PyCAMA report generated by tropl2-proc

tropl2-proc

2024-12-12 (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:

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

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]	0.905 ± 0.186	24768956	0.995	0.1000	1.000	0.350	1.000
cloud pressure crb [hPa]	773 ± 200	24768956	1.005×10^{3}	298	828	130	1.052×10^{3}
cloud pressure crb precision [hPa]	2.26 ± 8.93	24768956	0.750	1.09	0.513	9.766×10^{-4}	1.550×10^{3}
cloud fraction crb [1]	0.494 ± 0.389	24768956	0.996	0.892	0.430	0.0	1.000
cloud fraction crb precision [1]	$(1.606 \pm 5.883) \times 10^{-4}$	24768956	2.500×10^{-4}	5.816×10^{-5}	7.995×10^{-5}	1.920×10^{-9}	0.225
scene albedo [1]	0.475 ± 0.339	24768956	1.500×10^{-2}	0.626	0.453	-6.331×10^{-3}	4.16
scene albedo precision [1]	$(8.207 \pm 8.870) \times 10^{-5}$	24768956	2.500×10^{-4}	6.443×10^{-5}	5.536×10^{-5}	1.067×10^{-5}	6.392×10^{-3}
apparent scene pressure [hPa]	802 ± 179	24768956	1.008×10^{3}	276	855	130	1.043×10^{3}
apparent scene pressure precision [hPa]	0.917 ± 1.639	24768956	0.500	0.474	0.416	7.954×10^{-2}	60.2
chi square [1]	$(0.242 \pm 2.399) \times 10^{5}$	24768956	0.150	2.914×10^{4}	1.580×10^{4}	71.5	4.555×10^{8}
number of iterations [1]	3.38 ± 1.03	24768956	3.23	1.000	3.00	1.000	14.0
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.850 \pm 6.346) \times 10^{-9}$	24768956	7.500×10^{-10}	5.301×10^{-9}	1.542×10^{-9}	-1.762×10^{-6}	1.754×10^{-6}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.748 \pm 0.713) \times 10^{-9}$	24768956	8.500×10^{-10}	1.075×10^{-9}	1.675×10^{-9}	3.792×10^{-10}	5.569×10^{-9}
chi square fluorescence [1]	$(0.489 \pm 0.933) \times 10^{5}$	24768956	1.750×10^{3}	4.490×10^{4}	1.513×10^{4}	90.5	3.174×10^{6}
degrees of freedom fluorescence [1]	6.00 ± 0.00	24768956	5.95	0.0	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	24768956	49.7	0.0	50.0	46.0	50.0
wavelength calibration offset [nm]	$(4.634 \pm 8.270) \times 10^{-3}$	24768956	4.400×10^{-3}	5.314×10^{-3}	4.632×10^{-3}	-0.270	0.124

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]	245	378	468	555	642	940	971	990	1.007×10^{3}	1.018×10^{3}
cloud pressure crb precision [hPa]	0.181	0.229	0.248	0.266	0.299	1.39	2.42	4.17	8.38	29.2
cloud fraction crb [1]	1.394×10^{-3}	1.221×10^{-2}	2.717×10^{-2}	4.998×10^{-2}	0.100	0.992	1.000	1.000	1.000	1.000
cloud fraction crb precision [1]	2.049×10^{-5}	2.409×10^{-5}	2.708×10^{-5}	3.105×10^{-5}	4.184×10^{-5}	1.000×10^{-4}	1.367×10^{-4}	2.426×10^{-4}	5.885×10^{-4}	1.742×10^{-3}
scene albedo [1]	9.081×10^{-3}	2.226×10^{-2}	4.107×10^{-2}	7.166×10^{-2}	0.149	0.776	0.881	0.936	0.988	1.13
scene albedo precision [1]	1.331×10^{-5}	1.587×10^{-5}	1.937×10^{-5}	2.403×10^{-5}	3.211×10^{-5}	9.654×10^{-5}	1.263×10^{-4}	1.645×10^{-4}	2.416×10^{-4}	4.717×10^{-4}
apparent scene pressure [hPa]	330	446	536	607	676	952	979	995	1.008×10^{3}	1.018×10^{3}
apparent scene pressure precision [hPa]	0.210	0.235	0.251	0.268	0.295	0.770	1.21	1.93	3.42	8.02
chi square [1]	296	726	1.514×10^{3}	2.875×10^{3}	5.482×10^{3}	3.462×10^{4}	4.628×10^{4}	5.550×10^{4}	6.661×10^{4}	8.937×10^{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}]	-1.382×10^{-8}	-6.060×10^{-9}	-3.473×10^{-9}	-2.051×10^{-9}	-7.662×10^{-10}	4.535×10^{-9}	6.381×10^{-9}	8.150×10^{-9}	1.065×10^{-8}	1.600×10^{-8}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	6.971×10^{-10}	8.002×10^{-10}	8.782×10^{-10}	9.707×10^{-10}	1.147×10^{-9}	2.222×10^{-9}	2.510×10^{-9}	2.671×10^{-9}	2.978×10^{-9}	3.688×10^{-9}
chi square fluorescence [1]	408	1.050×10^{3}	1.666×10^{3}	2.454×10^{3}	4.123×10^{3}	4.902×10^{4}	8.305×10^{4}	1.276×10^{5}	2.186×10^{5}	4.819×10^{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]	-2.214×10^{-2}	-7.381×10^{-3}	-2.513×10^{-3}	-3.554×10^{-6}	1.956×10^{-3}	7.270×10^{-3}	9.250×10^{-3}	1.182×10^{-2}	1.677×10^{-2}	3.147×10^{-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 ± 0.051	9590543	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	744 ± 222	9590543	371	808	130	1.052×10^3	565	935
cloud pressure crb precision [hPa]	3.30 ± 11.20	9590543	1.91	0.868	2.136×10^{-3}	1.550×10^3	0.431	2.34
cloud fraction crb [1]	0.374 ± 0.347	9590543	0.601	0.247	0.0	1.000	6.116×10^{-2}	0.662
cloud fraction crb precision [1]	$(1.527 \pm 5.456) \times 10^{-4}$	9590543	9.201×10^{-5}	8.780×10^{-5}	8.697×10^{-7}	0.225	4.665×10^{-5}	1.387×10^{-4}
scene albedo [1]	0.391 ± 0.303	9590543	0.489	0.346	-6.331×10^{-3}	4.16	0.119	0.608
scene albedo precision [1]	$(9.079 \pm 9.996) \times 10^{-5}$	9590543	7.219×10^{-5}	5.730×10^{-5}	1.154×10^{-5}	6.392×10^{-3}	3.480×10^{-5}	1.070×10^{-4}
apparent scene pressure [hPa]	785 ± 196	9590543	308	847	130	1.043×10^3	640	948
apparent scene pressure precision [hPa]	1.16 ± 1.91	9590543	0.642	0.535	7.954×10^{-2}	60.2	0.371	1.01
chi square [1]	$(0.133 \pm 0.456) \times 10^5$	9590543	1.556×10^4	9.583×10^3	71.5	5.780×10^7	3.383×10^3	1.894×10^4
number of iterations [1]	3.35 ± 1.02	9590543	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(9.032 \pm 44.431) \times 10^{-10}$	9590543	3.553×10^{-9}	1.009×10^{-9}	-1.762×10^{-6}	1.174×10^{-6}	-6.785×10^{-10}	2.875×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.463 \pm 0.603) \times 10^{-9}$	9590543	8.337×10^{-10}	1.356×10^{-9}	3.792×10^{-10}	5.493×10^{-9}	9.692×10^{-10}	1.803×10^{-9}
chi square fluorescence [1]	$(0.432 \pm 0.882) \times 10^5$	9590543	3.809×10^4	1.118×10^4	90.5	1.764×10^6	3.225×10^3	4.132×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	9590543	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	9590543	0.0	50.0	48.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.746 \pm 9.318) \times 10^{-3}$	9590543	6.666×10^{-3}	4.640×10^{-3}	-8.273×10^{-2}	9.008×10^{-2}	1.356×10^{-3}	8.022×10^{-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	15178413	0.500	1.000	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	792 ± 182	15178413	274	840	130	1.032×10^3	668	942
cloud pressure crb precision [hPa]	1.61 ± 7.04	15178413	0.648	0.374	9.766×10^{-4}	436	0.271	0.918
cloud fraction crb [1]	0.569 ± 0.395	15178413	0.853	0.609	0.0	1.000	0.147	1.000
cloud fraction crb precision [1]	$(1.656 \pm 6.137) \times 10^{-4}$	15178413	6.052×10^{-5}	7.405×10^{-5}	1.920×10^{-9}	0.185	3.948×10^{-5}	1.000×10^{-4}
scene albedo [1]	0.528 ± 0.350	15178413	0.683	0.563	-2.499×10^{-3}	3.58	0.173	0.856
scene albedo precision [1]	$(7.655 \pm 8.028) \times 10^{-5}$	15178413	6.129×10^{-5}	5.421×10^{-5}	1.067×10^{-5}	2.043×10^{-3}	3.053×10^{-5}	9.182×10^{-5}
apparent scene pressure [hPa]	813 ± 167	15178413	264	860	130	1.032×10^3	689	954
apparent scene pressure precision [hPa]	0.765 ± 1.421	15178413	0.360	0.351	0.136	59.3	0.273	0.633
chi square [1]	$(0.311 \pm 3.040) \times 10^5$	15178413	3.759×10^4	2.390×10^4	86.7	4.555×10^8	8.111×10^3	4.570×10^4
number of iterations [1]	3.40 ± 1.03	15178413	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(2.448 \pm 7.233) \times 10^{-9}$	15178413	6.648×10^{-9}	2.191×10^{-9}	-1.623×10^{-6}	1.754×10^{-6}	-8.406×10^{-10}	5.808×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.928 \pm 0.719) \times 10^{-9}$	15178413	1.112×10^{-9}	1.948×10^{-9}	4.303×10^{-10}	5.569×10^{-9}	1.331×10^{-9}	2.444×10^{-9}
chi square fluorescence [1]	$(0.525 \pm 0.963) \times 10^5$	15178413	4.857×10^4	1.807×10^4	111	3.174×10^6	4.911×10^3	5.348×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	15178413	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	15178413	0.0	50.0	46.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.564 \pm 7.531) \times 10^{-3}$	15178413	4.621×10^{-3}	4.628×10^{-3}	-0.270	0.124	2.272×10^{-3}	6.894×10^{-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 ± 0.058	15688141	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	803 ± 198	15688141	273	877	130	1.042×10^{3}	684	957
cloud pressure crb precision [hPa]	2.34 ± 9.60	15688141	1.13	0.593	9.766×10^{-4}	650	0.331	1.46
cloud fraction crb [1]	0.401 ± 0.348	15688141	0.632	0.298	0.0	1.000	7.707×10^{-2}	0.709
cloud fraction crb precision [1]	$(1.079 \pm 4.702) \times 10^{-4}$	15688141	6.383×10^{-5}	5.309×10^{-5}	1.920×10^{-9}	0.125	3.106×10^{-5}	9.488×10^{-5}
scene albedo [1]	0.352 ± 0.302	15688141	0.541	0.268	-6.331×10^{-3}	3.81	7.192×10^{-2}	0.612
scene albedo precision [1]	$(6.282 \pm 7.722) \times 10^{-5}$	15688141	4.269×10^{-5}	4.351×10^{-5}	1.067×10^{-5}	5.835×10^{-3}	2.409×10^{-5}	6.678×10^{-5}
apparent scene pressure [hPa]	823 ± 187	15688141	249	890	130	1.040×10^{3}	721	969
apparent scene pressure precision [hPa]	1.21 ± 1.99	15688141	0.867	0.532	8.267×10^{-2}	60.2	0.317	1.18
chi square [1]	$(0.195 \pm 2.898) \times 10^{5}$	15688141	2.473×10^{4}	9.953×10^{3}	71.5	4.555×10^{8}	3.042×10^{3}	2.778×10^{4}
number of iterations [1]	3.01 ± 0.82	15688141	0.0	3.00	1.000	14.0	3.00	3.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(9.427 \pm 55.961) \times 10^{-10}$	15688141	4.588×10^{-9}	5.737×10^{-10}	-1.242×10^{-6}	1.244×10^{-6}	-1.400×10^{-9}	3.188×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.677 \pm 0.744) \times 10^{-9}$	15688141	1.177×10^{-9}	1.521×10^{-9}	3.792×10^{-10}	5.560×10^{-9}	1.035×10^{-9}	2.213×10^{-9}
chi square fluorescence [1]	$(0.481 \pm 0.865) \times 10^{5}$	15688141	4.654×10^{4}	1.853×10^{4}	90.5	1.916×10^{6}	5.576×10^{3}	5.212×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	15688141	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	15688141	0.0	50.0	46.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.579 \pm 9.706) \times 10^{-3}$	15688141	6.661×10^{-3}	4.572×10^{-3}	-0.270	0.124	1.220×10^{-3}	7.882×10^{-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]	0.731 ± 0.252	7404905	0.500	0.500	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	722 ± 184	7404905	246	721	130	1.050×10^3	624	870
cloud pressure crb precision [hPa]	1.95 ± 7.42	7404905	0.788	0.335	2.136×10^{-3}	1.550×10^3	0.263	1.05
cloud fraction crb [1]	0.696 ± 0.399	7404905	0.757	1.000	0.0	1.000	0.243	1.000
cloud fraction crb precision [1]	$(2.587 \pm 7.488) \times 10^{-4}$	7404905	2.651×10^{-5}	1.000×10^{-4}	6.162×10^{-9}	0.225	1.000×10^{-4}	1.265×10^{-4}
scene albedo [1]	0.721 ± 0.284	7404905	0.469	0.824	9.837×10^{-3}	4.16	0.472	0.942
scene albedo precision [1]	$(1.159 \pm 0.931) \times 10^{-4}$	7404905	7.403×10^{-5}	9.311×10^{-5}	1.197×10^{-5}	4.215×10^{-3}	5.917×10^{-5}	1.332×10^{-4}
apparent scene pressure [hPa]	761 ± 153	7404905	248	757	130	1.035×10^3	649	897
apparent scene pressure precision [hPa]	0.382 ± 0.194	7404905	0.160	0.327	7.954×10^{-2}	19.4	0.271	0.431
chi square [1]	$(0.349 \pm 0.870) \times 10^5$	7404905	3.273×10^4	2.741×10^4	116	3.210×10^7	1.479×10^4	4.752×10^4
number of iterations [1]	4.08 ± 1.00	7404905	0.0	4.00	1.000	14.0	4.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(3.730 \pm 7.195) \times 10^{-9}$	7404905	4.993×10^{-9}	3.521×10^{-9}	-1.762×10^{-6}	1.703×10^{-6}	1.361×10^{-9}	6.354×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.908 \pm 0.628) \times 10^{-9}$	7404905	8.254×10^{-10}	1.879×10^{-9}	4.443×10^{-10}	5.569×10^{-9}	1.457×10^{-9}	2.283×10^{-9}
chi square fluorescence [1]	$(0.442 \pm 0.966) \times 10^5$	7404905	3.100×10^4	7.901×10^3	123	1.733×10^6	2.663×10^3	3.367×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	7404905	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	7404905	0.0	50.0	47.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(4.683 \pm 4.236) \times 10^{-3}$	7404905	3.442×10^{-3}	4.679×10^{-3}	-7.434×10^{-2}	7.538×10^{-2}	2.954×10^{-3}	6.396×10^{-3}

3 Granule outlines

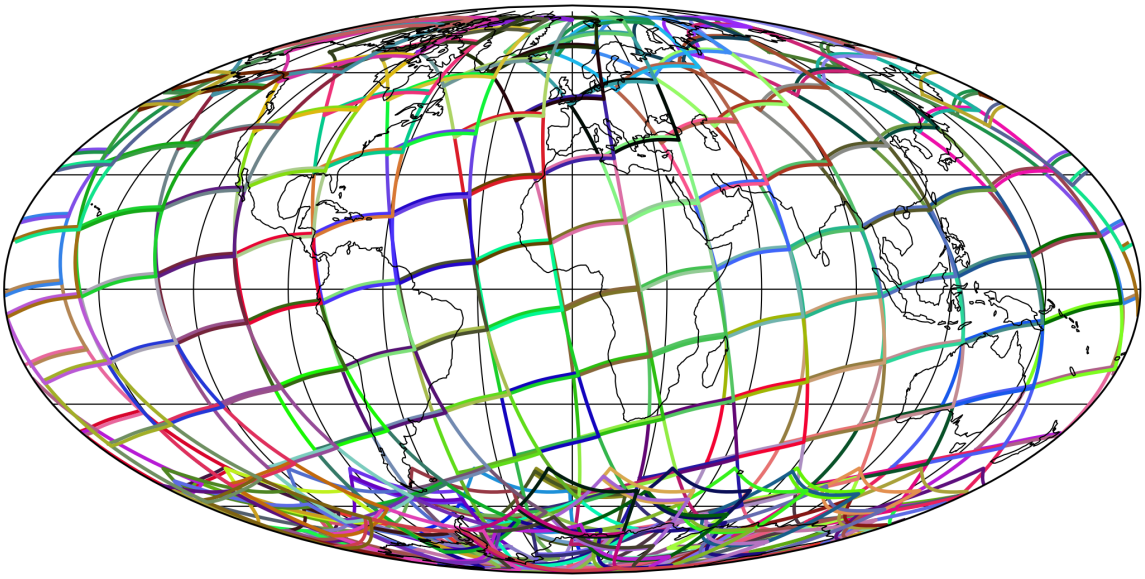

Figure 1: Outline of the granules.

