

Most Recent Product Releases: December 2011 (IIR, LIDAR, and WFC Data Sets)

Overall Summary Statement

RELEASE 3. The third release of the CALIPSO data products features a comprehensive restructuring and expansion of the Lidar Level 2 cloud and aerosol profile products; significant enhancements to the Lidar Level 2 cloud and aerosol profile products; and the implementation of an improved calibration technique for the Lidar Level 1 532 nm daytime calibration.

The primary contents of the CALIOP Level 1 product are calibrated profiles of 532 nm perpendicular attenuated backscatter and total attenuated backscatter at 532 nm and 1064 nm. The version 3 CALIOP Level 1 data are released with a product maturity classification of *Validated Stage 1*, indicating that initial validation of the CALIOP attenuated backscatter products has been successful.

The CALIOP Level 2 products consist of the full resolution vertical feature mask, cloud and aerosol layer products reported at several different spatial resolutions, and cloud and aerosol profile products reported at a uniform 5-km horizontal resolution. Validation of the Level 2 products is an on-going process, and some products are better characterized than others. Preliminary validation has been accomplished for the layer detection, cloud-aerosol discrimination, and layer sub-typing algorithms. Data products derived solely from these algorithms are designated as *Validated Stage 1*. Validation of the optical properties algorithms that generate extinction profiles and layer optical depth estimates is a considerably more challenging task. As a consequence, while all studies to date indicate acceptable performance, the status of those data products derived from this second class of algorithms remains *Provisional*. All obvious artifacts have been identified and corrected in these data, but only limited comparisons with independent data sets are currently available.

RELEASE 2. The second release of the CALIPSO data are comprised of Level 1 and 2 data from the CALIOP and IIR instruments. Release 2 included initial releases for the Level 2 CALIOP Cloud Profile and Aerosol Profile products and IIR Swath products. Validation of these products is very limited, and the majority of the data products should not be considered to be validated. Release 2 is considered to be a provisional release for the Level 1 data products, in the sense that while all obvious errors have been identified and corrected, only a limited set of intercomparisons have been performed. Various parameters are more or less reliable (explained in some detail in the data quality summaries), but the responsibility is on the user to determine if the data quality is sufficient for his/her purposes.

The Cloud and Aerosol Profile Products were released as Beta products. The primary contents are profiles of cloud and aerosol extinction and backscatter profiles at a horizontal resolution of 5 km (cloud profiles) and 40 km (aerosol profiles). The products contain known errors and invalid data and, in their current form, are not standalone products. The current products contain no data quality information and must be used in conjunction with the Cloud and Aerosol Layer Product and/or Vertical Feature Mask, which contain data quality parameters and confidence flags. Data assessment and screening procedures have not yet been developed. Because of this, the data products are considered to be not appropriate for scientific publication, but are released to users for evaluation and to provide feedback to the CALIOP algorithm development team. Users should carefully read the section of the Data Quality Summaries related to extinction retrievals. QA and validation are ongoing and data quality information will be included with future releases.

RELEASE 1. The initial release of CALIPSO data was comprised of Level 1 data from all three instruments (CALIOP, IIR, and WFC) and a limited set of CALIOP Level 2 Cloud and Aerosol Layer products. Validation of these data is very limited, and the majority of the data products should not be considered to be validated.

Uncertainties for specific parameters are reported in the individual quality statements. Quality designators indicate the maturity of products and individual parameters, and include "Beta", "Provisional", "Validated Stage 1", "Validated Stage 2", and "Validated Stage 3". A product may contain parameters at varying quality levels.

Maturity Level Definitions

Beta:	Early release products for users to gain familiarity with data formats and parameters. Users are strongly cautioned against the indiscriminate use of these data products as the basis for research findings, journal publications, and/or presentations.
Provisional:	Limited comparisons with independent sources have been made and obvious artifacts fixed.
Validated Stage 1:	Uncertainties are estimated from independent measurements at selected locations and times.
Validated Stage 2:	Uncertainties are estimated from more widely distributed independent measurements.
Validated Stage 3:	Uncertainties are estimated from independent measurements representing global conditions.

