

PyCAMA report generated by tropl2-proc

tropl2-proc

2024-10-14 (09:00)

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]	0.613 ± 0.396	22041187	0.995	0.810	0.850	0.0	1.000
cloud fraction [1]	0.554 ± 0.345	22041187	0.995	0.725	0.526	5.502×10^{-3}	1.000
cloud top height [m]	$(0.398 \pm 0.275) \times 10^4$	22041187	1.575×10^3	3.880×10^3	3.286×10^3	0.0	2.000×10^4
cloud optical thickness [1]	24.9 ± 46.2	22041187	9.77	12.6	10.4	1.000	250
cloud fraction crb [1]	0.553 ± 0.345	22041187	0.995	0.724	0.523	7.798×10^{-4}	1.000
cloud height crb [m]	$(0.318 \pm 0.235) \times 10^4$	22041187	975	3.371×10^3	2.624×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.604 ± 0.203	22041187	0.995	0.258	0.578	0.0	1.000
surface albedo fitted [1]	0.190 ± 0.267	22041187	2.500×10^{-2}	0.211	4.241×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.176 ± 0.252	22041187	1.500×10^{-2}	0.210	3.132×10^{-2}	0.0	1.000
fitted root mean square [1]	$(5.942 \pm 26.841) \times 10^{-4}$	22041187	5.000×10^{-5}	6.855×10^{-4}	3.537×10^{-4}	1.169×10^{-6}	1.48
fitted root mean square crb [1]	$(5.232 \pm 28.816) \times 10^{-4}$	22041187	5.000×10^{-5}	5.945×10^{-4}	2.661×10^{-4}	9.193×10^{-7}	1.66
wavelength shift [nm]	$(8.647 \pm 7.284) \times 10^{-3}$	22041187	9.000×10^{-4}	1.031×10^{-2}	8.055×10^{-3}	-0.142	0.758
cloud fraction apriori [1]	0.557 ± 0.350	22041187	0.995	0.771	0.531	0.0	1.000
reflectance blue ocra [1]	0.549 ± 0.224	22041187	0.255	0.379	0.515	0.125	2.05
reflectance green ocra [1]	0.496 ± 0.253	22041187	0.175	0.450	0.463	7.490×10^{-2}	1.99
reflectance continuum aband [1]	0.446 ± 0.280	22041187	4.500×10^{-2}	0.473	0.431	1.209×10^{-2}	5.53

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	0.150	0.960	1.000	1.000	1.000	1.000
cloud fraction [1]	2.611×10^{-2}	6.733×10^{-2}	0.103	0.146	0.227	0.952	1.000	1.000	1.000	1.000
cloud top height [m]	285	779	1.114×10^3	1.398×10^3	1.784×10^3	5.663×10^3	6.929×10^3	7.996×10^3	9.294×10^3	1.167×10^4
cloud optical thickness [1]	1.30	3.18	4.24	5.13	6.53	19.2	30.9	49.1	104	250
cloud fraction crb [1]	2.555×10^{-2}	6.626×10^{-2}	0.102	0.146	0.227	0.950	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	385	674	921	1.265×10^3	4.636×10^3	5.748×10^3	6.672×10^3	7.744×10^3	9.565×10^3
cloud albedo crb [1]	9.666×10^{-2}	0.285	0.383	0.432	0.475	0.733	0.825	0.913	1.000	1.000
surface albedo fitted [1]	0.0	7.566×10^{-3}	1.247×10^{-2}	1.620×10^{-2}	2.132×10^{-2}	0.232	0.534	0.699	0.805	0.962
surface albedo fitted crb [1]	0.0	6.146×10^{-3}	9.265×10^{-3}	1.194×10^{-2}	1.572×10^{-2}	0.226	0.518	0.655	0.741	0.890
fitted root mean square [1]	1.590×10^{-5}	2.958×10^{-5}	4.710×10^{-5}	7.388×10^{-5}	1.241×10^{-4}	8.096×10^{-4}	1.107×10^{-3}	1.412×10^{-3}	1.876×10^{-3}	2.983×10^{-3}
fitted root mean square crb [1]	1.031×10^{-5}	2.139×10^{-5}	3.505×10^{-5}	5.340×10^{-5}	8.936×10^{-5}	6.839×10^{-4}	9.935×10^{-4}	1.322×10^{-3}	1.826×10^{-3}	2.910×10^{-3}
wavelength shift [nm]	-7.358×10^{-3}	-5.867×10^{-4}	4.685×10^{-4}	1.452×10^{-3}	3.176×10^{-3}	1.349×10^{-2}	1.599×10^{-2}	1.813×10^{-2}	2.095×10^{-2}	2.692×10^{-2}
cloud fraction apriori [1]	2.886×10^{-2}	6.364×10^{-2}	9.633×10^{-2}	0.139	0.222	0.993	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.234	0.256	0.280	0.308	0.354	0.734	0.799	0.847	0.915	1.10
reflectance green ocra [1]	0.152	0.171	0.190	0.214	0.260	0.710	0.787	0.841	0.909	1.06
reflectance continuum aband [1]	2.908×10^{-2}	5.003×10^{-2}	7.876×10^{-2}	0.119	0.199	0.672	0.757	0.819	0.895	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]	0.654 ± 0.375	10835433	0.640	0.870	0.0	1.000	0.330	0.970
cloud fraction [1]	0.573 ± 0.355	10835433	0.763	0.579	7.442×10^{-3}	1.000	0.220	0.983
cloud top height [m]	$(0.395 \pm 0.260) \times 10^4$	10835433	3.550×10^3	3.372×10^3	0.0	2.000×10^4	1.905×10^3	5.455×10^3
cloud optical thickness [1]	24.1 ± 40.4	10835433	14.5	10.8	1.000	250	6.89	21.4
cloud fraction crb [1]	0.572 ± 0.355	10835433	0.764	0.576	7.798×10^{-4}	1.000	0.218	0.982
cloud height crb [m]	$(0.324 \pm 0.226) \times 10^4$	10835433	3.154×10^3	2.784×10^3	0.0	2.000×10^4	1.412×10^3	4.566×10^3
cloud albedo crb [1]	0.582 ± 0.191	10835433	0.234	0.569	0.0	1.000	0.468	0.702
surface albedo fitted [1]	0.129 ± 0.171	10835433	0.161	4.922×10^{-2}	0.0	1.000	2.220×10^{-2}	0.183
surface albedo fitted crb [1]	0.122 ± 0.171	10835433	0.161	3.513×10^{-2}	0.0	1.000	1.611×10^{-2}	0.177
fitted root mean square [1]	$(5.400 \pm 37.397) \times 10^{-4}$	10835433	5.636×10^{-4}	2.617×10^{-4}	1.169×10^{-6}	1.48	1.071×10^{-4}	6.707×10^{-4}
fitted root mean square crb [1]	$(5.042 \pm 40.227) \times 10^{-4}$	10835433	5.506×10^{-4}	2.129×10^{-4}	9.193×10^{-7}	1.66	7.306×10^{-5}	6.236×10^{-4}
wavelength shift [nm]	$(7.703 \pm 7.125) \times 10^{-3}$	10835433	9.588×10^{-3}	6.902×10^{-3}	-0.142	0.758	2.515×10^{-3}	1.210×10^{-2}
cloud fraction apriori [1]	0.575 ± 0.360	10835433	0.788	0.583	0.0	1.000	0.212	1.000
reflectance blue ocra [1]	0.516 ± 0.208	10835433	0.321	0.481	0.125	1.98	0.341	0.662
reflectance green ocra [1]	0.458 ± 0.235	10835433	0.387	0.421	7.490×10^{-2}	1.99	0.246	0.634
reflectance continuum aband [1]	0.415 ± 0.266	10835433	0.417	0.391	1.209×10^{-2}	4.89	0.189	0.605

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]	0.575 ± 0.412	11205754	0.830	0.810	0.0	1.000	0.120	0.950
cloud fraction [1]	0.536 ± 0.334	11205754	0.667	0.487	5.502×10^{-3}	1.000	0.233	0.900
cloud top height [m]	$(0.401 \pm 0.288) \times 10^4$	11205754	4.185×10^3	3.183×10^3	0.0	2.000×10^4	1.686×10^3	5.870×10^3
cloud optical thickness [1]	25.7 ± 51.2	11205754	10.8	10.1	1.000	250	6.21	17.0
cloud fraction crb [1]	0.535 ± 0.334	11205754	0.665	0.484	8.456×10^{-3}	1.000	0.233	0.898
cloud height crb [m]	$(0.312 \pm 0.243) \times 10^4$	11205754	3.561×10^3	2.440×10^3	0.0	2.000×10^4	1.149×10^3	4.710×10^3
cloud albedo crb [1]	0.626 ± 0.212	11205754	0.293	0.588	0.0	1.000	0.481	0.774
surface albedo fitted [1]	0.248 ± 0.324	11205754	0.582	3.767×10^{-2}	0.0	1.000	2.068×10^{-2}	0.603
surface albedo fitted crb [1]	0.228 ± 0.302	11205754	0.555	2.849×10^{-2}	0.0	1.000	1.541×10^{-2}	0.571
fitted root mean square [1]	$(6.467 \pm 8.011) \times 10^{-4}$	11205754	7.524×10^{-4}	4.623×10^{-4}	2.462×10^{-6}	0.359	1.571×10^{-4}	9.094×10^{-4}
fitted root mean square crb [1]	$(5.415 \pm 8.274) \times 10^{-4}$	11205754	6.178×10^{-4}	3.202×10^{-4}	1.947×10^{-6}	0.865	1.121×10^{-4}	7.300×10^{-4}
wavelength shift [nm]	$(9.560 \pm 7.320) \times 10^{-3}$	11205754	1.064×10^{-2}	9.321×10^{-3}	-4.463×10^{-2}	0.296	3.959×10^{-3}	1.460×10^{-2}
cloud fraction apriori [1]	0.540 ± 0.340	11205754	0.695	0.493	0.0	1.000	0.230	0.925
reflectance blue ocra [1]	0.581 ± 0.233	11205754	0.409	0.562	0.144	2.05	0.371	0.780
reflectance green ocra [1]	0.532 ± 0.265	11205754	0.488	0.519	9.889×10^{-2}	1.95	0.278	0.766
reflectance continuum aband [1]	0.477 ± 0.289	11205754	0.509	0.488	1.314×10^{-2}	5.53	0.212	0.721

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]	0.657 ± 0.369	15470684	0.620	0.880	0.0	1.000	0.350	0.970
cloud fraction [1]	0.551 ± 0.346	15470684	0.725	0.535	7.442×10^{-3}	1.000	0.214	0.939
cloud top height [m]	$(0.364 \pm 0.260) \times 10^4$	15470684	3.404×10^3	2.915×10^3	0.0	2.000×10^4	1.647×10^3	5.051×10^3
cloud optical thickness [1]	23.7 ± 42.8	15470684	11.7	10.7	1.000	250	7.28	18.9
cloud fraction crb [1]	0.550 ± 0.347	15470684	0.725	0.532	7.798×10^{-4}	1.000	0.213	0.937
cloud height crb [m]	$(0.292 \pm 0.228) \times 10^4$	15470684	3.083×10^3	2.302×10^3	0.0	2.000×10^4	1.129×10^3	4.211×10^3
cloud albedo crb [1]	0.571 ± 0.182	15470684	0.216	0.550	0.0	1.000	0.463	0.679
surface albedo fitted [1]	0.106 ± 0.214	15470684	3.085×10^{-2}	2.777×10^{-2}	0.0	1.000	1.721×10^{-2}	4.806×10^{-2}
surface albedo fitted crb [1]	$(9.529 \pm 20.463) \times 10^{-2}$	15470684	2.274×10^{-2}	2.045×10^{-2}	0.0	1.000	1.268×10^{-2}	3.542×10^{-2}
fitted root mean square [1]	$(5.375 \pm 31.673) \times 10^{-4}$	15470684	6.216×10^{-4}	2.664×10^{-4}	1.169×10^{-6}	1.48	9.165×10^{-5}	7.133×10^{-4}
fitted root mean square crb [1]	$(4.992 \pm 34.123) \times 10^{-4}$	15470684	5.696×10^{-4}	2.214×10^{-4}	1.043×10^{-6}	1.66	7.281×10^{-5}	6.424×10^{-4}
wavelength shift [nm]	$(8.361 \pm 7.548) \times 10^{-3}$	15470684	1.071×10^{-2}	7.565×10^{-3}	-0.142	0.758	2.693×10^{-3}	1.340×10^{-2}
cloud fraction apriori [1]	0.553 ± 0.352	15470684	0.762	0.539	0.0	1.000	0.206	0.968
reflectance blue ocra [1]	0.516 ± 0.205	15470684	0.330	0.476	0.156	2.00	0.341	0.671
reflectance green ocra [1]	0.455 ± 0.234	15470684	0.399	0.414	8.546×10^{-2}	1.97	0.242	0.641
reflectance continuum aband [1]	0.386 ± 0.268	15470684	0.468	0.354	1.209×10^{-2}	4.35	0.135	0.603

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]	0.442 ± 0.438	4830600	0.900	0.240	0.0	1.000	0.0	0.900
cloud fraction [1]	0.514 ± 0.332	4830600	0.655	0.423	7.885×10^{-3}	1.000	0.230	0.885
cloud top height [m]	$(0.517 \pm 0.298) \times 10^4$	4830600	4.546×10^3	4.923×10^3	0.0	2.000×10^4	2.705×10^3	7.251×10^3
cloud optical thickness [1]	25.3 ± 52.7	4830600	11.1	7.94	1.000	250	5.05	16.2
cloud fraction crb [1]	0.515 ± 0.331	4830600	0.652	0.422	8.188×10^{-3}	1.000	0.232	0.884
cloud height crb [m]	$(0.404 \pm 0.243) \times 10^4$	4830600	3.766×10^3	3.751×10^3	0.0	2.000×10^4	2.010×10^3	5.776×10^3
cloud albedo crb [1]	0.702 ± 0.237	4830600	0.398	0.703	0.0	1.000	0.534	0.931
surface albedo fitted [1]	0.458 ± 0.279	4830600	0.517	0.321	0.0	1.000	0.209	0.725
surface albedo fitted crb [1]	0.431 ± 0.252	4830600	0.472	0.320	1.556×10^{-3}	1.000	0.203	0.675
fitted root mean square [1]	$(7.933 \pm 7.390) \times 10^{-4}$	4830600	7.424×10^{-4}	6.146×10^{-4}	3.953×10^{-6}	0.188	3.186×10^{-4}	1.061×10^{-3}
fitted root mean square crb [1]	$(6.047 \pm 6.788) \times 10^{-4}$	4830600	6.524×10^{-4}	3.800×10^{-4}	1.947×10^{-6}	4.026×10^{-2}	1.548×10^{-4}	8.072×10^{-4}
wavelength shift [nm]	$(9.287 \pm 6.530) \times 10^{-3}$	4830600	9.262×10^{-3}	8.875×10^{-3}	-3.328×10^{-2}	5.593×10^{-2}	4.399×10^{-3}	1.366×10^{-2}
cloud fraction apriori [1]	0.521 ± 0.337	4830600	0.696	0.430	0.0	1.000	0.230	0.926
reflectance blue ocra [1]	0.649 ± 0.255	4830600	0.431	0.717	0.125	2.05	0.405	0.836
reflectance green ocra [1]	0.616 ± 0.280	4830600	0.498	0.693	7.490×10^{-2}	1.99	0.336	0.834
reflectance continuum aband [1]	0.612 ± 0.250	4830600	0.416	0.645	1.993×10^{-2}	5.53	0.386	0.802

Table 7: Correlation matrix

Viewing zenith angle	Solar zenith angle	Latitude	Radiometric cloud fraction	Cloud top height	Cloud optical thickness	Cloud fraction (CRB)	Cloud height (CRB)	Cloud albedo (CRB)	OCRA cloud fraction
1.000	-1.621×10^{-2}	-2.722×10^{-3}	-3.026×10^{-2}	5.108×10^{-2}	-2.765×10^{-2}	-3.062×10^{-2}	9.518×10^{-2}	4.350×10^{-2}	-3.317×10^{-2}
-1.621×10^{-2}	1.000	-4.362×10^{-3}	0.196	4.737×10^{-2}	0.267	0.196	3.104×10^{-2}	0.357	0.201
-2.722×10^{-3}	-4.362×10^{-3}	1.000	0.112	-8.858×10^{-2}	-2.277×10^{-2}	0.111	-4.702×10^{-2}	-0.168	0.106
-3.026×10^{-2}	0.196	0.112	1.000	-6.686×10^{-2}	0.253	1.000	-9.800×10^{-3}	0.269	0.990
5.108×10^{-2}	4.737×10^{-2}	-8.858×10^{-2}	-6.686×10^{-2}	1.000	6.540×10^{-2}	-6.554×10^{-2}	0.944	0.176	-7.363×10^{-2}
-2.765×10^{-2}	0.267	-2.277×10^{-2}	0.253	6.540×10^{-2}	1.000	0.248	0.108	0.479	0.251
-3.062×10^{-2}	0.196	0.111	1.000	-6.554×10^{-2}	0.248	1.000	-8.920×10^{-3}	0.268	0.990
9.518×10^{-2}	3.104×10^{-2}	-4.702×10^{-2}	-9.800×10^{-3}	0.944	0.108	-8.920×10^{-3}	1.000	0.114	-1.809×10^{-2}
4.350×10^{-2}	0.357	-0.168	0.269	0.176	0.479	0.268	0.114	1.000	0.280
-3.317×10^{-2}	0.201	0.106	0.990	-7.363×10^{-2}	0.251	0.990	-1.809×10^{-2}	0.280	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
383	-6.41	-2.76	-0.204	2.748×10^3	-25.0	-0.207	4.370×10^3	0.173	-0.227
-6.41	409	-4.58	1.37	2.632×10^3	249	1.37	1.472×10^3	1.47	1.42
-2.76	-4.58	2.693×10^3	2.01	-1.264×10^4	-54.6	1.98	-5.725×10^3	-1.77	1.94
-0.204	1.37	2.01	0.119	-63.4	4.02	0.119	-7.93	1.885×10^{-2}	0.120
2.748×10^3	2.632×10^3	-1.264×10^4	-63.4	7.559×10^6	8.307×10^3	-62.2	6.092×10^6	98.4	-70.9
-25.0	249	-54.6	4.02	8.307×10^3	2.134×10^3	3.95	1.168×10^4	4.50	4.07
-0.207	1.37	1.98	0.119	-62.2	3.95	0.119	-7.22	1.878×10^{-2}	0.120
4.370×10^3	1.472×10^3	-5.725×10^3	-7.93	6.092×10^6	1.168×10^4	-7.22	5.505×10^6	54.2	-14.9
0.173	1.47	-1.77	1.885×10^{-2}	98.4	4.50	1.878×10^{-2}	54.2	4.131×10^{-2}	1.997×10^{-2}
-0.227	1.42	1.94	0.120	-70.9	4.07	0.120	-14.9	1.997×10^{-2}	0.123

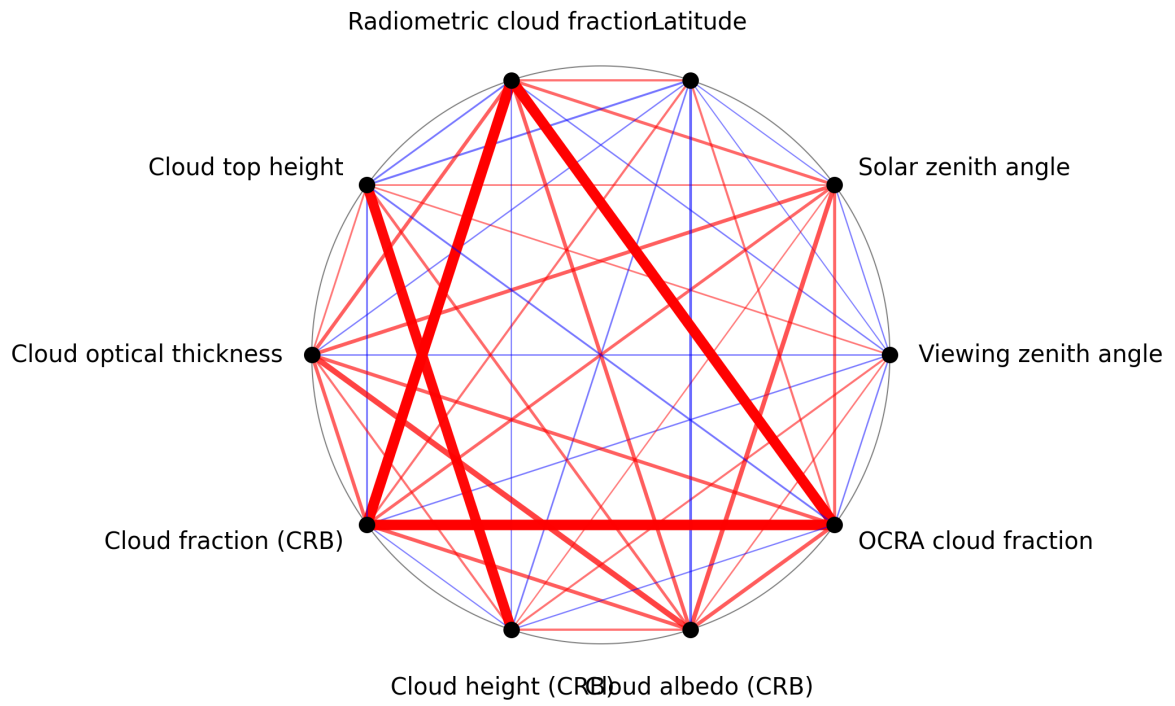


Figure 1: Map of correlation graph for 2024-09-26 to 2024-09-28.

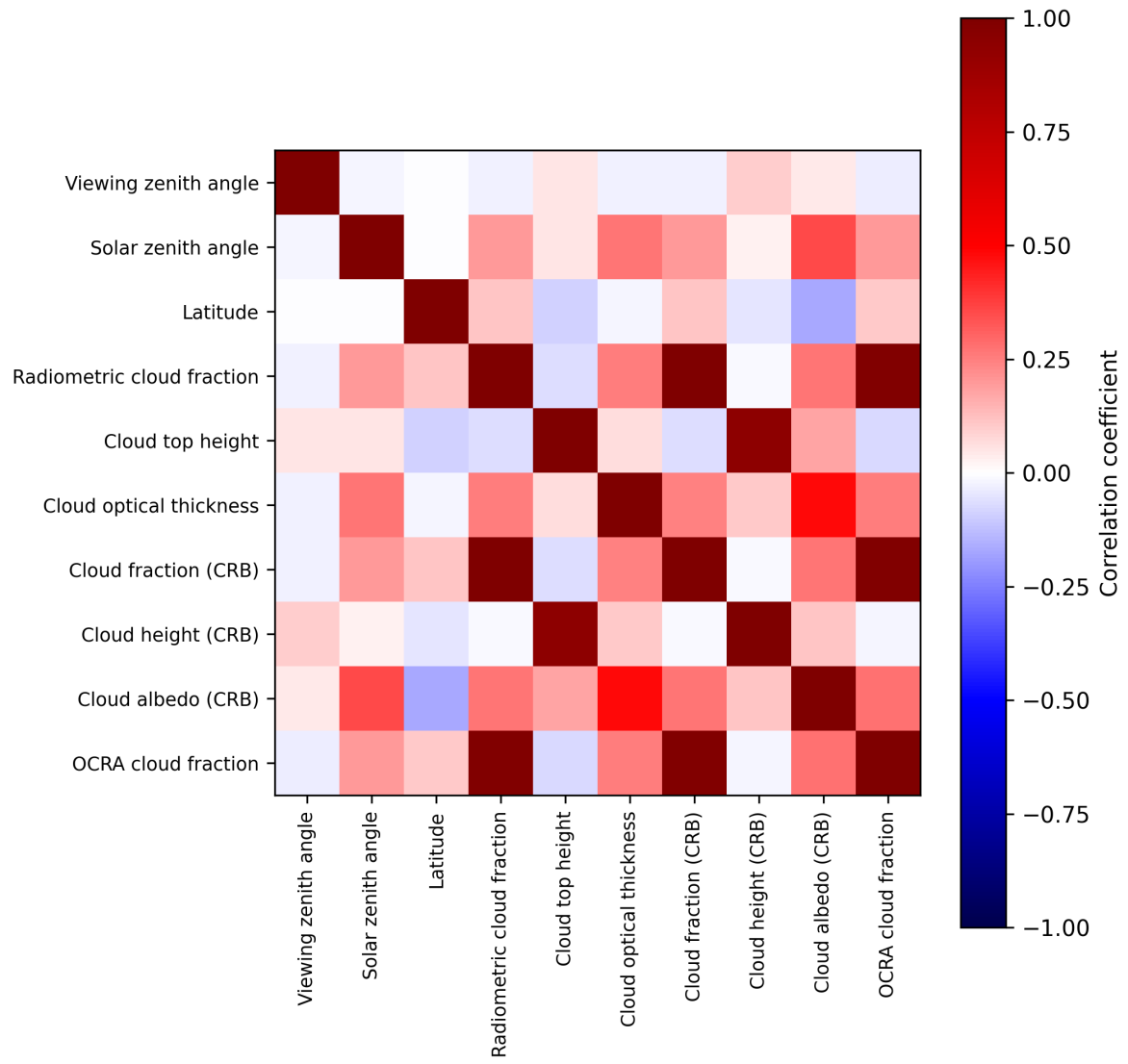


Figure 2: Map of correlation matrix for 2024-09-26 to 2024-09-28.

3 Granule outlines

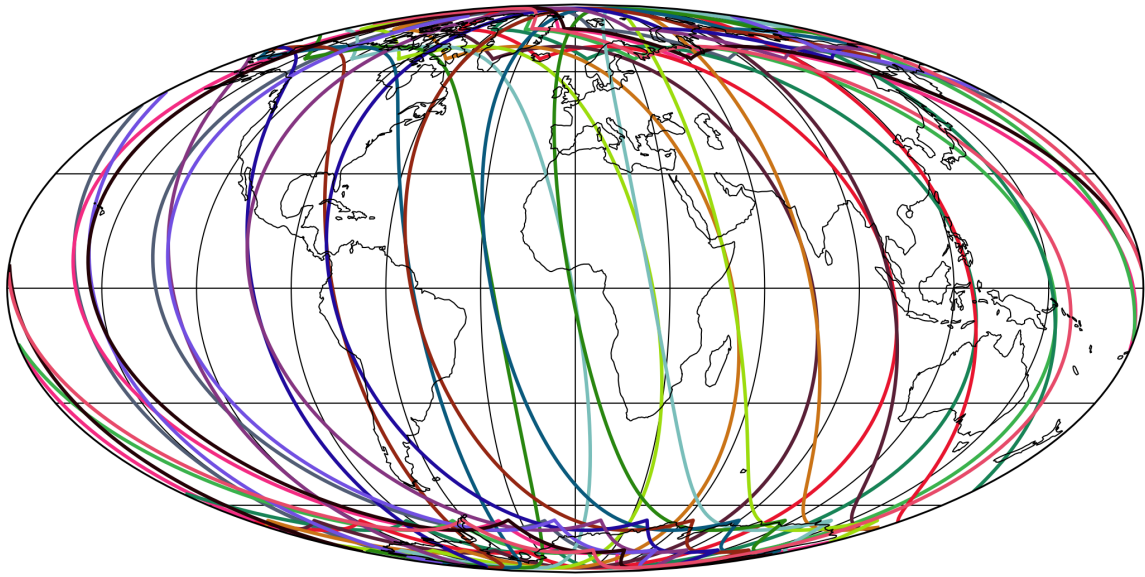


Figure 3: Outline of the granules.

