

PyCAMA report generated by tropl2-proc

tropl2-proc

2025-12-10 (02:50)

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]	0.688 ± 0.264	1285337	0.905	0.540	0.900	0.360	0.900
methane mixing ratio [parts per 10^9]	$(0.180 \pm 0.010) \times 10^4$	1285337	1.732×10^3	172	1.758×10^3	1.330×10^3	2.400×10^3
methane mixing ratio precision [parts per 10^9]	3.04 ± 1.78	1285337	1.30	1.63	2.74	0.701	30.6
methane mixing ratio bias corrected [parts per 10^9]	$(0.181 \pm 0.009) \times 10^4$	1285337	1.748×10^3	157	1.778×10^3	1.336×10^3	2.426×10^3
number of spectral points in retrieval [1]	798 ± 3	1285337	798	4.00	798	611	805
wavelength calibration offset SWIR [nm]	$(-1.104 \pm 0.241) \times 10^{-2}$	1285337	-1.100×10^{-2}	2.079×10^{-3}	-1.088×10^{-2}	-7.051×10^{-2}	4.602×10^{-2}
chi square SWIR [1]	$(0.233 \pm 92.178) \times 10^5$	1285337	2.550×10^3	7.494×10^3	3.779×10^3	1.549×10^3	7.922×10^9
chi square NIR [1]	$(0.156 \pm 34.385) \times 10^6$	1285337	2.250×10^3	1.237×10^4	1.450×10^4	200	3.546×10^{10}
degrees of freedom [1]	17.8 ± 0.5	1285337	17.2	0.930	17.6	17.0	20.9
number of iterations [1]	10.1 ± 1.1	1285337	10.2	0.0	10.00	10.00	30.0
fluorescence [$\text{mol s}^{-1} \text{ m}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$]	$(-2.247 \pm 3.368) \times 10^{-8}$	1285337	-9.900×10^{-9}	3.522×10^{-8}	-2.362×10^{-8}	-3.300×10^{-7}	1.054×10^{-6}
land fraction [1]	0.946 ± 0.213	1285337	0.995	0.0	1.000	0.0	1.000

Table 2: Percentile ranges

Variable	1 %	5 %	10 %	15.9 %	25 %	75 %	84.1 %	90 %	95 %	99 %
qa value [1]	0.360	0.360	0.360	0.360	0.360	0.900	0.900	0.900	0.900	0.900
methane mixing ratio [parts per 10^9]	1.642×10^3	1.675×10^3	1.694×10^3	1.710×10^3	1.723×10^3	1.895×10^3	1.925×10^3	1.939×10^3	1.953×10^3	1.971×10^3
methane mixing ratio precision [parts per 10^9]	1.10	1.22	1.33	1.53	1.94	3.57	4.11	4.78	6.11	10.2
methane mixing ratio bias corrected [parts per 10^9]	1.657×10^3	1.691×10^3	1.711×10^3	1.726×10^3	1.740×10^3	1.897×10^3	1.923×10^3	1.935×10^3	1.948×10^3	1.974×10^3
number of spectral points in retrieval [1]	792	793	794	795	796	800	801	802	803	804
wavelength calibration offset SWIR [nm]	-1.711×10^{-2}	-1.422×10^{-2}	-1.340×10^{-2}	-1.279×10^{-2}	-1.208×10^{-2}	-9.999×10^{-3}	-9.574×10^{-3}	-9.124×10^{-3}	-8.205×10^{-3}	-4.572×10^{-3}
chi square SWIR [1]	1.978×10^3	2.194×10^3	2.346×10^3	2.495×10^3	2.727×10^3	1.022×10^4	2.121×10^4	3.270×10^4	4.592×10^4	7.176×10^4
chi square NIR [1]	1.452×10^3	2.274×10^3	3.159×10^3	4.388×10^3	7.577×10^3	1.995×10^4	2.224×10^4	2.406×10^4	2.620×10^4	3.086×10^4
degrees of freedom [1]	17.1	17.2	17.2	17.2	17.3	18.2	18.5	18.6	18.7	18.9
number of iterations [1]	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	12.0
fluorescence [$\text{mol s}^{-1} \text{ m}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$]	-1.058×10^{-7}	-7.058×10^{-8}	-5.781×10^{-8}	-4.952×10^{-8}	-4.120×10^{-8}	-5.987×10^{-9}	2.950×10^{-9}	1.347×10^{-8}	2.990×10^{-8}	6.988×10^{-8}
land fraction [1]	0.0	0.517	0.985	0.999	1.000	1.000	1.000	1.000	1.000	1.000

4

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]	0.647 ± 0.269	371118	0.540	0.900	0.360	0.900	0.360	0.900
methane mixing ratio [parts per 10^9]	$(0.192 \pm 0.003) \times 10^4$	371118	38.2	1.929×10^3	1.544×10^3	2.400×10^3	1.908×10^3	1.946×10^3
methane mixing ratio precision [parts per 10^9]	2.62 ± 2.28	371118	1.27	1.82	0.928	30.6	1.40	2.67
methane mixing ratio bias corrected [parts per 10^9]	$(0.192 \pm 0.003) \times 10^4$	371118	33.5	1.926×10^3	1.535×10^3	2.426×10^3	1.908×10^3	1.942×10^3
number of spectral points in retrieval [1]	798 ± 3	371118	4.00	798	773	805	796	800
wavelength calibration offset SWIR [nm]	$(-1.112 \pm 0.324) \times 10^{-2}$	371118	2.695×10^{-3}	-1.098×10^{-2}	-7.051×10^{-2}	4.602×10^{-2}	-1.252×10^{-2}	-9.821×10^{-3}
chi square SWIR [1]	$(0.228 \pm 0.296) \times 10^5$	371118	2.670×10^4	1.260×10^4	1.736×10^3	8.373×10^6	6.712×10^3	3.341×10^4
chi square NIR [1]	$(0.200 \pm 22.684) \times 10^6$	371118	6.947×10^3	5.100×10^3	200	1.302×10^{10}	3.058×10^3	1.000×10^4
degrees of freedom [1]	18.3 ± 0.4	371118	0.625	18.3	17.0	20.9	18.0	18.6
number of iterations [1]	10.2 ± 1.5	371118	0.0	10.00	10.00	30.0	10.00	10.00
fluorescence [$\text{mol s}^{-1} \text{ m}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$]	$(-6.805 \pm 22.566) \times 10^{-9}$	371118	1.805×10^{-8}	-9.257×10^{-9}	-3.300×10^{-7}	5.502×10^{-7}	-1.749×10^{-8}	5.663×10^{-10}
land fraction [1]	0.972 ± 0.115	371118	3.451×10^{-3}	1.000	0.0	1.000	0.997	1.000

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]	0.705 ± 0.259	914219	0.540	0.900	0.360	0.900	0.360	0.900
methane mixing ratio [parts per 10^9]	$(0.175 \pm 0.006) \times 10^4$	914219	54.1	1.736×10^3	1.330×10^3	2.130×10^3	1.713×10^3	1.767×10^3
methane mixing ratio precision [parts per 10^9]	3.21 ± 1.50	914219	1.28	2.97	0.701	30.1	2.41	3.68
methane mixing ratio bias corrected [parts per 10^9]	$(0.176 \pm 0.005) \times 10^4$	914219	57.8	1.754×10^3	1.336×10^3	2.171×10^3	1.730×10^3	1.787×10^3
number of spectral points in retrieval [1]	798 ± 3	914219	4.00	798	611	805	796	800
wavelength calibration offset SWIR [nm]	$(-1.100 \pm 0.198) \times 10^{-2}$	914219	1.881×10^{-3}	-1.085×10^{-2}	-6.445×10^{-2}	4.572×10^{-2}	-1.193×10^{-2}	-1.005×10^{-2}
chi square SWIR [1]	$(0.235 \pm 109.297) \times 10^5$	914219	1.880×10^3	3.145×10^3	1.549×10^3	7.922×10^9	2.568×10^3	4.448×10^3
chi square NIR [1]	$(0.139 \pm 38.124) \times 10^6$	914219	8.471×10^3	1.754×10^4	635	3.546×10^{10}	1.319×10^4	2.166×10^4
degrees of freedom [1]	17.6 ± 0.4	914219	0.524	17.4	17.0	20.7	17.2	17.8
number of iterations [1]	10.1 ± 0.8	914219	0.0	10.00	10.00	30.0	10.00	10.00
fluorescence [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(-2.883 \pm 3.533) \times 10^{-8}$	914219	3.367×10^{-8}	-3.270×10^{-8}	-3.269×10^{-7}	1.054×10^{-6}	-4.680×10^{-8}	-1.313×10^{-8}
land fraction [1]	0.936 ± 0.241	914219	0.0	1.000	0.0	1.000	1.000	1.000

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]	0.502 ± 0.238	55161	0.540	0.360	0.360	0.900	0.360	0.900
methane mixing ratio [parts per 10^9]	$(0.185 \pm 0.004) \times 10^4$	55161	35.4	1.856×10^3	1.518×10^3	1.956×10^3	1.838×10^3	1.873×10^3
methane mixing ratio precision [parts per 10^9]	2.41 ± 0.65	55161	0.957	2.39	0.843	6.87	1.91	2.86
methane mixing ratio bias corrected [parts per 10^9]	$(0.186 \pm 0.004) \times 10^4$	55161	35.5	1.863×10^3	1.524×10^3	1.964×10^3	1.845×10^3	1.880×10^3
number of spectral points in retrieval [1]	798 ± 3	55161	4.00	798	782	803	796	800
wavelength calibration offset SWIR [nm]	$(-9.996 \pm 1.732) \times 10^{-3}$	55161	1.261×10^{-3}	-9.981×10^{-3}	-2.697×10^{-2}	1.081×10^{-2}	-1.068×10^{-2}	-9.421×10^{-3}
chi square SWIR [1]	$(0.294 \pm 44.495) \times 10^6$	55161	4.361×10^3	6.660×10^3	2.523×10^3	7.922×10^9	5.160×10^3	9.521×10^3
chi square NIR [1]	$(0.555 \pm 33.434) \times 10^5$	55161	2.425×10^3	2.921×10^3	750	3.773×10^8	2.083×10^3	4.508×10^3
degrees of freedom [1]	18.1 ± 0.2	55161	0.258	18.1	17.1	20.3	18.0	18.3
number of iterations [1]	10.1 ± 0.9	55161	0.0	10.00	10.00	30.0	10.00	10.00
fluorescence [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(1.342 \pm 5.435) \times 10^{-8}$	55161	2.522×10^{-8}	-1.435×10^{-9}	-1.928×10^{-7}	1.054×10^{-6}	-1.038×10^{-8}	1.483×10^{-8}
land fraction [1]	0.0 ± 0.00	55161	0.0	0.0	0.0	0.0	0.0	0.0

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]	0.708 ± 0.258	1060878	0.540	0.900	0.360	0.900	0.360	0.900
methane mixing ratio [parts per 10^9]	$(0.178 \pm 0.009) \times 10^4$	1060878	141	1.744×10^3	1.330×10^3	2.286×10^3	1.717×10^3	1.858×10^3
methane mixing ratio precision [parts per 10^9]	3.02 ± 1.61	1060878	1.54	2.81	0.884	30.1	2.04	3.58
methane mixing ratio bias corrected [parts per 10^9]	$(0.179 \pm 0.008) \times 10^4$	1060878	118	1.762×10^3	1.336×10^3	2.326×10^3	1.734×10^3	1.852×10^3
number of spectral points in retrieval [1]	798 ± 3	1060878	4.00	798	763	805	796	800
wavelength calibration offset SWIR [nm]	$(-1.110 \pm 0.194) \times 10^{-2}$	1060878	1.985×10^{-3}	-1.094×10^{-2}	-5.109×10^{-2}	3.159×10^{-2}	-1.208×10^{-2}	-1.010×10^{-2}
chi square SWIR [1]	$(0.112 \pm 0.263) \times 10^5$	1060878	5.439×10^3	3.412×10^3	1.549×10^3	6.881×10^6	2.641×10^3	8.080×10^3
chi square NIR [1]	$(0.172 \pm 37.743) \times 10^6$	1060878	9.200×10^3	1.629×10^4	256	3.546×10^{10}	1.168×10^4	2.088×10^4
degrees of freedom [1]	17.7 ± 0.5	1060878	0.841	17.5	17.0	20.9	17.3	18.1
number of iterations [1]	10.1 ± 1.0	1060878	0.0	10.00	10.00	30.0	10.00	10.00
fluorescence [$\text{mol s}^{-1} \text{m}^{-2} \text{nm}^{-1} \text{sr}^{-1}$]	$(-2.690 \pm 3.177) \times 10^{-8}$	1060878	3.492×10^{-8}	-2.969×10^{-8}	-3.300×10^{-7}	5.721×10^{-7}	-4.455×10^{-8}	-9.637×10^{-9}
land fraction [1]	1.000 ± 0.000	1060878	0.0	1.000	1.000	1.000	1.000	1.000

3 Granule outlines

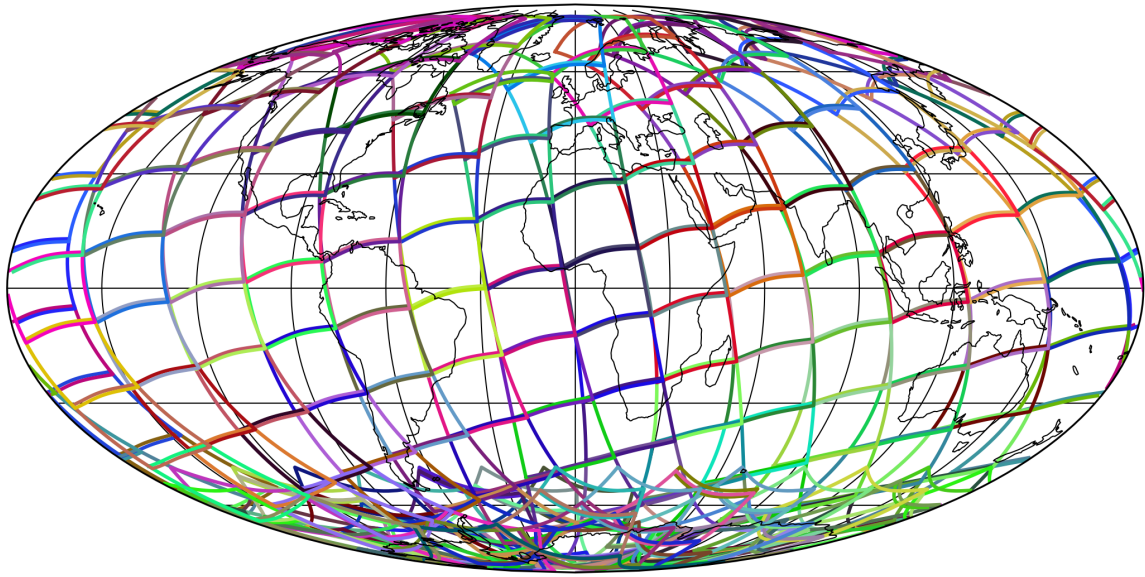


Figure 1: Outline of the granules.

