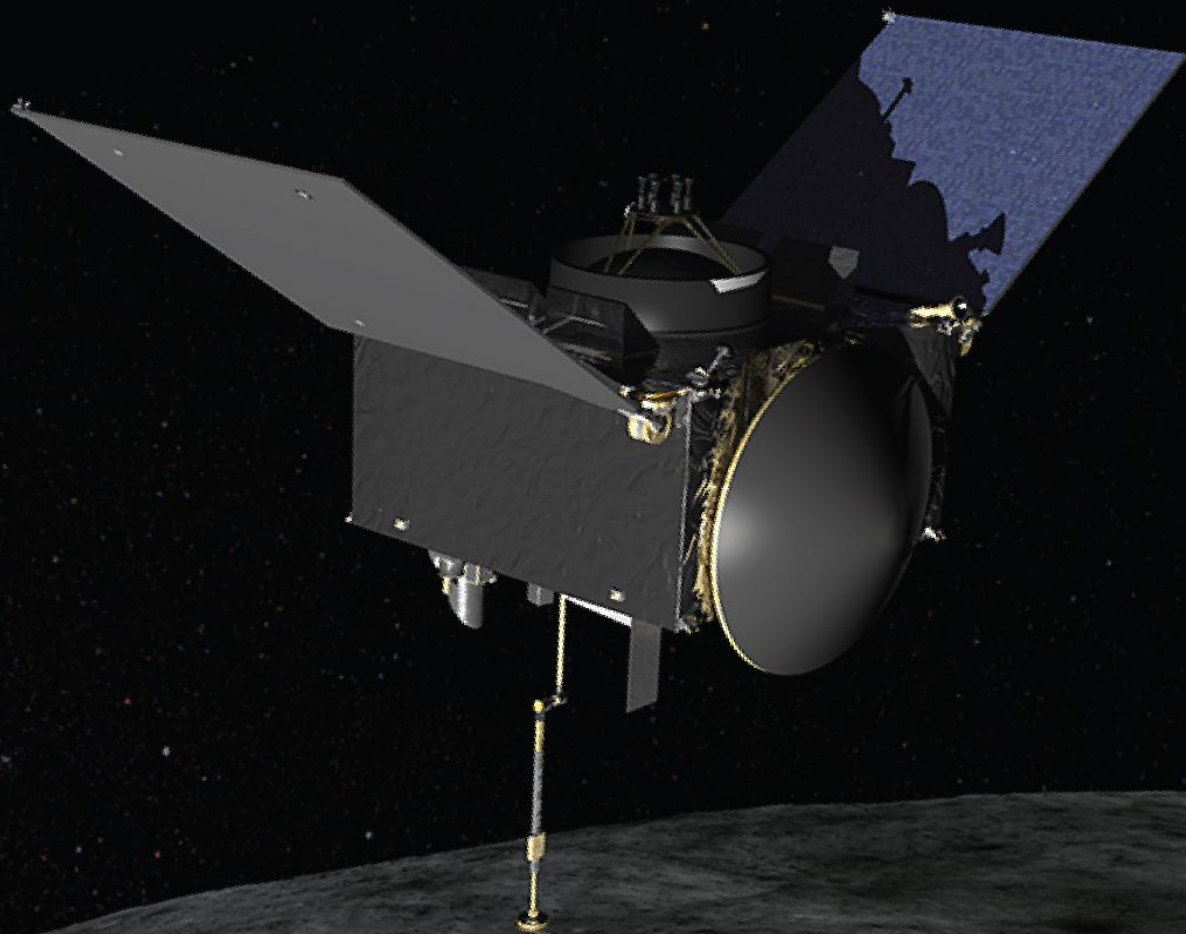




# Daily Downlink Tagup

Monday, October 15, 2018 (DOY 288)

**OSIRIS-REX<sup>TM</sup>**  
ASTEROID SAMPLE RETURN MISSION



# Agenda & Logistics

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- **Quicklook & Instrument Weekly Status**
- **DSN Schedule**
- **Observation Timeline**
- **Uplink/Execution/Downlink Summary**
- **Alarms, Watch items, ISAs, PFRs**
- **Need for Retransmit, need for Replay?**
- **Science / PI Comments**
- **Go-backs / Additional Comments**

**Daily Downlink Slides available shortly after each Tagup at:**

OSIRIS-REx Bennu Proximity Operations\Science Implementation\Downlink\_Daily\_Summary

# Quicklook + Weekly Instrument Status *(see backup for Instrument Status)*

Team	Status	Comment
<b>Spacecraft</b>	G	No issues
<i>Electrical Power System</i>	G	No issues
<i>Flight Software</i>	G	No issues
<i>Fault Protection</i>	G	No issues
<i>G&amp;NC</i>	G	No issues
<i>Mechanisms</i>	G	No issues
<i>Propulsion</i>	G	No issues
<i>Telecom</i>	G	No issues
<i>Thermal</i>	G	No issues
<i>Payload Interfaces</i>	G	No issues

	Health				Safety		Performance			Powered State	GO/NO-GO
OCAMS										<b>OFF</b>	<b>GO</b>
OLA										<b>OFF</b>	<b>GO</b>
OTES										<b>OFF</b>	<b>GO</b>
OVIRS										<b>OFF</b>	<b>GO</b>
REXIS										<b>OFF</b>	<b>GO</b>
	Thermal	Power	Command Response	Alarms	Trending	Limited Life & Mechanisms	Data Completeness	Pipeline Status	Science Concurrence		

# Downlink Schedule (times in UTC)

- **Current Data Rate: 916 kbps**

WOY	DOY	Start Date	HGA Start	End Date	HGA End	Duration	Note
41	288	2018-10-15	13:55	2018-10-15	16:37	02:40	<b>COMPLETE</b>
41	288	2018-10-15	17:39	2018-10-15	19:51	02:12	
42	289	2018-10-16	16:00	2018-10-16	20:00	04:00	
42	290	2018-10-17	16:00	2018-10-17	20:00	04:00	Portion of pass will be allocated to TAGSAM Cover Deploy
42	291	2018-10-18	15:30	2018-10-18	16:45	01:45	
42	292	2018-10-19	13:50	2018-10-19	17:05	03:15	
42	293	2018-10-20	13:50	2018-10-20	19:30	05:40	
42	294	2018-10-21	13:45	2018-10-21	19:30	05:45	

## DSN Notes:

SPC/DSS	EQUIPMENT	ETRO
-----	-----	-----
DSS43	HEMT-S1	292/0600z
DSS24	IFS1	292/2300z
DSS25	AWVR	292/2300z
DSS14	REC1	292/2300z
DSS54	ND-S	296/1530z
SPC40	RRT1	299/0500z
SPC60	VSR	300/1648z

# Approach: REXIS CXB, Daily Phase Function, Light Curve

## WOY 41 **COMPLETE**

		Monday 281 (10/08) Template AP4: OpNav and/or Daily Phase Function Day											Tuesday 282 (10/09) AP1: Nominal Science Day											Wednesday 283 (10/10) AP1: Nominal Science Day										
Template		HGA Pass: 5-7 Hour											DDOR window   ATL 6 Hour, includes OpNav											HGA Pass: 5-7 Hour										
Sci Plan		OpNav d/JI for AAM2 final design (DCO)											0615-0810 36 0115-0215 26/34 N/S											NO DSN HGA TRACK										
S/C Pointing		Earth Pt																																
OCAMS													rcL_wL_18282b_01.af Start: 09:02:51 End: 09:45:00											rcL_wL_18282b_01.af Start: 09:09:00 End: 09:42:09										
OTES																																		
OVIRS																																		
OLA																																		
REXIS		CALL rexis_pvt_on_block NET 02:40:00/MLT 02:55											REXIS CXB Target 0 rcL_wL_18282a_01.af Start: 04:01:02 End: 08:50:00											REXIS CXB Target 1 rcL_wL_18282a_01.af Start: 04:01:02 End: 08:50:00										
NAVCAM													REXIS powered on																					

		Thursday 284 (10/11) AP1: Nominal Science Day											Friday 285 (10/12) AP1: Nominal Science Day																																																						
Template		DDOR window   ATL 6 Hour, includes OpNav											HGA Pass: 5-7 Hour											DDOR window   ATL 6 Hour, includes OpNav											HGA Pass: 5-7 Hour																																
Sci Plan		0925-1225 35											DSN 1420-1620 54											2305-0100 24											DDOR 0145-0245 24/36 N/S											0600-0900 43											DSN 1500-1825 65 1st AAM uplink opportunity										
S/C Pointing		Earth Pt																																	Earth Pt																																
OCAMS		MapCam Light Curve rcL_wL_18284a_01.af Start: 04:00:55 End: 08:59:19																						MapCam Light Curve rcL_wL_18285a_01.af Start: 04:00:55 End: 08:59:19											rcL_wL_18284a_01.af Start: 09:02:51 End: 09:38:00																																
OTES																																																																			
OVIRS																																																																			
OLA																																																																			
REXIS																																																																			
NAVCAM																																																																			

		Saturday 286 (10/13) AP1: Nominal Science Day											Sunday 287 (10/14) Template AP4: OpNav and/or Daily Phase Function Day											Monday 288 (10/15) AP5: Maneuver Day, with OpNav and/or Daily Phase Function																																																																												
Template		DDOR window   ATL 6 Hour, includes OpNav											HGA Pass: 5-7 Hour											DDOR window   ATL 6 Hour, includes OpNav											HGA Pass: 5-7 Hour																																																																	
Sci Plan		0920-1255 43											DSN 1400-1910 55 Backup AAM uplink opportunity											2155-0100 25											DDOR 0145-0245 25/36 N/S											0400-0830 36											DSN 1515-1815 65 Backup AAM u/l opportunity											2115-0400 24											DDOR 0125-0225 24/34 N/S											0340-1220 34										
S/C Pointing		Earth Pt																																	Earth Pt																																																																	
OCAMS		rcL_wL_18286b_01.af Start: 09:02:51 End: 09:45:59																						rcL_wL_18287a_01.af Start: 09:02:51 End: 09:45:59																						rcL_wL_18288a_01.af Start: 09:02:51 End: 09:45:59																																																						
OTES																																														Call ocams_pvt_off_block.NET 11:59:11																																																						
OVIRS																																																																																																				
OLA																																																																																																				
REXIS		REXIS CXB Target 0 rcL_wL_18286a_01.af Start: 04:01:02 End: 08:51:37											REXIS Powered Off in rexis_app_18286_cxb0_002.vml at 08:51:30																																																																																							
NAVCAM																																																																																																				

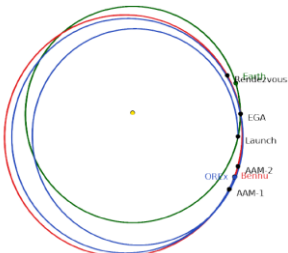
# AAM2, potential AAM2-C1, MapCam Phase Function 2, SMM3, TAG Cover Release, SMM4 WOY 42

