

PyCAMA report generated by tropl2-proc

tropl2-proc

2024-12-11 (02:15)

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]	0.905 ± 0.186	23401340	0.995	0.1000	1.000	0.350	1.000
cloud pressure crb [hPa]	771 ± 199	23401340	1.005×10^3	296	824	130	1.075×10^3
cloud pressure crb precision [hPa]	2.30 ± 9.22	23401340	0.750	1.06	0.511	1.282×10^{-3}	1.576×10^3
cloud fraction crb [1]	0.500 ± 0.389	23401340	0.996	0.894	0.443	0.0	1.000
cloud fraction crb precision [1]	$(1.652 \pm 6.392) \times 10^{-4}$	23401340	2.500×10^{-4}	5.670×10^{-5}	8.483×10^{-5}	3.291×10^{-9}	0.503
scene albedo [1]	0.482 ± 0.337	23401340	1.500×10^{-2}	0.618	0.466	-4.113×10^{-2}	4.44
scene albedo precision [1]	$(8.374 \pm 9.096) \times 10^{-5}$	23401340	2.500×10^{-4}	6.497×10^{-5}	5.643×10^{-5}	1.053×10^{-5}	1.035×10^{-2}
apparent scene pressure [hPa]	800 ± 178	23401340	1.008×10^3	273	850	130	1.065×10^3
apparent scene pressure precision [hPa]	0.886 ± 1.577	23401340	0.500	0.448	0.412	6.357×10^{-2}	55.9
chi square [1]	$(0.242 \pm 2.336) \times 10^5$	23401340	0.150	2.832×10^4	1.606×10^4	59.2	5.782×10^8
number of iterations [1]	3.39 ± 1.04	23401340	3.23	1.000	3.00	1.000	14.0
fluorescence [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(1.889 \pm 6.192) \times 10^{-9}$	23401340	7.500×10^{-10}	5.341×10^{-9}	1.601×10^{-9}	-1.666×10^{-6}	1.937×10^{-6}
fluorescence precision [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(1.757 \pm 0.718) \times 10^{-9}$	23401340	8.500×10^{-10}	1.070×10^{-9}	1.683×10^{-9}	4.083×10^{-10}	5.681×10^{-9}
chi square fluorescence [1]	$(0.504 \pm 0.986) \times 10^5$	23401340	1.750×10^3	4.465×10^4	1.448×10^4	102	4.527×10^6
degrees of freedom fluorescence [1]	6.00 ± 0.00	23401340	5.95	0.0	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	23401340	49.7	0.0	50.0	43.0	50.0
wavelength calibration offset [nm]	$(4.639 \pm 8.092) \times 10^{-3}$	23401340	4.400×10^{-3}	5.332×10^{-3}	4.636×10^{-3}	-0.144	0.116

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]	248	377	467	554	641	936	970	989	1.006×10^3	1.017×10^3
cloud pressure crb precision [hPa]	0.168	0.227	0.247	0.264	0.298	1.36	2.36	4.04	8.41	31.0
cloud fraction crb [1]	1.200×10^{-3}	1.262×10^{-2}	2.844×10^{-2}	5.237×10^{-2}	0.106	1.000	1.000	1.000	1.000	1.000
cloud fraction crb precision [1]	2.064×10^{-5}	2.417×10^{-5}	2.725×10^{-5}	3.153×10^{-5}	4.330×10^{-5}	1.000×10^{-4}	1.443×10^{-4}	2.606×10^{-4}	6.204×10^{-4}	1.743×10^{-3}
scene albedo [1]	8.955×10^{-3}	2.367×10^{-2}	4.417×10^{-2}	7.846×10^{-2}	0.162	0.779	0.881	0.937	0.990	1.14
scene albedo precision [1]	1.336×10^{-5}	1.591×10^{-5}	1.952×10^{-5}	2.431×10^{-5}	3.298×10^{-5}	9.795×10^{-5}	1.281×10^{-4}	1.686×10^{-4}	2.489×10^{-4}	4.763×10^{-4}
apparent scene pressure [hPa]	335	450	535	607	675	948	978	994	1.009×10^3	1.018×10^3
apparent scene pressure precision [hPa]	0.209	0.234	0.250	0.267	0.296	0.744	1.14	1.78	3.20	8.01
chi square [1]	295	776	1.664×10^3	3.134×10^3	5.856×10^3	3.418×10^4	4.549×10^4	5.490×10^4	6.585×10^4	8.797×10^4
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 [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	-1.392×10^{-8}	-6.113×10^{-9}	-3.475×10^{-9}	-2.042×10^{-9}	-7.584×10^{-10}	4.582×10^{-9}	6.444×10^{-9}	8.245×10^{-9}	1.079×10^{-8}	1.613×10^{-8}
fluorescence precision [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	7.017×10^{-10}	8.080×10^{-10}	8.874×10^{-10}	9.802×10^{-10}	1.155×10^{-9}	2.224×10^{-9}	2.522×10^{-9}	2.683×10^{-9}	3.011×10^{-9}	3.745×10^{-9}
chi square fluorescence [1]	436	1.023×10^3	1.620×10^3	2.349×10^3	3.991×10^3	4.864×10^4	8.390×10^4	1.324×10^5	2.356×10^5	5.088×10^5
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]	-2.143×10^{-2}	-7.174×10^{-3}	-2.432×10^{-3}	3.329×10^{-5}	1.964×10^{-3}	7.296×10^{-3}	9.244×10^{-3}	1.175×10^{-2}	1.654×10^{-2}	3.066×10^{-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]	0.990 ± 0.050	9233912	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	737 ± 224	9233912	380	799	130	1.075×10^3	552	933
cloud pressure crb precision [hPa]	3.30 ± 11.63	9233912	1.75	0.842	2.197×10^{-3}	1.576×10^3	0.423	2.18
cloud fraction crb [1]	0.389 ± 0.349	9233912	0.614	0.275	0.0	1.000	6.961×10^{-2}	0.684
cloud fraction crb precision [1]	$(1.633 \pm 6.669) \times 10^{-4}$	9233912	9.714×10^{-5}	9.589×10^{-5}	1.878×10^{-8}	0.503	5.058×10^{-5}	1.477×10^{-4}
scene albedo [1]	0.409 ± 0.298	9233912	0.473	0.377	-2.516×10^{-3}	3.98	0.150	0.623
scene albedo precision [1]	$(9.429 \pm 10.124) \times 10^{-5}$	9233912	7.362×10^{-5}	5.980×10^{-5}	1.168×10^{-5}	5.136×10^{-3}	3.642×10^{-5}	1.101×10^{-4}
apparent scene pressure [hPa]	780 ± 196	9233912	315	841	130	1.065×10^3	631	947
apparent scene pressure precision [hPa]	1.07 ± 1.77	9233912	0.544	0.520	6.357×10^{-2}	55.9	0.365	0.909
chi square [1]	$(0.138 \pm 0.732) \times 10^5$	9233912	1.518×10^4	1.011×10^4	59.2	5.786×10^7	3.992×10^3	1.917×10^4
number of iterations [1]	3.38 ± 1.05	9233912	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(1.001 \pm 4.414) \times 10^{-9}$	9233912	3.637×10^{-9}	1.105×10^{-9}	-1.043×10^{-6}	1.345×10^{-6}	-6.374×10^{-10}	2.999×10^{-9}
fluorescence precision [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(1.488 \pm 0.615) \times 10^{-9}$	9233912	8.412×10^{-10}	1.376×10^{-9}	4.182×10^{-10}	5.527×10^{-9}	9.927×10^{-10}	1.834×10^{-9}
chi square fluorescence [1]	$(0.437 \pm 0.882) \times 10^5$	9233912	3.898×10^4	1.120×10^4	102	1.643×10^6	3.276×10^3	4.225×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	9233912	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	9233912	0.0	50.0	48.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.741 \pm 8.818) \times 10^{-3}$	9233912	6.453×10^{-3}	4.634×10^{-3}	-8.112×10^{-2}	8.947×10^{-2}	1.453×10^{-3}	7.906×10^{-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]	0.850 ± 0.219	14167428	0.500	1.000	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	793 ± 178	14167428	266	838	130	1.032×10^3	672	938
cloud pressure crb precision [hPa]	1.64 ± 7.14	14167428	0.644	0.373	1.282×10^{-3}	966	0.269	0.913
cloud fraction crb [1]	0.572 ± 0.397	14167428	0.855	0.617	0.0	1.000	0.145	1.000
cloud fraction crb precision [1]	$(1.665 \pm 6.205) \times 10^{-4}$	14167428	6.037×10^{-5}	7.532×10^{-5}	3.291×10^{-9}	0.122	3.963×10^{-5}	1.000×10^{-4}
scene albedo [1]	0.530 ± 0.352	14167428	0.685	0.565	-4.113×10^{-2}	4.44	0.172	0.857
scene albedo precision [1]	$(7.685 \pm 8.286) \times 10^{-5}$	14167428	6.127×10^{-5}	5.446×10^{-5}	1.053×10^{-5}	1.035×10^{-2}	3.075×10^{-5}	9.203×10^{-5}
apparent scene pressure [hPa]	813 ± 163	14167428	257	856	130	1.032×10^3	692	949
apparent scene pressure precision [hPa]	0.769 ± 1.426	14167428	0.359	0.351	0.118	55.6	0.273	0.632
chi square [1]	$(0.311 \pm 2.941) \times 10^5$	14167428	3.693×10^4	2.435×10^4	81.9	5.782×10^8	8.270×10^3	4.520×10^4
number of iterations [1]	3.41 ± 1.03	14167428	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s ⁻¹ m ⁻² nm ⁻¹ sr ⁻¹]	$(2.467 \pm 7.056) \times 10^{-9}$	14167428	6.731×10^{-9}	2.217×10^{-9}	-1.666×10^{-6}	1.937×10^{-6}	-8.608×10^{-10}	5.870×10^{-9}
fluorescence precision [mol s ⁻¹ m ⁻² nm ⁻¹ sr ⁻¹]	$(1.933 \pm 0.726) \times 10^{-9}$	14167428	1.126×10^{-9}	1.951×10^{-9}	4.083×10^{-10}	5.681×10^{-9}	1.327×10^{-9}	2.454×10^{-9}
chi square fluorescence [1]	$(0.548 \pm 1.046) \times 10^5$	14167428	4.790×10^4	1.696×10^4	111	4.527×10^6	4.588×10^3	5.249×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	14167428	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	14167428	0.0	50.0	43.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.573 \pm 7.581) \times 10^{-3}$	14167428	4.721×10^{-3}	4.637×10^{-3}	-0.144	0.116	2.250×10^{-3}	6.971×10^{-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]	0.979 ± 0.059	14476585	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	803 ± 198	14476585	271	876	130	1.075×10^3	685	956
cloud pressure crb precision [hPa]	2.31 ± 9.51	14476585	1.07	0.578	1.282×10^{-3}	1.576×10^3	0.327	1.40
cloud fraction crb [1]	0.410 ± 0.350	14476585	0.643	0.314	0.0	1.000	8.201×10^{-2}	0.725
cloud fraction crb precision [1]	$(1.069 \pm 4.757) \times 10^{-4}$	14476585	6.881×10^{-5}	5.402×10^{-5}	9.732×10^{-9}	0.122	3.119×10^{-5}	1.000×10^{-4}
scene albedo [1]	0.360 ± 0.304	14476585	0.545	0.282	-4.113×10^{-2}	4.44	7.626×10^{-2}	0.621
scene albedo precision [1]	$(6.411 \pm 8.042) \times 10^{-5}$	14476585	4.481×10^{-5}	4.431×10^{-5}	1.053×10^{-5}	1.035×10^{-2}	2.411×10^{-5}	6.892×10^{-5}
apparent scene pressure [hPa]	822 ± 187	14476585	248	887	130	1.044×10^3	721	969
apparent scene pressure precision [hPa]	1.18 ± 1.94	14476585	0.828	0.523	6.850×10^{-2}	55.9	0.315	1.14
chi square [1]	$(0.195 \pm 2.641) \times 10^5$	14476585	2.481×10^4	1.020×10^4	59.2	5.782×10^8	3.198×10^3	2.801×10^4
number of iterations [1]	3.01 ± 0.82	14476585	0.0	3.00	1.000	14.0	3.00	3.00
fluorescence [mol s ⁻¹ m ⁻² nm ⁻¹ sr ⁻¹]	$(9.809 \pm 57.129) \times 10^{-10}$	14476585	4.671×10^{-9}	5.990×10^{-10}	-1.431×10^{-6}	1.580×10^{-6}	-1.397×10^{-9}	3.273×10^{-9}
fluorescence precision [mol s ⁻¹ m ⁻² nm ⁻¹ sr ⁻¹]	$(1.690 \pm 0.752) \times 10^{-9}$	14476585	1.173×10^{-9}	1.531×10^{-9}	4.083×10^{-10}	5.527×10^{-9}	1.042×10^{-9}	2.214×10^{-9}
chi square fluorescence [1]	$(0.491 \pm 0.911) \times 10^5$	14476585	4.596×10^4	1.795×10^4	102	2.285×10^6	5.447×10^3	5.140×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	14476585	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	14476585	0.0	50.0	48.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.587 \pm 9.523) \times 10^{-3}$	14476585	6.630×10^{-3}	4.599×10^{-3}	-0.108	0.116	1.255×10^{-3}	7.885×10^{-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]	0.739 ± 0.253	7220876	0.500	0.500	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	720 ± 183	7220876	240	721	130	1.055×10^3	624	864
cloud pressure crb precision [hPa]	2.11 ± 8.52	7220876	0.854	0.345	2.197×10^{-3}	1.064×10^3	0.262	1.12
cloud fraction crb [1]	0.684 ± 0.402	7220876	0.777	1.000	0.0	1.000	0.223	1.000
cloud fraction crb precision [1]	$(2.658 \pm 8.473) \times 10^{-4}$	7220876	3.567×10^{-5}	1.000×10^{-4}	3.291×10^{-9}	0.503	1.000×10^{-4}	1.357×10^{-4}
scene albedo [1]	0.713 ± 0.283	7220876	0.474	0.803	2.610×10^{-3}	3.98	0.466	0.940
scene albedo precision [1]	$(1.154 \pm 0.929) \times 10^{-4}$	7220876	7.566×10^{-5}	9.228×10^{-5}	1.293×10^{-5}	4.298×10^{-3}	5.727×10^{-5}	1.329×10^{-4}
apparent scene pressure [hPa]	760 ± 150	7220876	241	755	130	1.049×10^3	650	891
apparent scene pressure precision [hPa]	0.383 ± 0.177	7220876	0.165	0.331	6.357×10^{-2}	26.1	0.272	0.437
chi square [1]	$(0.342 \pm 1.503) \times 10^5$	7220876	3.099×10^4	2.702×10^4	256	2.779×10^8	1.463×10^4	4.563×10^4
number of iterations [1]	4.07 ± 1.01	7220876	0.0	4.00	1.000	14.0	4.00	4.00
fluorescence [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(3.667 \pm 6.505) \times 10^{-9}$	7220876	5.015×10^{-9}	3.441×10^{-9}	-1.448×10^{-6}	1.937×10^{-6}	1.279×10^{-9}	6.294×10^{-9}
fluorescence precision [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(1.903 \pm 0.629) \times 10^{-9}$	7220876	8.354×10^{-10}	1.876×10^{-9}	4.722×10^{-10}	5.681×10^{-9}	1.439×10^{-9}	2.275×10^{-9}
chi square fluorescence [1]	$(0.461 \pm 1.009) \times 10^5$	7220876	3.188×10^4	7.423×10^3	133	4.527×10^6	2.571×10^3	3.445×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	7220876	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	7220876	0.0	50.0	45.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.684 \pm 4.318) \times 10^{-3}$	7220876	3.568×10^{-3}	4.659×10^{-3}	-0.144	7.411×10^{-2}	2.885×10^{-3}	6.454×10^{-3}

3 Granule outlines

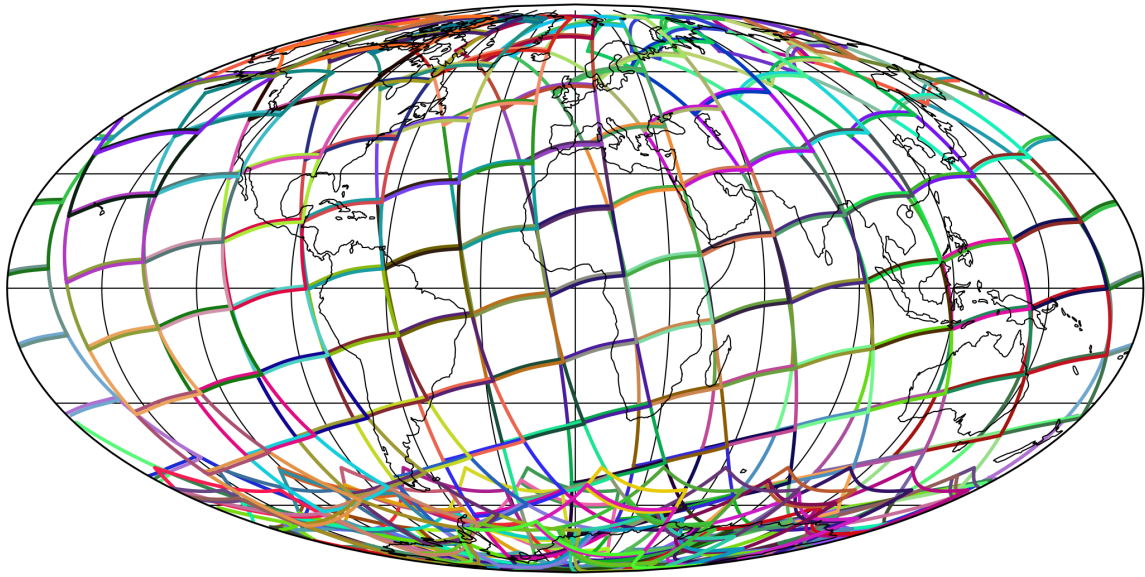


Figure 1: Outline of the granules.

