

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-02-25 (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 $\frac{1}{2}$ 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]	0.636 ± 0.370	20795872	0.995	0.580	0.800	0.0	1.000
cloud fraction [1]	0.561 ± 0.345	20795872	0.995	0.734	0.534	0.0	1.000
cloud top height [m]	$(0.397 \pm 0.271) \times 10^4$	20795872	1.575×10^3	3.837×10^3	3.325×10^3	0.0	2.000×10^4
cloud optical thickness [1]	18.0 ± 33.5	20795872	9.34	9.81	9.14	1.000	250
cloud fraction crb [1]	0.561 ± 0.345	20795872	0.995	0.734	0.533	0.0	1.000
cloud height crb [m]	$(0.304 \pm 0.228) \times 10^4$	20795872	1.125×10^3	3.192×10^3	2.510×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.597 ± 0.212	20795872	0.995	0.277	0.578	0.0	1.000
surface albedo fitted [1]	0.262 ± 0.342	20795872	1.500×10^{-2}	0.468	4.086×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.250 ± 0.330	20795872	1.500×10^{-2}	0.463	3.067×10^{-2}	0.0	1.000
fitted root mean square [1]	$(7.084 \pm 7.988) \times 10^{-4}$	20795872	5.000×10^{-5}	8.550×10^{-4}	4.570×10^{-4}	9.690×10^{-7}	0.112
fitted root mean square crb [1]	$(6.348 \pm 7.407) \times 10^{-4}$	20795872	5.000×10^{-5}	7.975×10^{-4}	3.524×10^{-4}	7.157×10^{-7}	0.115
wavelength shift [nm]	$(8.136 \pm 6.995) \times 10^{-3}$	20795872	9.000×10^{-4}	9.670×10^{-3}	7.799×10^{-3}	-5.394×10^{-2}	8.695×10^{-2}
cloud fraction apriori [1]	0.566 ± 0.349	20795872	0.995	0.764	0.542	0.0	1.000
reflectance blue ocra [1]	0.577 ± 0.232	20795872	0.265	0.409	0.563	0.129	2.00
reflectance green ocra [1]	0.529 ± 0.261	20795872	0.175	0.481	0.522	8.127×10^{-2}	2.01
reflectance continuum aband [1]	0.482 ± 0.287	20795872	4.500×10^{-2}	0.498	0.494	1.099×10^{-2}	4.70

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	0.370	0.950	1.000	1.000	1.000	1.000
cloud fraction [1]	2.051×10^{-2}	6.689×10^{-2}	0.102	0.149	0.238	0.972	1.000	1.000	1.000	1.000
cloud top height [m]	279	795	1.134×10^3	1.412×10^3	1.790×10^3	5.627×10^3	6.757×10^3	7.790×10^3	9.174×10^3	1.171×10^4
cloud optical thickness [1]	1.000	2.65	3.79	4.65	5.55	15.4	22.9	33.7	57.5	250
cloud fraction crb [1]	2.022×10^{-2}	6.596×10^{-2}	0.101	0.148	0.237	0.971	1.000	1.000	1.000	1.000
cloud height crb [m]	12.5	349	645	881	1.194×10^3	4.386×10^3	5.418×10^3	6.368×10^3	7.506×10^3	9.561×10^3
cloud albedo crb [1]	1.594×10^{-2}	0.241	0.358	0.419	0.467	0.744	0.830	0.896	0.975	1.000
surface albedo fitted [1]	0.0	6.889×10^{-3}	1.075×10^{-2}	1.406×10^{-2}	1.905×10^{-2}	0.487	0.782	0.894	0.959	1.000
surface albedo fitted crb [1]	0.0	5.420×10^{-3}	7.931×10^{-3}	1.036×10^{-2}	1.408×10^{-2}	0.477	0.763	0.861	0.902	0.953
fitted root mean square [1]	1.624×10^{-5}	3.206×10^{-5}	5.260×10^{-5}	8.387×10^{-5}	1.502×10^{-4}	1.005×10^{-3}	1.358×10^{-3}	1.715×10^{-3}	2.221×10^{-3}	3.369×10^{-3}
fitted root mean square crb [1]	1.022×10^{-5}	2.463×10^{-5}	4.276×10^{-5}	6.673×10^{-5}	1.131×10^{-4}	9.106×10^{-4}	1.272×10^{-3}	1.630×10^{-3}	2.149×10^{-3}	3.272×10^{-3}
wavelength shift [nm]	-8.848×10^{-3}	-1.232×10^{-3}	2.417×10^{-4}	1.339×10^{-3}	3.104×10^{-3}	1.277×10^{-2}	1.501×10^{-2}	1.695×10^{-2}	1.959×10^{-2}	2.575×10^{-2}
cloud fraction apriori [1]	2.948×10^{-2}	6.516×10^{-2}	9.822×10^{-2}	0.144	0.236	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.235	0.259	0.281	0.311	0.365	0.775	0.838	0.885	0.928	1.09
reflectance green ocra [1]	0.153	0.173	0.192	0.219	0.275	0.756	0.827	0.879	0.927	1.05
reflectance continuum aband [1]	2.960×10^{-2}	5.343×10^{-2}	8.517×10^{-2}	0.129	0.223	0.720	0.800	0.854	0.909	1.05

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

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.591 ± 0.392	8212254	0.770	0.720	0.0	1.000	0.180	0.950
cloud fraction [1]	0.522 ± 0.350	8212254	0.730	0.463	0.0	1.000	0.191	0.922
cloud top height [m]	$(0.390 \pm 0.270) \times 10^4$	8212254	3.551×10^3	3.222×10^3	0.0	2.000×10^4	1.822×10^3	5.373×10^3
cloud optical thickness [1]	24.0 ± 44.9	8212254	12.4	9.78	1.000	250	6.10	18.5
cloud fraction crb [1]	0.521 ± 0.350	8212254	0.729	0.462	0.0	1.000	0.191	0.920
cloud height crb [m]	$(0.314 \pm 0.226) \times 10^4$	8212254	3.212×10^3	2.616×10^3	0.0	2.000×10^4	1.304×10^3	4.516×10^3
cloud albedo crb [1]	0.595 ± 0.210	8212254	0.256	0.579	0.0	1.000	0.471	0.727
surface albedo fitted [1]	0.217 ± 0.253	8212254	0.356	5.484×10^{-2}	0.0	1.000	2.477×10^{-2}	0.381
surface albedo fitted crb [1]	0.206 ± 0.243	8212254	0.362	4.197×10^{-2}	0.0	1.000	1.820×10^{-2}	0.380
fitted root mean square [1]	$(5.705 \pm 7.135) \times 10^{-4}$	8212254	6.460×10^{-4}	3.352×10^{-4}	9.690×10^{-7}	9.852×10^{-2}	1.208×10^{-4}	7.669×10^{-4}
fitted root mean square crb [1]	$(4.764 \pm 6.207) \times 10^{-4}$	8212254	5.252×10^{-4}	2.322×10^{-4}	9.119×10^{-7}	3.454×10^{-2}	8.709×10^{-5}	6.123×10^{-4}
wavelength shift [nm]	$(7.398 \pm 6.936) \times 10^{-3}$	8212254	9.246×10^{-3}	6.750×10^{-3}	-5.394×10^{-2}	5.936×10^{-2}	2.517×10^{-3}	1.176×10^{-2}
cloud fraction apriori [1]	0.527 ± 0.354	8212254	0.763	0.470	0.0	1.000	0.190	0.952
reflectance blue ocr [1]	0.546 ± 0.215	8212254	0.353	0.527	0.129	1.99	0.359	0.712
reflectance green ocr [1]	0.492 ± 0.241	8212254	0.421	0.477	9.056×10^{-2}	2.01	0.266	0.687
reflectance continuum aband [1]	0.446 ± 0.269	8212254	0.443	0.445	1.219×10^{-2}	3.41	0.212	0.655

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]	0.665 ± 0.351	12583618	0.550	0.810	0.0	1.000	0.400	0.950
cloud fraction [1]	0.587 ± 0.340	12583618	0.716	0.575	0.0	1.000	0.276	0.992
cloud top height [m]	$(0.401 \pm 0.271) \times 10^4$	12583618	4.029×10^3	3.404×10^3	0.0	2.000×10^4	1.767×10^3	5.796×10^3
cloud optical thickness [1]	14.1 ± 22.3	12583618	8.52	8.77	1.000	250	5.29	13.8
cloud fraction crb [1]	0.587 ± 0.340	12583618	0.717	0.576	0.0	1.000	0.275	0.992
cloud height crb [m]	$(0.297 \pm 0.229) \times 10^4$	12583618	3.156×10^3	2.443×10^3	0.0	2.000×10^4	1.119×10^3	4.275×10^3
cloud albedo crb [1]	0.599 ± 0.213	12583618	0.290	0.577	0.0	1.000	0.465	0.755
surface albedo fitted [1]	0.291 ± 0.387	12583618	0.752	3.374×10^{-2}	0.0	1.000	1.626×10^{-2}	0.769
surface albedo fitted crb [1]	0.278 ± 0.374	12583618	0.752	2.559×10^{-2}	0.0	1.000	1.197×10^{-2}	0.764
fitted root mean square [1]	$(7.983 \pm 8.377) \times 10^{-4}$	12583618	9.683×10^{-4}	5.644×10^{-4}	1.118×10^{-6}	0.112	1.815×10^{-4}	1.150×10^{-3}
fitted root mean square crb [1]	$(7.381 \pm 7.926) \times 10^{-4}$	12583618	9.389×10^{-4}	4.754×10^{-4}	7.157×10^{-7}	0.115	1.441×10^{-4}	1.083×10^{-3}
wavelength shift [nm]	$(8.617 \pm 6.992) \times 10^{-3}$	12583618	9.731×10^{-3}	8.524×10^{-3}	-4.690×10^{-2}	8.695×10^{-2}	3.578×10^{-3}	1.331×10^{-2}
cloud fraction apriori [1]	0.591 ± 0.343	12583618	0.726	0.584	0.0	1.000	0.274	1.000
reflectance blue oca [1]	0.598 ± 0.240	12583618	0.442	0.593	0.147	2.00	0.371	0.812
reflectance green oca [1]	0.552 ± 0.271	12583618	0.515	0.559	8.127×10^{-2}	1.88	0.283	0.797
reflectance continuum aband [1]	0.506 ± 0.296	12583618	0.528	0.532	1.099×10^{-2}	4.70	0.233	0.760

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]	0.748 ± 0.316	13219937	0.430	0.900	0.0	1.000	0.570	1.000
cloud fraction [1]	0.597 ± 0.366	13219937	0.782	0.638	0.0	1.000	0.218	1.000
cloud top height [m]	$(0.342 \pm 0.248) \times 10^4$	13219937	3.050×10^3	2.613×10^3	0.0	2.000×10^4	1.586×10^3	4.636×10^3
cloud optical thickness [1]	17.6 ± 26.4	13219937	9.58	10.3	1.000	250	7.30	16.9
cloud fraction crb [1]	0.596 ± 0.366	13219937	0.784	0.637	0.0	1.000	0.216	1.000
cloud height crb [m]	$(0.275 \pm 0.224) \times 10^4$	13219937	2.877×10^3	1.999×10^3	0.0	2.000×10^4	1.052×10^3	3.929×10^3
cloud albedo crb [1]	0.555 ± 0.166	13219937	0.201	0.537	0.0	1.000	0.456	0.658
surface albedo fitted [1]	$(6.018 \pm 14.020) \times 10^{-2}$	13219937	2.366×10^{-2}	2.328×10^{-2}	0.0	1.000	1.412×10^{-2}	3.778×10^{-2}
surface albedo fitted crb [1]	$(5.350 \pm 13.719) \times 10^{-2}$	13219937	1.796×10^{-2}	1.726×10^{-2}	0.0	1.000	1.039×10^{-2}	2.836×10^{-2}
fitted root mean square [1]	$(6.546 \pm 7.990) \times 10^{-4}$	13219937	8.465×10^{-4}	3.494×10^{-4}	9.690×10^{-7}	9.546×10^{-2}	9.938×10^{-5}	9.459×10^{-4}
fitted root mean square crb [1]	$(6.354 \pm 7.677) \times 10^{-4}$	13219937	8.302×10^{-4}	3.222×10^{-4}	8.713×10^{-7}	9.745×10^{-2}	9.225×10^{-5}	9.224×10^{-4}
wavelength shift [nm]	$(7.638 \pm 7.393) \times 10^{-3}$	13219937	1.003×10^{-2}	7.081×10^{-3}	-5.232×10^{-2}	8.695×10^{-2}	2.426×10^{-3}	1.246×10^{-2}
cloud fraction apriori [1]	0.595 ± 0.371	13219937	0.794	0.632	0.0	1.000	0.206	1.000
reflectance blue ocr [1]	0.502 ± 0.197	13219937	0.318	0.469	0.169	1.96	0.331	0.649
reflectance green ocr [1]	0.442 ± 0.225	13219937	0.387	0.407	9.226×10^{-2}	2.00	0.233	0.620
reflectance continuum aband [1]	0.380 ± 0.263	13219937	0.466	0.352	1.099×10^{-2}	3.24	0.131	0.597

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]	0.451 ± 0.372	6136215	0.700	0.600	0.0	1.000	0.0	0.700
cloud fraction [1]	0.503 ± 0.289	6136215	0.432	0.463	0.0	1.000	0.276	0.707
cloud top height [m]	$(0.510 \pm 0.273) \times 10^4$	6136215	3.623×10^3	4.992×10^3	0.0	2.000×10^4	3.092×10^3	6.715×10^3
cloud optical thickness [1]	15.6 ± 37.6	6136215	5.65	5.74	1.000	250	4.31	9.96
cloud fraction crb [1]	0.504 ± 0.289	6136215	0.433	0.464	0.0	1.000	0.276	0.709
cloud height crb [m]	$(0.362 \pm 0.221) \times 10^4$	6136215	2.991×10^3	3.390×10^3	0.0	2.000×10^4	1.955×10^3	4.946×10^3
cloud albedo crb [1]	0.675 ± 0.256	6136215	0.359	0.717	0.0	1.000	0.524	0.882
surface albedo fitted [1]	0.655 ± 0.302	6136215	0.607	0.784	0.0	1.000	0.320	0.926
surface albedo fitted crb [1]	0.633 ± 0.285	6136215	0.562	0.772	0.0	1.000	0.320	0.882
fitted root mean square [1]	$(8.255 \pm 7.882) \times 10^{-4}$	6136215	8.006×10^{-4}	6.259×10^{-4}	1.351×10^{-6}	0.108	3.141×10^{-4}	1.115×10^{-3}
fitted root mean square crb [1]	$(6.690 \pm 6.963) \times 10^{-4}$	6136215	7.804×10^{-4}	4.405×10^{-4}	7.157×10^{-7}	6.560×10^{-2}	1.736×10^{-4}	9.540×10^{-4}
wavelength shift [nm]	$(9.256 \pm 6.059) \times 10^{-3}$	6136215	8.683×10^{-3}	9.208×10^{-3}	-3.386×10^{-2}	6.697×10^{-2}	4.767×10^{-3}	1.345×10^{-2}
cloud fraction apriori [1]	0.519 ± 0.292	6136215	0.445	0.484	0.0	1.000	0.287	0.732
reflectance blue ocr [1]	0.723 ± 0.231	6136215	0.321	0.798	0.129	2.00	0.564	0.885
reflectance green ocr [1]	0.698 ± 0.252	6136215	0.355	0.783	8.127×10^{-2}	1.94	0.528	0.883
reflectance continuum aband [1]	0.681 ± 0.232	6136215	0.339	0.734	1.510×10^{-2}	4.70	0.513	0.852

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	-1.420×10^{-2}	1.306×10^{-2}	-2.102×10^{-2}	2.425×10^{-2}	-3.621×10^{-2}	-2.124×10^{-2}	8.640×10^{-2}	-1.664×10^{-2}	-2.500×10^{-2}
-1.420×10^{-2}	1.000	2.220×10^{-2}	7.765×10^{-2}	6.462×10^{-2}	0.134	8.005×10^{-2}	1.340×10^{-2}	0.269	9.457×10^{-2}
1.306×10^{-2}	2.220×10^{-2}	1.000	-0.105	-1.781×10^{-3}	0.186	-0.106	8.468×10^{-2}	-5.641×10^{-2}	-0.106
-2.102×10^{-2}	7.765×10^{-2}	-0.105	1.000	-0.113	0.252	1.000	-9.831×10^{-2}	0.299	0.983
2.425×10^{-2}	6.462×10^{-2}	-1.781×10^{-3}	-0.113	1.000	5.137×10^{-2}	-0.112	0.921	0.115	-0.116
-3.621×10^{-2}	0.134	0.186	0.252	5.137×10^{-2}	1.000	0.249	0.103	0.376	0.255
-2.124×10^{-2}	8.005×10^{-2}	-0.106	1.000	-0.112	0.249	1.000	-9.809×10^{-2}	0.300	0.983
8.640×10^{-2}	1.340×10^{-2}	8.468×10^{-2}	-9.831×10^{-2}	0.921	0.103	-9.809×10^{-2}	1.000	-2.805×10^{-2}	-0.107
-1.664×10^{-2}	0.269	-5.641×10^{-2}	0.299	0.115	0.376	0.300	-2.805×10^{-2}	1.000	0.324
-2.500×10^{-2}	9.457×10^{-2}	-0.106	0.983	-0.116	0.255	0.983	-0.107	0.324	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
387	-6.01	12.9	-0.143	1.291×10^3	-23.9	-0.144	3.871×10^3	-6.922×10^{-2}	-0.171
-6.01	463	24.0	0.577	3.764×10^3	96.4	0.595	657	1.22	0.710
12.9	24.0	2.527×10^3	-1.81	-242	313	-1.85	9.699×10^3	-0.600	-1.86
-0.143	0.577	-1.81	0.119	-106	2.91	0.119	-77.3	2.184×10^{-2}	0.118
1.291×10^3	3.764×10^3	-242	-106	7.329×10^6	4.659×10^3	-104	5.681×10^6	66.1	-110
-23.9	96.4	313	2.91	4.659×10^3	1.122×10^3	2.88	7.898×10^3	2.67	2.98
-0.144	0.595	-1.85	0.119	-104	2.88	0.119	-77.2	2.191×10^{-2}	0.118
3.871×10^3	657	9.699×10^3	-77.3	5.681×10^6	7.898×10^3	-77.2	5.191×10^6	-13.5	-84.9
-6.922×10^{-2}	1.22	-0.600	2.184×10^{-2}	66.1	2.67	2.191×10^{-2}	-13.5	4.475×10^{-2}	2.390×10^{-2}
-0.171	0.710	-1.86	0.118	-110	2.98	0.118	-84.9	2.390×10^{-2}	0.122

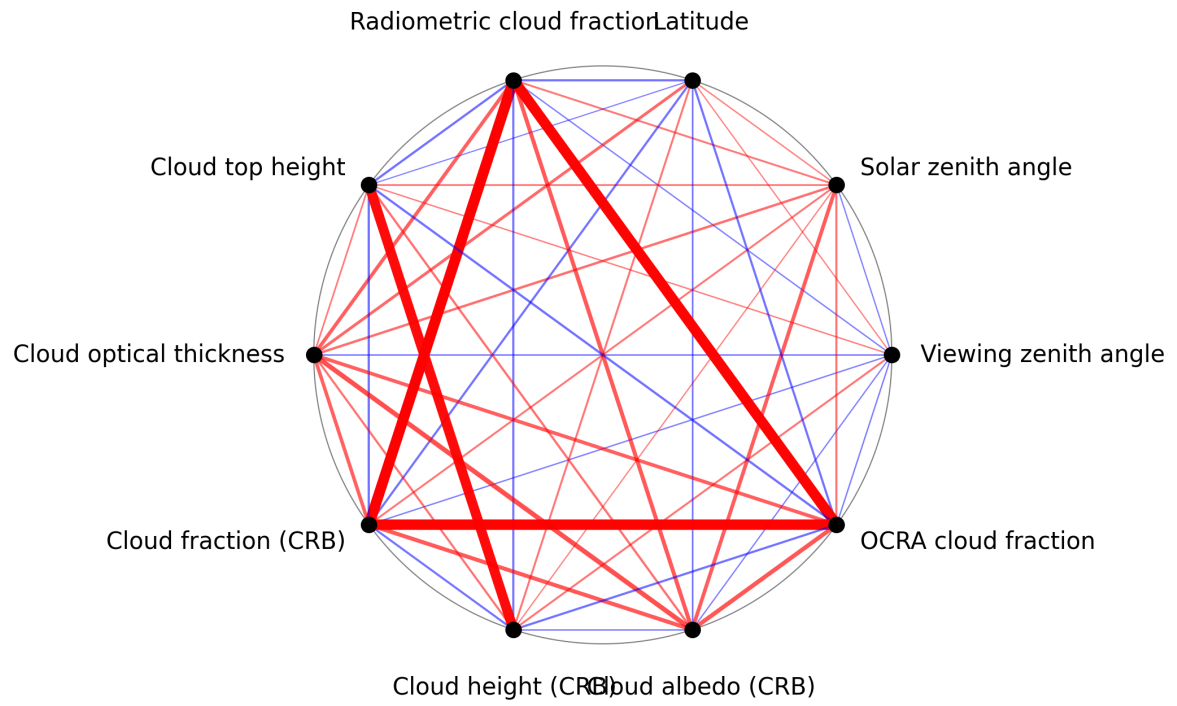


Figure 1: Map of correlation graph for 2025-02-09 to 2025-02-11.

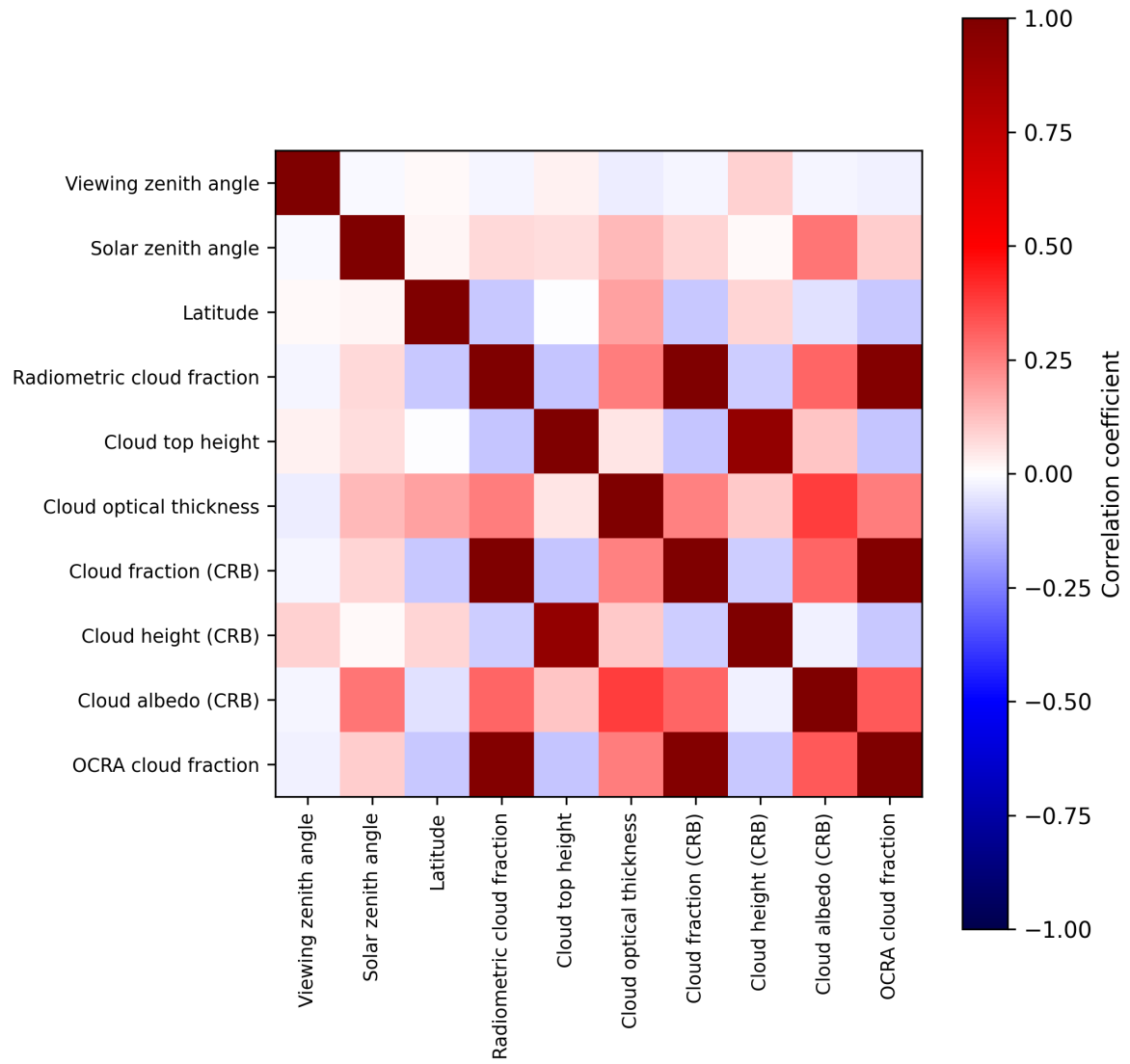


Figure 2: Map of correlation matrix for 2025-02-09 to 2025-02-11.

3 Granule outlines

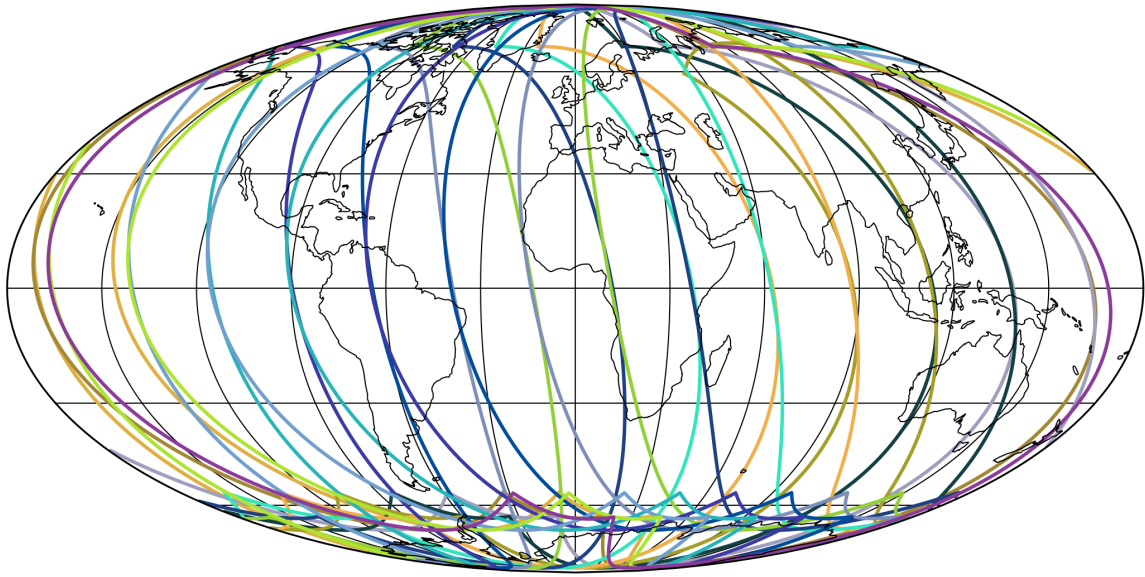


Figure 3: Outline of the granules.