4 Input data monitoring

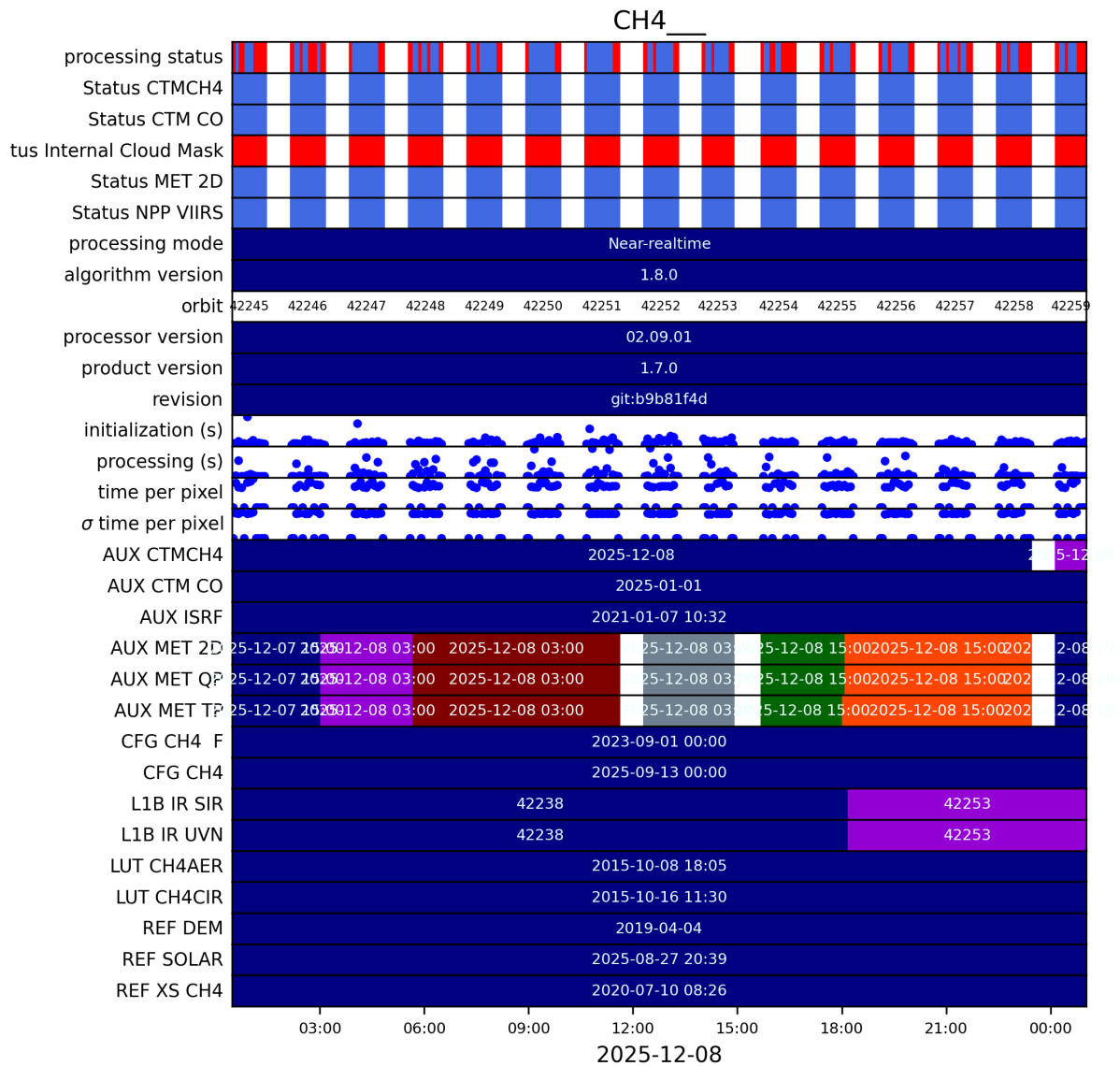


Figure 2: Input data per granule

5 Warnings and errors

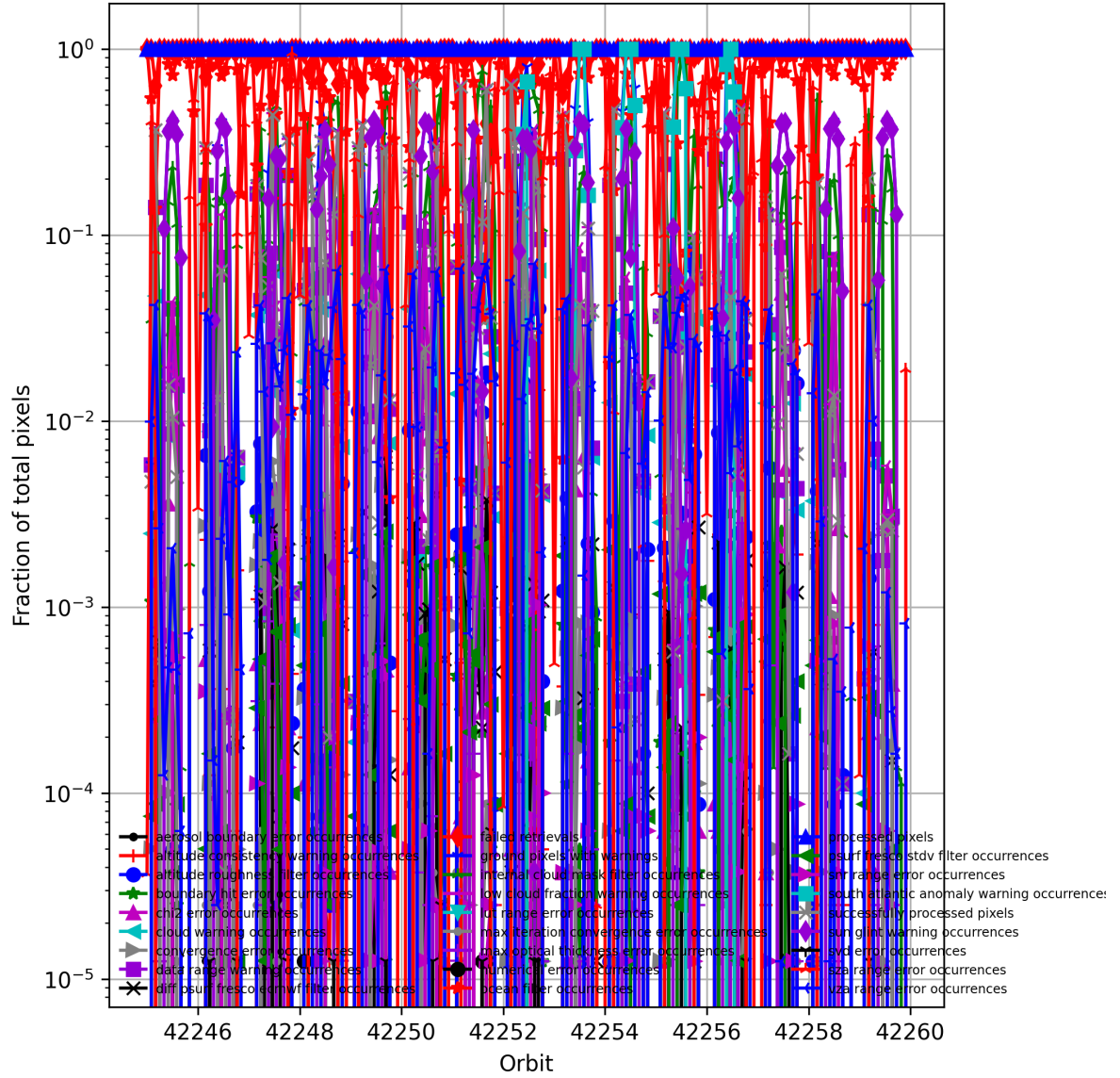


Figure 3: Fraction of pixels with specific warnings and errors during processing

6 World maps

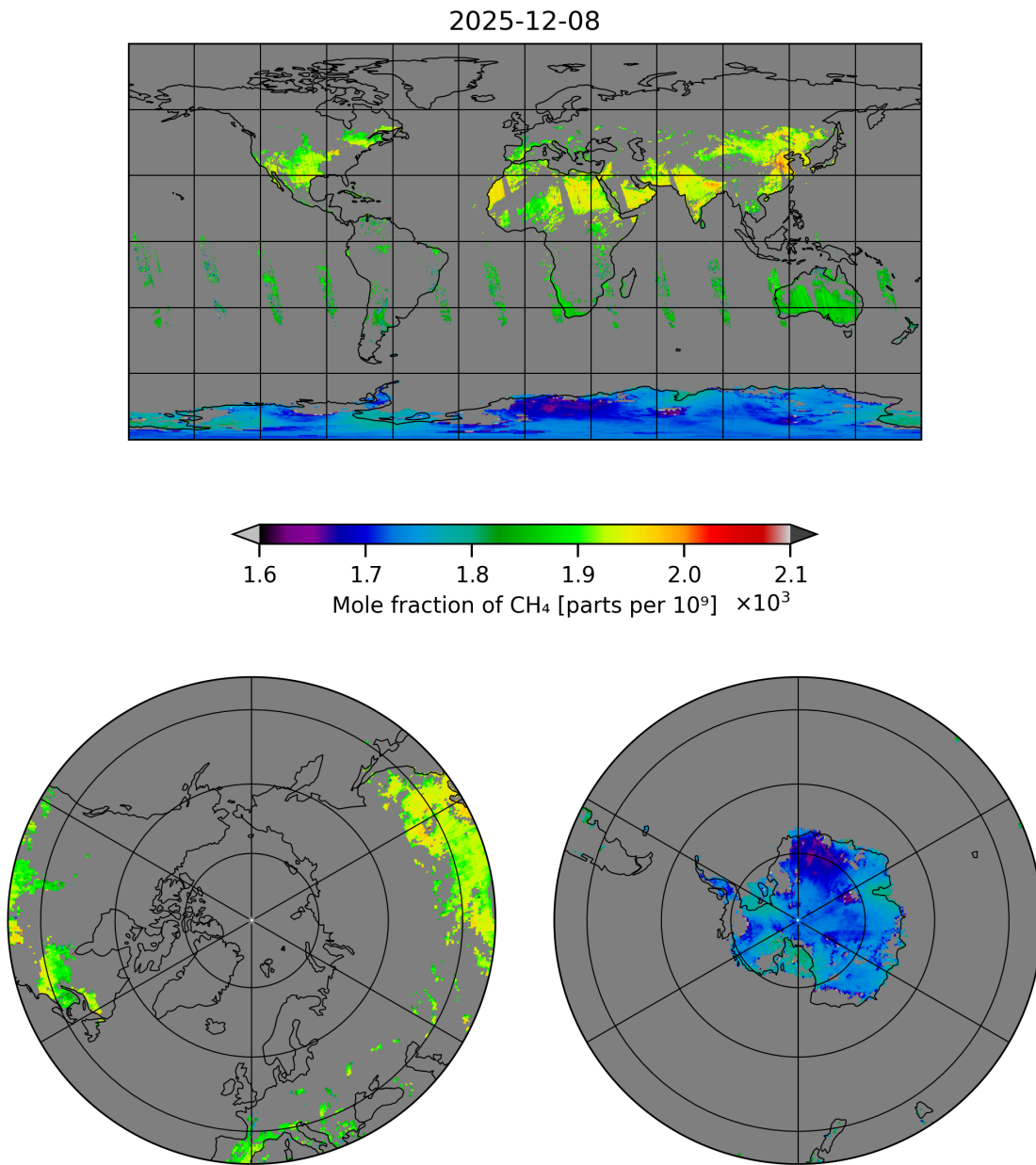


Figure 4: Map of “Mole fraction of CH_4 ” for 2025-12-08 to 2025-12-09

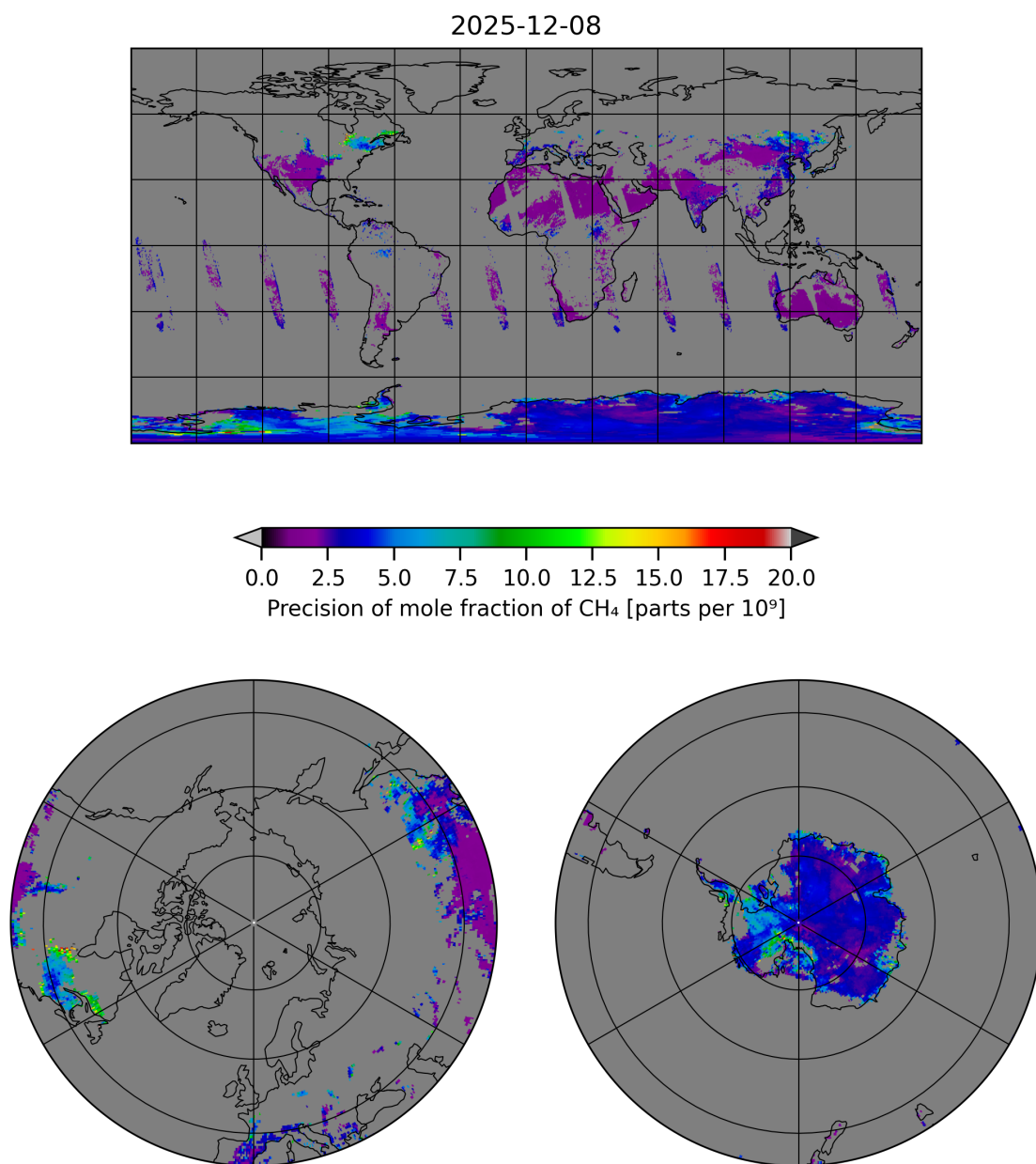


Figure 5: Map of “Precision of mole fraction of CH₄” for 2025-12-08 to 2025-12-09

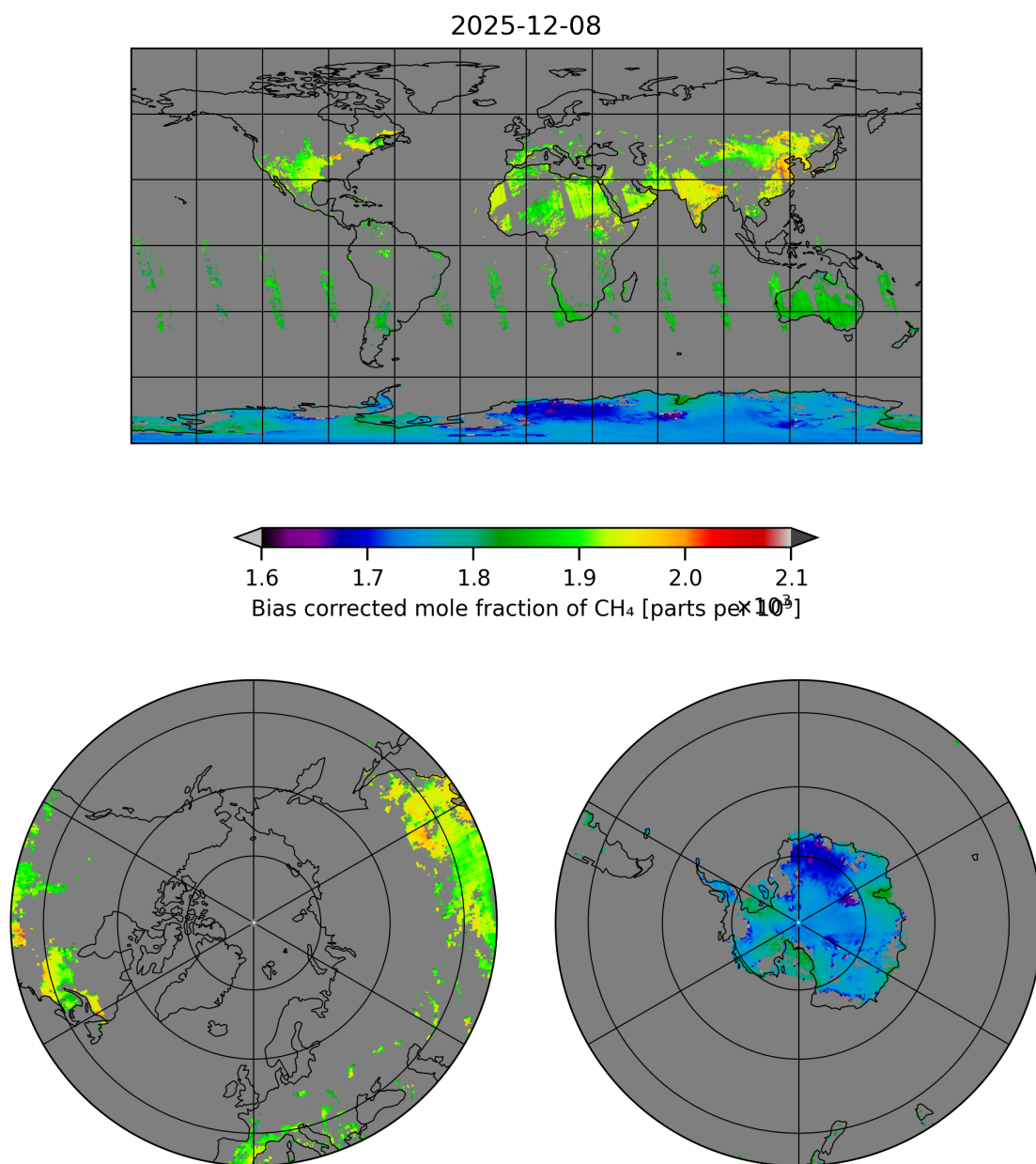


Figure 6: Map of “Bias corrected mole fraction of CH_4 ” for 2025-12-08 to 2025-12-09

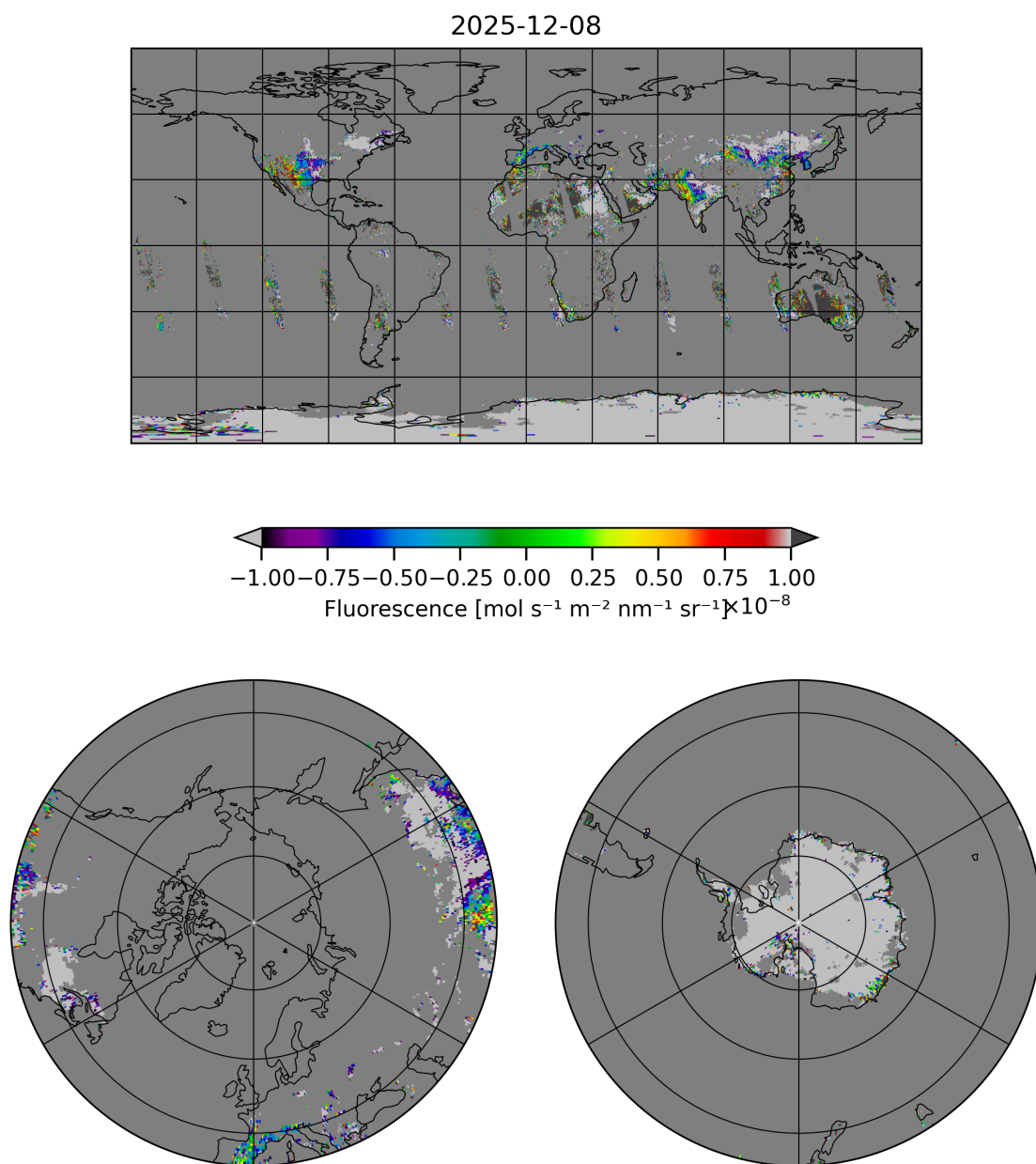


Figure 7: Map of “Fluorescence” for 2025-12-08 to 2025-12-09

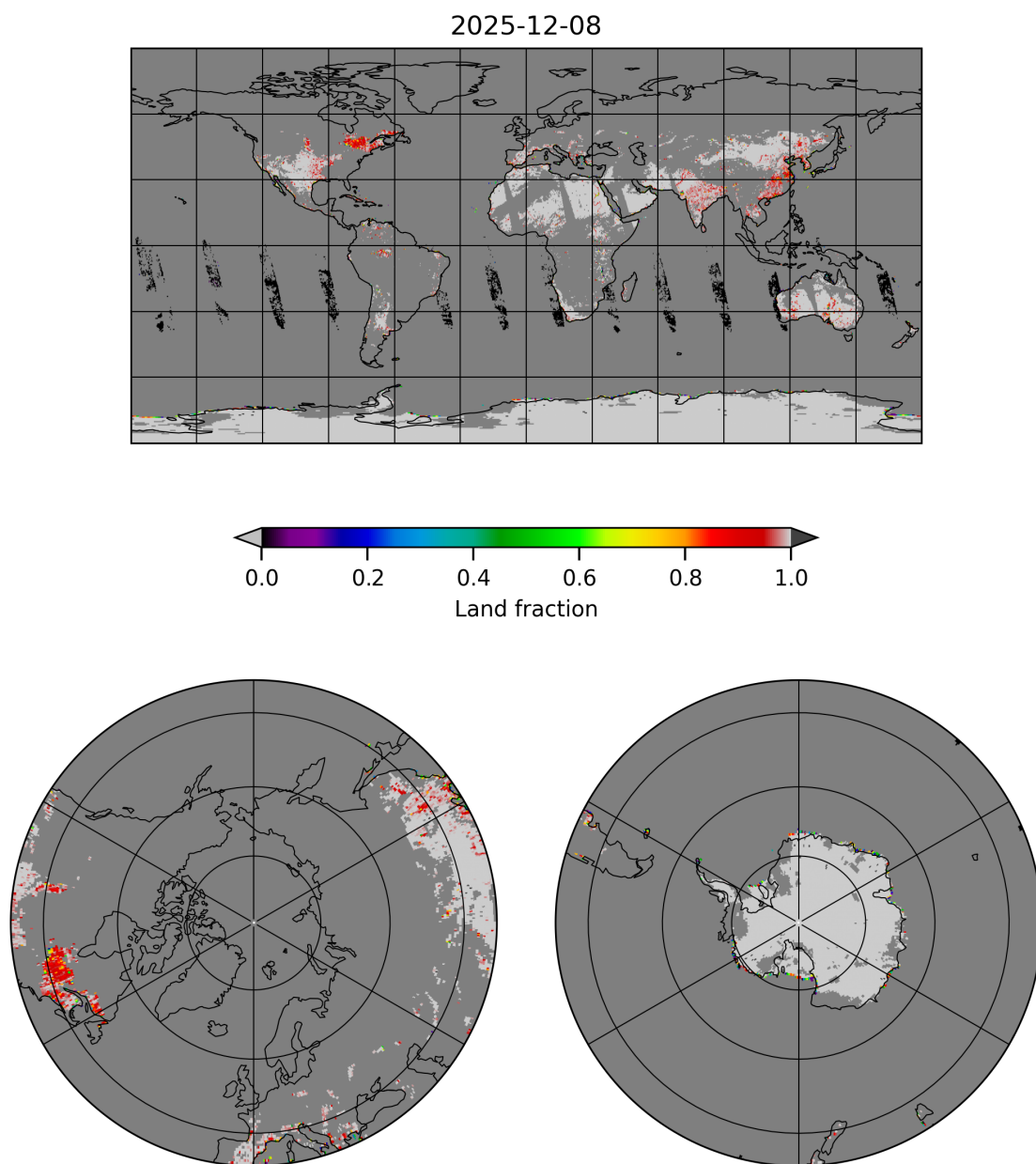


Figure 8: Map of “Land fraction” for 2025-12-08 to 2025-12-09

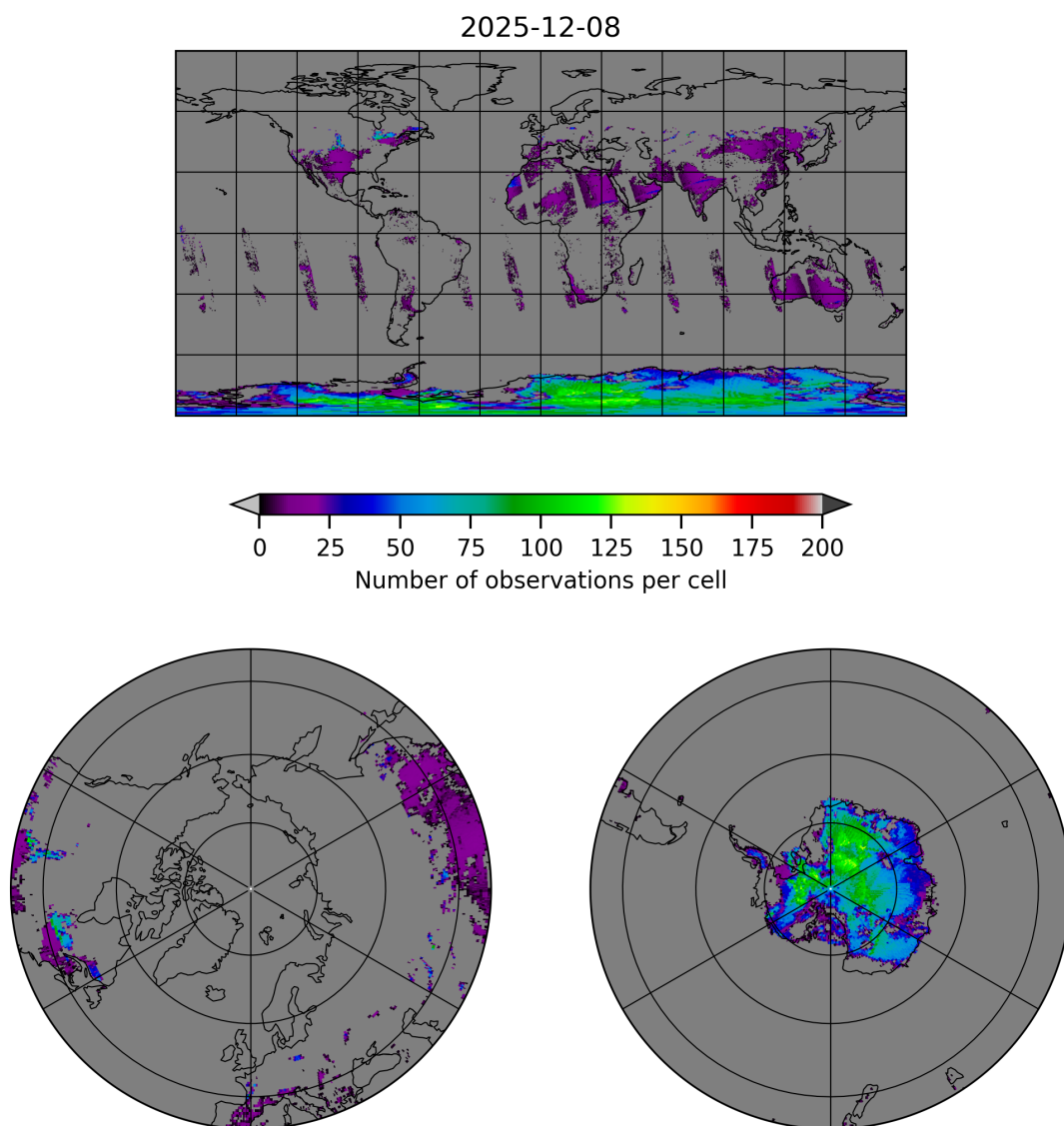


Figure 9: Map of the number of observations for 2025-12-08 to 2025-12-09

7 Zonal average

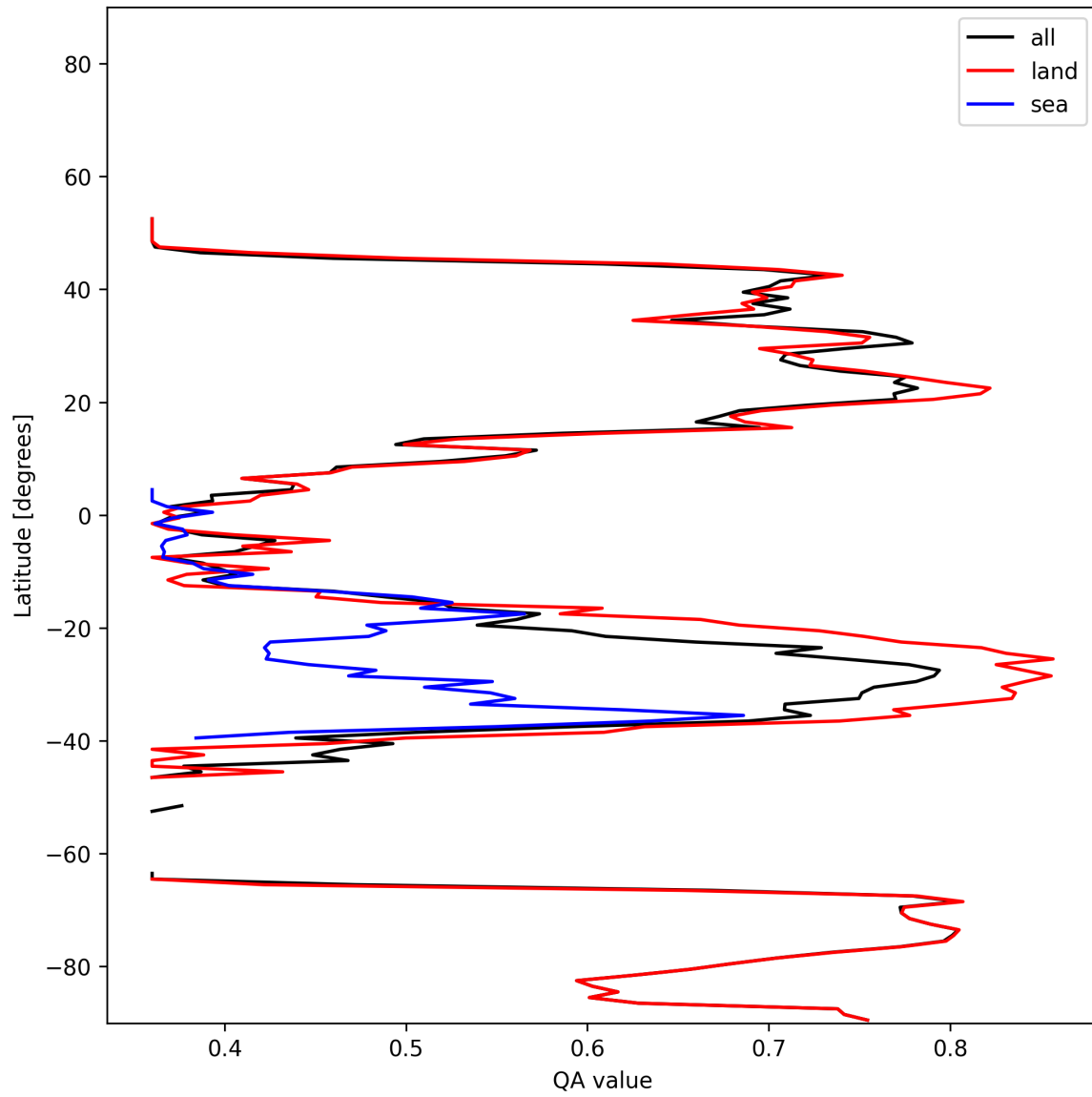


Figure 10: Zonal average of “QA value” for 2025-12-08 to 2025-12-09.

