PyCAMA report generated by tropl2-proc

tropl2-proc

2024-12-22 (04:45)

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:

$$\overline{x} = \frac{1}{N}\sum_{i=1}^{N} x_i \tag{1}$$

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 $\sigma(x) = \sqrt{V(x)}$.

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

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:

$$P(x \leq m) = P(x \geq m) = \int_{-\infty}^{m} f(x)\,\mathrm{d}x = \frac{1}{2} \tag{3}$$

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

The median is a special case of a percentile. Instead of ½ 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}.

$$C_{kl} = C(x_{(k)}, x_{(l)}) = \frac{1}{N-1}\sum_{i=1}^{N}(x_{(k),i} - \overline{x_{(k)}})(x_{(l),i} - \overline{x_{(l)}}) \tag{4}$$

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

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

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]	0.906 ± 0.186	23458610	0.995	0.1000	1.000	0.350	1.000
cloud pressure crb [hPa]	771 ± 201	23458610	1.015×10^{3}	296	823	130	1.040×10^{3}
cloud pressure crb precision [hPa]	2.19 ± 8.35	23458610	0.750	1.12	0.511	1.648×10^{-3}	1.584×10^{3}
cloud fraction crb [1]	0.493 ± 0.387	23458610	0.996	0.881	0.427	0.0	1.000
cloud fraction crb precision [1]	$(1.661 \pm 5.853) \times 10^{-4}$	23458610	2.500×10^{-4}	5.538×10^{-5}	8.191×10^{-5}	4.410×10^{-8}	0.258
scene albedo [1]	0.478 ± 0.332	23458610	1.500×10^{-2}	0.597	0.455	-4.104×10^{-2}	6.24
scene albedo precision [1]	$(8.306 \pm 9.014) \times 10^{-5}$	23458610	2.500×10^{-4}	6.328×10^{-5}	5.509×10^{-5}	1.038×10^{-5}	1.009×10^{-2}
apparent scene pressure [hPa]	801 ± 179	23458610	1.008×10^{3}	269	852	130	1.039×10^{3}
apparent scene pressure precision [hPa]	0.857 ± 1.515	23458610	0.500	0.434	0.412	0.106	55.2
chi square [1]	$(0.238 \pm 1.647) \times 10^{5}$	23458610	0.150	2.808×10^{4}	1.609×10^{4}	58.1	1.693×10^{8}
number of iterations [1]	3.40 ± 1.07	23458610	3.23	1.000	3.00	1.000	14.0
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.673 \pm 6.493) \times 10^{-9}$	23458610	7.500×10^{-10}	5.208×10^{-9}	1.490×10^{-9}	-1.876×10^{-6}	1.808×10^{-6}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.759 \pm 0.712) \times 10^{-9}$	23458610	8.500×10^{-10}	1.066×10^{-9}	1.691×10^{-9}	4.017×10^{-10}	5.544×10^{-9}
chi square fluorescence [1]	$(0.519 \pm 1.011) \times 10^{5}$	23458610	1.250×10^{3}	4.631×10^{4}	1.528×10^{4}	90.3	5.944×10^{6}
degrees of freedom fluorescence [1]	6.00 ± 0.00	23458610	5.95	0.0	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	23458610	49.7	0.0	50.0	45.0	50.0
wavelength calibration offset [nm]	$(4.381 \pm 8.021) \times 10^{-3}$	23458610	4.400×10^{-3}	5.229×10^{-3}	4.363×10^{-3}	-0.108	0.202

Table 2: Percentile ranges

Variable	1 %	5 %	10 %	15.9 %	25 %	75 %	84.1 %	90 %	95 %	99 %
qa value [1]	0.500	0.500	0.500	0.500	0.900	1.000	1.000	1.000	1.000	1.000
cloud pressure crb [hPa]	239	372	460	552	642	938	970	990	1.007×10^{3}	1.018×10^{3}
cloud pressure crb precision [hPa]	0.165	0.227	0.247	0.264	0.297	1.41	2.44	4.13	8.27	27.8
cloud fraction crb [1]	1.387×10^{-3}	1.307×10^{-2}	2.864×10^{-2}	5.278×10^{-2}	0.104	0.984	1.000	1.000	1.000	1.000
cloud fraction crb precision [1]	2.048×10^{-5}	2.418×10^{-5}	2.744×10^{-5}	3.238×10^{-5}	4.462×10^{-5}	1.000×10^{-4}	1.482×10^{-4}	2.759×10^{-4}	6.519×10^{-4}	1.708×10^{-3}
scene albedo [1]	9.856×10^{-3}	2.482×10^{-2}	4.747×10^{-2}	8.418×10^{-2}	0.172	0.769	0.876	0.932	0.982	1.12
scene albedo precision [1]	1.330×10^{-5}	1.600×10^{-5}	1.965×10^{-5}	2.470×10^{-5}	3.326×10^{-5}	9.653×10^{-5}	1.271×10^{-4}	1.682×10^{-4}	2.518×10^{-4}	4.682×10^{-4}
apparent scene pressure [hPa]	333	441	532	609	679	948	977	994	1.009×10^{3}	1.018×10^{3}
apparent scene pressure precision [hPa]	0.209	0.234	0.251	0.267	0.296	0.730	1.10	1.69	3.06	7.43
chi square [1]	309	815	1.796×10^{3}	3.252×10^{3}	5.828×10^{3}	3.391×10^{4}	4.434×10^{4}	5.311×10^{4}	6.371×10^{4}	8.576×10^{4}
number of iterations [1]	2.00	2.00	2.00	3.00	3.00	4.00	4.00	5.00	5.00	7.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	-1.432×10^{-8}	-6.399×10^{-9}	-3.700×10^{-9}	-2.219×10^{-9}	-8.788×10^{-10}	4.329×10^{-9}	6.093×10^{-9}	7.818×10^{-9}	1.030×10^{-8}	1.572×10^{-8}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	6.977×10^{-10}	8.087×10^{-10}	8.892×10^{-10}	9.850×10^{-10}	1.158×10^{-9}	2.224×10^{-9}	2.514×10^{-9}	2.675×10^{-9}	3.002×10^{-9}	3.687×10^{-9}
chi square fluorescence [1]	450	972	1.491×10^{3}	2.284×10^{3}	4.051×10^{3}	5.036×10^{4}	8.480×10^{4}	1.350×10^{5}	2.417×10^{5}	5.280×10^{5}
degrees of freedom fluorescence [1]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
wavelength calibration offset [nm]	-2.151×10^{-2}	-7.291×10^{-3}	-2.597×10^{-3}	-1.561×10^{-4}	1.752×10^{-3}	6.981×10^{-3}	8.929×10^{-3}	1.143×10^{-2}	1.620×10^{-2}	3.022×10^{-2}

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]	0.989 ± 0.055	9210987	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	737 ± 226	9210987	381	801	130	1.040×10^3	551	932
cloud pressure crb precision [hPa]	3.10 ± 10.31	9210987	1.88	0.906	1.648×10^{-3}	1.584×10^3	0.436	2.32
cloud fraction crb [1]	0.373 ± 0.348	9210987	0.588	0.240	0.0	1.000	6.642×10^{-2}	0.654
cloud fraction crb precision [1]	$(1.712 \pm 6.213) \times 10^{-4}$	9210987	9.751×10^{-5}	9.317×10^{-5}	4.888×10^{-8}	0.258	5.125×10^{-5}	1.488×10^{-4}
scene albedo [1]	0.402 ± 0.296	9210987	0.461	0.356	-2.486×10^{-3}	6.24	0.151	0.612
scene albedo precision [1]	$(9.386 \pm 10.135) \times 10^{-5}$	9210987	7.405×10^{-5}	5.815×10^{-5}	1.120×10^{-5}	2.728×10^{-3}	3.599×10^{-5}	1.100×10^{-4}
apparent scene pressure [hPa]	782 ± 198	9210987	311	846	130	1.039×10^3	635	946
apparent scene pressure precision [hPa]	1.04 ± 1.75	9210987	0.538	0.530	0.106	51.1	0.369	0.907
chi square [1]	$(0.139 \pm 1.596) \times 10^5$	9210987	1.436×10^4	9.599×10^3	58.1	1.307×10^8	3.991×10^3	1.835×10^4
number of iterations [1]	3.44 ± 1.12	9210987	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(9.255 \pm 43.408) \times 10^{-10}$	9210987	3.546×10^{-9}	1.063×10^{-9}	-9.926×10^{-7}	1.052×10^{-6}	-6.564×10^{-10}	2.890×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.471 \pm 0.602) \times 10^{-9}$	9210987	8.267×10^{-10}	1.351×10^{-9}	4.026×10^{-10}	5.474×10^{-9}	9.904×10^{-10}	1.817×10^{-9}
chi square fluorescence [1]	$(0.416 \pm 0.879) \times 10^5$	9210987	3.508×10^4	1.065×10^4	90.3	1.857×10^6	3.278×10^3	3.836×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	9210987	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	9210987	0.0	50.0	48.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.454 \pm 8.829) \times 10^{-3}$	9210987	6.397×10^{-3}	4.369×10^{-3}	-8.184×10^{-2}	8.962×10^{-2}	1.207×10^{-3}	7.604×10^{-3}

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]	0.852 ± 0.218	14247623	0.500	1.000	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	792 ± 180	14247623	270	837	130	1.031×10^3	671	941
cloud pressure crb precision [hPa]	1.60 ± 6.73	14247623	0.629	0.370	1.648×10^{-3}	1.398×10^3	0.269	0.898
cloud fraction crb [1]	0.570 ± 0.391	14247623	0.846	0.609	0.0	1.000	0.154	1.000
cloud fraction crb precision [1]	$(1.629 \pm 5.608) \times 10^{-4}$	14247623	5.908×10^{-5}	7.329×10^{-5}	4.410×10^{-8}	0.156	4.092×10^{-5}	1.000×10^{-4}
scene albedo [1]	0.528 ± 0.344	14247623	0.655	0.553	-4.104×10^{-2}	3.84	0.192	0.847
scene albedo precision [1]	$(7.607 \pm 8.133) \times 10^{-5}$	14247623	5.916×10^{-5}	5.338×10^{-5}	1.038×10^{-5}	1.009×10^{-2}	3.121×10^{-5}	9.037×10^{-5}
apparent scene pressure [hPa]	814 ± 163	14247623	256	856	130	1.031×10^3	694	950
apparent scene pressure precision [hPa]	0.737 ± 1.332	14247623	0.329	0.351	0.143	55.2	0.273	0.601
chi square [1]	$(0.302 \pm 1.676) \times 10^5$	14247623	3.511×10^4	2.456×10^4	73.1	1.693×10^8	8.700×10^3	4.382×10^4
number of iterations [1]	3.37 ± 1.04	14247623	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(2.156 \pm 7.526) \times 10^{-9}$	14247623	6.582×10^{-9}	2.017×10^{-9}	-1.876×10^{-6}	1.808×10^{-6}	-1.077×10^{-9}	5.504×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.944 \pm 0.717) \times 10^{-9}$	14247623	1.096×10^{-9}	1.970×10^{-9}	4.017×10^{-10}	5.544×10^{-9}	1.356×10^{-9}	2.452×10^{-9}
chi square fluorescence [1]	$(0.586 \pm 1.082) \times 10^5$	14247623	5.263×10^4	1.928×10^4	122	5.944×10^6	4.862×10^3	5.749×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	14247623	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	14247623	0.0	50.0	45.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.333 \pm 7.451) \times 10^{-3}$	14247623	4.592×10^{-3}	4.360×10^{-3}	-0.108	0.202	2.054×10^{-3}	6.646×10^{-3}

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]	0.980 ± 0.053	14414170	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	801 ± 199	14414170	276	875	130	1.039×10^{3}	679	955
cloud pressure crb precision [hPa]	2.07 ± 8.33	14414170	1.03	0.556	1.648×10^{-3}	1.584×10^{3}	0.326	1.36
cloud fraction crb [1]	0.410 ± 0.343	14414170	0.623	0.322	0.0	1.000	8.785×10^{-2}	0.711
cloud fraction crb precision [1]	$(1.034 \pm 3.716) \times 10^{-4}$	14414170	6.162×10^{-5}	5.453×10^{-5}	4.410×10^{-8}	0.156	3.186×10^{-5}	9.349×10^{-5}
scene albedo [1]	0.359 ± 0.298	14414170	0.527	0.293	-4.104×10^{-2}	6.24	8.127×10^{-2}	0.609
scene albedo precision [1]	$(6.418 \pm 8.163) \times 10^{-5}$	14414170	4.161×10^{-5}	4.397×10^{-5}	1.038×10^{-5}	1.009×10^{-2}	2.445×10^{-5}	6.606×10^{-5}
apparent scene pressure [hPa]	821 ± 186	14414170	246	887	130	1.039×10^{3}	719	965
apparent scene pressure precision [hPa]	1.13 ± 1.87	14414170	0.773	0.509	0.106	55.2	0.314	1.09
chi square [1]	$(0.189 \pm 1.428) \times 10^{5}$	14414170	2.480×10^{4}	1.080×10^{4}	58.1	1.261×10^{8}	3.370×10^{3}	2.817×10^{4}
number of iterations [1]	2.99 ± 0.85	14414170	0.0	3.00	1.000	14.0	3.00	3.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(7.039 \pm 58.687) \times 10^{-10}$	14414170	4.655×10^{-9}	4.641×10^{-10}	-1.534×10^{-6}	1.808×10^{-6}	-1.619×10^{-9}	3.036×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.702 \pm 0.748) \times 10^{-9}$	14414170	1.173×10^{-9}	1.556×10^{-9}	4.017×10^{-10}	5.540×10^{-9}	1.049×10^{-9}	2.223×10^{-9}
chi square fluorescence [1]	$(0.536 \pm 0.987) \times 10^{5}$	14414170	4.971×10^{4}	1.931×10^{4}	90.3	5.944×10^{6}	5.668×10^{3}	5.538×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	14414170	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	14414170	0.0	50.0	46.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.341 \pm 9.481) \times 10^{-3}$	14414170	6.612×10^{-3}	4.326×10^{-3}	-0.108	0.202	1.021×10^{-3}	7.633×10^{-3}

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]	0.740 ± 0.253	7302859	0.500	0.500	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	727 ± 185	7302859	244	731	130	1.036×10^3	630	874
cloud pressure crb precision [hPa]	2.22 ± 8.11	7302859	1.06	0.346	1.648×10^{-3}	1.413×10^3	0.261	1.32
cloud fraction crb [1]	0.672 ± 0.412	7302859	0.818	1.000	0.0	1.000	0.182	1.000
cloud fraction crb precision [1]	$(2.739 \pm 8.246) \times 10^{-4}$	7302859	3.840×10^{-5}	1.000×10^{-4}	4.702×10^{-8}	0.258	1.000×10^{-4}	1.384×10^{-4}
scene albedo [1]	0.703 ± 0.286	7302859	0.495	0.801	3.508×10^{-3}	3.84	0.441	0.935
scene albedo precision [1]	$(1.134 \pm 0.902) \times 10^{-4}$	7302859	7.322×10^{-5}	9.086×10^{-5}	1.329×10^{-5}	1.594×10^{-3}	5.634×10^{-5}	1.296×10^{-4}
apparent scene pressure [hPa]	766 ± 153	7302859	243	770	130	1.036×10^3	654	897
apparent scene pressure precision [hPa]	0.390 ± 0.195	7302859	0.171	0.333	0.161	25.5	0.271	0.442
chi square [1]	$(0.343 \pm 1.850) \times 10^5$	7302859	3.069×10^4	2.697×10^4	169	1.307×10^8	1.437×10^4	4.506×10^4
number of iterations [1]	4.10 ± 1.04	7302859	0.0	4.00	1.000	14.0	4.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(3.524 \pm 6.981) \times 10^{-9}$	7302859	4.833×10^{-9}	3.280×10^{-9}	-1.876×10^{-6}	1.482×10^{-6}	1.194×10^{-9}	6.028×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.896 \pm 0.633) \times 10^{-9}$	7302859	8.532×10^{-10}	1.870×10^{-9}	4.289×10^{-10}	5.544×10^{-9}	1.432×10^{-9}	2.286×10^{-9}
chi square fluorescence [1]	$(0.434 \pm 0.939) \times 10^5$	7302859	3.386×10^4	8.494×10^3	145	1.693×10^6	2.383×10^3	3.624×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	7302859	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	7302859	0.0	50.0	48.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.411 \pm 4.211) \times 10^{-3}$	7302859	3.412×10^{-3}	4.385×10^{-3}	-7.777×10^{-2}	7.177×10^{-2}	2.689×10^{-3}	6.101×10^{-3}

3 Granule outlines

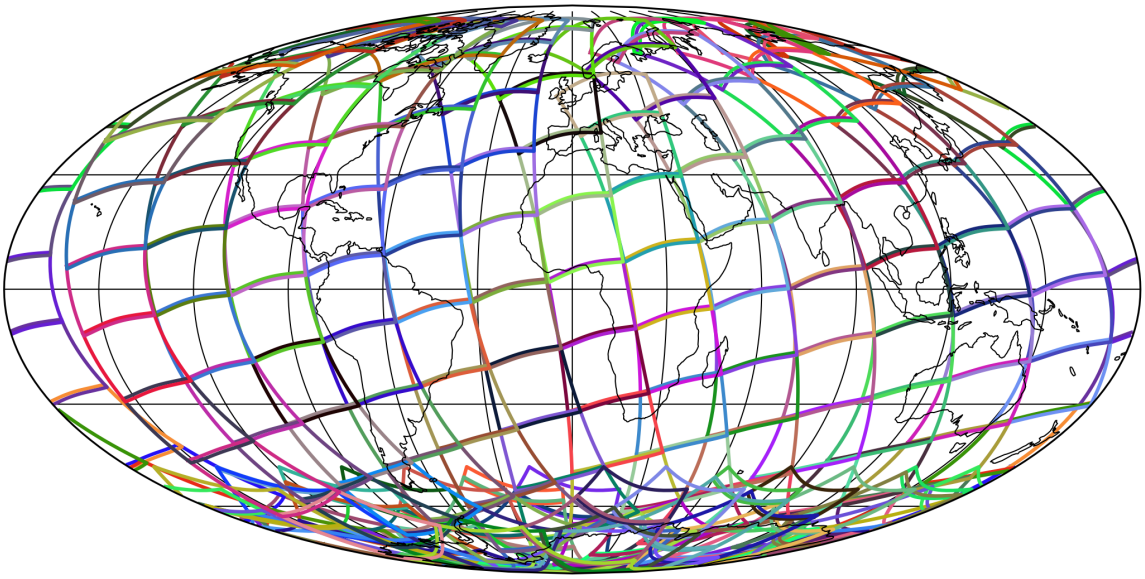

Figure 1: Outline of the granules.