We are HERE

Monday 288 (10/15) AP3: Maneuver Day, with OpNav and/or Daily Phase Function												Tuesday 289 (10/16) AP1: Nominal Science Day												Wednesday 290 (10/17) AP11: Spacecraft Activity with OpNav and/or Daily Phase Function Day											
Template												Template												Template											
HGA: 5-7 Hr												DDOR window												DDOR window											
Burn												ATL: 6 Hour, includes OpNav												HGA Pass: 5-7 Hour											
AMM2																								HGA Pass: 5 Hour											
DSN Level 3 Coverage												DDOR												DSN L4 Ops Eng/NOPE On-call TAG ARM CVR EKT											
1350-2000 6S, Dual receivers, critical support												0125-0225 26/35 N/S 0340-0930 35												1620-1955 54, Dual receivers											
OpNav d/I feeds post burn contingency ephem build												Contingency ephem uplink, OpNav d/I feeds post burn contingency ephem build												Contingency ephem uplink, OpNav d/I feeds AAM2 design data cutoff											
2100-0040 26																								0600-1200 35											
8 OCAMS MapCam Full Phase Function Part 2 of 2																								Pre-Cover standard dual-rotation SMM and TAGSAM Launch Cover Eject											
S/C Pointing												Nadir Point												12 hr cooldown at Sun Pt.											
OCAMS												ocams_ptr_on/NET 288-2100 00NLT 289-03:00:00												opn_wt_18291a_01.af Start: 09:42:38 End: 10:18:12 (MapCam OpNavs)											
OTES																								scl_wt_18291a_01.af Start: 04:00:00 End: 09:02:00											
OVIRS																								SMM3											
OLA																								TGM Cover Deploy											
REXIS																																			
NAVCM																																			

Thursday 291 (10/18) AP11: Spacecraft Activity with OpNav and/or Daily Phase Function Day												Friday 292 (10/19) Template AP4: OpNav and/or Daily Phase Function Day											
Template												Template											
DDOR window												DDOR window											
HGA Pass: 5 Hour												HGA Pass: 5-7 Hour											
A												A											
Sci Plan												Sci Plan											
0450-1150 36												0235-0355 24/34 N/S 0450-0955 34											
DSN												DSN											
1530-1645 63												1350-1705 55											
AAM2 C1 u/I opportunity												AAM-2C1 Elevate to L3 if maneuver needed											
Post-Cover Ejection SMM standard dual-rotation												2055-2355 26											
S/C Pointing												12 hr cooldown at Sun Pt.											
OCAMS												SMM4											
OTES												scl_wt_18291a_01.af Start: 11:27:51 End: 12:09:27 (MapCam OpNavs + MapCam Daily Phase Function)											
OVIRS												scl_wt_18291a_01.af Start: 08:52:51 End: 09:34:27 (PolyCam OpNavs + MapCam Daily Phase Function)											
OLA												Potential AAM2-C1											
REXIS												All Payloads Powered Off if Needed											
NAVCM																							

Saturday 293 (10/20) Template AP4: OpNav and/or Daily Phase Function Day												Sunday 294 (10/21) Template AP4: OpNav and/or Daily Phase Function Day												Monday 295 (10/22) AP5: Maneuver Day, with OpNav and/or Daily Phase Function											
Template												Template												Template											
DDOR window												DDOR window												DDOR window											
HGA Pass: 5-7 Hour												HGA Pass: 5-7 Hour												HGA Pass: 5 Hour											
A												A												A											
Sci Plan												Sci Plan												Sci Plan											
0400-1115 35												0050-0825 34												0130-0230 25/36 N/S 0345-1245 36											
DSN												DSN												DDOR											
1350-1930 55												1345-1930 54												0600-1200 35											
1st AAM u/I opportunity												backup opportunity for burn u/I, nominal ephem u/I												Contingency ephem uplink, OpNav d/I feeds AAM2 design data cutoff											
S/C Pointing												S/C Pointing												S/C Pointing											
OCAMS												OCAMS												OCAMS											
OTES												OTES												OTES											
OVIRS												OVIRS												OVIRS											
OLA												OLA												OLA											
REXIS												REXIS												REXIS											
NAVCM												NAVCM												NAVCM											



Statistics as of October 10, 2018, L-762 day

- Days until Arrival: 54 days
- Earth Range = 130,000,000 km (0.87 AU) (↑)
- Sun Range = 167,000,000 km (1.12 AU) (↓)
- Bennu Range = 66,000 km (↓)
- Sun-Probe-Earth Angle = 58.7 deg (↑)
- One Way Light Time = 00:07:13 hh:mm:ss (↑)
- Round Trip Light Time = 00:14:26 hh:mm:ss (↑ increasing, ↓ decreasing)

# Uplink Summary

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## UPLINK

### WOY 42 (2018/288 – 2018/295)

- AAM2 config file uplinked 2018-285/15:12
- xm1842 BGSeq and Sci Genies uplinked 2018-285/15:28
- Express command for early Downlink STOP uplinked 2018-285/16:55

# Execution Summary

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- **Instrument Status:**
  - All payloads powered off

## Executed (times in UTC):

- **2018/284 (Thursday, Oct 11)**
  - Expected/received= 18 OpNav + 735 Light Curve = 753 images / **753 images**
- **2018/285 (Friday, Oct 12)**
  - Expected/received= 18 OpNav + 705 Light Curve = 723 images / **723 images**
- **2018/286 (Saturday, Oct 13)**
  - 04:01 Start REXIS CXB Cal Target 0 Part 2 –acquires Sci data for ~4.5 hrs. Powers off REX at ~08:50 using rexis\_pwr\_off
  - 09:02 PolyCam OpNavs with Daily MapCam Phase Function ride-alongs
    - # of images expected/received= 18 OpNav + 46 Phase Function = 64 images / **64 images**
- **2018/287 (Sunday, Oct 14)**
  - 09:02 Start PolyCam OpNavs with Daily MapCam Phase Function ride-alongs
    - # of images expected/received= 18 OpNav + 46 Phase Function = 64 images / **64 images**
- **2018/288 (Monday, Oct 15)**
  - 09:02 Start PolyCam OpNavs with Daily MapCam Phase Function ride-alongs
    - # of images expected/received= 18 OpNav + 84 Phase Function = 102 images / **102 images**
  - 11:15 OCAMS Powered Off using ocams\_pwr\_off with YES\_XFER ahead of AAM2
  - ~17:05 AAM2 Burn start
  - ~17:11 AAM2 Burn end

## Up Next (times in UTC):

- **2018/288 (Monday, Oct 15)**
  - 21:00 OCAMS powered-ON
- **2018/289 (Tuesday, Oct 16)**
  - 04:00 MapCam Full Phase Function part 2
    - # of images Expected = 755 images
  - 09:42 MapCam OpNavs (critical for AAM2 reconstruct)
    - # of images Expected = 18
- **2018/290 (Wednesday, Oct 17)**
  - 11:27 Start MapCam OpNavs and MapCam Daily Phase Function Ride-along
    - # of images Expected = 18 OpNav + 69 Phase Function = 87
  - ~17:00 SMM3 followed by TAGSAM Cover Deploy

# Downlink Summary

**Current Data Rate: 916 kbps**

## DOWNLINK

### DOY 287 Downlink Summary

- We started receiving data right around the time expected, at ~08:35 MST (15:35 UTC). MSA also confirmed that the DSN had locked up with the S/C without issue and data was flowing.
- Around ~09:20 MST, SPOC Ingest appeared to have crashed and SPOC developers quickly identified a Database Issue that had stalled data processing. We understand the cause to be related to capacity issues within the SPOC DB. Our developers are working this, and the issue will be tracked via a PFR.
- At that time, we had completed processing of 7 OpNav Images—these were pushed to the FOB.
- SPOC DB was restarted around 11:50 MST (18:50 UTC), which was just after today's Pass had ended. We were able to complete processing of the remaining OpNavs shortly after the restart (did not require the replay data)
- A replay of ALL data with ERT 2018/287-15:20:00 – 2018/287-18:40:00 was initiated by the SPOC at 12:36 MST (19:36 UTC).
- All 18 DOY 287 OpNav images were confirmed on the FOB around 19:00 UTC DOY 287.

- Partition Status as of 19:00 today:

	Part. Start Vol (MB)	New Data Vol (MB)	New Data Vol (Mb)	Expected Partition Fill (%)	Current End Partition (%)	Comments
<i>OpNav</i>	0.00	42.23	337.84	6.03	0.00	
<i>OTES</i>	0.00	0.00	0.00	0.00	0.00	
<i>REXIS</i>	0.00	0.00	0.00	0.00	0.00	
<i>OLA</i>	0.00	0.00	0.00	0.00	0.00	
<i>OVIRS</i>	0.00	0.00	0.00	0.00	0.00	
<i>OCAMS</i>	184.30	204.13	1633.00	10.52	0.00	
<i>Tagcams/Overflow</i>	0.00	0.00	0.00	0.00	0.00	

# Downlink Summary

## Looking ahead

- Expected Partition Status going into the next pass, scheduled for DOY 289:

	Part. Start Vol (MB)	New Data Vol (MB)	New Data Vol (Mb)	Expected Partition Fill (%)	Expected End Partition (%)	Comments
<i>OpNav</i>	0.00	42.23	337.84	6.03	0.00	
<i>OTES</i>	0.00	0.00	0.00	0.00	0.00	
<i>REXIS</i>	0.00	0.00	0.00	0.00	0.00	
<i>OLA</i>	0.00	0.00	0.00	0.00	0.00	
<i>OVIRS</i>	0.00	0.00	0.00	0.00	0.00	
<i>OCAMS</i>	0.00	1689.00	13512.00	45.74	29.06	
<i>Tagcams/Overflow</i>	0.00	0.00	0.00	0.00	0.00	

# Need for Retransmit? Need for Replay?

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- **No outstanding data gaps identified through DOY 283**
- **Data Replay initiated yesterday (DOY 287) at 19:36 UTC for all data with ERT 2018/287-15:20:00 – 2018/287-18:40:00.**

# List of Unexpected Alarms, Watch Items, ISAs, PFRs

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## Alarms

### Watch Items, ISA's and PFR's

- **ISA # 6242 - ASIST issues during AAM-2 OD downlink**
  - Date of Incident: Oct 6, 2018
  - Status: IN PROGRESS
  - Anomaly Type: Ground Minor
- **PFR-30 - Failure to meet 30-minute OpNav Processing Requirement - 10/6/18 AND ISA # 6320 - Delay in data processing at the SPOC**
  - Date of Incident: Oct 6, 2018
  - Status: IN PROGRESS
  - Anomaly Type: Ground Minor

