



# Earth Observations and Contributions by GCOM-W

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# Outline of GCOM-W (Global Change Observation Mission – Water) and AMSR2 (Advanced Microwave Scanning Radiometer 2)

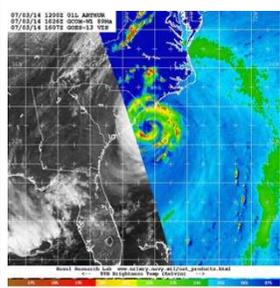


**GCOM-W**  
Altitude:700km  
98minutes/round

**AMSR2**  
Observation  
Frequency: 6-89GHz  
Swath:1600km  
(Entire Earth/2 days)  
Day and Night  
& Cloud free



Launch by H-IIA  
(May, 2012)



Typhoon  
Hurricane  
through  
cloud





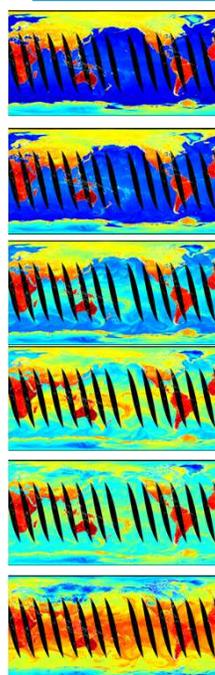
# AMSR2 Products and Contributions

Advantages: Water Related Phenomena (through cloud)  
Entire Earth (including the Arctic and Antarctic regions)

Observation Frequencies



Water Related Products



6.925GHz

10.65GHz

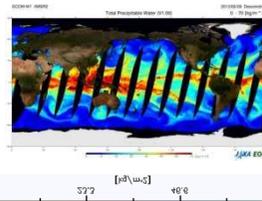
18.7GHz

23.8GHz

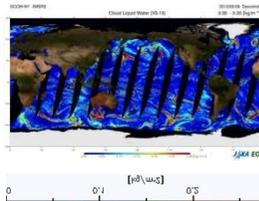
36.5GHz

89.0GHz

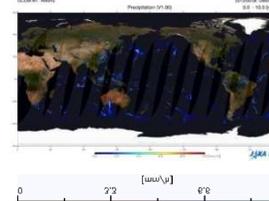
Total Perceptible Water



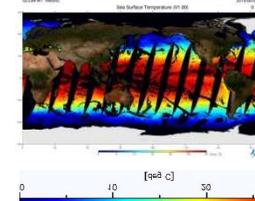
Cloud Liquid Water



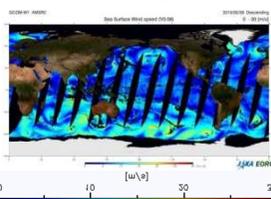
Precipitation



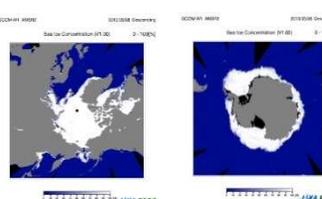
Sea Surface Temperature



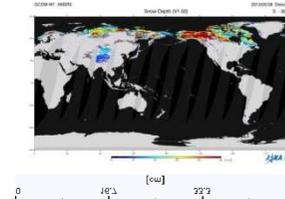
Sea Surface Wind speed



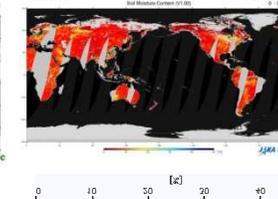
Sea Ice Concentration (Arctic) (Antarctic)



