

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-02-12 (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]	0.634 ± 0.362	20857594	0.995	0.530	0.770	0.0	1.000
cloud fraction [1]	0.562 ± 0.343	20857594	0.995	0.723	0.534	0.0	1.000
cloud top height [m]	$(0.395 \pm 0.255) \times 10^4$	20857594	1.575×10^3	3.666×10^3	3.475×10^3	0.0	2.000×10^4
cloud optical thickness [1]	17.8 ± 32.5	20857594	9.34	9.62	9.03	1.000	250
cloud fraction crb [1]	0.561 ± 0.343	20857594	0.995	0.723	0.534	0.0	1.000
cloud height crb [m]	$(0.303 \pm 0.220) \times 10^4$	20857594	975	3.106×10^3	2.586×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.601 ± 0.211	20857594	0.995	0.286	0.582	0.0	1.000
surface albedo fitted [1]	0.272 ± 0.350	20857594	1.500×10^{-2}	0.499	4.191×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.261 ± 0.340	20857594	1.500×10^{-2}	0.493	3.090×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.155 \pm 10.197) \times 10^{-4}$	20857594	5.000×10^{-5}	8.727×10^{-4}	4.407×10^{-4}	1.041×10^{-6}	0.767
fitted root mean square crb [1]	$(6.436 \pm 9.930) \times 10^{-4}$	20857594	5.000×10^{-5}	8.228×10^{-4}	3.473×10^{-4}	7.969×10^{-7}	0.848
wavelength shift [nm]	$(8.177 \pm 6.901) \times 10^{-3}$	20857594	9.000×10^{-4}	9.695×10^{-3}	7.865×10^{-3}	-7.560×10^{-2}	0.177
cloud fraction apriori [1]	0.566 ± 0.346	20857594	0.995	0.758	0.541	0.0	1.000
reflectance blue ocra [1]	0.581 ± 0.233	20857594	0.265	0.415	0.567	0.144	1.99
reflectance green ocra [1]	0.533 ± 0.263	20857594	0.175	0.489	0.527	8.027×10^{-2}	1.97
reflectance continuum aband [1]	0.484 ± 0.288	20857594	4.500×10^{-2}	0.507	0.496	1.281×10^{-2}	4.78

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	0.0	0.400	0.930	1.000	1.000	1.000	1.000
cloud fraction [1]	2.098×10^{-2}	6.812×10^{-2}	0.104	0.152	0.243	0.966	1.000	1.000	1.000	1.000
cloud top height [m]	348	805	1.134×10^3	1.436×10^3	1.854×10^3	5.520×10^3	6.535×10^3	7.510×10^3	8.854×10^3	1.110×10^4
cloud optical thickness [1]	1.05	2.76	3.87	4.68	5.51	15.1	22.7	34.0	58.7	238
cloud fraction crb [1]	2.063×10^{-2}	6.713×10^{-2}	0.104	0.152	0.243	0.965	1.000	1.000	1.000	1.000
cloud height crb [m]	44.9	354	628	876	1.230×10^3	4.336×10^3	5.300×10^3	6.170×10^3	7.362×10^3	9.321×10^3
cloud albedo crb [1]	8.212×10^{-3}	0.247	0.361	0.421	0.467	0.753	0.835	0.893	0.961	1.000
surface albedo fitted [1]	0.0	6.549×10^{-3}	1.066×10^{-2}	1.399×10^{-2}	1.892×10^{-2}	0.518	0.819	0.912	0.960	1.000
surface albedo fitted crb [1]	0.0	5.112×10^{-3}	7.676×10^{-3}	1.006×10^{-2}	1.379×10^{-2}	0.507	0.811	0.876	0.911	0.955
fitted root mean square [1]	1.595×10^{-5}	3.077×10^{-5}	5.016×10^{-5}	8.001×10^{-5}	1.416×10^{-4}	1.014×10^{-3}	1.393×10^{-3}	1.771×10^{-3}	2.295×10^{-3}	3.428×10^{-3}
fitted root mean square crb [1]	1.039×10^{-5}	2.310×10^{-5}	3.954×10^{-5}	6.140×10^{-5}	1.050×10^{-4}	9.278×10^{-4}	1.303×10^{-3}	1.673×10^{-3}	2.206×10^{-3}	3.318×10^{-3}
wavelength shift [nm]	-8.177×10^{-3}	-9.551×10^{-4}	3.250×10^{-4}	1.373×10^{-3}	3.088×10^{-3}	1.278×10^{-2}	1.499×10^{-2}	1.690×10^{-2}	1.952×10^{-2}	2.552×10^{-2}
cloud fraction apriori [1]	3.066×10^{-2}	6.602×10^{-2}	0.100	0.148	0.242	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.235	0.259	0.283	0.314	0.368	0.783	0.850	0.893	0.928	1.07
reflectance green ocra [1]	0.153	0.173	0.193	0.220	0.276	0.765	0.841	0.888	0.927	1.04
reflectance continuum aband [1]	3.043×10^{-2}	5.402×10^{-2}	8.590×10^{-2}	0.128	0.222	0.729	0.813	0.859	0.904	1.02

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]	0.607 ± 0.387	7976151	0.690	0.780	0.0	1.000	0.260	0.950
cloud fraction [1]	0.531 ± 0.348	7976151	0.724	0.479	0.0	1.000	0.205	0.929
cloud top height [m]	$(0.408 \pm 0.260) \times 10^4$	7976151	3.750×10^3	3.544×10^3	0.0	2.000×10^4	1.961×10^3	5.711×10^3
cloud optical thickness [1]	25.0 ± 44.5	7976151	14.2	10.1	1.000	250	6.22	20.5
cloud fraction crb [1]	0.530 ± 0.347	7976151	0.723	0.477	0.0	1.000	0.205	0.928
cloud height crb [m]	$(0.332 \pm 0.223) \times 10^4$	7976151	3.392×10^3	2.905×10^3	0.0	2.000×10^4	1.436×10^3	4.828×10^3
cloud albedo crb [1]	0.597 ± 0.205	7976151	0.254	0.582	0.0	1.000	0.474	0.727
surface albedo fitted [1]	0.197 ± 0.240	7976151	0.306	4.783×10^{-2}	0.0	1.000	2.329×10^{-2}	0.330
surface albedo fitted crb [1]	0.187 ± 0.233	7976151	0.309	3.523×10^{-2}	0.0	1.000	1.698×10^{-2}	0.326
fitted root mean square [1]	$(5.167 \pm 7.171) \times 10^{-4}$	7976151	5.562×10^{-4}	2.935×10^{-4}	1.078×10^{-6}	0.110	1.108×10^{-4}	6.670×10^{-4}
fitted root mean square crb [1]	$(4.353 \pm 5.929) \times 10^{-4}$	7976151	4.719×10^{-4}	2.108×10^{-4}	1.389×10^{-6}	2.580×10^{-2}	7.620×10^{-5}	5.481×10^{-4}
wavelength shift [nm]	$(7.184 \pm 6.727) \times 10^{-3}$	7976151	9.170×10^{-3}	6.438×10^{-3}	-4.340×10^{-2}	6.262×10^{-2}	2.294×10^{-3}	1.146×10^{-2}
cloud fraction apriori [1]	0.534 ± 0.351	7976151	0.755	0.481	0.0	1.000	0.201	0.956
reflectance blue ocr [1]	0.542 ± 0.208	7976151	0.328	0.522	0.144	1.99	0.366	0.694
reflectance green ocr [1]	0.488 ± 0.234	7976151	0.397	0.471	8.211×10^{-2}	1.95	0.274	0.670
reflectance continuum aband [1]	0.442 ± 0.268	7976151	0.430	0.434	1.359×10^{-2}	4.71	0.214	0.644

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]	0.651 ± 0.344	12881443	0.510	0.770	0.0	1.000	0.400	0.910
cloud fraction [1]	0.580 ± 0.339	12881443	0.710	0.566	0.0	1.000	0.274	0.984
cloud top height [m]	$(0.387 \pm 0.252) \times 10^4$	12881443	3.624×10^3	3.431×10^3	0.0	2.000×10^4	1.782×10^3	5.407×10^3
cloud optical thickness [1]	13.4 ± 20.9	12881443	7.82	8.51	1.000	250	5.24	13.1
cloud fraction crb [1]	0.580 ± 0.339	12881443	0.711	0.567	0.0	1.000	0.273	0.984
cloud height crb [m]	$(0.285 \pm 0.217) \times 10^4$	12881443	2.851×10^3	2.424×10^3	0.0	2.000×10^4	1.099×10^3	3.950×10^3
cloud albedo crb [1]	0.603 ± 0.215	12881443	0.306	0.583	0.0	1.000	0.464	0.770
surface albedo fitted [1]	0.319 ± 0.396	12881443	0.796	3.743×10^{-2}	0.0	1.000	1.663×10^{-2}	0.813
surface albedo fitted crb [1]	0.307 ± 0.385	12881443	0.798	2.795×10^{-2}	0.0	1.000	1.201×10^{-2}	0.810
fitted root mean square [1]	$(8.386 \pm 11.513) \times 10^{-4}$	12881443	1.049×10^{-3}	5.884×10^{-4}	1.041×10^{-6}	0.767	1.765×10^{-4}	1.226×10^{-3}
fitted root mean square crb [1]	$(7.726 \pm 11.556) \times 10^{-4}$	12881443	1.014×10^{-3}	5.044×10^{-4}	7.969×10^{-7}	0.848	1.390×10^{-4}	1.153×10^{-3}
wavelength shift [nm]	$(8.792 \pm 6.936) \times 10^{-3}$	12881443	9.652×10^{-3}	8.773×10^{-3}	-7.560×10^{-2}	0.177	3.777×10^{-3}	1.343×10^{-2}
cloud fraction apriori [1]	0.585 ± 0.342	12881443	0.725	0.576	0.0	1.000	0.275	1.000
reflectance blue oca [1]	0.605 ± 0.244	12881443	0.460	0.609	0.144	1.97	0.369	0.829
reflectance green oca [1]	0.561 ± 0.276	12881443	0.539	0.577	8.027×10^{-2}	1.97	0.279	0.818
reflectance continuum aband [1]	0.510 ± 0.298	12881443	0.548	0.545	1.281×10^{-2}	4.78	0.230	0.778

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]	0.743 ± 0.310	13056655	0.420	0.900	0.0	1.000	0.570	0.990
cloud fraction [1]	0.595 ± 0.366	13056655	0.781	0.627	0.0	1.000	0.219	1.000
cloud top height [m]	$(0.350 \pm 0.248) \times 10^4$	13056655	3.218×10^3	2.742×10^3	0.0	2.000×10^4	1.605×10^3	4.822×10^3
cloud optical thickness [1]	17.5 ± 25.9	13056655	9.49	10.2	1.000	250	7.26	16.8
cloud fraction crb [1]	0.594 ± 0.366	13056655	0.782	0.626	0.0	1.000	0.217	1.000
cloud height crb [m]	$(0.281 \pm 0.225) \times 10^4$	13056655	3.007×10^3	2.125×10^3	0.0	2.000×10^4	1.049×10^3	4.057×10^3
cloud albedo crb [1]	0.553 ± 0.163	13056655	0.199	0.535	0.0	1.000	0.455	0.654
surface albedo fitted [1]	$(6.105 \pm 14.129) \times 10^{-2}$	13056655	2.339×10^{-2}	2.280×10^{-2}	0.0	1.000	1.393×10^{-2}	3.732×10^{-2}
surface albedo fitted crb [1]	$(5.459 \pm 14.052) \times 10^{-2}$	13056655	1.753×10^{-2}	1.675×10^{-2}	0.0	1.000	1.001×10^{-2}	2.753×10^{-2}
fitted root mean square [1]	$(6.542 \pm 10.219) \times 10^{-4}$	13056655	8.446×10^{-4}	3.180×10^{-4}	1.041×10^{-6}	0.571	9.213×10^{-5}	9.367×10^{-4}
fitted root mean square crb [1]	$(6.408 \pm 10.229) \times 10^{-4}$	13056655	8.386×10^{-4}	3.030×10^{-4}	7.969×10^{-7}	0.605	8.603×10^{-5}	9.247×10^{-4}
wavelength shift [nm]	$(7.741 \pm 7.323) \times 10^{-3}$	13056655	1.006×10^{-2}	7.161×10^{-3}	-4.561×10^{-2}	0.177	2.479×10^{-3}	1.254×10^{-2}
cloud fraction apriori [1]	0.593 ± 0.371	13056655	0.792	0.622	0.0	1.000	0.208	1.000
reflectance blue oca [1]	0.499 ± 0.194	13056655	0.311	0.463	0.168	1.91	0.332	0.643
reflectance green oca [1]	0.438 ± 0.223	13056655	0.381	0.398	9.486×10^{-2}	1.77	0.234	0.615
reflectance continuum aband [1]	0.375 ± 0.262	13056655	0.462	0.341	1.281×10^{-2}	4.71	0.128	0.590

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]	0.461 ± 0.363	6408440	0.700	0.610	0.0	1.000	0.0	0.700
cloud fraction [1]	0.503 ± 0.285	6408440	0.440	0.462	0.0	1.000	0.280	0.719
cloud top height [m]	$(0.473 \pm 0.245) \times 10^4$	6408440	3.041×10^3	4.652×10^3	0.0	2.000×10^4	3.028×10^3	6.069×10^3
cloud optical thickness [1]	14.3 ± 33.1	6408440	5.37	5.73	1.000	250	4.42	9.79
cloud fraction crb [1]	0.504 ± 0.285	6408440	0.441	0.463	0.0	1.000	0.280	0.721
cloud height crb [m]	$(0.333 \pm 0.203) \times 10^4$	6408440	2.615×10^3	3.122×10^3	0.0	2.000×10^4	1.866×10^3	4.481×10^3
cloud albedo crb [1]	0.684 ± 0.255	6408440	0.342	0.742	0.0	1.000	0.540	0.882
surface albedo fitted [1]	0.673 ± 0.301	6408440	0.597	0.819	0.0	1.000	0.337	0.934
surface albedo fitted crb [1]	0.652 ± 0.287	6408440	0.555	0.814	0.0	1.000	0.336	0.892
fitted root mean square [1]	$(8.611 \pm 10.154) \times 10^{-4}$	6408440	8.527×10^{-4}	6.485×10^{-4}	1.674×10^{-6}	0.767	3.215×10^{-4}	1.174×10^{-3}
fitted root mean square crb [1]	$(6.970 \pm 9.238) \times 10^{-4}$	6408440	8.294×10^{-4}	4.825×10^{-4}	1.661×10^{-6}	0.848	1.789×10^{-4}	1.008×10^{-3}
wavelength shift [nm]	$(9.292 \pm 5.928) \times 10^{-3}$	6408440	8.491×10^{-3}	9.344×10^{-3}	-7.560×10^{-2}	6.786×10^{-2}	4.891×10^{-3}	1.338×10^{-2}
cloud fraction apriori [1]	0.519 ± 0.287	6408440	0.446	0.482	0.0	1.000	0.294	0.740
reflectance blue ocra [1]	0.732 ± 0.228	6408440	0.300	0.810	0.144	1.97	0.593	0.893
reflectance green ocra [1]	0.708 ± 0.249	6408440	0.333	0.800	8.027×10^{-2}	1.97	0.558	0.891
reflectance continuum aband [1]	0.685 ± 0.226	6408440	0.330	0.750	1.850×10^{-2}	4.78	0.526	0.856

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	-1.565×10^{-2}	8.622×10^{-3}	-4.093×10^{-2}	2.231×10^{-2}	-9.900×10^{-3}	-4.131×10^{-2}	9.350×10^{-2}	-6.588×10^{-4}	-4.449×10^{-2}
-1.565×10^{-2}	1.000	4.686×10^{-2}	8.271×10^{-2}	2.766×10^{-2}	0.137	8.449×10^{-2}	-1.554×10^{-2}	0.251	9.782×10^{-2}
8.622×10^{-3}	4.686×10^{-2}	1.000	-0.101	7.167×10^{-2}	0.206	-0.103	0.167	-7.846×10^{-2}	-0.109
-4.093×10^{-2}	8.271×10^{-2}	-0.101	1.000	-8.054×10^{-2}	0.279	1.000	-6.857×10^{-2}	0.304	0.985
2.231×10^{-2}	2.766×10^{-2}	7.167×10^{-2}	-8.054×10^{-2}	1.000	1.387×10^{-2}	-7.943×10^{-2}	0.924	5.967×10^{-2}	-8.496×10^{-2}
-9.900×10^{-3}	0.137	0.206	0.279	1.387×10^{-2}	1.000	0.276	7.542×10^{-2}	0.365	0.282
-4.131×10^{-2}	8.449×10^{-2}	-0.103	1.000	-7.943×10^{-2}	0.276	1.000	-6.856×10^{-2}	0.304	0.985
9.350×10^{-2}	-1.554×10^{-2}	0.167	-6.857×10^{-2}	0.924	7.542×10^{-2}	-6.856×10^{-2}	1.000	-7.485×10^{-2}	-7.660×10^{-2}
-6.588×10^{-4}	0.251	-7.846×10^{-2}	0.304	5.967×10^{-2}	0.365	0.304	-7.485×10^{-2}	1.000	0.326
-4.449×10^{-2}	9.782×10^{-2}	-0.109	0.985	-8.496×10^{-2}	0.282	0.985	-7.660×10^{-2}	0.326	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	-6.56	8.39	-0.275	1.117×10^3	-6.32	-0.278	4.043×10^3	-2.726×10^{-3}	-0.302
-6.56	457	49.7	0.606	1.509×10^3	95.2	0.620	-733	1.13	0.724
8.39	49.7	2.459×10^3	-1.72	9.072×10^3	332	-1.76	1.822×10^4	-0.821	-1.87
-0.275	0.606	-1.72	0.118	-70.5	3.12	0.118	-51.9	2.197×10^{-2}	0.117
1.117×10^3	1.509×10^3	9.072×10^3	-70.5	6.515×10^6	1.152×10^3	-69.6	5.203×10^6	32.1	-75.1
-6.32	95.2	332	3.12	1.152×10^3	1.059×10^3	3.08	5.411×10^3	2.51	3.17
-0.278	0.620	-1.76	0.118	-69.6	3.08	0.118	-51.9	2.203×10^{-2}	0.117
4.043×10^3	-733	1.822×10^4	-51.9	5.203×10^6	5.411×10^3	-51.9	4.861×10^6	-34.8	-58.5
-2.726×10^{-3}	1.13	-0.821	2.197×10^{-2}	32.1	2.51	2.203×10^{-2}	-34.8	4.451×10^{-2}	2.383×10^{-2}
-0.302	0.724	-1.87	0.117	-75.1	3.17	0.117	-58.5	2.383×10^{-2}	0.120

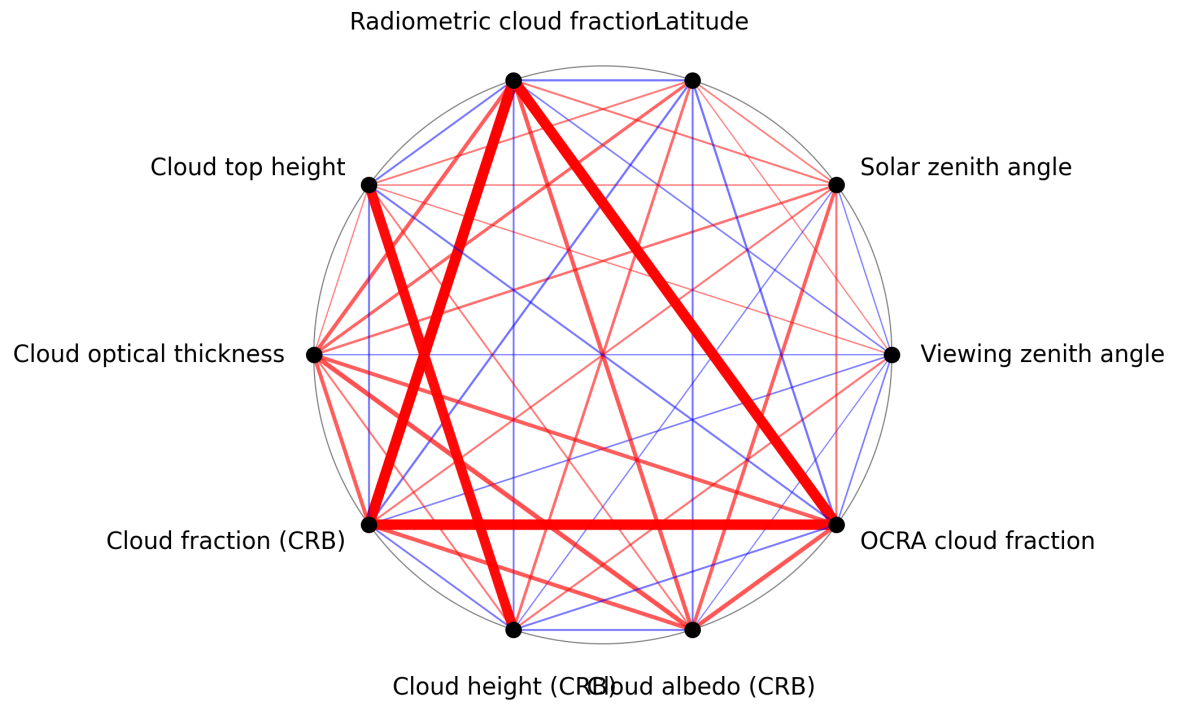


Figure 1: Map of correlation graph for 2025-01-28 to 2025-01-29.

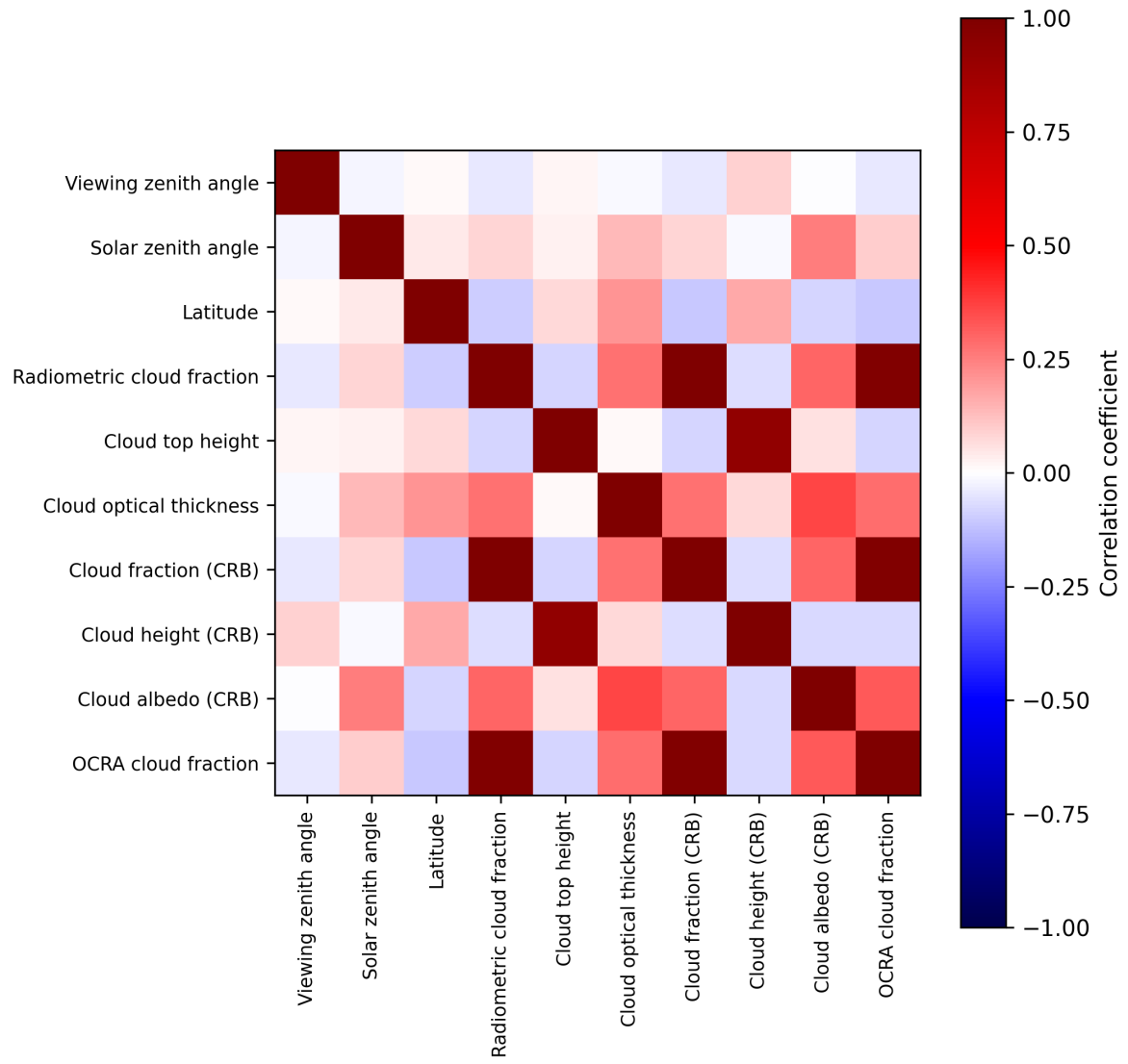


Figure 2: Map of correlation matrix for 2025-01-28 to 2025-01-29.

3 Granule outlines

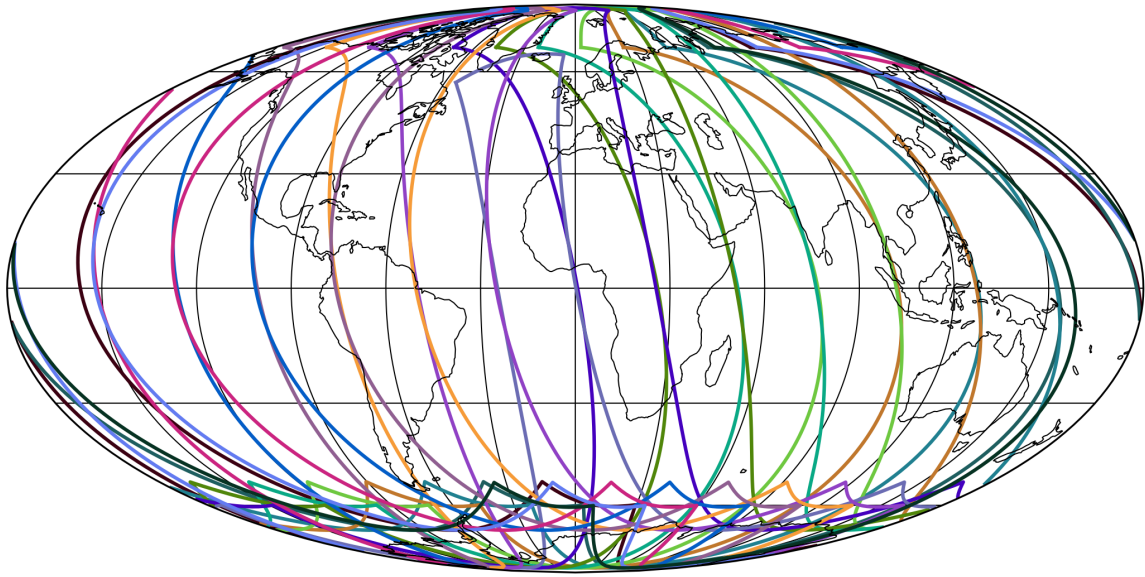


Figure 3: Outline of the granules.