# Science Status and/or PI Status

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# Looking Ahead

	42								43						44						45							
	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
	10/15	10/16	10/17	10/18	10/19	###	###	10/22	10/23	10/24	10/25	10/26	###	###	10/29	10/30	10/31	11/1	11/2	###	###	11/5	11/6	11/7	11/8	11/9	###	###
	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su
Week 8 - Tactical kickoff	xm1850 - Pre Surv Wk 2								xm1851 - Pre Surv Wk 3						xm1852 - Trans to Orbital A						xm1901 - Orbital A							
Week 7 - SOS	xm1849 - Pre Surv Wk 1								xm1850 - Pre Surv Wk 2						xm1851 - Pre Surv Wk 3						xm1852 - Trans to Orbital A							
Week 6 - J-A 1	xm1848								xm1849 - Pre Surv Wk 1						xm1850 - Pre Surv Wk 2						xm1851 - Pre Surv Wk 3							
Week 5 - J-A 2	xm1847								xm1848						xm1849 - Pre Surv Wk 1						xm1850 - Pre Surv Wk 2							
Week 4 - TCR approval, Handshake	xm1846								xm1847						xm1848						xm1849 - Pre Surv Wk 1							
Week 3 - FA Kickoff	xm1845								xm1846						xm1847						xm1848							
Week 2 - Final Build/Delivery/Test	xm1844								xm1845						xm1846						xm1847							
Week 1 - Review/Uplink	xm1843								xm1844						xm1845						xm1846							
Week 0 - Execution	xm1842								xm1843						xm1844						xm1845							

## Observation completion forecast dates:

Source Phase	WG	Task Name	Related DP #	MRD	Forecast Finish	WOY 2018 Finish
Approach	Obs_MapCam	Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/16/2018	42
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/17/2018	42
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/18/2018	42
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/19/2018	42
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/20/2018	42
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/21/2018	42
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/22/2018	43
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/23/2018	43
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/24/2018	43
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/25/2018	43
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/26/2018	43
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/27/2018	43
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/28/2018	43
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/29/2018	44
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/30/2018	44
Approach	Obs_MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/31/2018	44
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	11/1/2018	44
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	11/2/2018	44
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	11/3/2018	44
Approach	Obs_MapCam	Daily Phase Function: MapCam Images	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	11/4/2018	44
Approach	Obs_PolyCam	Daily Phase Function: PolyCam Images	AP-8, AP-9, AP-11, AP-14, AP-15, AP-19	144, 148, 158	10/23/2018	43
Approach	Obs_PolyCam	Daily Phase Function: PolyCam Images	AP-8, AP-9, AP-11, AP-14, AP-15, AP-19	144, 148, 158	10/30/2018	44
Approach	Obs_PolyCam	Daily Phase Function: PolyCam Images	AP-8, AP-9, AP-11, AP-14, AP-15, AP-19	144, 148, 158	10/31/2018	44
Approach	Obs_PolyCam	Nat Sat Search: PolyCam Images	AP-8, AP-9, AP-11	144, 148	10/24/2018	43
Approach	Obs_PolyCam	Nat Sat Search: PolyCam Images	AP-8, AP-9, AP-11	144, 148	10/25/2018	43
Approach	Obs_PolyCam	Nat Sat Search: PolyCam Images	AP-8, AP-9, AP-11	144, 148	10/27/2018	43
Approach	Obs_PolyCam	Nat Sat Search: PolyCam Images	AP-8, AP-9, AP-11	144, 148	10/28/2018	43
Approach	Obs_PolyCam	PolyCam Shape Model: PolyCam Images	Pre-Rel 75cm Shape model	678a	11/2/2018	44
Approach	Obs_PolyCam	PolyCam Shape Model: PolyCam Images	Pre-Rel 75cm Shape model	678a	11/3/2018	44
Approach	Obs_OTES	OTES Spectra (Optimized for OVIRS)	SA-10, SA-11, TA-008	159, 544	11/2/2018	44
Approach	Obs_OTES	OVIRS Full Disk Spectra: OTRS Spectra (Optimized for OVIRS)	SA-10, SA-11, TA-008	159, 544	11/3/2018	44
Approach	Obs_OVIRS	OVIRS Full disk spectra: OVIRS Spectra (Optimized for OVIRS)	SA-25	159	11/2/2018	44
Approach	Obs_OVIRS	OVIRS Full disk spectra: OVIRS Spectra (Optimized for OVIRS)	SA-25	159	11/3/2018	44

# Looking Ahead

<b>Validated Data available forecast dates (includes 1 weekday for Downlink)</b>						
Source Phase	WG	Task Name	Related DP #	MRD	Forecast Finish	WOY 2018 Finish
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/15/2018	42
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/15/2018	42
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/15/2018	42
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/17/2018	42
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/17/2018	42
Approach	Val-from-MapCam	Light Curve: MapCam Images validated	AP-4, AP-12, AP-13, IP-13	146, 148, 149a, 149b, 149c, 158	10/22/2018	43
Approach	Val-from-MapCam	Light Curve: MapCam Images validated	AP-4, AP-12, AP-13, IP-13	146, 148, 149a, 149b, 149c, 158	10/22/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/22/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/22/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/22/2018	43
Approach	Val-from-MapCam	Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/23/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/24/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/25/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/26/2018	43
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/29/2018	44
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/29/2018	44
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/29/2018	44
Approach	Val-from-MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/30/2018	44
Approach	Val-from-MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	10/31/2018	44
Approach	Val-from-MapCam	Daily Phase Fcn & Nat. Sat. Search: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	11/1/2018	44
Approach	Val-from-MapCam	Daily Phase Function: MapCam Images validated	AP-14, AP-15, AP-19, IP-13	149a, 149b, 149c, 158	11/2/2018	44
Approach	Val-from-PolyCam	Daily Phase Function: PolyCam Images validated	AP-18, AP-19	144, 148, 158	10/30/2018	44
Approach	Val-from-PolyCam	Nat Sat Search: PolyCam Images validated	AP-8, AP-9, AP-11	144, 148	10/31/2018	44
Approach	Val-from-PolyCam	Nat Sat Search: PolyCam Images validated	AP-8, AP-9, AP-11	144, 148	11/1/2018	44

## Science Data Product completion forecast dates:

Source Phas	WG	Task Name	DP #	MRD	Forecast Finish	WOY 2018 Finish
Approach	APWG	Bennu Photometry (AP-4)	AP-4	157	10/26/2018	43
Approach	APWG	Temporal and Phased Light Curve Photometry (AP-12)	AP-12	146, 157	10/26/2018	43
Approach	APWG	Light Curve Parameters (AP-13)	AP-13	146, 157	10/26/2018	43



OCAMS DAILY DOWNLINK OCT 15, 2018

**OSIRIS-REx™**  
ASTEROID SAMPLE RETURN MISSION

**Bashar Rizk**  
**Christian d'Aubigny**  
**Mike Fitzgibbon**  
**Chuck Fellows**



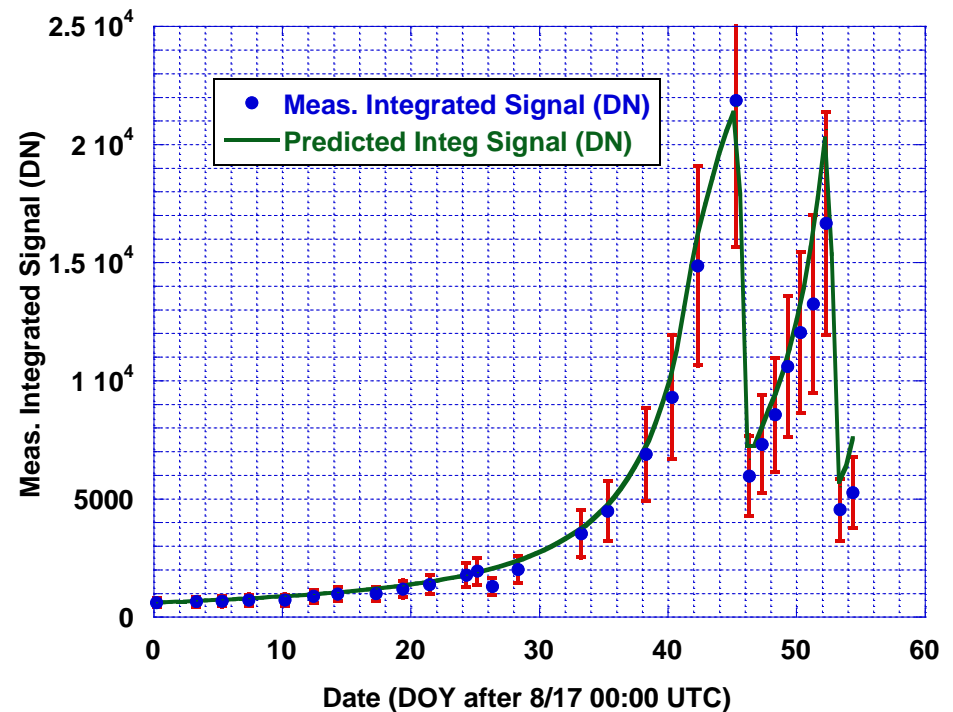
# Approach Phase Bennu Imaging (DOY 278–Present)

DO Y	Date	Start/End (UTC hh:mm)		Rng (K km)	B Sol Rng (AU)	Phase Angle (°)	V Mag	PC Pan Mag	Width (PC Pixel)	Pred Peak Sig (DN)	Obs Peak Sig (DN)	Pred Integ Sig (DN)	Obs Integ Sig (DN)	Obs Peak / IS 0.285
278	10/05	7:10	7:20	131.4	1.130	60.4	8.09	7.67	0.277	2996	2387	11051	10605	0.211
279	10/06	7:25	7:35	119.2	1.127	61.0	7.90	7.48	0.306	3607	3143	13309	12044	0.261
280	10/07	7:25	7:35	107.1	1.124	61.6	7.68	7.26	0.341	4431	2533	16349	13252	0.185
281	10/08	7:25	7:35	94.9	1.120	62.1	7.43	7.02	0.384	5593	3613	20635	16660	0.217
282	10/09	9:20	9:30	81.9	1.117	62.5	7.13	6.71	0.445	1572	2569	5526	4540	0.485
283	10/10	9:15	9:25	69.7	1.114	62.8	6.79	6.37	0.523	2159	2779	7586	5269	0.503
284	10/11	9:15	9:25	57.6	1.110	62.8	6.36	5.94	0.633	1271	1338	4400	3566	0.304
285	10/12	9:15	9:25	45.5	1.107	62.6	5.84	5.42	0.802	2060	4186	7134	7341	0.418
286	10/13	9:15	9:25	33.4	1.104	61.5	5.11	4.69	1.093	327	432	1132	829	0.266
287	10/14	9:15	9:25	21.4	1.101	58.3	4.00	3.58	1.71	863	569	3027	2311	0.092
288	10/15	9:15	9:25	9.74	1.097	45.5	1.74	1.32	3.75	863	2145	3027	20317	0.092

