

Comparison of C61 Operational and NRT Atmospheric Products

updated on November 02, 2017

This document provides a summary of results from comparison of C61 atmospheric products generated by the NRT system with those generated by the operational processing at MODAPS. Metrics presented in this document are from assessment of global data products from processing of instrument data from a typical data day and these metrics are expected to vary slightly from day to day depending on the disparity in the input ancillary and ephemeris data used by the NRT processing.

Confidence in NRT products

- C61 reprocessing of Terra L1B and Atmosphere currently in progress. Expected to complete by end of 2017
- C61 reprocessing of Aqua L1B and Atmosphere to start in Jan 2018.
- C61 forward processing of L1B and Atmosphere for Terra and Aqua at leading edge, starting Sept 2017.
- NRT, in order to meet the latency requirement, may use different ancillaries and ephemeris than MODAPS, resulting in minor difference in products compared to the operational products.
- This document summarizes the ability of the NRT to reproduce the C61 science quality products generated at MODAPS through confidence metric defined as percentage retrieval within given accuracy. Confidence metrics are provided for different data sets stored in products generated at NRT. C61 operational products are used as reference while estimating the confidence.

Accuracy of NRT Retrieval For Atmospheric products
(C61 operational product used as Baseline)
(Terra Day 2017-302)

ESDT	Science Data	Match (% of global non-fill retrievals within percentage of relative error)		
		<1%	<5%	<10%
MOD04	Optical_Depth_Land_and Ocean	92.19	96.04	97.55
MOD05	Water_Vapor_Near_Infrared	99.7	99.7	99.8
	Water_Vapor_Infrared	90.05	98.96	99.88
MOD07	Lifted_Index	84.99	96.56	98.57
	Water_Vapor	90.05	98.9	99.9

Statistics are computed for values retrieved within the valid range. Data values that are fill in both dataset it is not included in the analysis.

Accuracy of NRT Retrieval For Atmospheric products

(C6 operational product used as Baseline)
(Terra Day 2017-302)

ESDT	Science Data	Match (% of global non-fill retrievals within relative percentage error)		
		<1%	<5%	<10%
MOD06	Cloud_Top_Temperature	76.01	89.07	92.61
	Cloud_Optical_Thickness	94.77	98.32	99.08
	Cloud_Effective_Radius	91.29	97.71	99.06
	Cloud_Fraction	98.77	99.06	99.32

Statistics are computed for values retrieved within the valid range. Data values that are fill in both dataset it is not included in the analysis.

Accuracy of NRT Retrieval For Atmospheric products

(C6 operational product used as Baseline)
(Aqua Day 2017-302)

ESDT	Science Data	Match (% of global non-fill retrievals within percentage of relative error)		
		<1%	<5%	<10%
MYD04	Optical_Depth_Land_and Ocean	93.07	96.48	97.93
MYD05	Water_Vapor_Near_Infrared	99.56	99.56	99.77
	Water_Vapor_Infrared	89.02	98.83	99.73
MYD07	Lifted_Index	82.77	95.62	97.99
	Water_Vapor	89.02	98.83	99.83

Statistics are computed for values retrieved within the valid range. Data values that are fill in both dataset it is not included in the analysis.

Accuracy of NRT Retrieval For Atmospheric products

(C6 operational product used as Baseline)
(Aqua Day 2017-302)

ESDT	Science Data	Match (% of global non-fill retrievals within relative percentage error)		
		<1%	<5%	<10%
MYD06	Cloud_Top_Temperature	69.08	84.88	90.59
	Cloud_Optical_Thickness	94.89	98.39	99.13
	Cloud_Effective_Radius	92.03	97.87	99.10
	Cloud_Fraction	97.77	98.42	98.93

Statistics are computed for values retrieved within the valid range. Data values that are fill in both dataset it is not included in the analysis.

