

Comparison of MCD19A1C, MCD19A2C and MCD19A3C NRT and OPS data

May 2019

Accuracy of NRT Retrievals for MCD19A1C products: Day 2019113

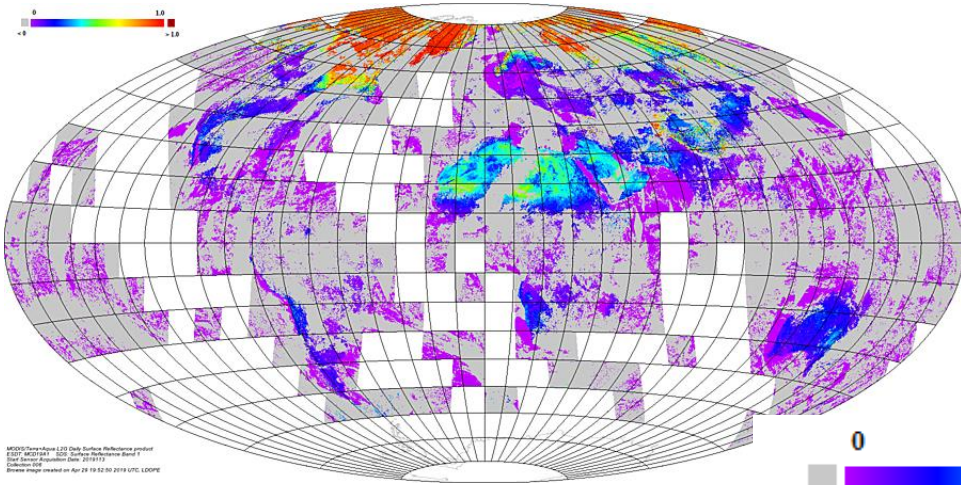
(C6 data used as Truth)

ESDT	Science Data Set	Match (%global)	Omission Error Npix(%)	Commission Error Npix (%)
MCD19A1C	Sur_refl1	98.52	NA	NA
	Sur_refl2	98.28	NA	NA
	Sur_refl3	96.84	NA	NA
	Sur_refl4	98.08	NA	NA
	Sur_refl5	99.43	NA	NA
	Sur_refl6	98.43	NA	NA
	Sur_refl_500m1	97.89	NA	NA
	Sur_refl_500m2	97.91	NA	NA
	Sur_refl_500m3	97.03	NA	NA
	Sur_refl_500m4	97.78	NA	NA
	Sur_refl_500m5	97.99	NA	NA
	Sur_refl_500m6	98.39	NA	NA

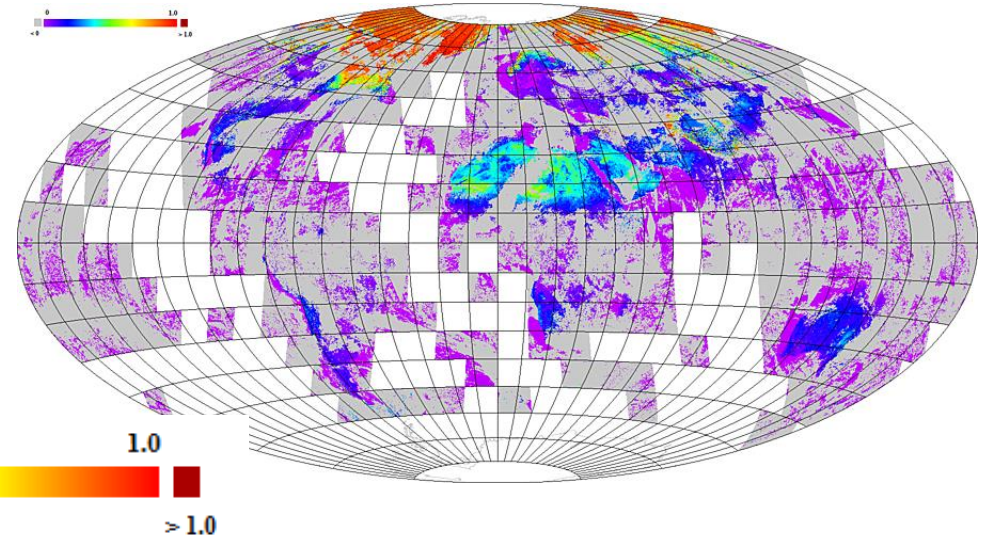
Match is the percentage of NRT retrievals that are within 1% error margin when compared to operational data.

