

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-05-21 (02:30)

1 Short Introduction

1.1 The list of parameters

You may want to keep the list given in table 1 at hand when viewing the results.

2 Definitions

The averages shown here are *unweighed* averages:

$$\bar{x} = \frac{1}{N} \sum_{i=1}^N x_i \quad (1)$$

with N the number of observations in the dataset.

The spread of the measurements is indicated with the variance $V(x)$, or rather the standard deviation $\sigma(x) = \sqrt{V(x)}$.

$$V(x) = \frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2 \quad (2)$$

We also report the more robust statistics median, minimum, maximum, various percentiles and inter quartile range.

The median m is the value of parameter x for which half of the observations of x is smaller than m :

$$P(x \leq m) = P(x \geq m) = \int_{-\infty}^m f(x) dx = \frac{1}{2} \quad (3)$$

with $f(x)$ the probability density function.

The median is a special case of a percentile. Instead of 1/2 in equation 3, other threshold values can be used. We report results for 1 %, 5 %, 10 %, 15.9 %, 25 %, 75 %, 84.1 %, 90 %, 95 % and 99 %. The inter quartile range is the difference between the 75 % and 25 % percentiles. Similarly the minimum and maximum values correspond to the 0 % and 100 % percentiles respectively.

For normally distributed parameters the mean and median are the same, while the $\mu \pm \sigma$ values and the 15.9 % and 84.1 % percentiles coincide.

To get a measure for the relation of one variable $x_{(k)}$ with another $x_{(l)}$, we calculate the covariance matrix C_{kl} .

$$C_{kl} = C(x_{(k)}, x_{(l)}) = \frac{1}{N-1} \sum_{i=1}^N (x_{(k),i} - \bar{x}_{(k)})(x_{(l),i} - \bar{x}_{(l)}) \quad (4)$$

Rather than a dimensionally dependent covariance, it is often easier to interpret a correlation matrix R_{kl} , a matrix of Pearson's r coefficients:

$$R_{kl} = R(x_{(k)}, x_{(l)}) = \frac{C_{kl}}{\sqrt{C_{kk}C_{ll}}} = \frac{C_{kl}}{\sqrt{V(x_{(k)})V(x_{(l)})}} \quad (5)$$

The diagonal elements of the covariance matrix are the variances of the elements, $V(x_{(k)}) = C_{kk}$ and obviously $R_{kk} = 1$.

Table 1: Parameterlist and basic statistics for the analysis

Variable	mean $\pm \sigma$	Count	Mode	IQR	Median	Minimum	Maximum
qa value [1]	0.578 ± 0.376	18181215	5.000×10^{-3}	0.690	0.700	0.0	1.000
cloud fraction [1]	0.596 ± 0.350	18181215	0.995	0.742	0.613	7.103×10^{-3}	1.000
cloud top height [m]	$(0.374 \pm 0.259) \times 10^4$	18181215	1.575×10^3	3.585×10^3	3.207×10^3	0.0	2.000×10^4
cloud optical thickness [1]	19.6 ± 34.7	18181215	8.91	11.6	9.24	1.000	250
cloud fraction crb [1]	0.595 ± 0.350	18181215	0.995	0.744	0.612	7.743×10^{-3}	1.000
cloud height crb [m]	$(0.286 \pm 0.228) \times 10^4$	18181215	75.0	3.174×10^3	2.421×10^3	0.0	2.000×10^4
cloud albedo crb [1]	0.580 ± 0.213	18181215	0.495	0.280	0.571	0.0	1.000
surface albedo fitted [1]	0.257 ± 0.314	18181215	2.500×10^{-2}	0.373	6.672×10^{-2}	0.0	1.000
surface albedo fitted crb [1]	0.251 ± 0.310	18181215	1.500×10^{-2}	0.411	5.158×10^{-2}	0.0	1.000
fitted root mean square [1]	$(8.327 \pm 13.263) \times 10^{-4}$	18181215	5.000×10^{-5}	1.038×10^{-3}	3.820×10^{-4}	1.022×10^{-6}	0.284
fitted root mean square crb [1]	$(7.374 \pm 11.148) \times 10^{-4}$	18181215	5.000×10^{-5}	9.957×10^{-4}	3.050×10^{-4}	7.446×10^{-7}	1.36
wavelength shift [nm]	$(7.255 \pm 6.867) \times 10^{-3}$	18181215	-3.000×10^{-4}	1.023×10^{-2}	6.621×10^{-3}	-6.637×10^{-2}	0.105
cloud fraction apriori [1]	0.610 ± 0.355	18181215	0.995	0.739	0.649	0.0	1.000
reflectance blue ocra [1]	0.561 ± 0.221	18181215	0.265	0.378	0.541	0.134	1.93
reflectance green ocra [1]	0.510 ± 0.250	18181215	0.175	0.447	0.490	8.770×10^{-2}	1.97
reflectance continuum aband [1]	0.462 ± 0.276	18181215	4.500×10^{-2}	0.465	0.452	1.216×10^{-2}	5.61

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	0.210	0.900	0.990	1.000	1.000	1.000
cloud fraction [1]	2.653×10^{-2}	6.859×10^{-2}	0.107	0.158	0.256	0.998	1.000	1.000	1.000	1.000
cloud top height [m]	156	515	882	1.255×10^3	1.694×10^3	5.278×10^3	6.462×10^3	7.489×10^3	8.811×10^3	1.107×10^4
cloud optical thickness [1]	1.000	2.41	3.61	4.54	5.65	17.3	26.6	39.6	69.6	238
cloud fraction crb [1]	2.599×10^{-2}	6.771×10^{-2}	0.106	0.157	0.255	0.999	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	2.66	242	599	1.045×10^3	4.219×10^3	5.242×10^3	6.174×10^3	7.333×10^3	9.296×10^3
cloud albedo crb [1]	0.0	0.198	0.315	0.394	0.453	0.733	0.812	0.868	0.928	1.000
surface albedo fitted [1]	0.0	9.076×10^{-3}	1.468×10^{-2}	1.996×10^{-2}	2.787×10^{-2}	0.401	0.737	0.830	0.903	0.985
surface albedo fitted crb [1]	0.0	6.666×10^{-3}	1.057×10^{-2}	1.454×10^{-2}	2.072×10^{-2}	0.432	0.735	0.808	0.863	0.938
fitted root mean square [1]	1.064×10^{-5}	2.320×10^{-5}	3.785×10^{-5}	6.095×10^{-5}	1.100×10^{-4}	1.148×10^{-3}	1.734×10^{-3}	2.281×10^{-3}	2.952×10^{-3}	4.425×10^{-3}
fitted root mean square crb [1]	5.022×10^{-6}	1.195×10^{-5}	2.171×10^{-5}	3.488×10^{-5}	6.461×10^{-5}	1.060×10^{-3}	1.630×10^{-3}	2.172×10^{-3}	2.816×10^{-3}	4.051×10^{-3}
wavelength shift [nm]	-7.637×10^{-3}	-1.090×10^{-3}	-1.611×10^{-4}	3.775×10^{-4}	1.742×10^{-3}	1.197×10^{-2}	1.432×10^{-2}	1.632×10^{-2}	1.895×10^{-2}	2.456×10^{-2}
cloud fraction apriori [1]	2.965×10^{-2}	6.575×10^{-2}	0.102	0.154	0.261	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.230	0.259	0.283	0.314	0.364	0.742	0.814	0.864	0.912	1.04
reflectance green ocra [1]	0.150	0.173	0.194	0.221	0.275	0.722	0.802	0.855	0.904	1.01
reflectance continuum aband [1]	2.972×10^{-2}	5.324×10^{-2}	8.760×10^{-2}	0.134	0.226	0.691	0.774	0.831	0.890	1.02

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

Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.545 ± 0.368	11770025	0.770	0.670	0.0	1.000	0.130	0.900
cloud fraction [1]	0.633 ± 0.351	11770025	0.709	0.696	7.103×10^{-3}	1.000	0.290	1.000
cloud top height [m]	$(0.359 \pm 0.266) \times 10^4$	11770025	3.759×10^3	3.022×10^3	0.0	2.000×10^4	1.453×10^3	5.213×10^3
cloud optical thickness [1]	15.3 ± 27.3	11770025	8.92	8.32	1.000	250	5.15	14.1
cloud fraction crb [1]	0.633 ± 0.351	11770025	0.710	0.697	7.743×10^{-3}	1.000	0.290	1.000
cloud height crb [m]	$(0.262 \pm 0.231) \times 10^4$	11770025	3.354×10^3	2.125×10^3	0.0	2.000×10^4	687	4.041×10^3
cloud albedo crb [1]	0.588 ± 0.233	11770025	0.328	0.588	0.0	1.000	0.443	0.771
surface albedo fitted [1]	0.361 ± 0.343	11770025	0.693	0.239	0.0	1.000	3.584×10^{-2}	0.729
surface albedo fitted crb [1]	0.357 ± 0.336	11770025	0.699	0.241	0.0	1.000	2.938×10^{-2}	0.728
fitted root mean square [1]	$(1.105 \pm 1.544) \times 10^{-3}$	11770025	1.447×10^{-3}	6.864×10^{-4}	1.454×10^{-6}	0.284	1.845×10^{-4}	1.631×10^{-3}
fitted root mean square crb [1]	$(9.761 \pm 12.795) \times 10^{-4}$	11770025	1.399×10^{-3}	5.846×10^{-4}	7.446×10^{-7}	1.36	1.204×10^{-4}	1.520×10^{-3}
wavelength shift [nm]	$(8.591 \pm 6.871) \times 10^{-3}$	11770025	1.009×10^{-2}	8.596×10^{-3}	-6.637×10^{-2}	0.105	3.261×10^{-3}	1.335×10^{-2}
cloud fraction apriori [1]	0.655 ± 0.352	11770025	0.687	0.756	0.0	1.000	0.313	1.000
reflectance blue oca [1]	0.596 ± 0.233	11770025	0.419	0.611	0.134	1.93	0.374	0.794
reflectance green oca [1]	0.554 ± 0.260	11770025	0.481	0.580	8.770×10^{-2}	1.97	0.300	0.780
reflectance continuum aband [1]	0.519 ± 0.276	11770025	0.461	0.550	1.216×10^{-2}	5.61	0.287	0.749

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]	0.638 ± 0.383	6411190	0.700	0.850	0.0	1.000	0.300	1.000
cloud fraction [1]	0.527 ± 0.337	6411190	0.662	0.498	8.003×10^{-3}	1.000	0.207	0.869
cloud top height [m]	$(0.403 \pm 0.244) \times 10^4$	6411190	3.346×10^3	3.491×10^3	0.0	2.000×10^4	2.067×10^3	5.413×10^3
cloud optical thickness [1]	27.5 ± 44.1	6411190	17.7	11.6	1.000	250	6.96	24.7
cloud fraction crb [1]	0.524 ± 0.337	6411190	0.660	0.494	8.377×10^{-3}	1.000	0.205	0.865
cloud height crb [m]	$(0.330 \pm 0.215) \times 10^4$	6411190	3.000×10^3	2.851×10^3	0.0	1.642×10^4	1.551×10^3	4.551×10^3
cloud albedo crb [1]	0.567 ± 0.171	6411190	0.201	0.555	0.0	1.000	0.466	0.668
surface albedo fitted [1]	$(6.723 \pm 9.190) \times 10^{-2}$	6411190	4.112×10^{-2}	3.692×10^{-2}	0.0	1.000	2.199×10^{-2}	6.311×10^{-2}
surface albedo fitted crb [1]	$(5.765 \pm 9.231) \times 10^{-2}$	6411190	3.178×10^{-2}	2.631×10^{-2}	0.0	1.000	1.484×10^{-2}	4.662×10^{-2}
fitted root mean square [1]	$(3.333 \pm 4.766) \times 10^{-4}$	6411190	3.324×10^{-4}	1.668×10^{-4}	1.022×10^{-6}	2.545×10^{-2}	6.121×10^{-5}	3.936×10^{-4}
fitted root mean square crb [1]	$(2.992 \pm 4.711) \times 10^{-4}$	6411190	3.240×10^{-4}	1.047×10^{-4}	8.515×10^{-7}	2.561×10^{-2}	3.661×10^{-5}	3.606×10^{-4}
wavelength shift [nm]	$(4.800 \pm 6.144) \times 10^{-3}$	6411190	7.543×10^{-3}	3.510×10^{-3}	-4.386×10^{-2}	5.966×10^{-2}	5.798×10^{-4}	8.122×10^{-3}
cloud fraction apriori [1]	0.526 ± 0.344	6411190	0.687	0.495	0.0	1.000	0.196	0.883
reflectance blue ocra [1]	0.497 ± 0.181	6411190	0.259	0.467	0.149	1.92	0.353	0.611
reflectance green ocra [1]	0.427 ± 0.206	6411190	0.315	0.394	8.991×10^{-2}	1.90	0.252	0.567
reflectance continuum aband [1]	0.357 ± 0.244	6411190	0.375	0.326	1.286×10^{-2}	4.63	0.148	0.523

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]	0.594 ± 0.371	12276392	0.600	0.720	0.0	1.000	0.300	0.900
cloud fraction [1]	0.557 ± 0.347	12276392	0.736	0.538	7.414×10^{-3}	1.000	0.224	0.960
cloud top height [m]	$(0.364 \pm 0.260) \times 10^4$	12276392	3.521×10^3	3.053×10^3	0.0	2.000×10^4	1.604×10^3	5.124×10^3
cloud optical thickness [1]	21.8 ± 37.2	12276392	12.9	10.1	1.000	250	6.32	19.2
cloud fraction crb [1]	0.555 ± 0.347	12276392	0.736	0.535	8.395×10^{-3}	1.000	0.223	0.958
cloud height crb [m]	$(0.284 \pm 0.233) \times 10^4$	12276392	3.149×10^3	2.356×10^3	0.0	2.000×10^4	1.009×10^3	4.158×10^3
cloud albedo crb [1]	0.570 ± 0.198	12276392	0.254	0.556	0.0	1.000	0.451	0.705
surface albedo fitted [1]	0.168 ± 0.287	12276392	5.064×10^{-2}	3.668×10^{-2}	0.0	1.000	2.095×10^{-2}	7.159×10^{-2}
surface albedo fitted crb [1]	0.158 ± 0.280	12276392	4.011×10^{-2}	2.779×10^{-2}	0.0	1.000	1.527×10^{-2}	5.538×10^{-2}
fitted root mean square [1]	$(6.063 \pm 10.907) \times 10^{-4}$	12276392	6.672×10^{-4}	2.333×10^{-4}	1.022×10^{-6}	0.237	7.824×10^{-5}	7.455×10^{-4}
fitted root mean square crb [1]	$(5.457 \pm 9.667) \times 10^{-4}$	12276392	6.280×10^{-4}	1.752×10^{-4}	7.593×10^{-7}	1.36	5.125×10^{-5}	6.793×10^{-4}
wavelength shift [nm]	$(6.626 \pm 6.798) \times 10^{-3}$	12276392	9.756×10^{-3}	5.688×10^{-3}	-6.637×10^{-2}	0.105	1.395×10^{-3}	1.115×10^{-2}
cloud fraction apriori [1]	0.566 ± 0.352	12276392	0.777	0.559	0.0	1.000	0.223	1.000
reflectance blue ocr [1]	0.545 ± 0.212	12276392	0.356	0.517	0.158	1.87	0.359	0.716
reflectance green ocr [1]	0.486 ± 0.241	12276392	0.428	0.459	9.366×10^{-2}	1.82	0.261	0.689
reflectance continuum aband [1]	0.413 ± 0.277	12276392	0.501	0.392	1.216×10^{-2}	4.63	0.148	0.649

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]	0.604 ± 0.372	3627898	0.650	0.720	0.0	1.000	0.260	0.910
cloud fraction [1]	0.647 ± 0.352	3627898	0.692	0.745	7.519×10^{-3}	1.000	0.308	1.000
cloud top height [m]	$(0.416 \pm 0.255) \times 10^4$	3627898	3.450×10^3	3.687×10^3	0.0	2.000×10^4	2.213×10^3	5.663×10^3
cloud optical thickness [1]	14.6 ± 25.0	3627898	8.90	7.81	1.000	250	4.85	13.7
cloud fraction crb [1]	0.647 ± 0.352	3627898	0.693	0.746	7.743×10^{-3}	1.000	0.307	1.000
cloud height crb [m]	$(0.311 \pm 0.215) \times 10^4$	3627898	3.048×10^3	2.700×10^3	0.0	2.000×10^4	1.422×10^3	4.471×10^3
cloud albedo crb [1]	0.598 ± 0.231	3627898	0.305	0.602	0.0	1.000	0.465	0.771
surface albedo fitted [1]	0.410 ± 0.261	3627898	0.313	0.298	1.902×10^{-3}	1.000	0.225	0.538
surface albedo fitted crb [1]	0.411 ± 0.255	3627898	0.355	0.300	1.798×10^{-3}	1.000	0.222	0.577
fitted root mean square [1]	$(1.309 \pm 1.545) \times 10^{-3}$	3627898	1.414×10^{-3}	9.514×10^{-4}	2.796×10^{-6}	0.261	4.495×10^{-4}	1.863×10^{-3}
fitted root mean square crb [1]	$(1.169 \pm 1.059) \times 10^{-3}$	3627898	1.370×10^{-3}	8.864×10^{-4}	1.082×10^{-6}	8.612×10^{-2}	3.730×10^{-4}	1.743×10^{-3}
wavelength shift [nm]	$(8.564 \pm 6.663) \times 10^{-3}$	3627898	9.600×10^{-3}	8.487×10^{-3}	-3.569×10^{-2}	5.474×10^{-2}	3.537×10^{-3}	1.314×10^{-2}
cloud fraction apriori [1]	0.669 ± 0.356	3627898	0.675	0.810	0.0	1.000	0.325	1.000
reflectance blue ocr [1]	0.562 ± 0.238	3627898	0.412	0.541	0.134	1.93	0.346	0.758
reflectance green ocr [1]	0.524 ± 0.261	3627898	0.468	0.500	8.770×10^{-2}	1.97	0.278	0.746
reflectance continuum aband [1]	0.547 ± 0.238	3627898	0.398	0.513	1.912×10^{-2}	3.29	0.343	0.742

3 Granule outlines

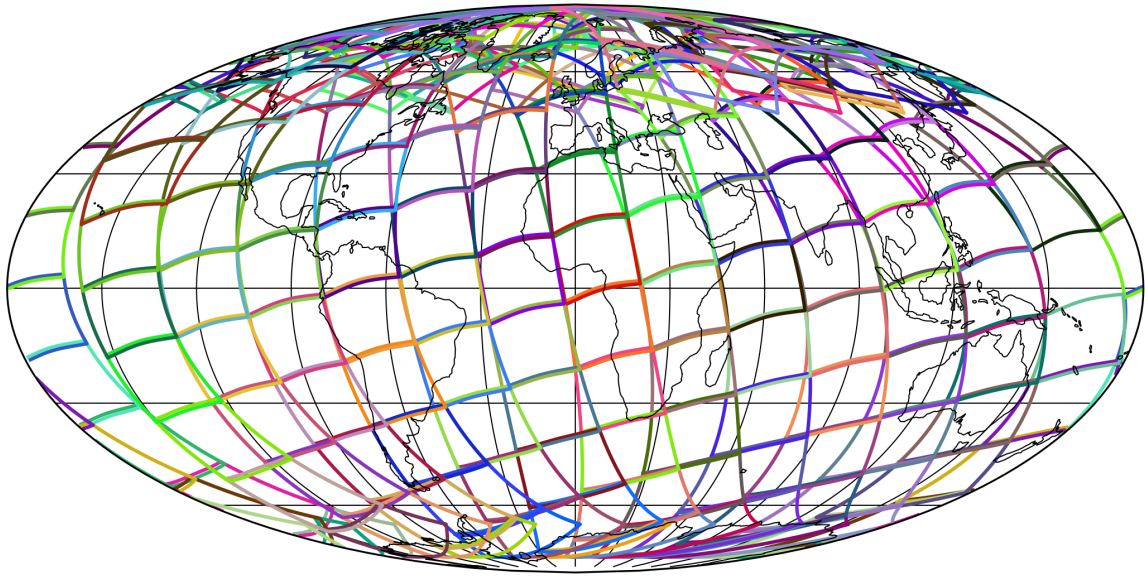


Figure 1: Outline of the granules.