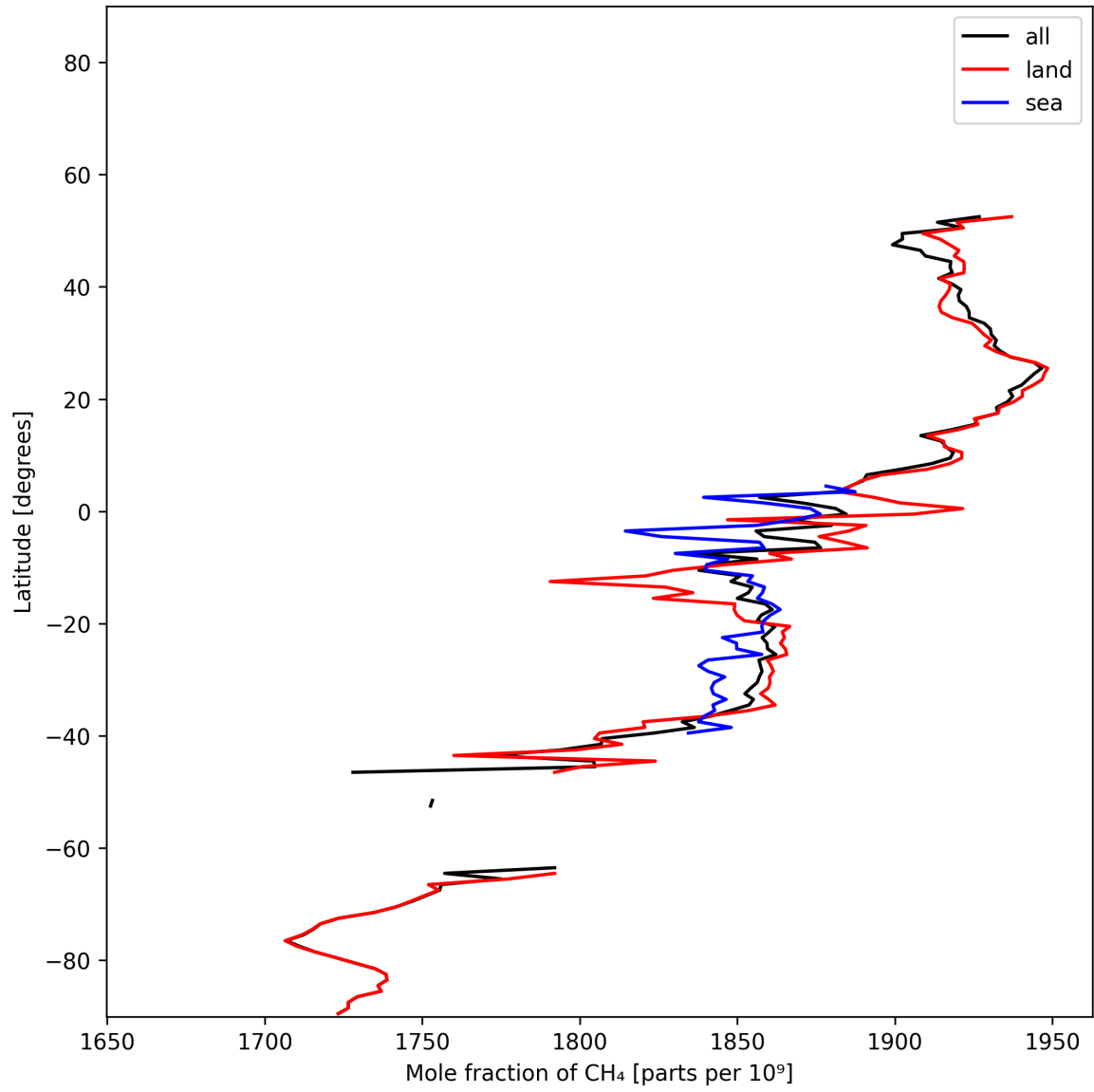


Figure 11: Zonal average of “Mole fraction of CH_4 ” for 2025-12-08 to 2025-12-09.

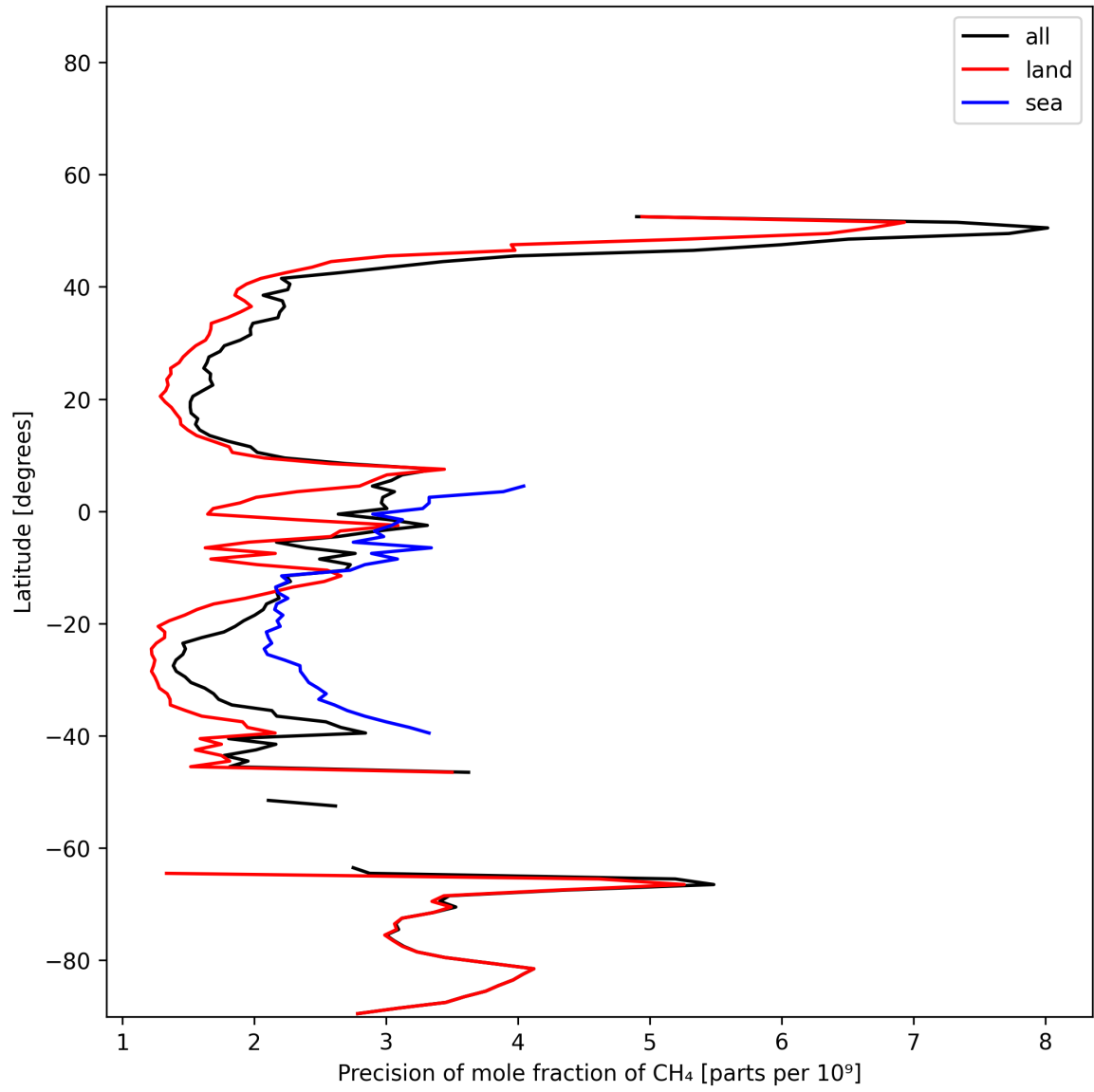


Figure 12: Zonal average of “Precision of mole fraction of CH₄” for 2025-12-08 to 2025-12-09.

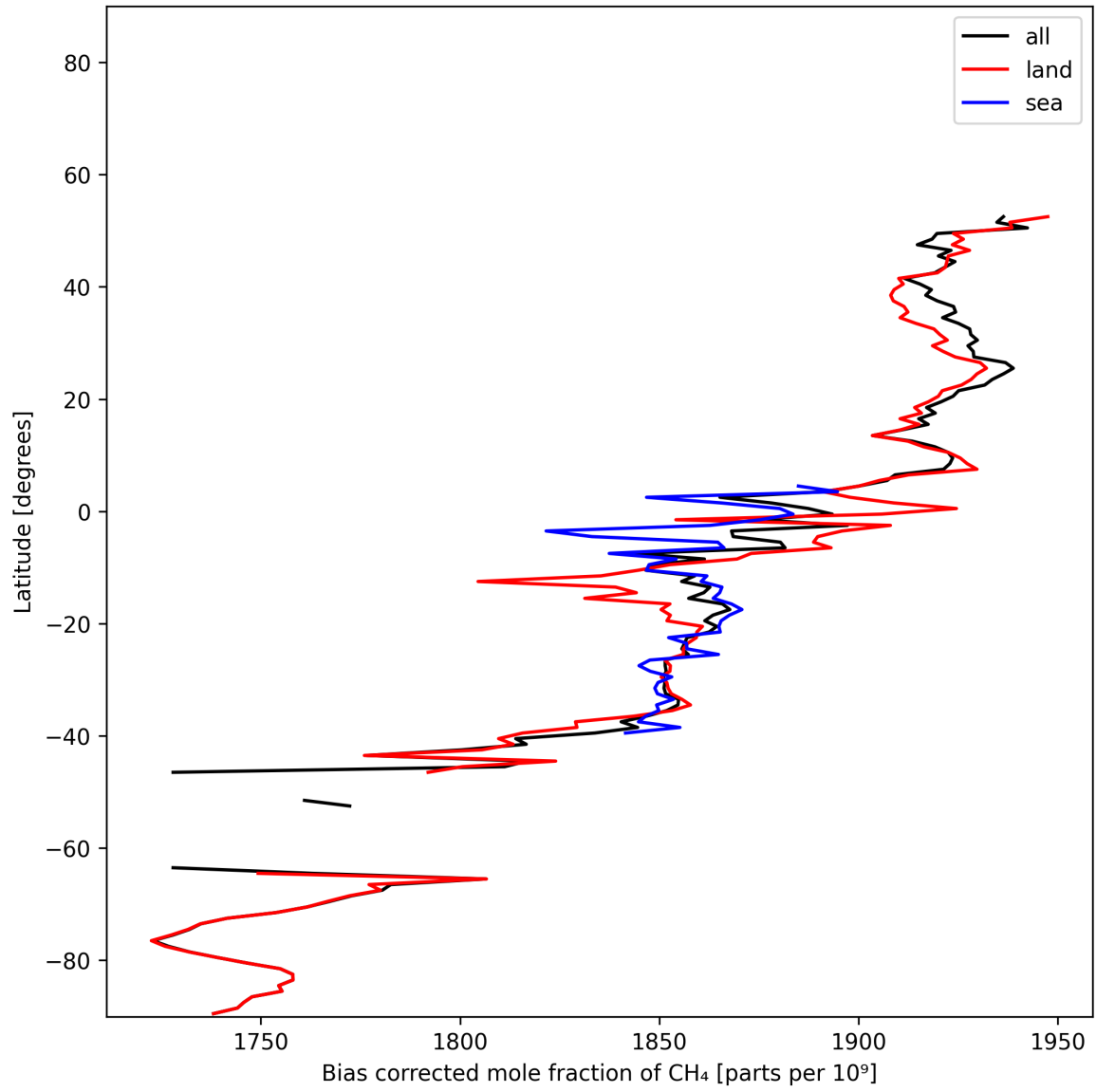


Figure 13: Zonal average of “Bias corrected mole fraction of CH₄” for 2025-12-08 to 2025-12-09.

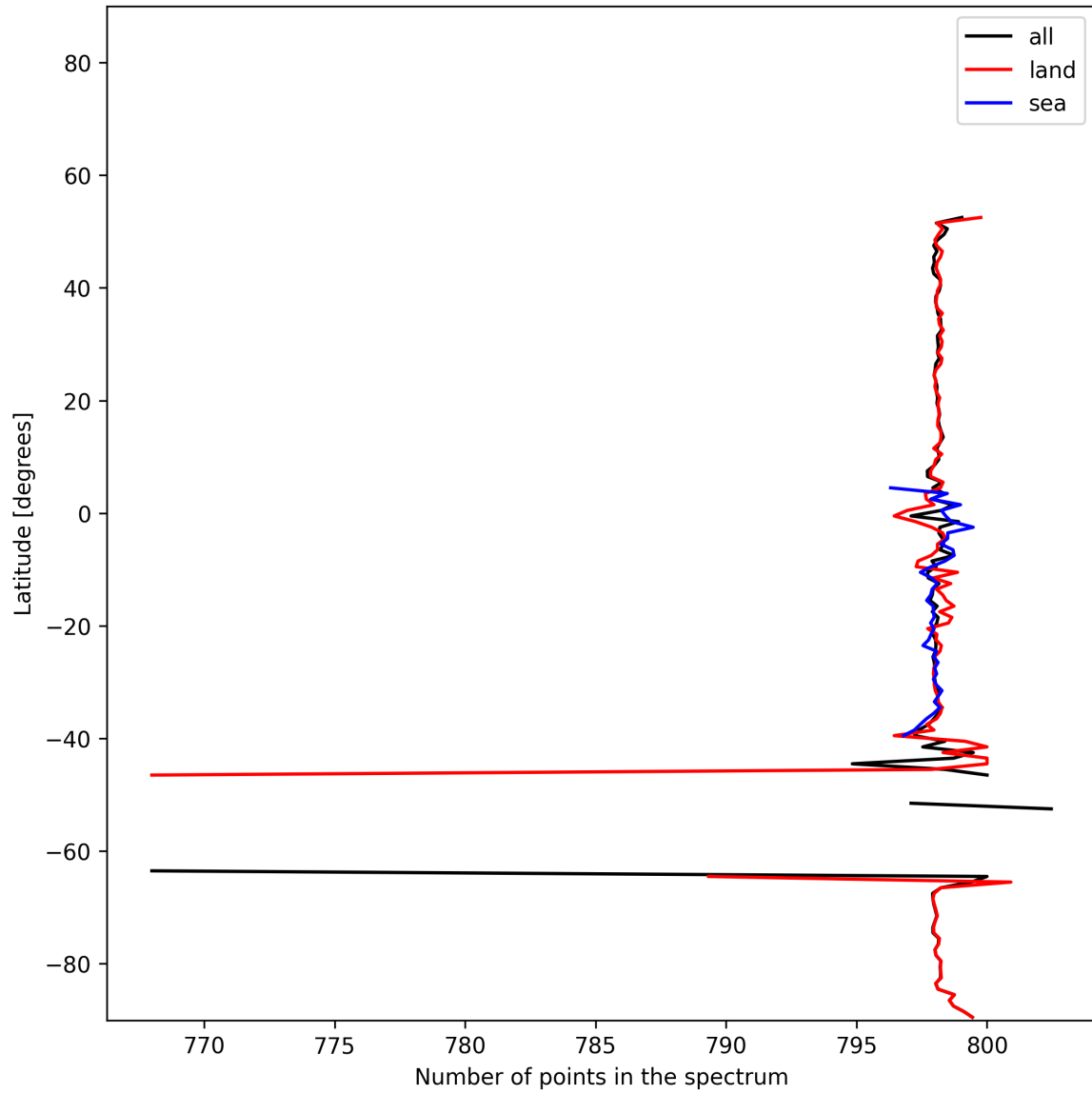


Figure 14: Zonal average of “Number of points in the spectrum” for 2025-12-08 to 2025-12-09.

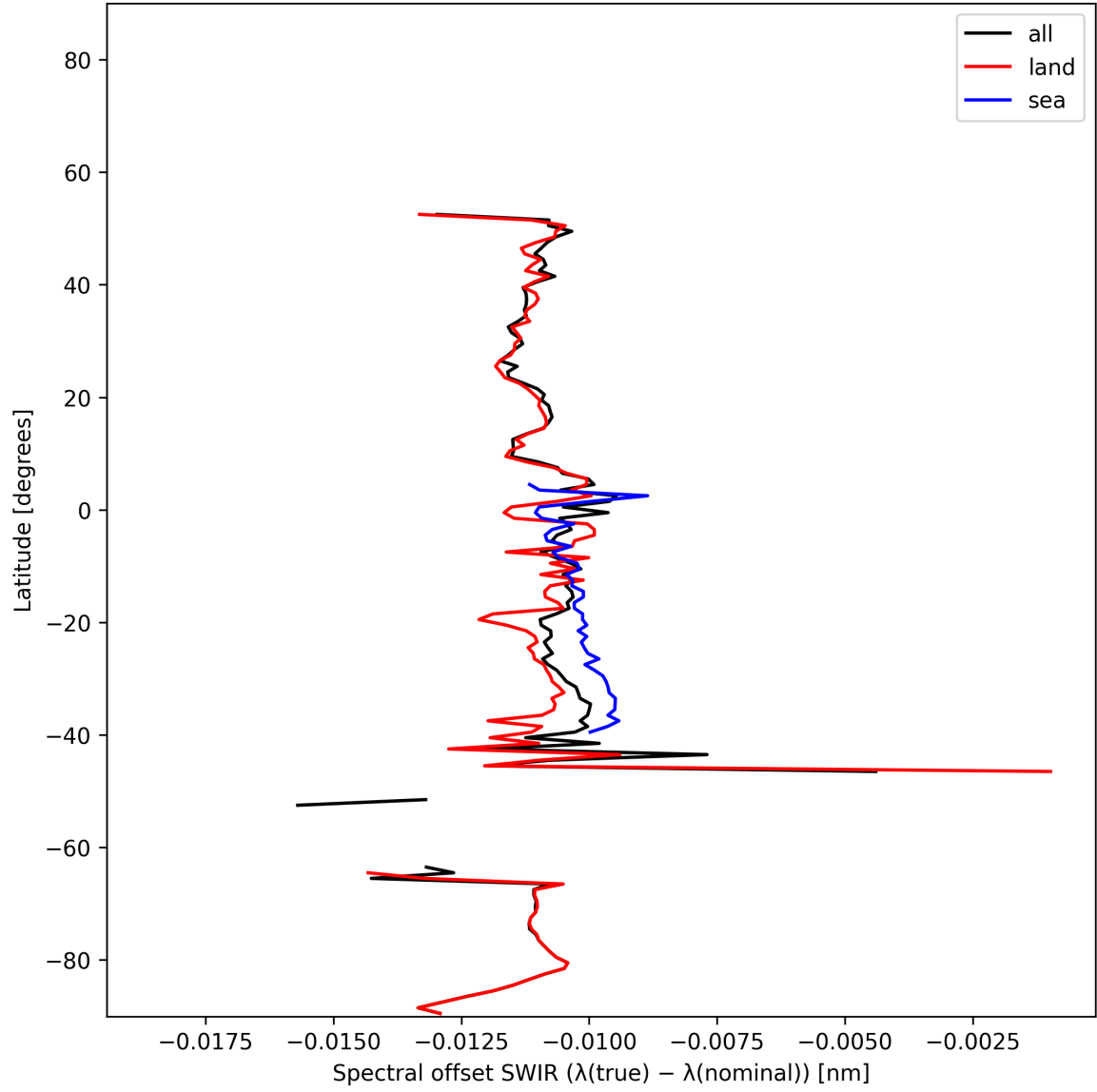


Figure 15: Zonal average of “Spectral offset SWIR ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2025-12-08 to 2025-12-09.

