



## MsWG (March 2, 2016)



- Recent L1B LUT delivery since February 17, 2016
  - Aqua C6 Forward Update: 02/26/2016, 6.1.35.13 (m1, RVS)
  - Aqua C5 Forward Update: 03/01/2016, 5.0.43.10 (m1, RVS)
- MODIS instrument status
  - Terra and Aqua MODIS are in nominal operations
  - Terra IAM#44 03/03/2016 (DOY 2016/063). Tentative LOPA: 12:26:23-17:29:32
  - Terra IAM#45 03/11/2016 (DOY 2016/071). Tentative LOPA: 13:06:43-18:18:04
  - Terra Black Body Cycle Scheduling for DOY 2016/062-065
- MCST recent activities:
  - Impact on Terra safe-mode anomaly on the MODIS instrument (slides 2-19)
  - Summary:
    - Nadir Door re-opened: 2016/055 20:01:32
    - Special calibrations (SDSM and BB WUCD) scheduled to monitor the instrument's behavior on-orbit
    - RSB VIS/NIR bands gain change less than 0.5%, Some detectors of SWIR bands show up to 2% gain change
    - LUT updates necessary to account for the gain changes after the recovery
    - Additional detectors in TEB (bands 27,29) need monitoring
- Around the table



# Terra Safe Mode



- On February 18<sup>th</sup>, 2016 (2016/049) the Terra FOT were executing Inclination Adjust Maneuver (IAM) #43
  - During the execution of IAM #43, prior to the maneuver burn, the slew tables tripped the Fault-Detection Isolation & Response (FDIR)
  - Terra autonomously transitioned into Earth Point Safe-Hold at 049/14:33:17
  - MODIS transitioned to Safe Mode at 049/14:33:30
- Terra spacecraft last transitioned to Earth Point Safe-Hold on December 16<sup>th</sup>, 2003



# Terra MODIS Safe Mode Recovery



- MODIS transitioned to Standby Mode at 2016/054 16:41:52
- MODIS preformed Outgas procedure from 2016/054 17:34:43 until 2016/055 19:19:40
  - Total Outgas Duration: 25:44:57
- Space View Door opened at 2016/055 19:22:52
- MODIS transitioned to Science Mode at 2016/055 19:26:34
- Blackbody was turned on (290K) at 2016/055 19:59:21
- Nadir Door was opened 2016/055 20:01:32
  - Telemetry point did not read “OPEN” directly after issuing command
  - Same problem has occurred in past
  - Telemetry Point switched to “OPEN” during back orbit and was confirmed at 2016/055 21:05:00



# Terra QA Status



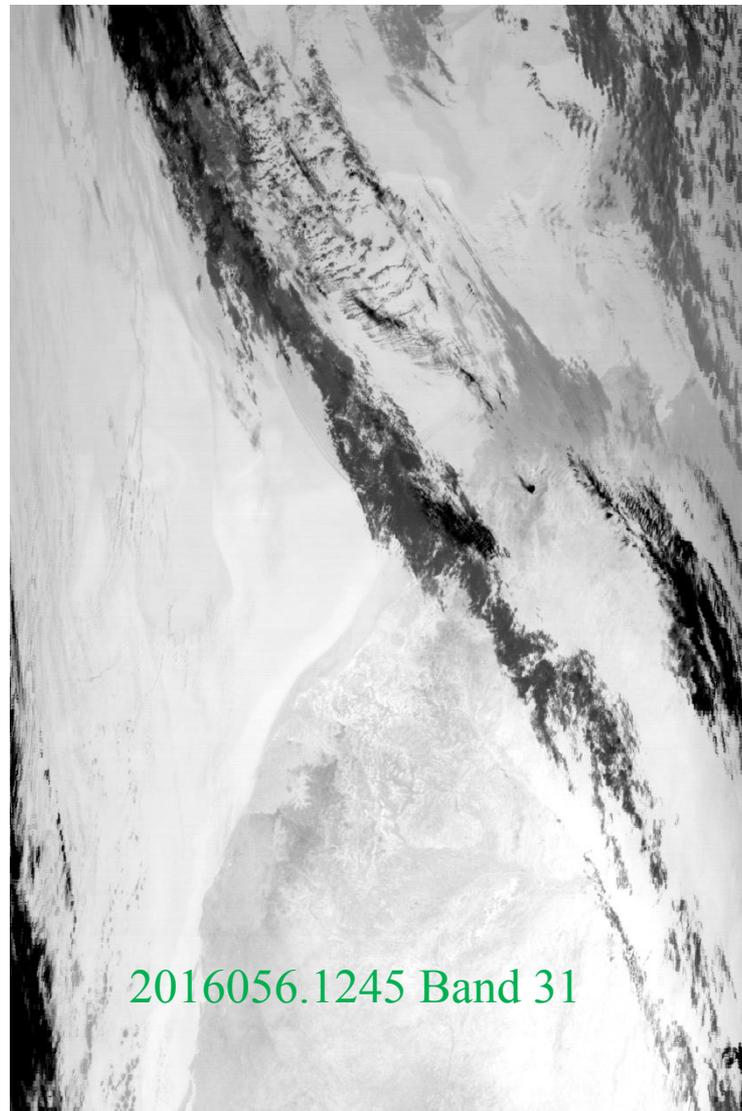
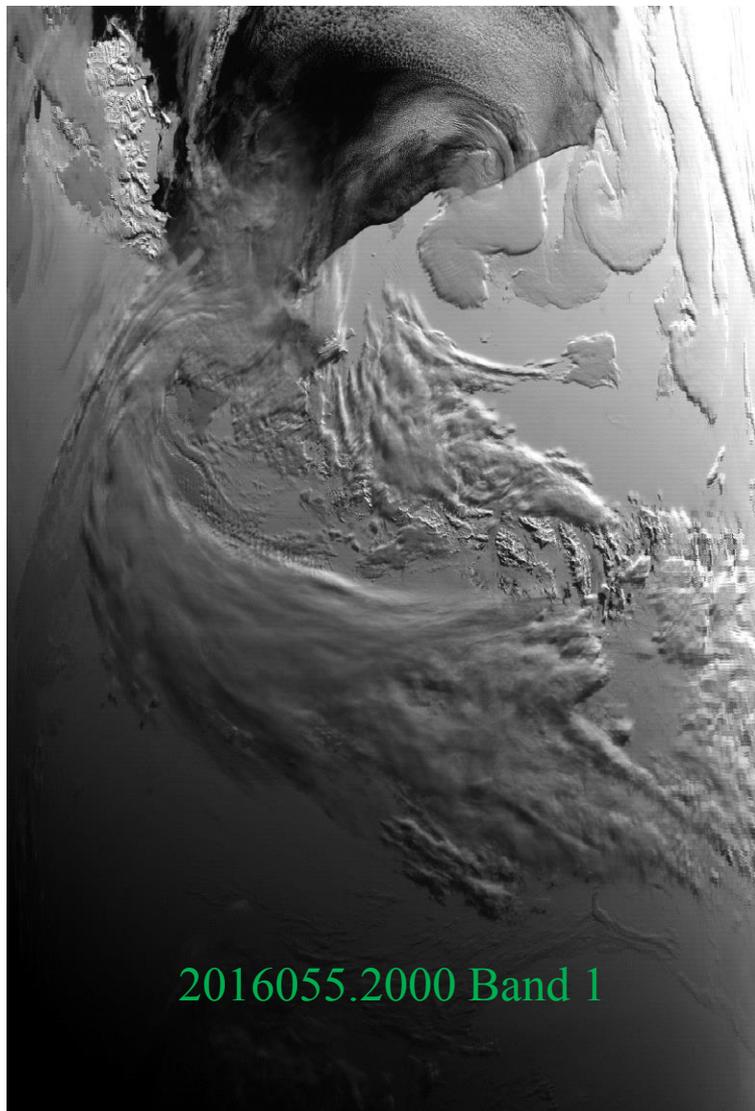
Band	Noisy	Inoperable	Need monitoring Safe Mode Recovery
27	1,2,3,6,8		9,10
28	1,8,9,10		
29		6	5,9
30	1,3,4,5,7,8	4	
33	1		
34	6,7,8		
36	All	7	