4 Input data monitoring

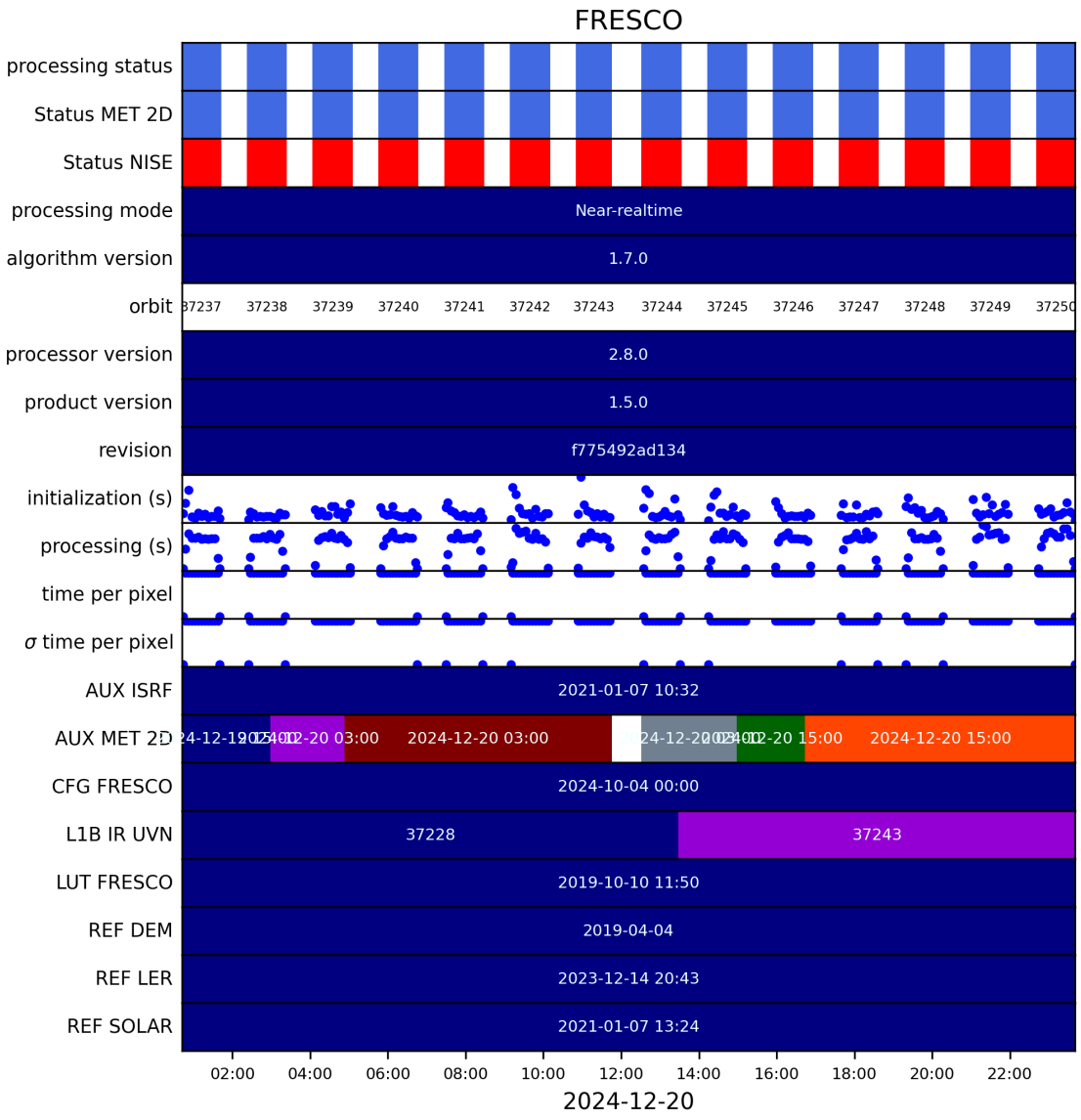

Figure 2: Input data per granule

5 Warnings and errors

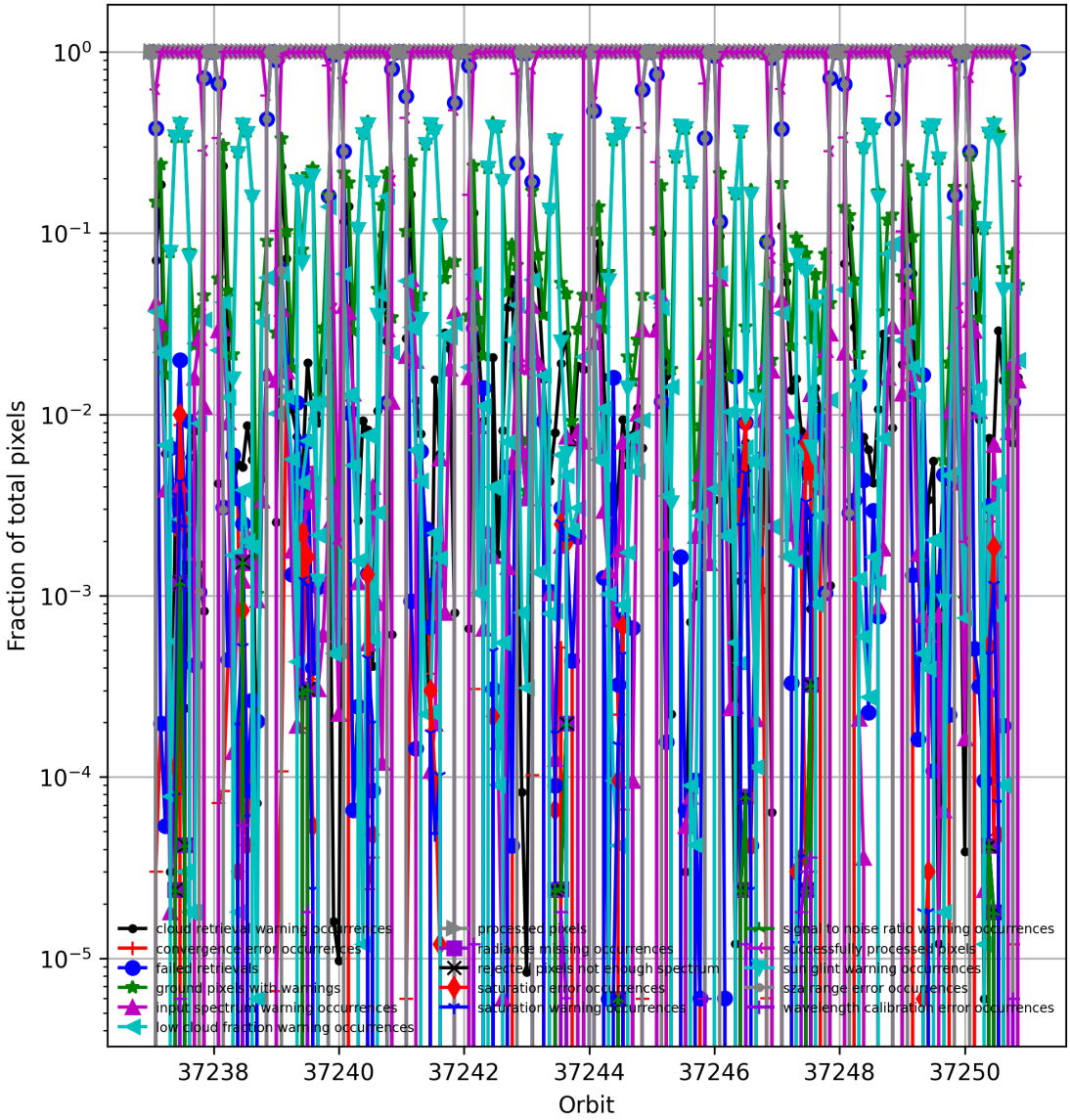

Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

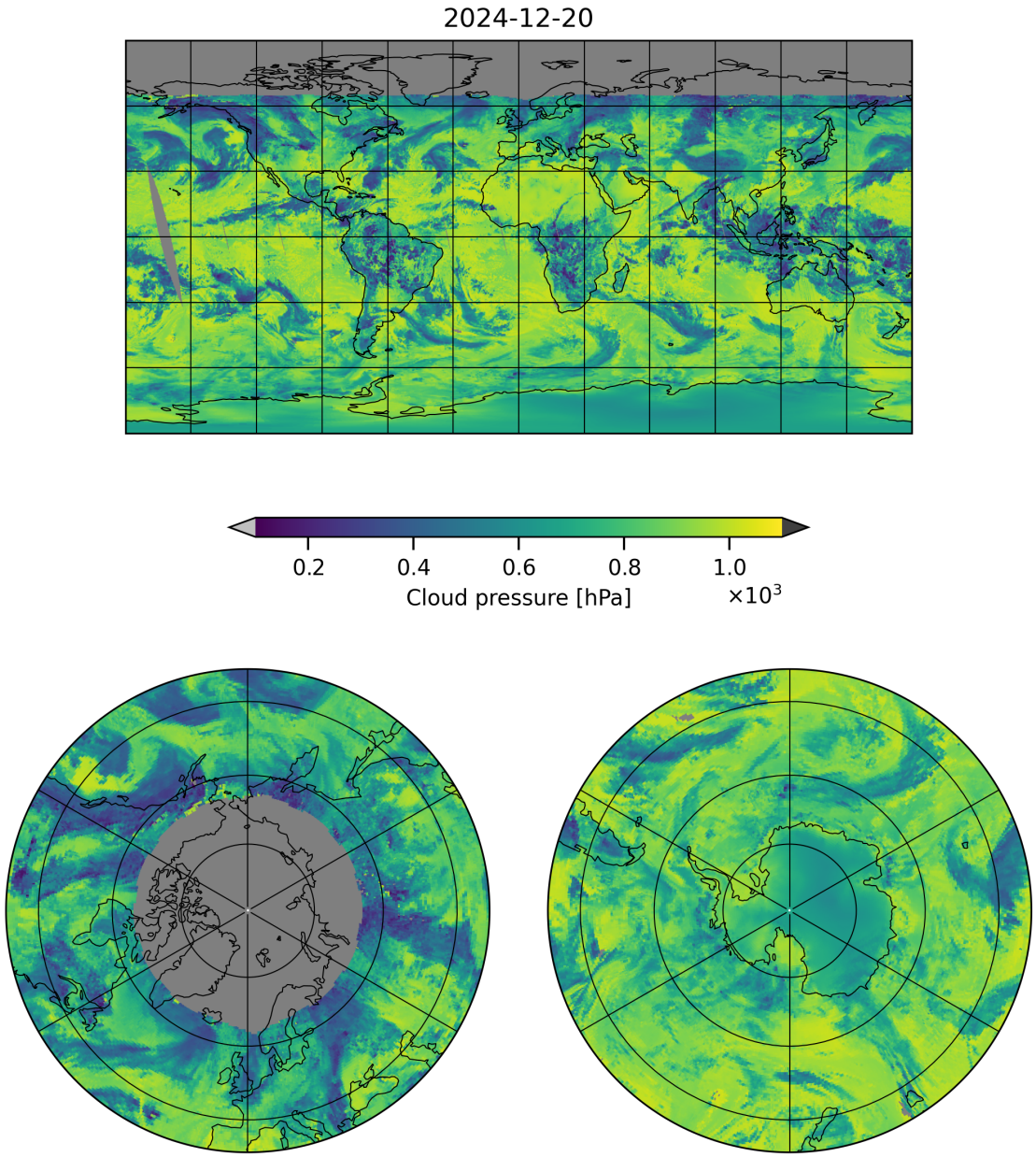

Figure 4: Map of “Cloud pressure” for 2024-12-20 to 2024-12-20

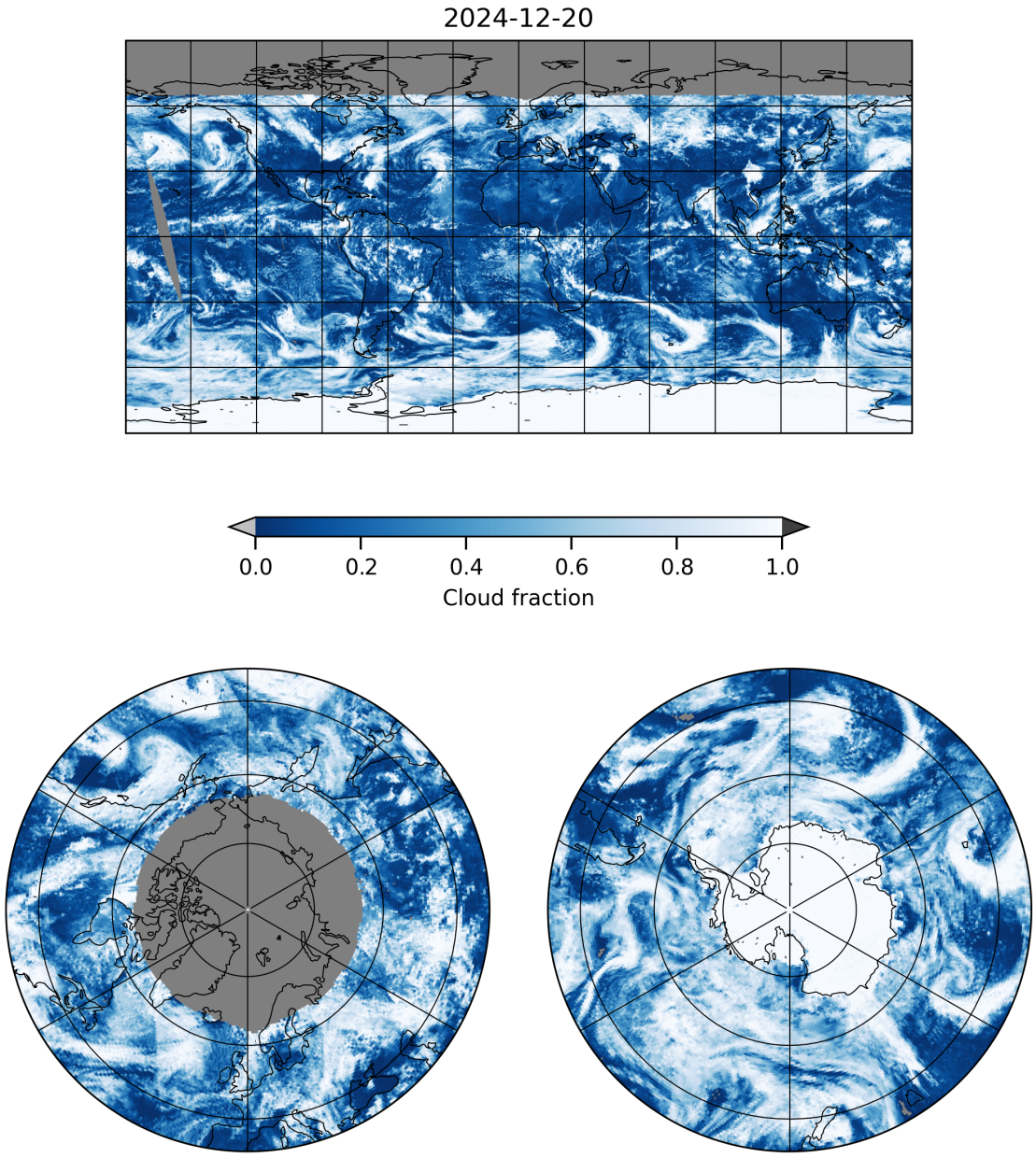

Figure 5: Map of “Cloud fraction” for 2024-12-20 to 2024-12-20

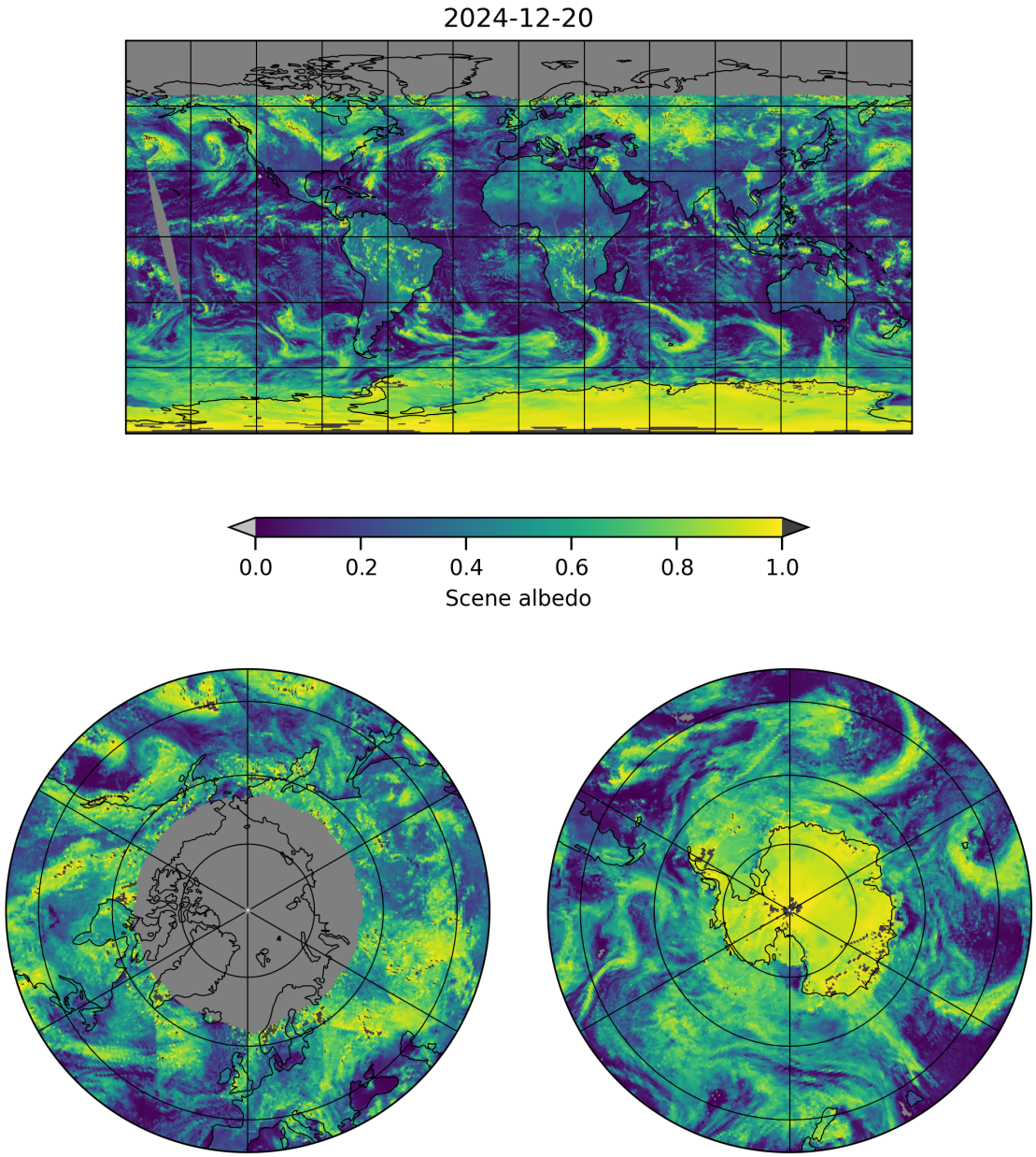

Figure 6: Map of “Scene albedo” for 2024-12-20 to 2024-12-20

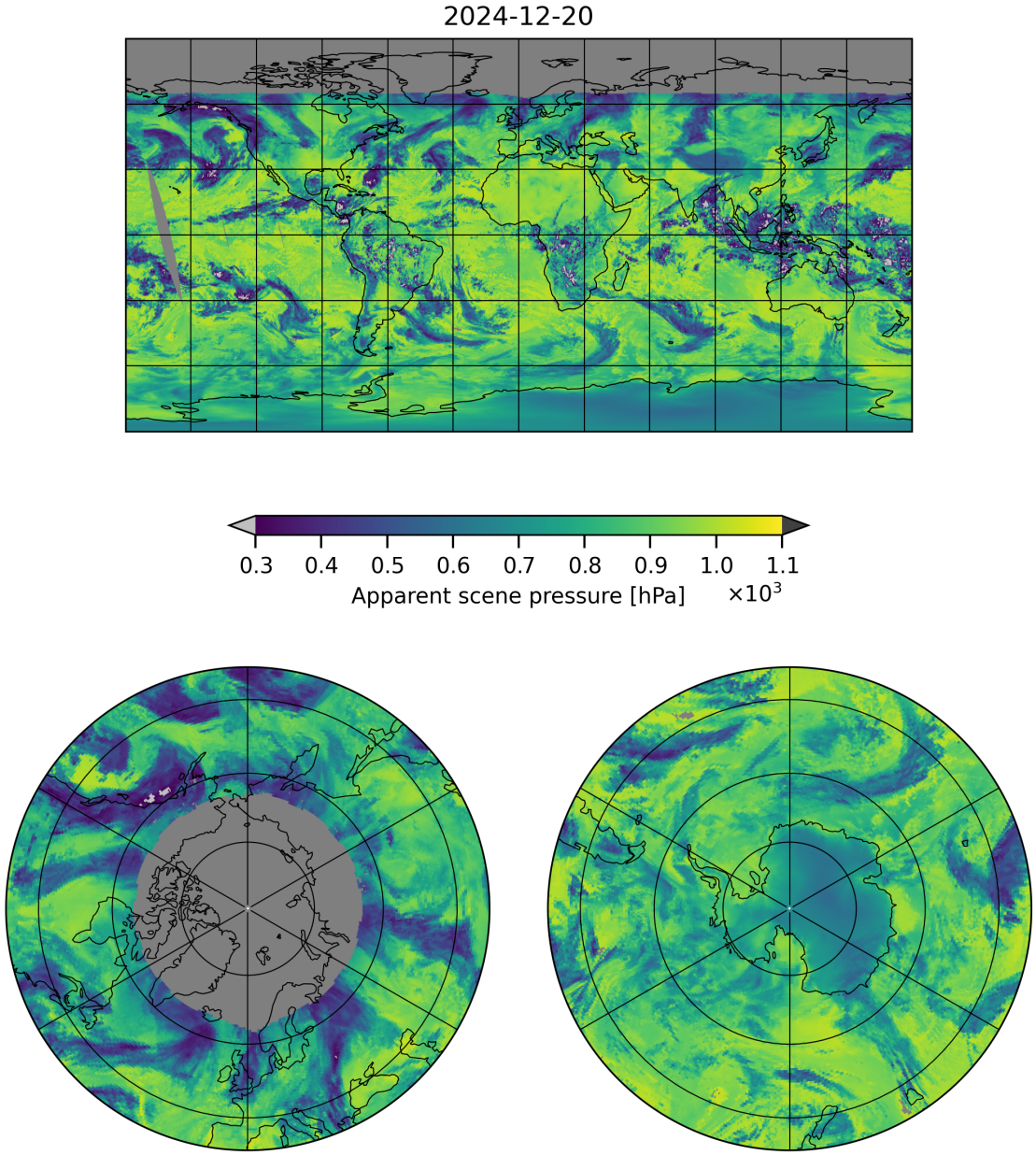

Figure 7: Map of “Apparent scene pressure” for 2024-12-20 to 2024-12-20

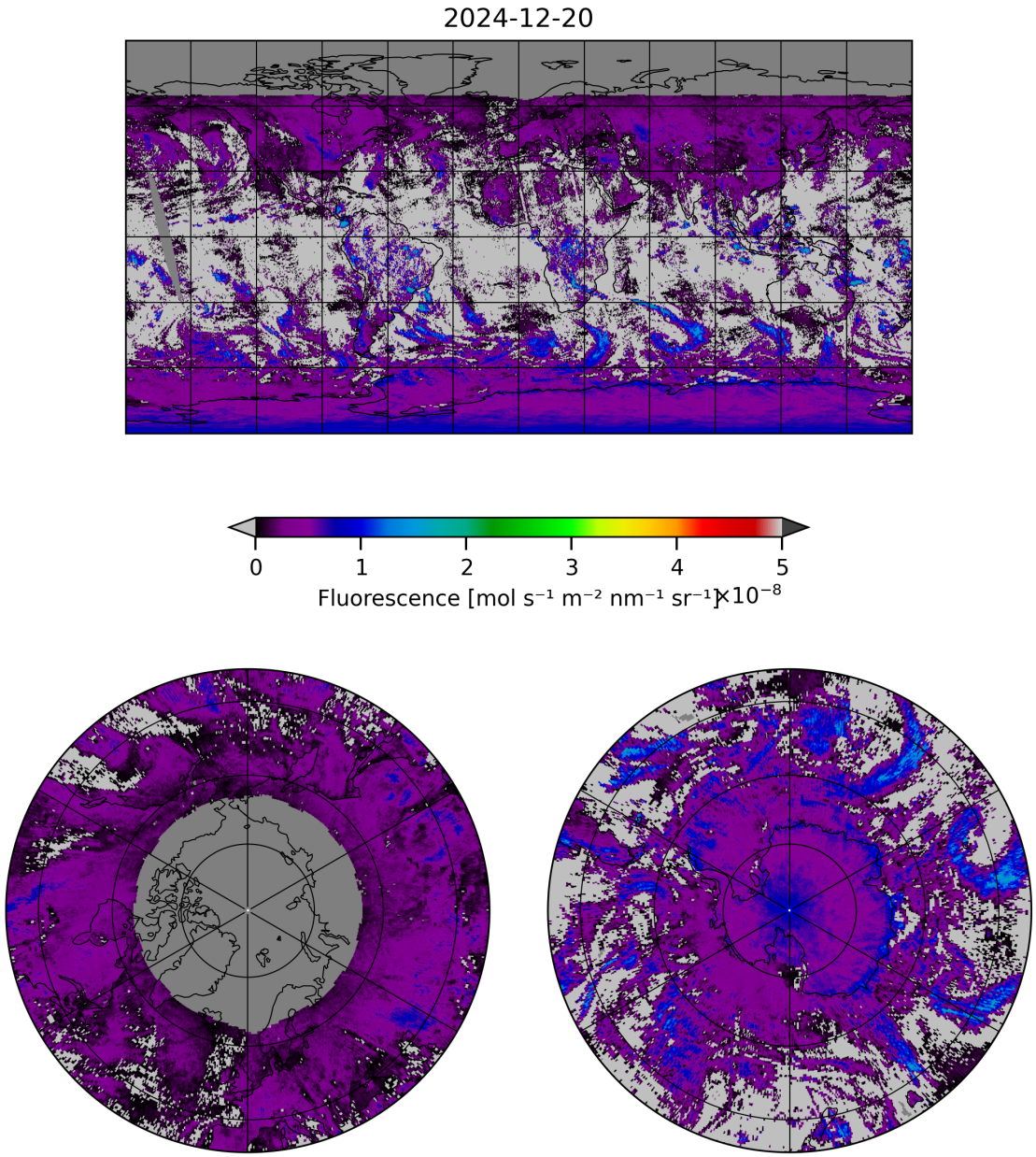

Figure 8: Map of “Fluorescence” for 2024-12-20 to 2024-12-20

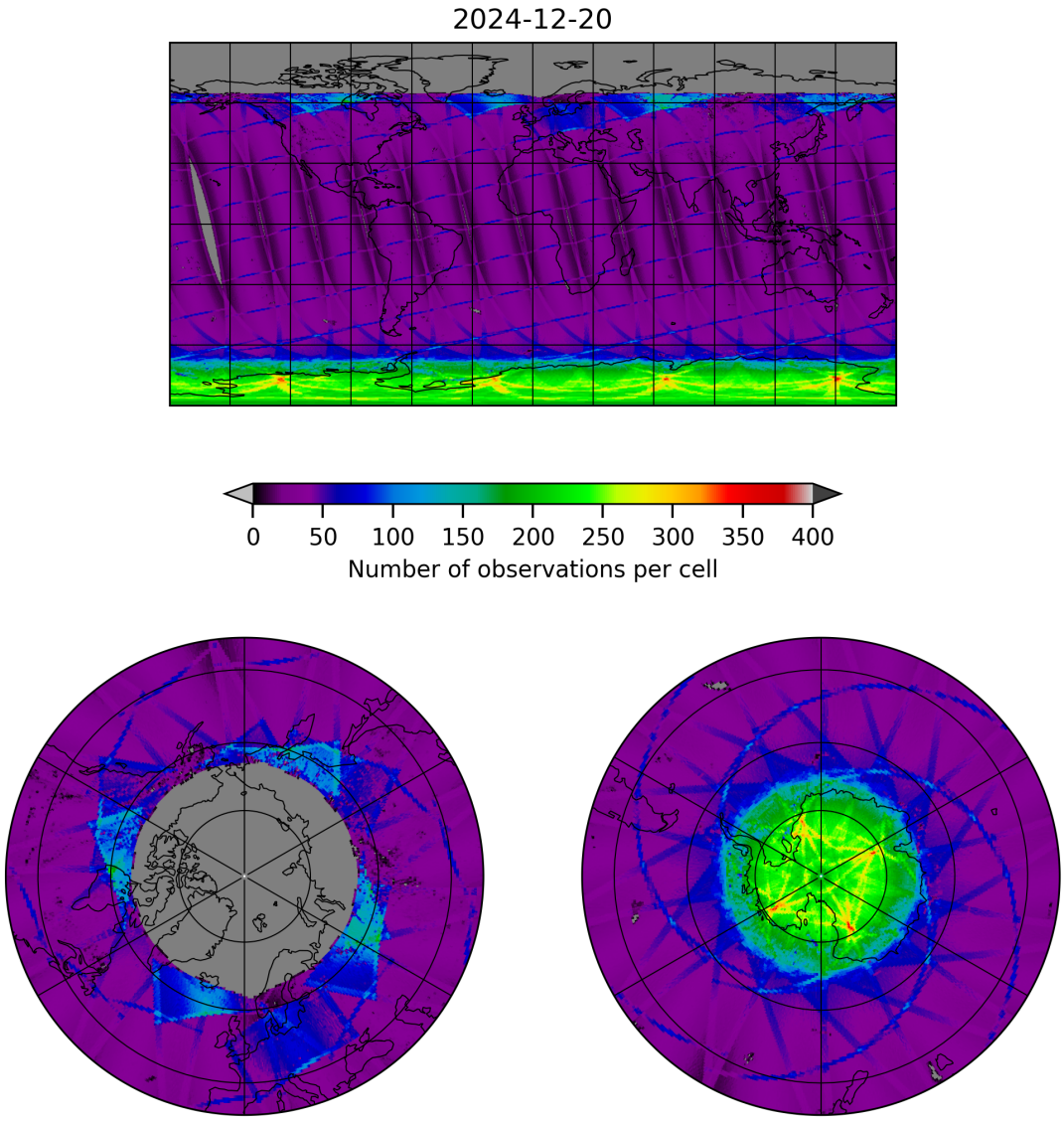

Figure 9: Map of the number of observations for 2024-12-20 to 2024-12-20

7 Zonal average

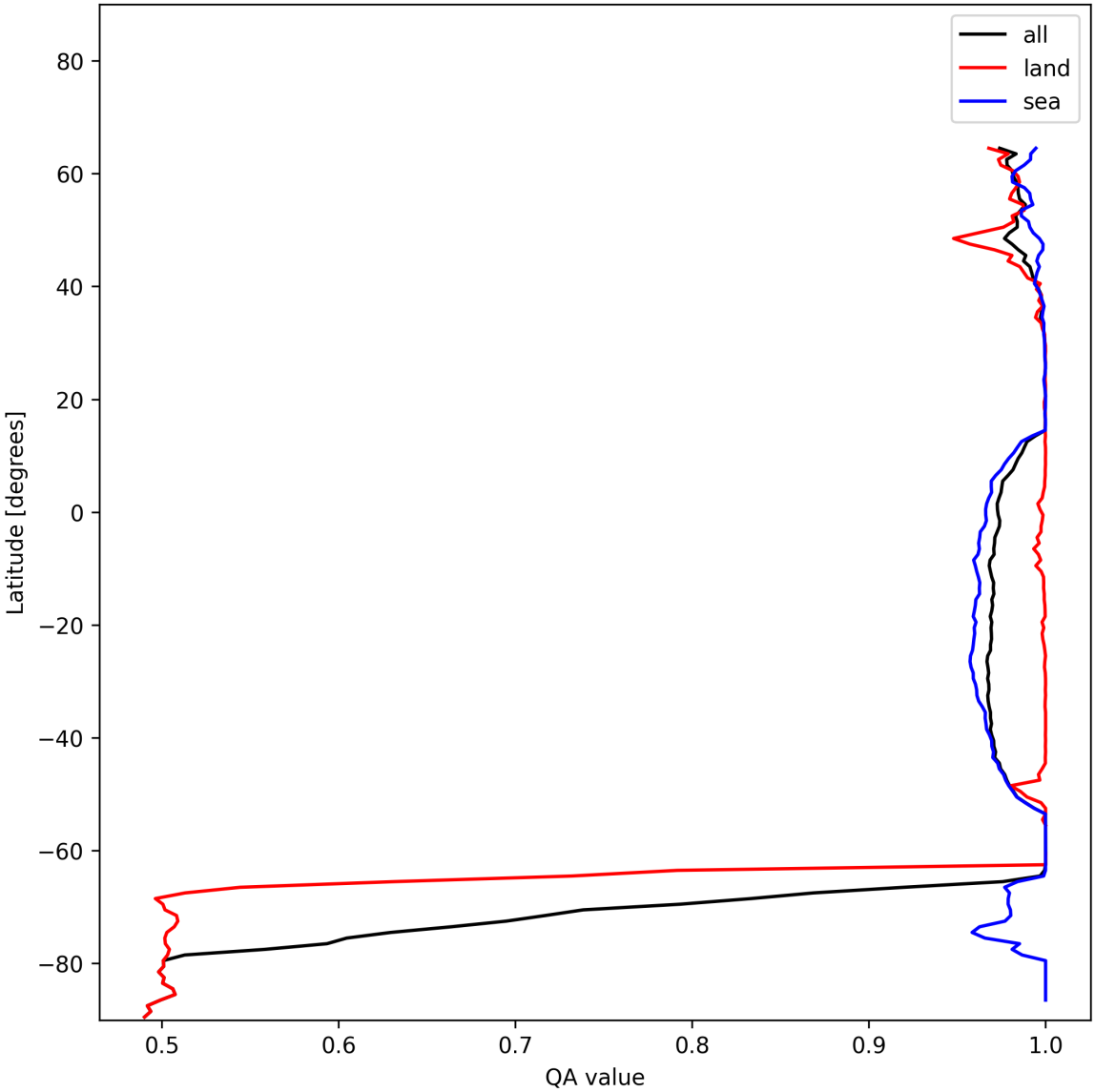

Figure 10: Zonal average of “QA value” for 2024-12-20 to 2024-12-20.

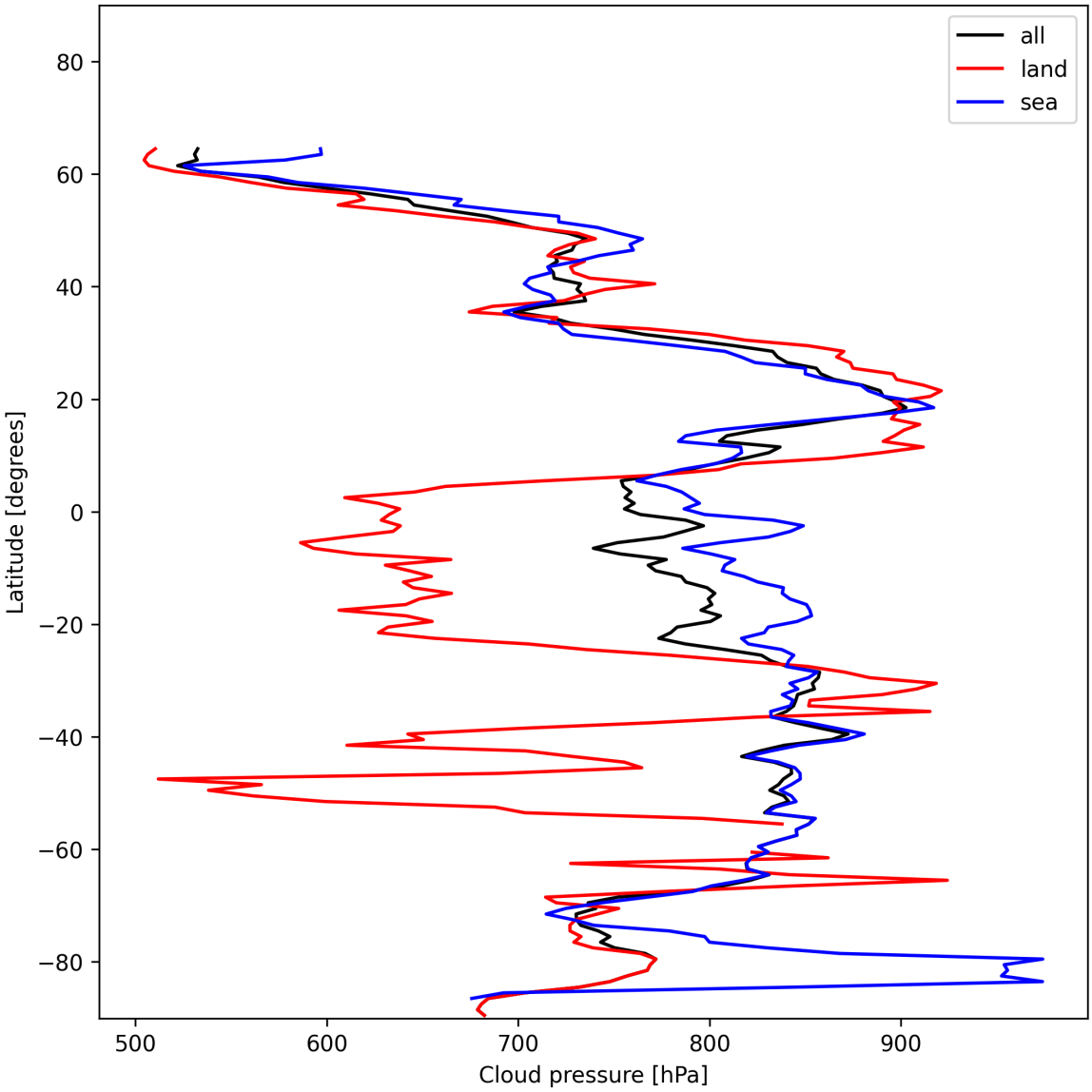

Figure 11: Zonal average of “Cloud pressure” for 2024-12-20 to 2024-12-20.

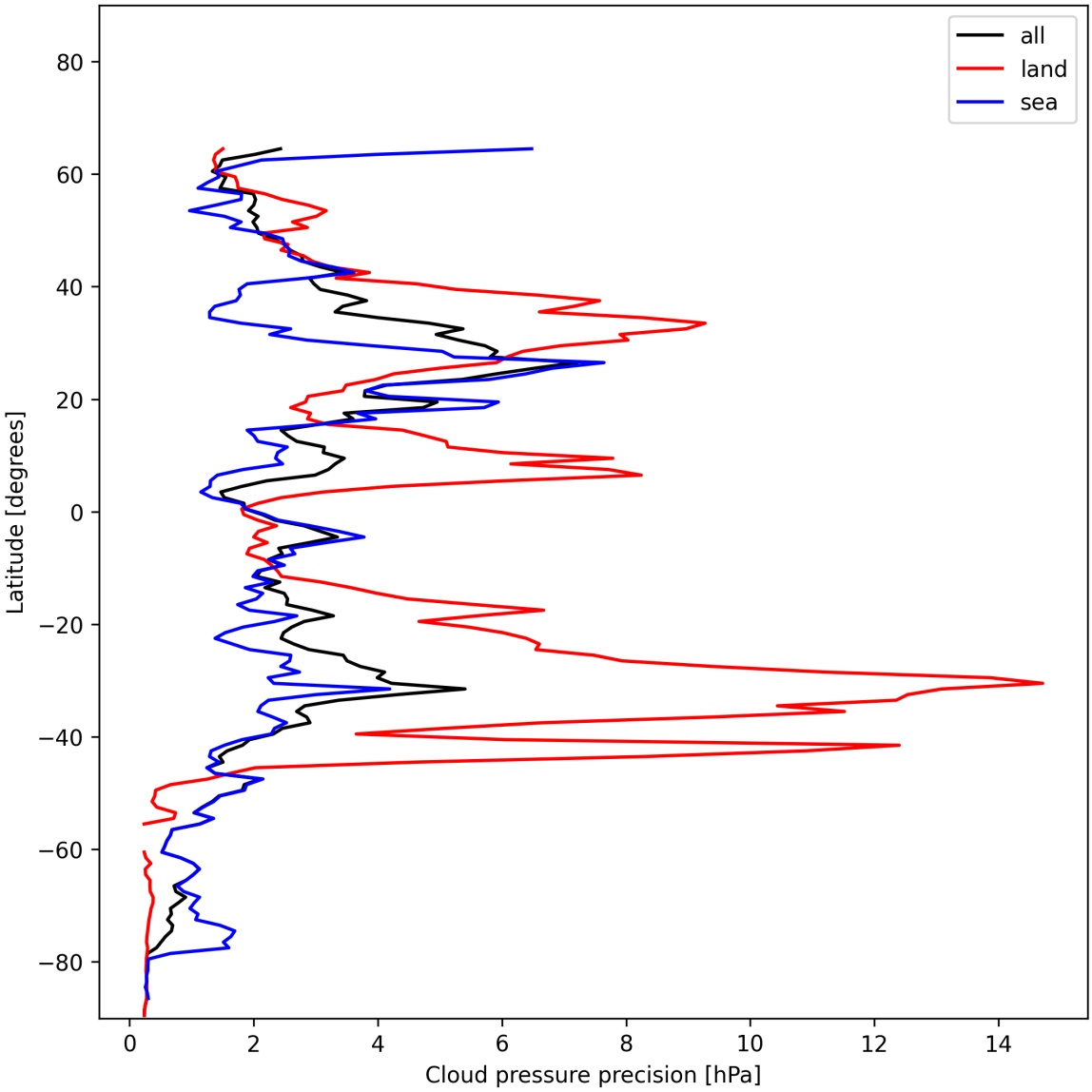

Figure 12: Zonal average of “Cloud pressure precision” for 2024-12-20 to 2024-12-20.