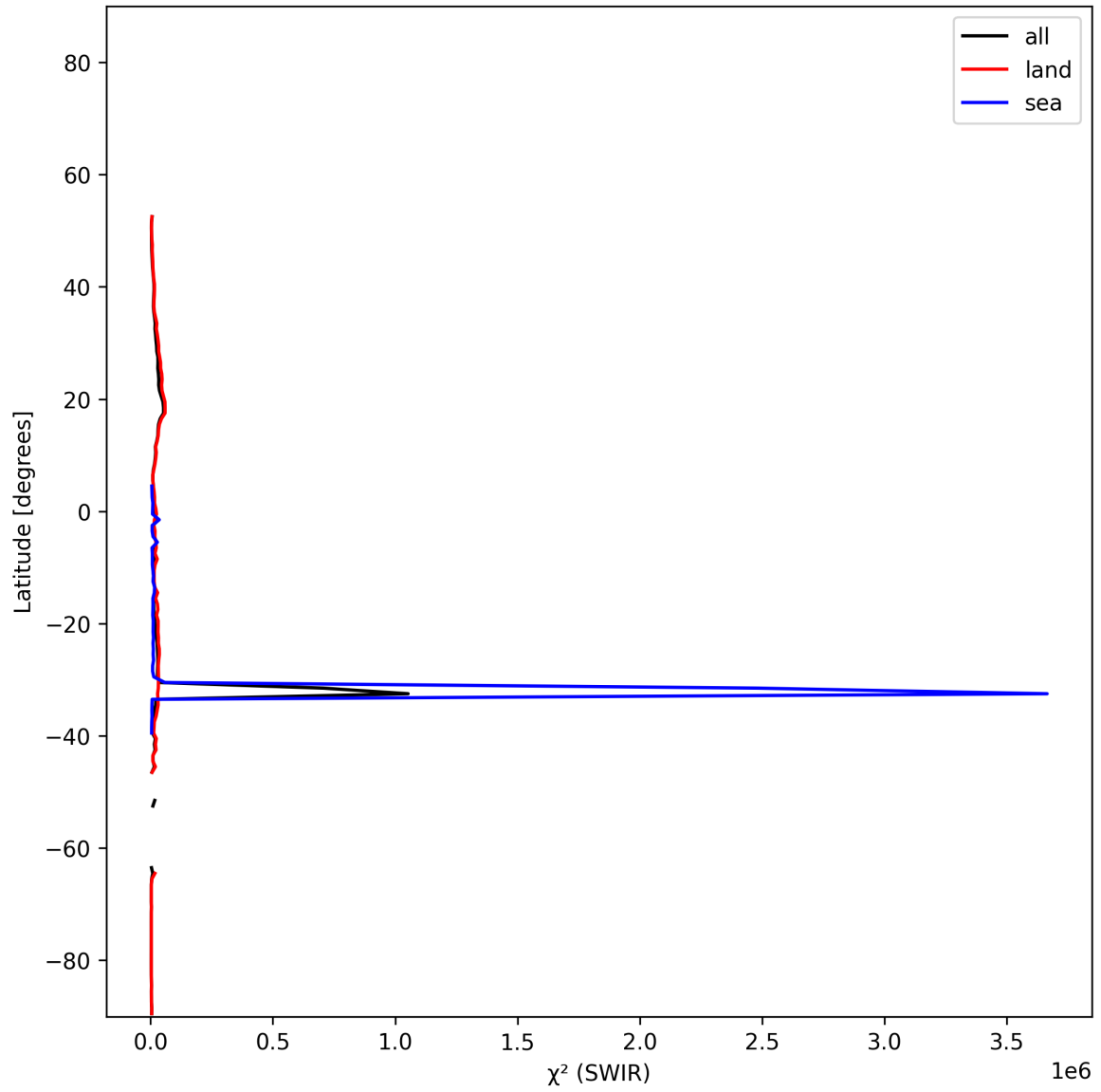


Figure 16: Zonal average of “ χ^2 (SWIR)” for 2025-12-08 to 2025-12-09.

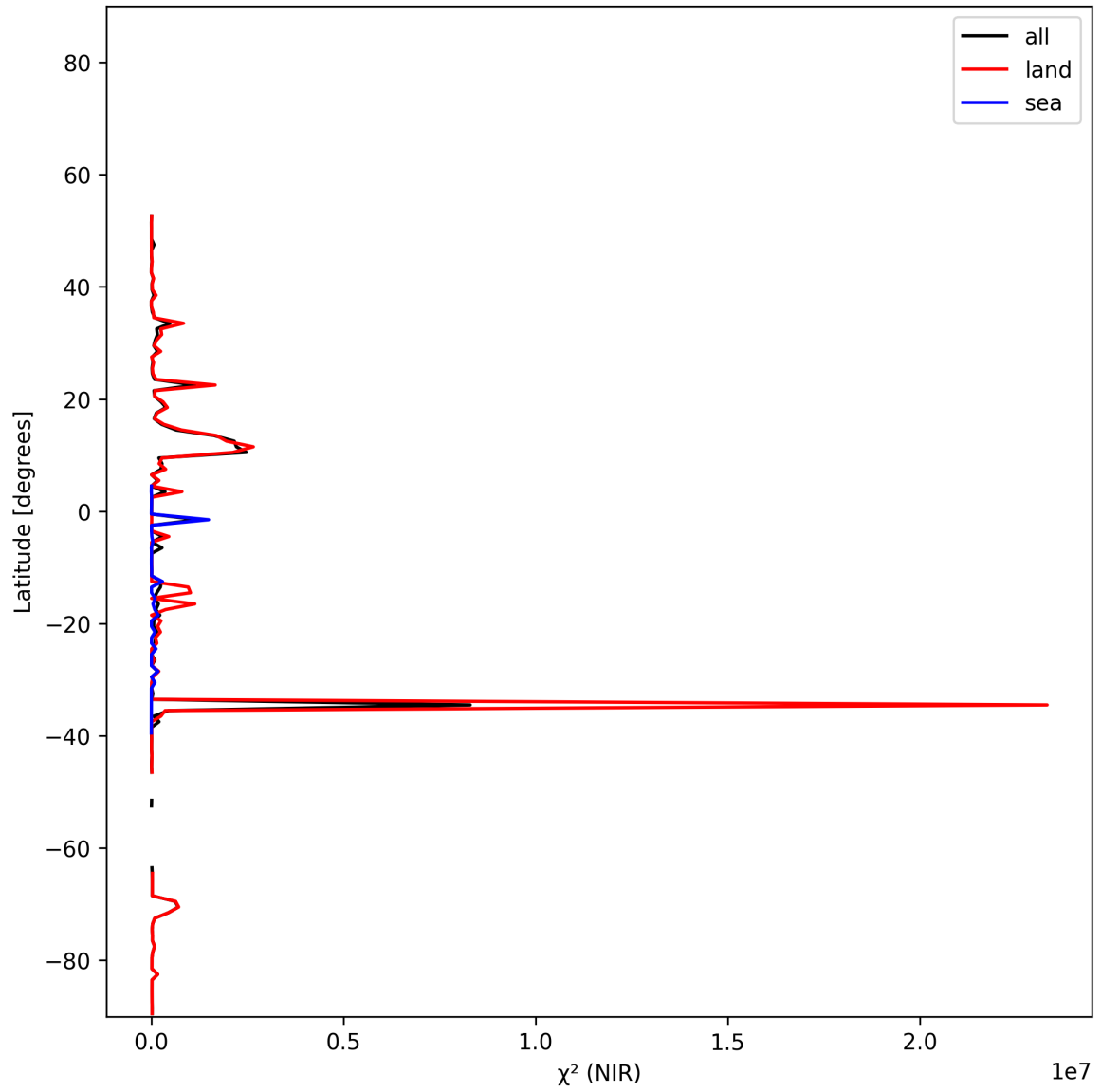


Figure 17: Zonal average of “ χ^2 (NIR)” for 2025-12-08 to 2025-12-09.

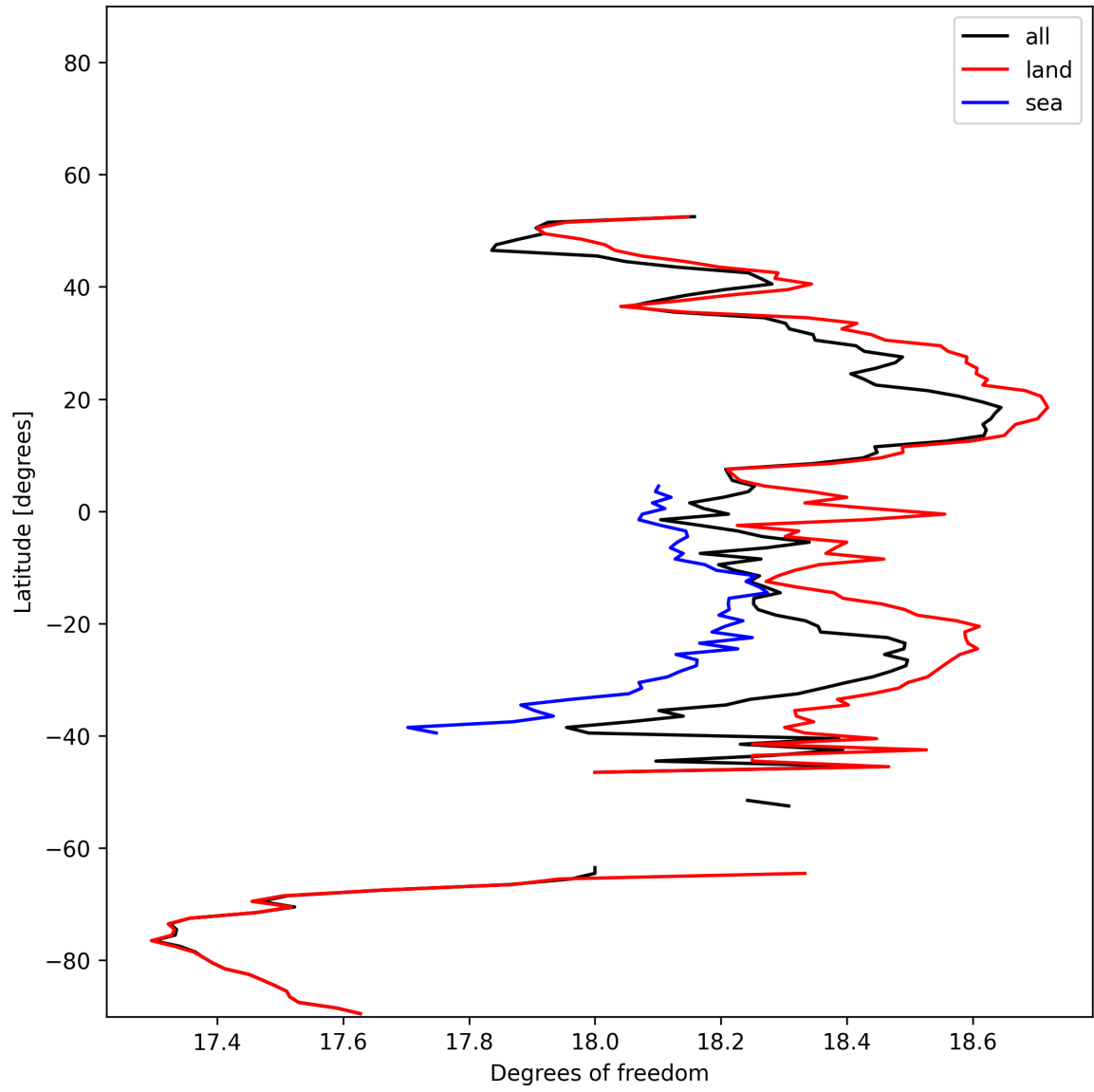


Figure 18: Zonal average of “Degrees of freedom” for 2025-12-08 to 2025-12-09.

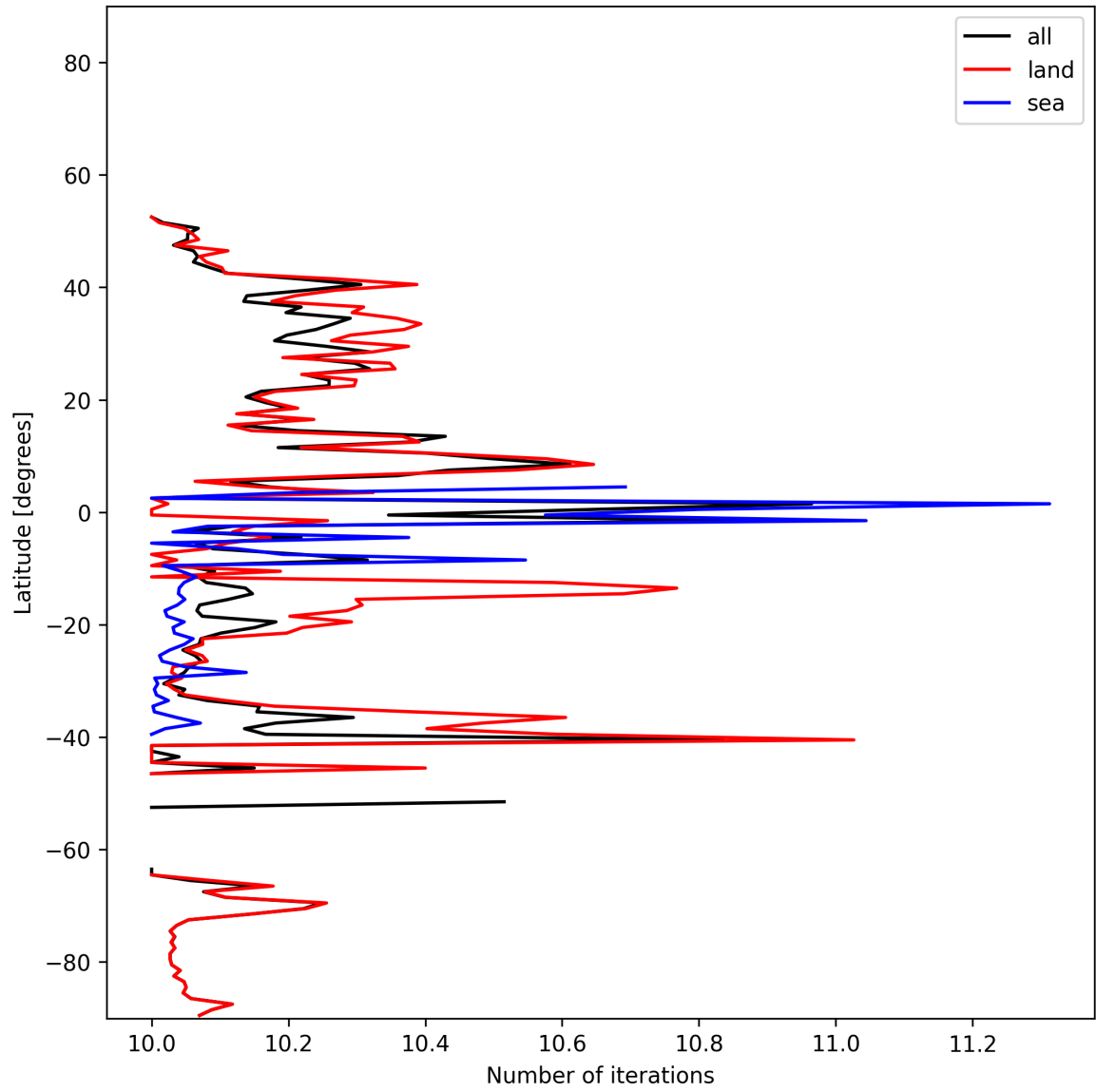


Figure 19: Zonal average of “Number of iterations” for 2025-12-08 to 2025-12-09.

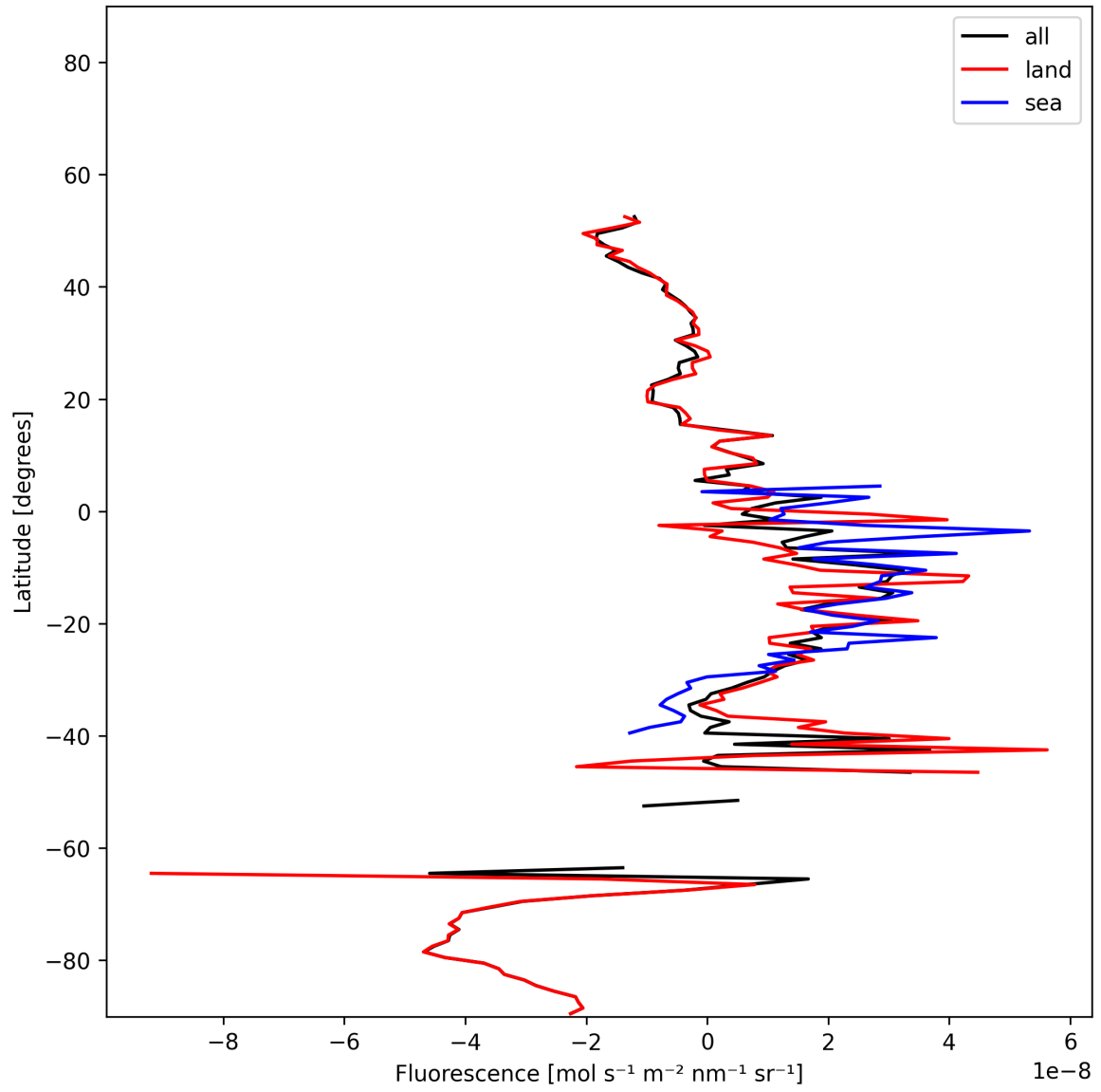


Figure 20: Zonal average of “Fluorescence” for 2025-12-08 to 2025-12-09.

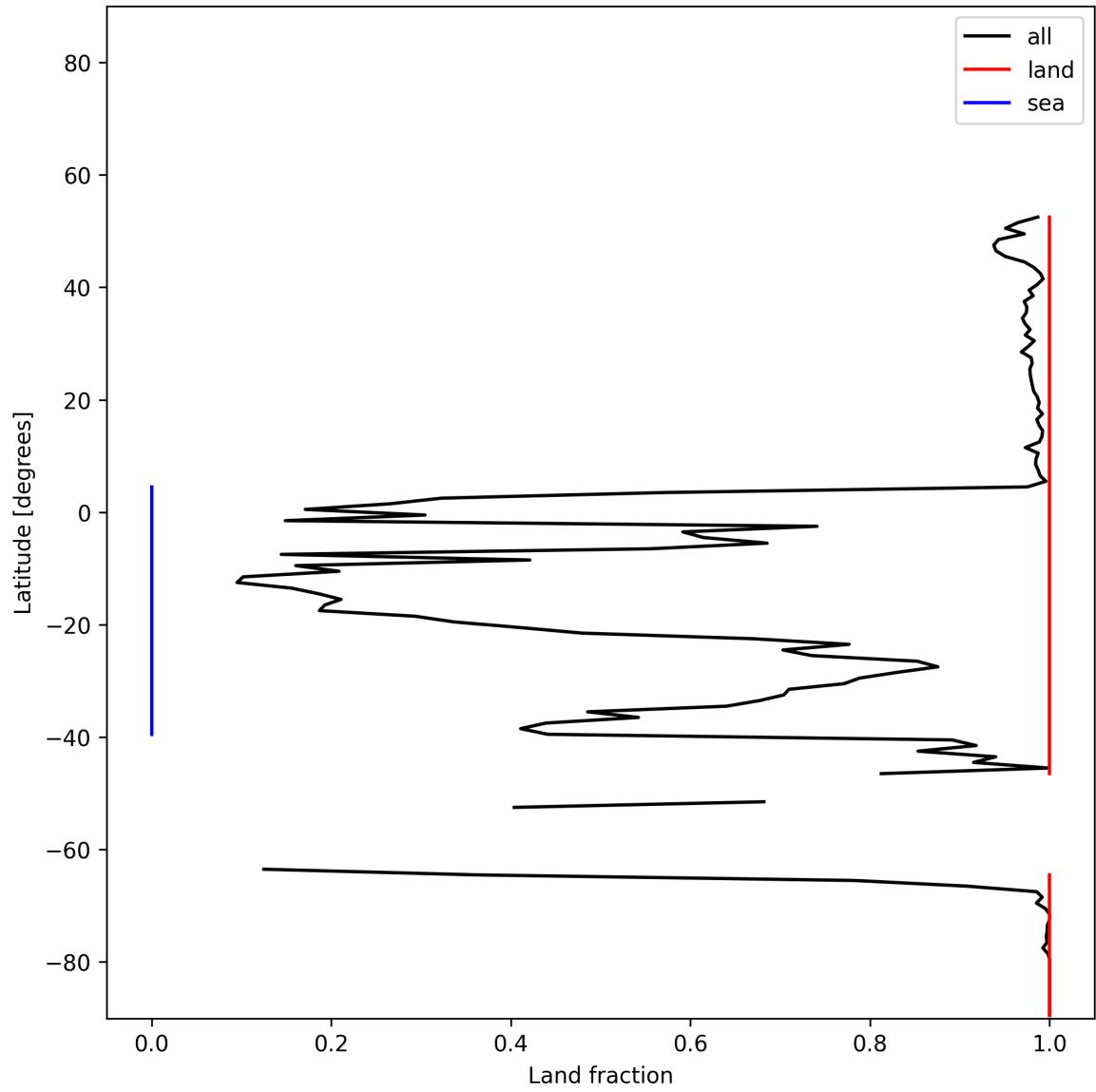


Figure 21: Zonal average of “Land fraction” for 2025-12-08 to 2025-12-09.

