



# GOES R

## GOES-T T20

**Matt Seybold**

February 7, 2022



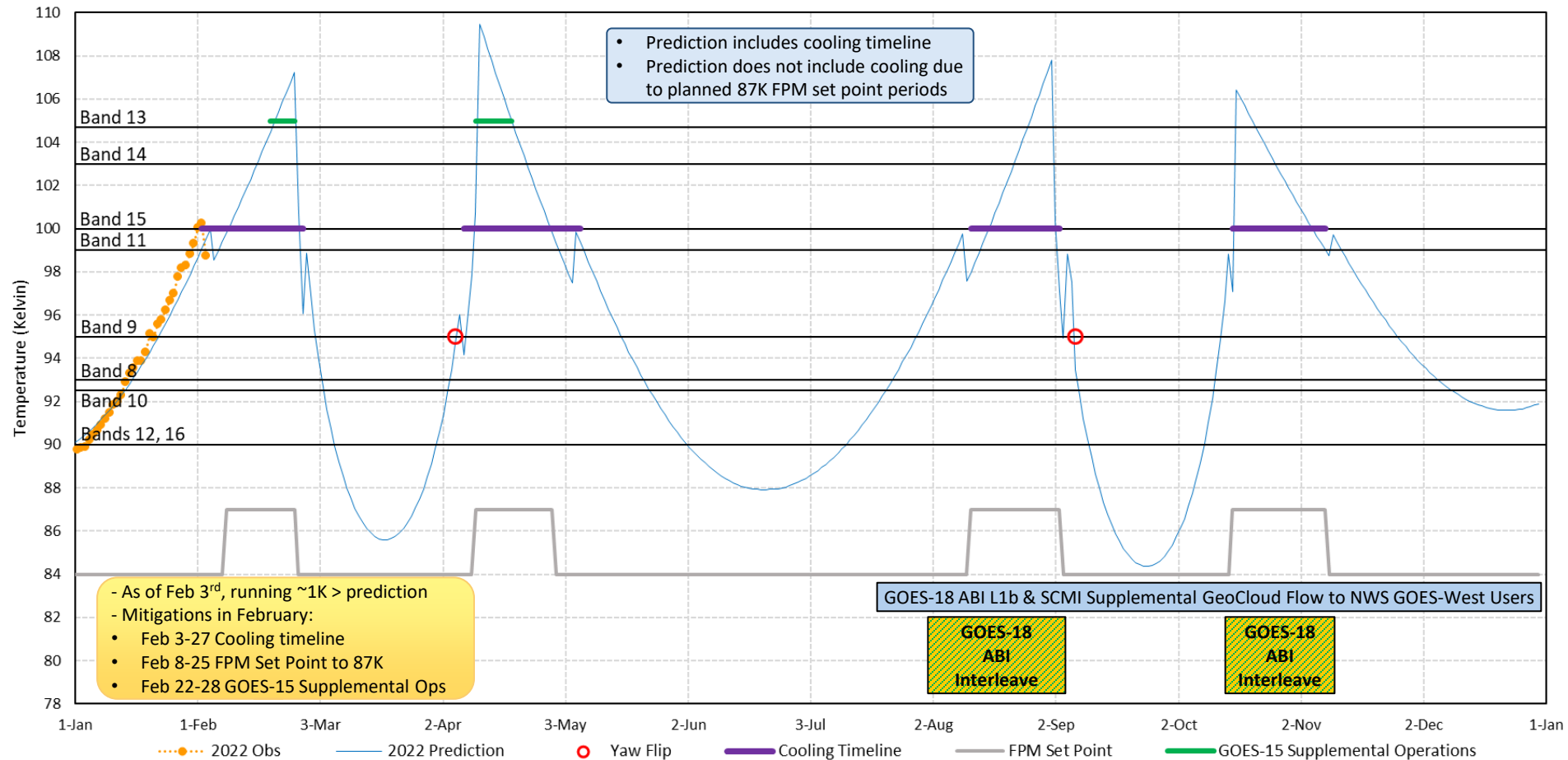
NOAA ~ NASA



SATELLITE R-SERIES



# 2022: GOES-17 ABI Daily Peak Longwave Infrared Focal Plane Module Temperatures



This plot shows daily maximum temperature of the ABI focal plane module. These maximums occur at night. The higher the temperature, the more saturated imagery becomes. Where the temperature rises to approach a black line for each band, marginal saturation may be observed in imagery. Where the temperature curve exceeds a black line for each band, the imagery may begin to saturate so much that it becomes unusable.



# GOES-T T2O Overview - March 1, 2022 Launch

Activity	March			April			May			June			July			August			September			October			November			December			January															
	3/1	3/8	3/15	3/22	3/29	4/5	4/12	4/19	4/26	5/3	5/10	5/17	5/24	5/31	6/7	6/14	6/21	6/28	7/5	7/12	7/19	7/26	8/2	8/9	8/16	8/23	8/30	9/6	9/13	9/20	9/27	10/4	10/11	10/18	10/25	11/1	11/8	11/15	11/22	11/29	12/6	12/13	12/20	12/27	1/3	1/10
G18 Events	▲ <i>Raise Launch</i>			PLT & PLPT Part 1 @ 89.5W			Drift to 136.8W			PLT & PLPT Part 2 @ 136.8W			▲ PLPT Continues Handover to OSPO			▲ G18 = GOES-West Nudge to 137.2W			▲																											
G18 Maturity				ABI 1st Public Image ▲			ABI Beta ▲						▲ ABI L1b/CMI Provisional			▲ ABI Tier 1 L2+ Provisional			▲ ABI other L2+ Provisional																											
				GLM 1st Public Image ◆									▲ GLM Beta			▲ GLM Provisional																														
				MAG 1st Public Data ◆						▲ GMAG Beta			▲ GMAG Provisional																																	
				SEISS 1st Public Data ◆			EXIS 1st Public Data ◆			▲ SEISS Beta			▲ SGPS			▲ MPS-Hi			▲ EHIS			▲ MPS-Lo Provisional																								