4 Input data monitoring

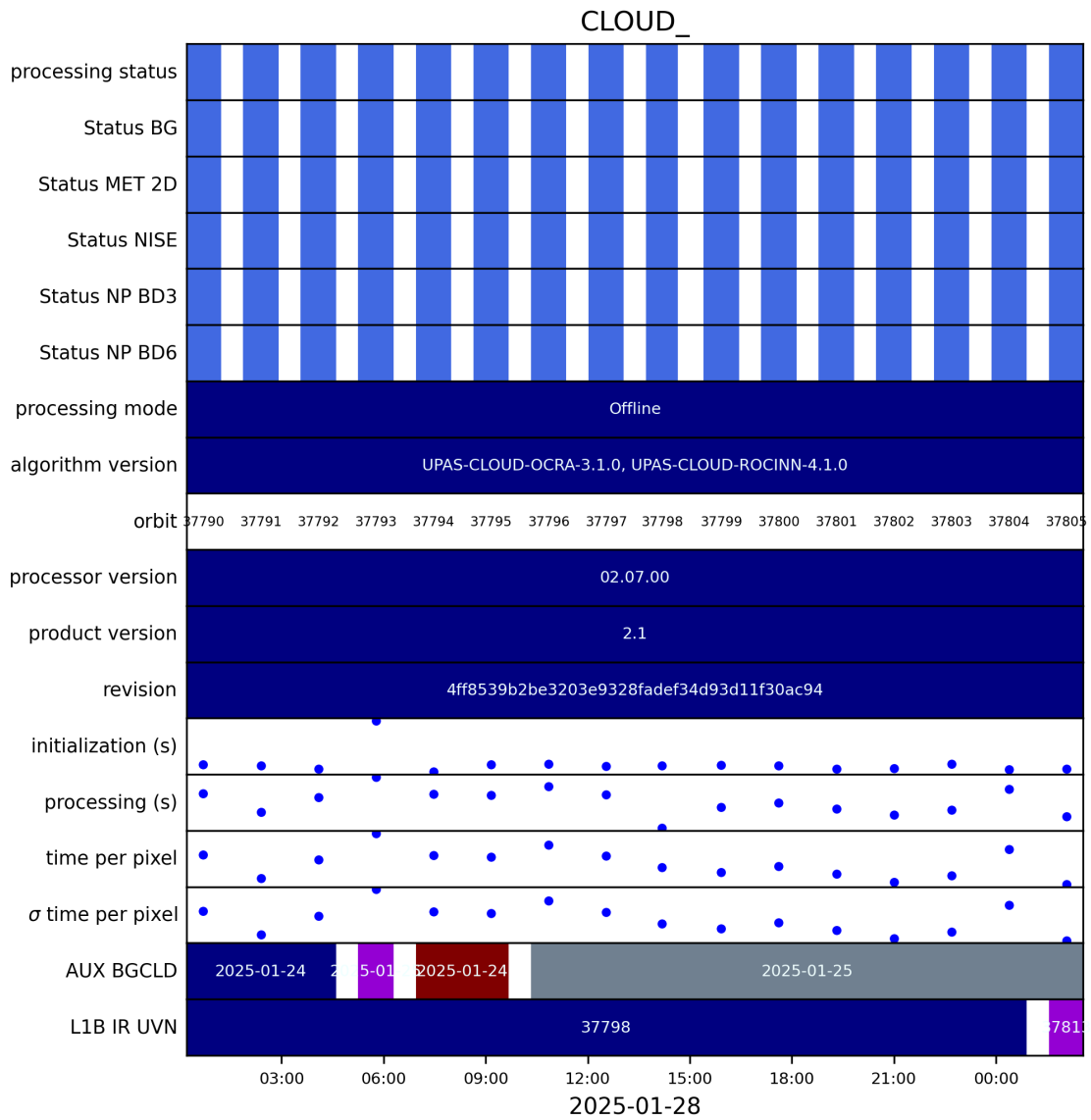


Figure 4: Input data per granule

5 Warnings and errors

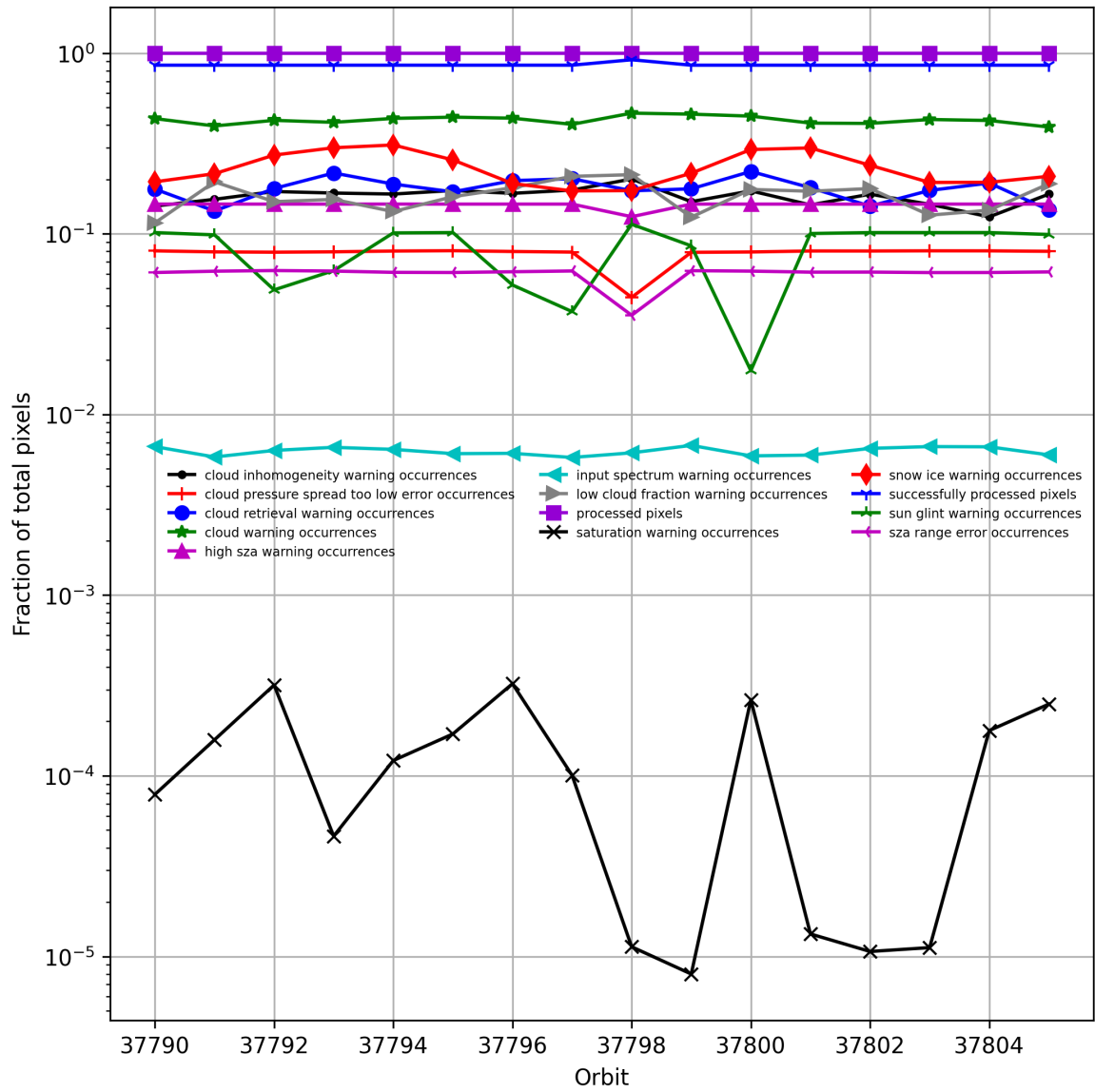


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

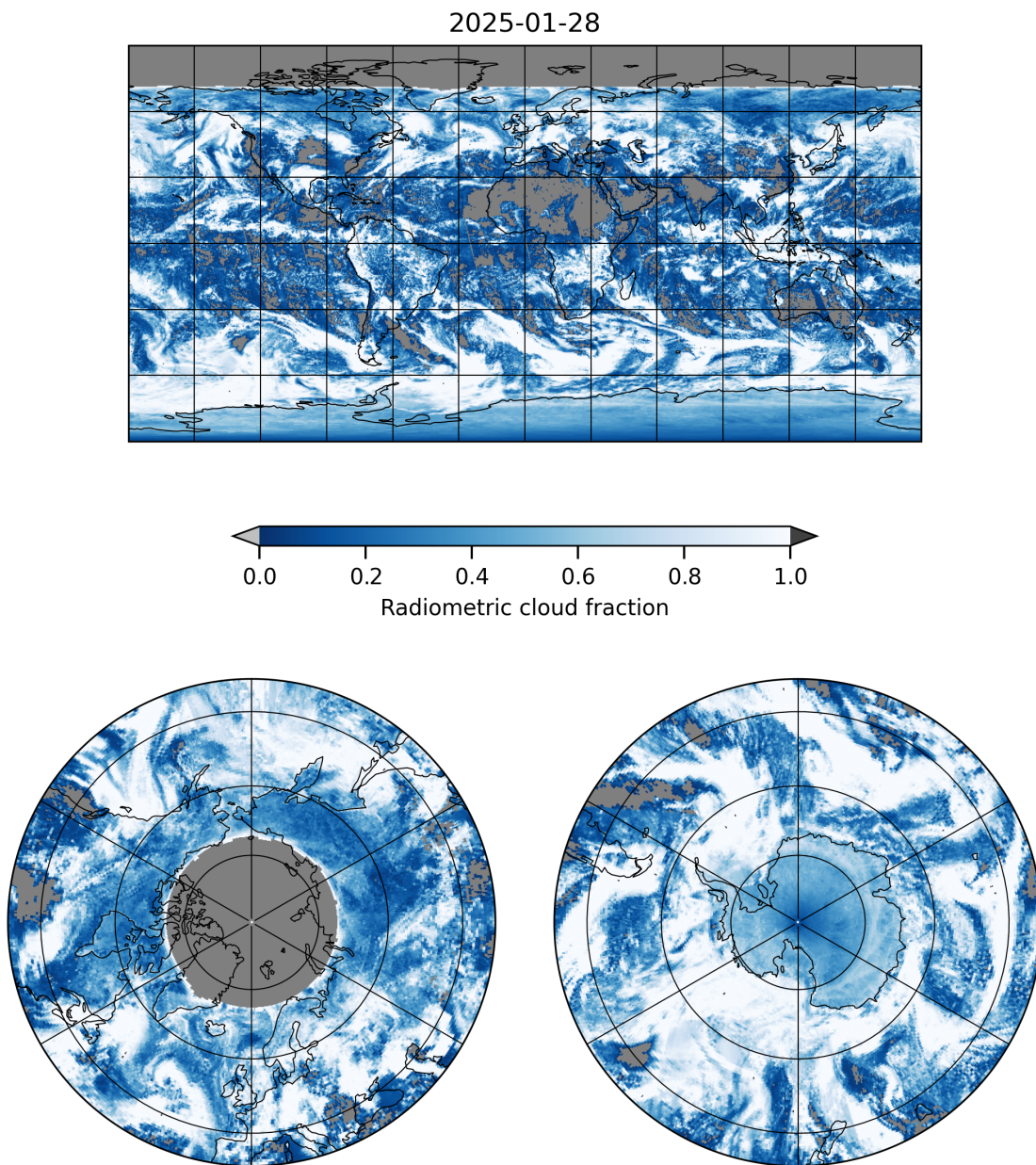


Figure 6: Map of “Radiometric cloud fraction” for 2025-01-28 to 2025-01-29

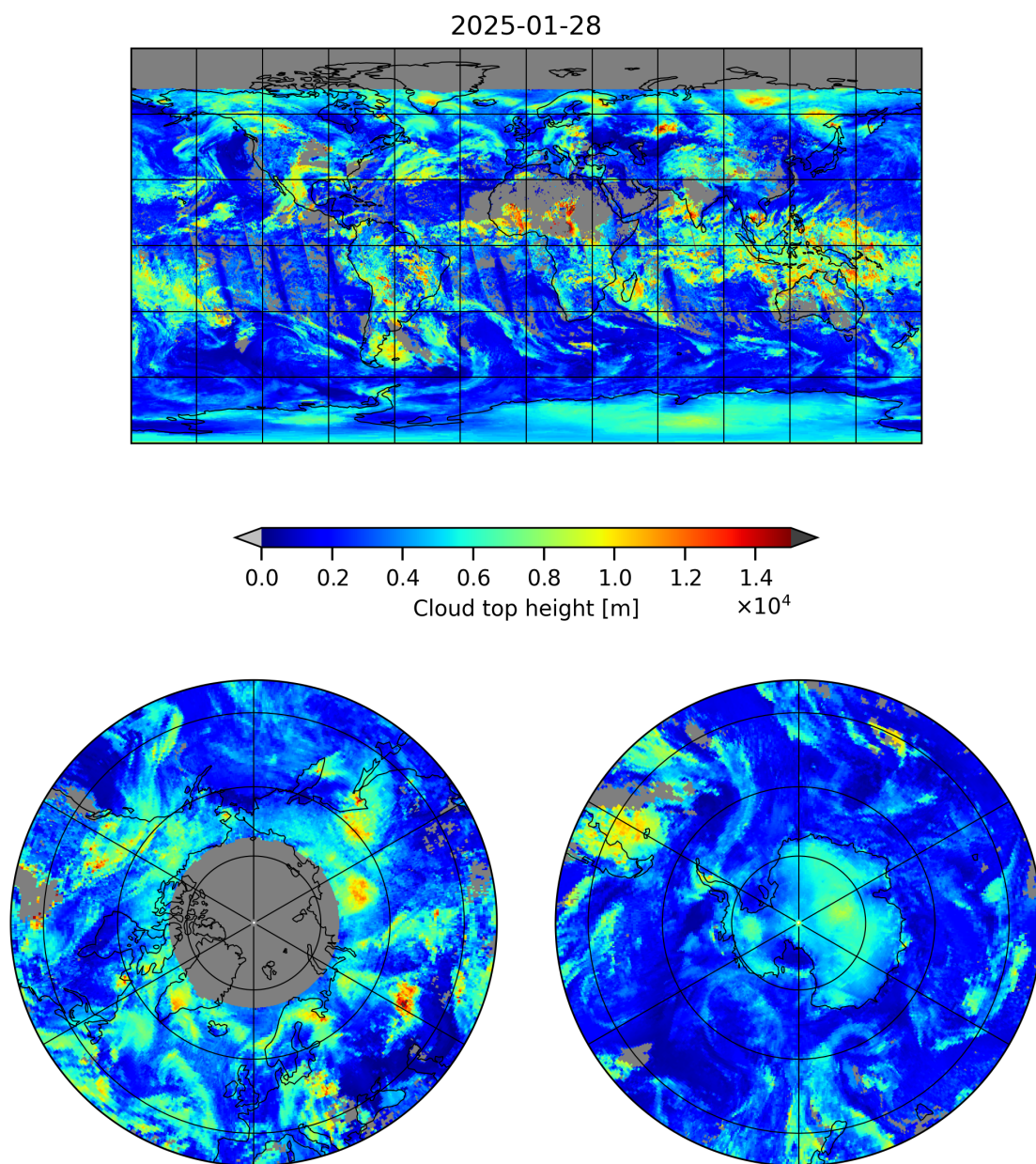


Figure 7: Map of “Cloud top height” for 2025-01-28 to 2025-01-29

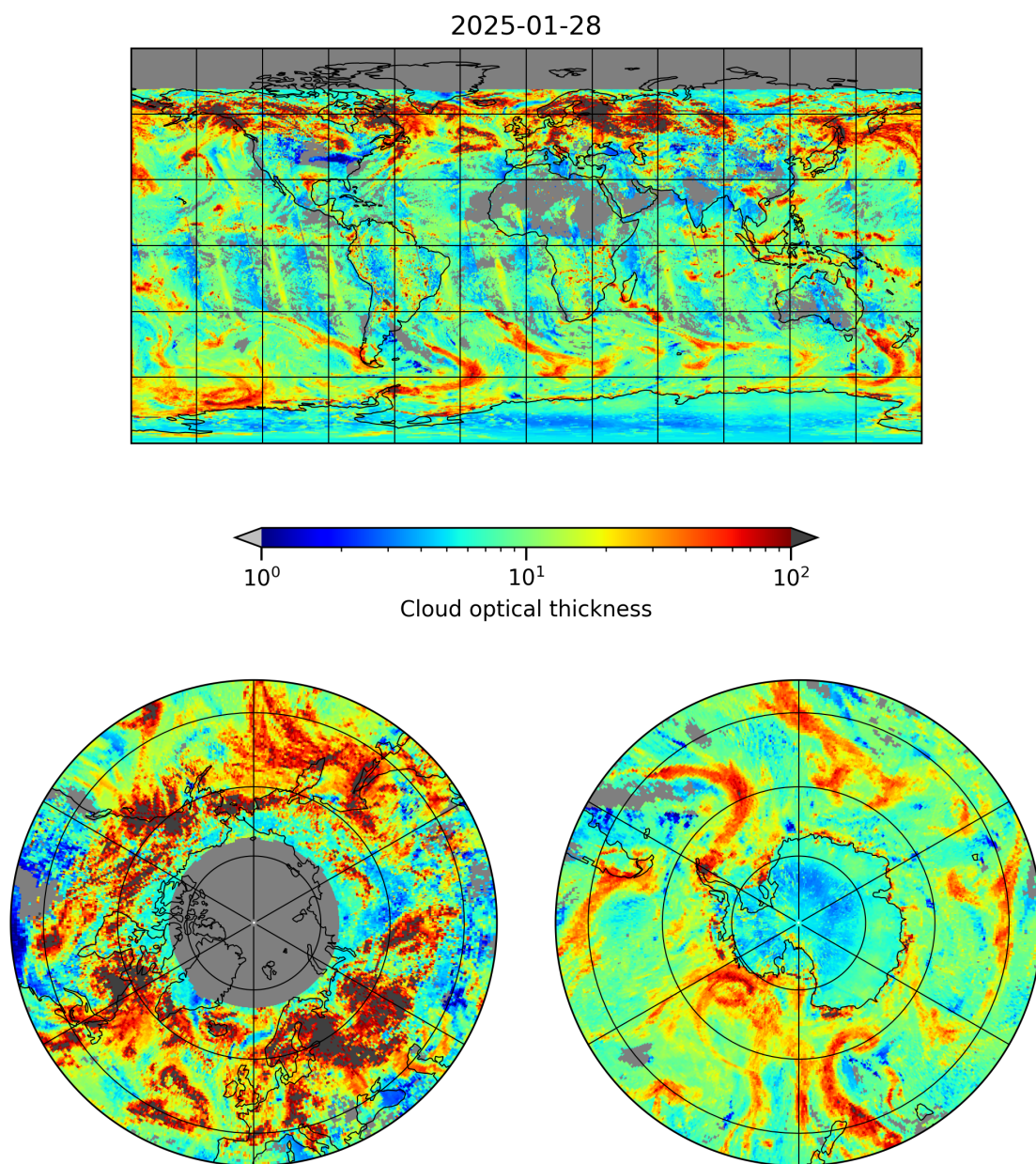


Figure 8: Map of “Cloud optical thickness” for 2025-01-28 to 2025-01-29

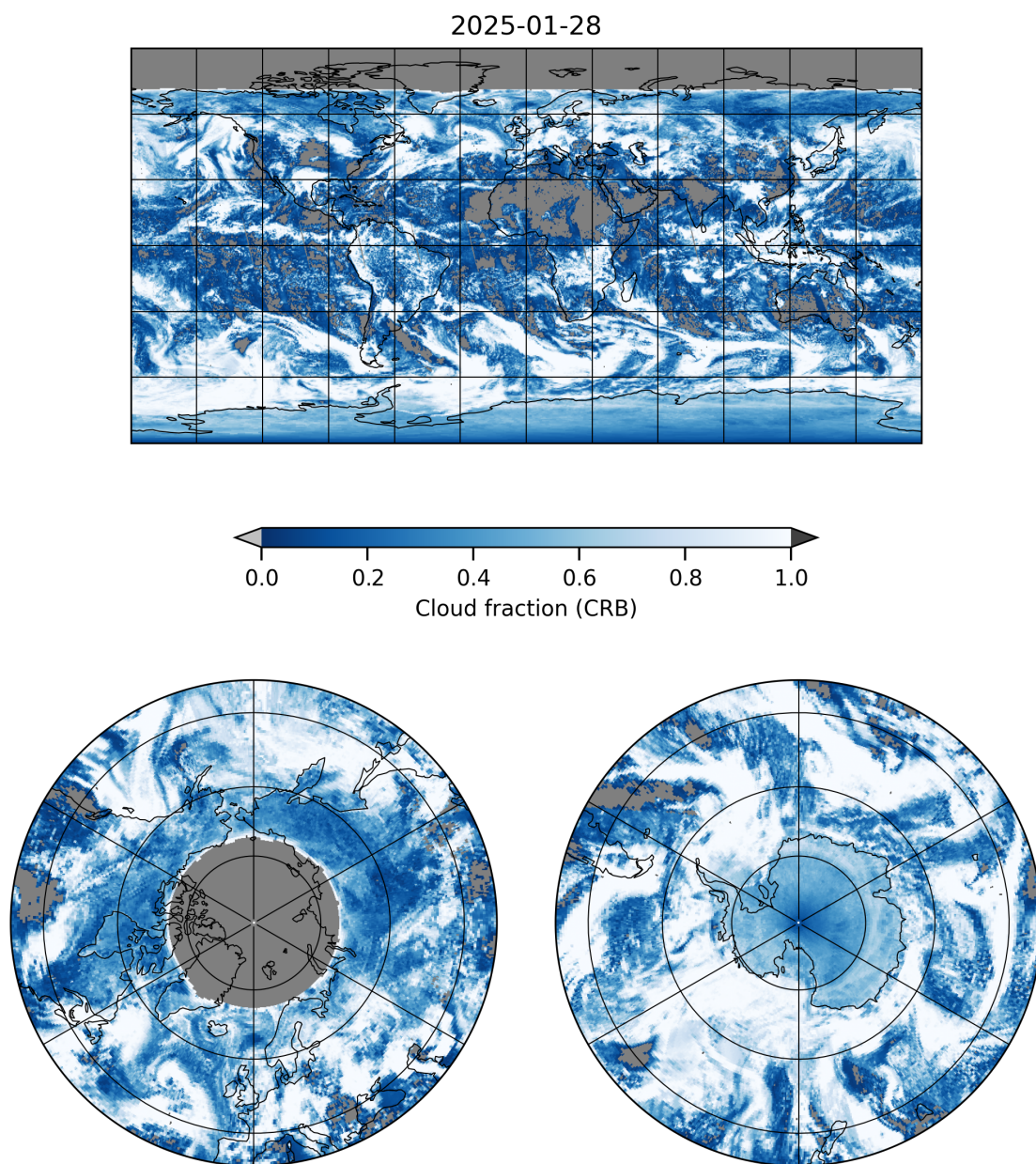


Figure 9: Map of “Cloud fraction (CRB)” for 2025-01-28 to 2025-01-29

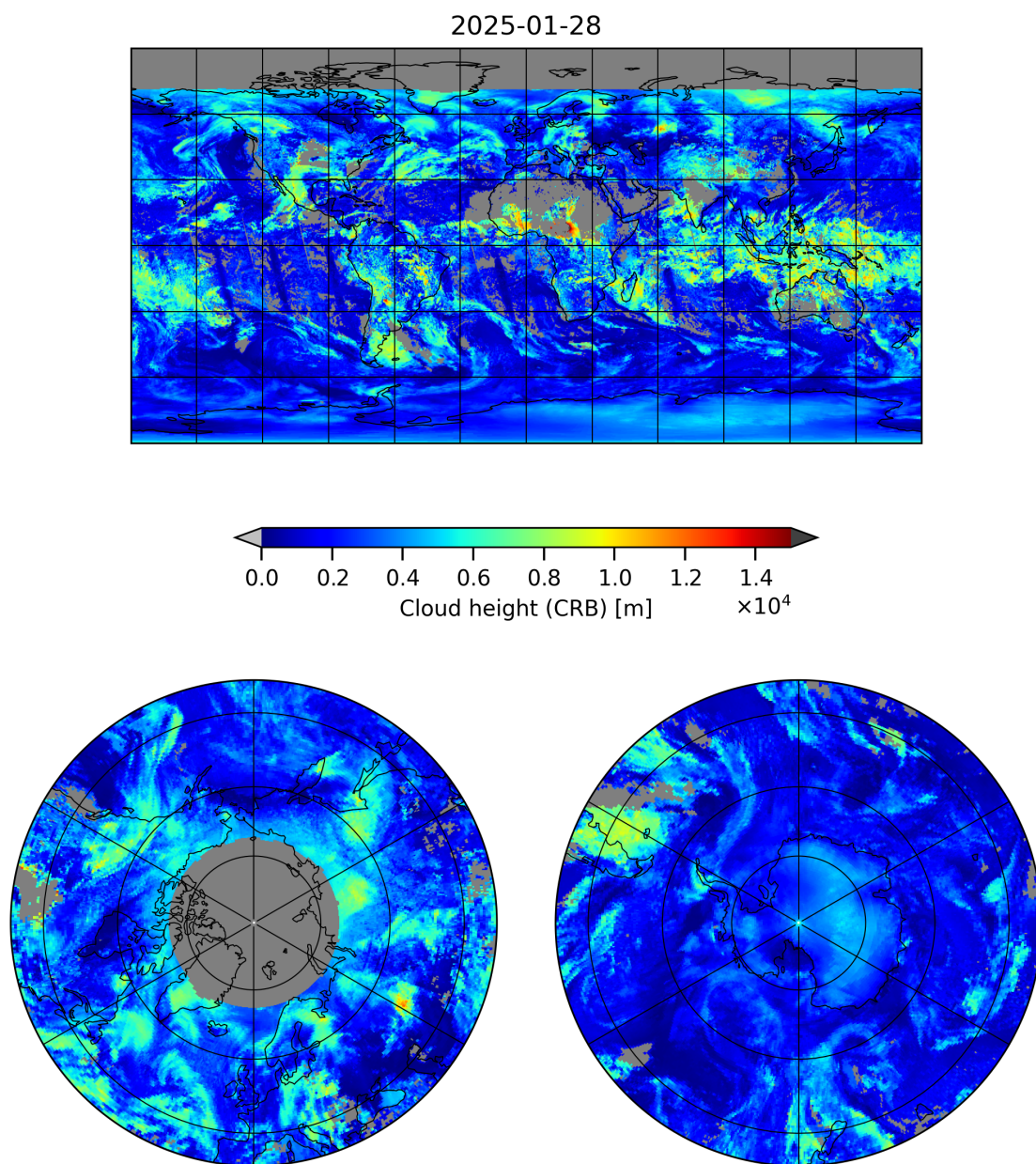


Figure 10: Map of “Cloud height (CRB)” for 2025-01-28 to 2025-01-29

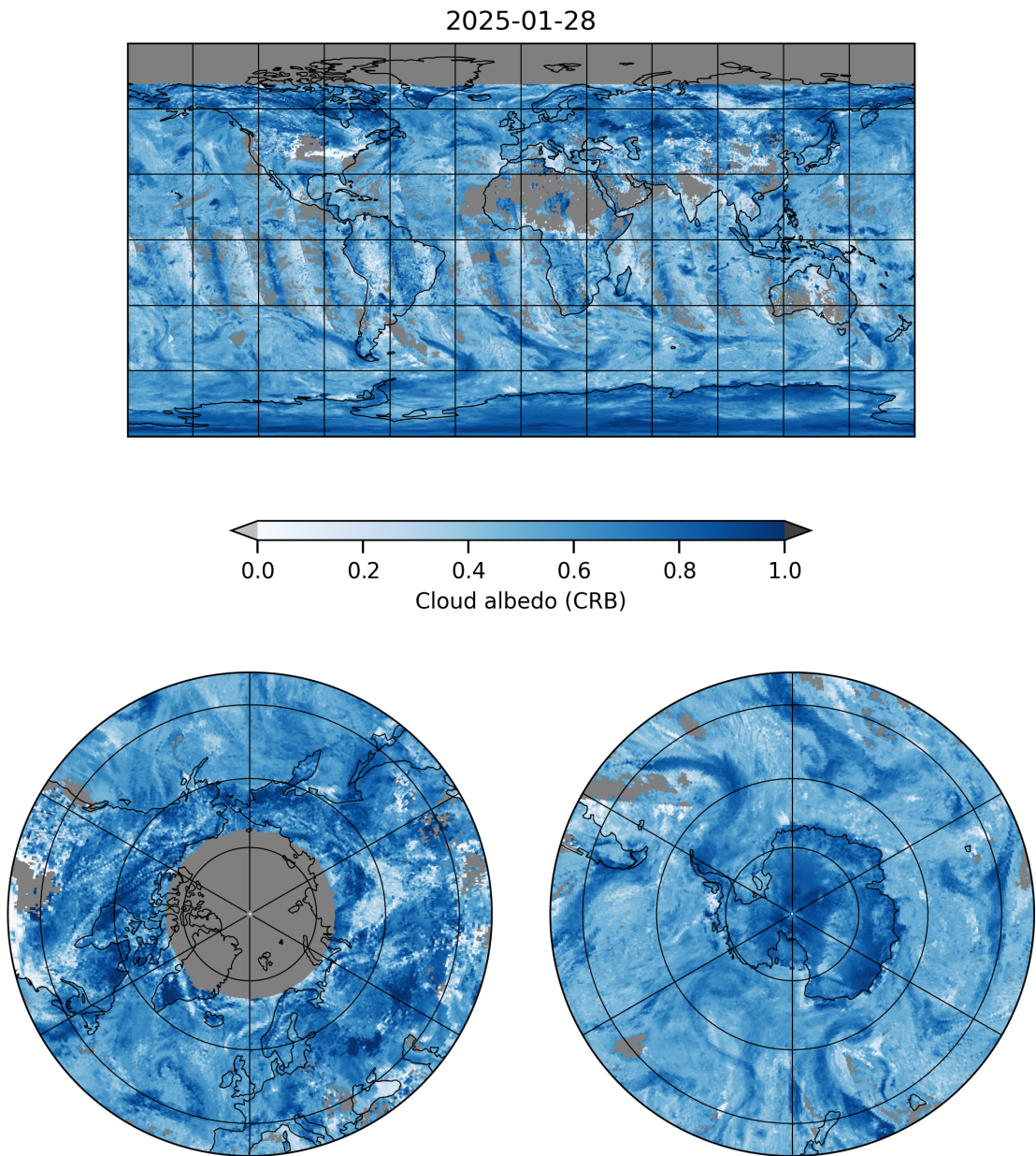


Figure 11: Map of “Cloud albedo (CRB)” for 2025-01-28 to 2025-01-29

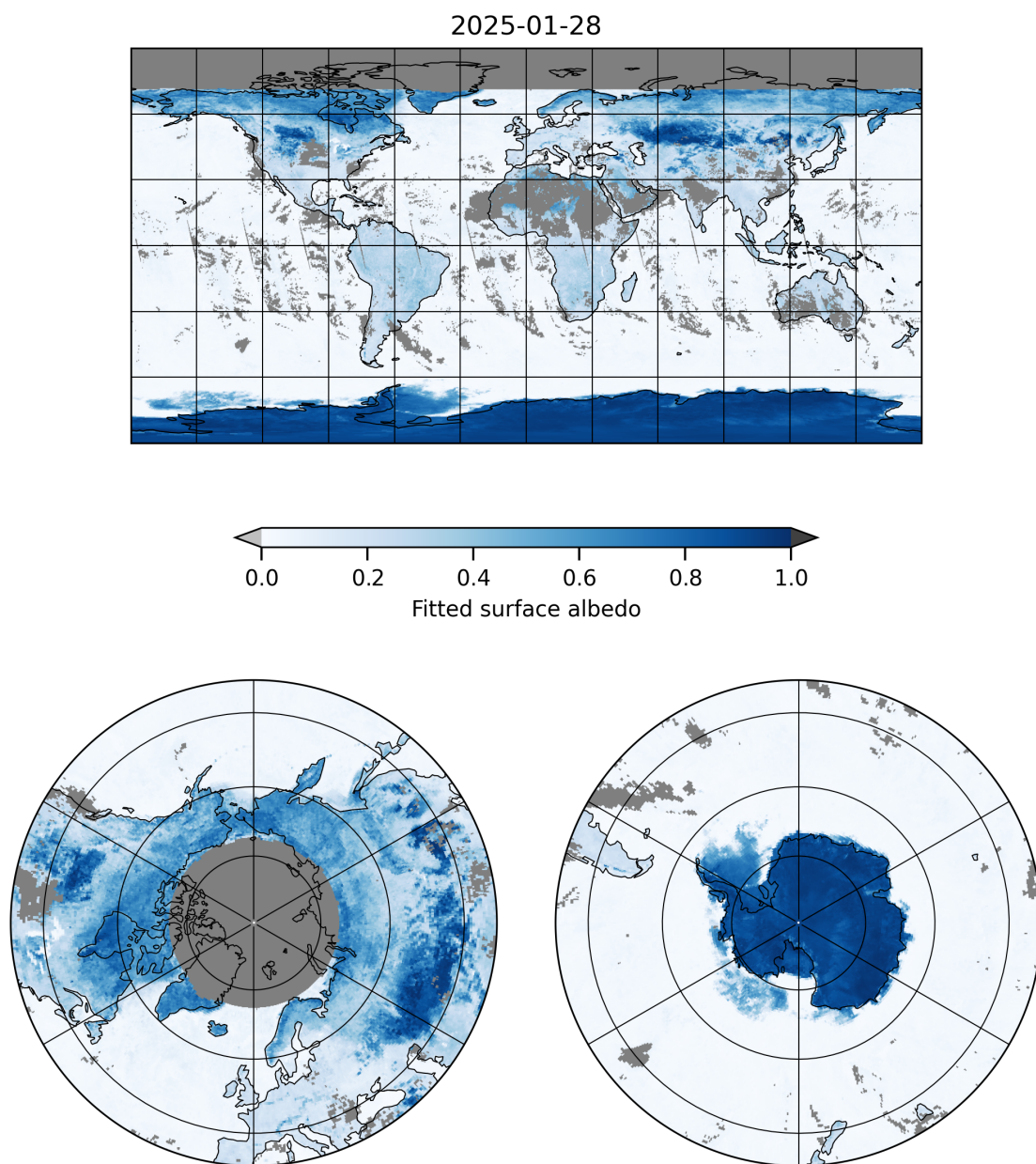


Figure 12: Map of “Fitted surface albedo” for 2025-01-28 to 2025-01-29

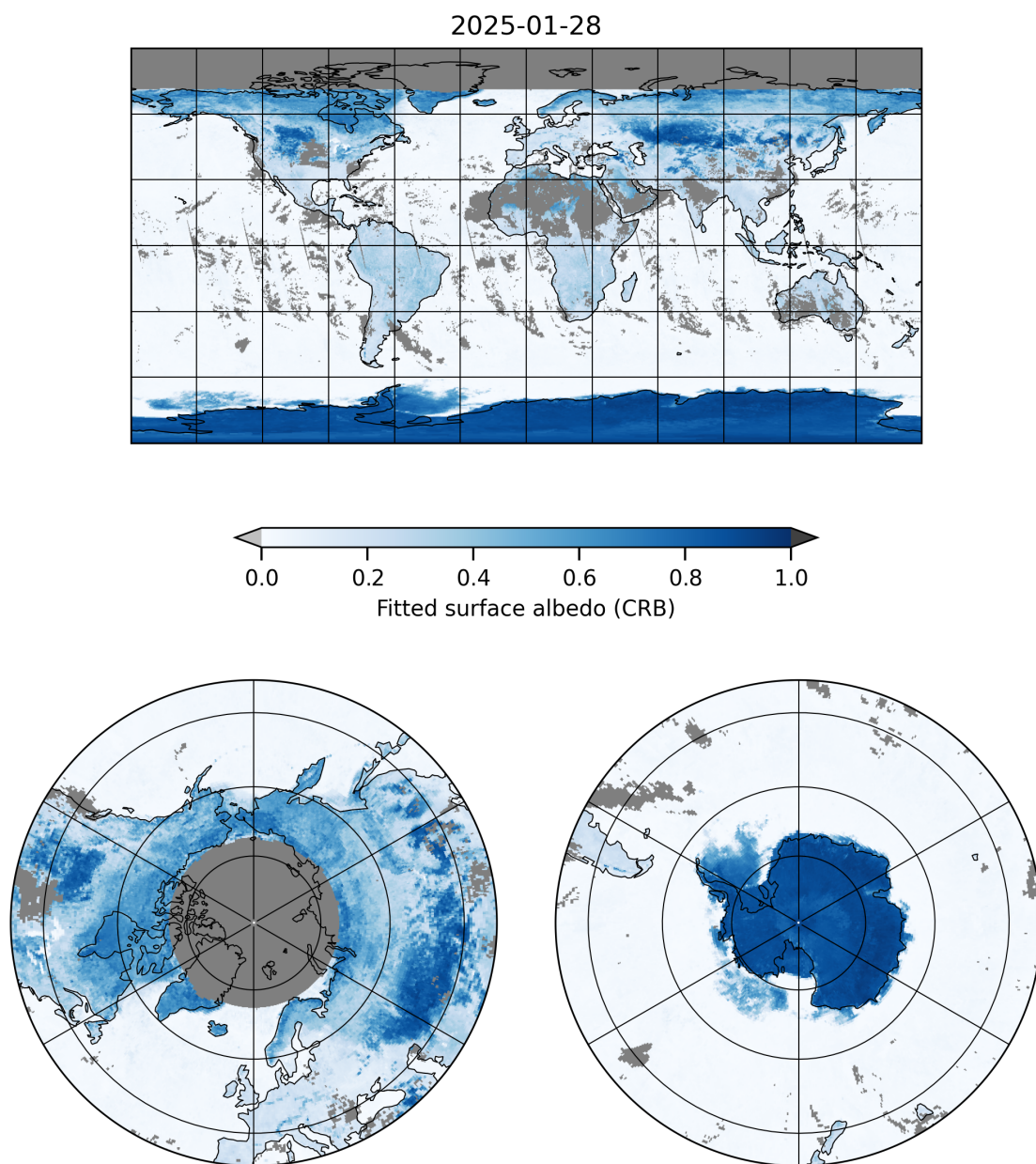


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-01-28 to 2025-01-29

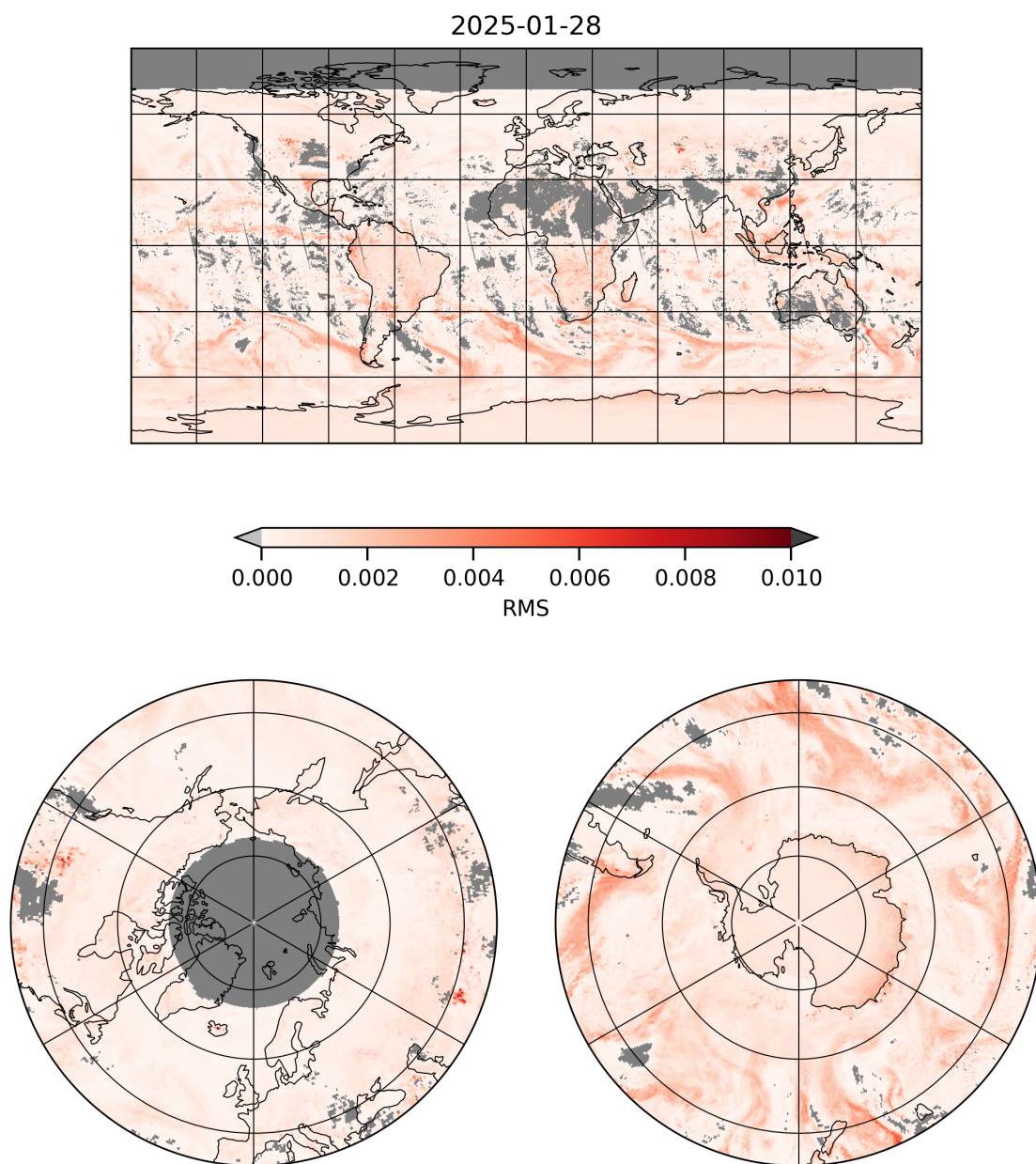


Figure 14: Map of “RMS” for 2025-01-28 to 2025-01-29

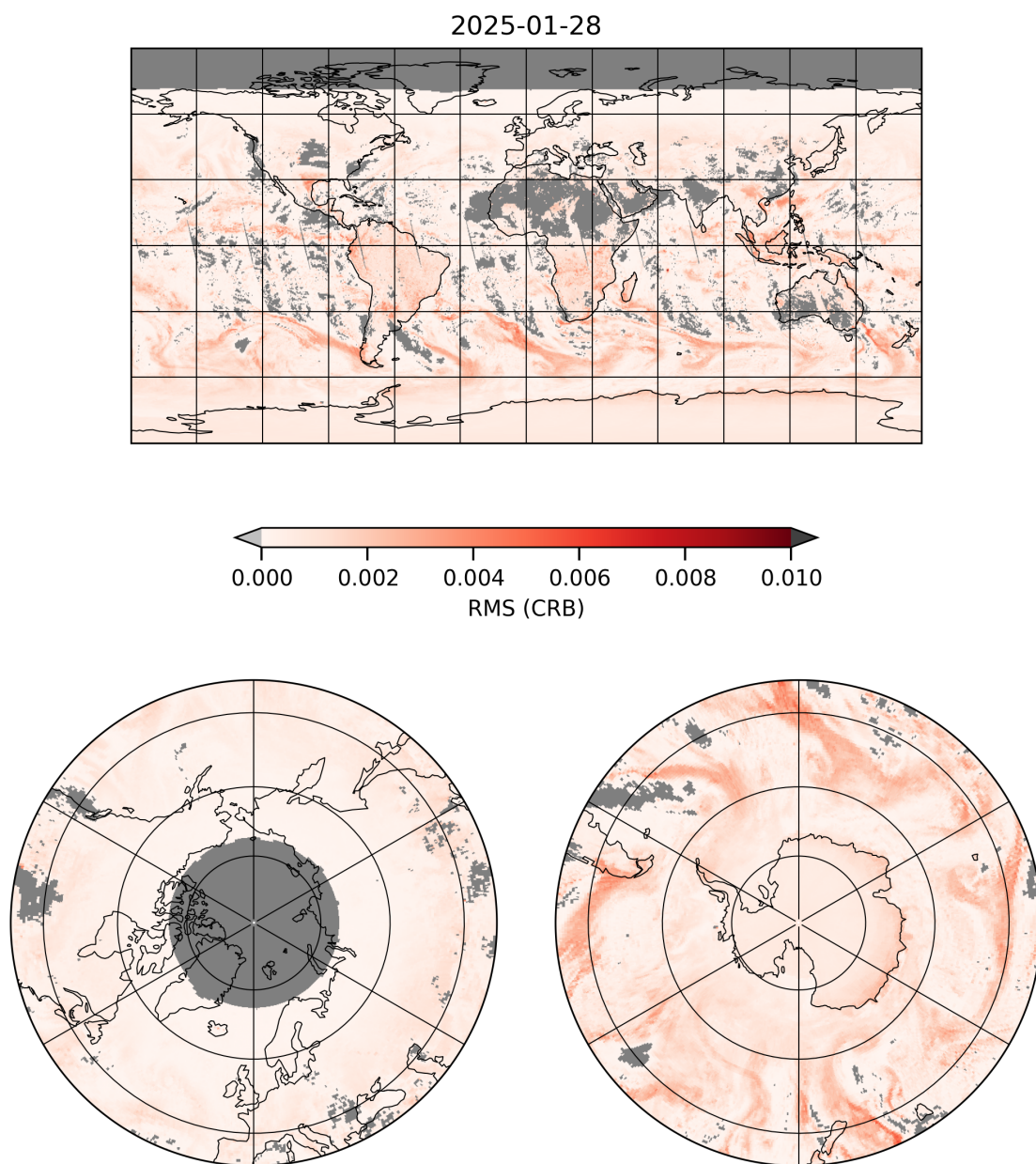


Figure 15: Map of “RMS (CRB)” for 2025-01-28 to 2025-01-29

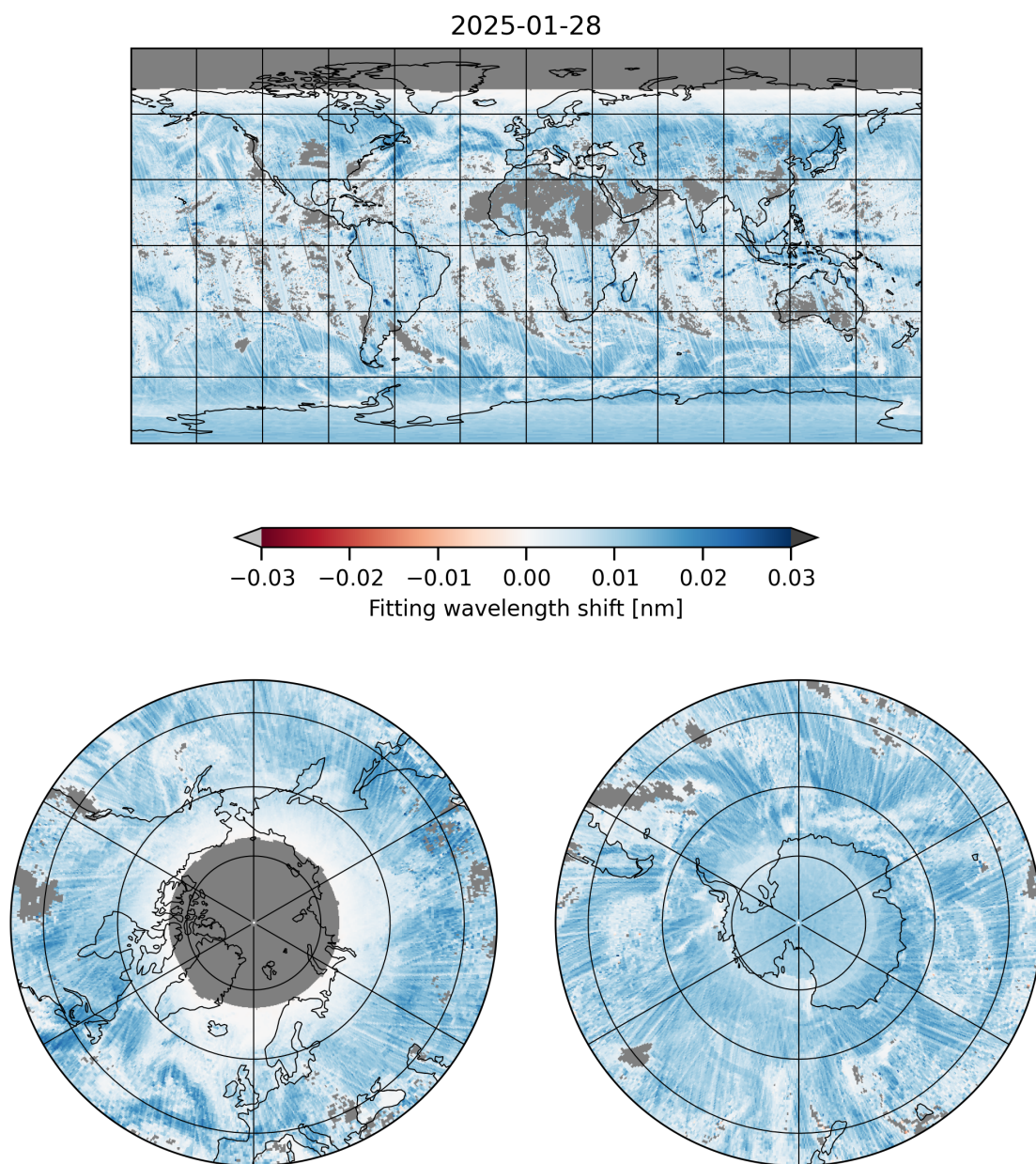


Figure 16: Map of “Fitting wavelength shift” for 2025-01-28 to 2025-01-29

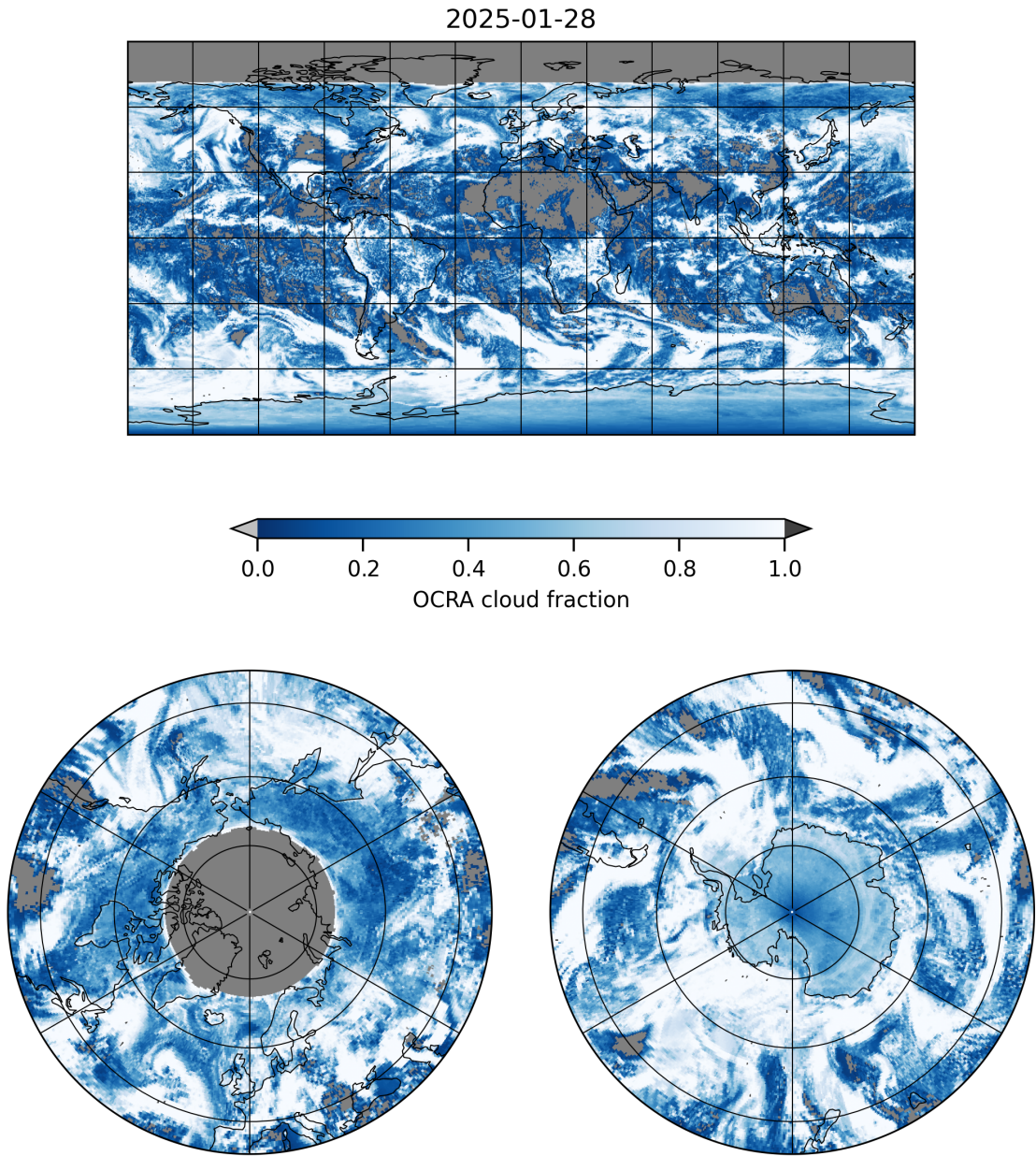


Figure 17: Map of “OCRA cloud fraction” for 2025-01-28 to 2025-01-29

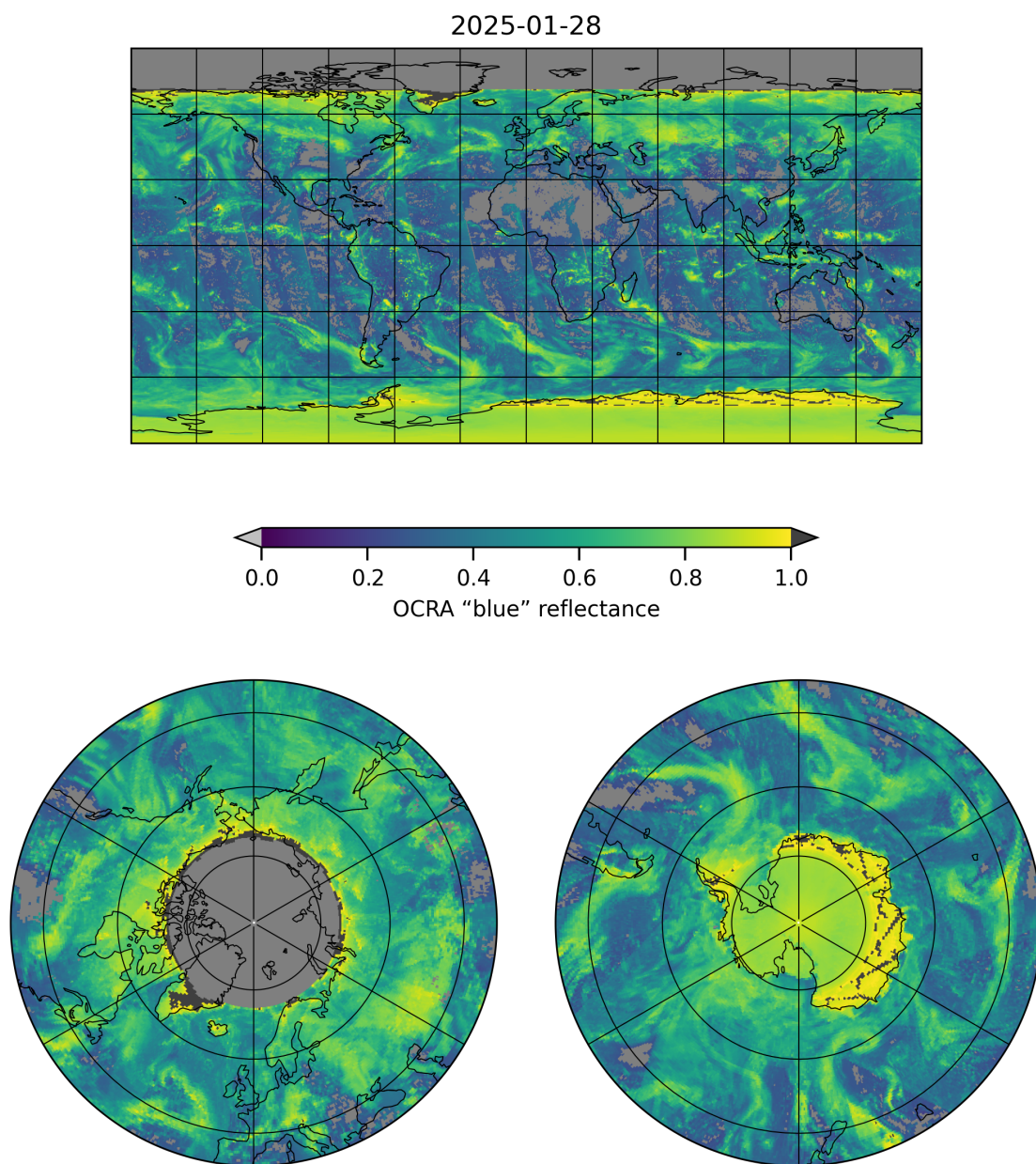


Figure 18: Map of "OCRA "blue" reflectance" for 2025-01-28 to 2025-01-29

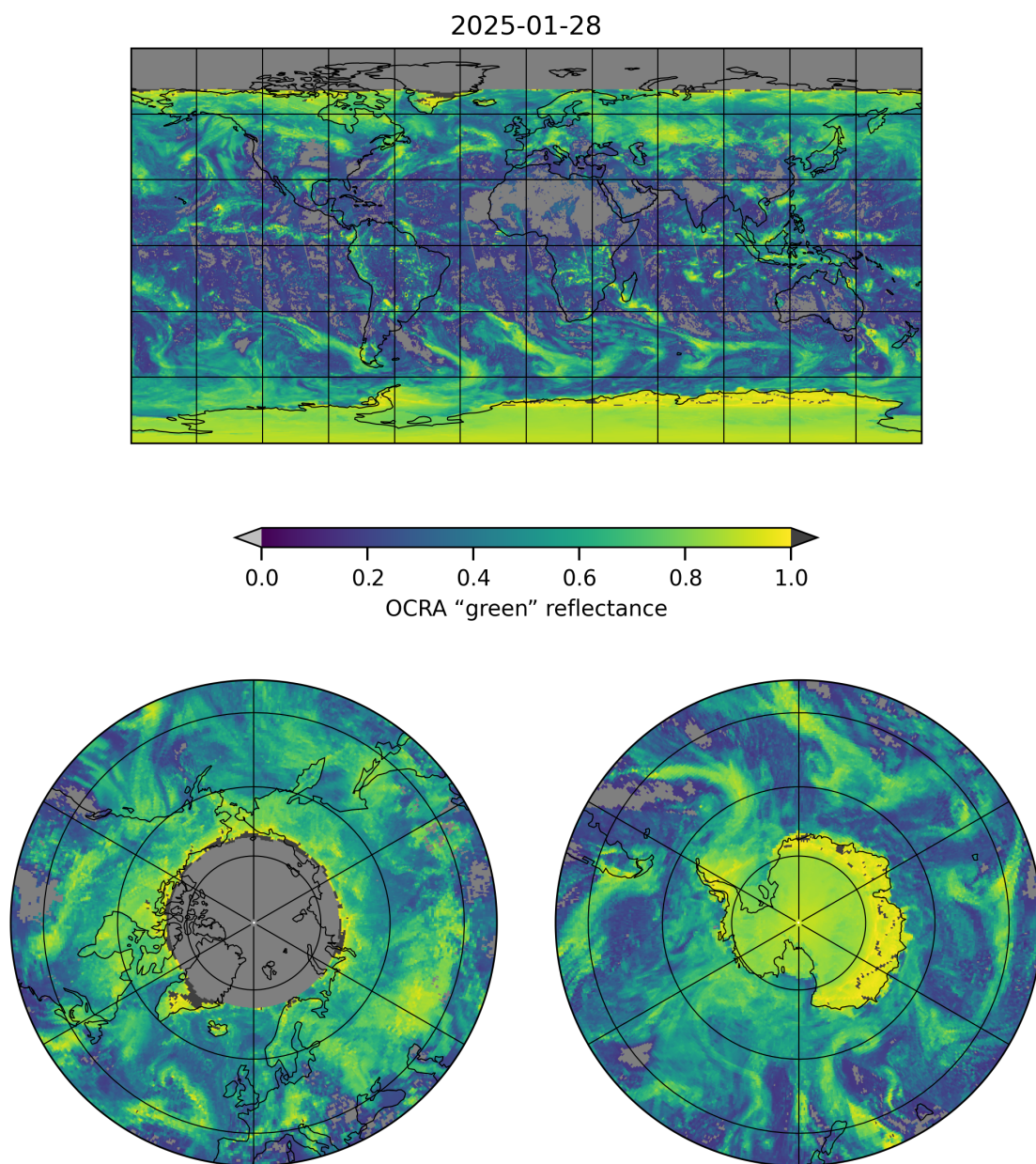


Figure 19: Map of "OCRA "green" reflectance" for 2025-01-28 to 2025-01-29

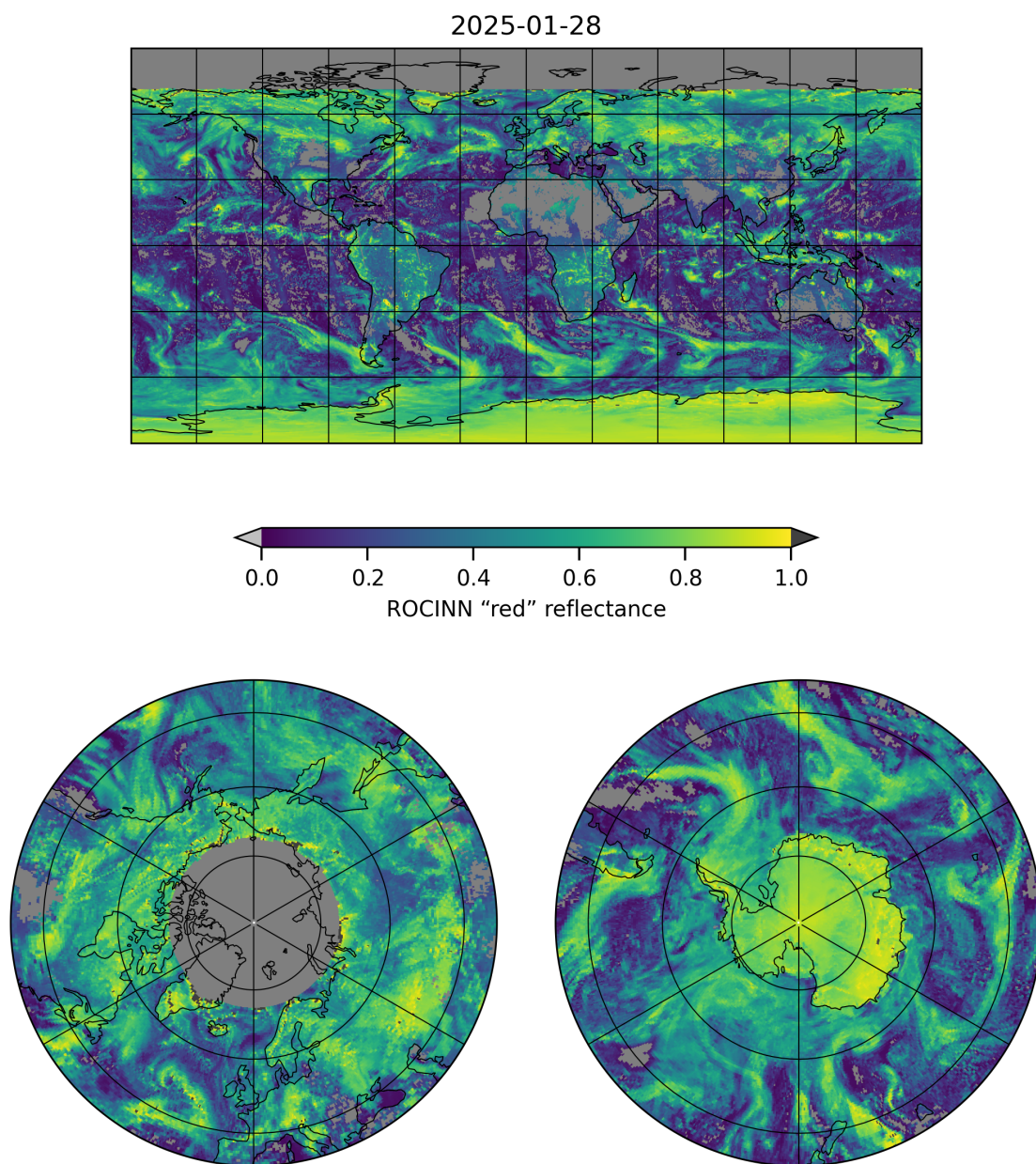


Figure 20: Map of "ROCINN "red" reflectance" for 2025-01-28 to 2025-01-29

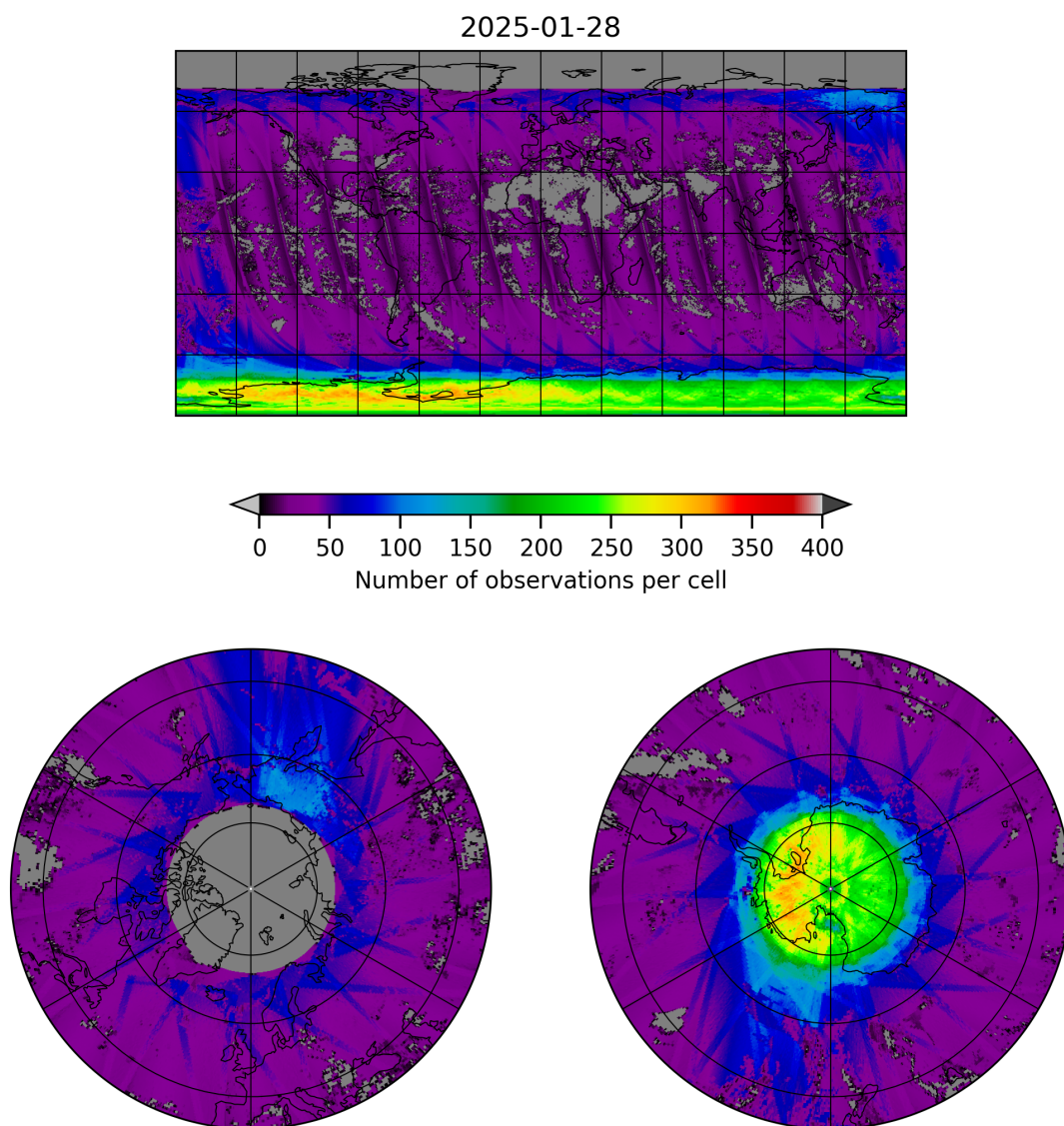


Figure 21: Map of the number of observations for 2025-01-28 to 2025-01-29

7 Zonal average

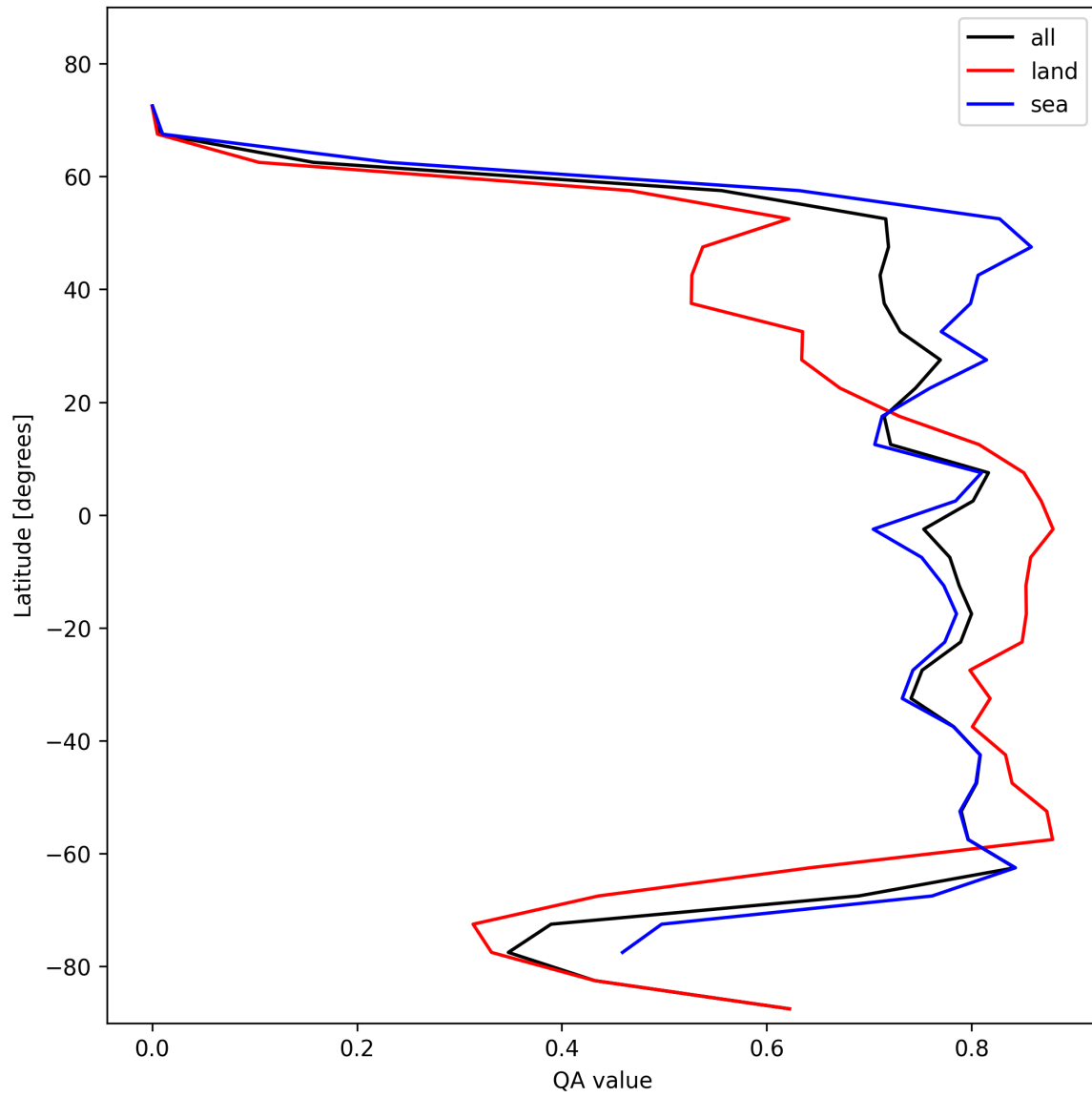


Figure 22: Zonal average of “QA value” for 2025-01-28 to 2025-01-29.

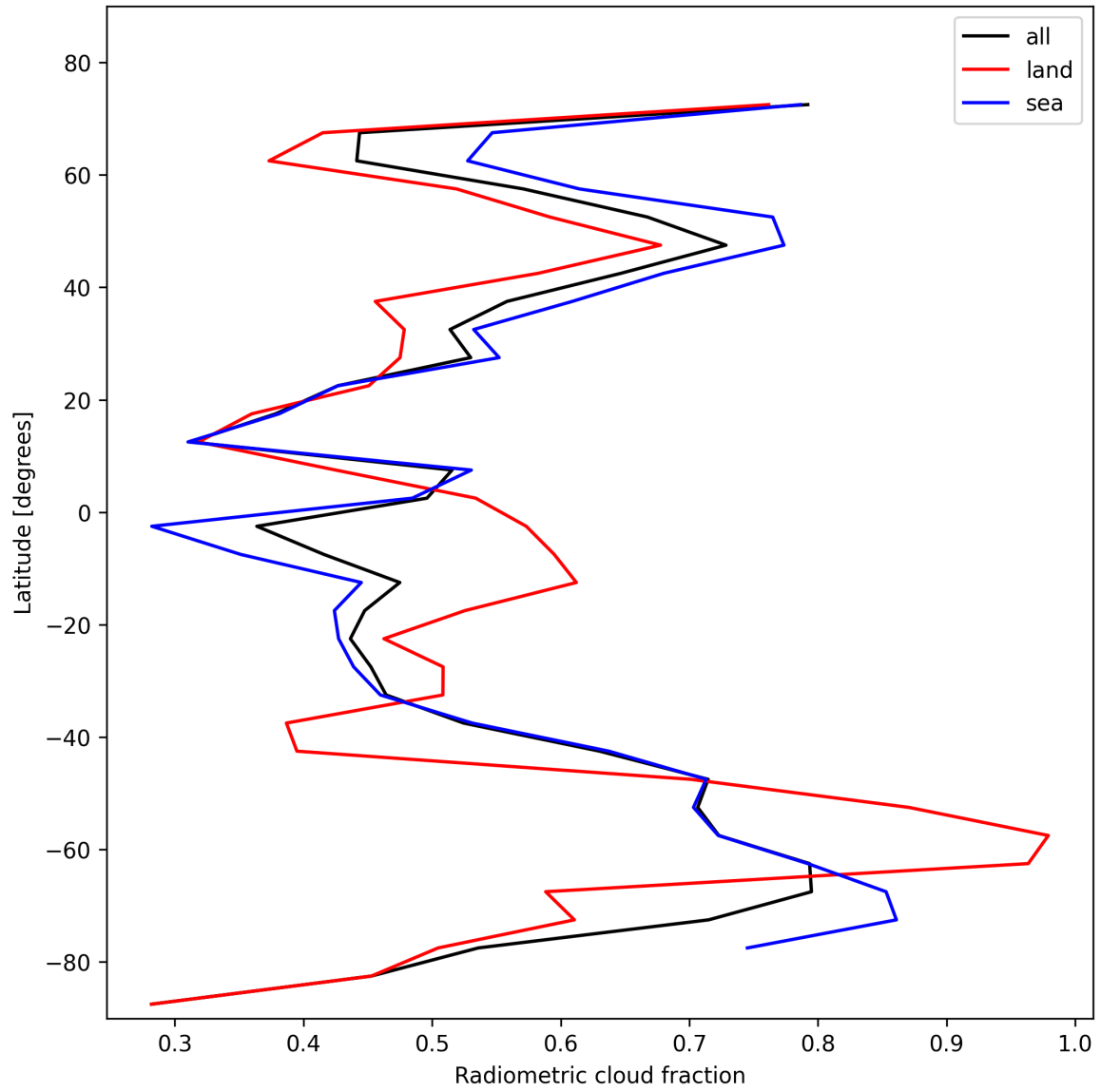


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-01-28 to 2025-01-29.

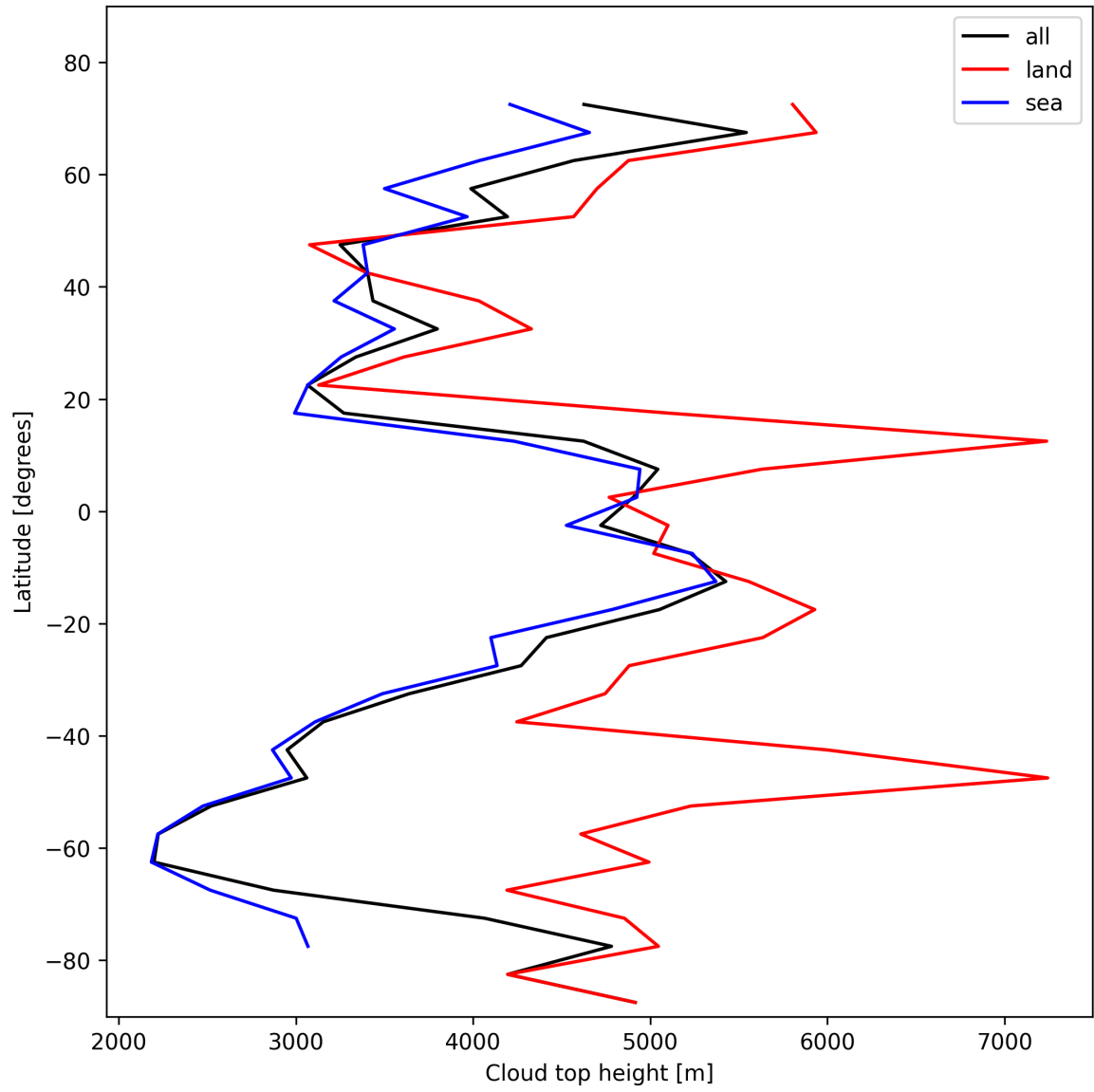


Figure 24: Zonal average of “Cloud top height” for 2025-01-28 to 2025-01-29.

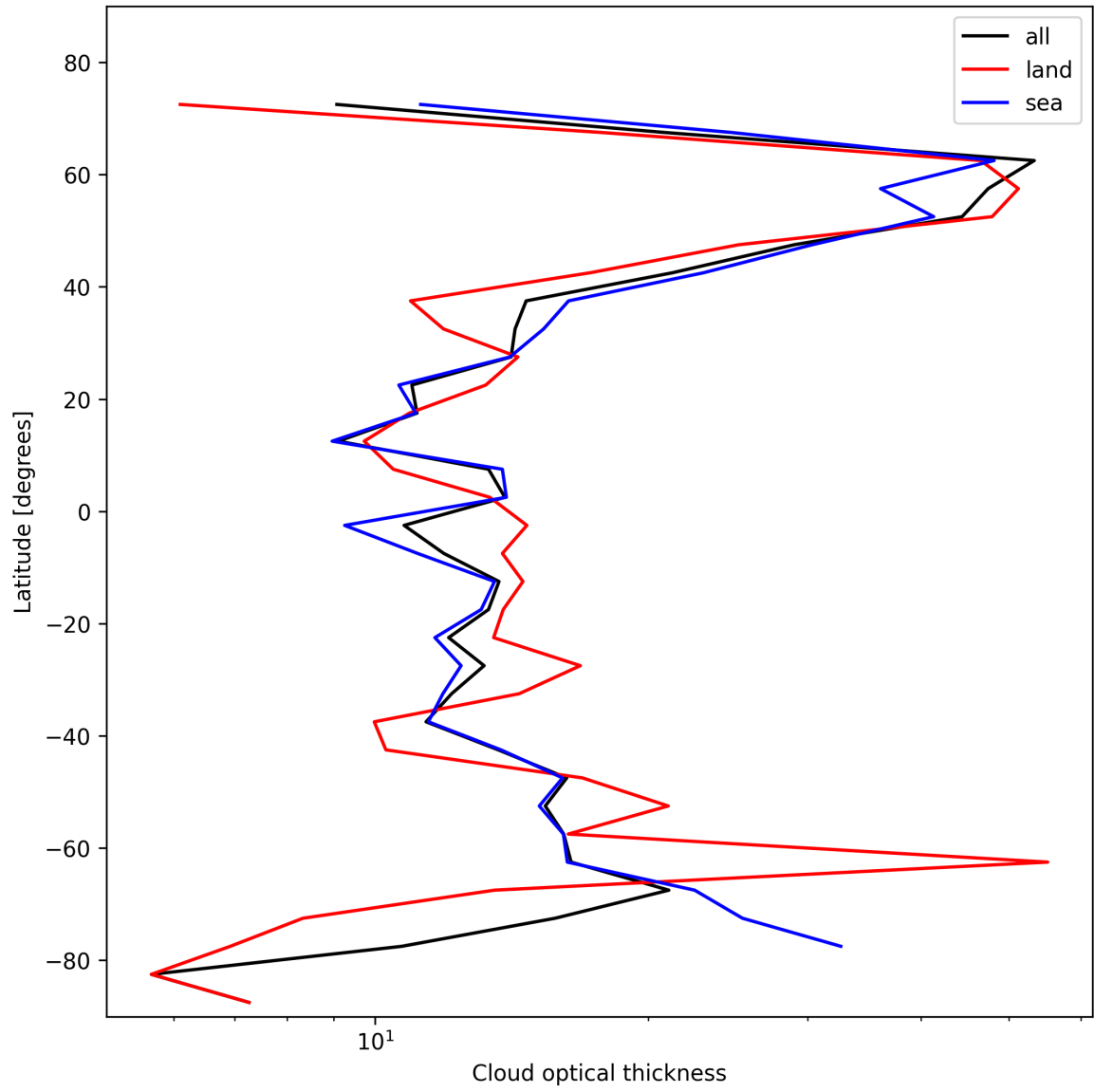


Figure 25: Zonal average of “Cloud optical thickness” for 2025-01-28 to 2025-01-29.

