



# GOES-16 ABI L2 Product Update and Plans

**Tom Feroli**

**GOES-R Product Readiness and  
Operations (PRO) Team**

**CSPP-GEO User's Conference  
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# Agenda



- Post-Launch Activities: Validation Maturity
- Status of L2 Algorithms
- L2 Algorithm Updates to CSPP-GEO



# POST-LAUNCH ACTIVITIES: VALIDATION MATURITY





# Product Maturity Levels

**What do the Product Maturity Levels mean? There is a PS-PVR at each stage as a method of informing the user community of the following readiness for use:**

- **Beta**: Products are only made available to cal/val users via PDA to gain familiarity with data formats and parameters as well as provide assistance to the science teams. The Product has been minimally validated and may still contain significant errors and is not optimized for operational use.
- **Provisional**: Product ready for operational use but has documented known issues. Product analyses are sufficient to communicate product performance to users relative to expectations.
- **Full**: Product is operational. All known product anomalies are resolved and/or documented and shared with the user community.



# What is a PS-PVR?



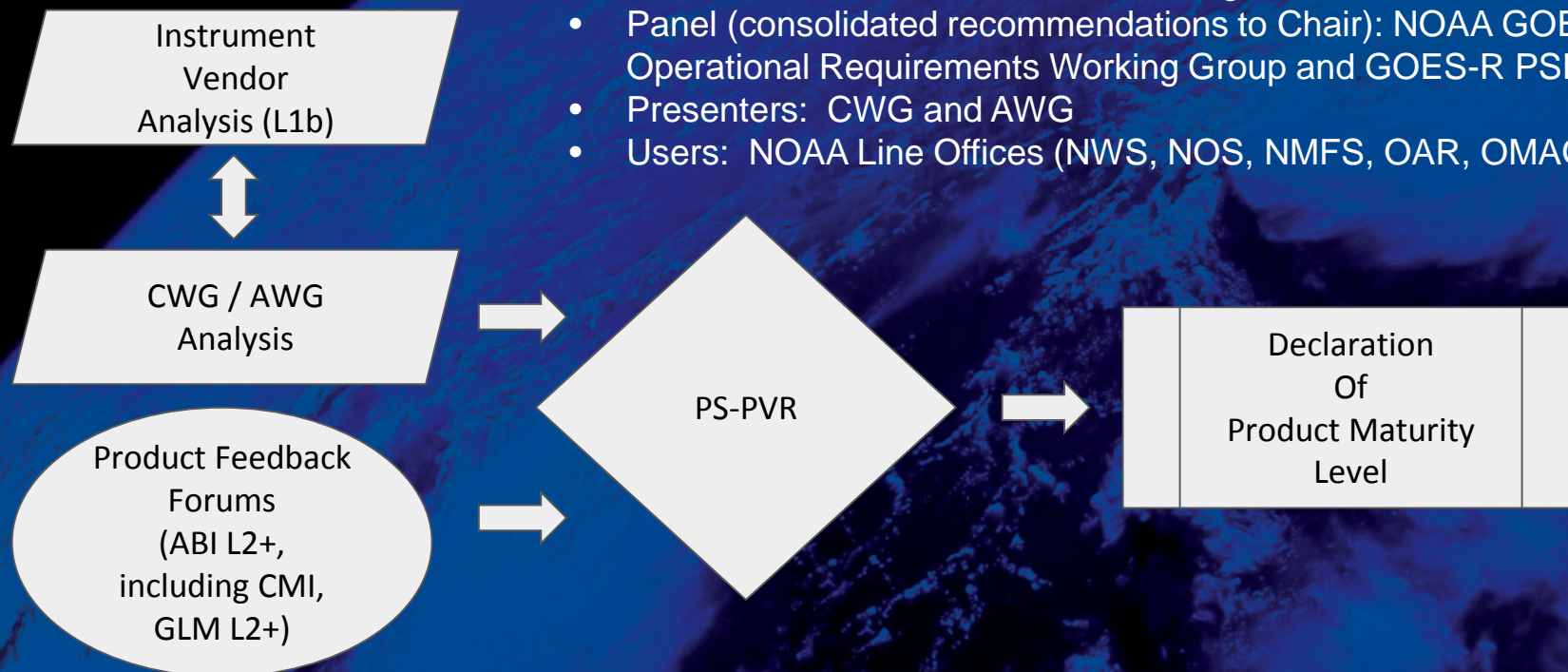
A Peer Stakeholder - Product Validation Review (PS-PVR) appraises the status of product quality with respect to Program definitions