Snow Depth



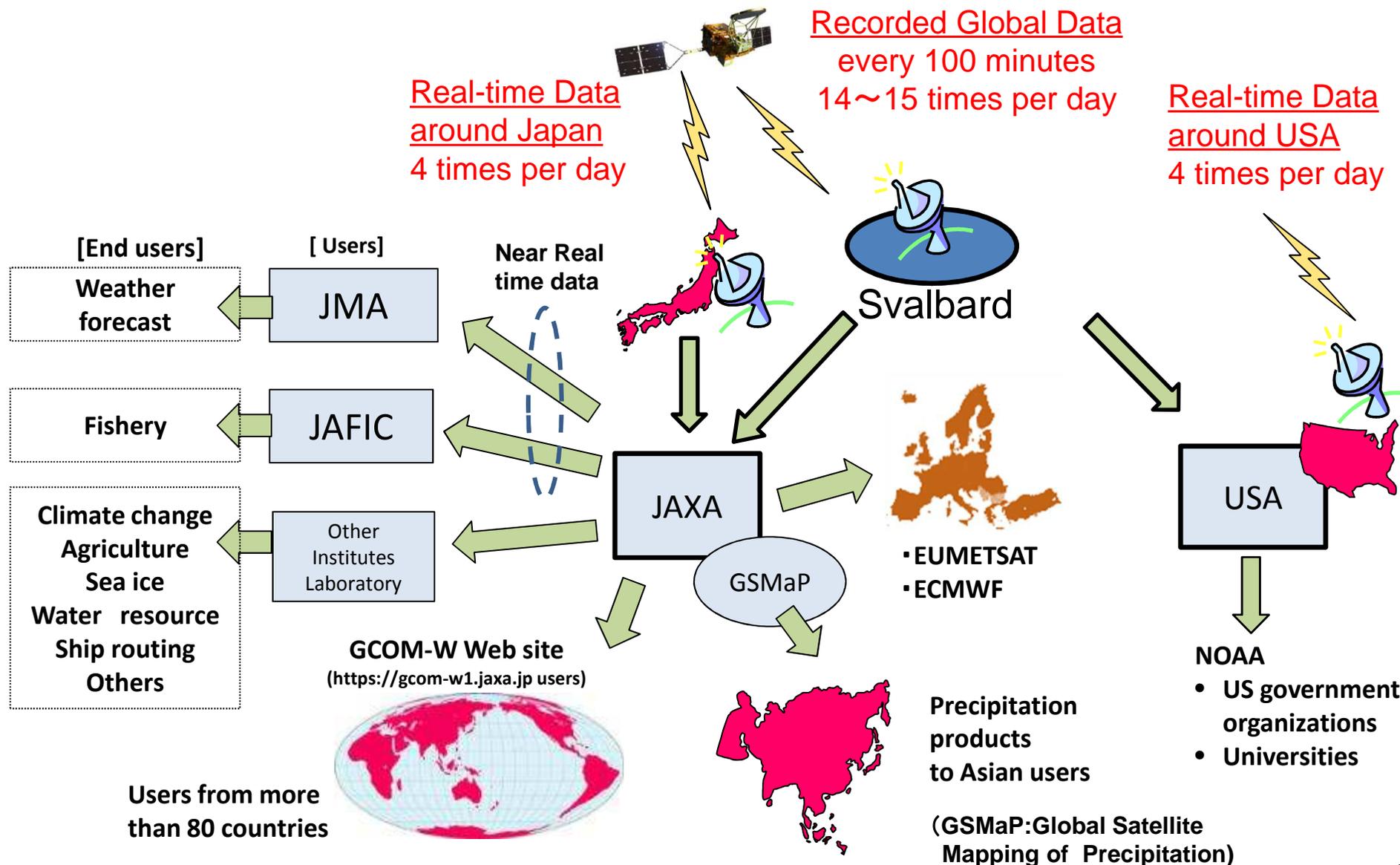
Soil Moisture Content



Contributions: Weather forecast(NWP, Typhoon/Hurricane) ,  
Climate change, Fishery, Agriculture, Ship routing, etc.