MCD19A1C Band 1 (2019113)

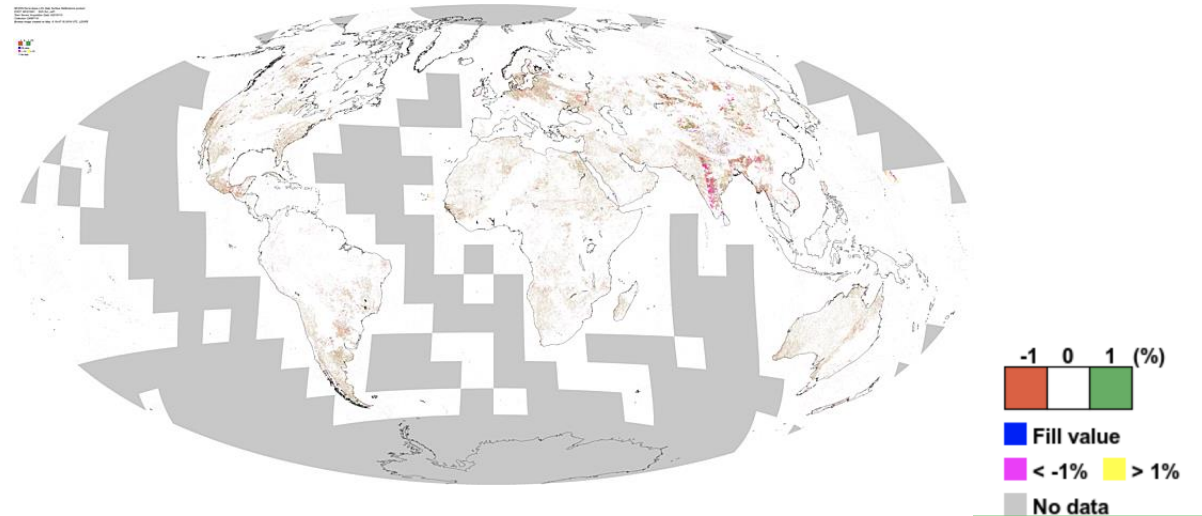
NRT



OPS

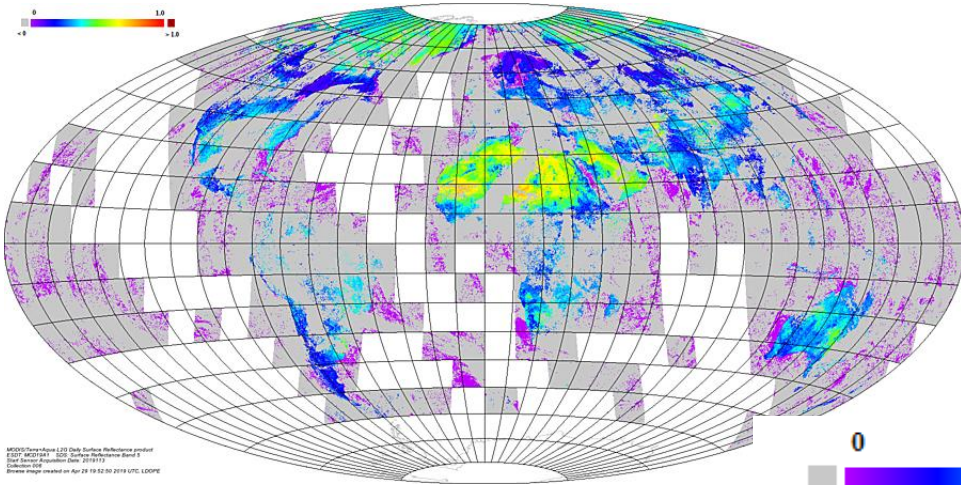


DIFFERENCE

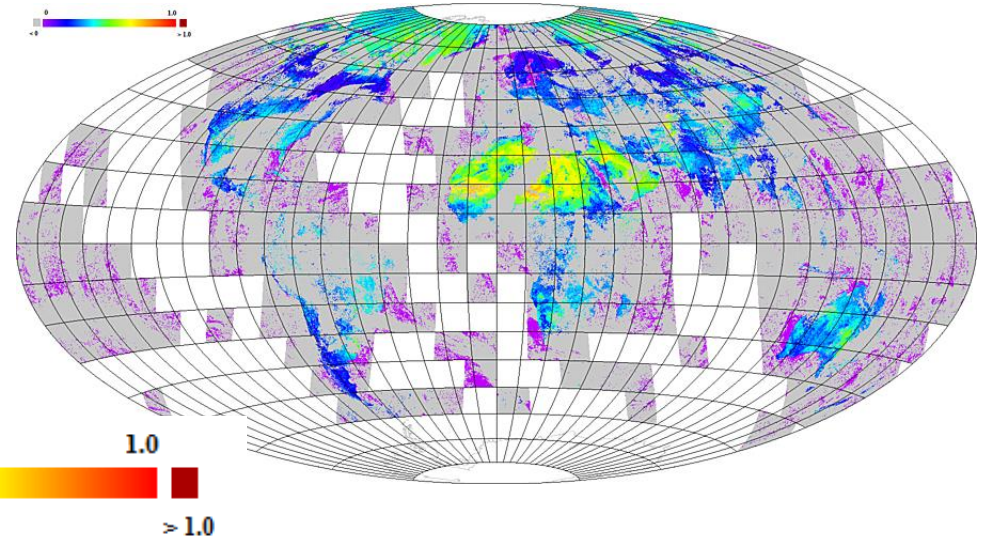


MCD19A1C Band 5 (2019113)