Detectors in product order

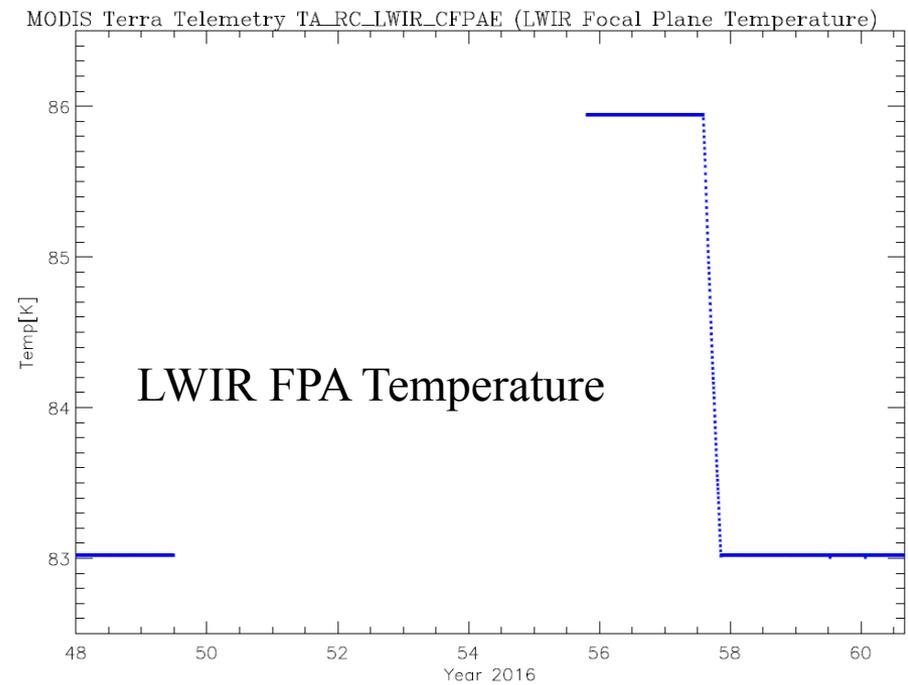
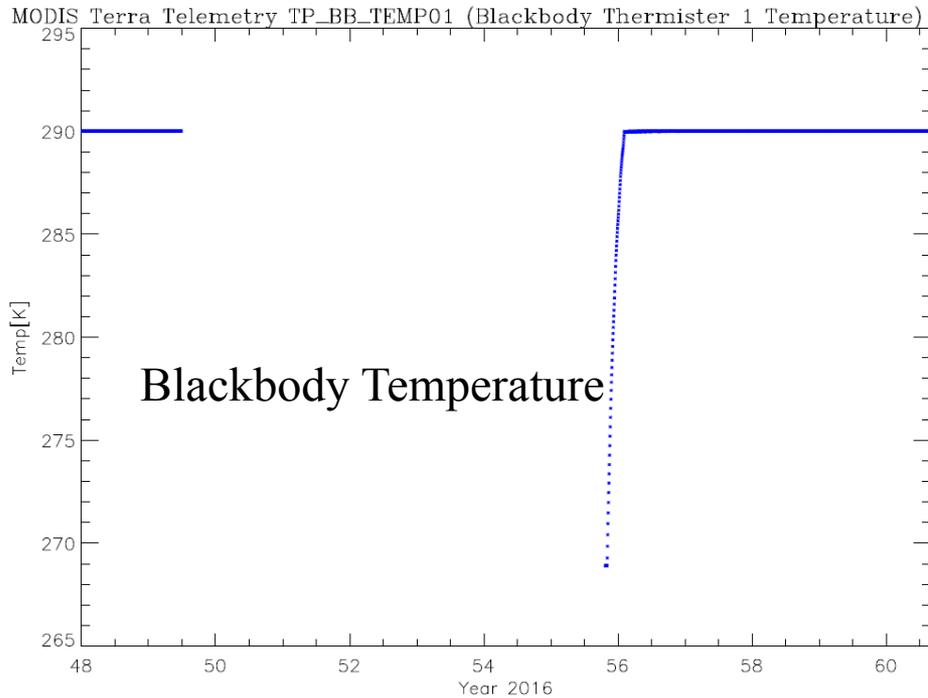
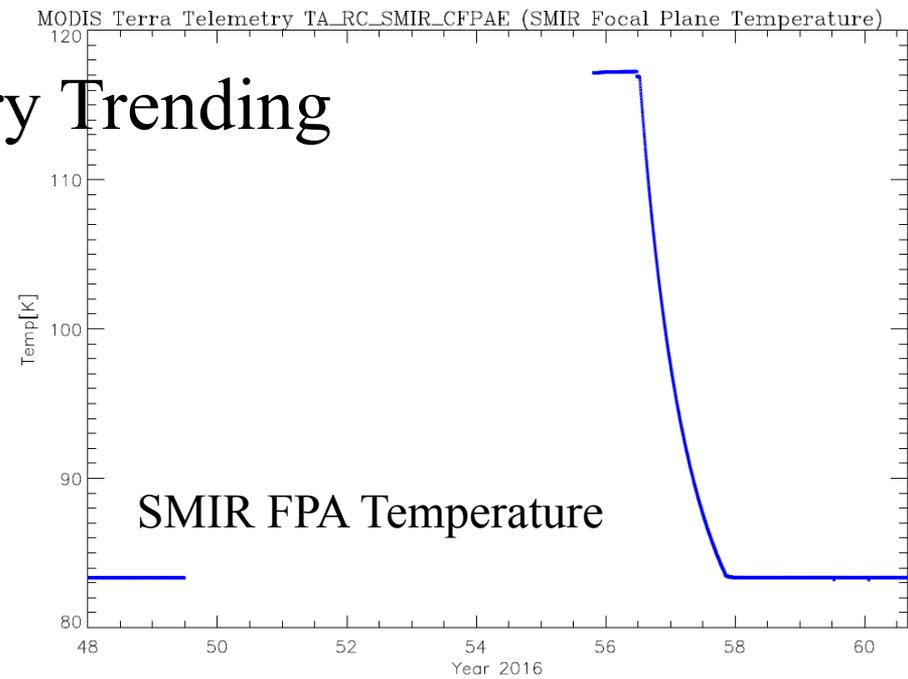
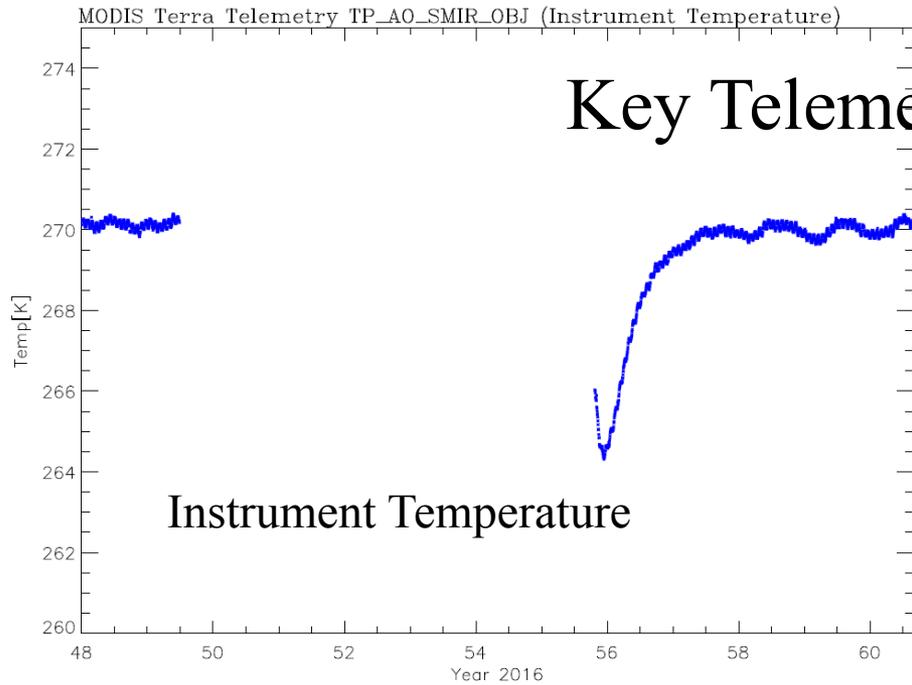
No out-of-family behavior observed for RSB detectors



