PyCAMA report generated by tropl2-proc

tropl2-proc

2025-03-03 (08:45)

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]	0.926 ± 0.169	23335015	0.995	0.0	1.000	0.350	1.000
cloud pressure crb [hPa]	787 ± 194	23335015	1.005×10^{3}	286	843	130	1.073×10^{3}
cloud pressure crb precision [hPa]	2.70 ± 10.24	23335015	0.750	1.32	0.586	2.441×10^{-4}	1.427×10^{3}
cloud fraction crb [1]	0.455 ± 0.385	23335015	0.996	0.807	0.354	0.0	1.000
cloud fraction crb precision [1]	$(2.240 \pm 16.602) \times 10^{-4}$	23335015	2.500×10^{-4}	6.110×10^{-5}	7.454×10^{-5}	1.800×10^{-9}	0.701
scene albedo [1]	0.449 ± 0.332	23335015	1.500×10^{-2}	0.599	0.415	-2.649×10^{-3}	4.77
scene albedo precision [1]	$(8.611 \pm 10.394) \times 10^{-5}$	23335015	2.500×10^{-4}	6.705×10^{-5}	5.218×10^{-5}	1.054×10^{-5}	9.261×10^{-3}
apparent scene pressure [hPa]	820 ± 171	23335015	1.008×10^{3}	247	873	130	1.073×10^{3}
apparent scene pressure precision [hPa]	0.993 ± 1.795	23335015	0.500	0.471	0.434	0.117	58.7
chi square [1]	$(0.217 \pm 2.319) \times 10^{5}$	23335015	0.150	2.346×10^{4}	1.534×10^{4}	60.3	2.183×10^{8}
number of iterations [1]	3.38 ± 1.09	23335015	3.23	1.000	3.00	1.000	14.0
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(8.497 \pm 60.650) \times 10^{-10}$	23335015	2.500×10^{-10}	4.843×10^{-9}	9.785×10^{-10}	-1.763×10^{-6}	1.971×10^{-6}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.692 \pm 0.662) \times 10^{-9}$	23335015	8.500×10^{-10}	9.451×10^{-10}	1.632×10^{-9}	4.734×10^{-10}	5.620×10^{-9}
chi square fluorescence [1]	$(0.477 \pm 0.921) \times 10^{5}$	23335015	750	4.181×10^{4}	1.295×10^{4}	104	1.279×10^{7}
degrees of freedom fluorescence [1]	6.00 ± 0.00	23335015	5.95	0.0	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	23335015	49.7	0.0	50.0	44.0	50.0
wavelength calibration offset [nm]	$(3.040 \pm 8.489) \times 10^{-3}$	23335015	2.800×10^{-3}	5.527×10^{-3}	3.093×10^{-3}	-0.477	0.123

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	0.900	1.000	1.000	1.000	1.000	1.000	1.000
cloud pressure crb [hPa]	250	399	495	578	659	945	974	994	1.009×10^{3}	1.021×10^{3}
cloud pressure crb precision [hPa]	0.172	0.242	0.271	0.296	0.339	1.66	2.94	5.06	10.2	35.9
cloud fraction crb [1]	0.0	9.065×10^{-3}	2.054×10^{-2}	3.828×10^{-2}	7.879×10^{-2}	0.885	1.000	1.000	1.000	1.000
cloud fraction crb precision [1]	1.961×10^{-5}	2.248×10^{-5}	2.527×10^{-5}	2.908×10^{-5}	3.890×10^{-5}	1.000×10^{-4}	1.221×10^{-4}	2.102×10^{-4}	6.110×10^{-4}	2.856×10^{-3}
scene albedo [1]	7.664×10^{-3}	1.851×10^{-2}	3.362×10^{-2}	6.045×10^{-2}	0.132	0.731	0.841	0.904	0.968	1.15
scene albedo precision [1]	1.288×10^{-5}	1.514×10^{-5}	1.820×10^{-5}	2.275×10^{-5}	3.017×10^{-5}	9.722×10^{-5}	1.351×10^{-4}	1.857×10^{-4}	2.834×10^{-4}	5.555×10^{-4}
apparent scene pressure [hPa]	347	470	563	626	710	957	982	998	1.010×10^{3}	1.021×10^{3}
apparent scene pressure precision [hPa]	0.216	0.249	0.272	0.293	0.324	0.795	1.33	2.17	3.79	8.80
chi square [1]	275	624	1.275×10^{3}	2.585×10^{3}	5.272×10^{3}	2.873×10^{4}	3.619×10^{4}	4.289×10^{4}	5.346×10^{4}	8.455×10^{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}]	-1.478×10^{-8}	-7.187×10^{-9}	-4.400×10^{-9}	-2.752×10^{-9}	-1.340×10^{-9}	3.503×10^{-9}	4.843×10^{-9}	6.145×10^{-9}	8.115×10^{-9}	1.290×10^{-8}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	7.400×10^{-10}	8.201×10^{-10}	8.885×10^{-10}	9.769×10^{-10}	1.158×10^{-9}	2.103×10^{-9}	2.320×10^{-9}	2.595×10^{-9}	2.905×10^{-9}	3.586×10^{-9}
chi square fluorescence [1]	413	854	1.356×10^{3}	2.120×10^{3}	3.774×10^{3}	4.559×10^{4}	8.210×10^{4}	1.323×10^{5}	2.265×10^{5}	4.584×10^{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]	-2.473×10^{-2}	-9.362×10^{-3}	-4.321×10^{-3}	-1.747×10^{-3}	2.886×10^{-4}	5.815×10^{-3}	7.779×10^{-3}	1.034×10^{-2}	1.539×10^{-2}	3.043×10^{-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]	0.948 ± 0.143	11447085	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	784 ± 202	11447085	285	846	130	1.073×10^3	661	946
cloud pressure crb precision [hPa]	2.88 ± 10.21	11447085	1.55	0.743	2.441×10^{-4}	1.427×10^3	0.375	1.93
cloud fraction crb [1]	0.432 ± 0.382	11447085	0.778	0.303	0.0	1.000	7.386×10^{-2}	0.852
cloud fraction crb precision [1]	$(3.027 \pm 21.925) \times 10^{-4}$	11447085	7.403×10^{-5}	9.309×10^{-5}	1.800×10^{-9}	0.701	4.465×10^{-5}	1.187×10^{-4}
scene albedo [1]	0.465 ± 0.326	11447085	0.567	0.445	-1.812×10^{-3}	4.19	0.169	0.735
scene albedo precision [1]	$(9.617 \pm 11.718) \times 10^{-5}$	11447085	7.463×10^{-5}	5.541×10^{-5}	1.105×10^{-5}	5.753×10^{-3}	3.183×10^{-5}	1.065×10^{-4}
apparent scene pressure [hPa]	831 ± 168	11447085	207	885	130	1.073×10^3	751	958
apparent scene pressure precision [hPa]	0.871 ± 1.391	11447085	0.407	0.444	0.143	58.1	0.332	0.739
chi square [1]	$(0.246 \pm 3.126) \times 10^5$	11447085	2.577×10^4	1.595×10^4	64.5	2.183×10^8	5.954×10^3	3.173×10^4
number of iterations [1]	3.63 ± 1.20	11447085	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.314 \pm 4.966) \times 10^{-9}$	11447085	4.696×10^{-9}	1.395×10^{-9}	-1.591×10^{-6}	1.319×10^{-6}	-8.705×10^{-10}	3.826×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.666 \pm 0.646) \times 10^{-9}$	11447085	9.227×10^{-10}	1.588×10^{-9}	4.734×10^{-10}	5.590×10^{-9}	1.149×10^{-9}	2.071×10^{-9}
chi square fluorescence [1]	$(0.367 \pm 0.715) \times 10^5$	11447085	3.138×10^4	1.051×10^4	112	1.753×10^6	3.638×10^3	3.502×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	11447085	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	11447085	0.0	50.0	48.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(2.965 \pm 7.719) \times 10^{-3}$	11447085	5.320×10^{-3}	2.971×10^{-3}	-8.132×10^{-2}	8.604×10^{-2}	2.807×10^{-4}	5.601×10^{-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]	0.906 ± 0.187	11887930	0.1000	1.000	0.350	1.000	0.900	1.000
cloud pressure crb [hPa]	789 ± 187	11887930	287	840	130	1.028×10^3	657	944
cloud pressure crb precision [hPa]	2.53 ± 10.27	11887930	1.01	0.485	1.160×10^{-3}	1.342×10^3	0.319	1.33
cloud fraction crb [1]	0.476 ± 0.386	11887930	0.824	0.413	0.0	1.000	8.528×10^{-2}	0.909
cloud fraction crb precision [1]	$(1.481 \pm 8.771) \times 10^{-4}$	11887930	6.486×10^{-5}	6.586×10^{-5}	2.467×10^{-9}	0.619	3.514×10^{-5}	1.000×10^{-4}
scene albedo [1]	0.433 ± 0.336	11887930	0.621	0.383	-2.649×10^{-3}	4.77	0.105	0.726
scene albedo precision [1]	$(7.642 \pm 8.828) \times 10^{-5}$	11887930	6.051×10^{-5}	4.947×10^{-5}	1.054×10^{-5}	9.261×10^{-3}	2.873×10^{-5}	8.924×10^{-5}
apparent scene pressure [hPa]	809 ± 174	11887930	278	859	130	1.028×10^3	677	956
apparent scene pressure precision [hPa]	1.11 ± 2.11	11887930	0.550	0.424	0.117	58.7	0.317	0.867
chi square [1]	$(0.189 \pm 1.070) \times 10^5$	11887930	2.192×10^4	1.482×10^4	60.3	7.795×10^7	4.683×10^3	2.660×10^4
number of iterations [1]	3.14 ± 0.91	11887930	1.000	3.00	1.000	14.0	3.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(4.029 \pm 69.317) \times 10^{-10}$	11887930	4.919×10^{-9}	5.642×10^{-10}	-1.763×10^{-6}	1.971×10^{-6}	-1.776×10^{-9}	3.143×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.718 \pm 0.675) \times 10^{-9}$	11887930	9.618×10^{-10}	1.666×10^{-9}	5.281×10^{-10}	5.620×10^{-9}	1.167×10^{-9}	2.129×10^{-9}
chi square fluorescence [1]	$(0.583 \pm 1.072) \times 10^5$	11887930	5.438×10^4	1.605×10^4	104	1.279×10^7	3.979×10^3	5.836×10^4
degrees of freedom fluorescence [1]	6.00 ± 0.00	11887930	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	11887930	0.0	50.0	44.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(3.111 \pm 9.169) \times 10^{-3}$	11887930	5.733×10^{-3}	3.215×10^{-3}	-0.477	0.123	2.975×10^{-4}	6.031×10^{-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 ± 0.066	15053053	0.0	1.000	0.350	1.000	1.000	1.000
cloud pressure crb [hPa]	810 ± 190	15053053	257	875	130	1.036×10^{3}	701	958
cloud pressure crb precision [hPa]	2.73 ± 10.65	15053053	1.30	0.630	2.197×10^{-3}	1.427×10^{3}	0.358	1.66
cloud fraction crb [1]	0.387 ± 0.347	15053053	0.627	0.276	0.0	1.000	6.459×10^{-2}	0.691
cloud fraction crb precision [1]	$(1.315 \pm 10.405) \times 10^{-4}$	15053053	6.133×10^{-5}	5.091×10^{-5}	1.434×10^{-8}	0.325	2.931×10^{-5}	9.063×10^{-5}
scene albedo [1]	0.339 ± 0.301	15053053	0.530	0.248	-2.649×10^{-3}	4.19	6.232×10^{-2}	0.592
scene albedo precision [1]	$(6.959 \pm 9.420) \times 10^{-5}$	15053053	4.796×10^{-5}	4.303×10^{-5}	1.054×10^{-5}	9.261×10^{-3}	2.310×10^{-5}	7.106×10^{-5}
apparent scene pressure [hPa]	831 ± 177	15053053	230	889	135	1.036×10^{3}	740	970
apparent scene pressure precision [hPa]	1.32 ± 2.16	15053053	0.937	0.568	0.127	58.7	0.353	1.29
chi square [1]	$(0.152 \pm 0.719) \times 10^{5}$	15053053	1.993×10^{4}	9.519×10^{3}	60.3	7.795×10^{7}	2.710×10^{3}	2.264×10^{4}
number of iterations [1]	3.01 ± 0.86	15053053	0.0	3.00	1.000	14.0	3.00	3.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.336 \pm 55.829) \times 10^{-10}$	15053053	4.181×10^{-9}	2.199×10^{-10}	-1.591×10^{-6}	1.747×10^{-6}	-1.733×10^{-9}	2.448×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.588 \pm 0.681) \times 10^{-9}$	15053053	9.995×10^{-10}	1.456×10^{-9}	4.734×10^{-10}	5.590×10^{-9}	1.017×10^{-9}	2.017×10^{-9}
chi square fluorescence [1]	$(0.421 \pm 0.821) \times 10^{5}$	15053053	3.864×10^{4}	1.313×10^{4}	104	1.279×10^{7}	4.270×10^{3}	4.291×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	15053053	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	15053053	0.0	50.0	45.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(2.994 \pm 9.905) \times 10^{-3}$	15053053	6.689×10^{-3}	3.074×10^{-3}	-0.477	0.123	-3.529×10^{-4}	6.336×10^{-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]	0.797 ± 0.250	6416135	0.500	1.000	0.350	1.000	0.500	1.000
cloud pressure crb [hPa]	733 ± 190	6416135	274	745	130	1.046×10^{3}	618	892
cloud pressure crb precision [hPa]	2.49 ± 8.79	6416135	1.25	0.470	2.441×10^{-4}	1.342×10^{3}	0.309	1.56
cloud fraction crb [1]	0.610 ± 0.420	6416135	0.871	0.874	0.0	1.000	0.129	1.000
cloud fraction crb precision [1]	$(4.146 \pm 24.620) \times 10^{-4}$	6416135	3.248×10^{-5}	1.000×10^{-4}	1.800×10^{-9}	0.619	9.820×10^{-5}	1.307×10^{-4}
scene albedo [1]	0.676 ± 0.288	6416135	0.495	0.734	1.701×10^{-2}	4.77	0.410	0.905
scene albedo precision [1]	$(1.251 \pm 1.185) \times 10^{-4}$	6416135	1.042×10^{-4}	9.337×10^{-5}	1.241×10^{-5}	1.910×10^{-3}	4.553×10^{-5}	1.497×10^{-4}
apparent scene pressure [hPa]	785 ± 156	6416135	264	813	130	1.048×10^{3}	658	922
apparent scene pressure precision [hPa]	0.386 ± 0.123	6416135	0.138	0.358	0.117	9.49	0.301	0.438
chi square [1]	$(0.326 \pm 3.027) \times 10^{5}$	6416135	2.162×10^{4}	2.381×10^{4}	331	2.183×10^{8}	1.480×10^{4}	3.642×10^{4}
number of iterations [1]	4.09 ± 1.14	6416135	0.0	4.00	1.000	14.0	4.00	4.00
fluorescence [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(2.184 \pm 6.161) \times 10^{-9}$	6416135	4.404×10^{-9}	2.620×10^{-9}	-1.670×10^{-6}	1.527×10^{-6}	3.263×10^{-10}	4.730×10^{-9}
fluorescence precision [mol s^{-1} m^{-2} nm^{-1} sr^{-1}]	$(1.858 \pm 0.576) \times 10^{-9}$	6416135	7.089×10^{-10}	1.780×10^{-9}	5.281×10^{-10}	5.587×10^{-9}	1.465×10^{-9}	2.174×10^{-9}
chi square fluorescence [1]	$(0.523 \pm 1.009) \times 10^{5}$	6416135	4.284×10^{4}	9.723×10^{3}	172	2.437×10^{6}	2.314×10^{3}	4.515×10^{4}
degrees of freedom fluorescence [1]	6.00 ± 0.00	6416135	0.0	6.00	6.00	6.00	6.00	6.00
number of spectral points in retrieval [1]	50.0 ± 0.1	6416135	0.0	50.0	44.0	50.0	50.0	50.0
wavelength calibration offset [nm]	$(3.096 \pm 4.310) \times 10^{-3}$	6416135	3.846×10^{-3}	3.110×10^{-3}	-7.819×10^{-2}	6.503×10^{-2}	1.182×10^{-3}	5.028×10^{-3}

3 Granule outlines

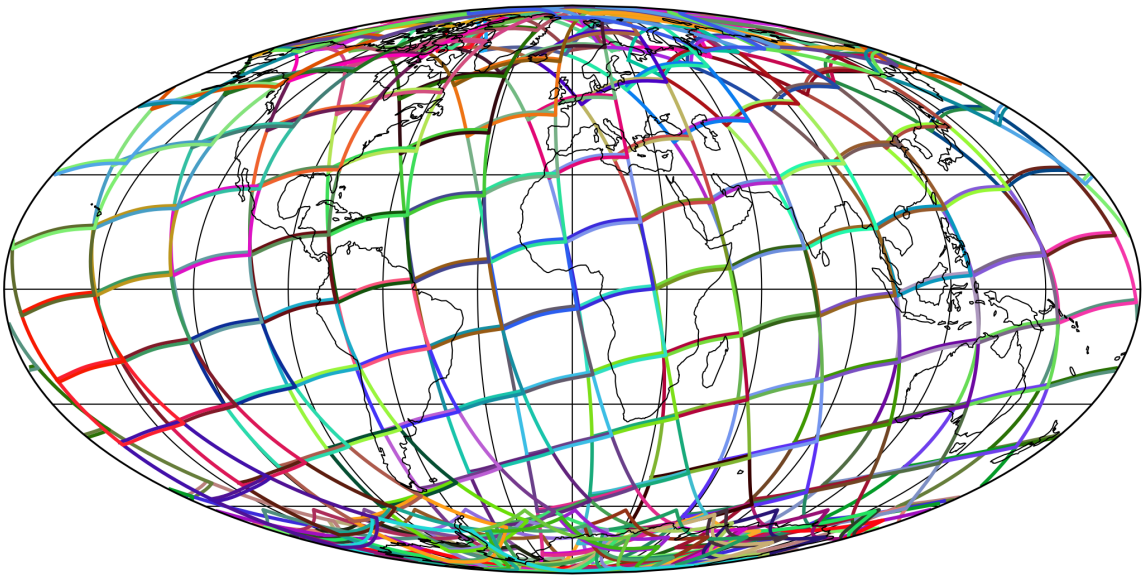

Figure 1: Outline of the granules.