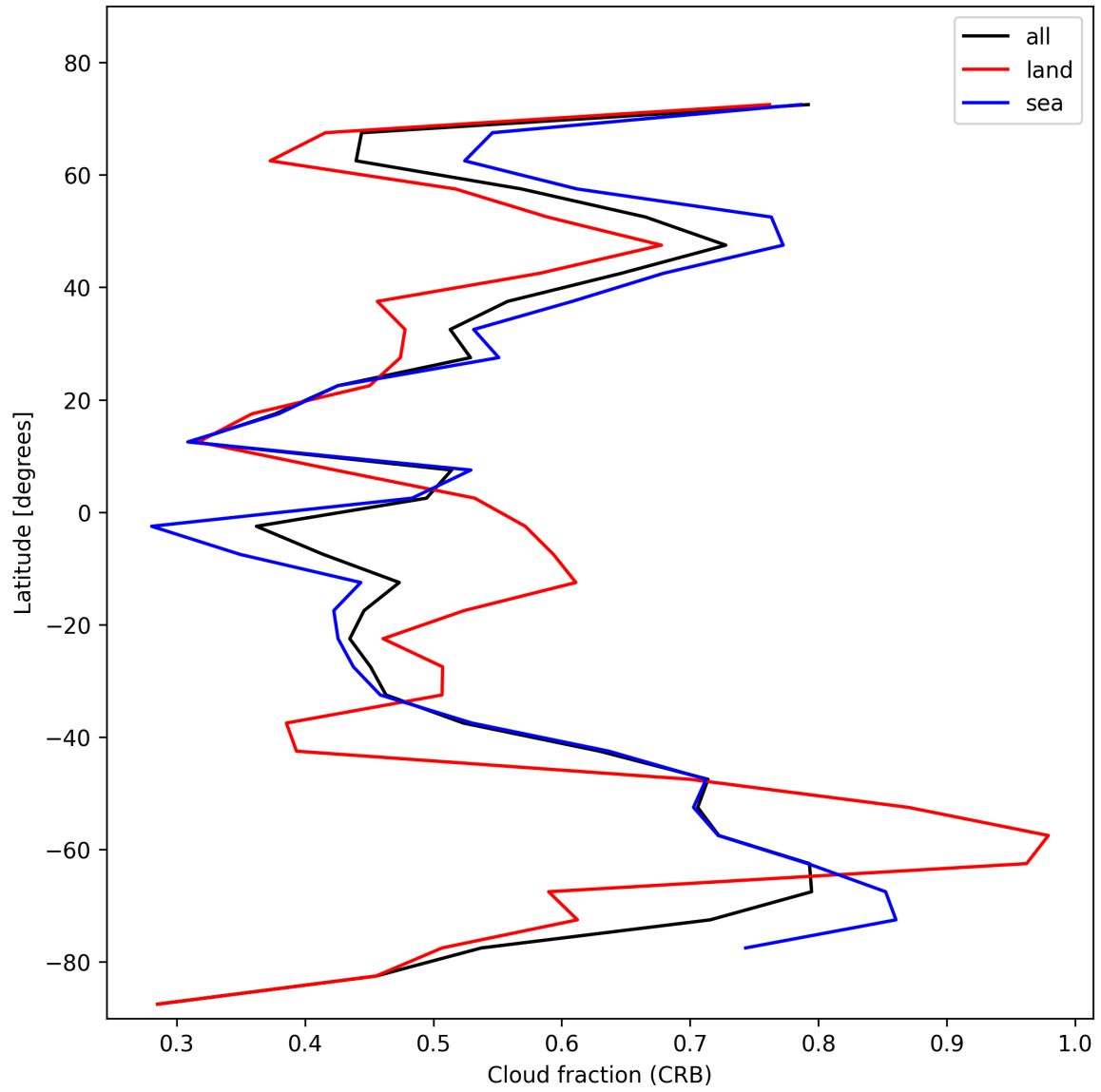


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-01-28 to 2025-01-29.

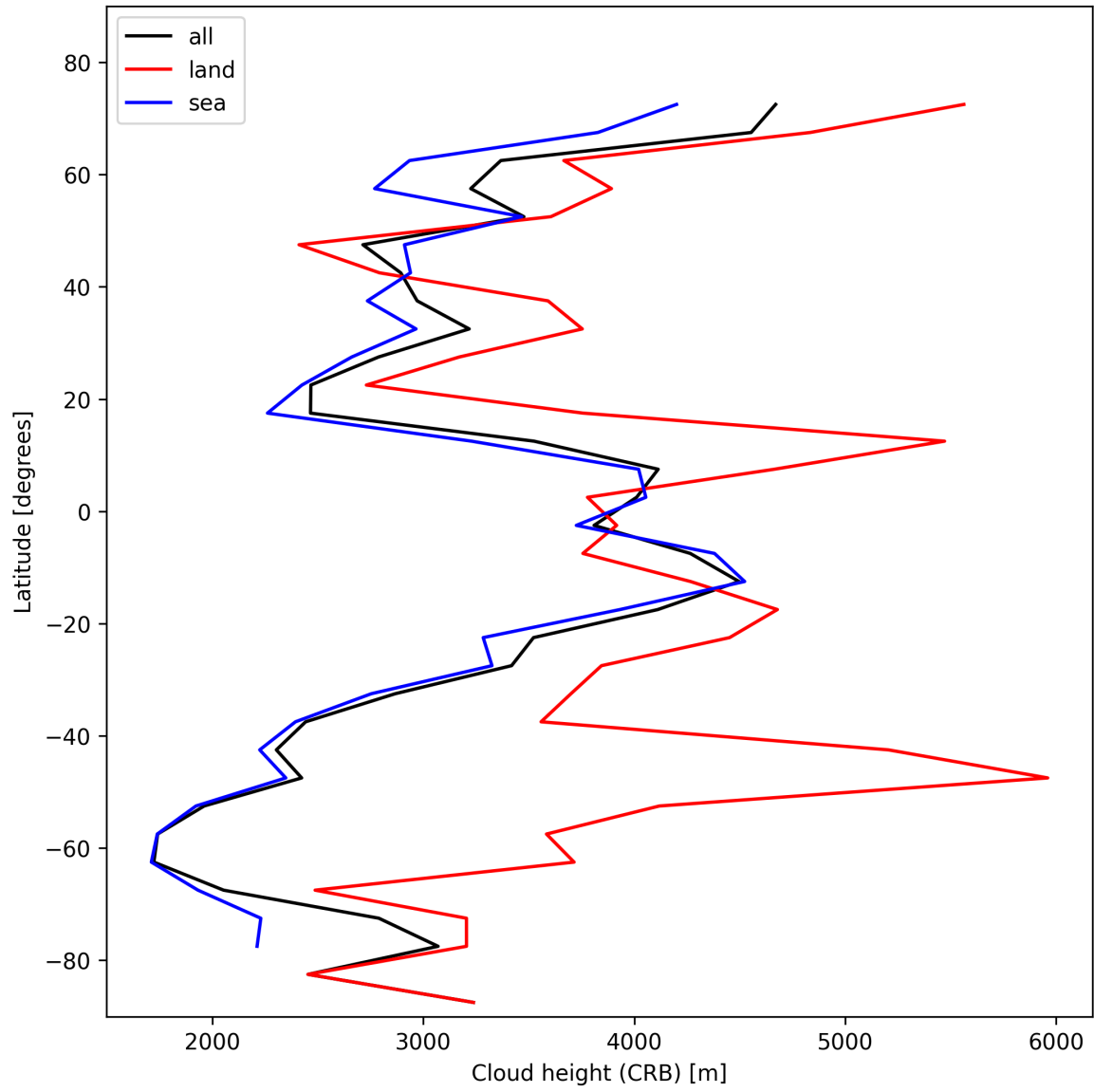


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-01-28 to 2025-01-29.

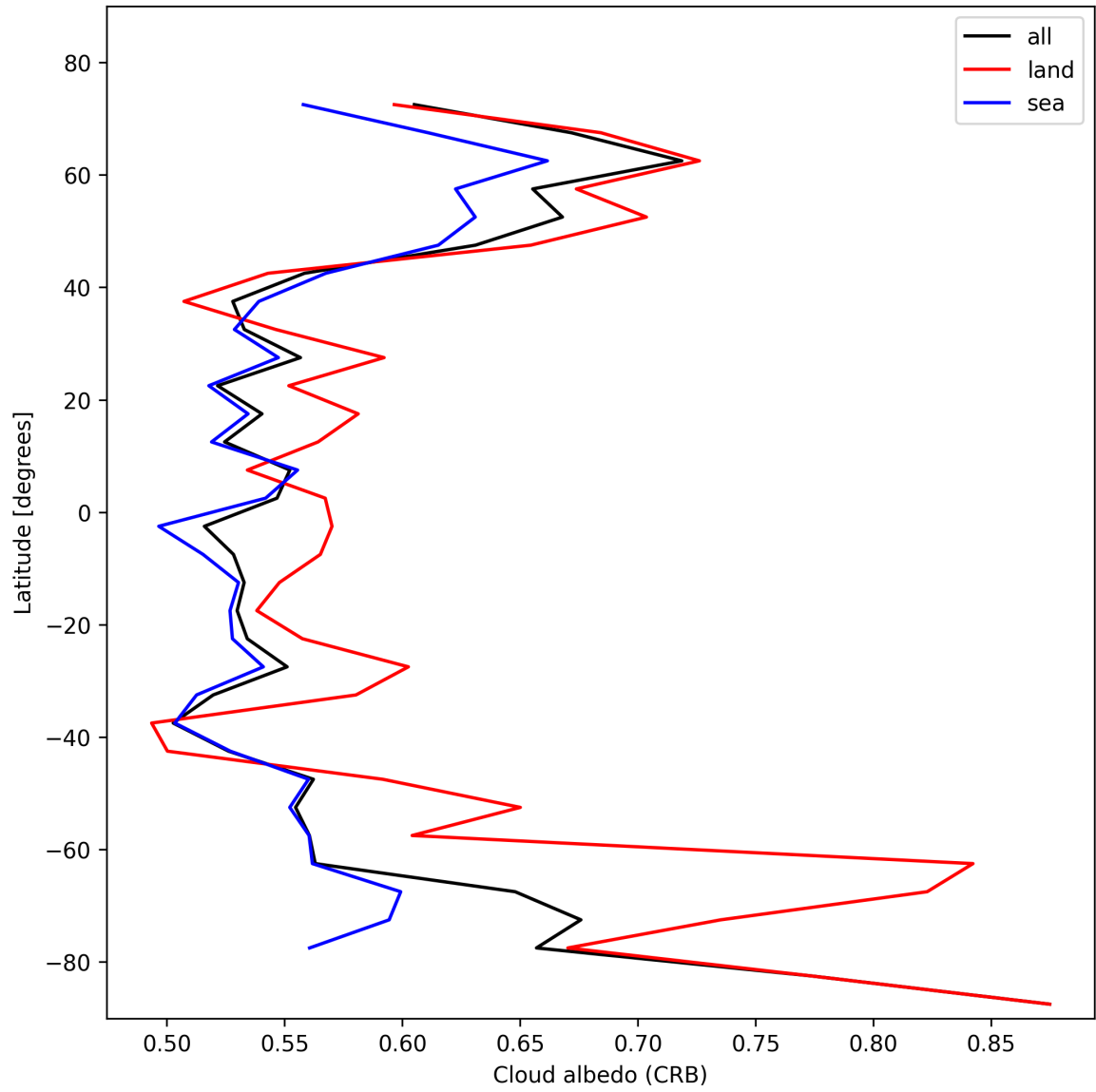


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-01-28 to 2025-01-29.

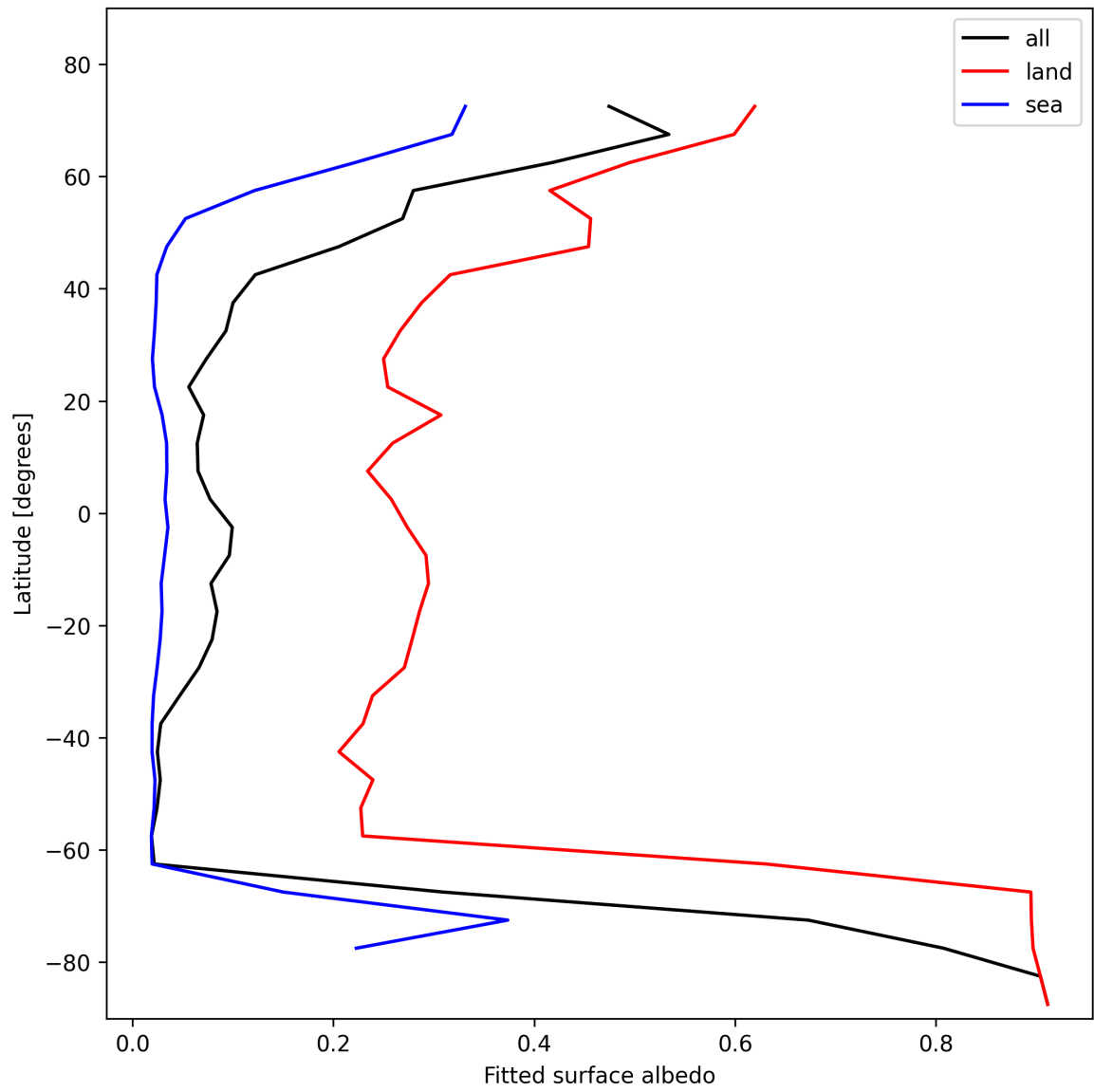


Figure 29: Zonal average of “Fitted surface albedo” for 2025-01-28 to 2025-01-29.

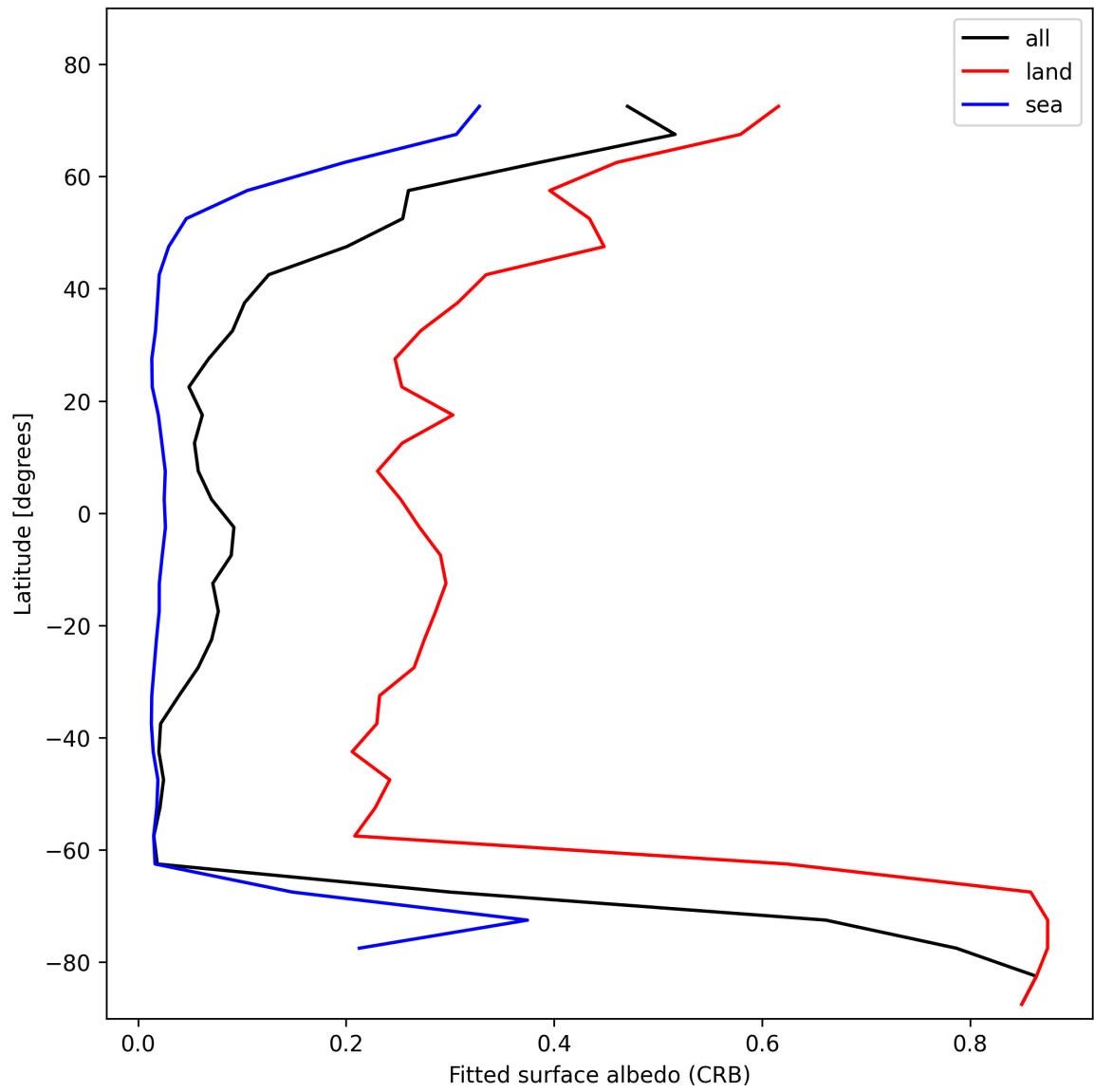


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-01-28 to 2025-01-29.

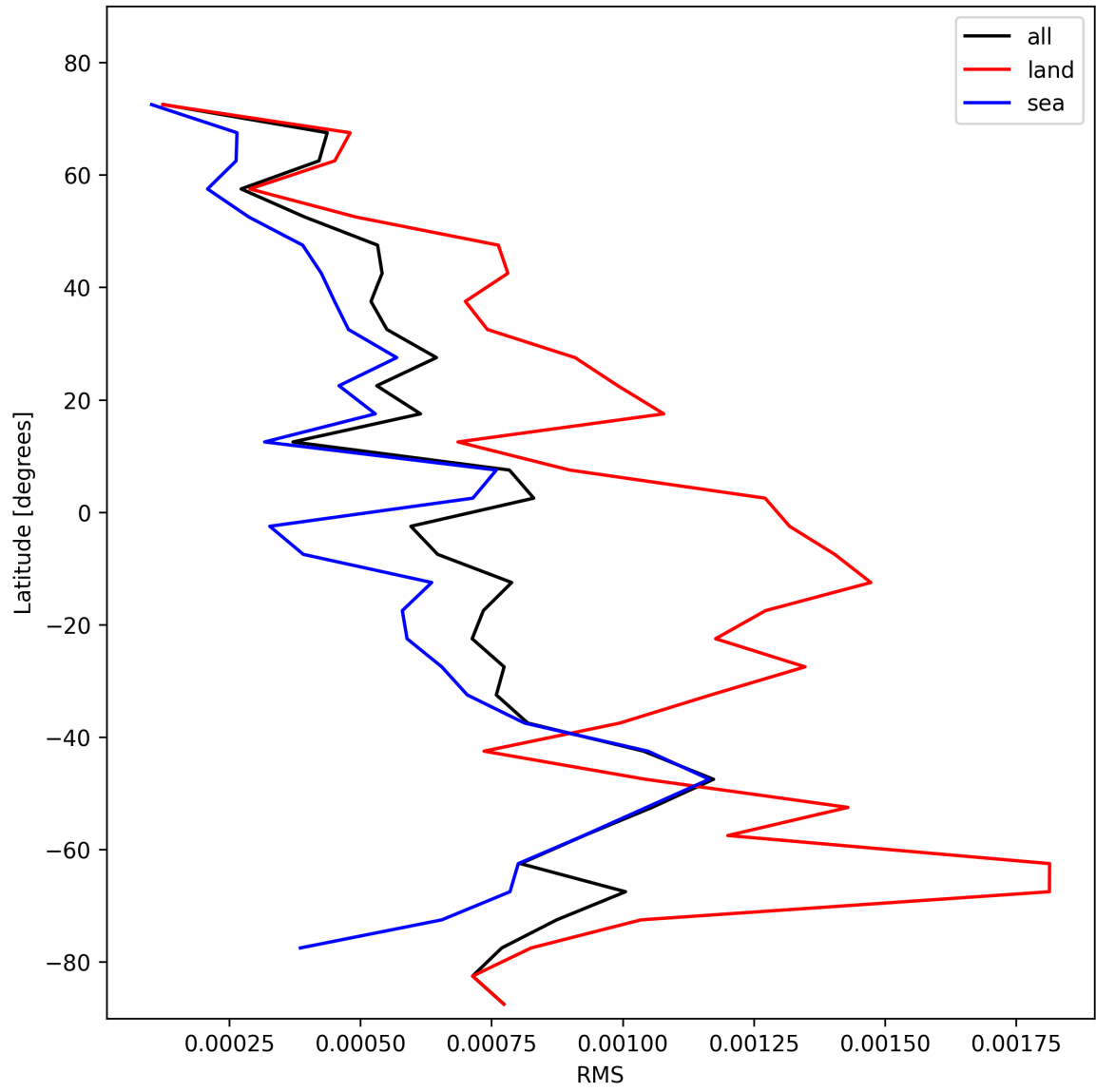


Figure 31: Zonal average of “RMS” for 2025-01-28 to 2025-01-29.

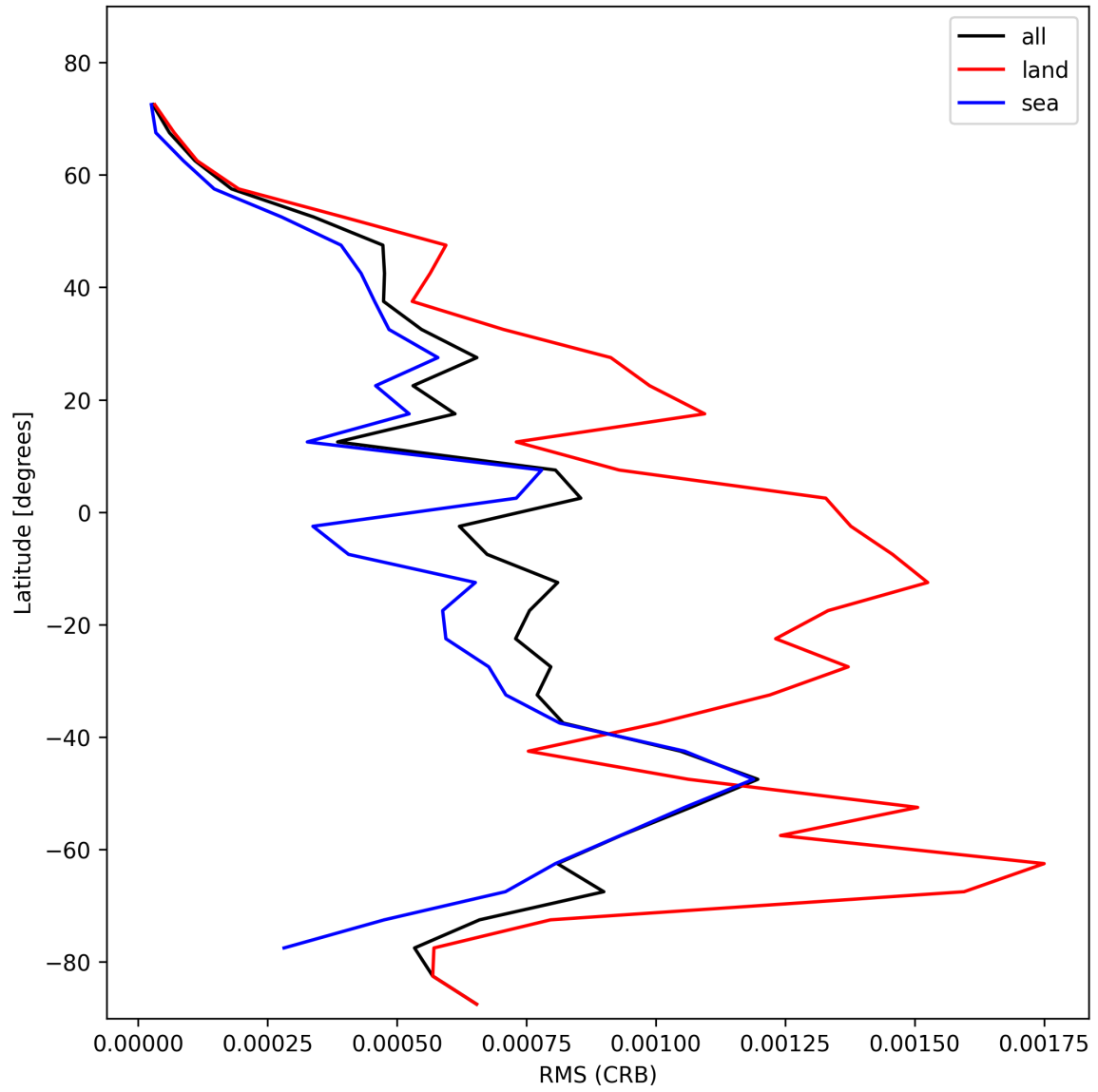


Figure 32: Zonal average of “RMS (CRB)” for 2025-01-28 to 2025-01-29.

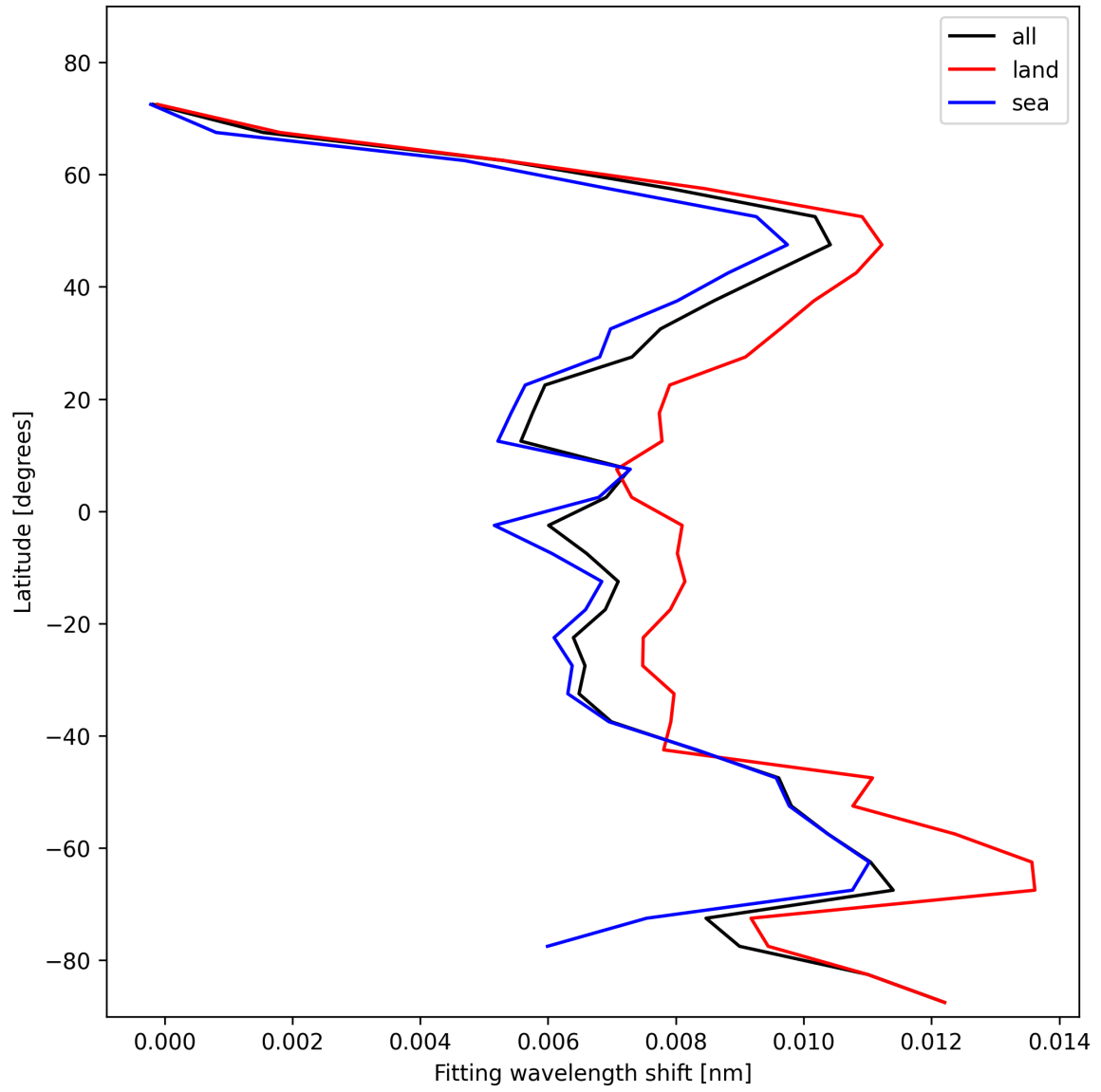


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-01-28 to 2025-01-29.

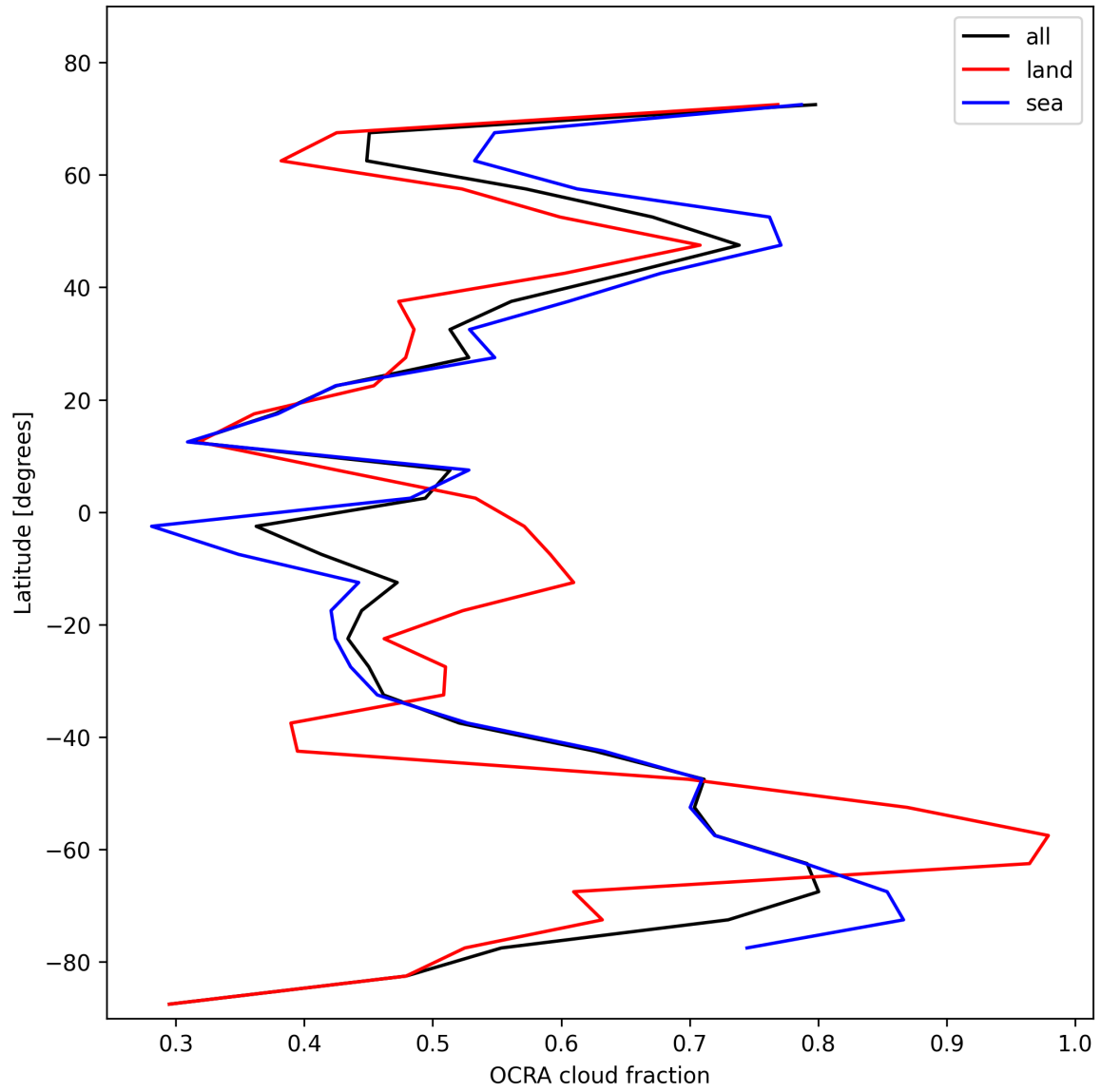


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-01-28 to 2025-01-29.

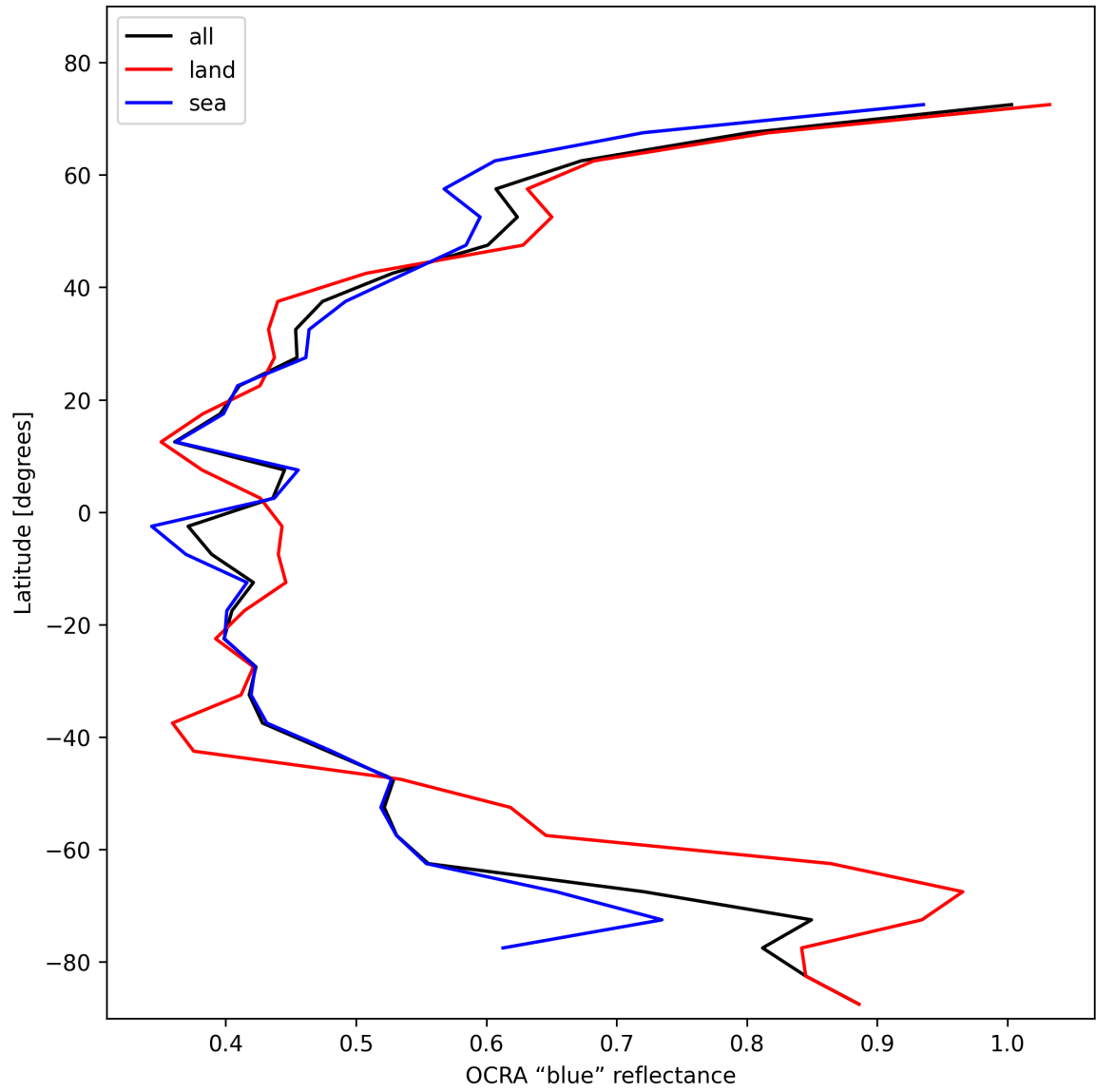


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-01-28 to 2025-01-29.

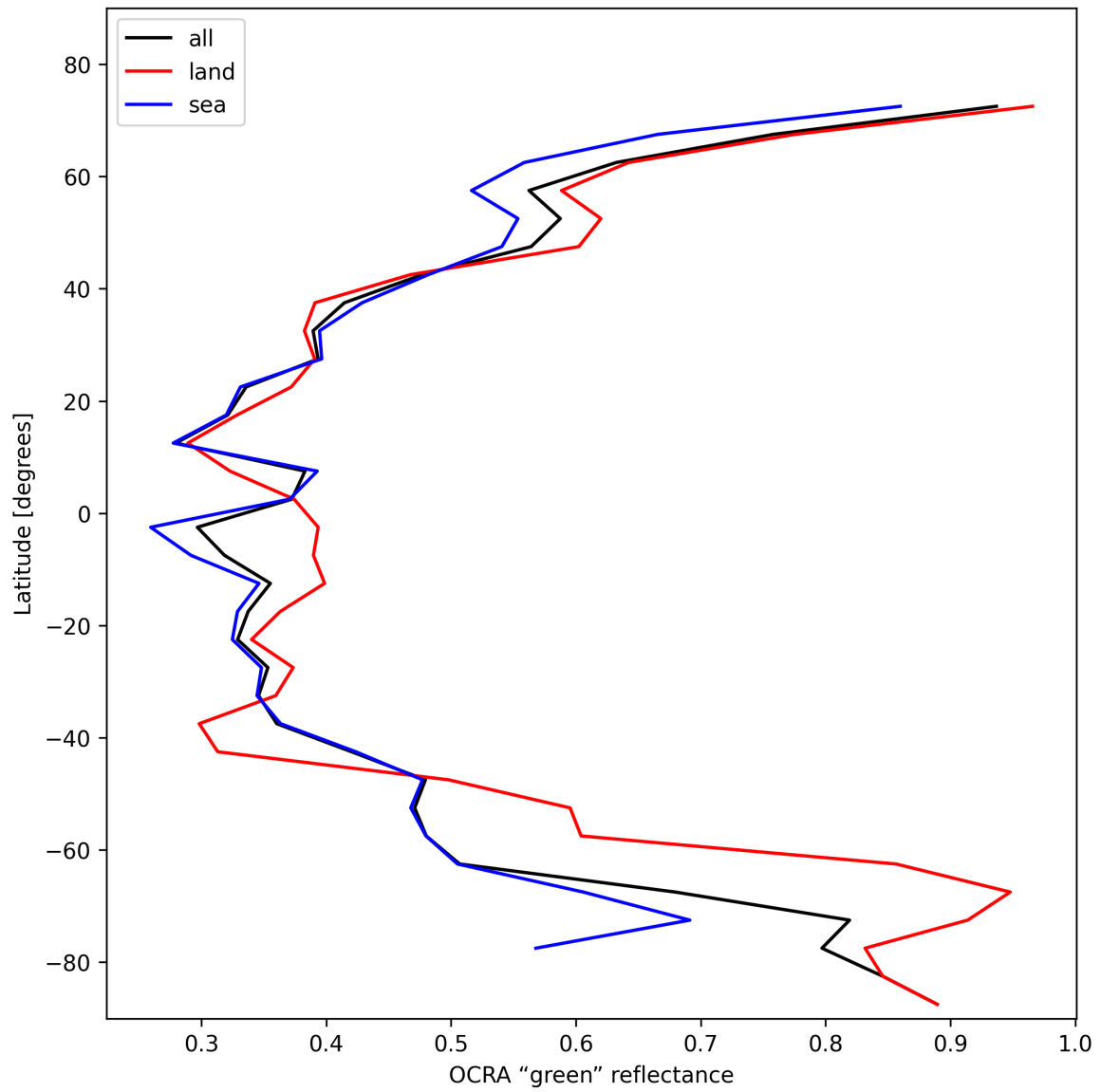


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-01-28 to 2025-01-29.

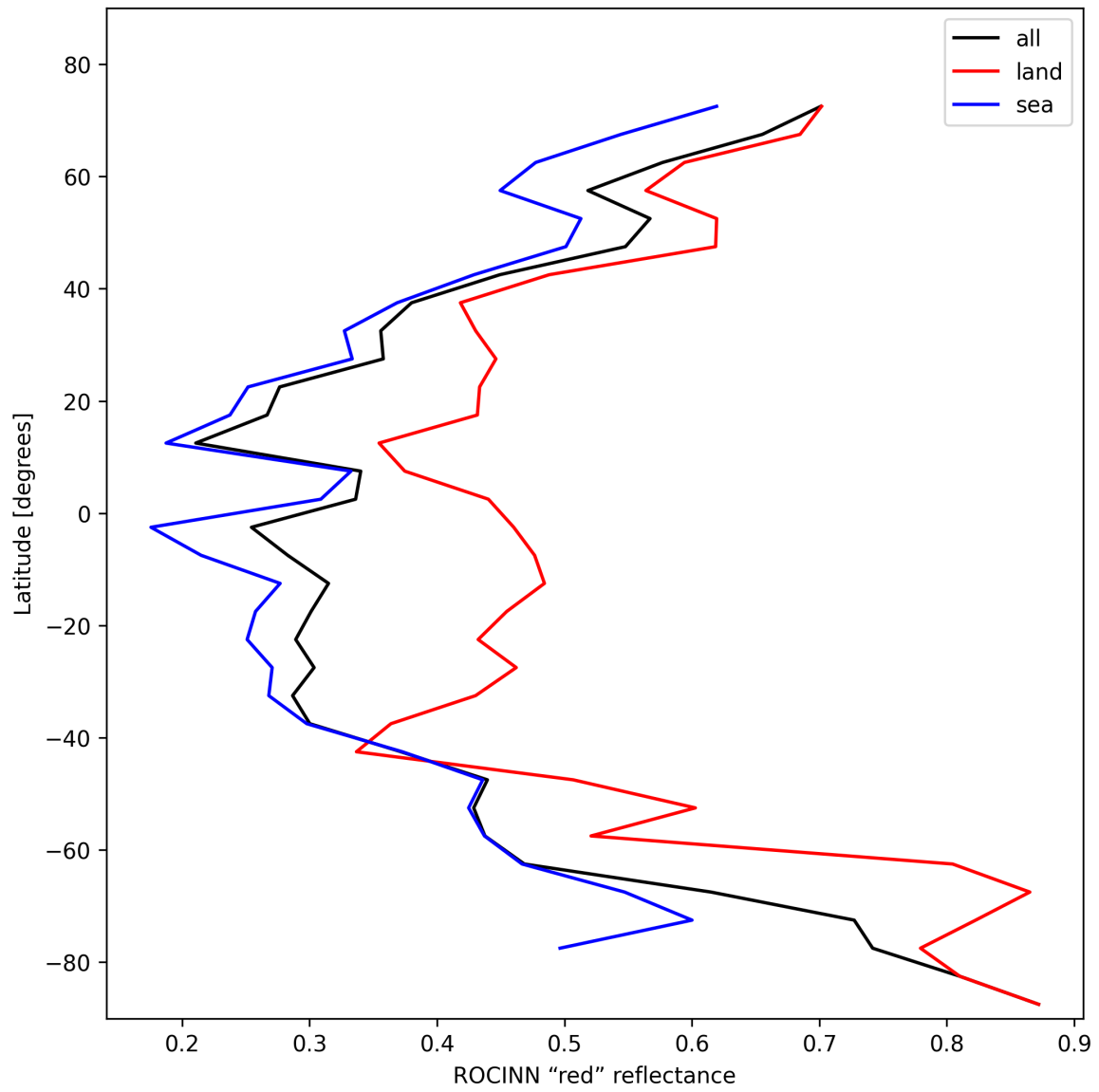


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-01-28 to 2025-01-29.