4 Input data monitoring

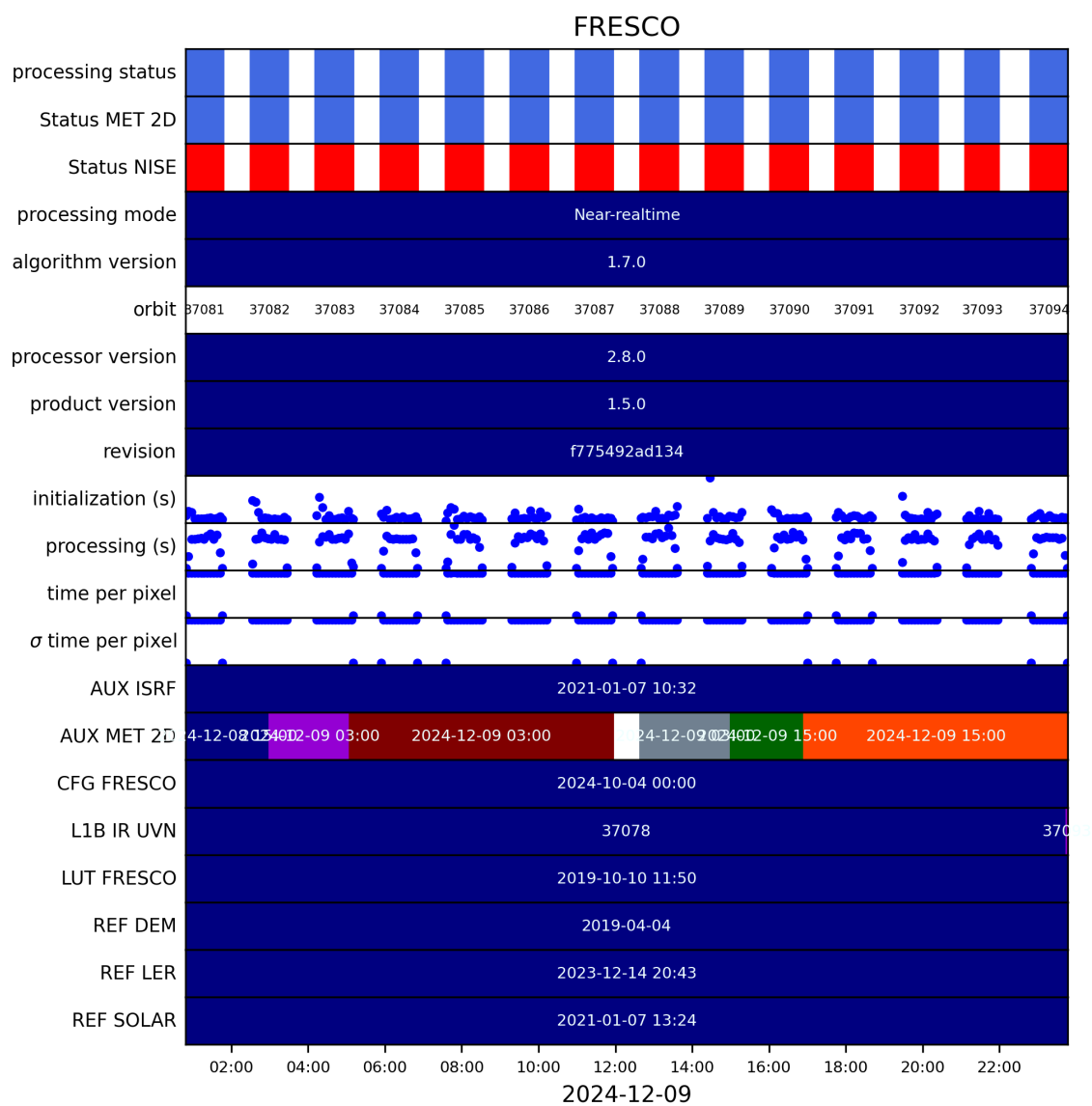


Figure 2: Input data per granule

5 Warnings and errors

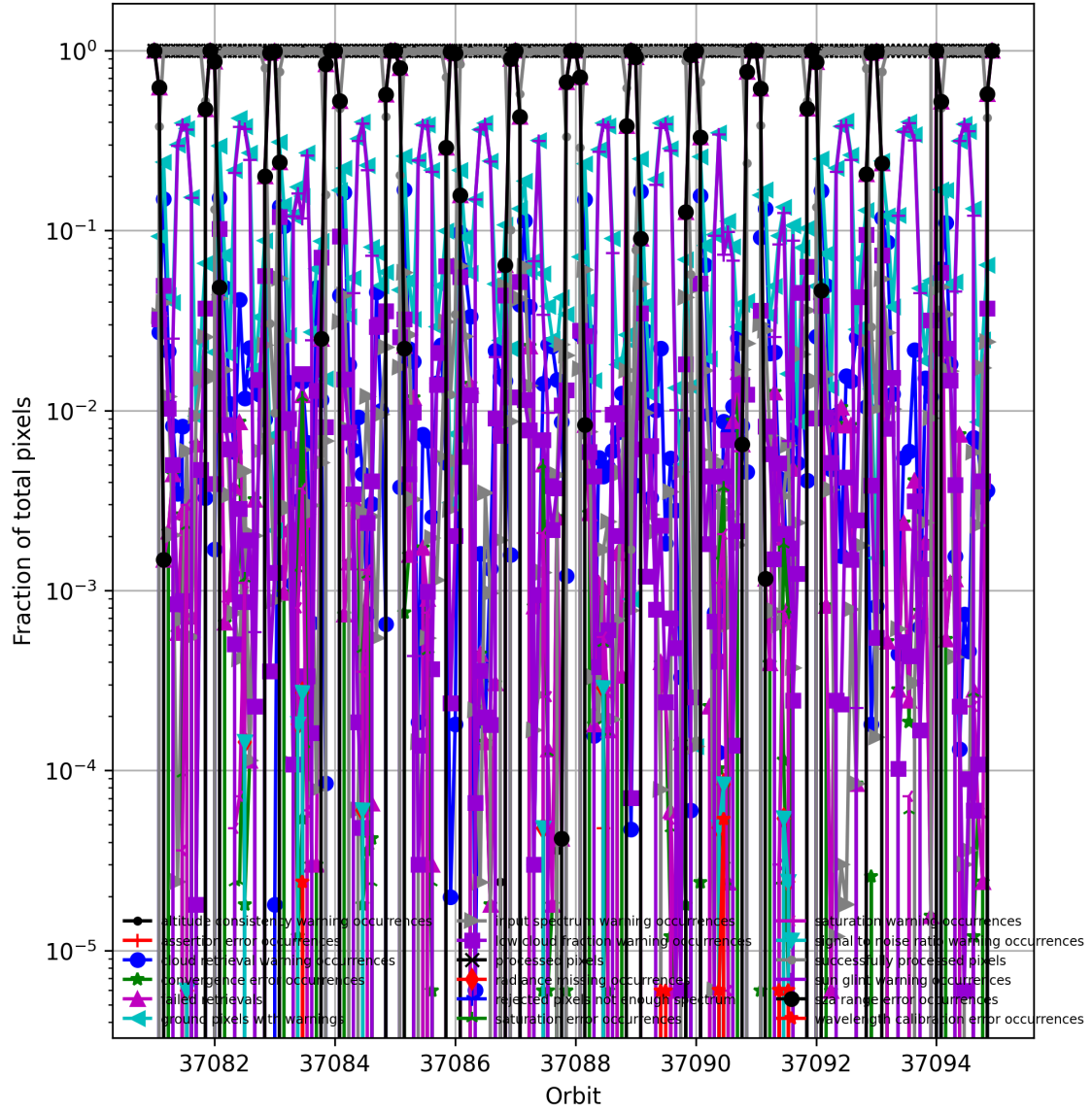


Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

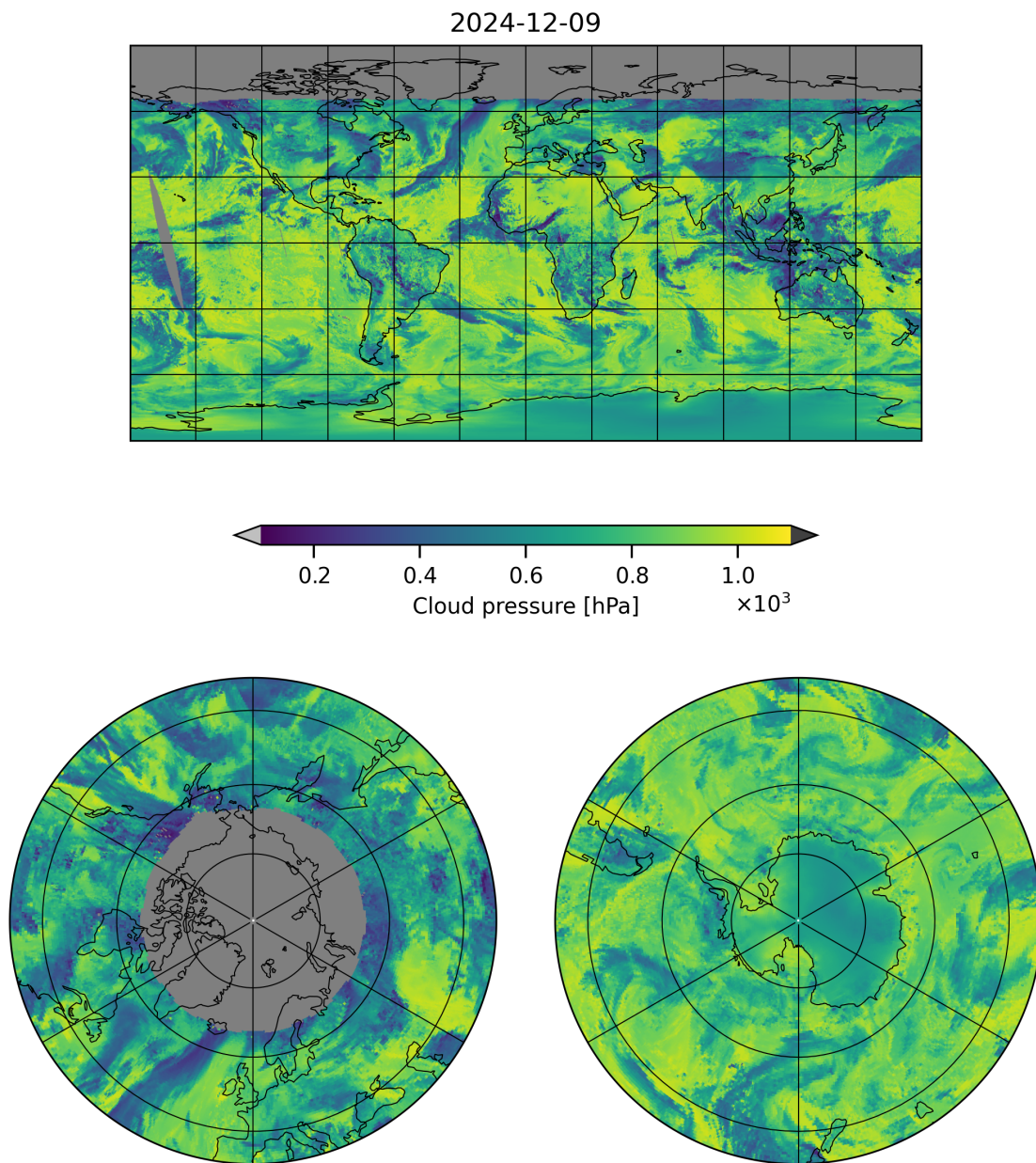


Figure 4: Map of “Cloud pressure” for 2024-12-09 to 2024-12-09

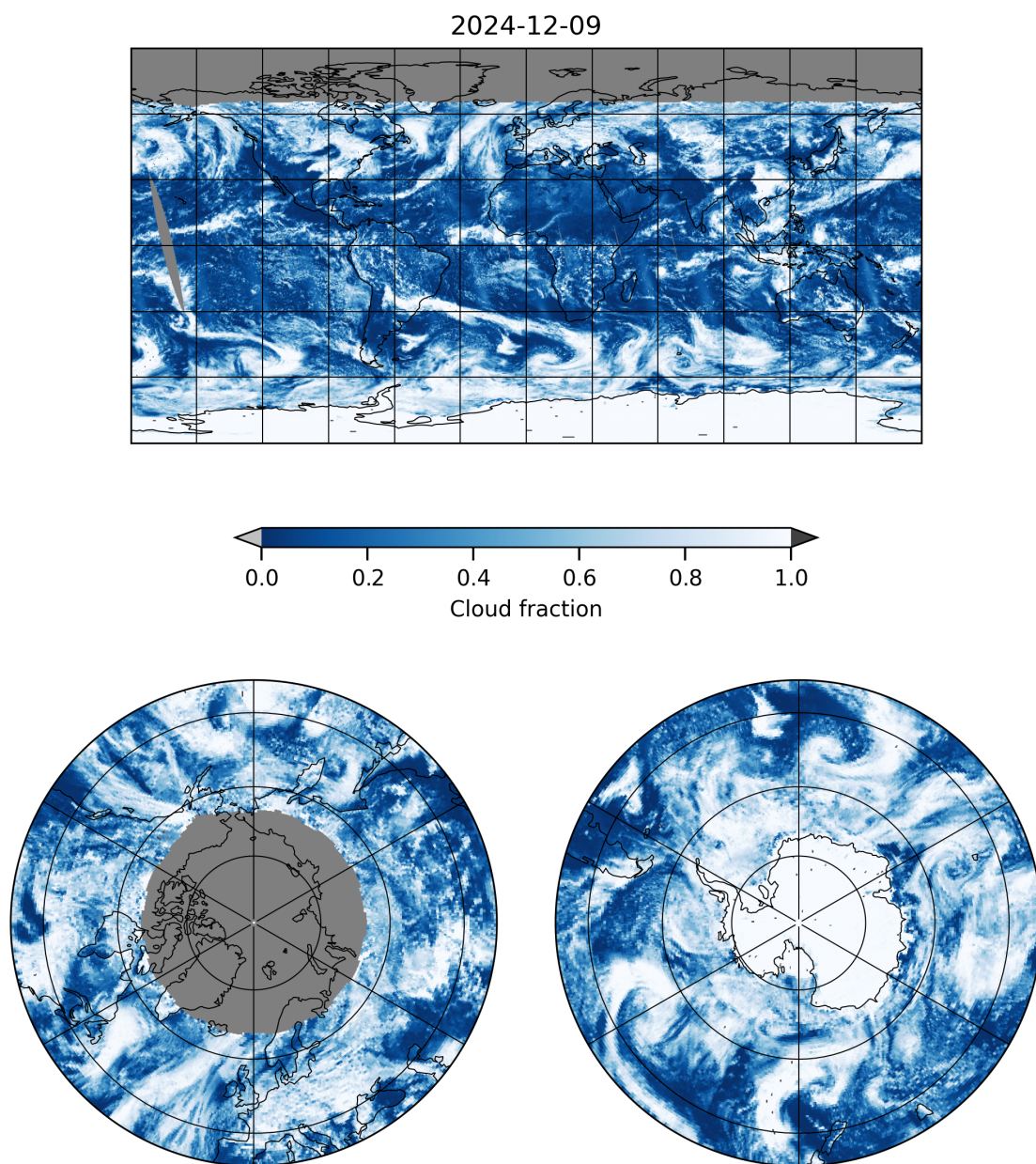


Figure 5: Map of “Cloud fraction” for 2024-12-09 to 2024-12-09

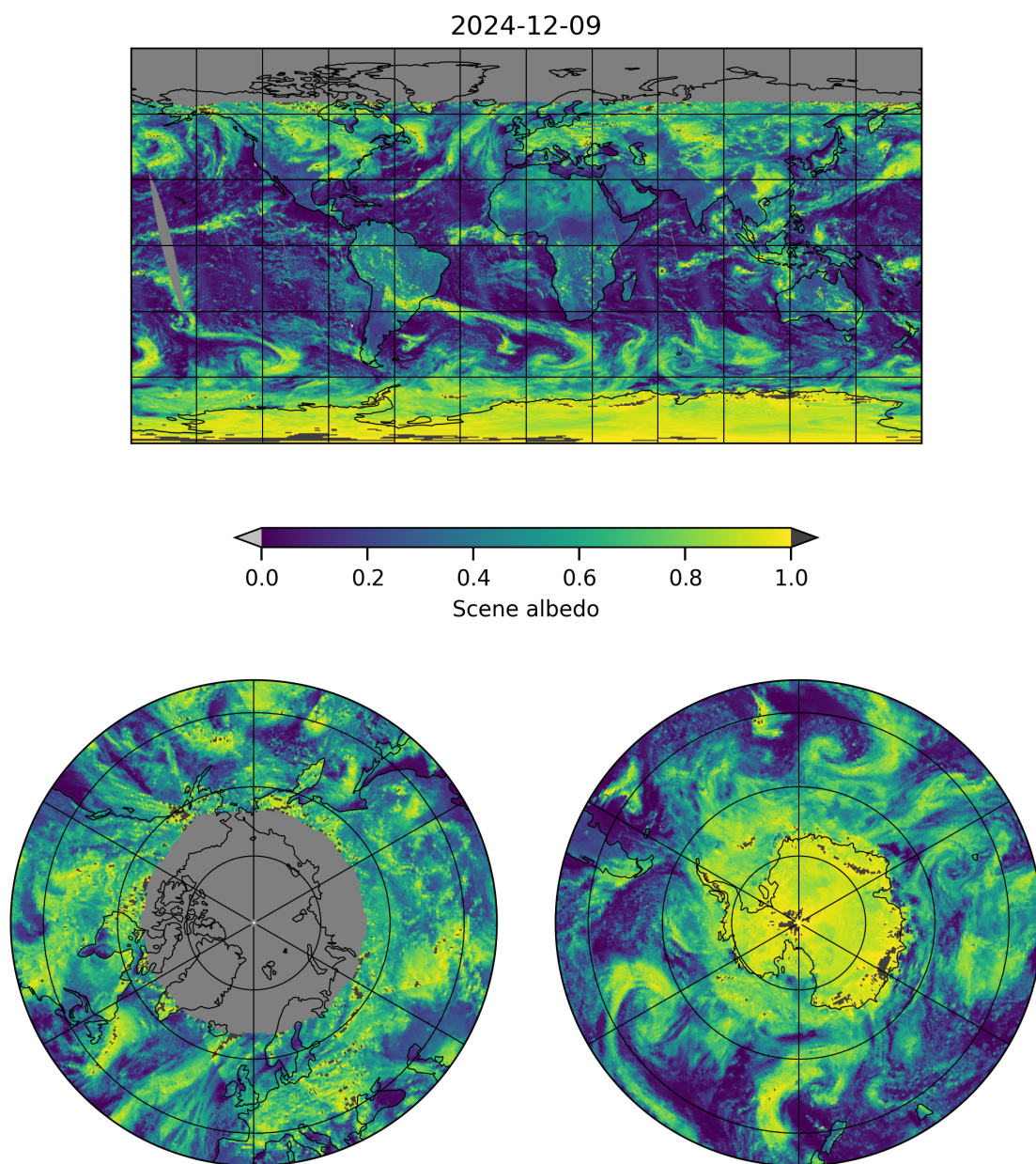


Figure 6: Map of “Scene albedo” for 2024-12-09 to 2024-12-09

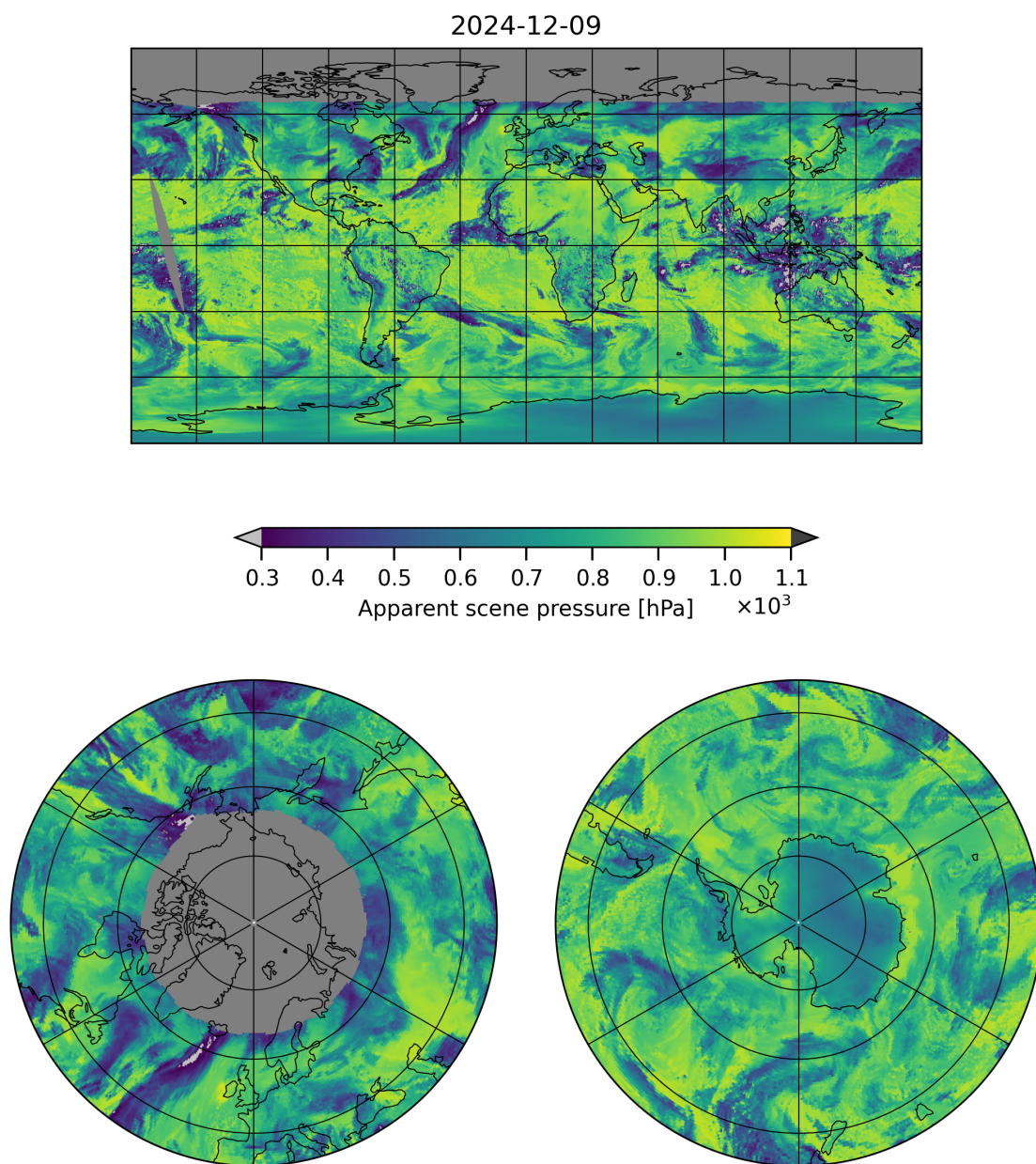


Figure 7: Map of “Apparent scene pressure” for 2024-12-09 to 2024-12-09

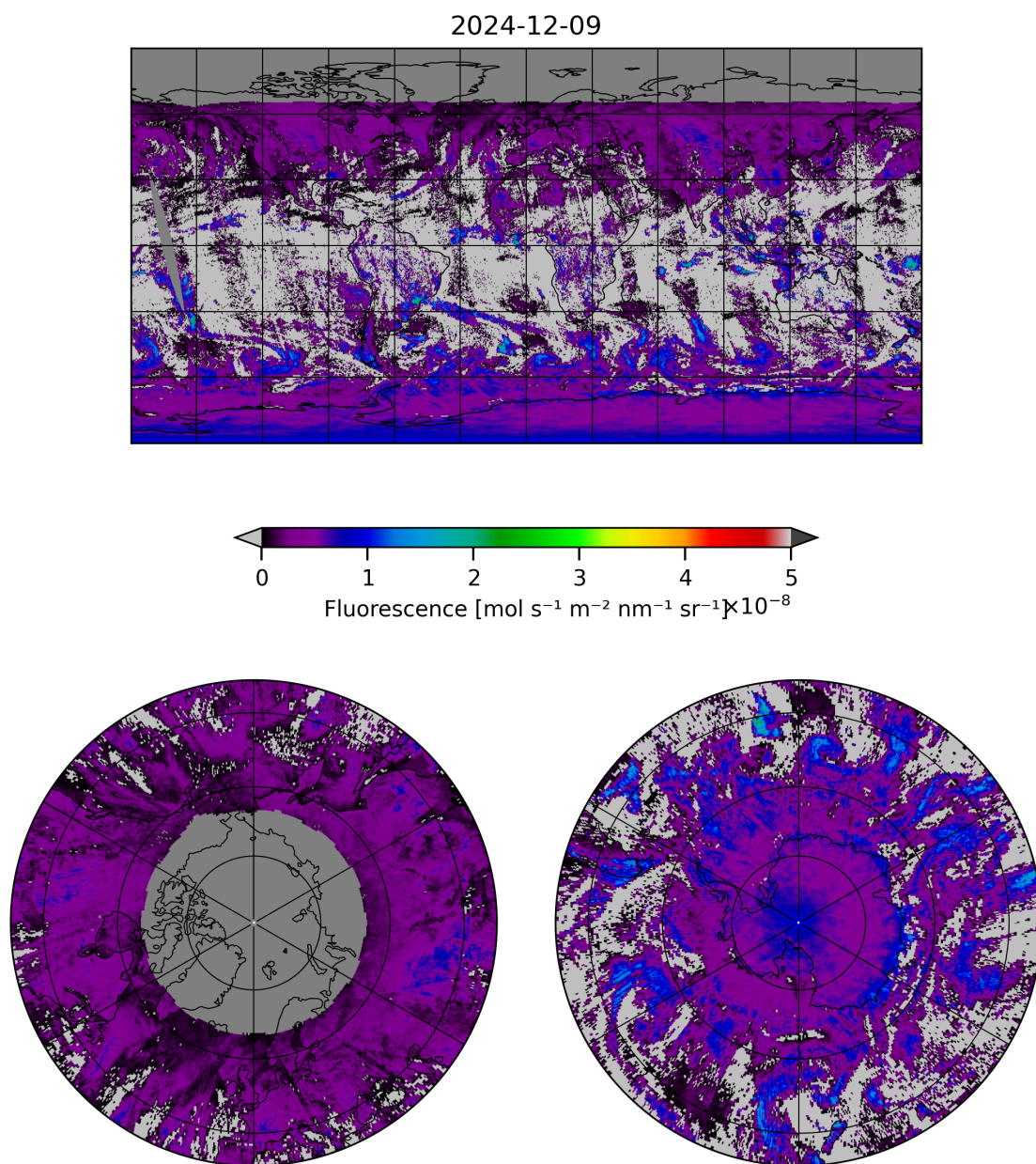


Figure 8: Map of “Fluorescence” for 2024-12-09 to 2024-12-09

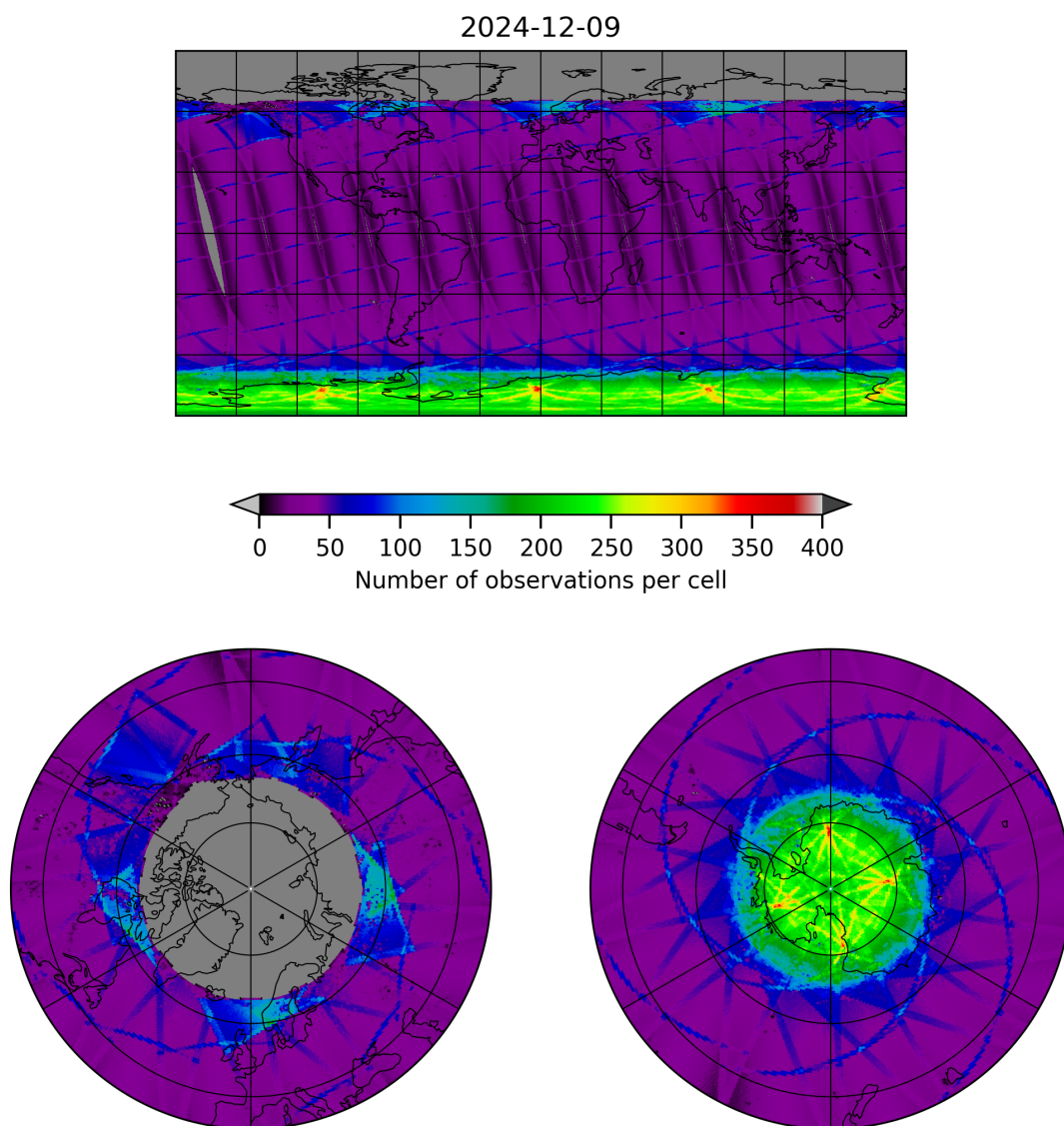


Figure 9: Map of the number of observations for 2024-12-09 to 2024-12-09

7 Zonal average

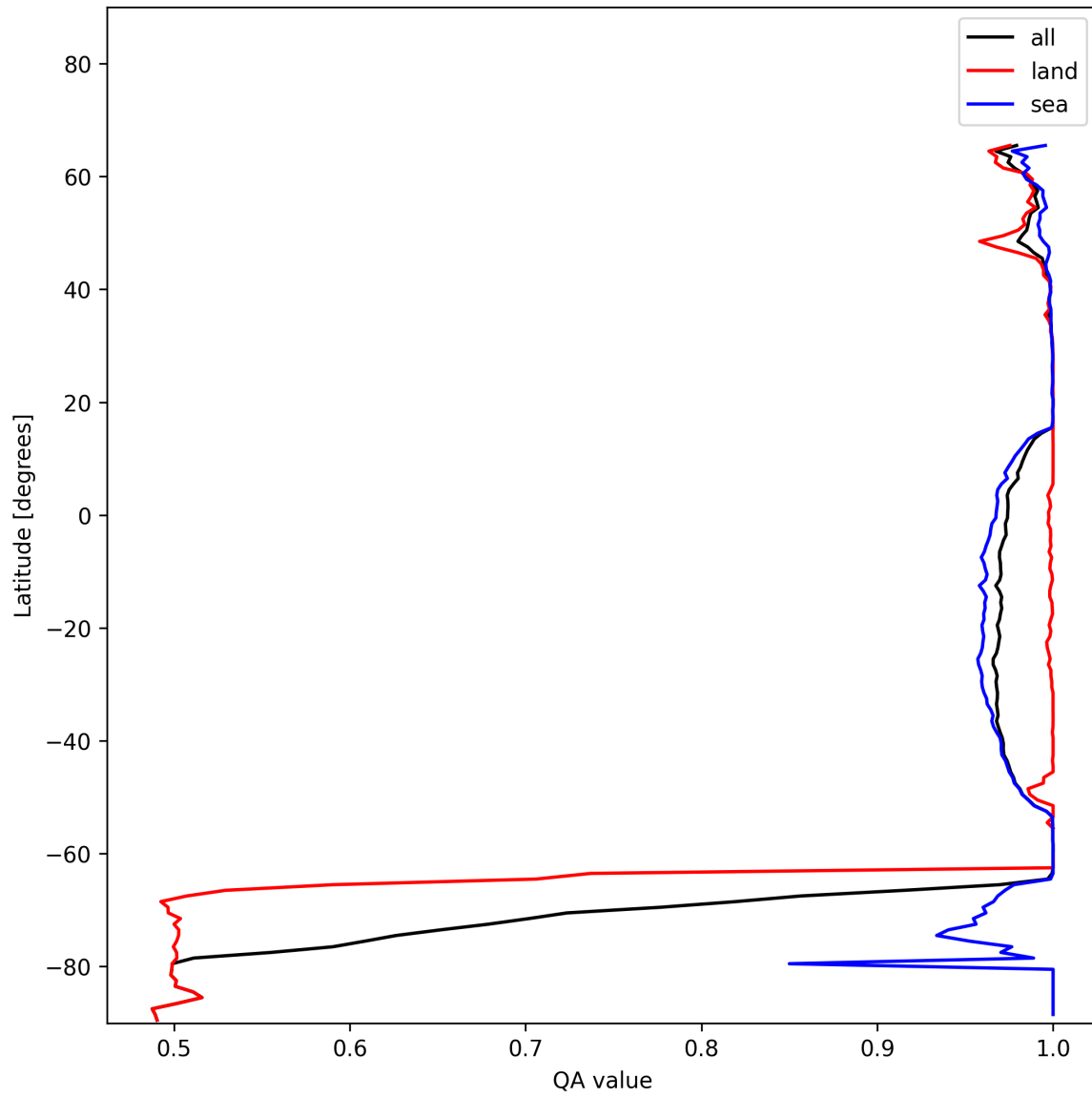


Figure 10: Zonal average of “QA value” for 2024-12-09 to 2024-12-09.

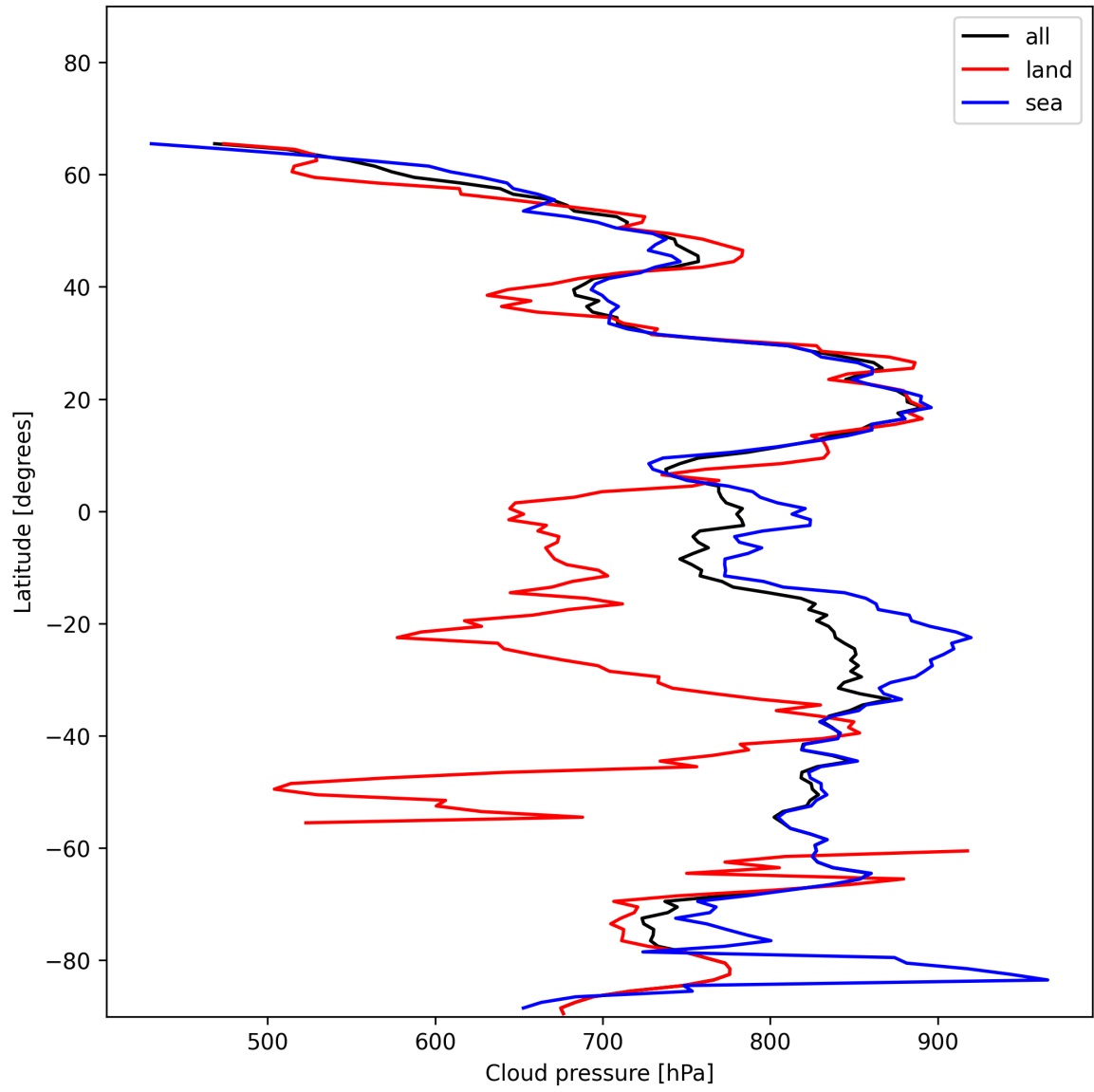


Figure 11: Zonal average of “Cloud pressure” for 2024-12-09 to 2024-12-09.