8 Histograms

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

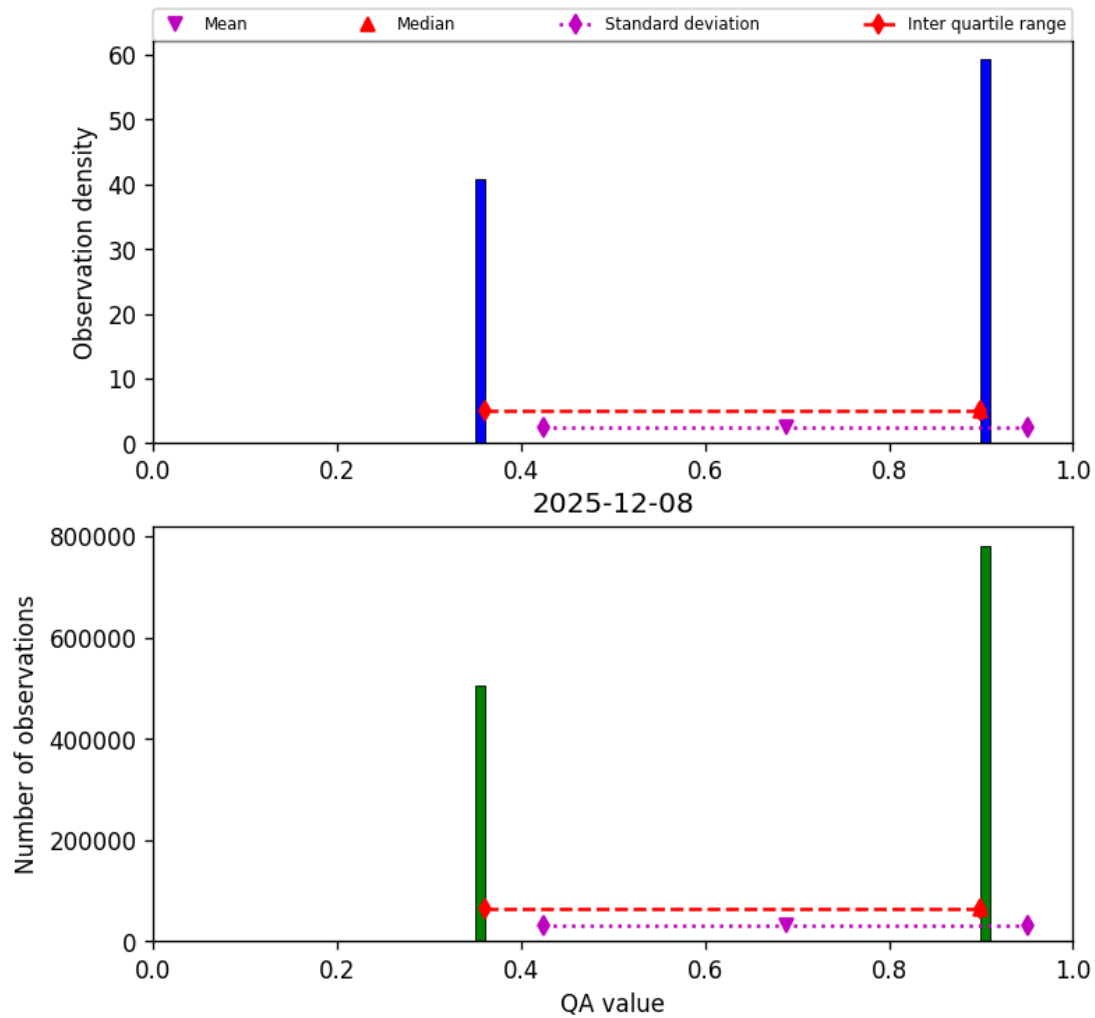


Figure 22: Histogram of “QA value” for 2025-12-08 to 2025-12-09

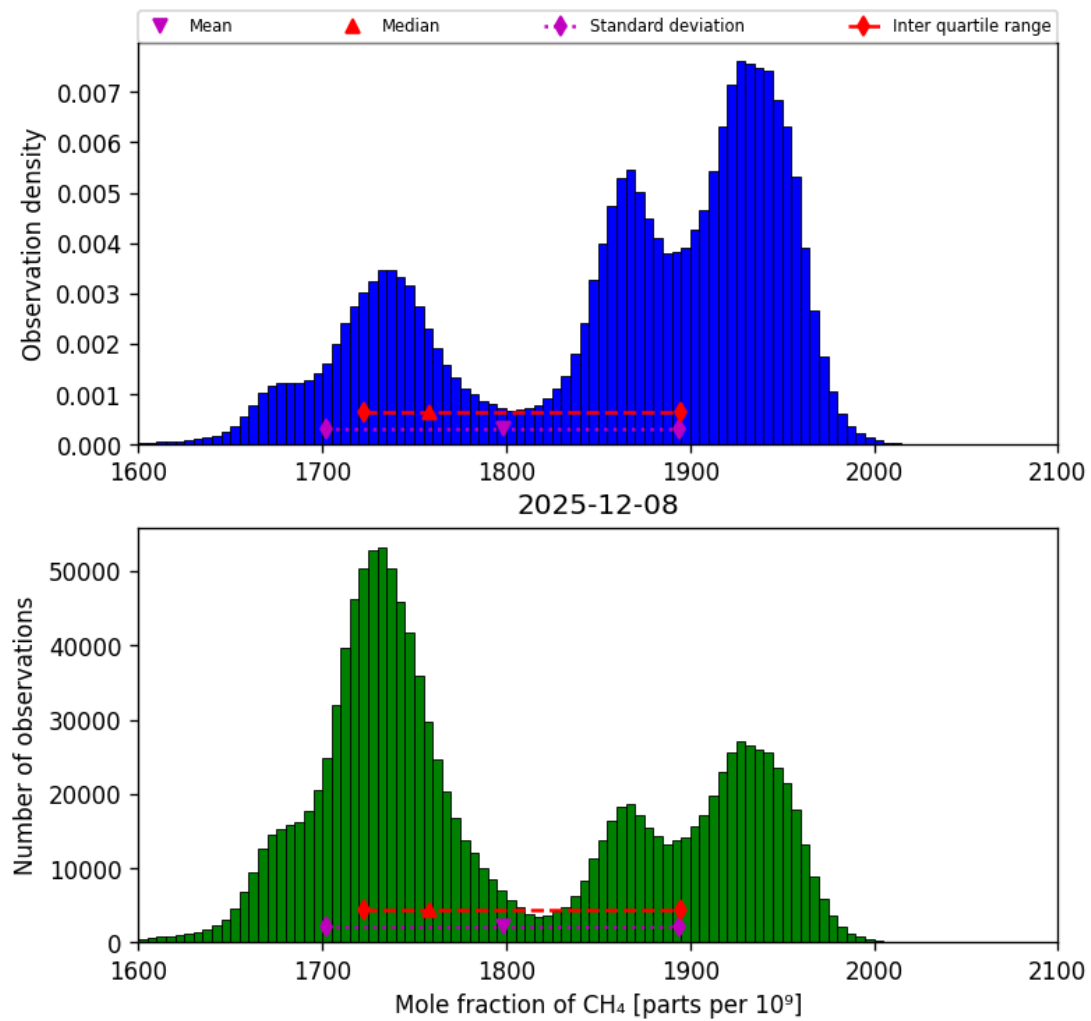


Figure 23: Histogram of “Mole fraction of CH₄” for 2025-12-08 to 2025-12-09

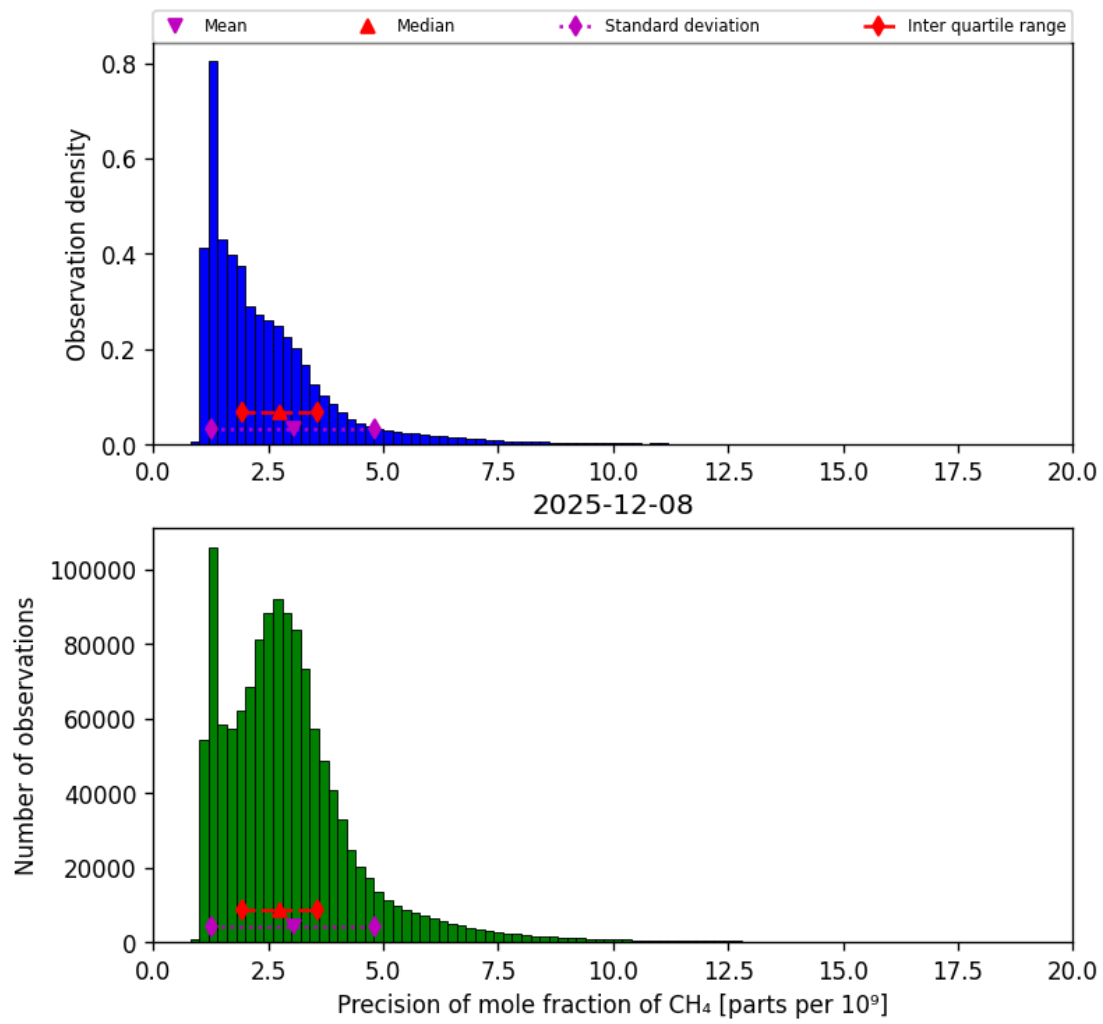


Figure 24: Histogram of “Precision of mole fraction of CH₄” for 2025-12-08 to 2025-12-09

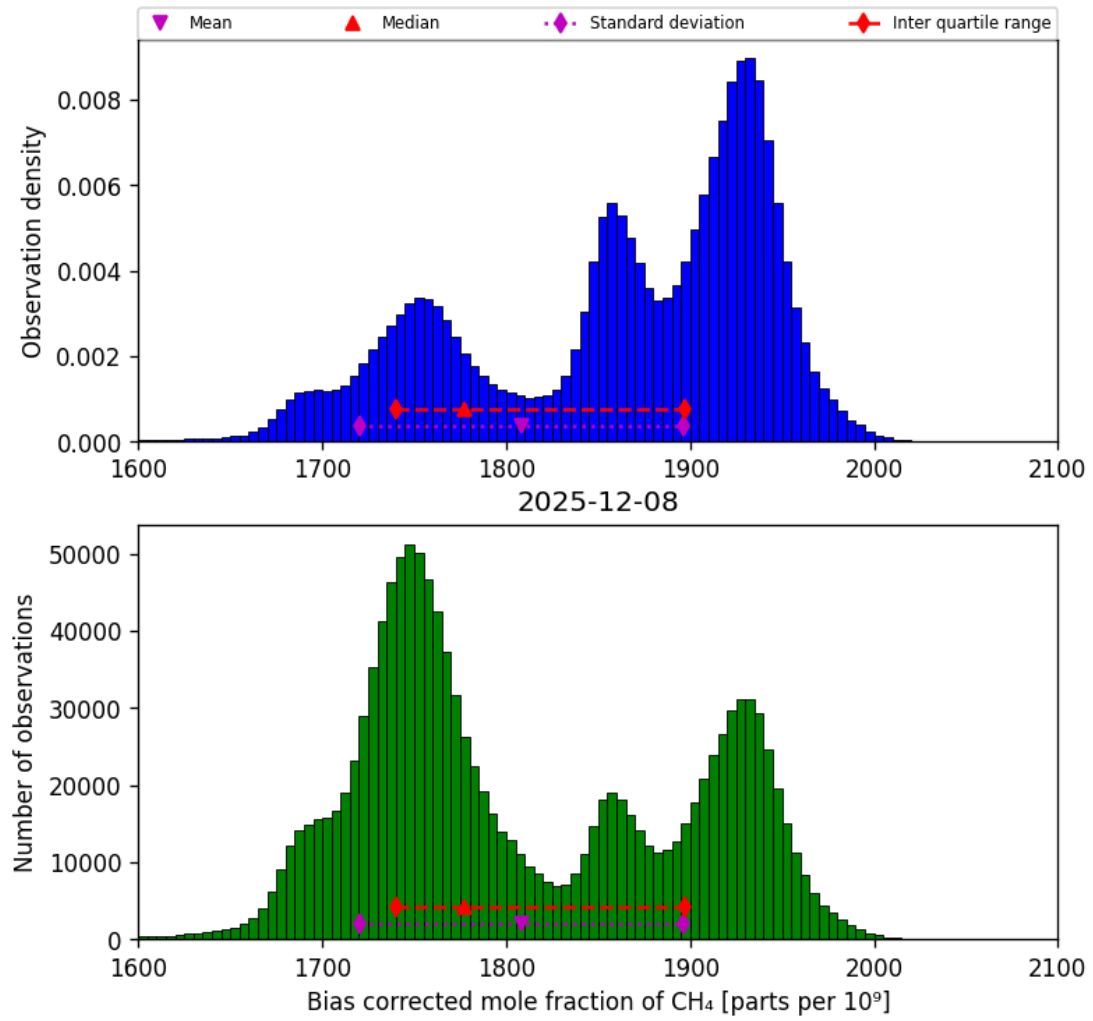


Figure 25: Histogram of “Bias corrected mole fraction of CH₄” for 2025-12-08 to 2025-12-09

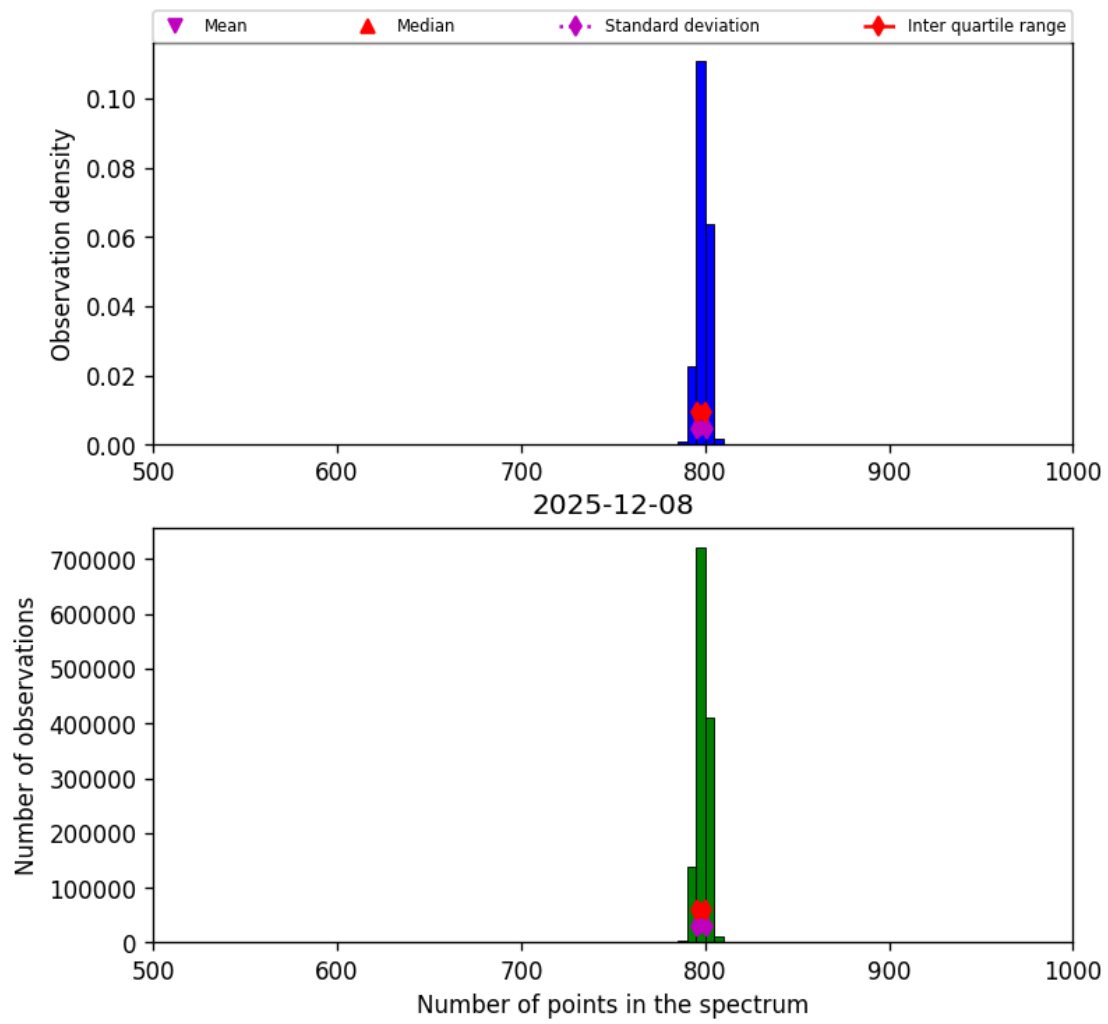


Figure 26: Histogram of “Number of points in the spectrum” for 2025-12-08 to 2025-12-09

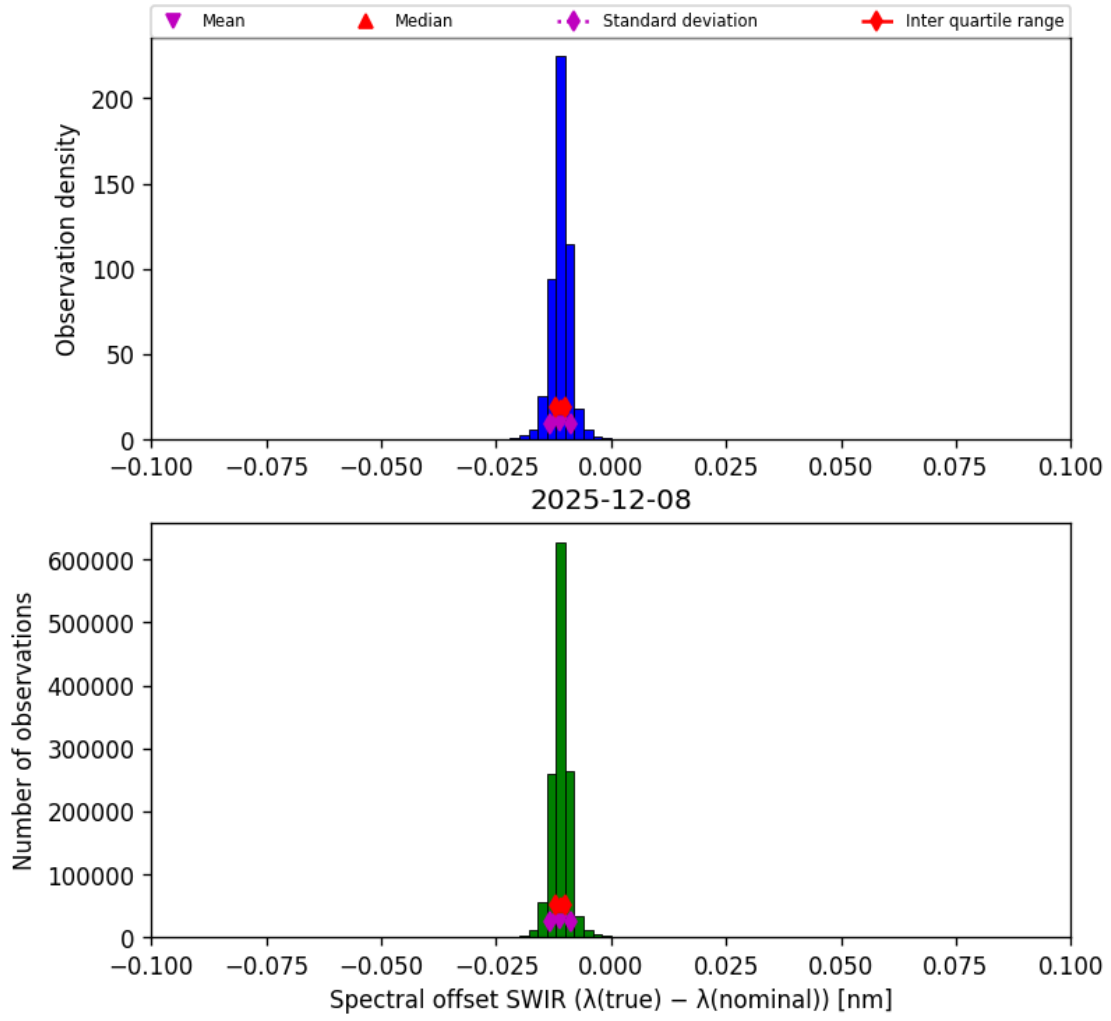


Figure 27: Histogram of “Spectral offset SWIR ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2025-12-08 to 2025-12-09