# Imaging Just Before bennu Leaves Point-Source Regime

- As of last Wednesday

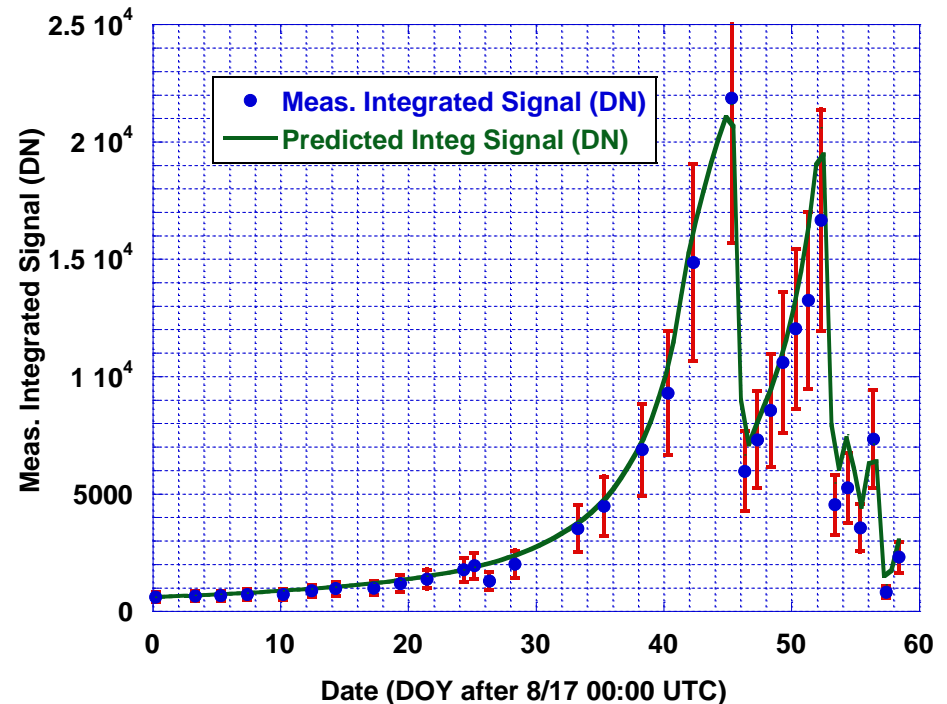
Bennu Meas. Integrated Irradiance to 10/10/2018 vs. Current Model (0.029 phase slope) (OpNav 4-, 2-, 0.5- and 0.1-sec images)



# Imaging Just As Bennu is Leaving Point-Source Regime

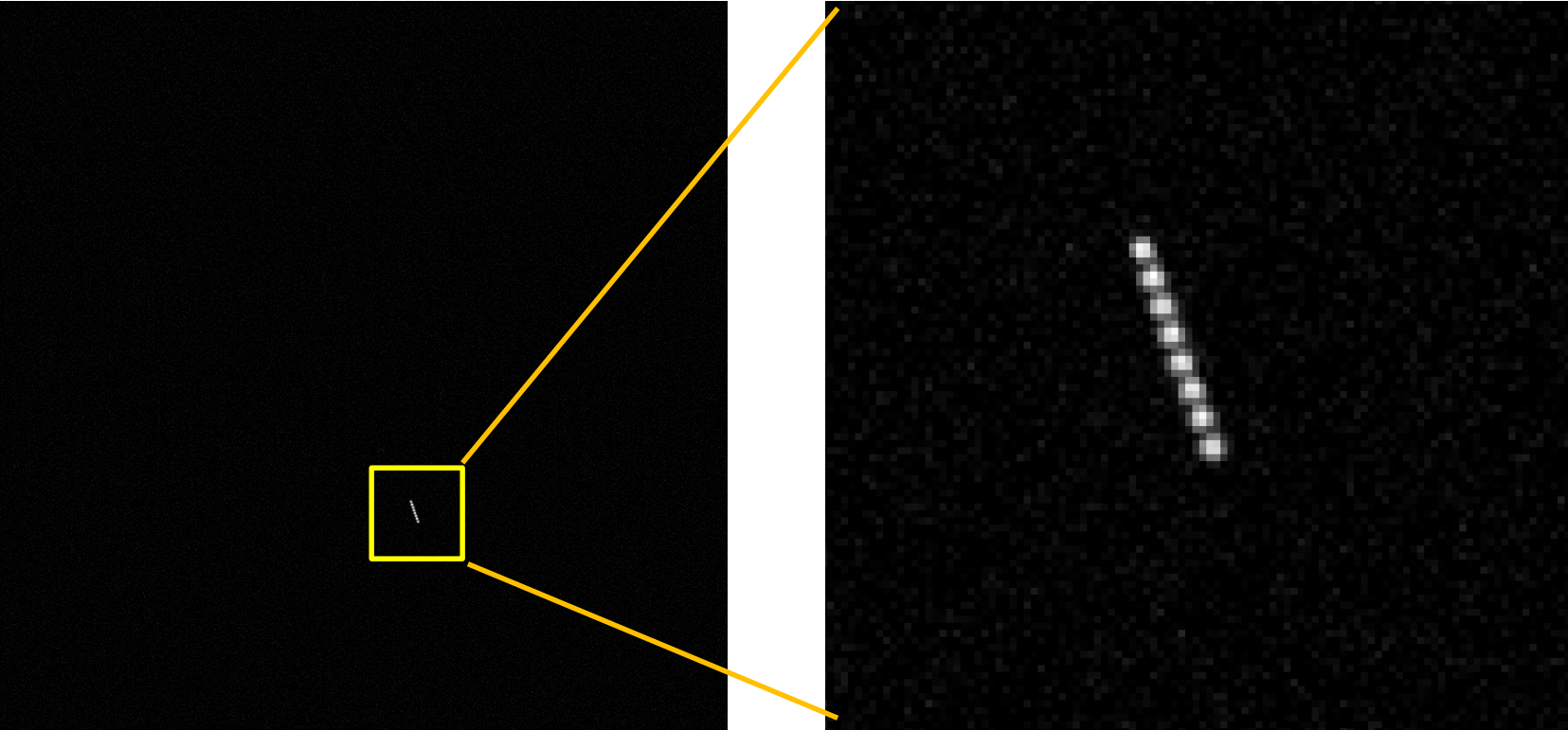
- Adding
  - Thursday
  - Friday
  - Saturday
  - Sunday

Bennu Meas. Integrated Irradiance to 10/14/2018 vs. Current Model (0.029 phase slope) (OpNav 4-, 2-, 0.5-, 0.1-, 0.04- and 0.004-sec images)



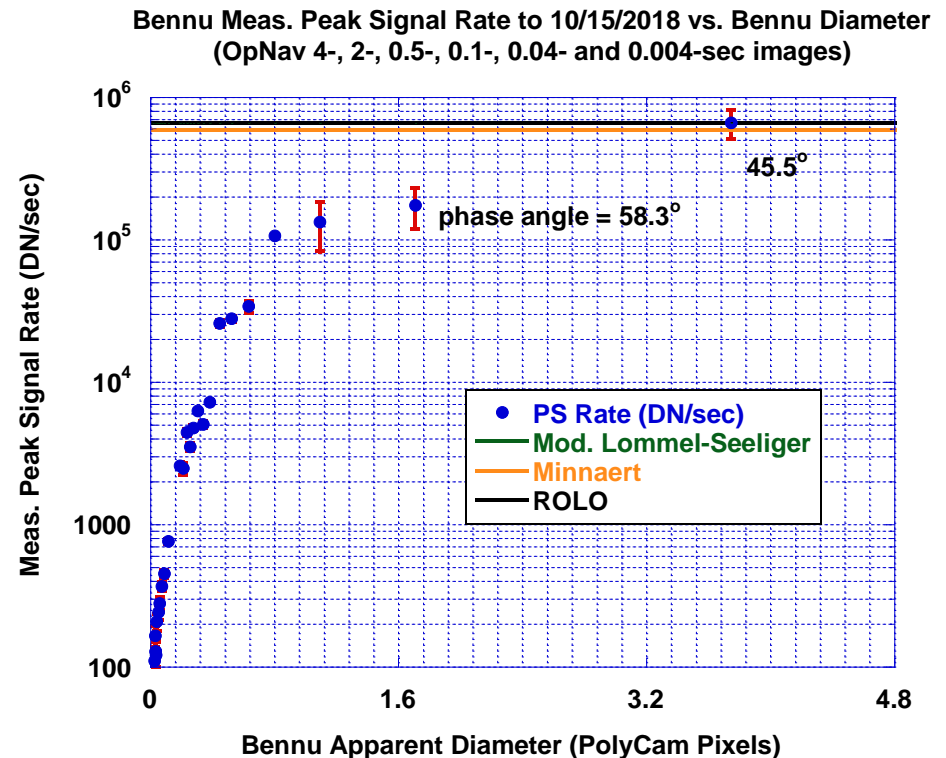
# Relative Motion Greatly Increased during 10/15 Data

---



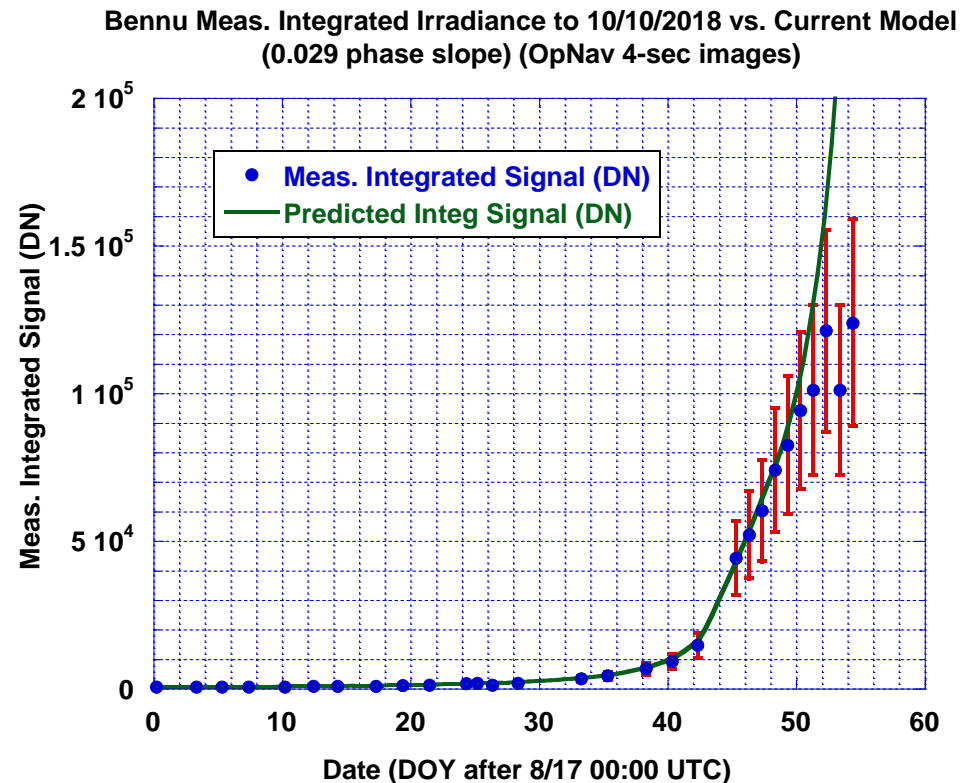
# Bennu Transitioning from Point Source to Extended Object in PolyCam