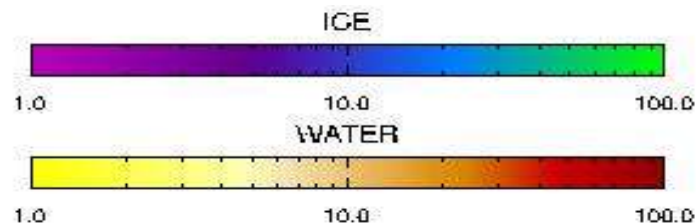
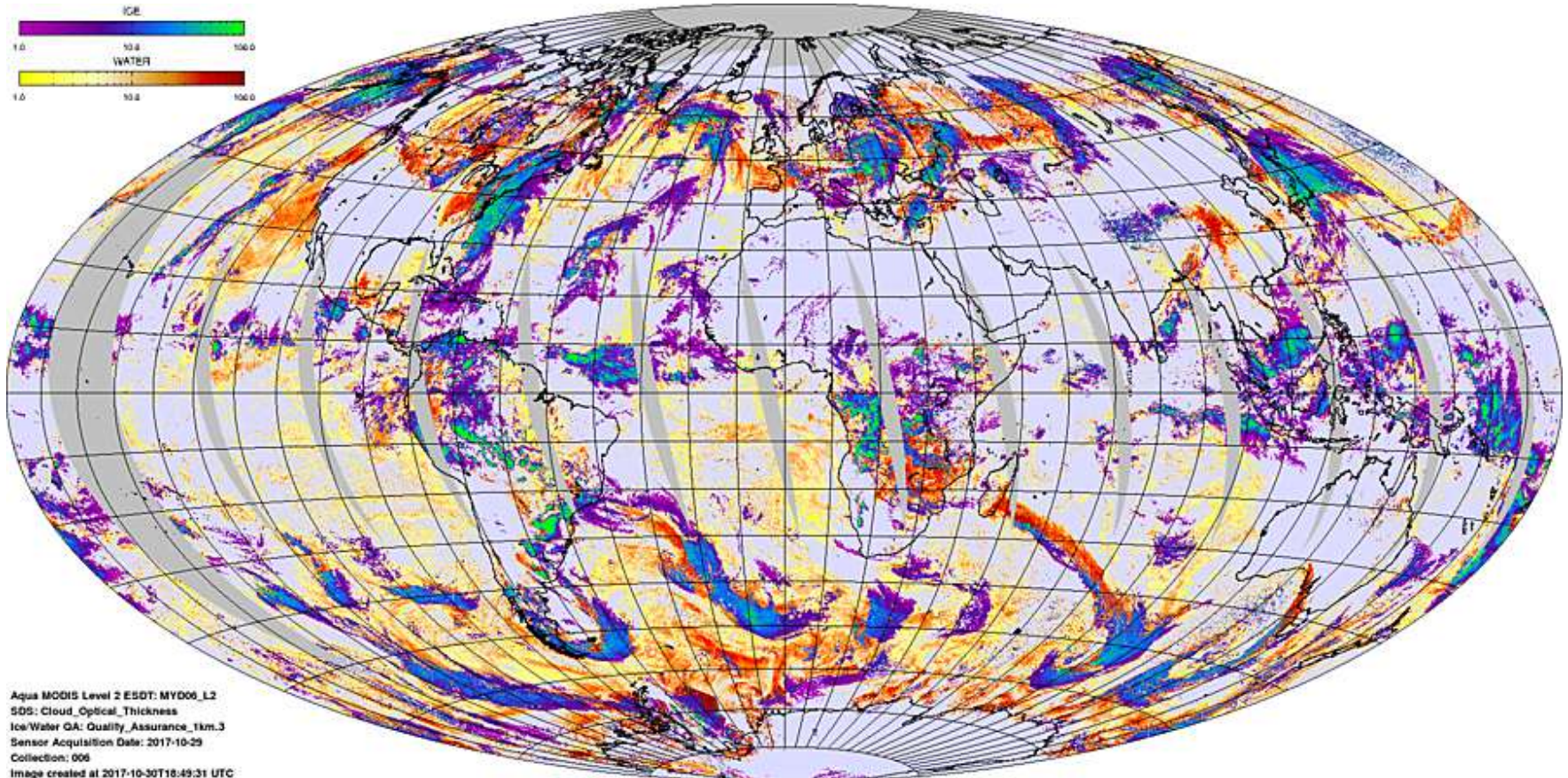
Summary

- Overall NRT products match to operational with some expected minor differences from use of different ancillaries and ephemeris – this information posted on the NRT web page at http://lance.modaps.eosdis.nasa.gov/data_products/comparison.html.
- There aren't any data gaps or data artifacts.
- C61 NRT on nrt3 will run in parallel with C6 NRT on nrt1/nrt2 – expected to continue for a year giving user enough time to get familiar with the C61 NRT products.