# Earth-View Images after safe-mode recovery



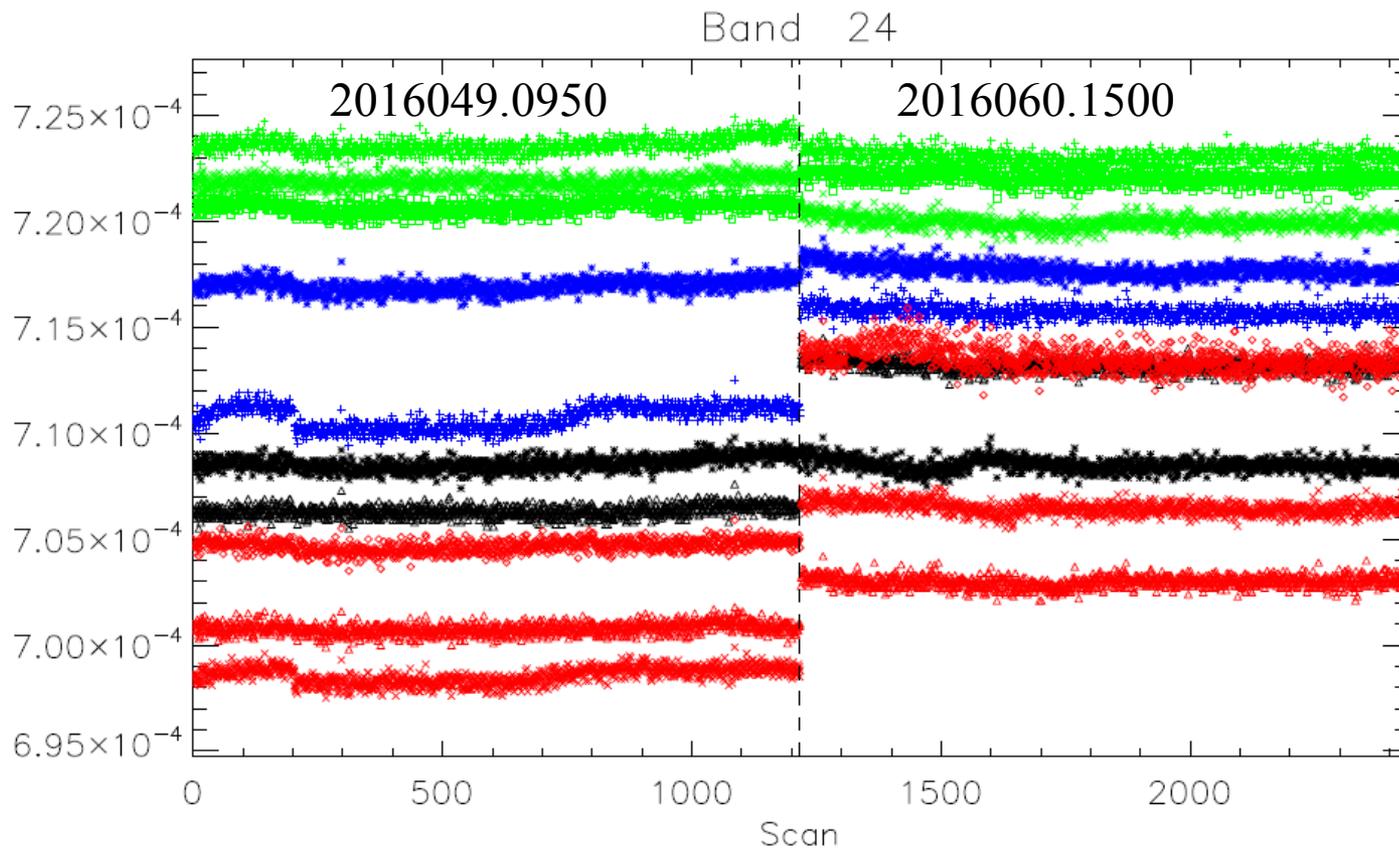
# Key Telemetry Trending





# TEB $b_1$ vs scan

Terra MODIS On-orbit TEB  $b_1$  vs Scan  
(MS1; Detector in Product order)



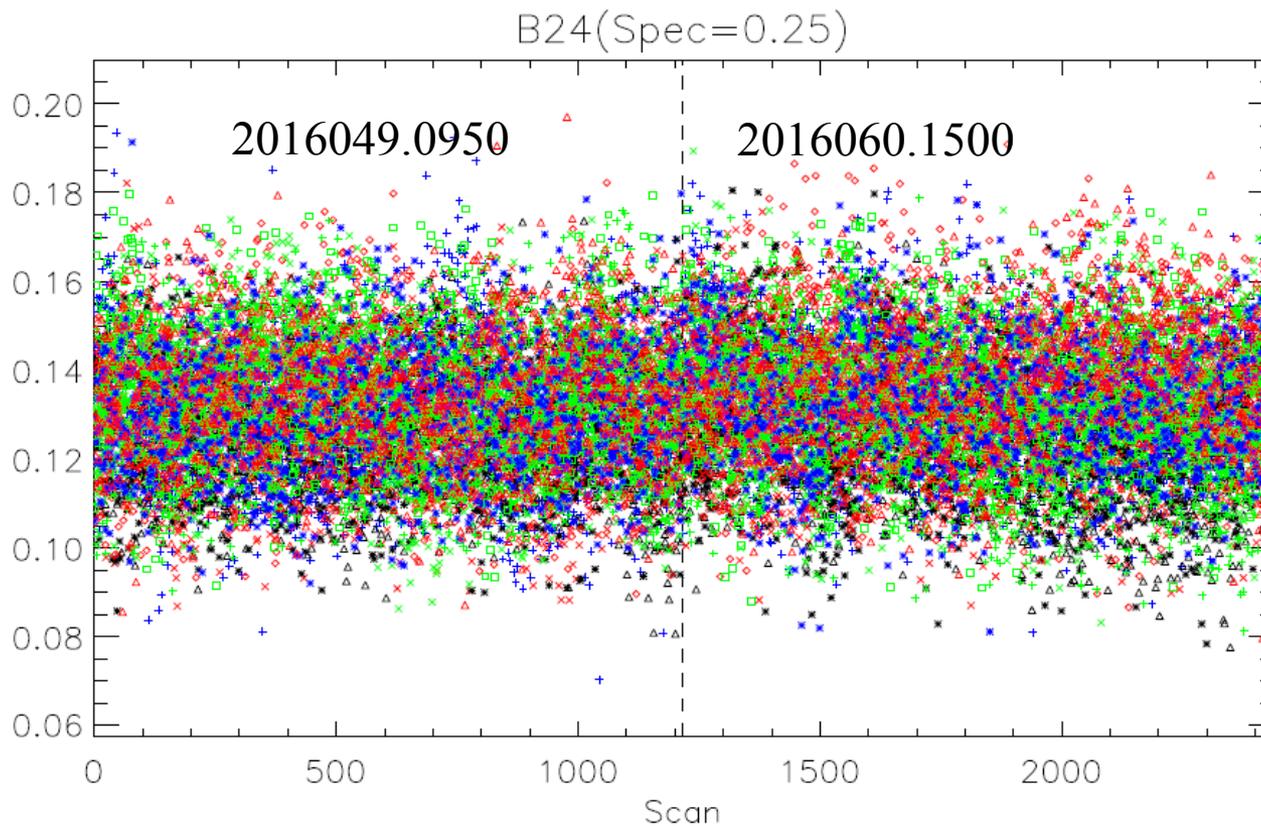
Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ

Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB NEdT vs scan

Terra MODIS On-orbit TEB NEdT vs Scan  
(MS1; Detector in Product order)



Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ

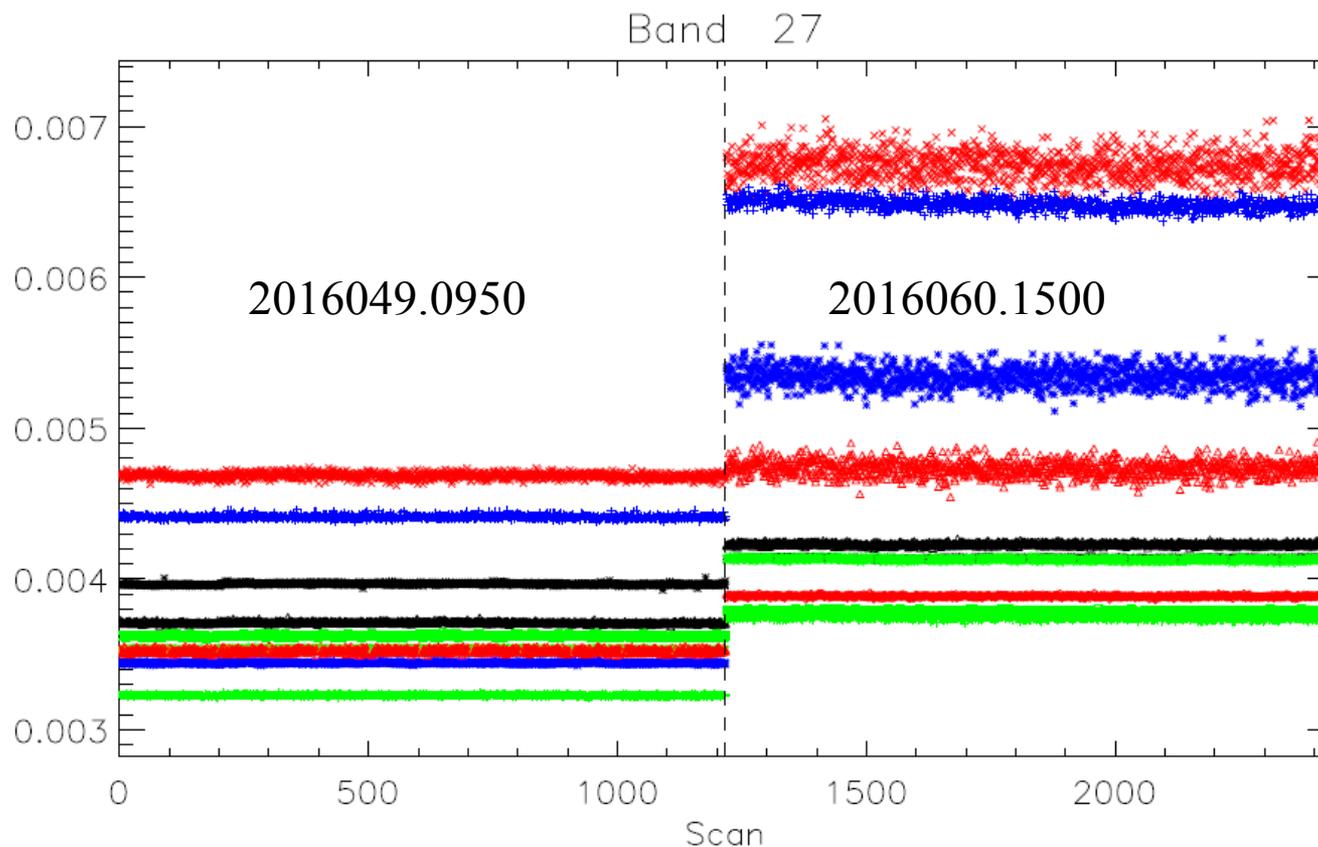
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB $b_1$ vs scan

Terra MODIS On-orbit TEB  $b_1$  vs Scan  
(MS1; Detector in Product order)

Noisy  
Detectors:  
1,2,3,6,8



Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ

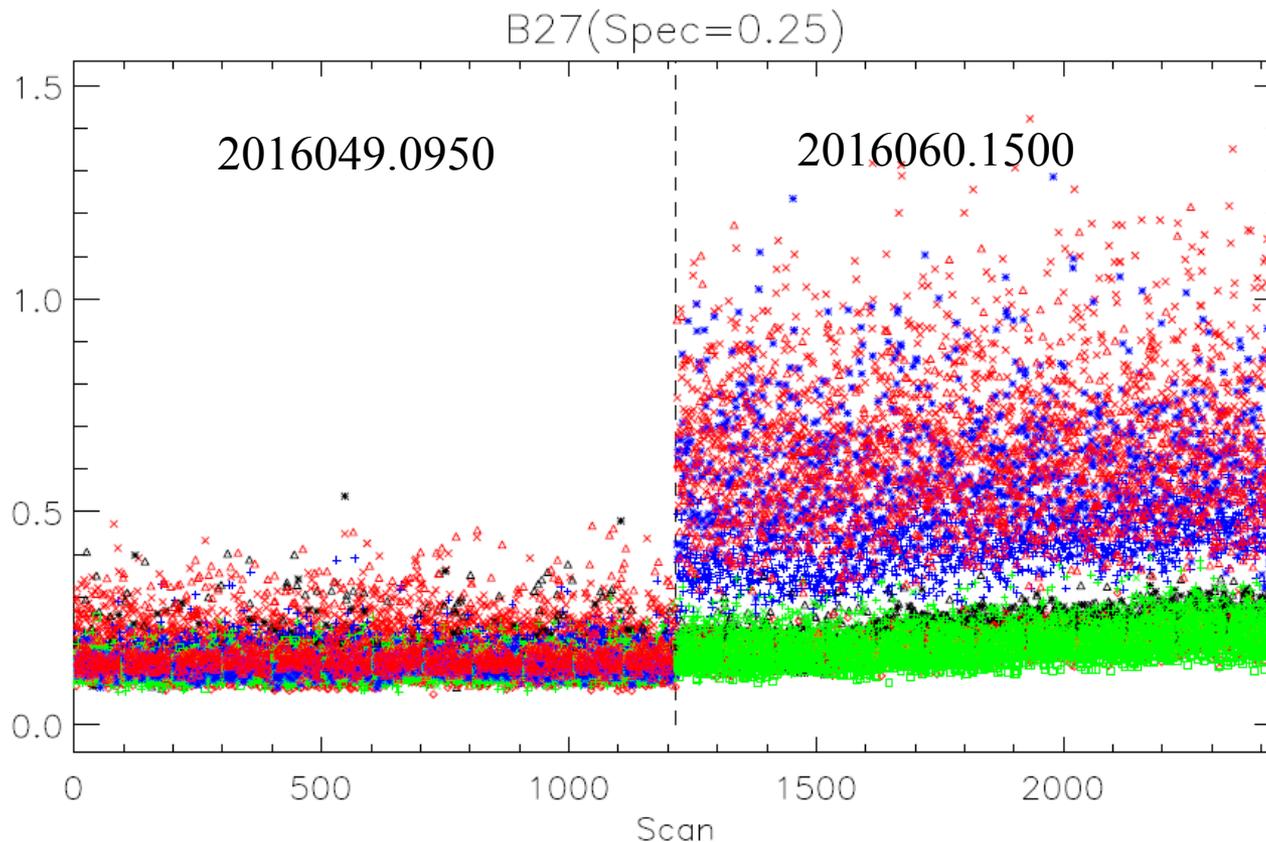
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB NEdT vs scan

