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Himawari Satellite Training Leads

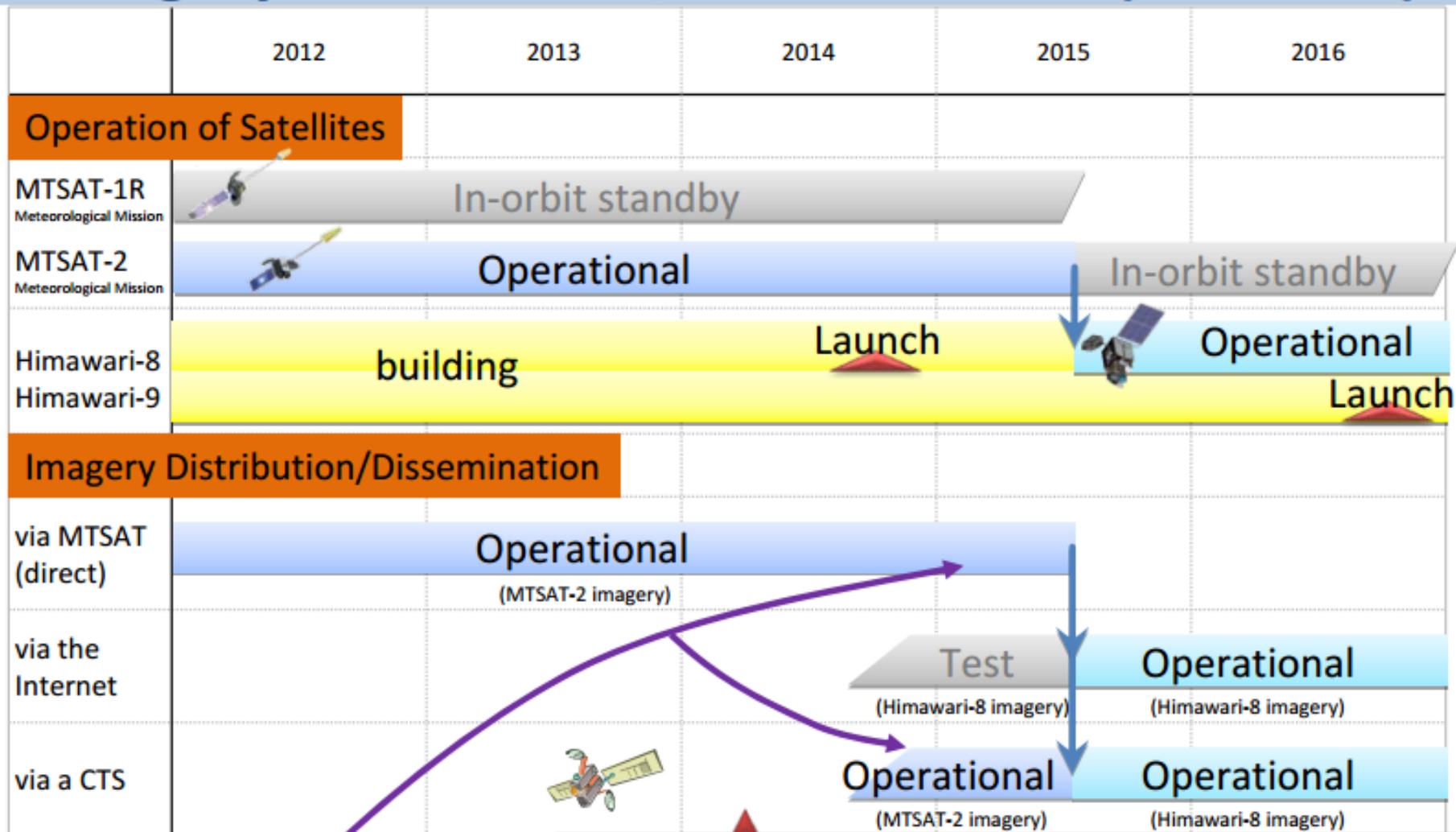
Himawari Training Plan  
NOAA Satellite Proving Ground/User-Readiness 2014 Meeting  
Kansas City, Missouri  
June 3, 2014



## Himawari Training development

- We are developing a training plan for the up and coming Himawari 8 that will be launched this fall and go operational mid 2015.
  - We need you to help us understand what your operationally significant products are such that we can:
    - Scope out the training requirements for these products
    - Find potential overlap within the centers and forecast offices
    - Understand what you deem required for training.
- As you may already know, the AHI sensor on the Himawari 8 satellite is very close to that of the ABI sensor that will be on the GOES-R satellite.
  - Thus, given the overlap of channels,
    - We plan to:
      - Ensure the required products are delivered and their capabilities are understood
      - Leverage training and algorithms already being used and developed within the GOES-R Proving Grounds.\*
  - Required Resources
    - Funding to do parallel ops with that of GOES-R for product development beyond raw imagery.
    - Ensure training is produced for required products and enough bandwidth is available to deliver them.