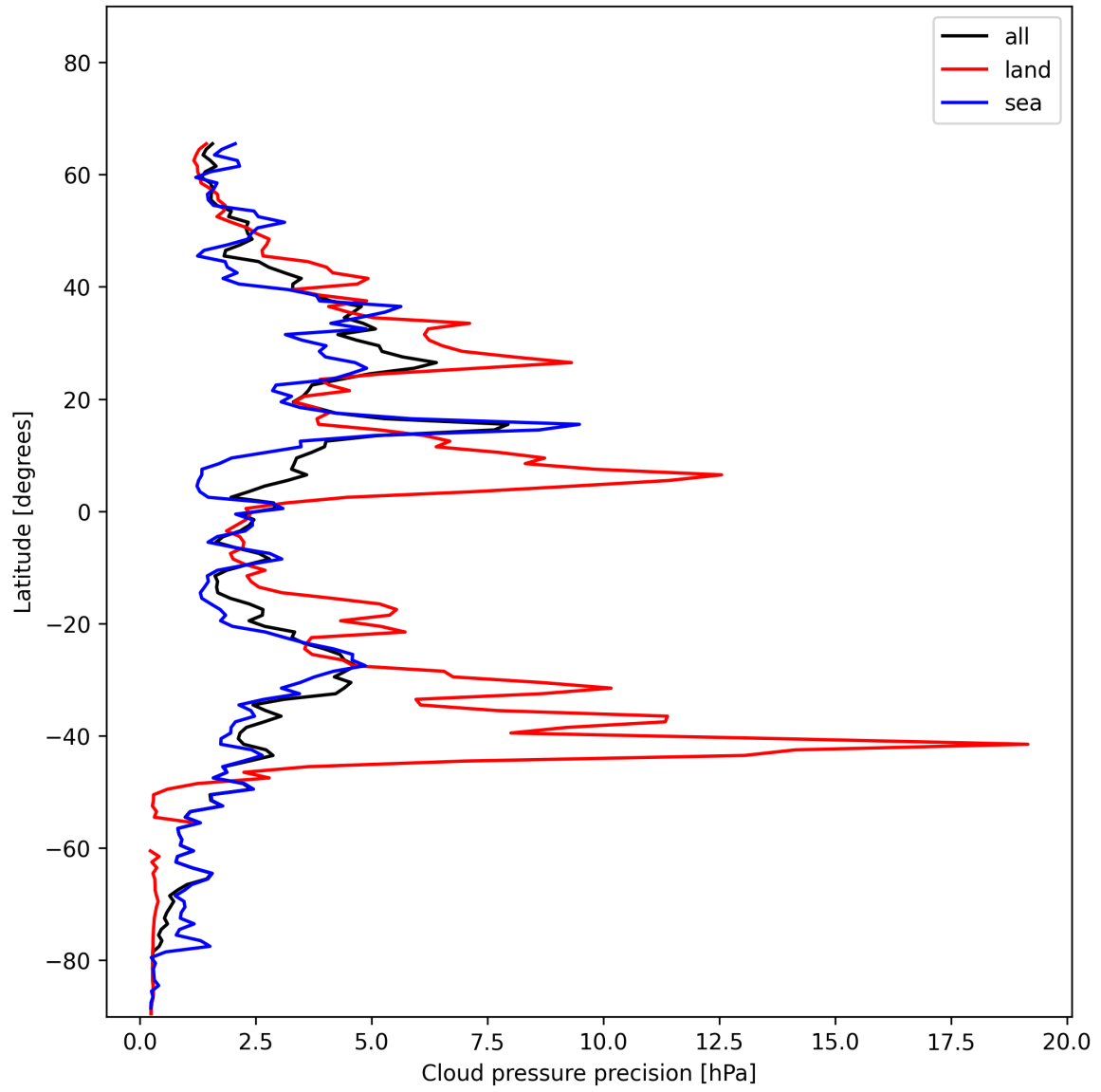


Figure 12: Zonal average of “Cloud pressure precision” for 2024-12-09 to 2024-12-09.

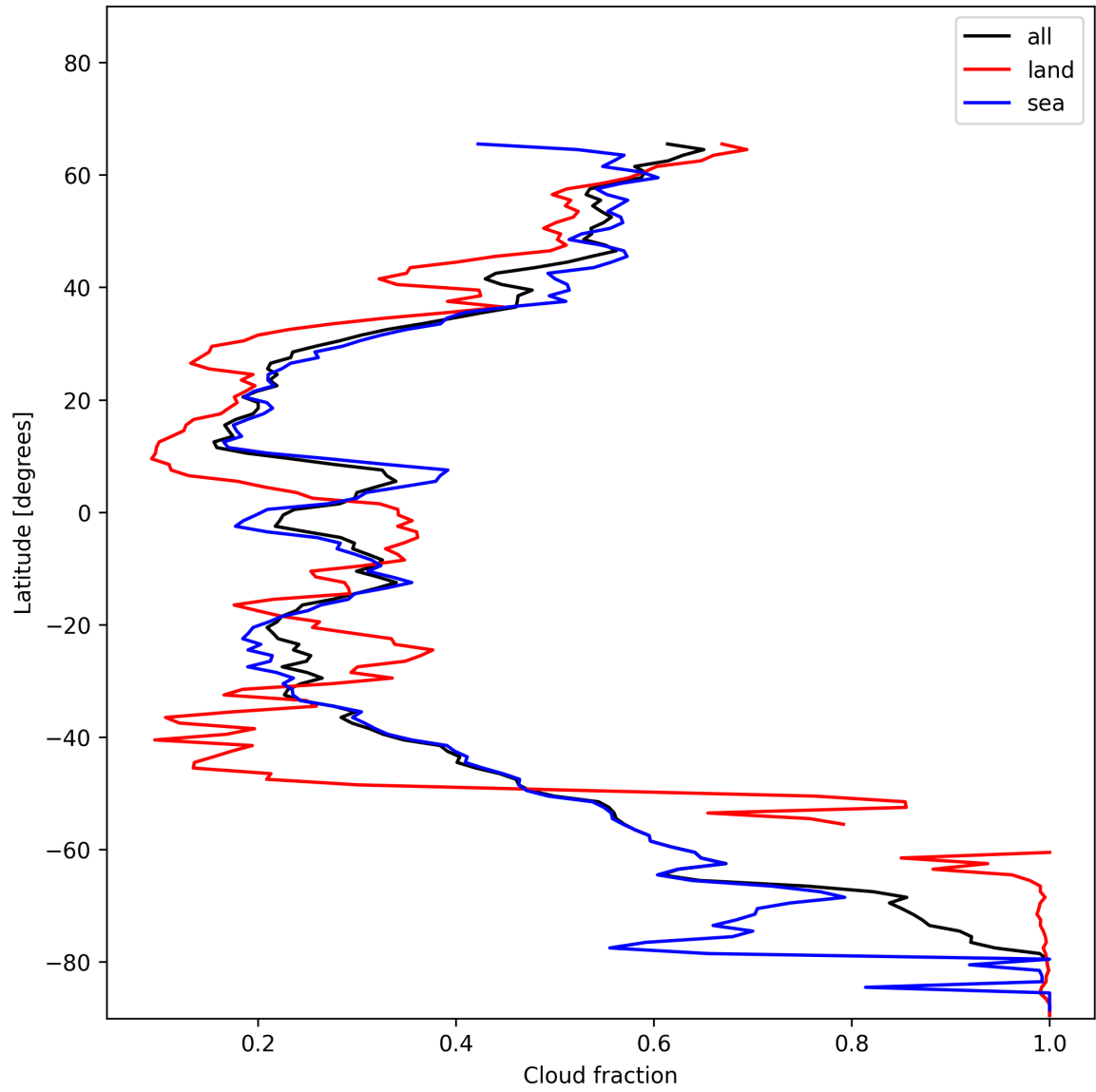


Figure 13: Zonal average of “Cloud fraction” for 2024-12-09 to 2024-12-09.

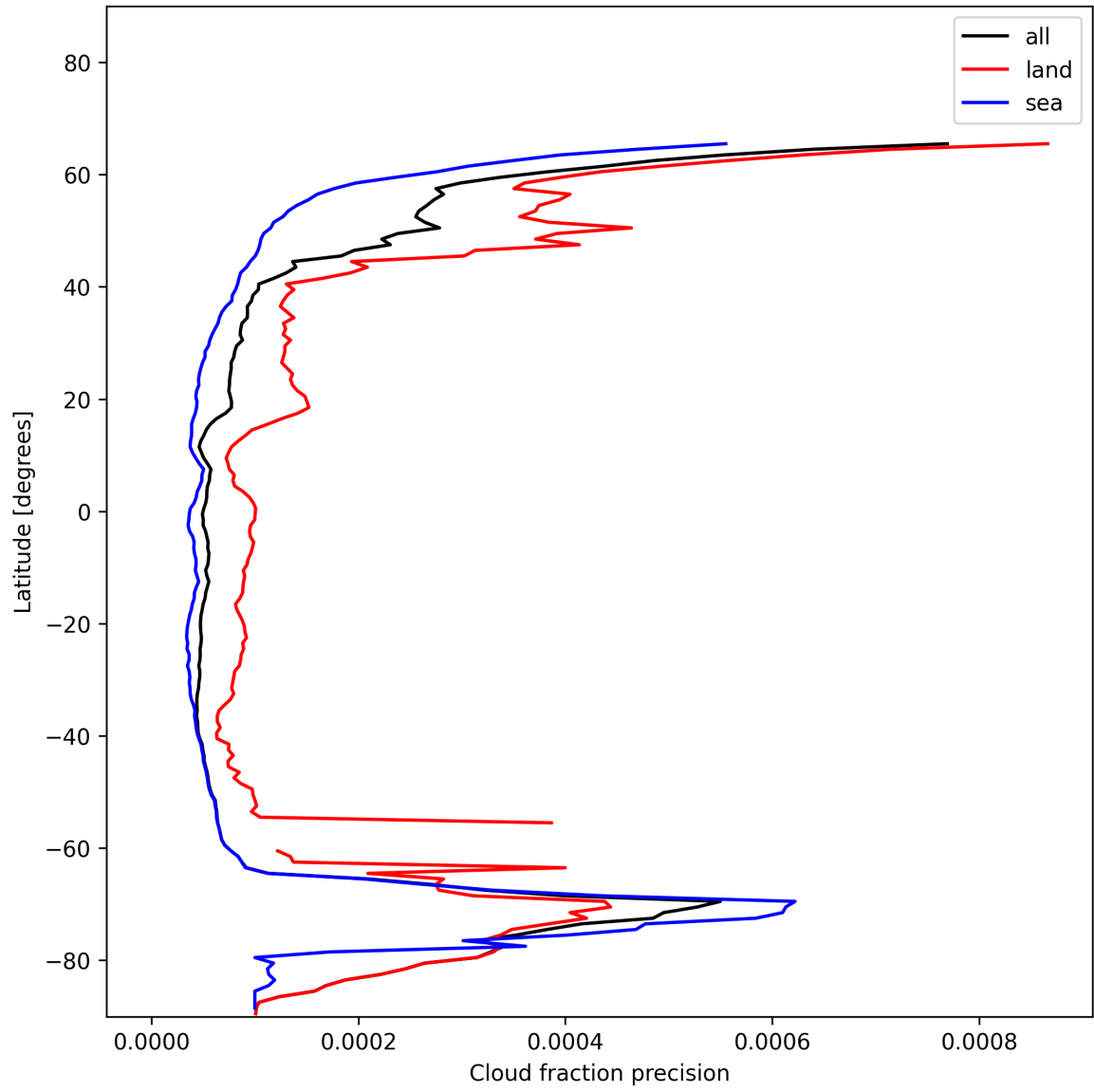


Figure 14: Zonal average of “Cloud fraction precision” for 2024-12-09 to 2024-12-09.

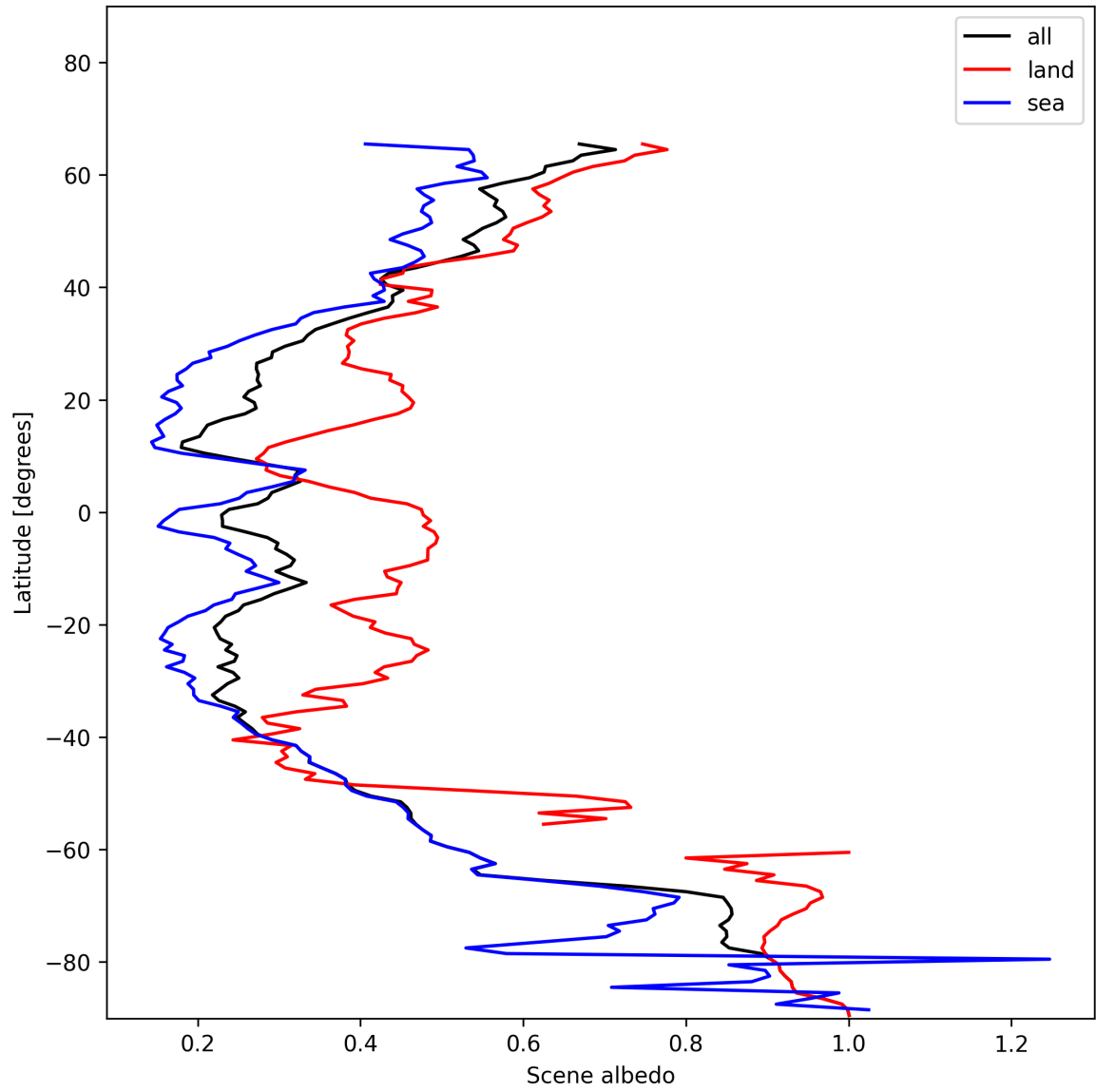


Figure 15: Zonal average of “Scene albedo” for 2024-12-09 to 2024-12-09.

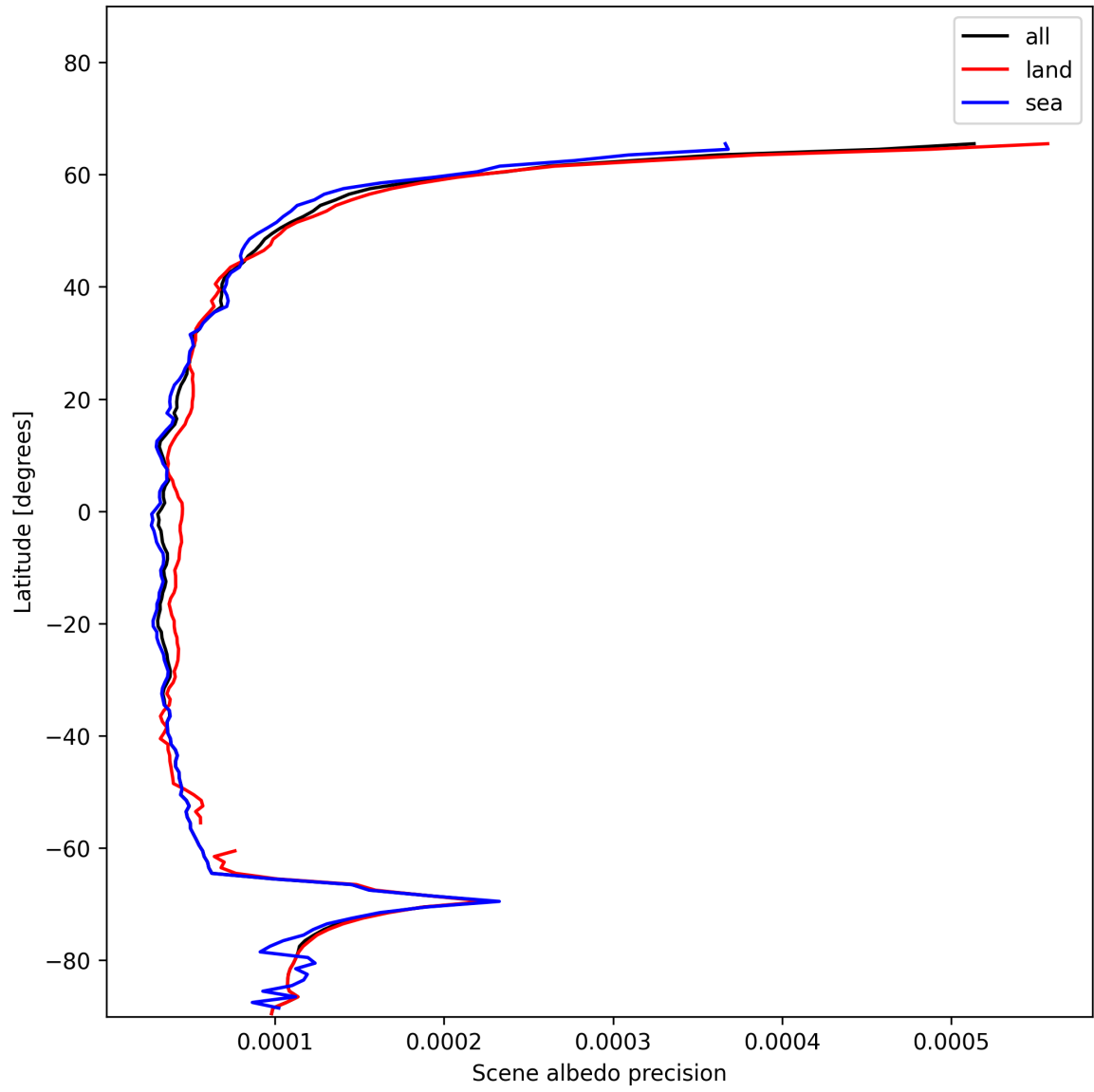


Figure 16: Zonal average of “Scene albedo precision” for 2024-12-09 to 2024-12-09.

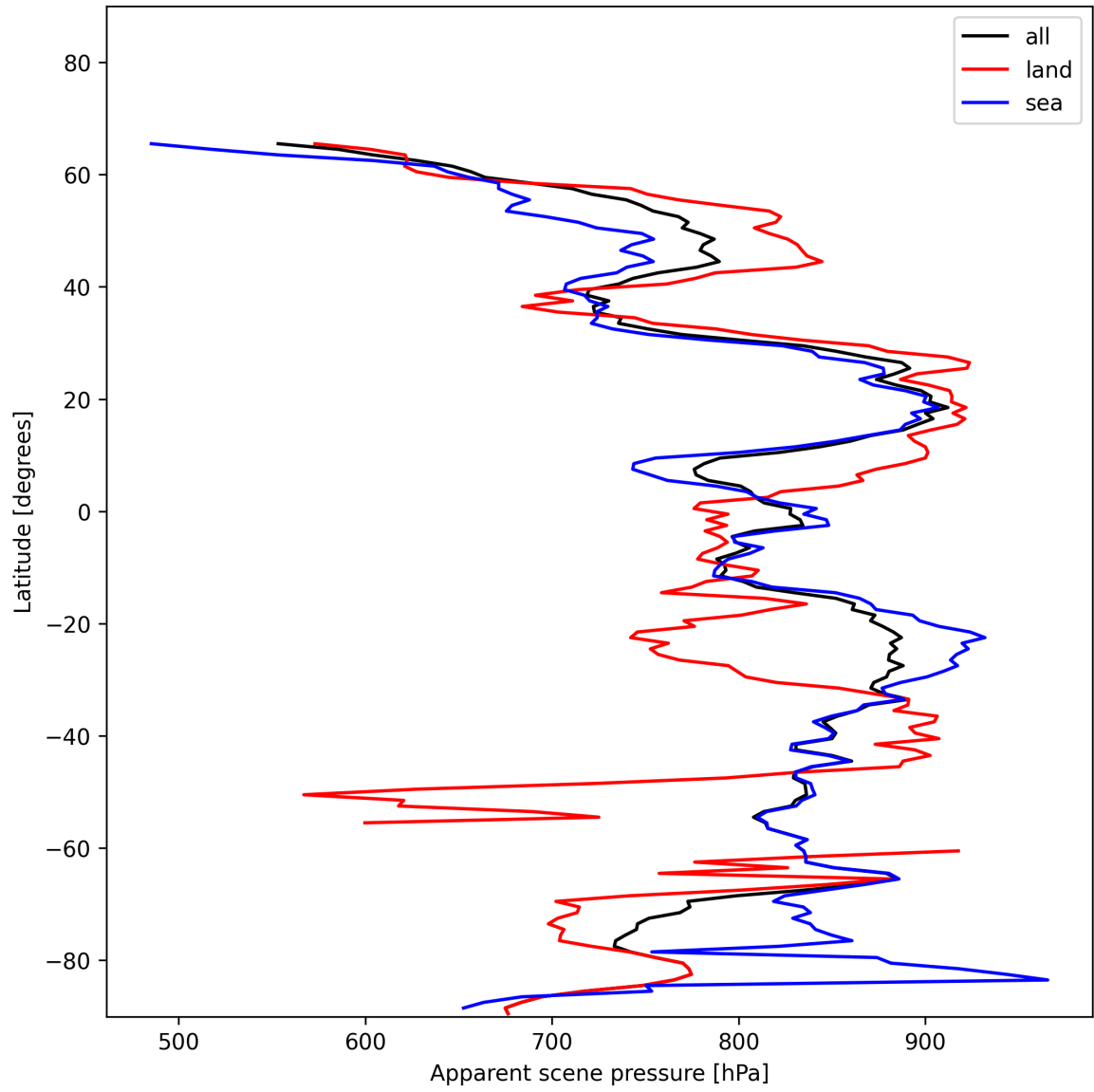


Figure 17: Zonal average of “Apparent scene pressure” for 2024-12-09 to 2024-12-09.

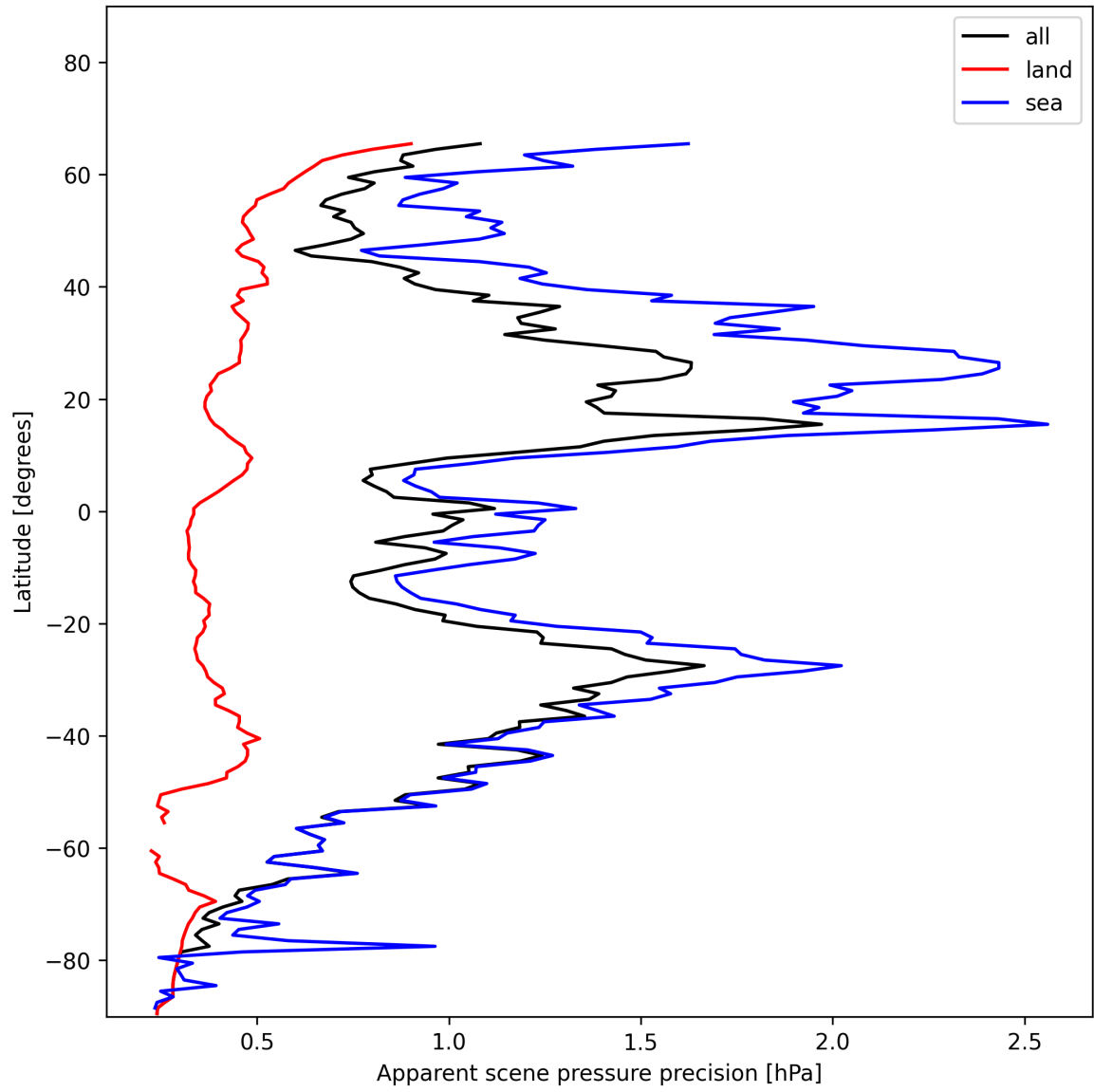


Figure 18: Zonal average of “Apparent scene pressure precision” for 2024-12-09 to 2024-12-09.

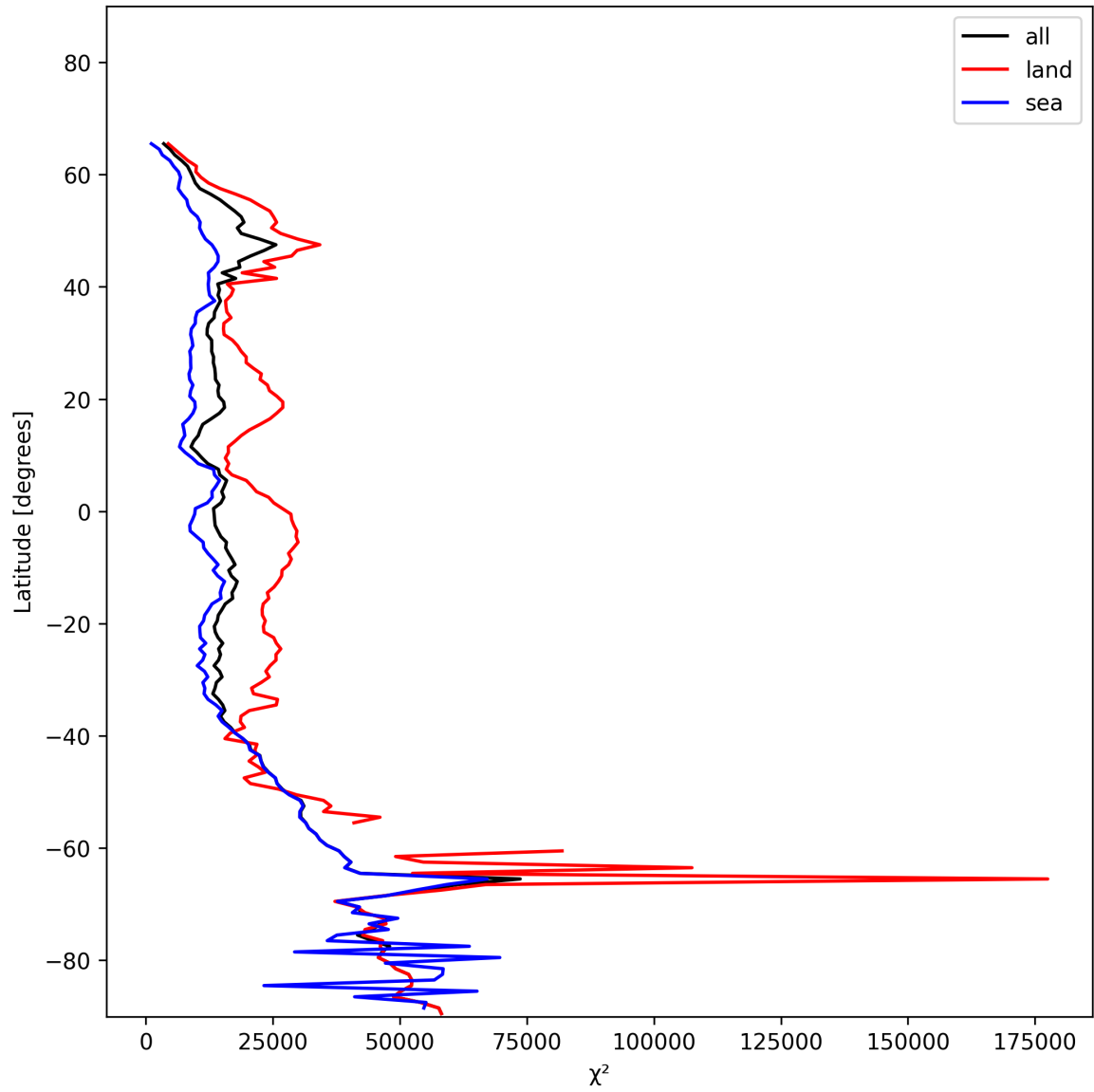


Figure 19: Zonal average of “ χ^2 ” for 2024-12-09 to 2024-12-09.