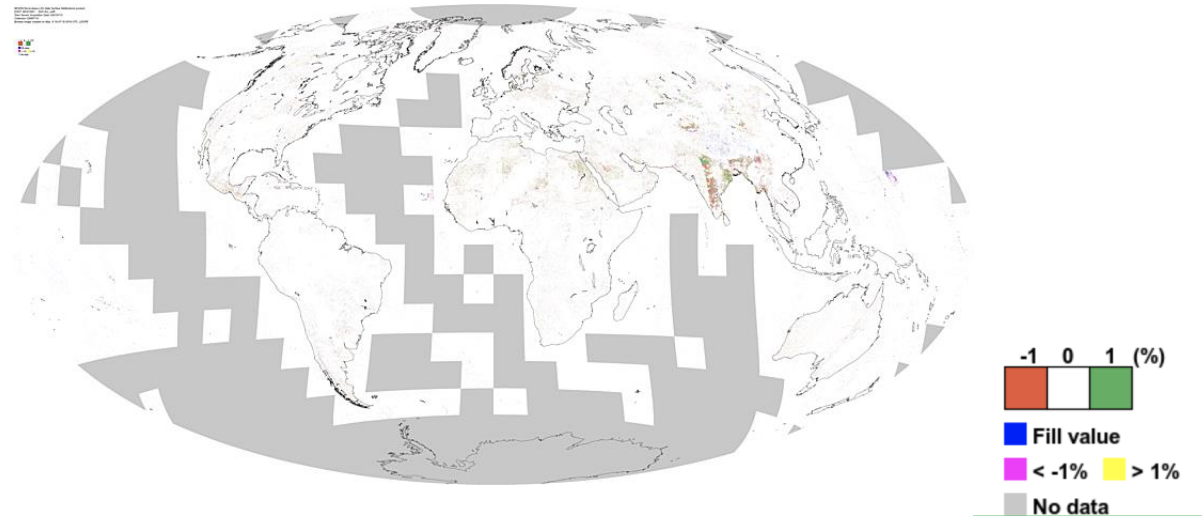
NRT



OPS



DIFFERENCE



Accuracy of NRT Retrievals for MCD19A2C products: Day 2019113

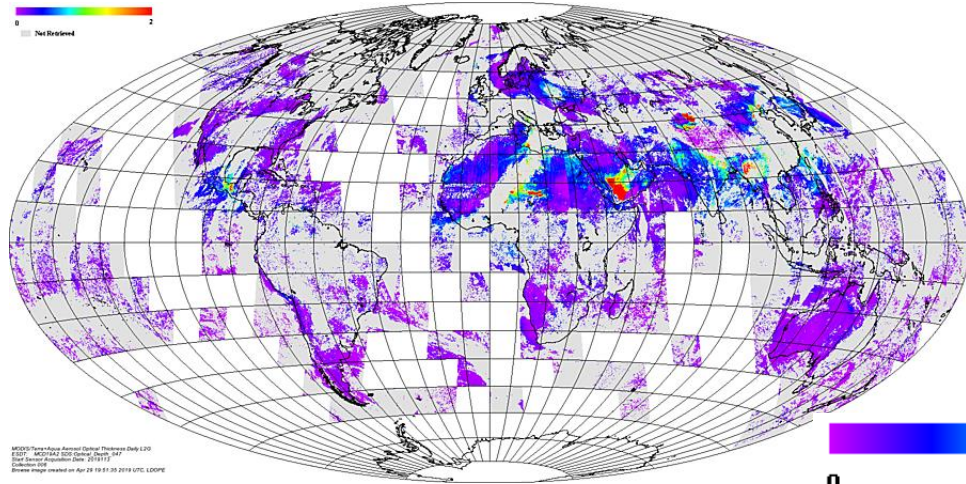
(C6 data used as Truth)

ESDT	Science Data Set	Match (%global)	Omission Error Npix(%)	Commission Error Npix (%)