# Imagery Distribution/Dissemination (Schedule)



JMA will announce the details of CTS (to be fixed in April 2014) and its receiving equipment in the spring of 2014.

- **Parallel dissemination** is planned for **users' smooth transitions** to the receipt of imagery via a CTS.

# NWS Network Project

for Flowing Himawari Data to NWS Field Offices

The NWS network project for flowing Himawari imagery to NWS field offices will be managed out of the NOAA Integrated Dissemination Program's Ground Readiness Project.

**Project Manager:** Scott Denton (of NWS Alaska Region)

**Project Objective:** To upgrade NWS networks needed to flow Himawari imagery and other Level 2 products to NWS field offices. Initial focus on flowing priority products (see following slides).

**Start Date:** March 2014

**Target Completion Date for Priority Offices:** Q2 Calendar Year 2015

**DoD Handoff/Interfaces:** Main coordination will take place through the COPC. One interface option is via the DISA connection at Suitland. OFCM has offered to facilitate discussions on interagency field needs.

# Himawari Products

## Planned Utilization at NOAA/NWS

NWS Centers and Field Offices	BUFR-Format Radiances	netCDF4-Format AH1 Imagery <sup>2</sup>	BUFR AMVs (from GTS)	Other H-8/-9 L2 Products
NCEP Supercomputers (WCOSS)	 1			TBD
NCEP Field Centers (e.g., NHC, AWC)			TBD	
Alaska Region (Anchorage - Regional HQ, WFOs, RFCs, WSOs)				
Pacific Region (Regional HQ, WFOs, WSO, and others)				

### Notes

1. AH1 radiances - 16 spectral channels (Level 1b).
2. Further details of priorities of Off-CONUS imagery on next slide.

# AHI Off-CONUS Imagery Priorities (NWS)

AHI Band	Resolution (km)	Priority 1*	Priority 2	Priority 3	Priority 4 + L2 GOES-R Product Subset
1	1		X		
2	1		X		
3	0.5	X			
4	1				X
5	2				X
6	2				X
7	2	X			
8	2			X	
9	2	X			
10	2			X	
11	2			X	
12	2				X
13	2				X
14	2	X			
15	2				X
16	2				X

\* Highest Priority

バンド Band		中心波長 Central wavelength (μm)
1	可視 VIS	0.46
2		0.51
3		0.64
4	近赤外 NIR	0.86
5		1.6
6		2.3
7	赤外 IR	3.9
8		6.2
9		7.0
10		7.3
11		8.6
12		9.6
13		10.4
14		11.2
15		12.3
16		13.3

Future GOES imager (ABI) band	Wavelength range (μm)	Central wavelength (μm)	Nominal subsatellite IGFOV (km)	Sample use	Heritage instrument(s)
1	0.45–0.49	0.47	1	Daytime aerosol over land, coastal water mapping	MODIS
2	0.59–0.69	0.64	0.5	Daytime clouds fog, insolation, winds	Current GOES imager/sounder
3	0.846–0.885	0.865	1	Daytime vegetation/burn scar and aerosol over water, winds	VIIRS, spectrally modified AVHRR
4	1.371–1.386	1.378	2	Daytime cirrus cloud	VIIRS, MODIS
5	1.58–1.64	1.61	1	Daytime cloud-top phase and particle size, snow	VIIRS, spectrally modified AVHRR
6	2.225–2.275	2.25	2	Daytime land/cloud properties, particle size, vegetation, snow	VIIRS, similar to MODIS
7	3.80–4.00	3.90	2	Surface and cloud, fog at night, fire, winds	Current GOES imager
8	5.77–6.6	6.19	2	High-level atmospheric water vapor, winds, rainfall	Current GOES imager
9	6.75–7.15	6.95	2	Midlevel atmospheric water vapor, winds, rainfall	Current GOES sounder
10	7.24–7.44	7.34	2	Lower-level water vapor, winds, and SO <sub>2</sub>	Spectrally modified current GOES sounder
11	8.3–8.7	8.5	2	Total water for stability, cloud phase, dust, SO <sub>2</sub> , rainfall	MAS
12	9.42–9.8	9.61	2	Total ozone, turbulence, and winds	Spectrally modified current sounder
13	10.1–10.6	10.35	2	Surface and cloud	MAS
14	10.8–11.6	11.2	2	Imagery, SST, clouds, rainfall	Current GOES sounder
15	11.8–12.8	12.3	2	Total water, ash, and SST	Current GOES sounder
16	13.0–13.6	13.3	2	Air temperature, cloud heights and amounts	Current GOES sounder/GOES-12+ imager