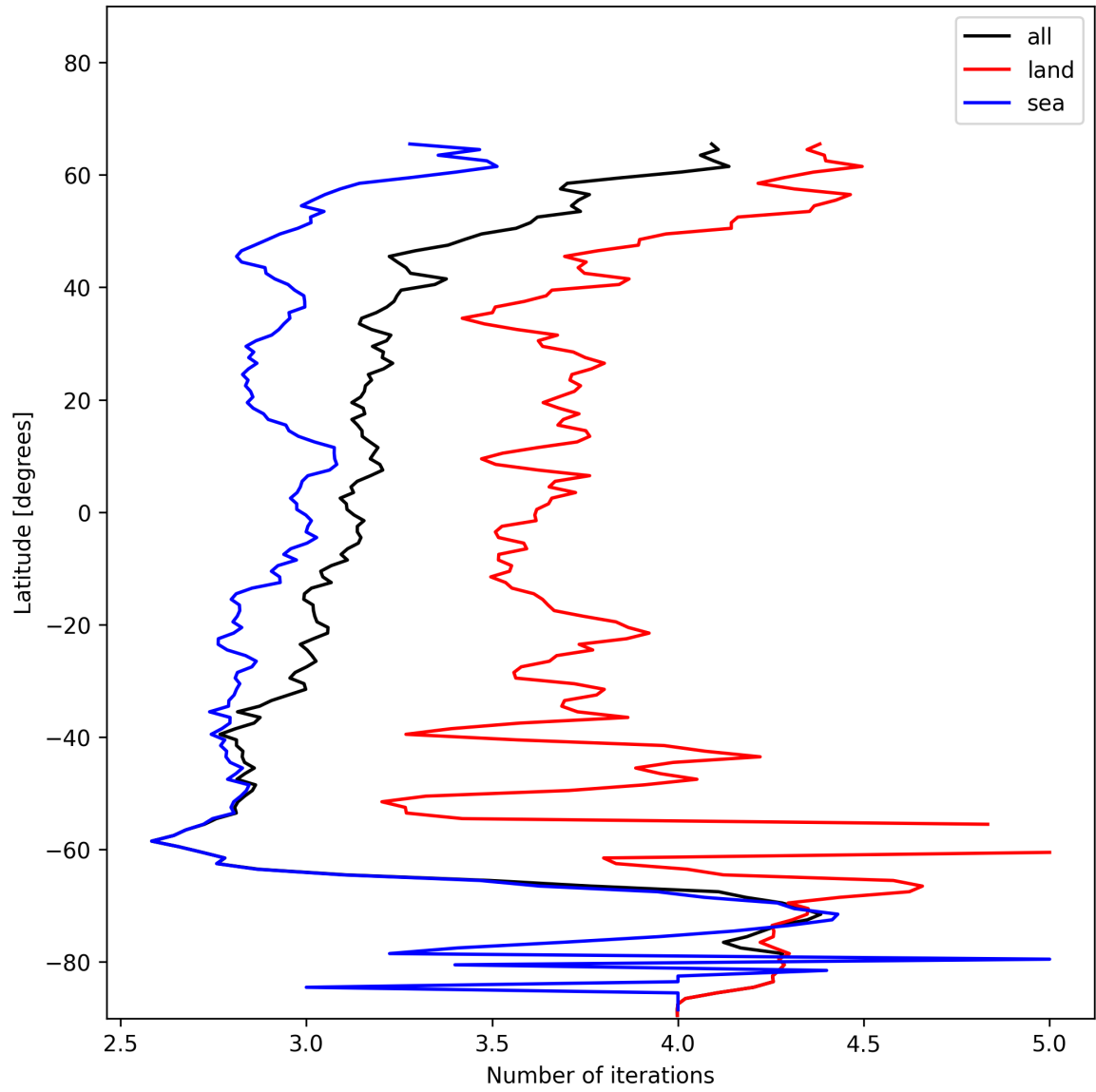


Figure 20: Zonal average of “Number of iterations” for 2024-12-09 to 2024-12-09.

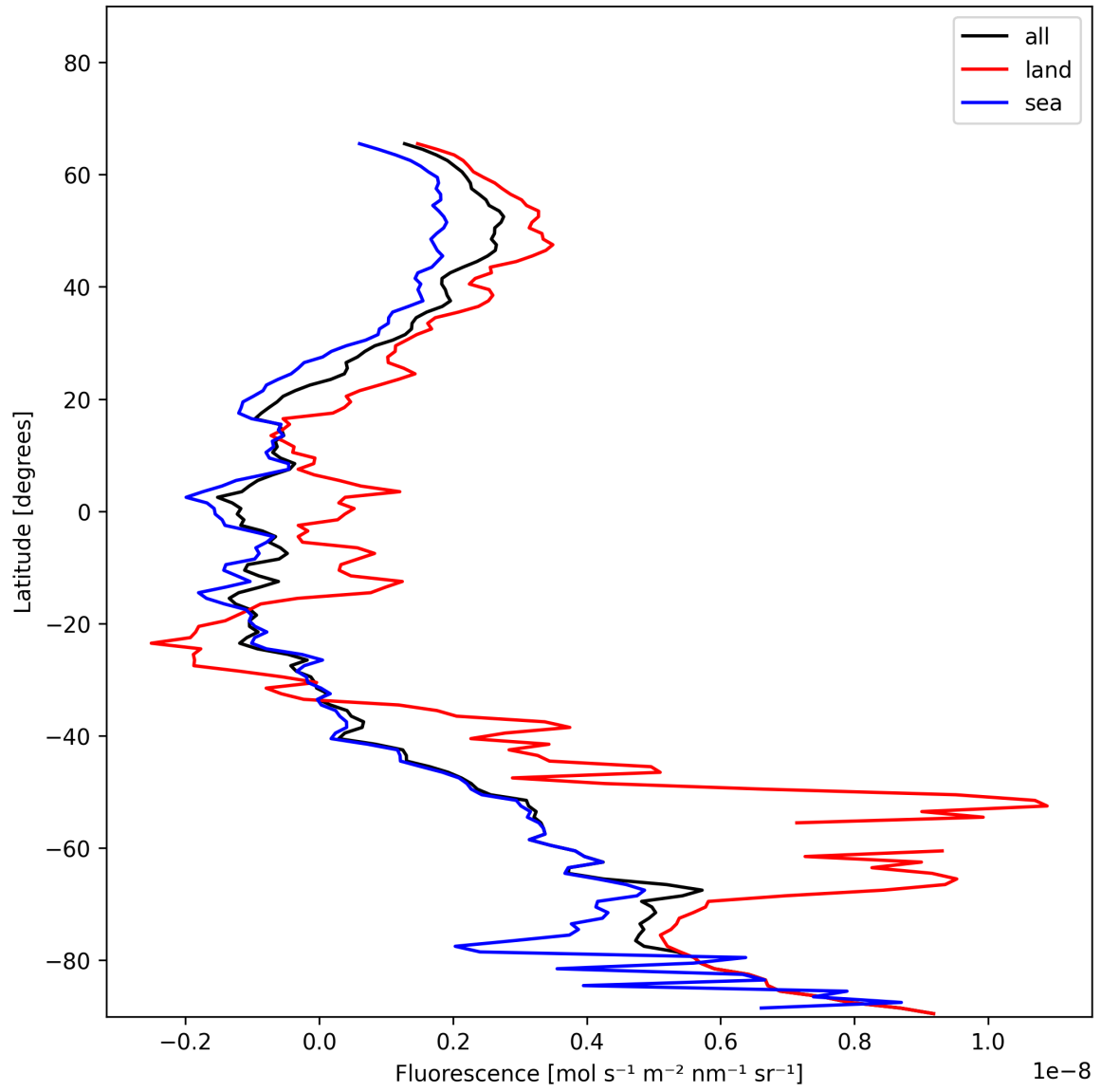


Figure 21: Zonal average of “Fluorescence” for 2024-12-09 to 2024-12-09.

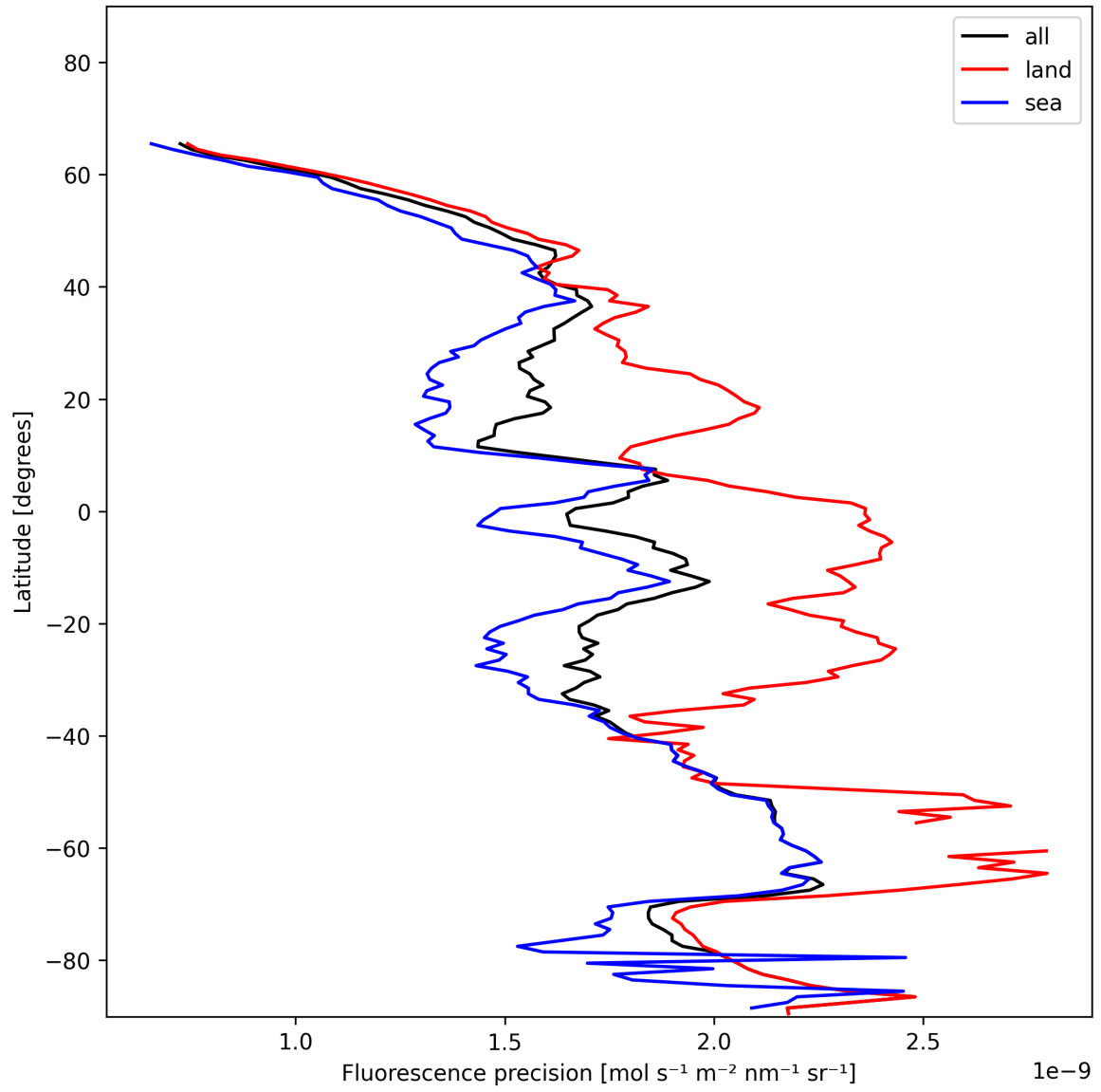


Figure 22: Zonal average of “Fluorescence precision” for 2024-12-09 to 2024-12-09.

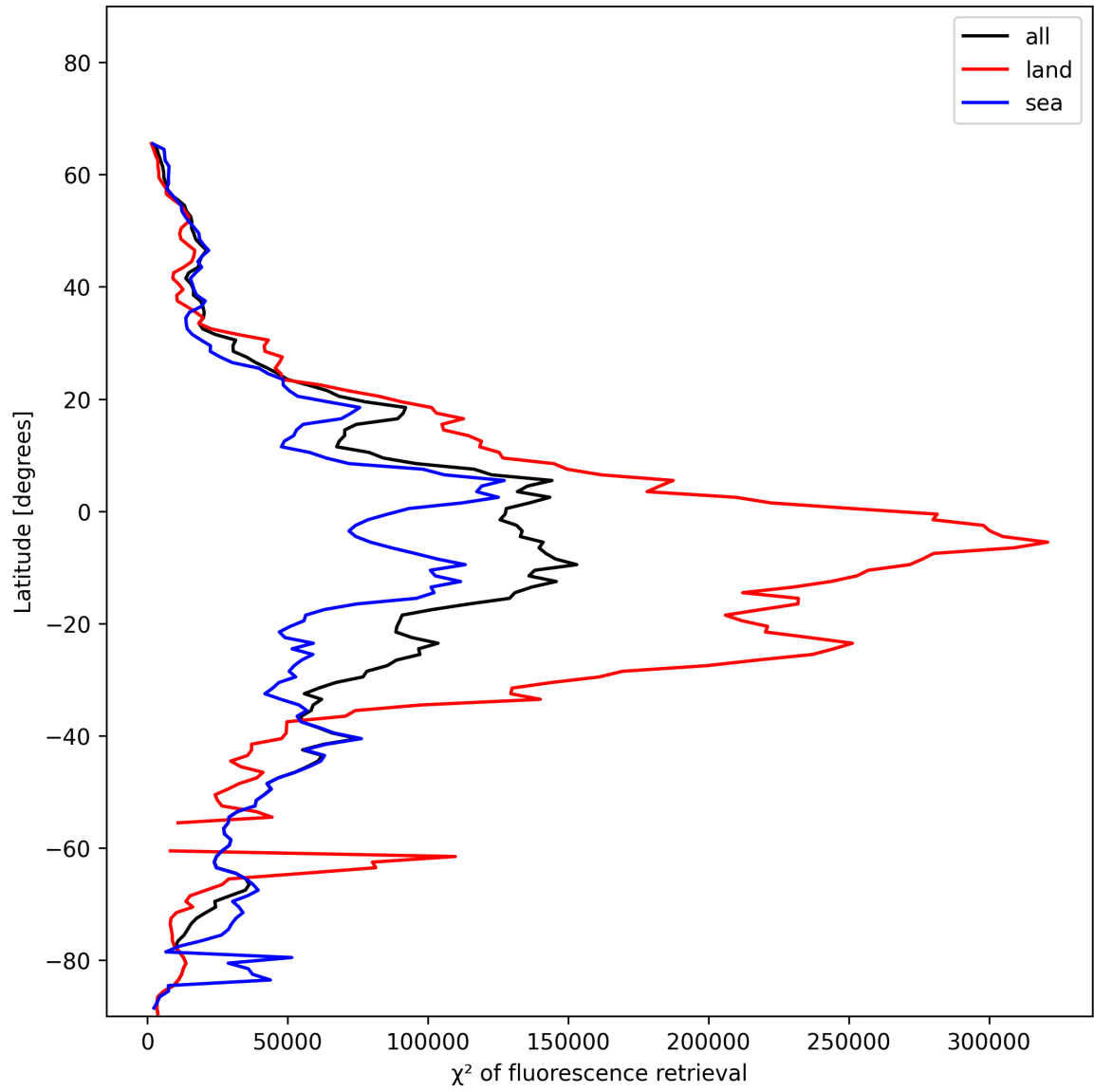


Figure 23: Zonal average of “ χ^2 of fluorescence retrieval” for 2024-12-09 to 2024-12-09.

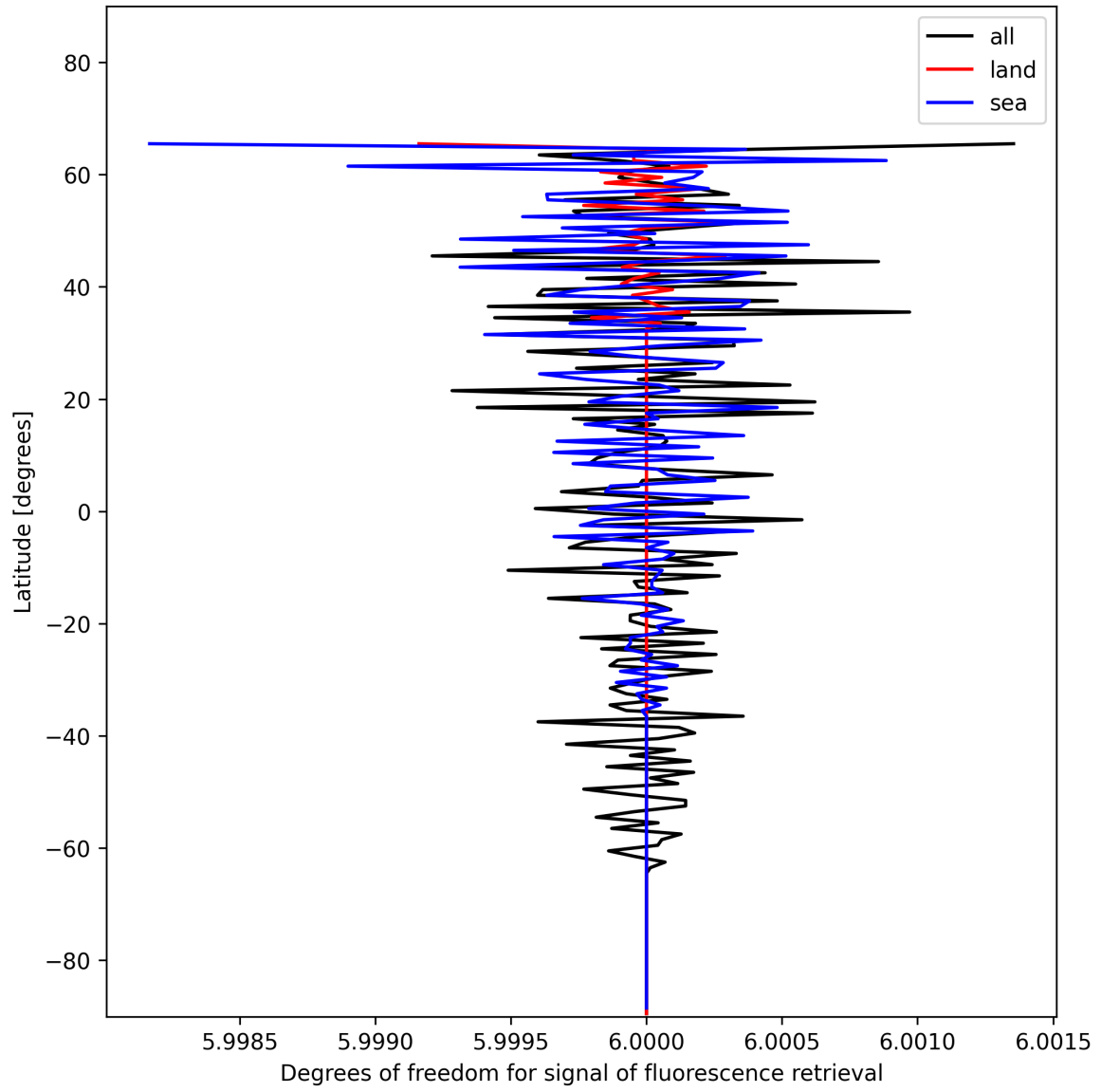


Figure 24: Zonal average of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-09 to 2024-12-09.

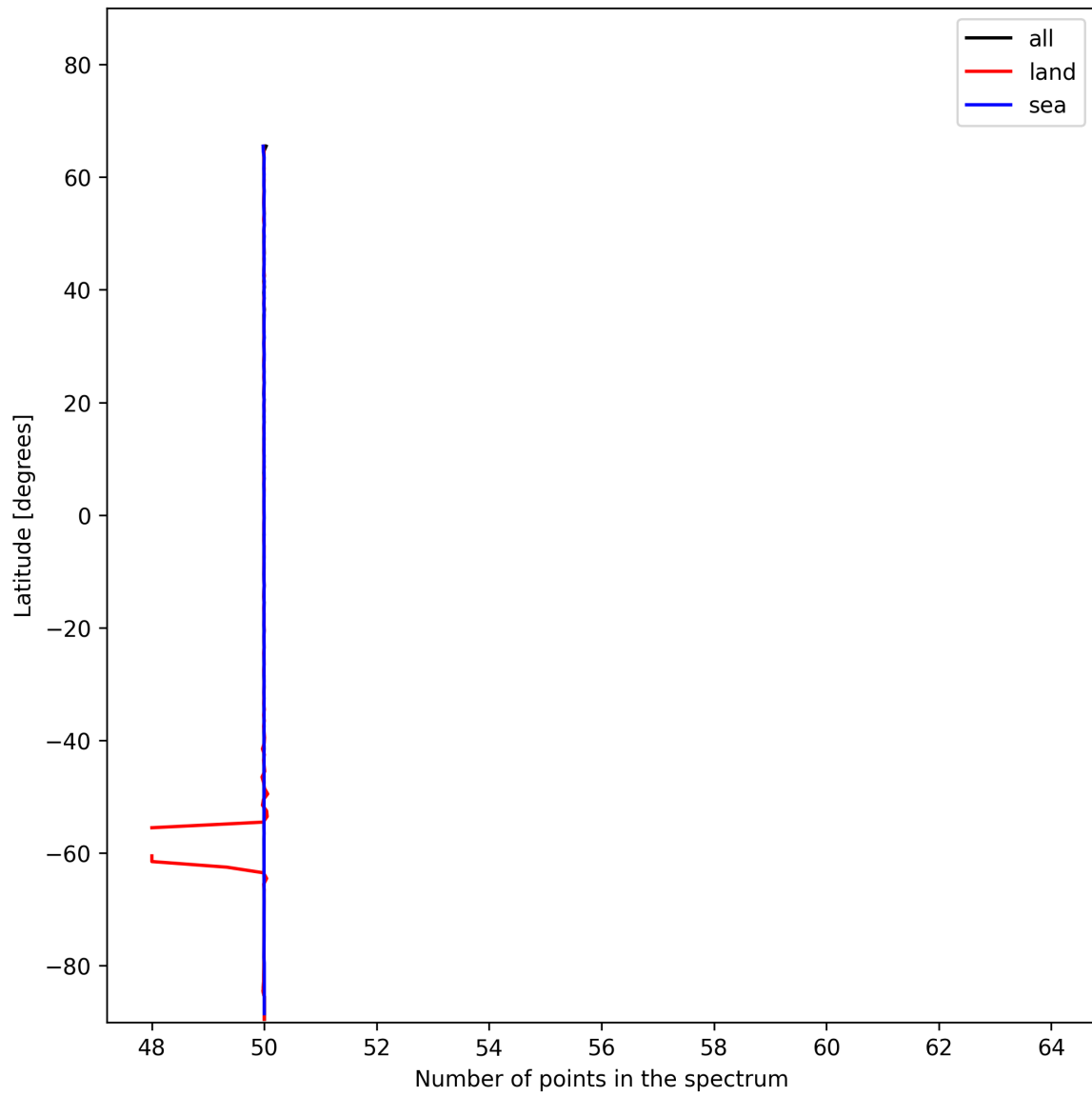


Figure 25: Zonal average of “Number of points in the spectrum” for 2024-12-09 to 2024-12-09.

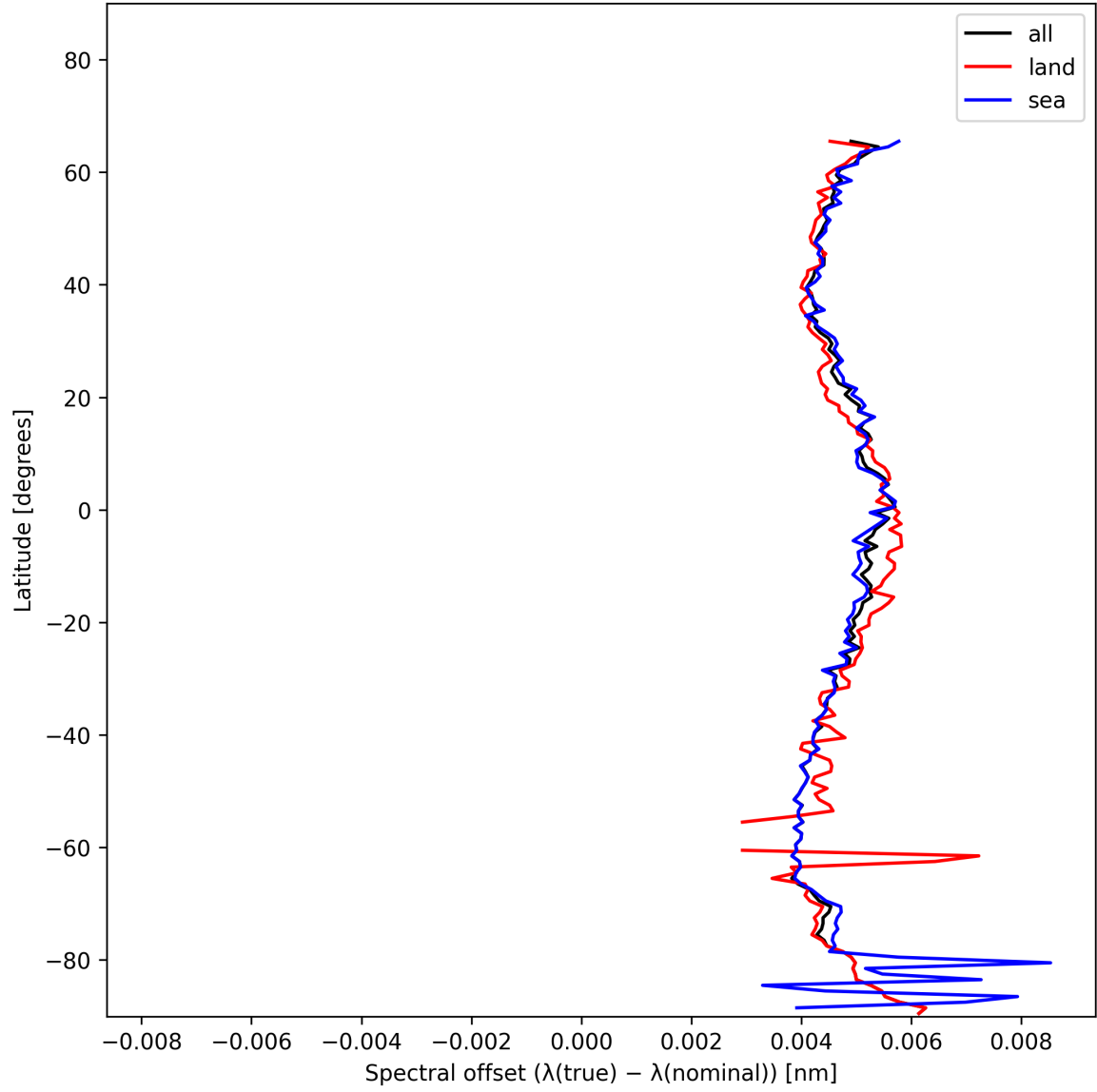


Figure 26: Zonal average of “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-12-09 to 2024-12-09.