4 Input data monitoring

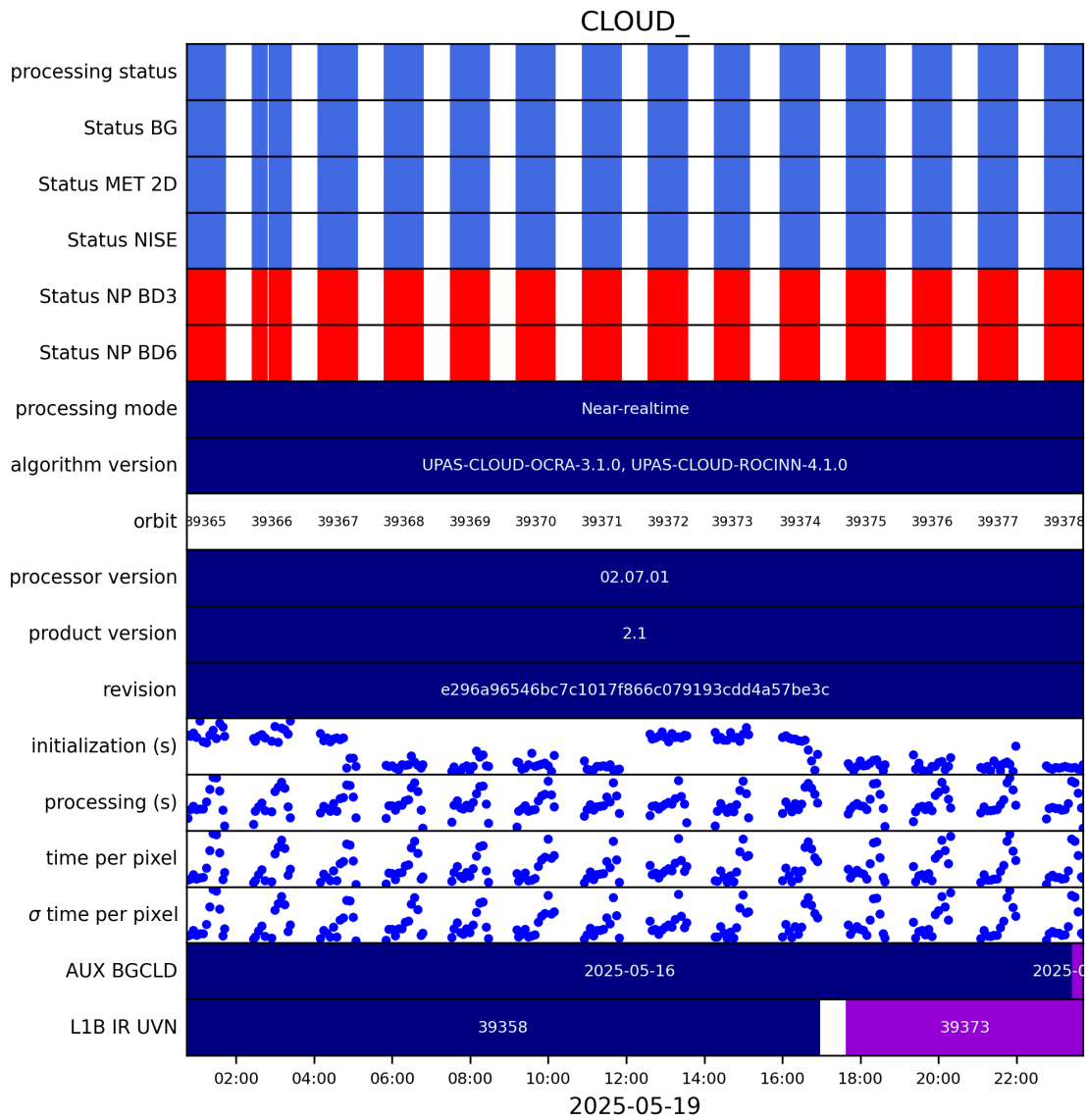


Figure 2: Input data per granule

5 Warnings and errors

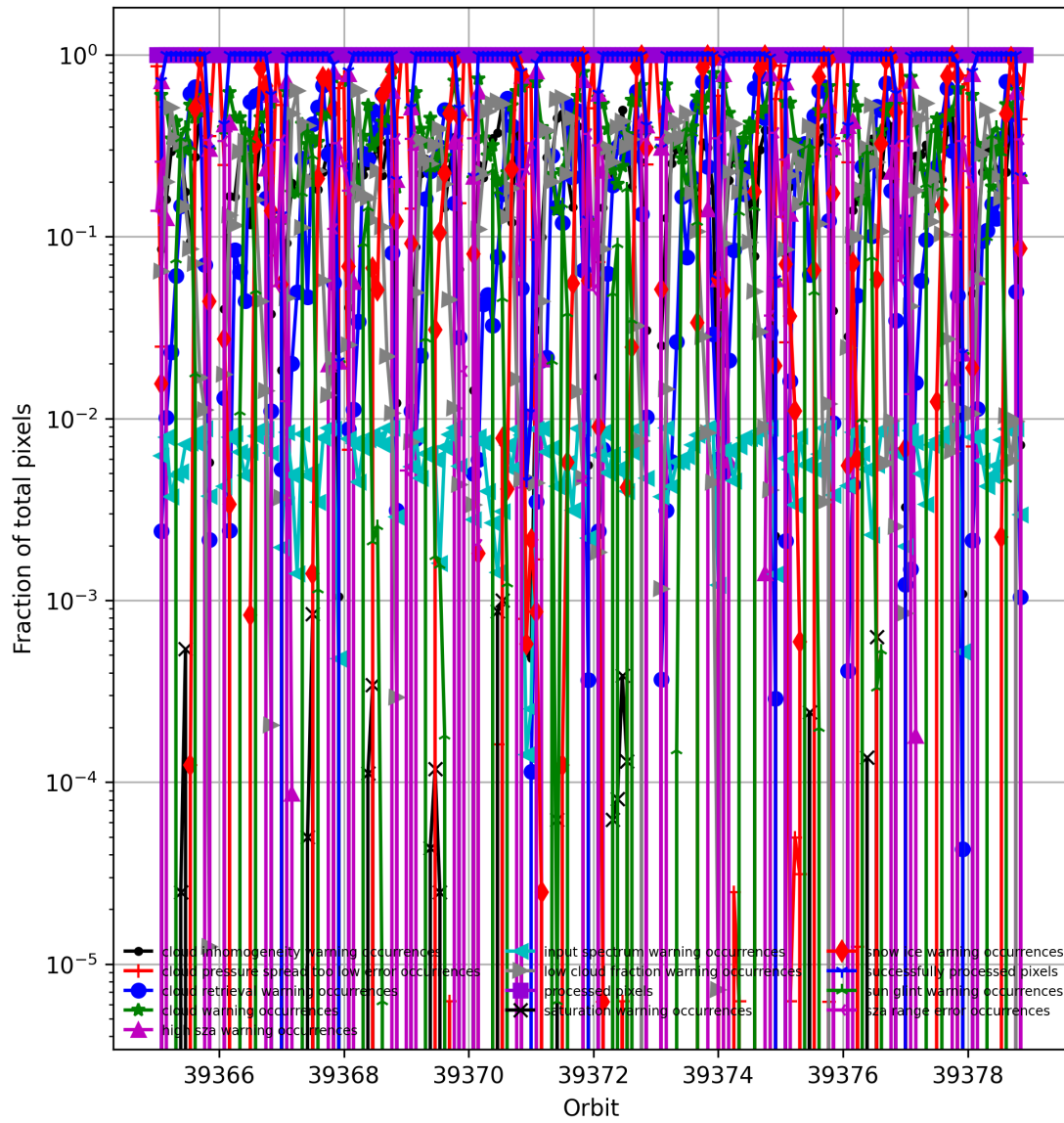


Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

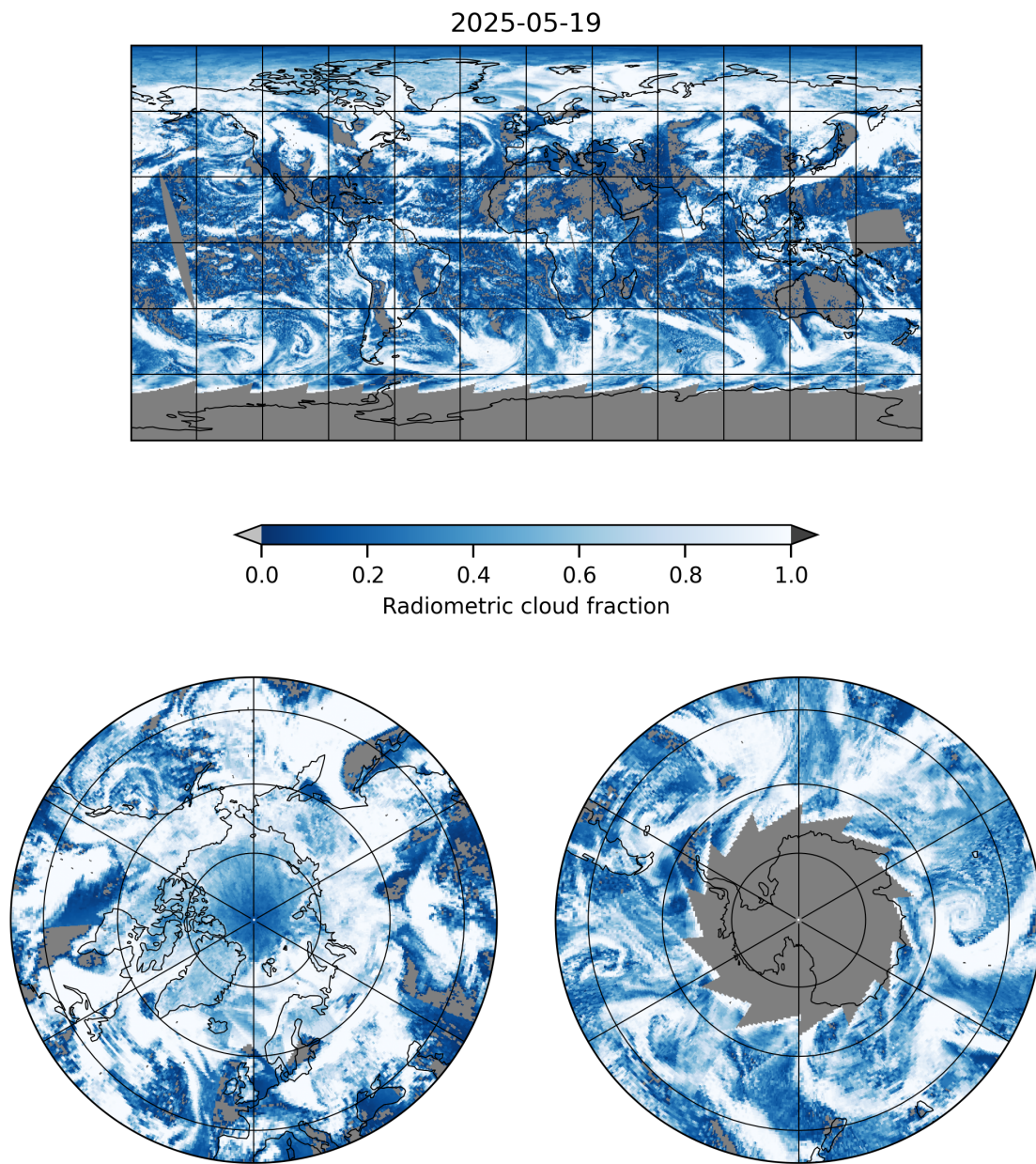


Figure 4: Map of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19

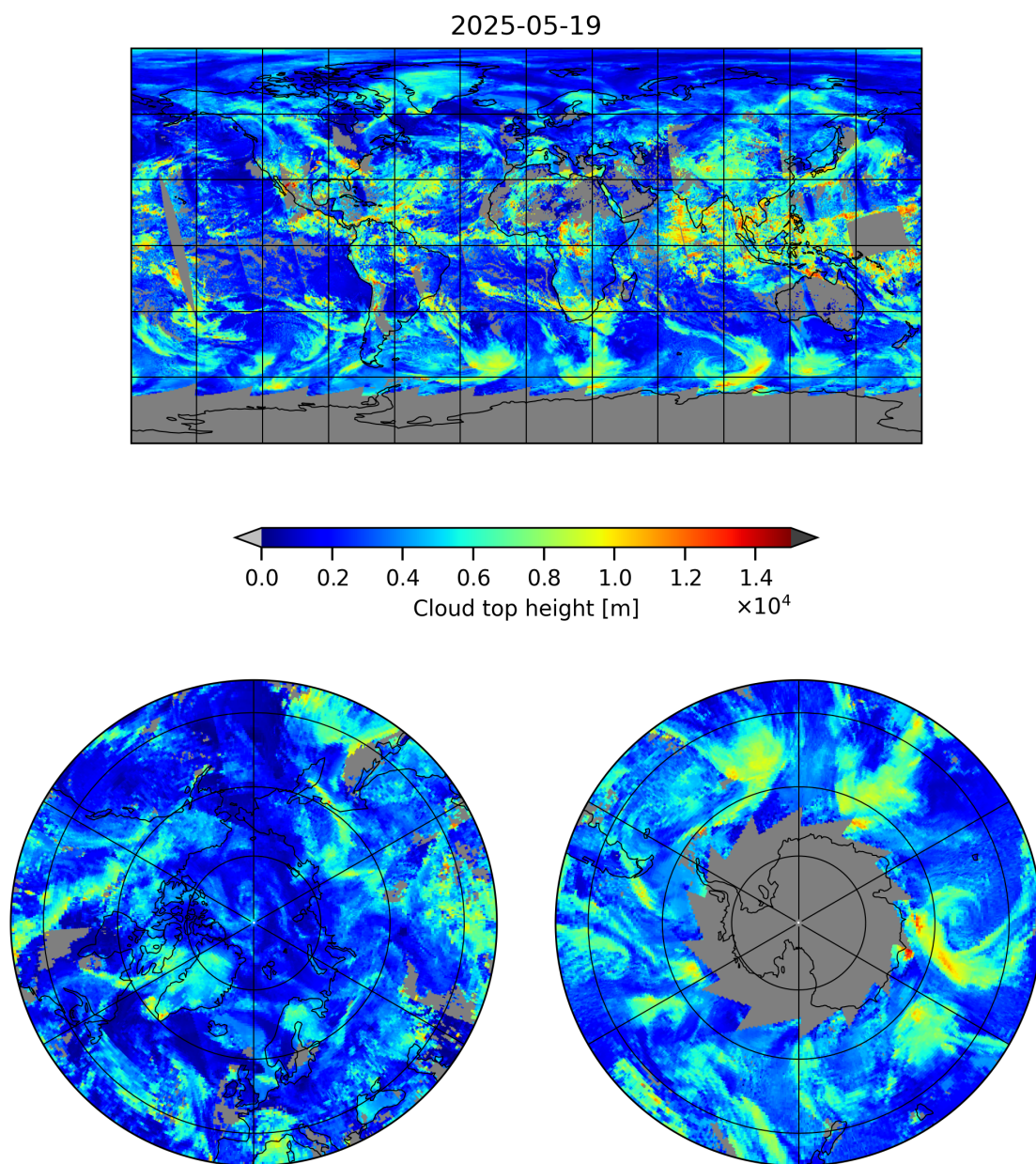


Figure 5: Map of “Cloud top height” for 2025-05-19 to 2025-05-19

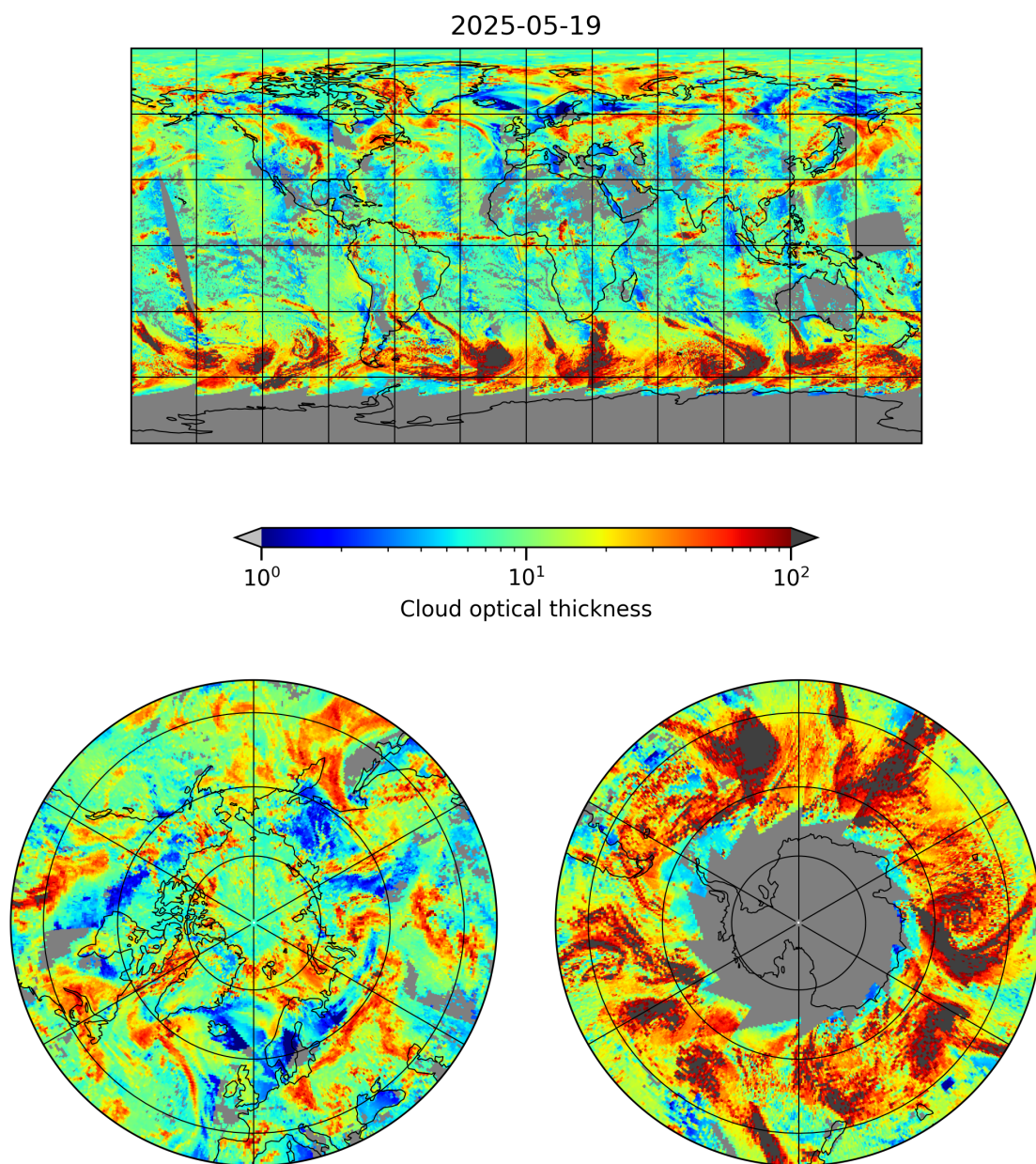


Figure 6: Map of “Cloud optical thickness” for 2025-05-19 to 2025-05-19

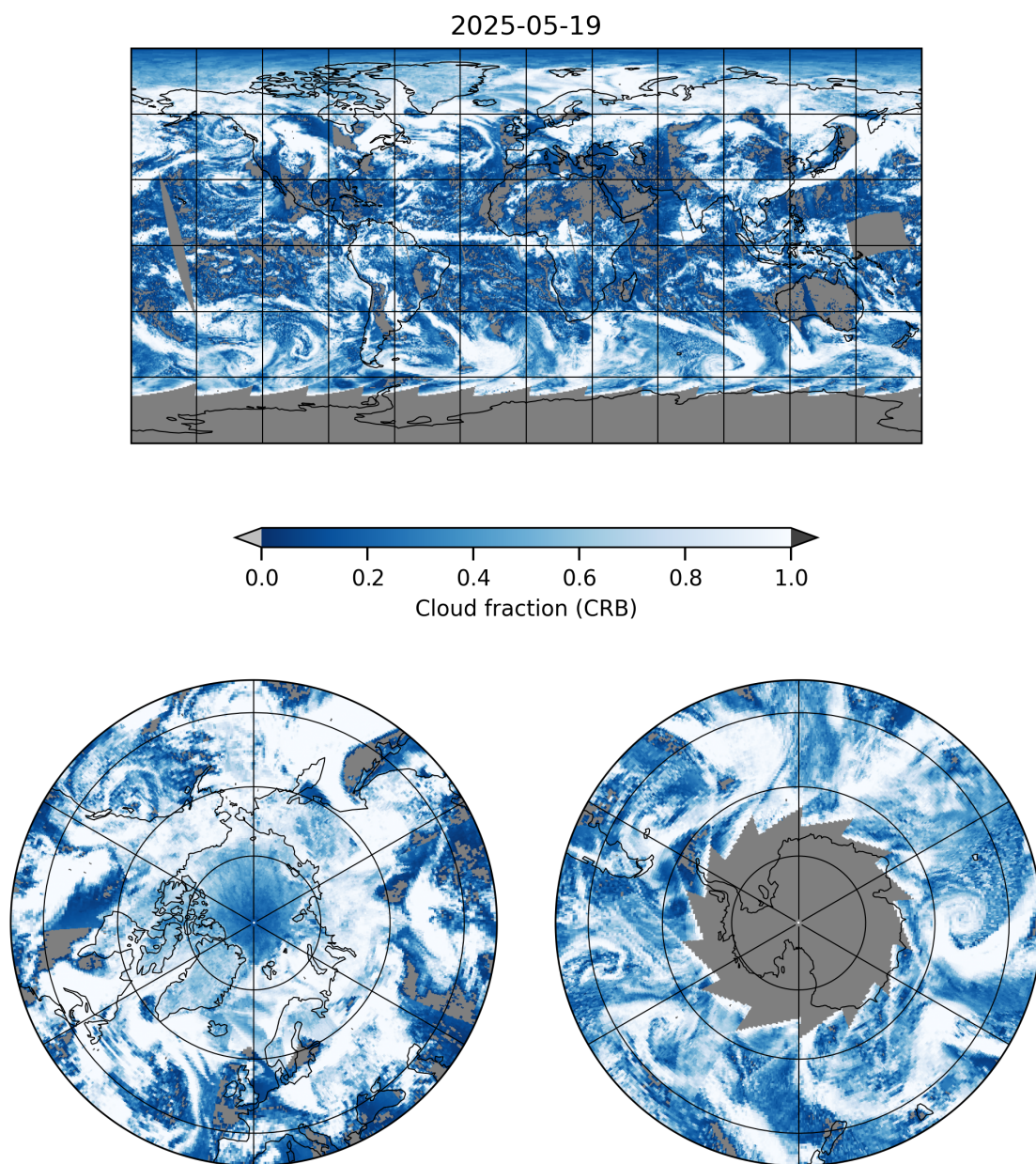


Figure 7: Map of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19

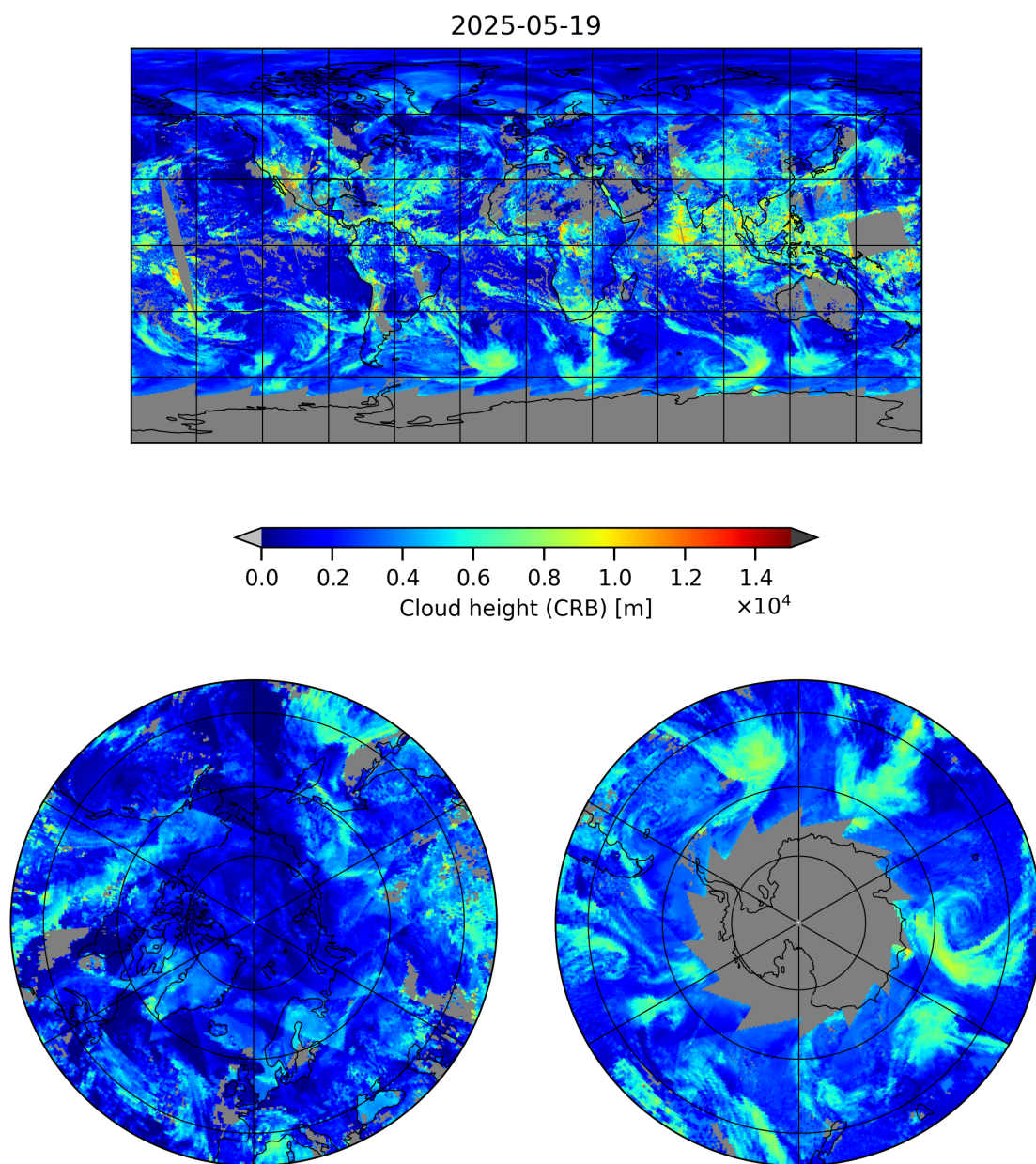


Figure 8: Map of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19

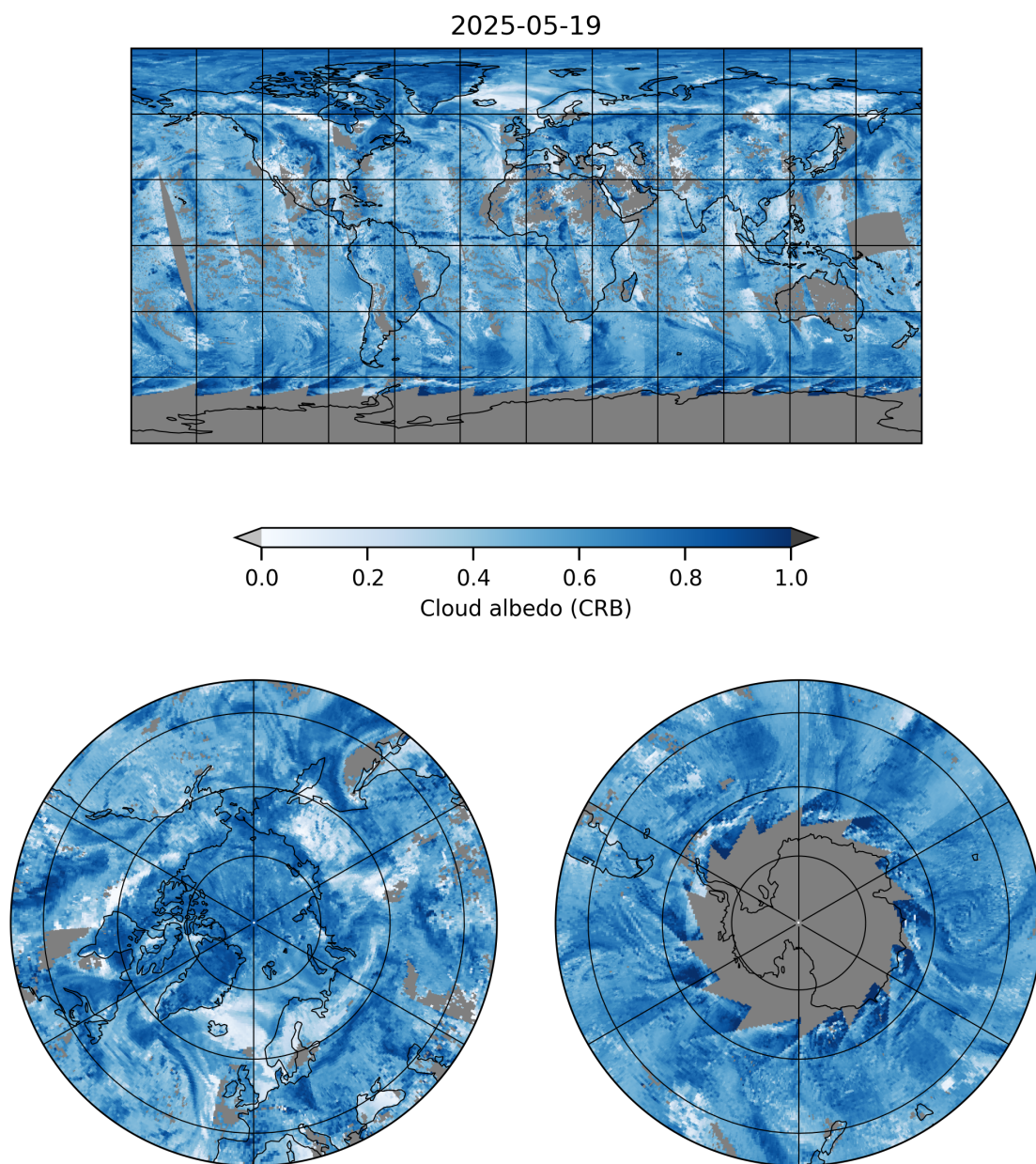


Figure 9: Map of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19

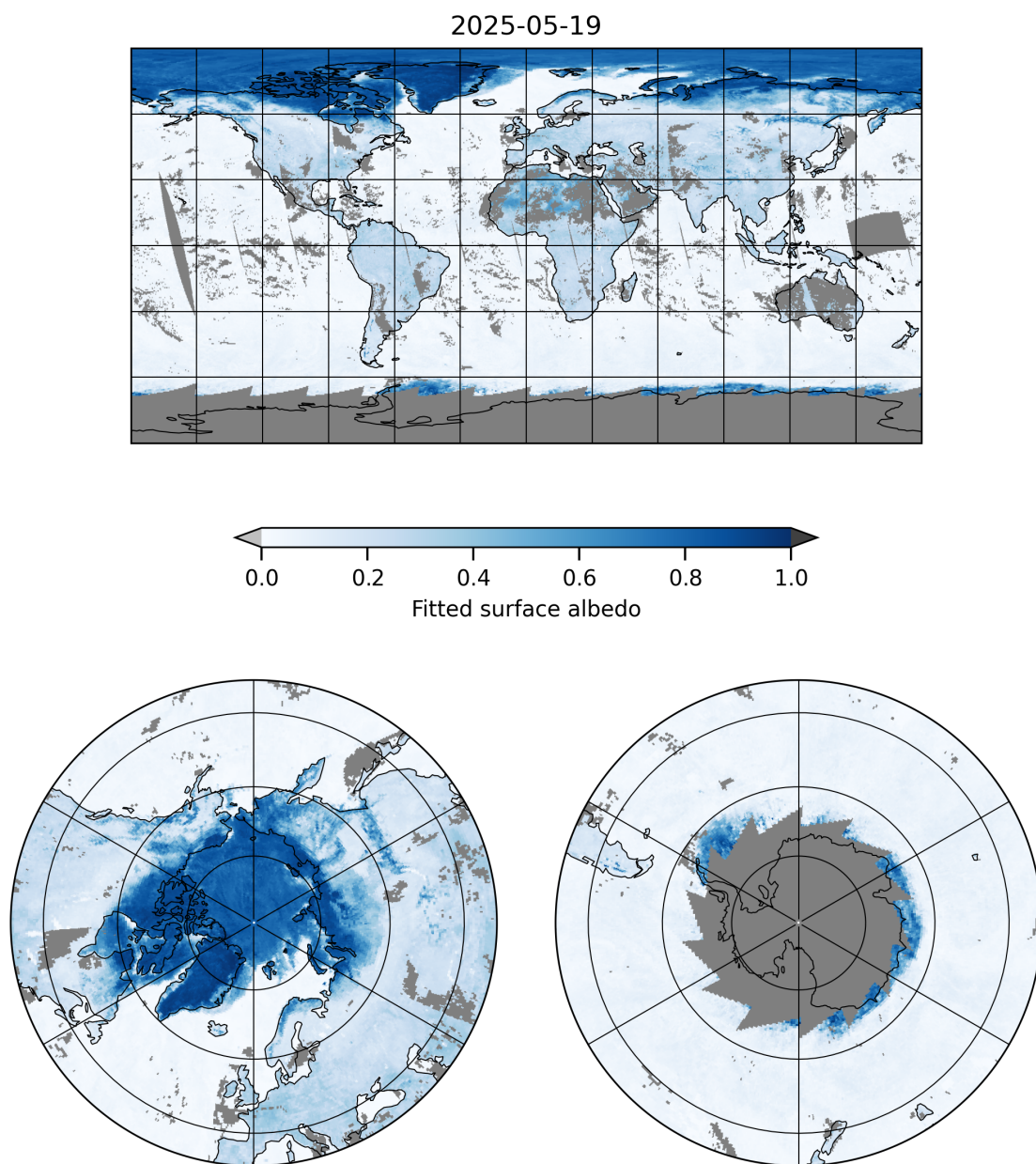


Figure 10: Map of “Fitted surface albedo” for 2025-05-19 to 2025-05-19

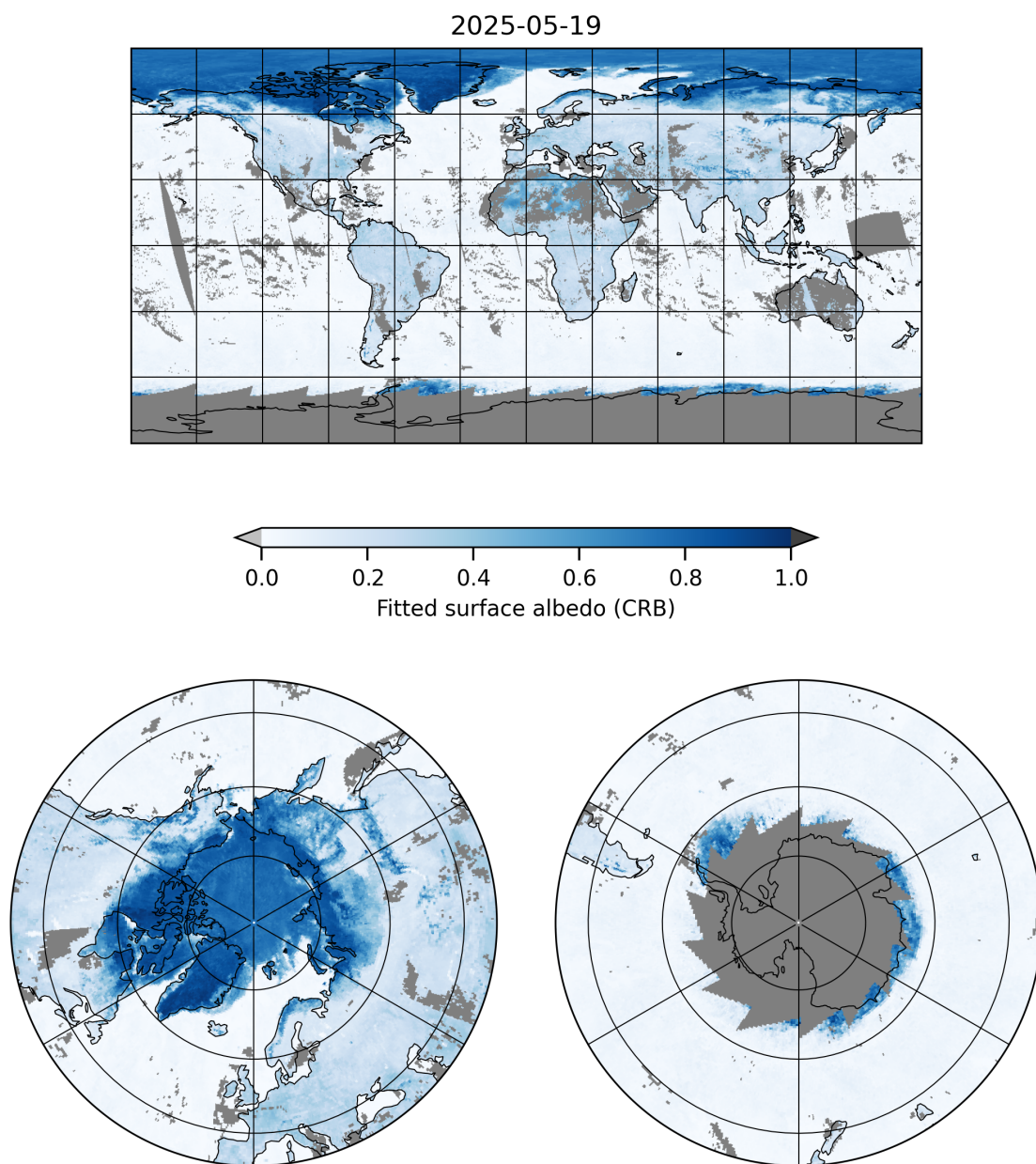


Figure 11: Map of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19

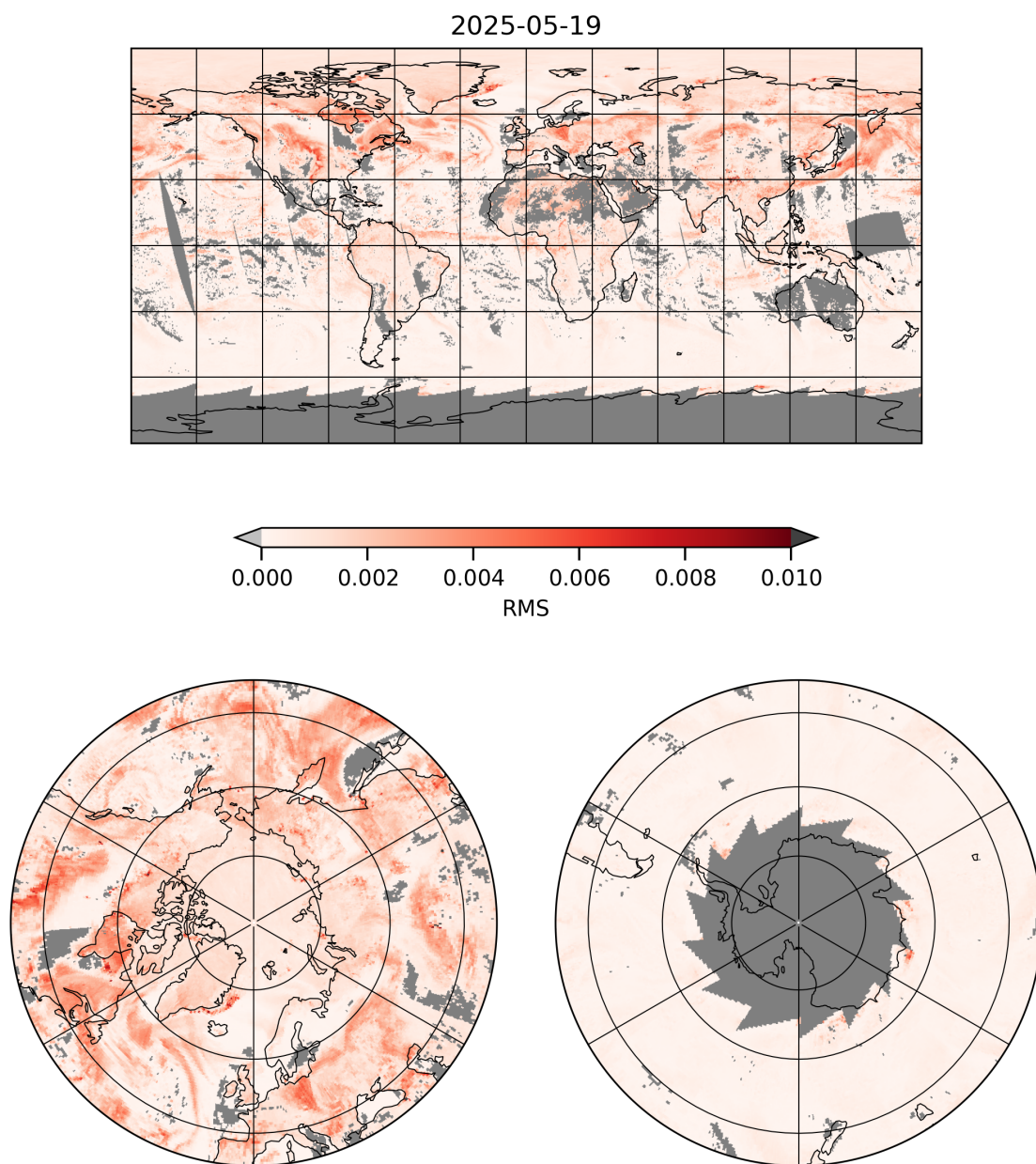


Figure 12: Map of “RMS” for 2025-05-19 to 2025-05-19

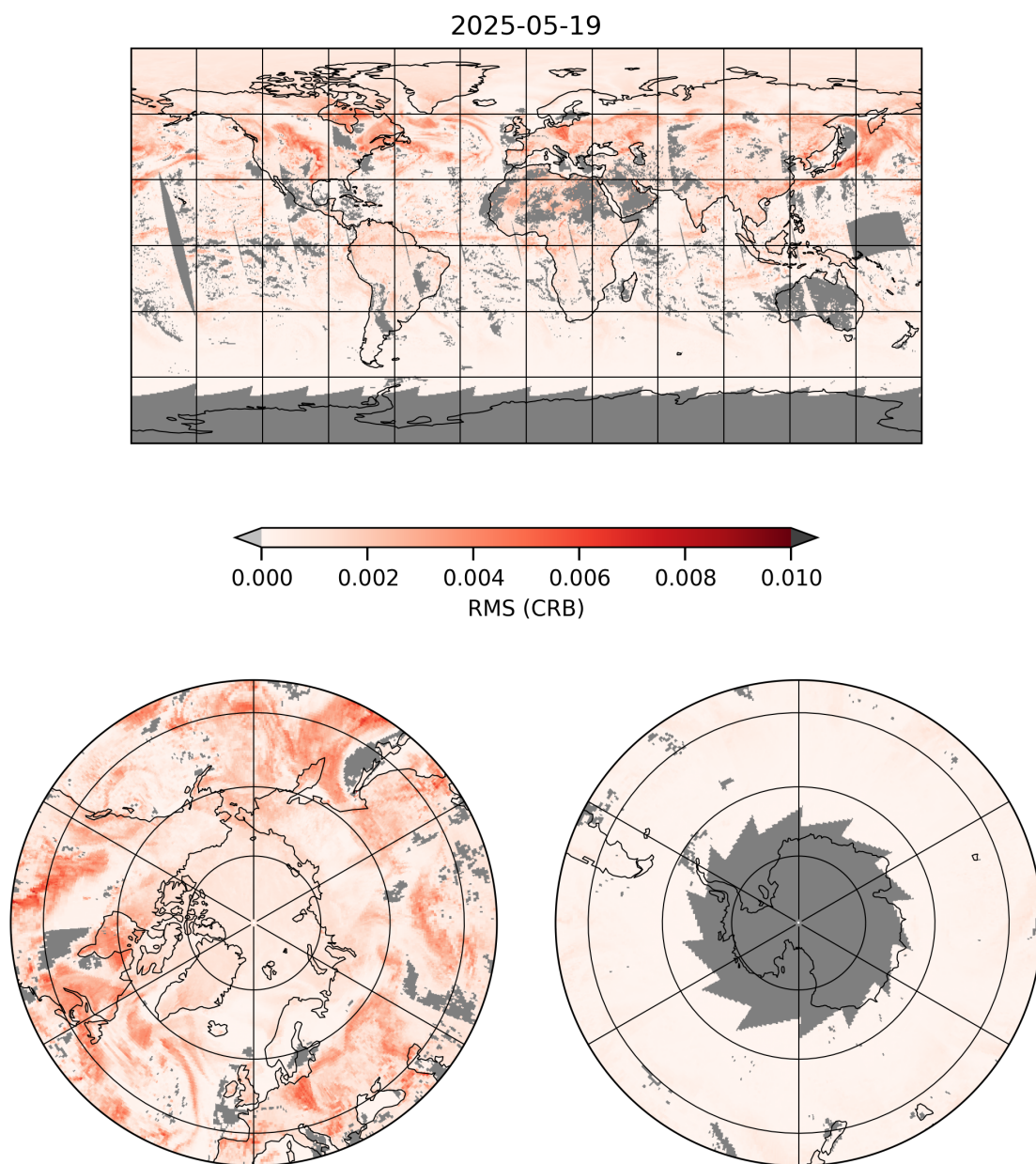


