

PyCAMA report generated by tropl2-proc

tropl2-proc

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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]	0.626 ± 0.379	19010666	0.995	0.650	0.800	0.0	1.000
cloud fraction [1]	0.543 ± 0.349	19010666	0.995	0.742	0.492	0.0	1.000
cloud top height [m]	$(0.383 \pm 0.277) \times 10^4$	19010666	1.575×10^3	3.605×10^3	3.076×10^3	0.0	2.000×10^4
cloud optical thickness [1]	17.6 ± 31.7	19010666	9.34	9.68	9.19	1.000	250
cloud fraction crb [1]	0.543 ± 0.349	19010666	0.995	0.741	0.491	0.0	1.000
cloud height crb [m]	$(0.300 \pm 0.237) \times 10^4$	19010666	975	3.160×10^3	2.380×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.592 ± 0.208	19010666	0.995	0.265	0.569	0.0	1.000
surface albedo fitted [1]	0.238 ± 0.321	19010666	1.500×10^{-2}	0.392	3.779×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.226 ± 0.308	19010666	1.500×10^{-2}	0.405	2.808×10^{-2}	0.0	1.000
fitted root mean square [1]	$(6.366 \pm 8.073) \times 10^{-4}$	19010666	5.000×10^{-5}	7.415×10^{-4}	4.077×10^{-4}	1.532×10^{-6}	0.209
fitted root mean square crb [1]	$(5.584 \pm 6.660) \times 10^{-4}$	19010666	5.000×10^{-5}	6.601×10^{-4}	3.095×10^{-4}	1.370×10^{-6}	4.455×10^{-2}
wavelength shift [nm]	$(7.662 \pm 6.958) \times 10^{-3}$	19010666	9.000×10^{-4}	9.410×10^{-3}	7.174×10^{-3}	-4.727×10^{-2}	6.653×10^{-2}
cloud fraction apriori [1]	0.548 ± 0.353	19010666	0.995	0.783	0.498	0.0	1.000
reflectance blue ocra [1]	0.562 ± 0.229	19010666	0.265	0.396	0.540	0.146	2.01
reflectance green ocra [1]	0.511 ± 0.257	19010666	0.175	0.468	0.496	8.005×10^{-2}	1.94
reflectance continuum aband [1]	0.462 ± 0.283	19010666	4.500×10^{-2}	0.496	0.467	1.230×10^{-2}	4.17

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]	1.831×10^{-2}	6.281×10^{-2}	9.558×10^{-2}	0.139	0.218	0.960	1.000	1.000	1.000	1.000
cloud top height [m]	261	706	1.025×10^3	1.324×10^3	1.722×10^3	5.327×10^3	6.685×10^3	7.869×10^3	9.322×10^3	1.193×10^4
cloud optical thickness [1]	1.000	2.73	3.90	4.76	5.77	15.5	22.7	33.1	55.7	244
cloud fraction crb [1]	1.805×10^{-2}	6.177×10^{-2}	9.483×10^{-2}	0.139	0.218	0.959	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	254	541	804	1.152×10^3	4.311×10^3	5.462×10^3	6.513×10^3	7.852×10^3	9.817×10^3
cloud albedo crb [1]	2.447×10^{-2}	0.255	0.361	0.418	0.464	0.729	0.818	0.895	0.984	1.000
surface albedo fitted [1]	0.0	7.535×10^{-3}	1.139×10^{-2}	1.447×10^{-2}	1.892×10^{-2}	0.411	0.724	0.822	0.902	0.993
surface albedo fitted crb [1]	0.0	5.515×10^{-3}	8.223×10^{-3}	1.058×10^{-2}	1.394×10^{-2}	0.419	0.692	0.774	0.850	0.935
fitted root mean square [1]	1.674×10^{-5}	3.152×10^{-5}	4.944×10^{-5}	7.713×10^{-5}	1.343×10^{-4}	8.758×10^{-4}	1.183×10^{-3}	1.513×10^{-3}	2.021×10^{-3}	3.179×10^{-3}
fitted root mean square crb [1]	1.115×10^{-5}	2.473×10^{-5}	4.060×10^{-5}	6.104×10^{-5}	1.025×10^{-4}	7.626×10^{-4}	1.092×10^{-3}	1.439×10^{-3}	1.956×10^{-3}	3.020×10^{-3}
wavelength shift [nm]	-9.184×10^{-3}	-1.562×10^{-3}	1.100×10^{-4}	1.123×10^{-3}	2.700×10^{-3}	1.211×10^{-2}	1.444×10^{-2}	1.649×10^{-2}	1.932×10^{-2}	2.580×10^{-2}
cloud fraction apriori [1]	2.792×10^{-2}	6.269×10^{-2}	9.375×10^{-2}	0.137	0.217	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.235	0.257	0.278	0.306	0.356	0.752	0.810	0.857	0.922	1.13
reflectance green ocra [1]	0.153	0.171	0.188	0.213	0.264	0.732	0.798	0.848	0.910	1.08
reflectance continuum aband [1]	2.891×10^{-2}	5.047×10^{-2}	7.849×10^{-2}	0.117	0.203	0.699	0.772	0.826	0.889	1.03

Table 3: Parameterlist and basic statistics for the analysis for observations in the northern hemisphere

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.572 ± 0.385	8824141	0.780	0.700	0.0	1.000	0.120	0.900
cloud fraction [1]	0.511 ± 0.349	8824141	0.723	0.433	0.0	1.000	0.193	0.916
cloud top height [m]	$(0.351 \pm 0.254) \times 10^4$	8824141	3.115×10^3	2.863×10^3	0.0	2.000×10^4	1.620×10^3	4.735×10^3
cloud optical thickness [1]	18.2 ± 34.5	8824141	8.98	8.80	1.000	250	5.80	14.8
cloud fraction crb [1]	0.511 ± 0.349	8824141	0.722	0.434	0.0	1.000	0.193	0.915
cloud height crb [m]	$(0.269 \pm 0.214) \times 10^4$	8824141	2.862×10^3	2.177×10^3	0.0	2.000×10^4	1.025×10^3	3.887×10^3
cloud albedo crb [1]	0.613 ± 0.225	8824141	0.309	0.595	0.0	1.000	0.469	0.779
surface albedo fitted [1]	0.289 ± 0.312	8824141	0.541	0.138	0.0	1.000	2.811×10^{-2}	0.569
surface albedo fitted crb [1]	0.274 ± 0.296	8824141	0.541	0.135	0.0	1.000	2.130×10^{-2}	0.562
fitted root mean square [1]	$(7.180 \pm 9.543) \times 10^{-4}$	8824141	8.122×10^{-4}	4.724×10^{-4}	2.727×10^{-6}	0.209	1.613×10^{-4}	9.735×10^{-4}
fitted root mean square crb [1]	$(6.073 \pm 7.222) \times 10^{-4}$	8824141	7.101×10^{-4}	3.412×10^{-4}	2.062×10^{-6}	4.455×10^{-2}	1.126×10^{-4}	8.227×10^{-4}
wavelength shift [nm]	$(8.294 \pm 7.067) \times 10^{-3}$	8824141	9.736×10^{-3}	7.905×10^{-3}	-4.727×10^{-2}	6.653×10^{-2}	3.181×10^{-3}	1.292×10^{-2}
cloud fraction apriori [1]	0.521 ± 0.351	8824141	0.759	0.447	0.0	1.000	0.197	0.956
reflectance blue ocrs [1]	0.566 ± 0.231	8824141	0.400	0.552	0.146	2.01	0.353	0.754
reflectance green ocrs [1]	0.518 ± 0.257	8824141	0.475	0.514	8.490×10^{-2}	1.94	0.265	0.740
reflectance continuum aband [1]	0.478 ± 0.281	8824141	0.492	0.495	1.309×10^{-2}	3.93	0.222	0.714

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]	0.672 ± 0.367	10186525	0.580	0.880	0.0	1.000	0.400	0.980
cloud fraction [1]	0.572 ± 0.347	10186525	0.737	0.551	0.0	1.000	0.244	0.981
cloud top height [m]	$(0.412 \pm 0.291) \times 10^4$	10186525	4.071×10^3	3.300×10^3	0.0	2.000×10^4	1.816×10^3	5.887×10^3
cloud optical thickness [1]	17.1 ± 29.0	10186525	10.2	9.54	1.000	250	5.74	16.0
cloud fraction crb [1]	0.571 ± 0.347	10186525	0.737	0.550	0.0	1.000	0.243	0.980
cloud height crb [m]	$(0.328 \pm 0.252) \times 10^4$	10186525	3.527×10^3	2.573×10^3	0.0	2.000×10^4	1.265×10^3	4.792×10^3
cloud albedo crb [1]	0.575 ± 0.191	10186525	0.226	0.552	0.0	1.000	0.461	0.687
surface albedo fitted [1]	0.195 ± 0.322	10186525	0.182	2.587×10^{-2}	0.0	1.000	1.536×10^{-2}	0.197
surface albedo fitted crb [1]	0.184 ± 0.312	10186525	0.180	1.890×10^{-2}	0.0	1.000	1.110×10^{-2}	0.191
fitted root mean square [1]	$(5.662 \pm 6.455) \times 10^{-4}$	10186525	6.759×10^{-4}	3.561×10^{-4}	1.532×10^{-6}	5.776×10^{-2}	1.161×10^{-4}	7.921×10^{-4}
fitted root mean square crb [1]	$(5.161 \pm 6.101) \times 10^{-4}$	10186525	6.221×10^{-4}	2.834×10^{-4}	1.370×10^{-6}	1.453×10^{-2}	9.494×10^{-5}	7.170×10^{-4}
wavelength shift [nm]	$(7.115 \pm 6.814) \times 10^{-3}$	10186525	9.041×10^{-3}	6.579×10^{-3}	-4.510×10^{-2}	6.531×10^{-2}	2.345×10^{-3}	1.139×10^{-2}
cloud fraction apriori [1]	0.572 ± 0.352	10186525	0.764	0.550	0.0	1.000	0.236	1.000
reflectance blue oca [1]	0.559 ± 0.228	10186525	0.391	0.531	0.152	2.00	0.357	0.748
reflectance green oca [1]	0.504 ± 0.256	10186525	0.458	0.482	8.005×10^{-2}	1.92	0.262	0.721
reflectance continuum aband [1]	0.449 ± 0.283	10186525	0.495	0.445	1.230×10^{-2}	4.17	0.187	0.682

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]	0.696 ± 0.350	13247397	0.590	0.900	0.0	1.000	0.400	0.990
cloud fraction [1]	0.563 ± 0.359	13247397	0.780	0.547	0.0	1.000	0.208	0.988
cloud top height [m]	$(0.335 \pm 0.240) \times 10^4$	13247397	2.862×10^3	2.659×10^3	0.0	2.000×10^4	1.589×10^3	4.451×10^3
cloud optical thickness [1]	17.5 ± 27.7	13247397	9.54	10.0	1.000	250	6.89	16.4
cloud fraction crb [1]	0.562 ± 0.359	13247397	0.780	0.546	0.0	1.000	0.208	0.987
cloud height crb [m]	$(0.267 \pm 0.216) \times 10^4$	13247397	2.733×10^3	2.037×10^3	0.0	1.685×10^4	1.044×10^3	3.777×10^3
cloud albedo crb [1]	0.562 ± 0.176	13247397	0.207	0.541	0.0	1.000	0.456	0.664
surface albedo fitted [1]	$(9.902 \pm 21.134) \times 10^{-2}$	13247397	2.653×10^{-2}	2.444×10^{-2}	0.0	1.000	1.526×10^{-2}	4.179×10^{-2}
surface albedo fitted crb [1]	$(8.888 \pm 19.914) \times 10^{-2}$	13247397	1.985×10^{-2}	1.808×10^{-2}	0.0	1.000	1.117×10^{-2}	3.102×10^{-2}
fitted root mean square [1]	$(5.473 \pm 7.127) \times 10^{-4}$	13247397	6.630×10^{-4}	2.867×10^{-4}	1.532×10^{-6}	7.541×10^{-2}	9.426×10^{-5}	7.572×10^{-4}
fitted root mean square crb [1]	$(5.046 \pm 6.406) \times 10^{-4}$	13247397	6.031×10^{-4}	2.365×10^{-4}	1.370×10^{-6}	4.455×10^{-2}	8.177×10^{-5}	6.848×10^{-4}
wavelength shift [nm]	$(7.095 \pm 7.126) \times 10^{-3}$	13247397	9.263×10^{-3}	6.380×10^{-3}	-4.727×10^{-2}	6.531×10^{-2}	2.226×10^{-3}	1.149×10^{-2}
cloud fraction apriori [1]	0.562 ± 0.364	13247397	0.800	0.542	0.0	1.000	0.200	1.000
reflectance blue oca [1]	0.511 ± 0.205	13247397	0.330	0.478	0.162	2.00	0.334	0.664
reflectance green oca [1]	0.451 ± 0.232	13247397	0.402	0.417	9.073×10^{-2}	1.94	0.235	0.637
reflectance continuum aband [1]	0.385 ± 0.265	13247397	0.480	0.361	1.230×10^{-2}	3.22	0.130	0.610

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]	0.449 ± 0.400	4460731	0.840	0.580	0.0	1.000	0.0	0.840
cloud fraction [1]	0.493 ± 0.318	4460731	0.534	0.415	0.0	1.000	0.234	0.768
cloud top height [m]	$(0.532 \pm 0.316) \times 10^4$	4460731	4.432×10^3	5.014×10^3	0.0	2.000×10^4	2.850×10^3	7.282×10^3
cloud optical thickness [1]	15.4 ± 35.4	4460731	6.54	6.00	1.000	250	4.30	10.8
cloud fraction crb [1]	0.494 ± 0.317	4460731	0.533	0.416	0.0	1.000	0.235	0.768
cloud height crb [m]	$(0.409 \pm 0.263) \times 10^4$	4460731	3.767×10^3	3.716×10^3	0.0	2.000×10^4	1.992×10^3	5.759×10^3
cloud albedo crb [1]	0.656 ± 0.253	4460731	0.364	0.678	0.0	1.000	0.499	0.863
surface albedo fitted [1]	0.577 ± 0.298	4460731	0.589	0.654	0.0	1.000	0.267	0.855
surface albedo fitted crb [1]	0.561 ± 0.280	4460731	0.551	0.644	4.752×10^{-3}	1.000	0.265	0.816
fitted root mean square [1]	$(8.317 \pm 9.632) \times 10^{-4}$	4460731	7.141×10^{-4}	6.236×10^{-4}	2.761×10^{-6}	0.209	3.395×10^{-4}	1.054×10^{-3}
fitted root mean square crb [1]	$(6.792 \pm 7.168) \times 10^{-4}$	4460731	7.112×10^{-4}	4.565×10^{-4}	3.000×10^{-6}	3.326×10^{-2}	1.915×10^{-4}	9.027×10^{-4}
wavelength shift [nm]	$(8.574 \pm 6.246) \times 10^{-3}$	4460731	8.878×10^{-3}	8.342×10^{-3}	-3.427×10^{-2}	5.504×10^{-2}	3.856×10^{-3}	1.274×10^{-2}
cloud fraction apriori [1]	0.508 ± 0.320	4460731	0.560	0.433	0.0	1.000	0.242	0.802
reflectance blue ocrs [1]	0.683 ± 0.248	4460731	0.387	0.767	0.146	2.00	0.465	0.852
reflectance green ocrs [1]	0.655 ± 0.266	4460731	0.430	0.747	8.309×10^{-2}	1.92	0.418	0.848
reflectance continuum aband [1]	0.646 ± 0.237	4460731	0.373	0.692	1.753×10^{-2}	4.17	0.448	0.820

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	-2.177×10^{-2}	3.781×10^{-3}	-2.425×10^{-3}	4.595×10^{-2}	-3.615×10^{-2}	-2.631×10^{-3}	9.618×10^{-2}	-1.194×10^{-2}	-5.620×10^{-3}
-2.177×10^{-2}	1.000	-2.331×10^{-2}	0.132	-3.554×10^{-3}	0.140	0.135	-2.866×10^{-2}	0.329	0.147
3.781×10^{-3}	-2.331×10^{-2}	1.000	-0.102	-0.135	1.538×10^{-2}	-0.100	-0.143	7.259×10^{-2}	-8.526×10^{-2}
-2.425×10^{-3}	0.132	-0.102	1.000	-0.106	0.283	1.000	-7.819×10^{-2}	0.254	0.983
4.595×10^{-2}	-3.554×10^{-3}	-0.135	-0.106	1.000	1.368×10^{-2}	-0.106	0.936	4.820×10^{-2}	-0.115
-3.615×10^{-2}	0.140	1.538×10^{-2}	0.283	1.368×10^{-2}	1.000	0.280	5.005×10^{-2}	0.376	0.286
-2.631×10^{-3}	0.135	-0.100	1.000	-0.106	0.280	1.000	-7.829×10^{-2}	0.255	0.983
9.618×10^{-2}	-2.866×10^{-2}	-0.143	-7.819×10^{-2}	0.936	5.005×10^{-2}	-7.829×10^{-2}	1.000	-5.636×10^{-2}	-8.952×10^{-2}
-1.194×10^{-2}	0.329	7.259×10^{-2}	0.254	4.820×10^{-2}	0.376	0.255	-5.636×10^{-2}	1.000	0.279
-5.620×10^{-3}	0.147	-8.526×10^{-2}	0.983	-0.115	0.286	0.983	-8.952×10^{-2}	0.279	1.000

Table 8: Covariance matrix

Viewing zenith angle	Solar zenith angle	Latitude	Radiometric cloud fraction	Cloud top height	Cloud optical thickness	Cloud fraction (CRB)	Cloud height (CRB)	Cloud albedo (CRB)	OCRA cloud fraction
386	-9.19	3.86	-1.664×10^{-2}	2.496×10^3	-22.5	-1.806×10^{-2}	4.480×10^3	-4.888×10^{-2}	-3.893×10^{-2}
-9.19	462	-26.1	0.990	-211	95.3	1.01	-1.460×10^3	1.47	1.12
3.86	-26.1	2.706×10^3	-1.85	-1.944×10^4	25.3	-1.83	-1.767×10^4	0.787	-1.56
-1.664×10^{-2}	0.990	-1.85	0.122	-103	3.13	0.122	-64.7	1.845×10^{-2}	0.121
2.496×10^3	-211	-1.944×10^4	-103	7.647×10^6	1.199×10^3	-102	6.138×10^6	27.8	-113
-22.5	95.3	25.3	3.13	1.199×10^3	1.004×10^3	3.10	3.760×10^3	2.48	3.19
-1.806×10^{-2}	1.01	-1.83	0.122	-102	3.10	0.122	-64.8	1.853×10^{-2}	0.121
4.480×10^3	-1.460×10^3	-1.767×10^4	-64.7	6.138×10^6	3.760×10^3	-64.8	5.622×10^6	-27.8	-74.8
-4.888×10^{-2}	1.47	0.787	1.845×10^{-2}	27.8	2.48	1.853×10^{-2}	-27.8	4.339×10^{-2}	2.051×10^{-2}
-3.893×10^{-2}	1.12	-1.56	0.121	-113	3.19	0.121	-74.8	2.051×10^{-2}	0.124

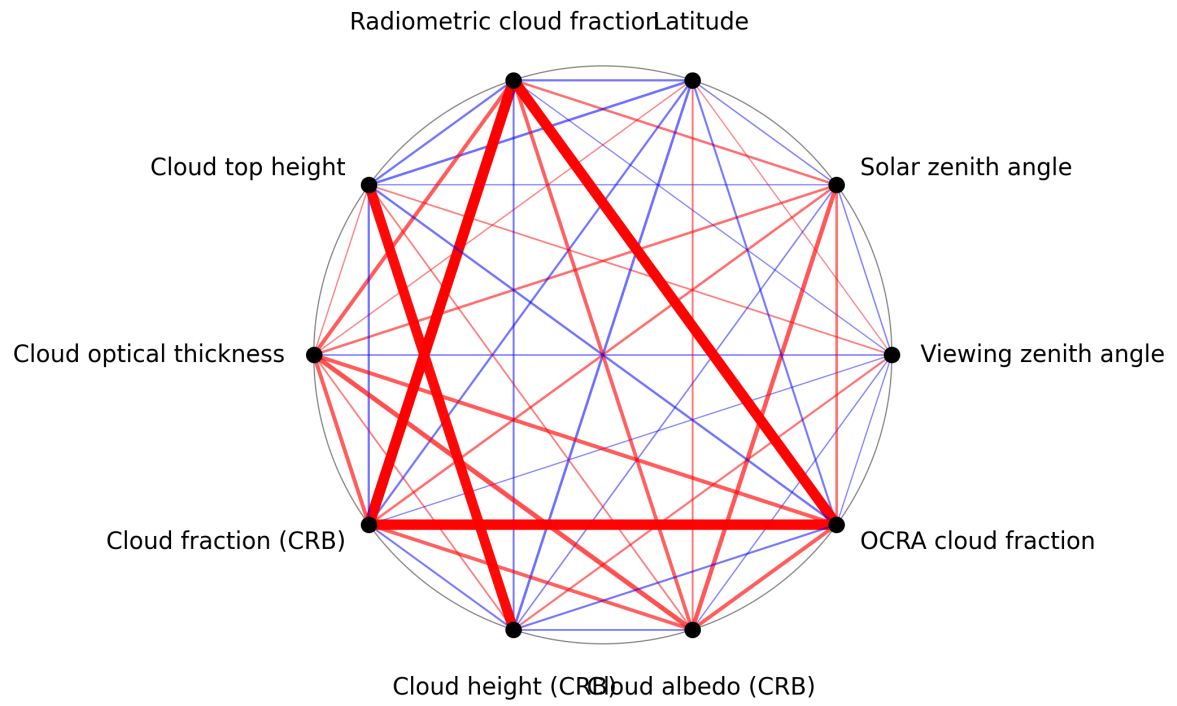


Figure 1: Map of correlation graph for 2025-03-12 to 2025-03-13.

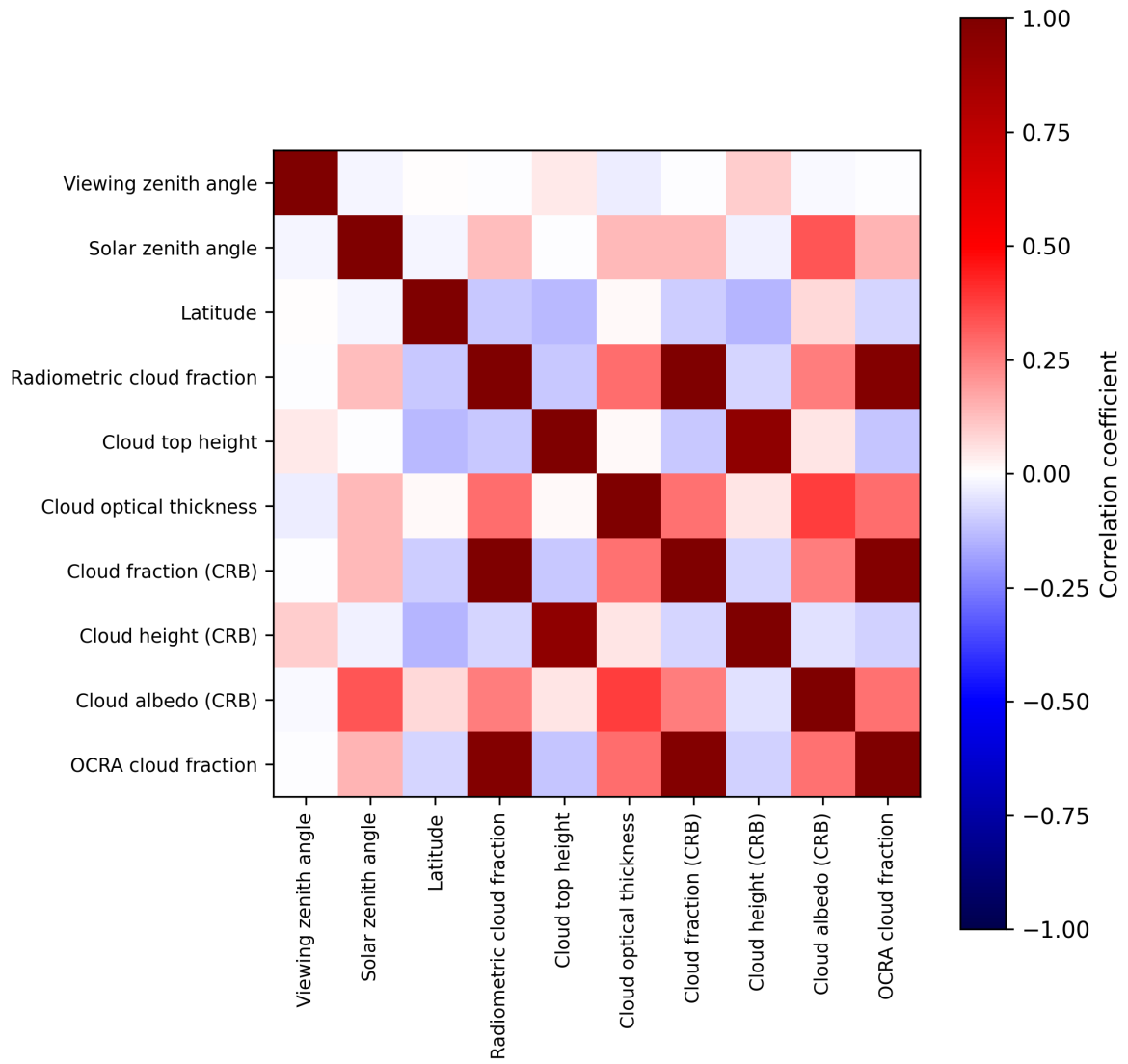


Figure 2: Map of correlation matrix for 2025-03-12 to 2025-03-13.

3 Granule outlines

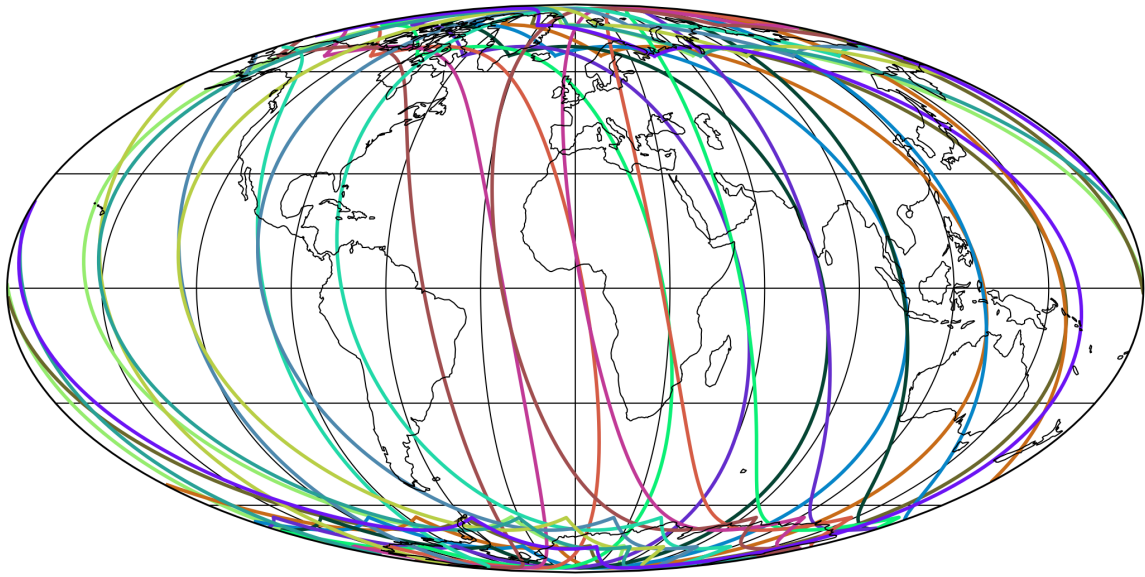


Figure 3: Outline of the granules.