8 Histograms

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

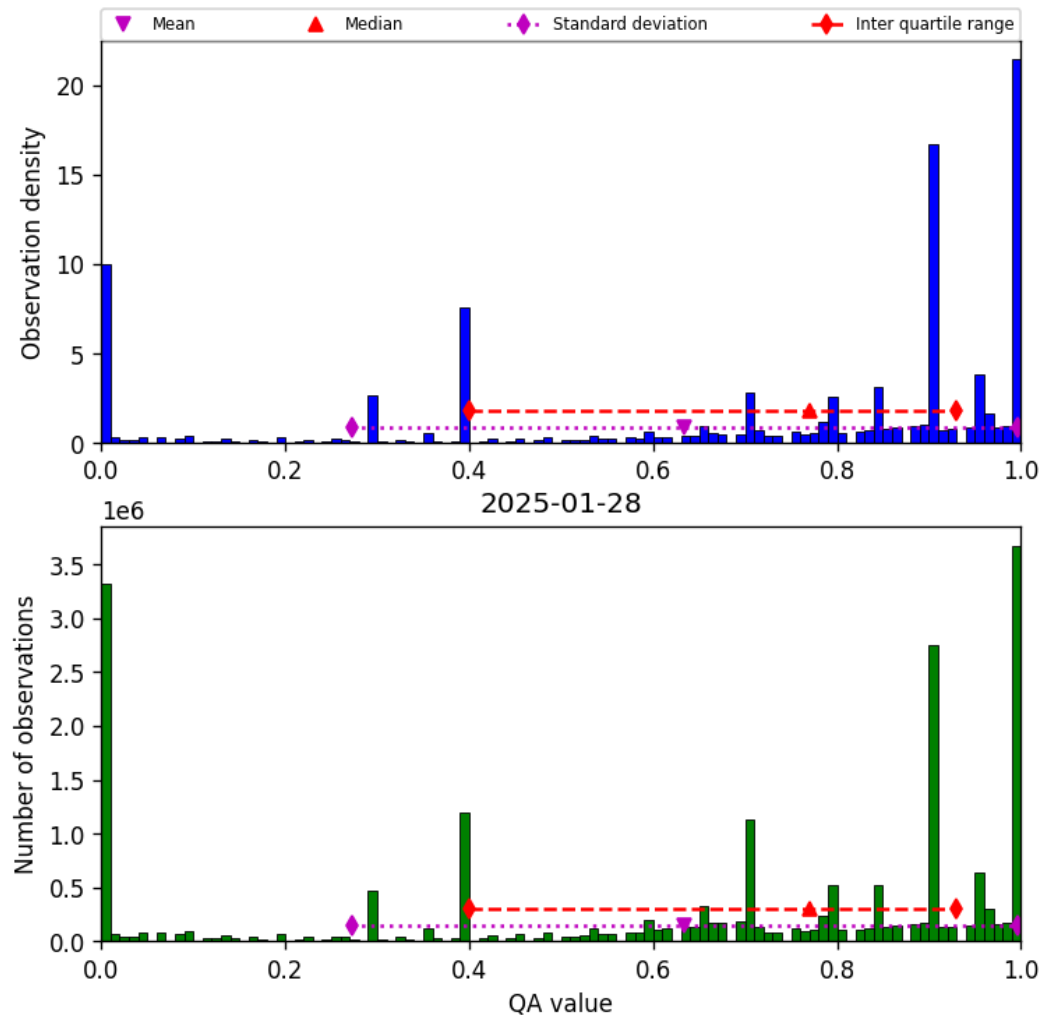


Figure 38: Histogram of “QA value” for 2025-01-28 to 2025-01-29

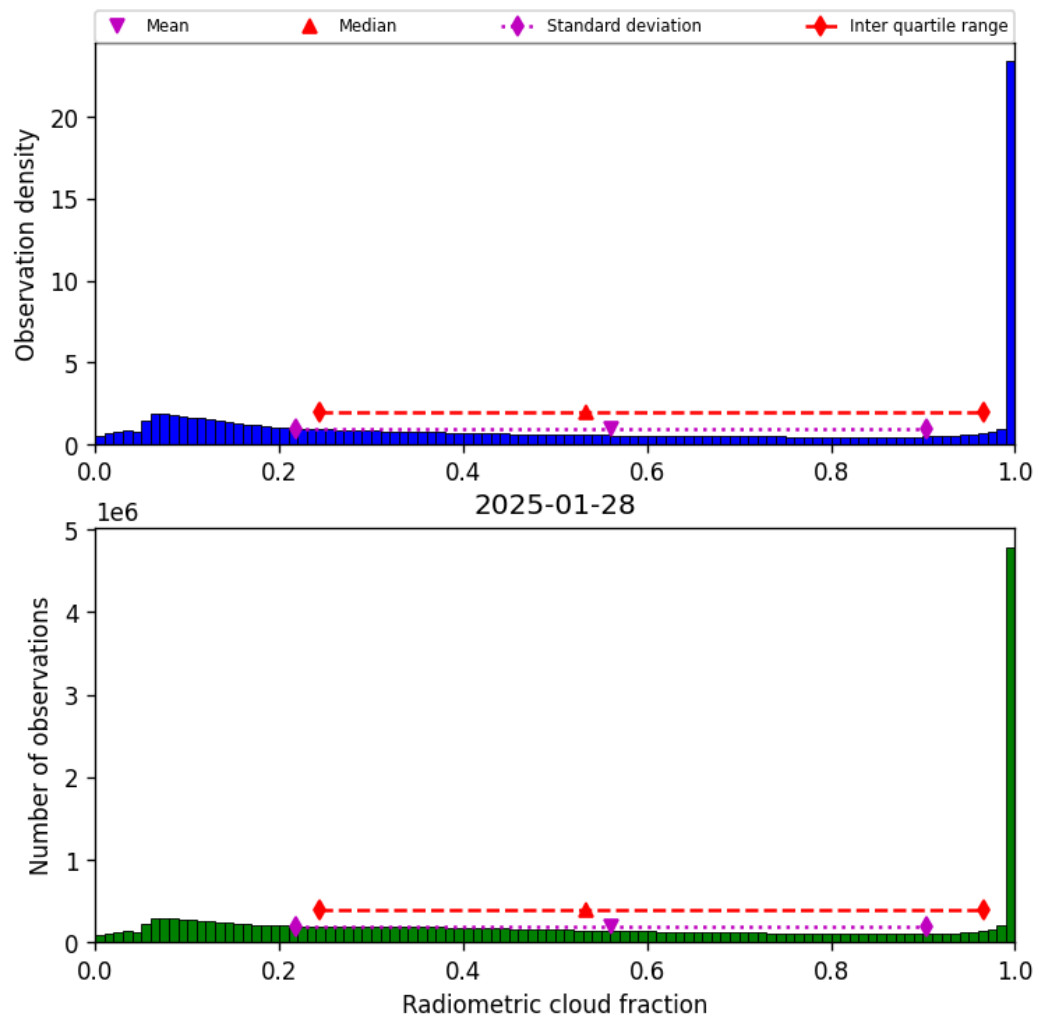


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-01-28 to 2025-01-29

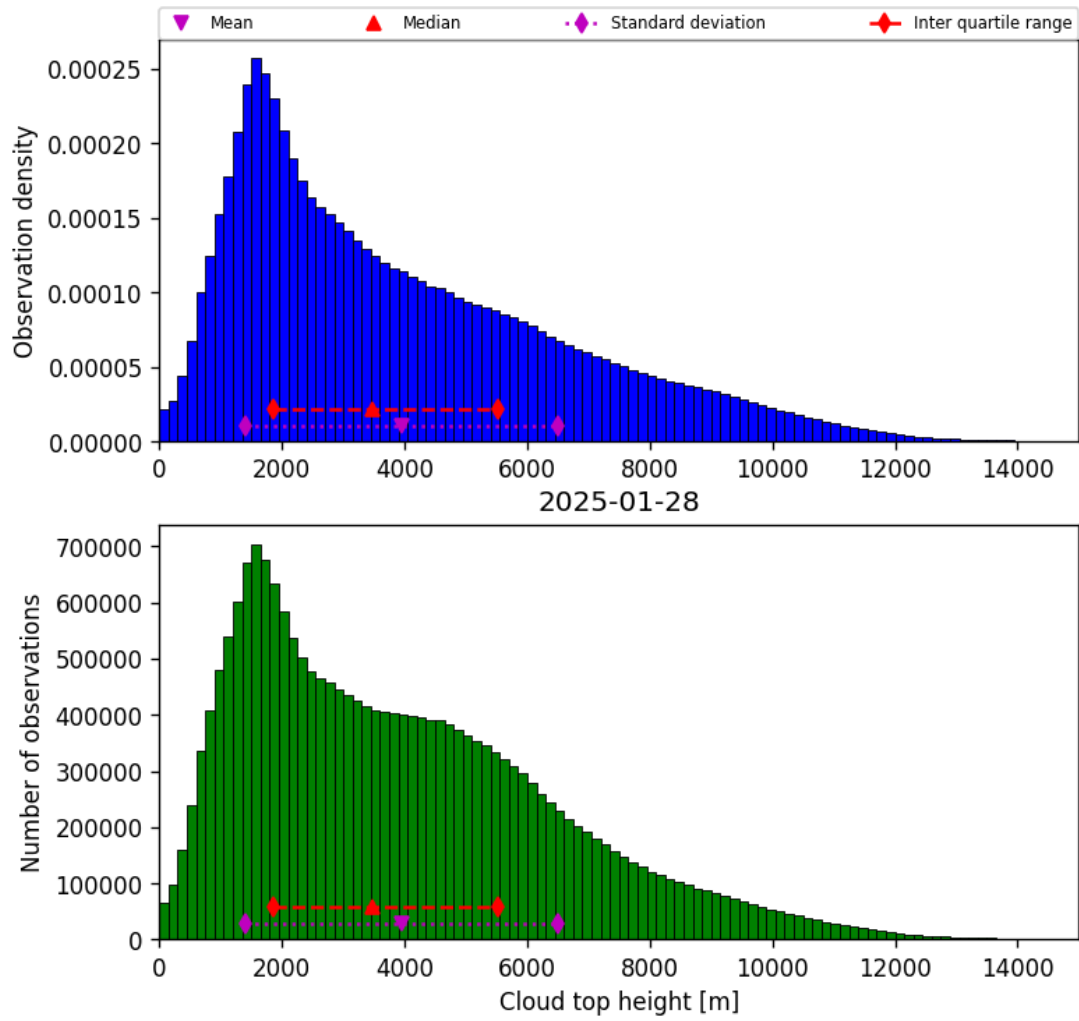


Figure 40: Histogram of “Cloud top height” for 2025-01-28 to 2025-01-29

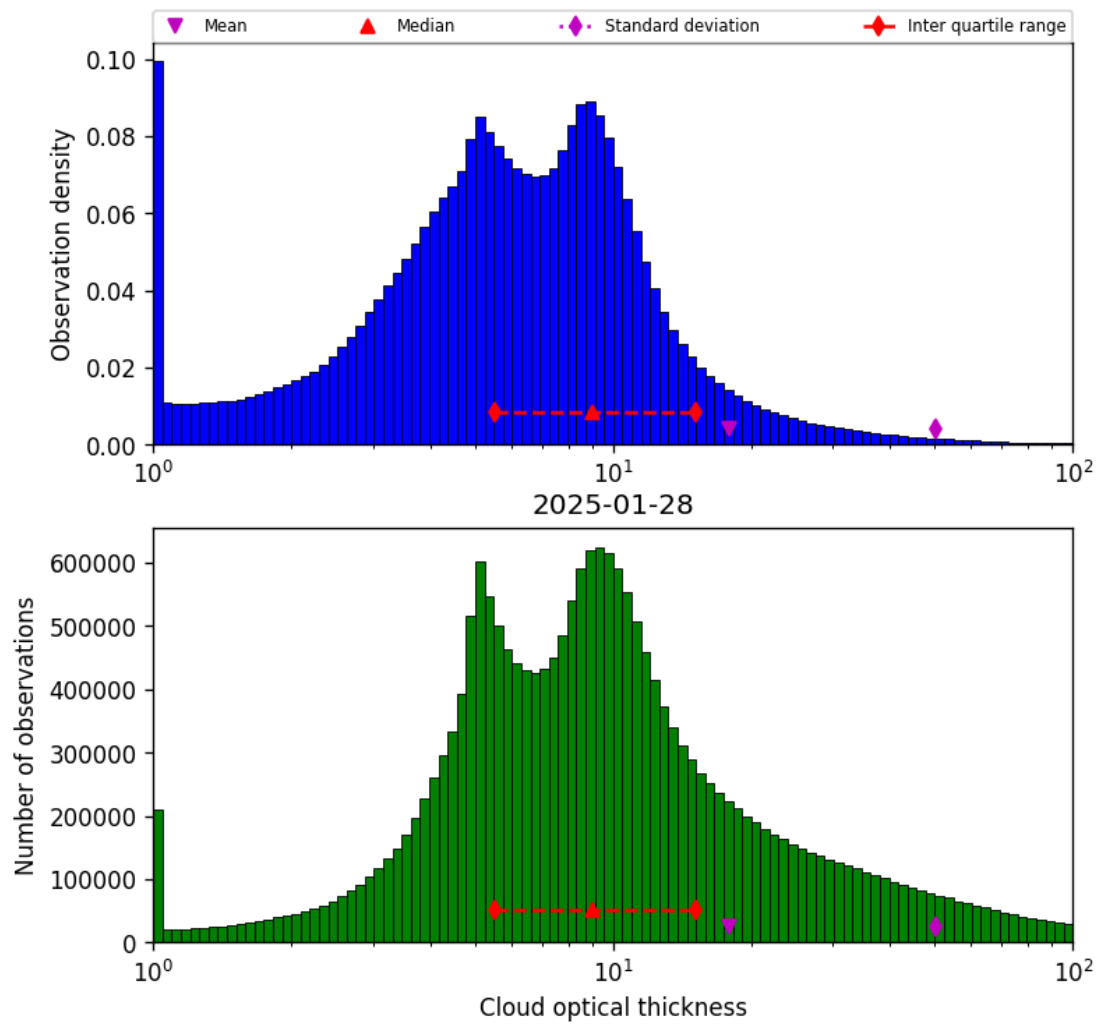


Figure 41: Histogram of “Cloud optical thickness” for 2025-01-28 to 2025-01-29

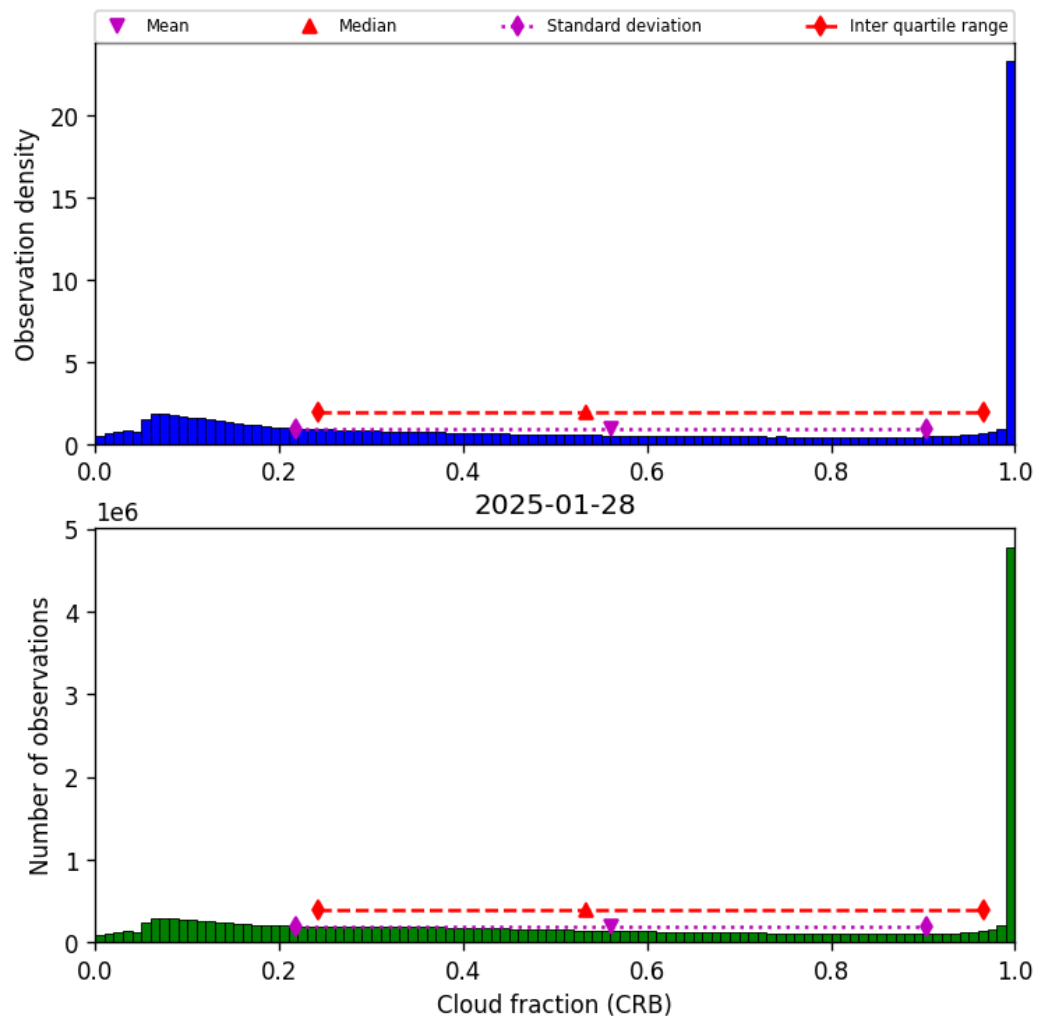


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-01-28 to 2025-01-29

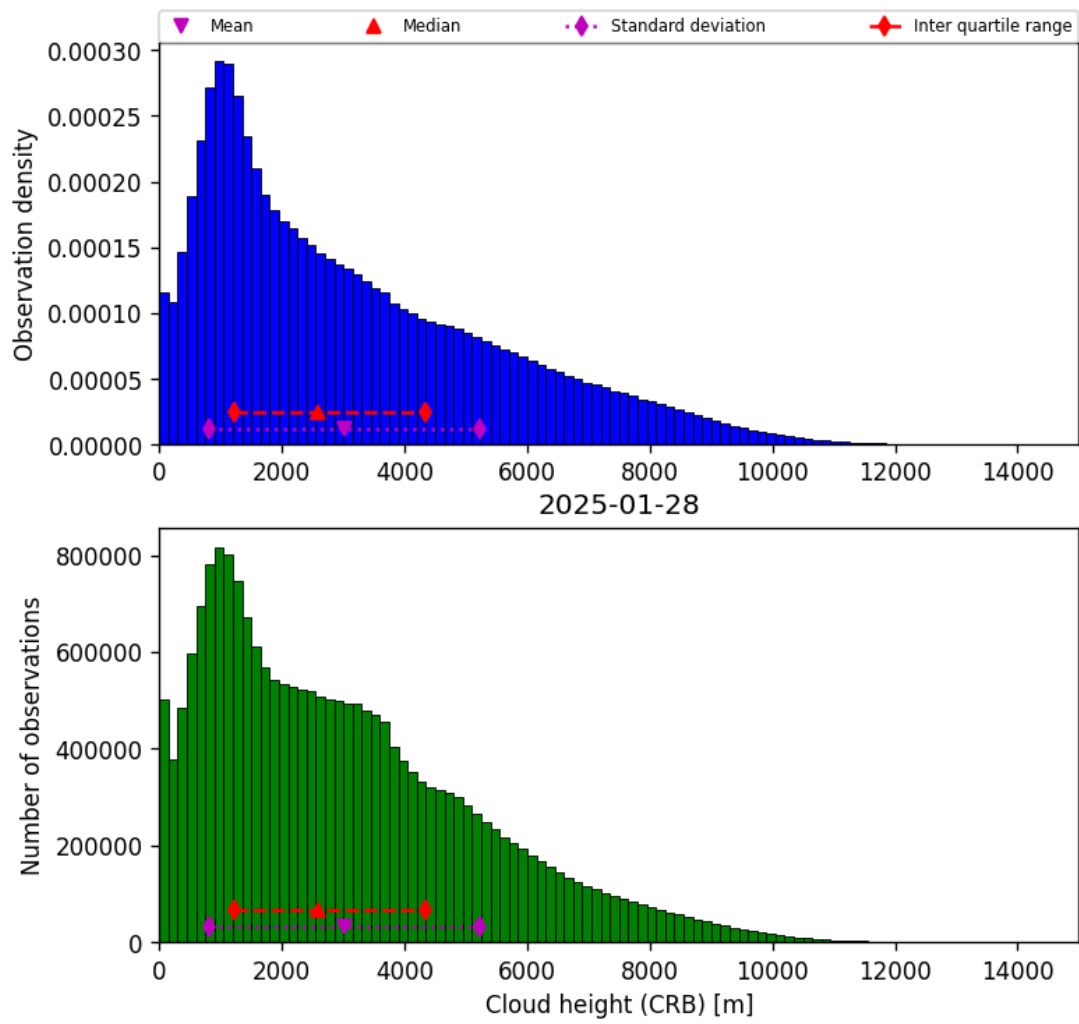


Figure 43: Histogram of “Cloud height (CRB)” for 2025-01-28 to 2025-01-29

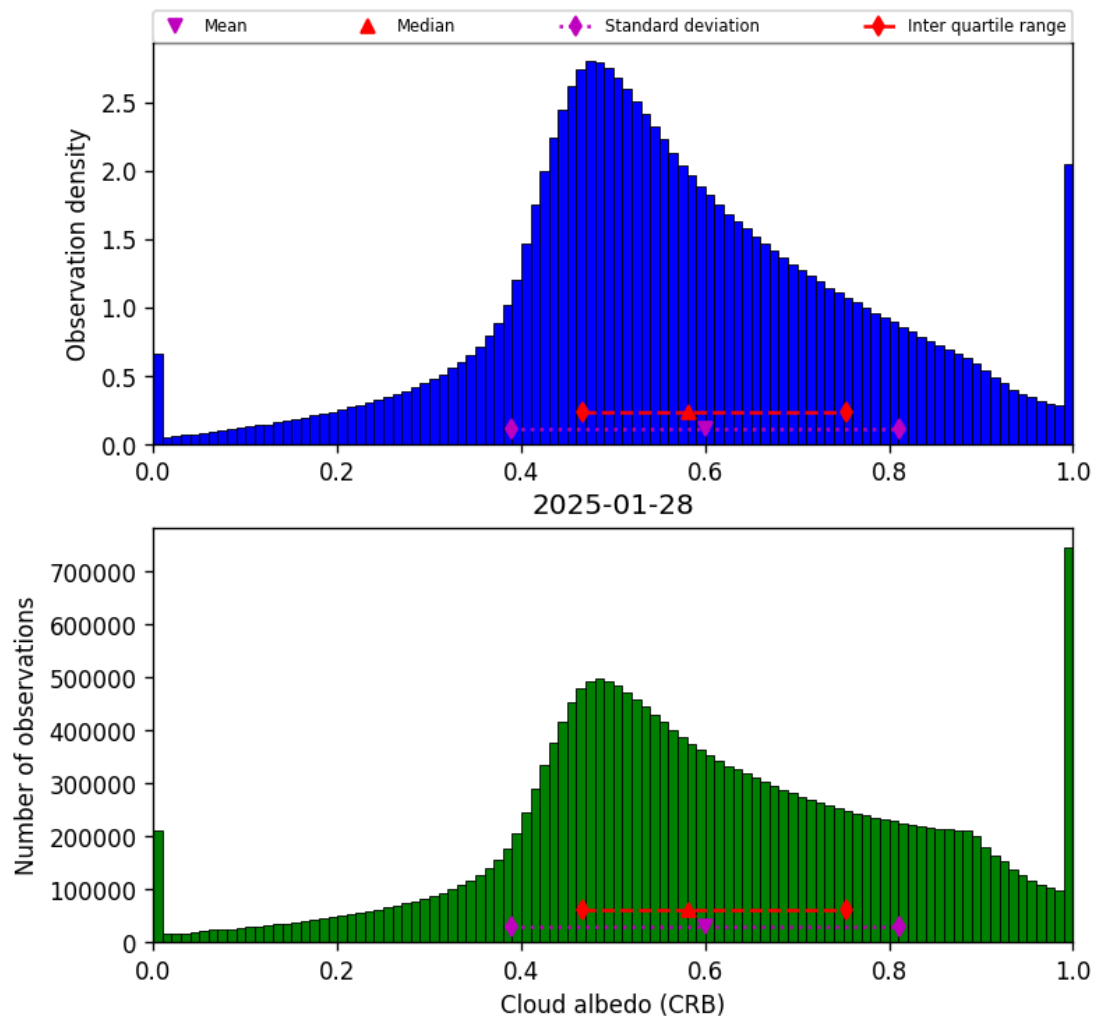


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-01-28 to 2025-01-29

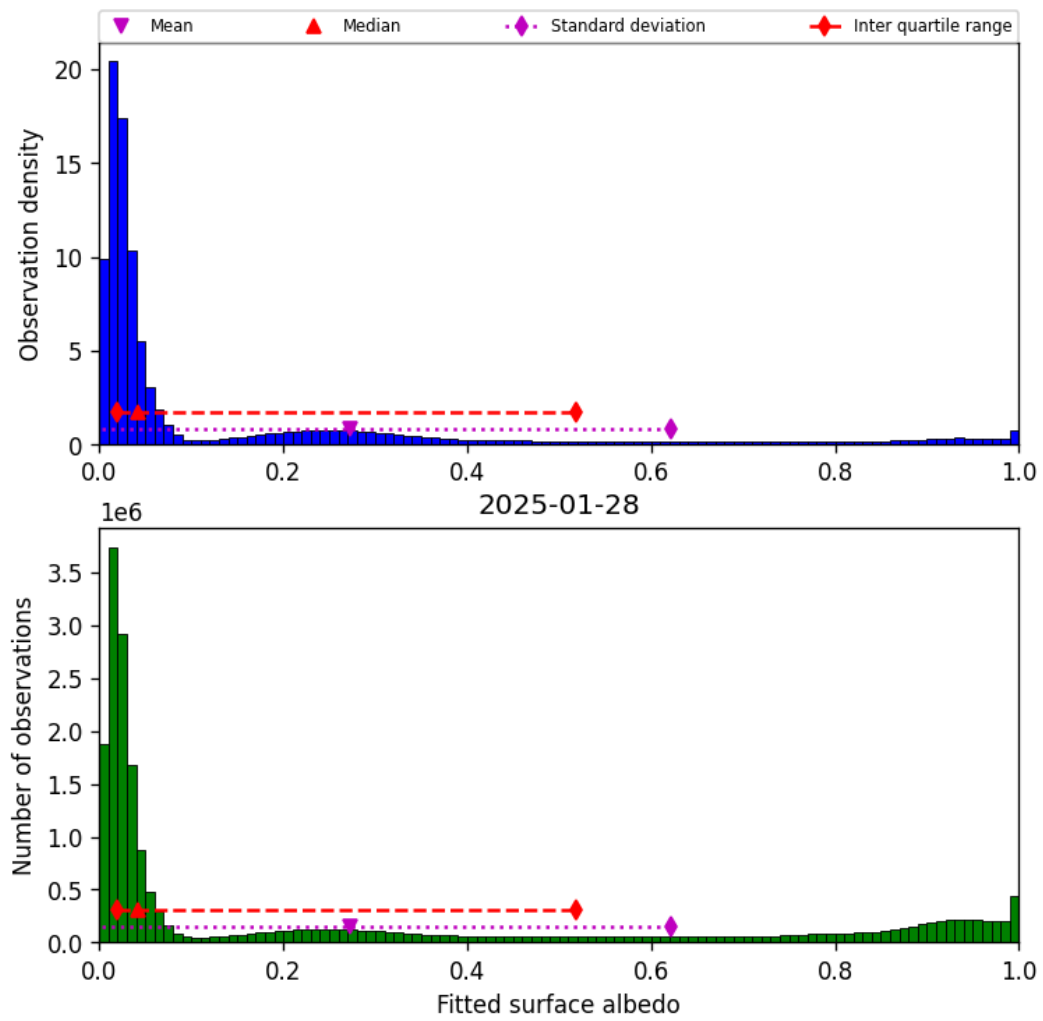


Figure 45: Histogram of “Fitted surface albedo” for 2025-01-28 to 2025-01-29

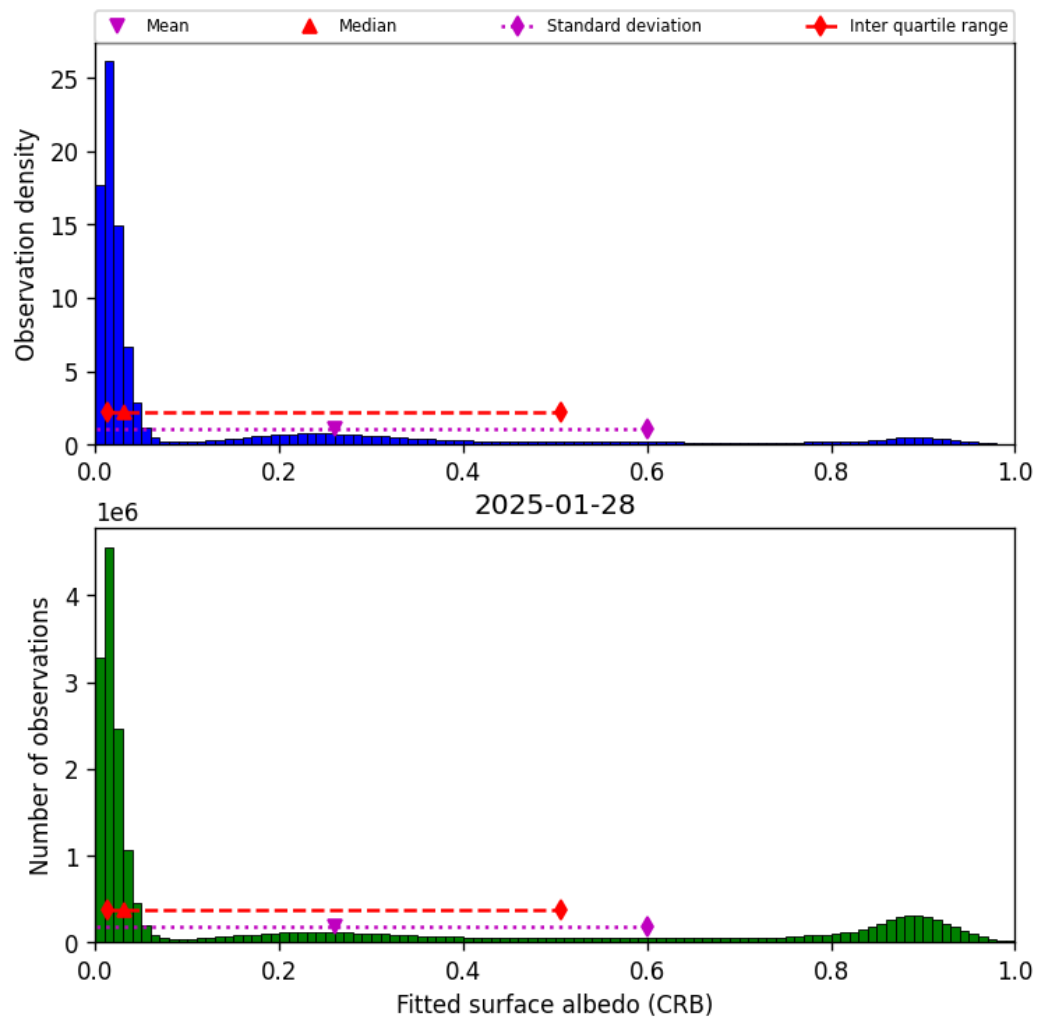


Figure 46: Histogram of "Fitted surface albedo (CRB)" for 2025-01-28 to 2025-01-29

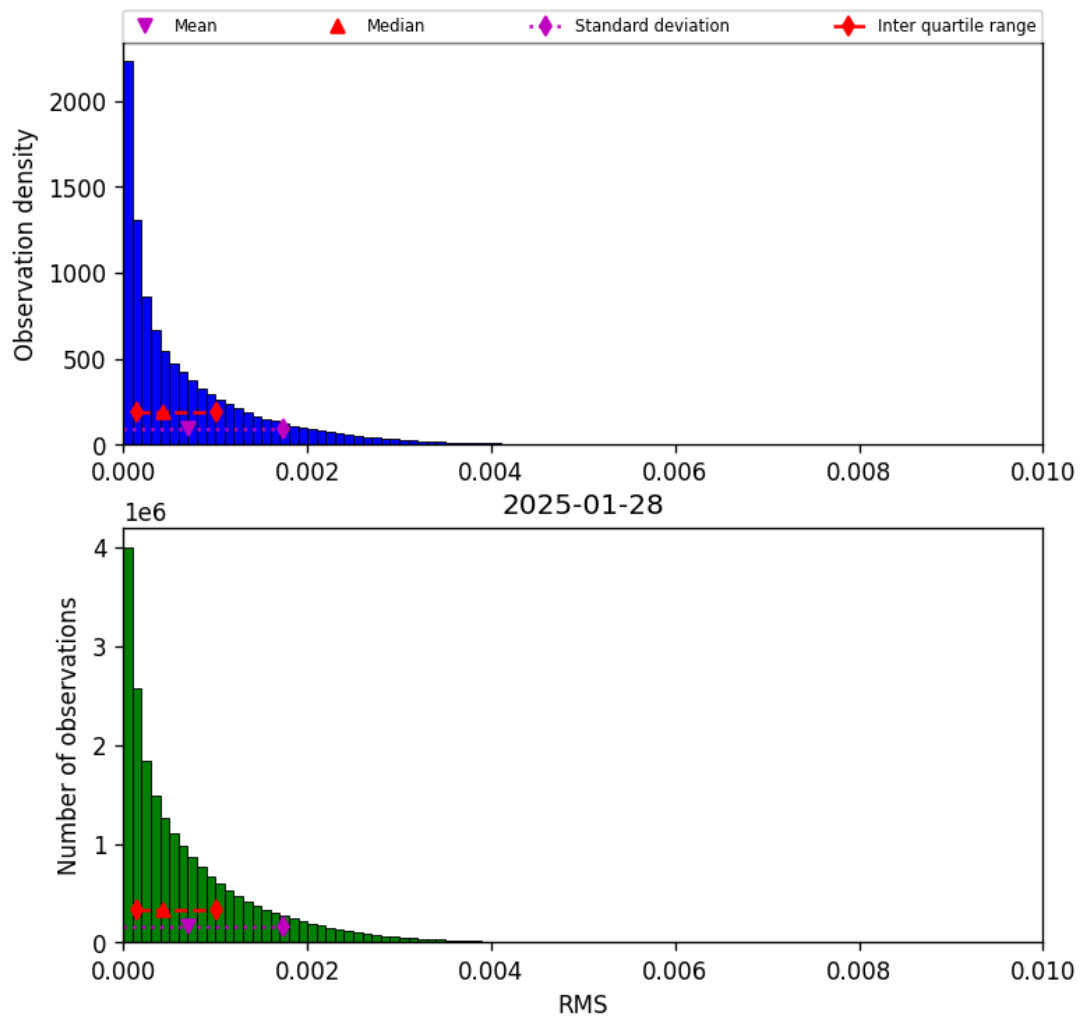


Figure 47: Histogram of “RMS” for 2025-01-28 to 2025-01-29

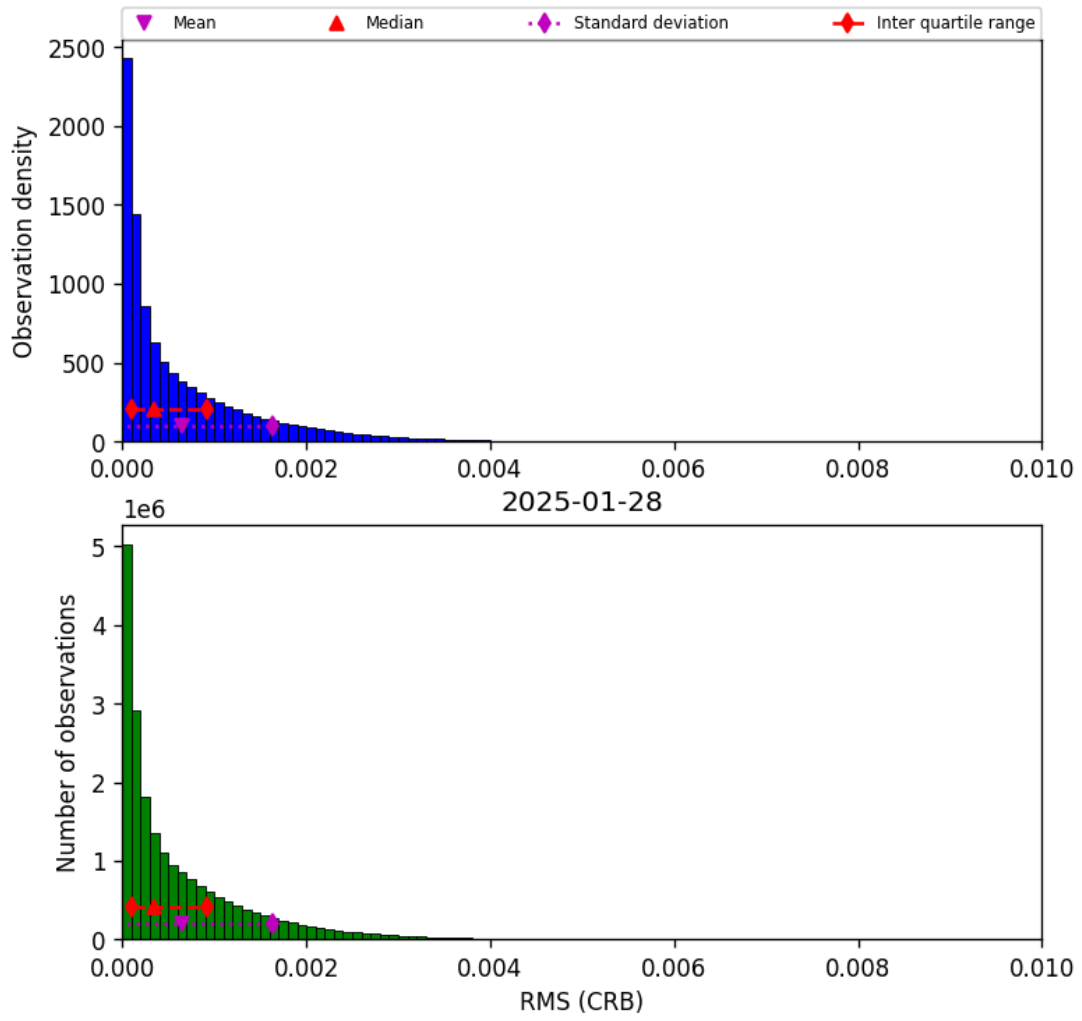


Figure 48: Histogram of "RMS (CRB)" for 2025-01-28 to 2025-01-29

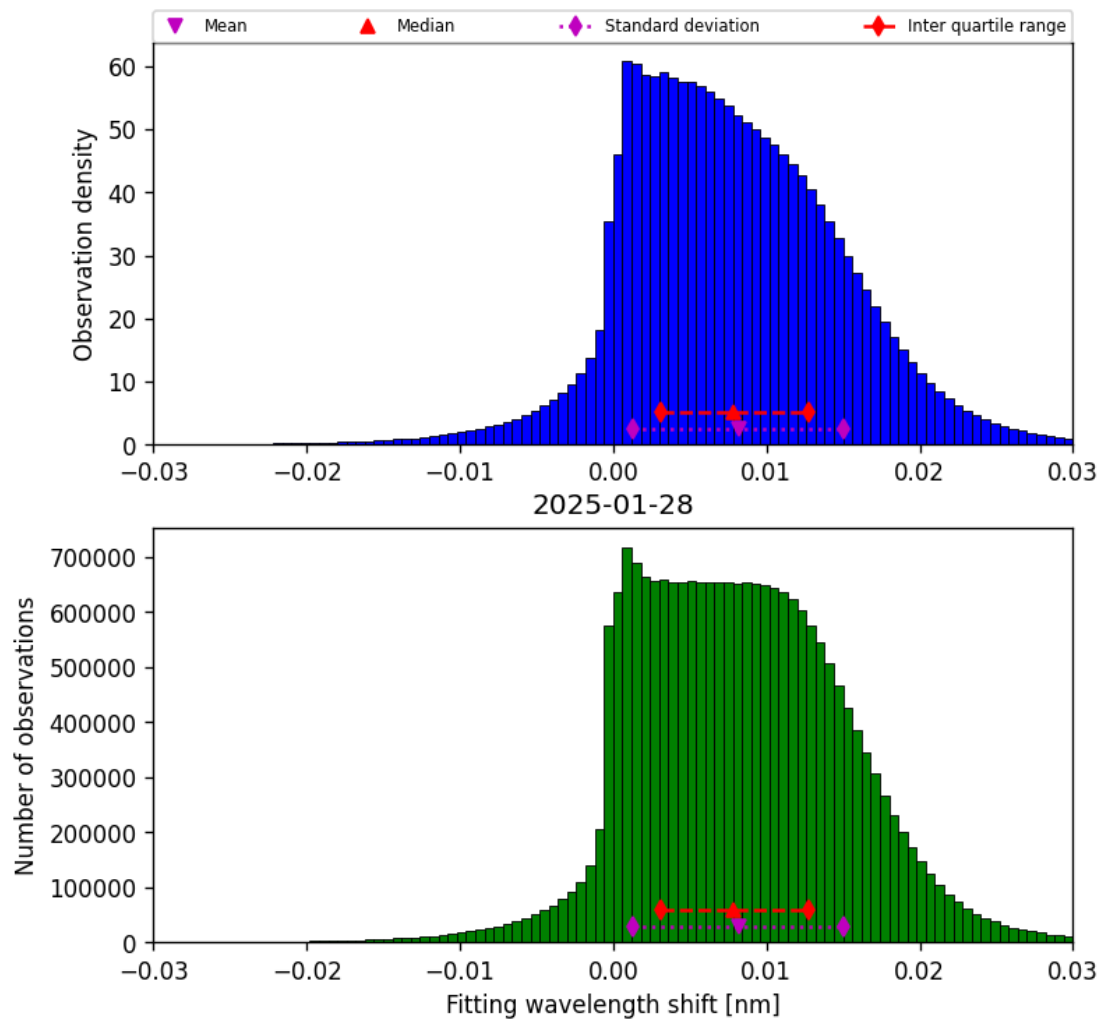


Figure 49: Histogram of “Fitting wavelength shift” for 2025-01-28 to 2025-01-29

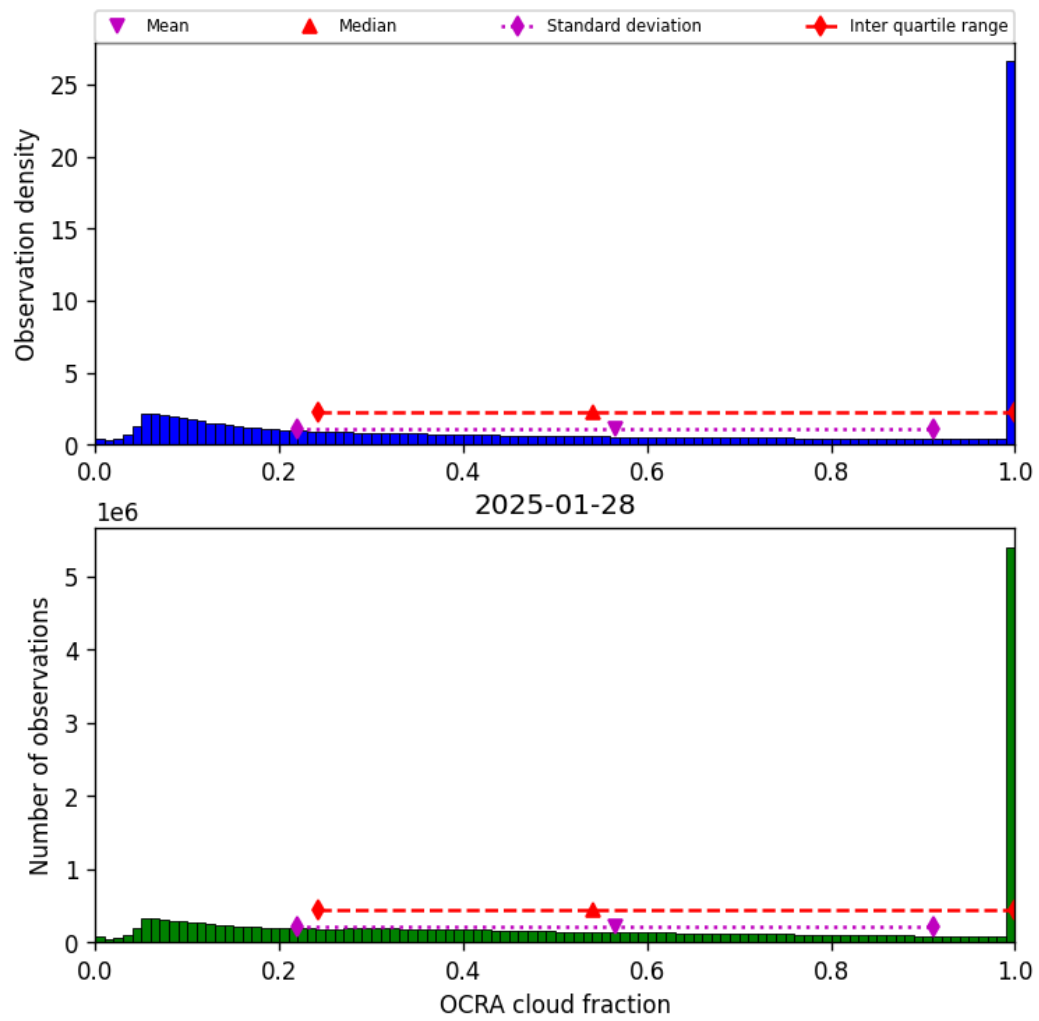


Figure 50: Histogram of “OCRA cloud fraction” for 2025-01-28 to 2025-01-29

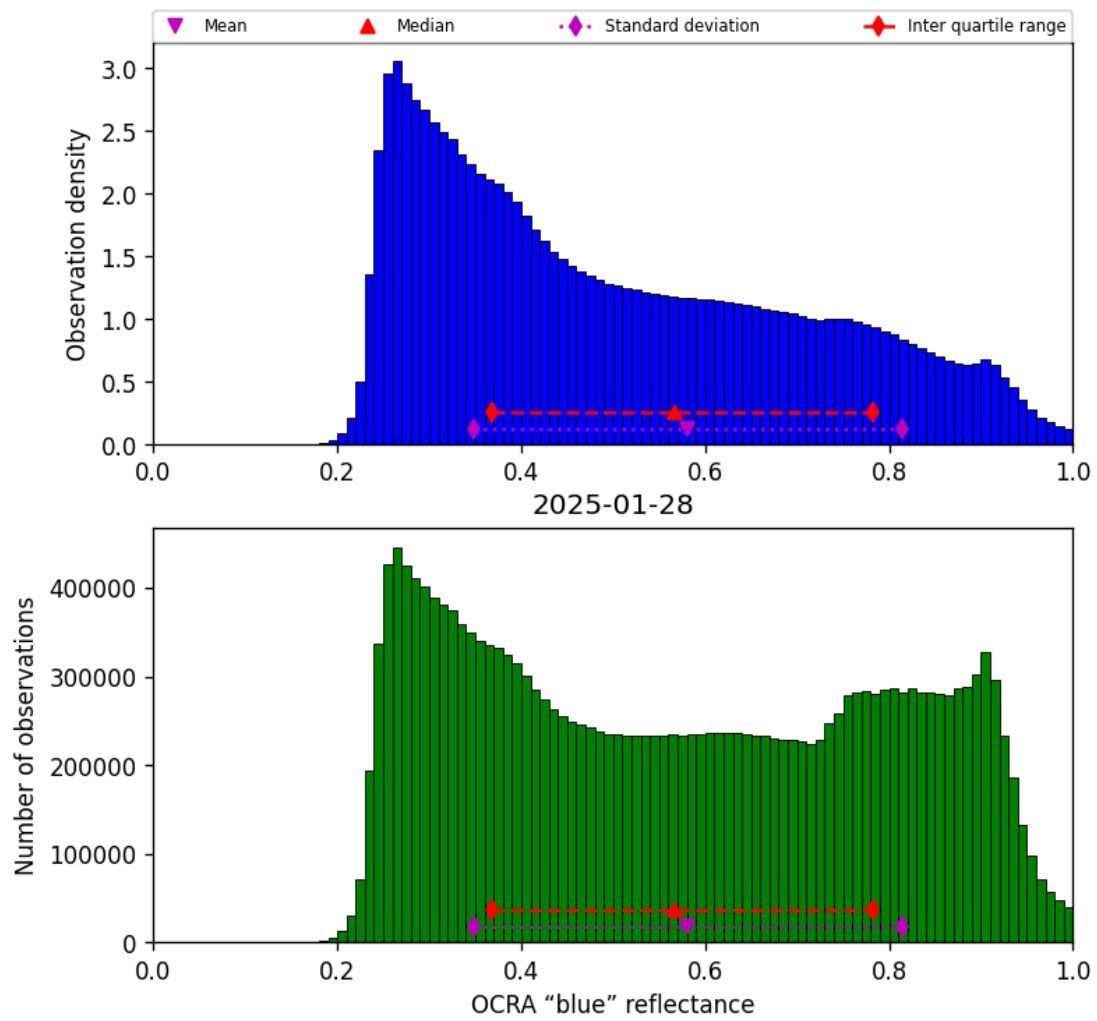


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-01-28 to 2025-01-29

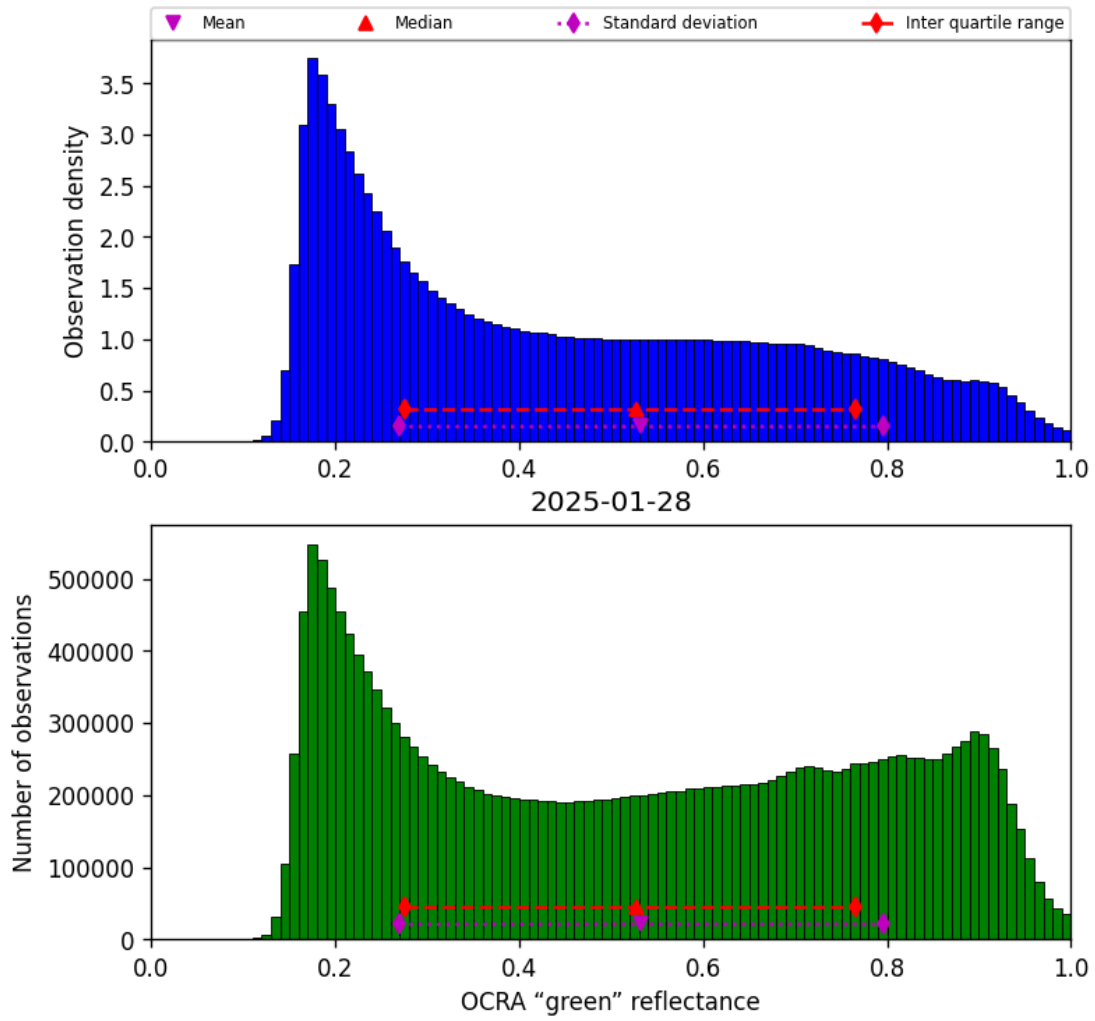


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-01-28 to 2025-01-29

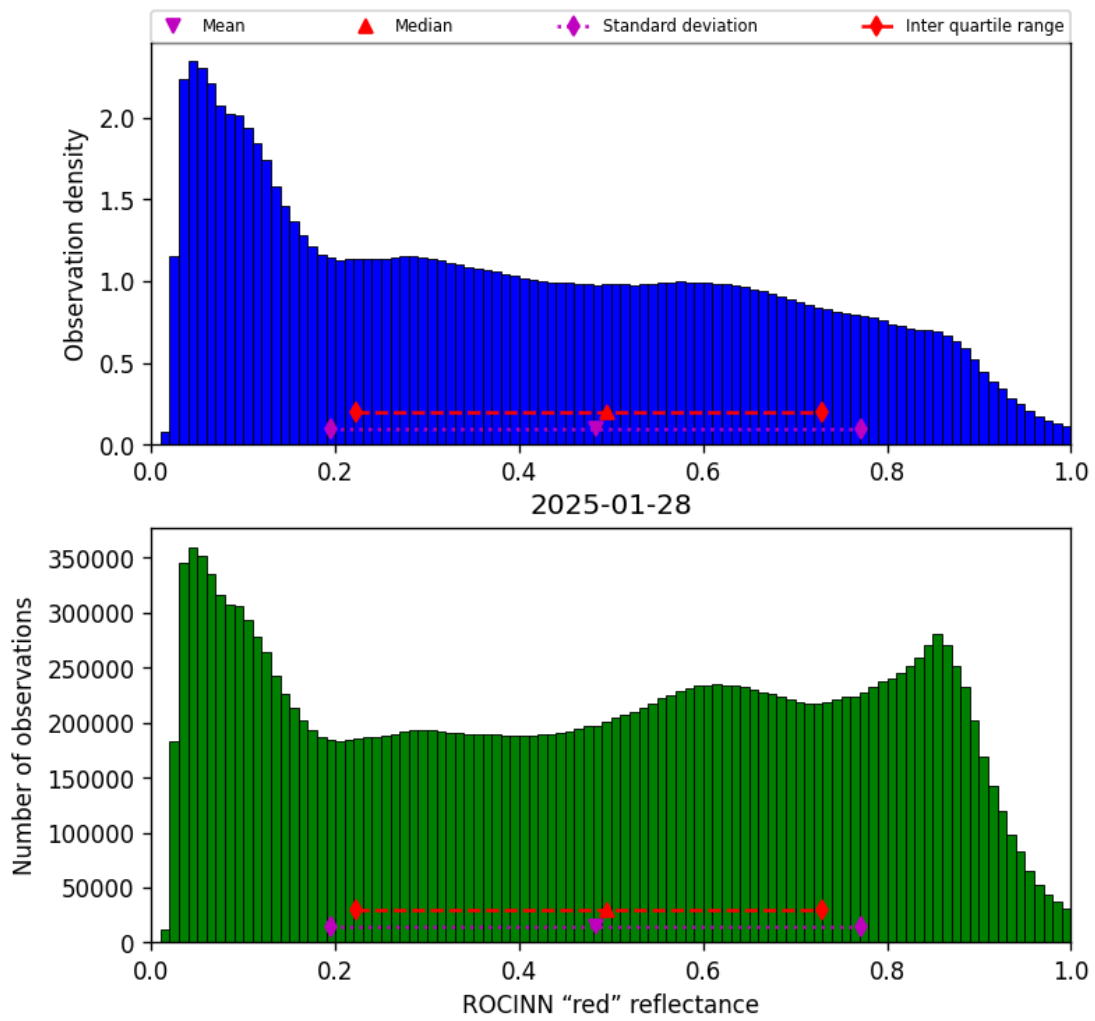


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-01-28 to 2025-01-29

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.

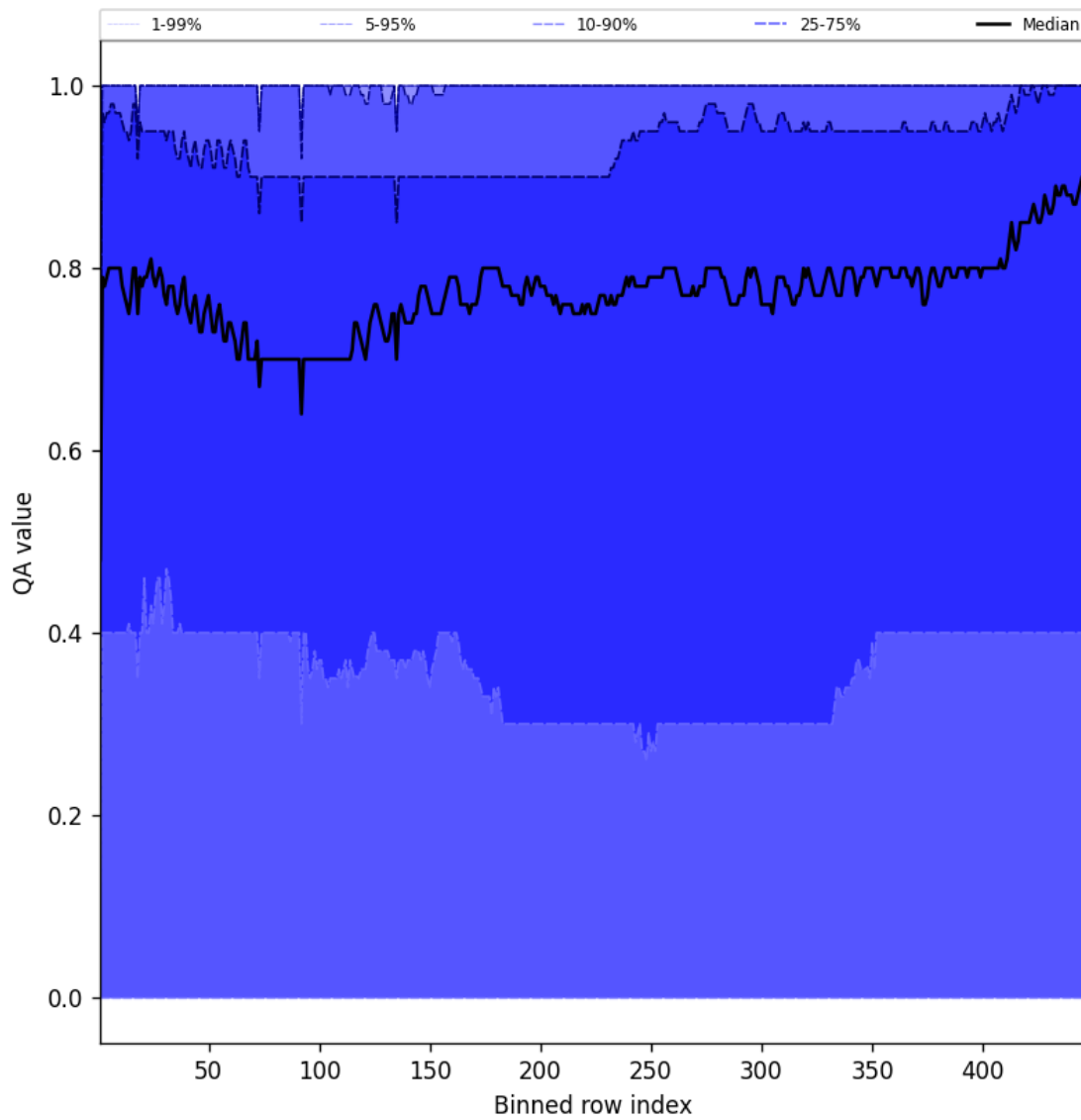


Figure 54: Along track statistics of “QA value” for 2025-01-28 to 2025-01-29

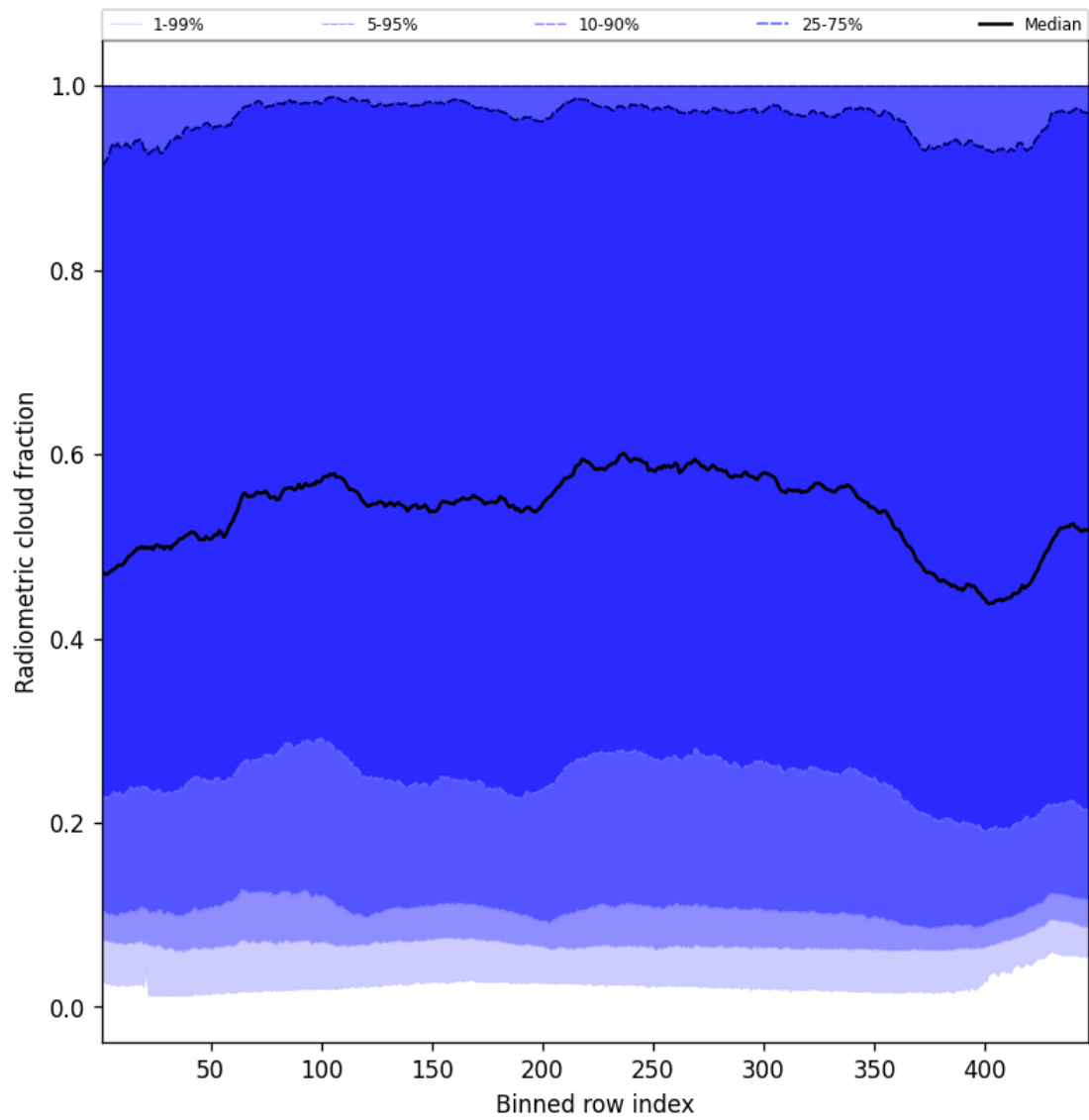


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-01-28 to 2025-01-29

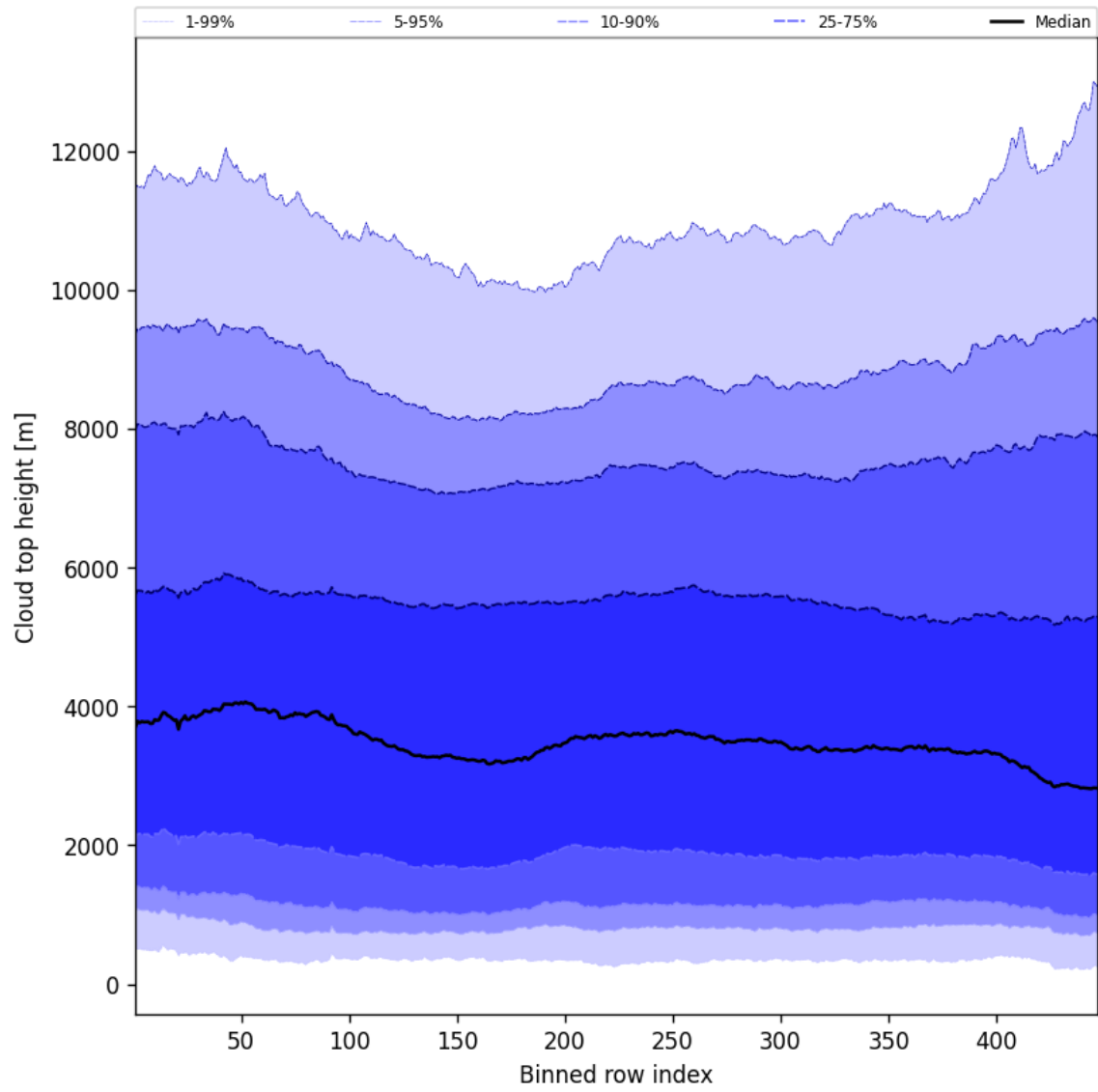


Figure 56: Along track statistics of “Cloud top height” for 2025-01-28 to 2025-01-29