Figure 13: Map of “RMS (CRB)” for 2025-05-19 to 2025-05-19

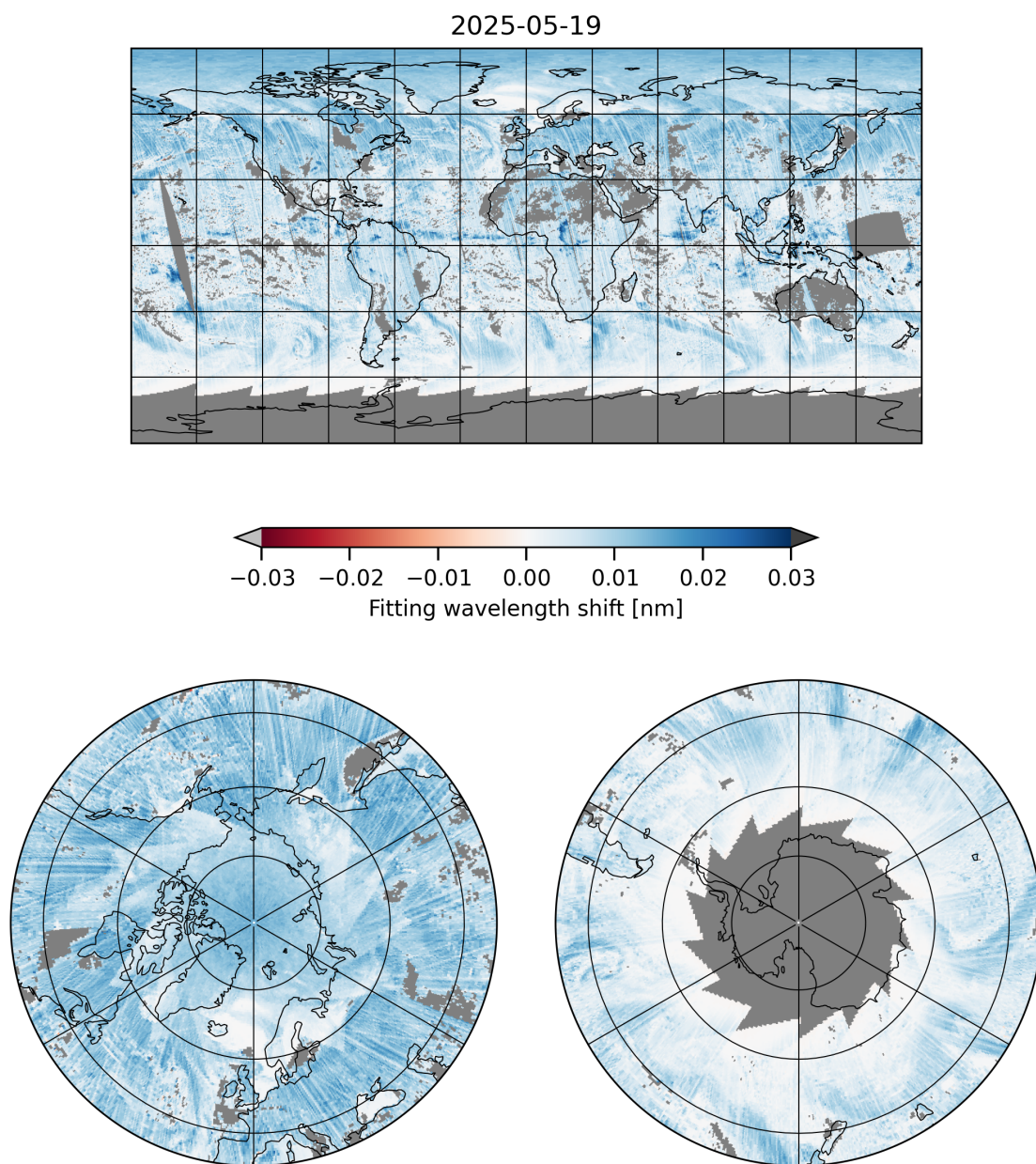


Figure 14: Map of "Fitting wavelength shift" for 2025-05-19 to 2025-05-19

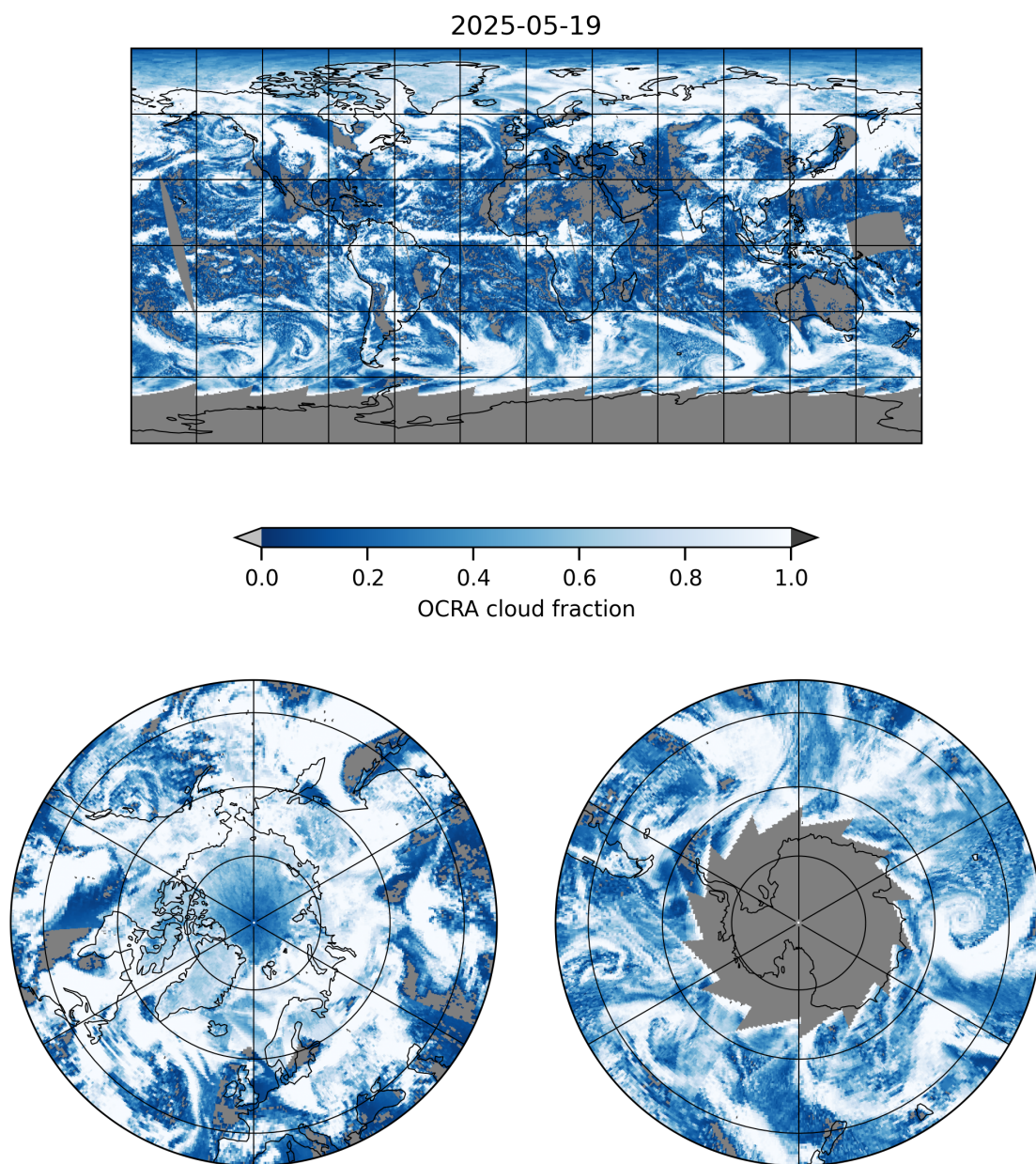


Figure 15: Map of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19

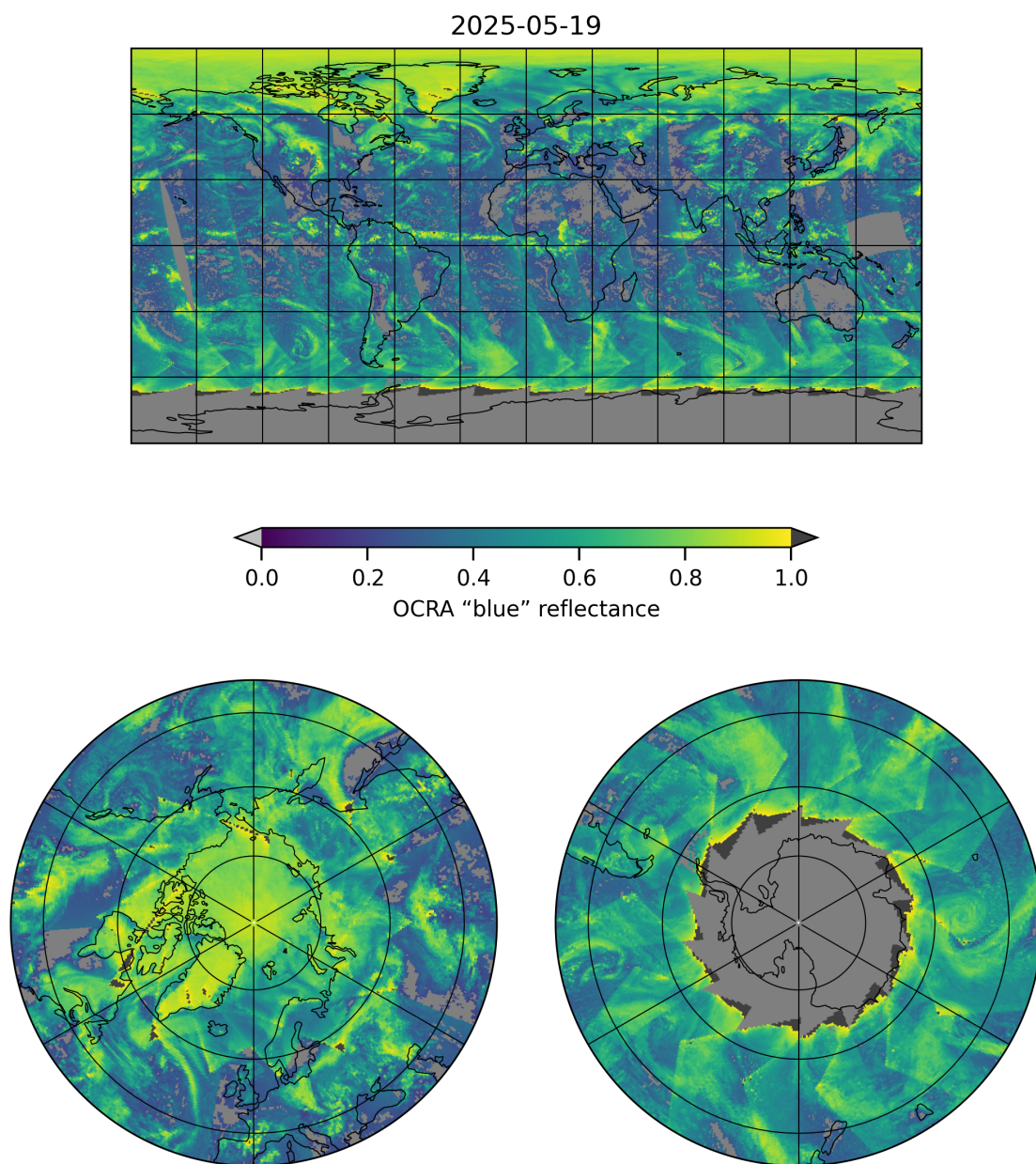


Figure 16: Map of "OCRA "blue" reflectance" for 2025-05-19 to 2025-05-19

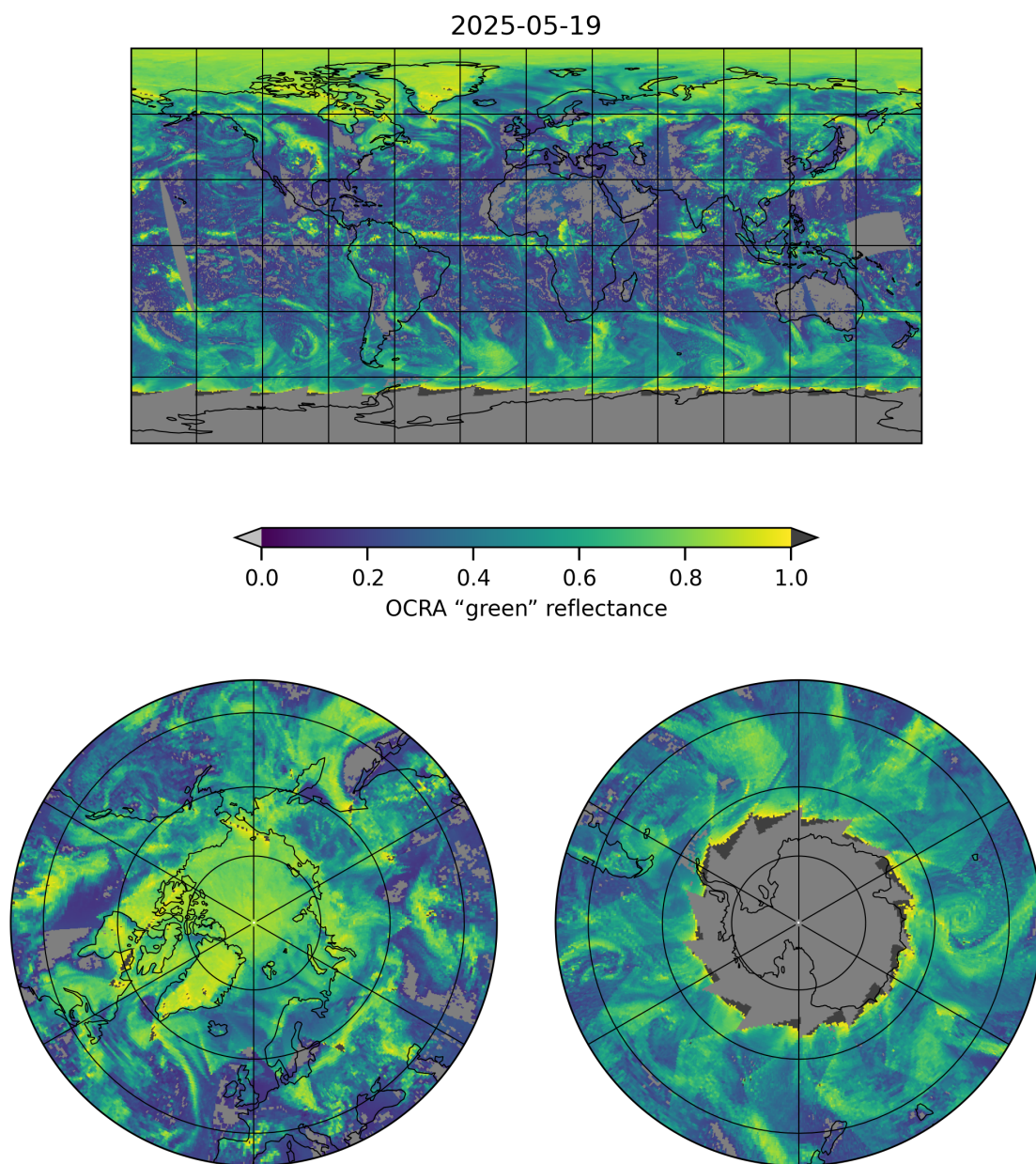


Figure 17: Map of "OCRA "green" reflectance" for 2025-05-19 to 2025-05-19

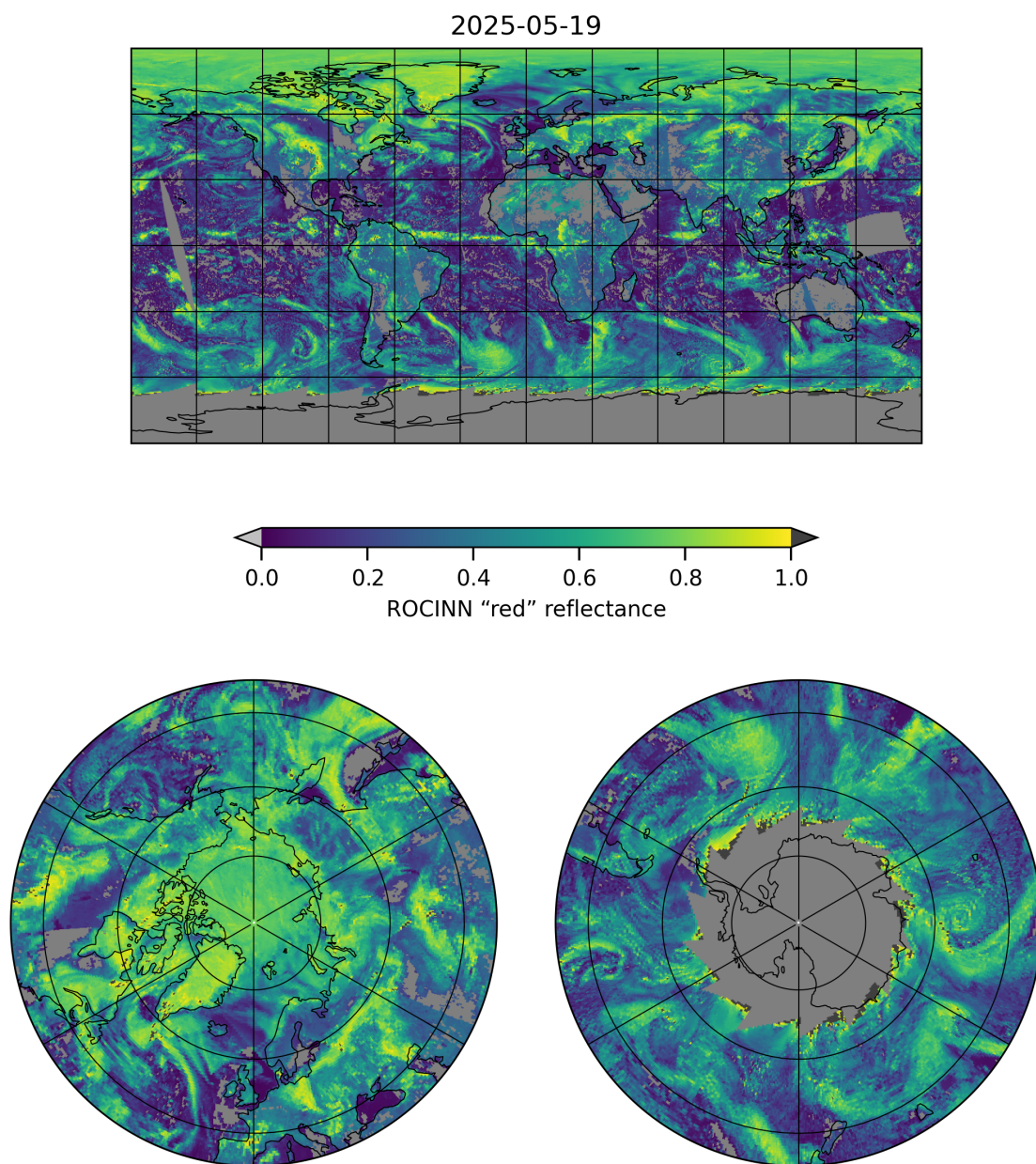


Figure 18: Map of "ROCINN "red" reflectance" for 2025-05-19 to 2025-05-19

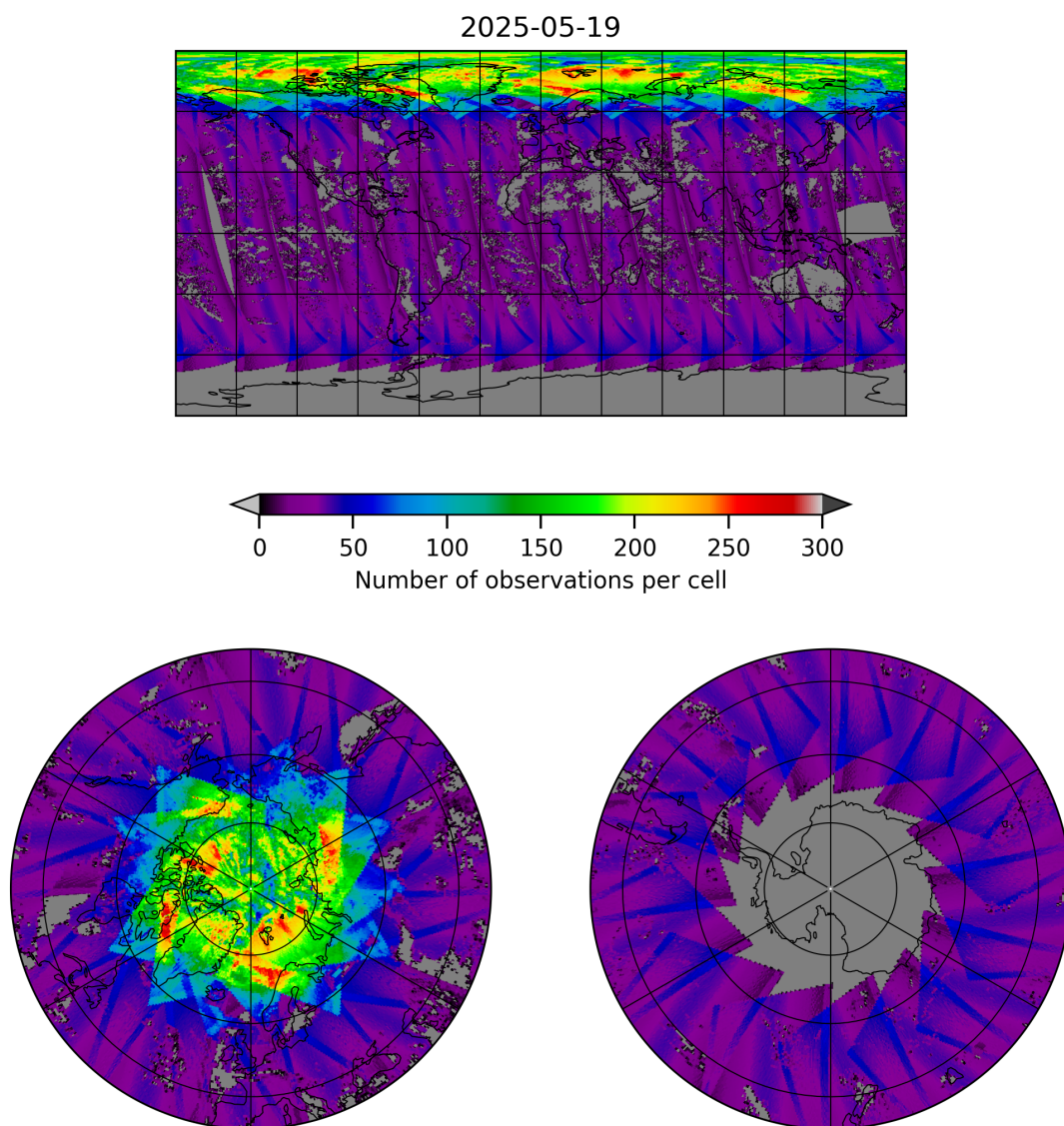


Figure 19: Map of the number of observations for 2025-05-19 to 2025-05-19

7 Zonal average

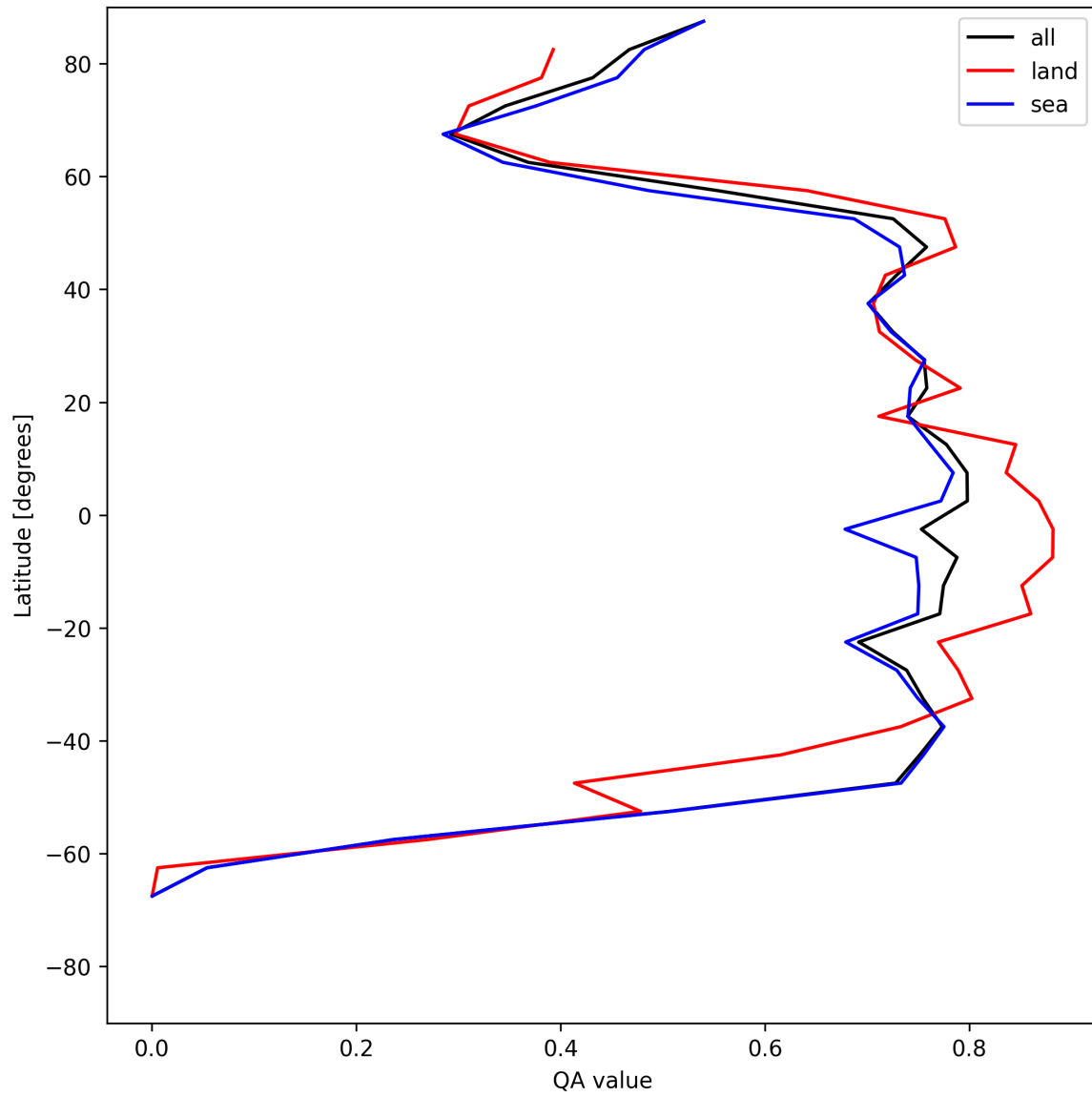


Figure 20: Zonal average of “QA value” for 2025-05-19 to 2025-05-19.

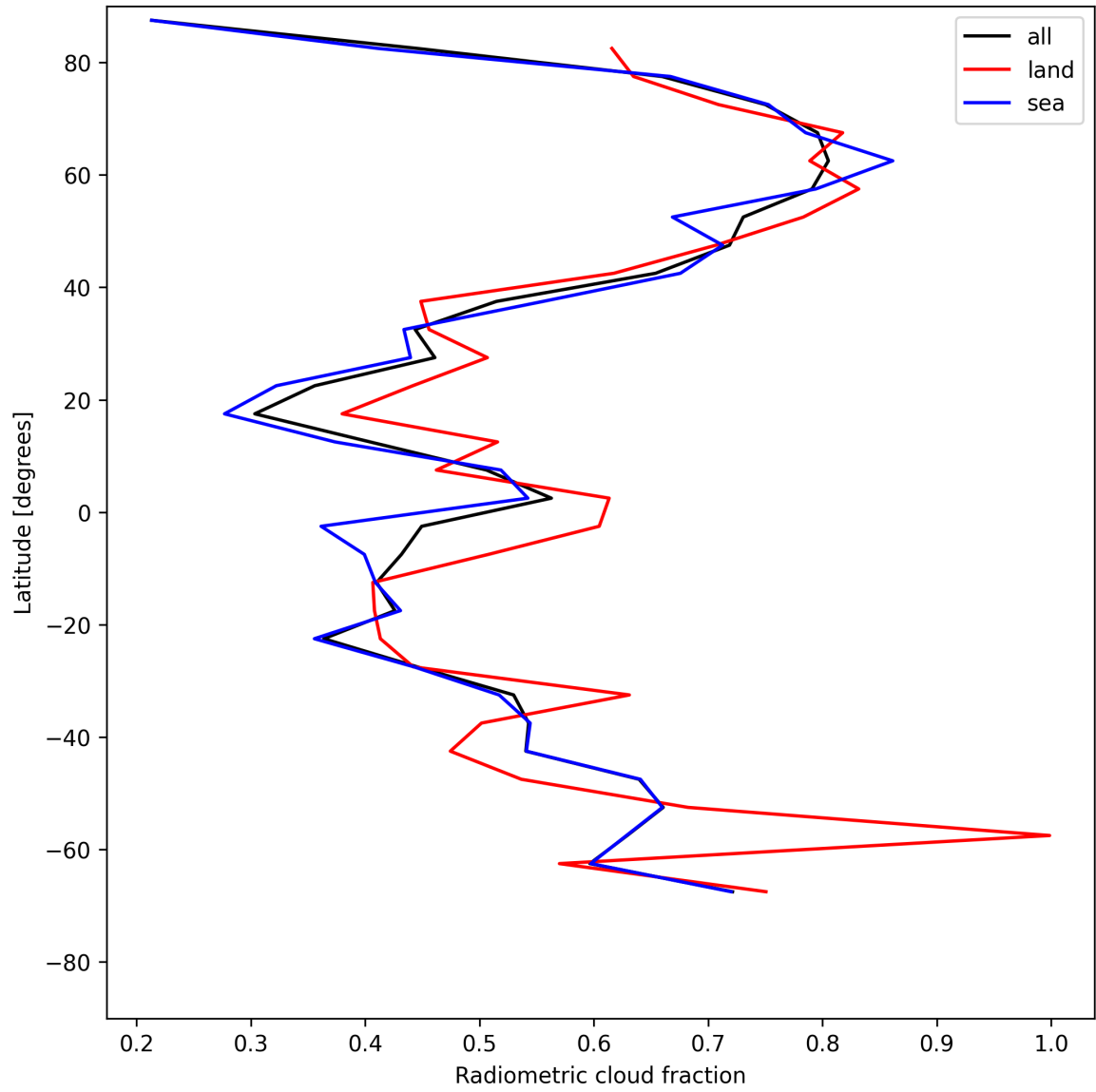


Figure 21: Zonal average of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19.

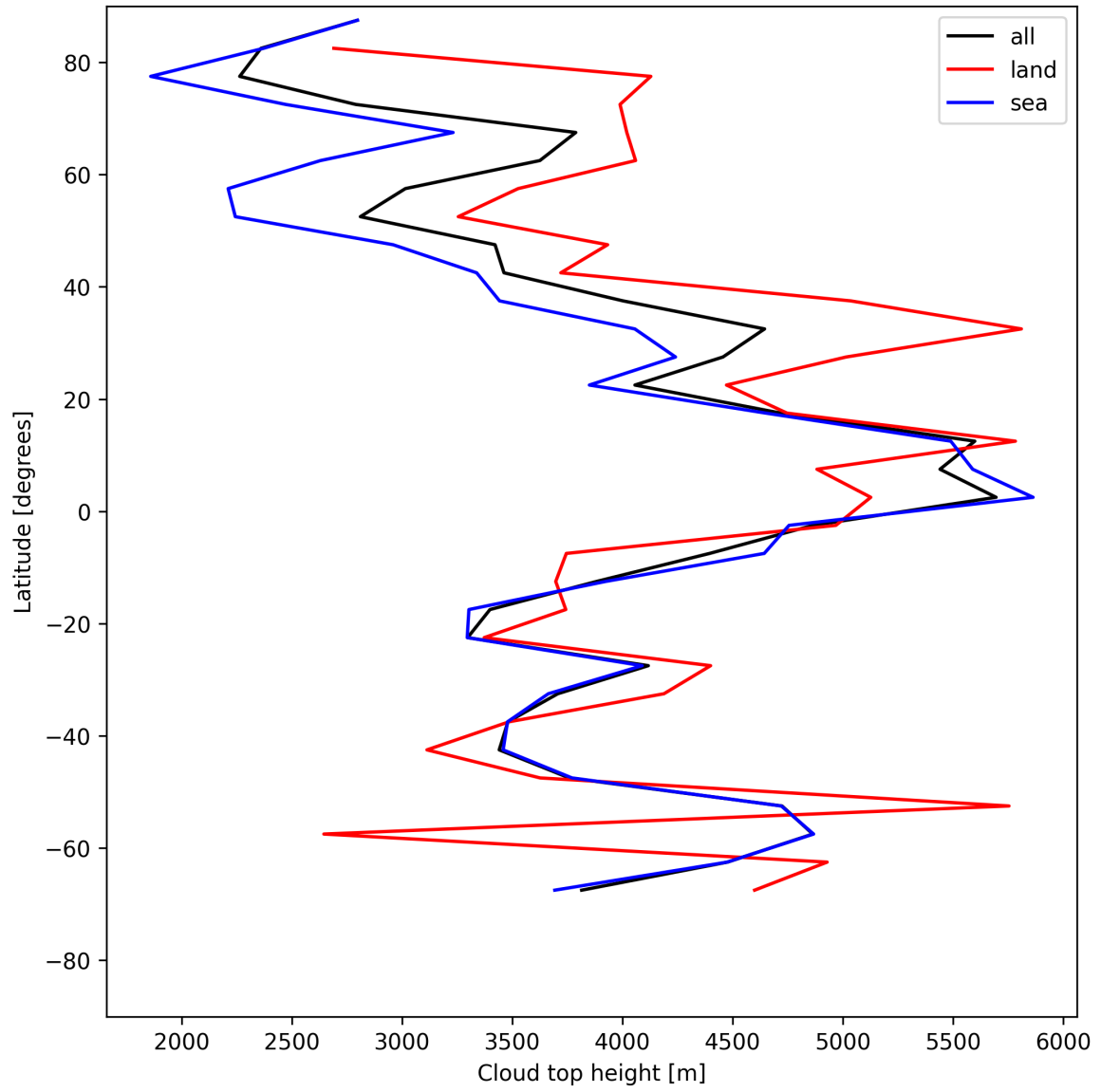


Figure 22: Zonal average of “Cloud top height” for 2025-05-19 to 2025-05-19.

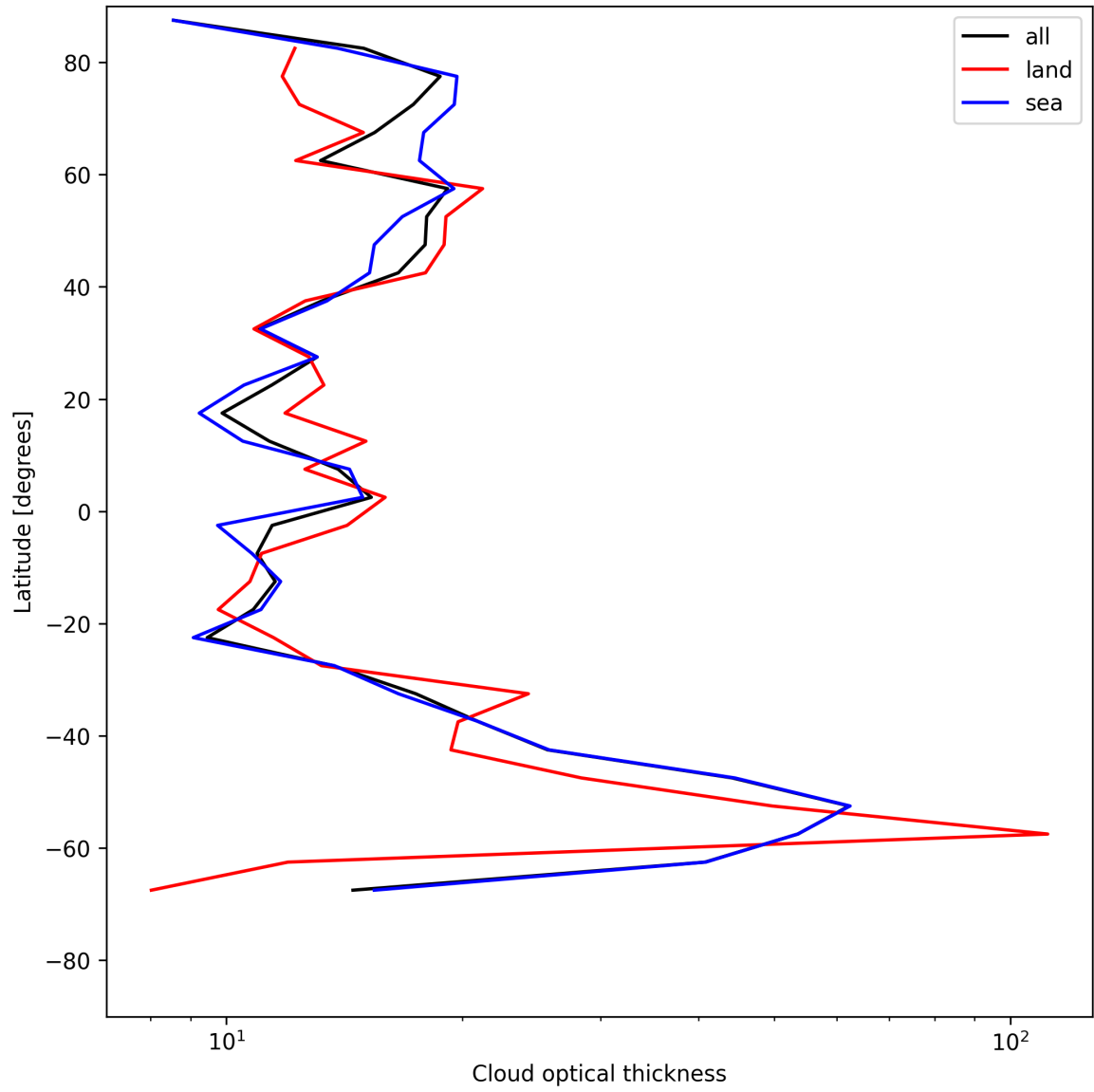


Figure 23: Zonal average of “Cloud optical thickness” for 2025-05-19 to 2025-05-19.