4 Input data monitoring

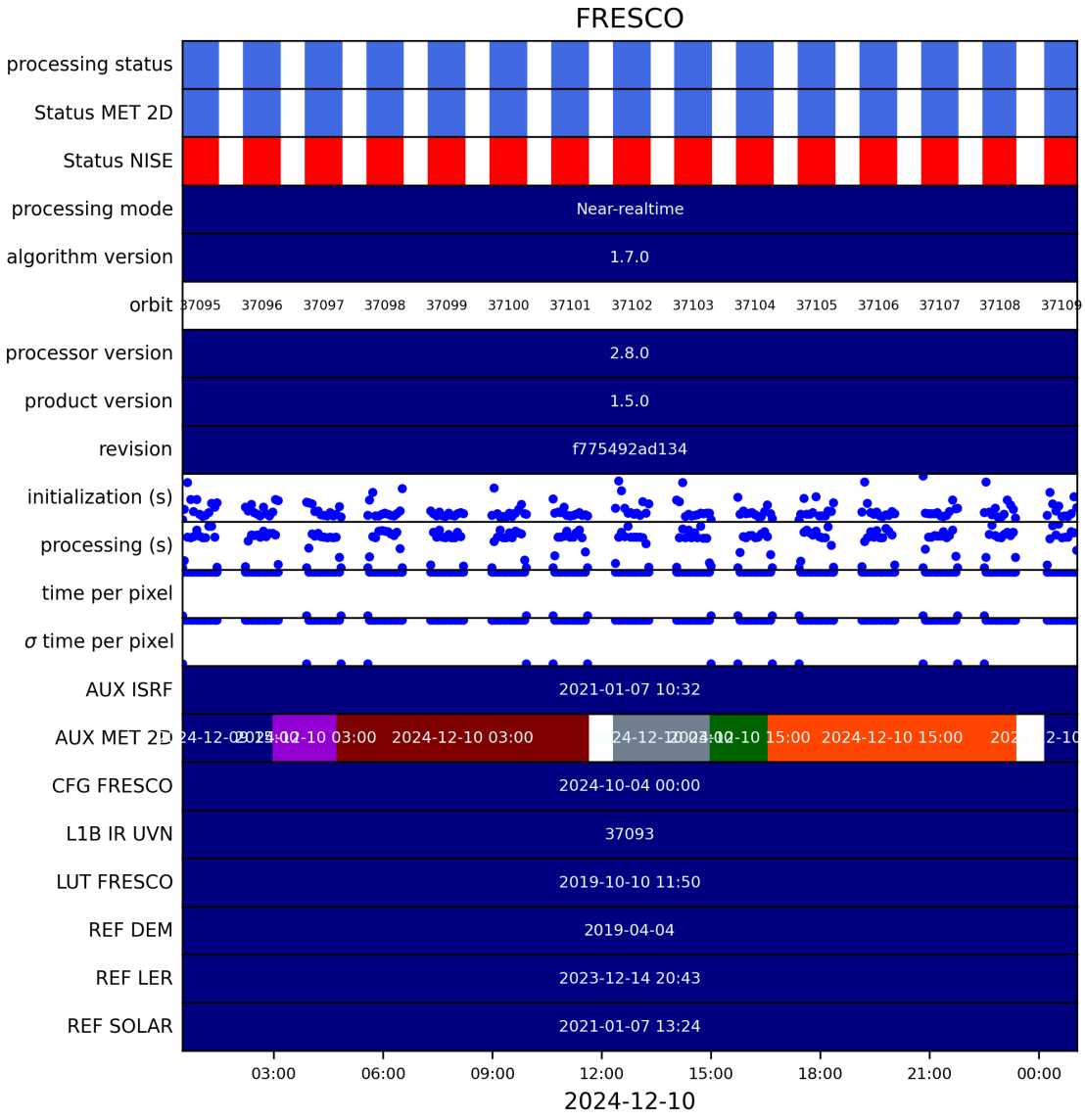

Figure 2: Input data per granule

5 Warnings and errors

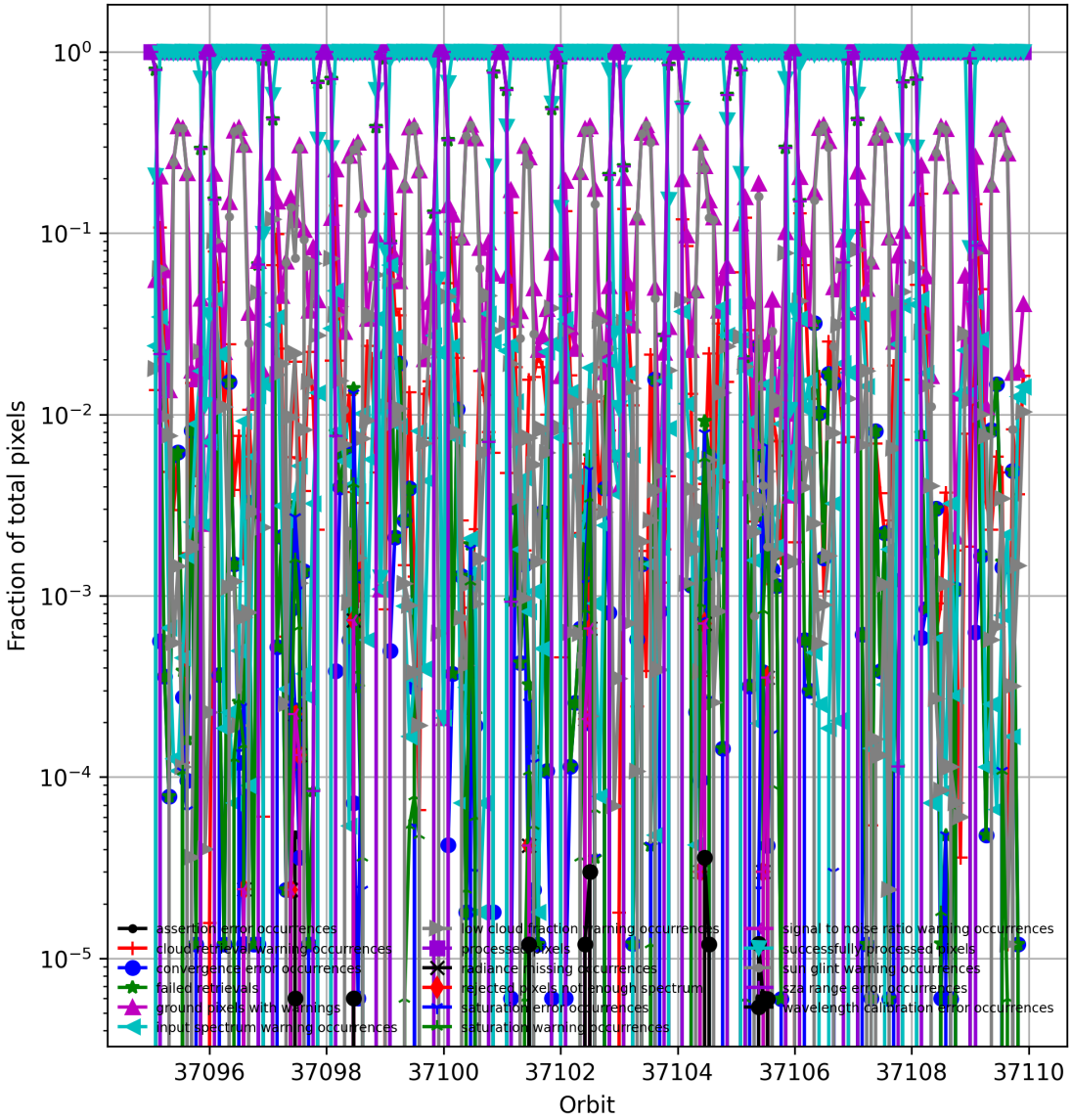

Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

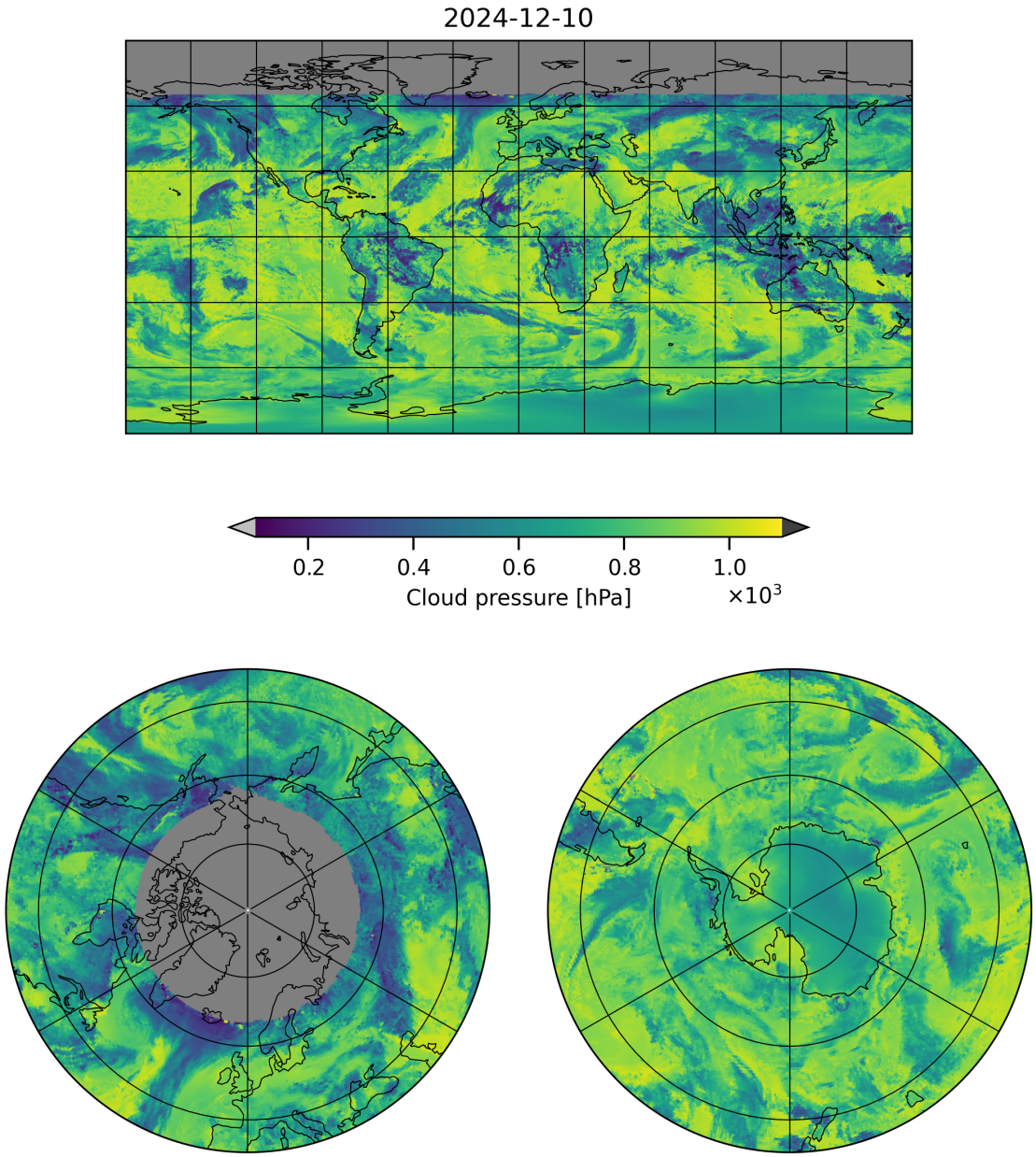

Figure 4: Map of “Cloud pressure” for 2024-12-10 to 2024-12-11

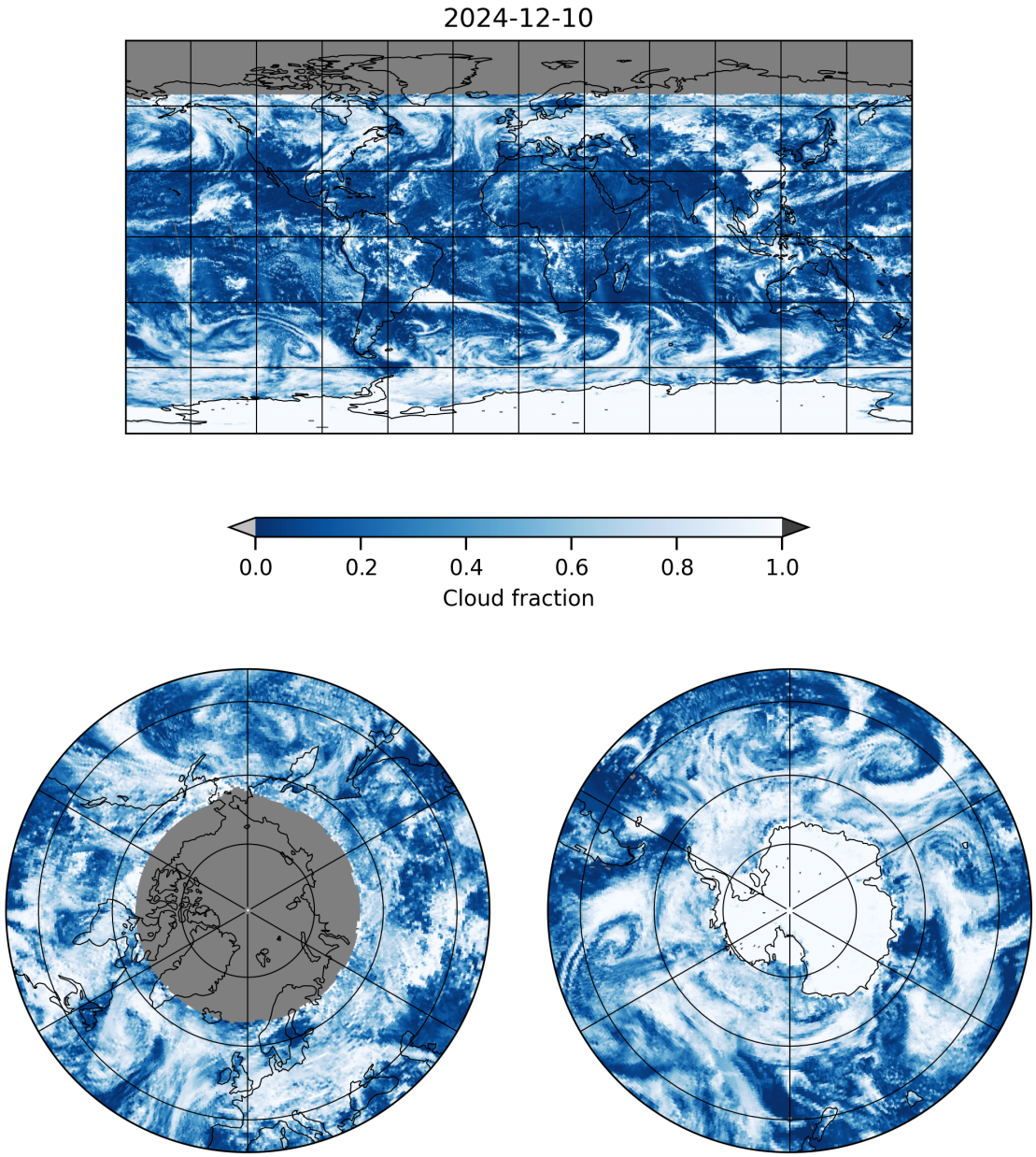

Figure 5: Map of “Cloud fraction” for 2024-12-10 to 2024-12-11

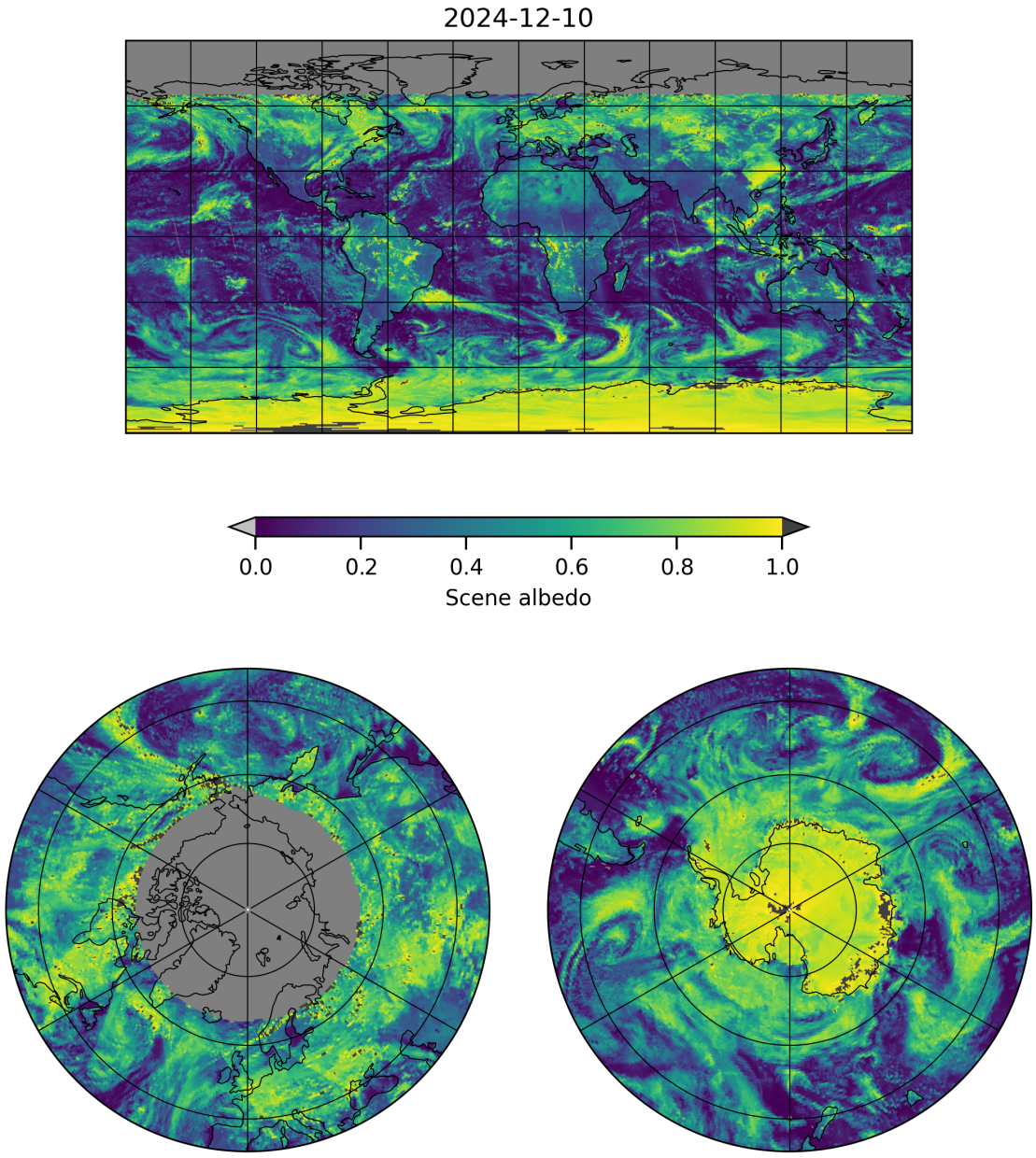

Figure 6: Map of “Scene albedo” for 2024-12-10 to 2024-12-11

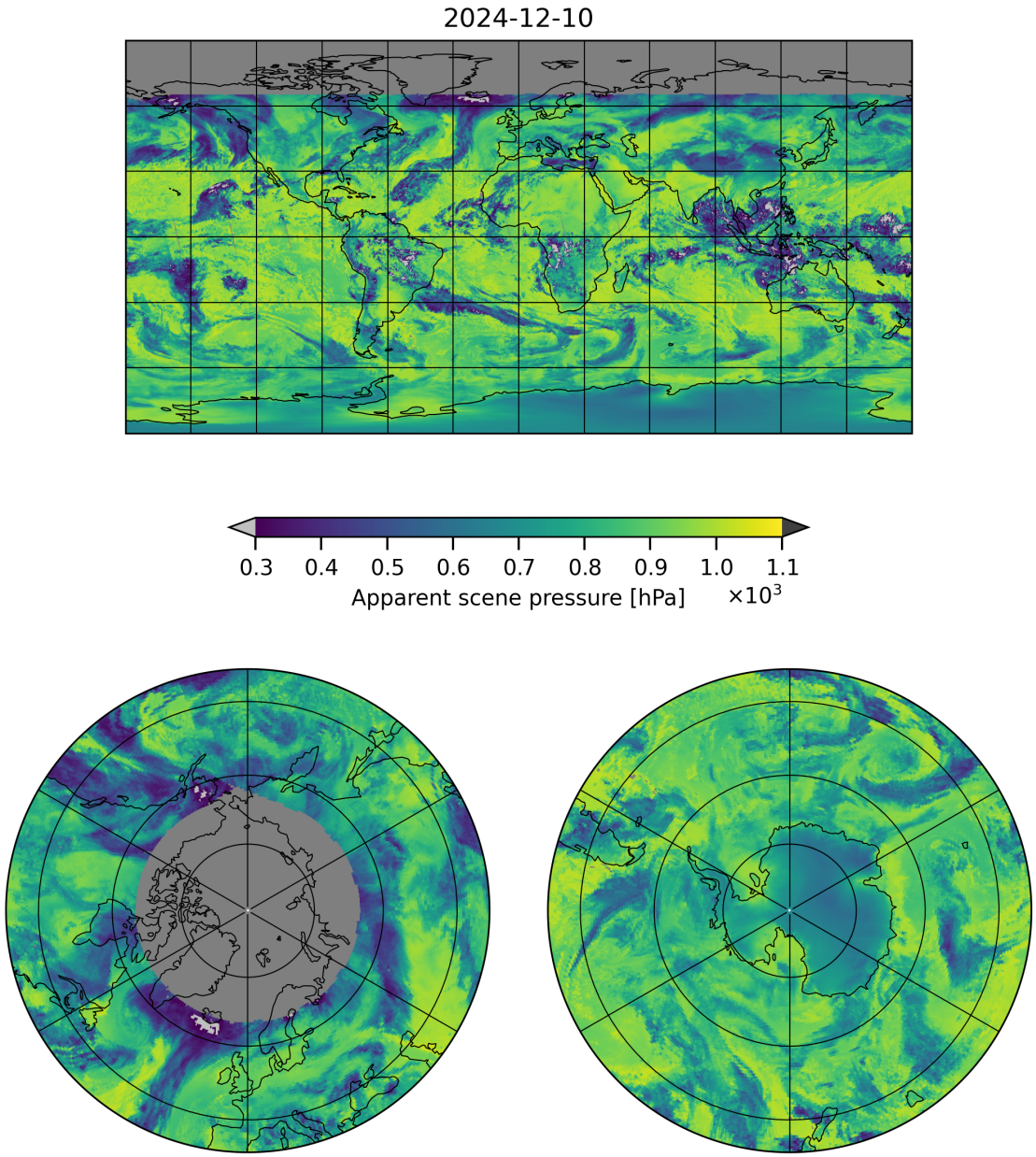

Figure 7: Map of “Apparent scene pressure” for 2024-12-10 to 2024-12-11

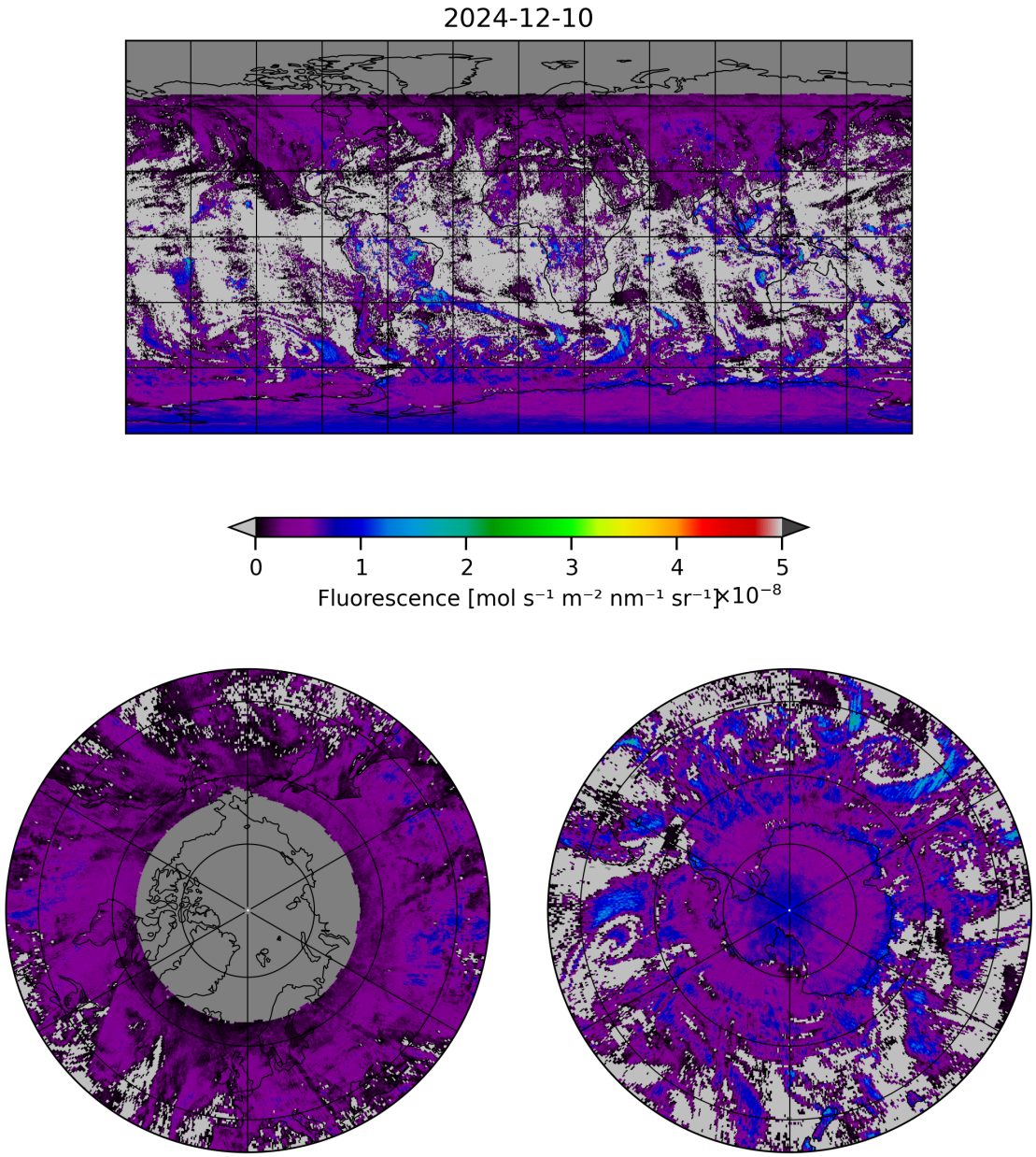

Figure 8: Map of “Fluorescence” for 2024-12-10 to 2024-12-11

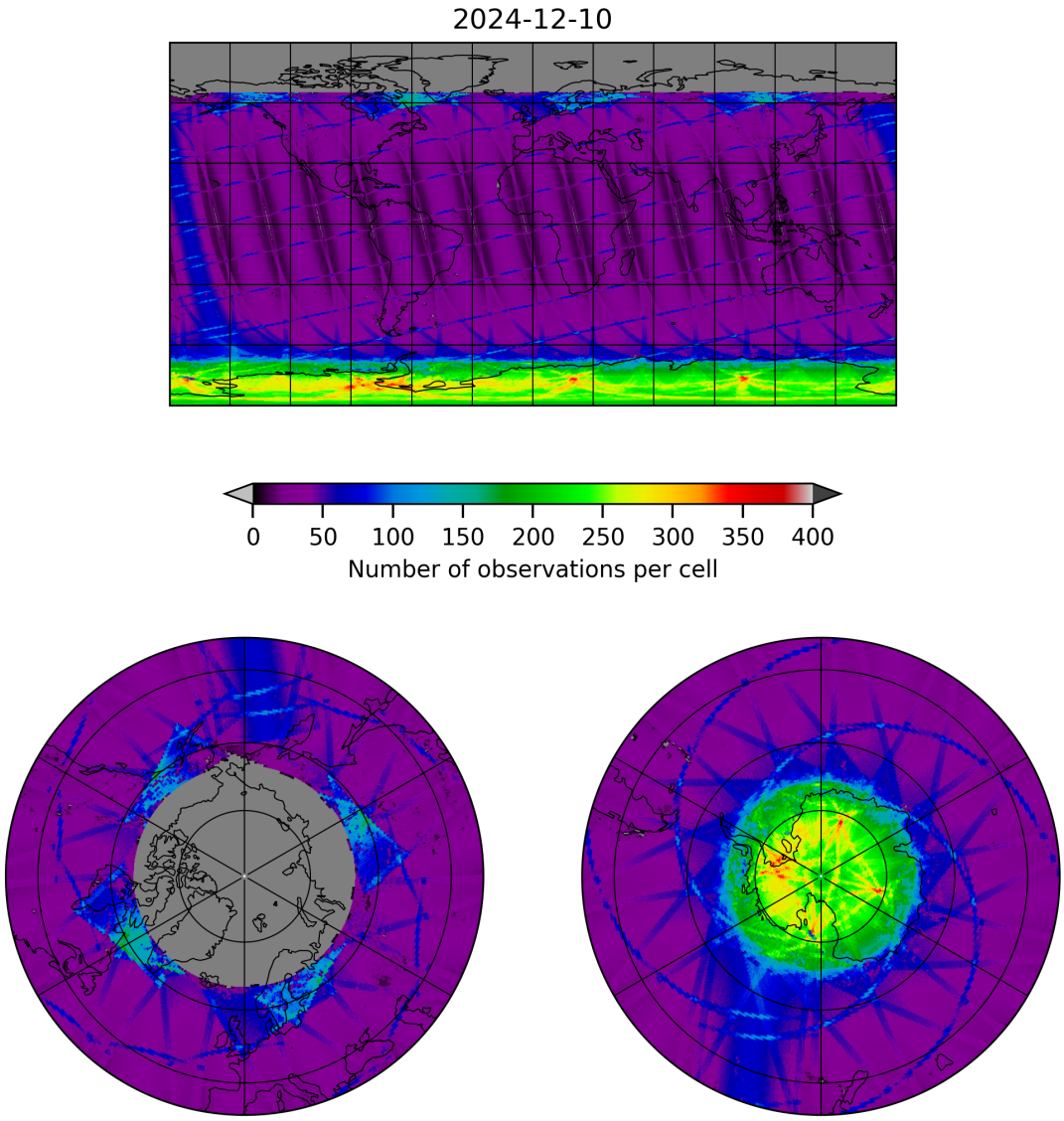

Figure 9: Map of the number of observations for 2024-12-10 to 2024-12-11

7 Zonal average

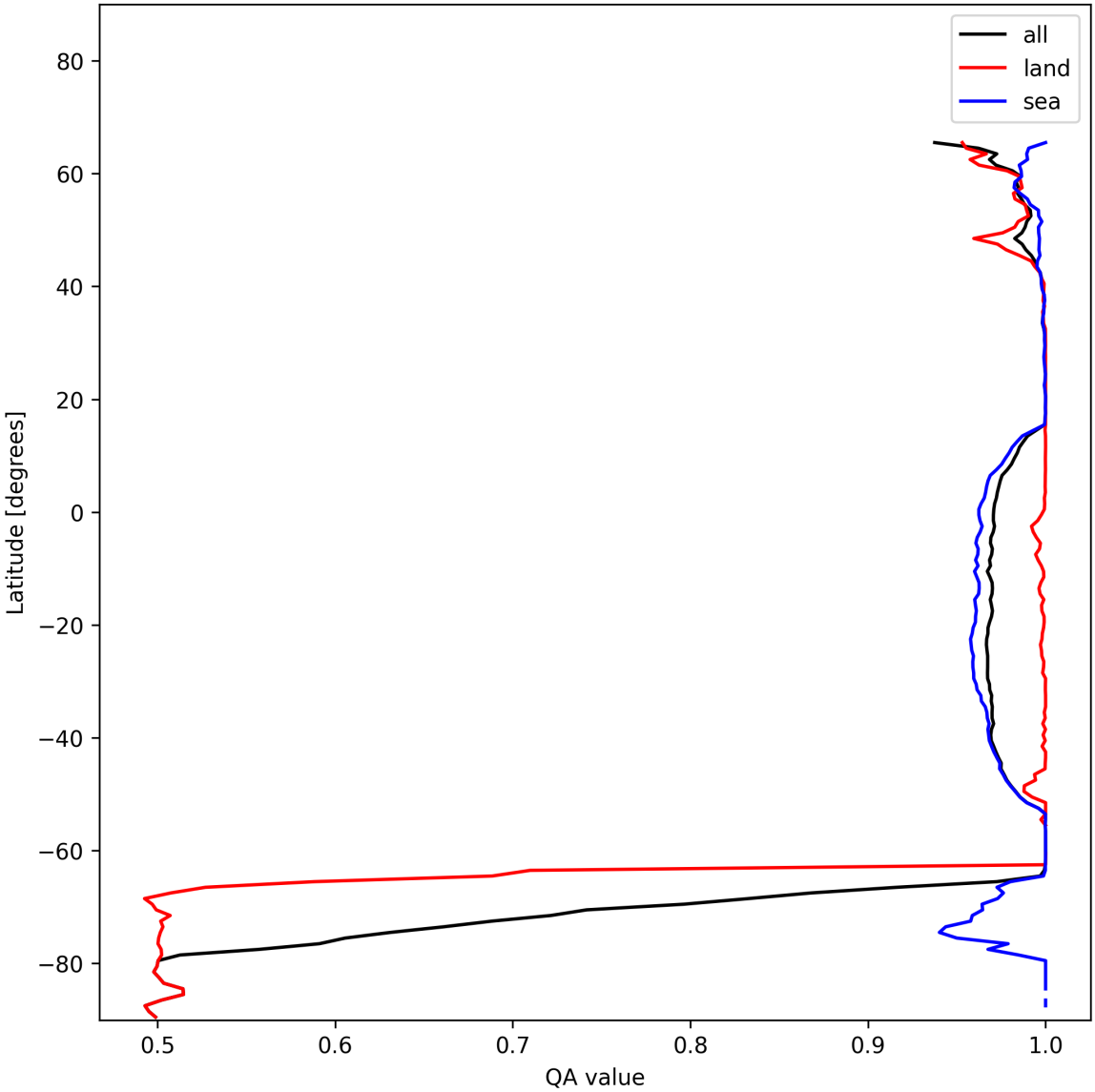

Figure 10: Zonal average of “QA value” for 2024-12-10 to 2024-12-11.

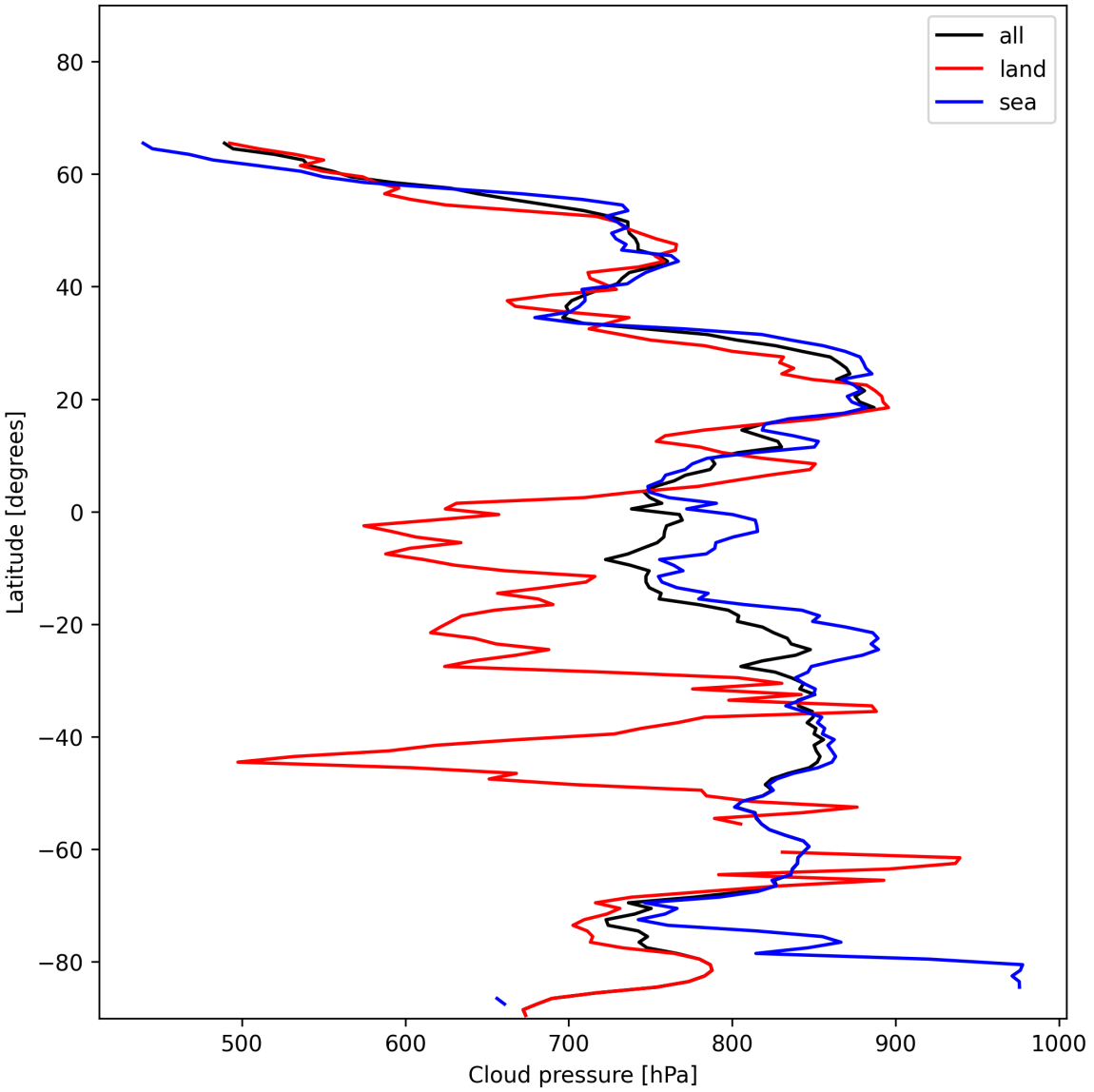

Figure 11: Zonal average of “Cloud pressure” for 2024-12-10 to 2024-12-11.

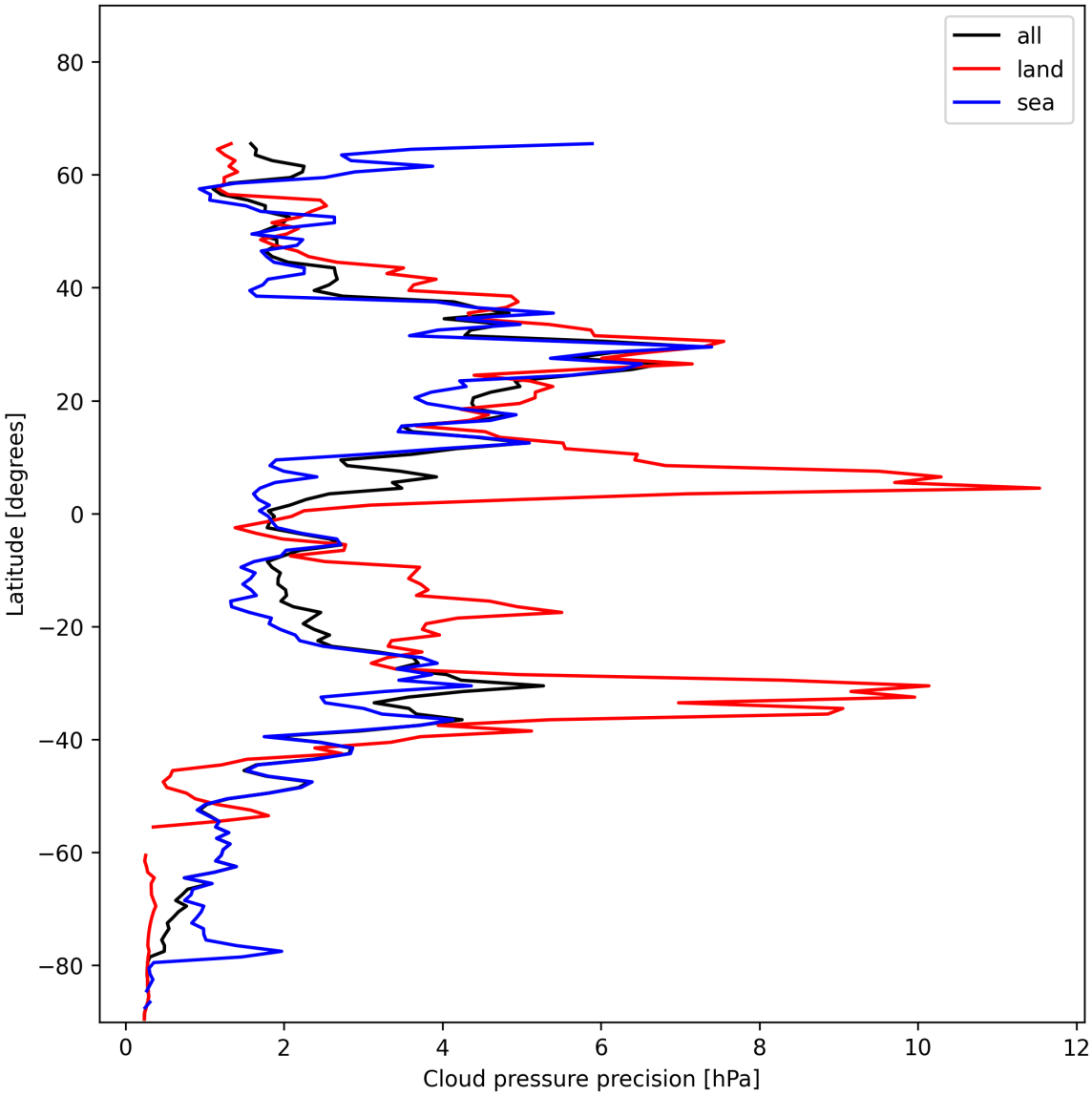

Figure 12: Zonal average of “Cloud pressure precision” for 2024-12-10 to 2024-12-11.