- Peak Signal Rate plotted against Bennu apparent diameter in Pixels Should flatten out as Bennu subtends 1 pixel or more
- Height of flat region gives brightness of Bennu at phase angle of  $45.5^\circ$
- For 10/15/2018, results compared to predictions of Rev 11 of Exposure Time Predictor
  - Measured: 662,000 DN/sec
  - Mod. Lommel-Seeliger: 665,000 DN/sec (Default)
  - Mod. Minnaert: 589,000
  - ROLO: 669,000 DN/sec



# Imaging Just Before bennu Leaves Point-Source Regime

- As of last Wednesday
- PolyCam 4-sec images saturated starting last Monday (10/8)



# Approach Phase Bennu Imaging (DOY 255–277)

DO Y	Date	Start/End (UTC hh:mm)		Rng (M km)	B Sol Rng (AU)	Phase Angle (°)	V Mag	PC Pan Mag	Width (PC Pixel)	Pred Peak Sig (DN)	Obs Peak Sig (DN)	Pred Integ Sig (DN)	Obs Integ Sig (DN)	Obs Peak / IS 0.285
255	9/12	8:40	8:45	0.997	1.20	44.8	11.9	11.5	0.036	508	487	1699	1288	0.375
257	9/14	7:55	8:05	0.913	1.194	46.2	11.8	11.4	0.040	579	831	1936	2014	0.409
260	9/17	10:25	10:35	0.780	1.185	48.5	11.55	11.1	0.047	741	***	2462	****	****
262	9/19	5:55	6:05	0.704	1.180	49.7	11.37	11.0	0.052	867	971	2903	3525	0.274
264	9/21	7:25	7:35	0.616	1.174	51.2	11.14	10.7	0.059	1079	1123	3609	4477	0.250
267	9/24	7:25	7:35	0.489	1.164	53.4	10.71	10.3	0.075	1602	1396	5360	6889	0.202
269	9/26	7:25	7:35	0.404	1.158	54.7	10.34	9.92	0.090	2201	1803	7513	9301	0.193
271	9/28	7:25	7:35	0.319	1.152	56.1	9.874	9.45	0.114	3319	2867	11537	14864	0.193
274	10/01	7:10	7:20	0.192	1.143	57.9	8.834	8.41	0.190	10111	9514	35592	44159	0.215
275	10/02	7:25	7:35	0.172	1.139	58.5	8.61	8.19	0.212	1810	1210	6678	5973	0.203
276	10/03	7:25	7:35	0.156	1.136	59.2	8.42	8.00	0.234	2189	2226	8078	7310	0.305
277	10/04	8:10	8:20	0.143	1.133	59.8	8.26	7.84	0.255	2558	1634	9436	8556	0.191

# Approach Phase Bennu Imaging (DOY 229–254)

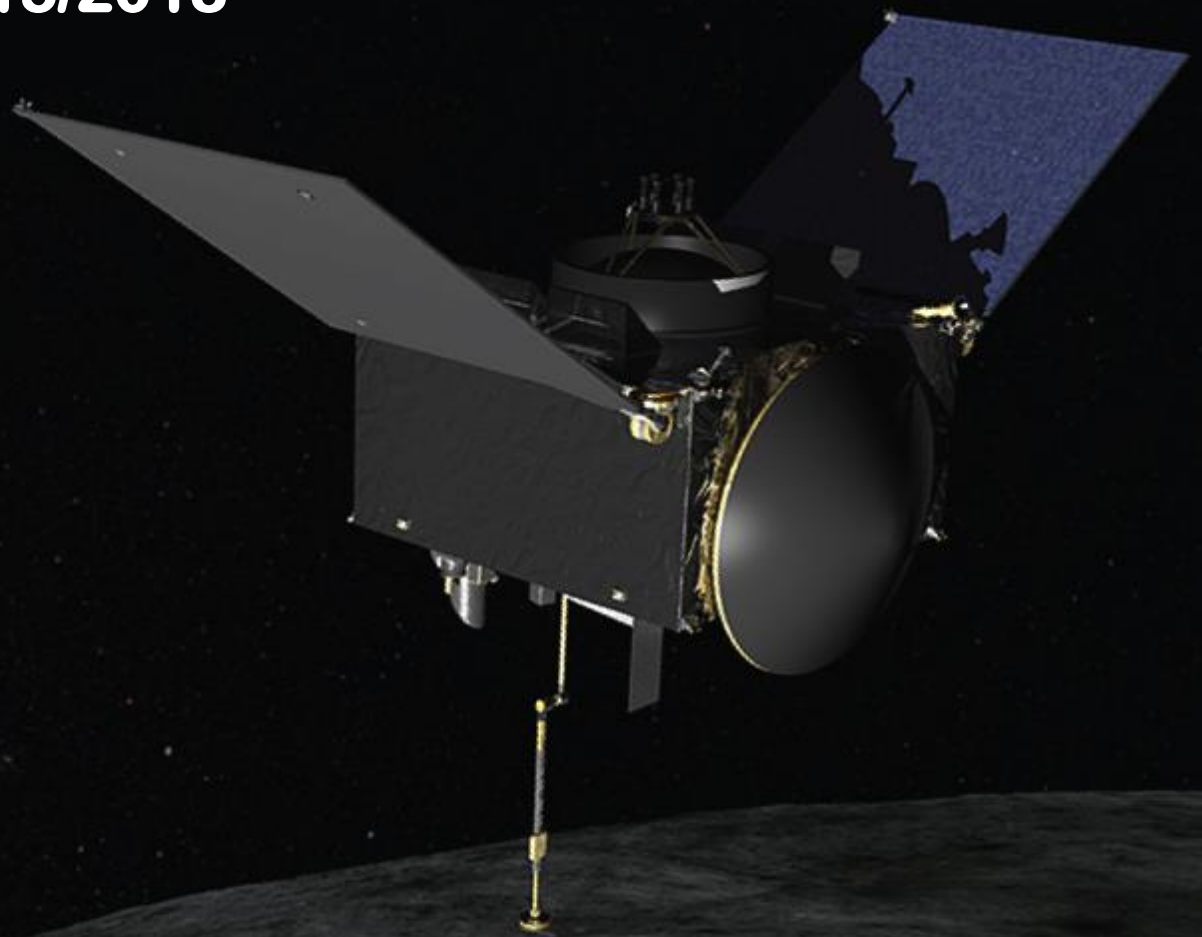
DOY	Date	Start/End (UTC hh:mm)		Rng (M km)	B Sol Rng (AU)	Phase Angle (°)	V Mag	PC Pan Mag	Width (PC Pixel)	Pred Peak Sig (DN)	Obs Peak Sig (DN)	Pred Integ Sig (DN)	Obs Integ Sig (DN)	Obs Peak / IS 0.285
229	8/17	5:30	7:30	2.18	1.27	26.7	13.0	12.58	0.017	178	230.4	589	618.1	0.366
232	8/20	7:25	7:35	2.04	1.26	28.6	12.91	12.49	0.018	194	173.2	644	655.2	0.256
234	8/22	7:25	7:35	1.94	1.25	30.0	12.86	12.44	0.019	204	144.6	676	668.9	0.210
236	8/24	9:00	9:30	1.84	1.25	31.4	12.80	12.38	0.020	217	187.6	716	717.6	0.256
239	8/27	4:30	5:00	1.71	1.24	33.3	12.70	12.29	0.021	236	219.8	782	718.4	0.294
241	8/29	10:00	11:00	1.61	1.24	34.8	12.63	12.21	0.023	256	242.6	846	876.5	0.272
243	8/31	7:25	7:35	1.53	1.23	36.2	12.56	12.14	0.024	274	278.1	906	975	0.279
246	9/3	7:10	7:20	1.39	1.22	38.3	12.44	12.02	0.026	308	248.2	1018	984.5	0.245
248	9/5	8:40	8:50	1.30	1.22	39.8	12.35	11.93	0.028	336	441.5	1112	1185	0.366
250	9/7	10:40	10:50	1.20	1.21	41.3	12.24	11.82	0.030	374	662.9	1238	1373	0.479
253	9/10	7:25	7:35	1.09	1.21	43.4	12.09	11.66	0.034	469	511.5	1551	1776	0.286
254	9/11	4:20	4:45	1.05	1.20	44.0	12.03	11.61	0.035	487	515	1635	1941	0.263