# GCOM-W/AMSR2 Data Distribution

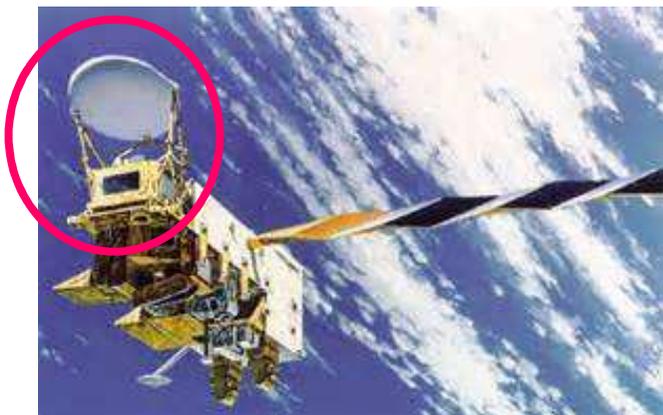




# Long term observation with AMSR series



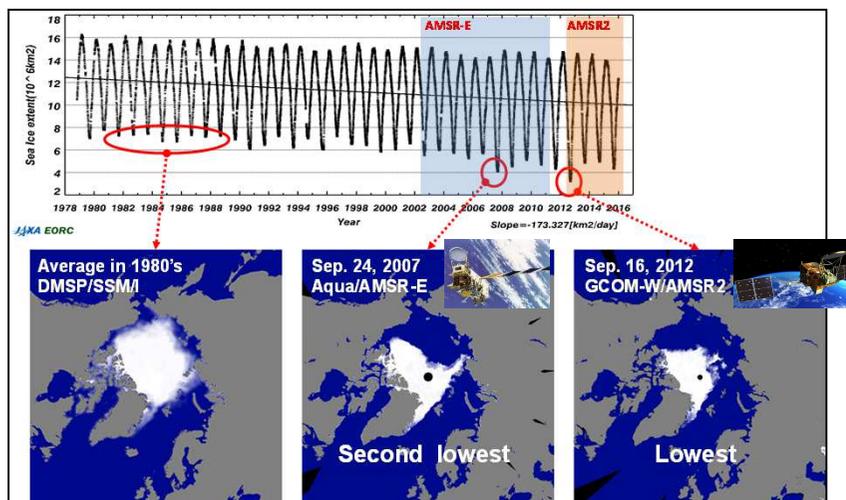
AMSR-E on Aqua (NASA satellite)  
2002.6 – 2011.10



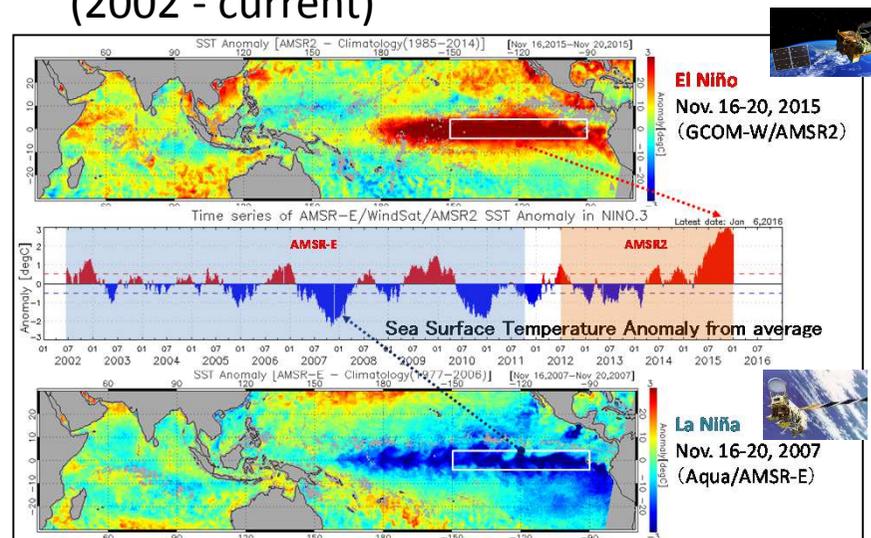
AMSR2 on GCOM-W  
2012.7 – Current



Arctic Sea Ice Extent  
(JAXA' contribution since 2002)

