

AEROCLO-sA F20 Cloud Droplet Probe CDP

General information

Dataset name: AEROCLO-sA F20 Cloud Droplet Probe CDP
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Period

Date begin (yyyy-mm-jj): 2017-09-05
Date end (yyyy-mm-jj): 2017-09-12

Project(s)

AEROCLO

Data description

Abstract

Measurements obtained with a Cloud Droplet Probe (CDP) which measure the forward light scattering of hydrometeors. It is calibrated for measuring water droplet in the range 2 to 50 microns.

Instrument information

Sensor

Instrument type: Samplers
Manufacturer: DMT
Model: CDP2

Sensor resolution

Observation frequency: 1Hz

Geographic information

Falcon 20 Safire

Location name: Falcon 20 Safire
Platform type: F-FALCON 20

Measured parameter

Droplet Concentration/Size

Parameter name: Droplet Concentration/Size
Parameter keyword: Atmosphere > Clouds > Cloud Microphysics
Unit: particles/cm³
Acquisition methodology and quality: PADS acquisition. Size bins are not corrected to take into account the ambient refractive index

The computer controlling the in situ probes on the Falcon-20 experienced a time lag which was only noticed prior to the last two flights, fs170014 and fs170015. The correlation between the vertical profiles of aerosol extinction at 532 nm from the lidar and the merged size distribution from the in situ probes was used to determine the time lag during each flight. This was done by applying a series of time lags between 0s and 160s and observing the maximum correlation. A clear trend in the time lag becoming larger from the beginning of the campaign was observed. The following table indicates the time lag that yielded the maximum coefficient of determination and the value that has been applied to the in situ data.

Flight: Time lag (s)

fs170006:	90
fs170007 :	NA
fs170008 :	90
fs170009 :	90
fs170010 :	100
fs170011:	100
fs170012:	125
fs170013:	130
fs170014:	0
fs170015:	0

Date begin (yyyy-mm-jj): 2017-09-05
Date end (yyyy-mm-jj): 2017-09-12

Derived parameter

Total Droplet Concentration

Parameter name:	Total Droplet Concentration
Parameter keyword:	Atmosphere > Clouds > Cloud Microphysics
Unit:	particles/cm ³

Data use information

Use constraints:	<p>This work was supported by the French National Research Agency under grant agreement n° ANR-15-CE01-0014-01, the French national programme LEFE/INSU, the Programme national de Télédétection Spatiale (PNTS, http://www.insu.cnrs.fr/pnts), grants n° PNTS-2016-02 and PNTS-2016-14, the French National Agency for Space Studies (CNES), and the South African National Research Foundation (NRF) under grant UID 105958. The research leading to these results has received funding from the European Union's 7th Framework Programme (FP7/2014-2018) under EUFAR2 contract n°312609". Airborne data was obtained using the F20 Atmospheric Research Aircraft managed by Safire, which is a joint facility of the CNRS, Météo-France and the CNES.</p>
Data policy:	AEROCLO data policy