Operational C61

Example browse images

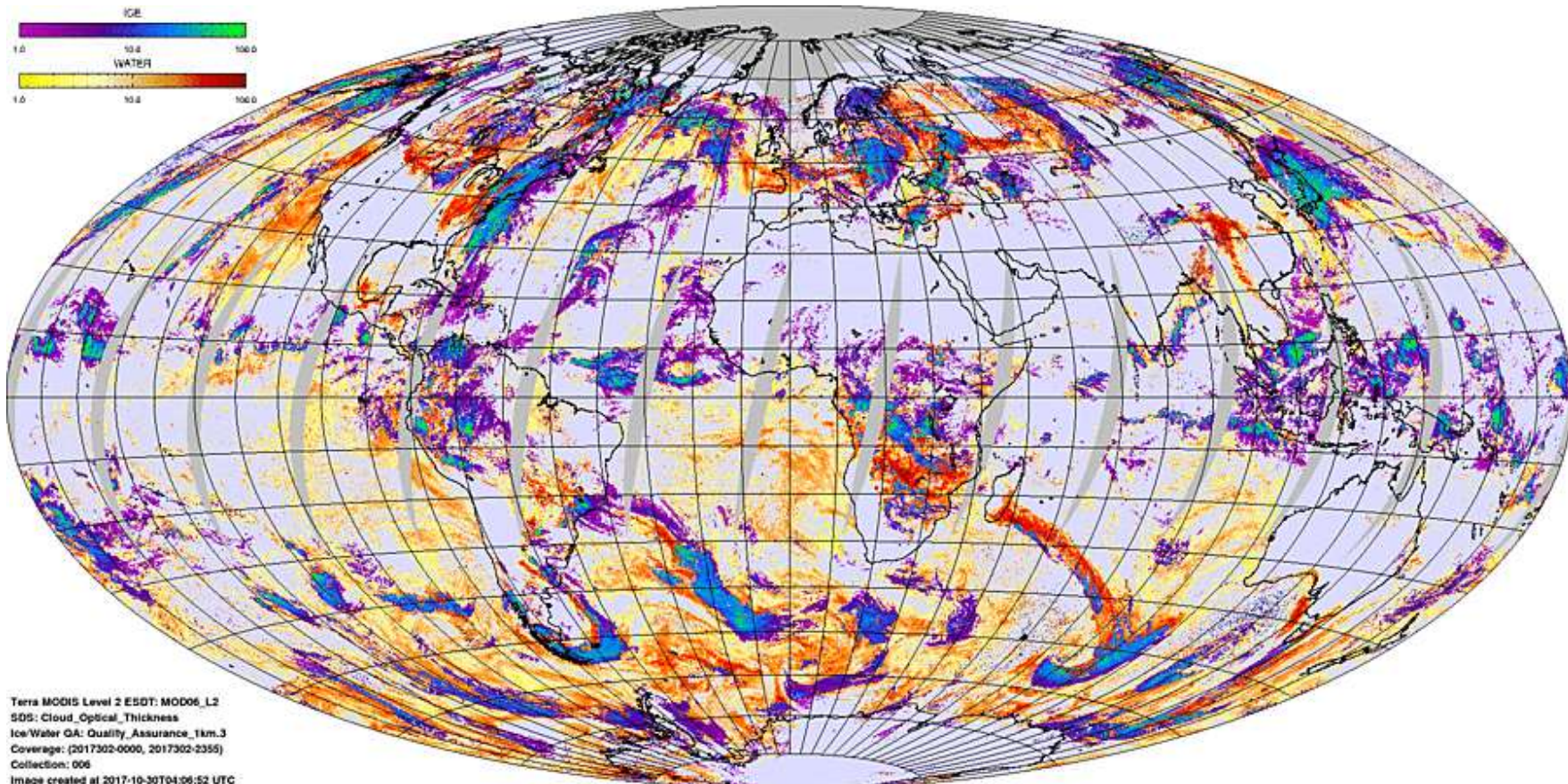
Cloud_Optical_Thickness



NRT C61