# REXIS CXB Calibration Daily Downlink Status

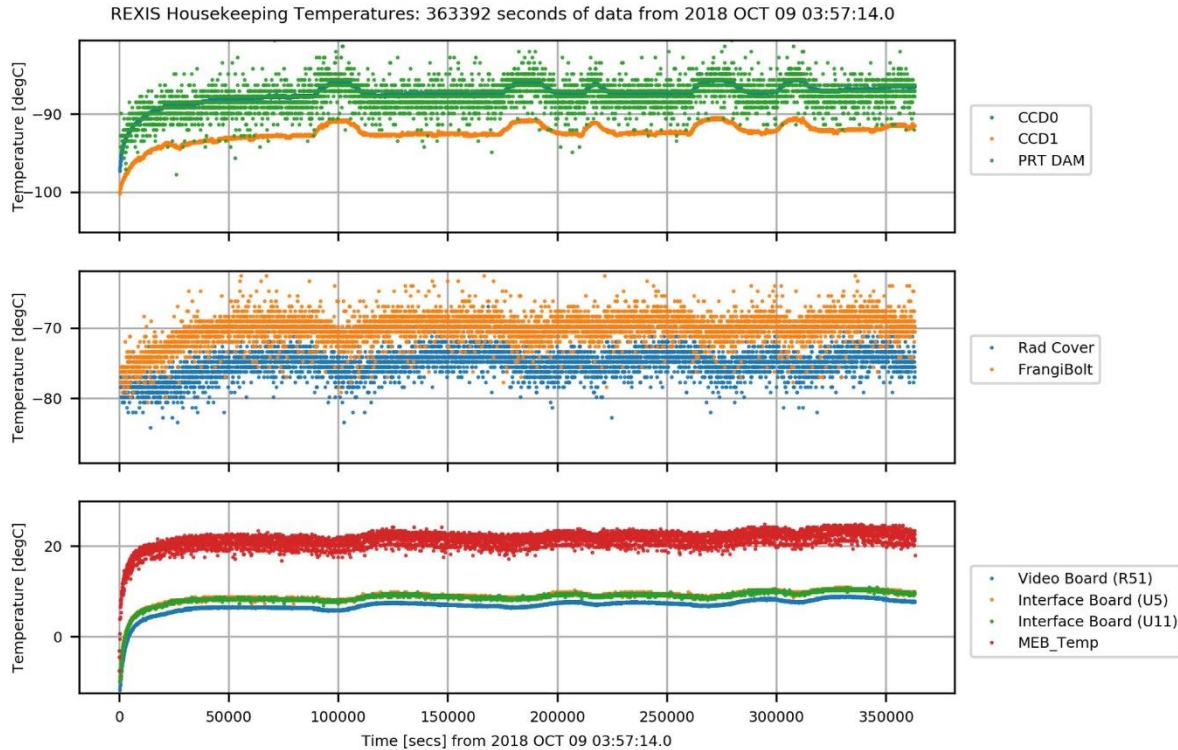
10/15/2018

**OSIRIS-REX™**  
ASTEROID SAMPLE RETURN MISSION



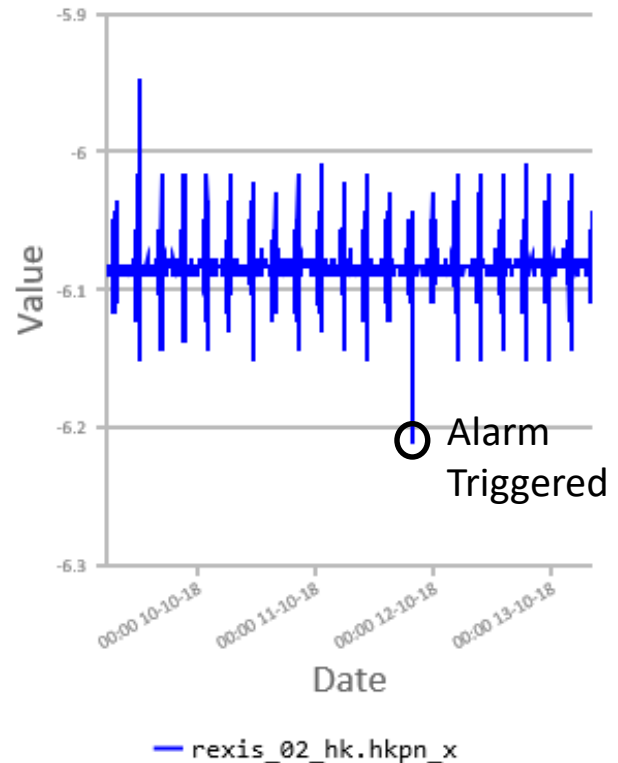
# Engineering Summary

- **Commanding**
  - All commands processed
  - No rejected or dropped commands
  - Instrument performed all functions nominally
- **Downlink**
  - No missing packets identified
- **Power**
  - Power draw as expected
  - Voltages regulated as expected
- **Thermal**
  - All temperatures within operating limits
    - Detector, Rad Cover, and Frangibolt Housing cooled significantly because the cover is open, and the cover heater is now off
    - Radiation Cover: ~ -75C
    - Frangibolt Housing: ~ -70C
    - Detectors: ~ -92C
    - SXM: ~ -68C
  - $\pm 5C$  noise on PRTs was seen as expected

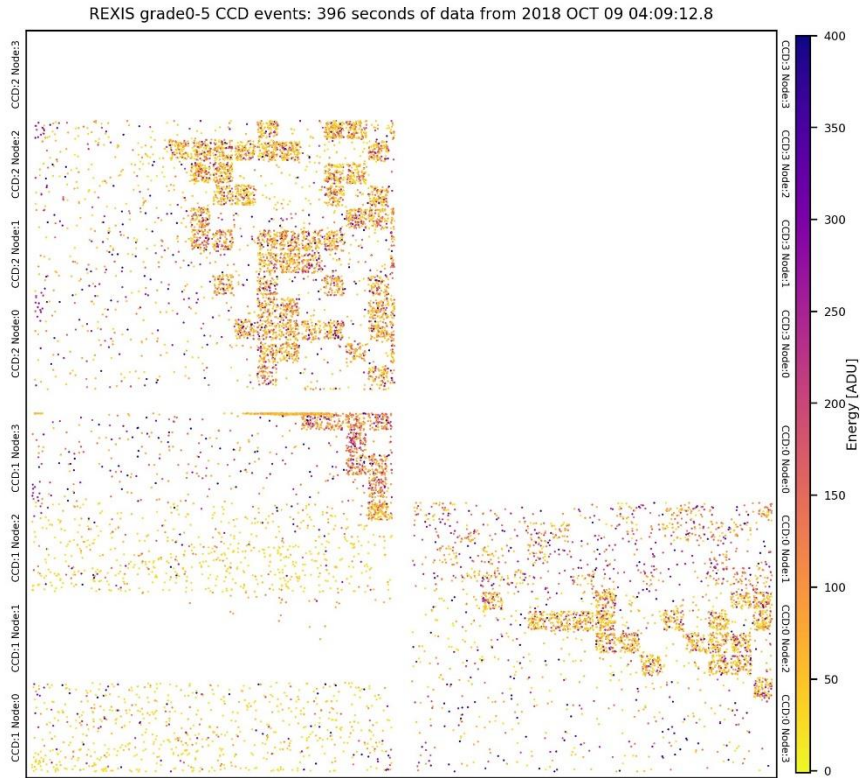


# Alarms

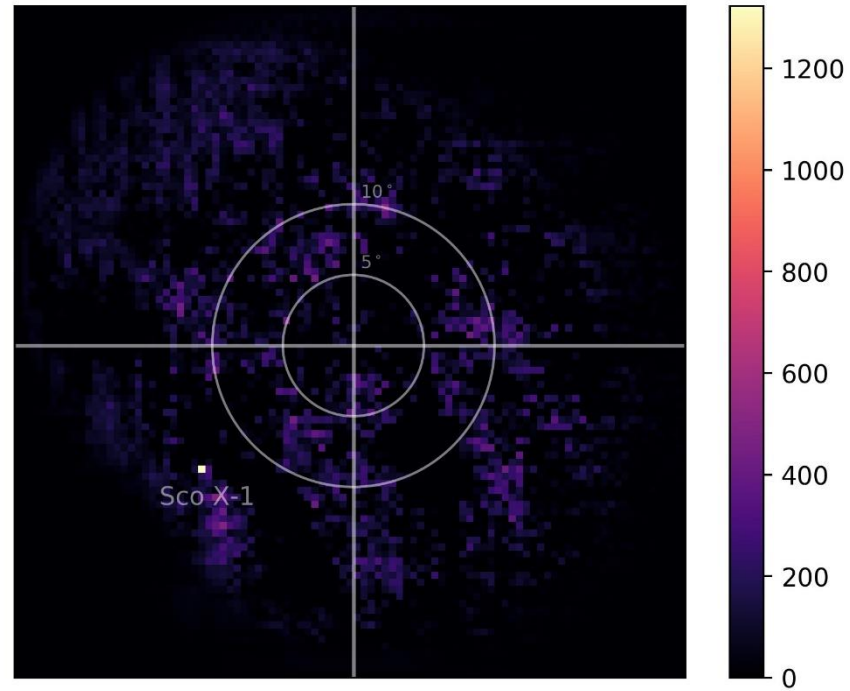
- **Switch washer state alarmed because cover open**
  - SPOCS-1266 has taken care of this – alarm updated
- **We saw many alarms that occurred because of the colder temperatures on the CCDs, Rad Cover, and Frangibolt Housing**
  - A CR has been initiated to provide new limits to these channels to prevent reoccurrence in the future (CR-352)
- **One unexpected yellow alarm violation on hkpn**
  - Alarm violation occurred during a “noisy” period
  - -6.21V instead of -6.1V
  - Violation was transient,
    - no trend observed on channel during this