Terra MODIS On-orbit TEB NEdT vs Scan  
(MS1; Detector in Product order)

Noisy  
Detectors:  
1,2,3,6,8



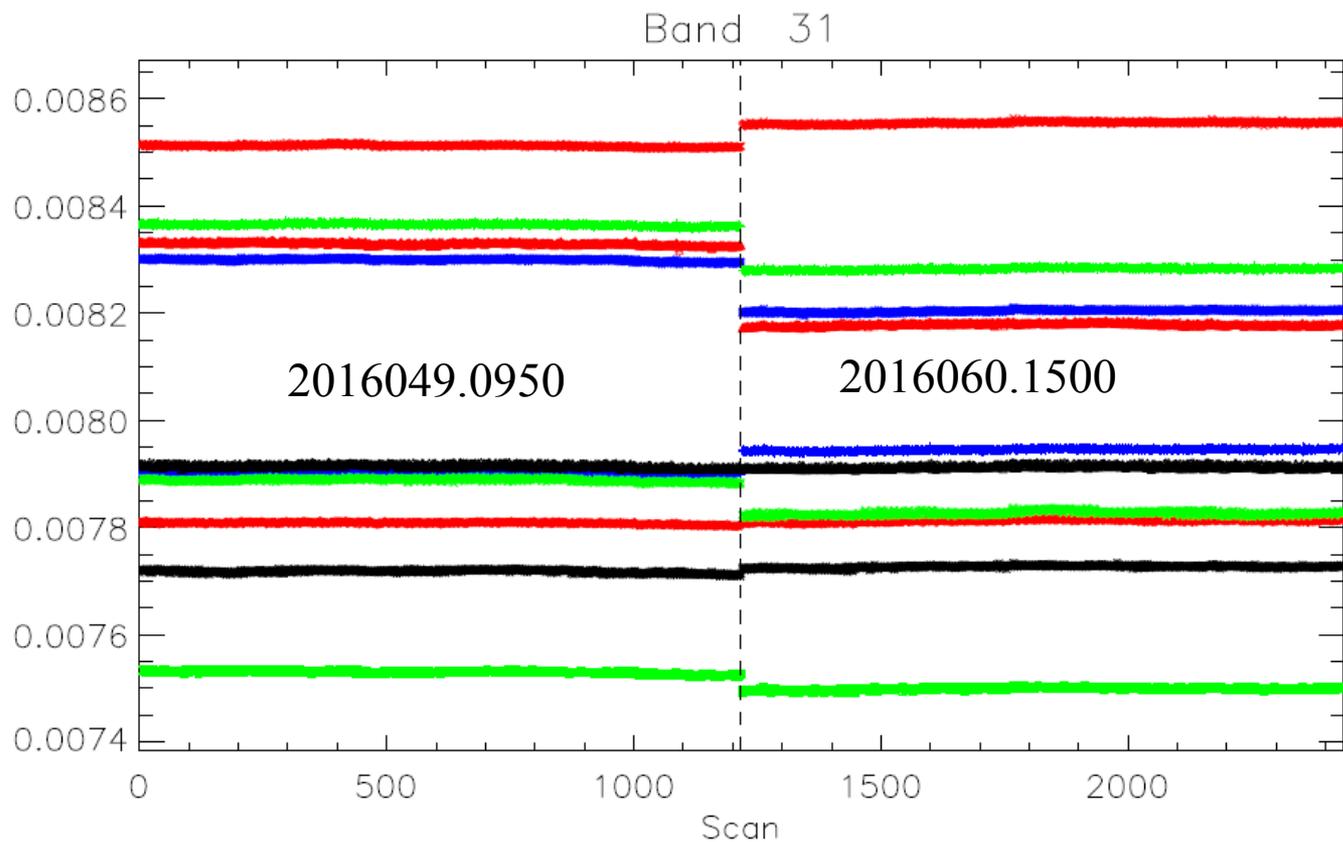
Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ  
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB $b_1$ vs scan



Terra MODIS On-orbit TEB  $b_1$  vs Scan  
(MS1; Detector in Product order)

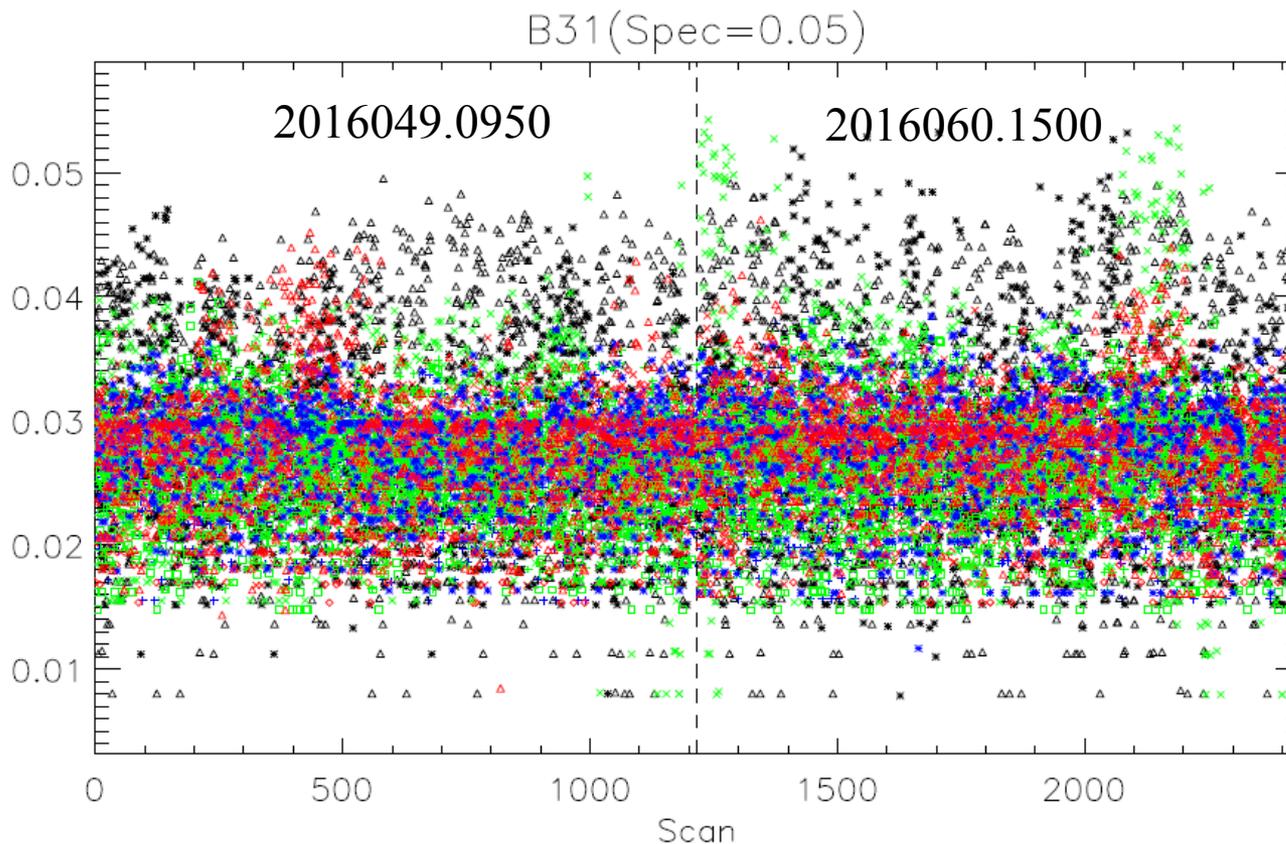


Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ  
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB NEdT vs scan

Terra MODIS On-orbit TEB NEdT vs Scan  
(MS1; Detector in Product order)



Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ

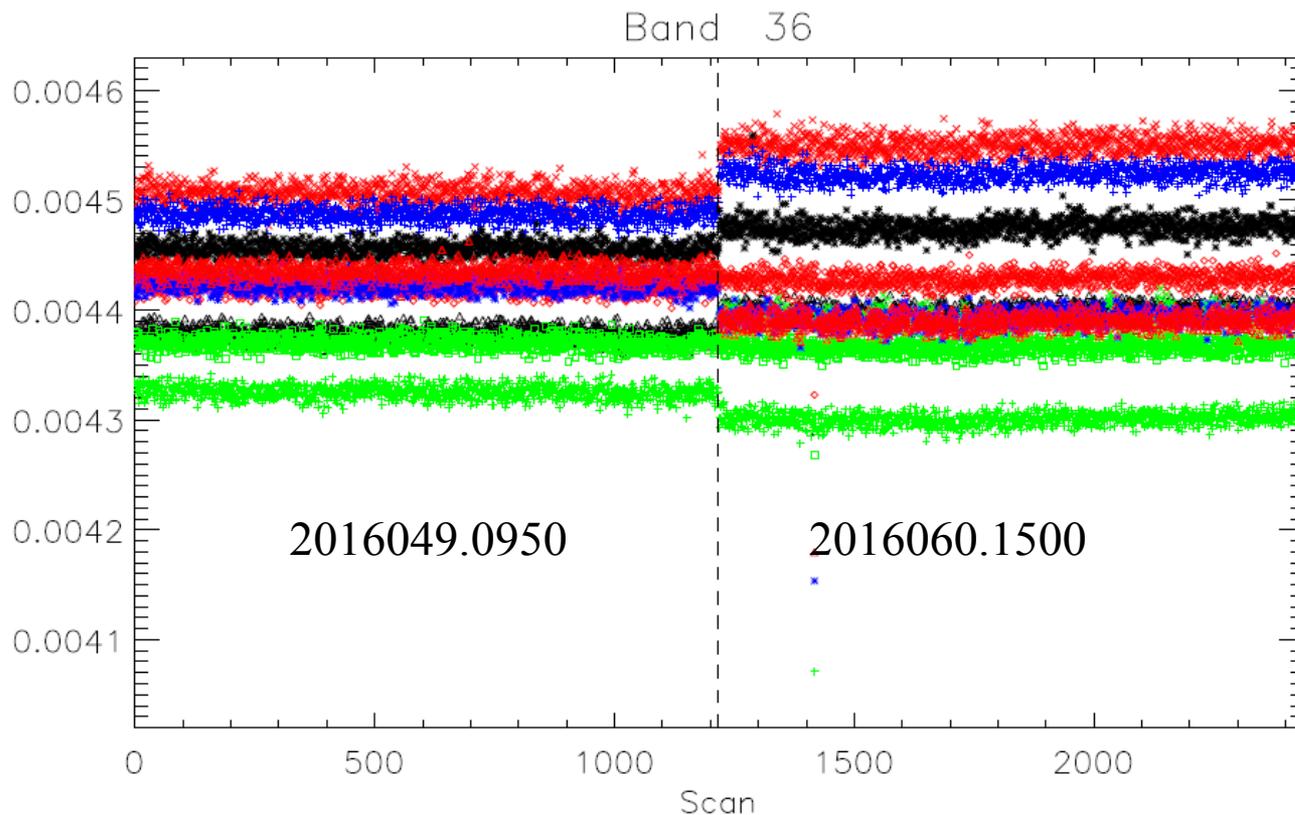
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB $b_1$ vs scan



Terra MODIS On-orbit TEB  $b_1$  vs Scan  
(MS1; Detector in Product order)

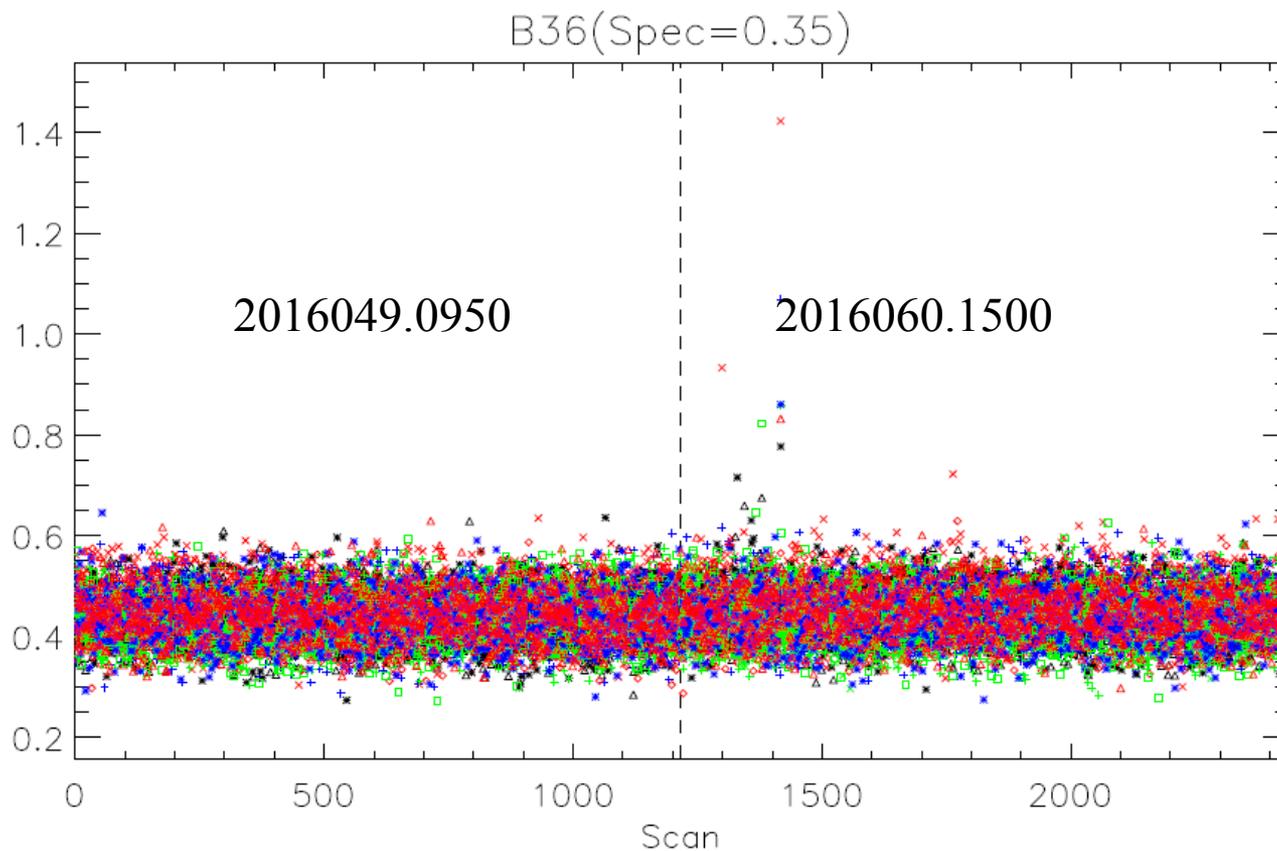


Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ  
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# TEB NEdT vs scan

Terra MODIS On-orbit TEB NEdT vs Scan  
(MS1; Detector in Product order)



Ch1:Red x Ch2:Blu + Ch3:Blk \* Ch4:Blk Δ Ch5:Red ◇ Ch6:Grn □ Ch7:Grn x Ch8:Grn + Ch9:Blu \* Ch10:Red Δ

