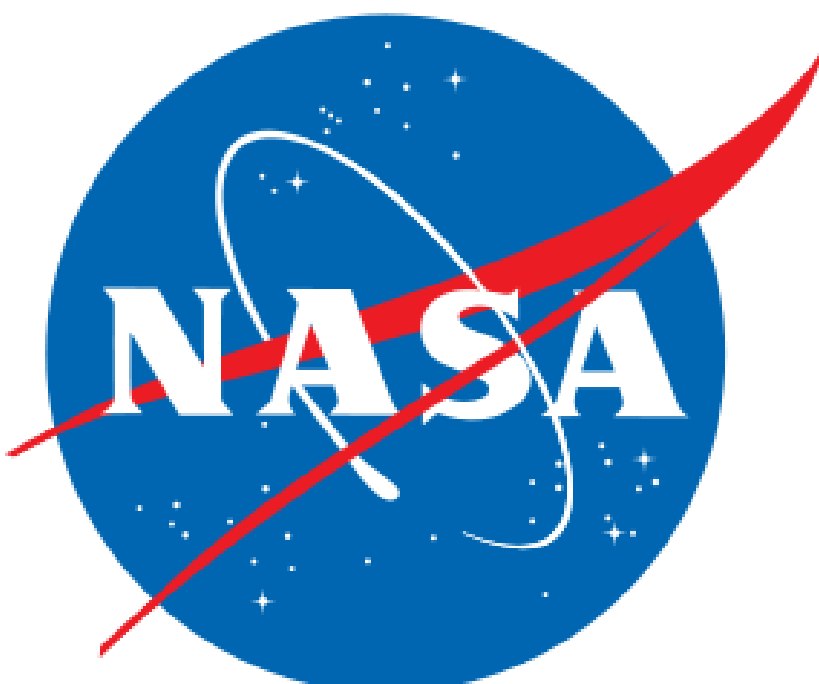




# CALIPSO Data Product Status

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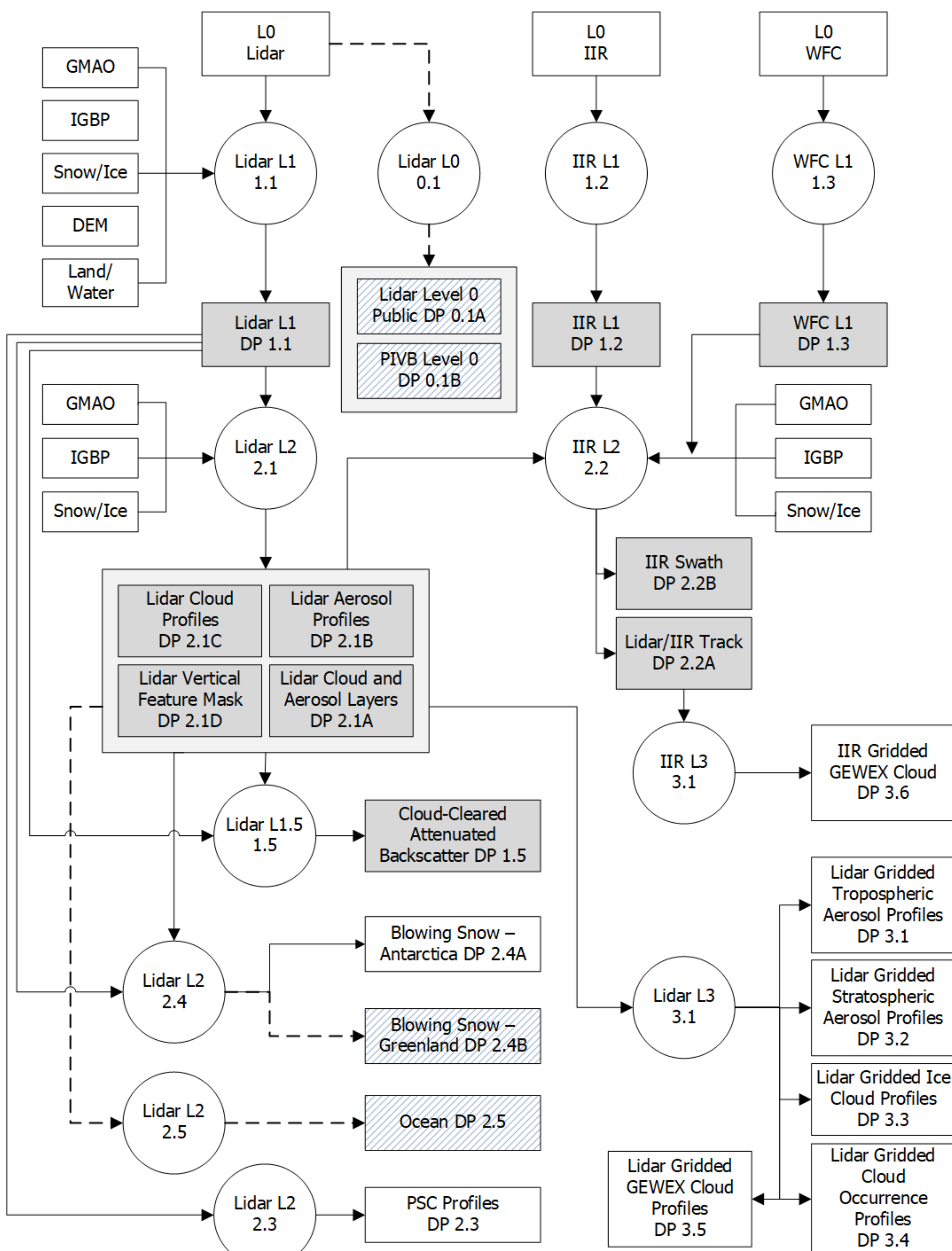