4 Input data monitoring

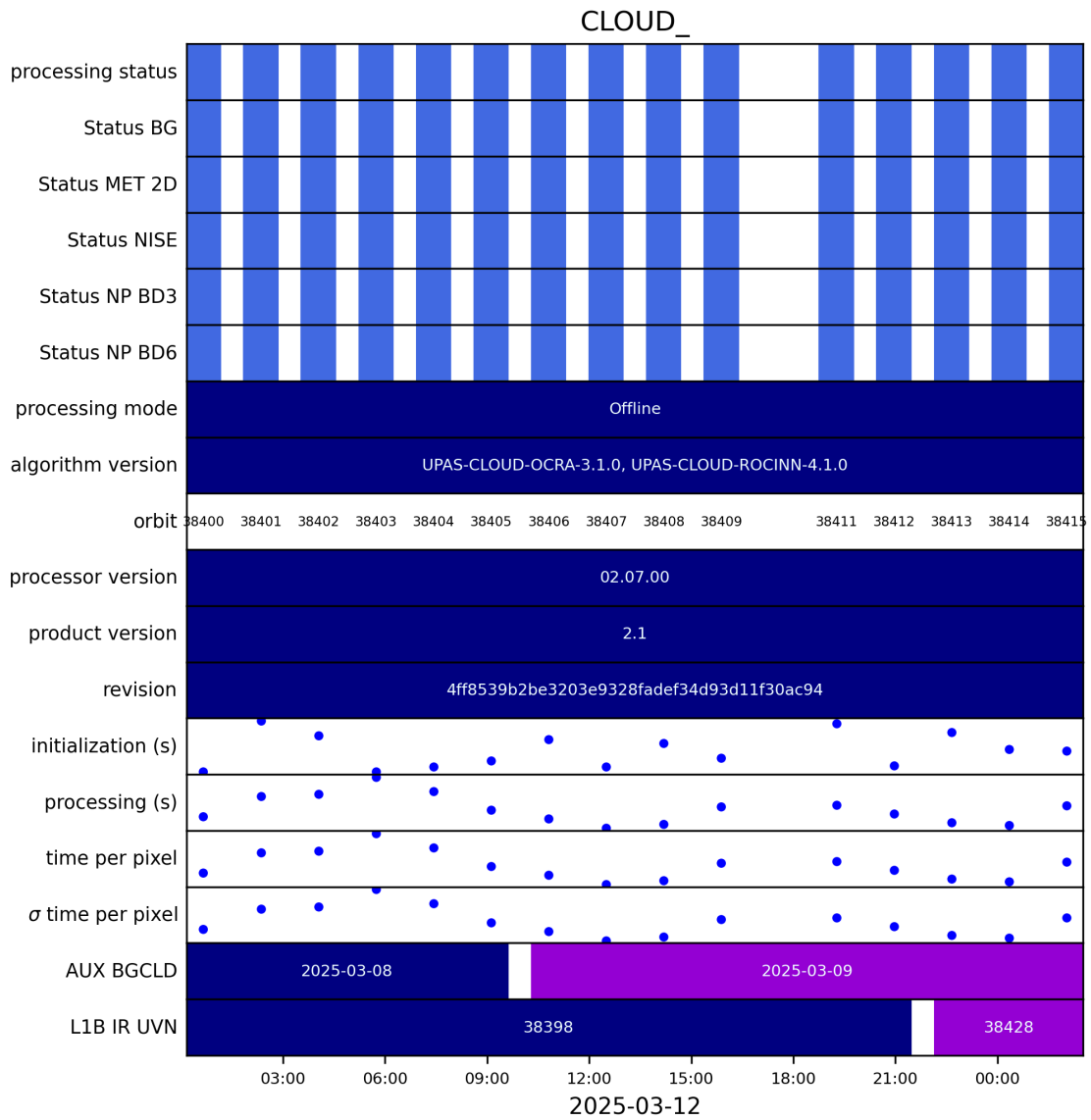


Figure 4: Input data per granule

5 Warnings and errors

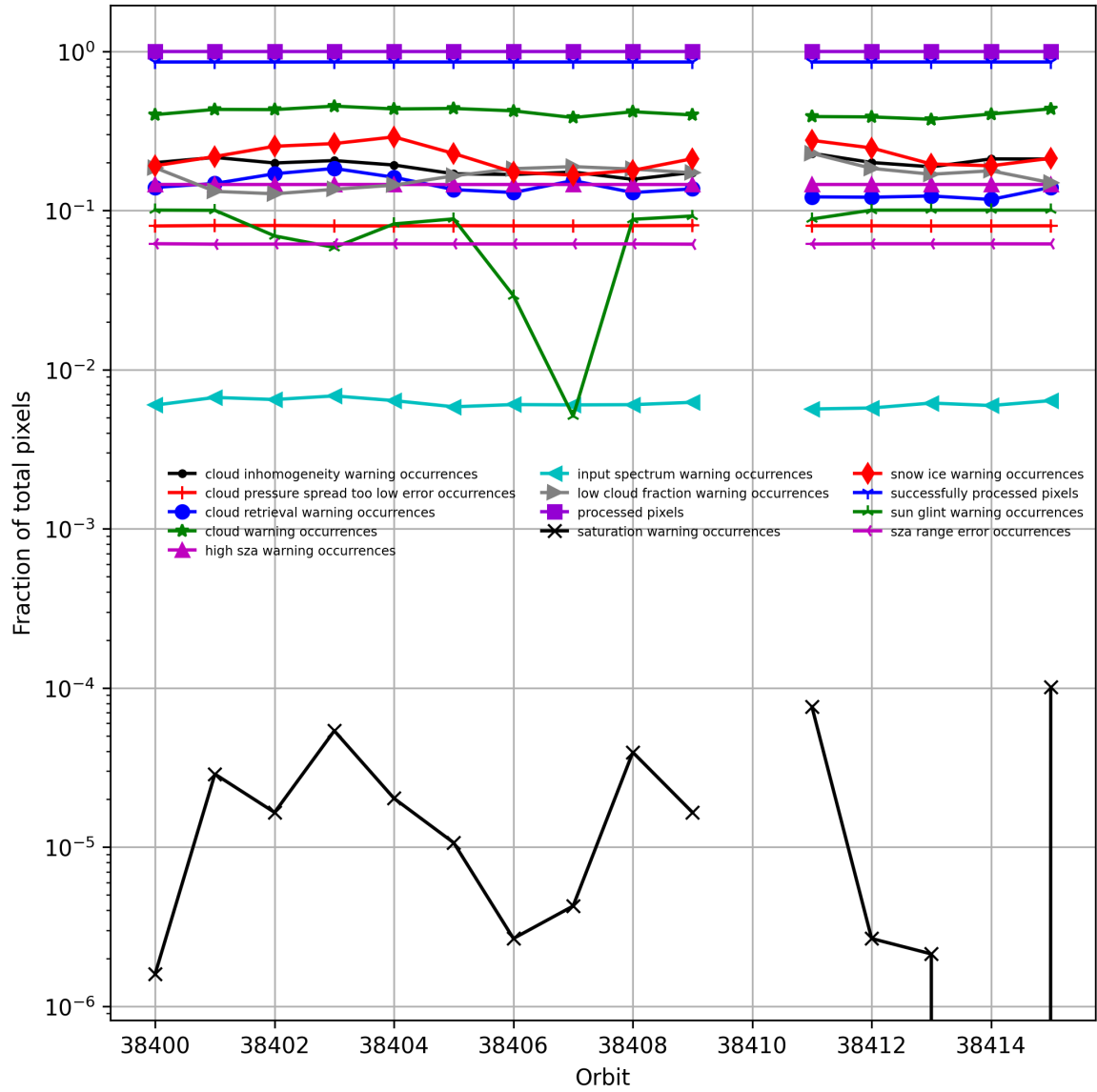


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

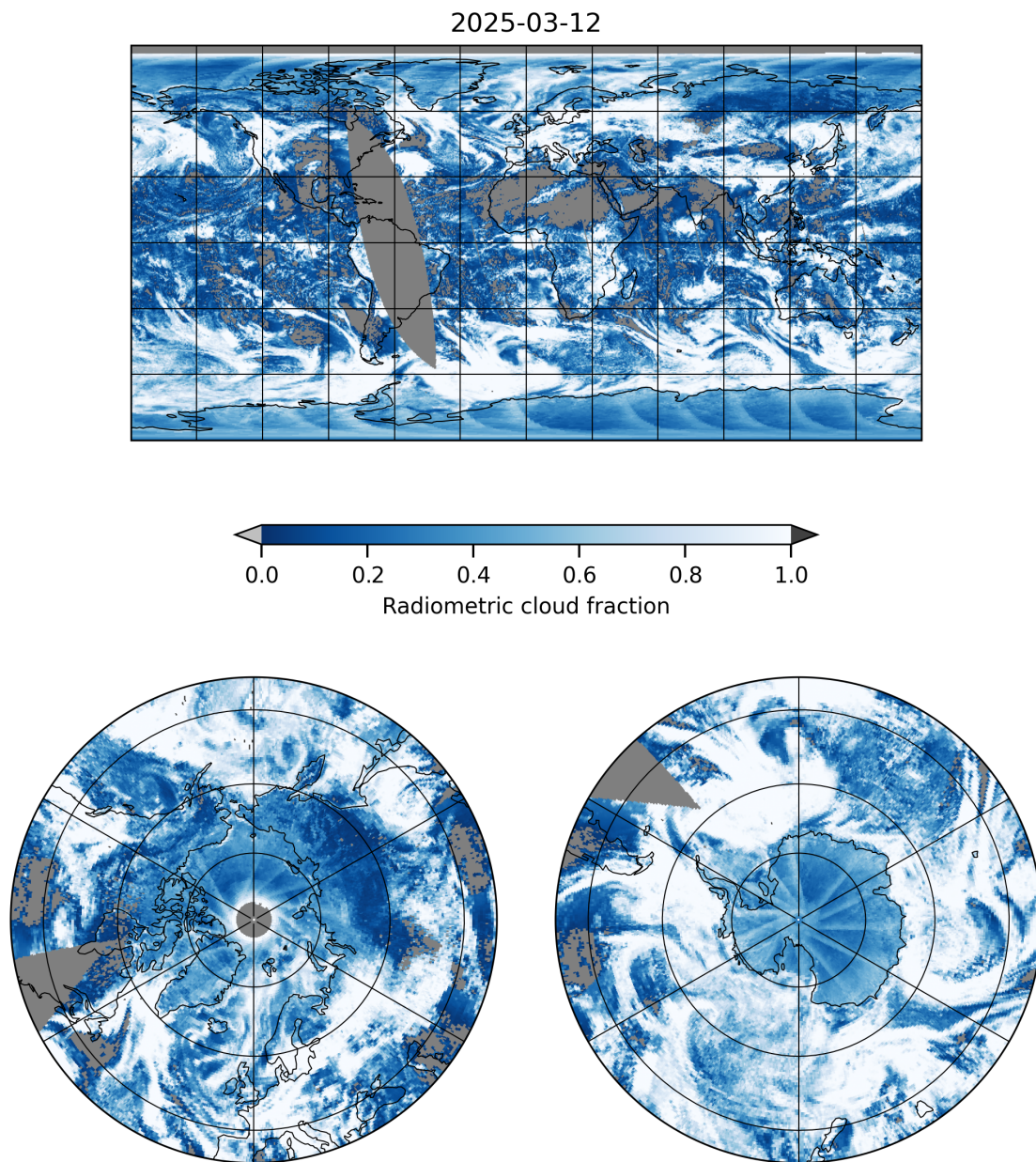


Figure 6: Map of “Radiometric cloud fraction” for 2025-03-12 to 2025-03-13

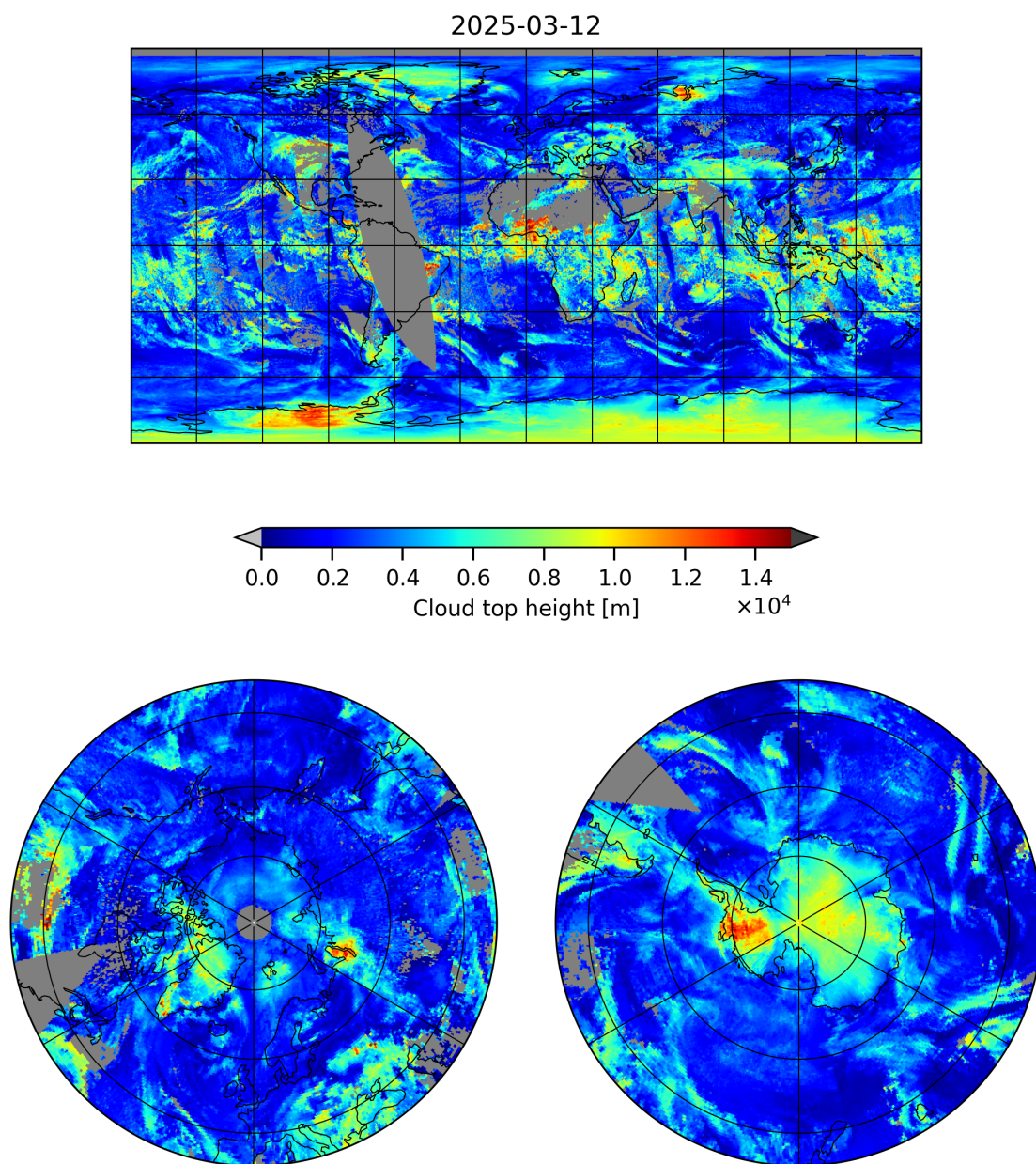


Figure 7: Map of “Cloud top height” for 2025-03-12 to 2025-03-13

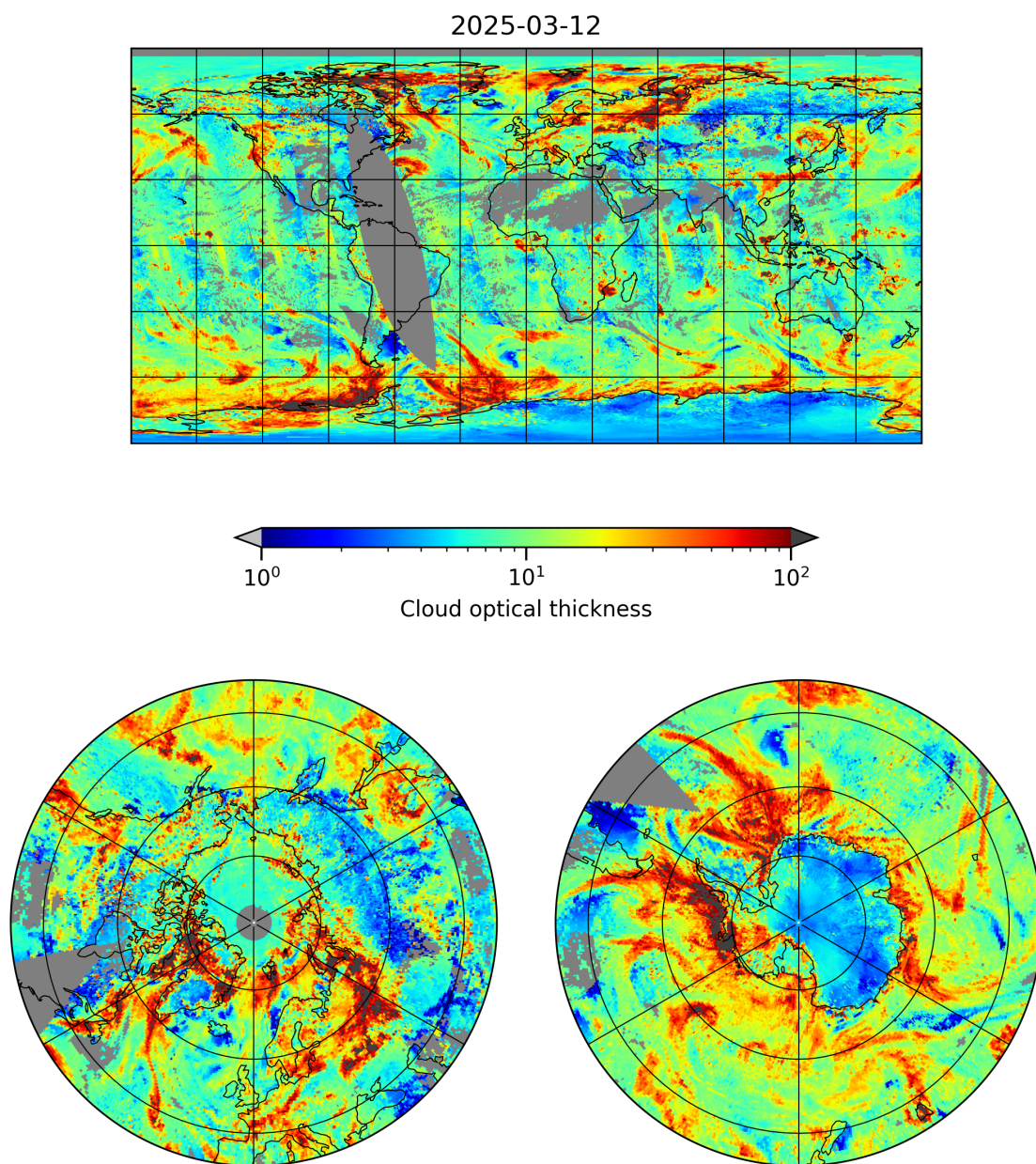


Figure 8: Map of “Cloud optical thickness” for 2025-03-12 to 2025-03-13

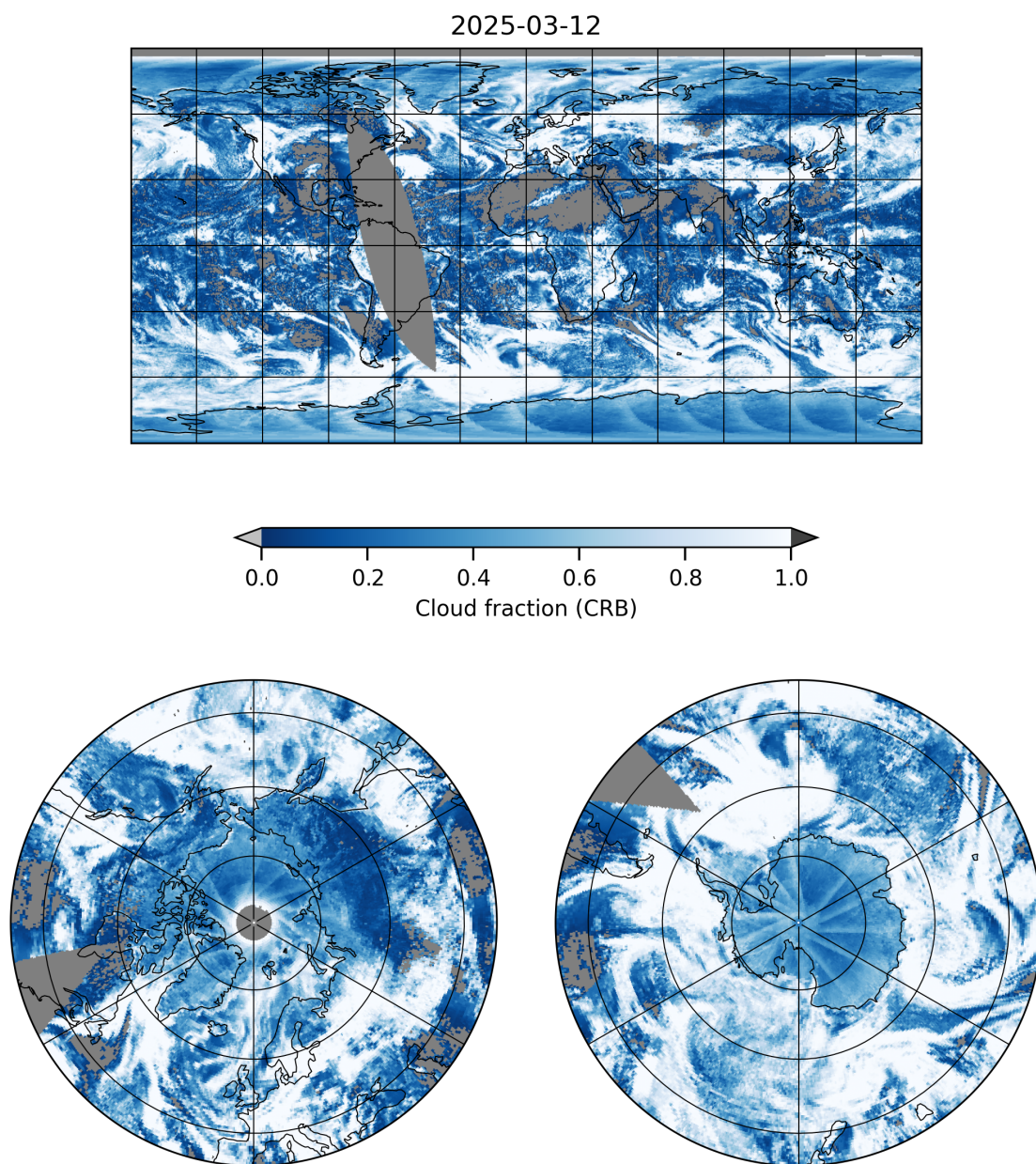


Figure 9: Map of “Cloud fraction (CRB)” for 2025-03-12 to 2025-03-13

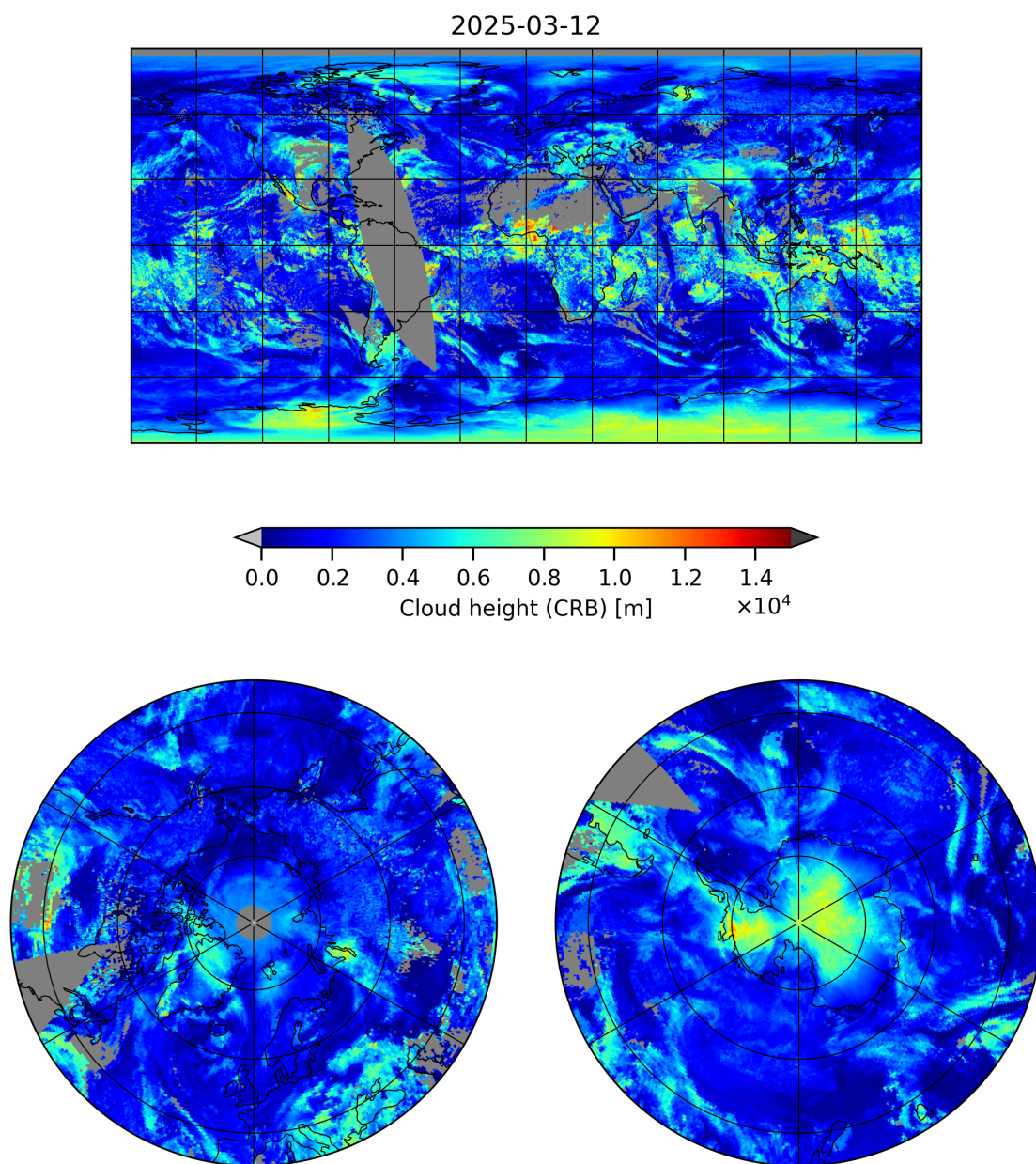


Figure 10: Map of “Cloud height (CRB)” for 2025-03-12 to 2025-03-13

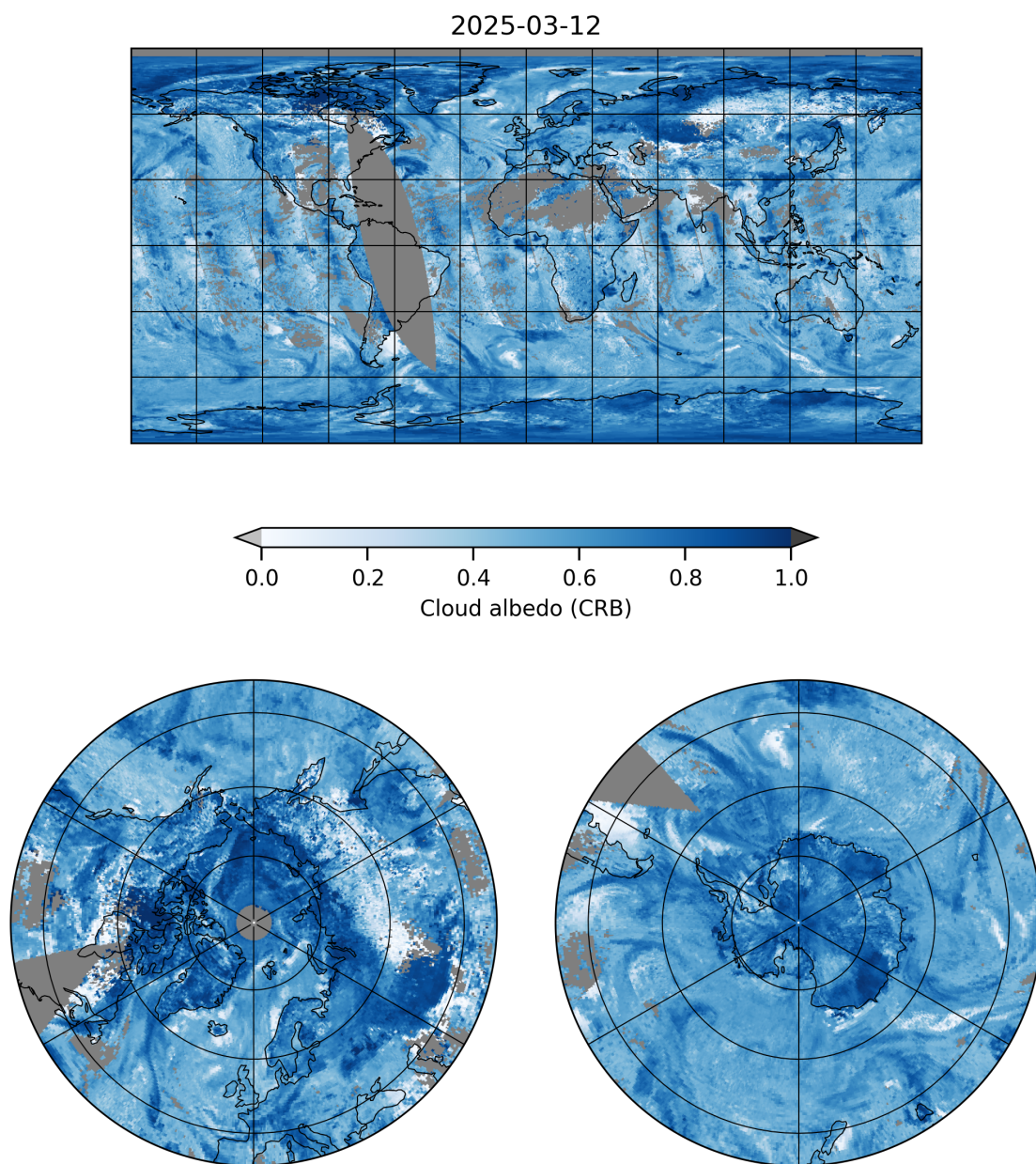


Figure 11: Map of “Cloud albedo (CRB)” for 2025-03-12 to 2025-03-13

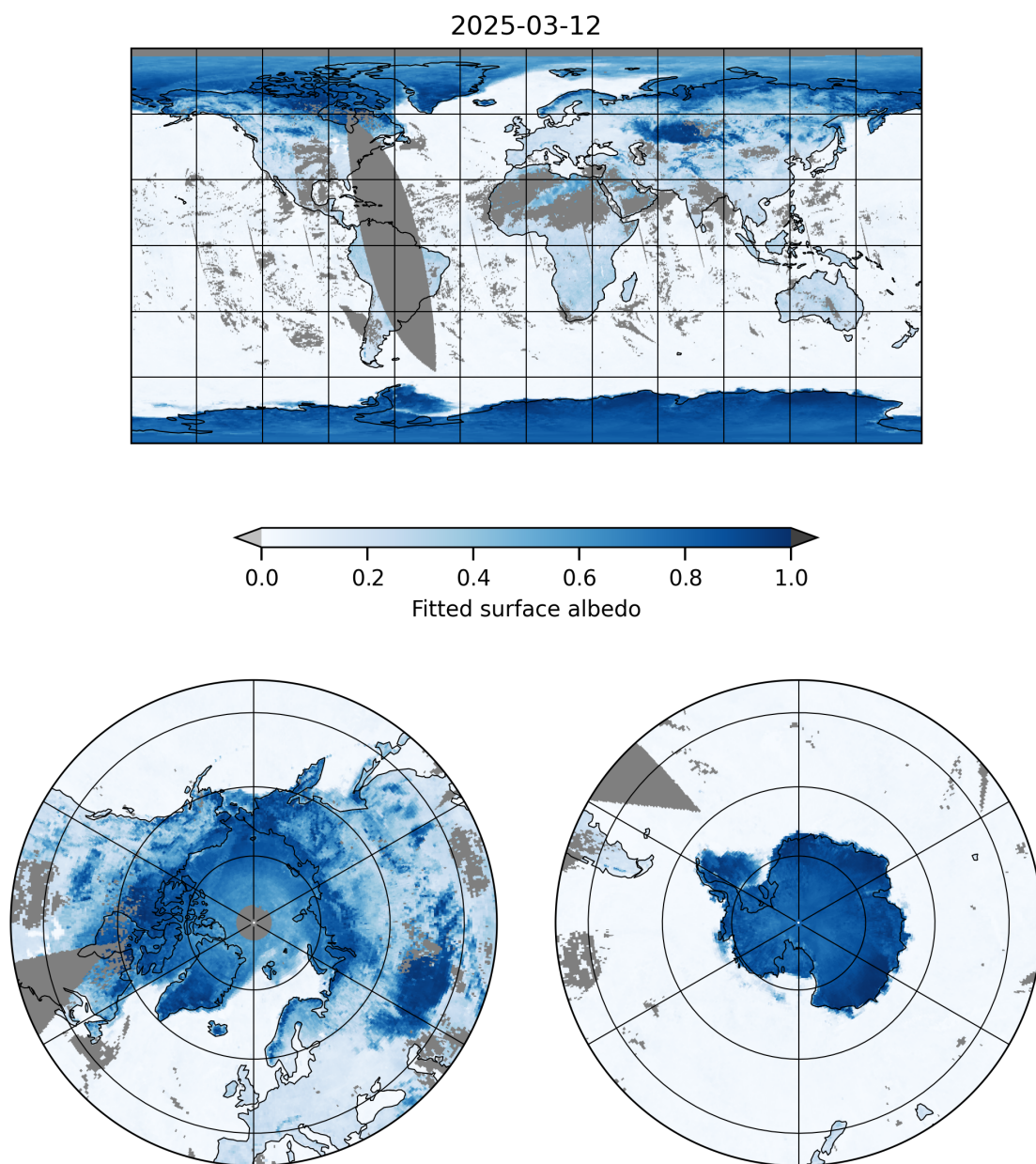


Figure 12: Map of “Fitted surface albedo” for 2025-03-12 to 2025-03-13

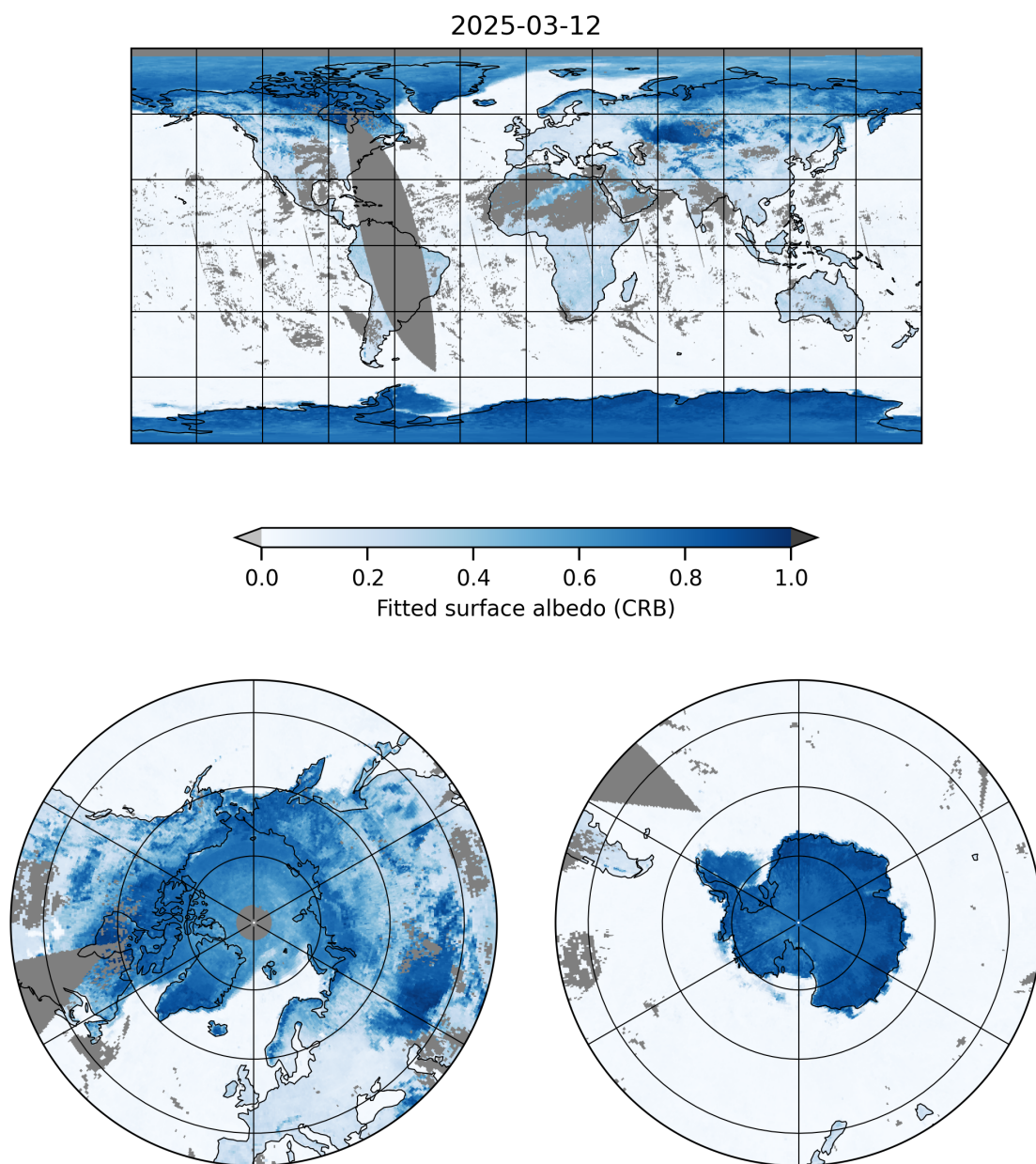


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-03-12 to 2025-03-13

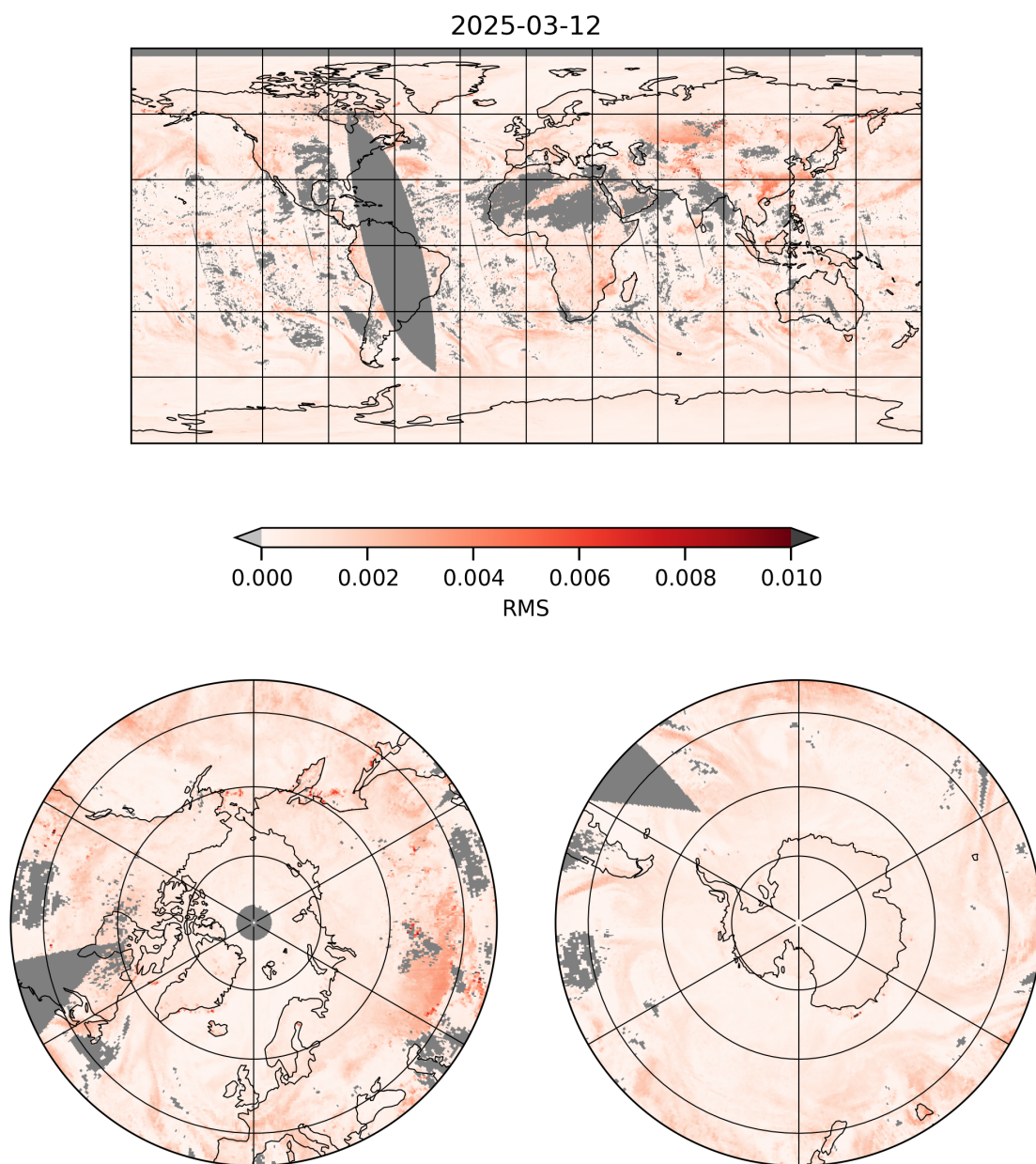


Figure 14: Map of “RMS” for 2025-03-12 to 2025-03-13

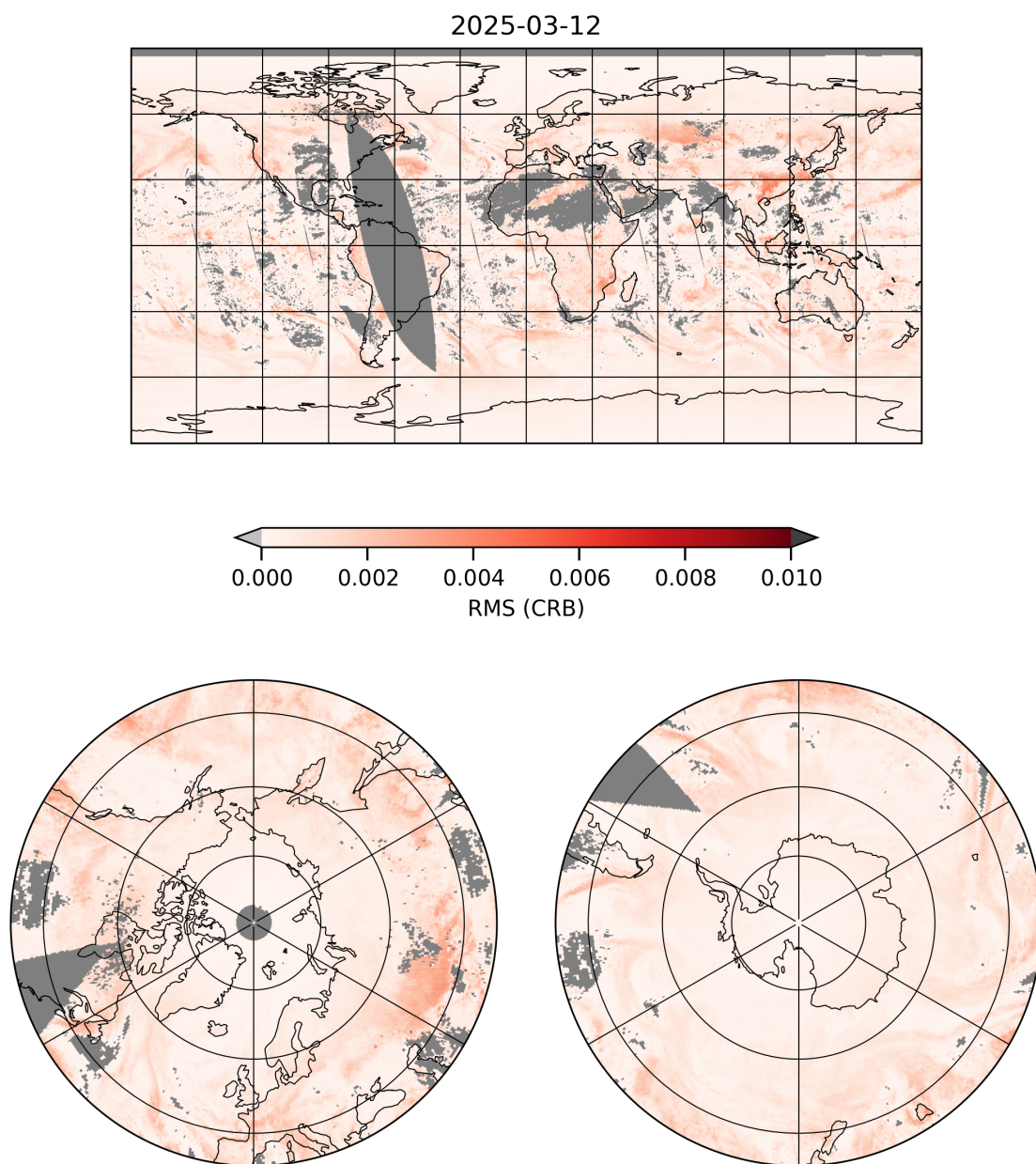


Figure 15: Map of “RMS (CRB)” for 2025-03-12 to 2025-03-13

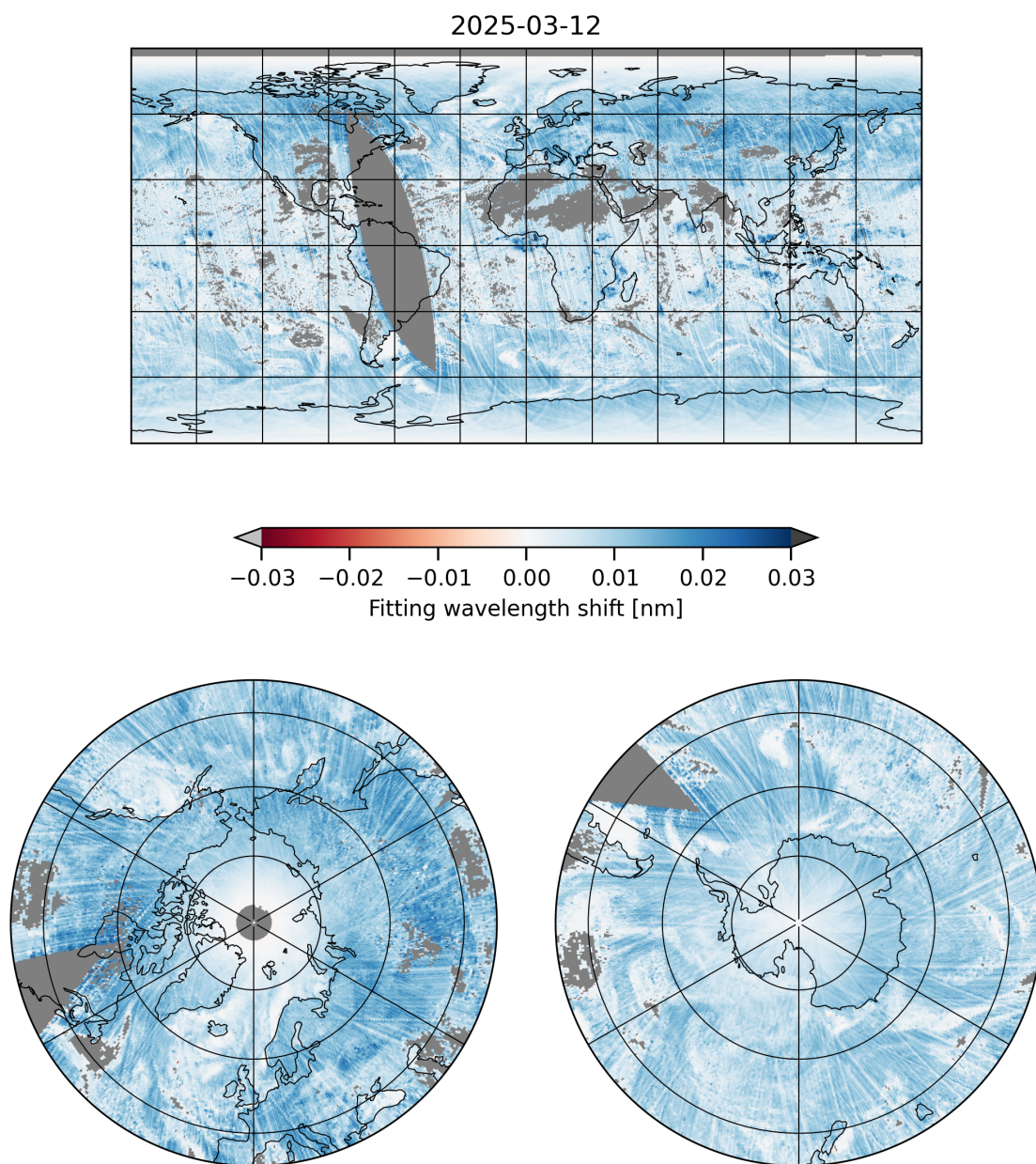


Figure 16: Map of “Fitting wavelength shift” for 2025-03-12 to 2025-03-13

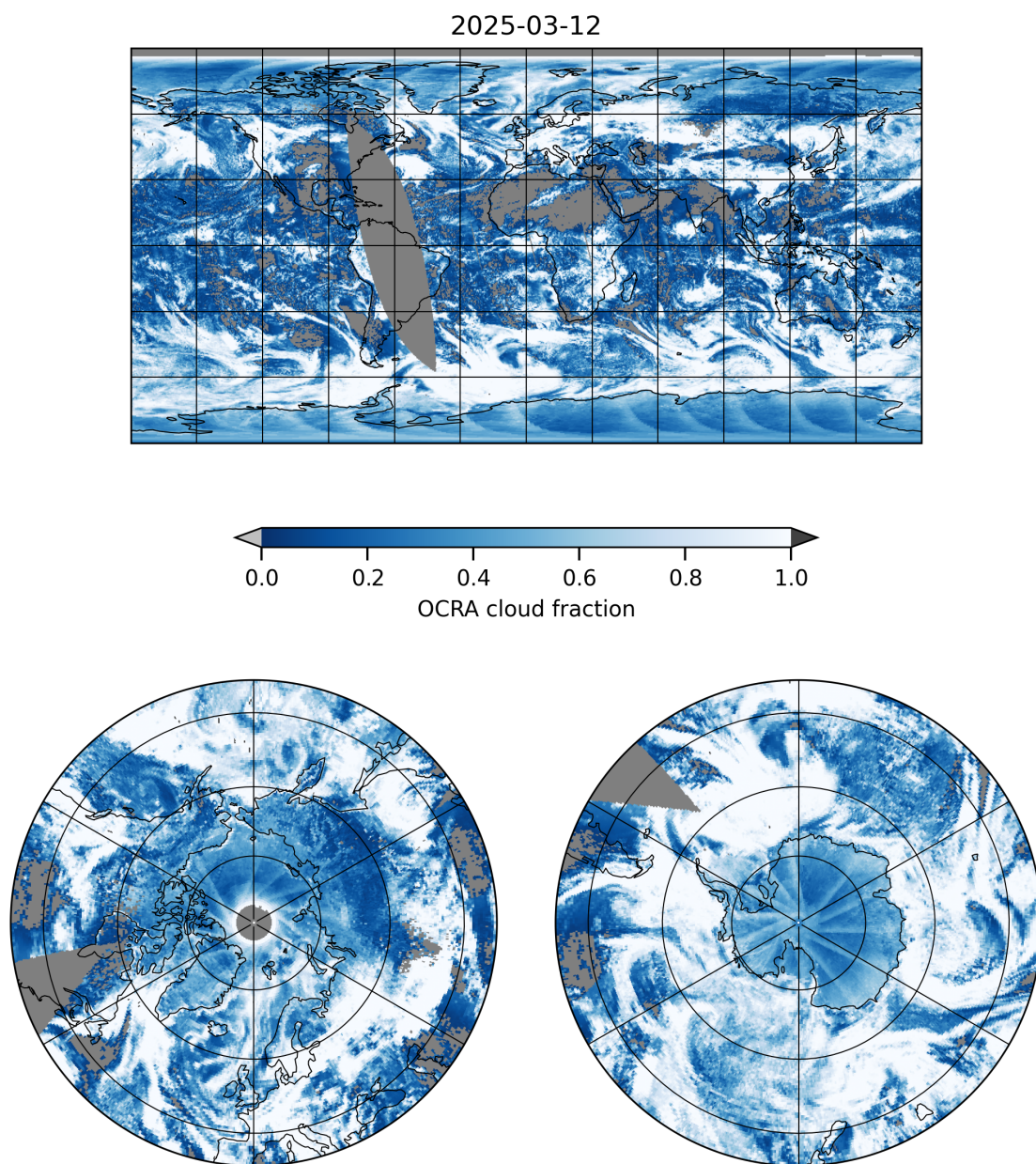


Figure 17: Map of “OCRA cloud fraction” for 2025-03-12 to 2025-03-13

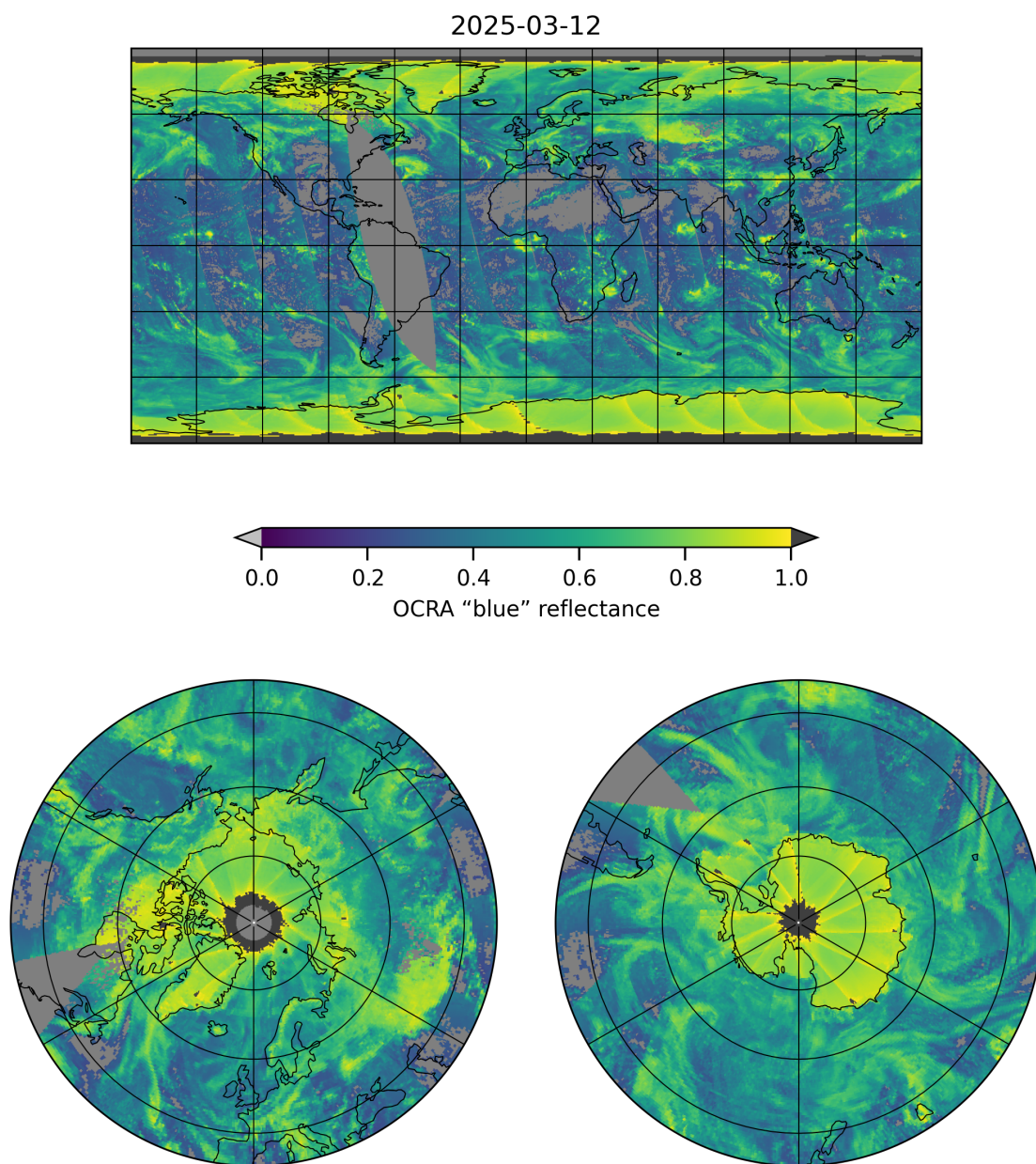


Figure 18: Map of "OCRA "blue" reflectance" for 2025-03-12 to 2025-03-13

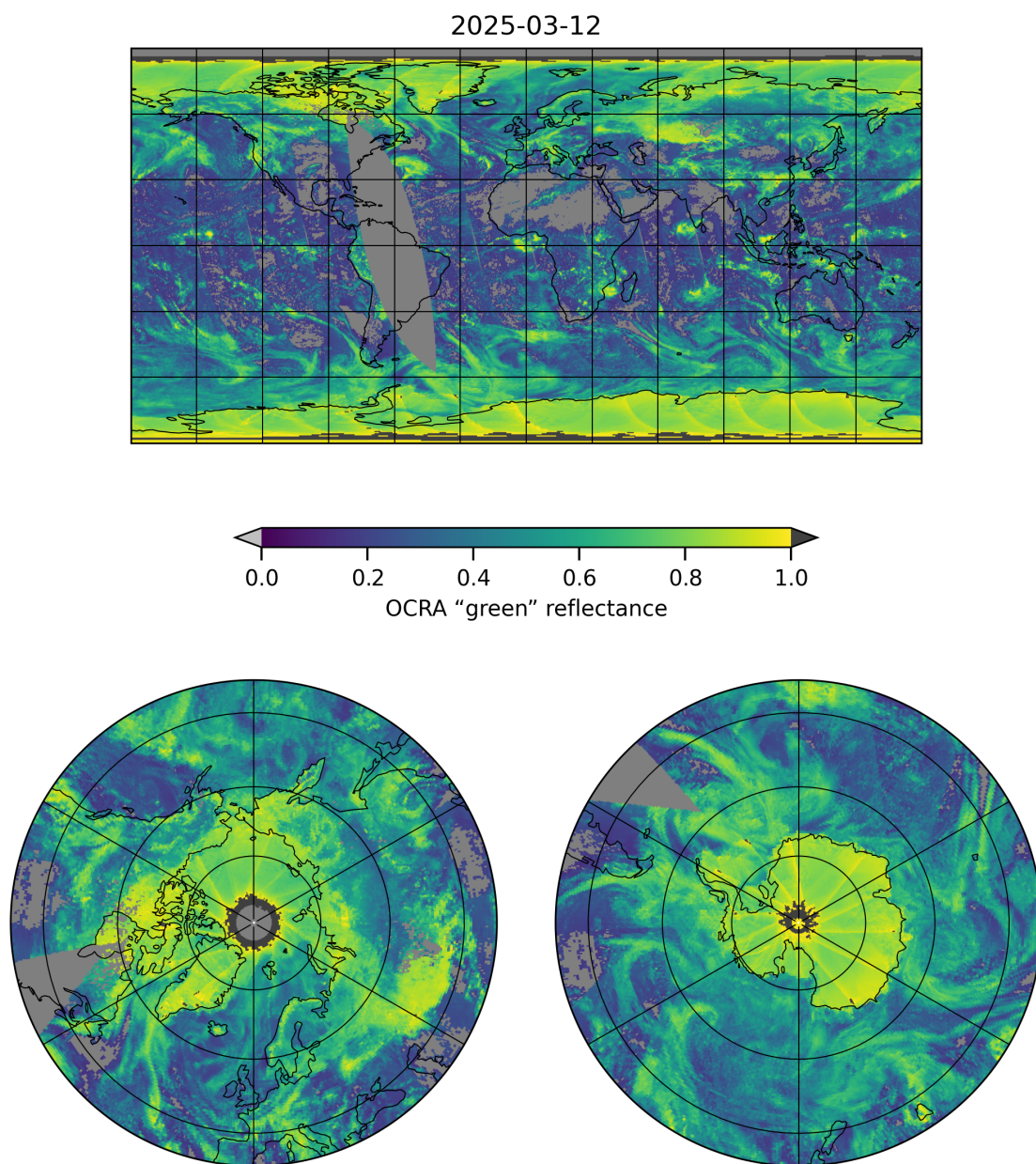


Figure 19: Map of "OCRA "green" reflectance" for 2025-03-12 to 2025-03-13

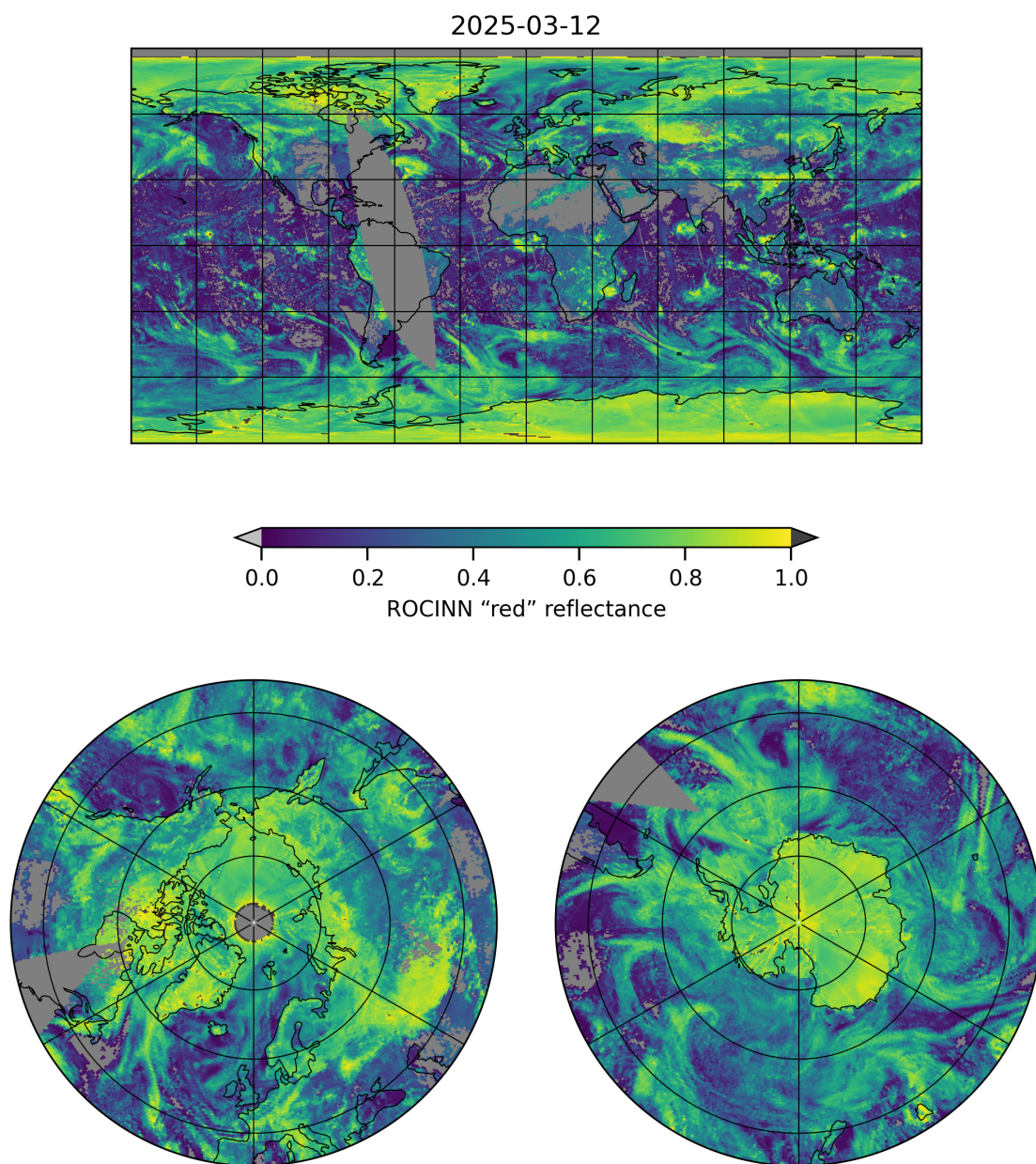


Figure 20: Map of "ROCINN "red" reflectance" for 2025-03-12 to 2025-03-13

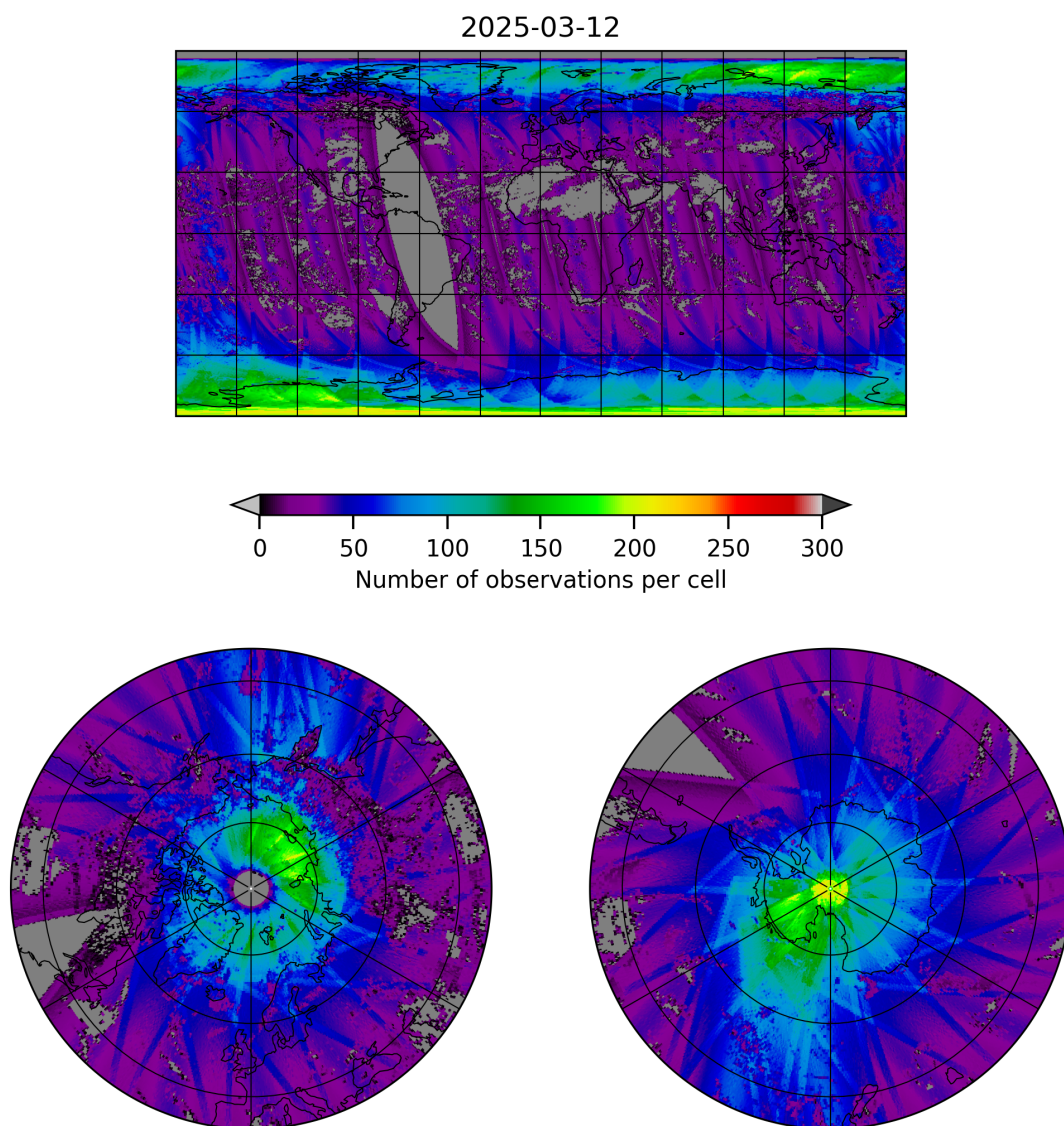


Figure 21: Map of the number of observations for 2025-03-12 to 2025-03-13

7 Zonal average

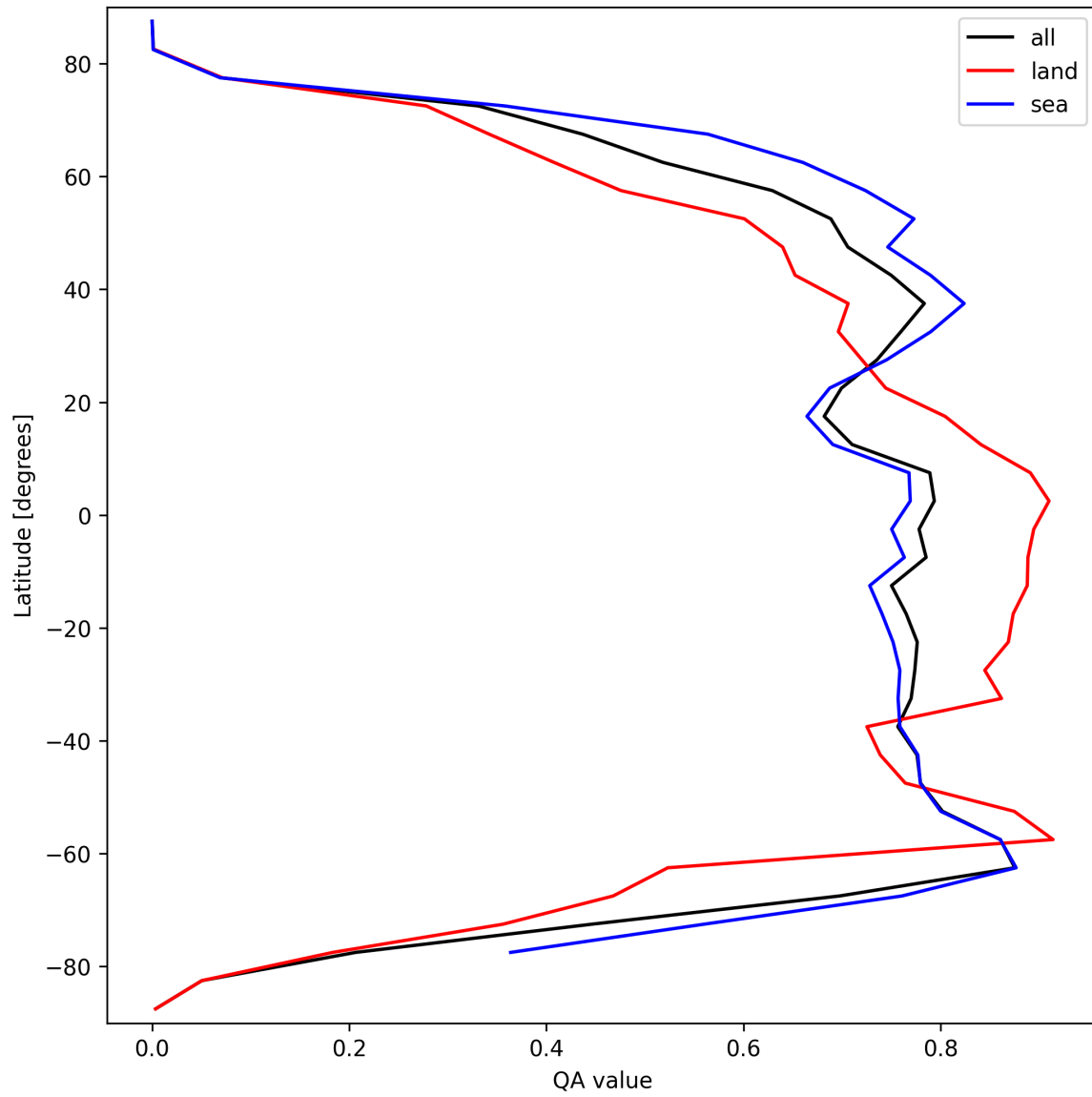


Figure 22: Zonal average of “QA value” for 2025-03-12 to 2025-03-13.

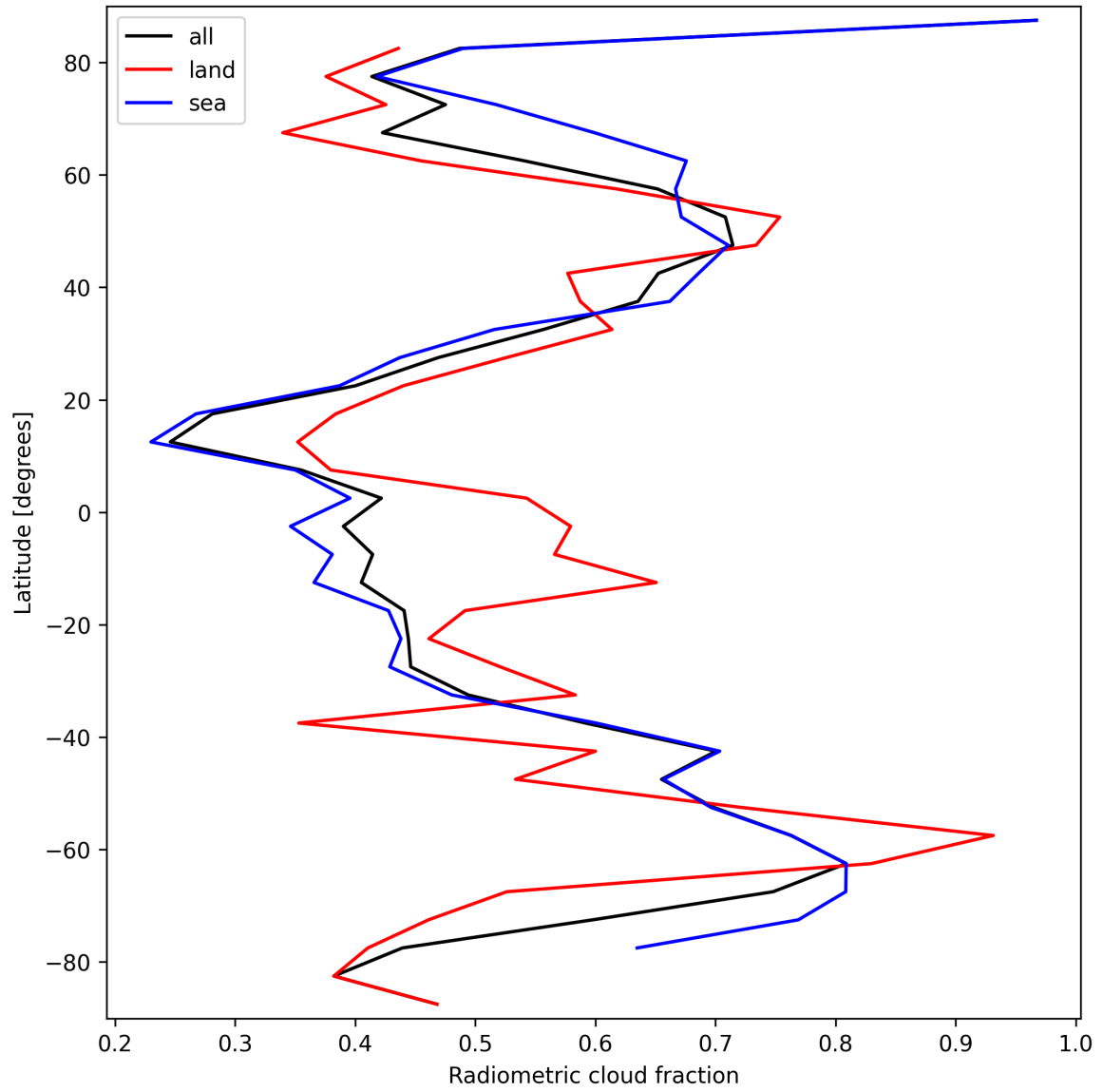


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-03-12 to 2025-03-13.

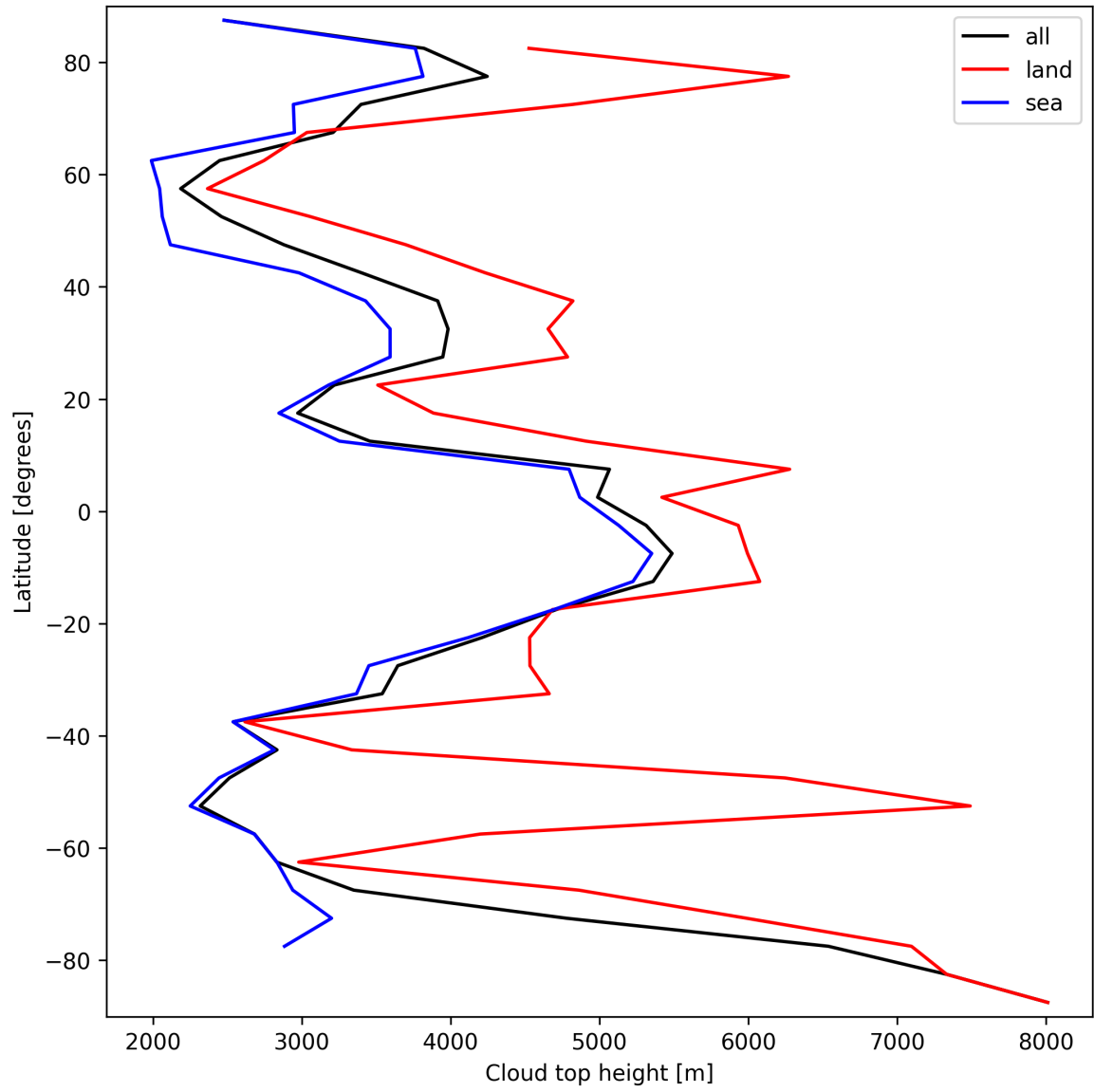


Figure 24: Zonal average of “Cloud top height” for 2025-03-12 to 2025-03-13.

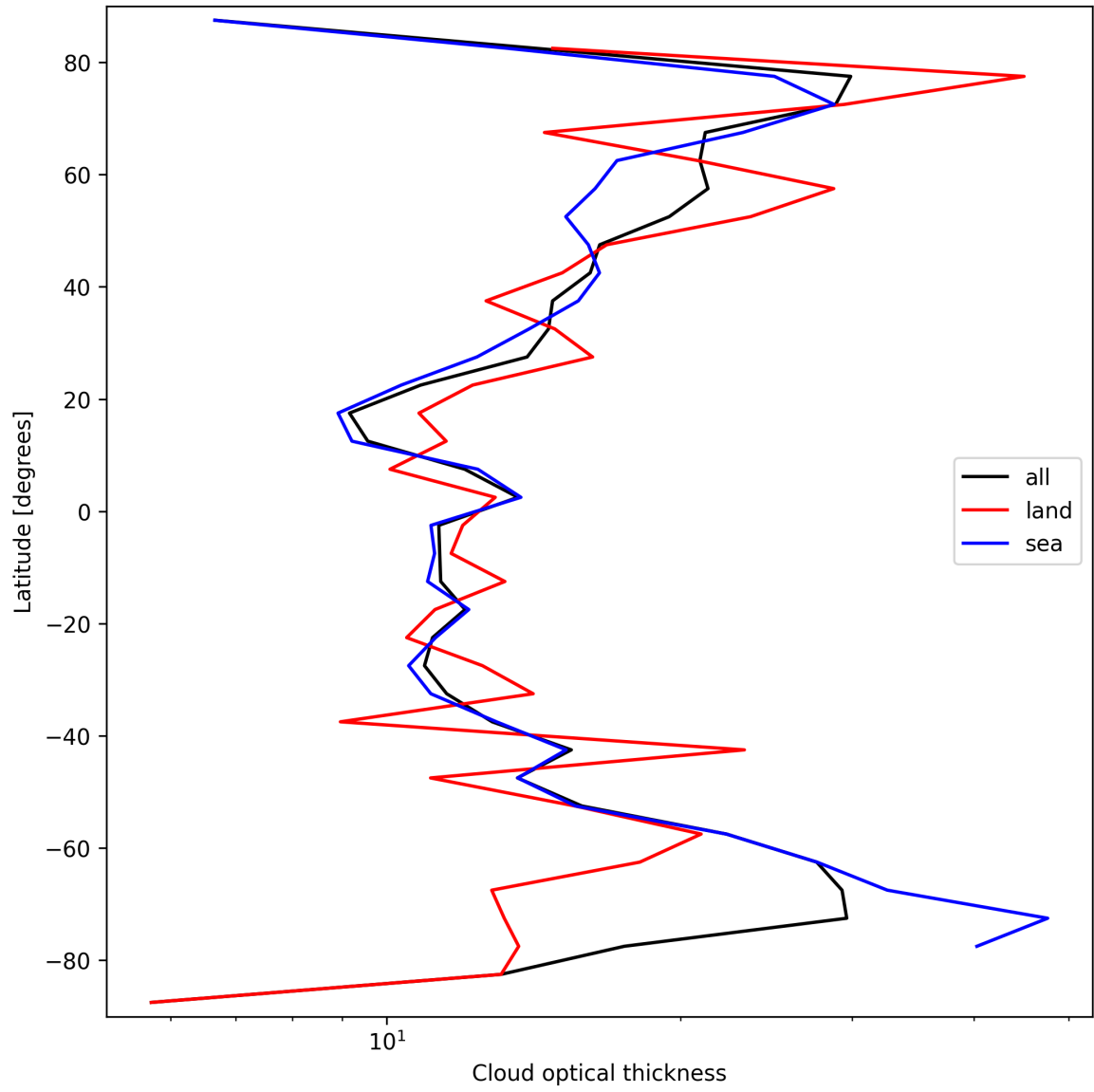


Figure 25: Zonal average of “Cloud optical thickness” for 2025-03-12 to 2025-03-13.