MCD19A2C	Optical_Depth_047	97.96	NA	NA
	Optical_Depth_055	97.82	NA	NA
	Column_WV	99.28	NA	NA

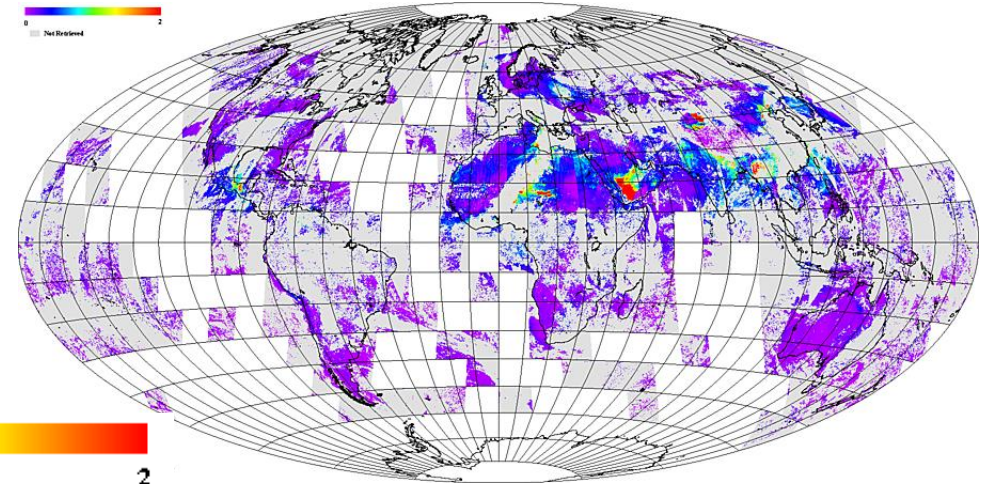
Match is the percentage of NRT retrievals that are within 1% error margin when compared to operational data.

MCD19A2C Optical_Depth_047 (AOD) (2019113)