Example browse images

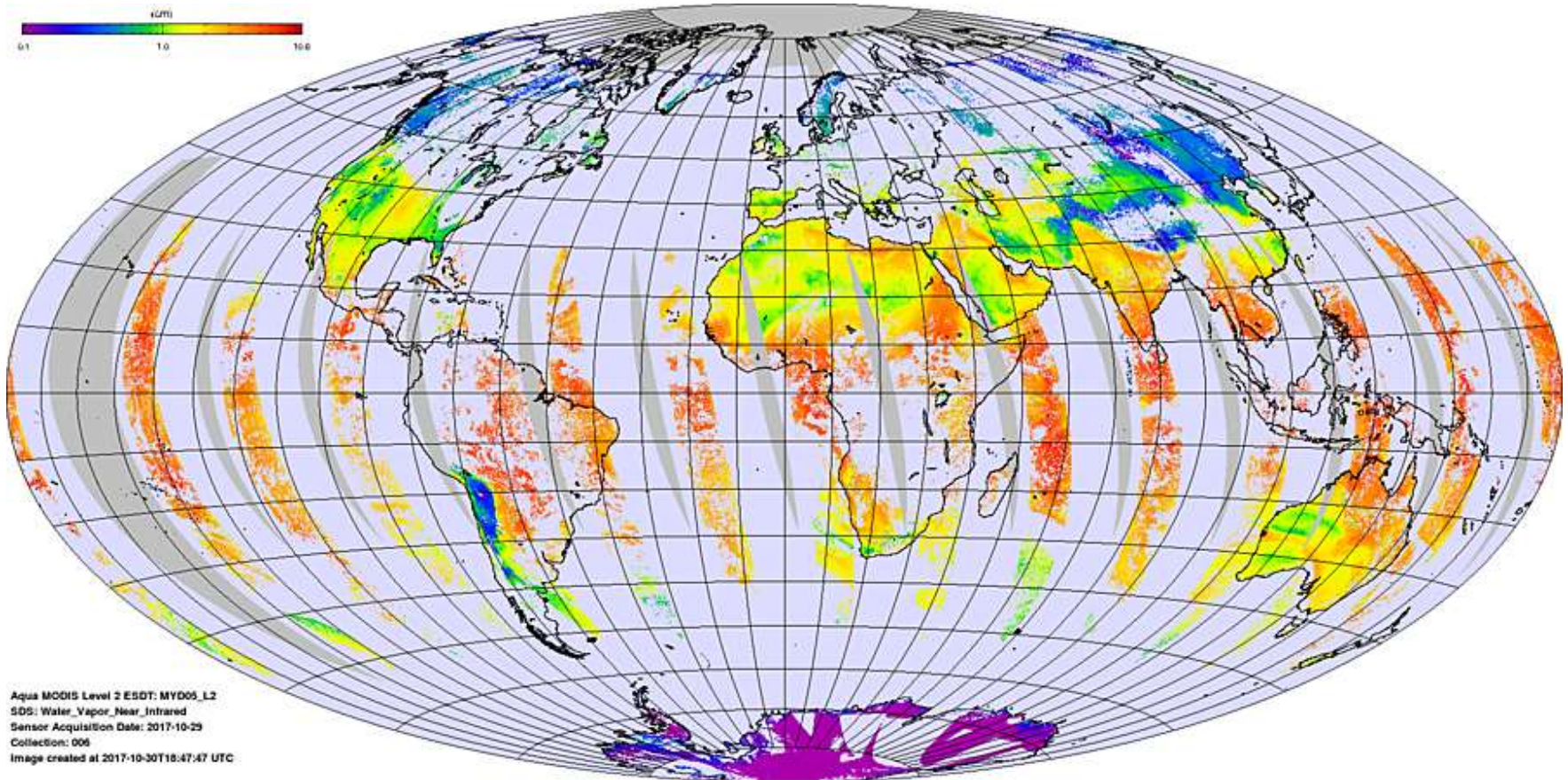
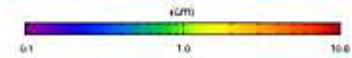
Cloud_Optical_Thickness