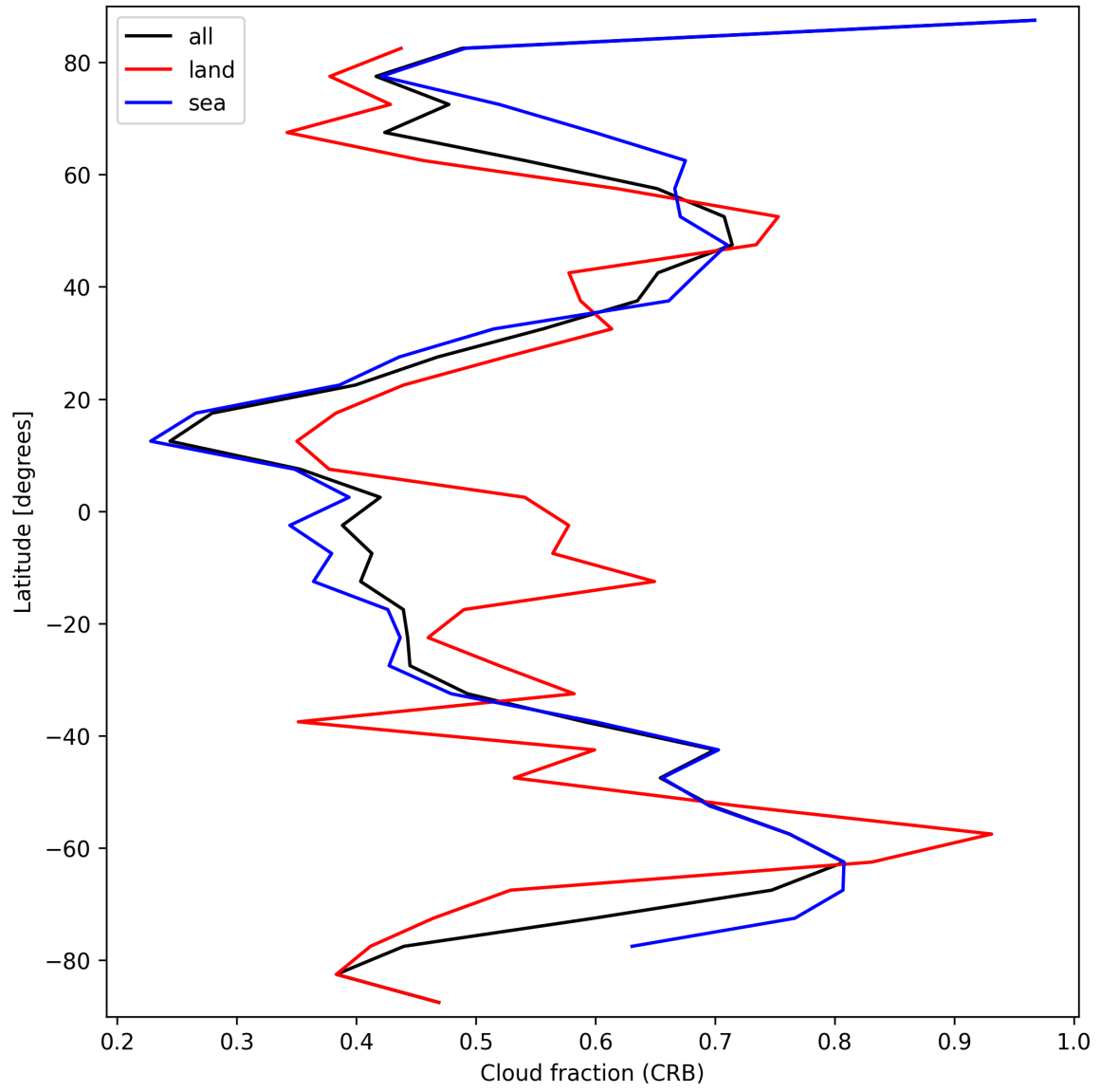


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-03-12 to 2025-03-13.

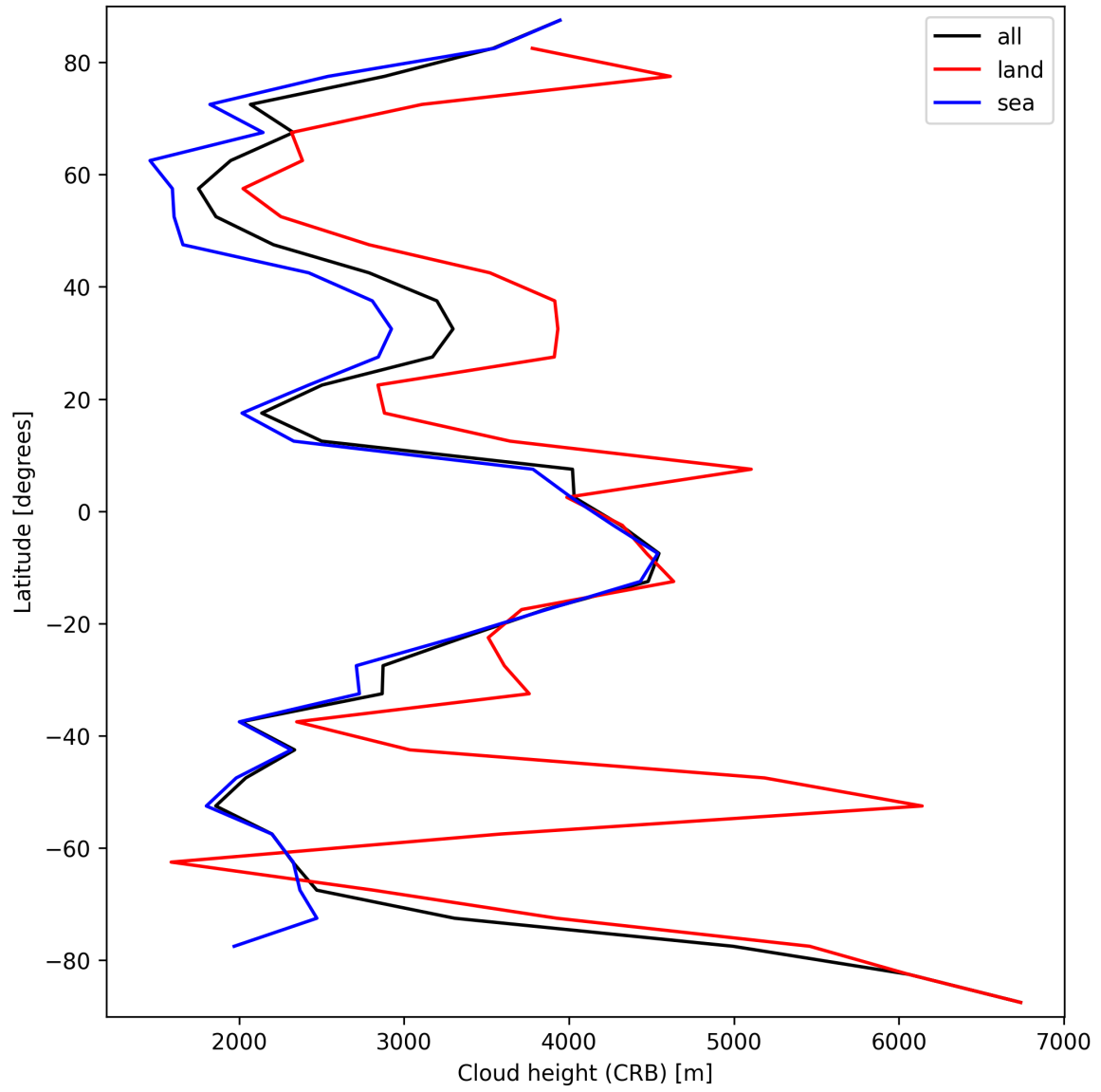


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-03-12 to 2025-03-13.

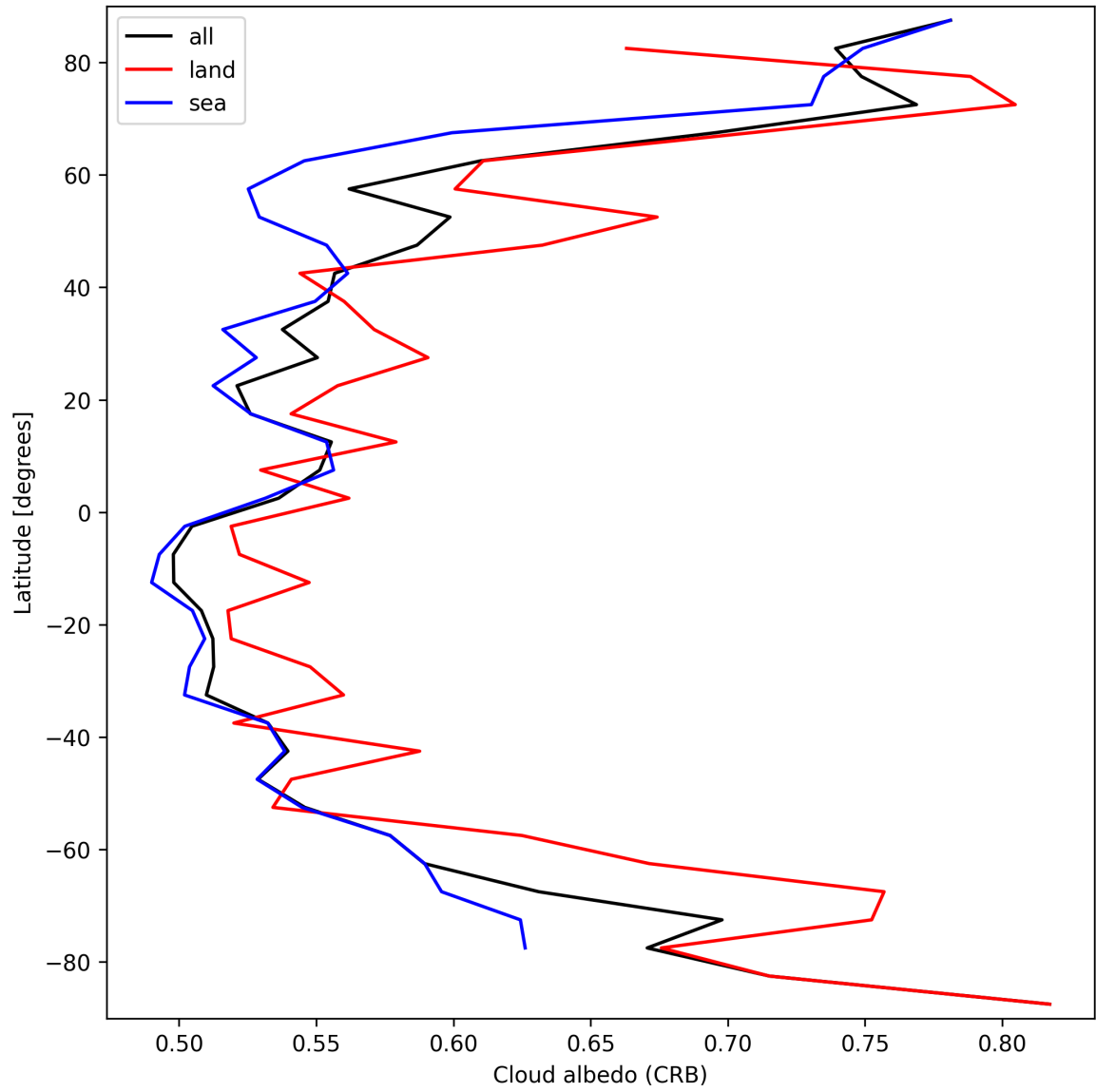


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-03-12 to 2025-03-13.

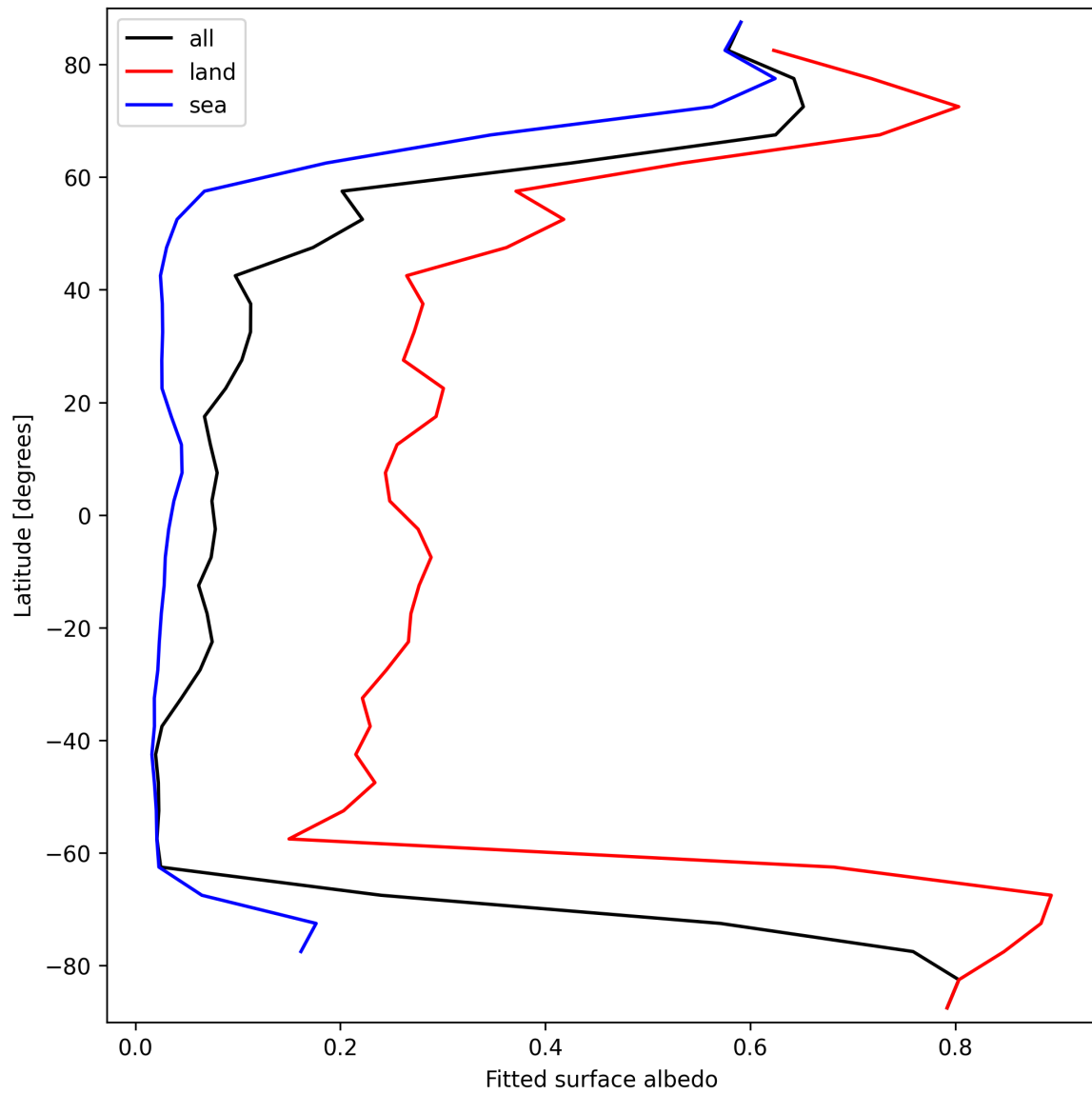


Figure 29: Zonal average of “Fitted surface albedo” for 2025-03-12 to 2025-03-13.

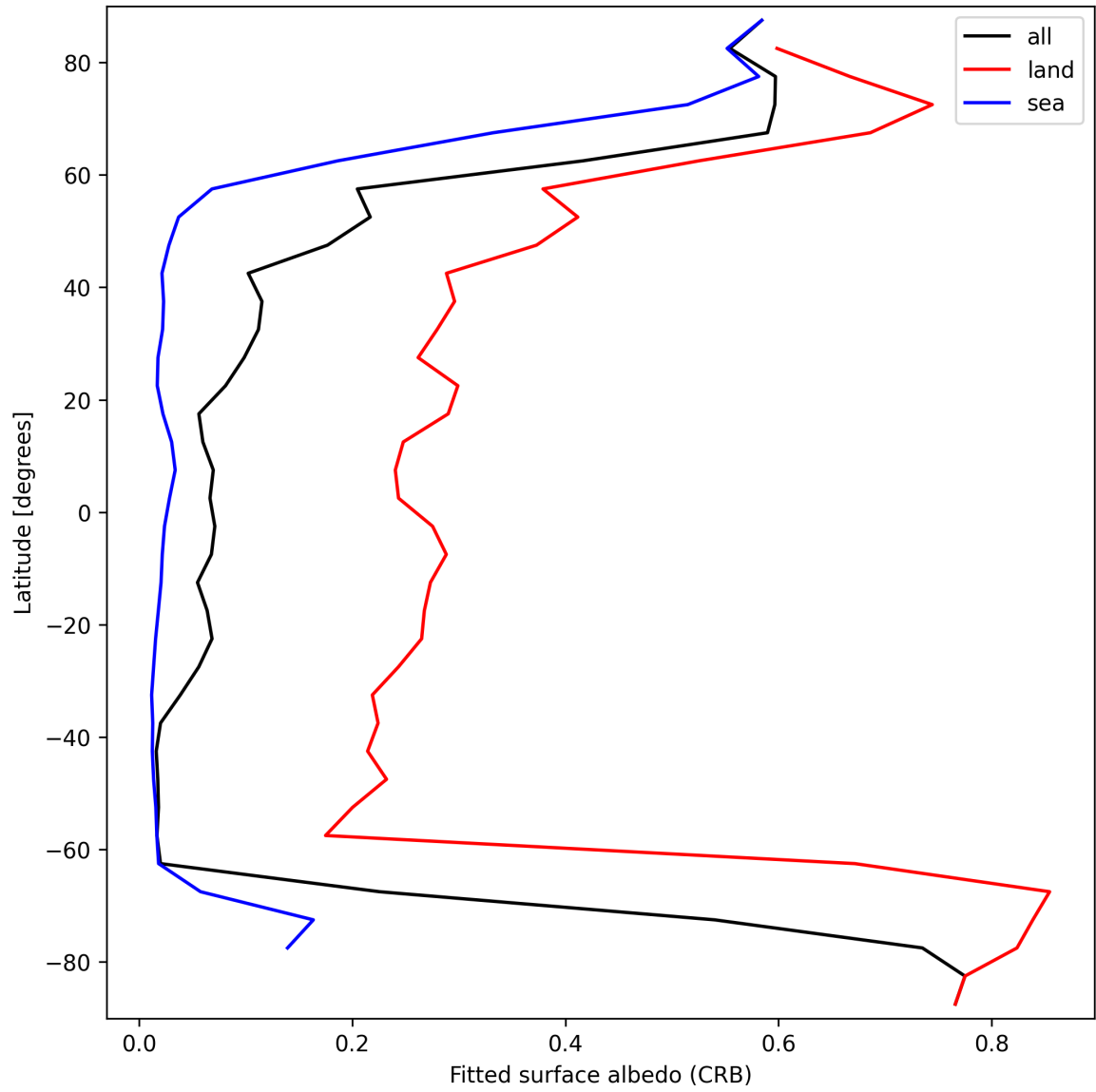


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-03-12 to 2025-03-13.

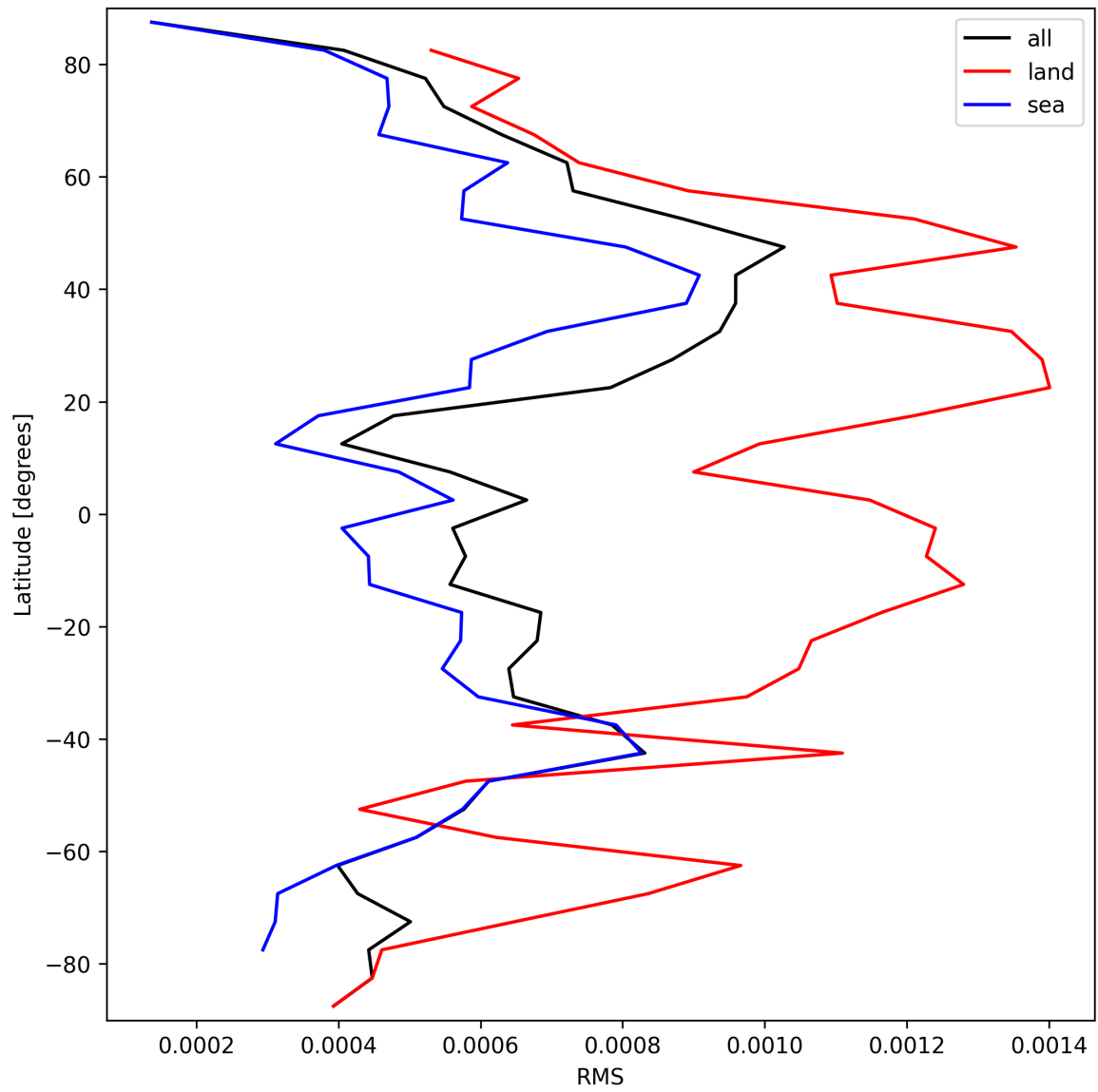


Figure 31: Zonal average of “RMS” for 2025-03-12 to 2025-03-13.

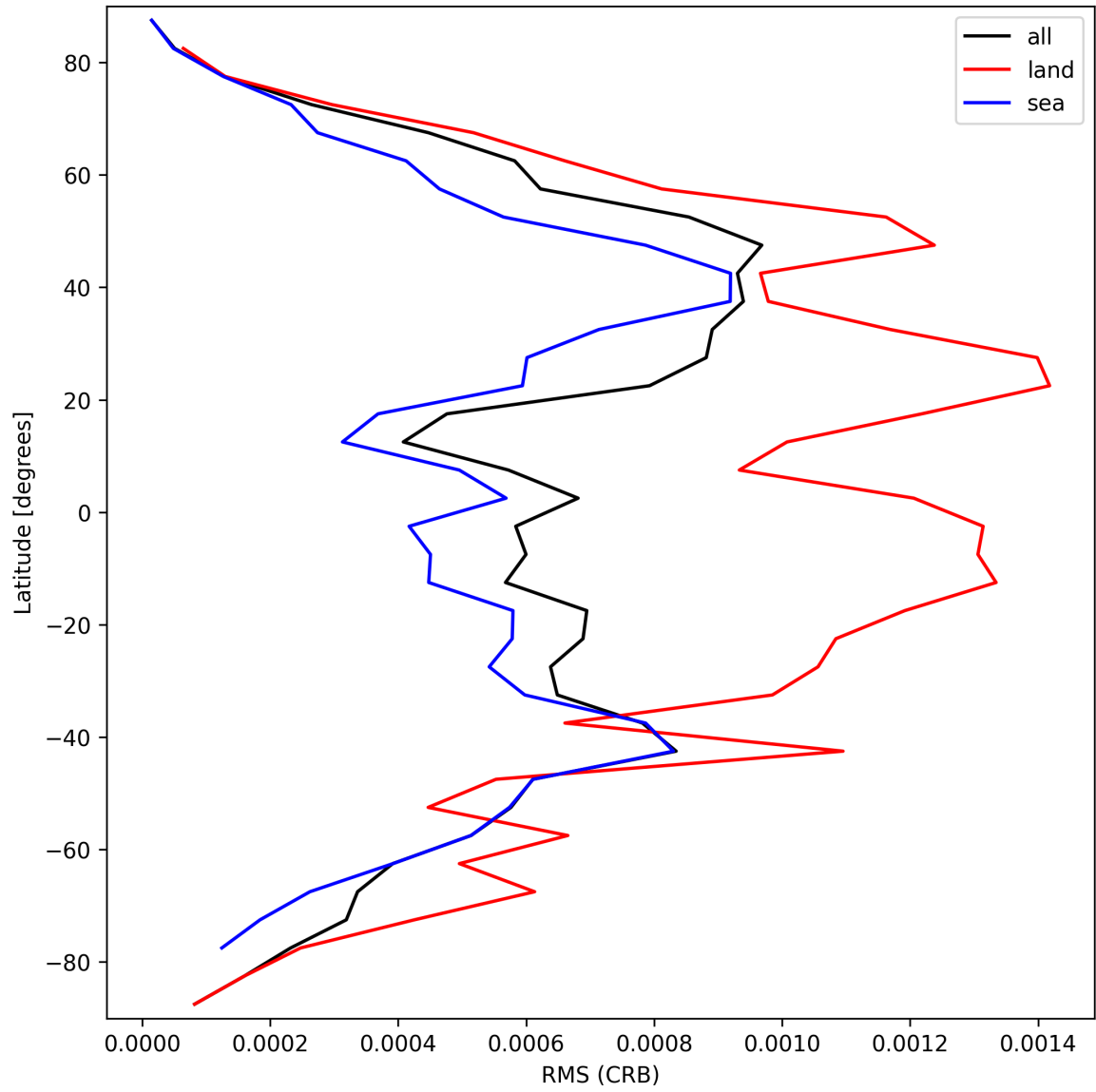


Figure 32: Zonal average of “RMS (CRB)” for 2025-03-12 to 2025-03-13.

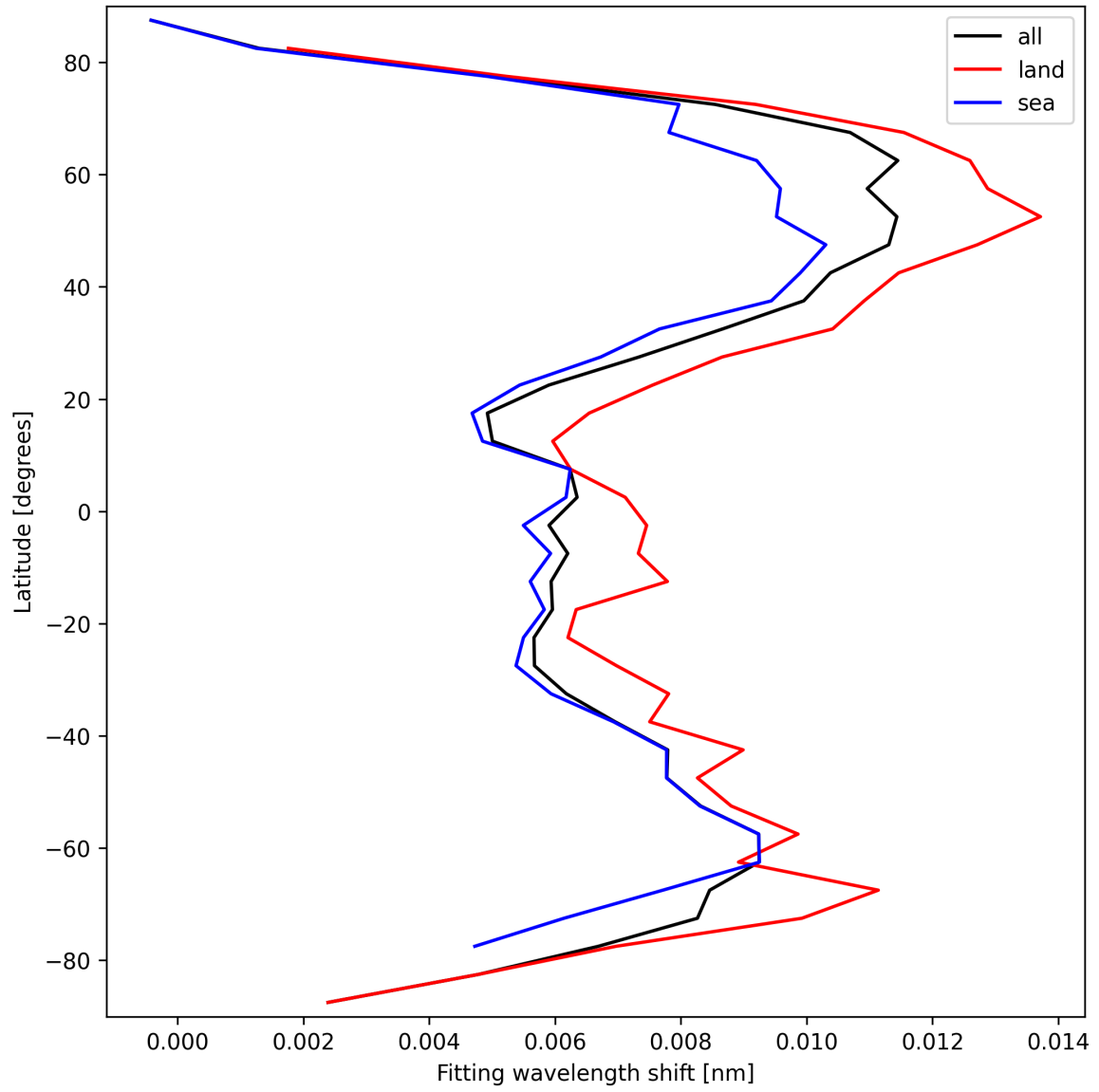


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-03-12 to 2025-03-13.

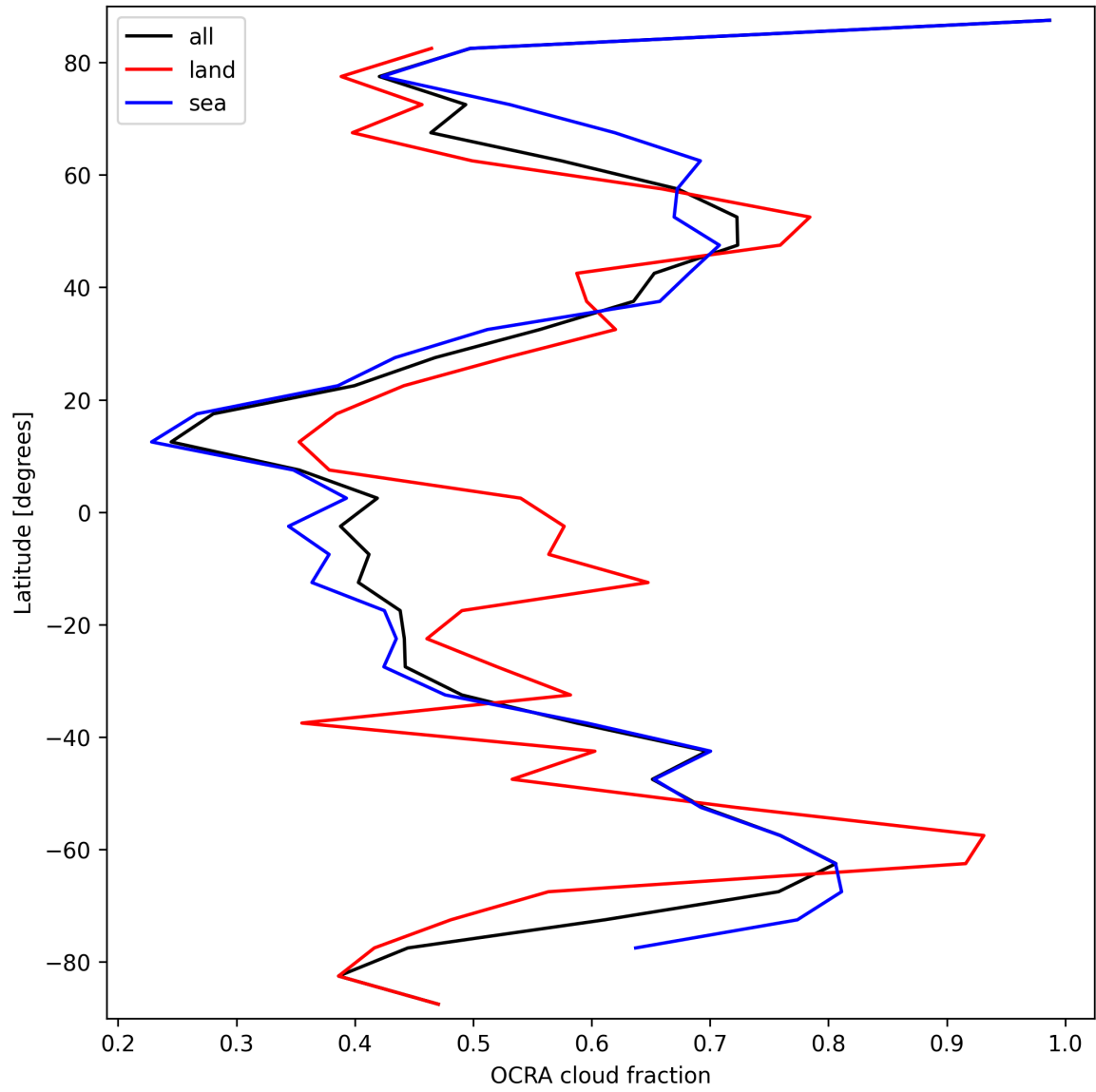


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-03-12 to 2025-03-13.

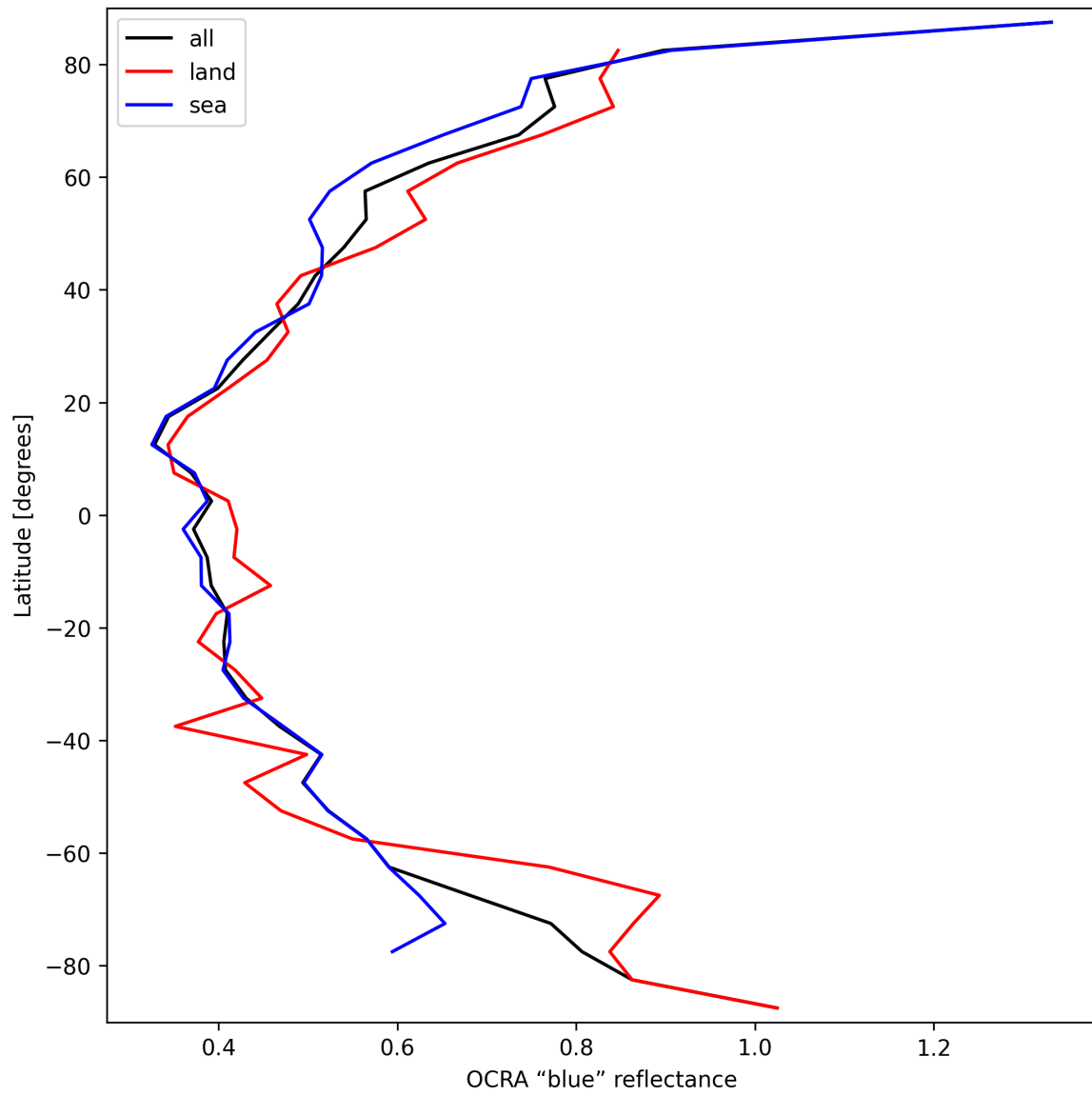


Figure 35: Zonal average of "OCRA "blue" reflectance" for 2025-03-12 to 2025-03-13.

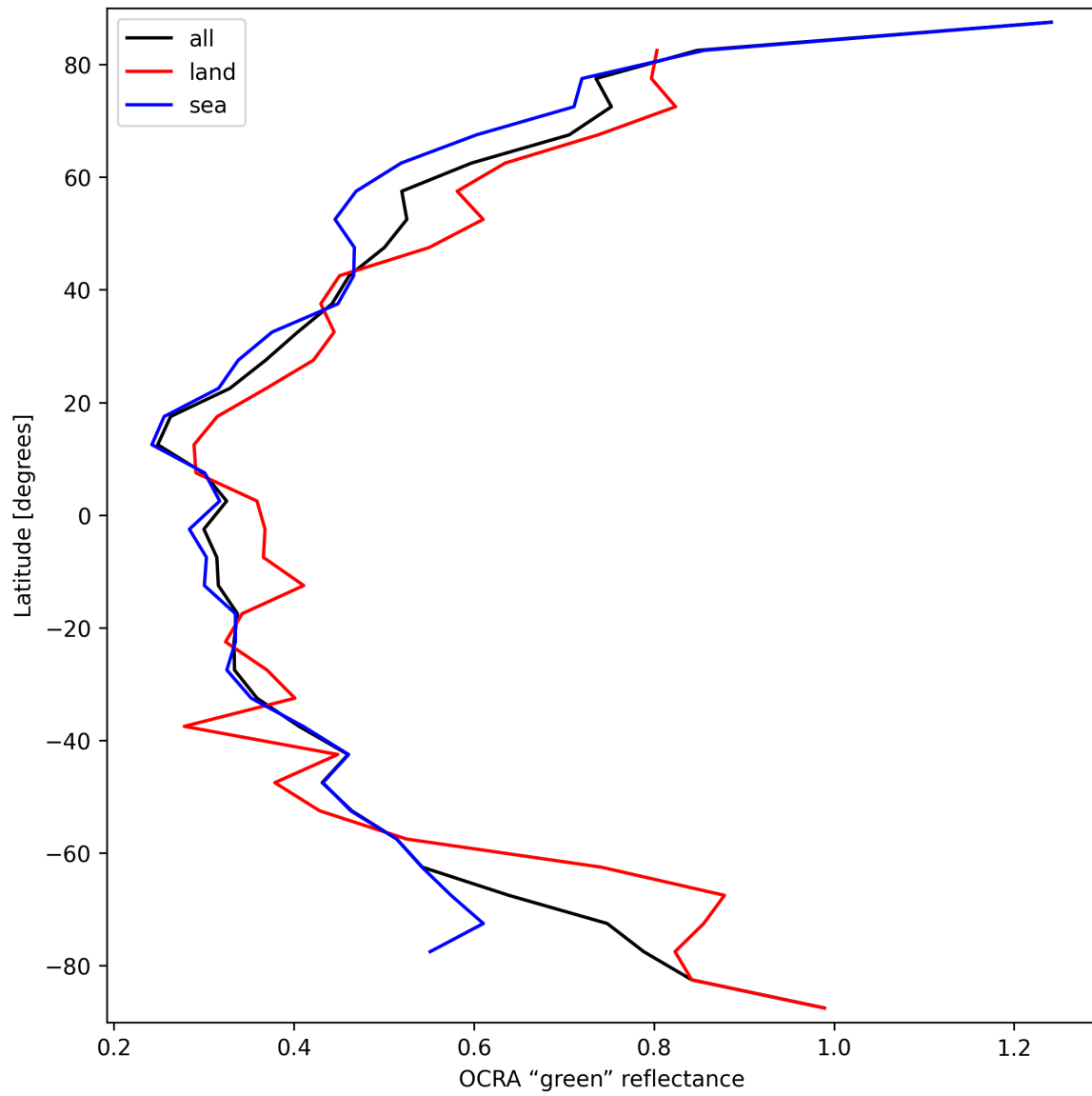


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-03-12 to 2025-03-13.

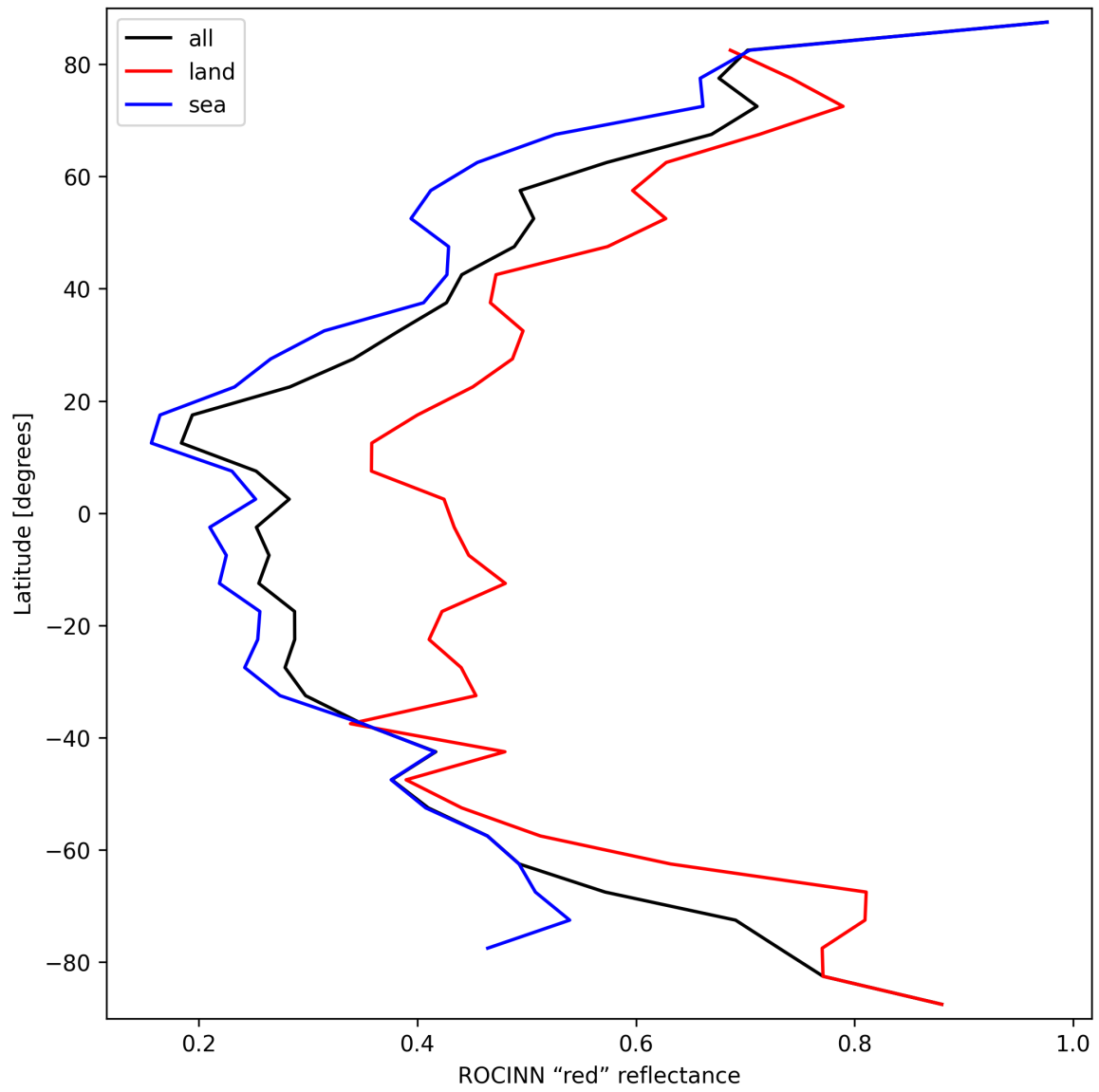


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-03-12 to 2025-03-13.

