ESA Climate Change Initiative
Aerosol_cci+

CRDP Documentation

Version 3.1

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DOCUMENT CHANGE RECORD

Issue	Date	Modified Items / Reason for Change
1.0	**10.03.2020**	Issue of this technical note
1.1	**21.04.2020**	Revised according to ESA RIDs received 17/04/2020
2.0	**31.03.2021**	Update for v2 test datasets
2.1	**15.04.2021**	Minor corrections according to RIDs raised by ESA
3.0	**06.05.2022**	Update for v3 test datasets
3.1	**18.07.2022**	Minor corrections according to RIDs raised by ESA

INTRODUCTION

Within ESA's Climate Change Initiative (CCI), the Aerosol_cci projects (2010-2017) have produced several dataset versions of various aerosol records, which now extend over full mission time series of the exploited Earth Observation instruments. The operational reprocessing and regular extensions of those datasets has been transferred to the Copernicus Climate Change Service (C3S), contract C3S_312b_Lot2 (Atmospheric Composition ECVs, including aerosols). Within the ESA Aerosol_cci+ project (03/2019 – 05/2022) algorithm development for the dual view sensor lines continues (extending it mainly to the Sentinel-3 SLSTR instruments, but also looking inti the full record consistency across all 4 sensors). This short *Technical Note on the Climate Research Data Package (CRDP) of Aerosol_cci+* briefly summarizes the third versions of all datasets produced in Aerosol_cci+ towards the end of its third year (02/2022). It includes test datasets (AOD / FM-AOD) covering 12 months of one year for each of the 4 sensors (ATSR-2, AATSR, SLSTR/S3A, SLSTR/S3B) obtained with one algorithm (Swansea university SU) and additionally test datasets for SLSTR/S3A processed with the new CISAR algorithm (Rayference RF).

These test datasets of the CRDP have beeen evaluated by independent experts. All datasets are internally available together with all earlier versions of datasets produced under Aerosol_cci2 at the ICARE ftp site http://www.icare.univ-lille1.fr/archive/?dir=CCI-Aerosols_internal (restricted access for project partners). This project processed only one-year test datasets. Full mission records processed with the Swansea algorithm are publically available at the operational Climate Data Store https://cds.climate.copernicus.eu/cdsapp#!/dataset/satellite-aerosol-properties?tab=overview of the Copernicus Climate Change Service (currently pre-decessor versions SLSTR v1.12 and ATSR v4.33; the latest versions as benchmarked in this project will become available at the next reprocessing in autumn 2023).

The dcoumentation for the algorithms in Aerosol_cci+, the Algorithm Theoretical Basis Documents, the Product User Guide and the Product Validation and Intercomparison Report are provided at https://climate.esa.int/en/projects/aerosol/ once approved by ESA:

Aerosol_cci+ CRDP datasets (February 2022)

algorithm	version	sensor(s)	responsible provider	Main aerosol parameters	Resolution coverage	period(s)
SU	4.35	ATSR-2	USwansea	AOD, FMAOD	10km, 1° global	1-12 / 1998
	4.35	AATSR	USwansea	AOD, FMAOD	10km, 1° global	1-12 / 2008
	1.14	SLSTR/S3A	USwansea	AOD, FMAOD	10km, 1° global	1-12 / 2020
	1.14	SLSTR/S3B	USwansea	AOD, FMAOD	10km, 1° global	1-12 / 2020
RF	2.1.1	SLSTR/S3A	Rayference	AOD, FMAOD	5km, 1°	1-12 / 2020

The main product characteristics are summarized in the Product User Guide.

The independent validation of the products is summarized in the Product Validation and Intercomparison Report.

REFERENCES

Algorithm Theoretical Basis Document, Swansea SLSTR v1.12, version 1.1, dated 04.05.2021.

Algorithm Theoretical Basis Document, Swansea ATSR v4.35, version 5.0, dated 31.03.2022.

Algorithm Theoretical Basis Document, CISAR SLSTR, version 1.2, dated 01.12.2021.

Product User Guide, version 3.0, dated 07.12.2021.

End-to-End ECV Uncertainty Budget, version 3.0, dated 07.12.2021.

Climate Research Data Package, version 3.1, dated 18.07.2027.

Product Validation and Intercomparison Report, v3.1, dated 18.07.2022.

Climate Assessment Report, v3.1, dated 18.07.2022.