4 Input data monitoring

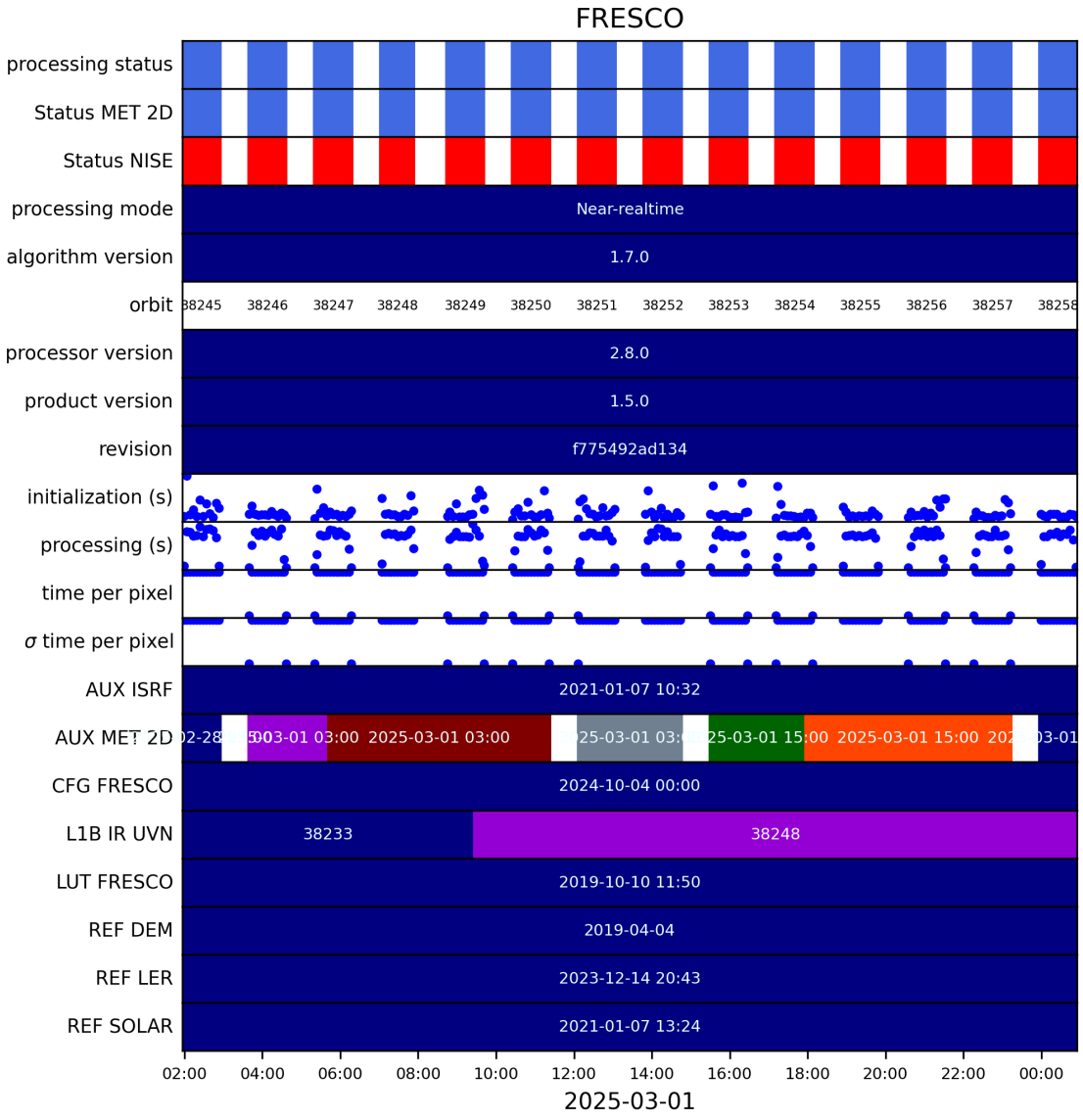

Figure 2: Input data per granule

5 Warnings and errors

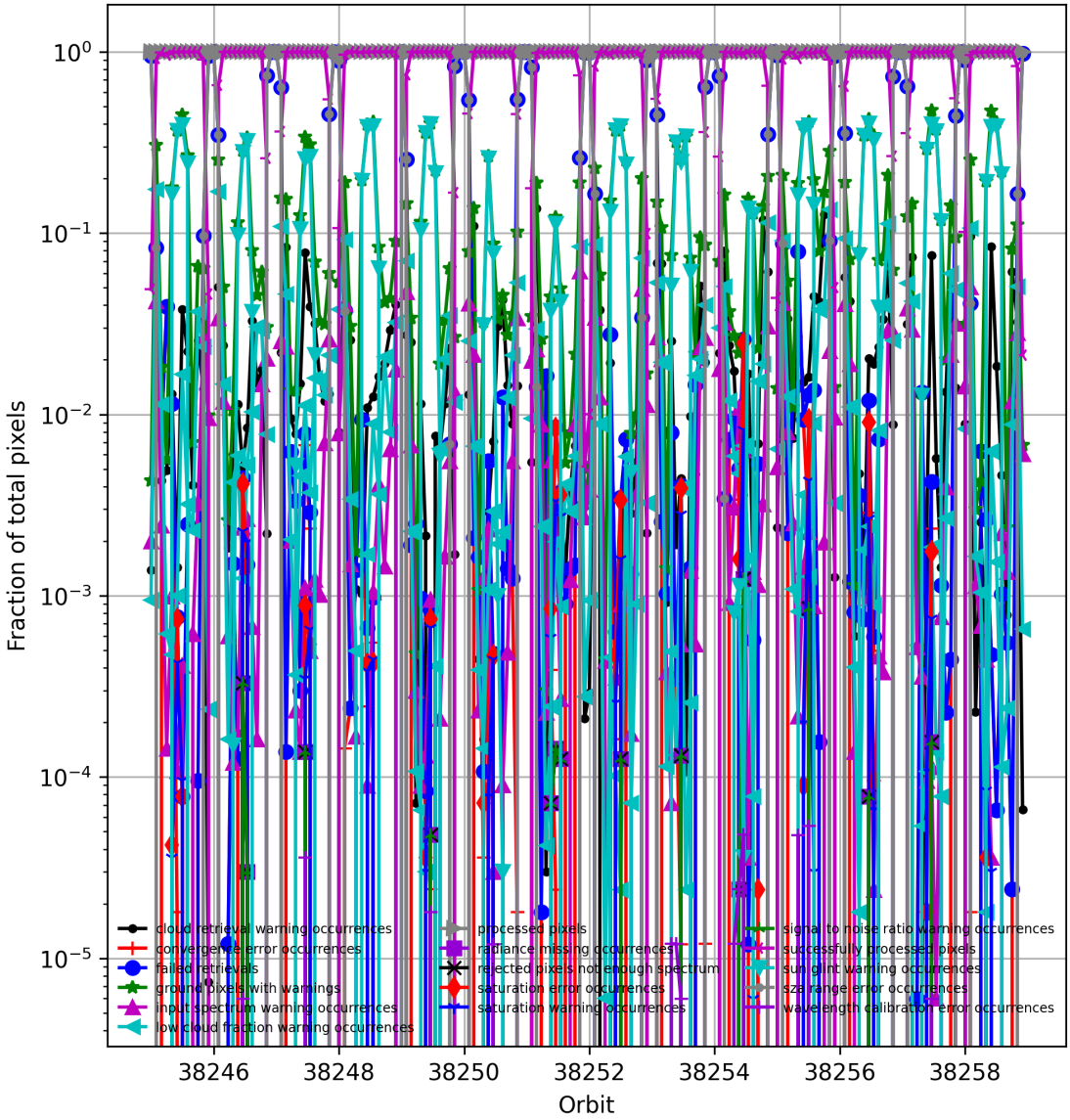

Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

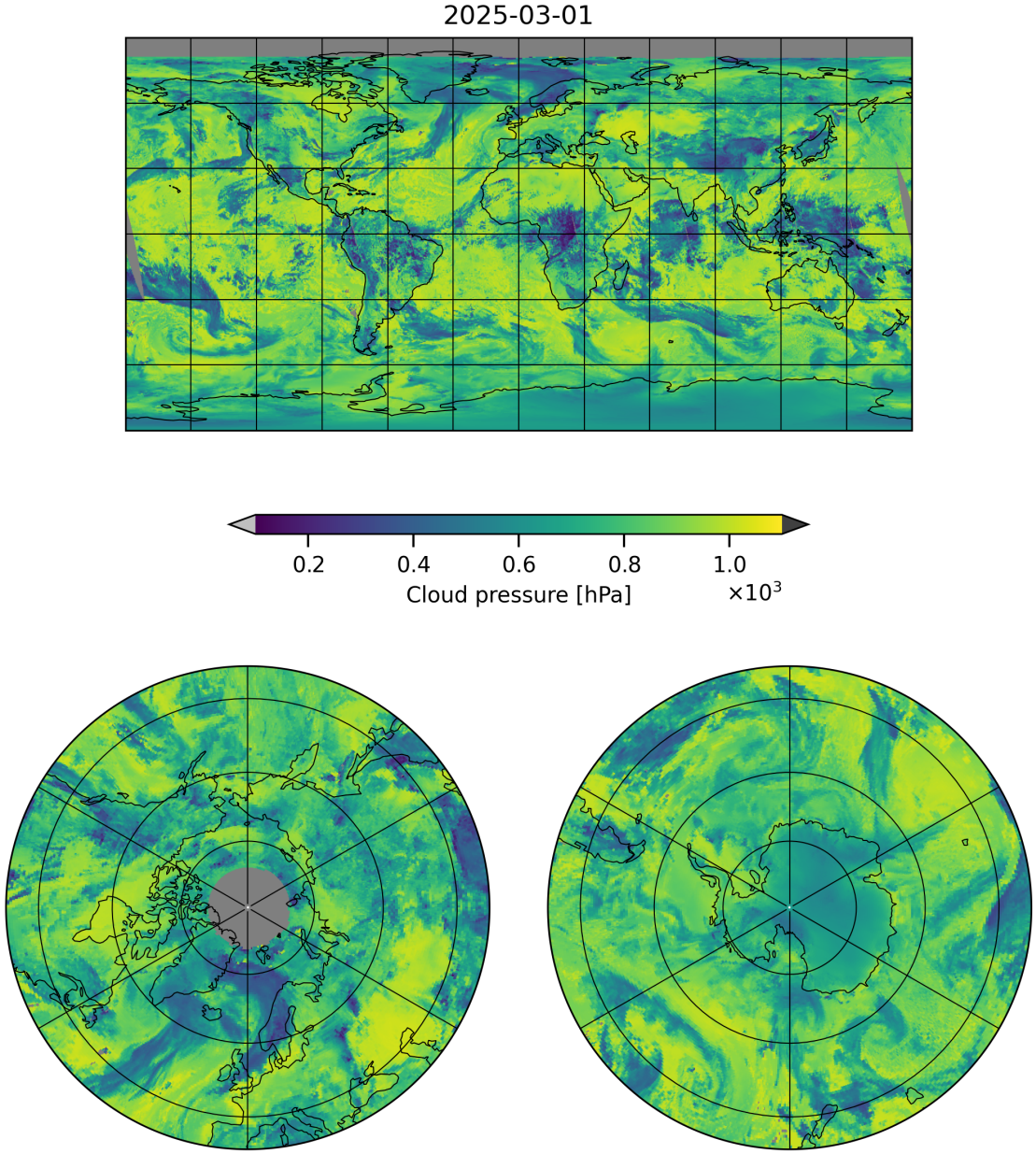

Figure 4: Map of “Cloud pressure” for 2025-03-01 to 2025-03-02

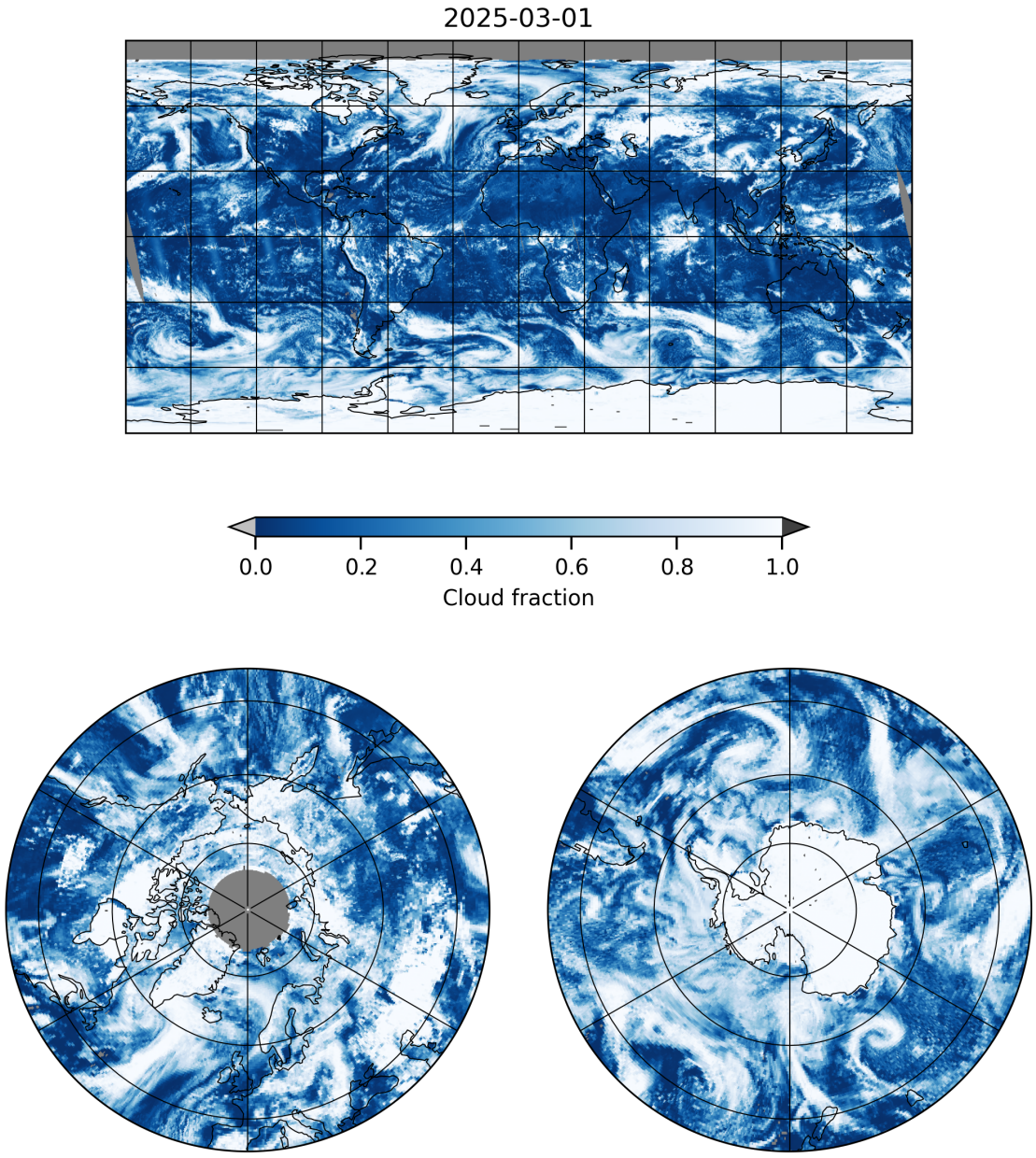

Figure 5: Map of “Cloud fraction” for 2025-03-01 to 2025-03-02

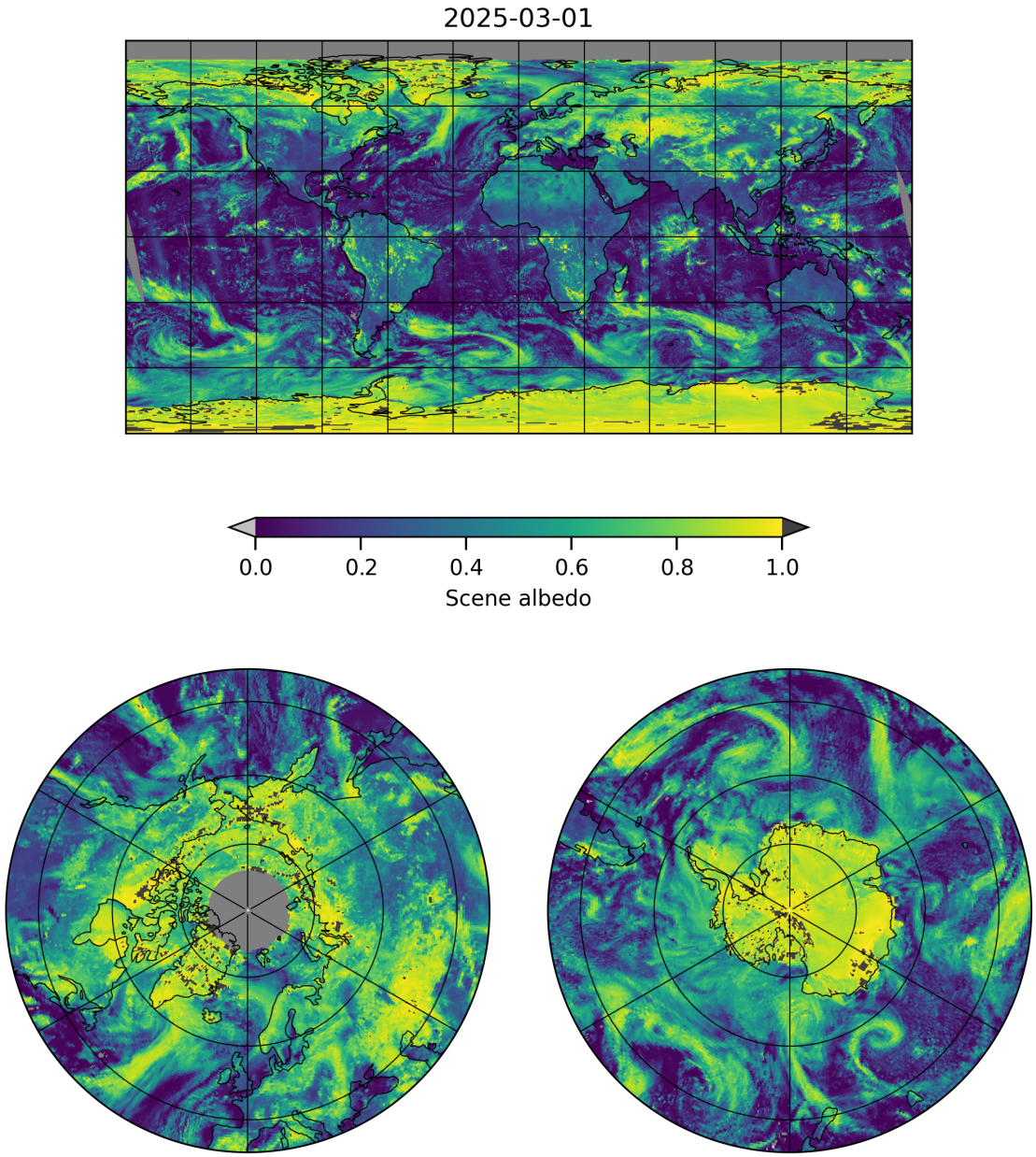

Figure 6: Map of “Scene albedo” for 2025-03-01 to 2025-03-02

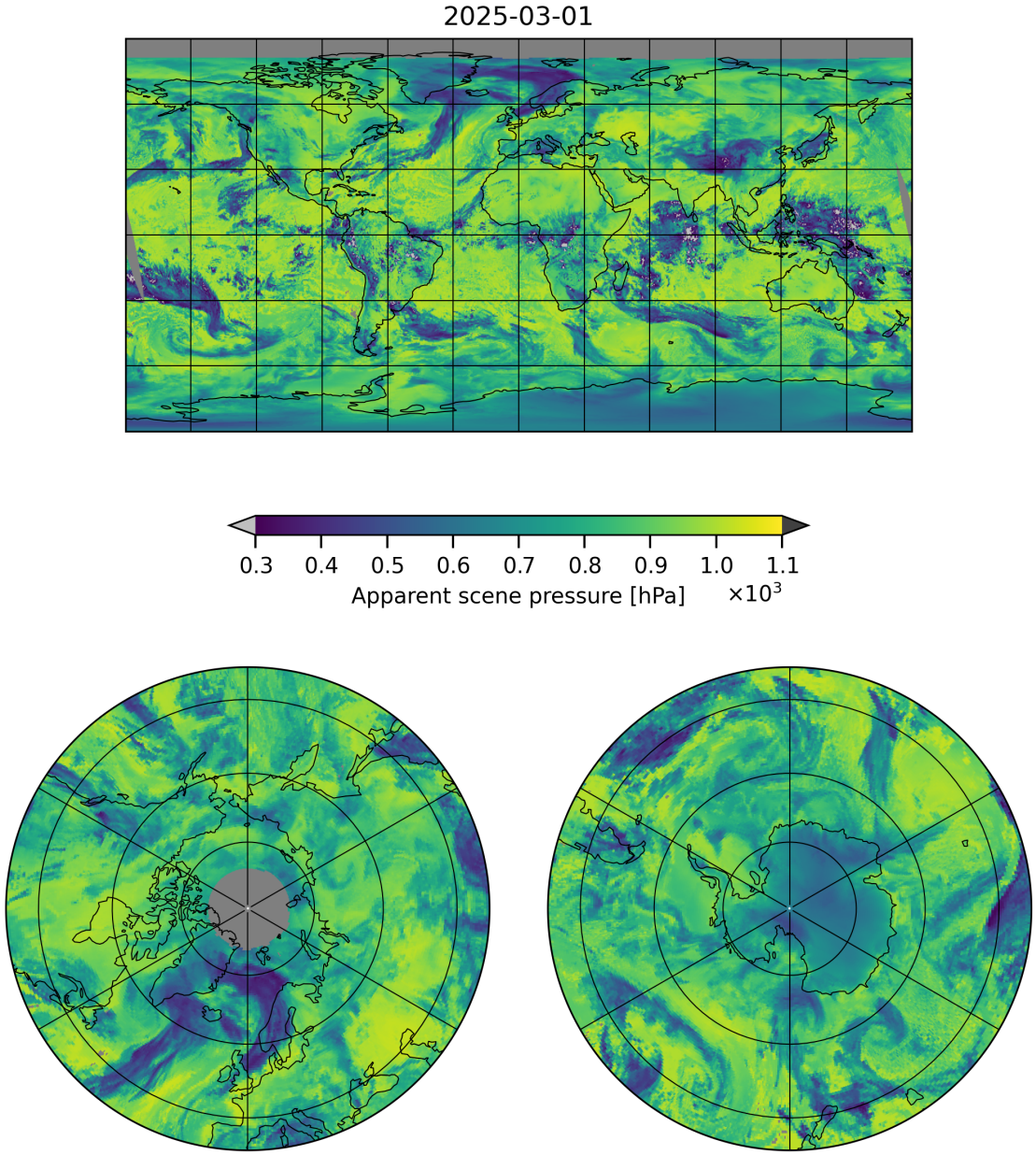

Figure 7: Map of “Apparent scene pressure” for 2025-03-01 to 2025-03-02

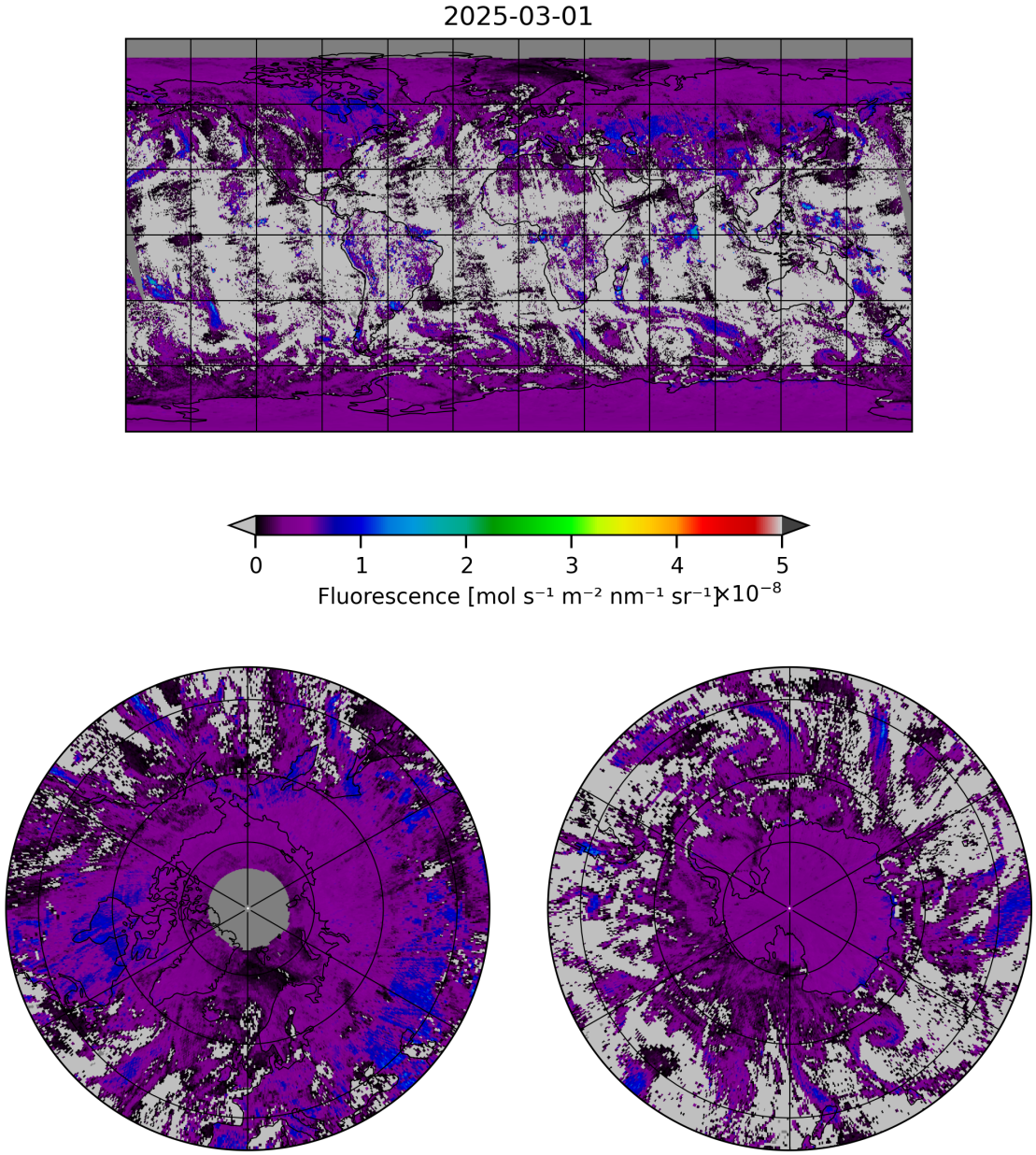

Figure 8: Map of “Fluorescence” for 2025-03-01 to 2025-03-02

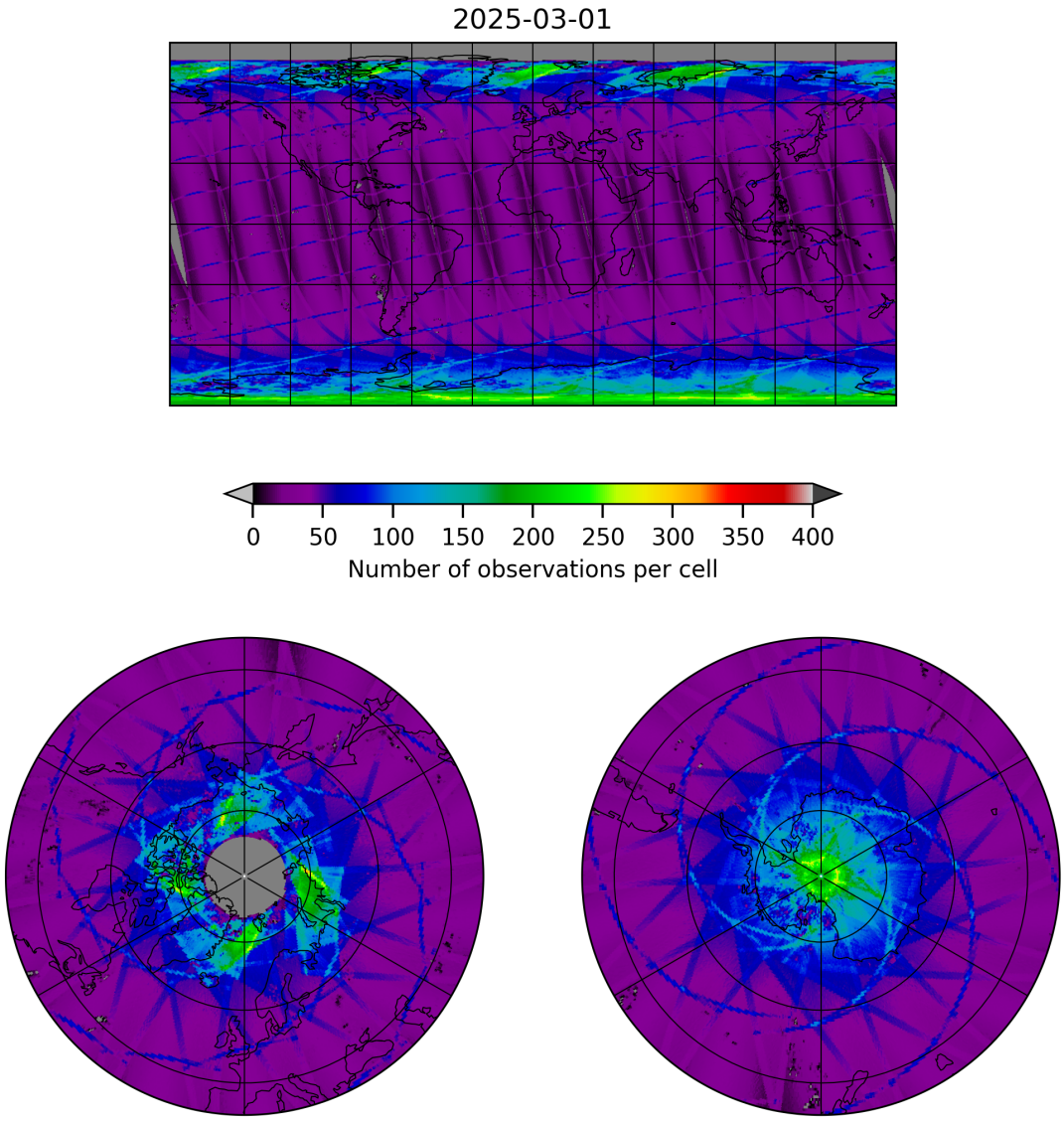

Figure 9: Map of the number of observations for 2025-03-01 to 2025-03-02

7 Zonal average

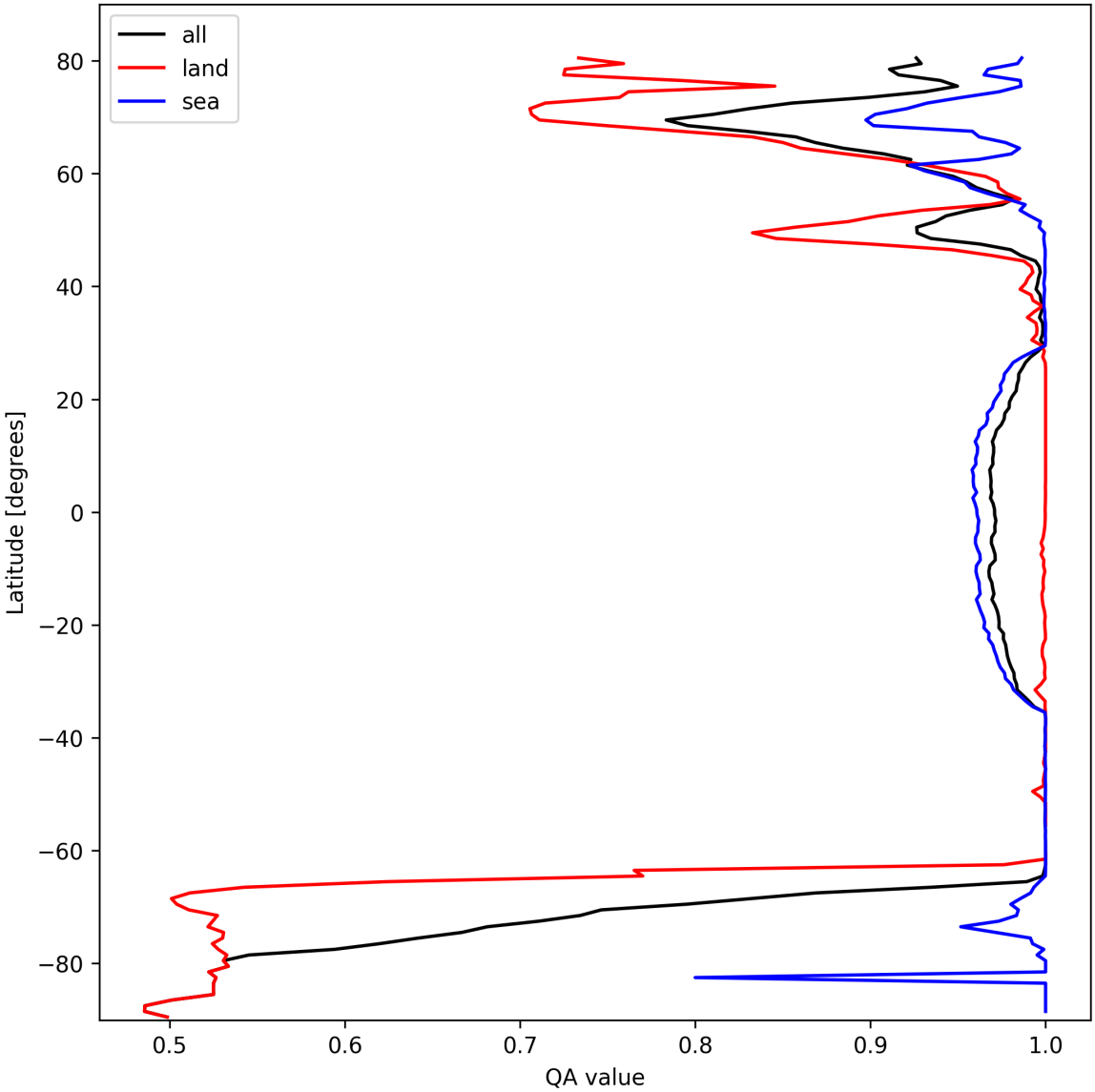

Figure 10: Zonal average of “QA value” for 2025-03-01 to 2025-03-02.

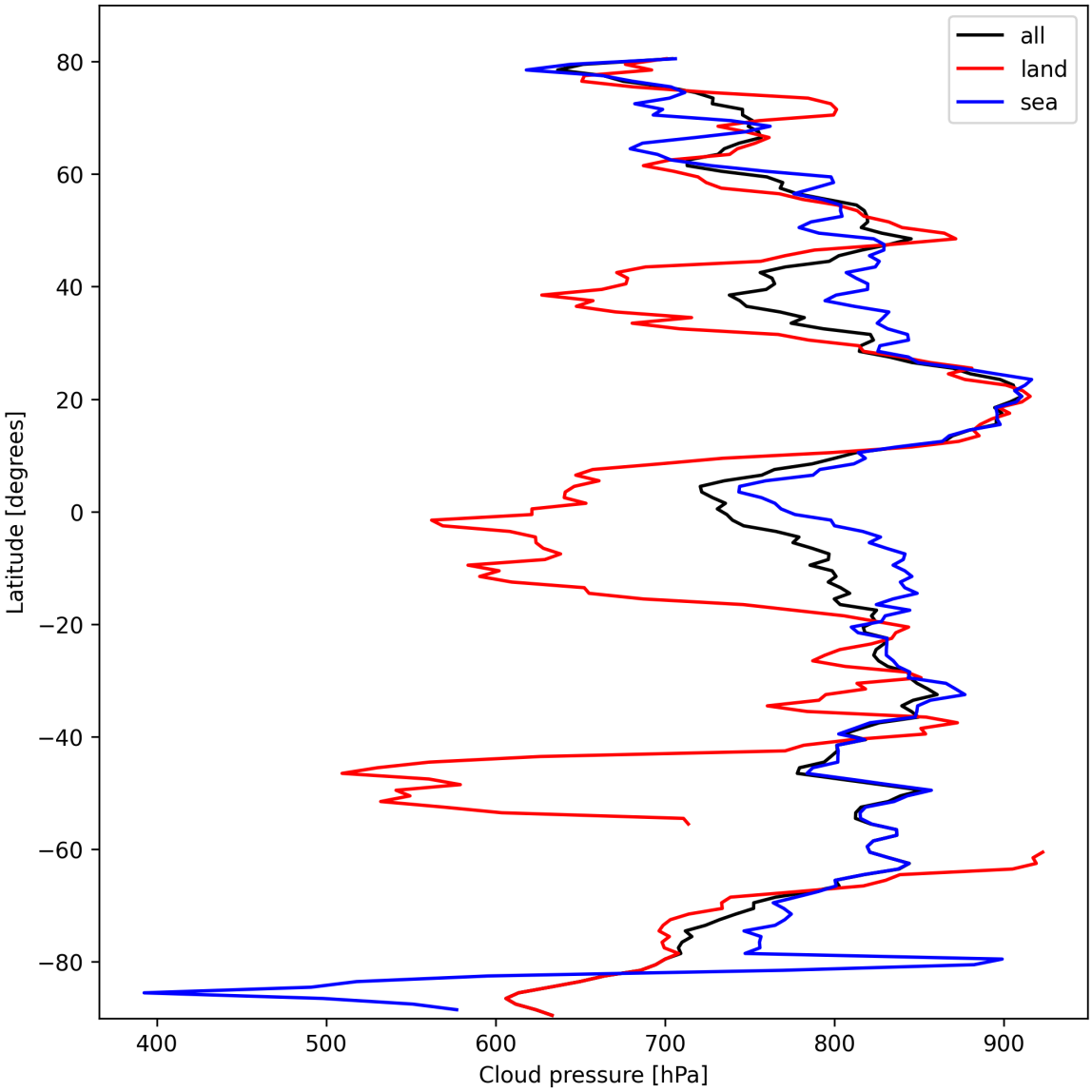

Figure 11: Zonal average of “Cloud pressure” for 2025-03-01 to 2025-03-02.

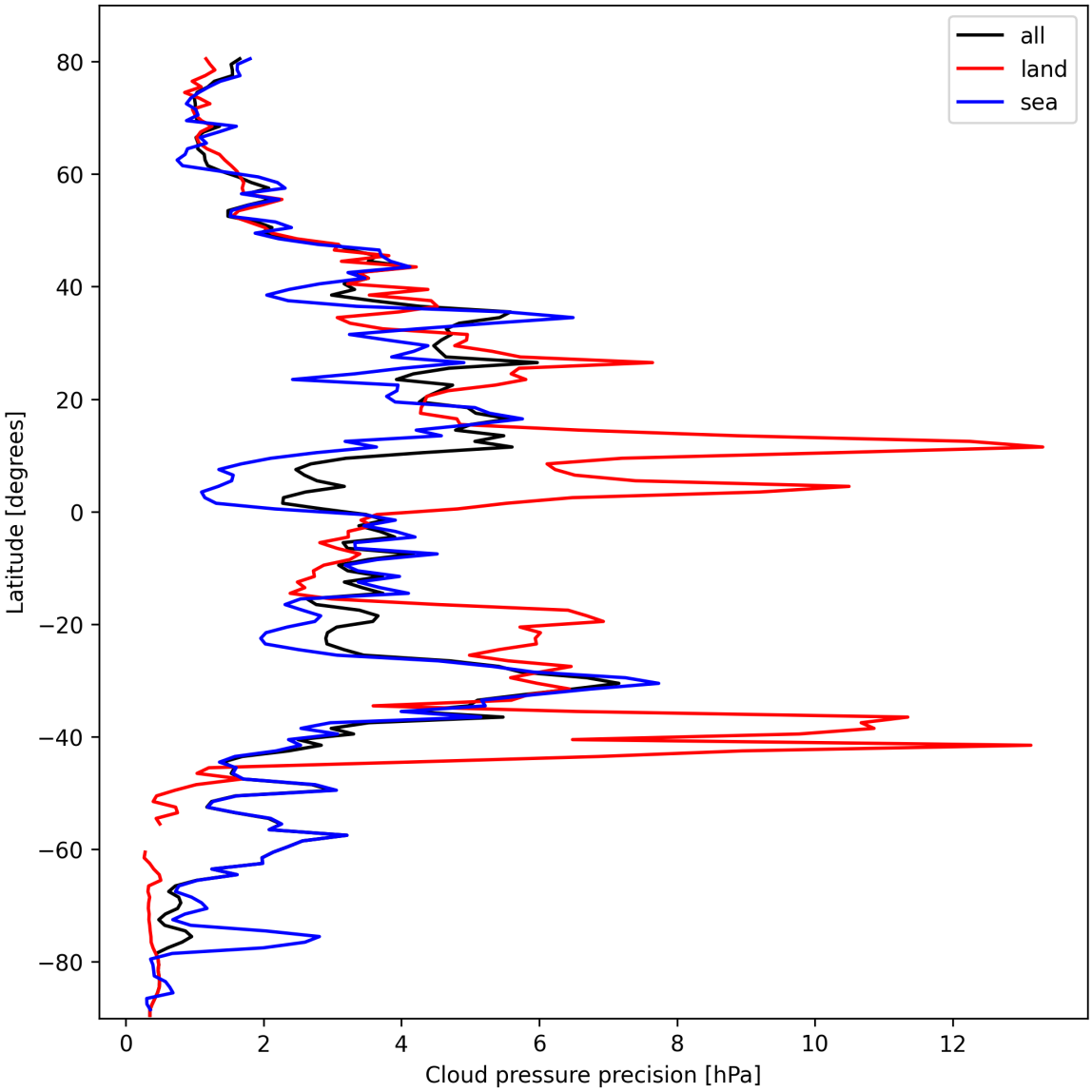

Figure 12: Zonal average of “Cloud pressure precision” for 2025-03-01 to 2025-03-02.