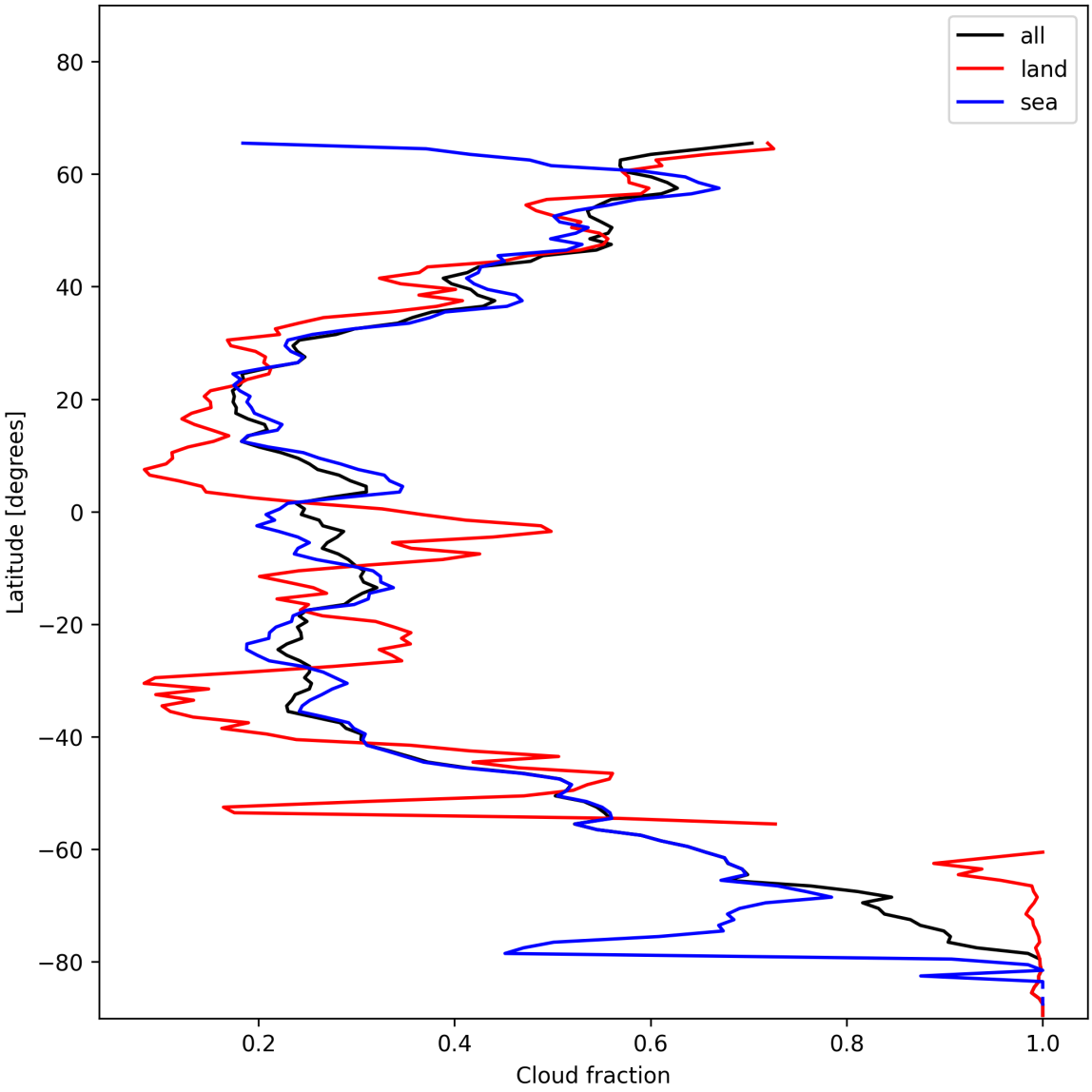

Figure 13: Zonal average of “Cloud fraction” for 2024-12-10 to 2024-12-11.

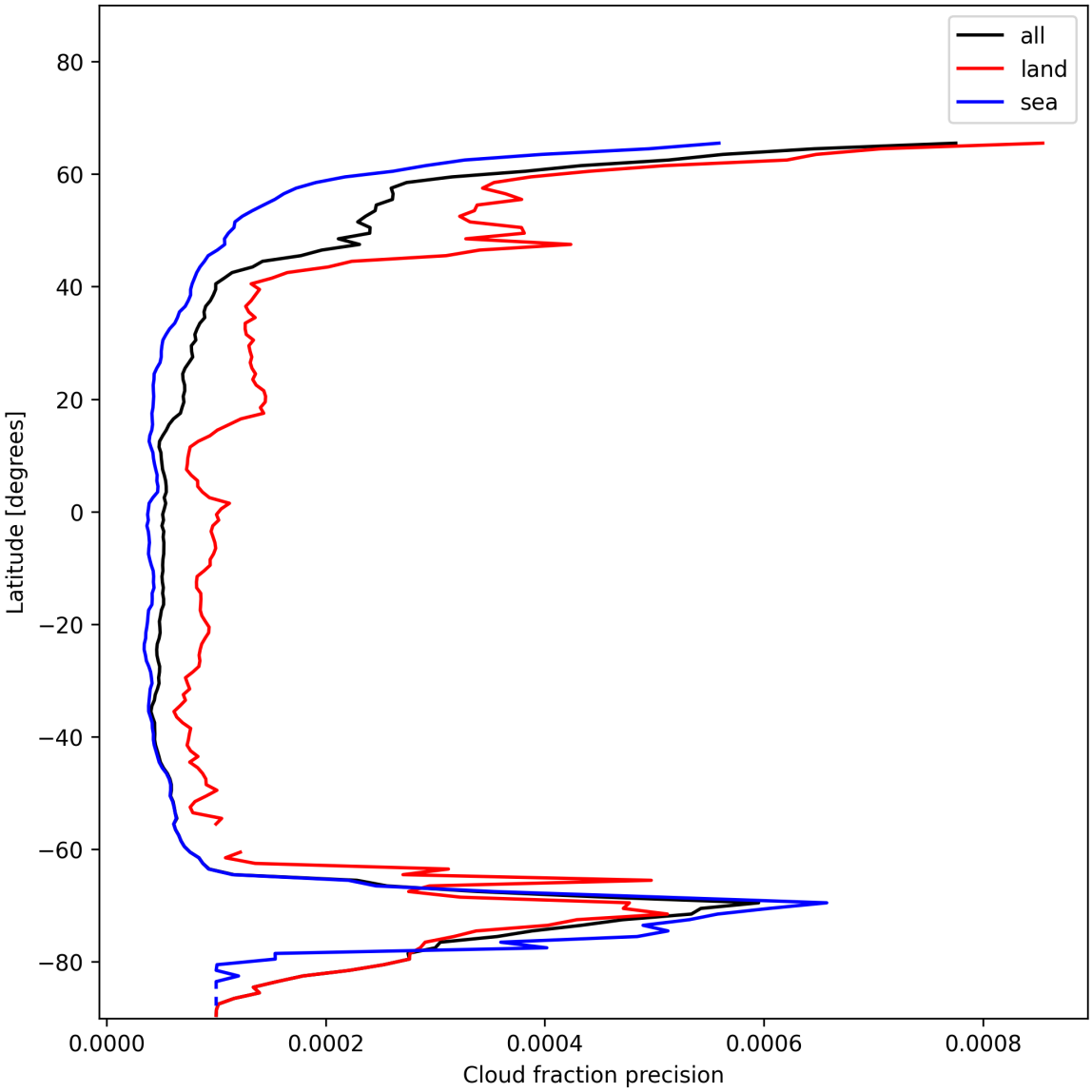

Figure 14: Zonal average of “Cloud fraction precision” for 2024-12-10 to 2024-12-11.

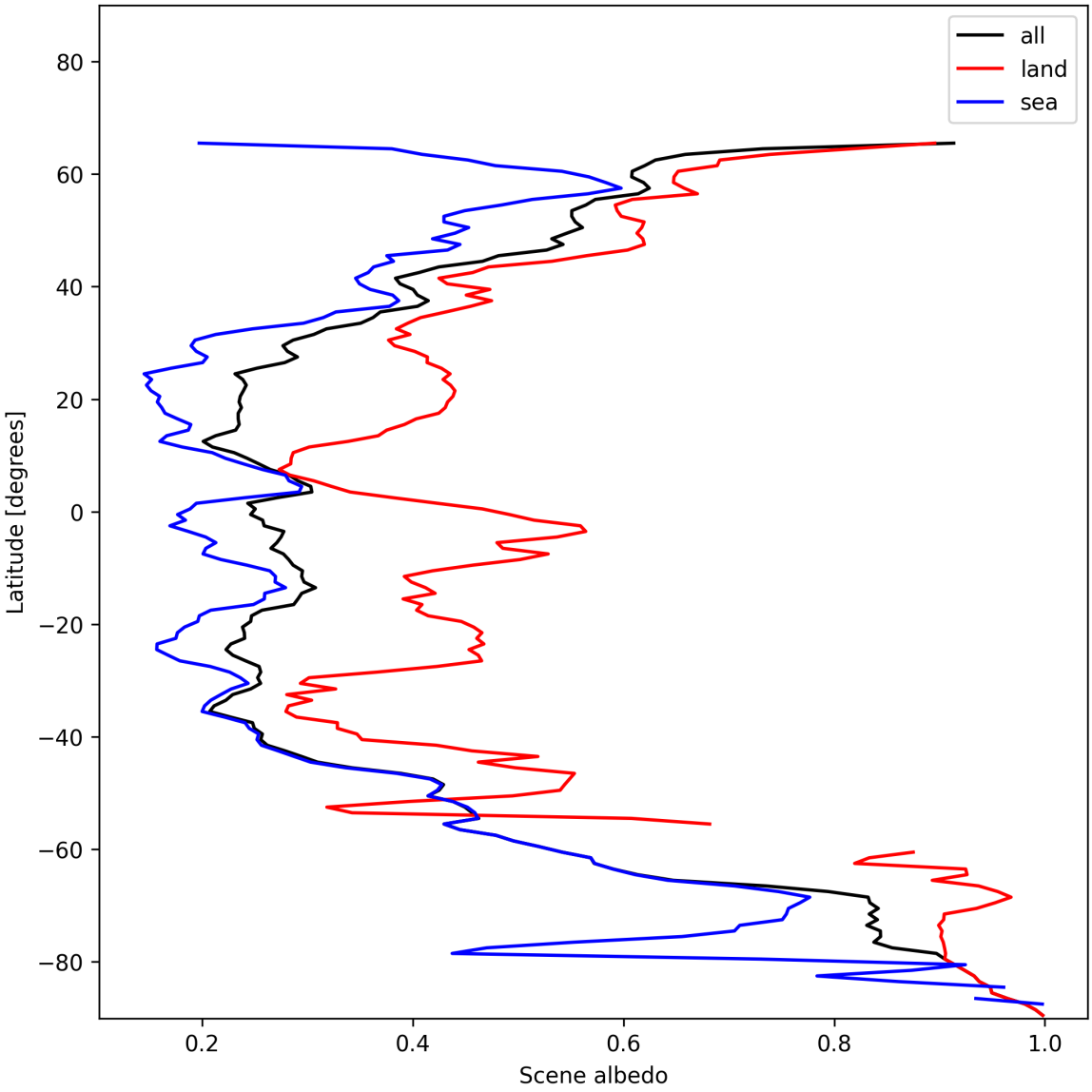

Figure 15: Zonal average of “Scene albedo” for 2024-12-10 to 2024-12-11.

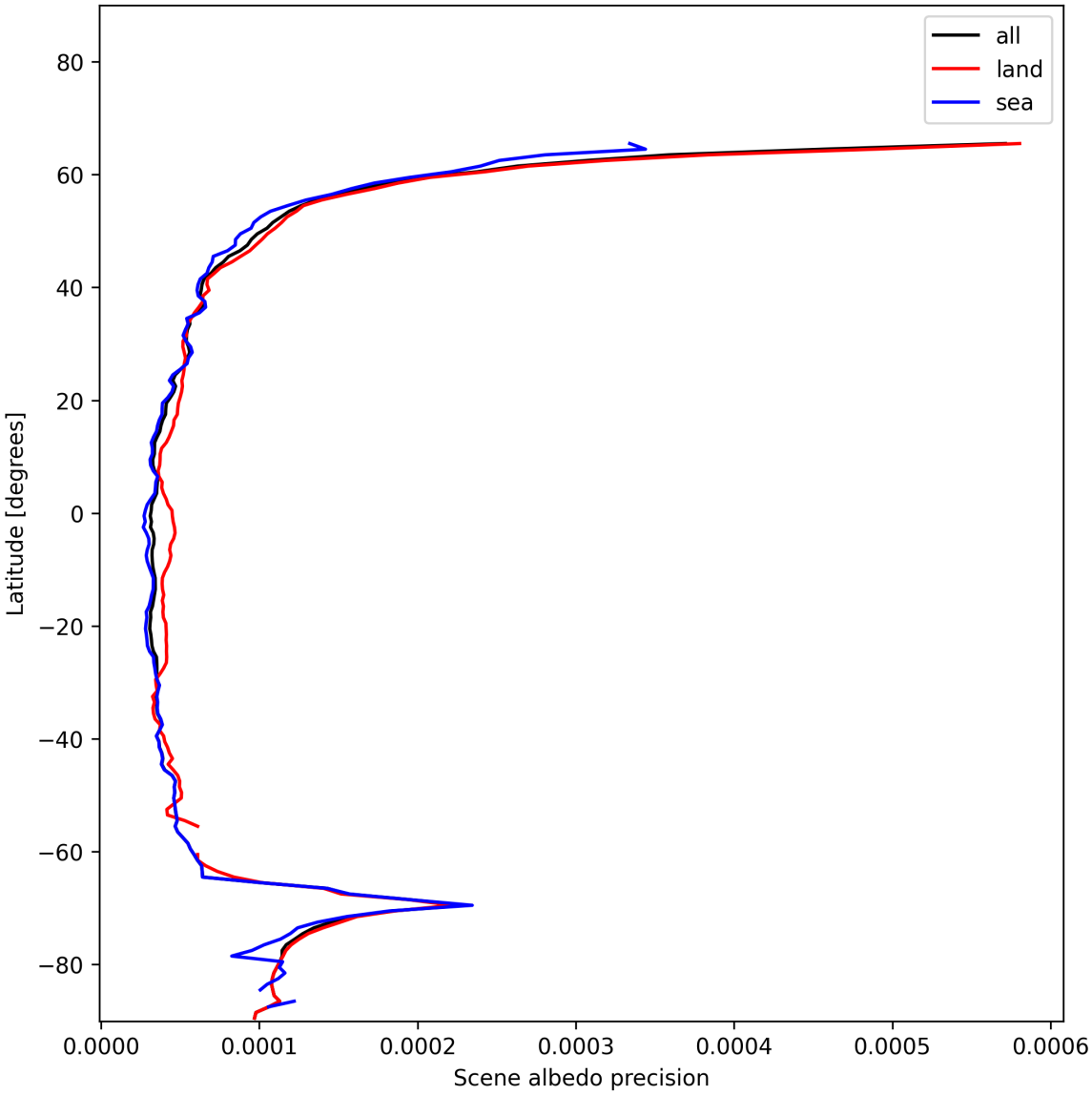

Figure 16: Zonal average of “Scene albedo precision” for 2024-12-10 to 2024-12-11.

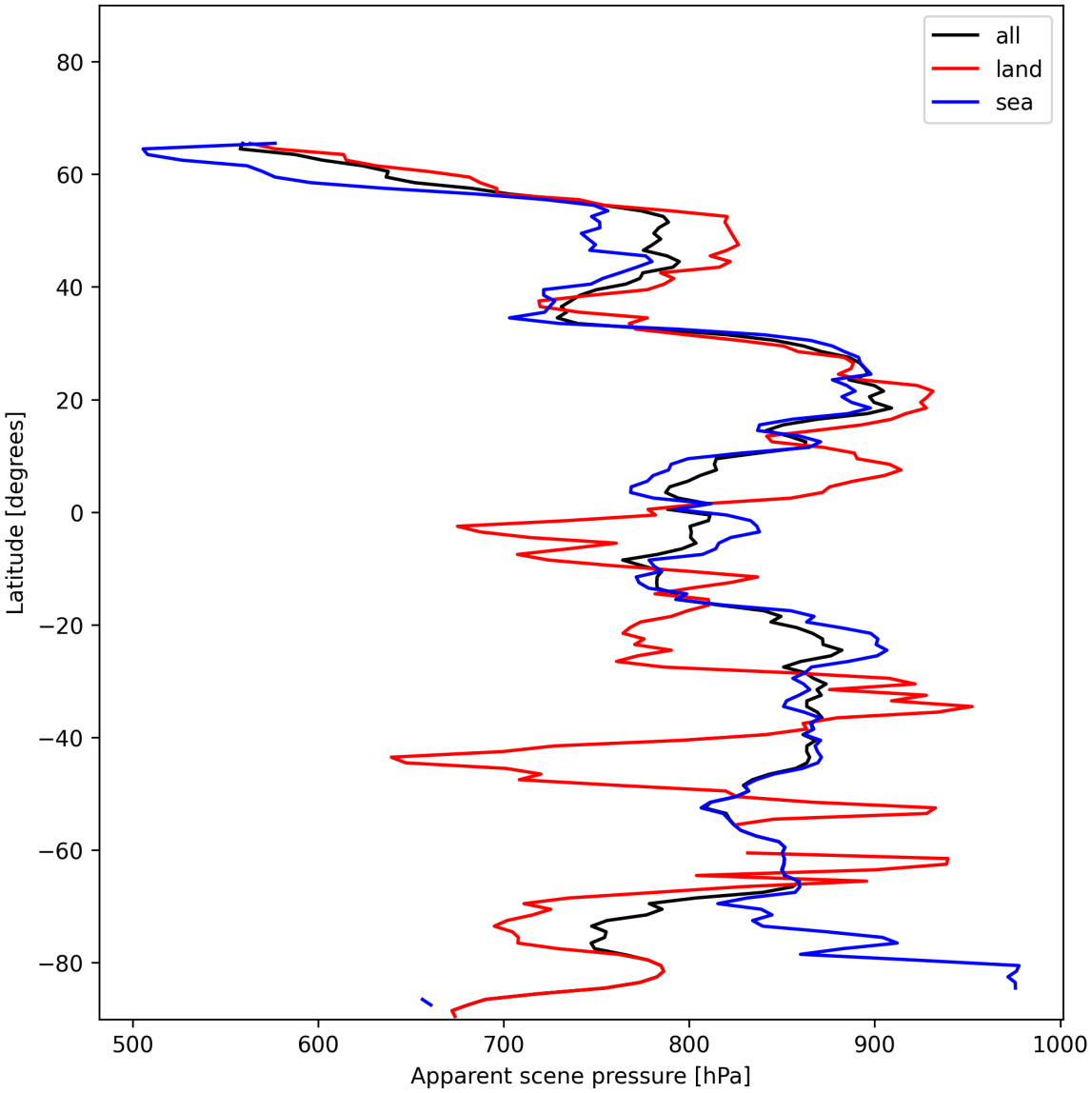

Figure 17: Zonal average of “Apparent scene pressure” for 2024-12-10 to 2024-12-11.

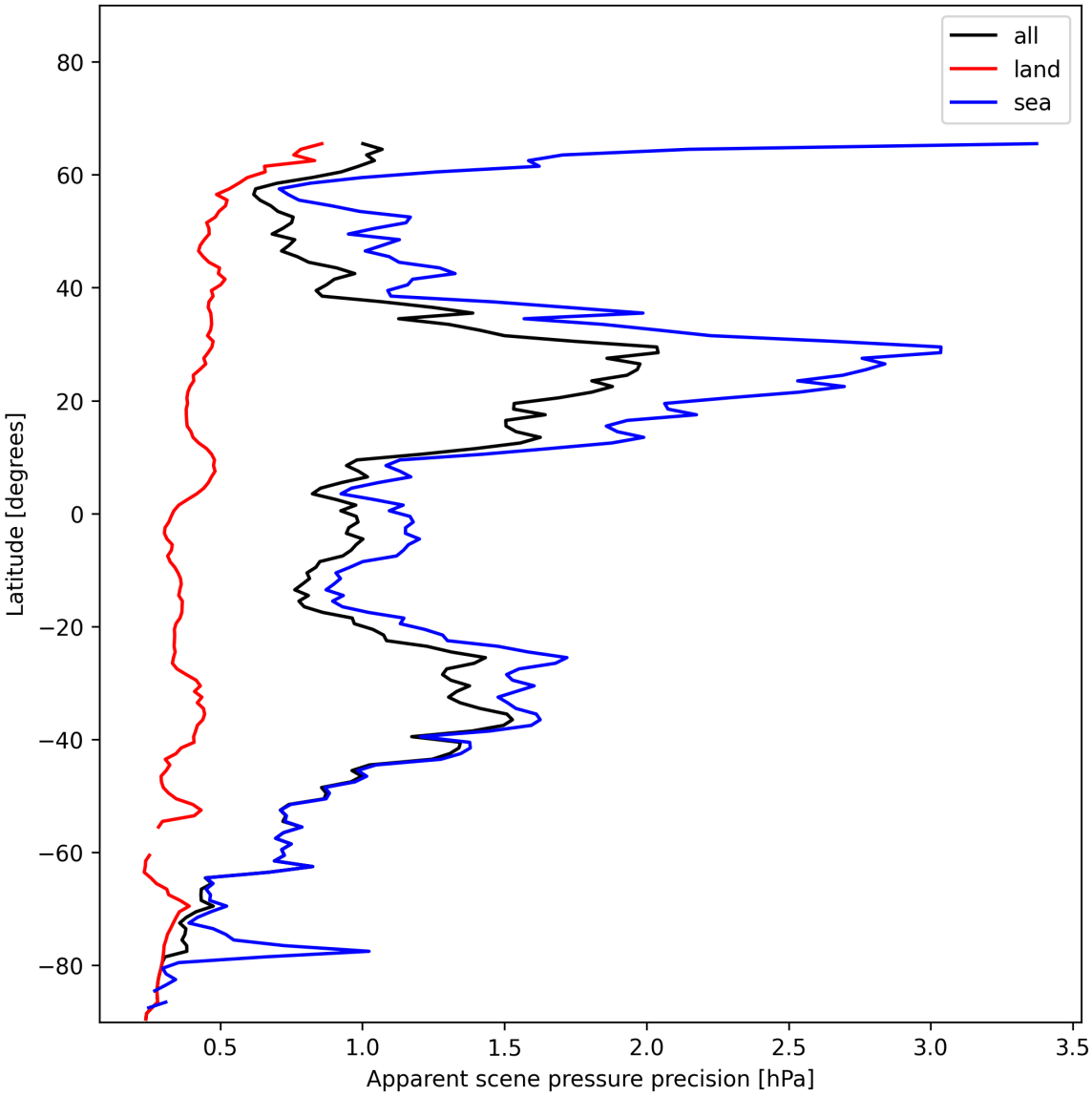

Figure 18: Zonal average of “Apparent scene pressure precision” for 2024-12-10 to 2024-12-11.

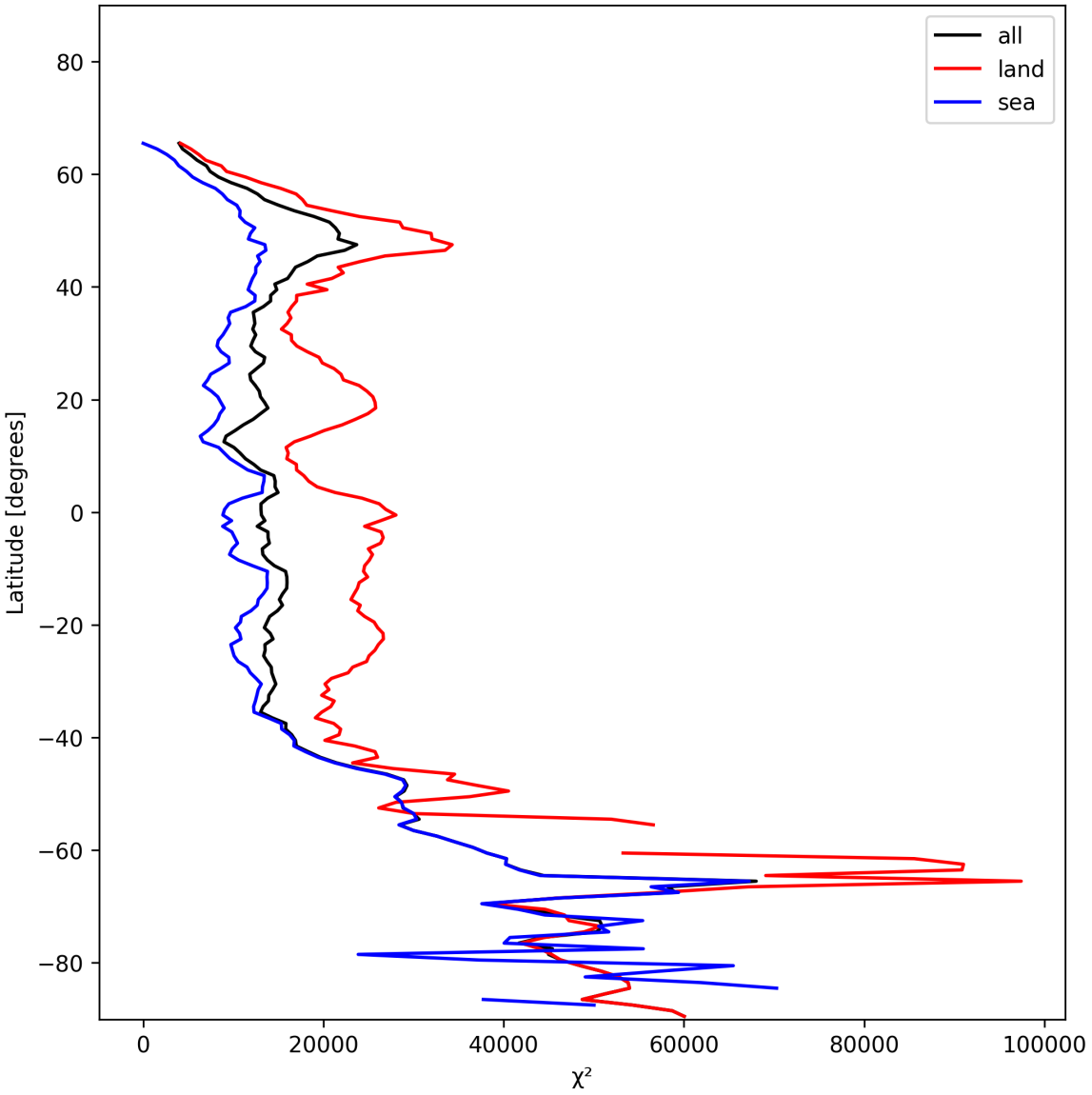

Figure 19: Zonal average of "χ^2" for 2024-12-10 to 2024-12-11.

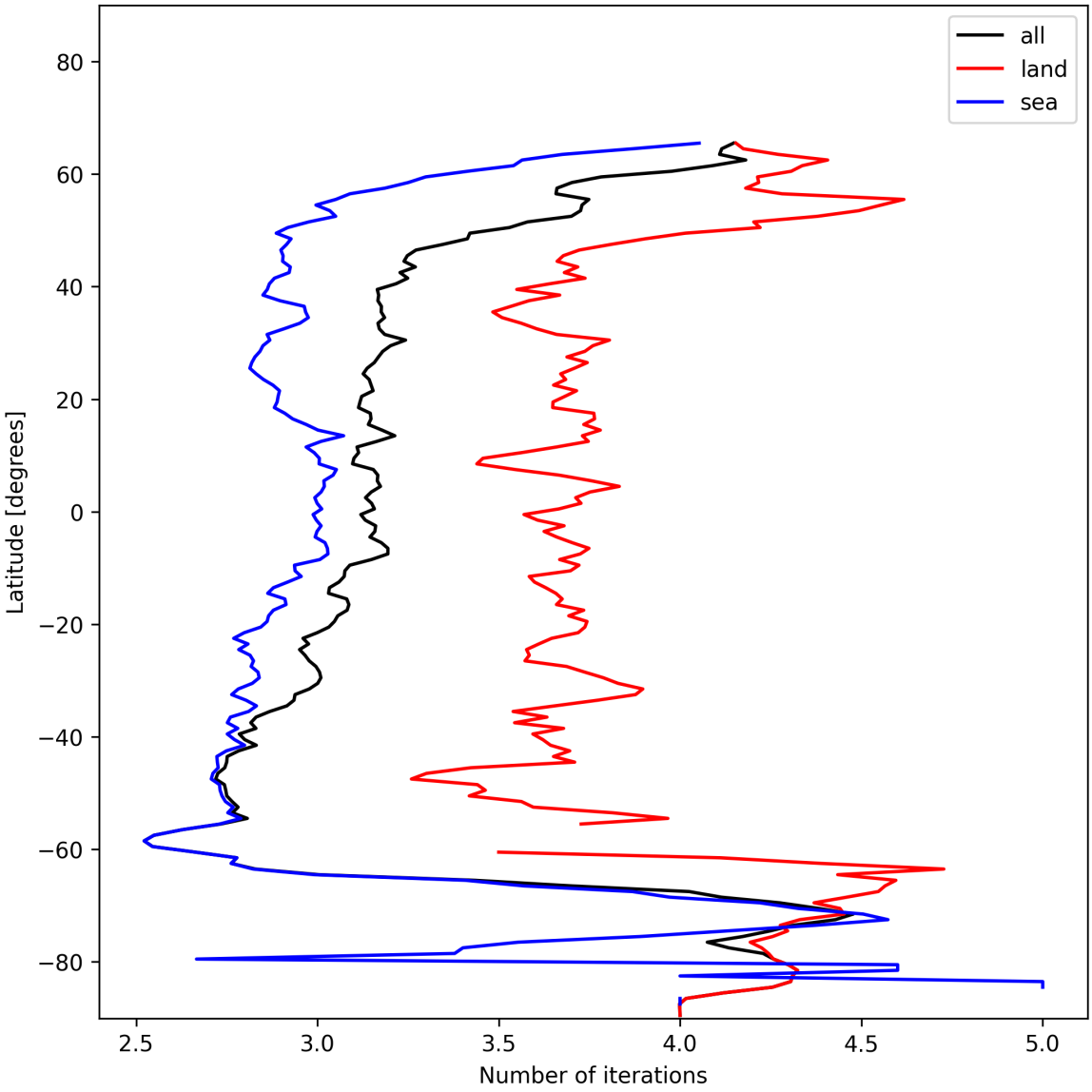

Figure 20: Zonal average of “Number of iterations” for 2024-12-10 to 2024-12-11.