# Image of Sco X-1

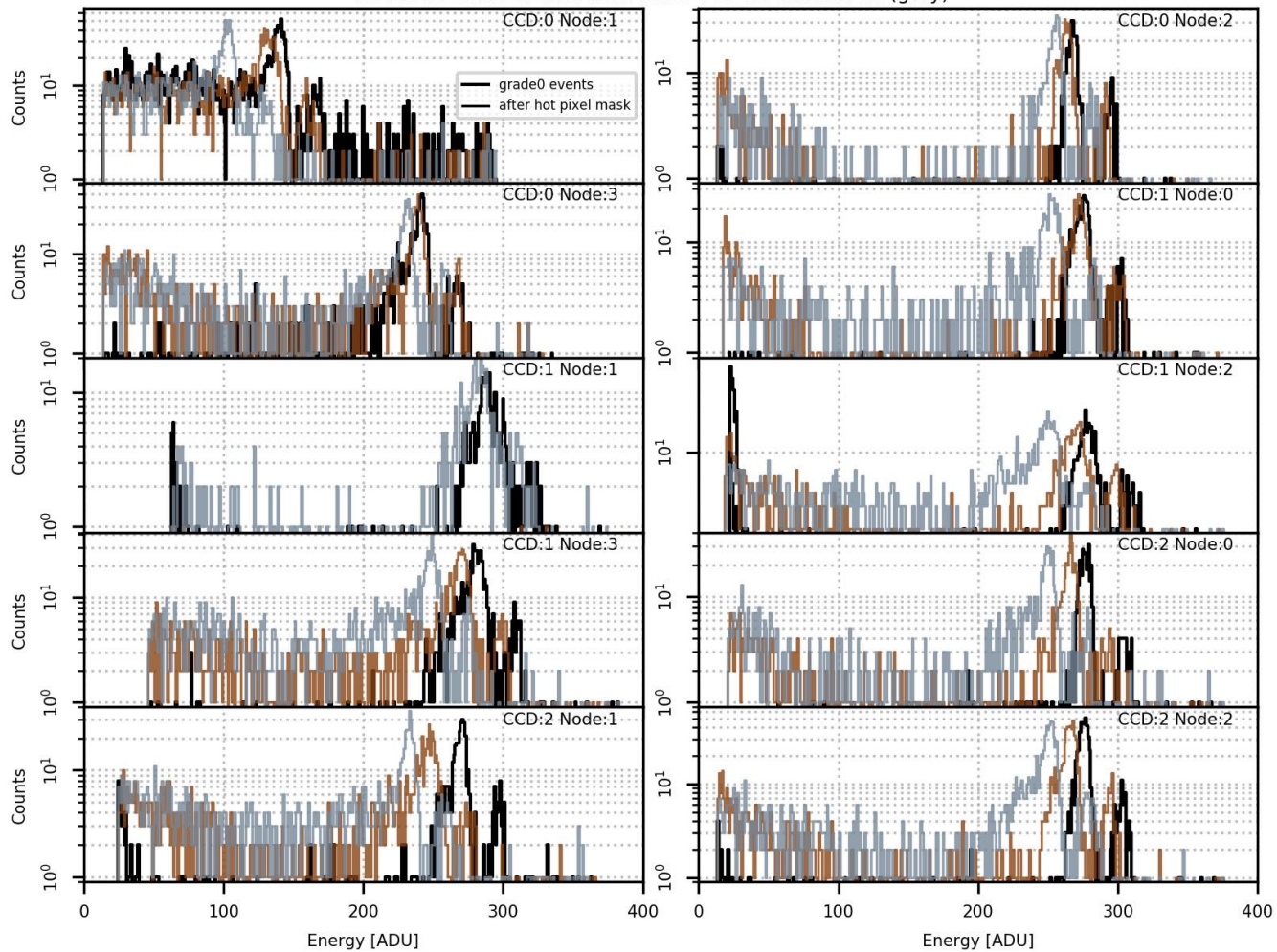


Sky image from REXIS boresight on 2018-10-09T04:09:12



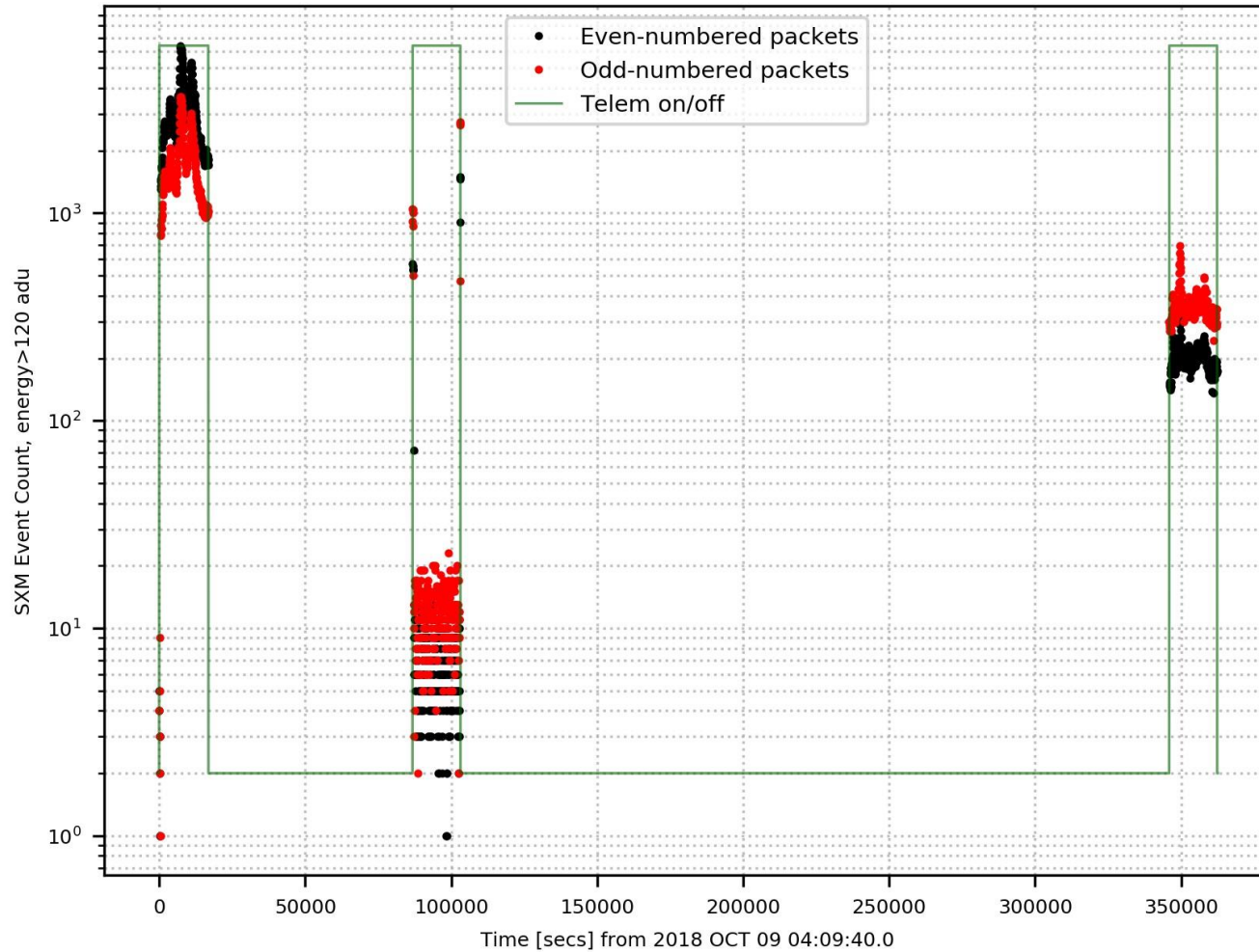
# CCD Spectra: Observed Unexpected Change in Fe-55 Peak

REXIS grade0 CCD events: 16196 seconds of data from 2018 JUL 12 19:30:03.2 (black)  
16836 seconds of data from 2018 OCT 09 04:09:12.8 (brown)  
16440 seconds of data from 2018 OCT 10 04:15:24.3 (gray)



# SXM Count Rate: Nominal

REXIS SXM Event Rate: 362367 seconds from 2018 OCT 09 04:09:40.0



# REXIS CXB Calibration

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All data have been downlinked from the spacecraft & parsed, and we've looked at the reconstructed CK files.

Targets were observed as expected.

Updates to CCD image processing parameters (ET, for three nodes) worked as expected.

Sco X-1 was imaged by REXIS during the initial power-on sequence, when it was serendipitously in the field of view. REXIS imaging works!

The spectra from the CXB observing targets is largely as expected (featureless continuum). Need some time to perform spectral fitting to check that measured CXB spectrum matches the prediction.

We observed an anomalous change in detector response (either gain or offset) from previous calibration sequences. Currently investigating the cause, but the onboard Fe-55 calibration sources allow us to track the change.

## Go Backs / Additional Comments

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- **AAM-2 Post Burn Status at 20:00 UTC today.**

# Backup

---

# Weekly Instrument Status

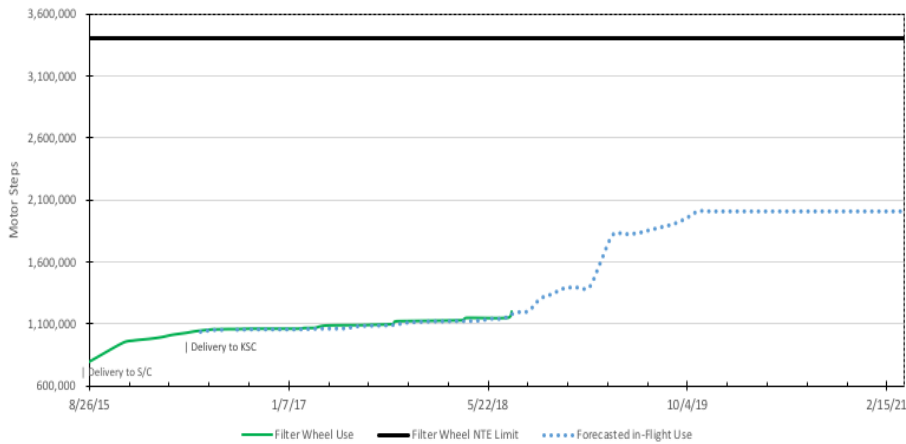
---

- **OCAMS: See slides 16-24. OCAMS currently OFF for AMM2.** In a few days, Bennu went from less than one pixel to almost 4. Phase graphs looking as predicted. Relative motion and drift as expected. Latest measurement for brightness is very close to expectations. This data suggests we won't need to make any exposure time changes for in progress plans.
- **OLA: off, nominal.**
- **OTES: powered off, temps nominal.**
- **OVIRS: off, nominal.**
- **REXIS: See slides 25-31.** REXIS currently off, temps nominal but colder than previously because cover is open and heater off. All packets downlinked as expected. Some alarms, both expected and unexpected. New CR for post cover opening temp alarms. Unexpected alarm during noisy period. Image of Sco-X1. Slight change in Fe-55 peak detection, but can be corrected data processing.