8 Histograms

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

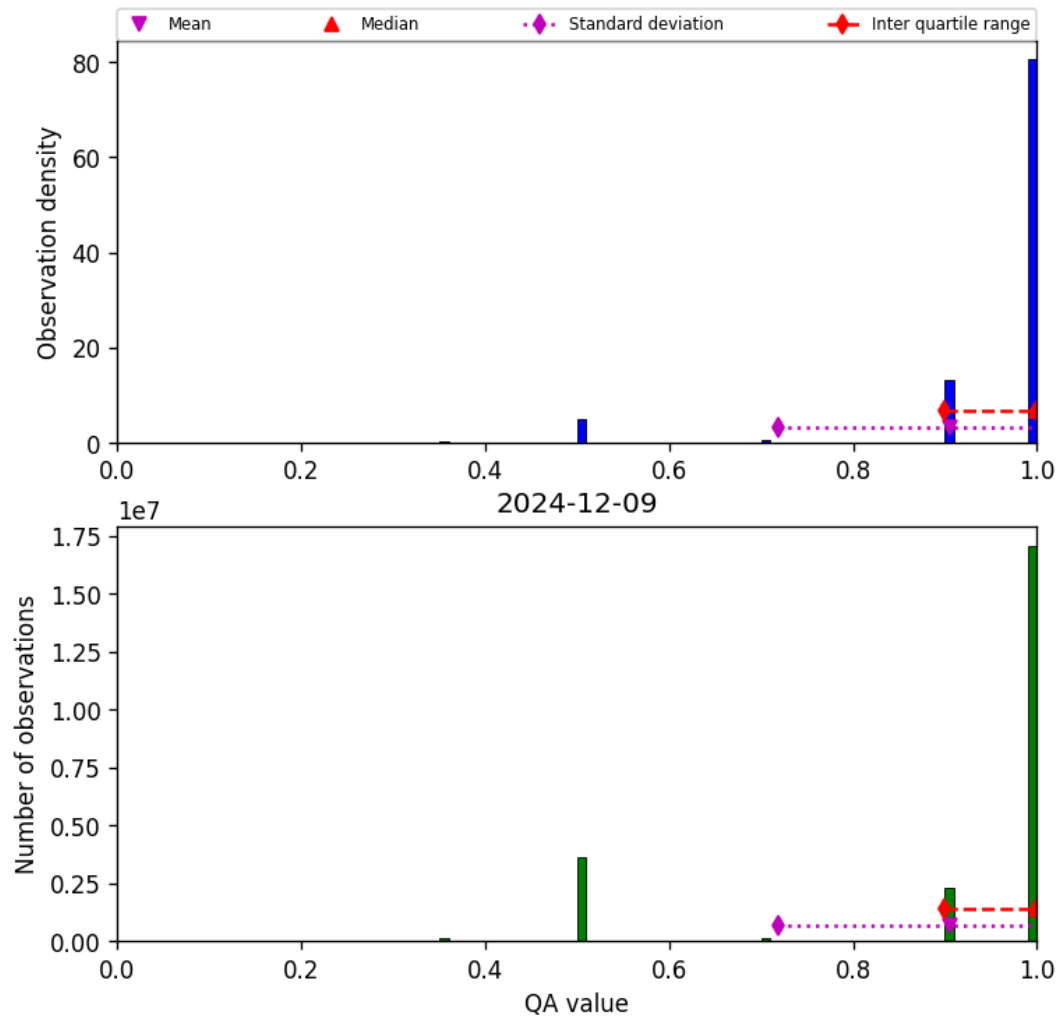


Figure 27: Histogram of “QA value” for 2024-12-09 to 2024-12-09

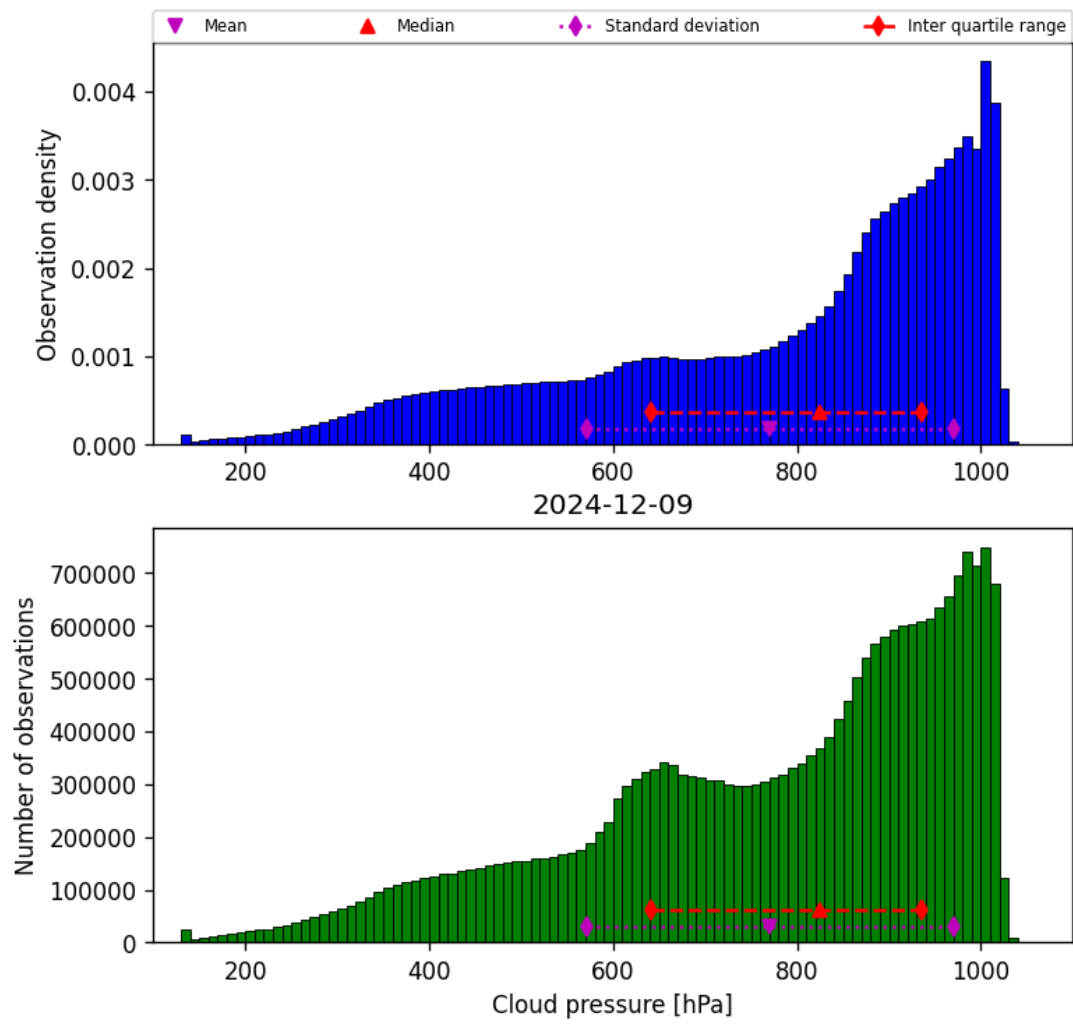


Figure 28: Histogram of “Cloud pressure” for 2024-12-09 to 2024-12-09

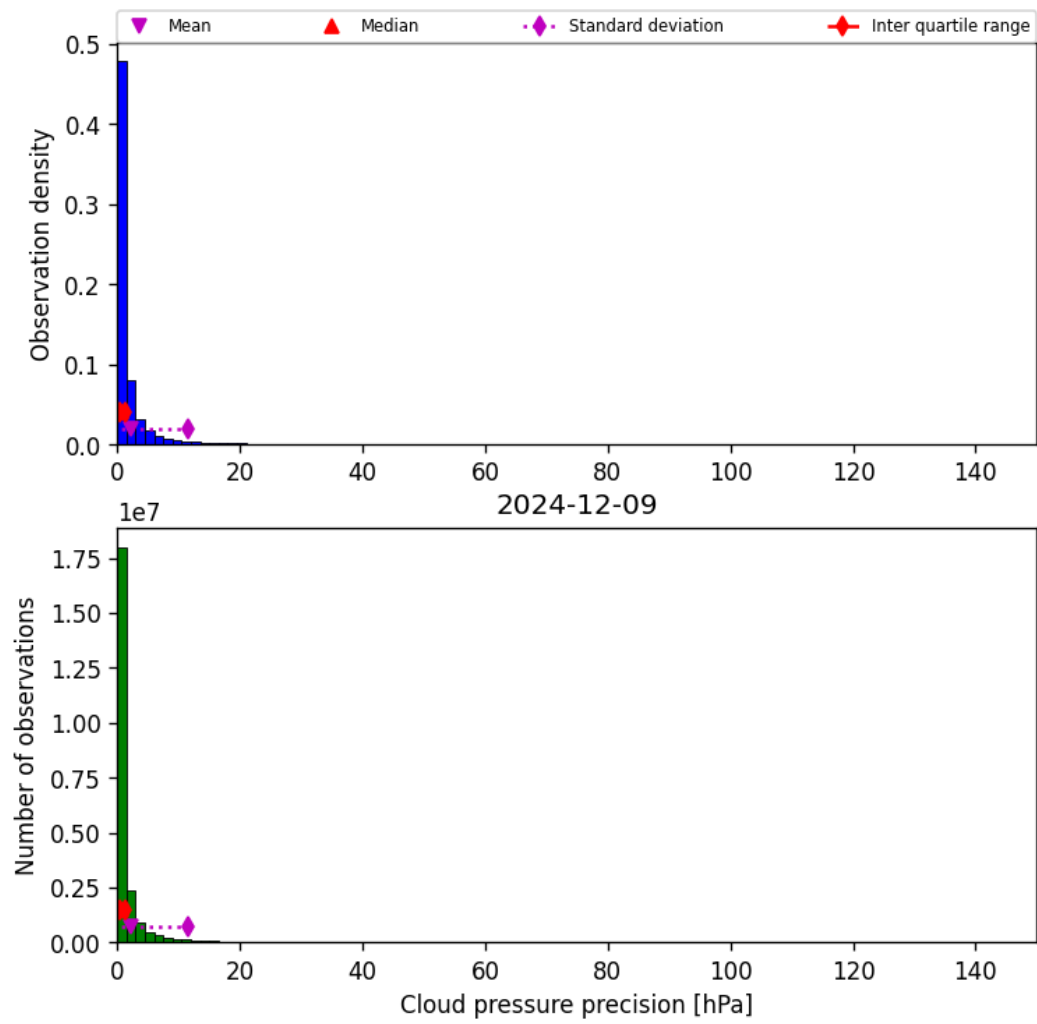


Figure 29: Histogram of “Cloud pressure precision” for 2024-12-09 to 2024-12-09

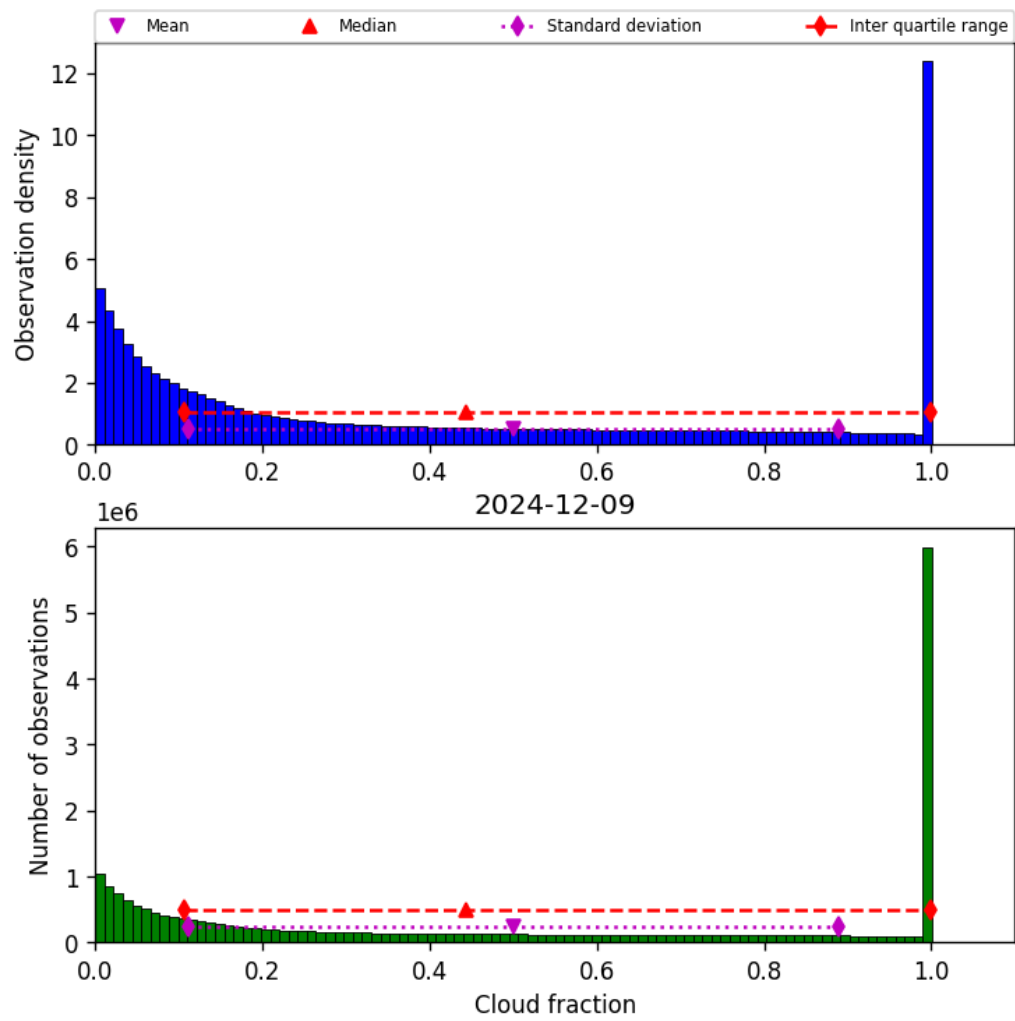


Figure 30: Histogram of “Cloud fraction” for 2024-12-09 to 2024-12-09

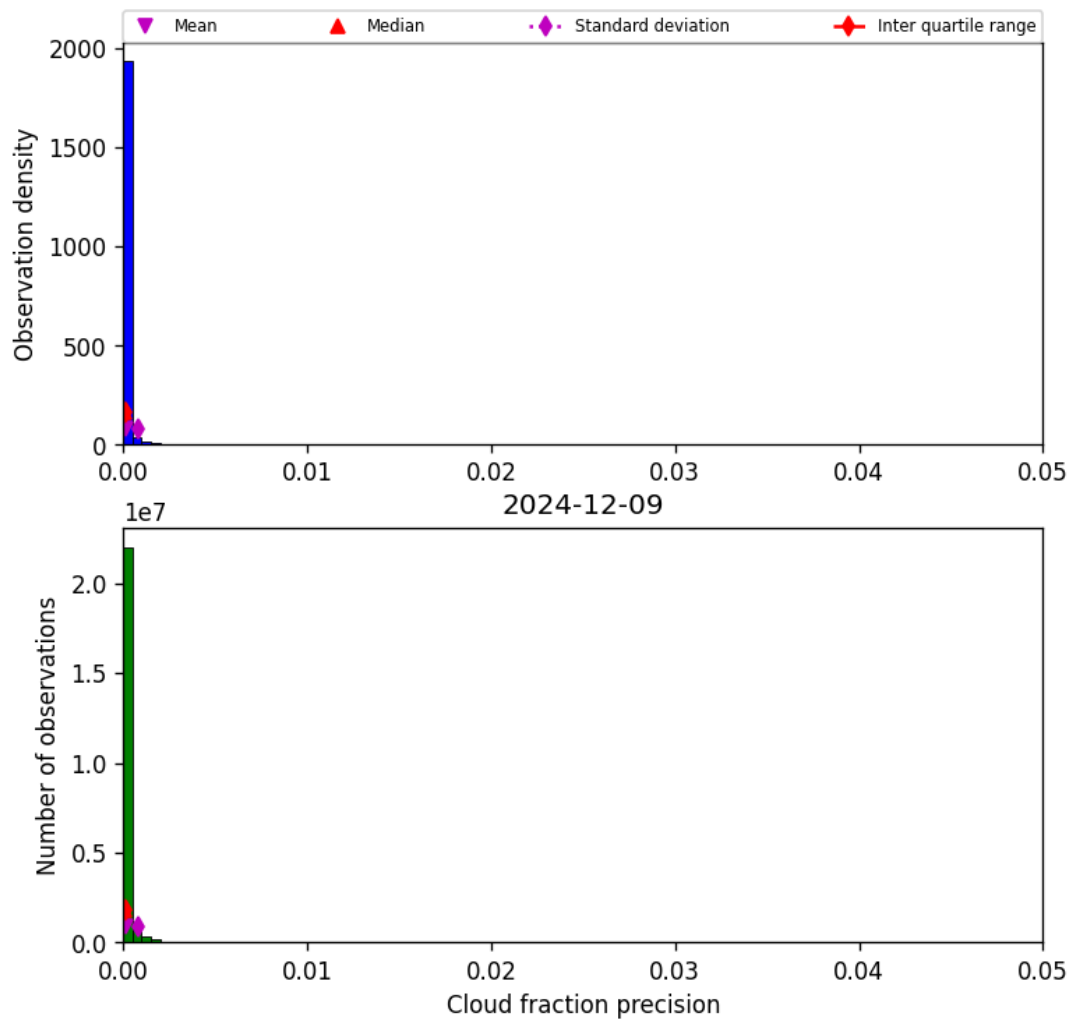


Figure 31: Histogram of “Cloud fraction precision” for 2024-12-09 to 2024-12-09

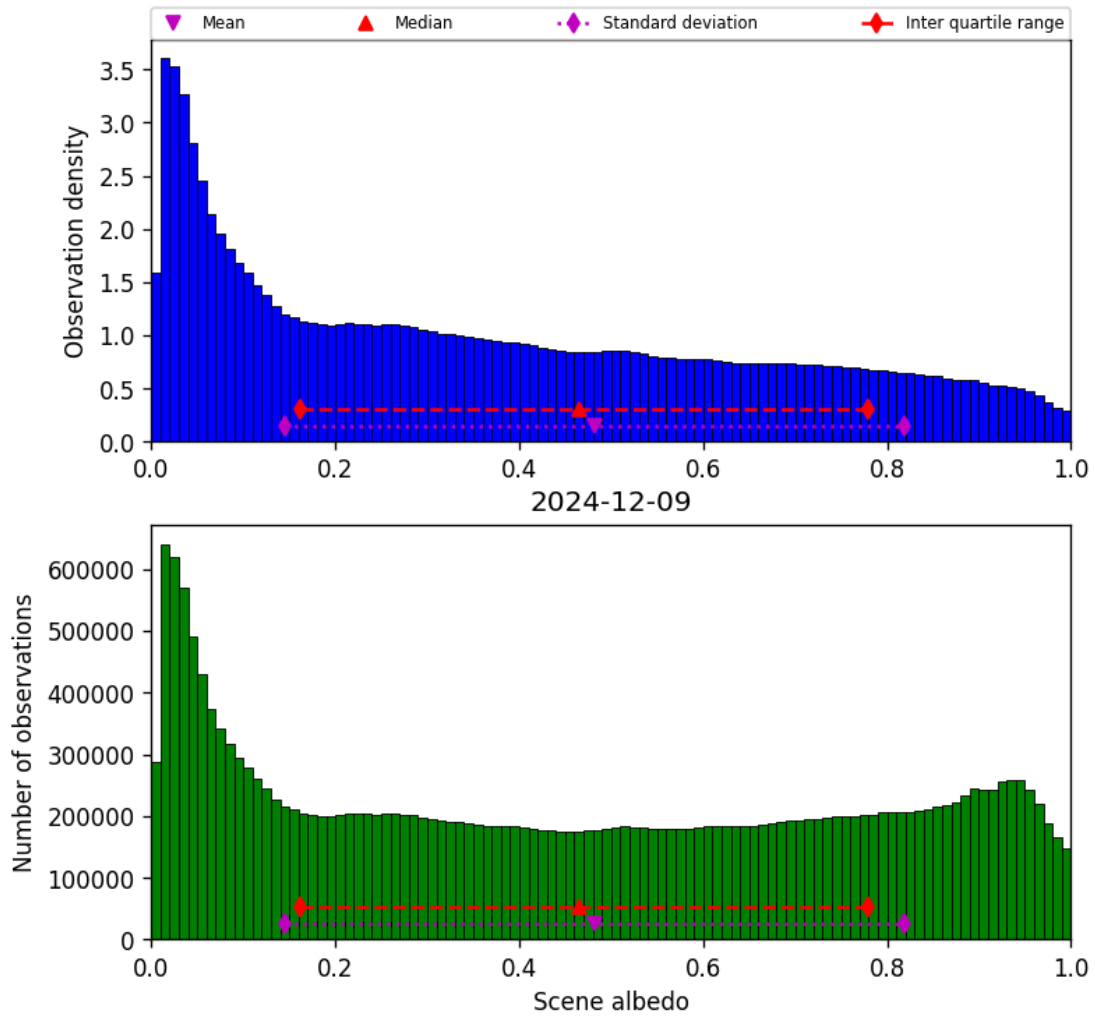


Figure 32: Histogram of “Scene albedo” for 2024-12-09 to 2024-12-09

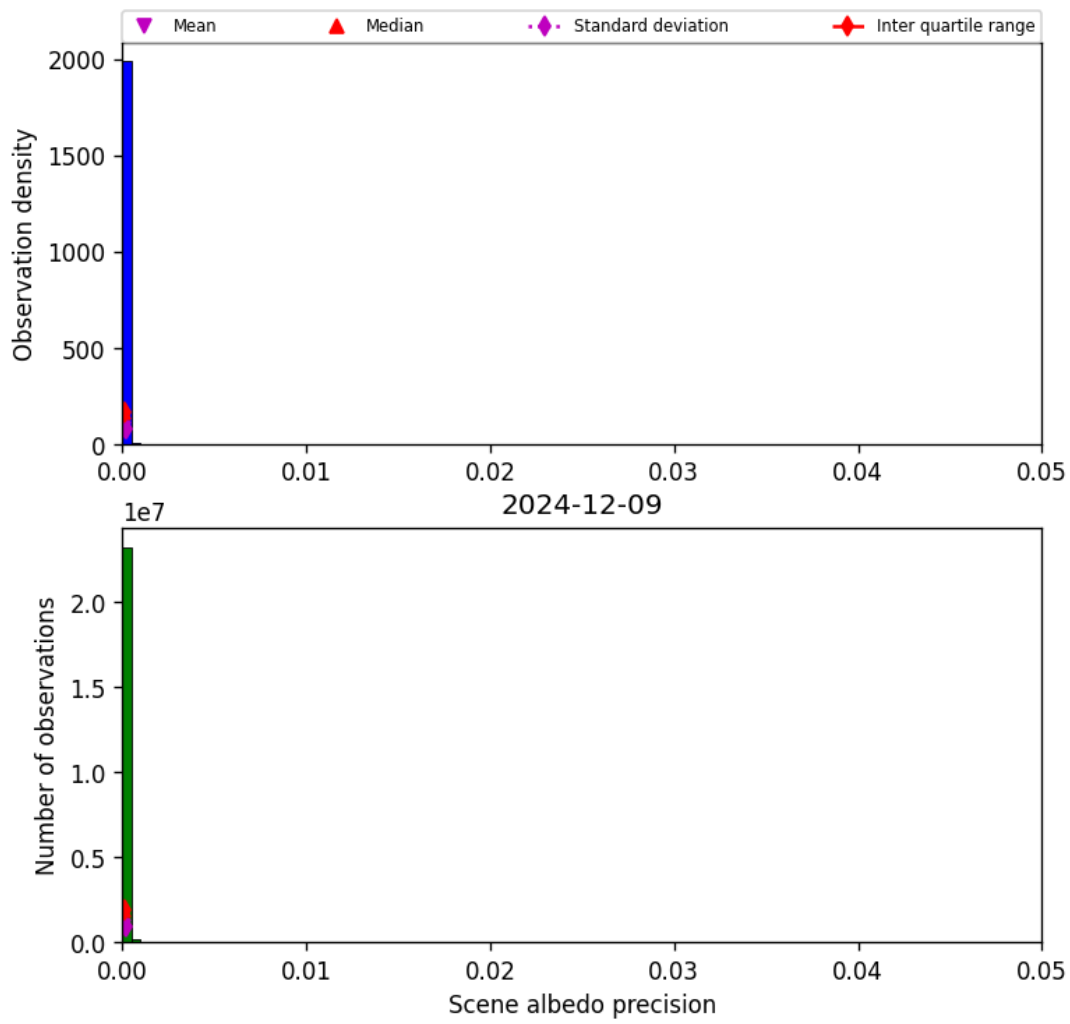


Figure 33: Histogram of “Scene albedo precision” for 2024-12-09 to 2024-12-09

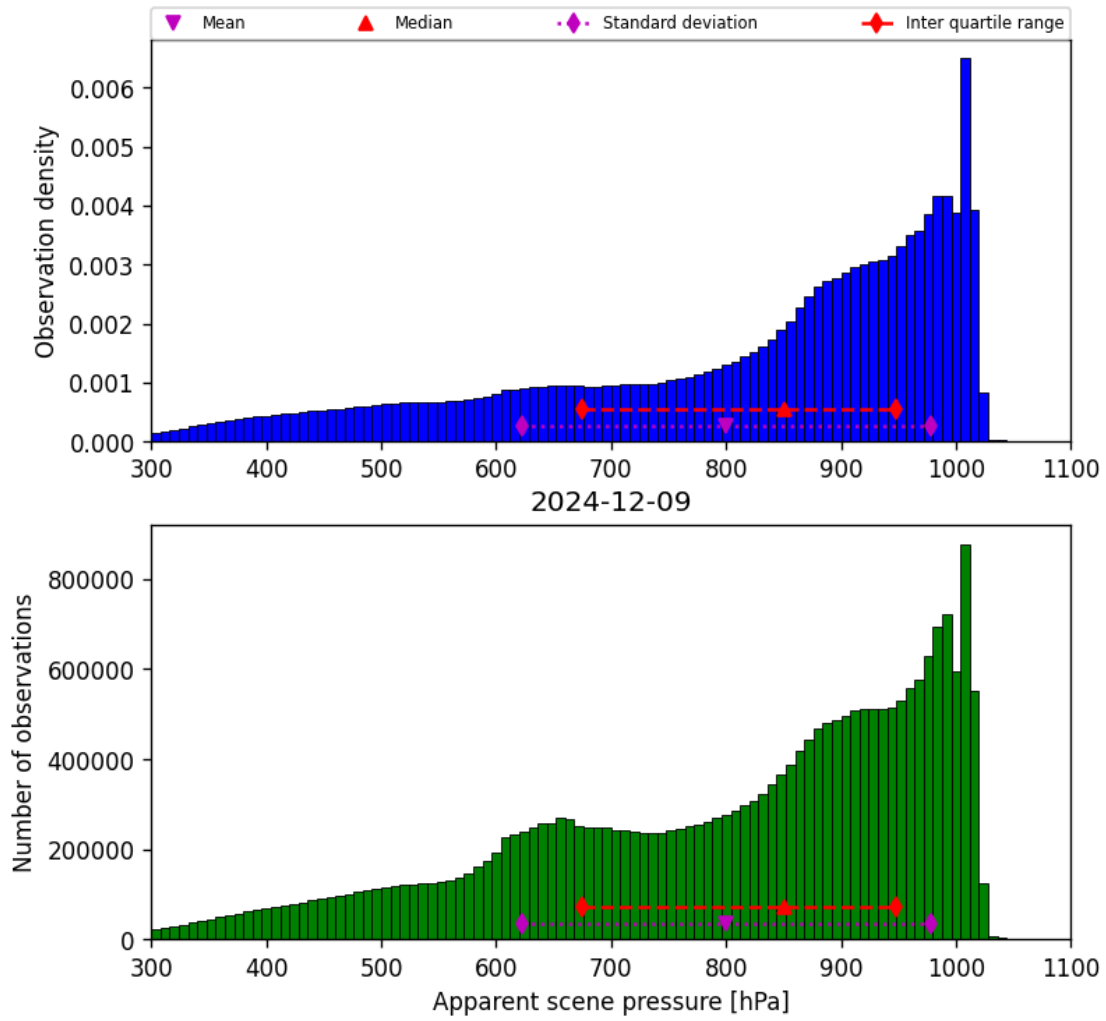


Figure 34: Histogram of “Apparent scene pressure” for 2024-12-09 to 2024-12-09

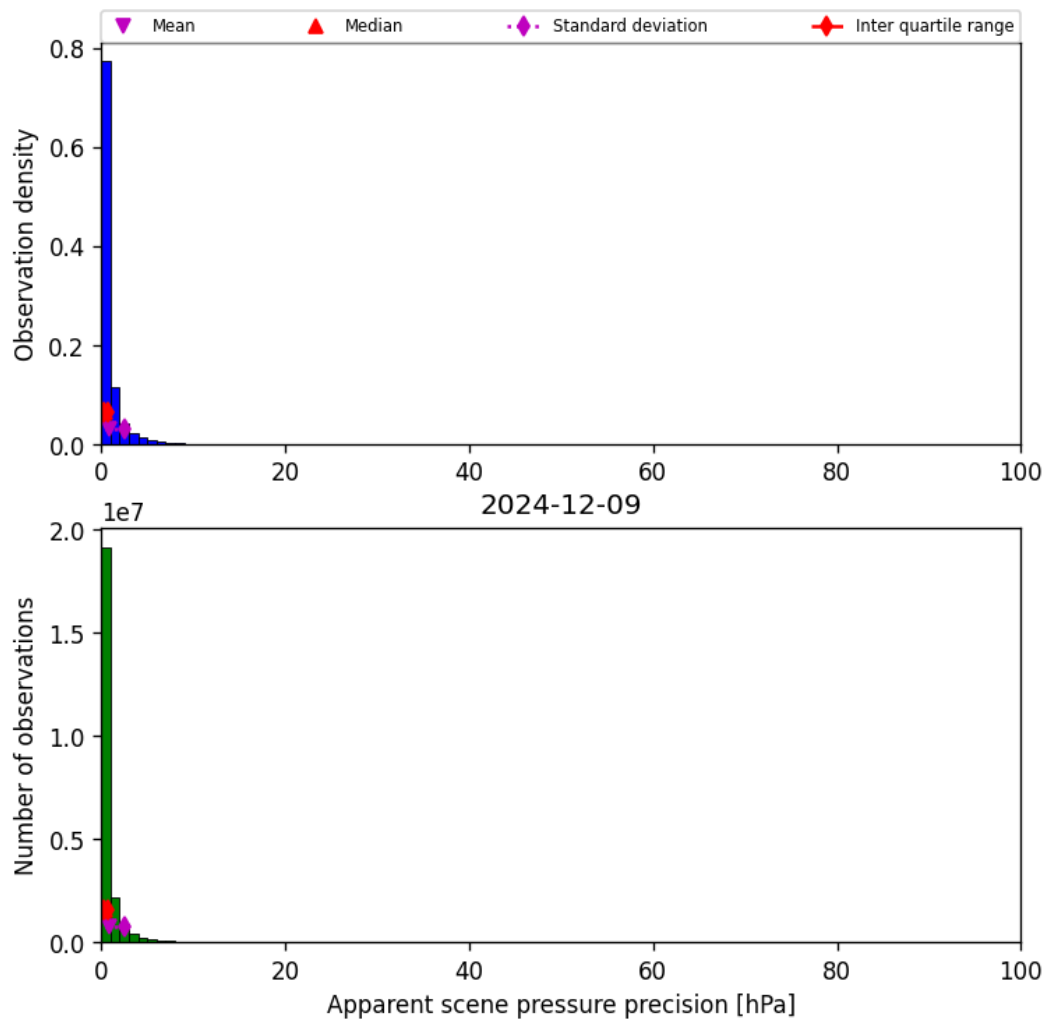


Figure 35: Histogram of “Apparent scene pressure precision” for 2024-12-09 to 2024-12-09