4 Input data monitoring

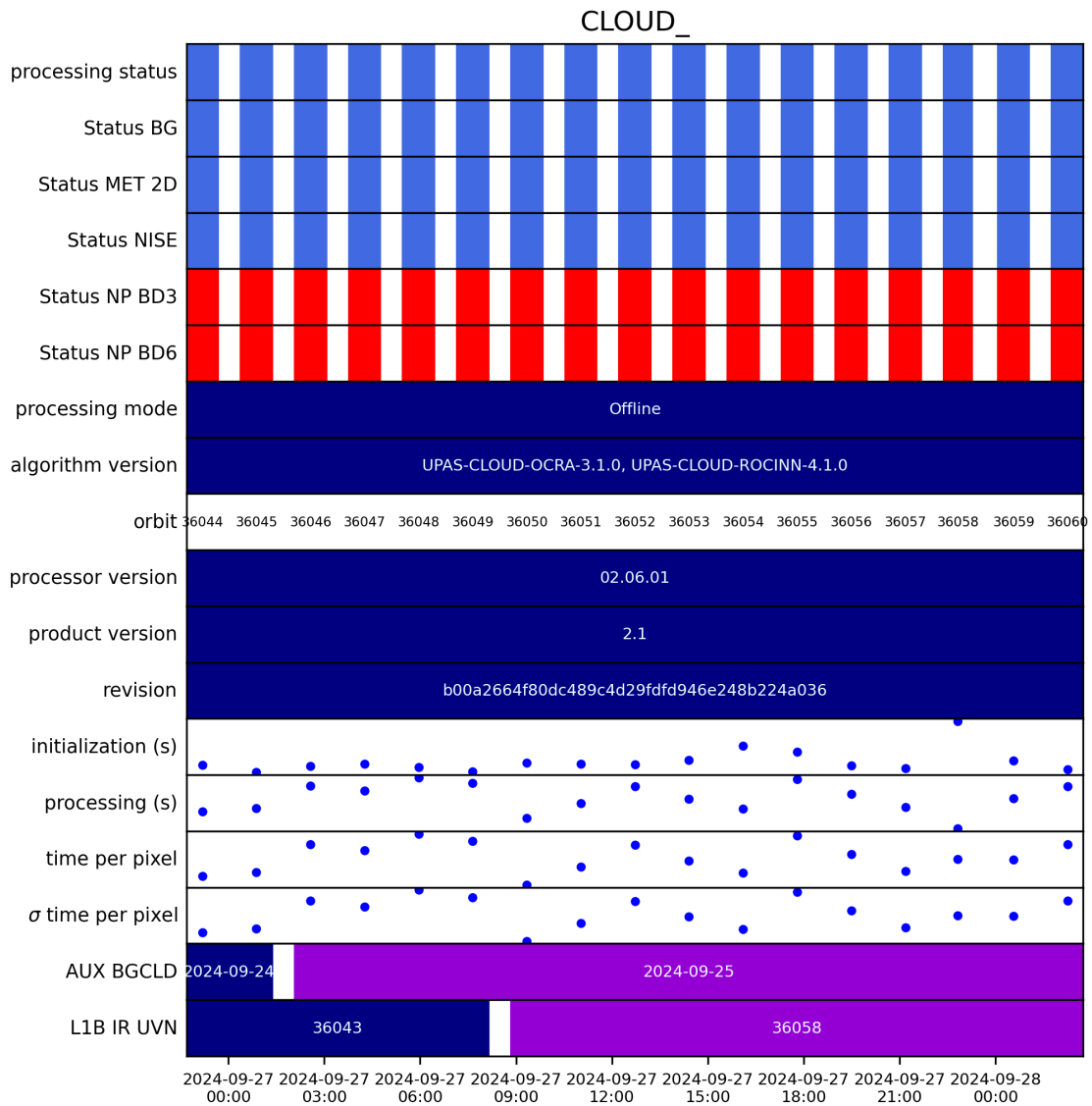


Figure 4: Input data per granule

5 Warnings and errors

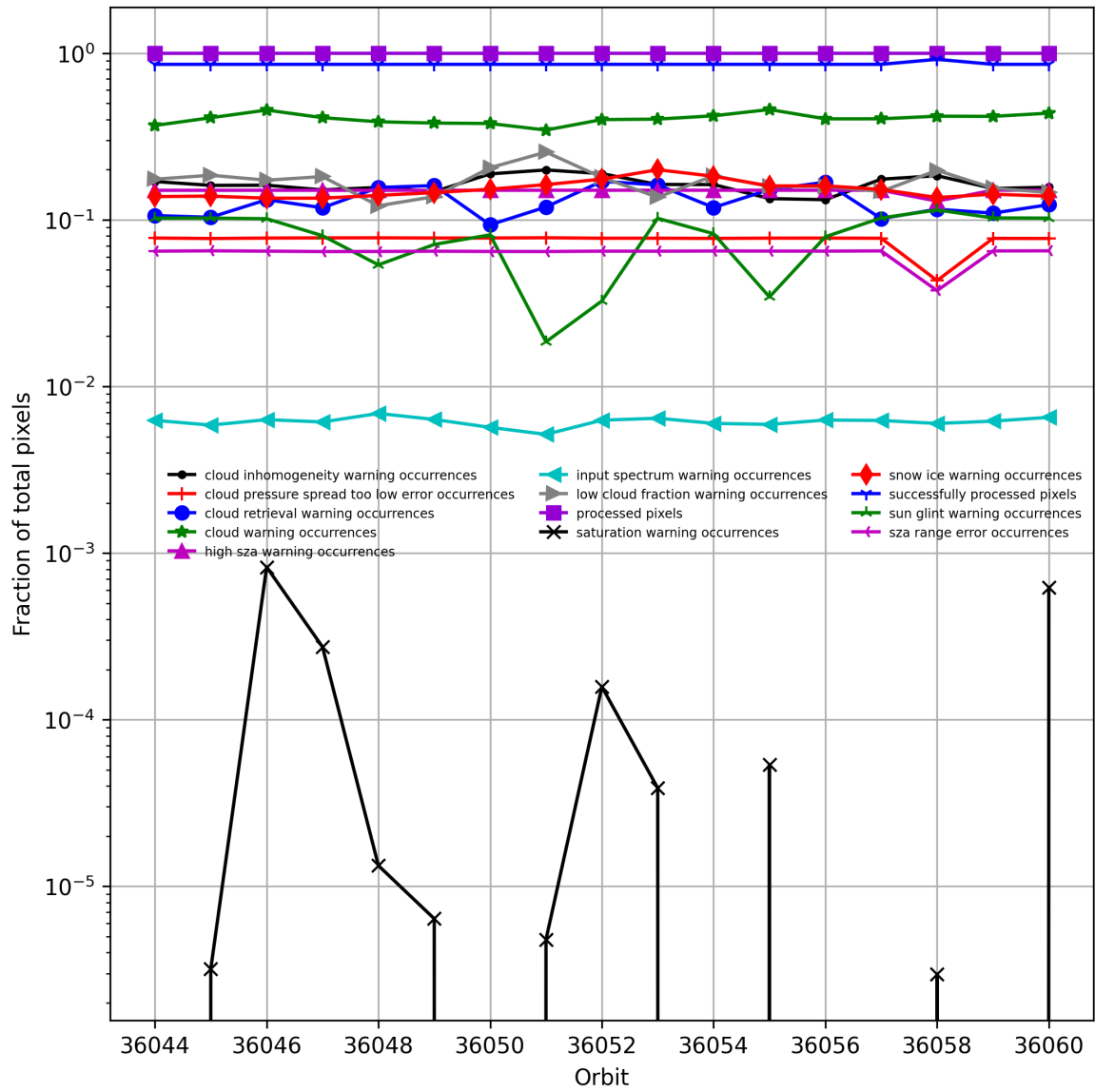


Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps

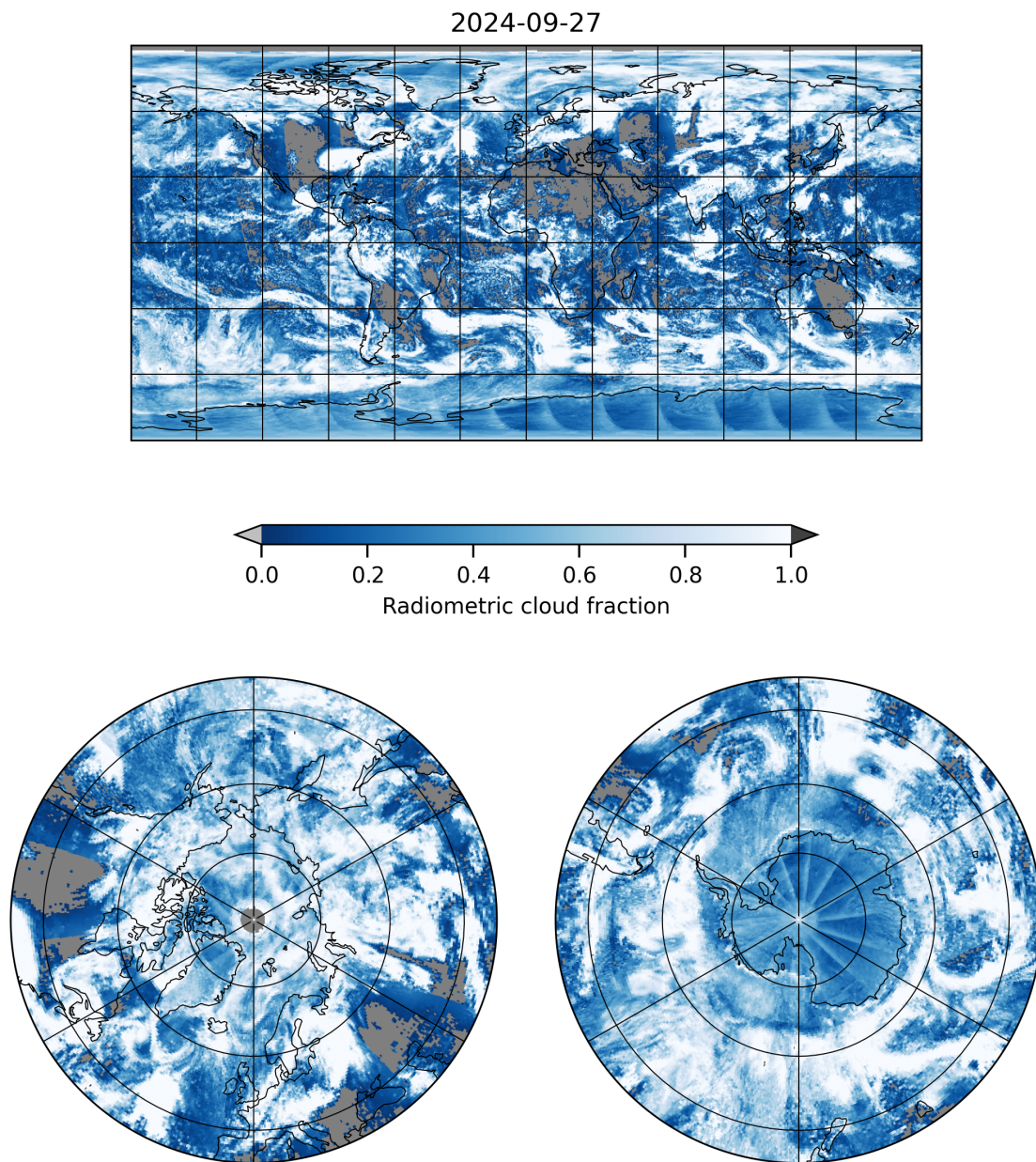


Figure 6: Map of “Radiometric cloud fraction” for 2024-09-26 to 2024-09-28

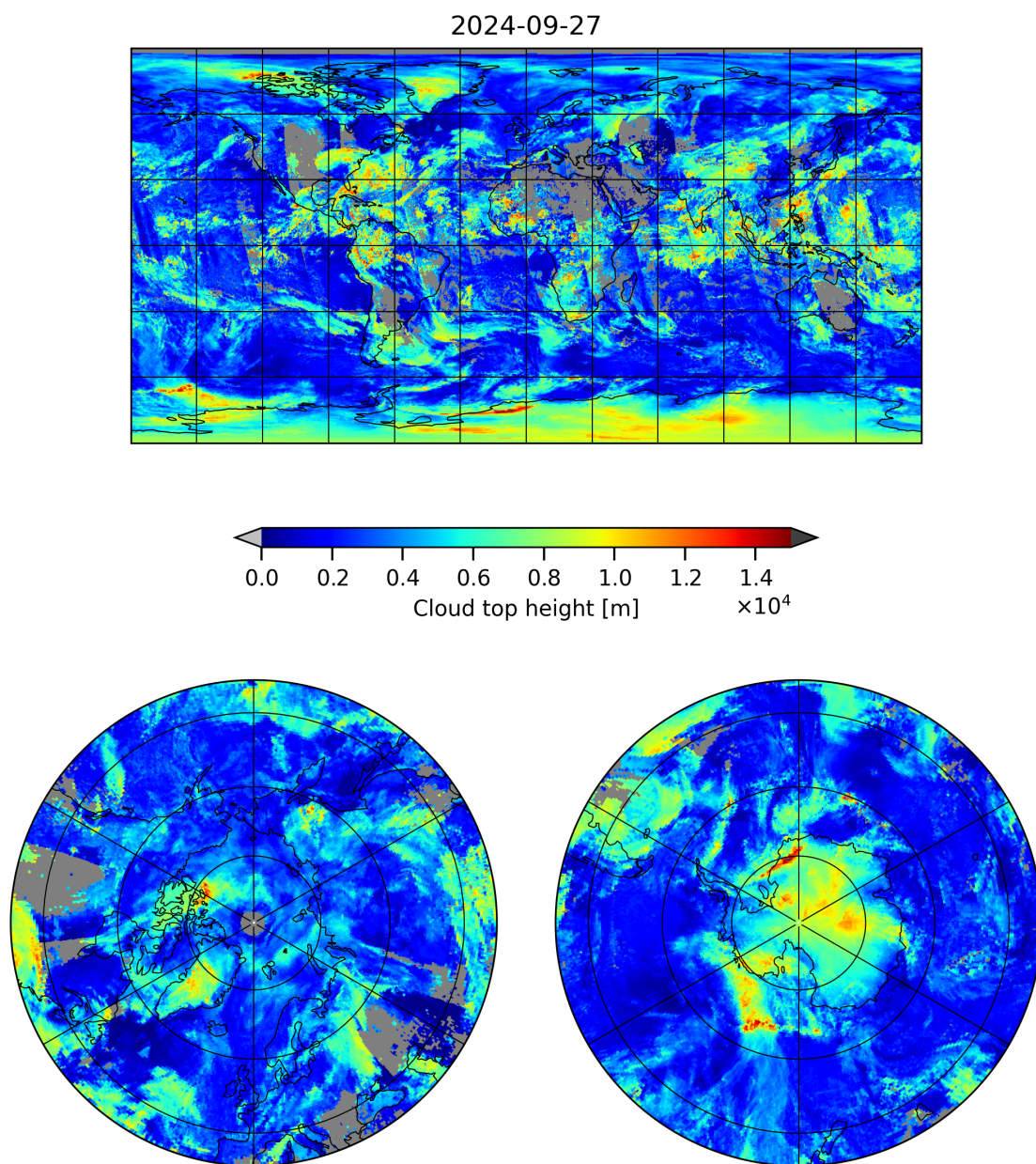


Figure 7: Map of “Cloud top height” for 2024-09-26 to 2024-09-28

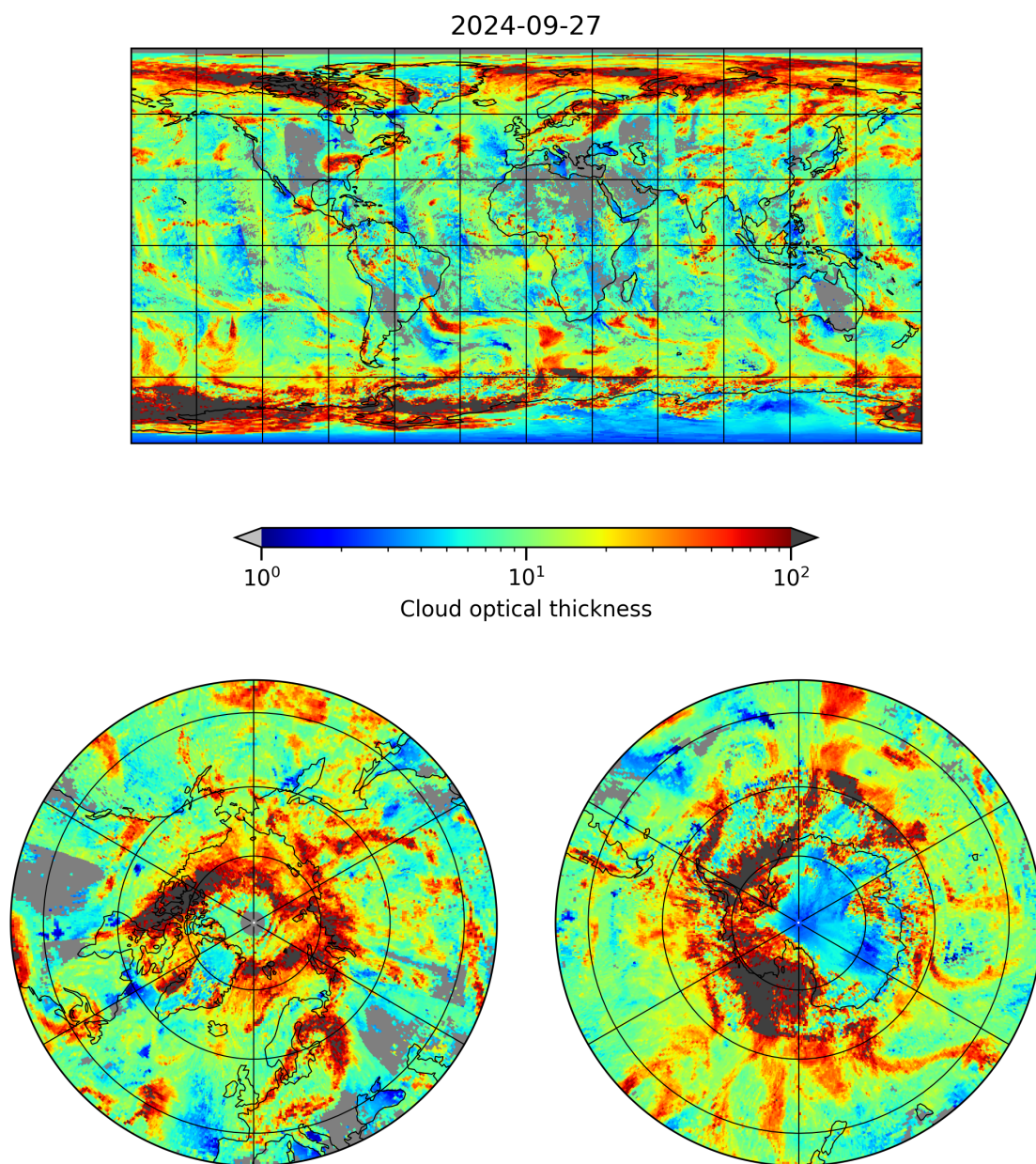


Figure 8: Map of “Cloud optical thickness” for 2024-09-26 to 2024-09-28

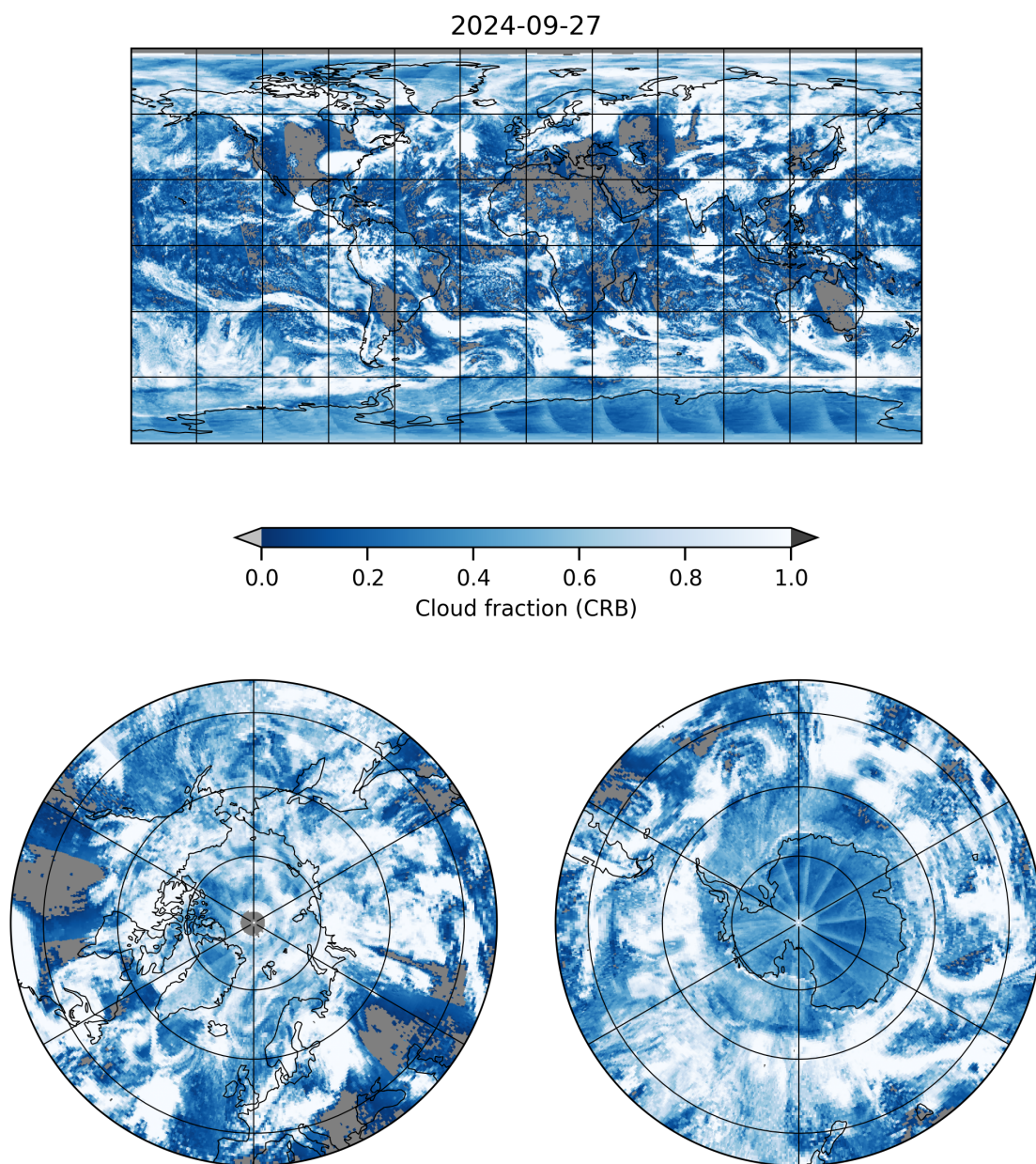


Figure 9: Map of “Cloud fraction (CRB)” for 2024-09-26 to 2024-09-28

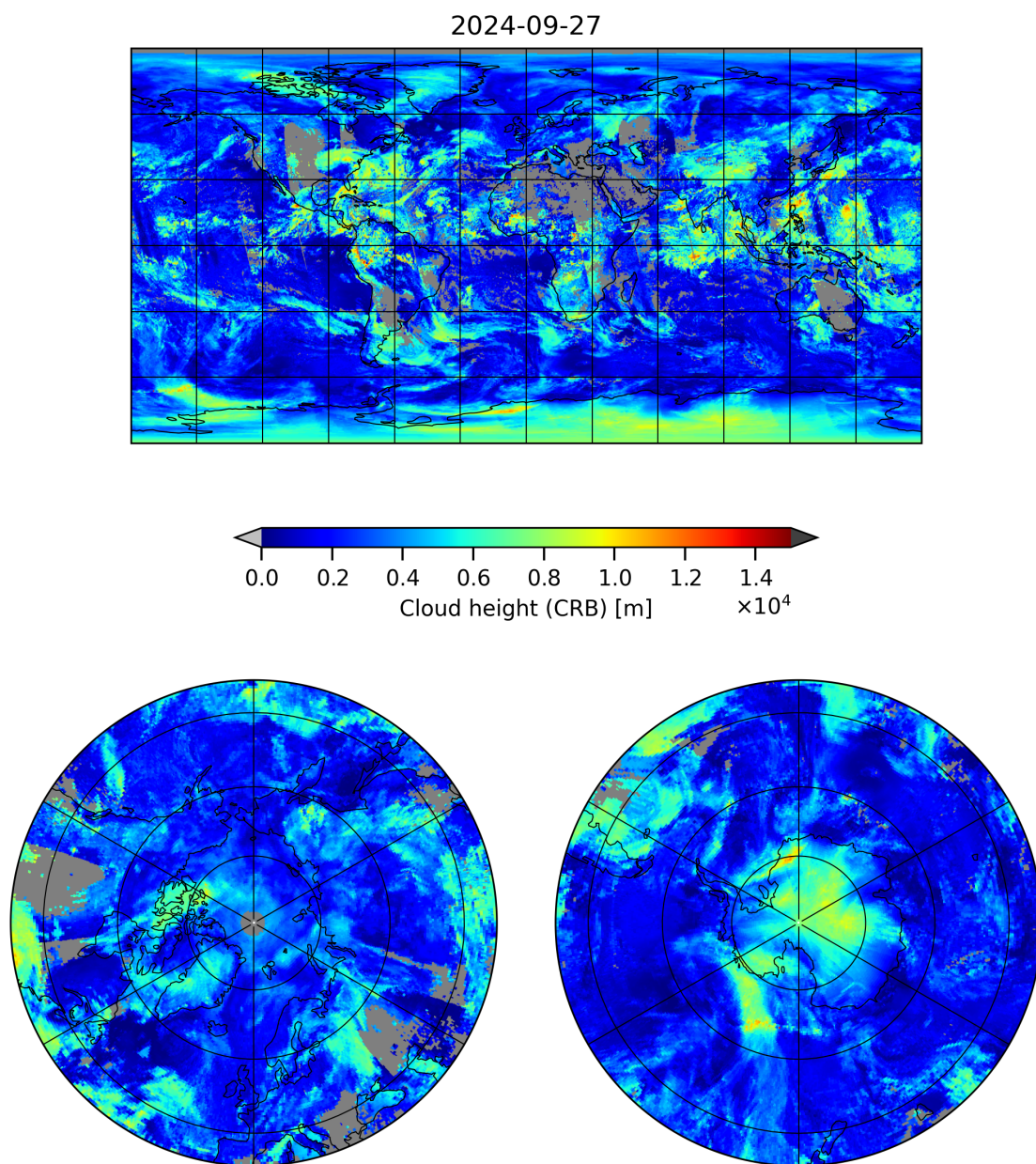


Figure 10: Map of “Cloud height (CRB)” for 2024-09-26 to 2024-09-28

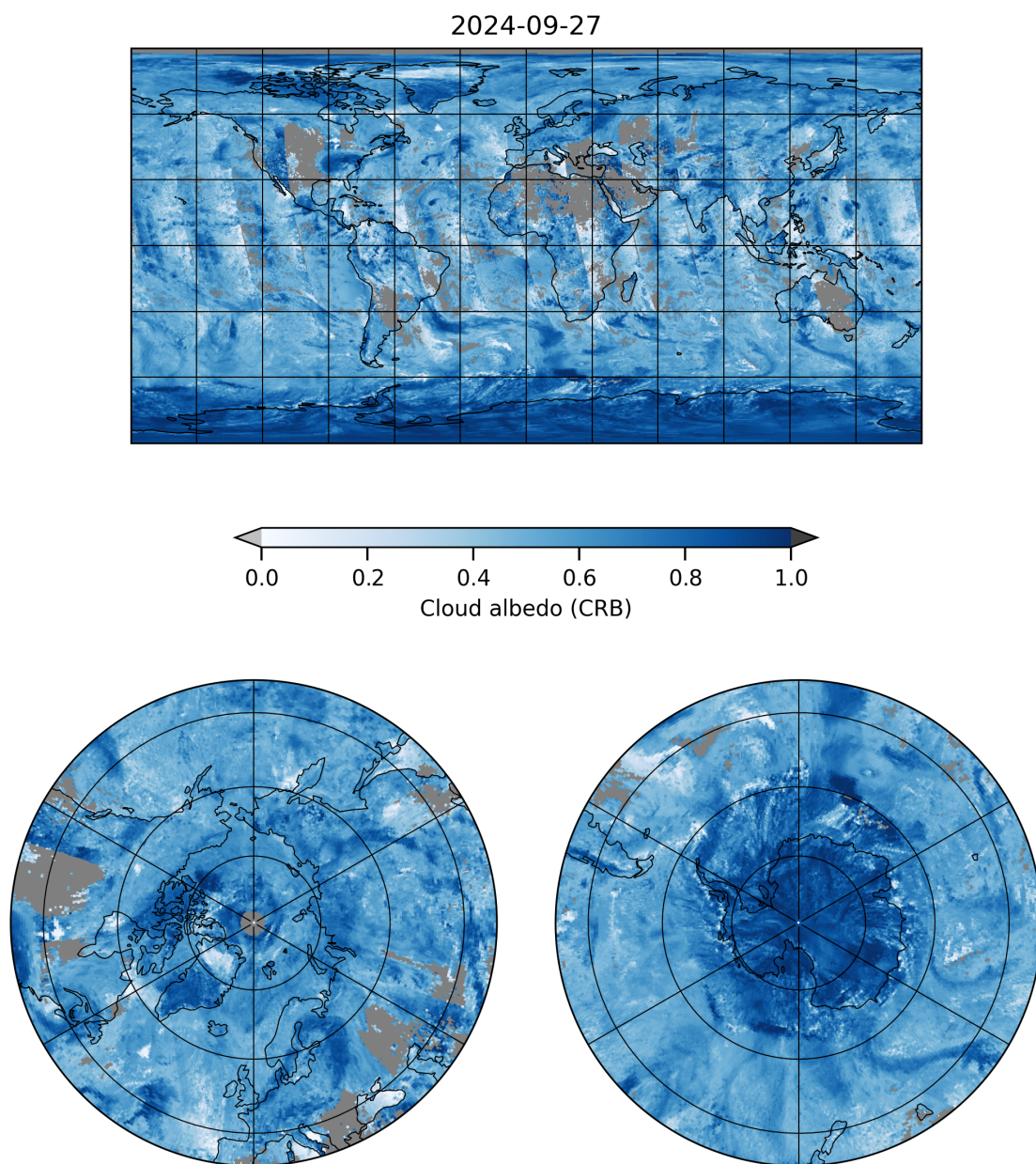


Figure 11: Map of “Cloud albedo (CRB)” for 2024-09-26 to 2024-09-28

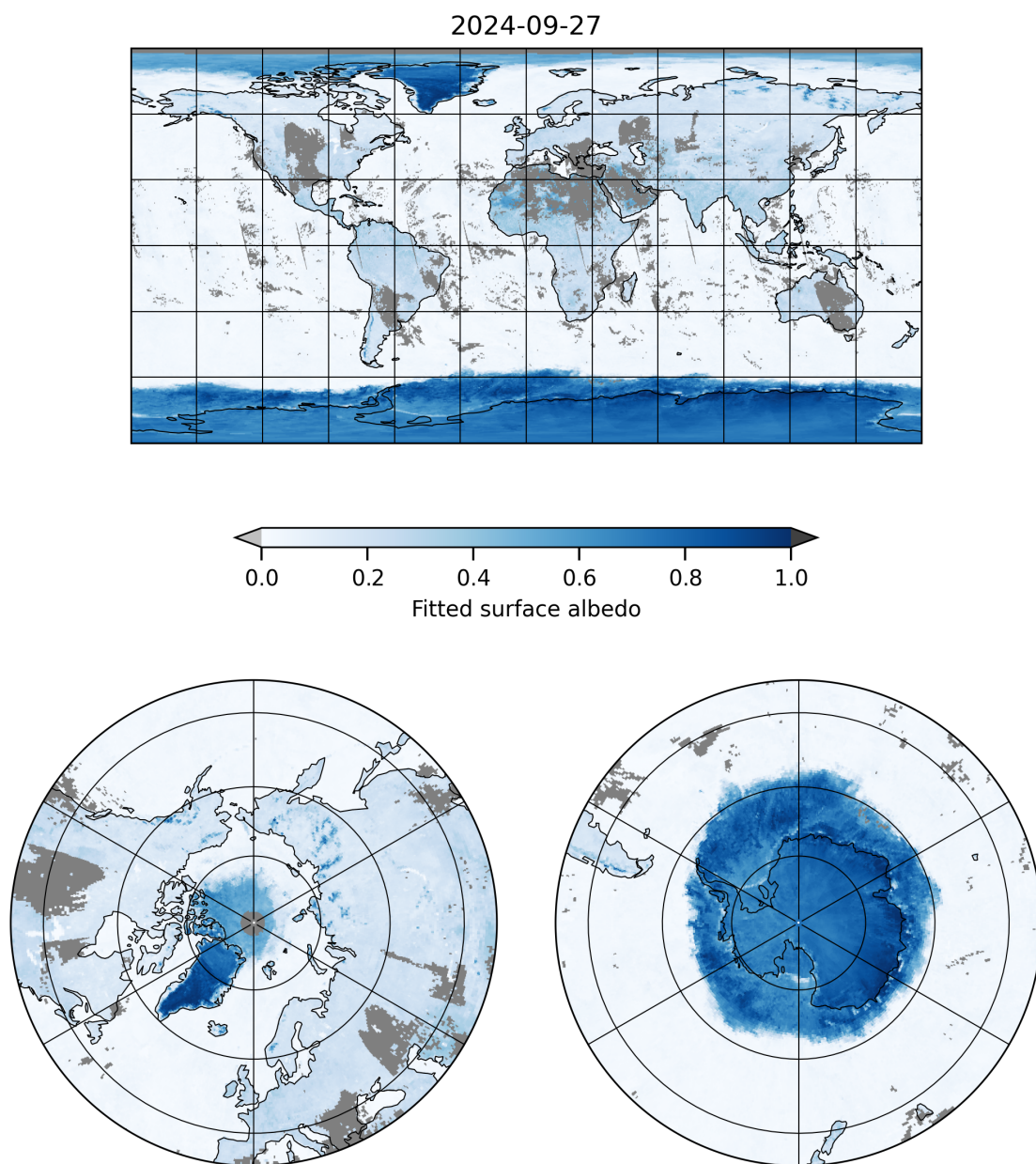


Figure 12: Map of “Fitted surface albedo” for 2024-09-26 to 2024-09-28

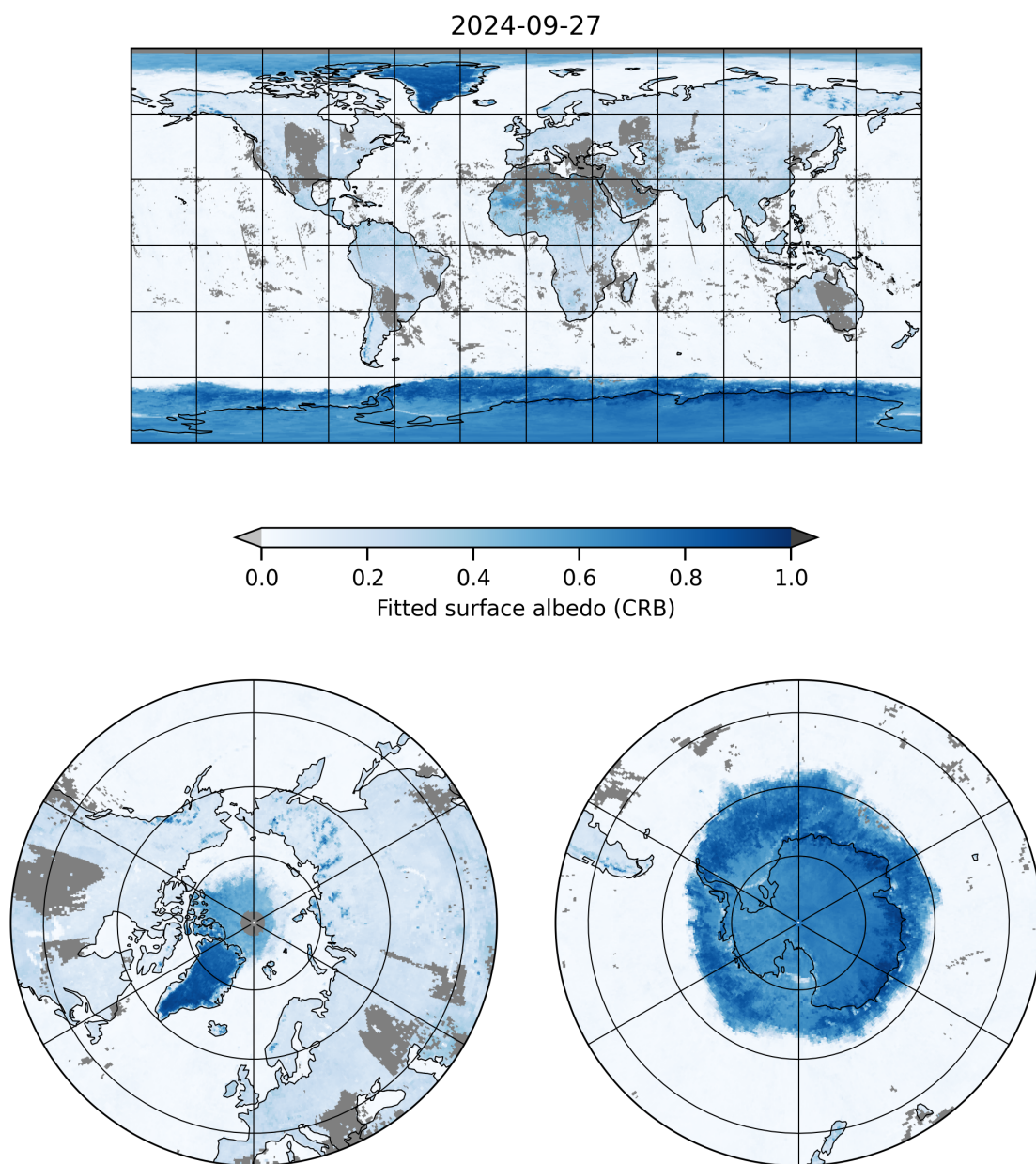


Figure 13: Map of “Fitted surface albedo (CRB)” for 2024-09-26 to 2024-09-28

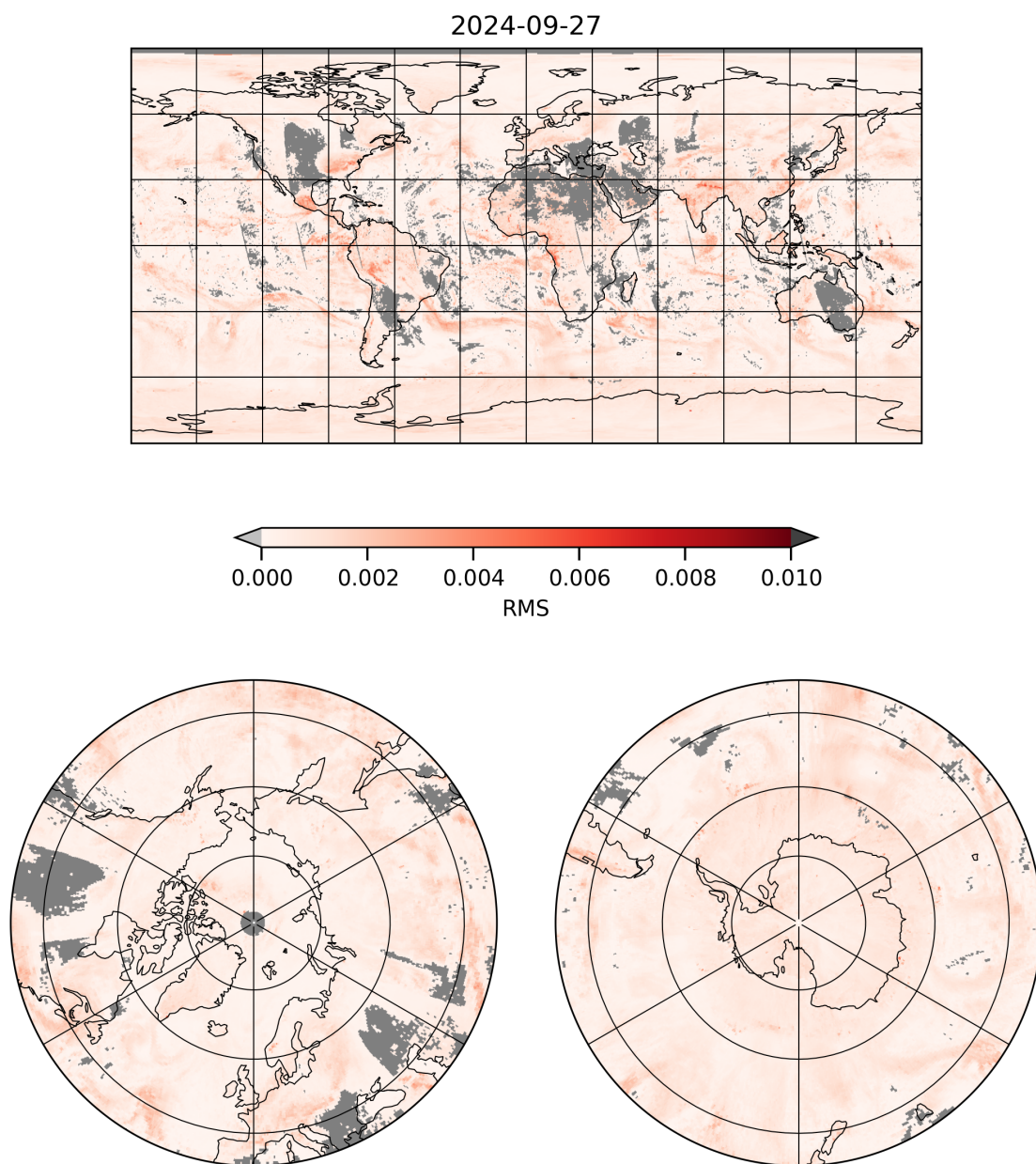


Figure 14: Map of “RMS” for 2024-09-26 to 2024-09-28

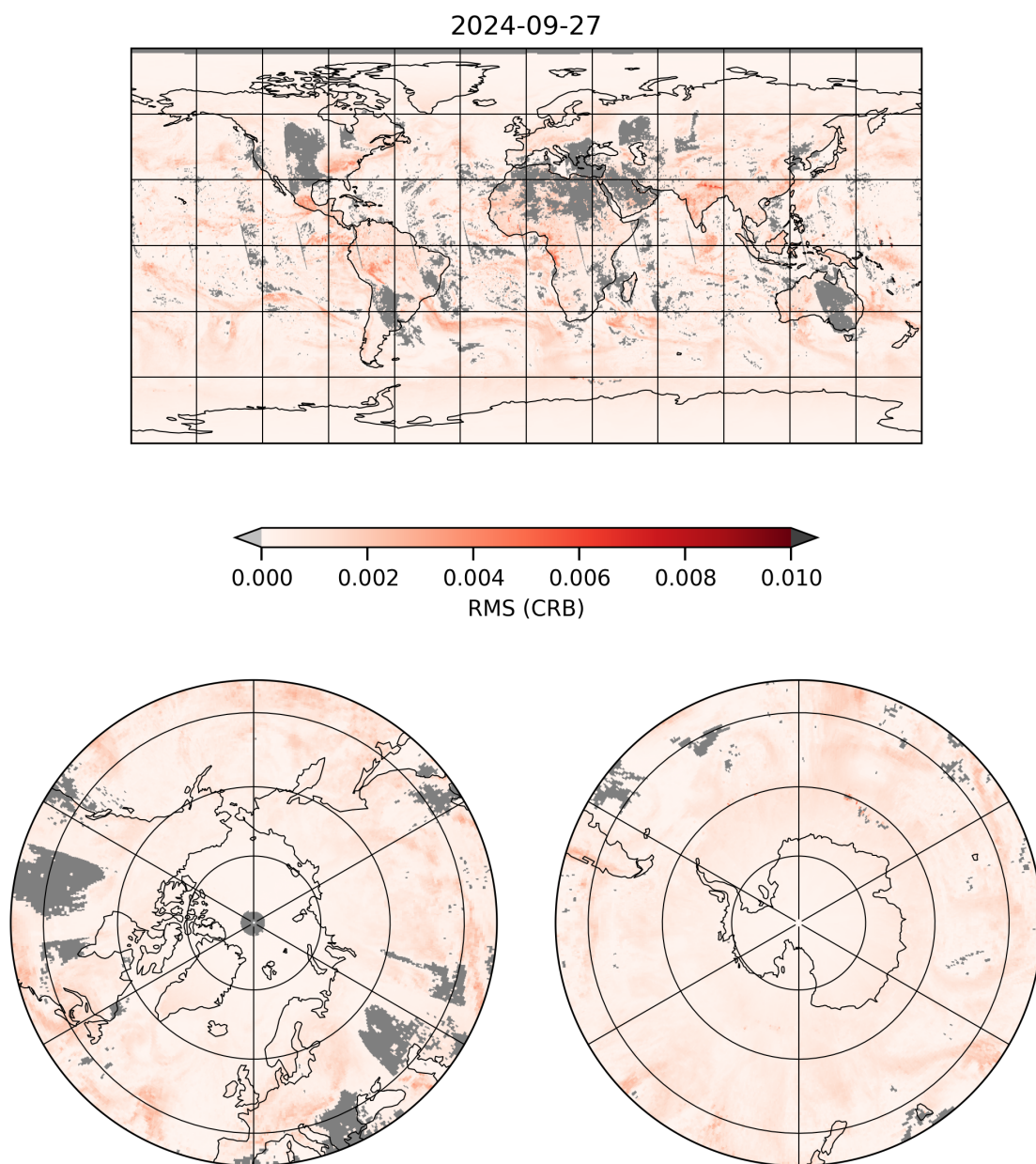


Figure 15: Map of “RMS (CRB)” for 2024-09-26 to 2024-09-28

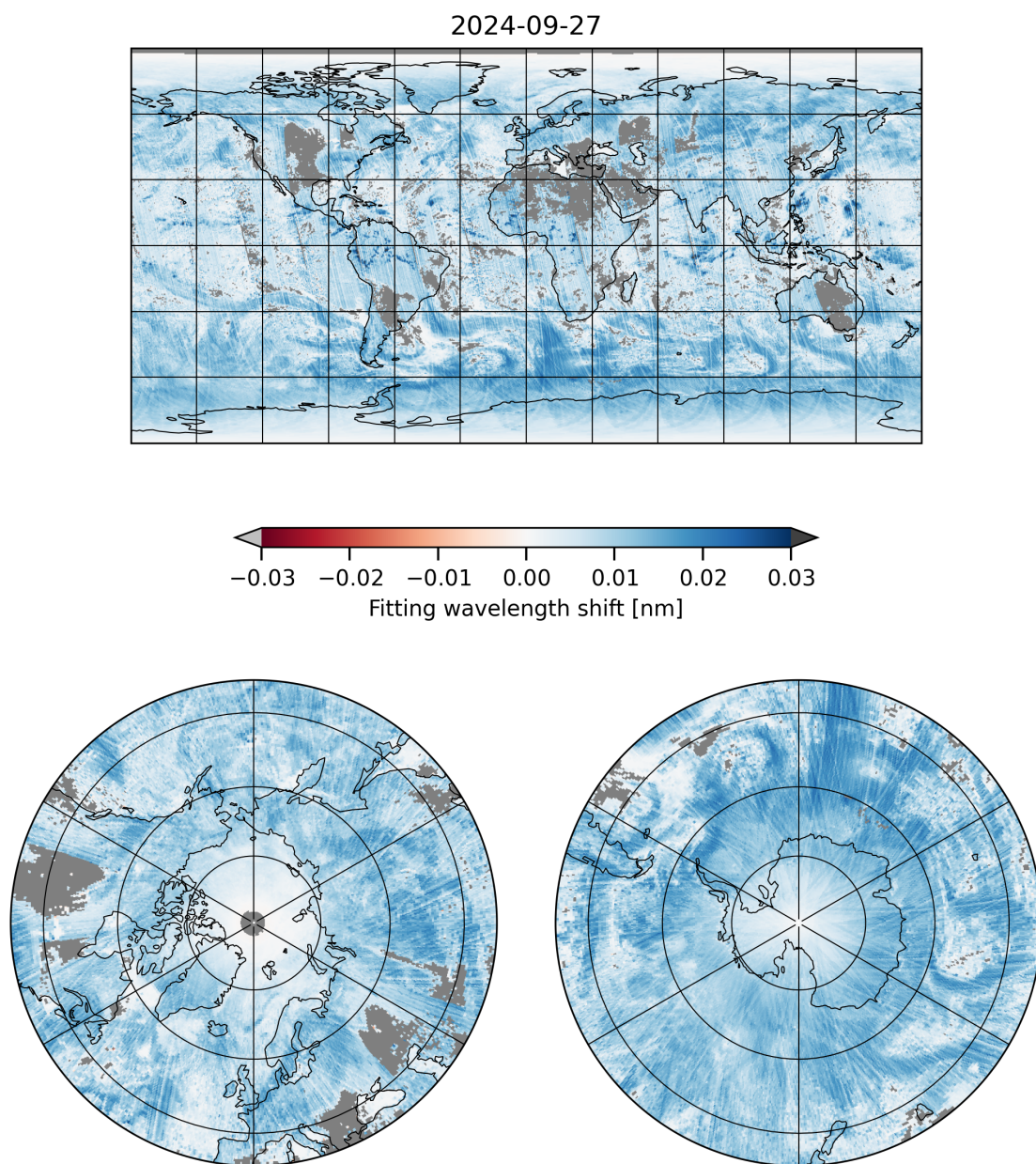


Figure 16: Map of "Fitting wavelength shift" for 2024-09-26 to 2024-09-28

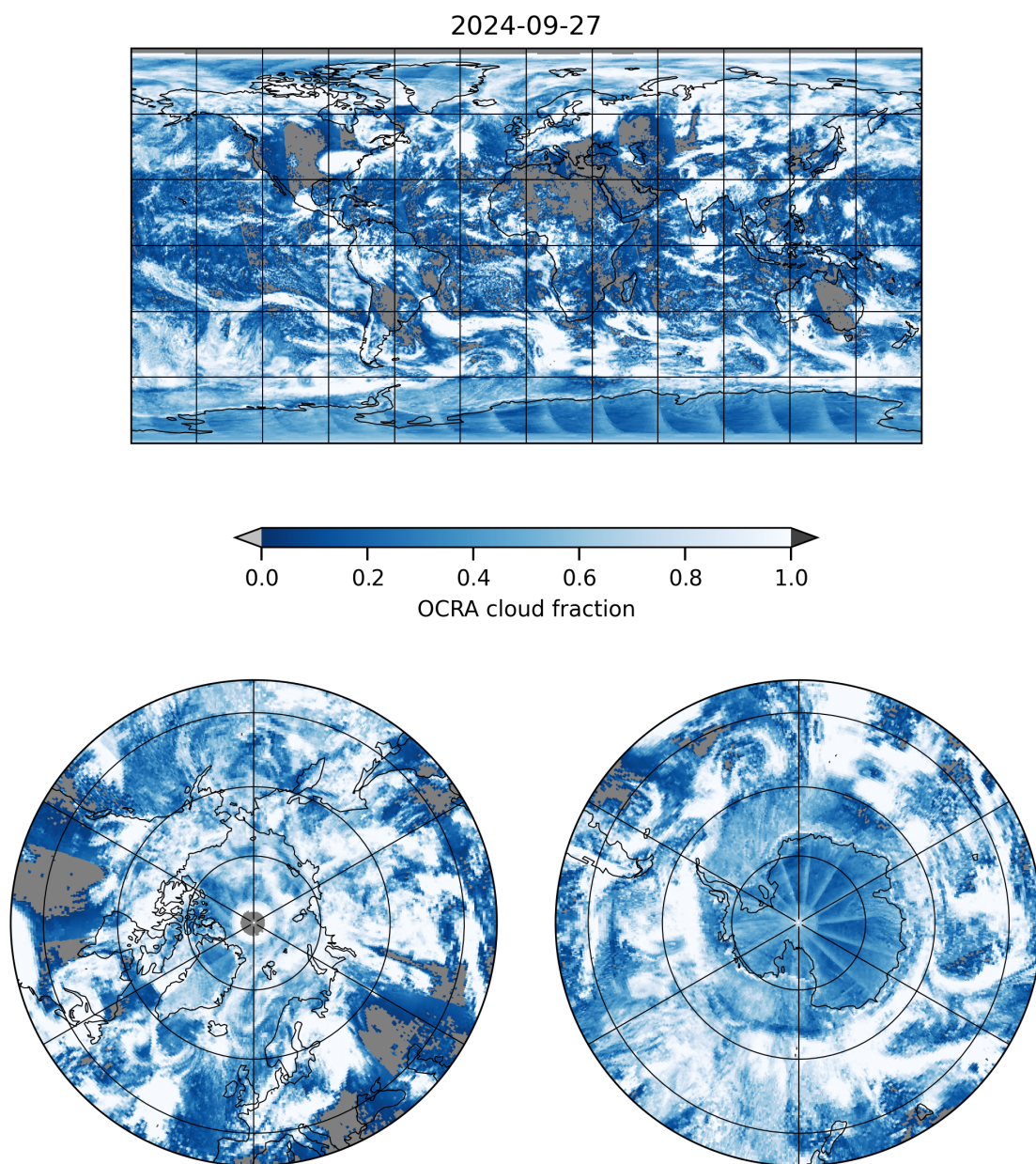


Figure 17: Map of “OCRA cloud fraction” for 2024-09-26 to 2024-09-28

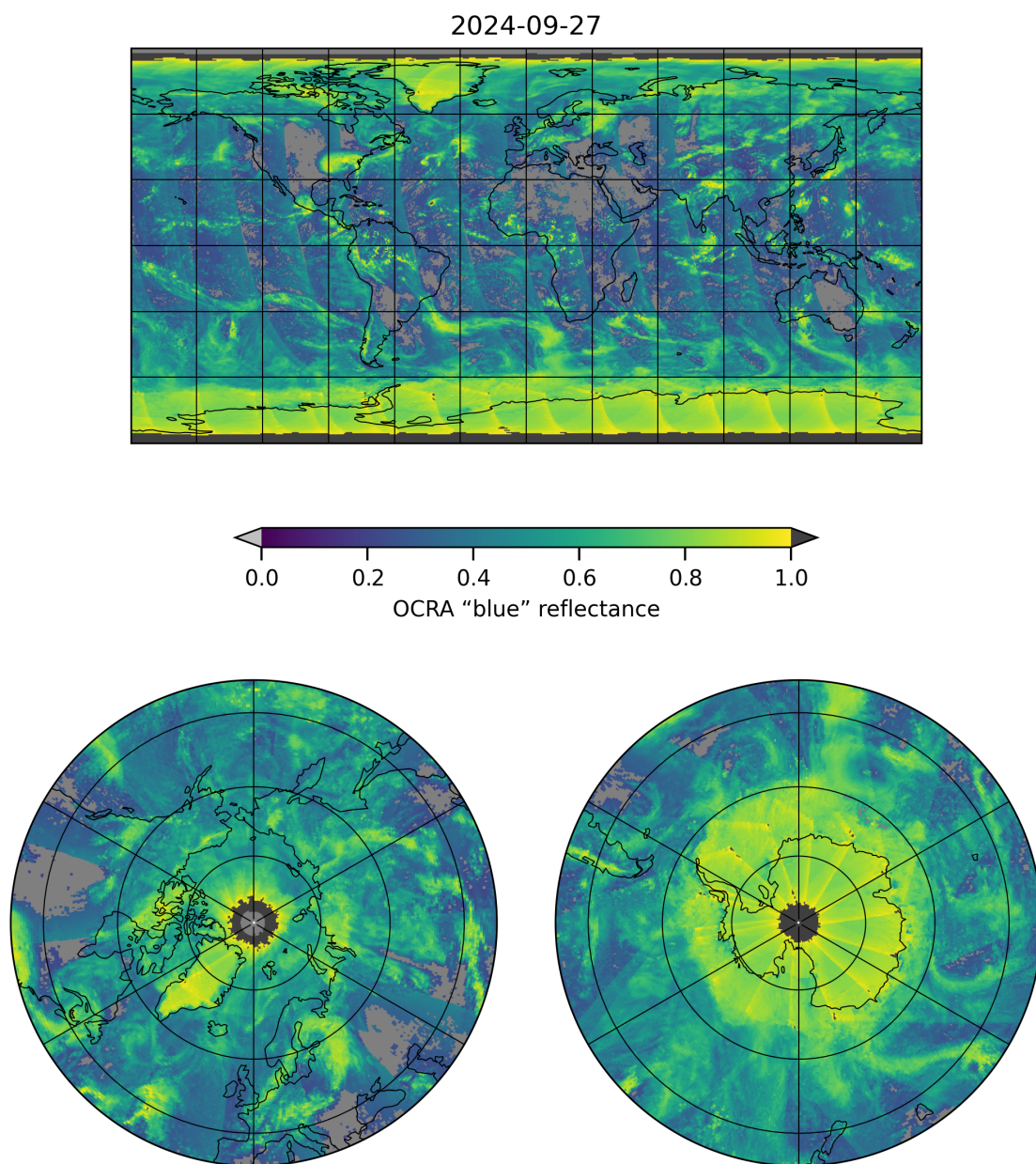


Figure 18: Map of "OCRA "blue" reflectance" for 2024-09-26 to 2024-09-28

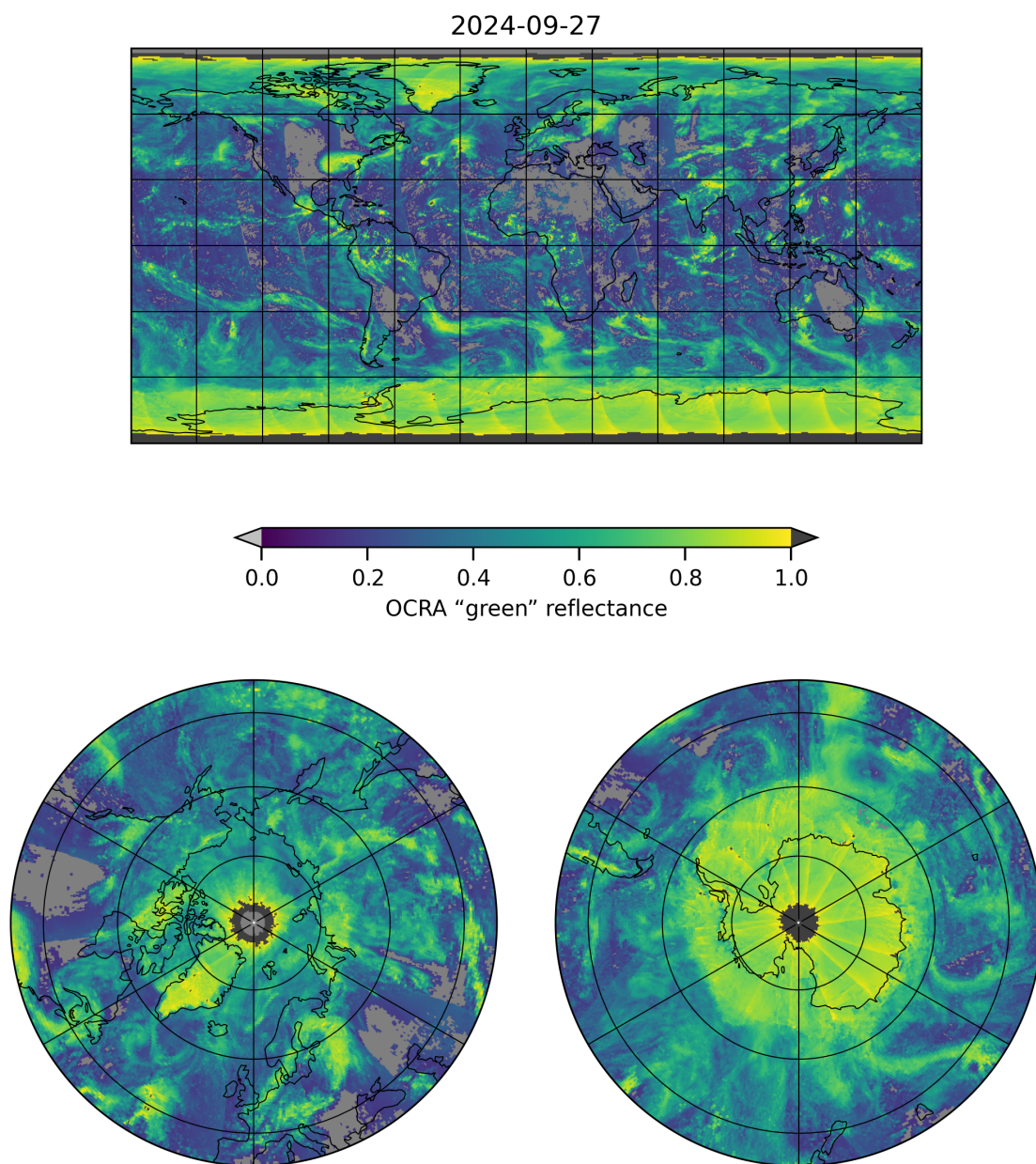


Figure 19: Map of "OCRA "green" reflectance" for 2024-09-26 to 2024-09-28

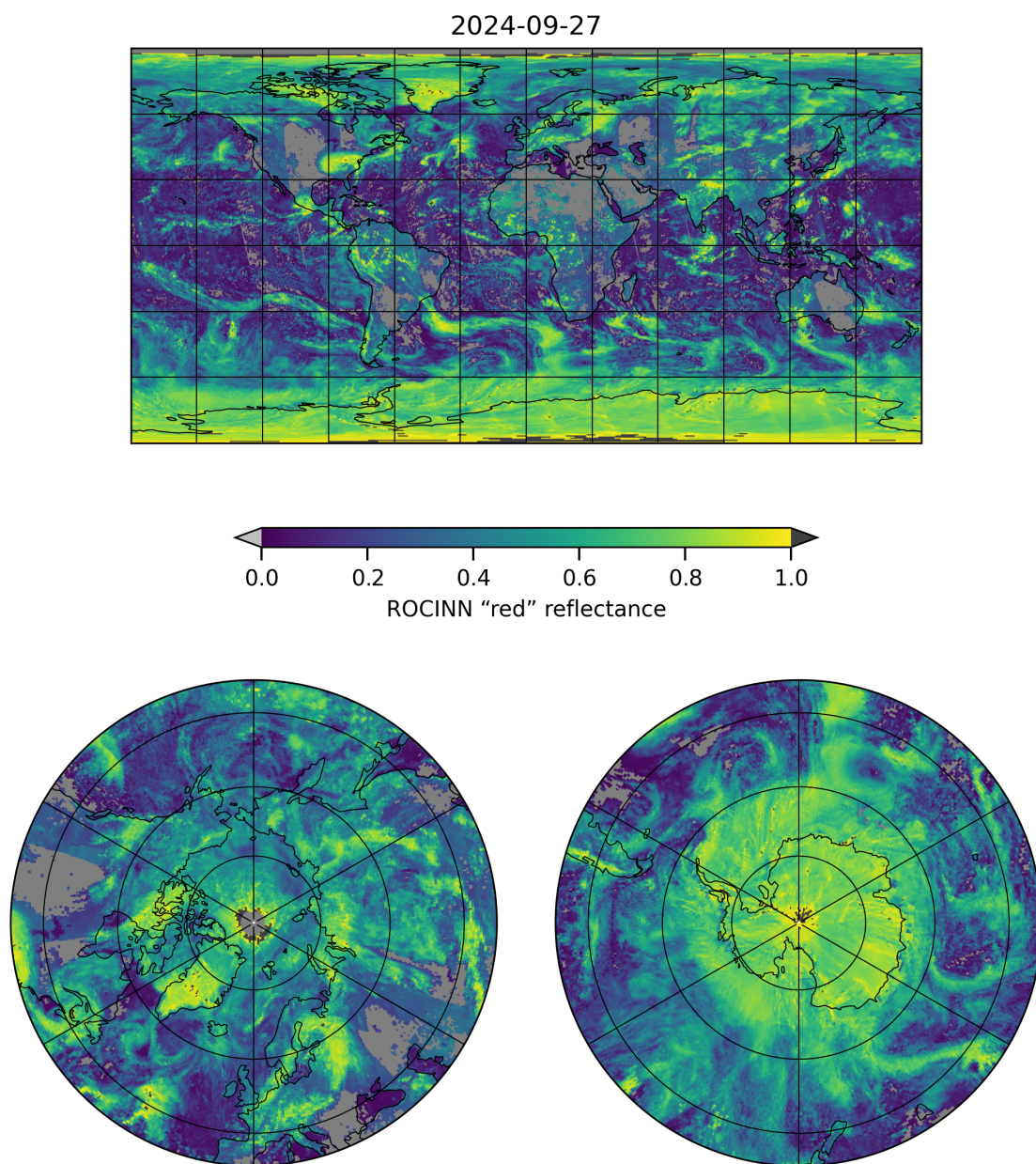


Figure 20: Map of "ROCINN "red" reflectance" for 2024-09-26 to 2024-09-28

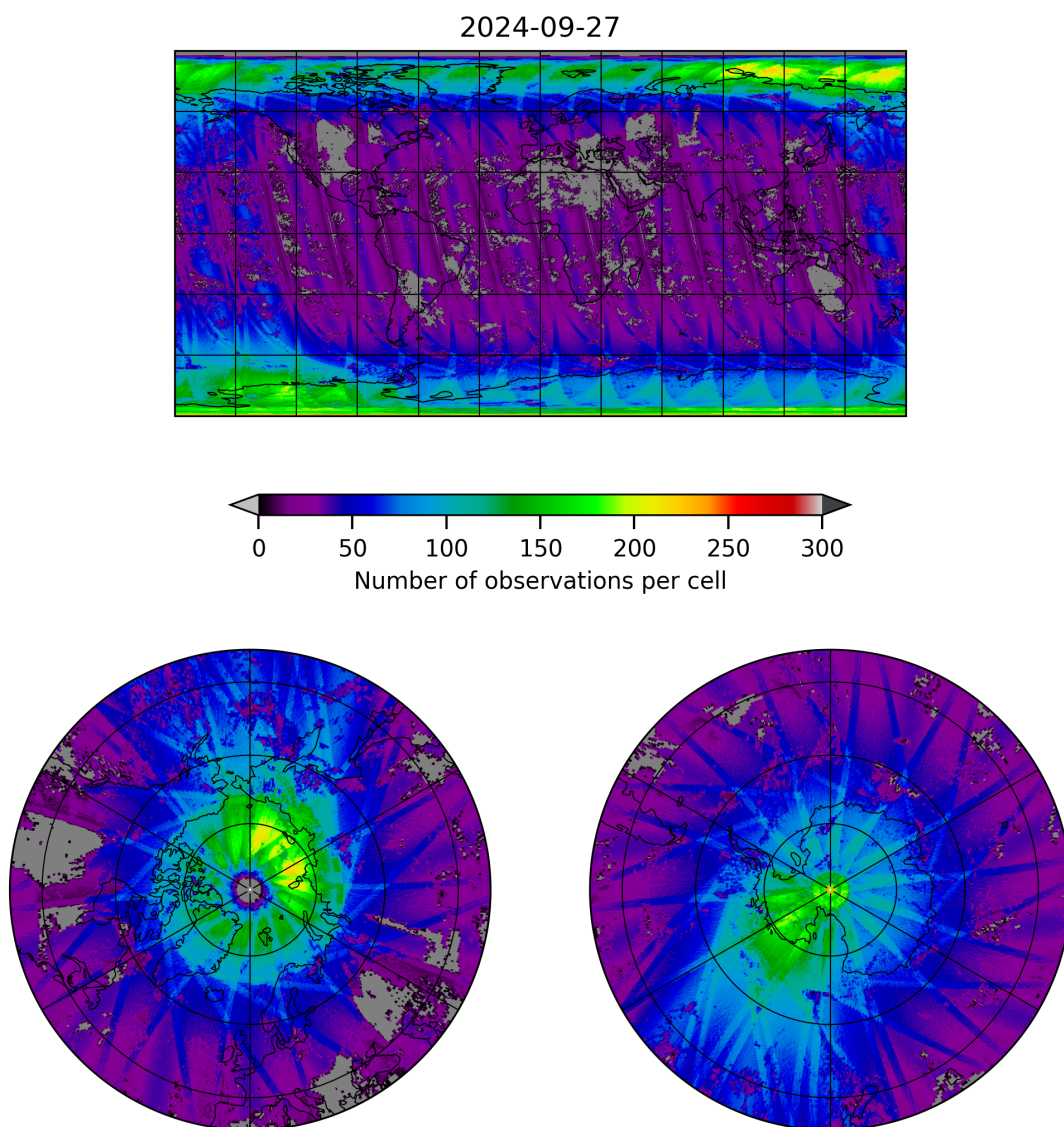


Figure 21: Map of the number of observations for 2024-09-26 to 2024-09-28

7 Zonal average

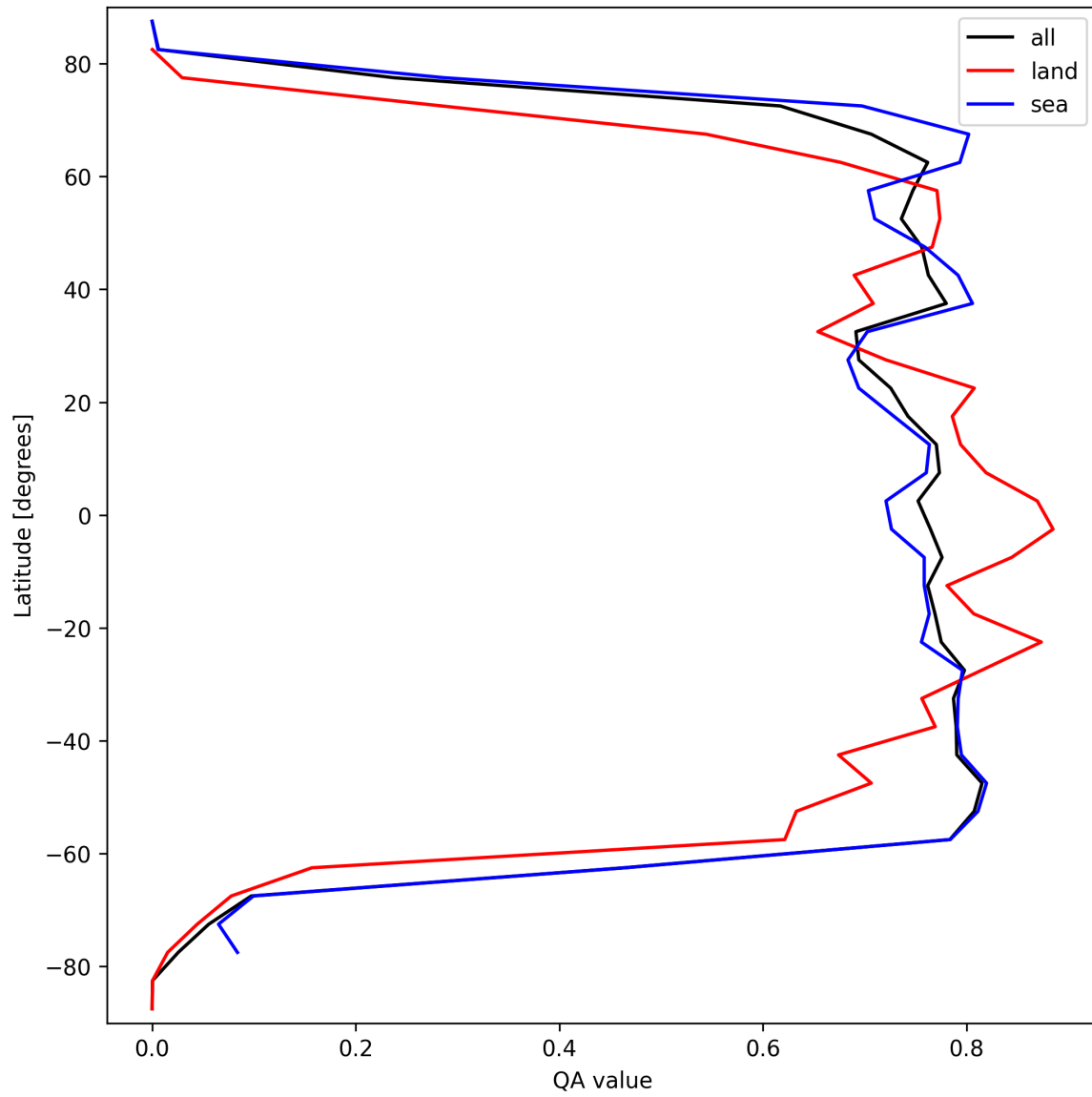


Figure 22: Zonal average of “QA value” for 2024-09-26 to 2024-09-28.

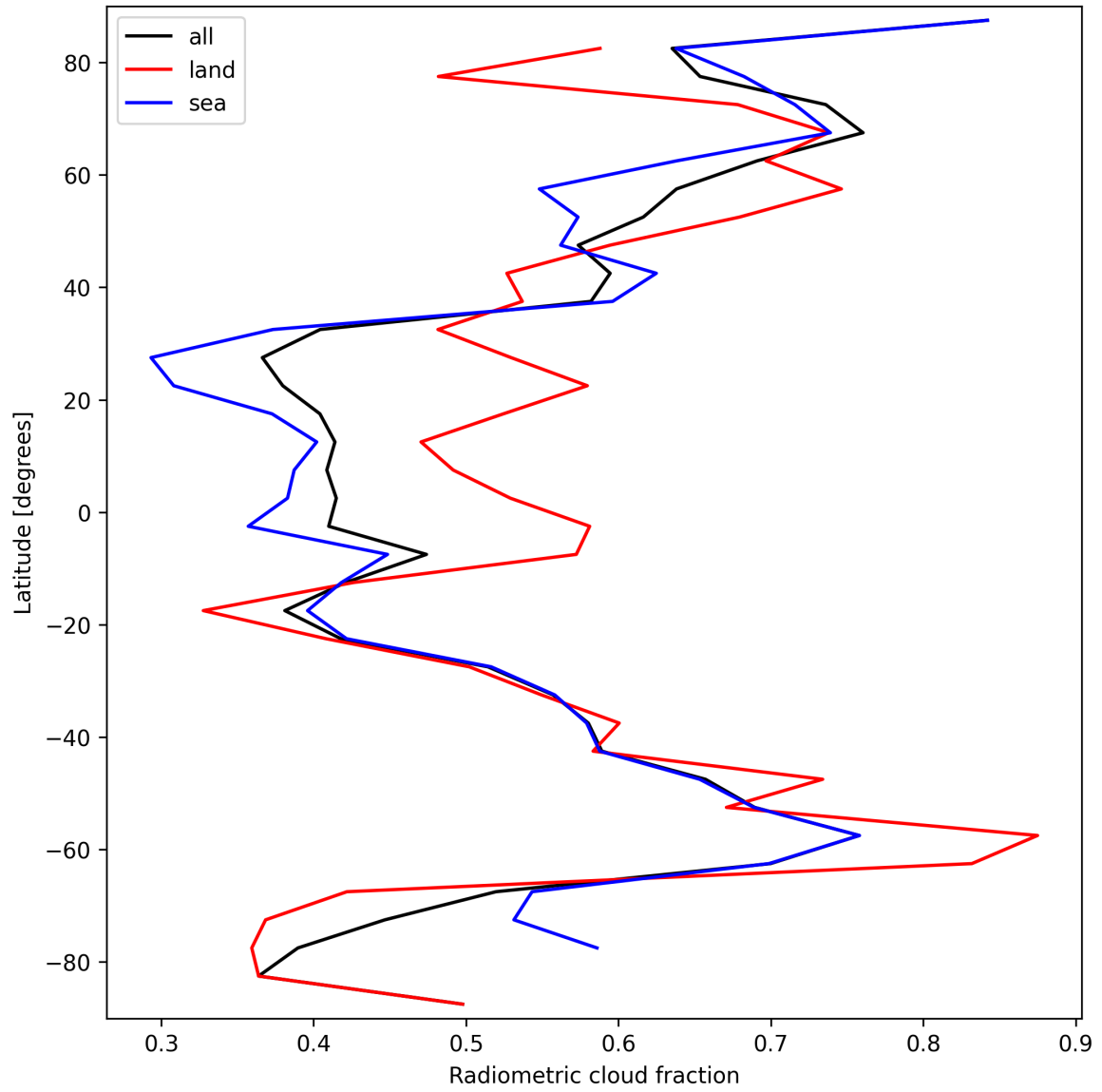


Figure 23: Zonal average of “Radiometric cloud fraction” for 2024-09-26 to 2024-09-28.

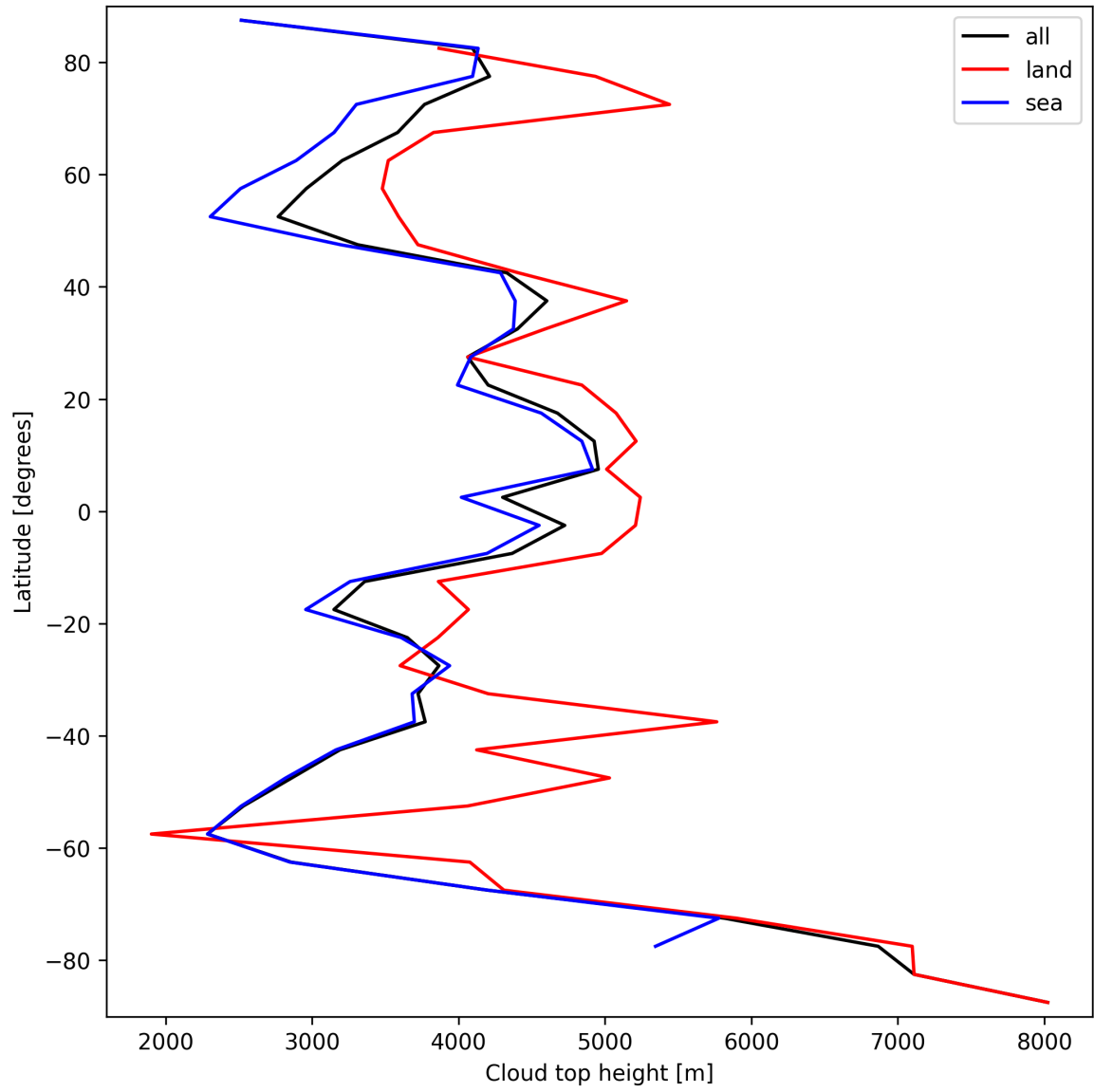


Figure 24: Zonal average of “Cloud top height” for 2024-09-26 to 2024-09-28.

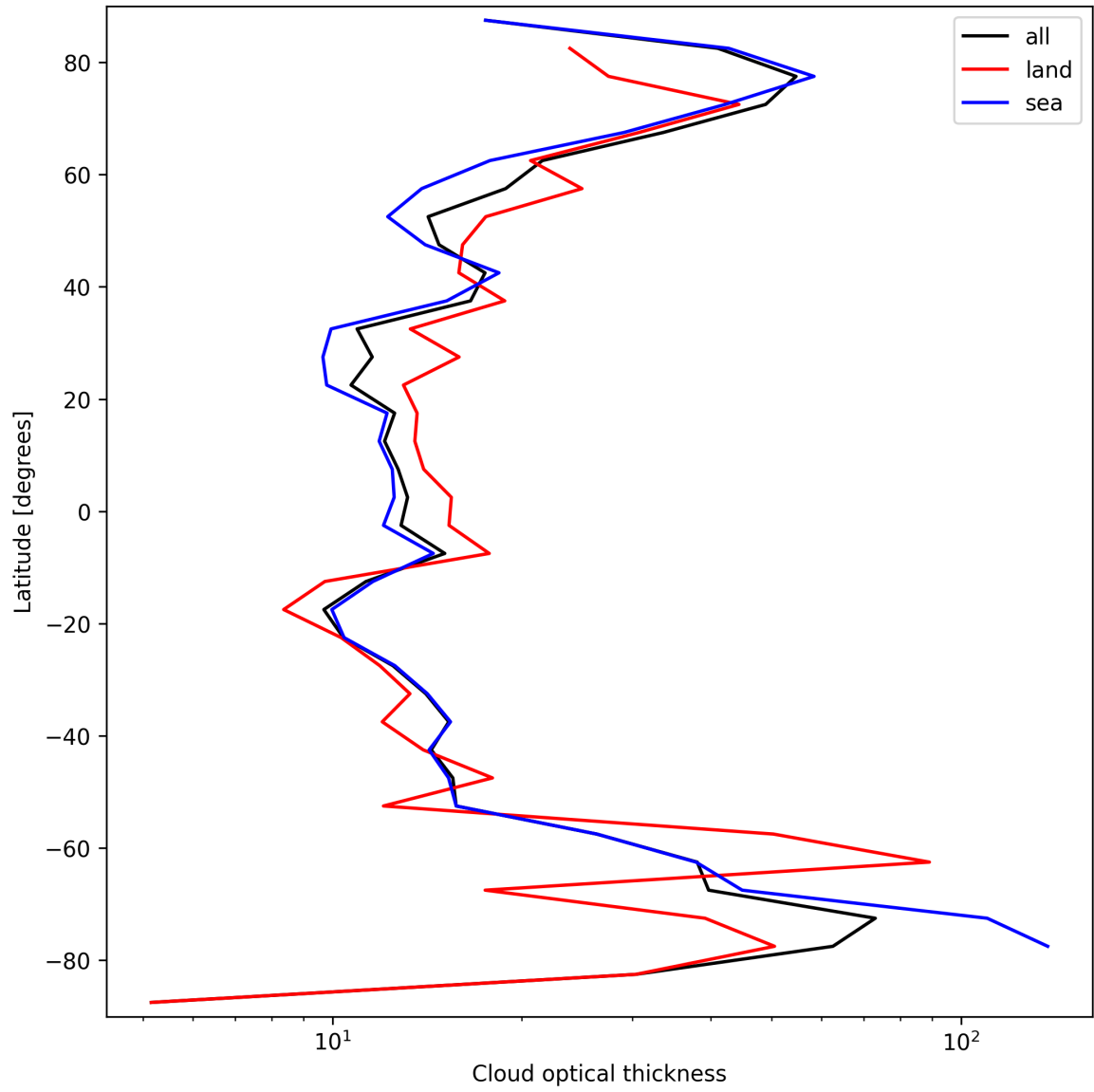


Figure 25: Zonal average of “Cloud optical thickness” for 2024-09-26 to 2024-09-28.

