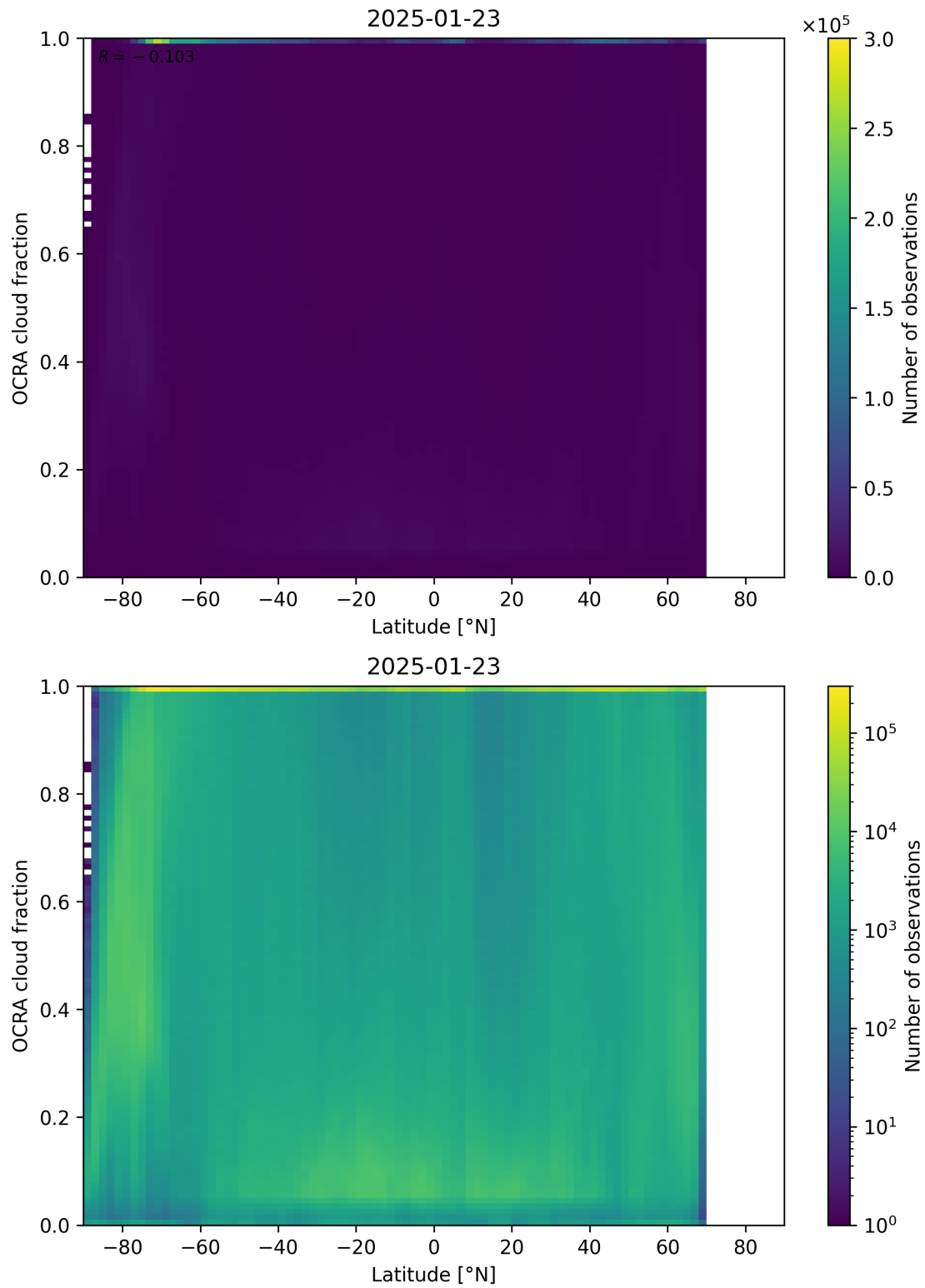


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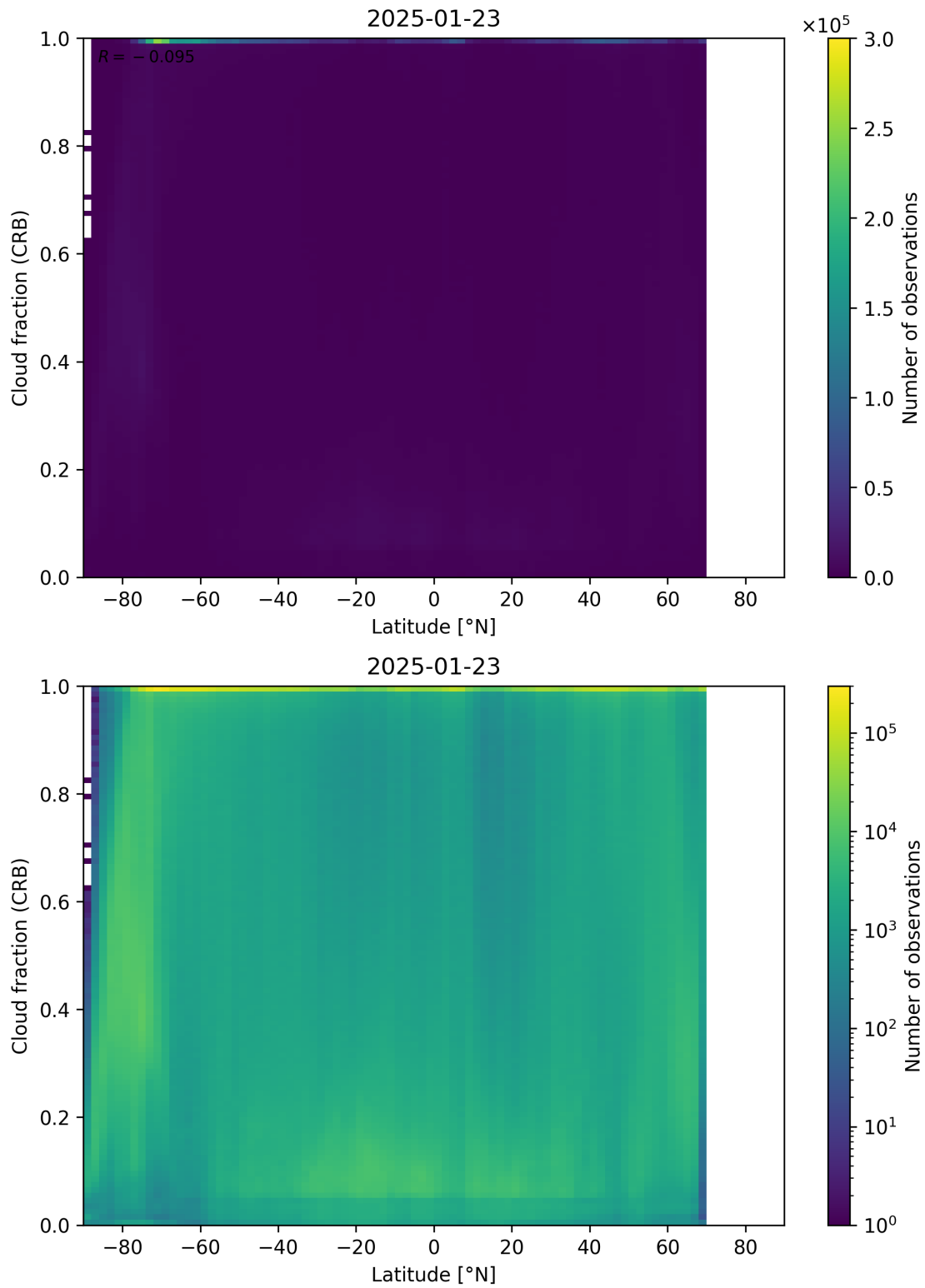


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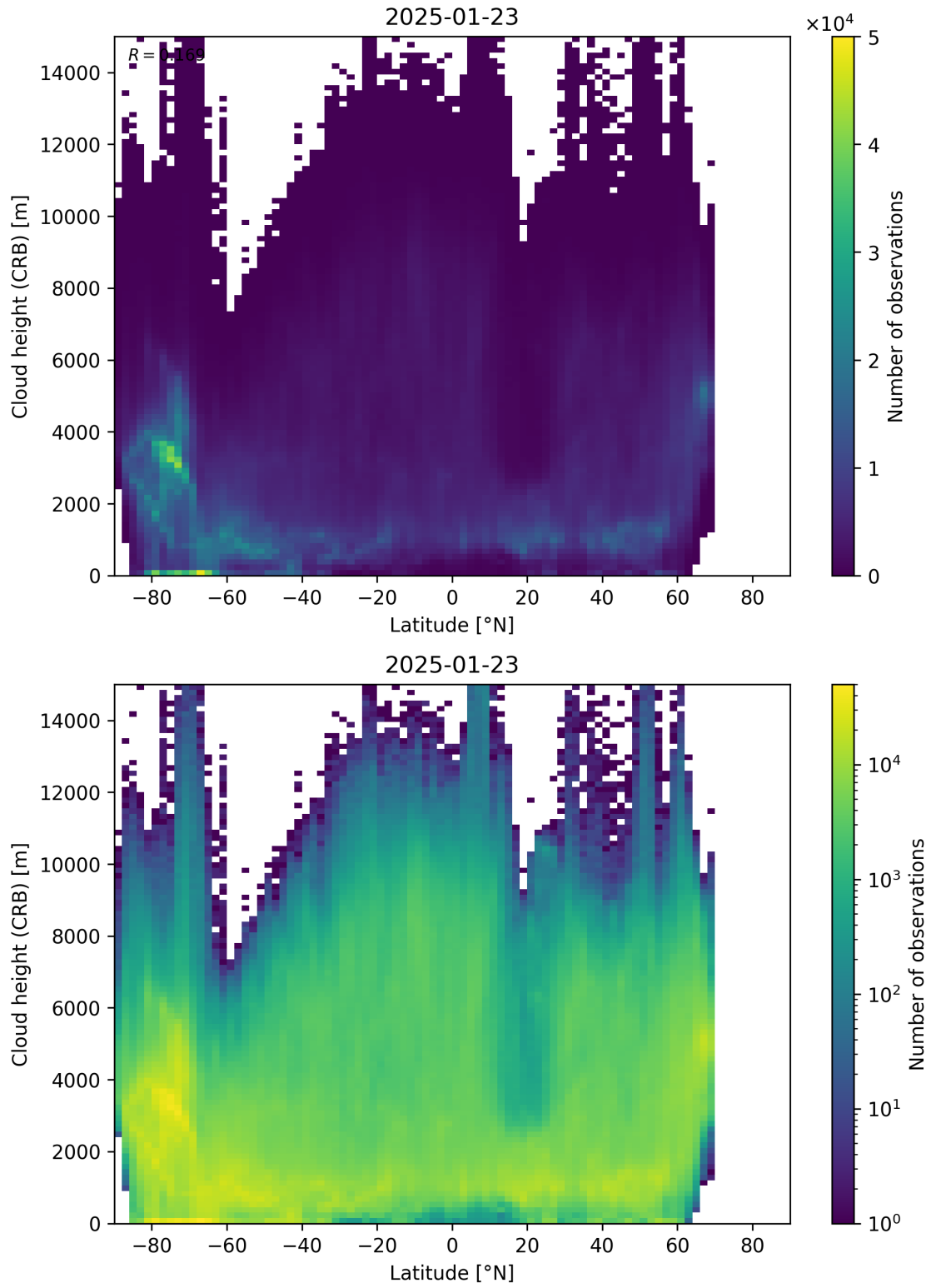