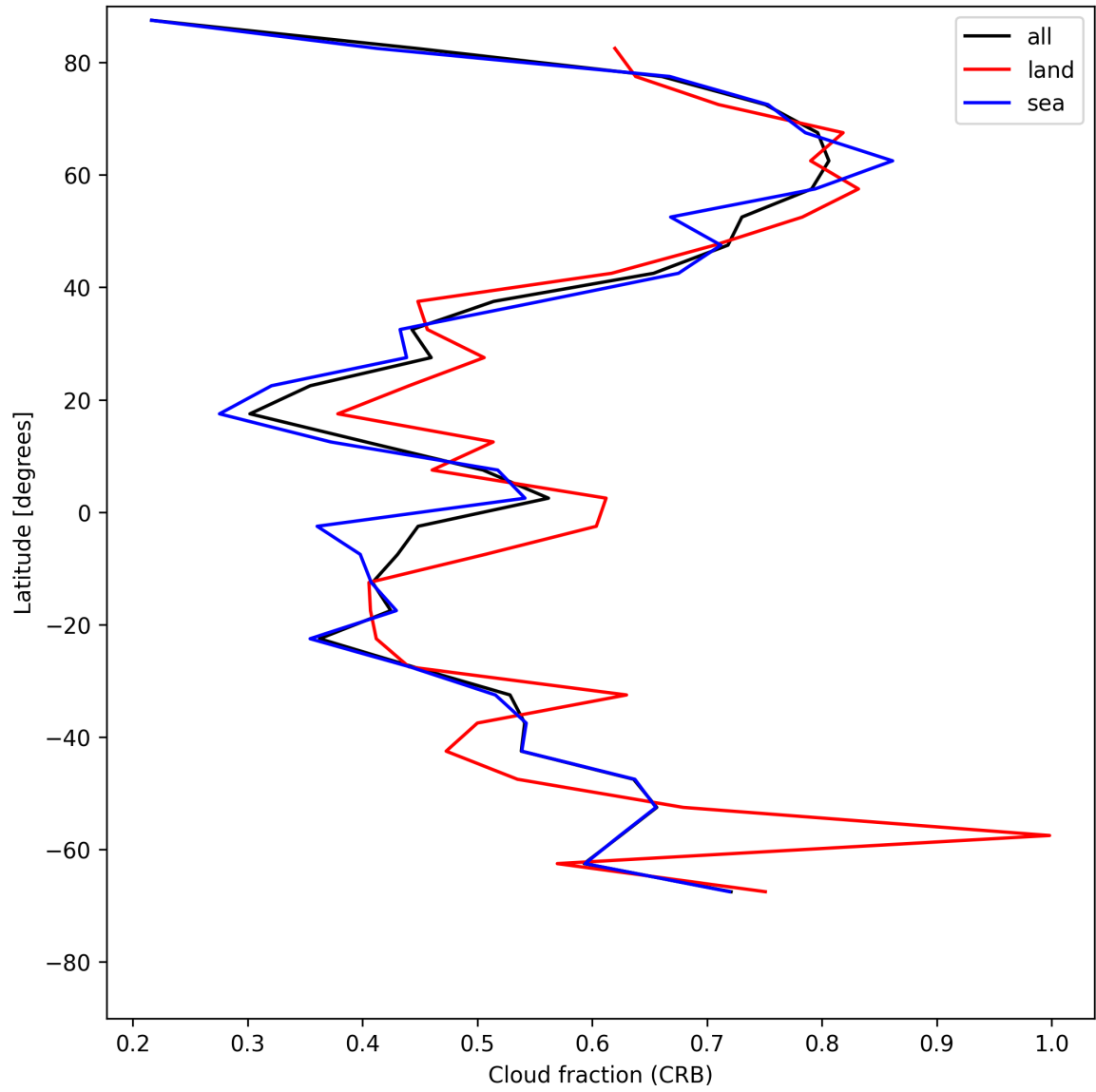


Figure 24: Zonal average of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19.

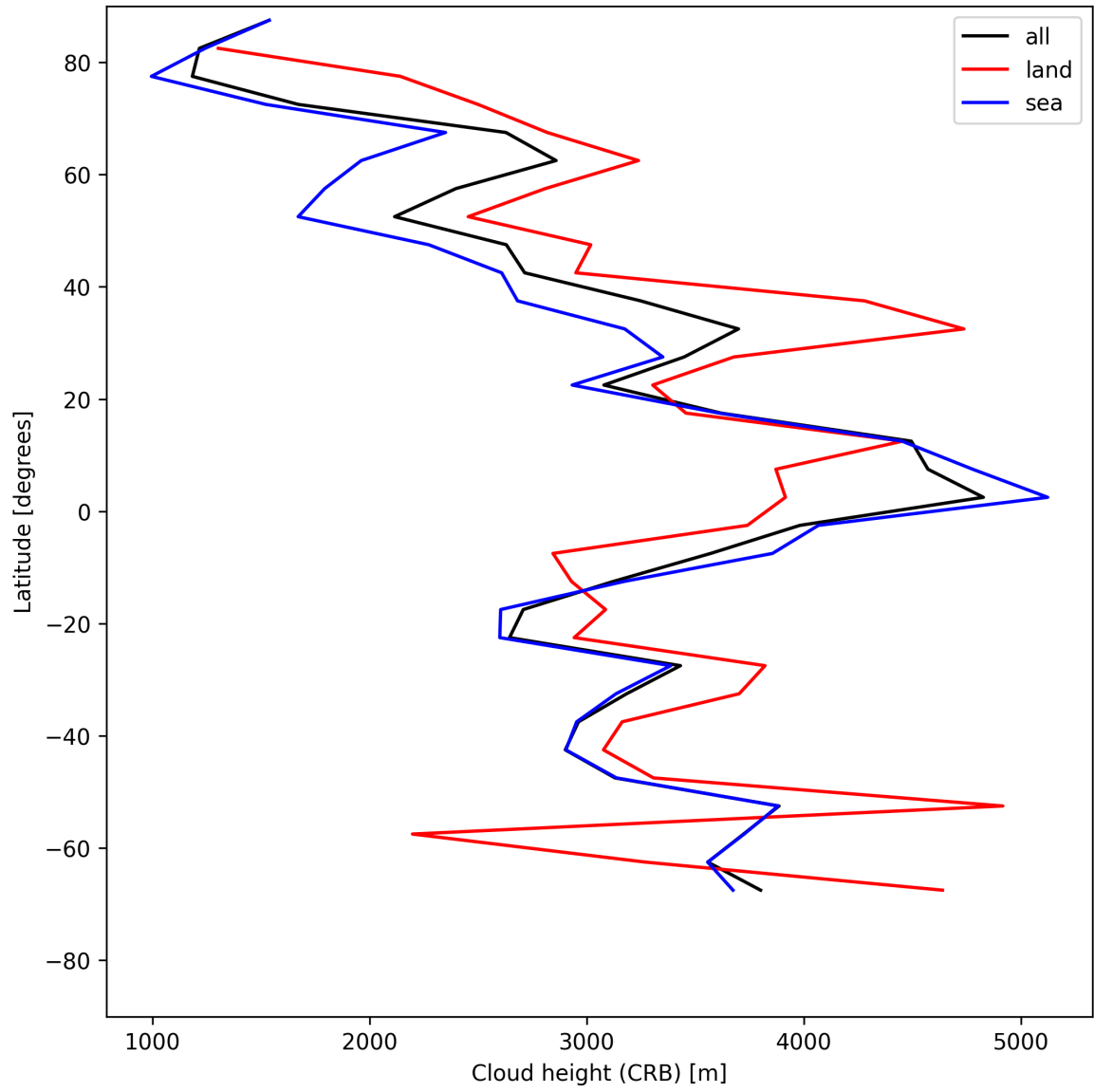


Figure 25: Zonal average of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19.

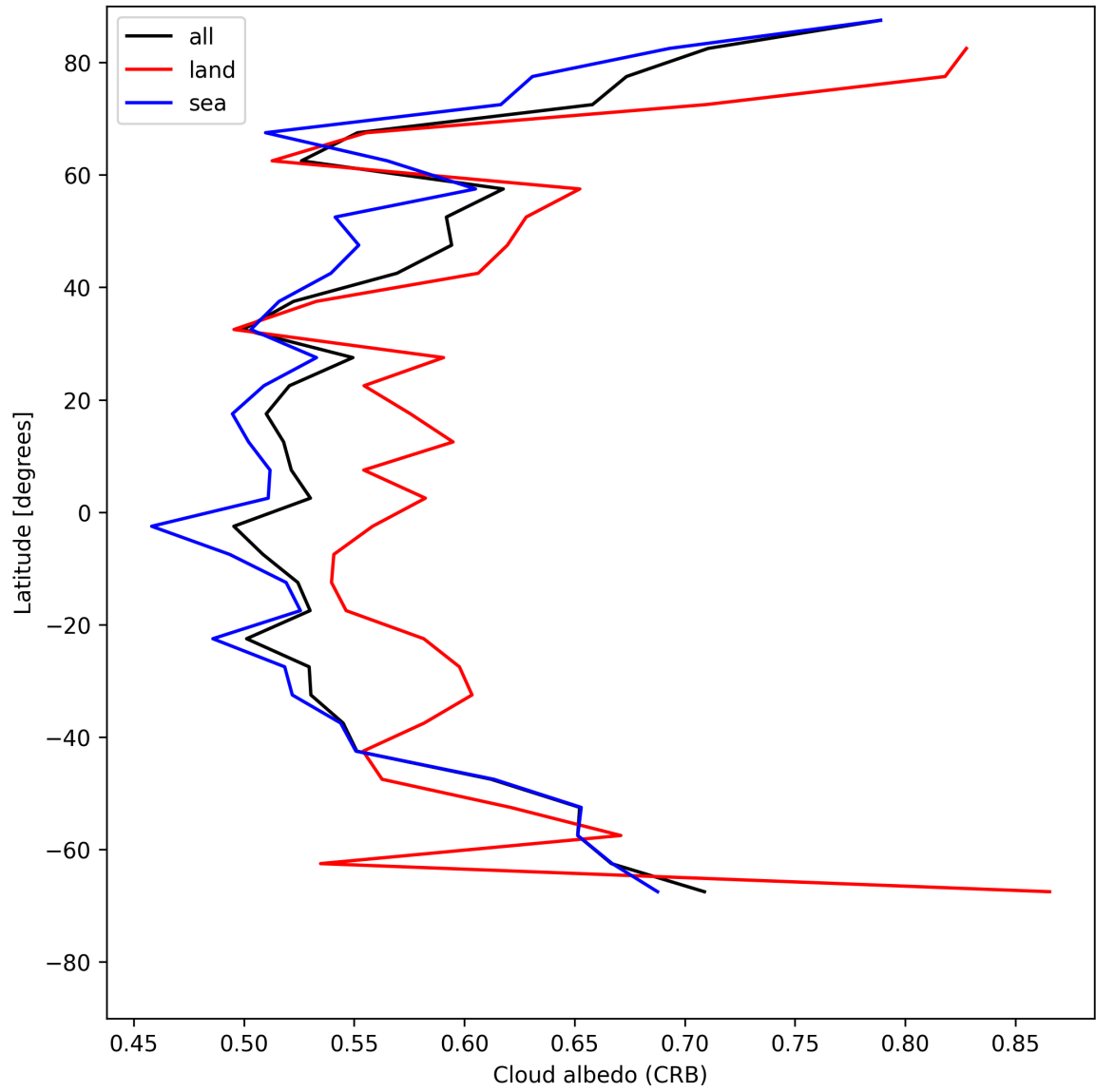


Figure 26: Zonal average of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19.

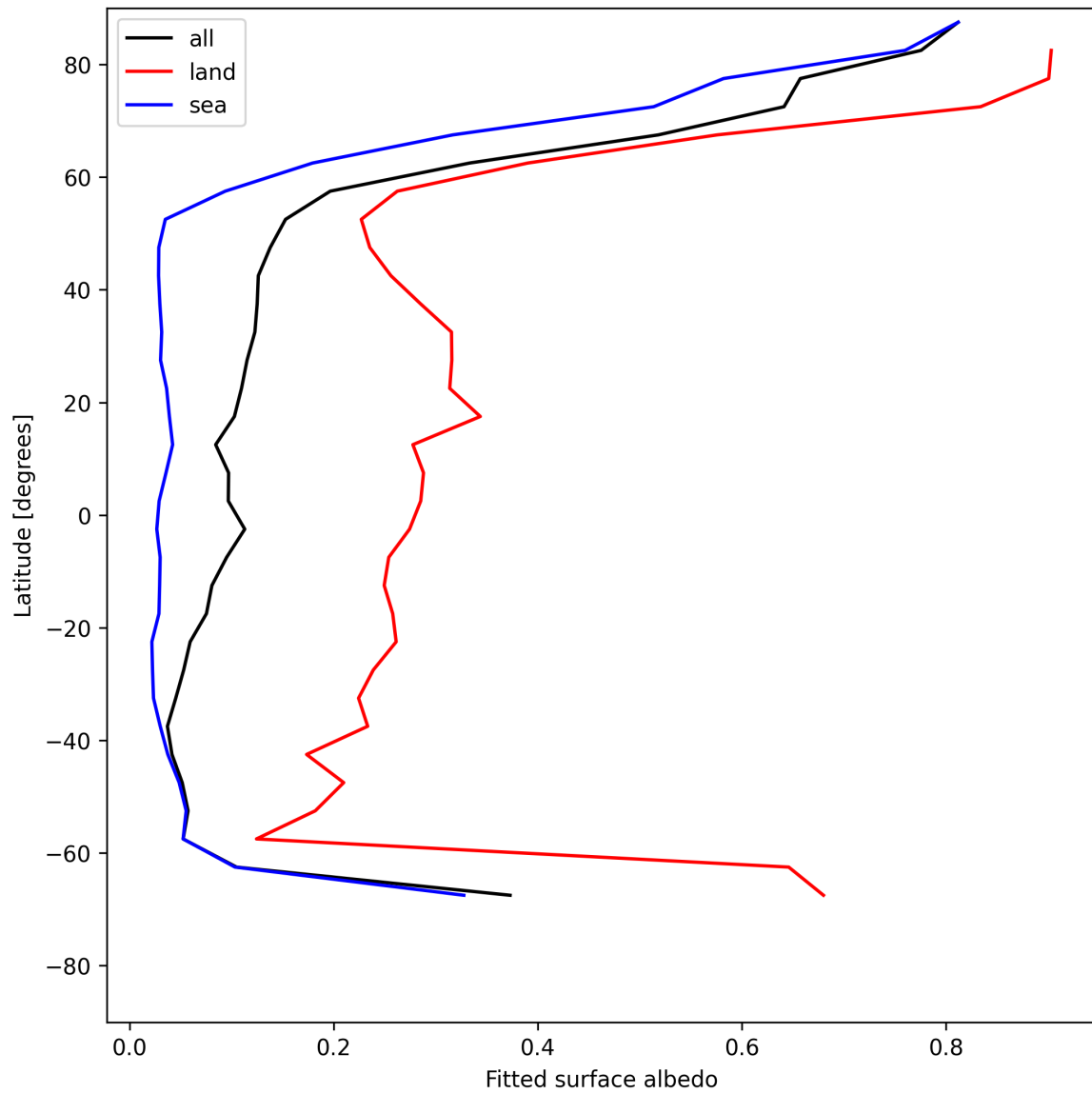


Figure 27: Zonal average of “Fitted surface albedo” for 2025-05-19 to 2025-05-19.

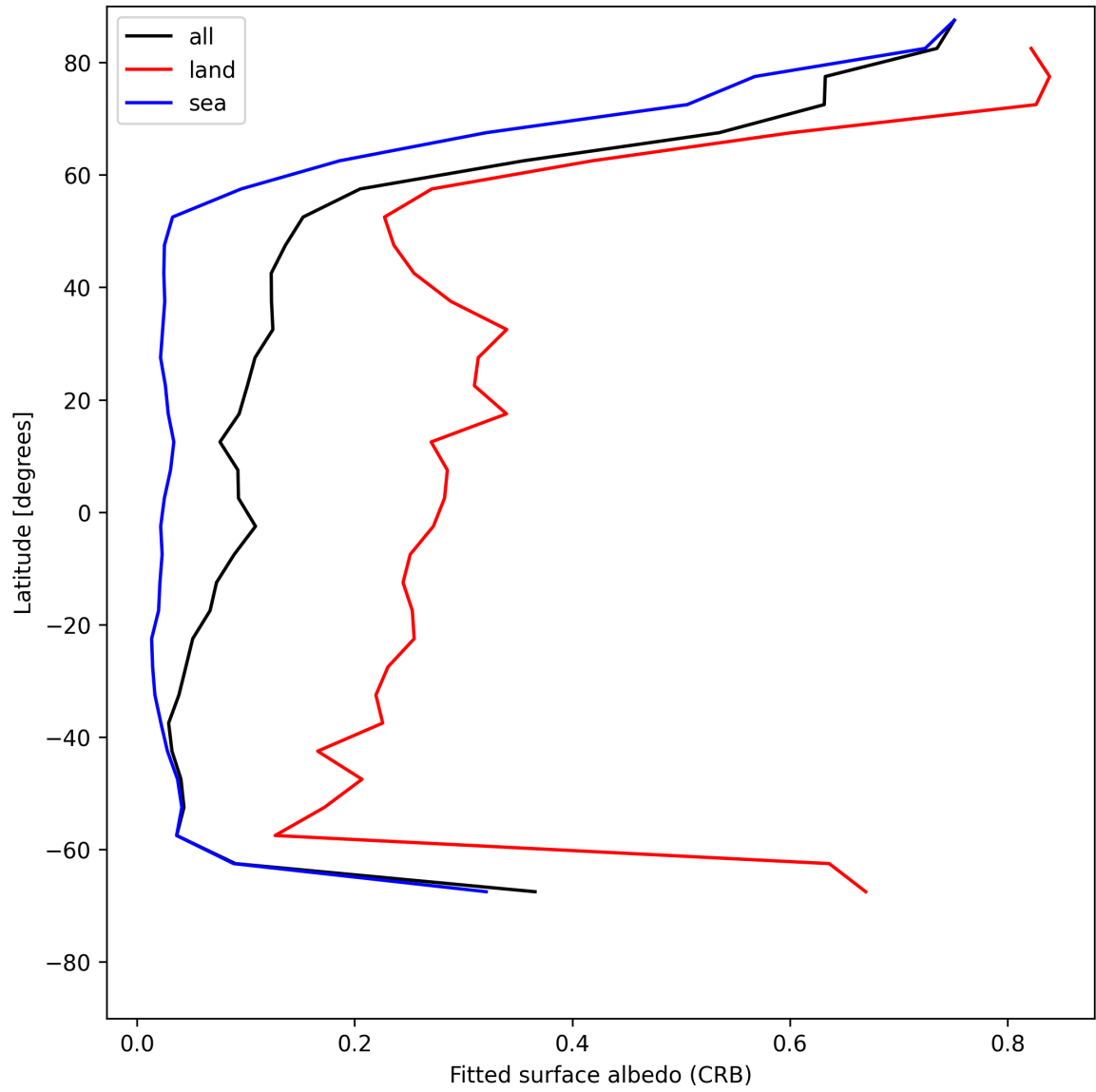


Figure 28: Zonal average of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19.

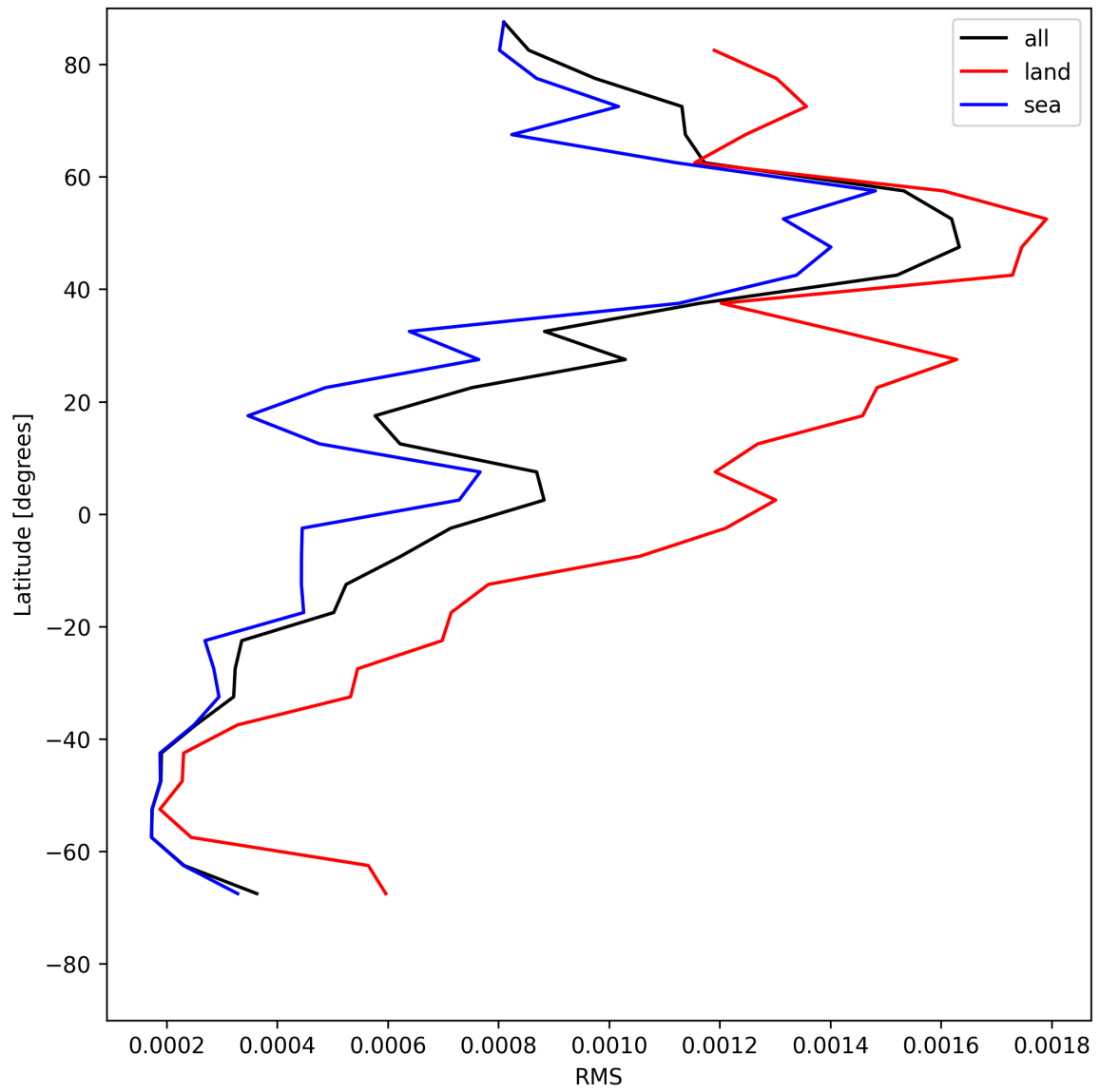


Figure 29: Zonal average of “RMS” for 2025-05-19 to 2025-05-19.

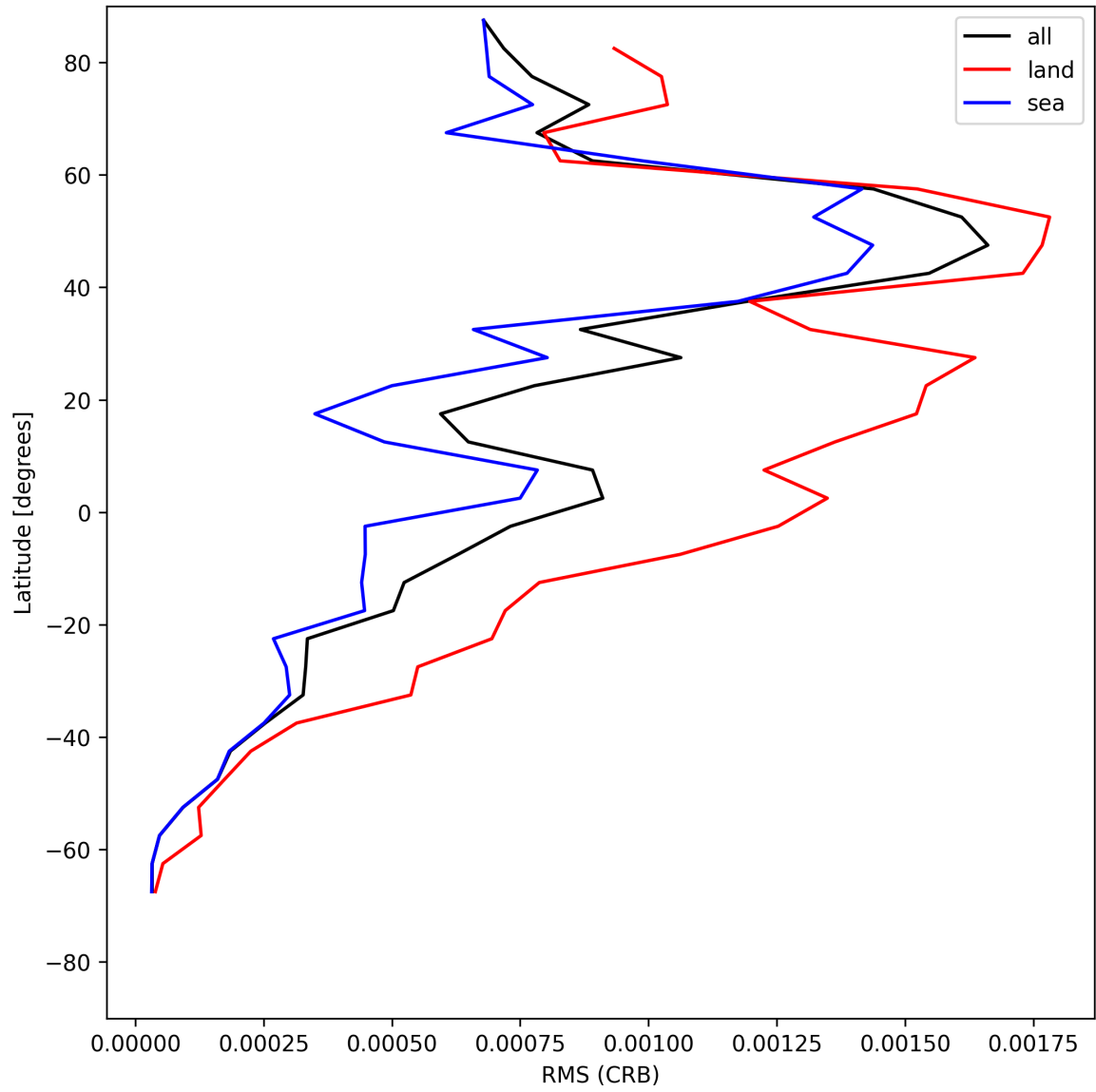


Figure 30: Zonal average of “RMS (CRB)” for 2025-05-19 to 2025-05-19.

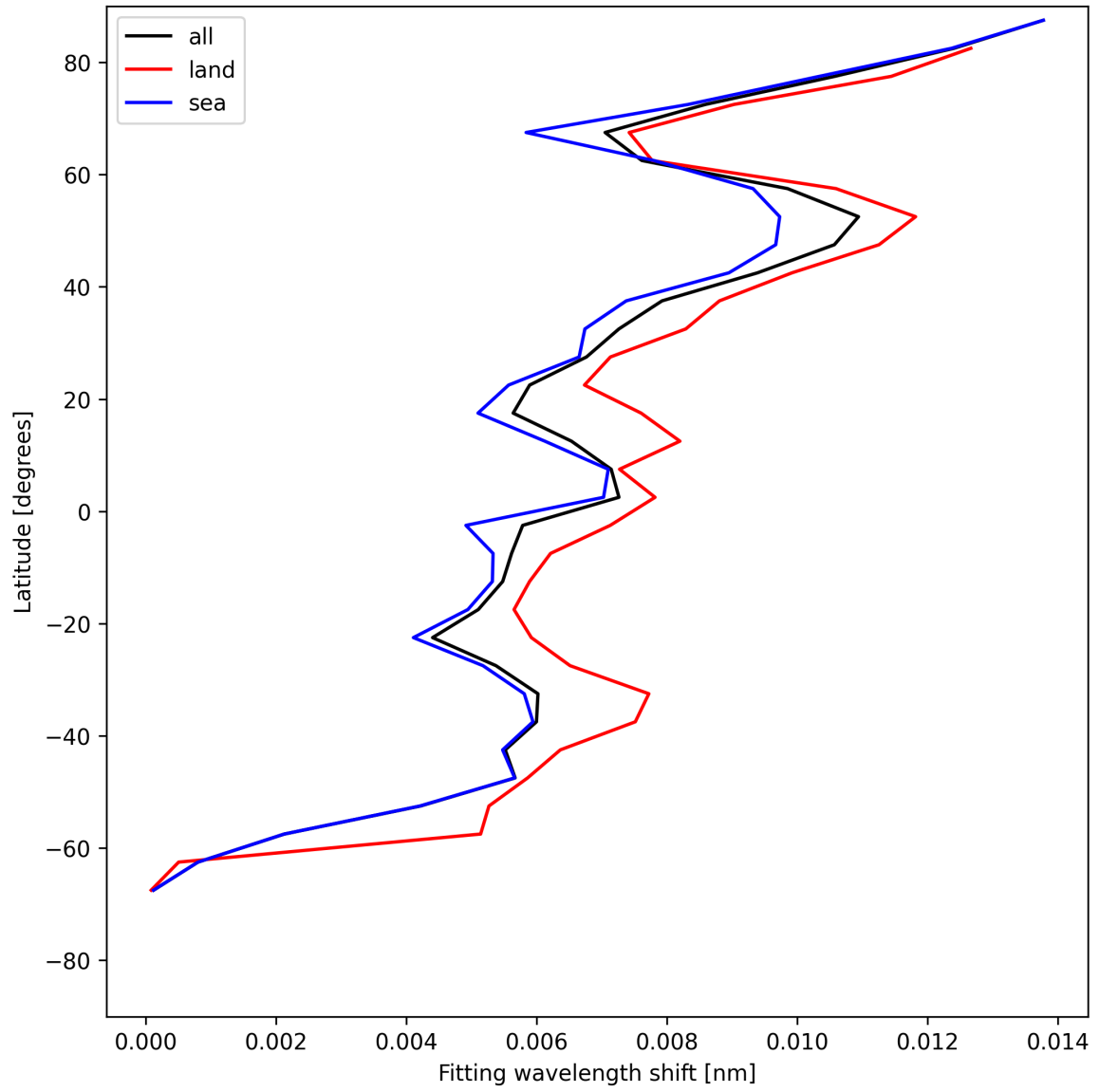


Figure 31: Zonal average of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19.

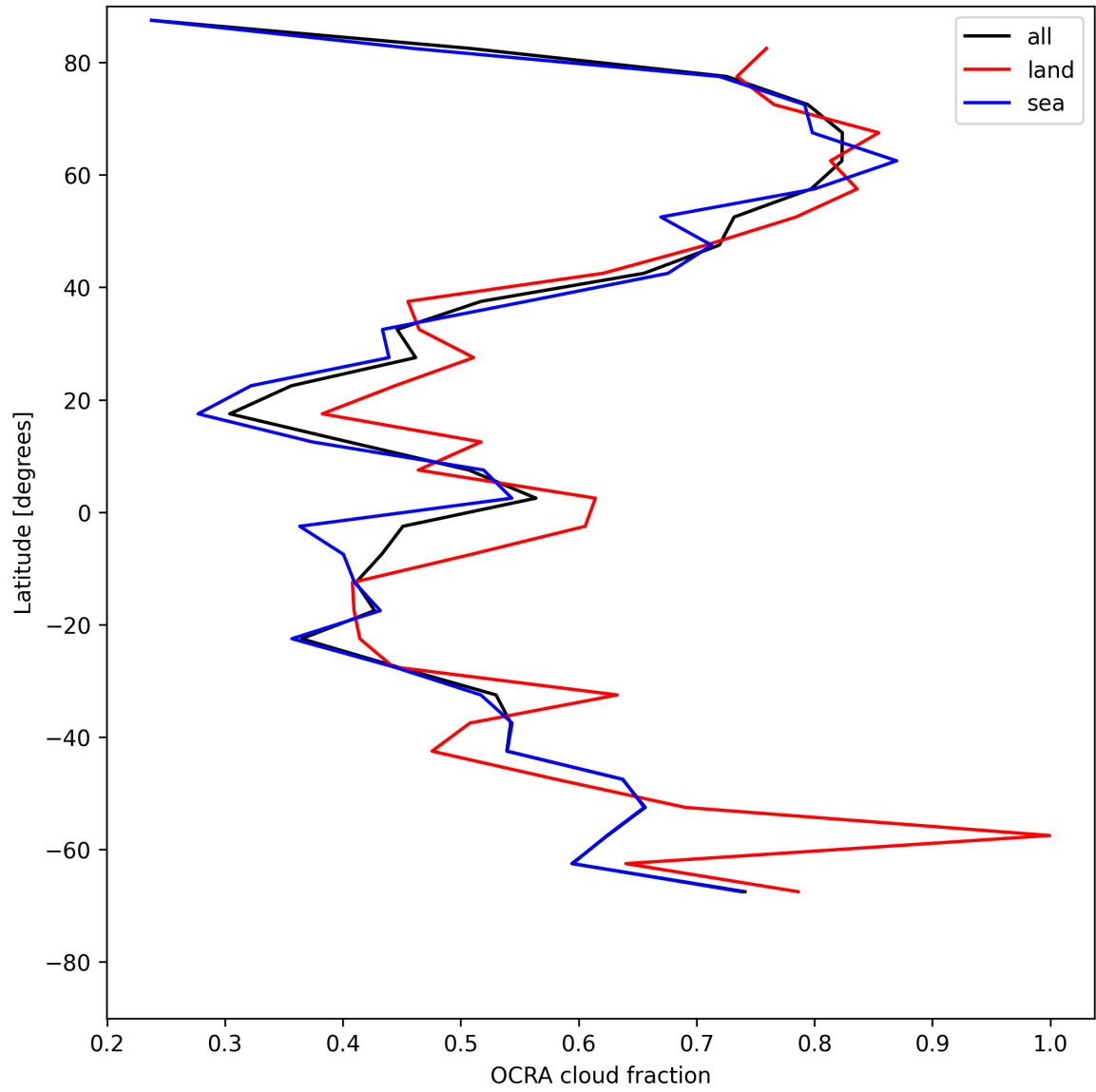


Figure 32: Zonal average of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19.