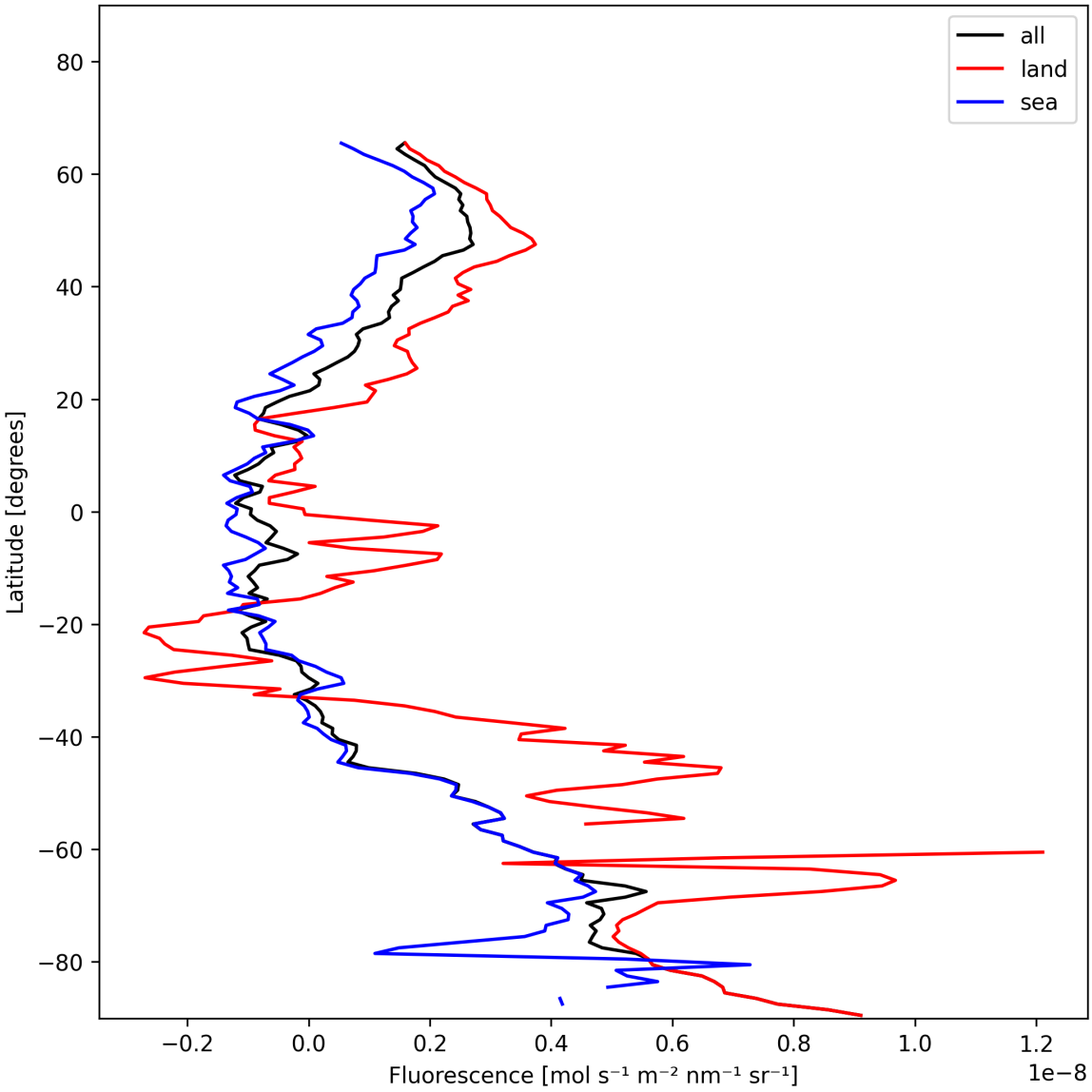

Figure 21: Zonal average of “Fluorescence” for 2024-12-10 to 2024-12-11.

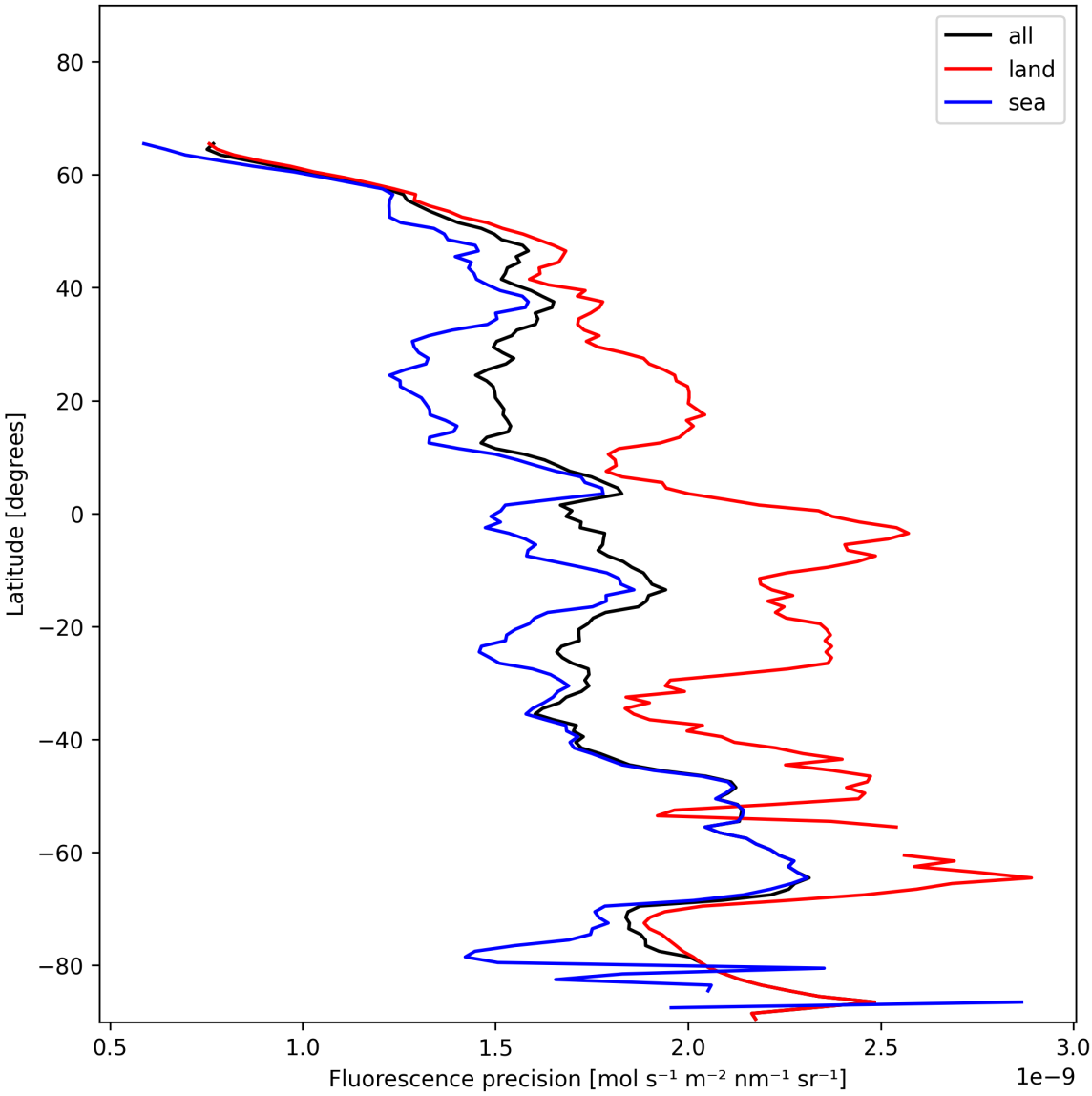

Figure 22: Zonal average of “Fluorescence precision” for 2024-12-10 to 2024-12-11.

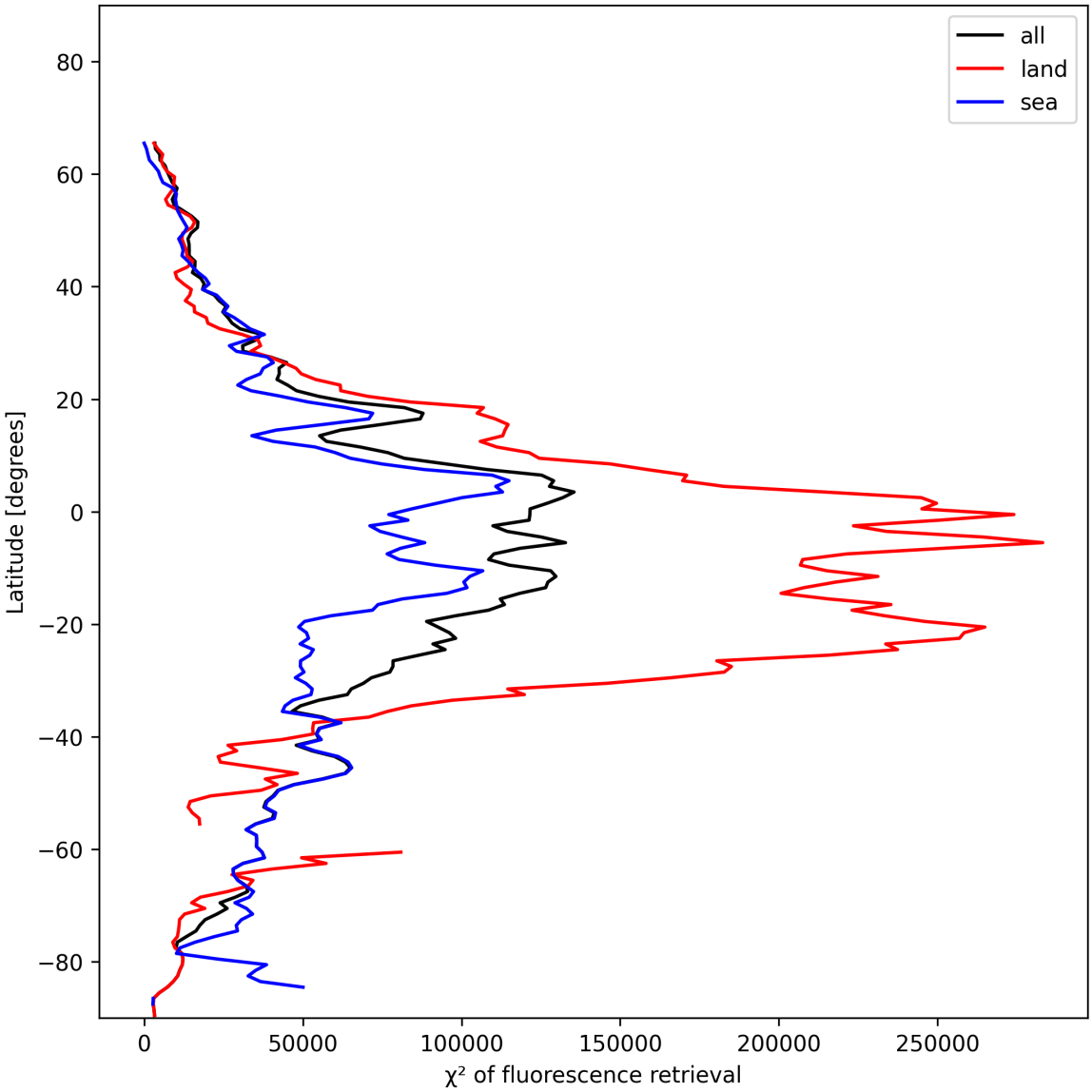

Figure 23: Zonal average of "χ^2 of fluorescence retrieval" for 2024-12-10 to 2024-12-11.

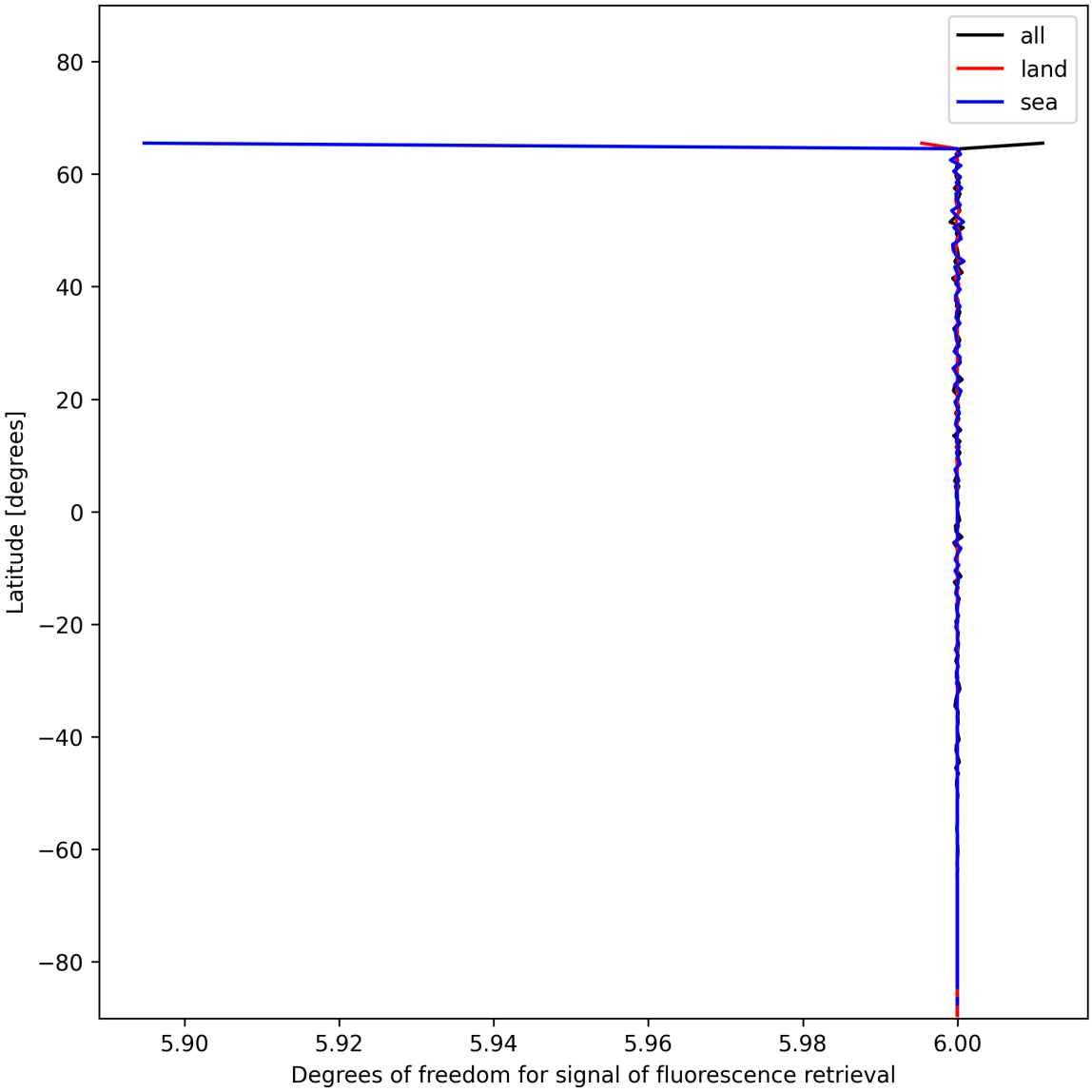

Figure 24: Zonal average of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-10 to 2024-12-11.

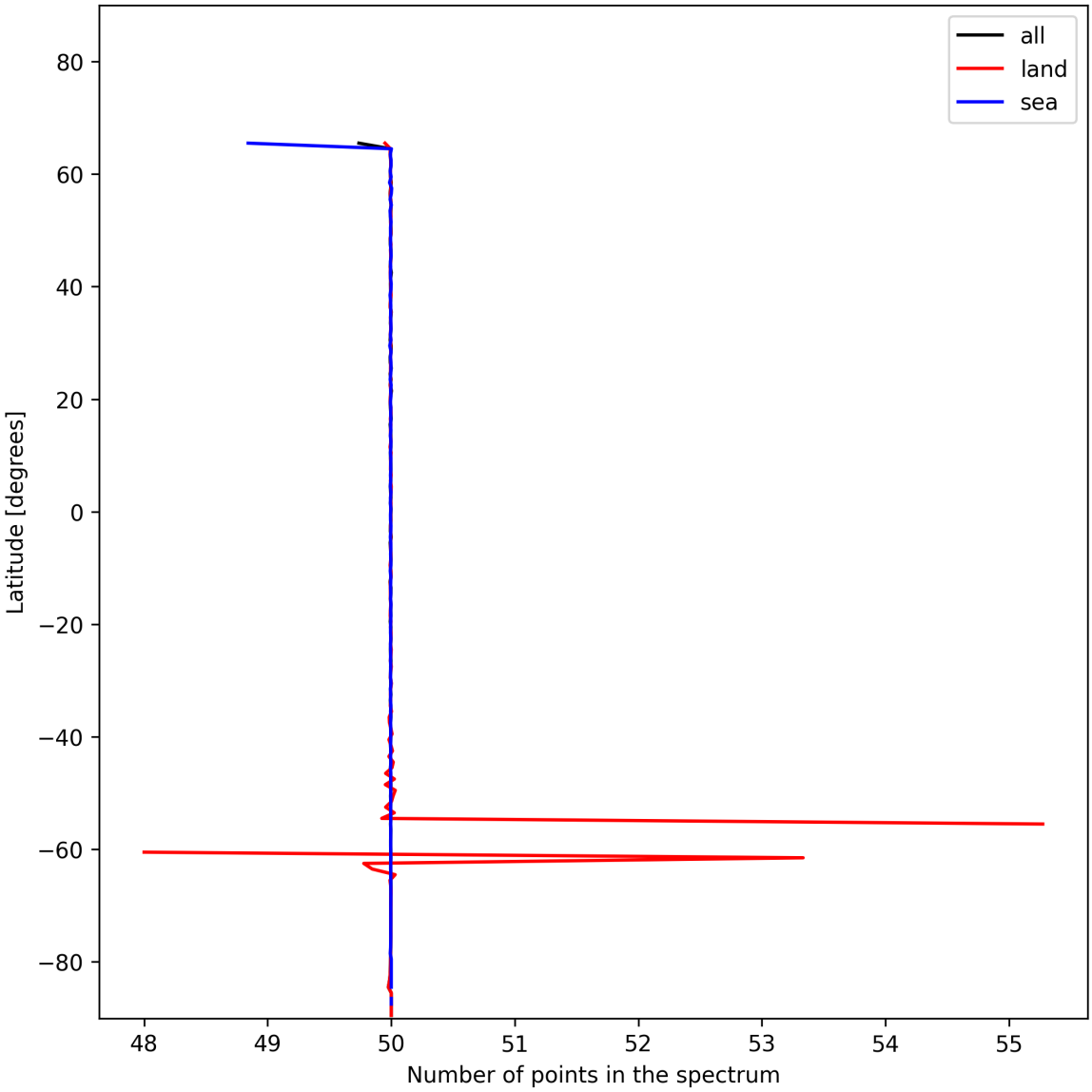

Figure 25: Zonal average of “Number of points in the spectrum” for 2024-12-10 to 2024-12-11.

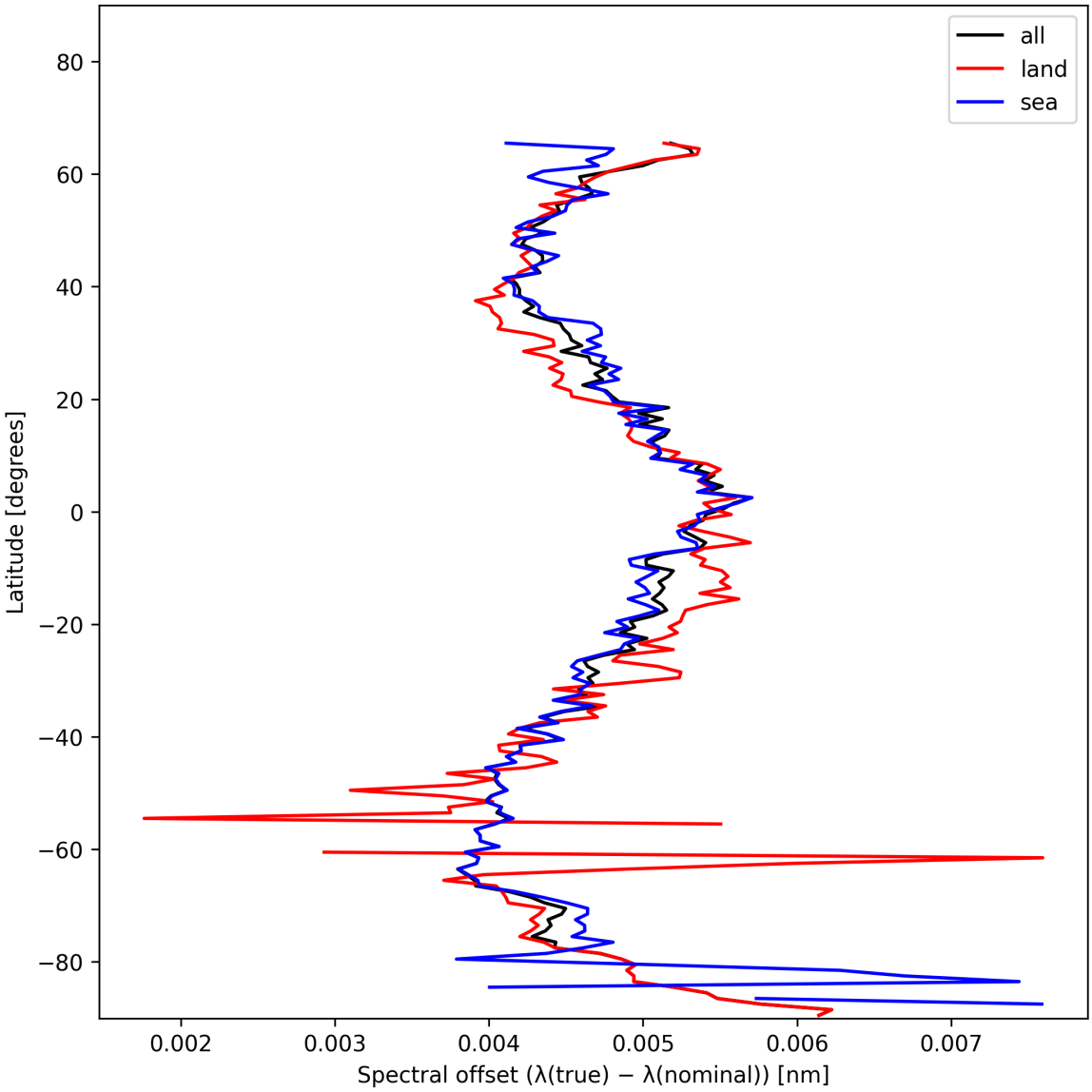

Figure 26: Zonal average of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-12-10 to 2024-12-11.