8 Histograms

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

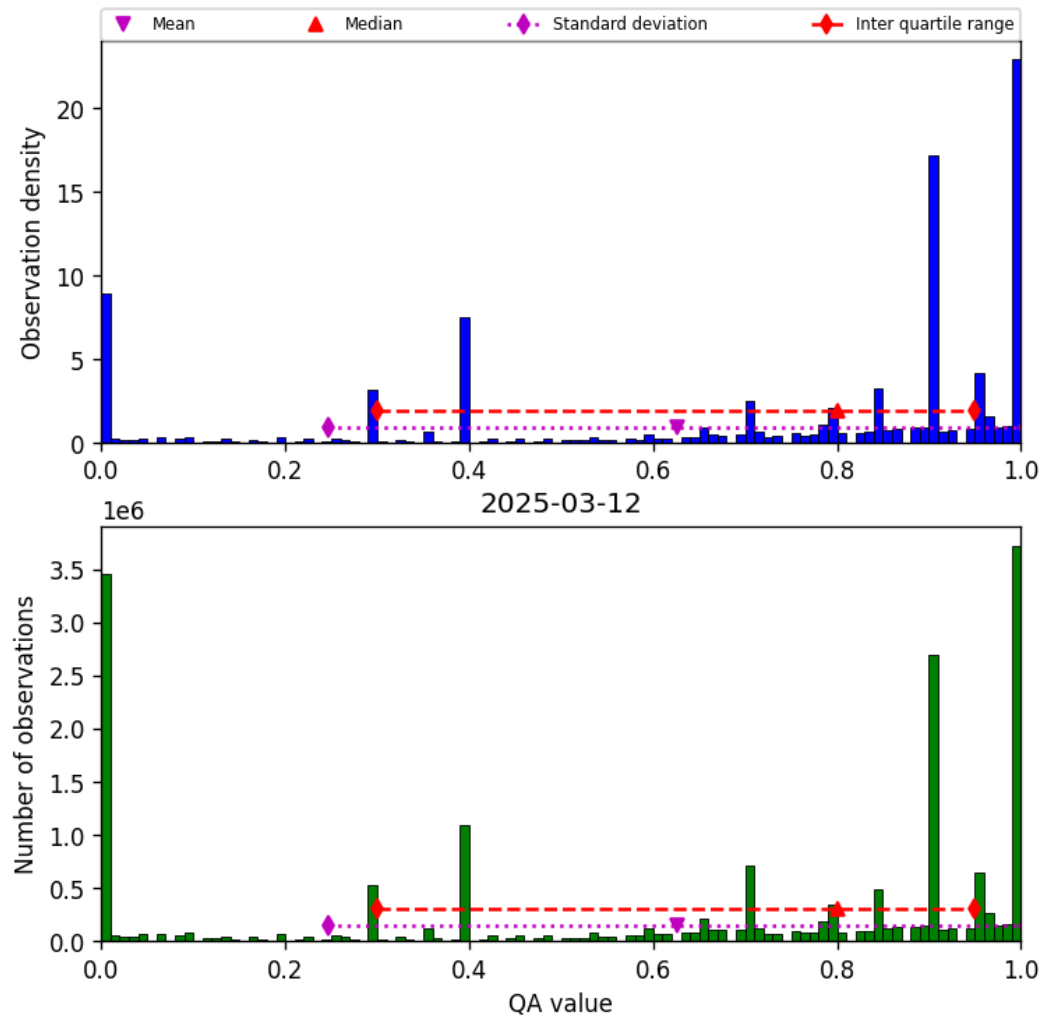


Figure 38: Histogram of “QA value” for 2025-03-12 to 2025-03-13

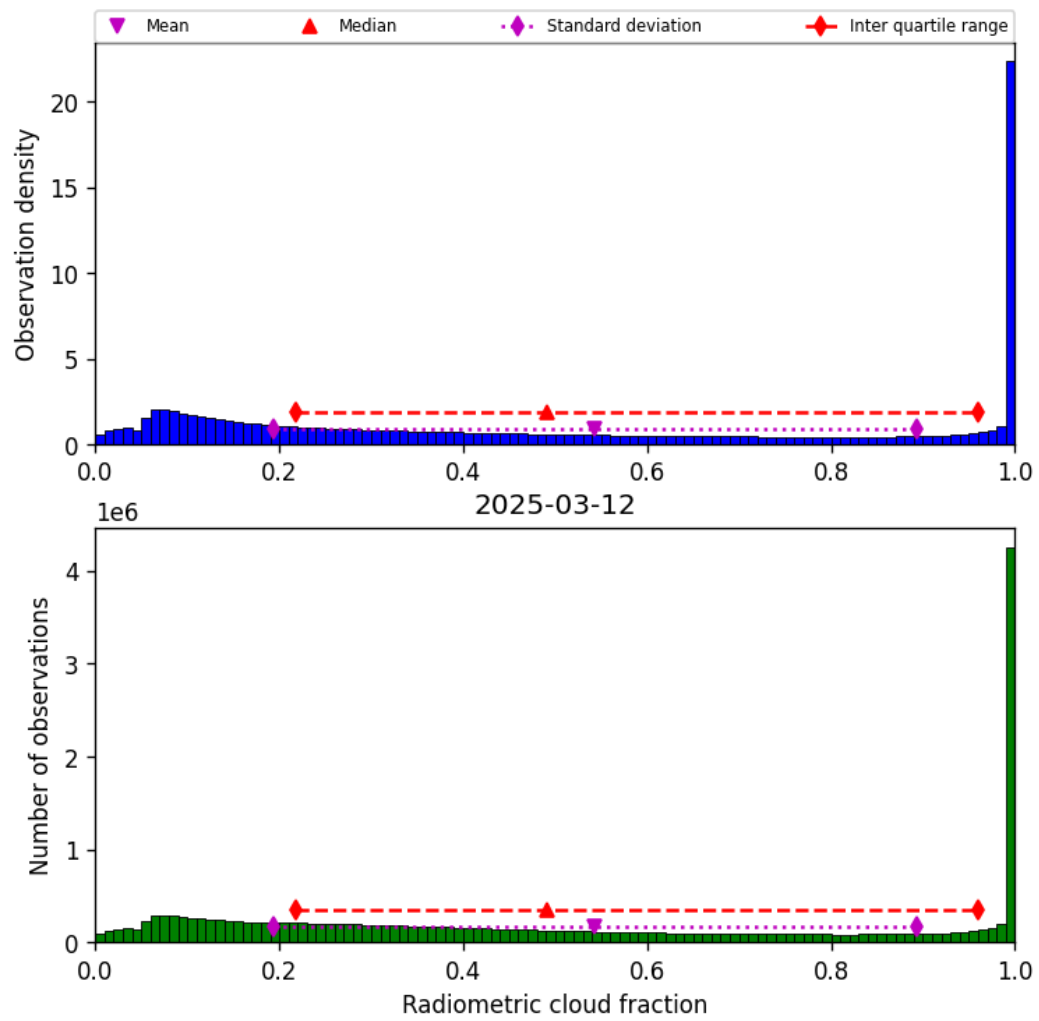


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-03-12 to 2025-03-13

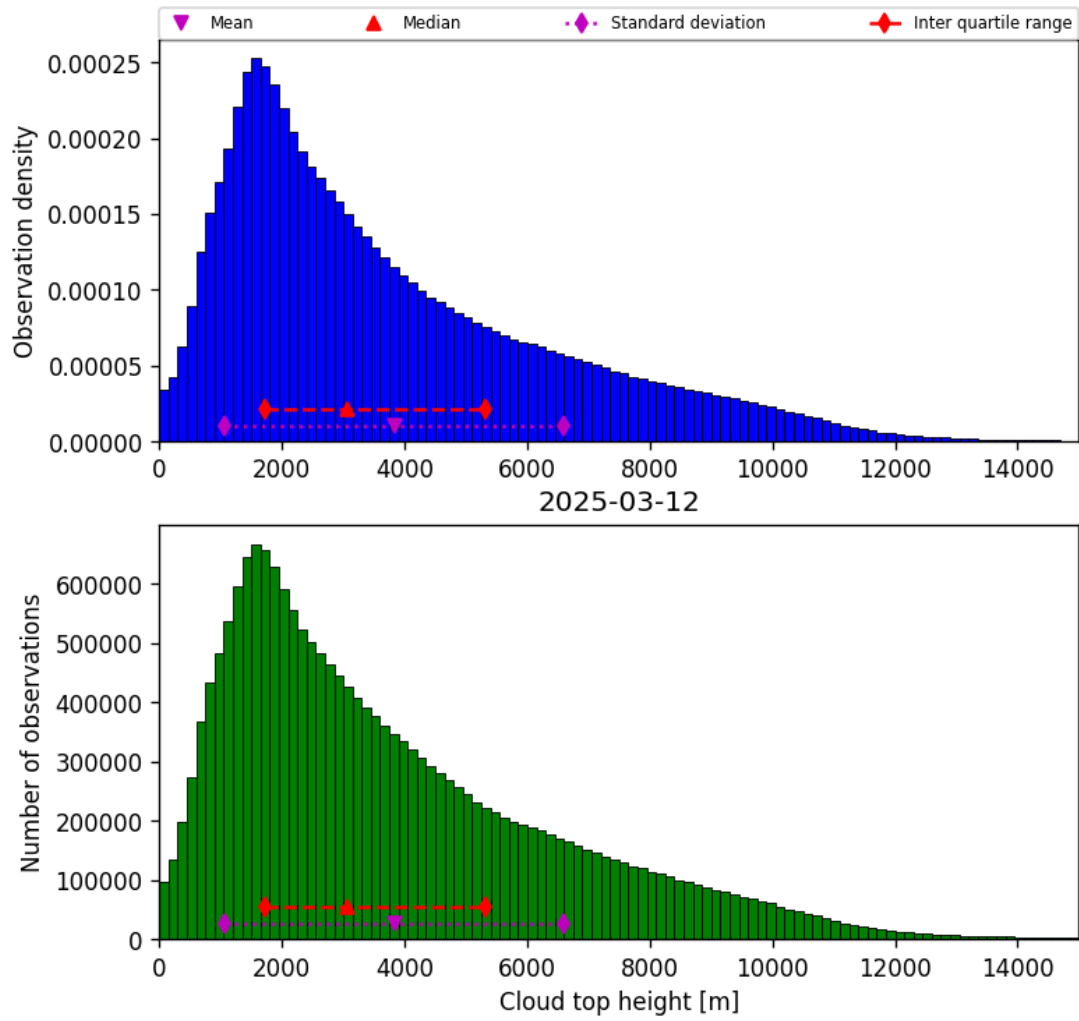


Figure 40: Histogram of “Cloud top height” for 2025-03-12 to 2025-03-13

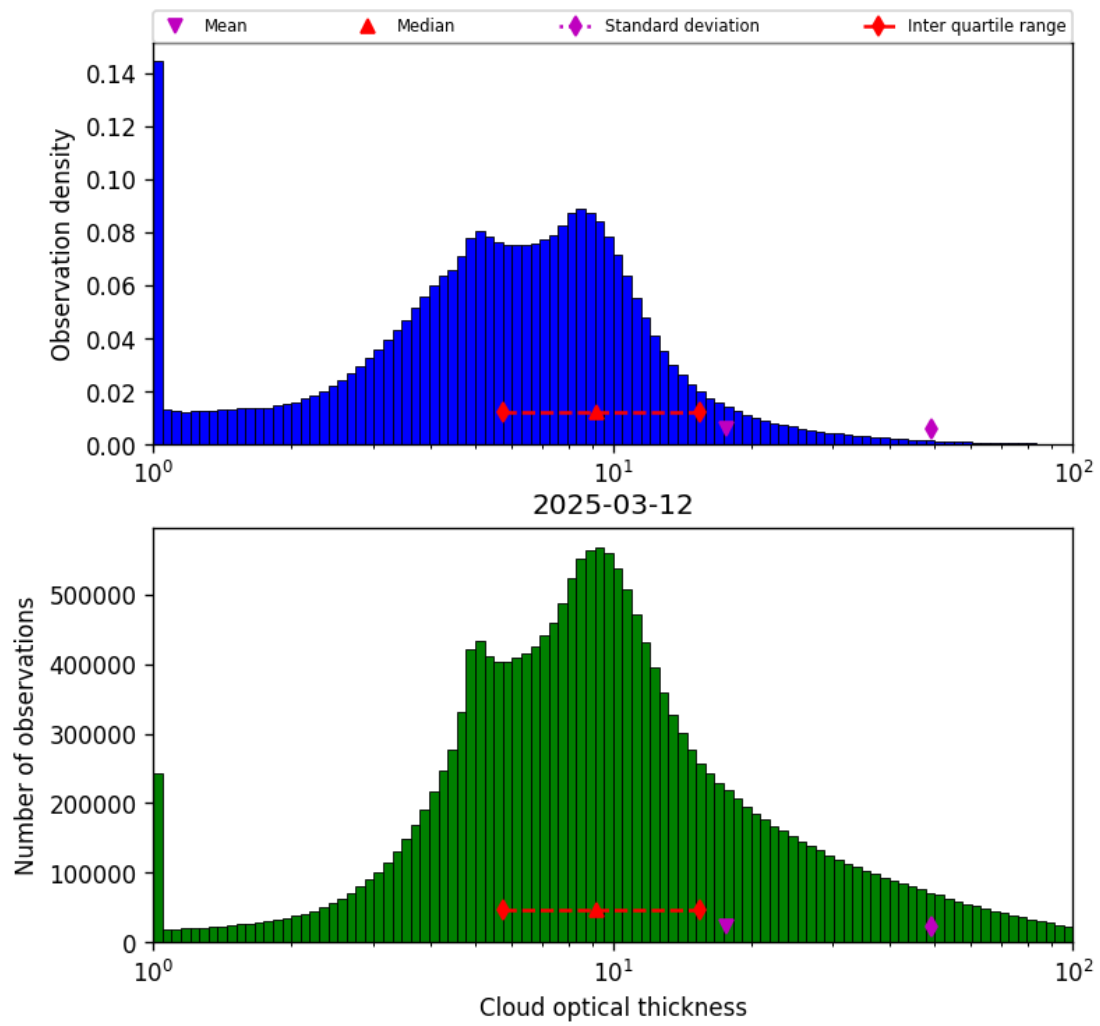


Figure 41: Histogram of “Cloud optical thickness” for 2025-03-12 to 2025-03-13

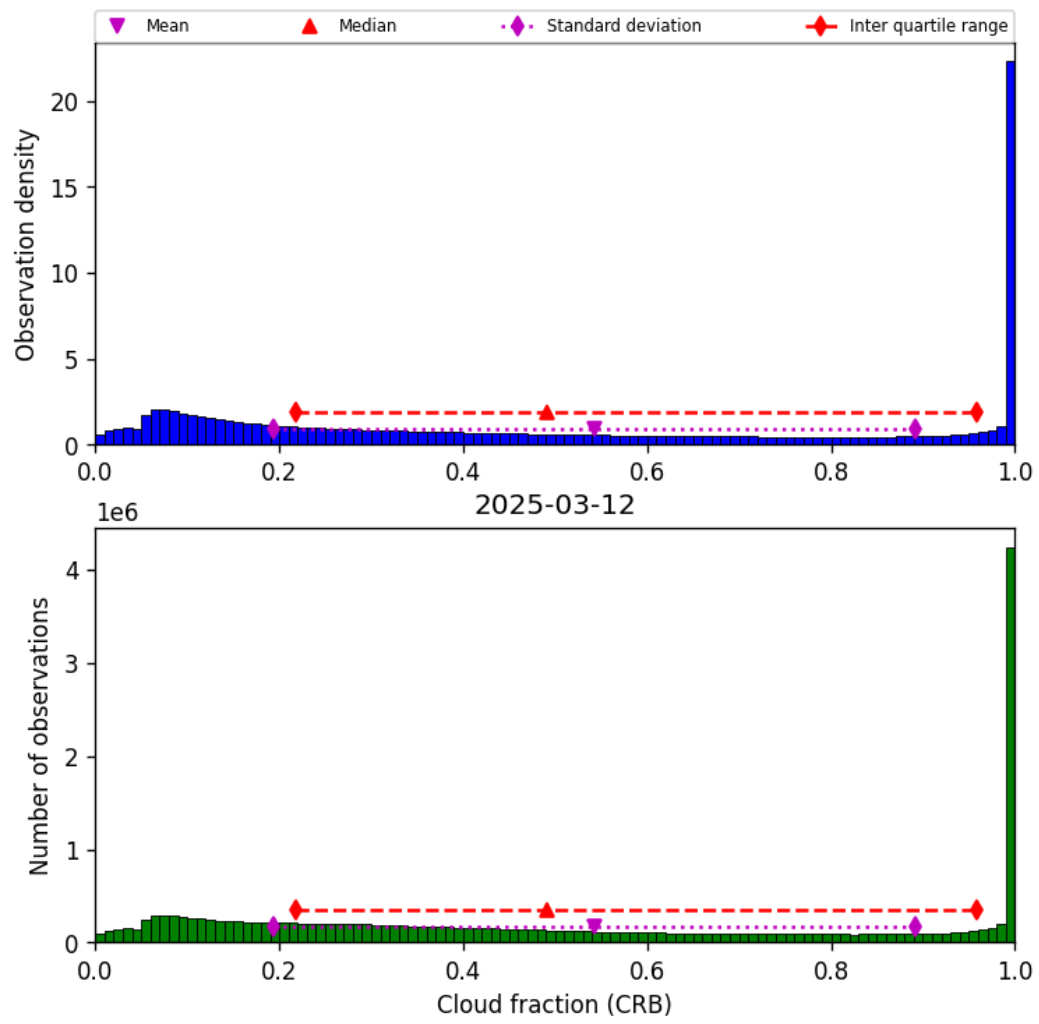


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-03-12 to 2025-03-13

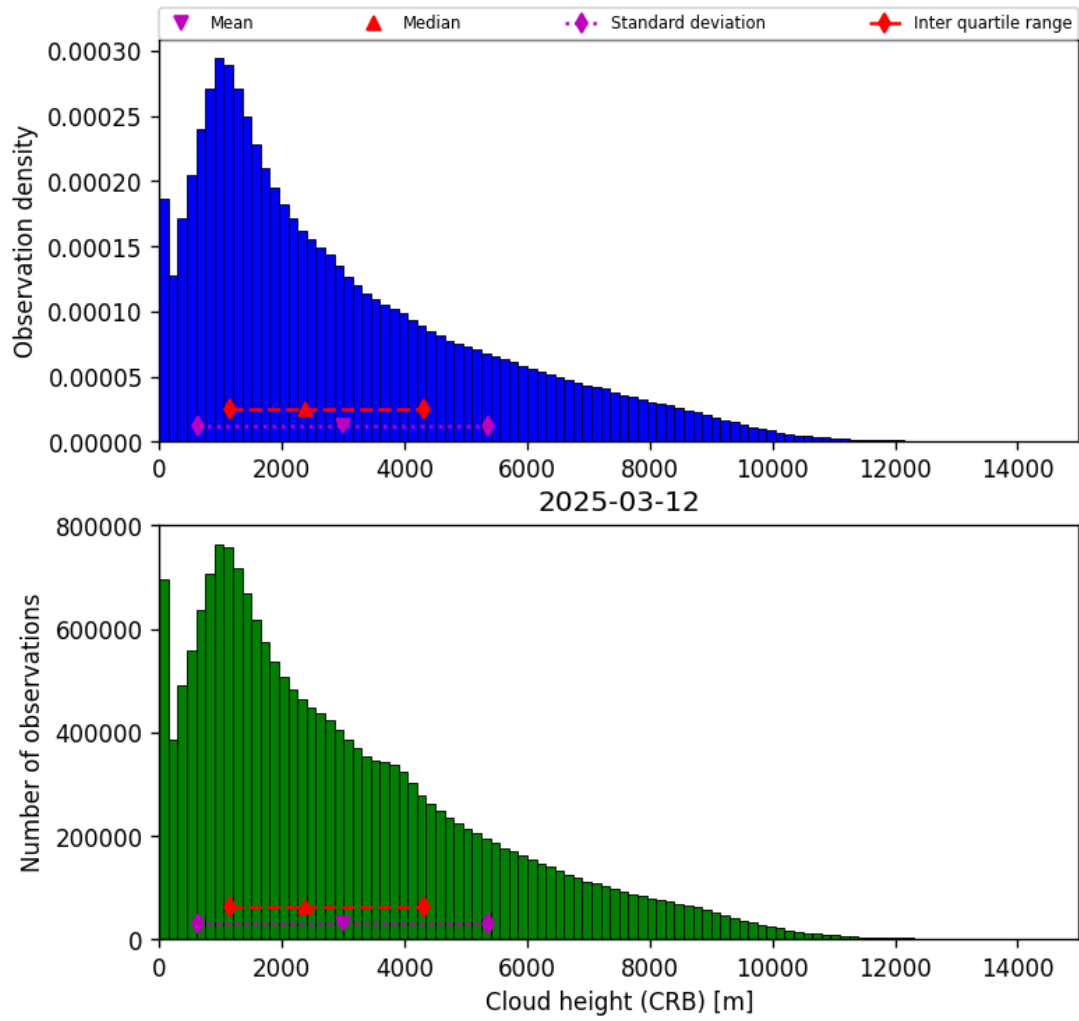


Figure 43: Histogram of “Cloud height (CRB)” for 2025-03-12 to 2025-03-13

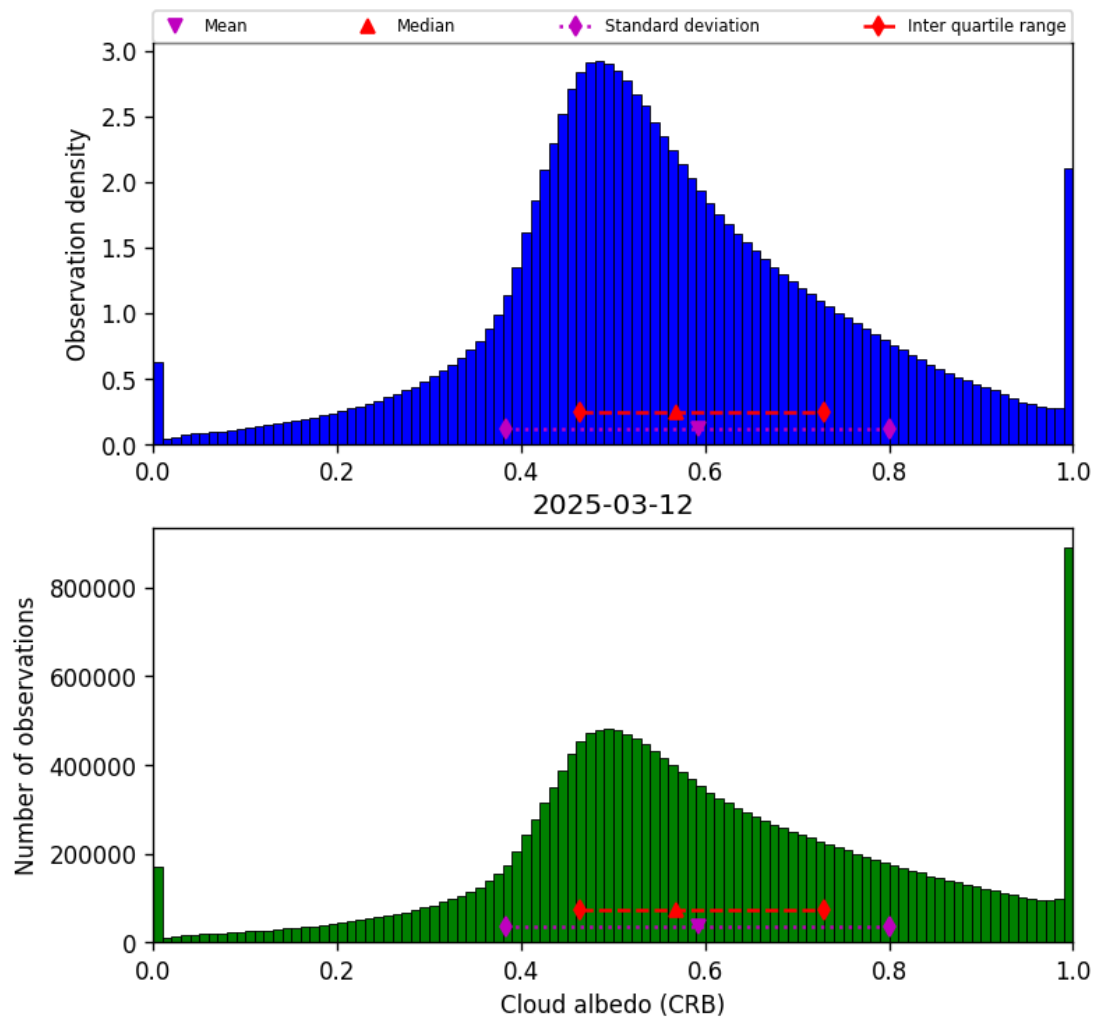


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-03-12 to 2025-03-13

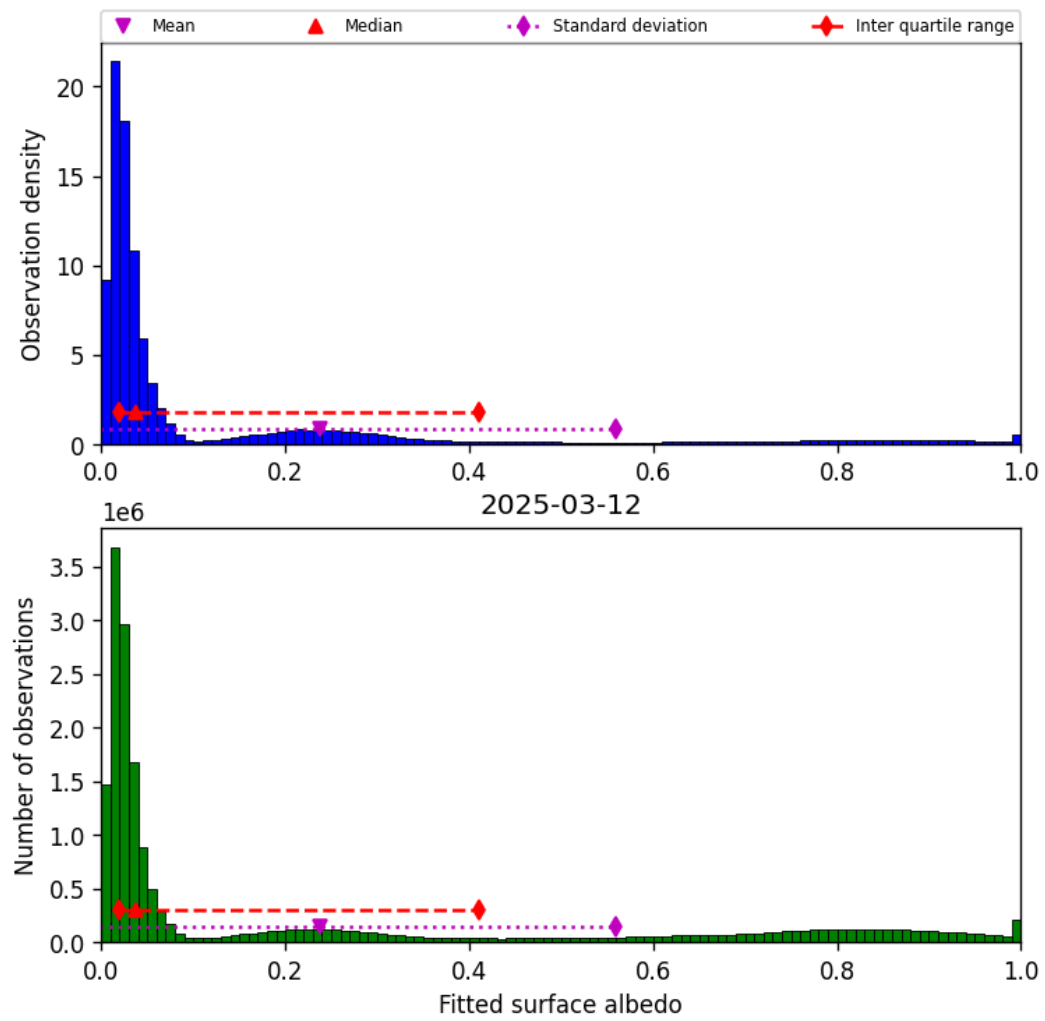


Figure 45: Histogram of “Fitted surface albedo” for 2025-03-12 to 2025-03-13

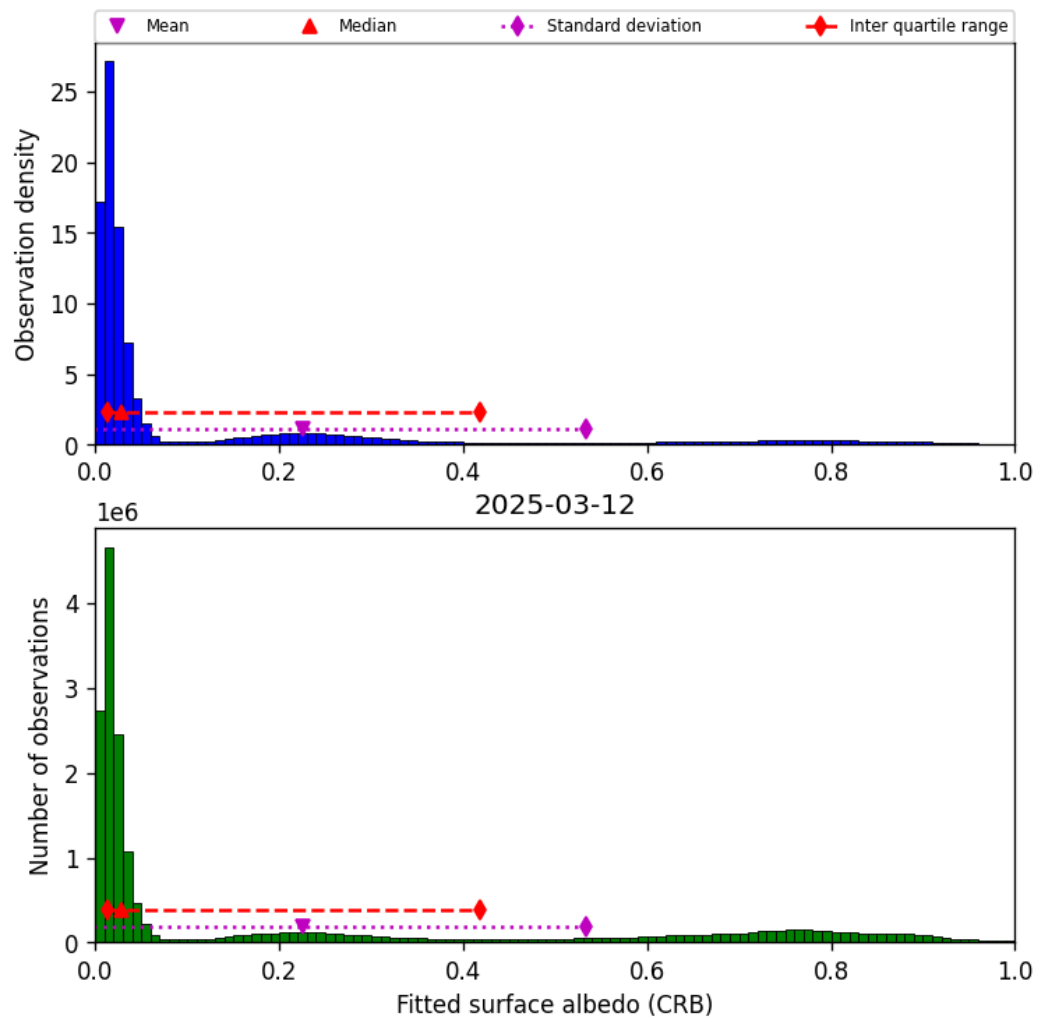


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-03-12 to 2025-03-13

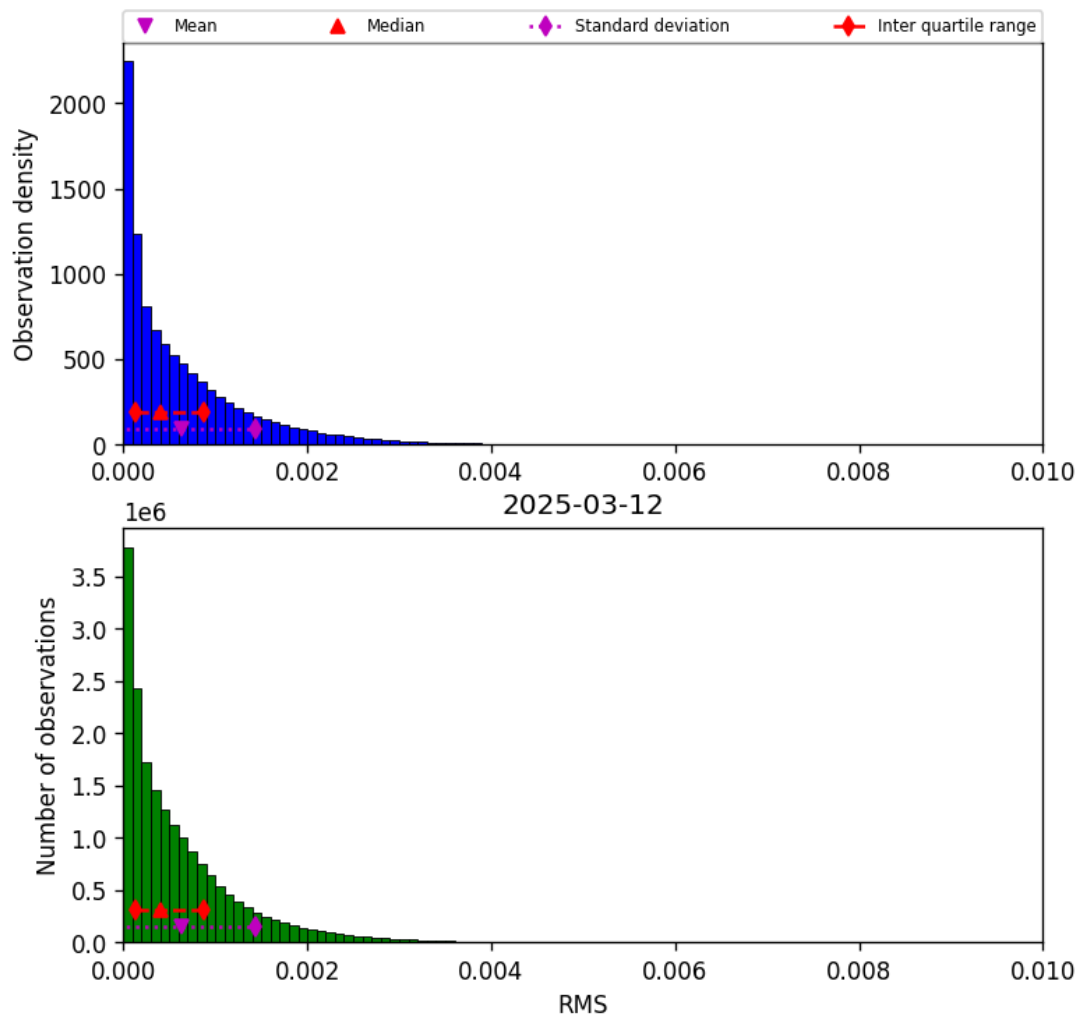


Figure 47: Histogram of “RMS” for 2025-03-12 to 2025-03-13

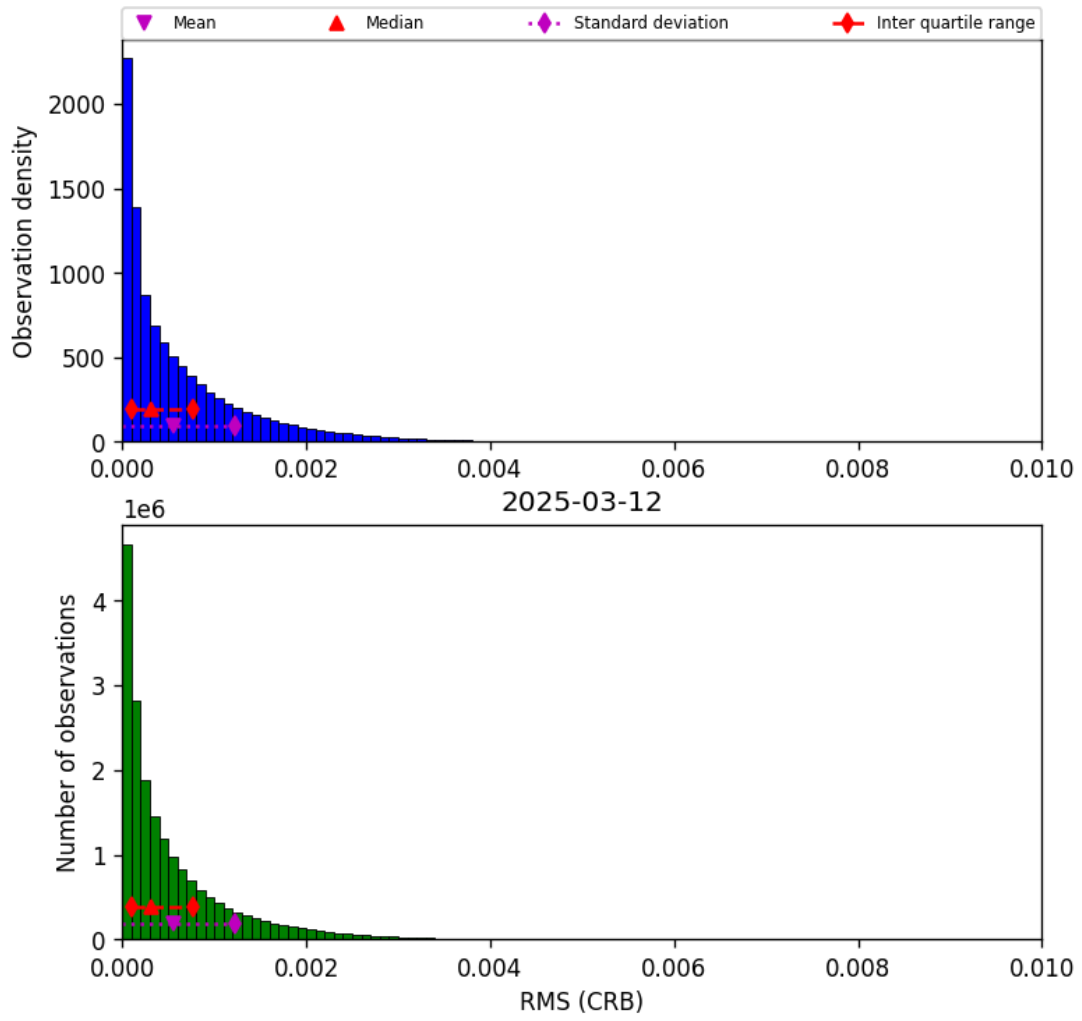


Figure 48: Histogram of "RMS (CRB)" for 2025-03-12 to 2025-03-13

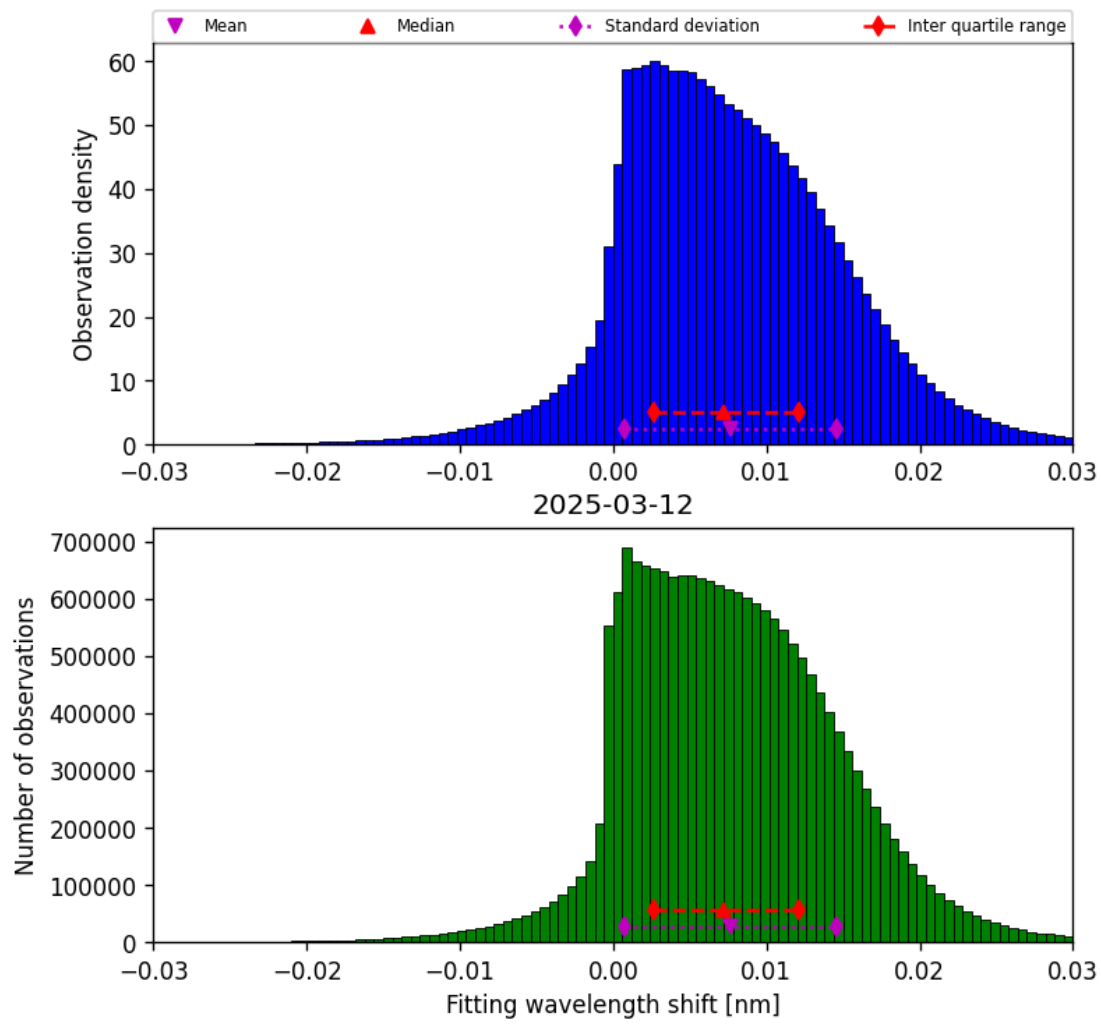


Figure 49: Histogram of “Fitting wavelength shift” for 2025-03-12 to 2025-03-13

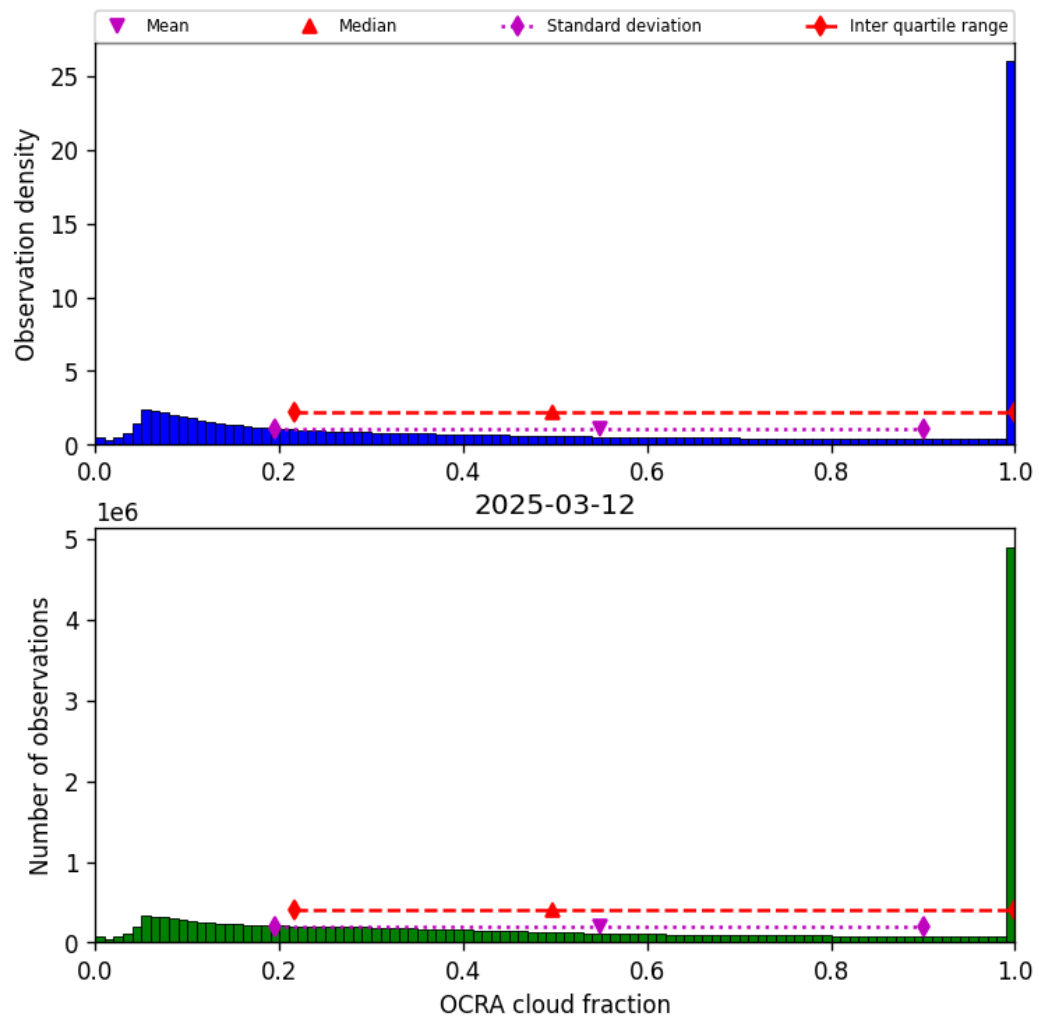


Figure 50: Histogram of “OCRA cloud fraction” for 2025-03-12 to 2025-03-13

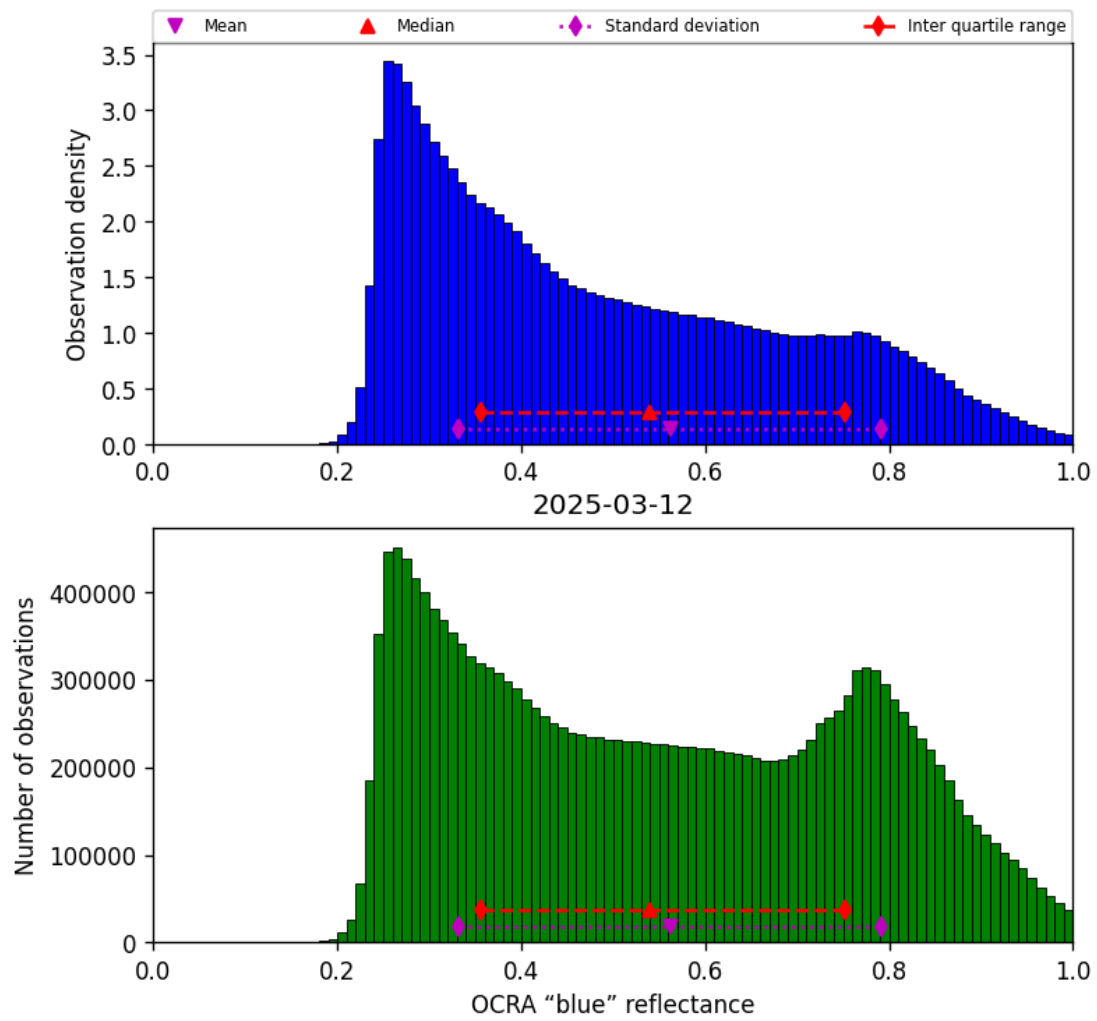


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-03-12 to 2025-03-13

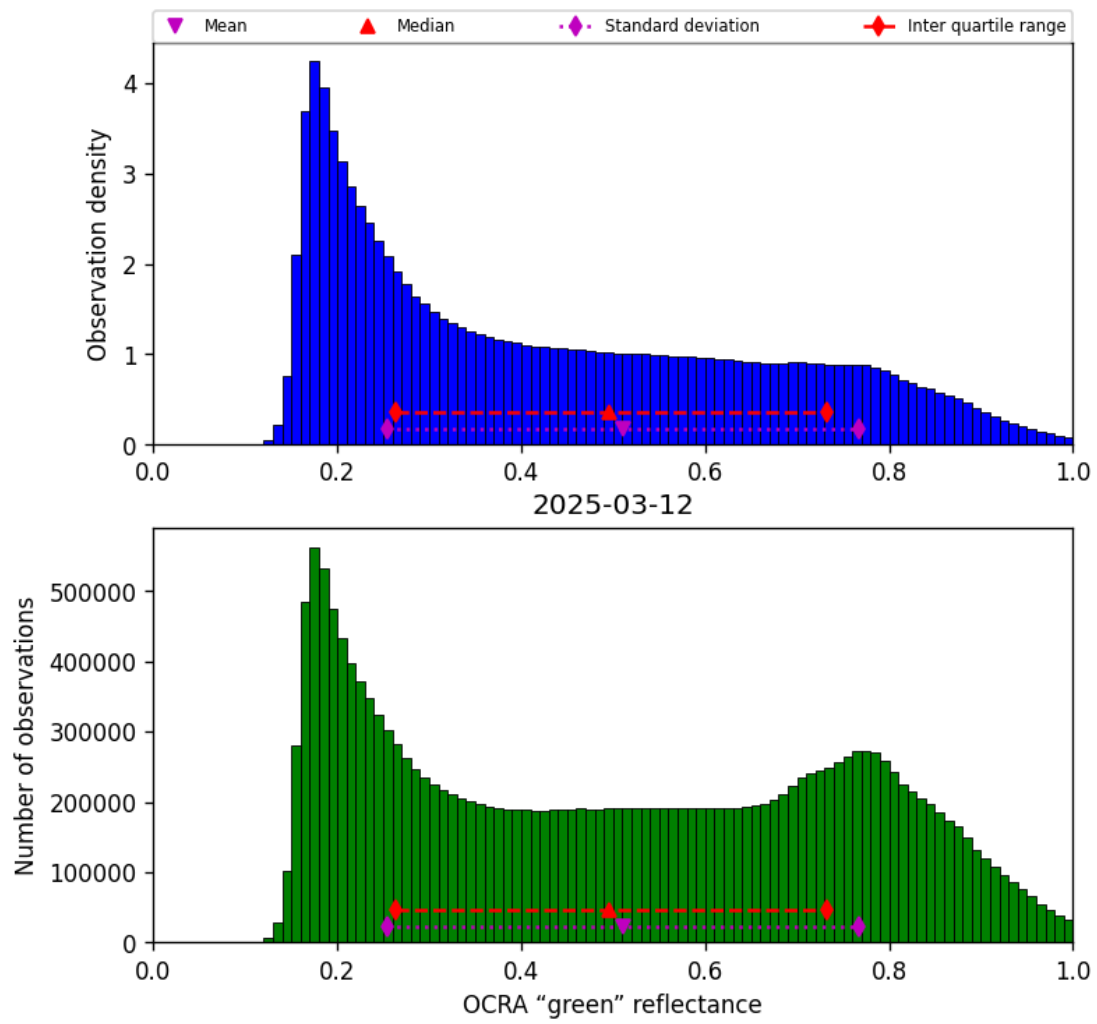


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-03-12 to 2025-03-13

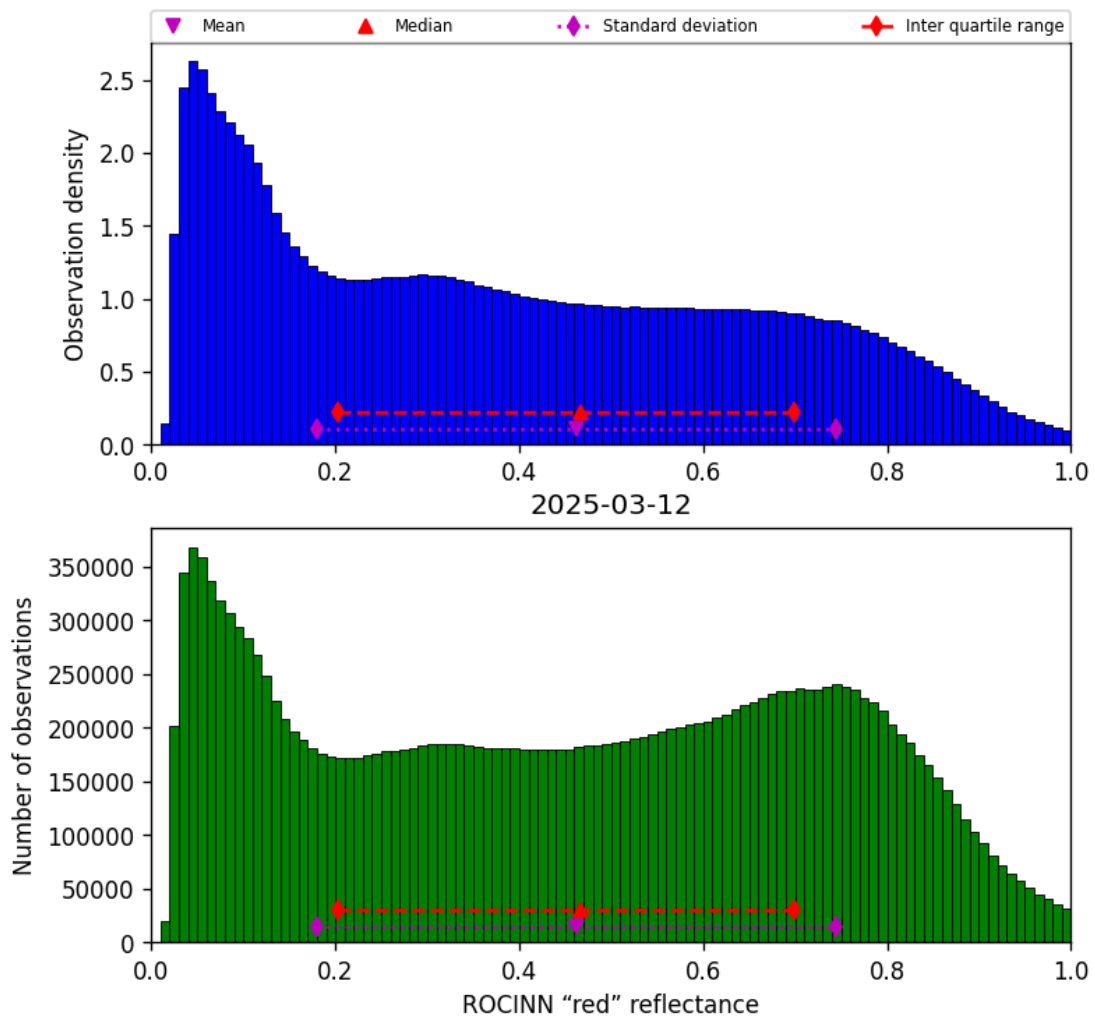


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-03-12 to 2025-03-13

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.