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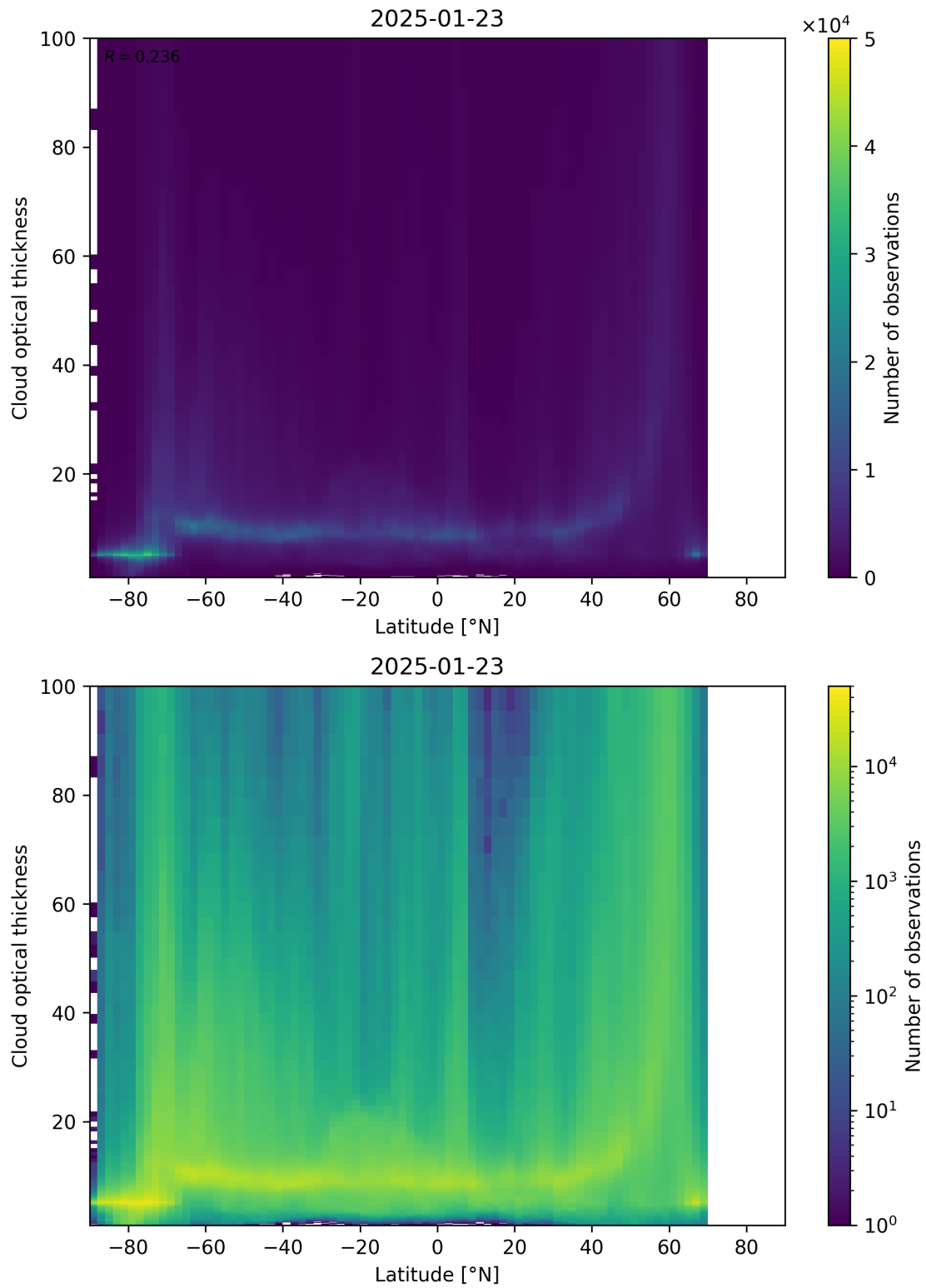


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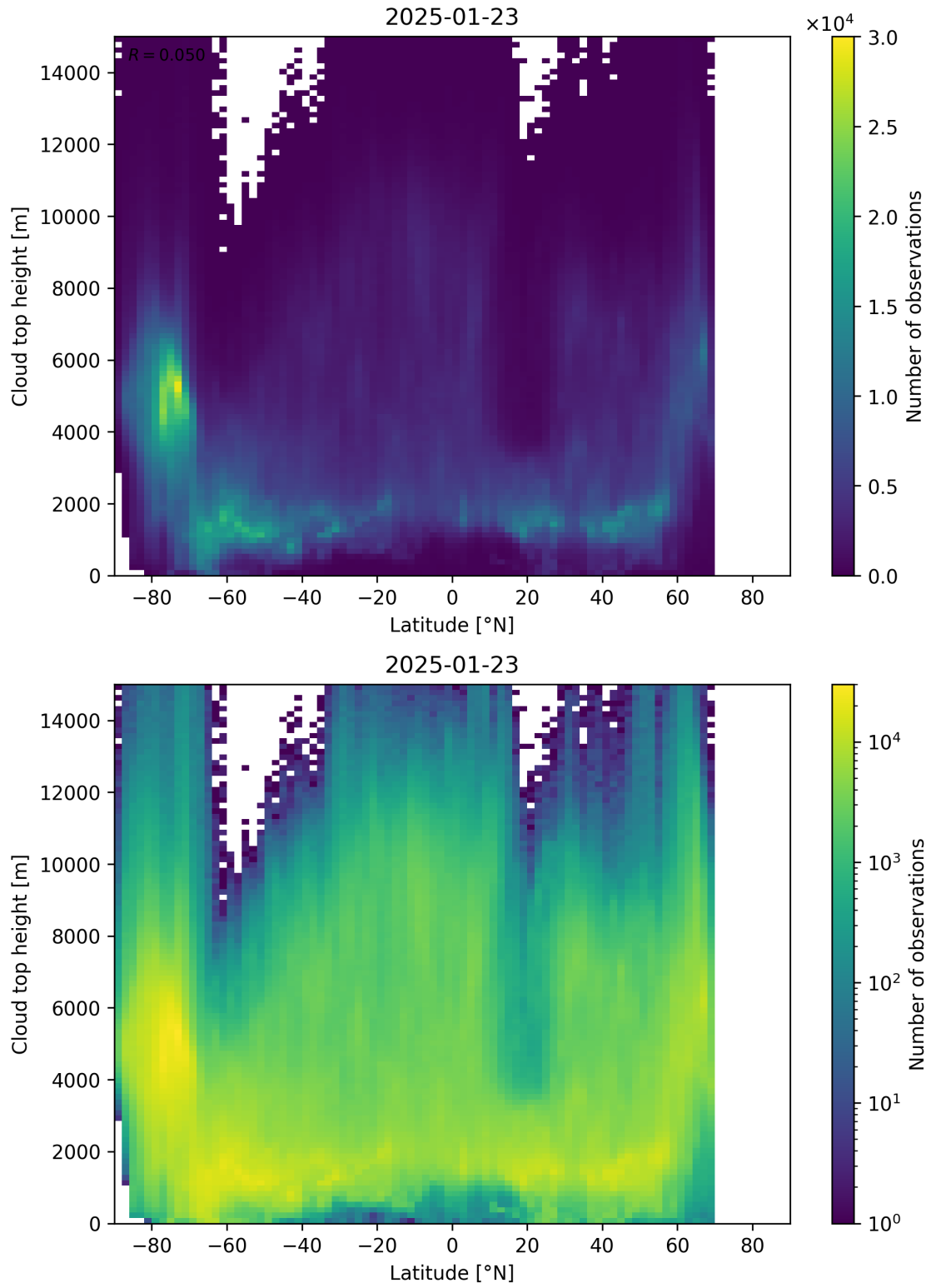