8 Histograms

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

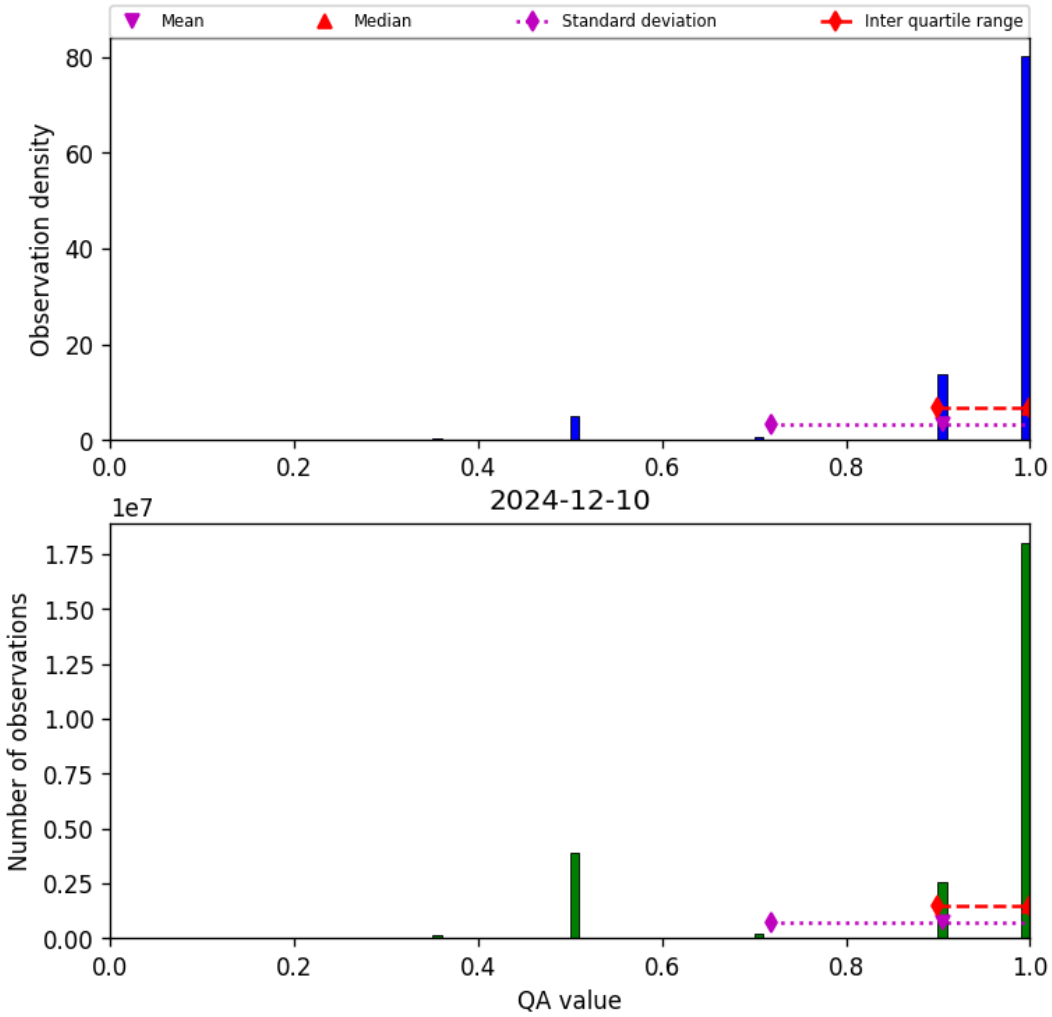

Figure 27: Histogram of “QA value” for 2024-12-10 to 2024-12-11

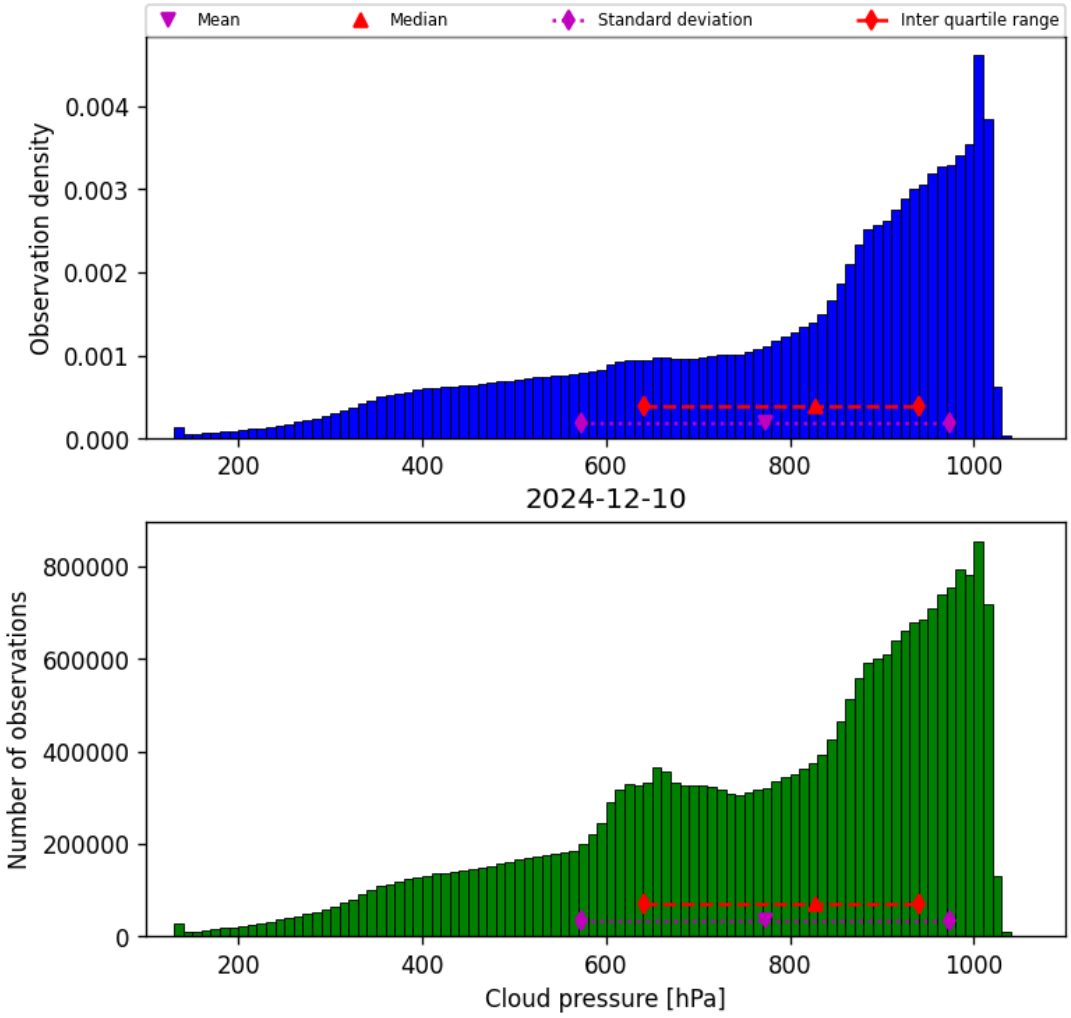

Figure 28: Histogram of “Cloud pressure” for 2024-12-10 to 2024-12-11

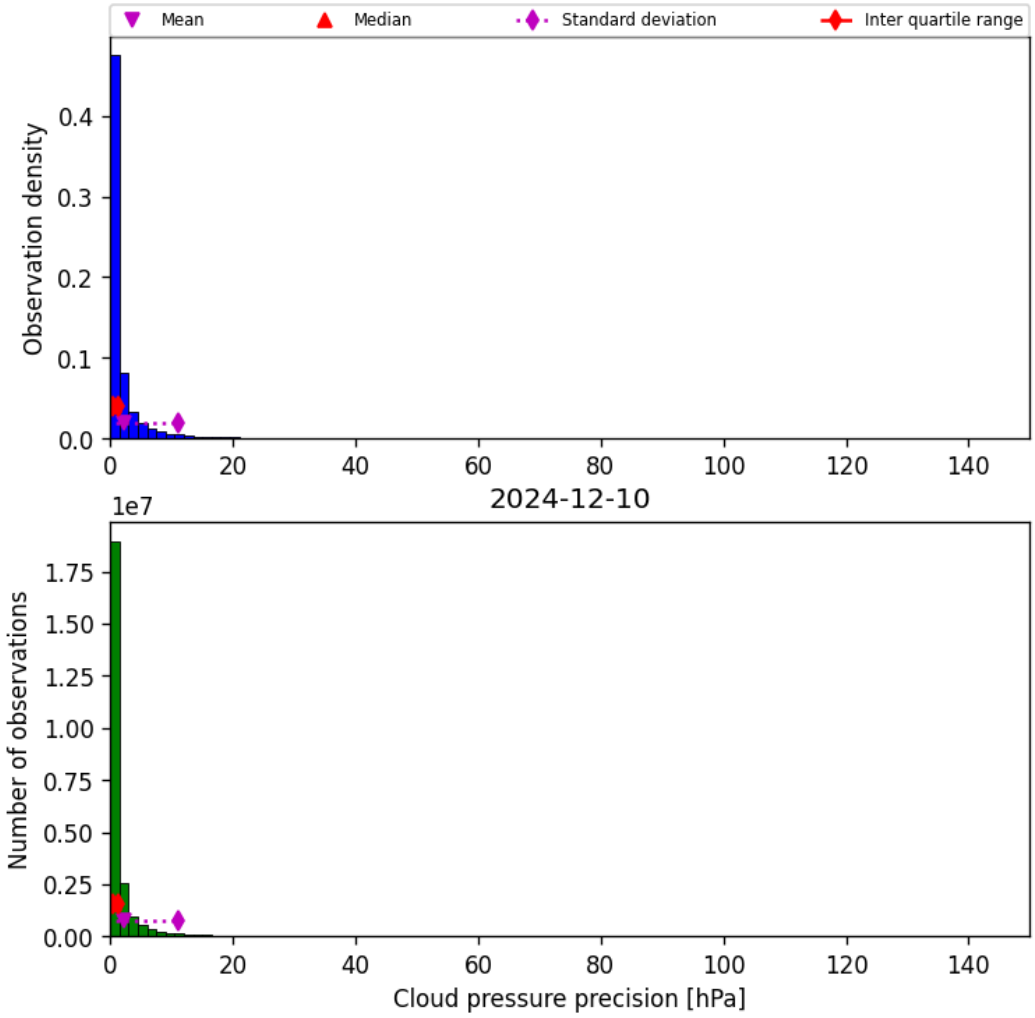

Figure 29: Histogram of “Cloud pressure precision” for 2024-12-10 to 2024-12-11

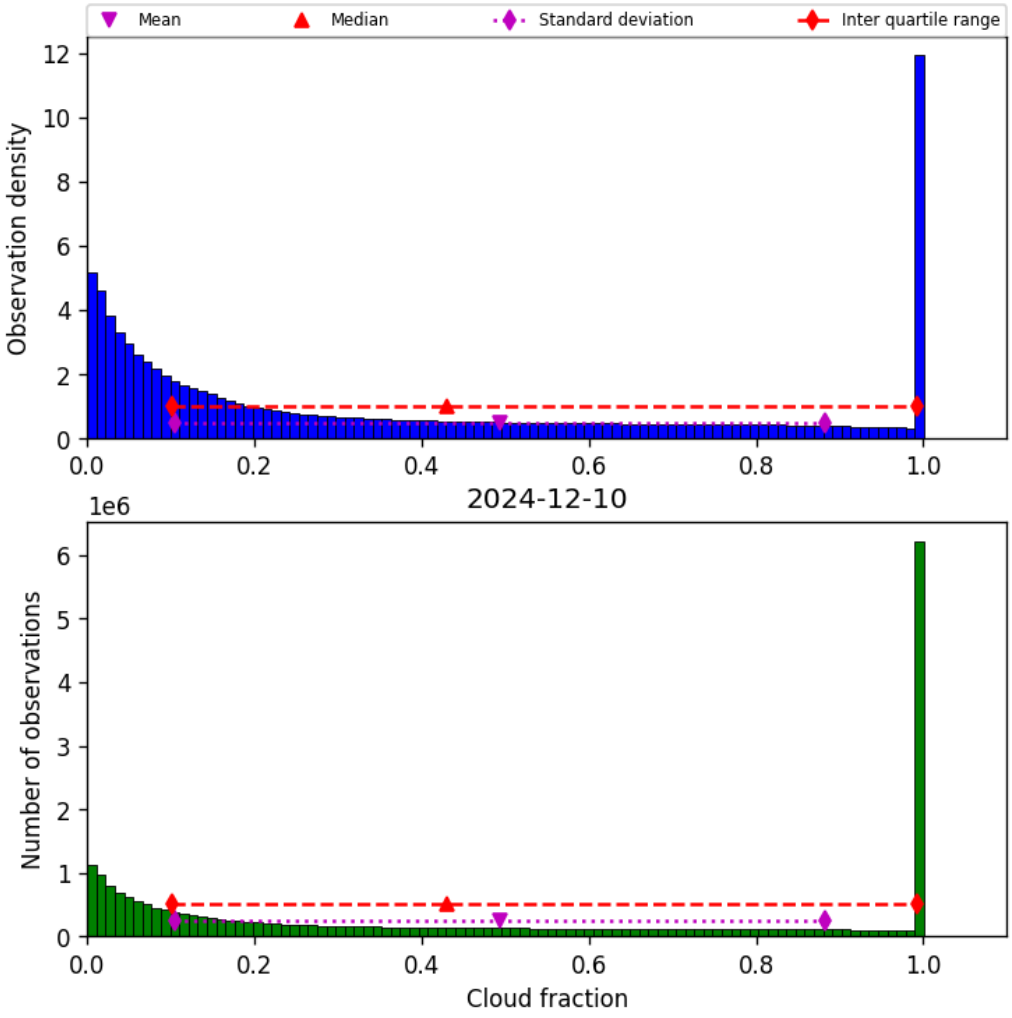

Figure 30: Histogram of “Cloud fraction” for 2024-12-10 to 2024-12-11

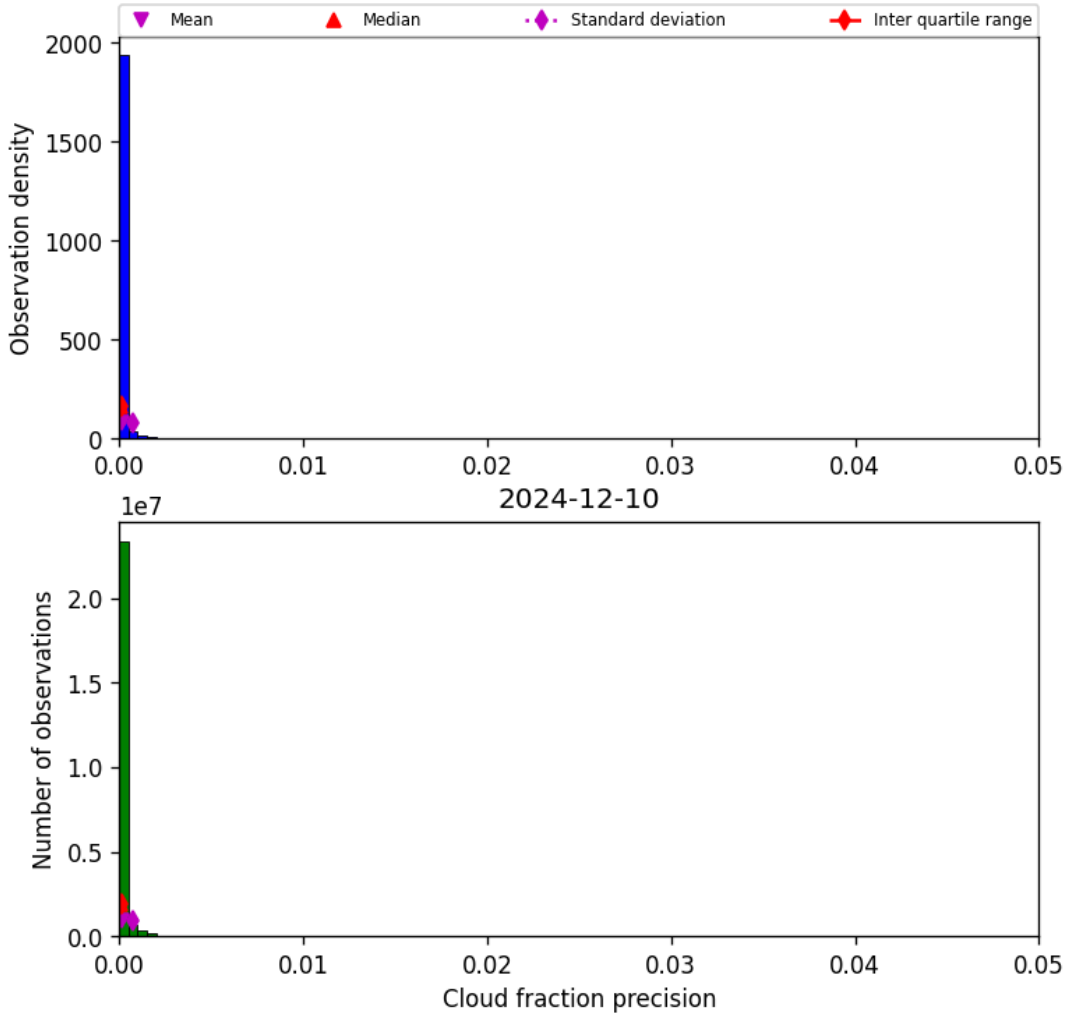

Figure 31: Histogram of “Cloud fraction precision” for 2024-12-10 to 2024-12-11

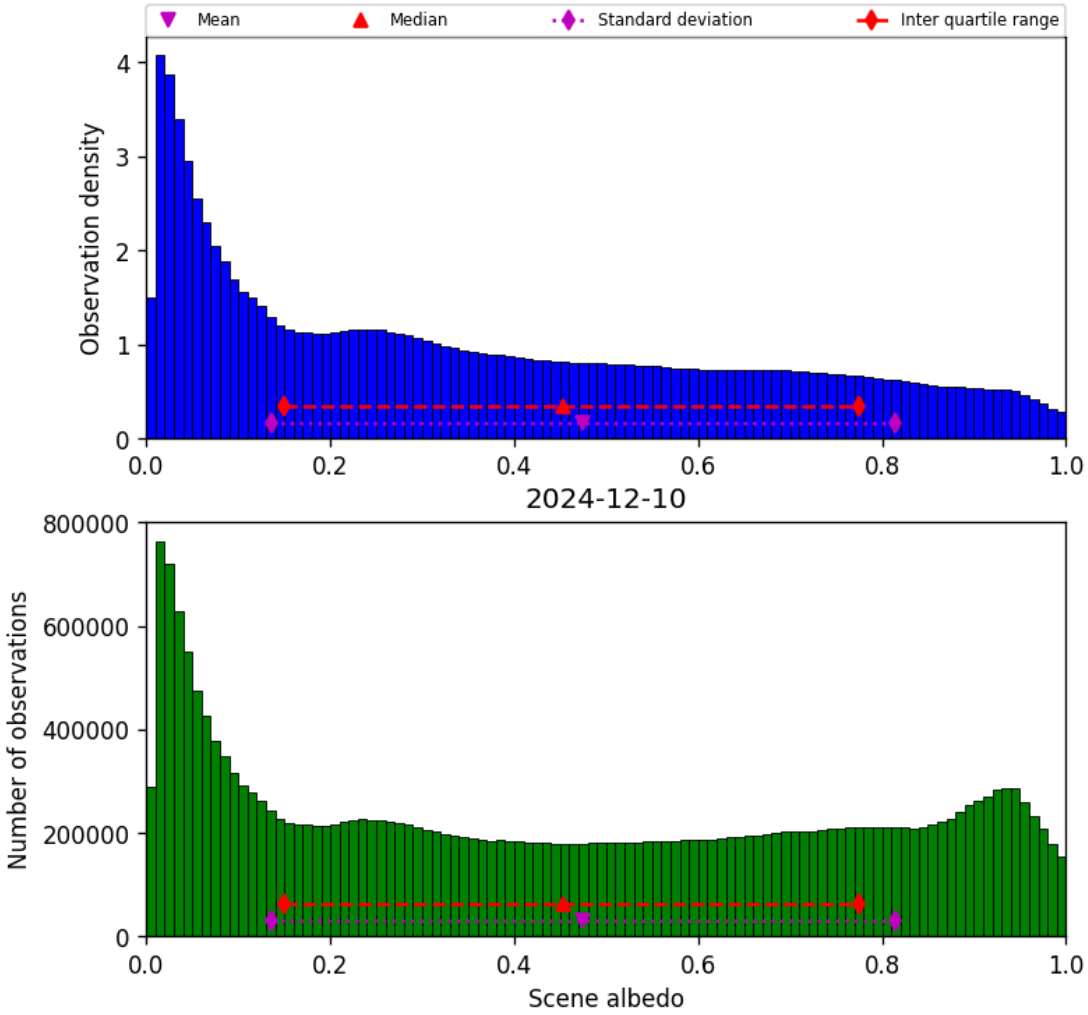

Figure 32: Histogram of “Scene albedo” for 2024-12-10 to 2024-12-11

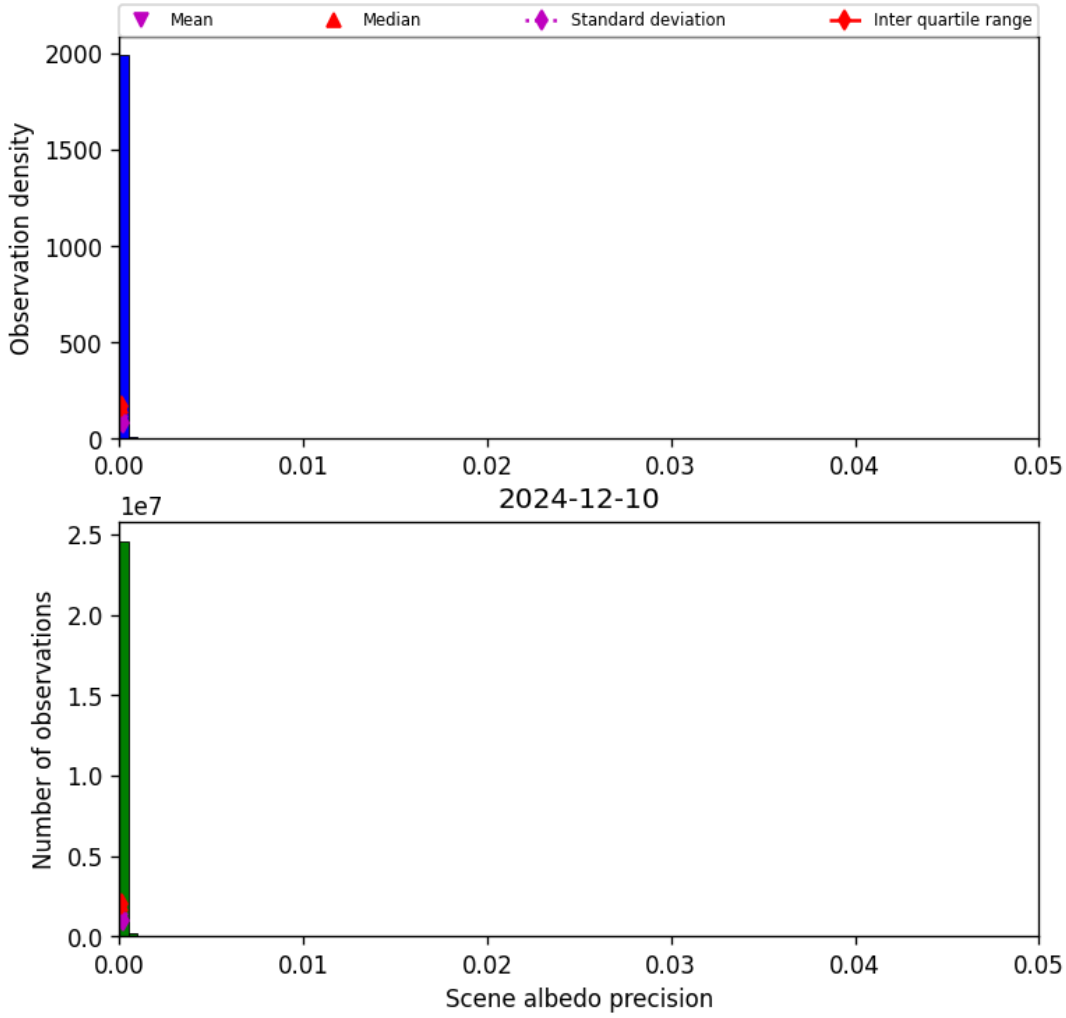

Figure 33: Histogram of “Scene albedo precision” for 2024-12-10 to 2024-12-11

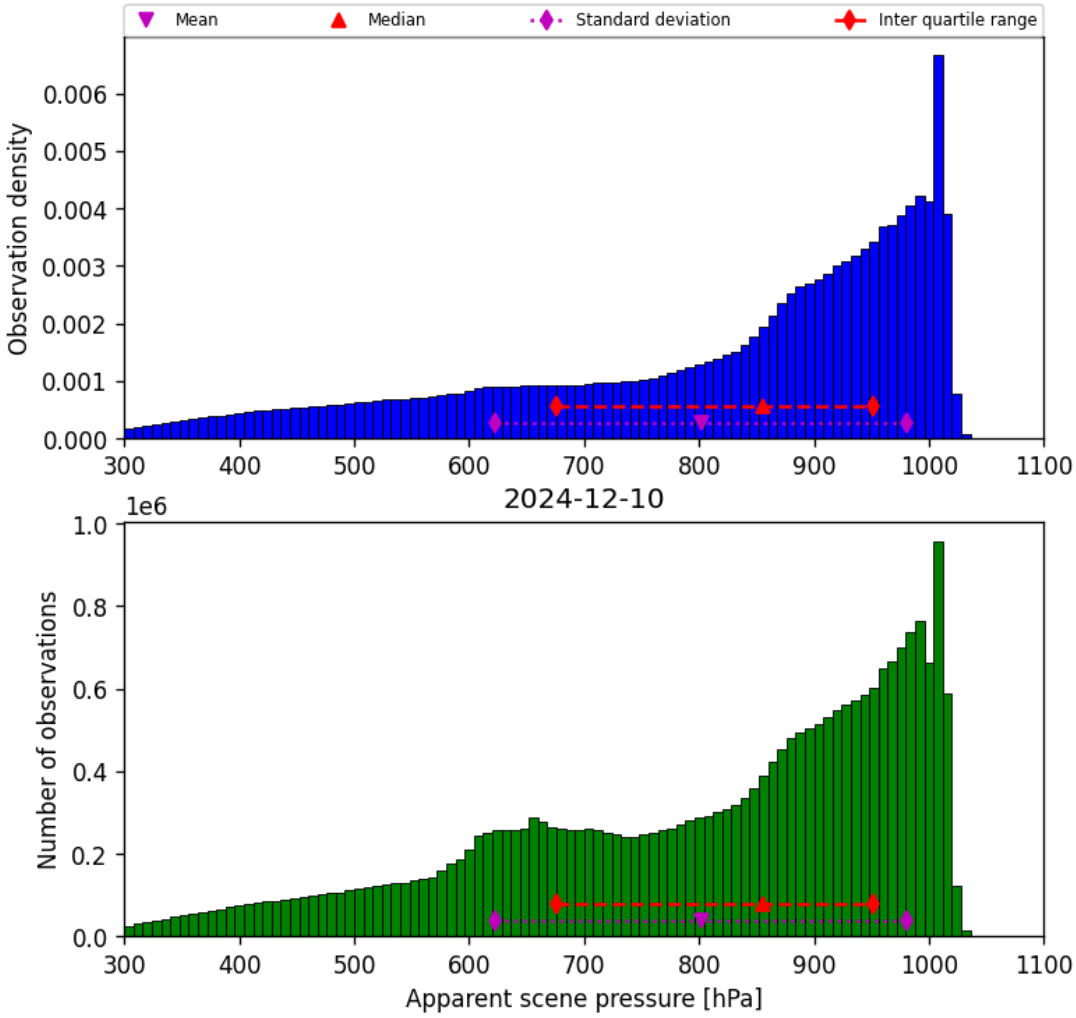

Figure 34: Histogram of “Apparent scene pressure” for 2024-12-10 to 2024-12-11

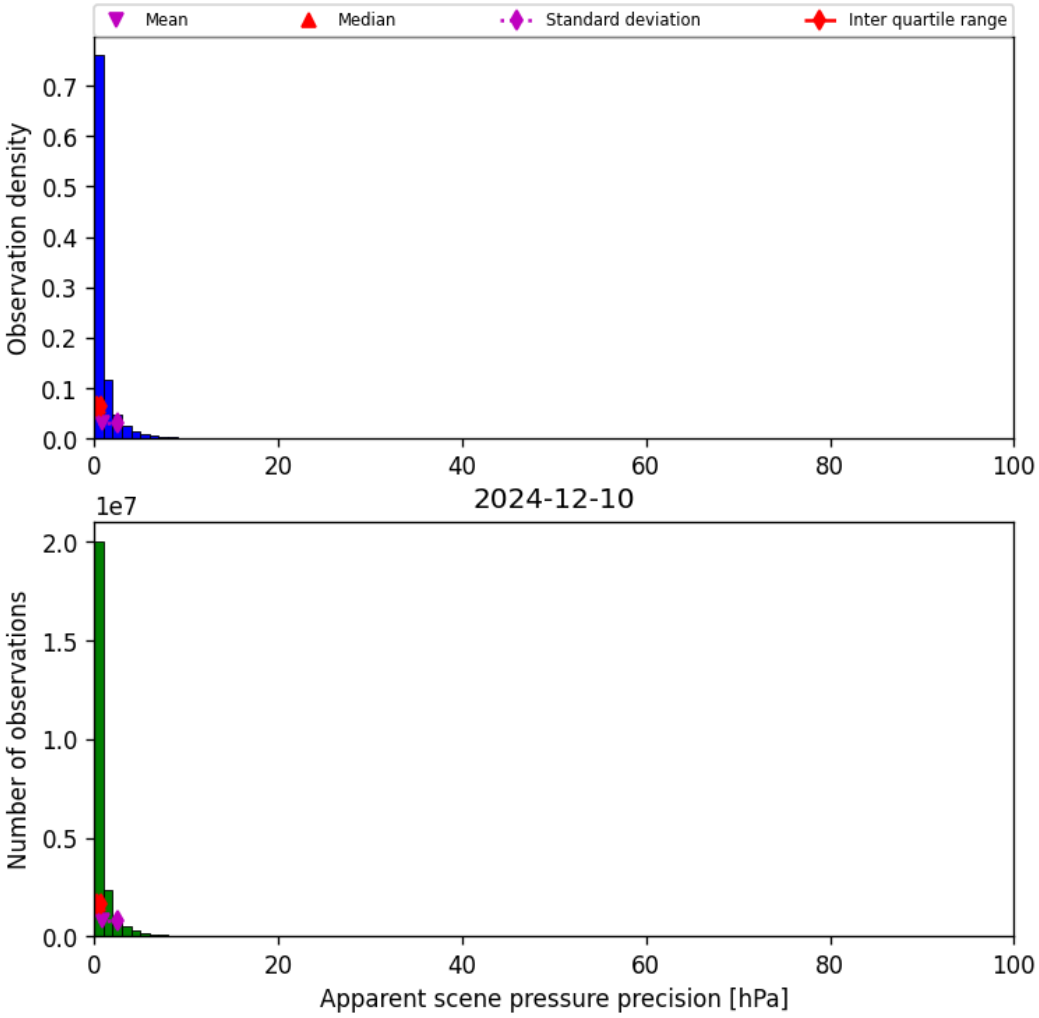

Figure 35: Histogram of “Apparent scene pressure precision” for 2024-12-10 to 2024-12-11