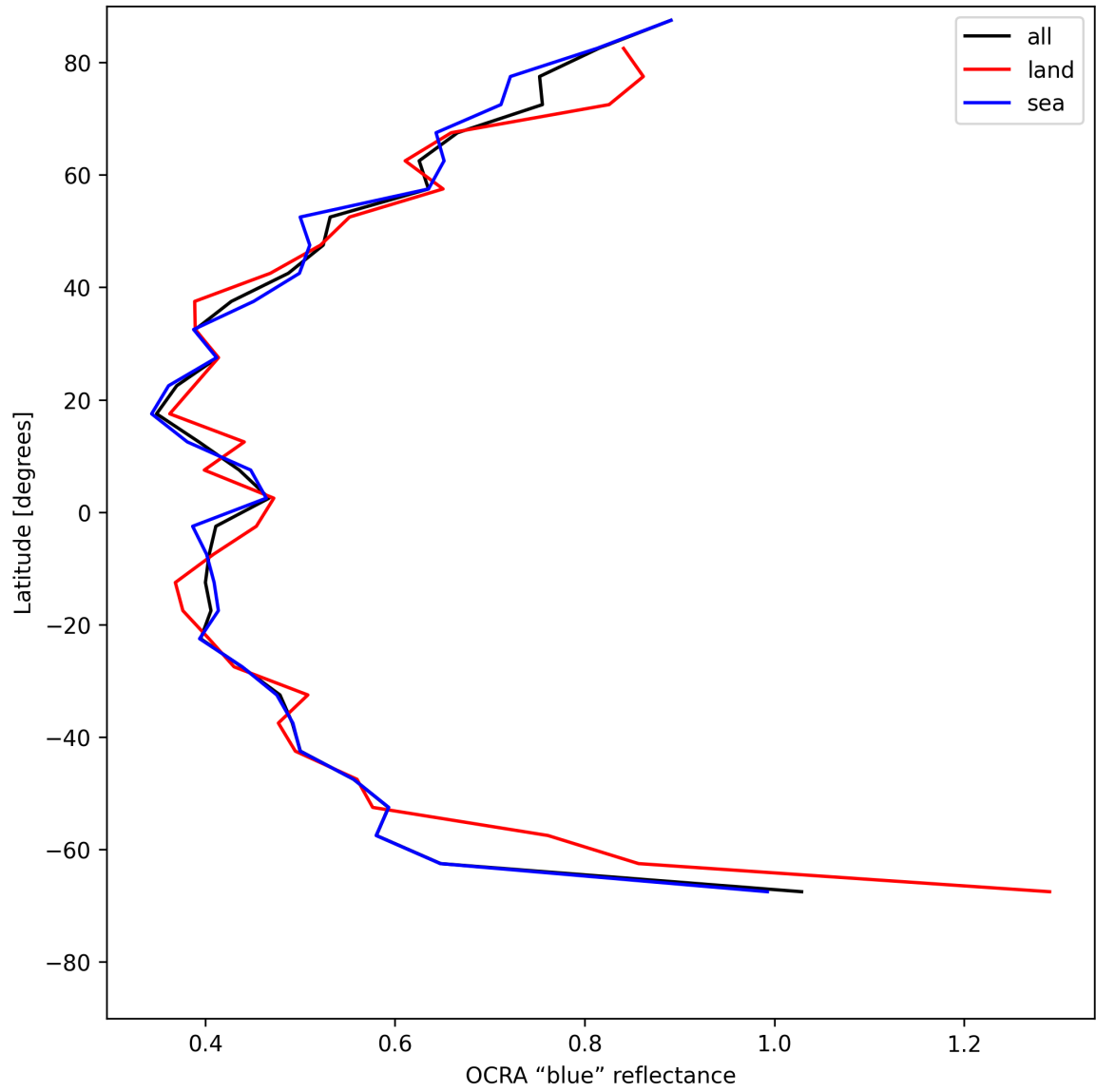


Figure 33: Zonal average of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19.

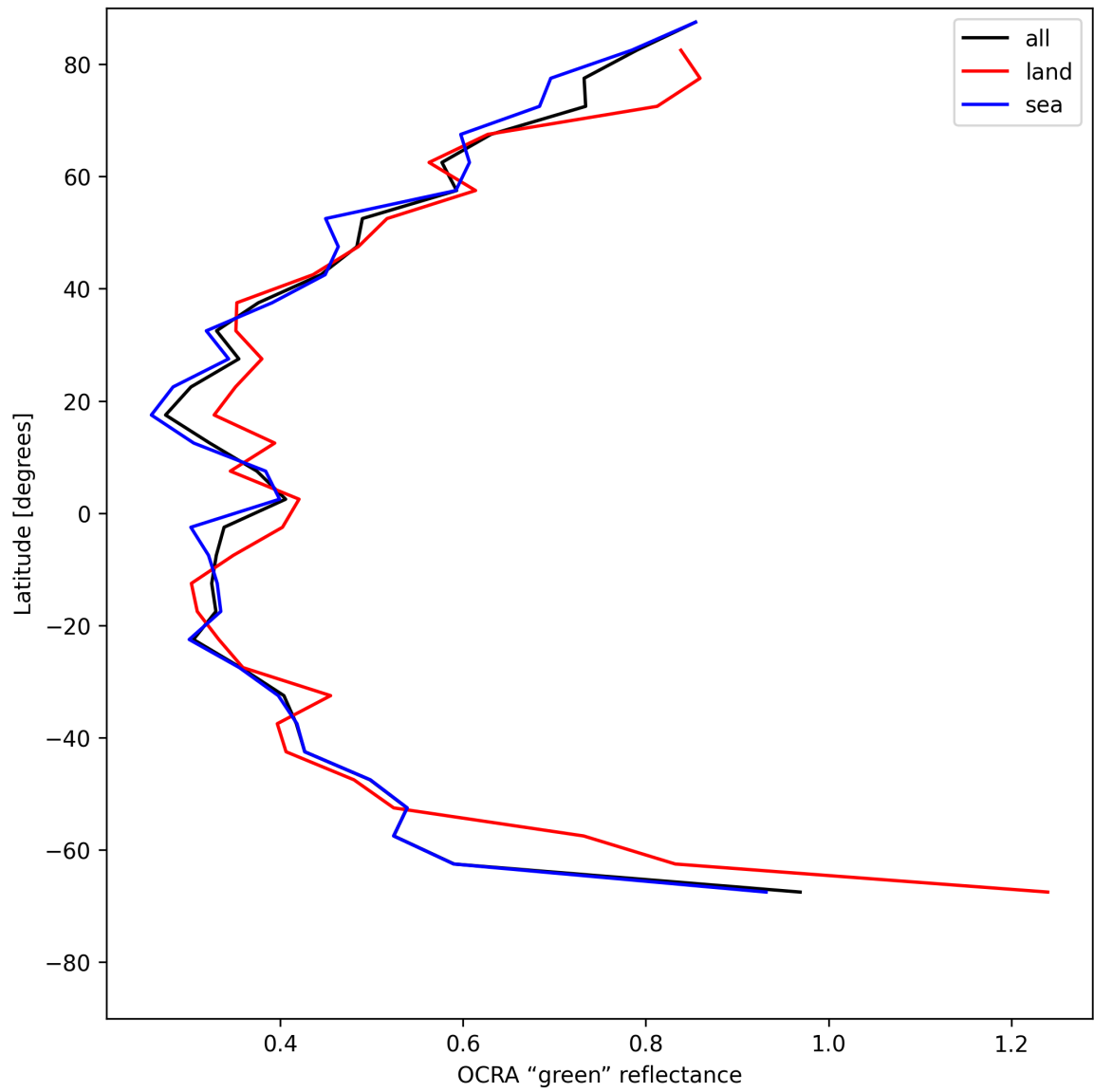


Figure 34: Zonal average of “OCRA “green” reflectance” for 2025-05-19 to 2025-05-19.

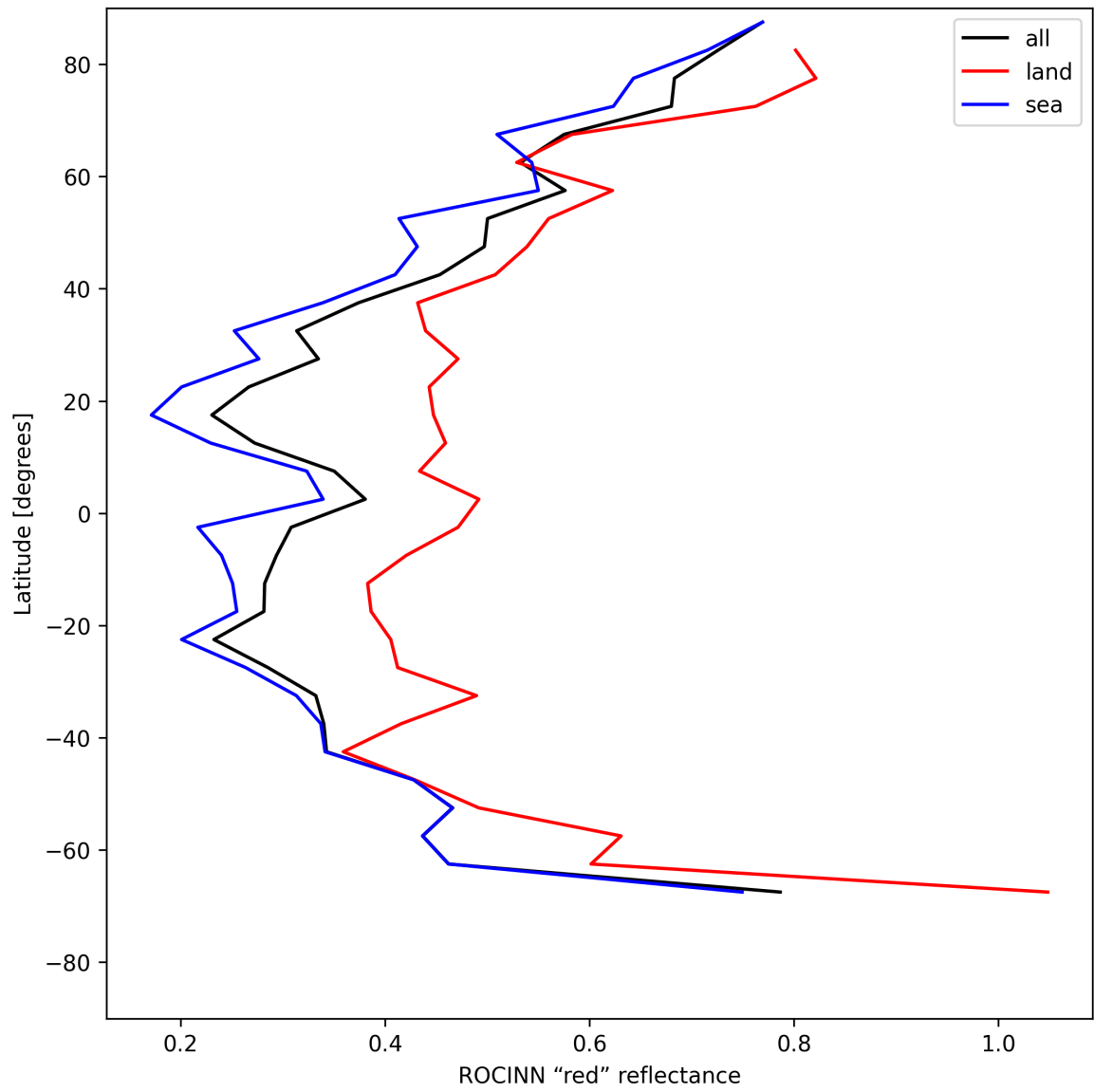


Figure 35: Zonal average of “ROCINN “red” reflectance” for 2025-05-19 to 2025-05-19.

