

TORUS_2022: NOAA P-3 Cloud Physics Data

Author:

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1.0 Data Set Description

Cloud physics measurements from the suite of instrumentation on the NOAA P-3 aircraft that flew around convective systems over the central United States during the TORUS_2022 campaign. Instruments include a Precipitation Imaging Probe, Cloud Imaging Probe, Cloud Droplet Probe, and CAS - Cloud and Aerosol Spectrometer.

Data Version: 1.0

Release Date: 13 July 2022

Data Status: Final

Time period: 19 May to 13 June 2022

Location: Central United States

Data Frequency: No set schedule

Data source: NOAA

Data set restrictions: None

2.0 Instrument Description

The NOAA P-3 was equipped with cloud microphysics probes that image cloud and precipitation particles and produce particle size distributions. The probes flown included:

Droplet Measurement Technologies, Inc. (DMT) **Cloud Combination Probe (CCP)** for aerosol and cloud hydrometeor size distributions from 2 to 50 μm , 2-D images and precipitation size distributions between 25 and 1550 μm , liquid water content from 0.05 to 3 g m⁻³. The CCP includes 2 droplet instruments:

Cloud Droplet Probe (CDP) for hydrometeor sizes between 3 - 50 μm

Cloud Imaging Probe (CIP) for hydrometeor sizes between 25 μm - 1.6 mm, including the CIP Grayscale (CIP GS) particle imaging module

Precipitation Imaging Probe (PIP) for hydrometeor sizes between 100 μm and 6.4 mm

Cloud and Aerosol Spectrometer (CAS) for aerosol and cloud hydrometeor size between 0.5 and 50 μm . The CAS forward resolution is 0.63 - 50 μm , while the backward resolution is 1.6 - 100 μm .

3.0 Data Collection and Processing

The data were collected and processed by the instrumentation in the field. No additional processing was performed post-field.

4.0 Data Format

The data are available in comma separated value (csv) format. Parameters are in the headers.

5.0 Data Remarks

Data are provided “as-is” but are considered to be in final form.

6.0 References

None.