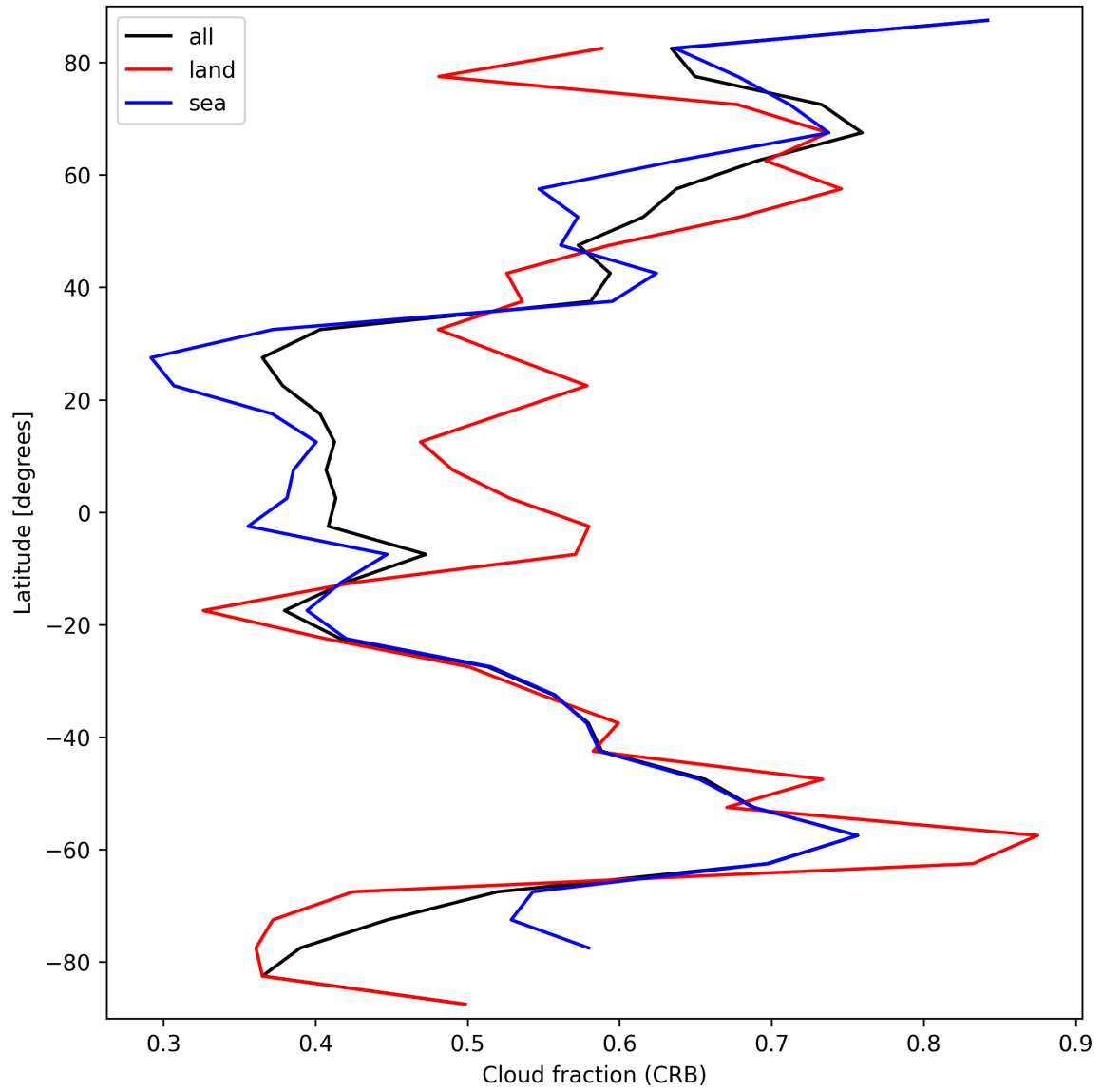


Figure 26: Zonal average of “Cloud fraction (CRB)” for 2024-09-26 to 2024-09-28.

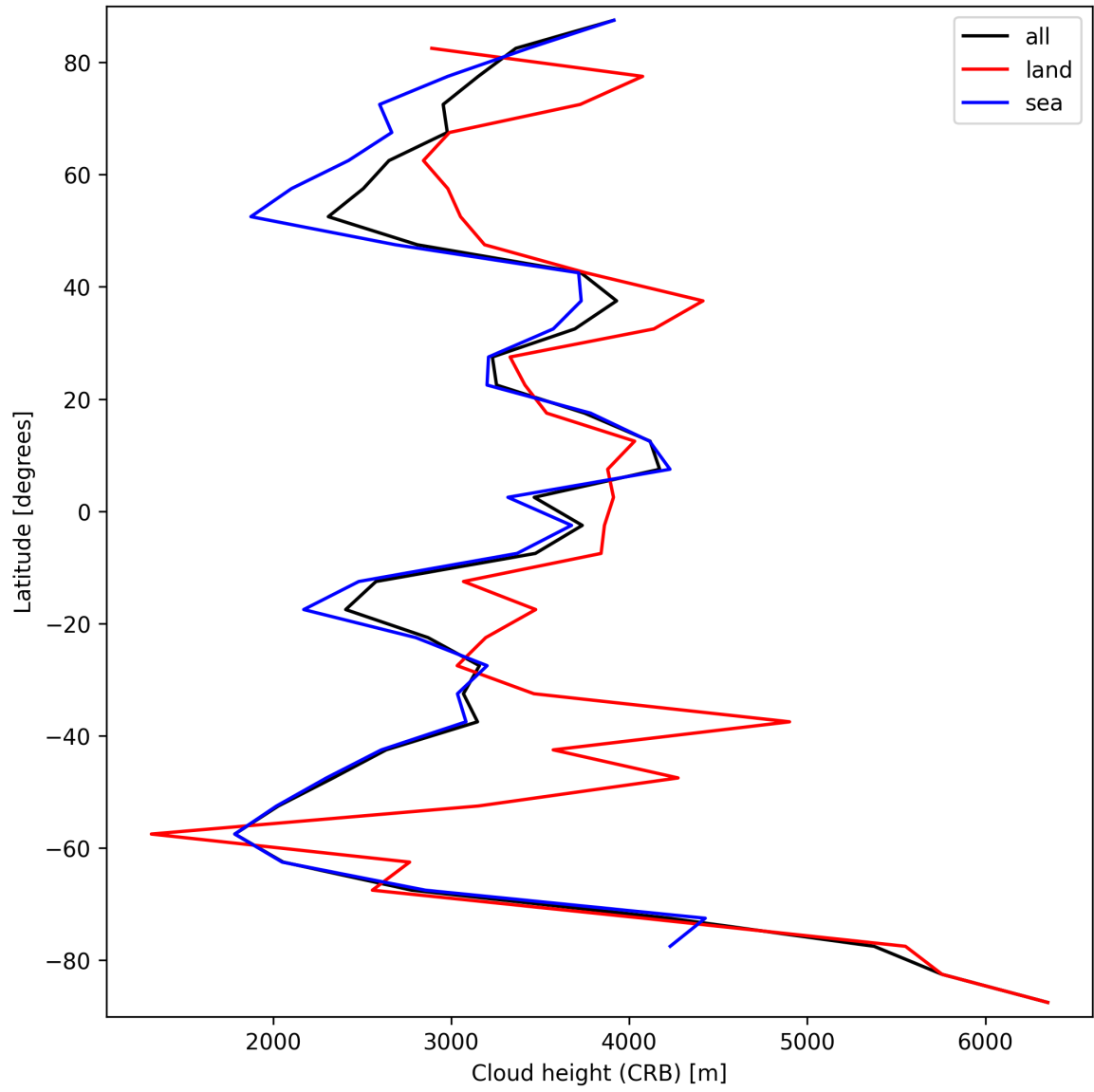


Figure 27: Zonal average of “Cloud height (CRB)” for 2024-09-26 to 2024-09-28.

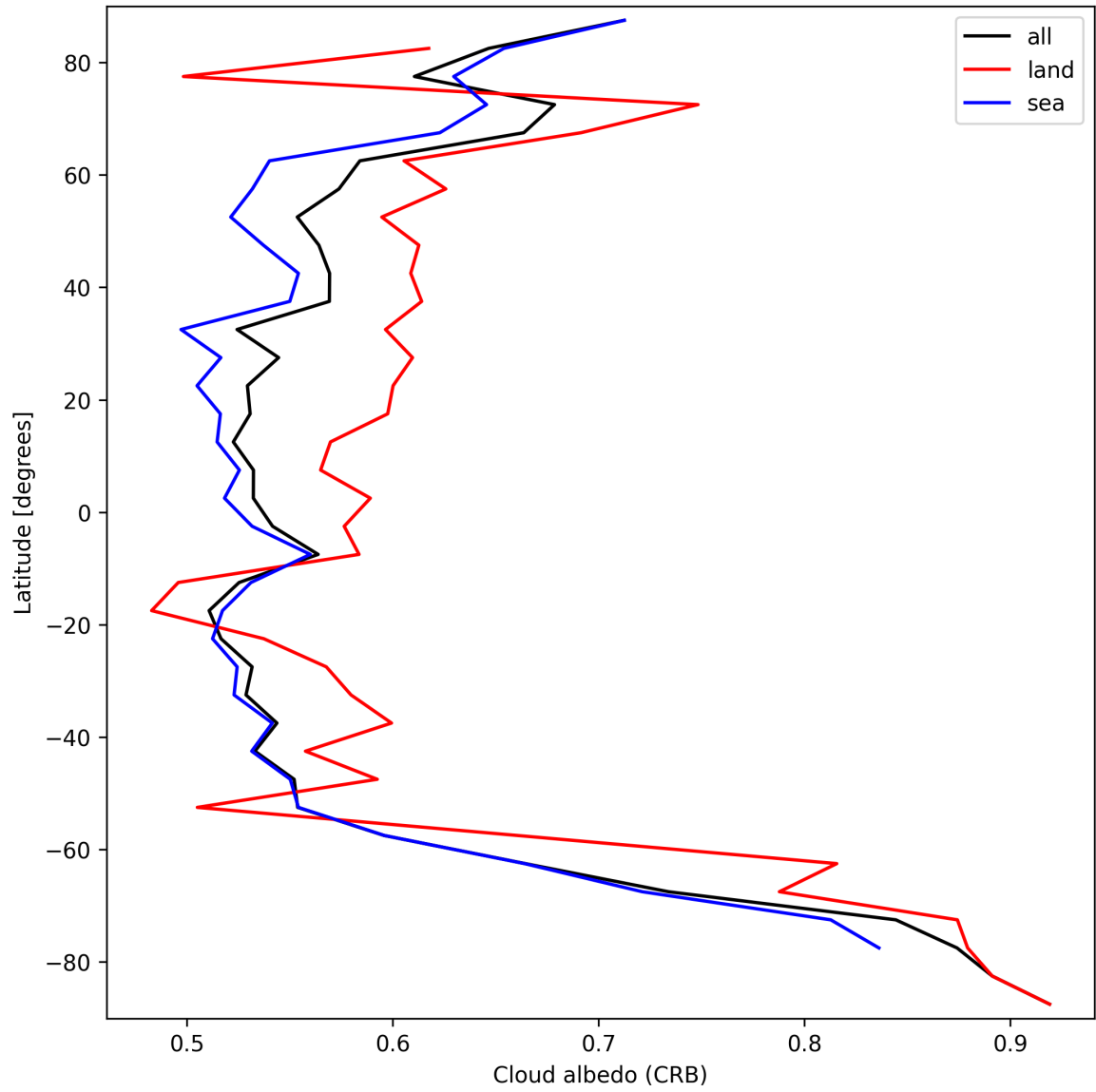


Figure 28: Zonal average of “Cloud albedo (CRB)” for 2024-09-26 to 2024-09-28.

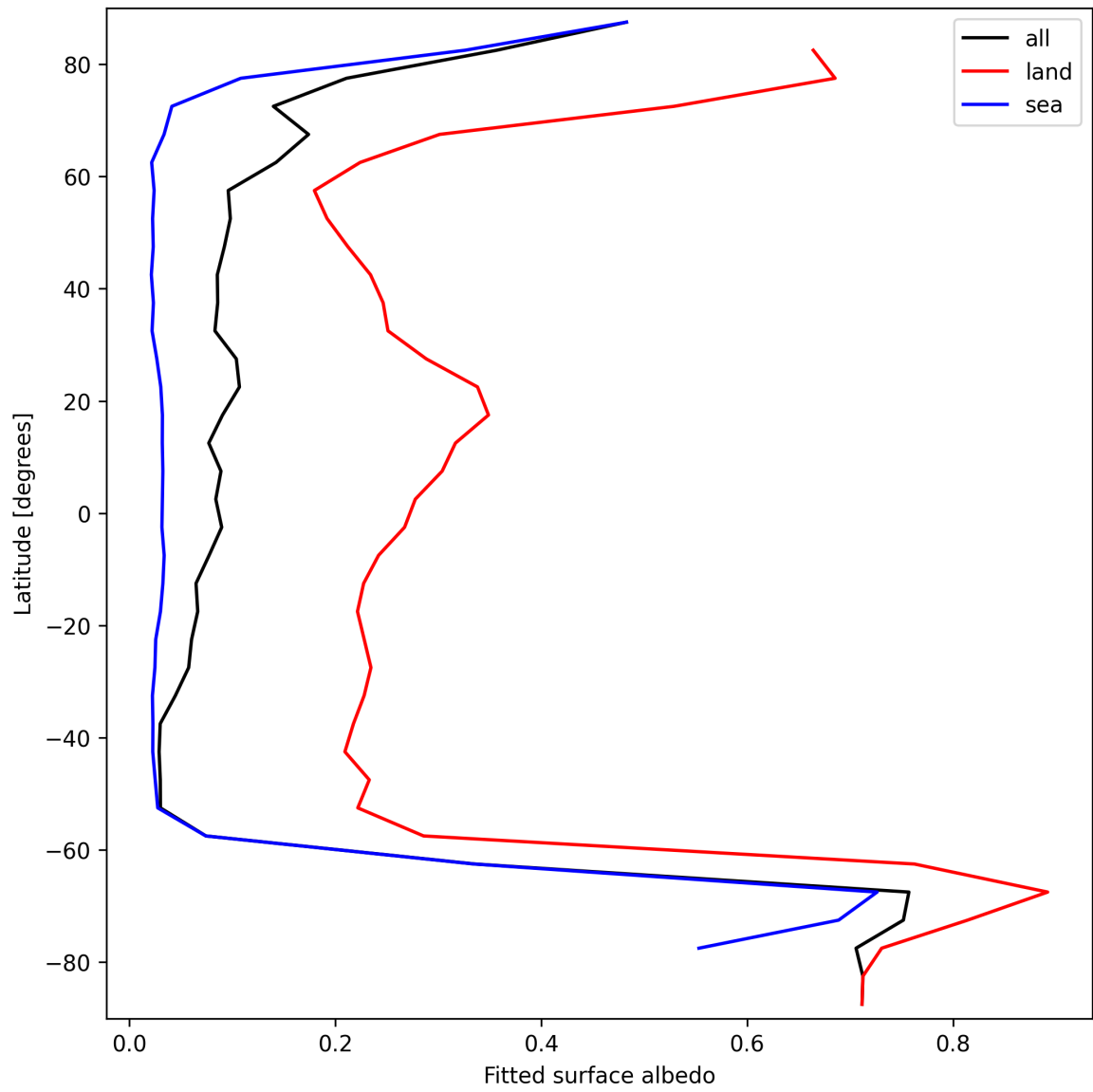


Figure 29: Zonal average of “Fitted surface albedo” for 2024-09-26 to 2024-09-28.

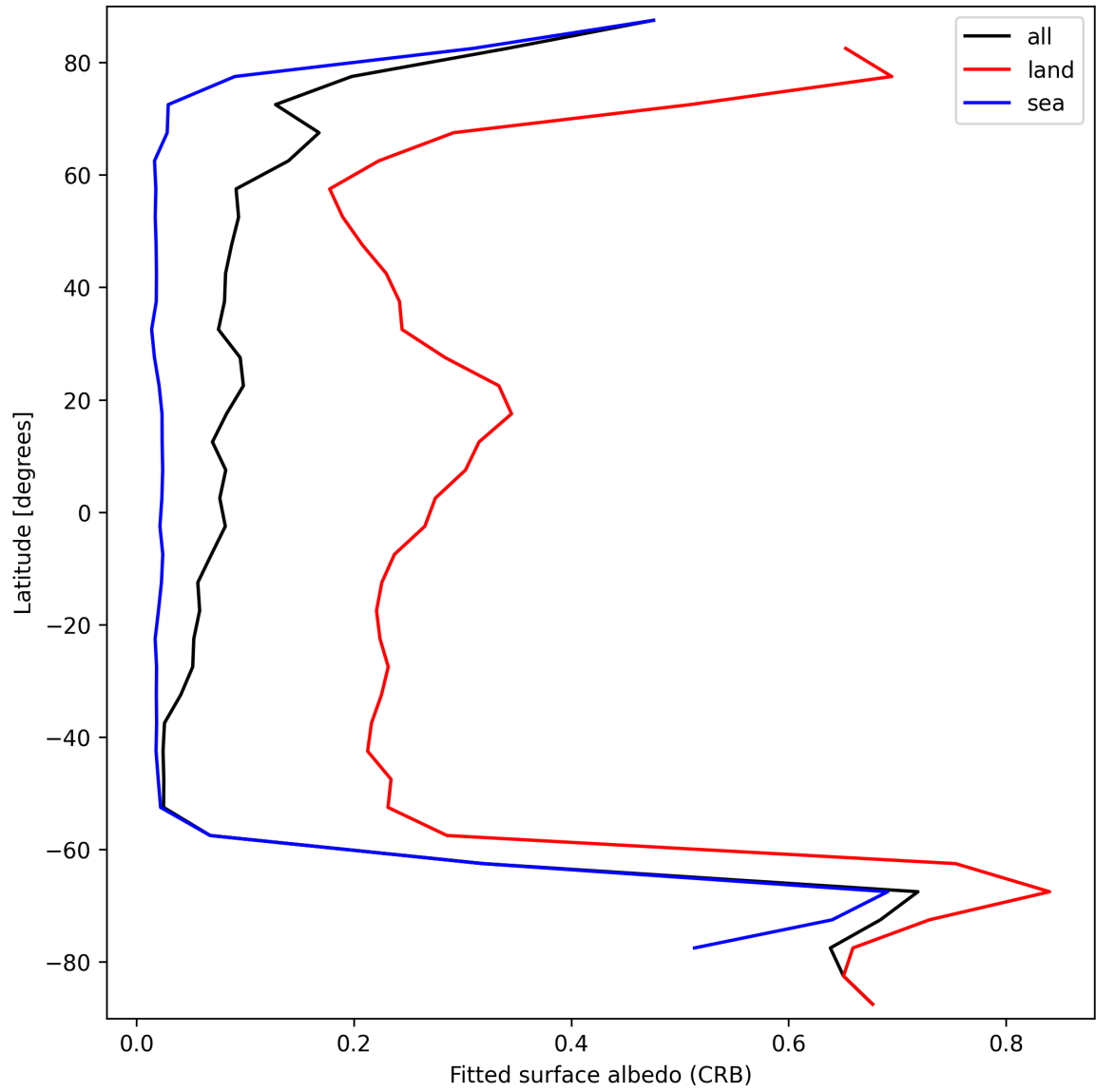


Figure 30: Zonal average of “Fitted surface albedo (CRB)” for 2024-09-26 to 2024-09-28.

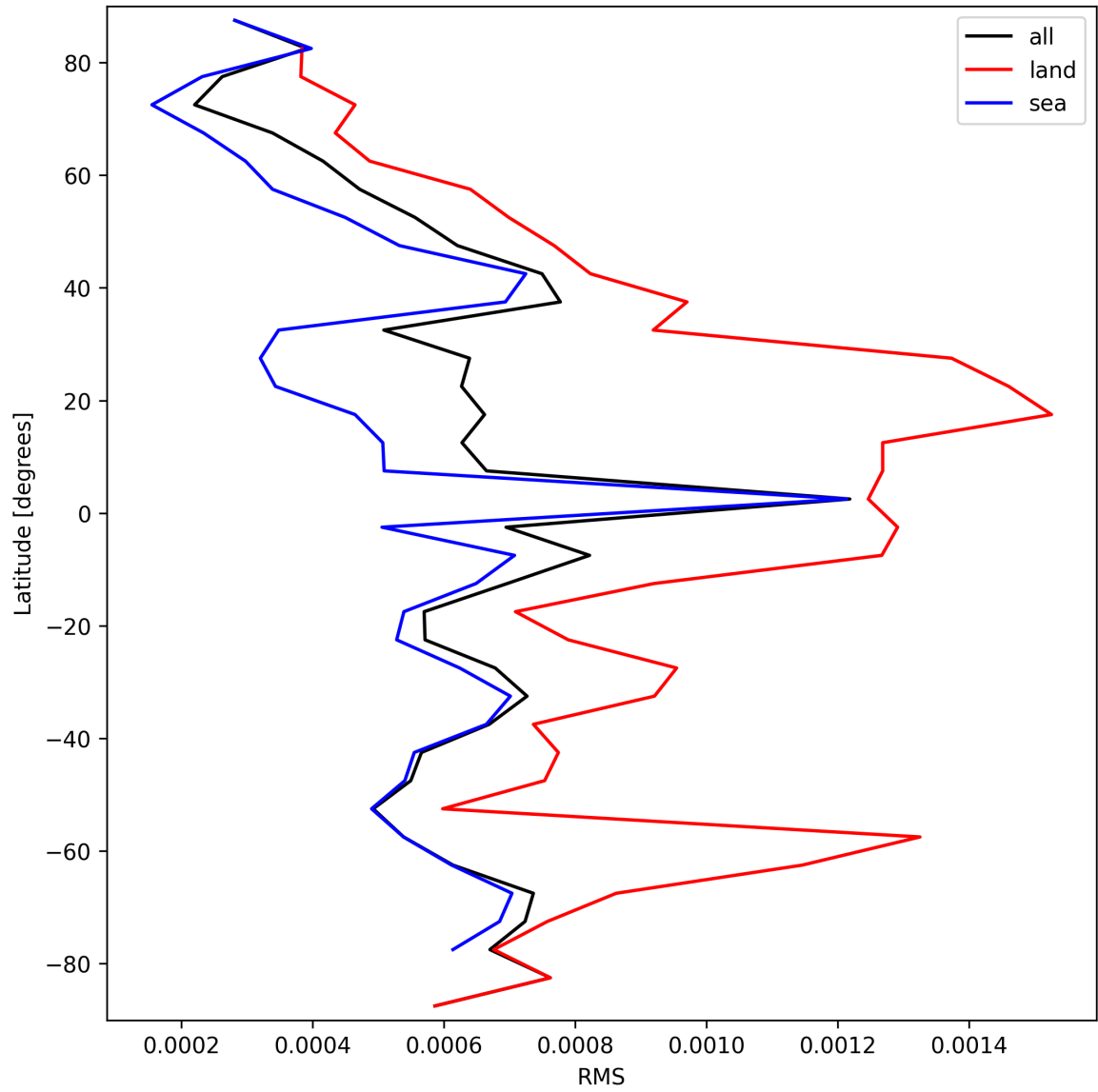


Figure 31: Zonal average of “RMS” for 2024-09-26 to 2024-09-28.

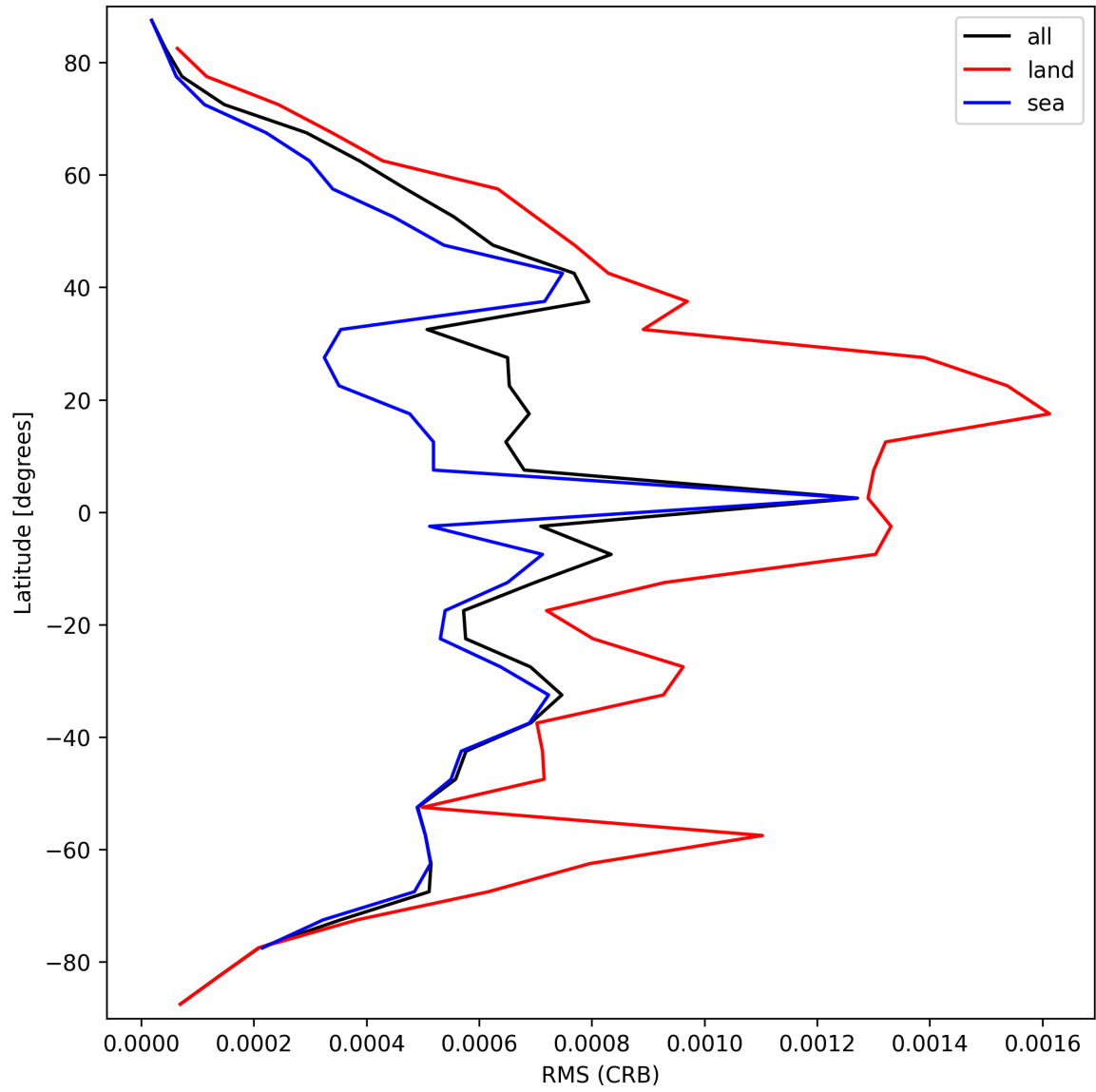


Figure 32: Zonal average of “RMS (CRB)” for 2024-09-26 to 2024-09-28.

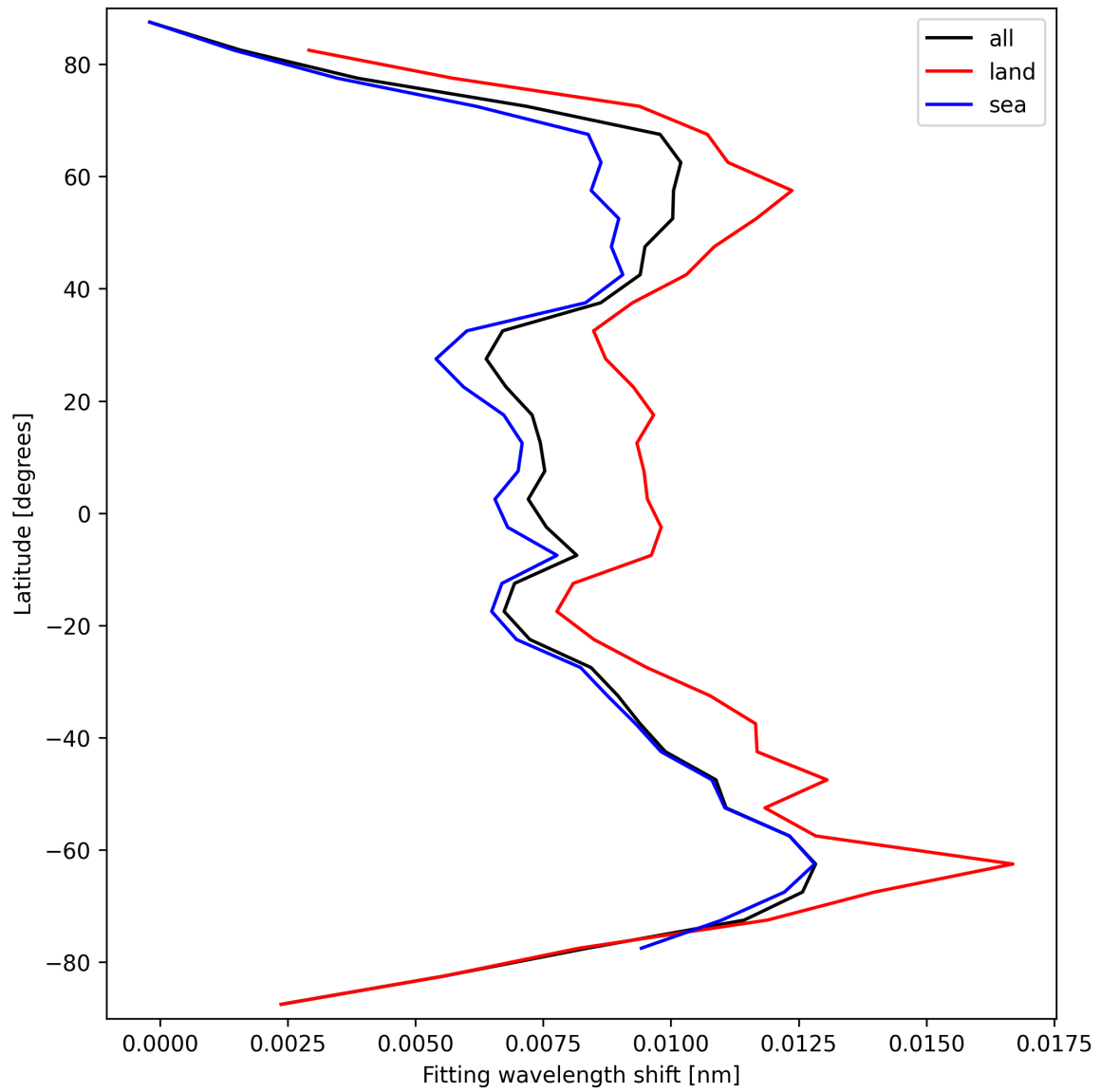


Figure 33: Zonal average of “Fitting wavelength shift” for 2024-09-26 to 2024-09-28.

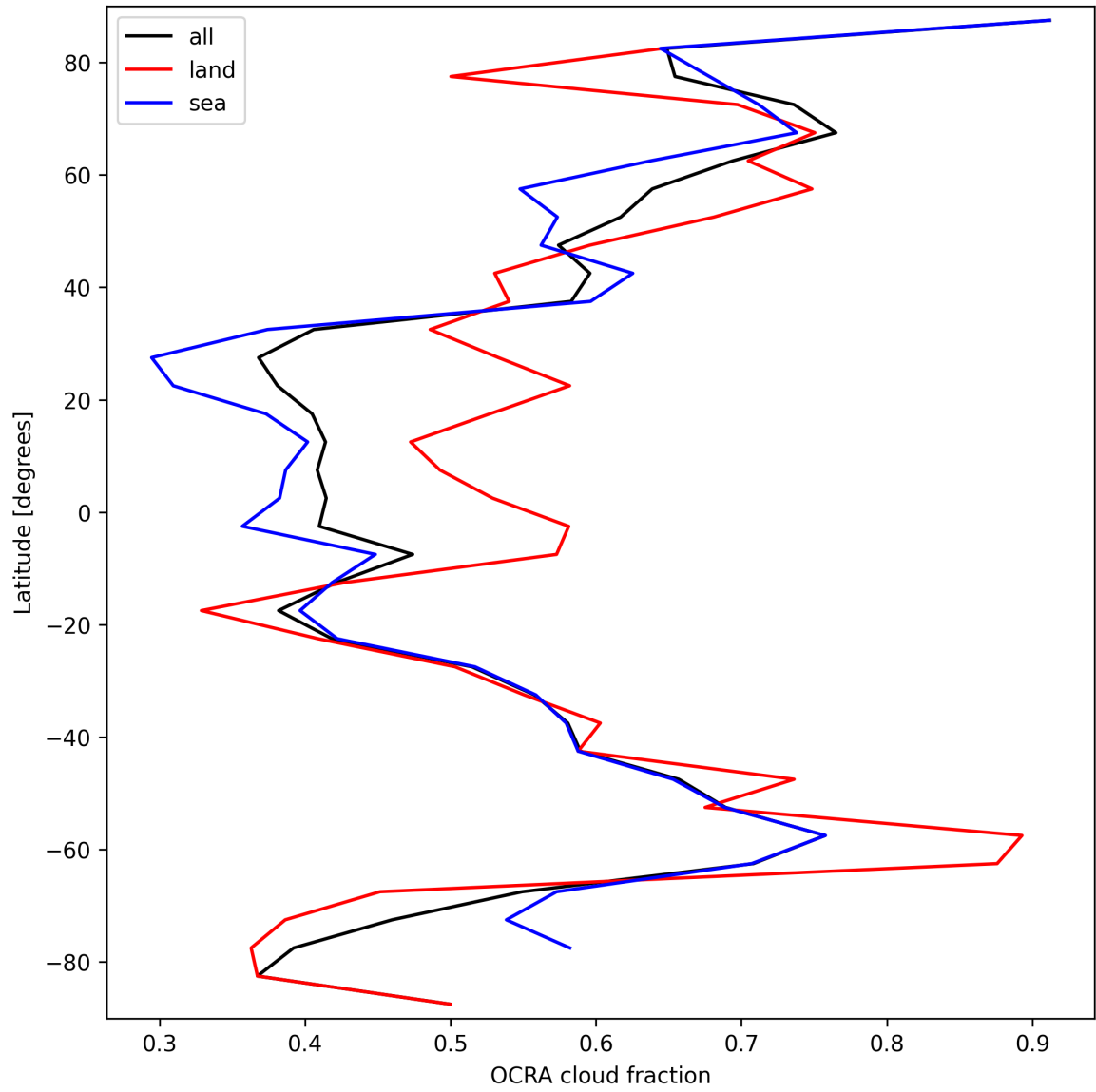


Figure 34: Zonal average of “OCRA cloud fraction” for 2024-09-26 to 2024-09-28.

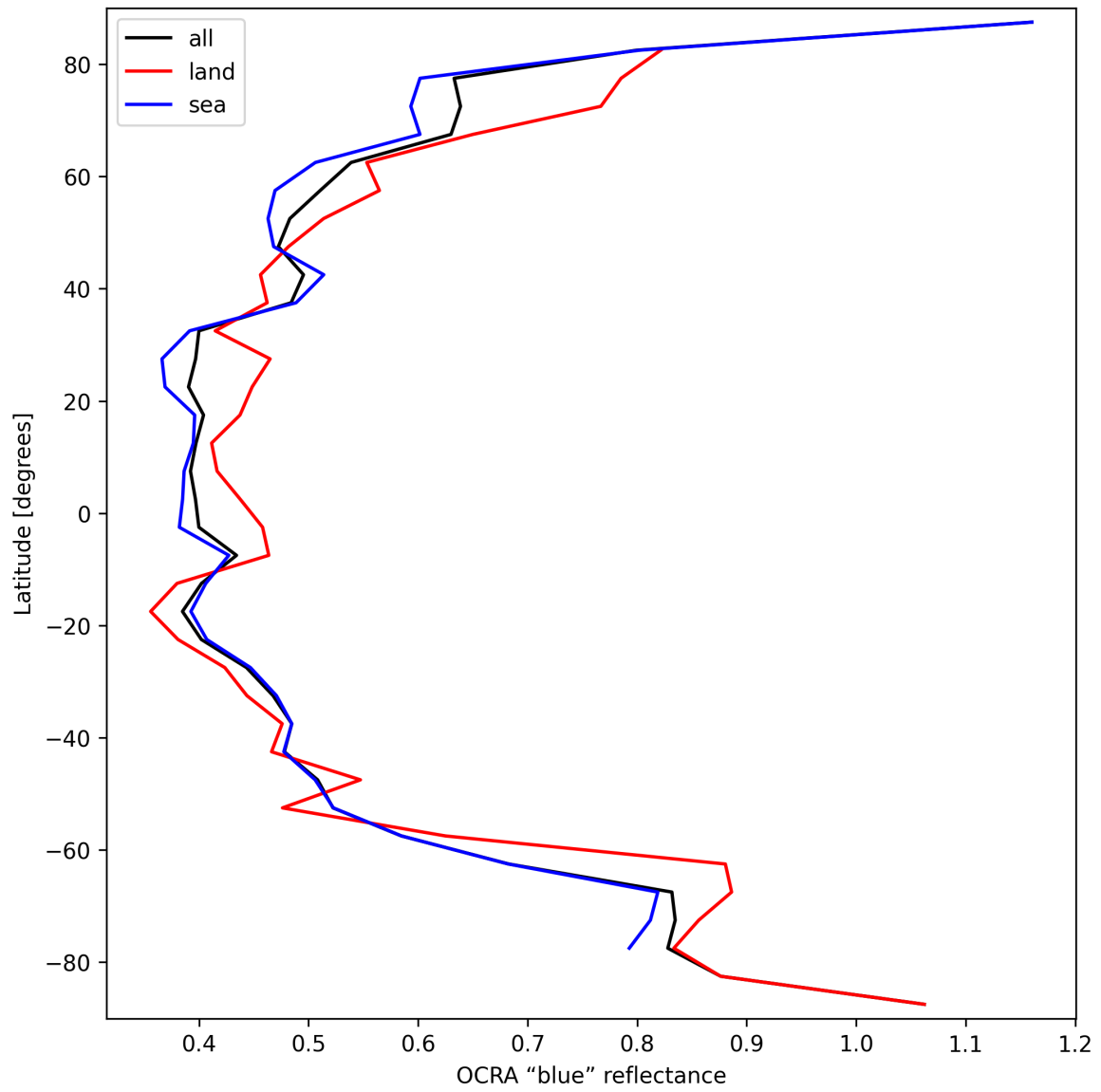


Figure 35: Zonal average of “OCRA “blue” reflectance” for 2024-09-26 to 2024-09-28.

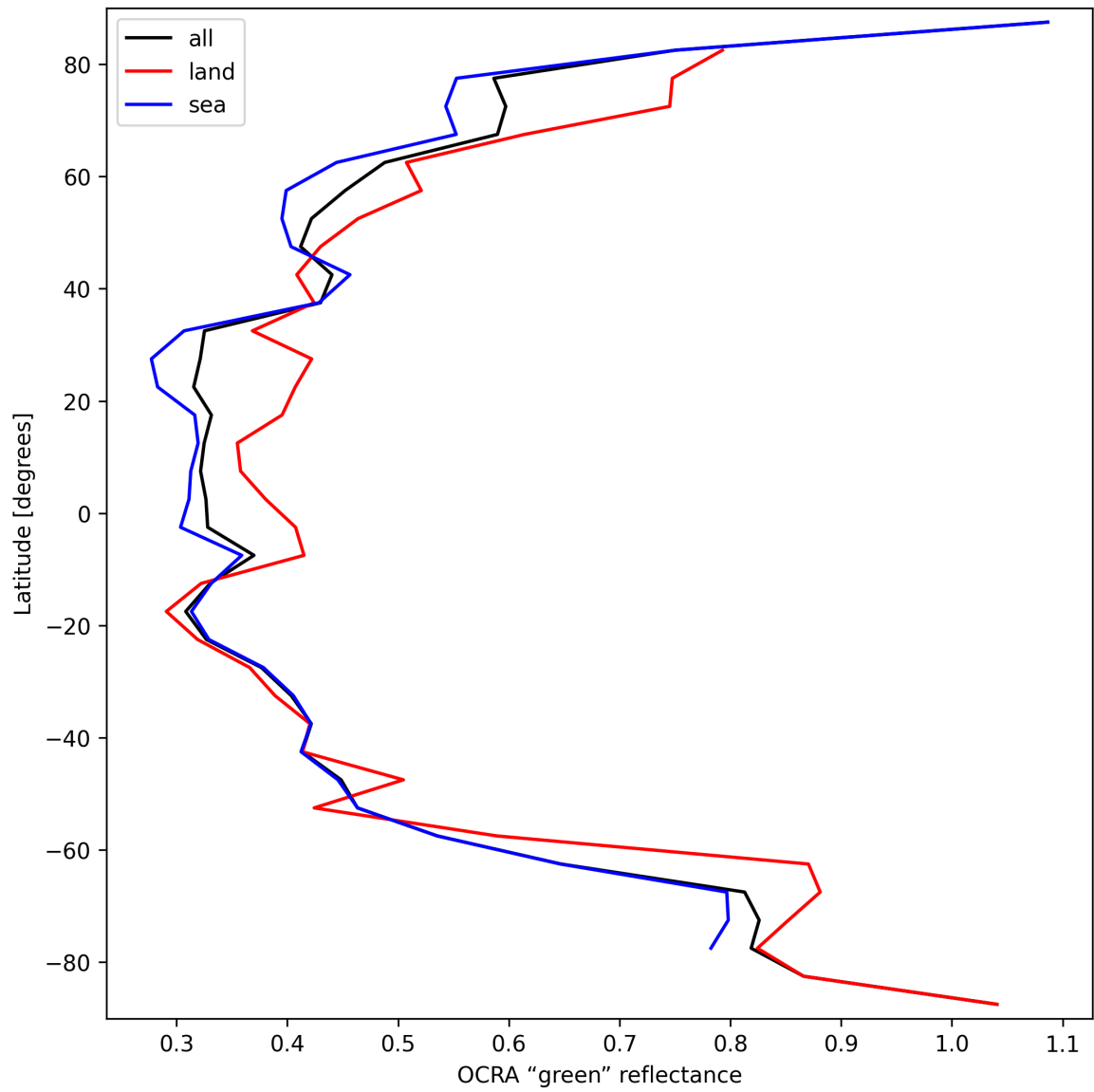


Figure 36: Zonal average of “OCRA “green” reflectance” for 2024-09-26 to 2024-09-28.

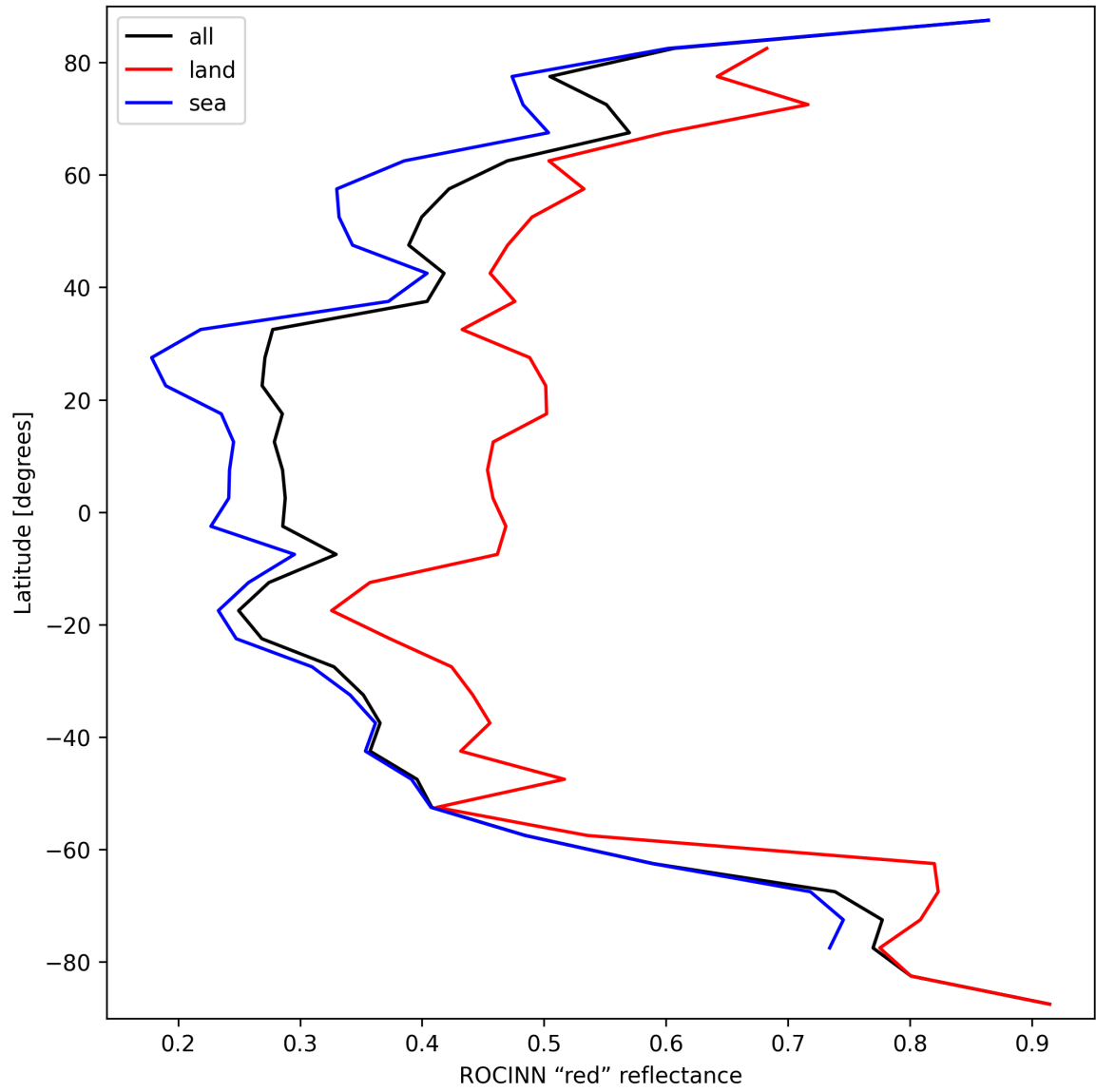


Figure 37: Zonal average of “ROCINN “red” reflectance” for 2024-09-26 to 2024-09-28.

8 Histograms

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

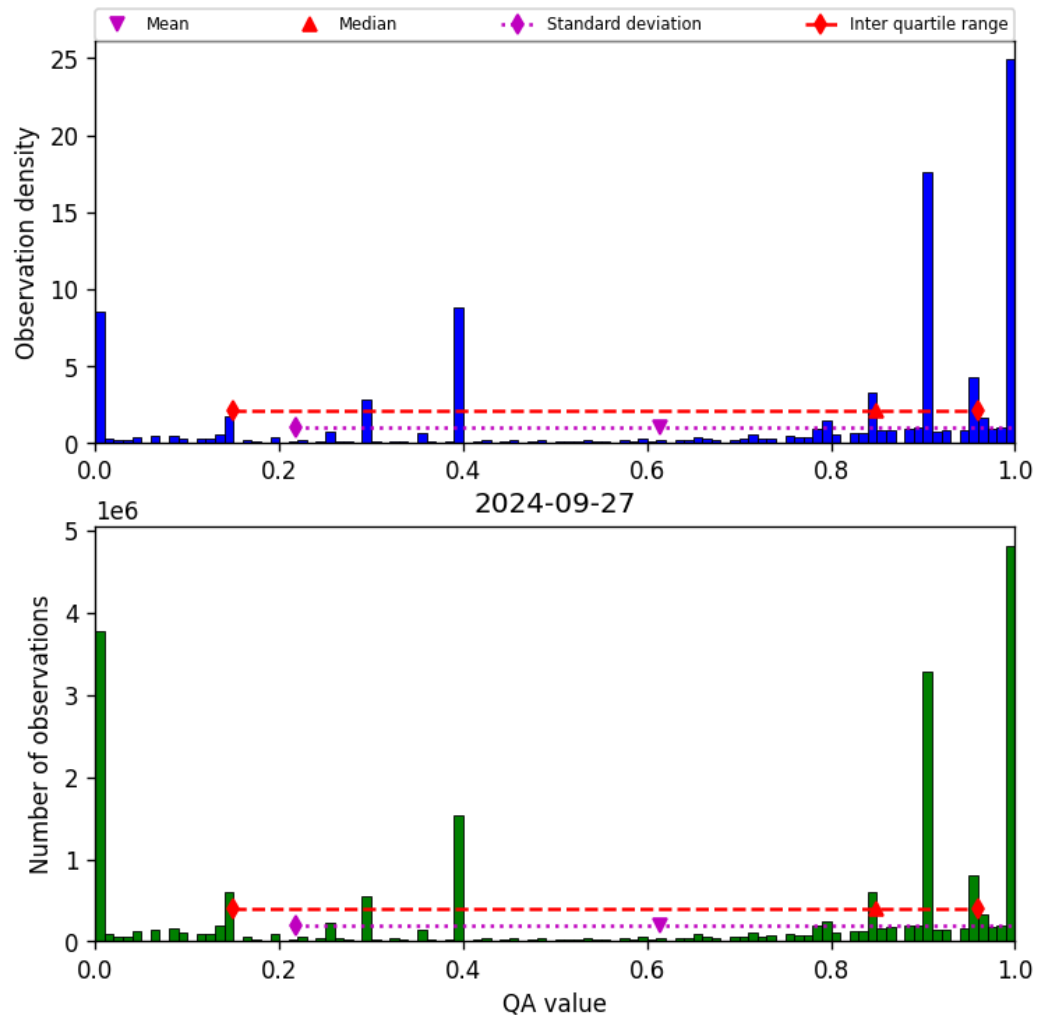


Figure 38: Histogram of “QA value” for 2024-09-26 to 2024-09-28

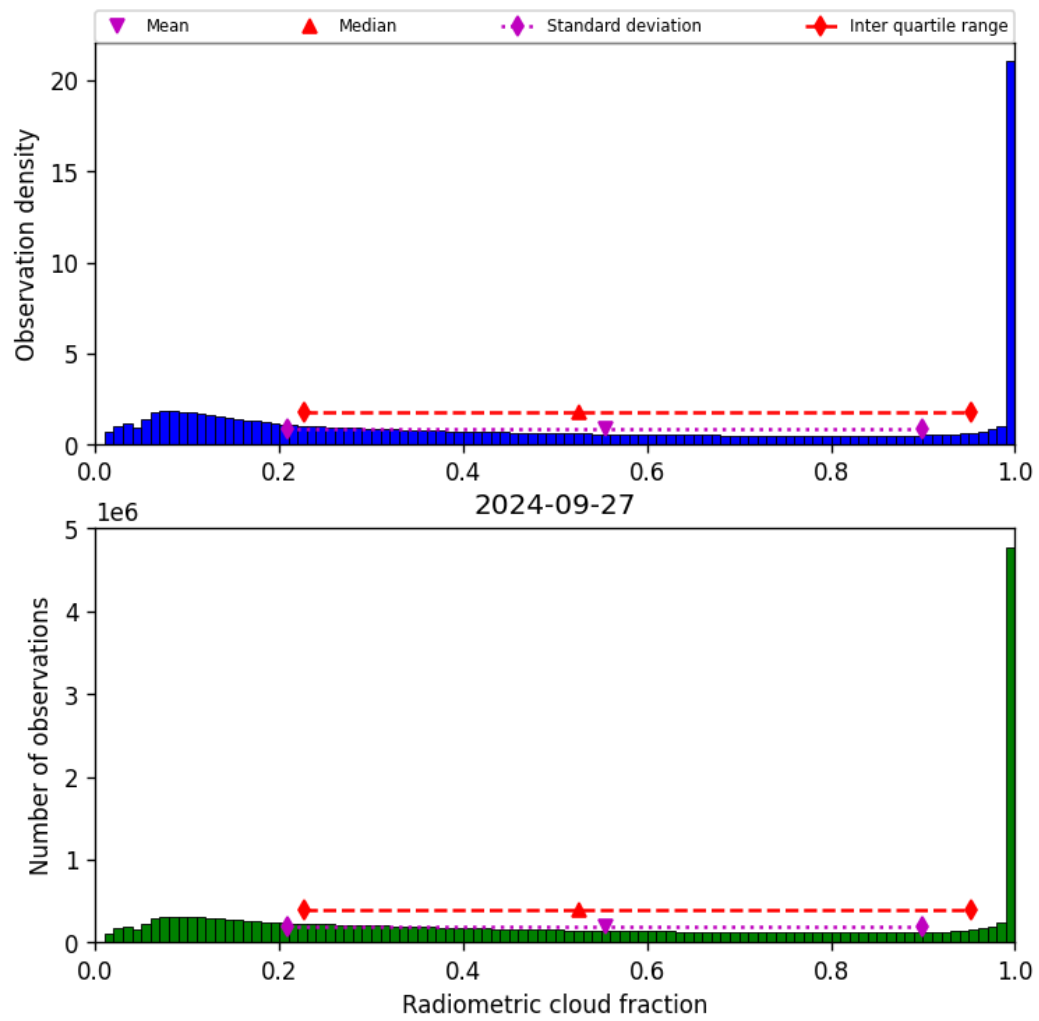


Figure 39: Histogram of “Radiometric cloud fraction” for 2024-09-26 to 2024-09-28

