

Comparison of C6 Operational and NRT Atmospheric Products

updated on July 07, 2015

This document provides a summary of results from comparison of C6 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

- C6 Forward processing of atmospheric products began at MODAPS, for Aqua in April 2014 and for Terra in March 2015.
- C6 PGEs used in the operational forward processing are ported and baselined for use in the NRT processing.
- 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 C6 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. C6 operational products are used as reference while estimating the confidence.

Accuracy of NRT Retrieval For Atmospheric products

(C6 operational product used as Baseline)
([Terra Day 2015-146](#))

ESDT	Science Data	Match (% of global non-fill retrievals within percentage of relative error)		
		<1%	<5%	<10%
MOD04	Optical_Depth_Land_and Ocean	92.44	95.42	97.42
MOD05	Water_Vapor_Near_Infrared	99.11	99.3	99.9
	Water_Vapor_Infrared	92.26	99.40	99.9
MOD07	Lifted_Index	82.92	90.96	95.24
	Water_Vapor	92.26	99.4	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 2015-146)

ESDT	Science Data	Match (% of global non-fill retrievals within relative percentage error)		
		<1%	<5%	<10%
MOD06	Cloud_Top_Pressure	51.51	73.00	82.97
	Cloud_Top_Temperature	69.70	84.28	89.07
	Cloud_Optical_Thickness	94.45	98.08	99.03
	Cloud_Effective_Radius	91.56	97.69	98.99
	Cloud_Fraction	99.1	99.5	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)
(Aqua Day 2015-146)

ESDT	Science Data	Match (% of global non-fill retrievals within percentage of relative error)		
		<1%	<5%	<10%
MYD04	Optical_Depth_Land_and Ocean	92.38	95.00	97.21
MYD05	Water_Vapor_Near_Infrared	99.78	99.88	99.99
	Water_Vapor_Infrared	90.57	99.52	99.93
MYD07	Lifted_Index	81.12	92.81	96.39
	Water_Vapor	90.57	99.5	99.99

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 2015-146)

ESDT	Science Data	Match (% of global non-fill retrievals within relative percentage error)		
		<1%	<5%	<10%
MYD06	Cloud_Top_Pressure	51.65	73.28	84.04
	Cloud_Top_Temperature	69.32	85.47	91.82
	Cloud_Optical_Thickness	94.15	97.84	98.91
	Cloud_Effective_Radius	91.56	97.69	98.99
	Cloud_Fraction	98.41	98.75	99.93

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.

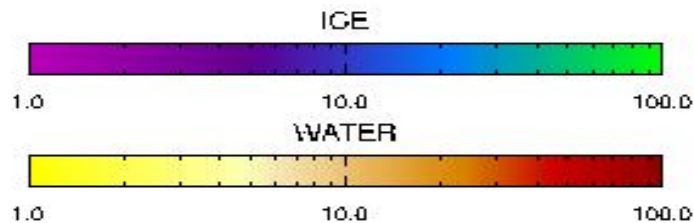
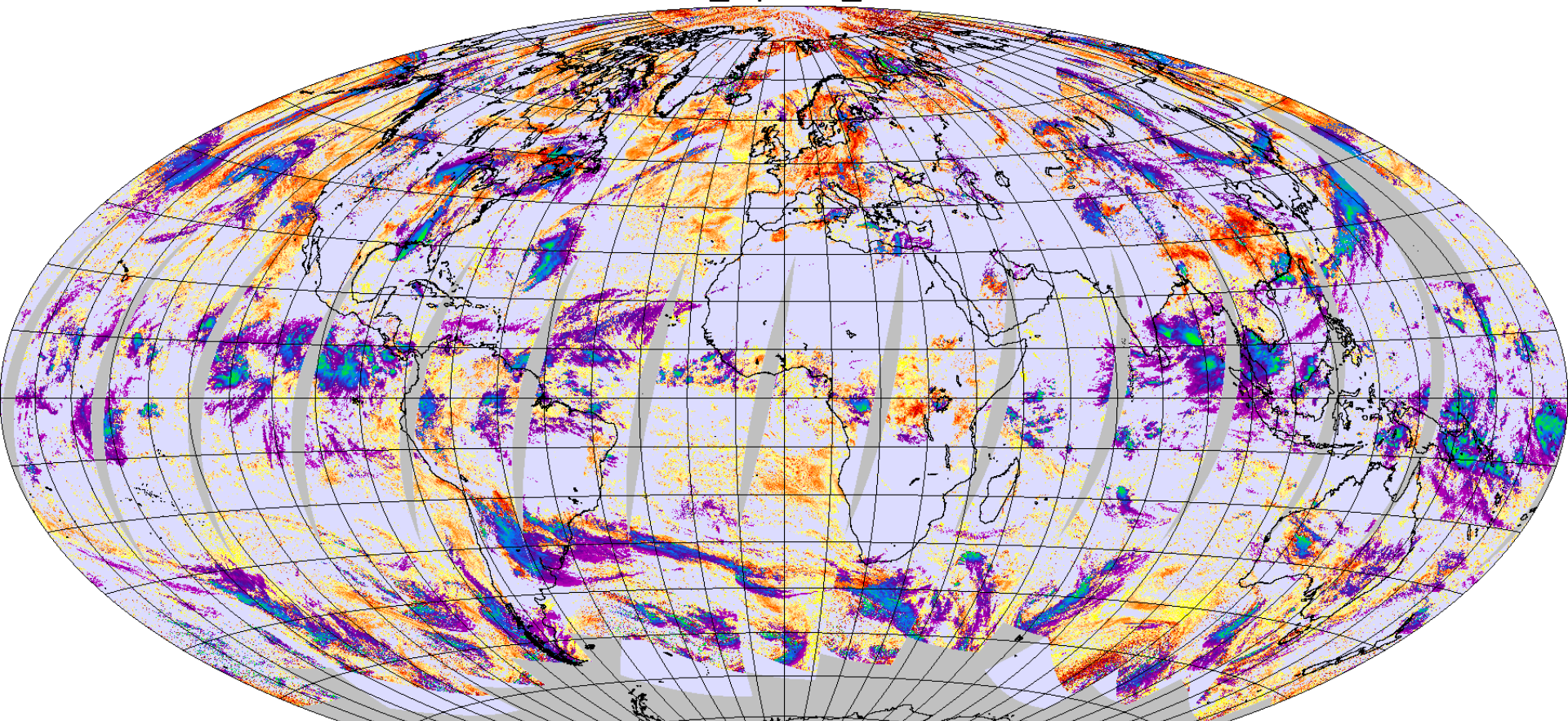
Summary