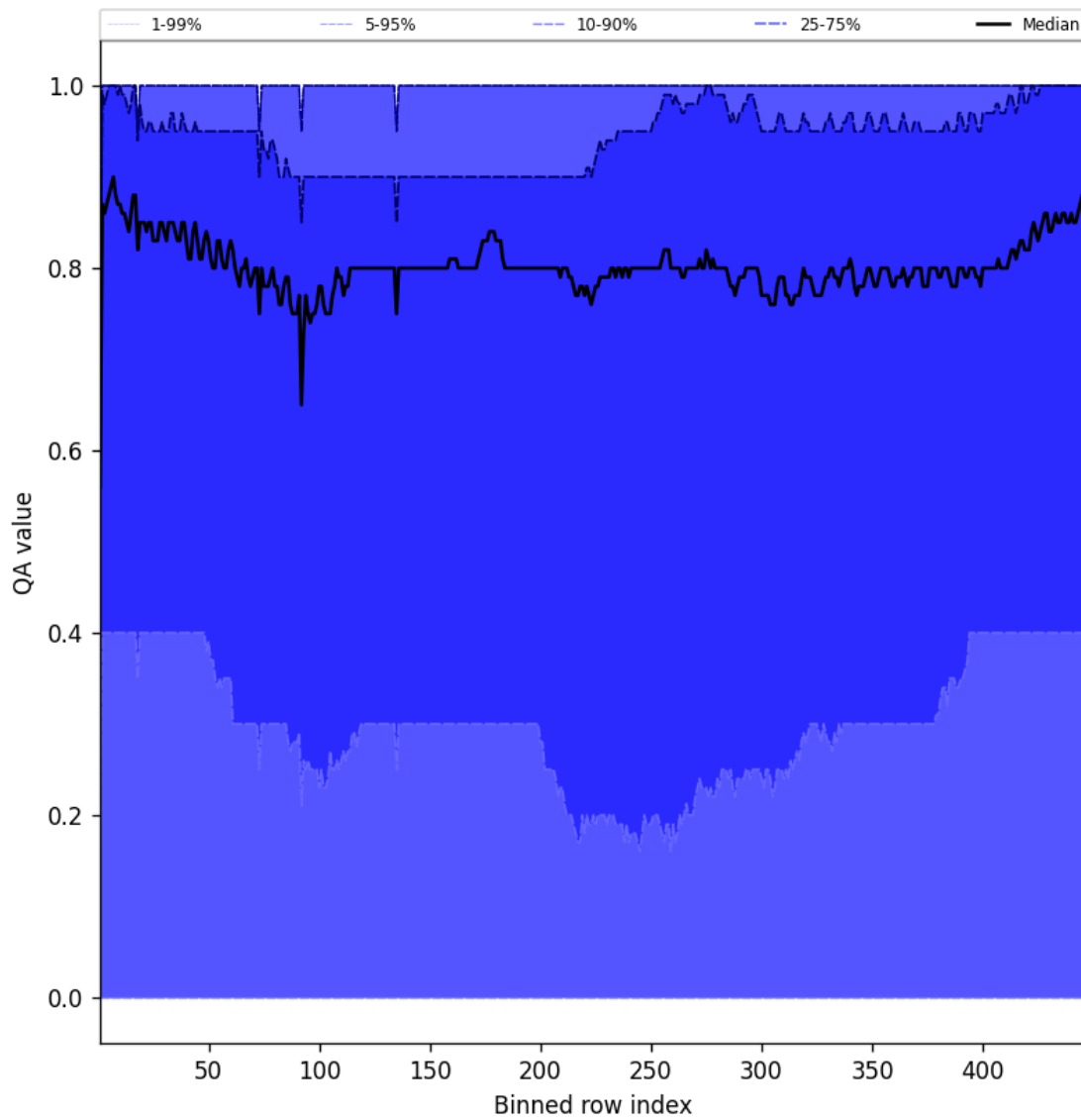


Figure 54: Along track statistics of “QA value” for 2025-03-12 to 2025-03-13

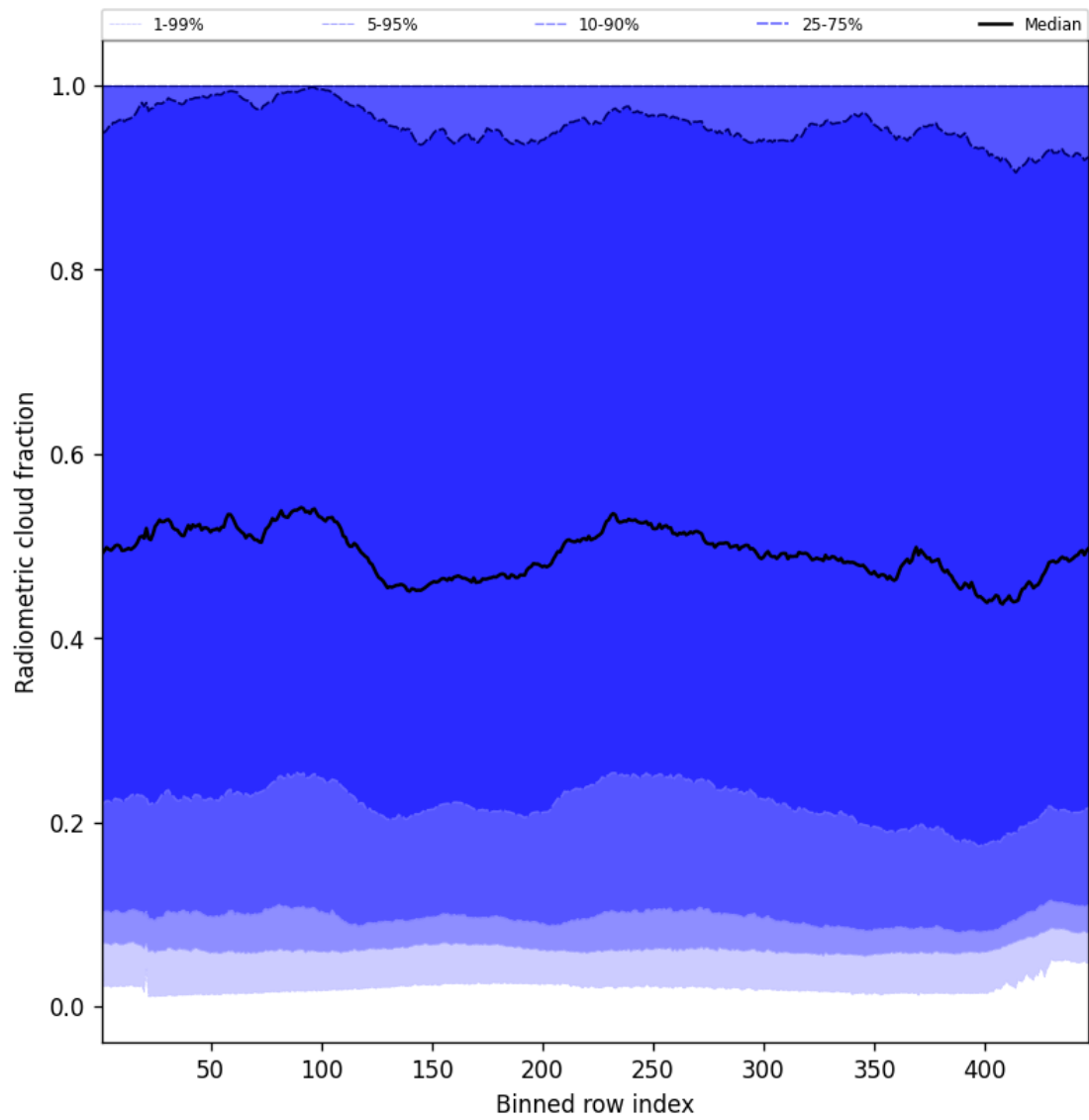


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-03-12 to 2025-03-13

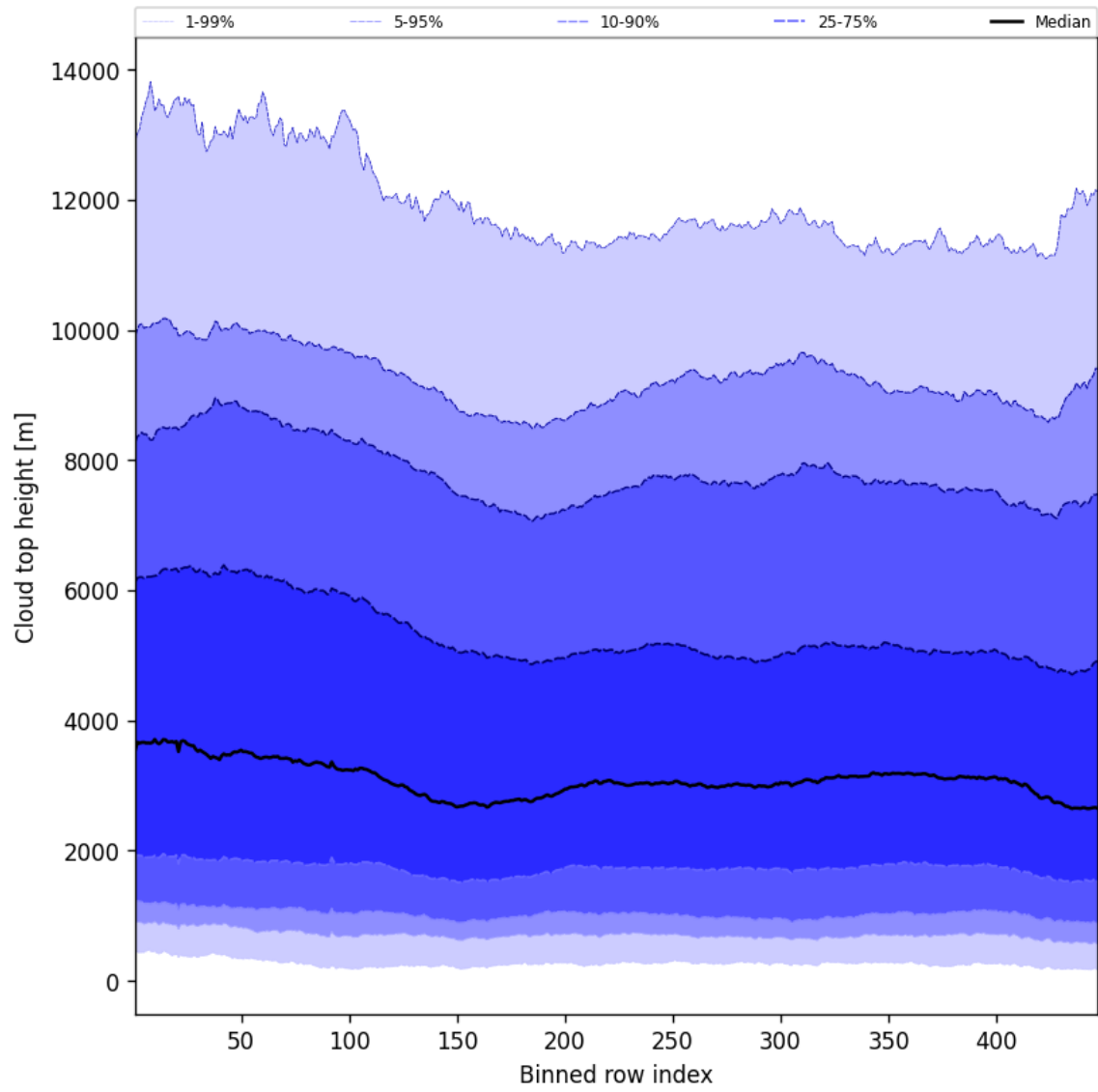


Figure 56: Along track statistics of “Cloud top height” for 2025-03-12 to 2025-03-13

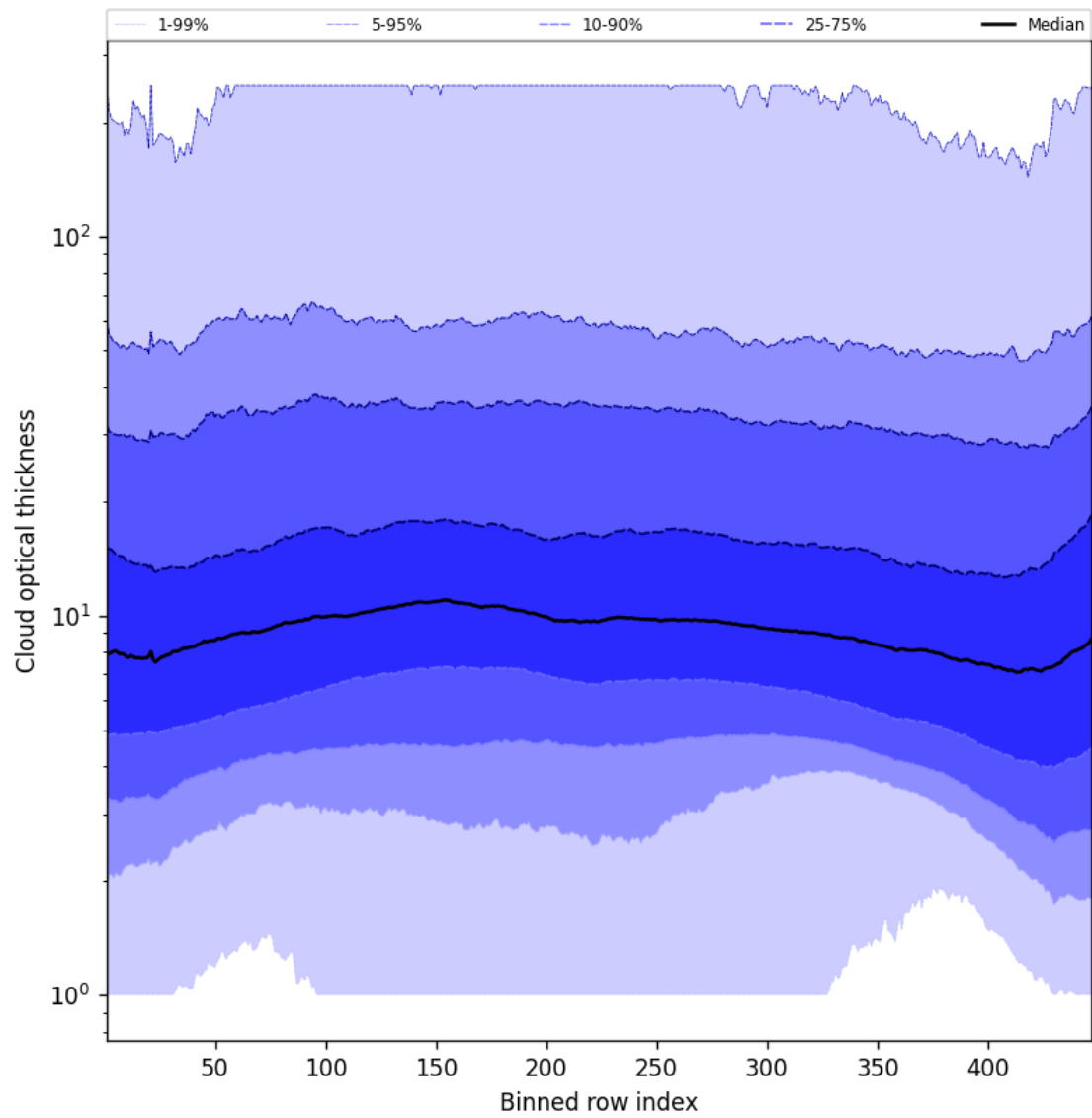


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-03-12 to 2025-03-13

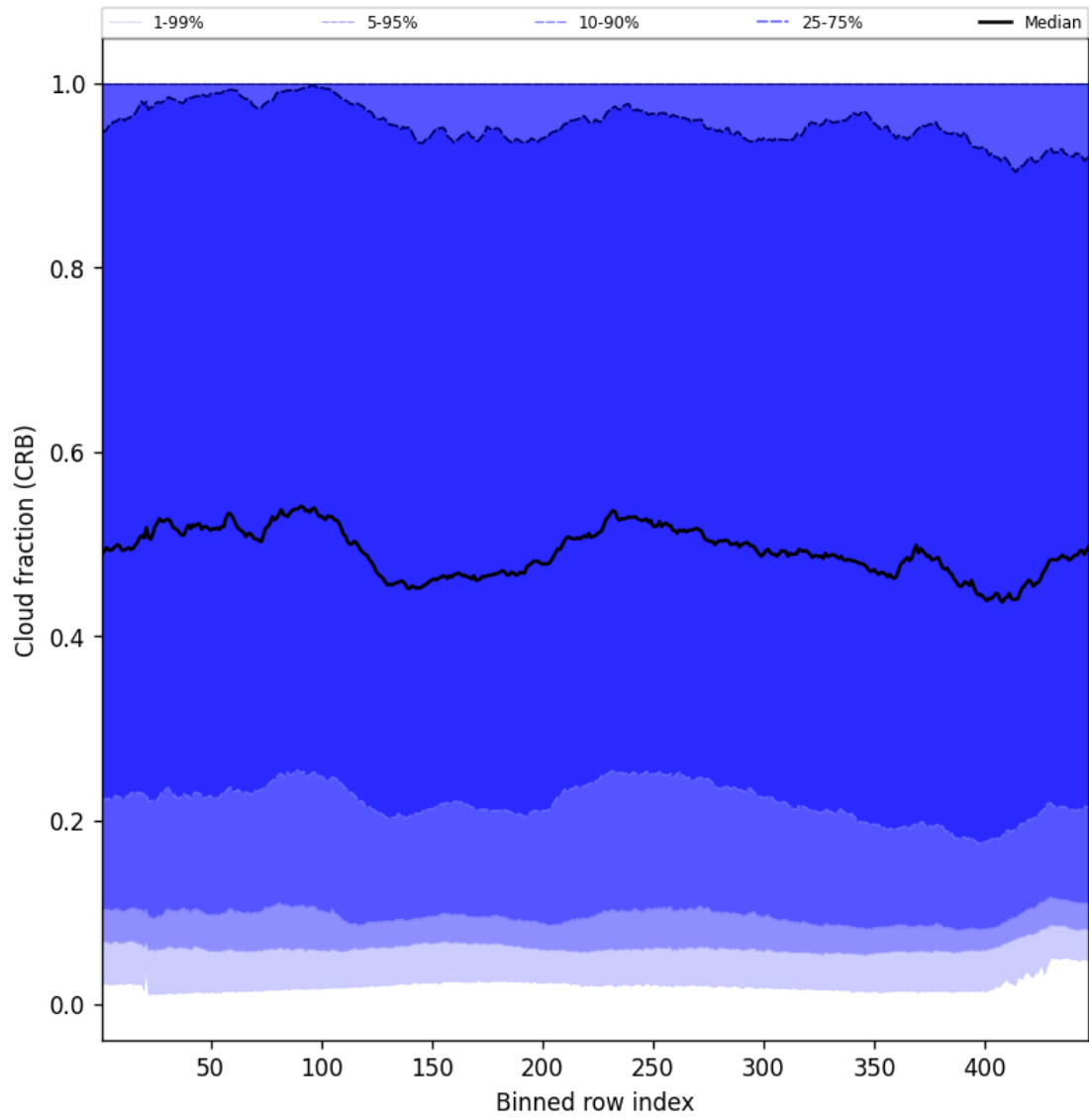


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-03-12 to 2025-03-13

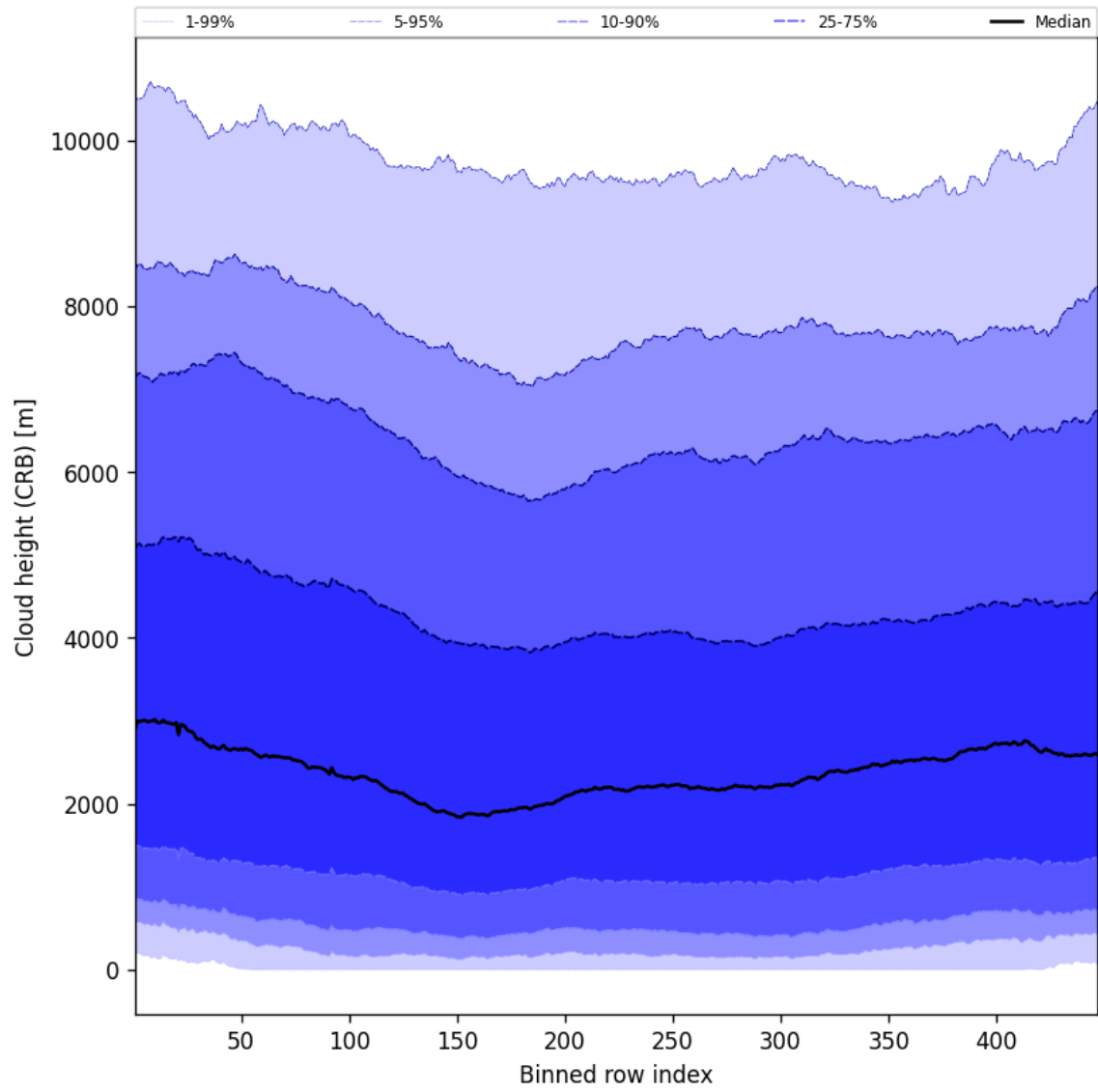


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-03-12 to 2025-03-13

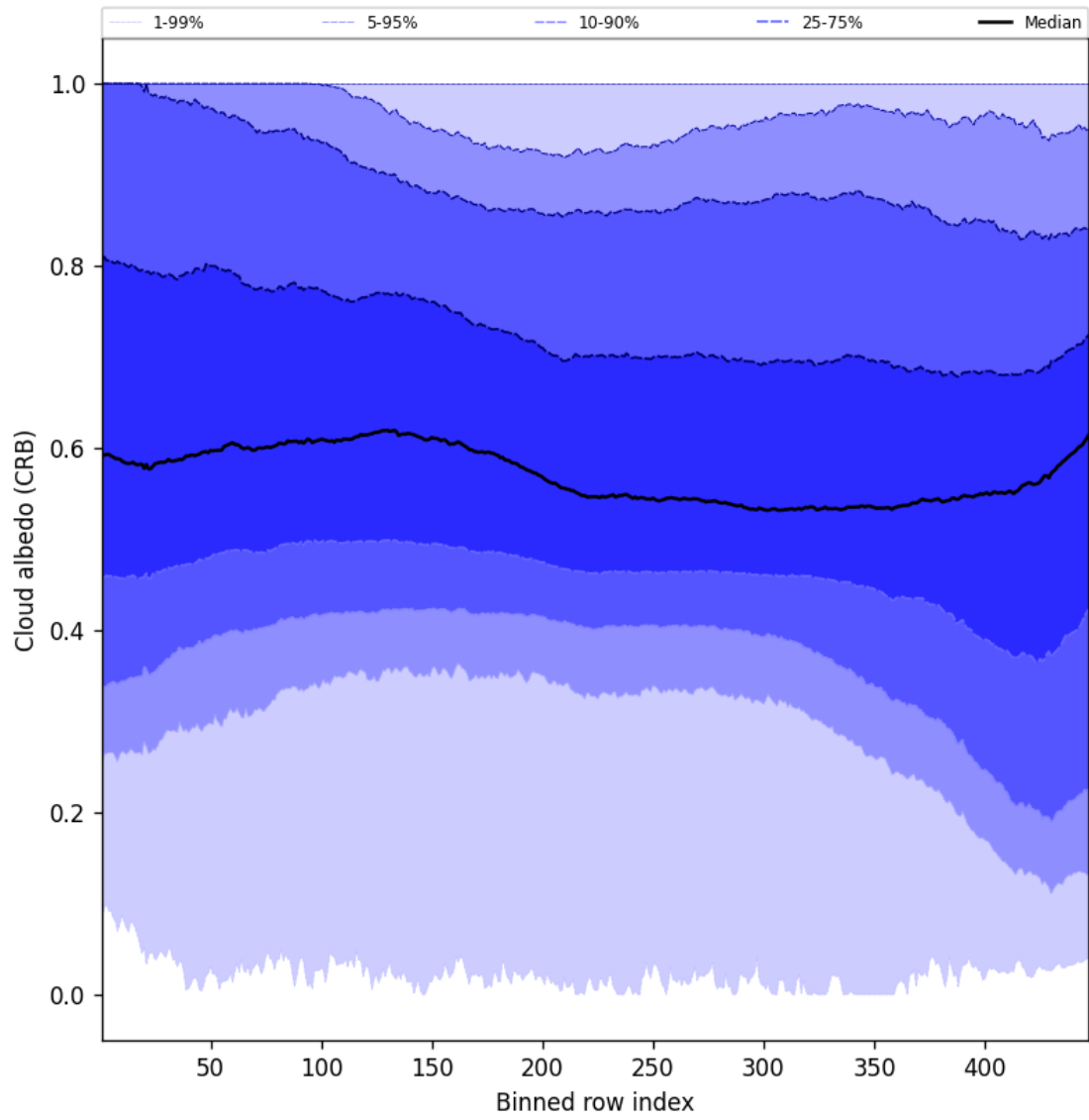


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-03-12 to 2025-03-13

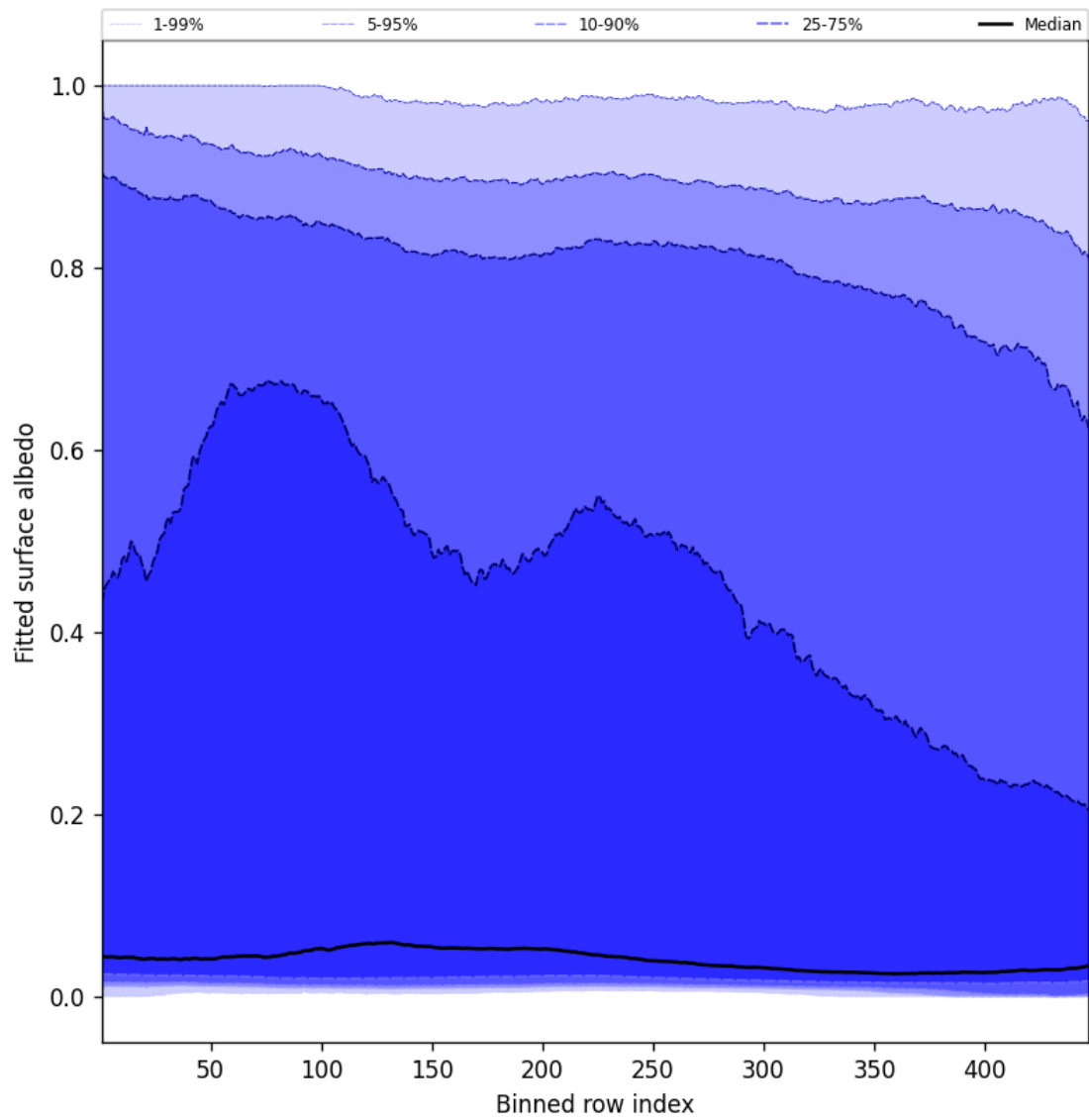


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-03-12 to 2025-03-13

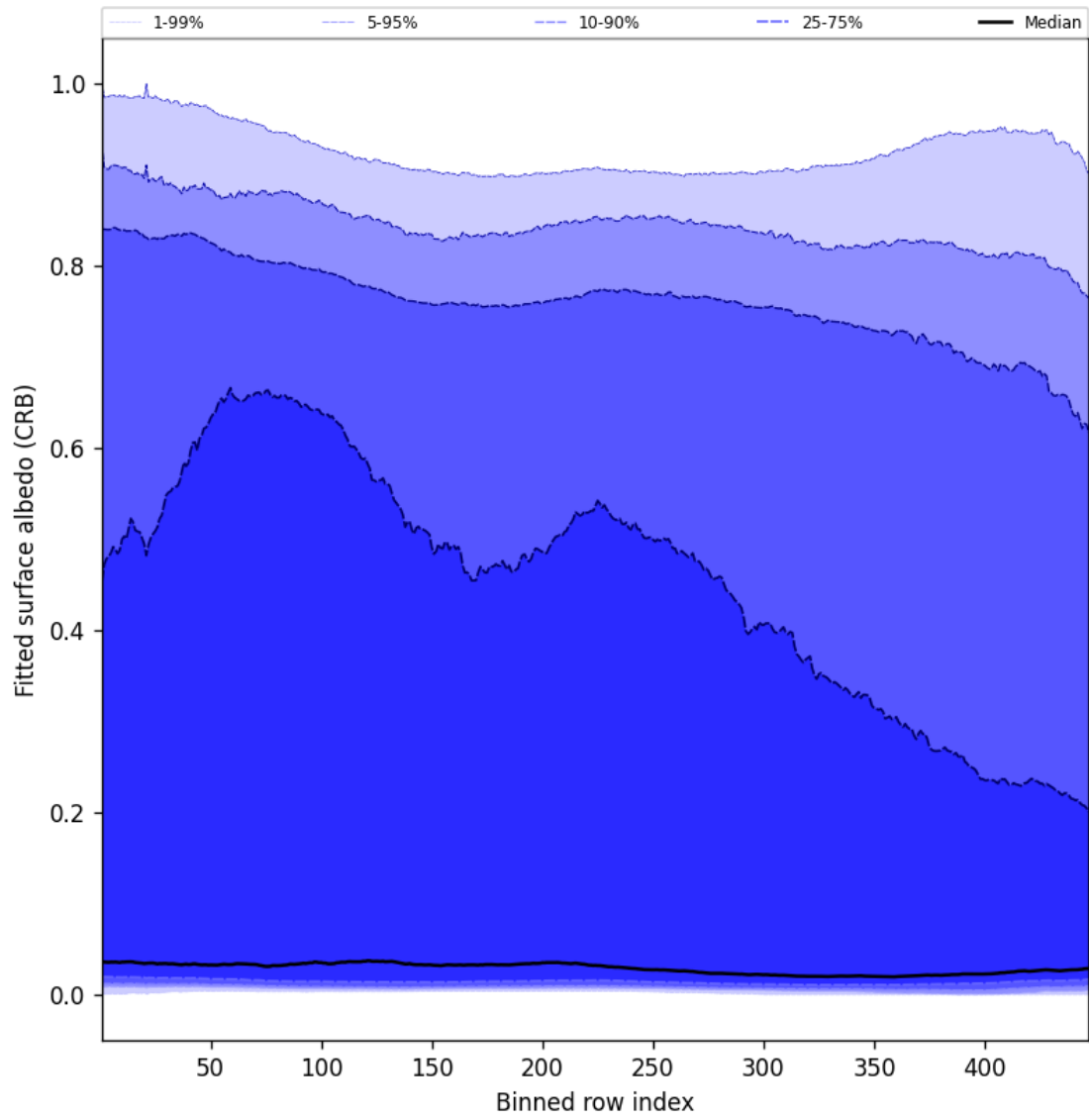


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-03-12 to 2025-03-13

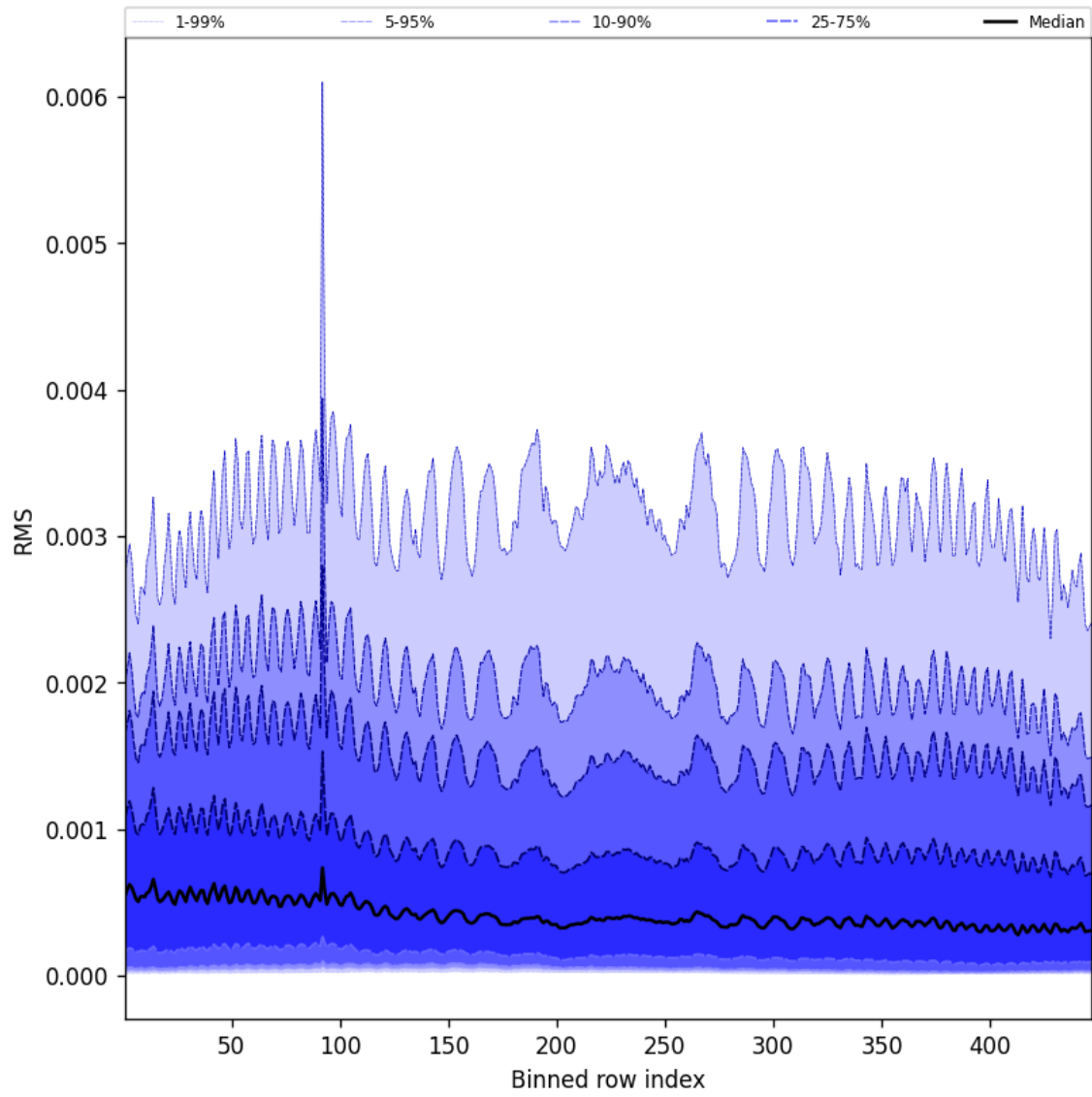


Figure 63: Along track statistics of “RMS” for 2025-03-12 to 2025-03-13

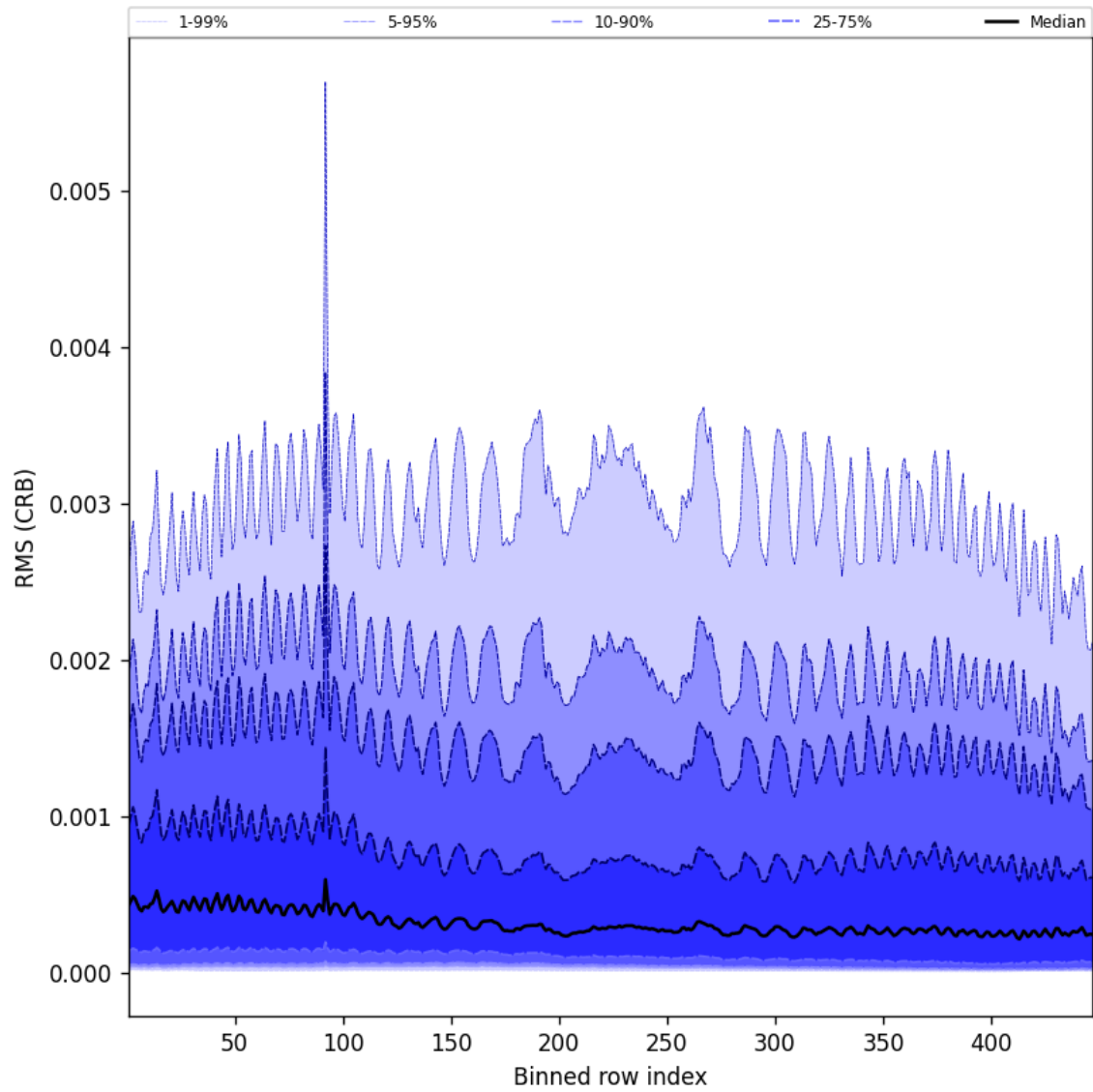


Figure 64: Along track statistics of “RMS (CRB)” for 2025-03-12 to 2025-03-13

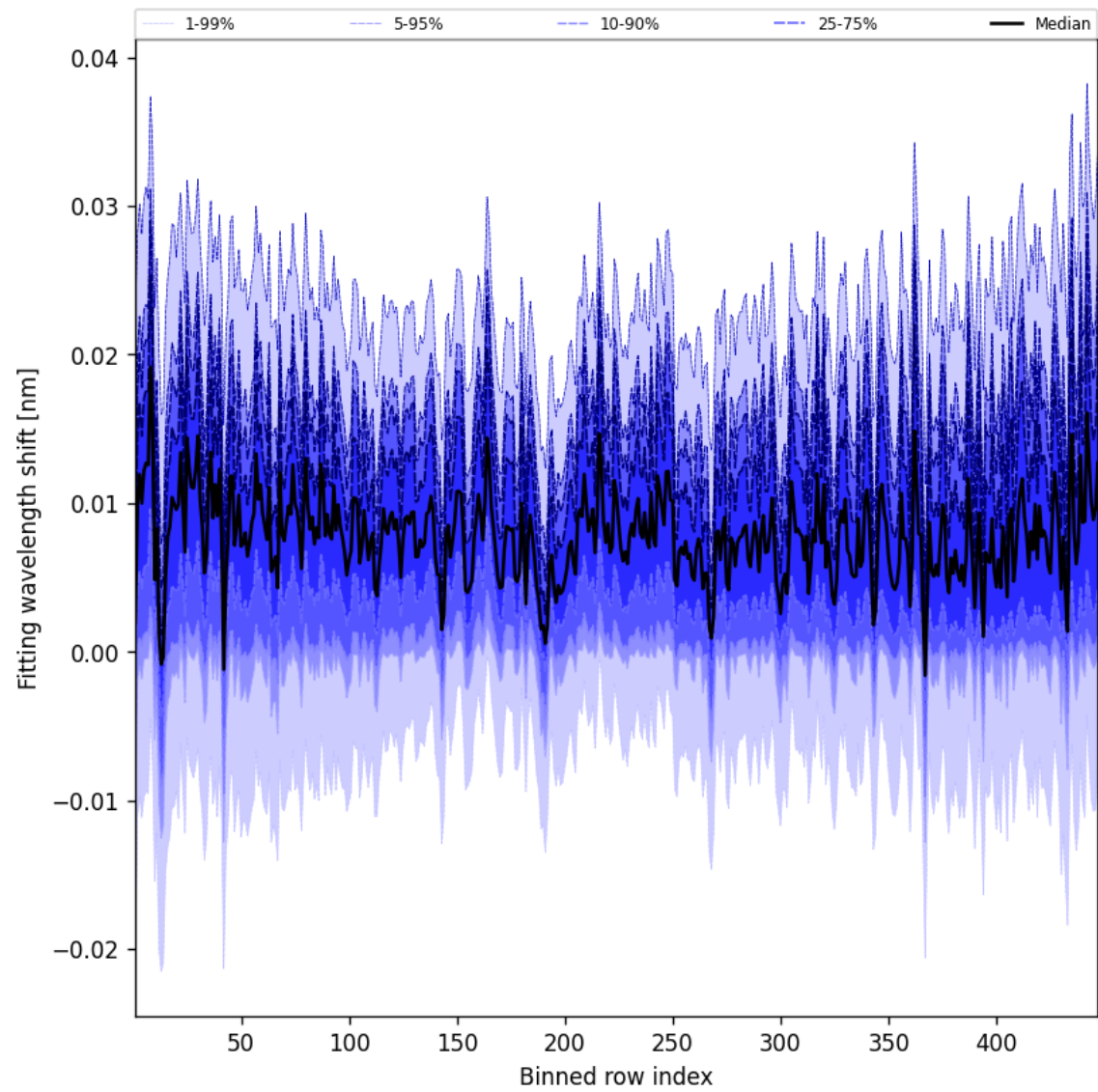


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-03-12 to 2025-03-13

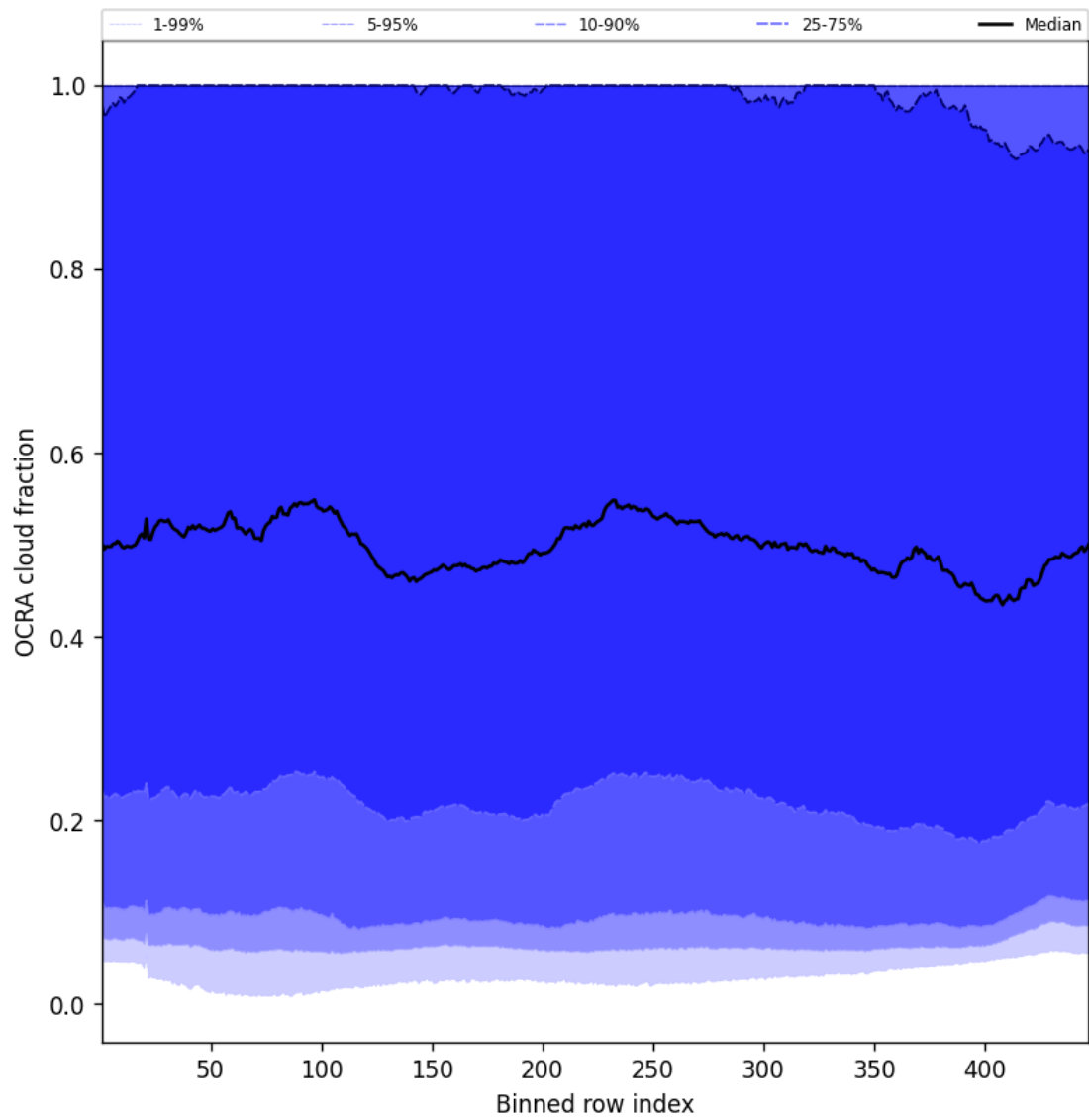


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-03-12 to 2025-03-13

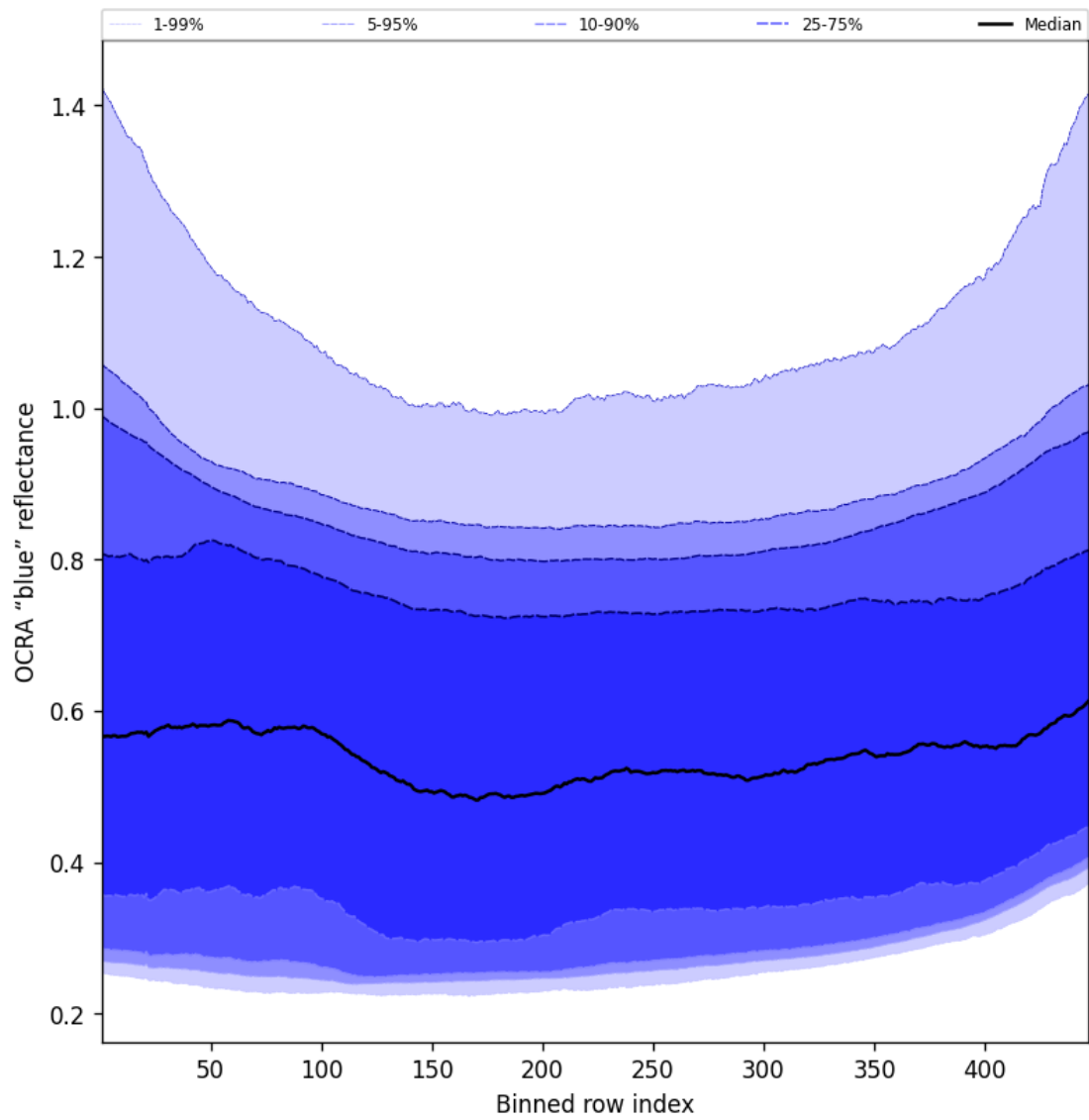


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-03-12 to 2025-03-13

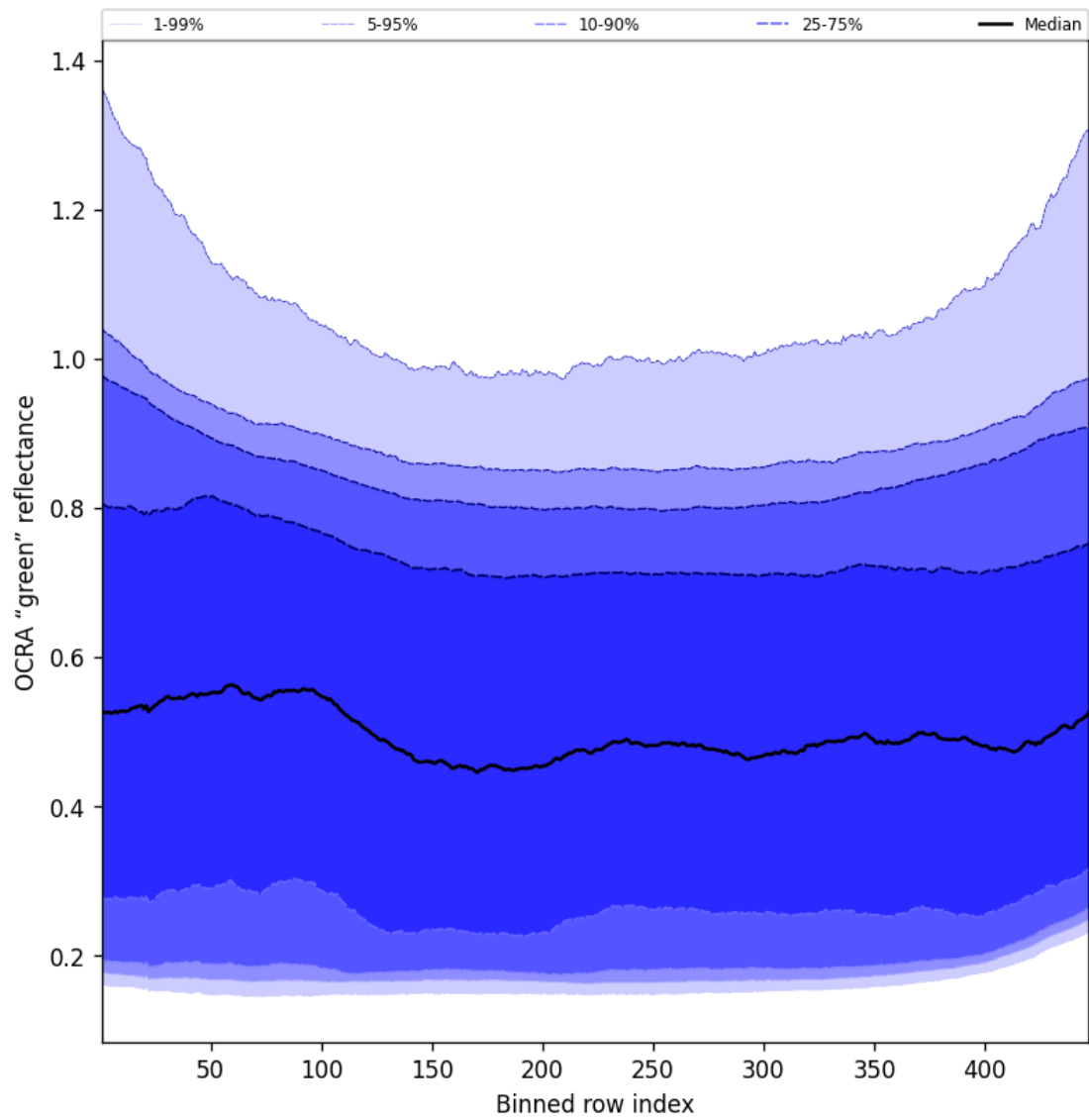


Figure 68: Along track statistics of "OCRA "green" reflectance" for 2025-03-12 to 2025-03-13

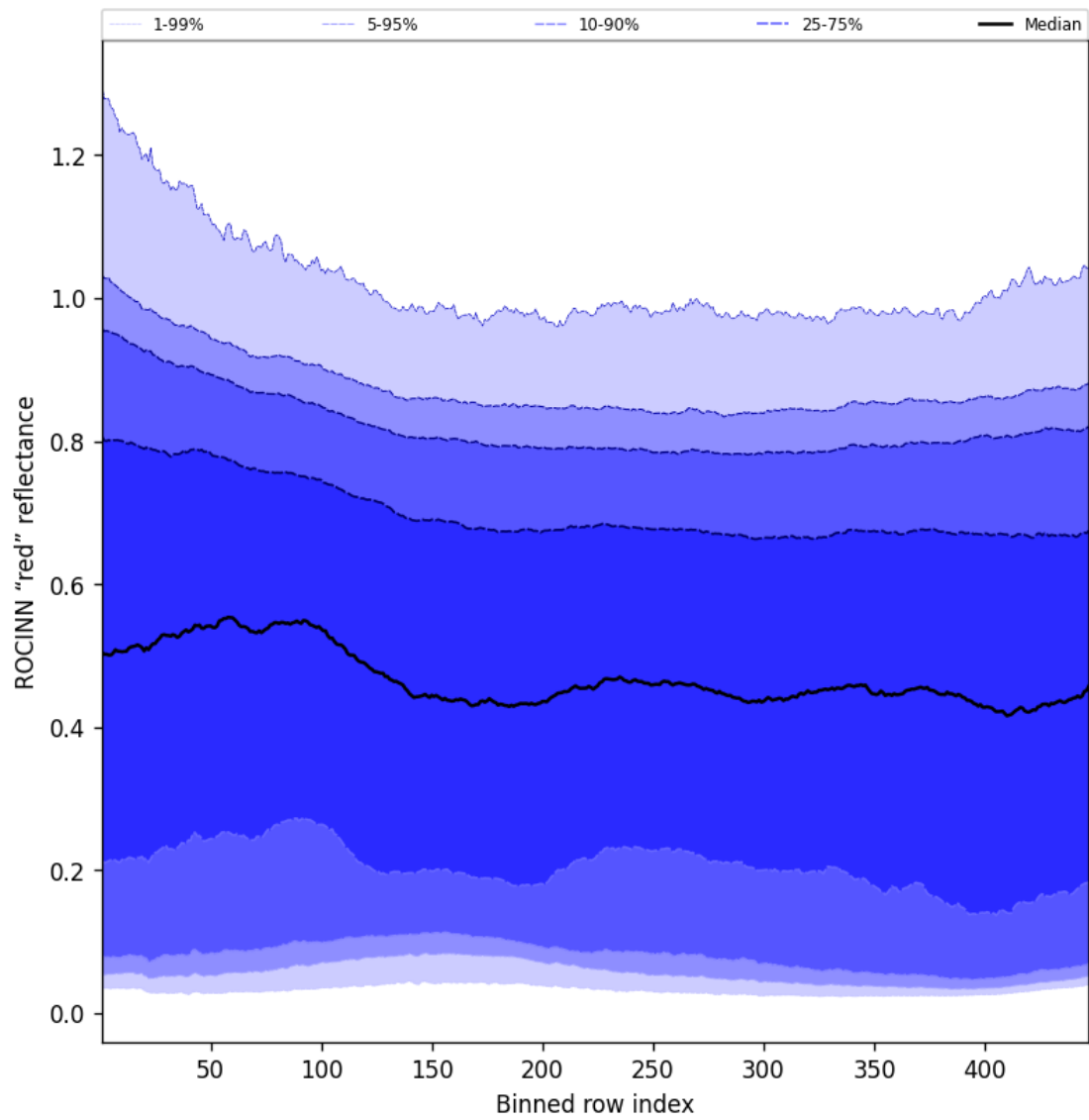


Figure 69: Along track statistics of “ROCINN “red” reflectance” for 2025-03-12 to 2025-03-13

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.

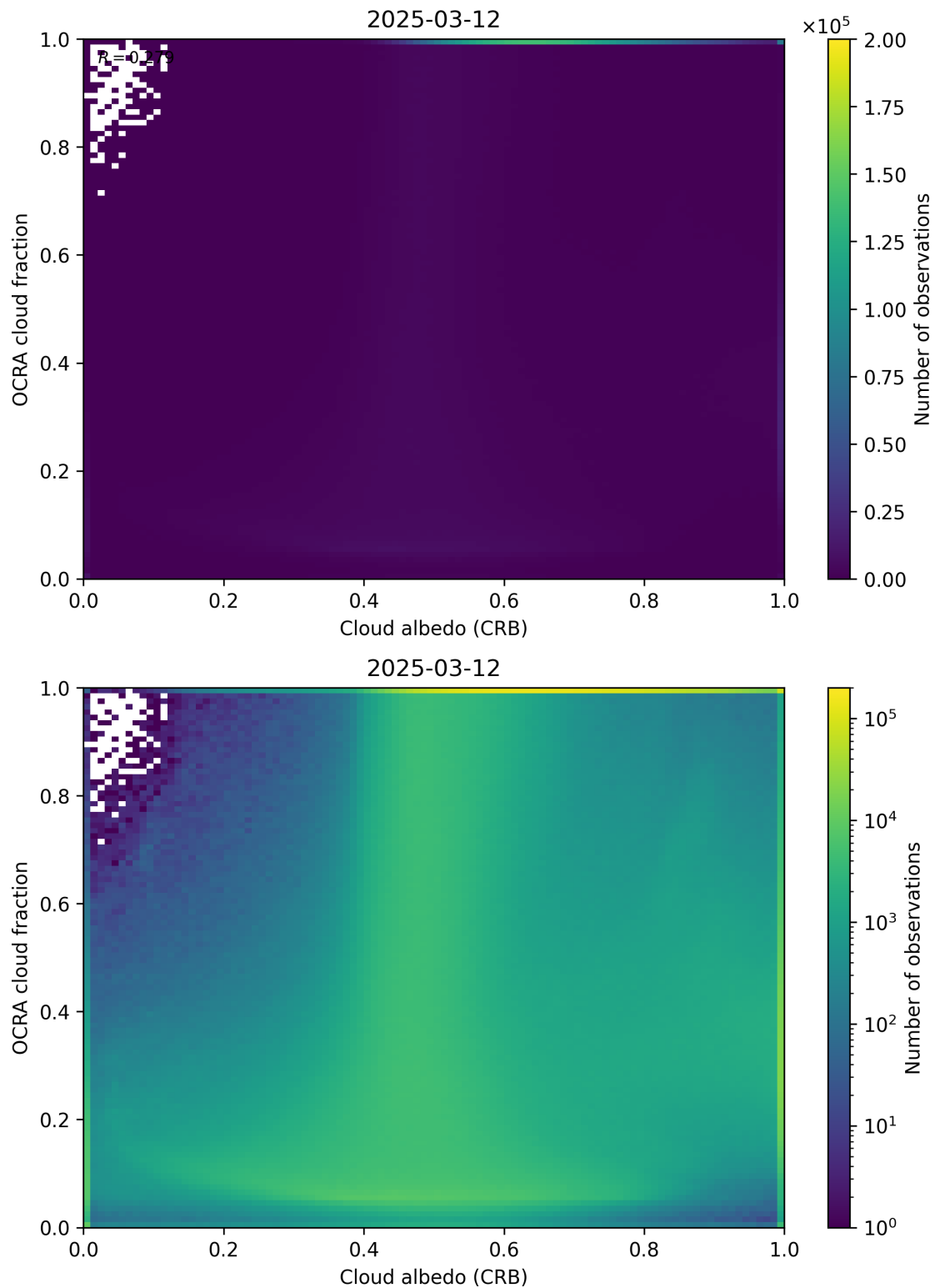


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-03-12 to 2025-03-13.

