PyCAMA report generated by tropl2-proc

tropl2-proc

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

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

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

with f(x) the probability density function.

The median is a special case of a percentile. Instead of $\frac{1}{2}$ 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} .

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

$$R_{kl} = R(x_{(k)}, x_{(l)}) = \frac{C_{kl}}{\sqrt{C_{kk}C_{ll}}} = \frac{C_{kl}}{\sqrt{V(x_k)V(x_l)}}$$
(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]	0.538 ± 0.414	20390401	5.000×10^{-3}	0.840	0.730	0.0	1.000		
cloud fraction [1]	0.563 ± 0.340	20390401	0.995	0.716	0.535	5.256×10^{-3}	1.000		
cloud top height [m]	$(0.398 \pm 0.275) imes 10^4$	20390401	$1.575 imes 10^3$	3.963×10^{3}	3.400×10^{3}	0.0	$2.000 imes 10^4$		
cloud optical thickness [1]	19.0 ± 33.7	20390401	5.13	11.4	9.78	1.000	250		
cloud fraction crb [1]	0.563 ± 0.340	20390401	0.995	0.716	0.535	1.530×10^{-3}	1.000		
cloud height crb [m]	$(0.299 \pm 0.229) imes 10^4$	20390401	75.0	3.156×10^{3}	2.507×10^{3}	0.0	$2.000 imes 10^4$		
cloud albedo crb [1]	0.650 ± 0.212	20390401	0.995	0.293	0.635	0.0	1.000		
surface albedo fitted [1]	0.299 ± 0.359	20390401	1.500×10^{-2}	0.606	7.618×10^{-2}	0.0	1.000		
surface albedo fitted crb [1]	0.282 ± 0.342	20390401	$1.500 imes 10^{-2}$	0.608	$5.603 imes 10^{-2}$	0.0	1.000		
fitted root mean square [1]	$(7.932 \pm 10.374) \times 10^{-4}$	20390401	$5.000 imes 10^{-5}$	$9.879 imes10^{-4}$	$5.009 imes 10^{-4}$	$9.117 imes10^{-7}$	0.239		
fitted root mean square crb [1]	$(7.125 \pm 8.371) \times 10^{-4}$	20390401	$5.000 imes 10^{-5}$	$9.405 imes 10^{-4}$	$4.086 imes10^{-4}$	$7.462 imes10^{-7}$	0.559		
wavelength shift [nm]	$(9.774 \pm 7.526) \times 10^{-3}$	20390401	$9.000 imes 10^{-4}$	1.097×10^{-2}	9.462×10^{-3}	-5.035×10^{-2}	7.757×10^{-2}		
cloud fraction apriori [1]	0.571 ± 0.346	20390401	0.995	0.752	0.551	0.0	1.000		
reflectance blue ocra [1]	0.602 ± 0.235	20390401	0.295	0.414	0.588	0.132	2.10		
reflectance green ocra [1]	0.557 ± 0.266	20390401	0.195	0.491	0.549	$8.093 imes 10^{-2}$	2.01		
reflectance continuum aband [1]	0.513 ± 0.291	20390401	0.795	0.503	0.520	$1.231 imes 10^{-2}$	4.42		
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Table 2: Percentile ranges										
Variable	1 %	5%	10 %	15.9%	25 %	75%	84.1 %	90 %	95 %	99 %
qa value [1]	0.0	0.0	0.0	0.0	$7.000 imes 10^{-2}$	0.910	1.000	1.000	1.000	1.000
cloud fraction [1]	$2.638 imes10^{-2}$	$6.957 imes 10^{-2}$	0.110	0.161	0.248	0.964	1.000	1.000	1.000	1.000
cloud top height [m]	229	673	1.016×10^3	1.336×10^3	1.744×10^{3}	5.707×10^{3}	6.785×10^{3}	$7.820 imes 10^3$	$9.213 imes 10^3$	$1.176 imes 10^4$
cloud optical thickness [1]	1.000	2.37	3.60	4.53	5.48	16.8	24.6	36.3	65.0	240
cloud fraction crb [1]	$2.613 imes10^{-2}$	$6.914 imes10^{-2}$	0.110	0.161	0.247	0.963	1.000	1.000	1.000	1.000
cloud height crb [m]	0.0	205	511	798	1.156×10^{3}	4.312×10^{3}	5.400×10^{3}	6.383×10^{3}	7.546×10^{3}	9.454×10^{3}
cloud albedo crb [1]	$5.576 imes10^{-2}$	0.294	0.413	0.466	0.513	0.807	0.894	0.962	1.000	1.000
surface albedo fitted [1]	0.0	9.410×10^{-3}	1.434×10^{-2}	$1.885 imes 10^{-2}$	2.604×10^{-2}	0.632	0.855	0.927	0.975	1.000
surface albedo fitted crb [1]	$2.213 imes 10^{-3}$	7.592×10^{-3}	$1.093 imes 10^{-2}$	$1.430 imes 10^{-2}$	1.972×10^{-2}	0.627	0.806	0.865	0.908	0.956
fitted root mean square [1]	$1.821 imes 10^{-5}$	$3.896 imes 10^{-5}$	$6.580 imes 10^{-5}$	$1.020 imes 10^{-4}$	$1.678 imes10^{-4}$	1.156×10^{-3}	$1.567 imes 10^{-3}$	$1.937 imes 10^{-3}$	$2.412 imes 10^{-3}$	3.404×10^{-3}
fitted root mean square crb [1]	$1.113 imes 10^{-5}$	$2.767 imes 10^{-5}$	$4.689 imes 10^{-5}$	$7.290 imes 10^{-5}$	$1.244 imes10^{-4}$	1.065×10^{-3}	$1.478 imes 10^{-3}$	1.846×10^{-3}	$2.315 imes 10^{-3}$	3.255×10^{-3}
wavelength shift [nm]	-7.123×10^{-3}	-3.847×10^{-4}	$6.983 imes 10^{-4}$	1.982×10^{-3}	4.072×10^{-3}	1.504×10^{-2}	1.750×10^{-2}	1.957×10^{-2}	2.222×10^{-2}	2.763×10^{-2}
cloud fraction apriori [1]	$1.711 imes10^{-2}$	$6.394 imes 10^{-2}$	0.102	0.155	0.248	1.000	1.000	1.000	1.000	1.000
reflectance blue ocra [1]	0.235	0.266	0.297	0.334	0.393	0.807	0.868	0.907	0.944	1.10
reflectance green ocra [1]	0.158	0.186	0.210	0.242	0.304	0.796	0.863	0.910	0.949	1.06
reflectance continuum aband [1]	3.502×10^{-2}	6.783×10^{-2}	0.111	0.163	0.260	0.763	0.835	0.886	0.939	1.06