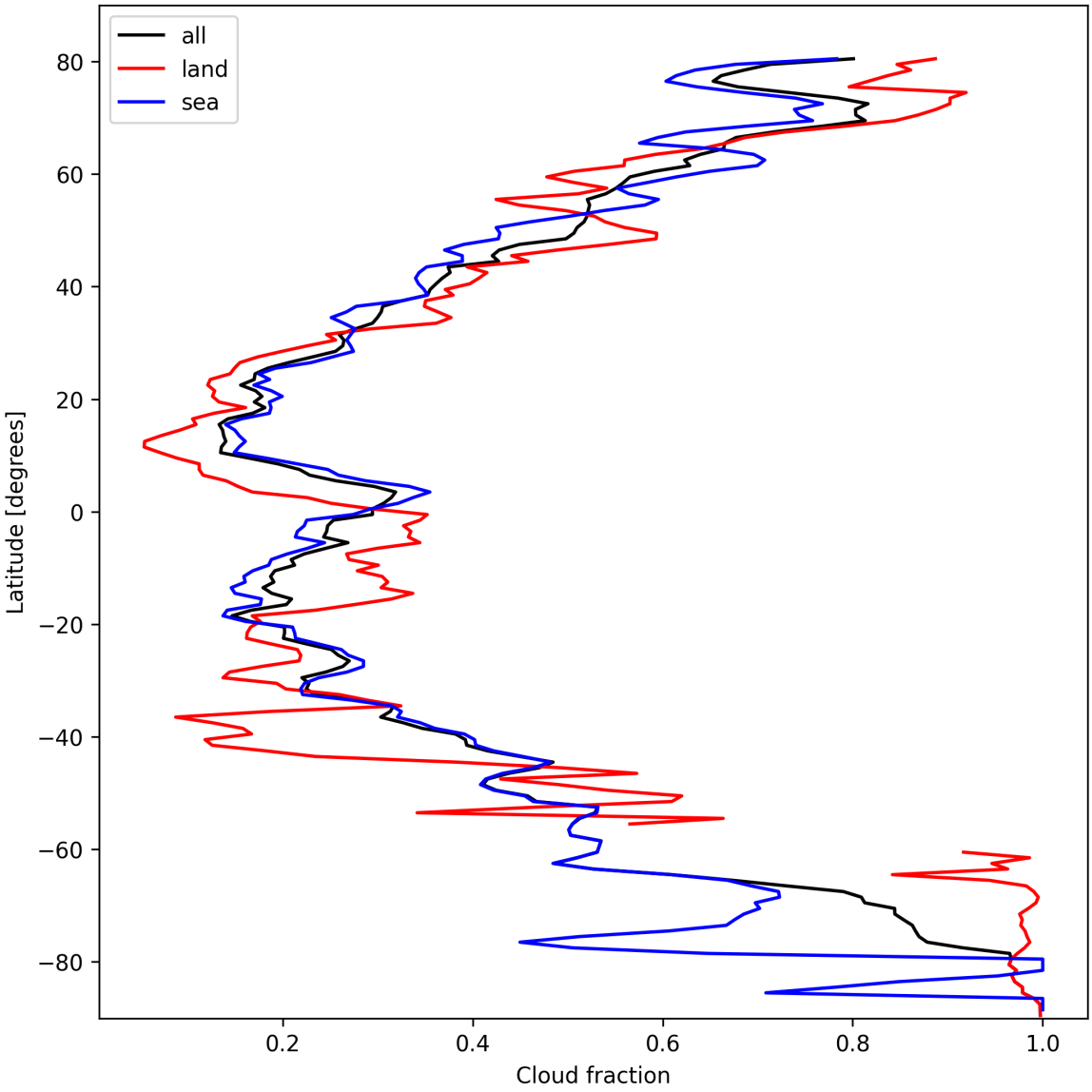

Figure 13: Zonal average of “Cloud fraction” for 2025-03-01 to 2025-03-02.

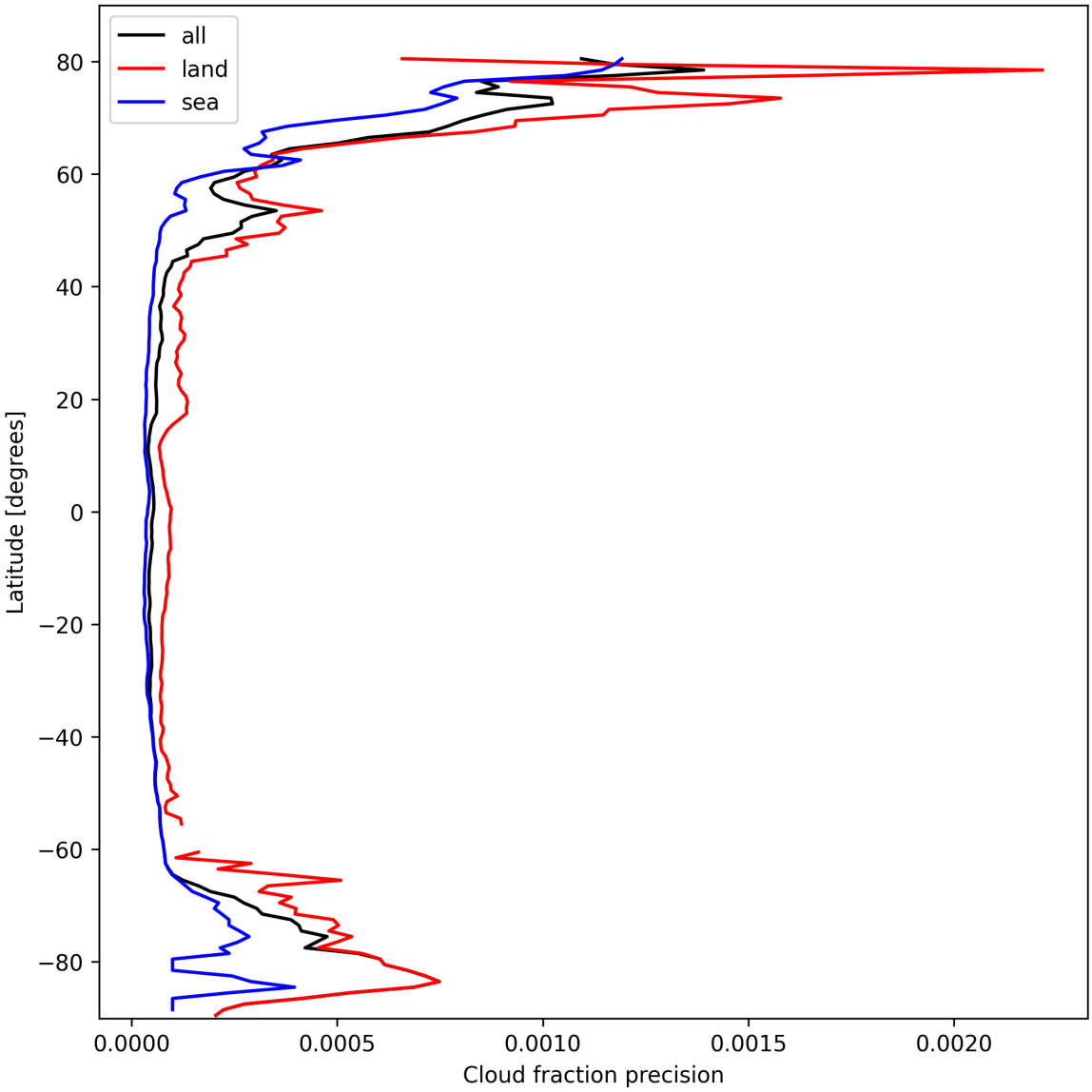

Figure 14: Zonal average of “Cloud fraction precision” for 2025-03-01 to 2025-03-02.

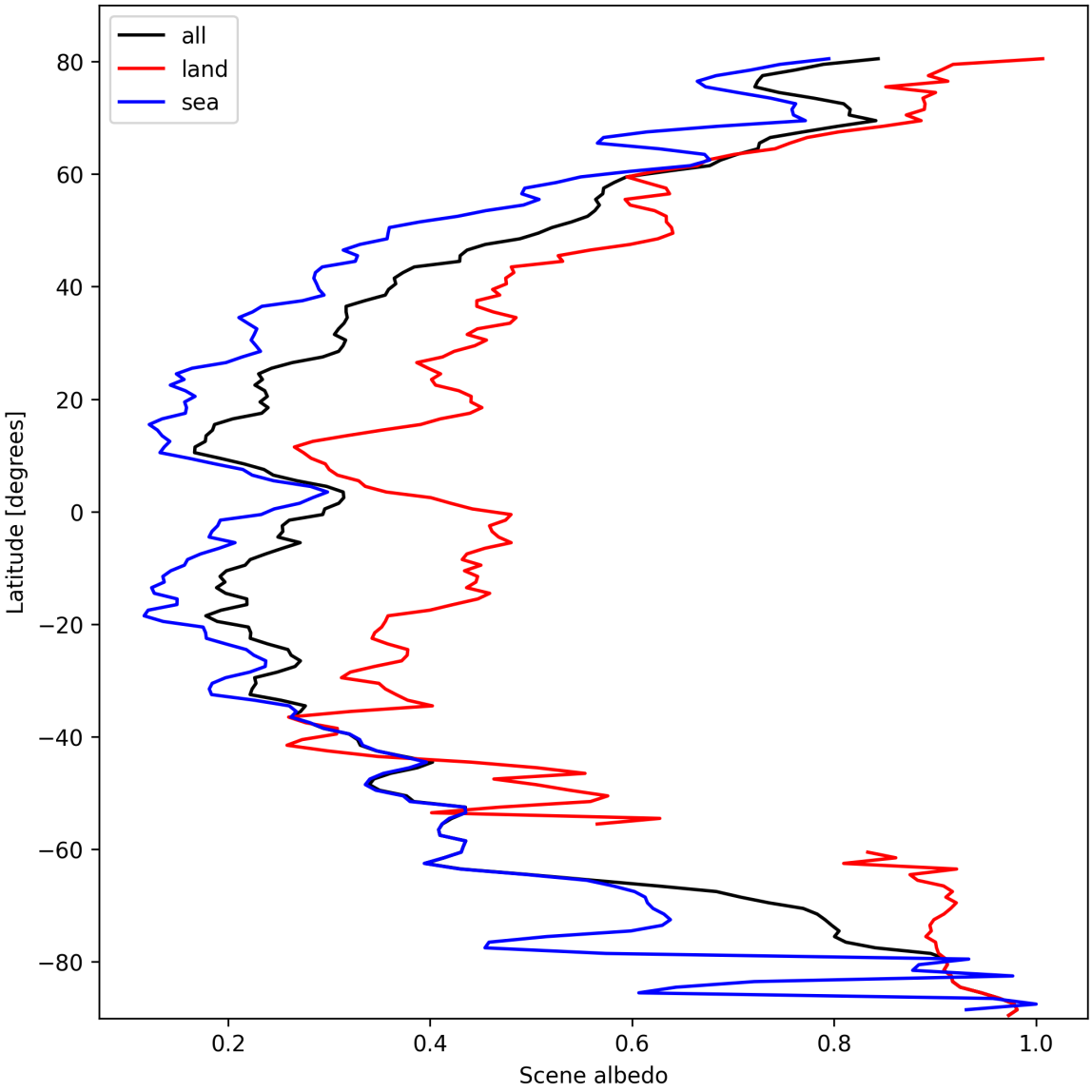

Figure 15: Zonal average of “Scene albedo” for 2025-03-01 to 2025-03-02.

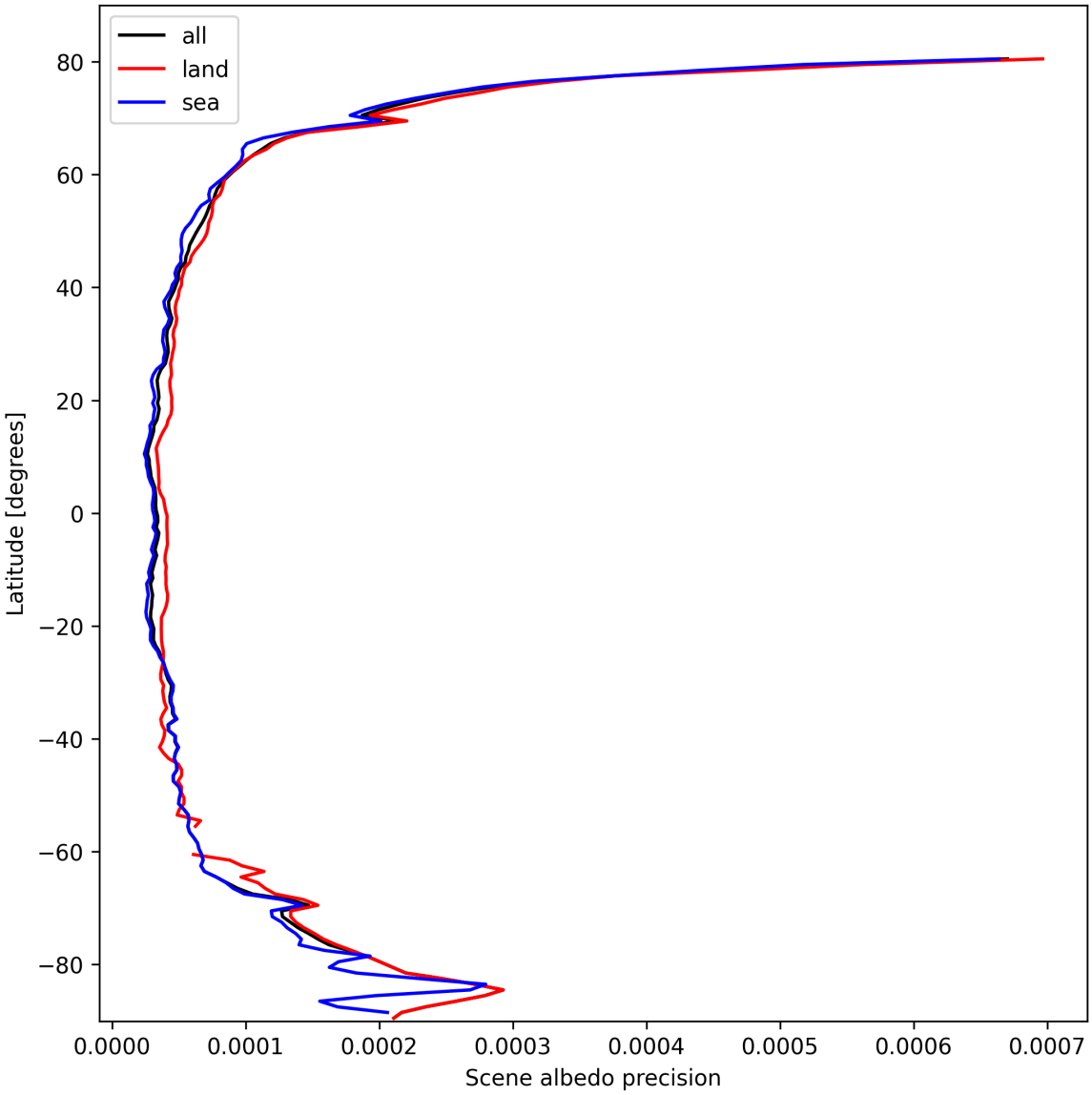

Figure 16: Zonal average of “Scene albedo precision” for 2025-03-01 to 2025-03-02.

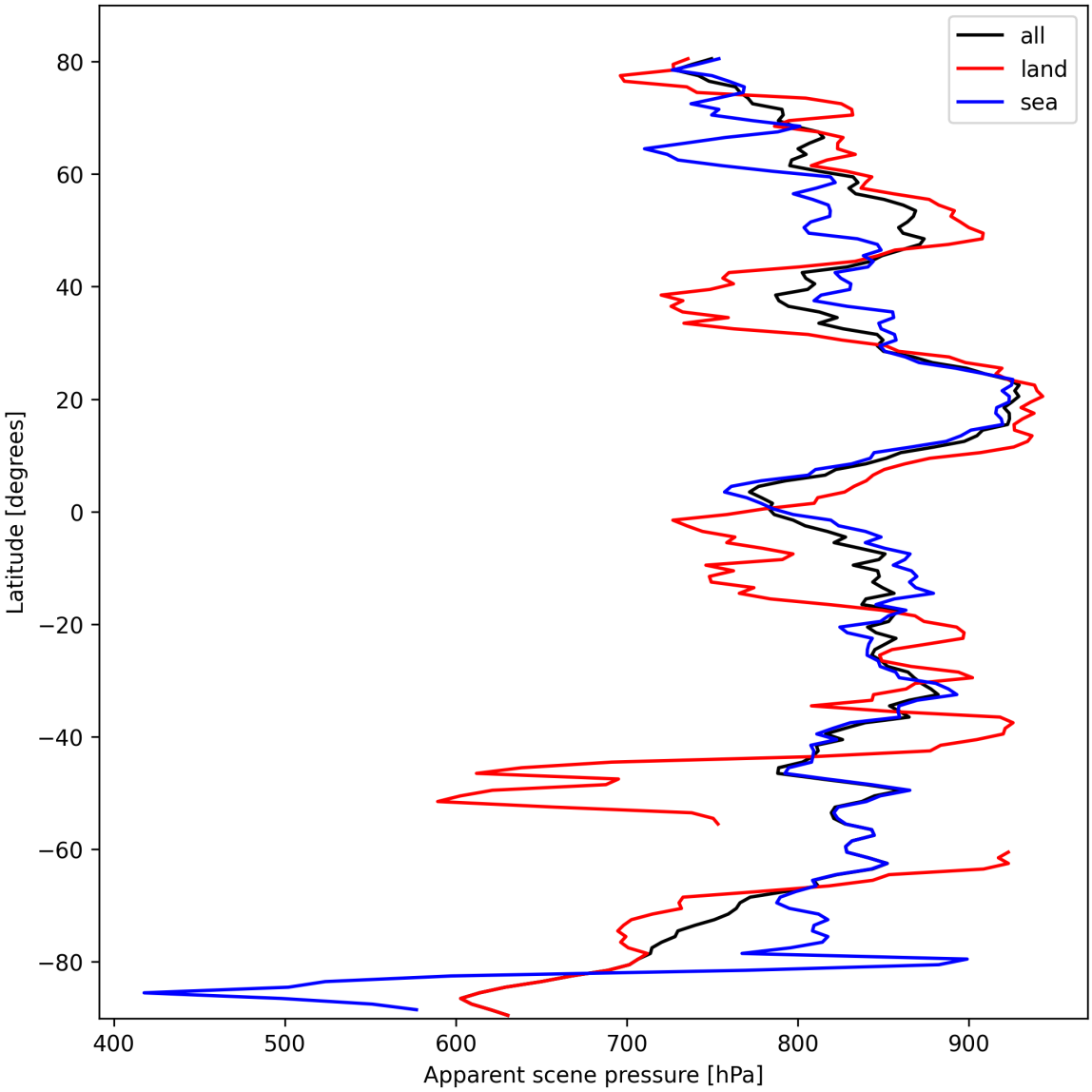

Figure 17: Zonal average of “Apparent scene pressure” for 2025-03-01 to 2025-03-02.

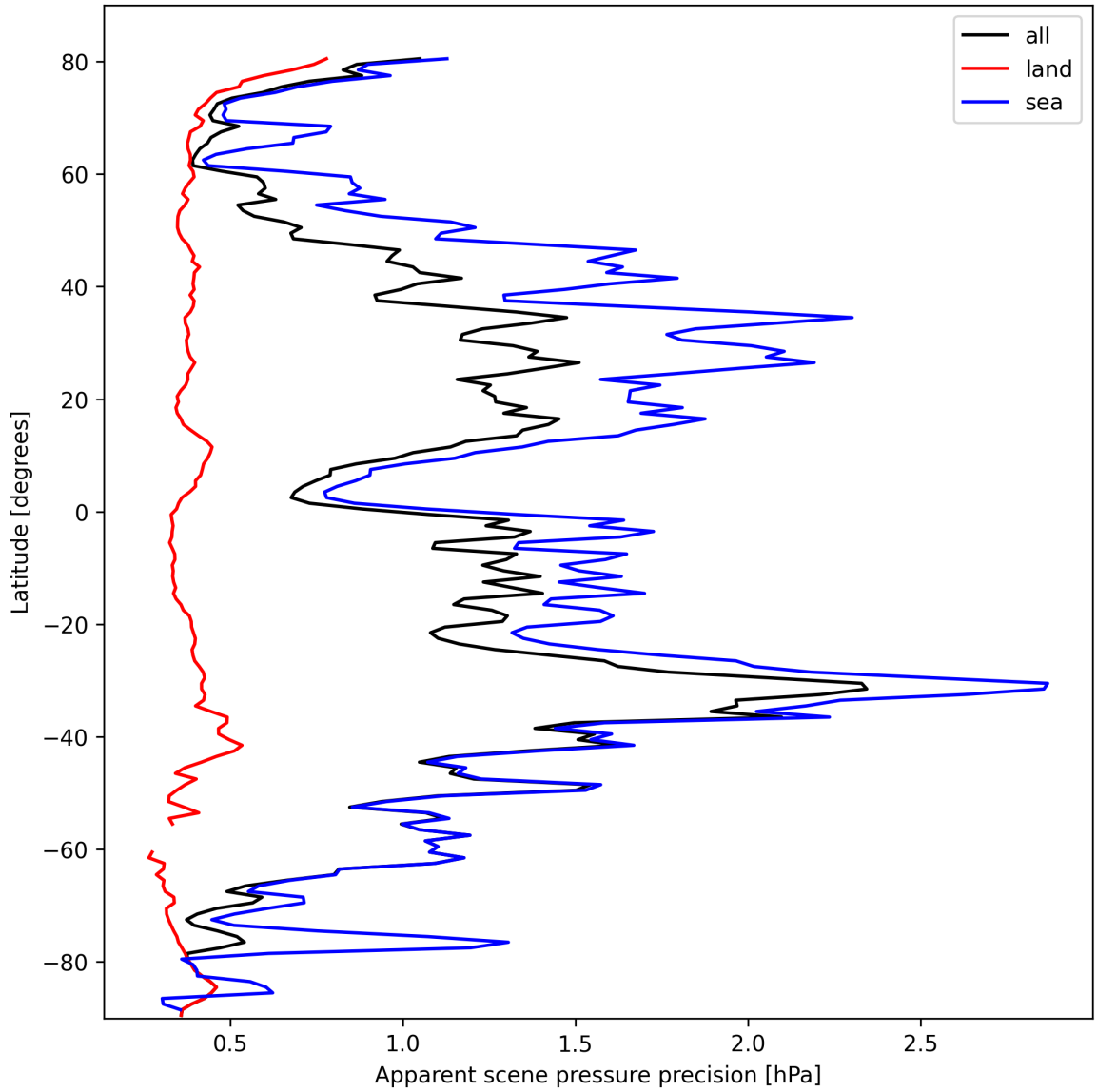

Figure 18: Zonal average of “Apparent scene pressure precision” for 2025-03-01 to 2025-03-02.

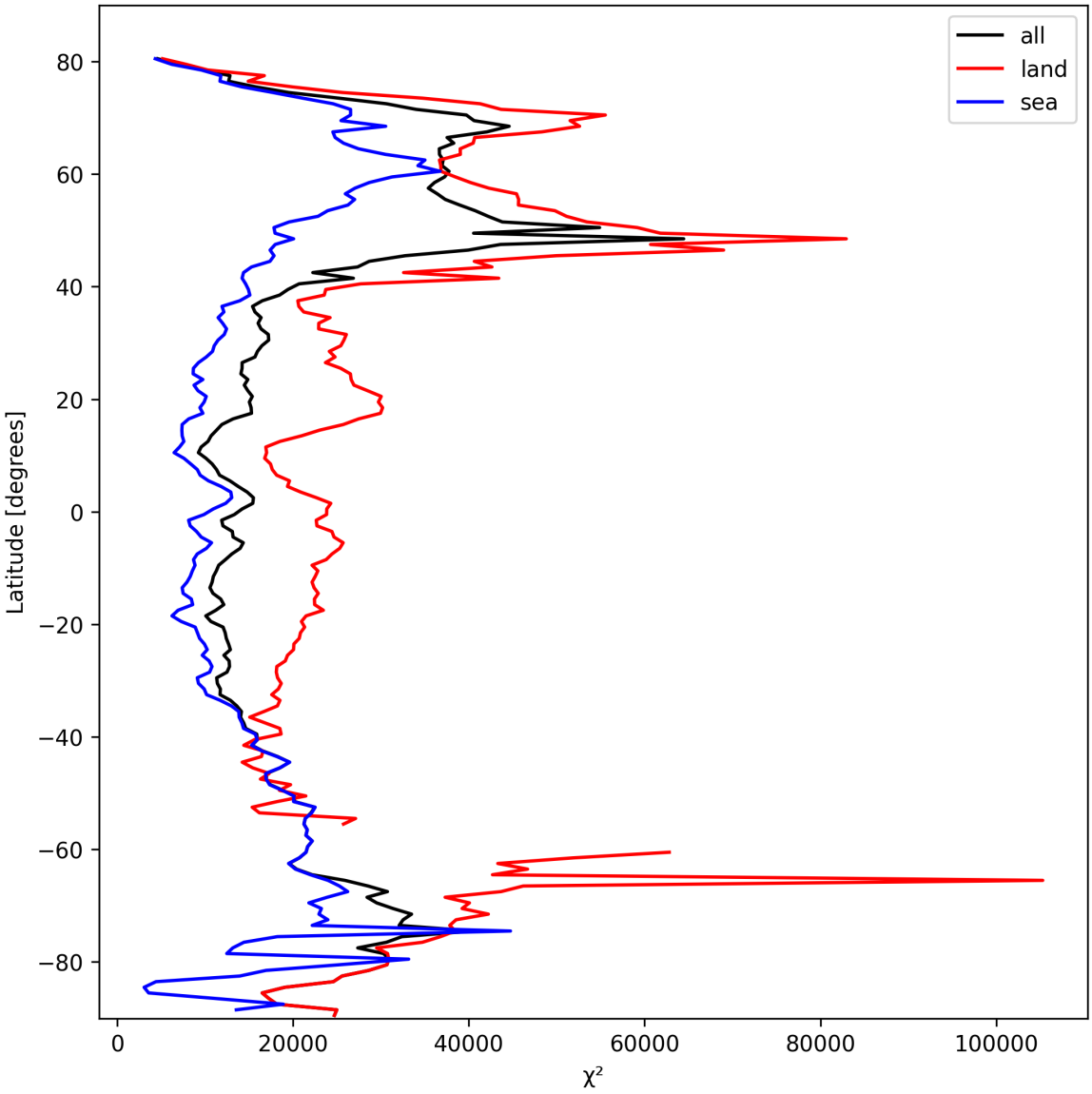

Figure 19: Zonal average of "χ^2" for 2025-03-01 to 2025-03-02.

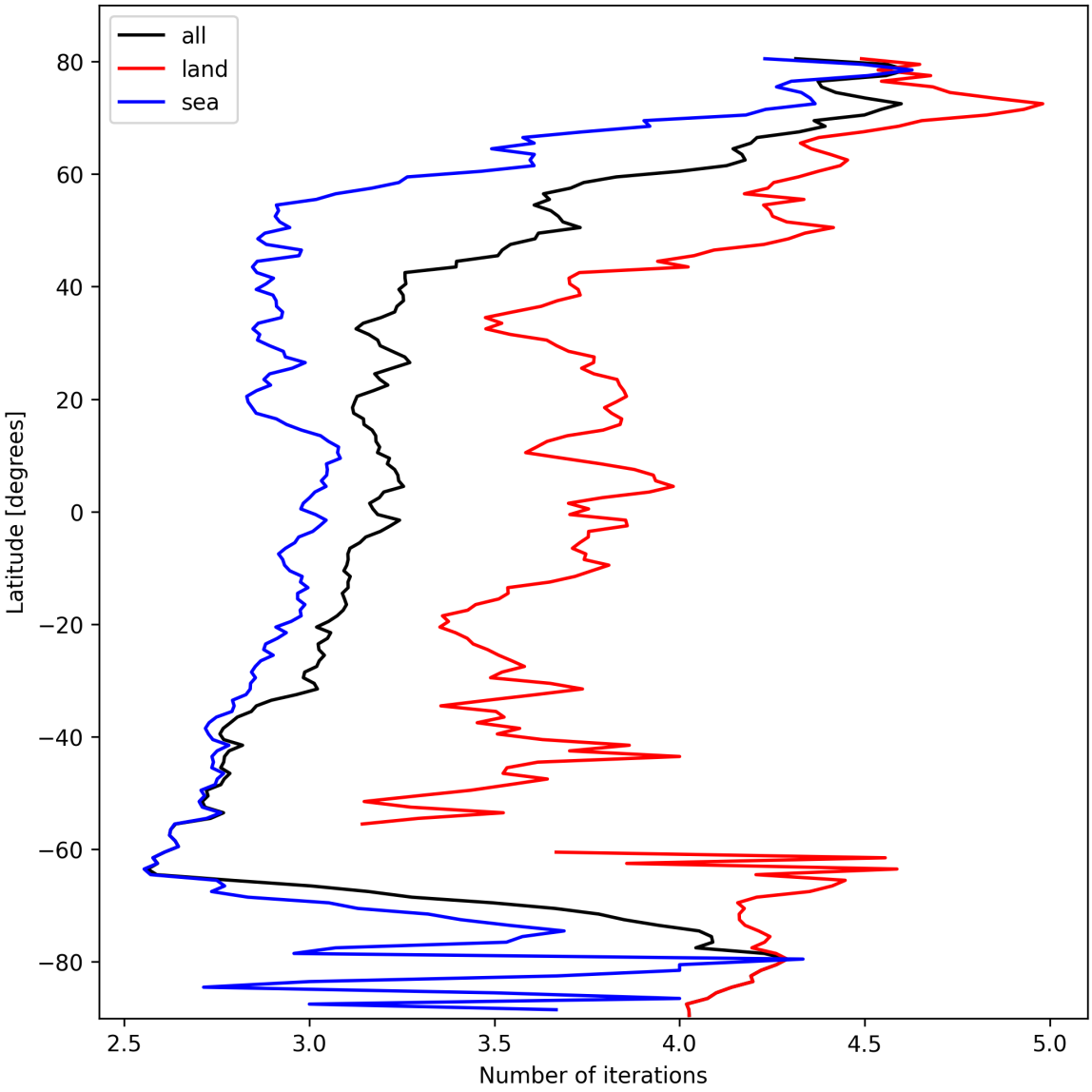

Figure 20: Zonal average of “Number of iterations” for 2025-03-01 to 2025-03-02.