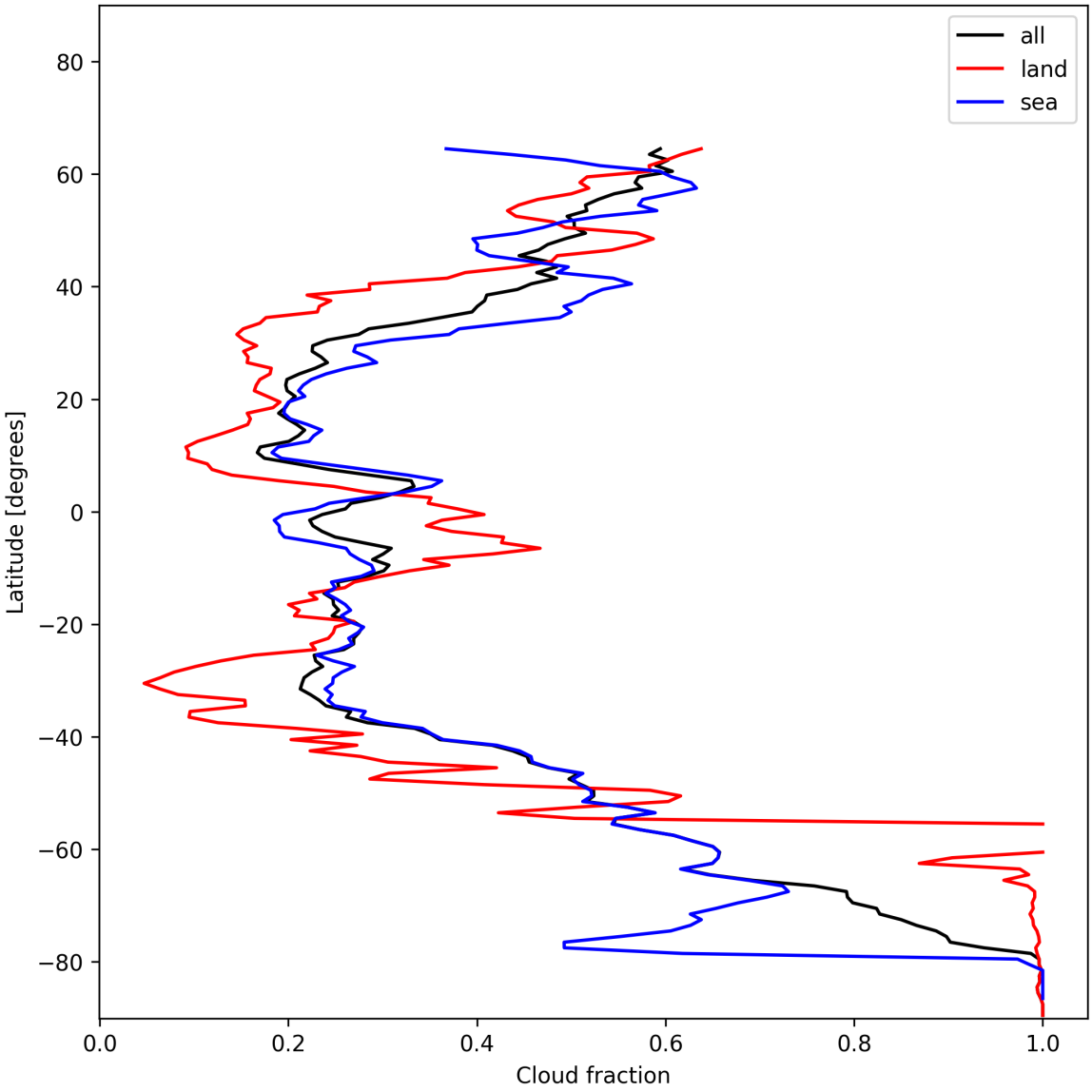

Figure 13: Zonal average of “Cloud fraction” for 2024-12-20 to 2024-12-20.

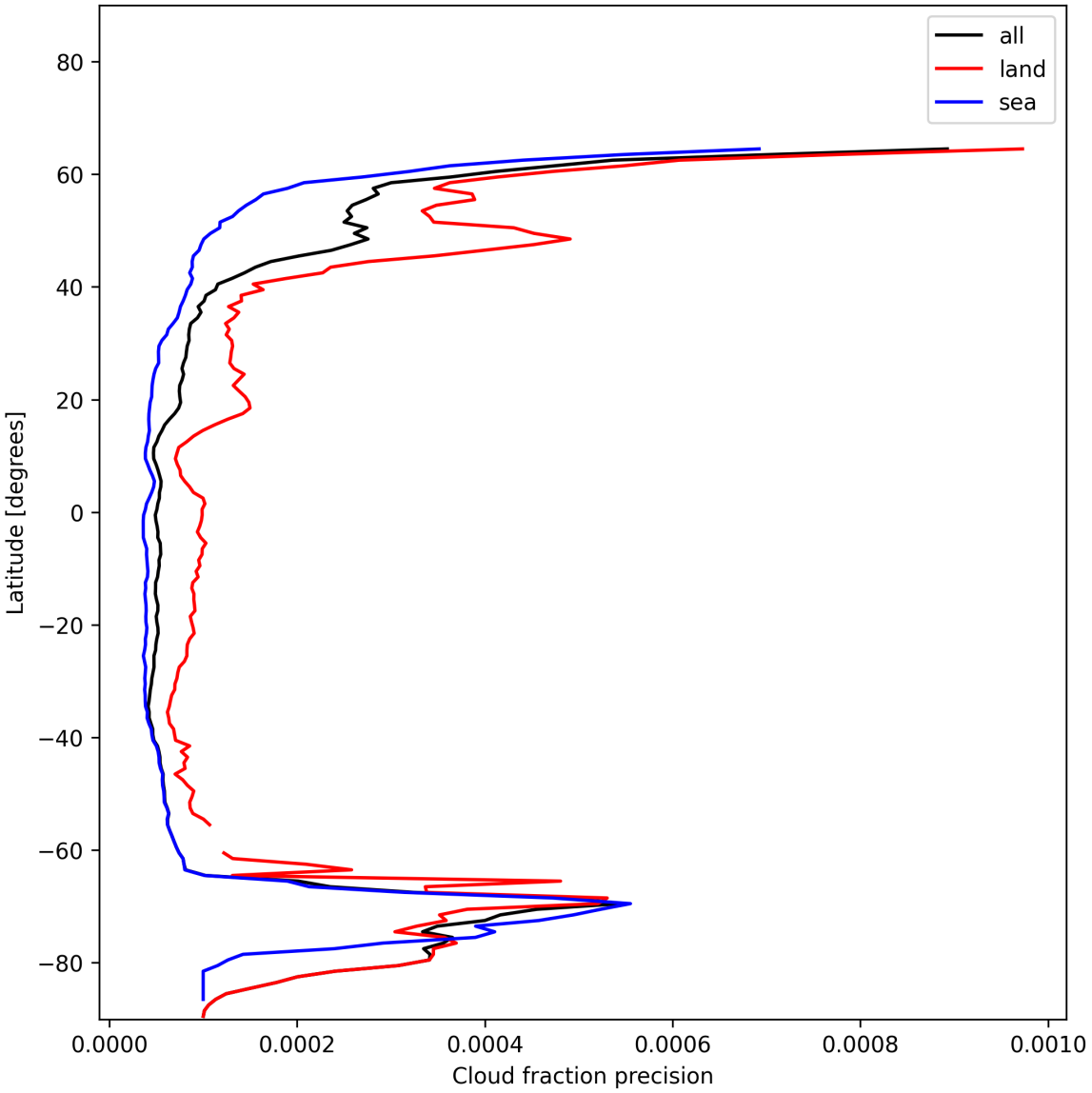

Figure 14: Zonal average of “Cloud fraction precision” for 2024-12-20 to 2024-12-20.

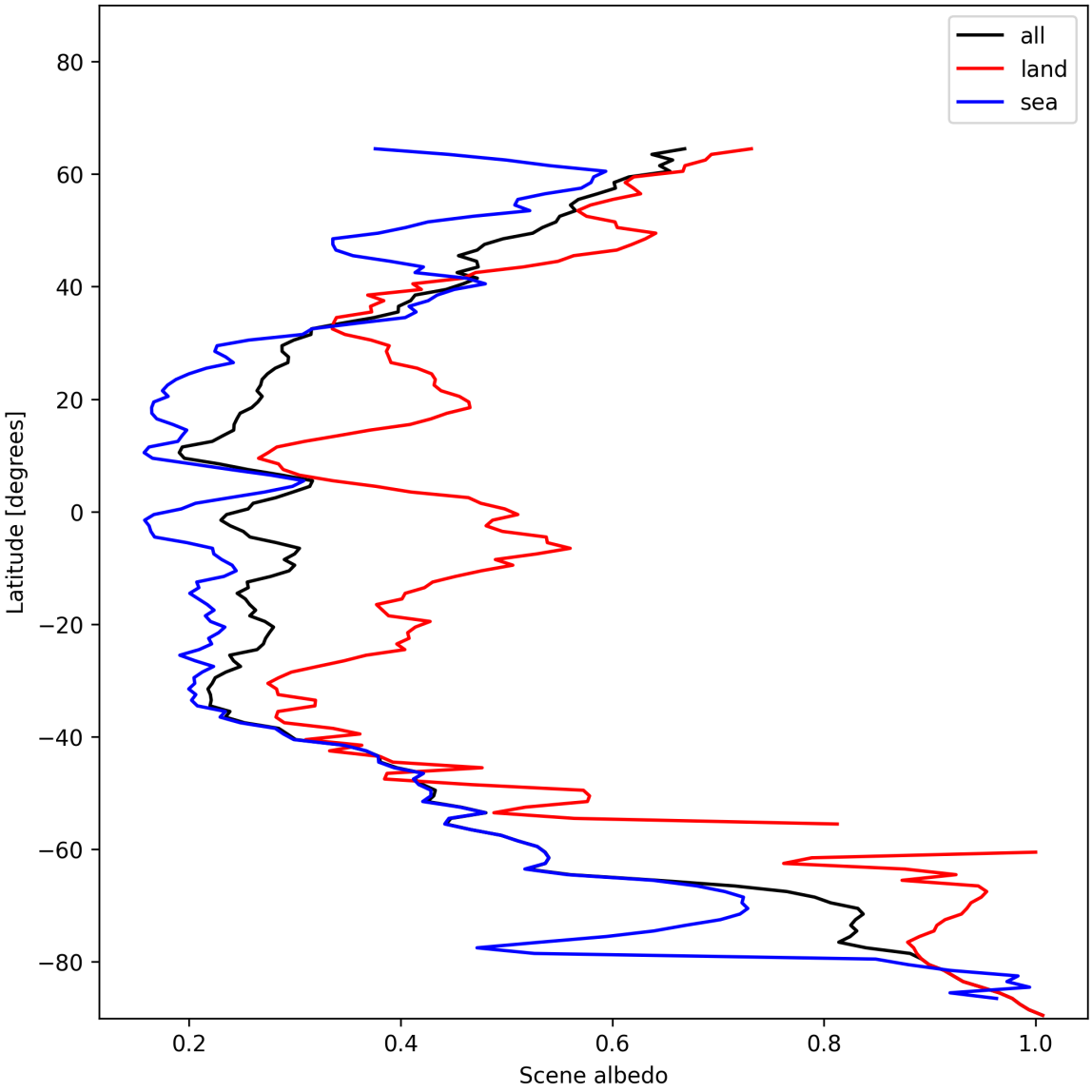

Figure 15: Zonal average of “Scene albedo” for 2024-12-20 to 2024-12-20.

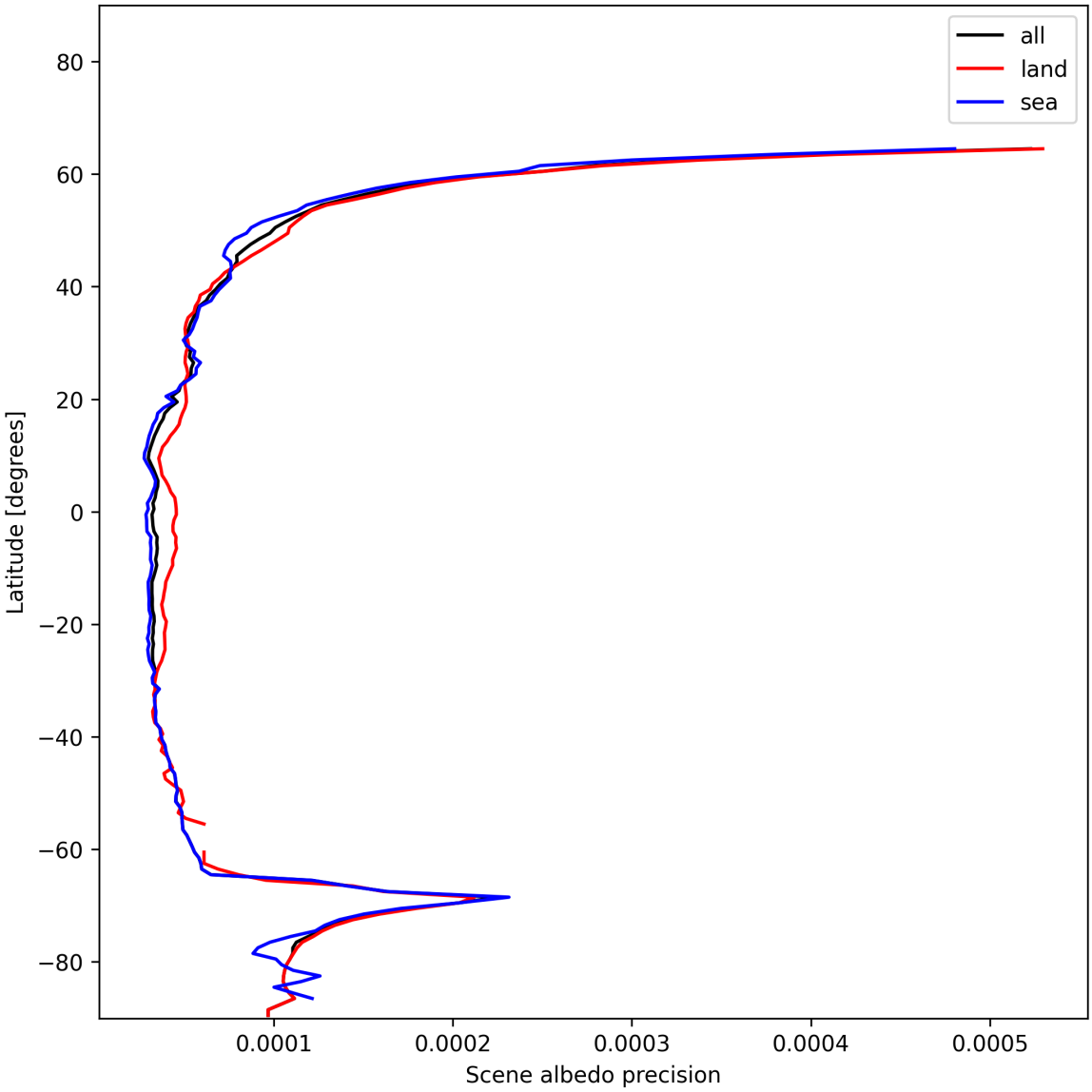

Figure 16: Zonal average of “Scene albedo precision” for 2024-12-20 to 2024-12-20.

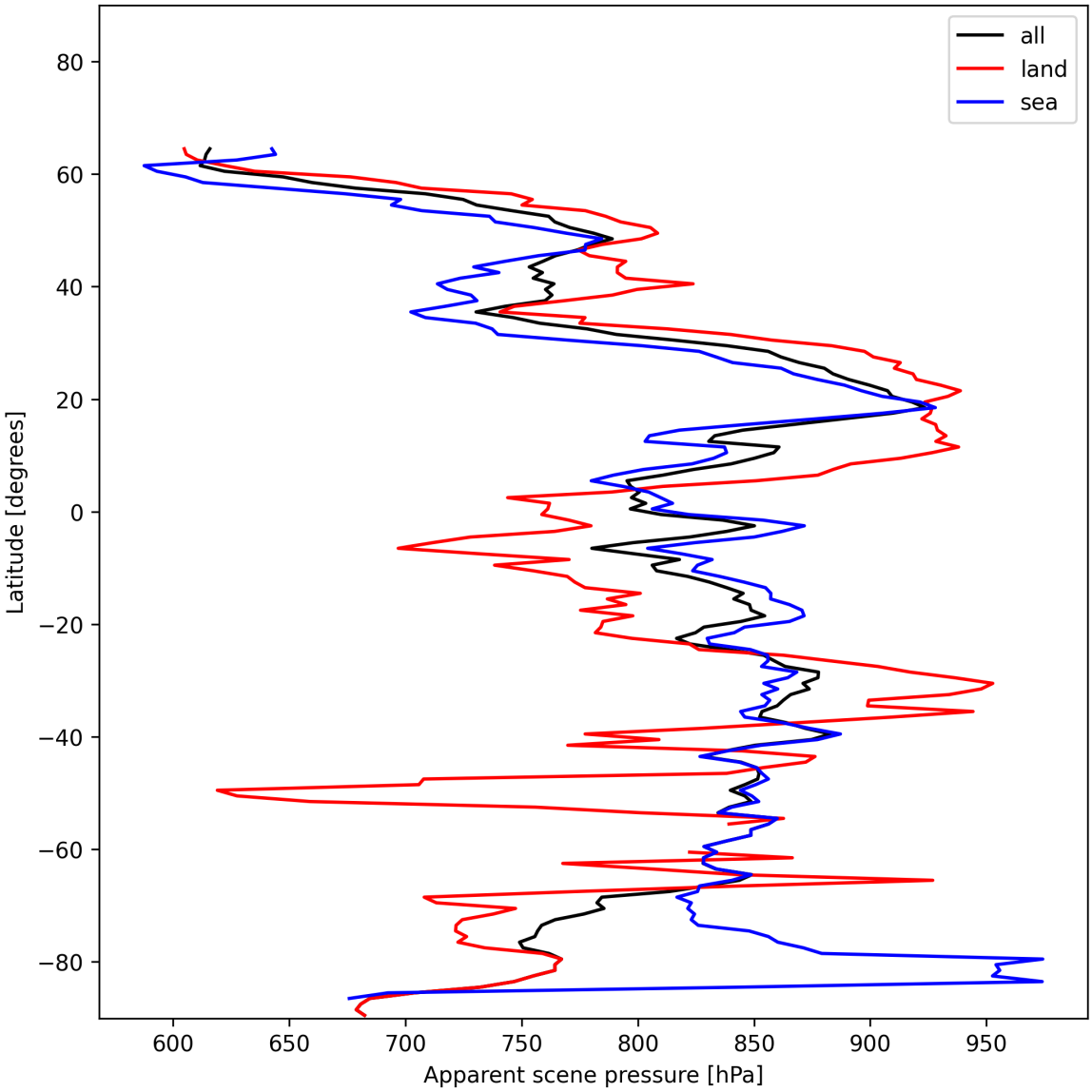

Figure 17: Zonal average of “Apparent scene pressure” for 2024-12-20 to 2024-12-20.

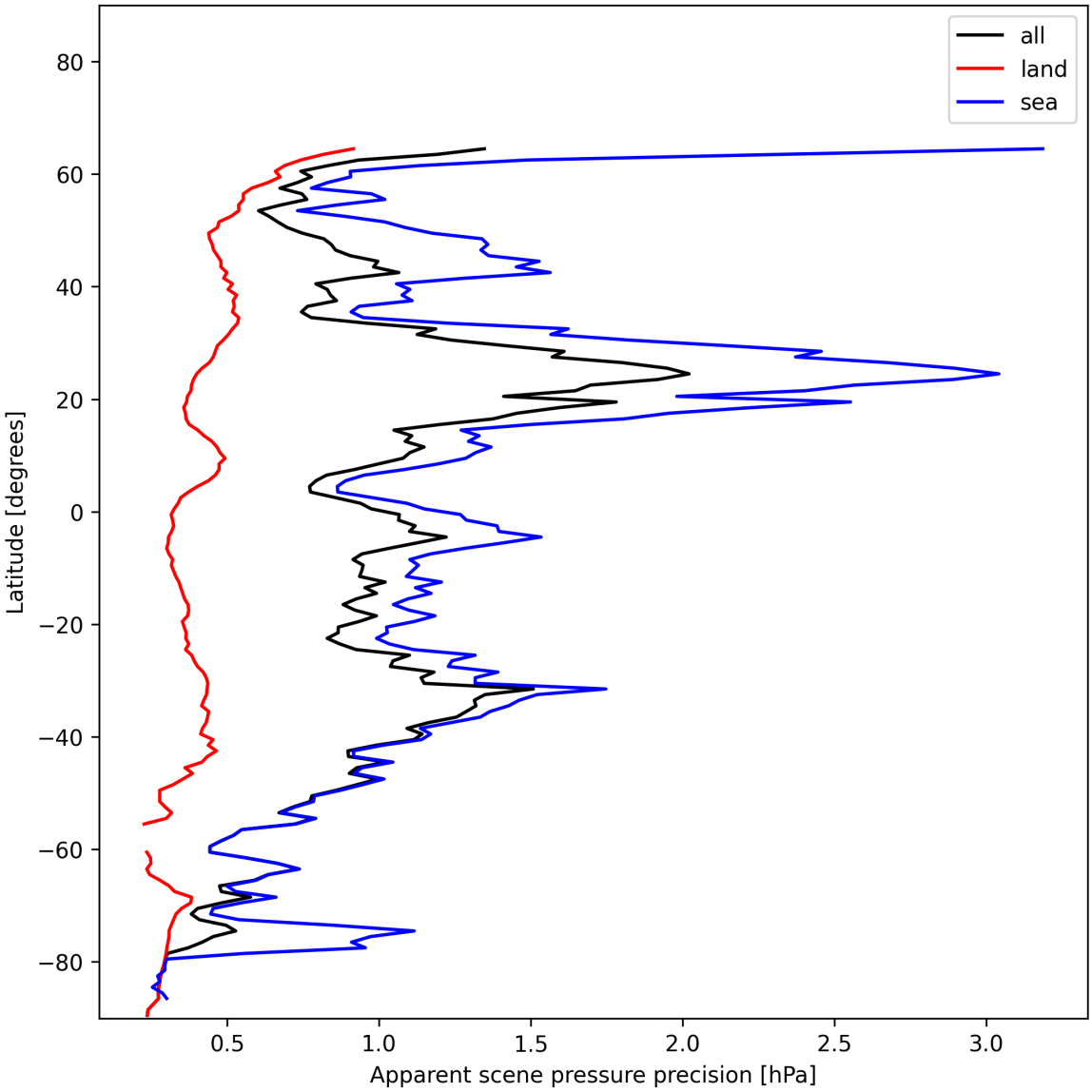

Figure 18: Zonal average of “Apparent scene pressure precision” for 2024-12-20 to 2024-12-20.

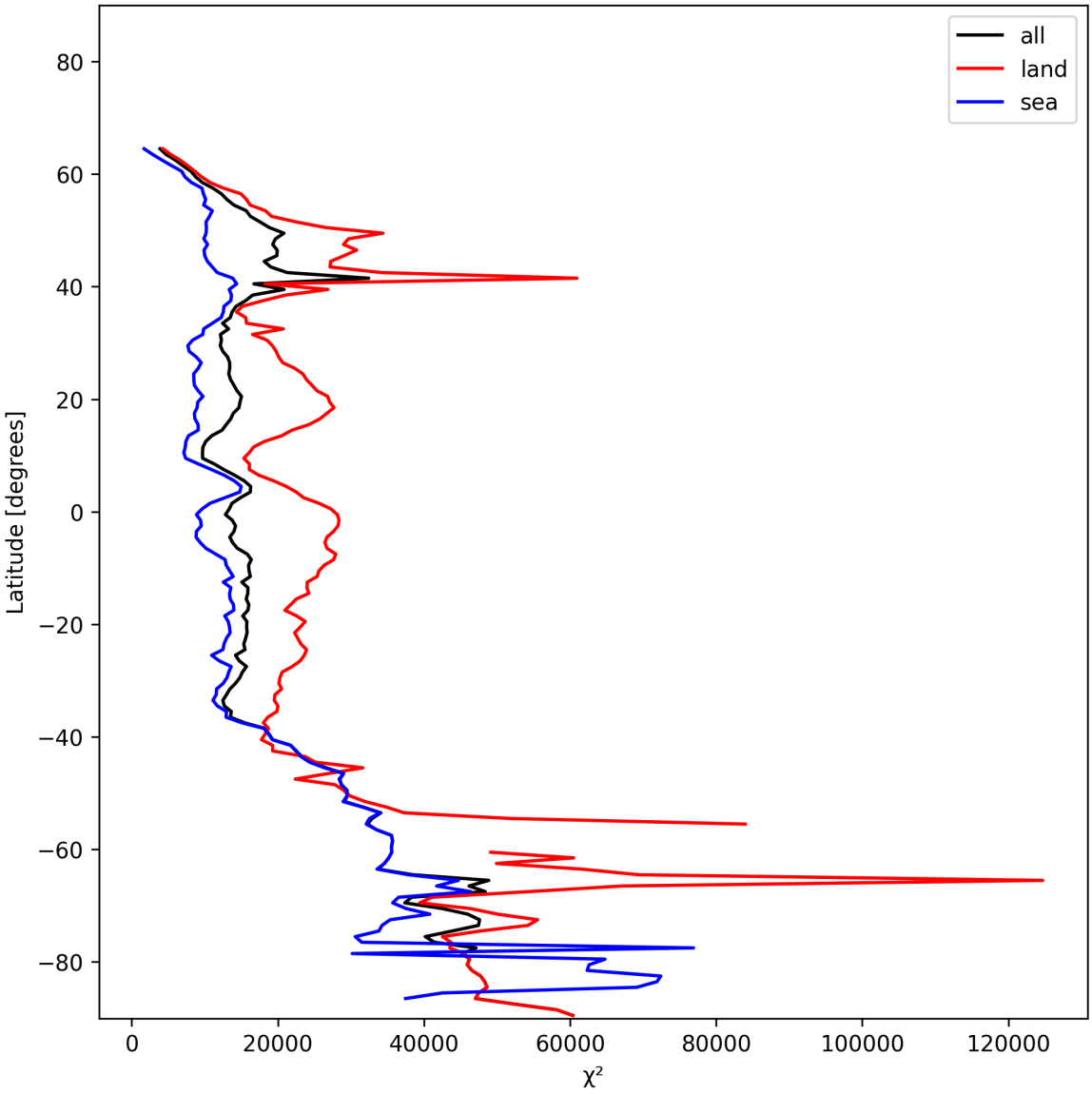

Figure 19: Zonal average of "χ^2" for 2024-12-20 to 2024-12-20.

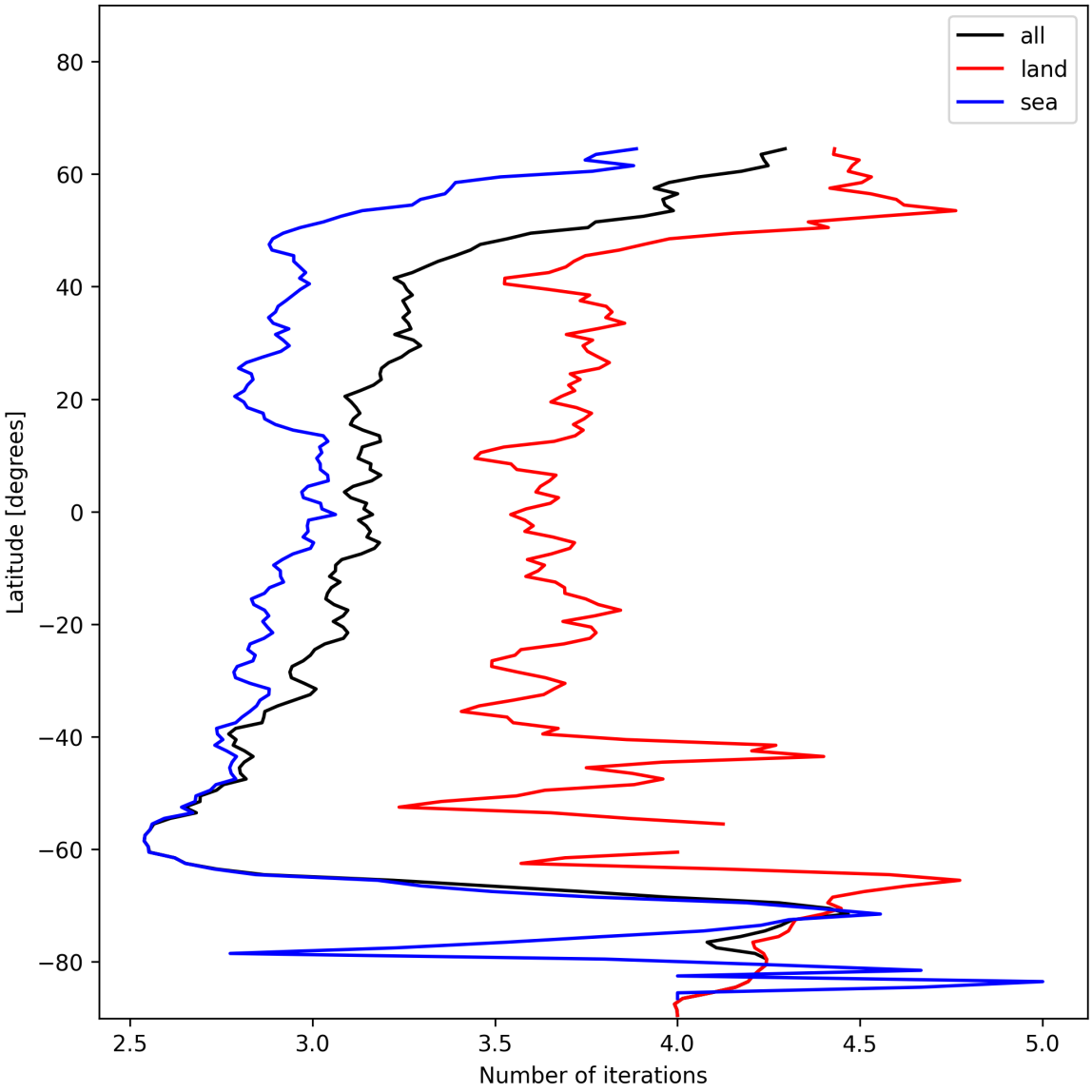

Figure 20: Zonal average of “Number of iterations” for 2024-12-20 to 2024-12-20.