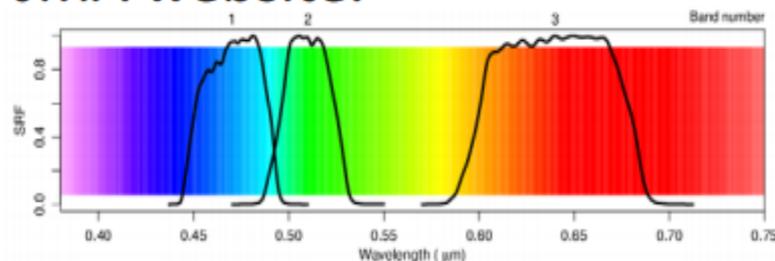
## Channels of the Advanced Himawari Imager (AHI) to be carried by Himawari-8/9

Channel	Central Wavelength [ $\mu\text{m}$ ]	Spatial Resolution	
X 1	0.43 – 0.48	1 km	RGB Composited True Color Image
2	0.50 – 0.52	1 km	
X 3	0.63 – 0.66	0.5 km	
X 4	0.85 – 0.87	1 km	ABI: 1.3 $\mu\text{m}$
X 5	1.60 – 1.62	2 km	
X 6	2.25 – 2.27	2 km	
X 7	3.74 – 3.96	2 km	
X 8	6.06 – 6.43	2 km	Water Vapor
X 9	6.89 – 7.01	2 km	
X 10	7.26 – 7.43	2 km	
X 11	8.44 – 8.76	2 km	SO <sub>2</sub>
X 12	9.54 – 9.72	2 km	O <sub>3</sub>
X 13	10.3 – 10.6	2 km	Atmospheric Windows
X 14	11.1–11.3	2 km	
X 15	12.2 – 12.5	2 km	
X 16	13.2 – 13.4	2 km	CO <sub>2</sub>

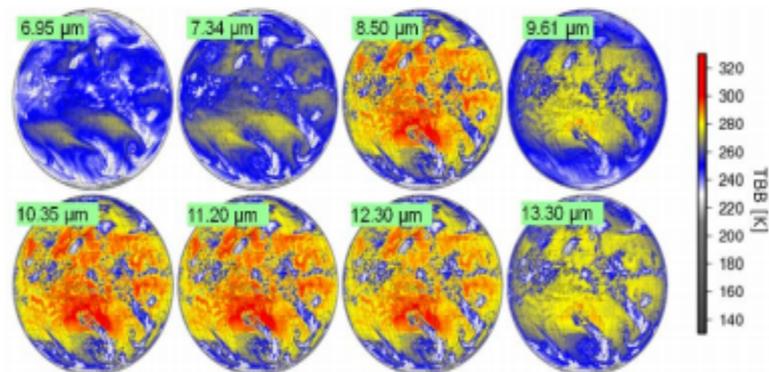
X: Channels of ABI

To support research and development of products based on Himawari-8/9,

- Estimated Spectral Response Functions (SRFs) of AHI are **available** on JMA website.



- Simulation data generated using a radiative transfer model are also **available** on JMA website.



## HIMAWARI CTS BROADCAST

- JMA plans to produce HRIT files (VIS, IR1, IR2, IR3, IR4) and disseminate them via a communication satellite (HimawariCast).

MTSAT 1R & 2R CHANNELS	JMA PROPOSED HIMAWARI CTS CHANNELS	NOAA SUGGESTED CTS CHANNELS
VIS --- 0.55 – 0.80	AHI band 3: VIS	AHI band 3: VIS
IR1 --- 10.3 – 11.3	AHI band 7: IR4	AHI band 7: IR4
IR2 --- 11.5 – 12.5	AHI band 8: IR3	AHI band 9: IR3
IR3 --- 6.5 – 7.0	AHI band 13: IR1	AHI band 14: IR1
IR4 --- 3.5 – 4.0	AHI band 15: IR2	AHI band 15: IR2

- NESDIS and NWS users, including representatives of Alaska and Pacific regions, have expressed the view that, in their opinion, a slightly different set would be closer to the current MTSAT bands we are now using and would more closely meet their needs.