8 Histograms

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

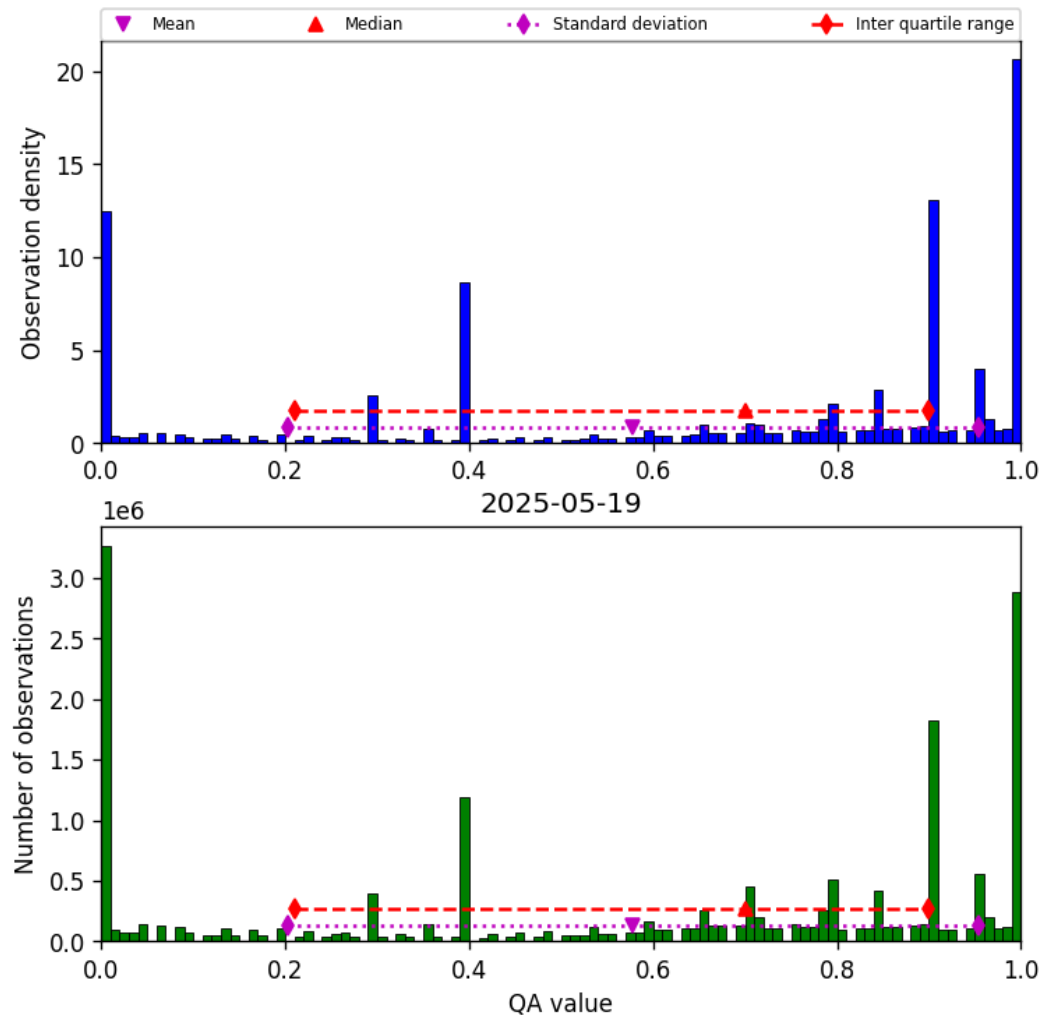


Figure 36: Histogram of “QA value” for 2025-05-19 to 2025-05-19

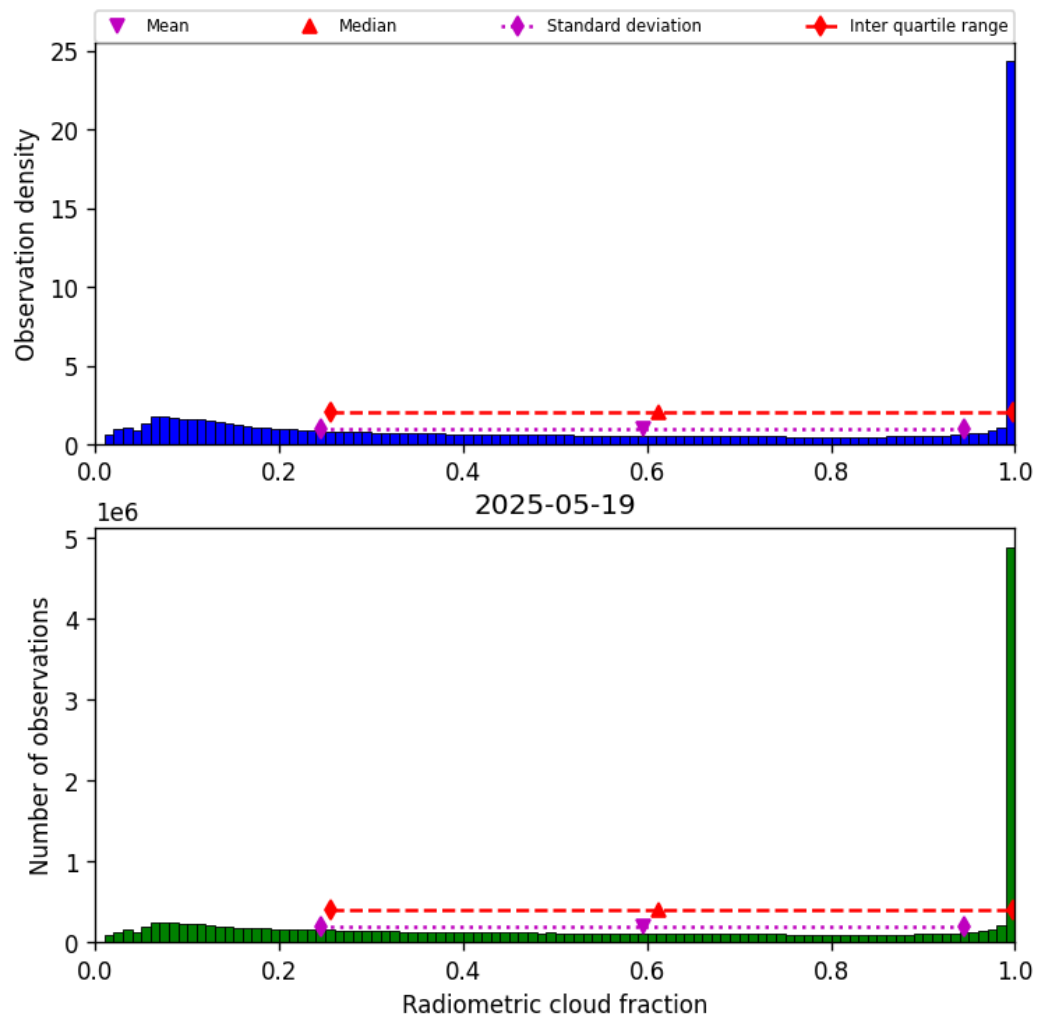


Figure 37: Histogram of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19

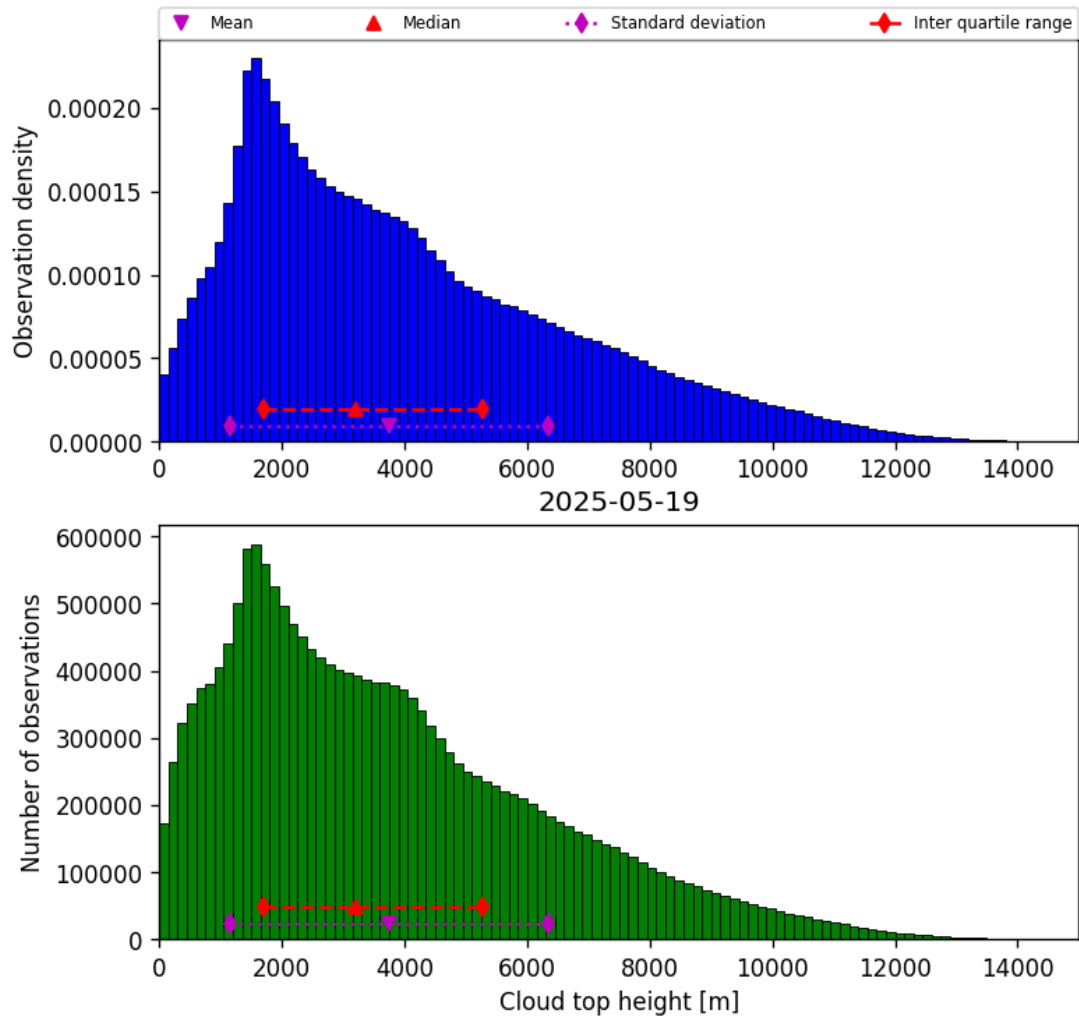


Figure 38: Histogram of “Cloud top height” for 2025-05-19 to 2025-05-19

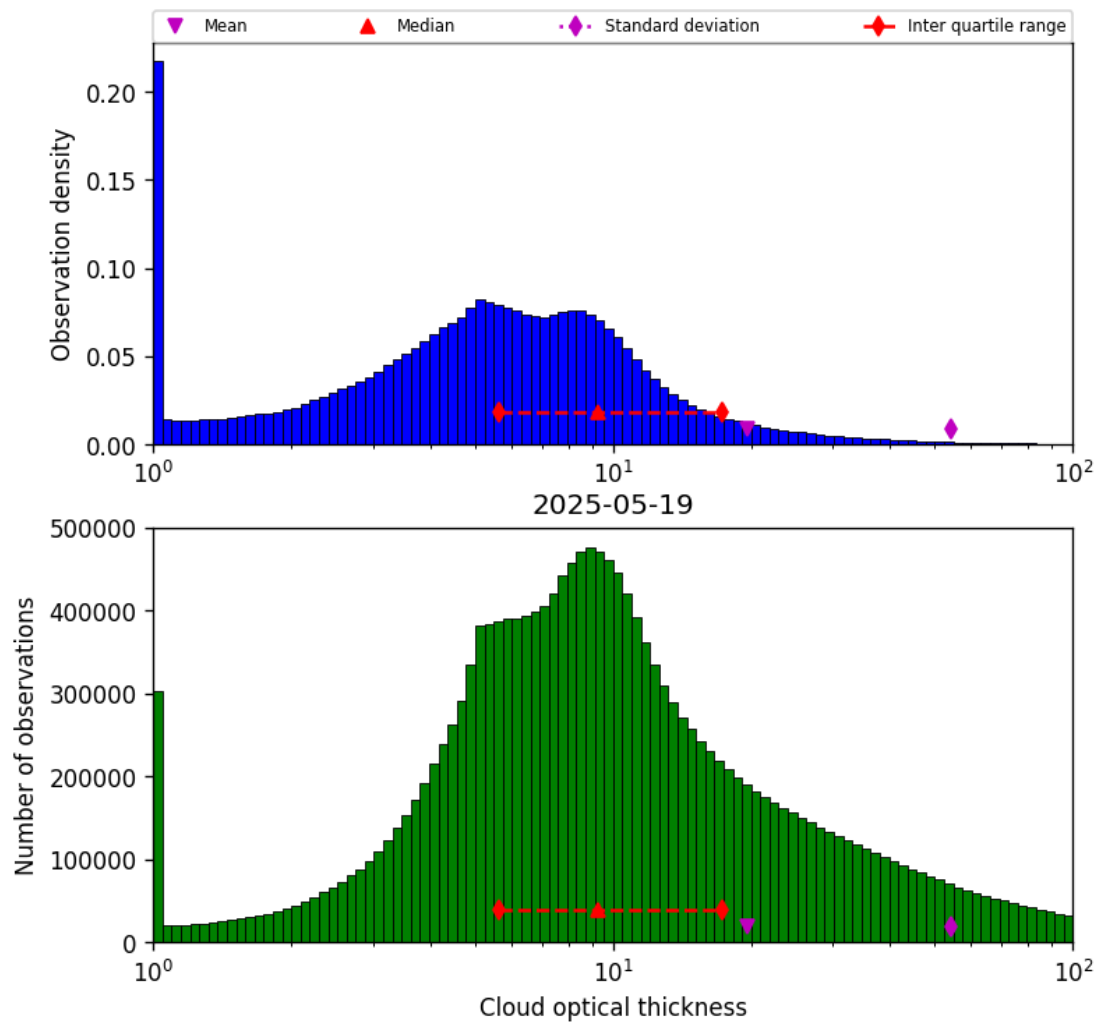


Figure 39: Histogram of “Cloud optical thickness” for 2025-05-19 to 2025-05-19

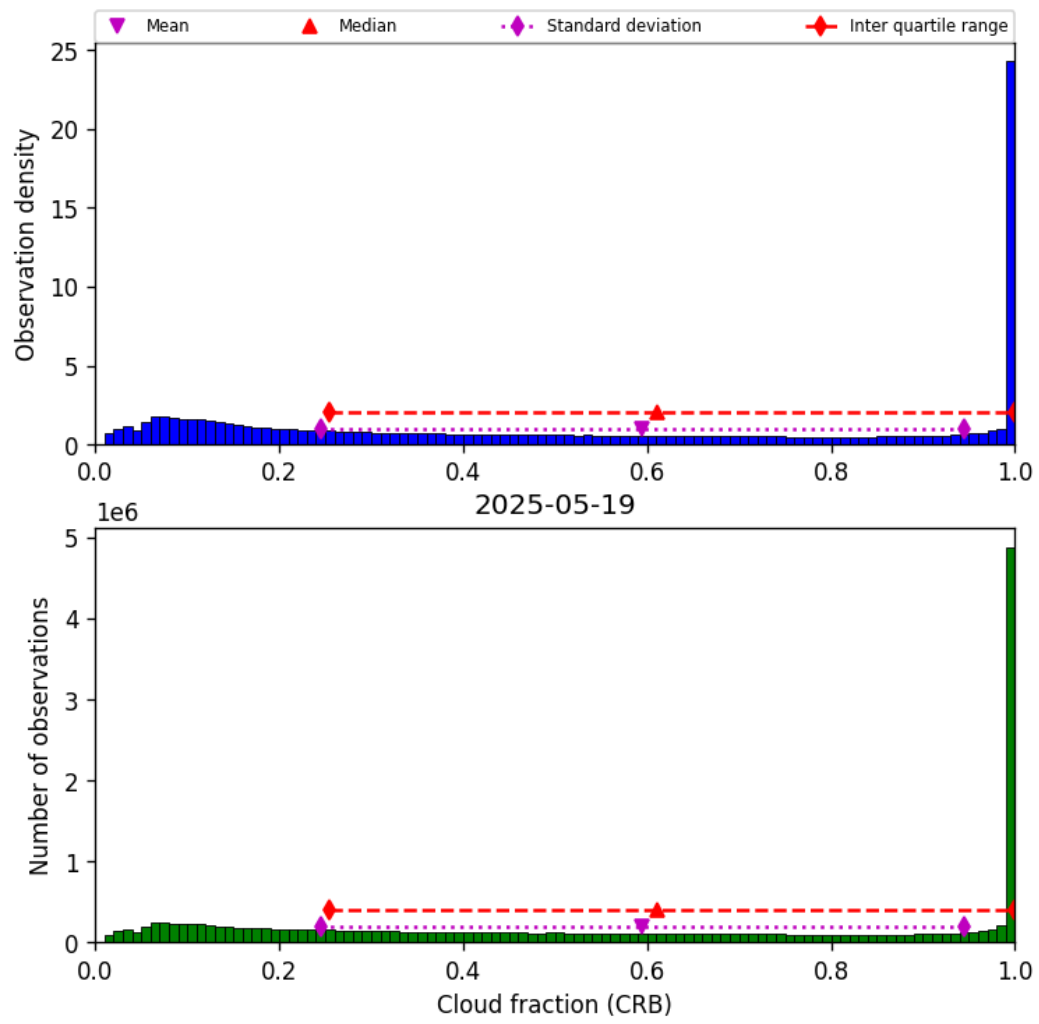


Figure 40: Histogram of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19

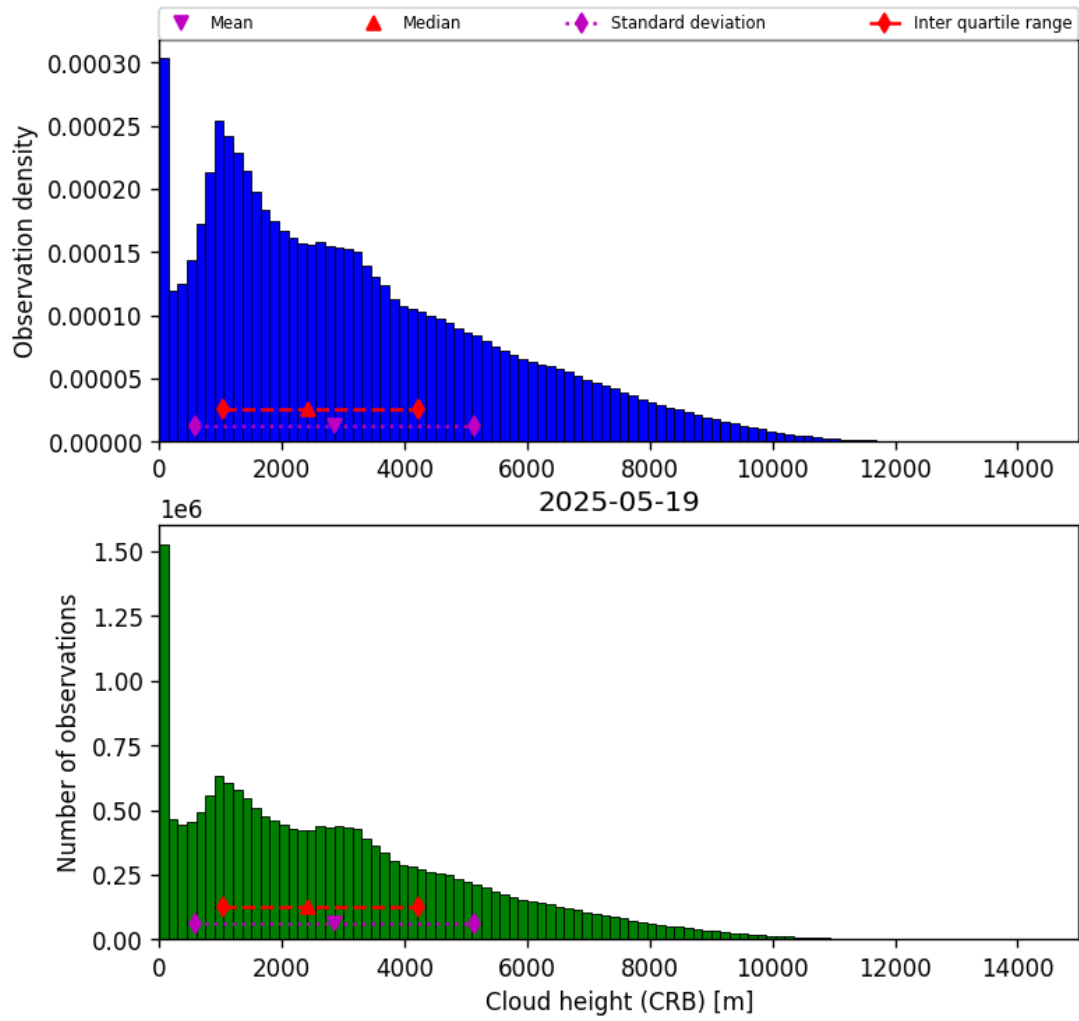


Figure 41: Histogram of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19

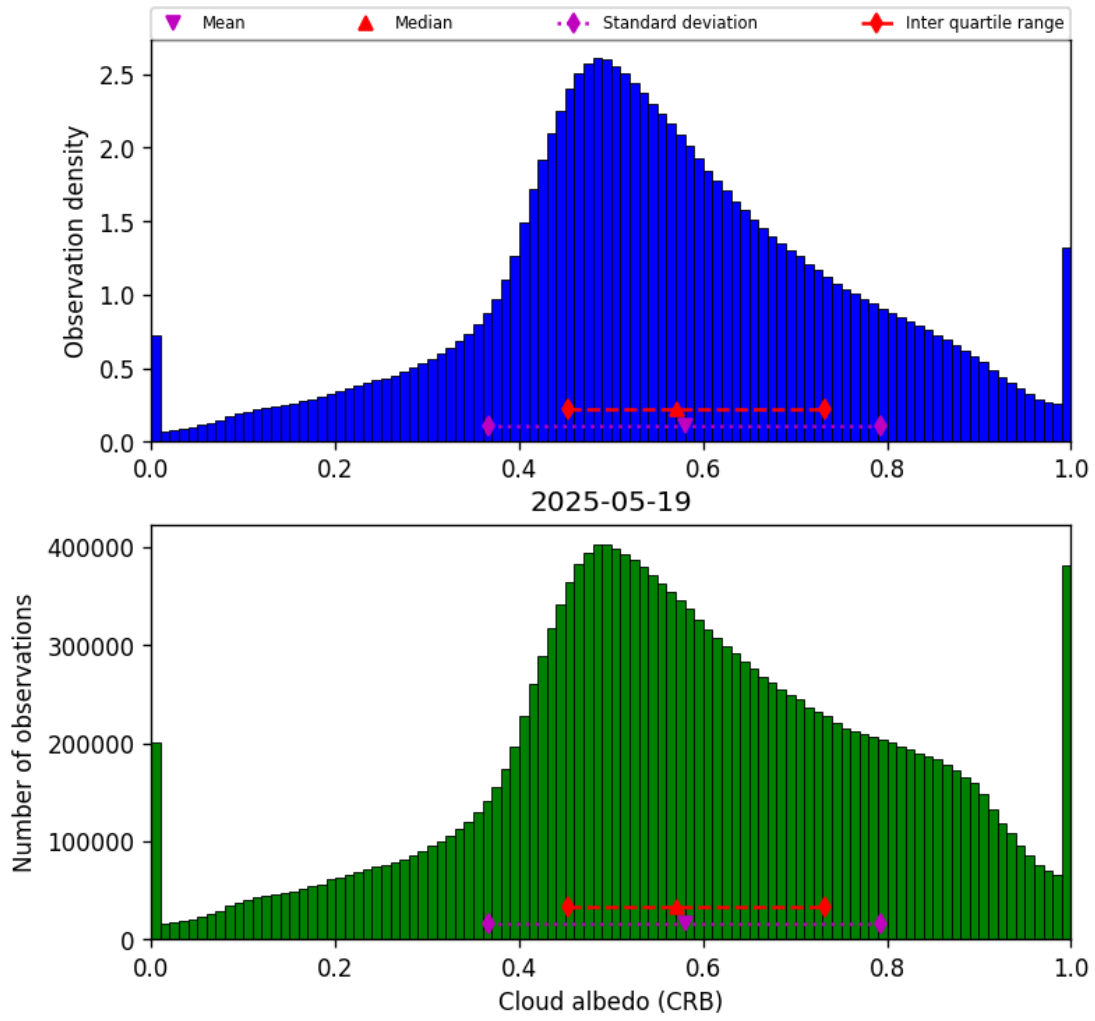


Figure 42: Histogram of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19

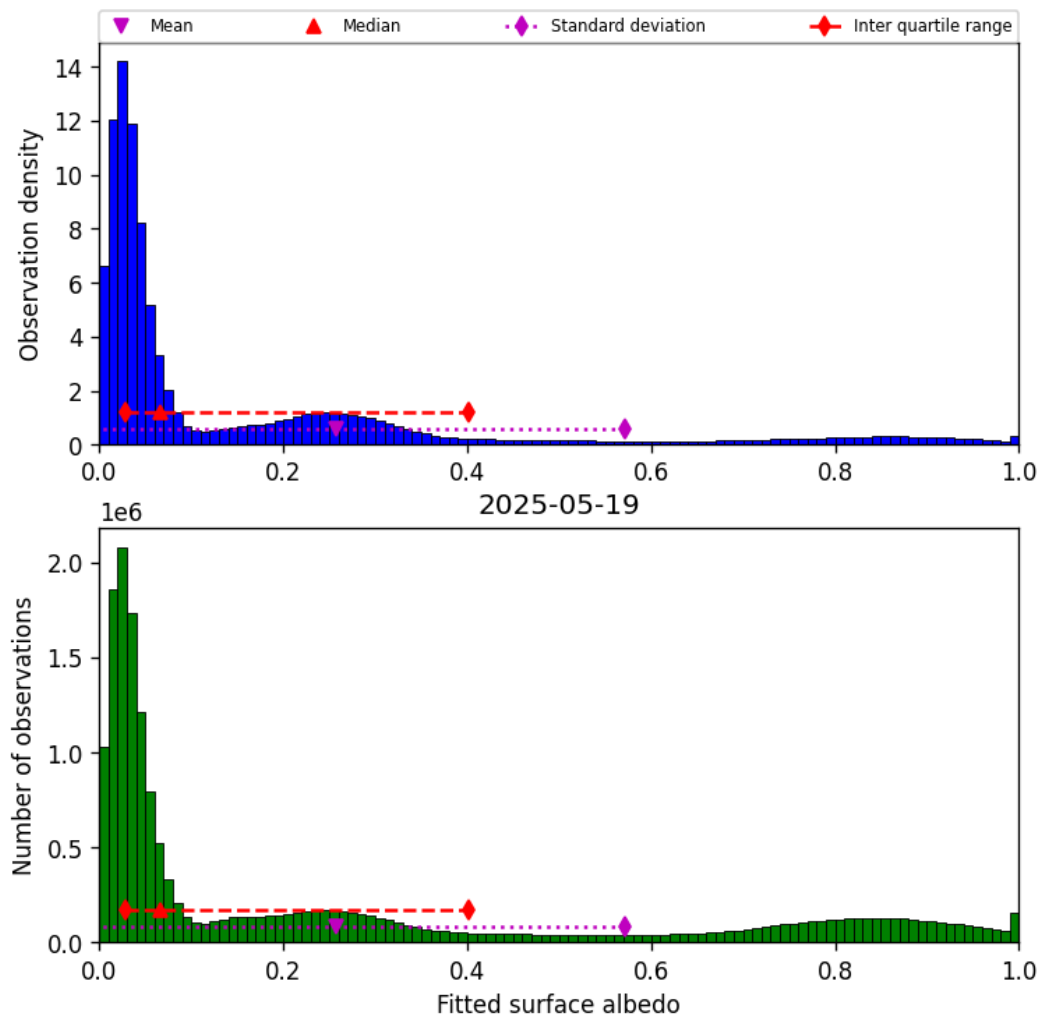


Figure 43: Histogram of “Fitted surface albedo” for 2025-05-19 to 2025-05-19

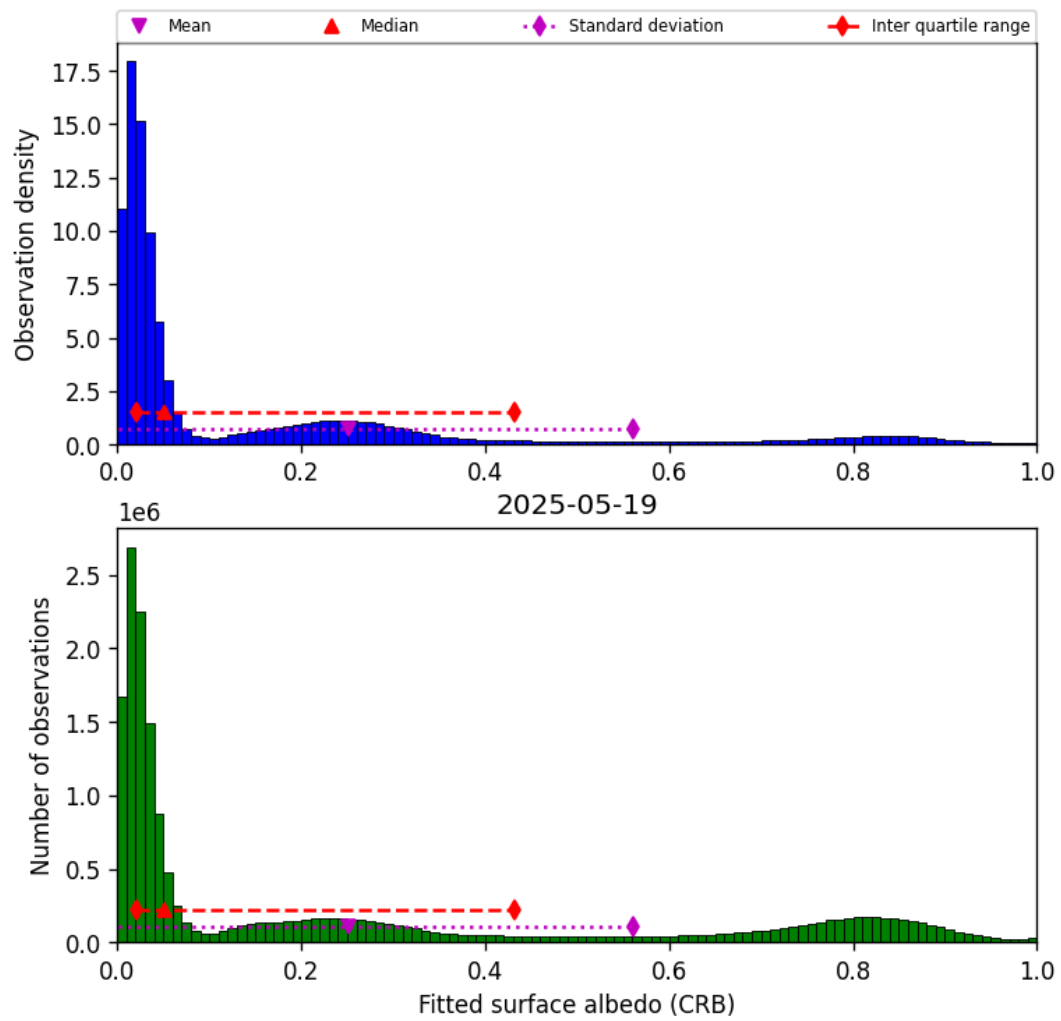


Figure 44: Histogram of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19

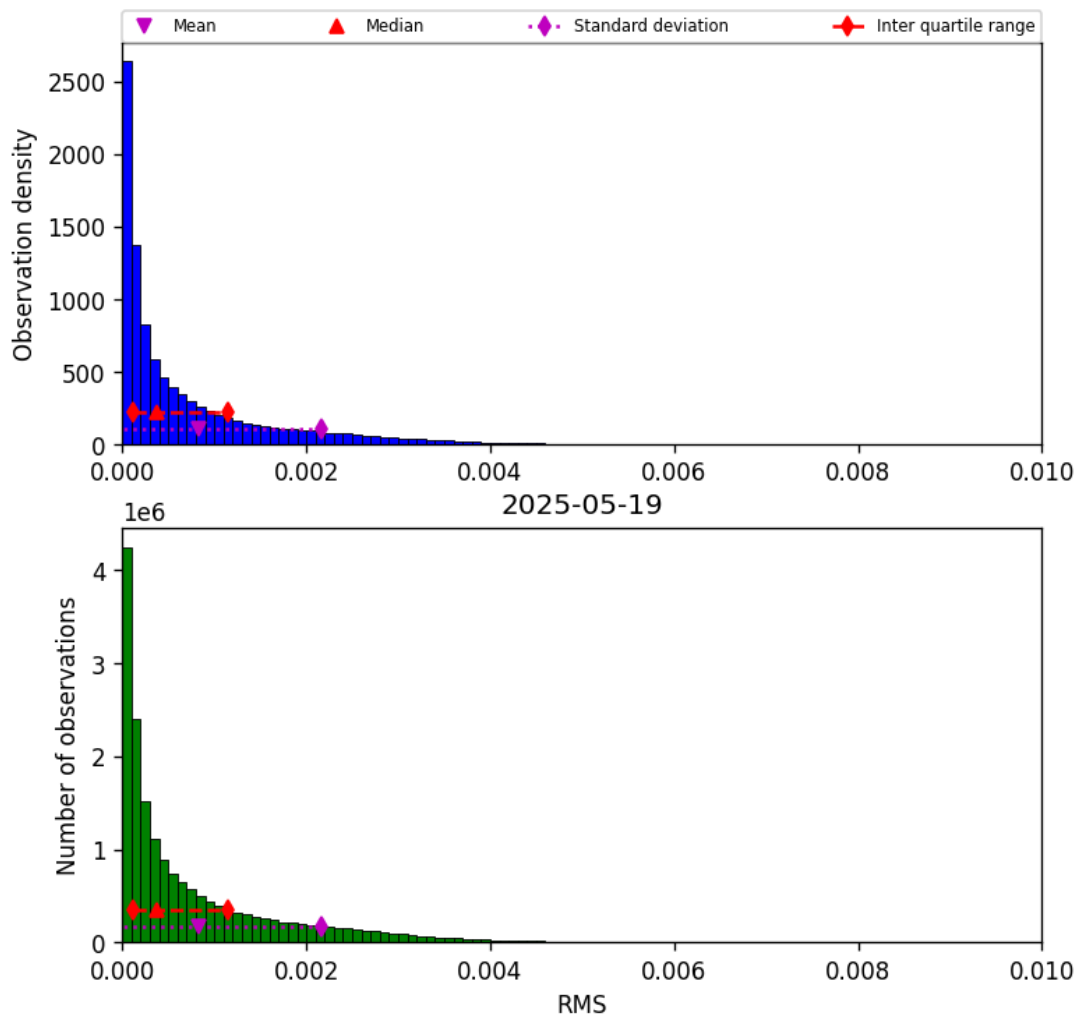


Figure 45: Histogram of “RMS” for 2025-05-19 to 2025-05-19

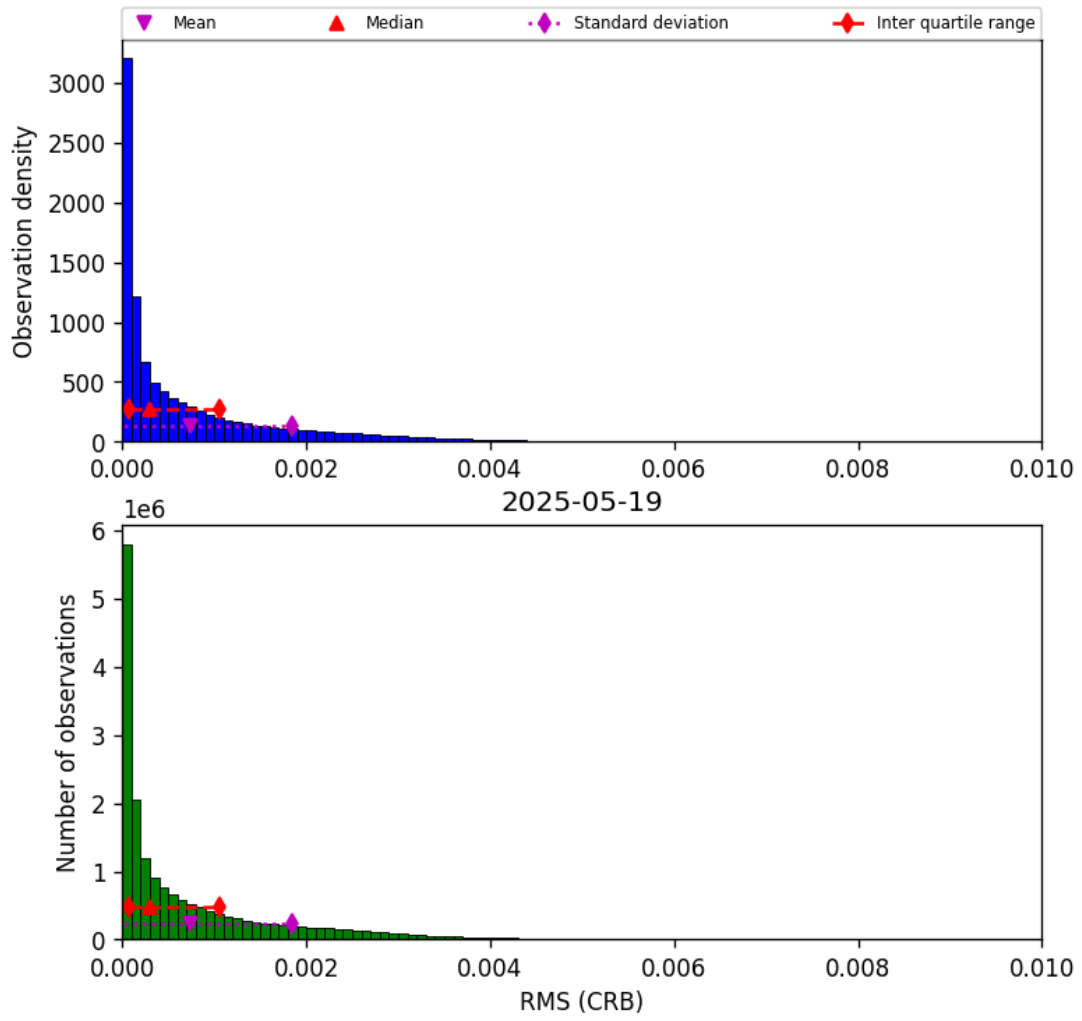


Figure 46: Histogram of “RMS (CRB)” for 2025-05-19 to 2025-05-19

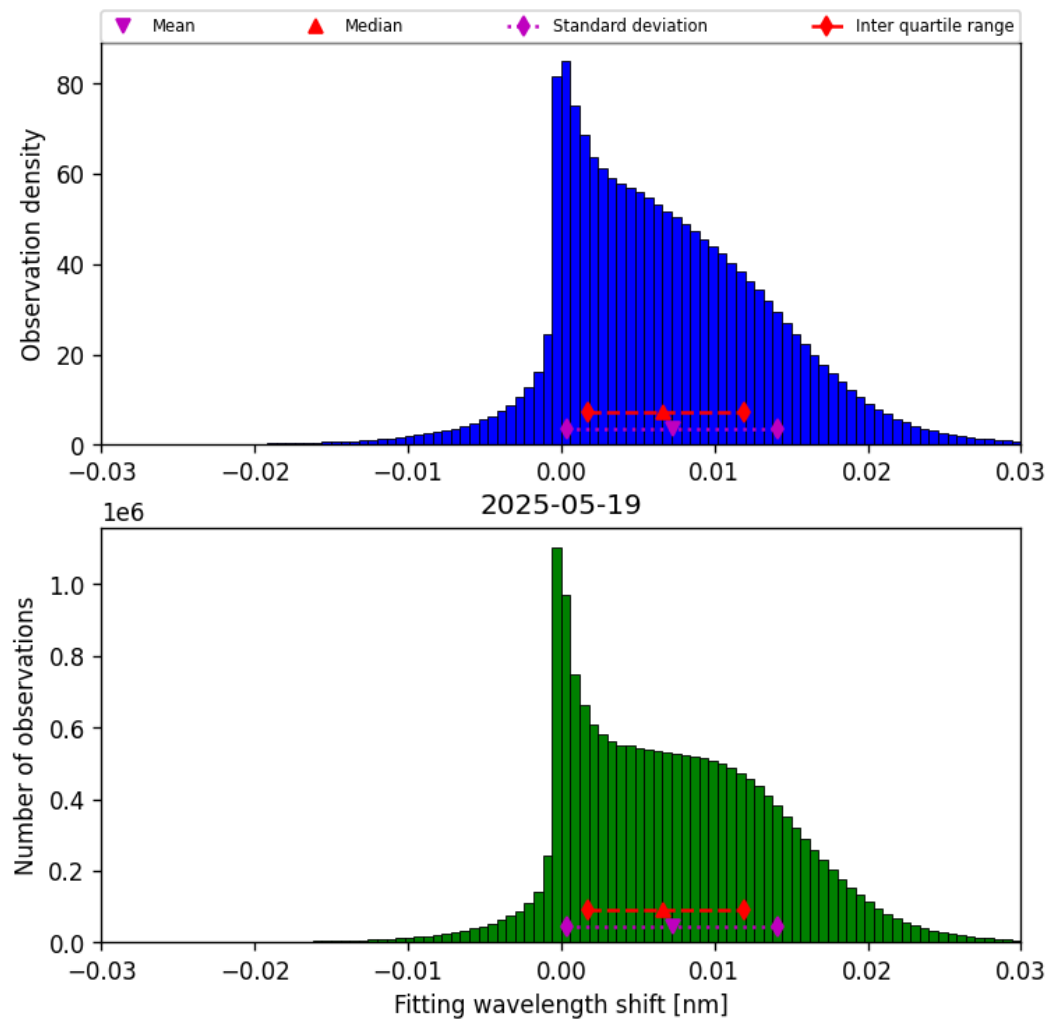


Figure 47: Histogram of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19

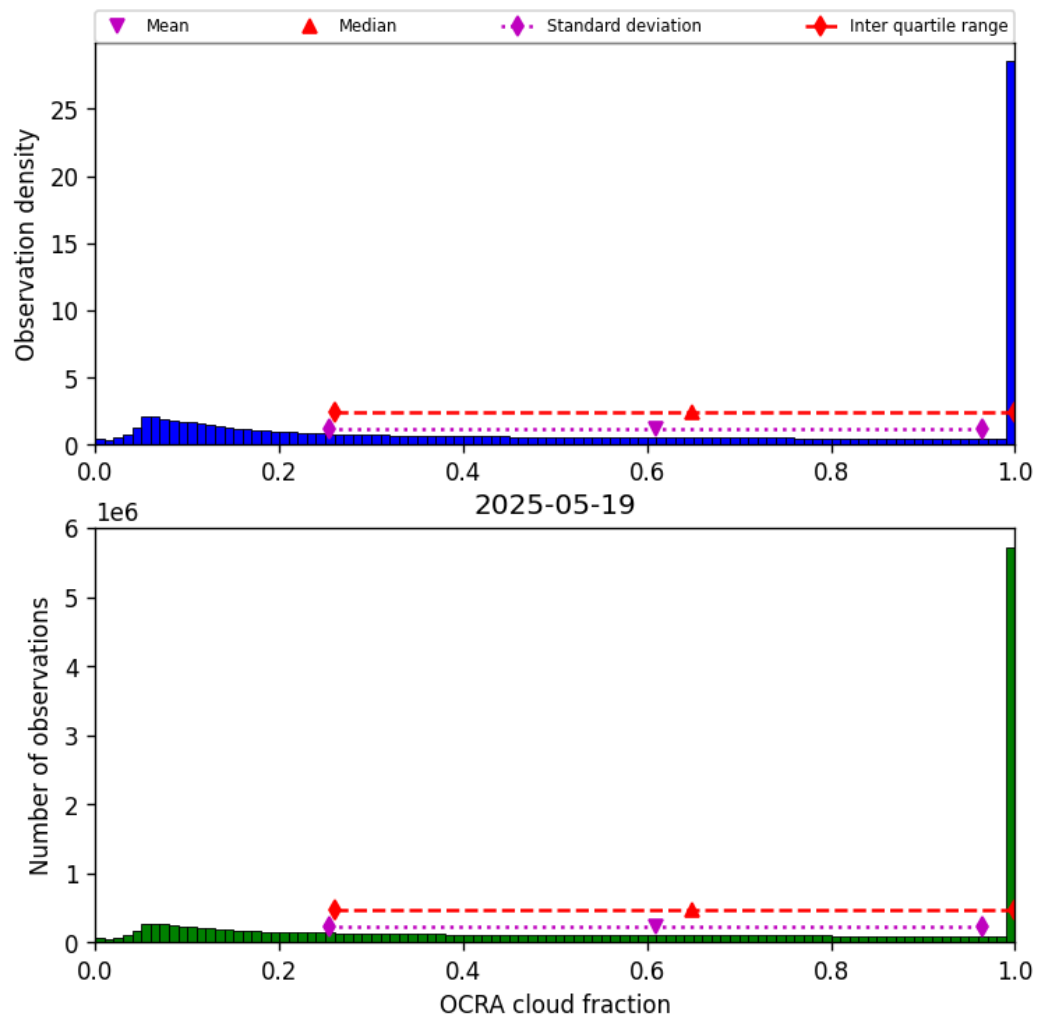


Figure 48: Histogram of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19

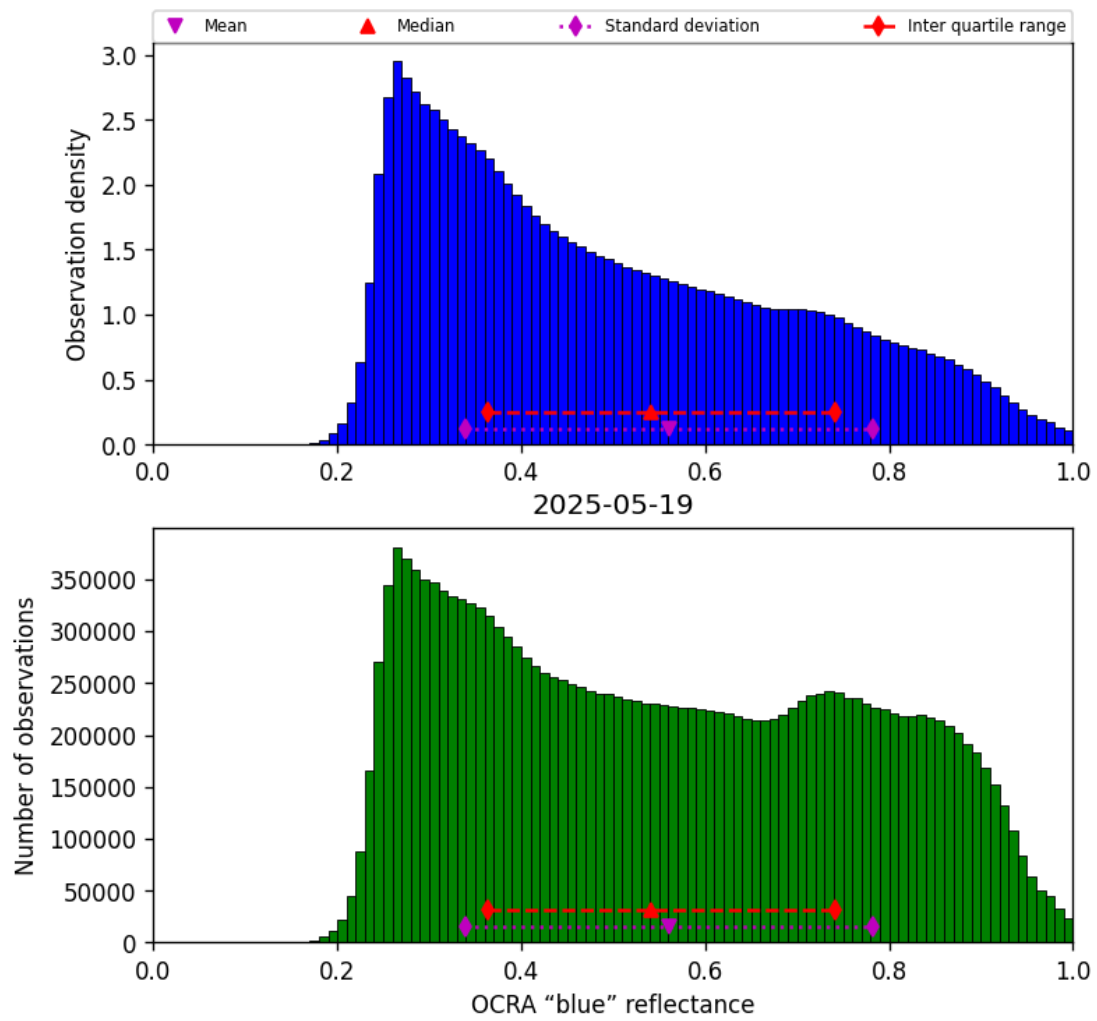


Figure 49: Histogram of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19

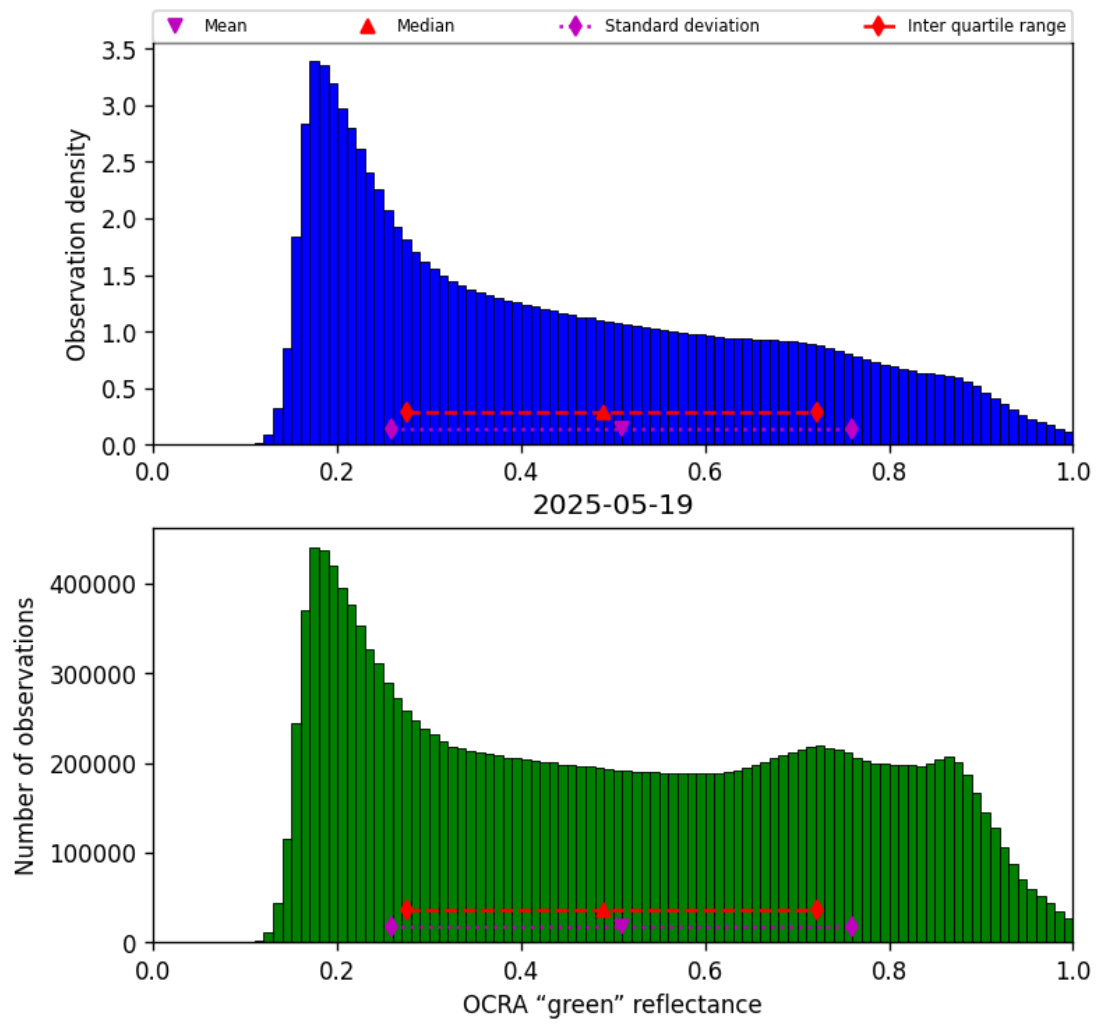


Figure 50: Histogram of “OCRA “green” reflectance” for 2025-05-19 to 2025-05-19

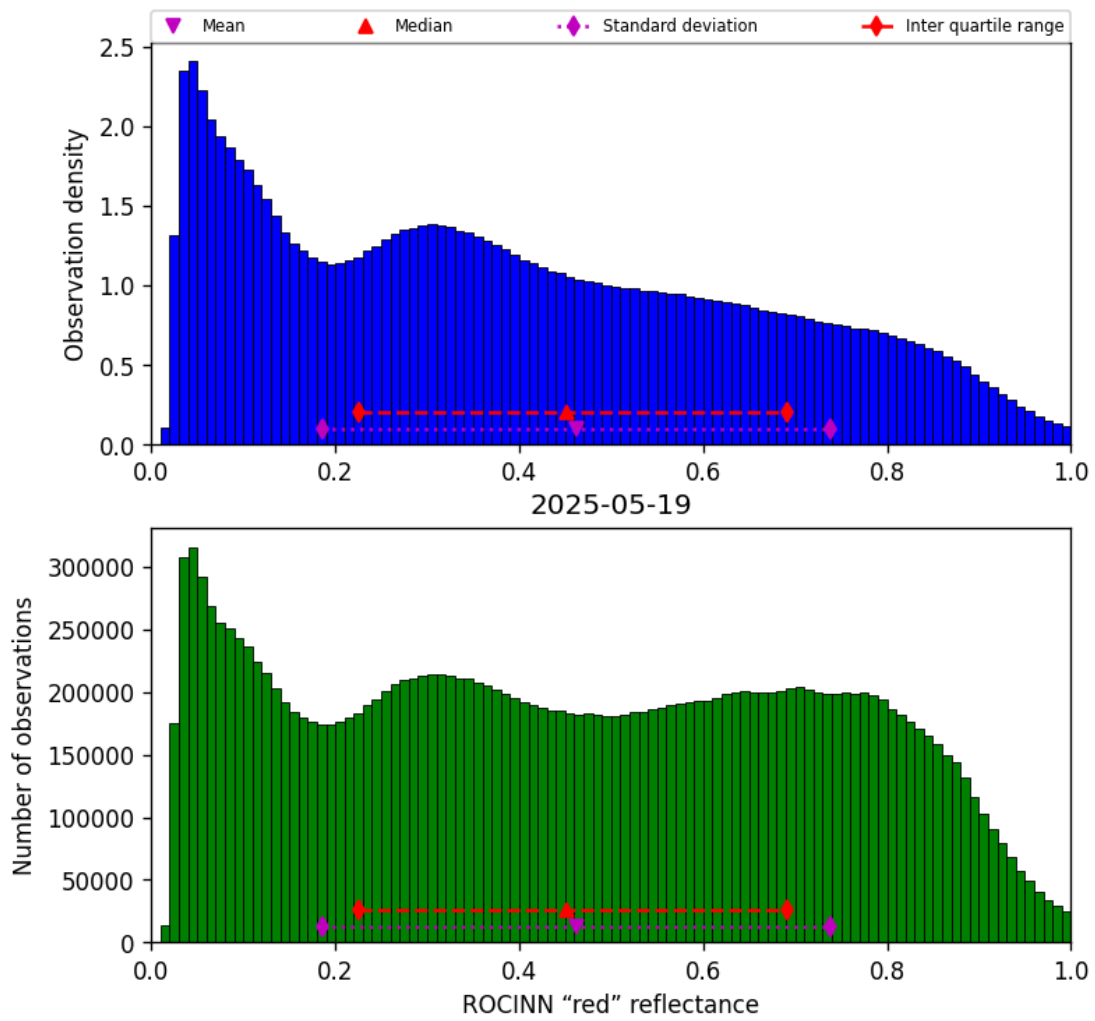


Figure 51: Histogram of “ROCINN “red” reflectance” for 2025-05-19 to 2025-05-19

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.