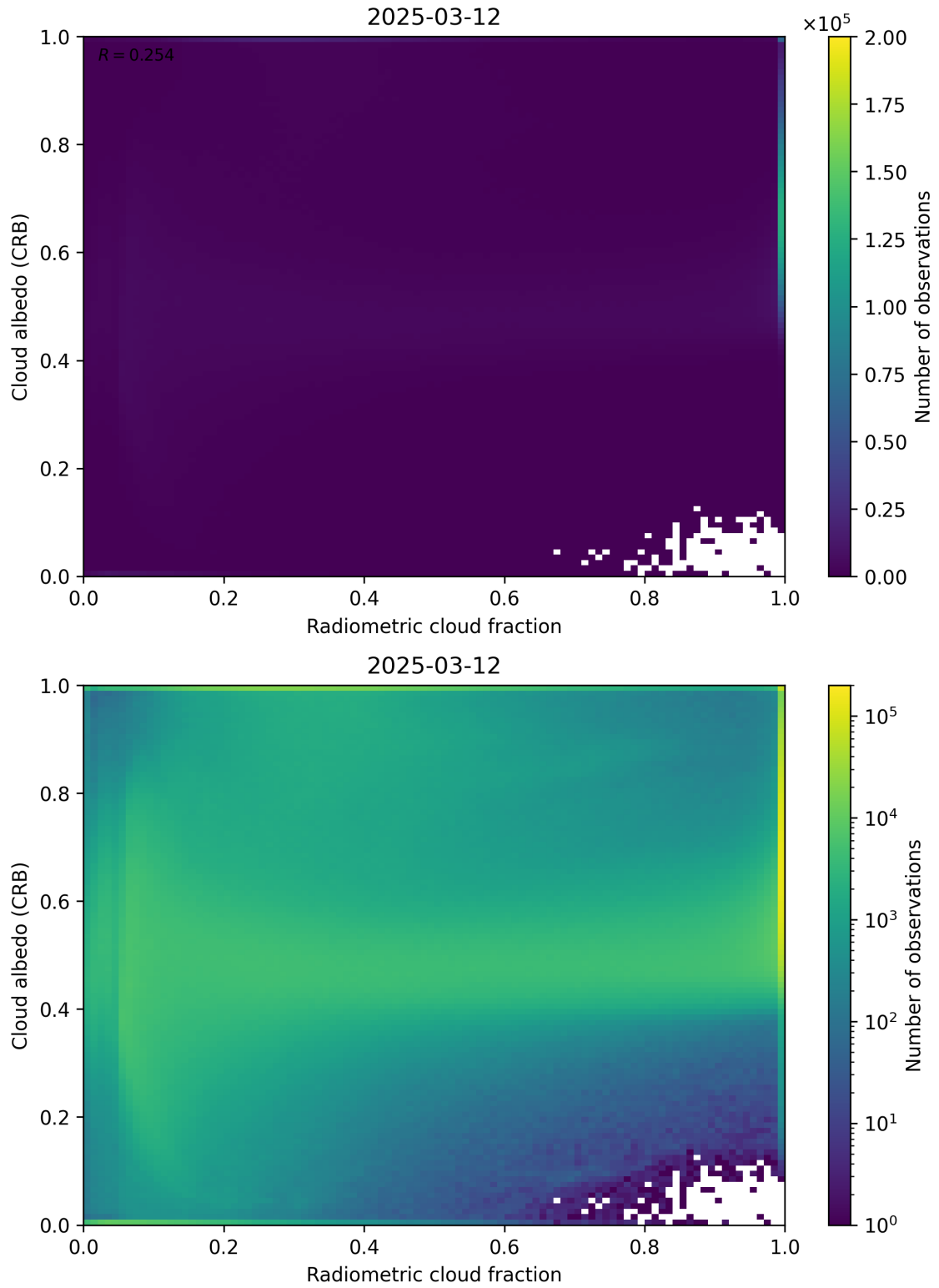


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-03-12 to 2025-03-13.

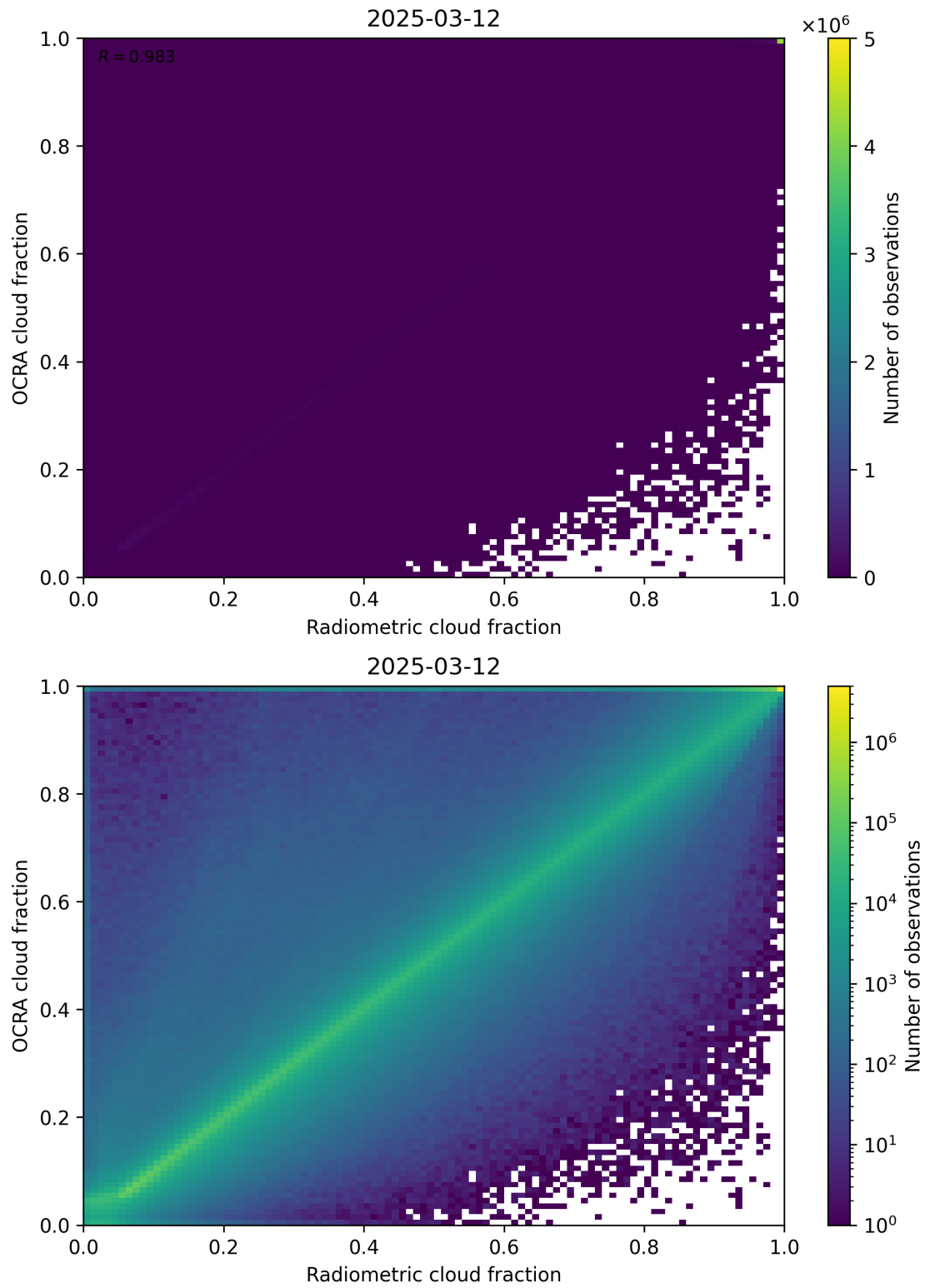


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-03-12 to 2025-03-13.

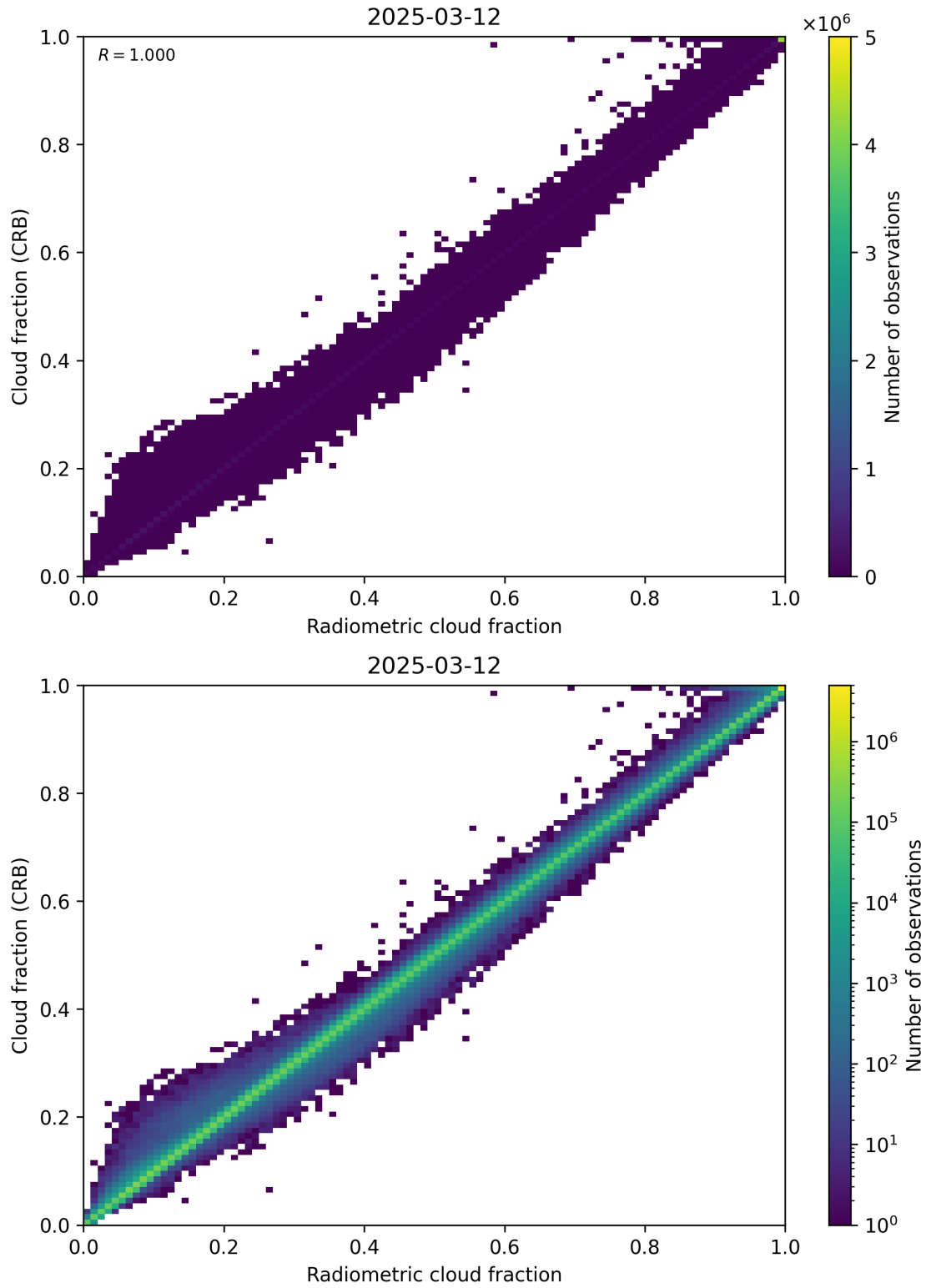


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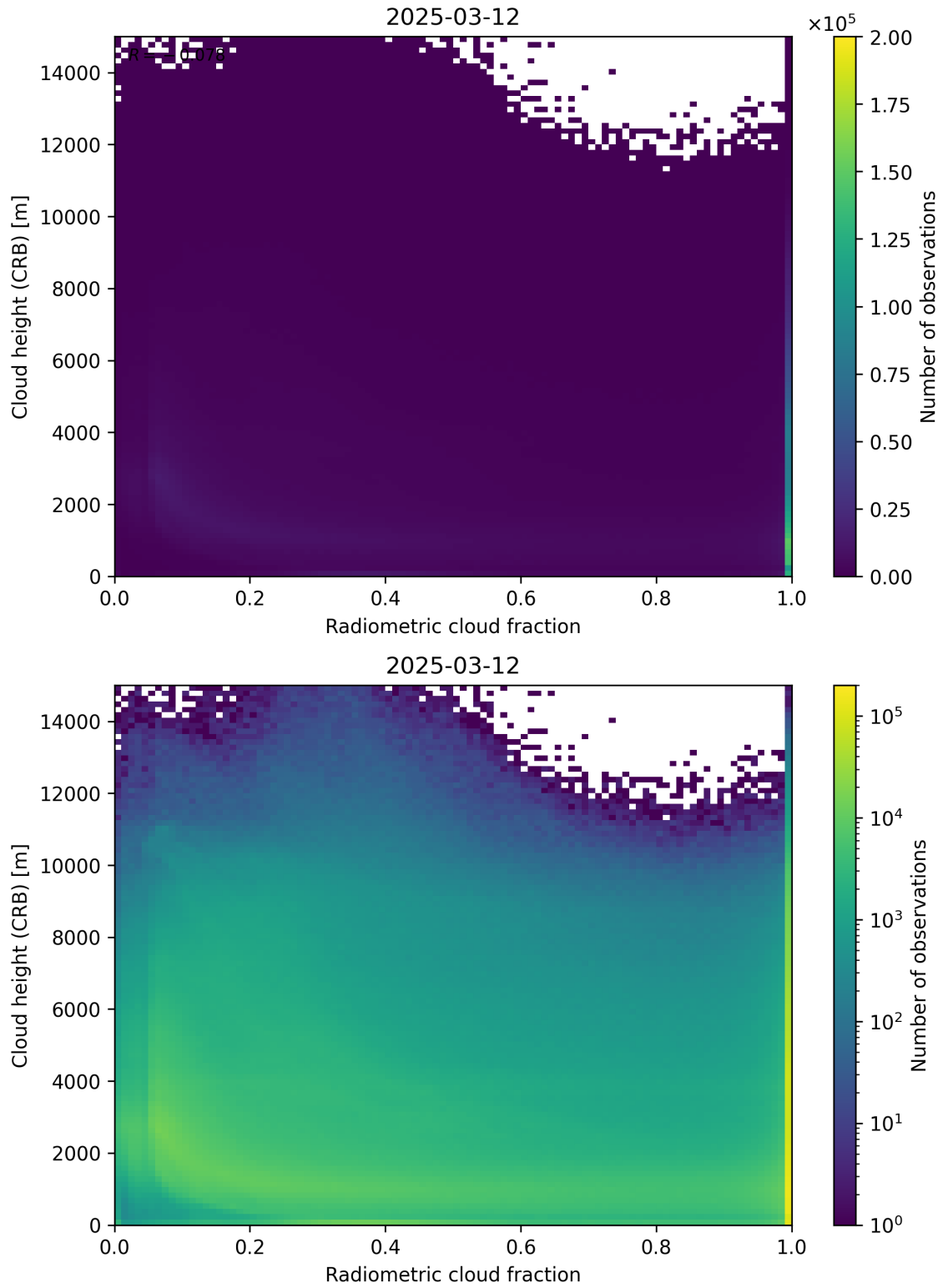


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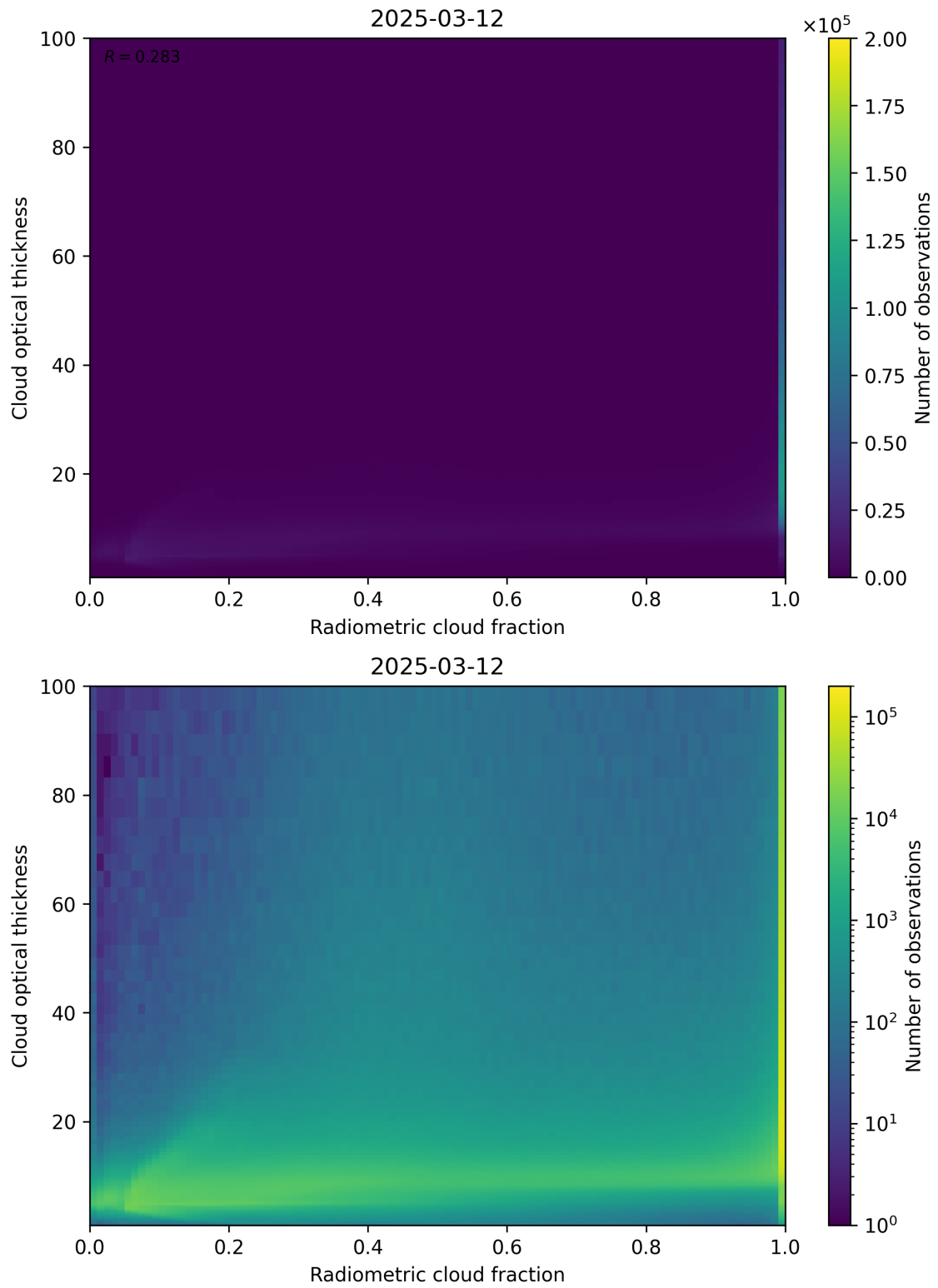


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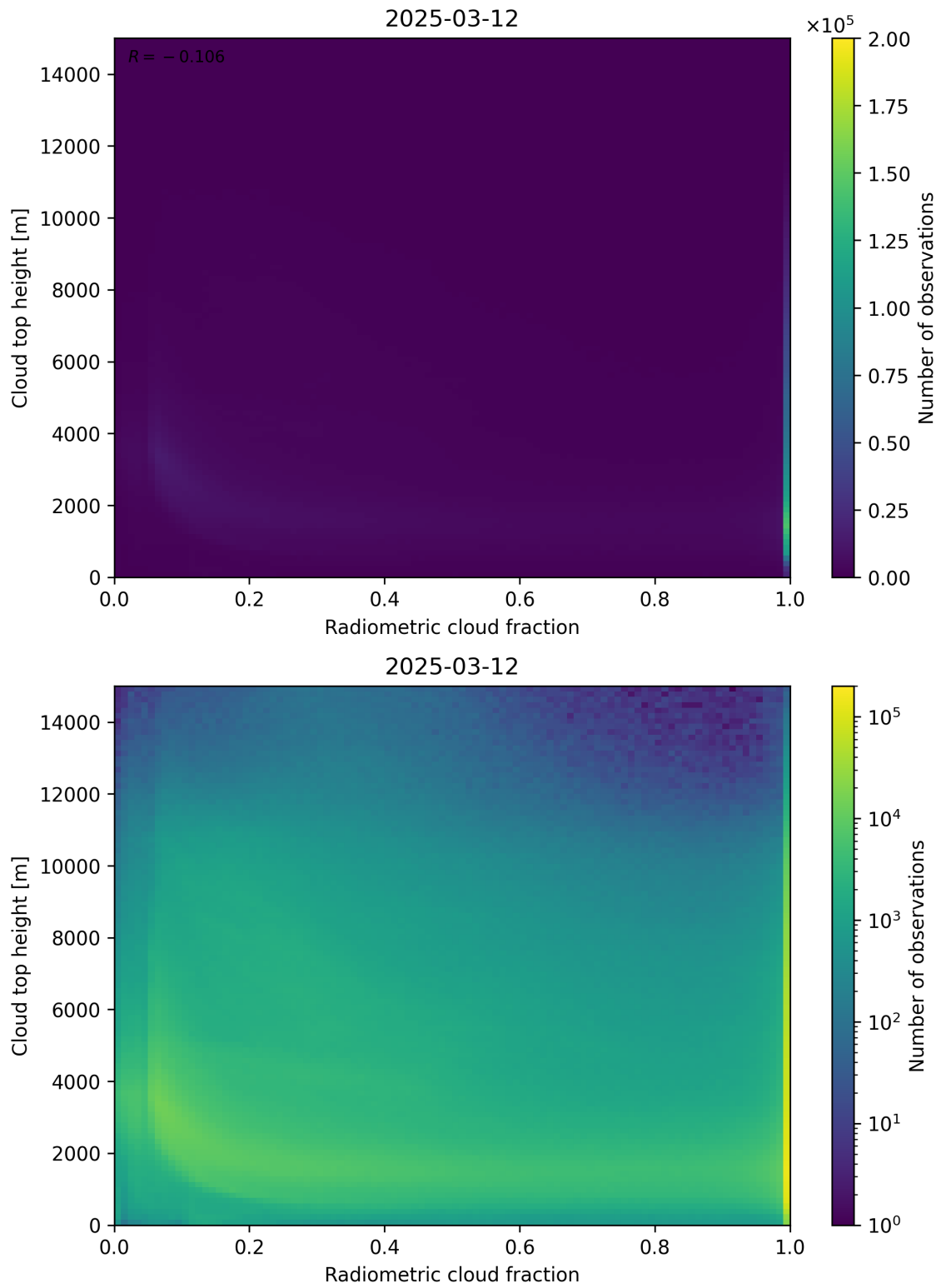


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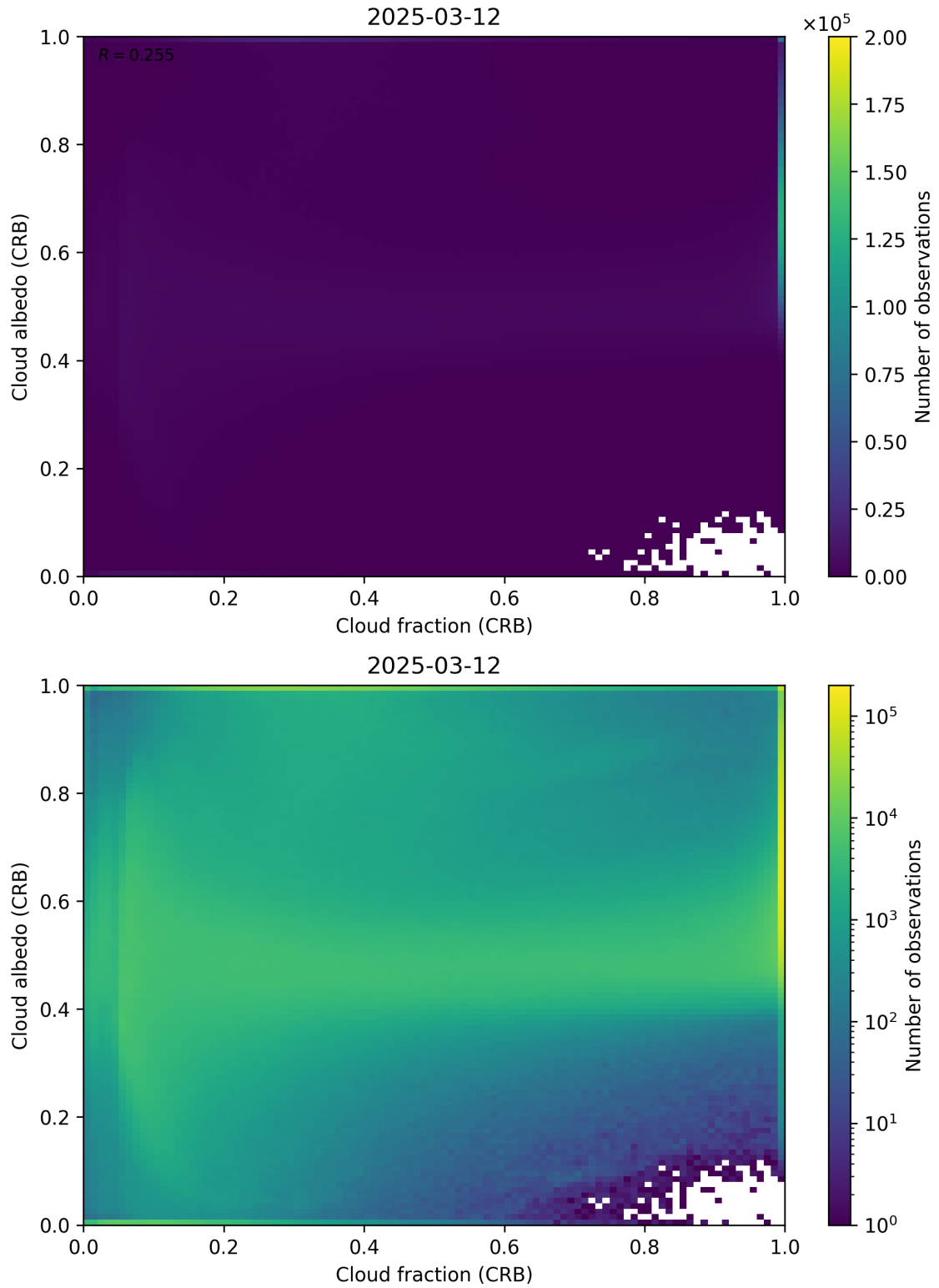


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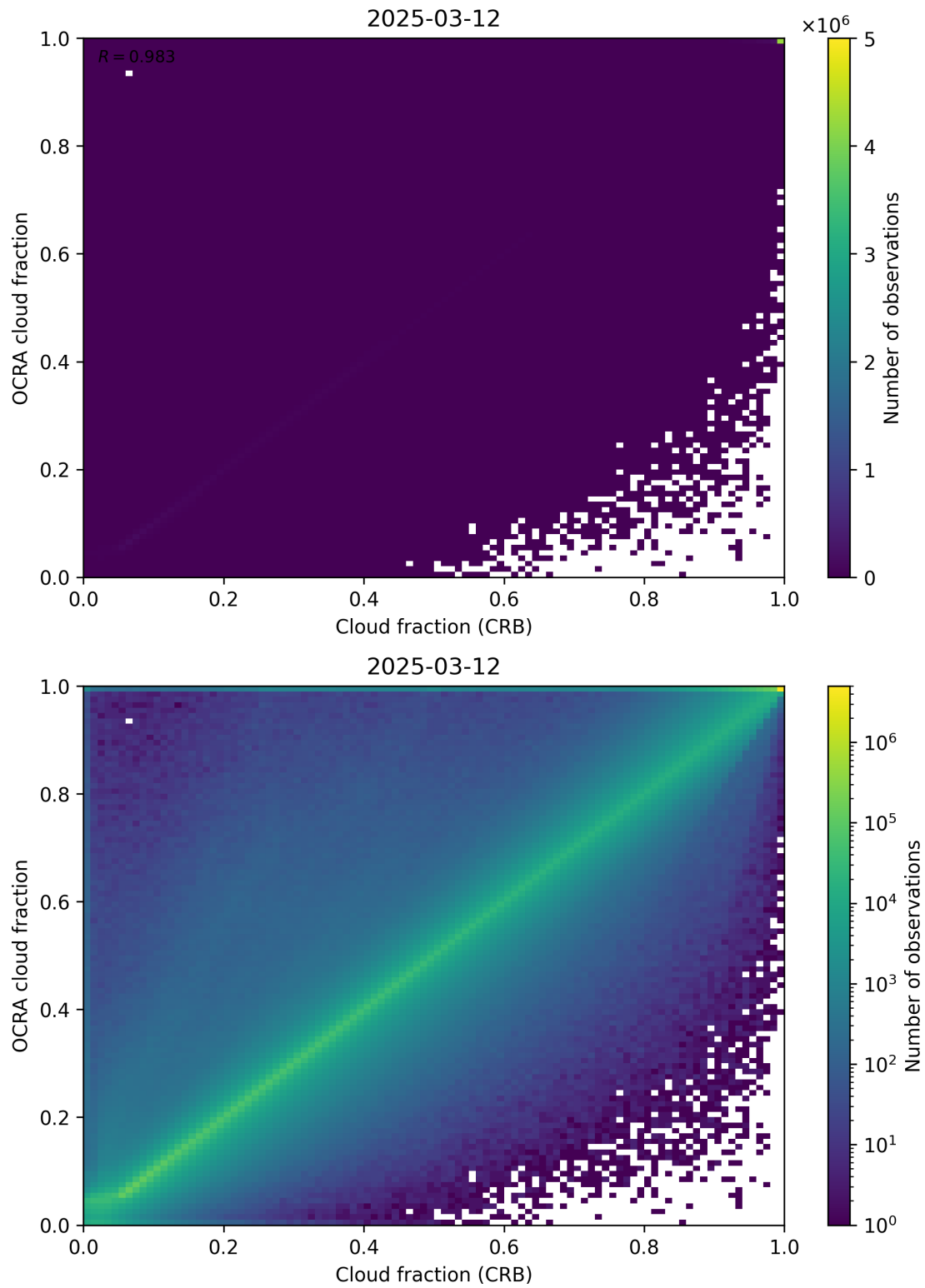


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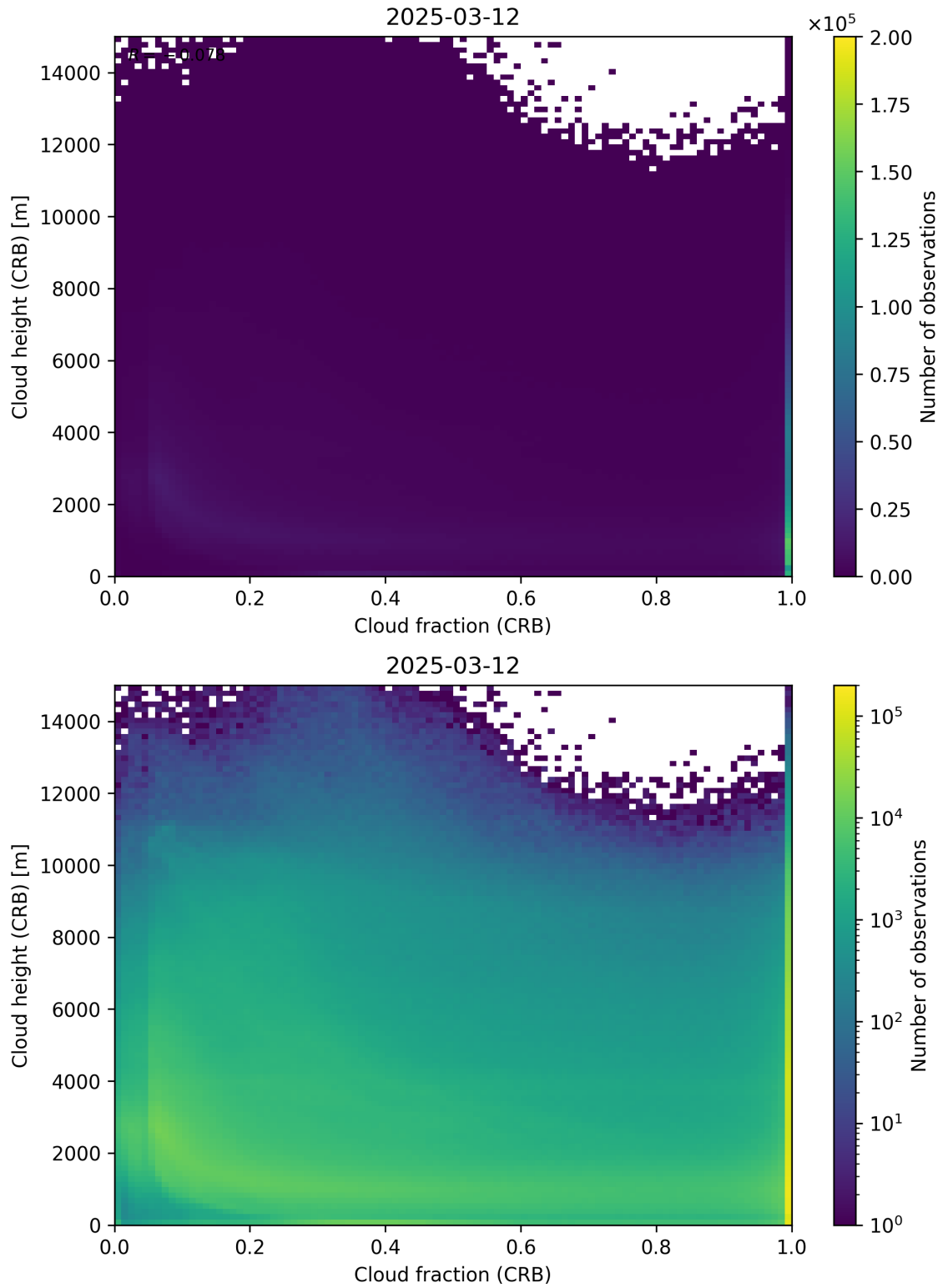


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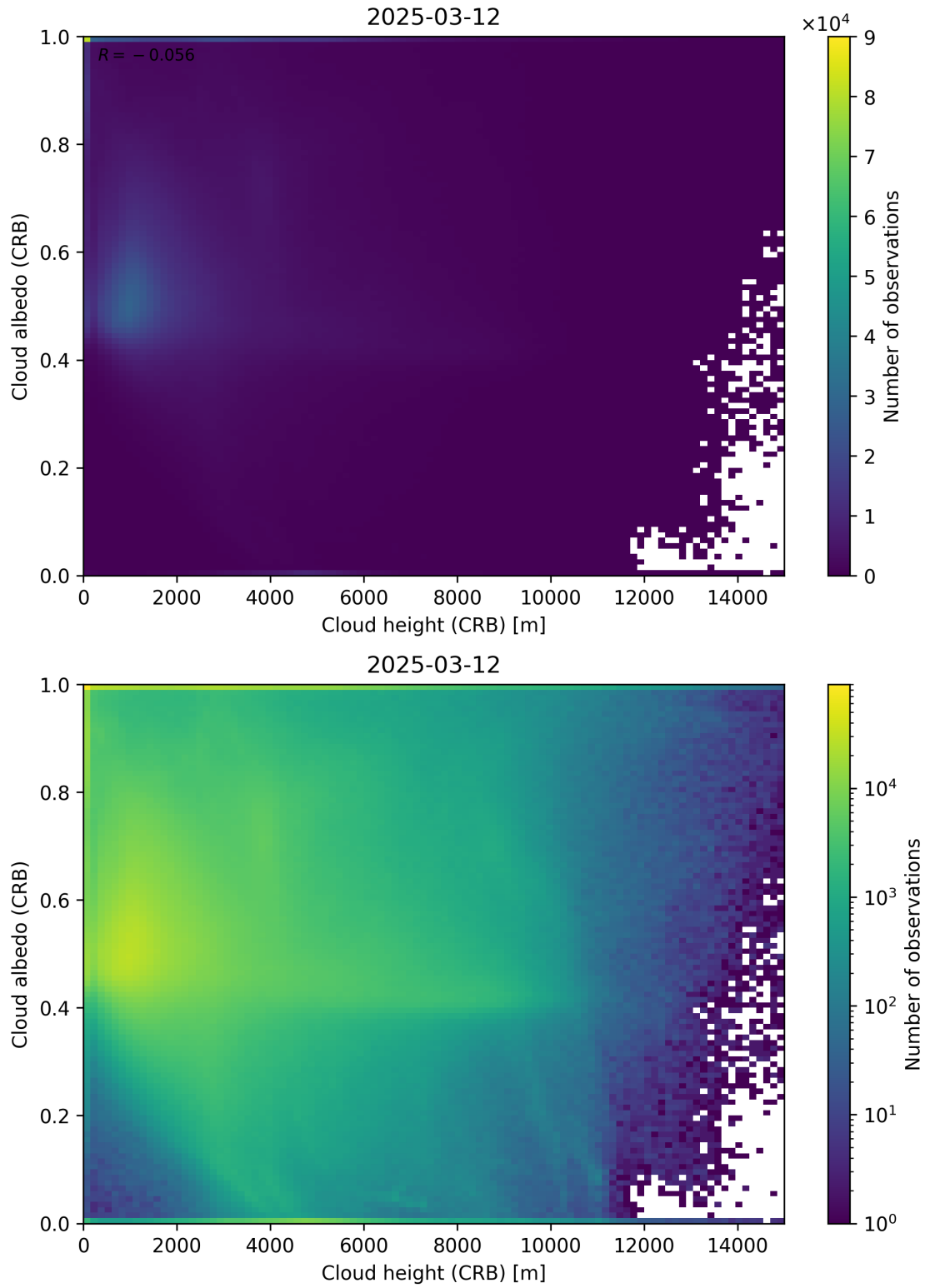


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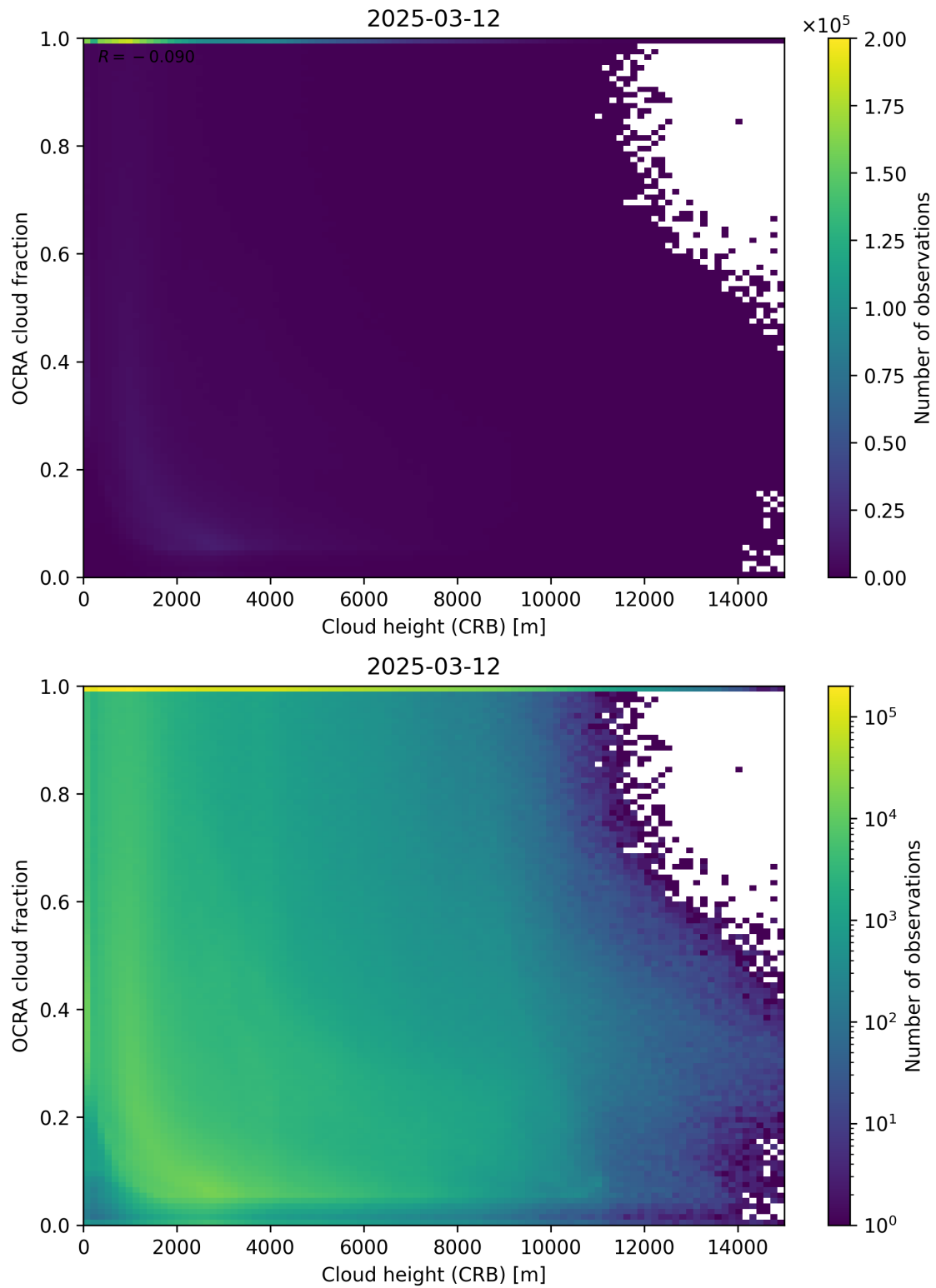


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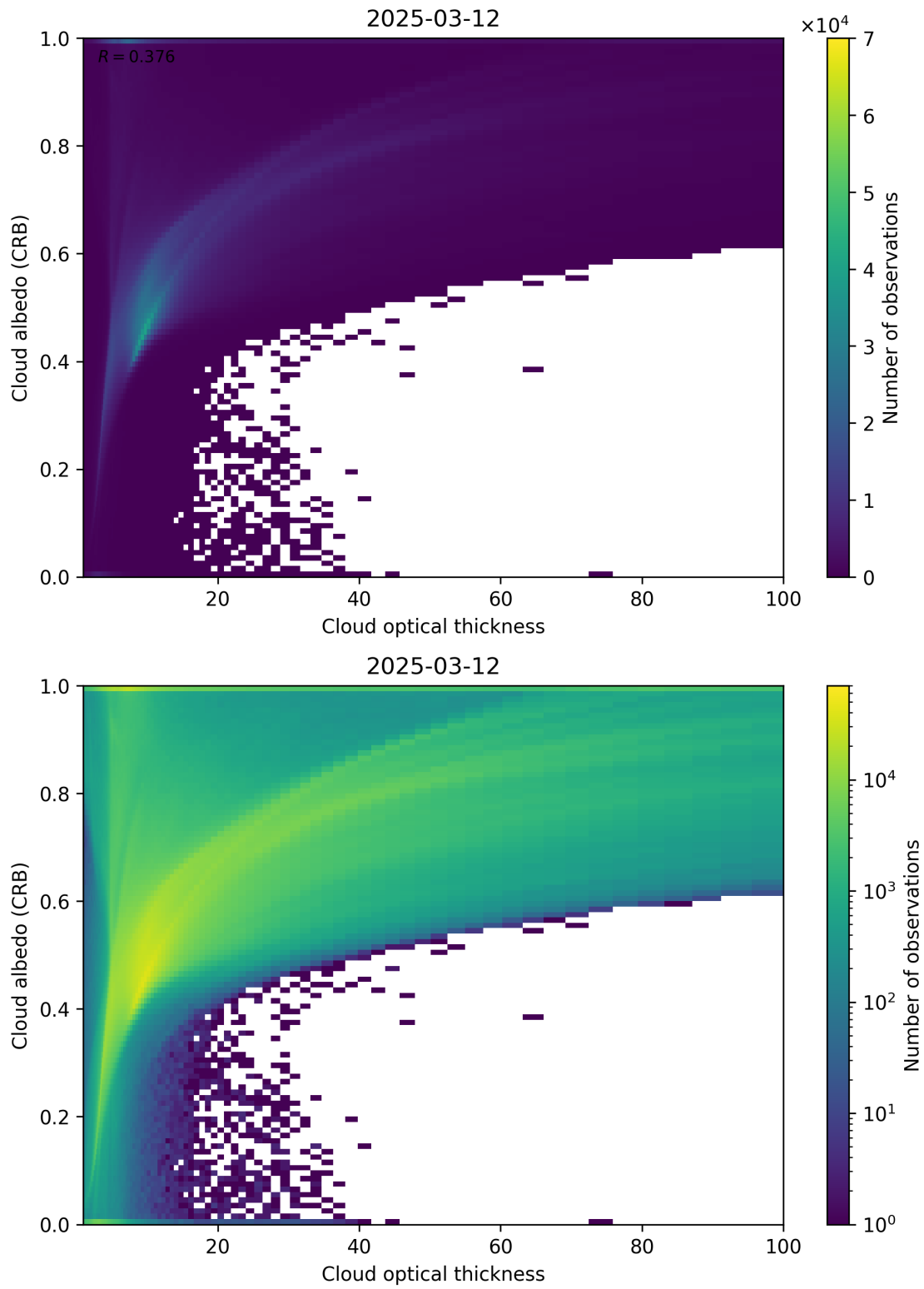


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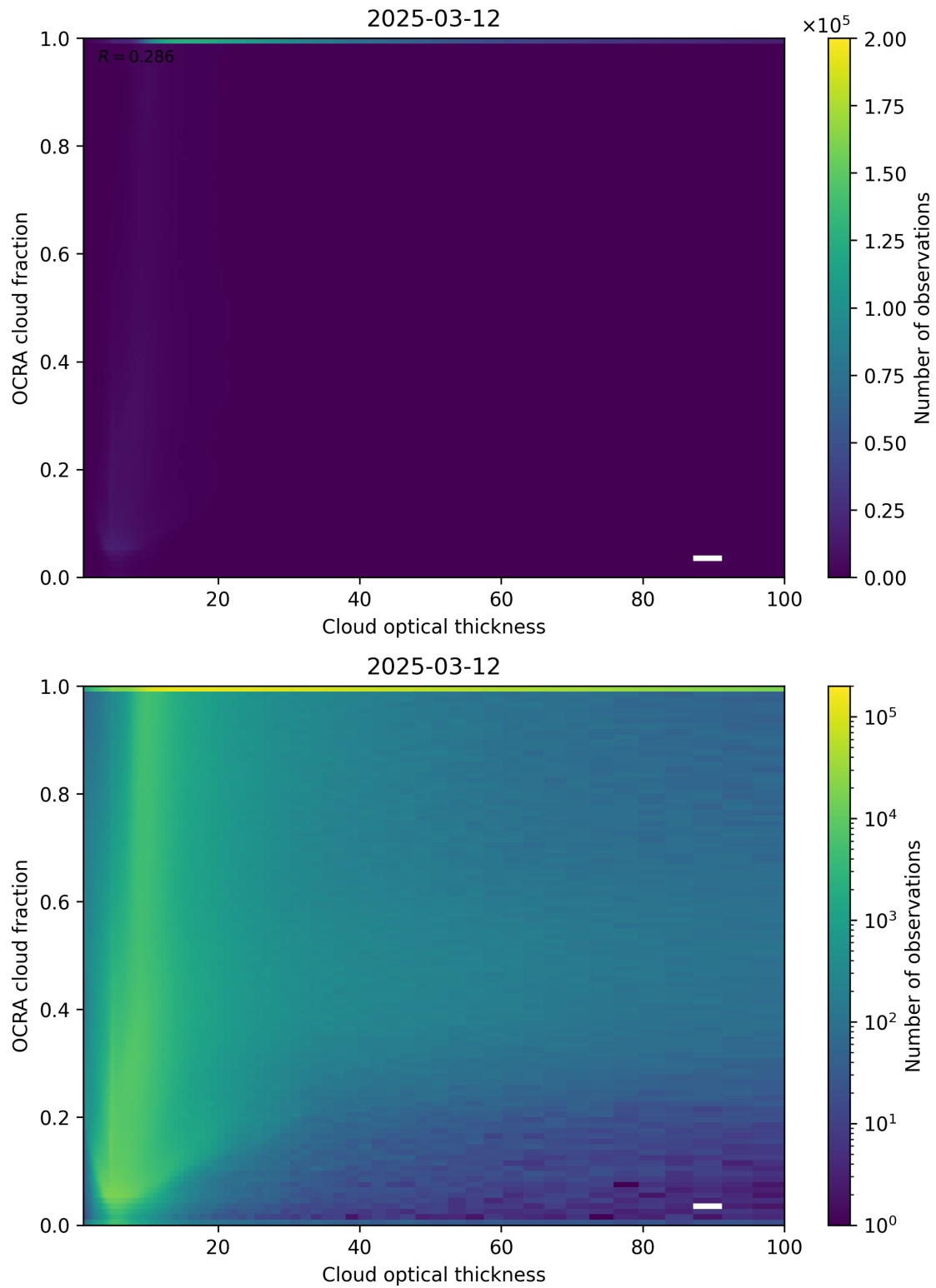


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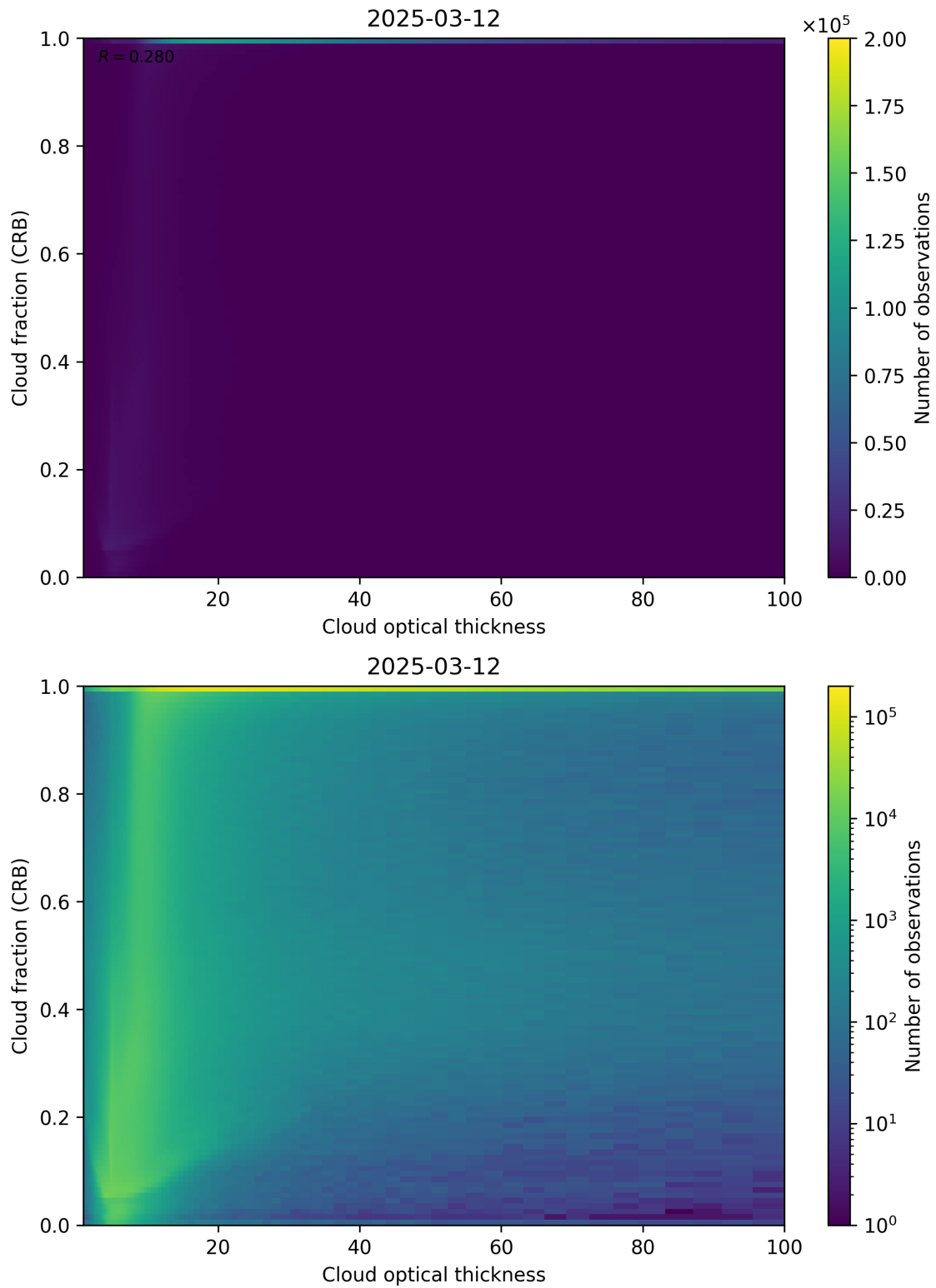