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Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.622 ± 0.399	7676766	0.790	0.870	0.0	1.000	0.180	0.970
cloud fraction [1]	0.579 ± 0.355	7676766	0.765	0.579	$5.256 imes 10^{-3}$	1.000	0.230	0.995
cloud top height [m]	$(0.441 \pm 0.278) imes 10^4$	7676766	$4.263 imes 10^3$	$3.838 imes 10^3$	0.0	2.000×10^4	2.050×10^3	6.313×10^{3}
cloud optical thickness [1]	26.5 ± 43.9	7676766	17.3	11.0	1.000	250	6.34	23.6
cloud fraction crb [1]	0.578 ± 0.356	7676766	0.766	0.576	$8.445 imes 10^{-3}$	1.000	0.229	0.995
cloud height crb [m]	$(0.370 \pm 0.241) \times 10^4$	7676766	3.847×10^3	3.246×10^3	0.0	2.000×10^4	1.593×10^{3}	5.440×10^{3}
cloud albedo crb [1]	0.601 ± 0.198	7676766	0.233	0.591	0.0	1.000	0.489	0.723
surface albedo fitted [1]	0.139 ± 0.170	7676766	0.177	$5.508 imes10^{-2}$	0.0	1.000	2.493×10^{-2}	0.202
surface albedo fitted crb [1]	0.132 ± 0.169	7676766	0.172	$4.219 imes10^{-2}$	0.0	1.000	$1.949 imes 10^{-2}$	0.191
fitted root mean square [1]	$(4.408 \pm 5.751) \times 10^{-4}$	7676766	$4.724 imes 10^{-4}$	$2.478 imes10^{-4}$	$9.117 imes10^{-7}$	8.828×10^{-2}	$1.032 imes 10^{-4}$	$5.755 imes10^{-4}$
fitted root mean square crb [1]	$(3.860 \pm 4.999) \times 10^{-4}$	7676766	$4.454 imes10^{-4}$	$1.867 imes10^{-4}$	$7.462 imes 10^{-7}$	$4.042 imes 10^{-2}$	$6.816 imes10^{-5}$	$5.136 imes10^{-4}$
wavelength shift [nm]	$(7.177 \pm 6.827) \times 10^{-3}$	7676766	$9.237 imes 10^{-3}$	$6.334 imes 10^{-3}$	-4.217×10^{-2}	$5.718 imes10^{-2}$	$2.138 imes10^{-3}$	1.137×10^{-2}
cloud fraction apriori [1]	0.582 ± 0.362	7676766	0.777	0.586	0.0	1.000	0.223	1.000
reflectance blue ocra [1]	0.539 ± 0.201	7676766	0.302	0.512	0.134	2.03	0.374	0.676
reflectance green ocra [1]	0.480 ± 0.228	7676766	0.366	0.453	8.280×10^{-2}	2.01	0.281	0.647
reflectance continuum aband [1]	0.434 ± 0.262	7676766	0.398	0.412	1.231×10^{-2}	4.42	0.224	0.622