- 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.
- C6 NRT on nrt3 will run in parallel with C5 NRT on nrt1/nrt2 – expected to continue for a year giving user enough time to get familiar with the C6 NRT products.

Operational C6

Example browse images

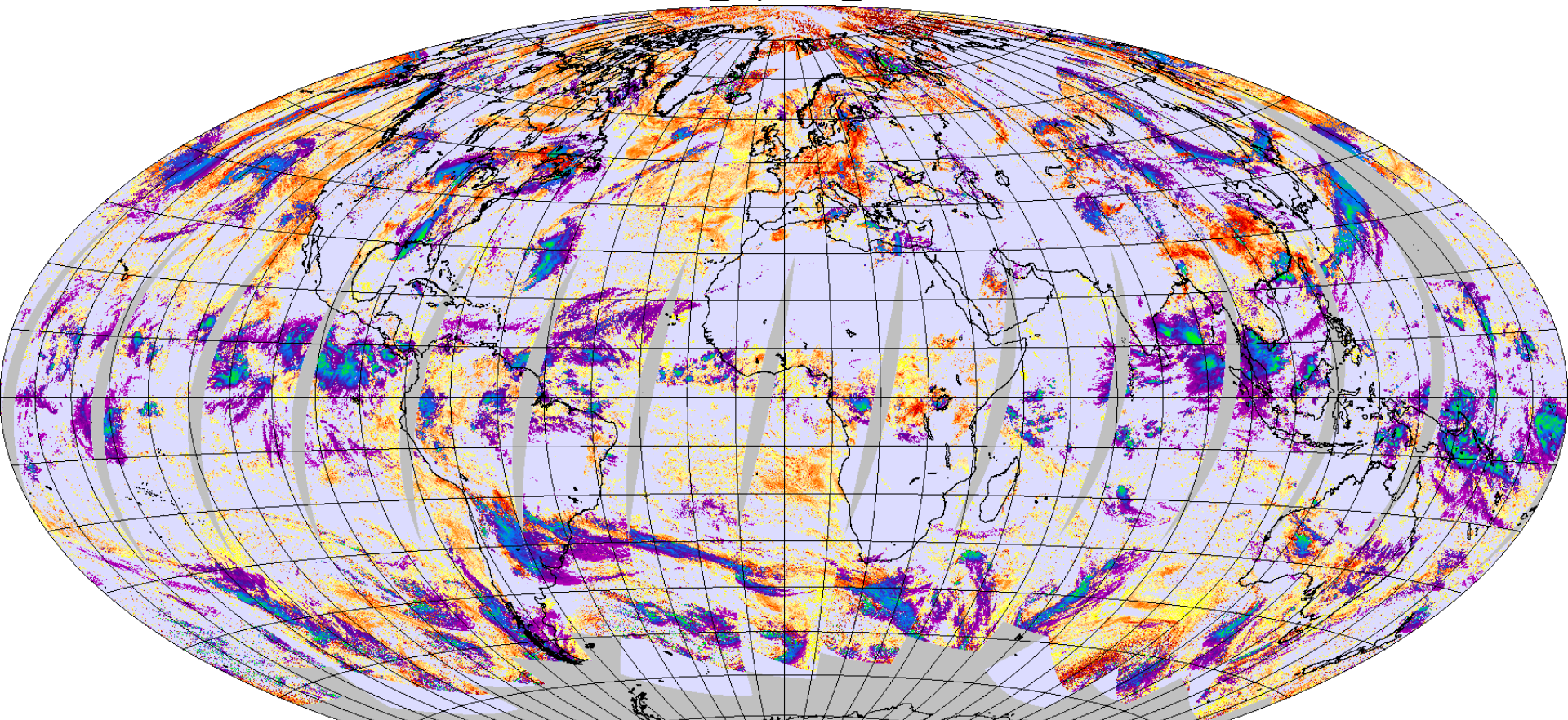
Cloud_Optical_Thickness



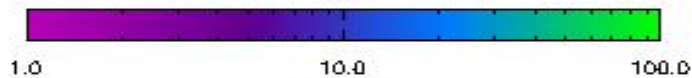
NRT C6