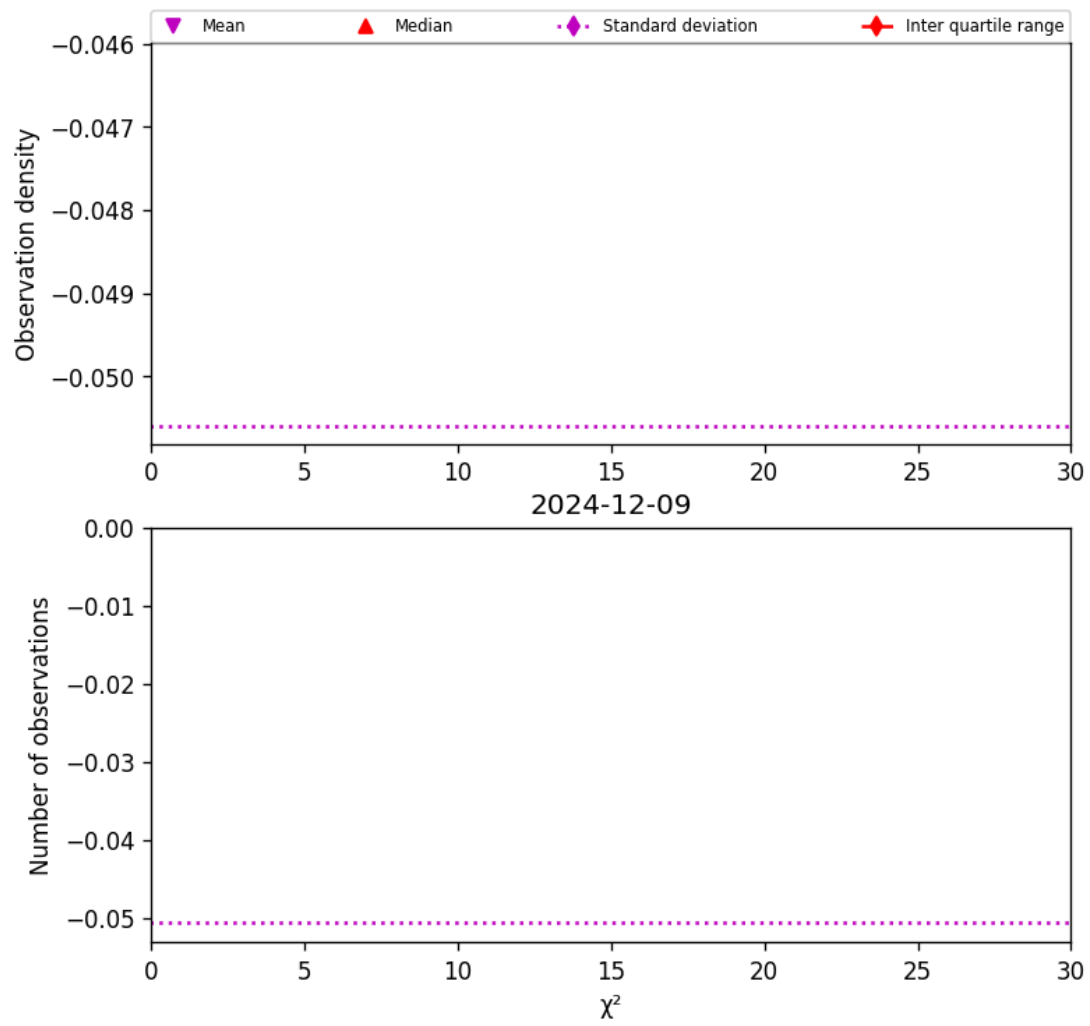


Figure 36: Histogram of “ χ^2 ” for 2024-12-09 to 2024-12-09

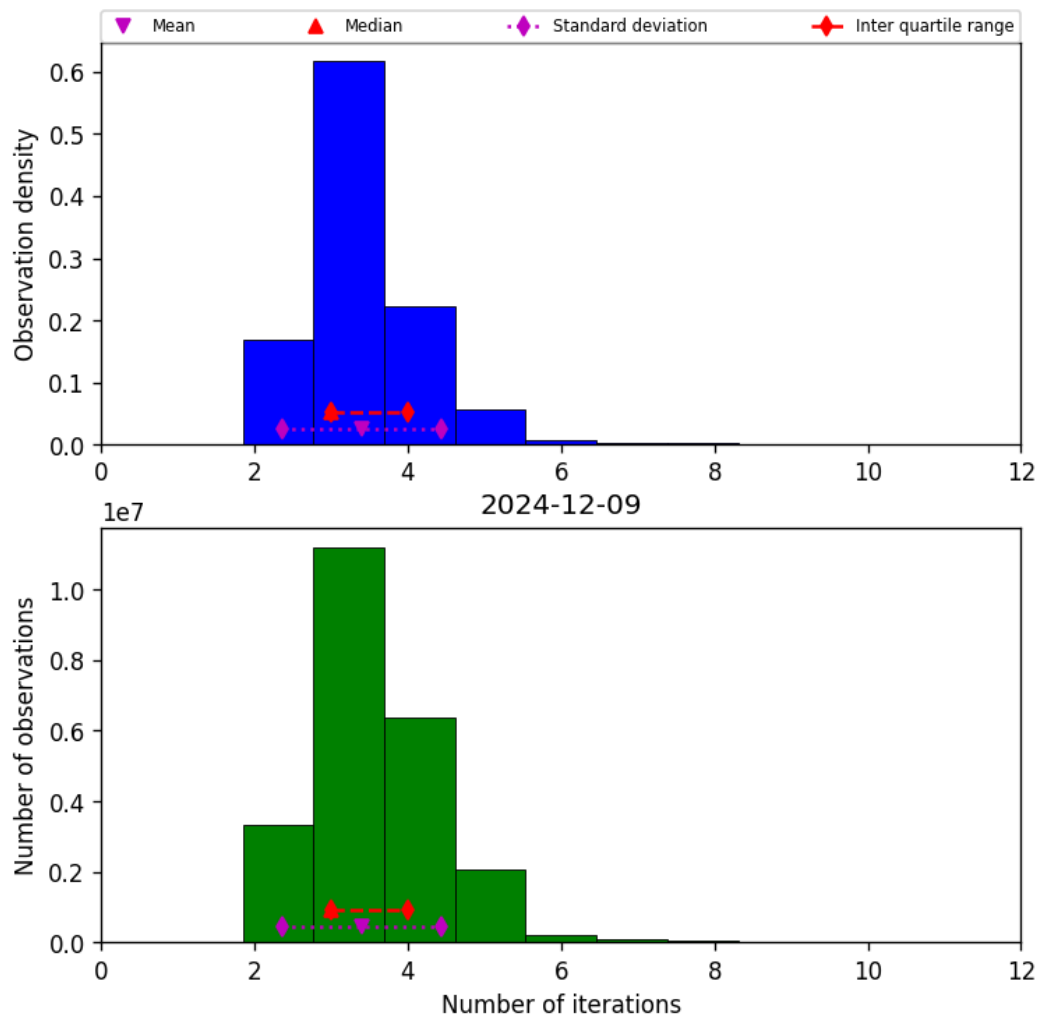


Figure 37: Histogram of “Number of iterations” for 2024-12-09 to 2024-12-09

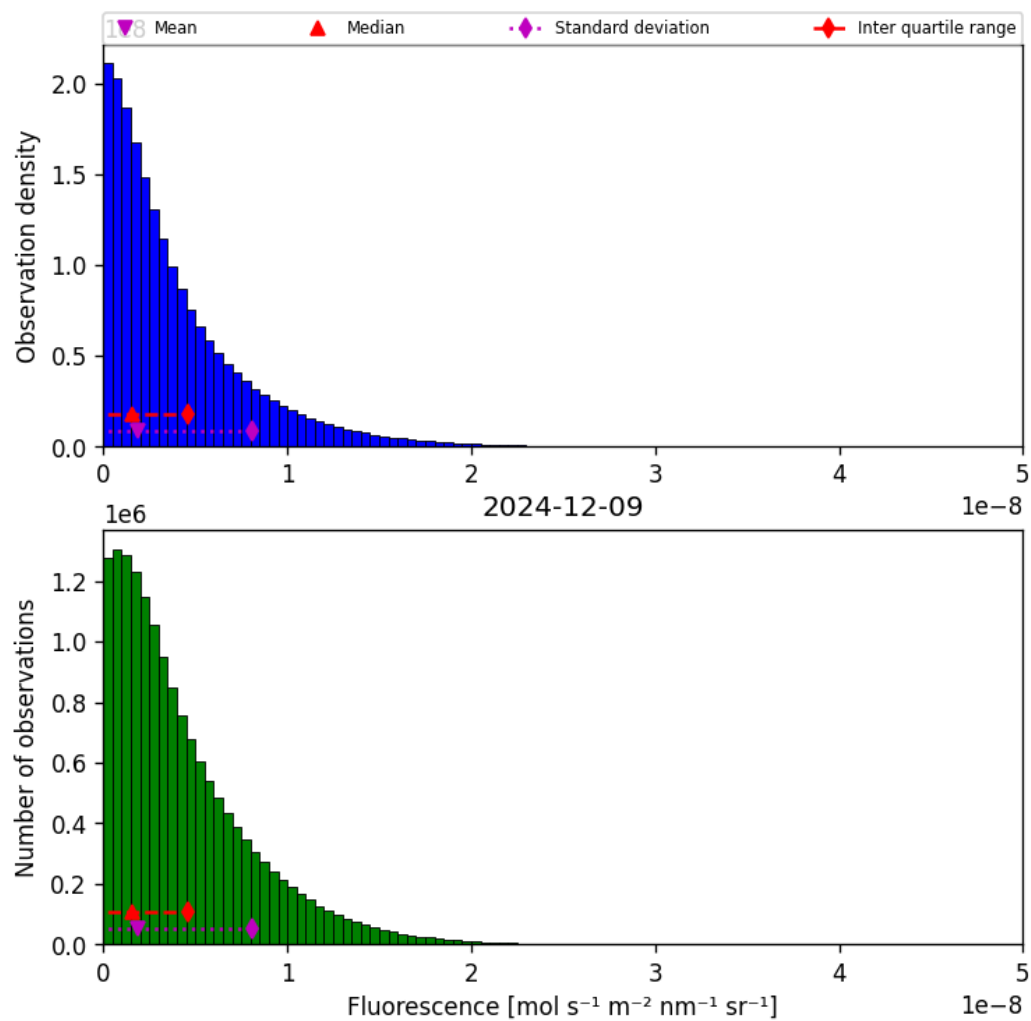


Figure 38: Histogram of “Fluorescence” for 2024-12-09 to 2024-12-09

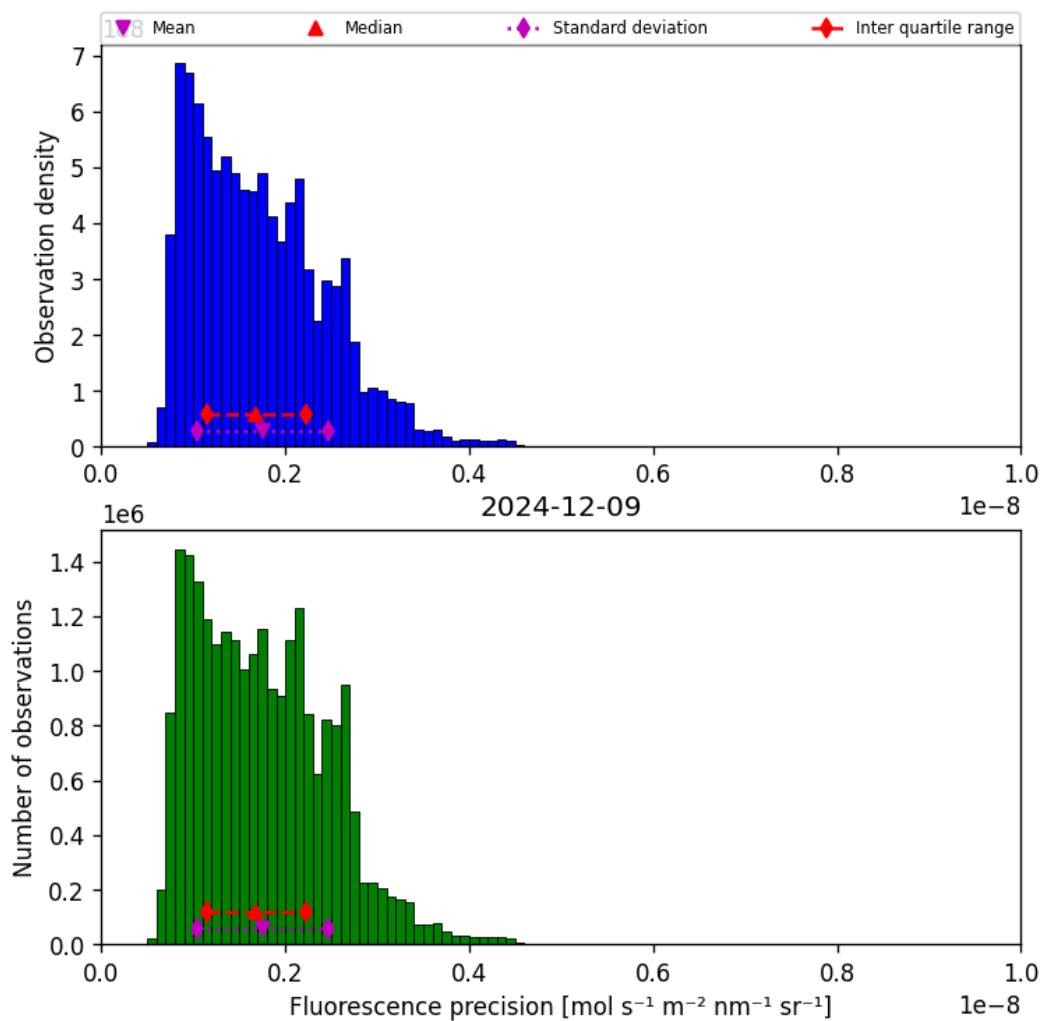


Figure 39: Histogram of “Fluorescence precision” for 2024-12-09 to 2024-12-09

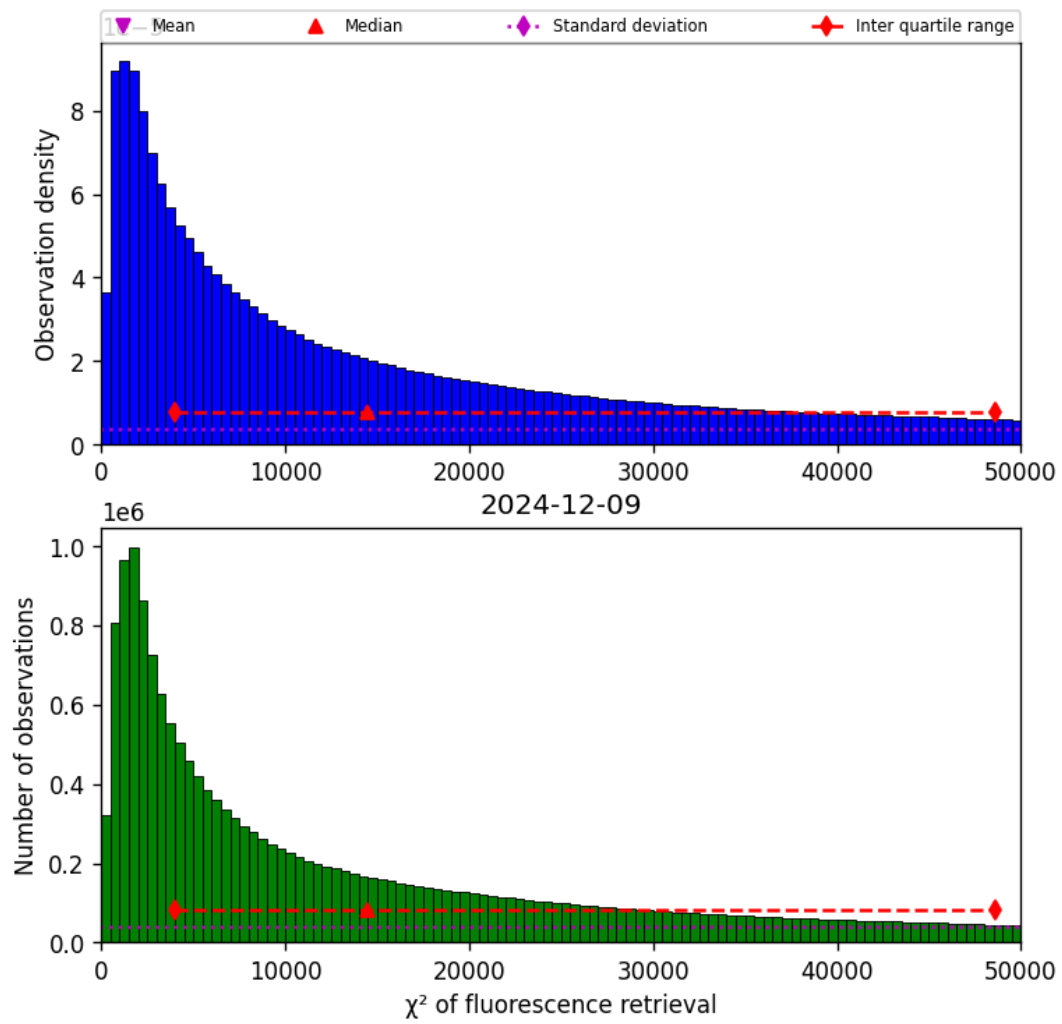


Figure 40: Histogram of “ χ^2 of fluorescence retrieval” for 2024-12-09 to 2024-12-09

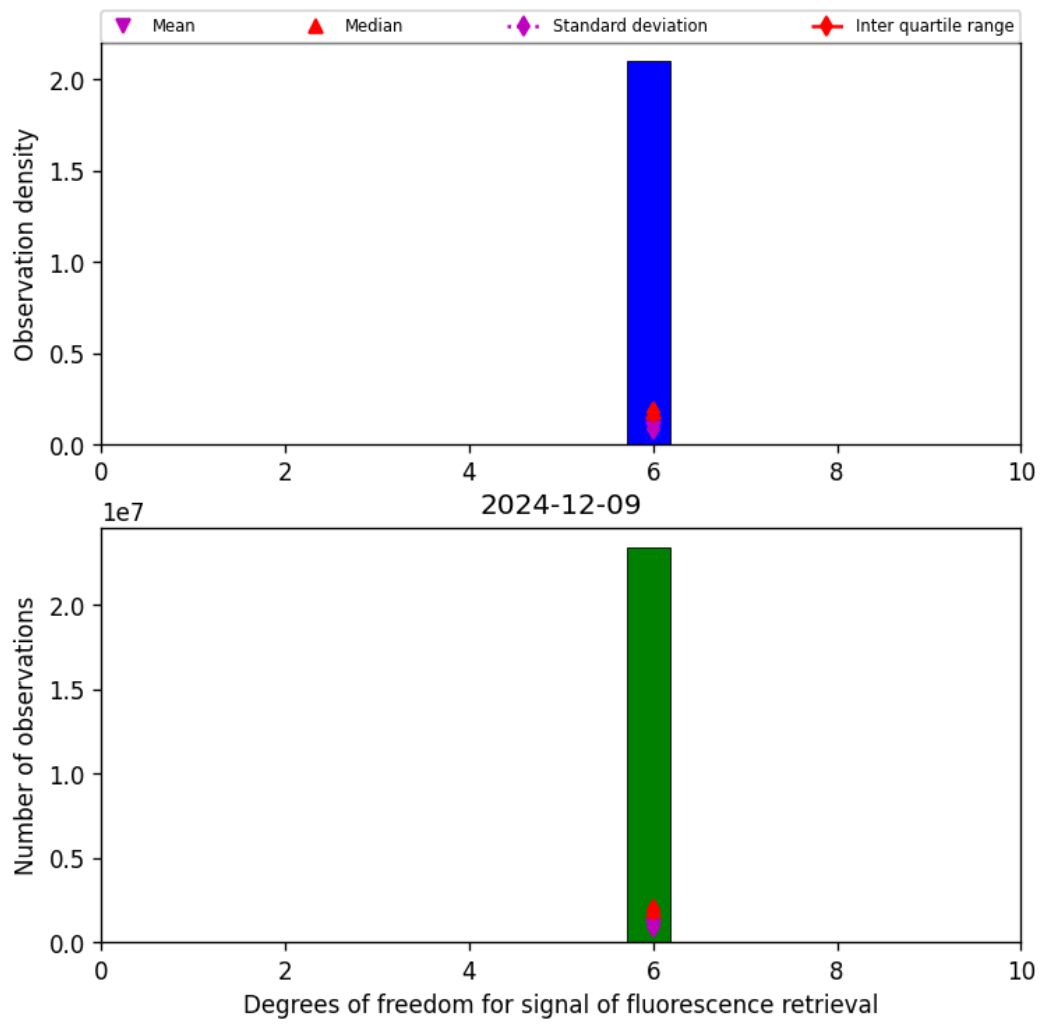


Figure 41: Histogram of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-09 to 2024-12-09

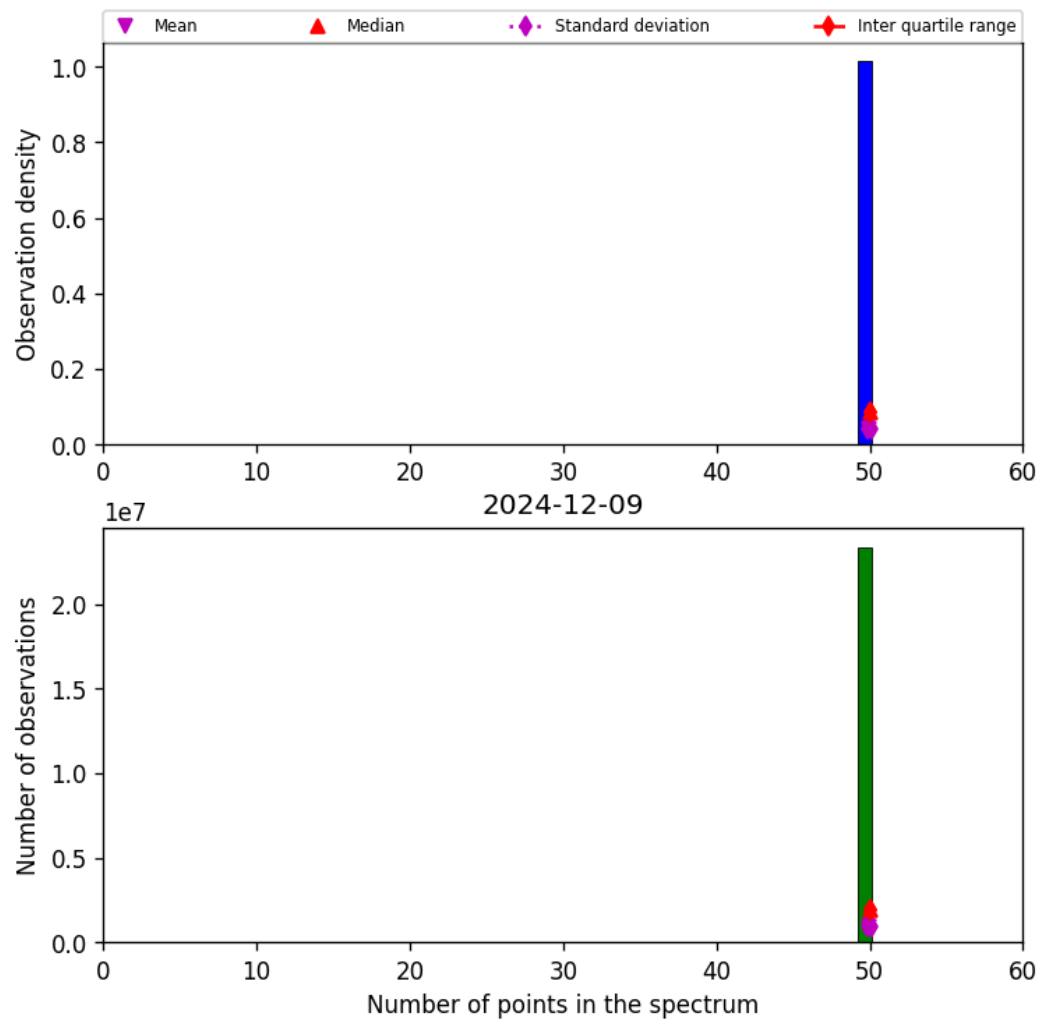


Figure 42: Histogram of "Number of points in the spectrum" for 2024-12-09 to 2024-12-09

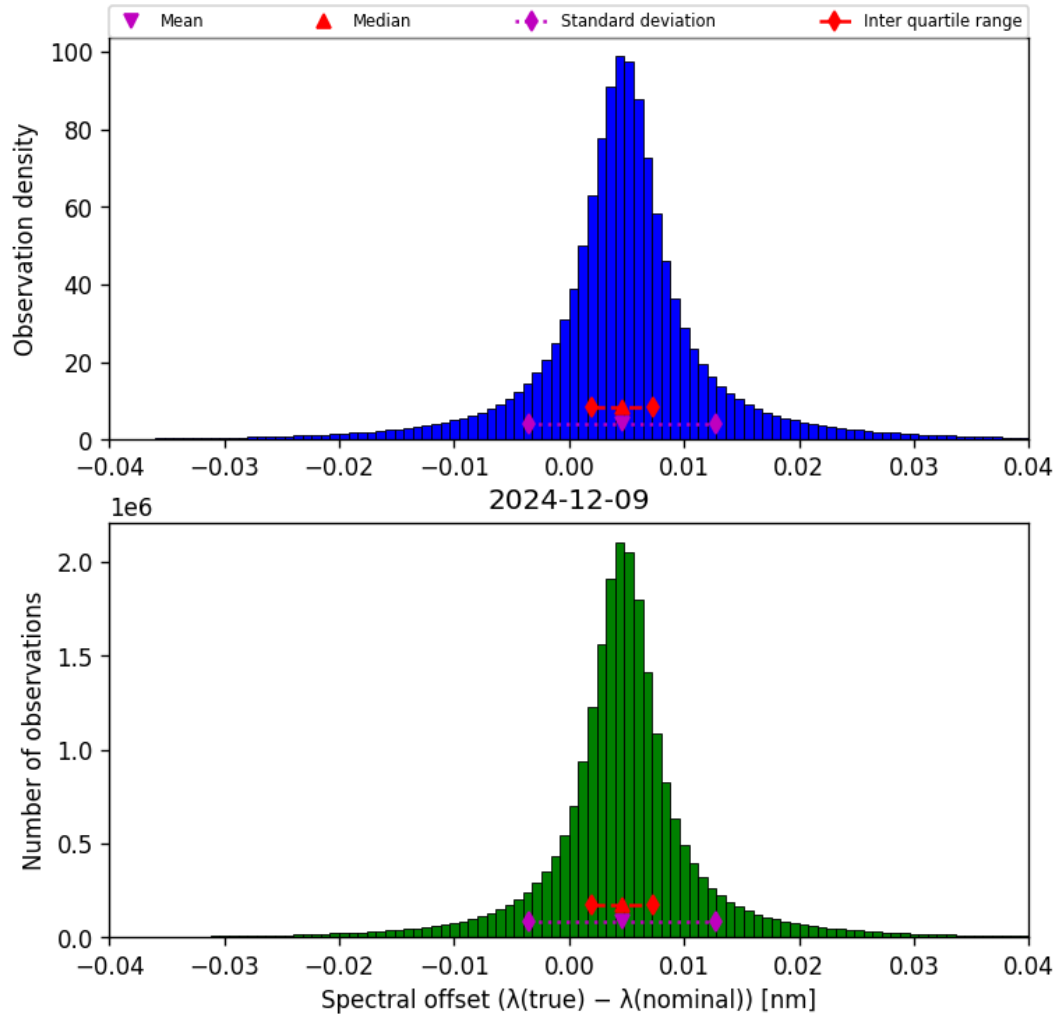


Figure 43: Histogram of “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-12-09 to 2024-12-09

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.