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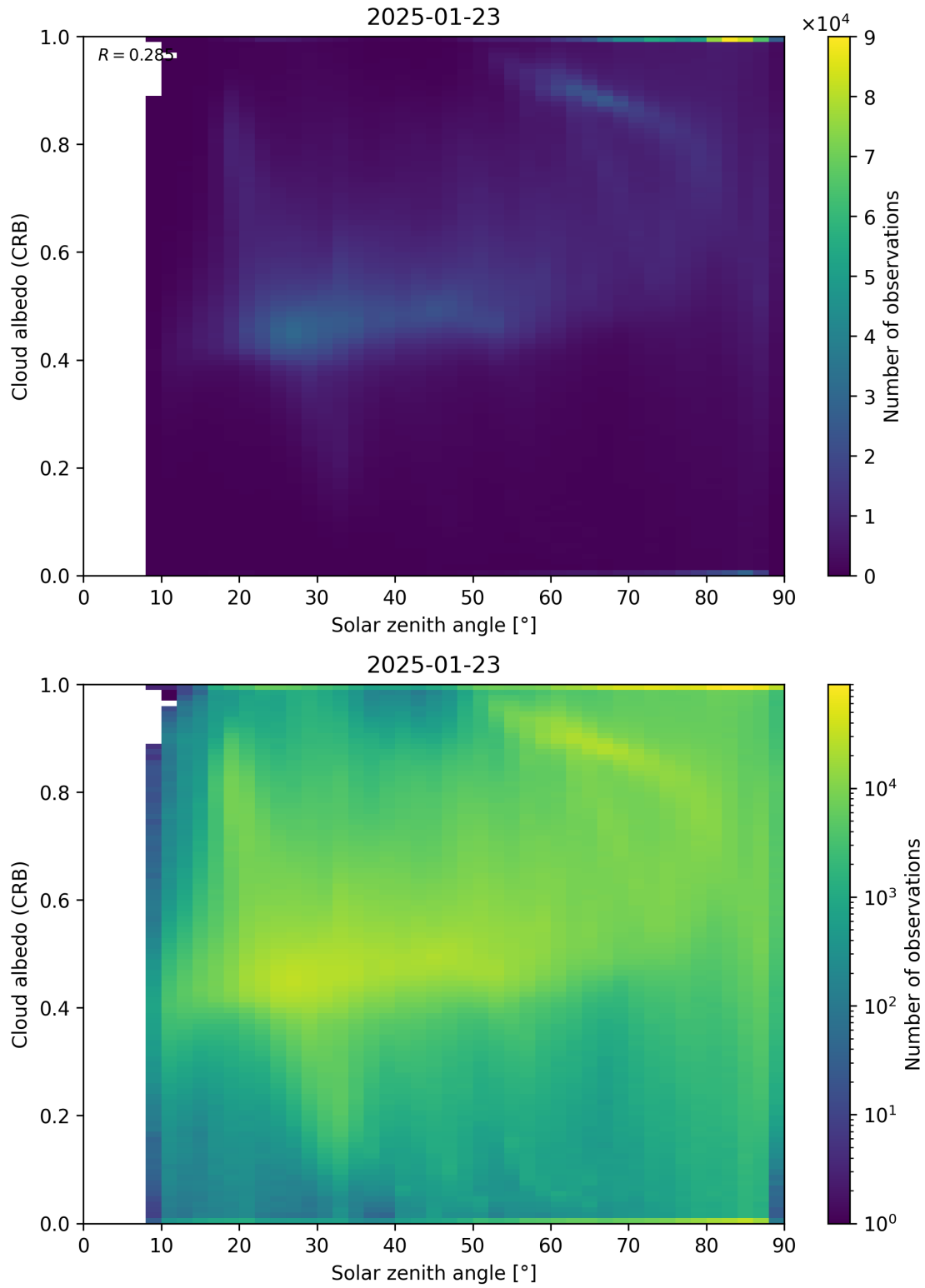


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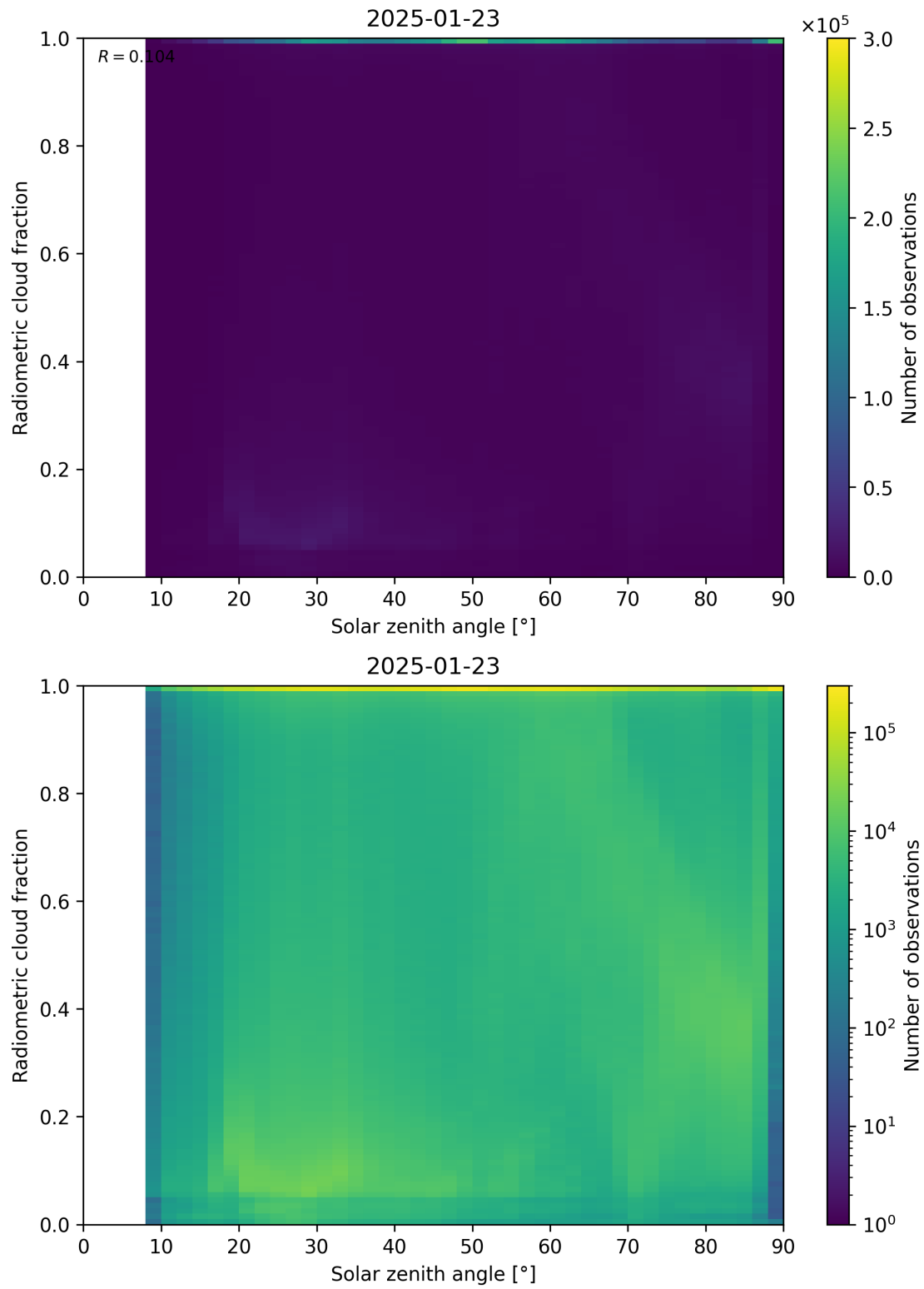


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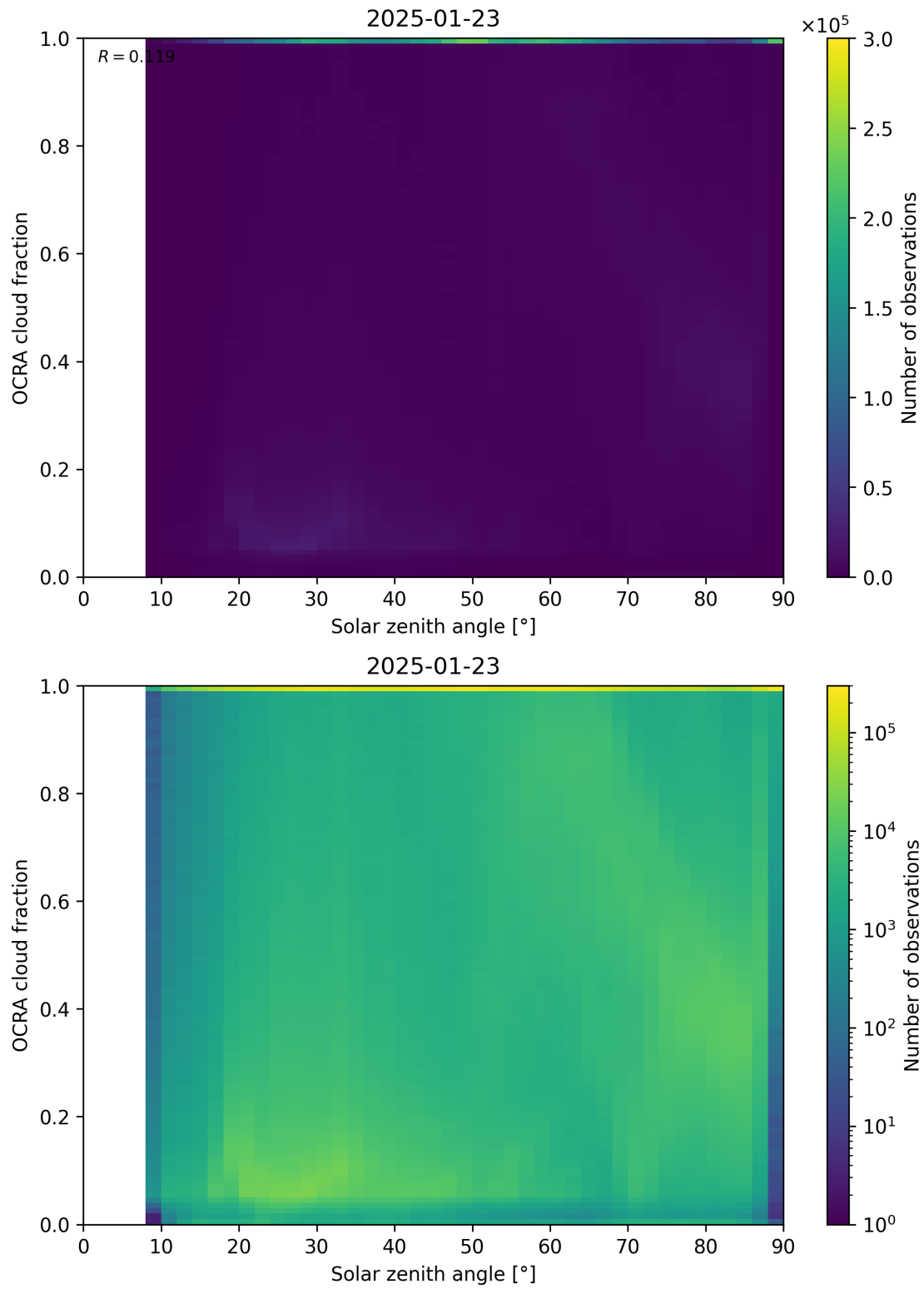