4 Input data monitoring

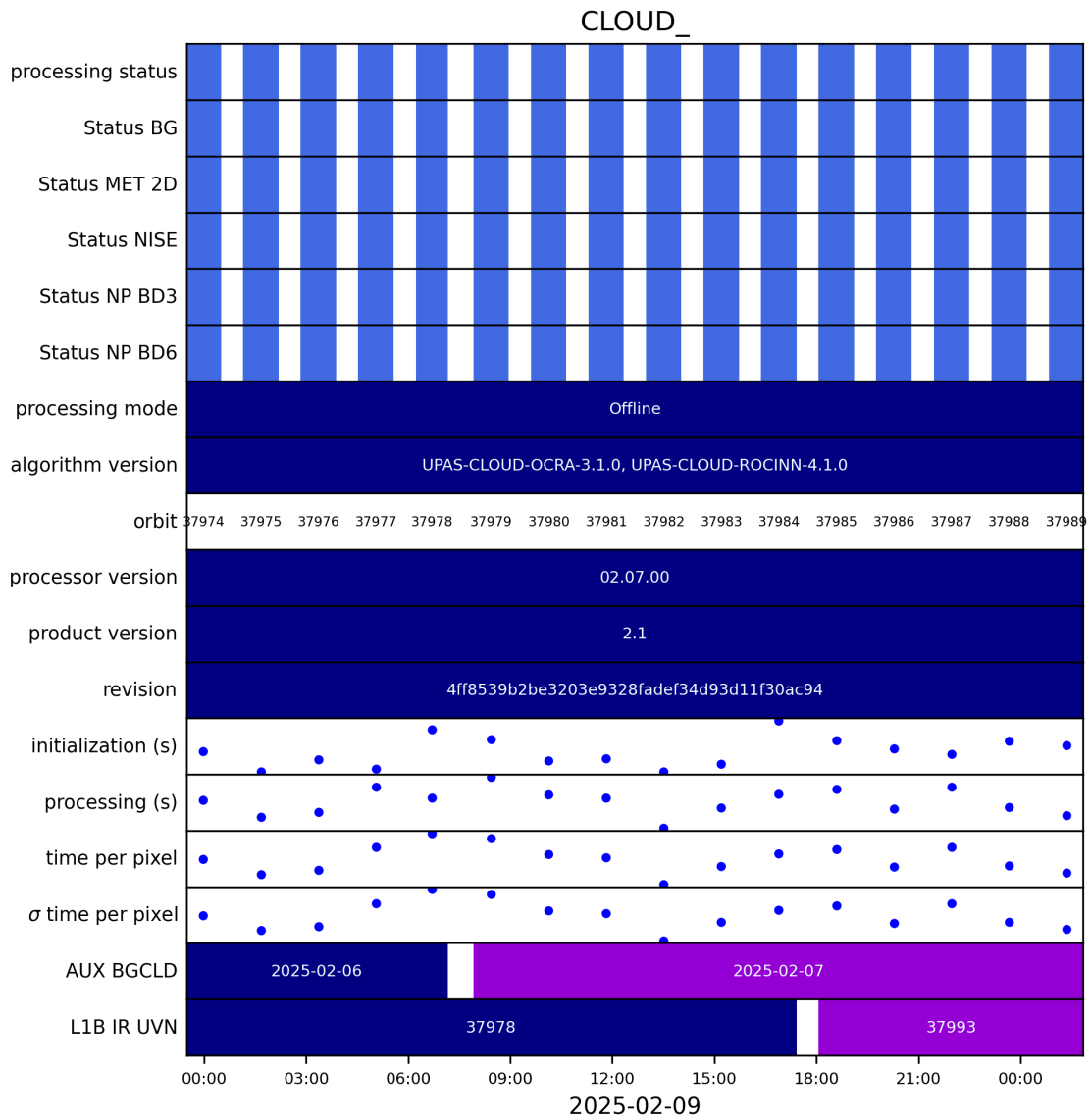


Figure 4: Input data per granule

5 Warnings and errors

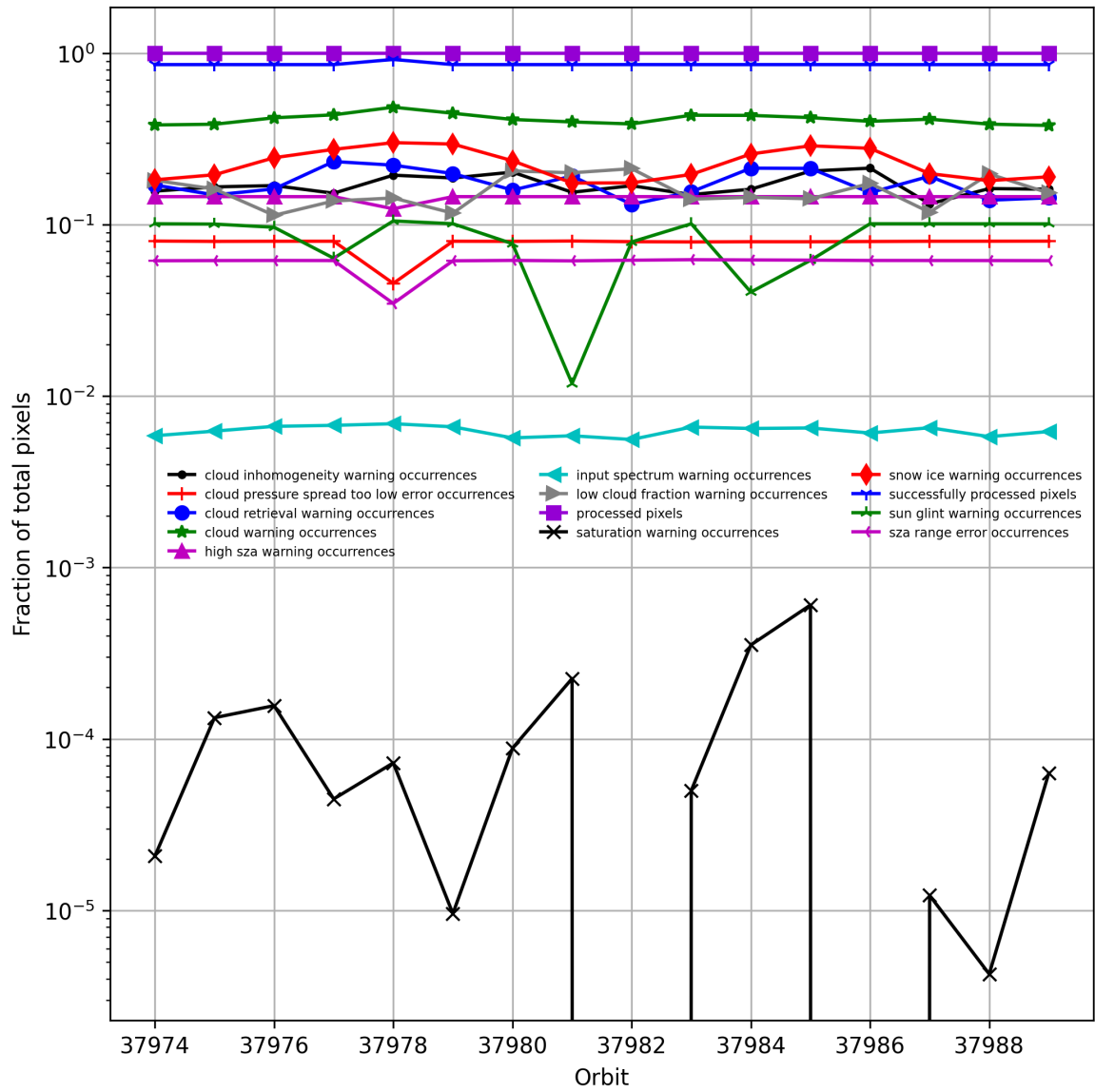


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

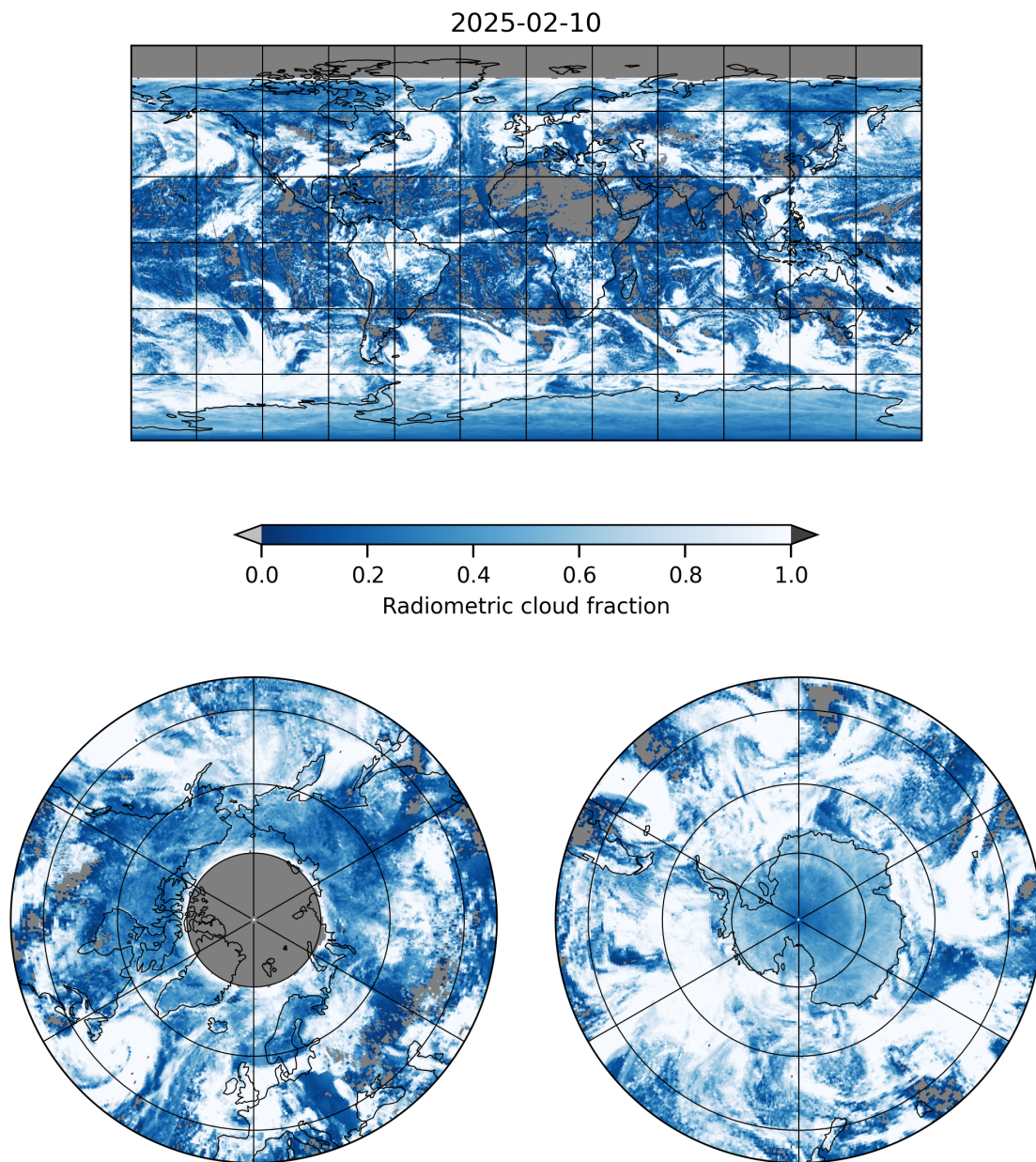


Figure 6: Map of “Radiometric cloud fraction” for 2025-02-09 to 2025-02-11

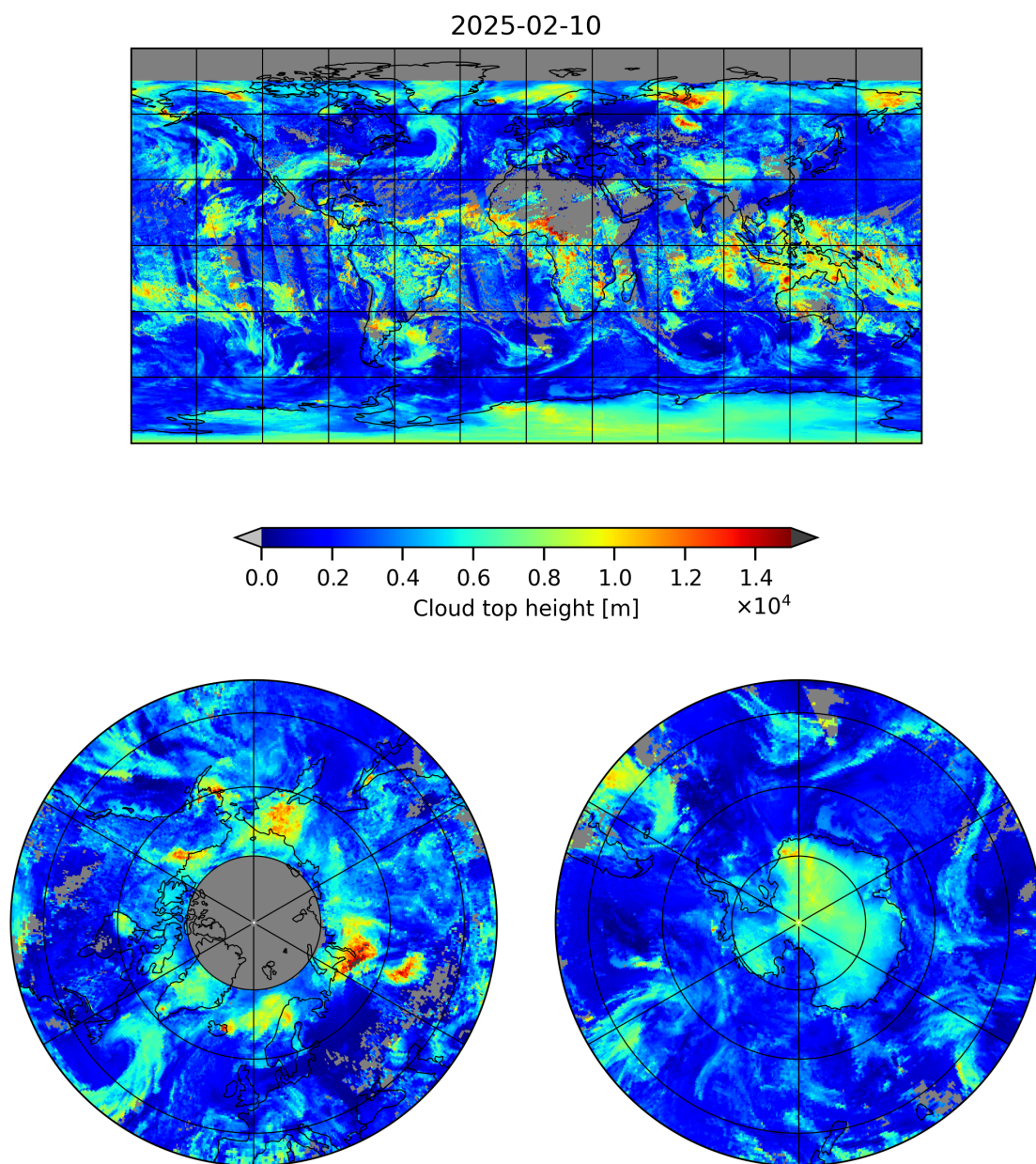


Figure 7: Map of “Cloud top height” for 2025-02-09 to 2025-02-11

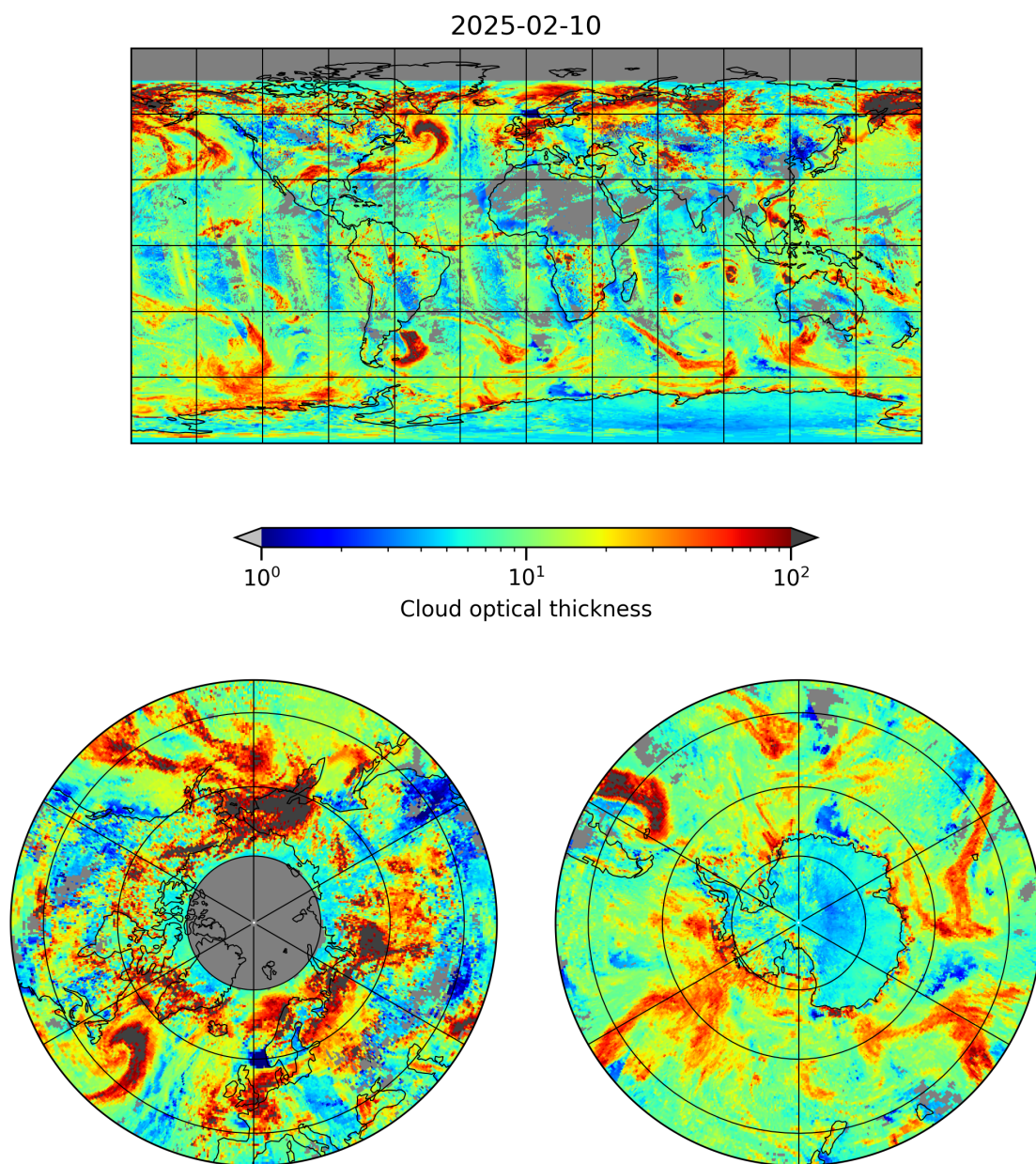


Figure 8: Map of “Cloud optical thickness” for 2025-02-09 to 2025-02-11

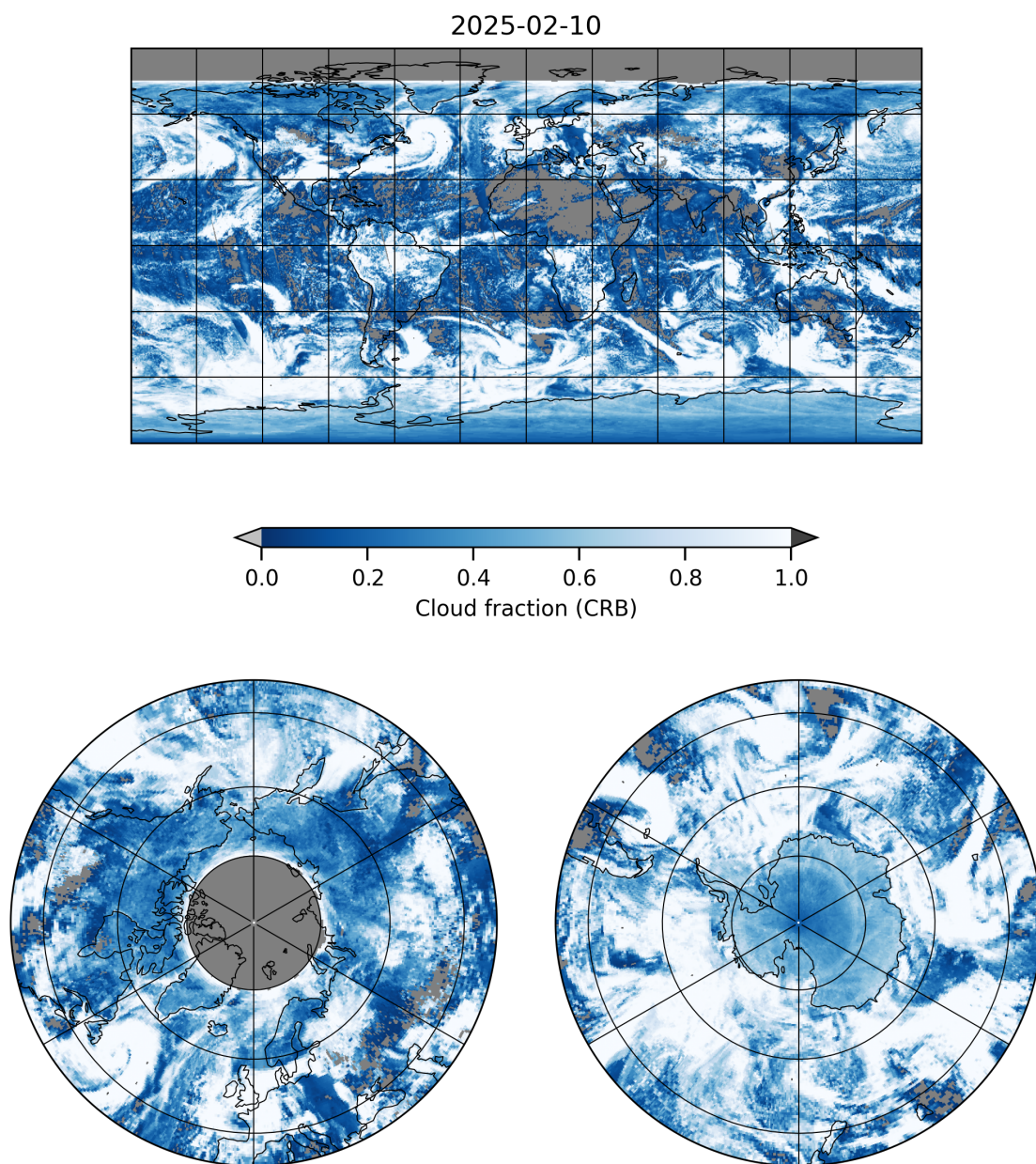


Figure 9: Map of “Cloud fraction (CRB)” for 2025-02-09 to 2025-02-11

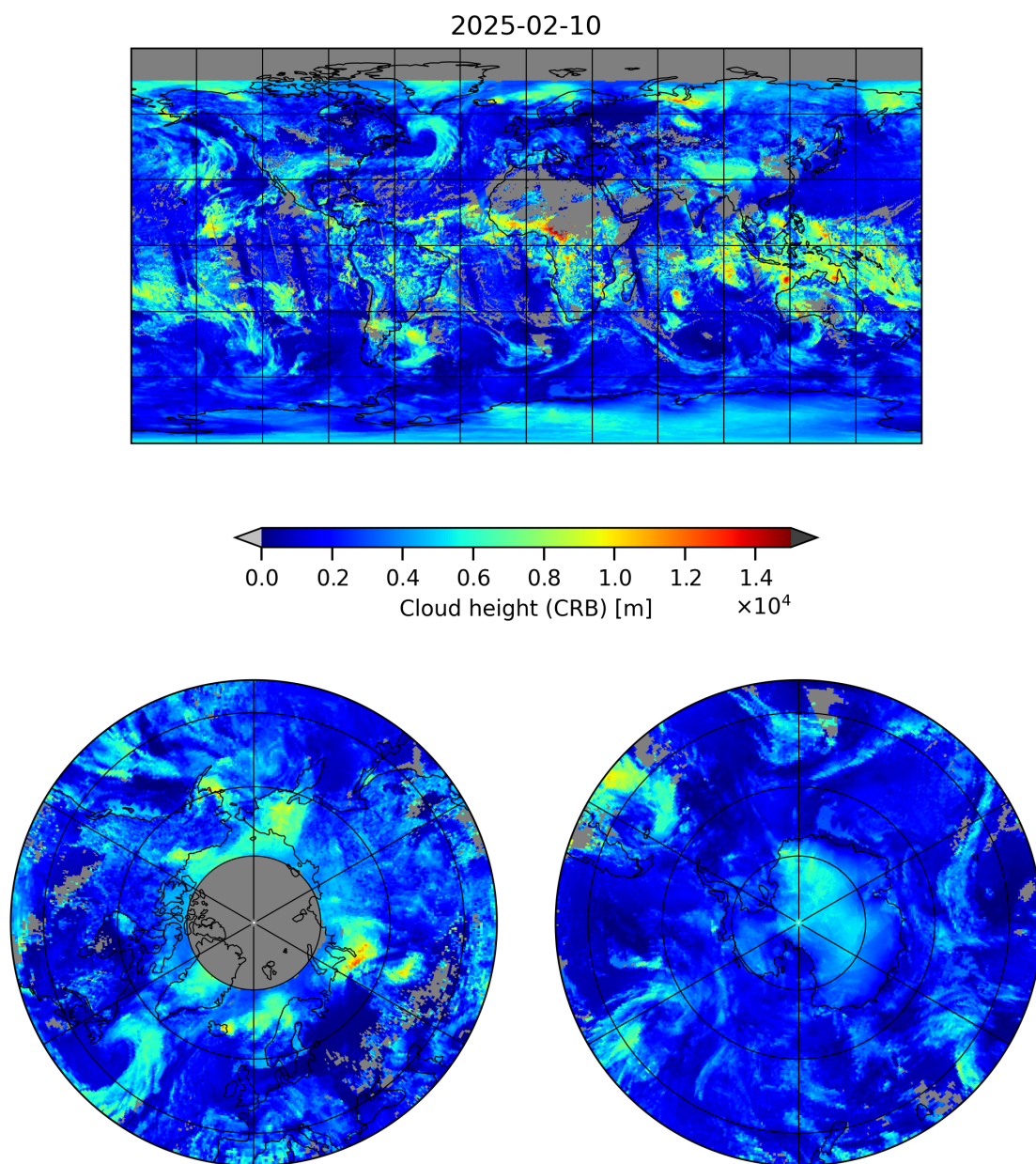


Figure 10: Map of “Cloud height (CRB)” for 2025-02-09 to 2025-02-11

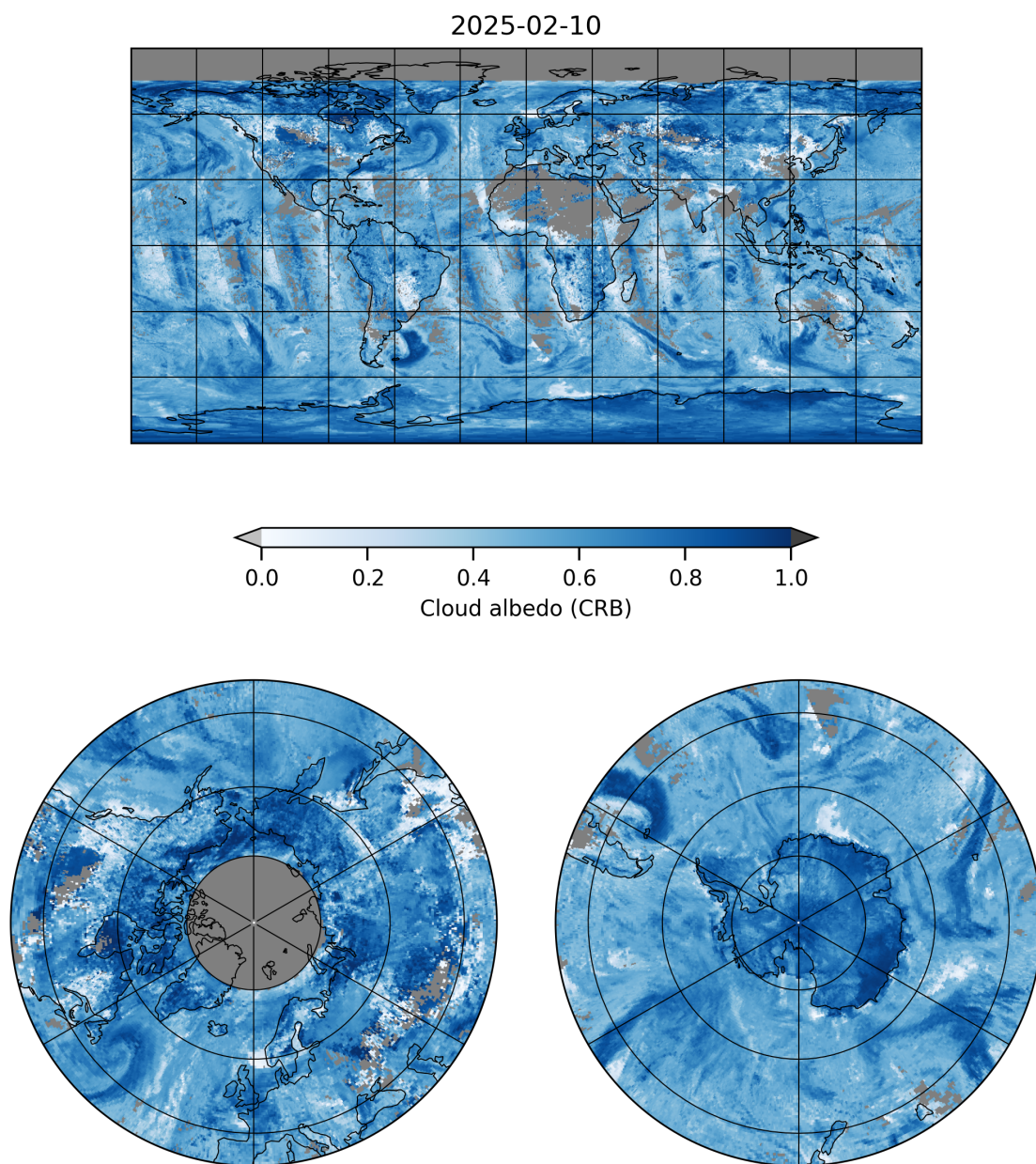


Figure 11: Map of “Cloud albedo (CRB)” for 2025-02-09 to 2025-02-11

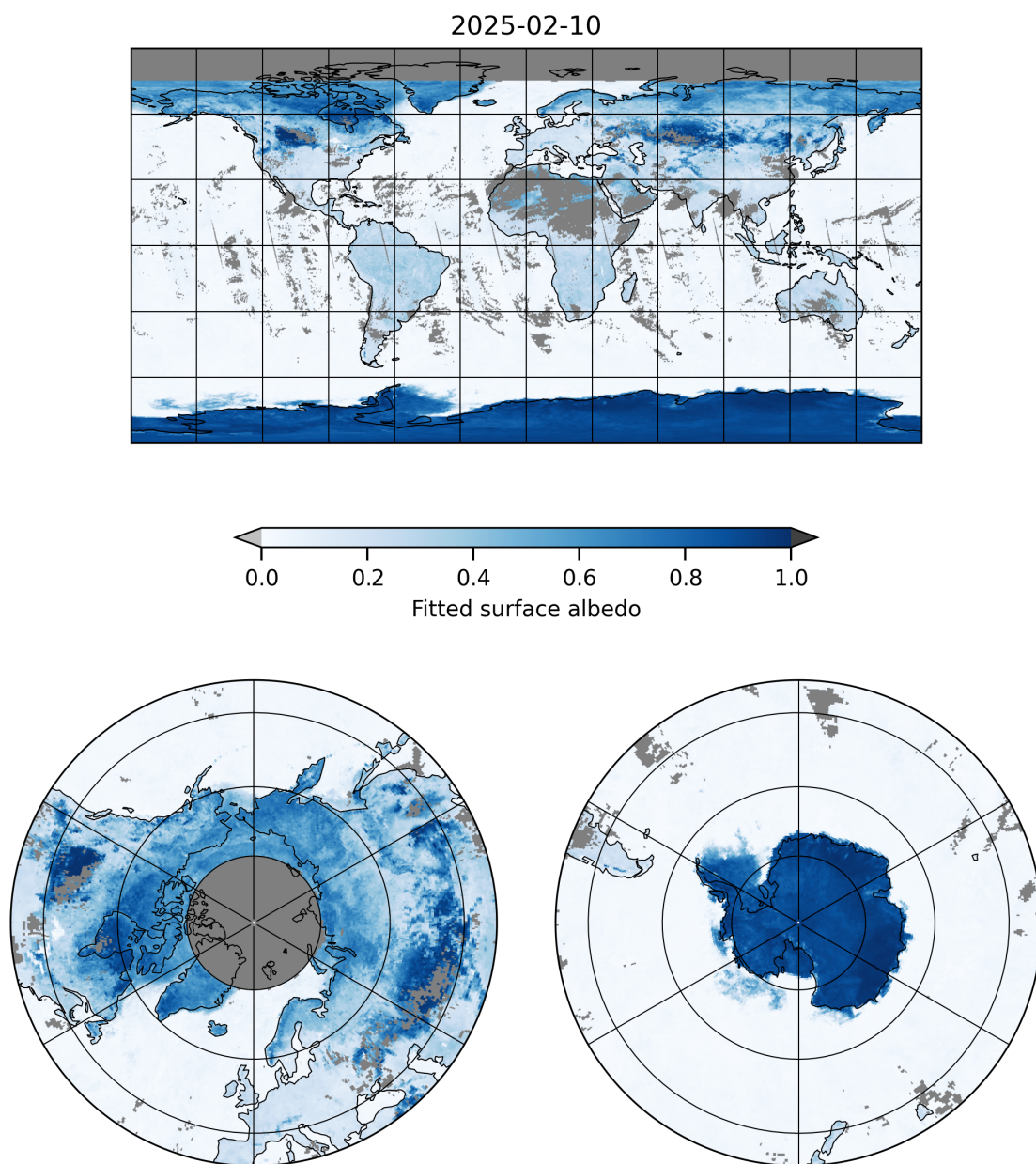


Figure 12: Map of “Fitted surface albedo” for 2025-02-09 to 2025-02-11

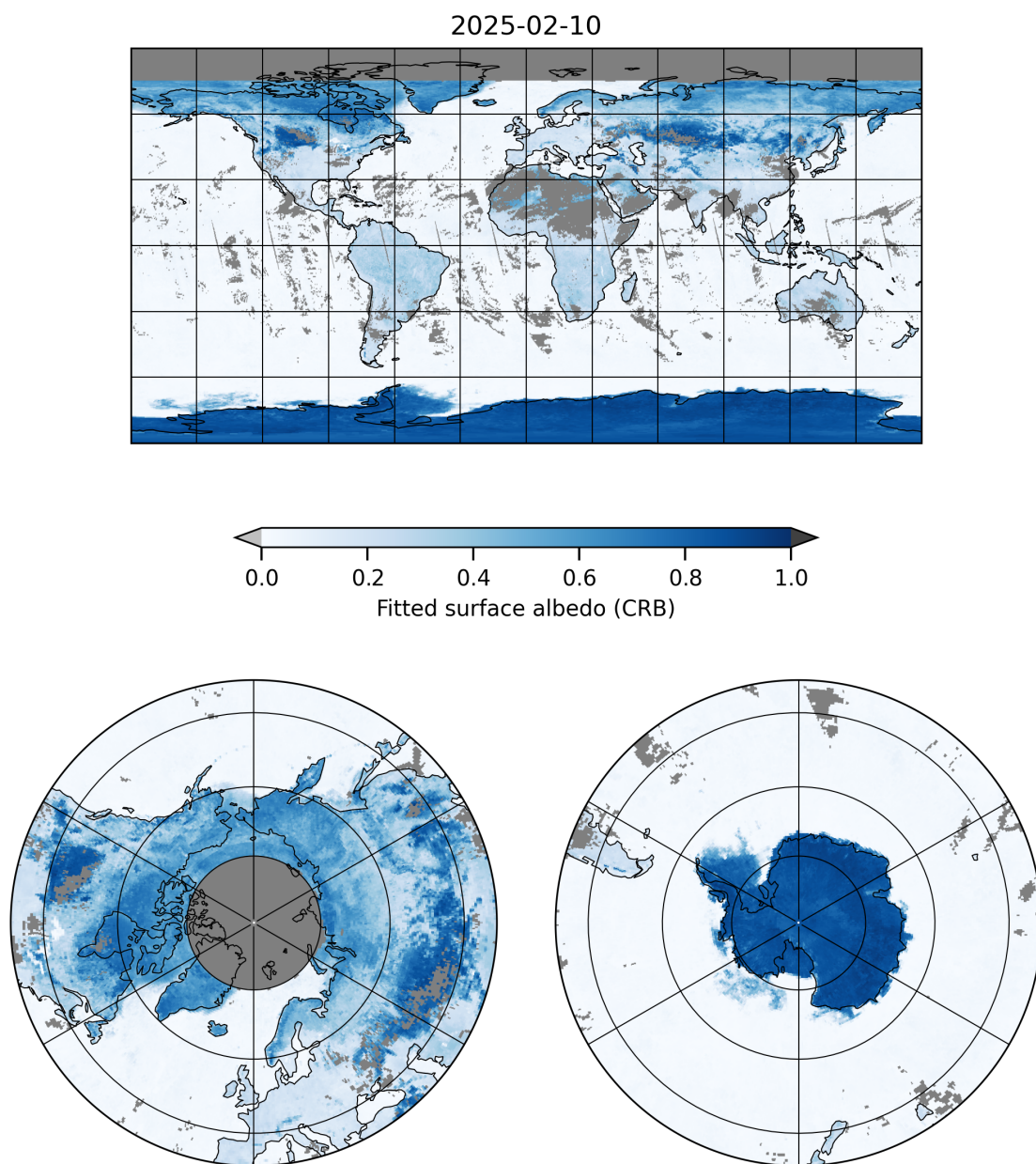


Figure 13: Map of “Fitted surface albedo (CRB)” for 2025-02-09 to 2025-02-11

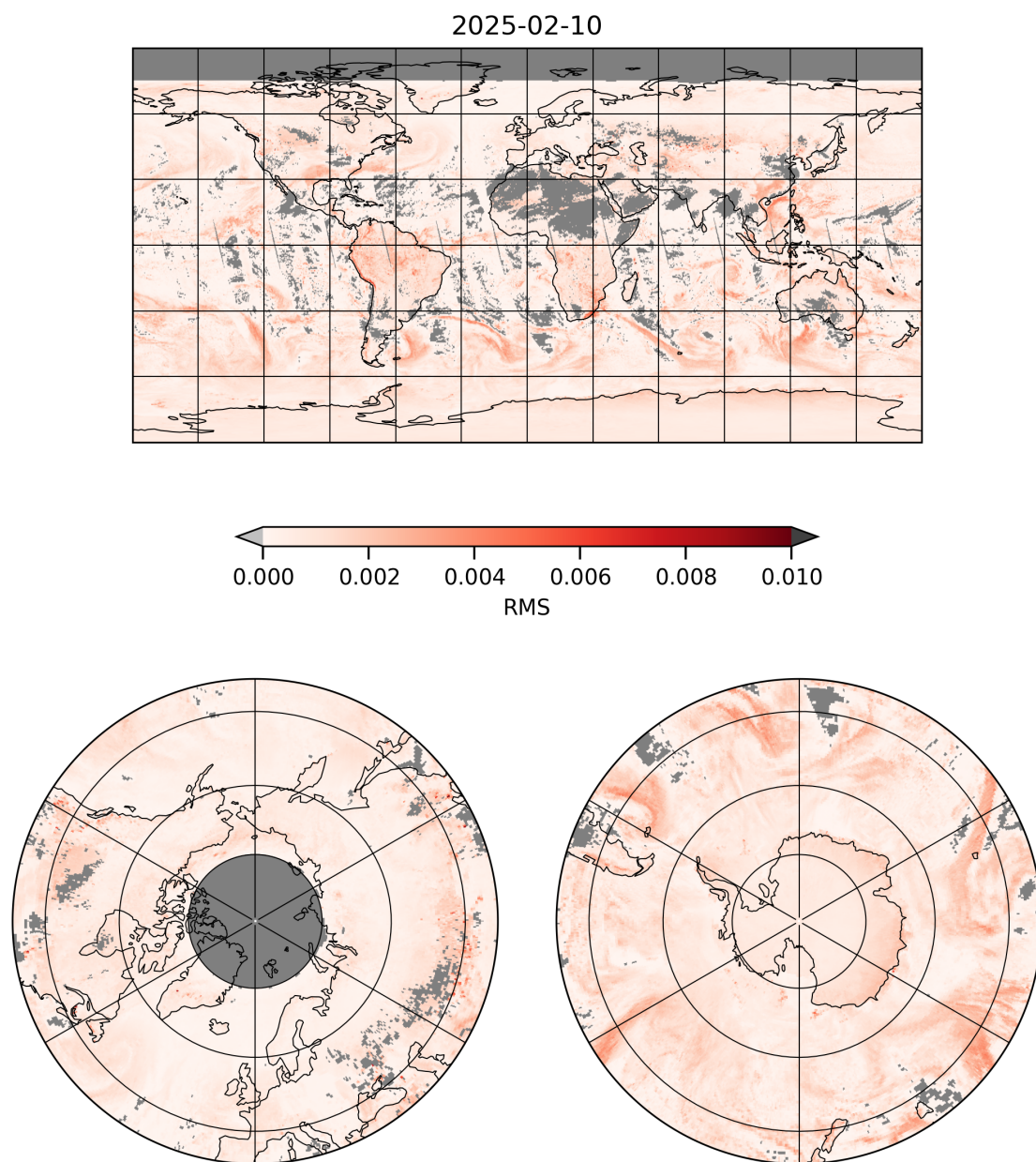


Figure 14: Map of “RMS” for 2025-02-09 to 2025-02-11

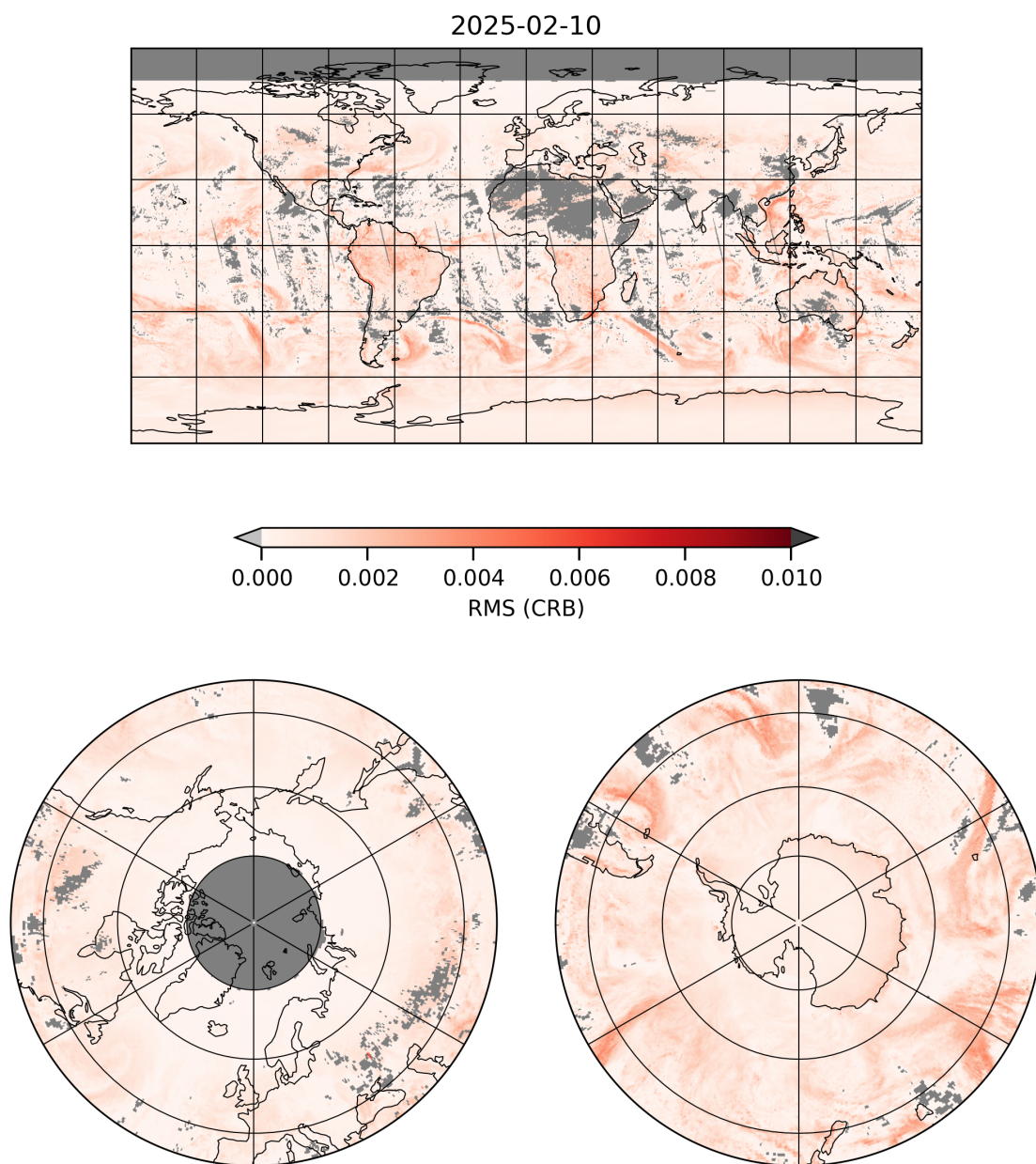


Figure 15: Map of “RMS (CRB)” for 2025-02-09 to 2025-02-11

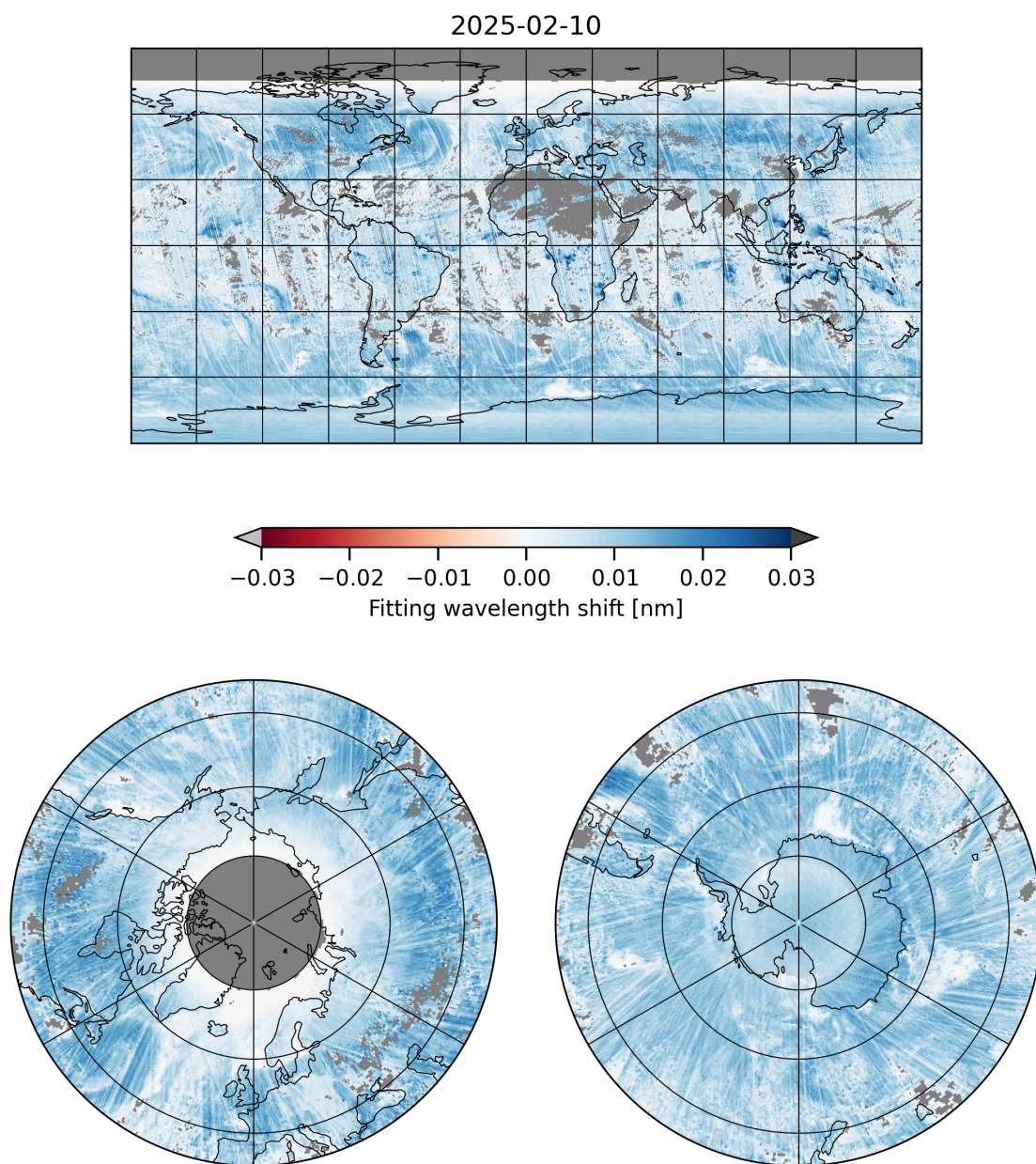


Figure 16: Map of “Fitting wavelength shift” for 2025-02-09 to 2025-02-11

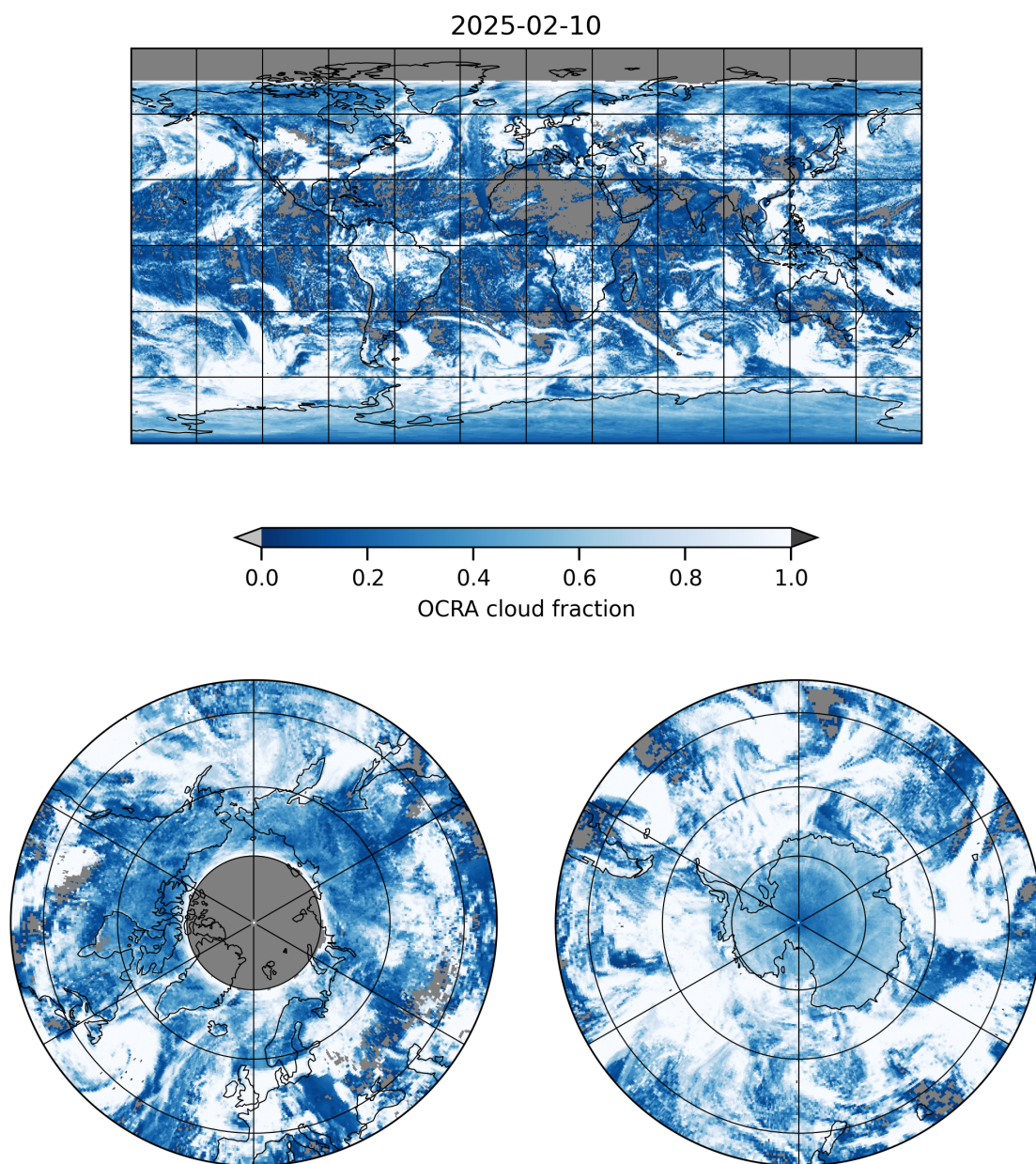


Figure 17: Map of “OCRA cloud fraction” for 2025-02-09 to 2025-02-11

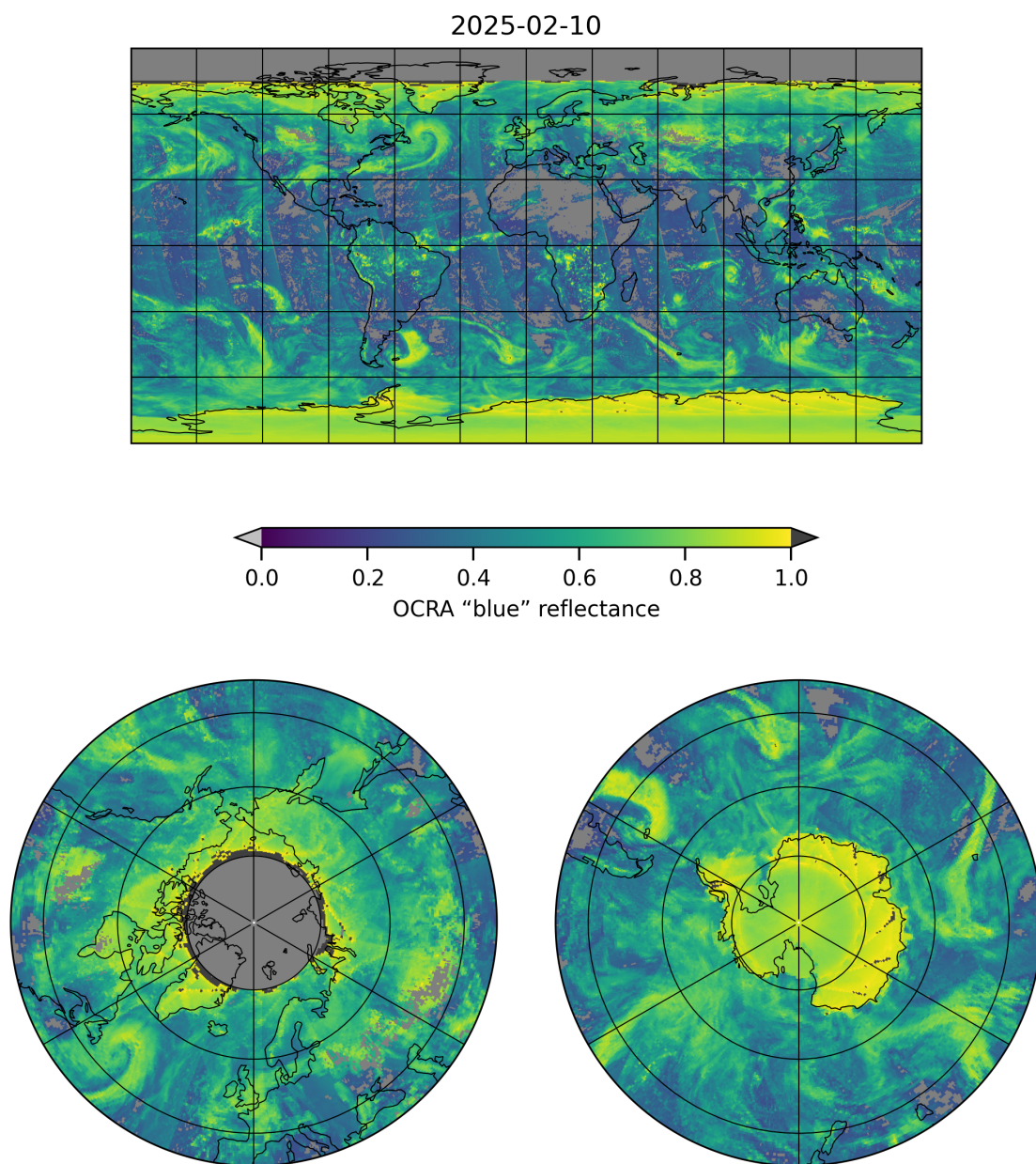


Figure 18: Map of "OCRA "blue" reflectance" for 2025-02-09 to 2025-02-11

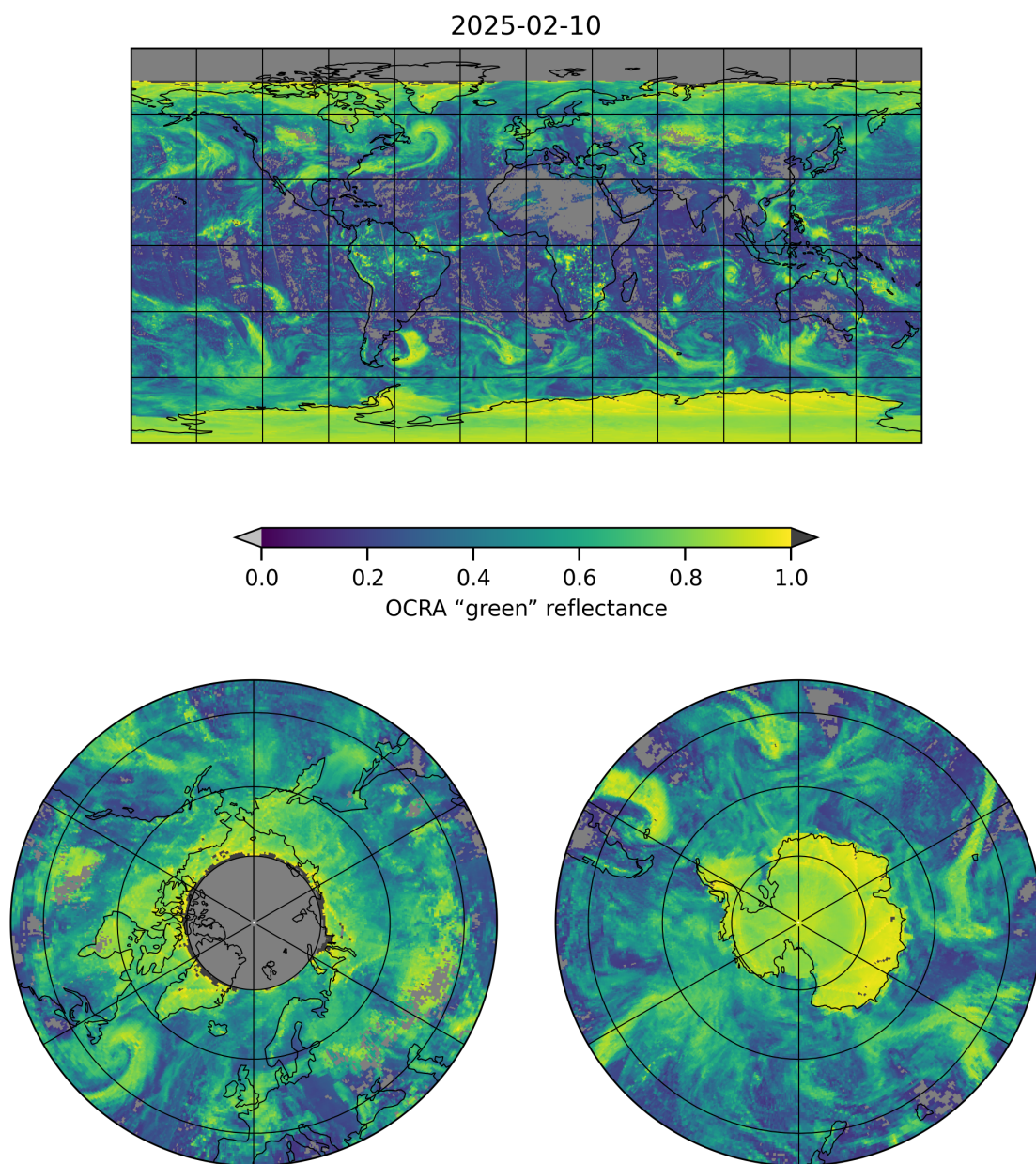


Figure 19: Map of "OCRA "green" reflectance" for 2025-02-09 to 2025-02-11

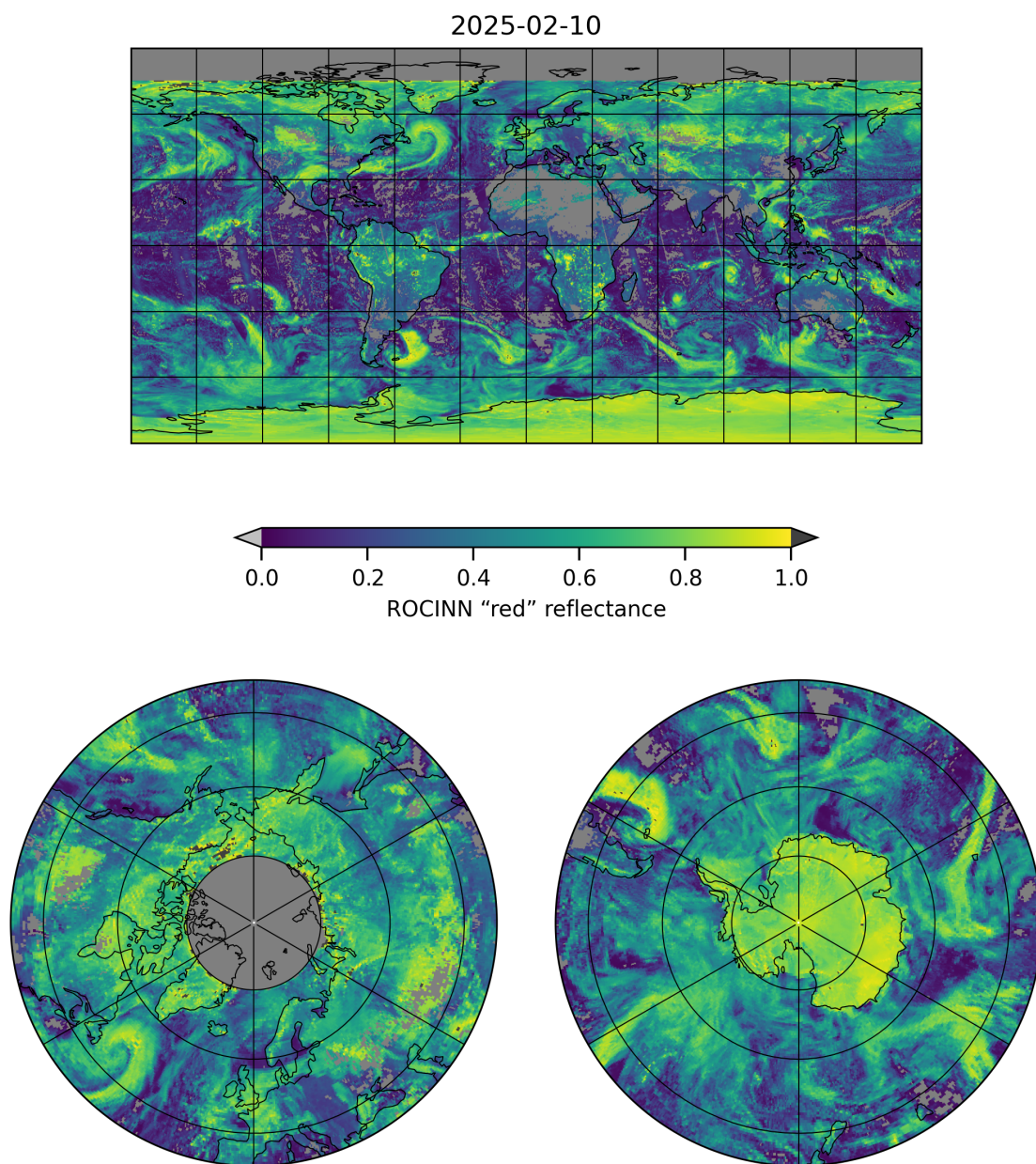


Figure 20: Map of "ROCINN "red" reflectance" for 2025-02-09 to 2025-02-11

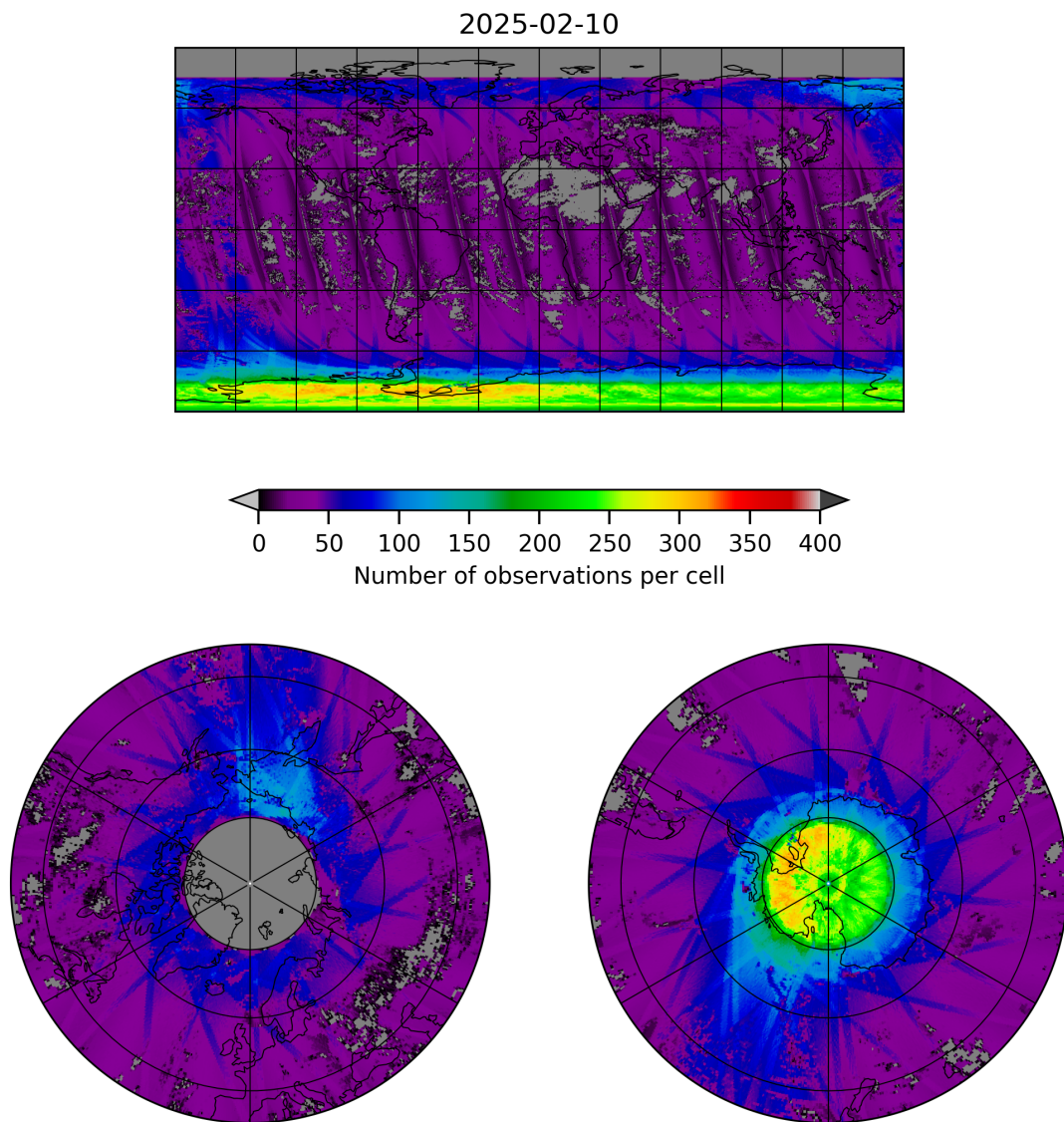


Figure 21: Map of the number of observations for 2025-02-09 to 2025-02-11

7 Zonal average

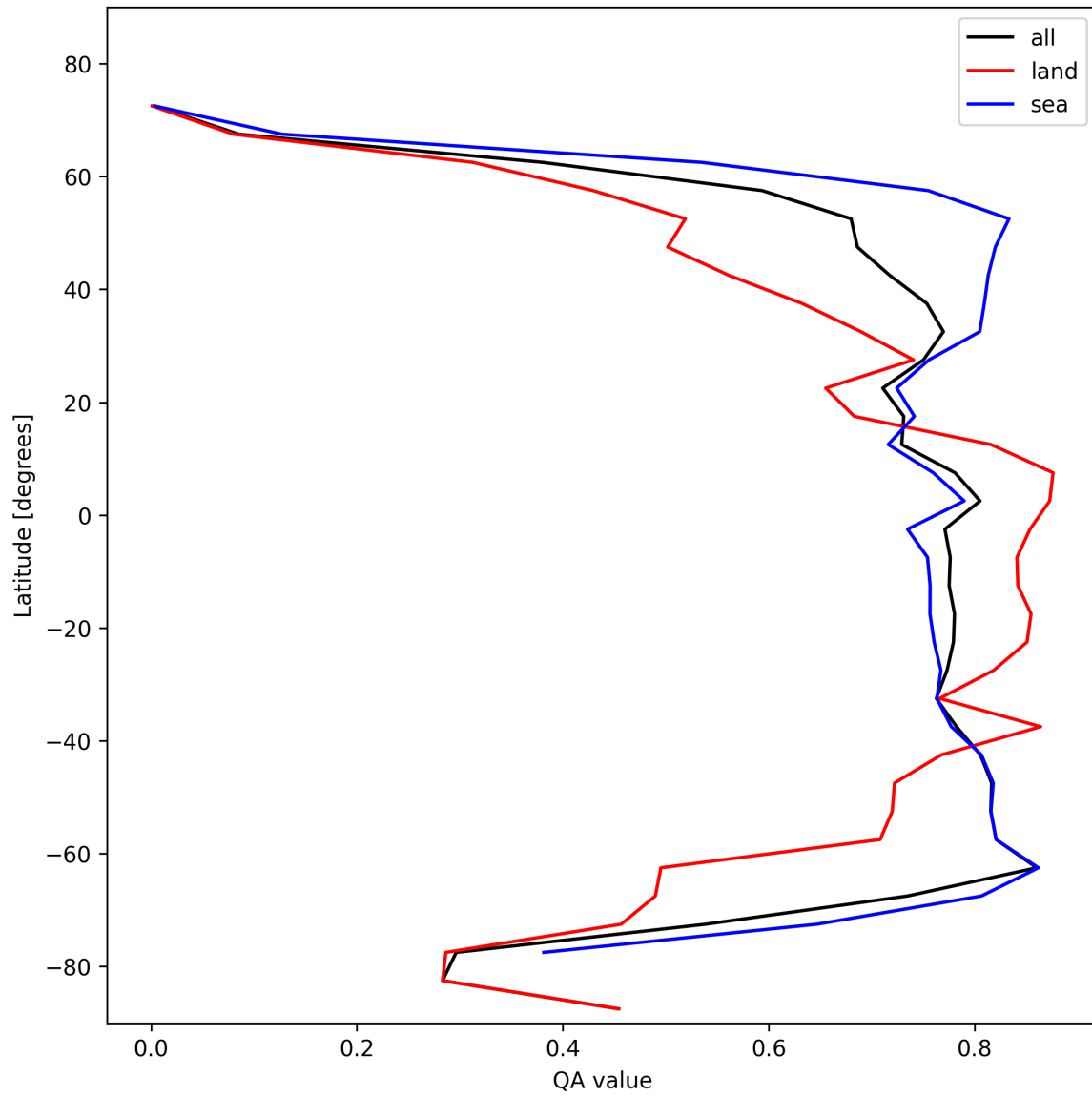


Figure 22: Zonal average of “QA value” for 2025-02-09 to 2025-02-11.

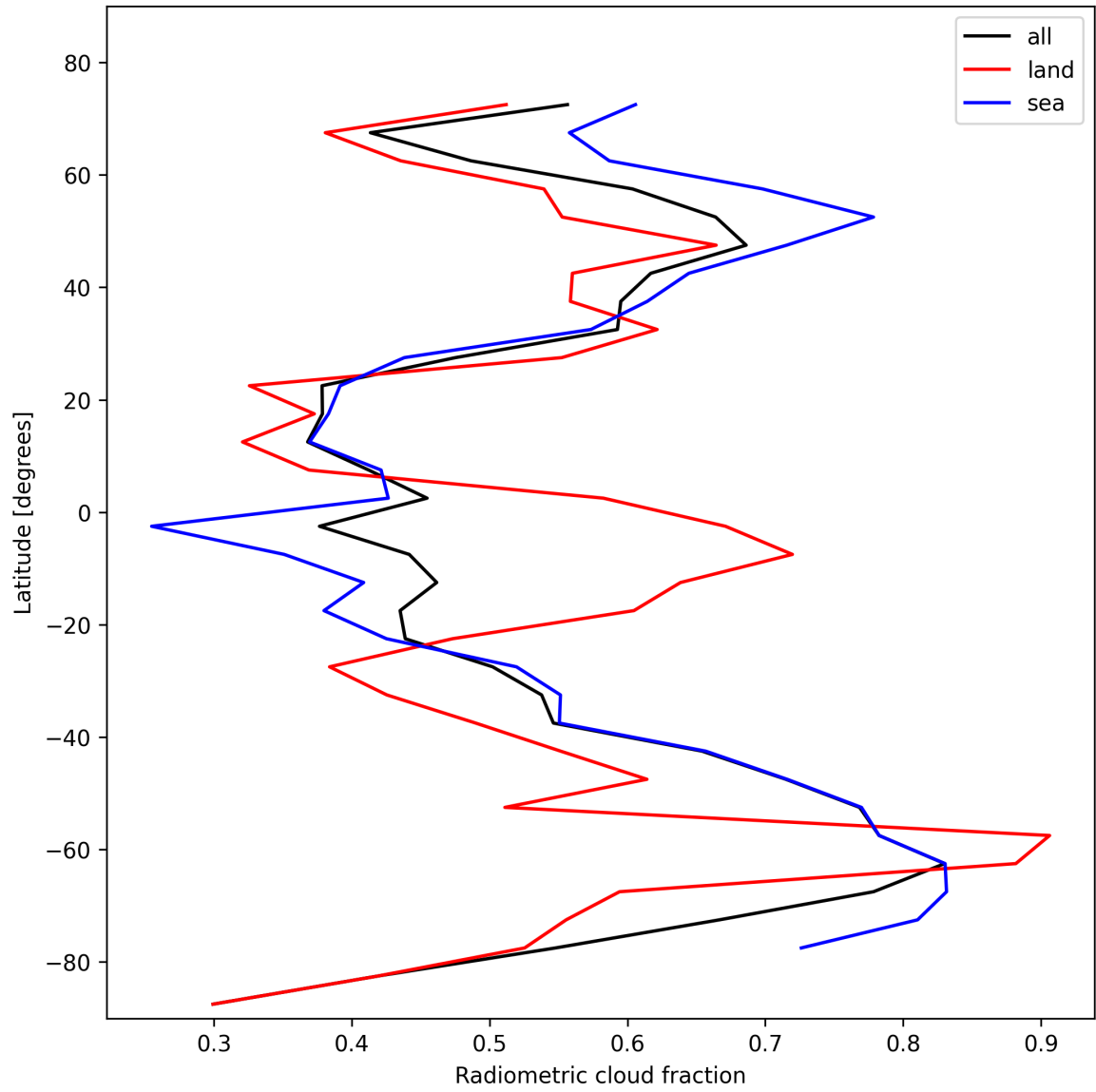


Figure 23: Zonal average of “Radiometric cloud fraction” for 2025-02-09 to 2025-02-11.

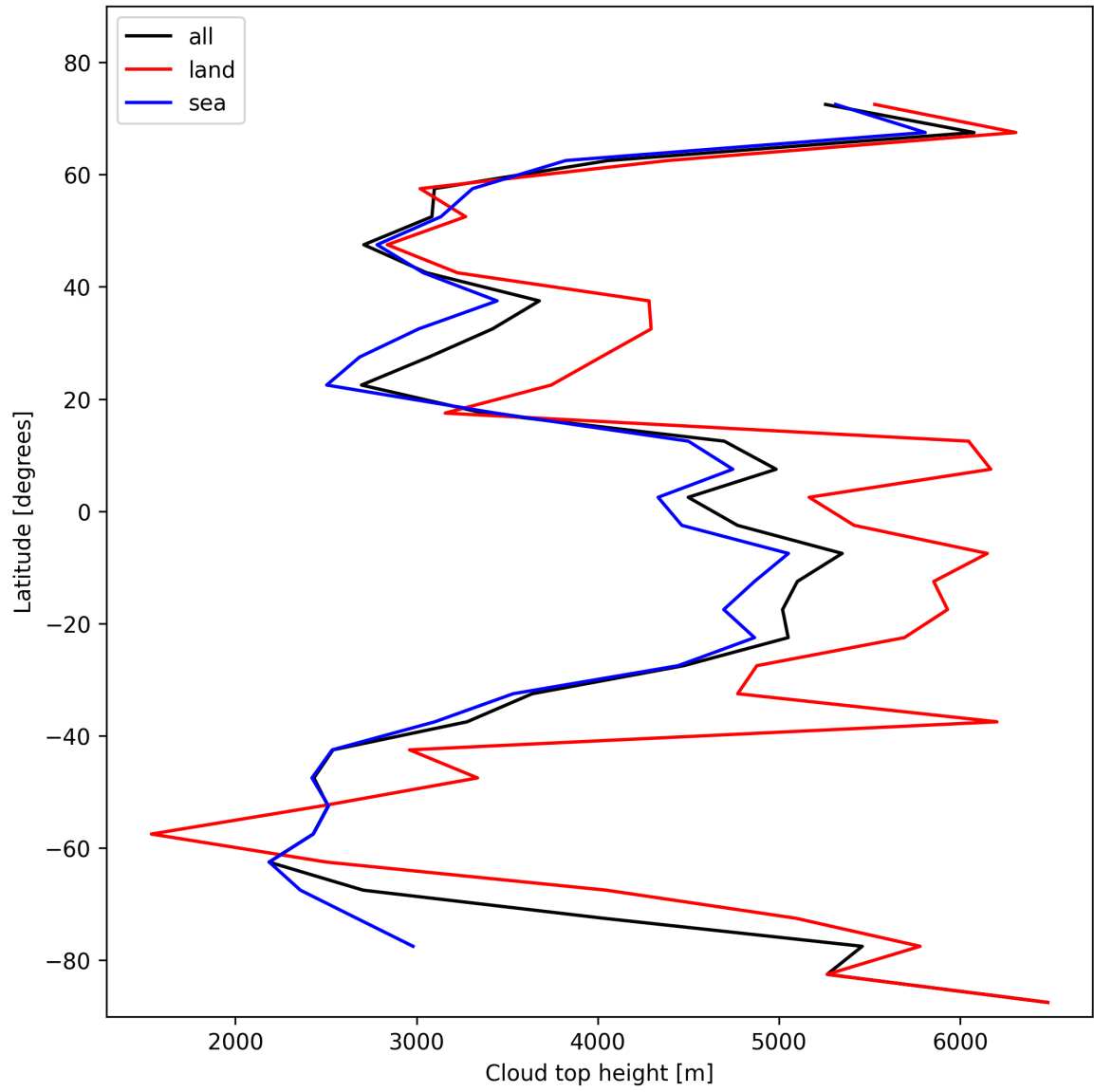


Figure 24: Zonal average of “Cloud top height” for 2025-02-09 to 2025-02-11.

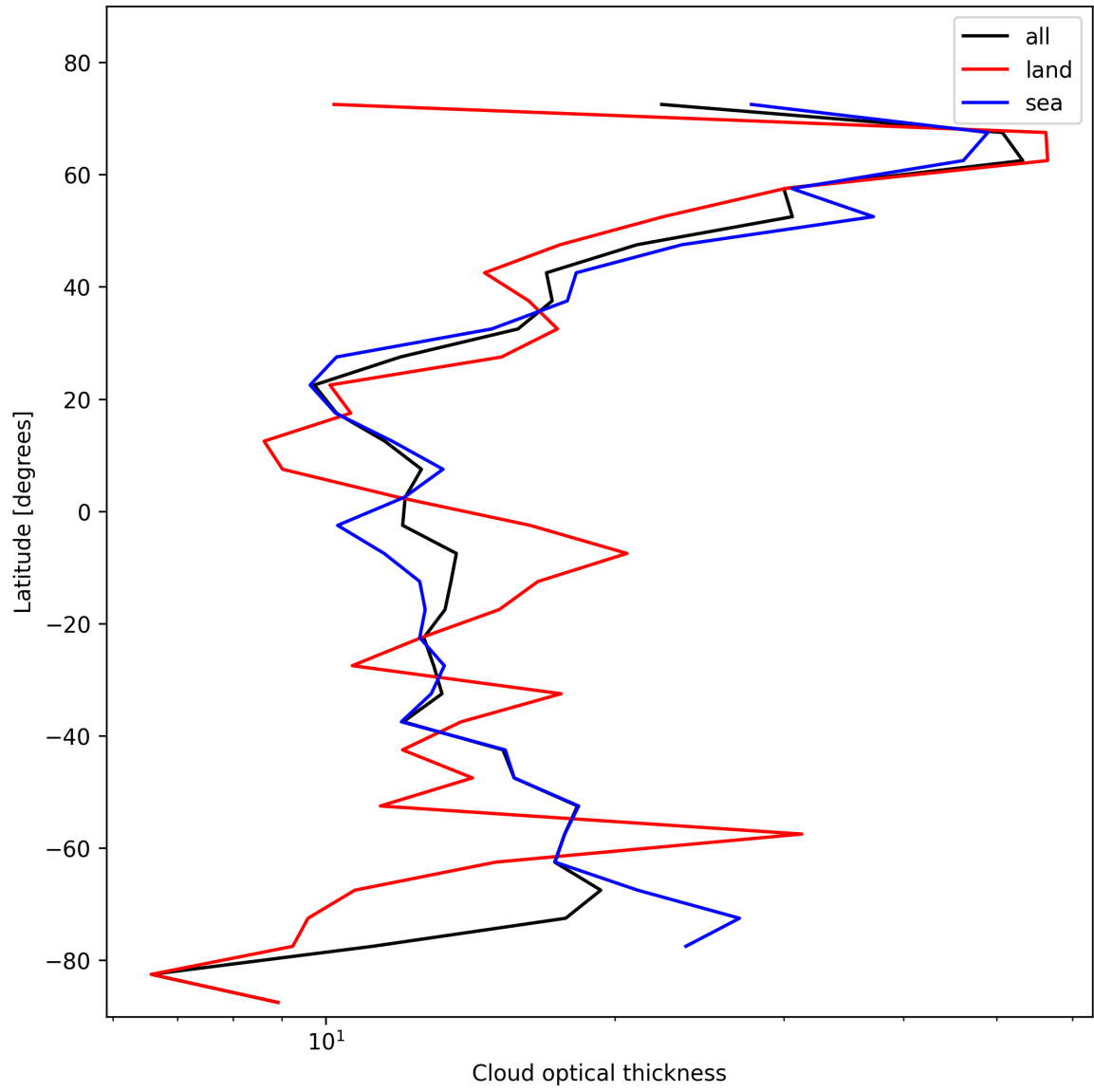


Figure 25: Zonal average of “Cloud optical thickness” for 2025-02-09 to 2025-02-11.

