



Quick Deforestation monitoring system using the ALOS-2/PALSAR-2

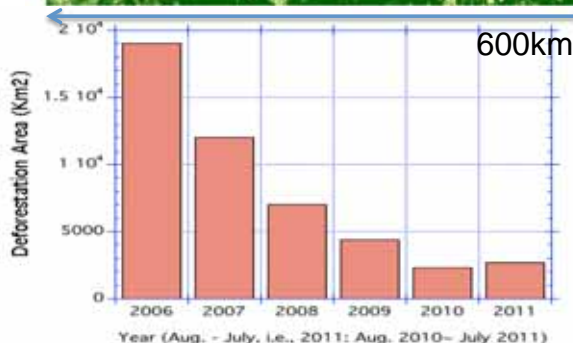
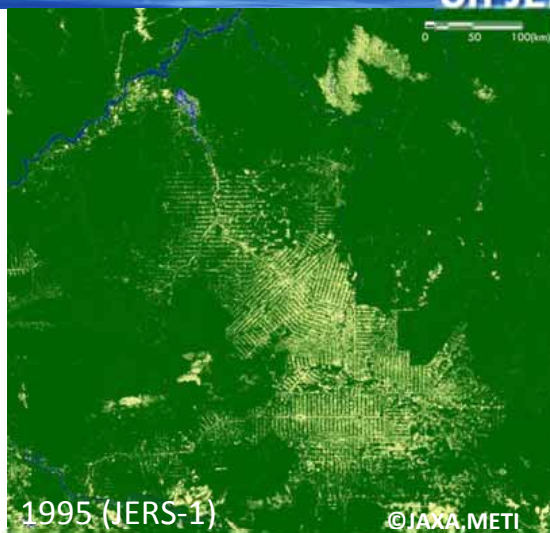
February 25, 2016

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Professor, Tokyo Denki University

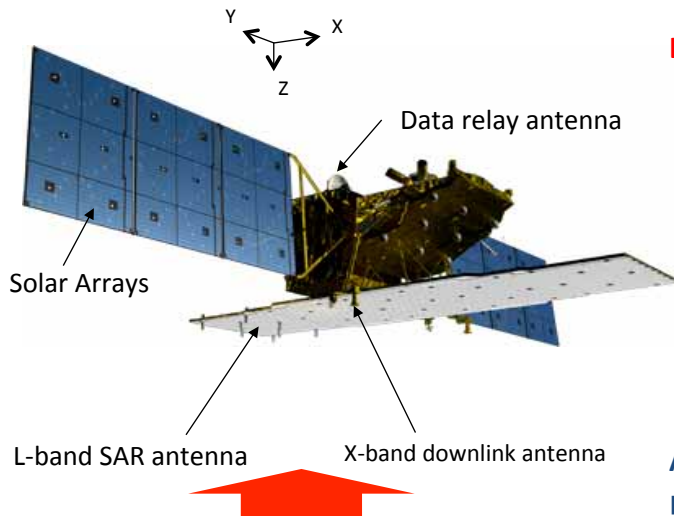
Deforestation Monitoring in Brazil by L-band SAR on JERS-1/ALOS



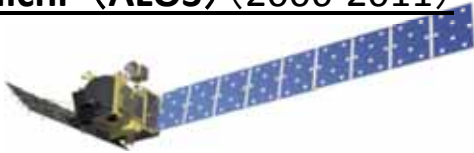
- Application for deforestation monitoring by provision of ALOS/SAR data to IBAMA (Brazilian Institute of Environment and Renewable Natural Resources)
- Contribution to declination of deforestation area in Brazil

Advanced Land Observing Satellite-2 "DAICHI-2" (ALOS-2)

ALOS-2 in-orbit configuration



"Daichi" (ALOS) (2006-2011)



ALOS-2/PALSAR-2 was launched on 24 May 2014, and is now operational.