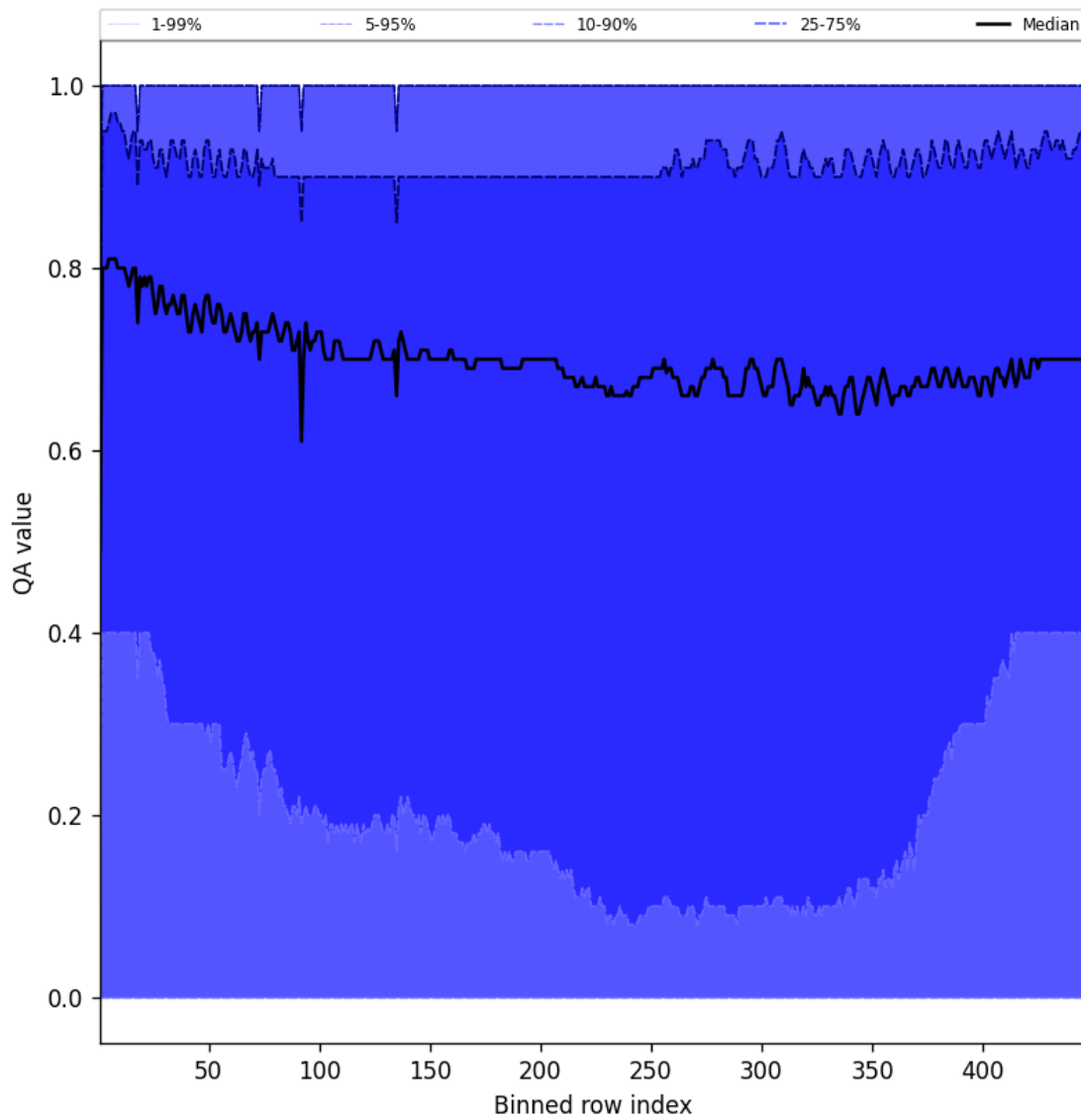


Figure 52: Along track statistics of “QA value” for 2025-05-19 to 2025-05-19

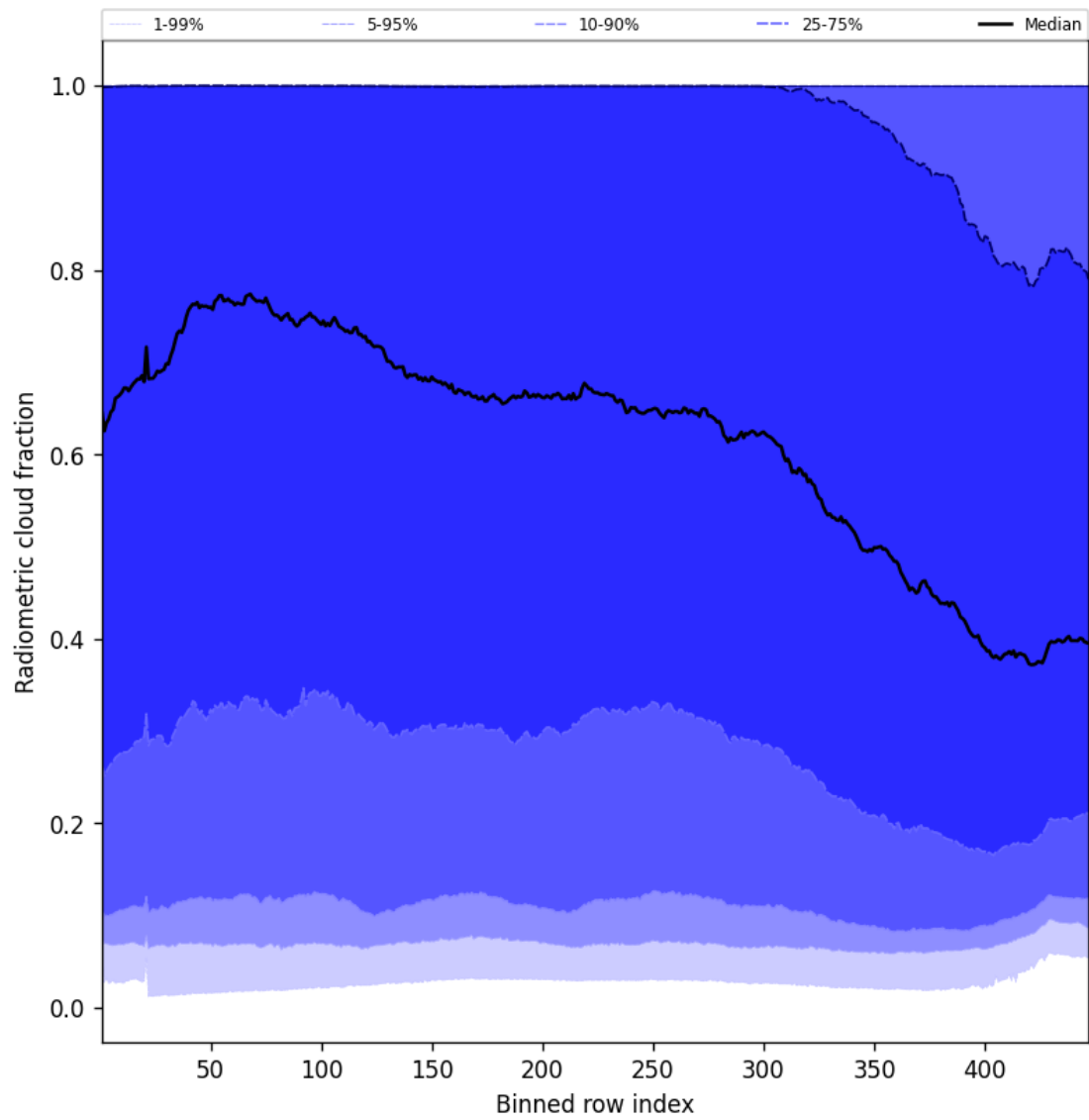


Figure 53: Along track statistics of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19

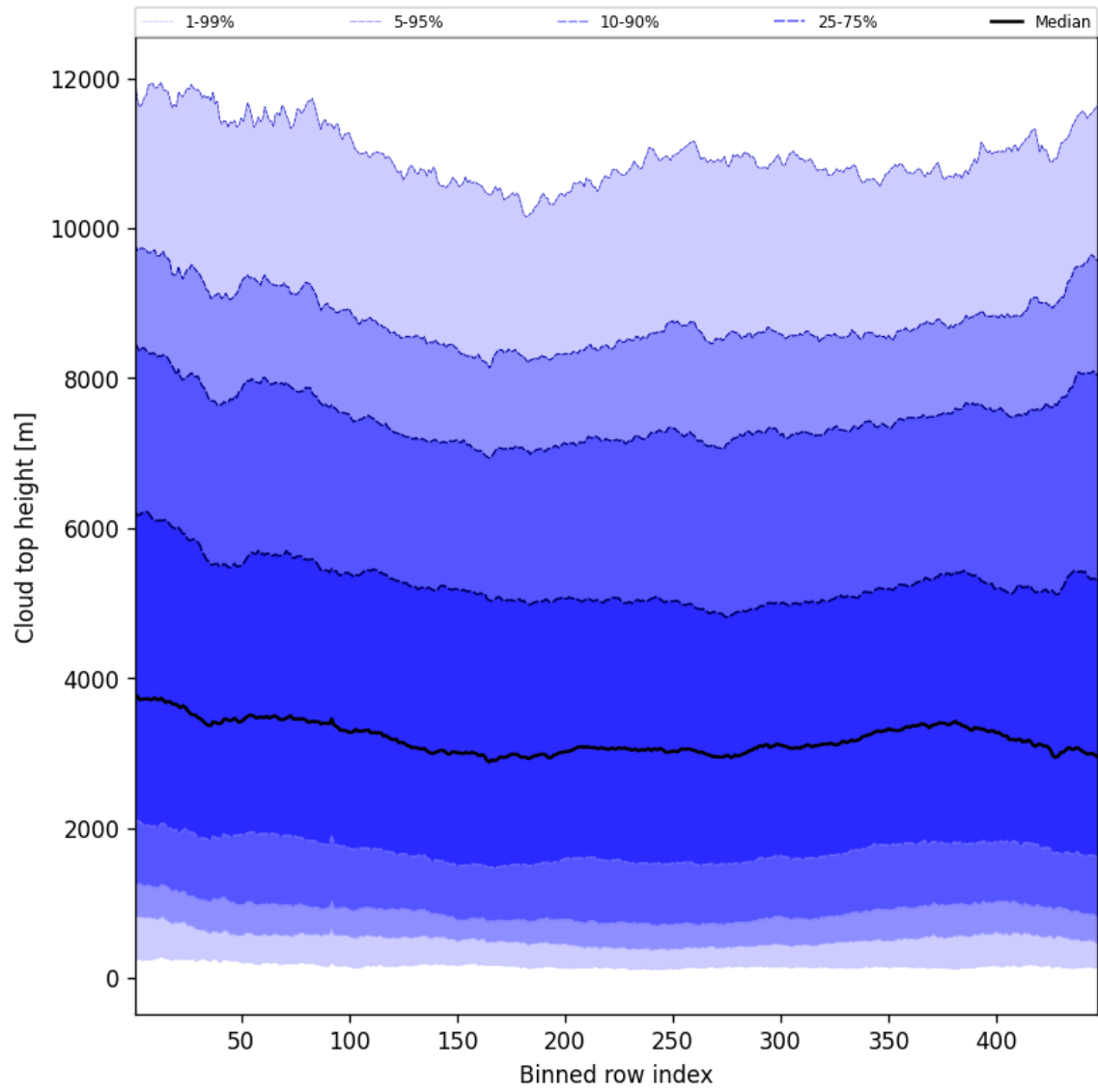


Figure 54: Along track statistics of “Cloud top height” for 2025-05-19 to 2025-05-19

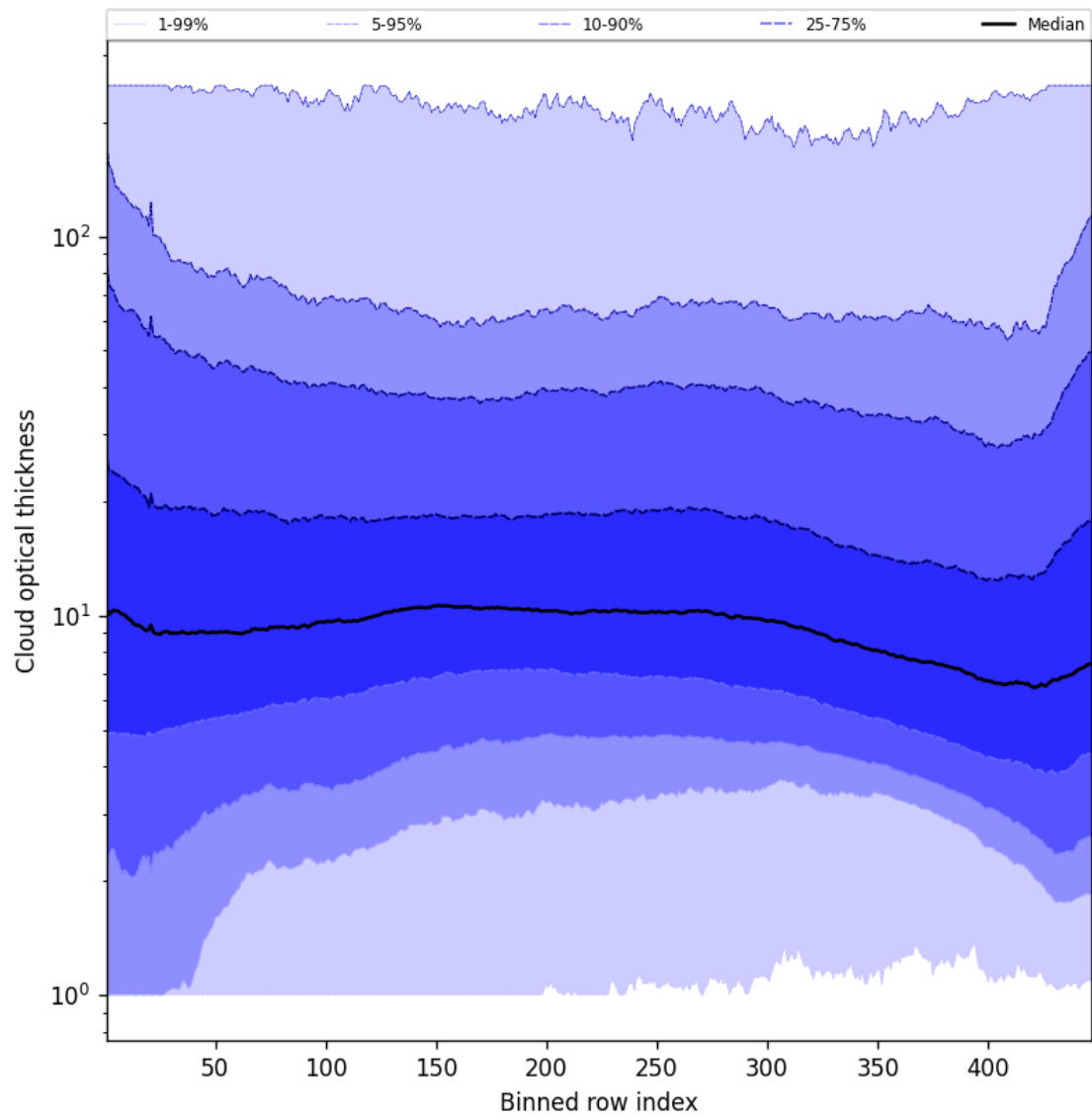


Figure 55: Along track statistics of “Cloud optical thickness” for 2025-05-19 to 2025-05-19

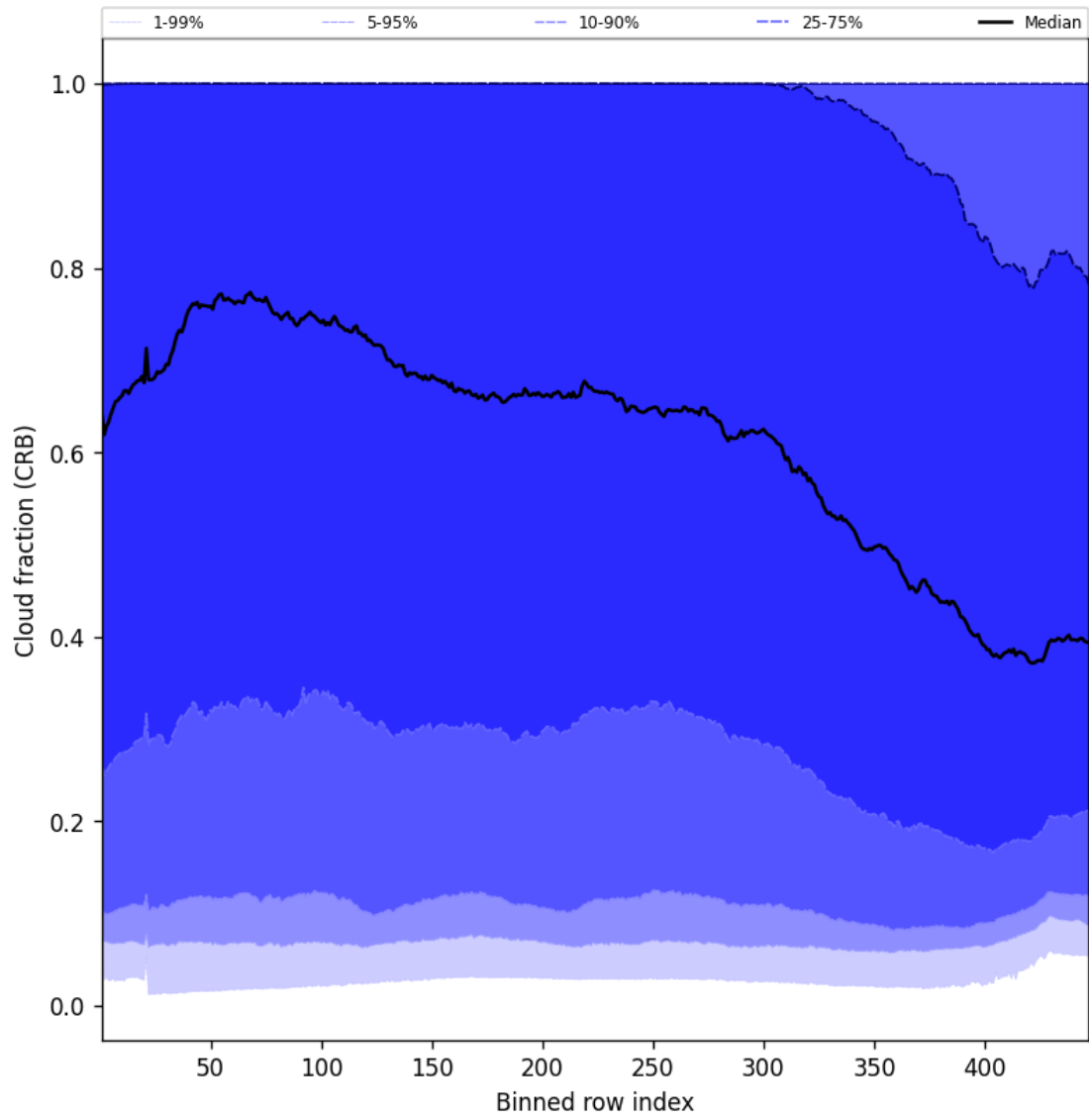


Figure 56: Along track statistics of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19

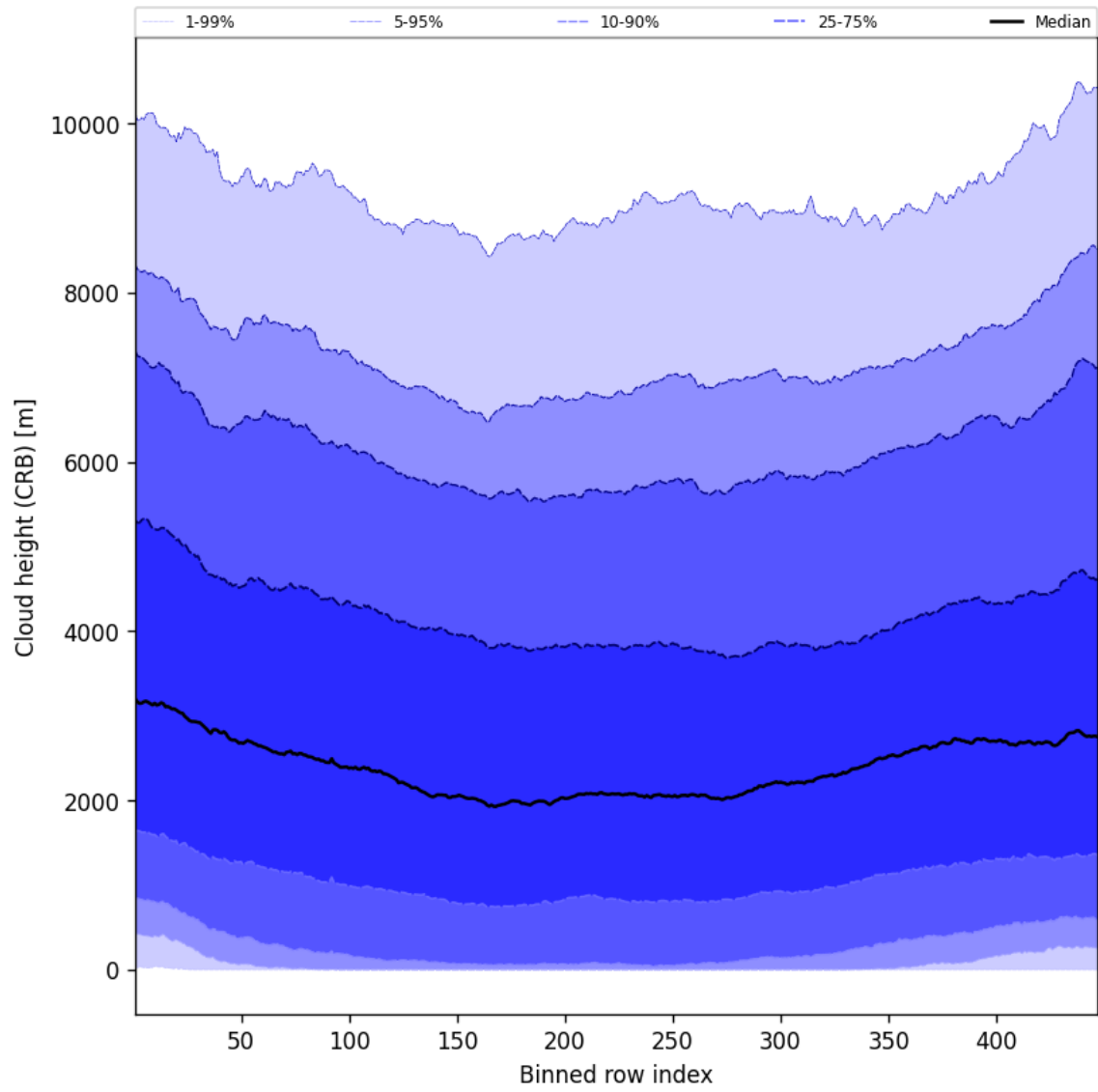


Figure 57: Along track statistics of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19

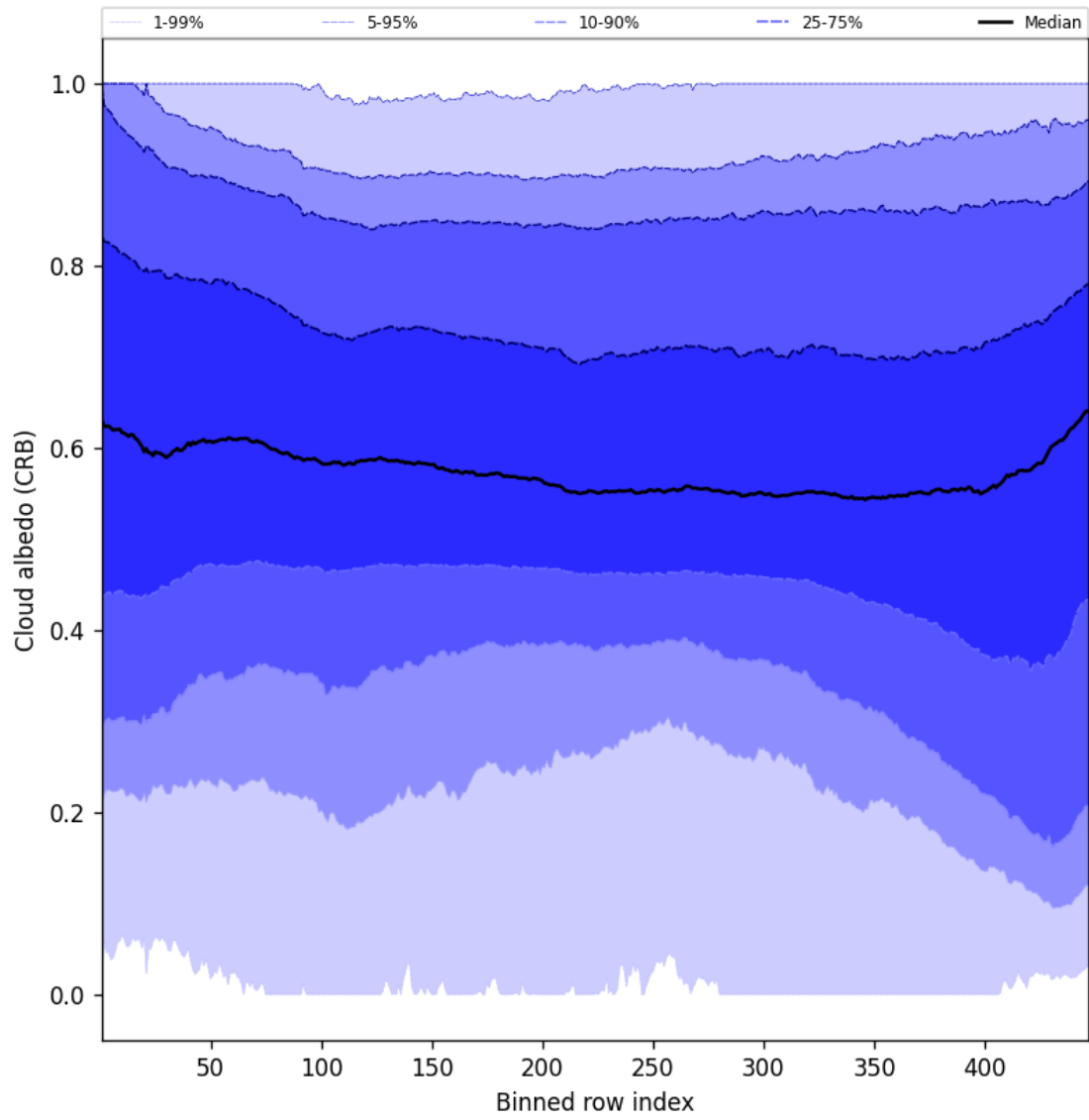


Figure 58: Along track statistics of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19

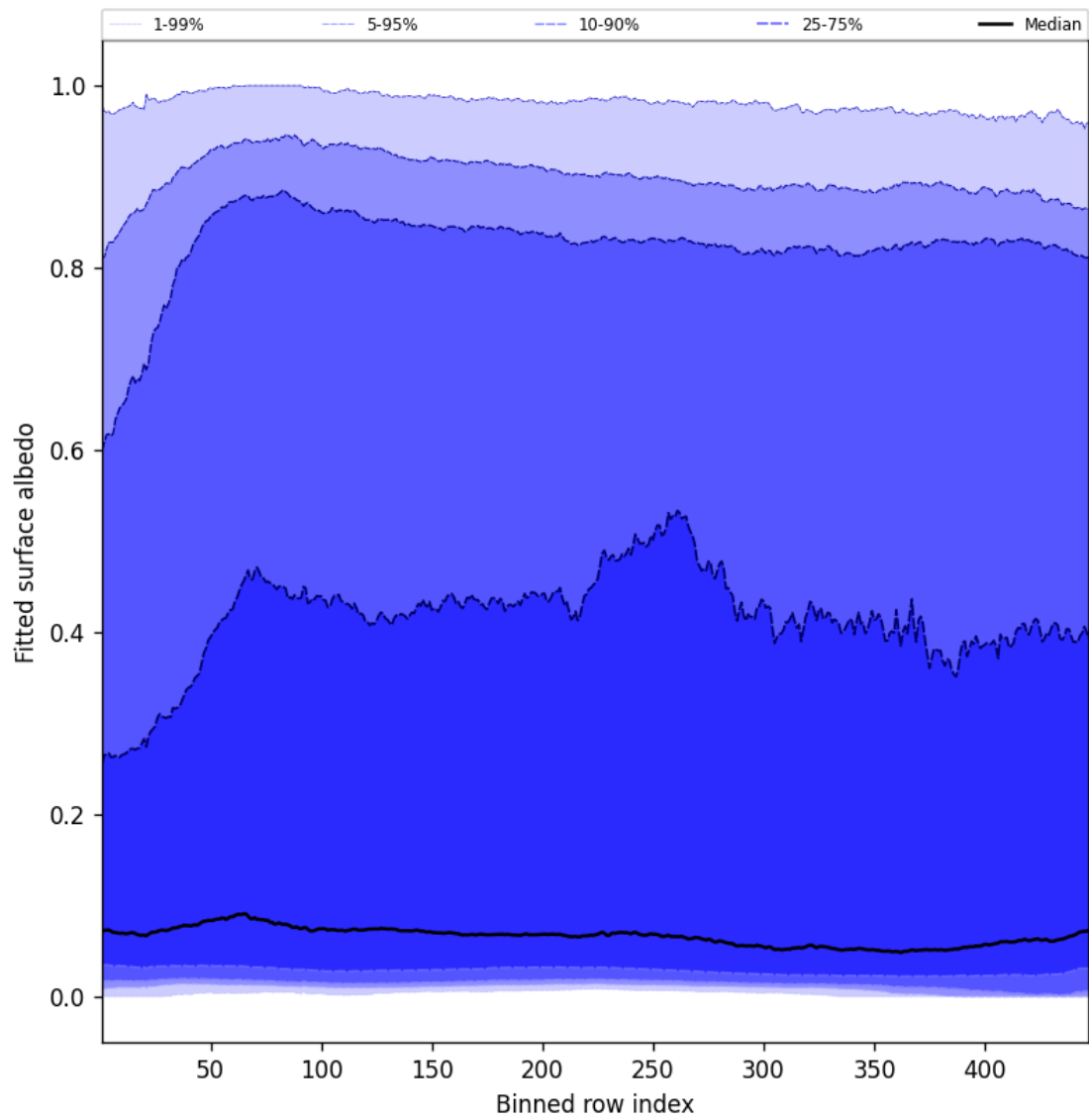


Figure 59: Along track statistics of “Fitted surface albedo” for 2025-05-19 to 2025-05-19

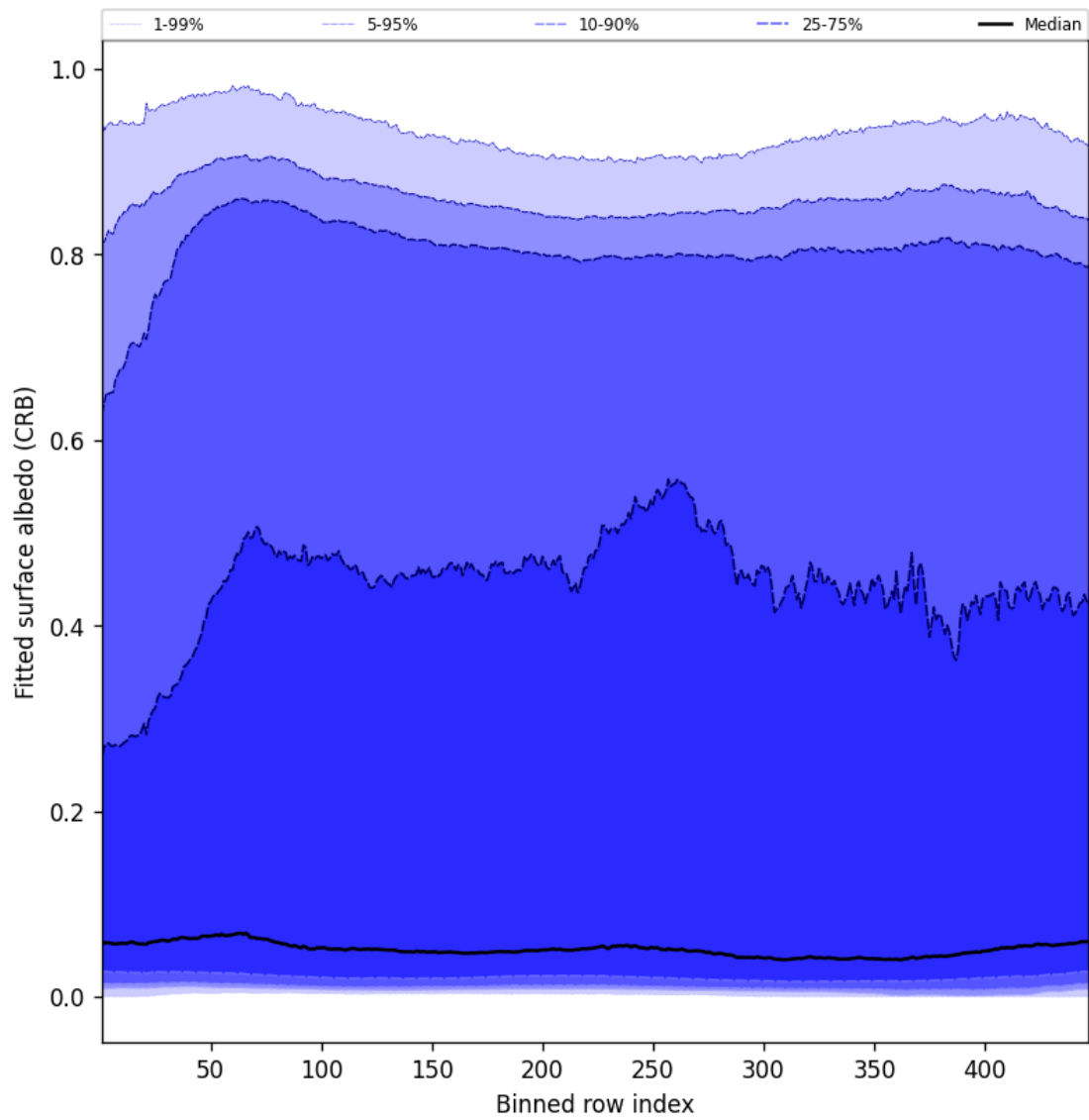


Figure 60: Along track statistics of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19