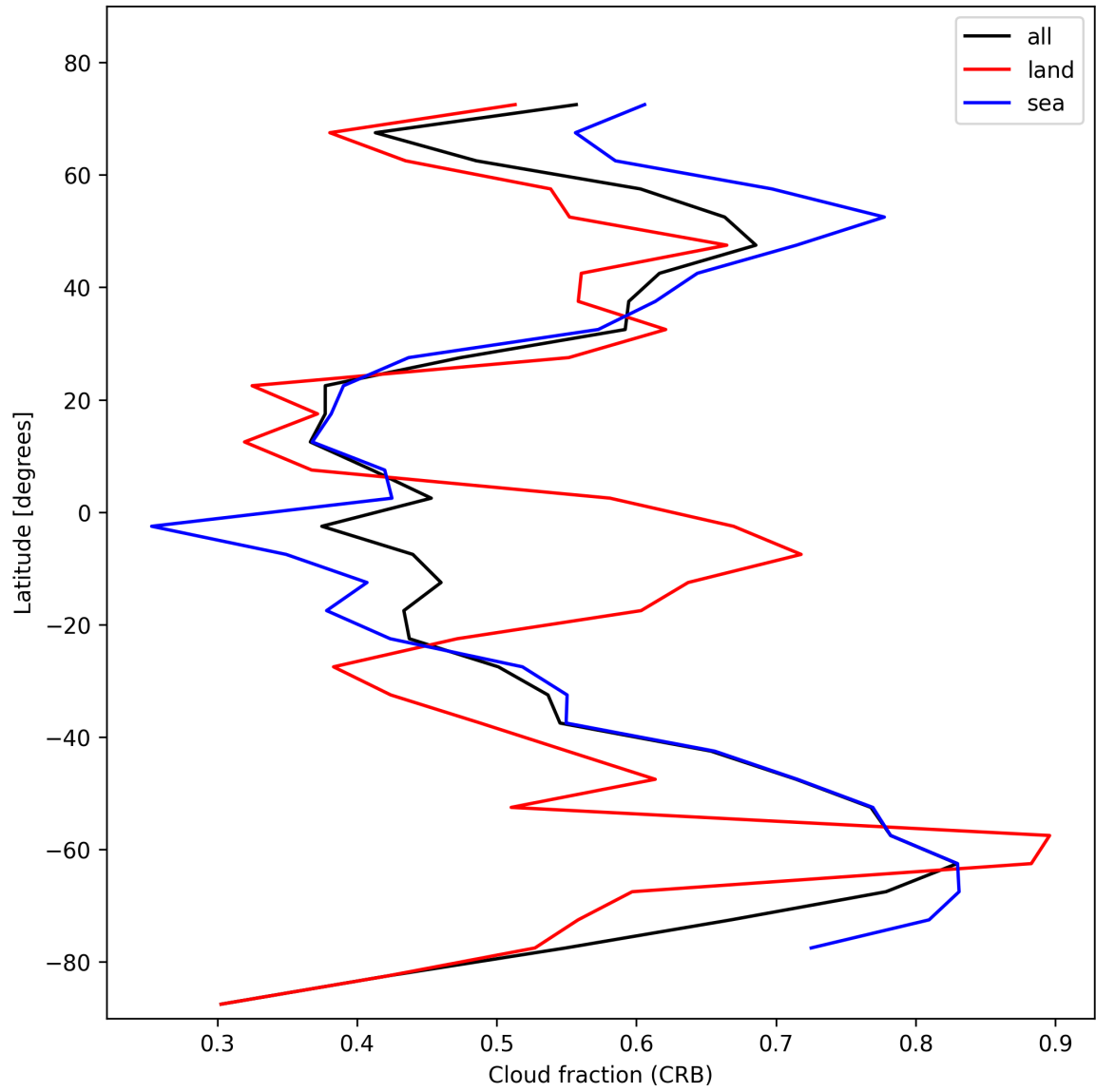


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2025-02-09 to 2025-02-11.

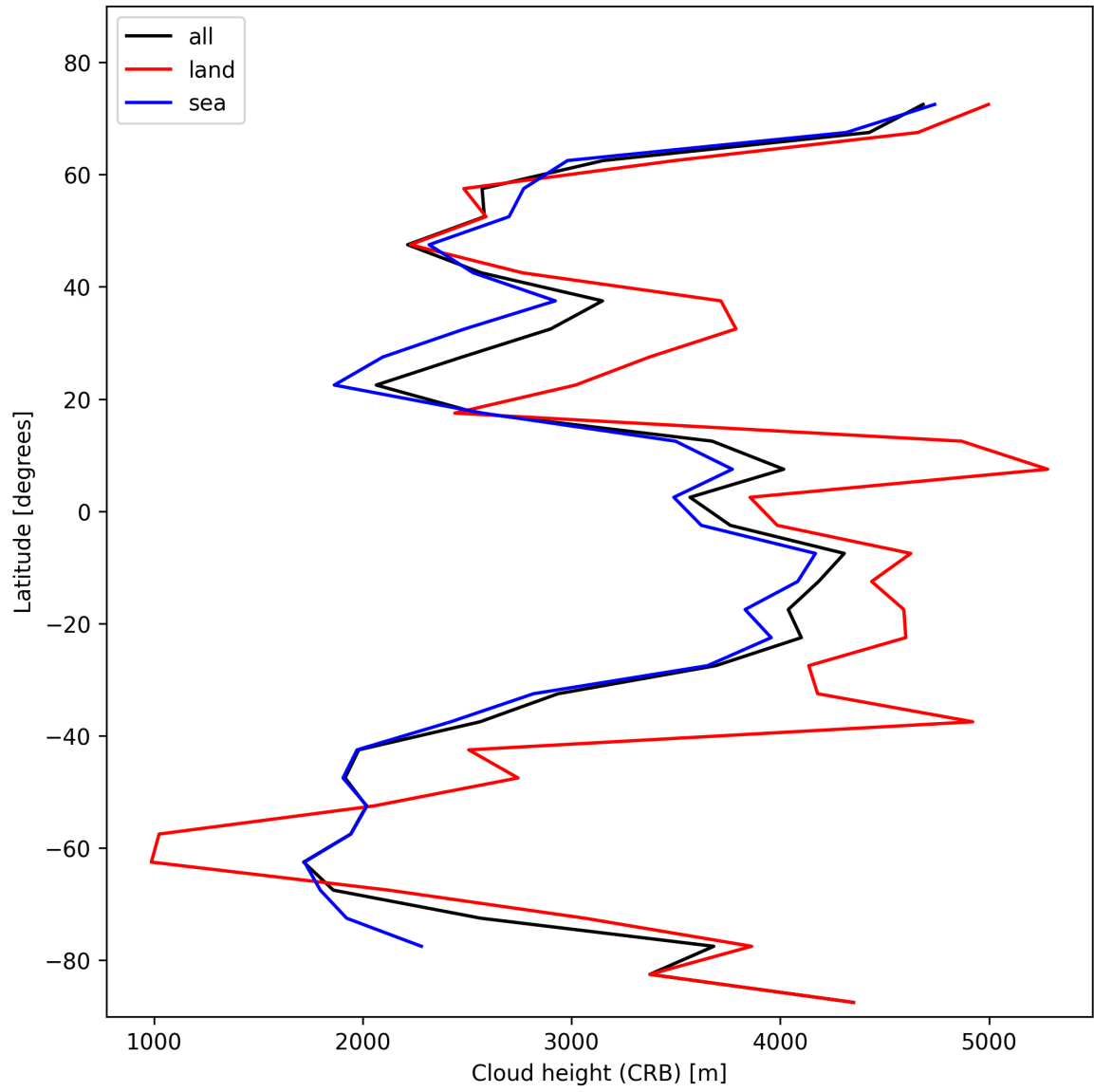


Figure 27: Zonal average of “Cloud height (CRB)” for 2025-02-09 to 2025-02-11.

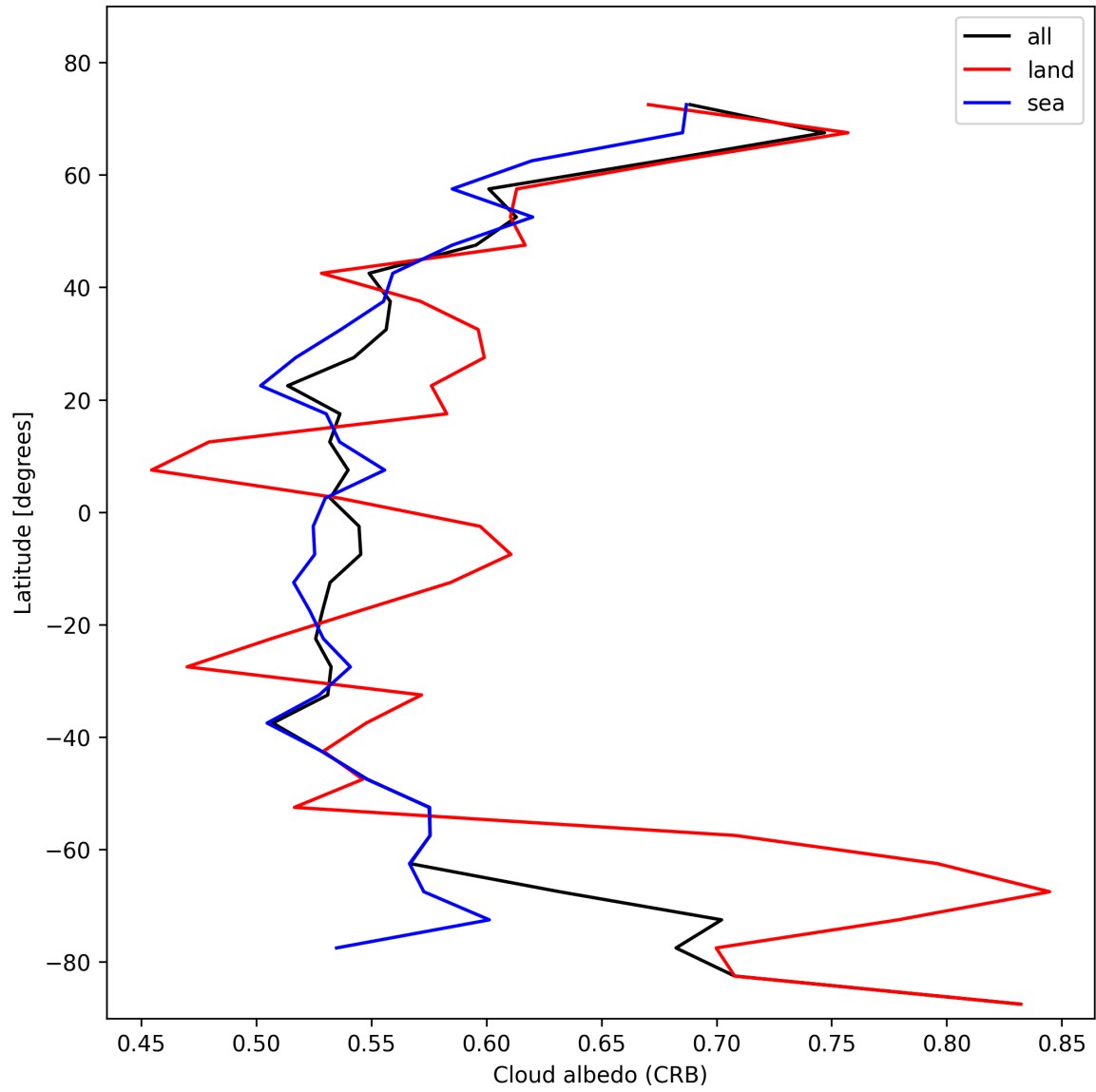


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2025-02-09 to 2025-02-11.

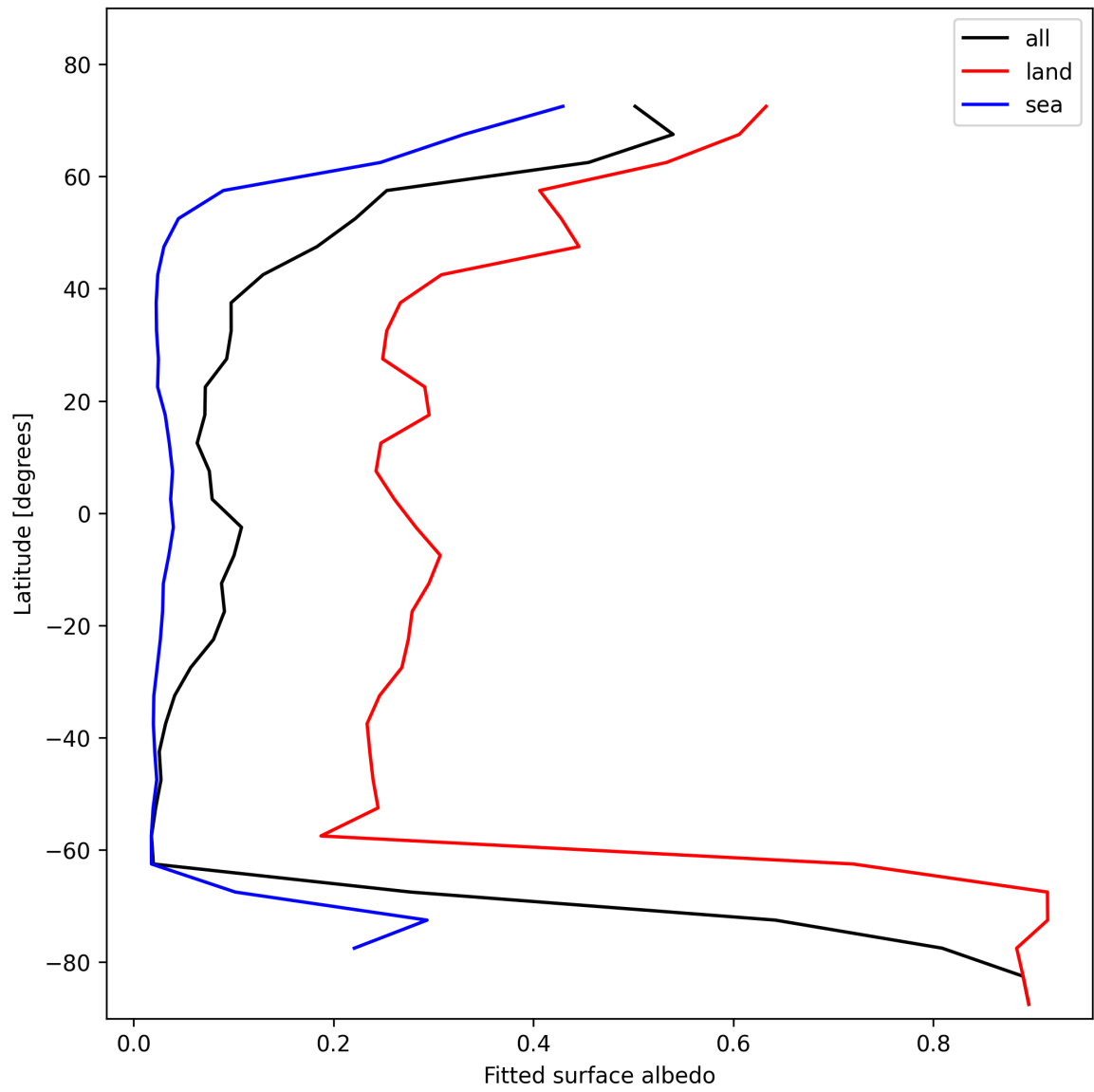


Figure 29: Zonal average of “Fitted surface albedo” for 2025-02-09 to 2025-02-11.

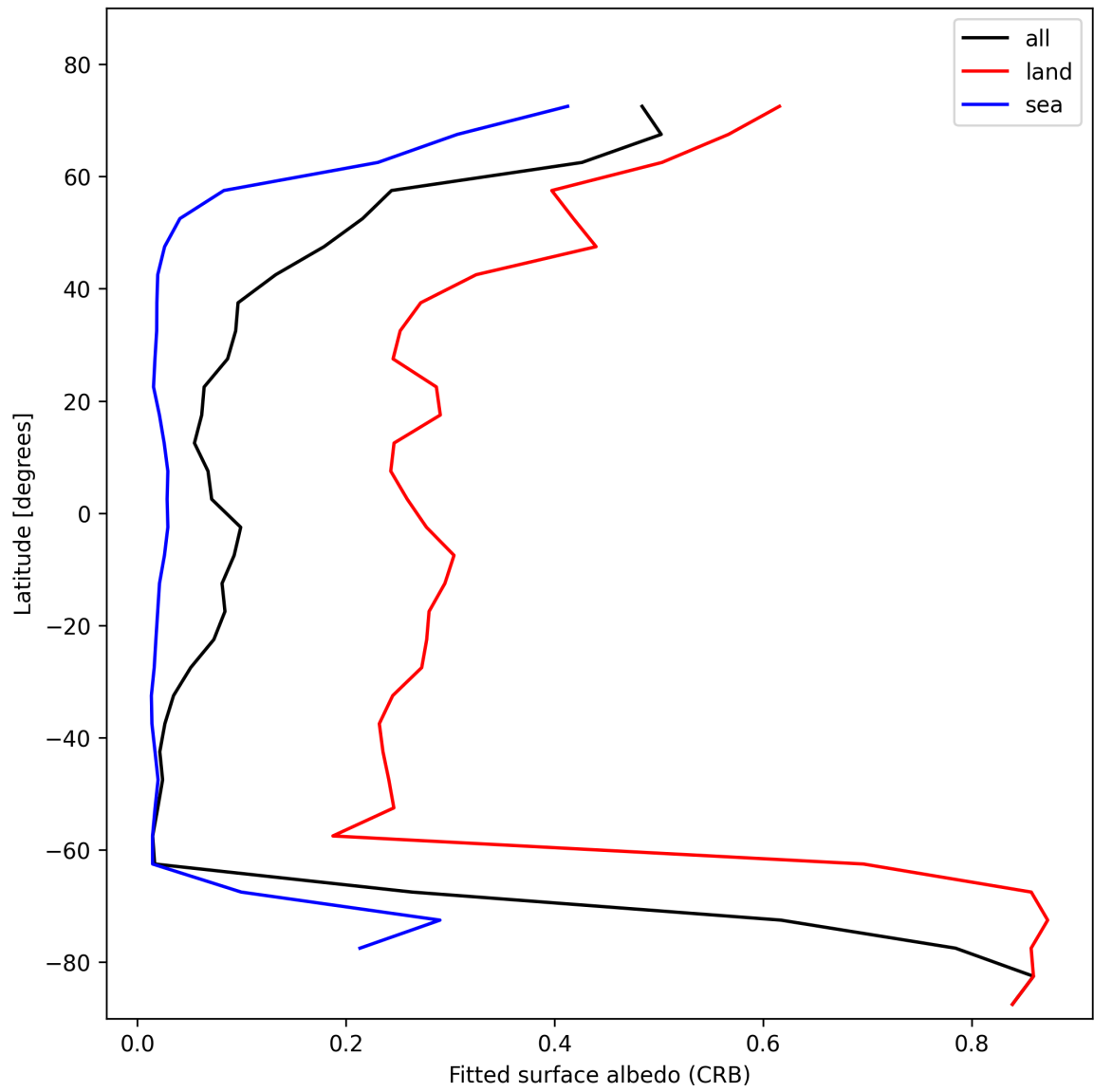


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2025-02-09 to 2025-02-11.

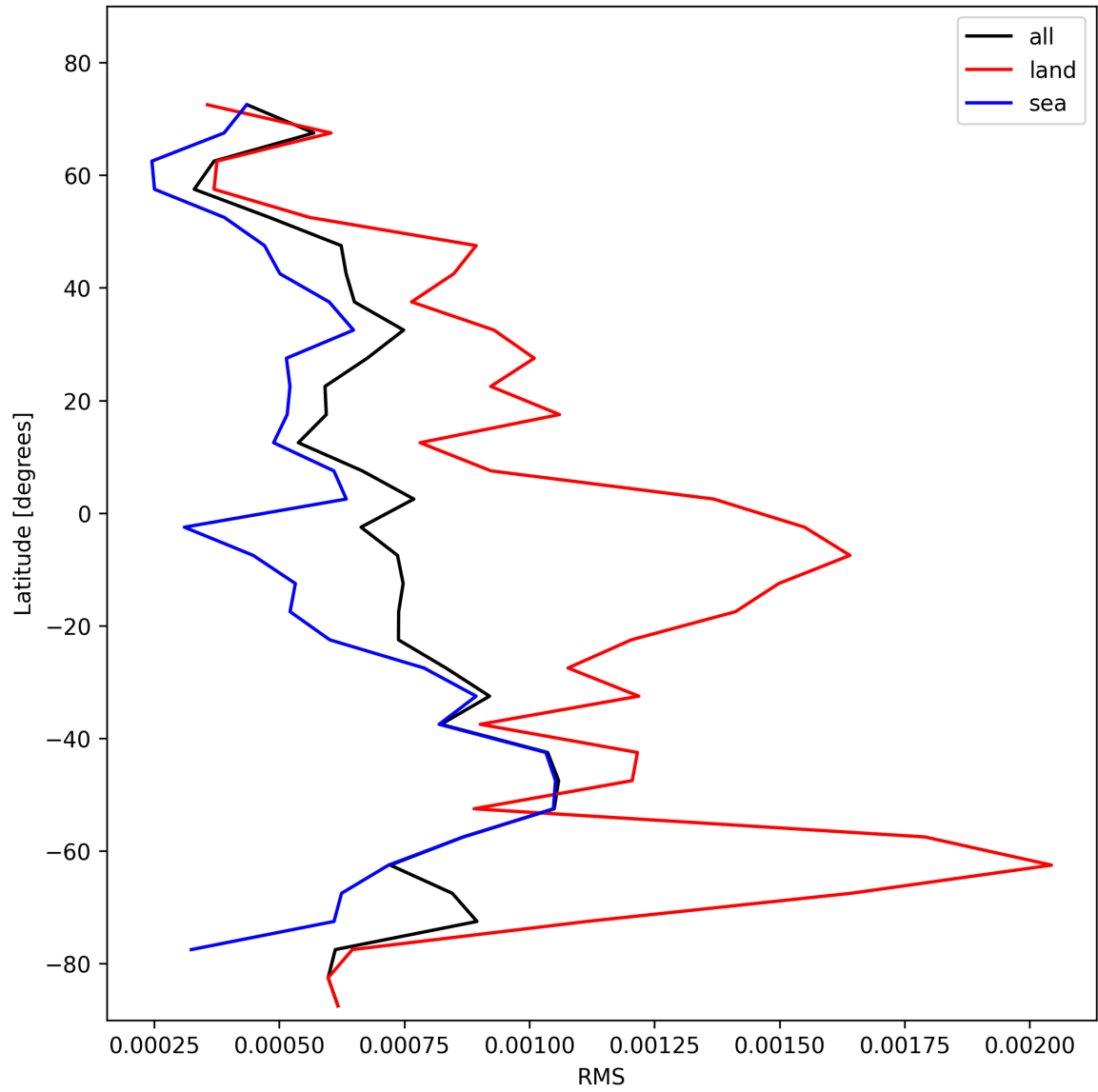


Figure 31: Zonal average of “RMS” for 2025-02-09 to 2025-02-11.

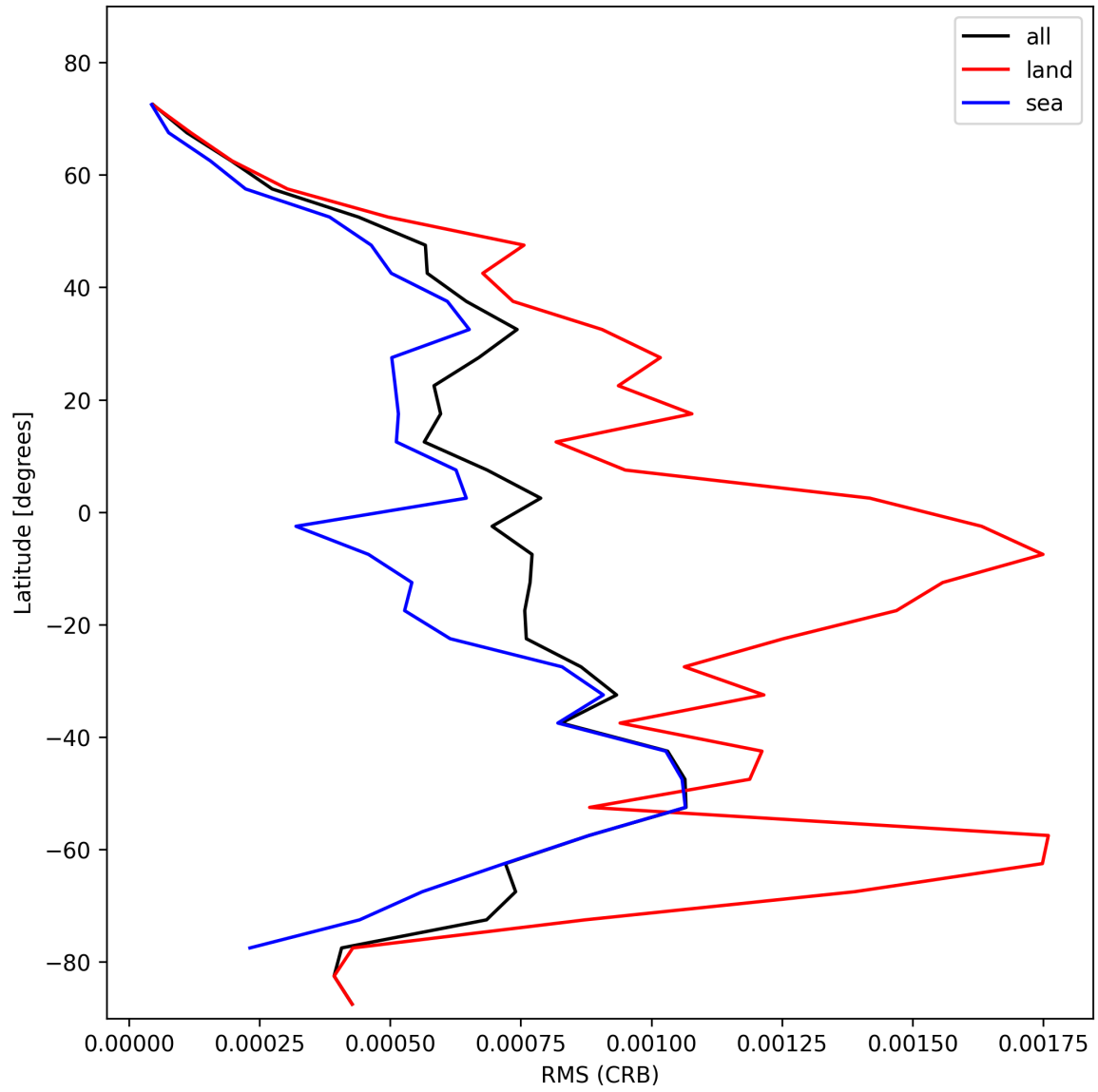


Figure 32: Zonal average of “RMS (CRB)” for 2025-02-09 to 2025-02-11.

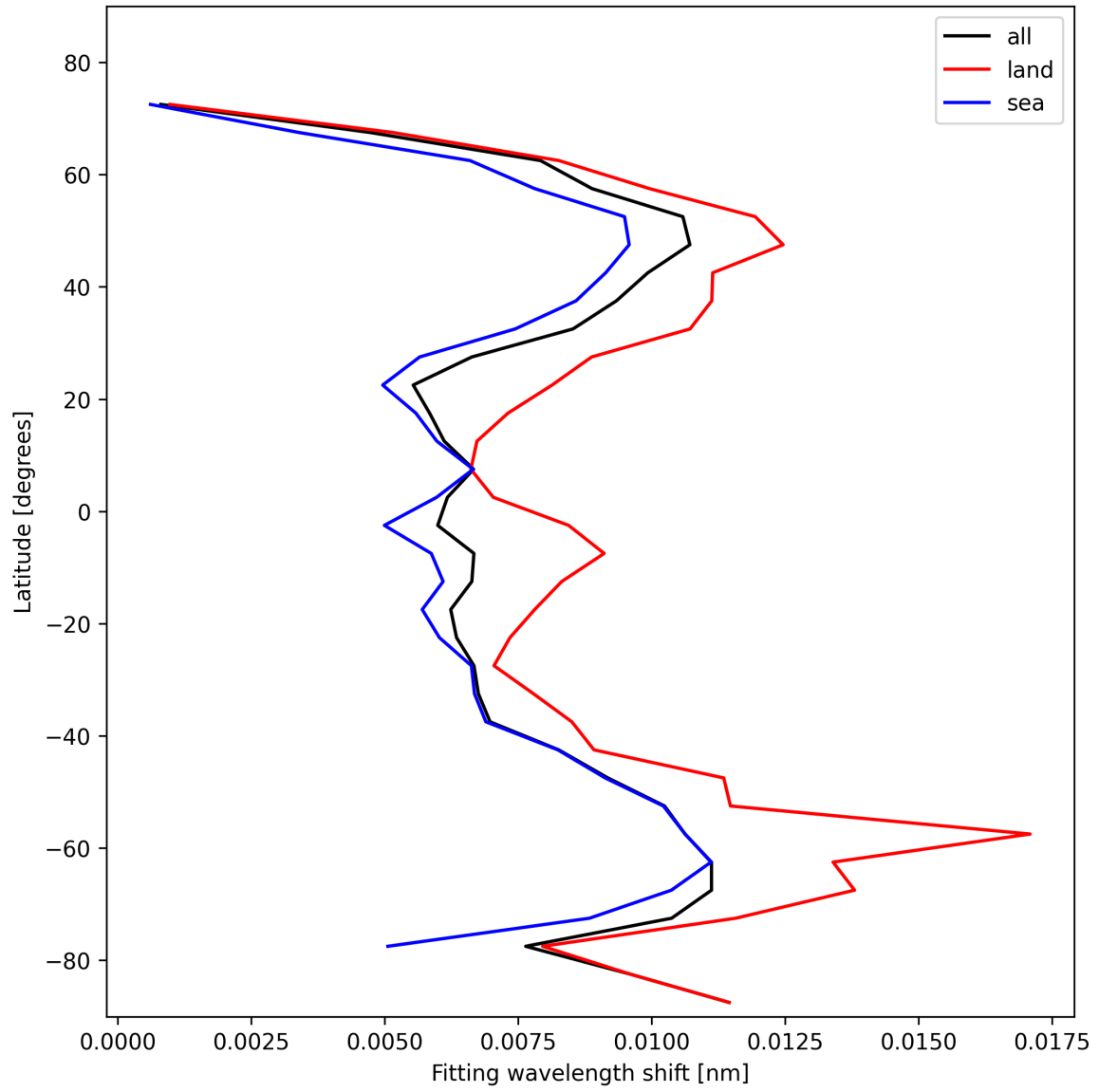


Figure 33: Zonal average of “Fitting wavelength shift” for 2025-02-09 to 2025-02-11.

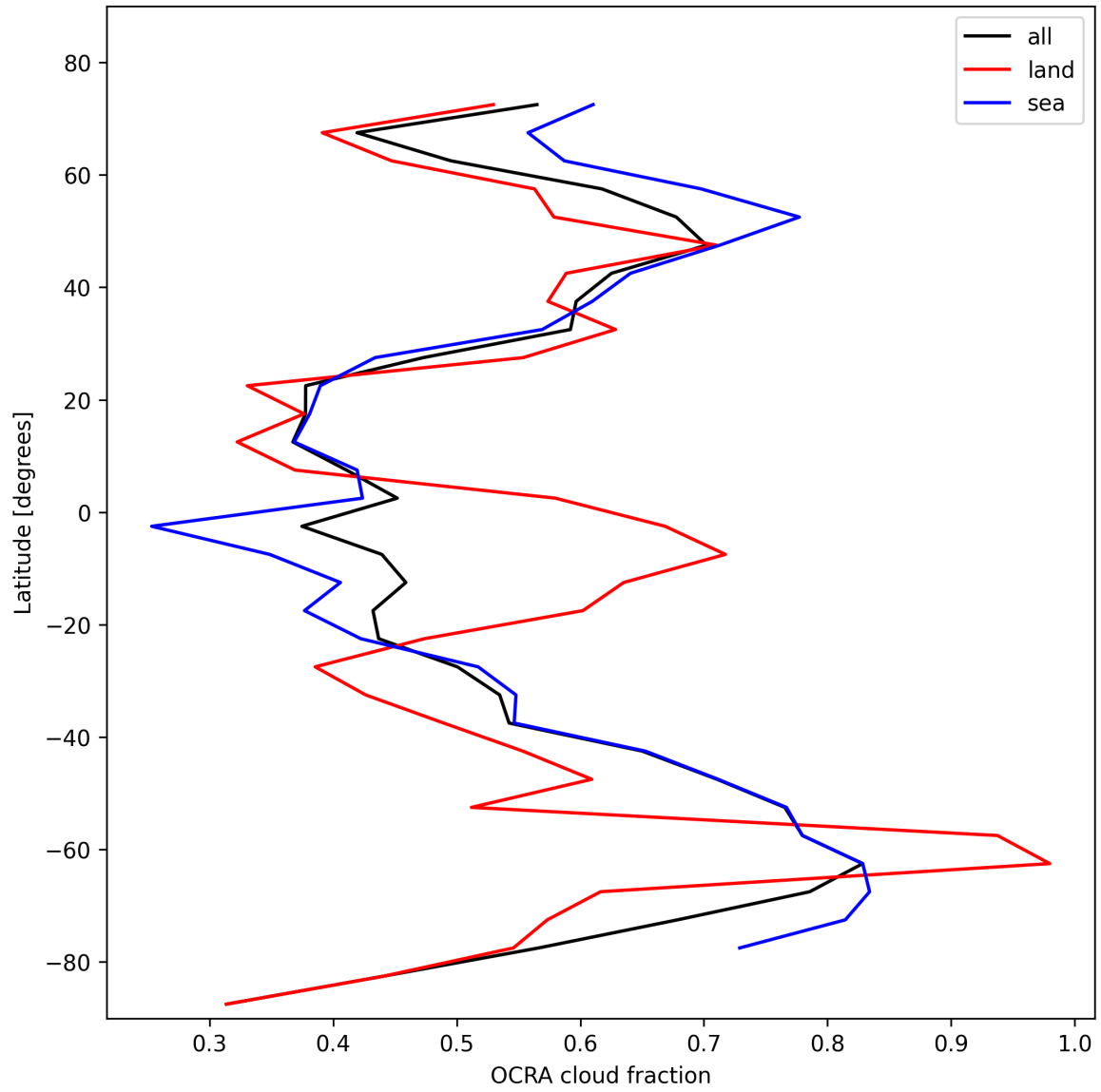


Figure 34: Zonal average of “OCRA cloud fraction” for 2025-02-09 to 2025-02-11.

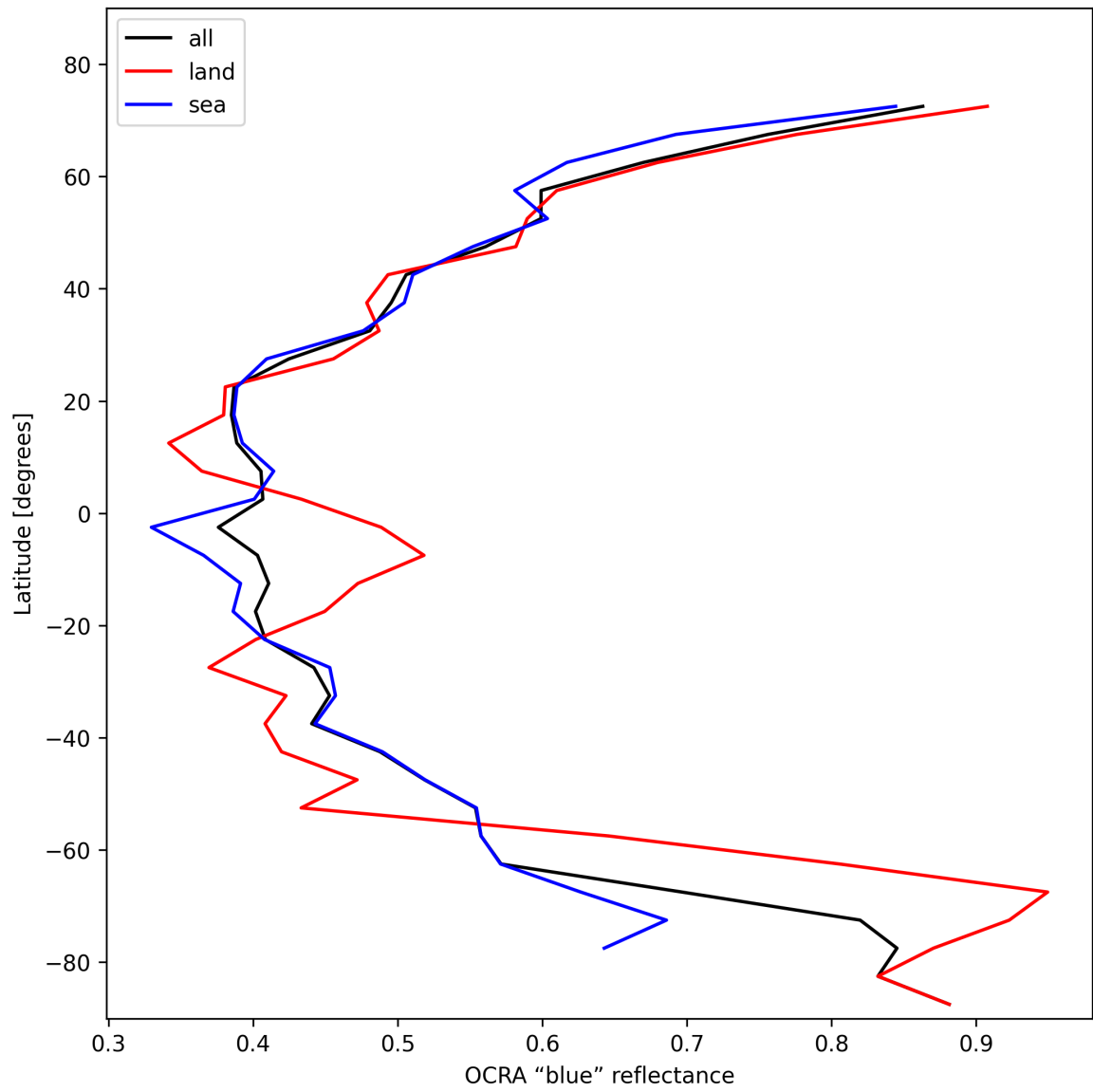


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2025-02-09 to 2025-02-11.

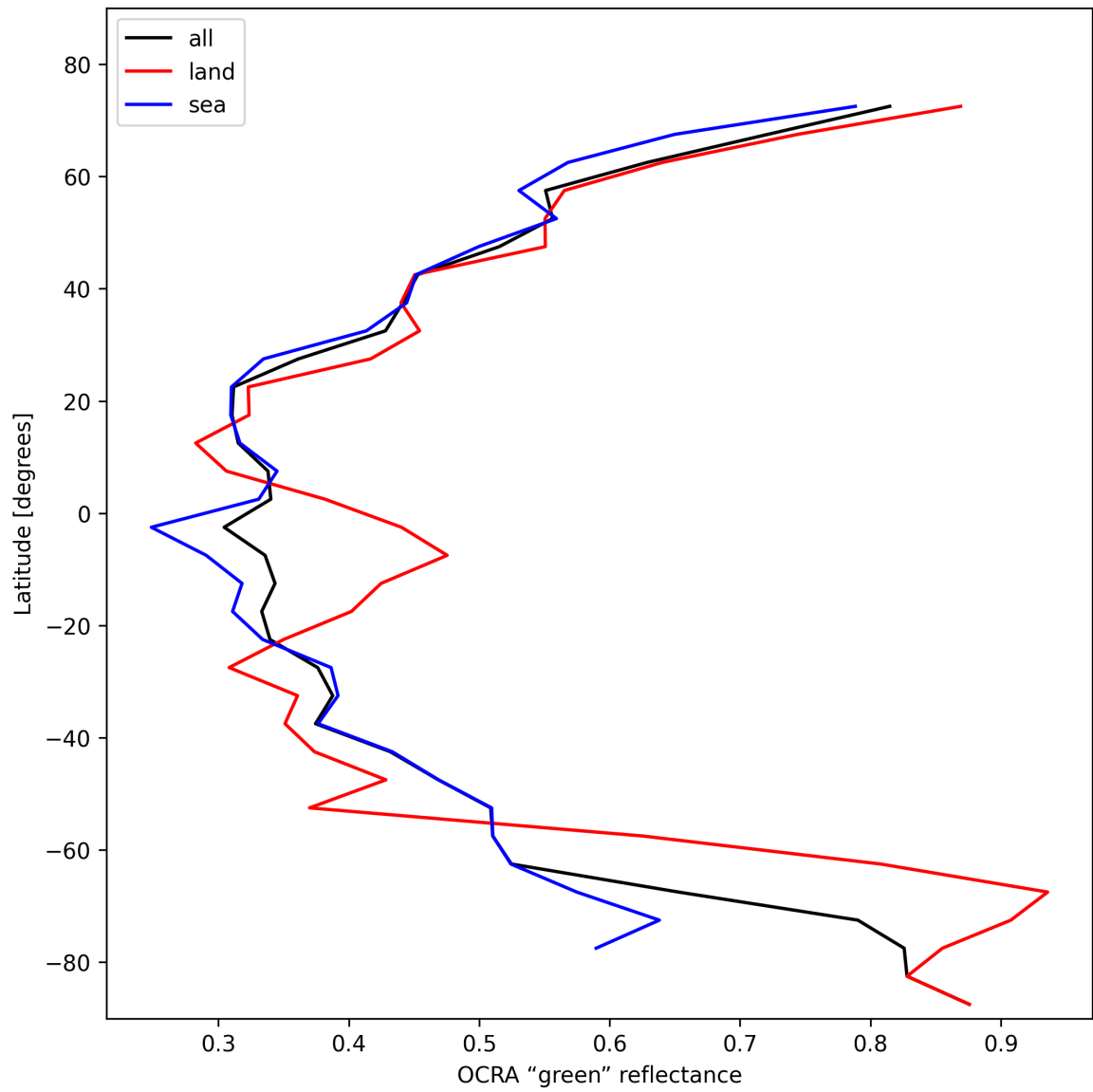


Figure 36: Zonal average of “OCRA “green” reflectance” for 2025-02-09 to 2025-02-11.

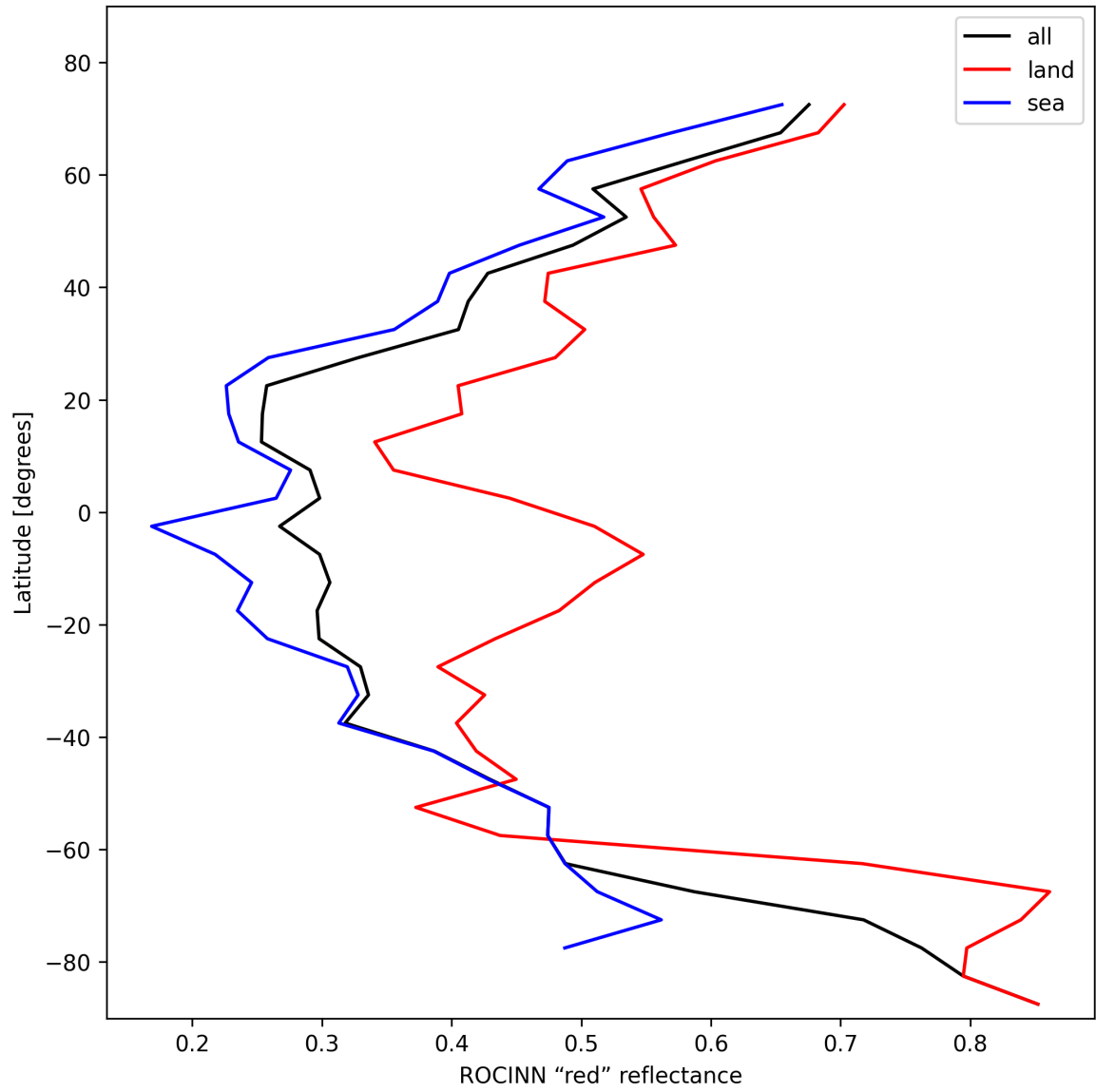


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2025-02-09 to 2025-02-11.

8 Histograms

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

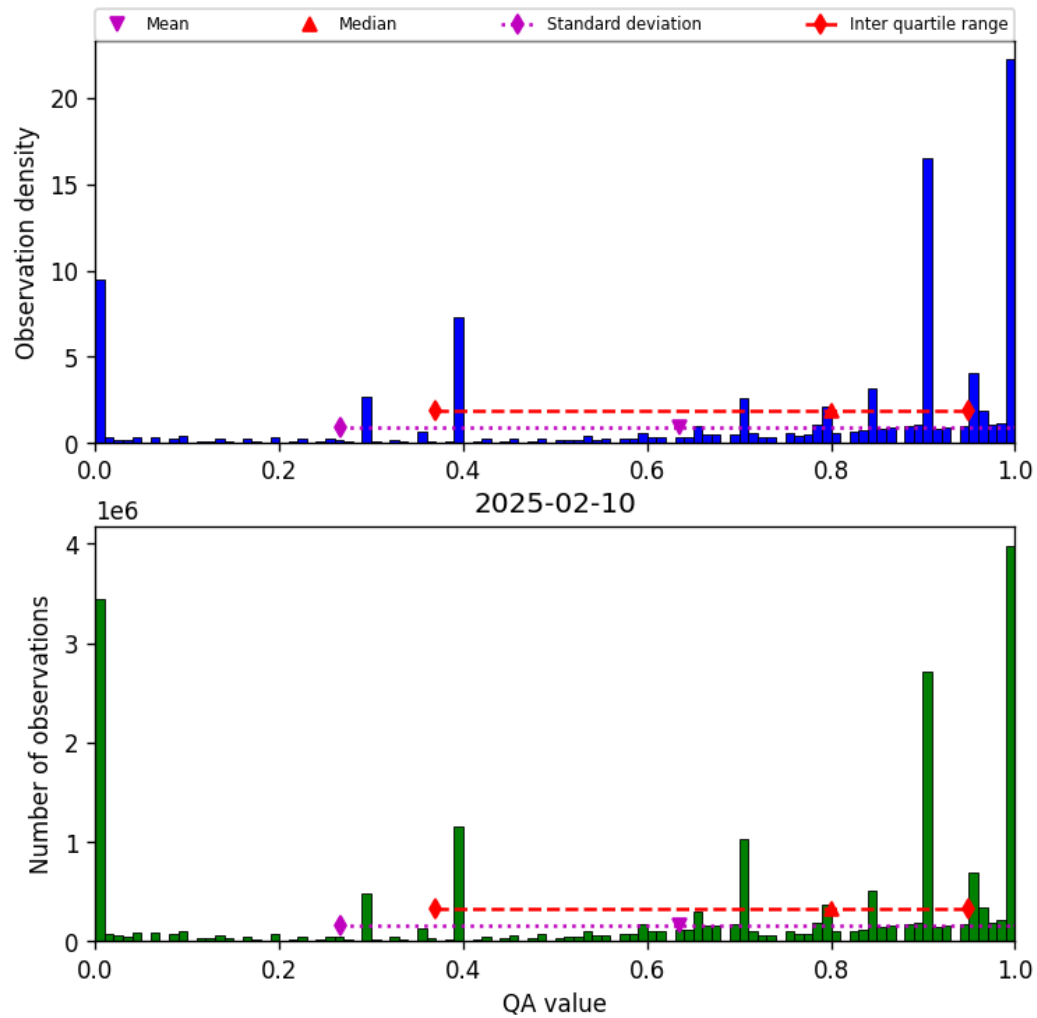


Figure 38: Histogram of “QA value” for 2025-02-09 to 2025-02-11

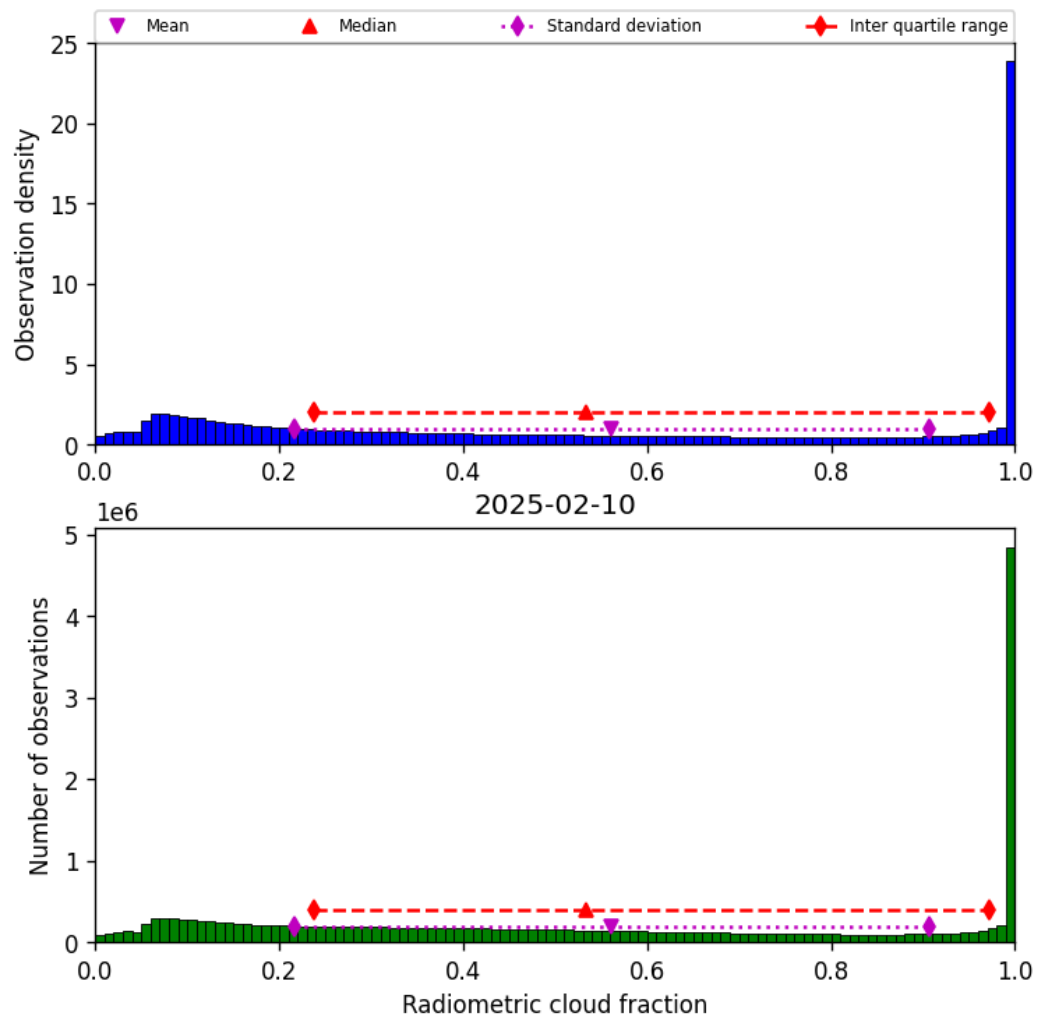


Figure 39: Histogram of “Radiometric cloud fraction” for 2025-02-09 to 2025-02-11