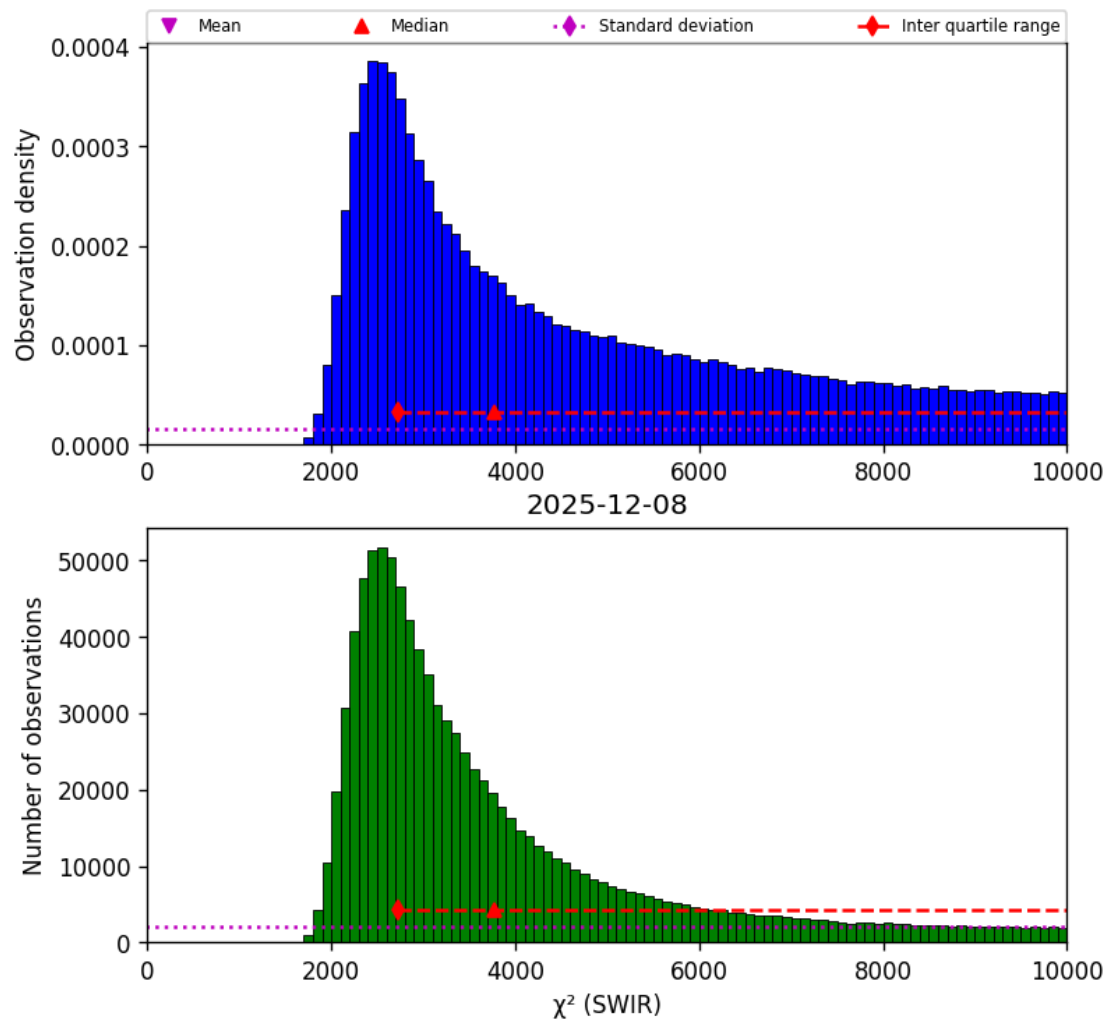


Figure 28: Histogram of “ χ^2 (SWIR)” for 2025-12-08 to 2025-12-09

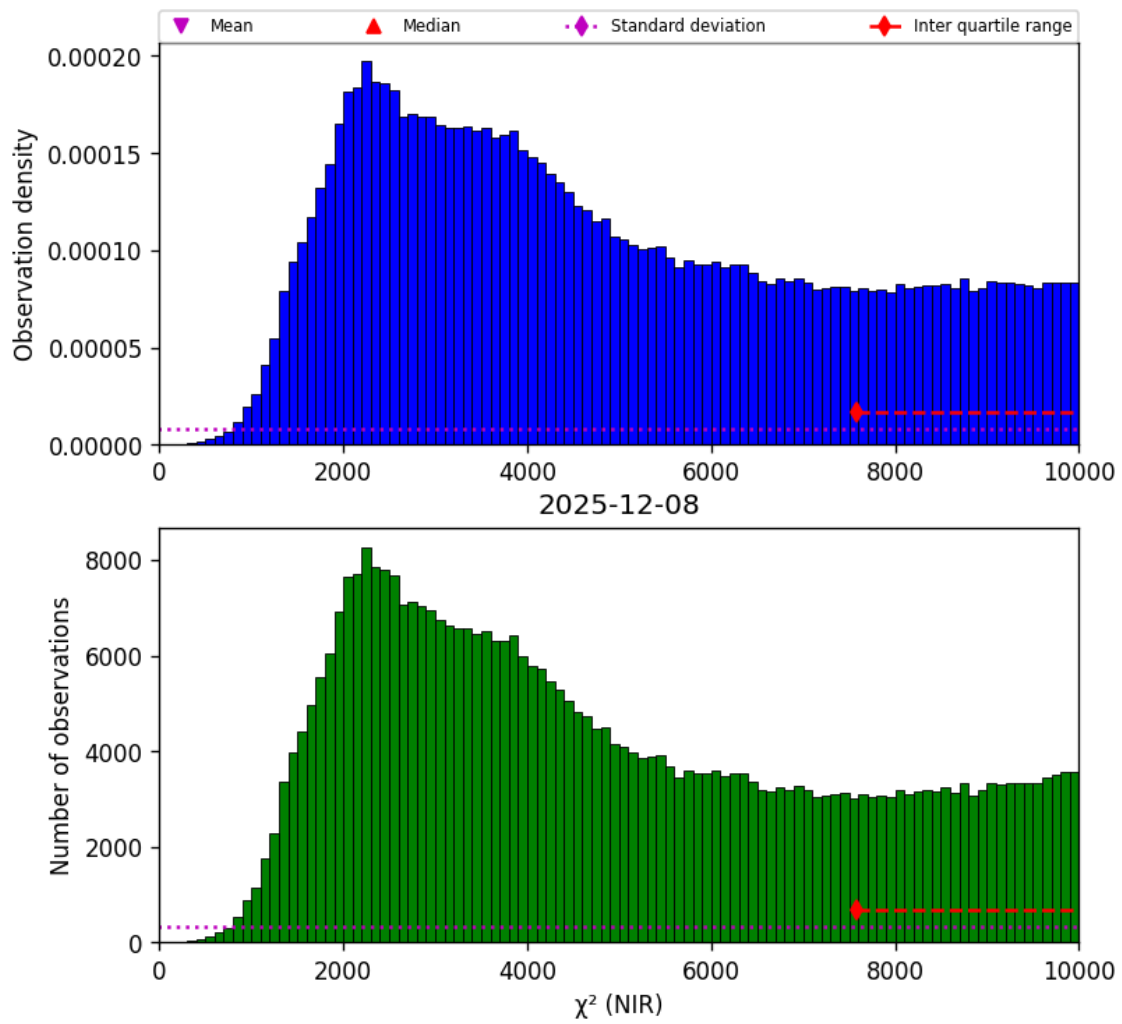


Figure 29: Histogram of " χ^2 (NIR)" for 2025-12-08 to 2025-12-09

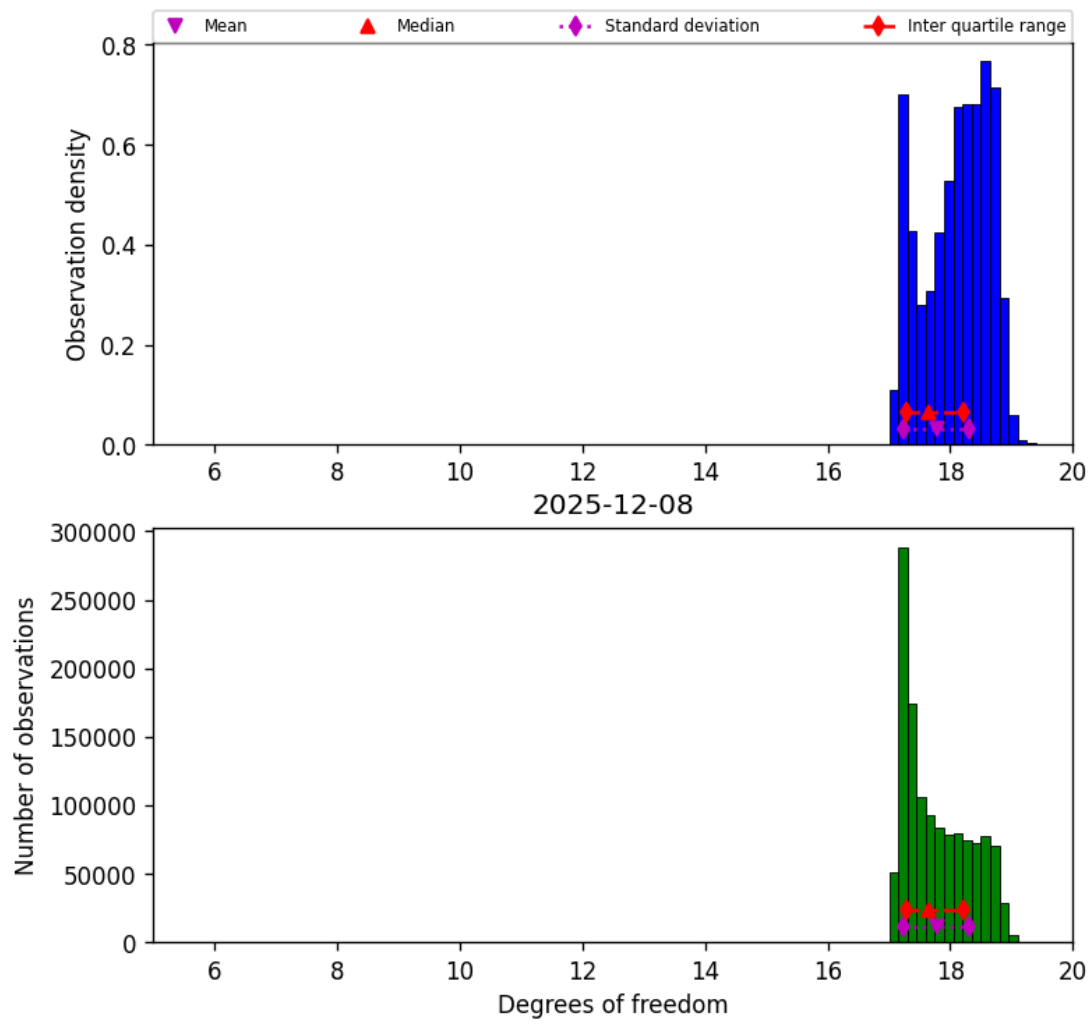


Figure 30: Histogram of “Degrees of freedom” for 2025-12-08 to 2025-12-09

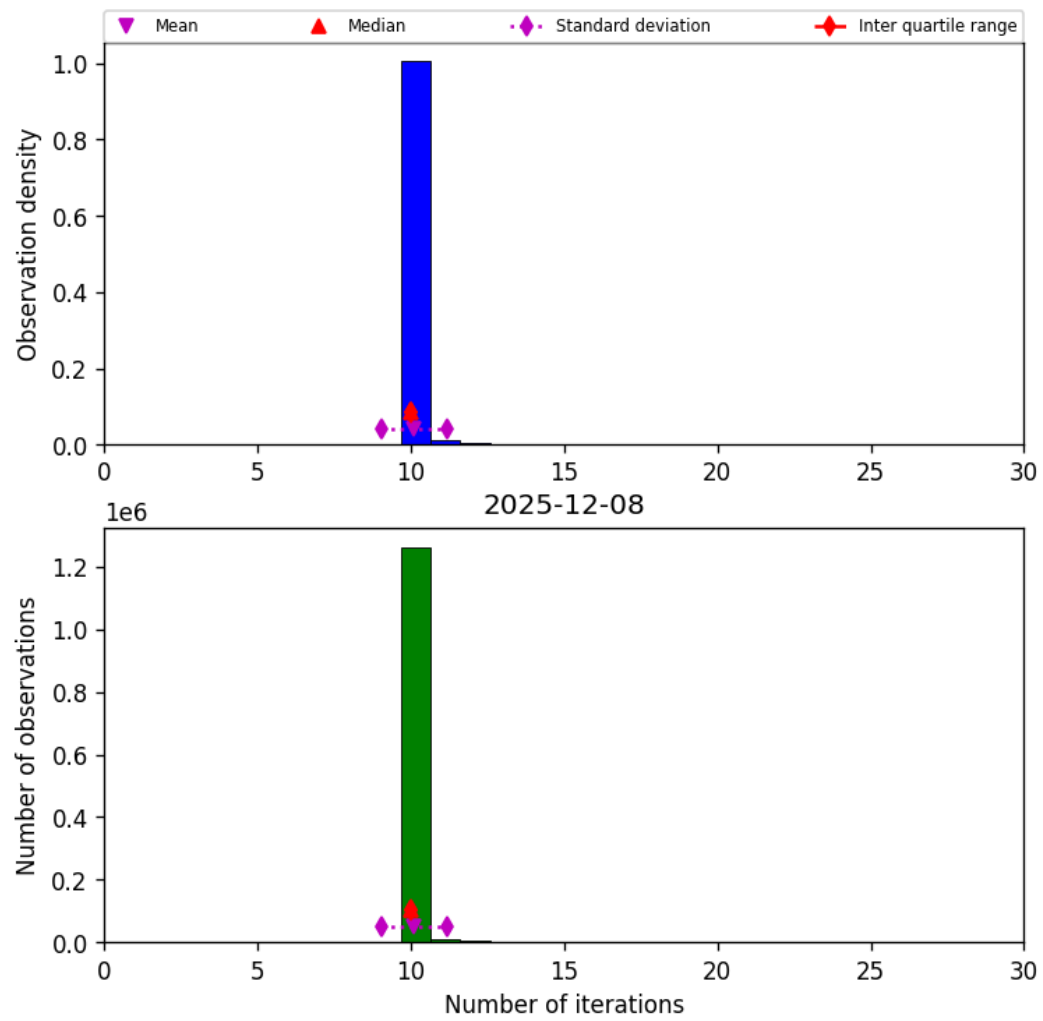


Figure 31: Histogram of “Number of iterations” for 2025-12-08 to 2025-12-09

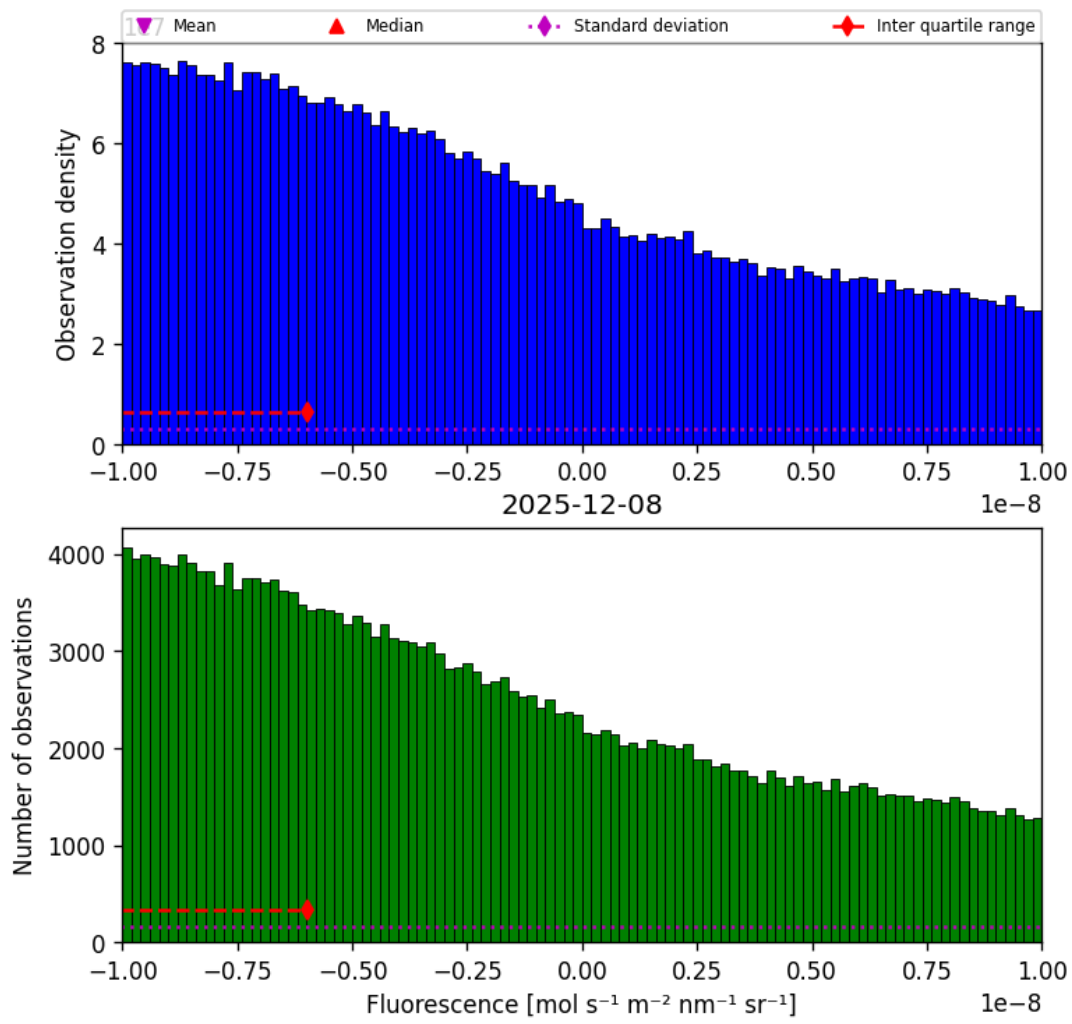


Figure 32: Histogram of “Fluorescence” for 2025-12-08 to 2025-12-09

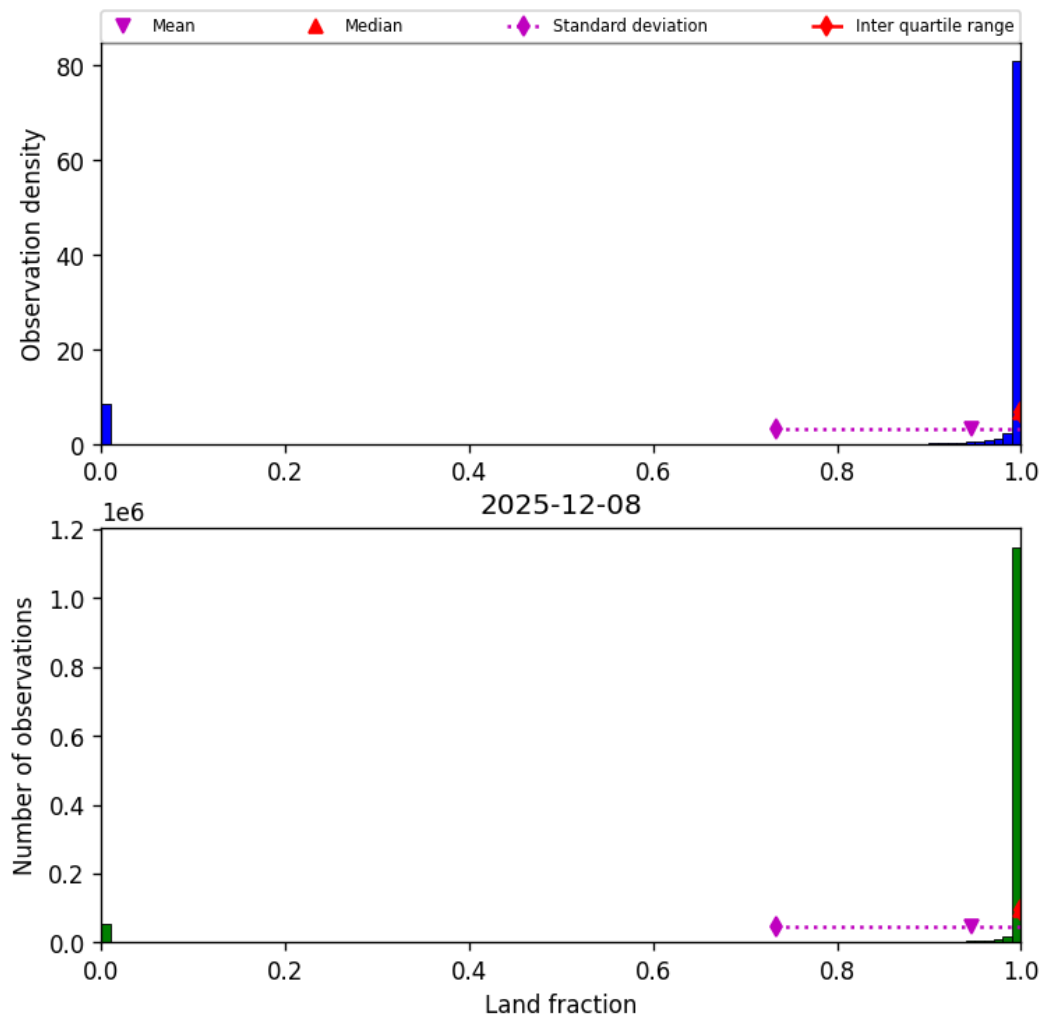


Figure 33: Histogram of “Land fraction” for 2025-12-08 to 2025-12-09

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.