NRT



OPS

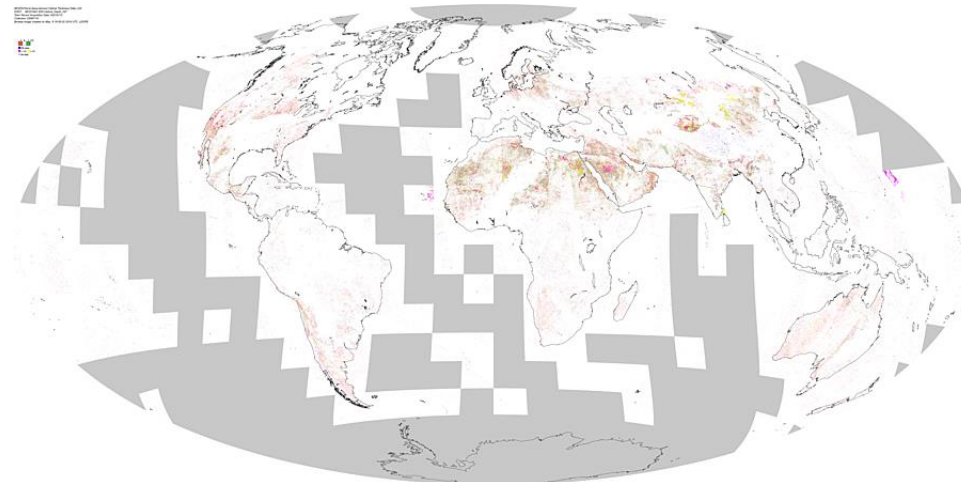


0

2

Not Retrieved

DIFFERENCE



-1 0 1 (%)



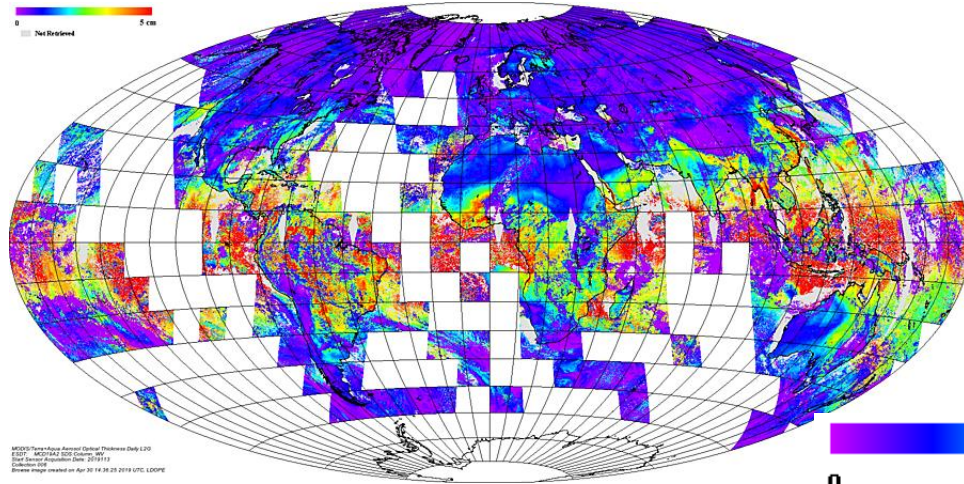
■ **Fill value**

■ < -1% ■ > 1%

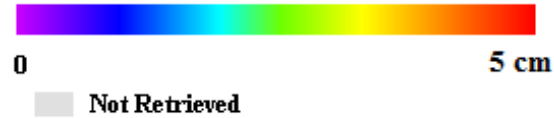
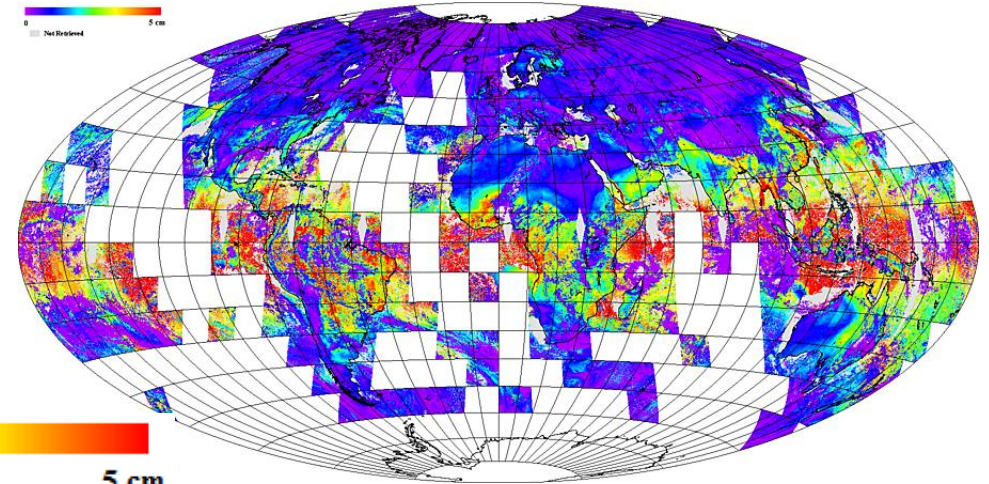
■ No data