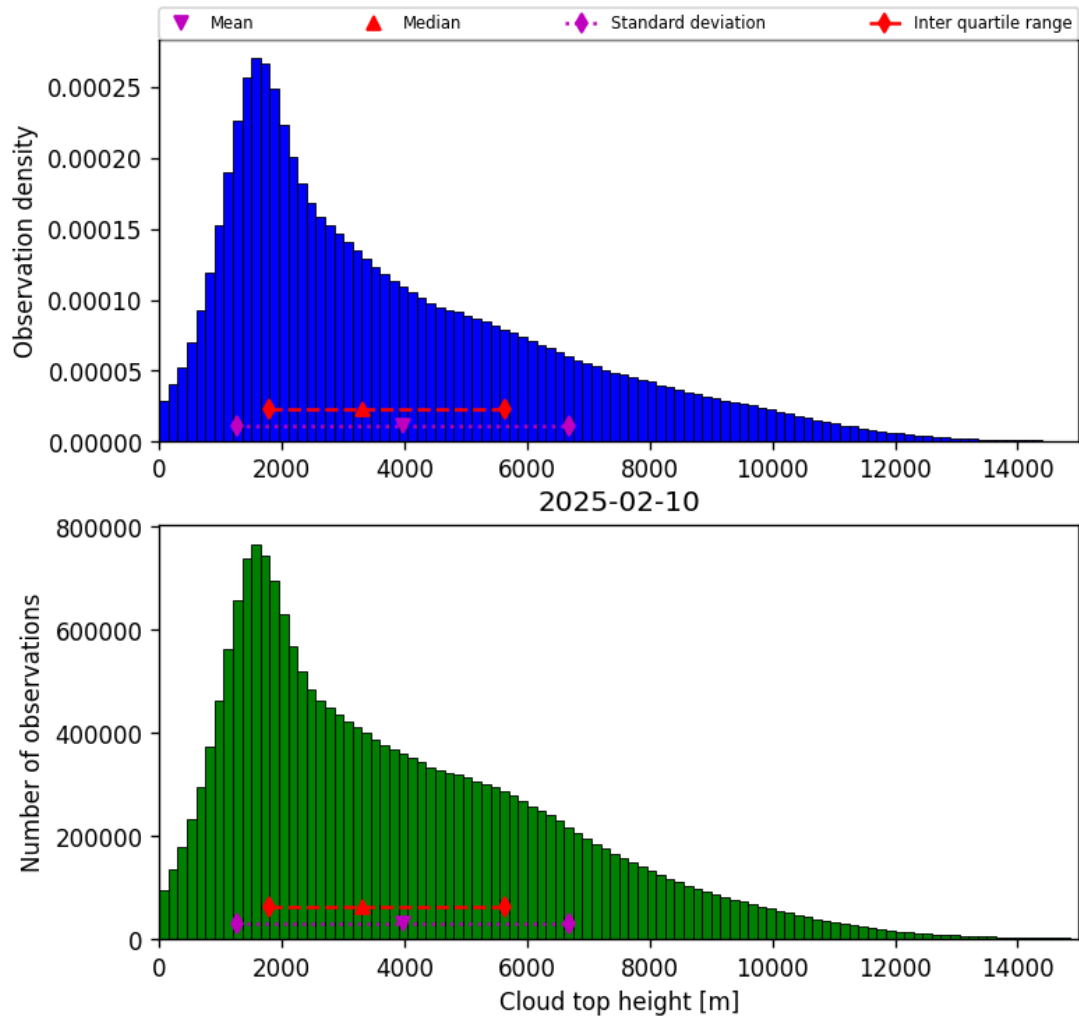


Figure 40: Histogram of “Cloud top height” for 2025-02-09 to 2025-02-11

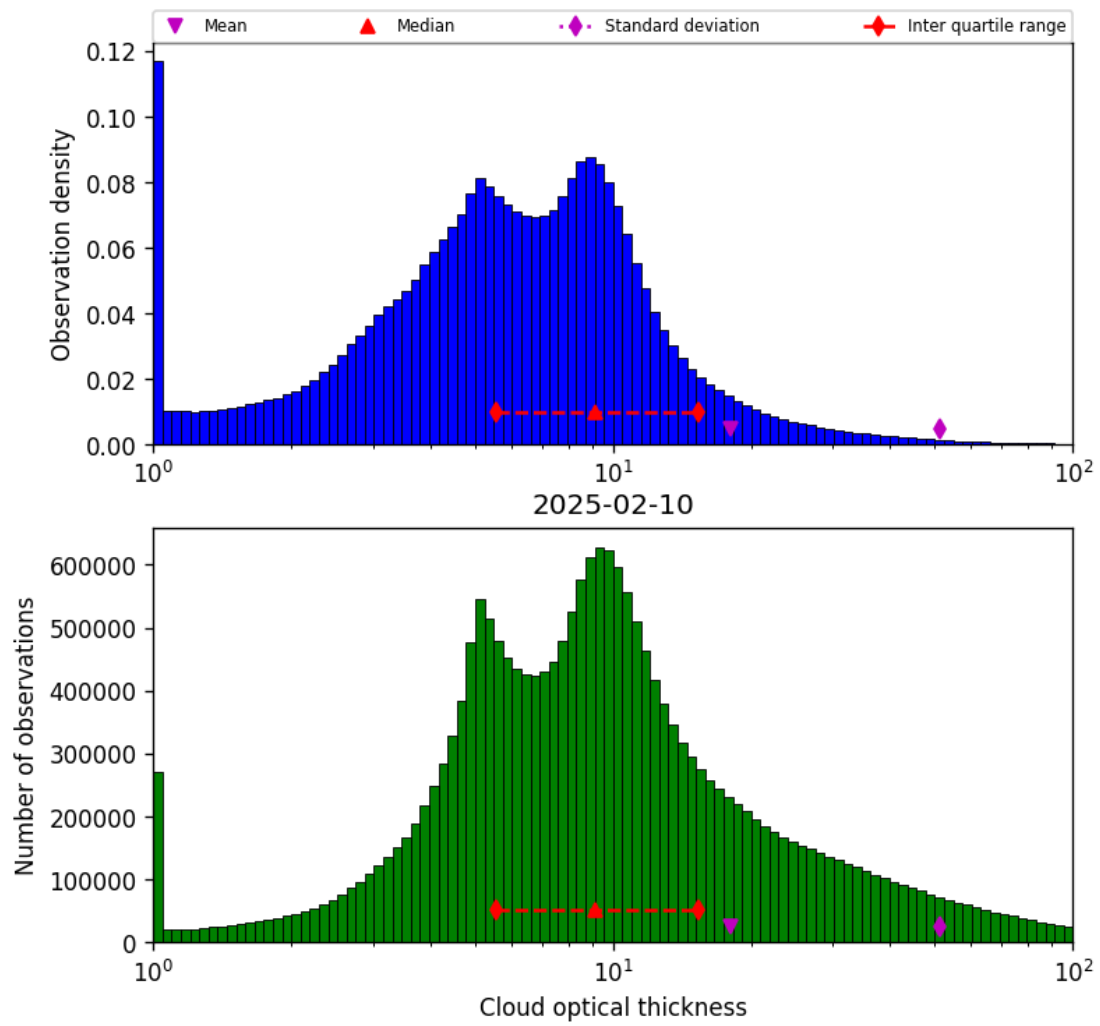


Figure 41: Histogram of “Cloud optical thickness” for 2025-02-09 to 2025-02-11

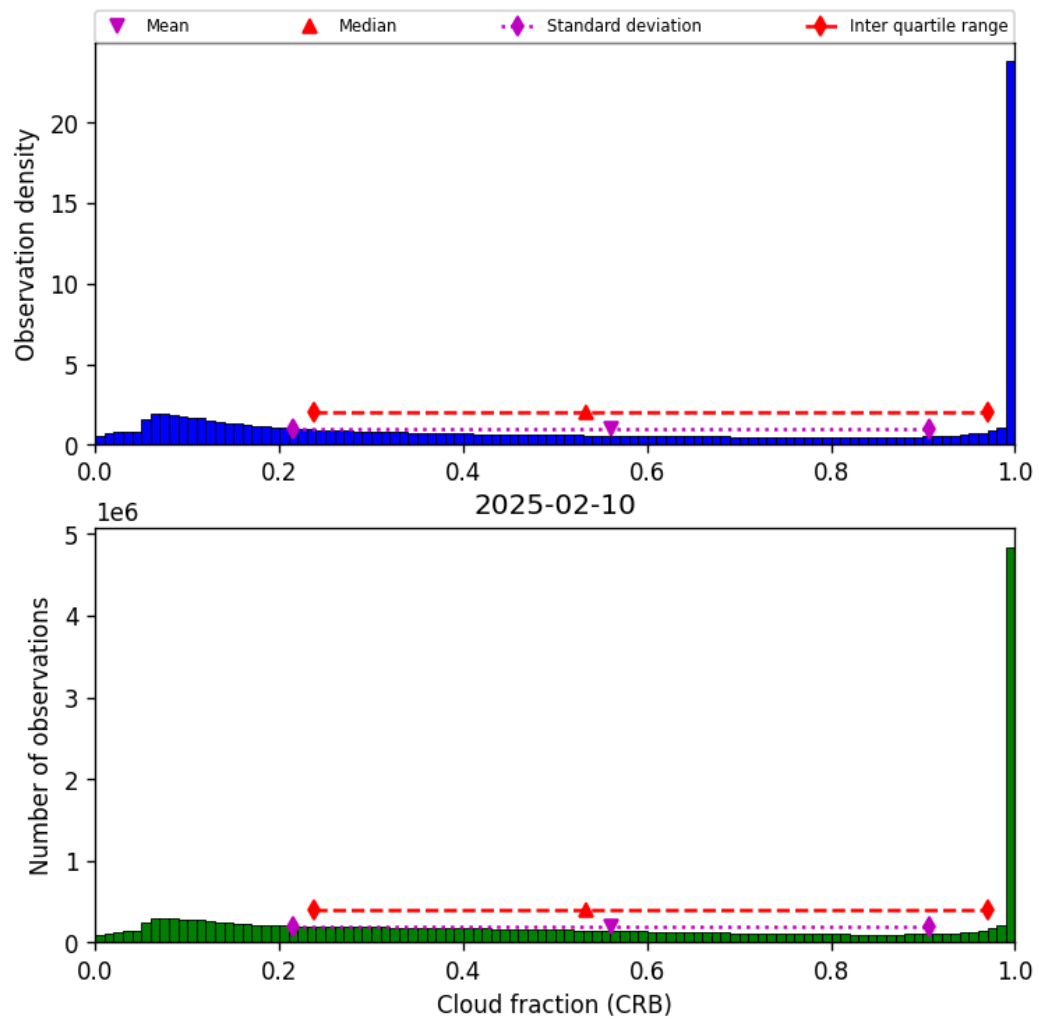


Figure 42: Histogram of “Cloud fraction (CRB)” for 2025-02-09 to 2025-02-11

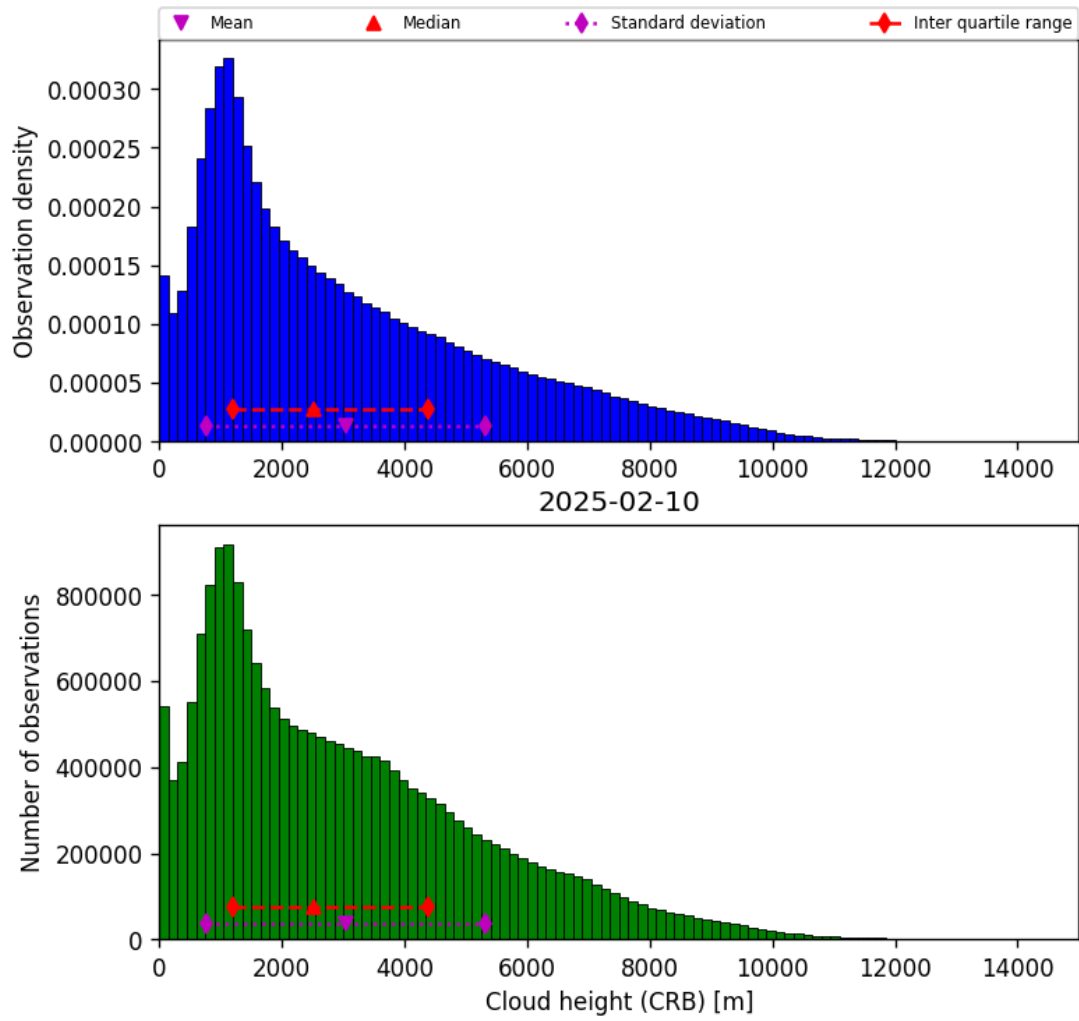


Figure 43: Histogram of “Cloud height (CRB)” for 2025-02-09 to 2025-02-11

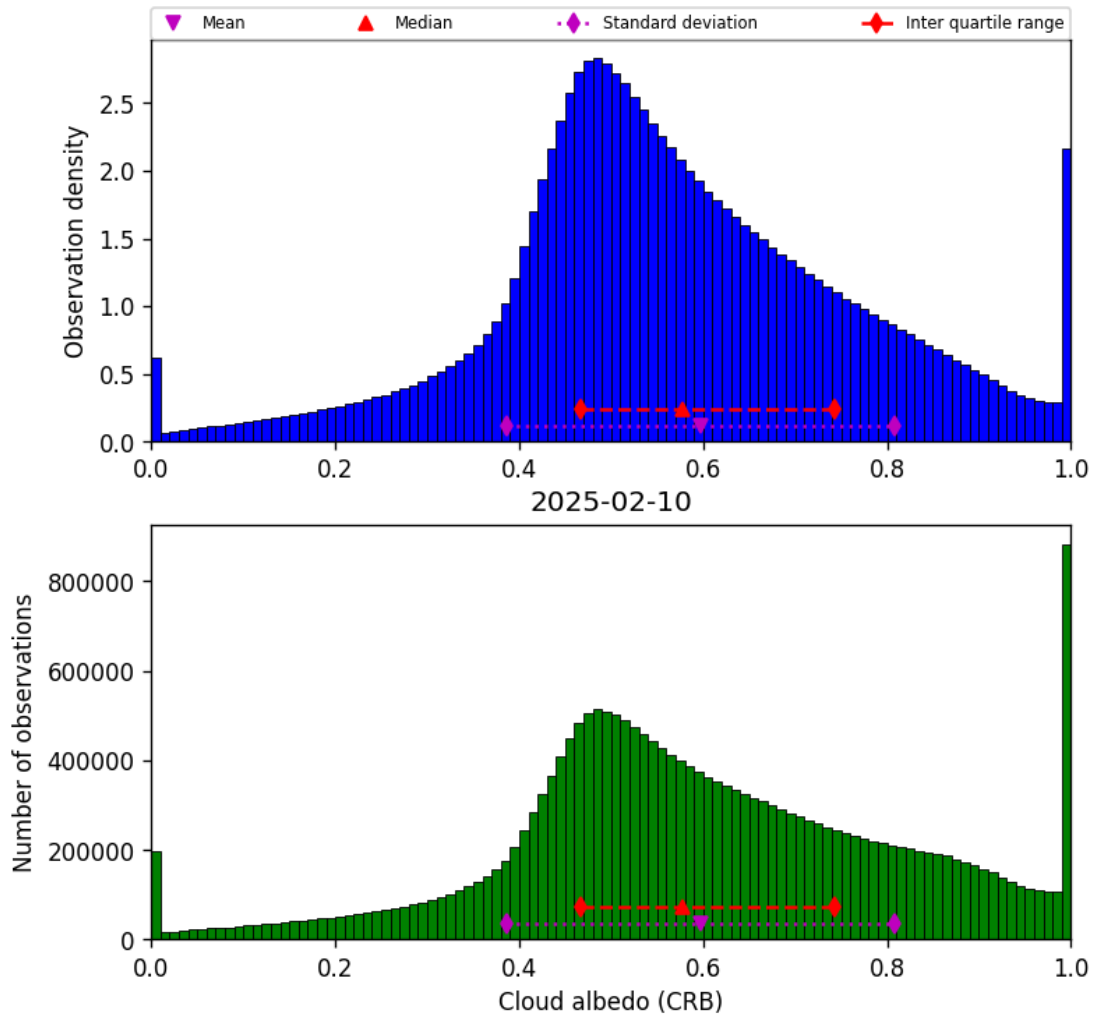


Figure 44: Histogram of “Cloud albedo (CRB)” for 2025-02-09 to 2025-02-11

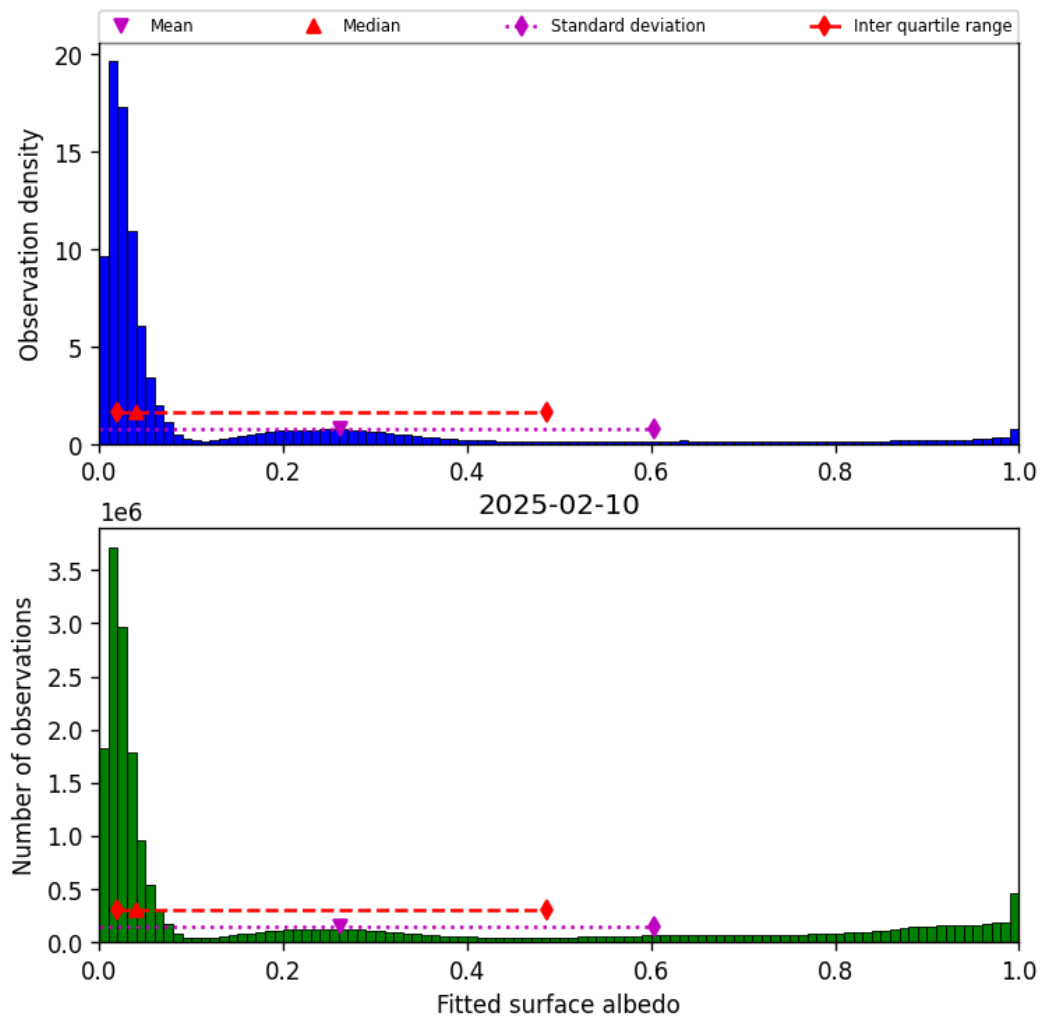


Figure 45: Histogram of “Fitted surface albedo” for 2025-02-09 to 2025-02-11

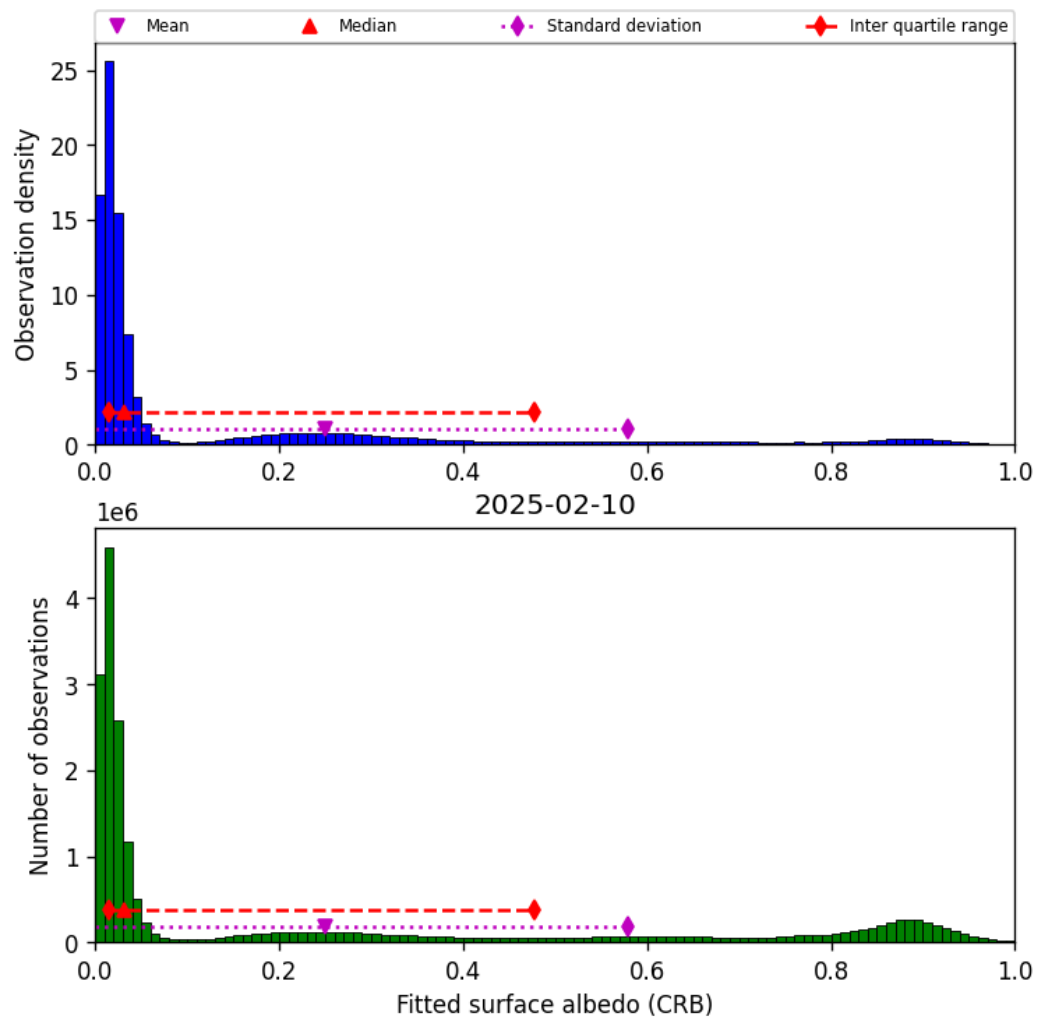


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2025-02-09 to 2025-02-11

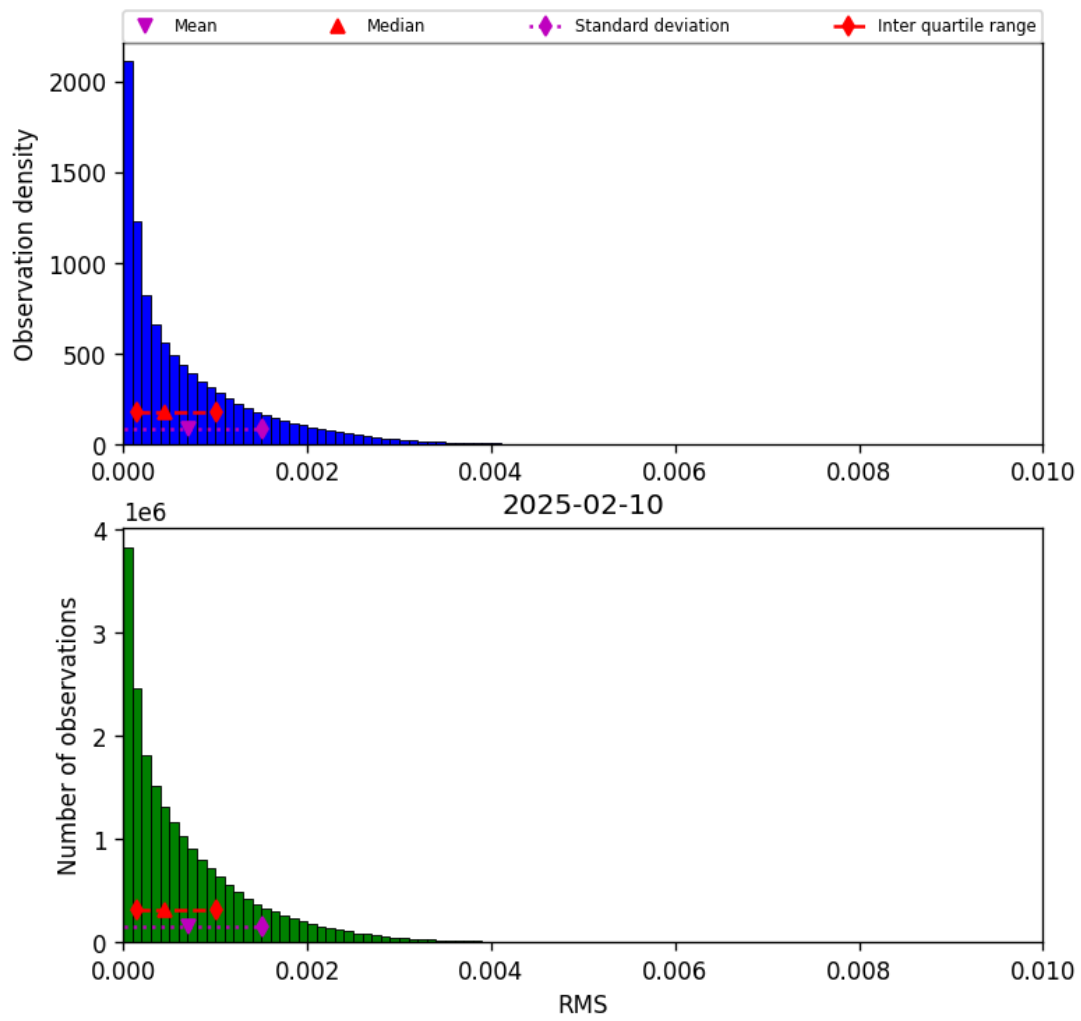


Figure 47: Histogram of “RMS” for 2025-02-09 to 2025-02-11

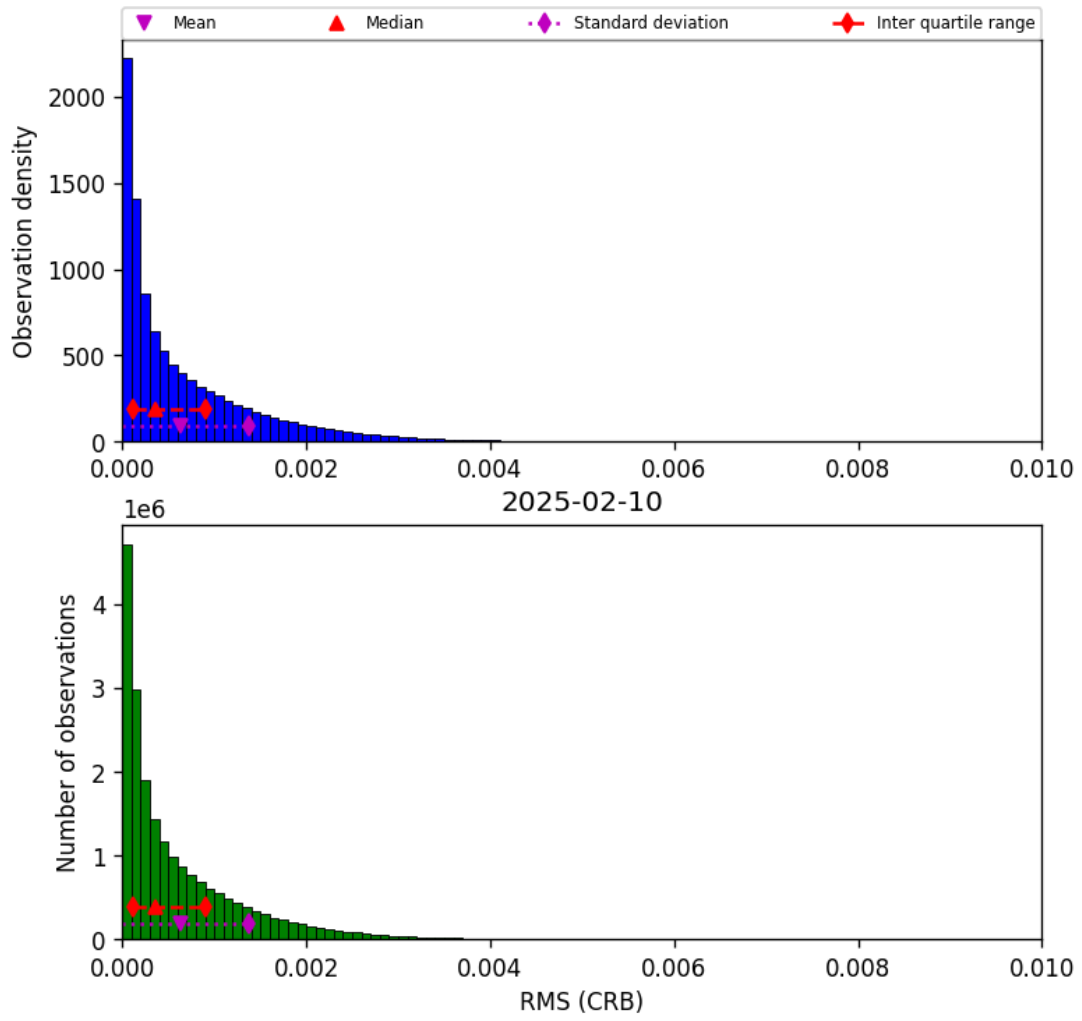


Figure 48: Histogram of “RMS (CRB)” for 2025-02-09 to 2025-02-11

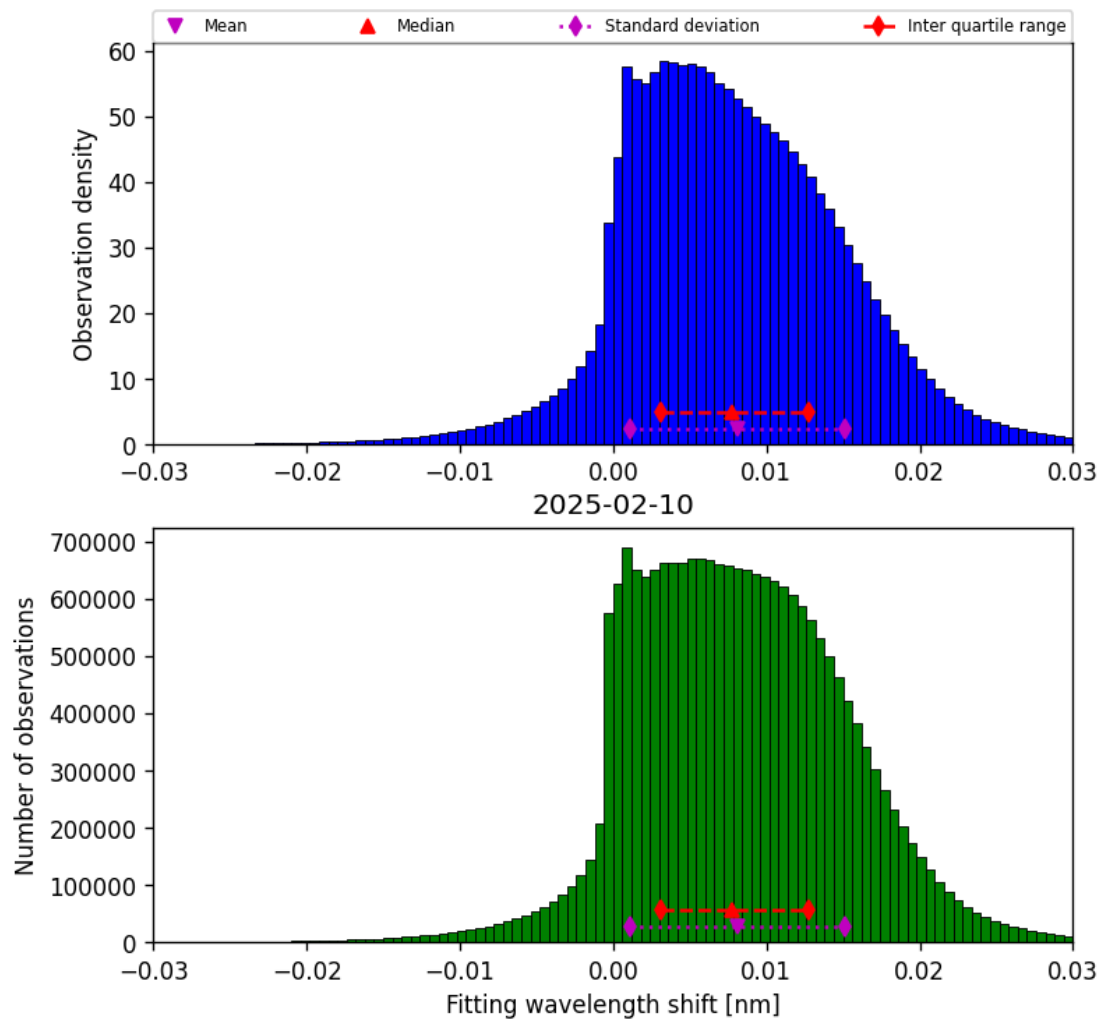


Figure 49: Histogram of “Fitting wavelength shift” for 2025-02-09 to 2025-02-11

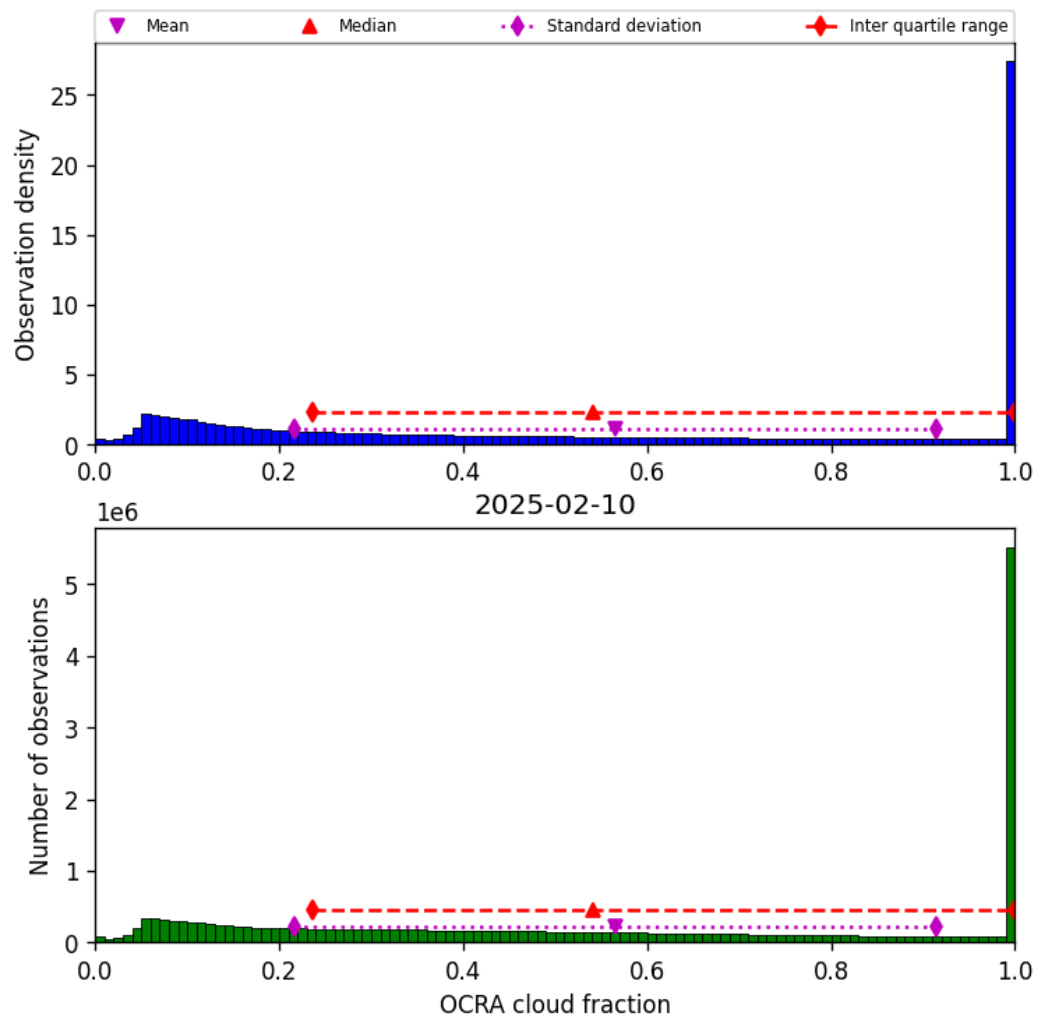


Figure 50: Histogram of “OCRA cloud fraction” for 2025-02-09 to 2025-02-11

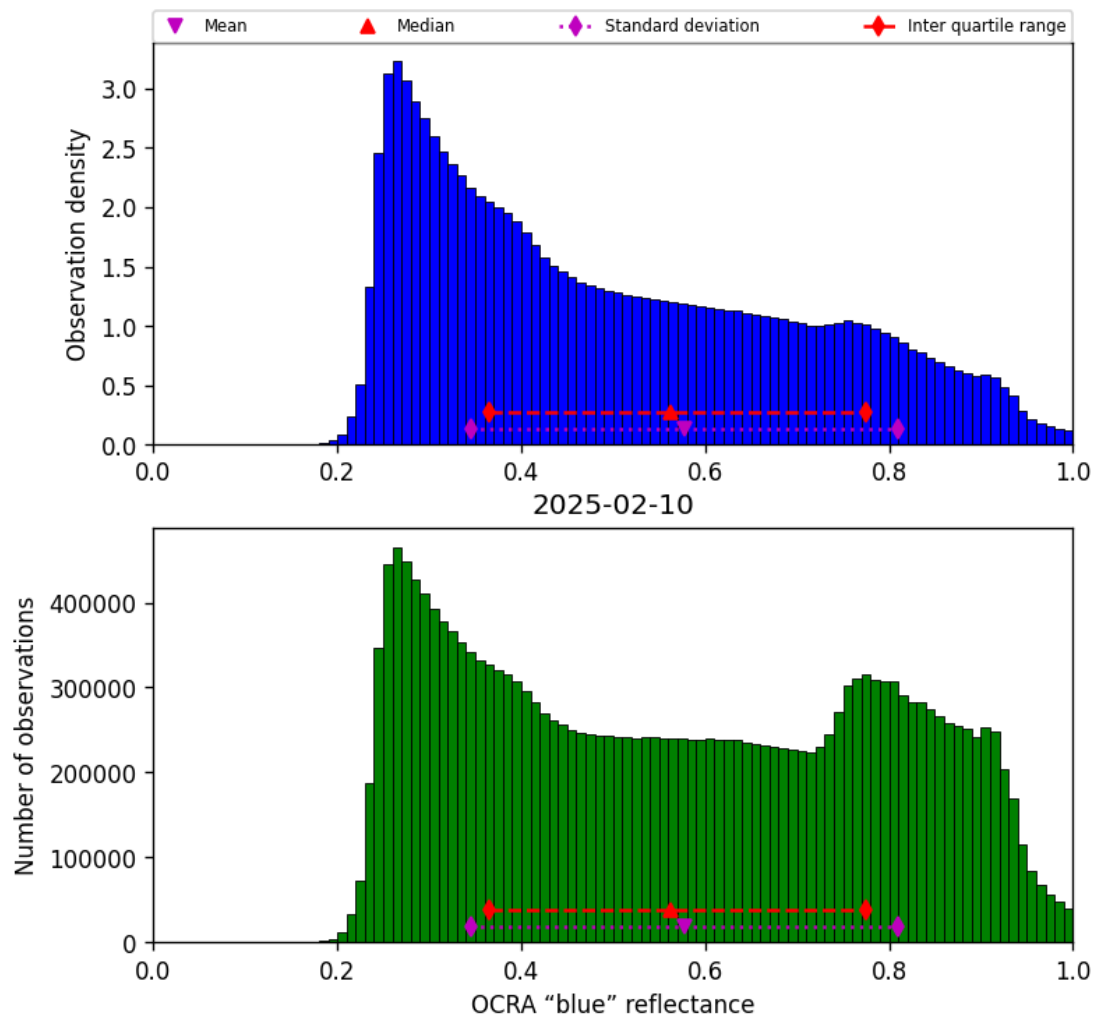


Figure 51: Histogram of “OCRA “blue” reflectance” for 2025-02-09 to 2025-02-11

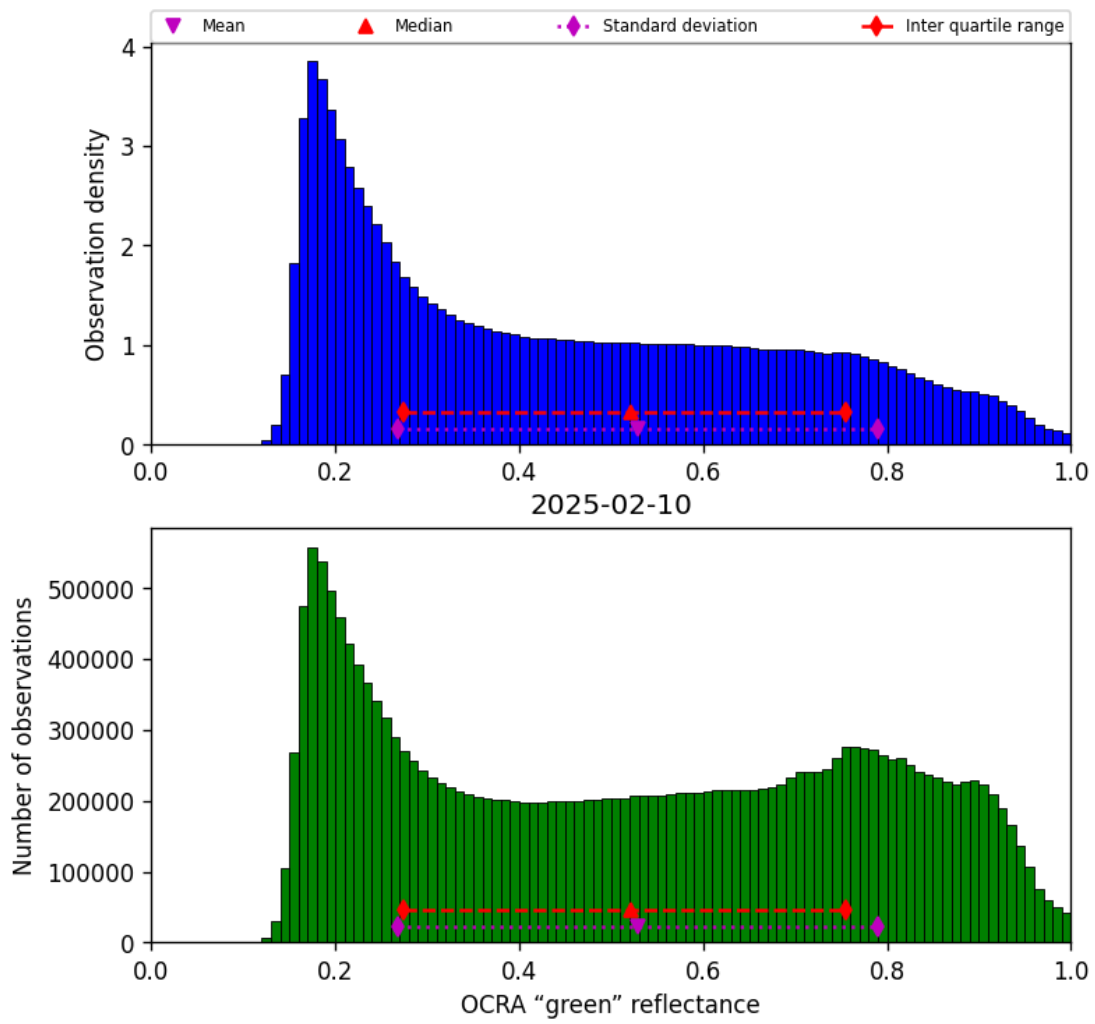


Figure 52: Histogram of “OCRA “green” reflectance” for 2025-02-09 to 2025-02-11

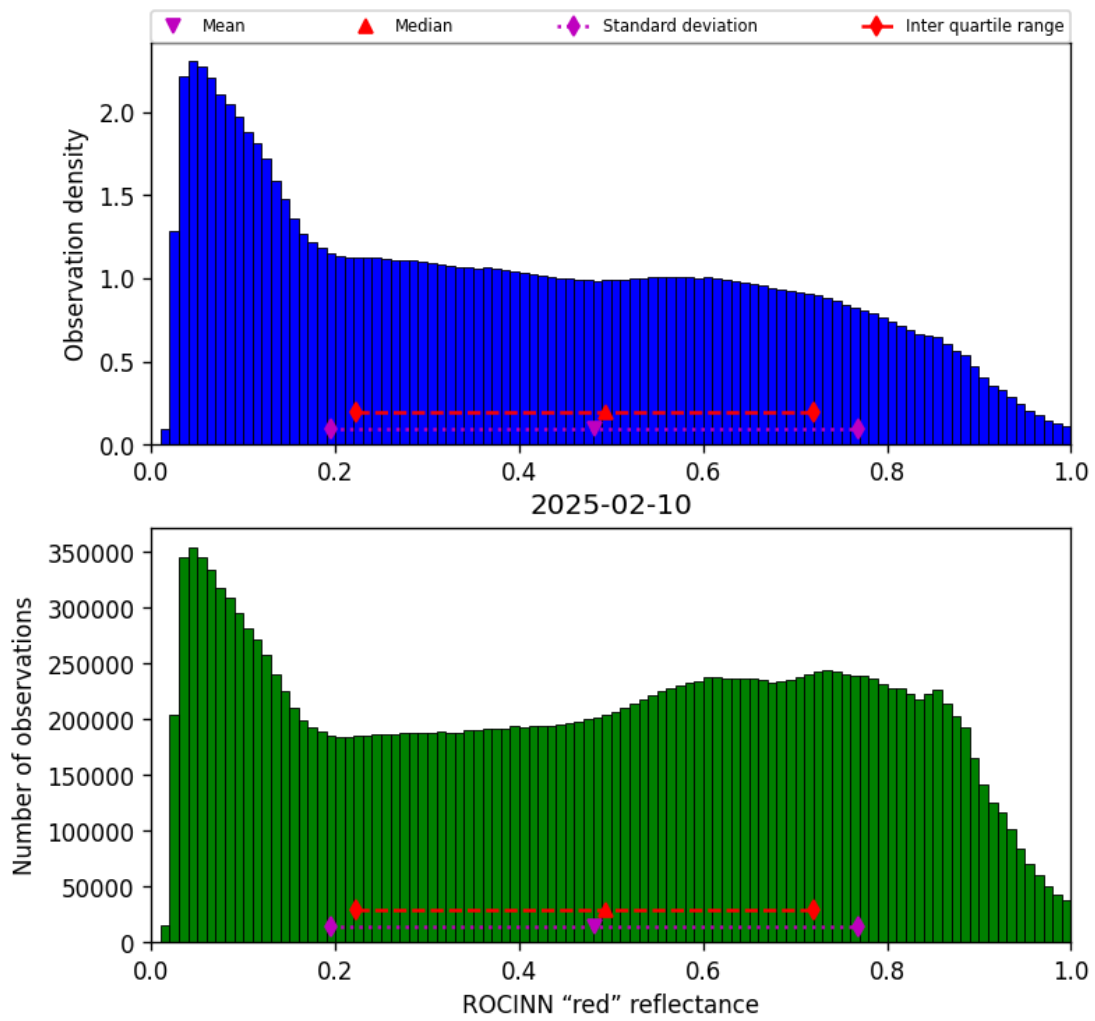


Figure 53: Histogram of “ROCINN “red” reflectance” for 2025-02-09 to 2025-02-11

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.