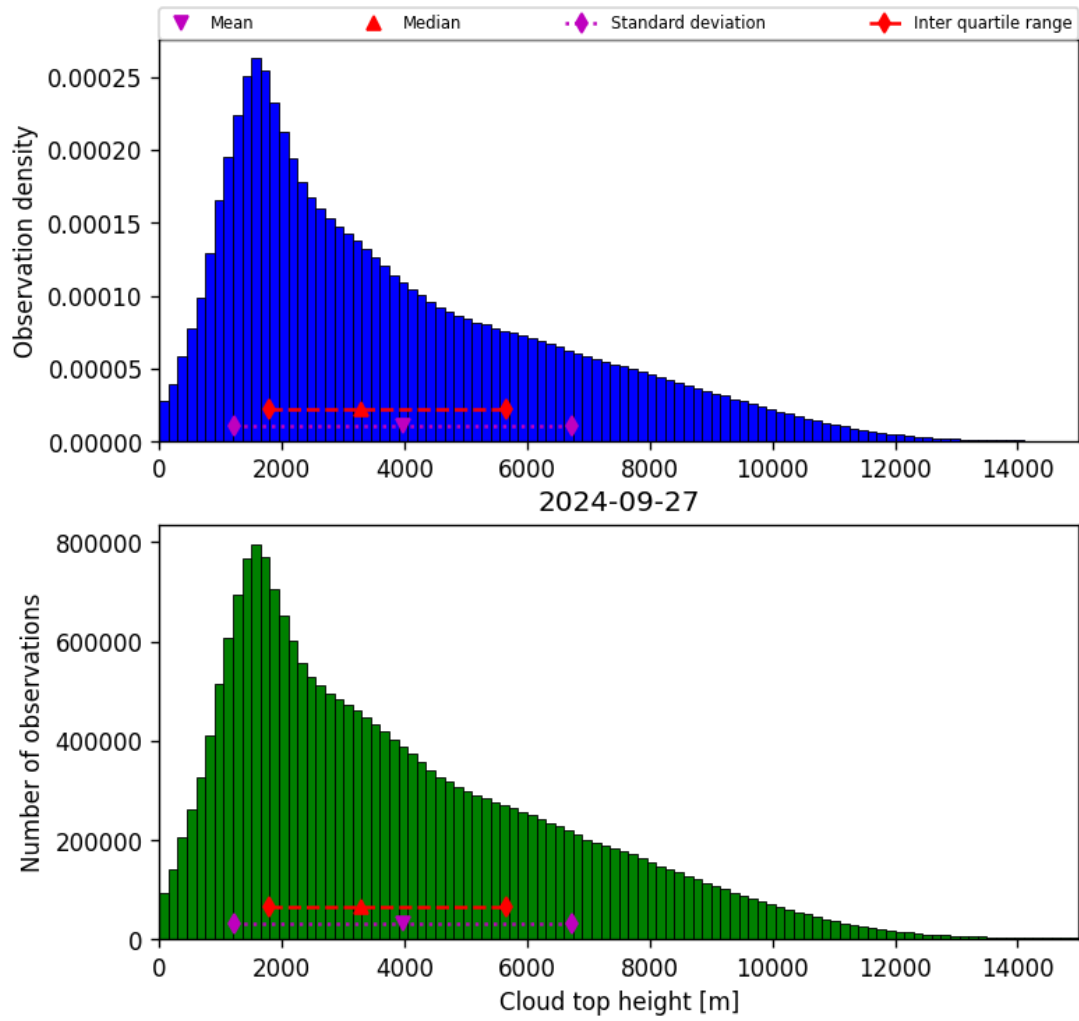


Figure 40: Histogram of “Cloud top height” for 2024-09-26 to 2024-09-28

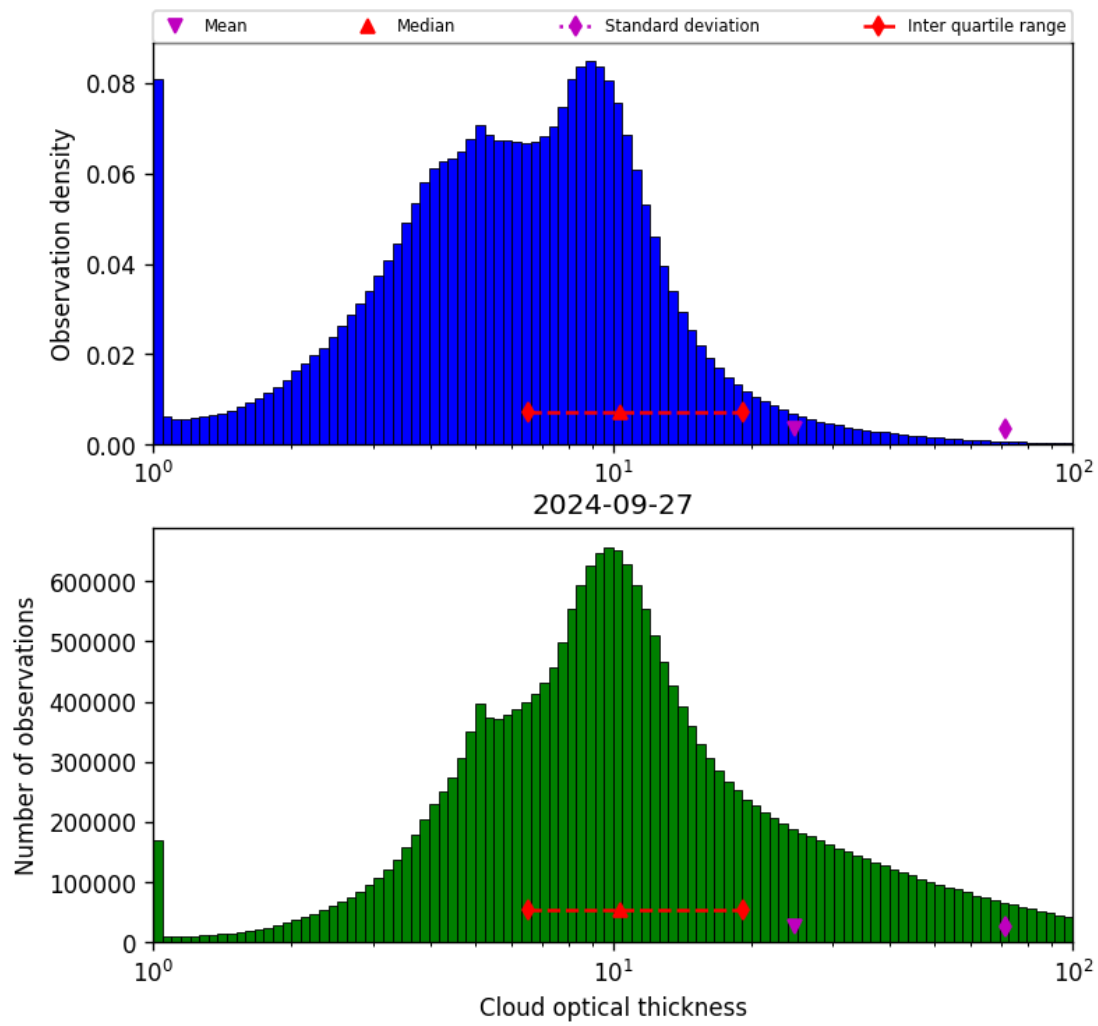


Figure 41: Histogram of “Cloud optical thickness” for 2024-09-26 to 2024-09-28

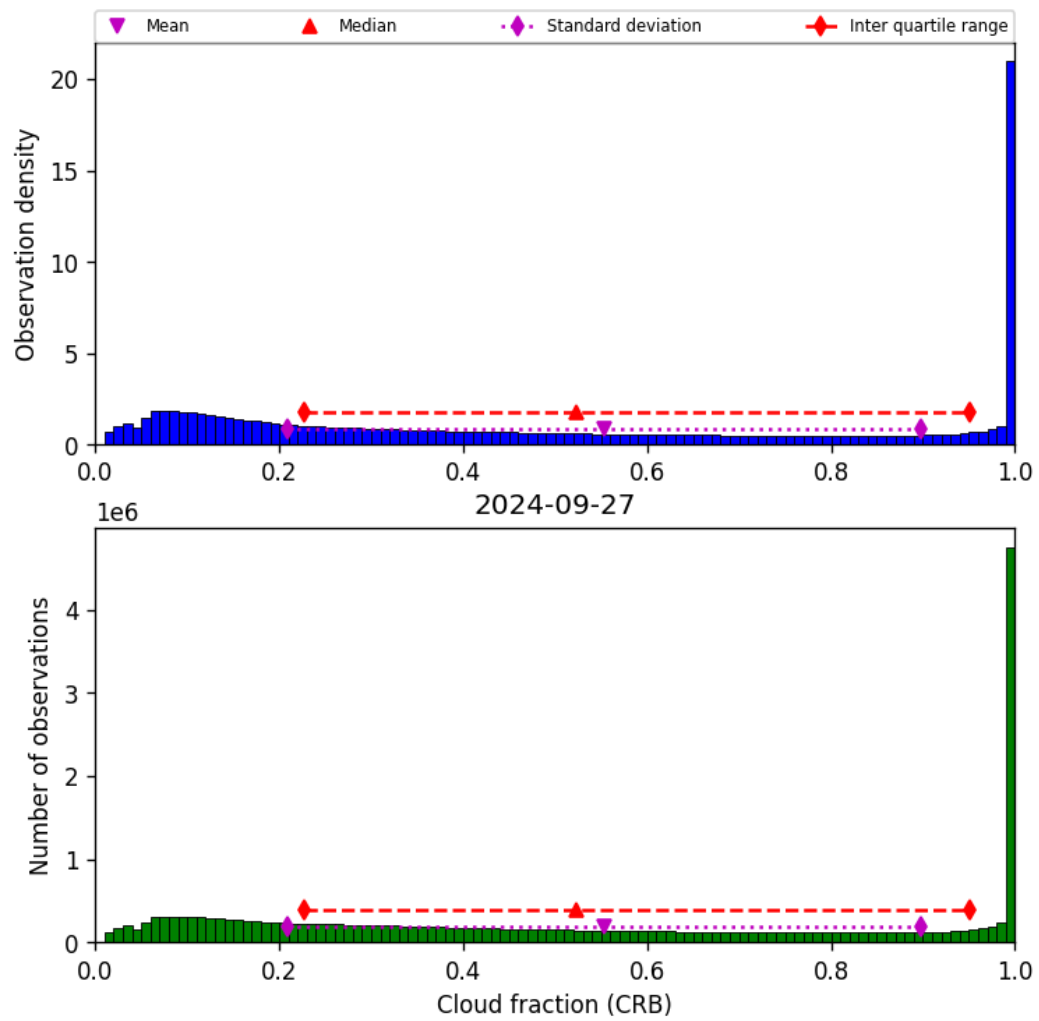


Figure 42: Histogram of “Cloud fraction (CRB)” for 2024-09-26 to 2024-09-28

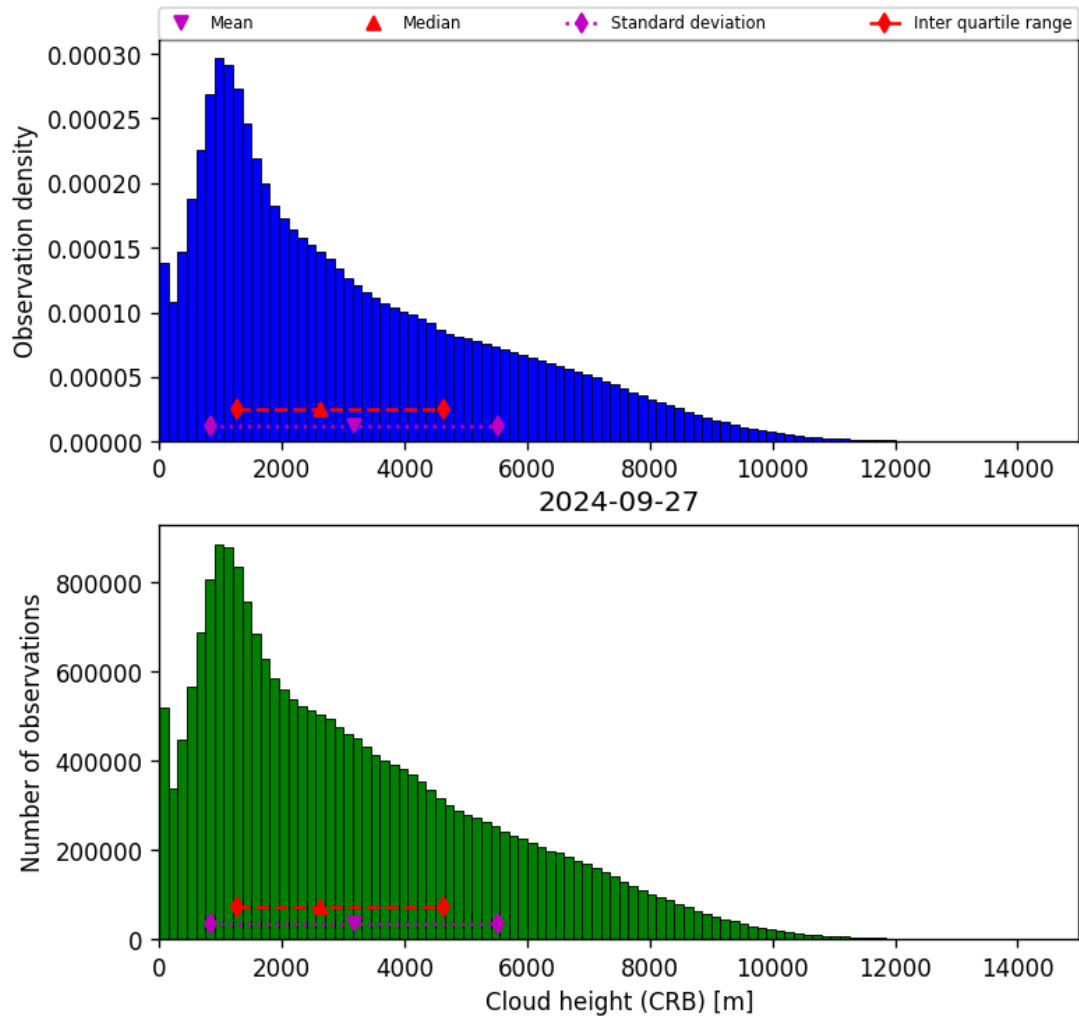


Figure 43: Histogram of “Cloud height (CRB)” for 2024-09-26 to 2024-09-28

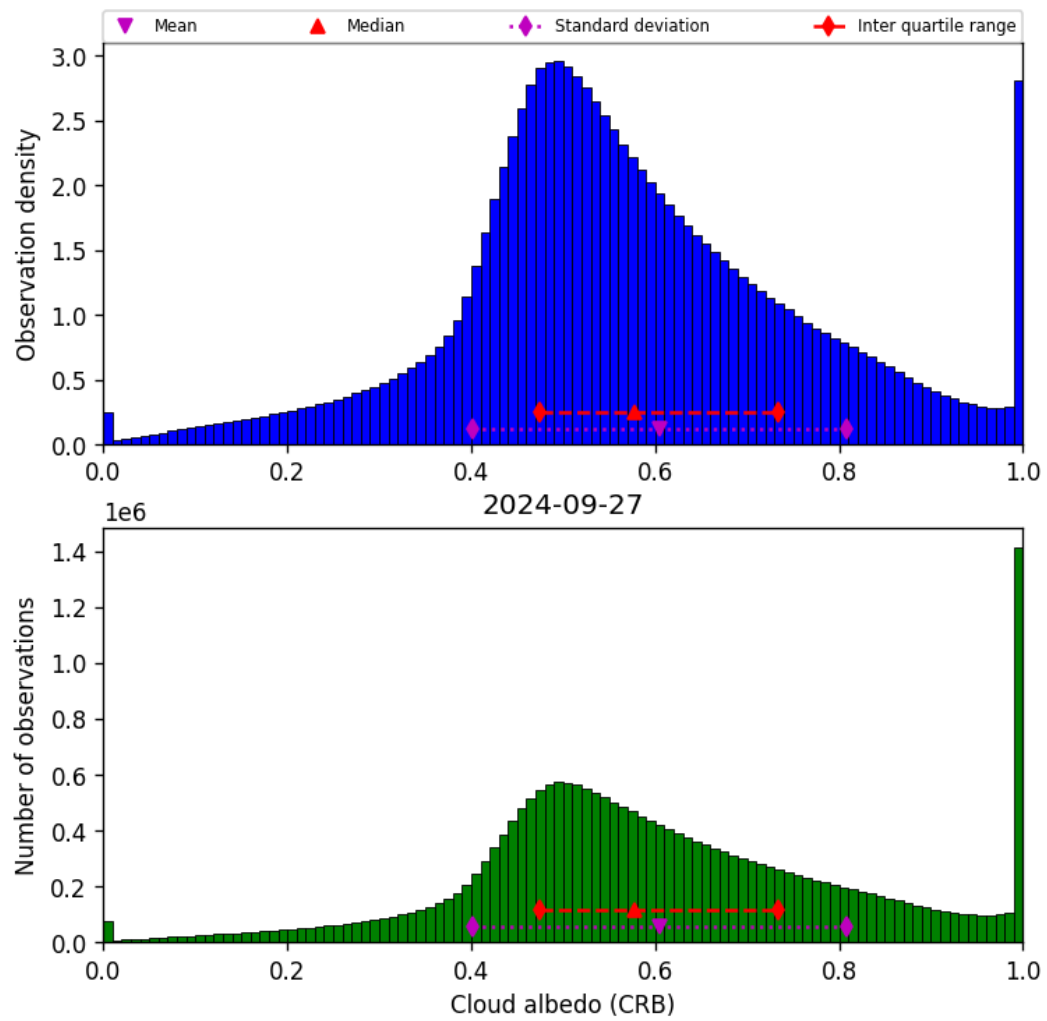


Figure 44: Histogram of “Cloud albedo (CRB)” for 2024-09-26 to 2024-09-28

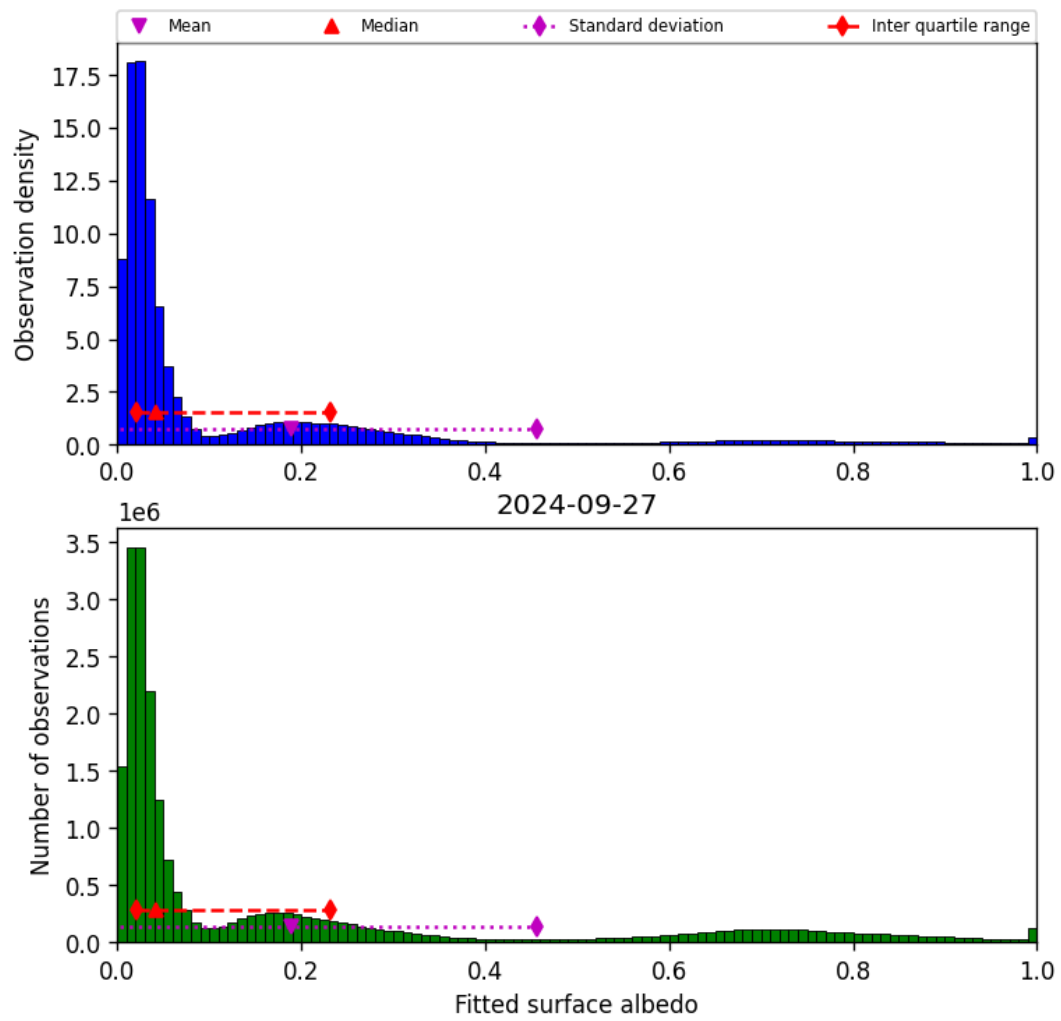


Figure 45: Histogram of “Fitted surface albedo” for 2024-09-26 to 2024-09-28

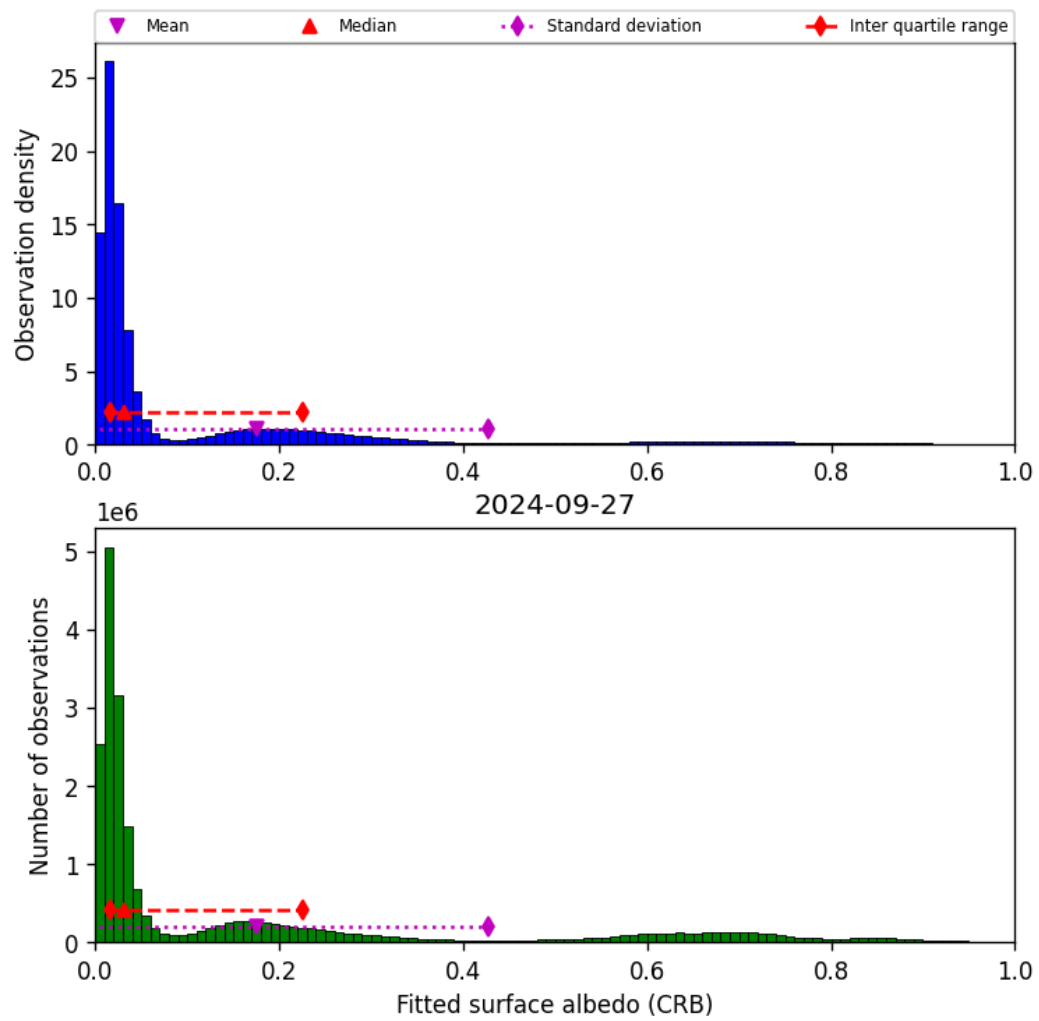


Figure 46: Histogram of “Fitted surface albedo (CRB)” for 2024-09-26 to 2024-09-28

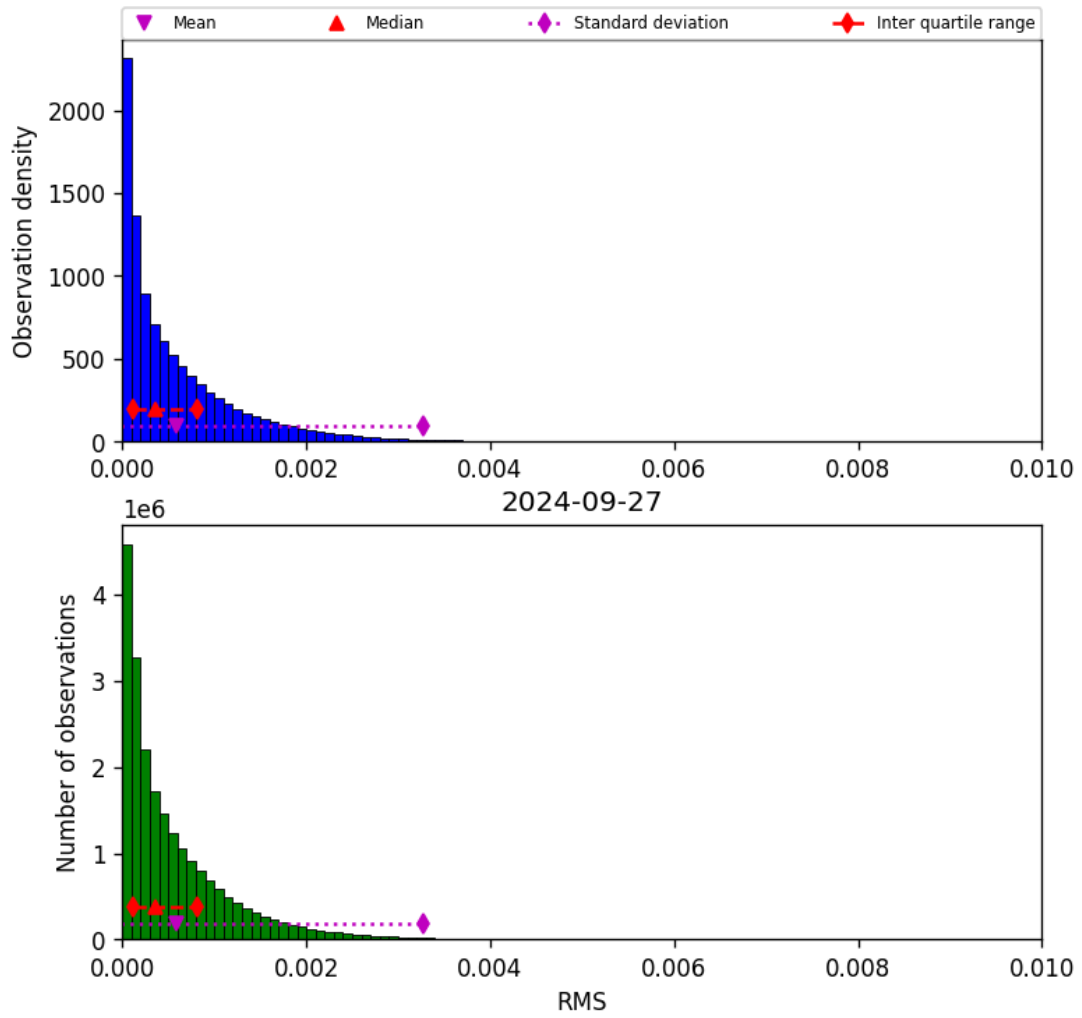


Figure 47: Histogram of “RMS” for 2024-09-26 to 2024-09-28

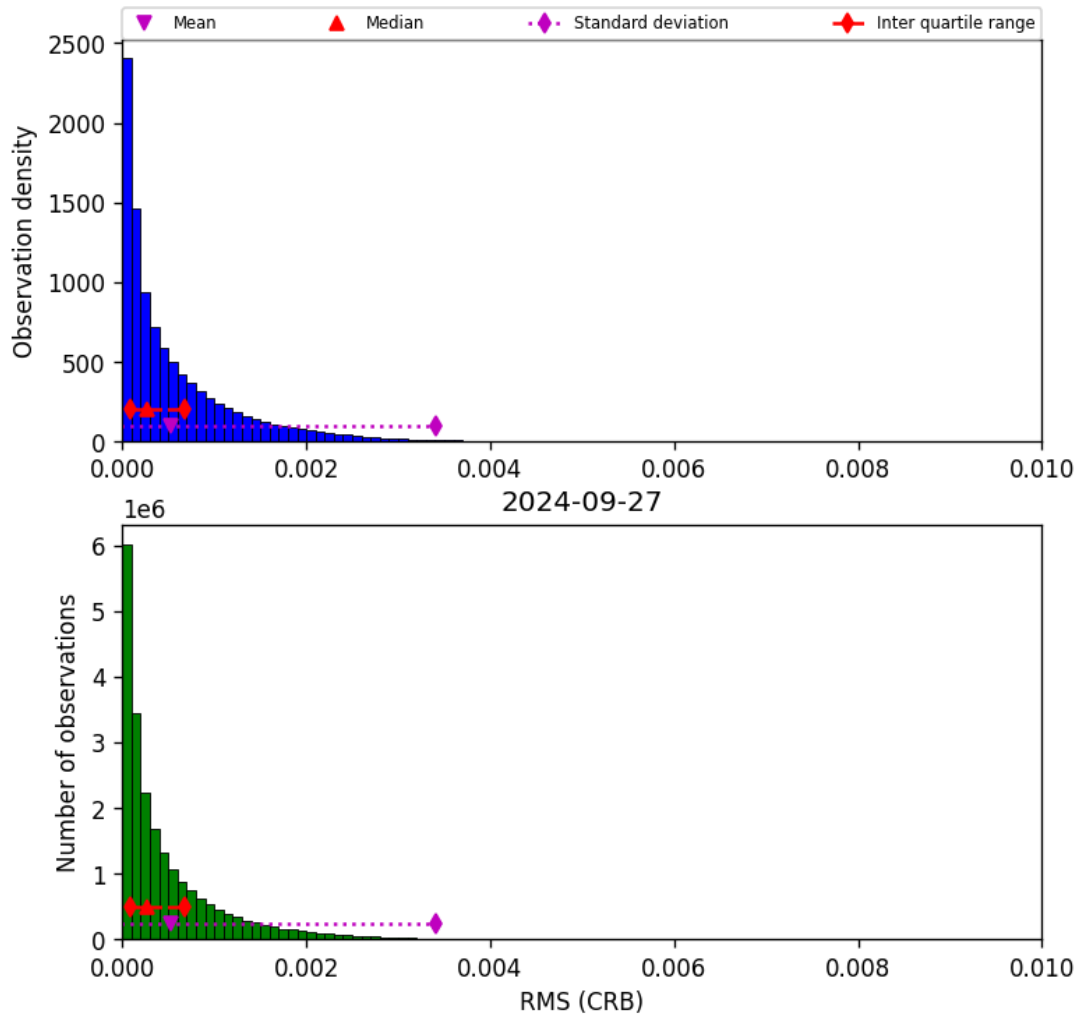


Figure 48: Histogram of “RMS (CRB)” for 2024-09-26 to 2024-09-28

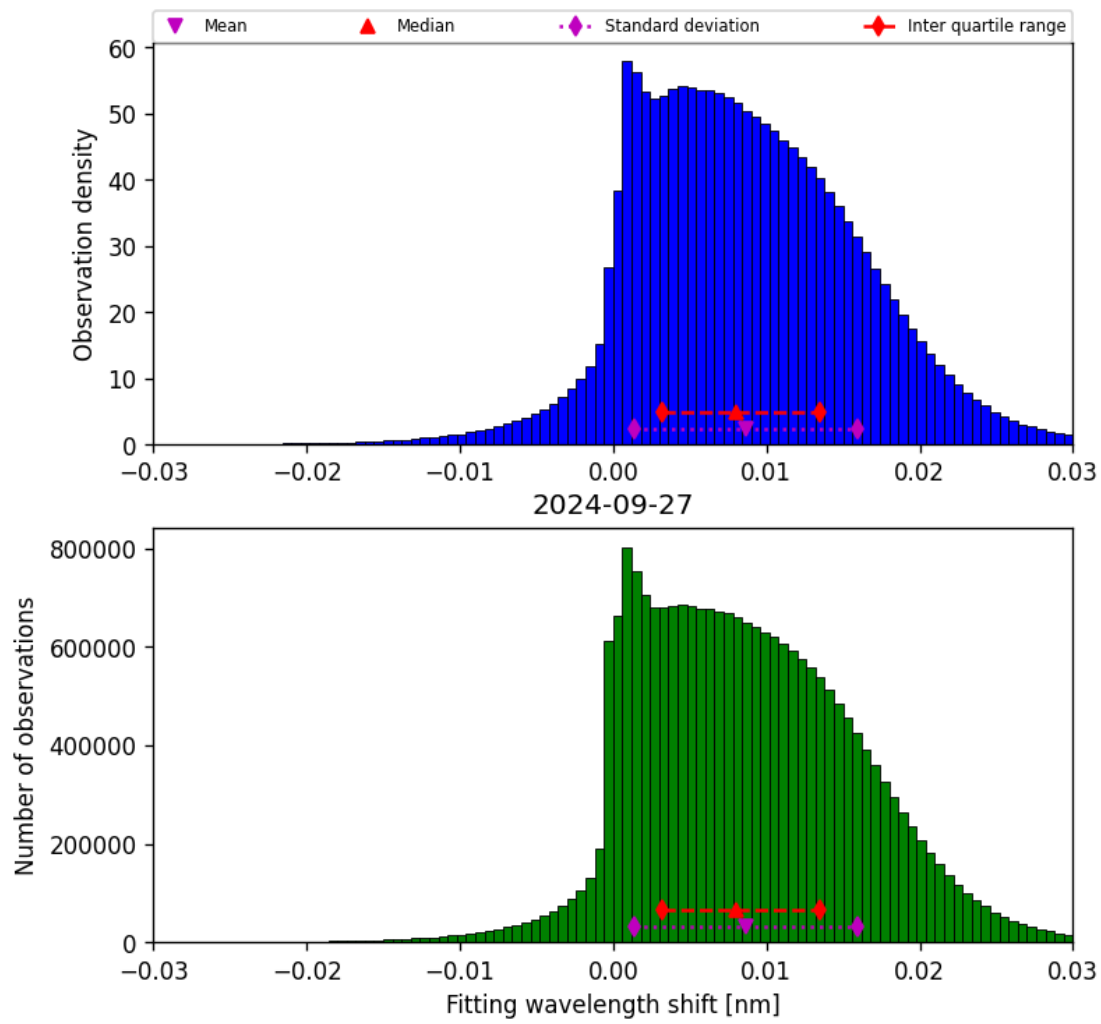


Figure 49: Histogram of “Fitting wavelength shift” for 2024-09-26 to 2024-09-28

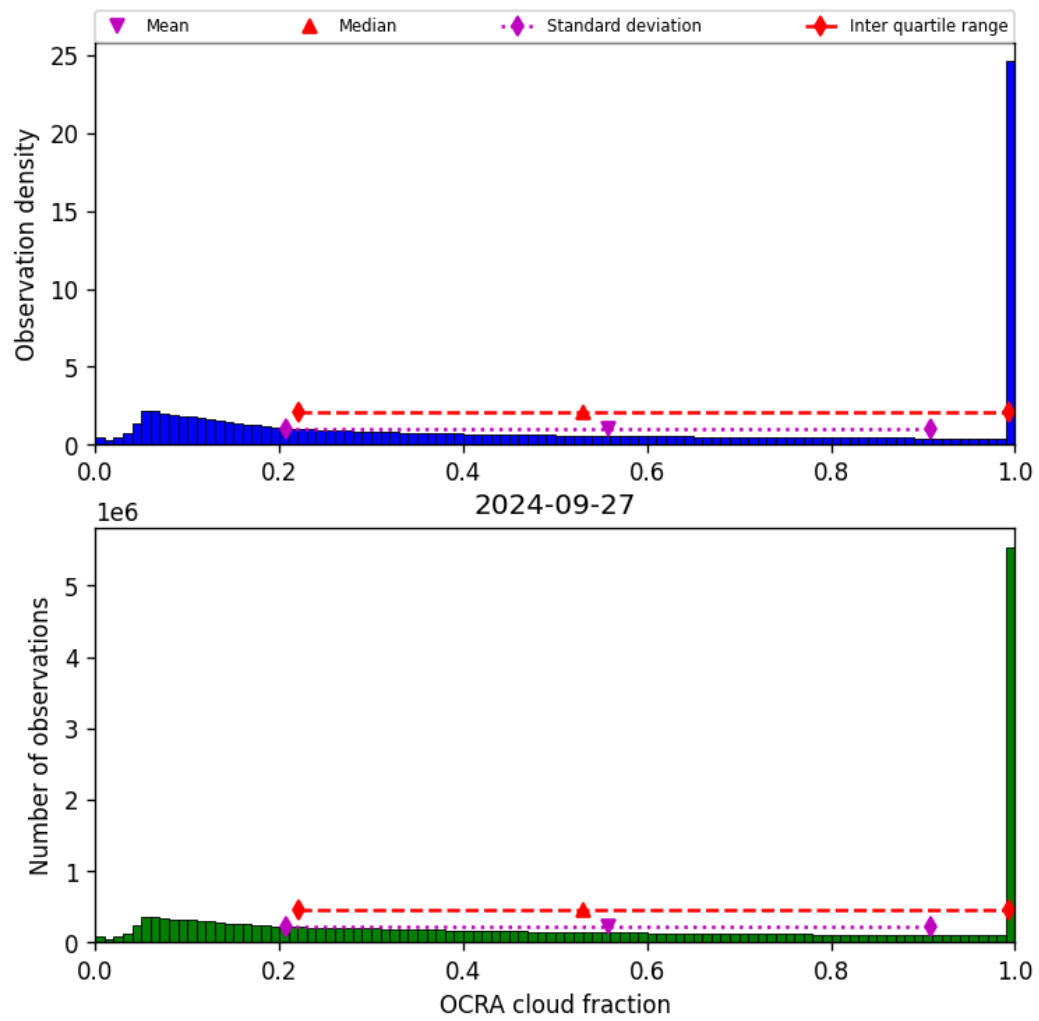


Figure 50: Histogram of “OCRA cloud fraction” for 2024-09-26 to 2024-09-28

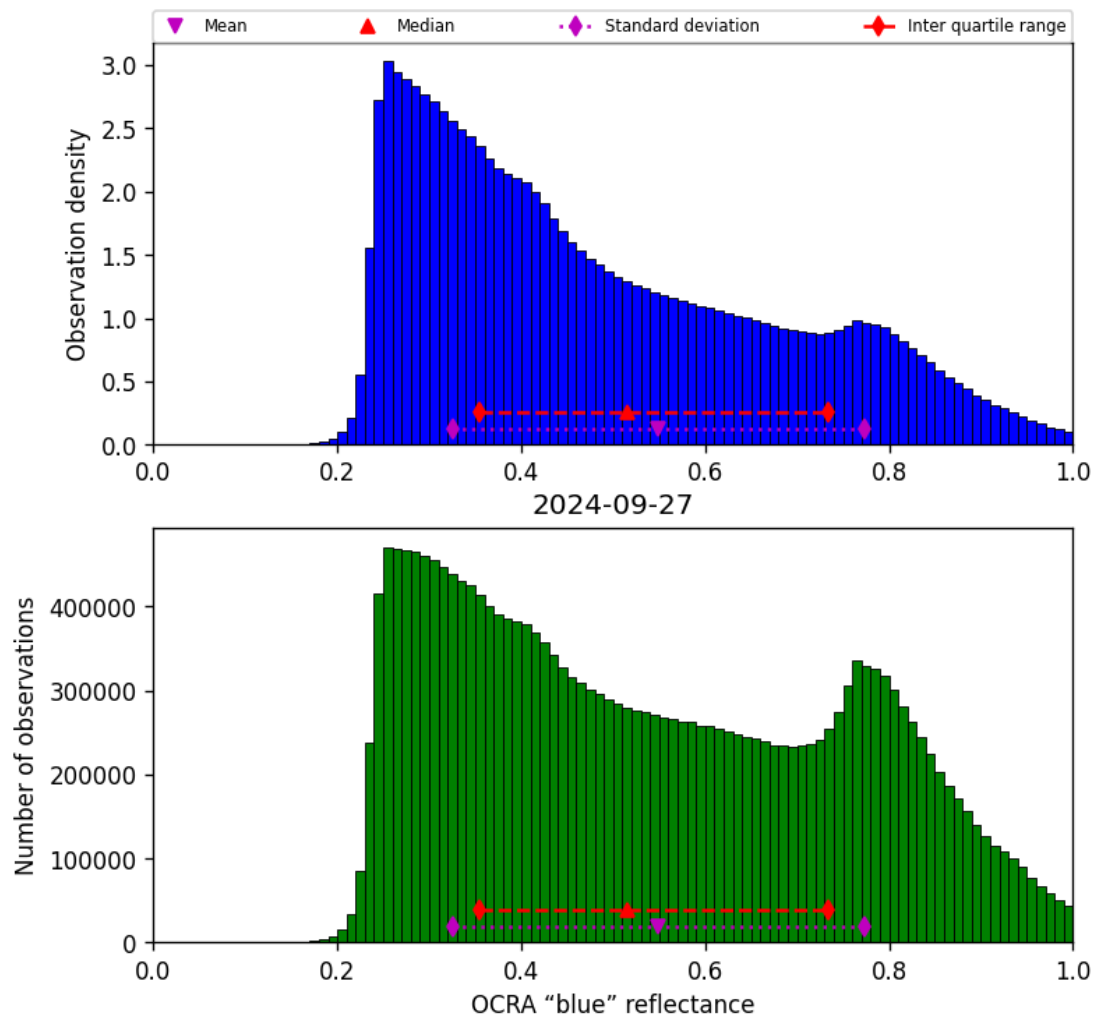


Figure 51: Histogram of “OCRA “blue” reflectance” for 2024-09-26 to 2024-09-28

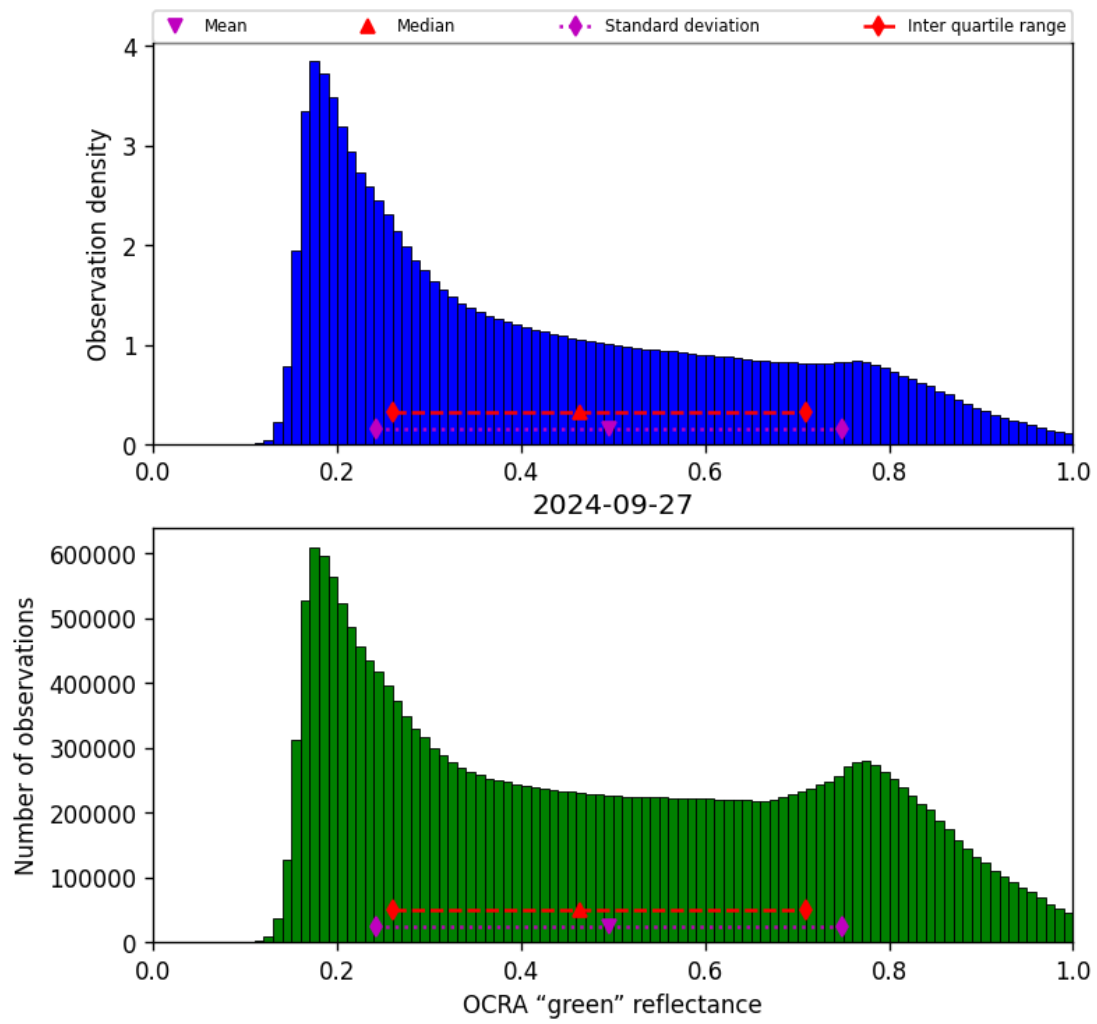


Figure 52: Histogram of “OCRA “green” reflectance” for 2024-09-26 to 2024-09-28

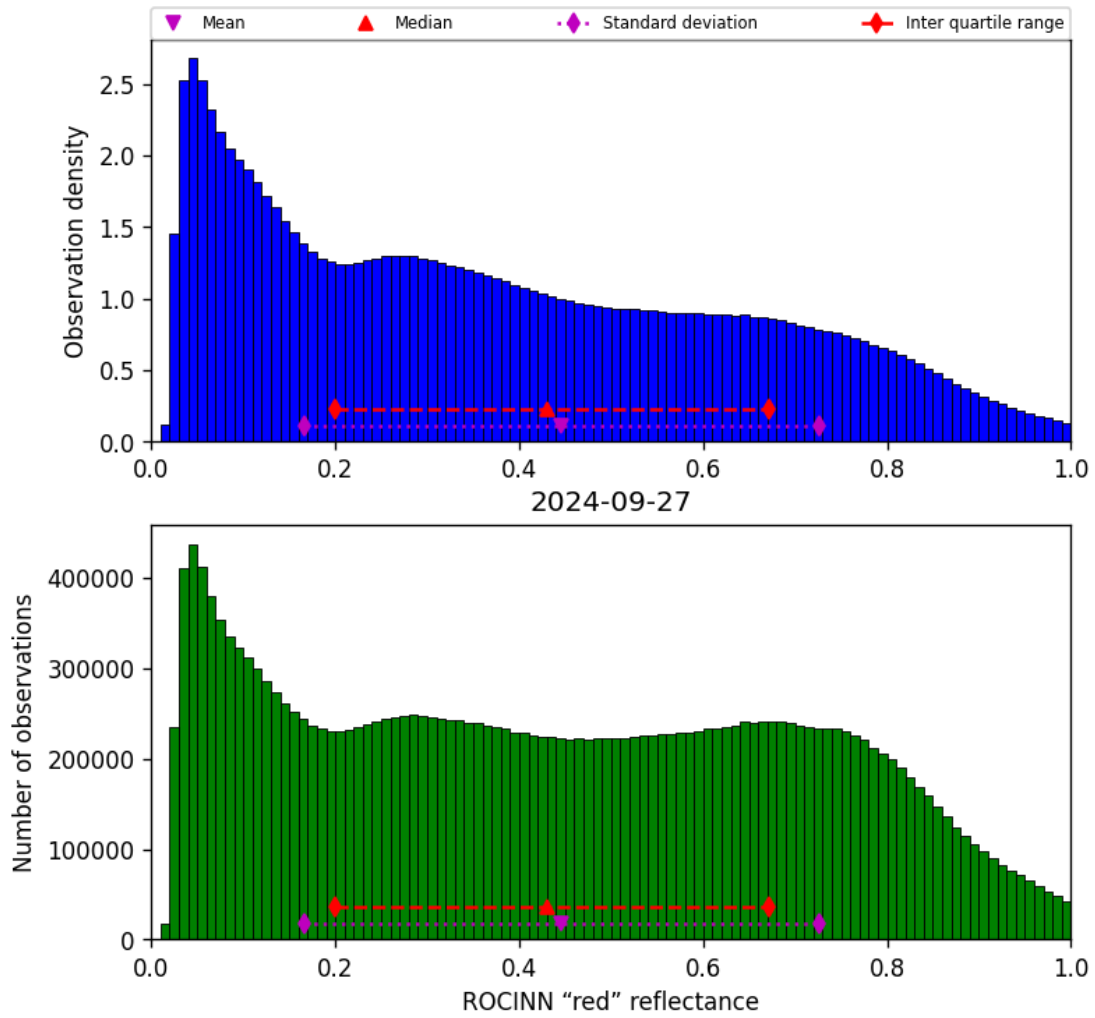


Figure 53: Histogram of “ROCINN “red” reflectance” for 2024-09-26 to 2024-09-28

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.