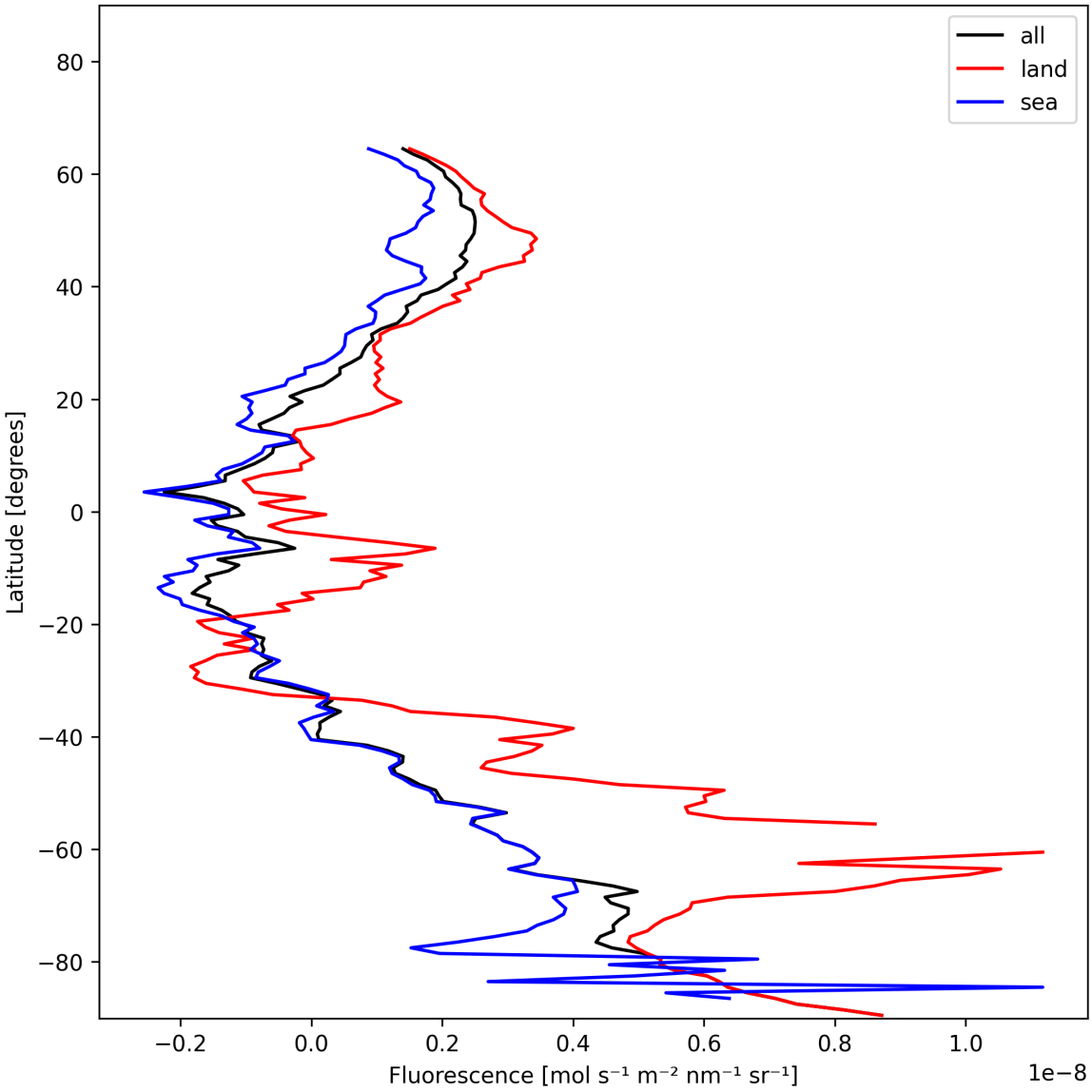

Figure 21: Zonal average of “Fluorescence” for 2024-12-20 to 2024-12-20.

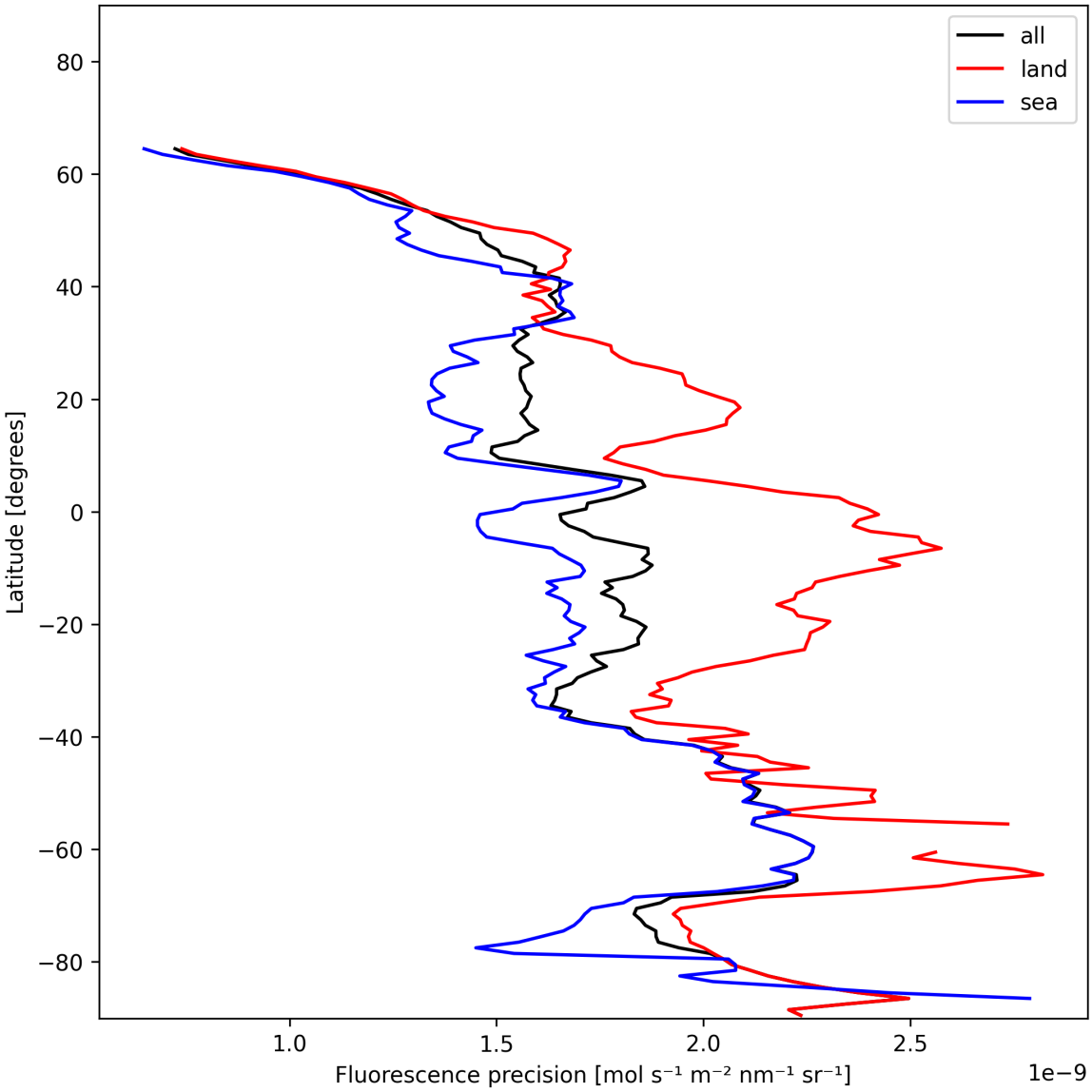

Figure 22: Zonal average of “Fluorescence precision” for 2024-12-20 to 2024-12-20.

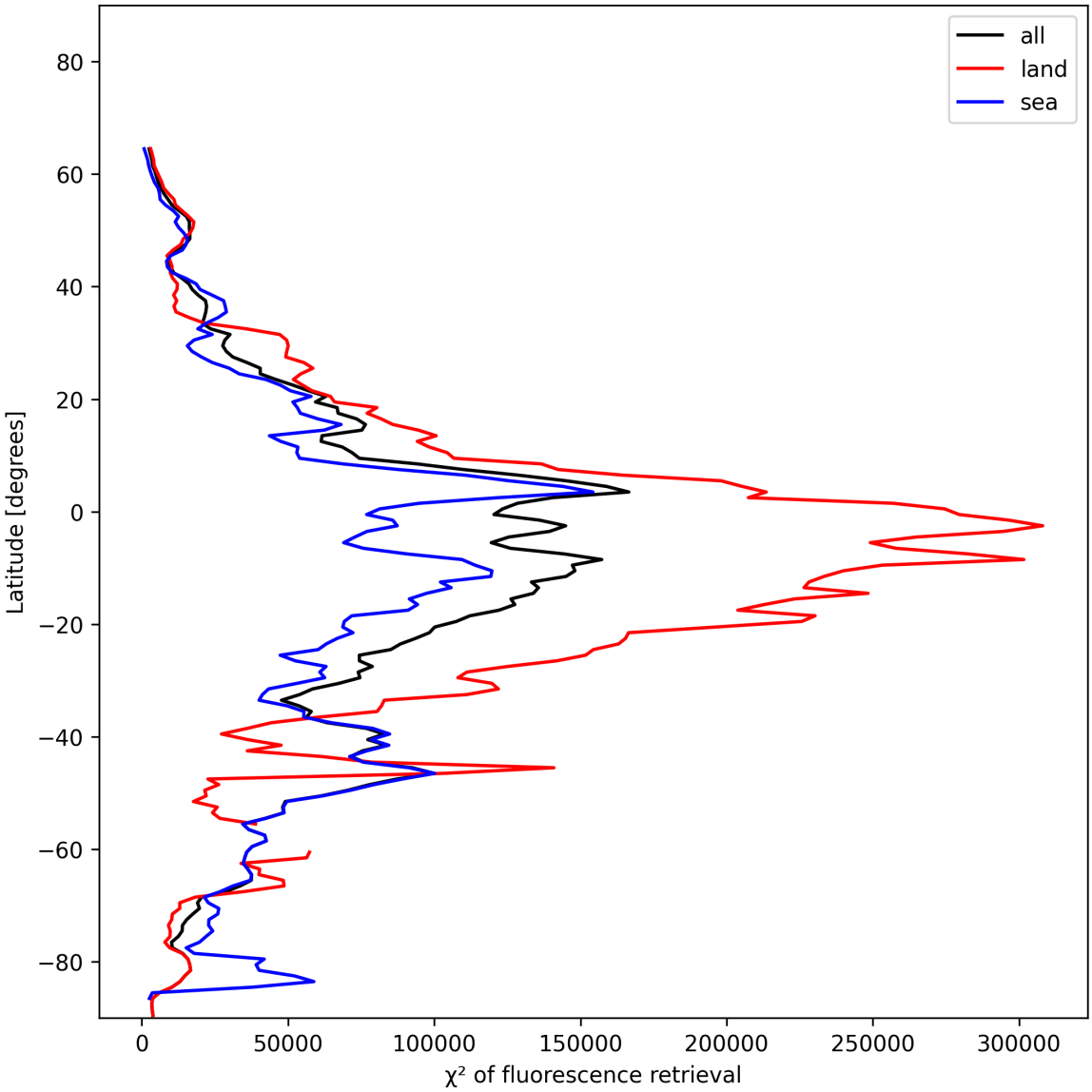

Figure 23: Zonal average of "χ^2 of fluorescence retrieval" for 2024-12-20 to 2024-12-20.

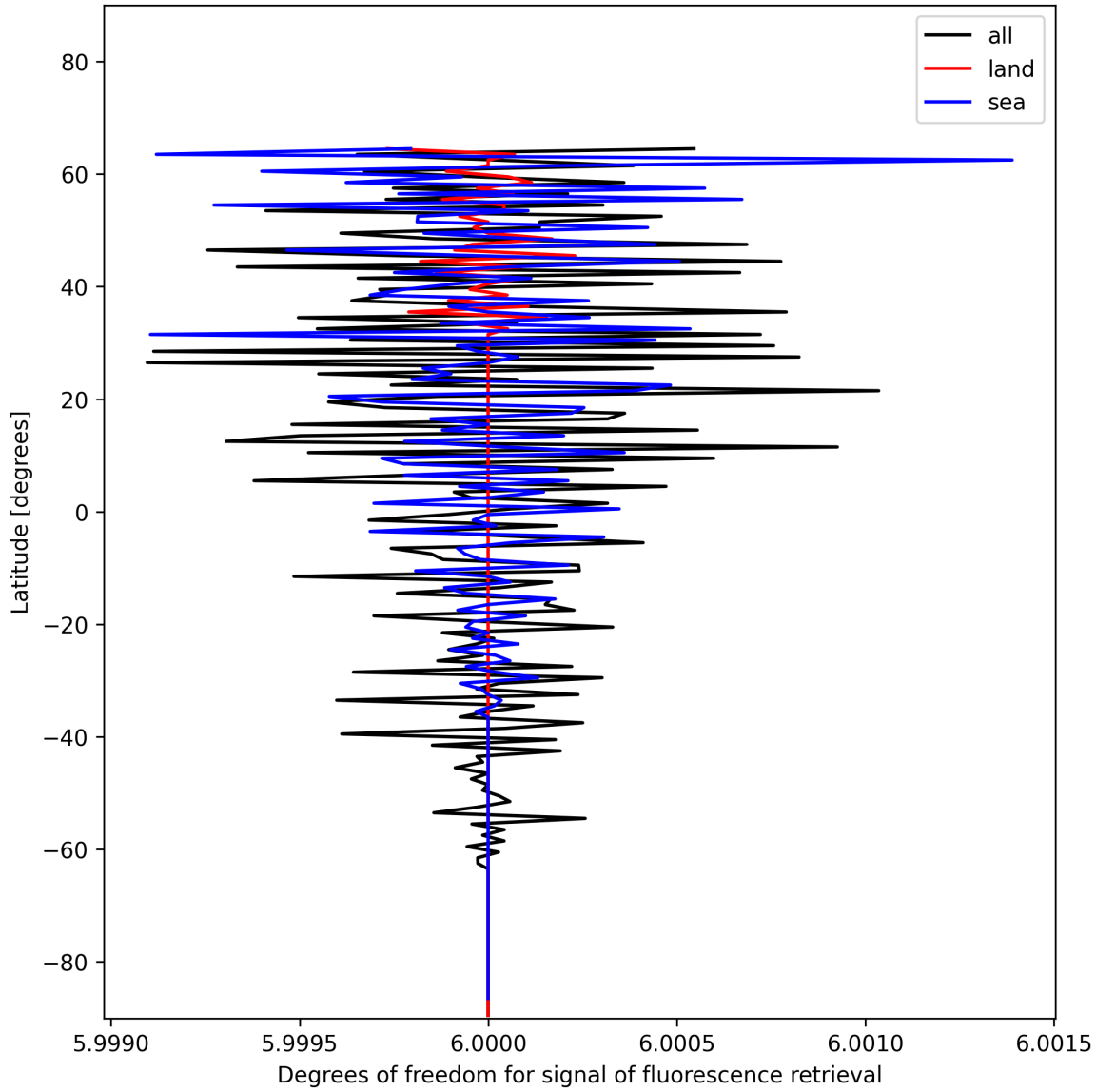

Figure 24: Zonal average of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-20 to 2024-12-20.

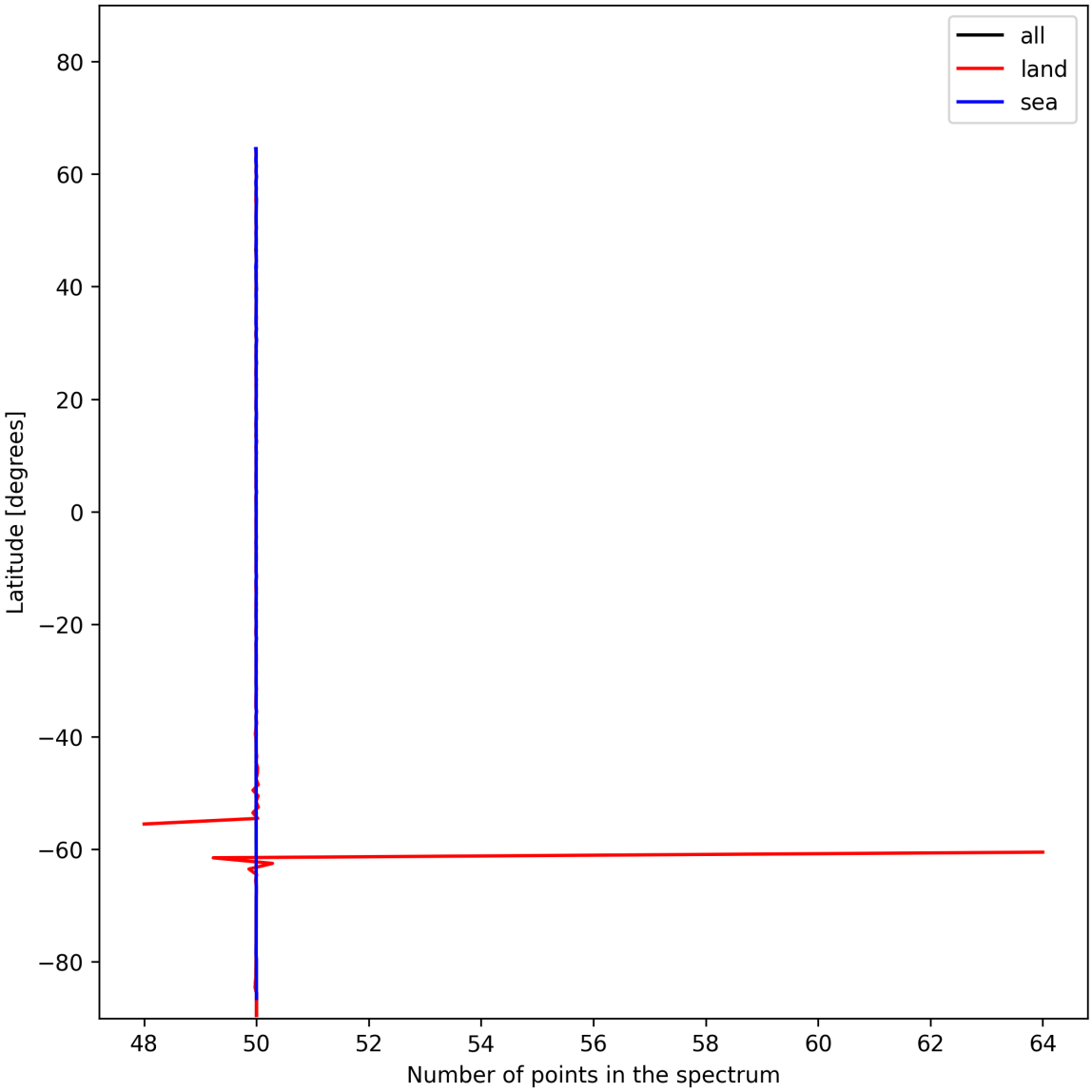

Figure 25: Zonal average of “Number of points in the spectrum” for 2024-12-20 to 2024-12-20.

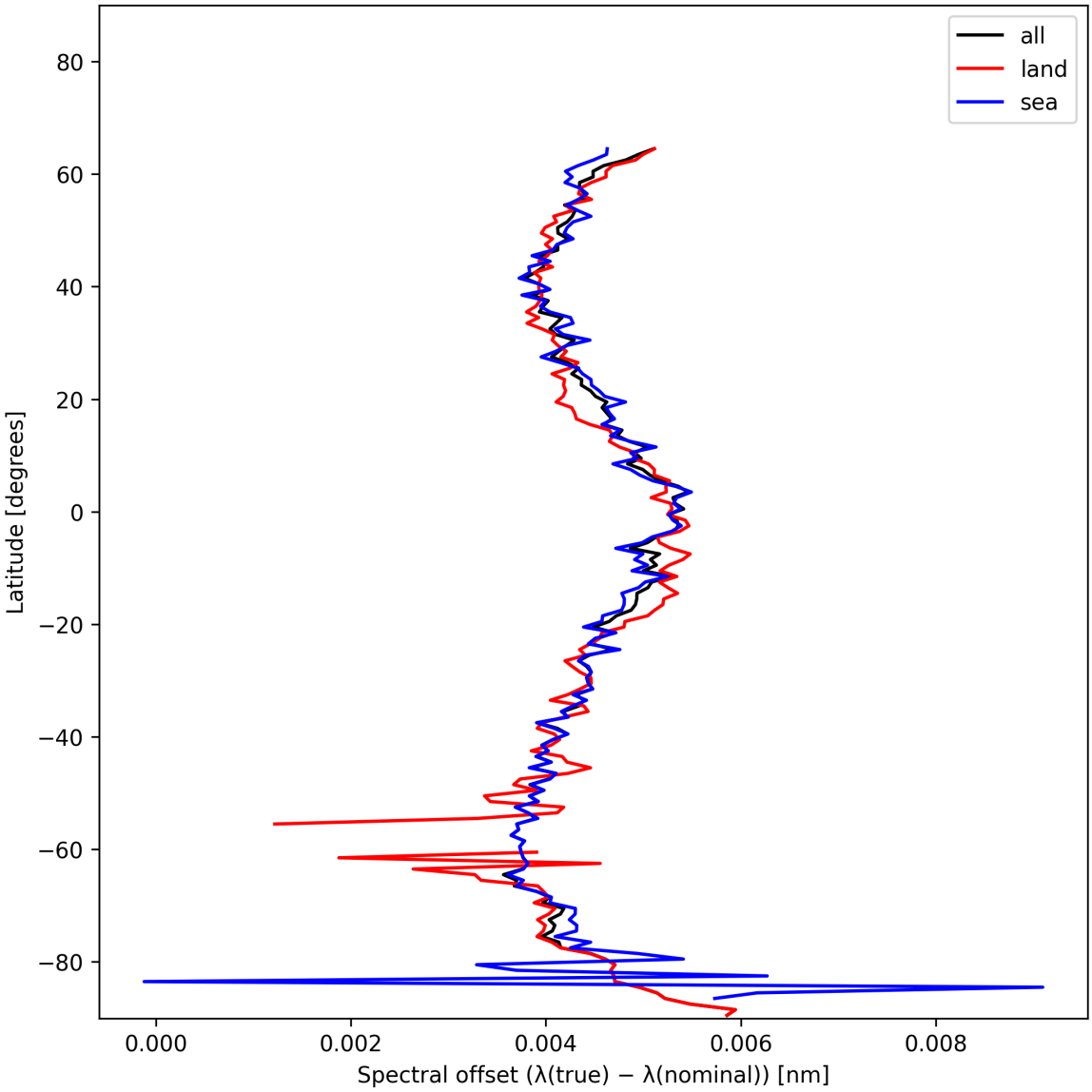

Figure 26: Zonal average of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-12-20 to 2024-12-20.