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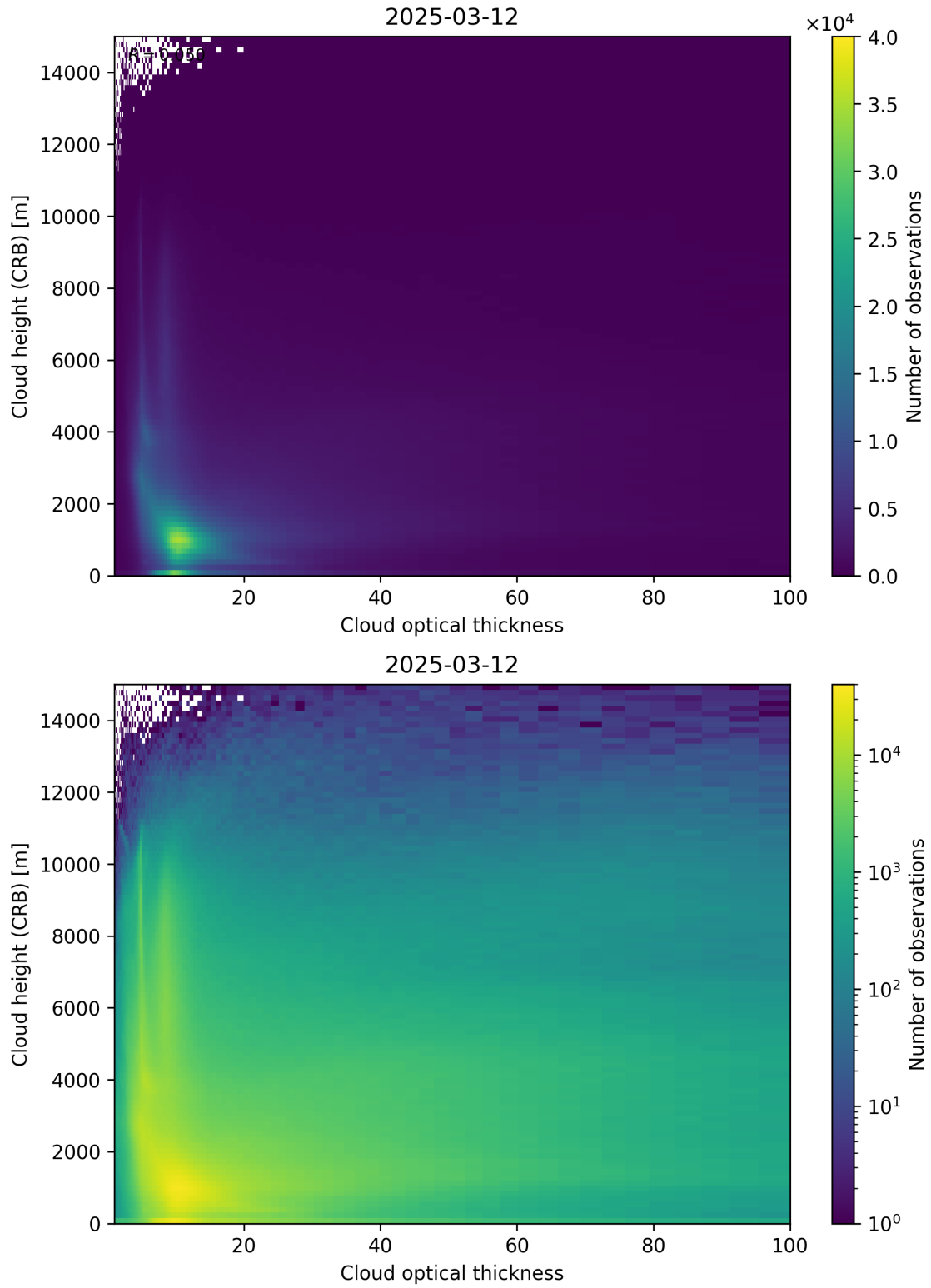


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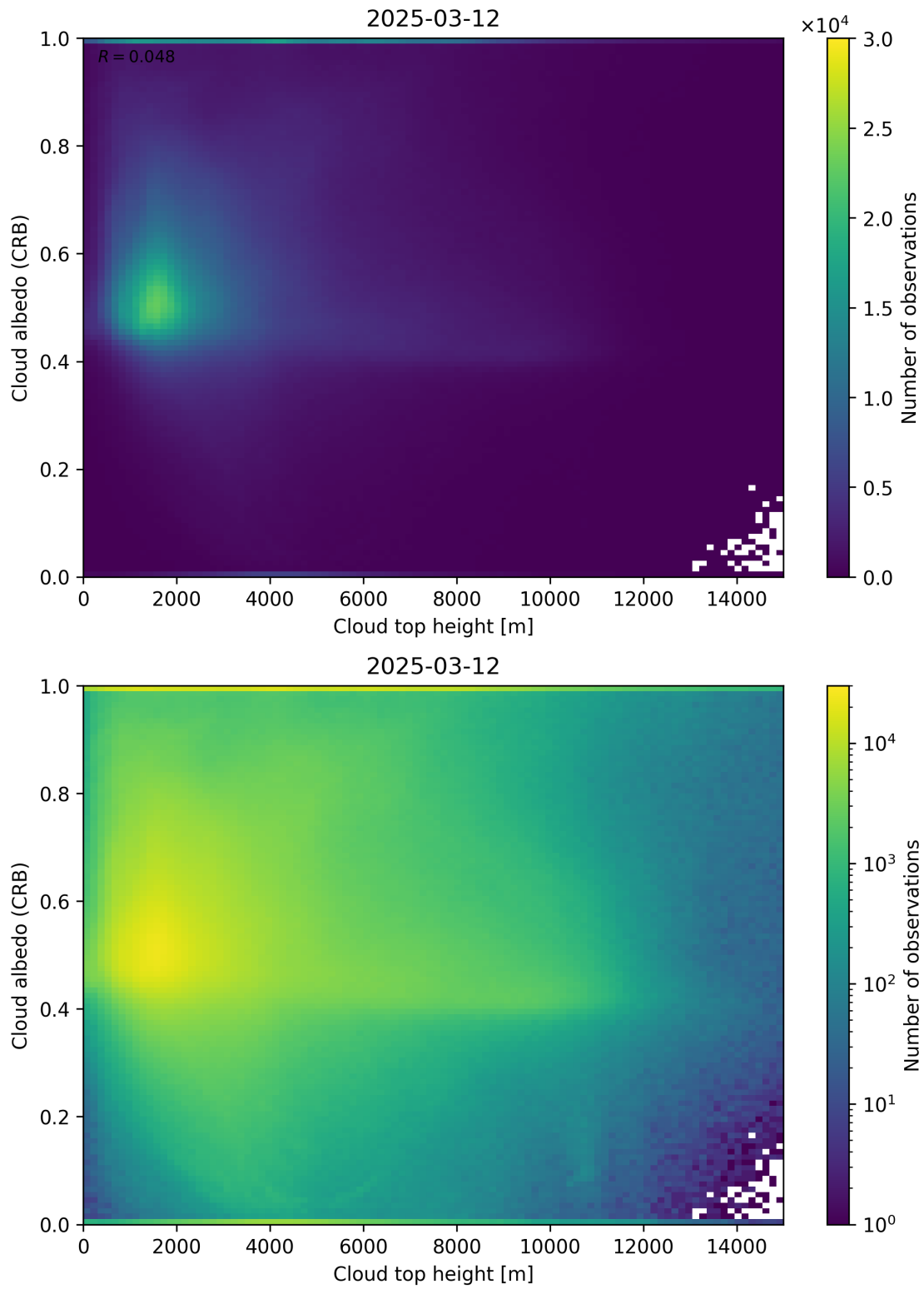


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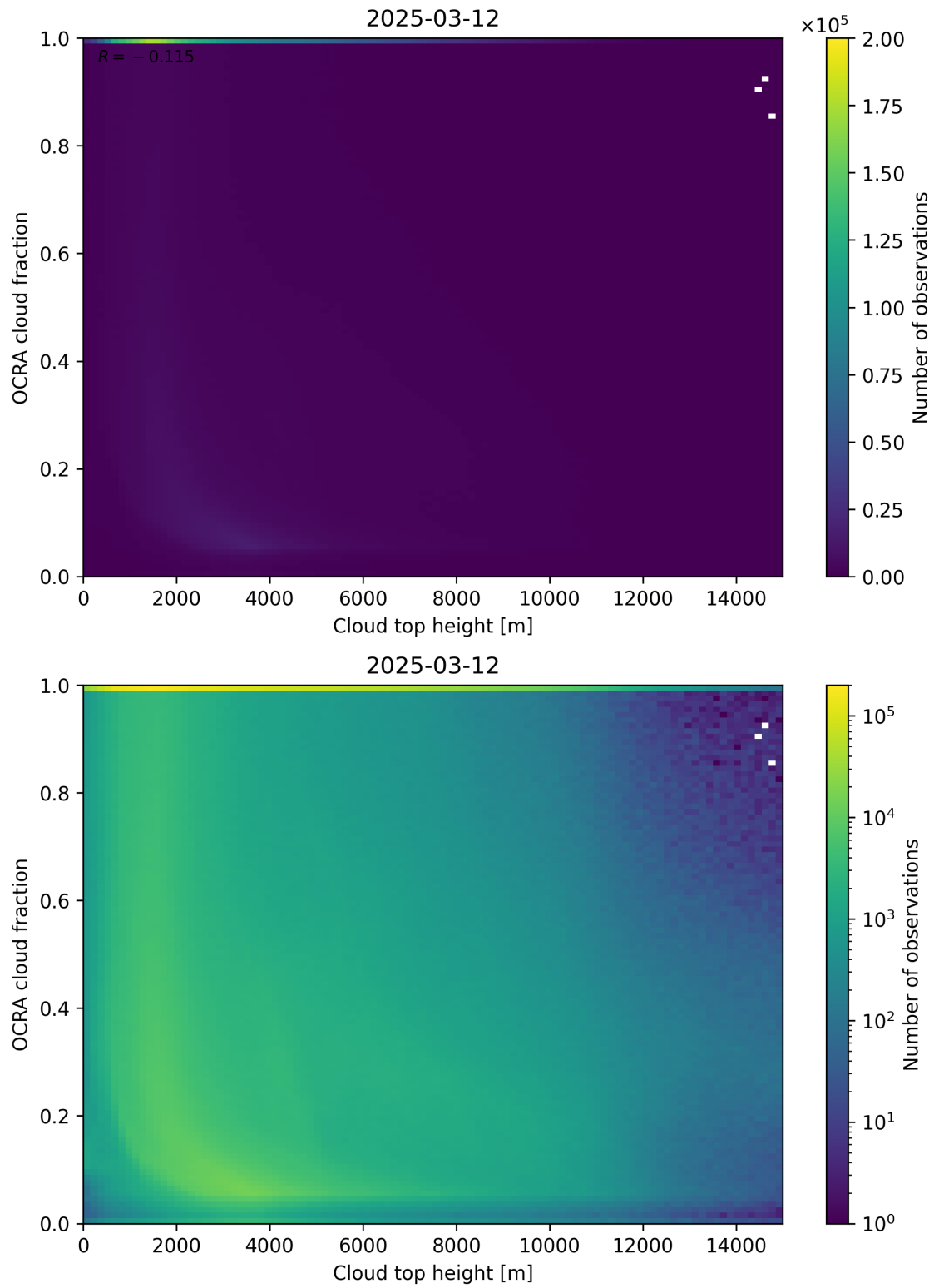


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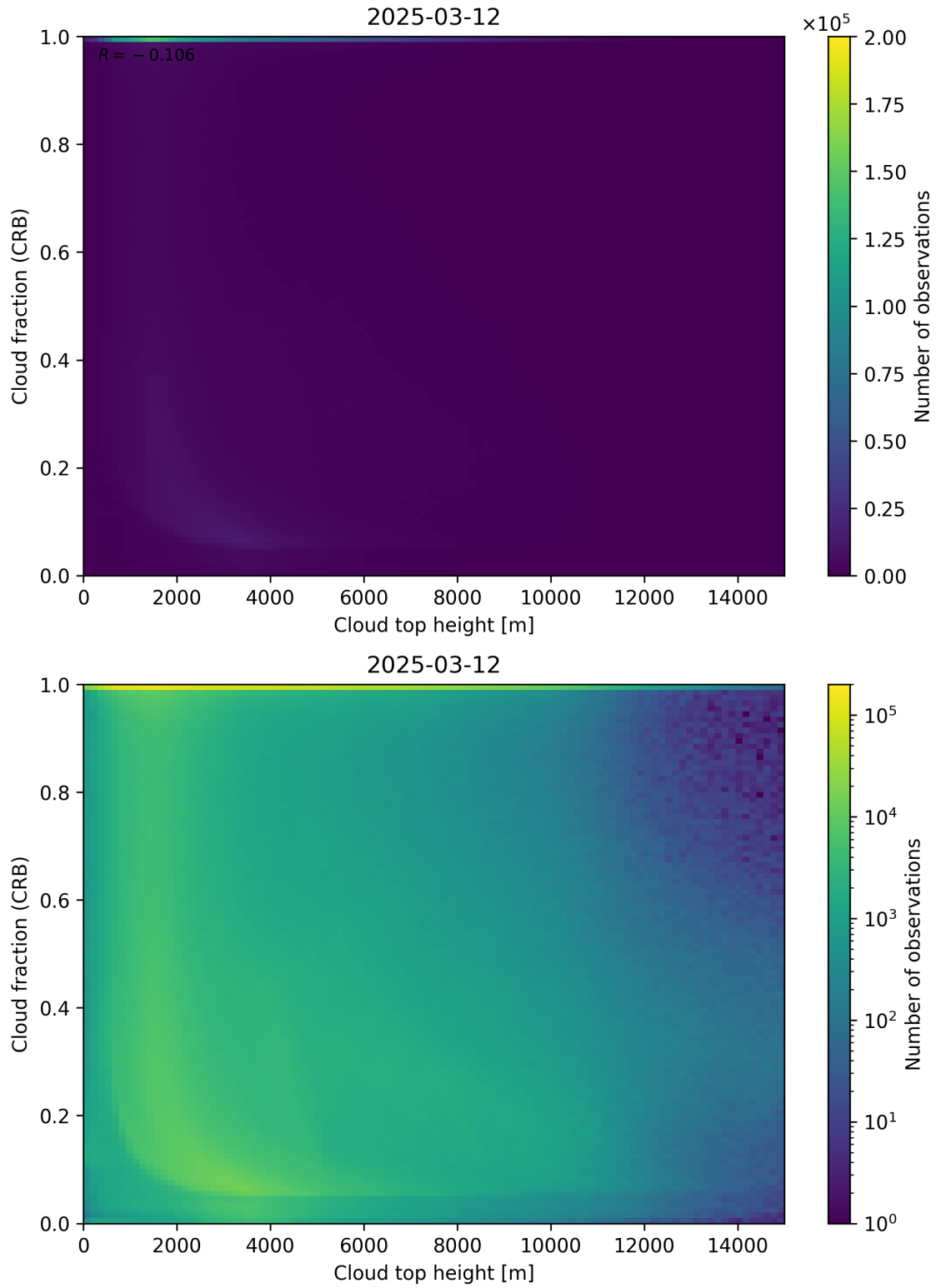


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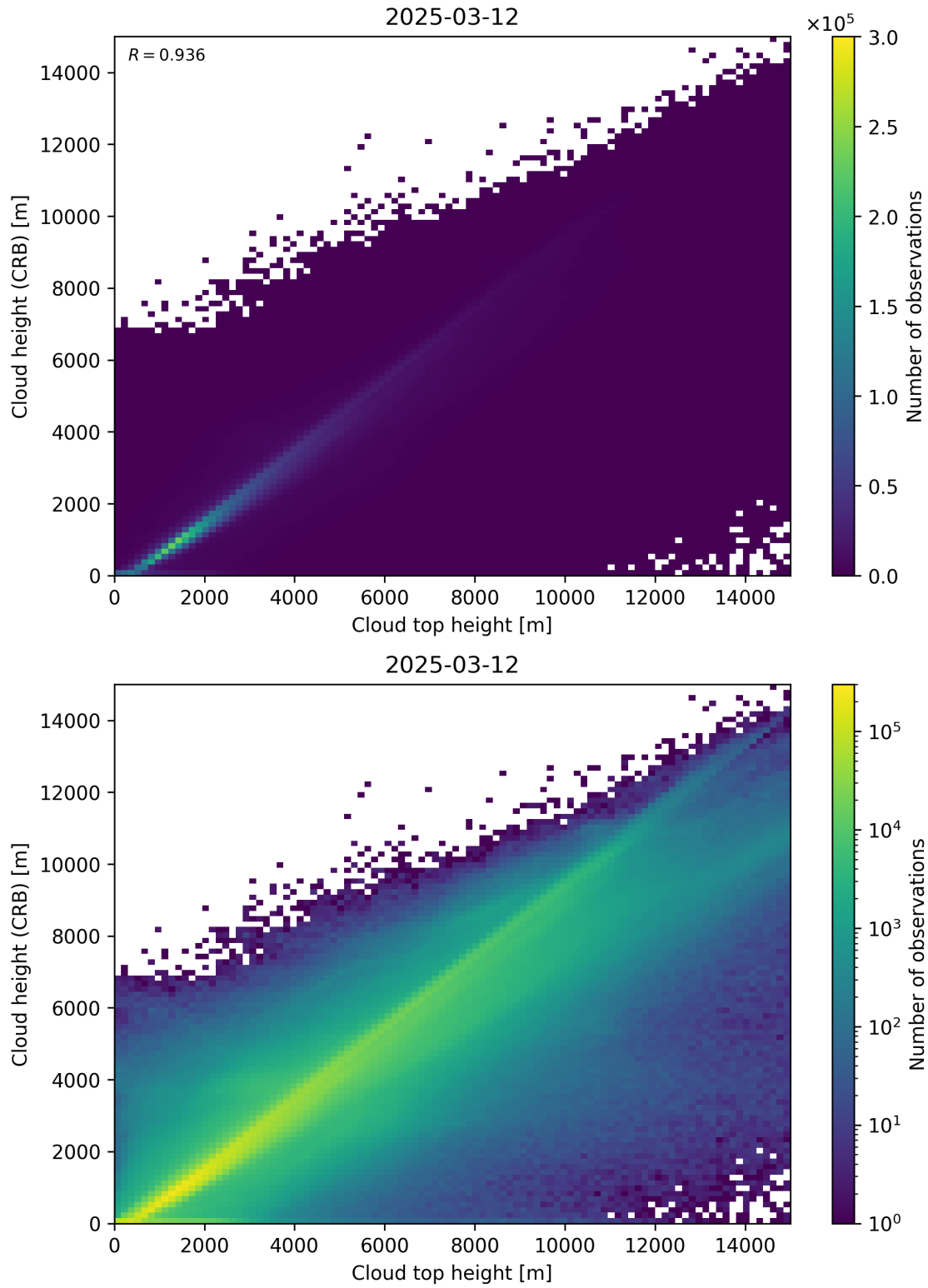


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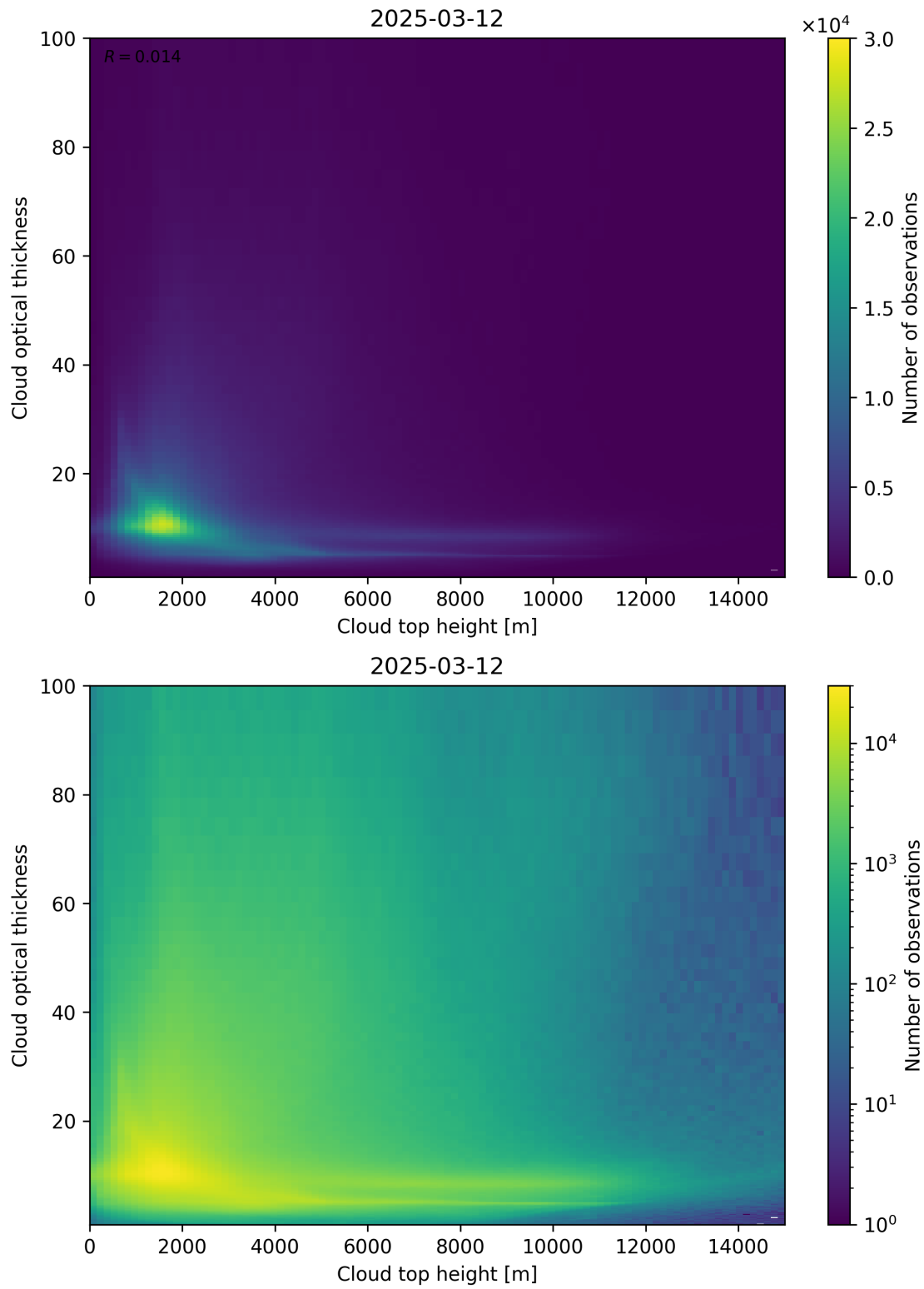


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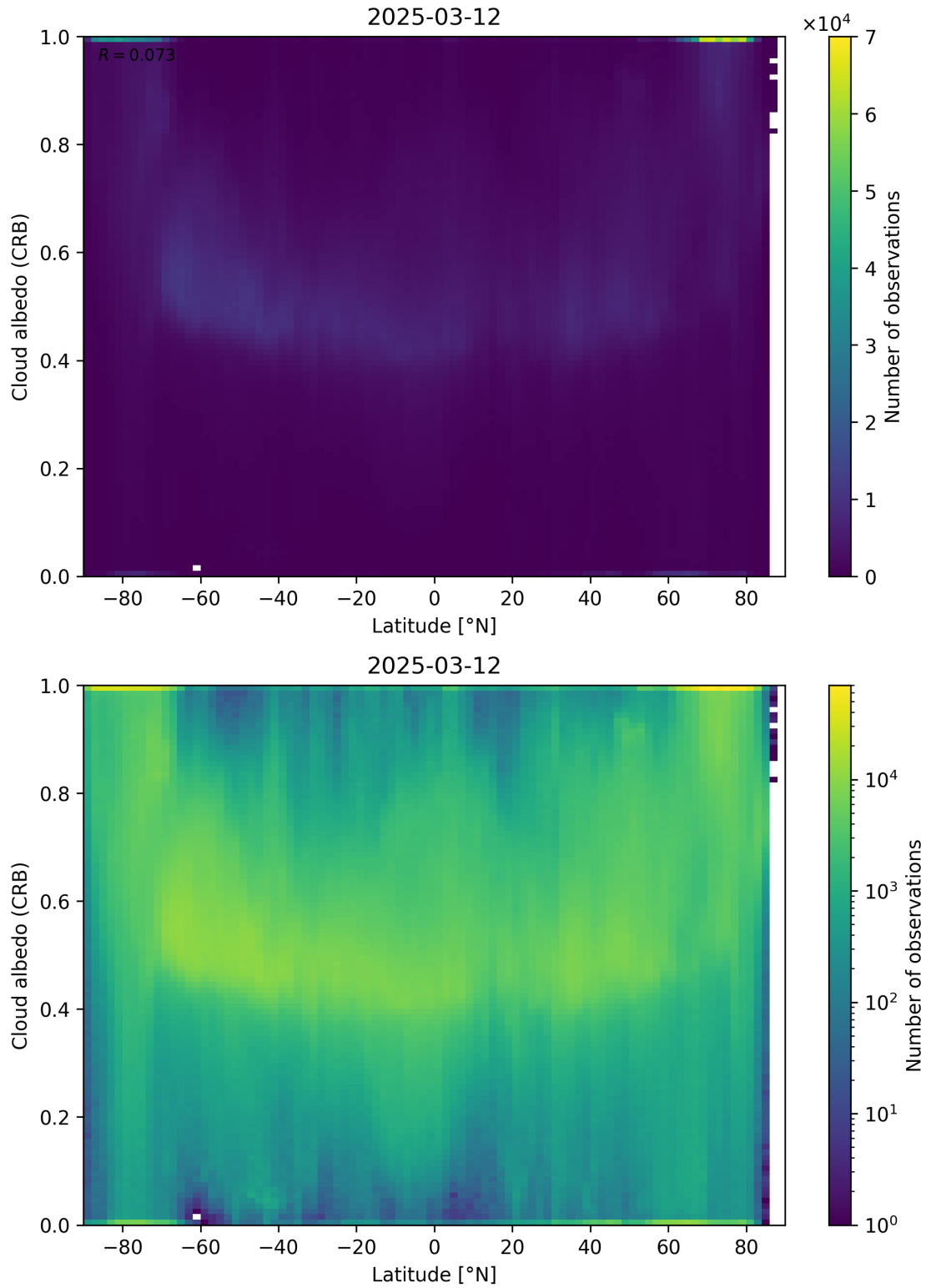


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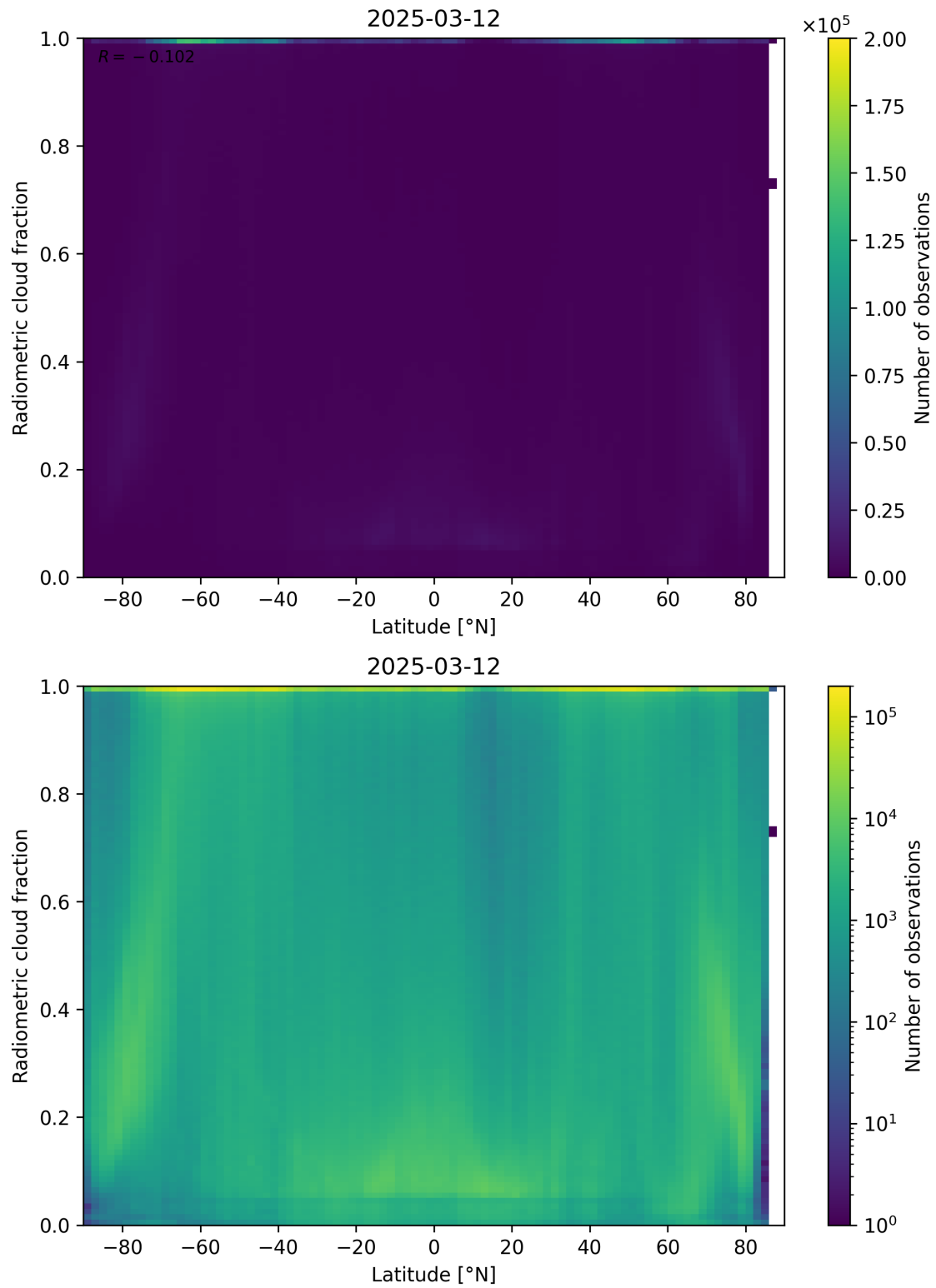


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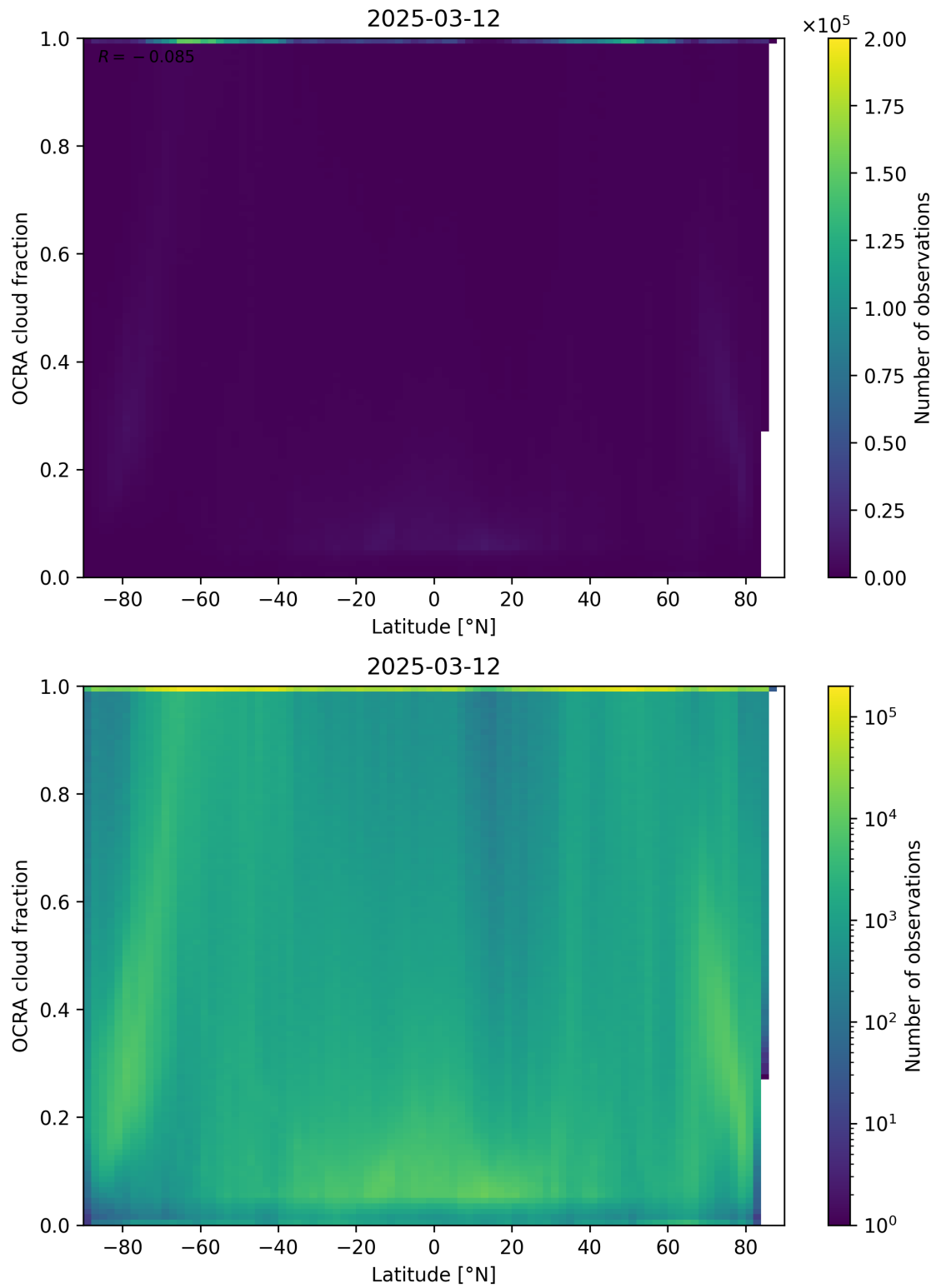


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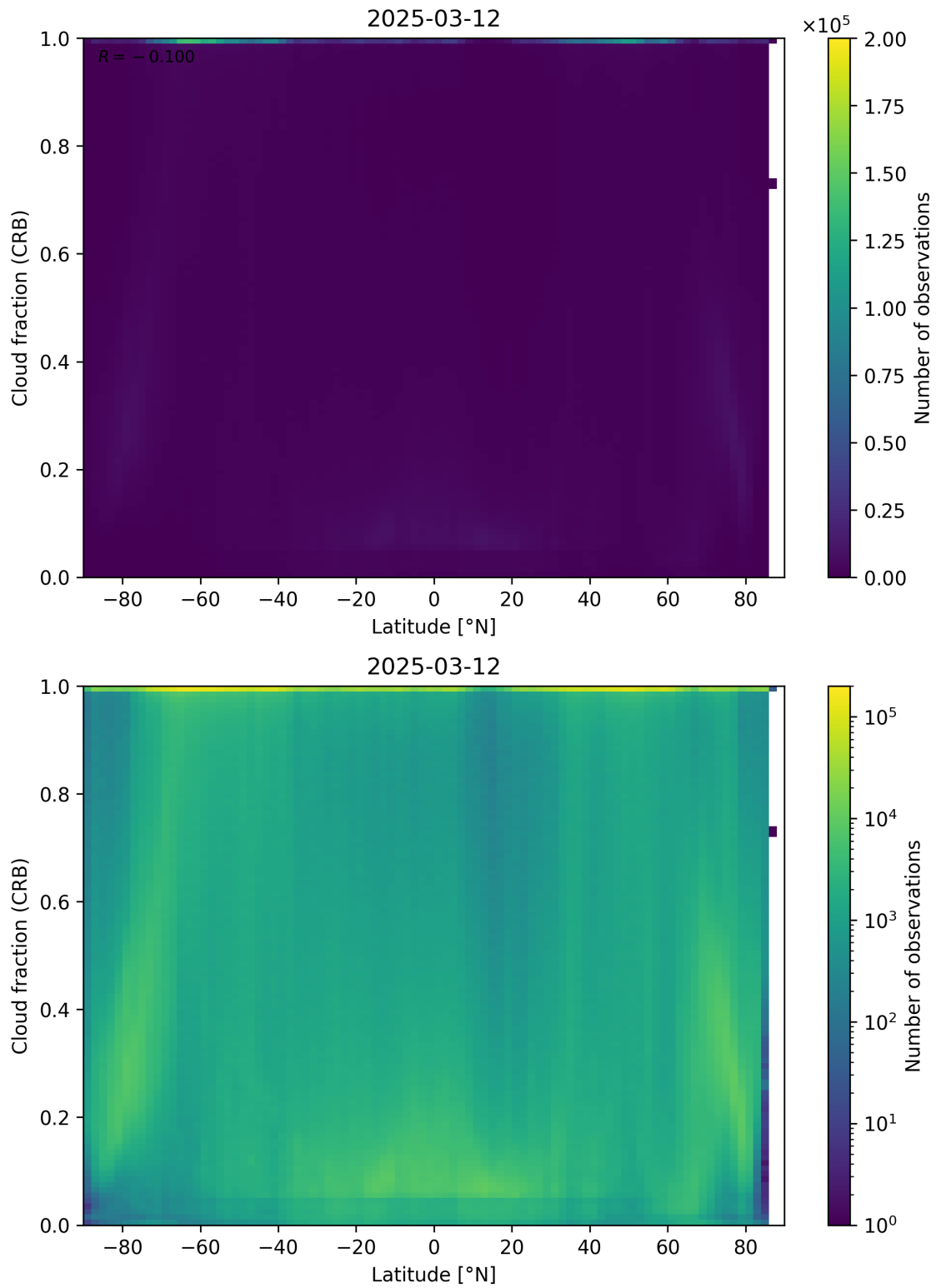


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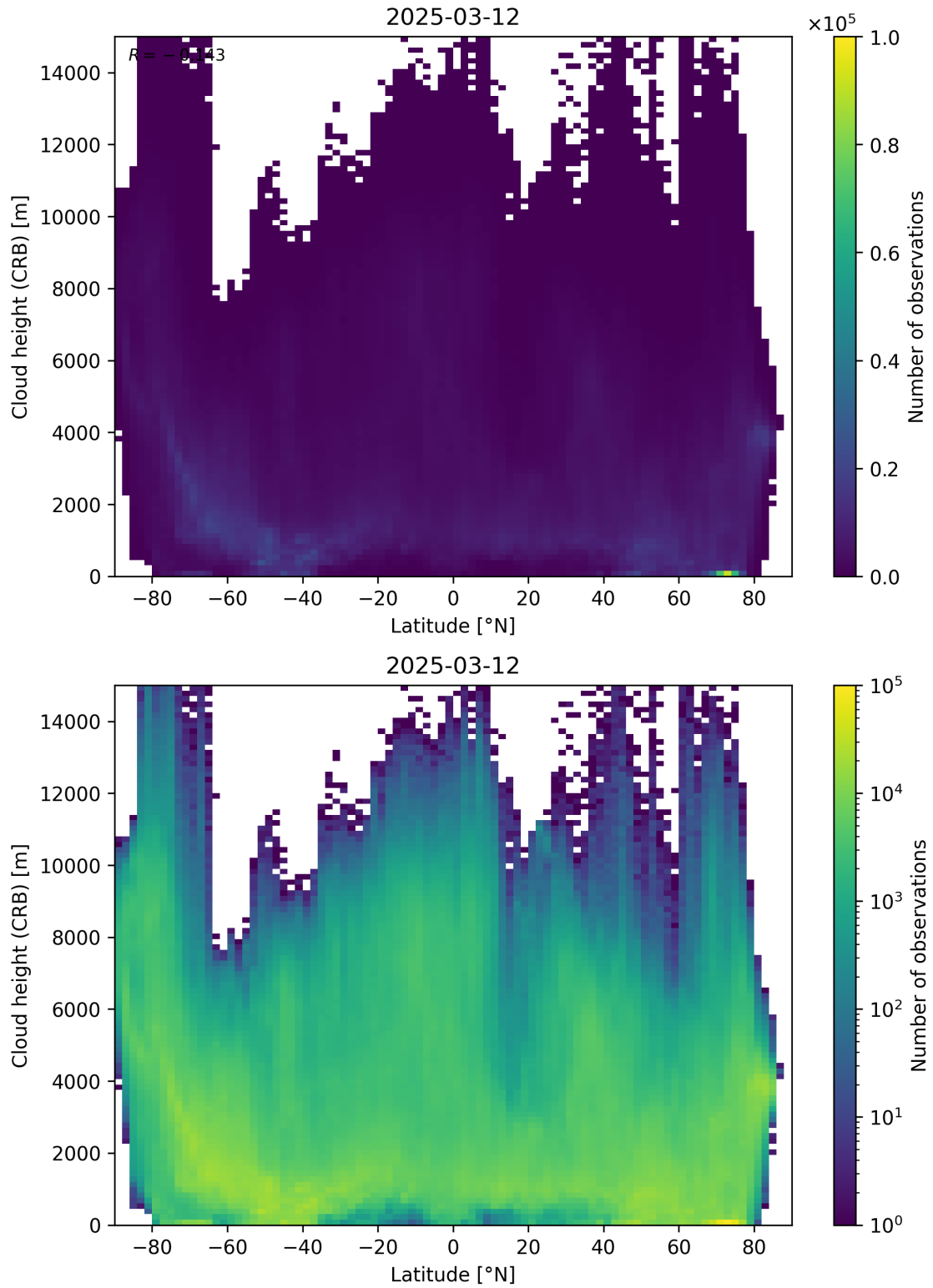


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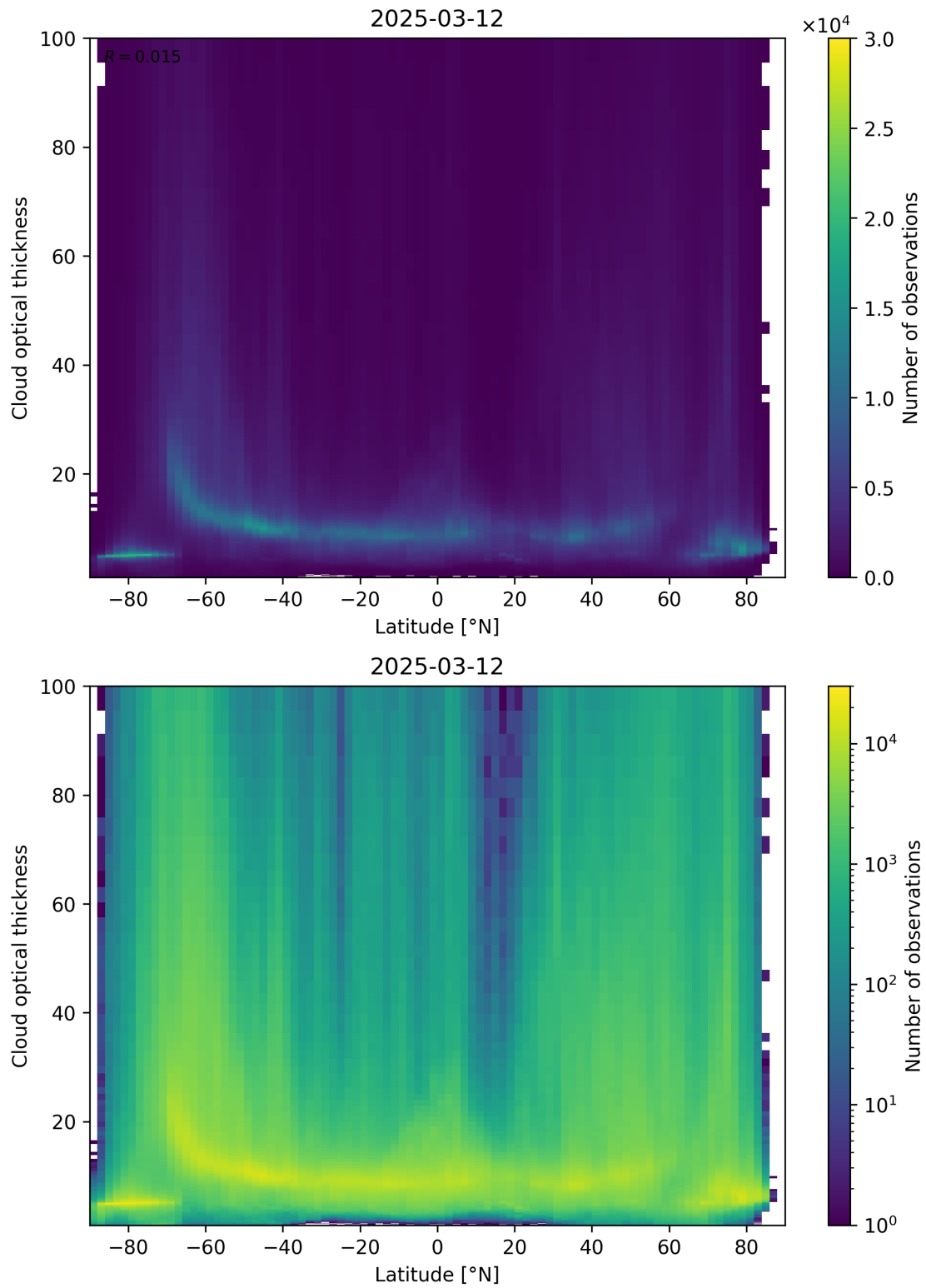


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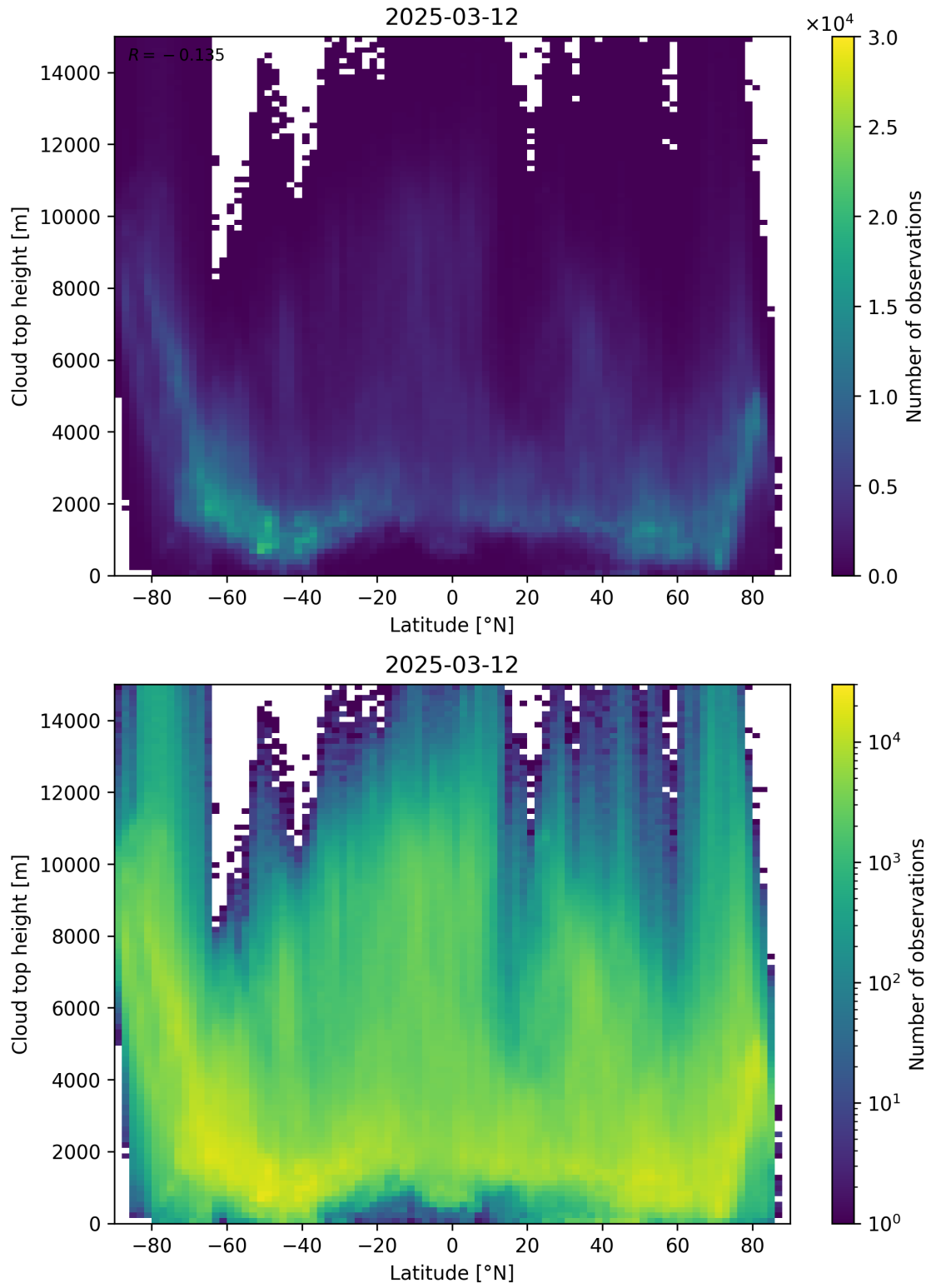


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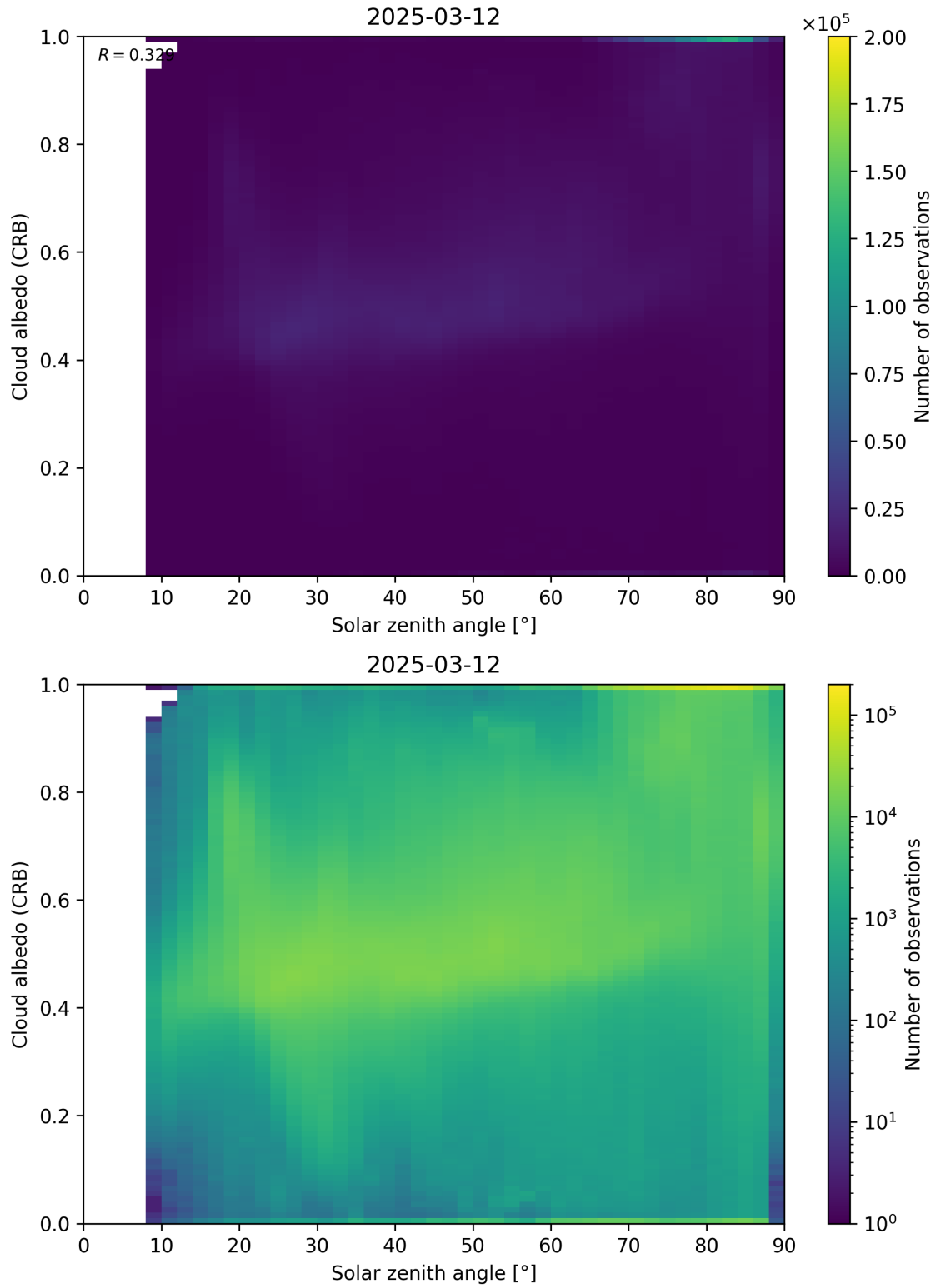


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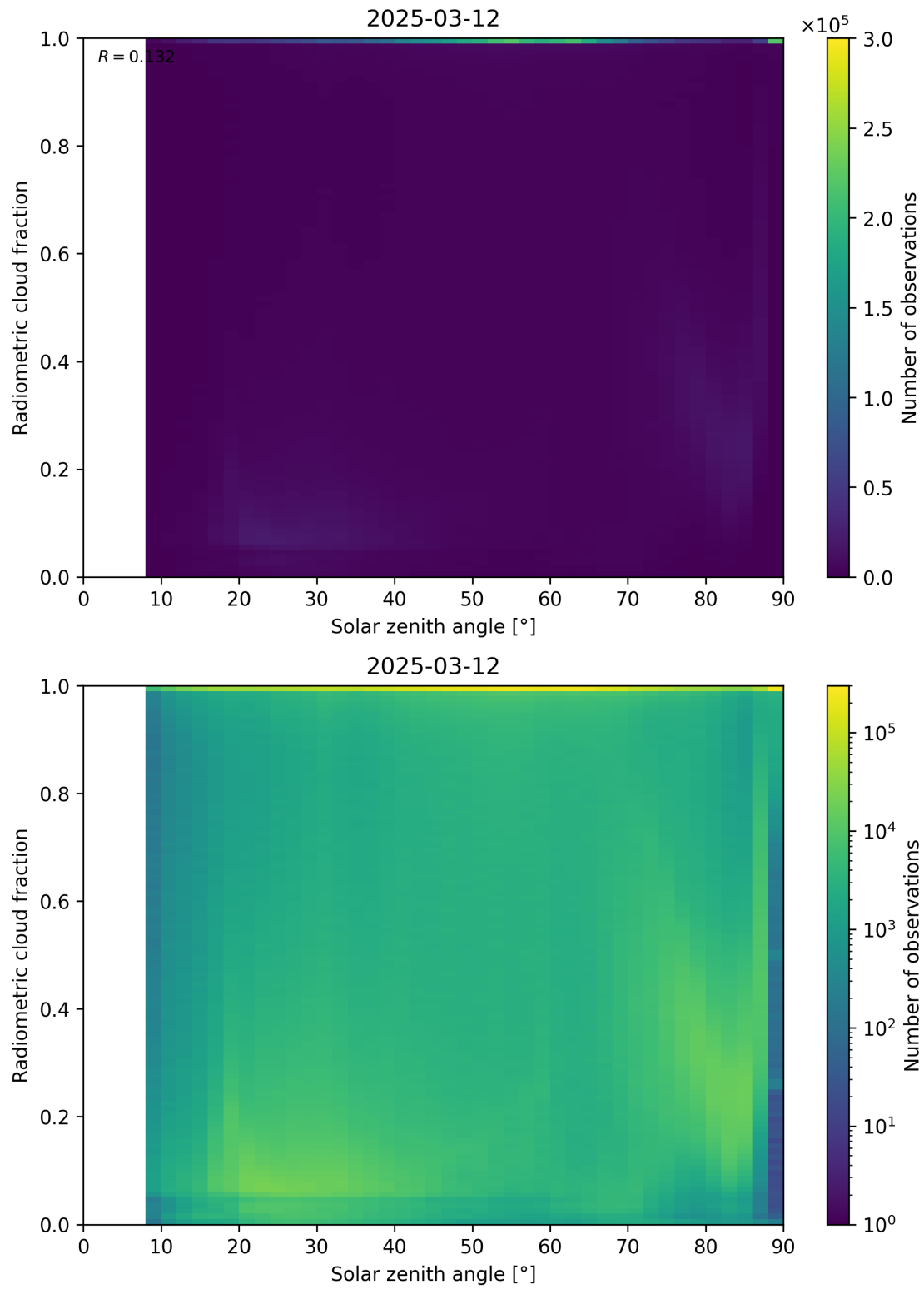