							SUVI 1st Public Image ◆			▲ EXIS Beta			▲ SUVI Beta									▲ EXIS Provisional			▲ SUVI Provisional																					
G18 ABI PD																																														
GRB																																					Ops									
PDA				Cal/Val Purposes						Cal/Val Purposes			Ops (L1b & CMI, not L2+)			Cal/Val			Ops (L1b & CMI, not L2+)			Cal/Val									Ops															
LZSS				Cal/Val Purposes						Cal/Val Purposes																								Ops												
AWIPS													G18 ABI L1b & SCMI 'supplemental' via GeoCloud for NWS GOES-West Users																		Ops - GS															
HRIT/EMWIN																																		Ops												
GNC-A																																		Ops												
G17 ABI PD				G17 ABI Warm Period									G17 ABI Warm Period						G17 ABI Warm Period																											
GRB				Ops									17 w/ 18 ABI Interleave						17 w/ 18 ABI Interleave												Ops															
PDA				Ops																																										
LZSS				Ops																																										
AWIPS				Ops									18 ABI SCMI						18 ABI SCMI																											
HRIT/EMWIN				Ops									17 ABI L2+ w/ 18 ABI CMI						17 ABI L2+ w/ 18 ABI CMI																											
GNC-A				Ops									17 ABI L2+, GLM w/ 18 ABI CMI						17 ABI L2+, GLM w/ 18 ABI CMI																											
West PD																																														
GLM				Ops																														Ops												
SpWx				Ops																														Ops												

Legend: GOES-18 GOES-17 PD = Product Distribution G17 ABI Warm Period 17 w/ 18 ABI Interleave ◆ 1st Public Image ▲ Beta Maturity ▲ Provisional Maturity