8 Histograms

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

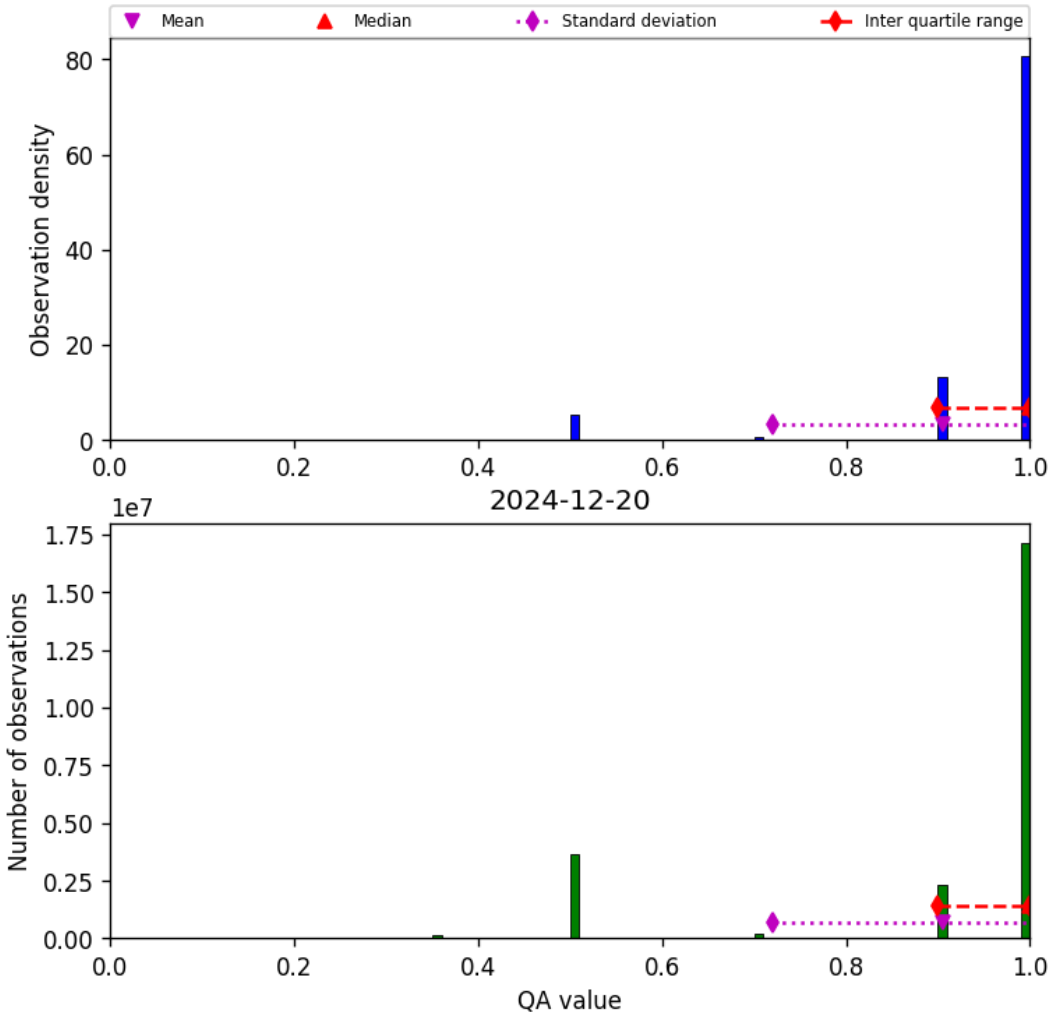

Figure 27: Histogram of “QA value” for 2024-12-20 to 2024-12-20

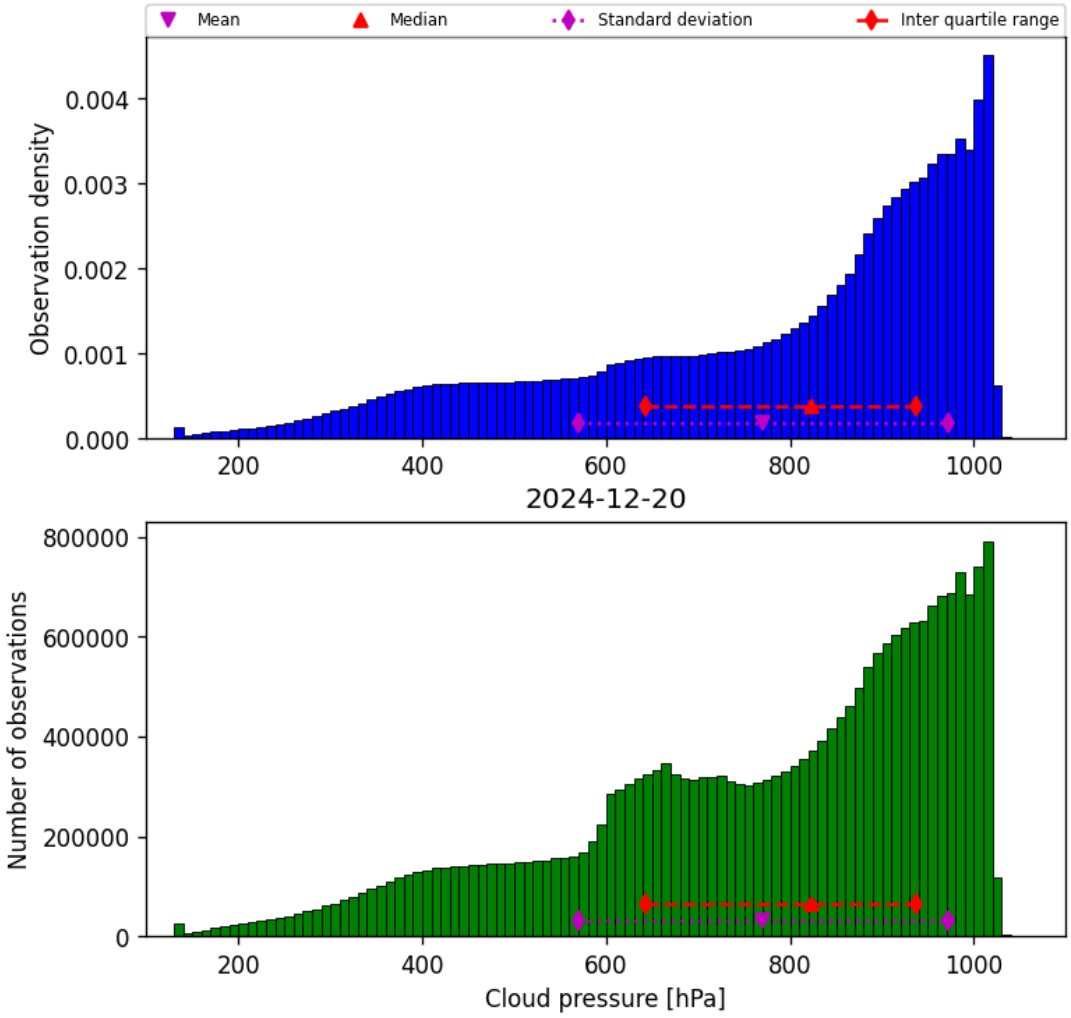

Figure 28: Histogram of “Cloud pressure” for 2024-12-20 to 2024-12-20

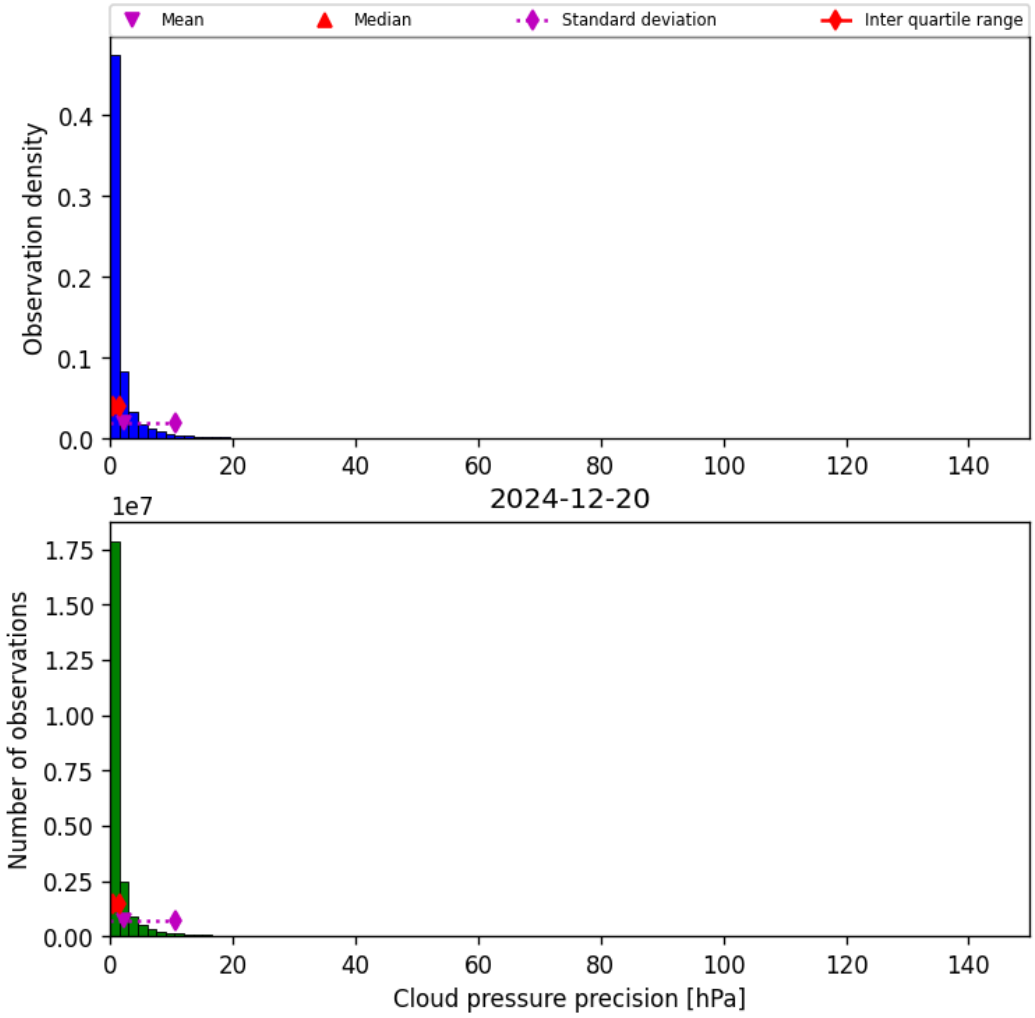

Figure 29: Histogram of “Cloud pressure precision” for 2024-12-20 to 2024-12-20

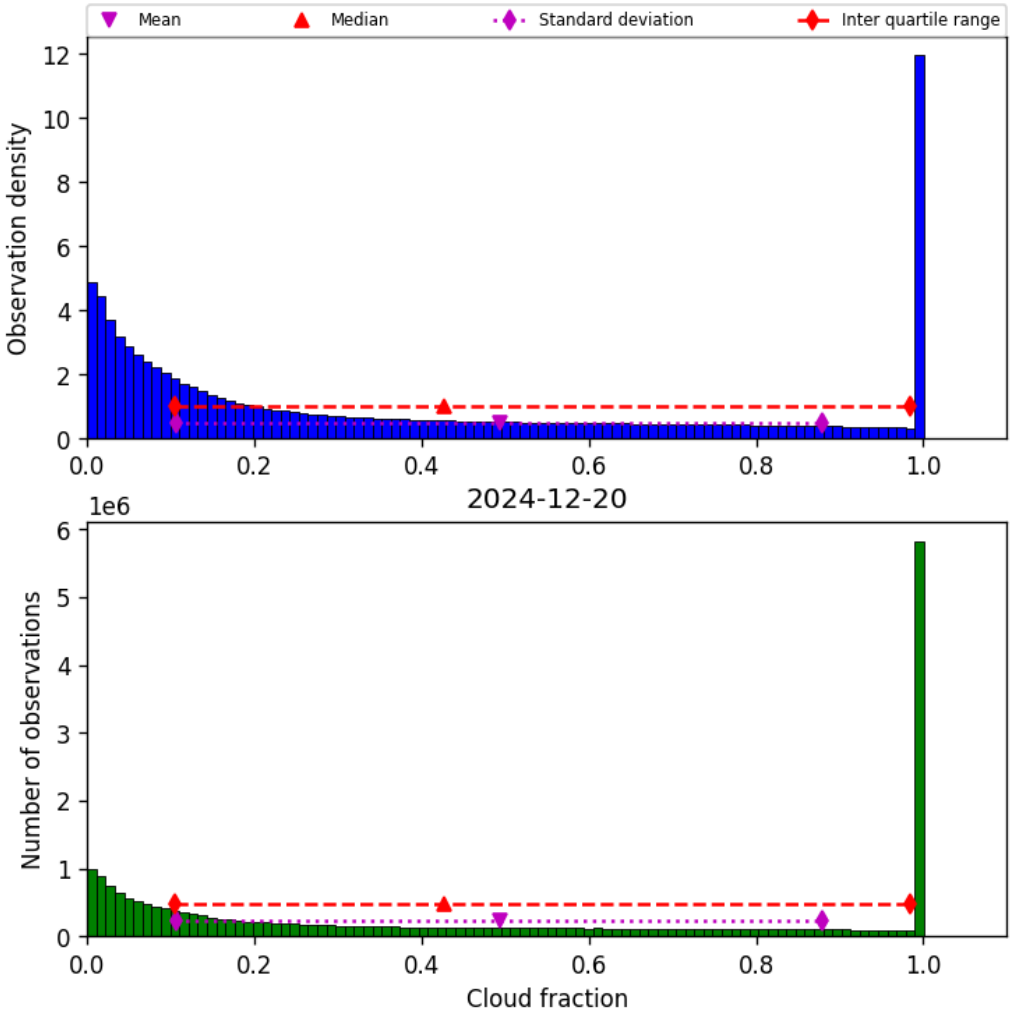

Figure 30: Histogram of “Cloud fraction” for 2024-12-20 to 2024-12-20

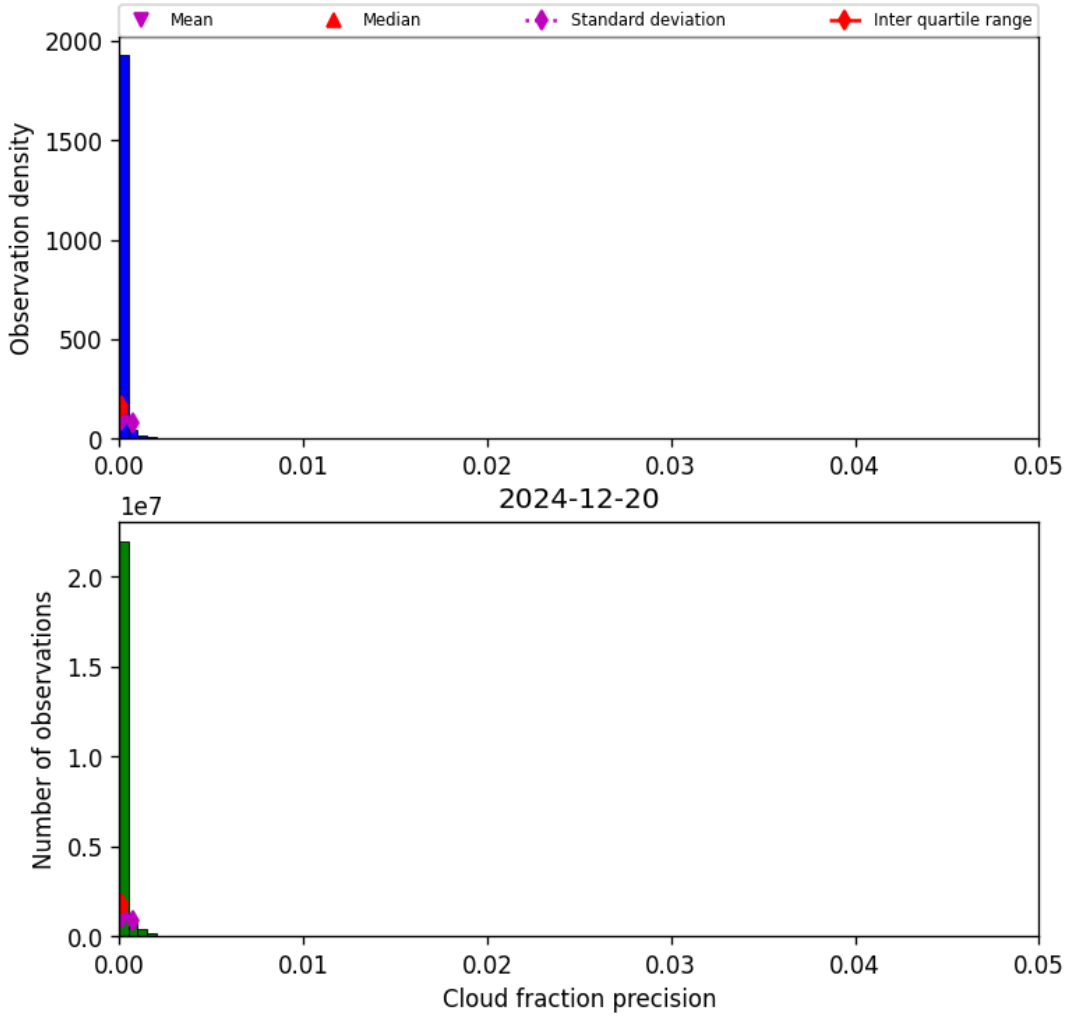

Figure 31: Histogram of “Cloud fraction precision” for 2024-12-20 to 2024-12-20

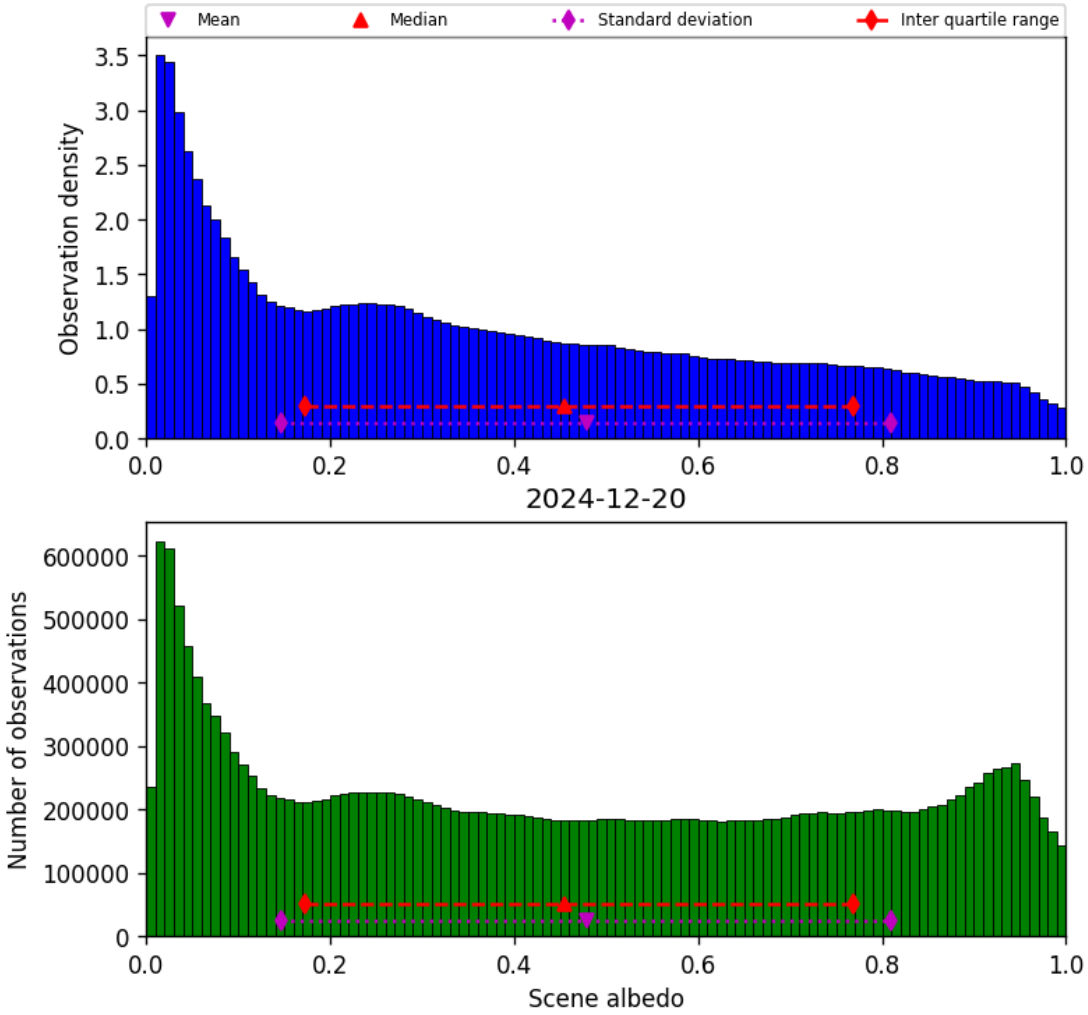

Figure 32: Histogram of “Scene albedo” for 2024-12-20 to 2024-12-20

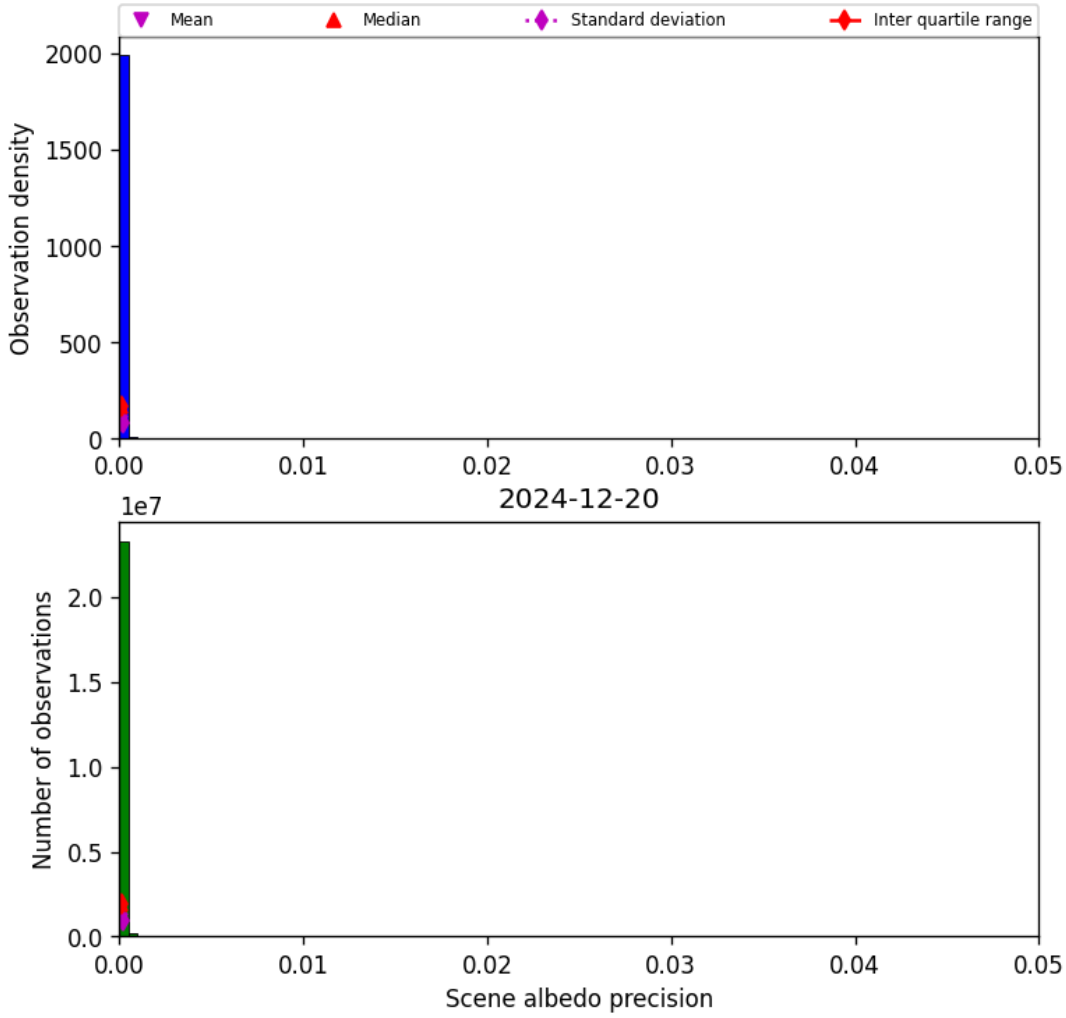

Figure 33: Histogram of “Scene albedo precision” for 2024-12-20 to 2024-12-20

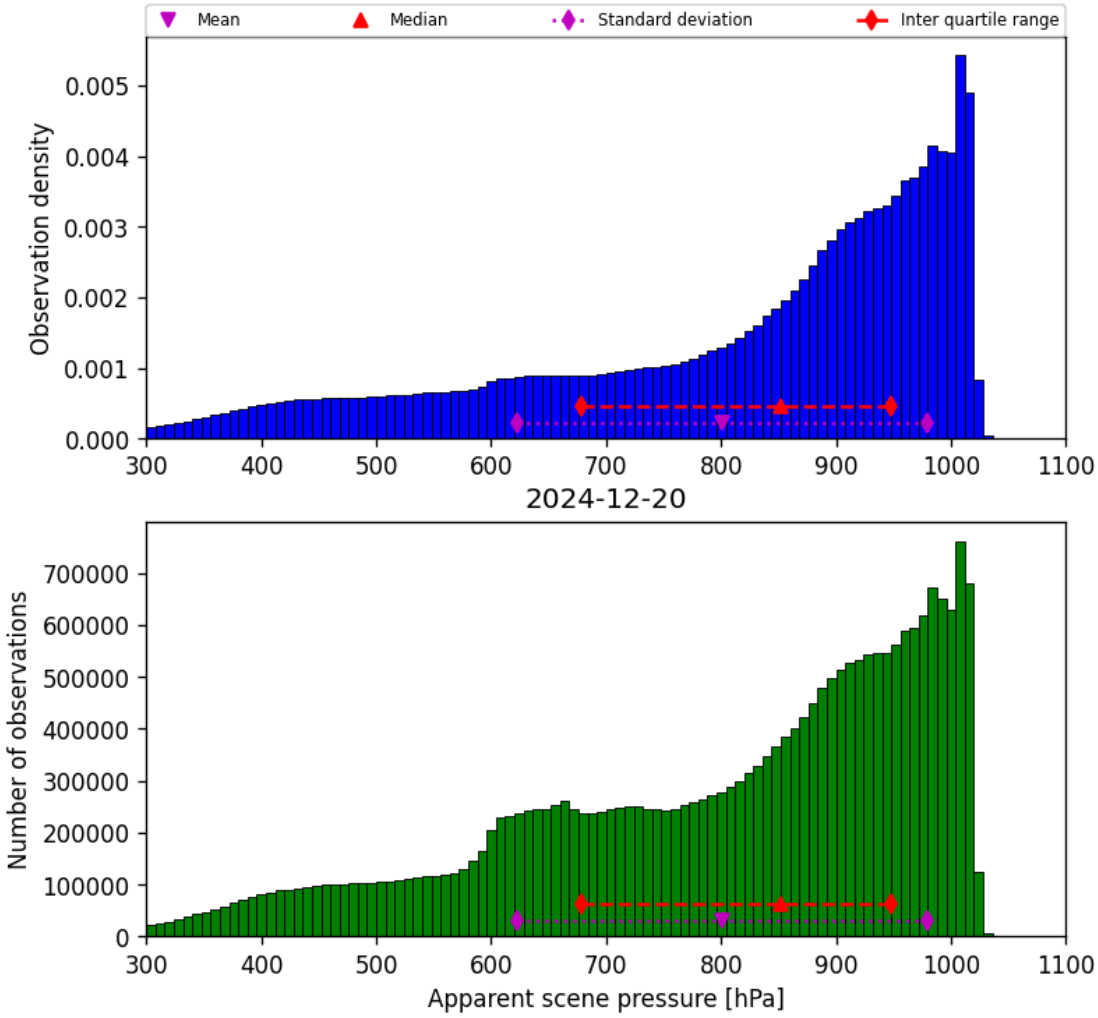

Figure 34: Histogram of “Apparent scene pressure” for 2024-12-20 to 2024-12-20

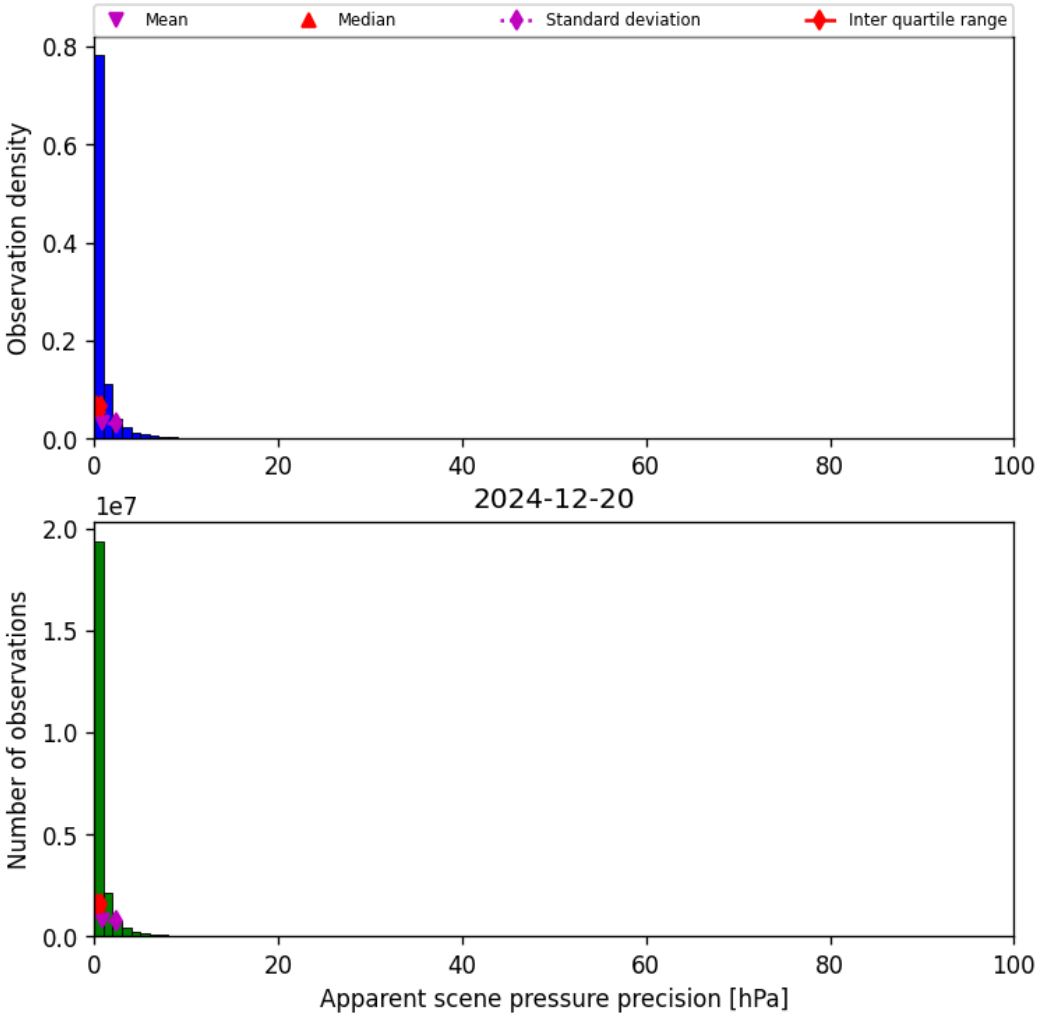

Figure 35: Histogram of “Apparent scene pressure precision” for 2024-12-20 to 2024-12-20