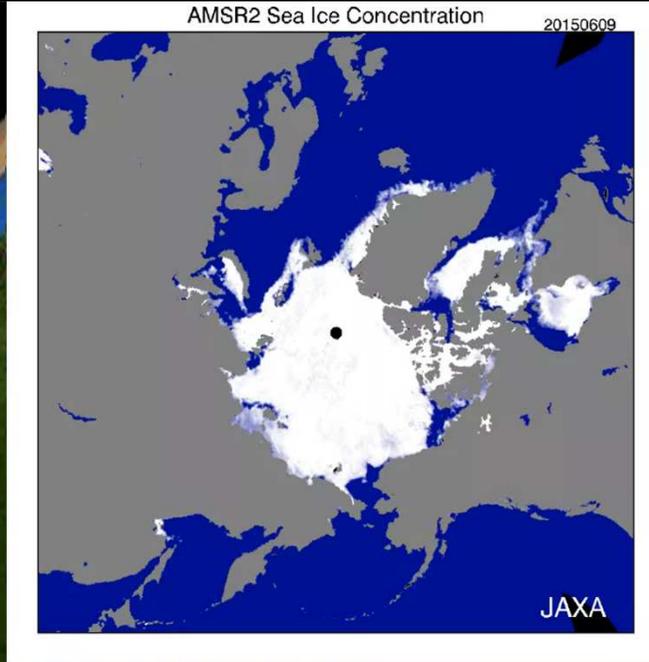


El Niño & La Niña Phenomena  
(2002 - current)



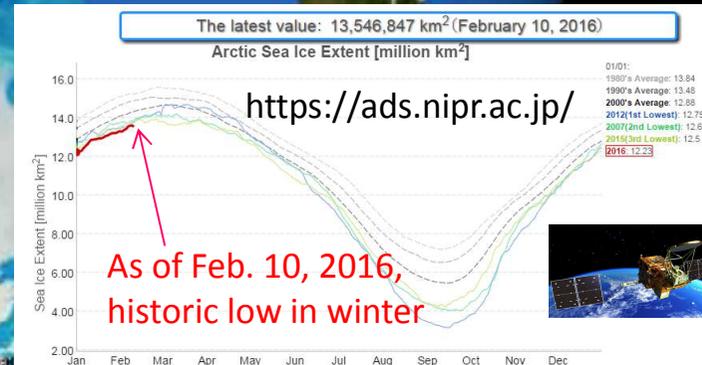
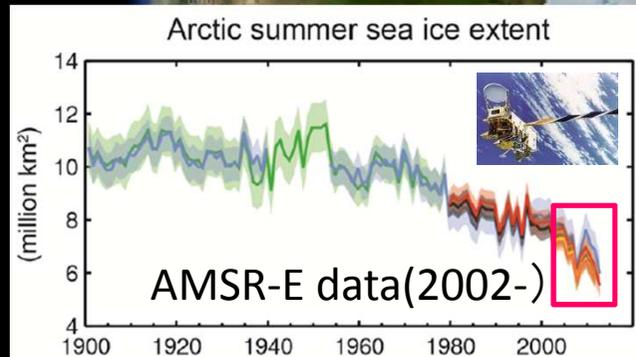
# Arctic sea ice monitoring

From June, 2015  
To February, 2016



IPCC AR5 Report(2013)