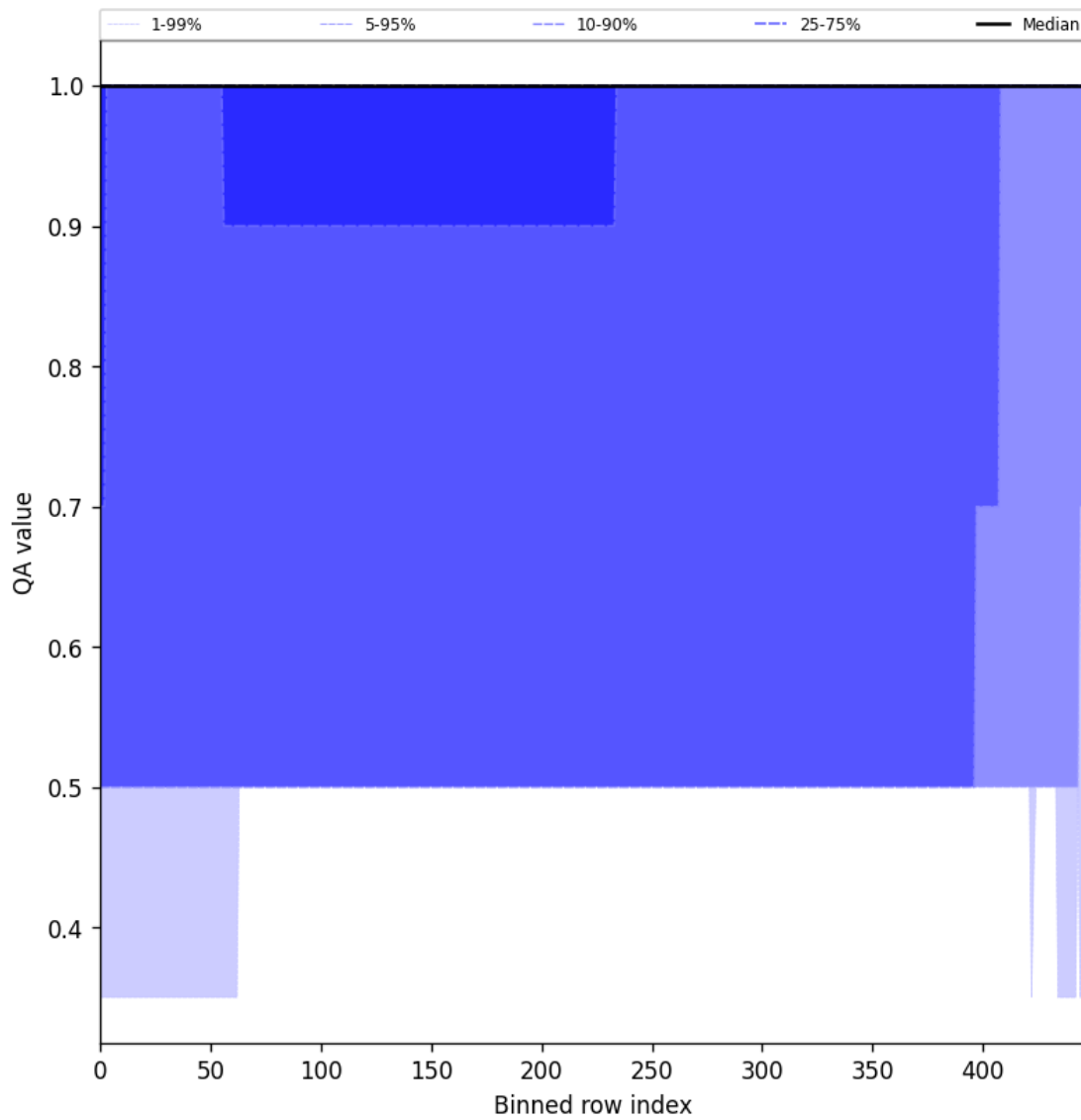


Figure 44: Along track statistics of “QA value” for 2024-12-09 to 2024-12-09

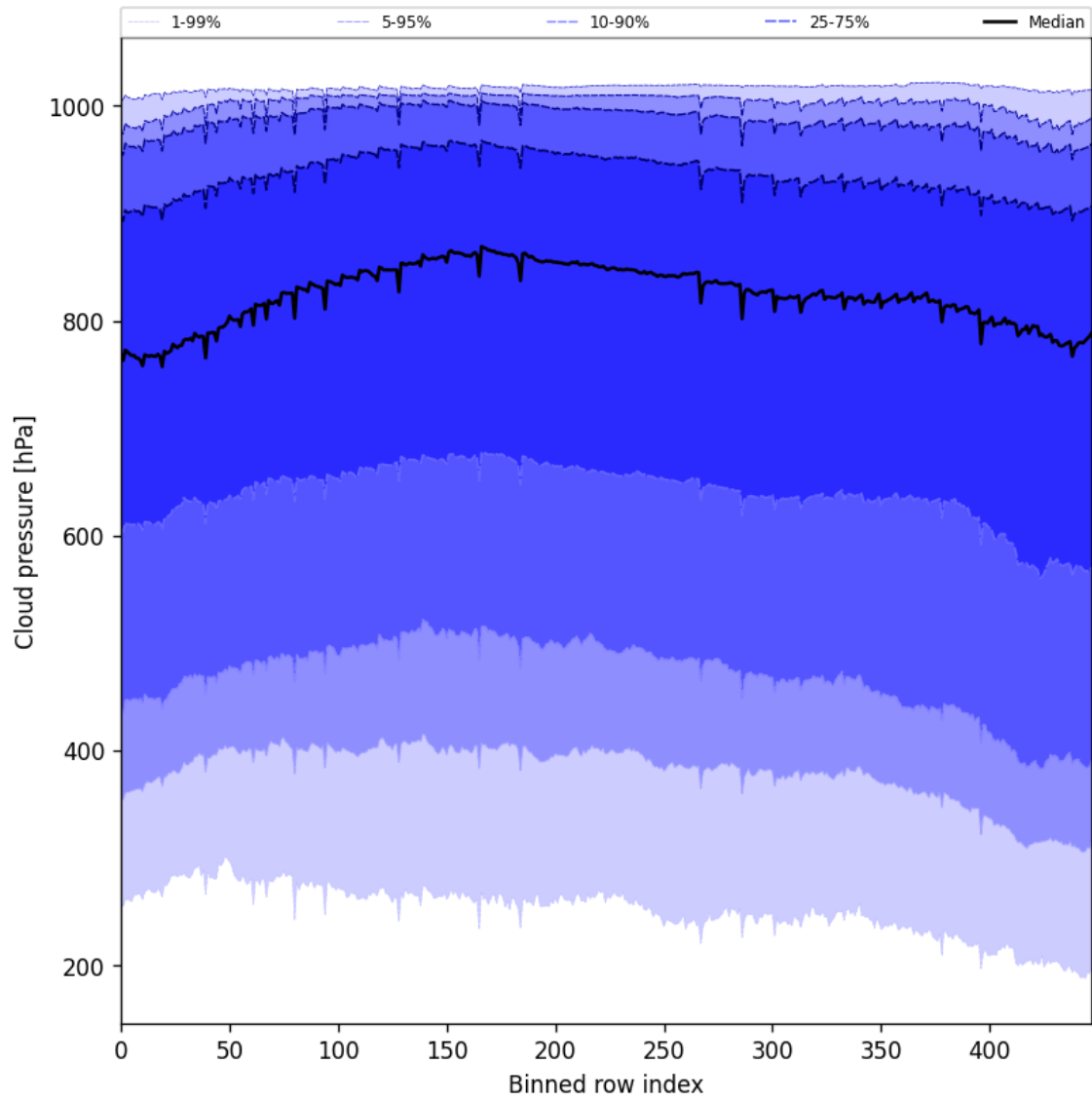


Figure 45: Along track statistics of “Cloud pressure” for 2024-12-09 to 2024-12-09

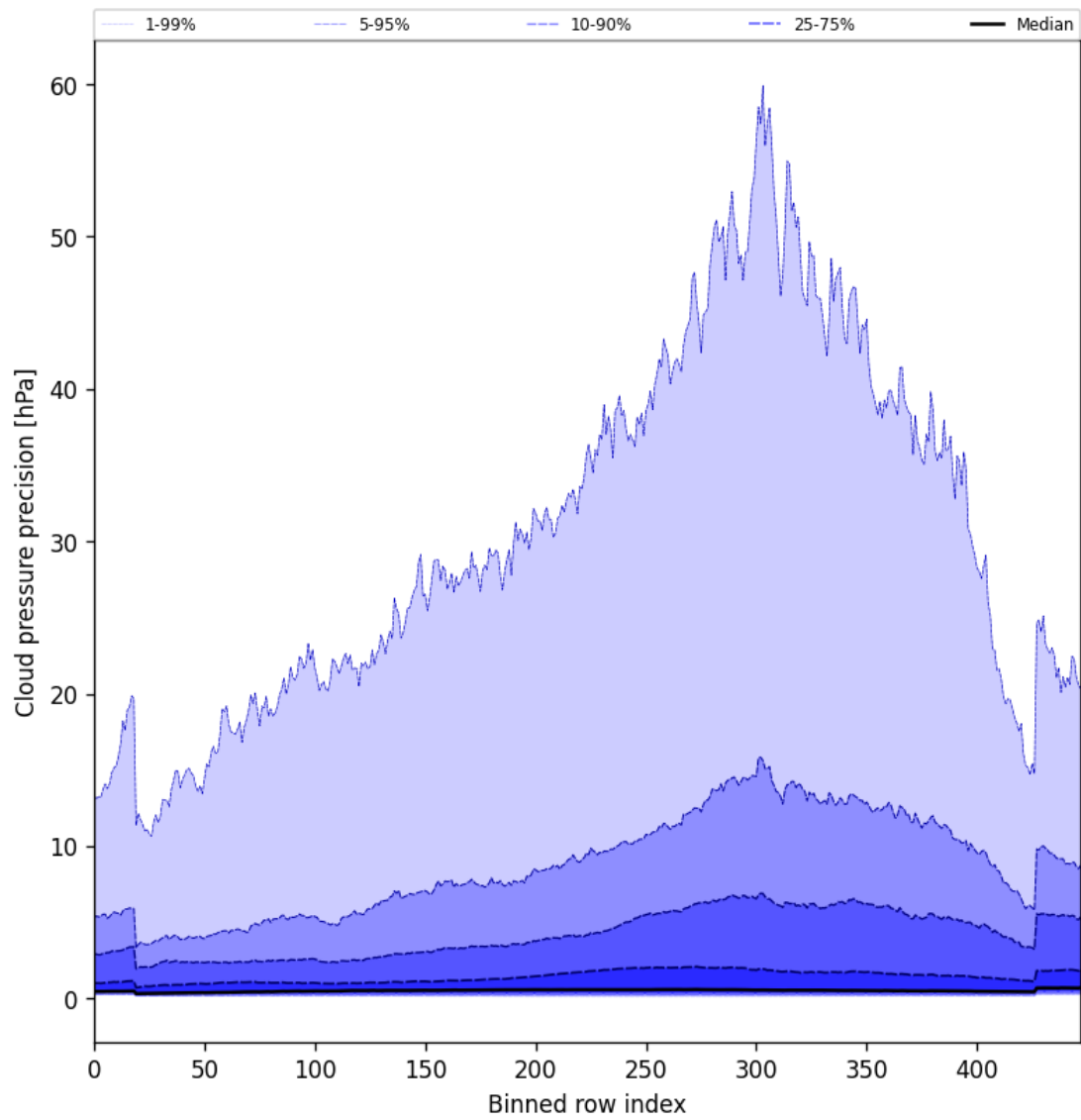


Figure 46: Along track statistics of “Cloud pressure precision” for 2024-12-09 to 2024-12-09

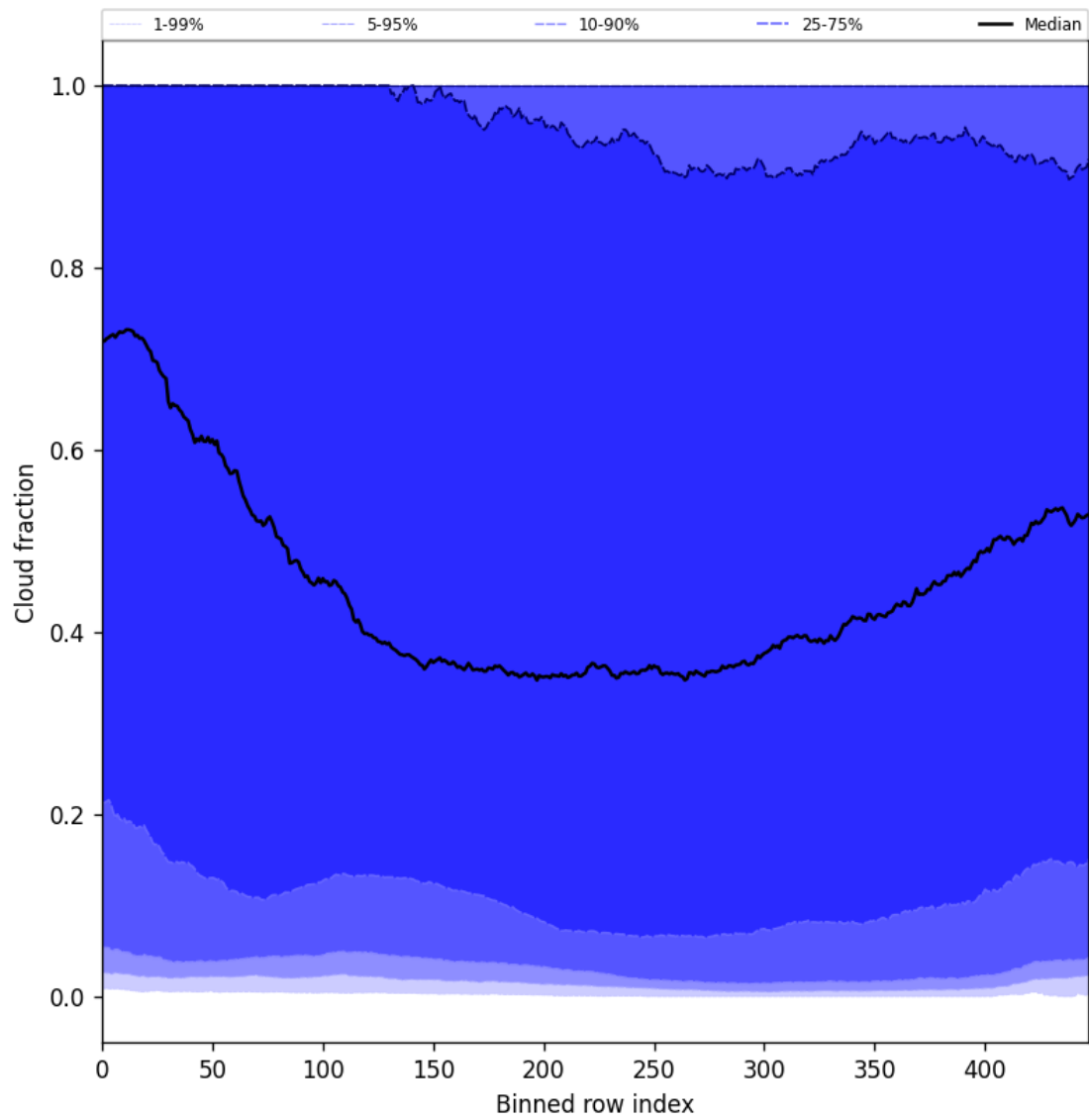


Figure 47: Along track statistics of “Cloud fraction” for 2024-12-09 to 2024-12-09

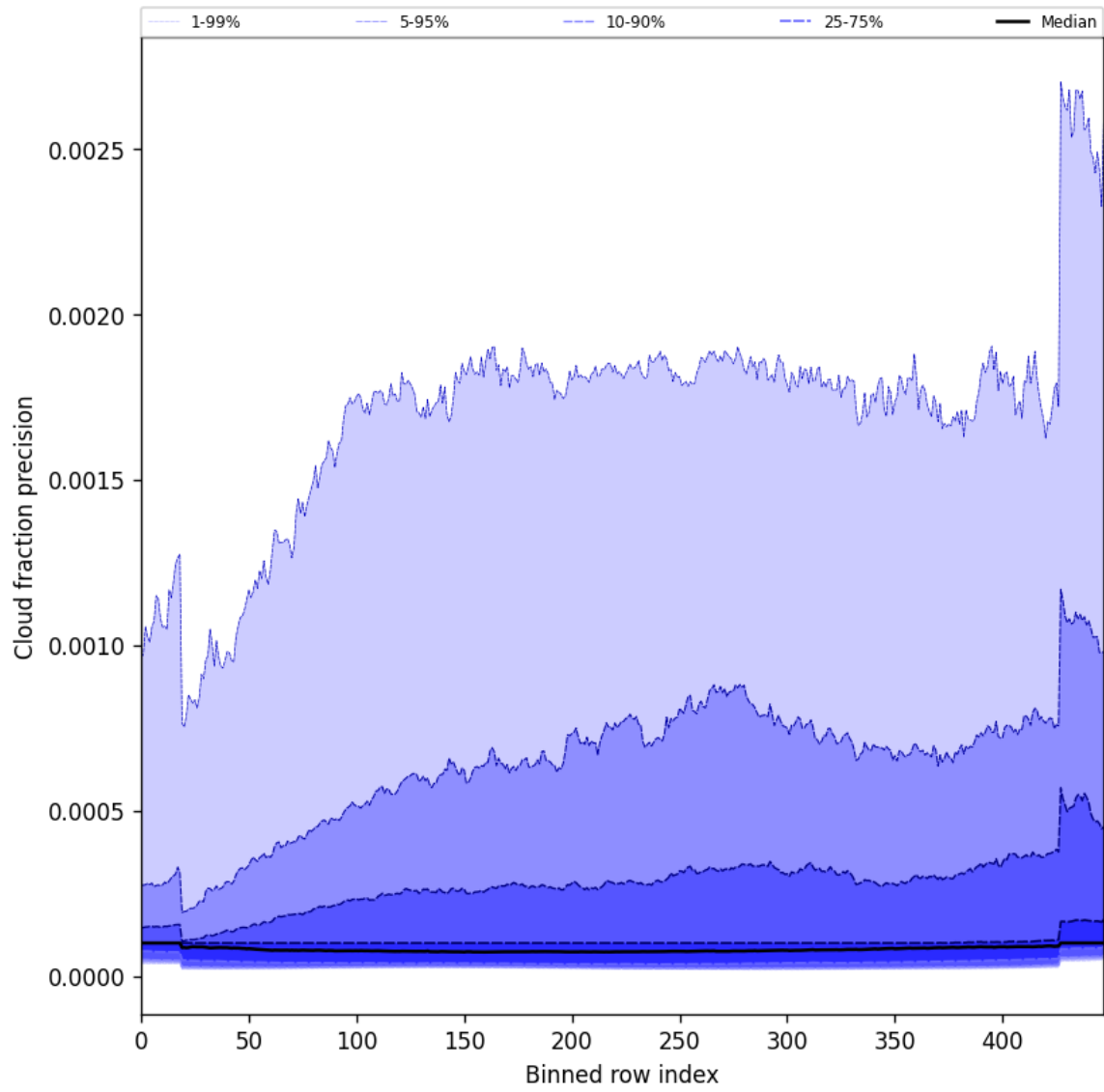


Figure 48: Along track statistics of “Cloud fraction precision” for 2024-12-09 to 2024-12-09

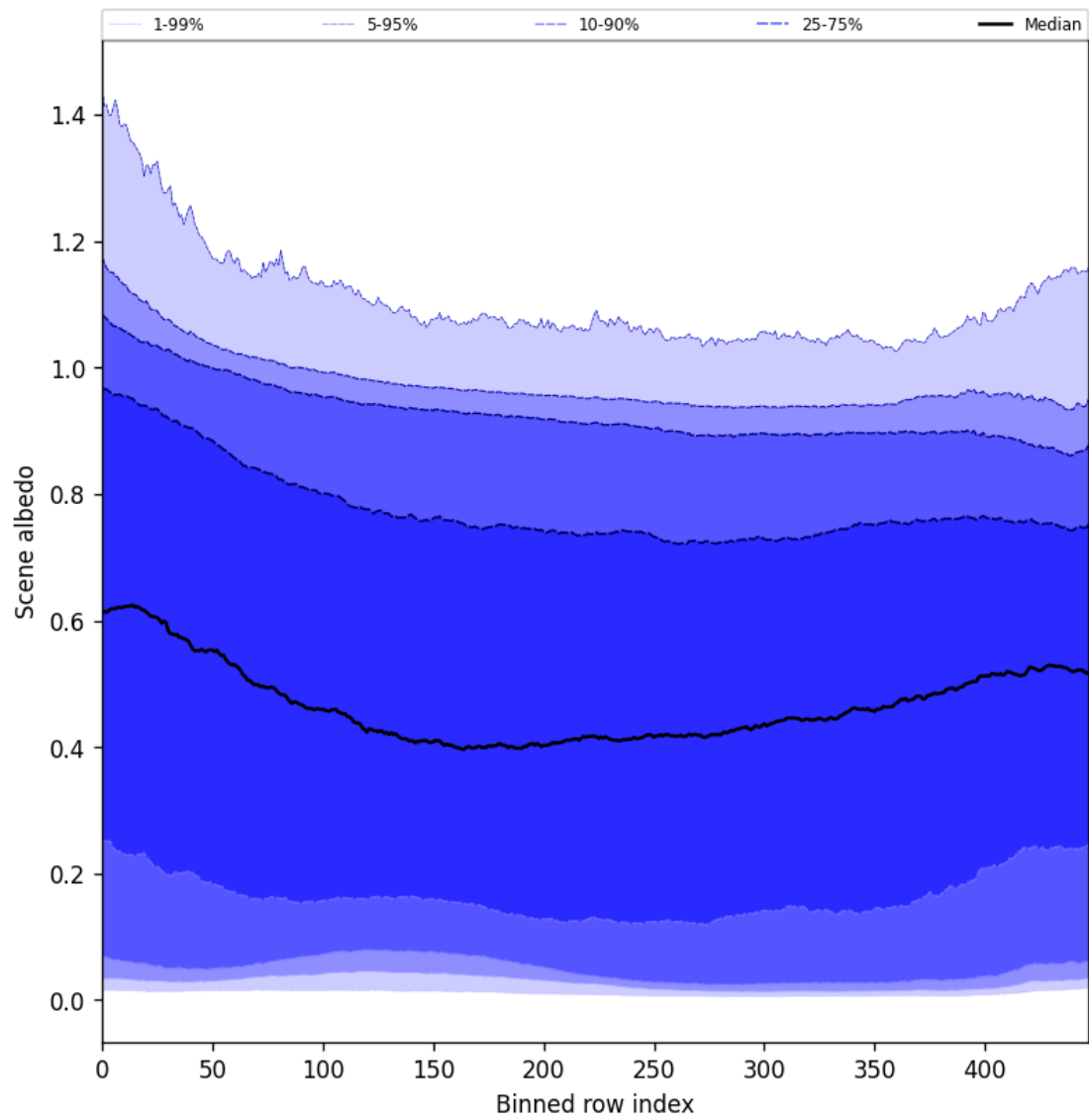


Figure 49: Along track statistics of “Scene albedo” for 2024-12-09 to 2024-12-09

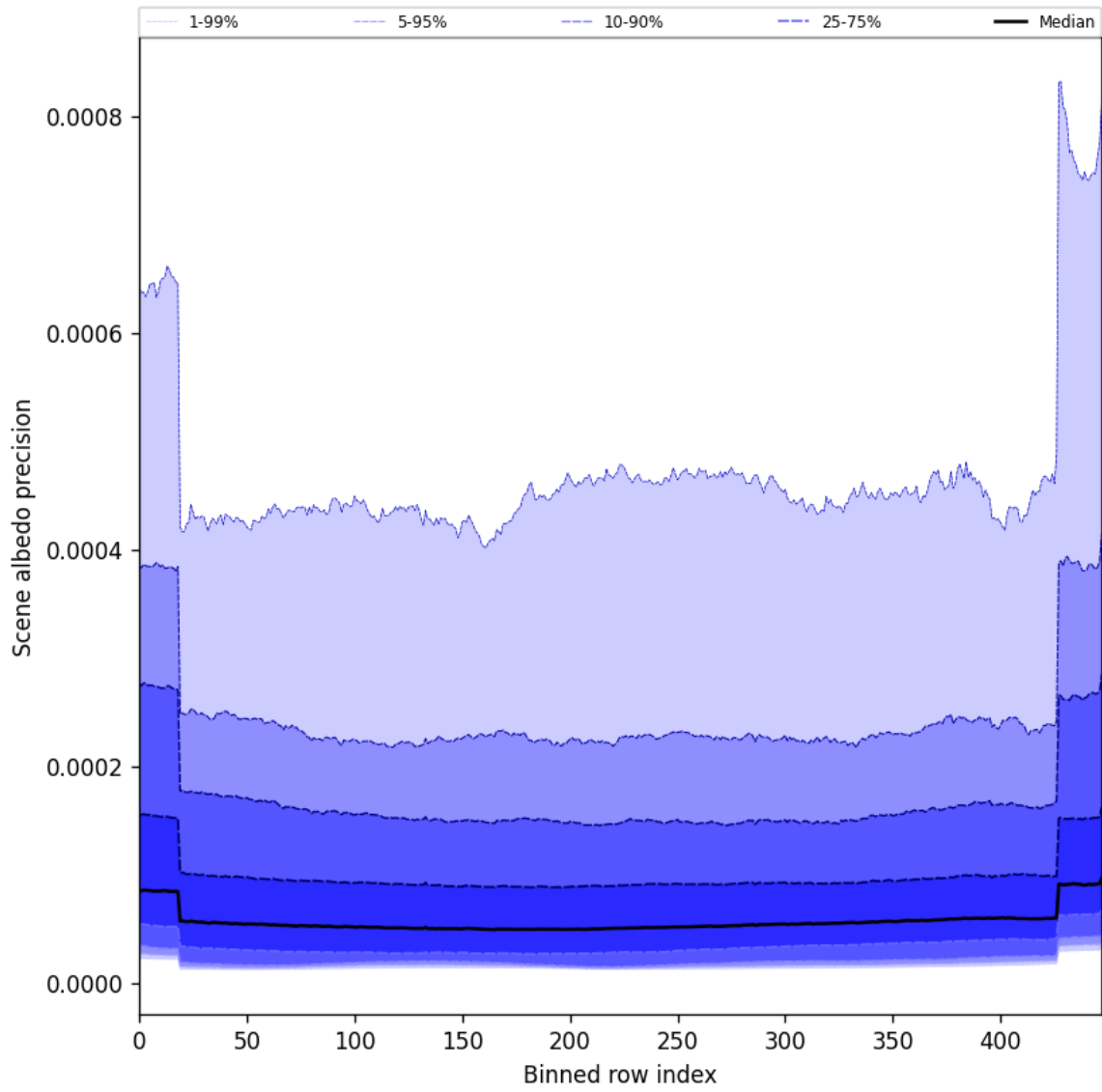


Figure 50: Along track statistics of “Scene albedo precision” for 2024-12-09 to 2024-12-09

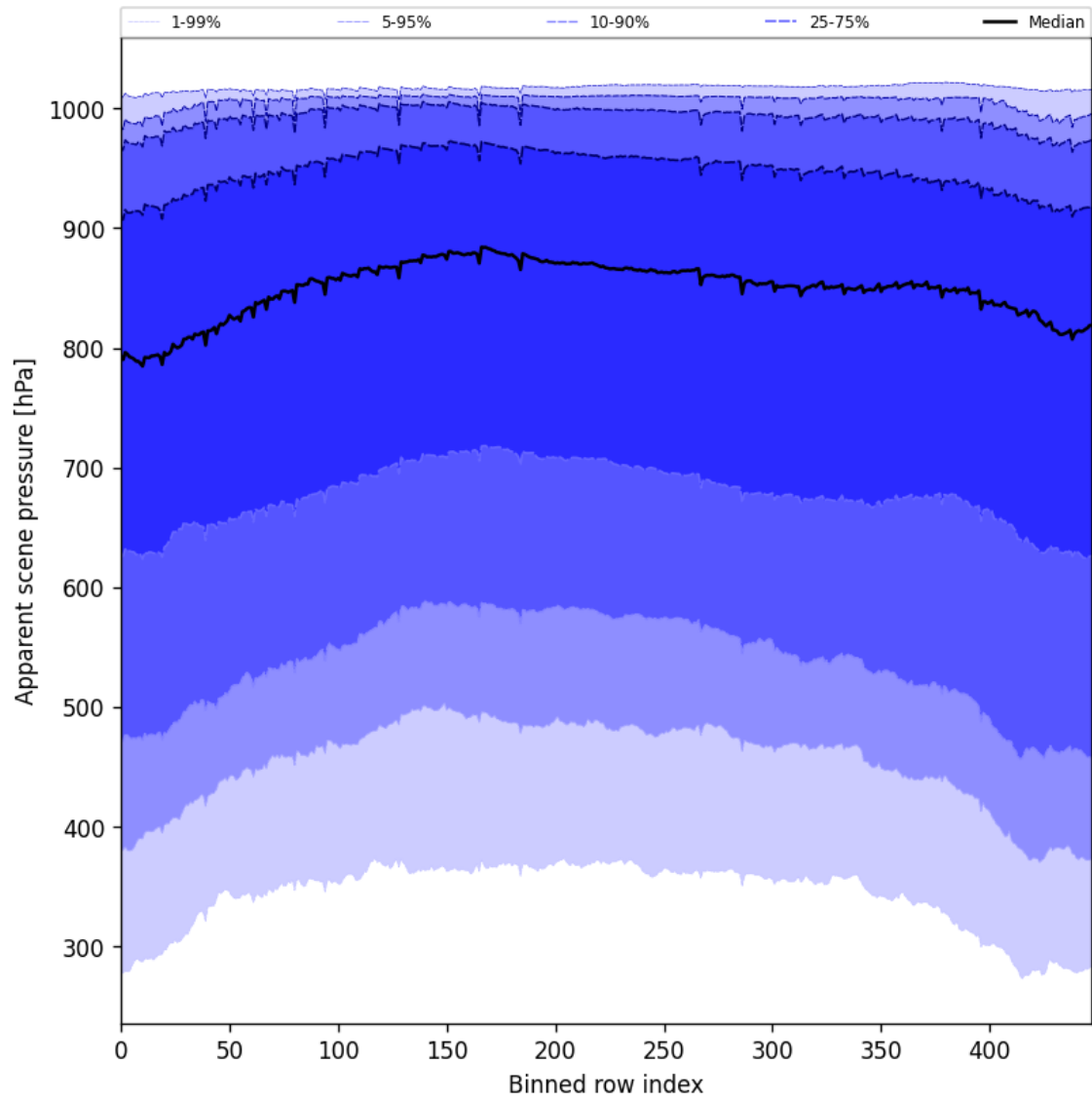


Figure 51: Along track statistics of “Apparent scene pressure” for 2024-12-09 to 2024-12-09