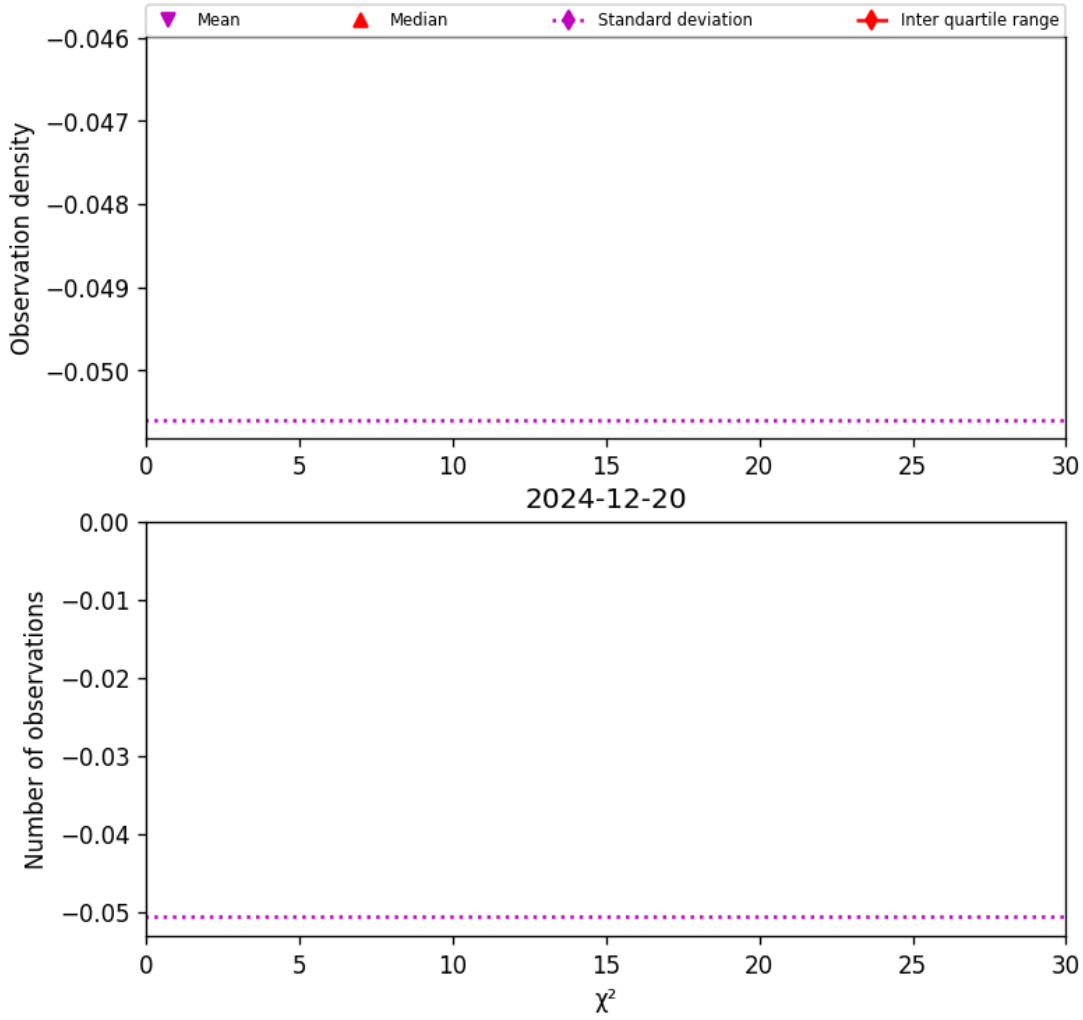

Figure 36: Histogram of "χ^2" for 2024-12-20 to 2024-12-20

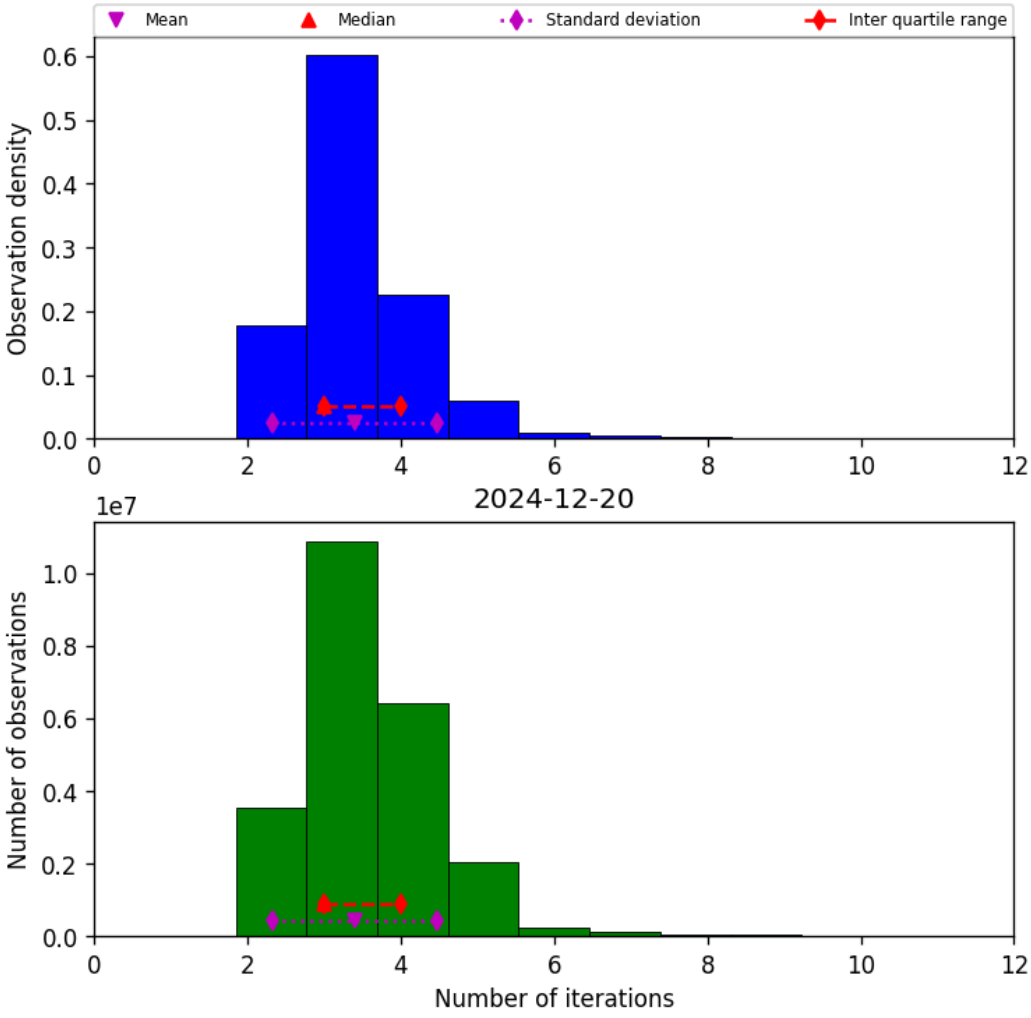

Figure 37: Histogram of “Number of iterations” for 2024-12-20 to 2024-12-20

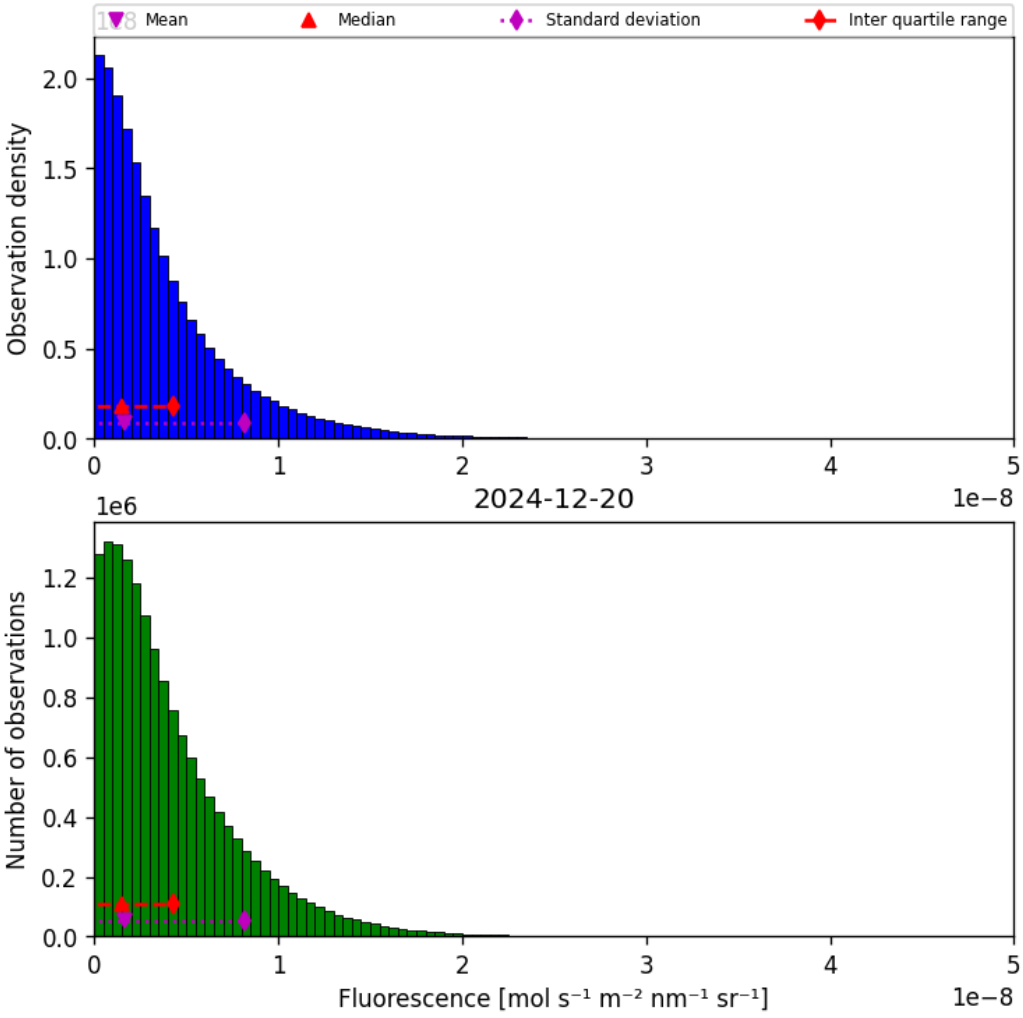

Figure 38: Histogram of “Fluorescence” for 2024-12-20 to 2024-12-20

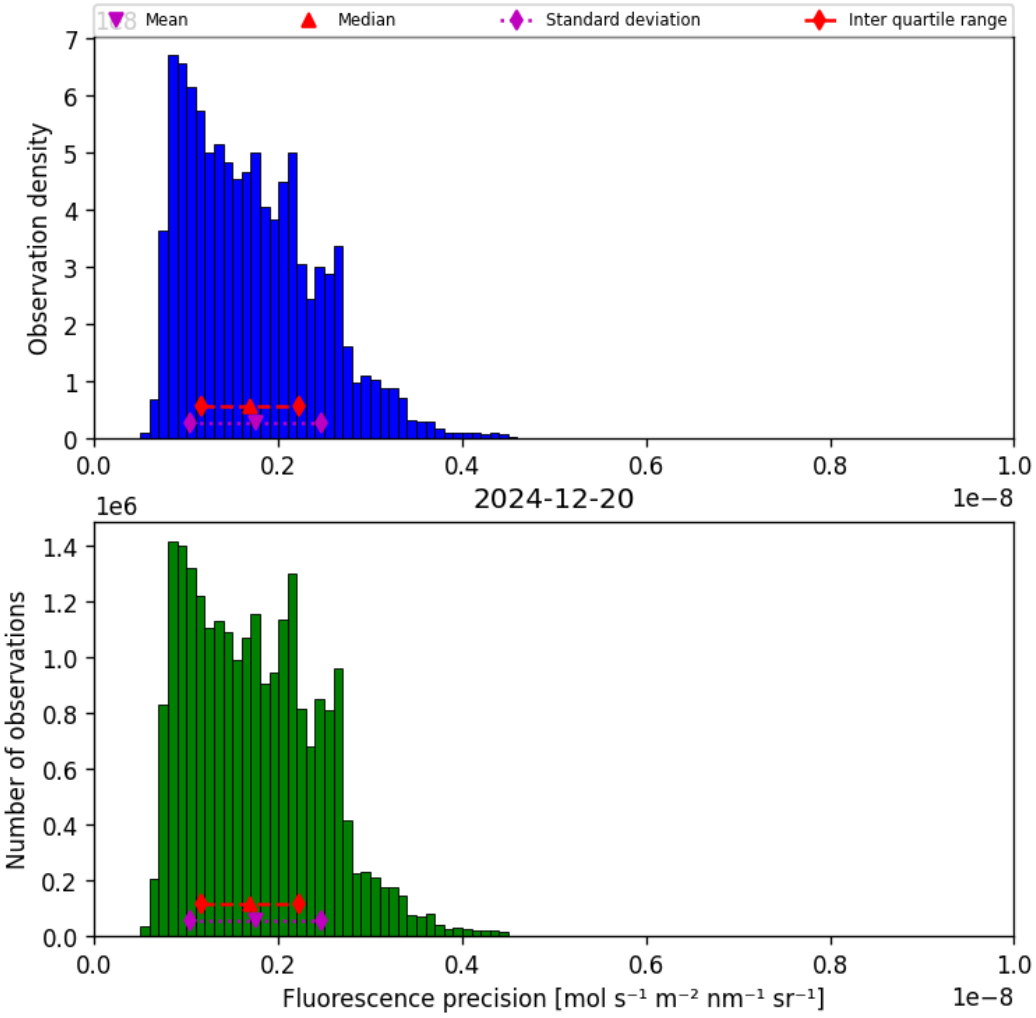

Figure 39: Histogram of “Fluorescence precision” for 2024-12-20 to 2024-12-20

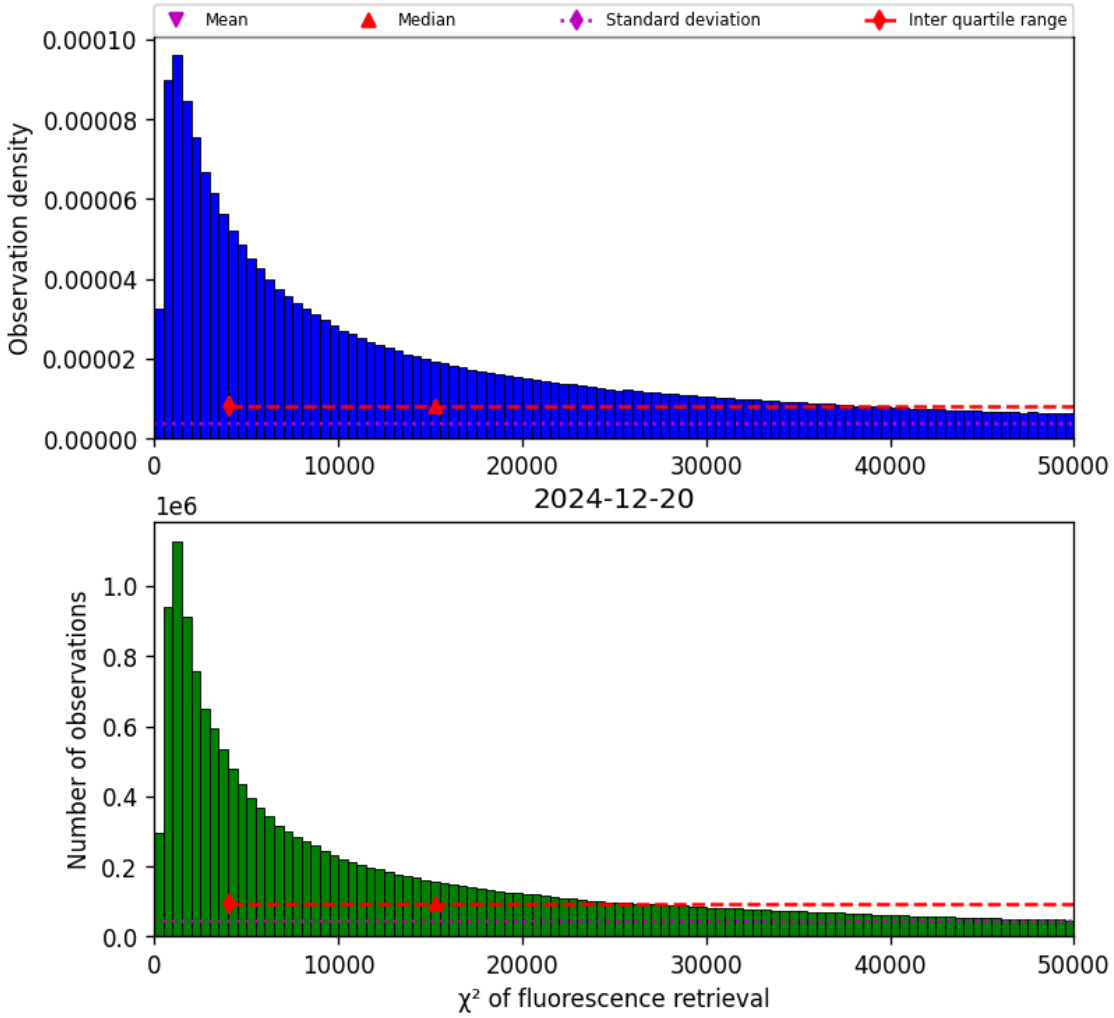

Figure 40: Histogram of "χ^2 of fluorescence retrieval" for 2024-12-20 to 2024-12-20

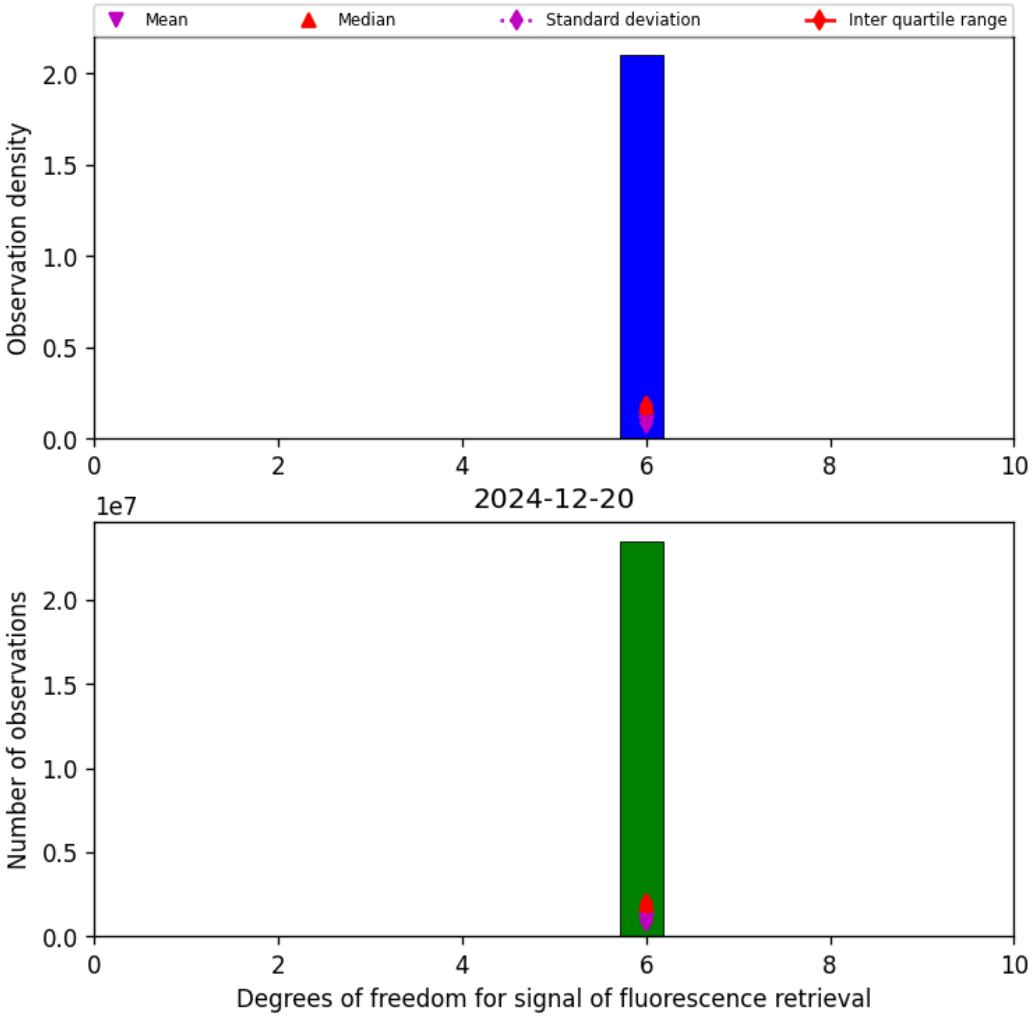

Figure 41: Histogram of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-20 to 2024-12-20

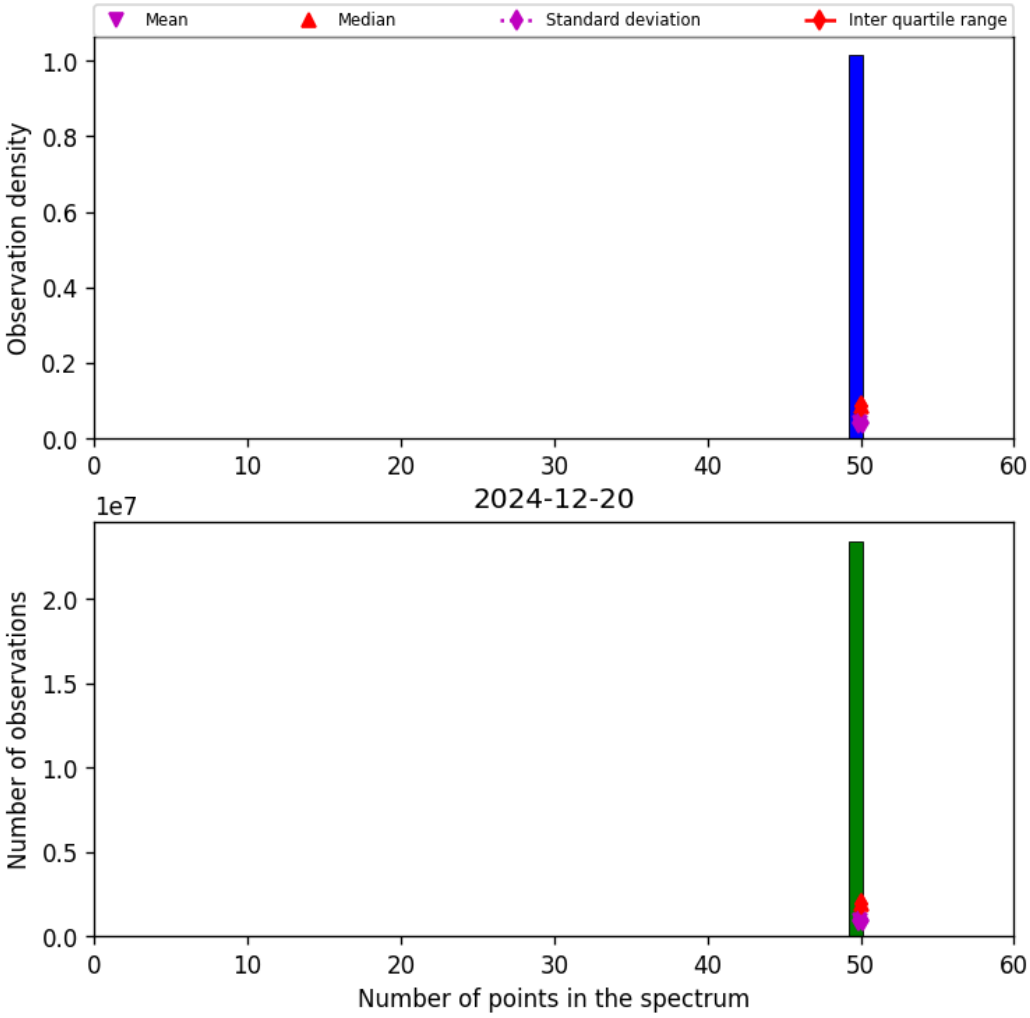

Figure 42: Histogram of “Number of points in the spectrum” for 2024-12-20 to 2024-12-20

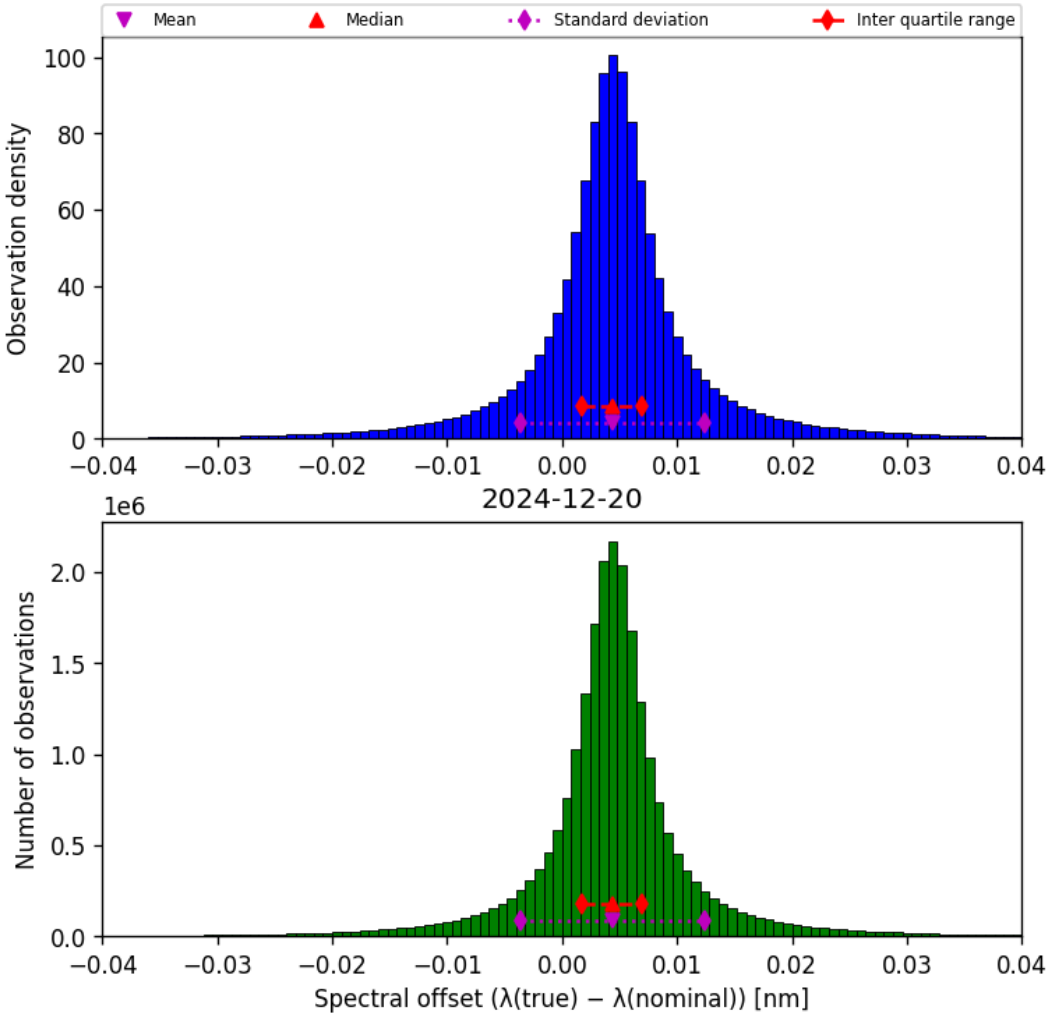

Figure 43: Histogram of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-12-20 to 2024-12-20

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.

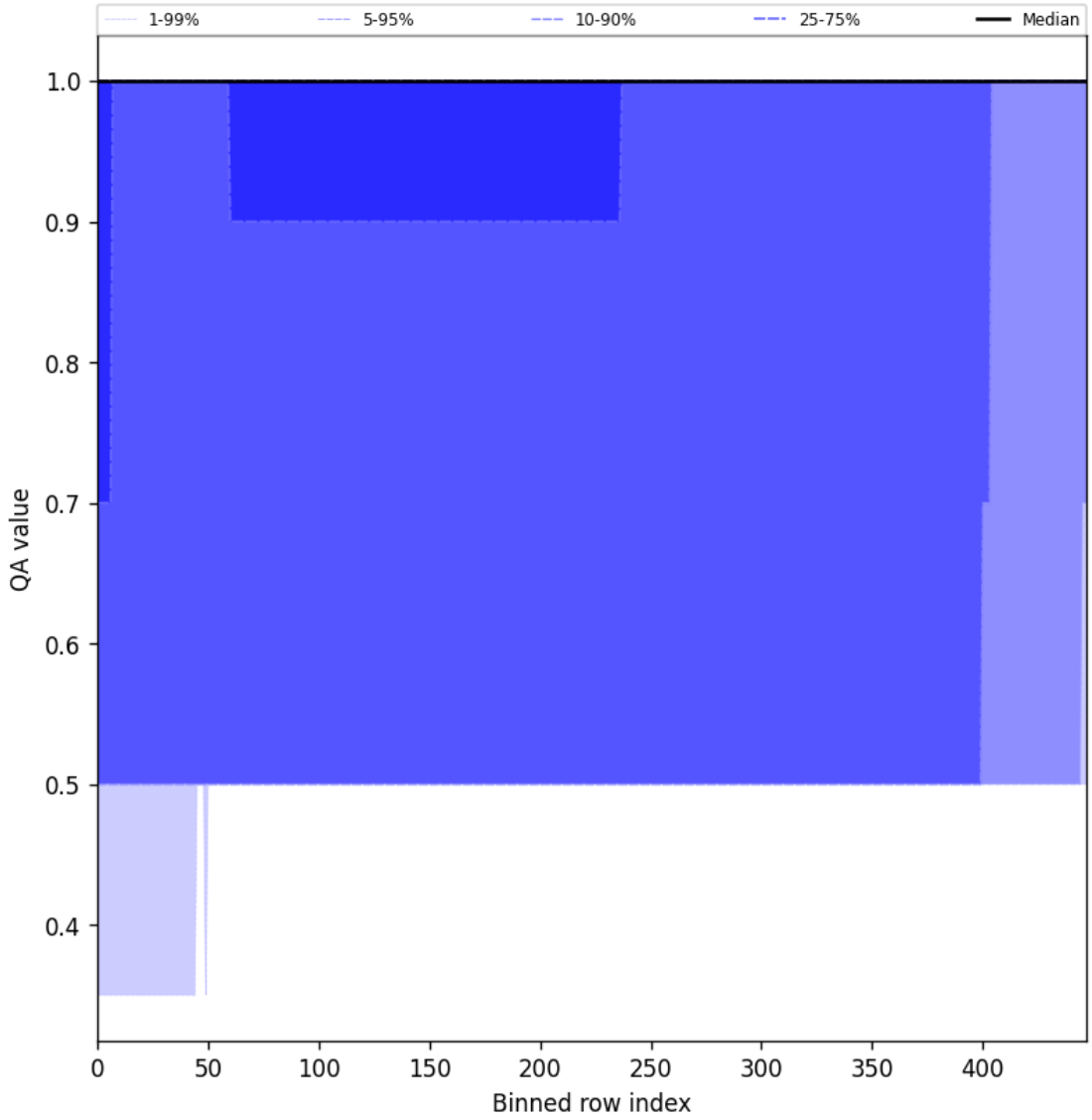

Figure 44: Along track statistics of “QA value” for 2024-12-20 to 2024-12-20

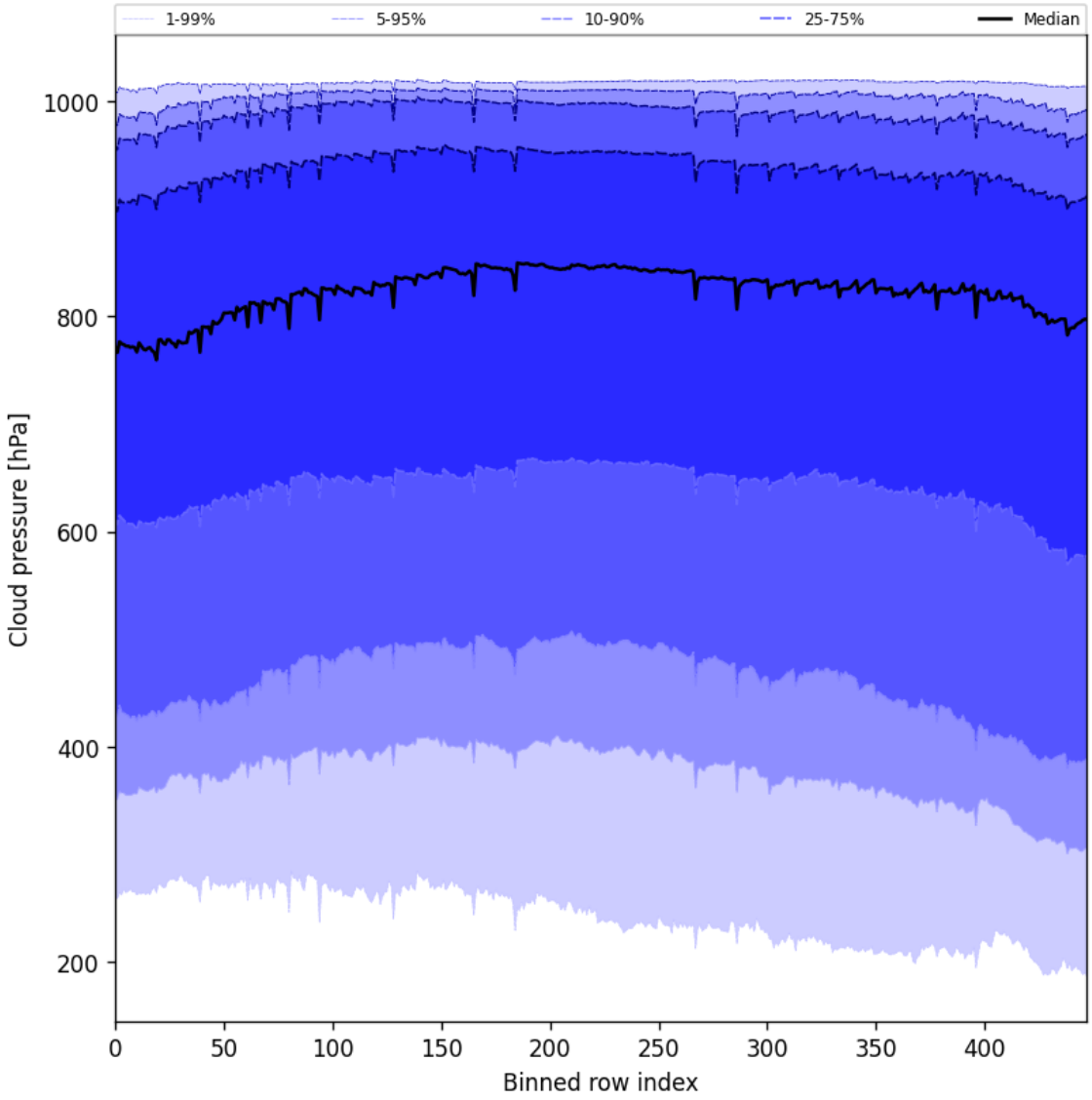

Figure 45: Along track statistics of “Cloud pressure” for 2024-12-20 to 2024-12-20