Daily Monitoring



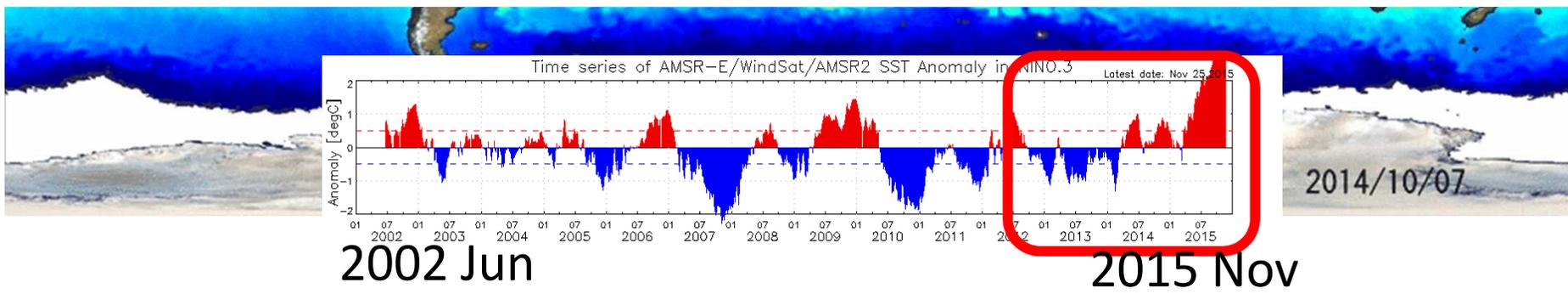
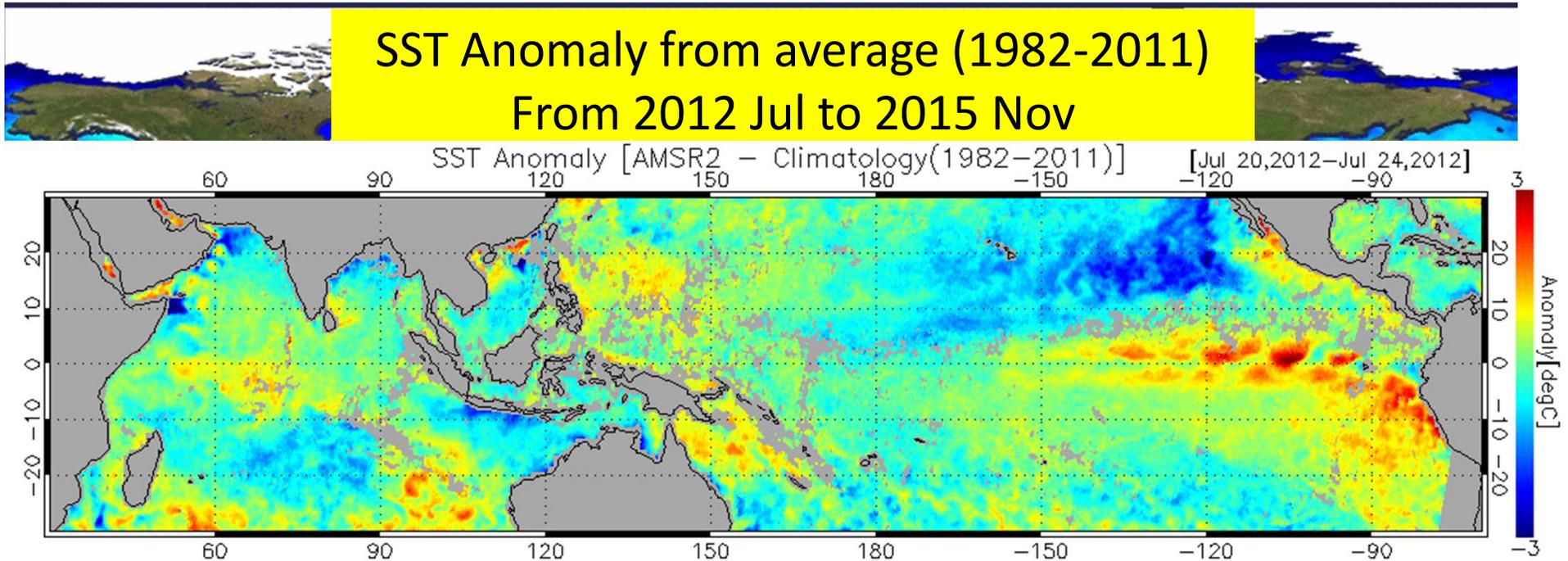