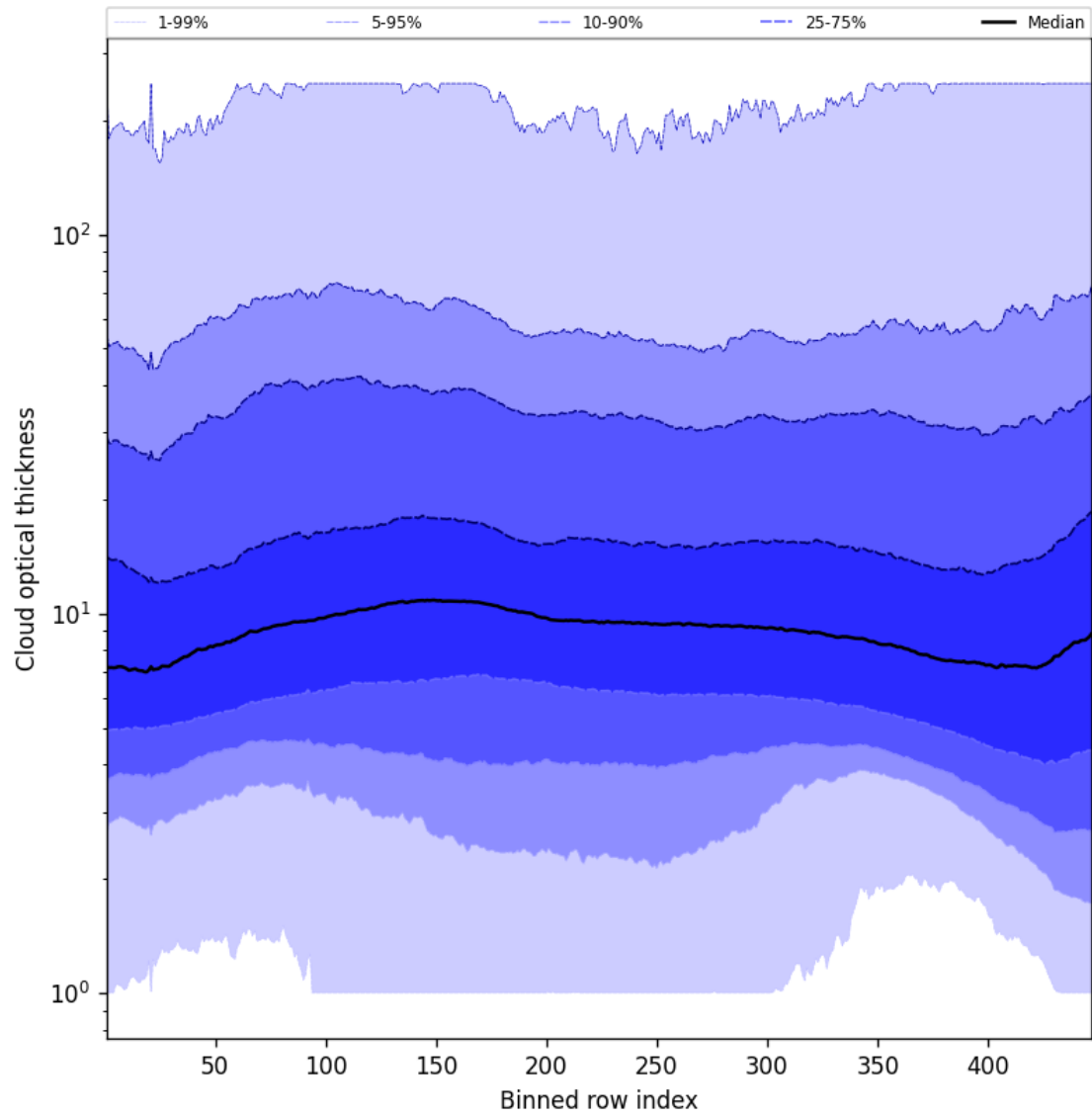


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-01-28 to 2025-01-29

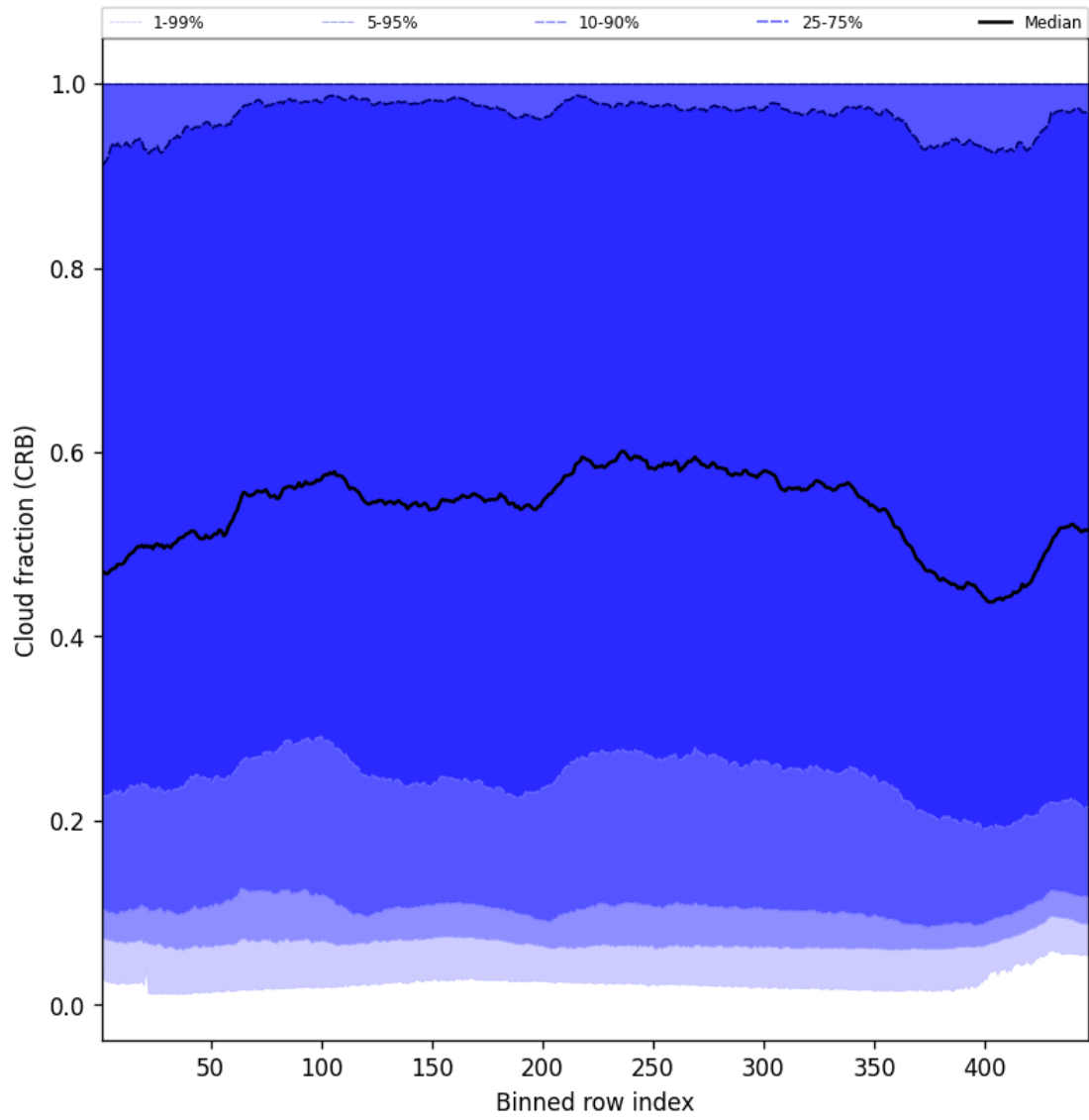


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-01-28 to 2025-01-29

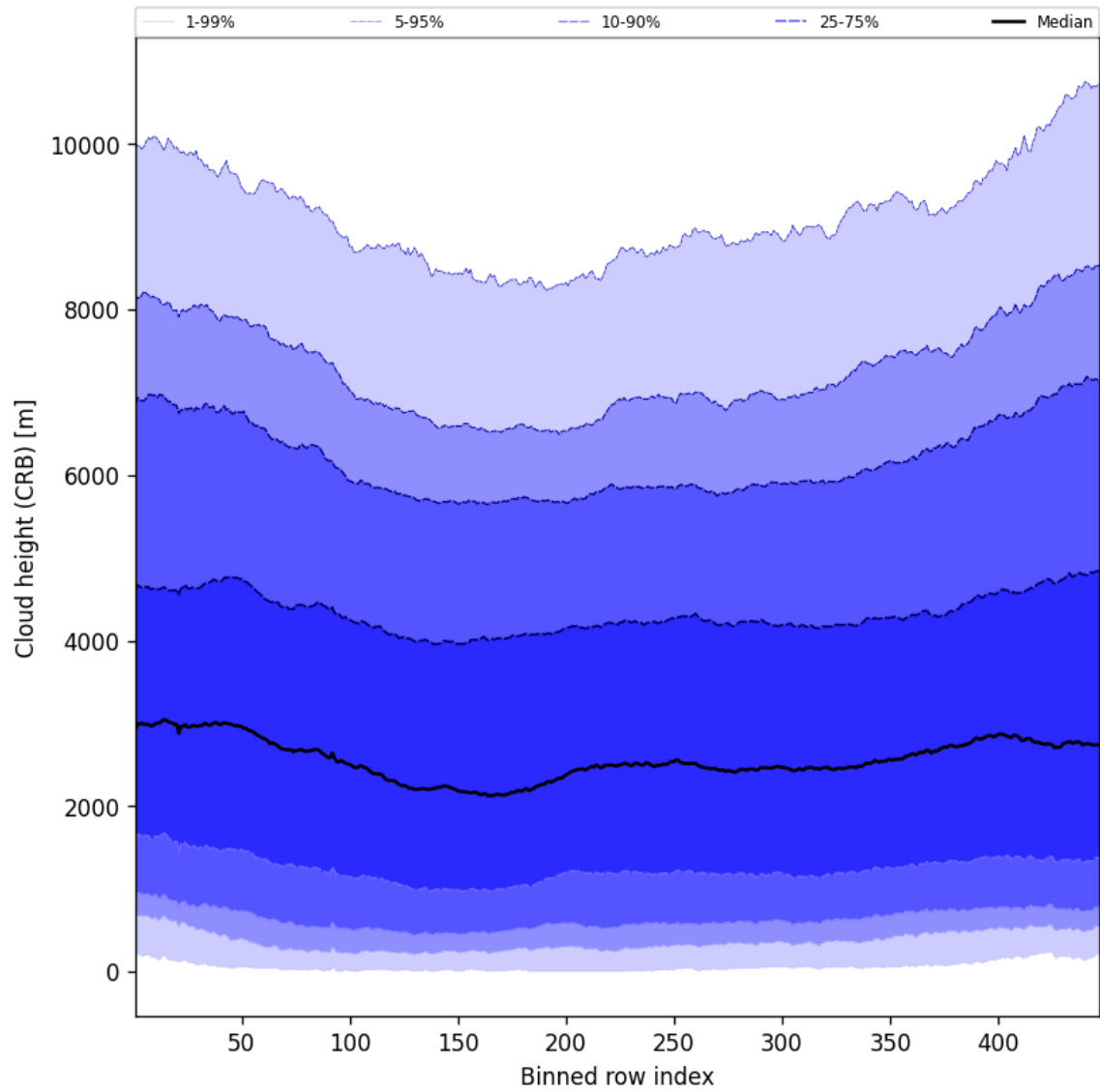


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-01-28 to 2025-01-29

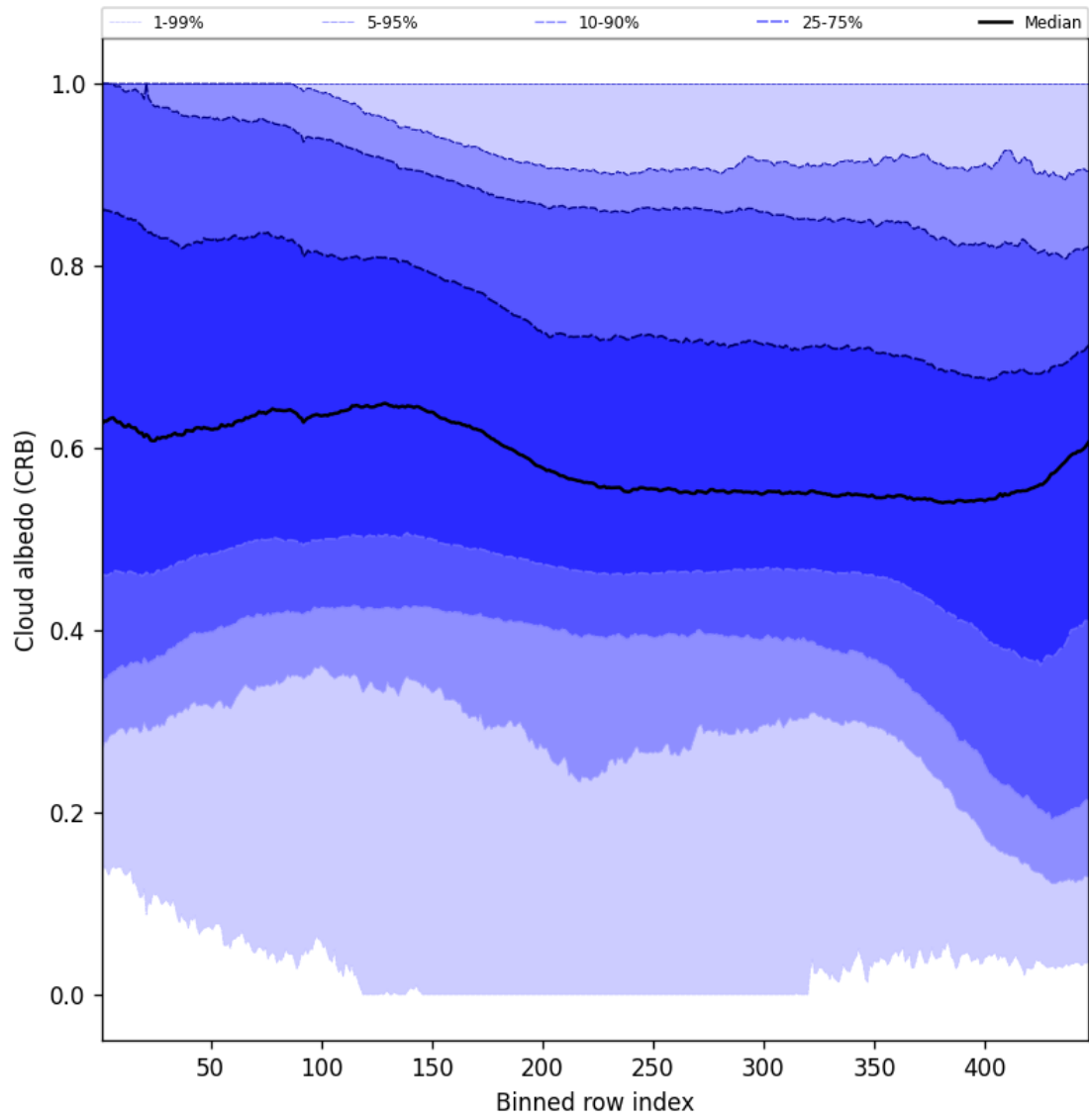


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-01-28 to 2025-01-29

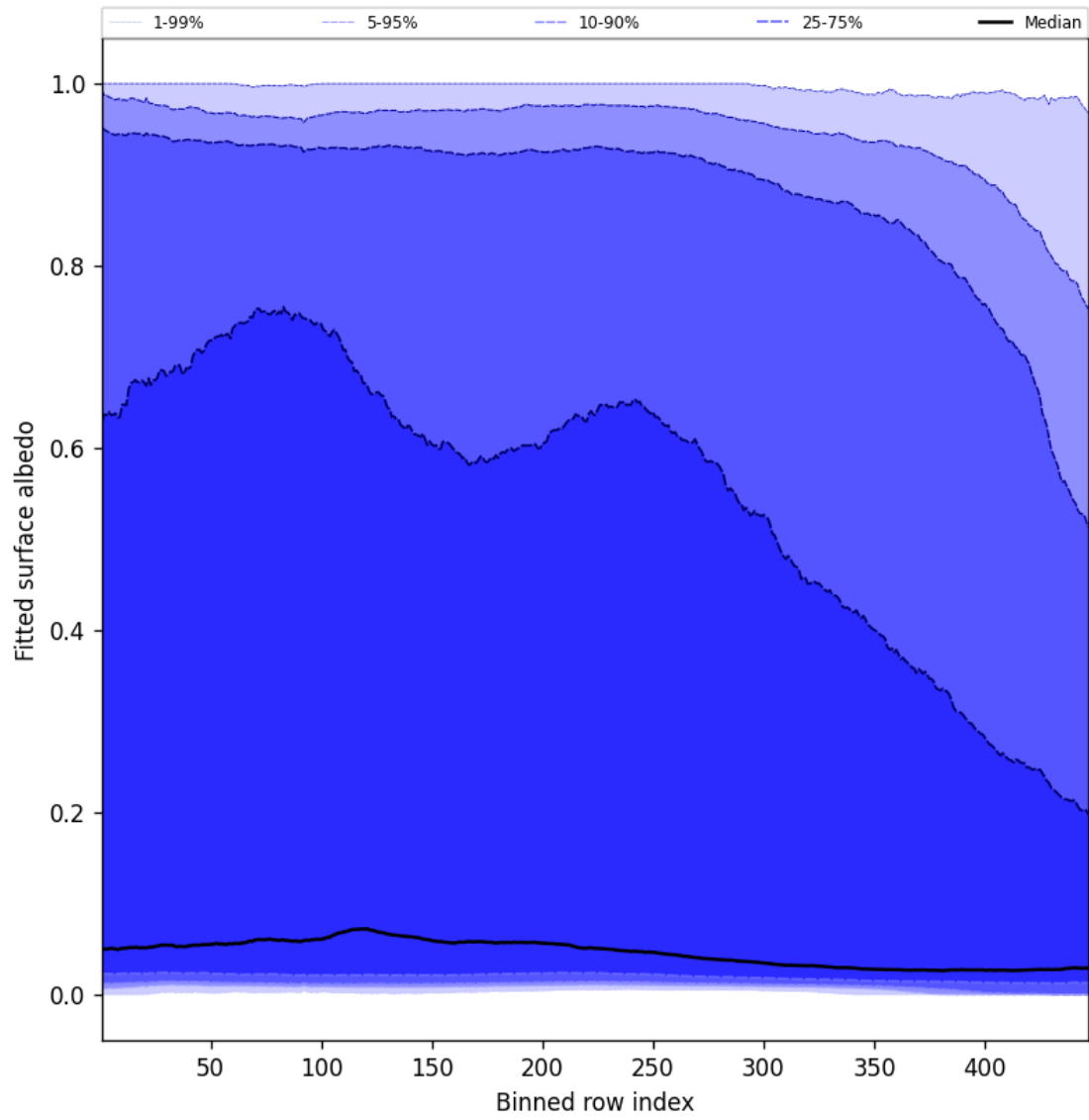


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-01-28 to 2025-01-29

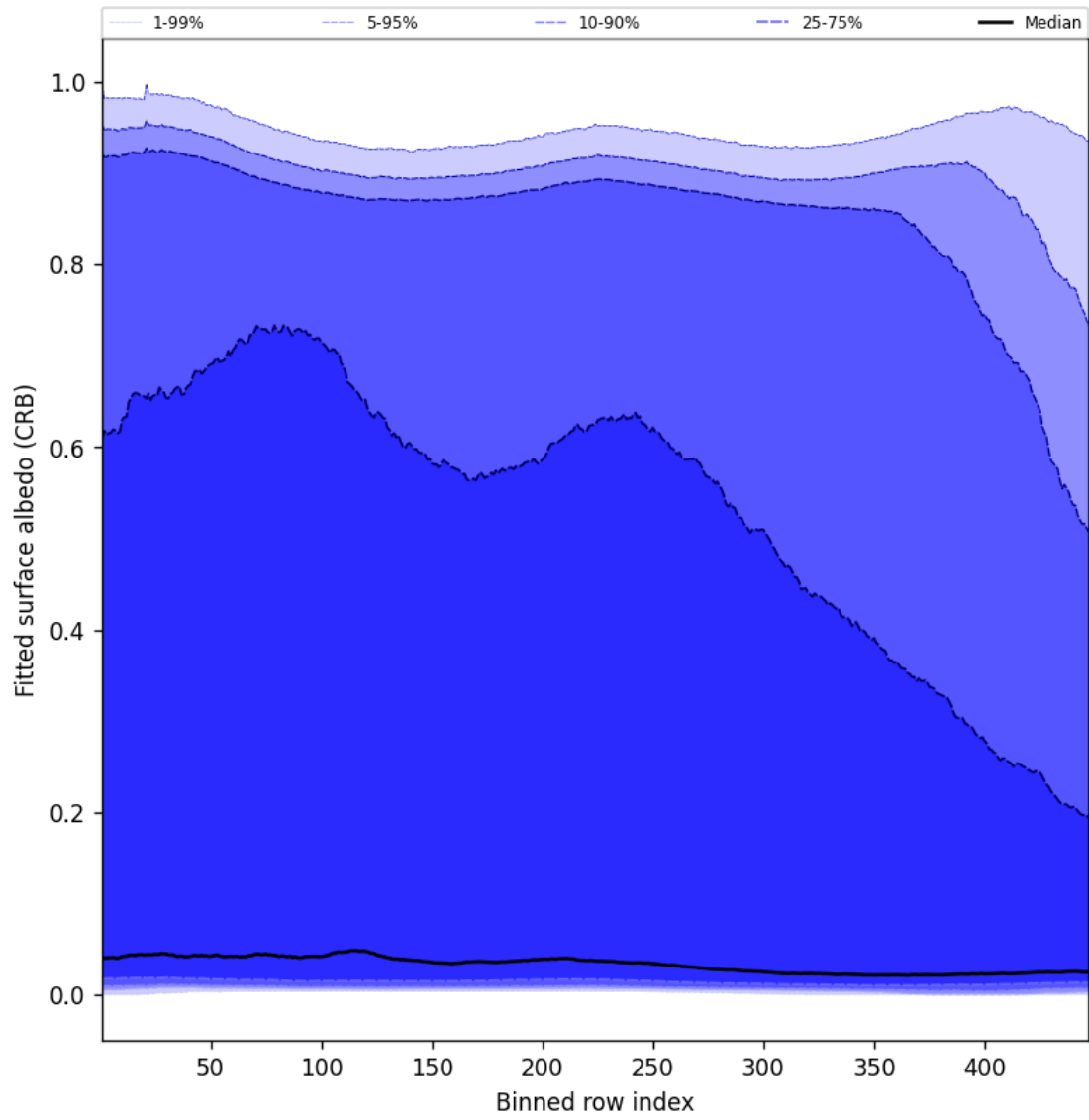


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-01-28 to 2025-01-29

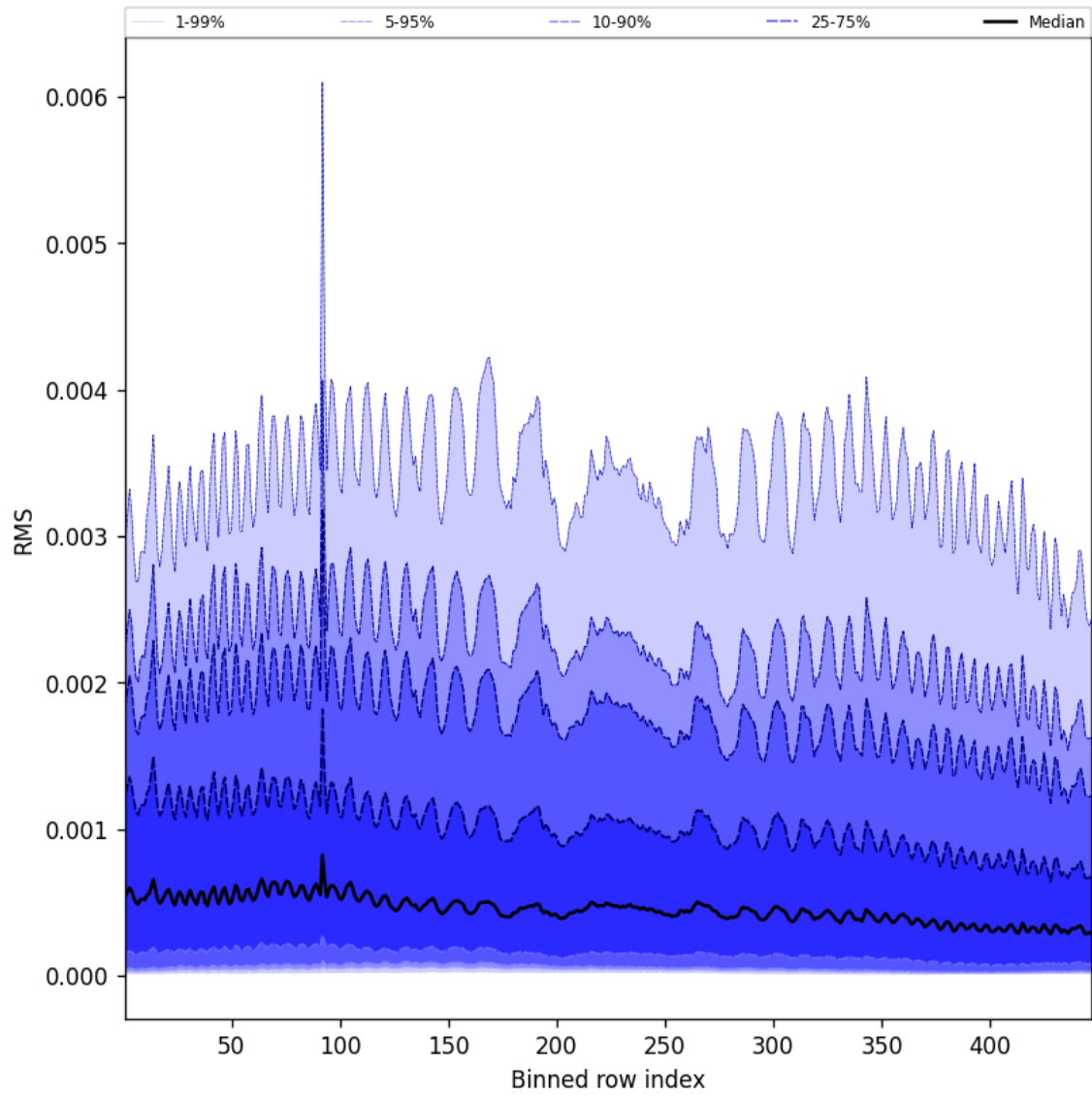


Figure 63: Along track statistics of “RMS” for 2025-01-28 to 2025-01-29

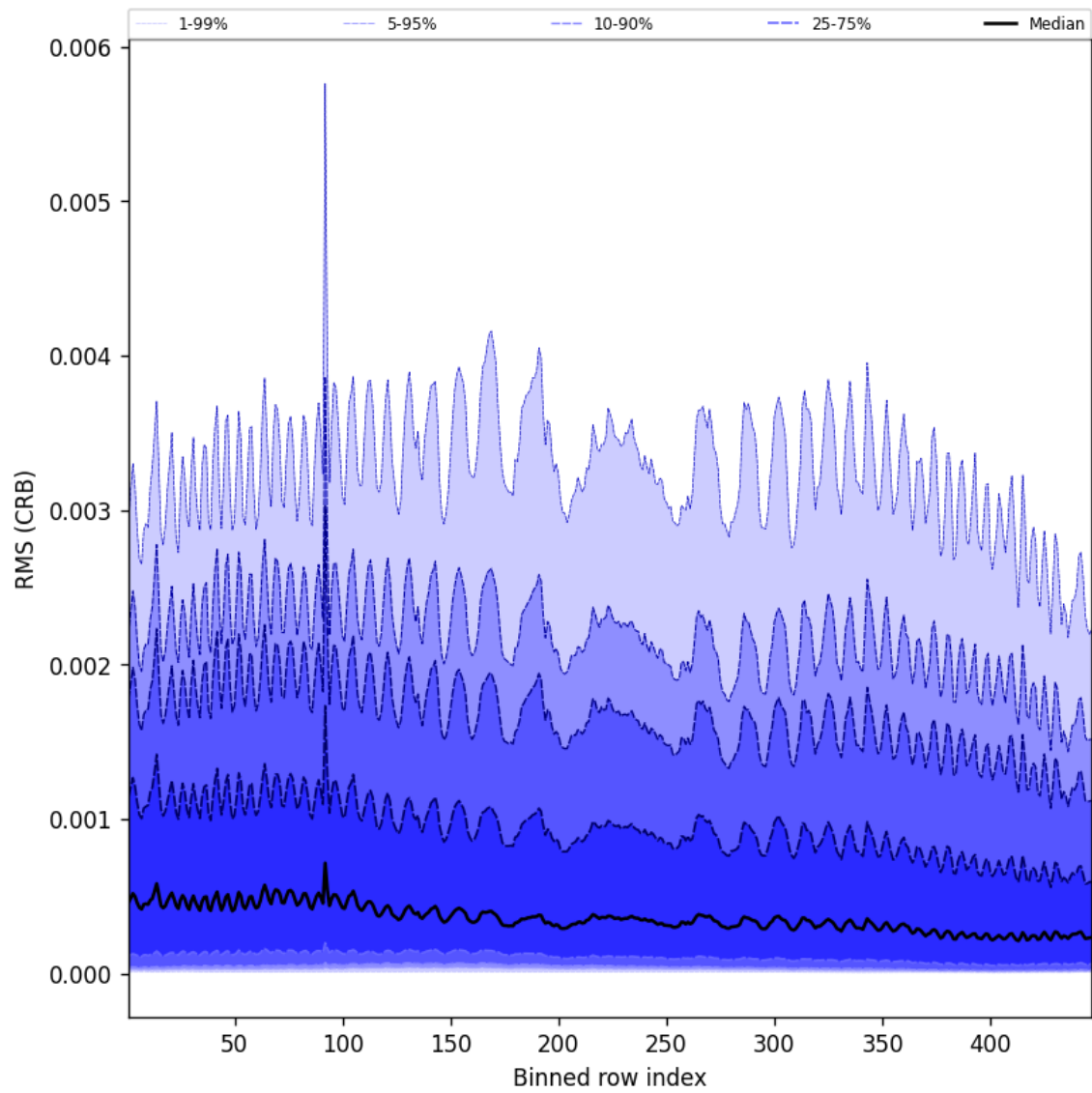


Figure 64: Along track statistics of “RMS (CRB)” for 2025-01-28 to 2025-01-29

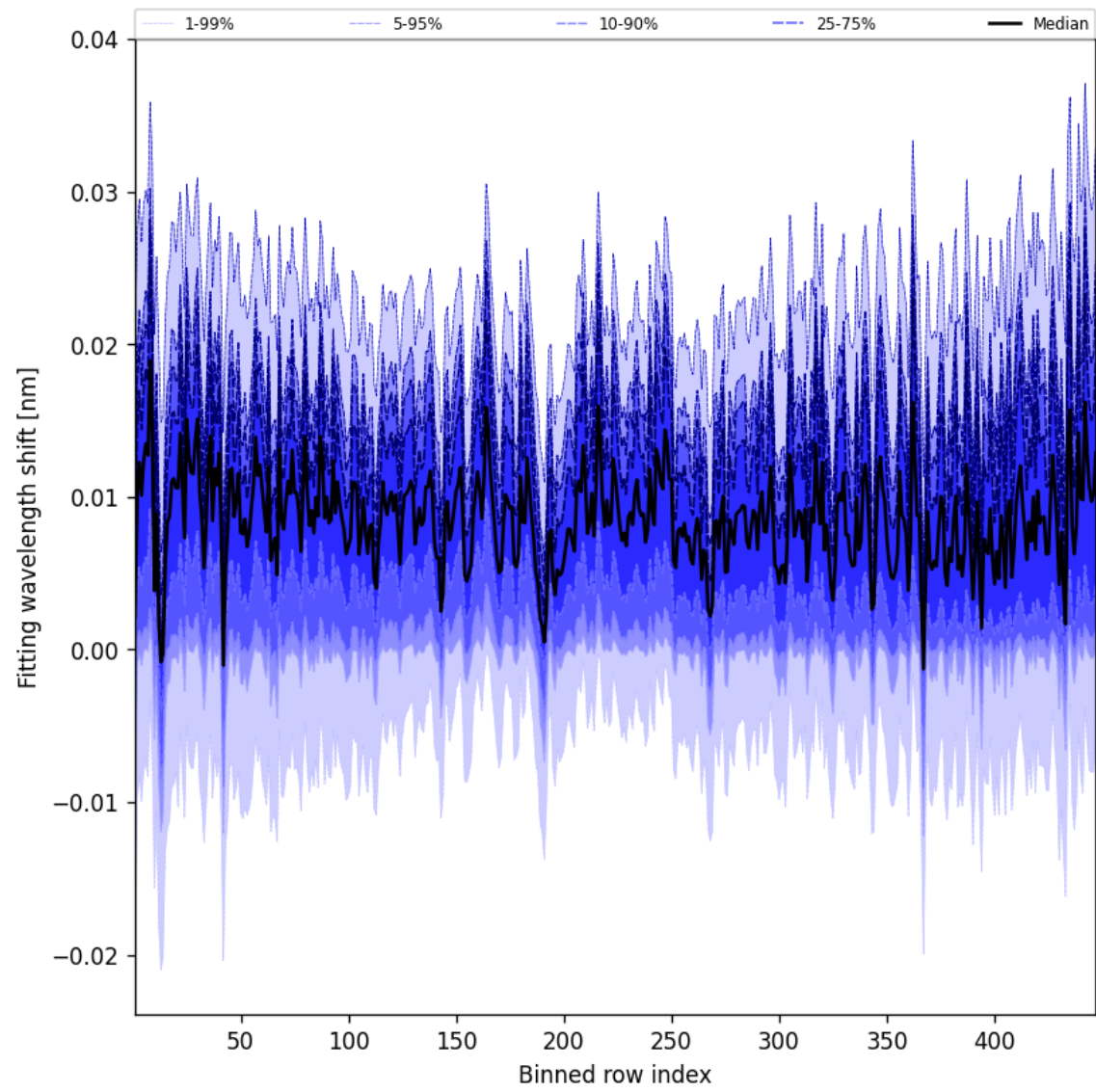


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-01-28 to 2025-01-29

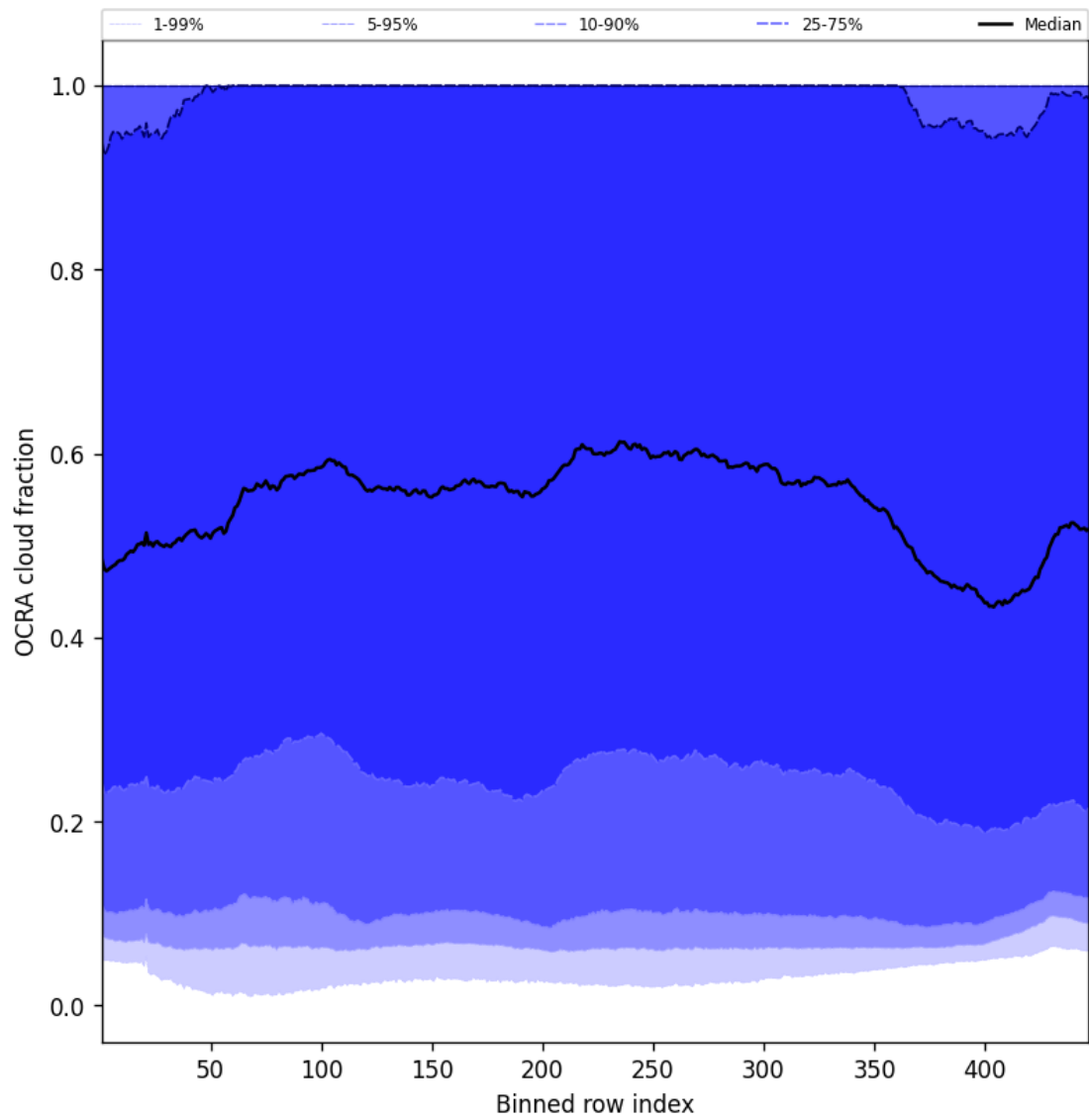


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-01-28 to 2025-01-29

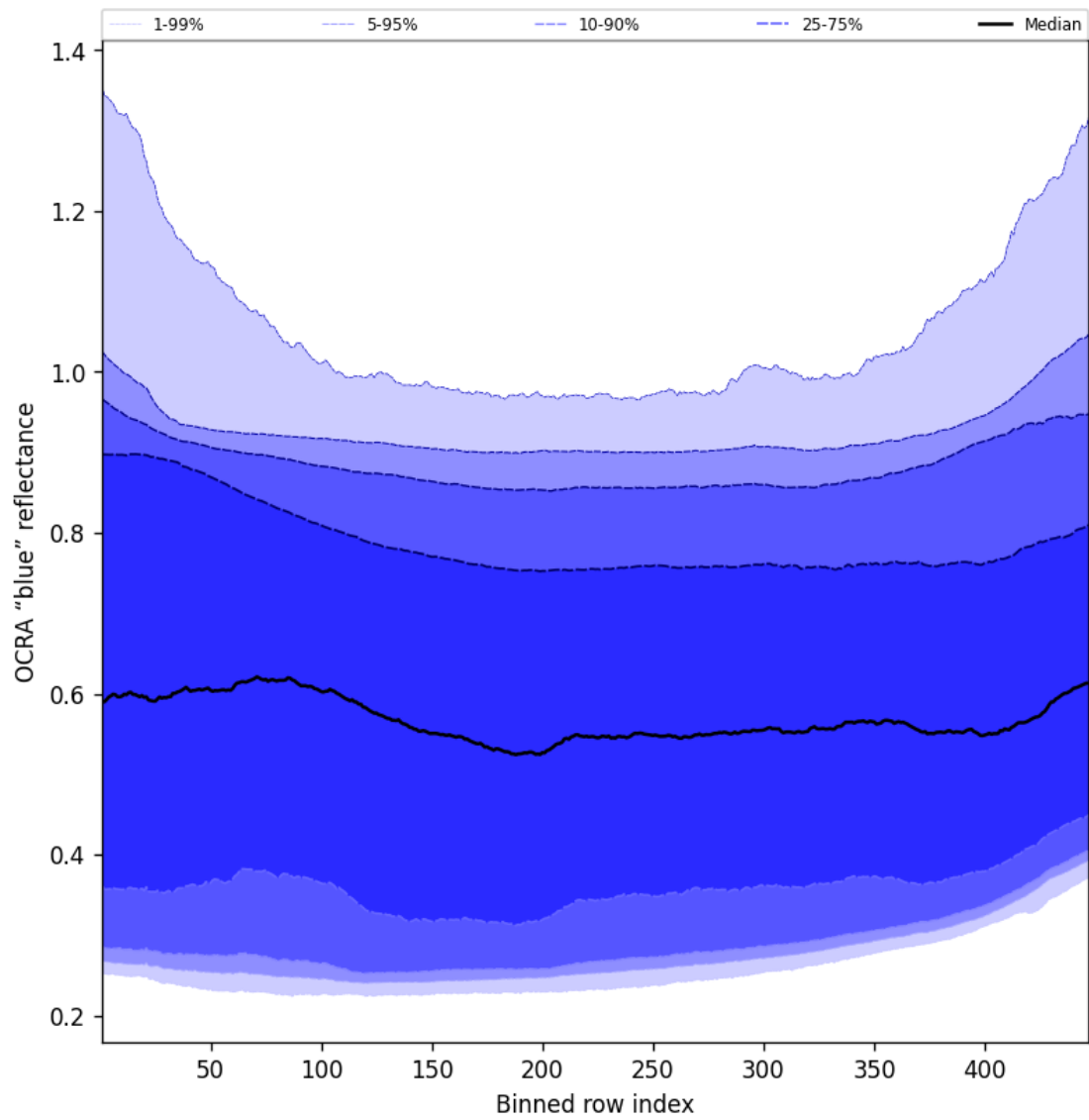


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-01-28 to 2025-01-29

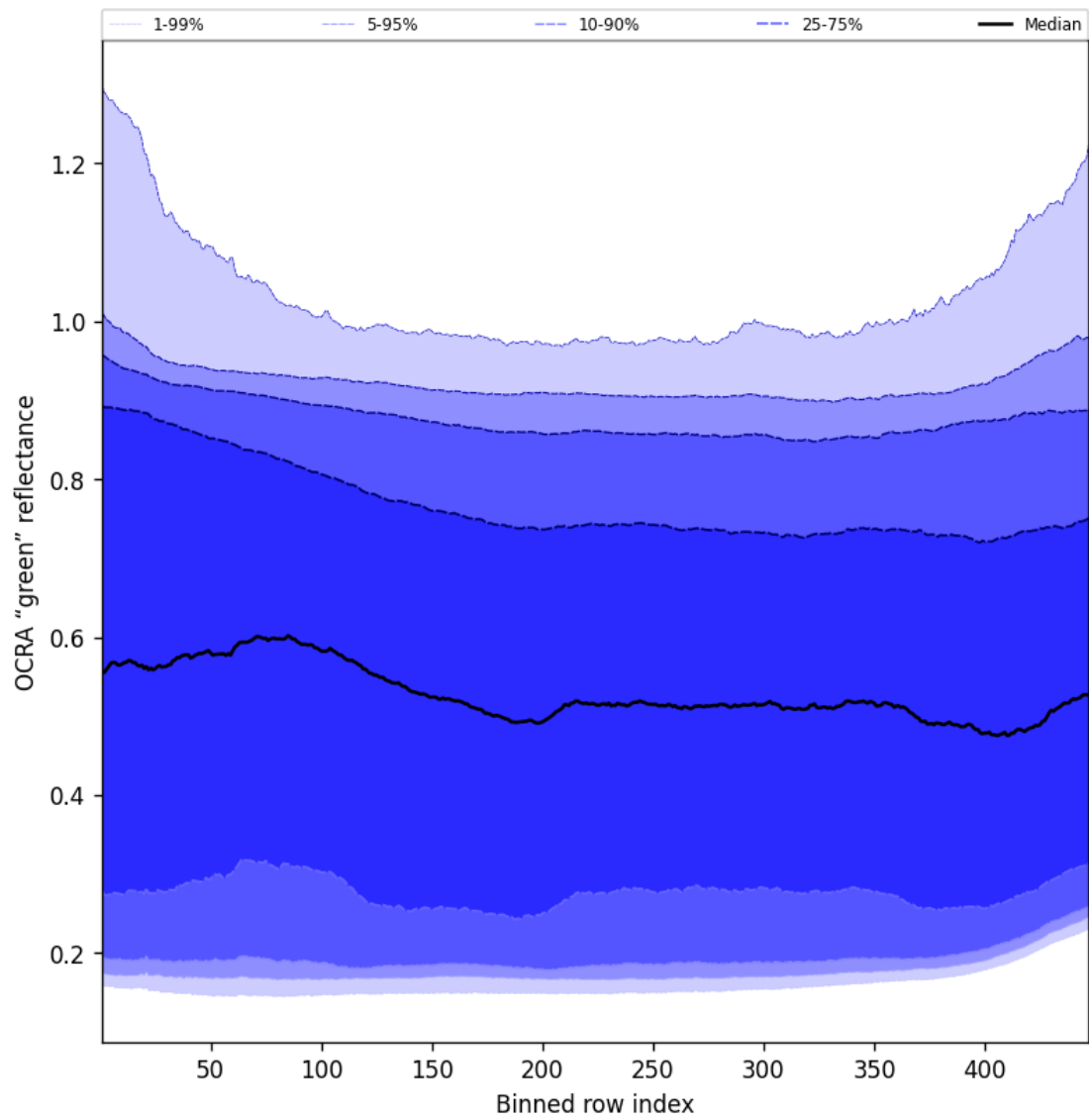


Figure 68: Along track statistics of "OCRA "green" reflectance" for 2025-01-28 to 2025-01-29

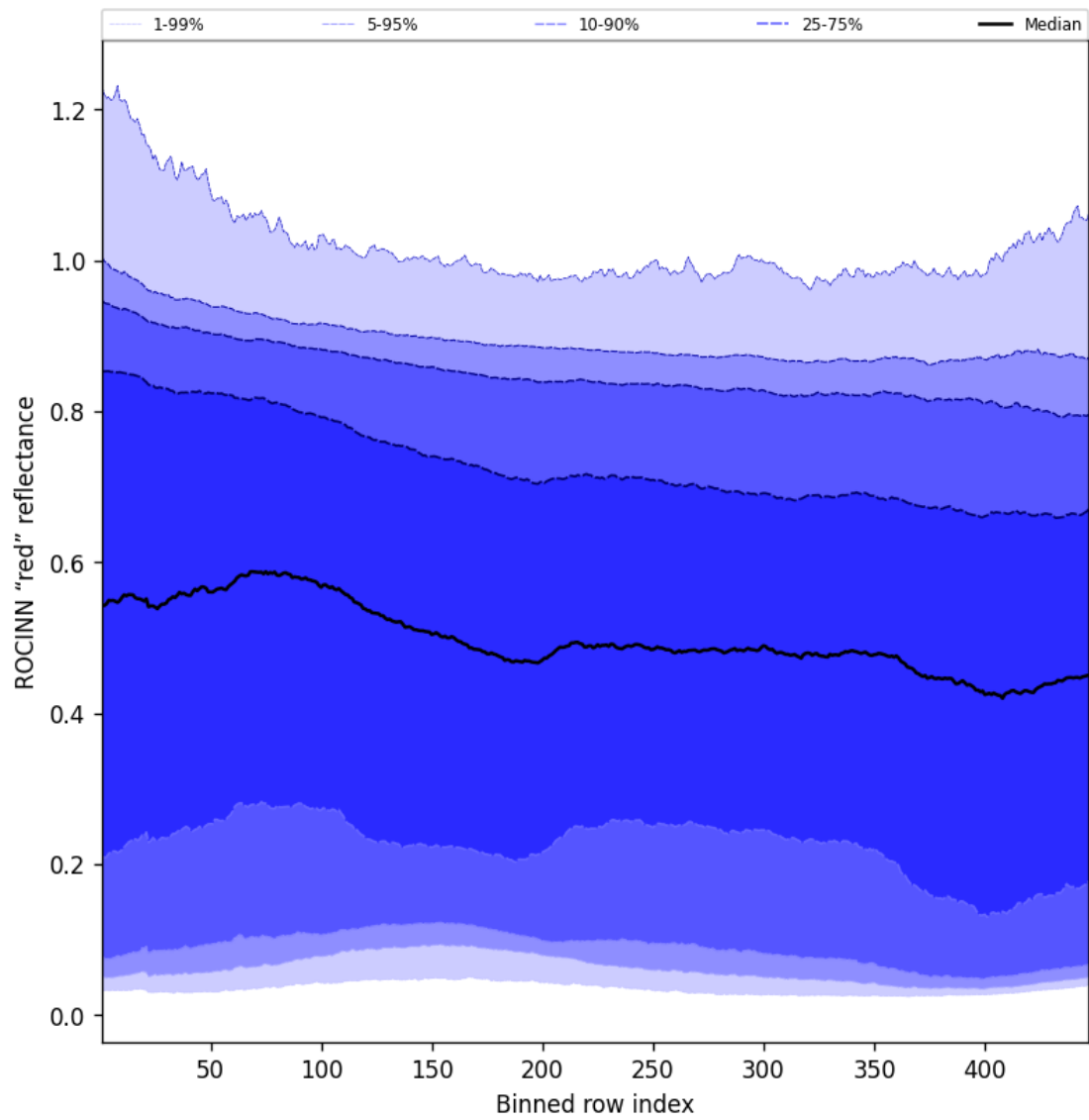


Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2025-01-28 to 2025-01-29

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.

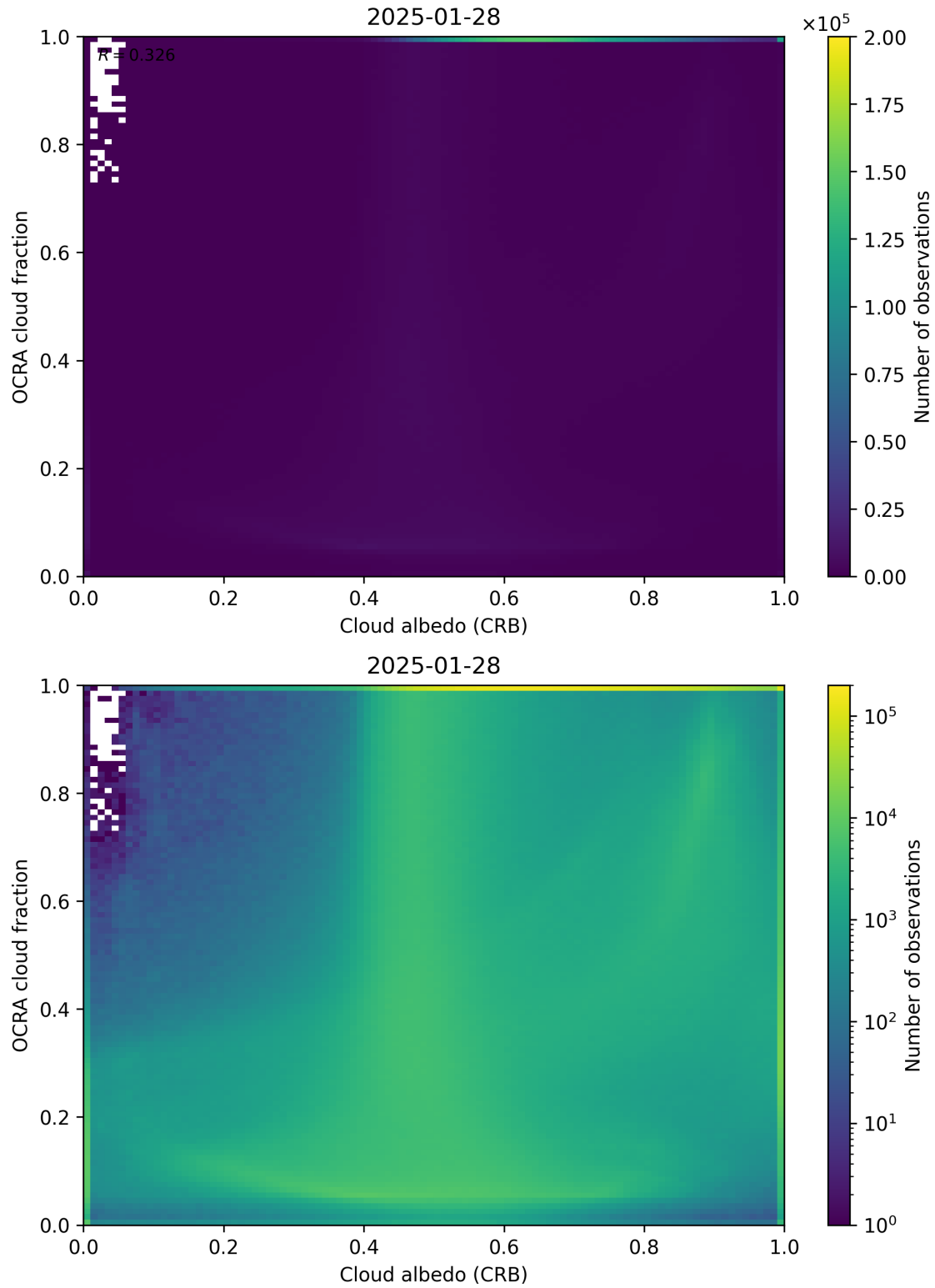


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-01-28 to 2025-01-29.