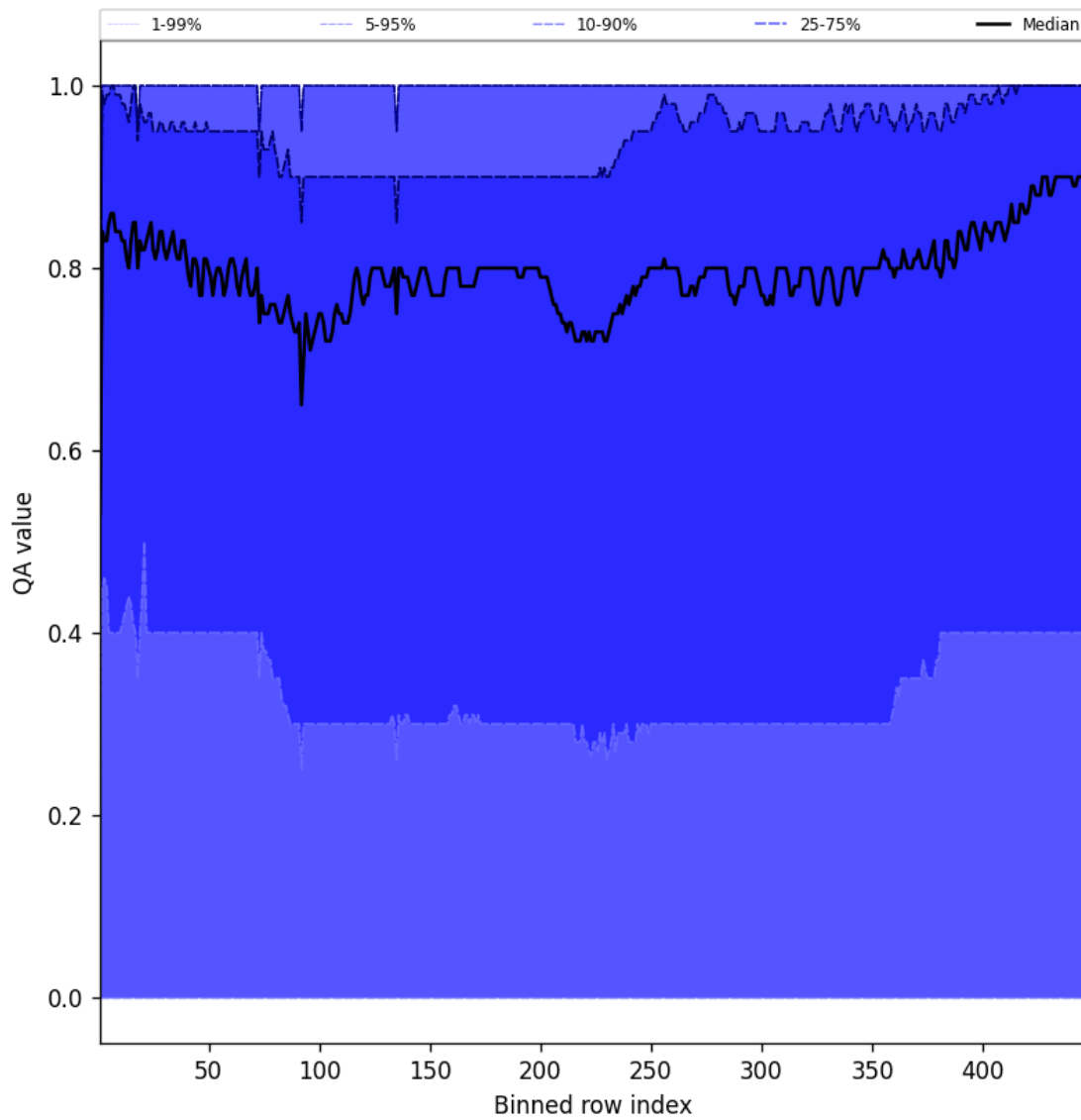


Figure 54: Along track statistics of “QA value” for 2025-02-09 to 2025-02-11

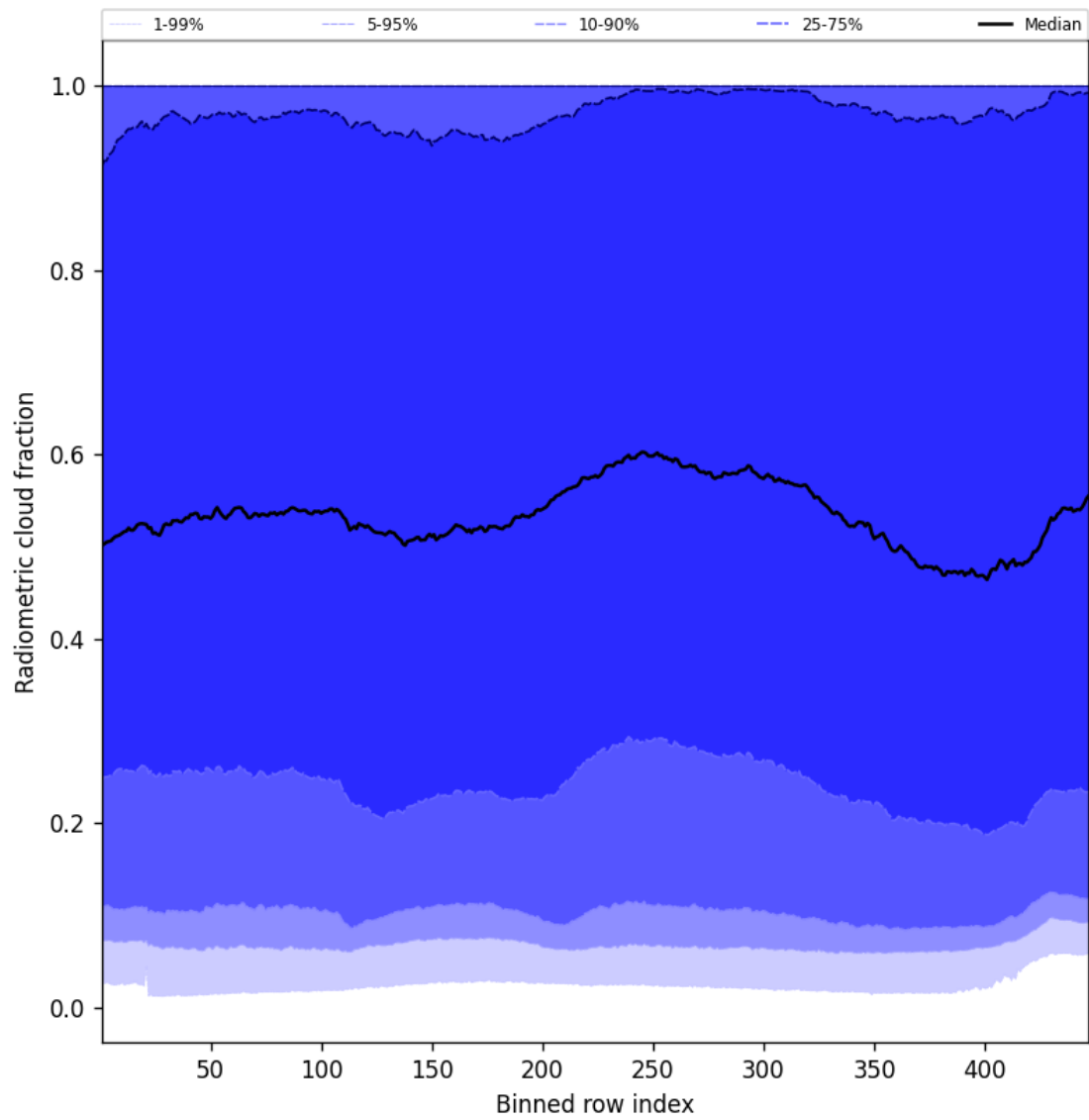


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2025-02-09 to 2025-02-11

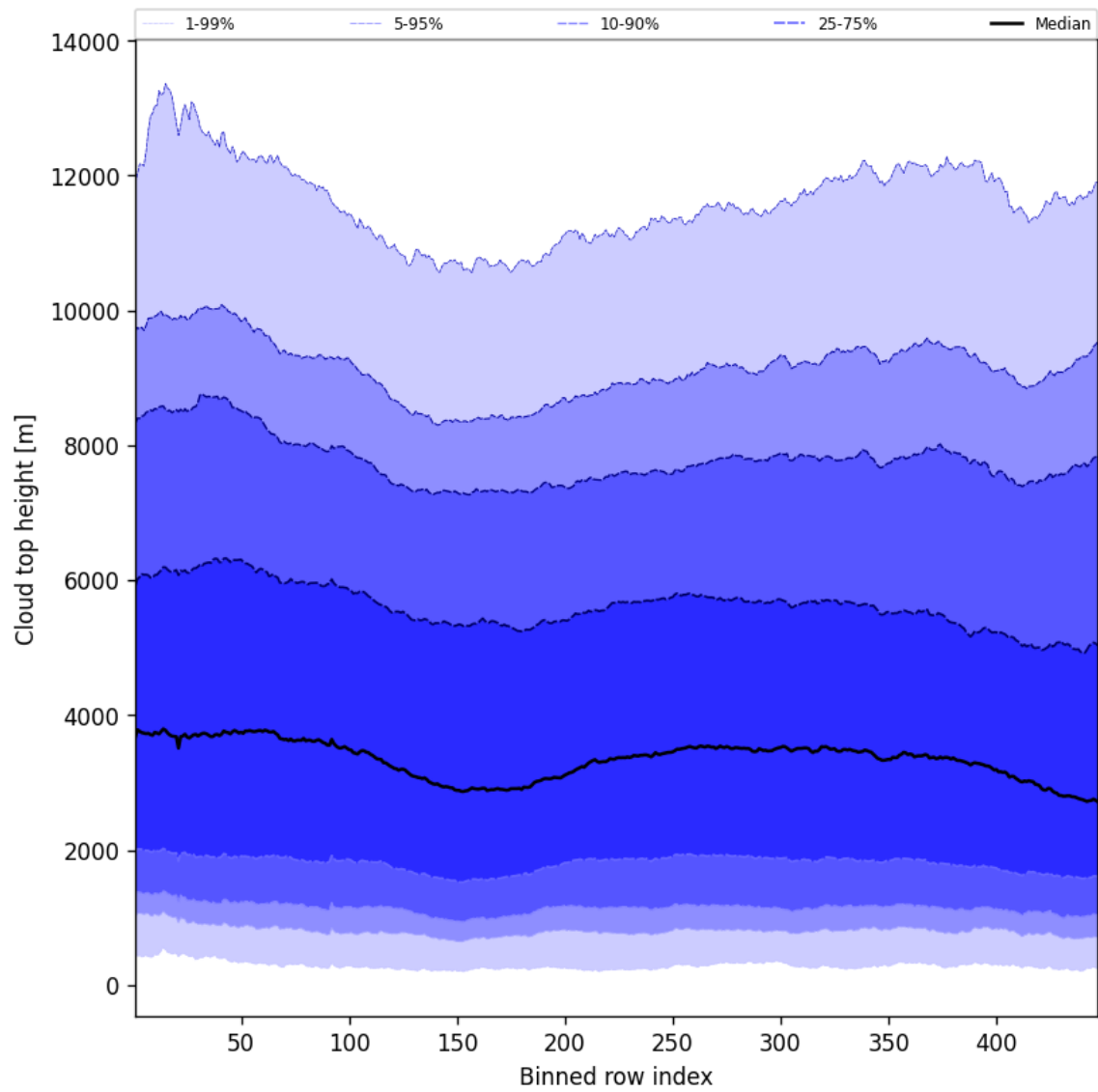


Figure 56: Along track statistics of “Cloud top height” for 2025-02-09 to 2025-02-11

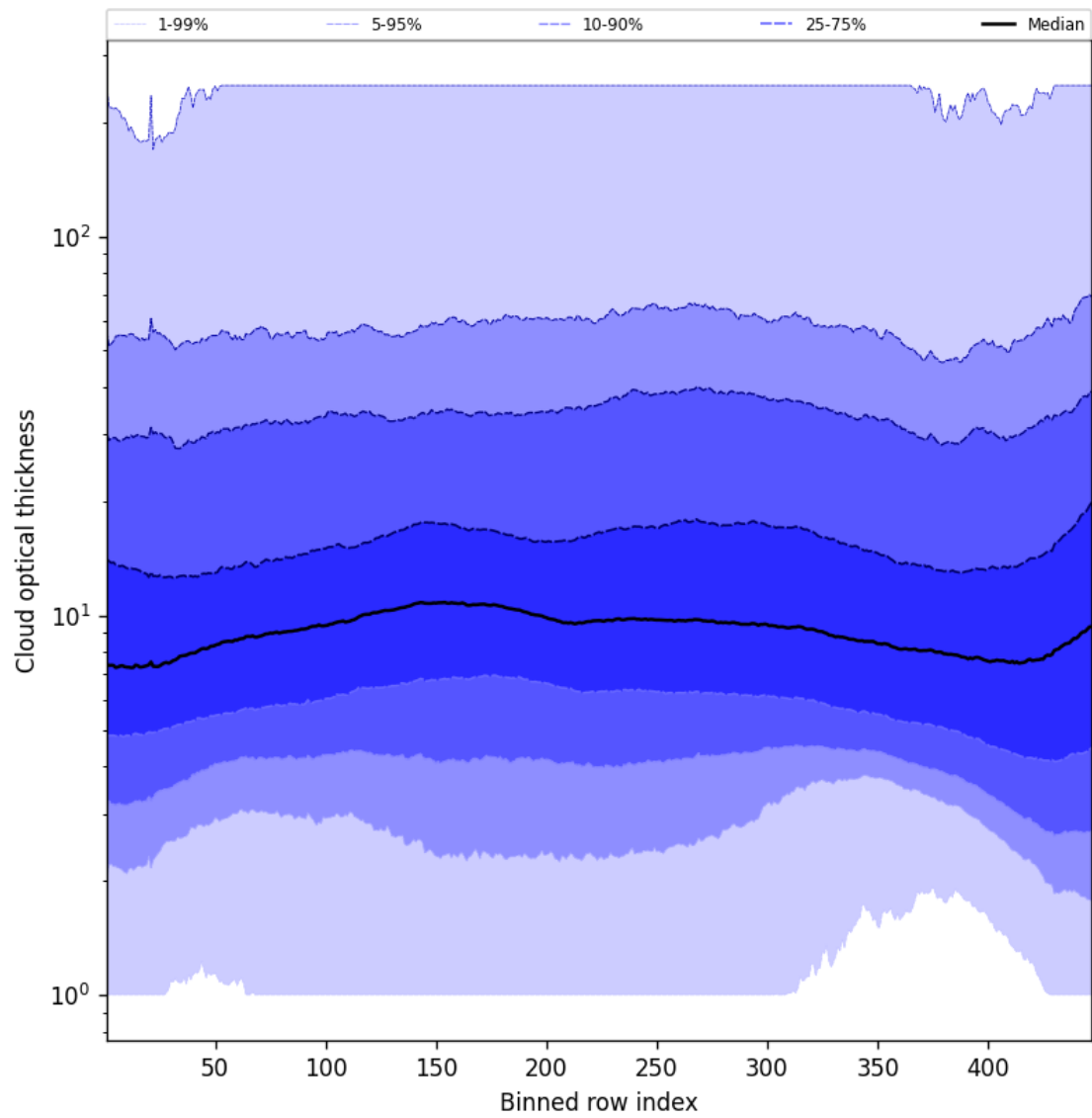


Figure 57: Along track statistics of “Cloud optical thickness” for 2025-02-09 to 2025-02-11

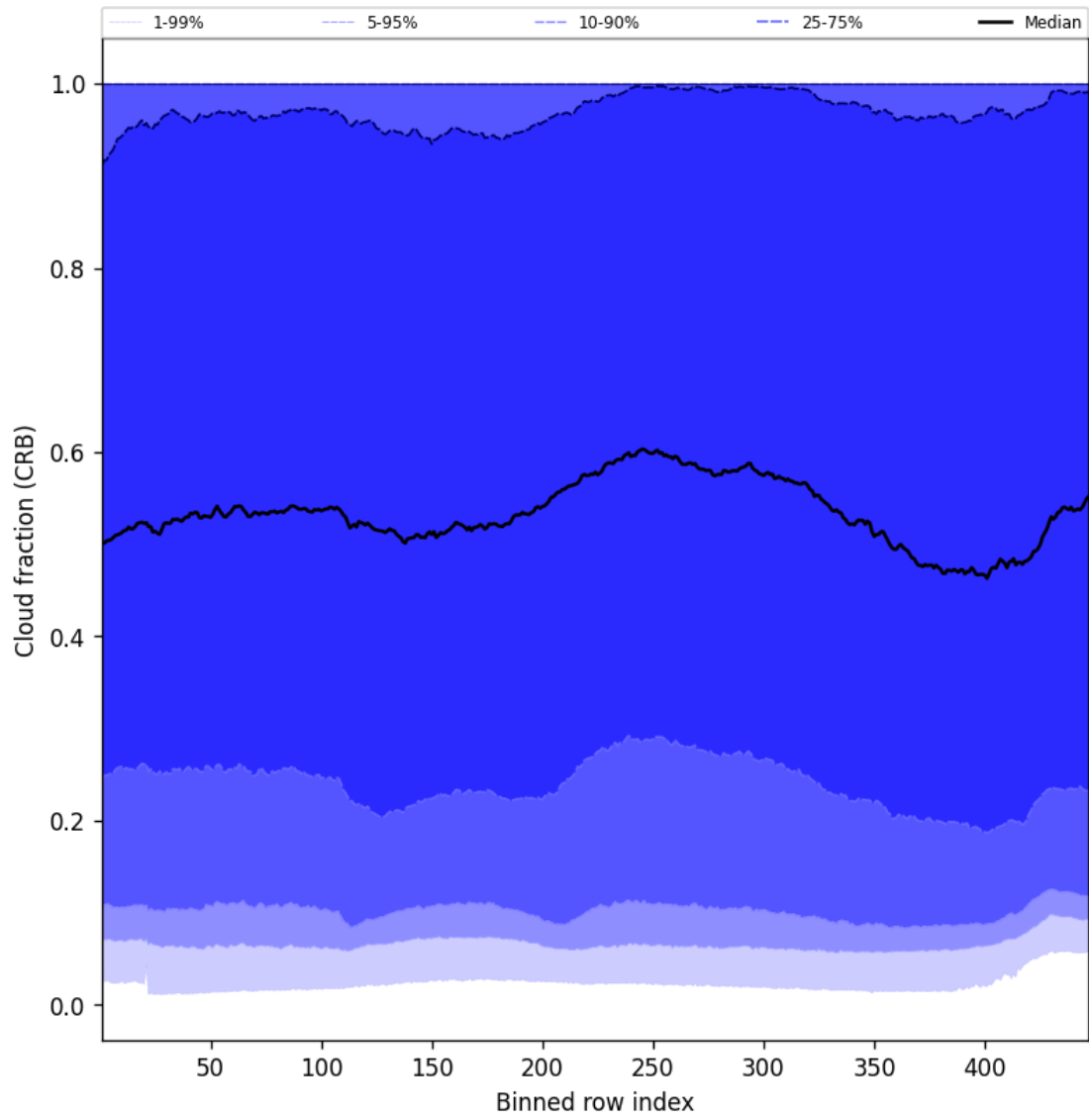


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2025-02-09 to 2025-02-11

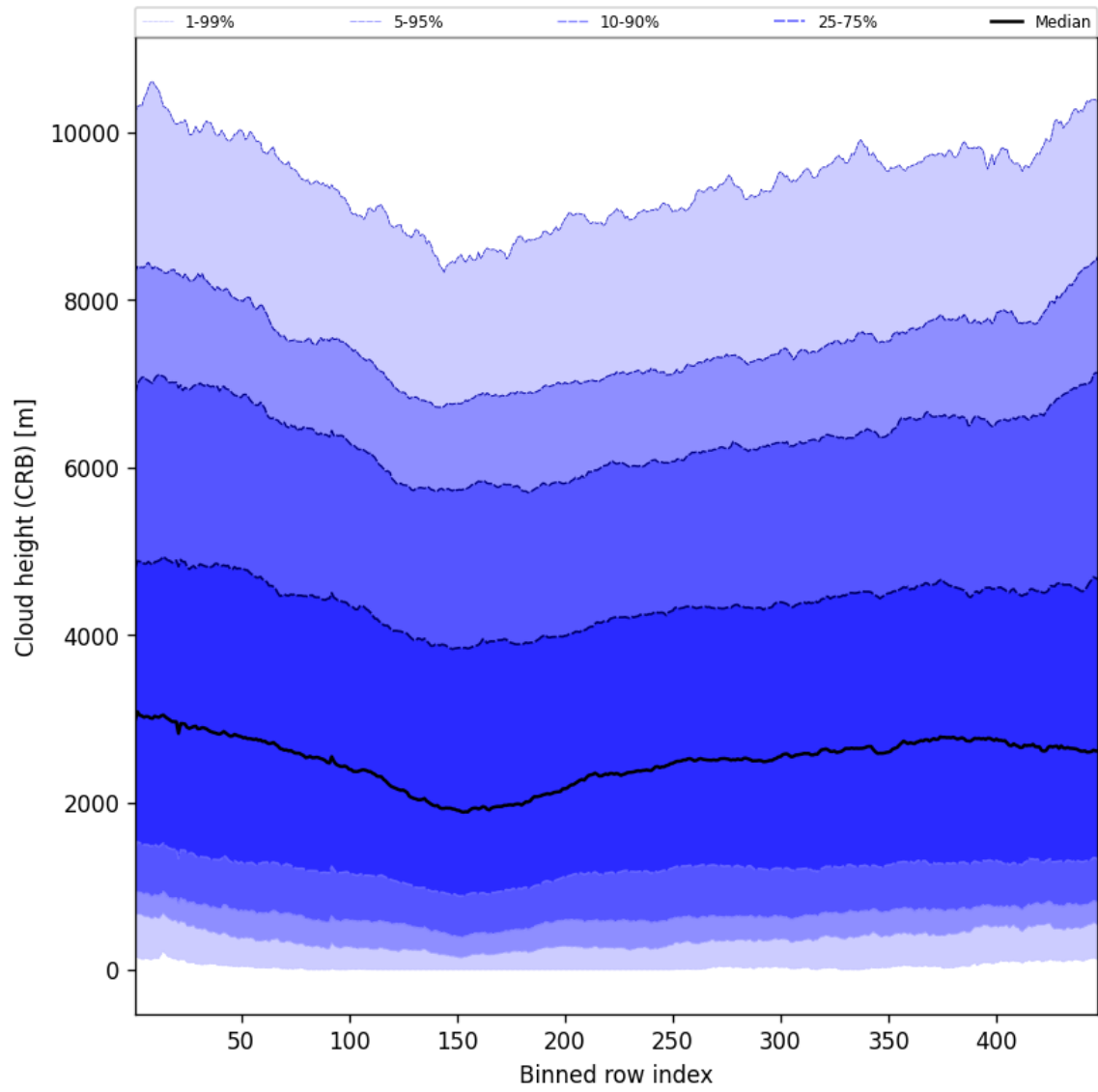


Figure 59: Along track statistics of “Cloud height (CRB)” for 2025-02-09 to 2025-02-11

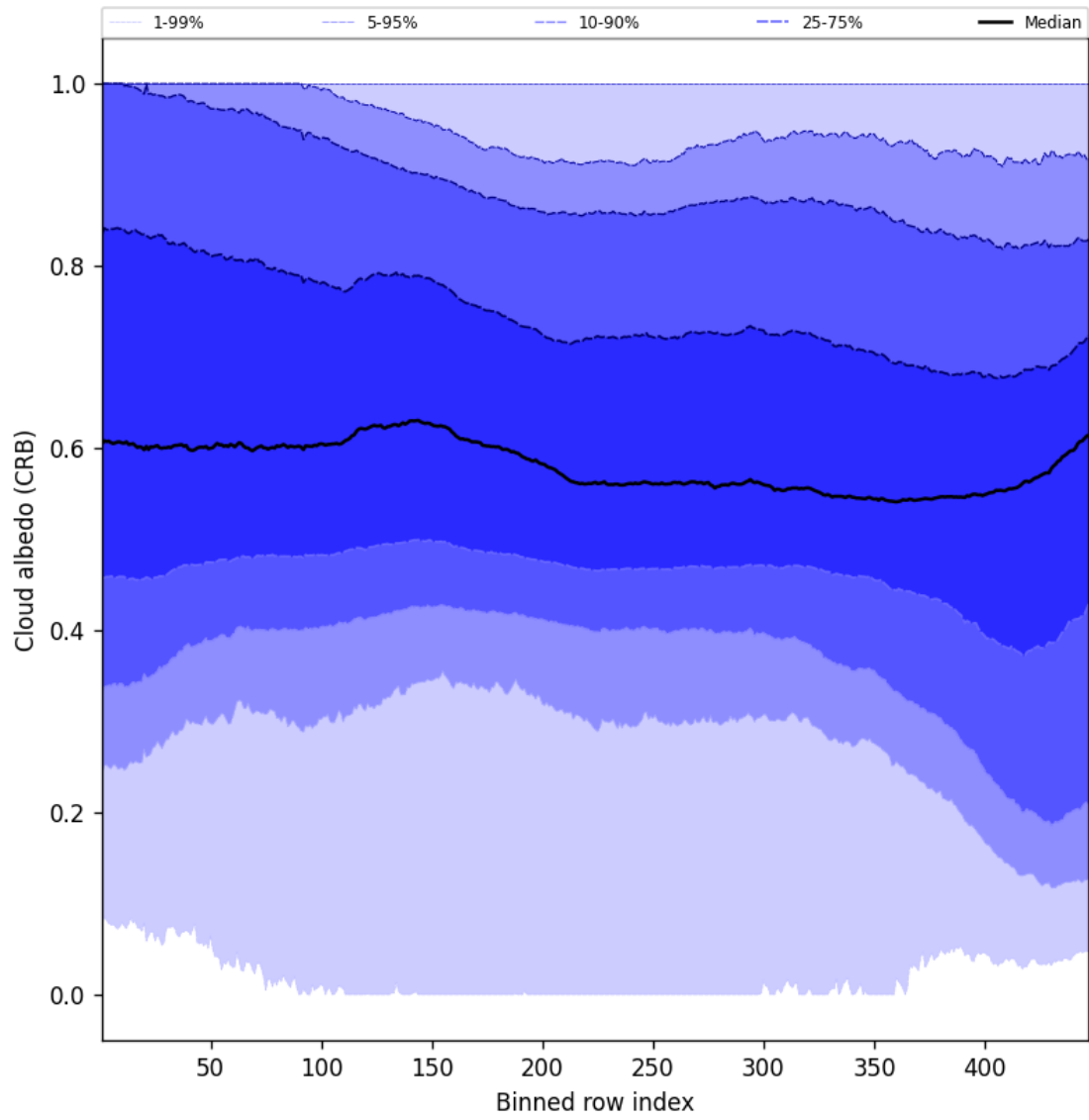


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2025-02-09 to 2025-02-11

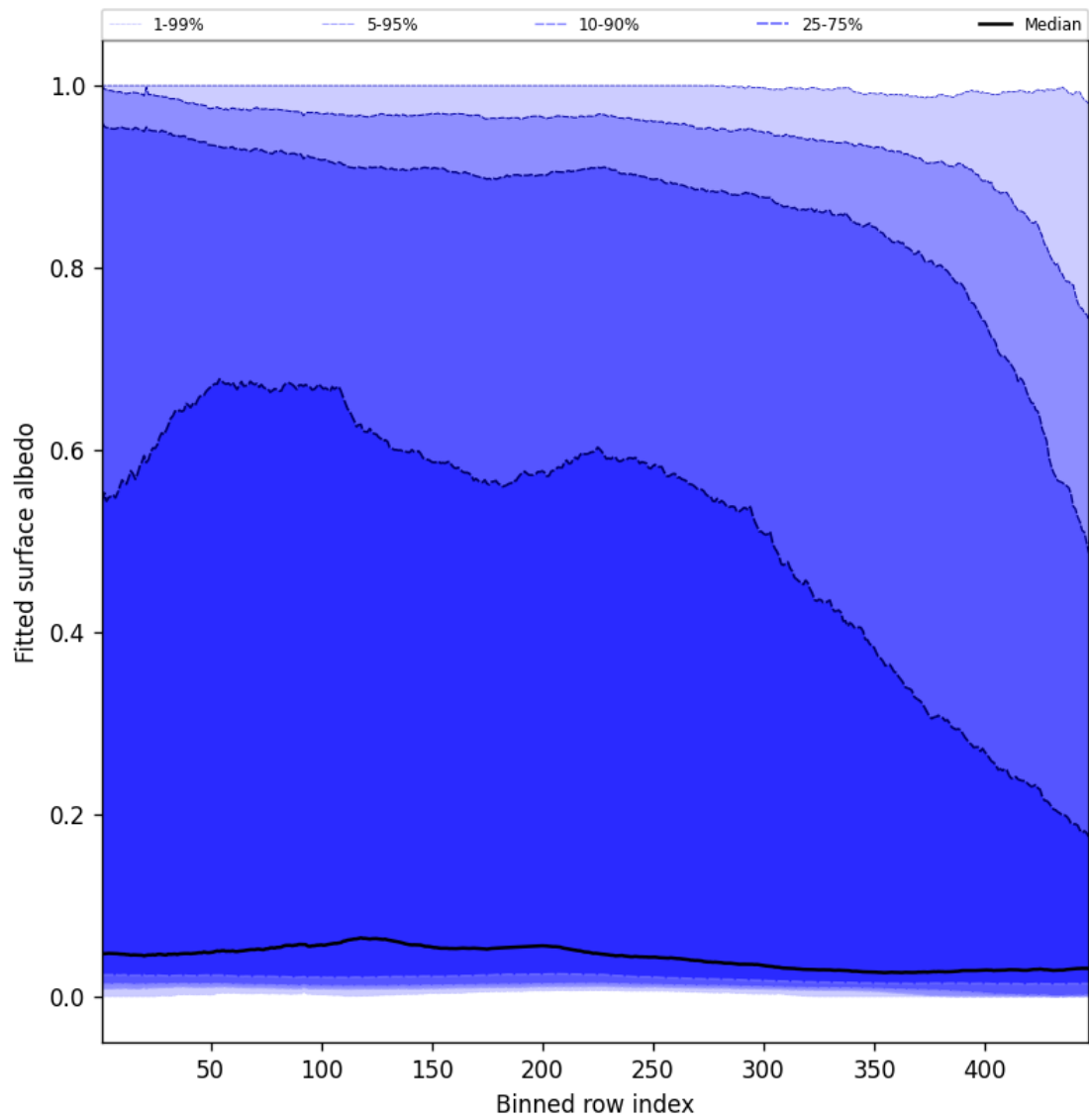


Figure 61: Along track statistics of “Fitted surface albedo” for 2025-02-09 to 2025-02-11

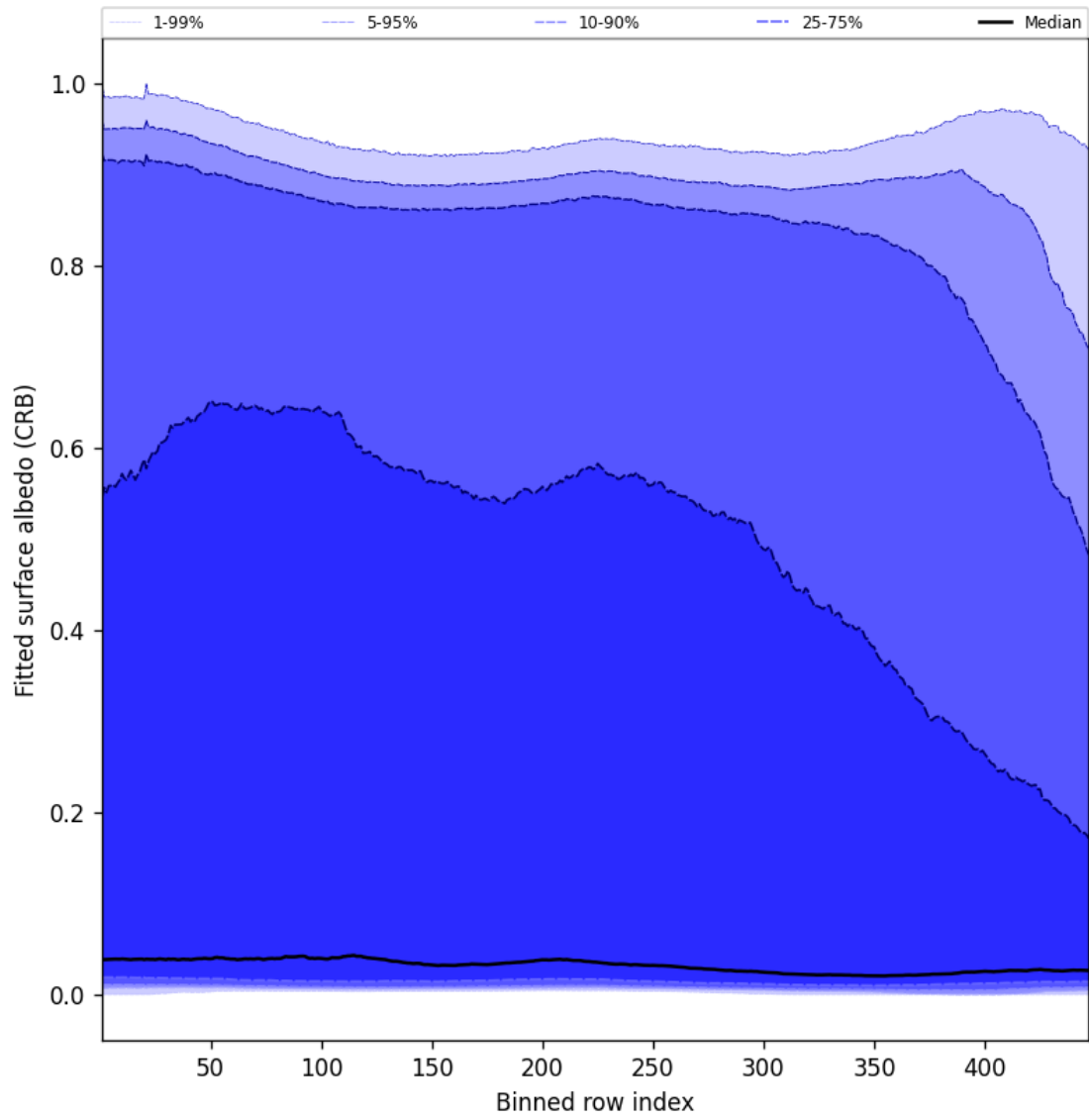


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2025-02-09 to 2025-02-11

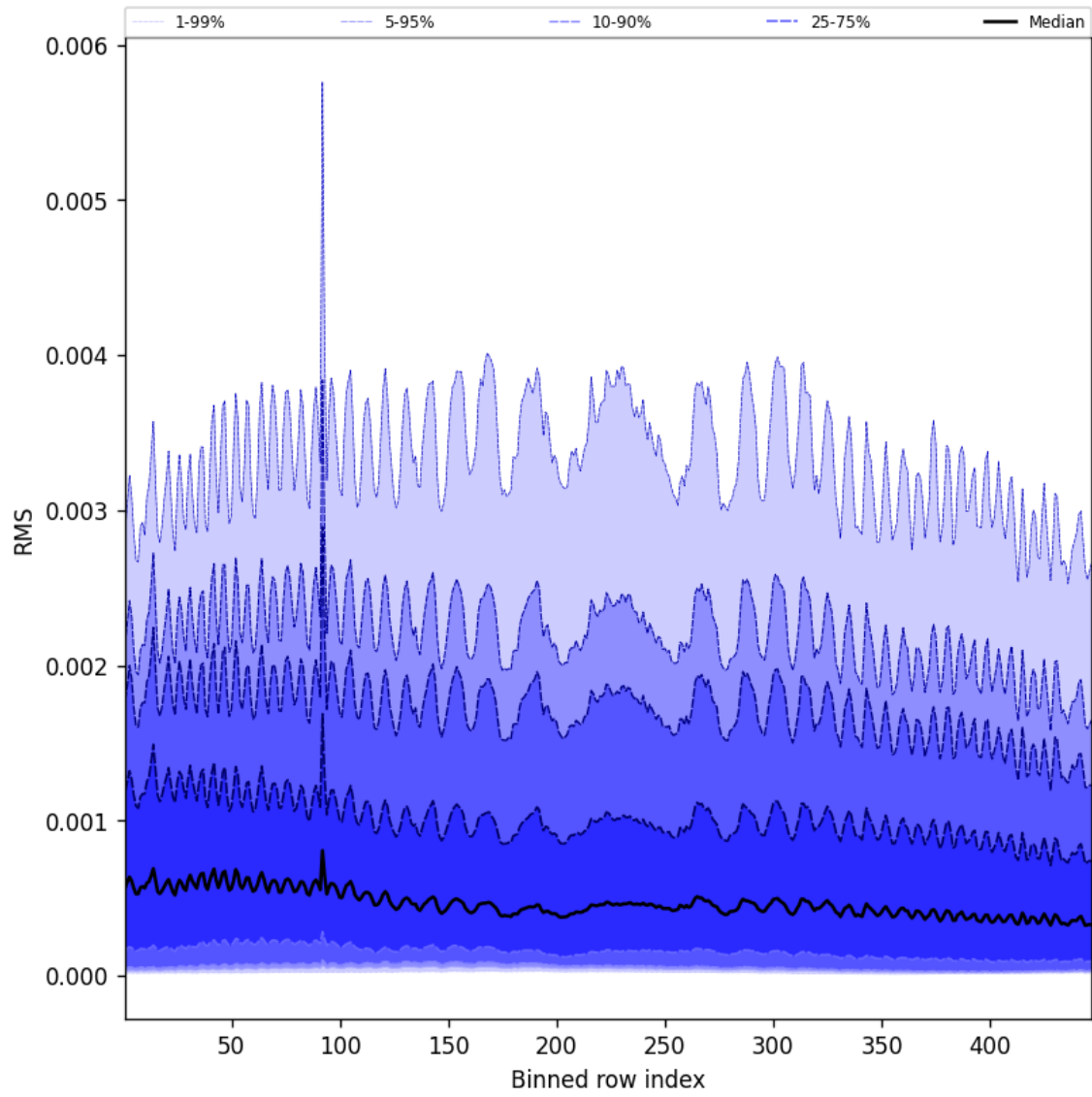


Figure 63: Along track statistics of “RMS” for 2025-02-09 to 2025-02-11

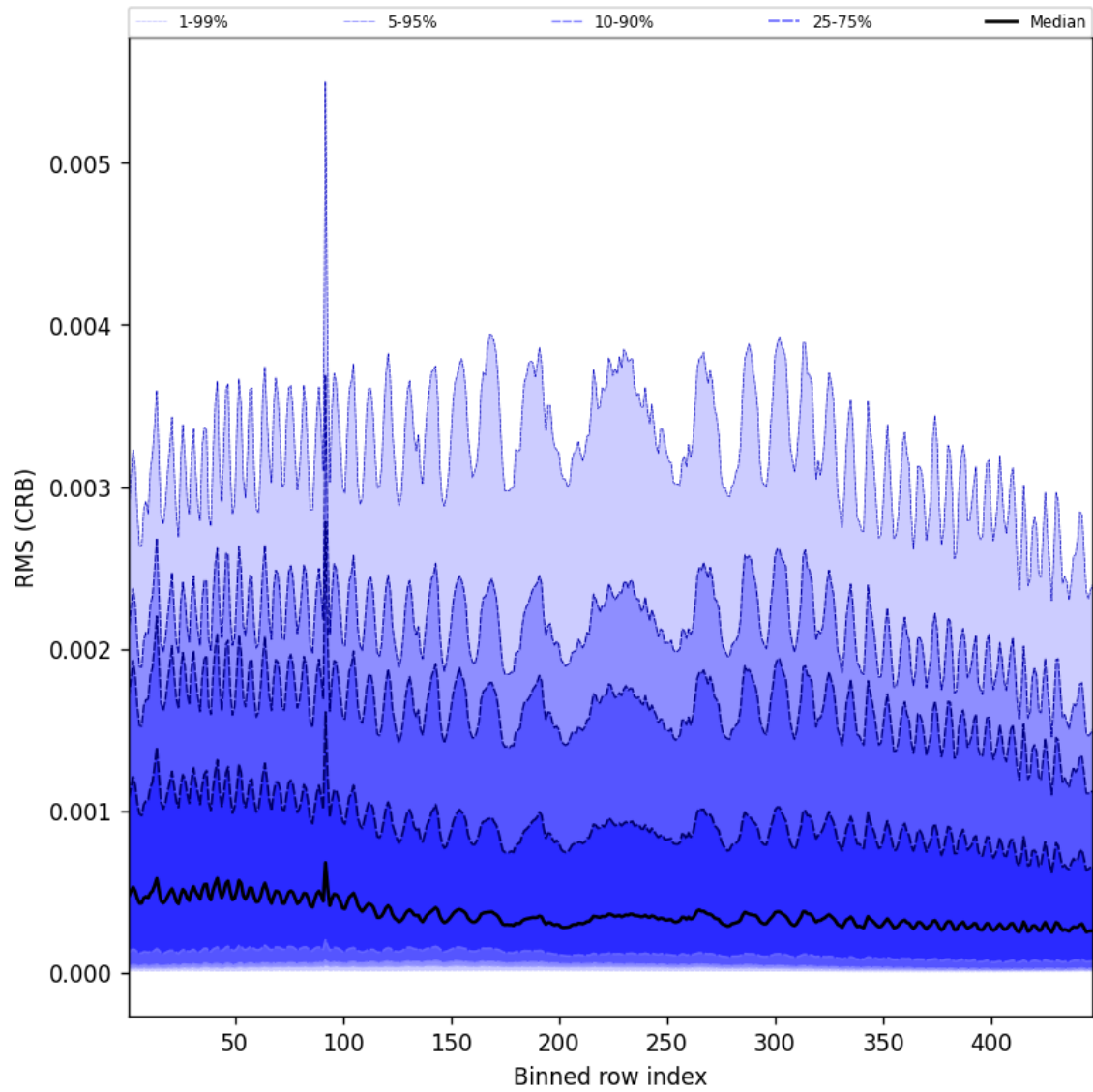


Figure 64: Along track statistics of “RMS (CRB)” for 2025-02-09 to 2025-02-11

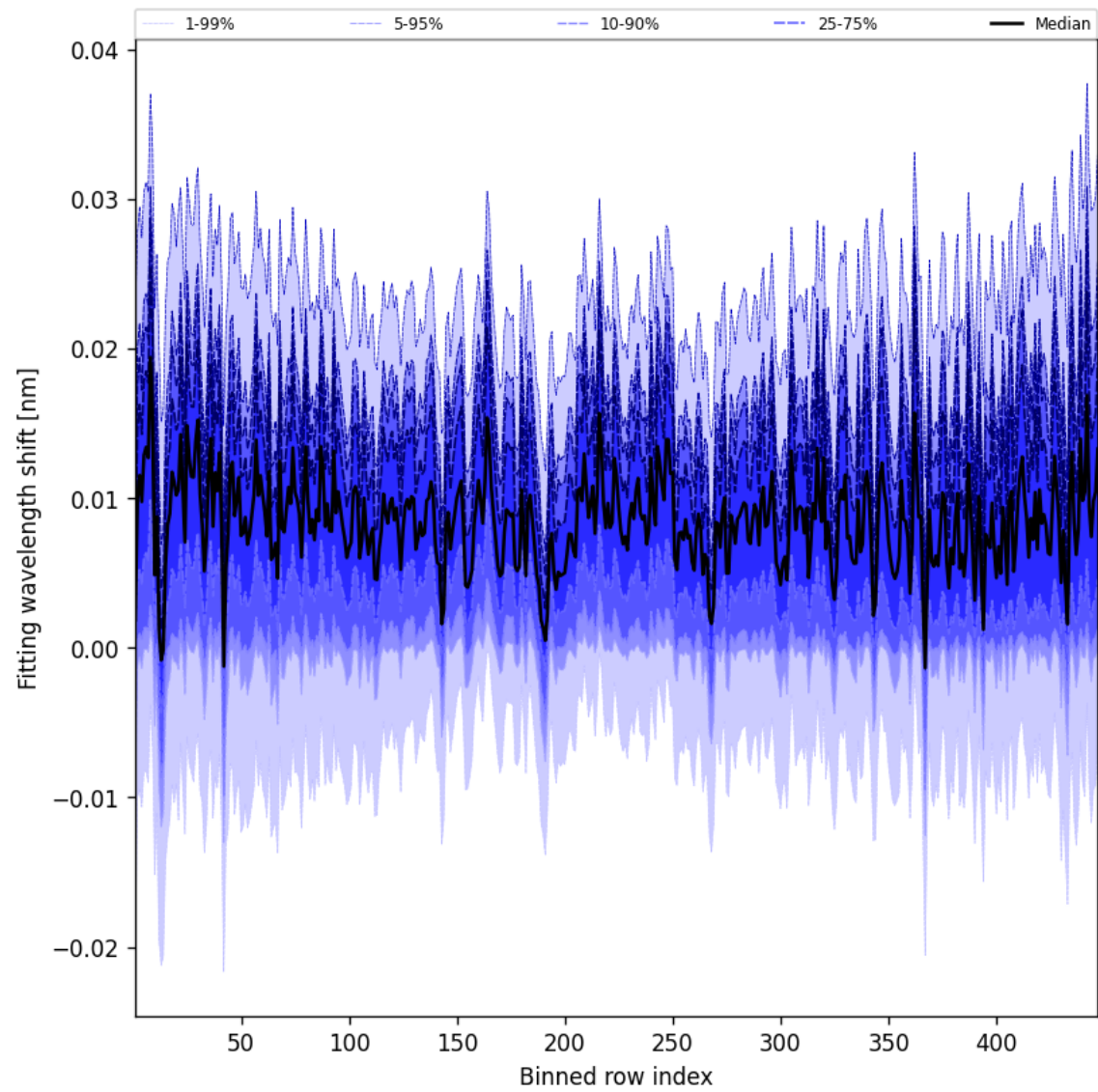


Figure 65: Along track statistics of “Fitting wavelength shift” for 2025-02-09 to 2025-02-11

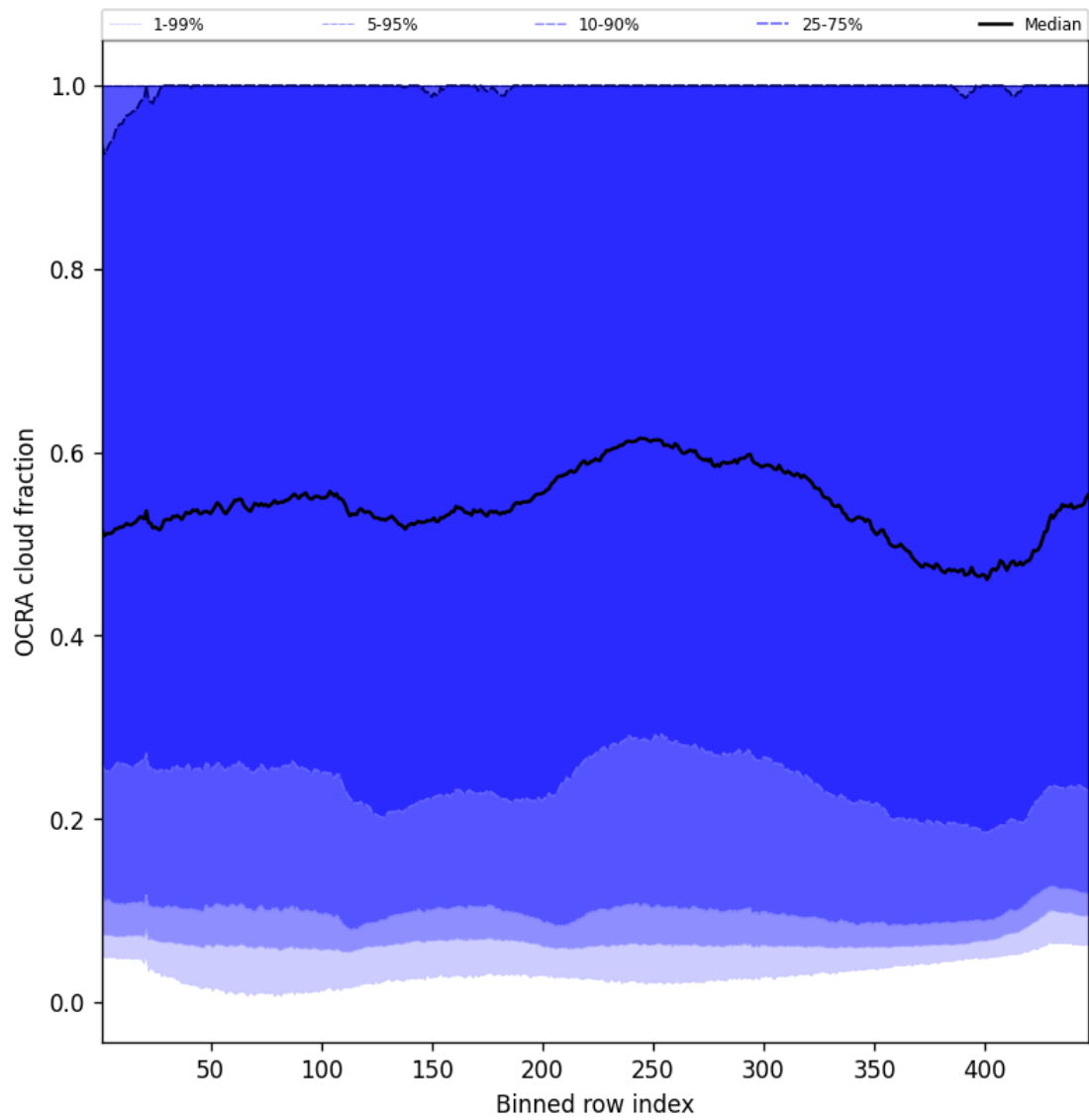


Figure 66: Along track statistics of “OCRA cloud fraction” for 2025-02-09 to 2025-02-11

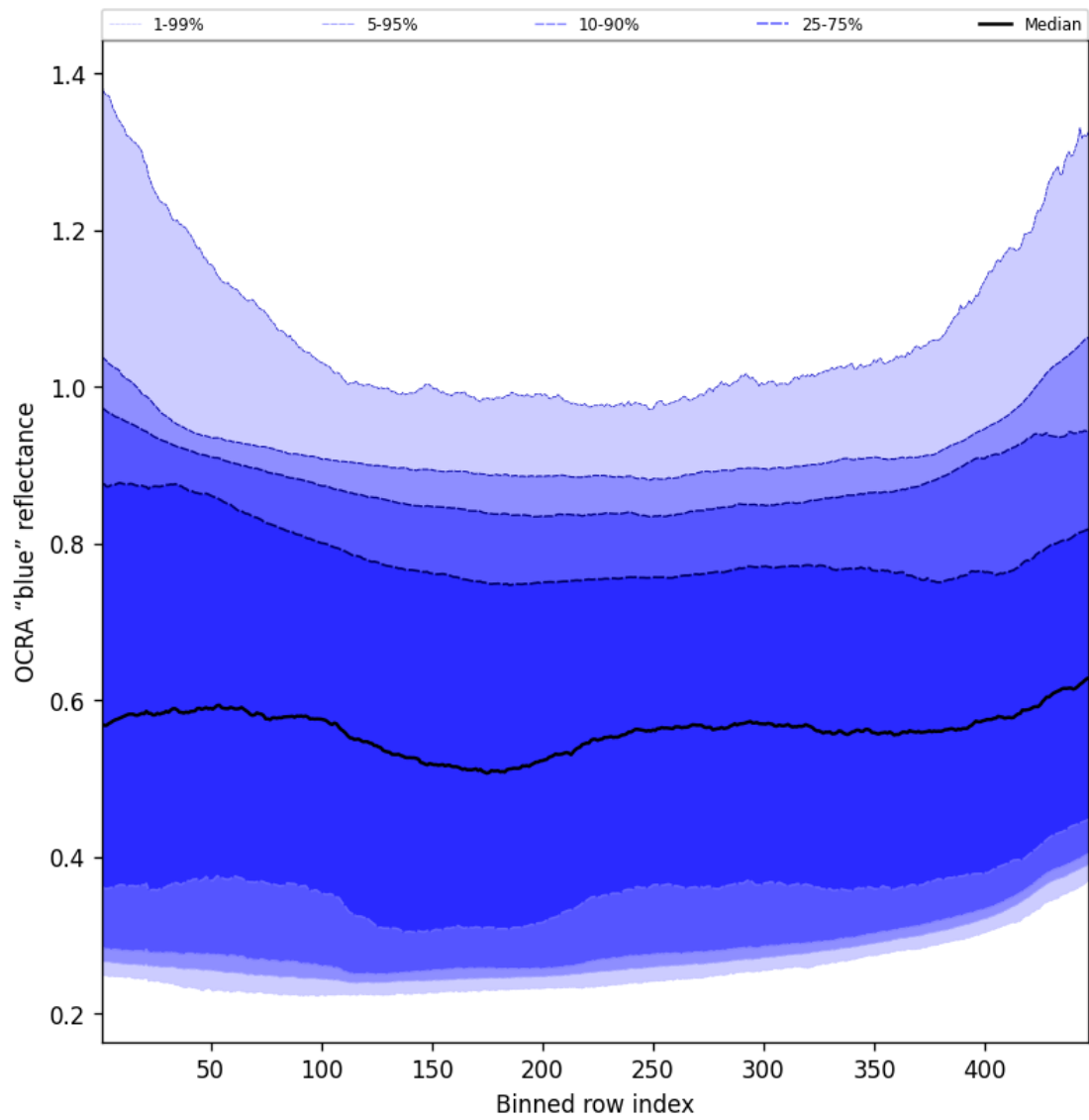


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2025-02-09 to 2025-02-11

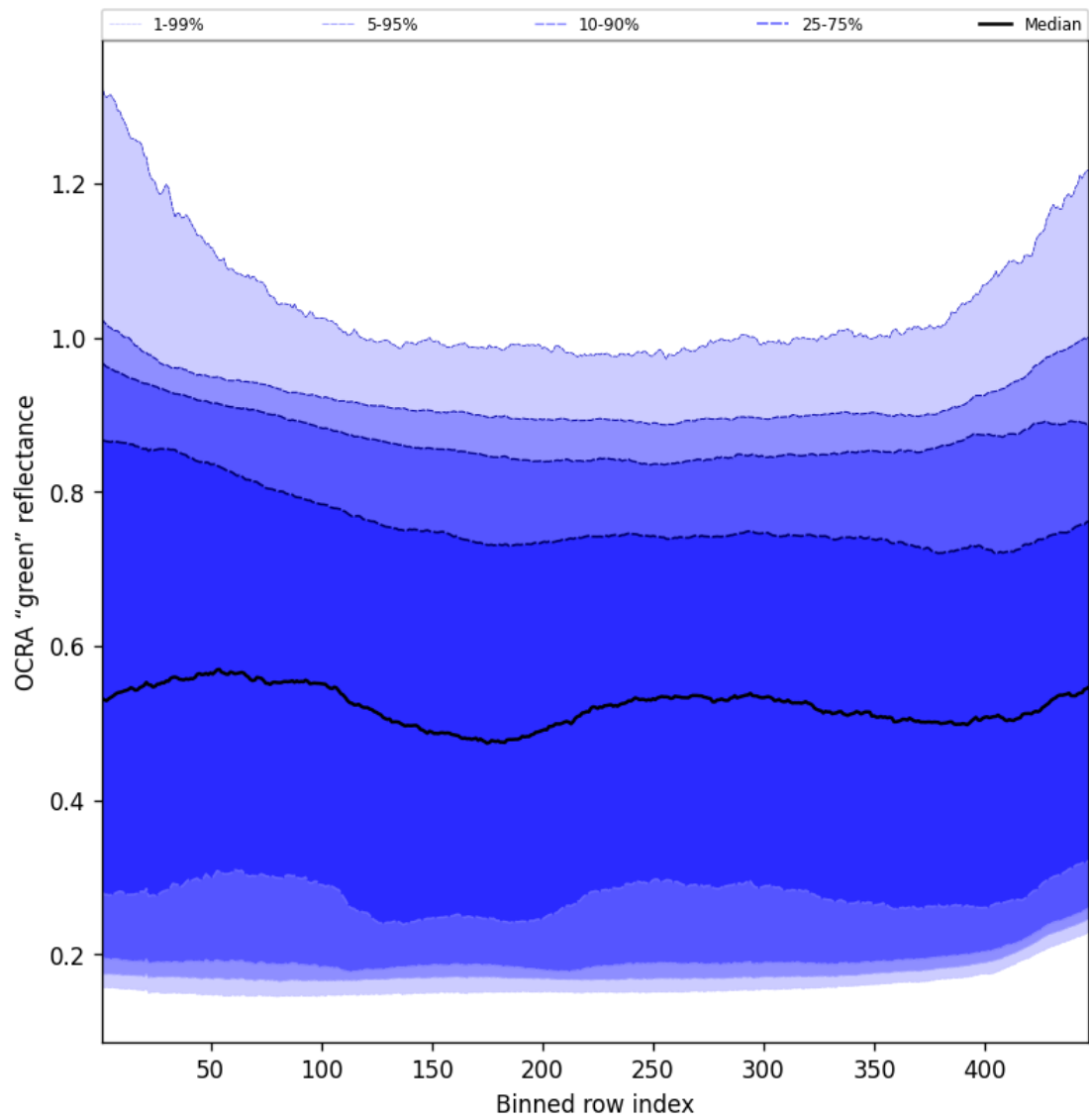


Figure 68: Along track statistics of “OCRA “green” reflectance” for 2025-02-09 to 2025-02-11

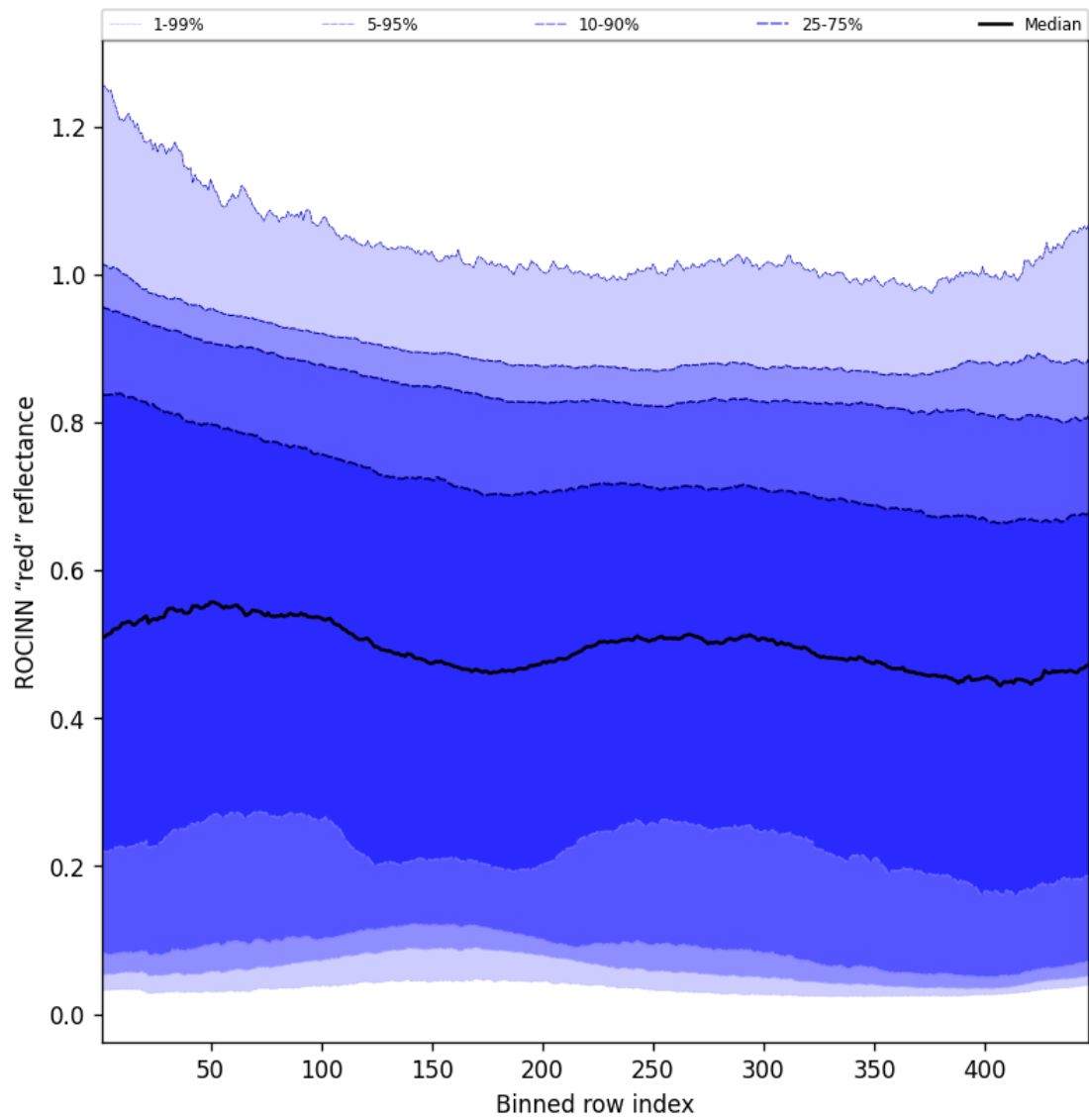


Figure 69: Along track statistics of “ROCINN “red” reflectance” for 2025-02-09 to 2025-02-11

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.

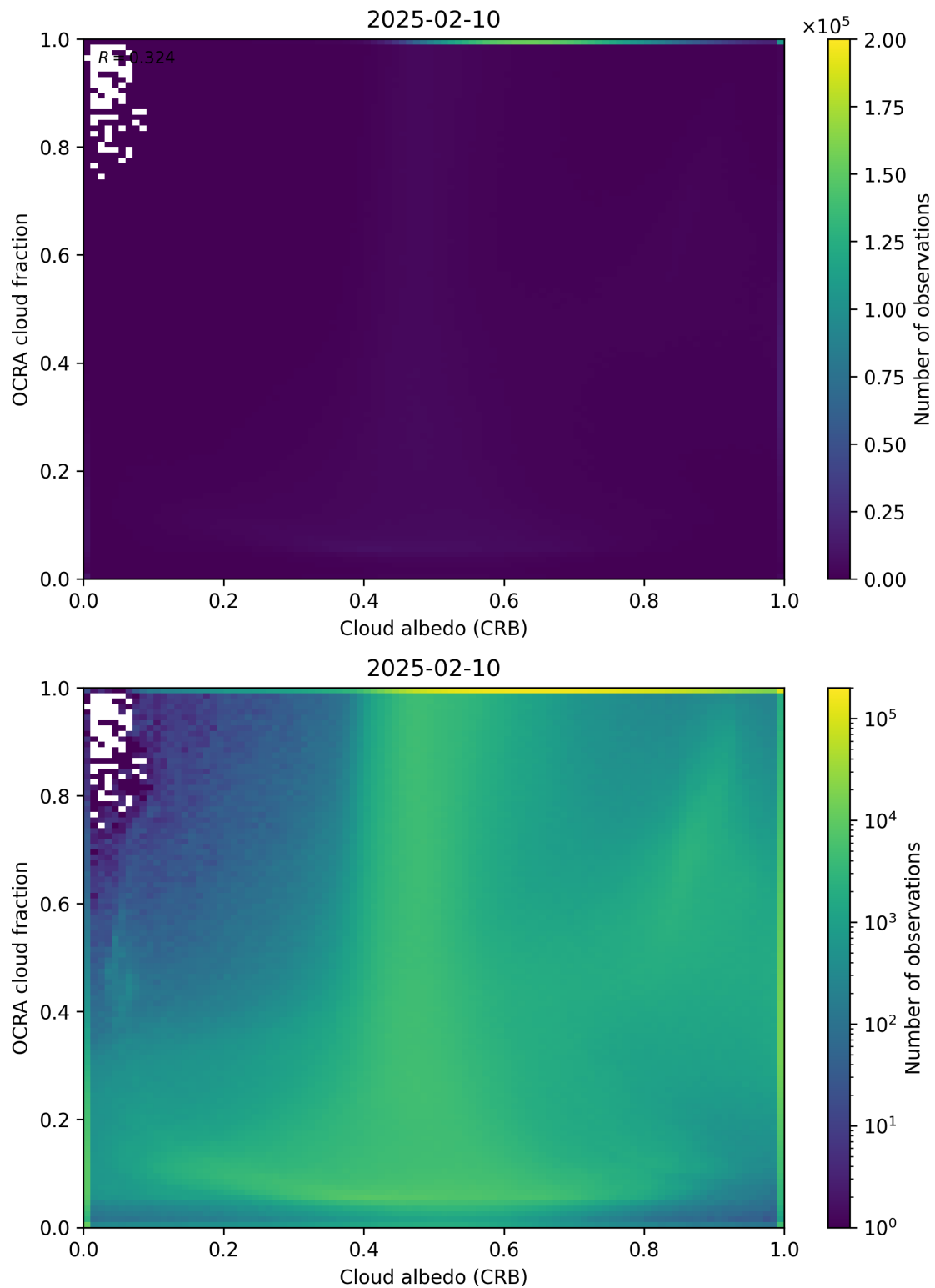


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2025-02-09 to 2025-02-11.