L-band Synthetic Aperture Radar-2 (PALSAR-2)

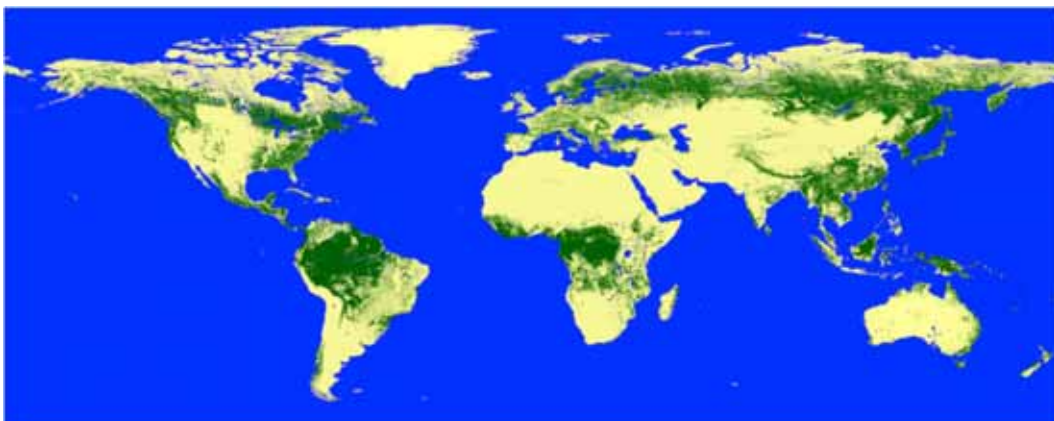
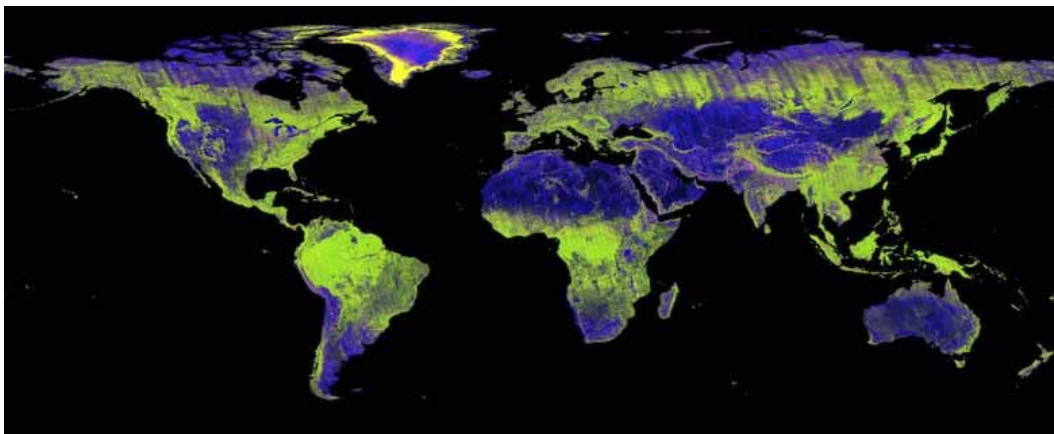
- Wide observable area (2,320km)
- Right-and-left looking function
- High resolutions (1-3m)
- Dual Polarization(HH+HV)
- ScanSAR – Strip Mode SAR
- **capable of observing day and night, and in all weather conditions.**
- **Successor of ALOS/JERS-1 using same forest observation capability from 1990s**

ALOS-2 will achieve significant contributions to:

- Disaster Monitoring of Damage Areas
- Continuous updating of data archives related to national land and infrastructure
- Effective monitoring of cultivated areas
- Global monitoring of tropical rain forests to identify carbon sinks.