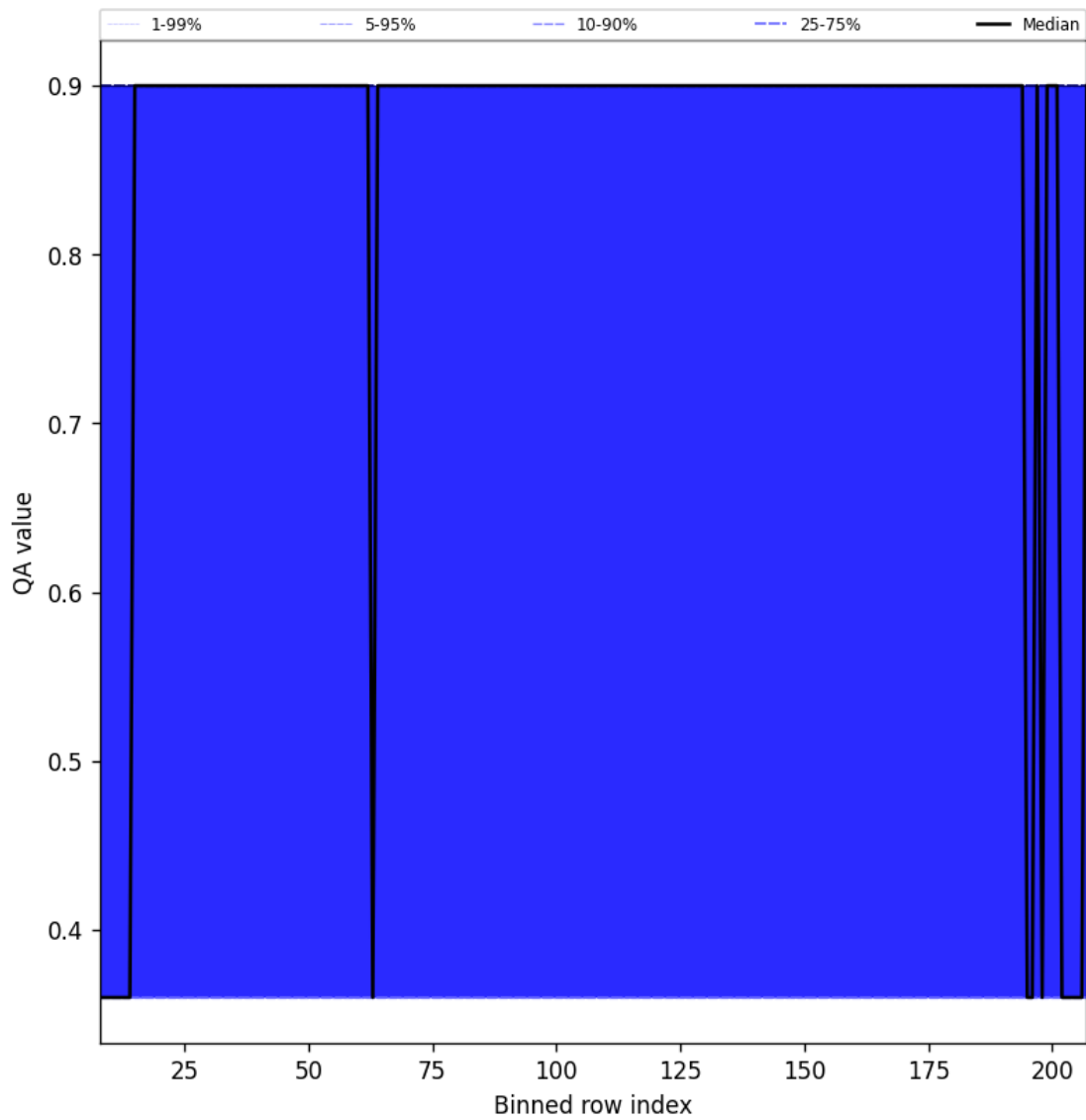


Figure 34: Along track statistics of “QA value” for 2025-12-08 to 2025-12-09

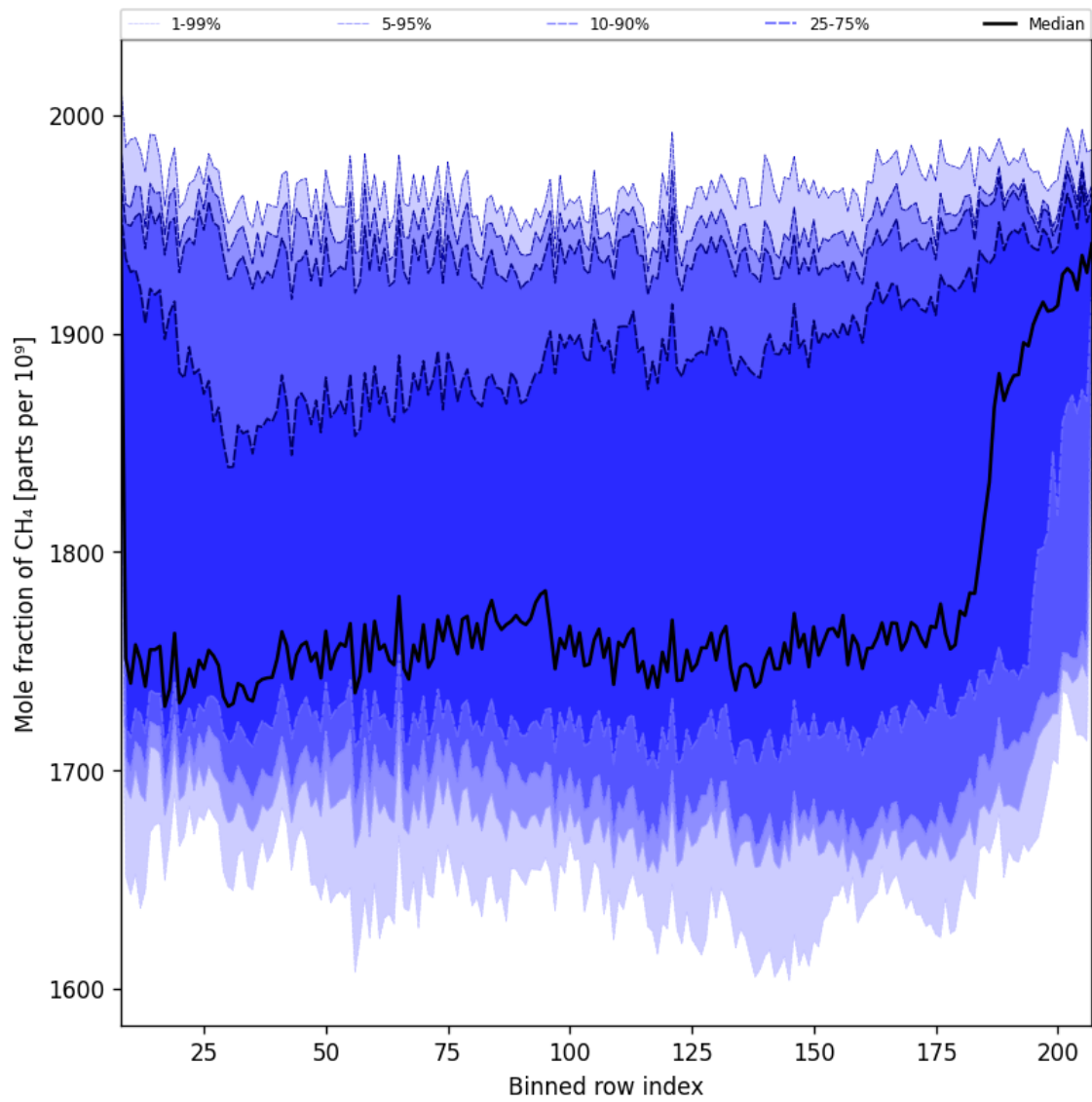


Figure 35: Along track statistics of “Mole fraction of CH₄” for 2025-12-08 to 2025-12-09

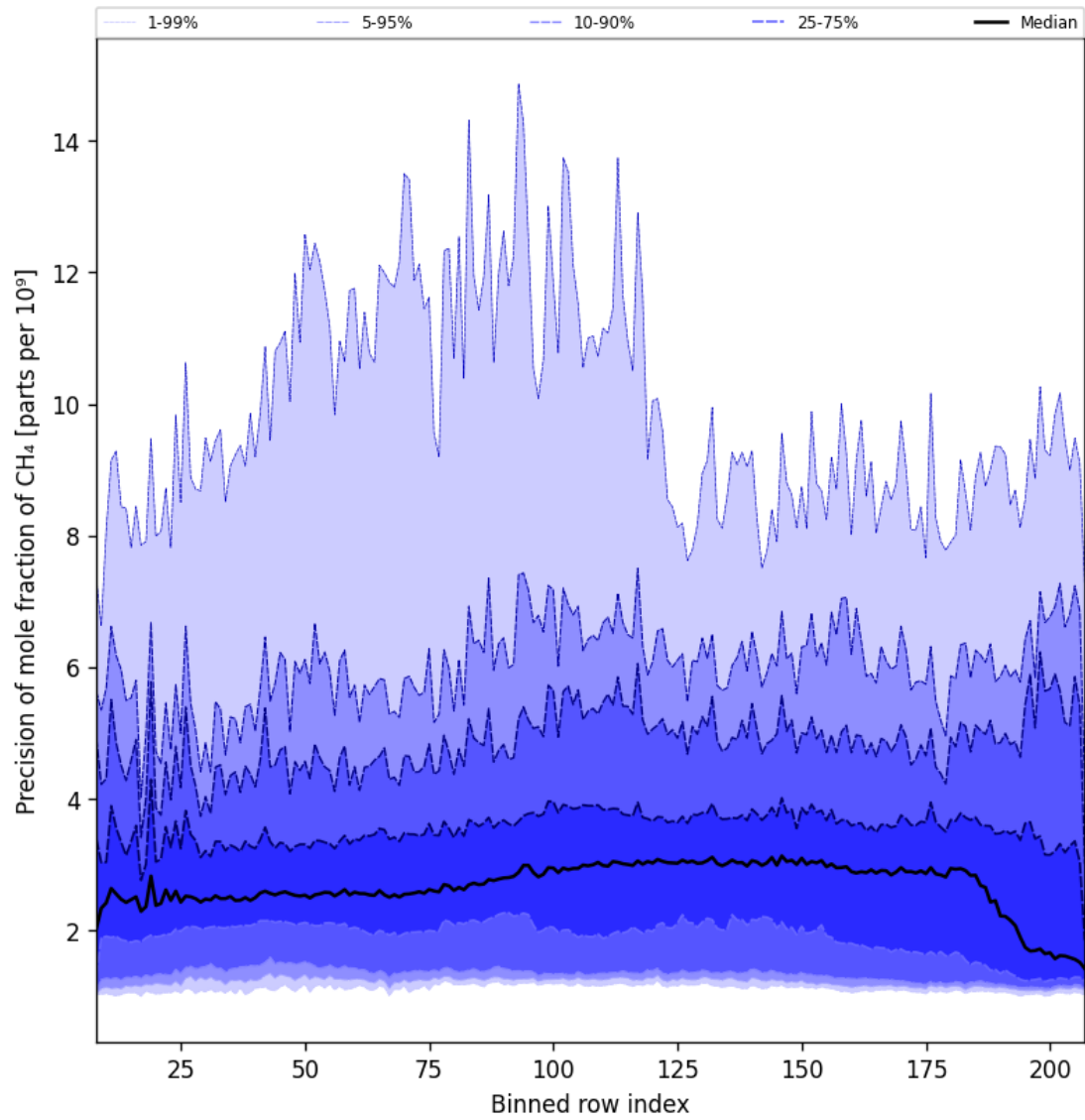


Figure 36: Along track statistics of “Precision of mole fraction of CH₄” for 2025-12-08 to 2025-12-09

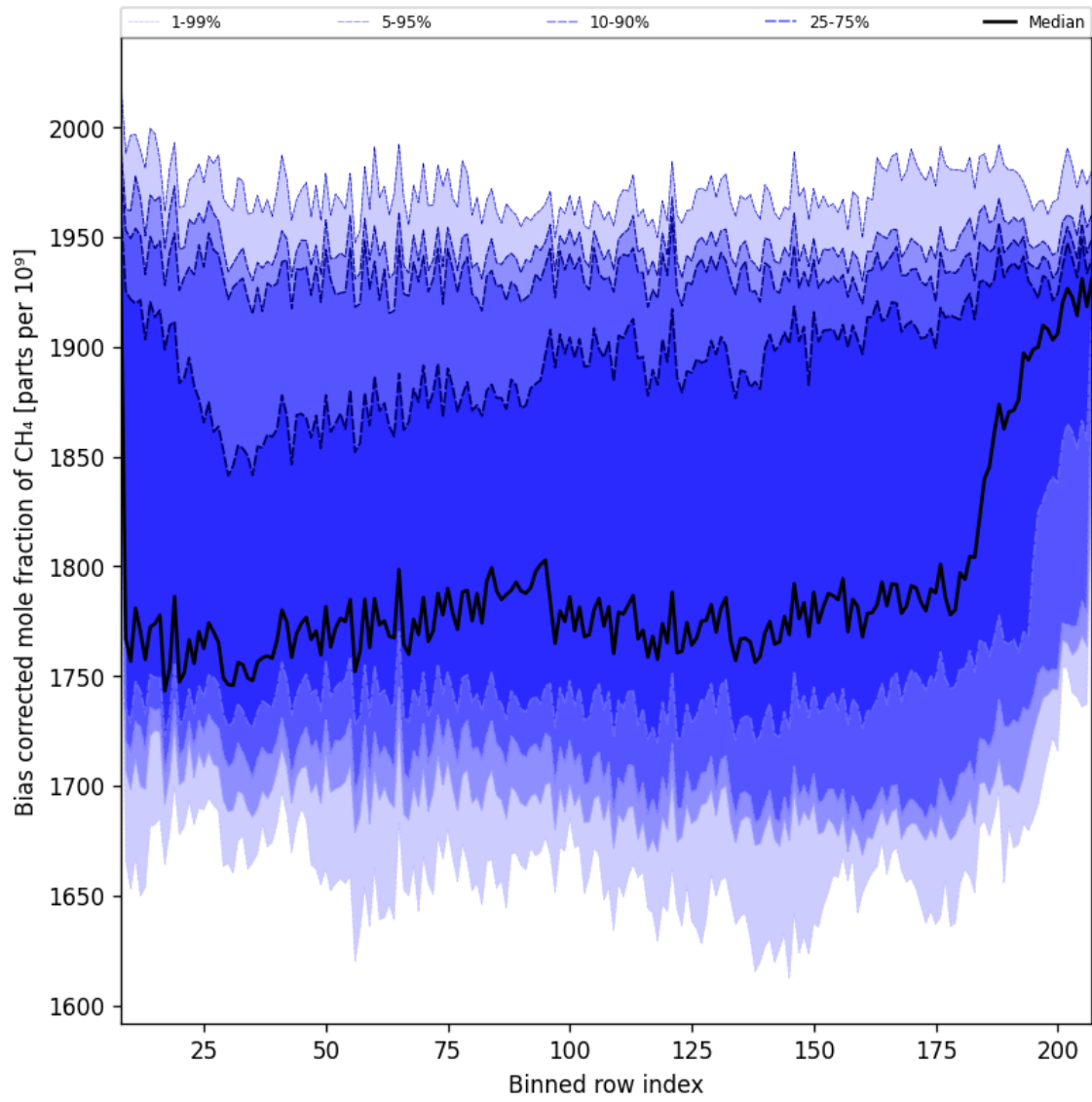


Figure 37: Along track statistics of “Bias corrected mole fraction of CH₄” for 2025-12-08 to 2025-12-09

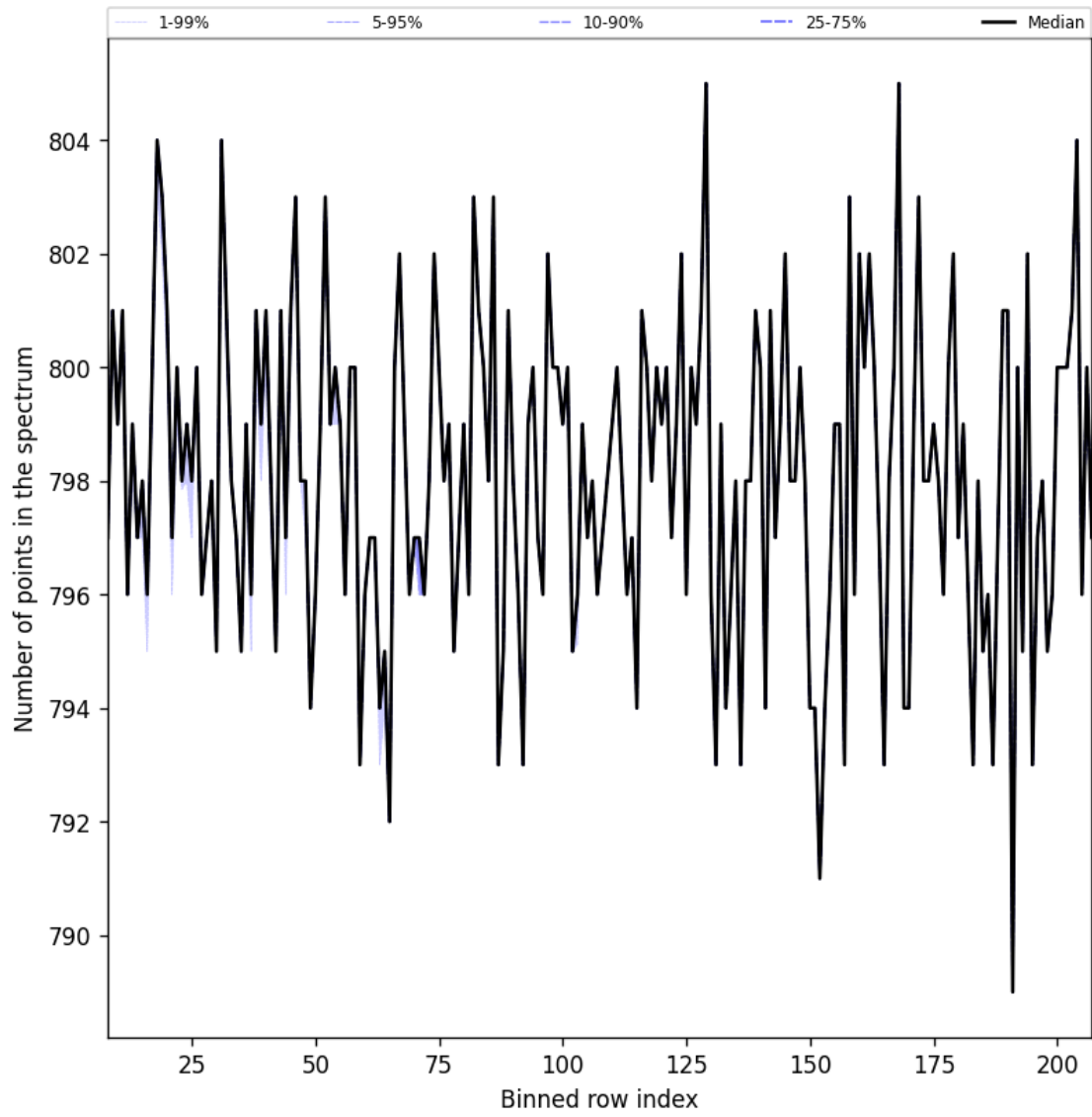


Figure 38: Along track statistics of “Number of points in the spectrum” for 2025-12-08 to 2025-12-09

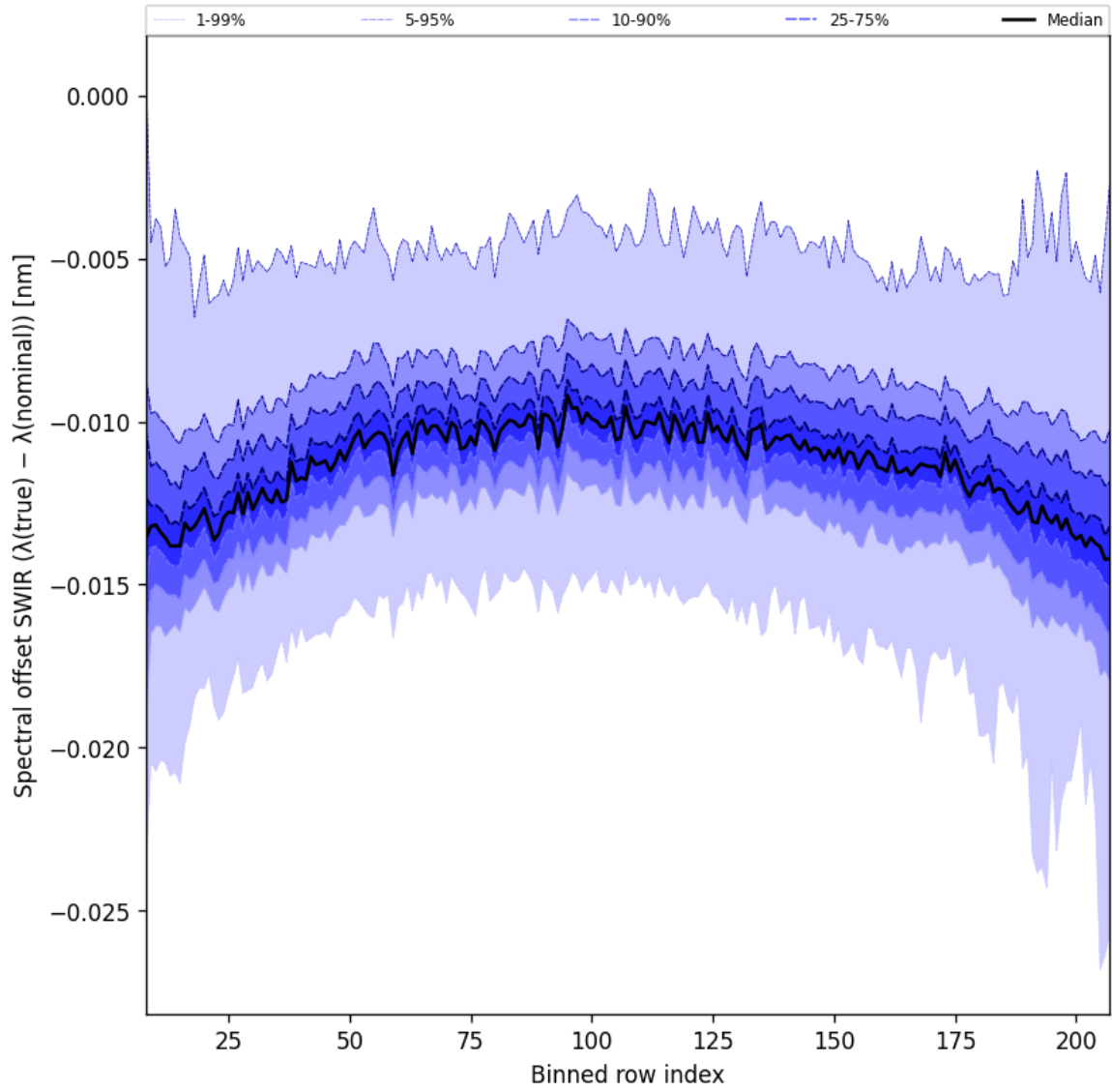


Figure 39: Along track statistics of “Spectral offset SWIR ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2025-12-08 to 2025-12-09