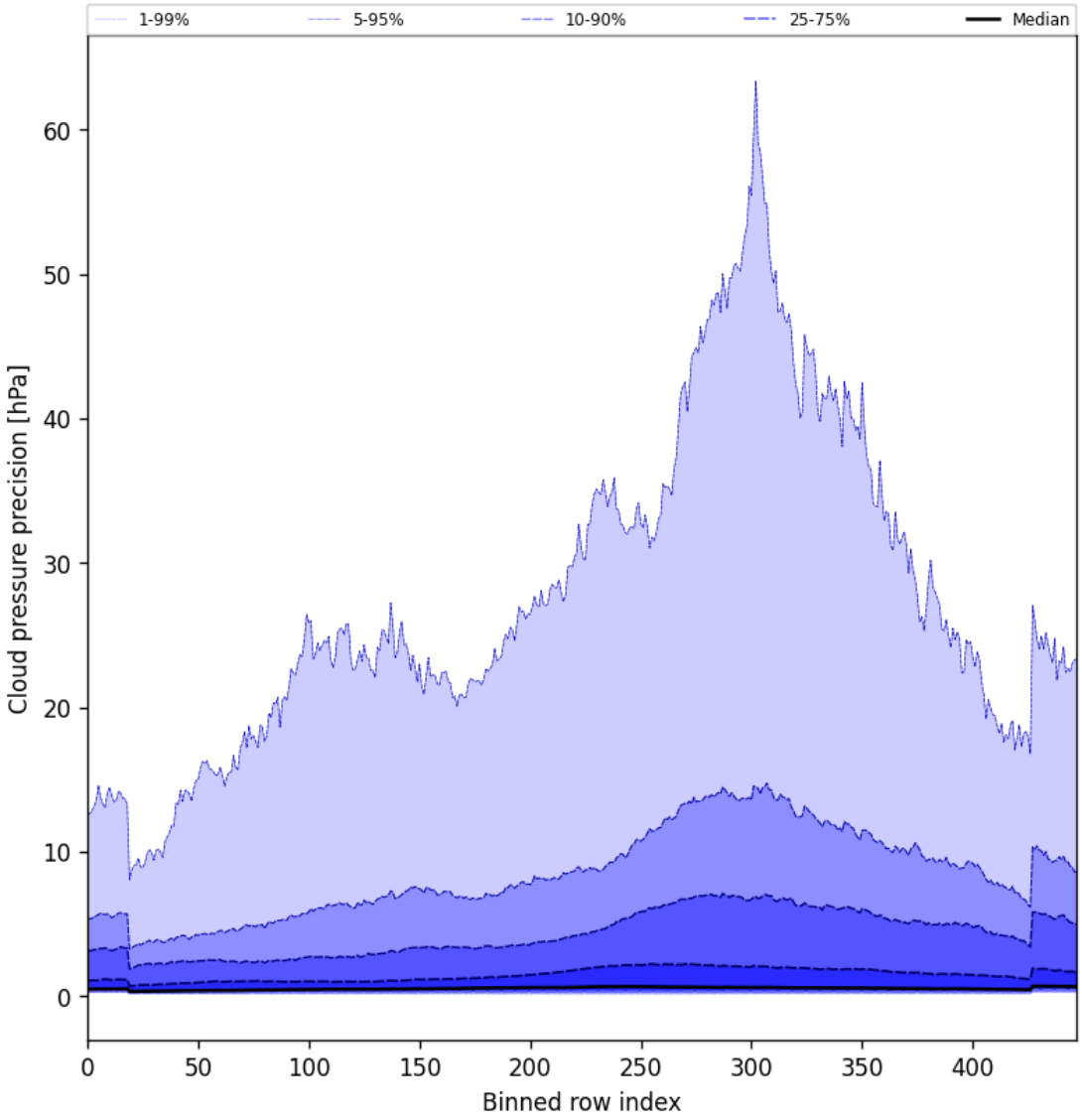

Figure 46: Along track statistics of “Cloud pressure precision” for 2024-12-20 to 2024-12-20

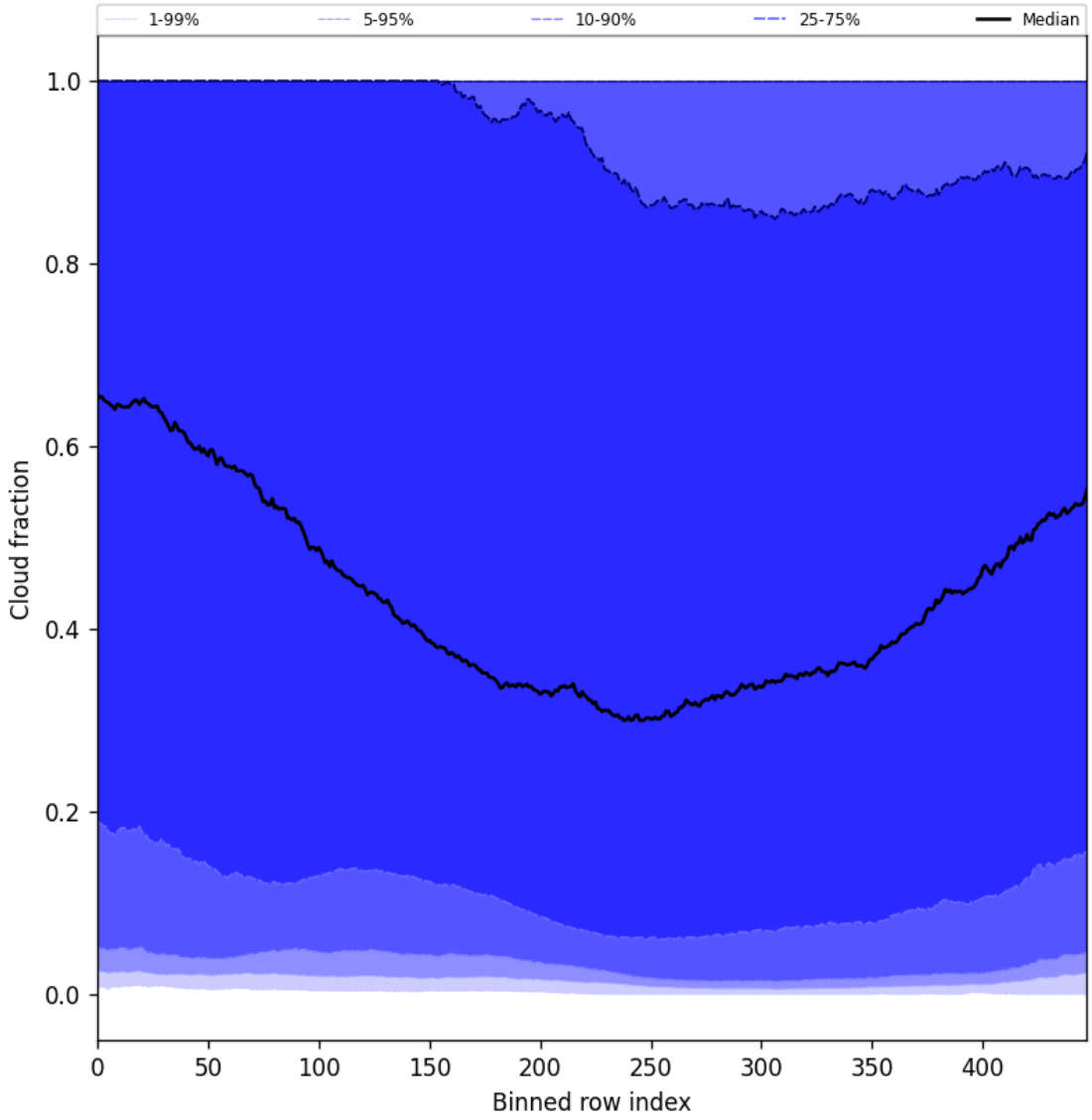

Figure 47: Along track statistics of “Cloud fraction” for 2024-12-20 to 2024-12-20

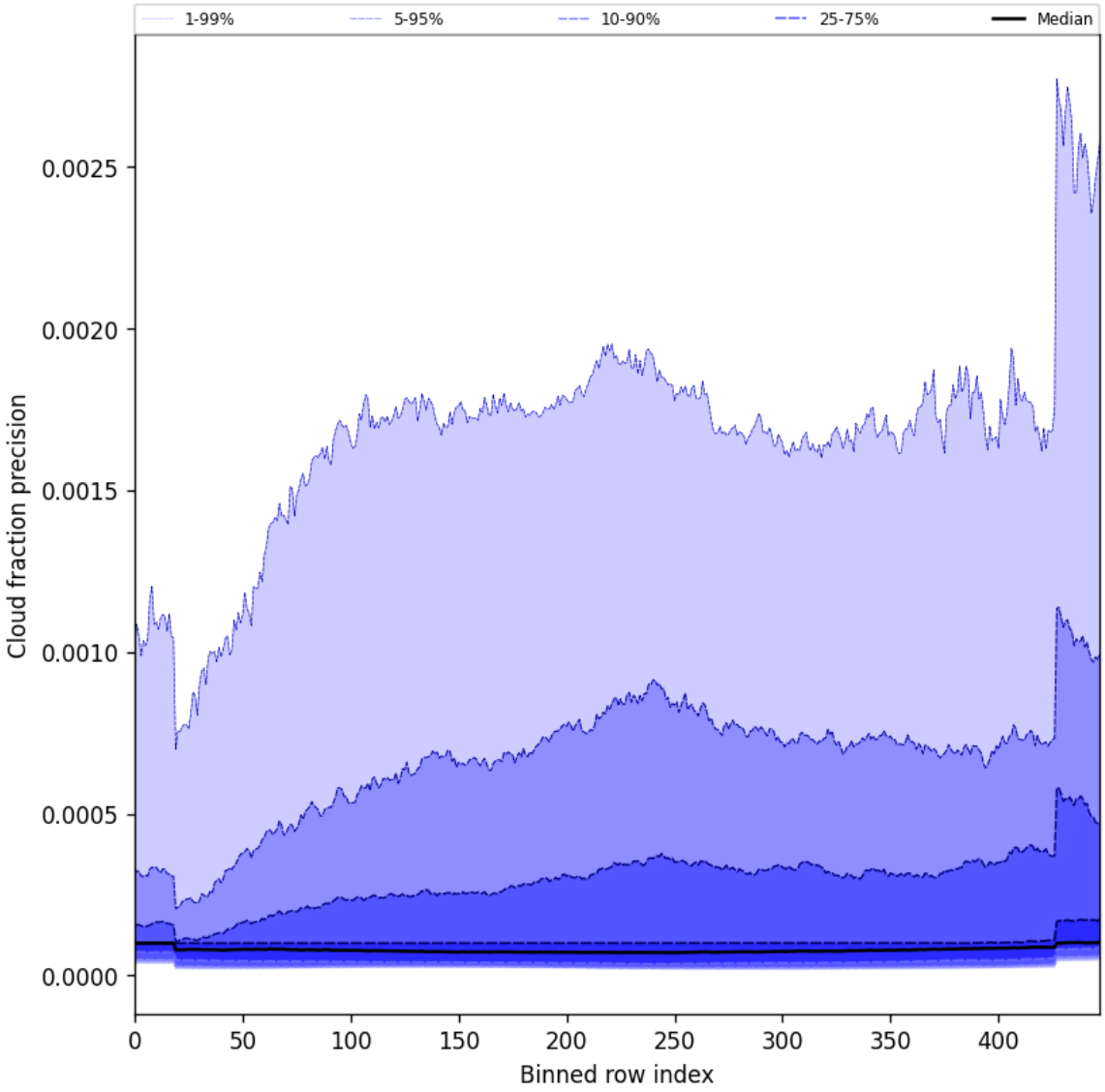

Figure 48: Along track statistics of “Cloud fraction precision” for 2024-12-20 to 2024-12-20

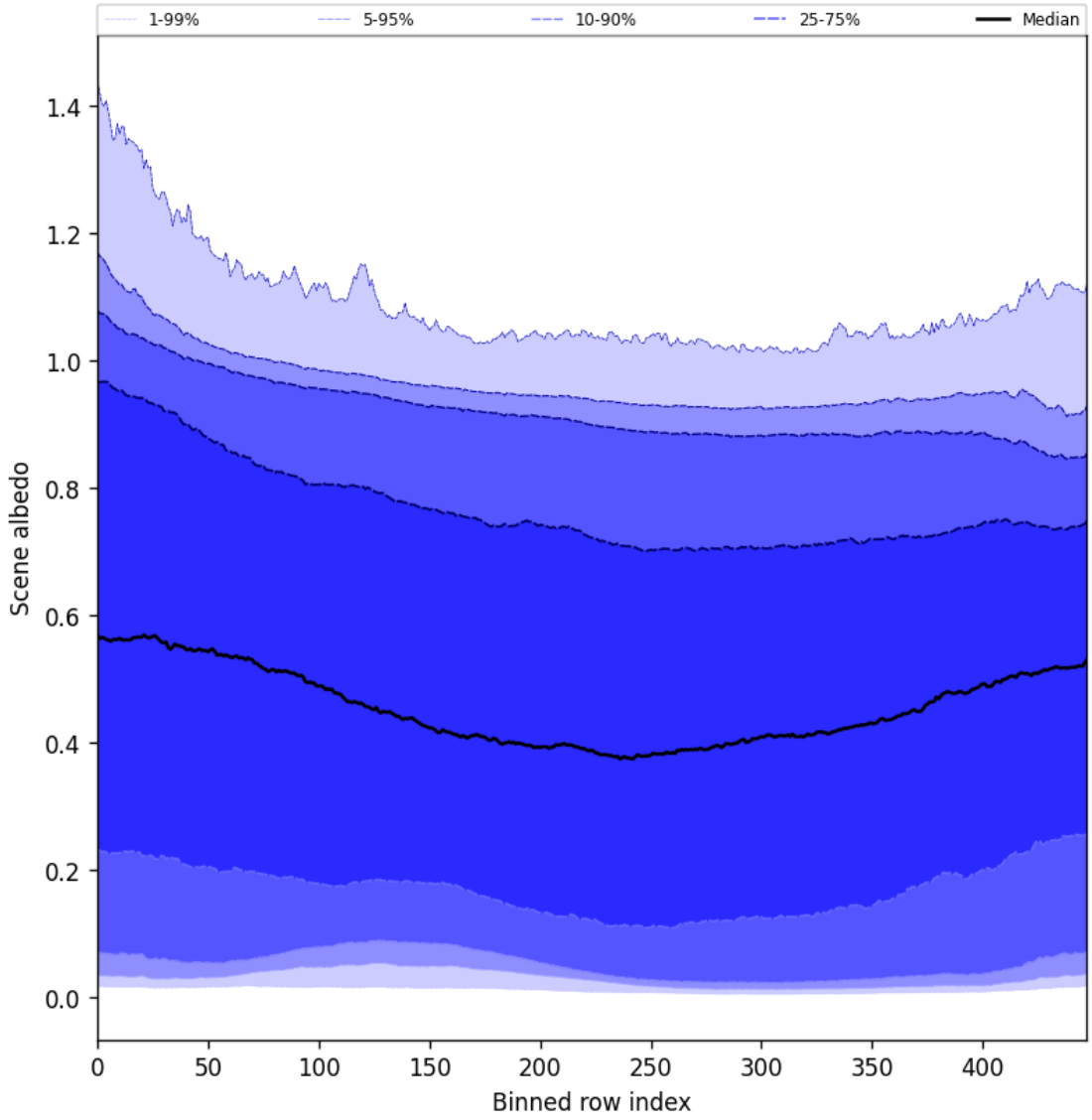

Figure 49: Along track statistics of “Scene albedo” for 2024-12-20 to 2024-12-20

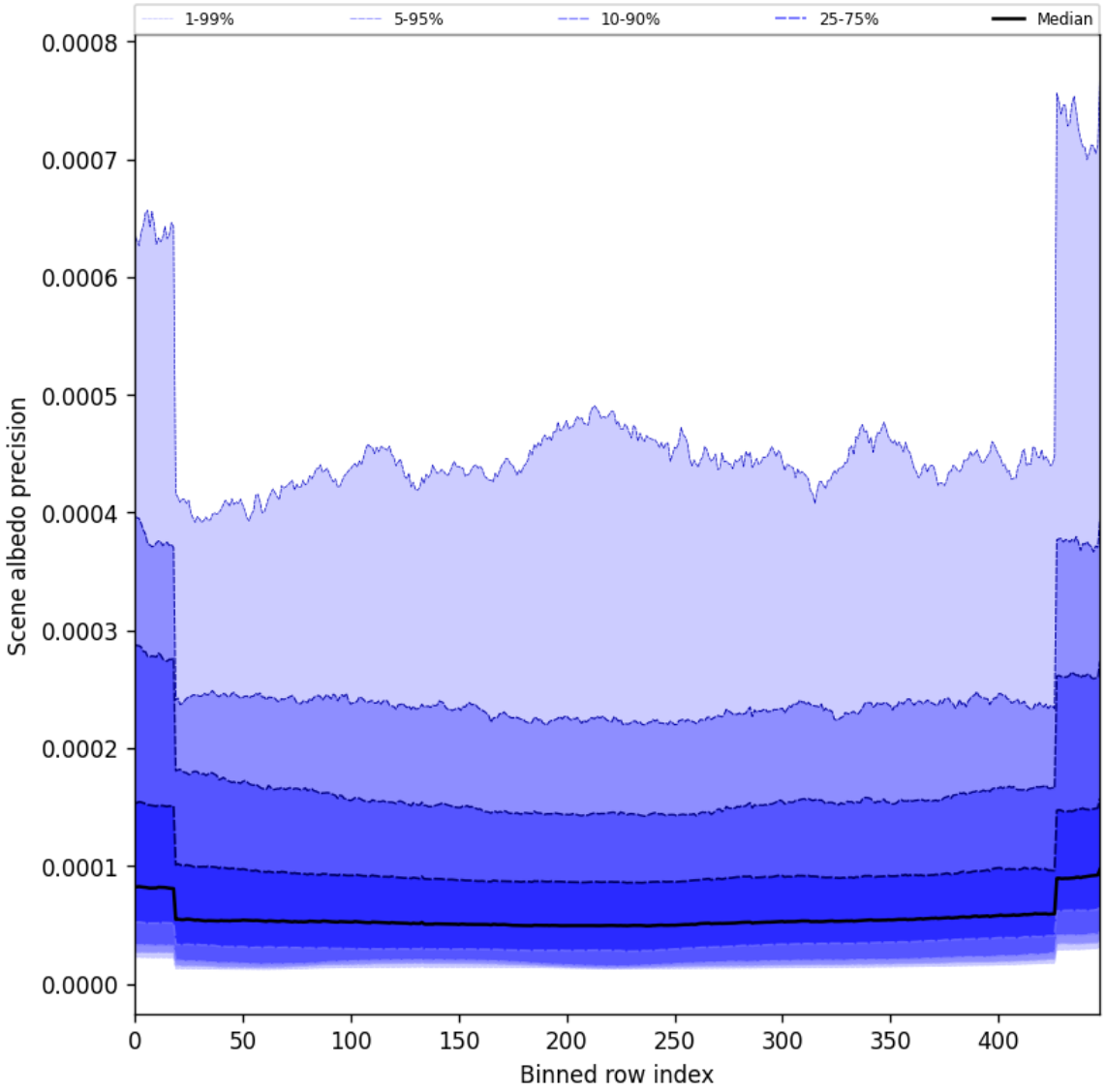

Figure 50: Along track statistics of “Scene albedo precision” for 2024-12-20 to 2024-12-20

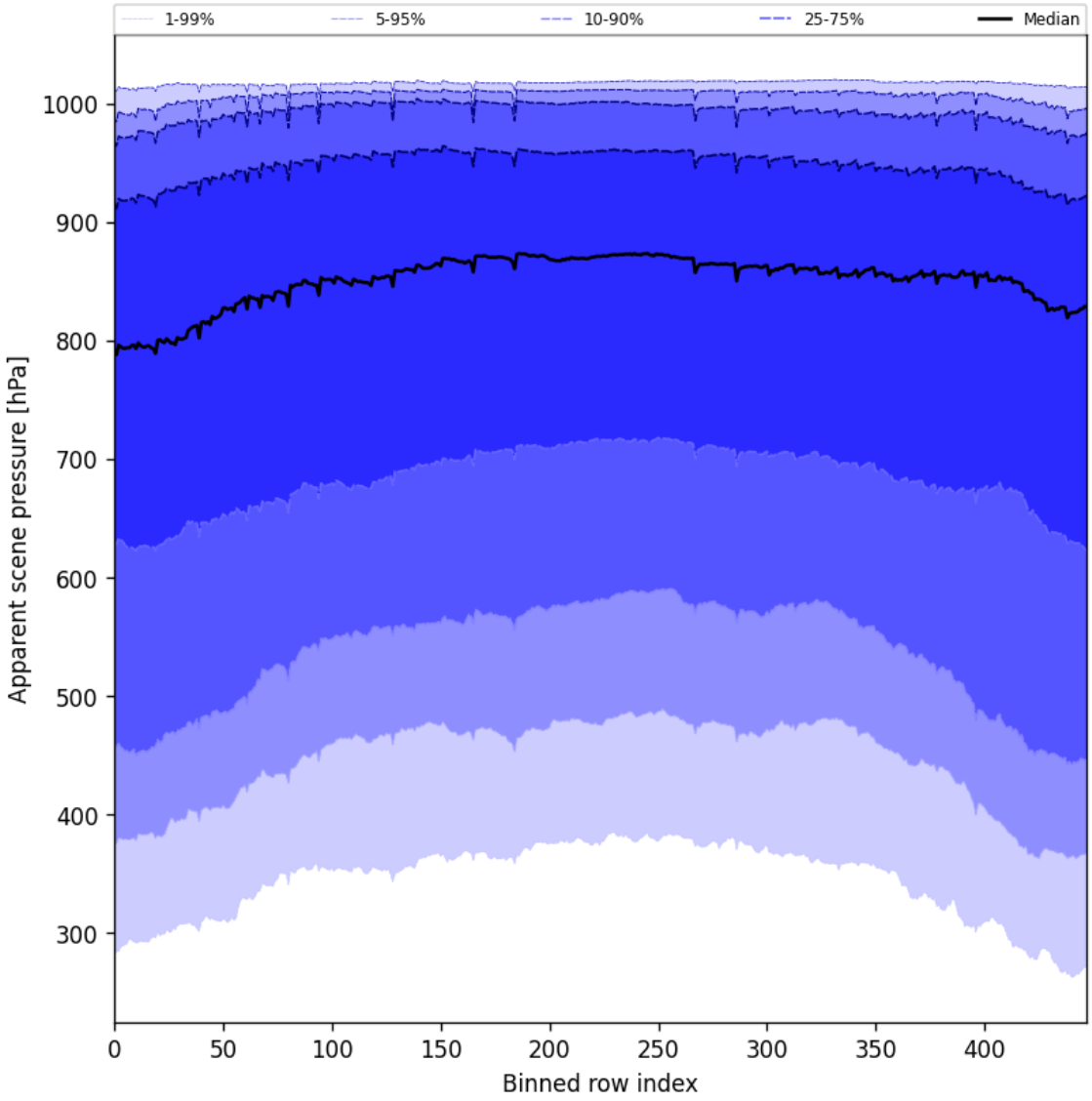

Figure 51: Along track statistics of “Apparent scene pressure” for 2024-12-20 to 2024-12-20

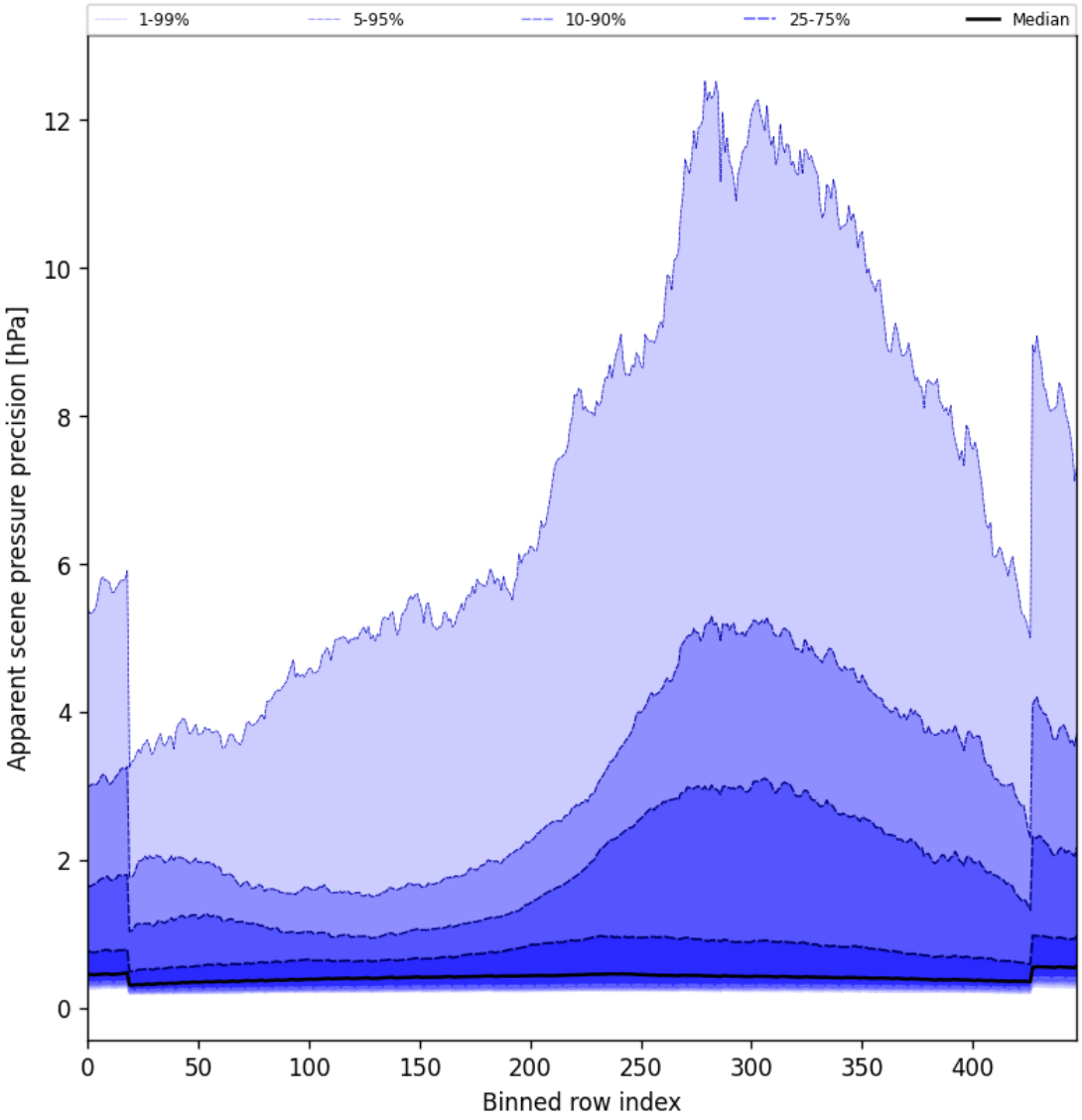

Figure 52: Along track statistics of “Apparent scene pressure precision” for 2024-12-20 to 2024-12-20