The PS-PVR Panel has the authority to declare products have achieved a product maturity level and provides guidance on work expected to achieve the next maturity level

PS-PVRs continue into Extended Validation

OSPO uses analogous SPSRB review gates to approve product readiness for operations

- Chair: Steve Goodman, GOES-R Program Scientist
- Panel (consolidated recommendations to Chair): NOAA GOES Operational Requirements Working Group and GOES-R PSE
- Presenters: CWG and AWG
- Users: NOAA Line Offices (NWS, NOS, NMFS, OAR, OMAO)







# Focus During PS-PVRs



What will be the focus of the PS-PVR at the different maturity levels?

## Beta:

- Review present state of PLT activities and results
- Consider initial product quick looks
- Affirm release of data products to public

## Provisional:

- Review present state of PLPT activities and results
- Compare initial assessment to predicted performance
- Discuss user feedback, known anomalies, and remediation strategies
- Recommend path to predicted performance

## Full:

- Review present state of continuing cal/val activities and results
- Compare ongoing assessment to predicted performance
- Recommend further optimization activities, considering mission parameters and priorities
- Affirm dissemination of product quality assessment to public



# Beta Validation Tests



L2 Algorithm	Number of Tests
Clear Sky Mask	8
Aerosol Detection	11
Aerosol Optical Depth	6
Cloud Optical Properties	8
Cloud Top Parameters	8
Imagery	7
DMW	56
Shortwave Radiation	8
Soundings (including TPW and DSI)	32
Fire	10
Hurricane Intensity	5
LST	8
Rainrate	3
Snow Cover	8
SST	1
Volcanic Ash	5



# Provisional Validation Tests



L2 Algorithm	Number of Tests
Clear Sky Mask	3
Aerosol Detection	3
Aerosol Optical Depth	2
Cloud Optical Properties	3
Cloud Top Parameters	3
Imagery	3
DMW	21
Shortwave Radiation	3
Soundings (including TPW and DSI)	12
Fire	2
Hurricane Intensity	1
LST	3
Rainrate	1
Snow Cover	3
SST	1
Volcanic Ash	1





# Full Validation Tests



L2 Algorithm	Number of Tests
Clear Sky Mask	3
Aerosol Detection	3
Aerosol Optical Depth	2
Cloud Optical Properties	3
Cloud Top Parameters	3
Imagery	3
DMW	21
Shortwave Radiation	3
Soundings (including TPW and DSI)	12
Fire	2
Hurricane Intensity	1
LST	3
Rainrate	1
Snow Cover	3
SST	1
Volcanic Ash	1



# STATUS OF L2 ALGORITHMS





# Current GOES-16 L2 Status



- System is generating L2 Products
- Cal/Val teams are evaluating products
- Performing their validation tests for Beta: Hurricane Intensity
- All other L2 algorithms have begun their provisional tests.



# GOES-16 Science Product Availability & Validation Status



ABI L1b Product	ABI L2+ Products (con't)	GLM L2 Product
Radiances	Downward S/W Radiation: Surface	Lightning: Events, Groups, Flashes
ABI L2+ Products	Fire/Hot Spot Characterization	SEISS L1b Products
Cloud and Moisture Imagery (CMI) and Sectorized CMI (KPP)	Hurricane Intensity Estimation	Energetic Heavy Ions
Aerosol Detection (Smoke & Dust)	Land Surface Temperature	Magnetospheric e <sup>-</sup> /p <sup>+</sup> : Low Energy
Aerosol Optical Depth (AOD)	Legacy Vertical Moisture Profile	Magnetospheric e <sup>-</sup> /p <sup>+</sup> : High Energy
Clear Sky Mask	Legacy Vertical Temperature Profile	Solar & Galactic Protons
	Rainfall Rate/QPE	EXIS L1b Product
	Reflected S/W Radiation: TOA	Solar Flux: EUV
Cloud Top Height	Sea Surface Temperature	Solar Flux: X-ray Irradiance
Cloud Top Phase	Snow Cover	SUVI L1b Product
Cloud Top Pressure	Total Perceptible Water	Solar EUV Imagery
Cloud Top Temperature	Volcanic Ash: Detection and Height	MAG L1b Product
Derived Motion Winds		Geomagnetic Field
Derived Stability Indices		

## Validation Maturity Levels:

Continuous Availability  
(v/s intermittent tests e.g.  
HRIT/EMWIN, GNC-A):