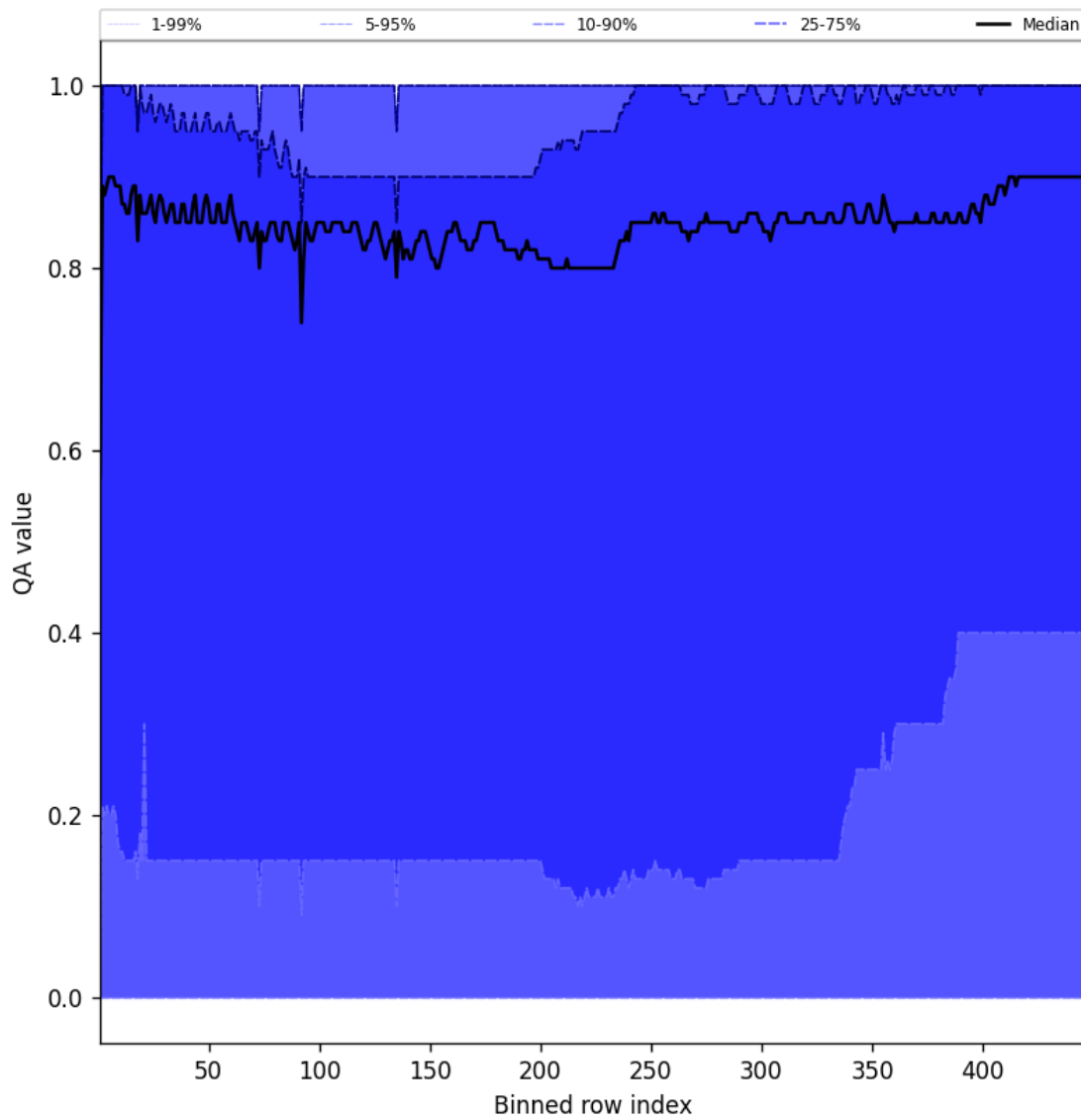


Figure 54: Along track statistics of “QA value” for 2024-09-26 to 2024-09-28

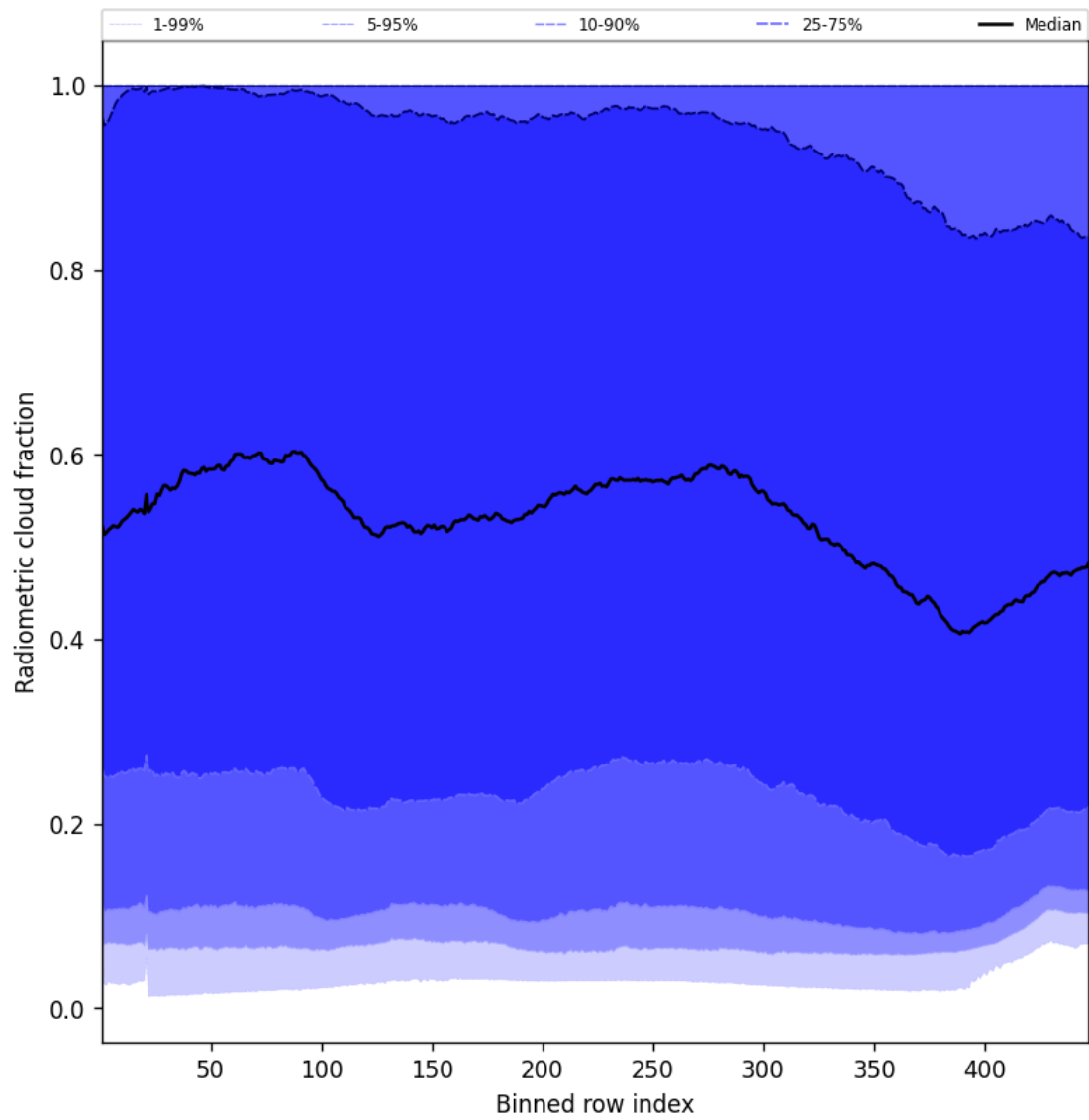


Figure 55: Along track statistics of “Radiometric cloud fraction” for 2024-09-26 to 2024-09-28

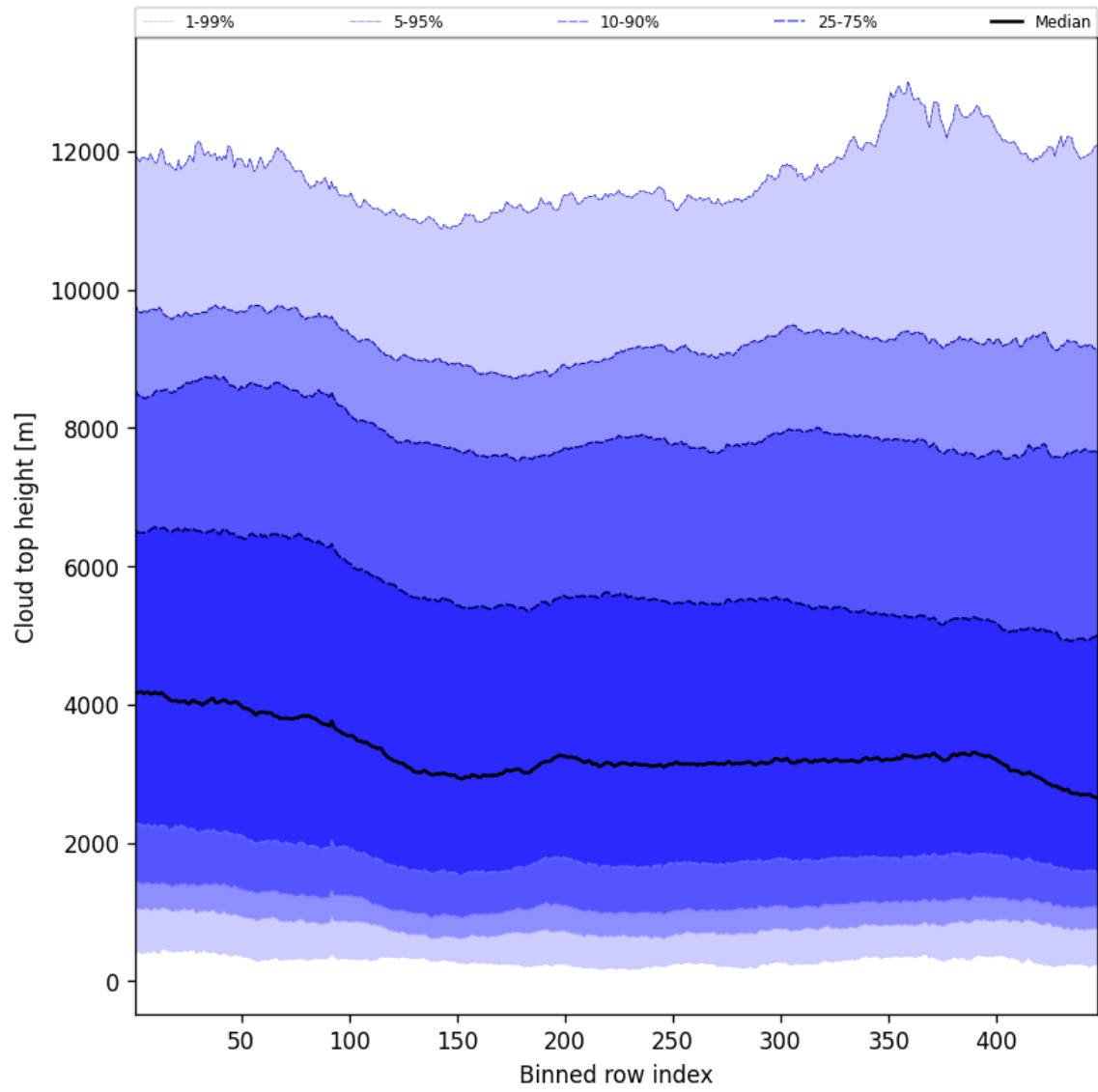


Figure 56: Along track statistics of “Cloud top height” for 2024-09-26 to 2024-09-28

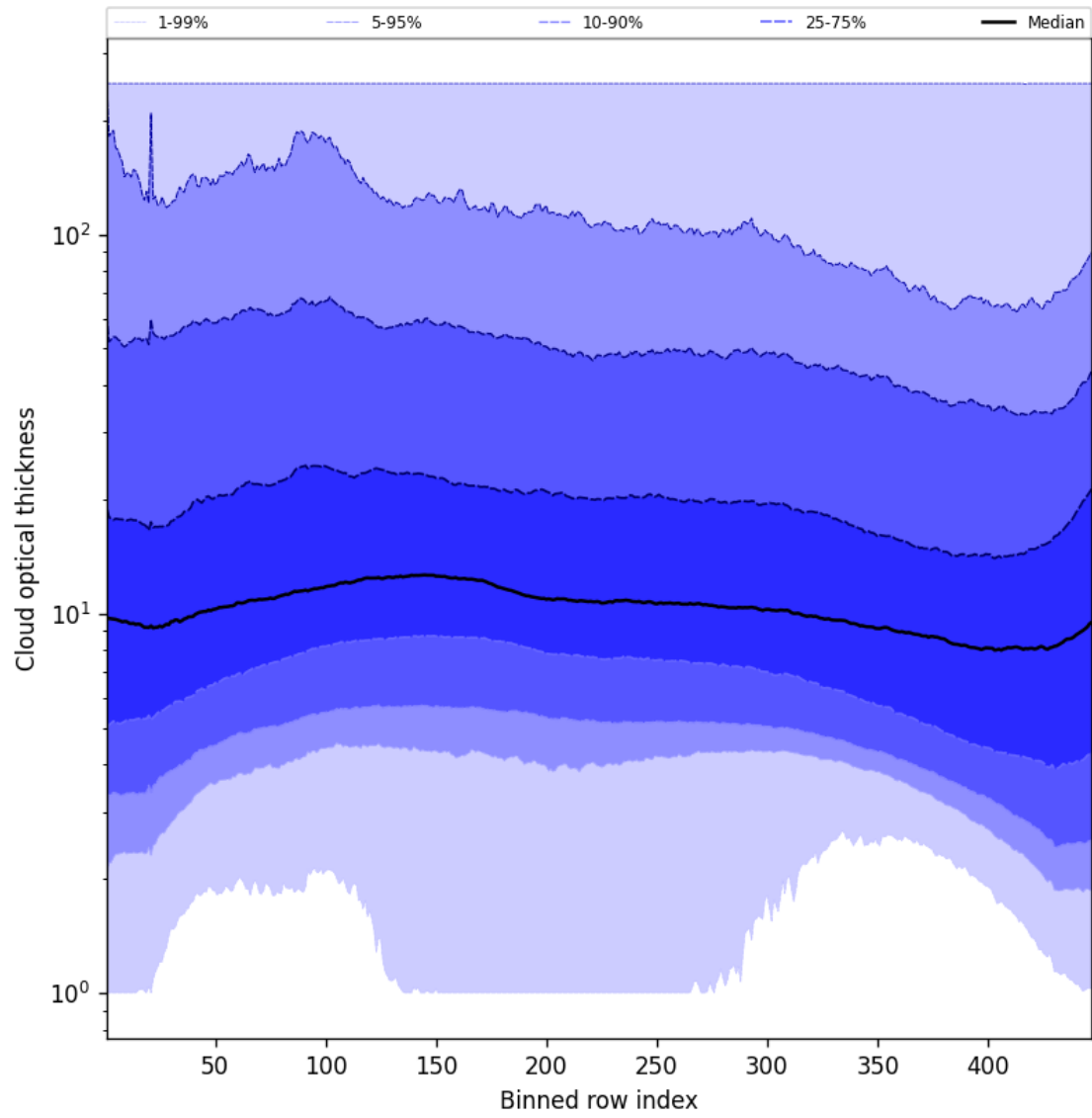


Figure 57: Along track statistics of “Cloud optical thickness” for 2024-09-26 to 2024-09-28

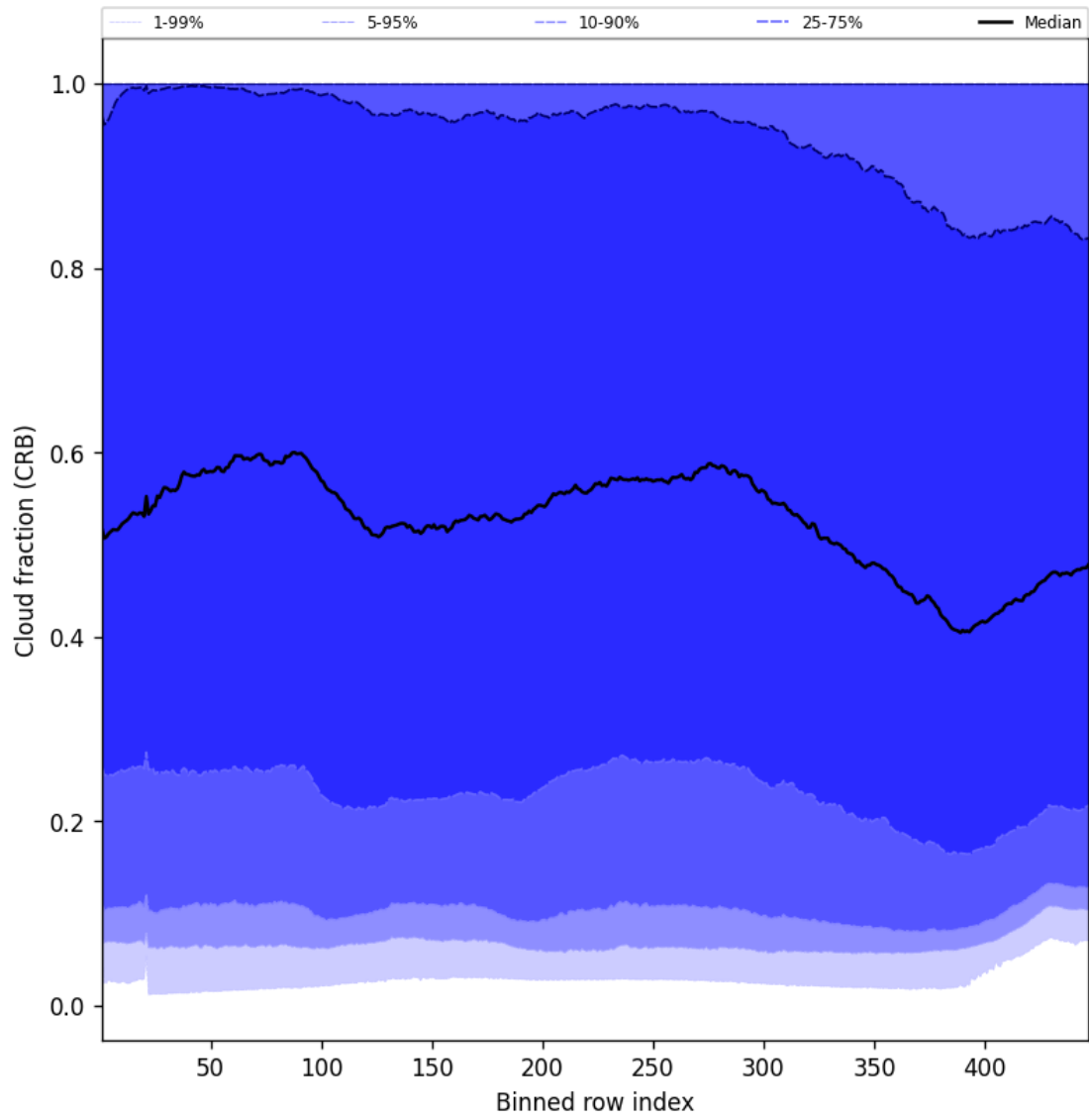


Figure 58: Along track statistics of “Cloud fraction (CRB)” for 2024-09-26 to 2024-09-28

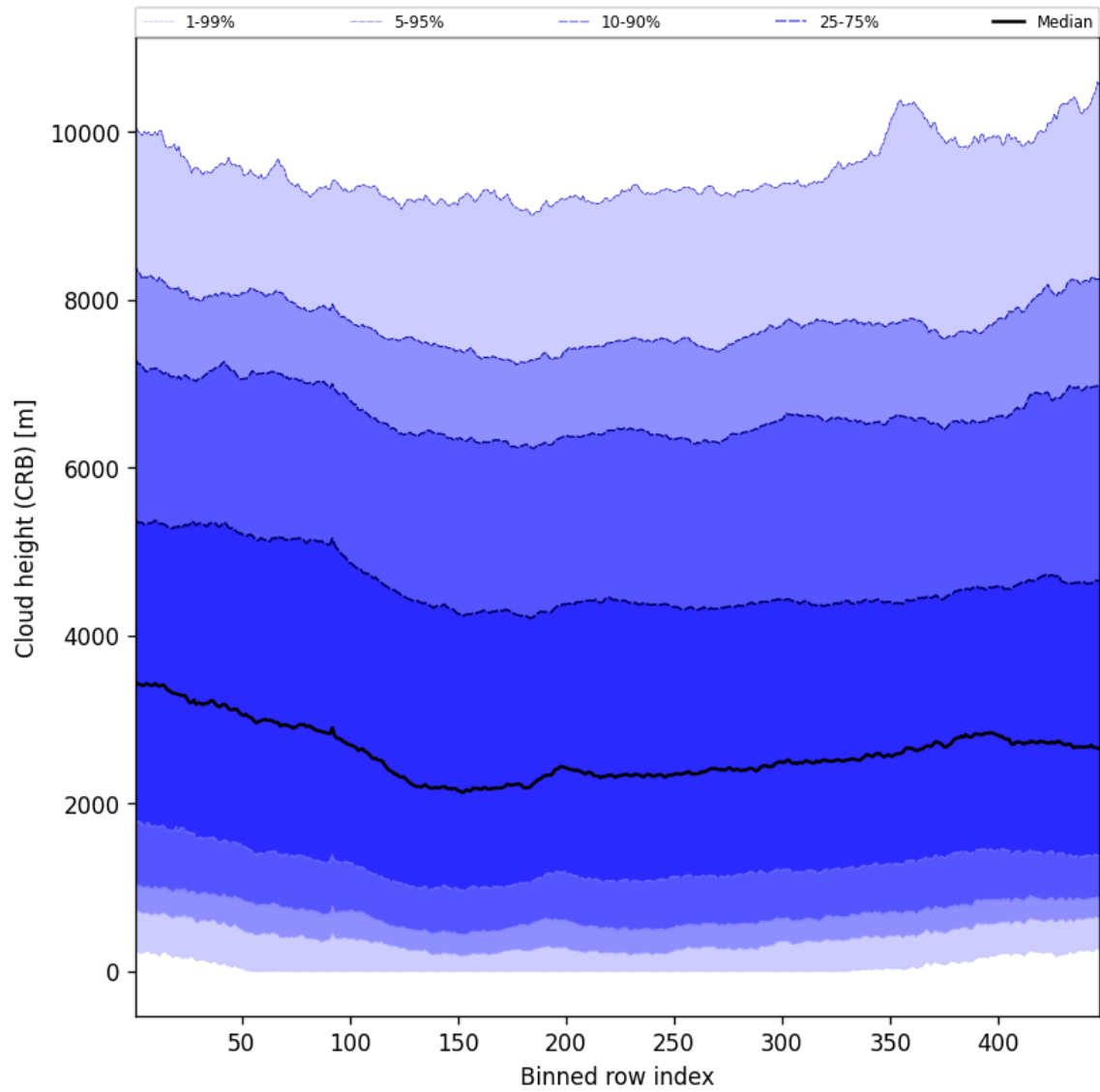


Figure 59: Along track statistics of “Cloud height (CRB)” for 2024-09-26 to 2024-09-28

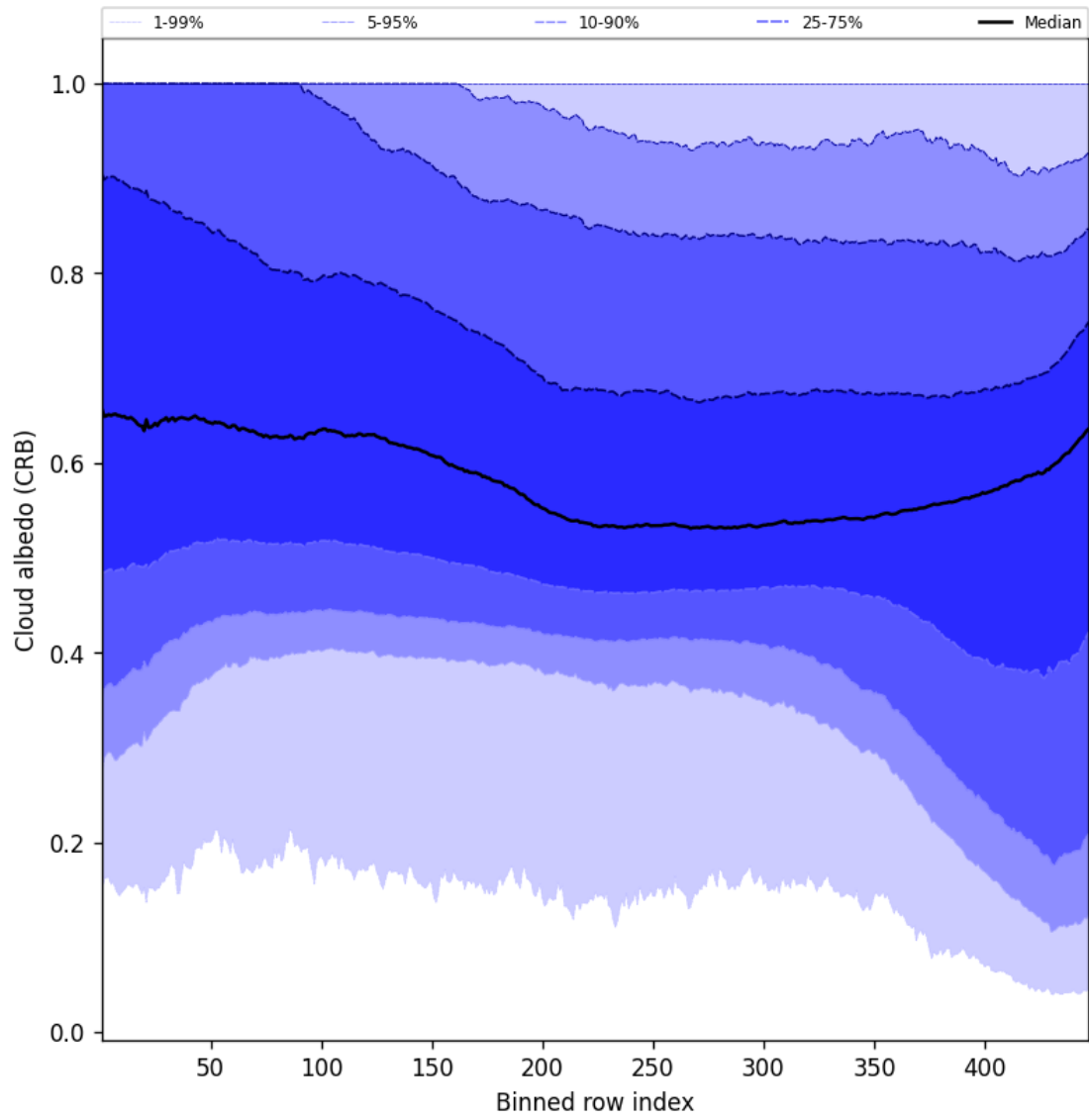


Figure 60: Along track statistics of “Cloud albedo (CRB)” for 2024-09-26 to 2024-09-28

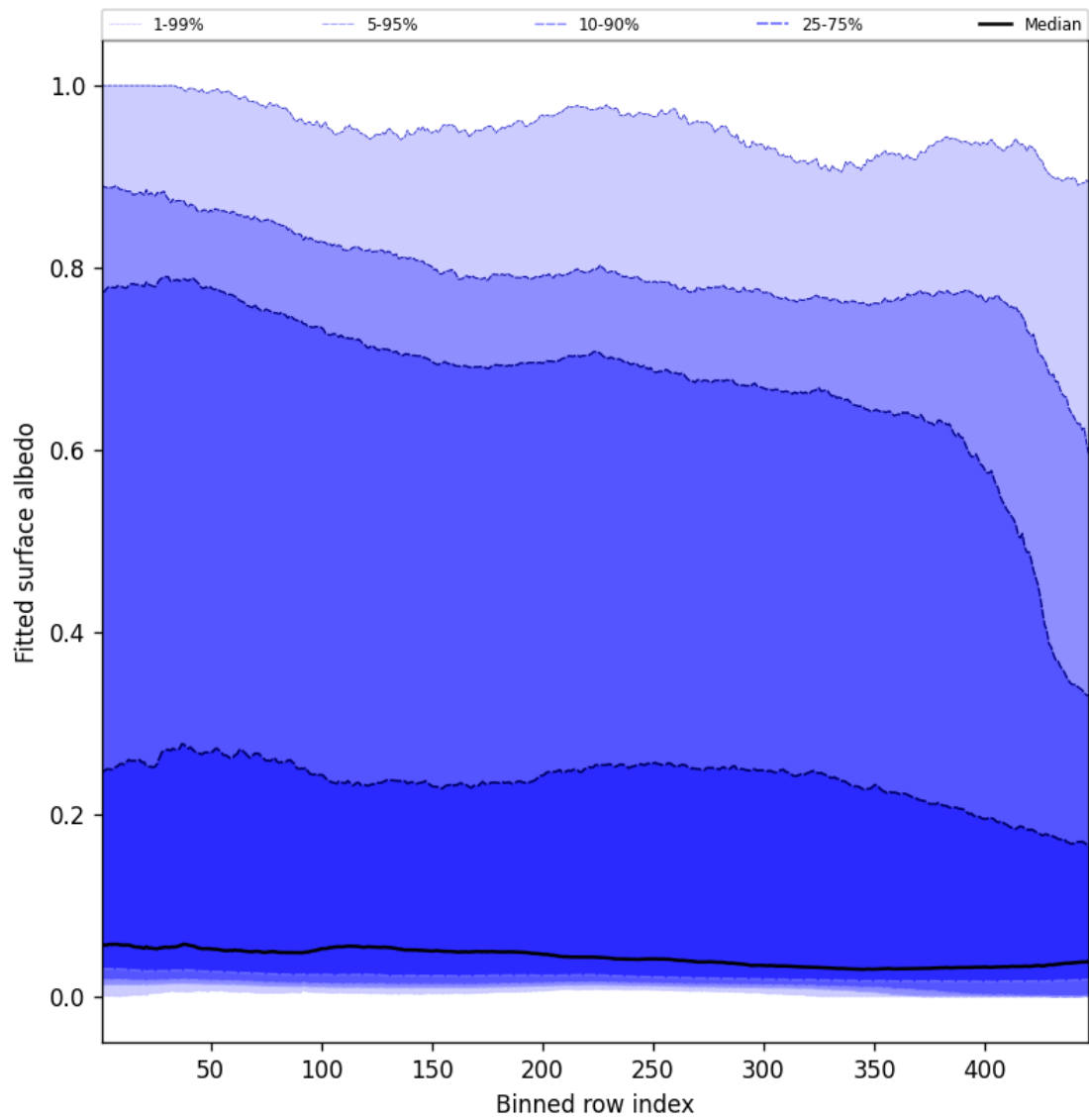


Figure 61: Along track statistics of “Fitted surface albedo” for 2024-09-26 to 2024-09-28

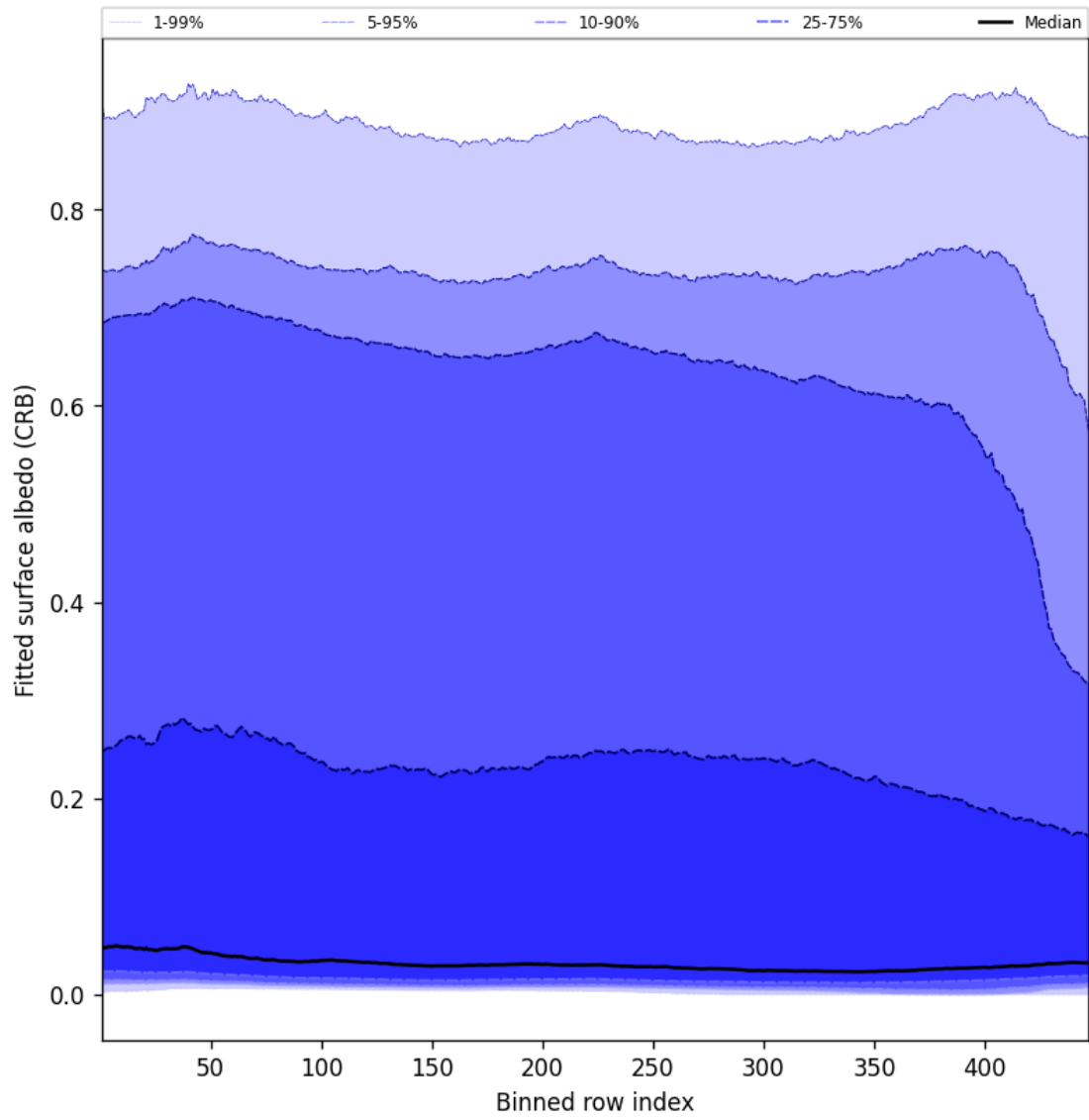


Figure 62: Along track statistics of “Fitted surface albedo (CRB)” for 2024-09-26 to 2024-09-28

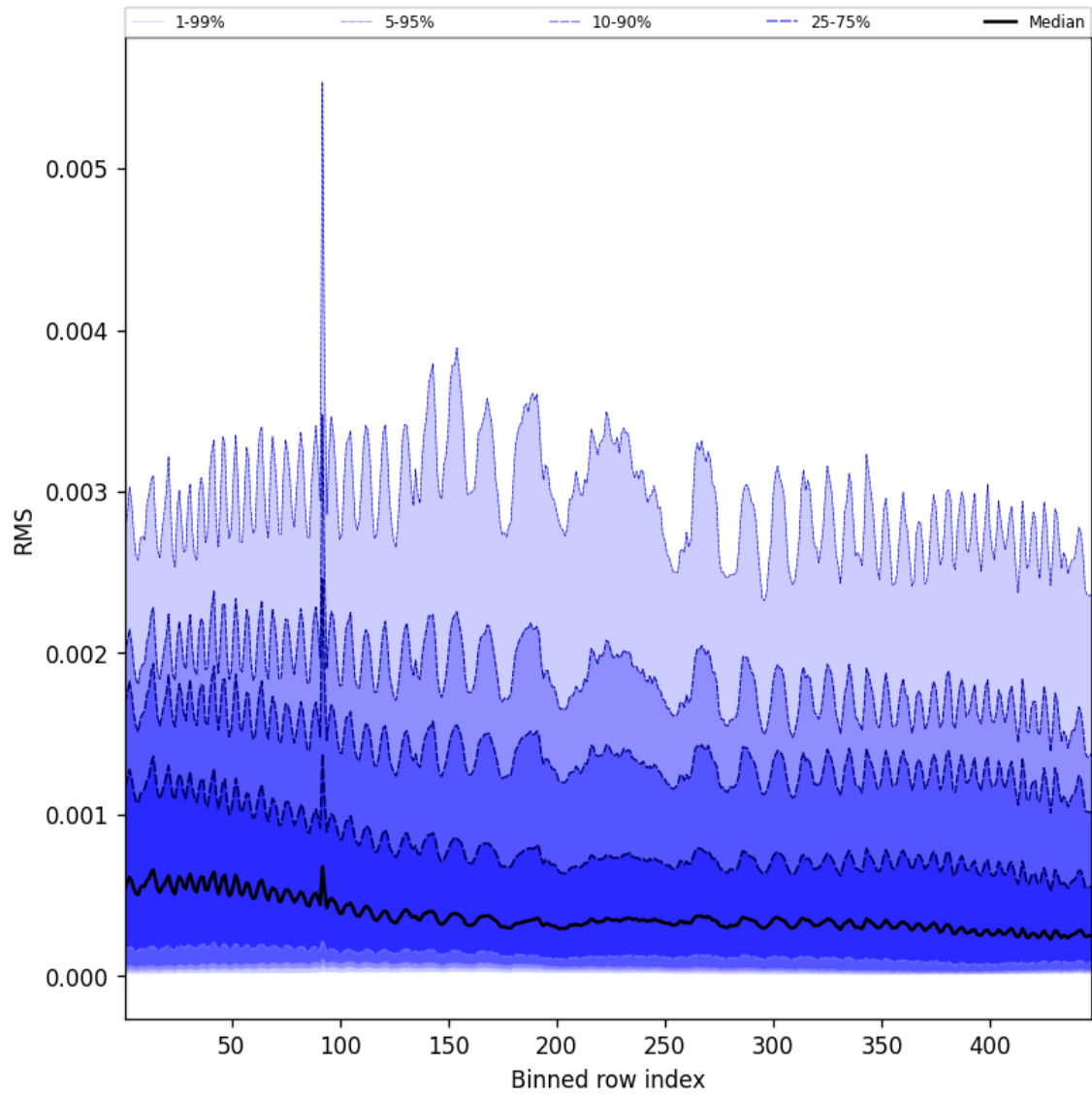


Figure 63: Along track statistics of “RMS” for 2024-09-26 to 2024-09-28

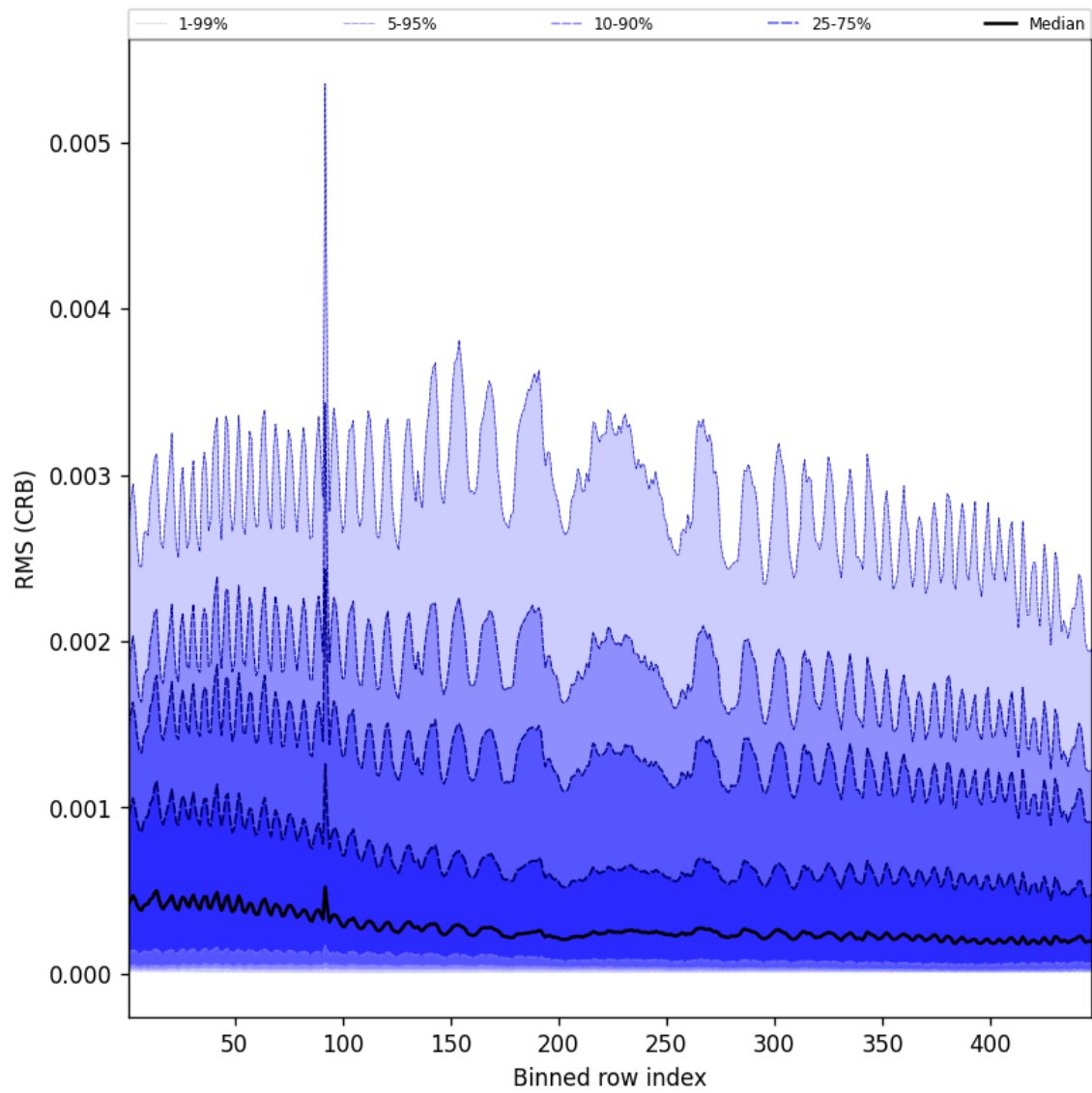


Figure 64: Along track statistics of “RMS (CRB)” for 2024-09-26 to 2024-09-28

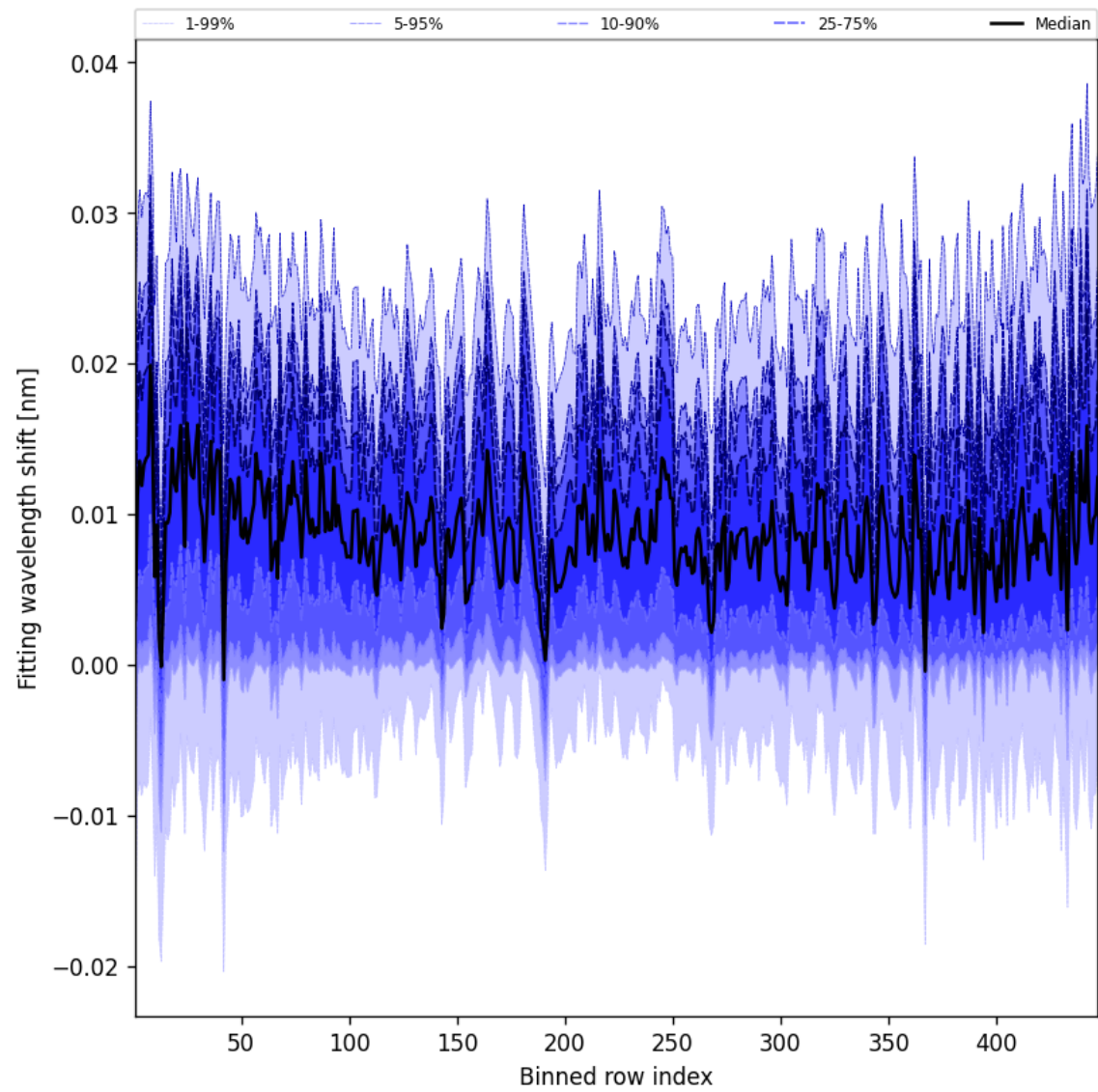


Figure 65: Along track statistics of “Fitting wavelength shift” for 2024-09-26 to 2024-09-28

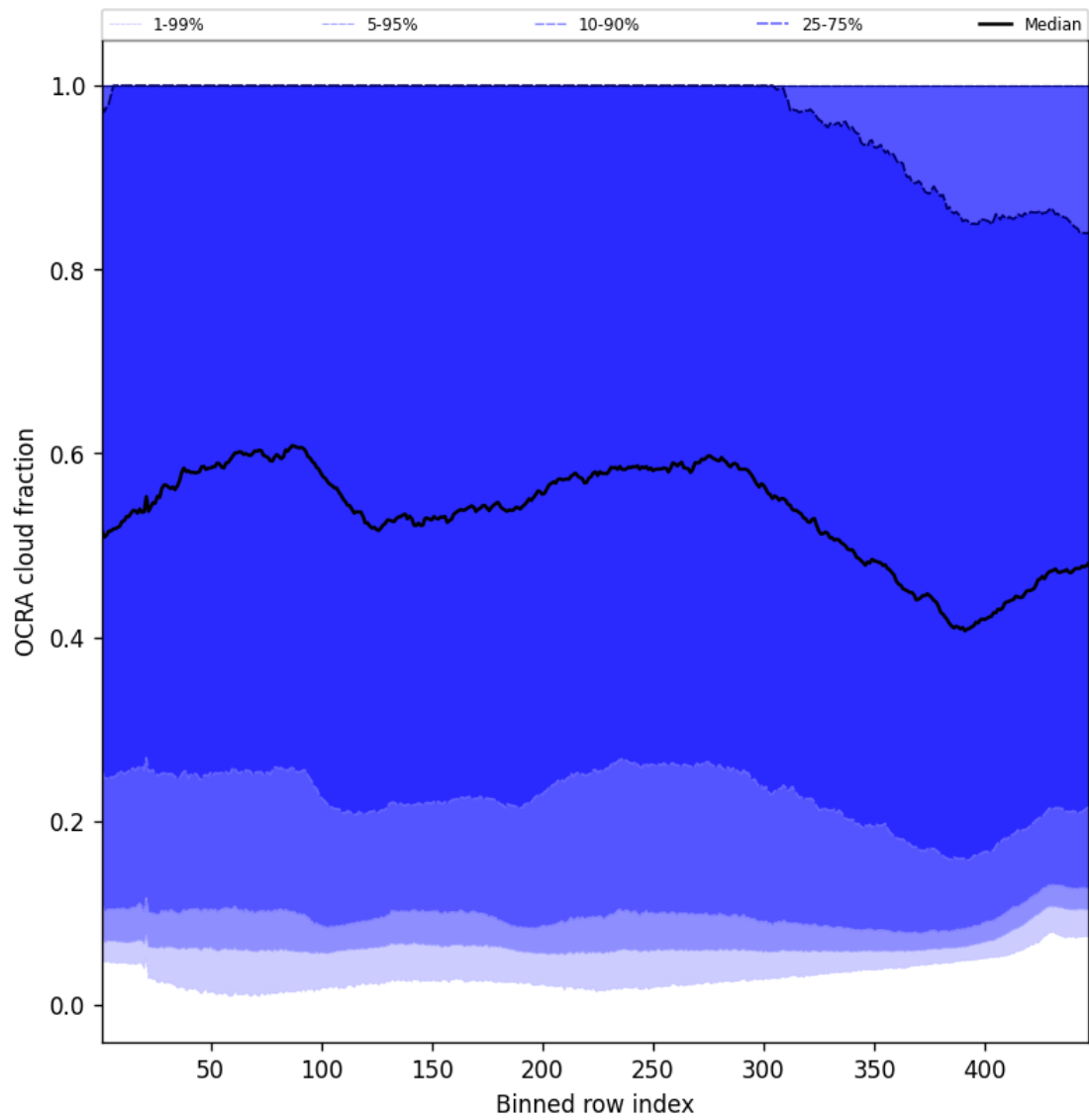


Figure 66: Along track statistics of “OCRA cloud fraction” for 2024-09-26 to 2024-09-28

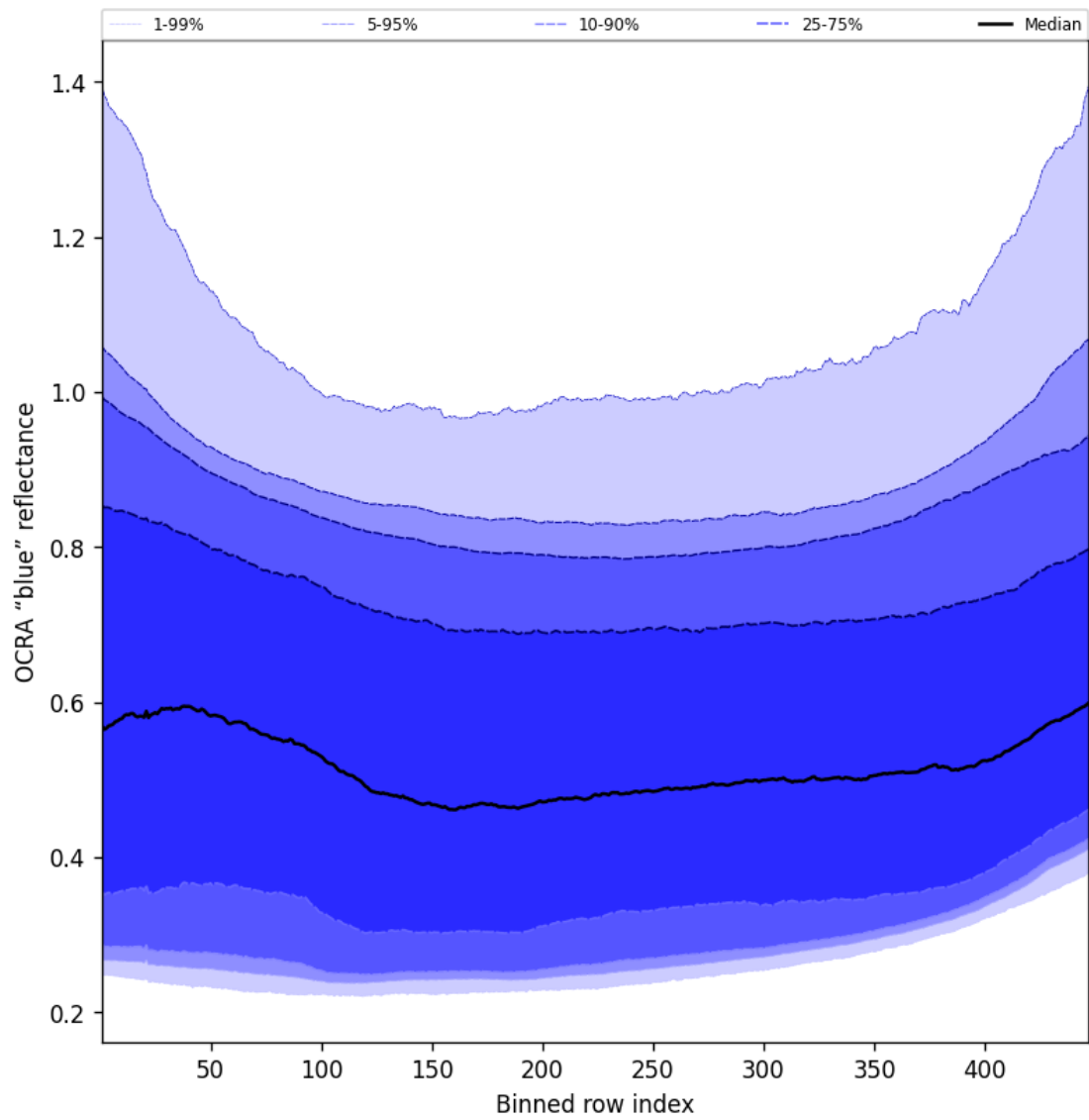


Figure 67: Along track statistics of “OCRA “blue” reflectance” for 2024-09-26 to 2024-09-28

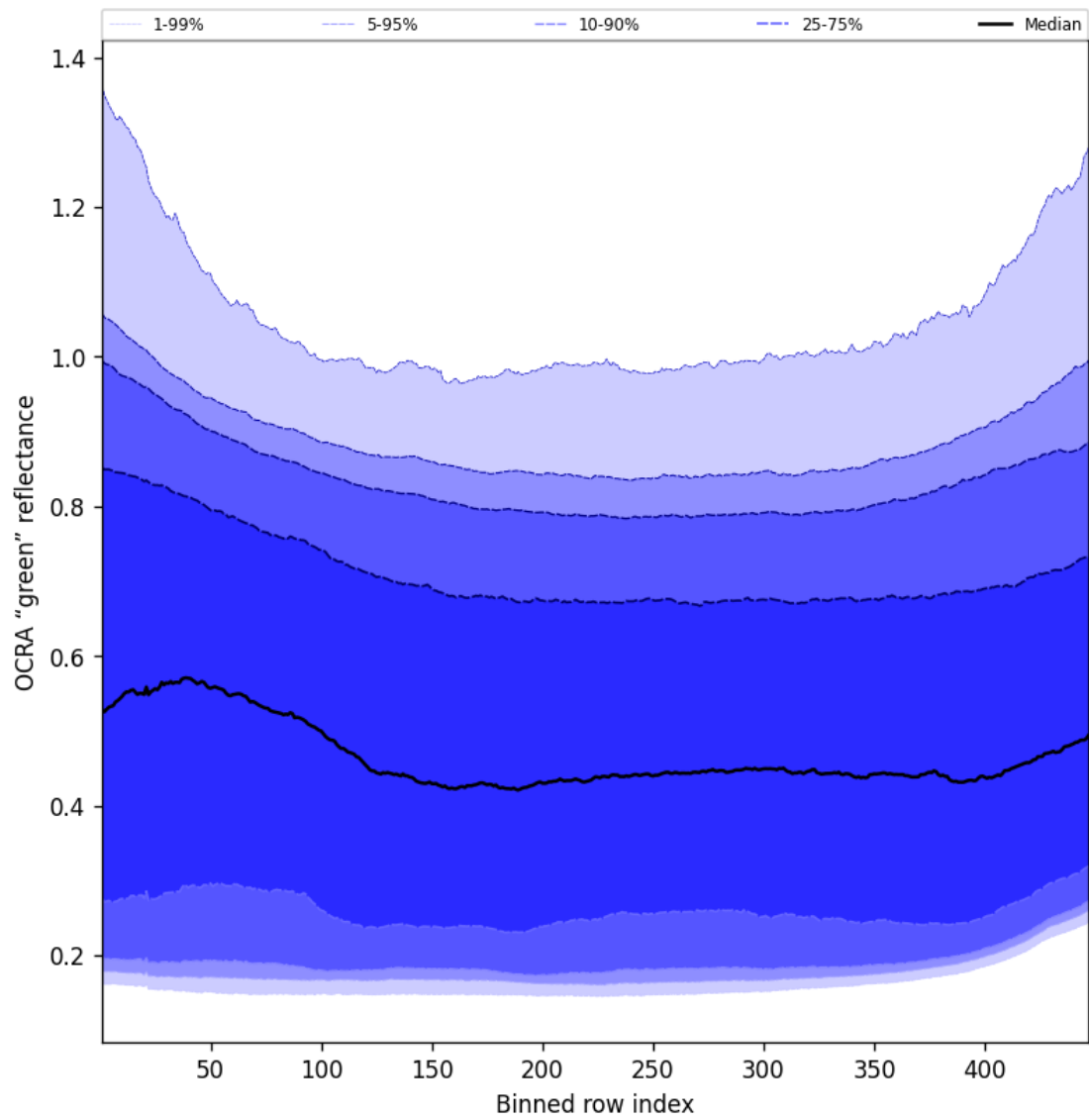


Figure 68: Along track statistics of “OCRA “green” reflectance” for 2024-09-26 to 2024-09-28

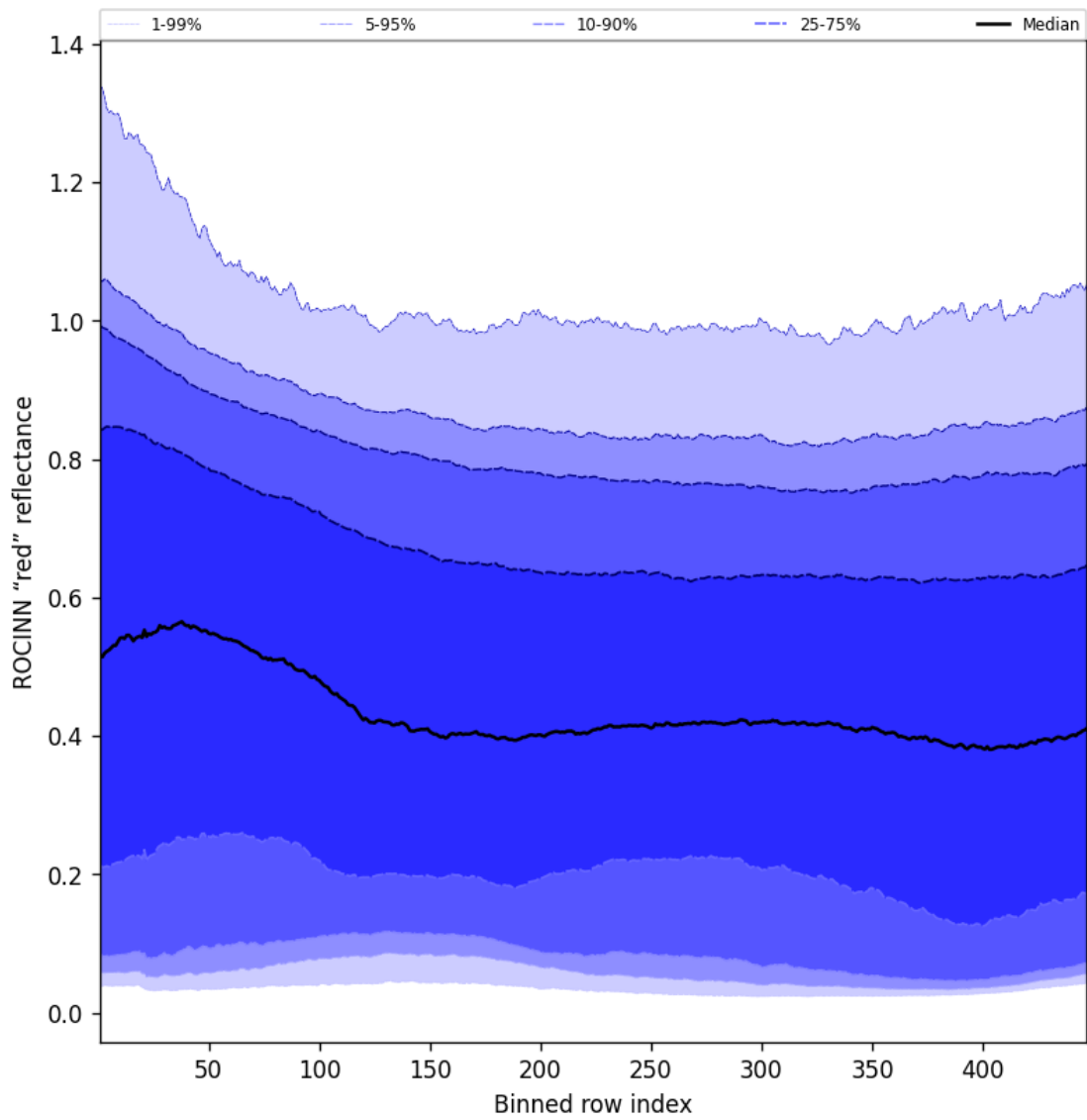


Figure 69: Along track statistics of “ROCINN “red” reflectance” for 2024-09-26 to 2024-09-28

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.

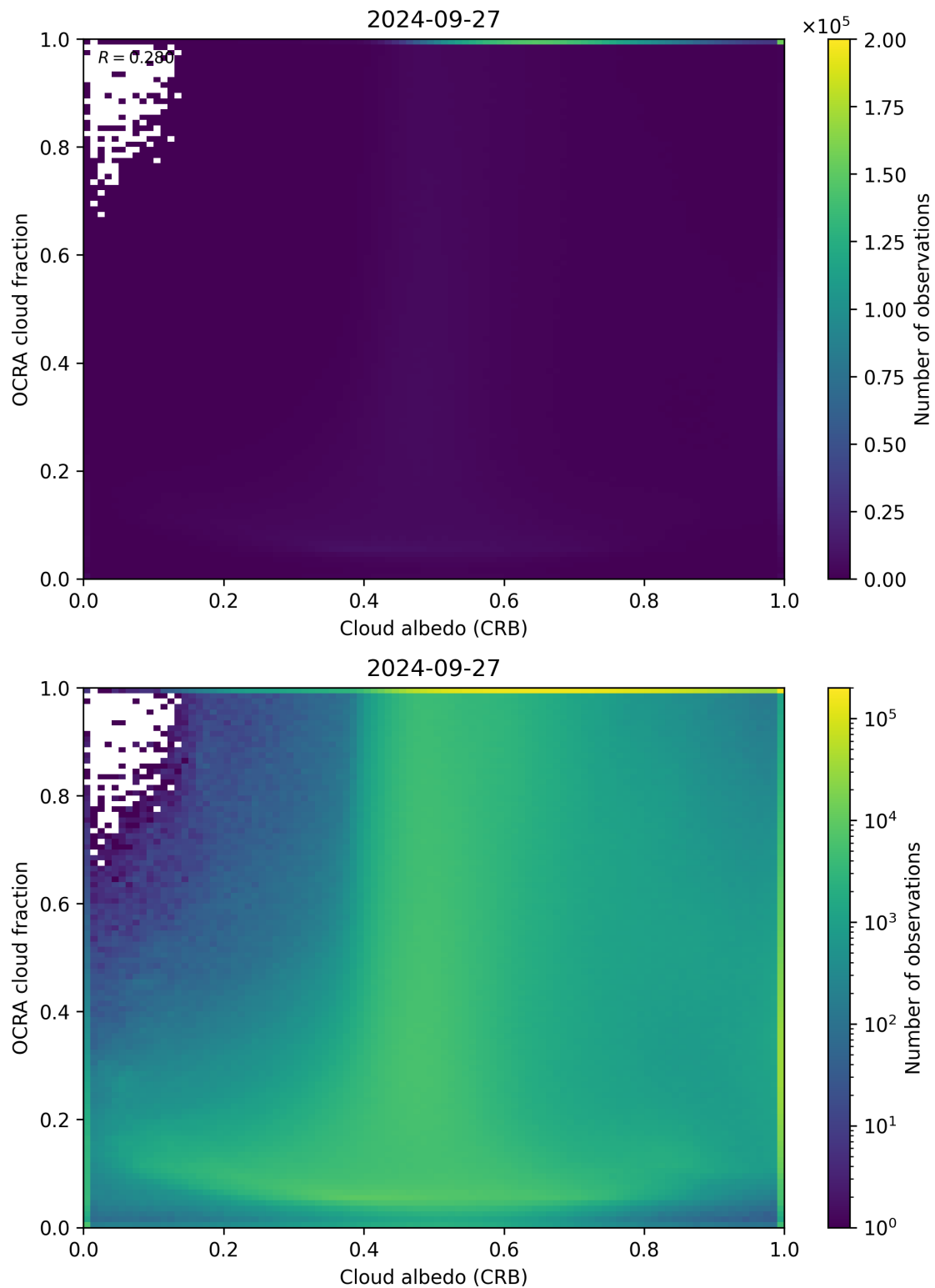


Figure 70: Scatter density plot of “Cloud albedo (CRB)” against “OCRA cloud fraction” for 2024-09-26 to 2024-09-28.