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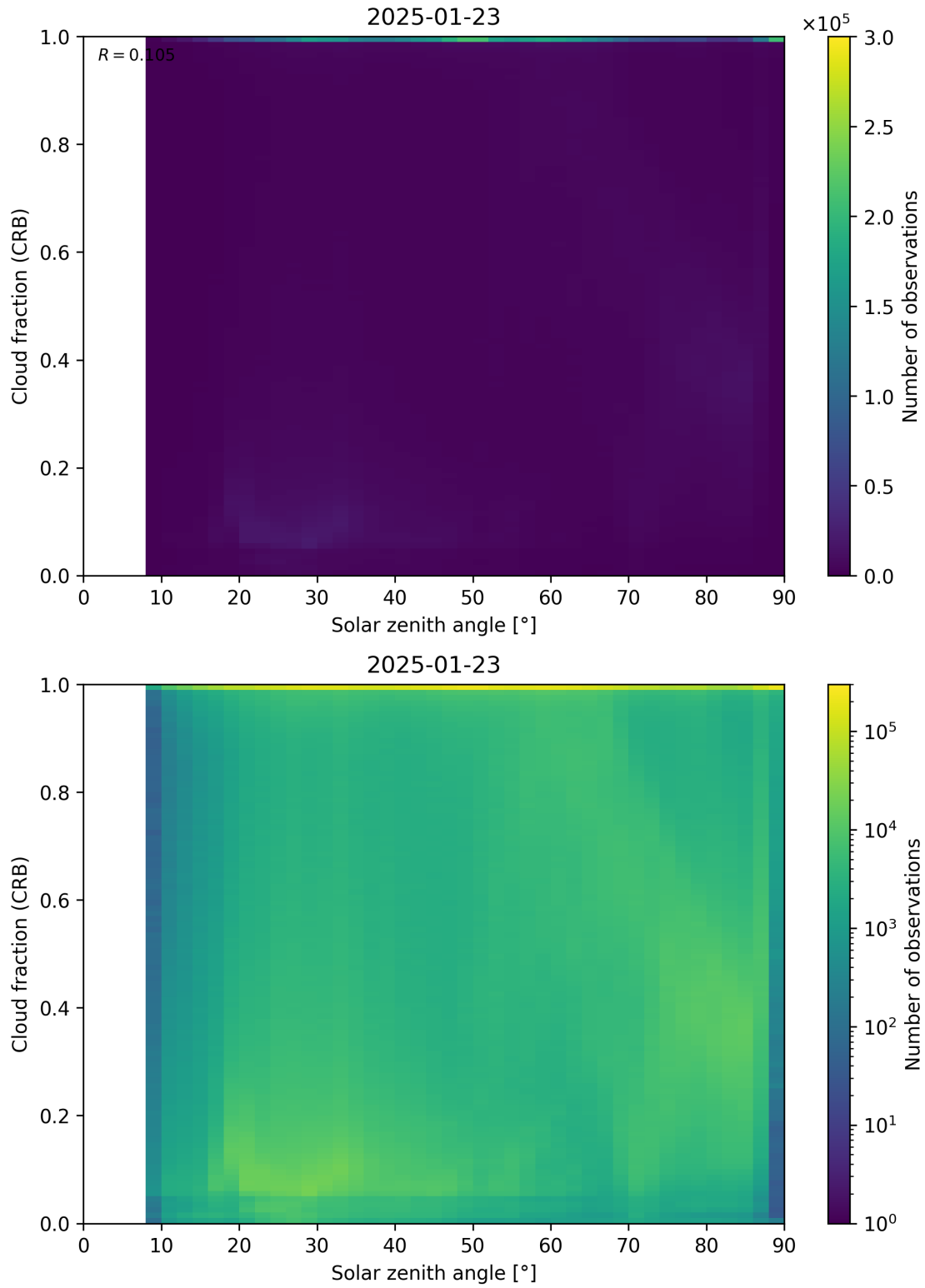


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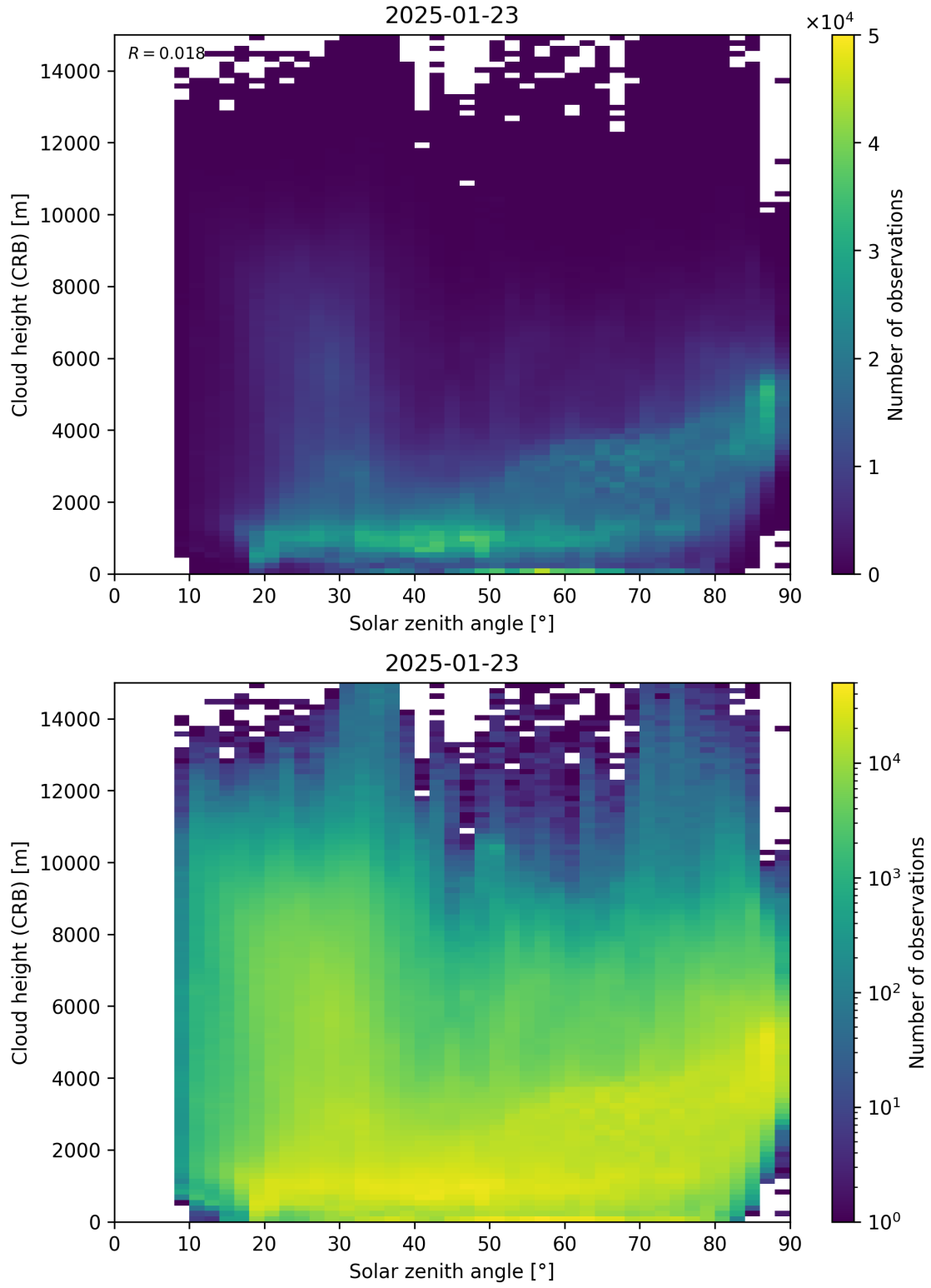


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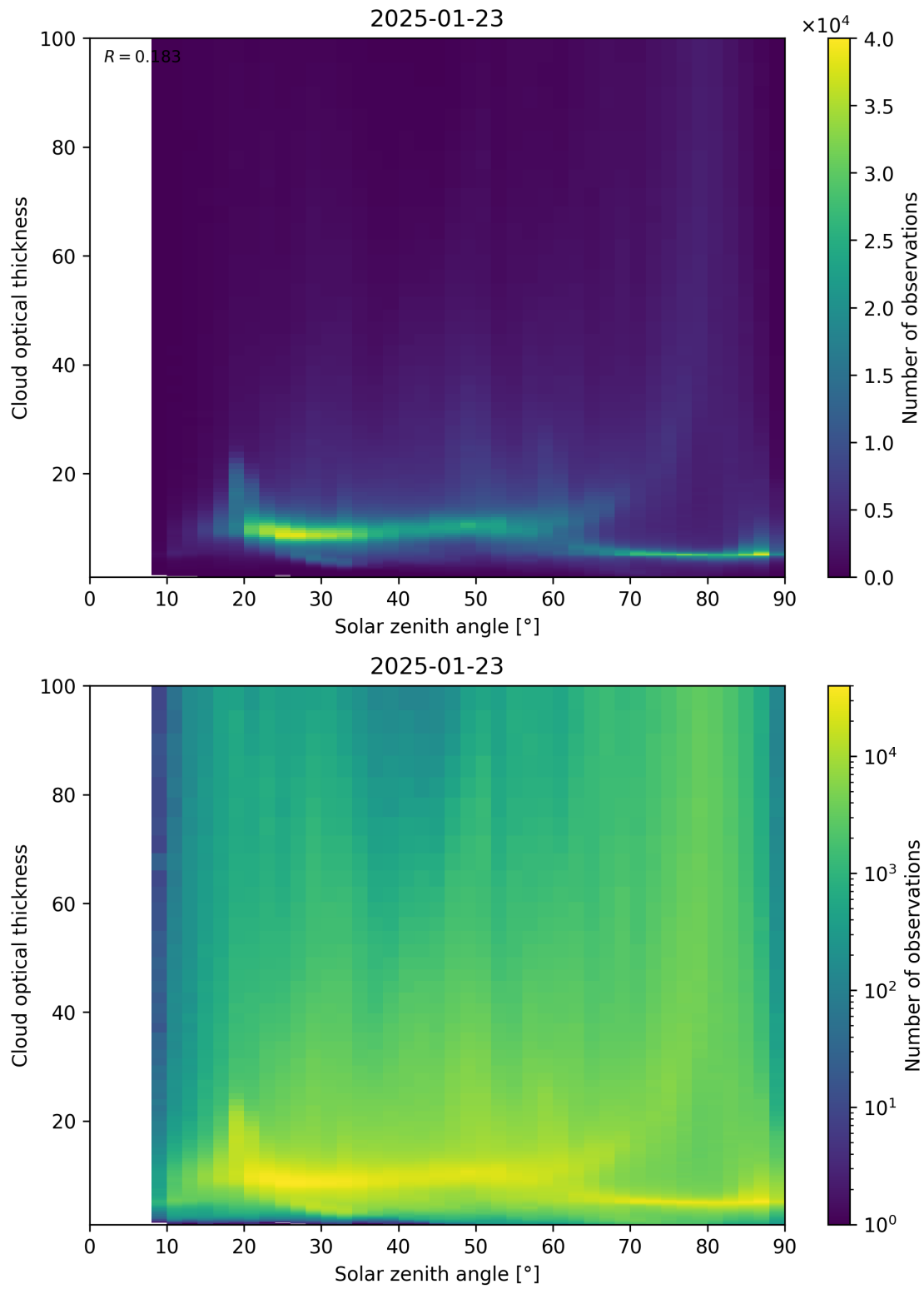