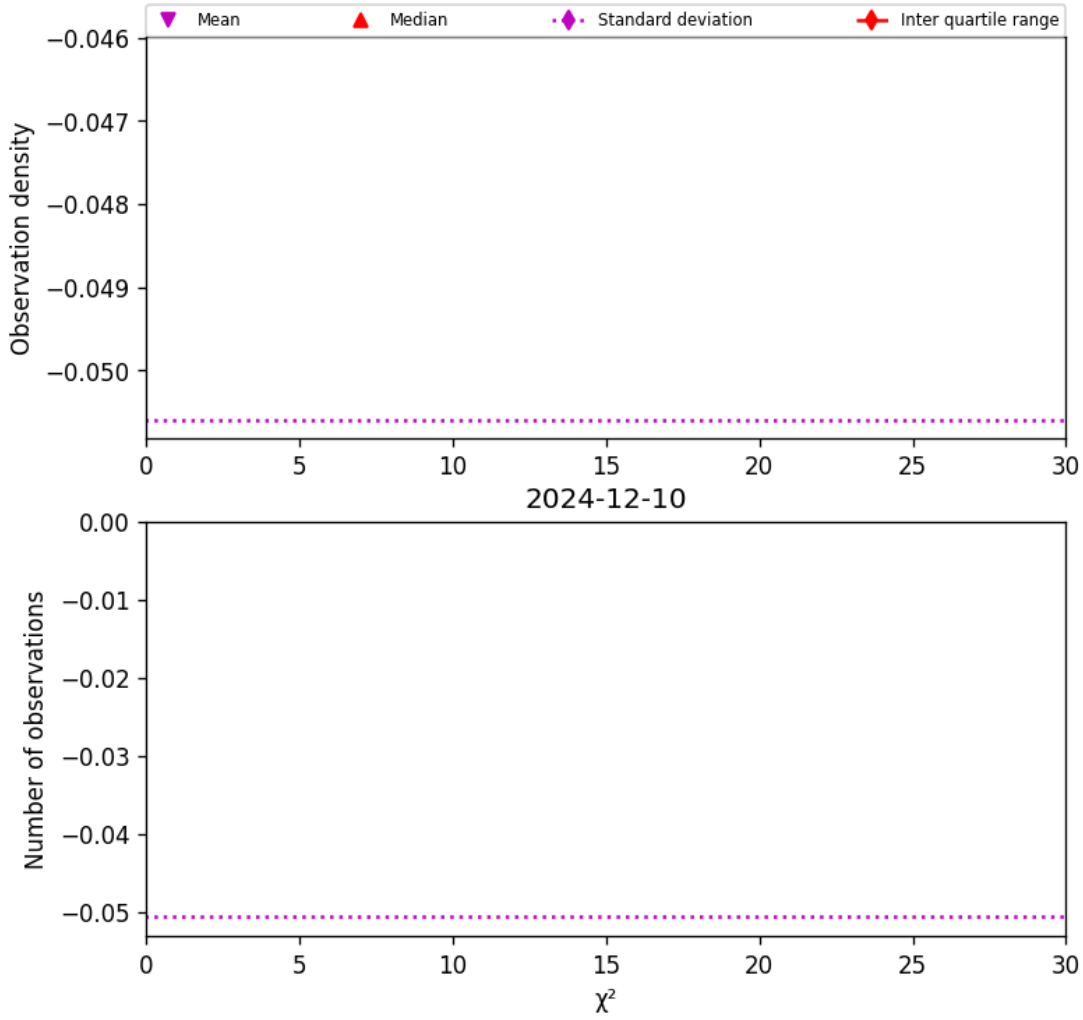

Figure 36: Histogram of "χ^2" for 2024-12-10 to 2024-12-11

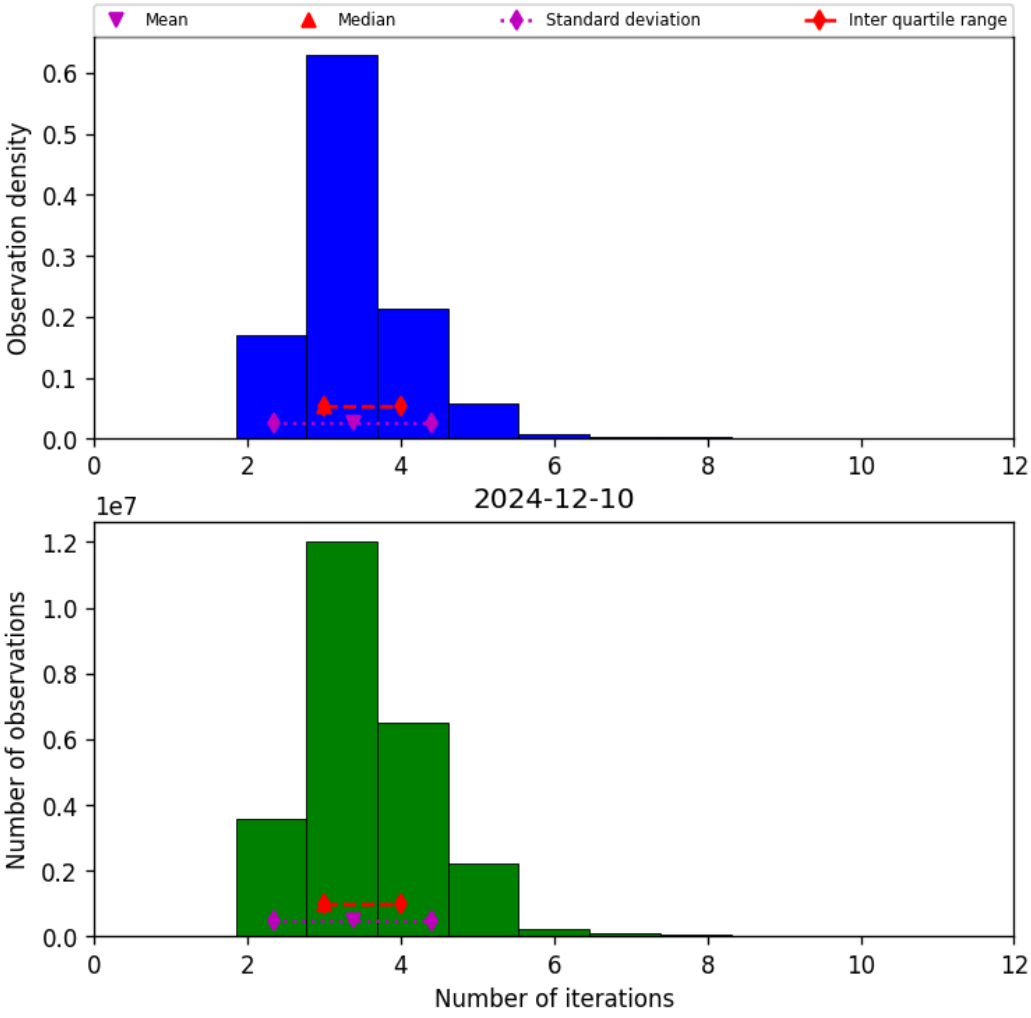

Figure 37: Histogram of “Number of iterations” for 2024-12-10 to 2024-12-11

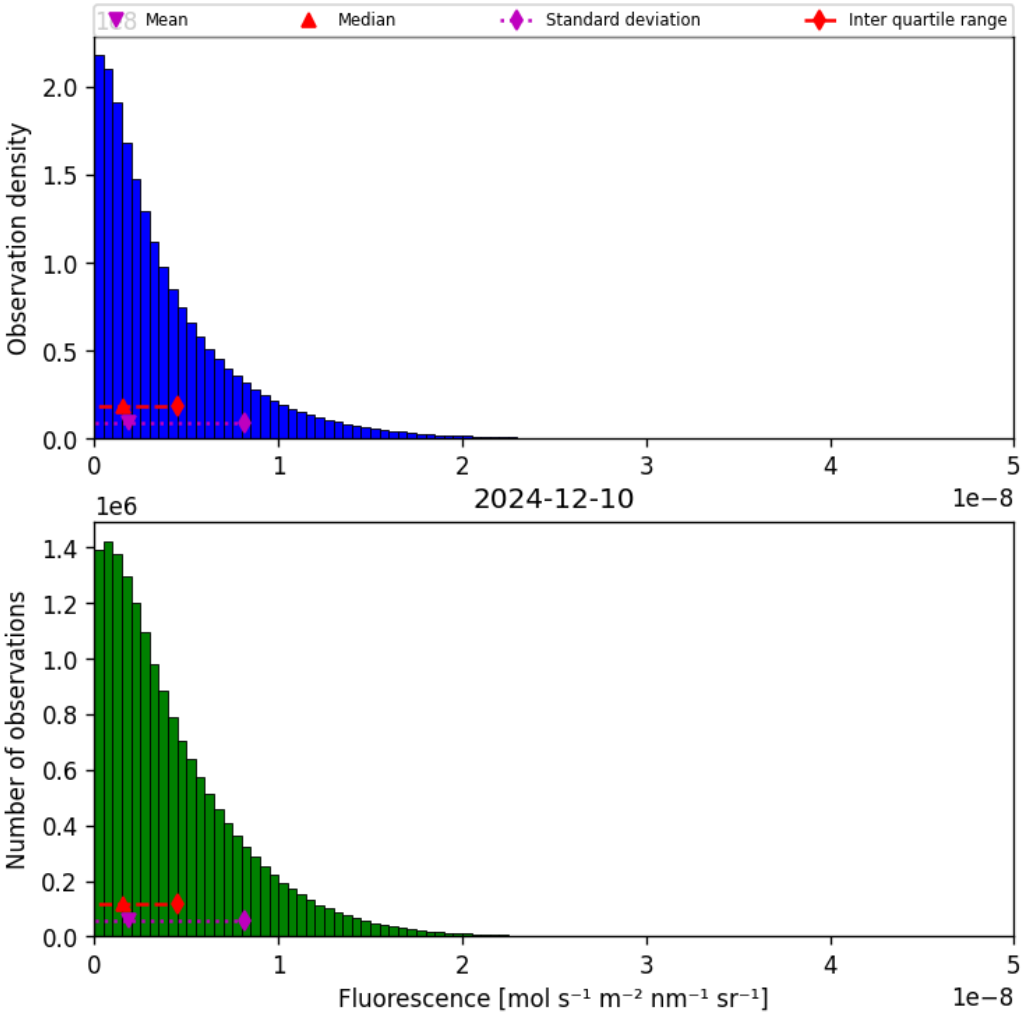

Figure 38: Histogram of “Fluorescence” for 2024-12-10 to 2024-12-11

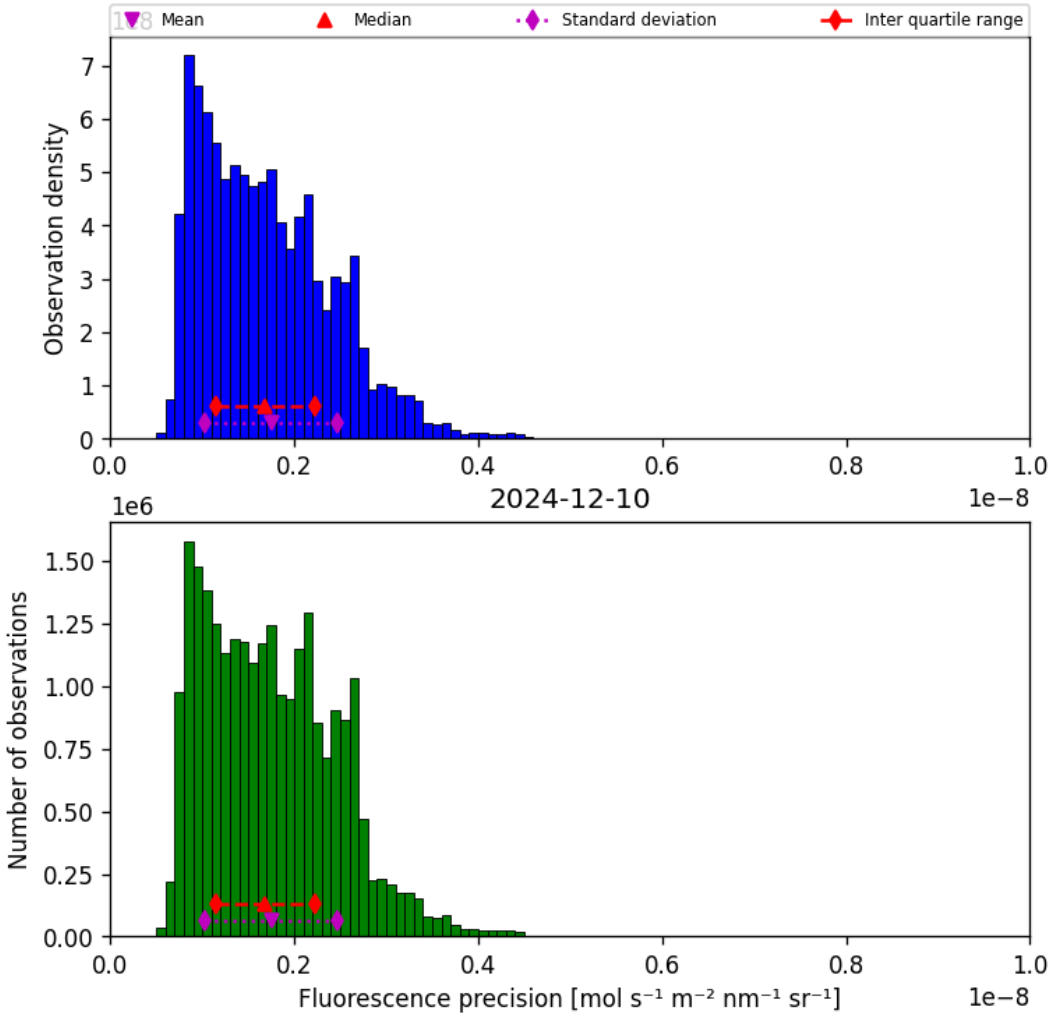

Figure 39: Histogram of “Fluorescence precision” for 2024-12-10 to 2024-12-11

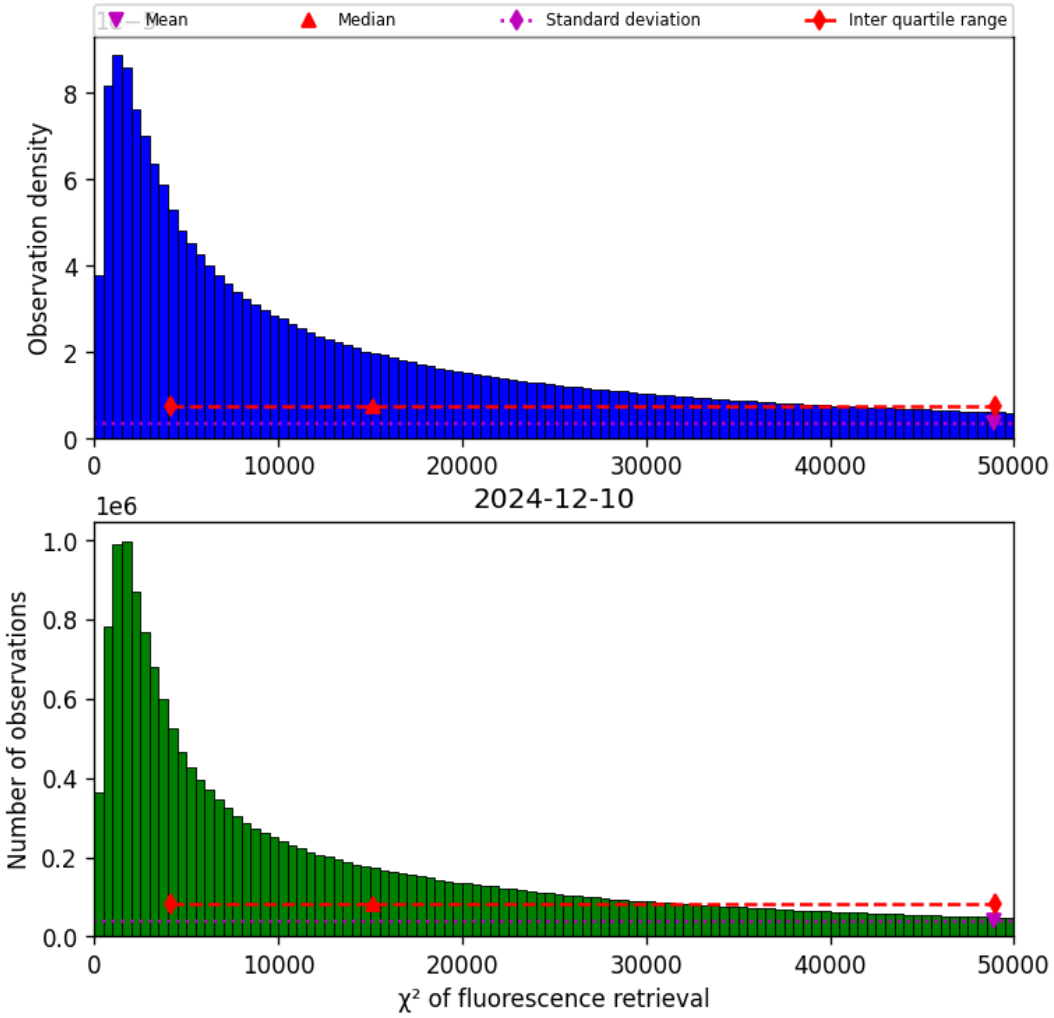

Figure 40: Histogram of "χ^2 of fluorescence retrieval" for 2024-12-10 to 2024-12-11

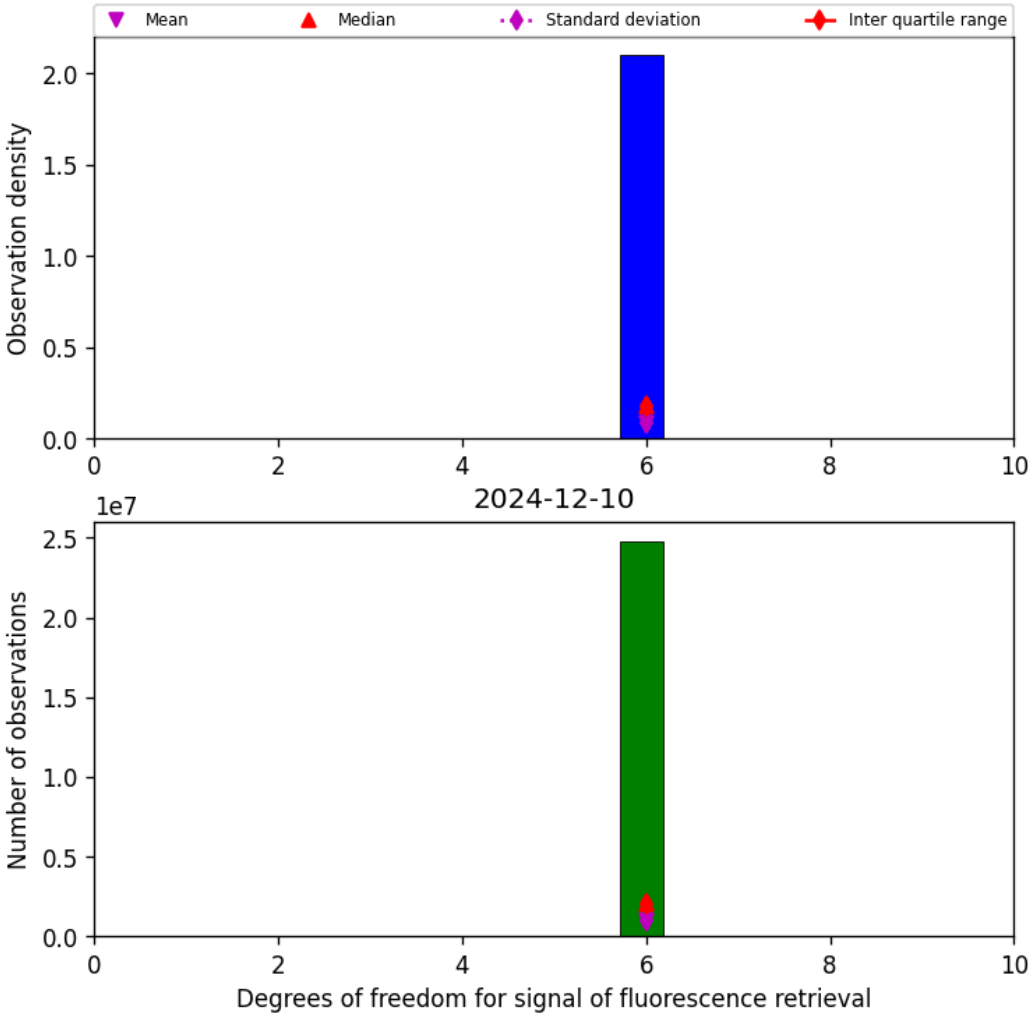

Figure 41: Histogram of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-10 to 2024-12-11

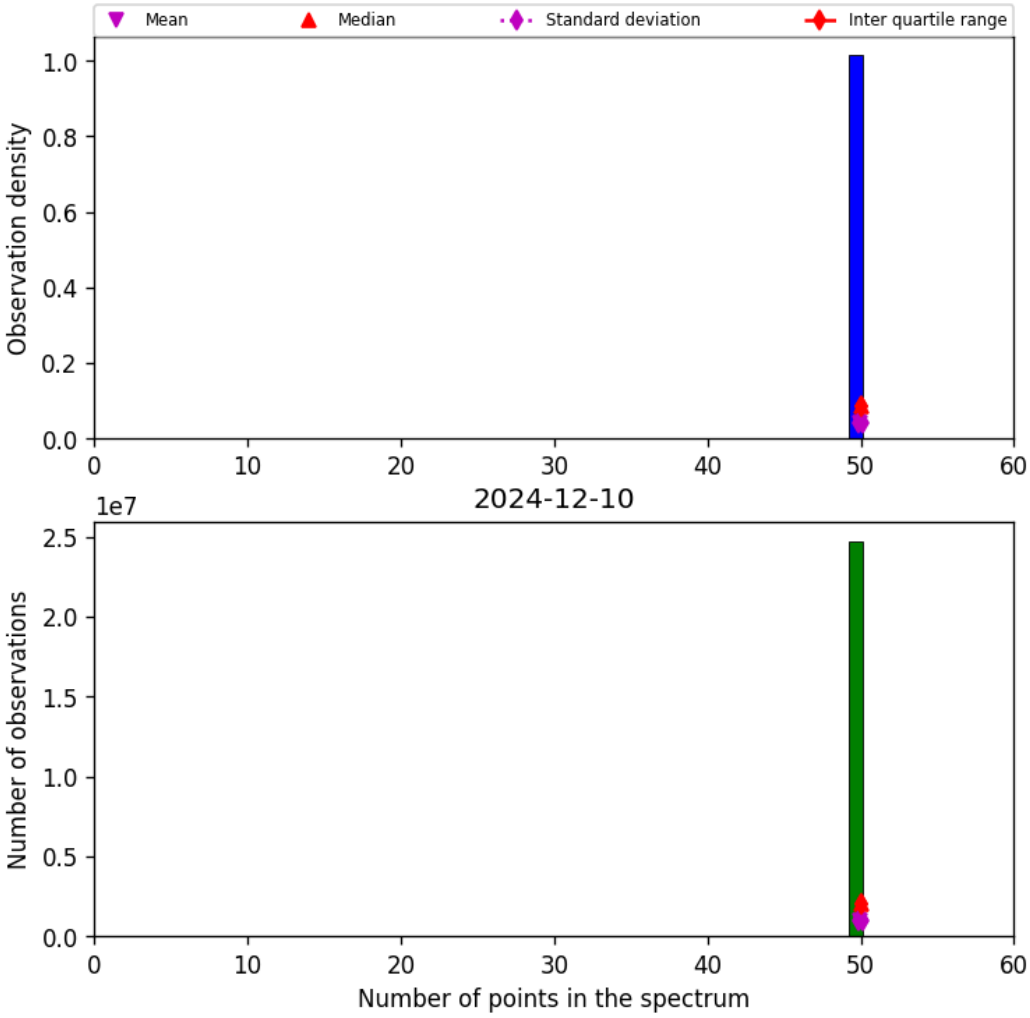

Figure 42: Histogram of “Number of points in the spectrum” for 2024-12-10 to 2024-12-11

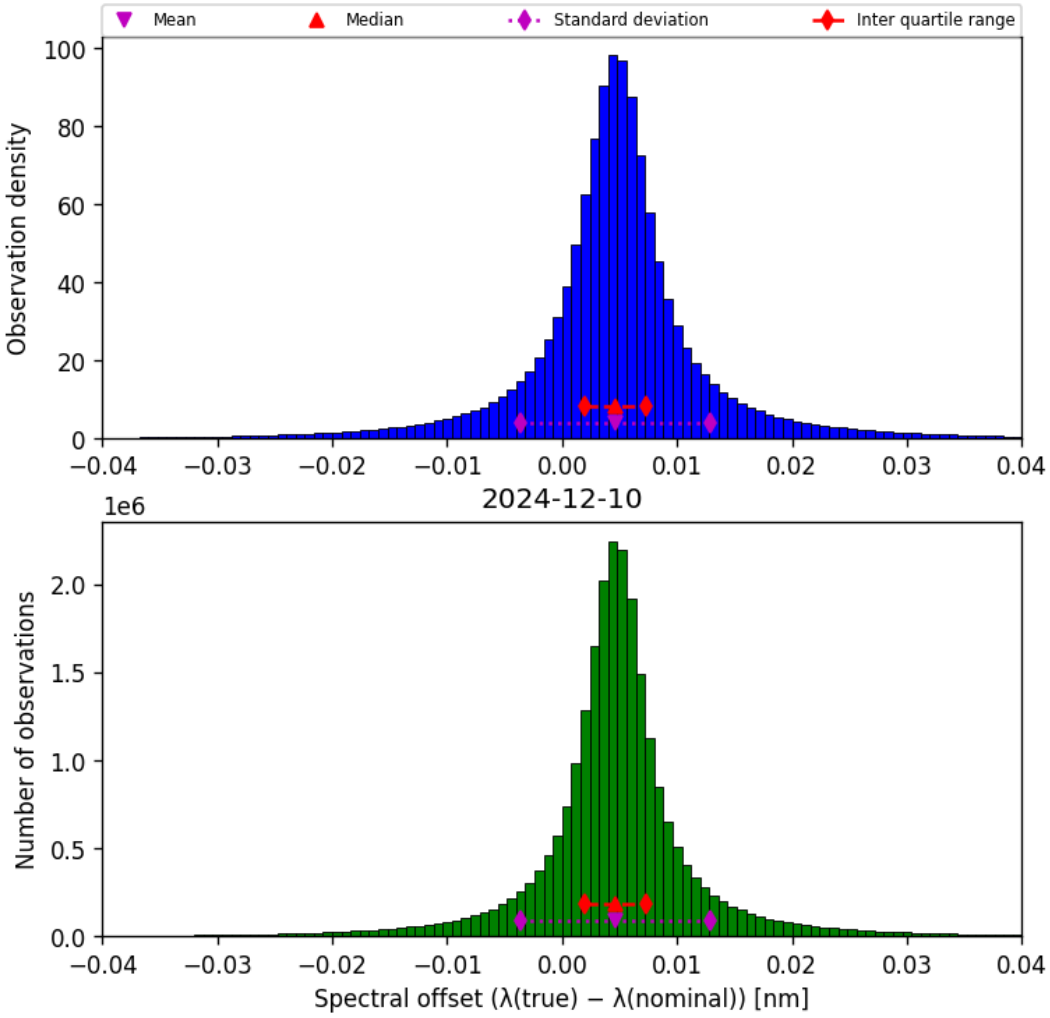

Figure 43: Histogram of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-12-10 to 2024-12-11

9 Along track statistics

The TROPOMI instrument uses different binned detector rows for different viewing directions. In this section statistics are presented for each of the binned rows in the instrument.

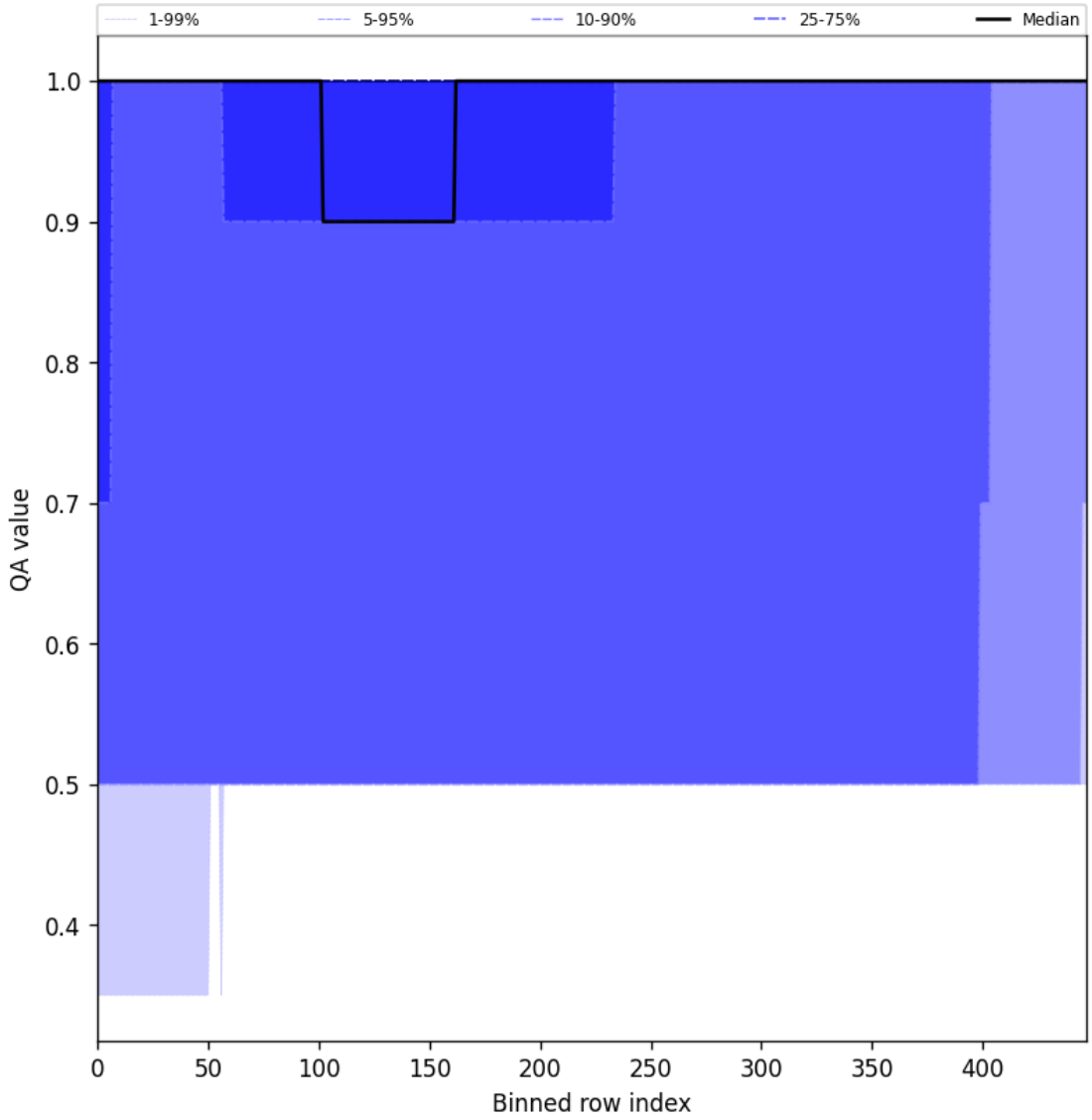

Figure 44: Along track statistics of “QA value” for 2024-12-10 to 2024-12-11

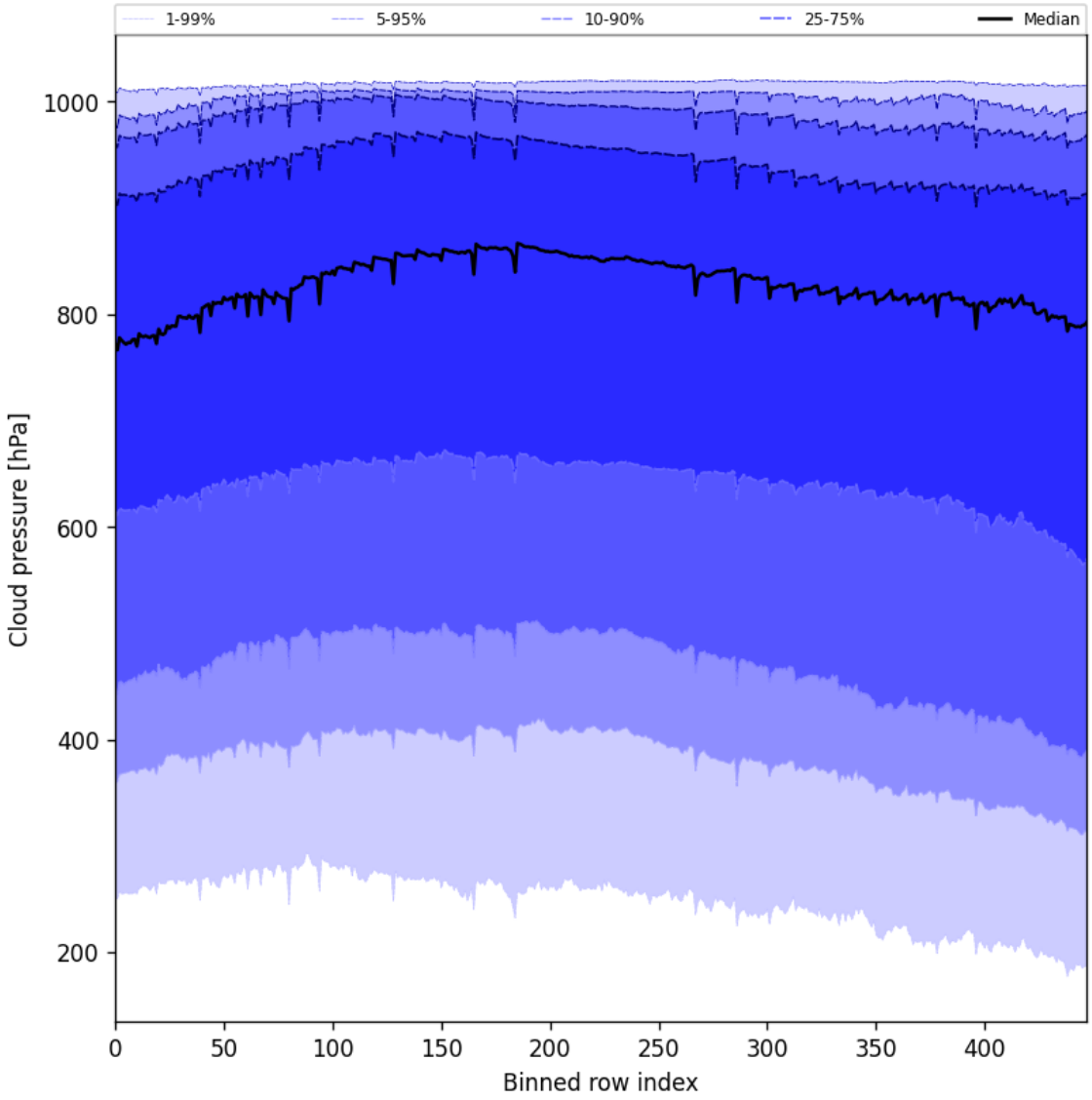

Figure 45: Along track statistics of “Cloud pressure” for 2024-12-10 to 2024-12-11