MCD19A2C Column_WV (2019113)

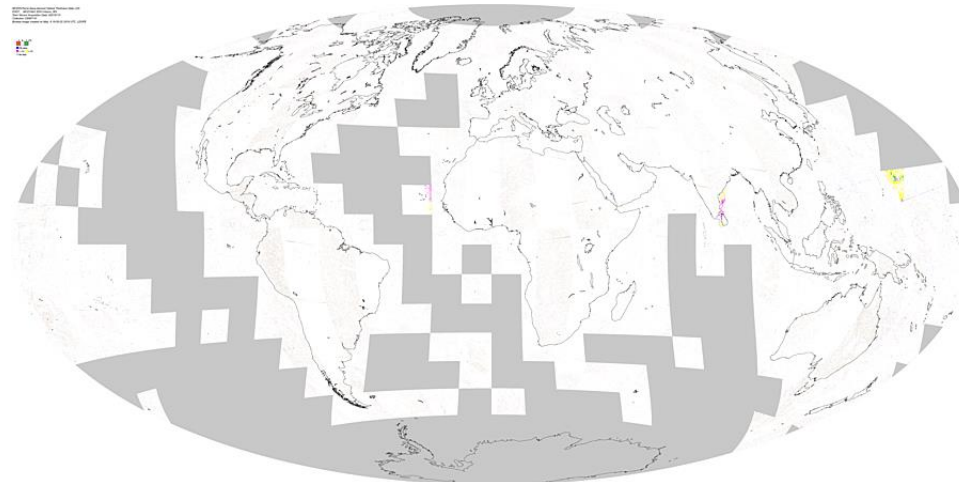
NRT



OPS



DIFFERENCE



Accuracy of NRT Retrievals for MCD19A3C products: Day 2019113

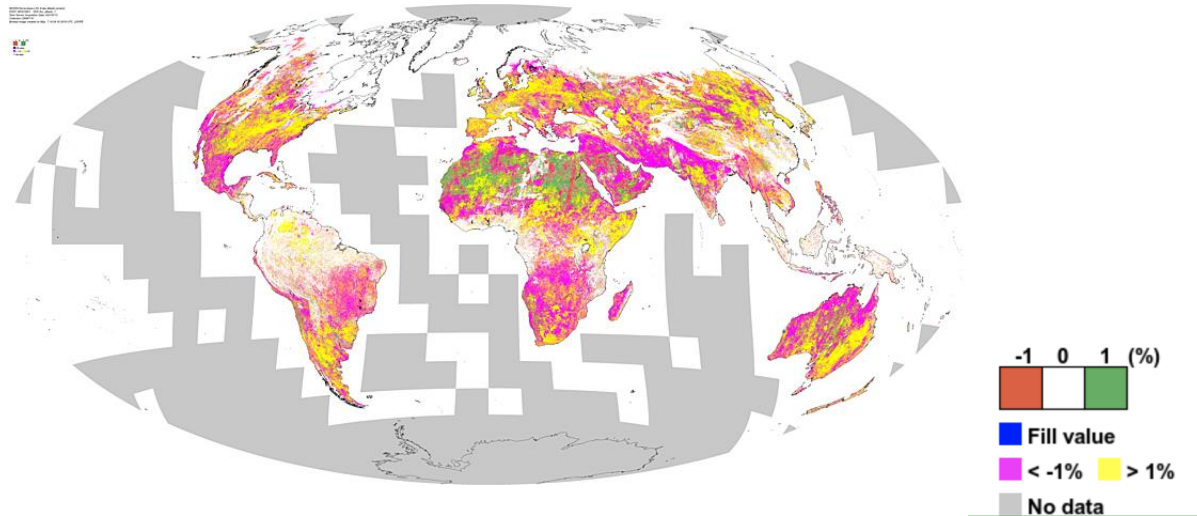
(C6 data used as Truth)