Example browse images

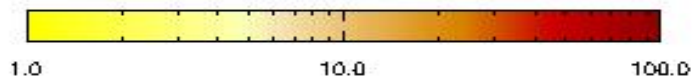
Cloud_Optical_Thickness



ICE



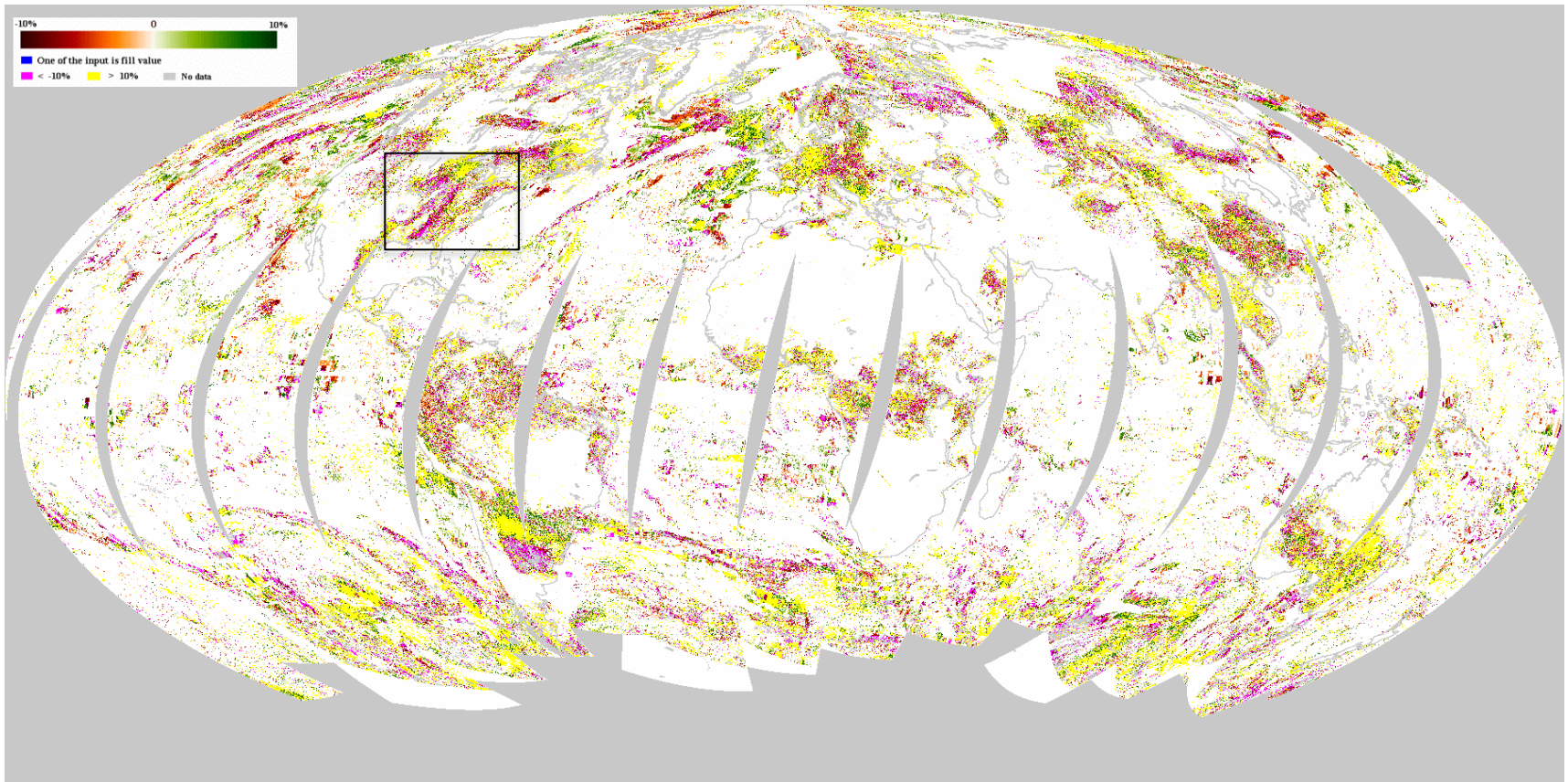
WATER



Absolute Difference

Example browse images

Difference in Cloud_Optical_Thickness from global processing



MOD06_L2 Difference Images

This example shows a granule with difference in Cloud_Optical_Thickness from use of different ancillary input file