Planning a 'split' Post Launch Test phase, beginning at 89.5°W and then drifting to 136.8°W in order to have early use of the GOES-18 Imager in the West location to mitigate the GOES-17 Imager thermal anomaly



# PLTs of Interleave vs Nominal Interleave

	G18 PLT Test "GND-006"	G18 PLT Test "GND-008"	Interleave
Description	Test of interleave logic early during G18 PLT	E2E test of Interleave	Early operational access to G18 ABI (Beta Maturity) as a mitigation for the G17 ABI saturated imagery from the LHP anomaly
Duration	2 hours	2-4 hours	36 days
Dates	Early May ~May 9, 2022	Late July 19, 2022 prior to Interleave	1 <sup>st</sup> : August 1 – September 6, 2022 2 <sup>nd</sup> : October 15 – November 11, 2022
GRB Content	<p>G16 GRB at 75.2° West: G16 L1b</p> <p>G17 GRB at 137.2° West: G17 L1b</p> <p>G18 GRB at 89.5° West:</p> <ul style="list-style-type: none"> <li>• G16 ABI, GLM L1b</li> <li>• G17 EXIS, MAG, SEISS, SUVI L1b</li> </ul> <p>Other Exceptions:</p> <ul style="list-style-type: none"> <li>• The G18 GRB interleave products will not go to LZSS</li> <li>• No G18 L1b or L2 products will be distributed to PDA</li> </ul>	<p>G16 GRB at 75.2° West: G16 L1b</p> <p>G17 GRB at 137.2° West:</p> <ul style="list-style-type: none"> <li>• G18 ABI L1b</li> <li>• G17 GLM, EXIS, MAG, SEISS, SUVI L1b</li> </ul> <p>G18 GRB at 136.8° West:</p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>	<p>G16 GRB at 75.2° West: G16 L1b</p> <p>G17 GRB at 137.2° West:</p> <ul style="list-style-type: none"> <li>• G18 ABI L1b</li> <li>• G17 GLM, EXIS, MAG, SEISS, SUVI L1b</li> </ul> <p>G18 GRB at 136.8° West:</p> <ul style="list-style-type: none"> <li>• N/A</li> </ul>
AWIPS ANCF/BNCF Content	N/A	G18 ABI SCMI	G18 ABI SCMI

Unique test/interleave configurations are indicated in blue



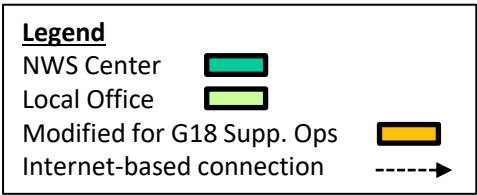
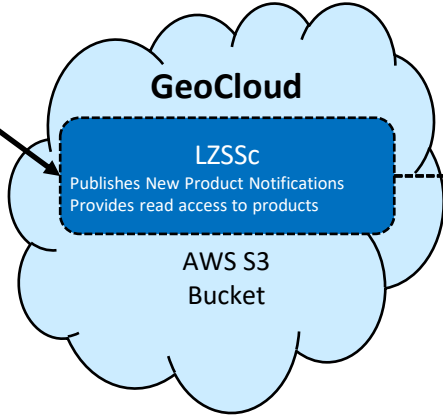
# GOES-T PLT