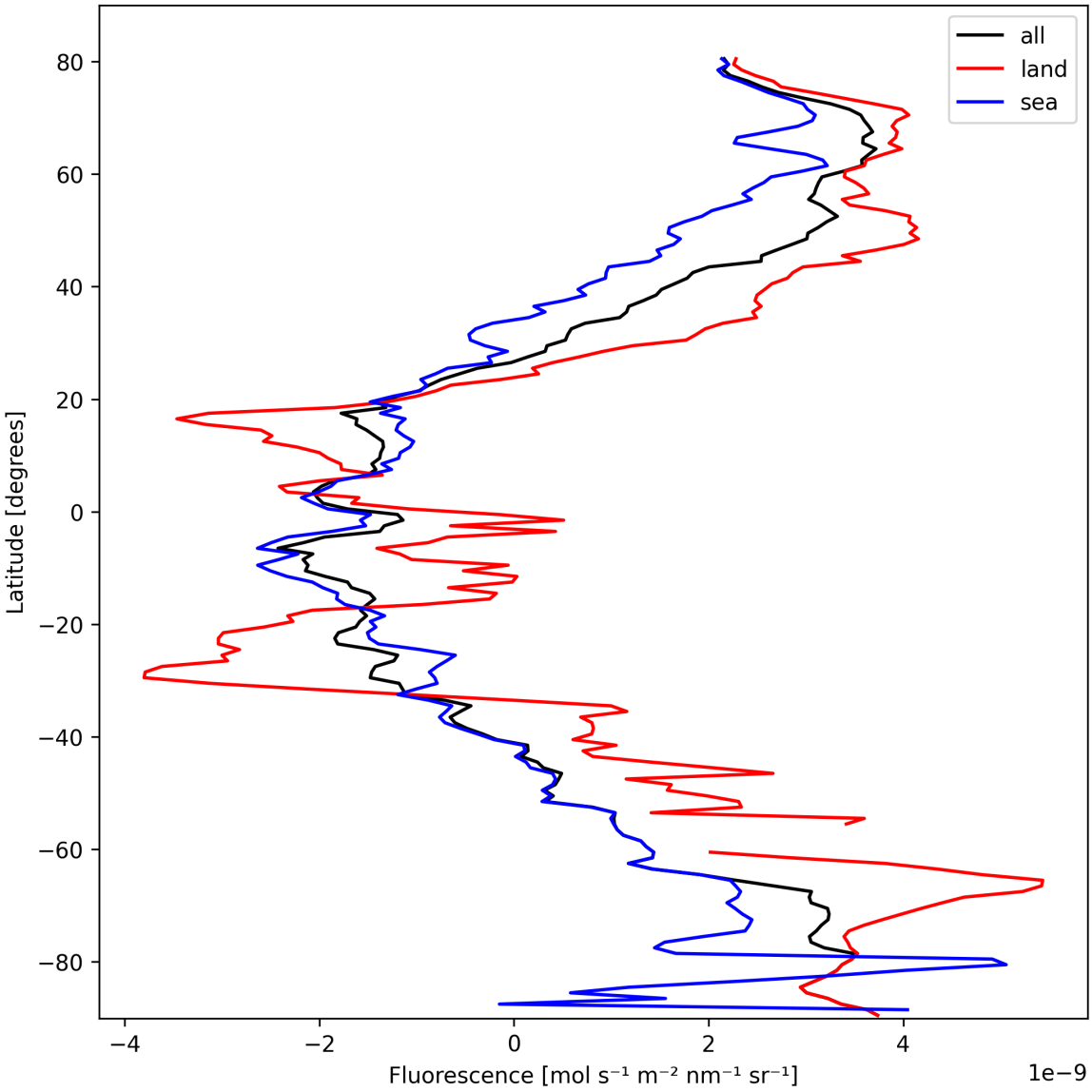

Figure 21: Zonal average of “Fluorescence” for 2025-03-01 to 2025-03-02.

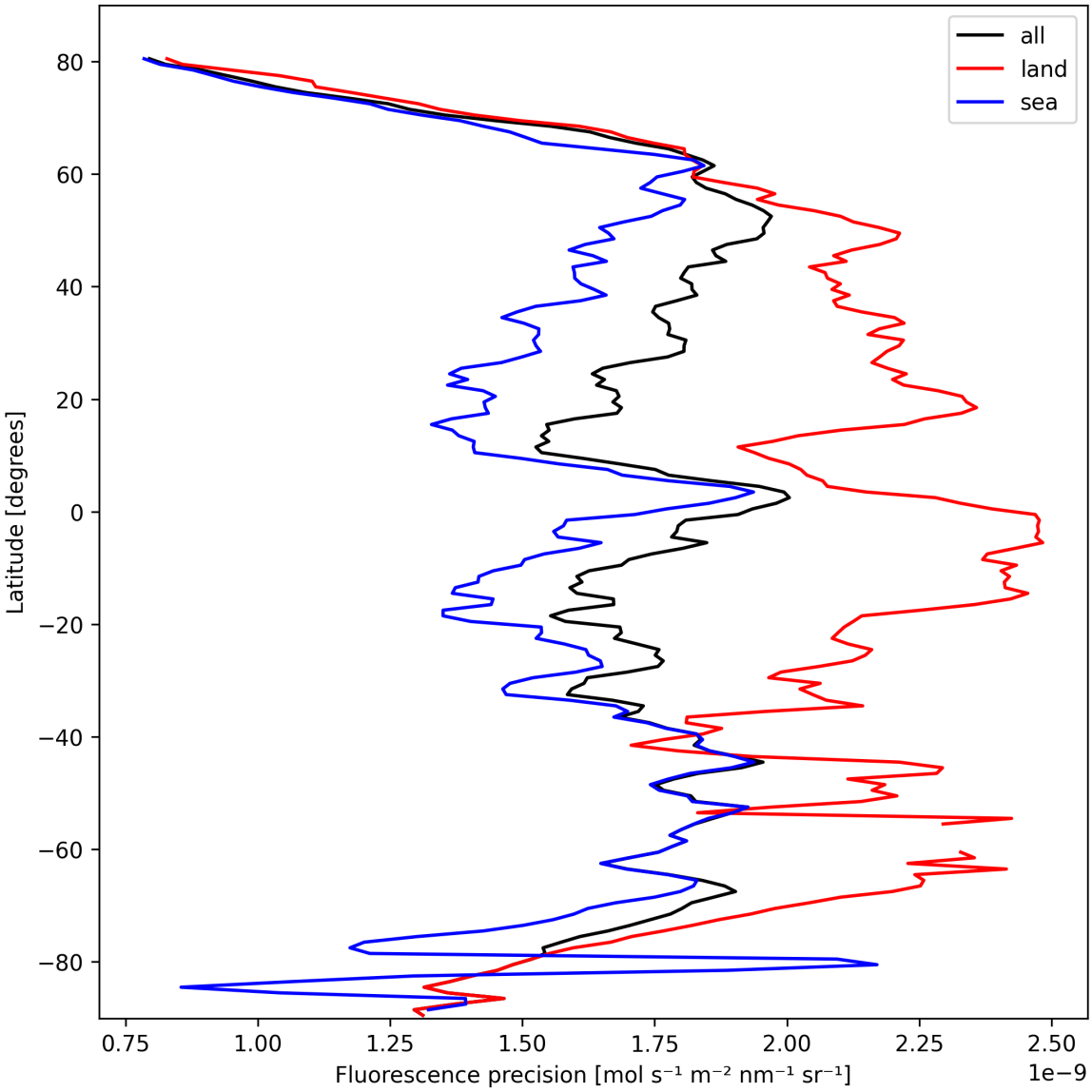

Figure 22: Zonal average of “Fluorescence precision” for 2025-03-01 to 2025-03-02.

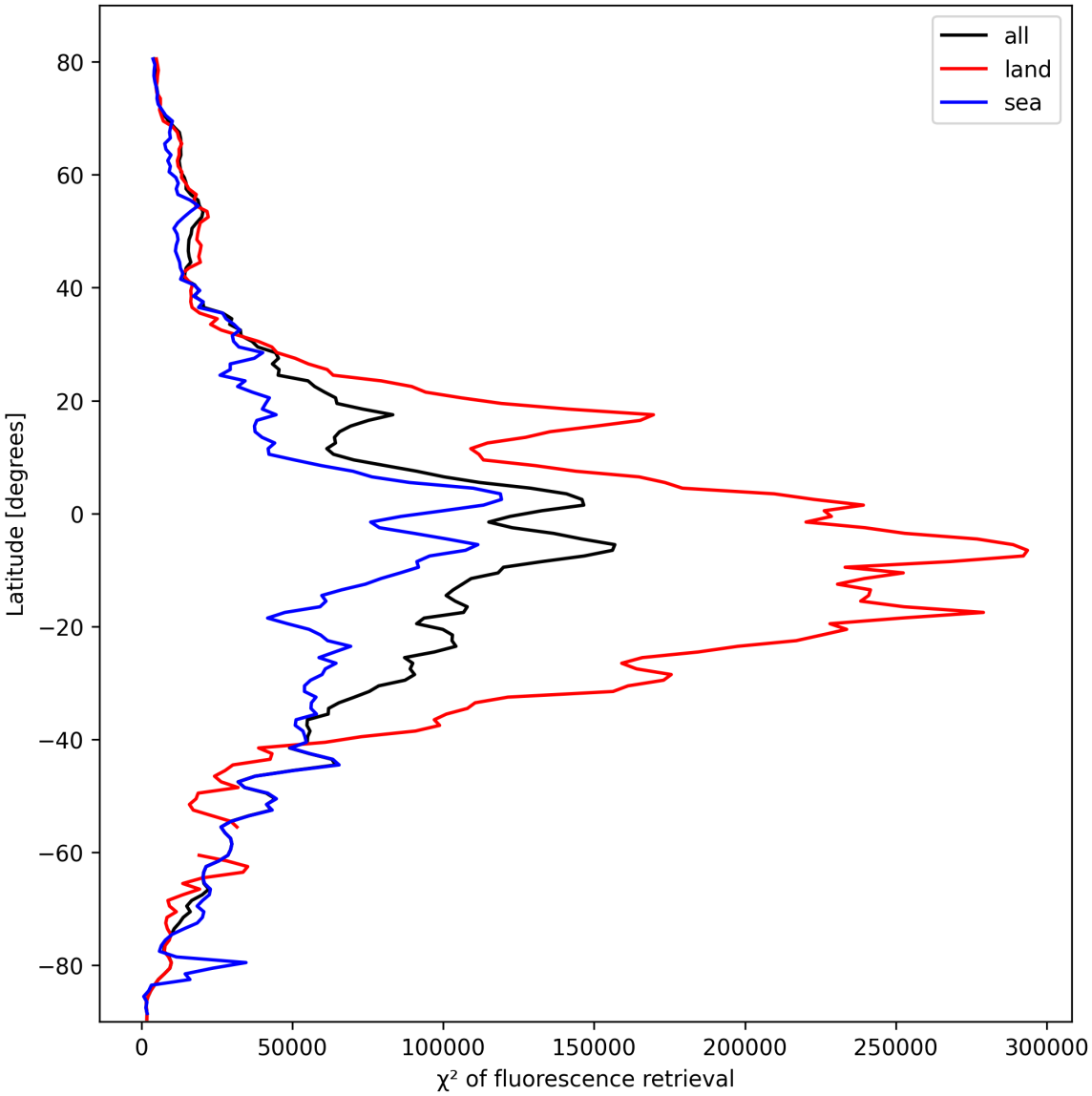

Figure 23: Zonal average of "χ^2 of fluorescence retrieval" for 2025-03-01 to 2025-03-02.

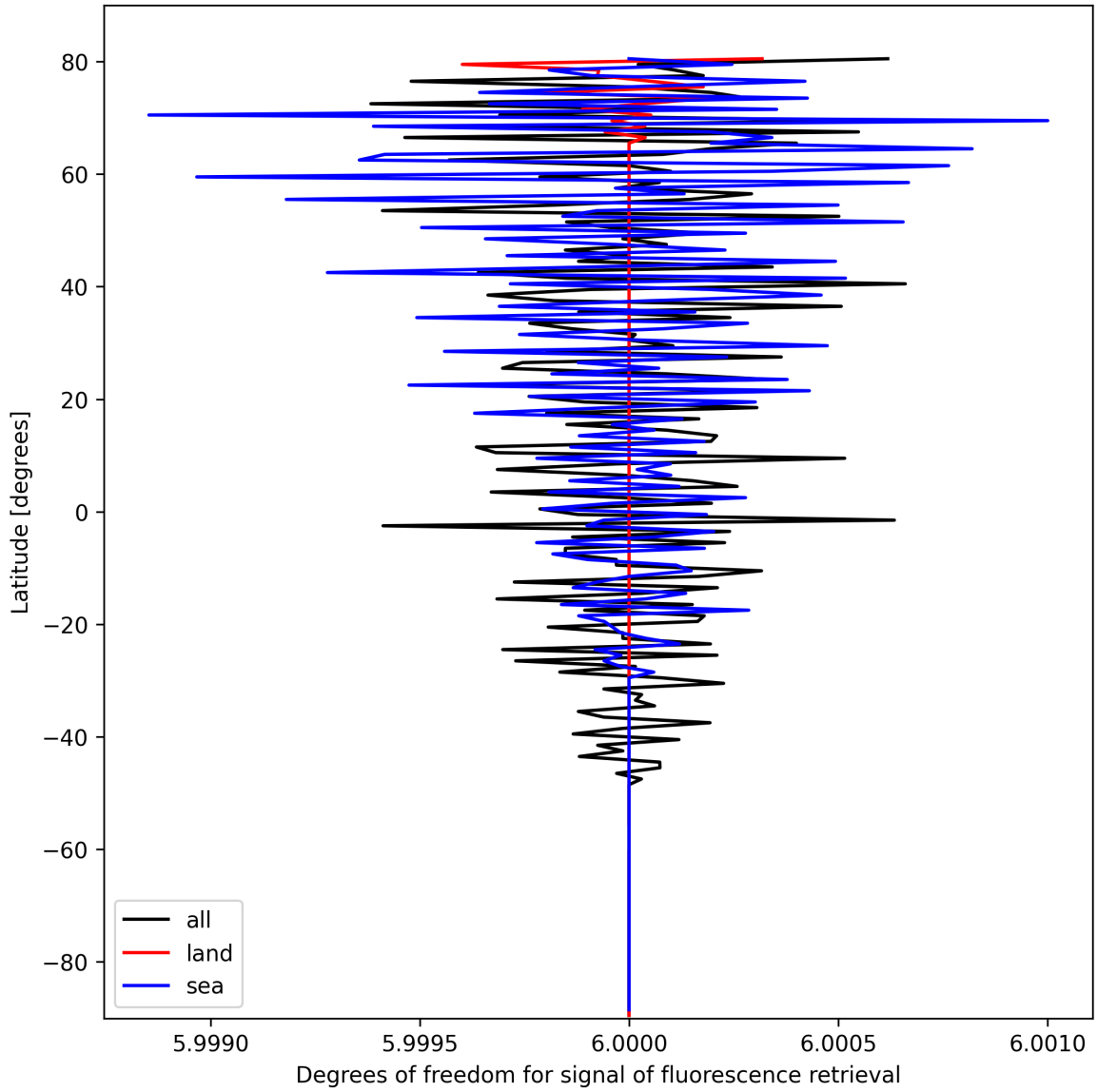

Figure 24: Zonal average of “Degrees of freedom for signal of fluorescence retrieval” for 2025-03-01 to 2025-03-02.

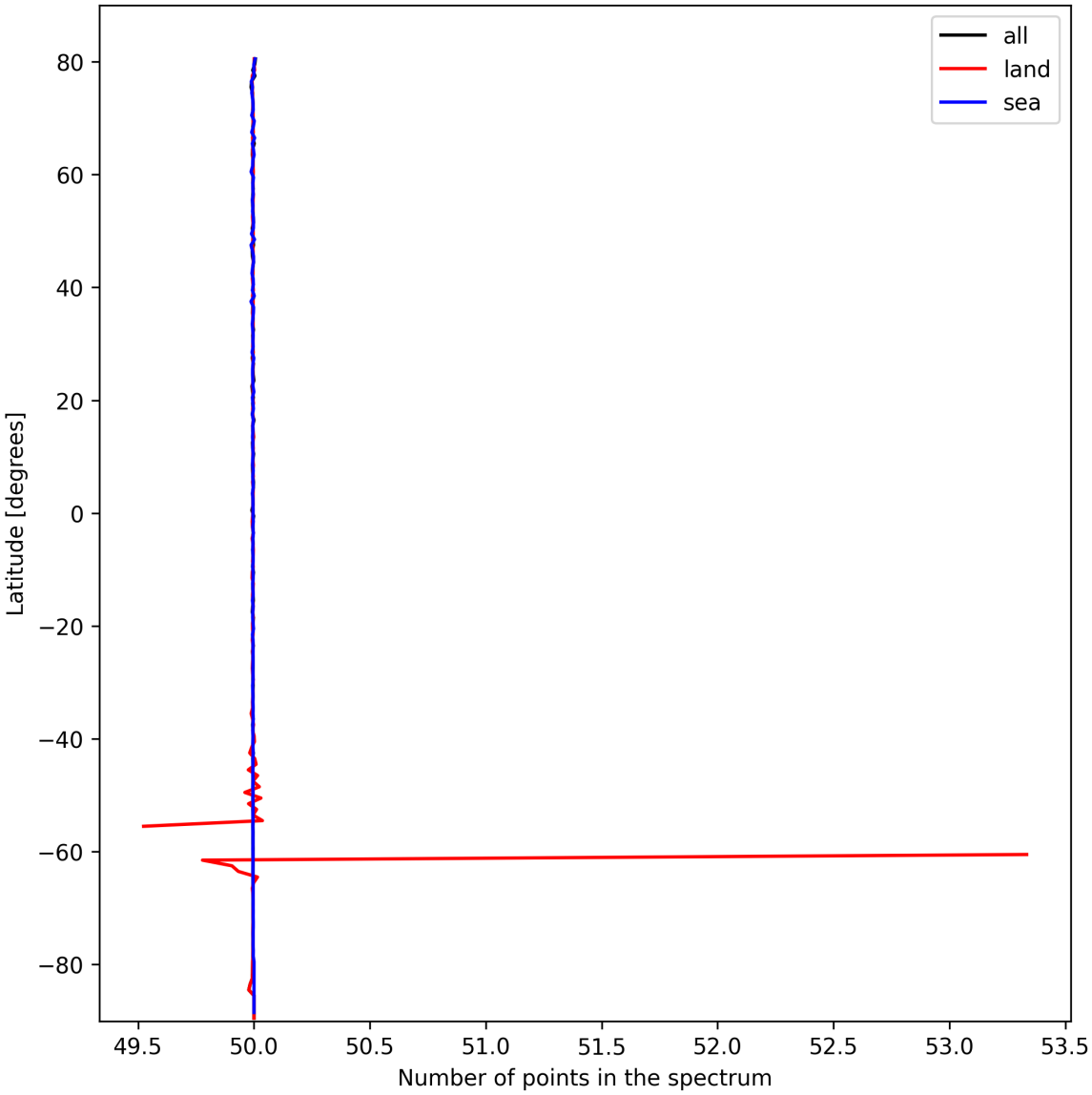

Figure 25: Zonal average of “Number of points in the spectrum” for 2025-03-01 to 2025-03-02.

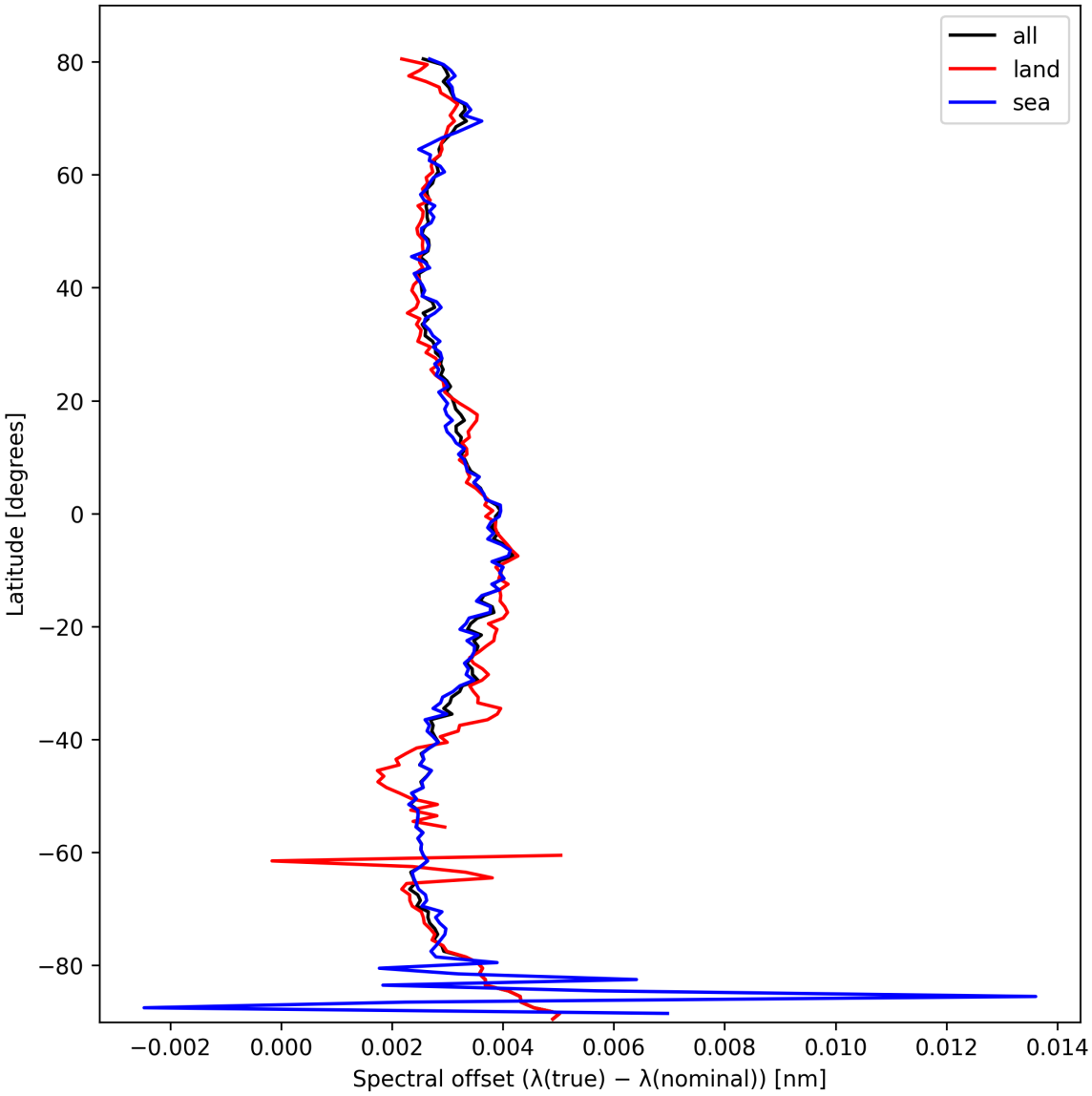

Figure 26: Zonal average of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2025-03-01 to 2025-03-02.