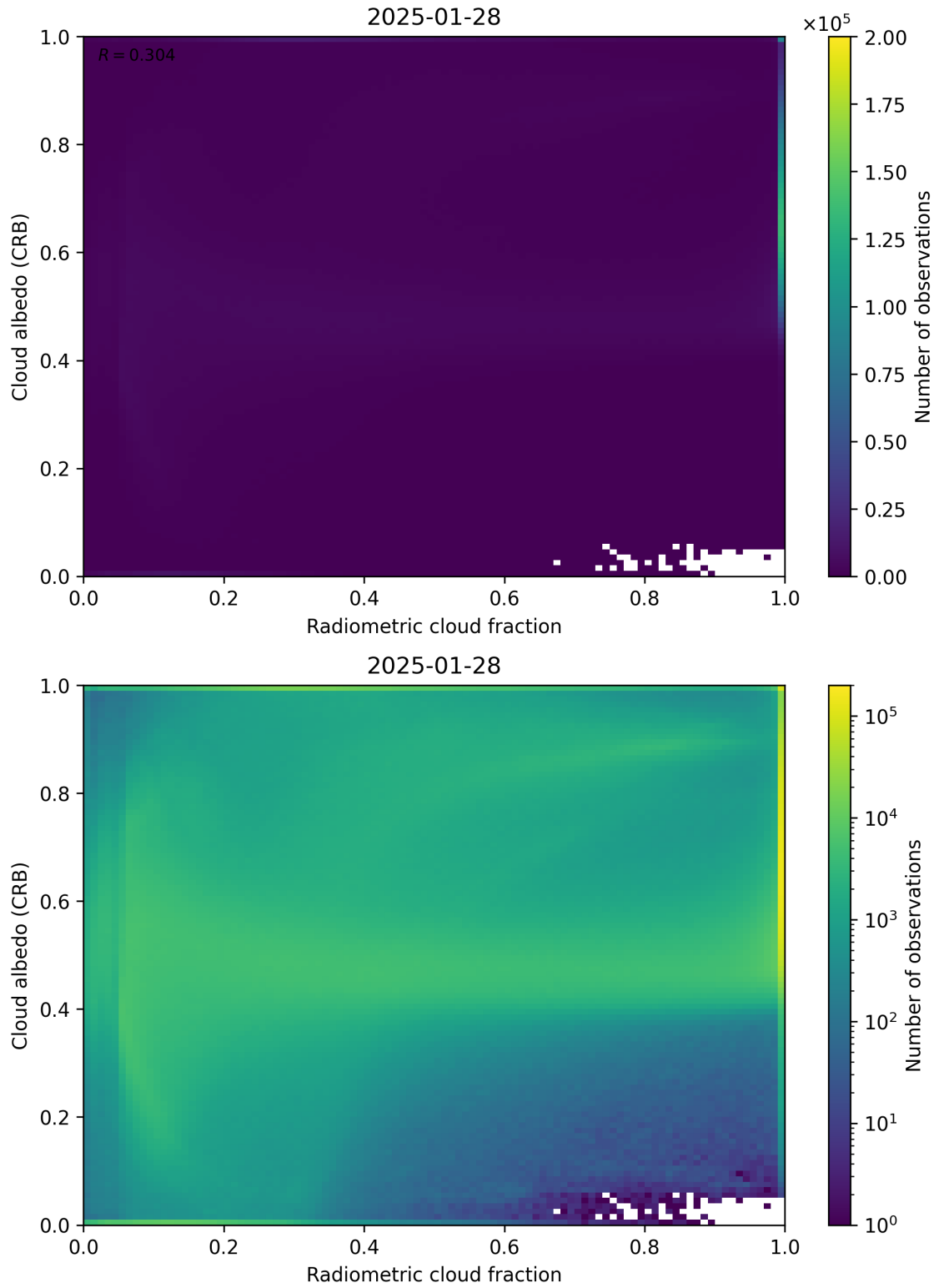


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-01-28 to 2025-01-29.

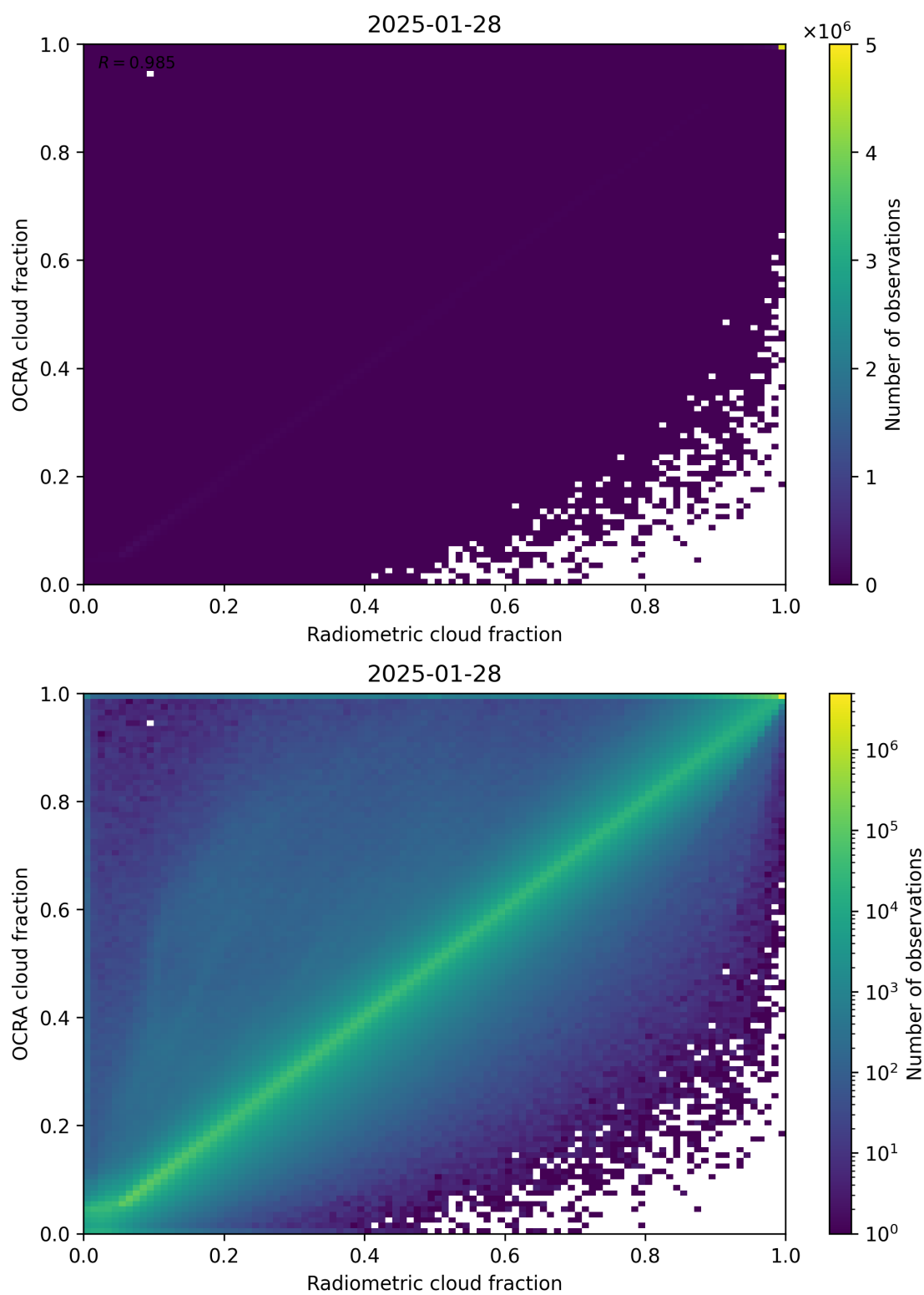


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-01-28 to 2025-01-29.

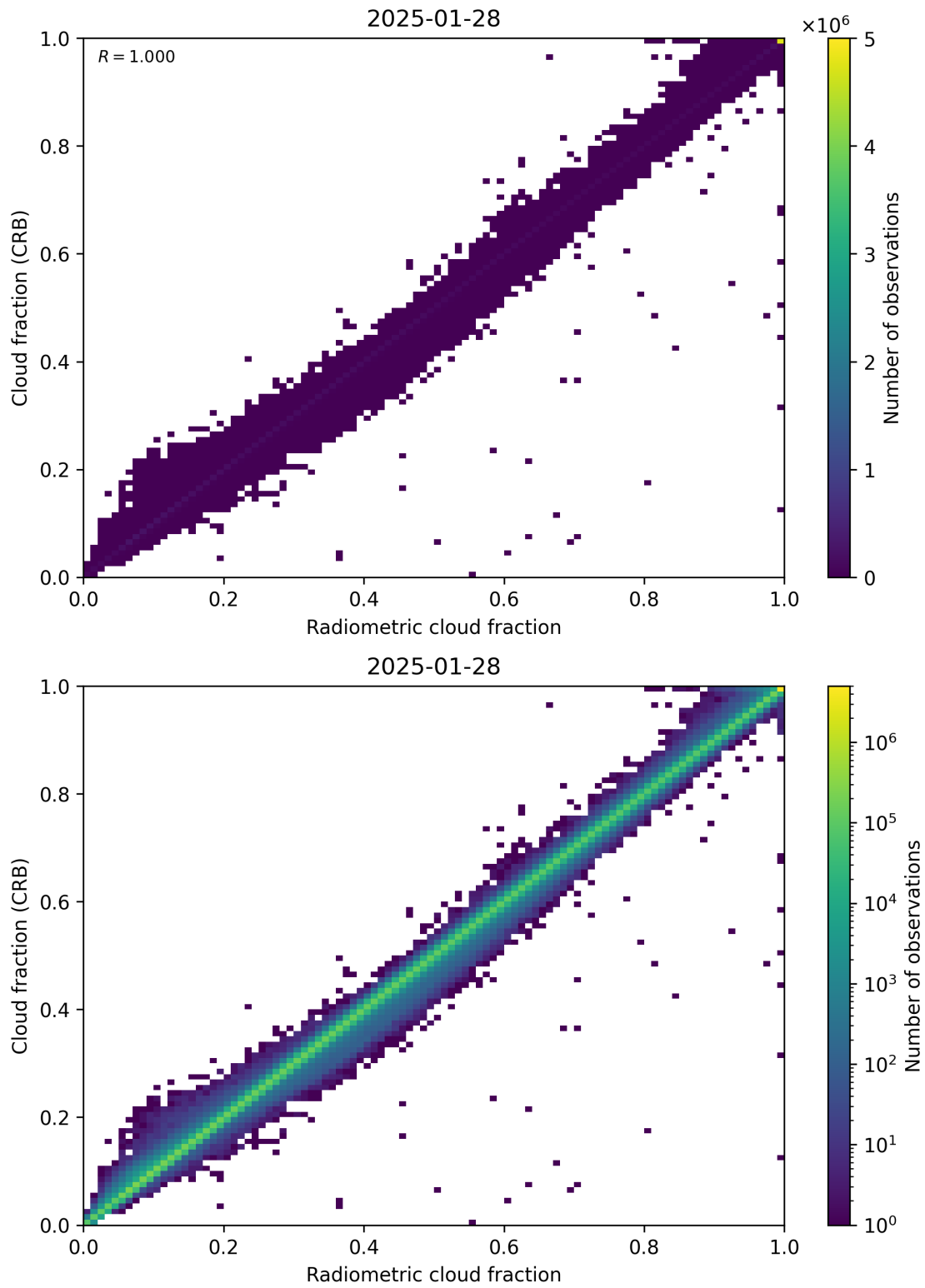


Figure 73: Scatter density plot of “Radiometric cloud fraction” against “Cloud fraction (CRB)” for 2025-01-28 to 2025-01-29.

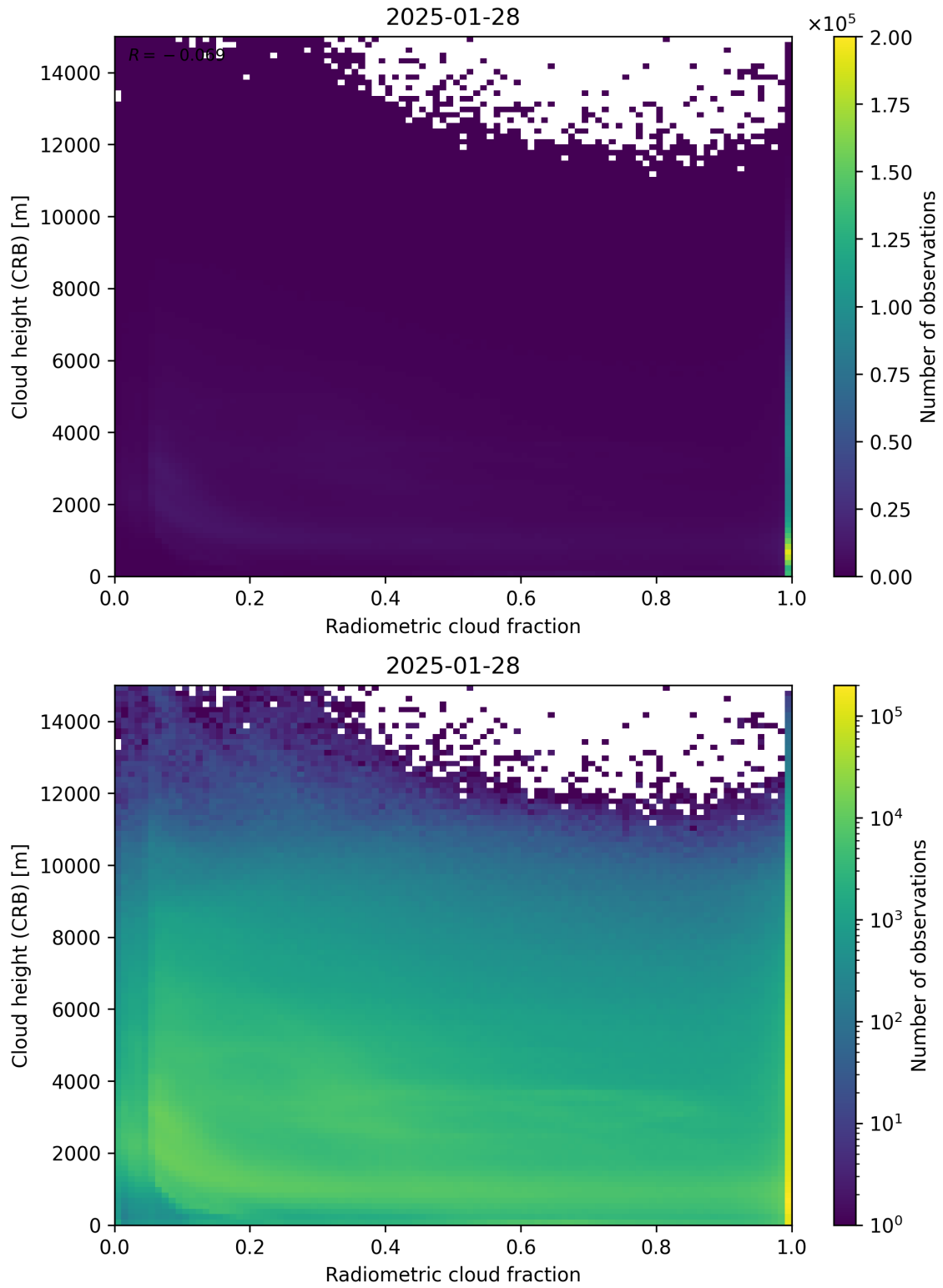


Figure 74: Scatter density plot of “Radiometric cloud fraction” against “Cloud height (CRB)” for 2025-01-28 to 2025-01-29.

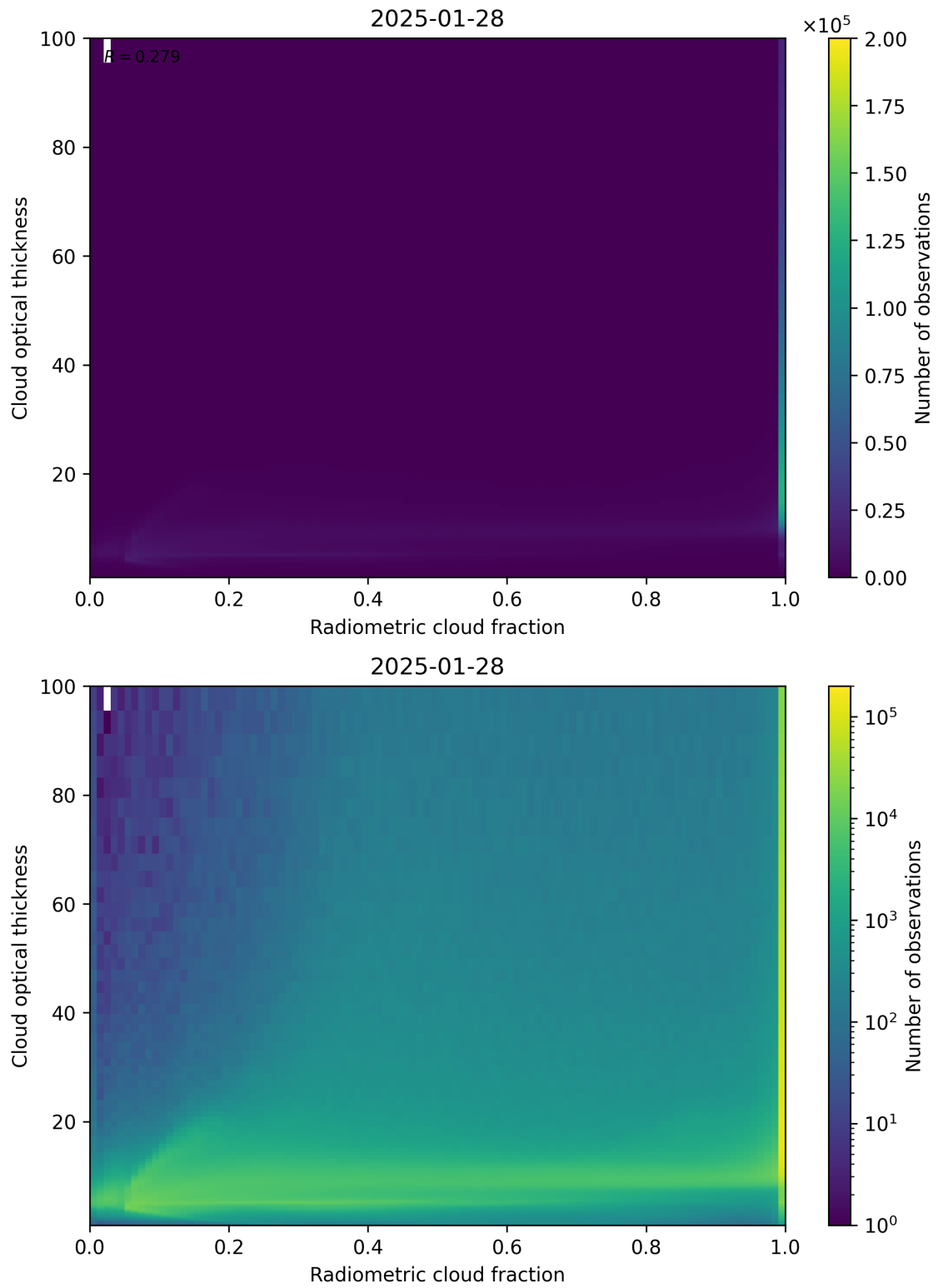


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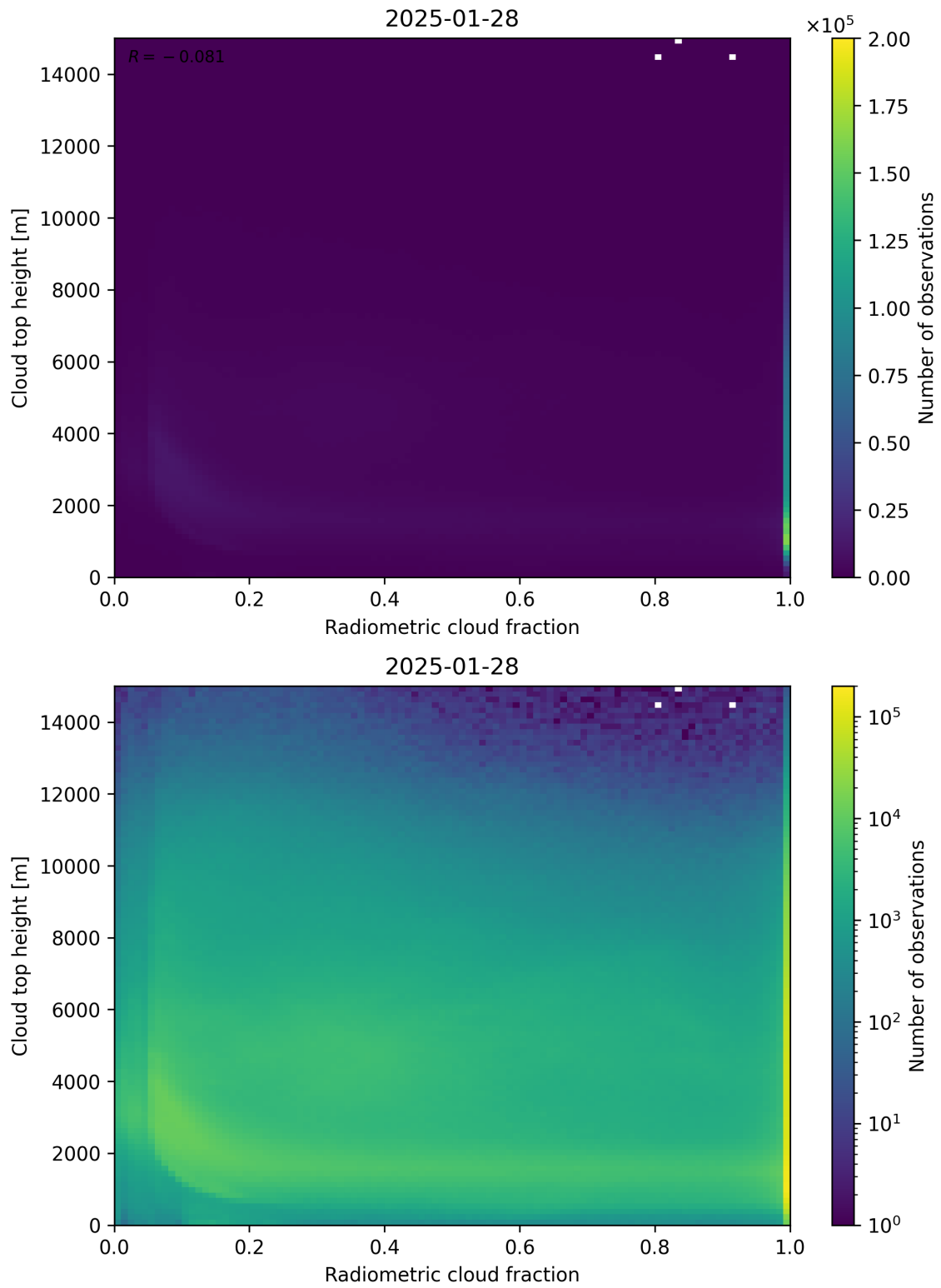


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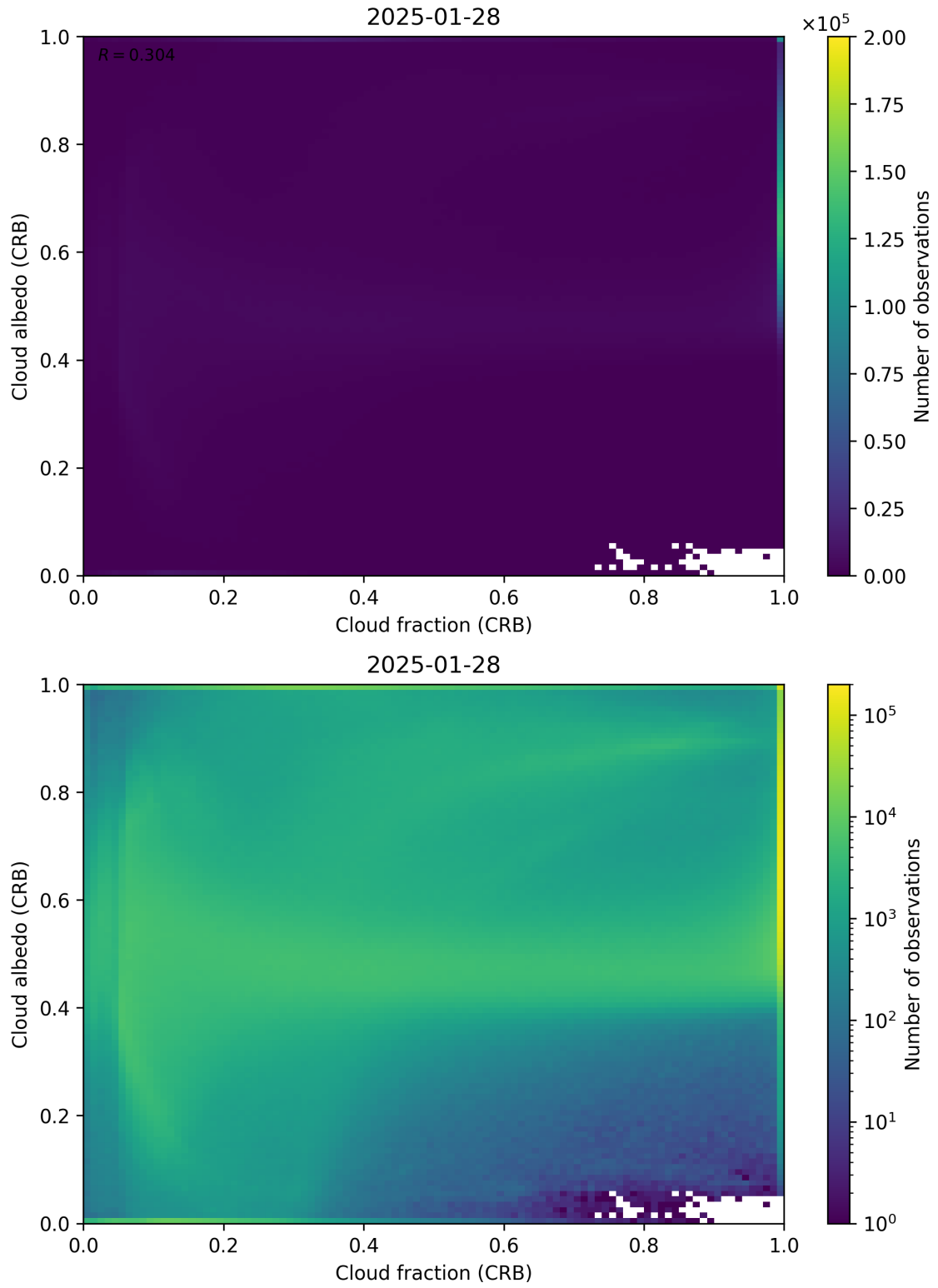


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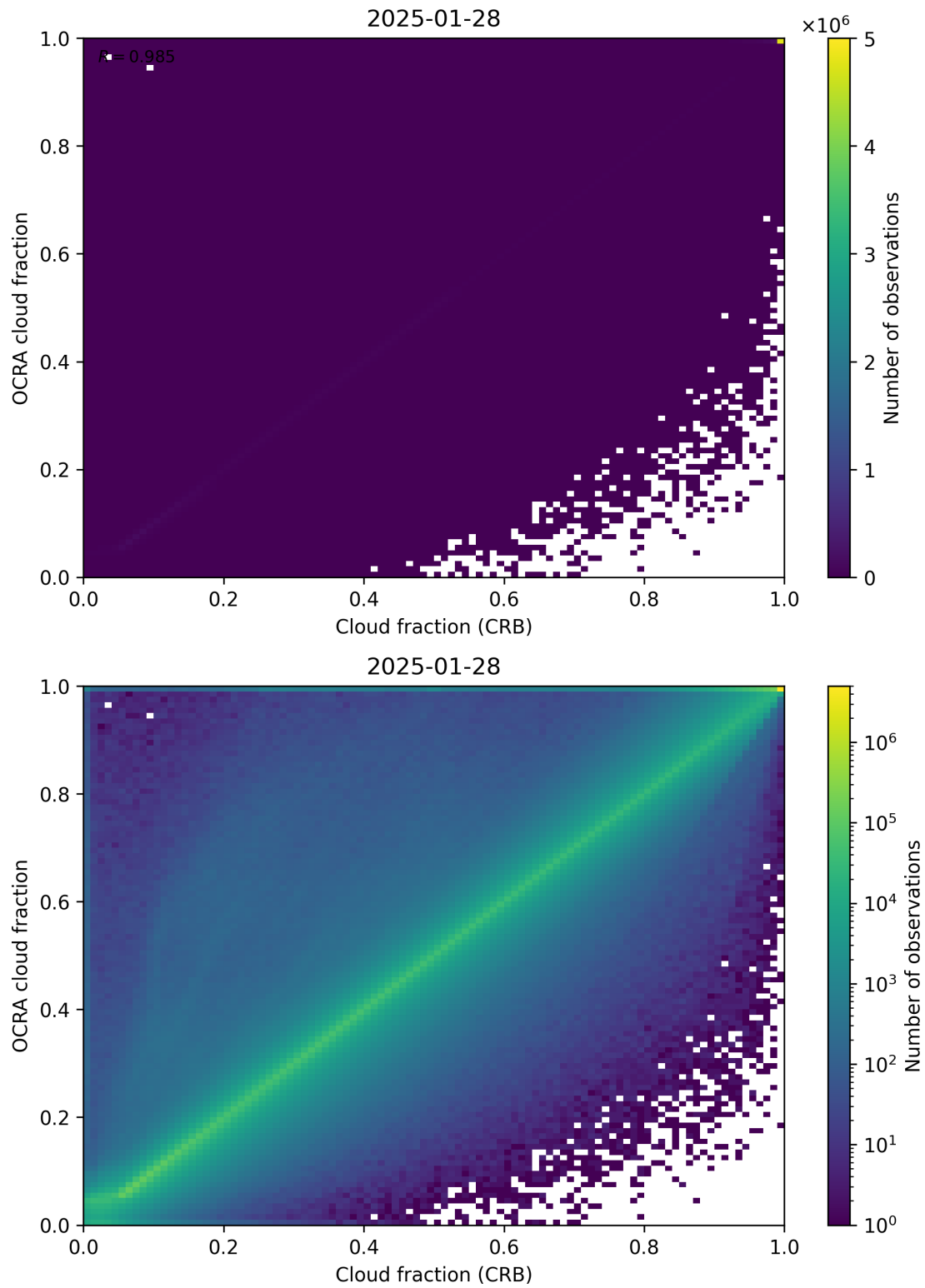


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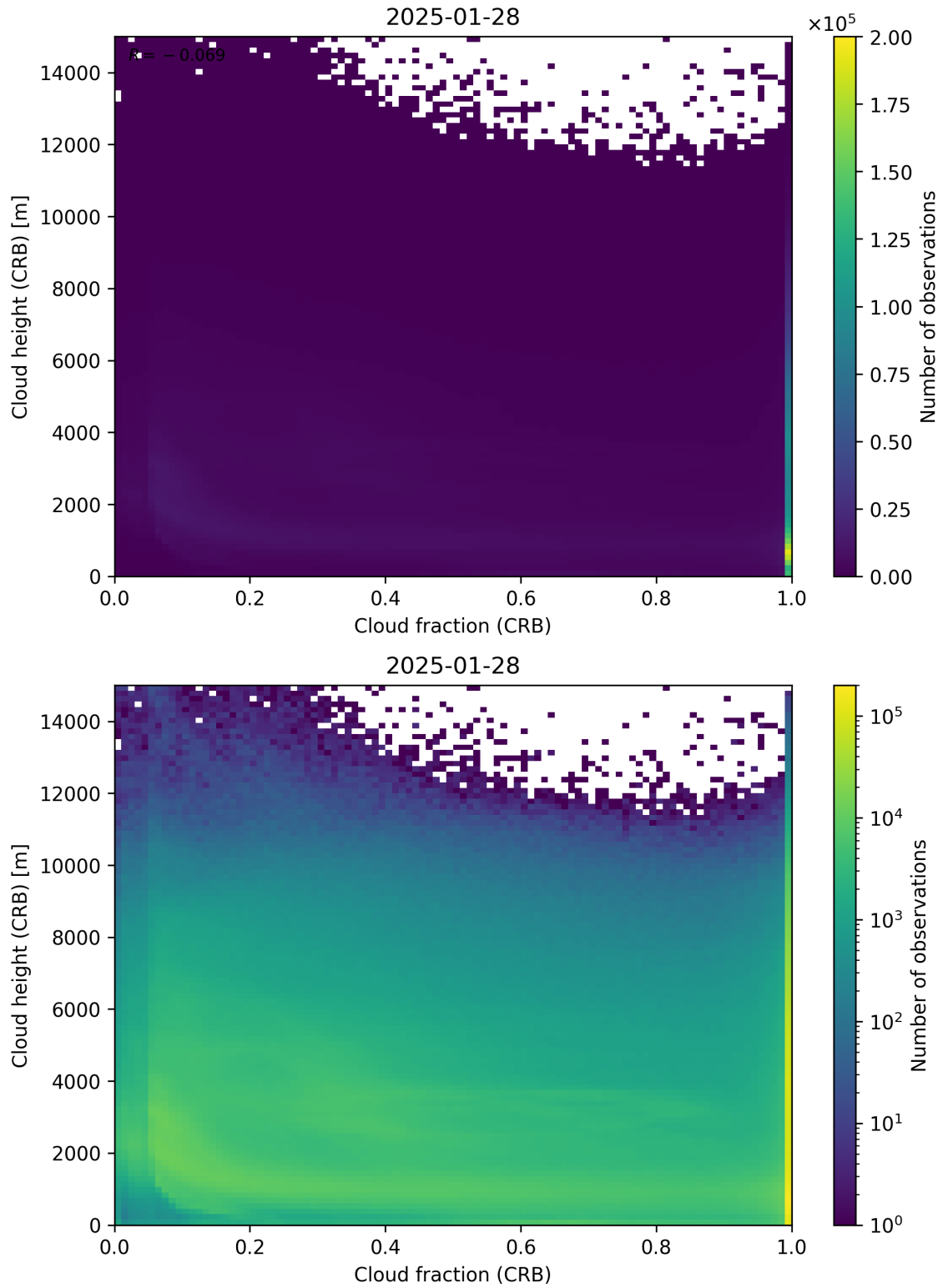


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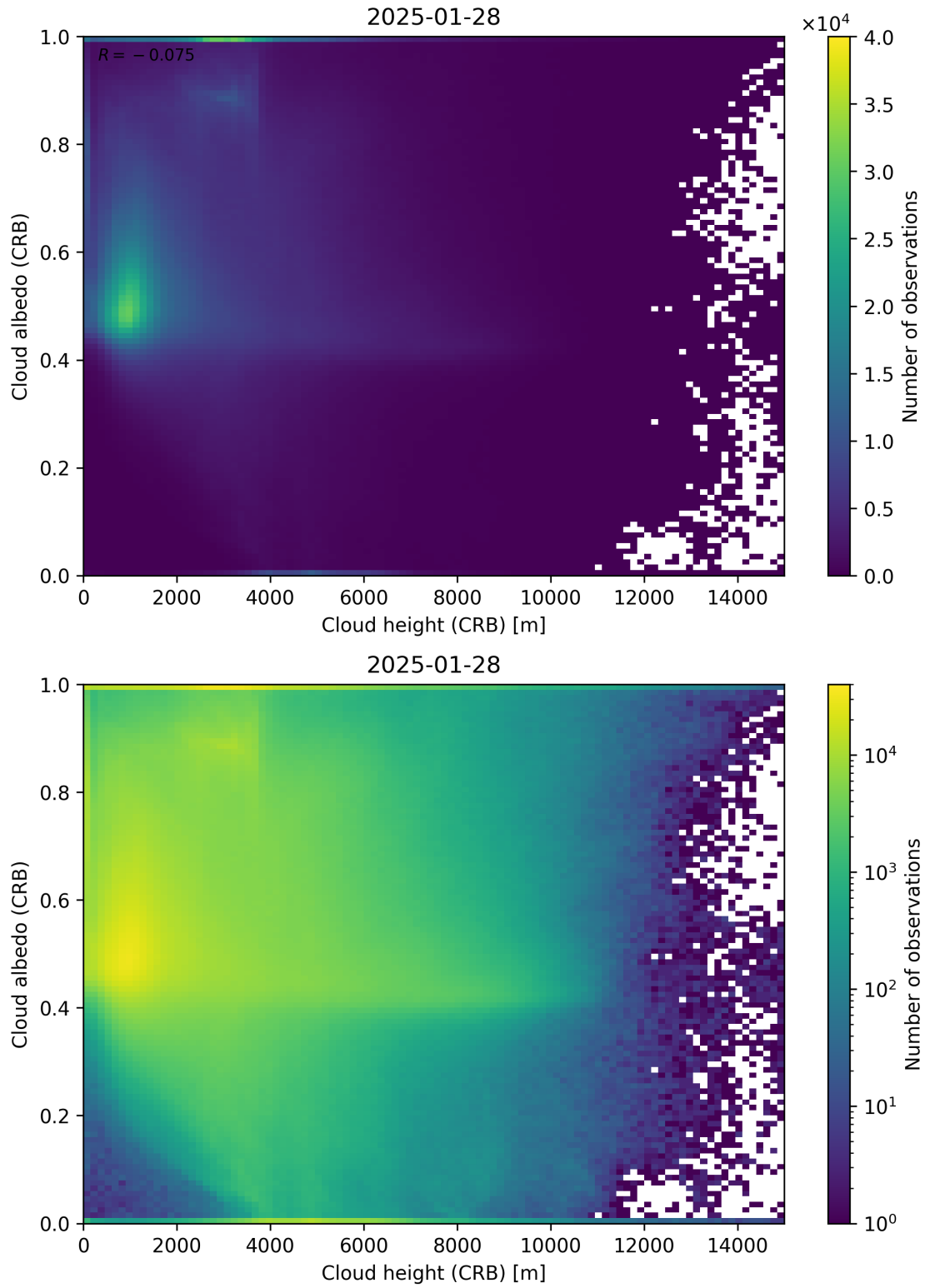


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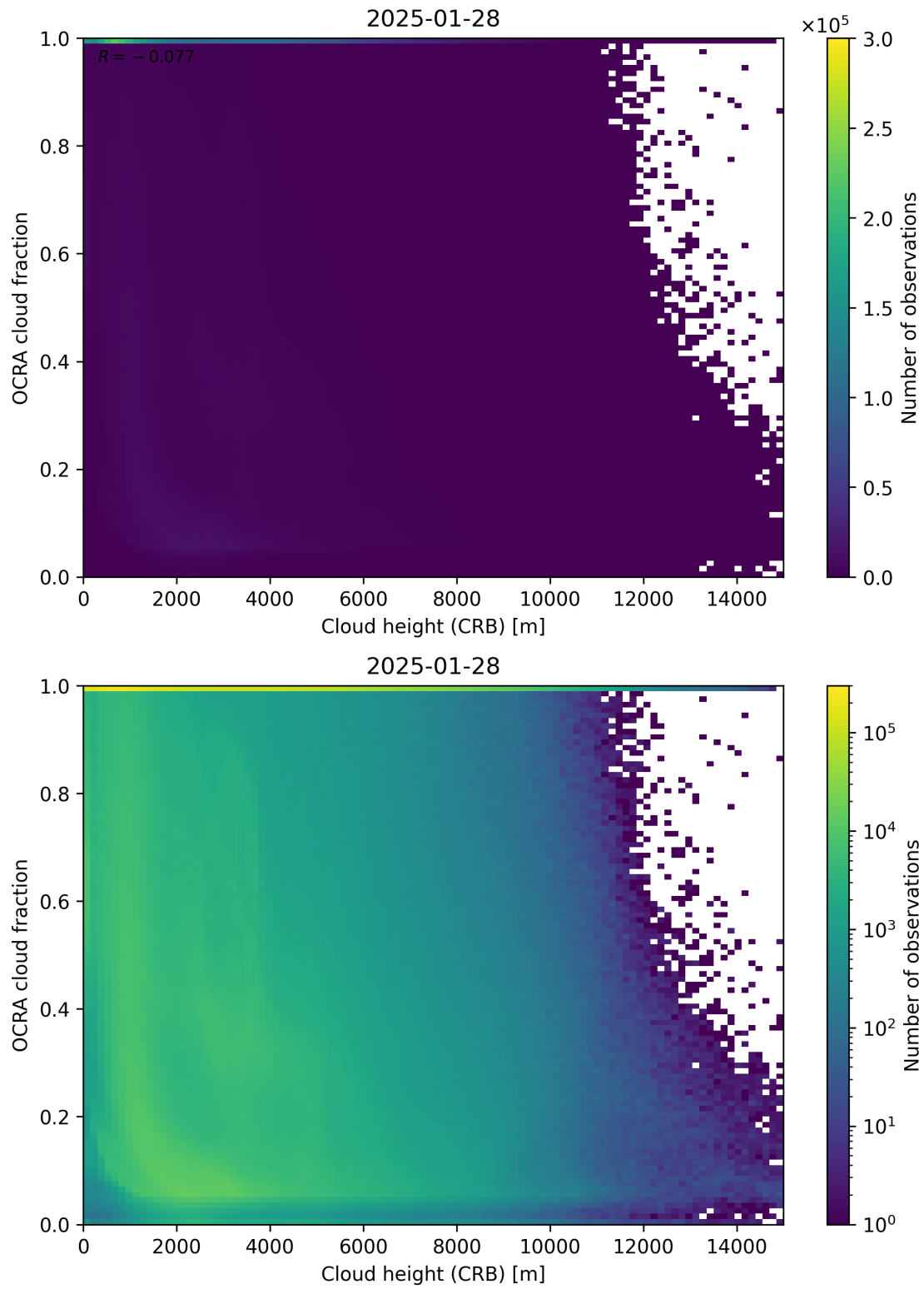


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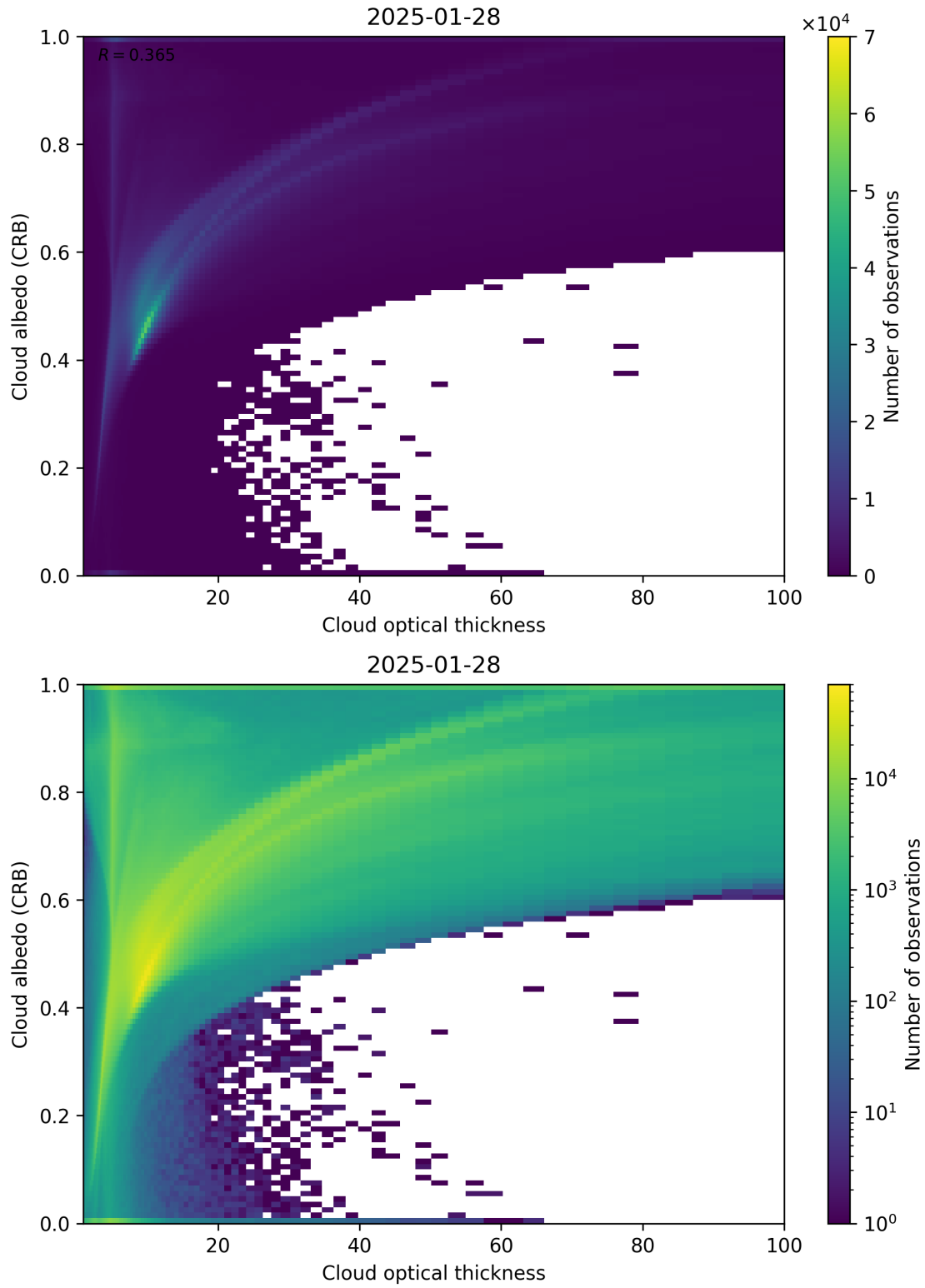


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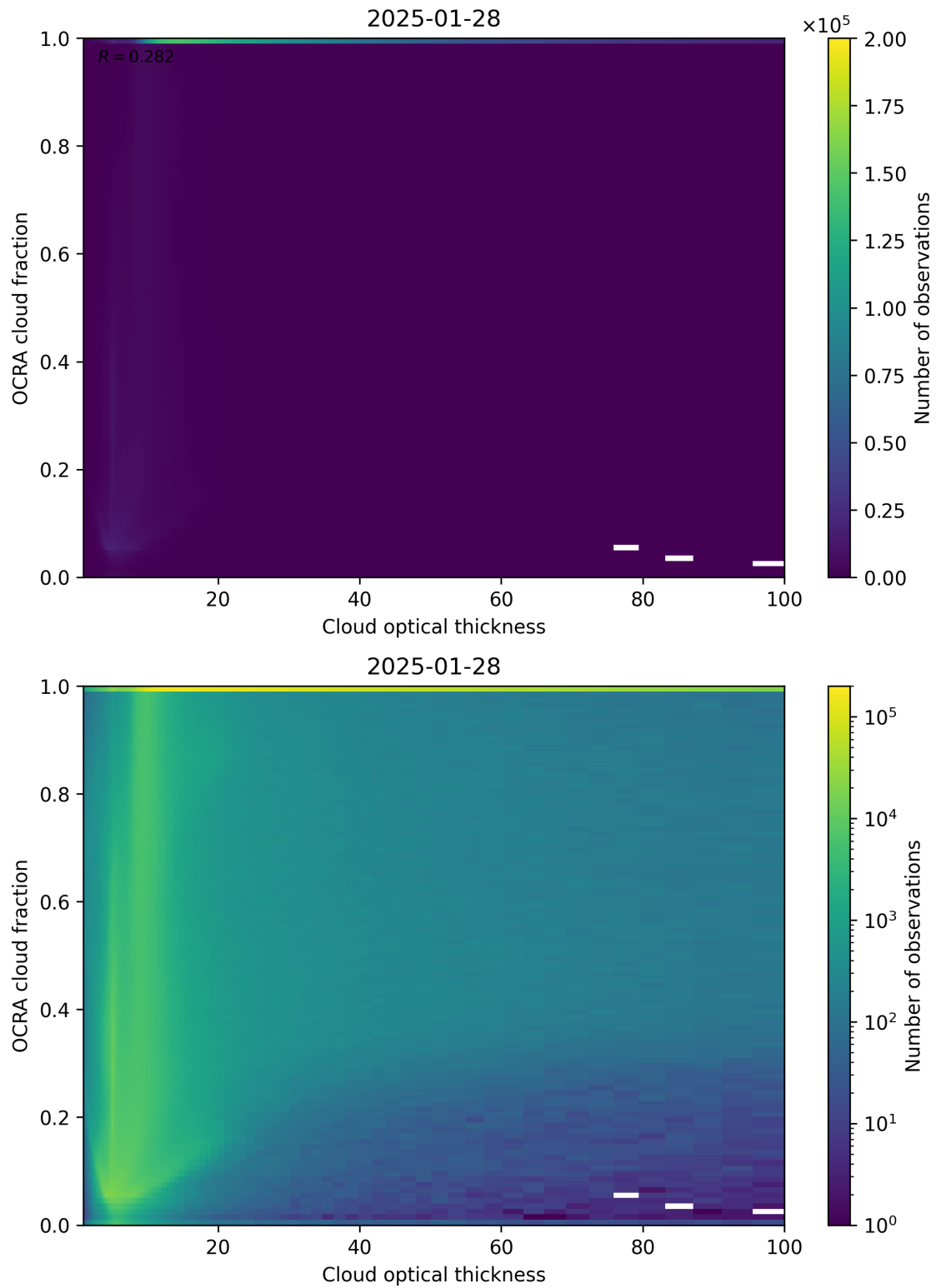


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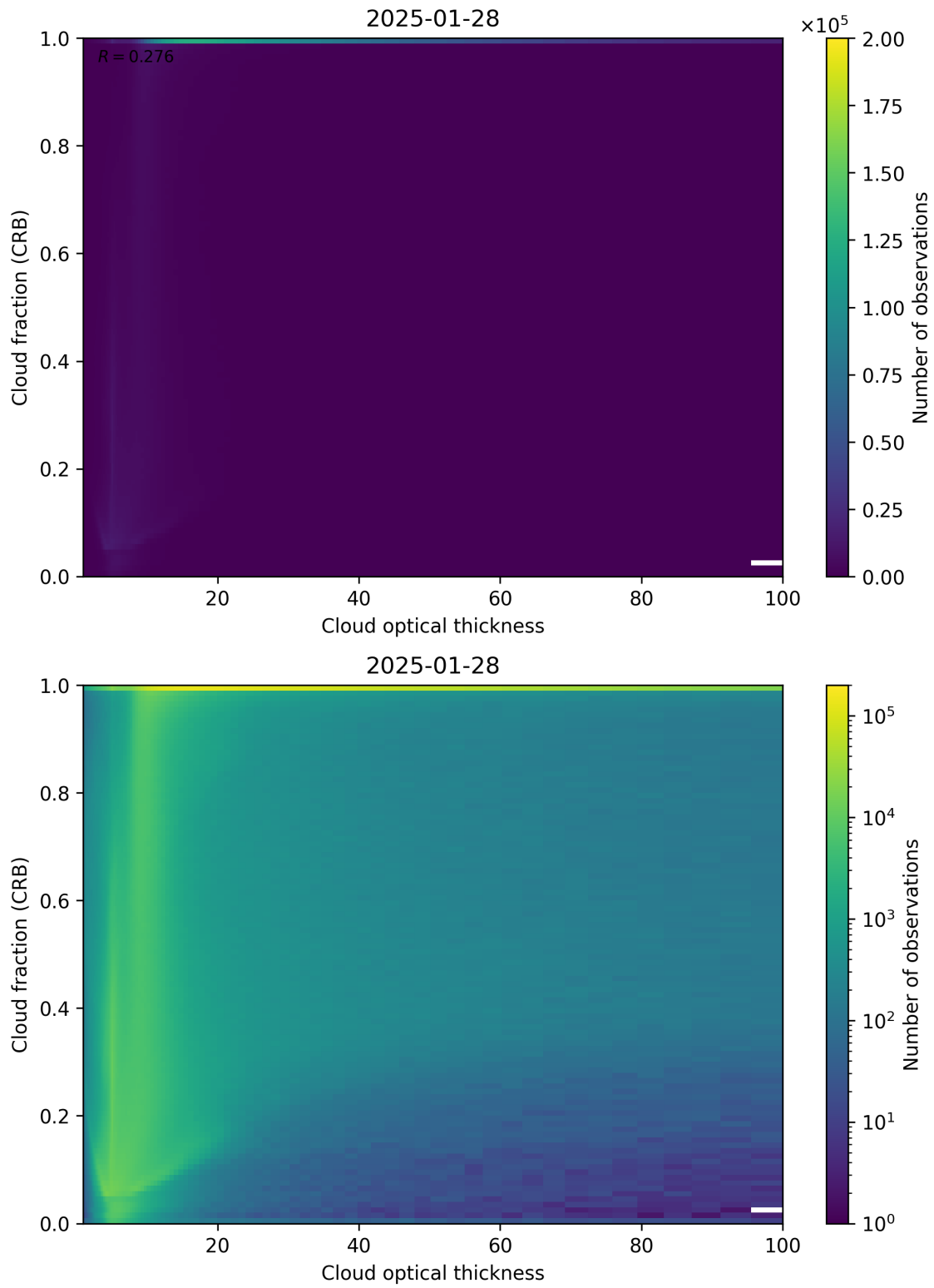