CALIPSO Product Organization

CALIPSO Products are divided into nine groups:

- [Lidar Level 1B Profiles](#)
- [IIR Level 1B Radiances](#)
- [WFC Level 1B Scans](#)
- [Lidar Level 2 Cloud and Aerosol Layer](#)
- [Lidar Level 2 Aerosol Profile](#)
- [Lidar Level 2 Cloud Profile](#)
- [Lidar Level 2 Vertical Feature Mask](#)
- [Lidar Level 3 Aerosol Profile Monthly](#)
- [IIR Level 2 Track](#)
- [IIR Level 2 Swath](#)

The tables below provide quality summary information for all of the CALIPSO data products. Each table contains links to both (a) an *Overall Quality Summary*, which provides a file-level quality assessment for each data product; and (b) a much longer *Detailed Quality Statement* that describes each scientific data set (SDS) found within the product file, and provides quality assessments and usage guidance at the SDS level. Please be aware that earlier generations of the data products may be of different (presumably lower) quality than current products. It is important, therefore, to note that dates on quality statements correspond to the dates when the CALIPSO data products were released, not to the dates when the raw measurements were acquired by the CALIPSO instrument.

Product Specific Quality Statements

IIR Level 1B Radiances <i>Half orbit (Night and Day) geolocated, calibrated radiances</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	1.12	November 1, 2011 to present	1.11, 1.12 Summary		Provisional
November 6, 2008	1.11	August 20, 2008 to October 31, 2011			Provisional
December 8, 2006	1.10	June 13, 2006 to August 19, 2008	1.10 Summary		Provisional



Lidar Level 1B Profiles					
<i>Half orbit (Night and Day) geolocated, calibrated Lidar Profiles and Viewing Geometry Products</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Summary	QS 3.01, 3.02	Validated Stage 1
November 2009	3.01	June 13, 2006 to February 16, 2009 March 17, 2009 to October 31, 2011			Validated Stage 1
June 2009	3.00	June 13, 2006 to December 31, 2006 March 12, 2009 to June 10, 2009 No longer orderable	3.00 Summary	QS 3.00	Validated Stage 1
October 2008	2.02	September 14, 2008 to February 16, 2009	2.02 Summary	QS 2.01, 2.02	Provisional
December 2007	2.01	June 13, 2006 to September 13, 2008	2.01 Summary		Provisional
August 12, 2007	1.22	August 12, 2007 to November 11, 2007	1.22 Summary	QS 1.10, 1.11, 1.20, 1.22	Provisional
March 1, 2007	1.20	March 1, 2007 to August 11, 2007	1.20 Summary		Provisional
January 6, 2007	1.11	January 6, 2007 to February 28, 2007	1.11 Summary		Provisional
December 8, 2006	1.10	June 6, 2006 to January 5, 2007	1.10 Summary		Provisional

Lidar Level 2 Vertical Feature Mask					
<i>Half orbit (Night and Day) scene classification data and lidar lighting and land/water indicators</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Summary	QS 3.01, 3.02	Validated Stage 1
May 2010	3.01	June 13, 2006 to February 16, 2009 March 17, 2009 to October 31, 2011			Validated Stage 1
October 2008	2.02	September 14, 2008 to October 29, 2009	2.02 Summary	QS 2.01, 2.02	Provisional
January 2008	2.01	June 13, 2006 to September 13, 2008	2.01 Summary		Provisional
December 8, 2006	1.10	June 13, 2006 to November 11, 2007	1.10 Summary	QS 1.10	<ul style="list-style-type: none"> • Layer Heights - Provisional • Layer Classifications - Beta