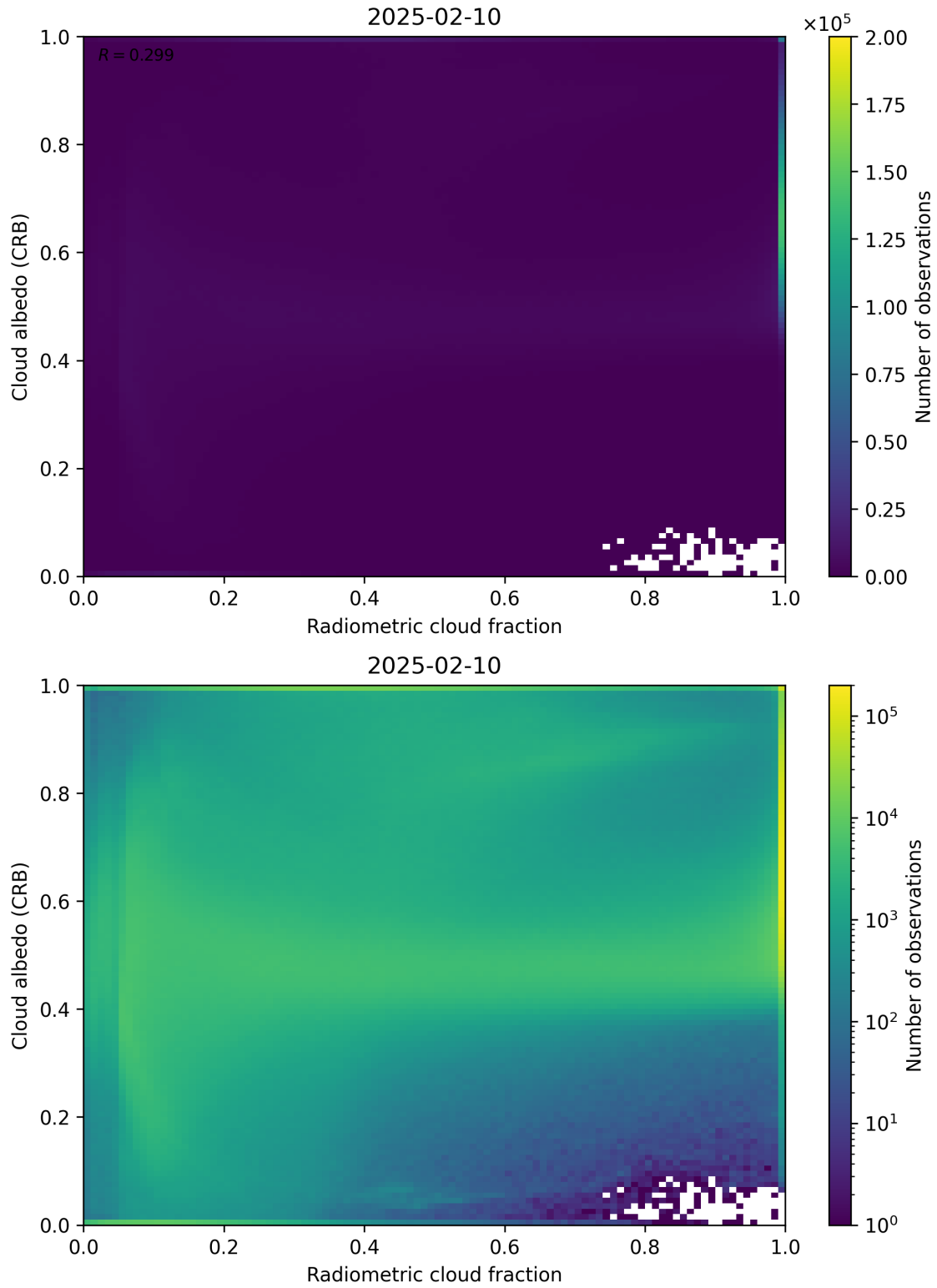


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2025-02-09 to 2025-02-11.

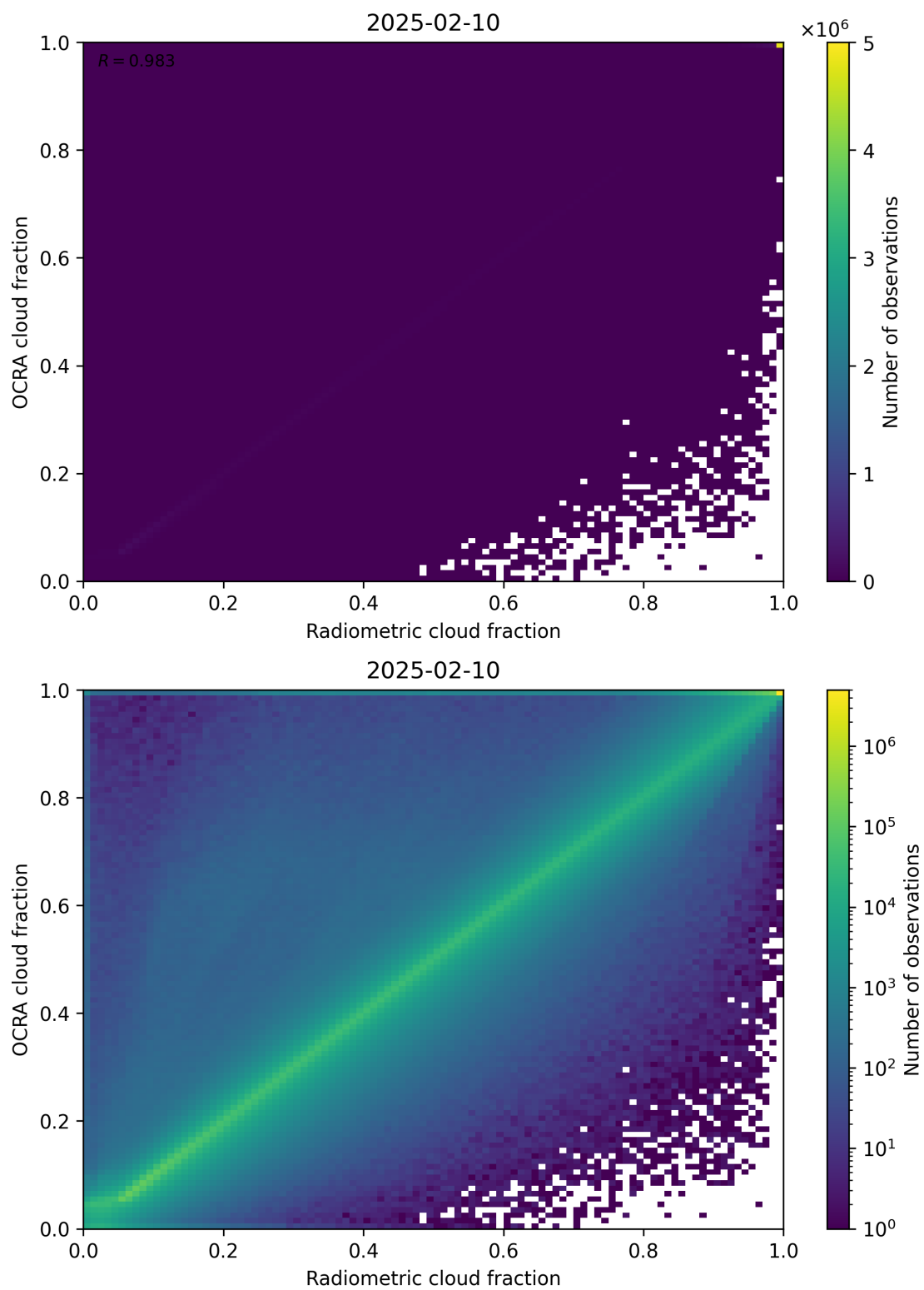


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2025-02-09 to 2025-02-11.

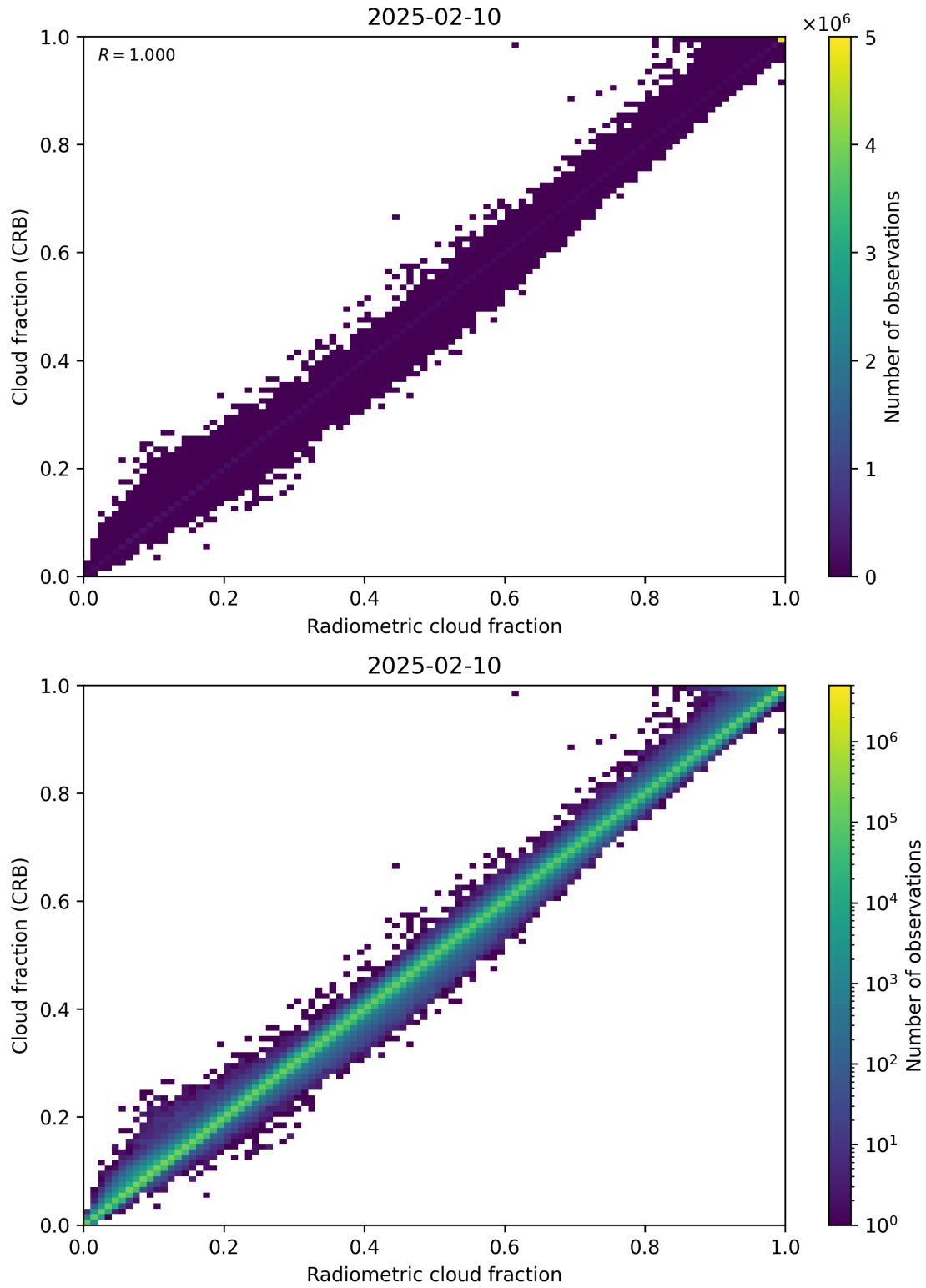


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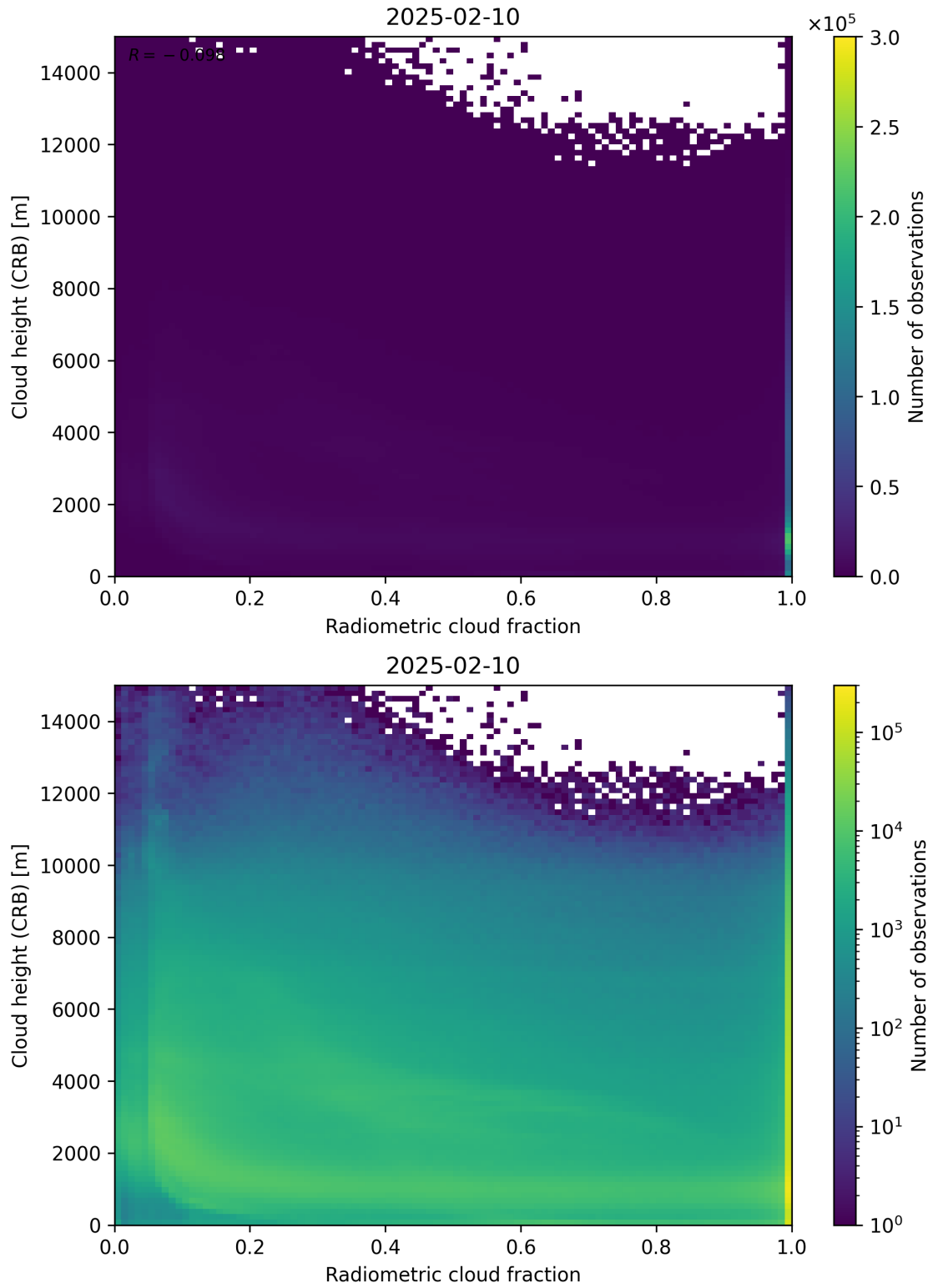


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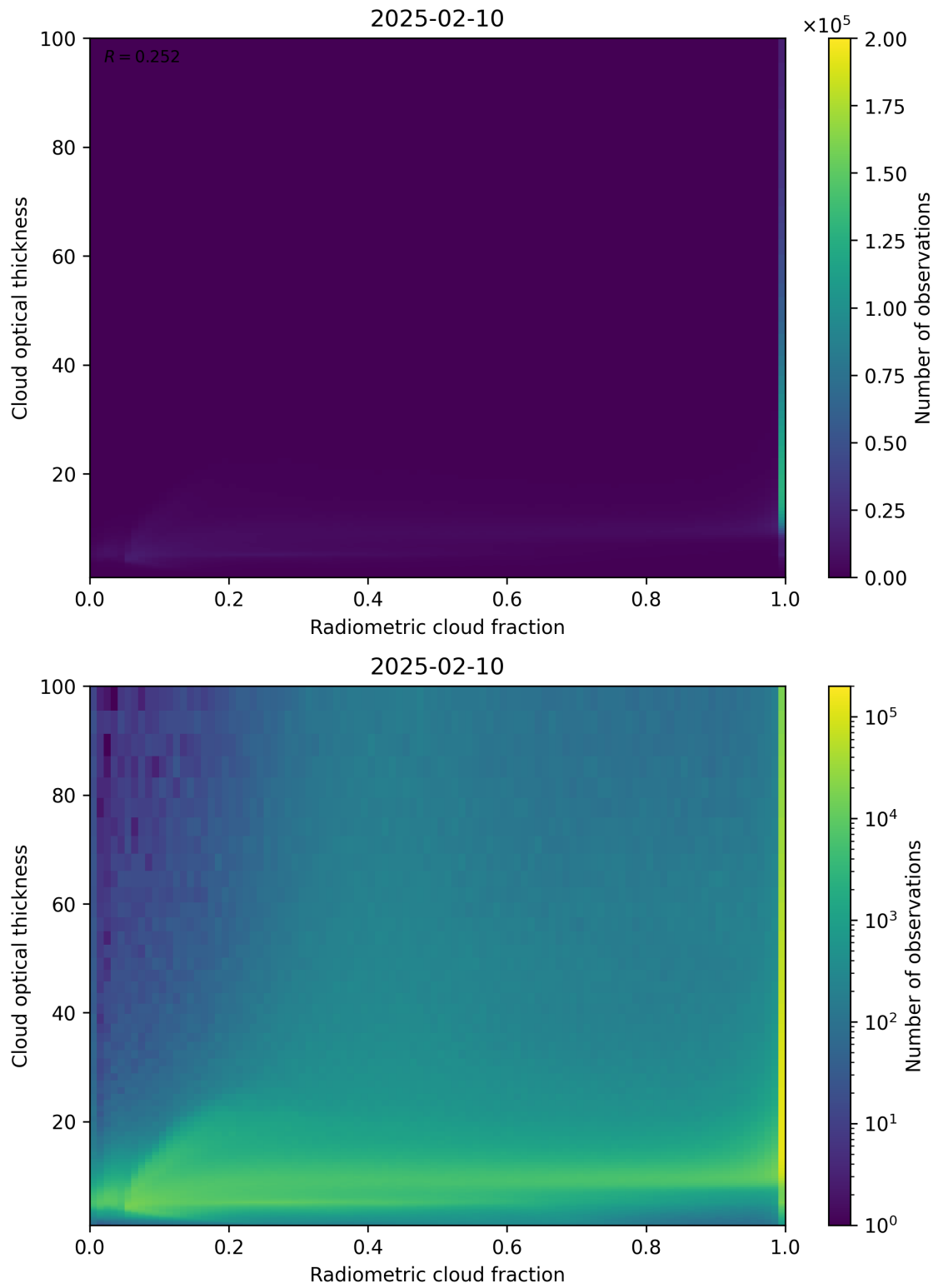


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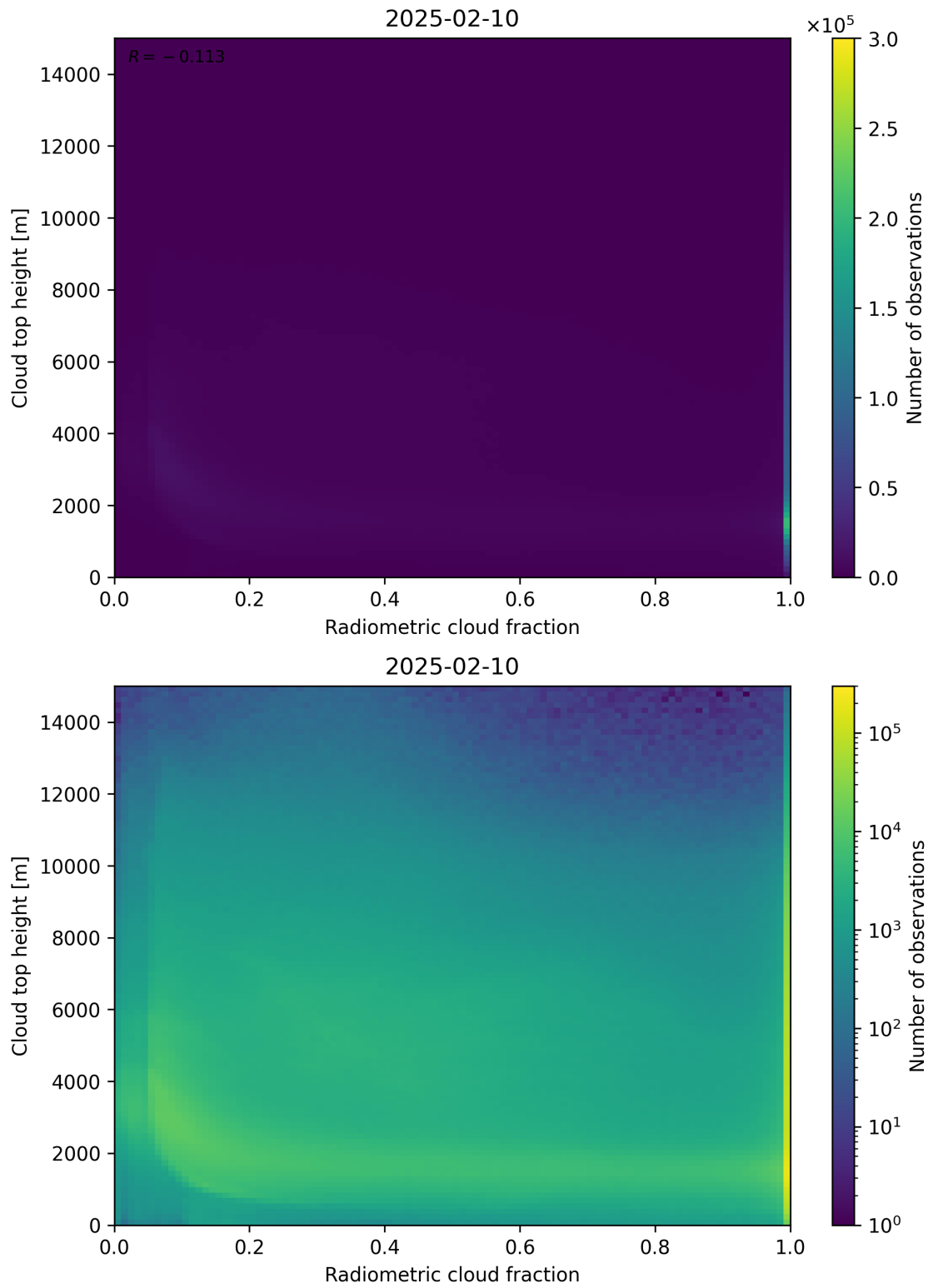


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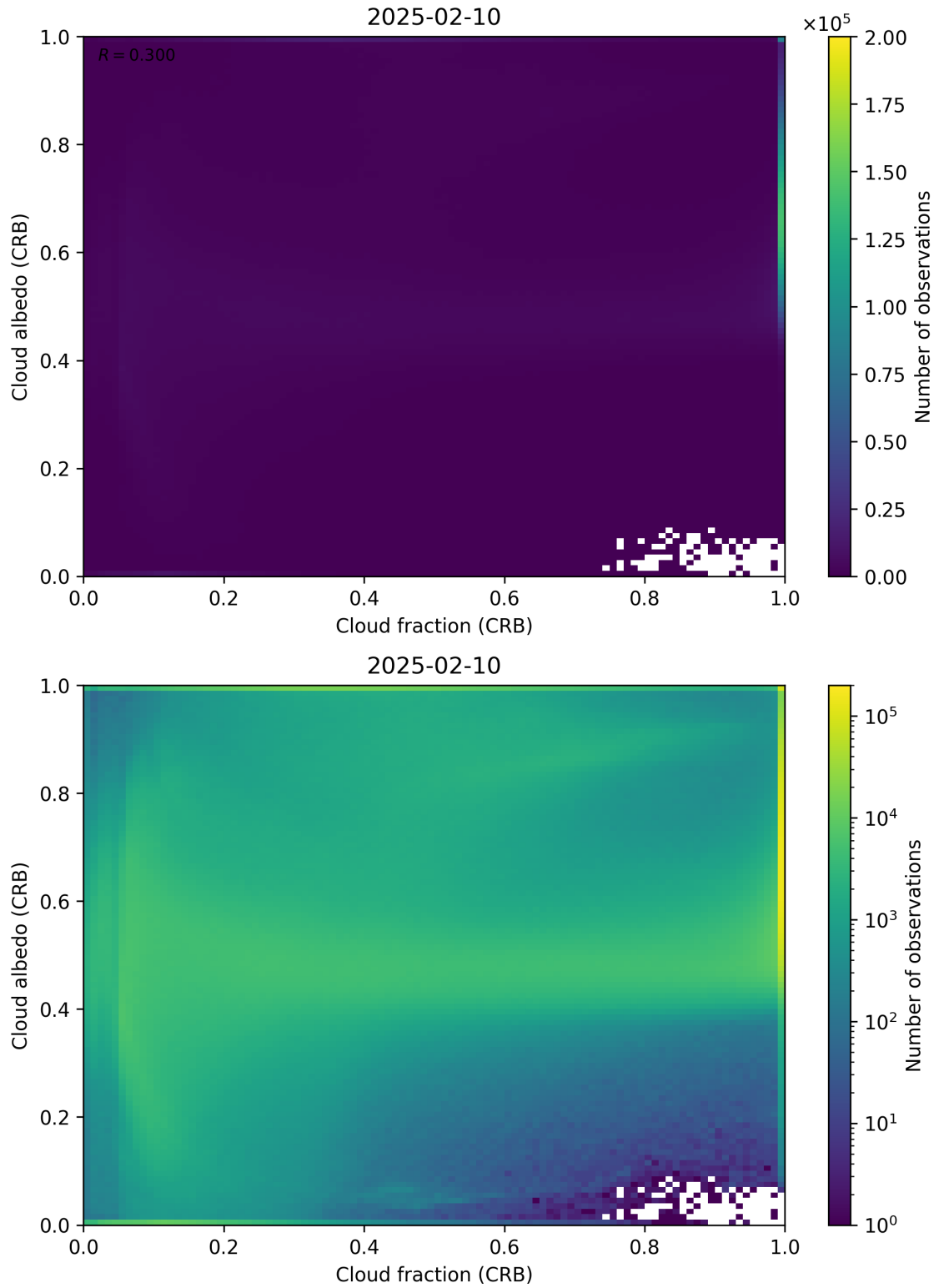


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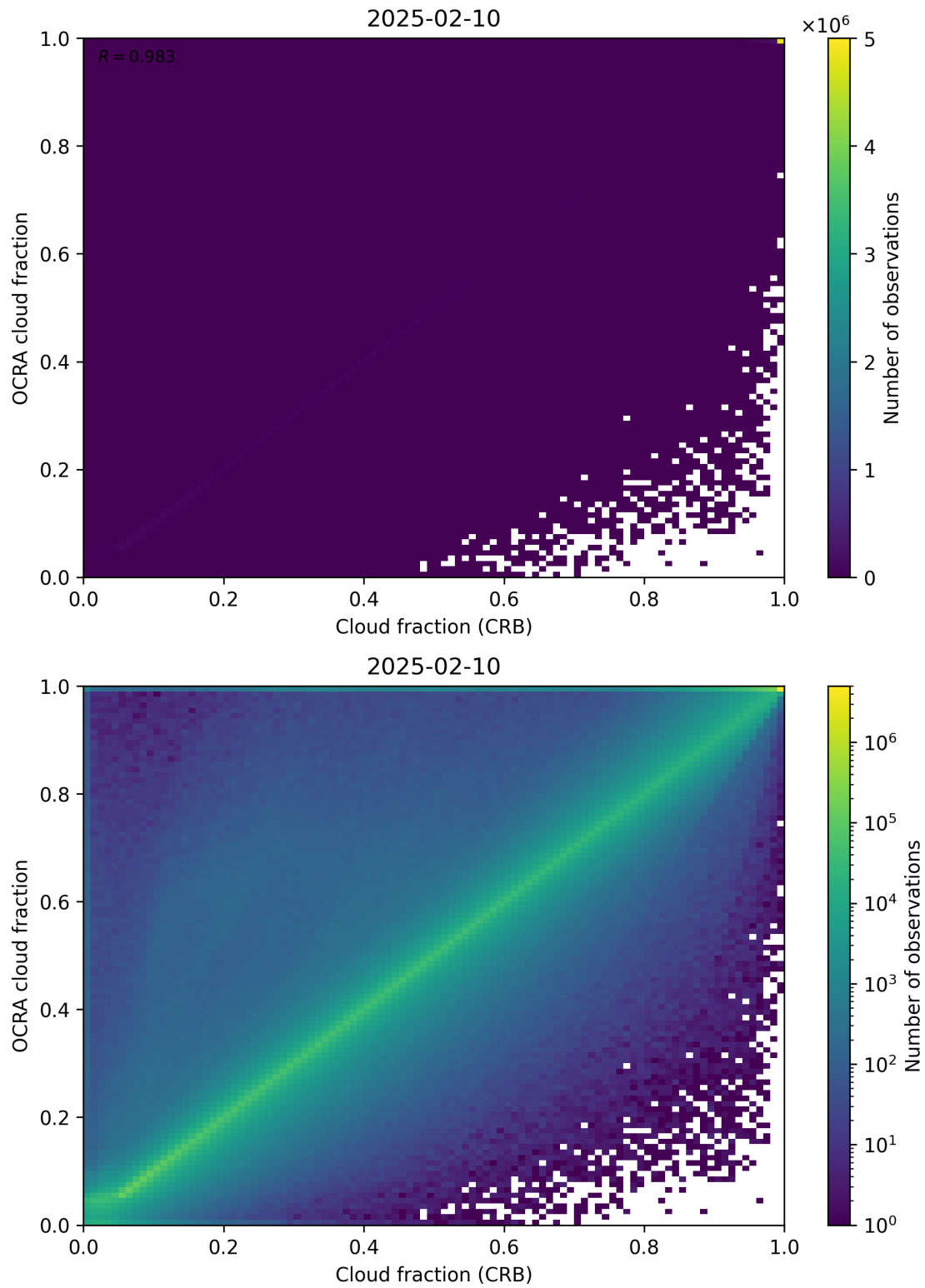


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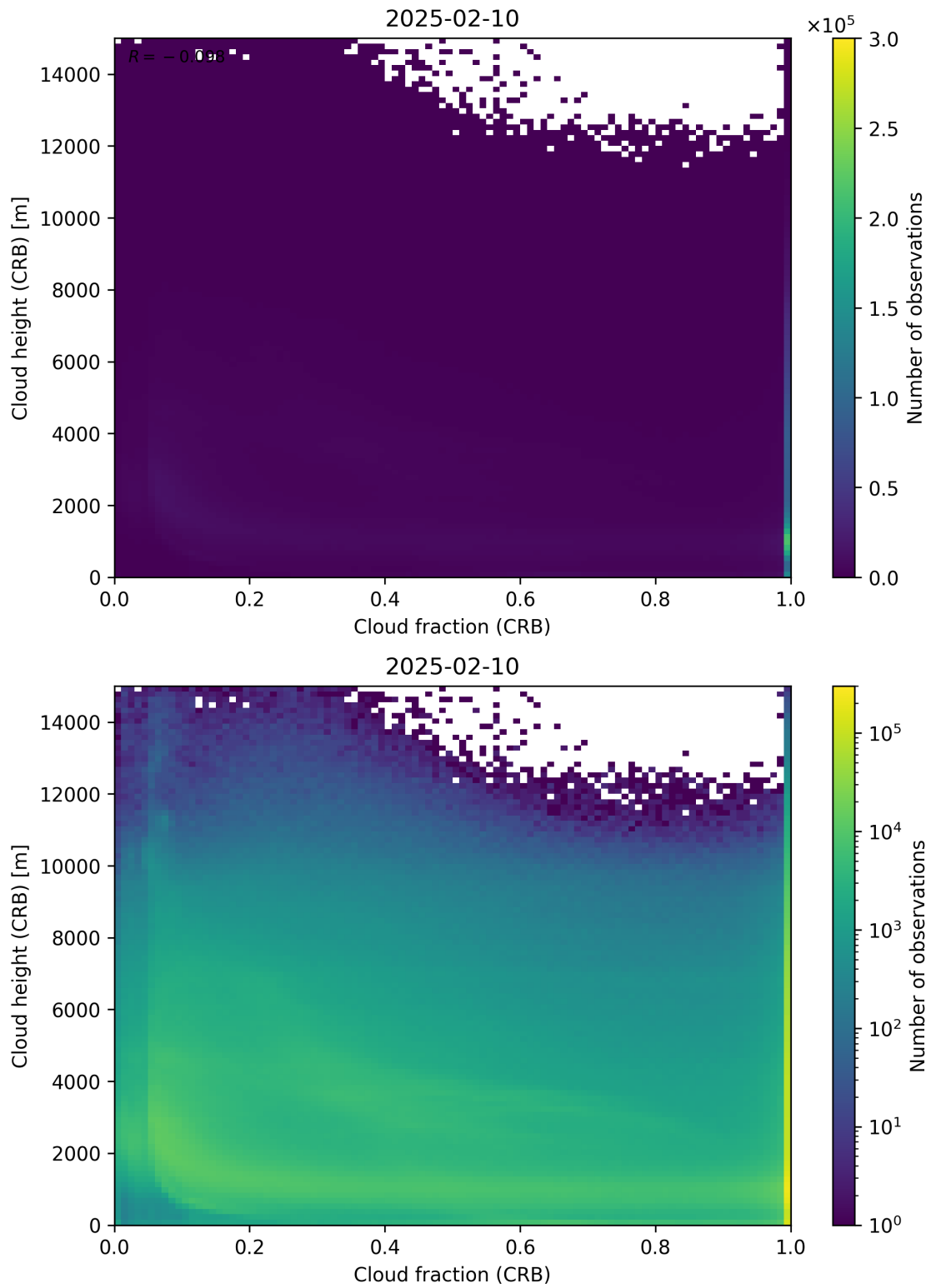


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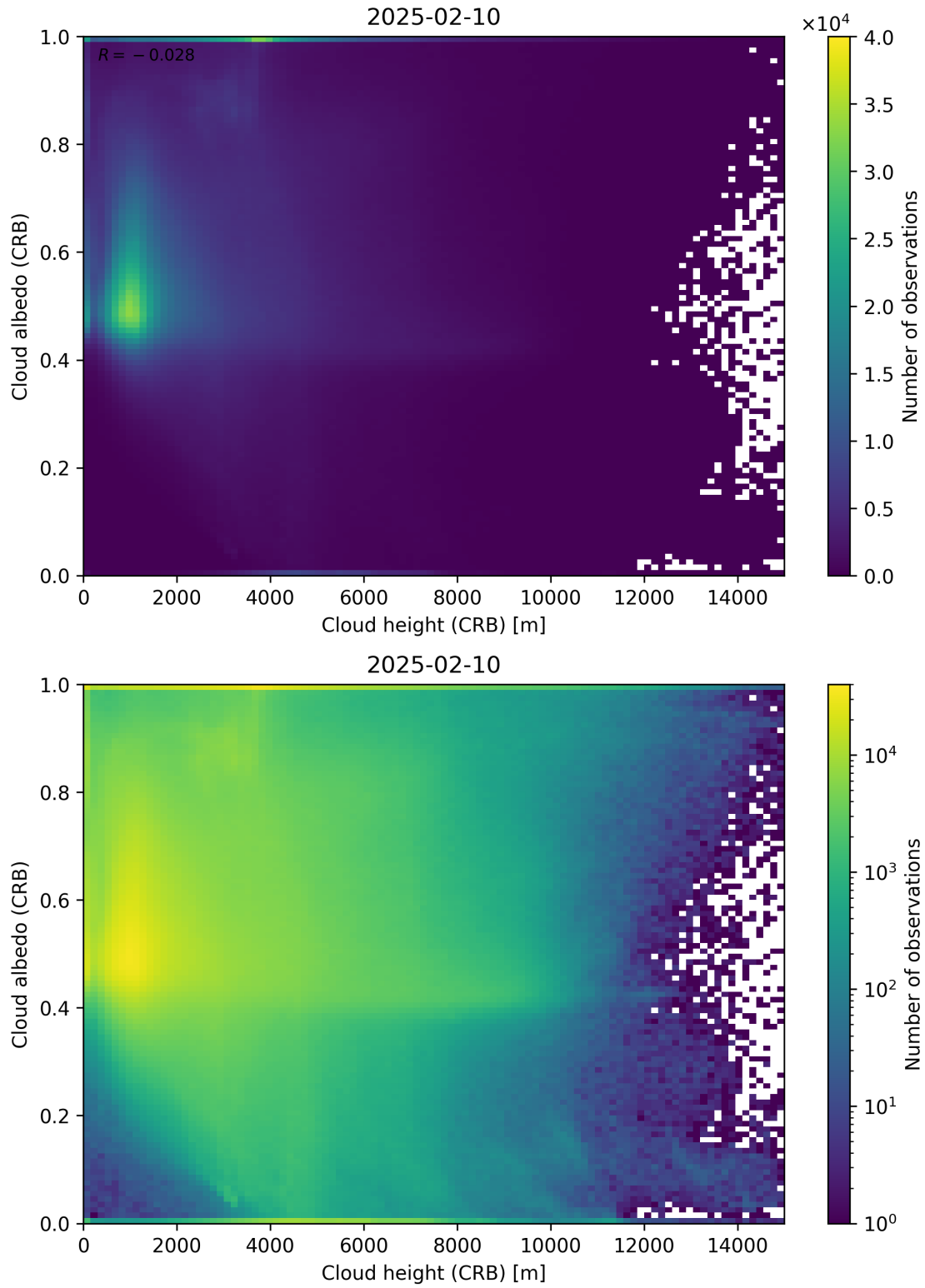


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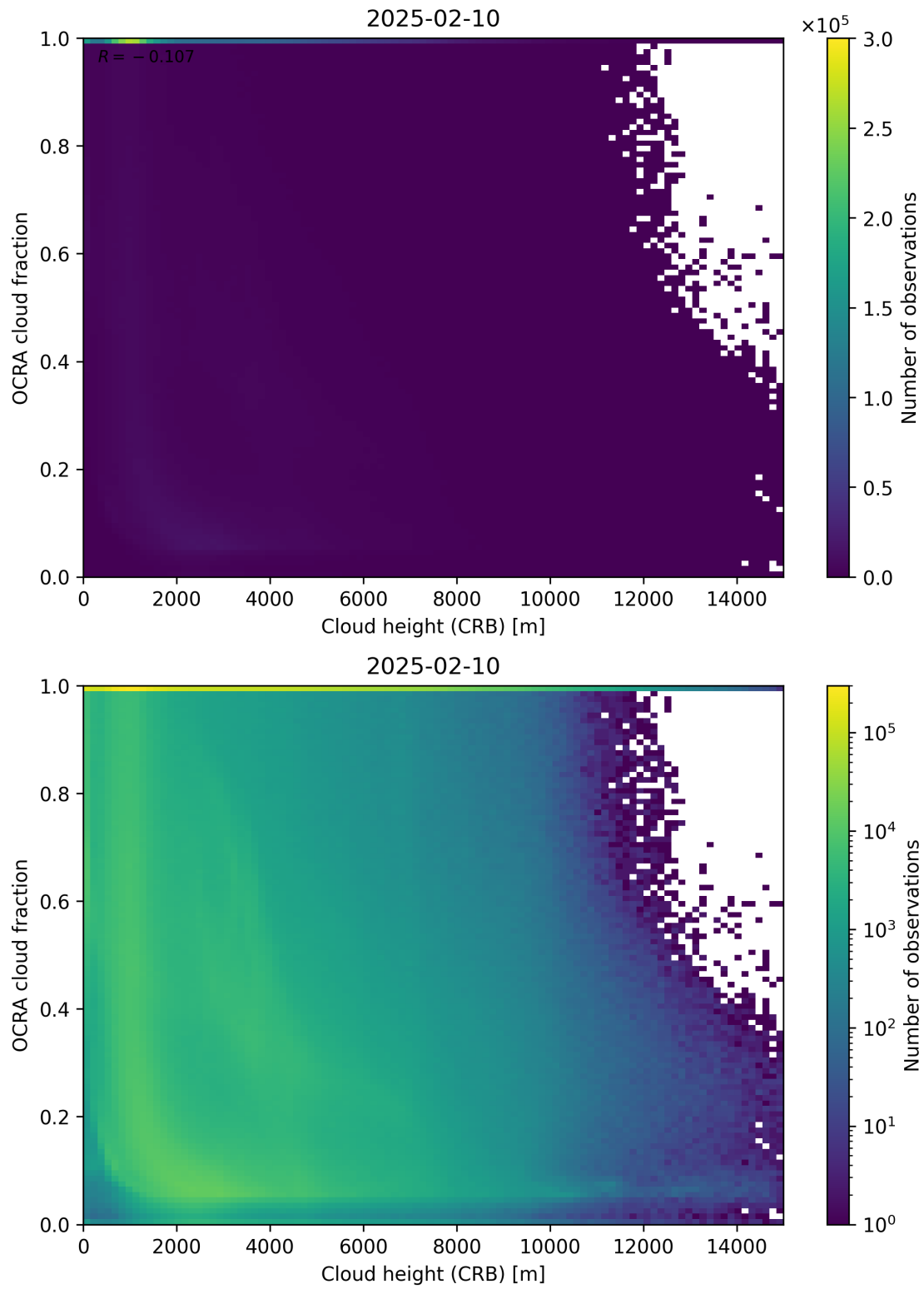


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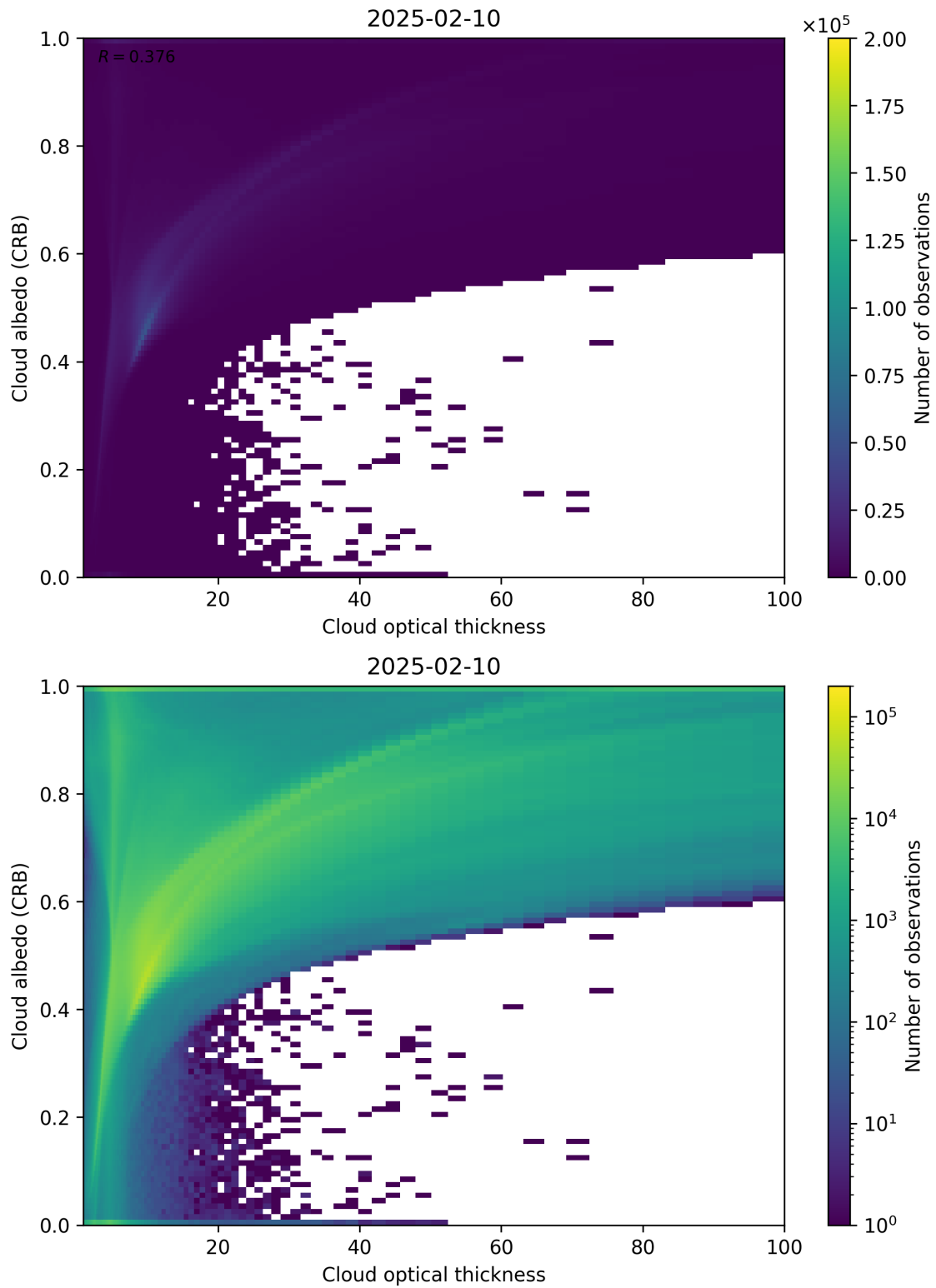


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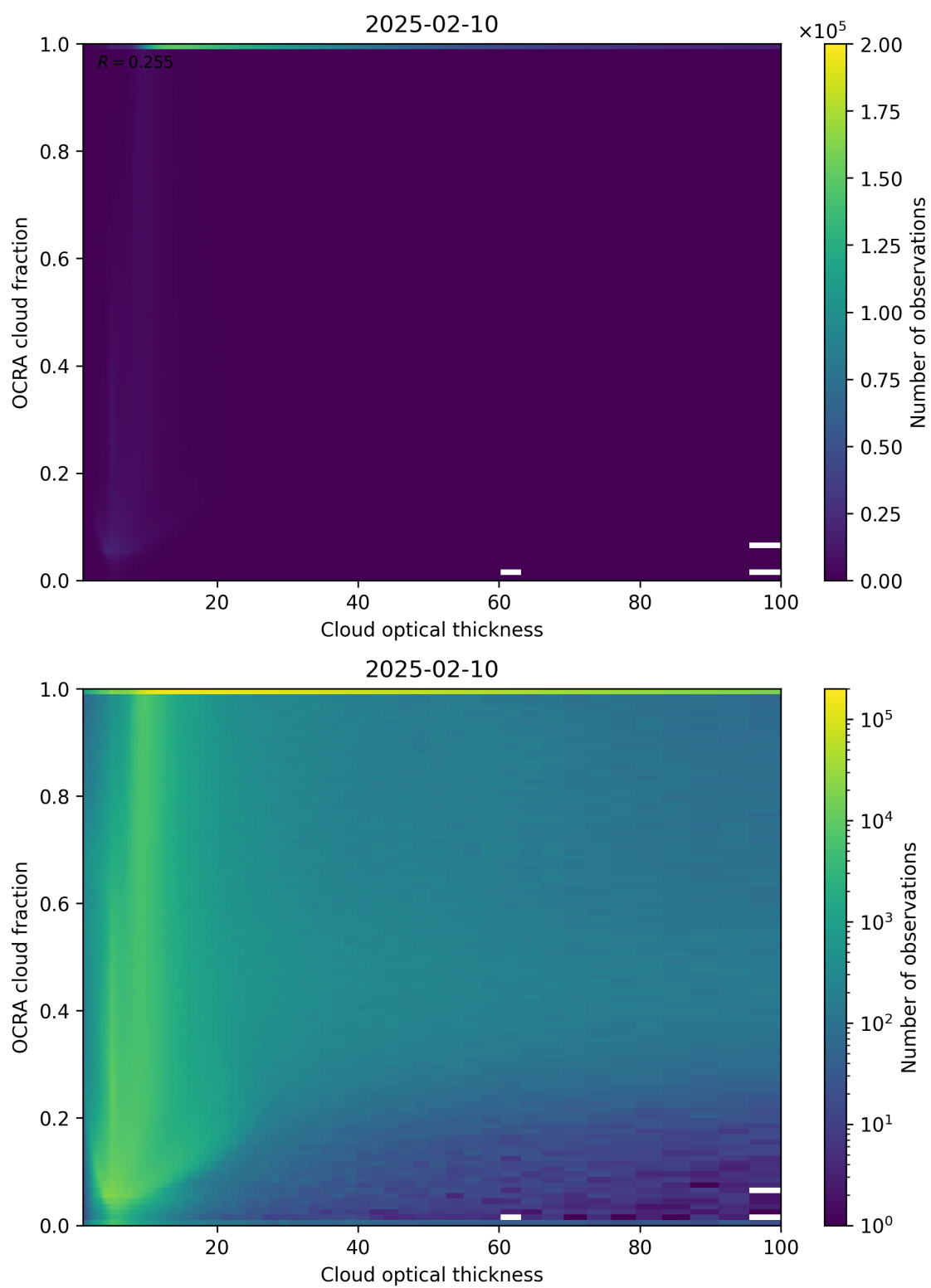


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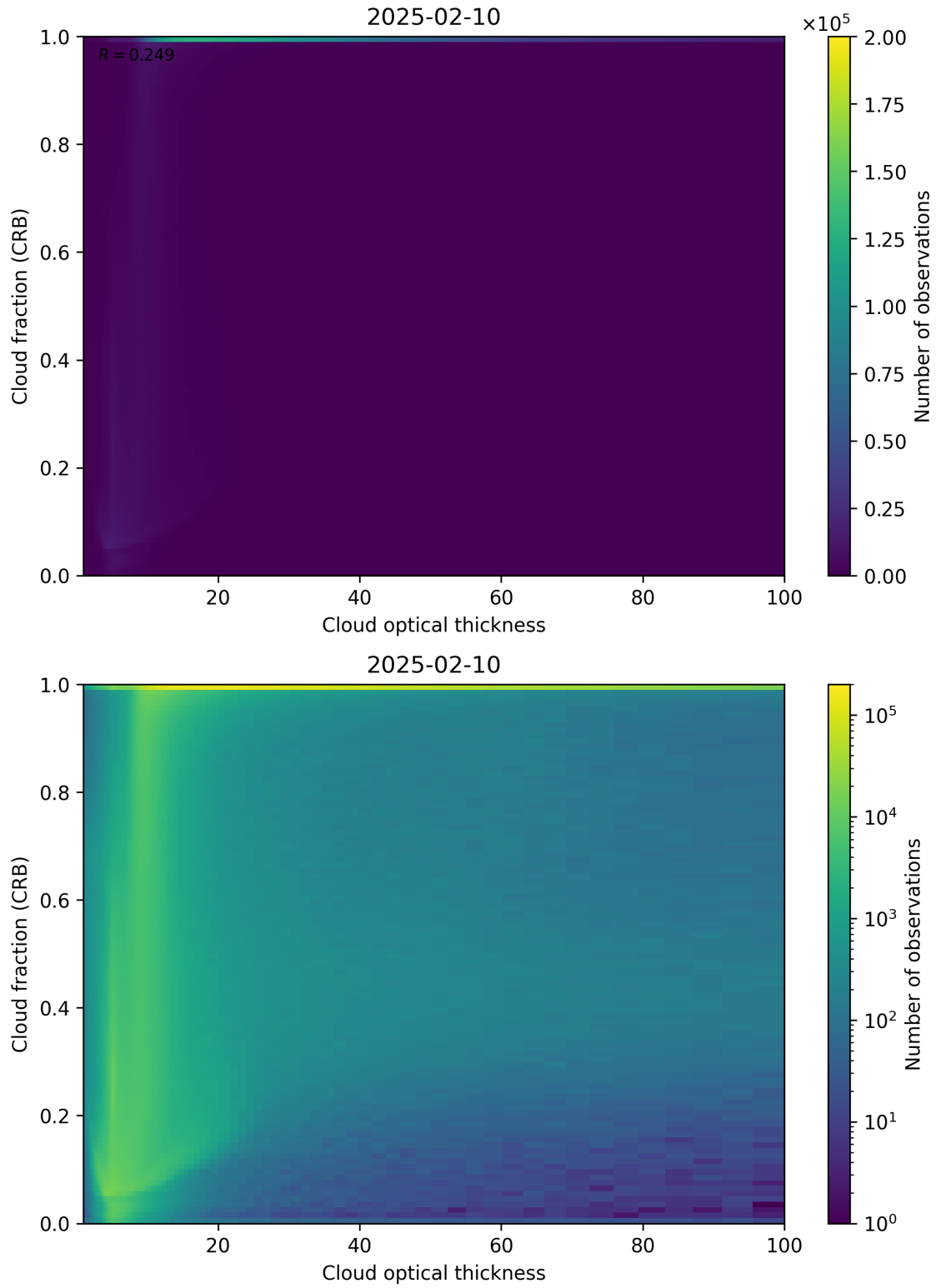