8 Histograms

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

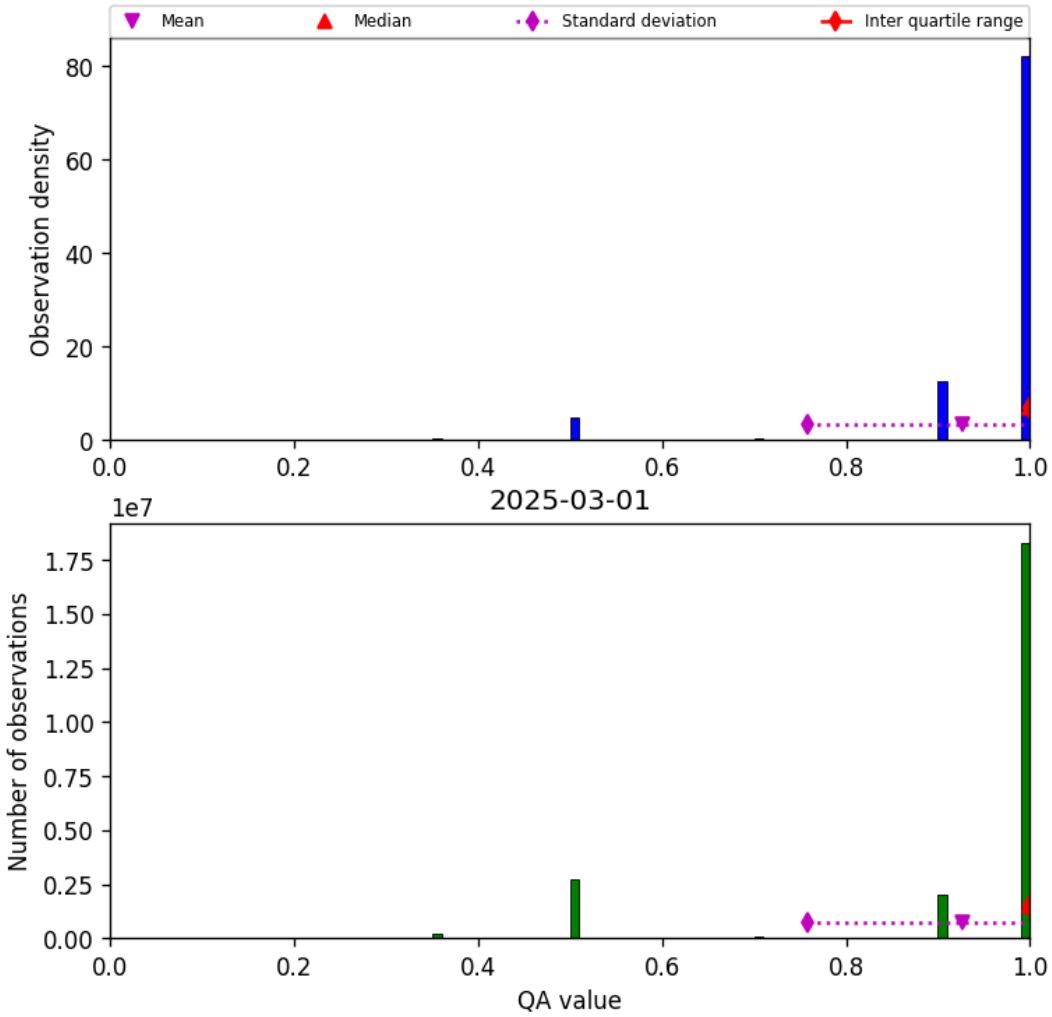

Figure 27: Histogram of “QA value” for 2025-03-01 to 2025-03-02

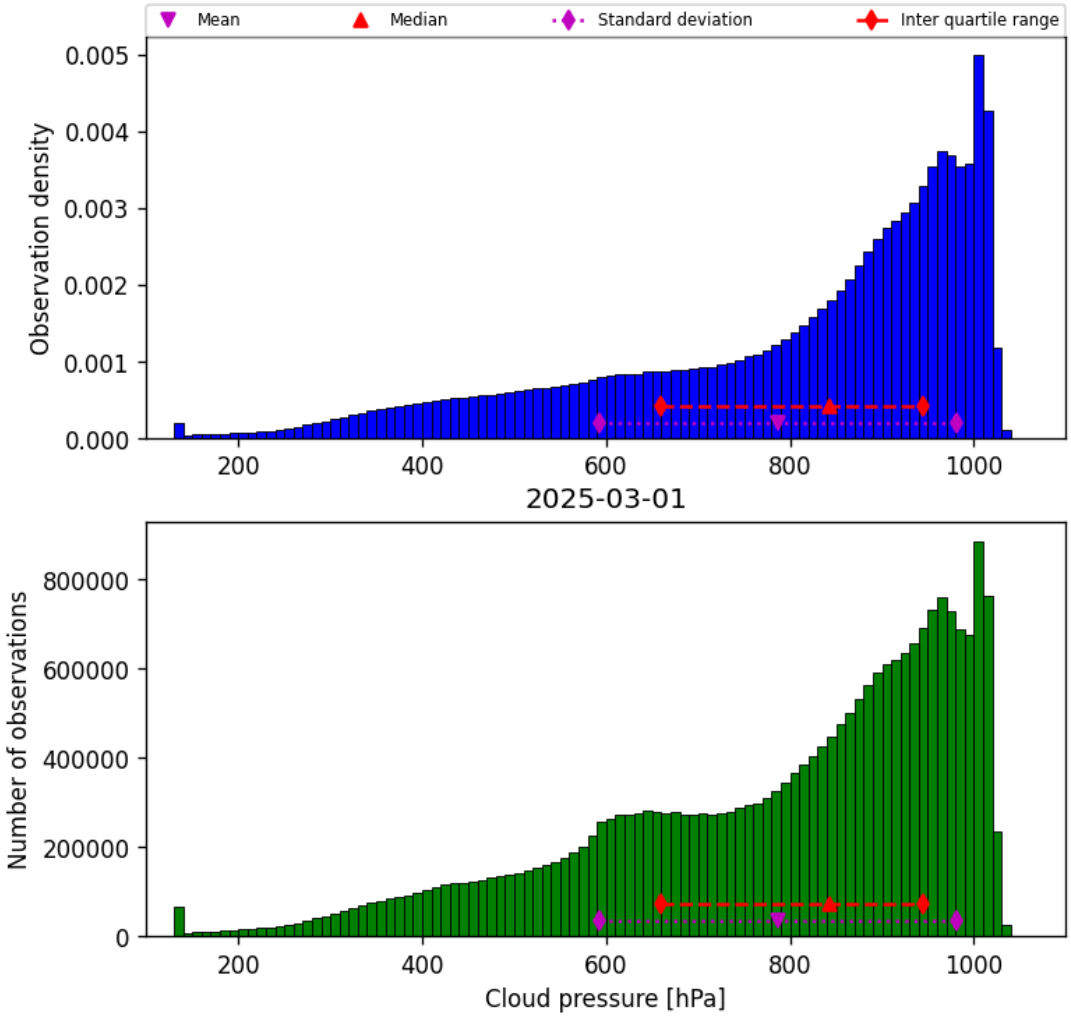

Figure 28: Histogram of “Cloud pressure” for 2025-03-01 to 2025-03-02

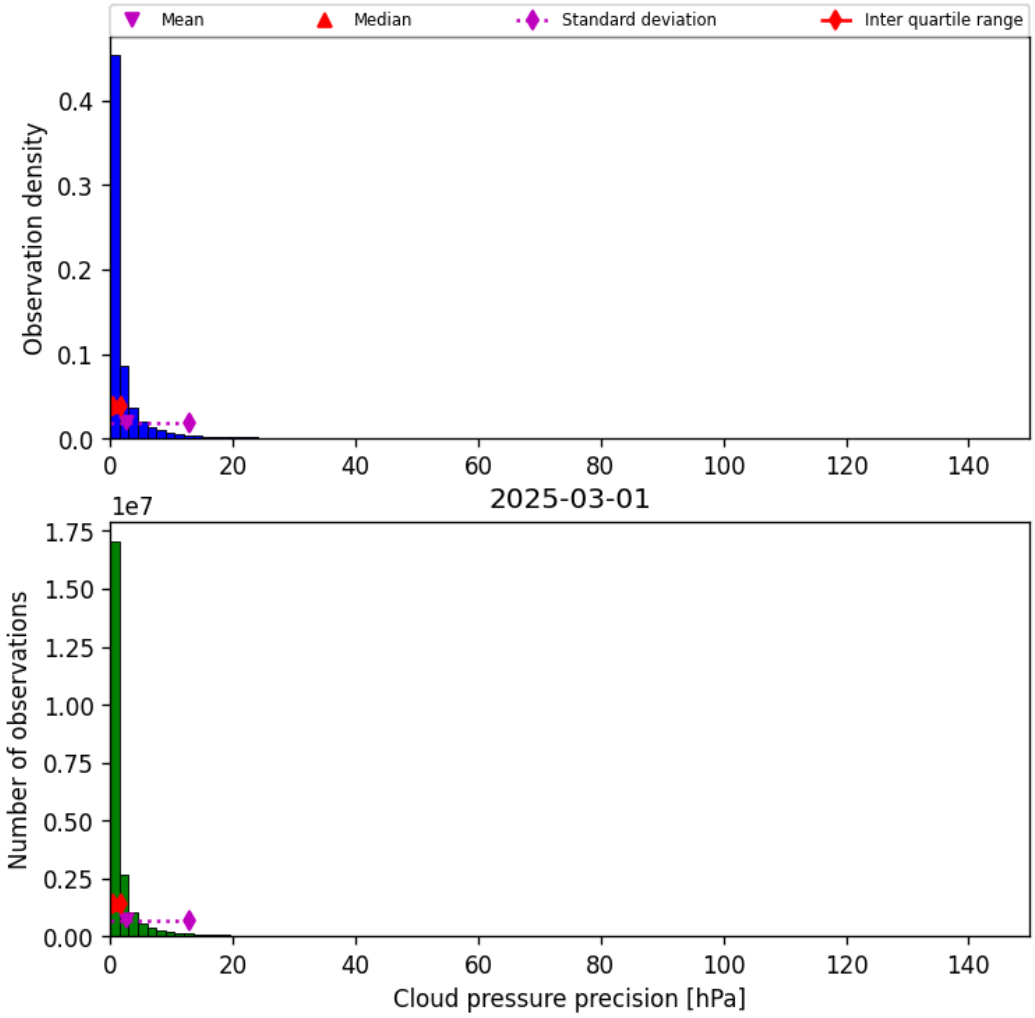

Figure 29: Histogram of “Cloud pressure precision” for 2025-03-01 to 2025-03-02

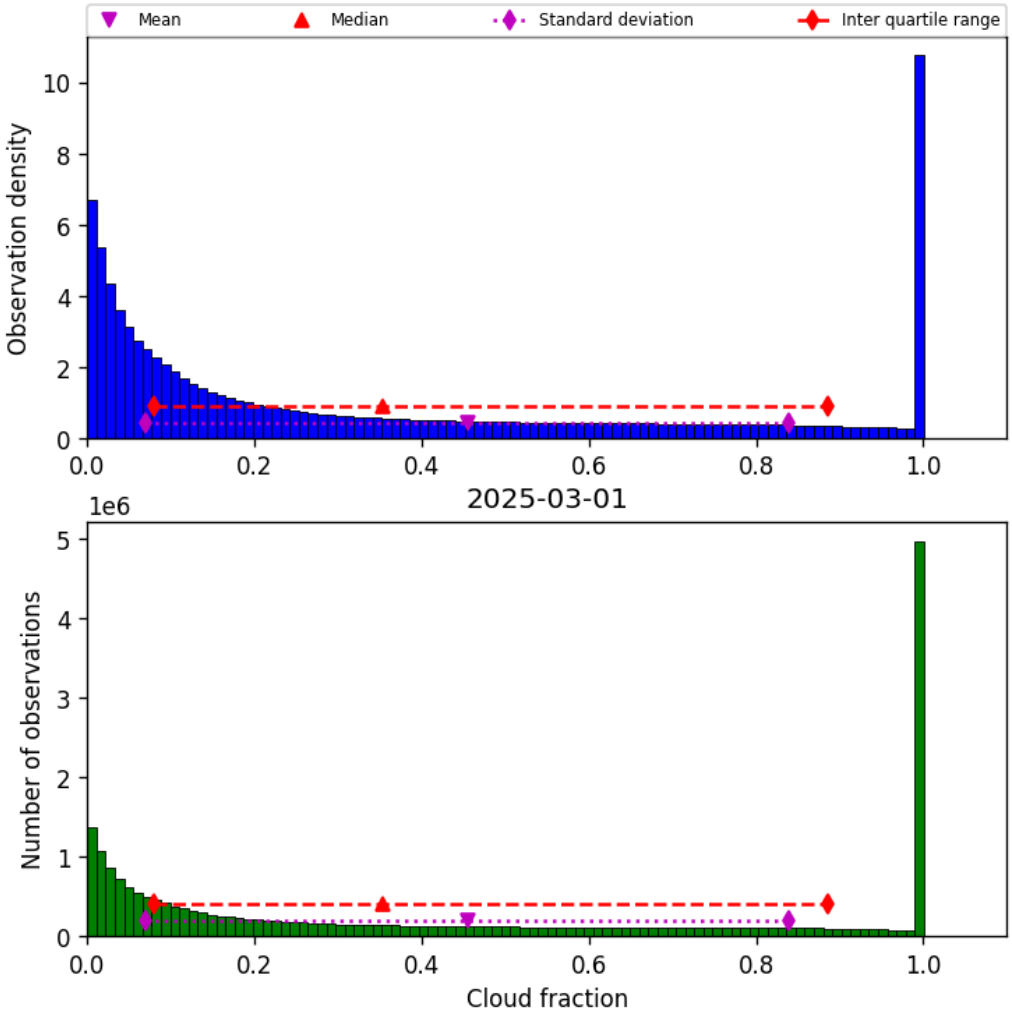

Figure 30: Histogram of “Cloud fraction” for 2025-03-01 to 2025-03-02

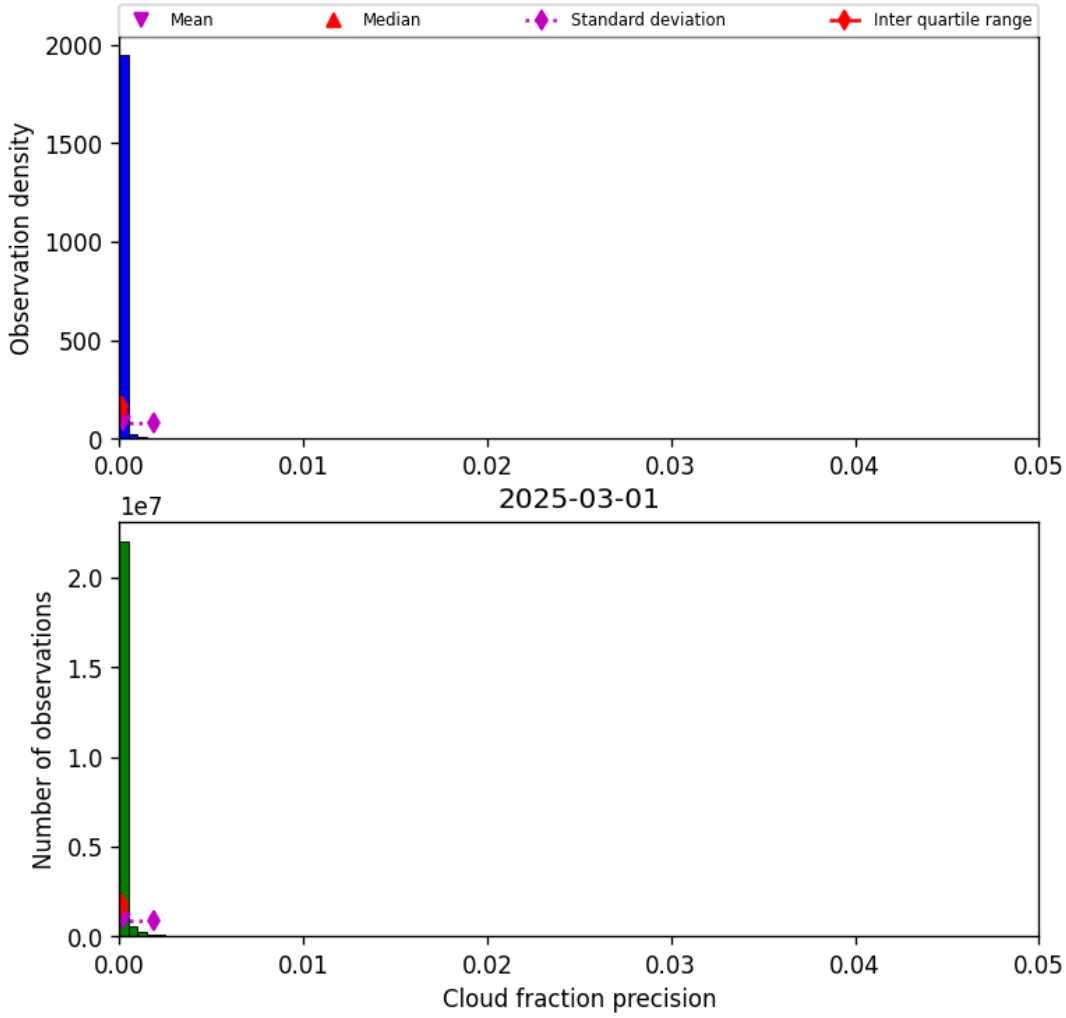

Figure 31: Histogram of “Cloud fraction precision” for 2025-03-01 to 2025-03-02

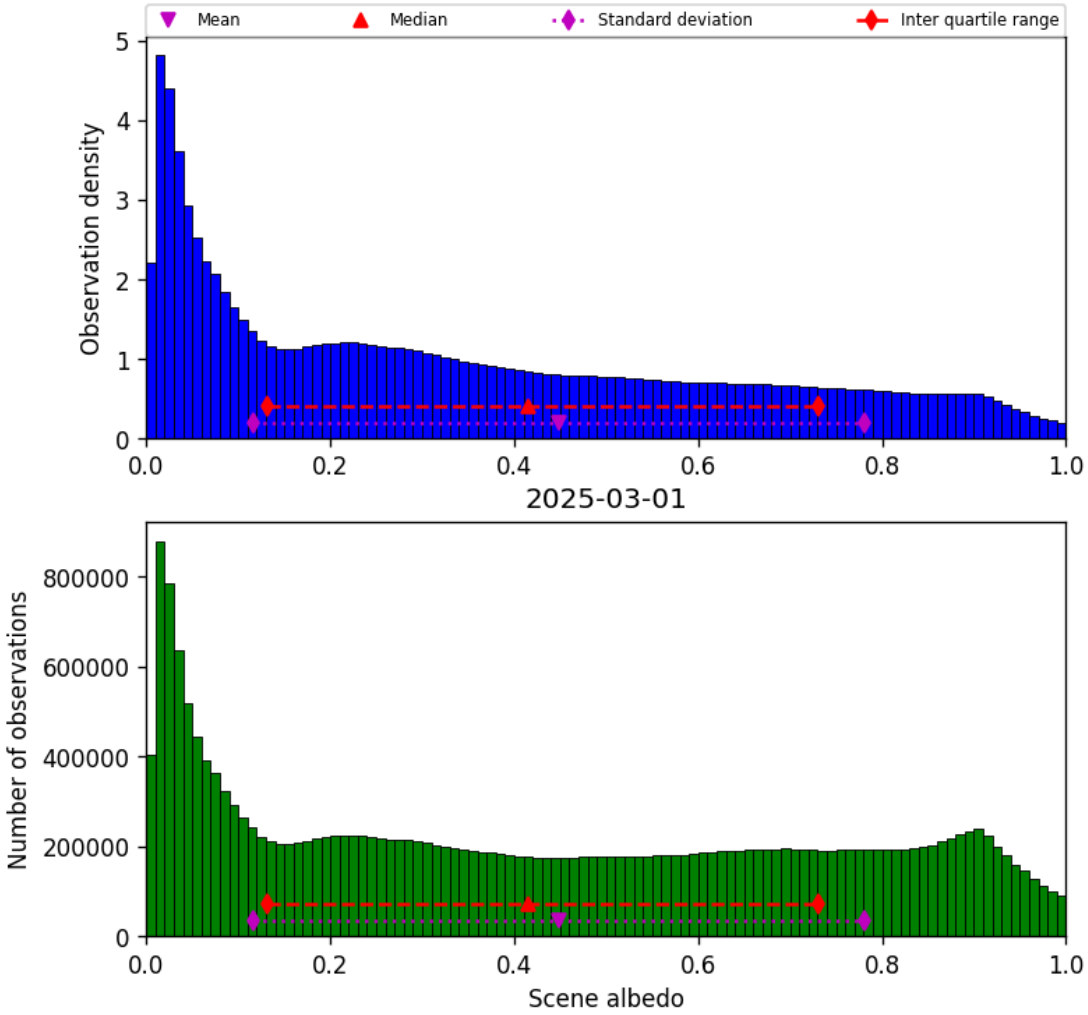

Figure 32: Histogram of “Scene albedo” for 2025-03-01 to 2025-03-02

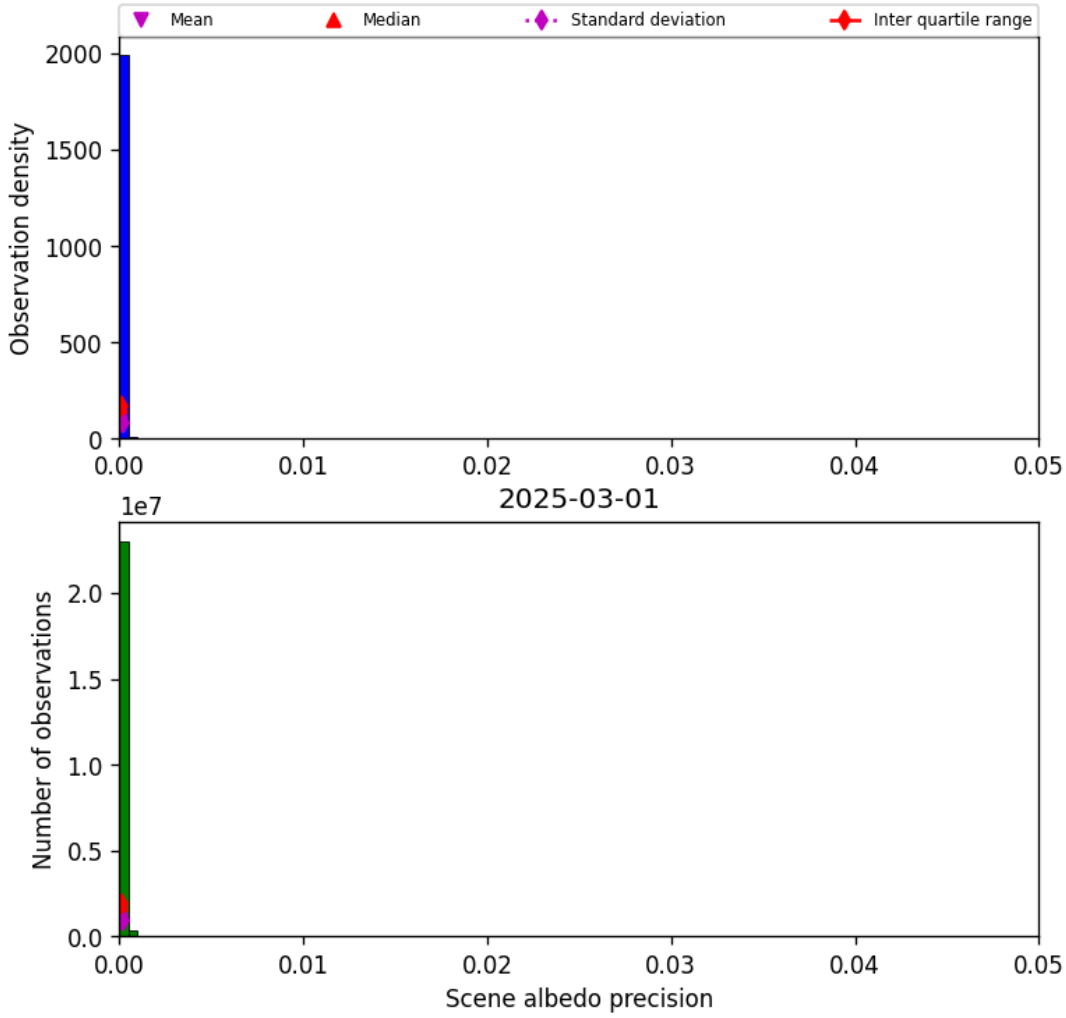

Figure 33: Histogram of “Scene albedo precision” for 2025-03-01 to 2025-03-02

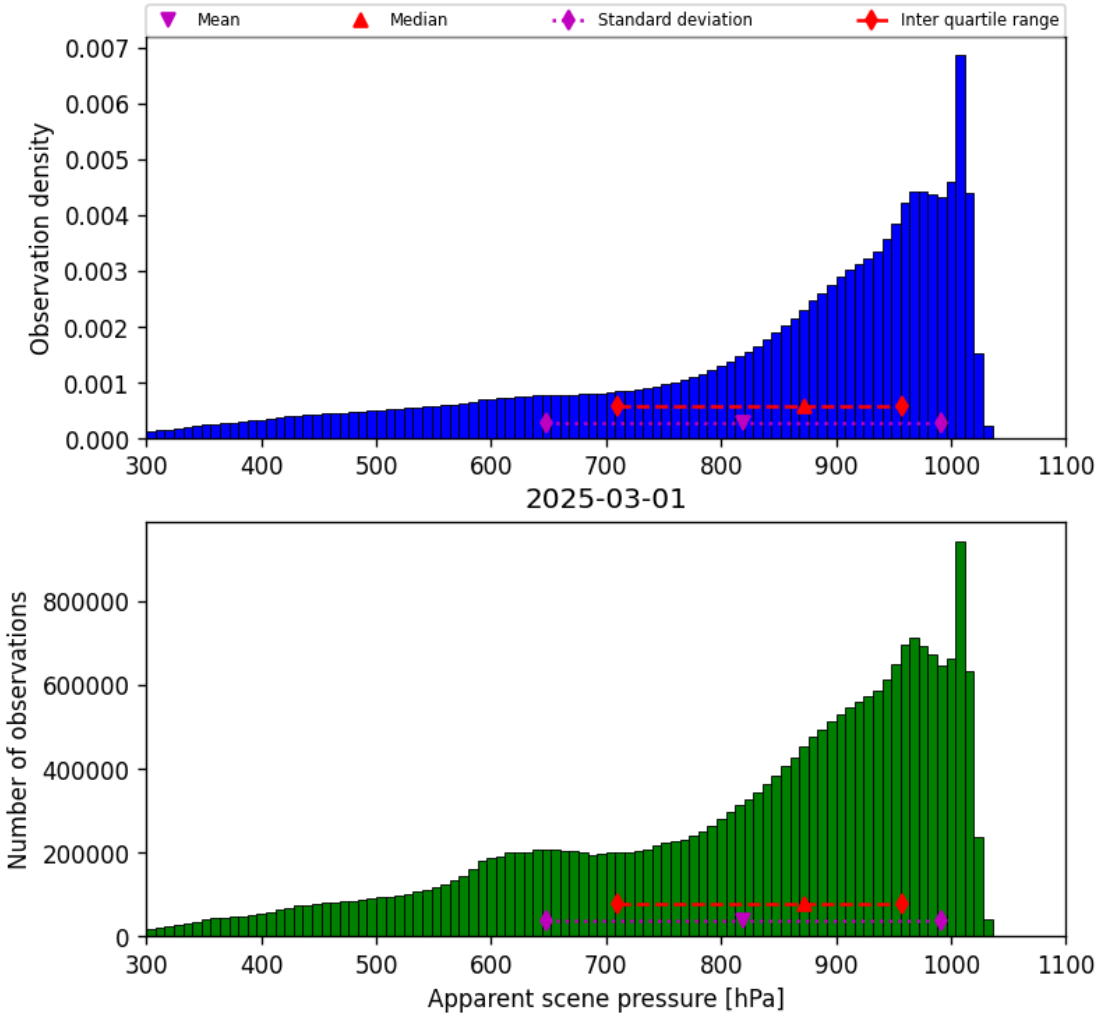

Figure 34: Histogram of “Apparent scene pressure” for 2025-03-01 to 2025-03-02

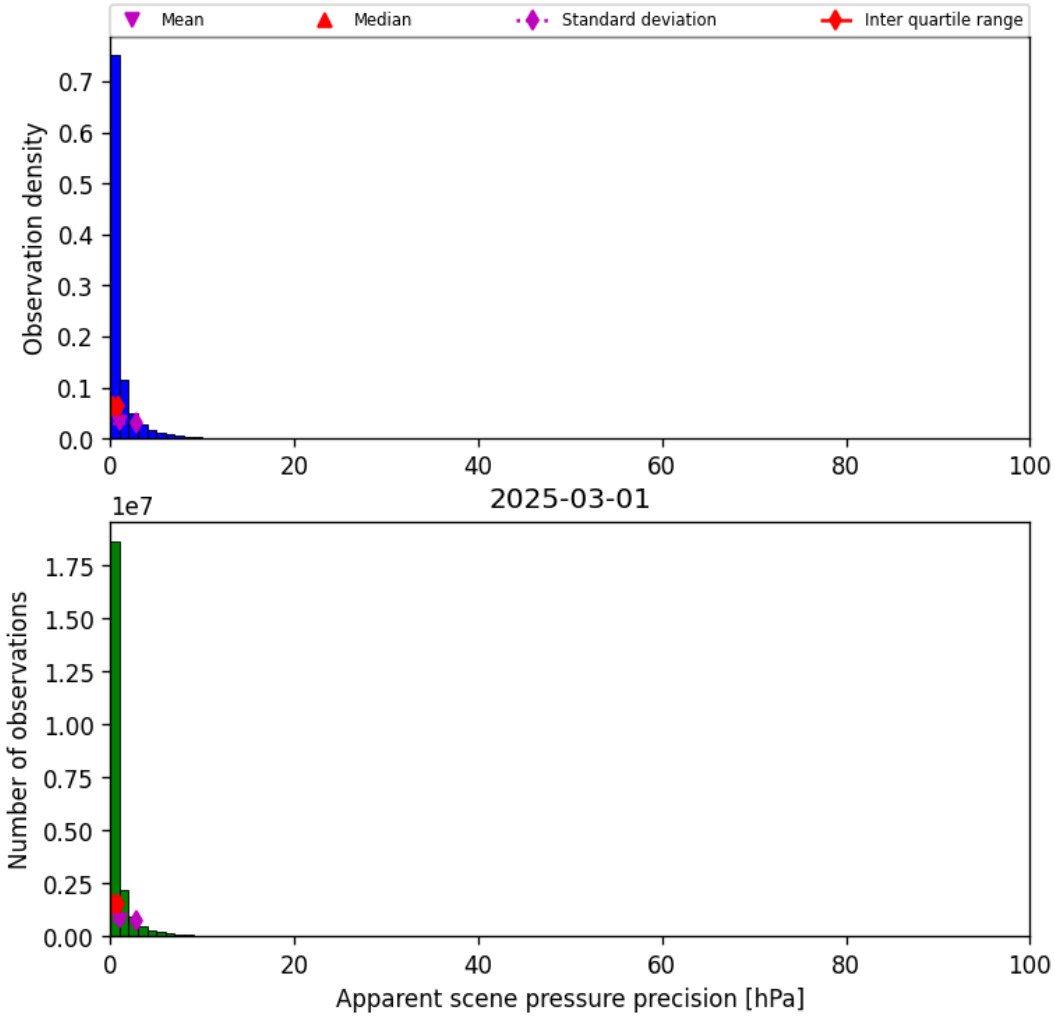

Figure 35: Histogram of “Apparent scene pressure precision” for 2025-03-01 to 2025-03-02