Lidar Level 2 Cloud and Aerosol Layer Information					
<i>Half orbit (Night and Day) lidar cloud and aerosol layer products describe both column and layer properties</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Summary	QS 3.01, 3.02	<ul style="list-style-type: none"> • 1/3 km: Validated Stage 1 • 1 km: Validated Stage 1 • 5 km: Provisional
May 2010	3.01	June 13, 2006 to February 16, 2009 March 17, 2009 to October 31, 2011			<ul style="list-style-type: none"> • 1/3 km: Validated Stage 1 • 1 km: Validated Stage 1 • 5 km: Provisional
October 2008	2.02	September 14, 2008 to October 29, 2009	2.02 Summary	QS 2.01, 2.02	Provisional
January 2008	2.01	June 13, 2006 to September 13, 2008	2.01 Summary		Provisional
December 8, 2006	1.10	June 13, 2006 to November 11, 2007	1.10 Summary	QS 1.10	<ul style="list-style-type: none"> • Layer Heights - Provisional • Layer Classifications - Beta

Lidar Level 2 Aerosol Profile					
<i>Half orbit (Night and Day) averaged aerosol profile data and ancillary data</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Summary	QS 3.01, 3.02	Provisional
May 2010	3.01	June 13, 2006 to February 16, 2009 March 17, 2009 to October 31, 2011			Provisional
October 2008	2.02	September 14, 2008 to October 29, 2009	2.02 Summary	QS 2.01, 2.02	Beta
January 2008	2.01	June 13, 2006 to September 13, 2008	2.01 Summary		Beta

Lidar Level 2 Cloud Profile					
<i>Half orbit (Night and Day) averaged cloud profile data and ancillary data</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Summary	QS 3.01, 3.02	Provisional
May 2010	3.01	June 13, 2006 to February 16, 2009 March 17, 2009 to October 31, 2011			Provisional
October 2008	2.02	September 14, 2008 to October 29, 2009	2.02 Summary	QS 2.01, 2.02	Beta
January 2008	2.01	June 13, 2006 to September 13, 2008	2.01 Summary		Beta

Lidar Level 3 Aerosol Profile Monthly					
<i>Globally gridded & monthly averaged aerosol profile data and ancillary data</i>					
Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	1.00	June 13, 2006 to present	1.00 Summary	QS 1.00	Beta

Wide Field Camera (WFC) Level 1B Scans Information
Half orbit (Day) geolocated data radiances

Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Summary	QS 3.01, 3.02	Validated Stage 1
November 2010	3.01	June 13, 2006 to October 31, 2011			Validated Stage 1
December 8, 2006	1.10	June 13, 2006 to September 21, 2010	1.10 Summary	QS 1.10	Provisional

IIR Level 2 Track Data

Half orbit (Night and Day) emissivity and cloud particle data related to pixels that have been co-located to the Lidar track

Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Beta Summary	QS 3.01, 3.02	Beta
May 2011	3.01	June 13, 2006 to October 31, 2011			Beta
October 2008	2.02	September 14, 2008 to January 17, 2011	2.02 Summary		Beta
October 2008	2.01	June 13, 2006 to December 31, 2006 February 18, 2008 to September 13, 2008	2.01 Summary		Beta

IIR Level 2 Swath Data

Half orbit (Night and Day) emissivity and cloud particle data assigned to IIR pixels on a 1 km grid centered on the Lidar track

Release Date	Version	Data Date Range	Overall Quality Statement	Detailed Quality Statement	Maturity Level
December 2011	3.02	November 1, 2011 to present	3.01, 3.02 Beta Summary	QS 3.01, 3.02	Beta
May 2011	3.01	June 13, 2006 to October 31, 2011			Beta
October 2008	2.02	September 14, 2008 to January 17, 2011	2.02 Summary		Beta
October 2008	2.01	June 13, 2006 to December 31, 2006 February 18, 2008 to September 13, 2008	2.01 Summary		Beta