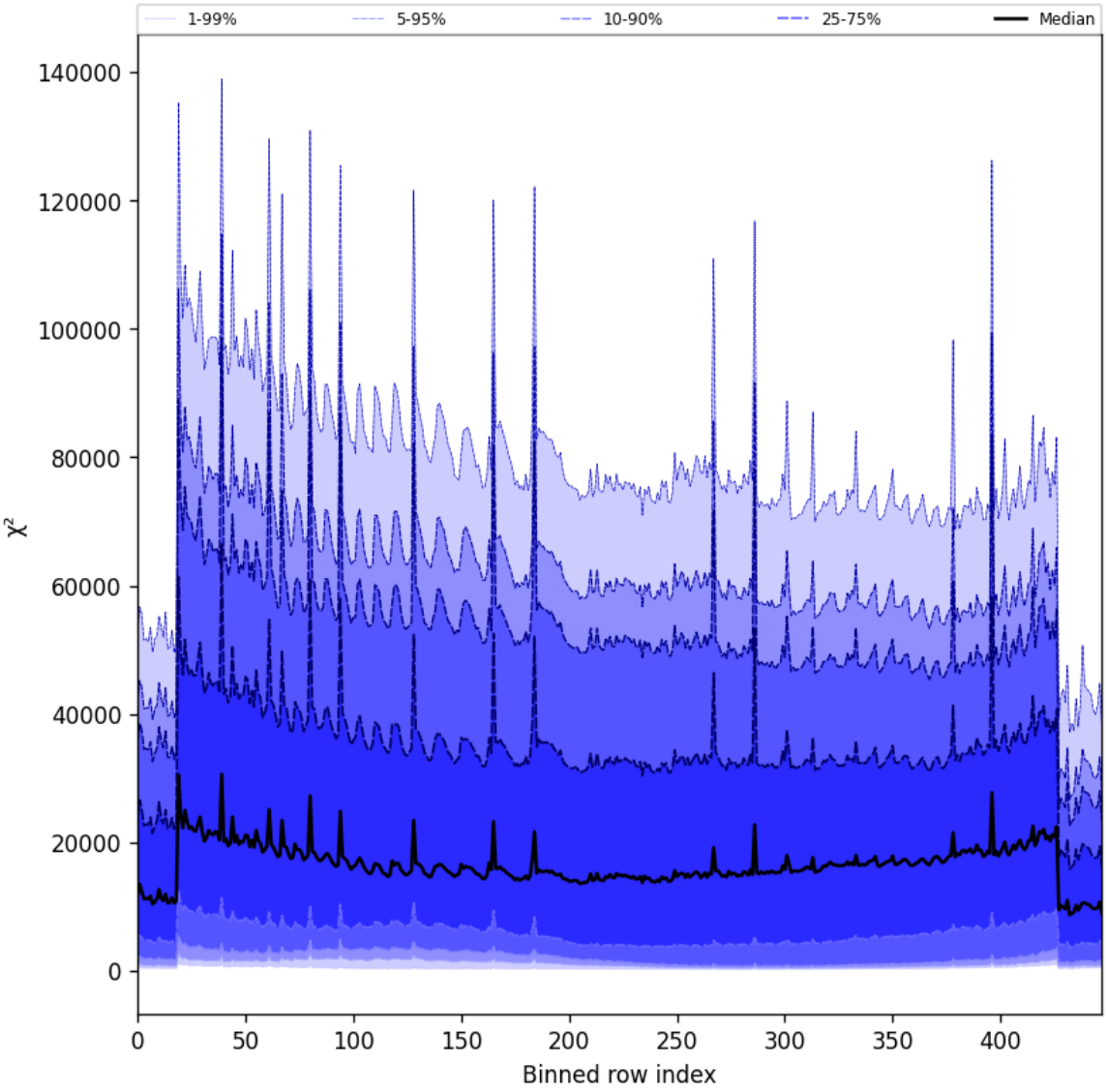

Figure 53: Along track statistics of "χ^2" for 2024-12-20 to 2024-12-20

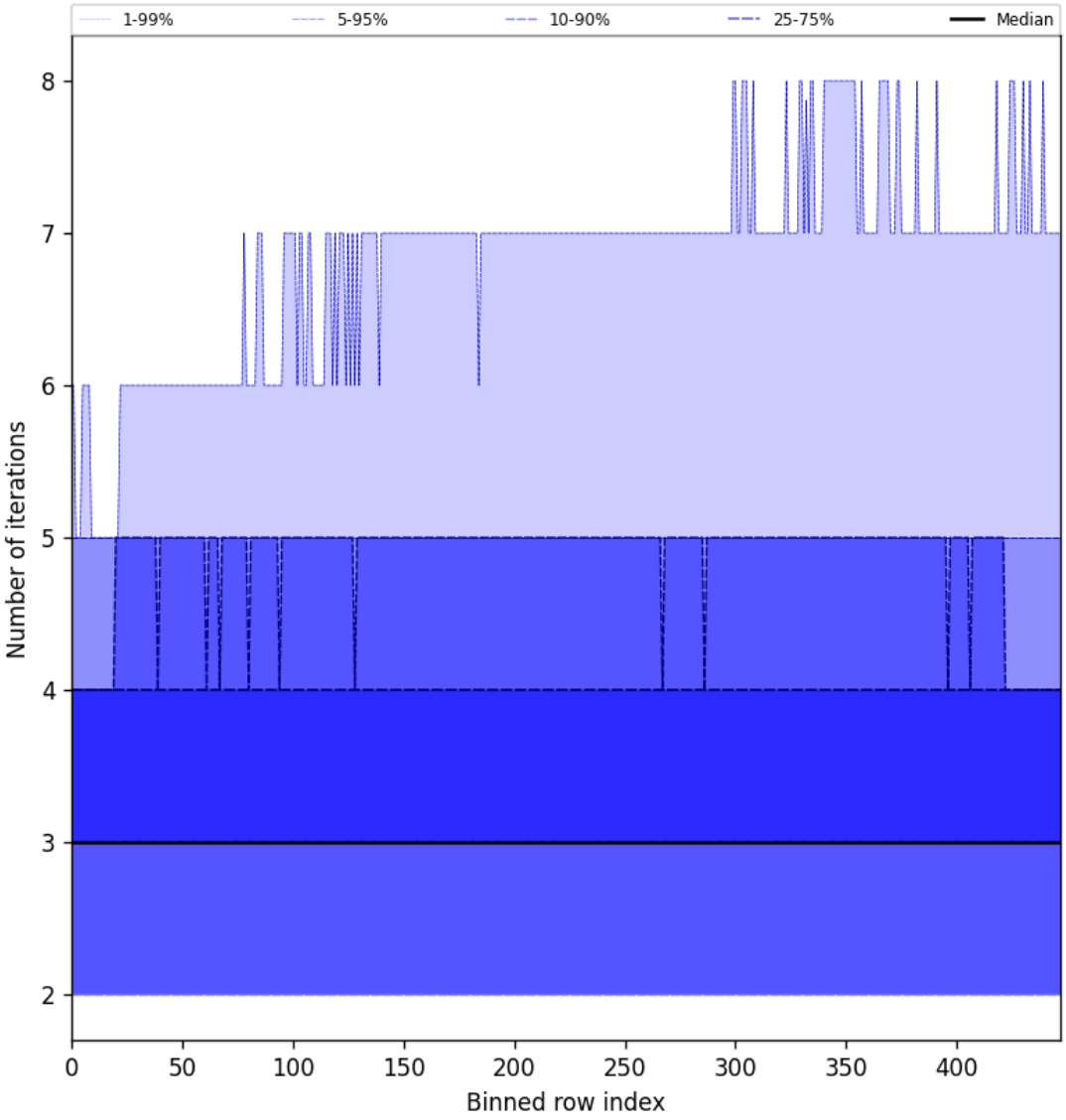

Figure 54: Along track statistics of “Number of iterations” for 2024-12-20 to 2024-12-20

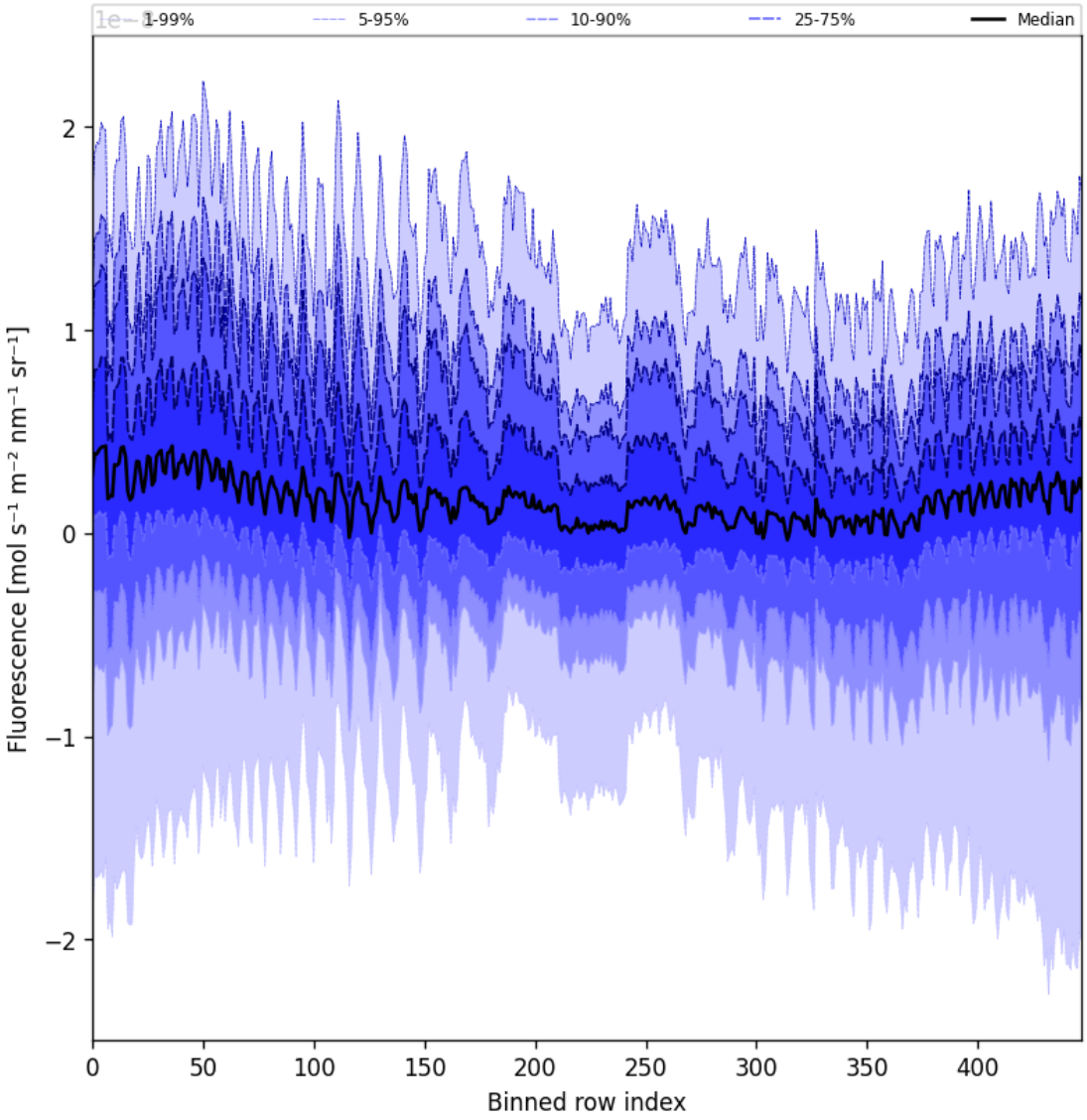

Figure 55: Along track statistics of “Fluorescence” for 2024-12-20 to 2024-12-20

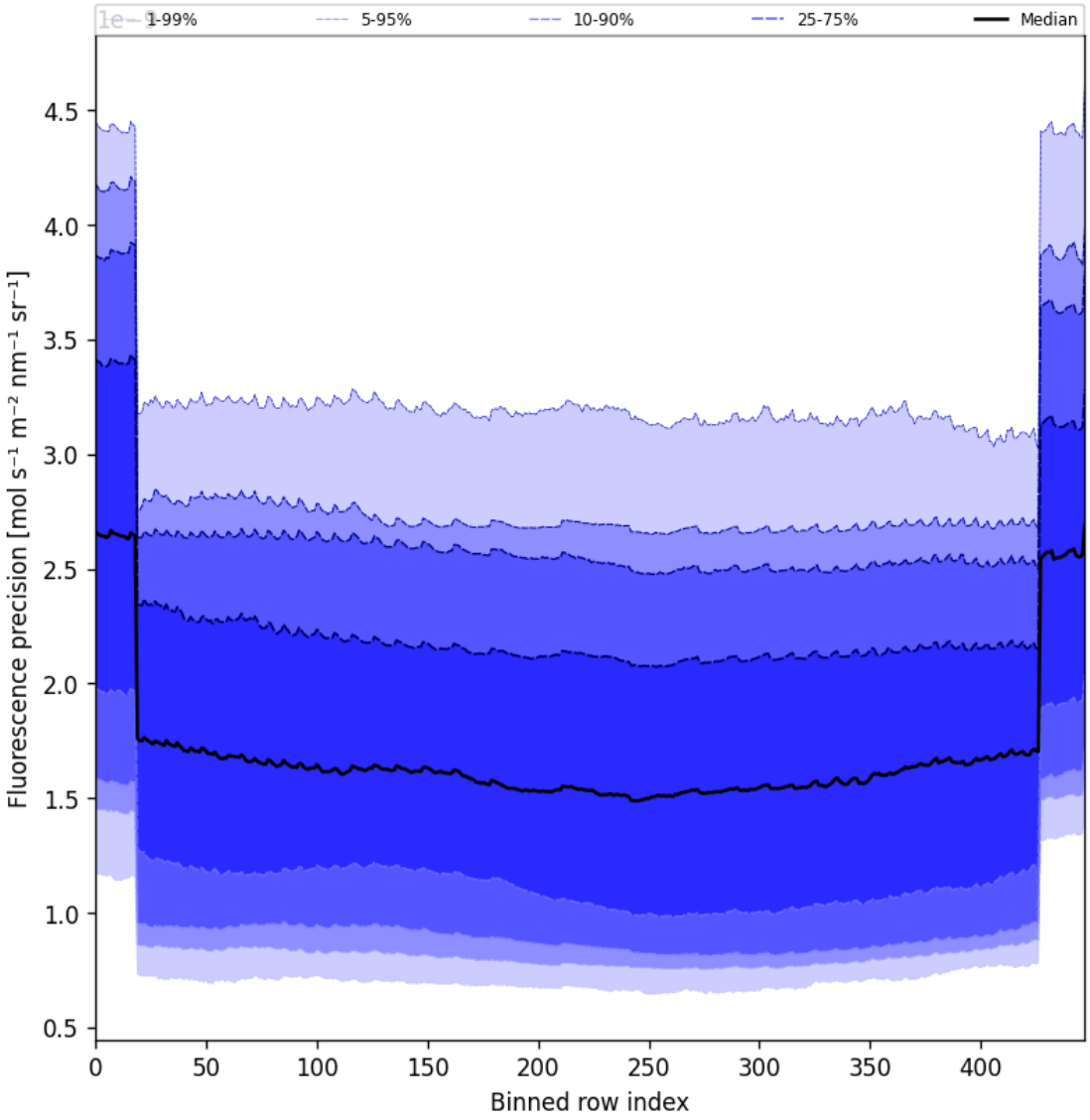

Figure 56: Along track statistics of “Fluorescence precision” for 2024-12-20 to 2024-12-20

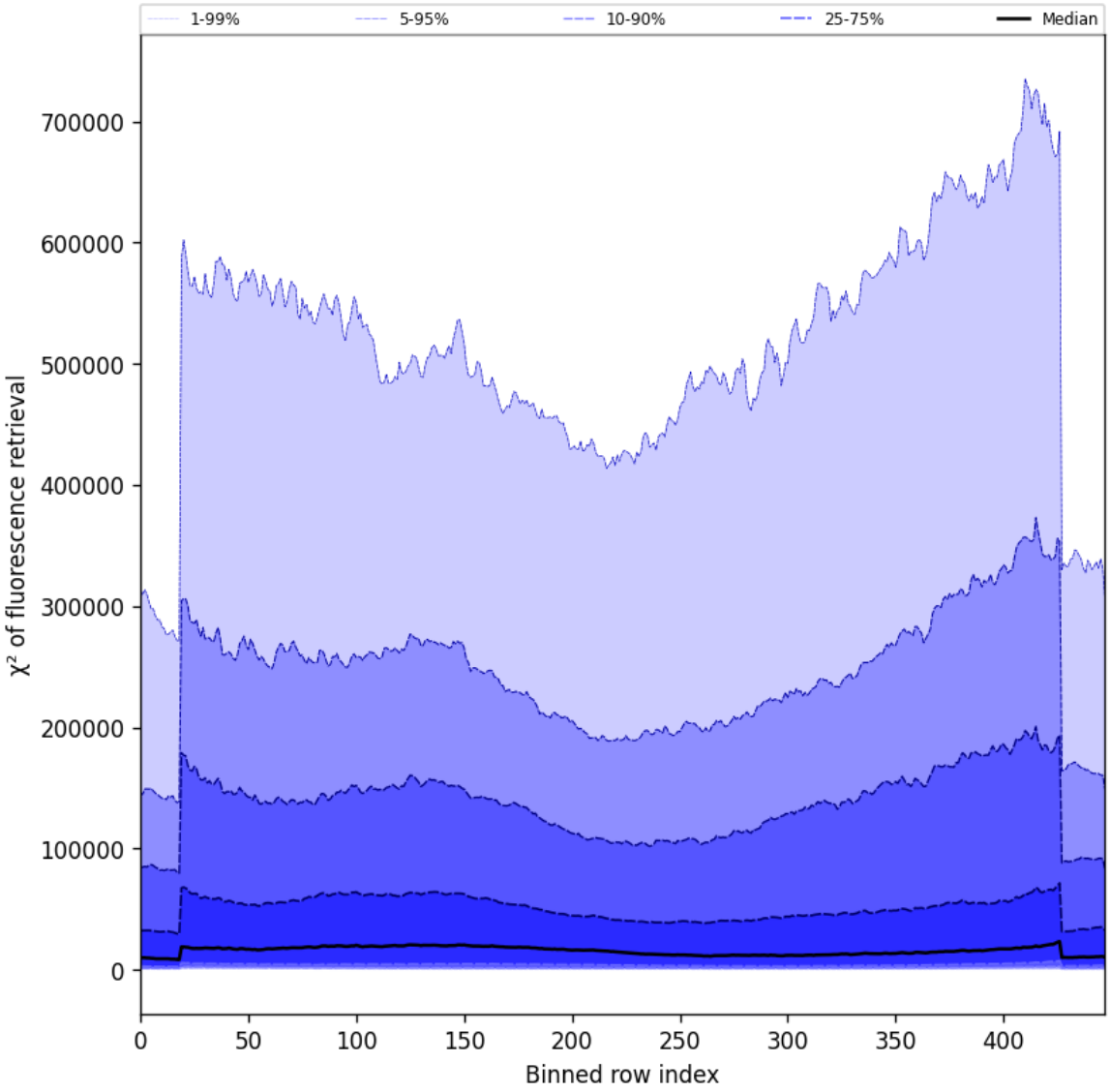

Figure 57: Along track statistics of "χ^2 of fluorescence retrieval" for 2024-12-20 to 2024-12-20

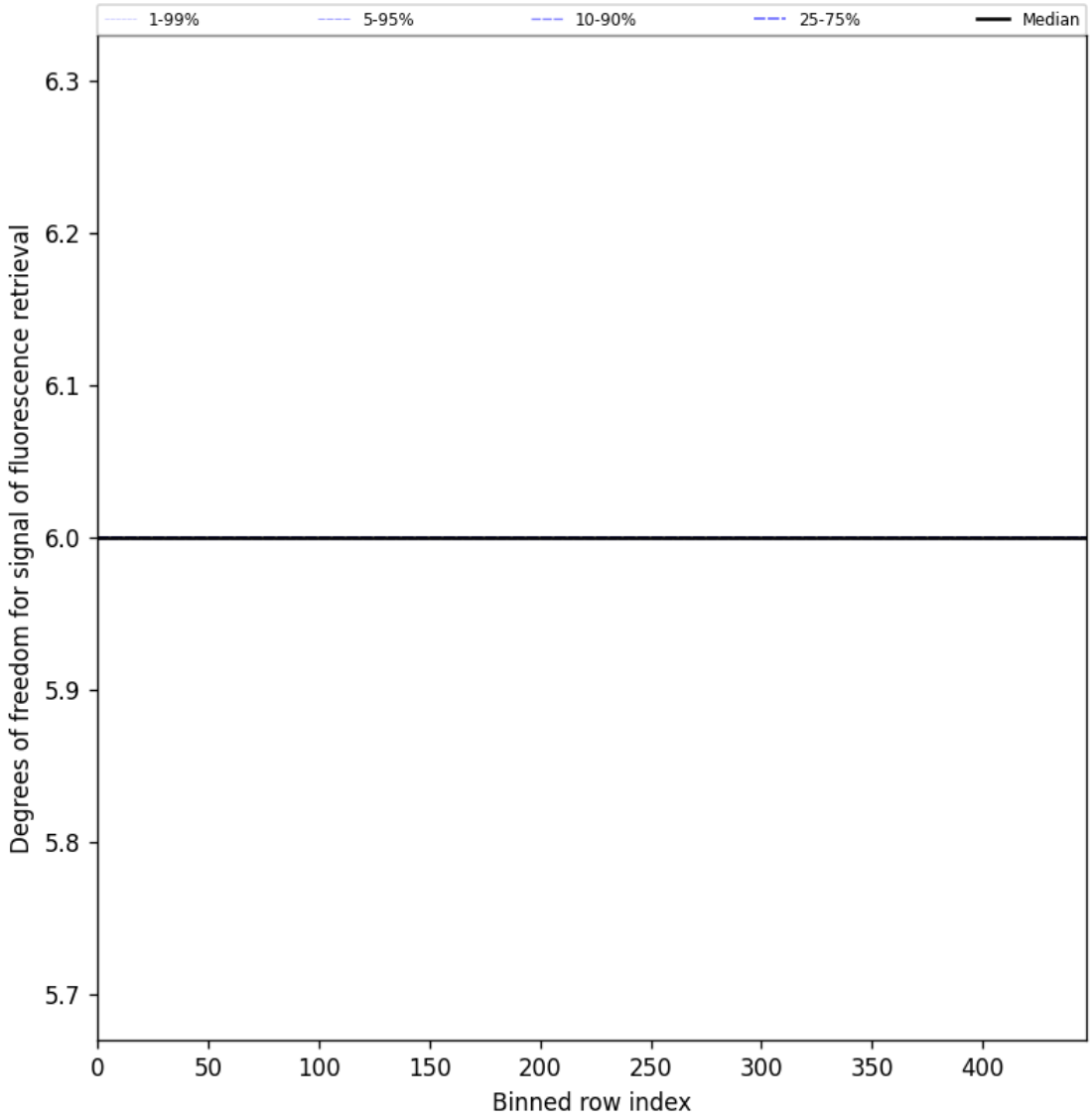

Figure 58: Along track statistics of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-20 to 2024-12-20

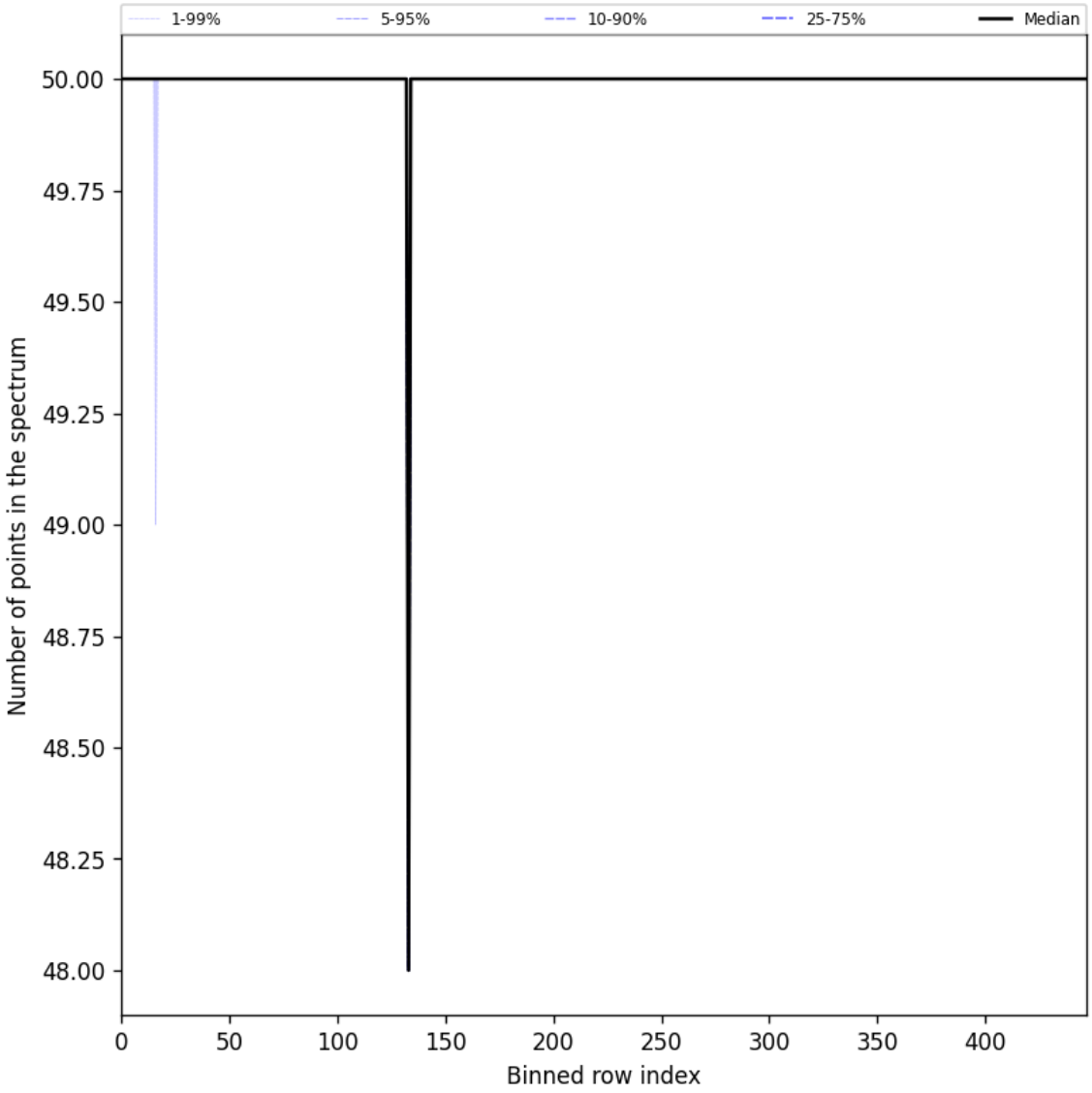

Figure 59: Along track statistics of “Number of points in the spectrum” for 2024-12-20 to 2024-12-20

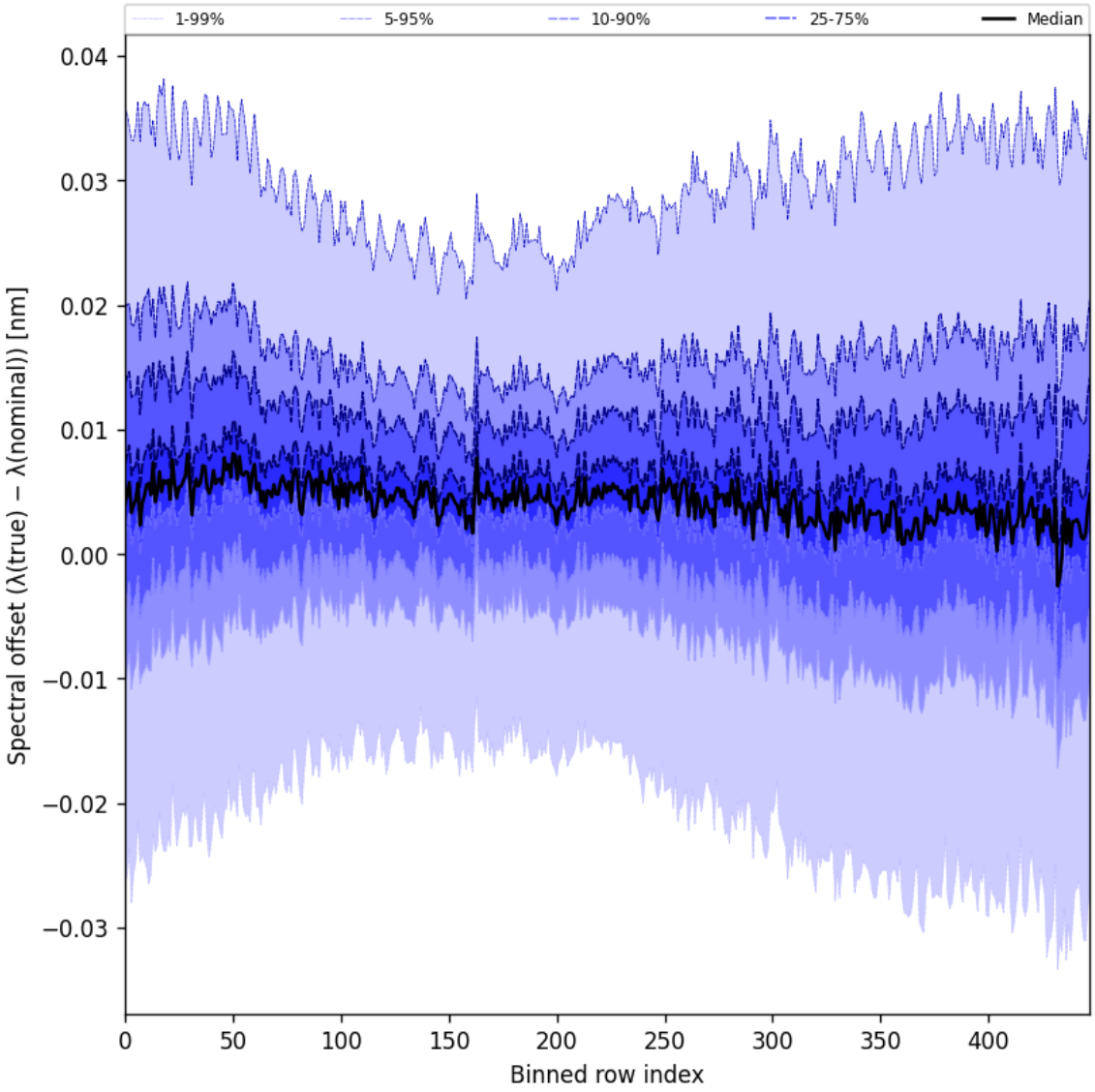

Figure 60: Along track statistics of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-12-20 to 2024-12-20

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.

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