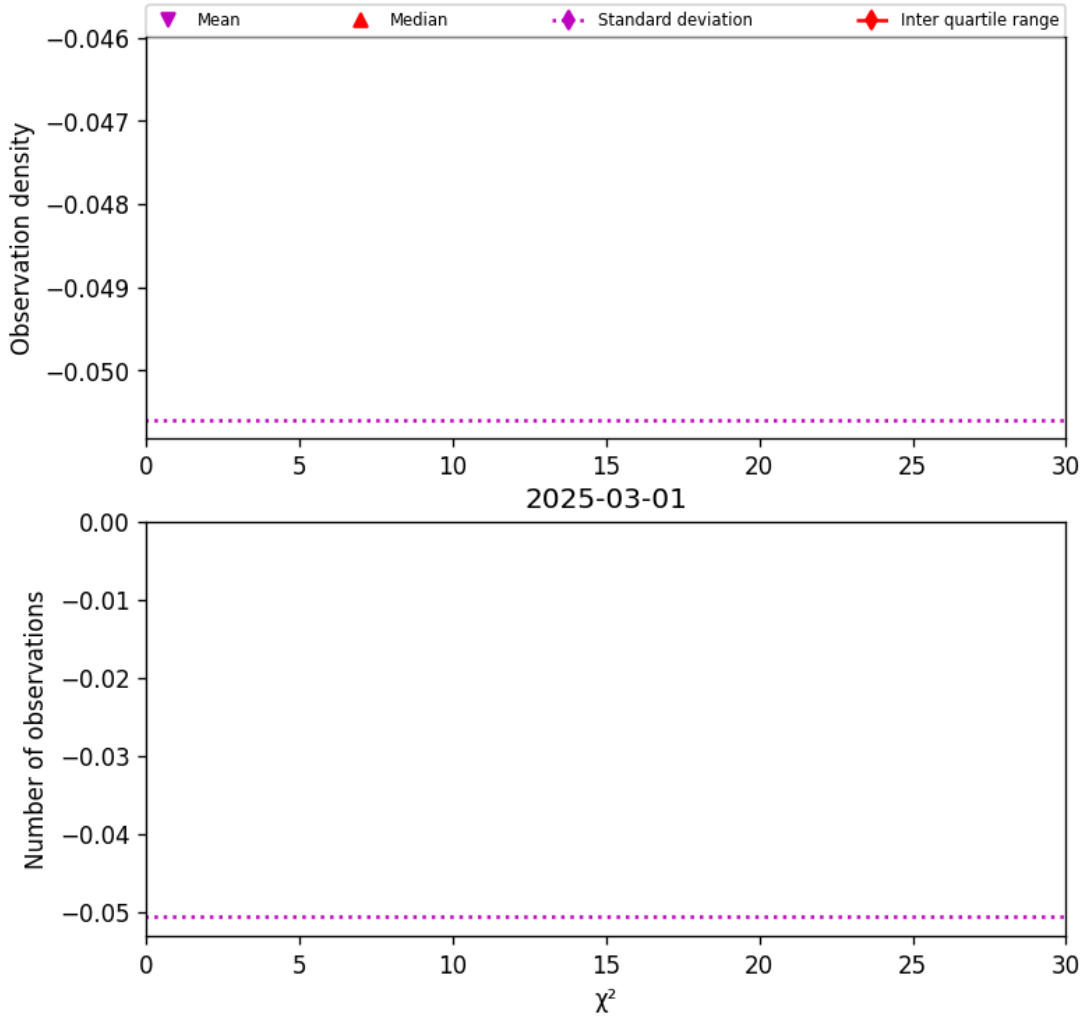

Figure 36: Histogram of "χ^2" for 2025-03-01 to 2025-03-02

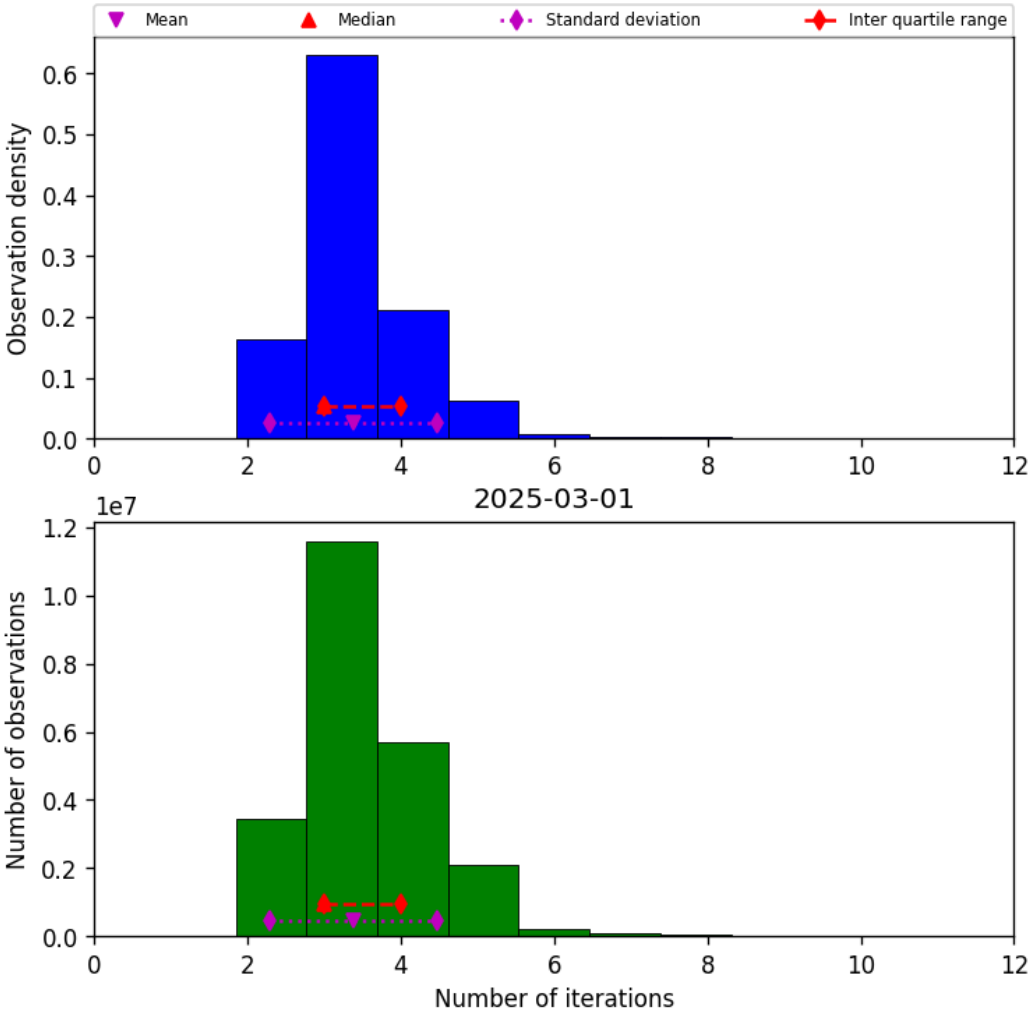

Figure 37: Histogram of “Number of iterations” for 2025-03-01 to 2025-03-02

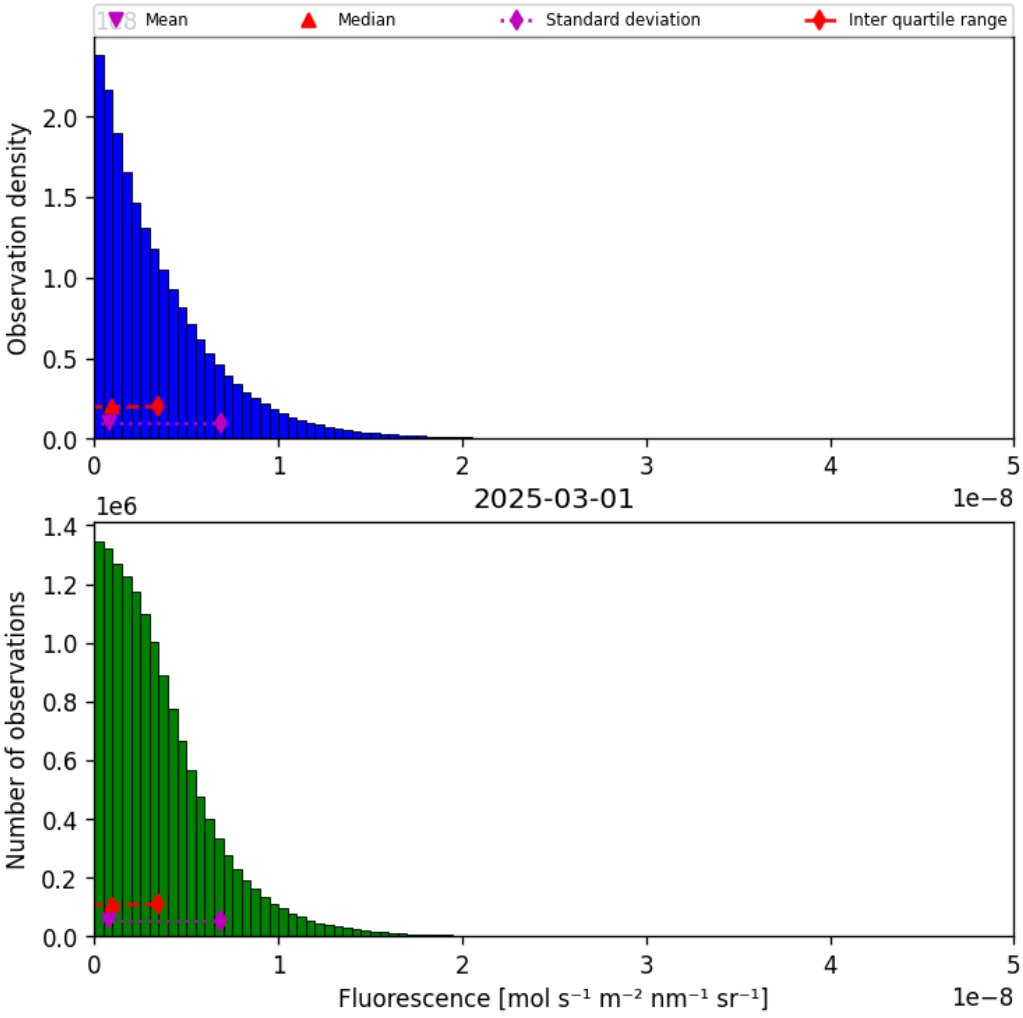

Figure 38: Histogram of “Fluorescence” for 2025-03-01 to 2025-03-02

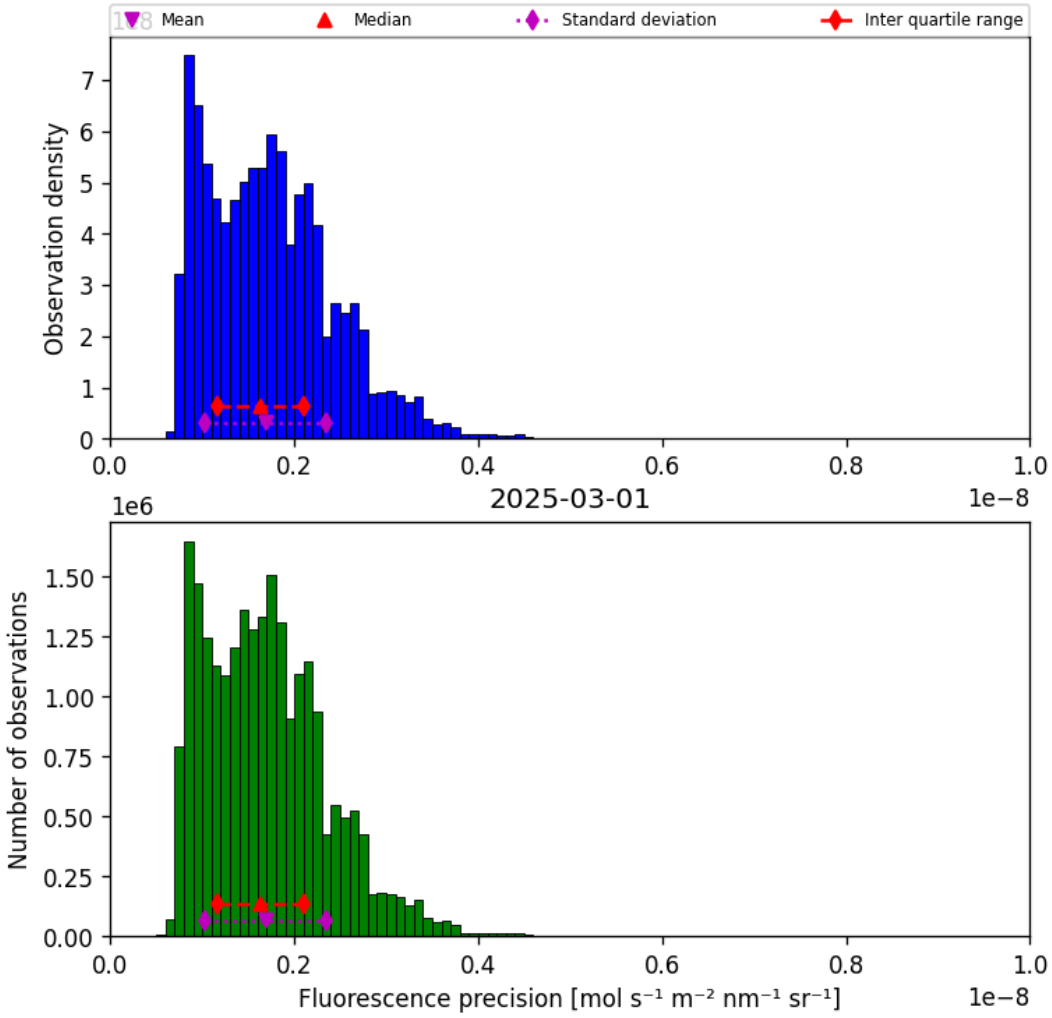

Figure 39: Histogram of “Fluorescence precision” for 2025-03-01 to 2025-03-02

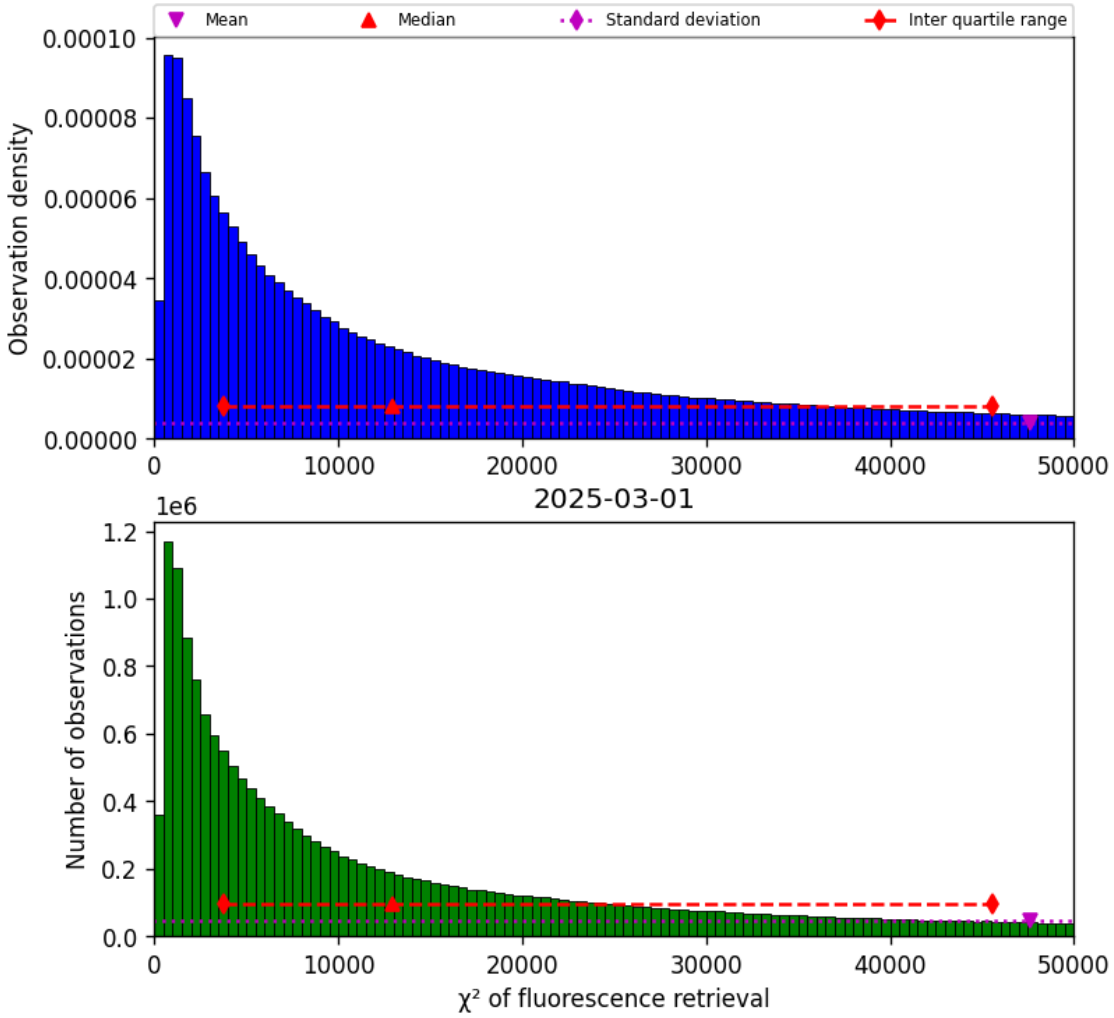

Figure 40: Histogram of "χ^2 of fluorescence retrieval" for 2025-03-01 to 2025-03-02

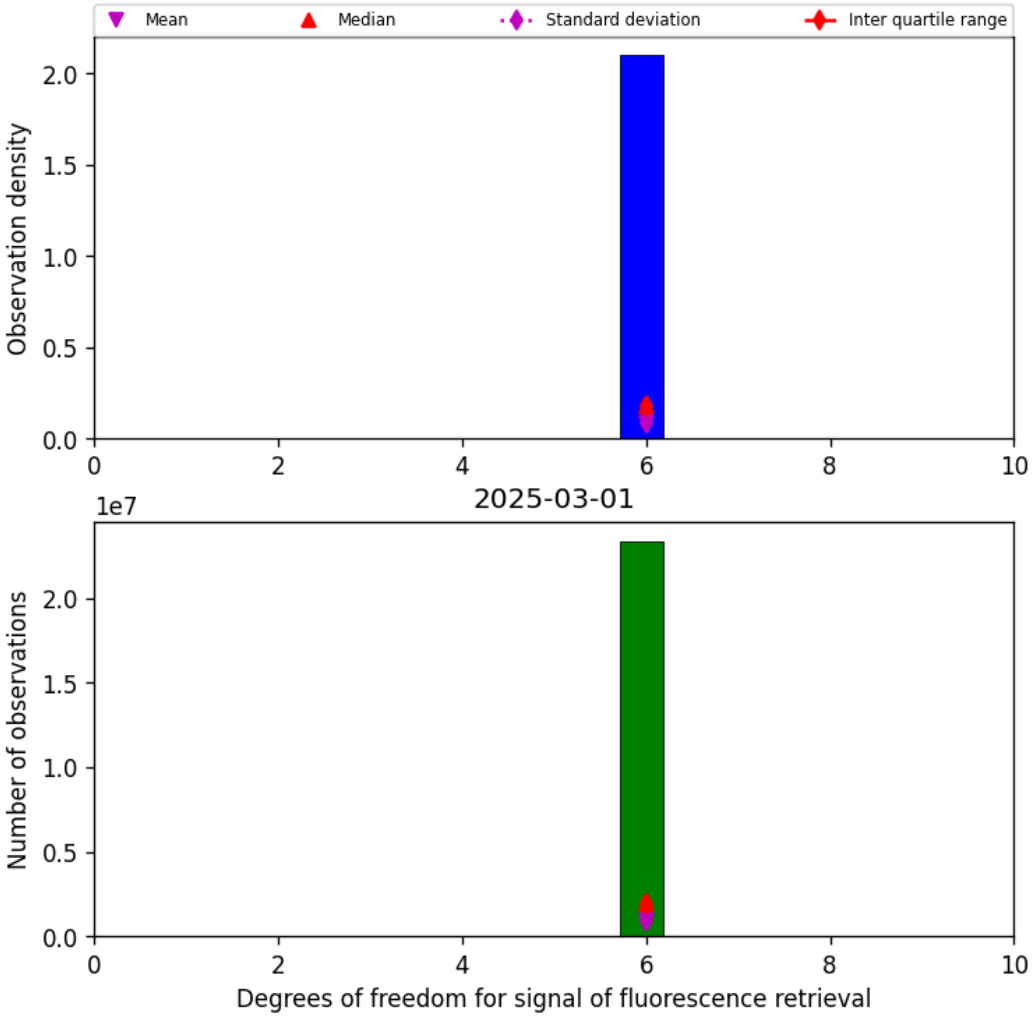

Figure 41: Histogram of “Degrees of freedom for signal of fluorescence retrieval” for 2025-03-01 to 2025-03-02

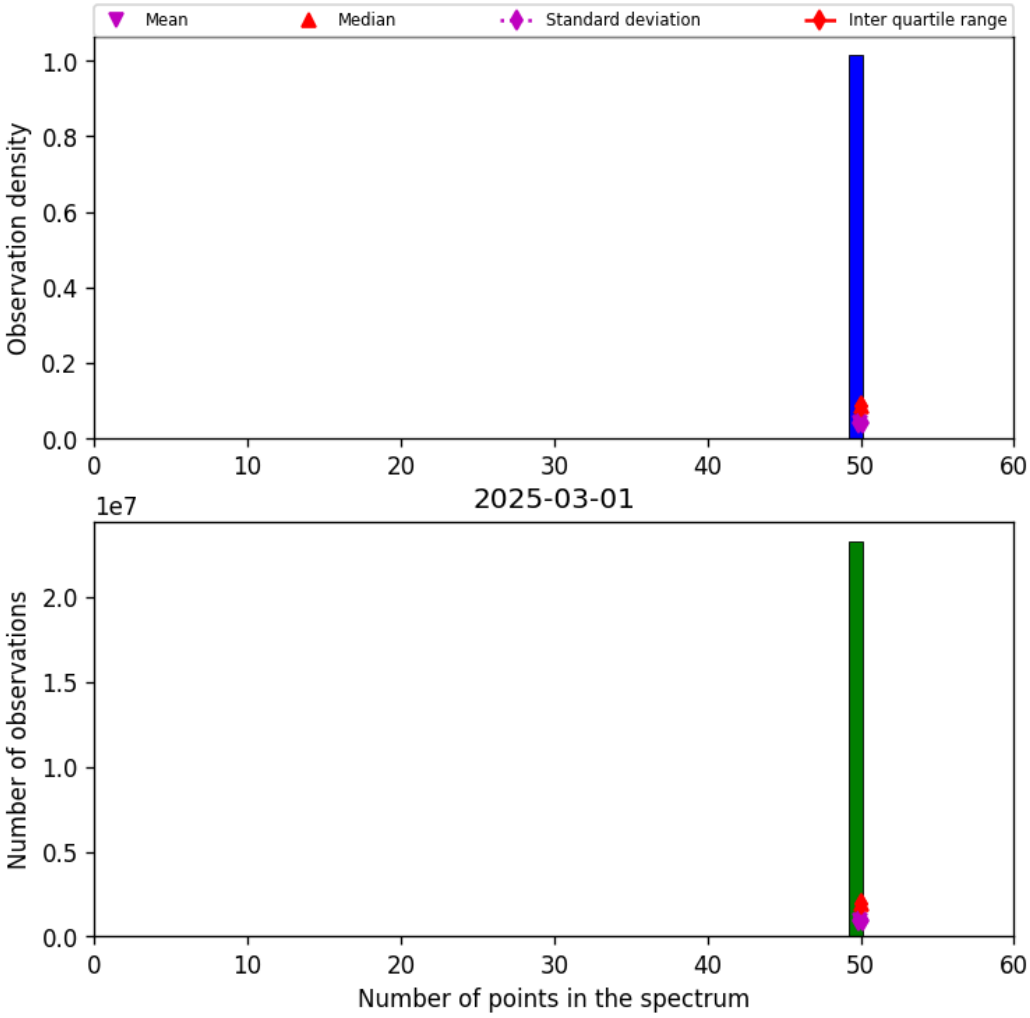

Figure 42: Histogram of “Number of points in the spectrum” for 2025-03-01 to 2025-03-02

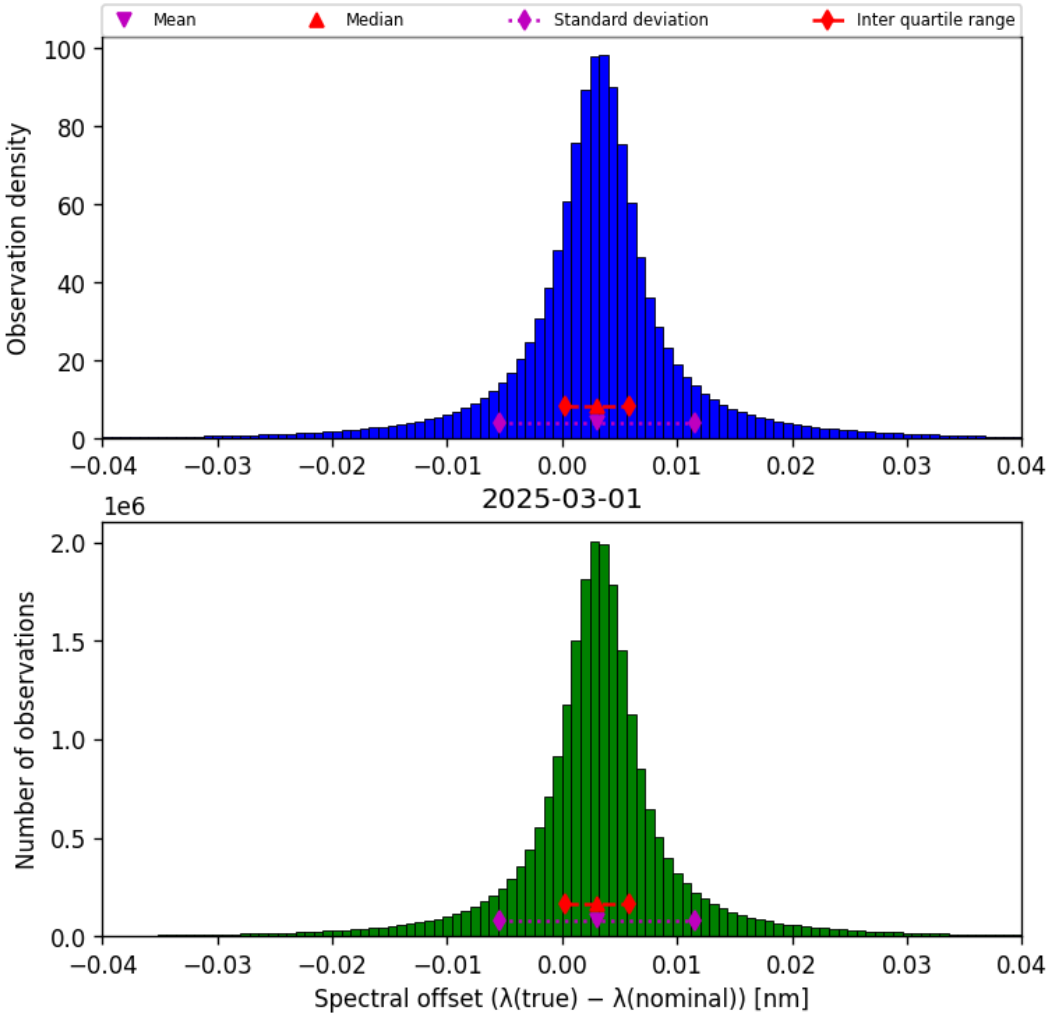

Figure 43: Histogram of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2025-03-01 to 2025-03-02

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.

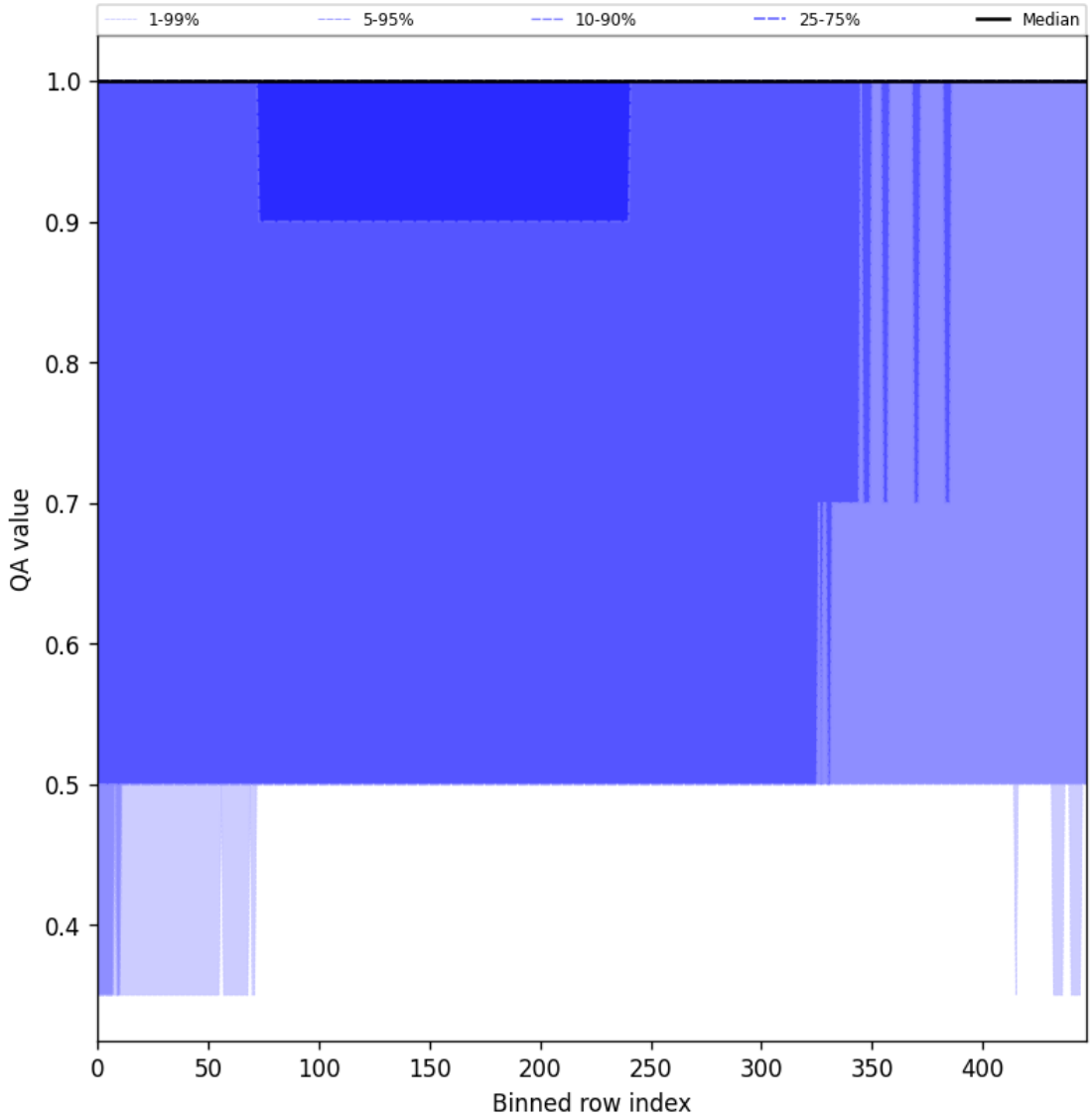

Figure 44: Along track statistics of “QA value” for 2025-03-01 to 2025-03-02

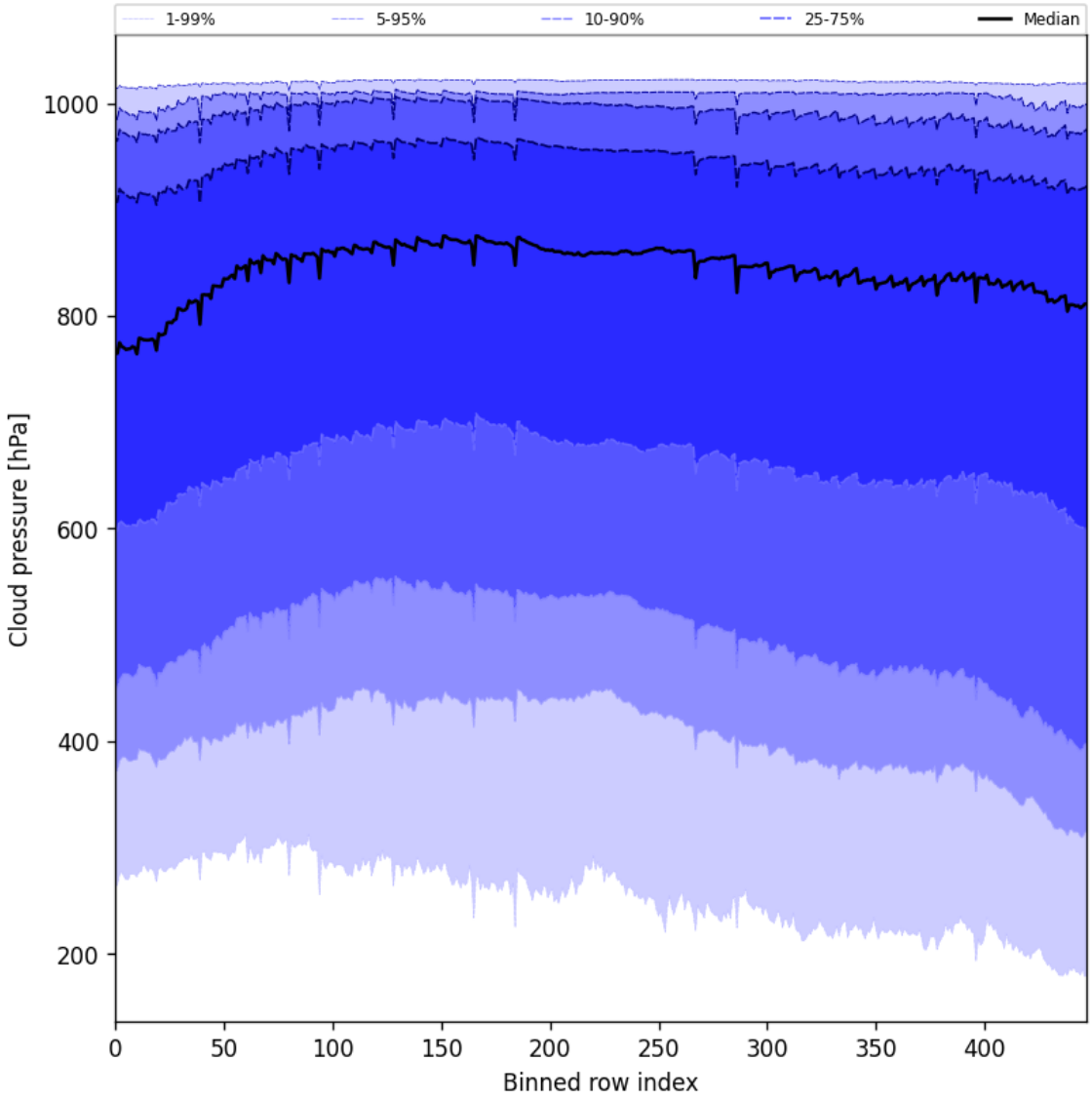

Figure 45: Along track statistics of “Cloud pressure” for 2025-03-01 to 2025-03-02