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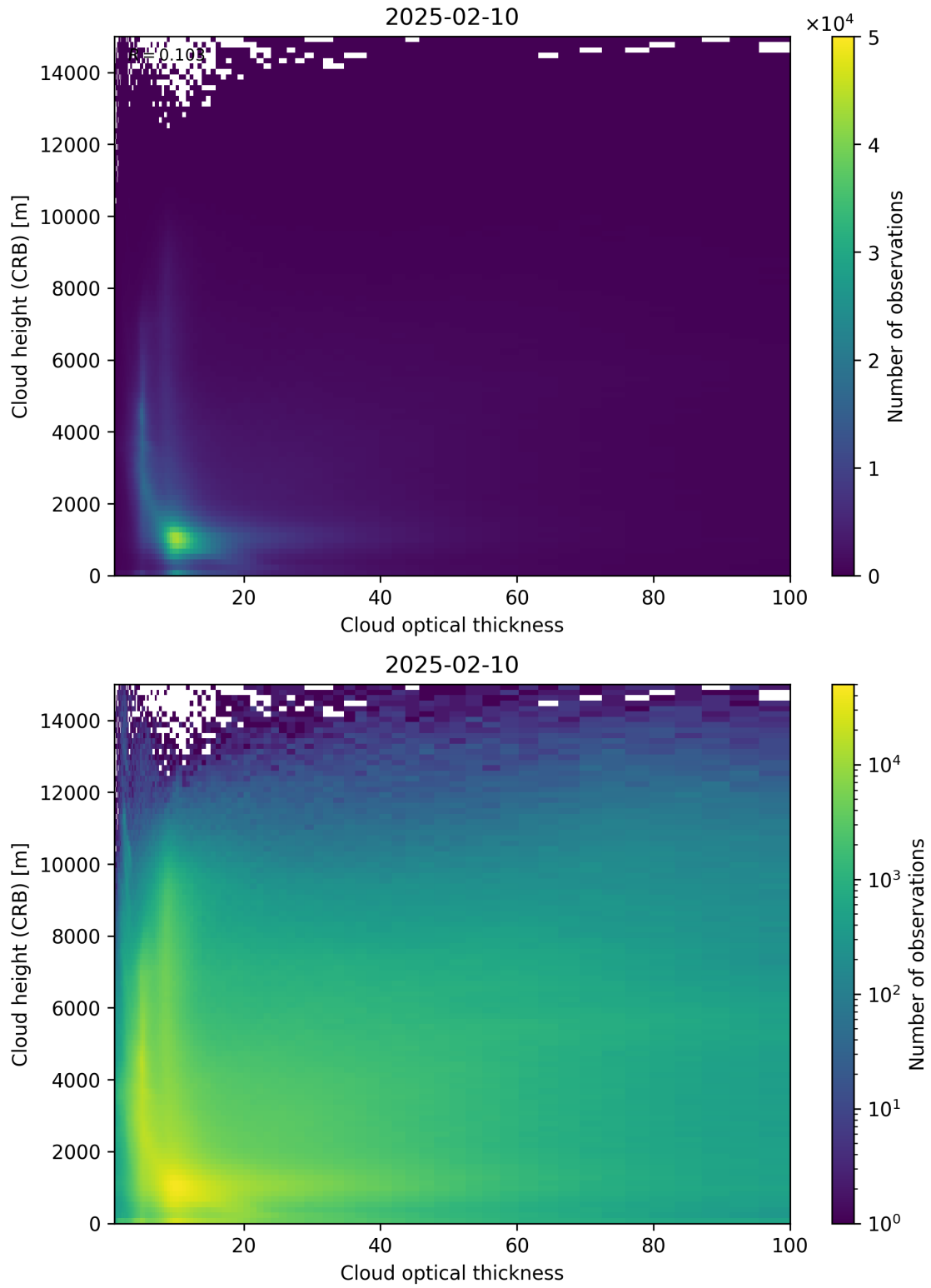


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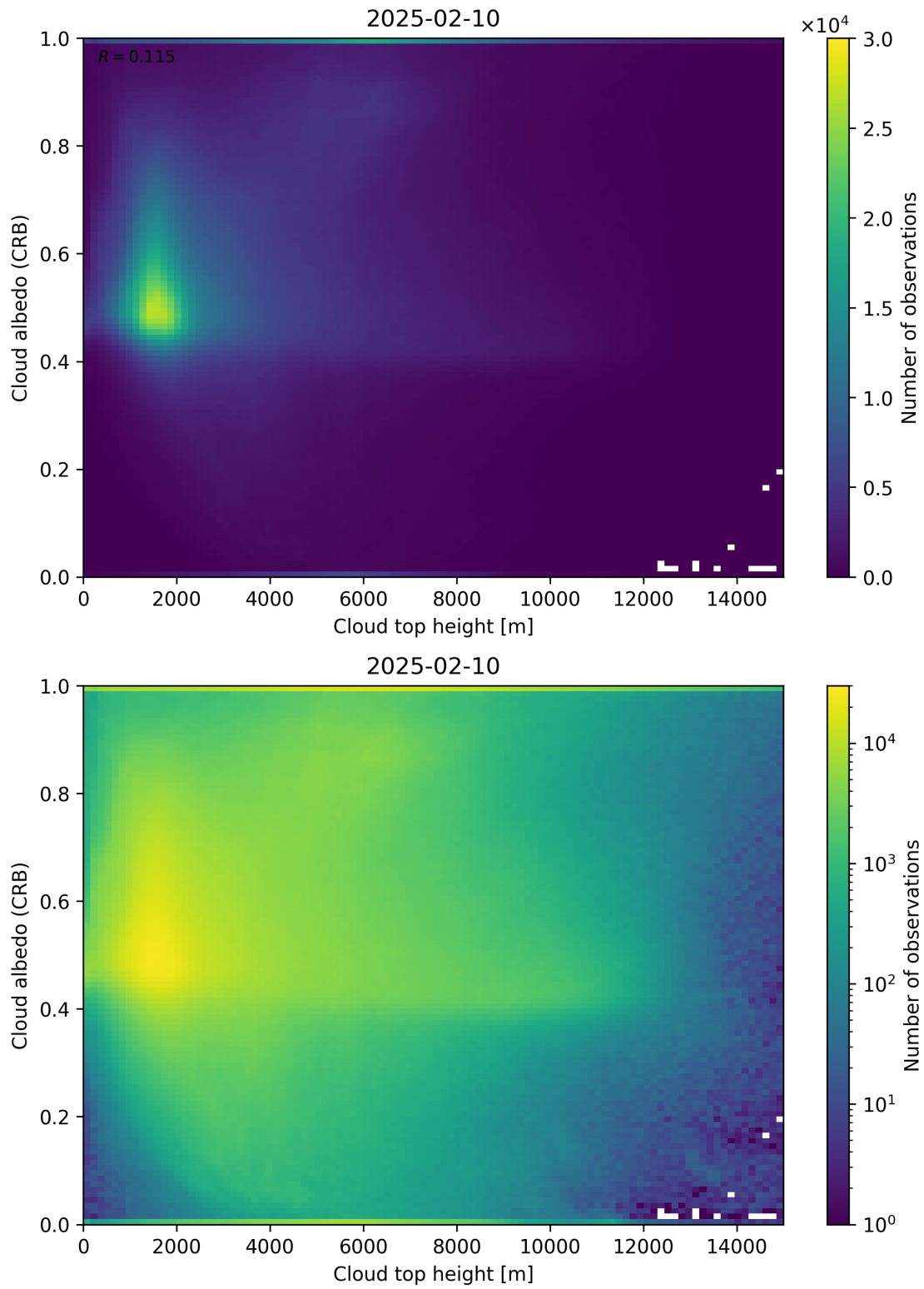


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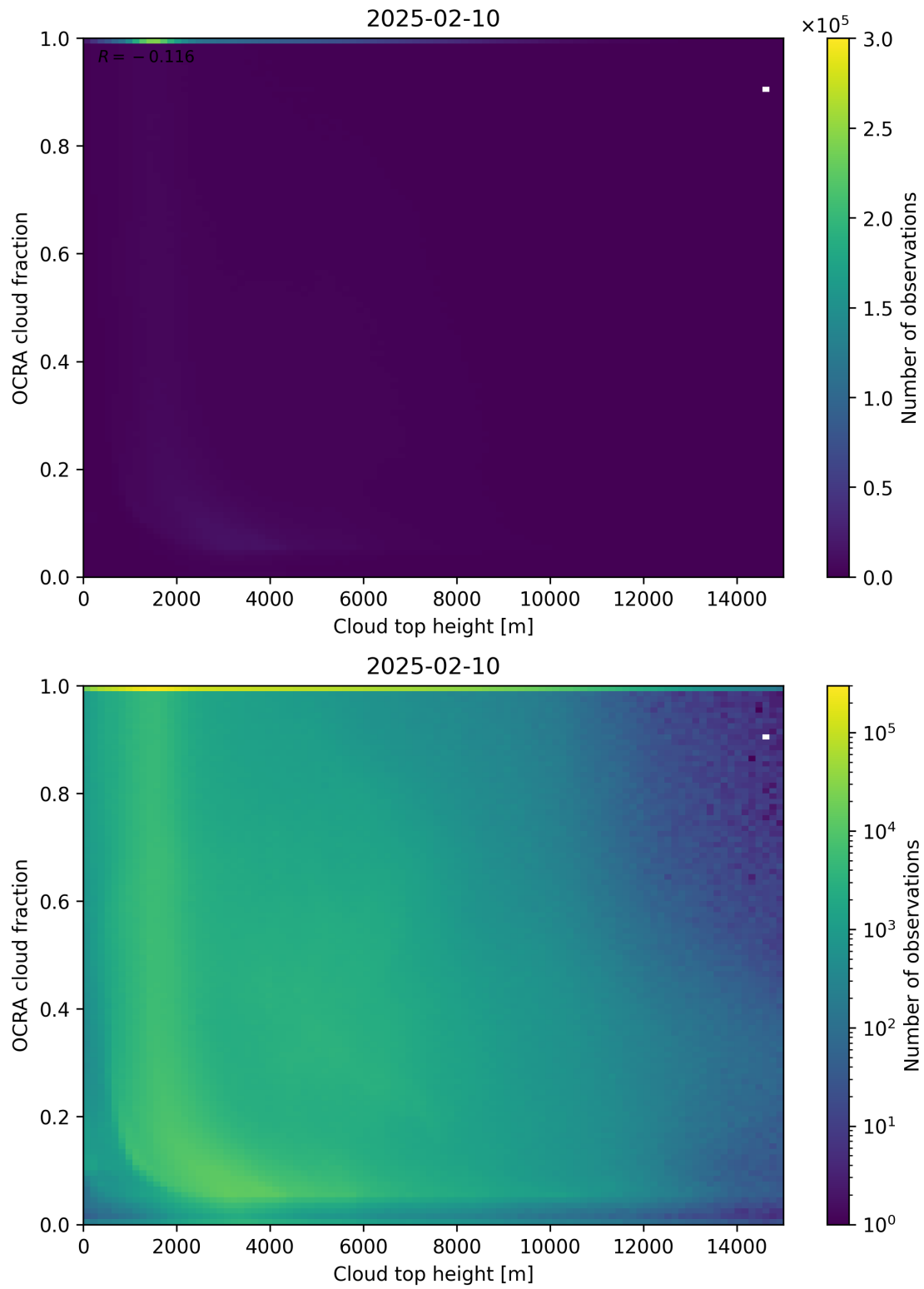


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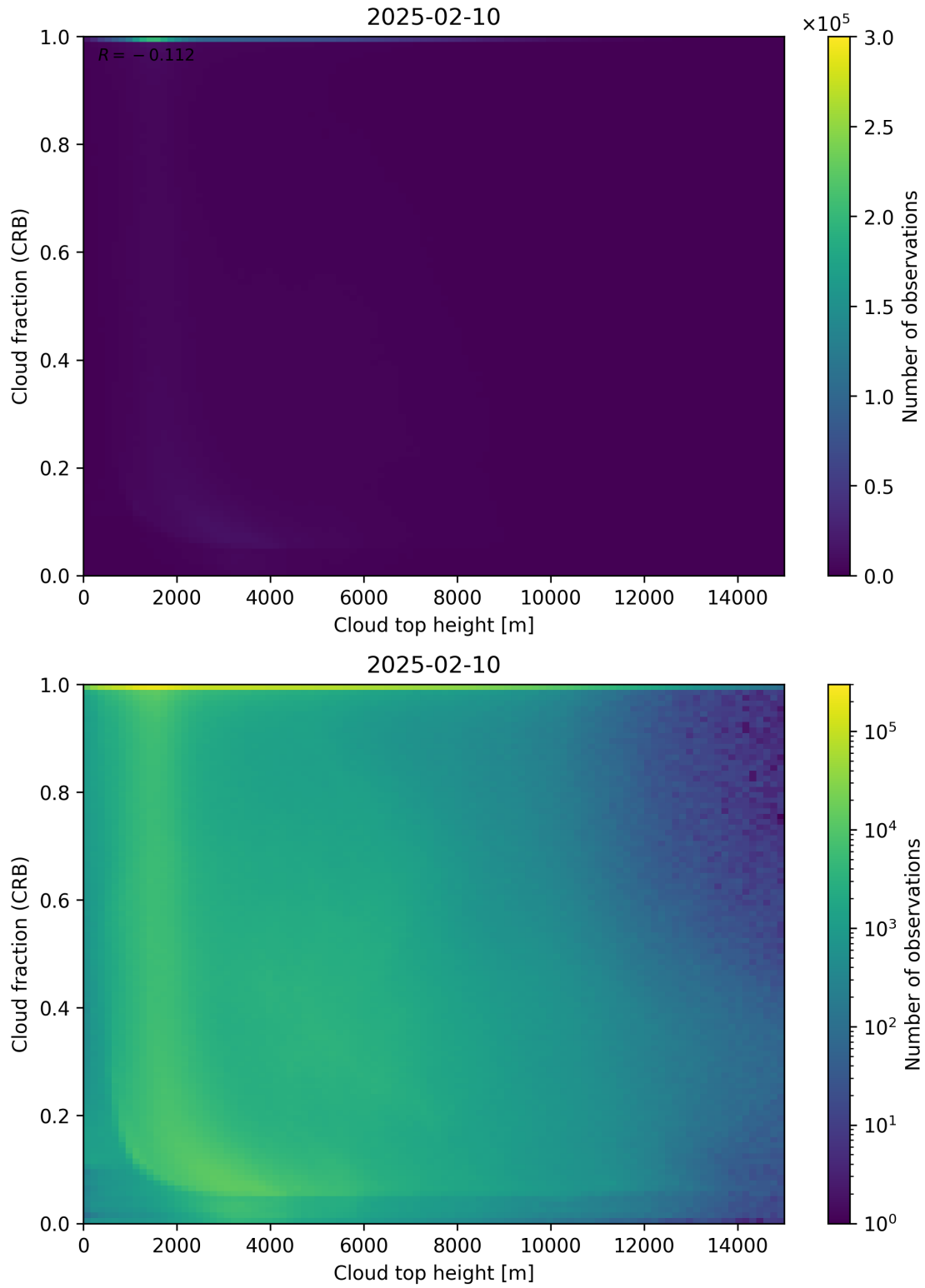


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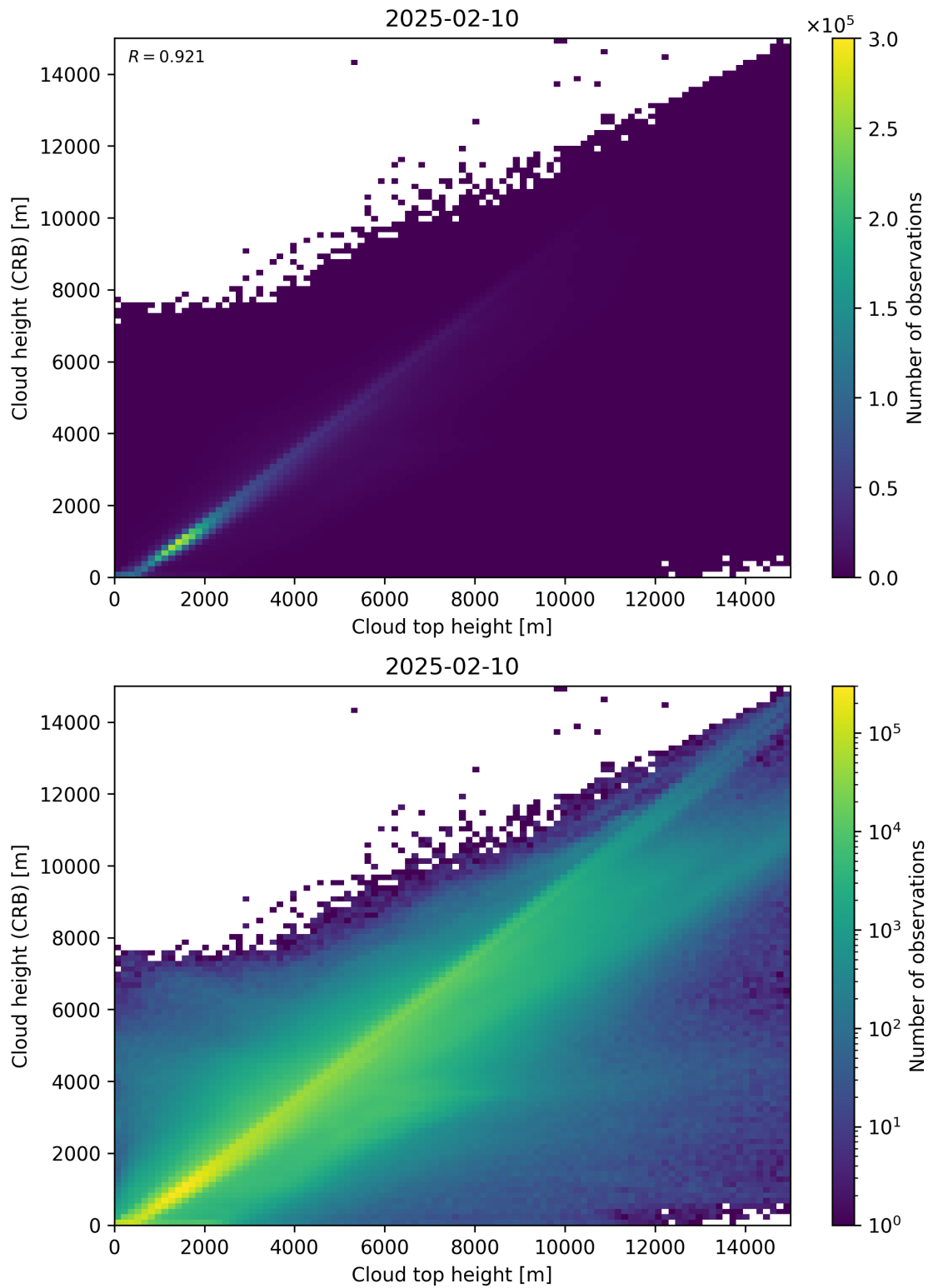


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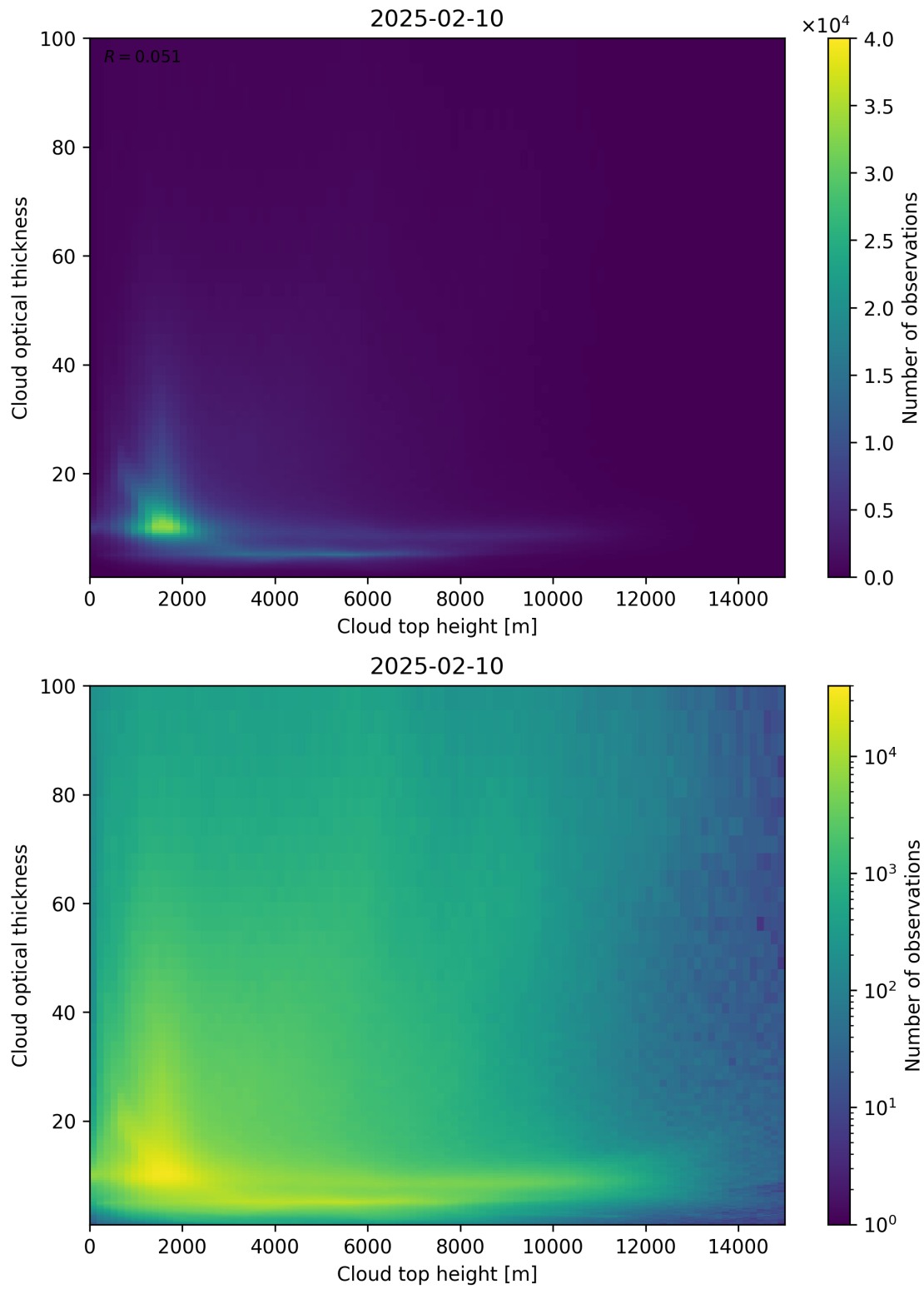


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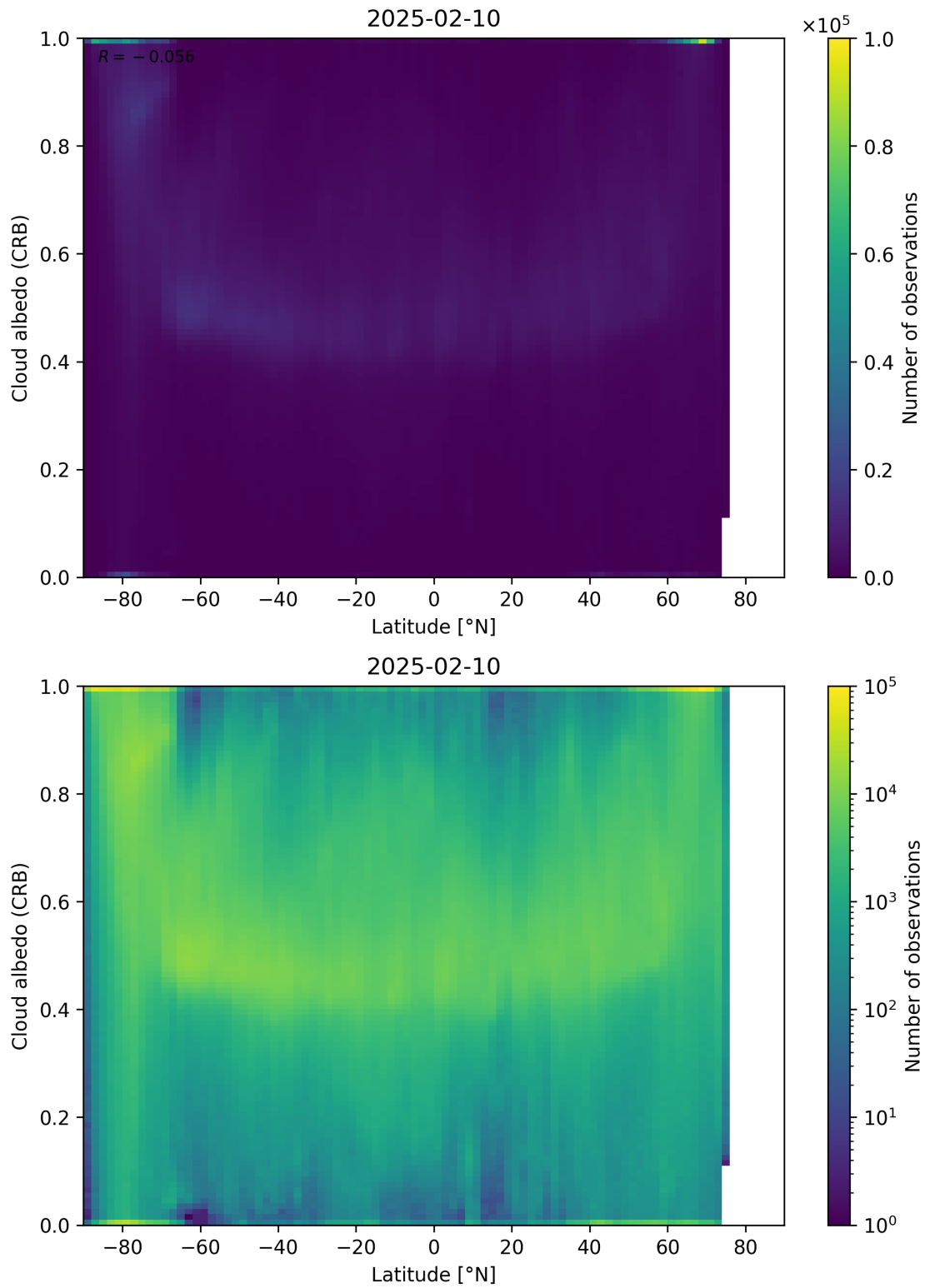


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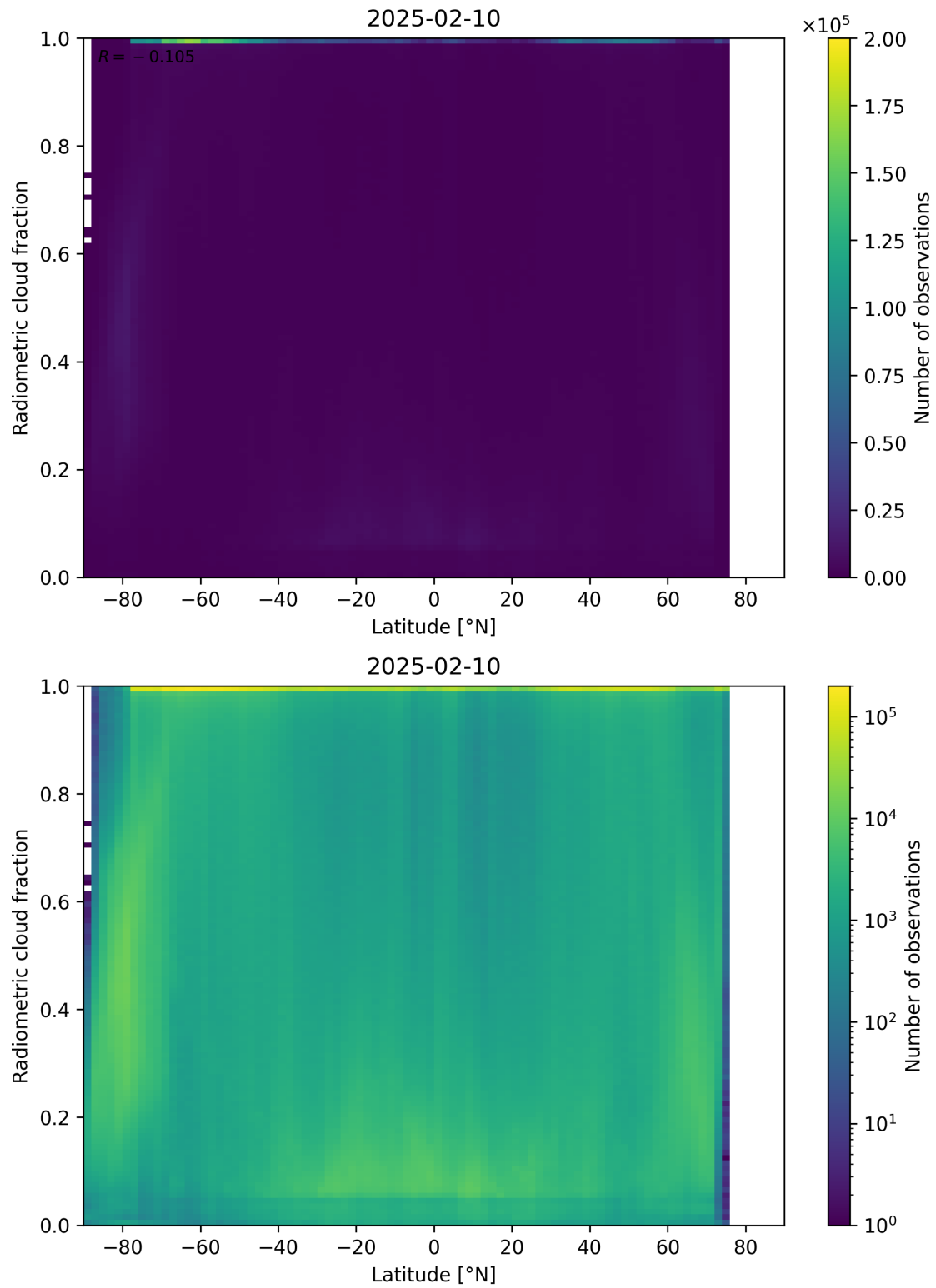


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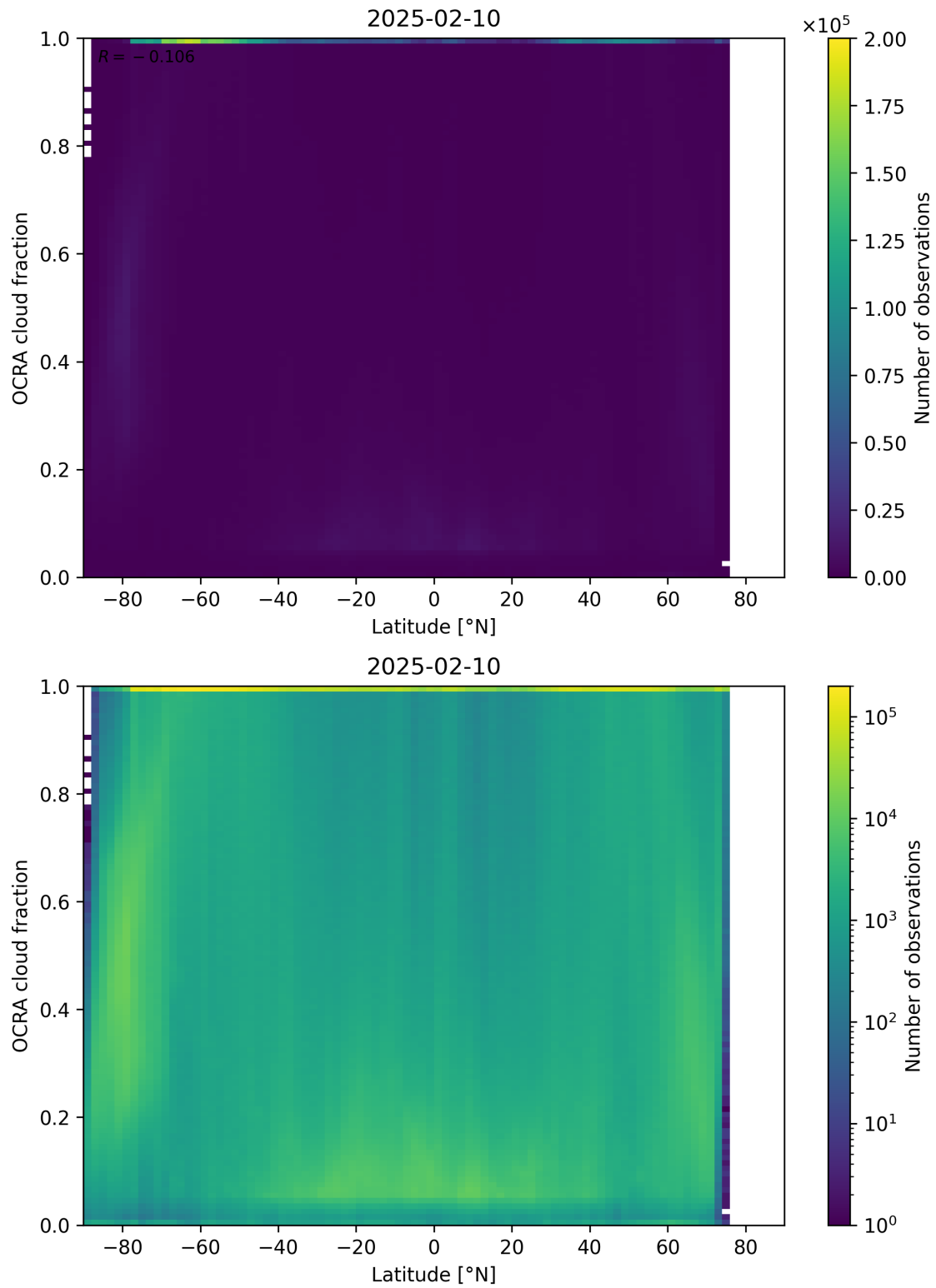


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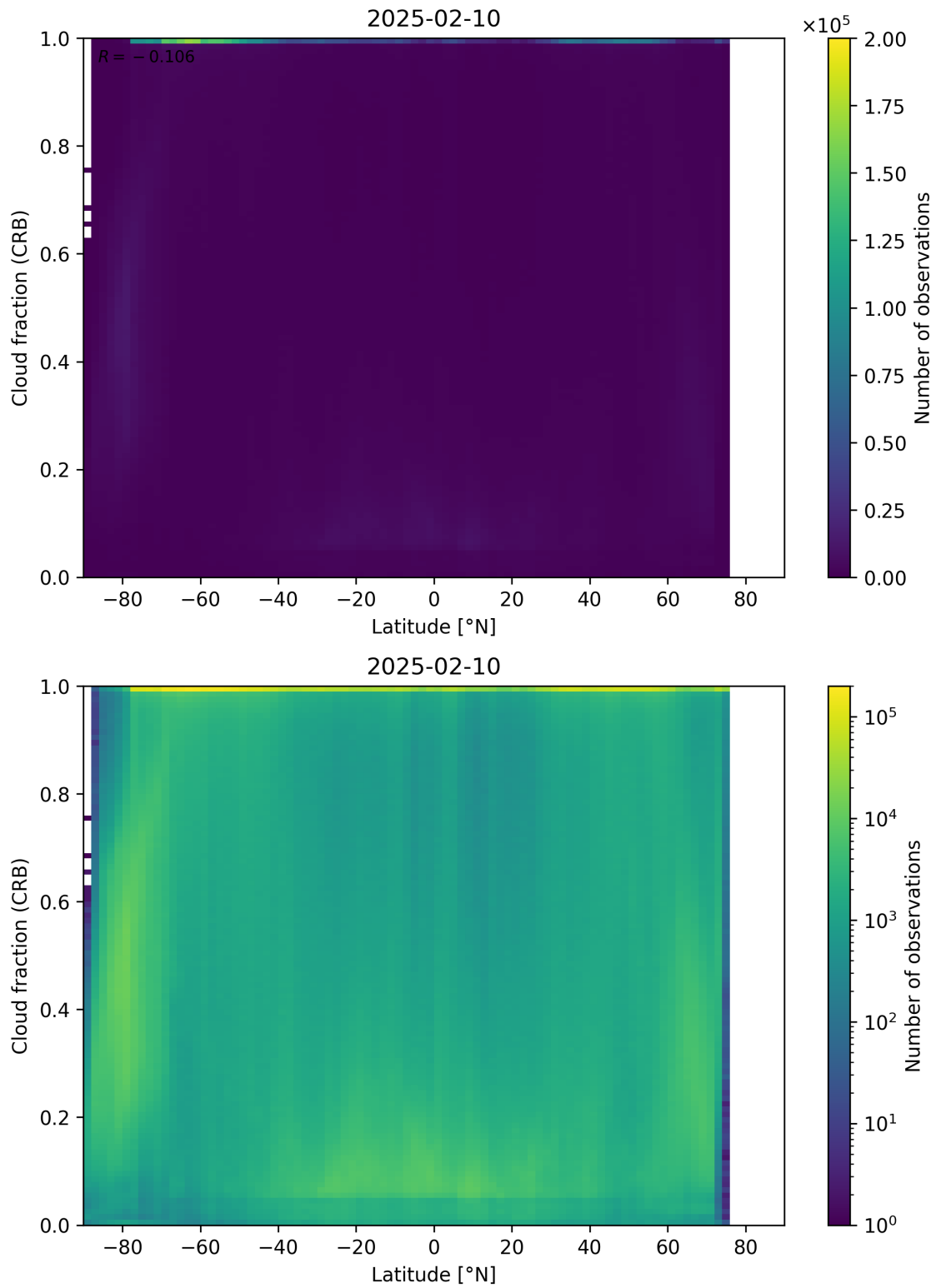


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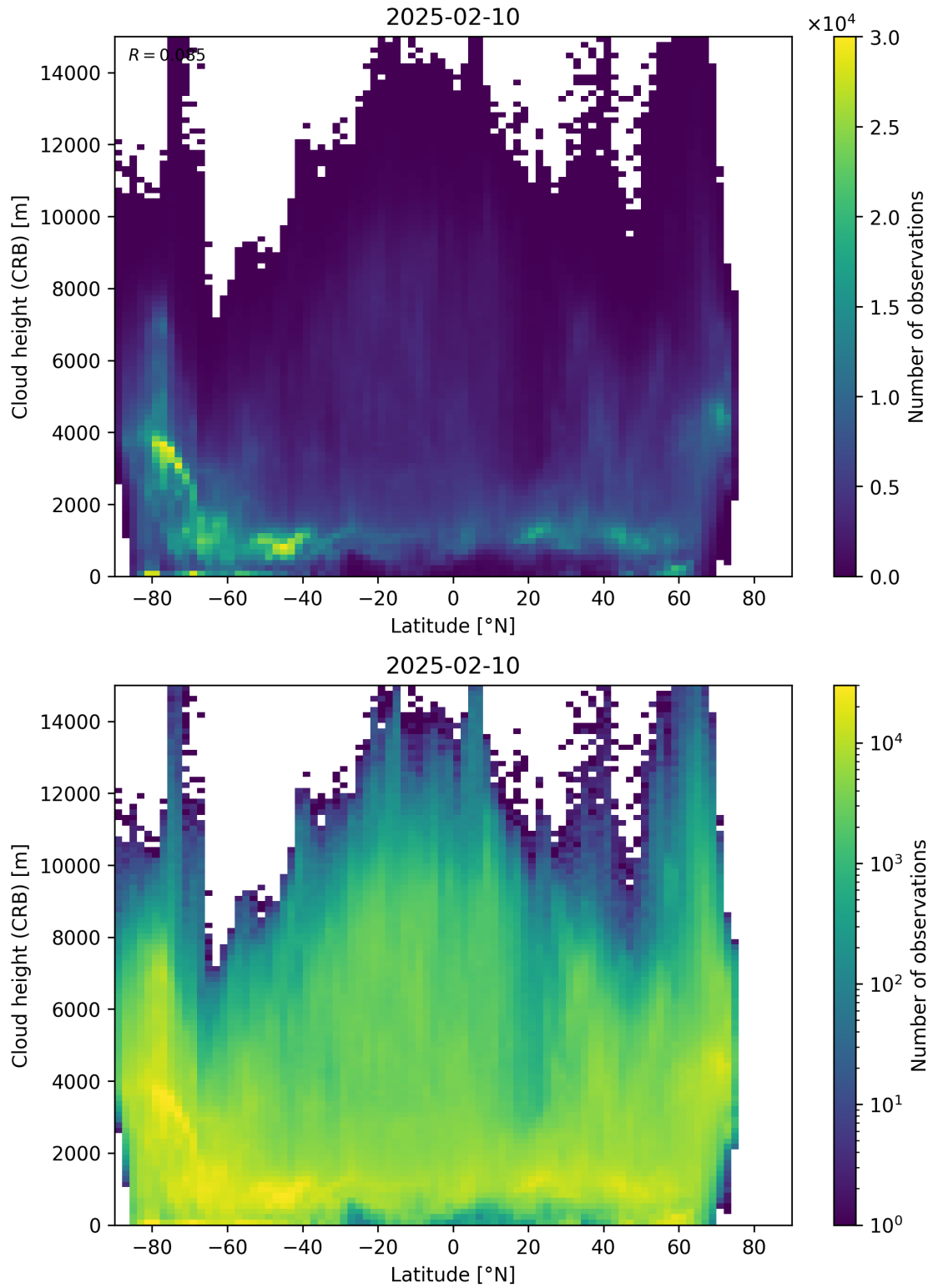


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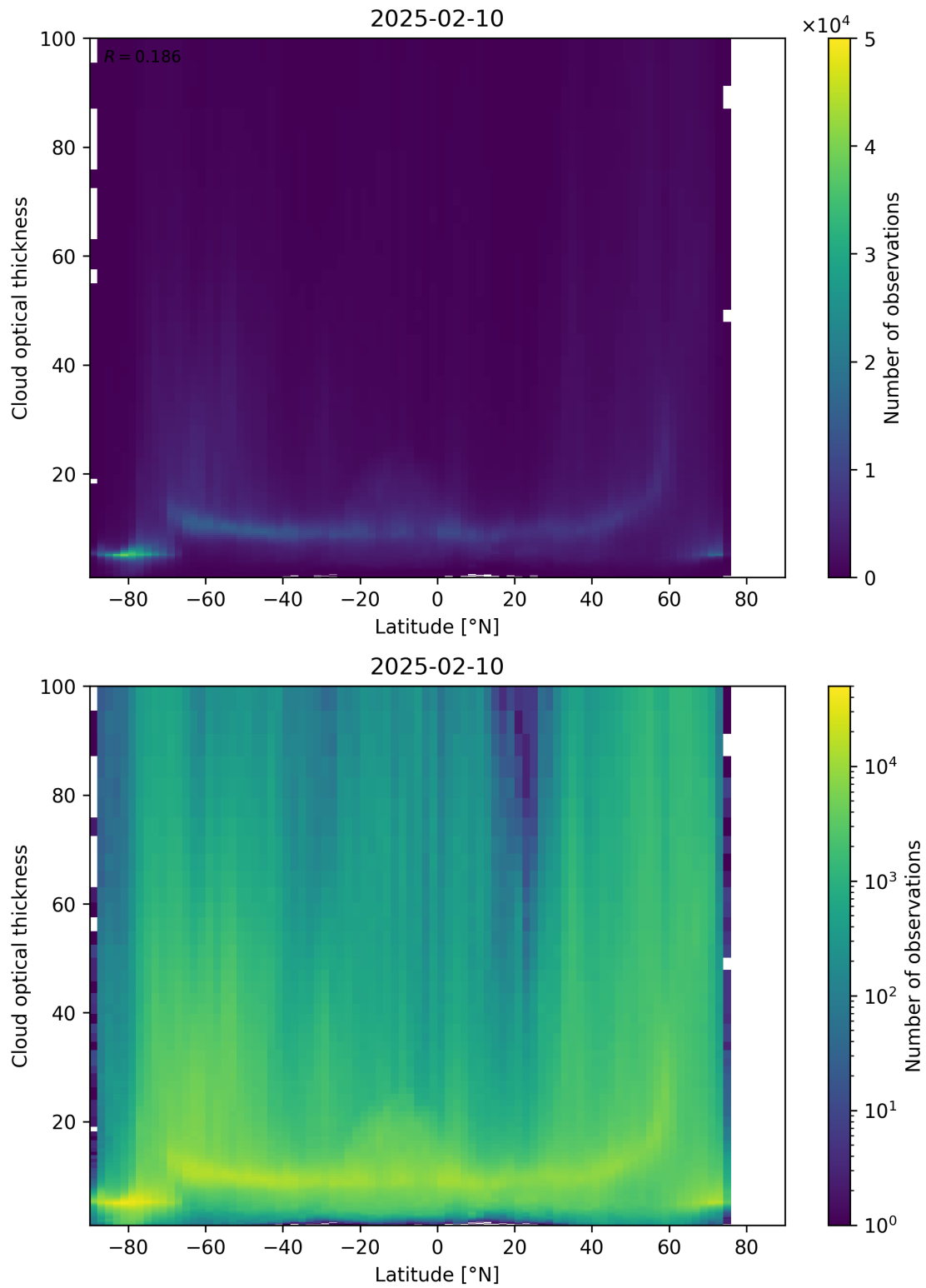


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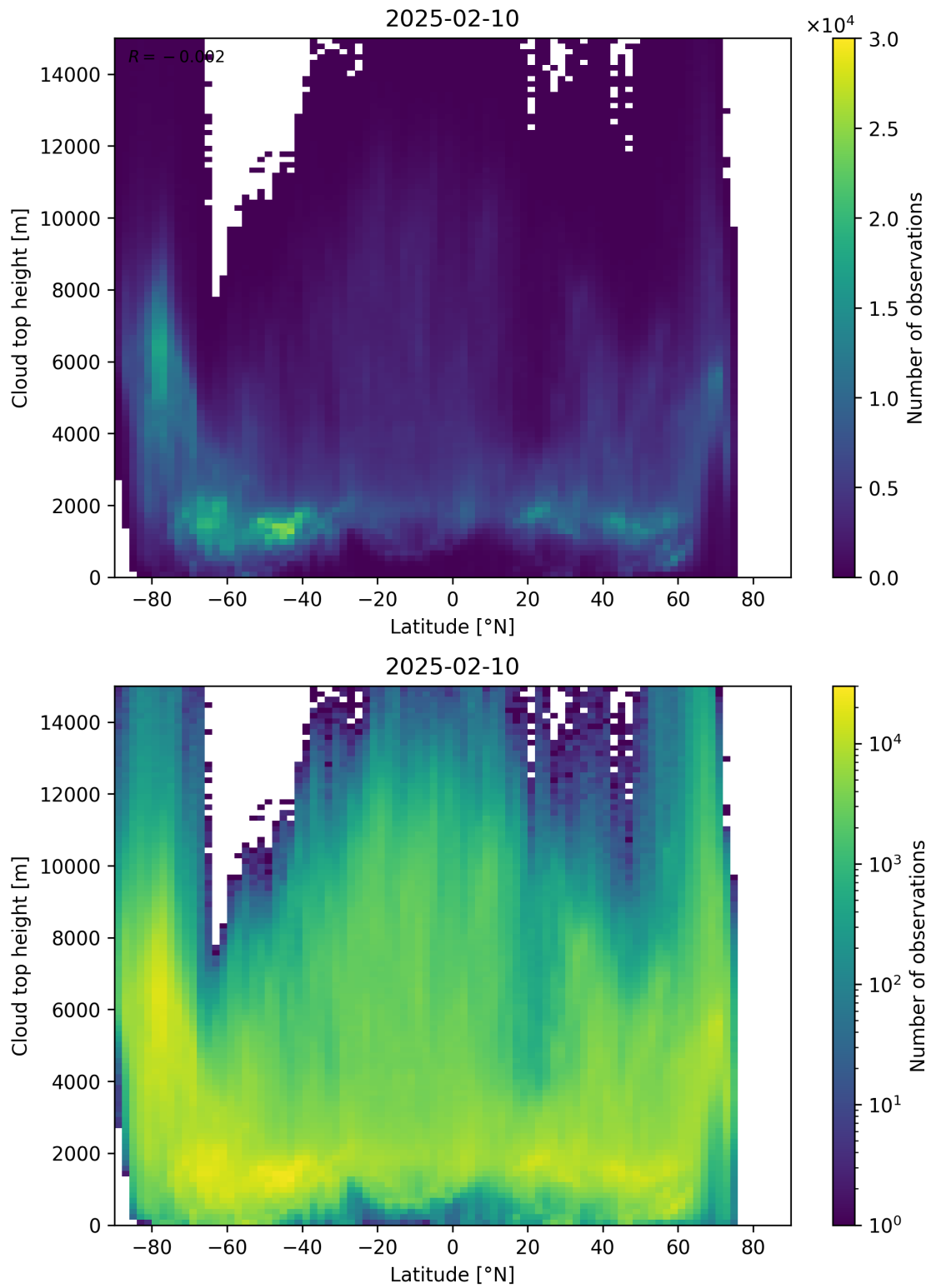


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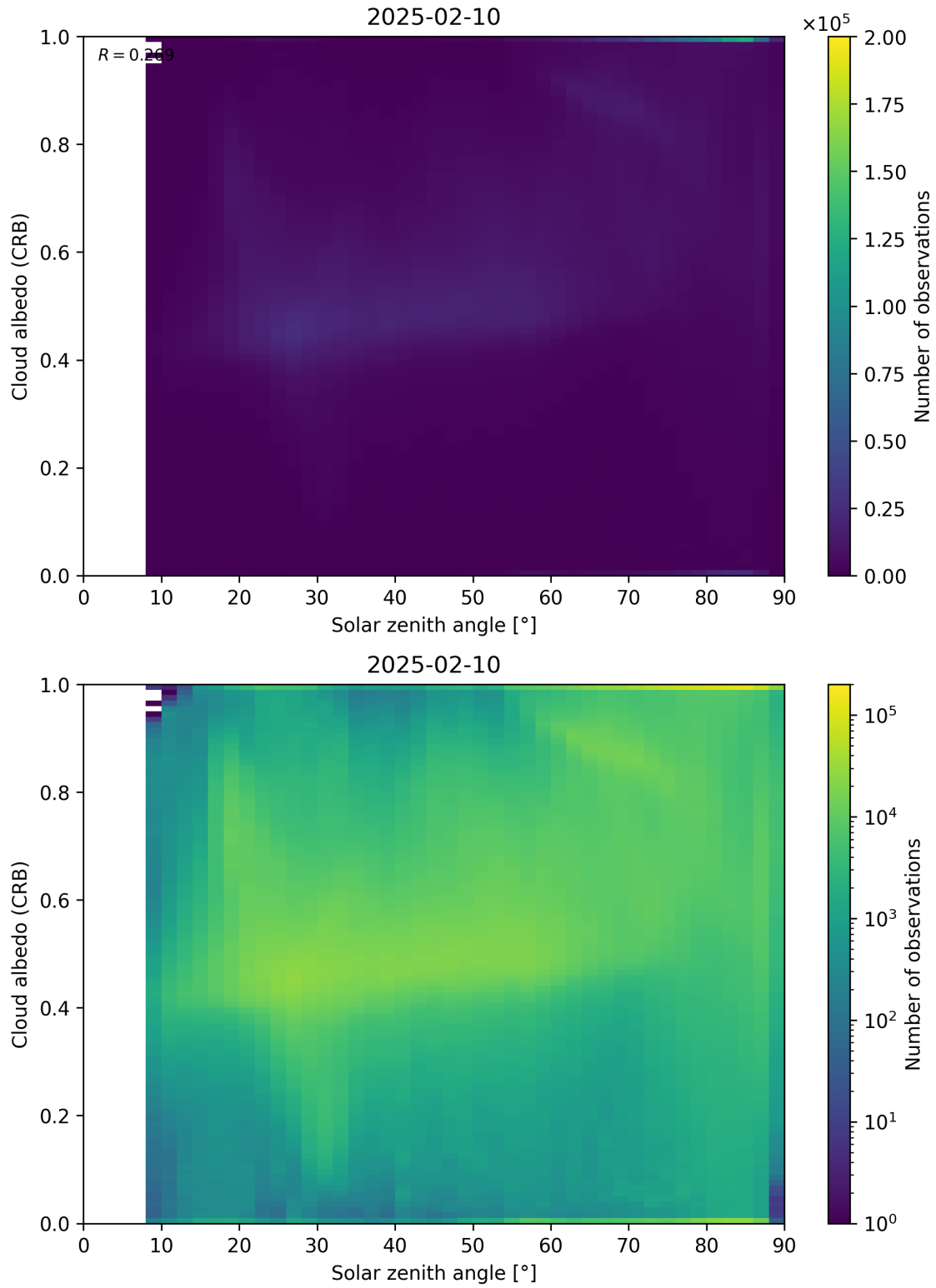


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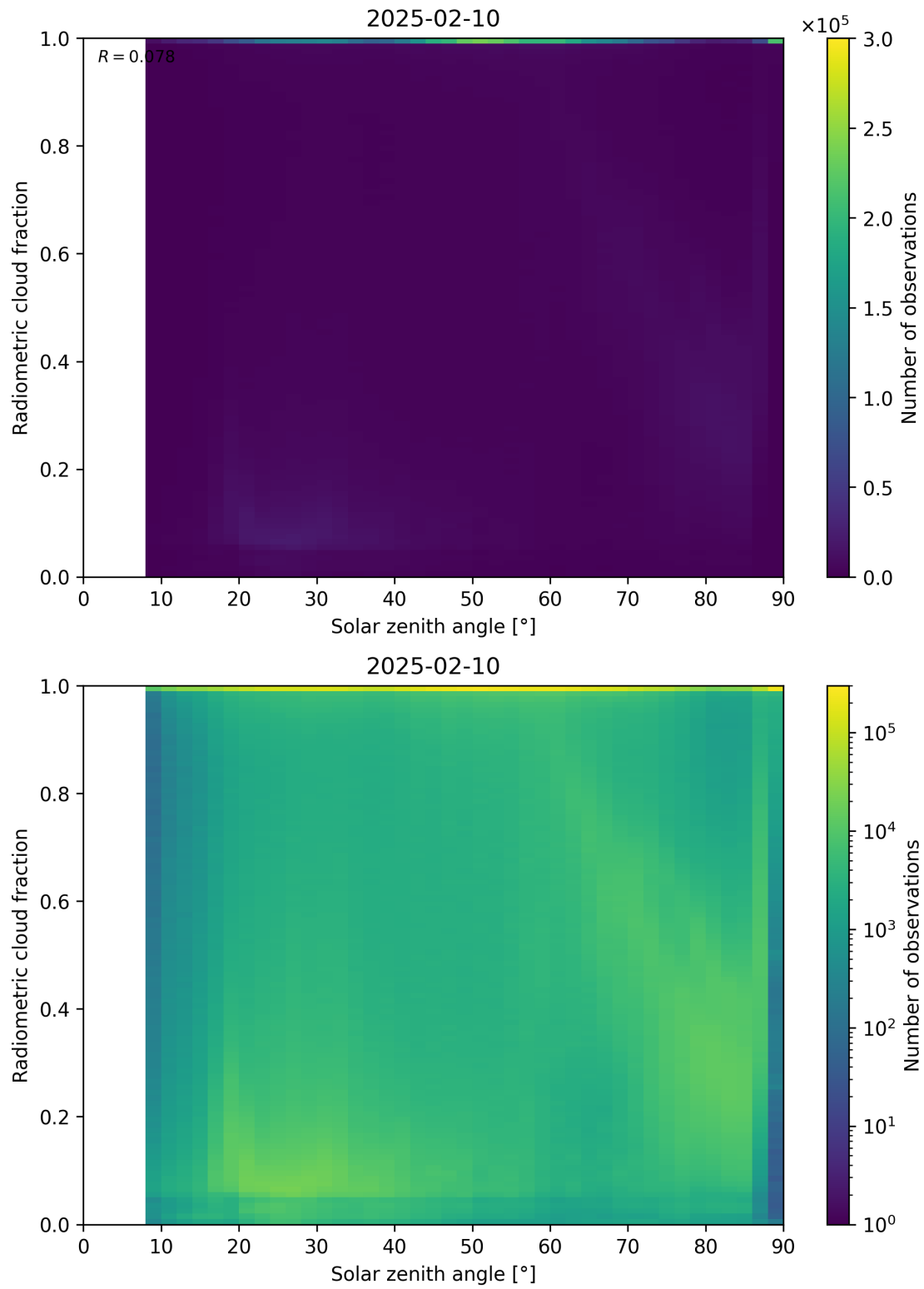