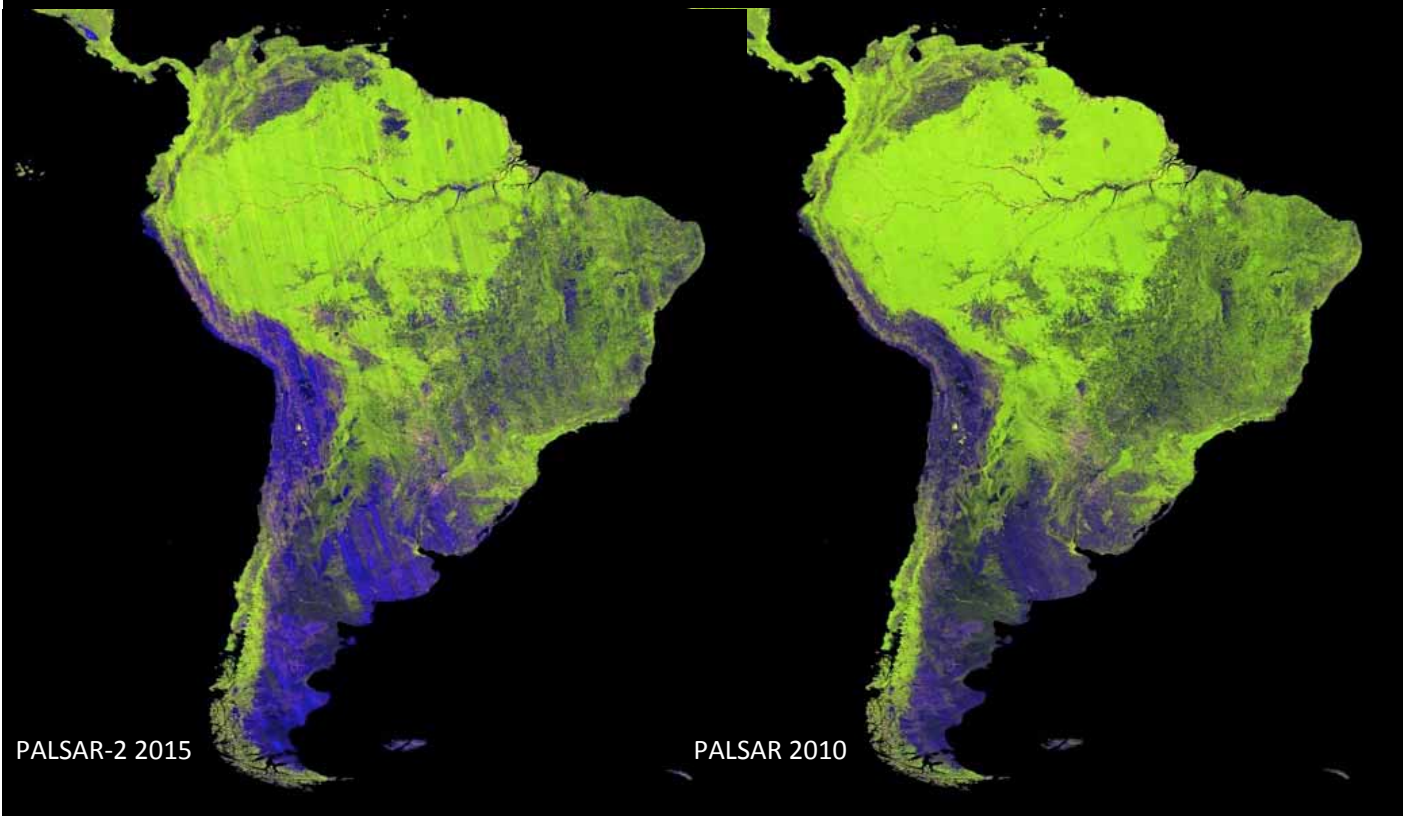
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ALOS-2 PALSAR-2 Global Mosaic & Forest/Non-forest Map 2015 (25 m resolution, first generated)