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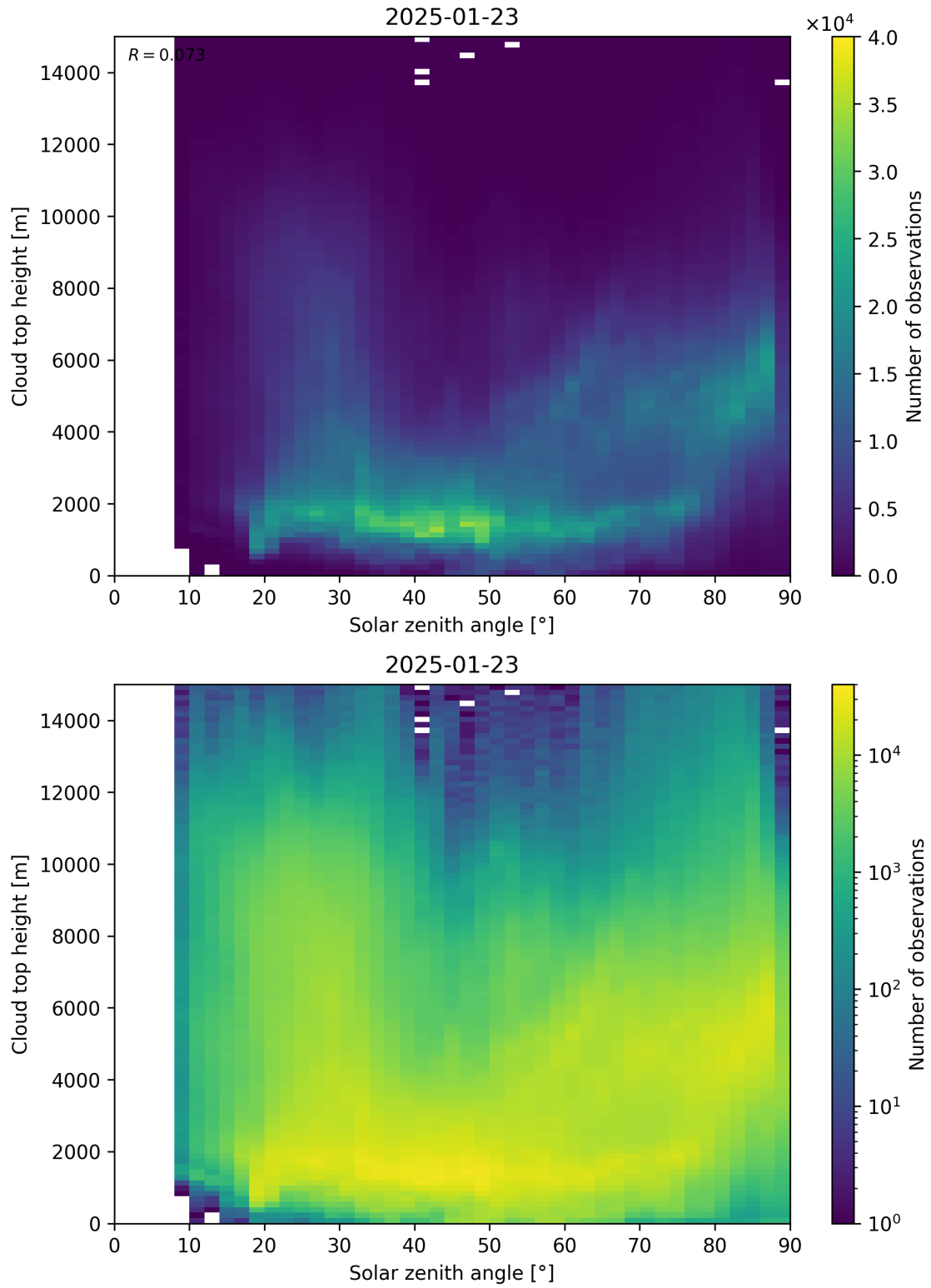


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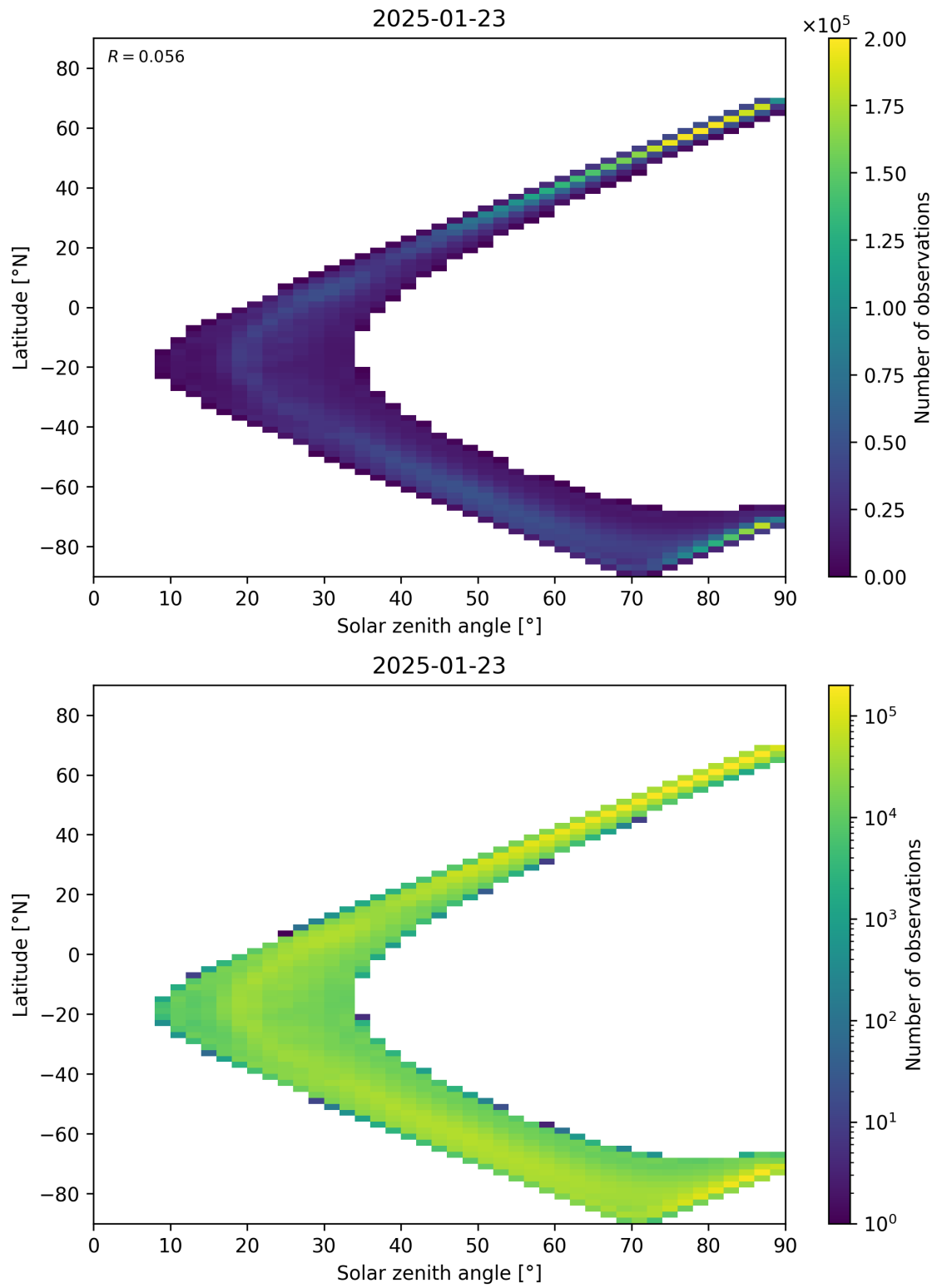


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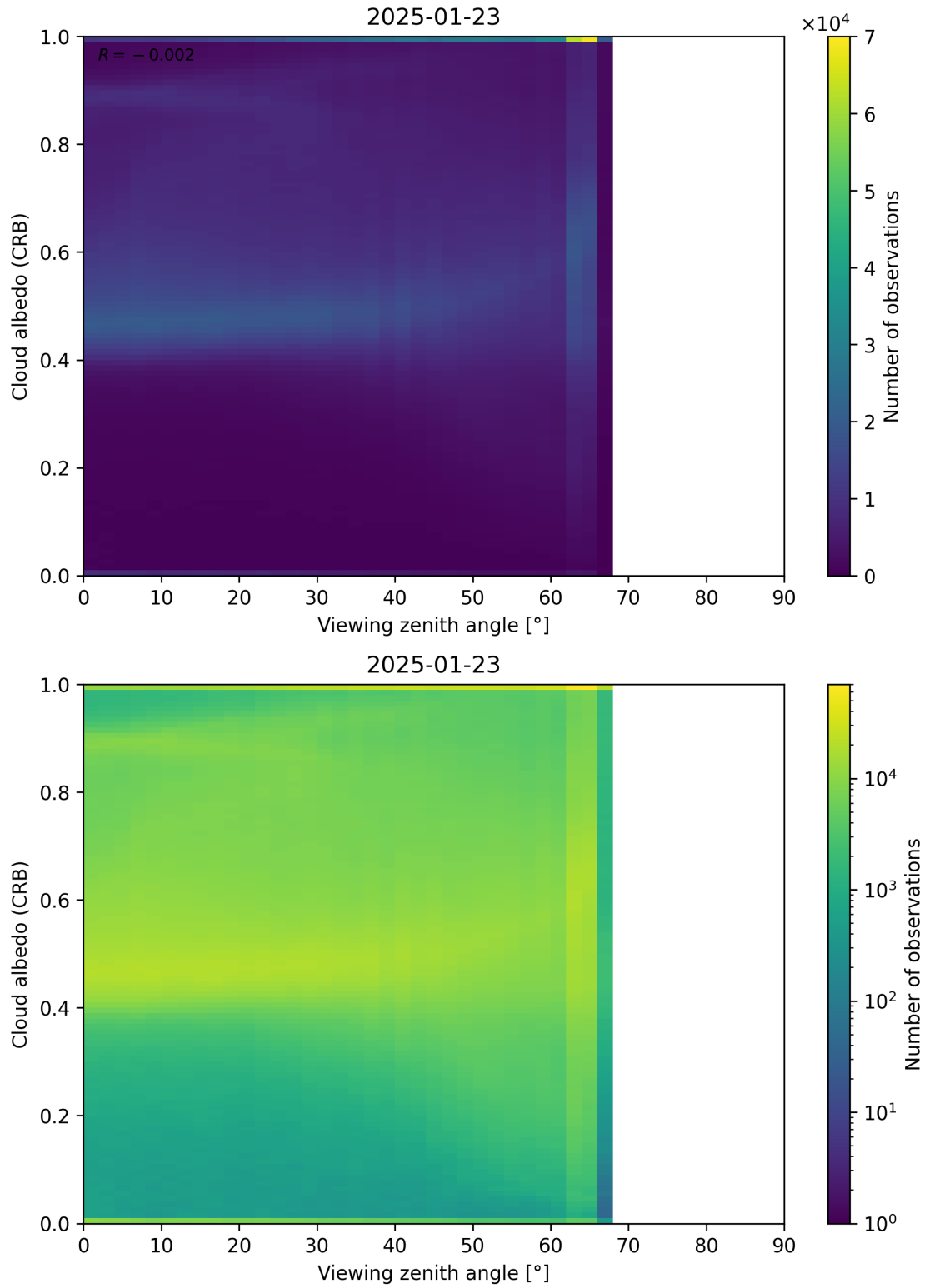