Not Validated	Beta Maturity	Provisional Maturity	Full Maturity
<u>Baseline Availability</u> <ul style="list-style-type: none"> <li>CWG (STAR, NCEI-CO, NASA-MSFC) only via PDA, CLASS, LZSS</li> <li>NWS I&amp;T</li> </ul>	<u>Additional Availability</u> <ul style="list-style-type: none"> <li>All Receivers via GRB, NWS' SBN</li> <li>EUMETSAT, CMC, INPE via PDA</li> <li>DoD's FNMOC, NAVO, 557<sup>th</sup> via PDA</li> </ul>	<u>Additional Availability</u> <ul style="list-style-type: none"> <li>All remaining PDA accounts</li> <li>All receivers via HRIT/EMWIN</li> <li>All receivers via GNC-A</li> </ul>	<u>Additional Availability</u> <ul style="list-style-type: none"> <li>No changes</li> </ul>





# GOES-16 Science Product Availability & Validation Status



ABI L1b Product	ABI L2+ Products (con't)	GLM L2 Product
Radiances	Downward S/W Radiation: Surface	Lightning: Events, Groups, Flashes
<b>ABI L2+ Products</b>	<div><ul style="list-style-type: none"><li>• Radiance and Imagery held Provisional PS-PVR and awaiting final approvals in NOAA to be declared Provisional</li><li>• Hurricane Intensity Beta PS-PVR scheduled in September</li><li>• Snow Cover is TBD at this time</li><li>• Rain &amp; Volcanic Ash are conditional Beta</li><li>• GLM is conditionally declared beta and is awaiting a LUT update to occur last week in June before official beta declaration</li></ul></div>	
Cloud and Moisture Imagery (Cloud Sectorized CMI (KPP))		
Aerosol Detection (Smoke & Dust)		
Aerosol Optical Depth (AOD)		
Clear Sky Mask		
Cloud Top Height		
Cloud Top Phase		
Cloud Top Pressure		
Cloud Top Temperature		
Derived Motion Winds		
Derived Stability Indices		
Validation Maturity Levels:		
Continuous Availability (v/s intermittent tests e.g. HRIT/EMWIN, GNC-A):		
• NWS I&T	• DoD's FNMOC, NAVO, 557 <sup>th</sup> via PDA	• All receivers via GNC-A



# Current GOES-16 L2 Status



- Reminder of the definition of beta validation maturity:
  - Products are only made available to cal/val users via PDA to gain familiarity with data formats and parameters as well as provide assistance to the science teams. The Product has been minimally validated and may still contain significant errors and is not optimized for operational use.