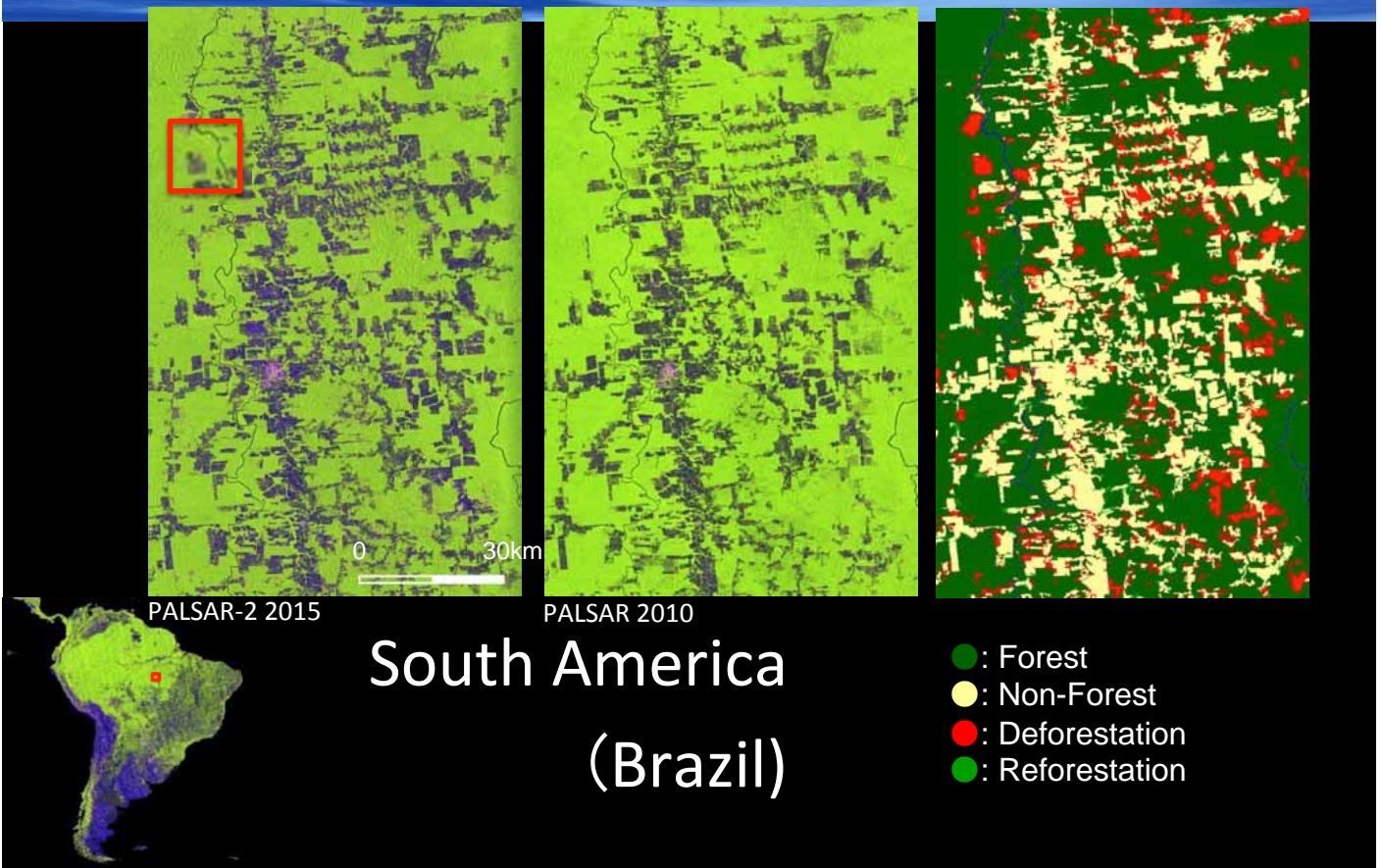


25m PALSAR/PALSAR-2 Mosaic

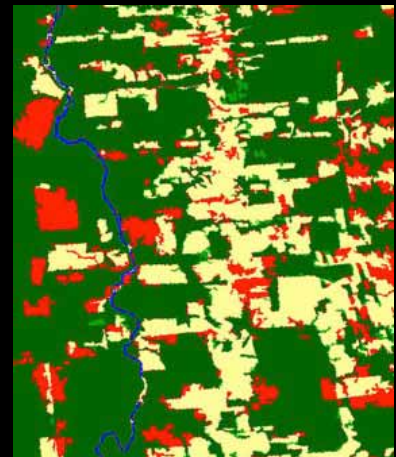
South America



25m PALSAR/PALSAR-2 Mosaic



25m PALSAR/PALSAR-2 Mosaic

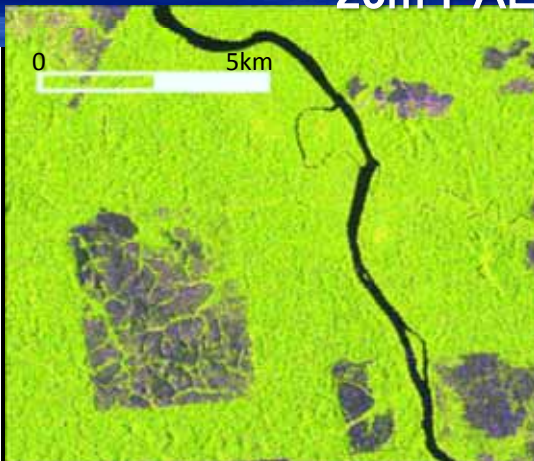


PALSAR 2010

South America (Brazil)