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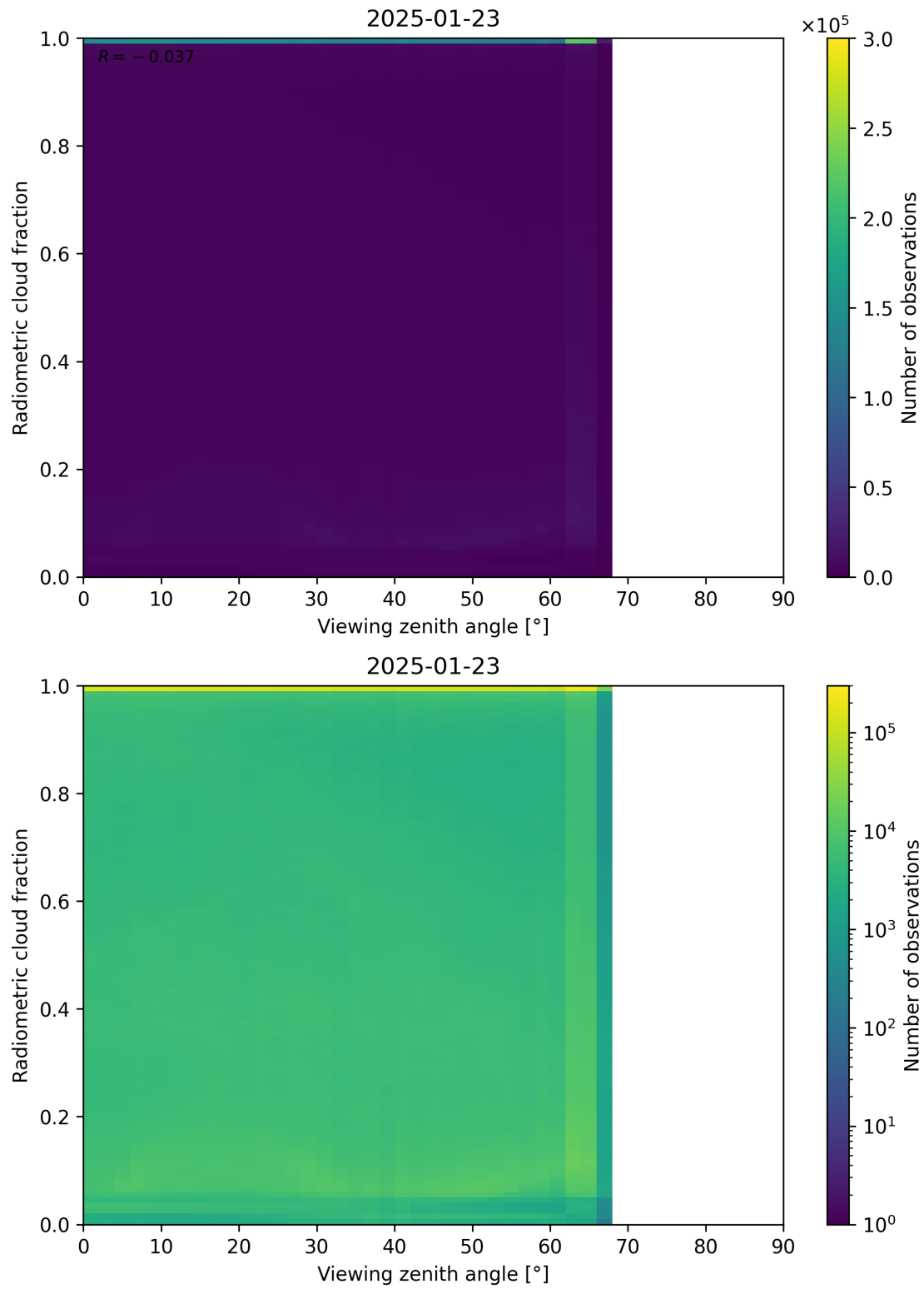


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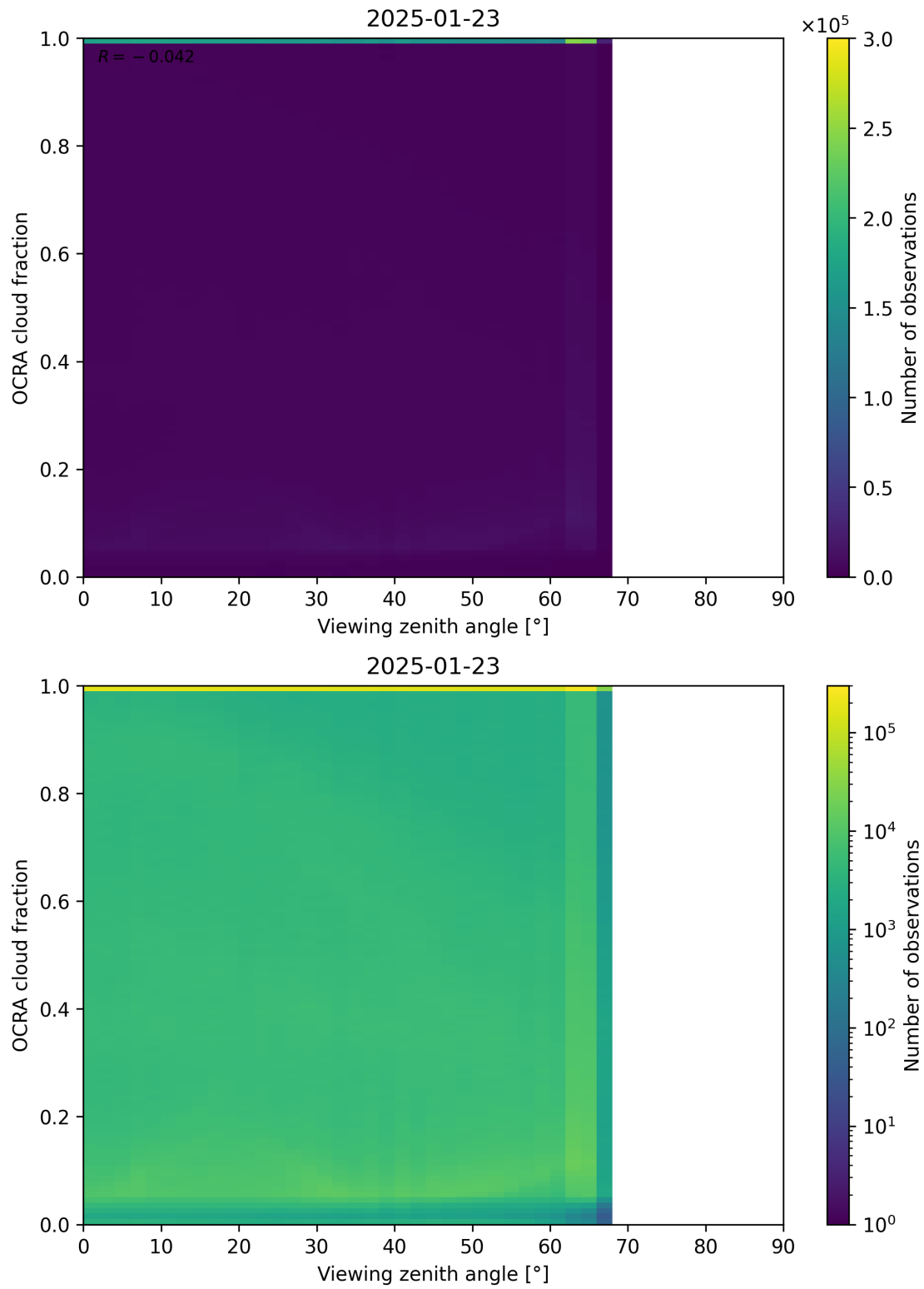