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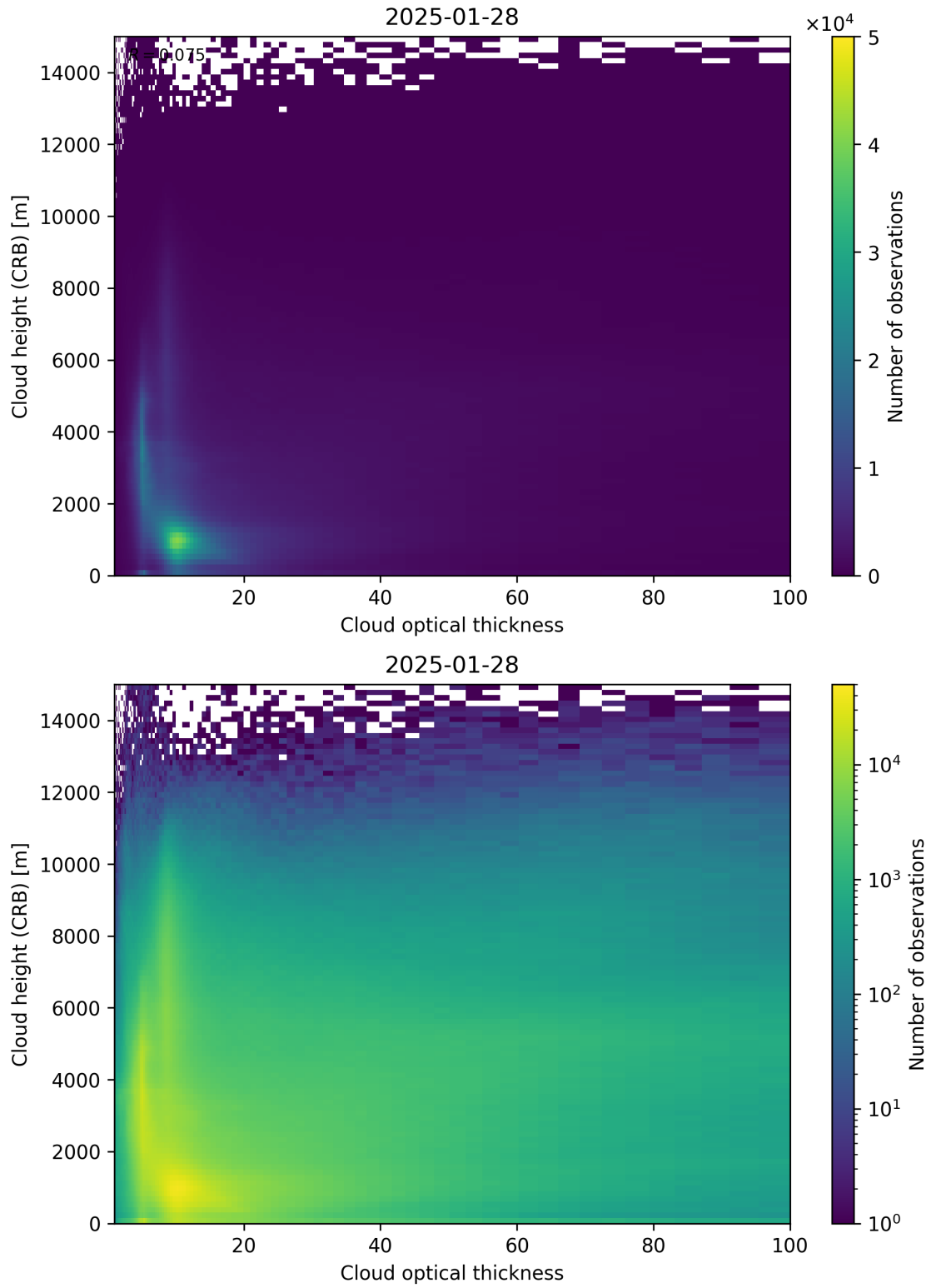


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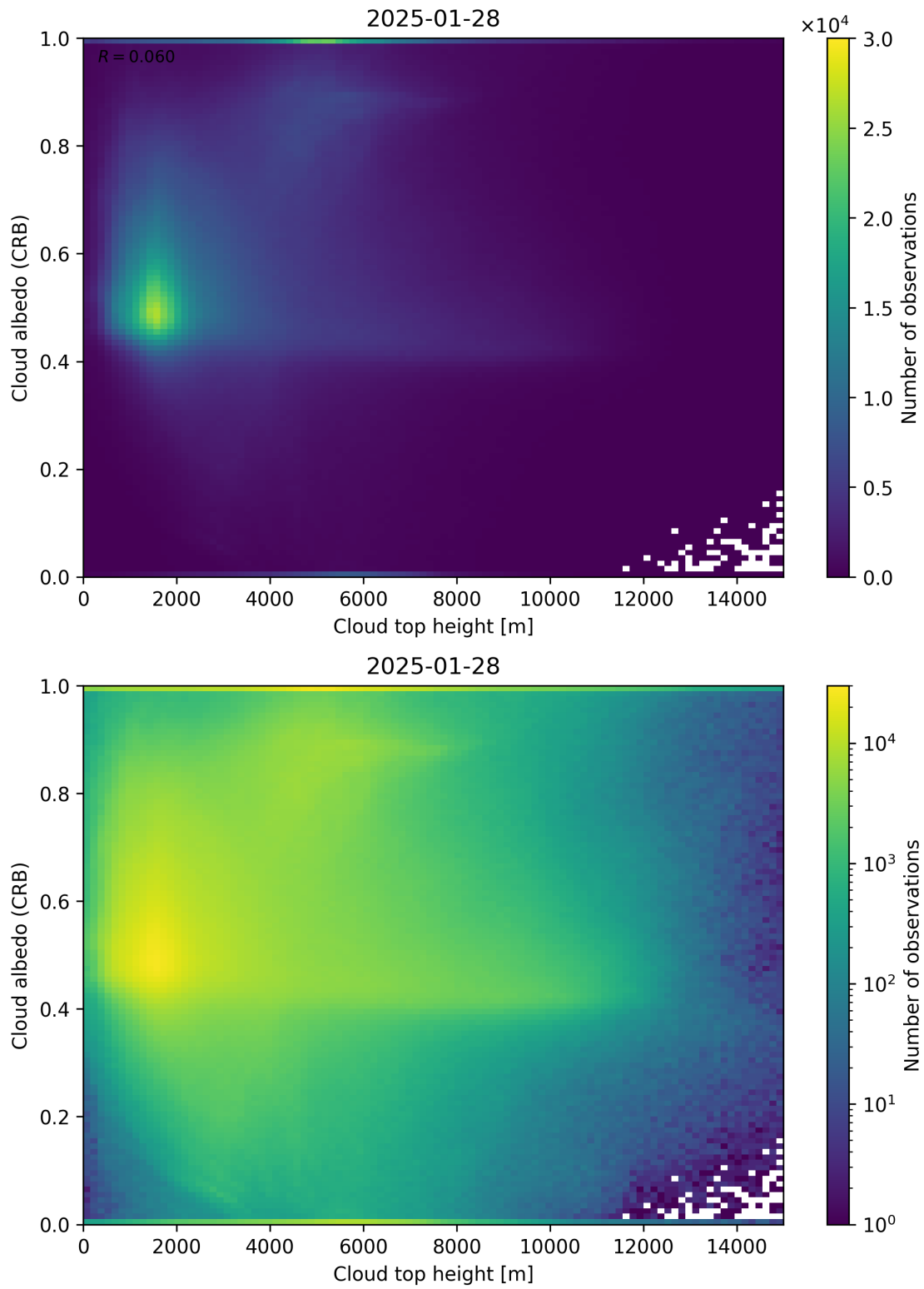


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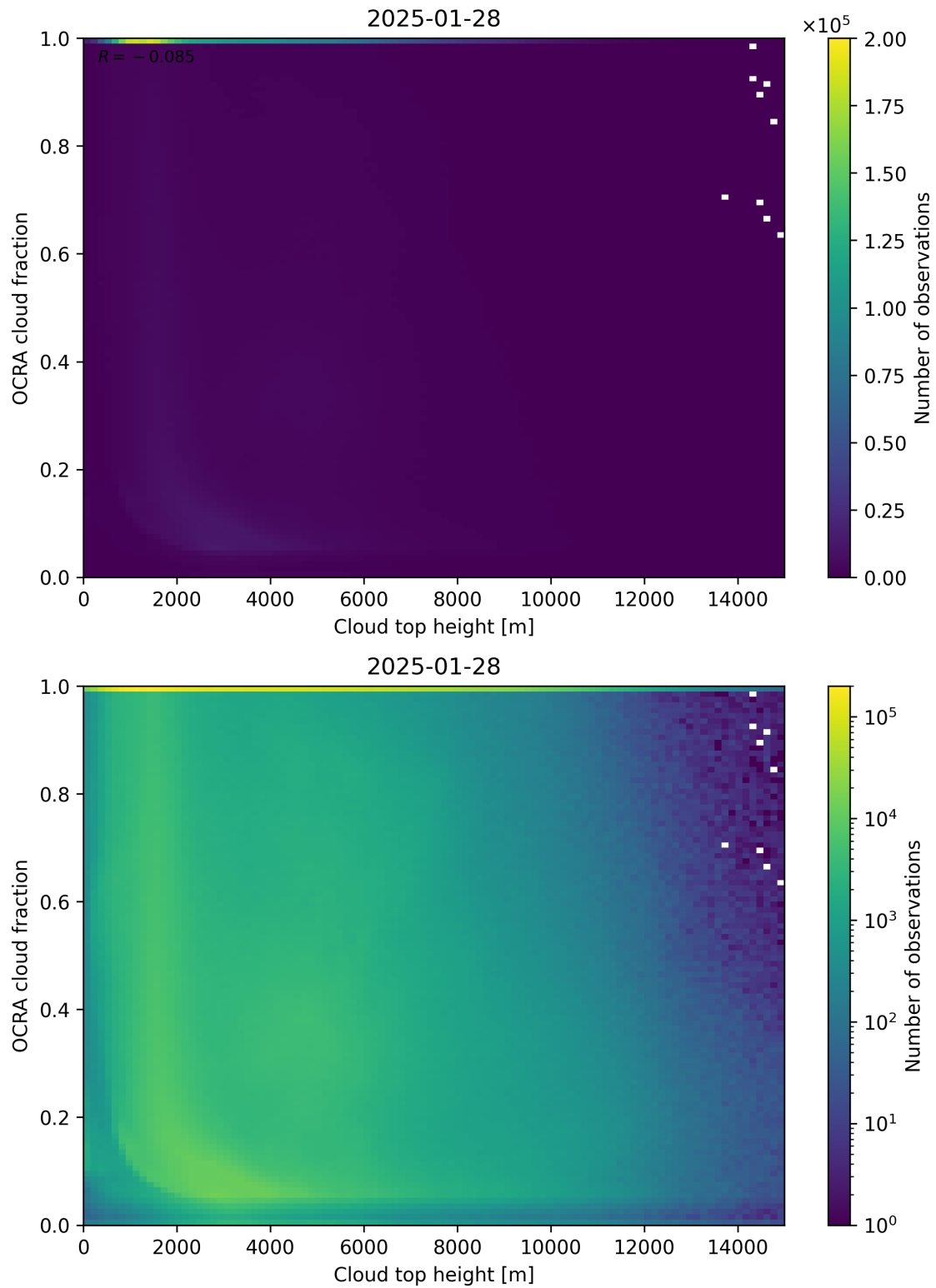


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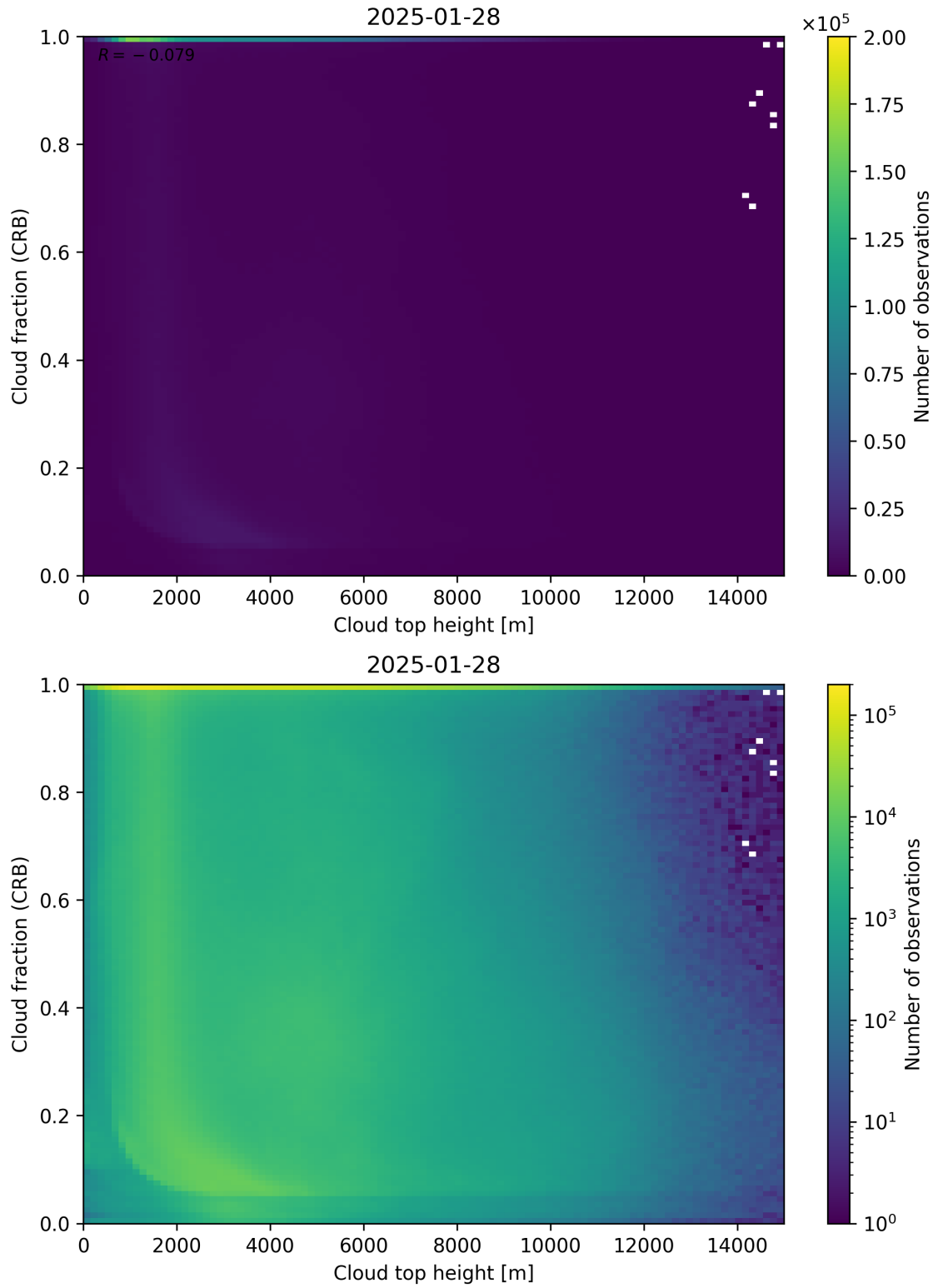


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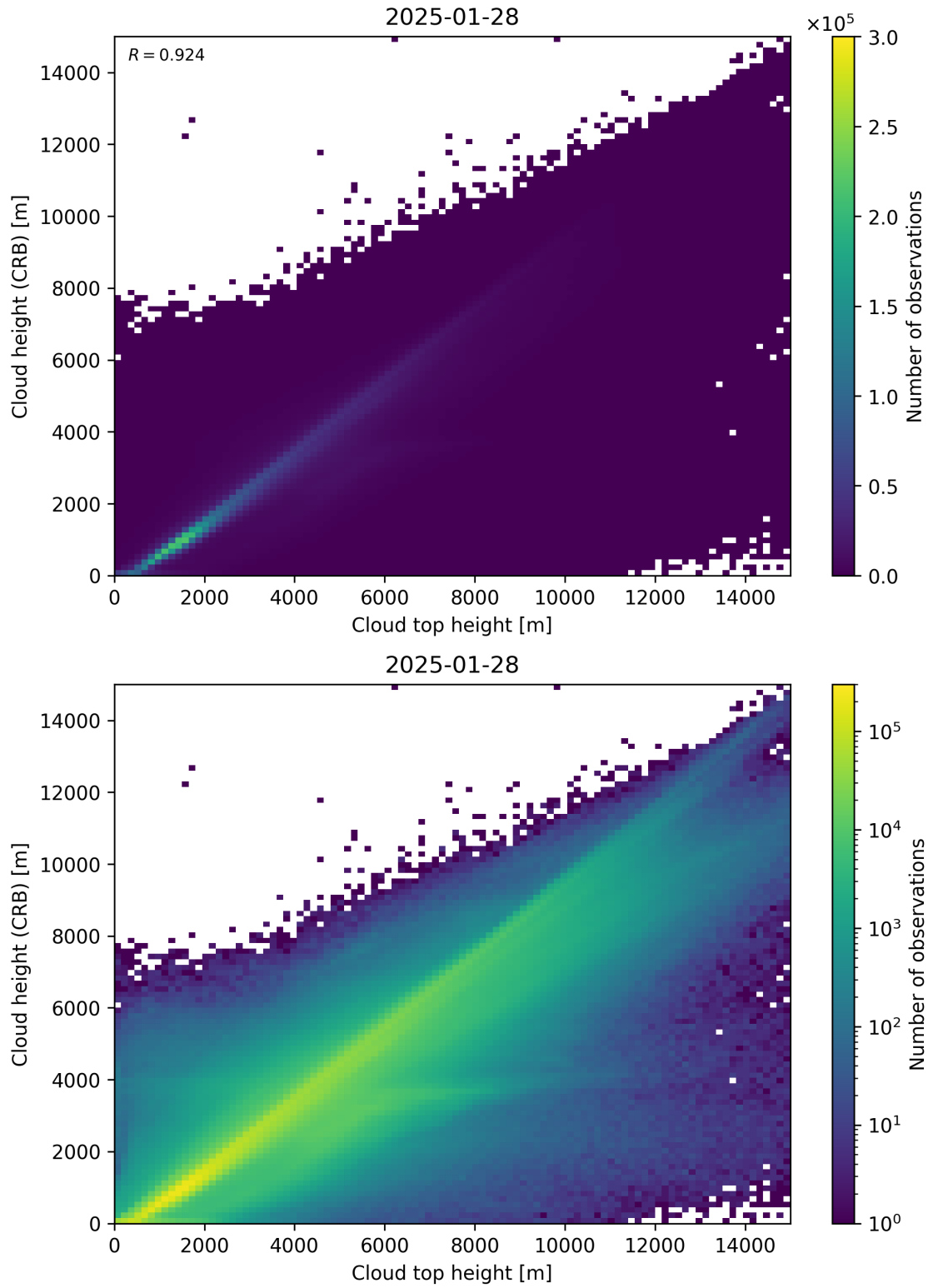


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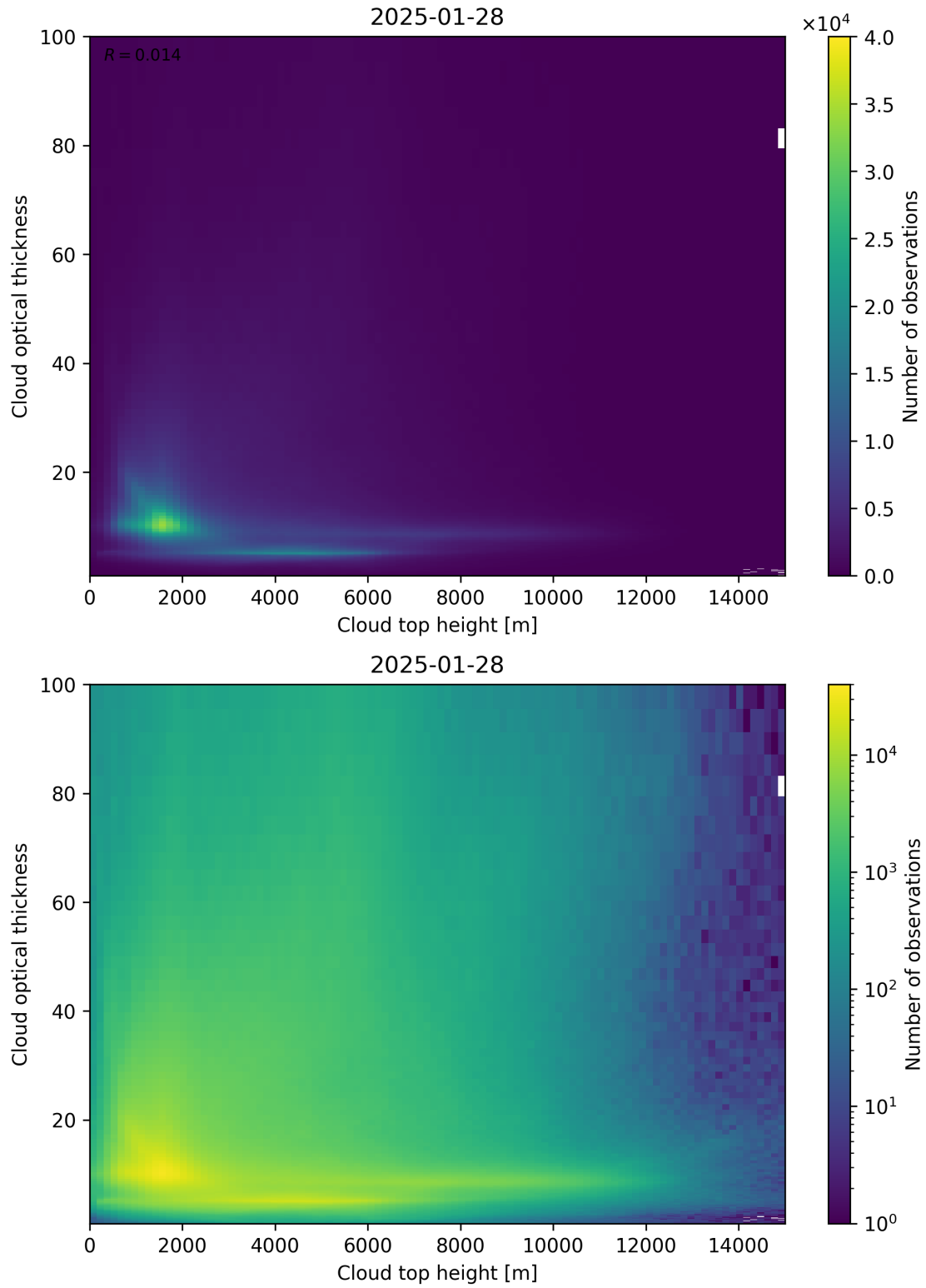


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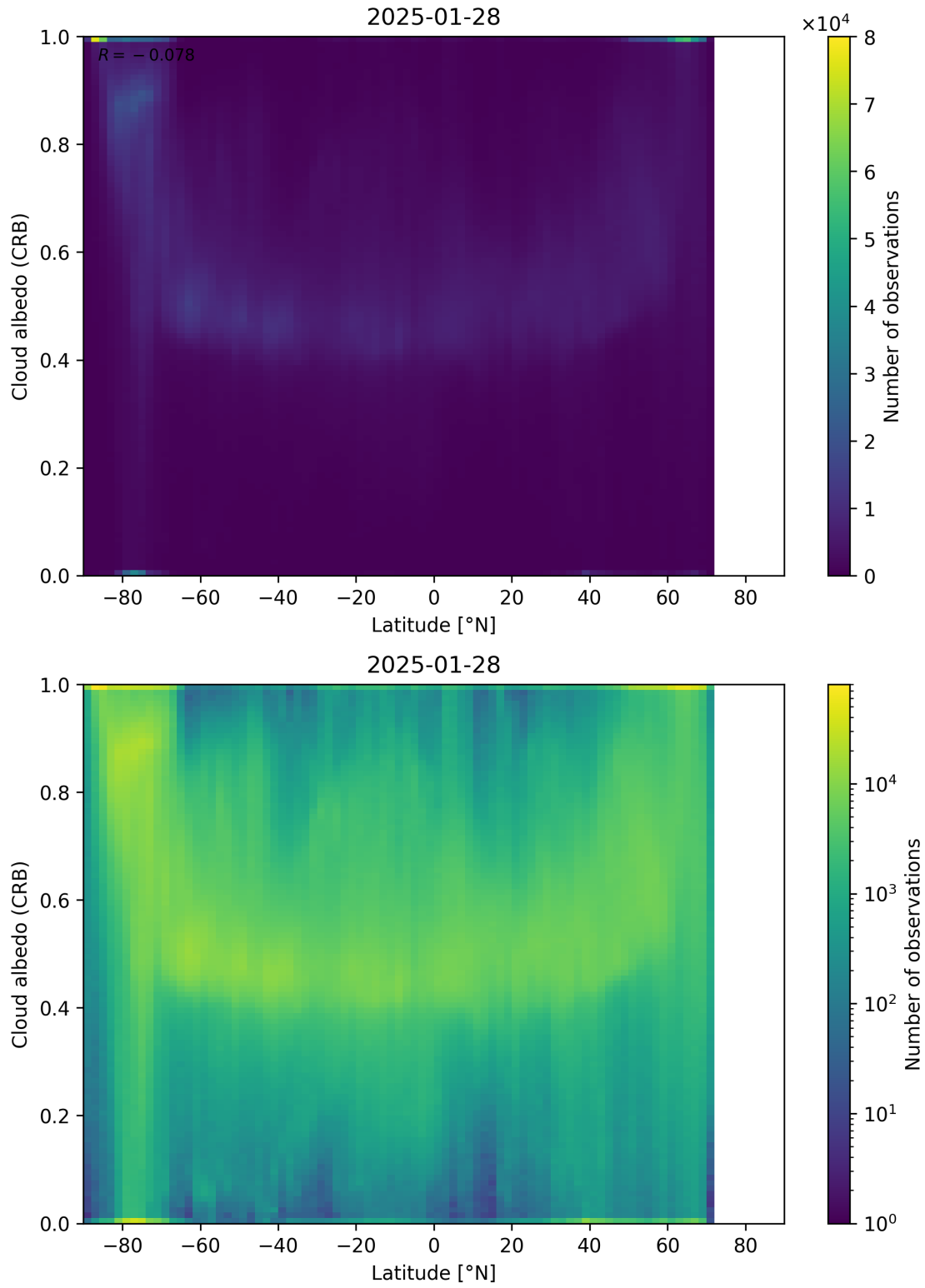


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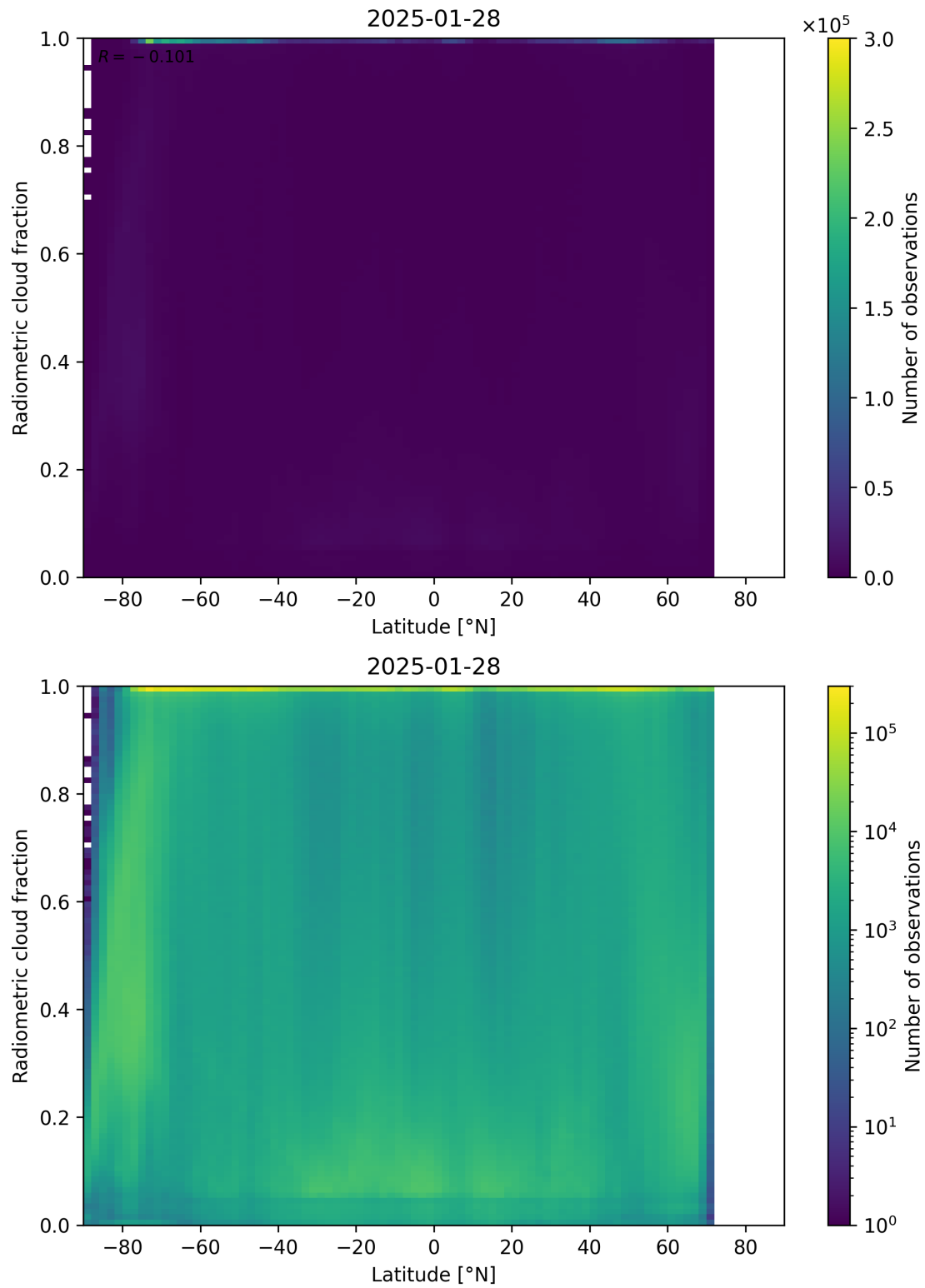


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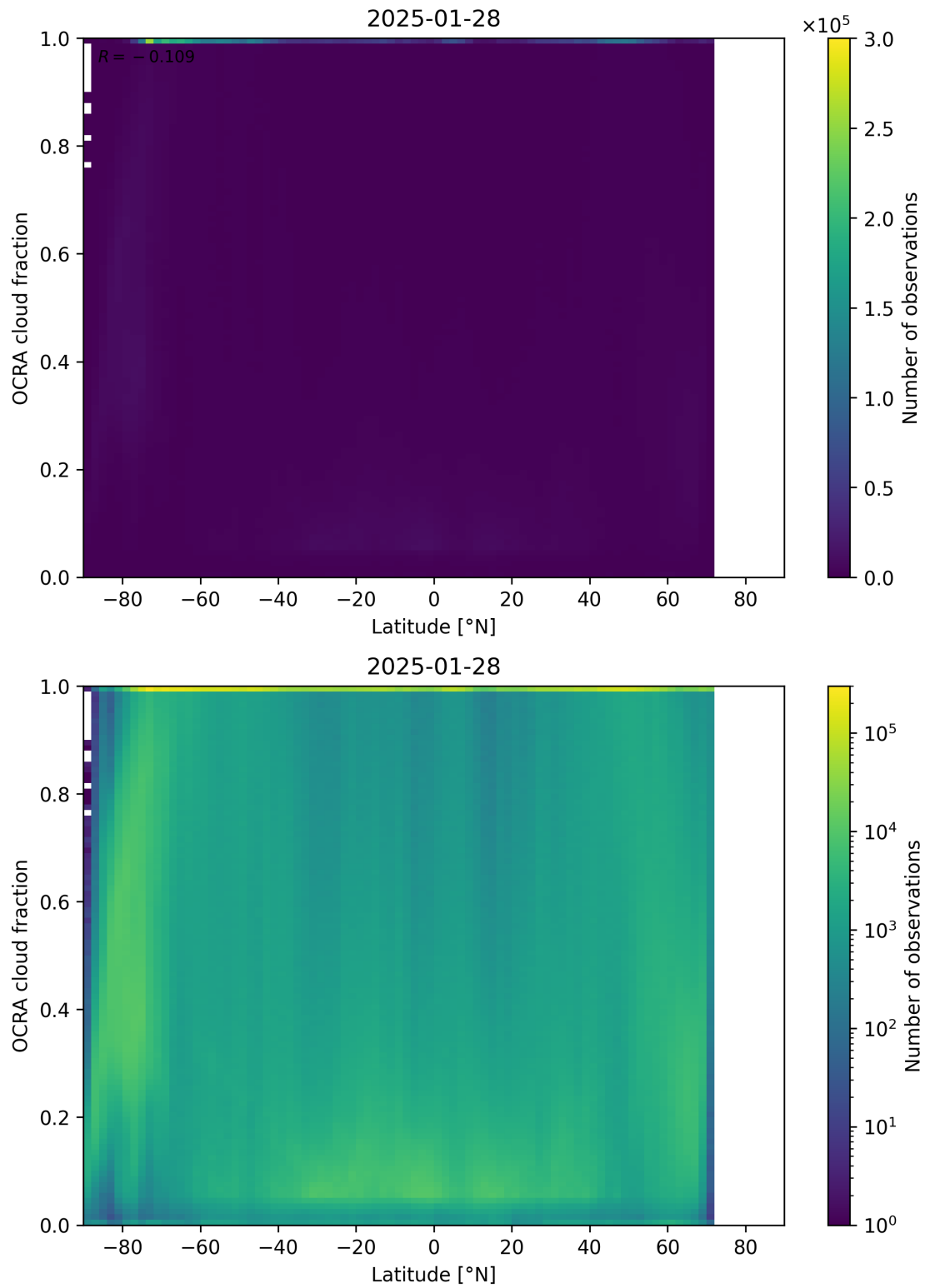


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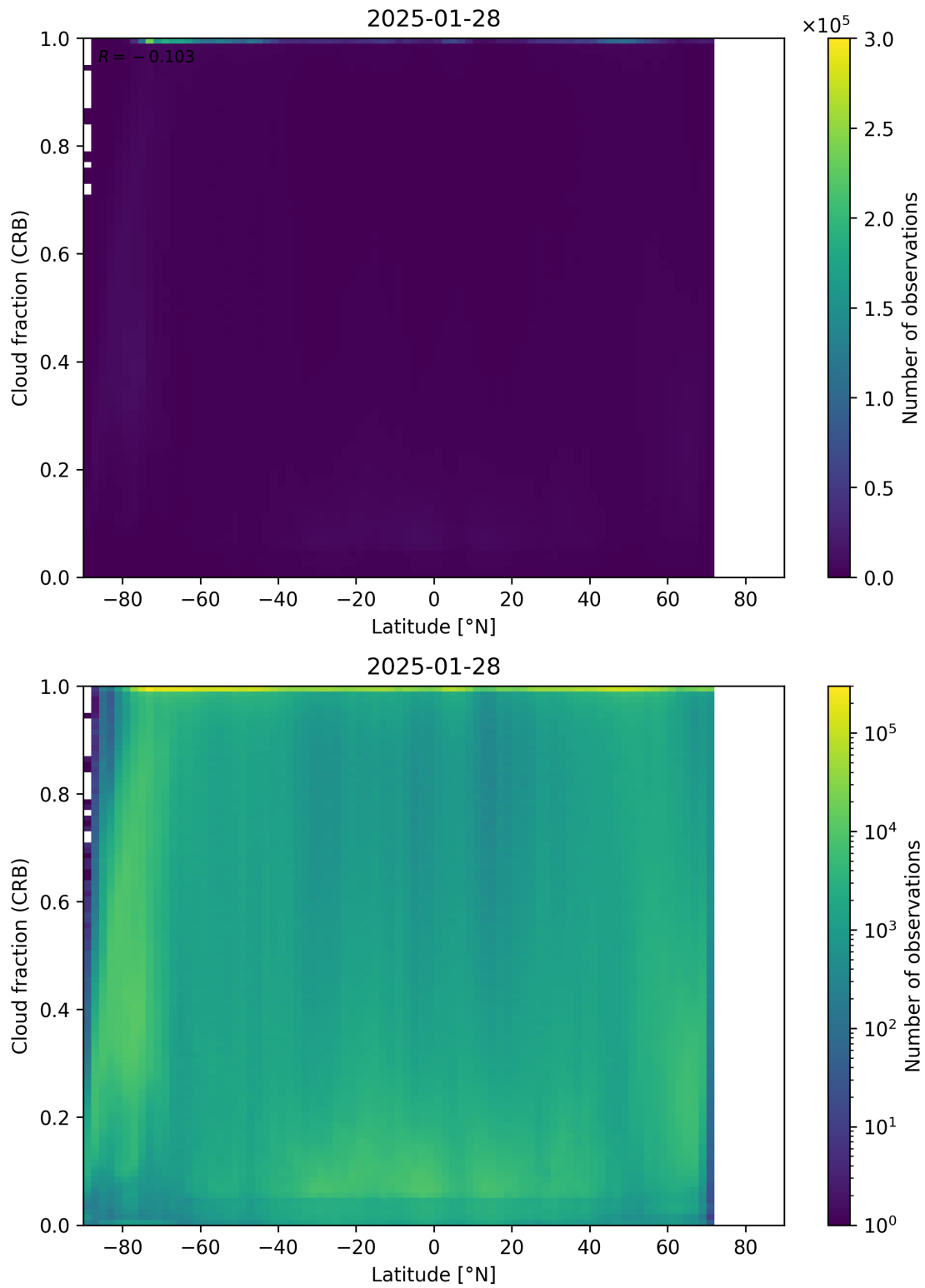


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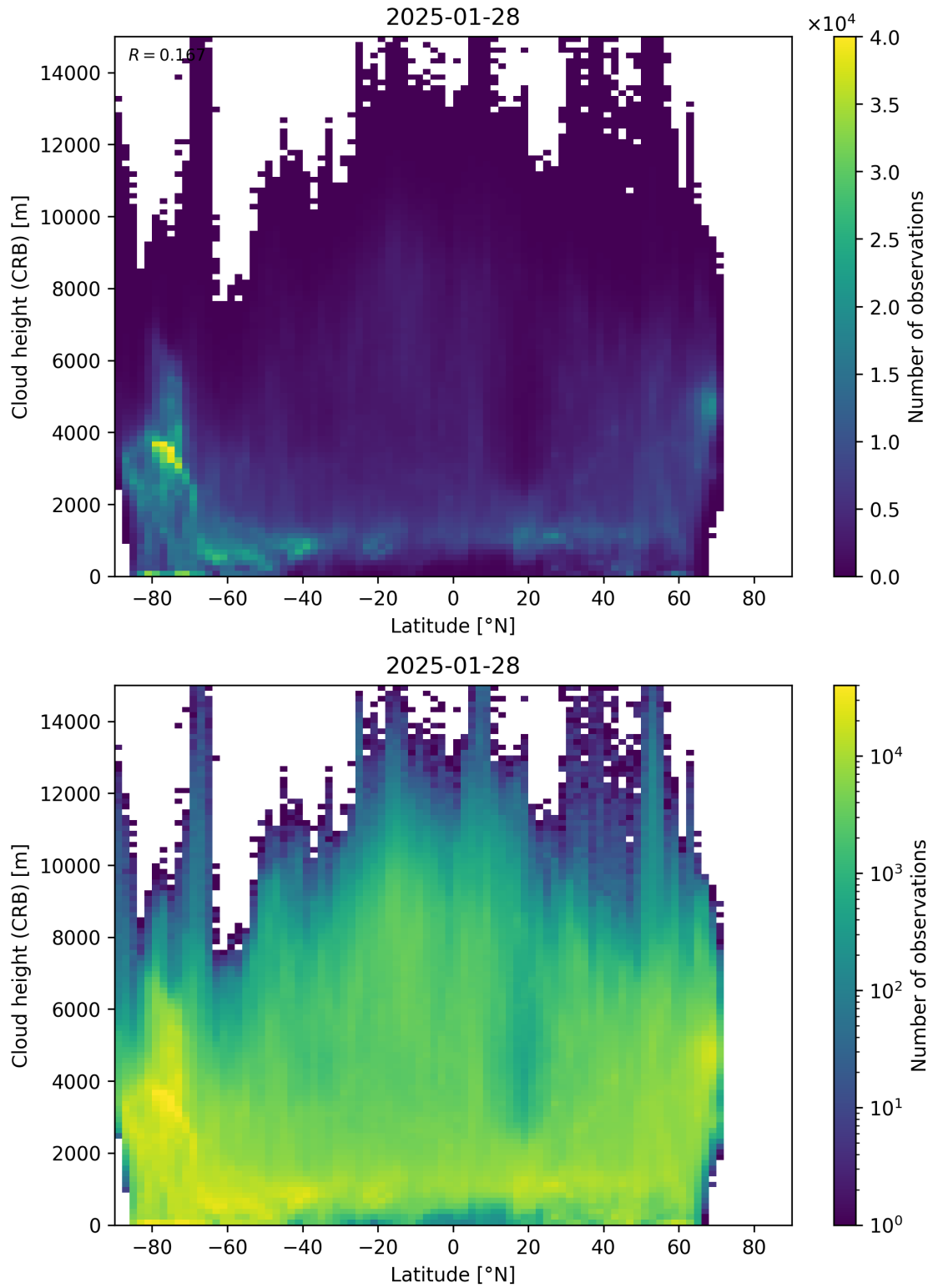


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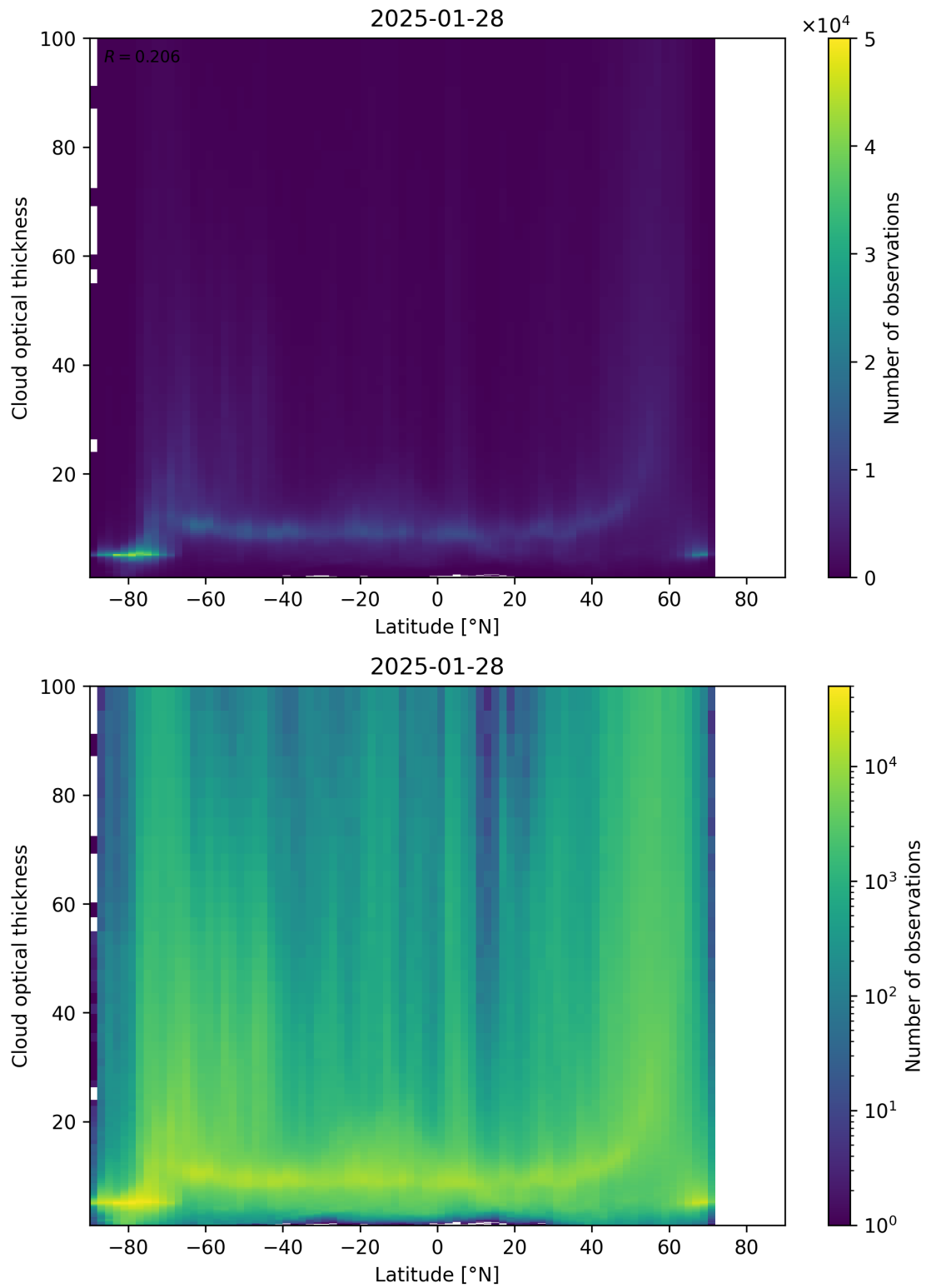


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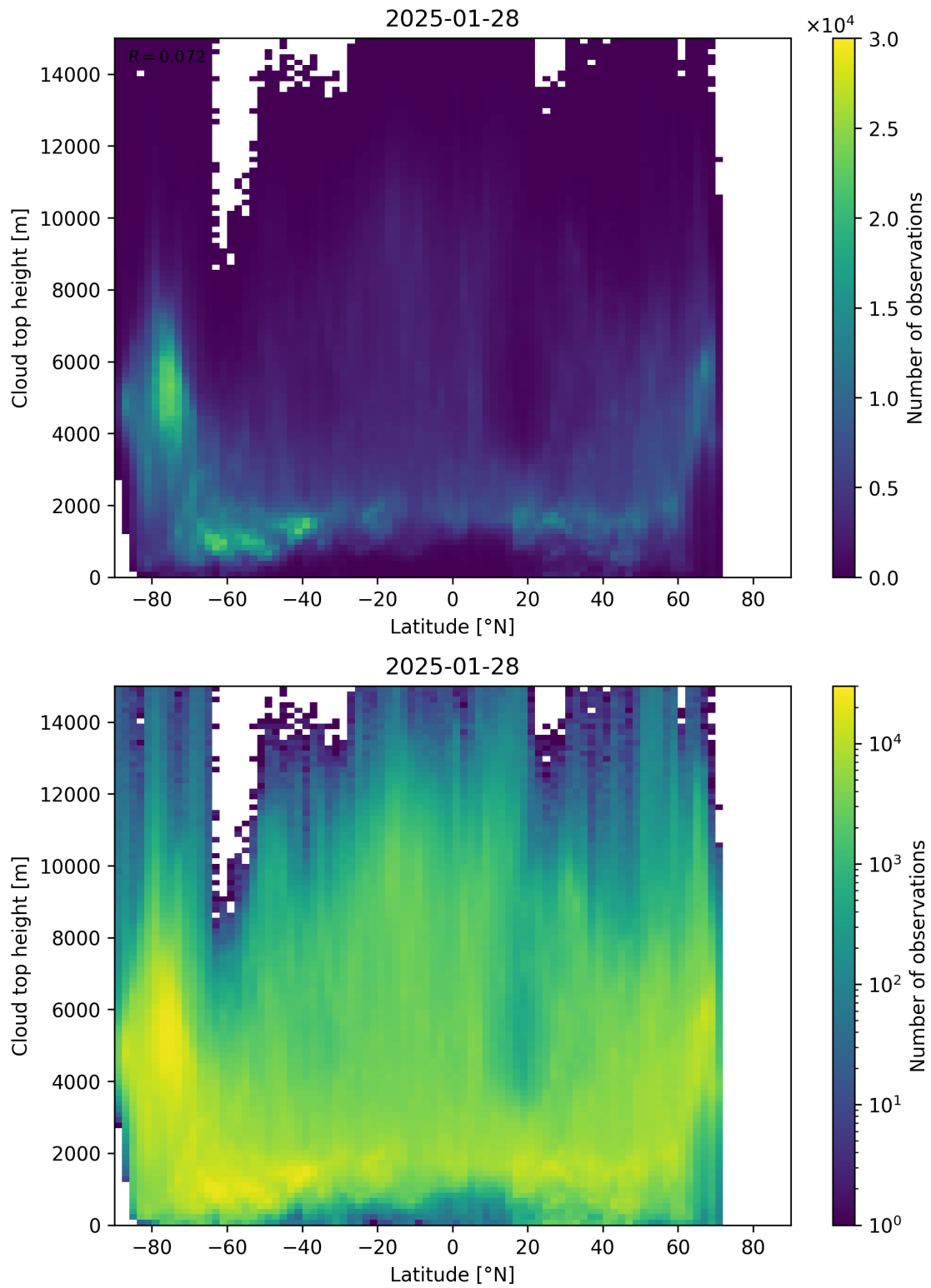


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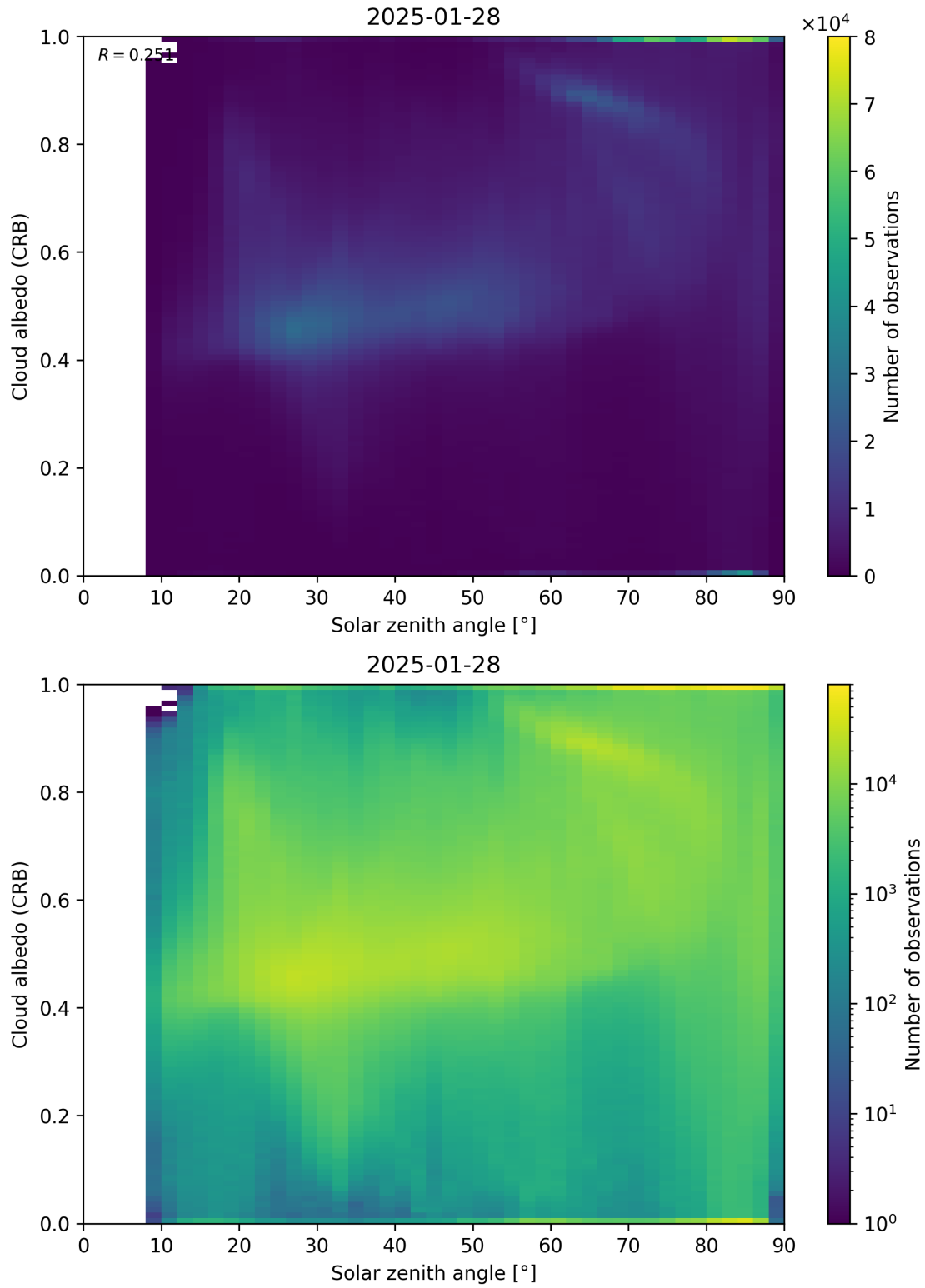


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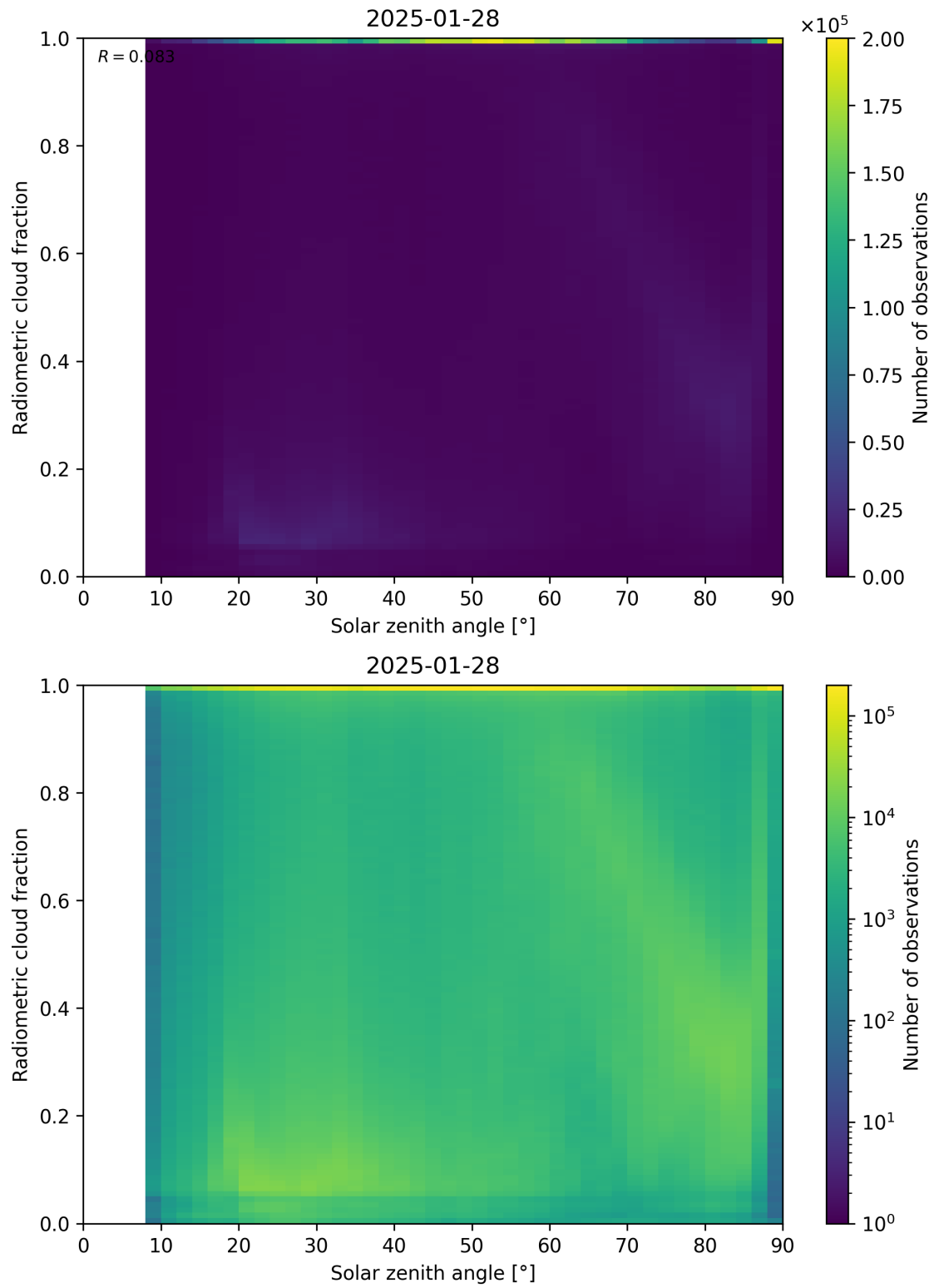