## Supplemental Cloud Data Flow to NWS

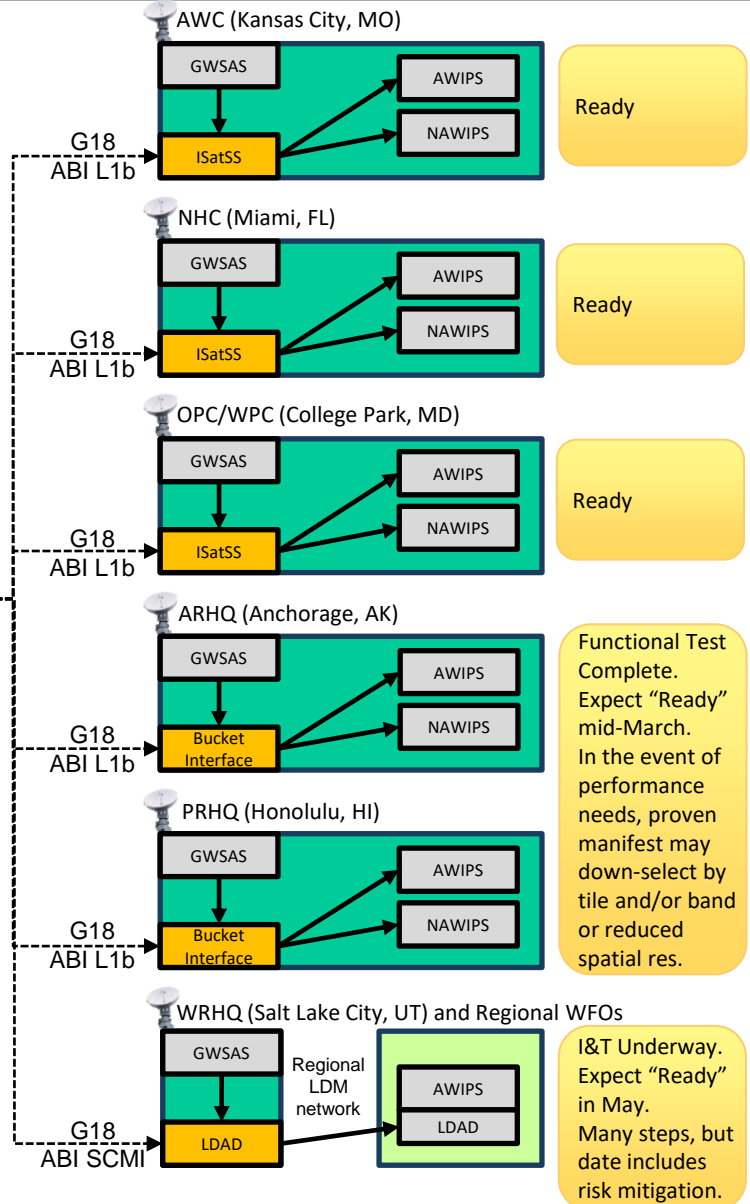


DOE-T3:  
E2E verification of both  
AWIPS II and NAWIPS

GS push to LZSSc  
Nwave-based dedicated VRF



1. G18 ABI products created in GOES-R GS and published to GeoCloud
2. Delivery of ABI L1b files to NWS Centers via GeoCloud services
3. Additional WFO Option under consideration: Delivery of SCMI to WRHQ, which uses Regional LDM network to forward SCMI to 24 WFOs
4. All products delivered to and integrated with key NWS Centers within latency goals and bandwidth constraints