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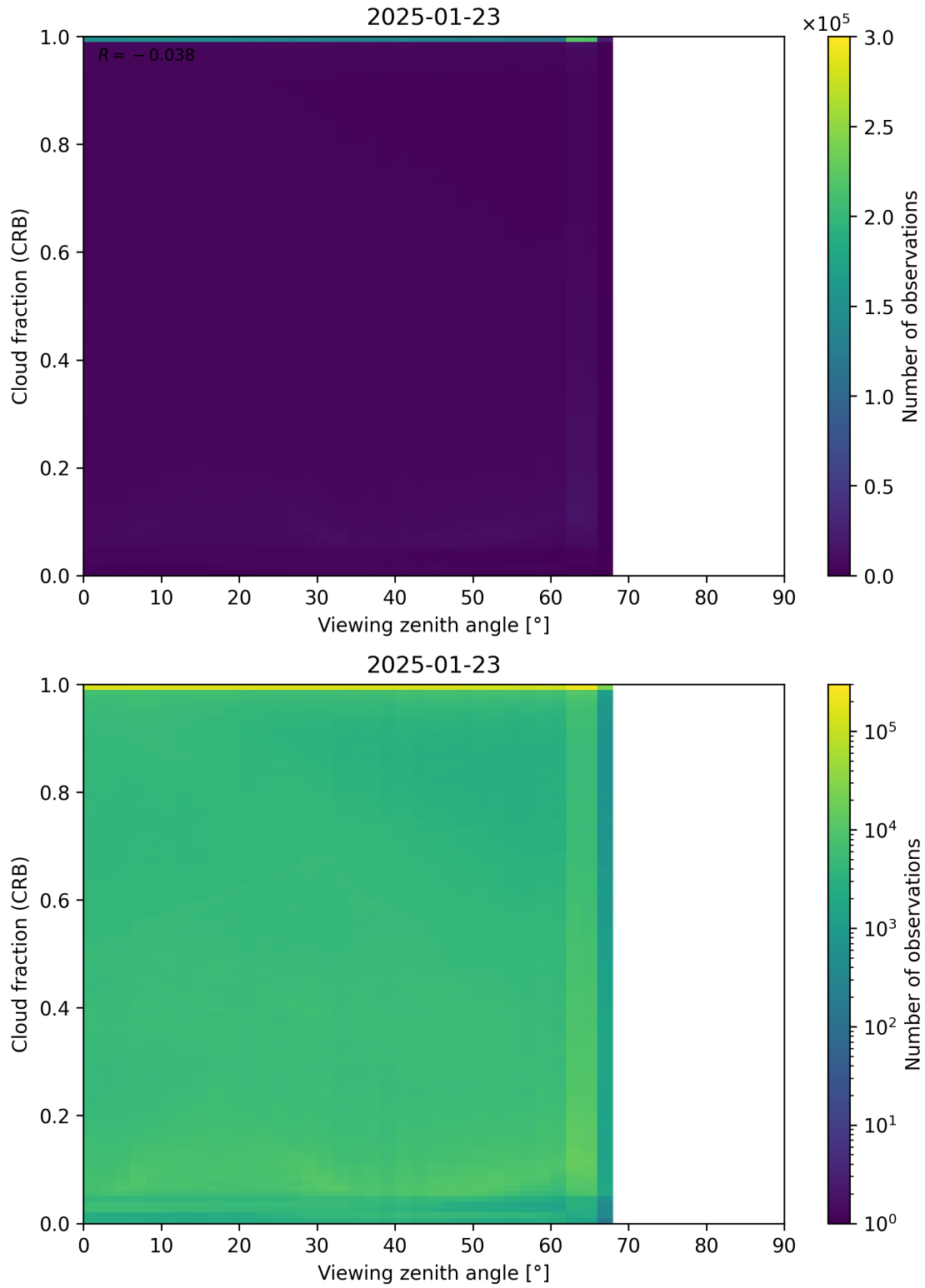


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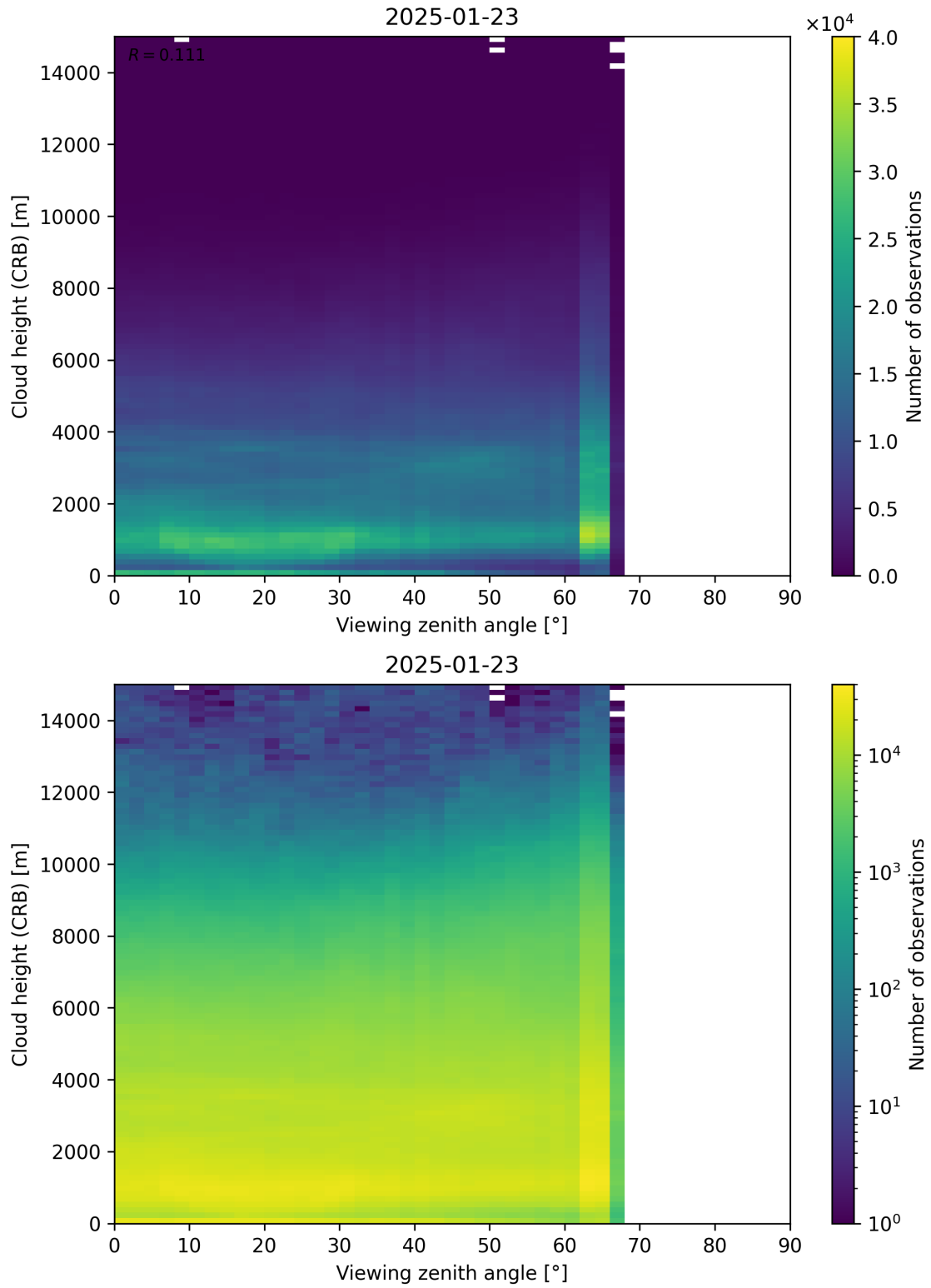


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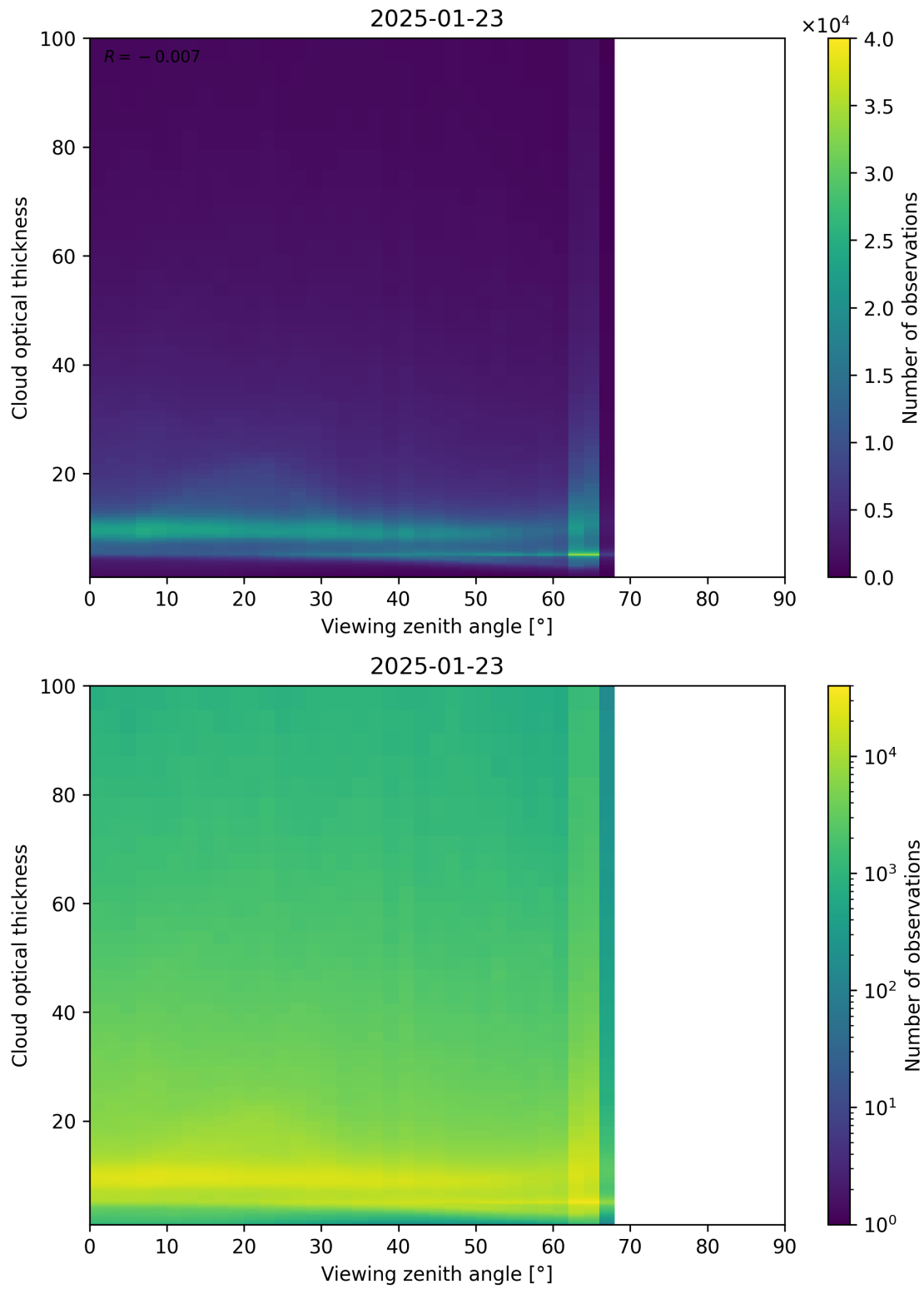