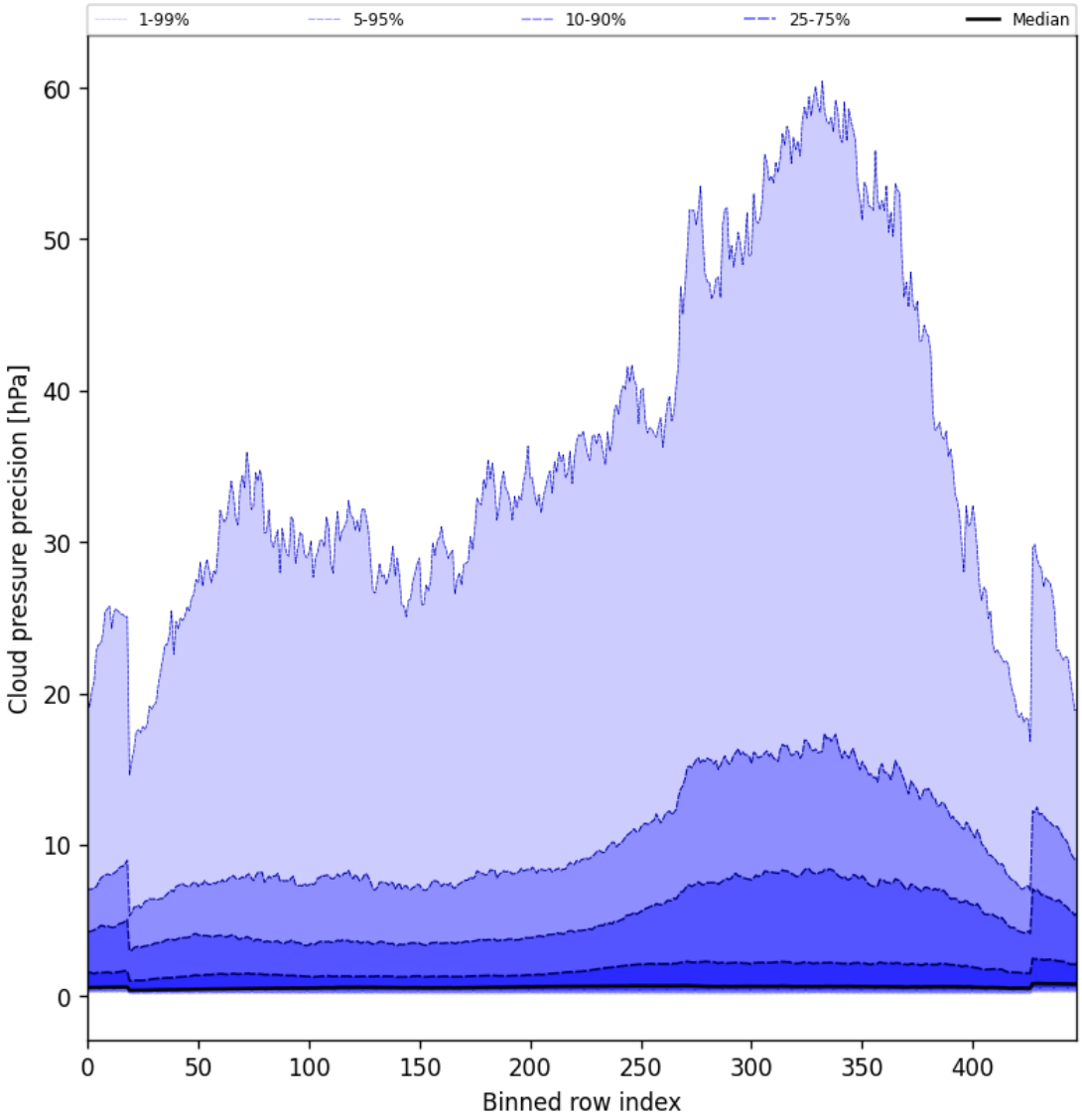

Figure 46: Along track statistics of “Cloud pressure precision” for 2025-03-01 to 2025-03-02

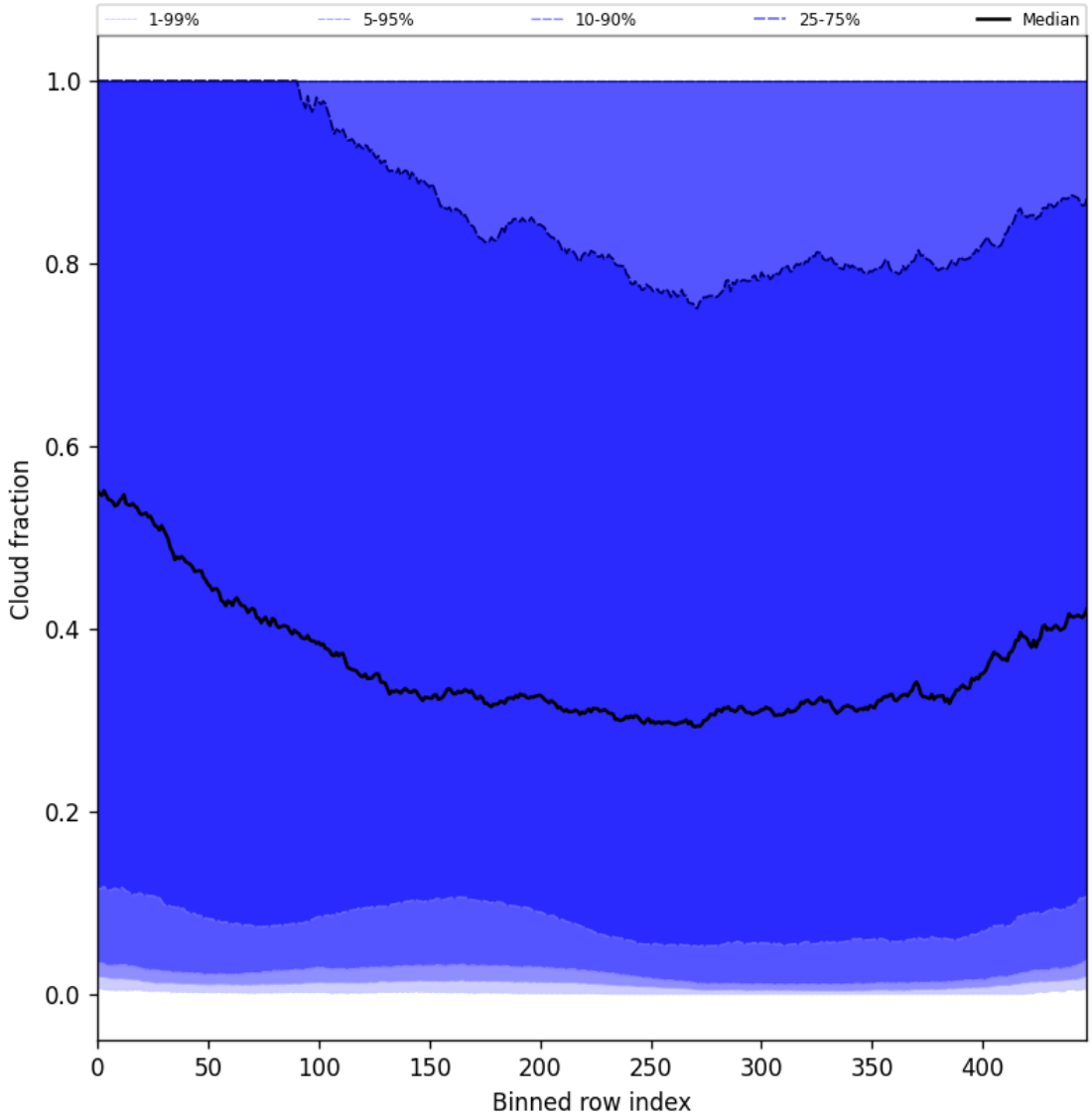

Figure 47: Along track statistics of “Cloud fraction” for 2025-03-01 to 2025-03-02

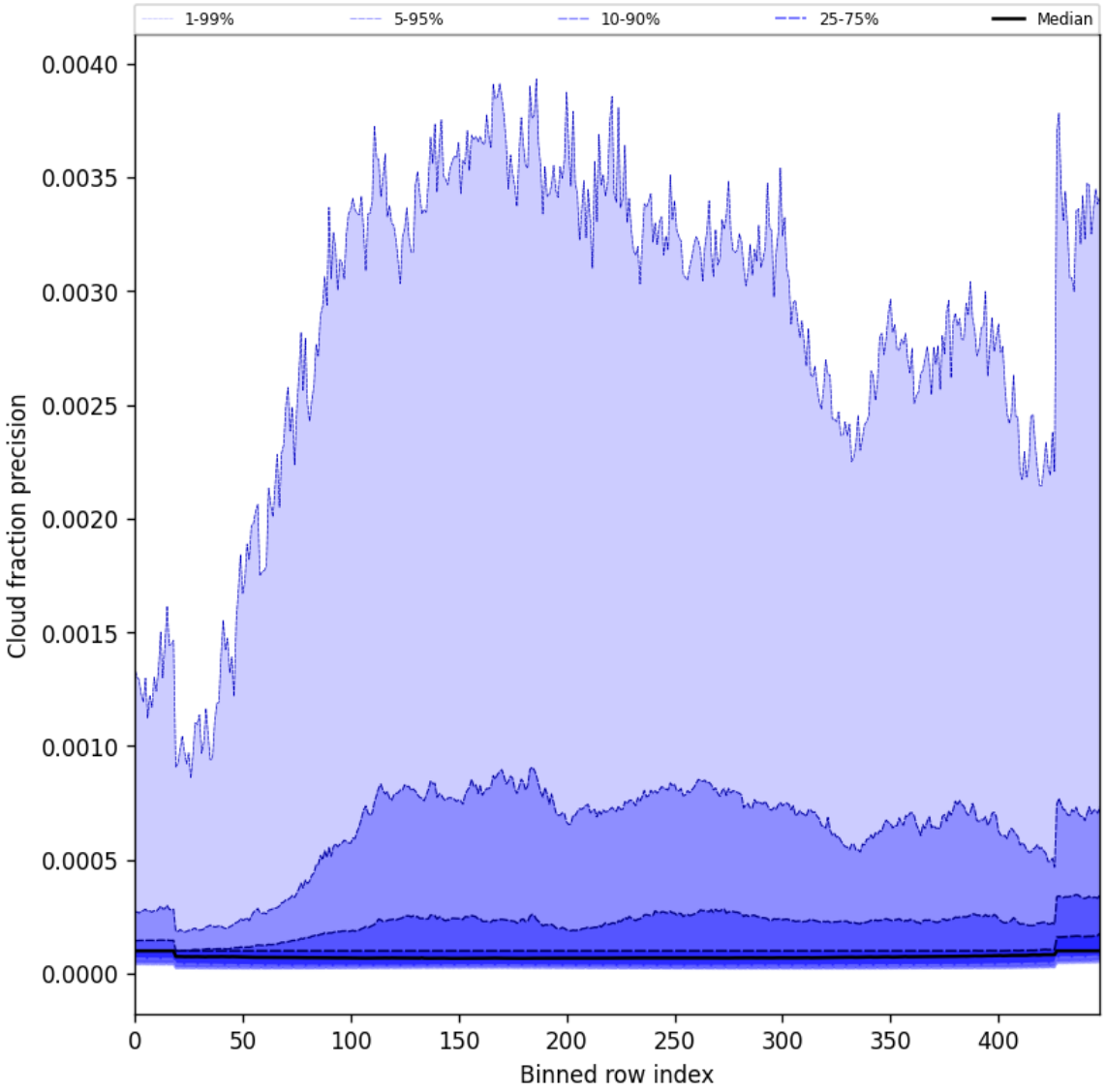

Figure 48: Along track statistics of “Cloud fraction precision” for 2025-03-01 to 2025-03-02

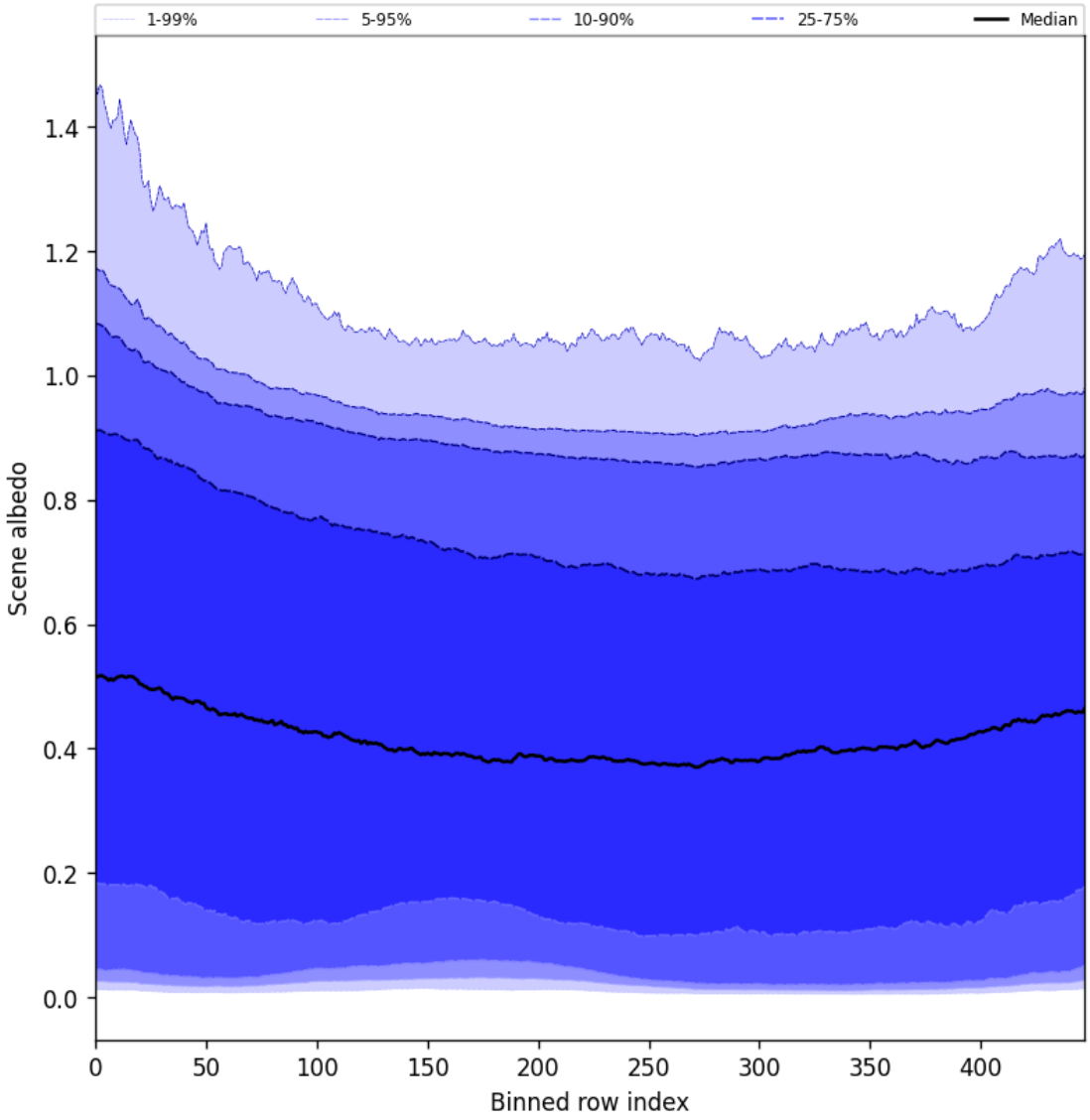

Figure 49: Along track statistics of “Scene albedo” for 2025-03-01 to 2025-03-02

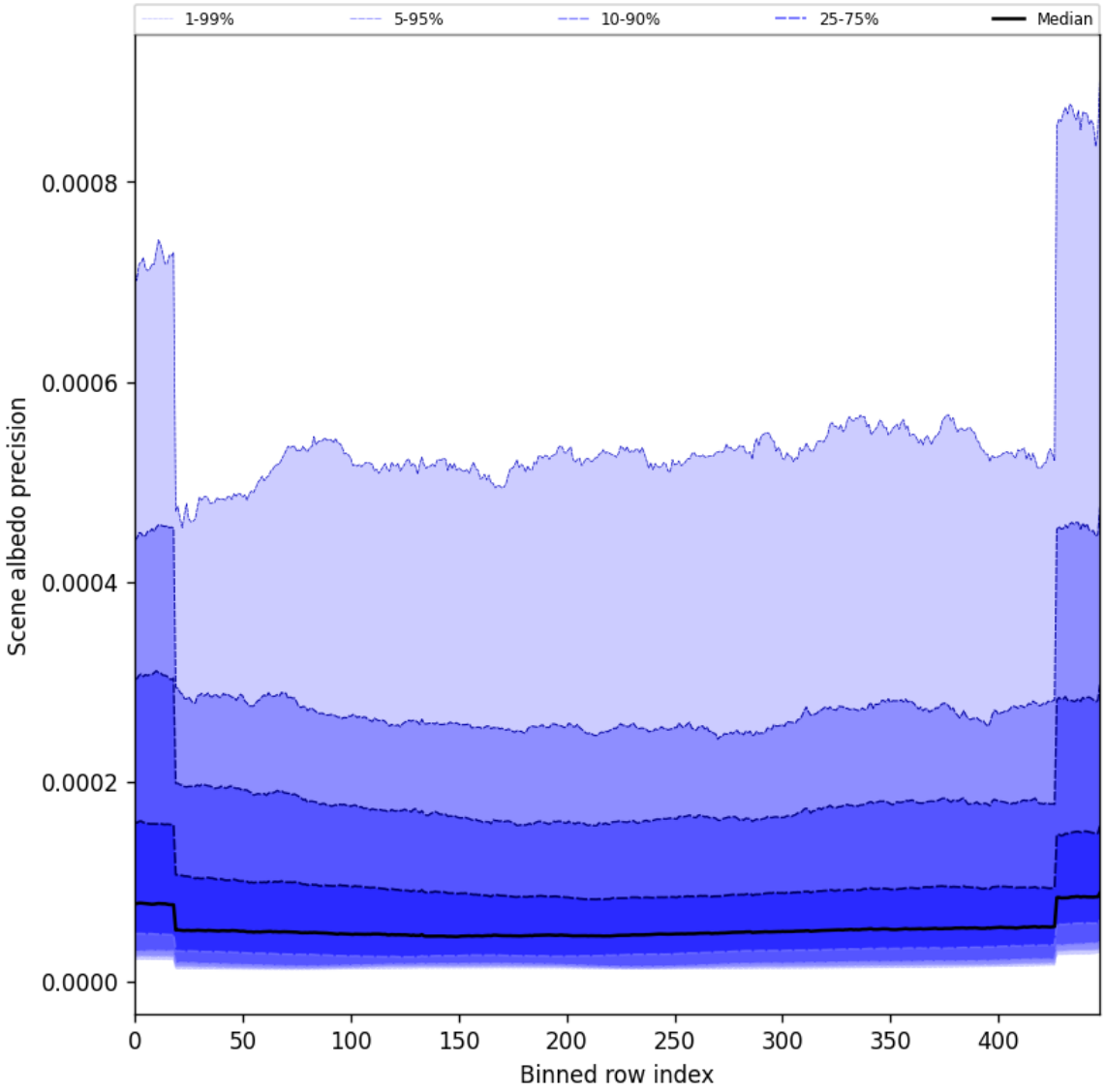

Figure 50: Along track statistics of “Scene albedo precision” for 2025-03-01 to 2025-03-02

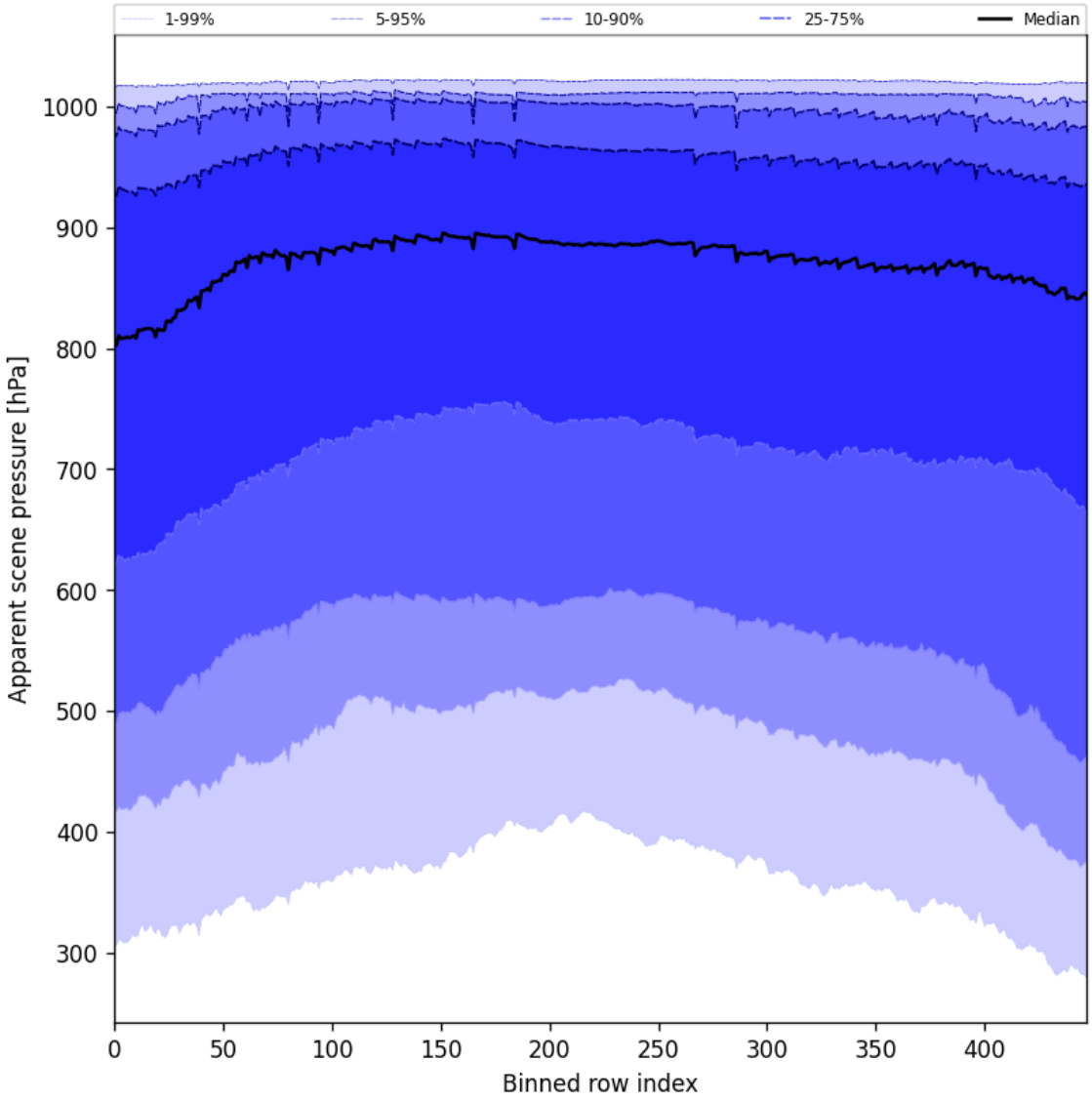

Figure 51: Along track statistics of “Apparent scene pressure” for 2025-03-01 to 2025-03-02

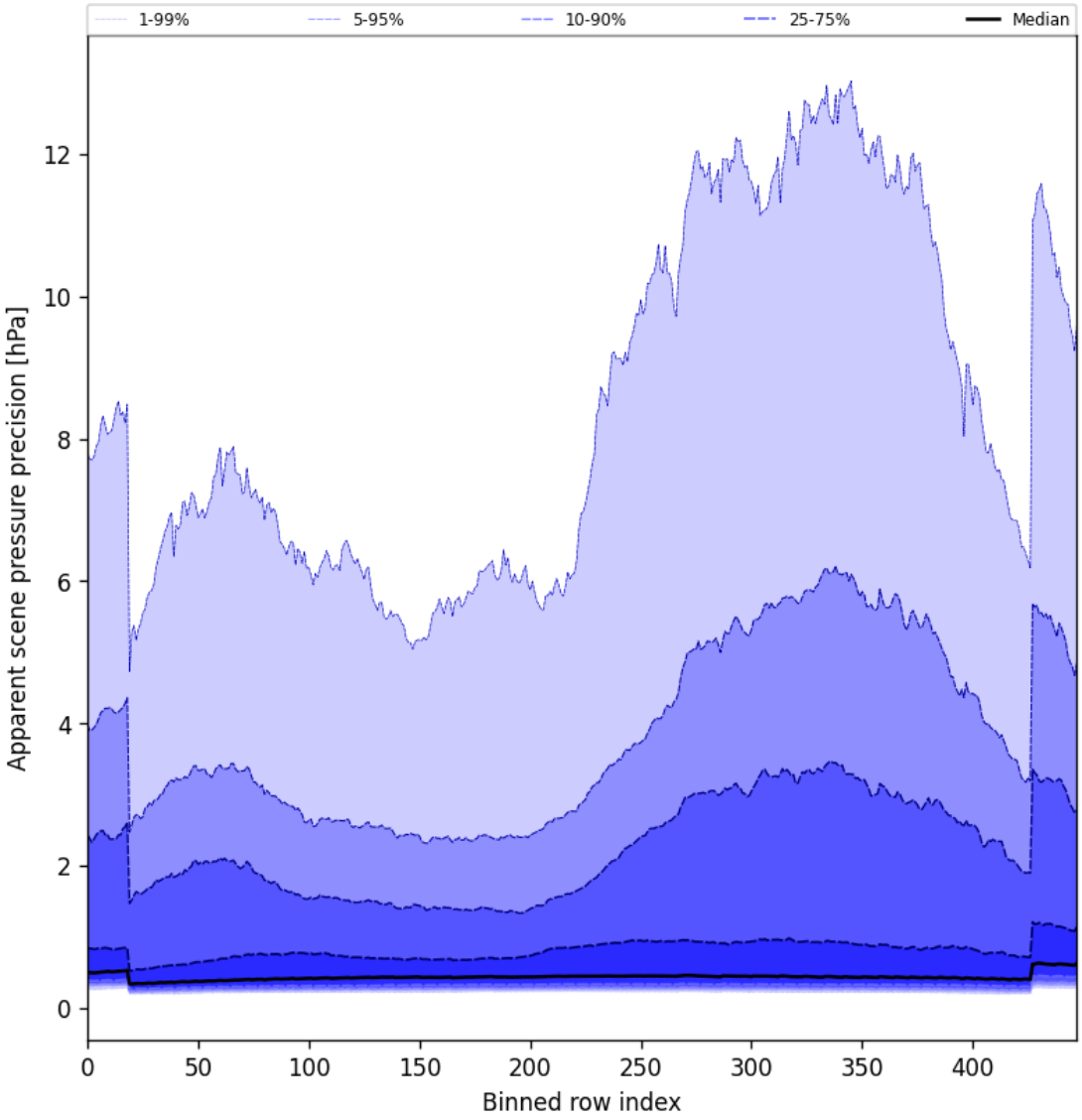

Figure 52: Along track statistics of “Apparent scene pressure precision” for 2025-03-01 to 2025-03-02