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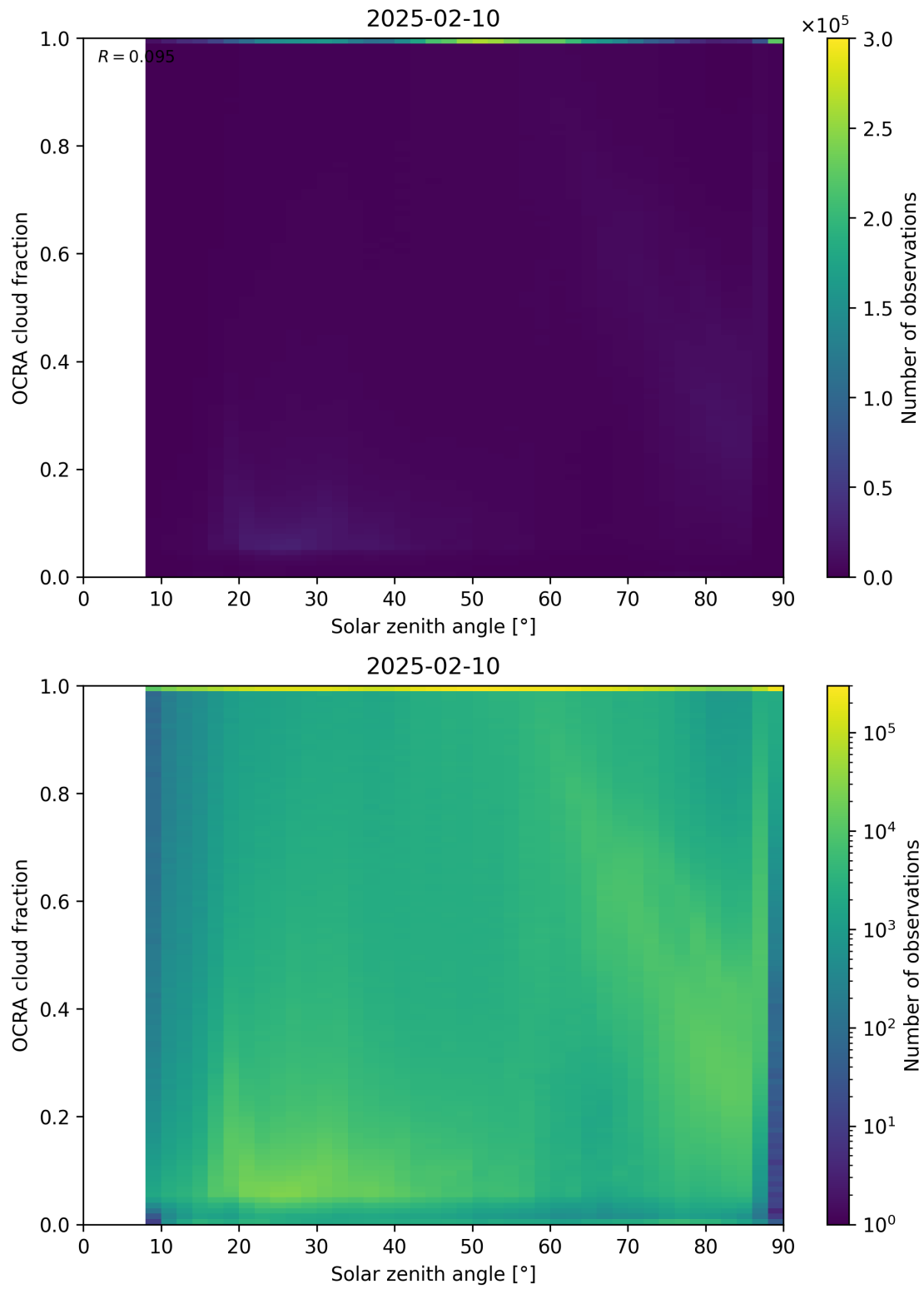


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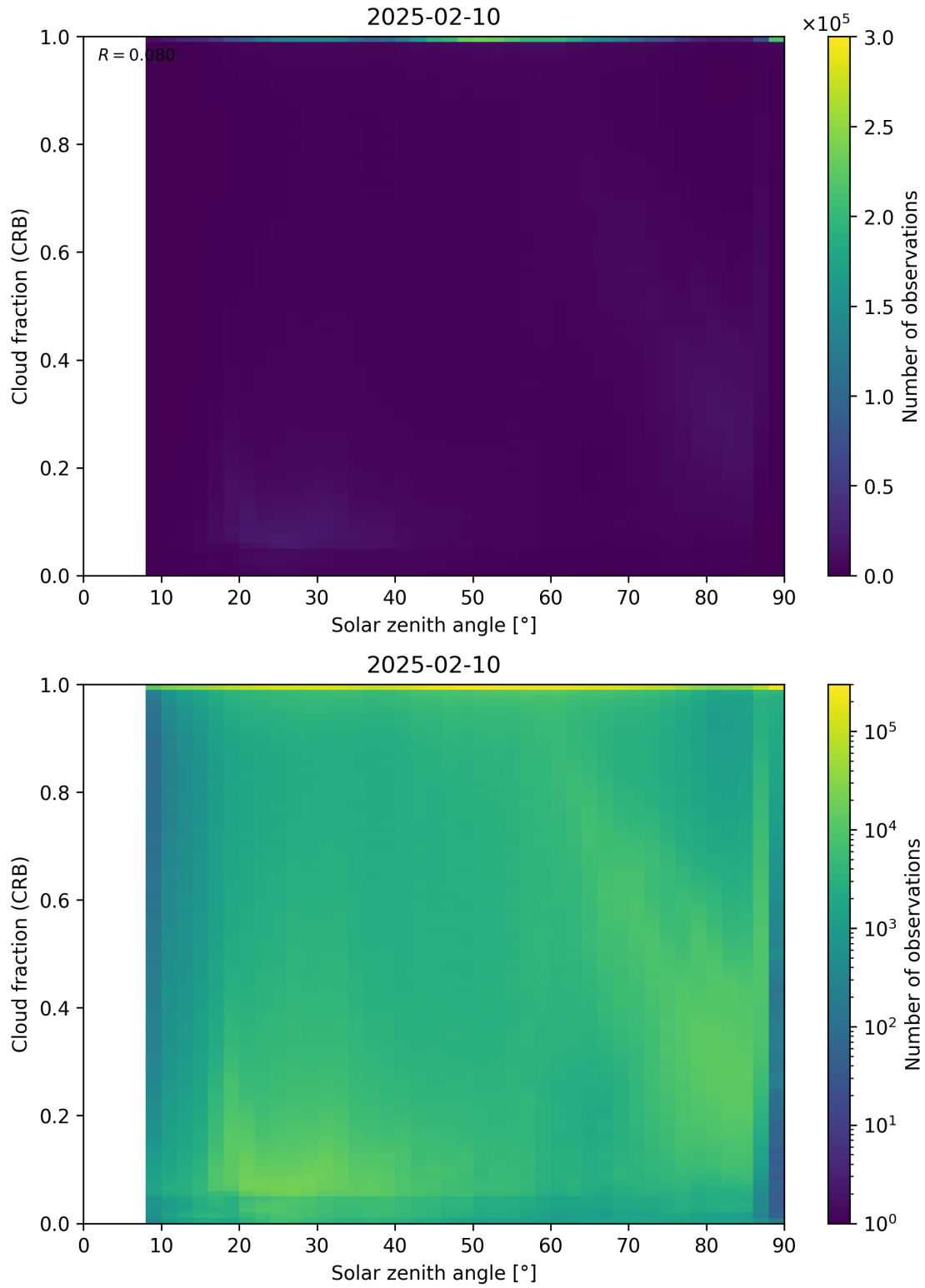


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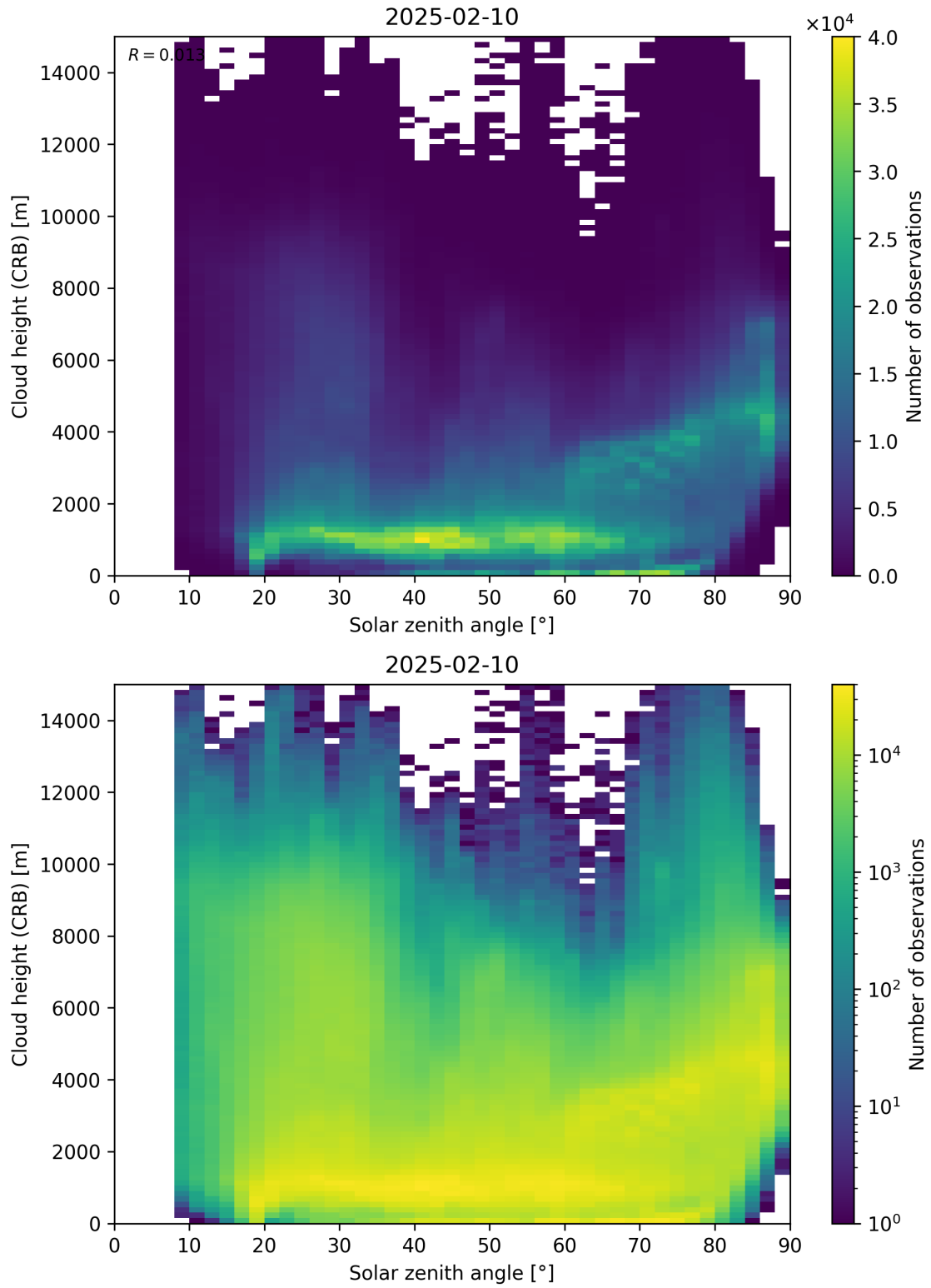


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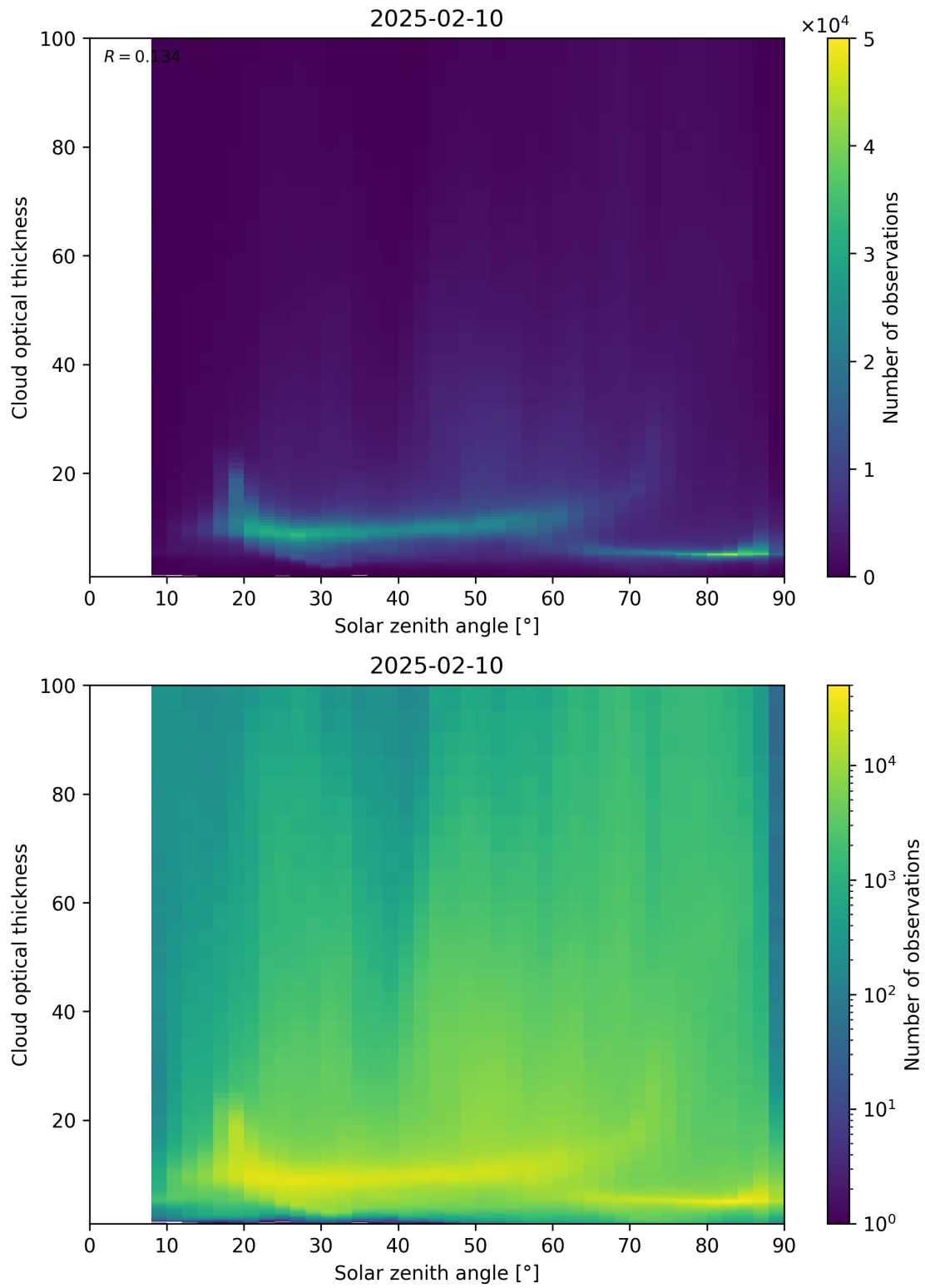


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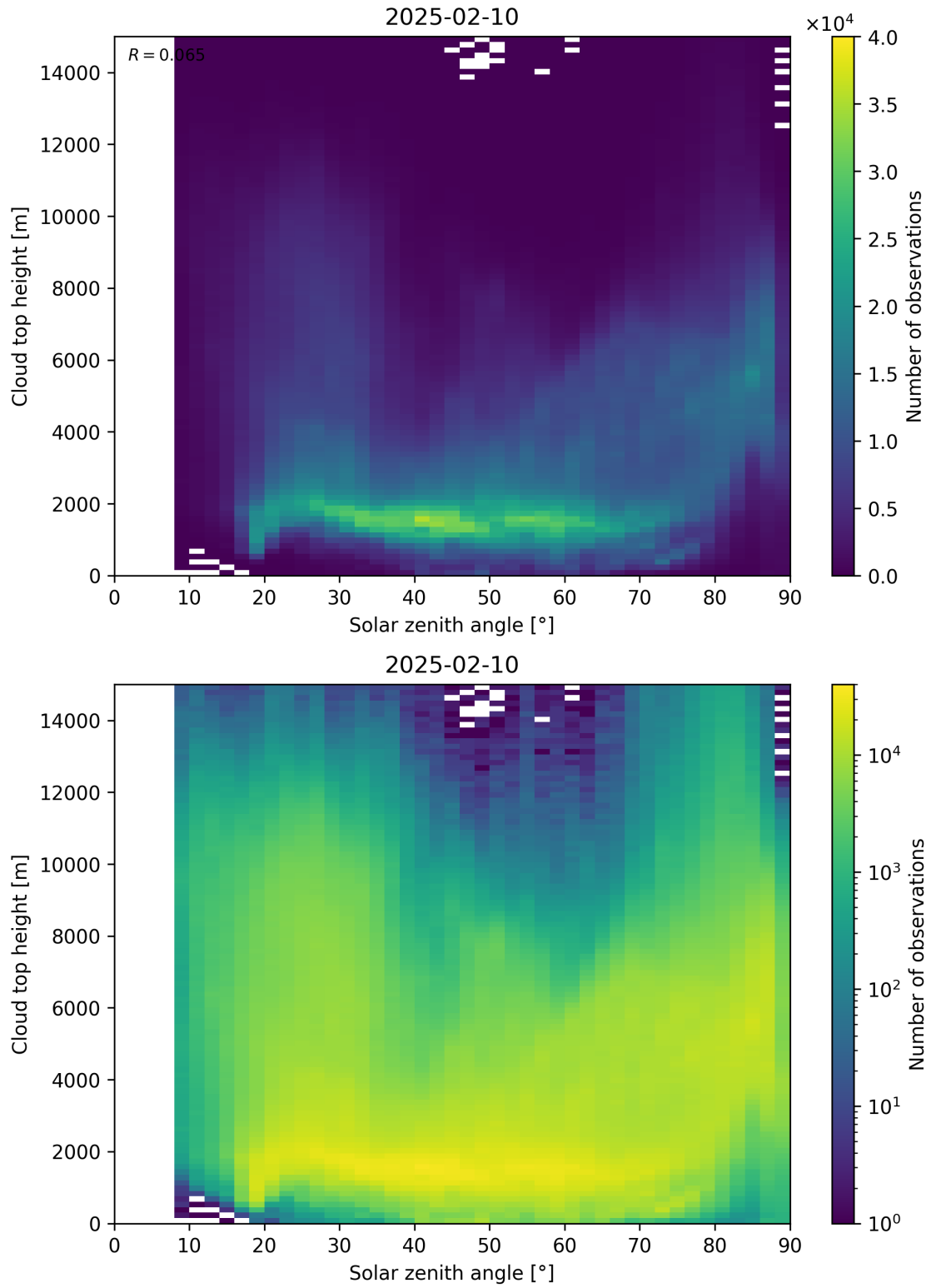


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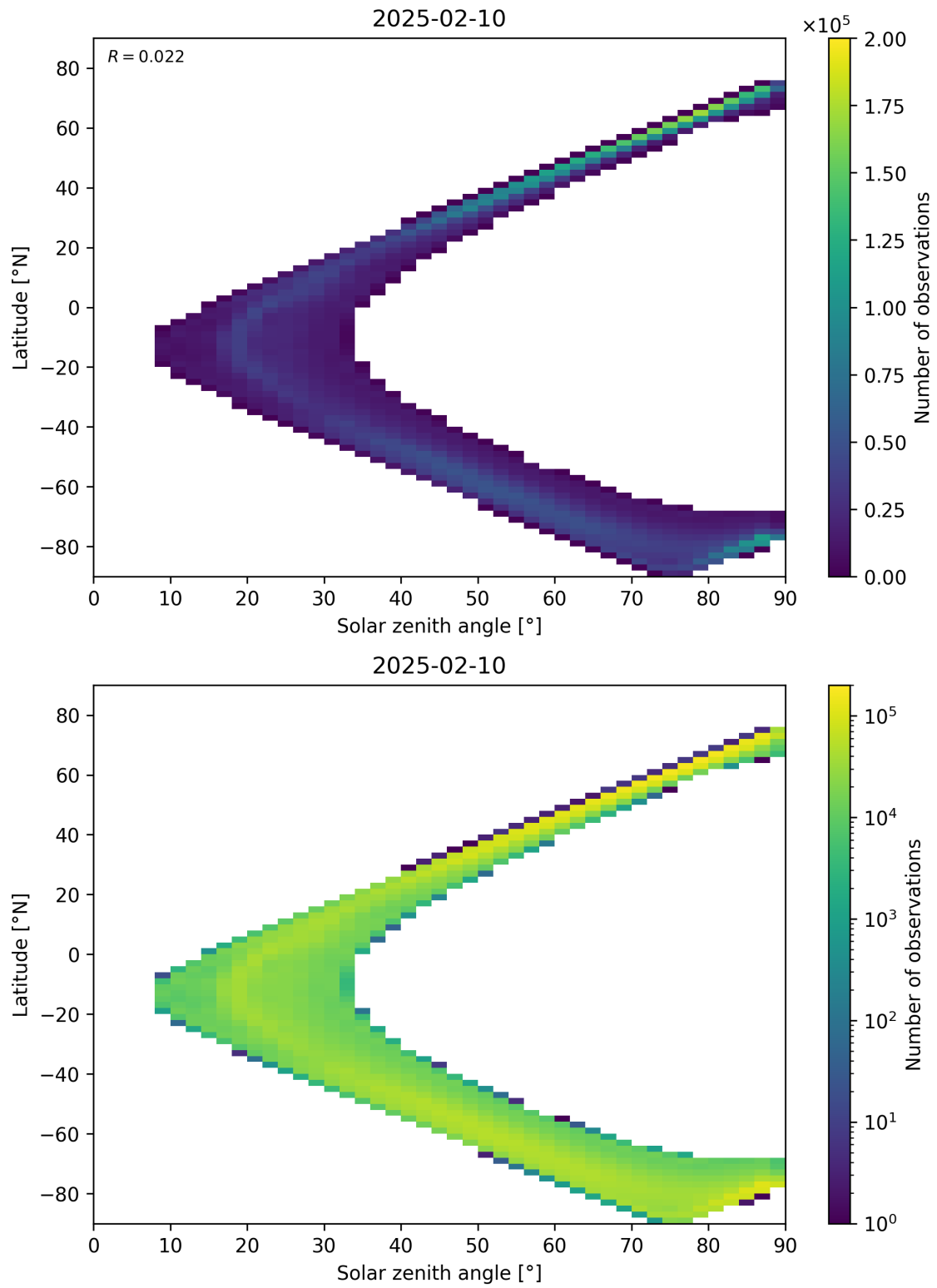


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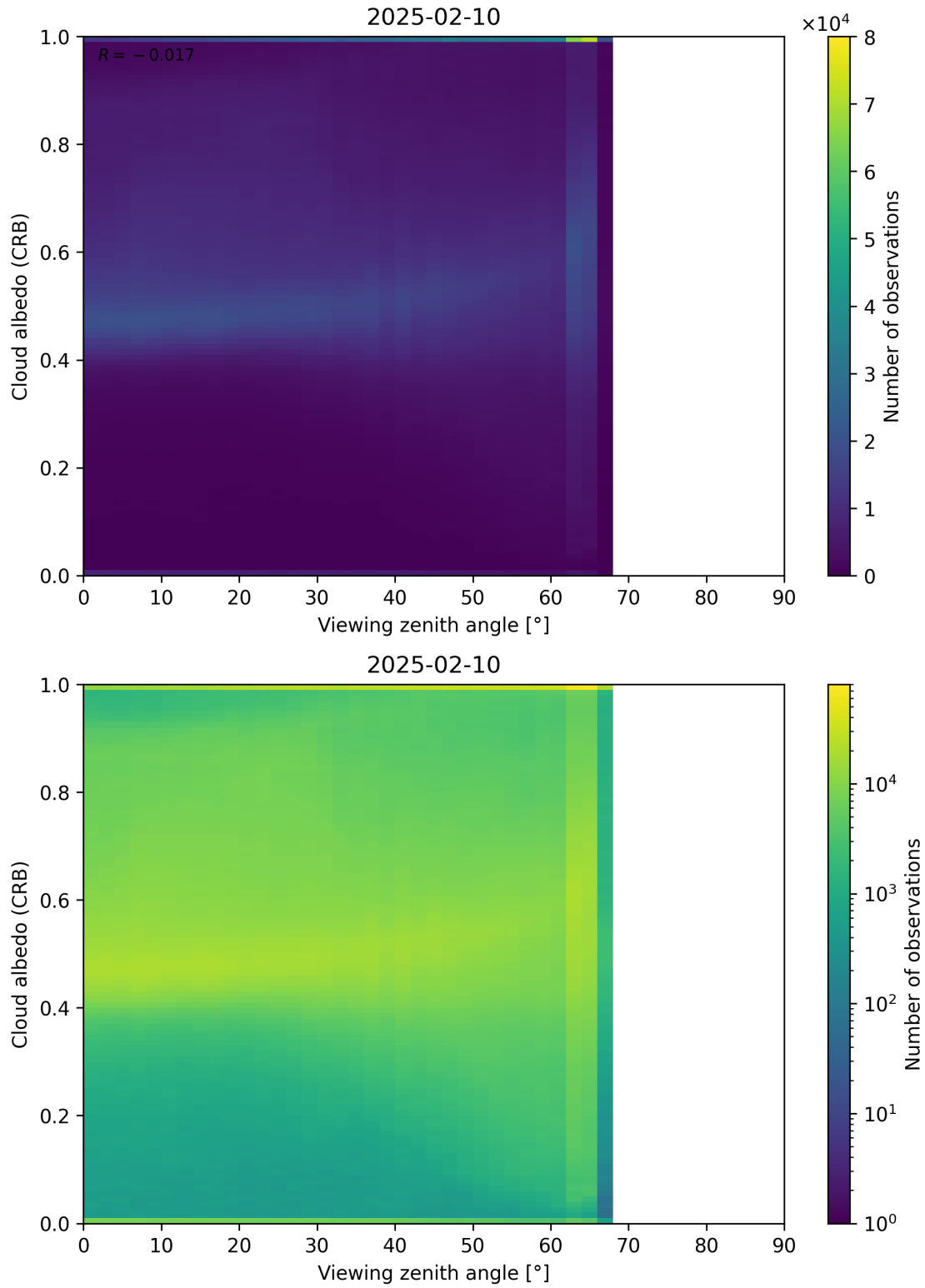


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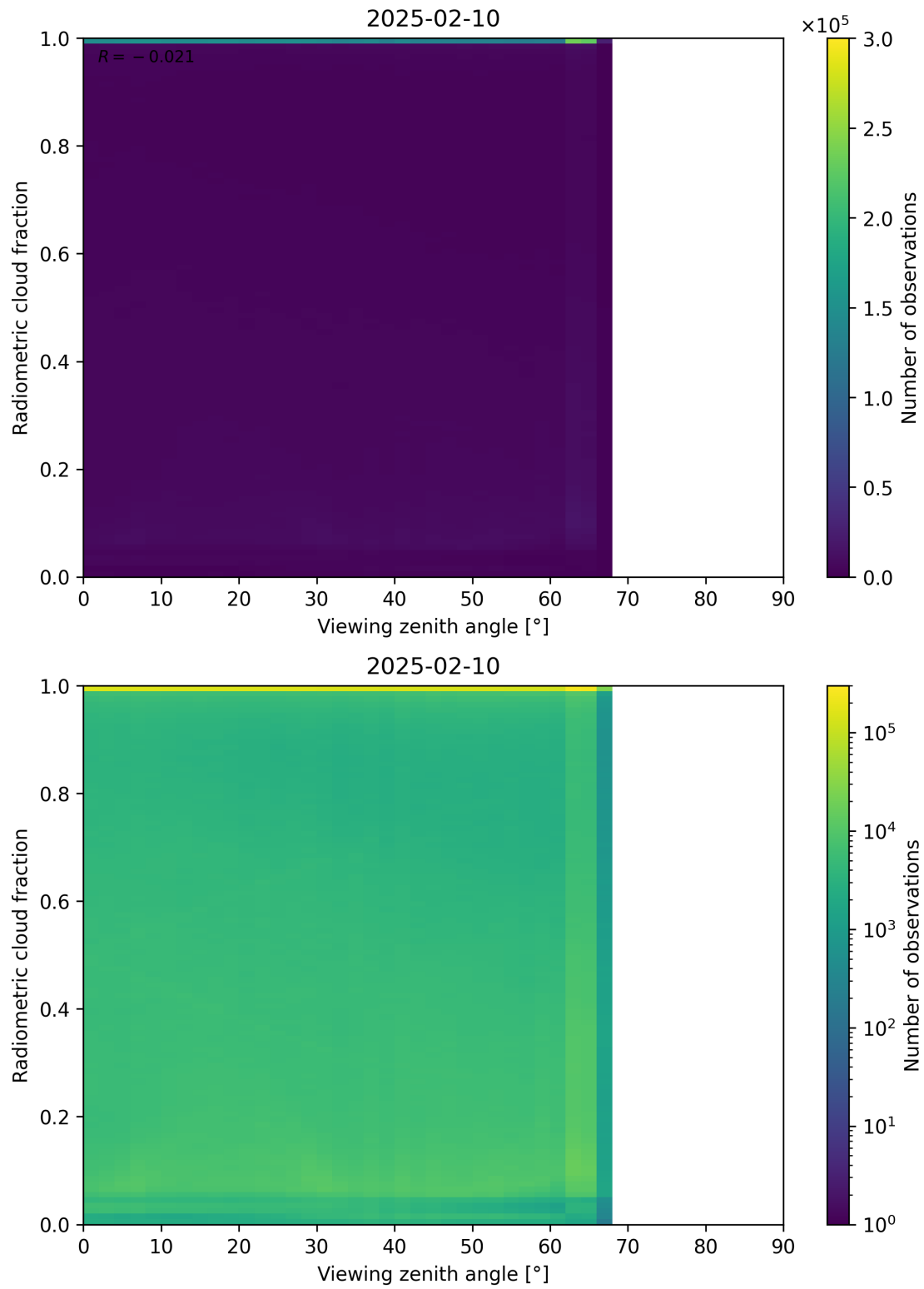


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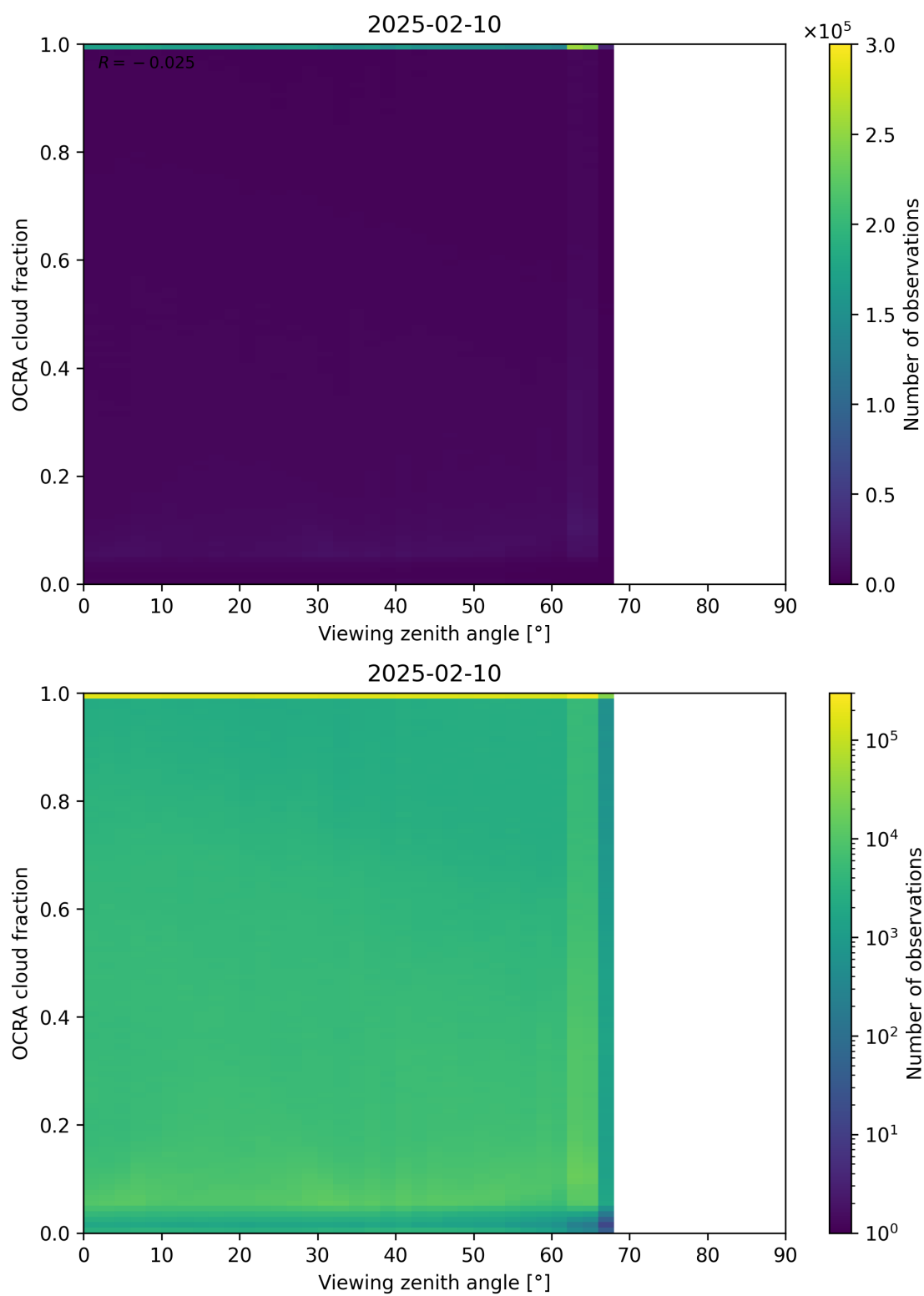


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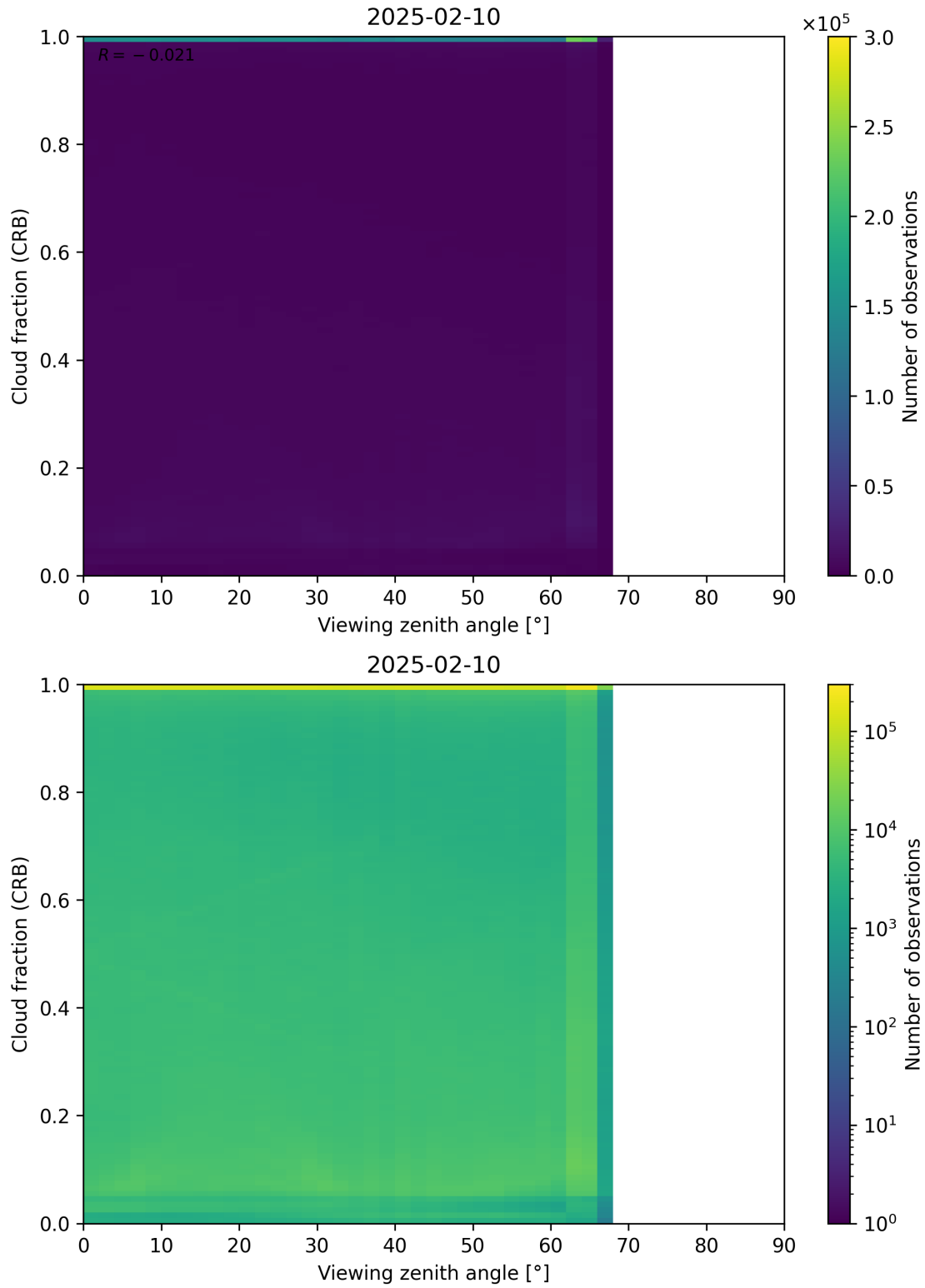


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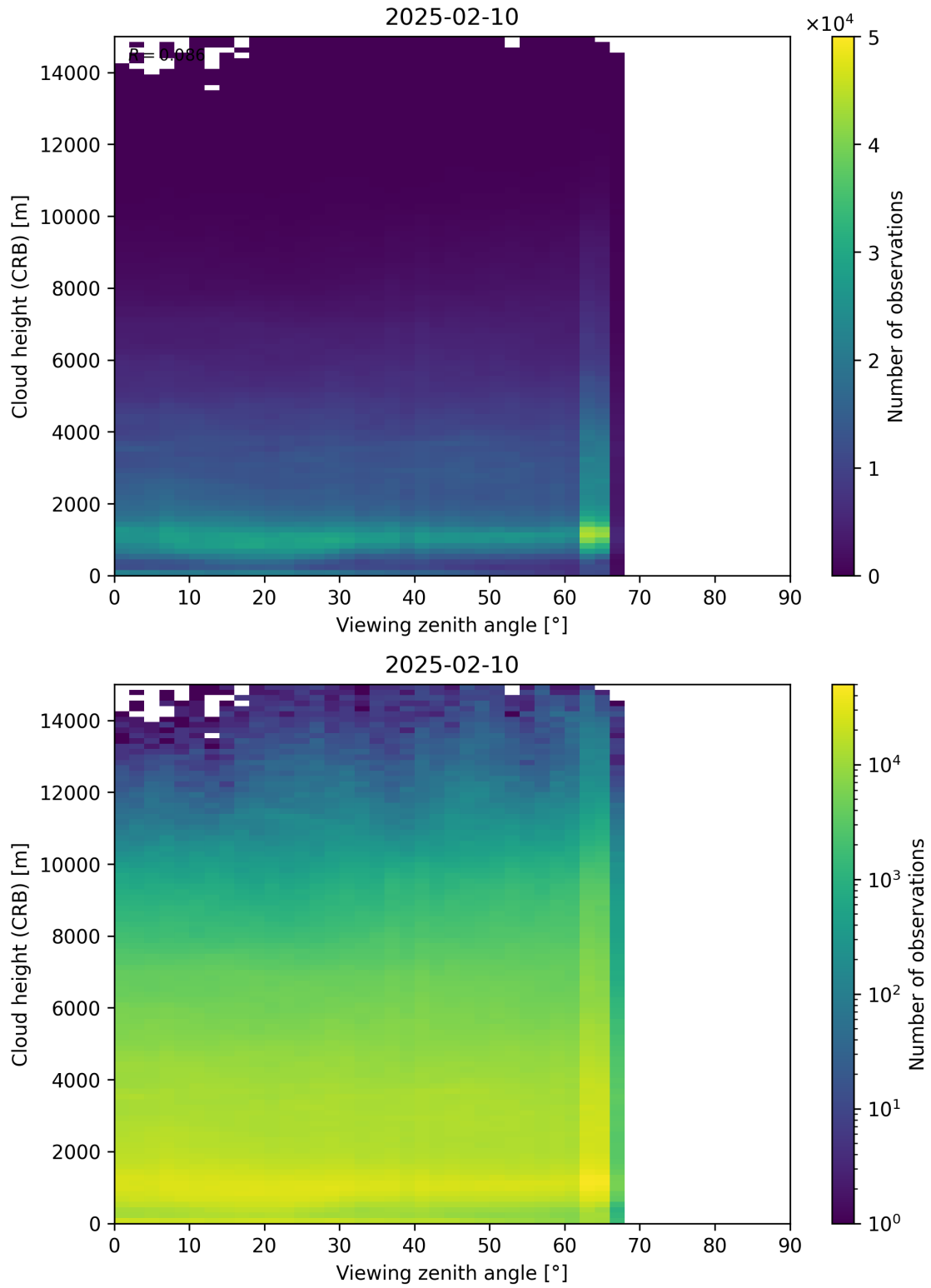


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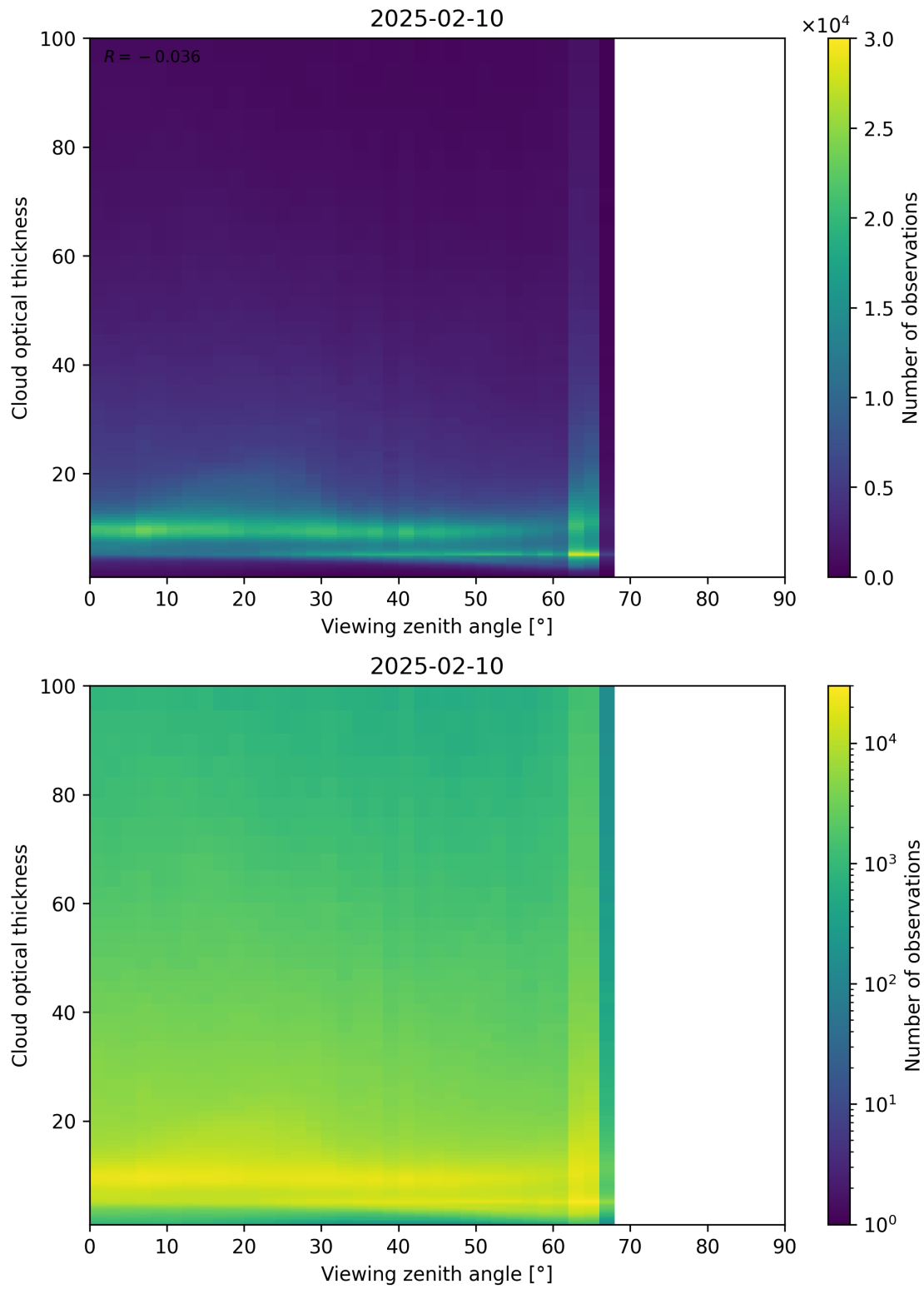


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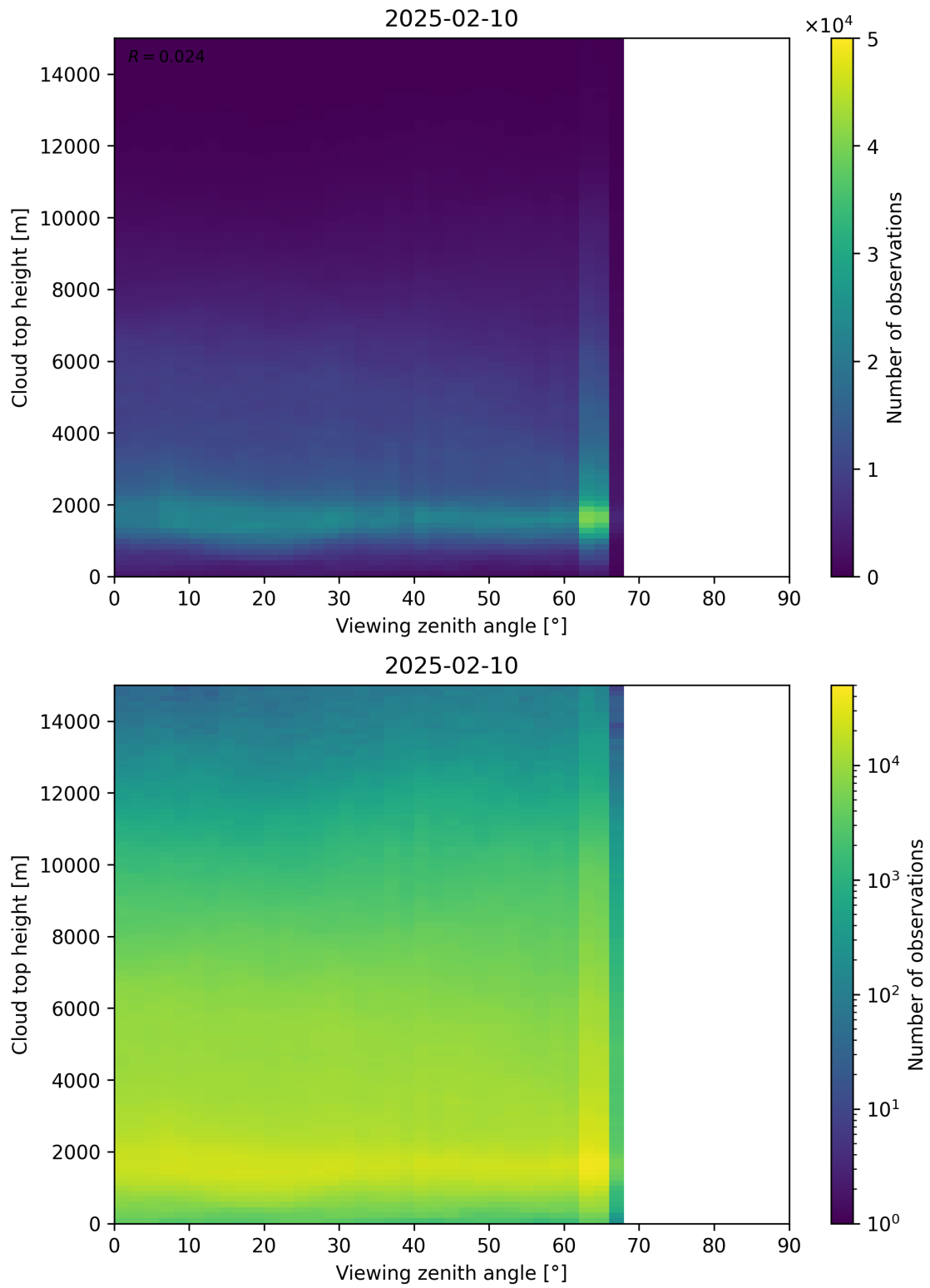


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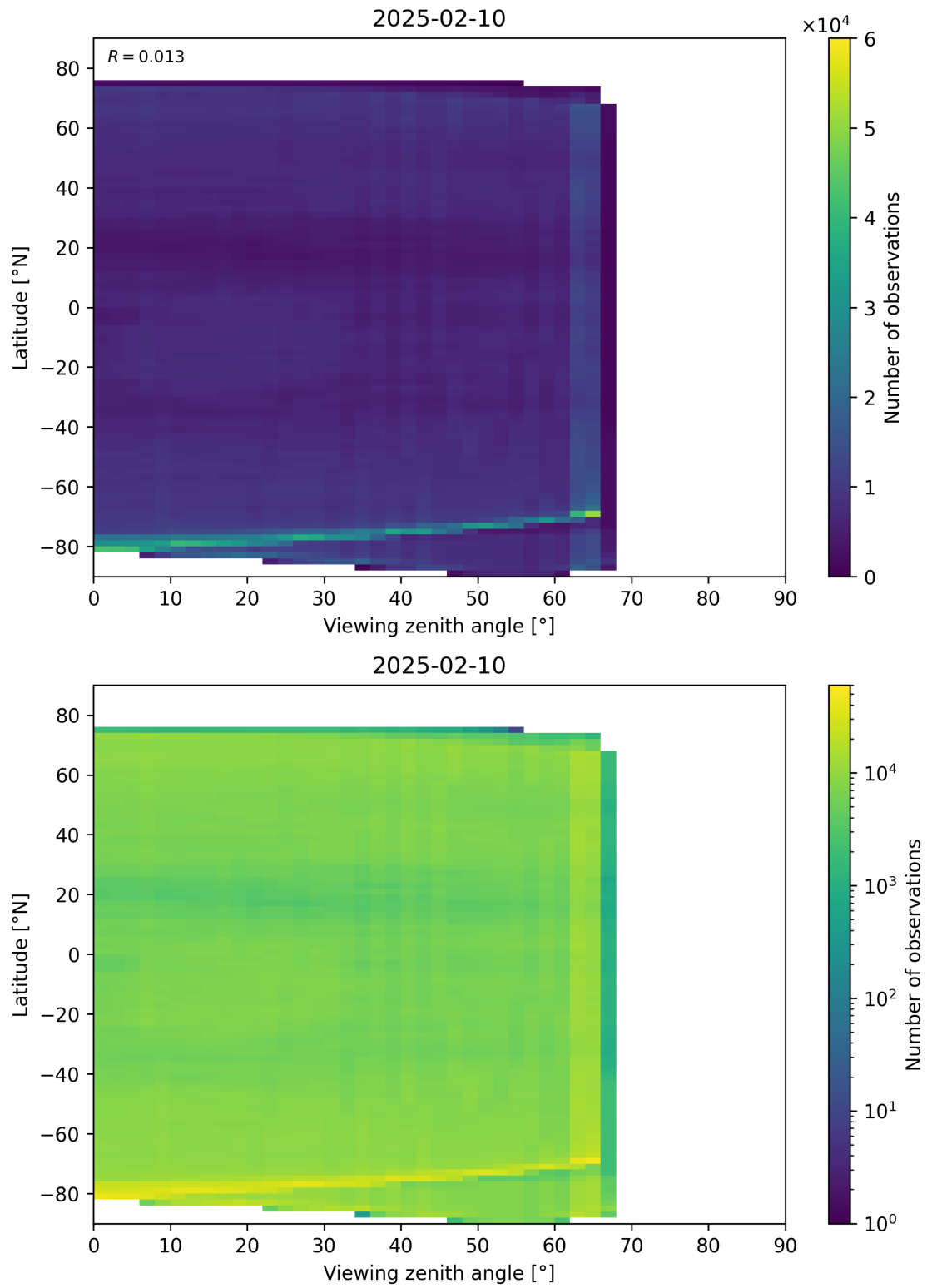


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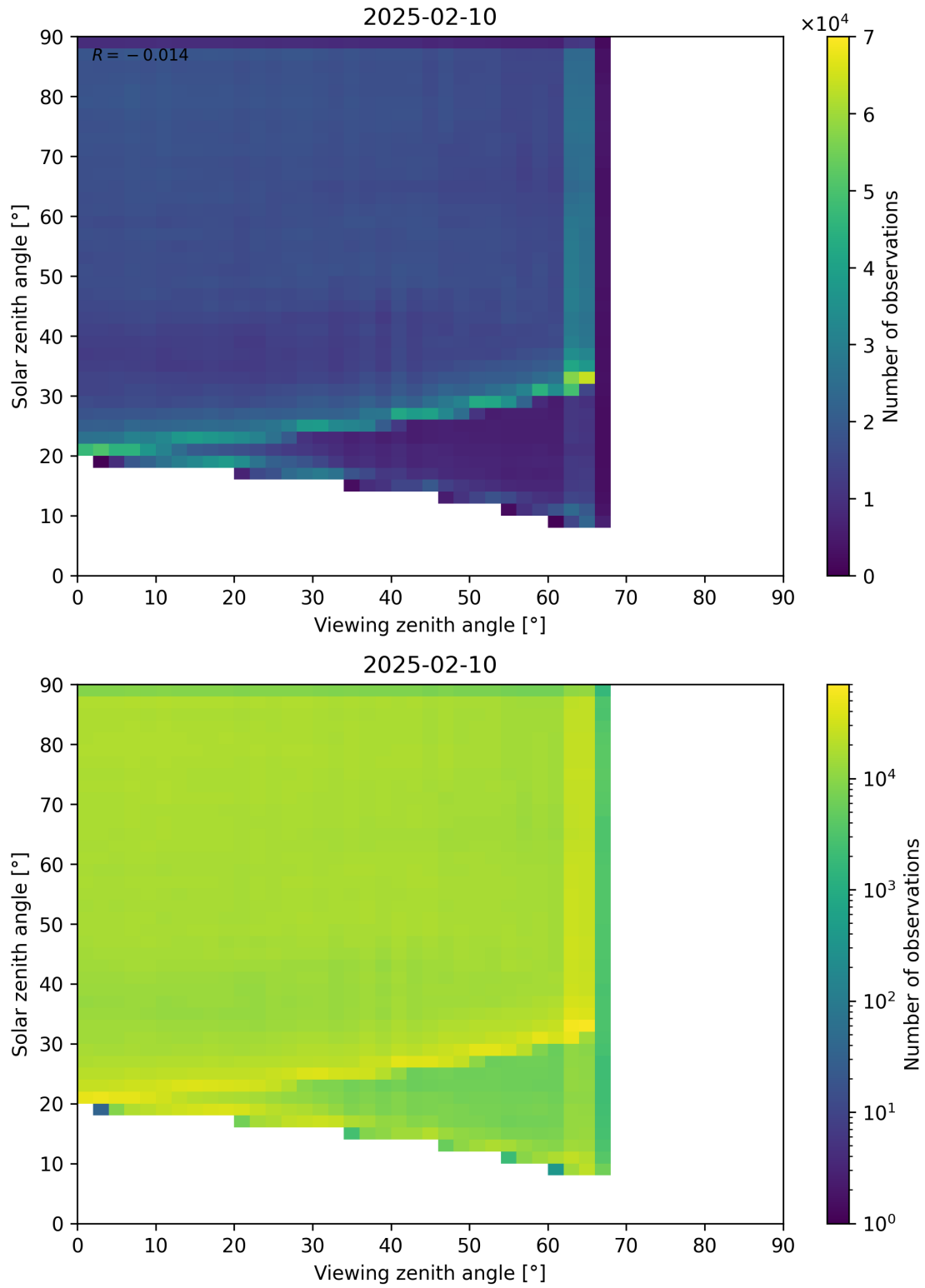


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