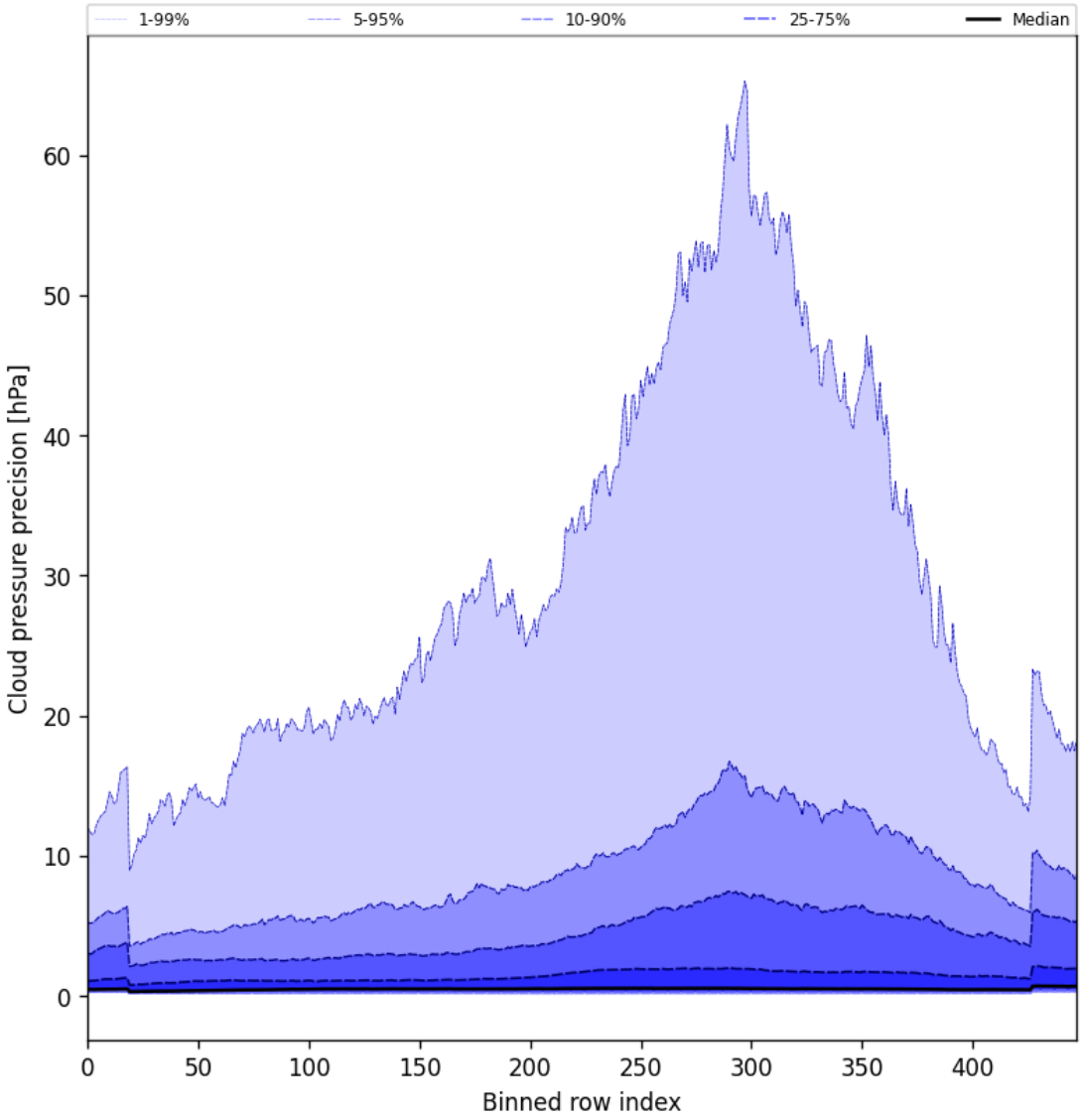

Figure 46: Along track statistics of “Cloud pressure precision” for 2024-12-10 to 2024-12-11

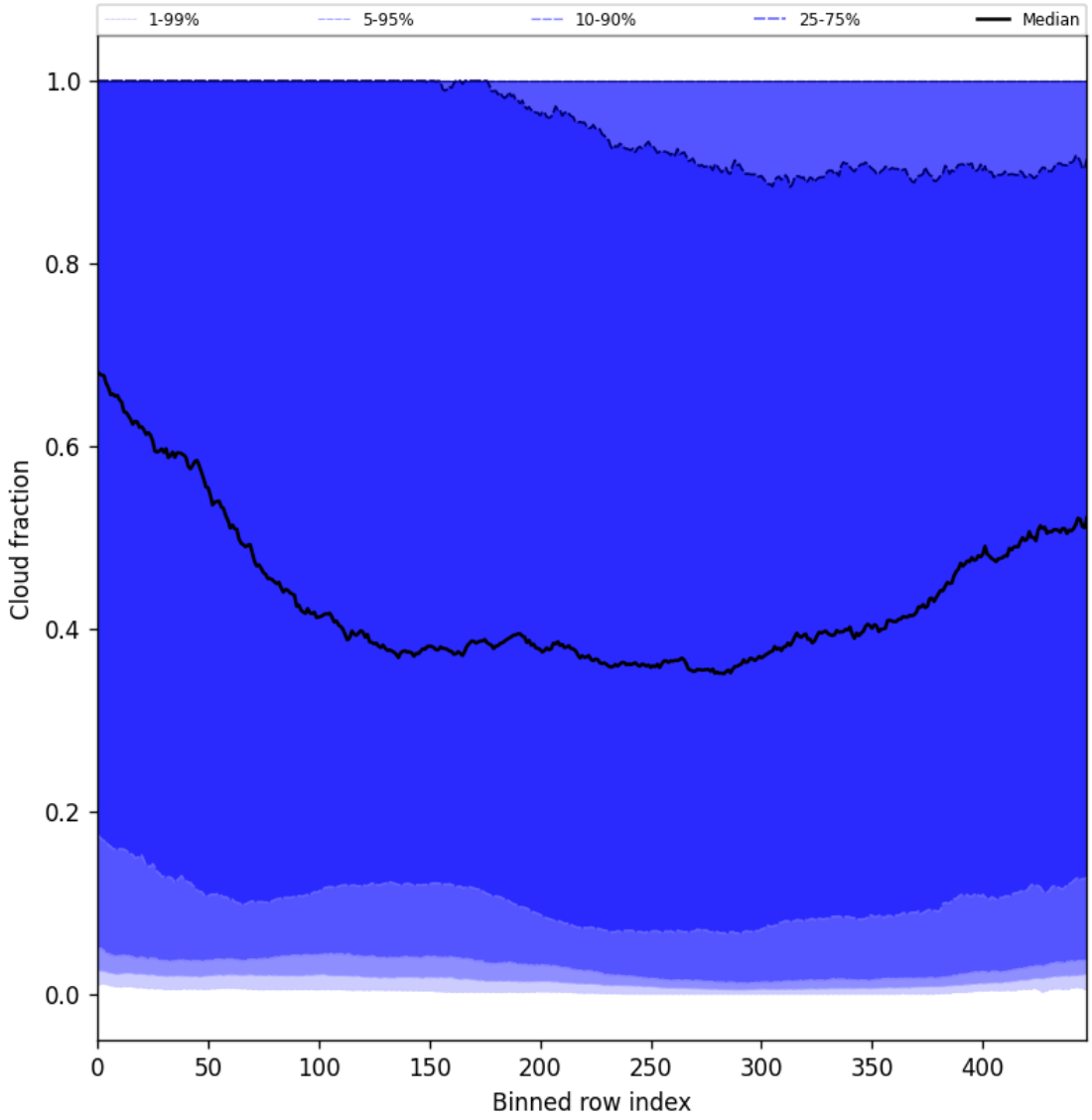

Figure 47: Along track statistics of “Cloud fraction” for 2024-12-10 to 2024-12-11

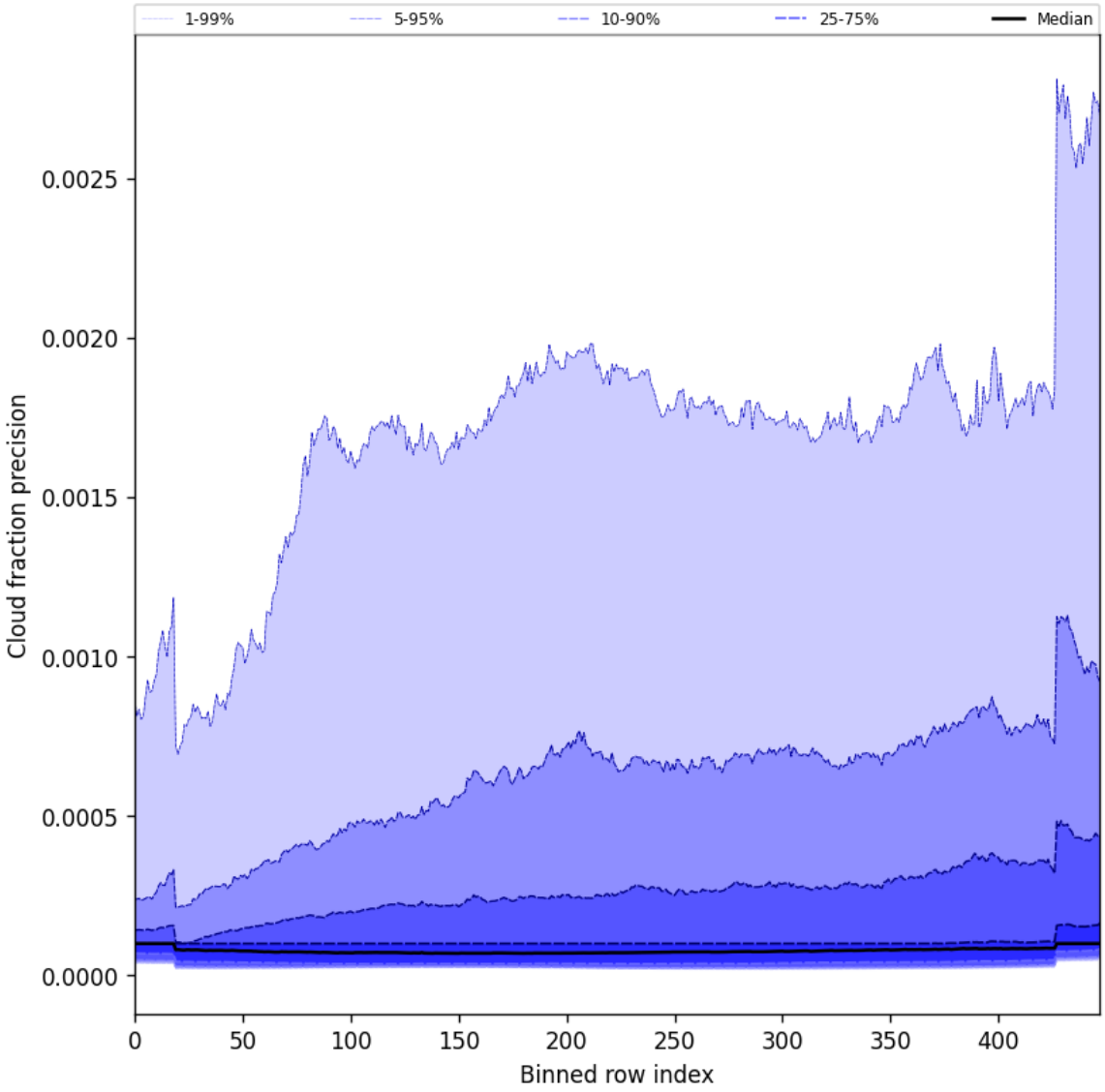

Figure 48: Along track statistics of “Cloud fraction precision” for 2024-12-10 to 2024-12-11

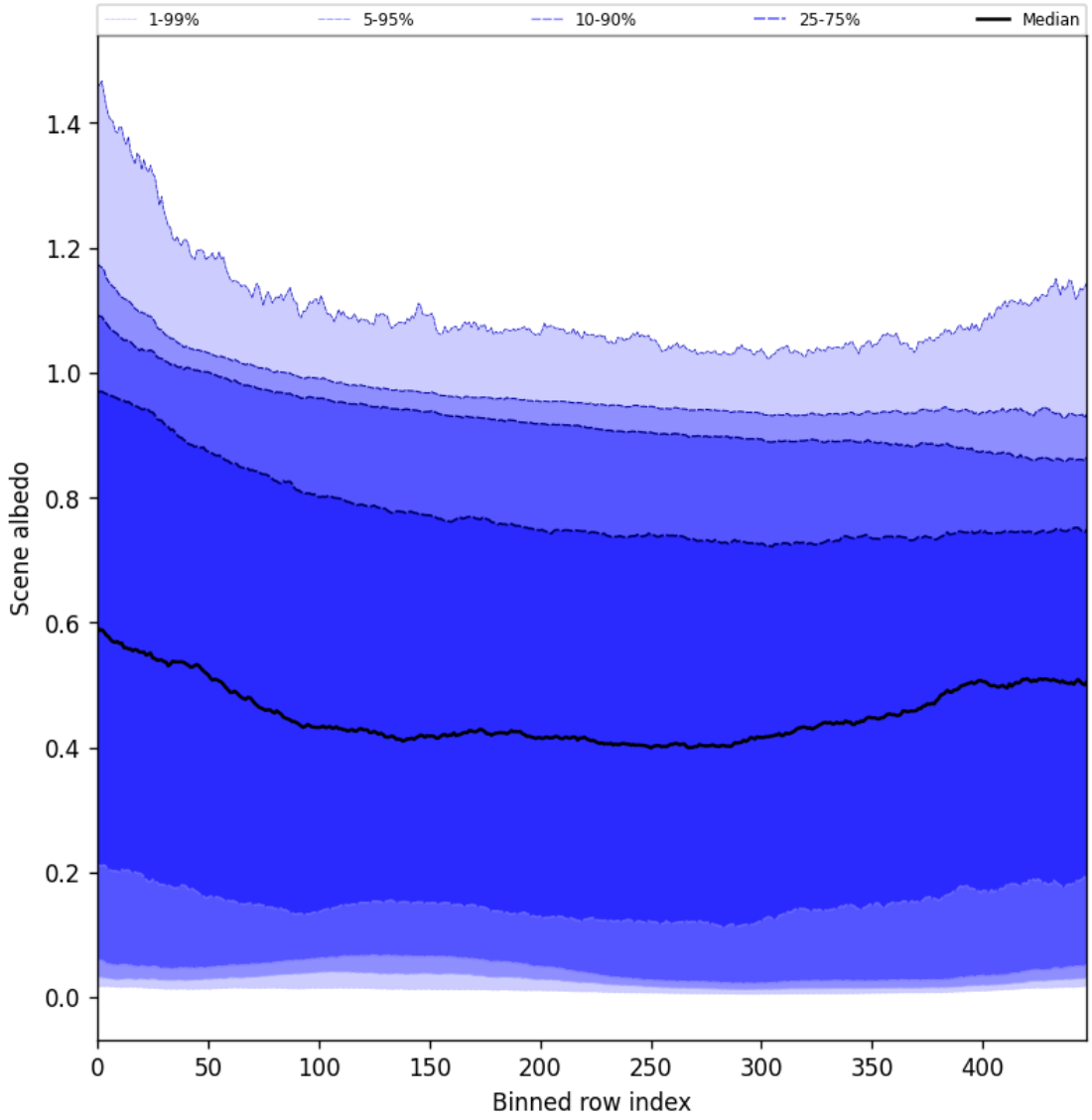

Figure 49: Along track statistics of “Scene albedo” for 2024-12-10 to 2024-12-11

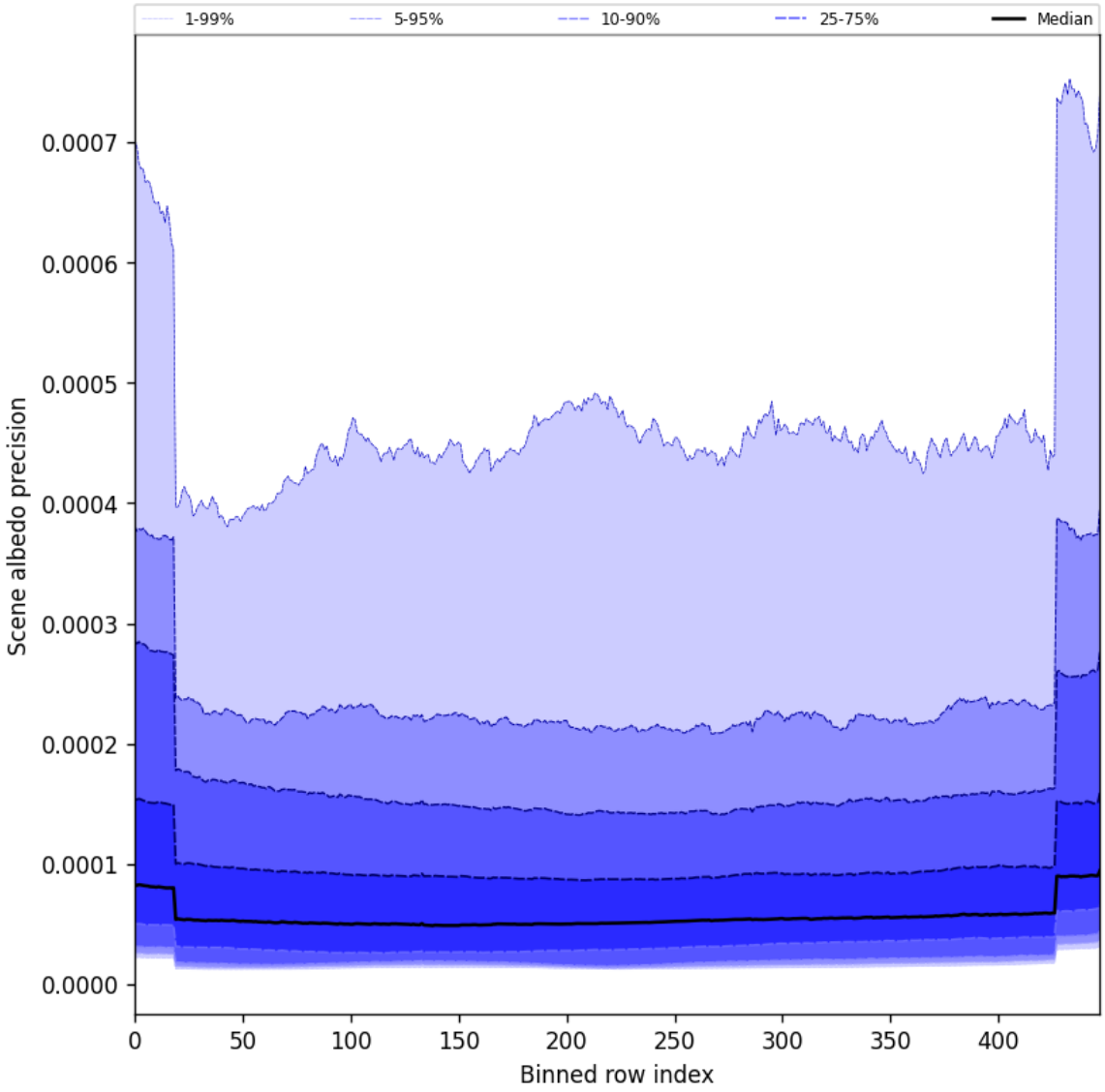

Figure 50: Along track statistics of “Scene albedo precision” for 2024-12-10 to 2024-12-11

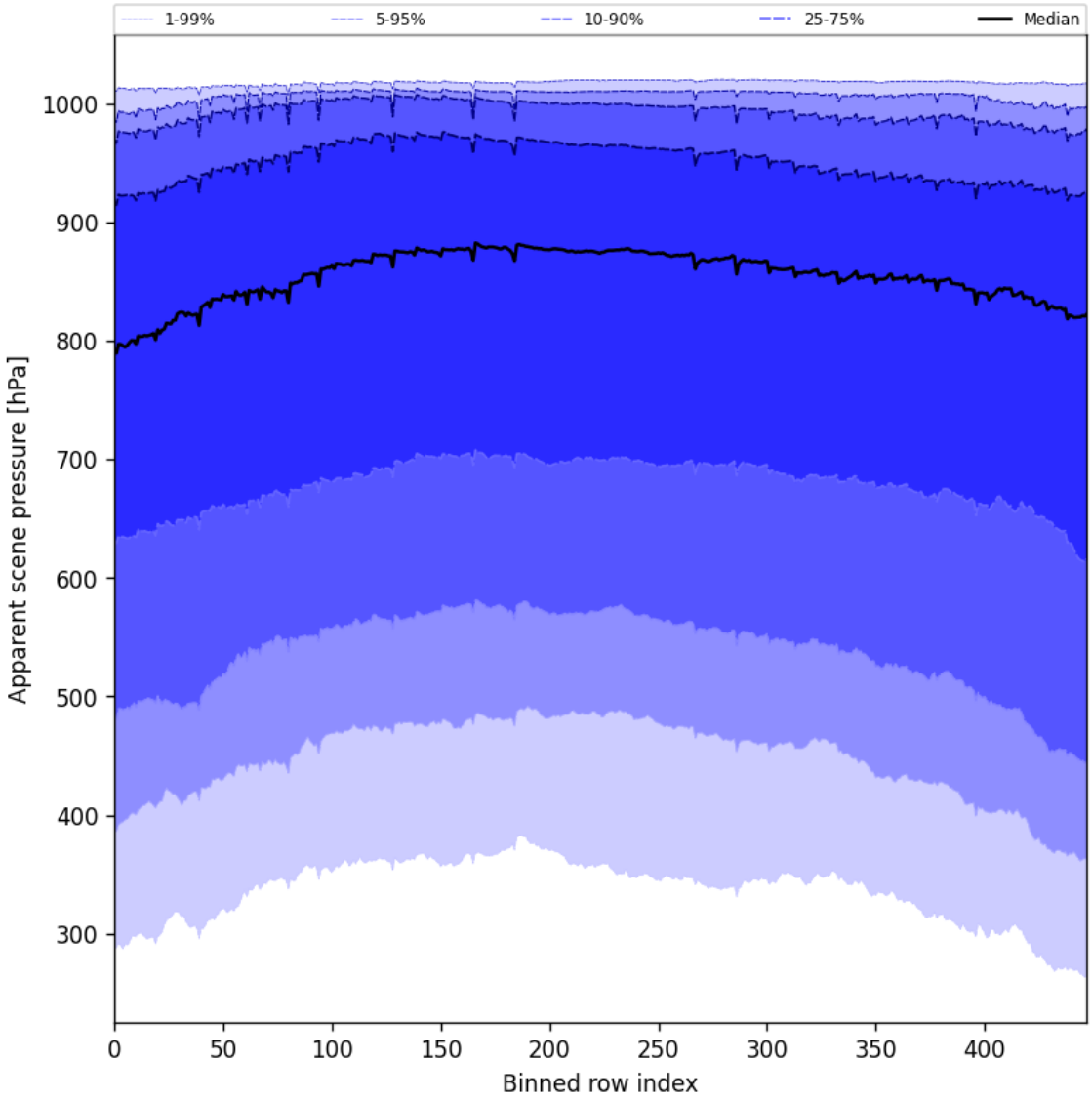

Figure 51: Along track statistics of “Apparent scene pressure” for 2024-12-10 to 2024-12-11

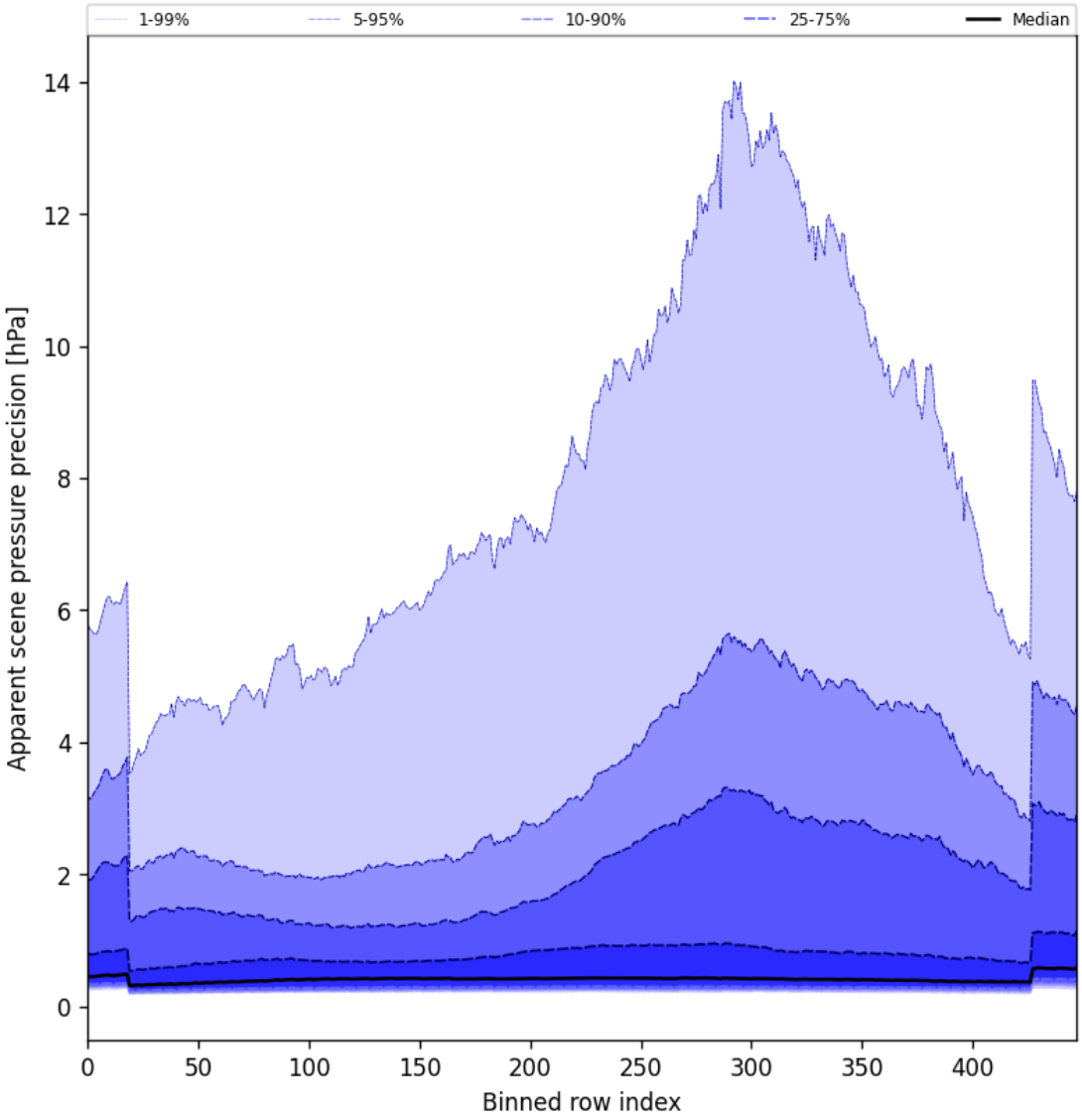

Figure 52: Along track statistics of “Apparent scene pressure precision” for 2024-12-10 to 2024-12-11