## Updated Himawari Information

**Please check the following URLs.**

- **Leaflet**

- [http://www.jma.go.jp/jma/kishou/books/himawari/2014\\_Himawari89.pdf](http://www.jma.go.jp/jma/kishou/books/himawari/2014_Himawari89.pdf)

- [http://www.jma.go.jp/jma/jma-eng/satellite/news/himawari89/himawari89\\_leaflet.pdf](http://www.jma.go.jp/jma/jma-eng/satellite/news/himawari89/himawari89_leaflet.pdf)

- **Leaflet in JPG format**

- [http://www.jma.go.jp/jma/jma-eng/satellite/news/himawari89/himawari89\\_leaflet\\_1.jpg](http://www.jma.go.jp/jma/jma-eng/satellite/news/himawari89/himawari89_leaflet_1.jpg)

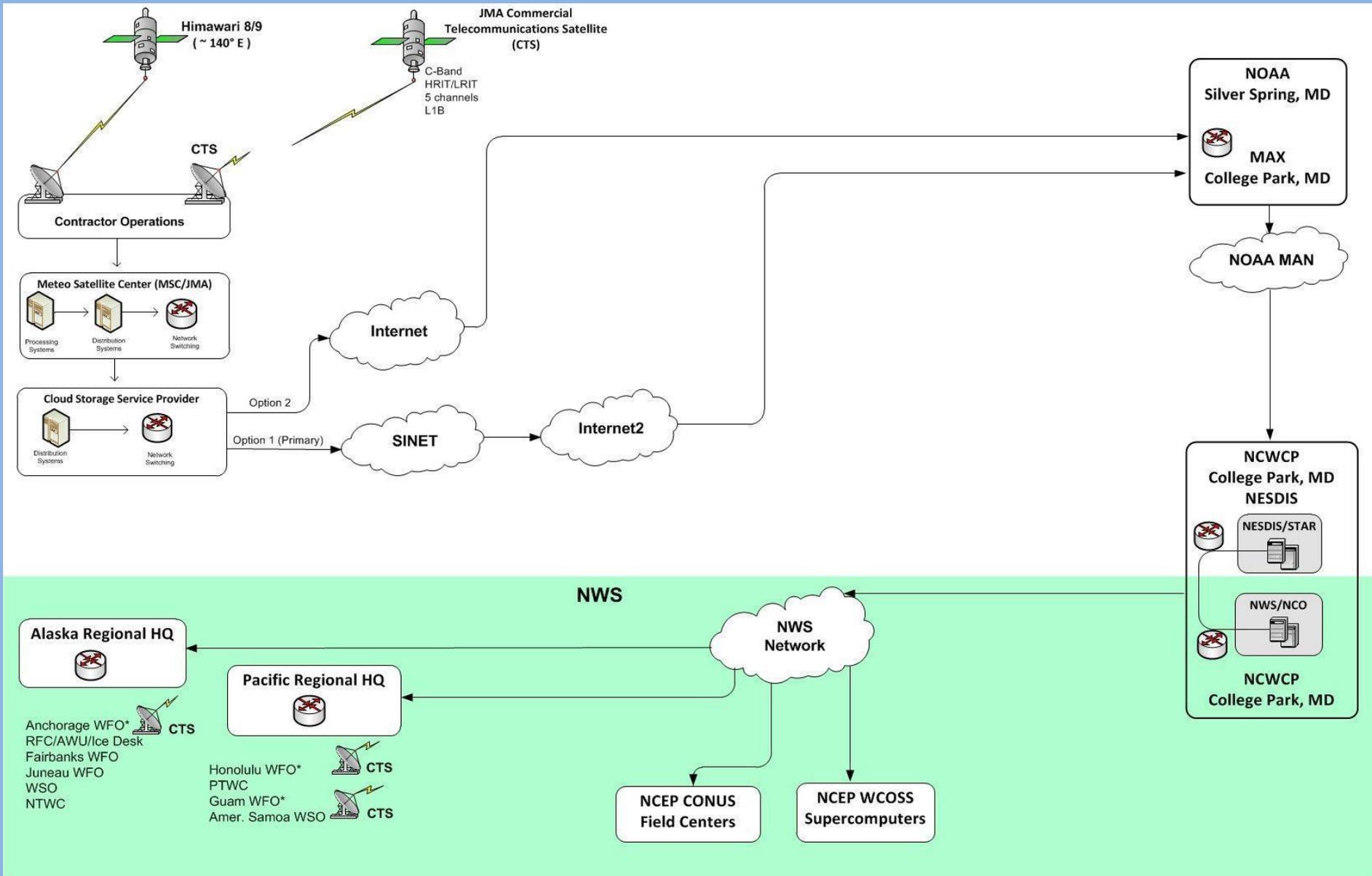
- **For information on data distribution/dissemination plan**