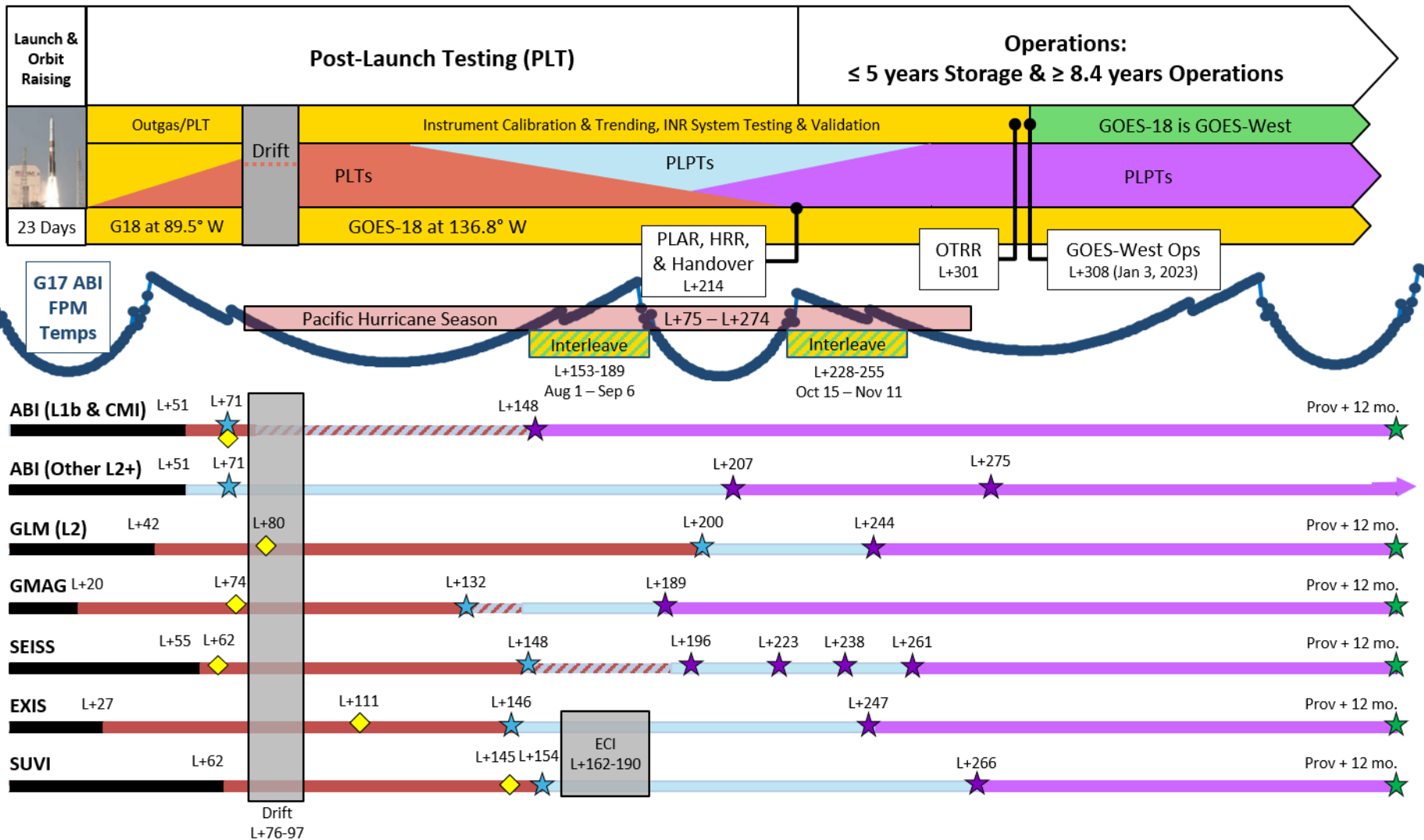
# GOES-T Data Sharing Policy

Not Allowed
Caveats
Allowed

	Images/Social Media	Data Files	Publications
Between Launch and "First Light" Public Release	Not allowed	Not allowed	Allowed; You may include pre-Provisional instrument data/images/plots as long as it will not be published until after Provisional validation is declared for that instrument. Exercise caution in publishing data regarding apparent anomalies or artifacts especially during ongoing instrument and product tests (PLTs and PLPTs).
Between First Public Release and Beta Certification	Allowed; must contain the caveat: "GOES-18 Preliminary, Non-Operational Data"	Not allowed	
Between Beta and Provisional	Allowed; must contain the caveat: "GOES-18 Preliminary, Non-Operational Data"	Not allowed	
ABI Interleaved Data	Allowed (ABI Only)	Allowed (ABI Only)	
Between Provisional (or Interleave Period(s) for ABI) and Operational Declaration	Allowed; must contain the caveat: "GOES-18 Preliminary, Non-Operational Data"	Allowed; must contain the caveat: "GOES-18 Preliminary, Non-Operational Data"	
GOES-West Operations onwards	Allowed	Allowed	

Table description: Policy for sharing images on social media, data files, and publications as it evolves during post-launch phases of satellite testing and data maturity.