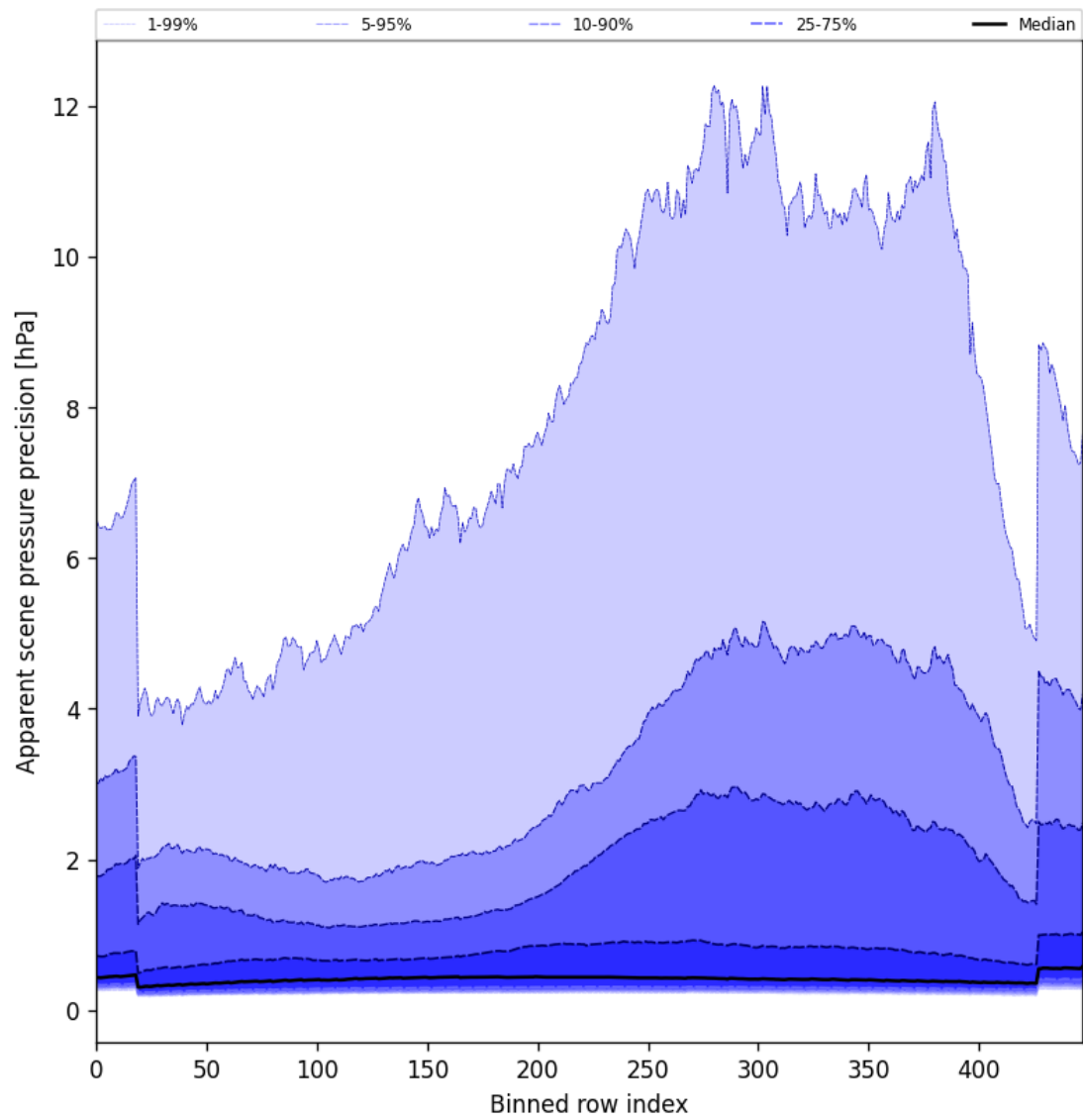


Figure 52: Along track statistics of “Apparent scene pressure precision” for 2024-12-09 to 2024-12-09

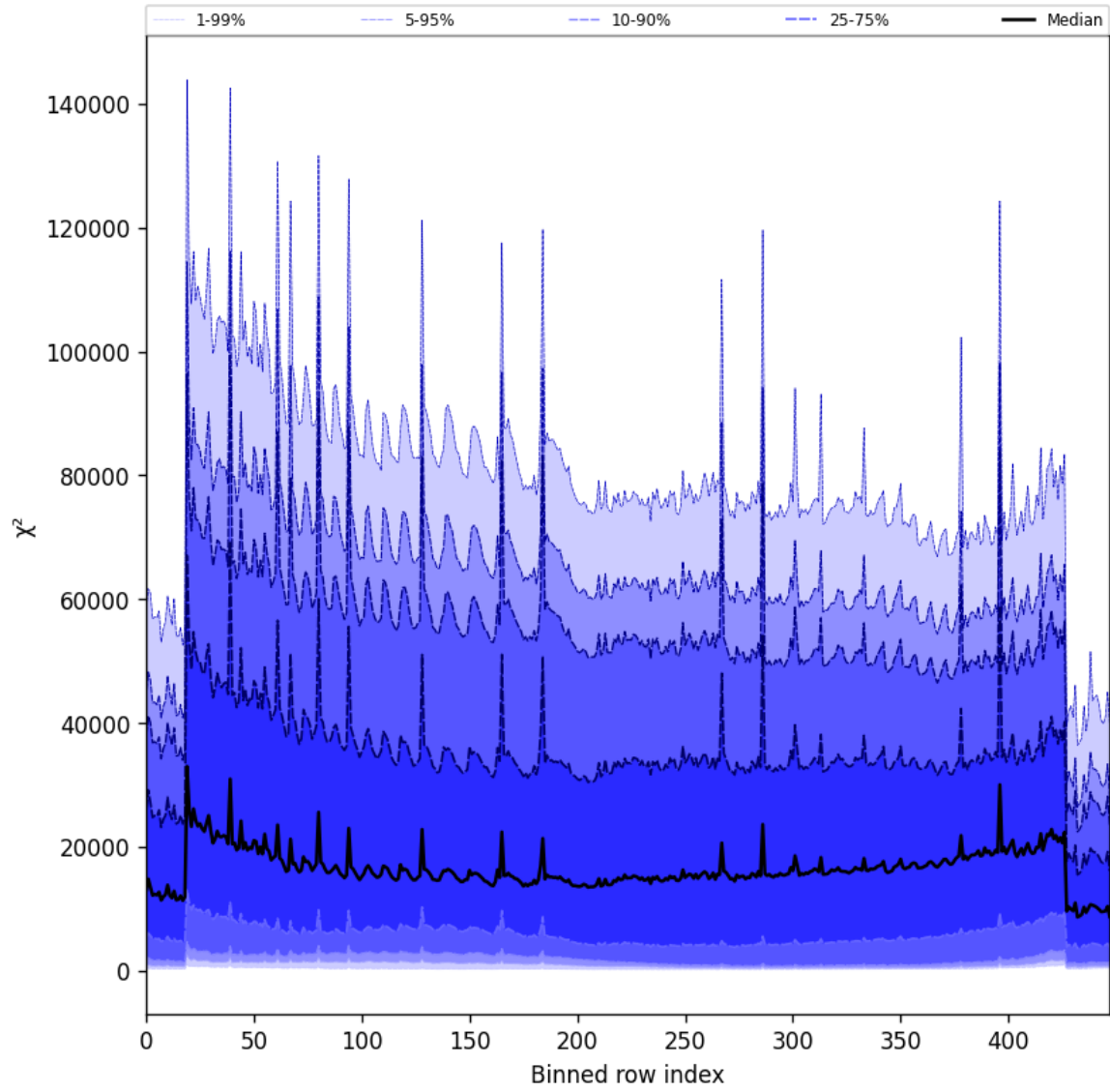


Figure 53: Along track statistics of “ χ^2 ” for 2024-12-09 to 2024-12-09

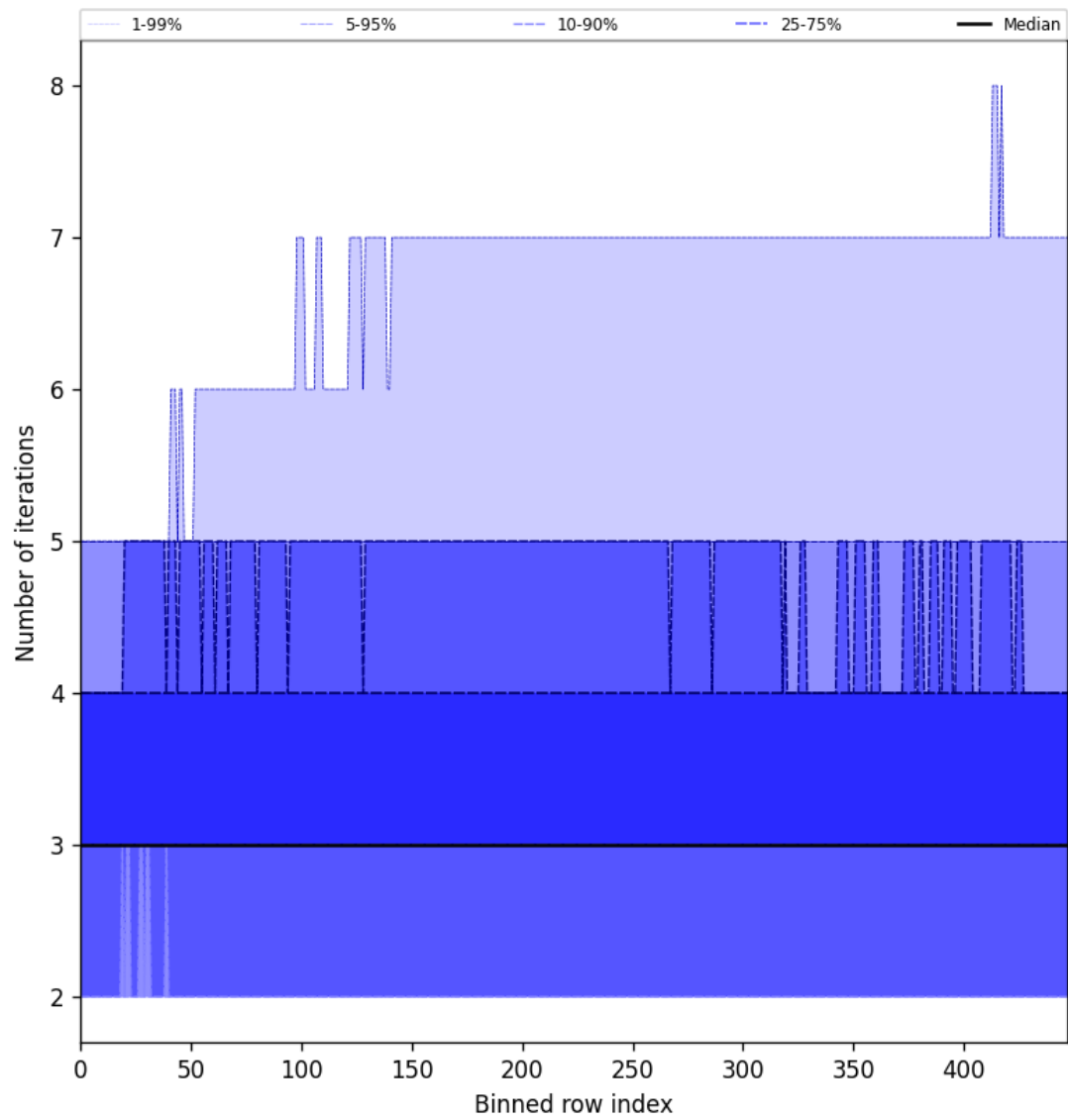


Figure 54: Along track statistics of “Number of iterations” for 2024-12-09 to 2024-12-09

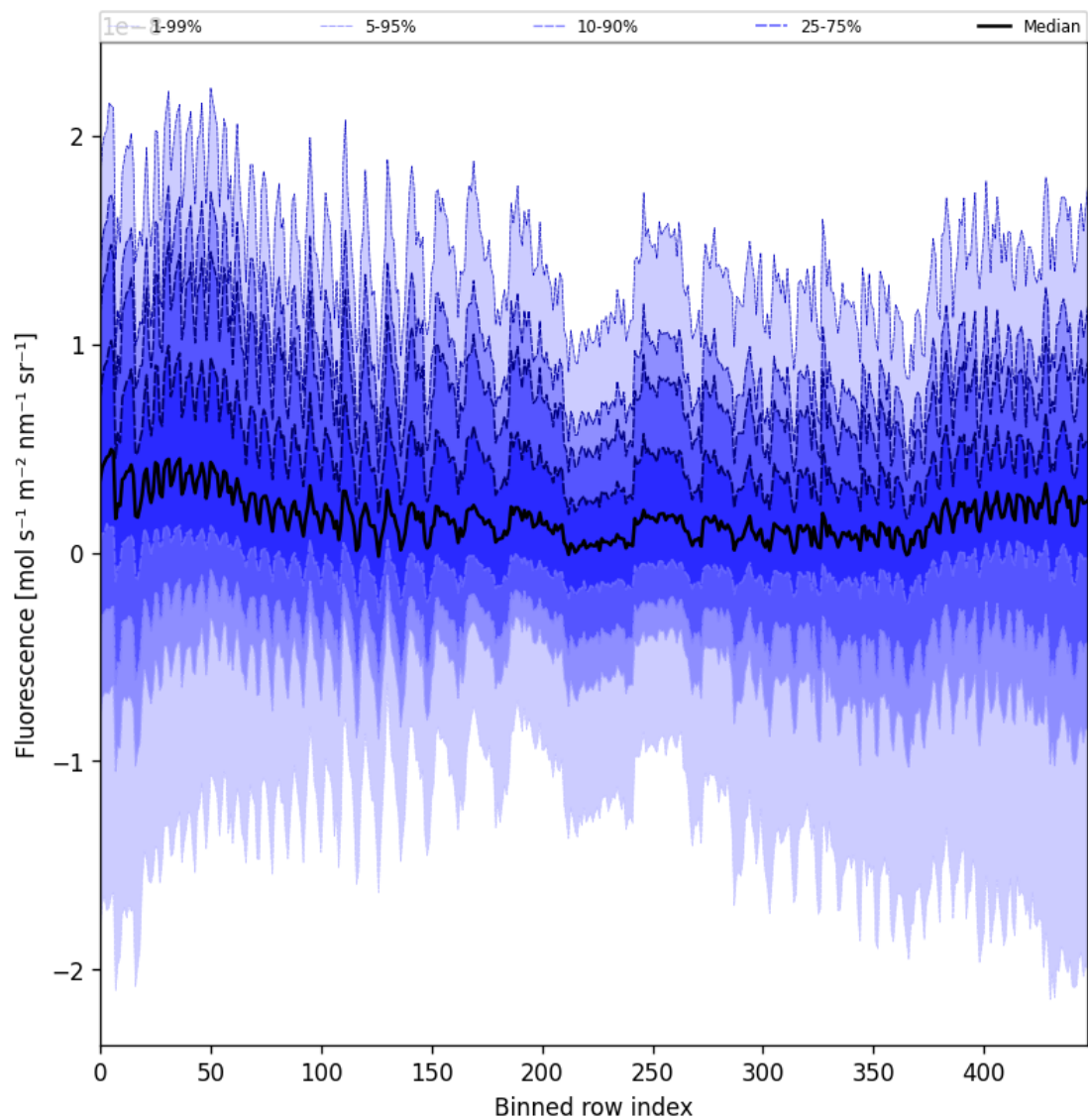


Figure 55: Along track statistics of “Fluorescence” for 2024-12-09 to 2024-12-09

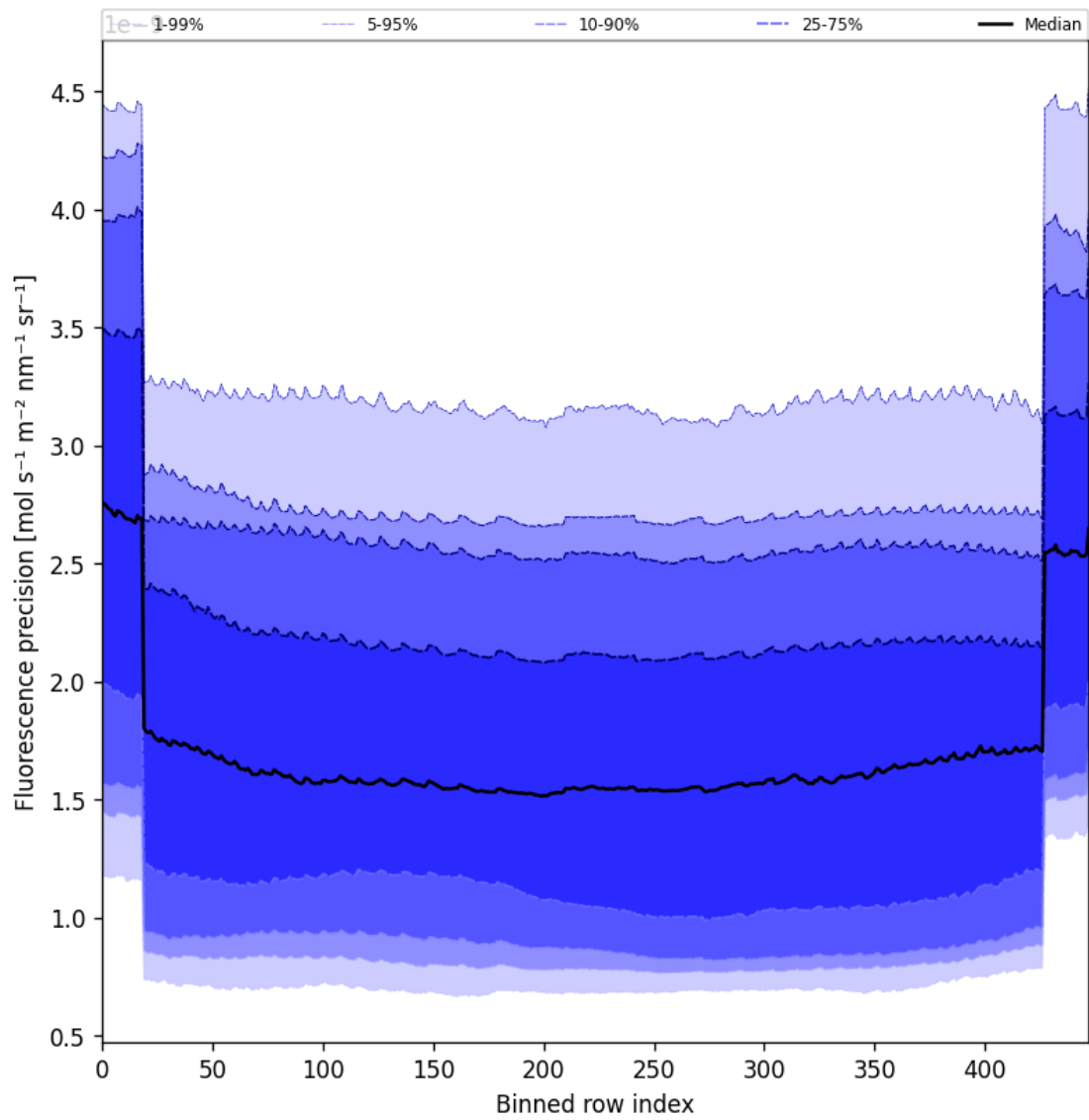


Figure 56: Along track statistics of “Fluorescence precision” for 2024-12-09 to 2024-12-09

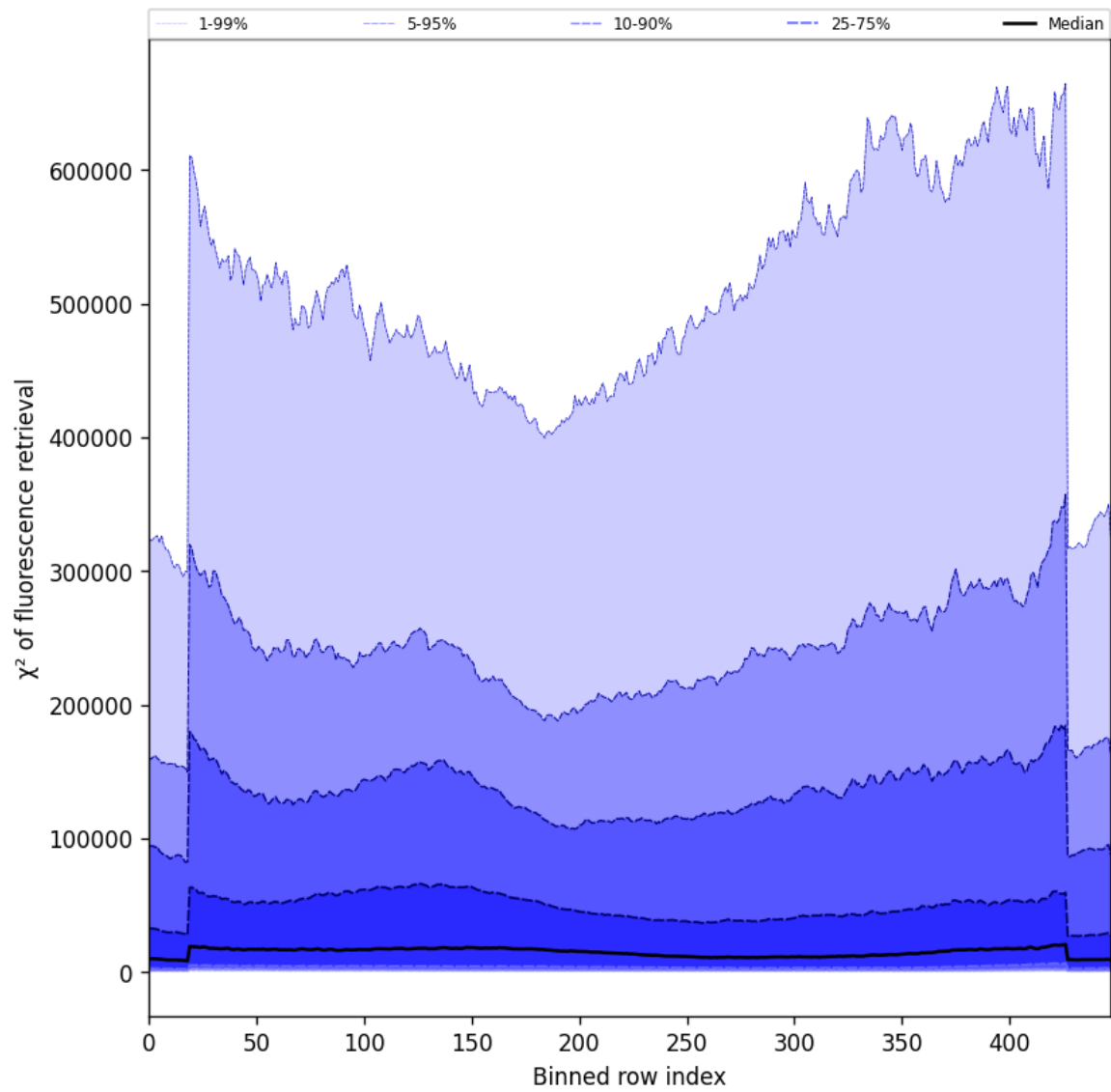


Figure 57: Along track statistics of “ χ^2 of fluorescence retrieval” for 2024-12-09 to 2024-12-09



Figure 58: Along track statistics of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-09 to 2024-12-09



Figure 59: Along track statistics of “Number of points in the spectrum” for 2024-12-09 to 2024-12-09

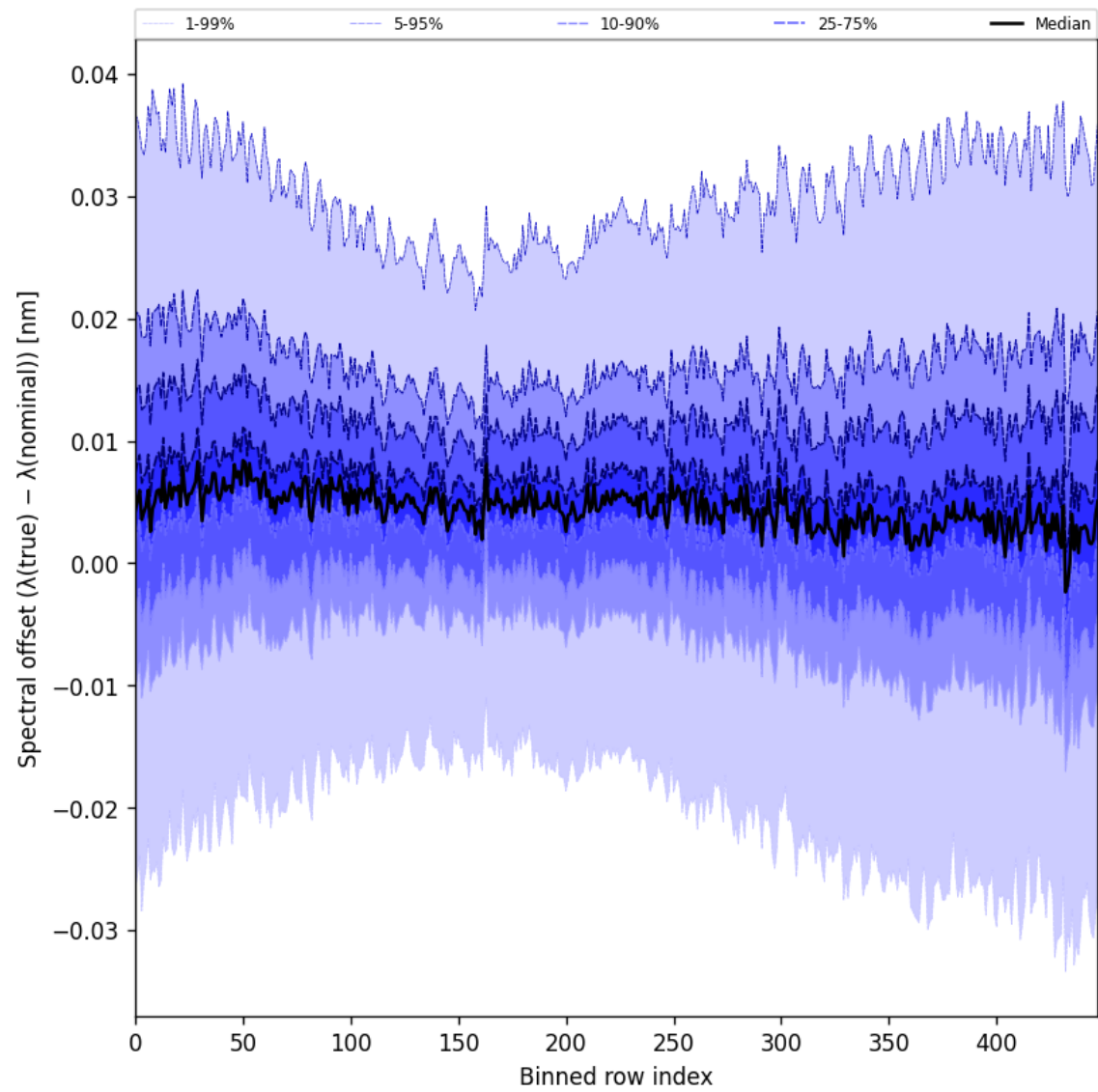


Figure 60: Along track statistics of “Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2024-12-09 to 2024-12-09

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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