- <http://www.jma.go.jp/jma/jma-eng/satellite/index.html>

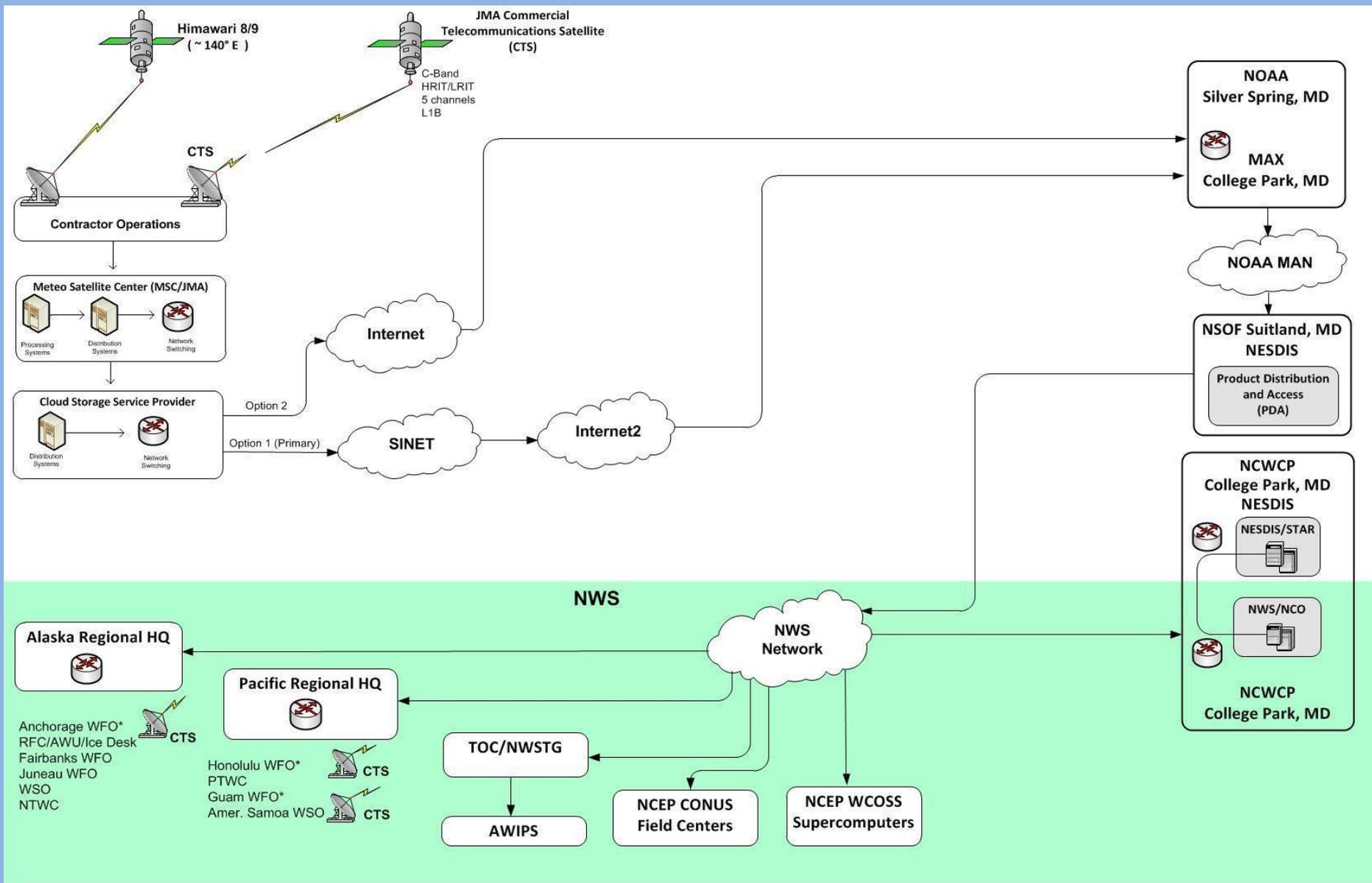
- **For technical information**

- <http://mscweb.kishou.go.jp/himawari89/index.html>

# Himawari Data Flow into NWS: 2015 (Pre-PDA Era)



# Himawari Data Flow into NWS: Post-2015 (PDA Era)



## QUESTIONS

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