

AEROCLO-sA F20 OSIRIS L2

General information

Dataset name: AEROCLO-sA F20 OSIRIS L2
Dataset DOI: 10.6096/AEROCLO.1802
Created on: 2019-12-19

Contact(s)

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Period

Date begin (yyyy-mm-jj): 2019-09-05
Date end (yyyy-mm-jj): 2019-09-12

Project(s)

AEROCLO

Data description

Abstract

The Observing System Including Polarisation in the Solar Infrared Spectrum (OSIRIS, Auriol et al., 2008) is an airborne prototype of the future space mission 3MI (Multi-viewing, Multichannel, Multi-polarization instrument). OSIRIS operated from the SAFIRE Falcon 20 during AEROCLO-sA campaign.

Observing strategy

The total and polarized radiances are sampled by OSIRIS between 440 and 2200 nm. New retrieval algorithms (Waquet et al., 2013; Peers et al., 2015) allow to simultaneously retrieve the aerosol and surface properties over land and ocean, or the aerosol and cloud properties in case of aerosols above clouds.

The present dataset is focused on visible channels and for cases of aerosol above cloud.

References

The OSIRIS instrument is described in Auriol et al. (2008): Auriol, F., Léon, J.-F., Balois, J.-Y., Verwaerde, C., François, P., Riedi, J., Parol, F., Waquet, F., Tanré, D. and Goloub, P.: Multidirectional visible and shortwave infrared polarimeter for atmospheric aerosol and cloud observation: OSIRIS (Observing System Including Polarisation in the Solar Infrared Spectrum), in *Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques, and Applications II*, vol. 7149, p. 71491D, International Society for Optics and Photonics., 2008.

Algorithms used are described in Waquet et al. (2009) and Peers et al. (2015): Waquet, F., Cornet, C., Deuzé, J.-L., Dubovik, O., Ducos, F., Goloub, P., Herman, M., Lapyonok, T., Labonnote, L. C., Riedi, J., Tanré, D., Thieuleux, F., and Vanbauce, C.: Retrieval of aerosol microphysical and optical properties above liquid clouds from POLDER/PARASOL polarization measurements, *Atmos. Meas. Tech.*, 6, 991?1016, <https://doi.org/10.5194/amt-6-991-2013>, 2013. Peers, F., F. Waquet, C. Cornet, P. Dubuisson, F. Ducos, P. Goloub, F. Szczap, D. Tanré, and F. Thieuleux. « Absorption of aerosols above clouds from POLDER/PARASOL measurements and estimation of their direct radiative effect ». *Atmospheric Chemistry and Physics* 15, no 8 : 4179?4196 (2015).

Instrument information

Sensor

Instrument type:	Imaging Spectrometers/Radiometers
Reference:	Auriol et al., 2008

Geographic information

Aircraft operations from Walvis Bay, Namibia

Location name:	Aircraft operations from Walvis Bay, Namibia
Platform type:	F-FALCON 20
West bounding coordinate (°):	8
East bounding coordinate (°):	20
North bounding coordinate (°):	-16
South bounding coordinate (°):	-24
Altitude max:	10000

Derived parameters

Angstrom Exponent

Parameter keyword:	Atmosphere > Aerosols > Aerosol Optical Depth/Thickness > Angstrom Exponent
Acquisition methodology and quality:	The Aerosol Optical Depth (AOD) at 490, 550, 670 and 870 nm are obtained from the simulation of total and polarized radiances (on the principal plane of OSIRIS images and from scattering angles between 90° and 130°) described in Waquet et al. (2013) and by using an optimal estimation method. Corresponding Angström exponent and errors are also provided.
Date begin (yyyy-mm-jj):	2019-09-05
Date end (yyyy-mm-jj):	2019-09-12

Aerosol Single Scattering Albedo

Parameter name:	Aerosol Single Scattering Albedo
Parameter keyword:	Atmosphere > Aerosols
Acquisition methodology and quality:	The Single Scattering Albedo(SSA) at 490, 550, 670 and 870 nm are obtained from the simulation of total and polarized radiances (on the full principal plane of OSIRIS images) described in Peers et al. (2015). Corresponding errors are also provided.
Date begin (yyyy-mm-jj):	2019-09-05
Date end (yyyy-mm-jj):	2019-09-12

Complex aerosol refractive index

Parameter name:	Complex aerosol refractive index
Parameter keyword:	Atmosphere > Aerosols
Acquisition methodology and quality:	The real part of the refractive index is fixed according regional mean values obtained from previous studies and AERONET climatology (1.51) and the imaginary part is retrieved using the method described in Peers et al. (2015).
Date begin (yyyy-mm-jj):	2019-09-05
Date end (yyyy-mm-jj):	2019-09-12

Cloud Optical Depth/Thickness

Parameter keyword:	Atmosphere > Clouds > Cloud Microphysics > Cloud Optical Depth/Thickness
Acquisition methodology and quality:	The Cloud Optical Depth(COD) at 550 nm is obtained from the simulation of total and polarized radiances (on the full principal plane of OSIRIS images) described in Peers et al. (2015). Corresponding errors are also provided. In addition, droplet effective radius used is provided and fixed at 10 μm .
Date begin (yyyy-mm-jj):	2019-09-05
Date end (yyyy-mm-jj):	2019-09-12

Data use information

Use constraints:	The Principal Investigator(s) of the OSIRIS data for the AEROCLO-sA campaign is Fabien Waquet. If you intend to use the following data please consult with him via e-mail: fabien.waquet@univ-lille.fr . Please consider authorship for the PI whenever using the OSIRIS data. The OSIRIS data was acquired with the support of Frédérique Auriol (LOA), Jean-Marc Nicolas (LOA), Rodrique Loisil (LOA), Cyril Delegove (LOA) and with the help of the Falcon 20 operator (SAFIRE, www.safire.fr , a joint entity between CNRS, Météo-France and CNES). Data inversions are realized by Aurélien Chauvigné.
Data policy:	AEROCLO data policy

Database: AEROCLO-sA on BAOBAB
Original data format(s): ascii text