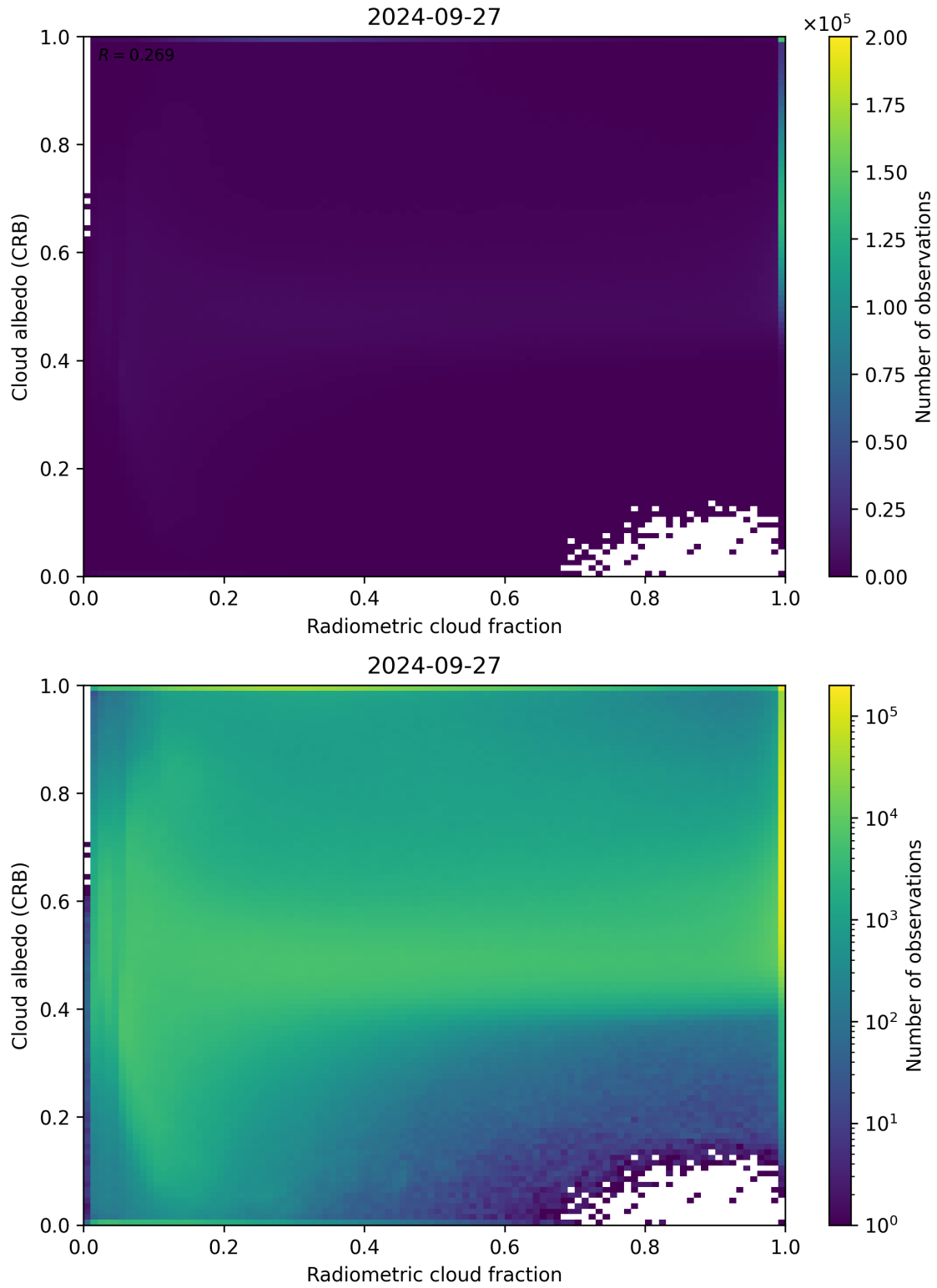


Figure 71: Scatter density plot of “Radiometric cloud fraction” against “Cloud albedo (CRB)” for 2024-09-26 to 2024-09-28.

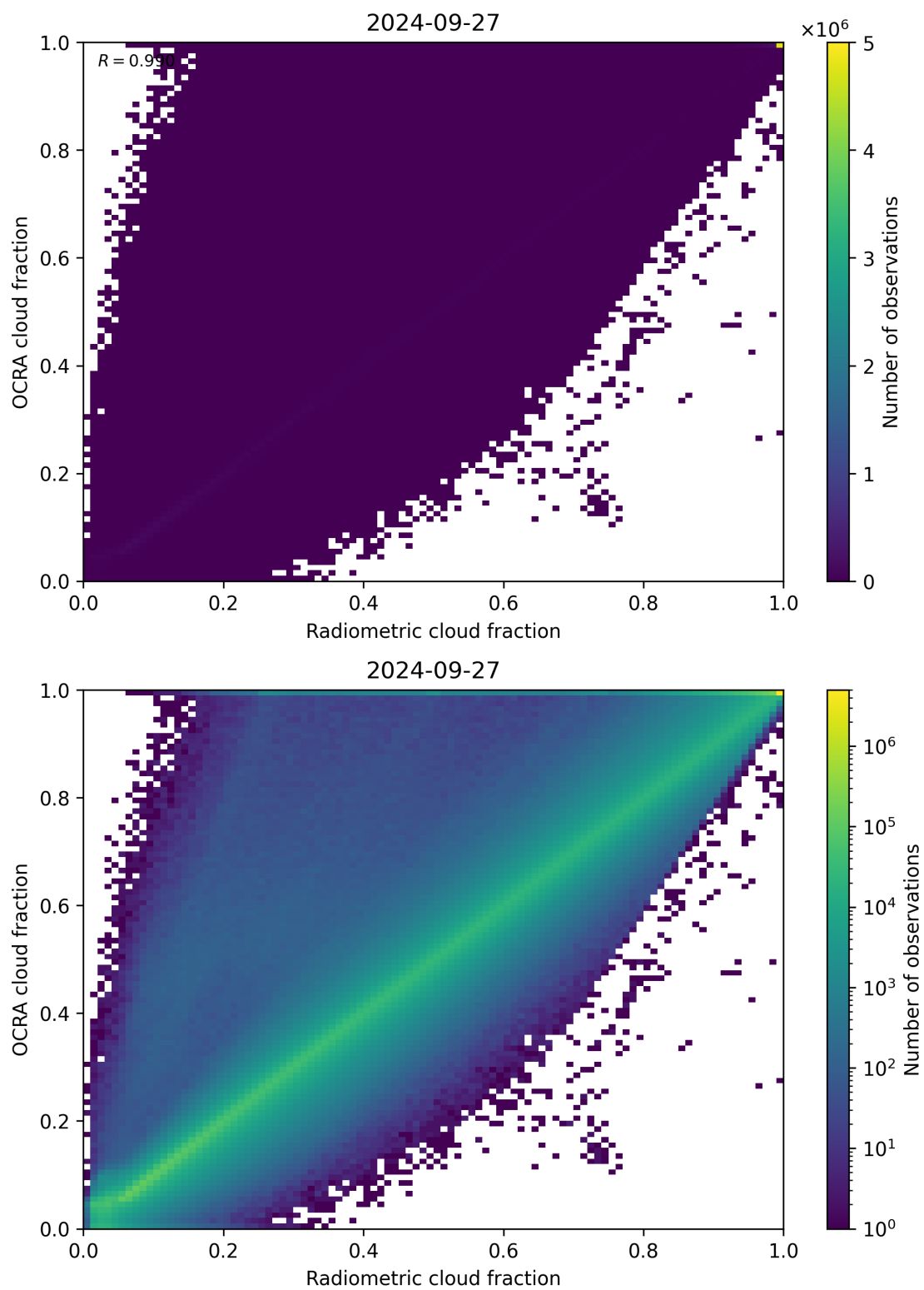


Figure 72: Scatter density plot of “Radiometric cloud fraction” against “OCRA cloud fraction” for 2024-09-26 to 2024-09-28.

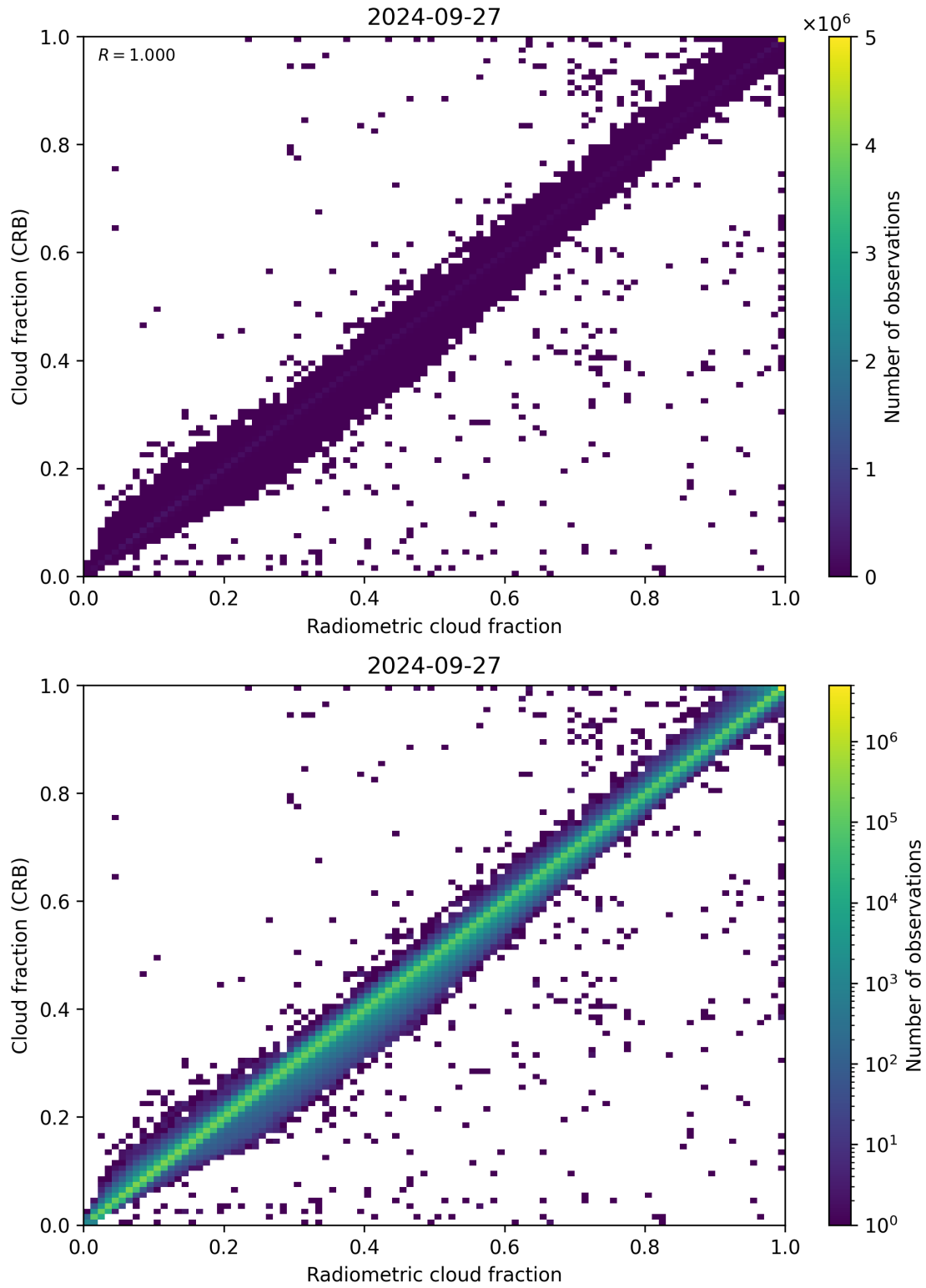


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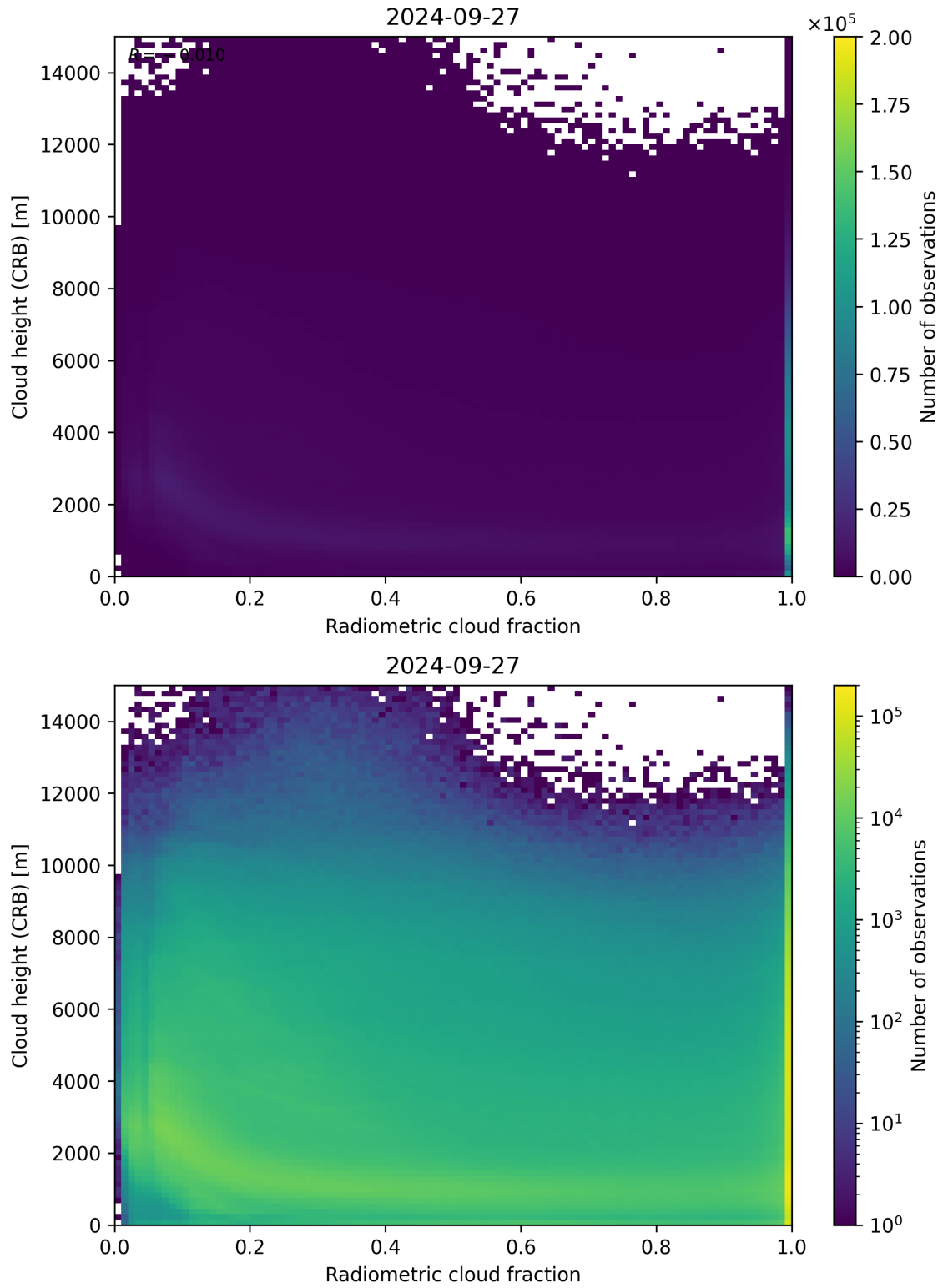


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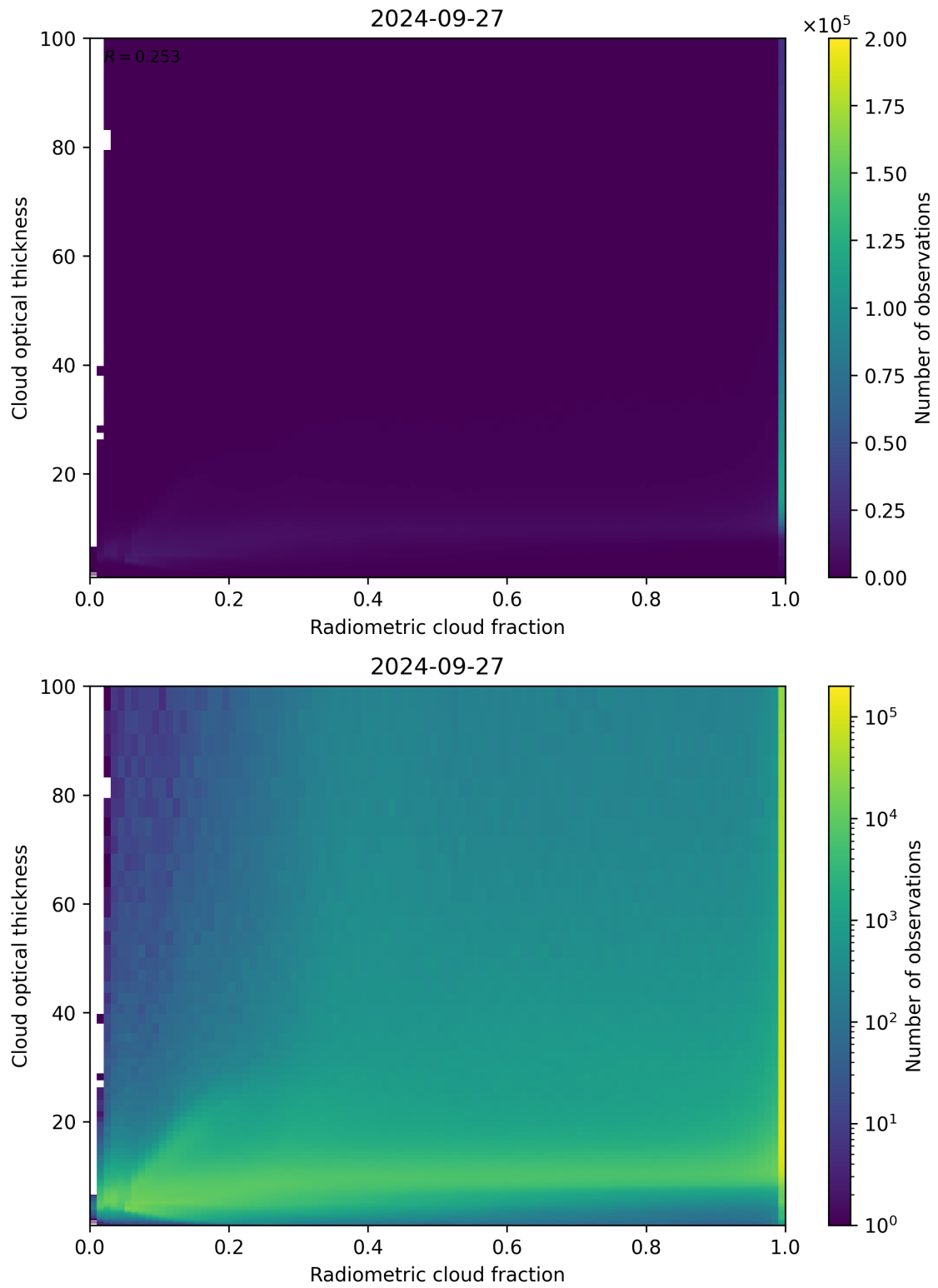


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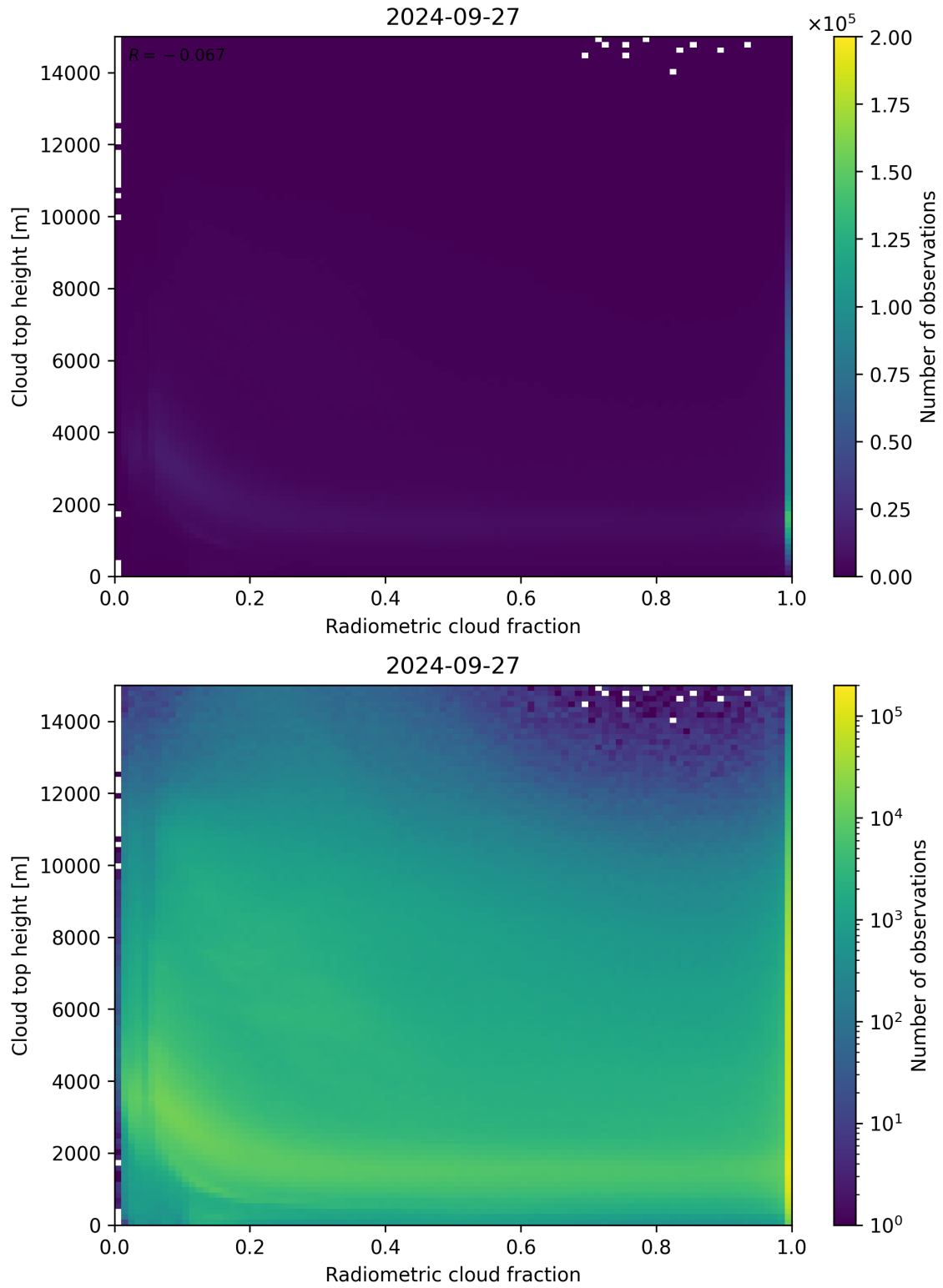


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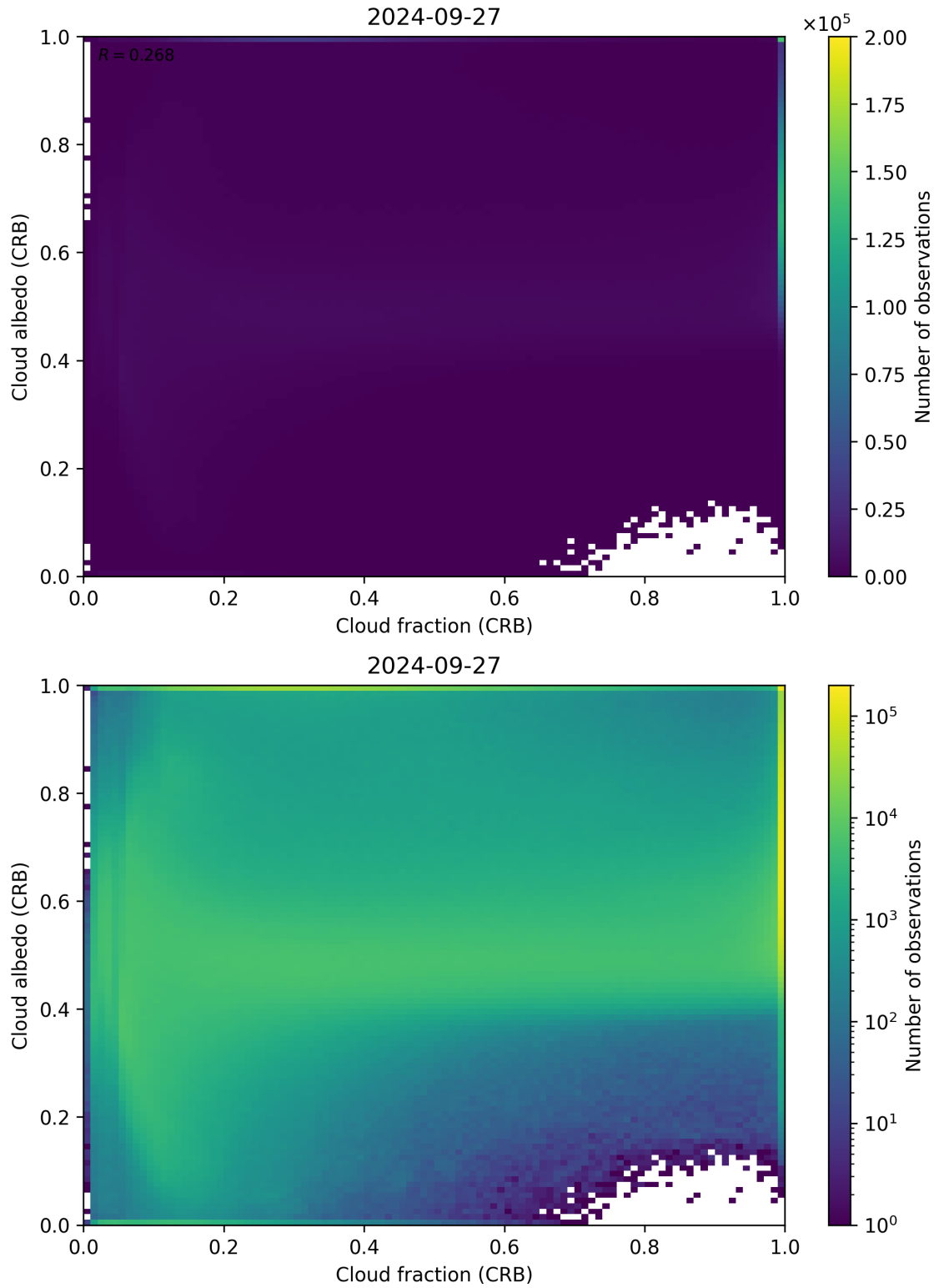


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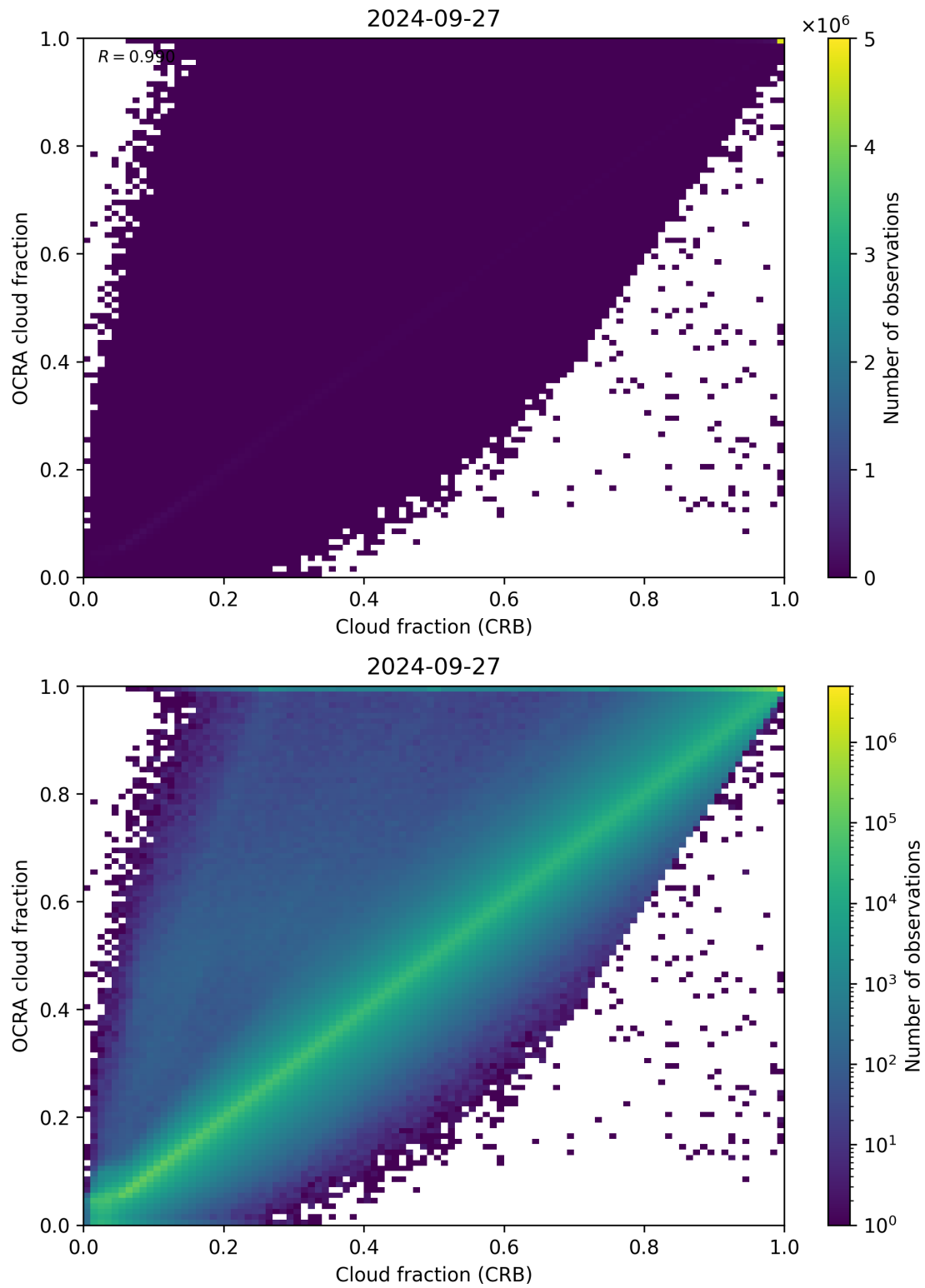


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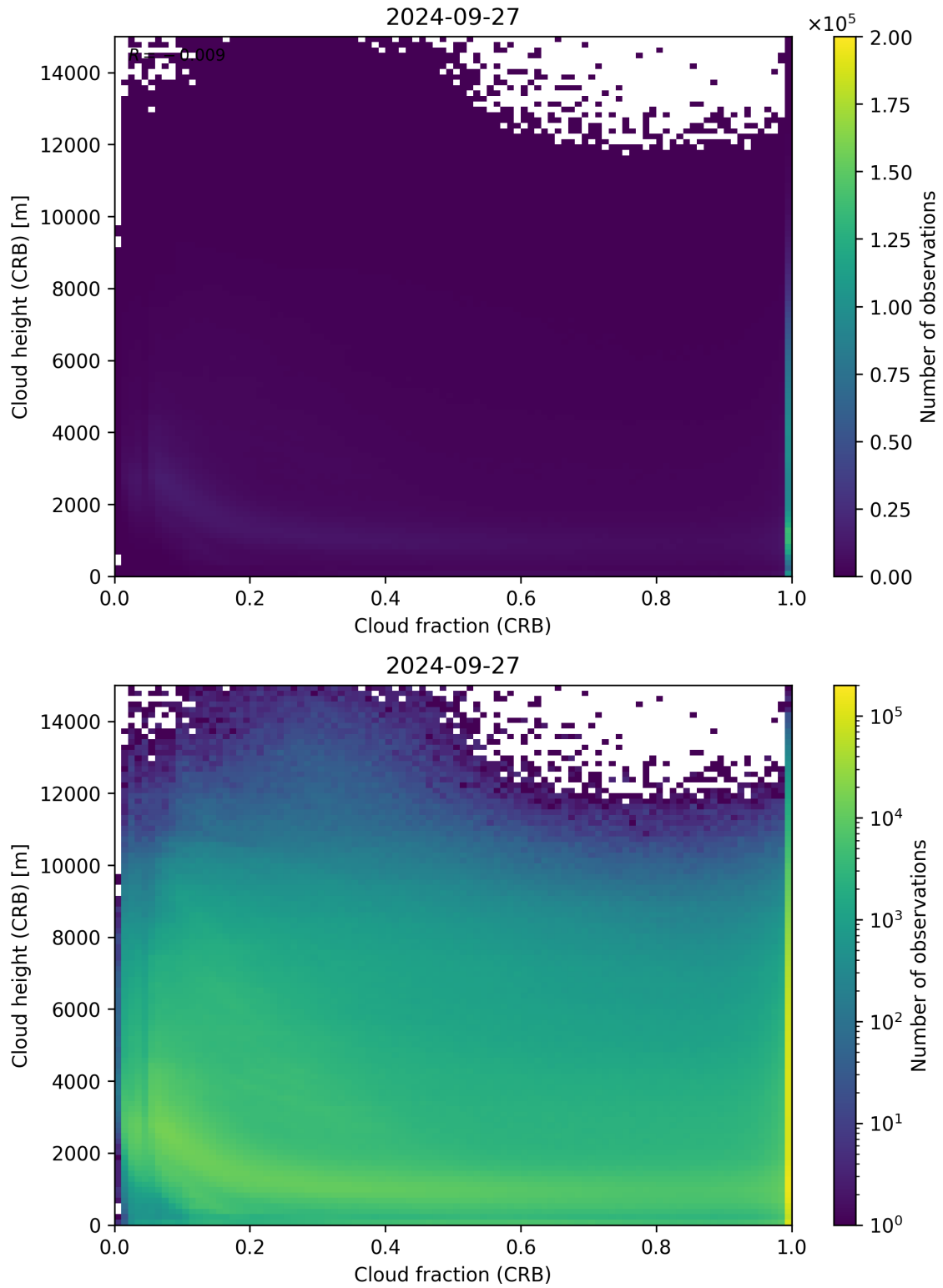


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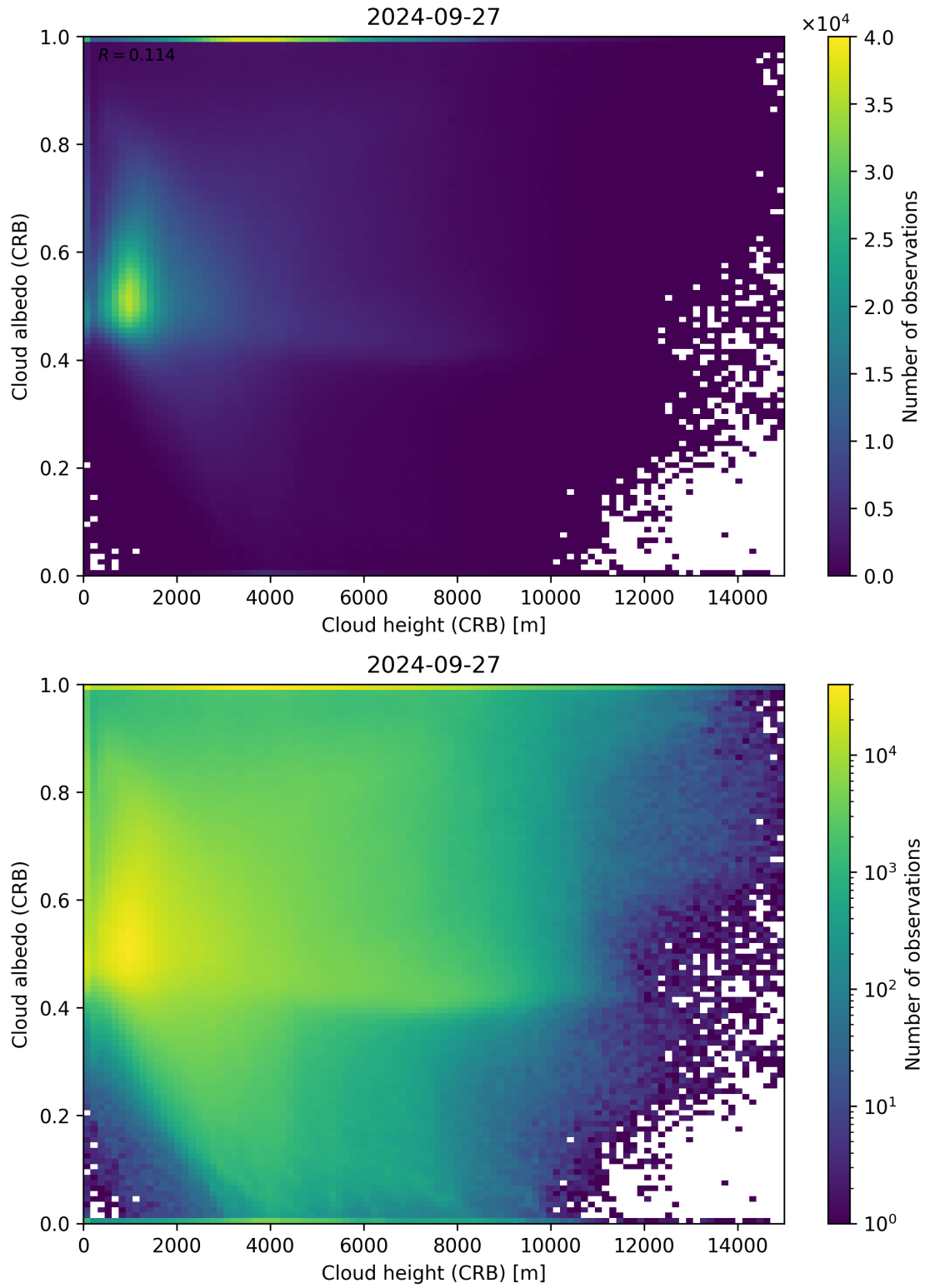


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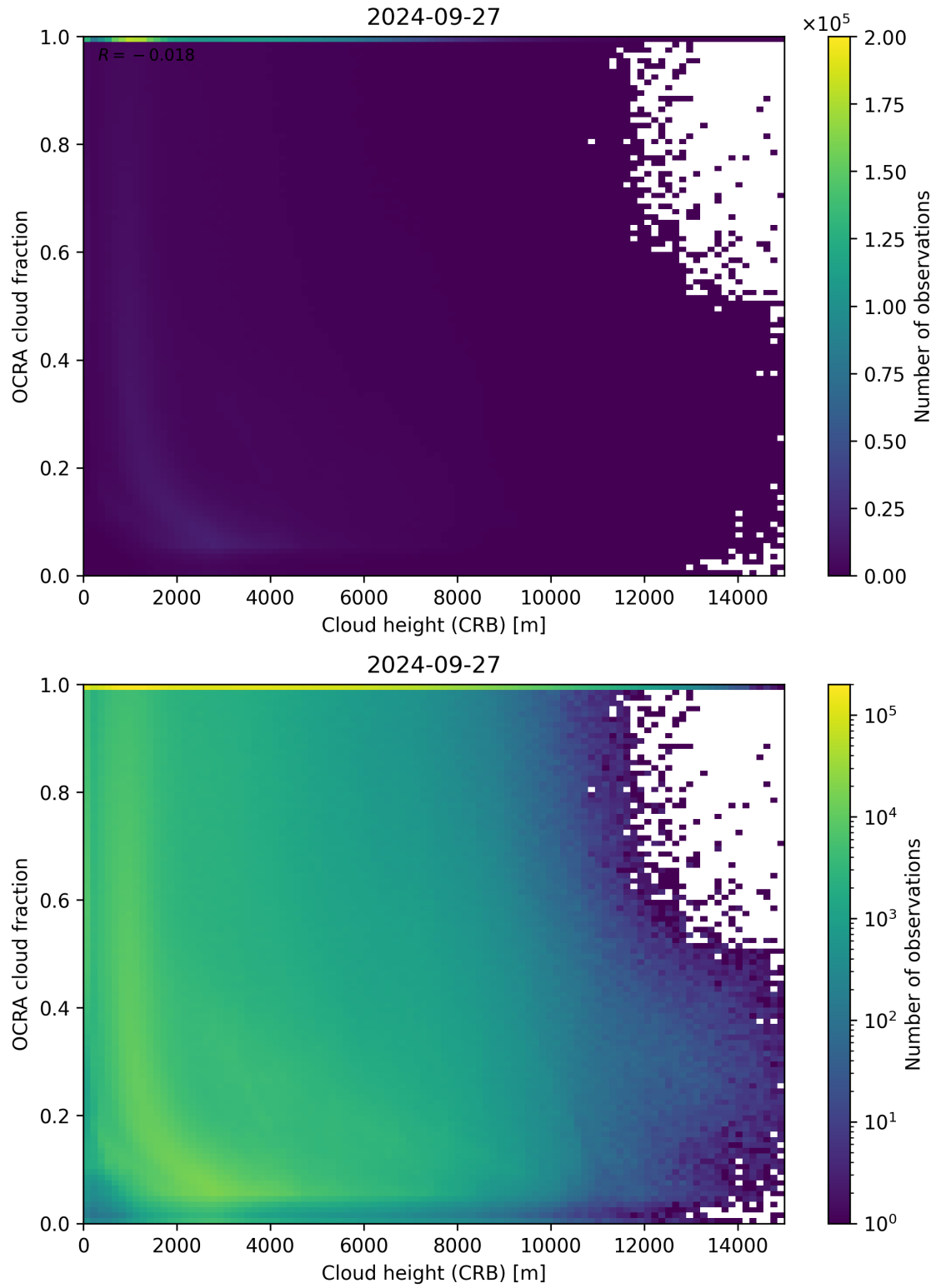


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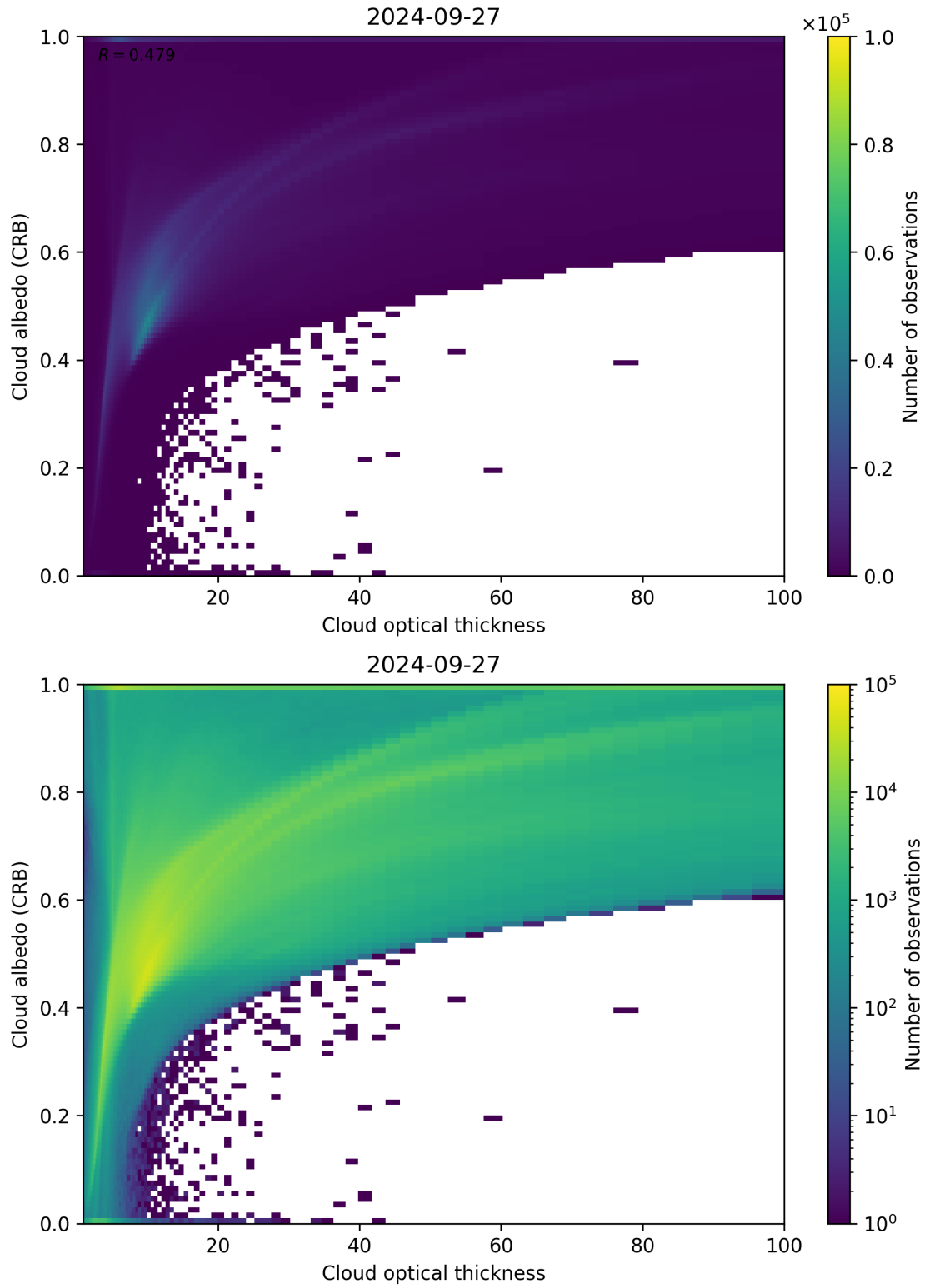


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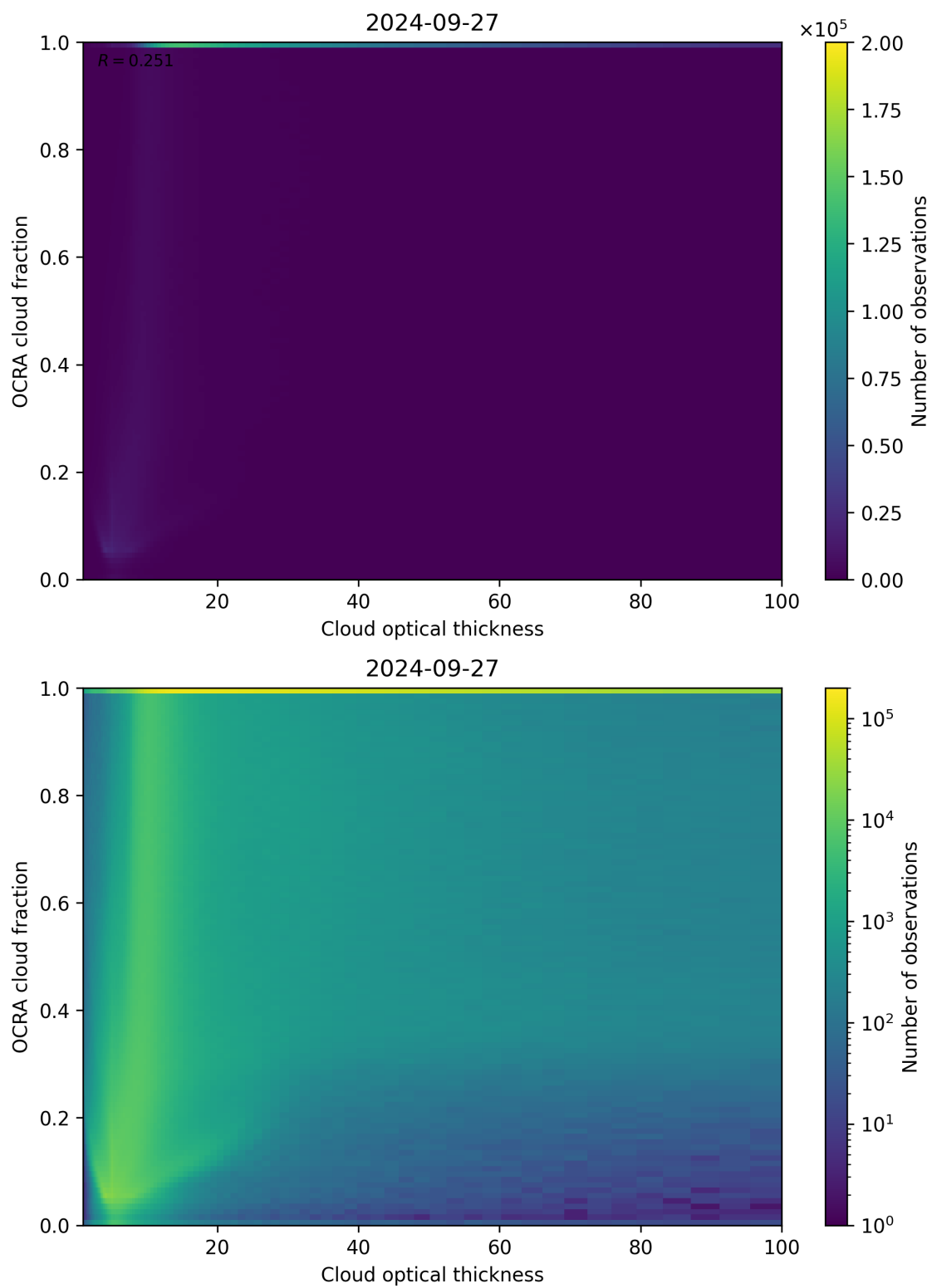


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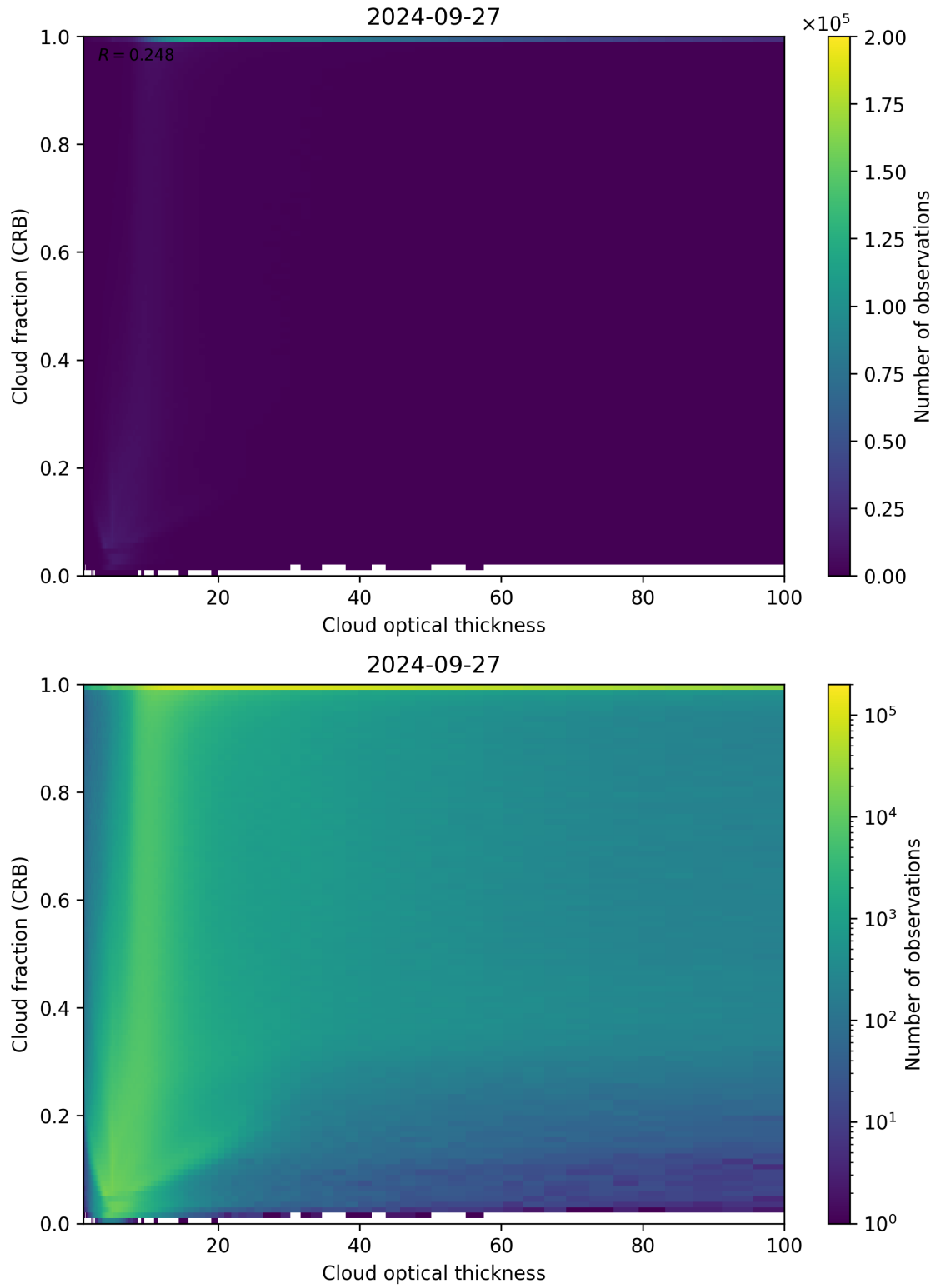