# El Niño & La Niña Phenomena monitoring



## Global Sea Surface Temperature (SST)

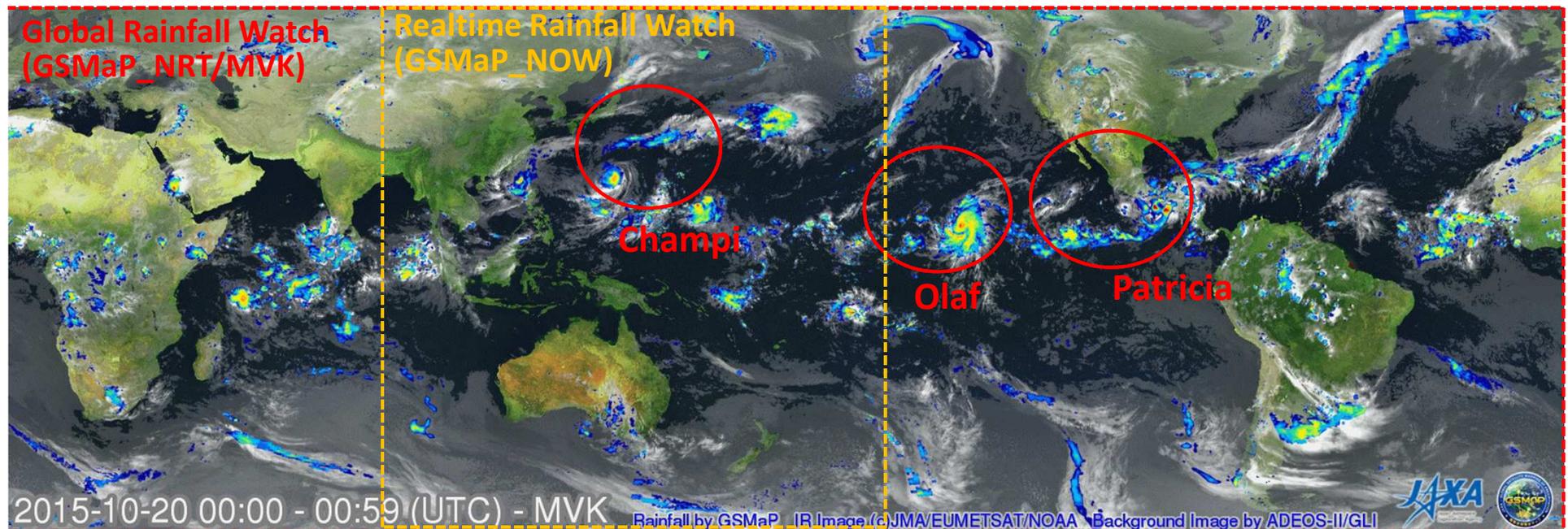
SST Anomaly from average (1982-2011)  
From 2012 Jul to 2015 Nov