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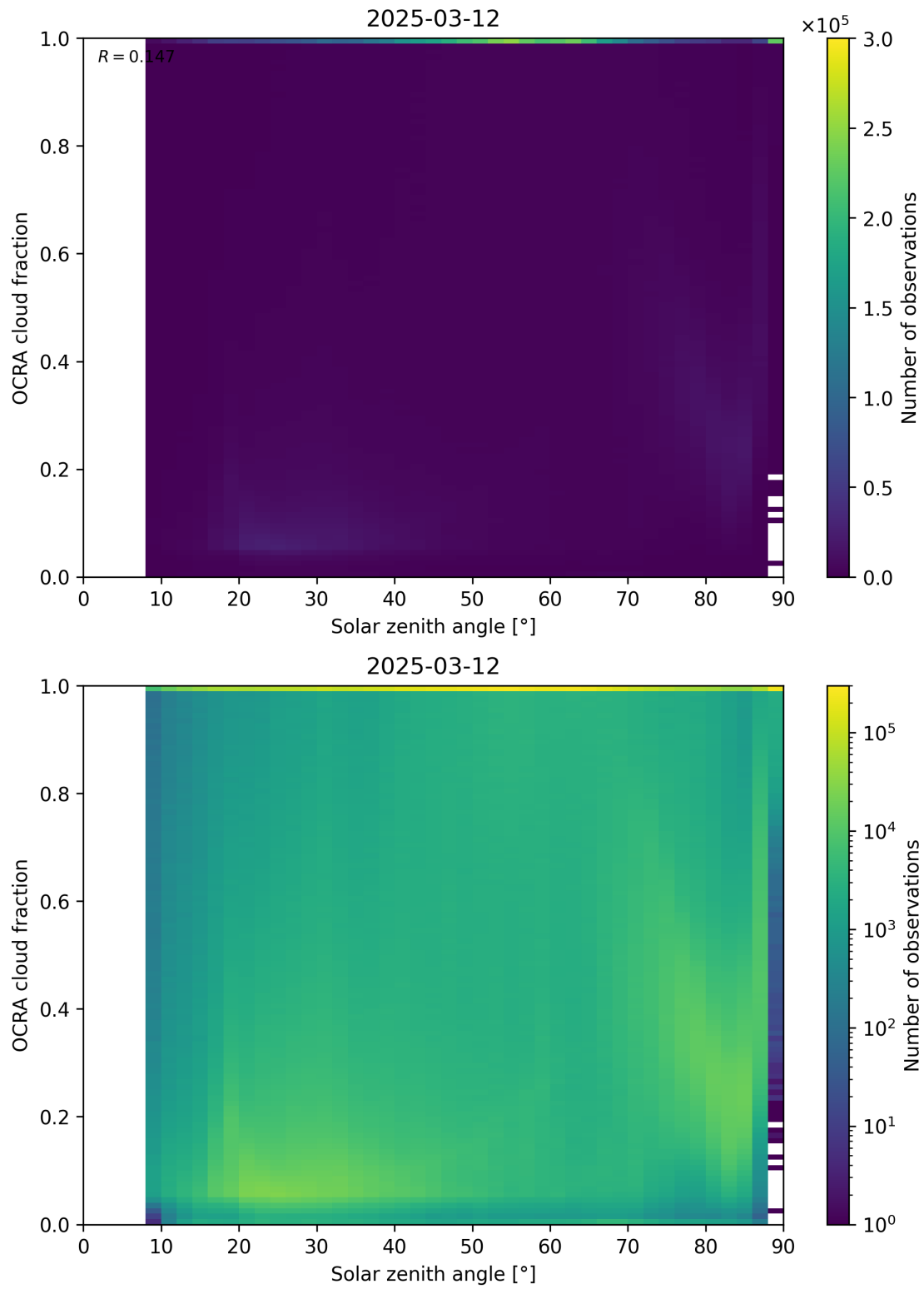


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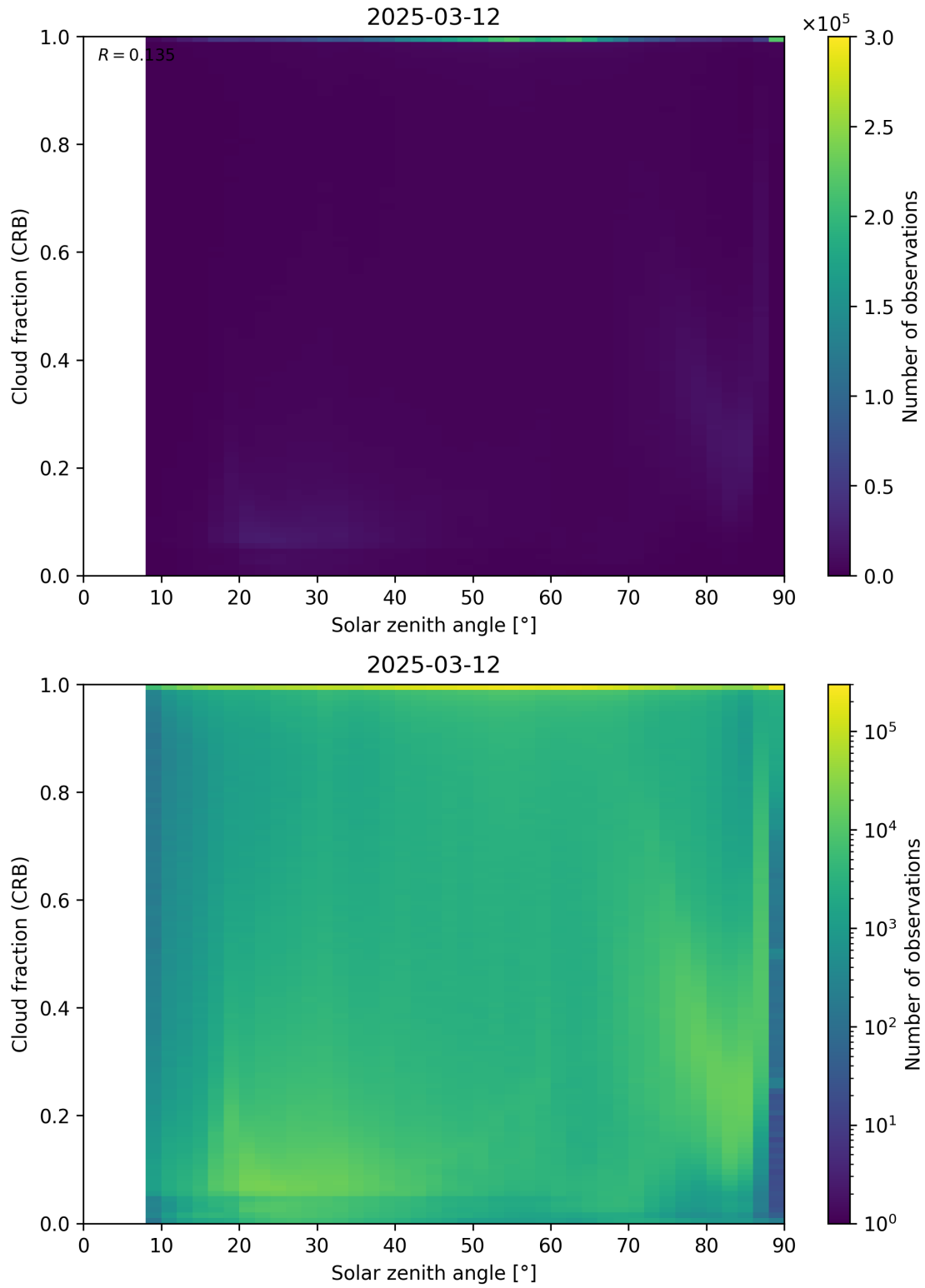


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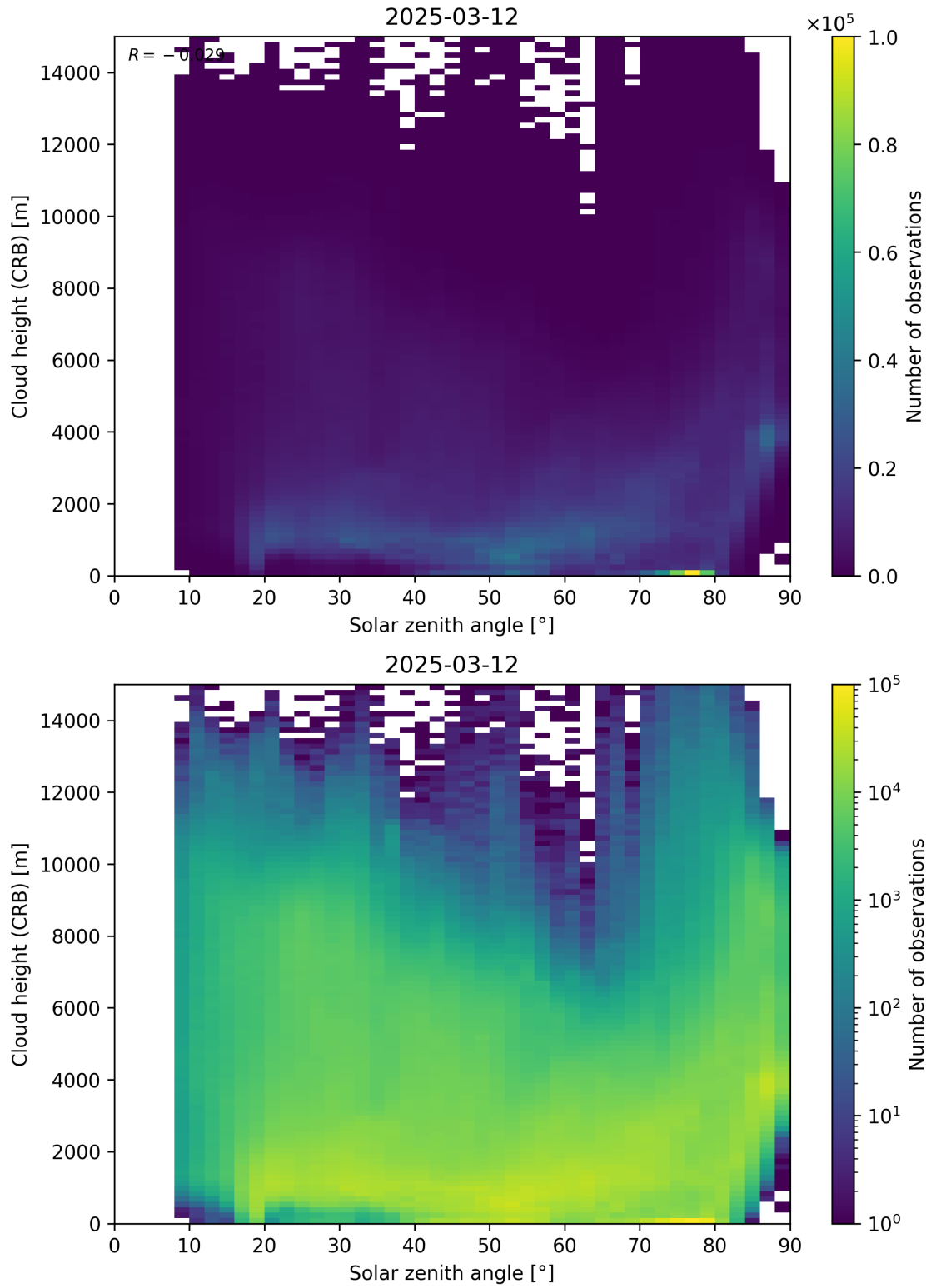


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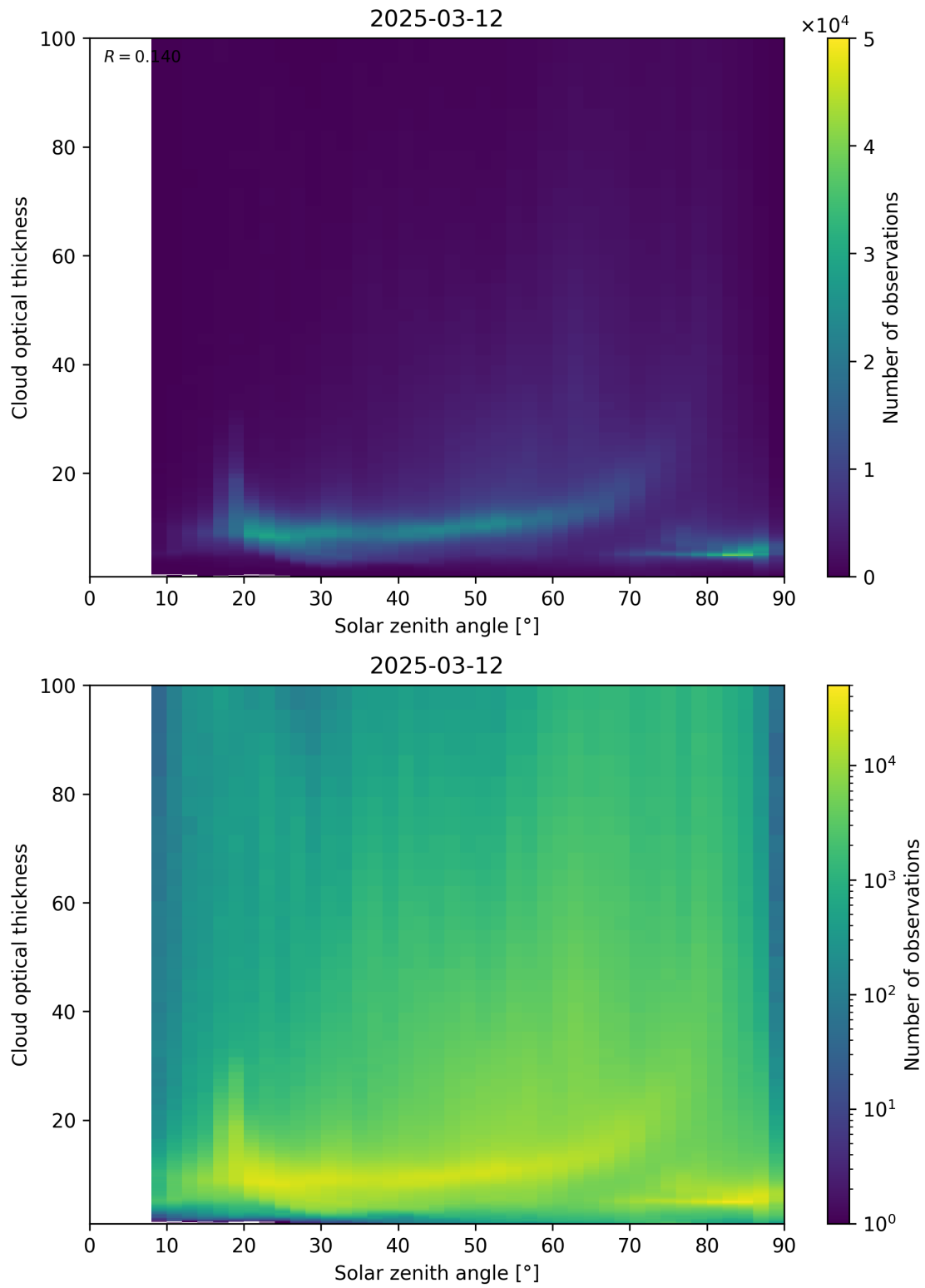


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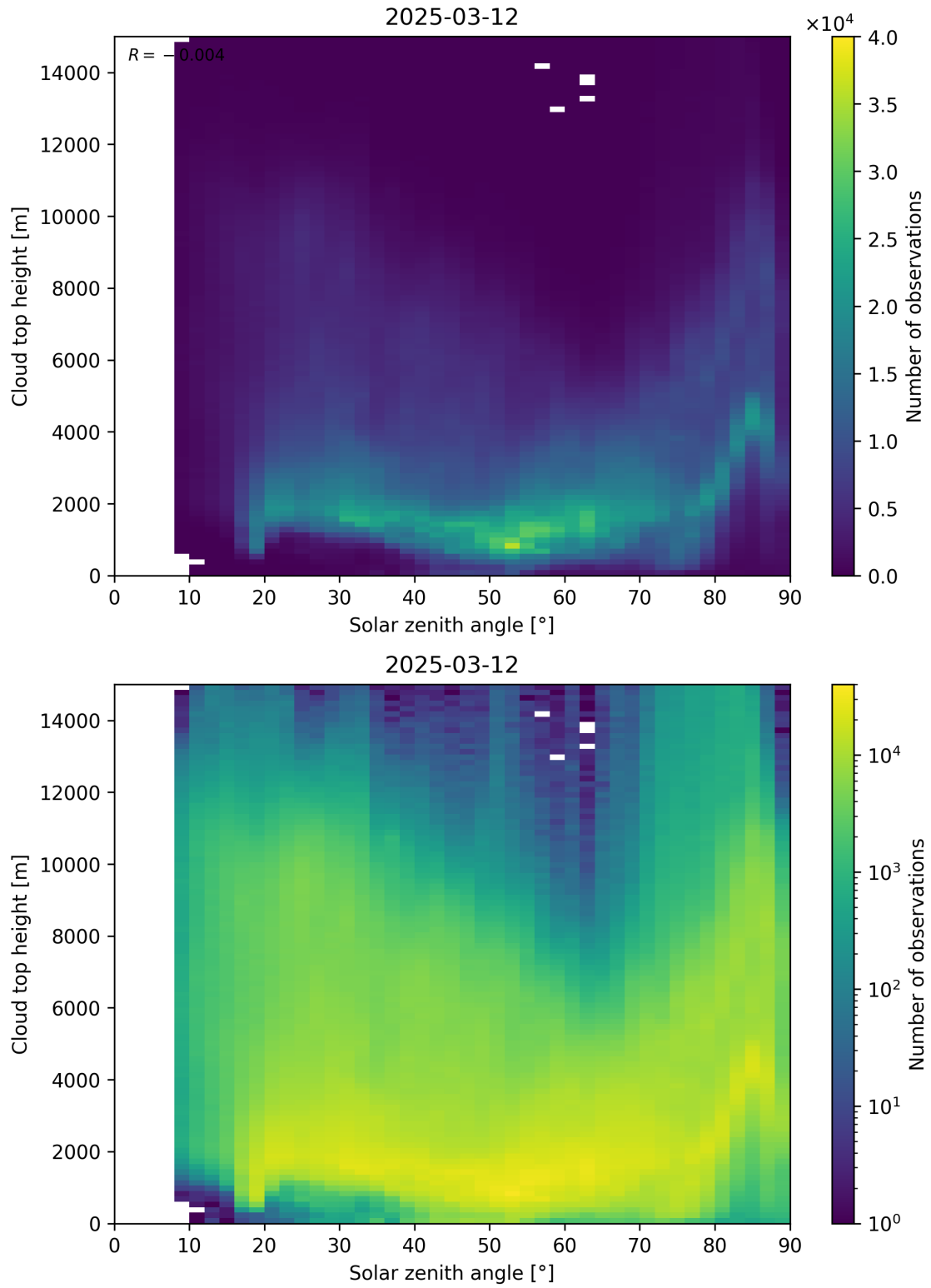


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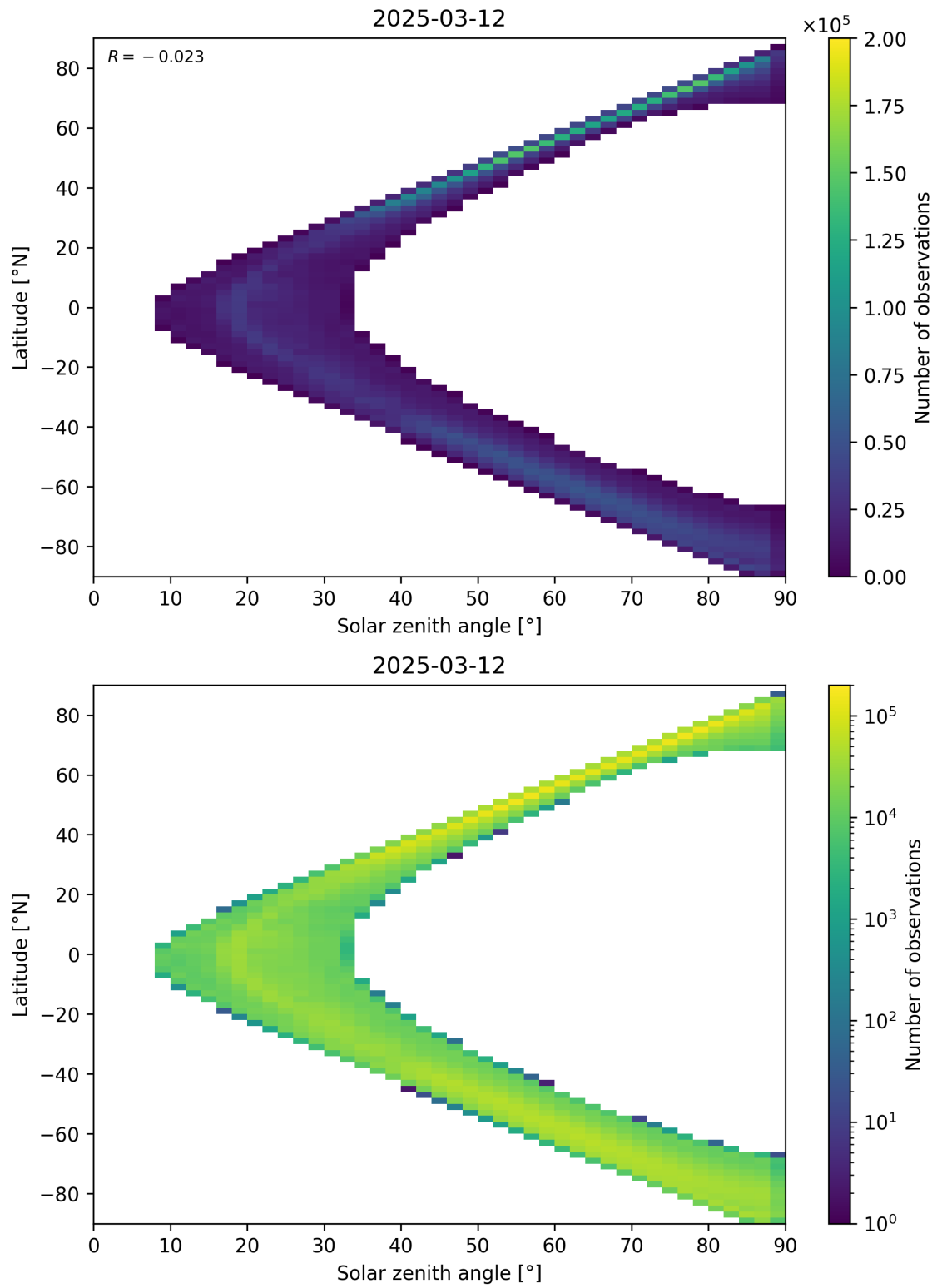


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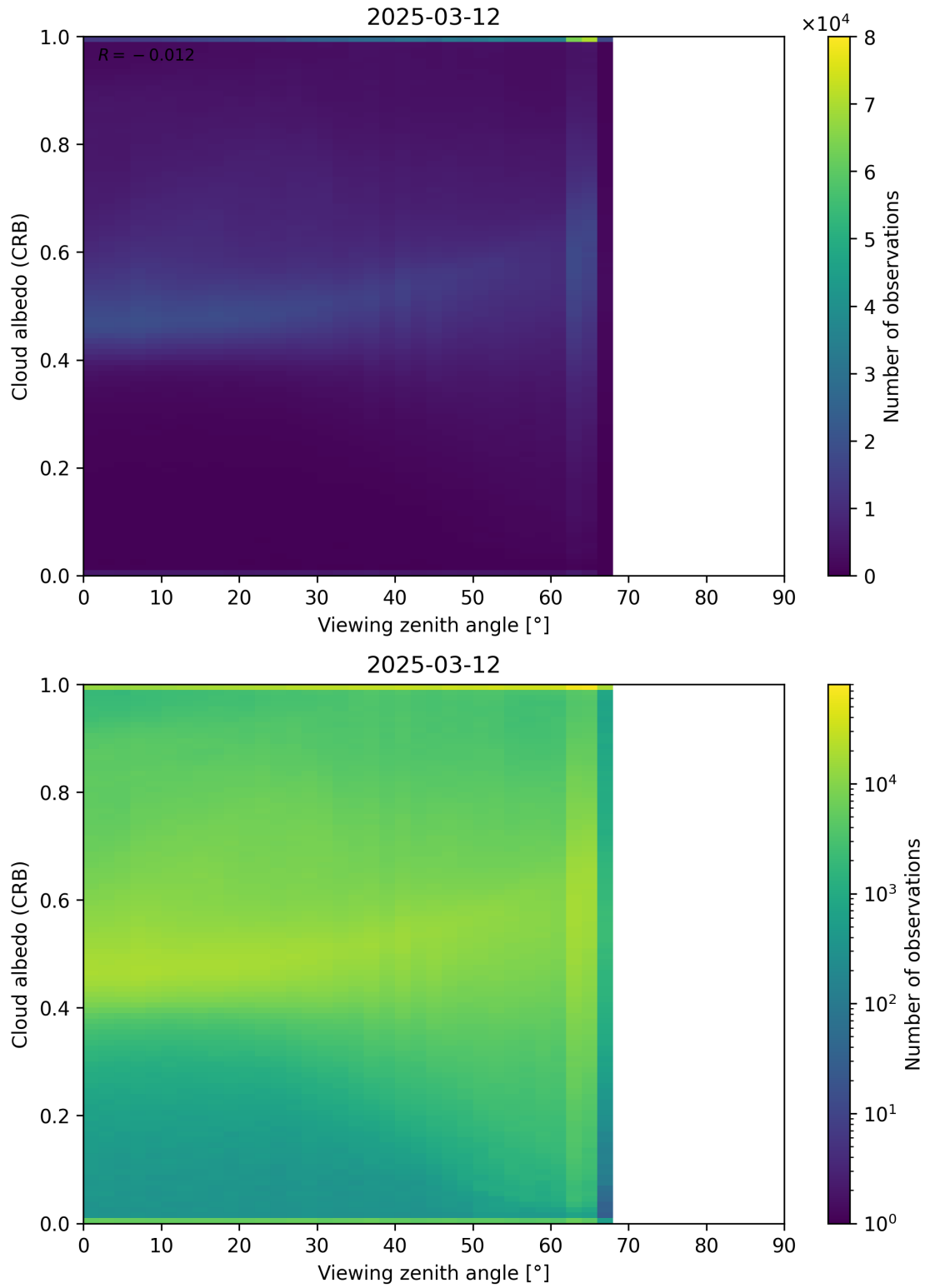


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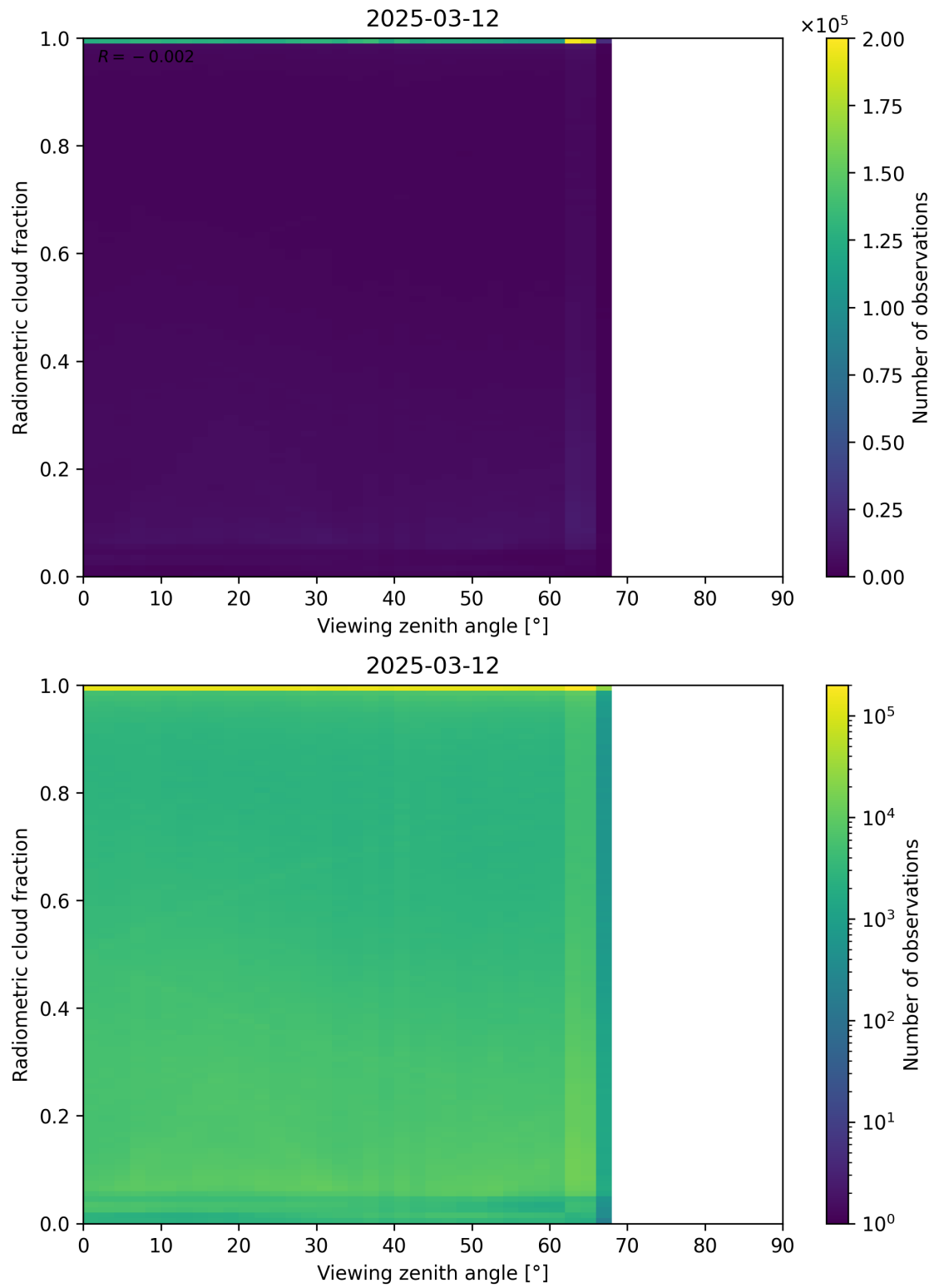


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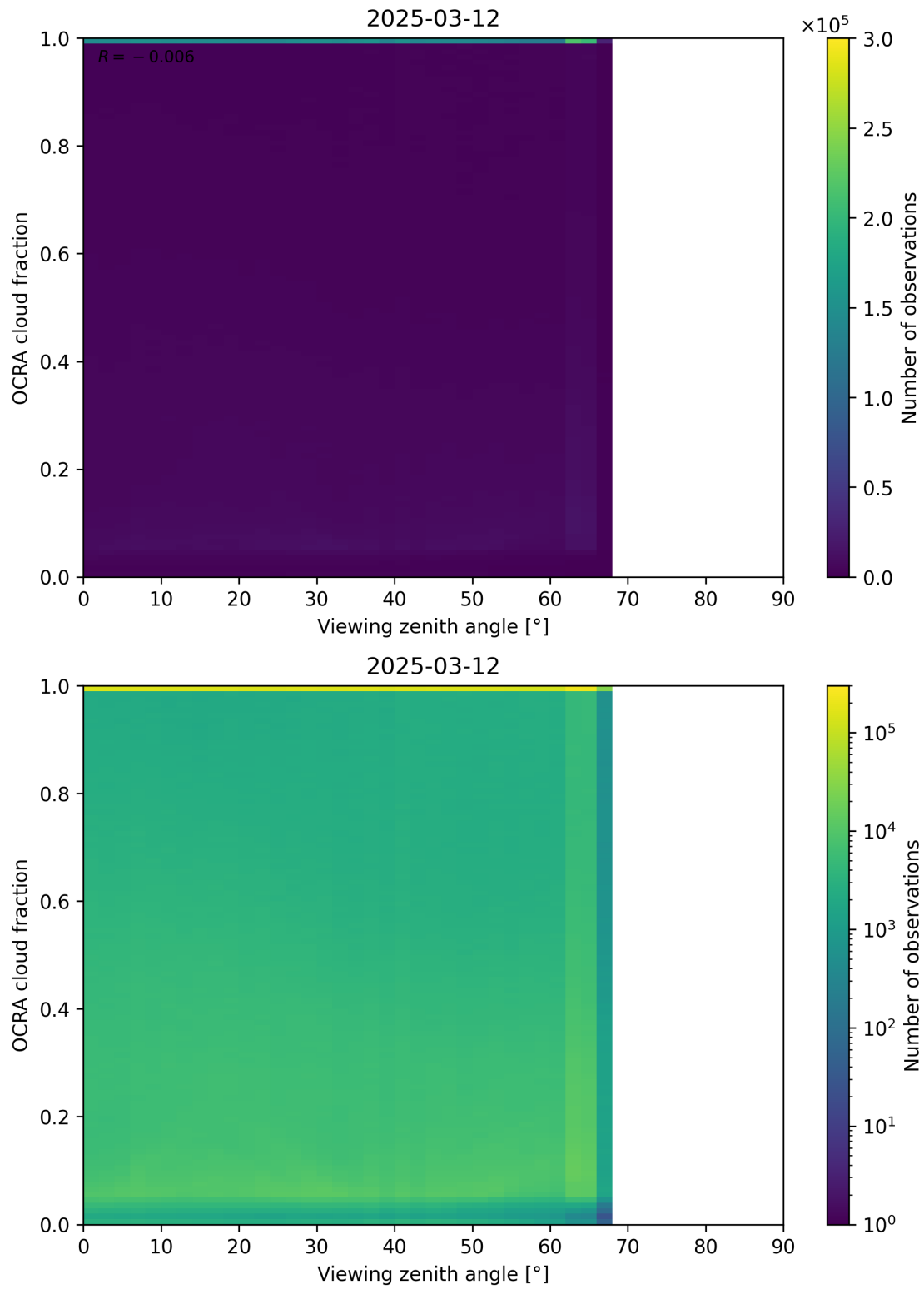


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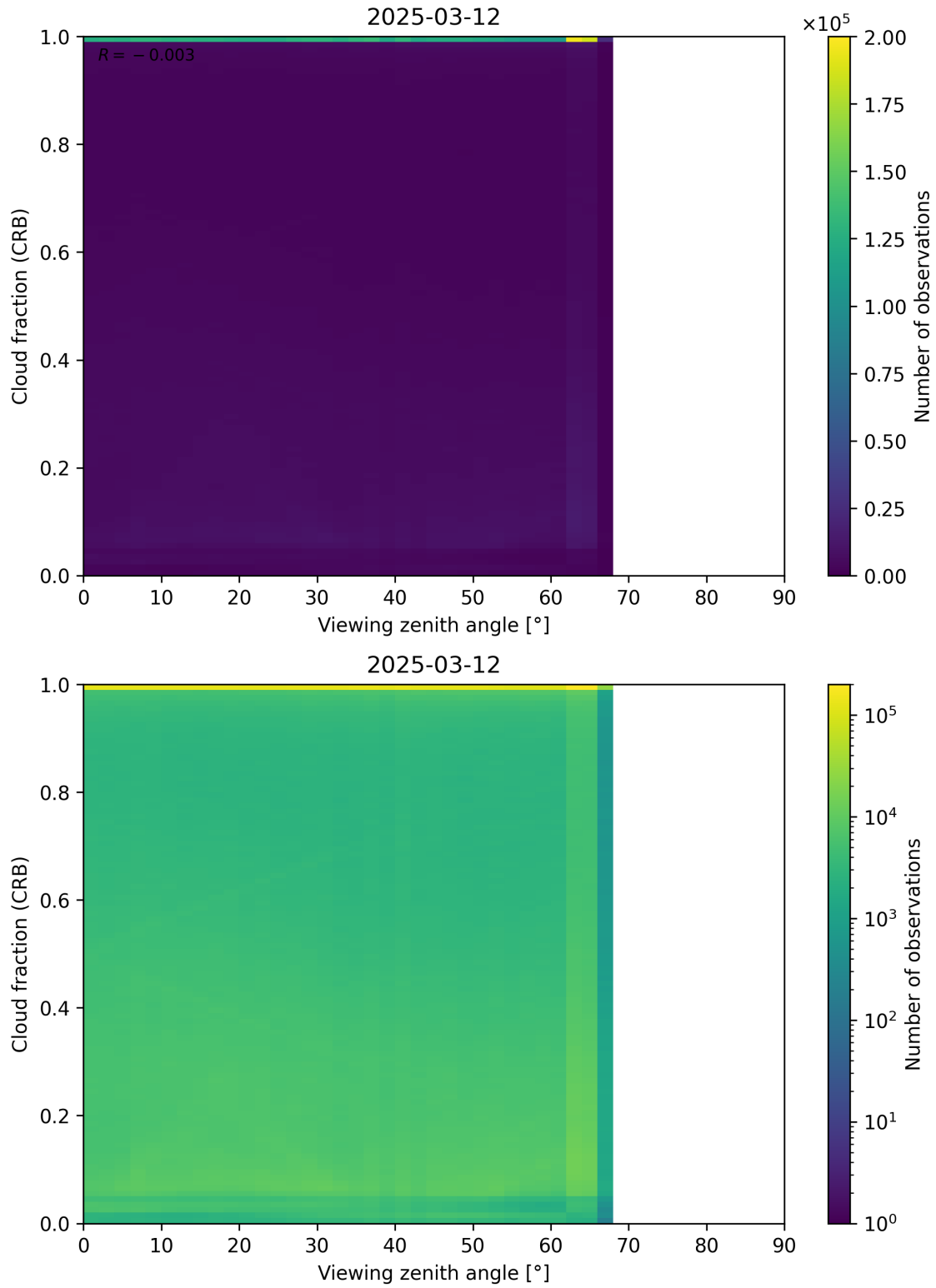


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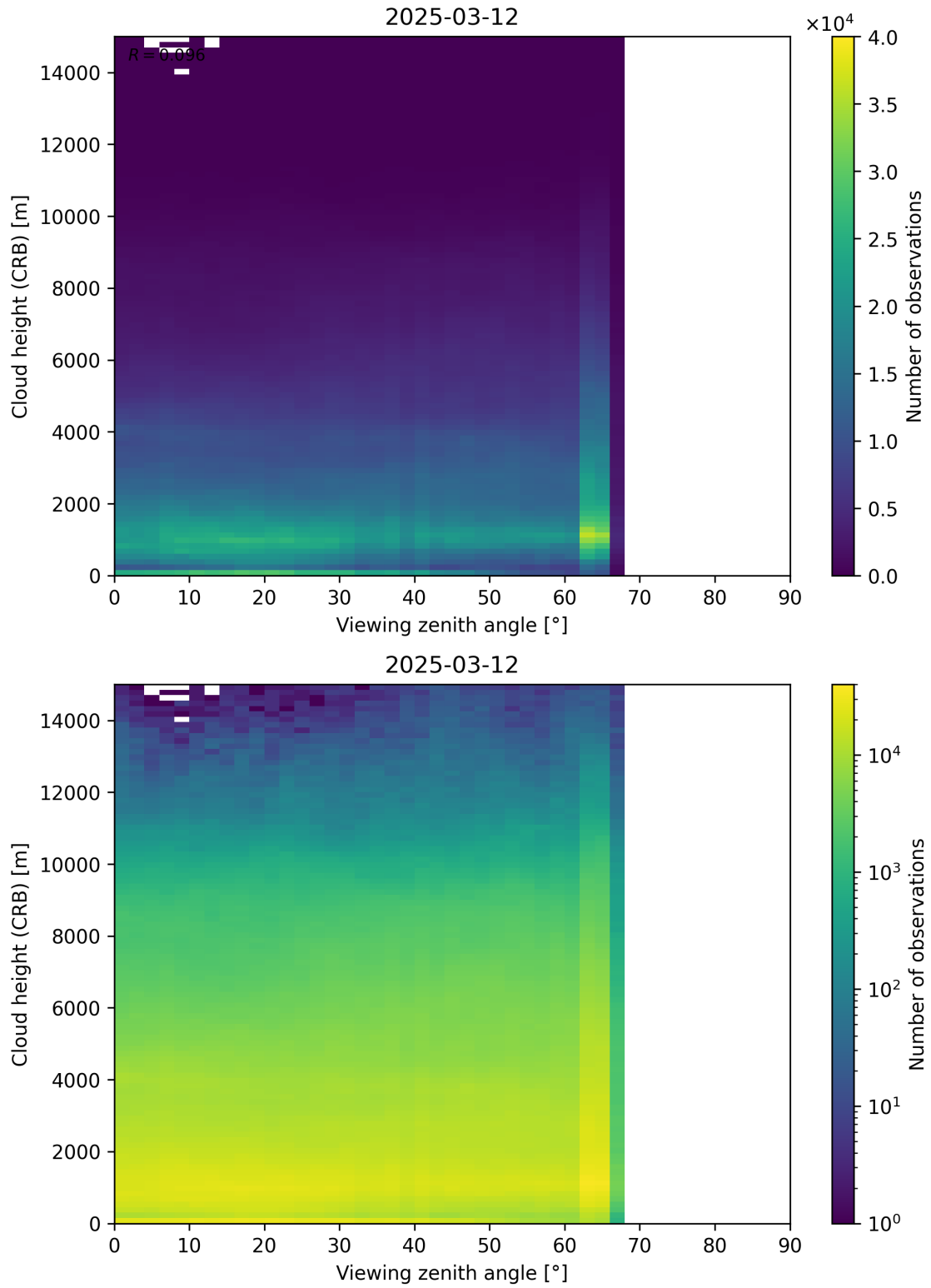


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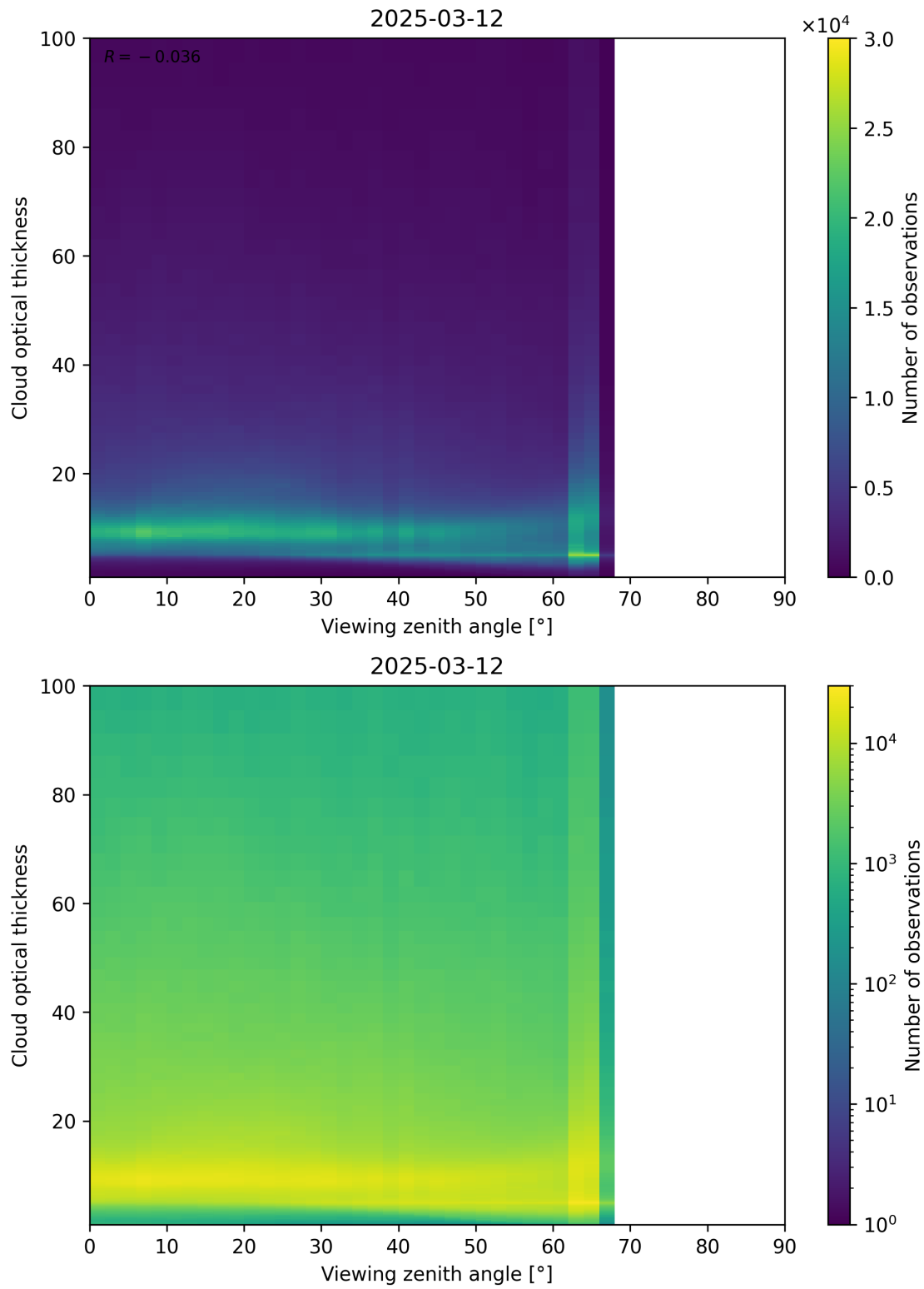


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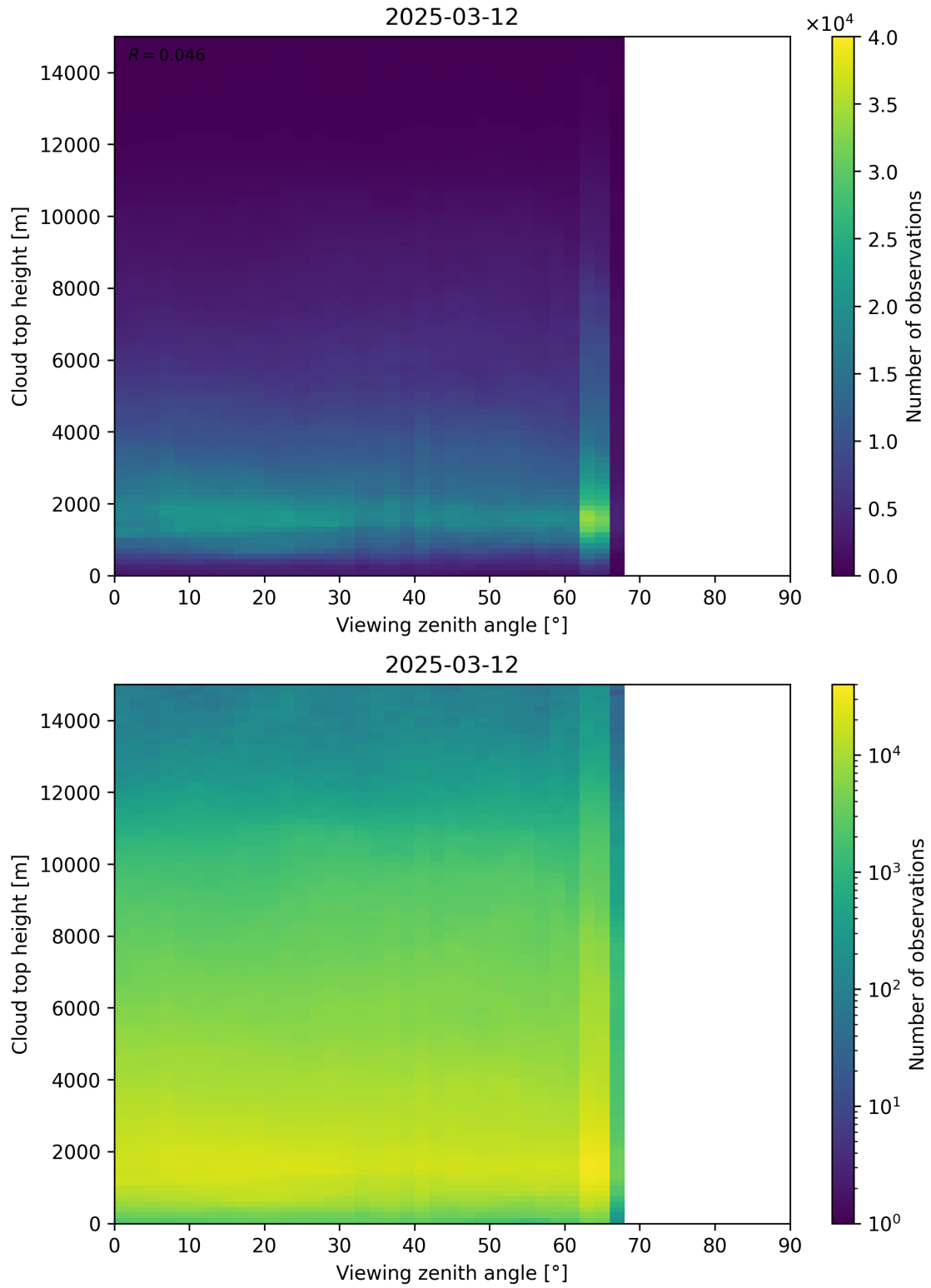


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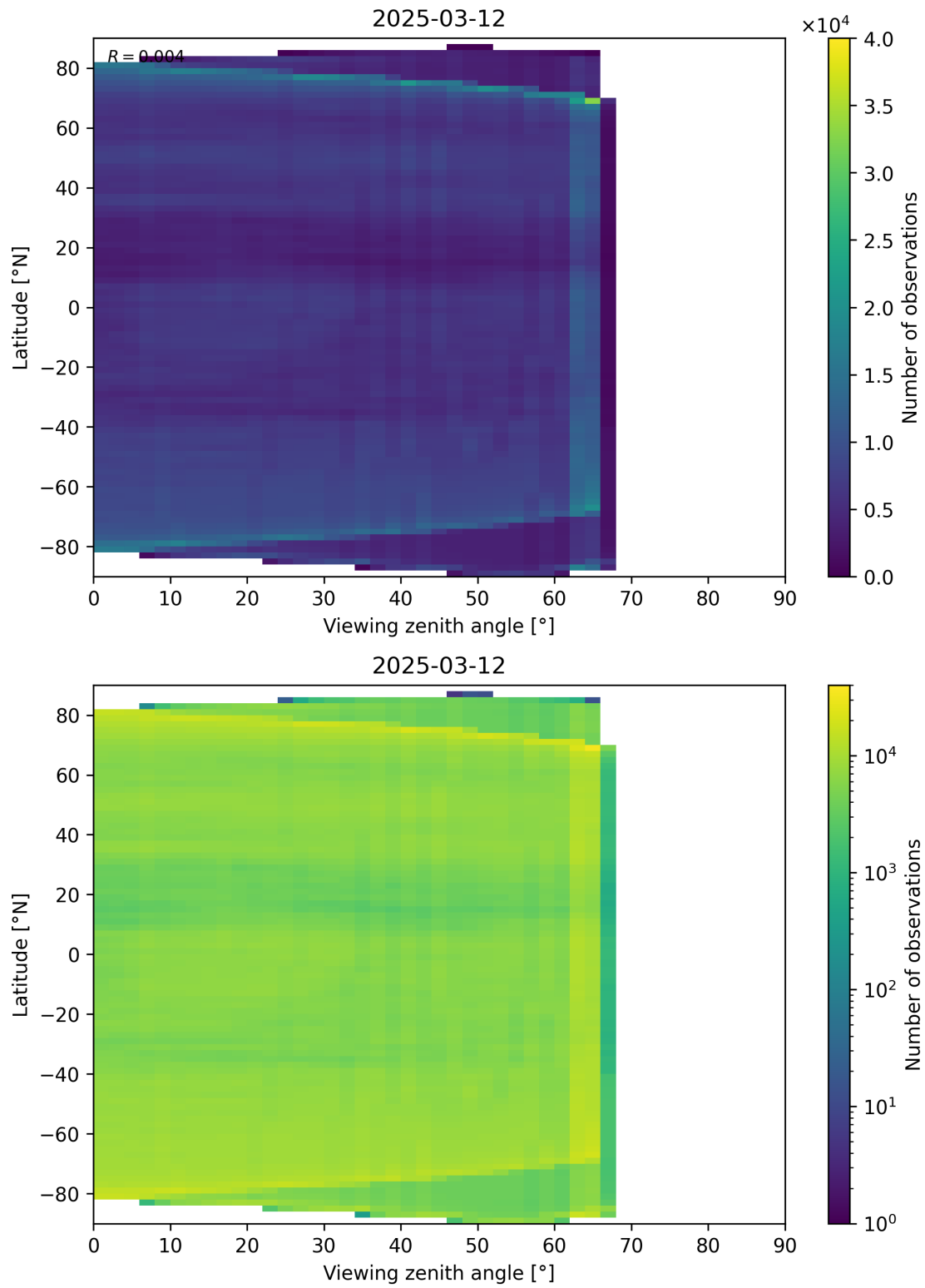


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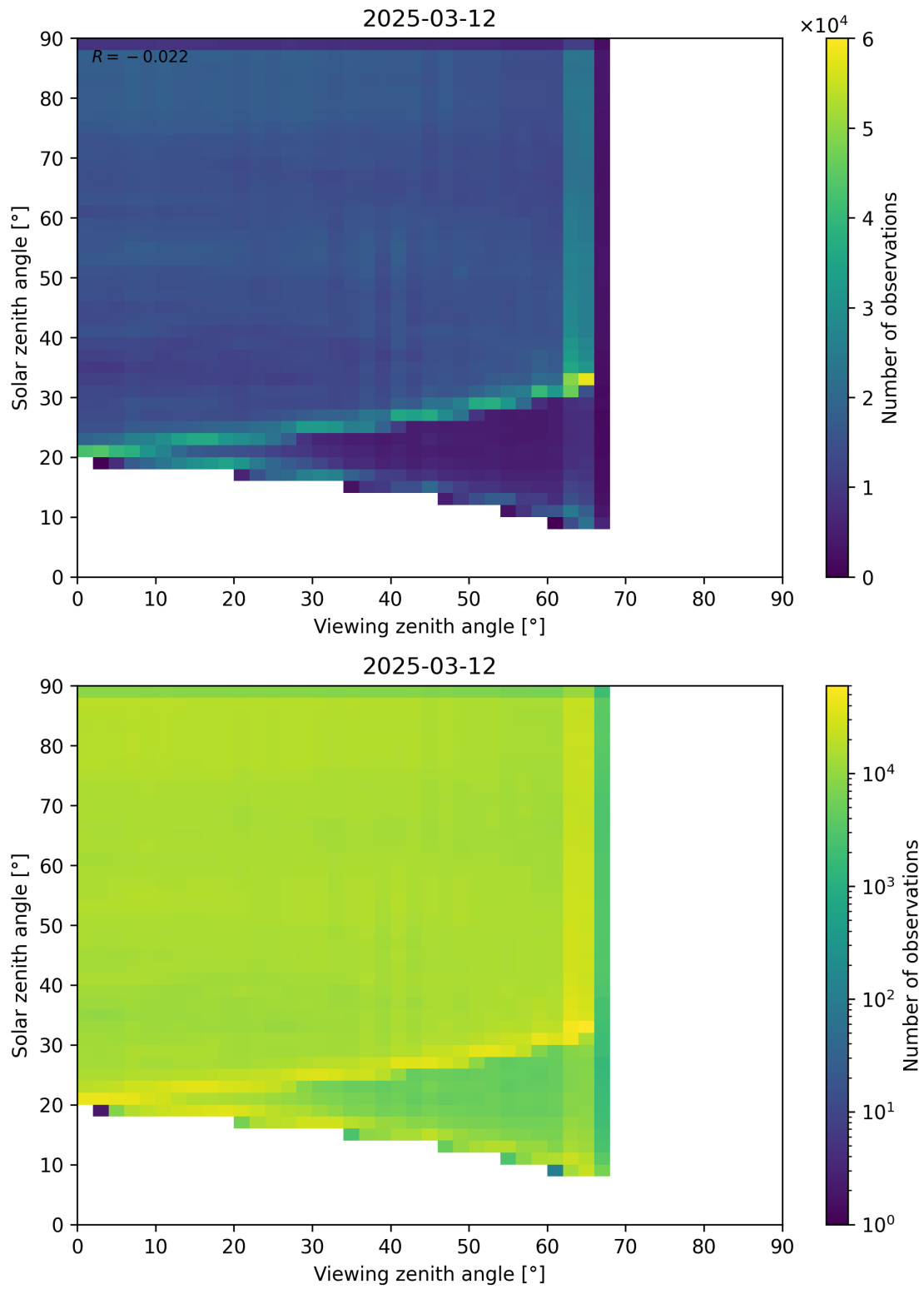


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