- : Forest
- : Non-Forest
- : Deforestation
- : Reforestation

25m PALSAR/PALSAR-2 Mosaic

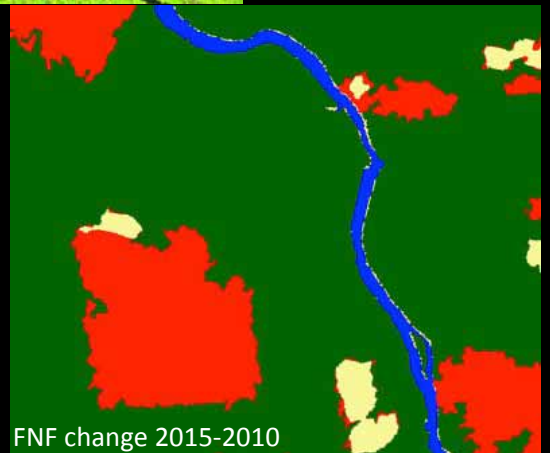
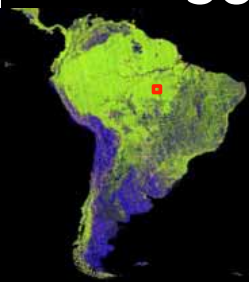


- : Forest
- : Non-Forest
- : Deforestation
- : Reforestation

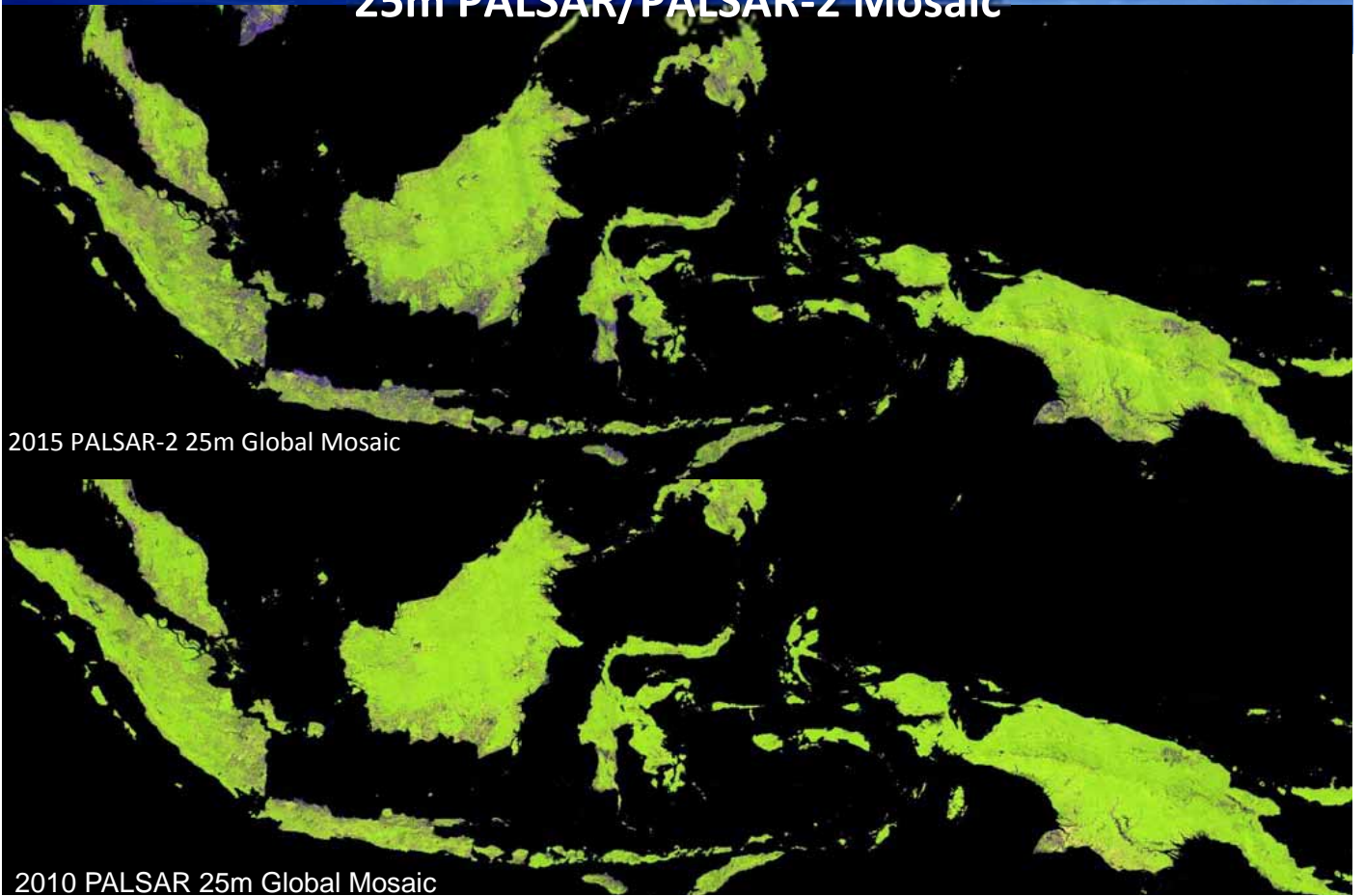
PALSAR-2 2015

PALSAR 2010

South America



25m PALSAR/PALSAR-2 Mosaic



25m PALSAR/PALSAR-2 Mosaic



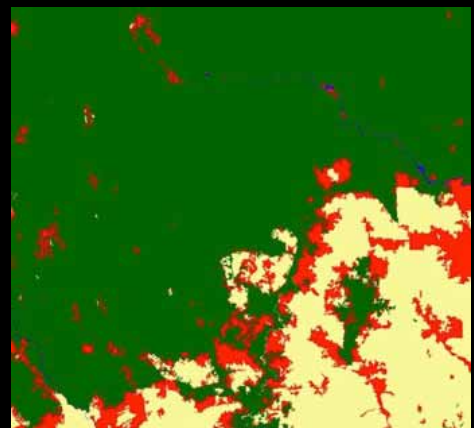
PALSAR-2 2015



PALSAR 2010

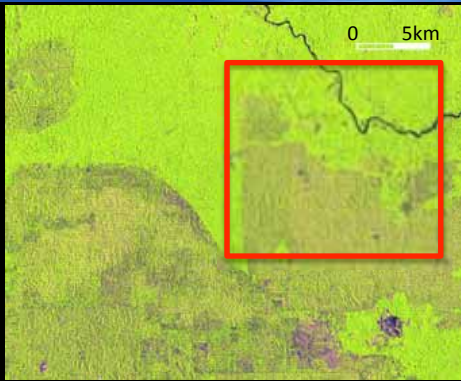