## SST Anomaly from 30 year average



## Global Satellite Mapping of Precipitation (GSMaP) using GCOM-W, GPM, and others (European and US satellites)



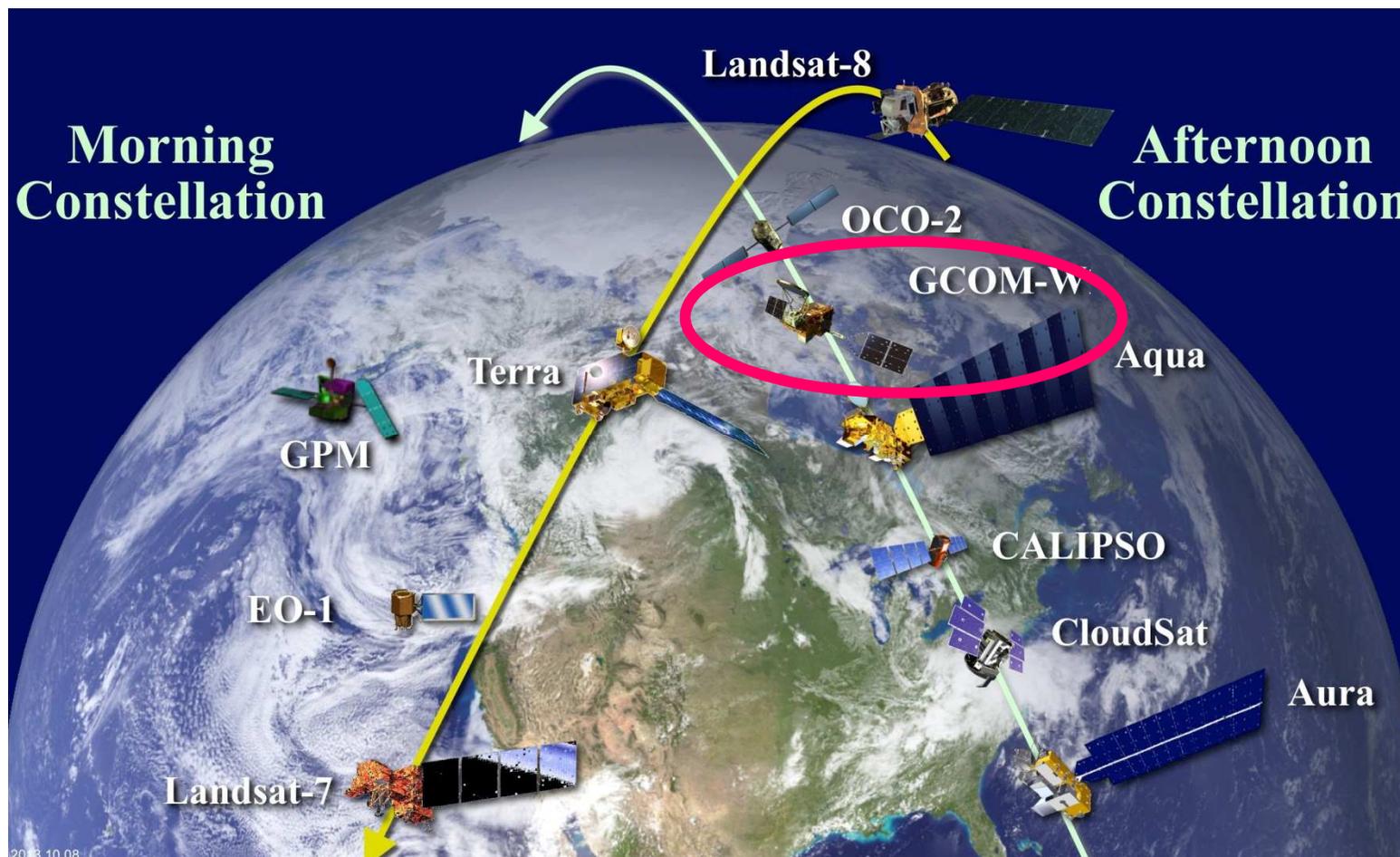
GSMaP (Global) observed Hurricane Patricia and Olaf, and Typhoon Champi: 20-24 Oct. 2015, hourly animation

JAXA Global Rainfall Watch (4-hr delay) : <http://sharaku.eorc.jaxa.jp/GSMaP>  
JAXA Realtime Rainfall Watch (Himawari-area): [http://sharaku.eorc.jaxa.jp/GSMaP\\_NOW](http://sharaku.eorc.jaxa.jp/GSMaP_NOW)



# GCOM-W in A-Train constellation

Collaboration with US and French satellites for various Earth observation applications using various types of instruments





# Conclusion

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- **GCOM-W/AMSR2 has been observing the entire earth since July, 2012.**
- **The unique advantage to observe water related phenomena is contributing to various fields, such as weather forecast, climate change monitoring, fishery, agriculture, and ship routing..**
- **With its predecessor (AMSR-E on Aqua), the AMSR series has been providing a valuable service all over the world for 14 years and will continue to help us solve social problems related to “water”.**