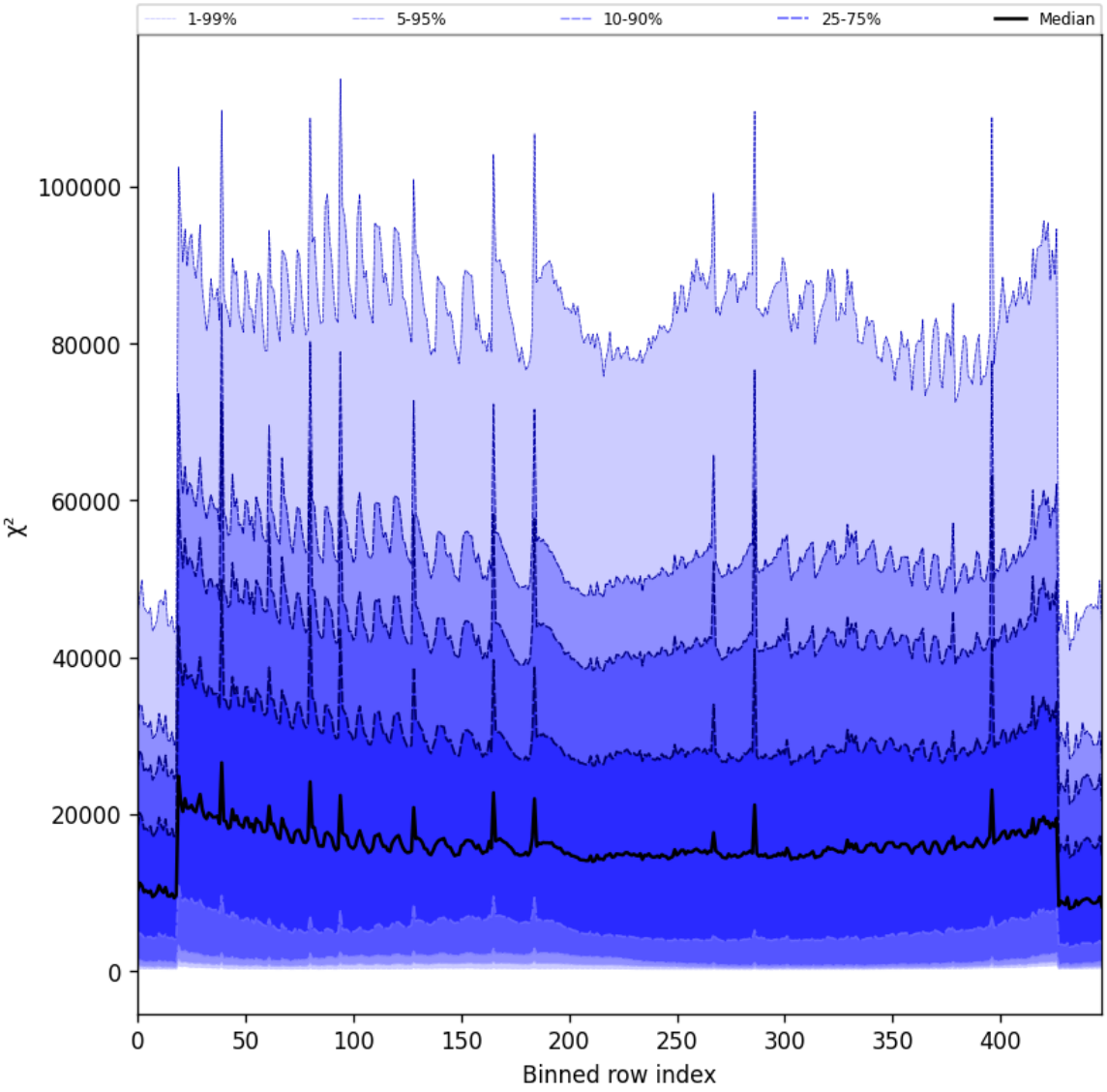

Figure 53: Along track statistics of "χ^2" for 2025-03-01 to 2025-03-02

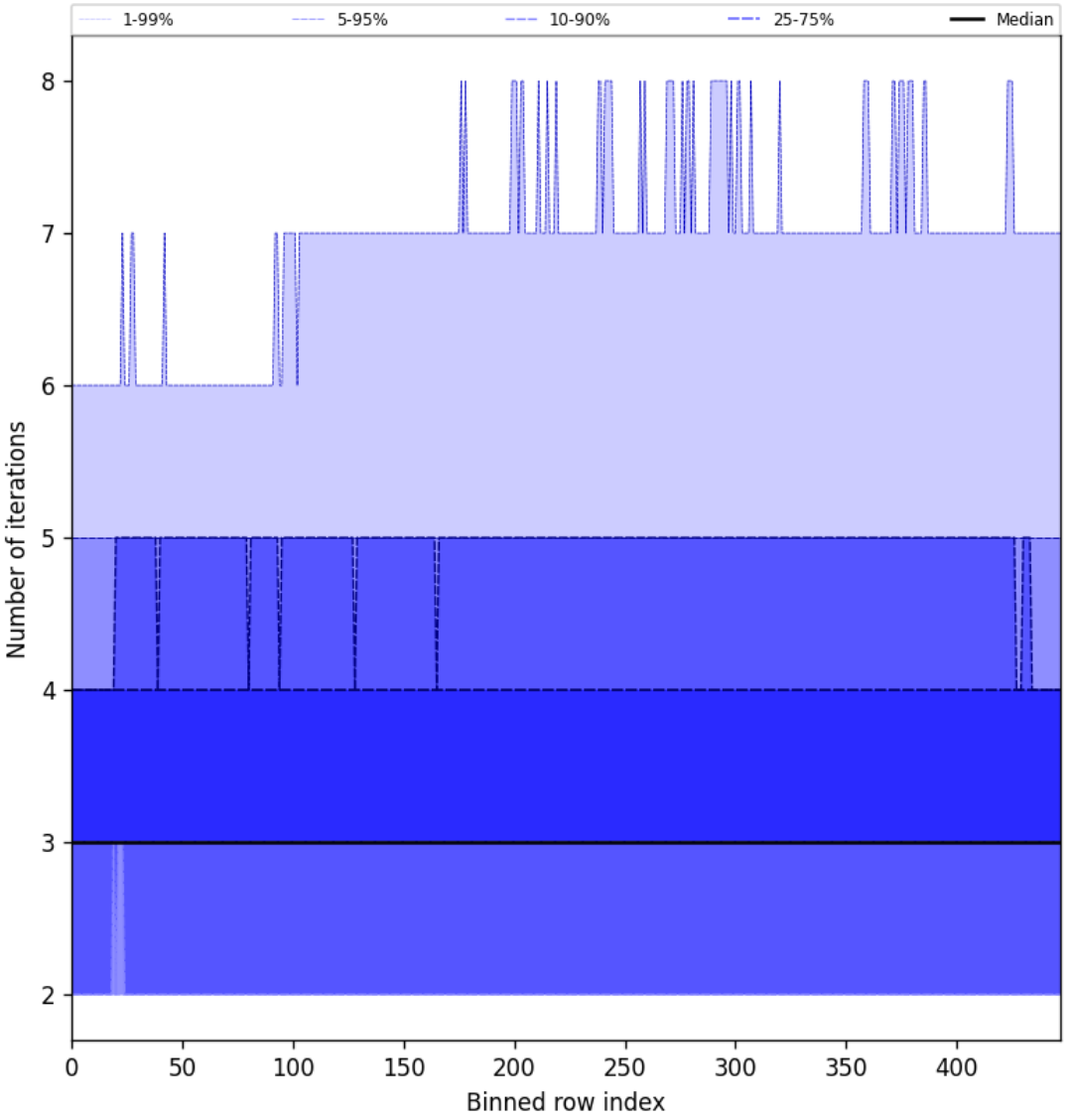

Figure 54: Along track statistics of “Number of iterations” for 2025-03-01 to 2025-03-02

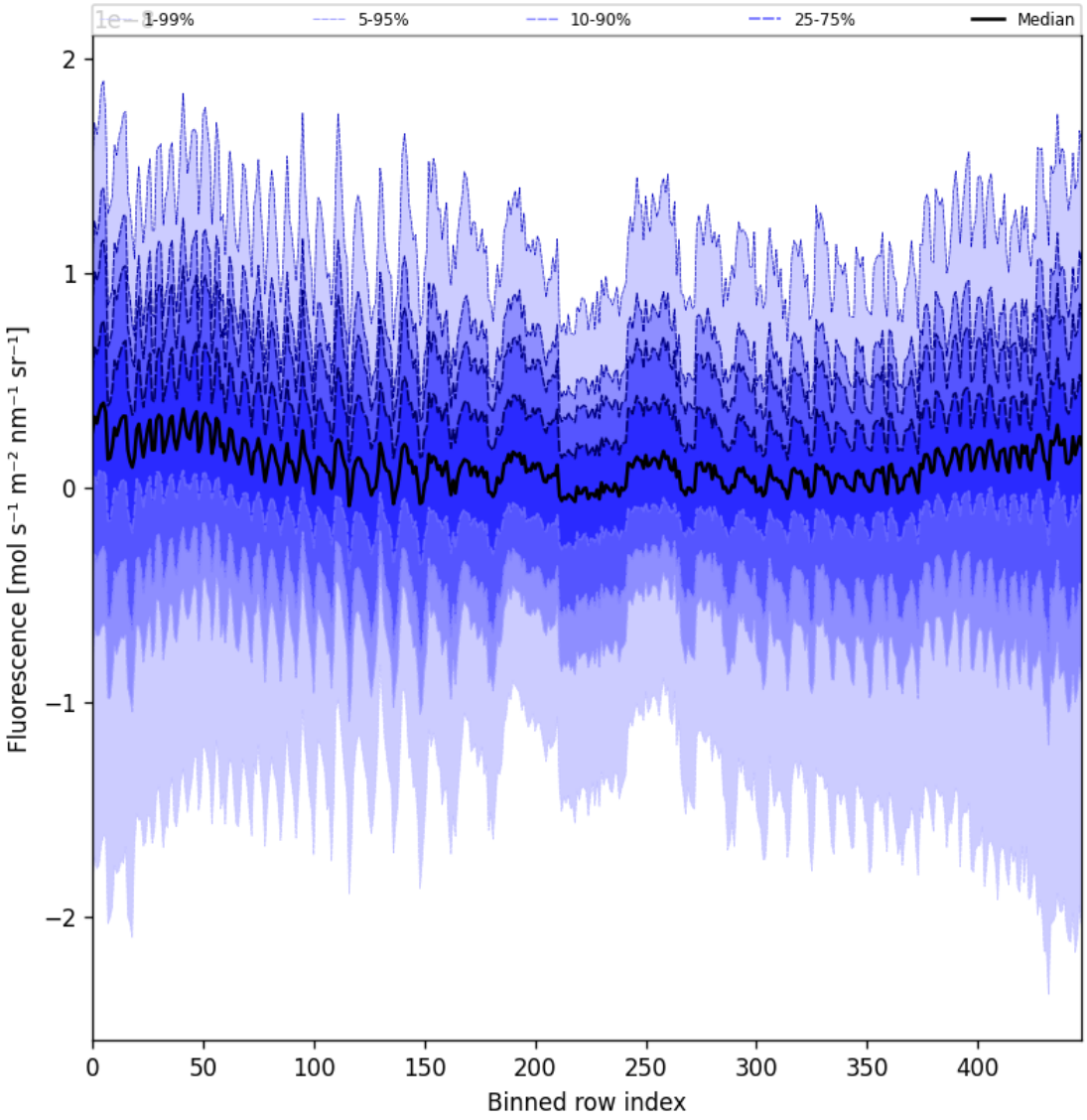

Figure 55: Along track statistics of “Fluorescence” for 2025-03-01 to 2025-03-02

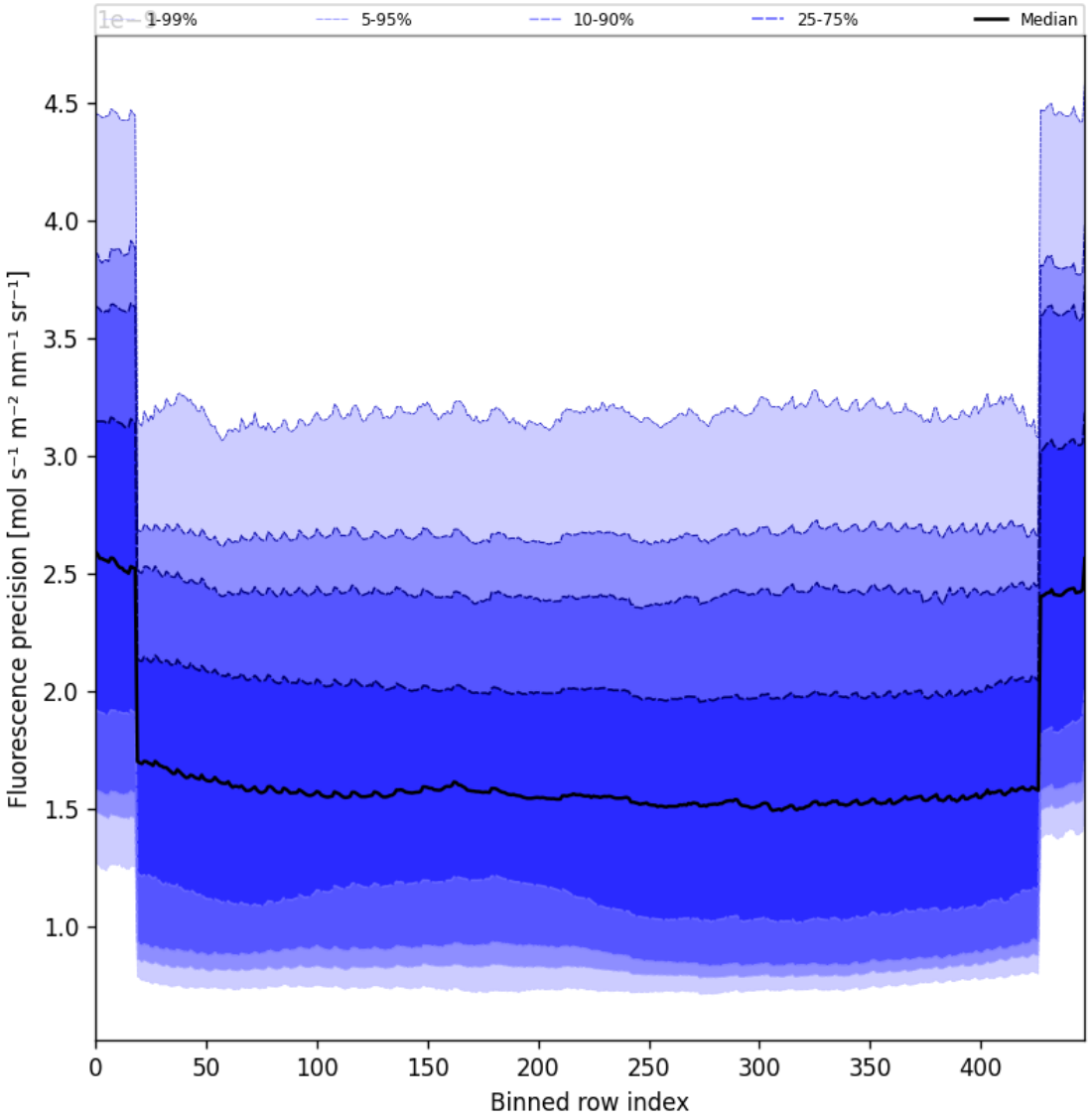

Figure 56: Along track statistics of “Fluorescence precision” for 2025-03-01 to 2025-03-02

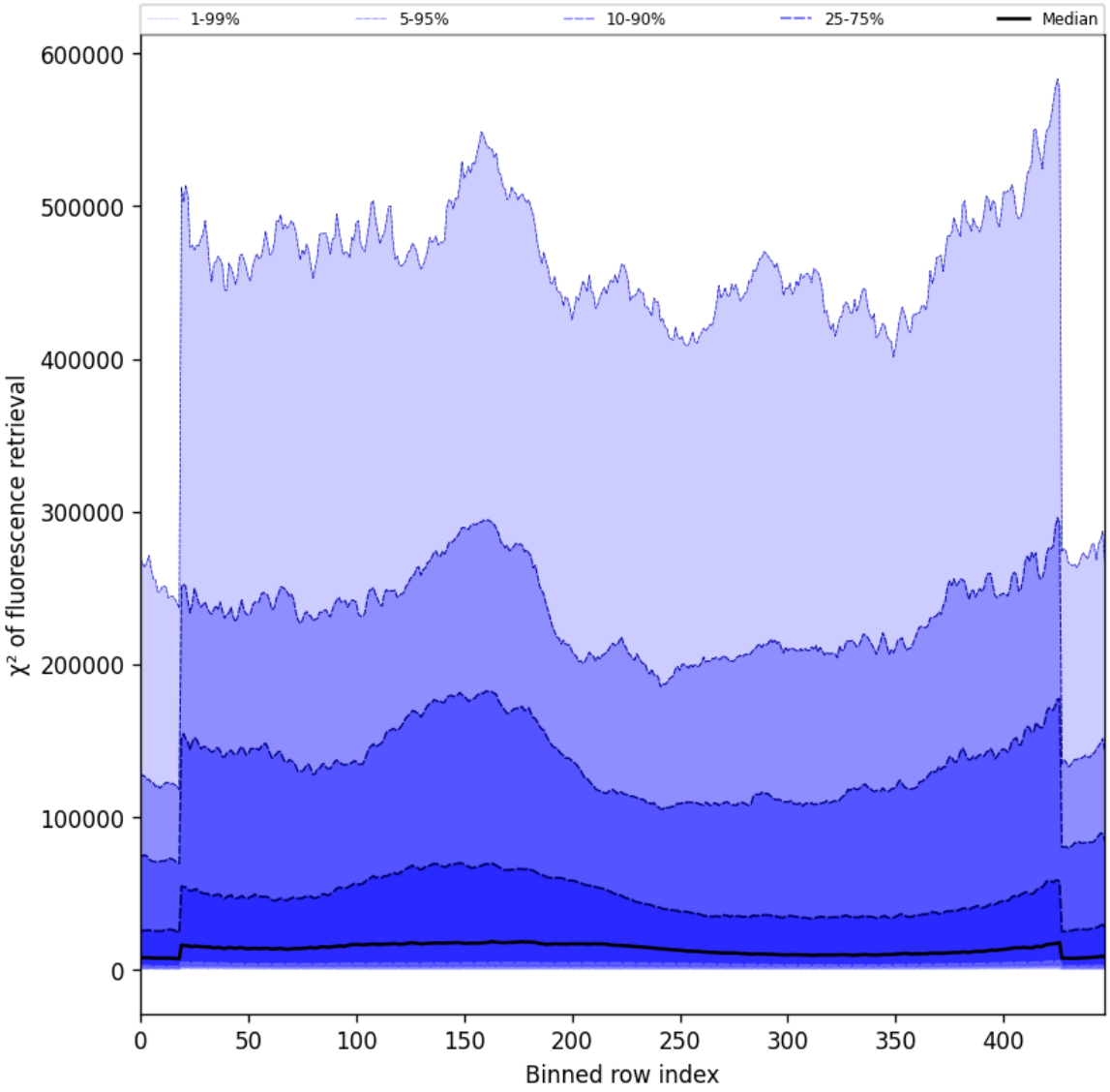

Figure 57: Along track statistics of "χ^2 of fluorescence retrieval" for 2025-03-01 to 2025-03-02

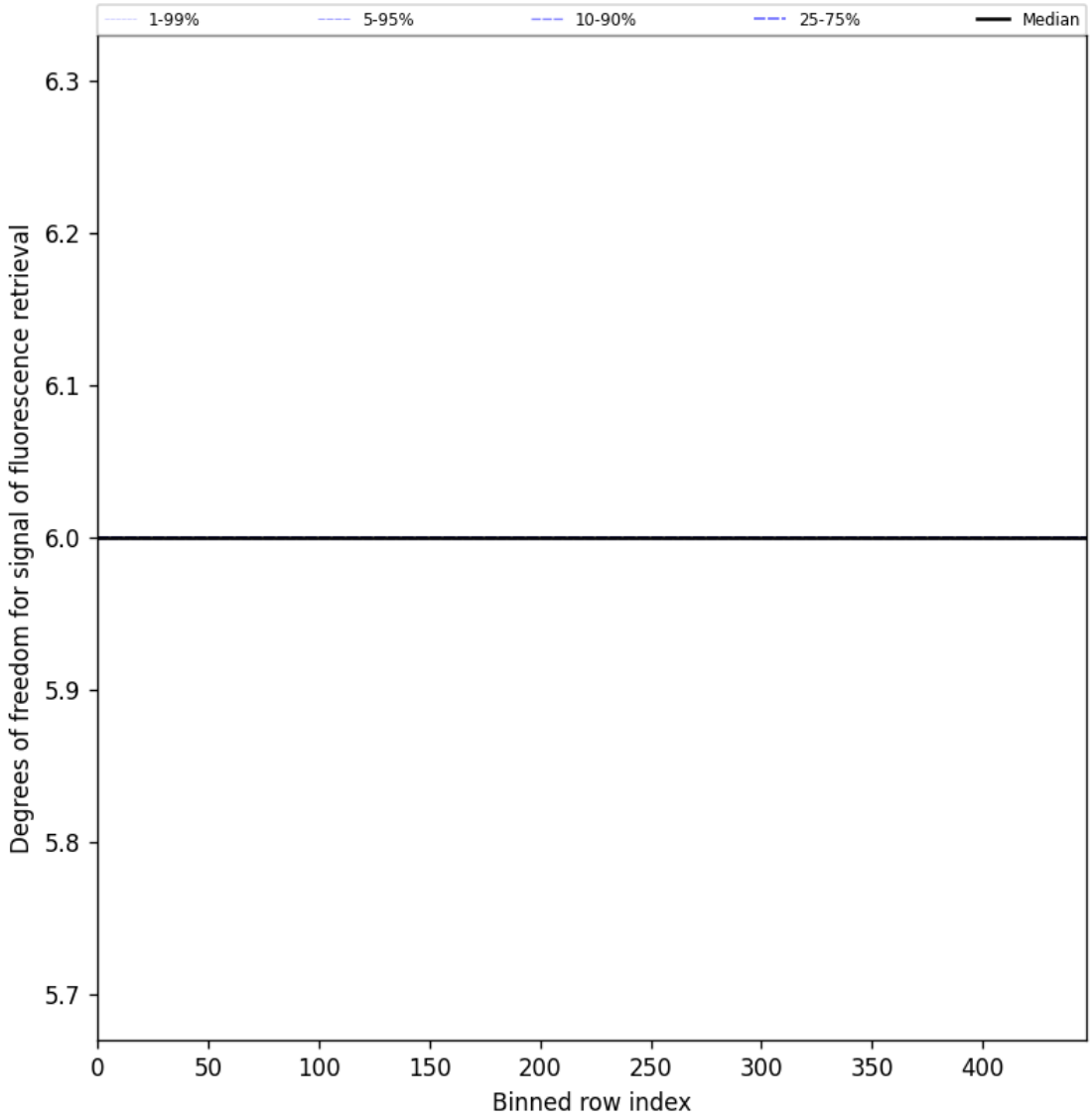

Figure 58: Along track statistics of “Degrees of freedom for signal of fluorescence retrieval” for 2025-03-01 to 2025-03-02

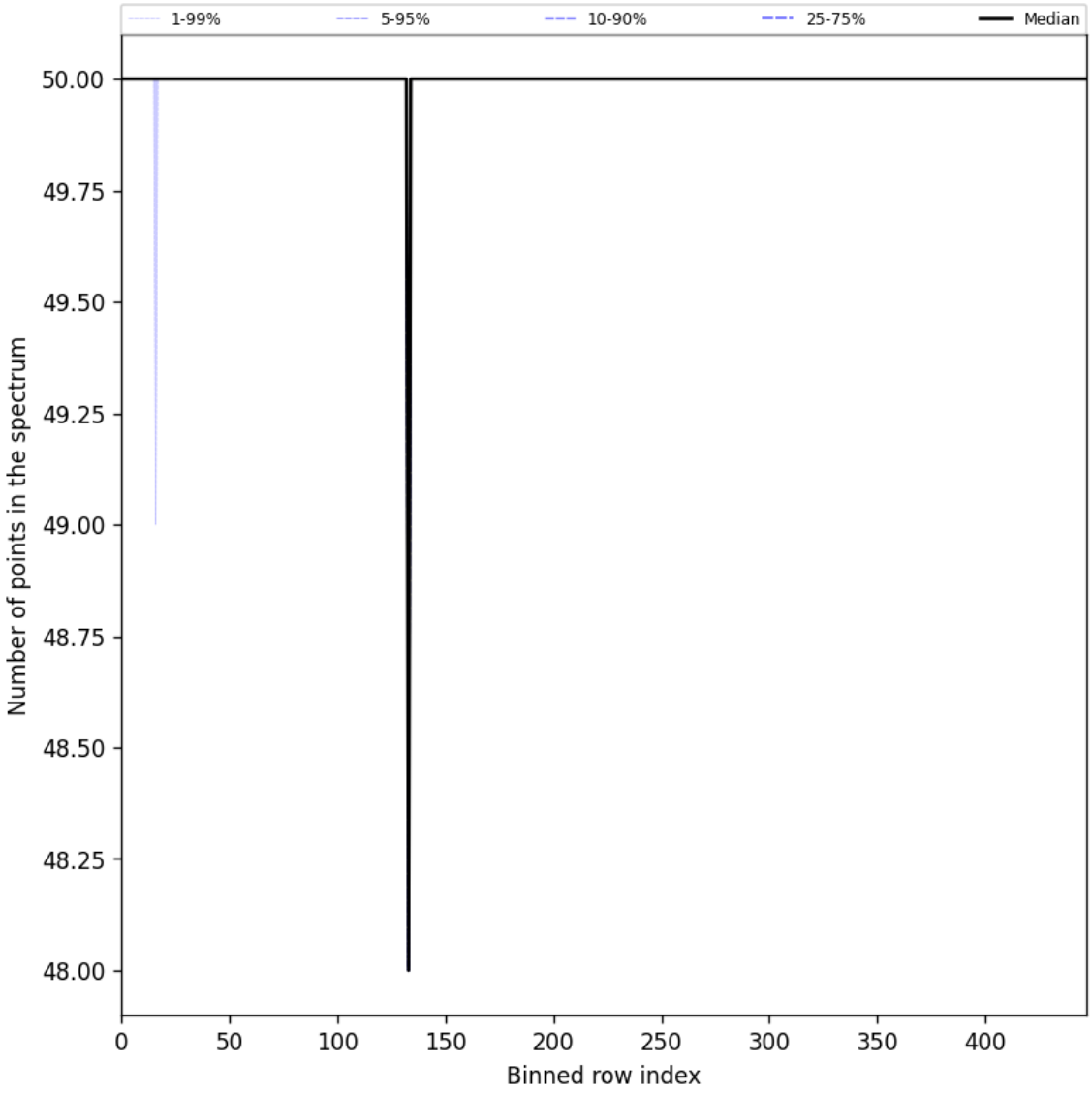

Figure 59: Along track statistics of “Number of points in the spectrum” for 2025-03-01 to 2025-03-02

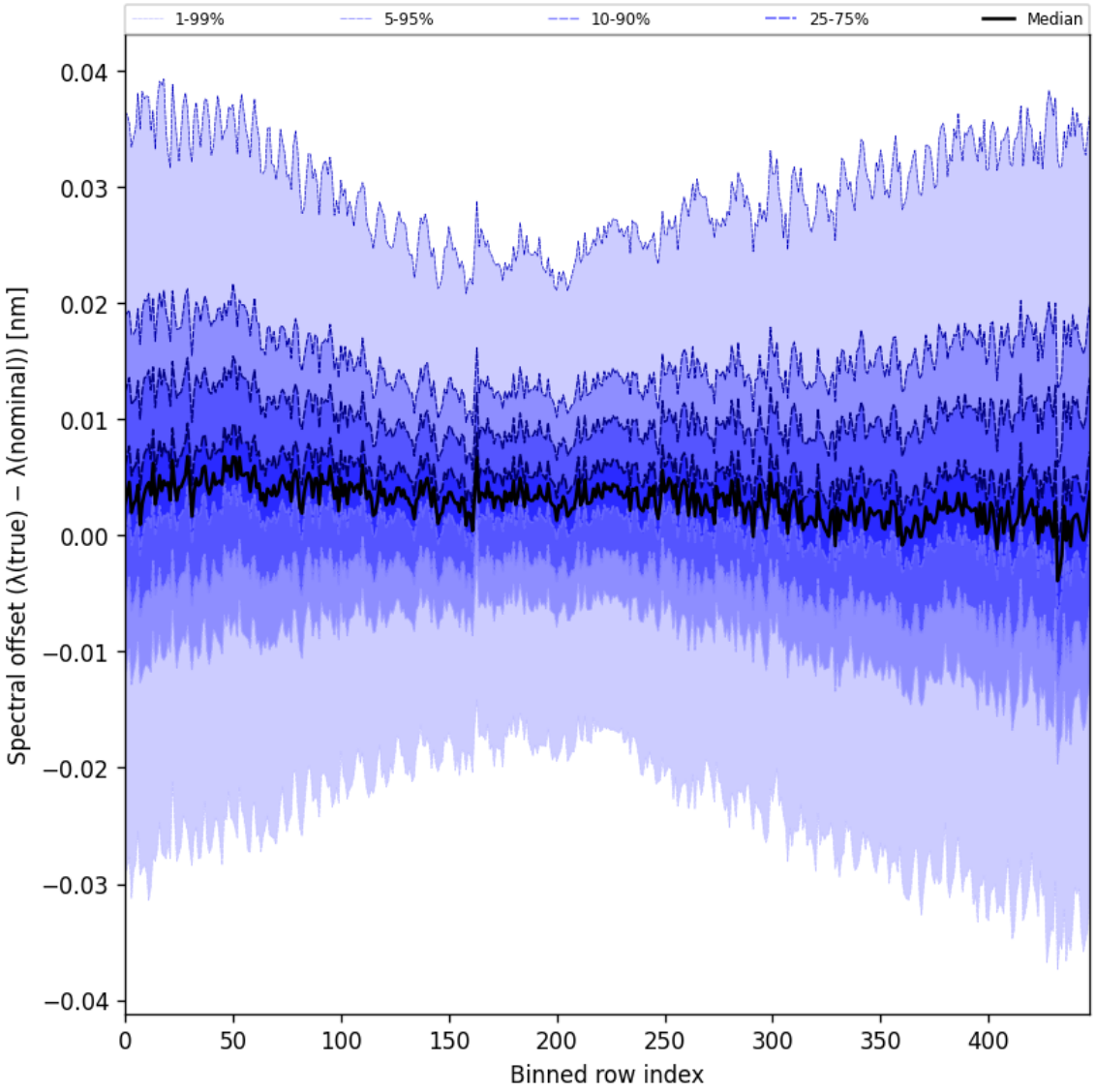

Figure 60: Along track statistics of "Spectral offset ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)" for 2025-03-01 to 2025-03-02

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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