Table 4: Parameterlist and	basic statistics fo	or the analysis f	for observations i	n the southern	hemisphere
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Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.487 ± 0.415	12713635	0.870	0.460	0.0	1.000	$3.000 imes 10^{-2}$	0.900
cloud fraction [1]	0.553 ± 0.330	12713635	0.668	0.518	$7.246 imes 10^{-3}$	1.000	0.258	0.926
cloud top height [m]	$(0.373 \pm 0.269) \times 10^4$	12713635	3.799×10^{3}	3.133×10^{3}	0.0	$2.000 imes 10^4$	1.566×10^{3}	5.365×10^{3}
cloud optical thickness [1]	14.5 ± 24.6	12713635	9.45	9.15	1.000	250	5.22	14.7
cloud fraction crb [1]	0.553 ± 0.330	12713635	0.668	0.519	$1.530 imes 10^{-3}$	1.000	0.258	0.926
cloud height crb [m]	$(0.256 \pm 0.211) \times 10^4$	12713635	2.757×10^{3}	2.110×10^{3}	0.0	$2.000 imes 10^4$	913	3.670×10^{3}
cloud albedo crb [1]	0.680 ± 0.215	12713635	0.323	0.674	0.0	1.000	0.530	0.853
surface albedo fitted [1]	0.395 ± 0.405	12713635	0.830	0.150	0.0	1.000	$2.683 imes 10^{-2}$	0.857
surface albedo fitted crb [1]	0.373 ± 0.385	12713635	0.788	0.144	0.0	1.000	1.990×10^{-2}	0.808
fitted root mean square [1]	$(1.006 \pm 1.186) \times 10^{-3}$	12713635	$1.200 imes 10^{-3}$	$7.640 imes10^{-4}$	$1.086 imes10^{-6}$	0.239	$2.818 imes10^{-4}$	$1.482 imes 10^{-3}$
fitted root mean square crb [1]	$(9.096 \pm 9.326) \times 10^{-4}$	12713635	$1.183 imes10^{-3}$	$6.530 imes 10^{-4}$	$9.724 imes10^{-7}$	0.559	$2.075 imes10^{-4}$	$1.390 imes 10^{-3}$
wavelength shift [nm]	$(1.134 \pm 0.749) \times 10^{-2}$	12713635	$1.065 imes10^{-2}$	1.160×10^{-2}	$-5.035 imes10^{-2}$	7.757×10^{-2}	$5.921 imes 10^{-3}$	1.657×10^{-2}
cloud fraction apriori [1]	0.564 ± 0.336	12713635	0.716	0.538	0.0	1.000	0.263	0.979
reflectance blue ocra [1]	0.640 ± 0.245	12713635	0.441	0.676	0.132	2.10	0.411	0.852
reflectance green ocra [1]	0.604 ± 0.276	12713635	0.517	0.654	$8.093 imes 10^{-2}$	1.95	0.330	0.847
reflectance continuum aband [1]	0.561 ± 0.297	12713635	0.516	0.618	1.363×10^{-2}	4.39	0.296	0.811