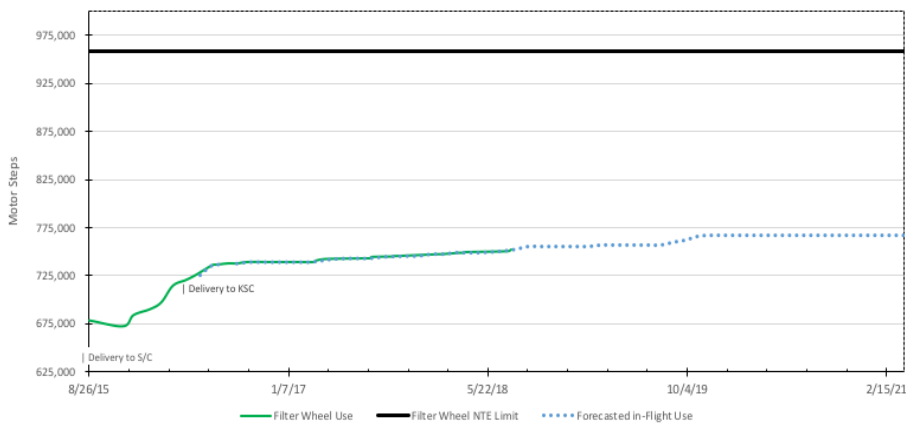
# OCAMS Mechanism Life Tracking

Status as of October 12, 2018

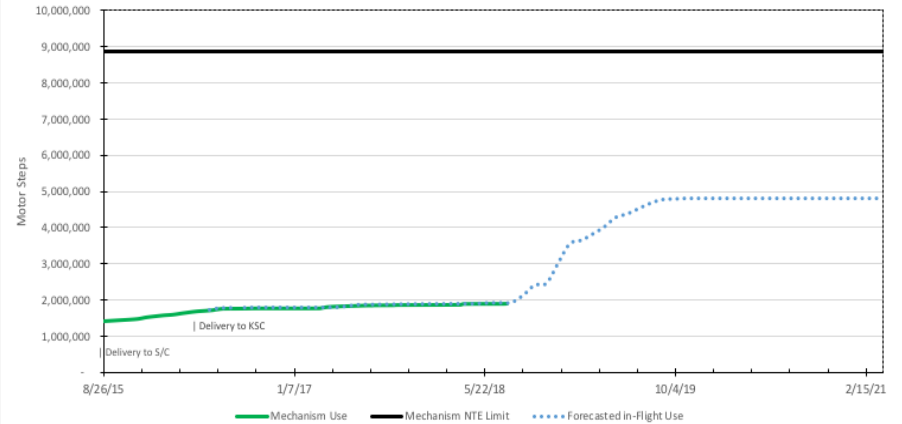
MapCam Flight Filter Wheel Margin



SamCam Flight Filter Wheel Margin



PolyCam Flight Focus Mechanism Margin

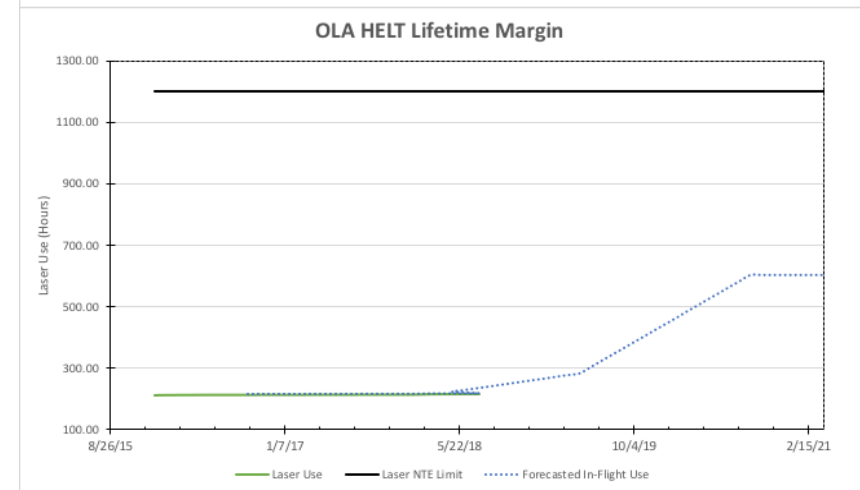
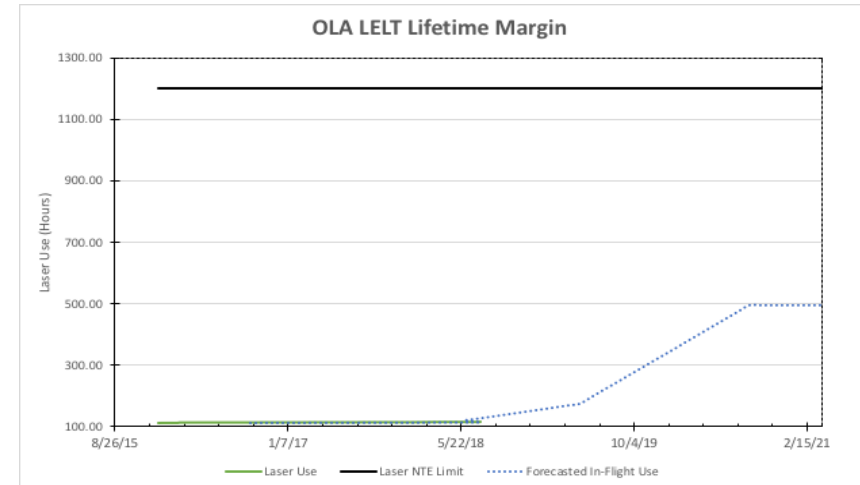


	Launch (steps)	Flight (steps)	NTE (steps)
MapCam	1057475	344577	3400320
SamCam	738110	14525	958384
PolyCam	1775496	193811	8876160

# OLA Limited Life Laser Tracking

	Launch (hours)	Flight (hours)	NTE Margin (hours)
LELT	110.70	4.29	1,085.01
HELT	212.50	3.70	983.80

Status as of October 12, 2018



# Anomaly Response & Status

ISA #	Date Created	Type	Priority	Title	Detailed Description - Action Plan	Notes	Status	Resolved Date	Need Date
6292	10/9/18	Ground Minor	Normal	Issues accessing OREx Redmine via RAMP	There have been a number of issues accessing Redmine via RAMP (direct access without having to go the Citrix). Problems such as certain actions on a particular issue number being persistently blocked for a user by the firewall. This is a running ISA to report and log individual instances:		New	TBD	TBD
6291	10/9/18	Ground Minor	Normal	Issues accessing OREx Redmine via Citrix Receiver	There have been a number of issues accessing Redmine via the Citrix Receiver. Mostly the problems occur when opening Citrix. This is a running ISA to report and log individual instances:  ASIST hung twice on the RTO machine, causing a few issues were seen over the past weekend that should be corrected.  1 - When the RTO machine was rebooted after the first hung ASIST instance, it was brought up under a FSW account. It turns out that there are some processes that are tied to a Sys account so they did not run (ie, mid-pass queries, etc).  2 - ASIST hung a second time between Friday & Saturday, so did not kick off auto-orx in time for Saturday's HGA pass. This required GDS to come in to fix the machine, restart ASIST, and manually run a playback and the post-pass queries. The alert process is tied to auto-orx so GDS was not notified.  Two resolutions need to be worked. - The RTO machine is due for a refresh and the continued hanging of ASIST may be resolved by this. - Monitoring tools should be set up on a separate machine to ensure that the key components of auto-orx run as expected: -- station binding occurs and data flows -- mid-pass query executes and posts to the FOB -- post-pass queries execute and post to the FOB		New	TBD	TBD
6242	10/8/18	Ground Minor	Normal	ASIST issues during AAM-2 OD downlink	There was an EVR seen in the 1841 STL test due to an attempt to load an OCAMS sequence while the previous sequence is still running in the same engine. This overlap did not occur in SS or OLVM. It appears that, in the STL, a delay is being introduced each time the ocm_map_filter_alt_other block cycles. This delay is only ~100ms each time, but the block runs hundreds of times throughout the ATL, so the total delay is ~27 seconds by the time the next OCAMS sequence tries to load. From preliminary investigation, it appears to be related to spacecraft time being used in a delay.		New	TBD	TBD
6163	9/29/18	Spacecraft Minor	Normal	Delay in execution of OCAMS block	The OCAMS performance specific to early Approach at low DN values warranted updates to previously delivered exposure settings in several OpNav Requests that was not necessarily expected or anticipated. This is relatively easily accommodated but is being captured more as a 'surprise' in the ISA then an anomaly or a problem, and as a place to capture the changes, the rationale for the changes, and any other implications or analyses that go with the exposure setting updates for posterity.		New	TBD	TBD
5855	9/5/18	Spacecraft Minor	Normal	OCAMS settings for OpNavs in Approach			In Progress	TBD	TBD

# Anomaly Response & Status

ISA #	Date Created	Type	Priority	Title	Detailed Description - Action Plan	Notes	Status	Resolved Date	Need Date
5854	9/5/18	Spacecraft Minor	Normal	Previously known OCAMS 'finger regions' implications on Nav solutions	Although this is not an issue for science because nominal observations are planned with pointing to avoid the finger regions when targeting or it's N/A due to the nature of the target and the scene entropy, there could be low probability but non-zero situations where the dispersion following a maneuver places Bennu in one of these less desirable locations overlapping a finger region causing bright blooming issues which can affect the center-finding algorithms. The project will likely document an acceptance of this low probability risk but the ISA is a logical place to capture any extra work, analysis, or implications this phenomenon can cause with other elements, particularly navigation.		In Progress	TBD	TBD
5708	8/22/18	Ground Minor	Normal	FEDS not reconstructing packets that encounter a frame counter rollover	SPOC noticed a missing image line for one image. The image line had a packet in it which one of the frames within rolled over the frame counter. The packet was not reassembled and was not available from the FEDS at both LM and the SPOC.		In Progress	TBD	TBD
5380	7/20/18	Ground Minor	Normal	SCLK SCET file error in rev 31	<p>The SCLK SCET file released on July 10 (rev 31) has an error in it that results in a 5 second offset due to an incorrect incorporation of the DUT.</p> <p>Rev 32 is in work to replace this file and remove the incorrect entry from the sclk-scet interpolation history.</p> <p>On Friday, 7/20 the SPOC was notified that the SCLKSCET kernel delivered on July 10, 2018 (FILENAME: ORX_SCLKSCET.00031), did not have the inclusion of Leap Seconds, therefore resulting in an ~5 second shortage in timing. This kernel had been applied to all the L+22 data up until notification late Friday afternoon.</p> <p>A new SCLKSCET has been released as of this morning 07/23/18 (FILENAME: ORX_SCLKSCET.00032) with this issue corrected. Please Note: SPOC will be kicking off reprocessing of all L+22 data using ORX_SCLKSCET.00032 after the conclusion of today's DSN pass (at ~21:00 UTC) 07/23/18.</p>		In Progress	TBD	TBD

# Current ISA Status

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#	Status	Priority	Subject	Assignee	Updated
6320	In Progress	Normal	Delay in data processing at the SPOC	Karl Harshman	10/12/18 7:46
6292	Monitor	Normal	Issues accessing OREx Redmine via RAMP - Multiple Instances	OSIRIS-REx Mission Management	10/12/18 12:51
6291	Monitor	Normal	Issues accessing OREx Redmine via Citrix Receiver - Multiple Instances	OSIRIS-REx Mission Management	10/12/18 7:45
6242	In Progress	Normal	ASIST issues during AAM-2 OD downlink	Paul Falkenstern	10/12/18 7:48
6163	In Progress	Normal	Delay in execution of OCAMS block	Andy Calloway	10/12/18 7:47
5854	In Progress	Normal	Previously known OCAMS 'finger regions' implications on Nav solutions	Brent Bos	10/12/18 10:01
5708	In Progress	Normal	FEDS not reconstructing packets that encounter a frame counter rollover	Mark Fisher	8/23/18 12:31
5701	In Progress	Normal	Missing Downlink Table during Station 55 pass on 18229	Andy Calloway	8/23/18 12:54
4868	In Progress	Normal	Dropped data during STL run	Mike Skeen	5/25/18 9:45
4762	Monitor	Normal	JAsteroid and ATARPS FOV disagreement	Sandy Freund	10/12/18 13:01

# SPOC Watch Item List

Todays Date: 10/15/2018		SPOC Watch Item List									
Status	Date Added	Date Removed	Item ID	Instrument	Title	Watch Item Description	Impact Type	Watch Item Age	ISA # or TCR #	Watch Item Action	Watch Item Action Plan
Open	9/30/16		Item1	REXIS	CCD Hot Pixels	Some hot pixels were noted on the CCD array.	Hardware Performance	745		Watch	None as of now. If this item trends up, an assessment of masking pixels will need to be made. Update 08/06/2018: REXIS team reports that no additional hot pixels have been noted since the opening of this item, but they will continue to monitor.
Open	4/3/18		Item10	OLA	OLA T0 Intensity	L+10 day, L+6 mo, and L+10 mo On-orbit checkouts showed that OLA's T0 signal intensity (Return Intensity) is an order of magnitude lower than expected as compared with pre-launch spacecraft and stand-alone test data. The L+18 calibrations revealed that the T0 intensity is at pre-launch levels on both the Gold and Silver sides of OLA. SPOC has opted to close ISA 2257 and continue to monitor T0 intensity as a watch item.	Instrument Performance	195		Watch	Monitor the T0 Intensity at the L+22 and L+30 OLA checkouts Update 08/06/2018: Based on results from L+18 and L+22, OLA has not been able to discern a temperature dependency with t0 Intensity value. We will continue to watch, but may never fully understand the cause. OLA can still operate as expected despite the inconsistency seen in the t0 value.
Open	9/5/18		Item11	OCAMS	OCAMS Error on Polycam Startup	During power on of the OCAMS cameras there is the possibility of a 4 byte packet being created due to line noise. SPOCFLIGHT is unsure what to do with this packet, so flags it as an error. So far this has only occurred twice during flight, both times with Polycam but it is possible this could occur with any of the OCAMS cameras. As OCAMS has only been used sparingly during Cruise, it is not certain how frequently this error will occur.	Instrument Performance	40		Watch	Will monitor for future occurrences across all of the OCAMS cameras and assess if any action is warranted.