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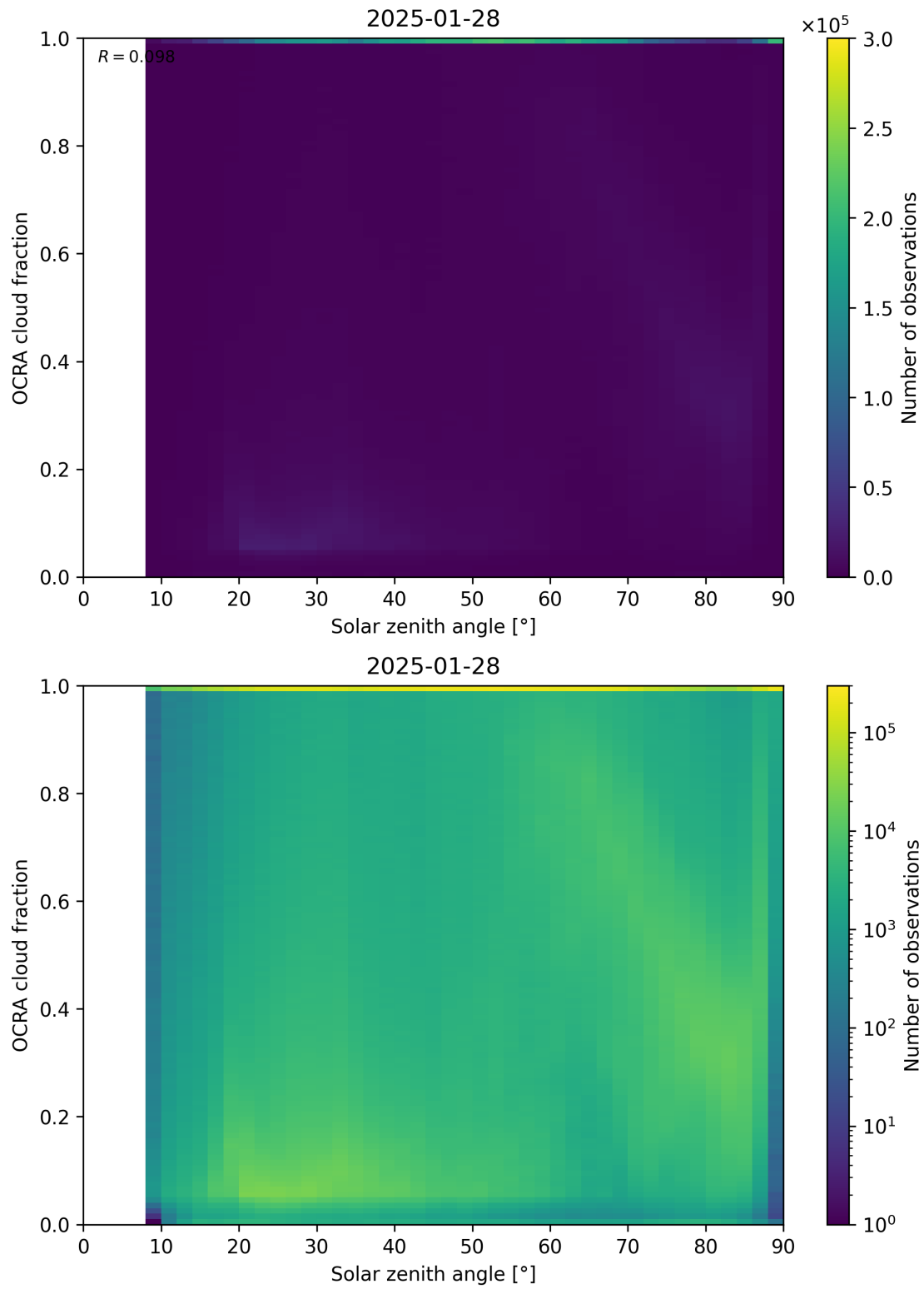


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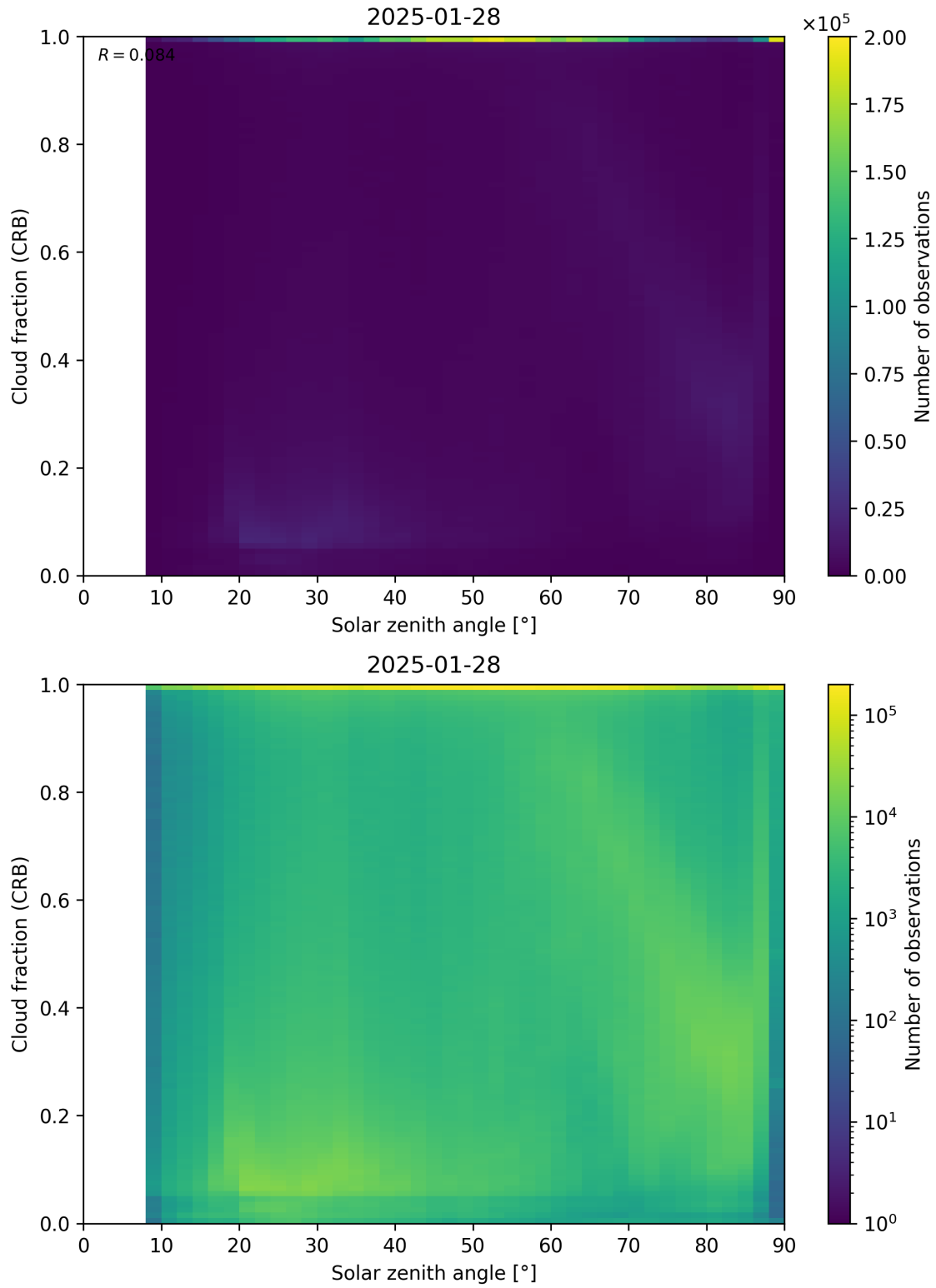


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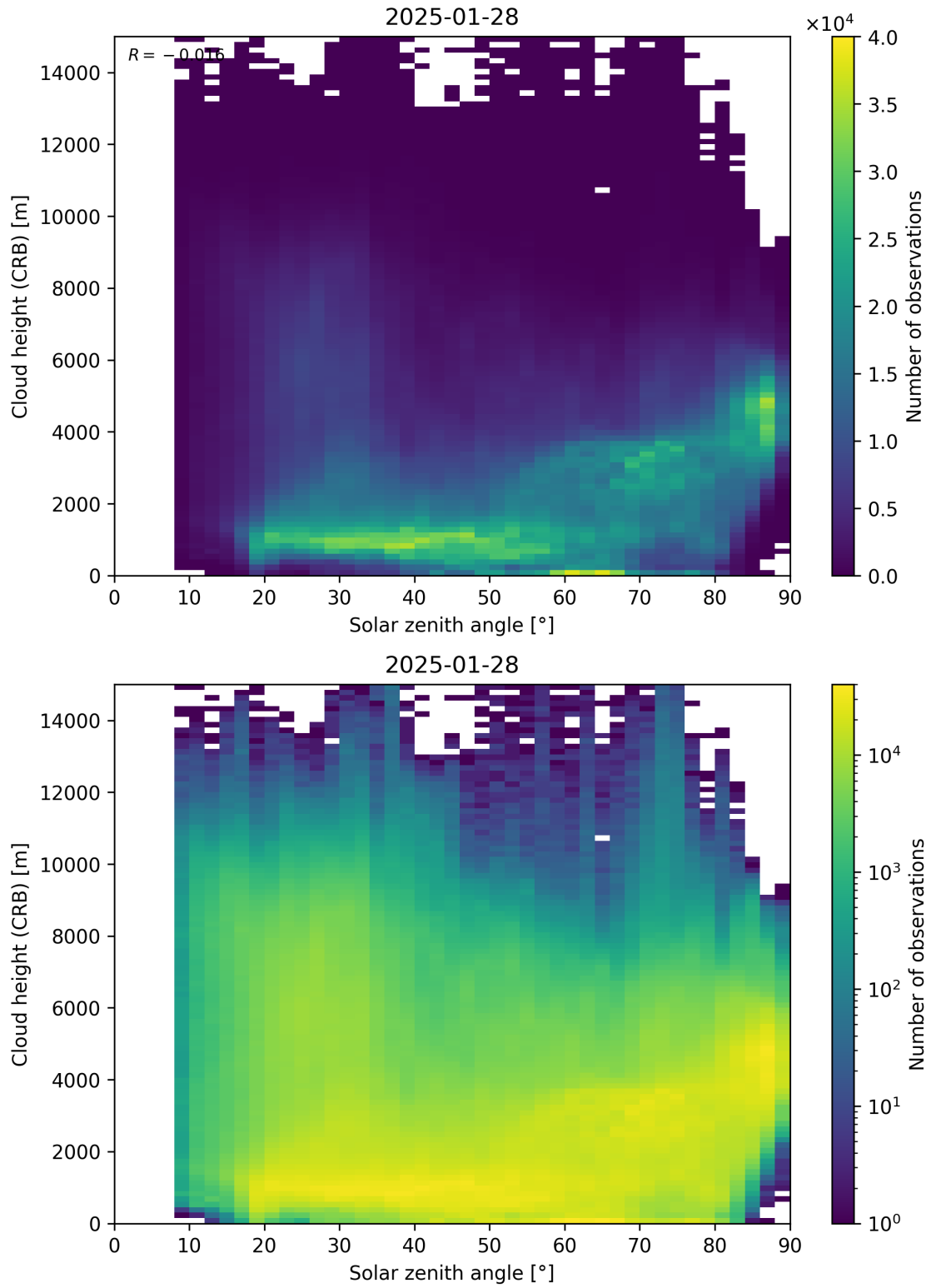


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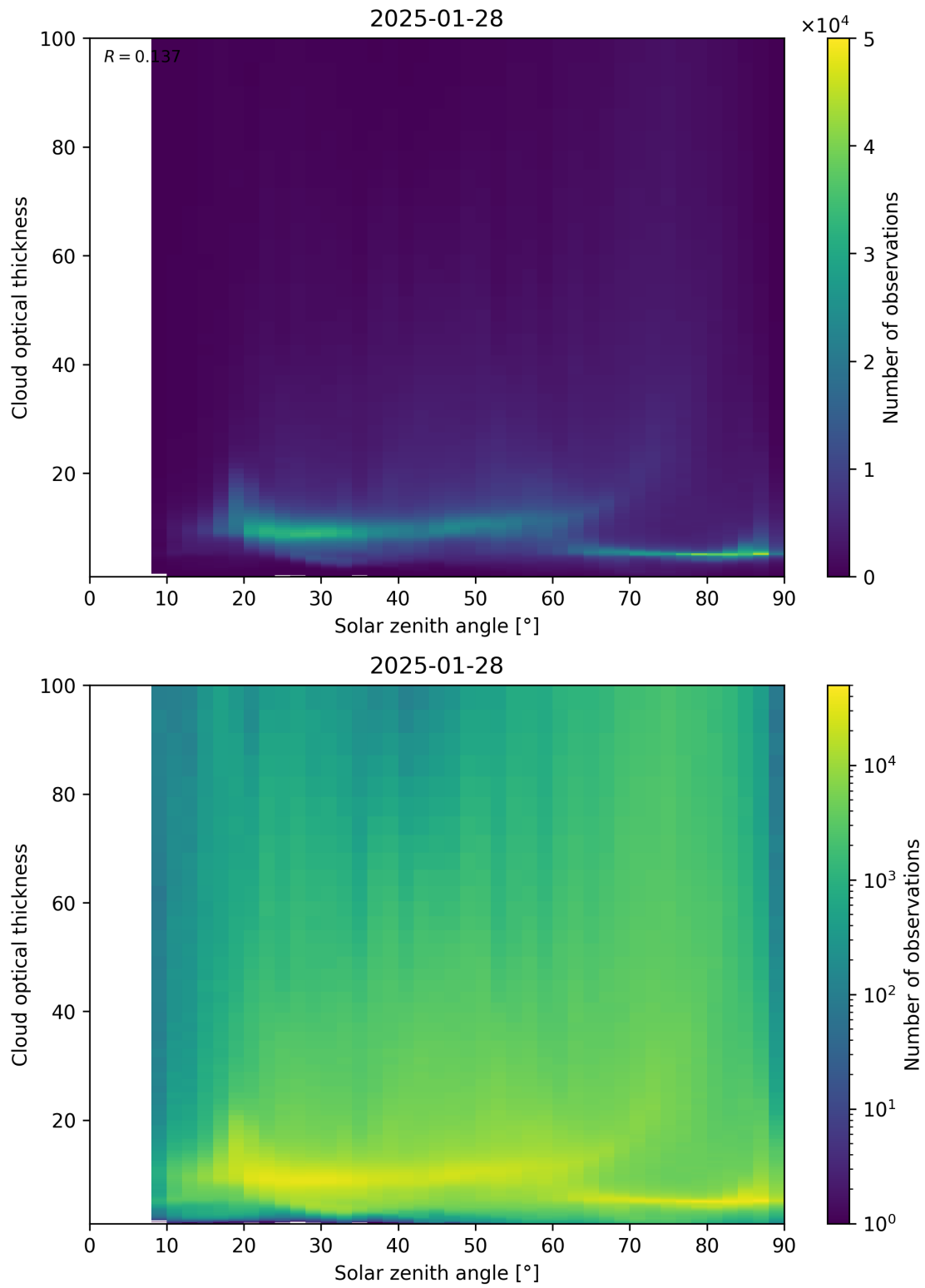


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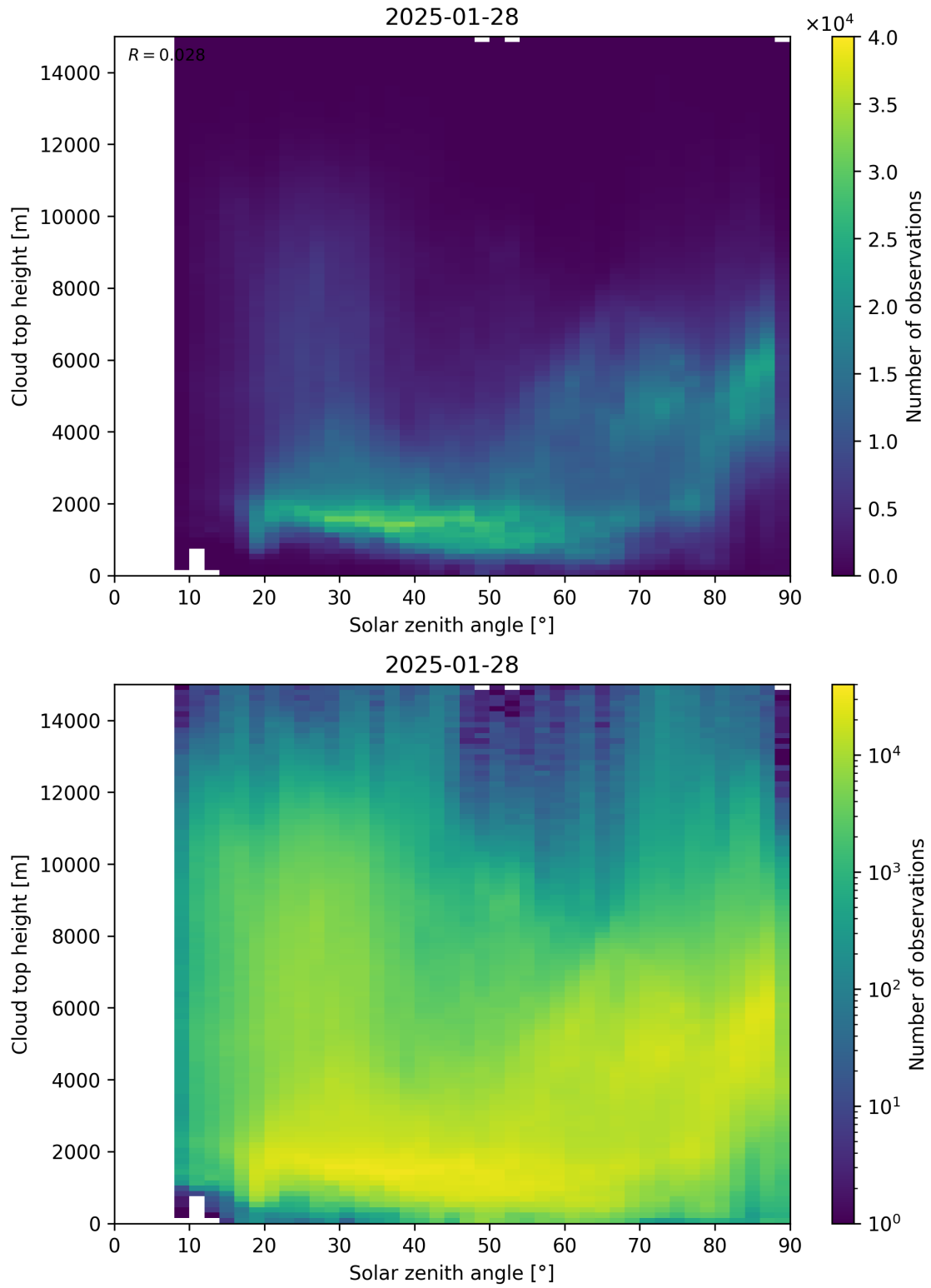


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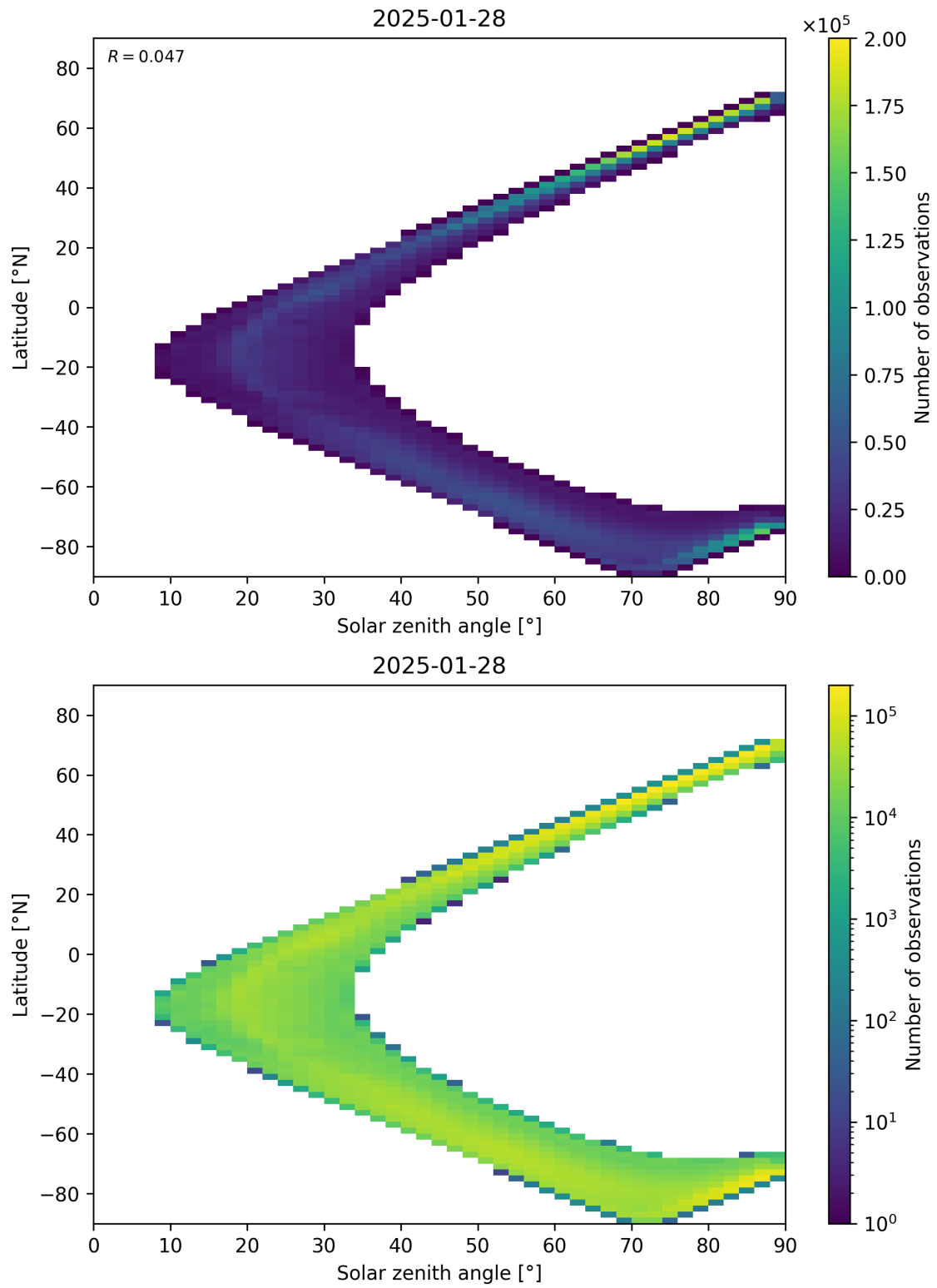


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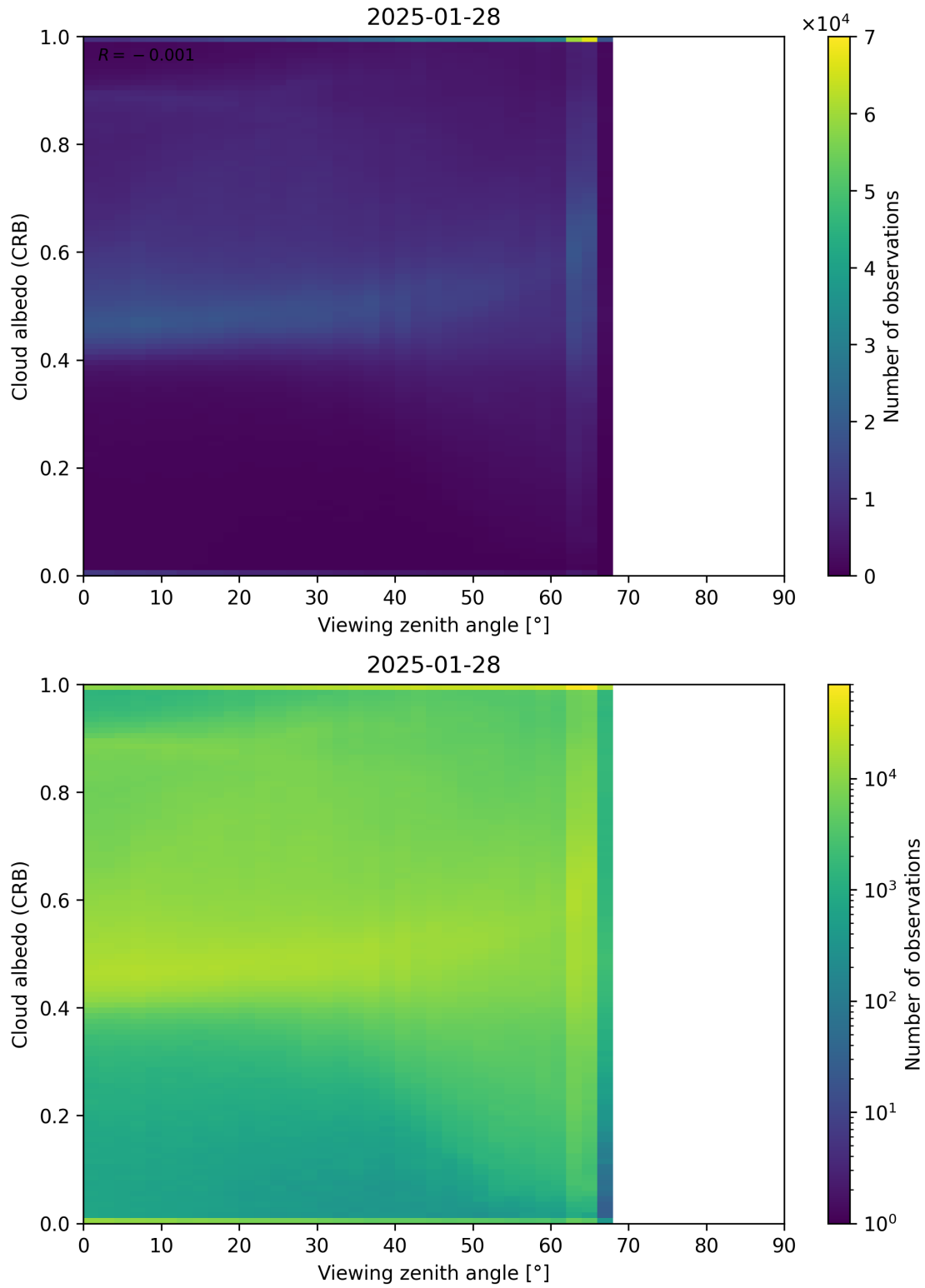


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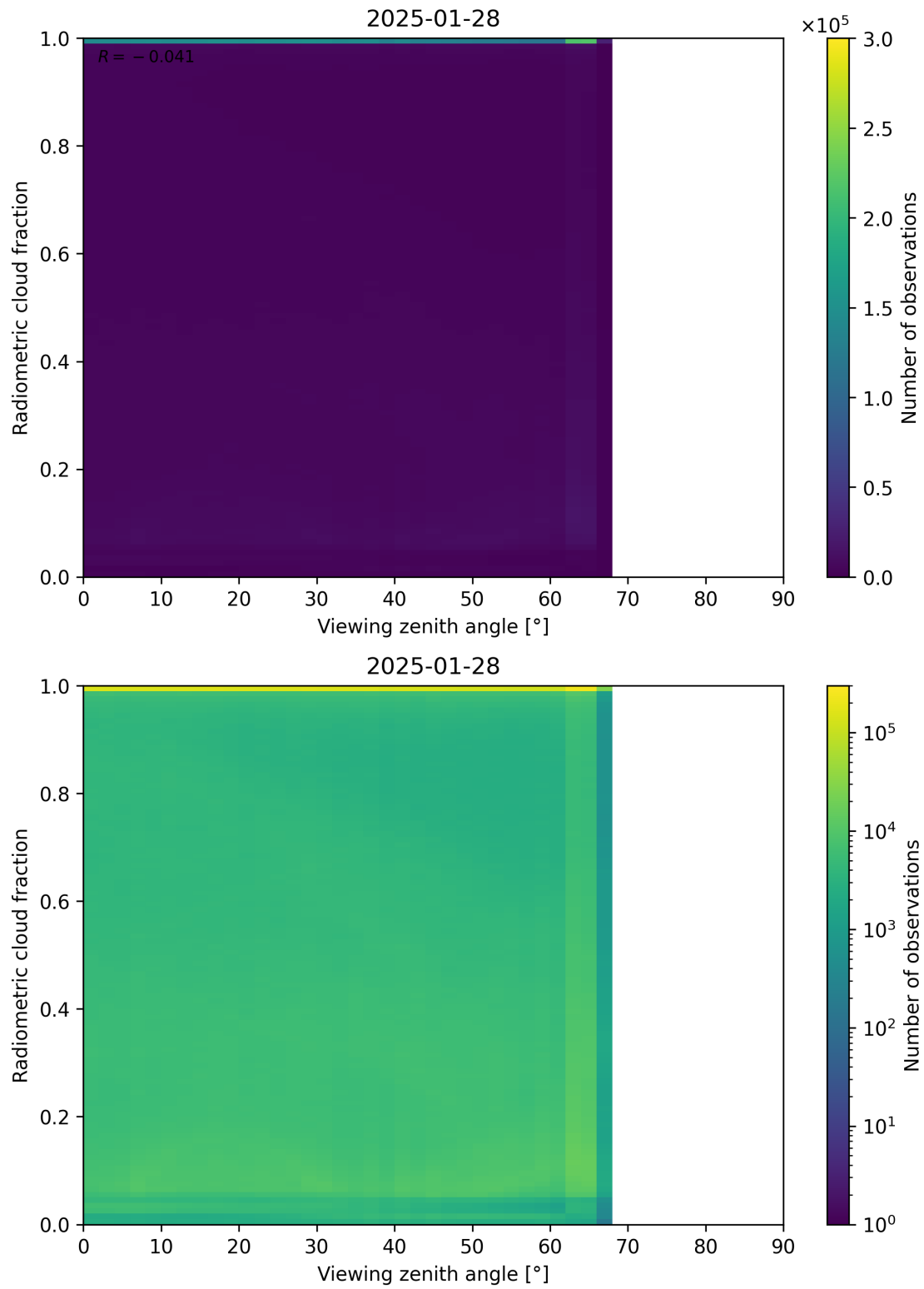


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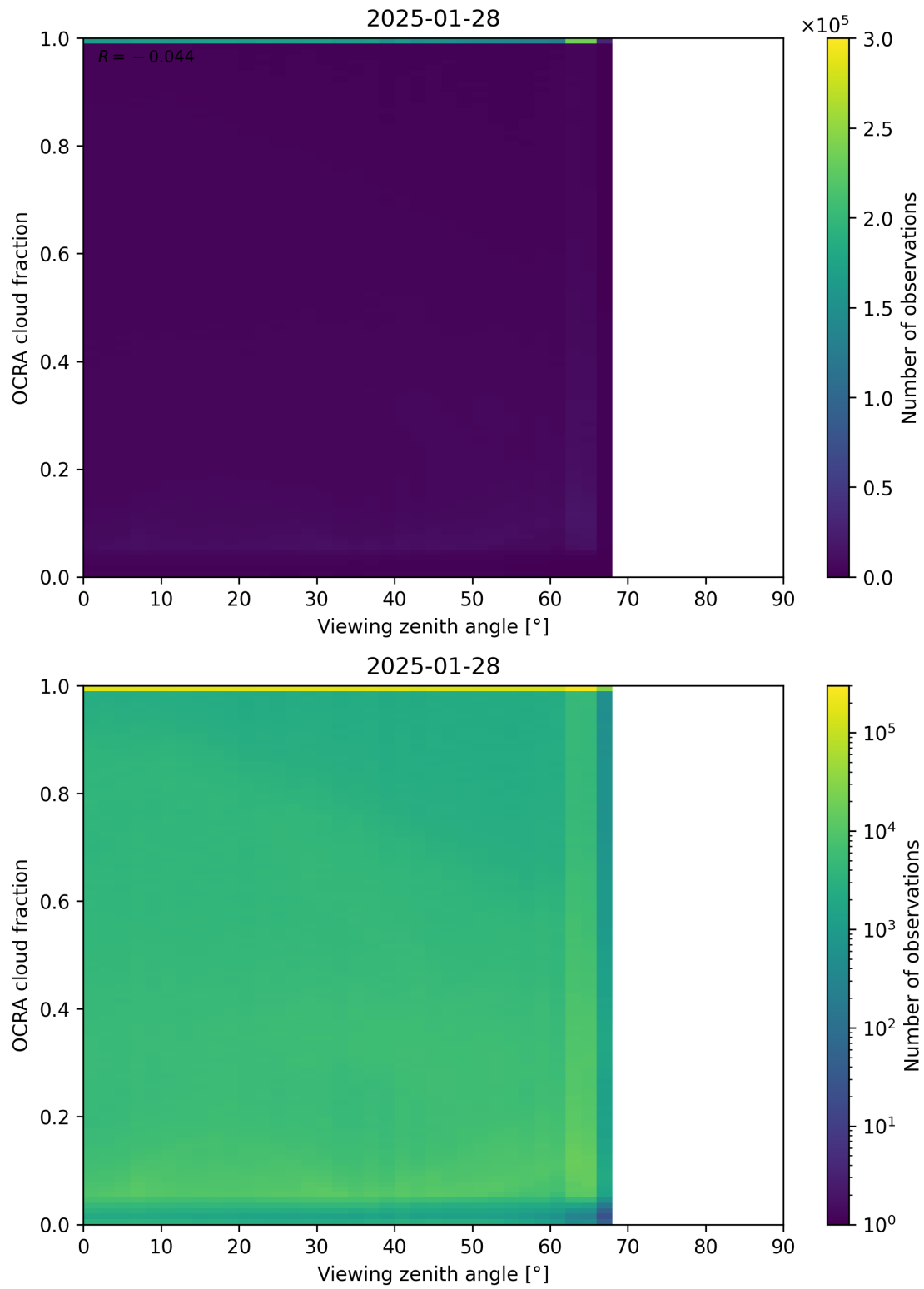


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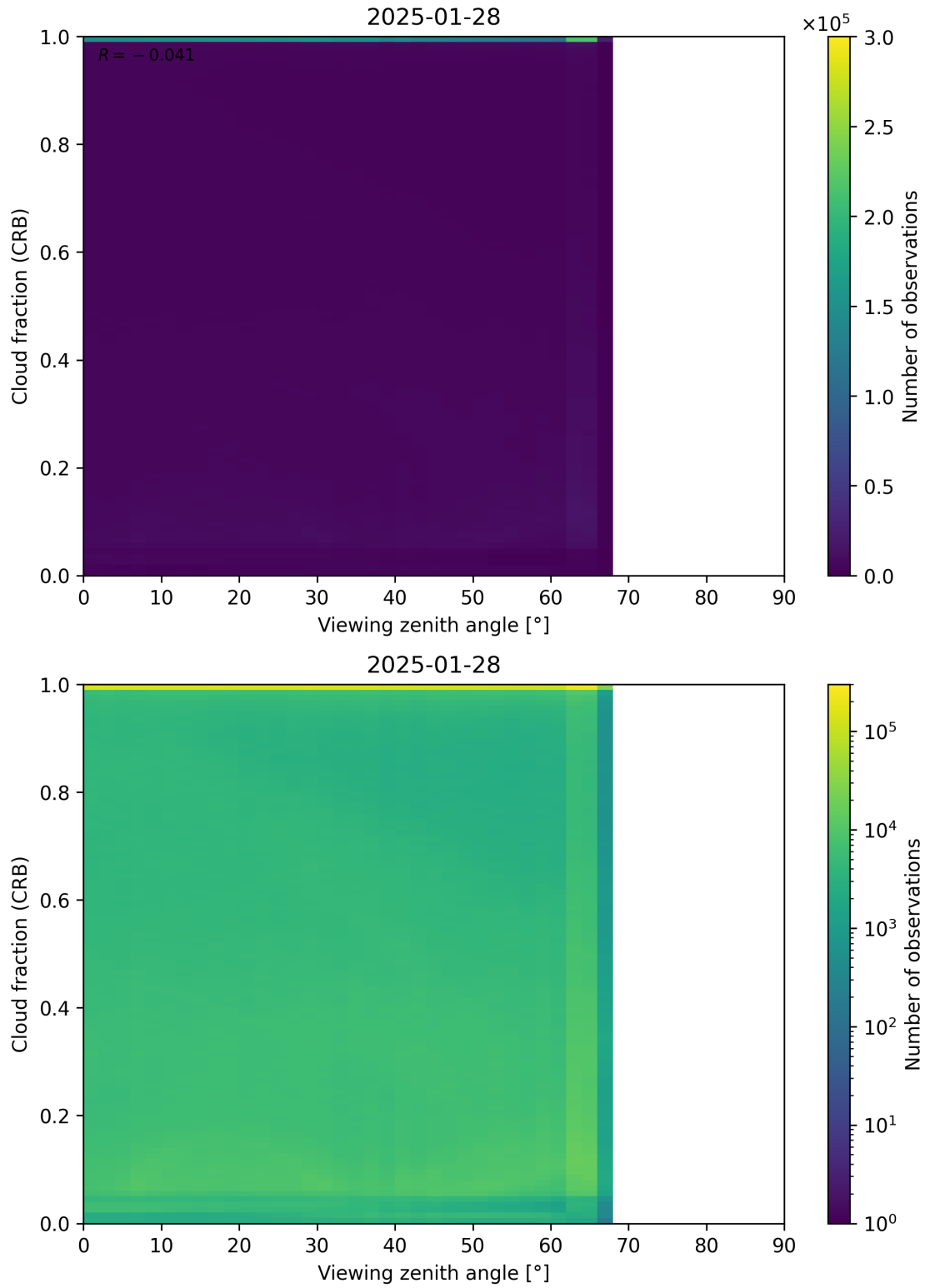


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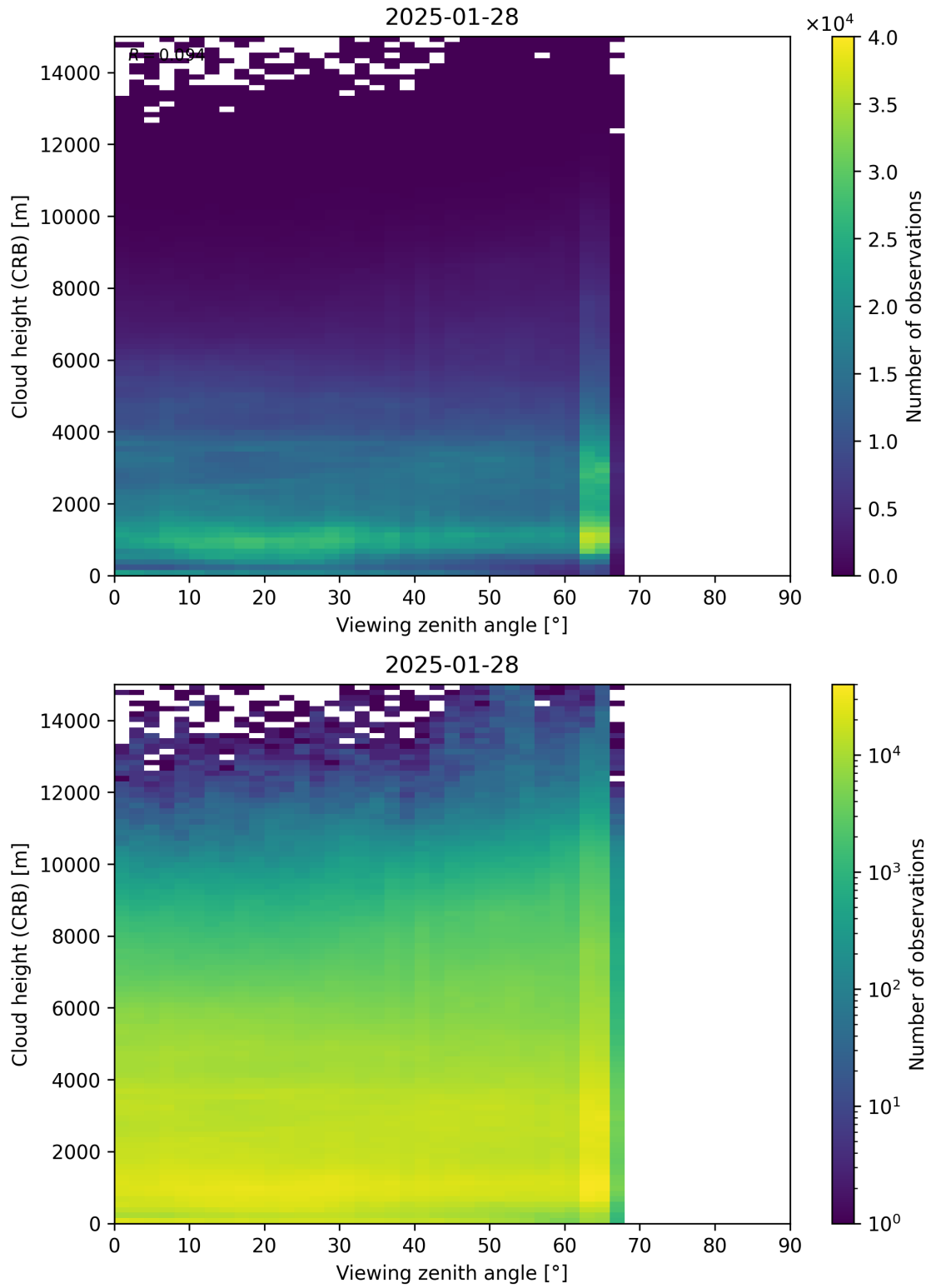


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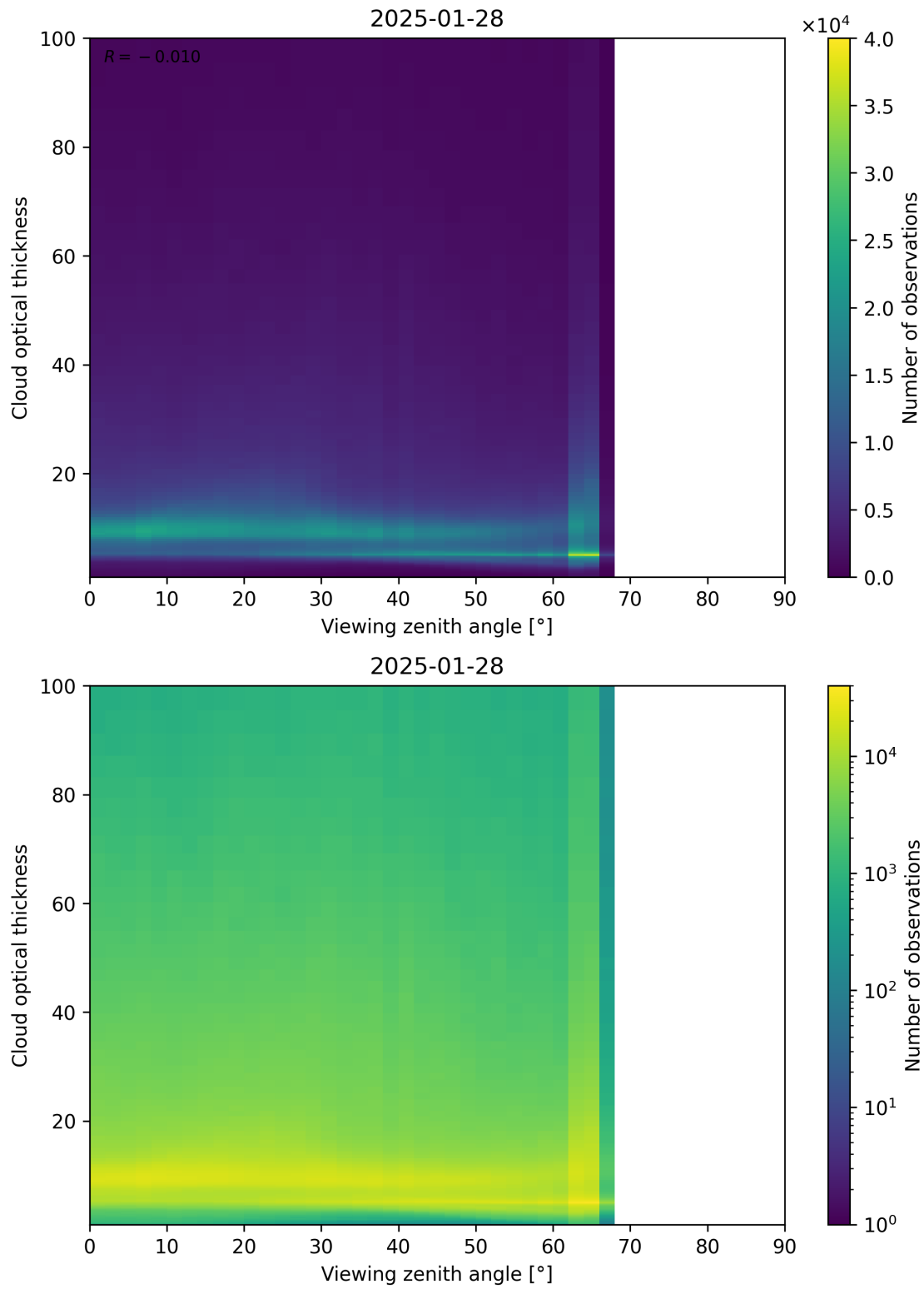


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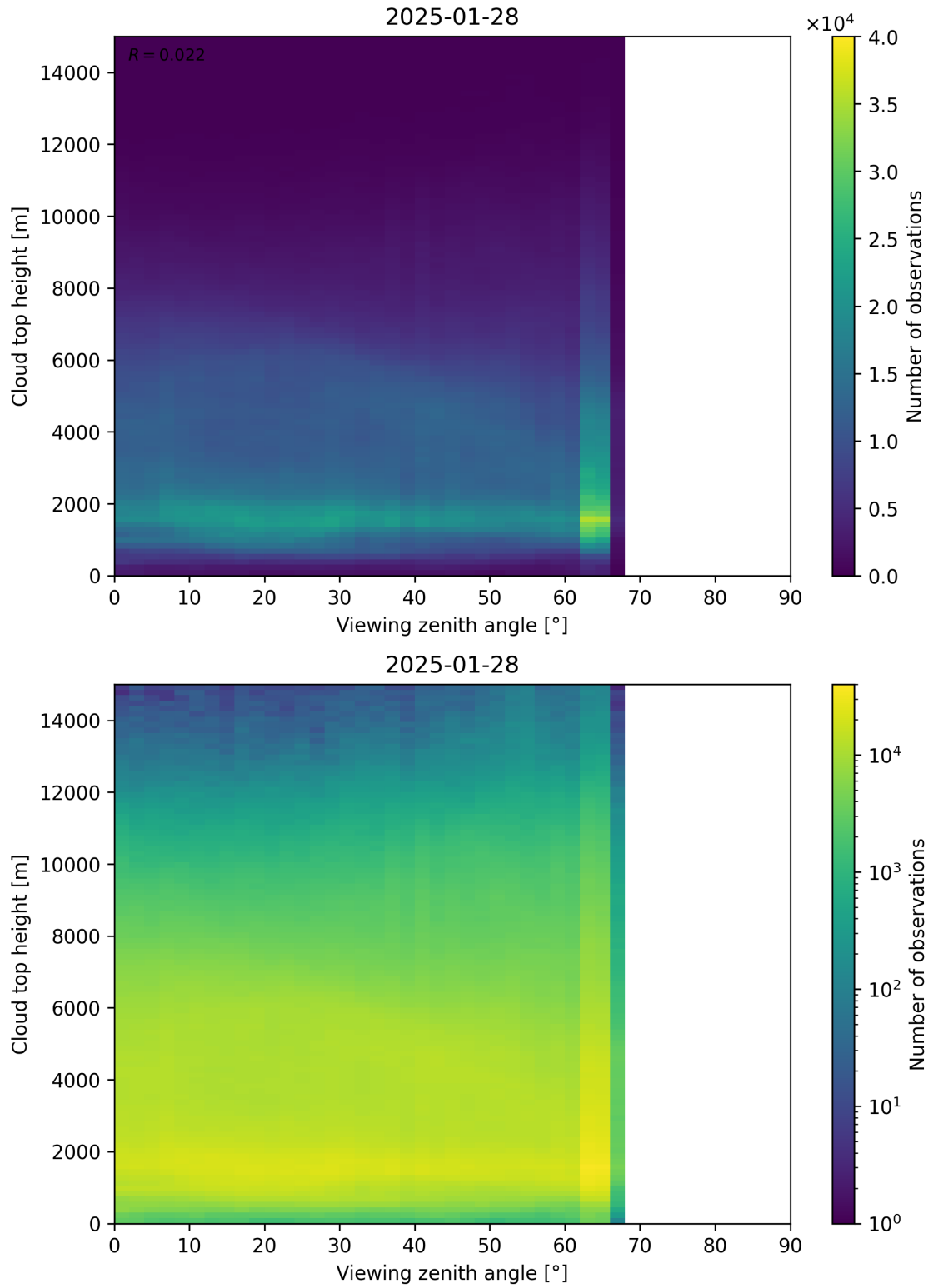


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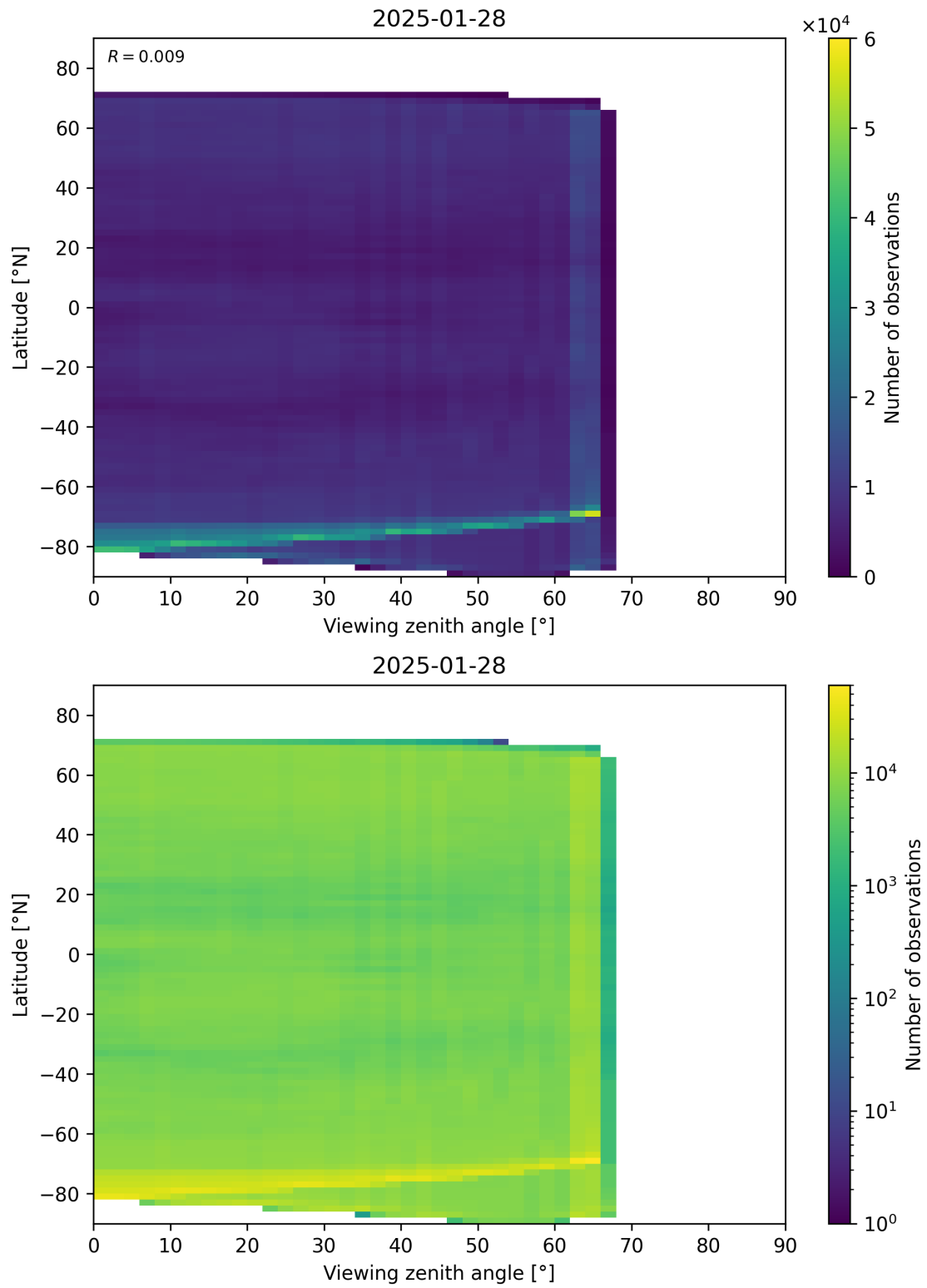


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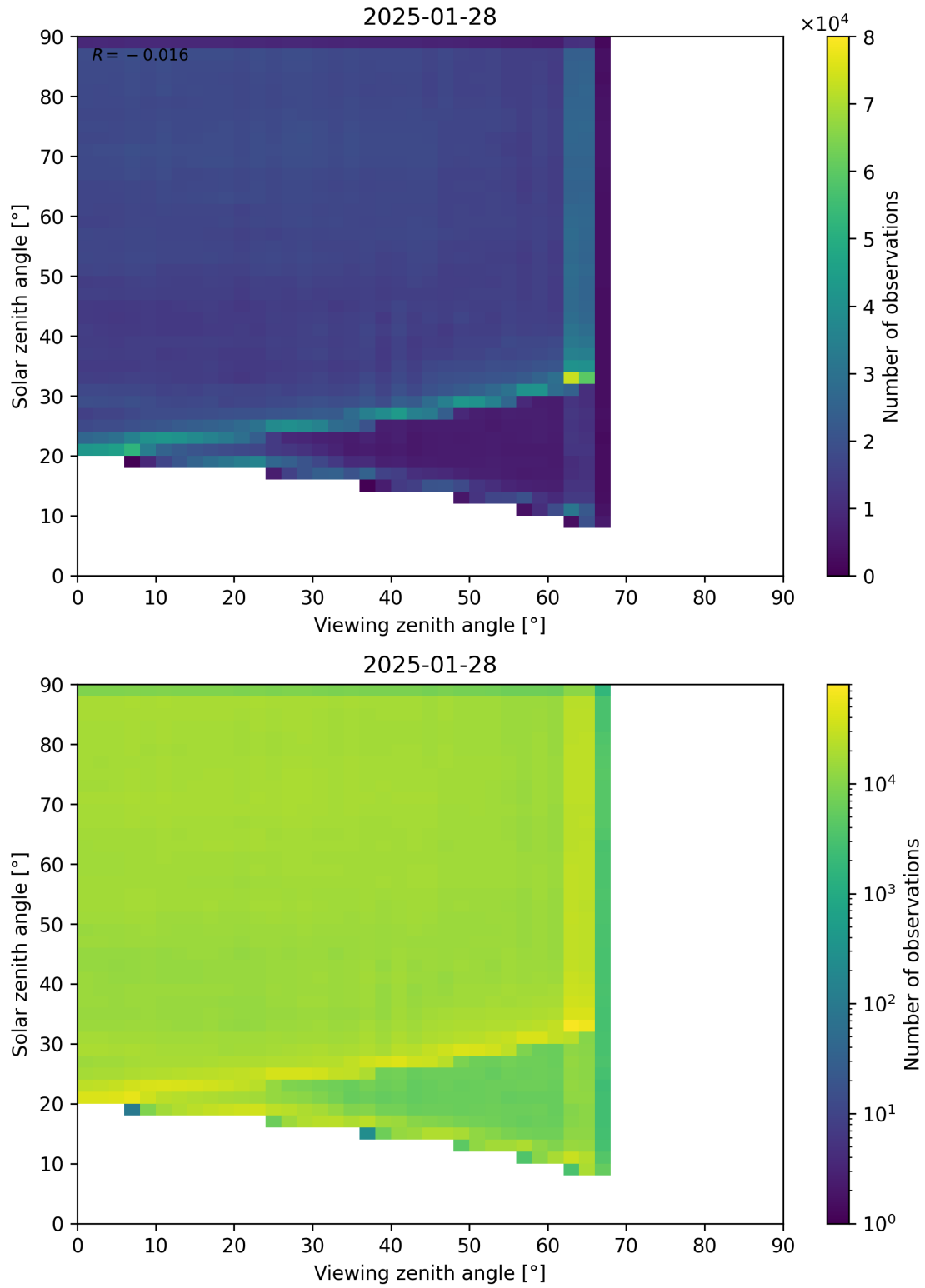


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