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]	0.695 ± 0.348	12544437	0.560	0.890	0.0	1.000	0.400	0.960
cloud fraction [1]	0.600 ± 0.357	12544437	0.757	0.635	$7.246 imes 10^{-3}$	1.000	0.243	1.000
cloud top height [m]	$(0.345 \pm 0.263) \times 10^4$	12544437	3.354×10^3	2.537×10^3	0.0	$2.000 imes 10^4$	$1.505 imes 10^3$	$4.859 imes 10^3$
cloud optical thickness [1]	19.2 ± 28.9	12544437	10.7	11.4	1.000	250	7.80	18.5
cloud fraction crb [1]	0.599 ± 0.358	12544437	0.759	0.633	$1.530 imes 10^{-3}$	1.000	0.241	1.000
cloud height crb [m]	$(0.271 \pm 0.234) \times 10^4$	12544437	3.066×10^{3}	1.862×10^{3}	0.0	$2.000 imes 10^4$	951	$4.017 imes 10^3$
cloud albedo crb [1]	0.608 ± 0.176	12544437	0.224	0.596	0.0	1.000	0.501	0.725
surface albedo fitted [1]	0.124 ± 0.235	12544437	$4.213 imes10^{-2}$	$3.179 imes 10^{-2}$	0.0	1.000	1.856×10^{-2}	$6.069 imes10^{-2}$
surface albedo fitted crb [1]	0.116 ± 0.234	12544437	$3.020 imes 10^{-2}$	$2.394 imes10^{-2}$	0.0	1.000	$1.408 imes 10^{-2}$	$4.428 imes10^{-2}$
fitted root mean square [1]	$(7.584 \pm 11.448) \times 10^{-4}$	12544437	$1.009 imes 10^{-3}$	$4.044 imes10^{-4}$	$9.117 imes10^{-7}$	0.147	$1.257 imes10^{-4}$	$1.135 imes10^{-3}$
fitted root mean square crb [1]	$(7.213 \pm 8.659) \times 10^{-4}$	12544437	$9.957 imes10^{-4}$	$3.752 imes 10^{-4}$	$7.462 imes10^{-7}$	0.124	$1.100 imes10^{-4}$	$1.106 imes10^{-3}$
wavelength shift [nm]	$(9.293 \pm 7.749) \times 10^{-3}$	12544437	1.106×10^{-2}	$8.906 imes 10^{-3}$	$-4.806 imes 10^{-2}$	7.506×10^{-2}	3.556×10^{-3}	$1.462 imes10^{-2}$
cloud fraction apriori [1]	0.604 ± 0.365	12544437	0.766	0.648	0.0	1.000	0.234	1.000
reflectance blue ocra [1]	0.536 ± 0.206	12544437	0.328	0.504	0.139	2.07	0.363	0.691
reflectance green ocra [1]	0.479 ± 0.232	12544437	0.401	0.446	$9.489 imes 10^{-2}$	1.91	0.267	0.668
reflectance continuum aband [1]	0.418 ± 0.271	12544437	0.486	0.399	1.284×10^{-2}	4.42	0.162	0.648