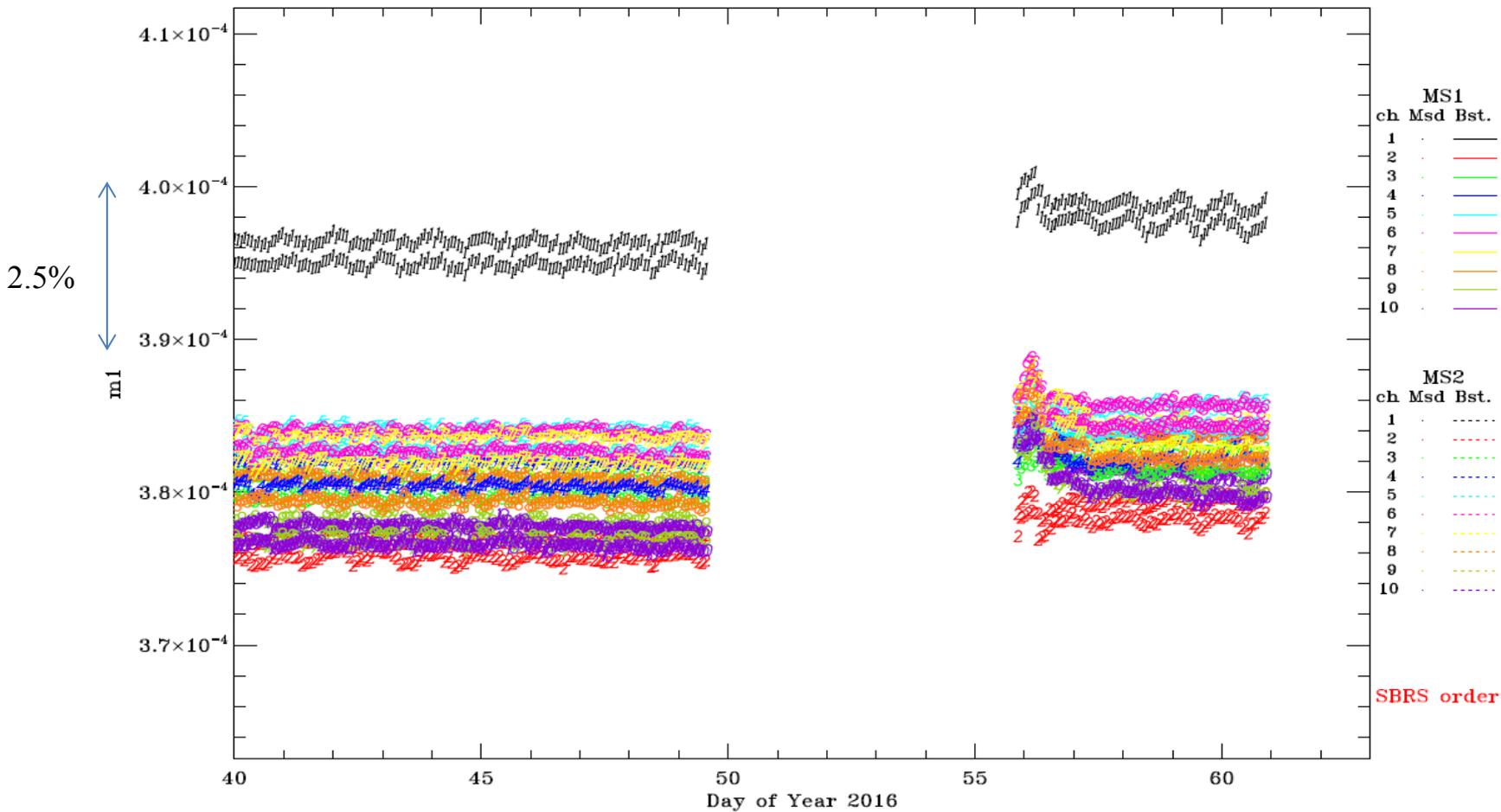
Data collected time: P2016049.0950–P2016049.1145; P2016060.1500–P2016060.1555 Itwk/Vdet = 79/190