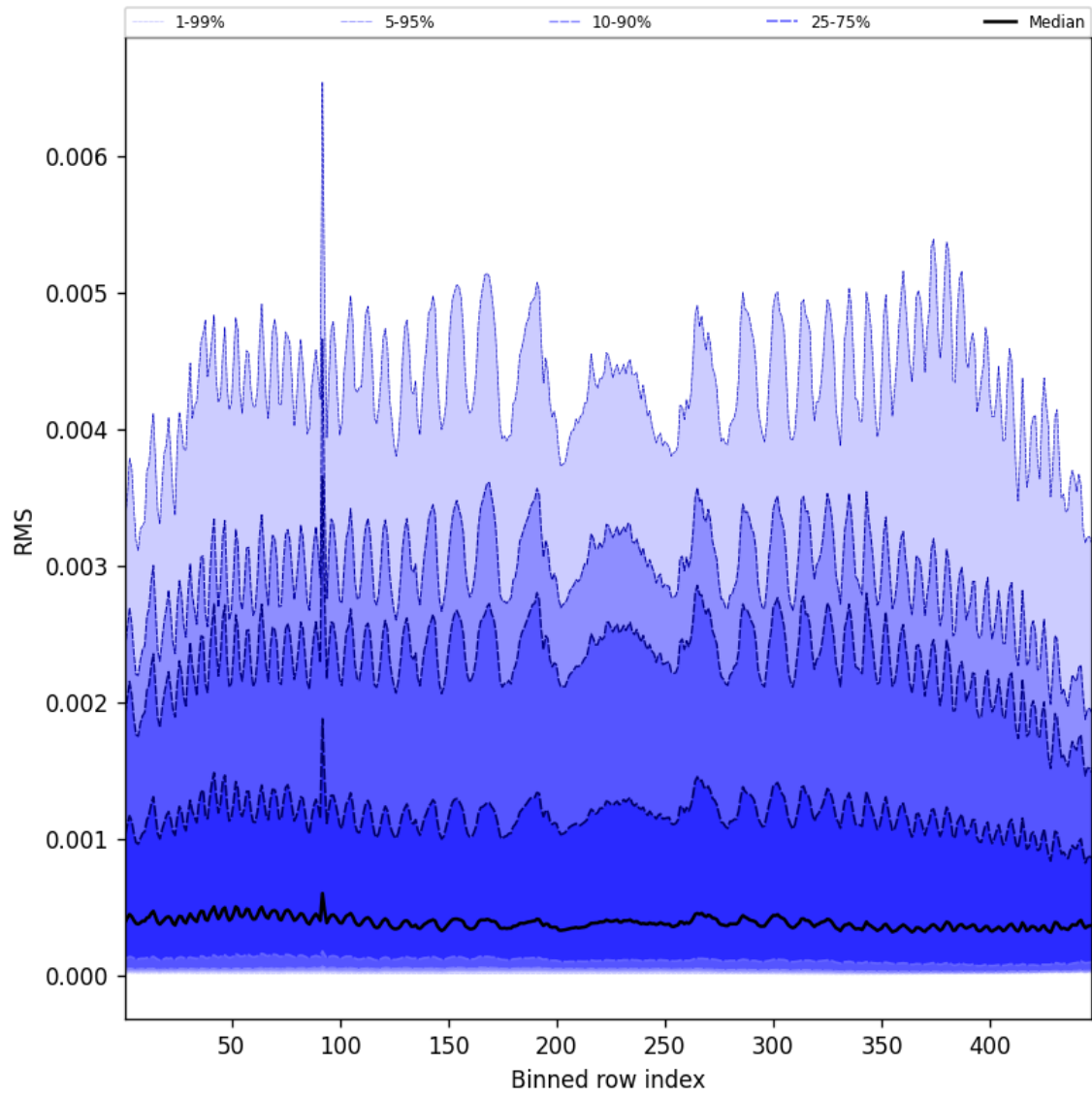


Figure 61: Along track statistics of “RMS” for 2025-05-19 to 2025-05-19

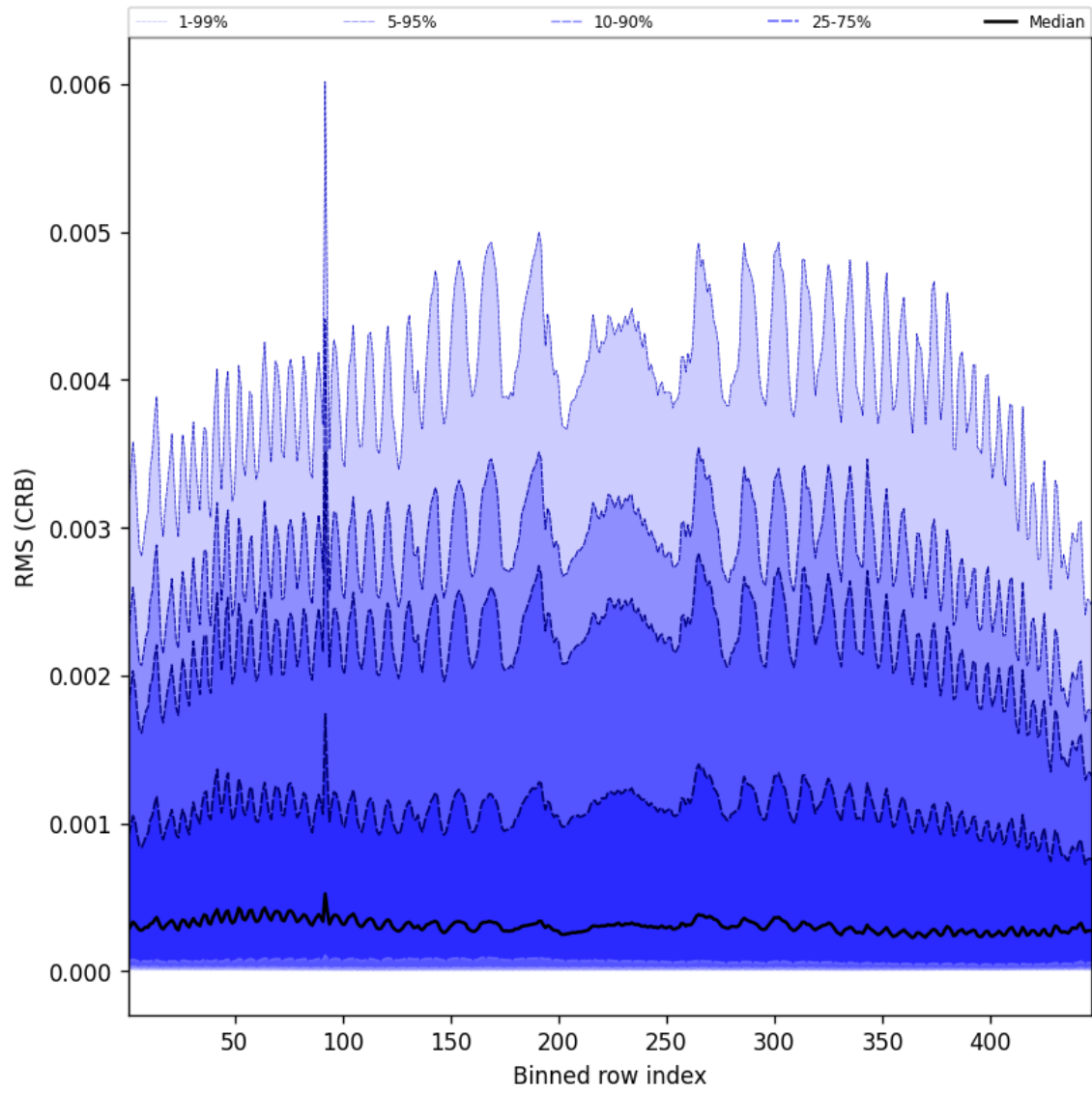


Figure 62: Along track statistics of “RMS (CRB)” for 2025-05-19 to 2025-05-19

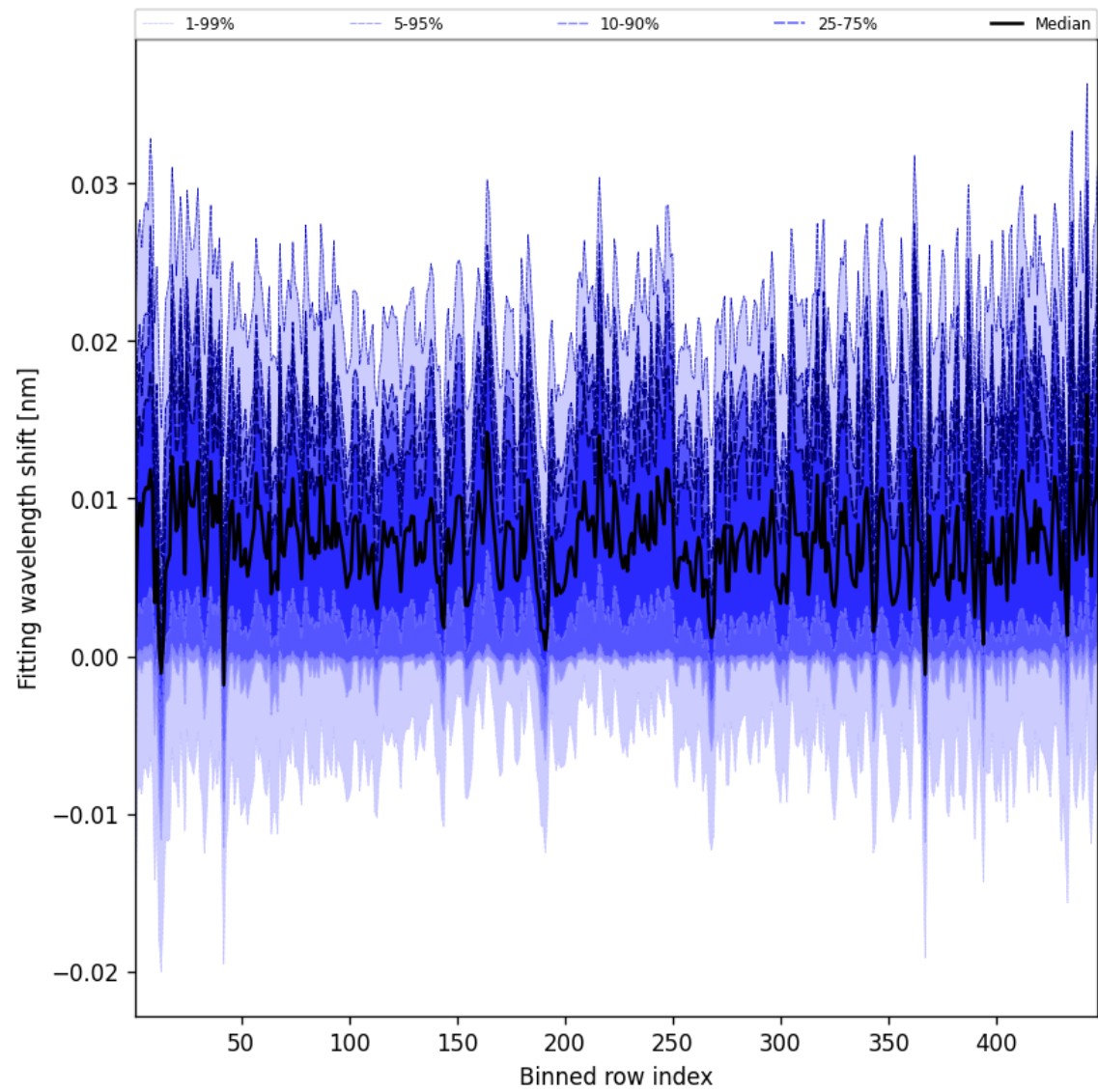


Figure 63: Along track statistics of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19

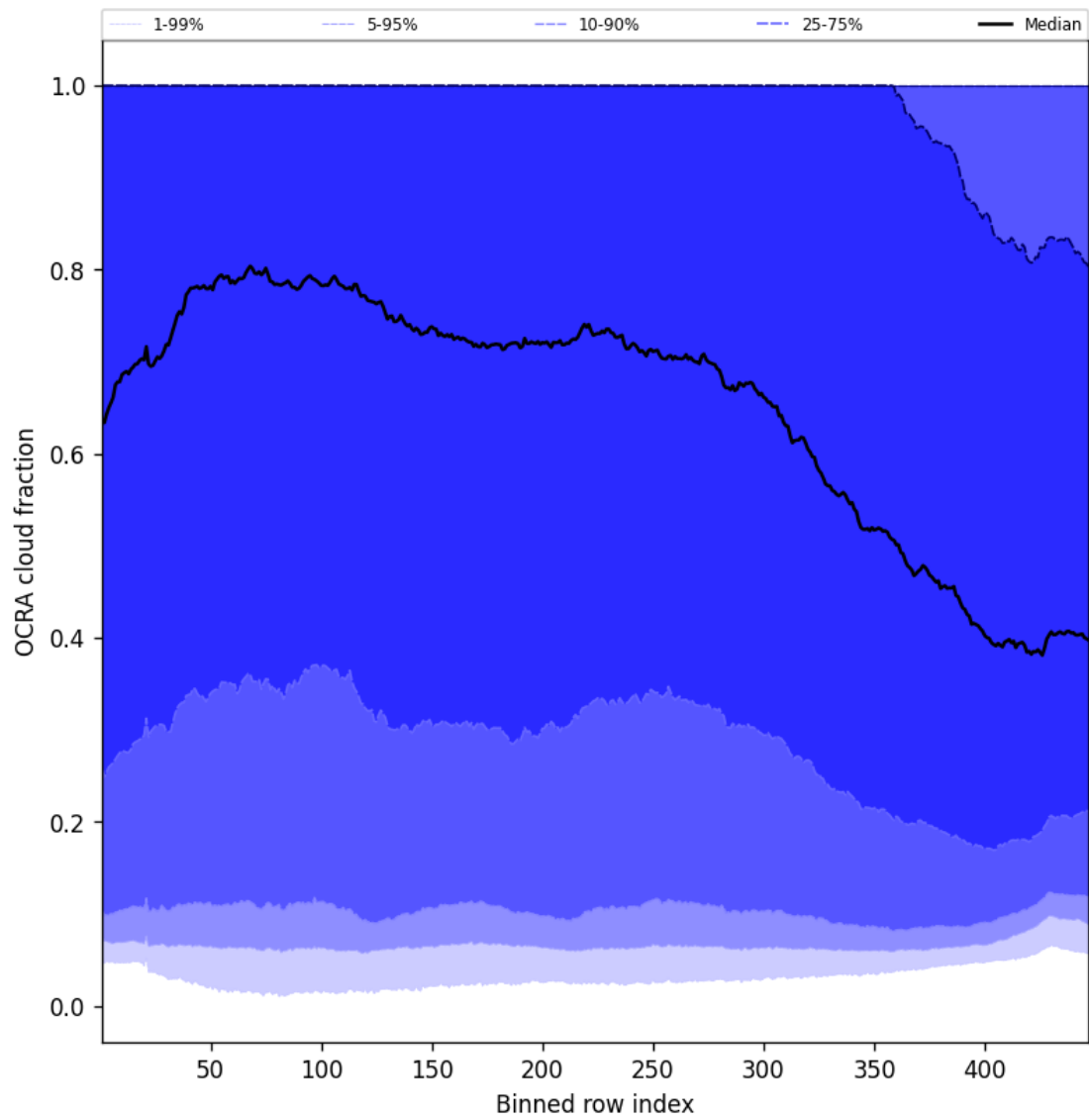


Figure 64: Along track statistics of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19

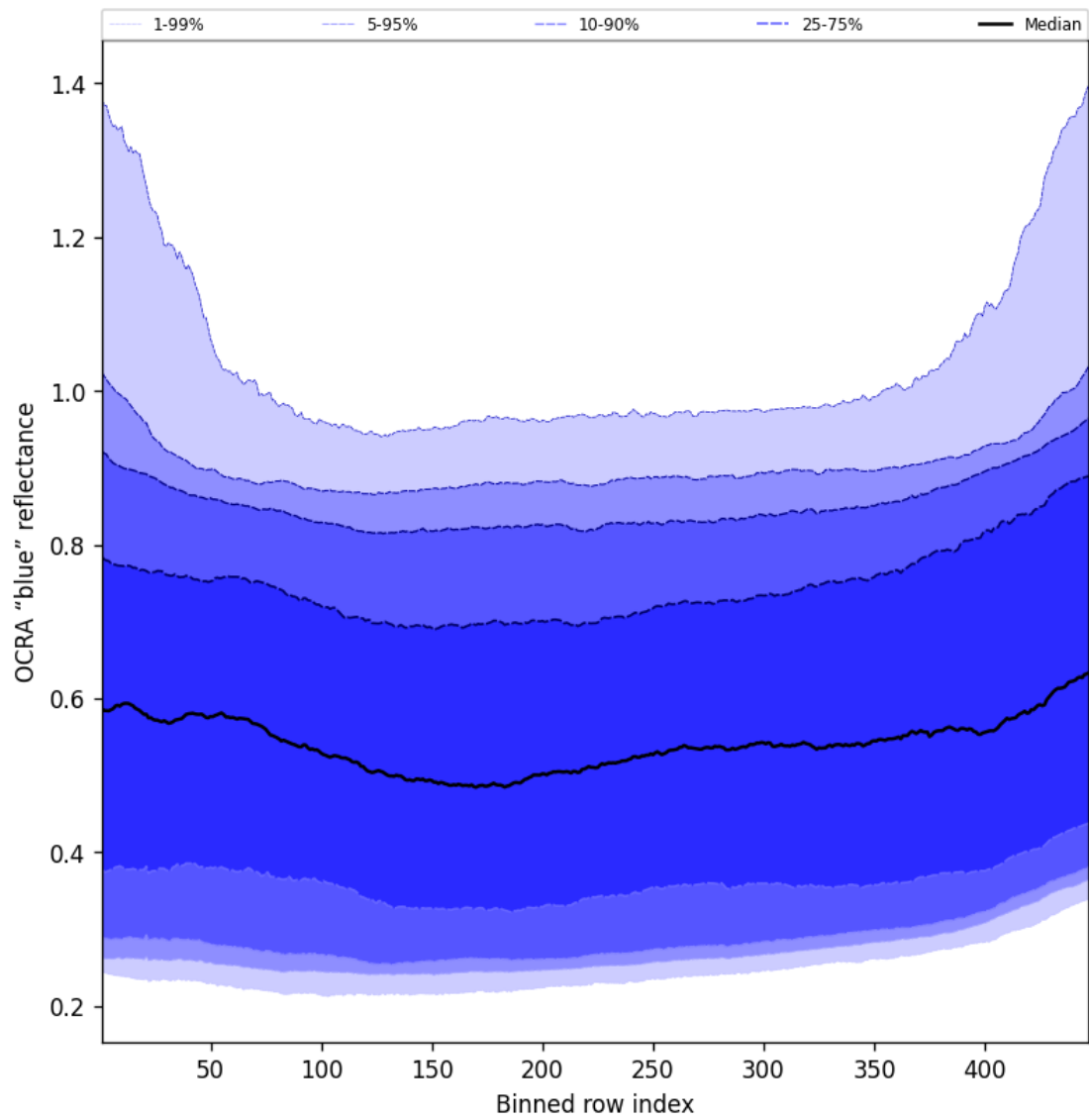


Figure 65: Along track statistics of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19

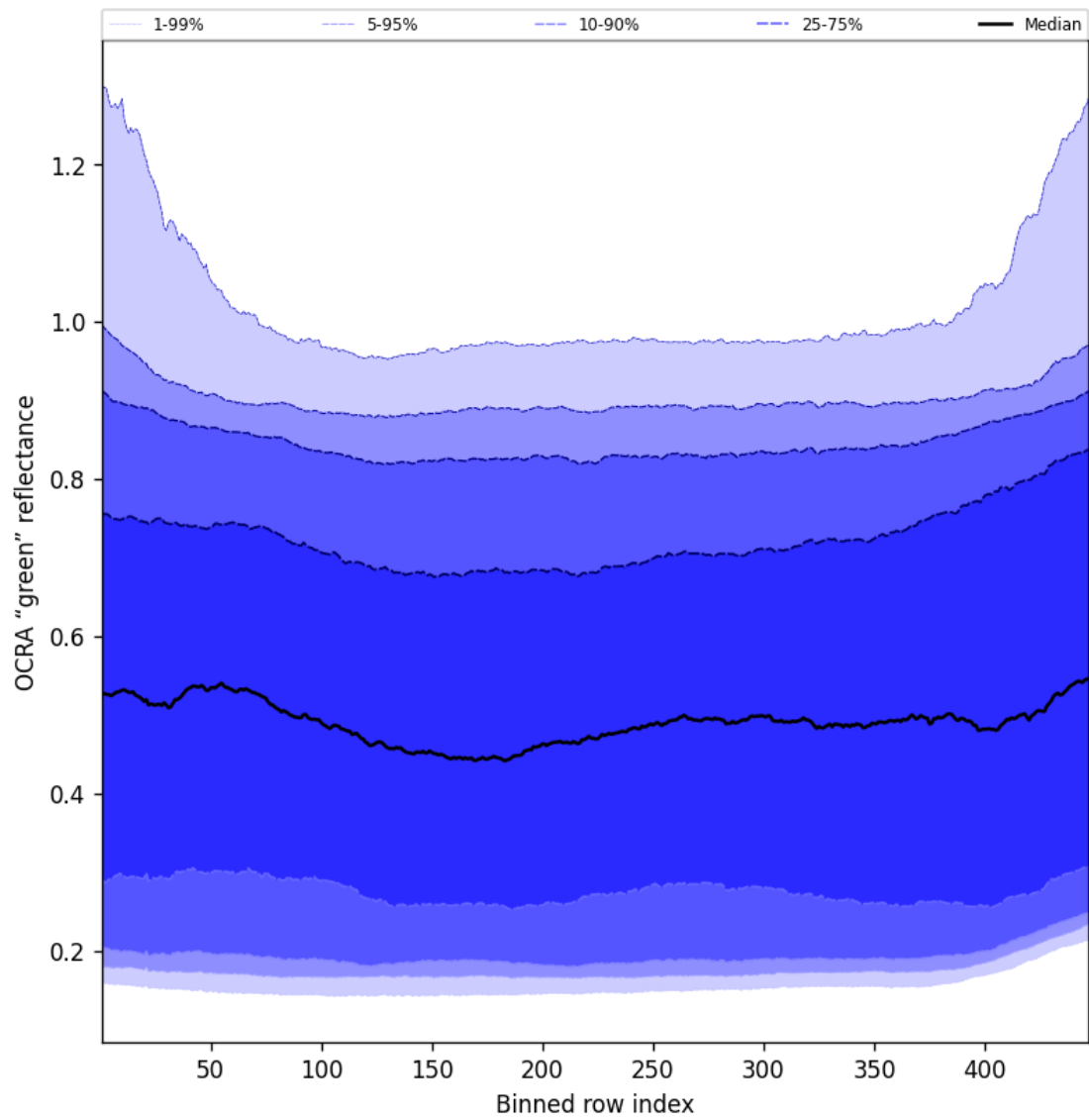


Figure 66: Along track statistics of "OCRA "green" reflectance" for 2025-05-19 to 2025-05-19

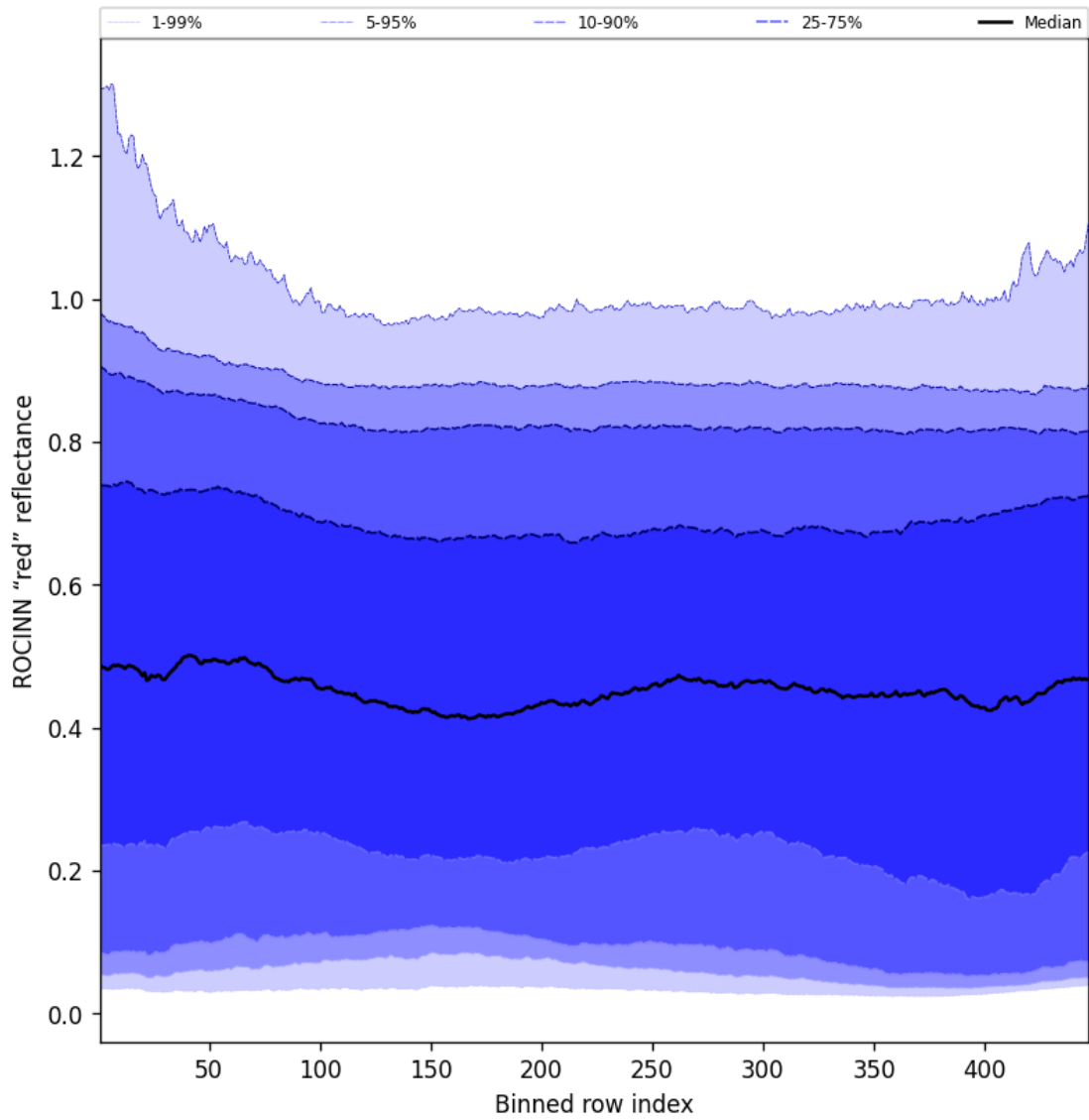


Figure 67: Along track statistics of "ROCINN "red" reflectance" for 2025-05-19 to 2025-05-19

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.

Contents

1	Short Introduction	1
1.1	The list of parameters	1
2	Definitions	1
3	Granule outlines	8
4	Input data monitoring	9
5	Warnings and errors	10
6	World maps	11
7	Zonal average	27
8	Histograms	43
9	Along track statistics	59
10	Coincidence density	75
11	Copyright information of ‘PyCAMA’	75

List of Figures

1	Outline of the granules.	8
2	Input data per granule	9
3	Fraction of pixels with specific warnings and errors during processing	10
4	Map of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19	11
5	Map of “Cloud top height” for 2025-05-19 to 2025-05-19	12
6	Map of “Cloud optical thickness” for 2025-05-19 to 2025-05-19	13
7	Map of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19	14
8	Map of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19	15
9	Map of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19	16
10	Map of “Fitted surface albedo” for 2025-05-19 to 2025-05-19	17
11	Map of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19	18
12	Map of “RMS” for 2025-05-19 to 2025-05-19	19
13	Map of “RMS (CRB)” for 2025-05-19 to 2025-05-19	20
14	Map of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19	21
15	Map of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19	22
16	Map of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19	23
17	Map of “OCRA “green” reflectance” for 2025-05-19 to 2025-05-19	24
18	Map of “ROCINN “red” reflectance” for 2025-05-19 to 2025-05-19	25
19	Map of the number of observations for 2025-05-19 to 2025-05-19	26
20	Zonal average of “QA value” for 2025-05-19 to 2025-05-19.	27
21	Zonal average of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19.	28
22	Zonal average of “Cloud top height” for 2025-05-19 to 2025-05-19.	29
23	Zonal average of “Cloud optical thickness” for 2025-05-19 to 2025-05-19.	30
24	Zonal average of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19.	31
25	Zonal average of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19.	32
26	Zonal average of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19.	33
27	Zonal average of “Fitted surface albedo” for 2025-05-19 to 2025-05-19.	34
28	Zonal average of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19.	35
29	Zonal average of “RMS” for 2025-05-19 to 2025-05-19.	36

30	Zonal average of “RMS (CRB)” for 2025-05-19 to 2025-05-19	37
31	Zonal average of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19	38
32	Zonal average of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19	39
33	Zonal average of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19	40
34	Zonal average of “OCRA “green” reflectance” for 2025-05-19 to 2025-05-19	41
35	Zonal average of “ROCINN “red” reflectance” for 2025-05-19 to 2025-05-19	42
36	Histogram of “QA value” for 2025-05-19 to 2025-05-19	43
37	Histogram of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19	44
38	Histogram of “Cloud top height” for 2025-05-19 to 2025-05-19	45
39	Histogram of “Cloud optical thickness” for 2025-05-19 to 2025-05-19	46
40	Histogram of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19	47
41	Histogram of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19	48
42	Histogram of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19	49
43	Histogram of “Fitted surface albedo” for 2025-05-19 to 2025-05-19	50
44	Histogram of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19	51
45	Histogram of “RMS” for 2025-05-19 to 2025-05-19	52
46	Histogram of “RMS (CRB)” for 2025-05-19 to 2025-05-19	53
47	Histogram of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19	54
48	Histogram of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19	55
49	Histogram of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19	56
50	Histogram of “OCRA “green” reflectance” for 2025-05-19 to 2025-05-19	57
51	Histogram of “ROCINN “red” reflectance” for 2025-05-19 to 2025-05-19	58
52	Along track statistics of “QA value” for 2025-05-19 to 2025-05-19	59
53	Along track statistics of “Radiometric cloud fraction” for 2025-05-19 to 2025-05-19	60
54	Along track statistics of “Cloud top height” for 2025-05-19 to 2025-05-19	61
55	Along track statistics of “Cloud optical thickness” for 2025-05-19 to 2025-05-19	62
56	Along track statistics of “Cloud fraction (CRB)” for 2025-05-19 to 2025-05-19	63
57	Along track statistics of “Cloud height (CRB)” for 2025-05-19 to 2025-05-19	64
58	Along track statistics of “Cloud albedo (CRB)” for 2025-05-19 to 2025-05-19	65
59	Along track statistics of “Fitted surface albedo” for 2025-05-19 to 2025-05-19	66
60	Along track statistics of “Fitted surface albedo (CRB)” for 2025-05-19 to 2025-05-19	67
61	Along track statistics of “RMS” for 2025-05-19 to 2025-05-19	68
62	Along track statistics of “RMS (CRB)” for 2025-05-19 to 2025-05-19	69
63	Along track statistics of “Fitting wavelength shift” for 2025-05-19 to 2025-05-19	70
64	Along track statistics of “OCRA cloud fraction” for 2025-05-19 to 2025-05-19	71
65	Along track statistics of “OCRA “blue” reflectance” for 2025-05-19 to 2025-05-19	72
66	Along track statistics of “OCRA “green” reflectance” for 2025-05-19 to 2025-05-19	73
67	Along track statistics of “ROCINN “red” reflectance” for 2025-05-19 to 2025-05-19	74

List of Tables

1	Parameterlist and basic statistics for the analysis	2
2	Percentile ranges	3
3	Parameterlist and basic statistics for the analysis for observations in the northern hemisphere	4
4	Parameterlist and basic statistics for the analysis for observations in the southern hemisphere	5
5	Parameterlist and basic statistics for the analysis for observations over water	6
6	Parameterlist and basic statistics for the analysis for observations over land	7

11 Copyright information of ‘PyCAMA’

Copyright © 2005 – 2023, Maarten Sneep (KNMI).

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

This software is provided by the copyright holders and contributors “as is” and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the copyright holder or contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if advised of the possibility of such damage.

Maarten Sneep (maarten.sneep@knmi.nl).