	Table 6: Parar	neterlist and	basic statistics for	or the analysis for	observations over	land		
Variable	mean $\pm \sigma$	Count	IQR	Median	Minimum	Maximum	25 % percentile	75 % percentile
qa value [1]	0.271 ± 0.379	6574609	0.460	$8.000 imes 10^{-2}$	0.0	1.000	0.0	0.460
cloud fraction [1]	0.482 ± 0.288	6574609	0.424	0.433	$5.256 imes 10^{-3}$	1.000	0.248	0.672
cloud top height [m]	$(0.490 \pm 0.269) imes 10^4$	6574609	3.345×10^{3}	4.781×10^{3}	0.0	$2.000 imes 10^4$	3.000×10^{3}	6.346×10^{3}
cloud optical thickness [1]	15.2 ± 34.4	6574609	6.09	5.68	1.000	250	4.26	10.4
cloud fraction crb [1]	0.483 ± 0.288	6574609	0.425	0.435	$6.340 imes 10^{-3}$	1.000	0.249	0.674
cloud height crb [m]	$(0.341 \pm 0.209) \times 10^4$	6574609	2.509×10^{3}	3.189×10^{3}	0.0	$2.000 imes 10^4$	1.943×10^{3}	4.452×10^{3}
cloud albedo crb [1]	0.730 ± 0.247	6574609	0.390	0.778	0.0	1.000	0.564	0.954
surface albedo fitted [1]	0.635 ± 0.337	6574609	0.688	0.815	0.0	1.000	0.257	0.945
surface albedo fitted crb [1]	0.600 ± 0.311	6574609	0.628	0.769	0.0	1.000	0.251	0.878
fitted root mean square [1]	$(9.040 \pm 8.260) \times 10^{-4}$	6574609	$9.344 imes 10^{-4}$	$6.813 imes10^{-4}$	$1.635 imes 10^{-6}$	0.239	$3.281 imes10^{-4}$	$1.262 imes 10^{-3}$
fitted root mean square crb [1]	$(7.548 \pm 7.401) \times 10^{-4}$	6574609	$8.912 imes10^{-4}$	$5.267 imes10^{-4}$	$2.278 imes10^{-6}$	7.708×10^{-2}	$2.014 imes10^{-4}$	$1.093 imes10^{-3}$
wavelength shift [nm]	$(1.125 \pm 0.698) \times 10^{-2}$	6574609	$1.042 imes 10^{-2}$	1.117×10^{-2}	$-4.074 imes10^{-2}$	6.953×10^{-2}	$5.867 imes 10^{-3}$	1.629×10^{-2}
cloud fraction apriori [1]	0.497 ± 0.293	6574609	0.439	0.454	0.0	1.000	0.259	0.698
reflectance blue ocra [1]	0.724 ± 0.239	6574609	0.370	0.812	0.132	2.10	0.531	0.901
reflectance green ocra [1]	0.701 ± 0.268	6574609	0.425	0.805	$8.093 imes 10^{-2}$	2.01	0.483	0.907
reflectance continuum aband [1]	0.690 ± 0.248	6574609	0.402	0.767	$1.363 imes10^{-2}$	4.39	0.480	0.882

Viewing zenith angle	Solar zenith angle	Latitude	Radiometric cloud fraction	Cloud top height	Cloud optical thickness	Cloud fraction (CRB)	Cloud height (CRB)	Cloud albedo (CRB)	OCRA cloud fraction
1.000	$5.381 imes 10^{-3}$	$3.063 imes 10^{-2}$	3.046×10^{-2}	-6.197×10^{-3}	$-4.454 imes 10^{-2}$	$3.038 imes 10^{-2}$	4.758×10^{-2}	2.644×10^{-2}	2.734×10^{-2}
$5.381 imes 10^{-3}$	1.000	5.899×10^{-2}	$9.015 imes10^{-2}$	0.147	0.122	9.269×10^{-2}	$9.281 imes10^{-2}$	0.190	0.105
3.063×10^{-2}	$5.899 imes10^{-2}$	1.000	4.752×10^{-2}	8.957×10^{-2}	0.215	4.373×10^{-2}	0.244	-0.240	2.793×10^{-2}
$3.046 imes 10^{-2}$	$9.015 imes10^{-2}$	4.752×10^{-2}	1.000	-7.857×10^{-2}	0.266	1.000	$-3.583 imes10^{-2}$	0.148	0.981
-6.197×10^{-3}	0.147	8.957×10^{-2}	-7.857×10^{-2}	1.000	$6.070 imes10^{-2}$	$-7.731 imes 10^{-2}$	0.923	0.119	$-9.136 imes 10^{-2}$
-4.454×10^{-2}	0.122	0.215	0.266	$6.070 imes 10^{-2}$	1.000	0.262	0.131	0.299	0.260
$3.038 imes 10^{-2}$	$9.269 imes10^{-2}$	$4.373 imes10^{-2}$	1.000	$-7.731 imes 10^{-2}$	0.262	1.000	$-3.583 imes 10^{-2}$	0.149	0.981
$4.758 imes 10^{-2}$	$9.281 imes10^{-2}$	0.244	$-3.583 imes 10^{-2}$	0.923	0.131	$-3.583 imes 10^{-2}$	1.000	$-2.713 imes 10^{-2}$	$-5.365 imes 10^{-2}$
2.644×10^{-2}	0.190	-0.240	0.148	0.119	0.299	0.149	-2.713×10^{-2}	1.000	0.167
2.734×10^{-2}	0.105	$2.793 imes 10^{-2}$	0.981	-9.136×10^{-2}	0.260	0.981	-5.365×10^{-2}	0.167	1.000