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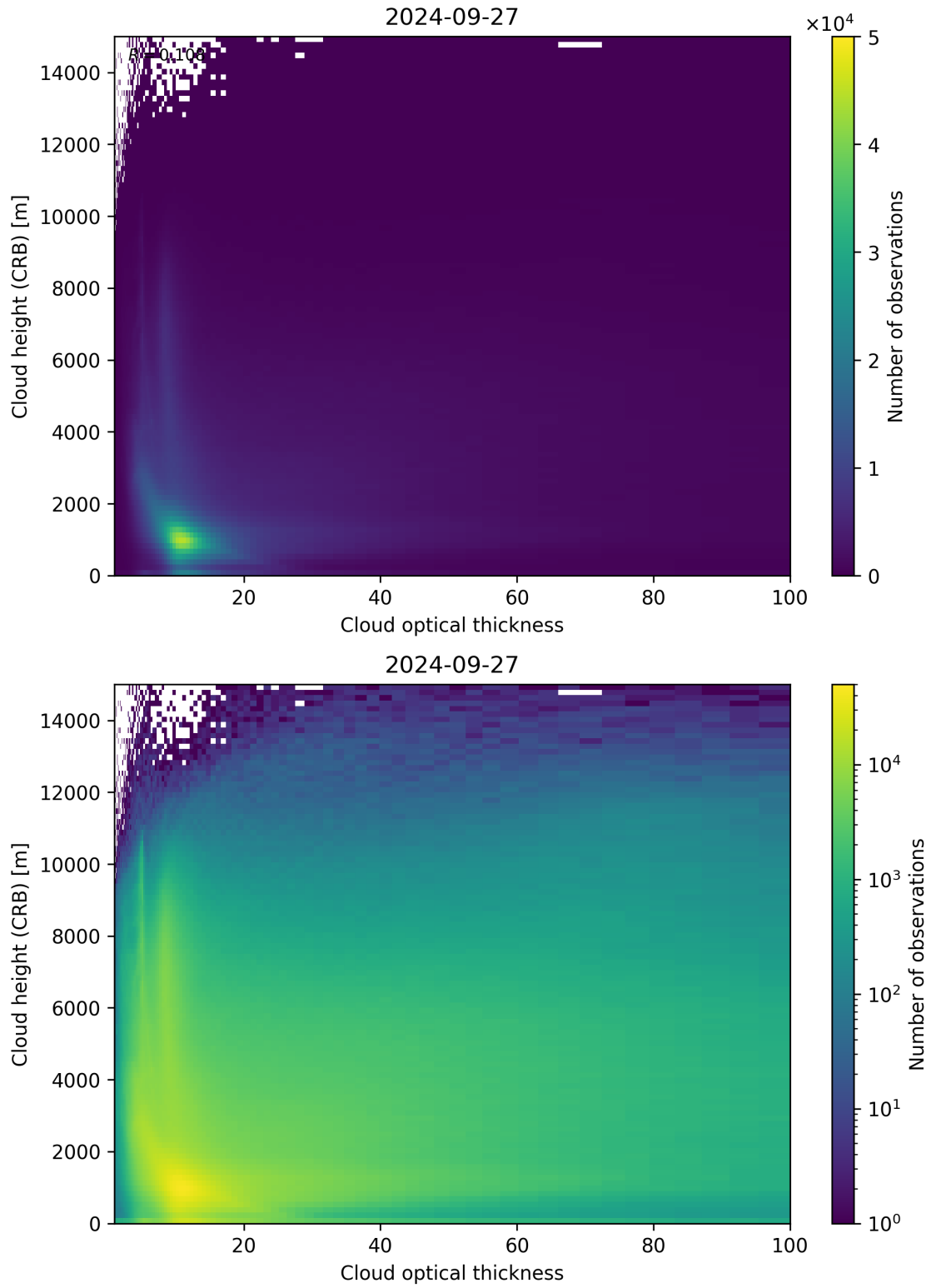


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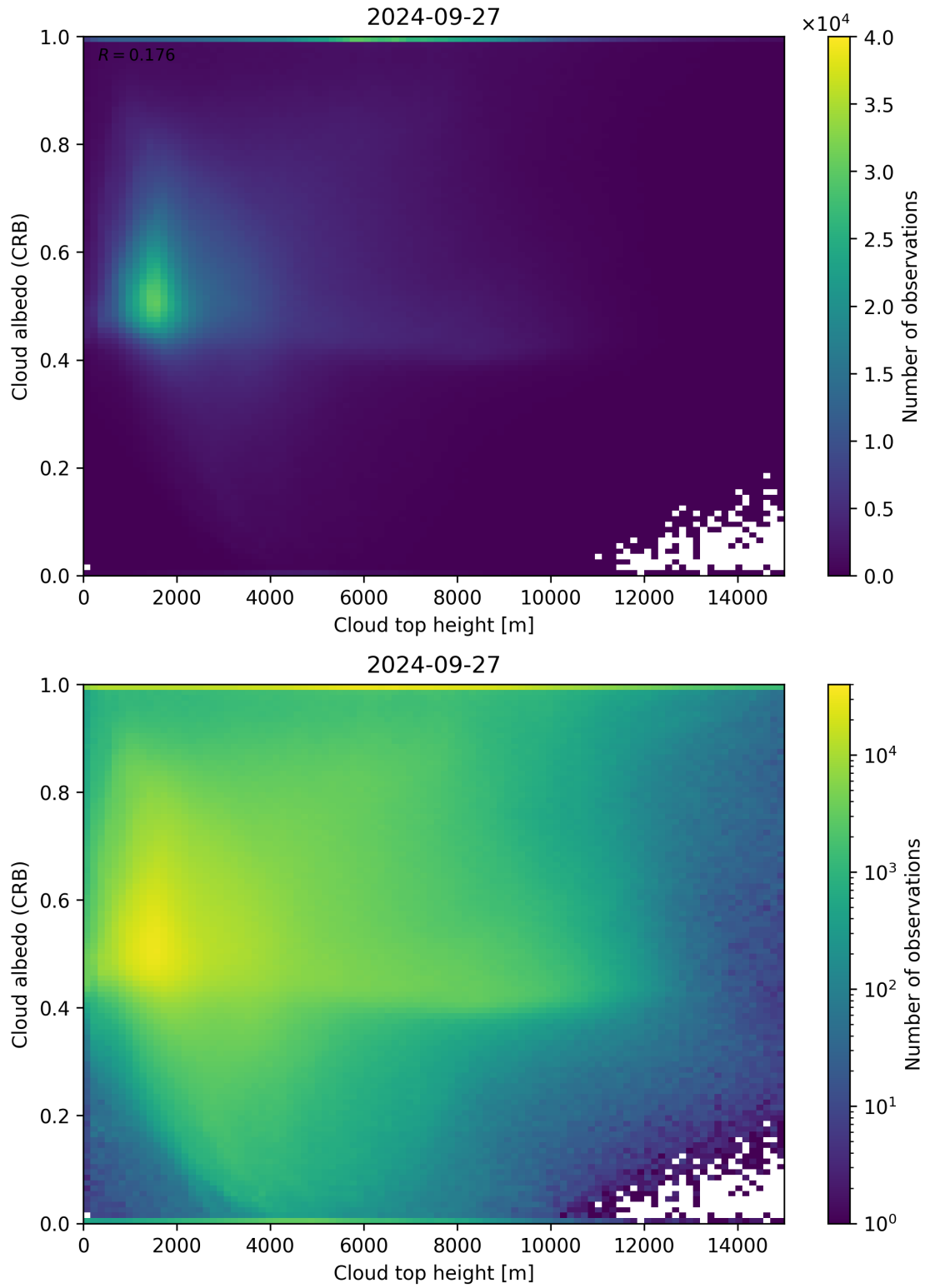


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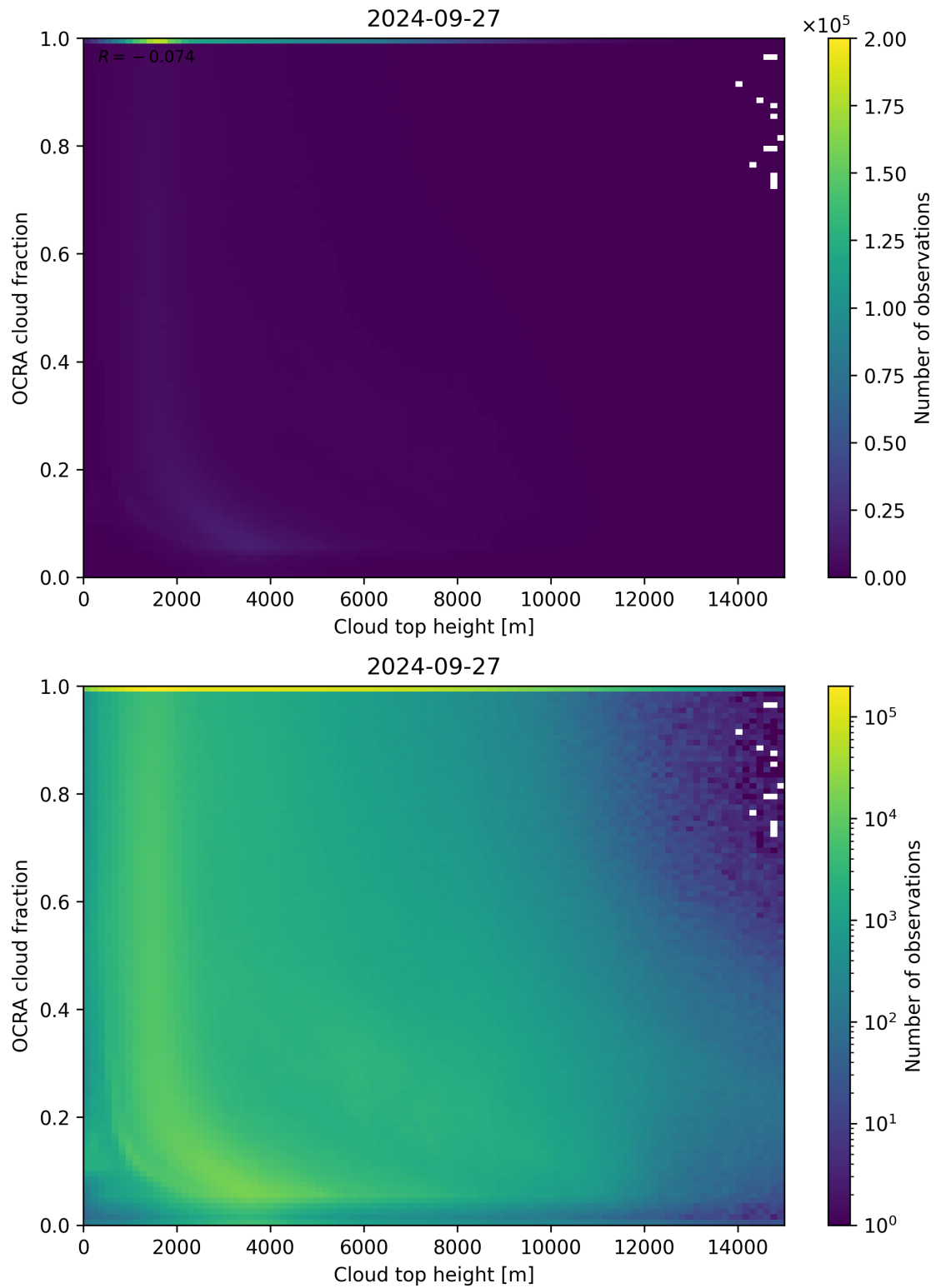


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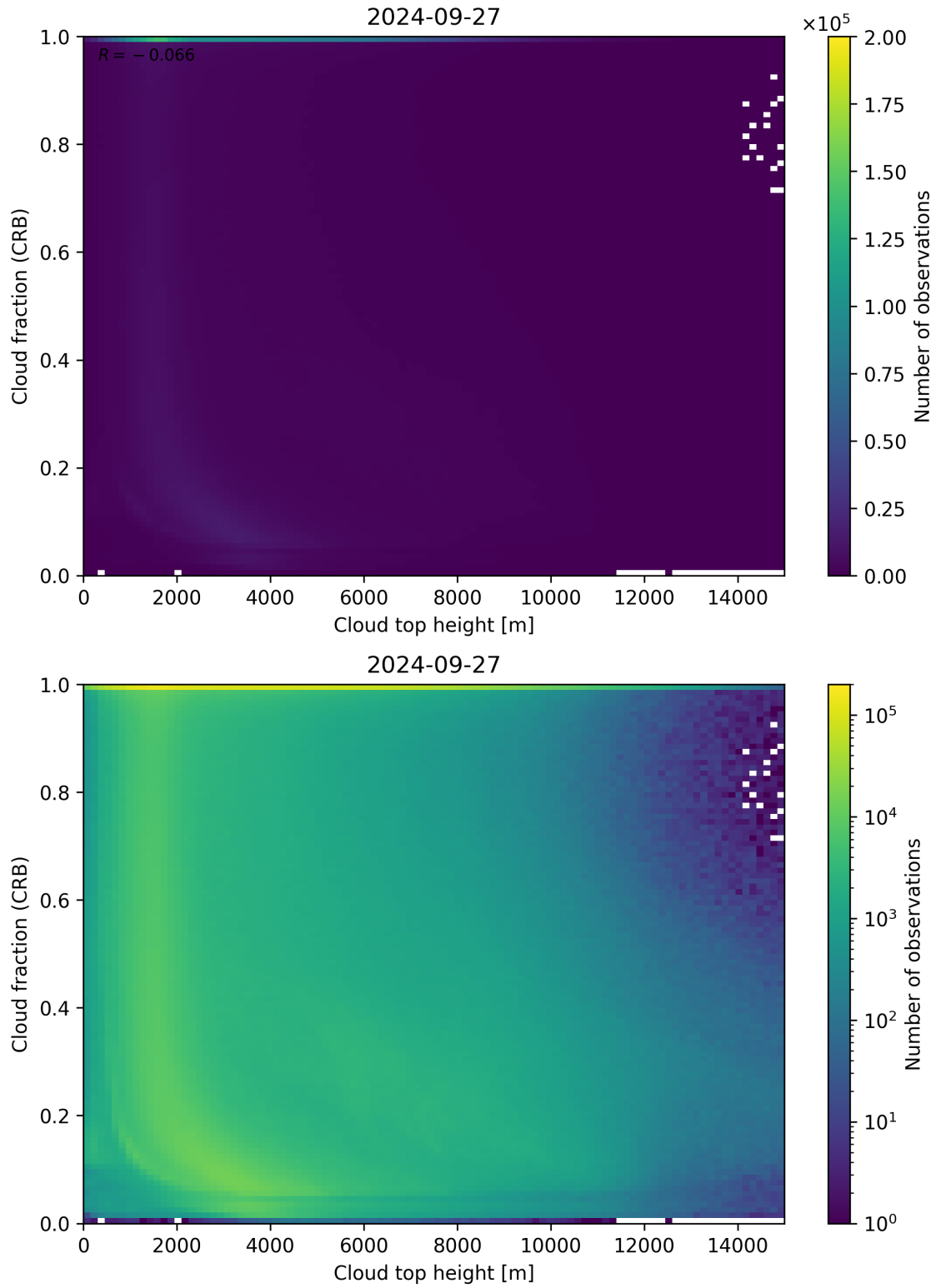


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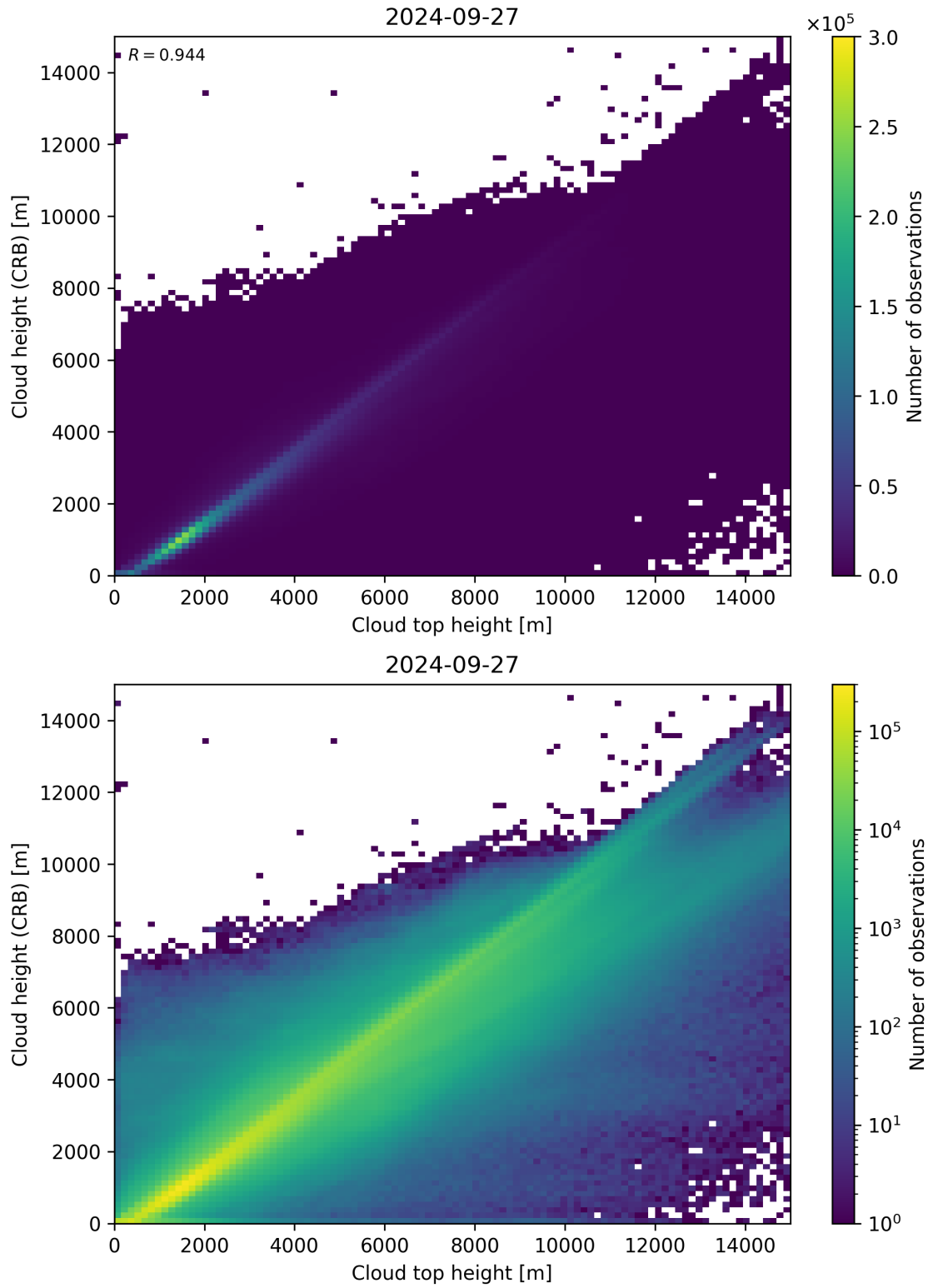


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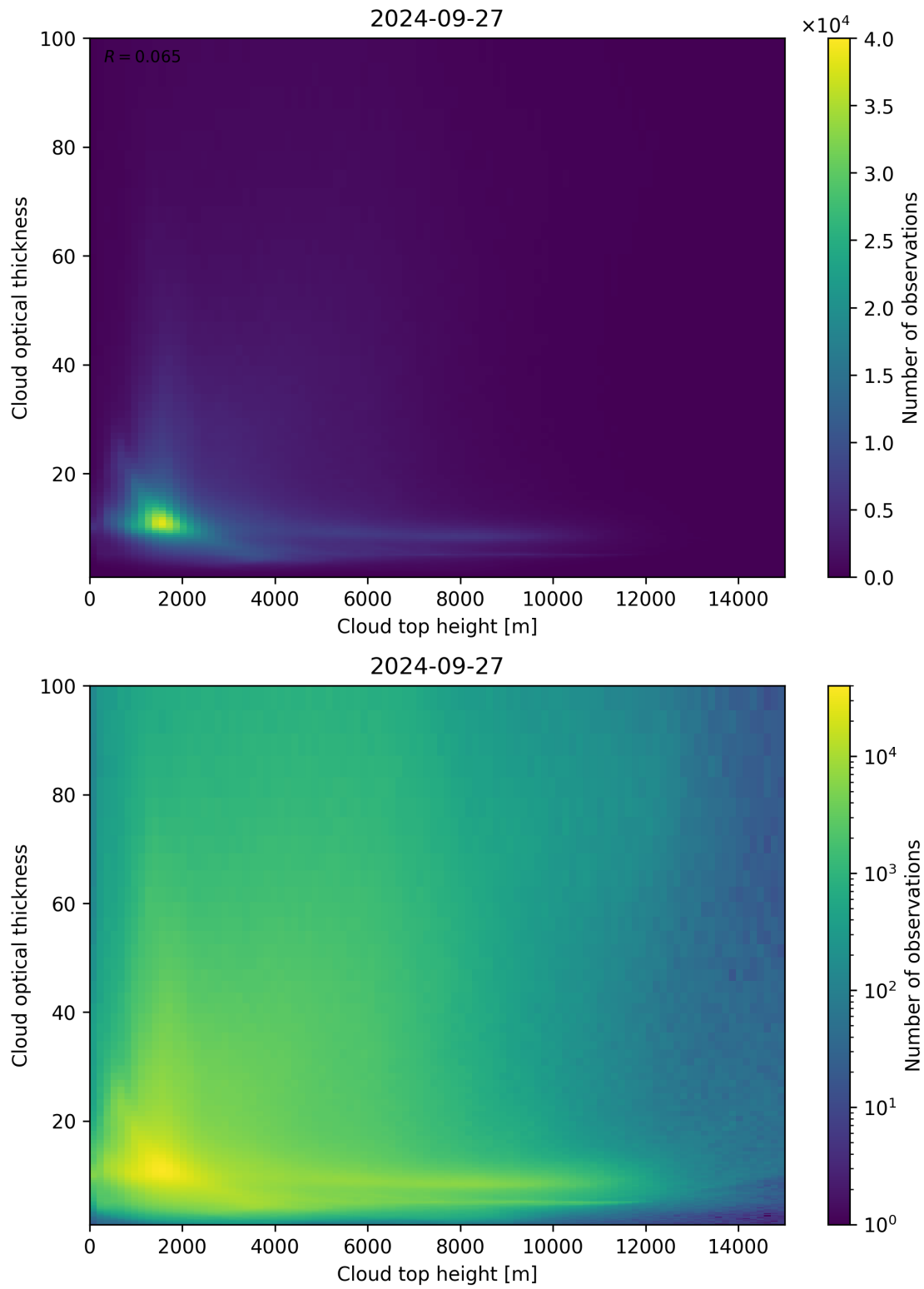


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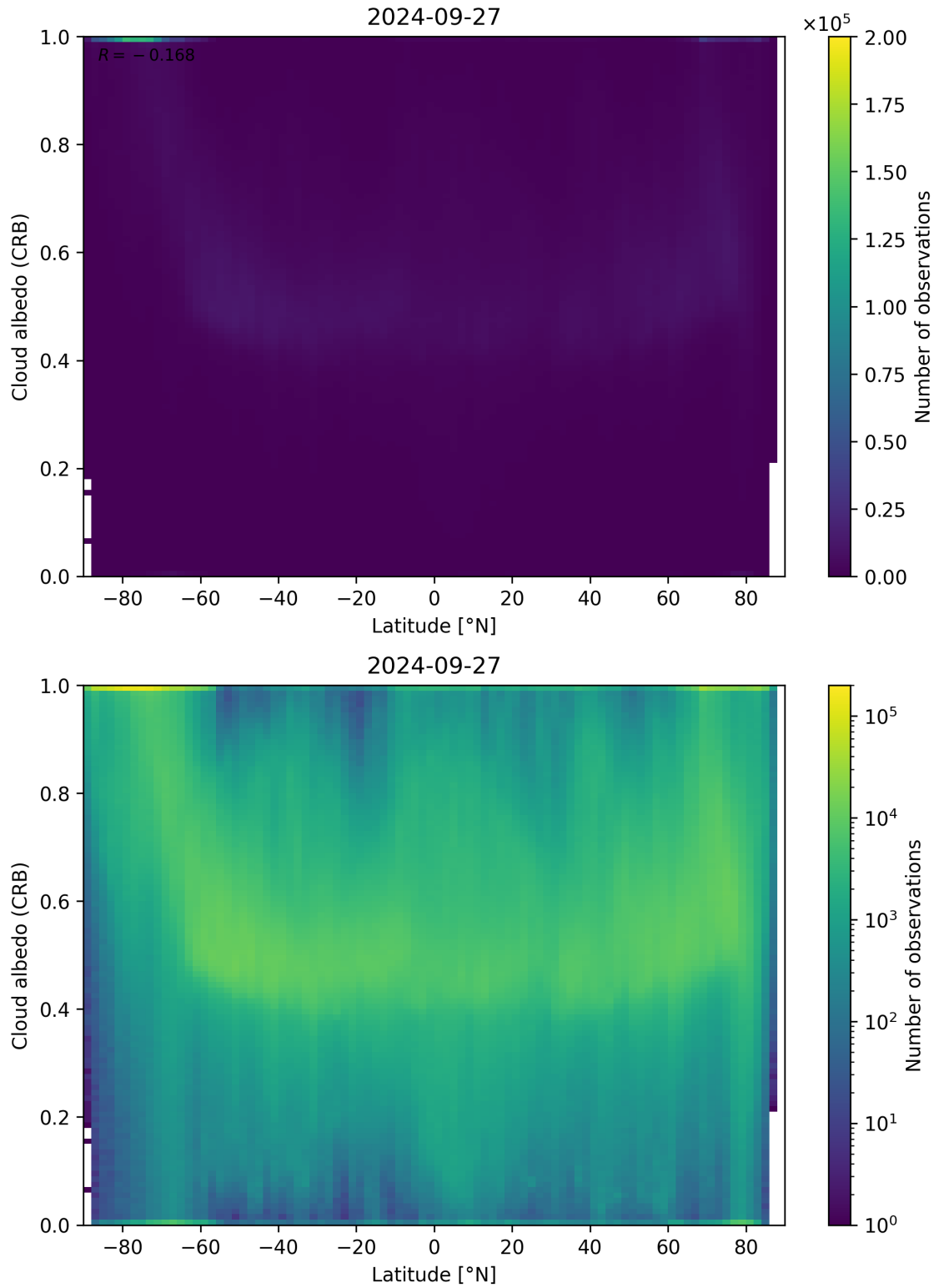


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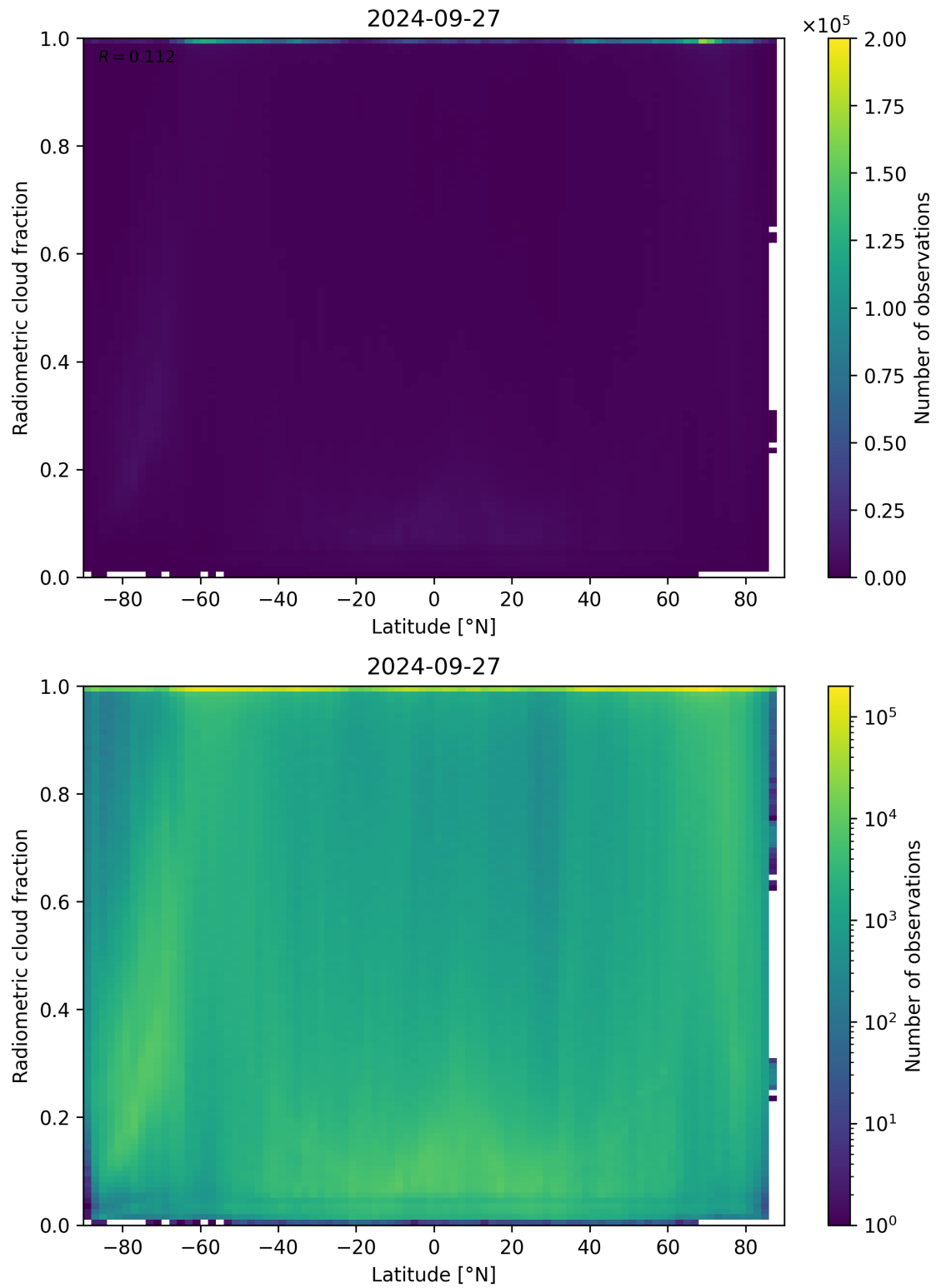


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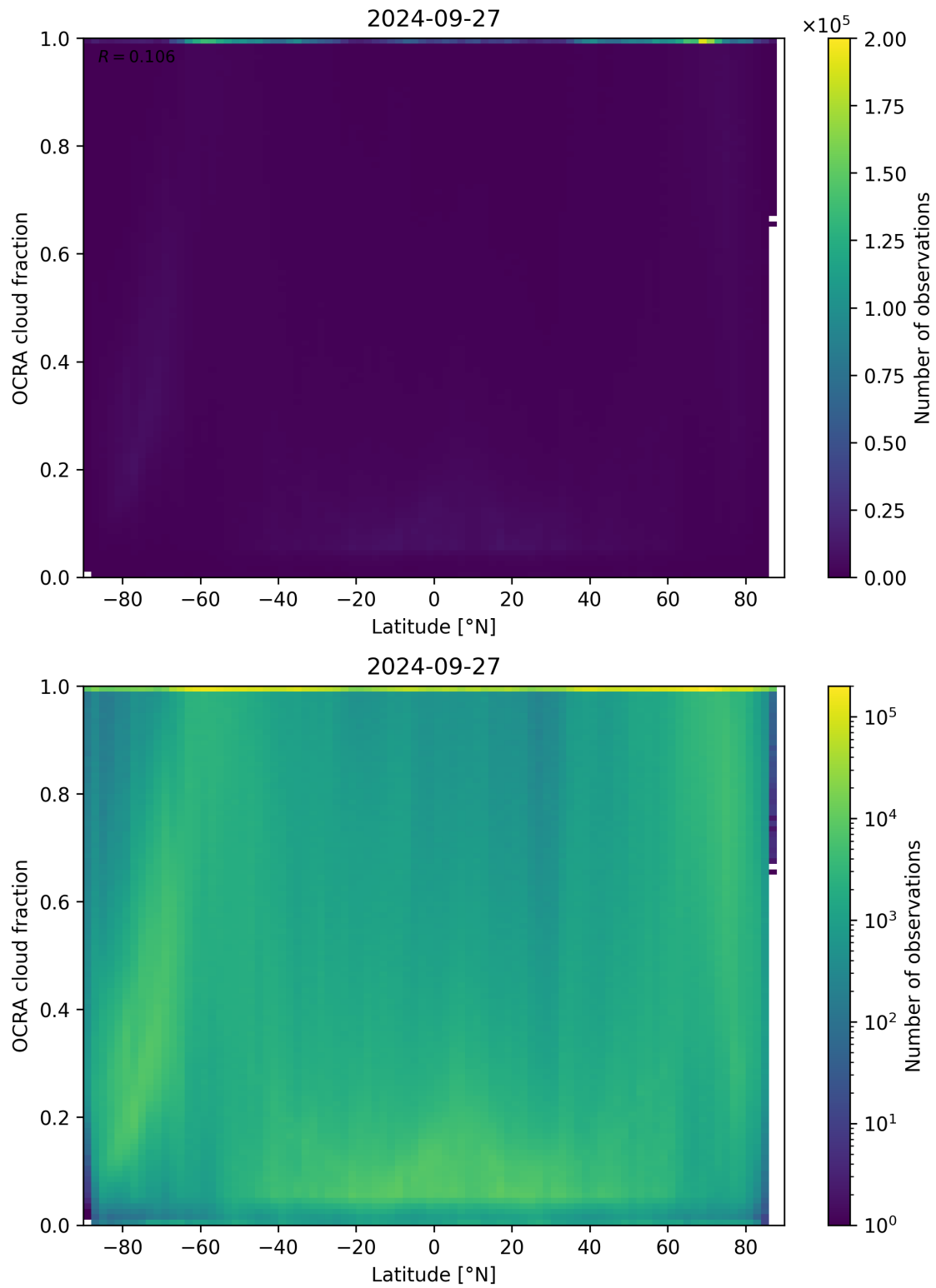


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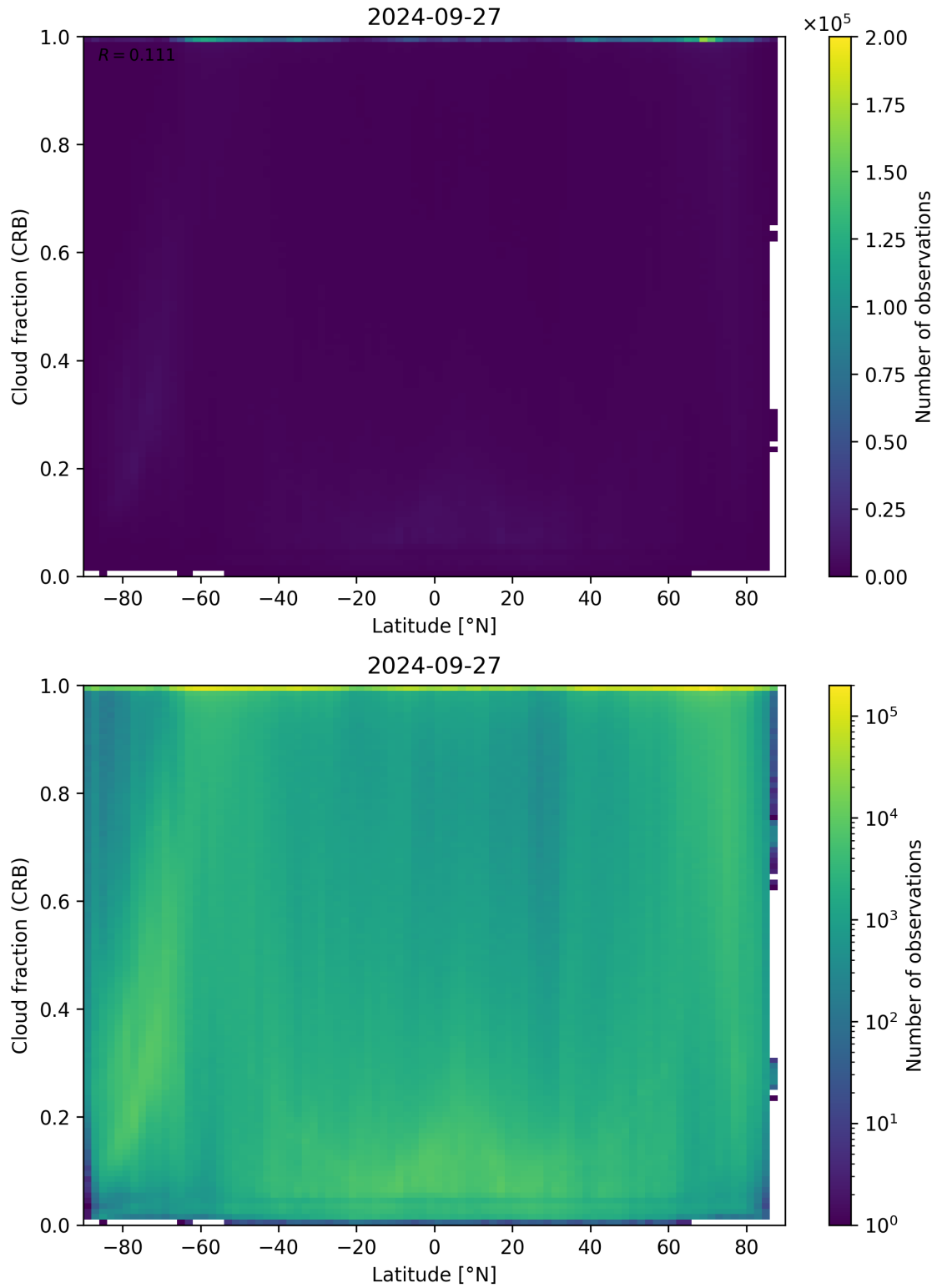


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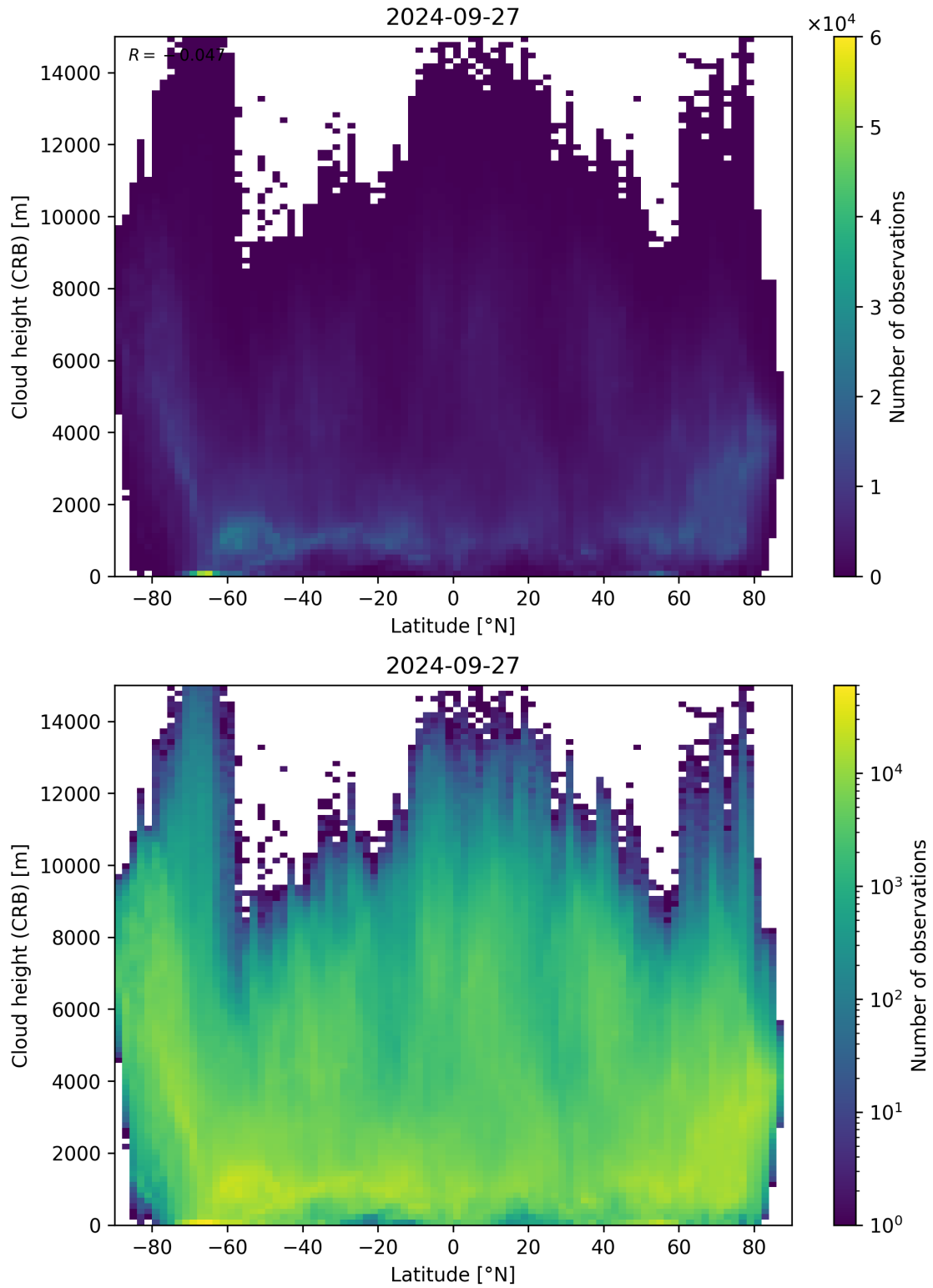


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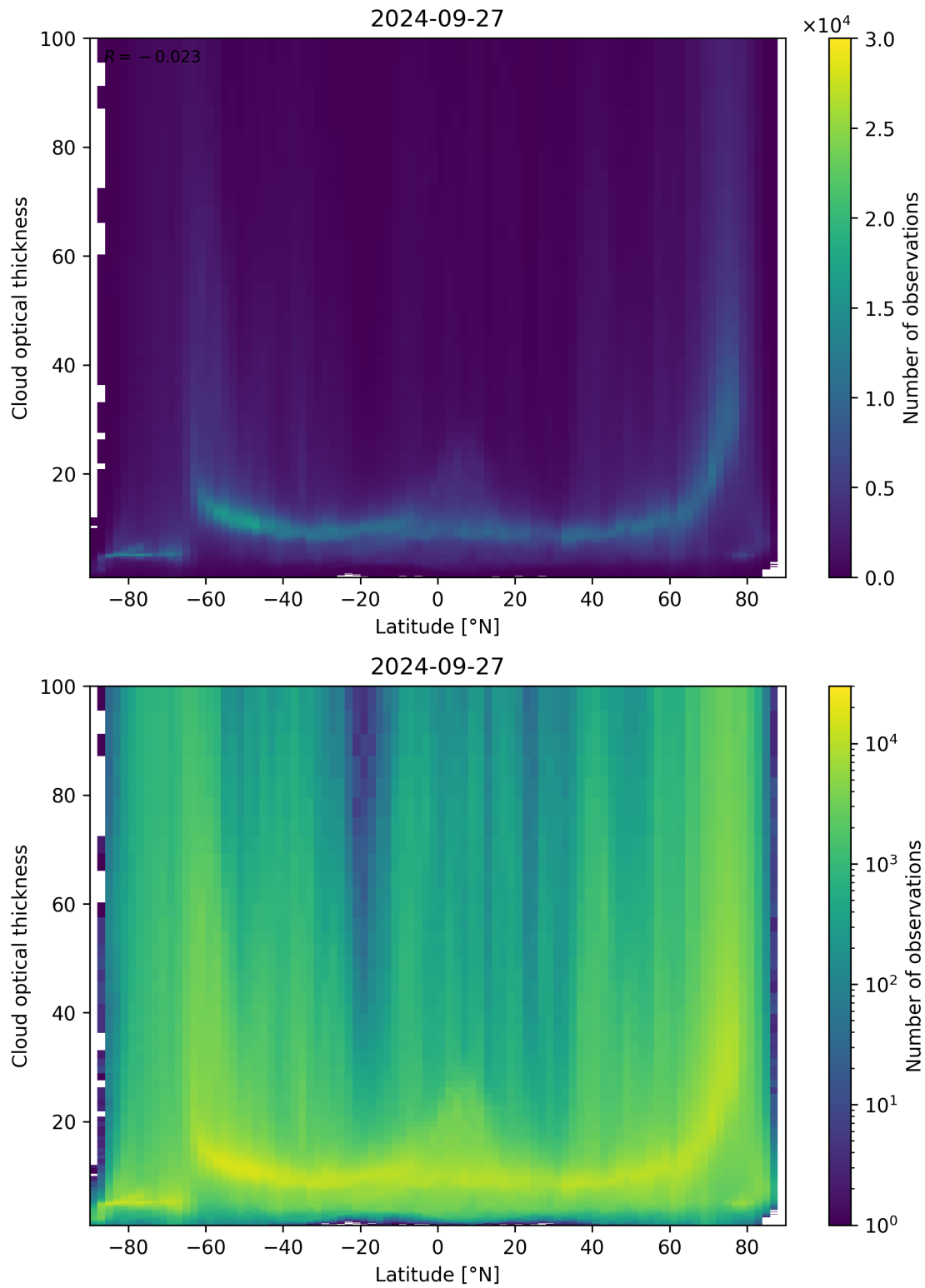


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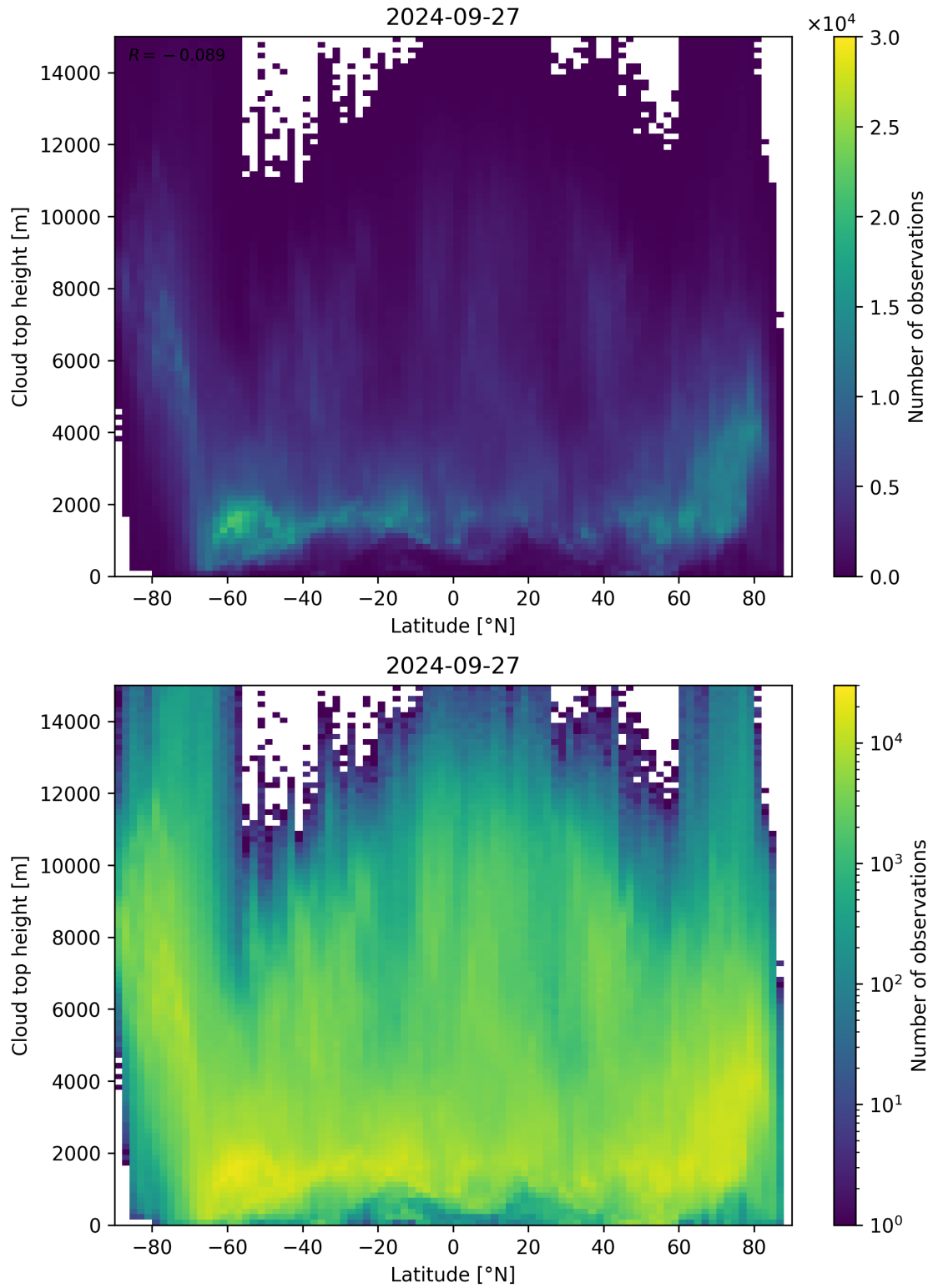


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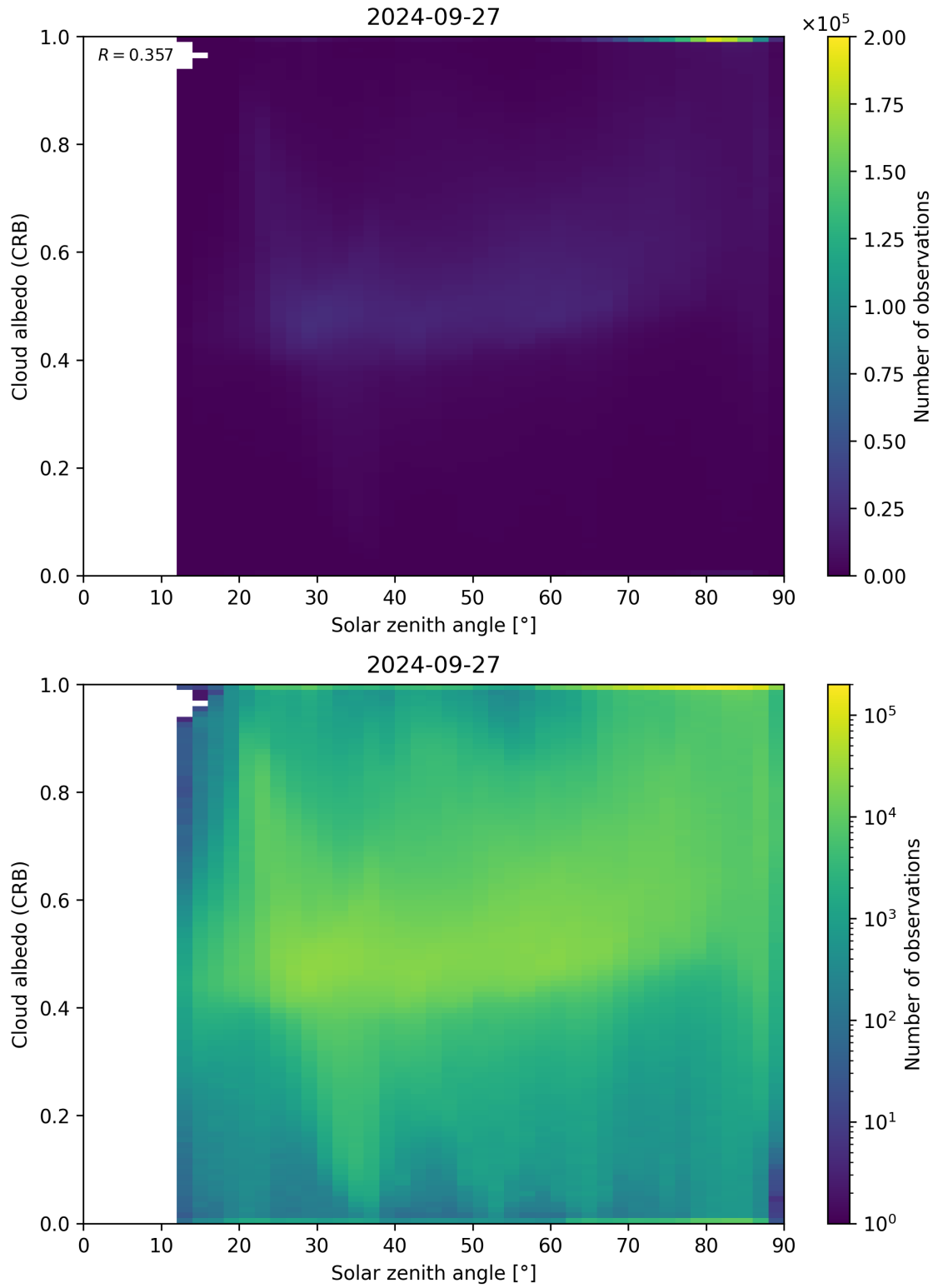


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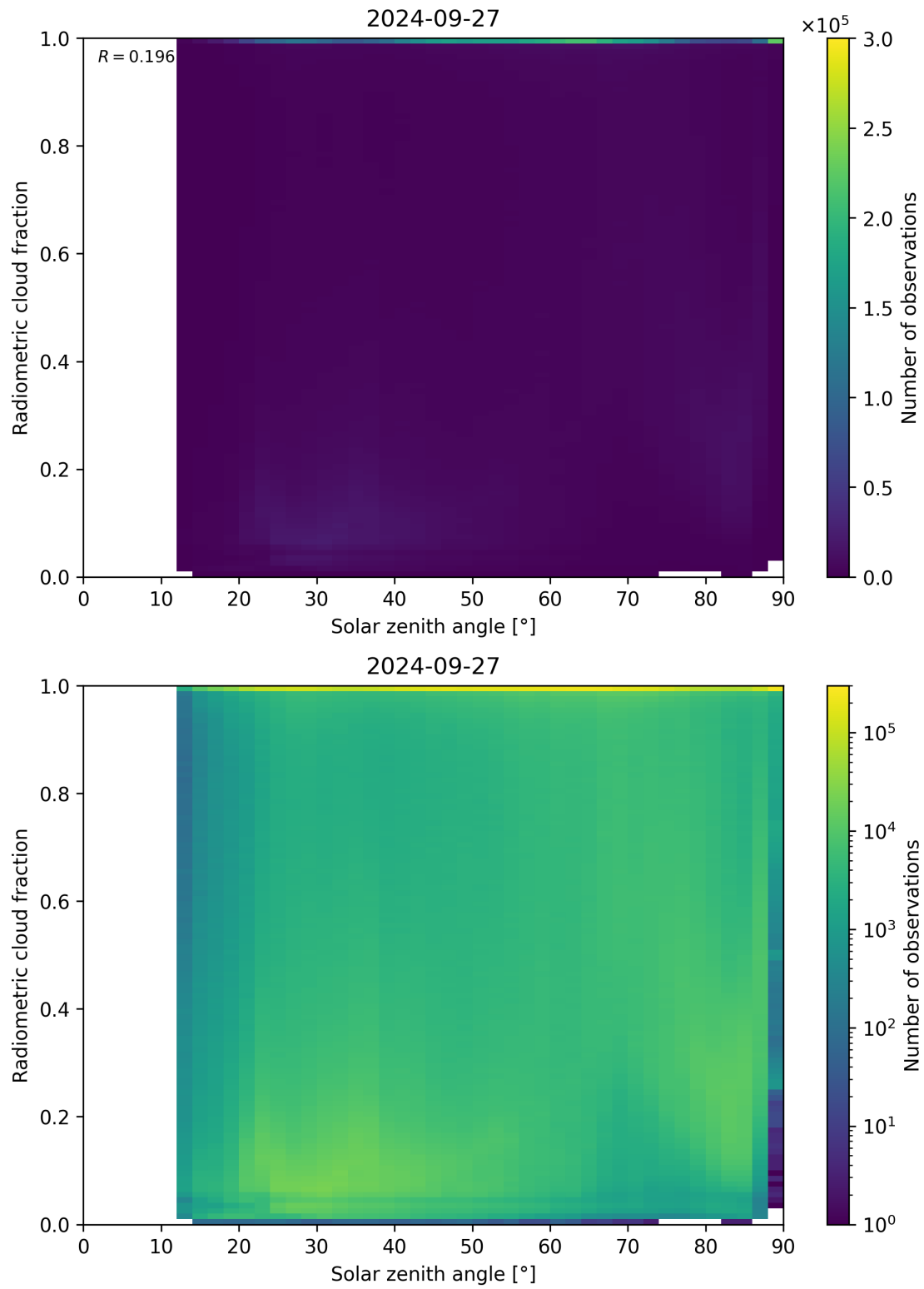