Operational C61

Example browse images

Water Vapor Near Infrared

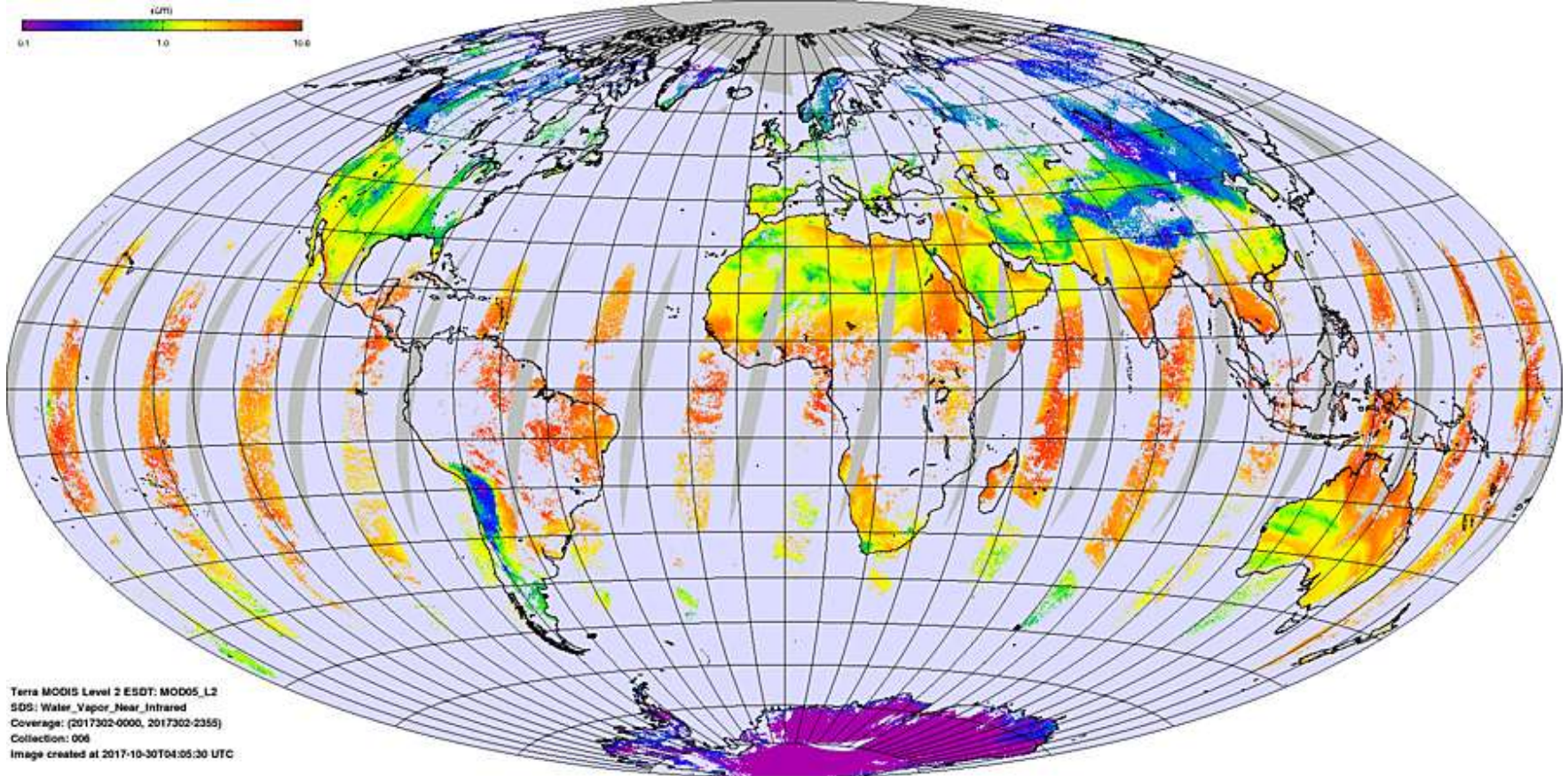
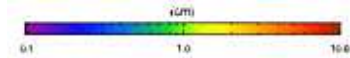


Aqua MODIS Level 2 ESDT: MYD05_L2
SDS: Water_Vapor_Near_Infrared
Sensor Acquisition Date: 2017-10-29
Collection: 006
Image created at 2017-10-30T18:47:47 UTC

NRT C61

Example browse images

Cloud_Optical_Thickness



Terra MODIS Level 2 ESDT: MOD05_L2
SDS: Water_Vapor_Near_Infrared
Coverage: (2017302-0000, 2017302-2355)
Collection: 006
Image created at 2017-10-30T04:05:30 UTC