# GOES-T Post-Launch Science Product Validation Schedule



**LEGEND**

- Science Products Not Flowing
- Internal flow begins
- Post-Launch Testing (PLT)
- Both PLT/PLPT
- Provisionally Validated Products
- Post-Launch Product Testing (PLPT)
- Post-Launch Product Testing (PLPT) / Full validation testing
- Fully Validated Products
- First public imagery release
- Beta Certification
- Provisional PS-PVR
- Full Validation PS-PVR

Current as of February 2, 2022 (SOE v1.15)





# GOES-T L1b Science Product Validation Status

ABI L1b Product	Beta	Provisional	Full
Radiances	5/11/2022	7/27/2022	FY23
<b>GLM L2 Product</b>			
Lightning: Events, Groups, Flashes	9/17/2022	10/31/2022	FY23
<b>SEISS L1b Products</b>			
Energetic Heavy Ions	7/27/2022	10/25/2022	FY23
Magnetospheric e <sup>-</sup> /p <sup>+</sup> : Low Energy	7/27/2022	11/17/2022	FY23
Magnetospheric e <sup>-</sup> /p <sup>+</sup> : High Energy	7/27/2022	10/10/2022	FY23
Solar & Galactic Protons	7/27/2022	9/13/2022	FY23
<b>EXIS L1b Products</b>			
Solar Flux: EUV	7/22/2022	11/11/2022	FY23
Solar Flux: X-ray Irradiance	7/22/2022	11/11/2022	FY23
<b>SUVI L1b Product</b>			
Solar EUV Imagery	8/2/2022	11/22/2022	FY23
<b>GMAG L1b Product</b>			
Geomagnetic Field	7/11/2022	9/6/2022	FY23

Synced with SOE v1.15

\*EXIS and SUVI Provisional dates may be affected by final scheduling of ECI test

Validation Maturity Levels:

Not Validated	Beta Maturity	Provisional Maturity	Full Maturity
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# GOES-T L2+ Science Product Validation Status

L2+ Products	Beta	Prov	Full
Cloud and Moisture Imagery (CMI) and Sectorized CMI (KPP)	5/11/2022	9/24/2022	FY23
Aerosol Detection (Smoke & Dust)	5/11/2022	12/1/2022	
Aerosol Optical Depth	5/11/2022	12/1/2022	
Bidirectional Reflectance Factor	5/11/2022	12/1/2022	
Clear Sky Mask	5/11/2022	9/24/2022	
Cloud Cover Layers	5/11/2022	12/1/2022	
Cloud Optical Depth	5/11/2022	12/1/2022	
Cloud Particle Size Distribution	5/11/2022	12/1/2022	
Cloud Top Height	5/11/2022	9/24/2022	
Cloud Top Phase	5/11/2022	9/24/2022	
Cloud Top Pressure	5/11/2022	9/24/2022	
Cloud Top Temperature	5/11/2022	9/24/2022	
Derived Motion Winds	5/11/2022	9/24/2022	
Derived Stability Indices	5/11/2022	12/1/2022	

L2+ Products	Beta	Prov	Full
Downward S/W Radiation: Surface	5/11/2022	12/1/2022	FY23
Fire/Hot Spot Characterization	5/11/2022	12/1/2022	
Ice Age & Thickness	5/11/2022	12/1/2022	
Ice Concentration & Extent	5/11/2022	12/1/2022	
Ice Motion	5/11/2022	12/1/2022	
Land Surface Albedo	5/11/2022	12/1/2022	
Land Surface Temperature	5/11/2022	12/1/2022	
Legacy Vertical Moisture Profile	5/11/2022	12/1/2022	
Legacy Vertical Temperature Profile	5/11/2022	12/1/2022	
Rainfall Rate/QPE	5/11/2022	12/1/2022	
Reflected S/W Radiation: TOA	5/11/2022	12/1/2022	
Sea Surface Temperature	5/11/2022	12/1/2022	
Snow Cover	5/11/2022	12/1/2022	
Total Precipitable Water	5/11/2022	12/1/2022	