<https://www-calipso.larc.nasa.gov>

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## Overview of CALIPSO Data Products (DP)



Shaded = Standard & Expedited,  
Hashed = New Product,  
Otherwise, standard only

## Data Access

- NASA Langley Atmospheric Data Center (ASDC)
  - <https://asdc.larc.nasa.gov>
- NASA Langley ASDC Data Pool (OPeNDAP)
  - <https://opendap.larc.nasa.gov/opendap/CALIPSO>
- NASA Langley ASDC Direct Data Download
  - <https://asdc.larc.nasa.gov/data/CALIPSO>
- Cloud-Aerosol-Water-Radiation Interactions (ICARE) Data and Services Center
  - <https://www.icare.univ-lille.fr/>
- NASA Earthdata Search
  - <https://search.earthdata.nasa.gov>
- CALIPSO Search/Sub-setter Tool
  - <https://subset.larc.nasa.gov/calipso>

## Recent Data Releases

- V4.51 Lidar Level 1 (DP 1.1), September 2023
- V4.51 Lidar Level 2 (DP 2.1A – 2.1D), June 2023
- V4.51 IIR Level 2 (DP 2.2A and 2.2B), October 2023

## Upcoming Data Releases\*

### V1.00 Lidar Level 0 (DP 0.1A)

- Planned Release : Fall 2023**
- Consolidated and reformatted version of the CALIOP Level 0 binary data products into one for public consumption that is ITAR/Export Control compliant

### V1.00 Payload Instrument and Verification Block (DP 0.1B)

- Planned Release : Fall 2023**
- Reports full resolution science profile measurements for 15 consecutive laser profiles – not processed by the CALIPSO's on-board data averaging scheme.
- Only acquired during fixed periods of time during the full mission.

### V2.00 Lidar Level 2 Blowing Snow: Antarctica (DP 2.4A)

- Planned Release : Fall 2023**
- Updated version will make use of new V4.51 Lidar Level 1 and V4.51 Lidar Level 2.

### V1.00 Lidar Level 2 Blowing Snow: Greenland (DP 2.4B)

- Planned Release : Fall 2023**
- New version will use the same code base as the V1.00 Lidar Level 2 Blowing Snow – Antarctica, but with a different spatial region of interest.

### V1.00 Lidar Level 2 Ocean (DP 3.2)

- Planned Release : Winter 2023**
- Global observations of ocean subsurface optical properties
- Relevant Citations:
  - Lu X, Hu Y, Omar A, Baize R, Vaughan M, Rodier S, et al. Global Ocean Studies from CALIOP/CALIPSO by Removing Polarization Crosstalk Effects. Remote Sens 2021;13. <https://doi.org/10.3390/rs13142769>.
  - Lu X, Hu Y, Yang Y, Neumann T, Omar A, Baize R, et al. New Ocean Subsurface Optical Properties From Space Lidars: CALIOP/CALIPSO and ATLAS/ICESat-2. Earth Space Sci 2021;8:e2021EA001839. <https://doi.org/10.1029/2021EA001839>.

\*- no more releases planned until end of Phase F (Oct. 2025)

## Final Planned Data Products

| Data Product                                                                                                                                                                                                                                                                                                                 | Primary Changes                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V5.00 CALIOP Level 1                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"><li>Final resolution of any instrument anomalies that need to be addressed in the algorithm.</li></ul>                                                      |
| V5.00 CALIOP Level 2 (layer, profile, VFM)                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"><li>Implementation of the Low Energy Missing Data Recovery Algorithm (LEMDRA)</li></ul>                                                                     |
| V5.00 IIR Level 2                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>Ice crystal concentrations using CALIOP extinction and surface emissivity tables.</li><li>Improved IIR Cloud/Aerosol discrimination algorithm</li></ul> |
| V3.00 CALIOP L2 Blowing Snow - Antarctica<br>V2.00 CALIOP L2 Blowing Snow – Greenland<br>V5.00 CALIOP L3 – Tropospheric Aerosol<br>V2.00 CALIOP L3 – Stratospheric Aerosol<br>V2.00 CALIOP L3 – Ice Cloud<br>V2.00 CALIOP L3 – Cloud Occurrence<br>V2.00 CALIOP L3 – Cloud, GEWEX format<br>V2.00 IIR Level 3 – GEWEX format | <ul style="list-style-type: none"><li>Minor algorithm corrections and enhancements</li><li>Processed using final release of the Lidar Level 1, Lidar Level 2, and IIR Level 2 data</li></ul>  |
| V1.00 IIR Level 3                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"><li>IIR brightness temperature for all scenes</li><li>Statistics on the accumulation of ice/water microphysical parameters</li></ul>                        |

## Final Planned Data Reformatting

- Data products currently distributed in Hierarchical Data Format Version 4 (HDF4) a decision made in early 2000's.
- To make CALIPSO data readily accessible to the scientific community beyond the life of the mission and take advantage of newer data access capabilities, the full catalog of final CALIPSO data products will be upgraded to netCDF.
- Format changes will rely on external converters rather than updating science algorithm.