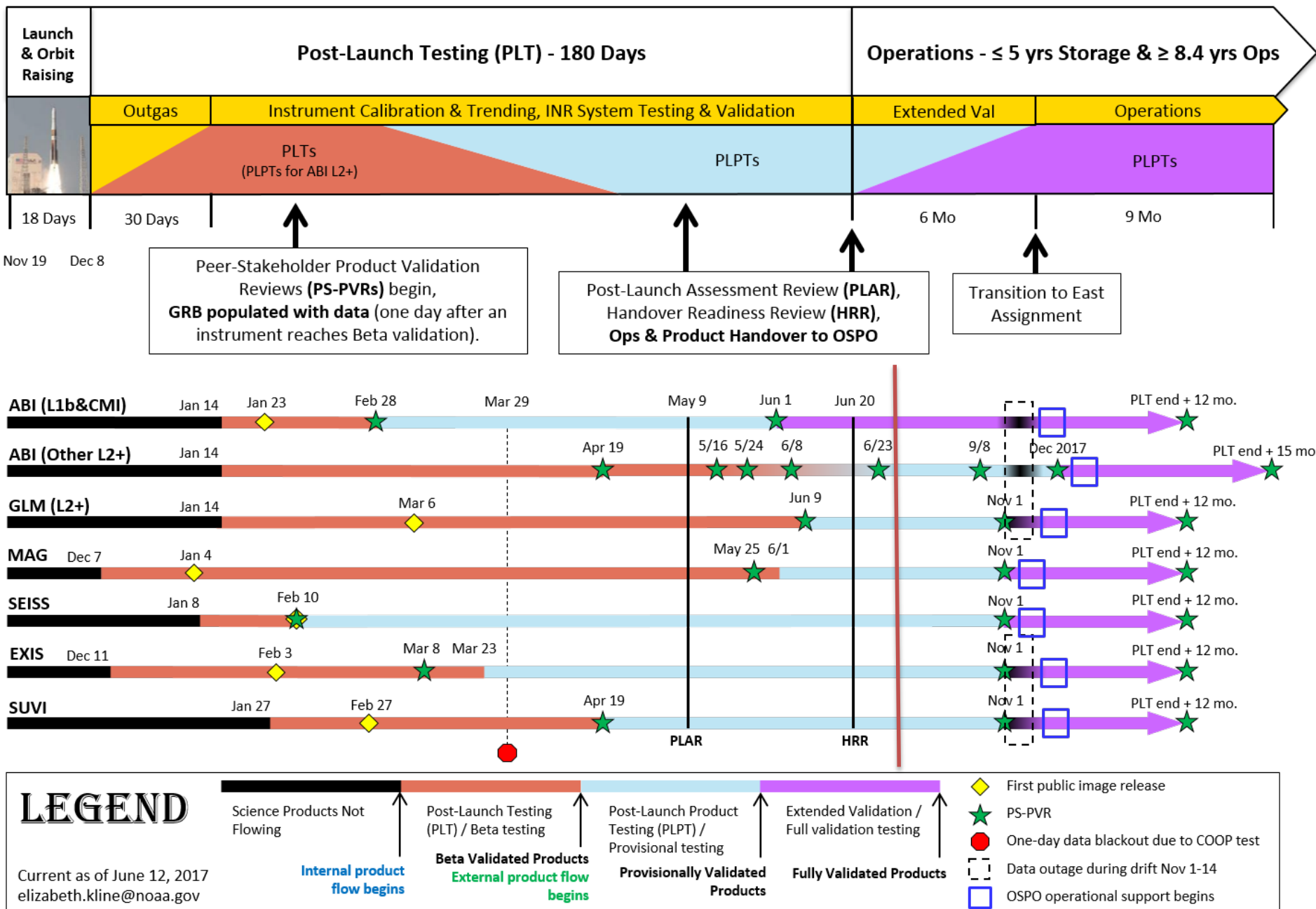


# NOAA GOES-16 Data Disclaimer



- NOAA's GOES-16 satellite has not been declared operational and its data are preliminary and undergoing testing. Users receiving these data through any dissemination means (including, but not limited to, PDA and GRB) assume all risk related to their use of GOES-16 data and NOAA disclaims and any and all warranties, whether express or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose.

# GOES-16 Post-Launch Science Product Validation Schedule



Note: All dates are coordinated with the Flight/MOST PLT SOE group and the T&H team and are subject to change.





# ABI L2+ PS-PVRs



- Dates for remaining Beta PS-PVRs of ABI L2+ Products:
  - Week of 9/5/2017 – Hurricane Intensity
- Dates for Provisional PS-PVRs of ABI L2+ Products:
  - All L2+ Products will be Provisional by December 2017



# L2 ALGORITHM UPDATES TO CSPP- GEO





# Getting Updates to CSPP-GEO



- CSPP-GEO will have the following L2 Algorithms in the initial release (all declared beta):
  - Aerosol Detection
  - Aerosol Optical Depth
  - Cloud Mask
  - Cloud Height
  - Cloud Phase
  - Cloud Optical Depth and Particle Size
  - Imagery
  - Land Surface Temperature

See Poster: “The STAR Algorithm Processing Framework with Applications for CSPP GEO Direct Broadcast GOES-16 L2 Products” by Graeme Martin, Claire McCaskill, Shanna Sampson, Walter Wolf, Aiwu Li, William Straka, Alan De Smet, Ray Garcia



# Getting Updates to CSPP-GEO



- Algorithms within CSPP-GEO will be the same as within NOAA/NESDIS Operations
- As algorithms are updated within operations, CSPP-GEO will get the updated algorithms.
- For more information on L2 Algorithms within CSPP-GEO, see the following poster:
  - “The STAR Algorithm Processing Framework with Applications for CSPP GEO Direct Broadcast GOES-16 L2 Products” by Graeme Martin, Claire McCaskill, Shanna Sampson, Walter Wolf, Aiwu Li, William Straka, Alan De Smet, Ray Garcia





# Questions?



- For questions or general information, please contact me at:
  - [thomas.feroli@noaa.gov](mailto:thomas.feroli@noaa.gov)
  - [wayne.mackenzie@noaa.gov](mailto:wayne.mackenzie@noaa.gov)