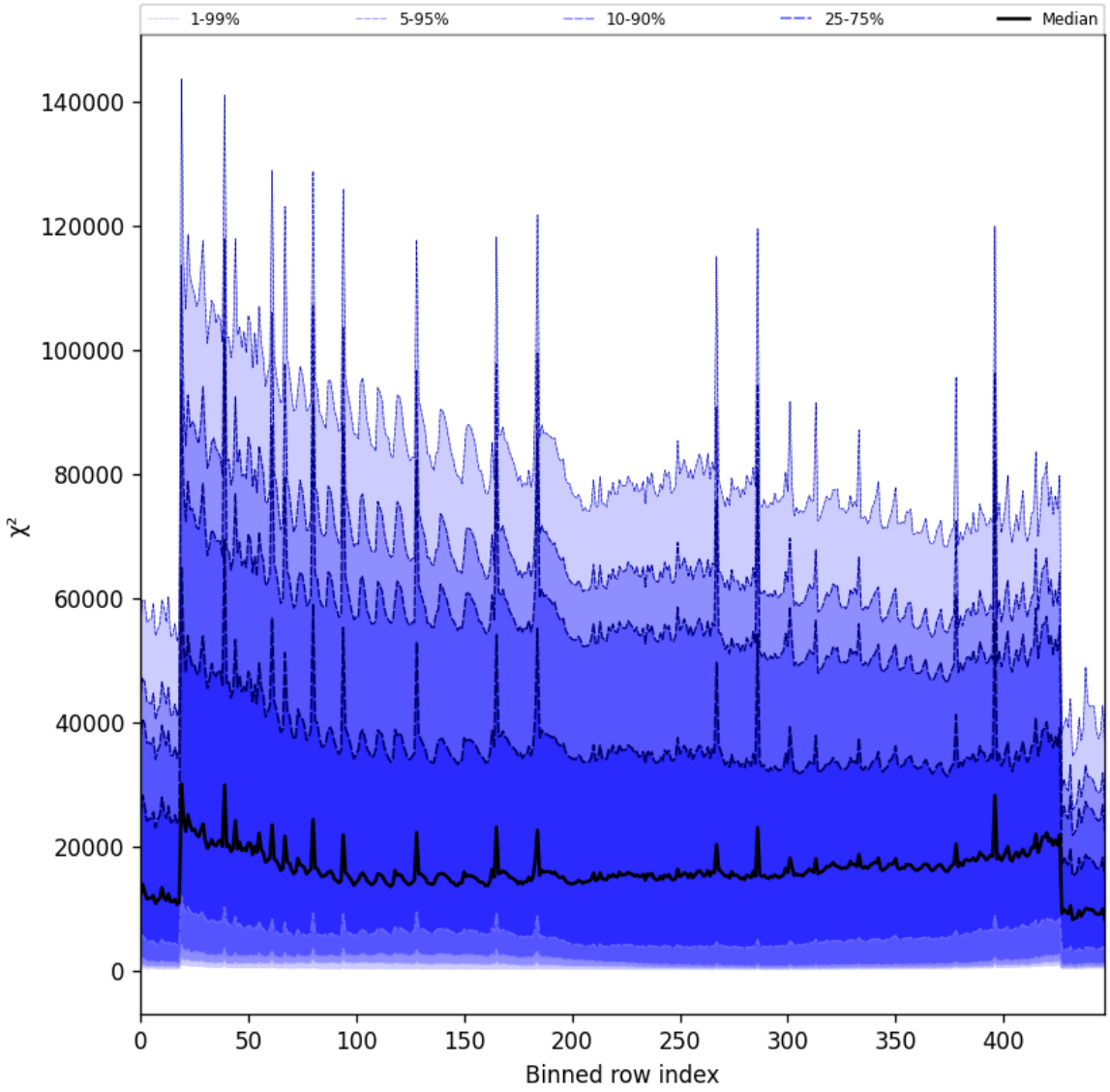

Figure 53: Along track statistics of "χ^2" for 2024-12-10 to 2024-12-11

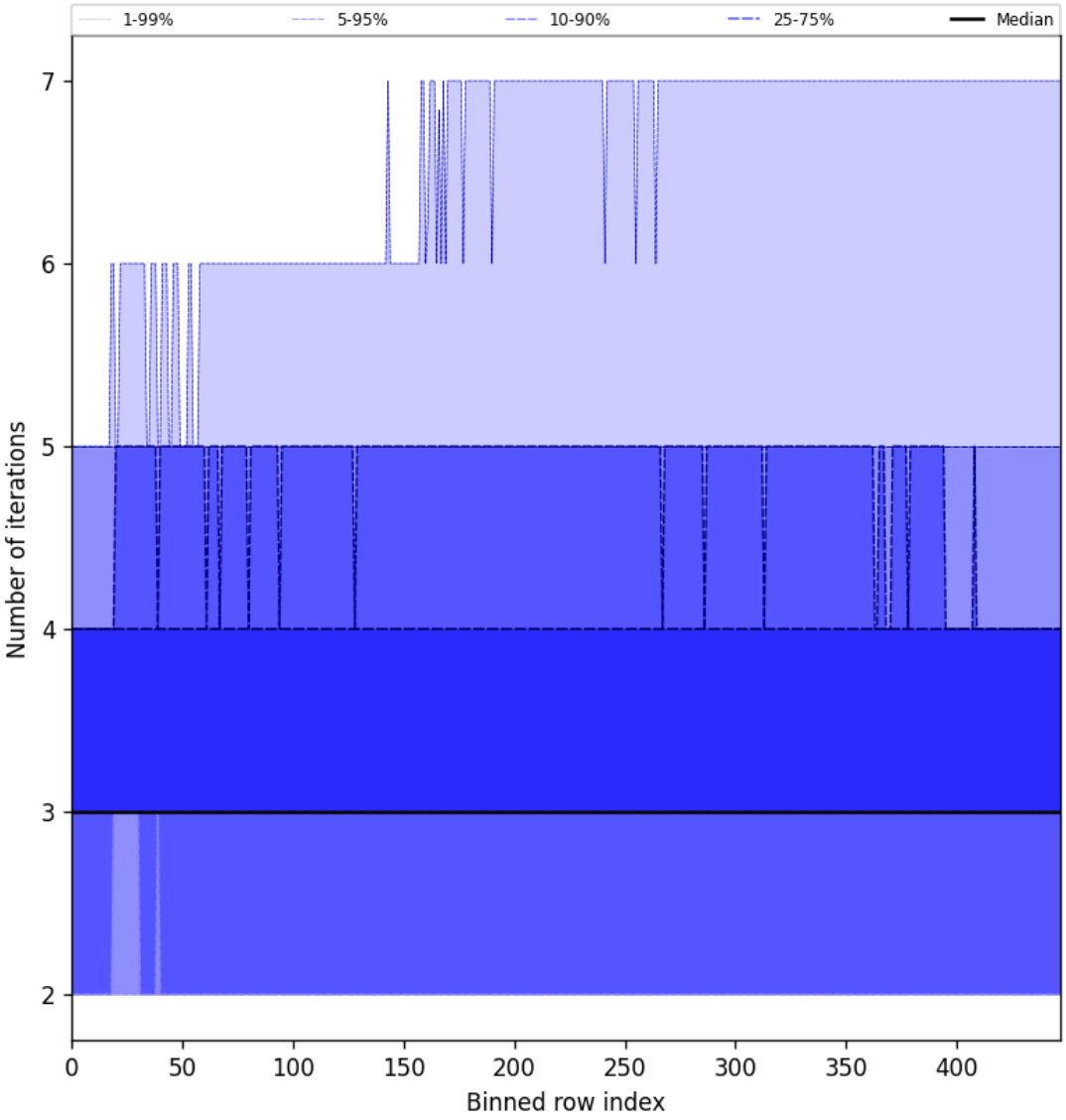

Figure 54: Along track statistics of “Number of iterations” for 2024-12-10 to 2024-12-11

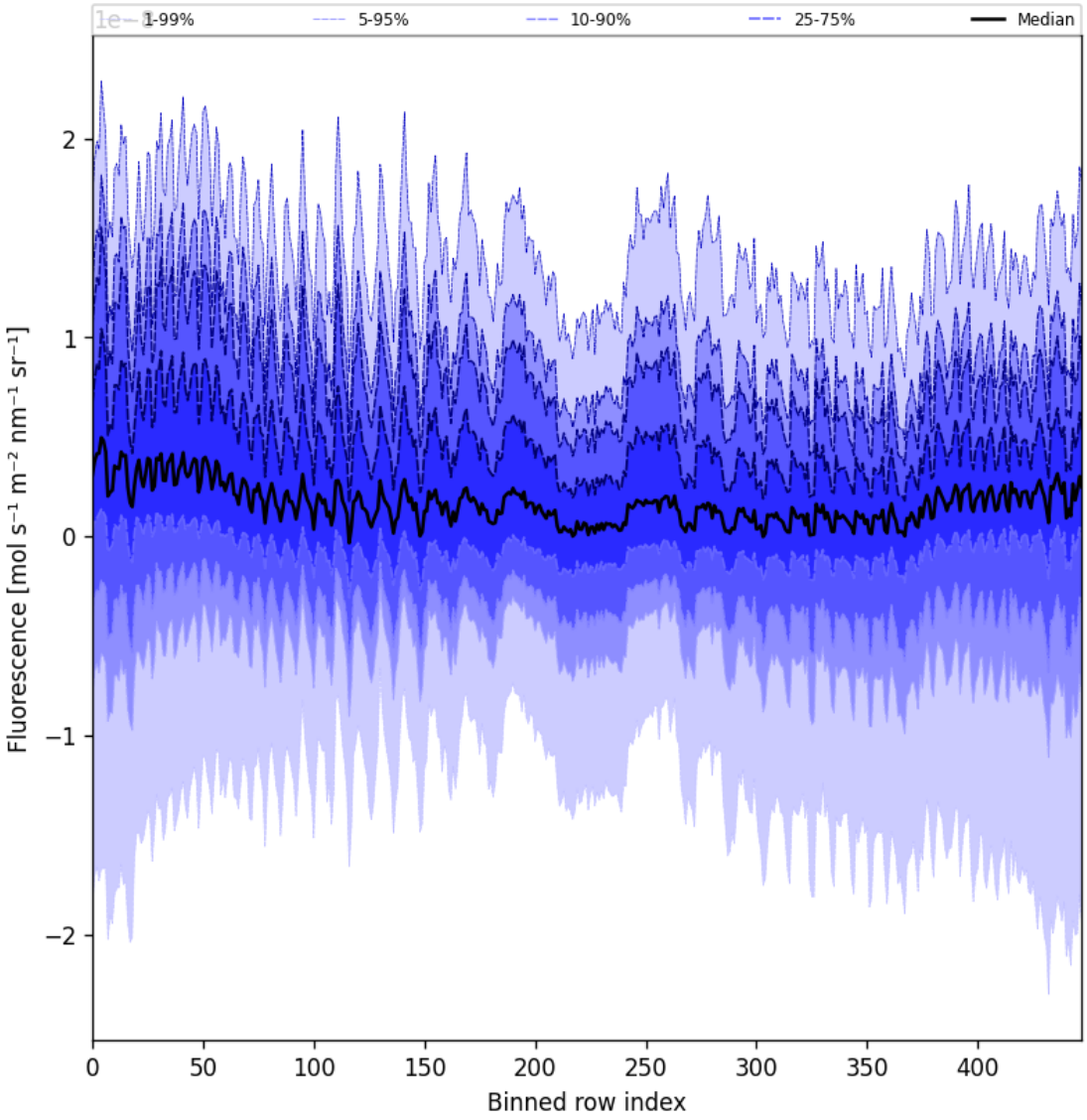

Figure 55: Along track statistics of “Fluorescence” for 2024-12-10 to 2024-12-11

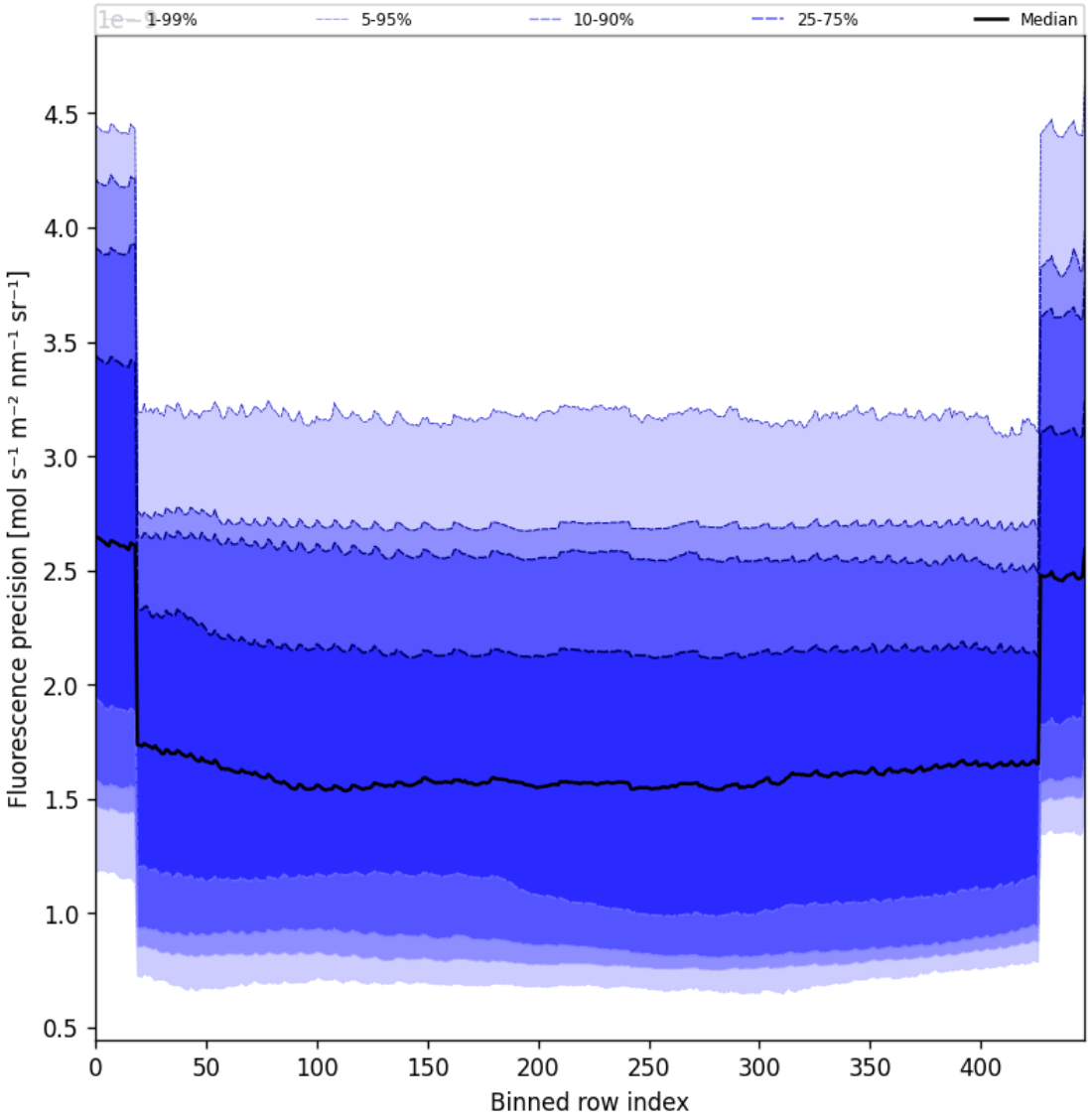

Figure 56: Along track statistics of “Fluorescence precision” for 2024-12-10 to 2024-12-11

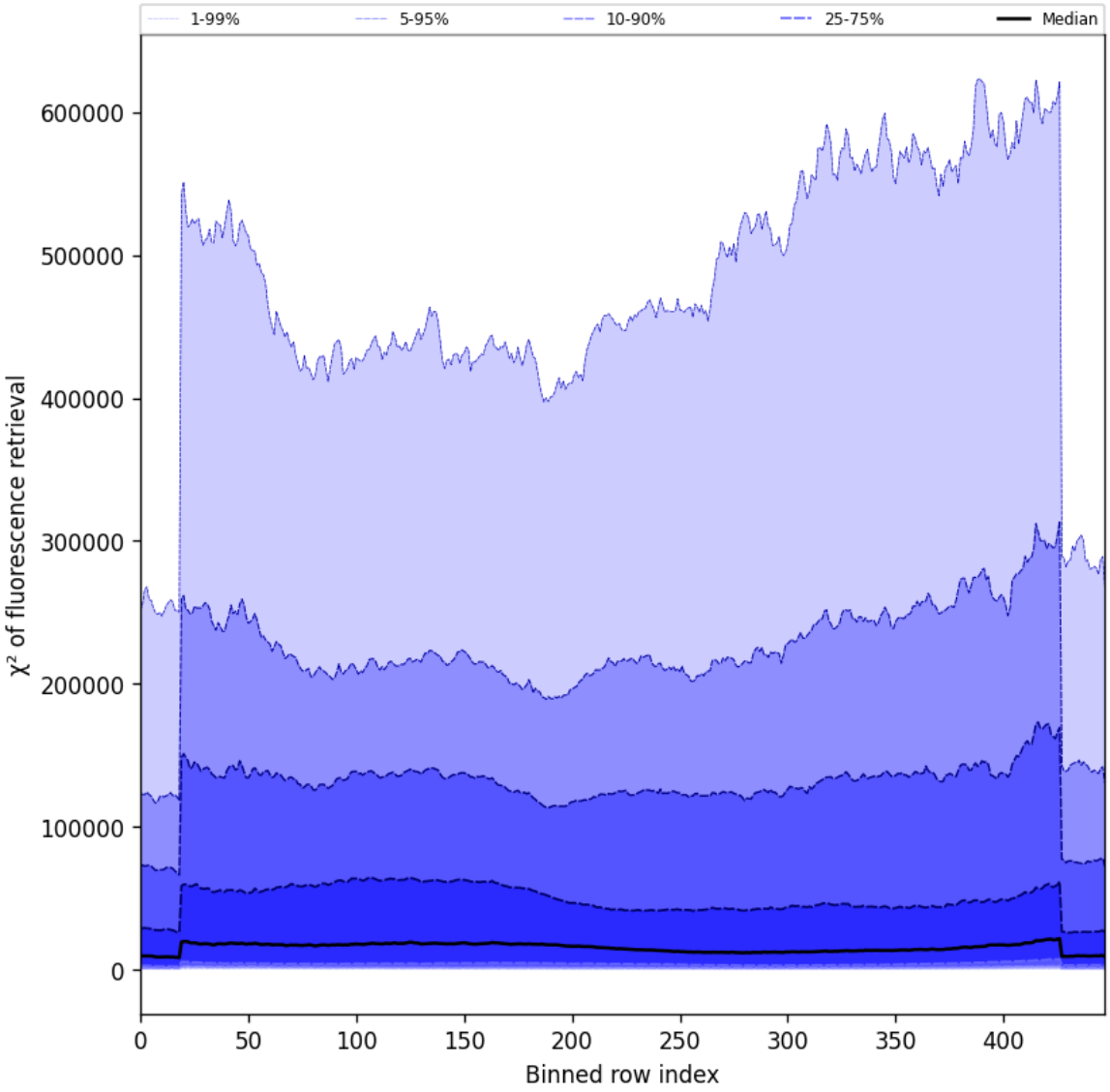

Figure 57: Along track statistics of "χ^2 of fluorescence retrieval" for 2024-12-10 to 2024-12-11

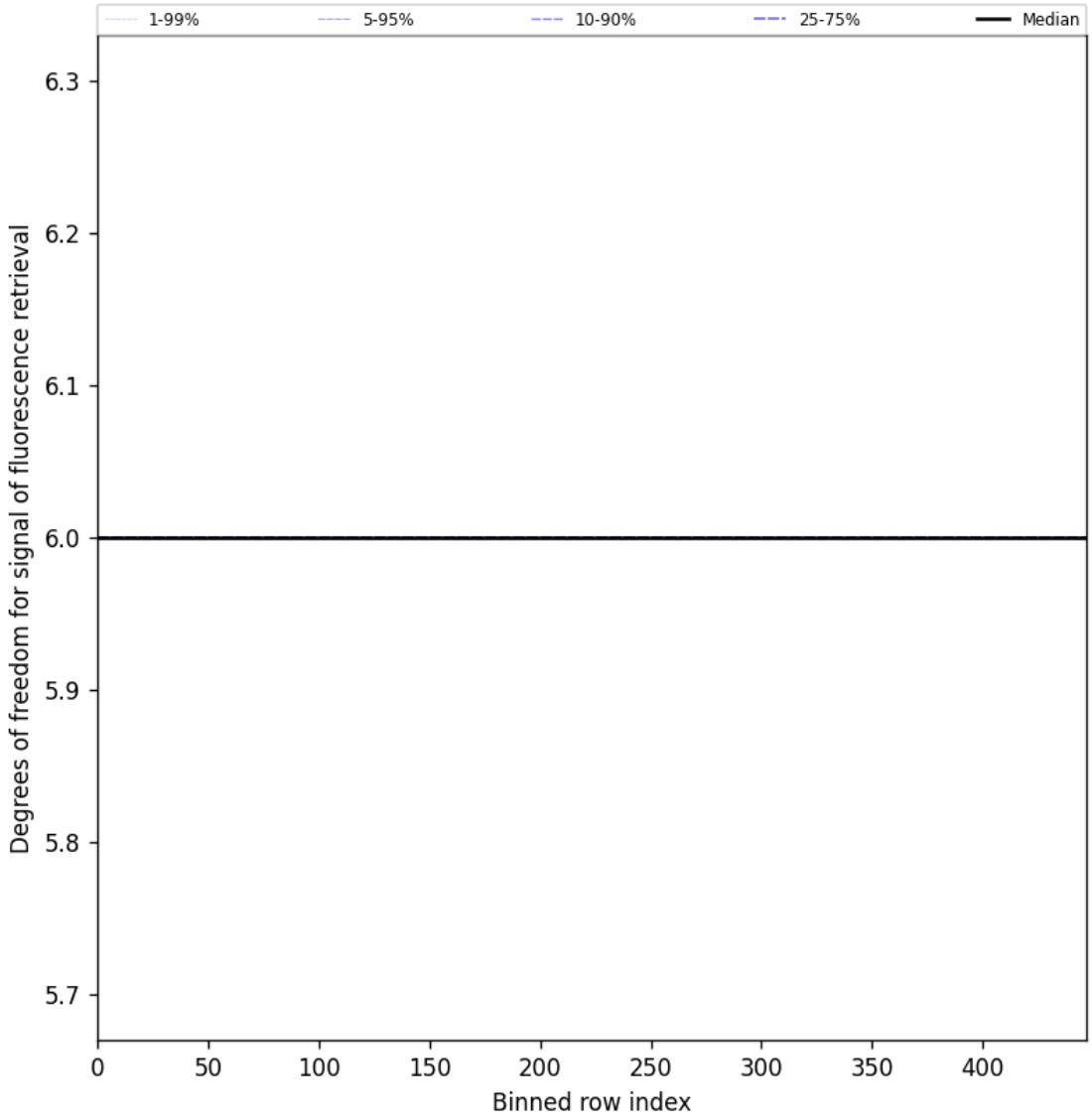

Figure 58: Along track statistics of “Degrees of freedom for signal of fluorescence retrieval” for 2024-12-10 to 2024-12-11

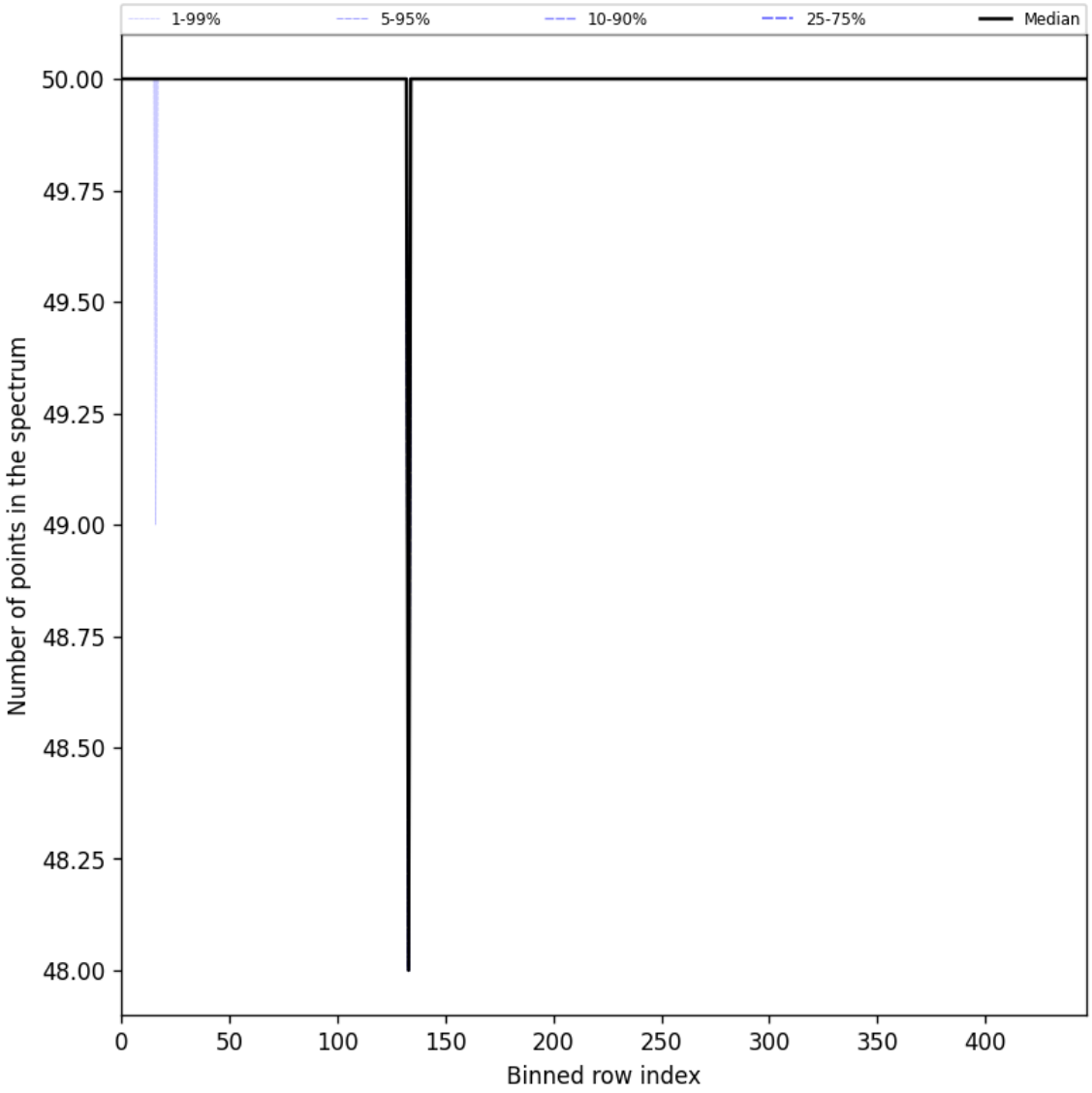

Figure 59: Along track statistics of “Number of points in the spectrum” for 2024-12-10 to 2024-12-11

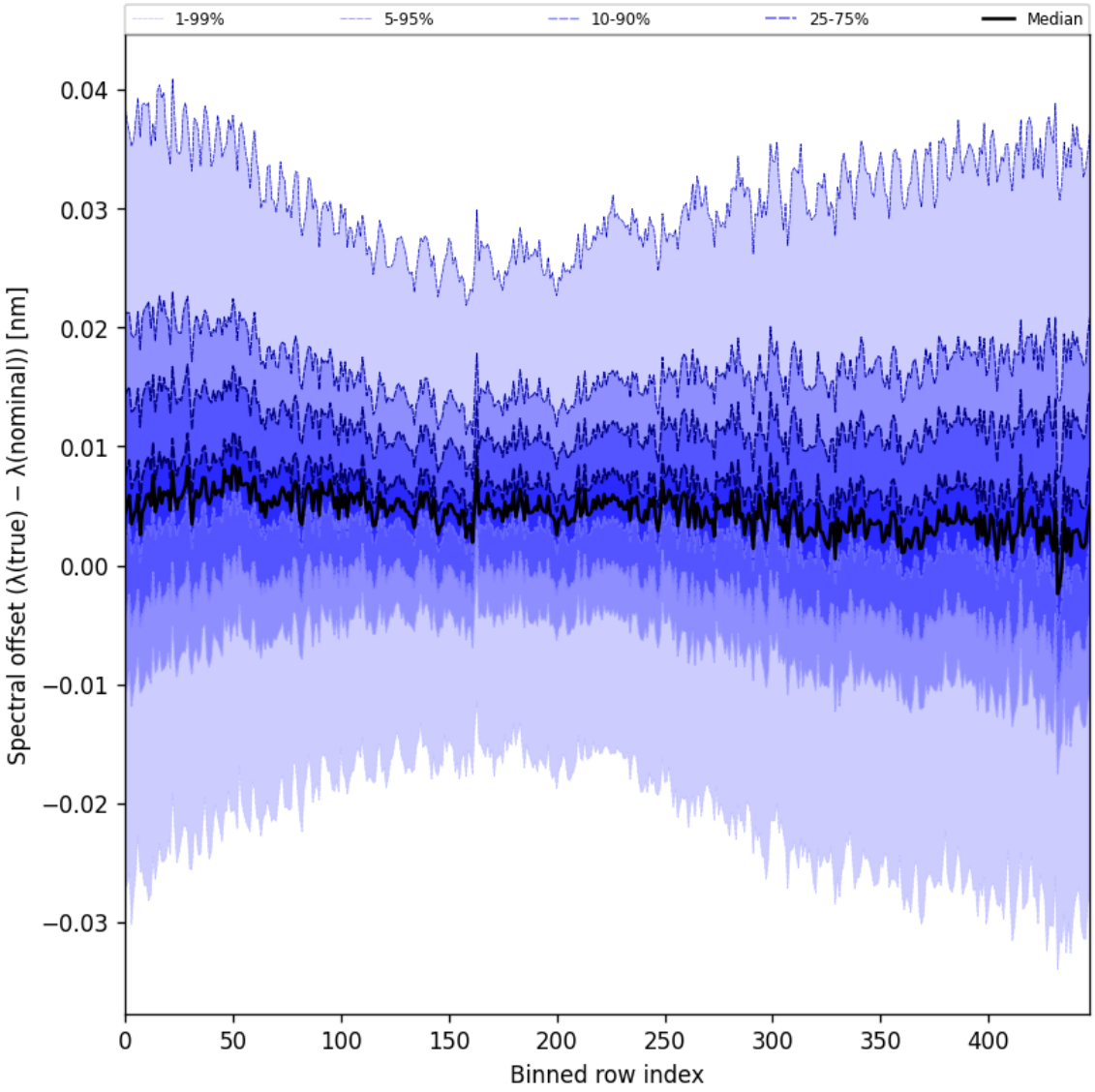

Figure 60: Along track statistics of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2024-12-10 to 2024-12-11

10 Coincidence density

To investigate the relation between parameters scatter density plots are produced. These include some 'hidden' parameters, latitude and the solar- and viewing geometries, in addition to all configured parameters. All combinations of pairs of parameters are included *once*, in one direction alone.

Contents

List of Figures

List of Tables

11 Copyright information of ‘PyCAMA’

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).