# RSB gain trending



## Daily TERRA m1 Trending – Band 1 Subframe 3

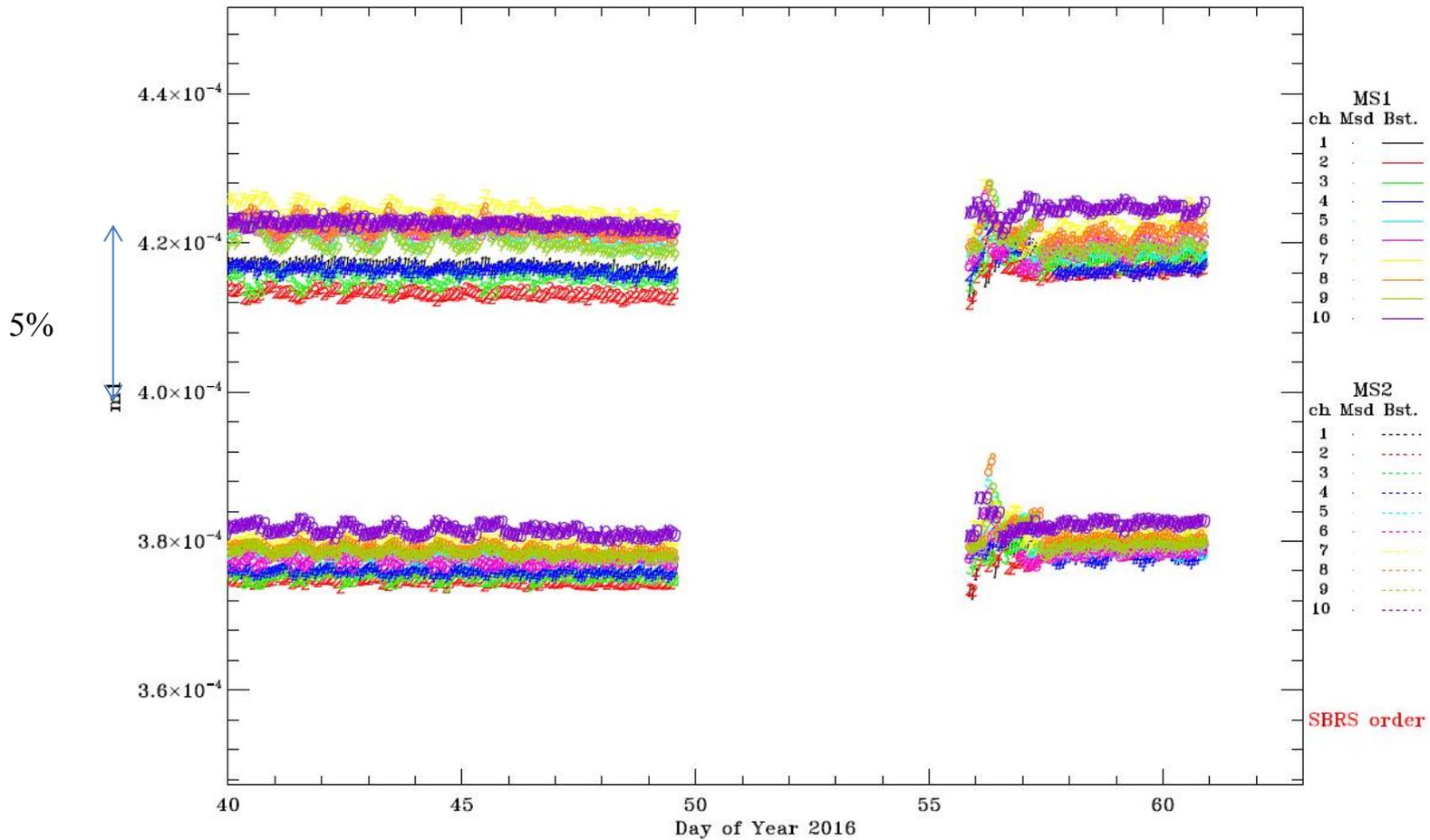




# RSB gain trending



Daily TERRA m1 Trending – Band 3 Subframe 1

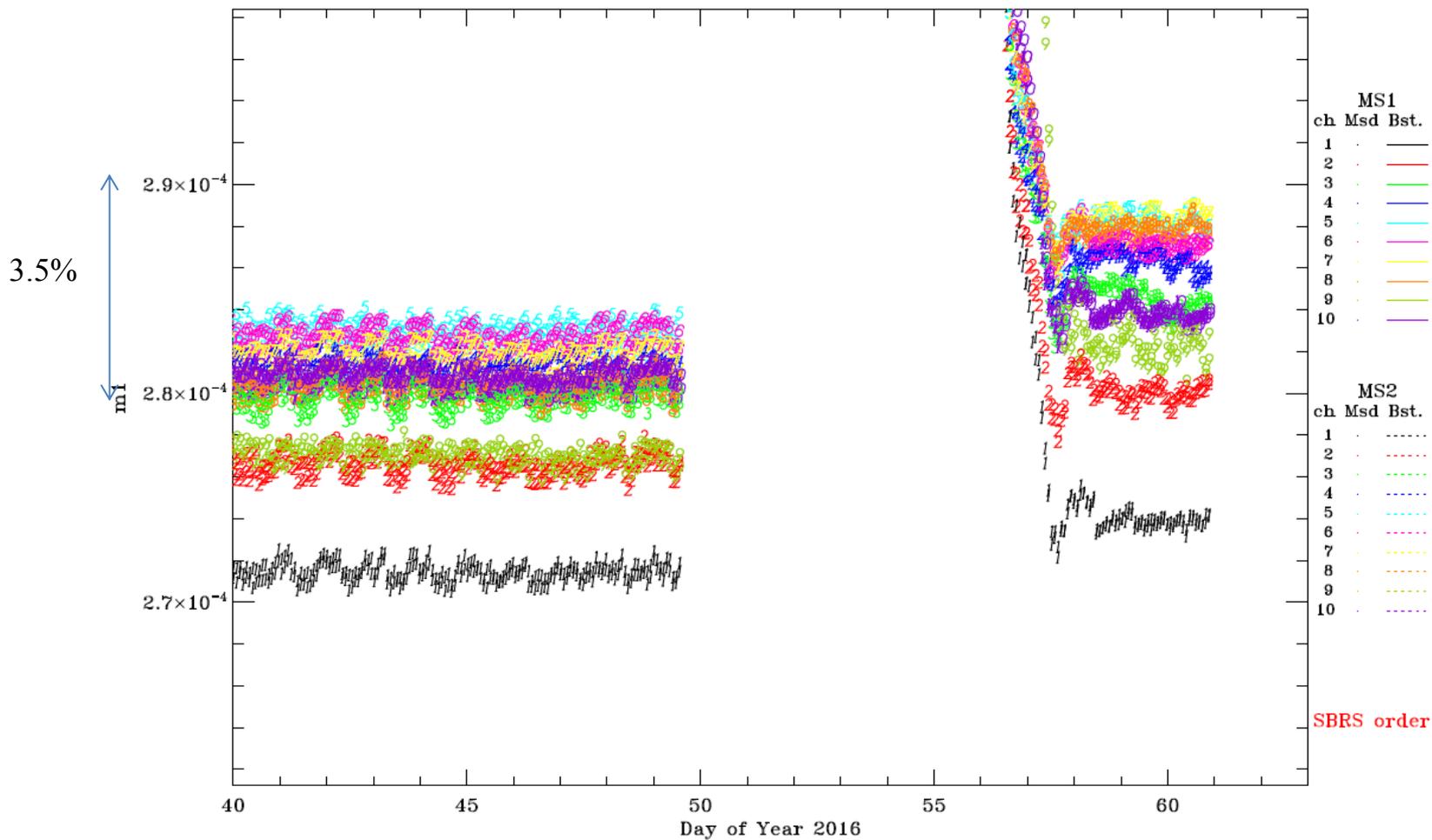




# RSB gain trending



## Daily TERRA m1 Trending – Band 6 Subframe 1

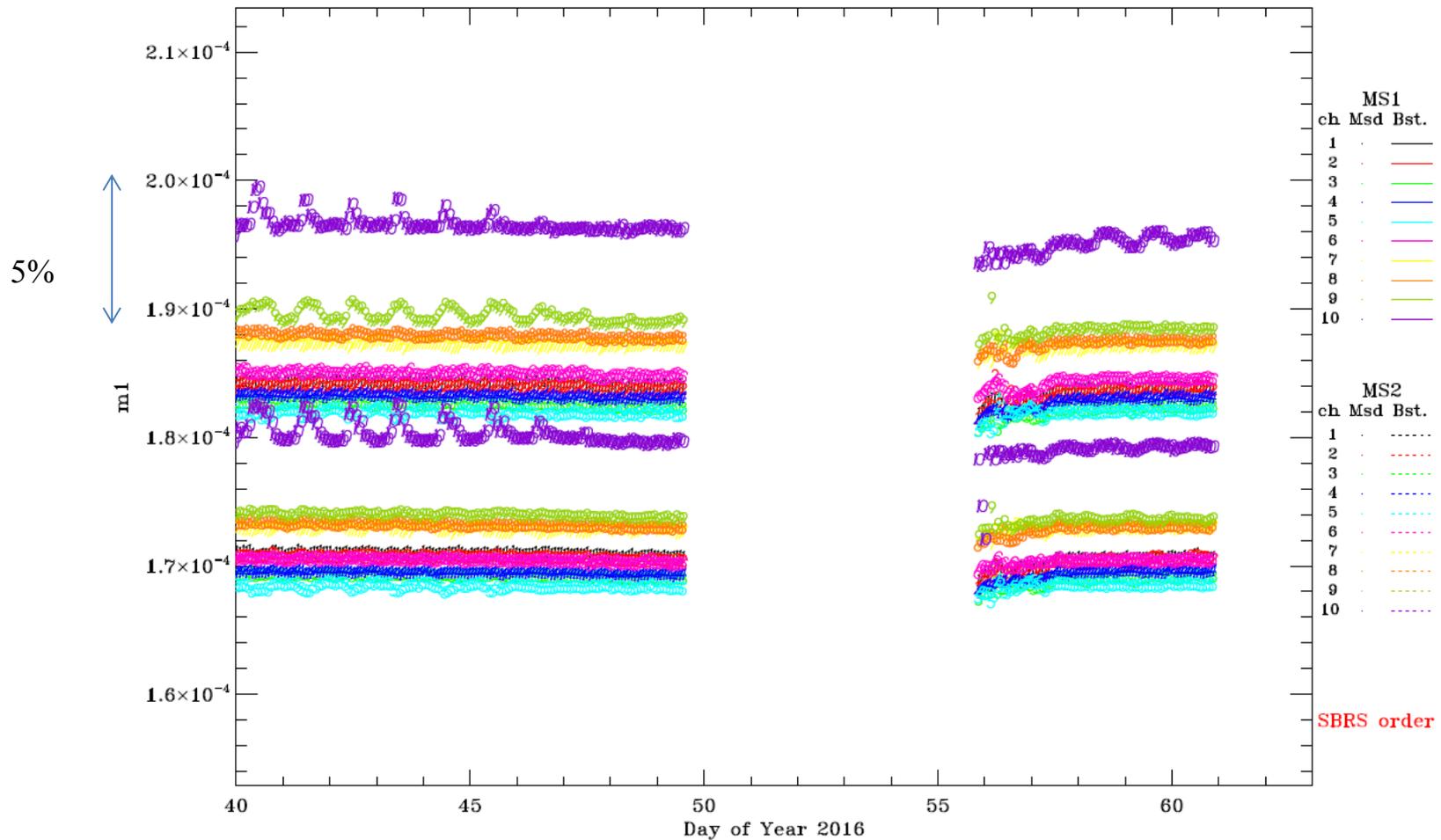




# RSB gain trending



Daily TERRA m1 Trending – Band 8 Subframe 1





# RSB gain trending



Daily TERRA m1 Trending – Band 17 Subframe 1