Validation Maturity Levels:

Not Validated	Beta Maturity	Provisional Maturity	Full Maturity
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# GOES-West Transition Plan - Swap of GOES-17/18 (March 1, 2022 Launch)

Date (Based on 3/1/22 Launch)	GOES-17		GOES-T/18	
	Location	Activity	Location	Activity
3/1 – 3/23	137.2°W	<b>GOES-West Operations</b>		Launch and Orbit Raising
3/24 – 5/15			89.5°W	<b>GOES-18 PLT Part 1</b> <ul style="list-style-type: none"> <li>Instrument Outgassing, Spacecraft PLT</li> <li>First ABI Image (Vis &amp; IR) @ 89.5W</li> <li>5/11 - GOES-18 ABI reaches Beta maturity</li> </ul>
5/16 – 6/6			<i>Drift to 136.8W</i>	<b>GOES-18 Drift from 89.5W to 136.8W</b> <ul style="list-style-type: none"> <li>PLT activities paused; No GOES-18 product data</li> </ul>
6/7			136.8°W	<b>GOES-18 PLT Part 2 begins and PLPT begins</b>
7/25			136.8°W	<ul style="list-style-type: none"> <li>GOES-18 ABI 'supplemental' data via Cloud for NWS until GOES-18 Ops</li> </ul>
8/1-9/6	137.2°W	<b>GOES-17 ABI Warm Period</b> <ul style="list-style-type: none"> <li>GOES-18 ABI interleaved in GOES-17 data</li> </ul>	136.8°W	<b>GOES-18 ABI data interleaved in GOES-17 data</b>
9/6-10/15	137.2°W	<b>GOES-West Operations</b> <ul style="list-style-type: none"> <li>GOES-17 Nominal Distribution</li> </ul>	136.8°W	<b>GOES-18 product maturation continues</b> <ul style="list-style-type: none"> <li>GOES-18 ABI 'supplemental' data via Cloud for NWS until GOES-18 Ops</li> </ul>
10/15-11/11	137.2°W	<b>GOES-17 ABI Warm Period</b> <ul style="list-style-type: none"> <li>GOES-18 ABI interleaved in GOES-17 data</li> </ul>	136.8°W	<b>GOES-18 ABI data interleaved in GOES-17 data</b>
11/11-1/3	137.2°W	<b>GOES-West Operations</b> <ul style="list-style-type: none"> <li>GOES-17 Nominal Distribution</li> </ul>	136.8°W	<b>GOES-18 product maturation continues</b> <ul style="list-style-type: none"> <li>GOES-18 ABI 'supplemental' data via Cloud for NWS until GOES-18 Ops</li> </ul>
1/3	137.2°W	Full G-18 GRB relayed through GOES-17 GRB <ul style="list-style-type: none"> <li>Users do not need to re-point antennas</li> <li>X-band downlink off and instruments shut down</li> </ul>	136.8°W	<b>GOES-18 Declared operational GOES-West</b> <ul style="list-style-type: none"> <li>Begin full GOES-18 GRB broadcast (relay through GOES-17 GRB)</li> </ul>
1/4 – 1/11		Full G-18 GRB relayed through GOES-17 during longitude shift	Slow drift to 137.2°W	<b>GOES-18 gradual shift to 137.2</b>
1/12	<b>Drift to 105°W</b>	End GOES-18 data relay through GOES-17 GRB GOES-17 drift to 105°W followed by storage mode	137.2°W	<b>GOES-18 Nominal Distribution</b> <ul style="list-style-type: none"> <li>End GOES-18 GRB relay through G-17 GRB</li> <li>Begin GOES-18 GRB broadcast / nominal distribution</li> <li>SAR/DCS services transitioned to GOES-18</li> </ul>