Table 7: Correlation matrix

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Viewing zenith angle	Solar zenith angle	Latitude	Radiometric cloud fraction	Cloud top height	Cloud optical thickness	Cloud fraction (CRB)	Cloud height (CRB)	Cloud albedo (CRB)	OCRA cloud fraction
382	2.02	29.2	0.202	-332	-29.3	0.202	2.132×10^3	0.110	0.185
2.02	371	55.5	0.591	7.792×10^3	79.3	0.607	4.102×10^{3}	0.776	0.699
29.2	55.5	$2.384 imes 10^3$	0.789	$1.201 imes 10^4$	354	0.727	$2.736 imes 10^4$	-2.48	0.472
0.202	0.591	0.789	0.116	-73.4	3.05	0.116	-28.0	$1.071 imes10^{-2}$	0.116
-332	7.792×10^{3}	$1.201 imes 10^4$	-73.4	$7.538 imes 10^6$	5.615×10^{3}	-72.2	$5.812 imes 10^6$	69.5	-86.8
-29.3	79.3	354	3.05	5.615×10^3	1.135×10^{3}	3.00	$1.015 imes 10^4$	2.14	3.03
0.202	0.607	0.727	0.116	-72.2	3.00	0.116	-28.0	$1.079 imes10^{-2}$	0.116
2.132×10^{3}	4.102×10^{3}	$2.736 imes 10^4$	-28.0	$5.812 imes 10^6$	$1.015 imes 10^4$	-28.0	$5.265 imes 10^6$	-13.2	-42.6
0.110	0.776	-2.48	$1.071 imes 10^{-2}$	69.5	2.14	1.079×10^{-2}	-13.2	$4.508 imes10^{-2}$	1.228×10^{-2}
0.185	0.699	0.472	0.116	-86.8	3.03	0.116	-42.6	$1.228 imes10^{-2}$	0.120

Table 8: Covariance matrix

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Figure 1: Map of correlation graph for 2023-11-20 to 2023-11-22.



Figure 2: Map of correlation matrix for 2023-11-20 to 2023-11-22.

Granule outlines



Figure 3: Outline of the granules.

4 Input data monitoring



Figure 4: Input data per granule

5 Warnings and errors



Figure 5: Fraction of pixels with specific warnings and errors during processing

6 World maps



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Figure 11: Map of "Cloud albedo (CRB)" for 2023-11-20 to 2023-11-22





Figure 12: Map of "Fitted surface albedo" for 2023-11-20 to 2023-11-22





Figure 13: Map of "Fitted surface albedo (CRB)" for 2023-11-20 to 2023-11-22

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Figure 16: Map of "Fitting wavelength shift" for 2023-11-20 to 2023-11-22

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Figure 17: Map of "OCRA cloud fraction" for 2023-11-20 to 2023-11-22





Figure 18: Map of "OCRA "blue" reflectance" for 2023-11-20 to 2023-11-22





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7 Zonal average



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8 Histograms

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



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Figure 53: Histogram of "ROCINN "red" reflectance" for 2023-11-20 to 2023-11-22

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.



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Figure 68: Along track statistics of "OCRA "green" reflectance" for 2023-11-20 to 2023-11-22



Figure 69: Along track statistics of "ROCINN "red" reflectance" for 2023-11-20 to 2023-11-22

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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