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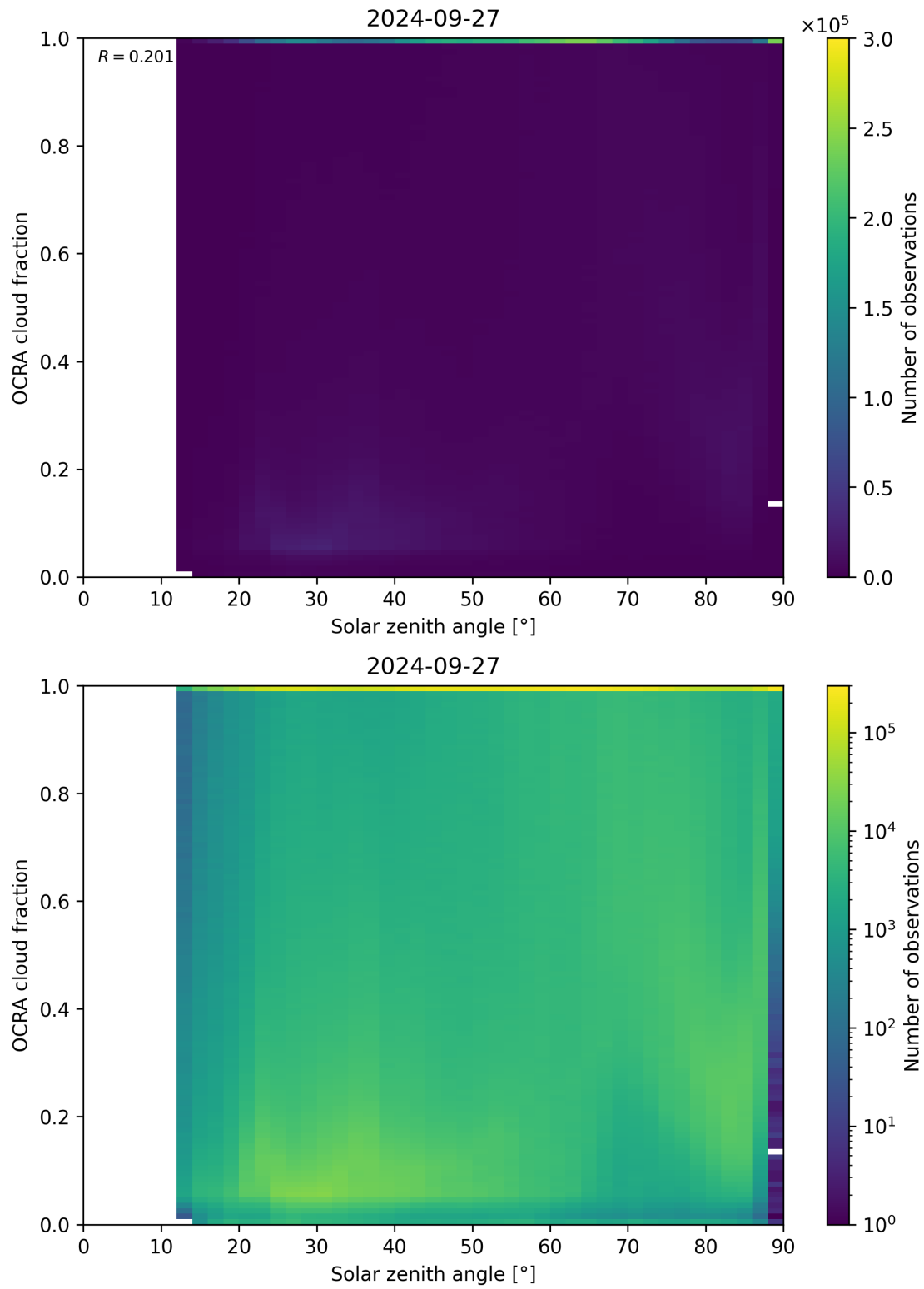


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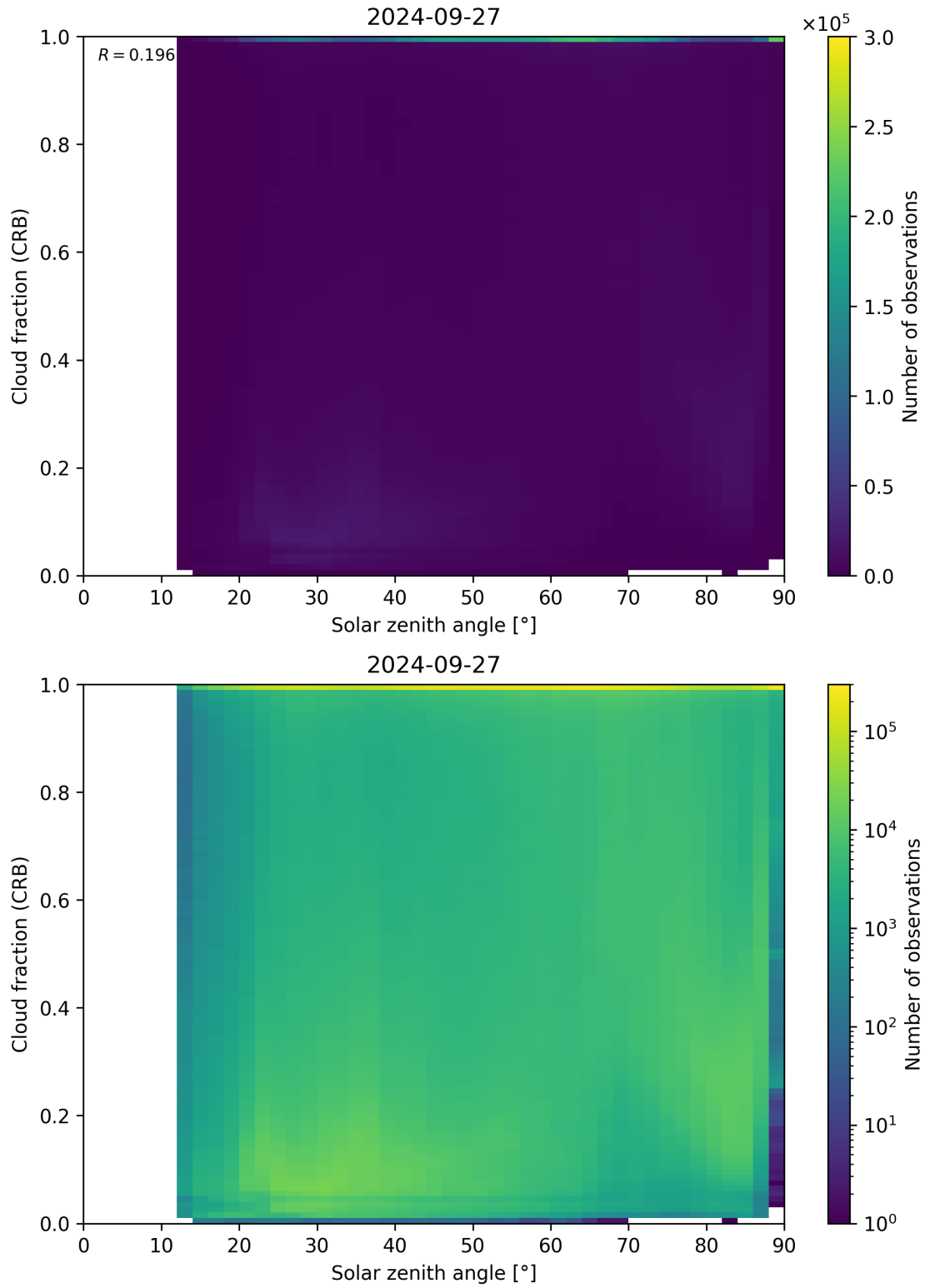


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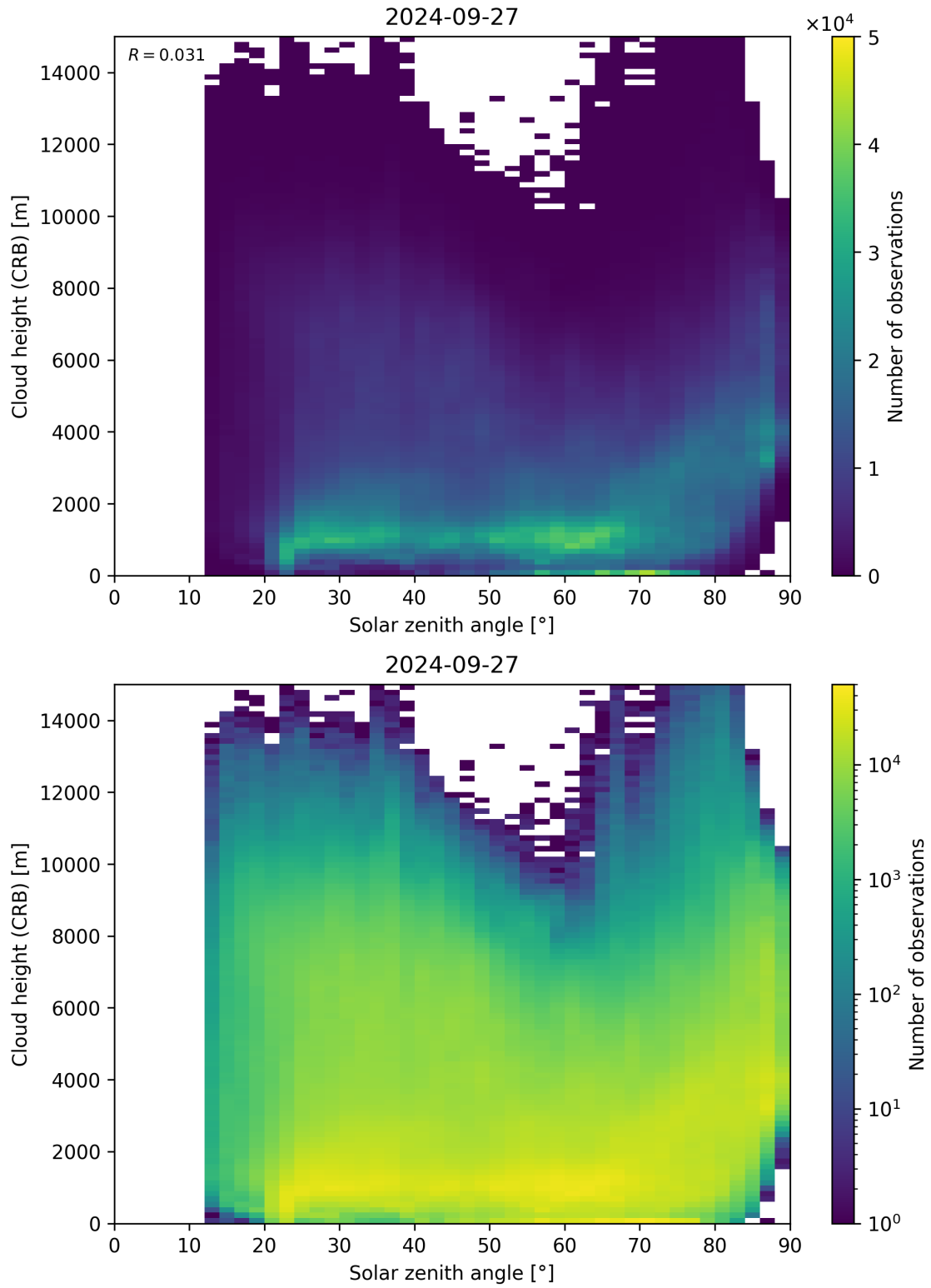


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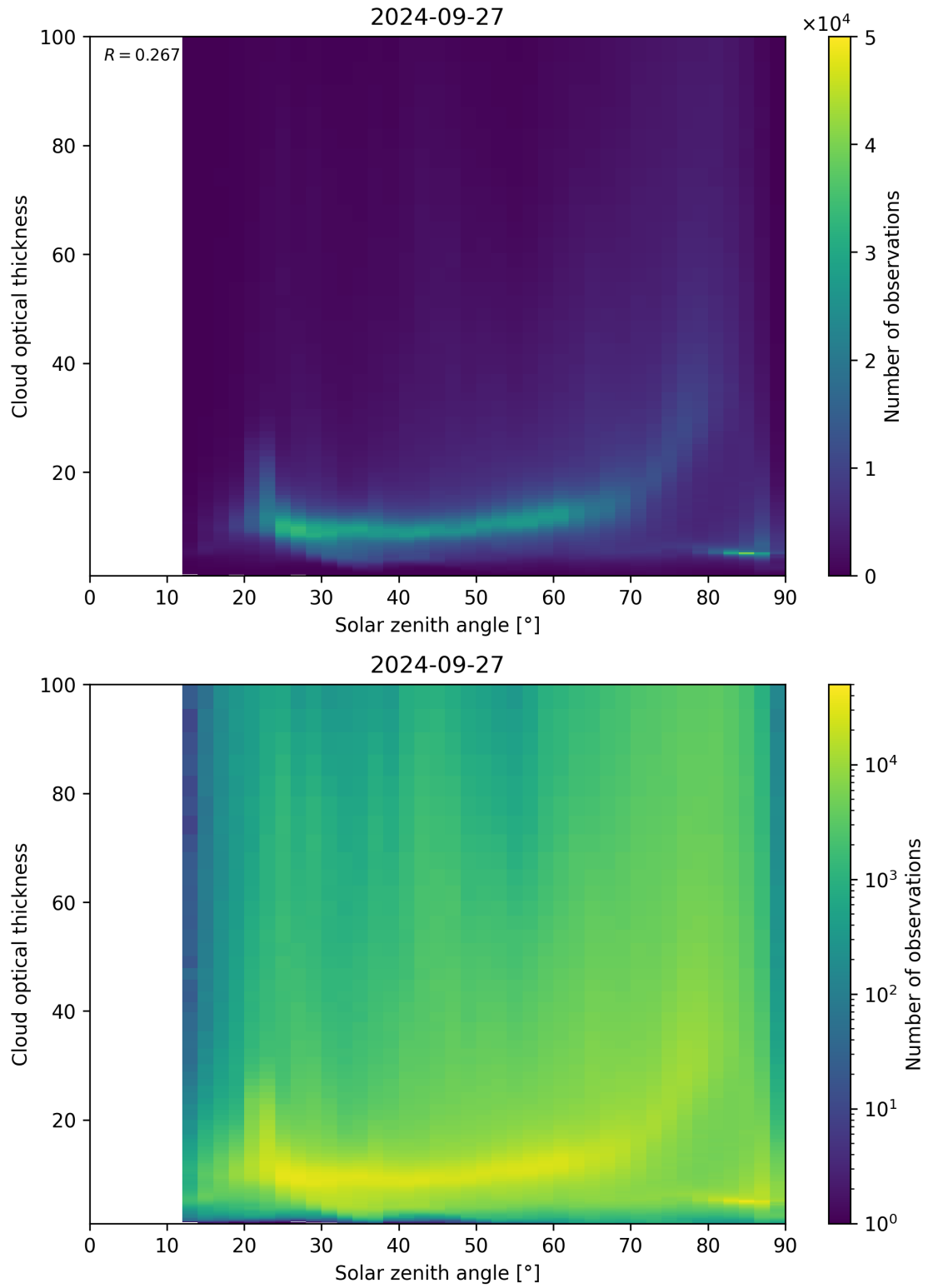


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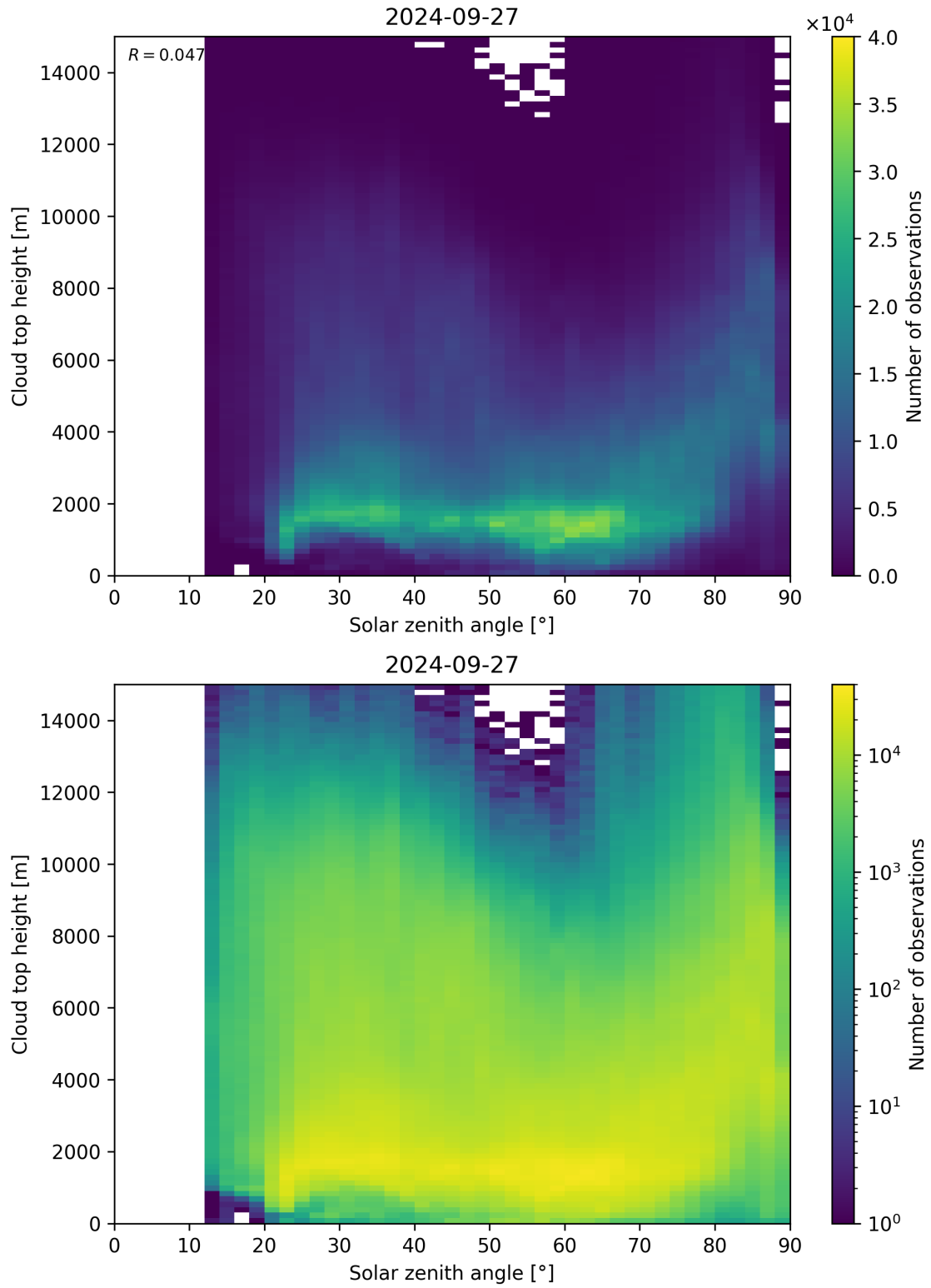


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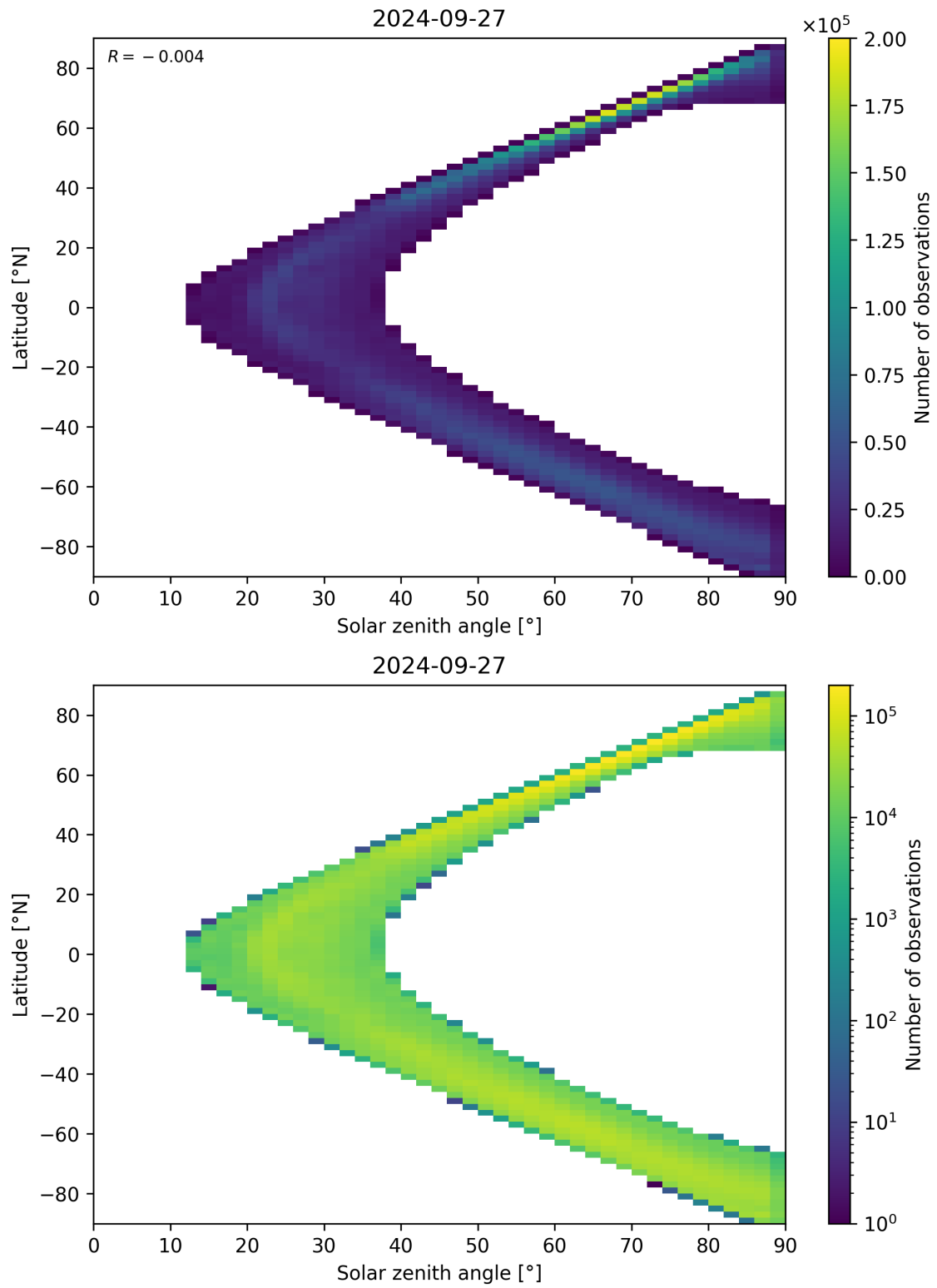


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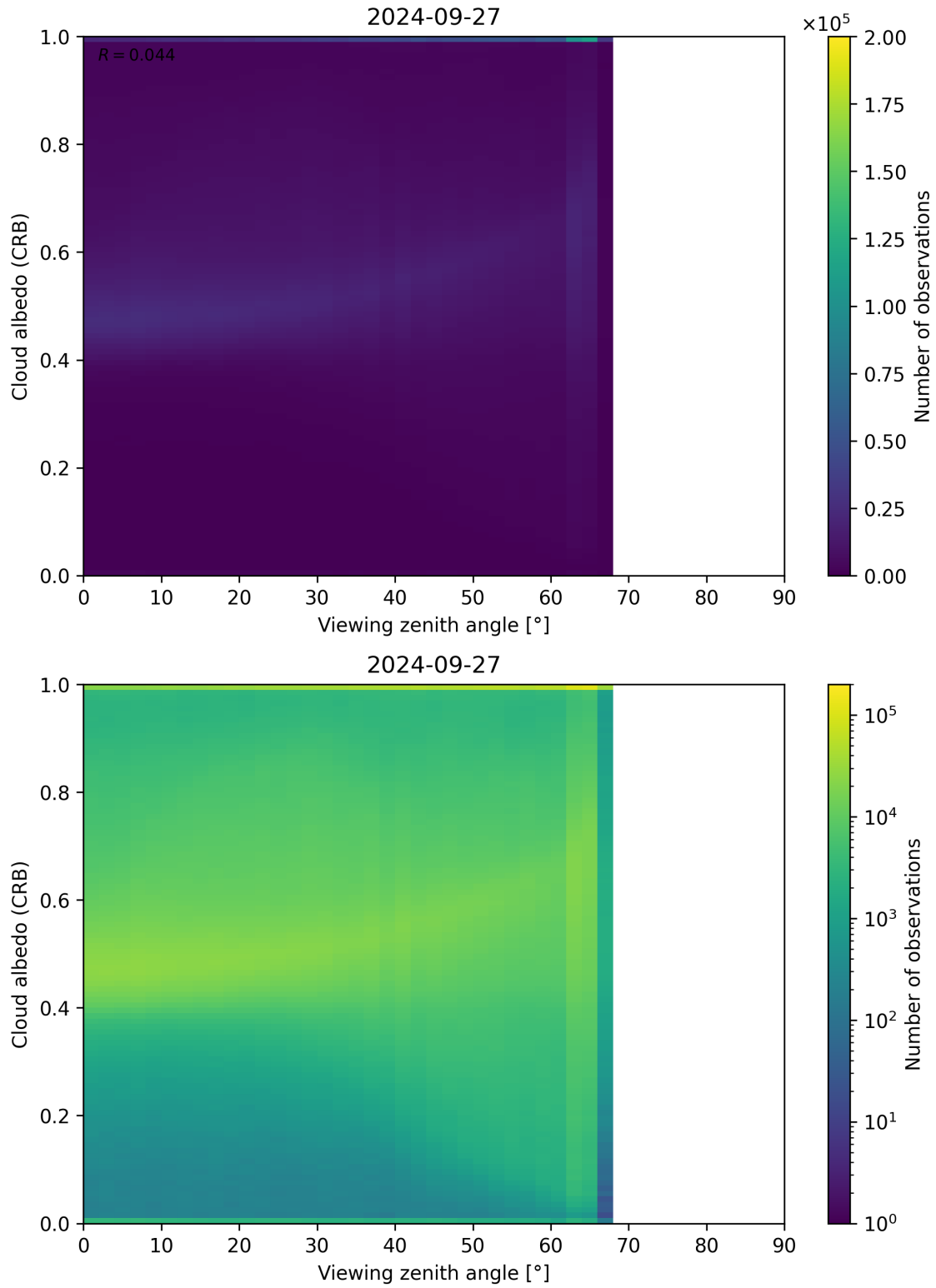


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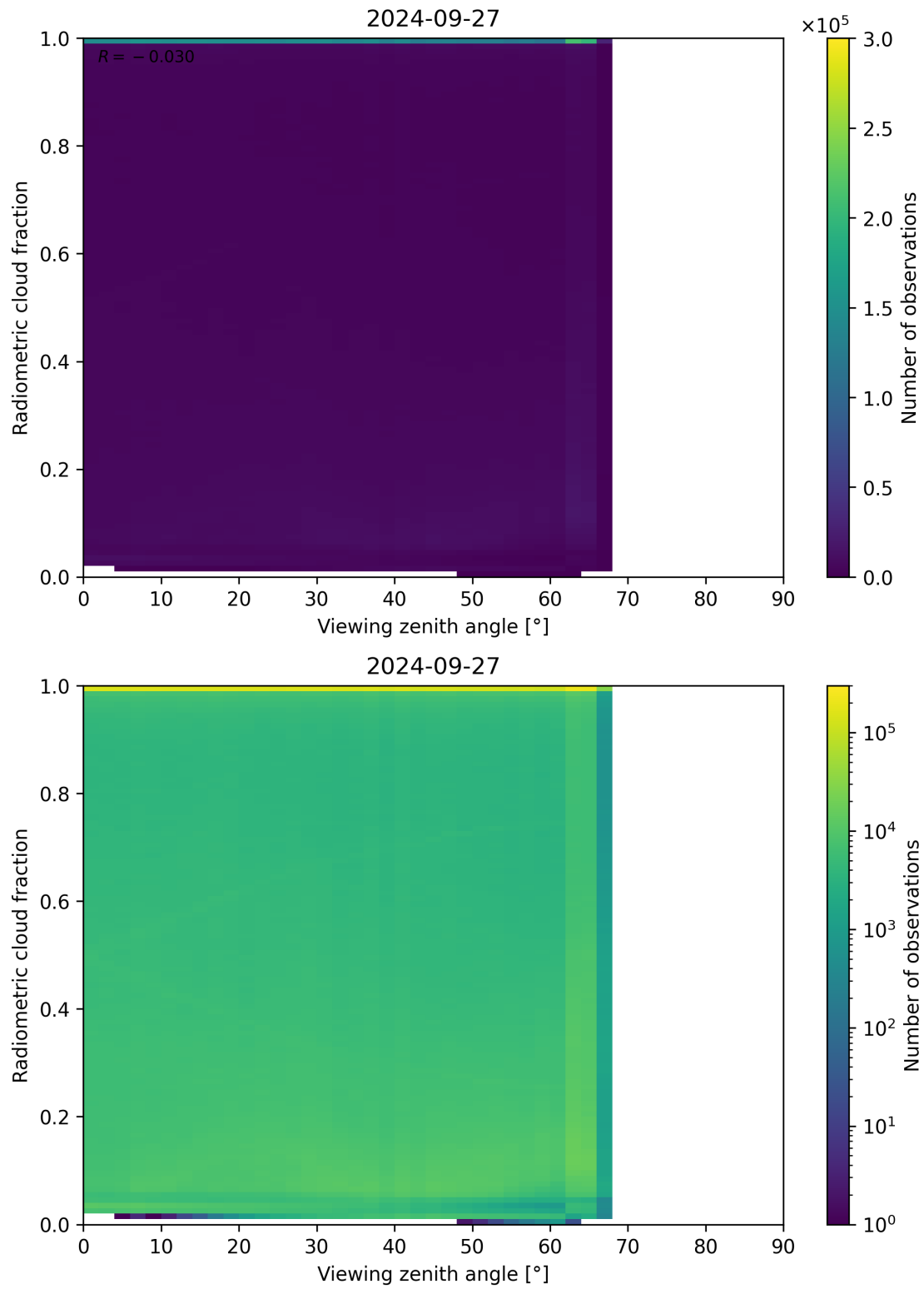


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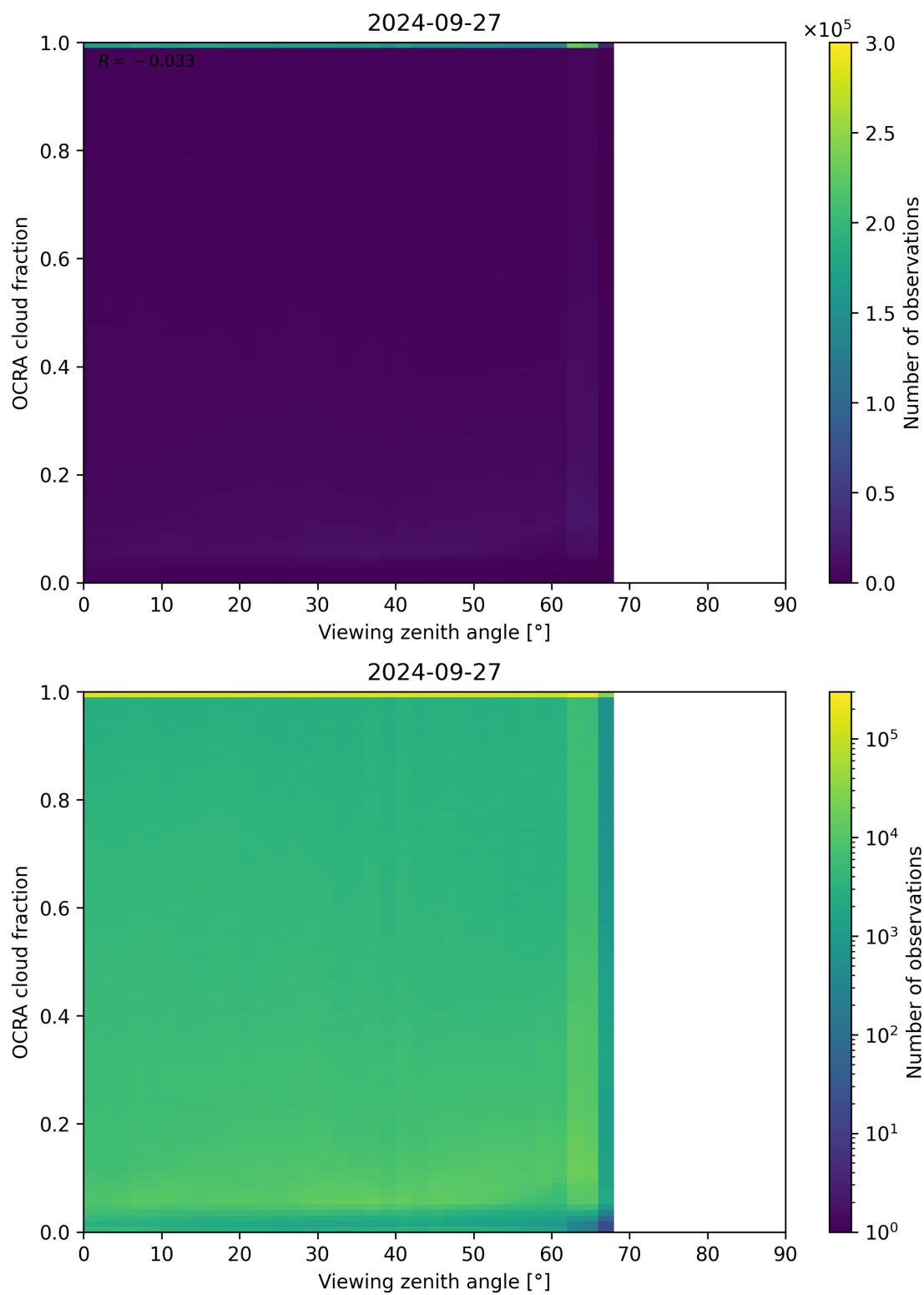


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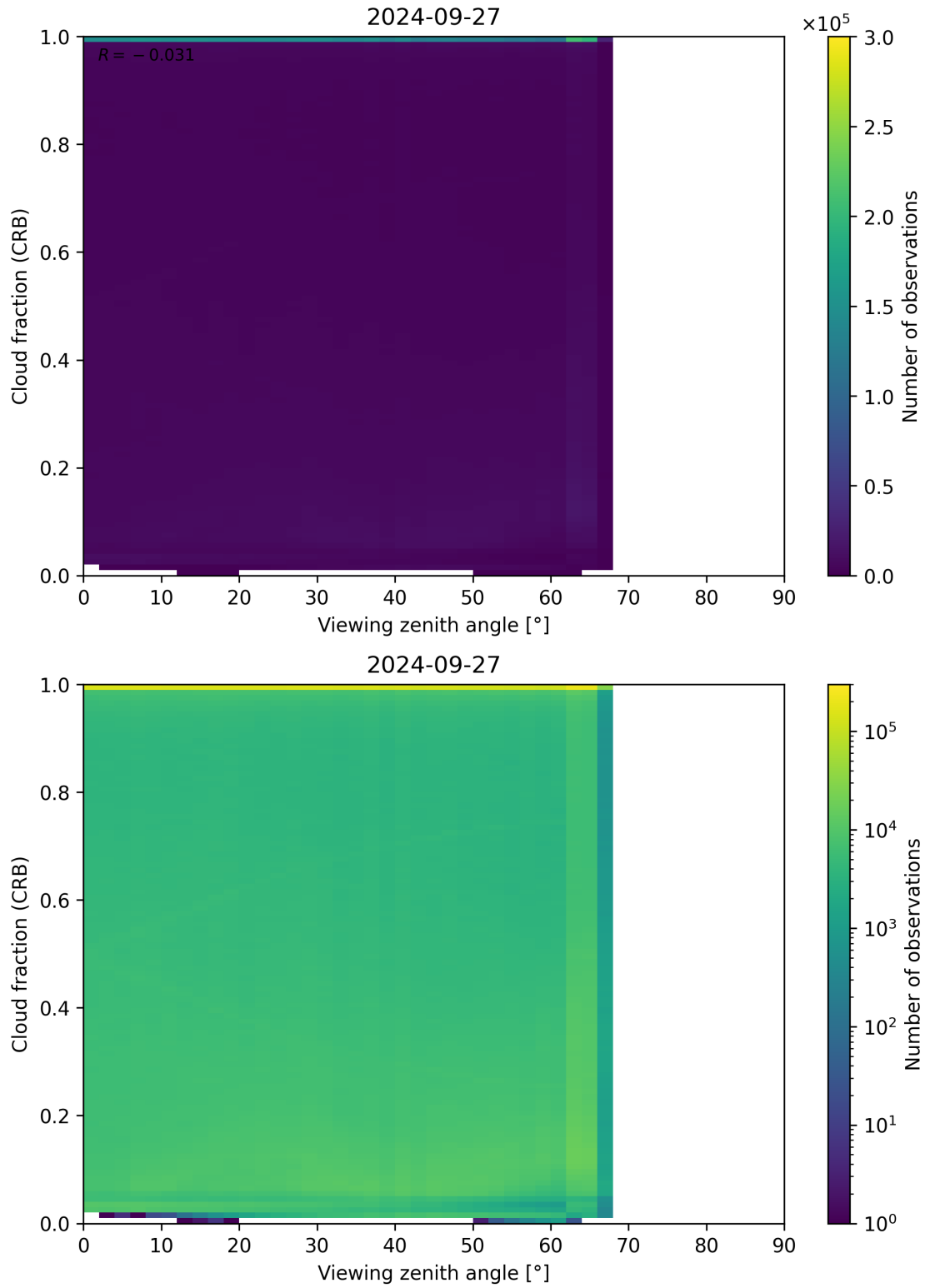


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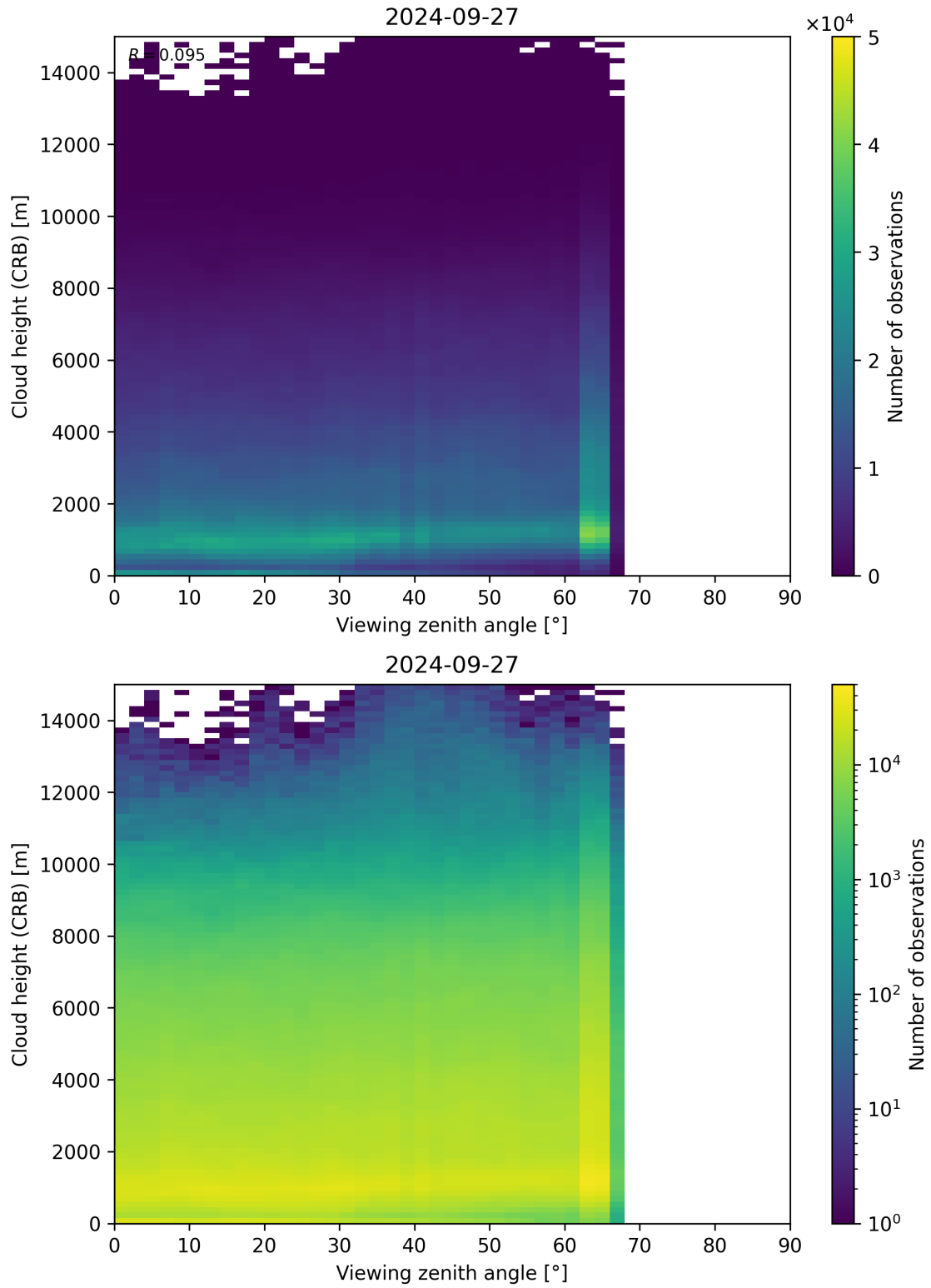


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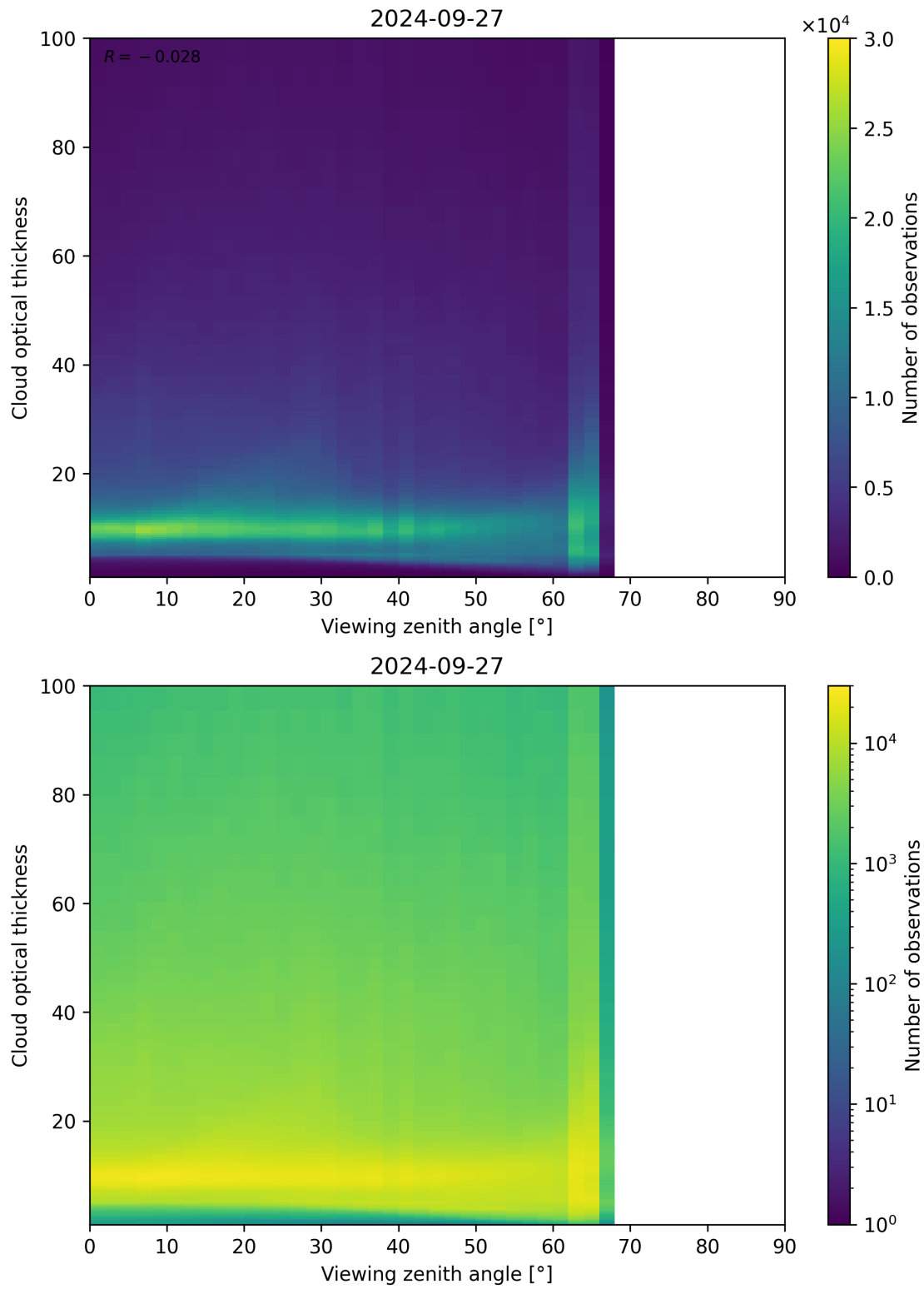


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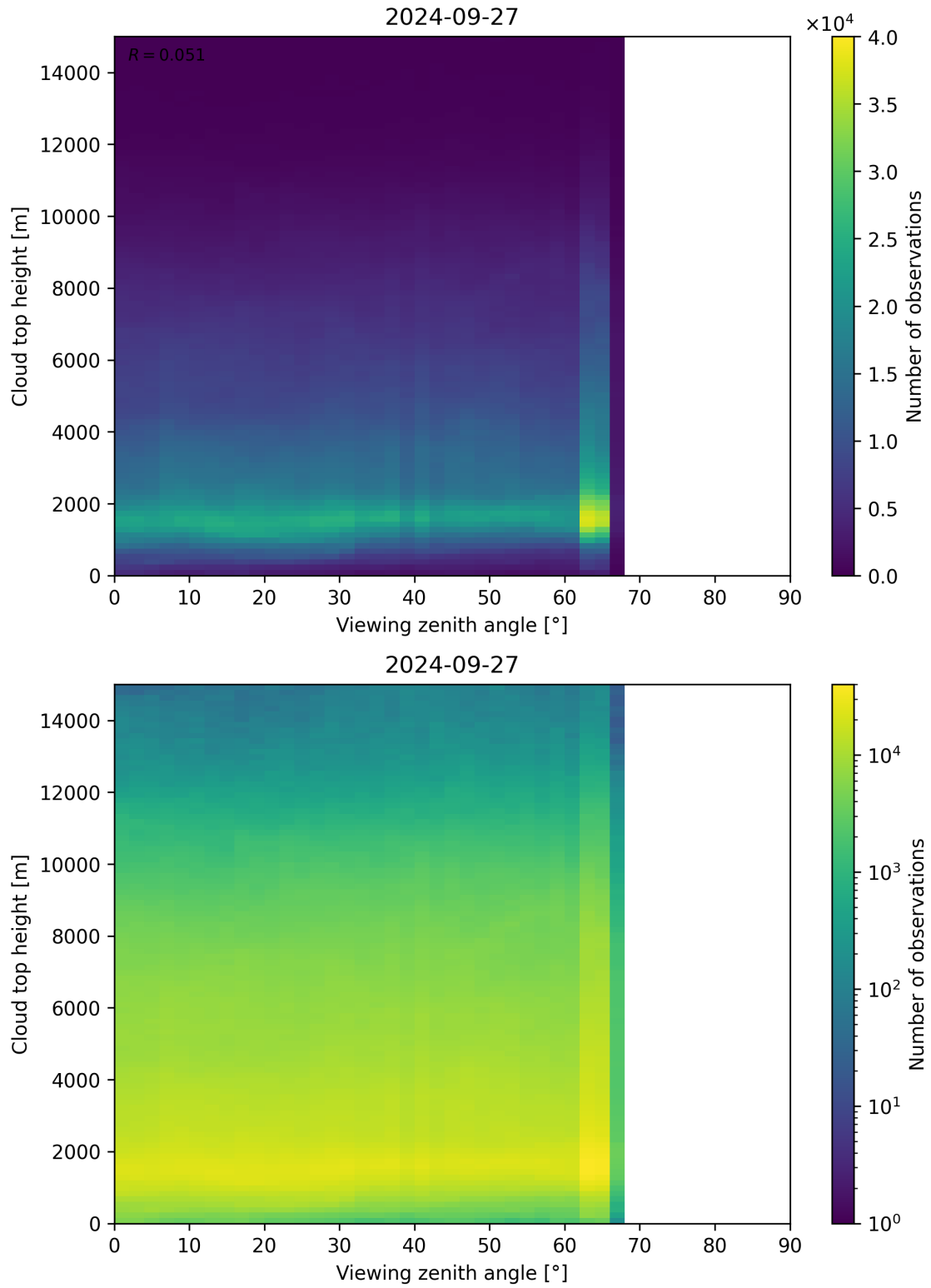


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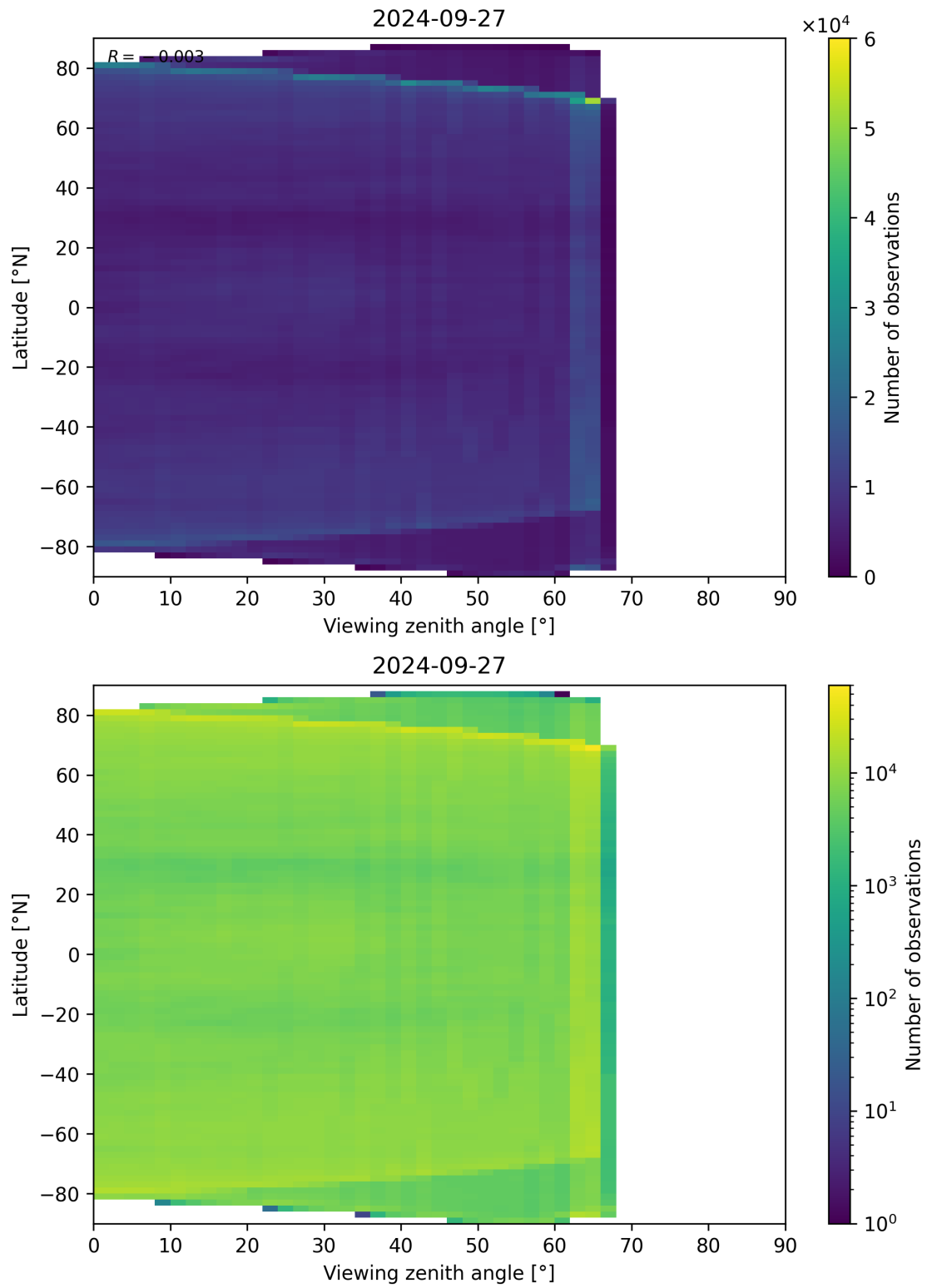


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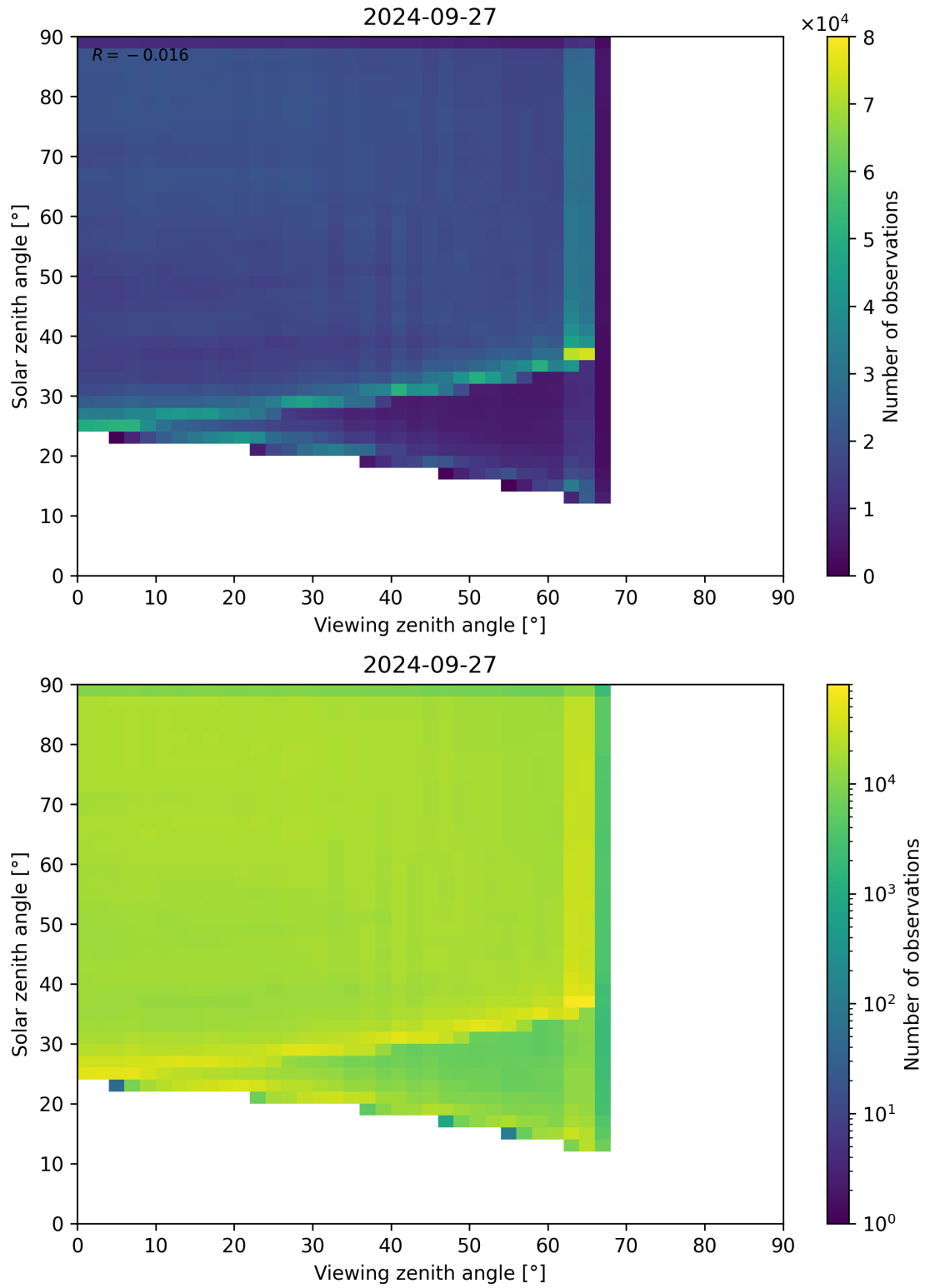


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