ESDT	Science Data Set	Match (%global)
MCD19A3C Band 1	Kiso	77.19
	Kvol	78.21
	Kgeo	77.55
	Sur_albedo	77.78
MCD19A3C Band 2	Kiso	78.12
	Kvol	77.41
	Kgeo	78.44
	Sur_albedo	78.93

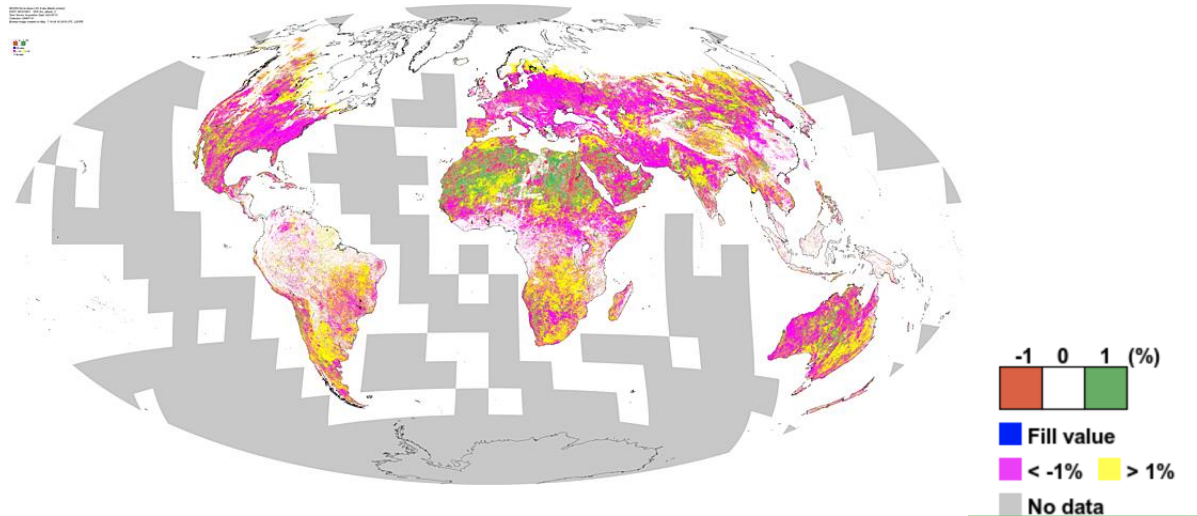
Match is the percentage of NRT retrievals that are within 1% error margin when compared to operational data.

Note: MCD19A3 is a daily product but in Collection 6 it is not produced daily but at every 8-day interval. However, it is setup a little differently in MODAPS Operational system (OPS) compared to NRT. In OPS, the MCD19A3 is produced at the end of a given 8-day boundary whereas in NRT it is produced at the beginning of that same 8-day boundary and hence will reflect two different data days. For example, in this case, the MCD19A3 from NRT was actually produced on day 113 itself, whereas the same from OPS was produced on day 120, the last day of the 8-day period, starting with day 113. Thus the two are not exactly comparable and have a 7-day offset between them. This explains the larger difference seen between the two.

NRT



NRT



Comparison of NRT and Operational MCD19A3 at 1-day lag: Comparing NRT day 2019129 versus OPS day 2019121 (effective day: 2019128)

ESDT	Science Data Set	Match (%global)
MCD19A3C Band 1	Kiso	84.33
	Kvol	79.34
	Kgeo	79.79
	Sur_albedo	85.43
MCD19A3C Band 2	Kiso	86.62
	Kvol	81.53
	Kgeo	80.98
	Sur_albedo	87.61

Match is the percentage of NRT retrievals that are within 1% error margin when compared to operational data.

Note: As noted in a previous slide, MCD19A3 is setup to be produced differently in OPS and NRT. In the earlier slides, the day 113 was considered where effectively, there was a offset of 7 days between OPS and NRT. For this particular case, we considered two different 8-day periods to decrease the actual day-offset between the OPS and NRT. In this particular case, OPS data was produced on day 128 but reflects the 8-day period of 2019121, whereas the NRT was produced on day 129 and reflects the following 8-day period of 2019129, thus resulting in only a day offset between the two, compared to 7-day offset that we had seen for the earlier comparison (slide# 8-10) carried out for day 113. We see lower differences in this case, compared to what we see for day 113.