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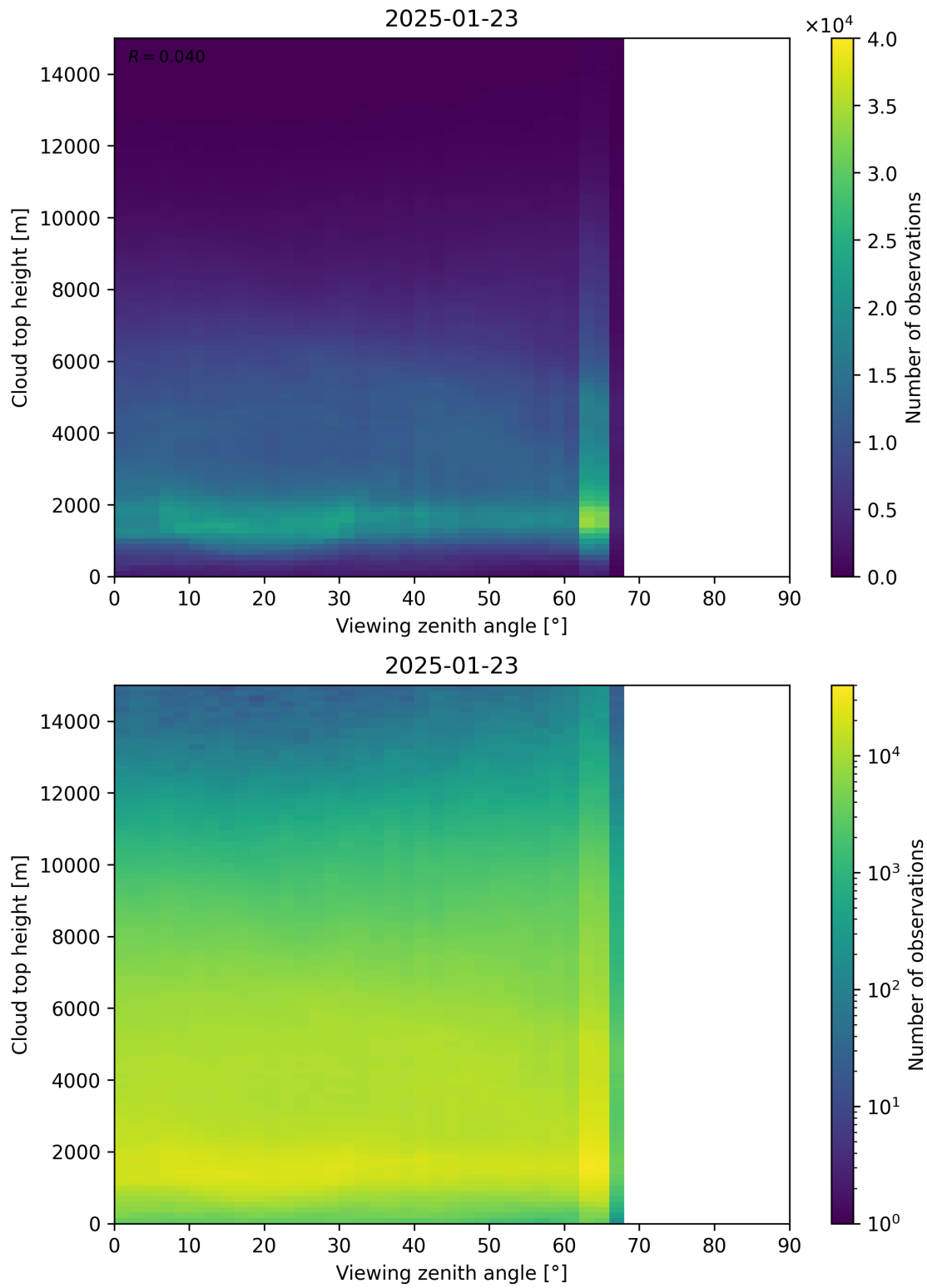


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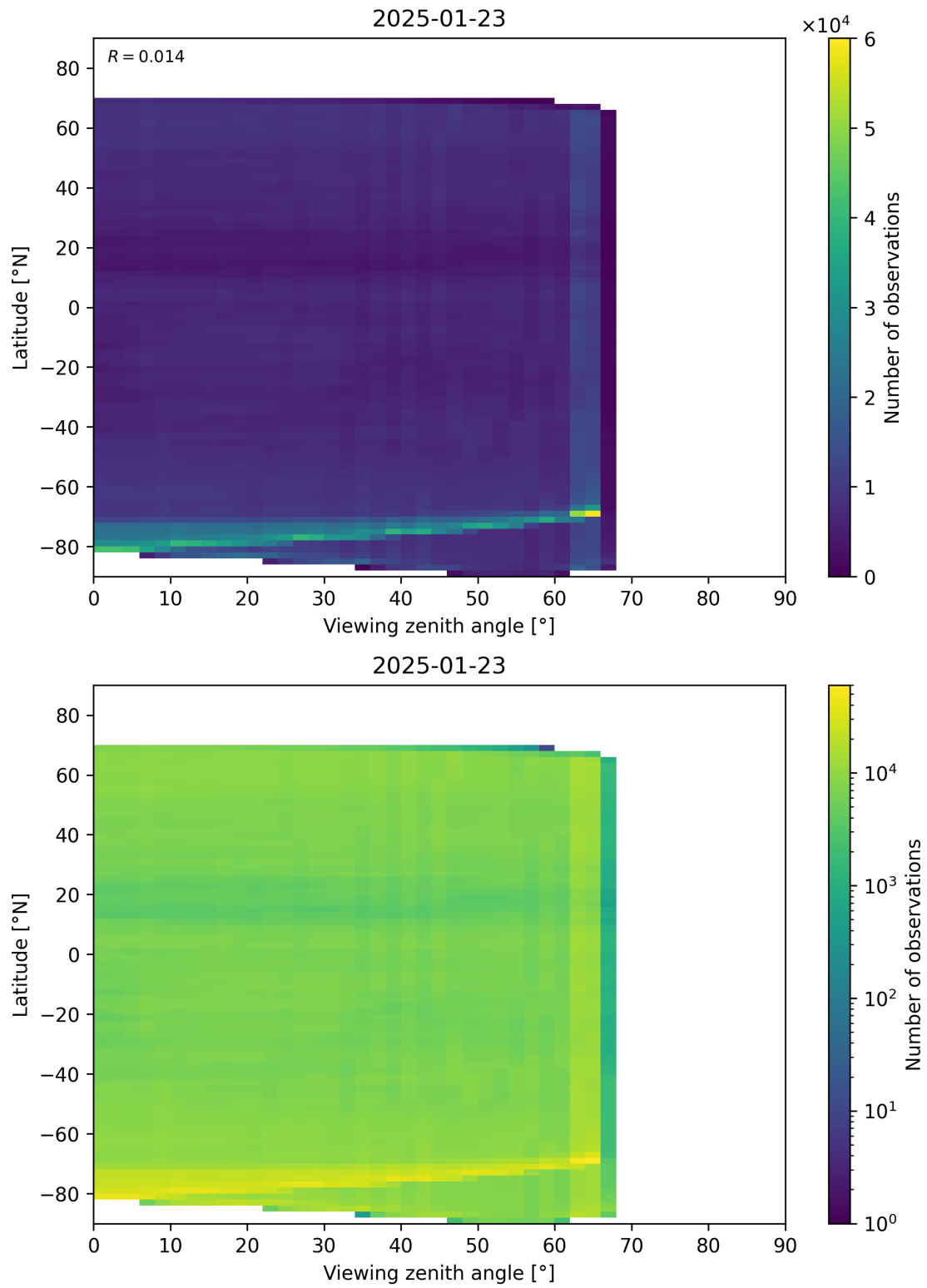


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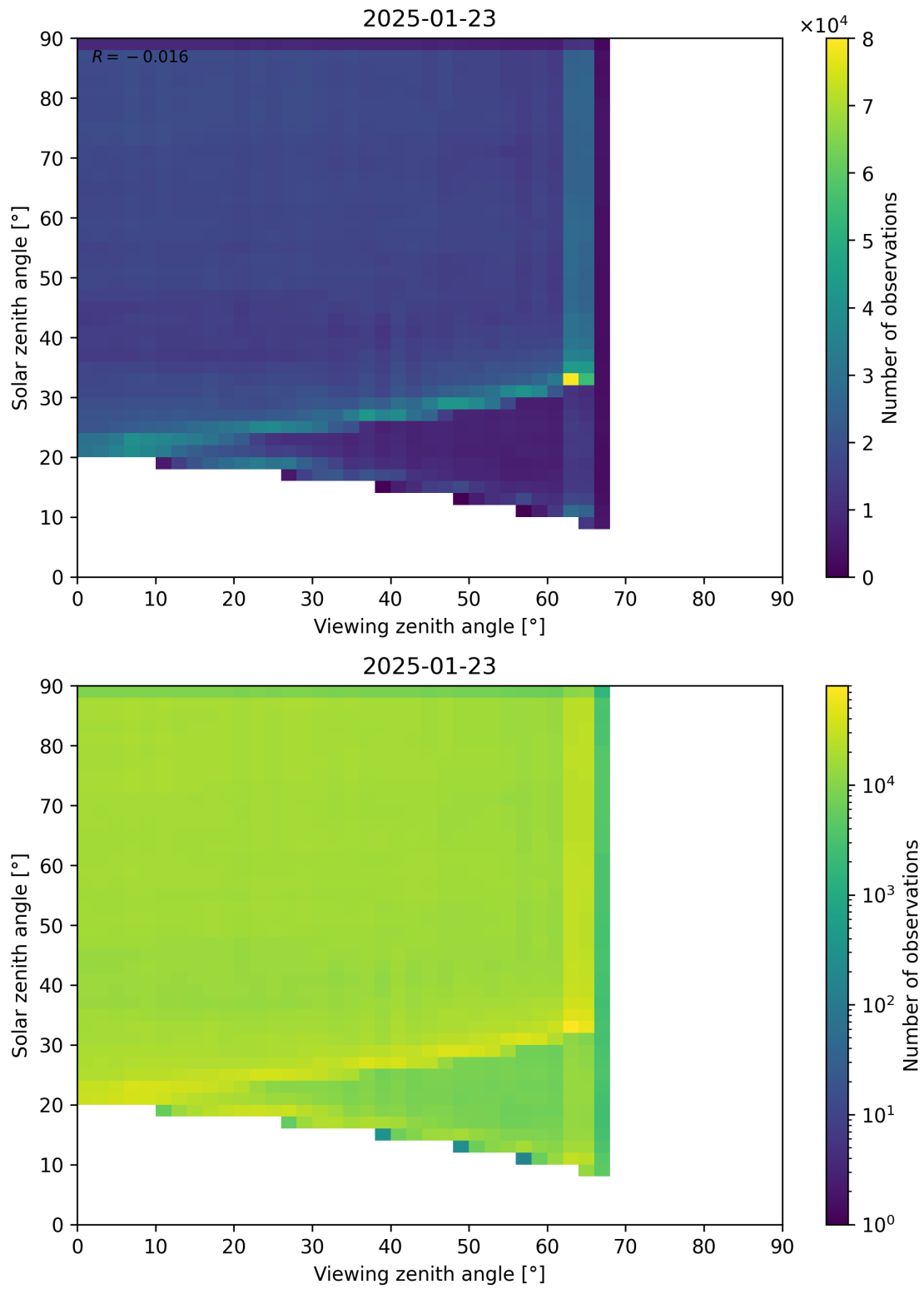


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