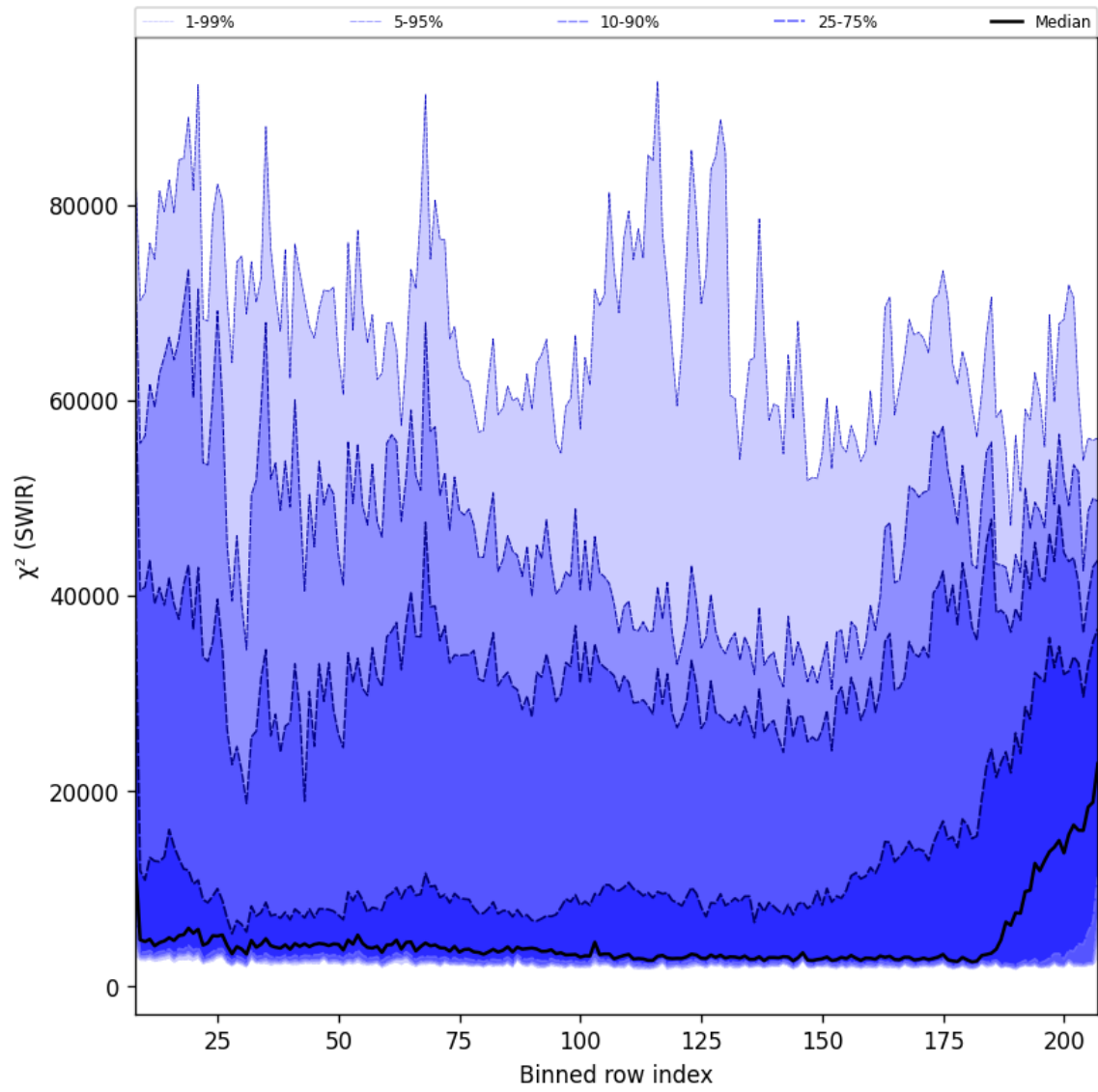


Figure 40: Along track statistics of “ χ^2 (SWIR)” for 2025-12-08 to 2025-12-09

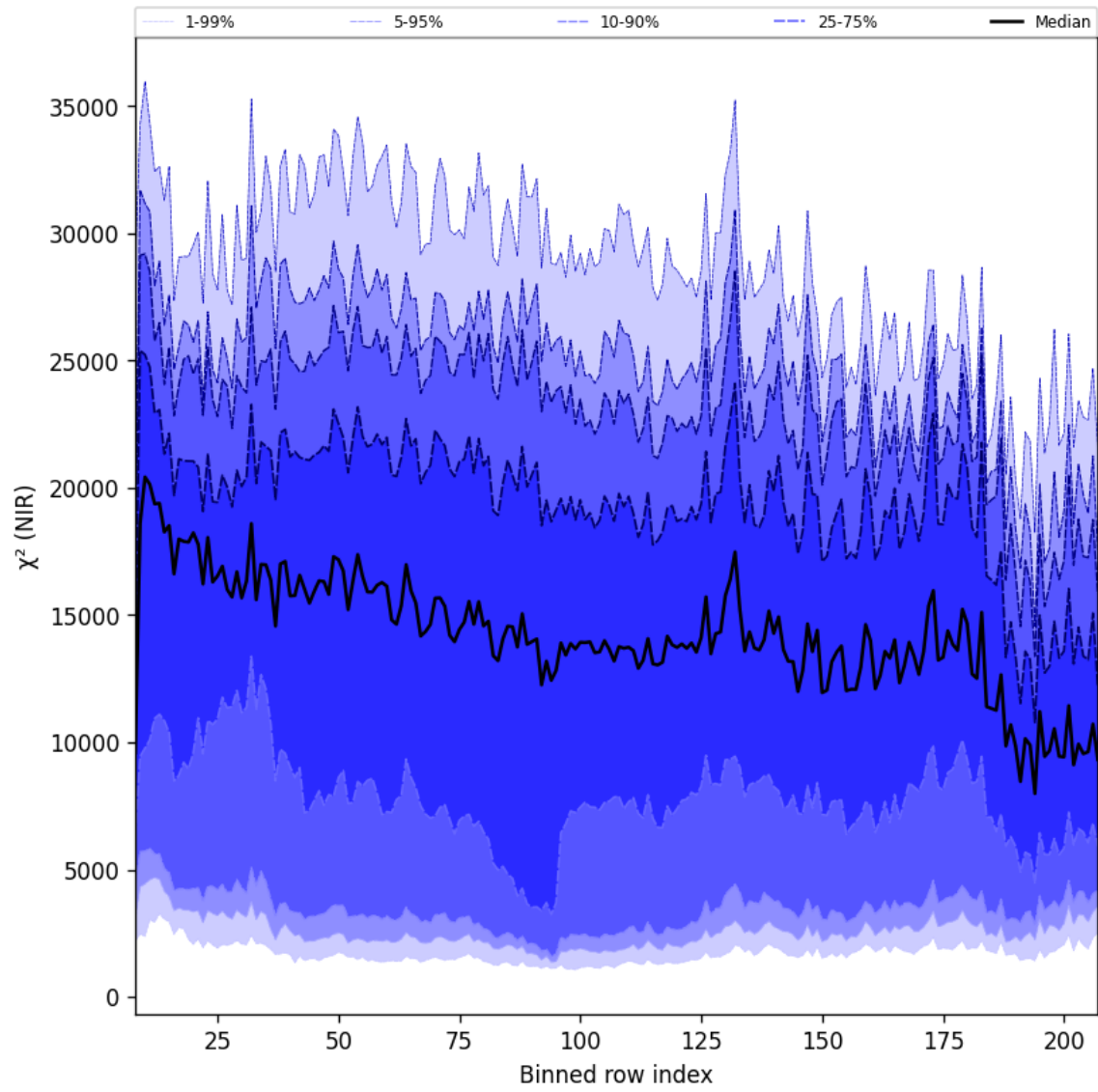


Figure 41: Along track statistics of “ χ^2 (NIR)” for 2025-12-08 to 2025-12-09

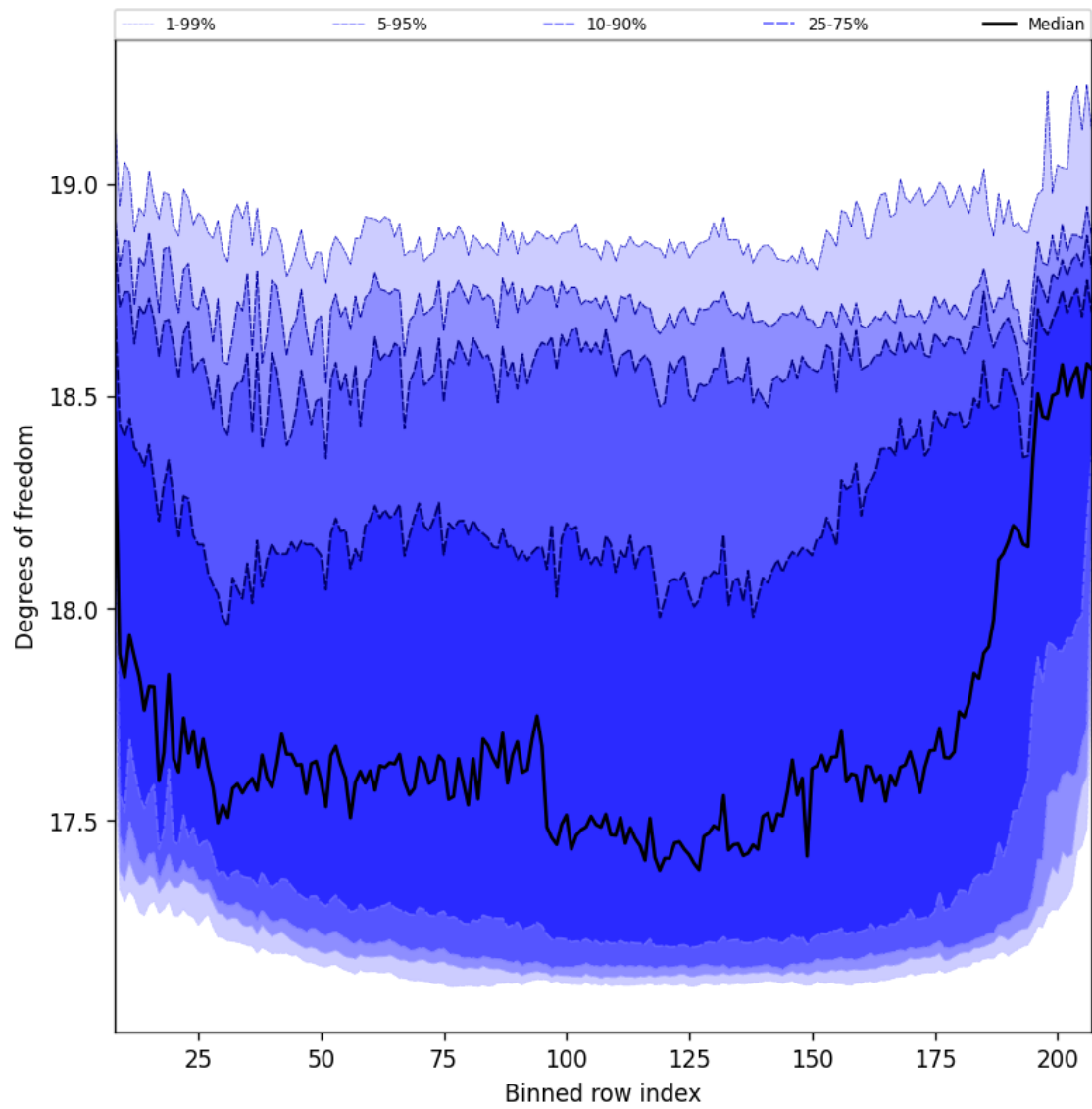


Figure 42: Along track statistics of “Degrees of freedom” for 2025-12-08 to 2025-12-09

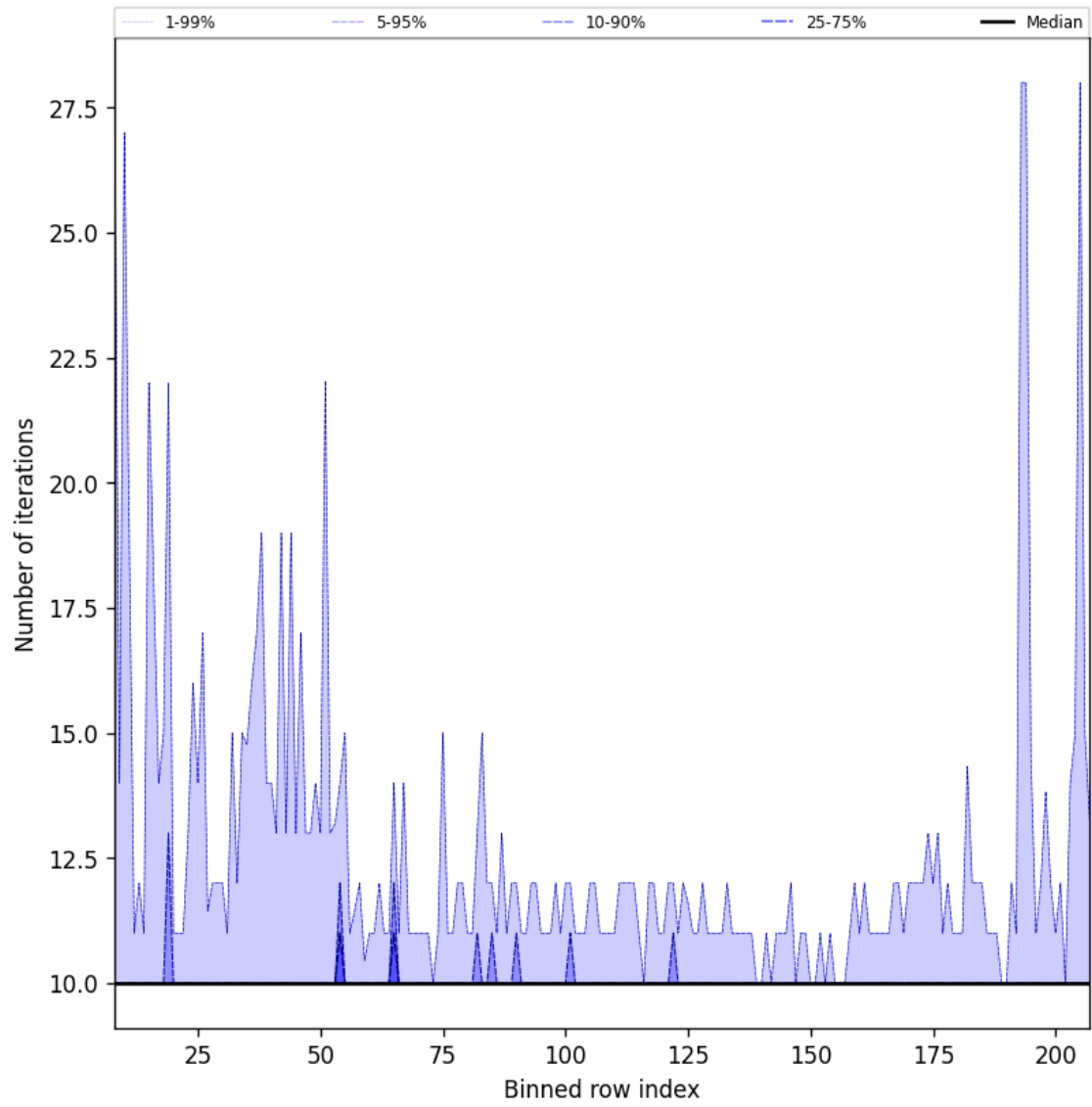


Figure 43: Along track statistics of “Number of iterations” for 2025-12-08 to 2025-12-09

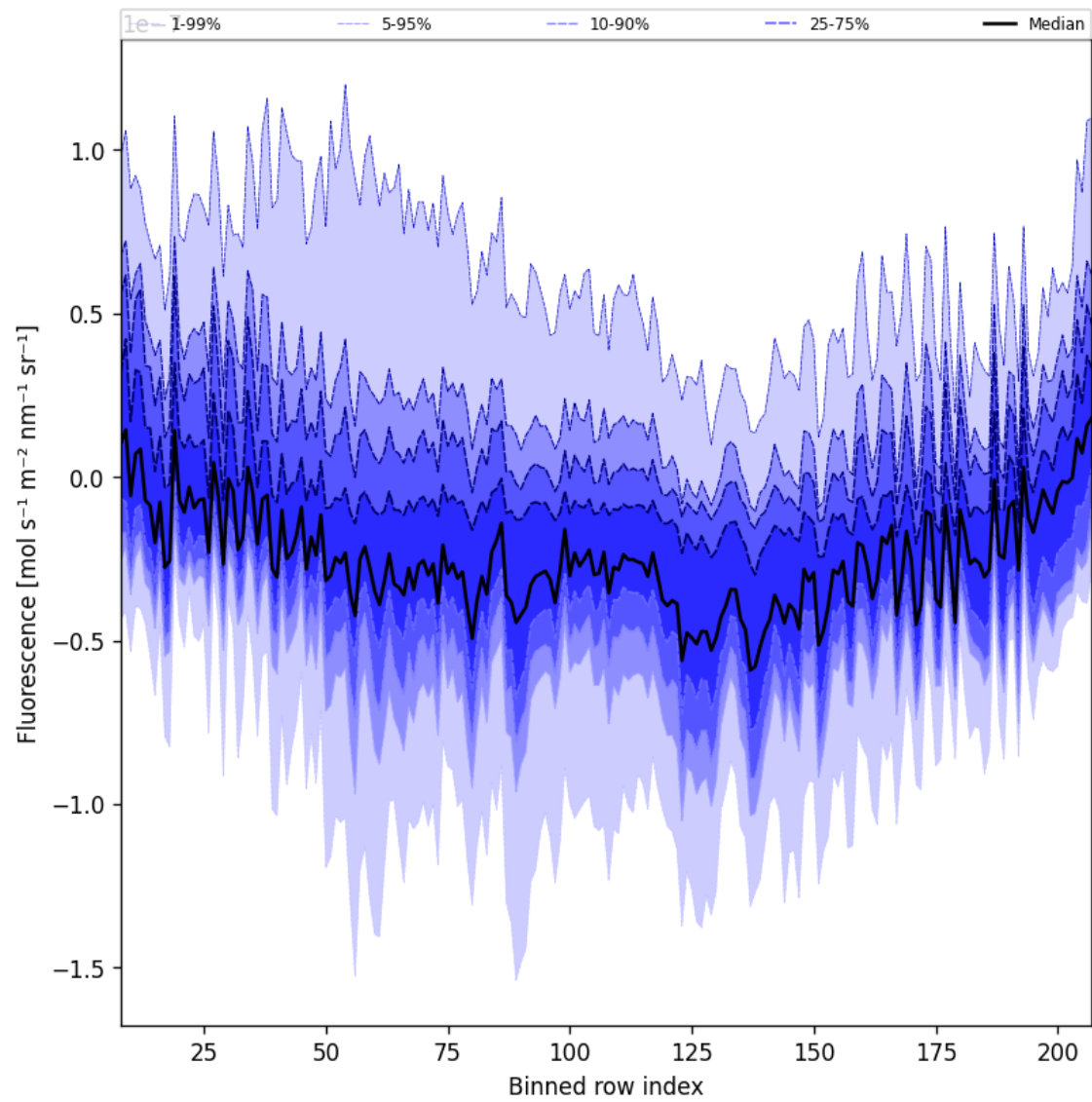


Figure 44: Along track statistics of “Fluorescence” for 2025-12-08 to 2025-12-09

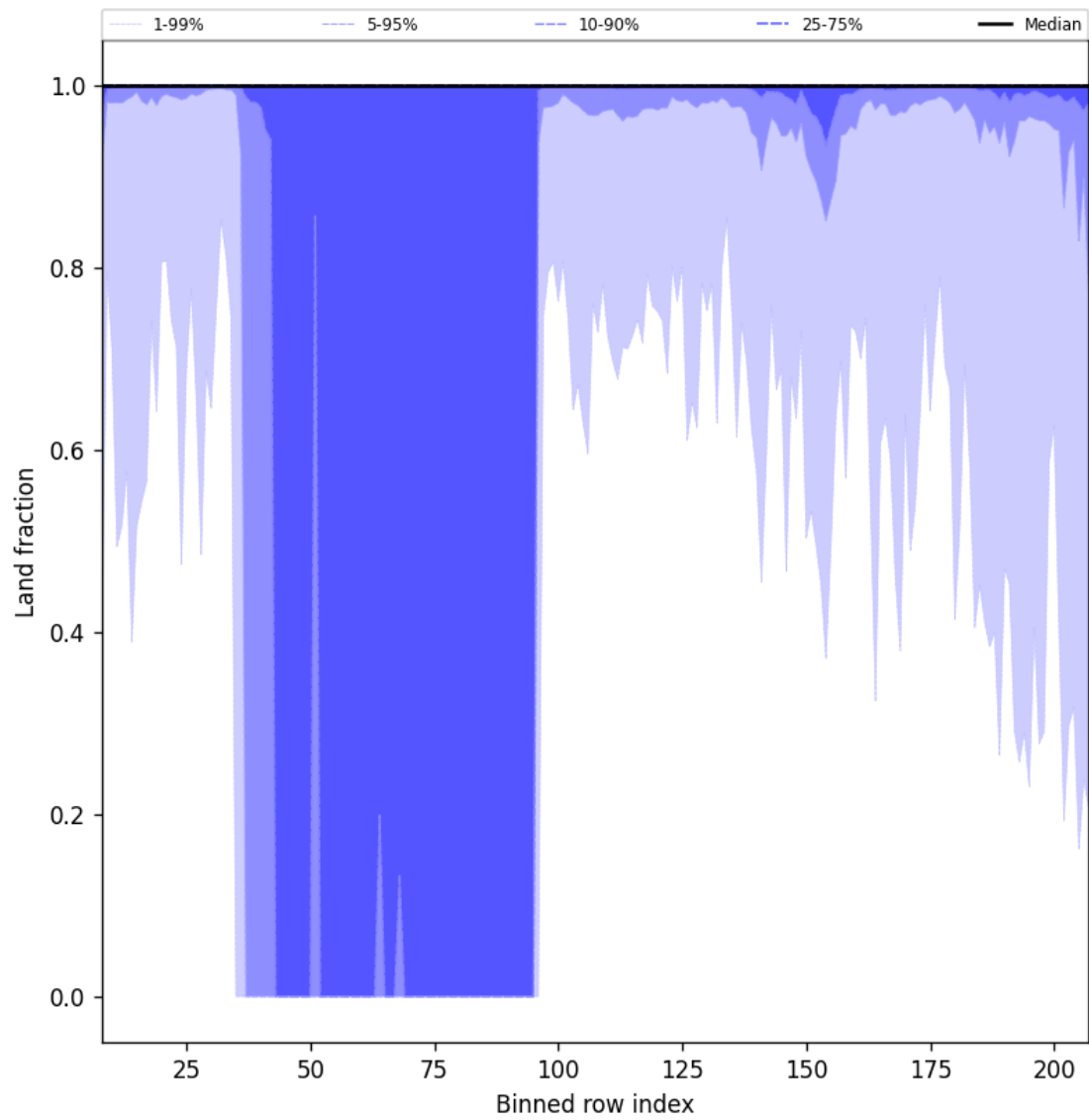


Figure 45: Along track statistics of “Land fraction” for 2025-12-08 to 2025-12-09

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.

Contents

1	Short Introduction	1
1.1	The list of parameters	1
2	Definitions	1
3	Granule outlines	8
4	Input data monitoring	9
5	Warnings and errors	10
6	World maps	11
7	Zonal average	17
8	Histograms	29
9	Along track statistics	41
10	Coincidence density	53
11	Copyright information of ‘PyCAMA’	53

List of Figures

1	Outline of the granules.	8
2	Input data per granule	9
3	Fraction of pixels with specific warnings and errors during processing	10
4	Map of “Mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	11
5	Map of “Precision of mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	12
6	Map of “Bias corrected mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	13
7	Map of “Fluorescence” for 2025-12-08 to 2025-12-09	14
8	Map of “Land fraction” for 2025-12-08 to 2025-12-09	15
9	Map of the number of observations for 2025-12-08 to 2025-12-09	16
10	Zonal average of “QA value” for 2025-12-08 to 2025-12-09.	17
11	Zonal average of “Mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09.	18
12	Zonal average of “Precision of mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09.	19
13	Zonal average of “Bias corrected mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09.	20
14	Zonal average of “Number of points in the spectrum” for 2025-12-08 to 2025-12-09.	21
15	Zonal average of “Spectral offset SWIR ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2025-12-08 to 2025-12-09.	22
16	Zonal average of “ χ^2 (SWIR)” for 2025-12-08 to 2025-12-09.	23
17	Zonal average of “ χ^2 (NIR)” for 2025-12-08 to 2025-12-09.	24
18	Zonal average of “Degrees of freedom” for 2025-12-08 to 2025-12-09.	25
19	Zonal average of “Number of iterations” for 2025-12-08 to 2025-12-09.	26
20	Zonal average of “Fluorescence” for 2025-12-08 to 2025-12-09.	27
21	Zonal average of “Land fraction” for 2025-12-08 to 2025-12-09.	28
22	Histogram of “QA value” for 2025-12-08 to 2025-12-09	29
23	Histogram of “Mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	30
24	Histogram of “Precision of mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	31
25	Histogram of “Bias corrected mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	32
26	Histogram of “Number of points in the spectrum” for 2025-12-08 to 2025-12-09	33
27	Histogram of “Spectral offset SWIR ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2025-12-08 to 2025-12-09	34
28	Histogram of “ χ^2 (SWIR)” for 2025-12-08 to 2025-12-09	35
29	Histogram of “ χ^2 (NIR)” for 2025-12-08 to 2025-12-09	36

30	Histogram of “Degrees of freedom” for 2025-12-08 to 2025-12-09	37
31	Histogram of “Number of iterations” for 2025-12-08 to 2025-12-09	38
32	Histogram of “Fluorescence” for 2025-12-08 to 2025-12-09	39
33	Histogram of “Land fraction” for 2025-12-08 to 2025-12-09	40
34	Along track statistics of “QA value” for 2025-12-08 to 2025-12-09	41
35	Along track statistics of “Mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	42
36	Along track statistics of “Precision of mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	43
37	Along track statistics of “Bias corrected mole fraction of CH ₄ ” for 2025-12-08 to 2025-12-09	44
38	Along track statistics of “Number of points in the spectrum” for 2025-12-08 to 2025-12-09	45
39	Along track statistics of “Spectral offset SWIR ($\lambda_{\text{true}} - \lambda_{\text{nominal}}$)” for 2025-12-08 to 2025-12-09	46
40	Along track statistics of “ χ^2 (SWIR)” for 2025-12-08 to 2025-12-09	47
41	Along track statistics of “ χ^2 (NIR)” for 2025-12-08 to 2025-12-09	48
42	Along track statistics of “Degrees of freedom” for 2025-12-08 to 2025-12-09	49
43	Along track statistics of “Number of iterations” for 2025-12-08 to 2025-12-09	50
44	Along track statistics of “Fluorescence” for 2025-12-08 to 2025-12-09	51
45	Along track statistics of “Land fraction” for 2025-12-08 to 2025-12-09	52

List of Tables

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

11 Copyright information of ‘PyCAMA’

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

All rights reserved.

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

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

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

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