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Indonesia (Kalimantan)

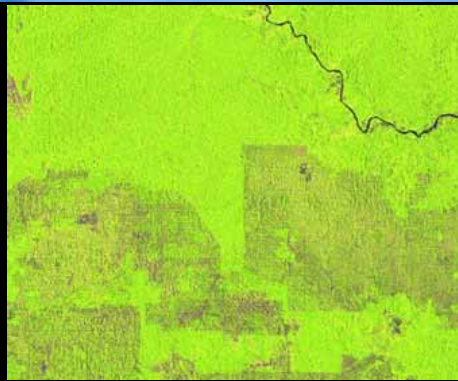


FNF change 2015-2010

25m PALSAR/PALSAR-2 Mosaic



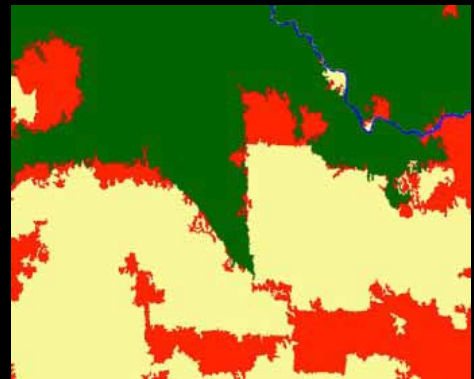
PALSAR-2 2015



PALSAR 2010

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Indonesia (Kalimantan)



25m PALSAR/PALSAR-2 Mosaic



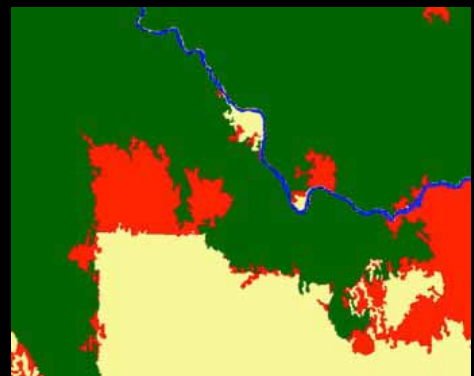
PALSAR-2 2015



PALSAR 2010

- : Forest
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Indonesia (Kalimantan)



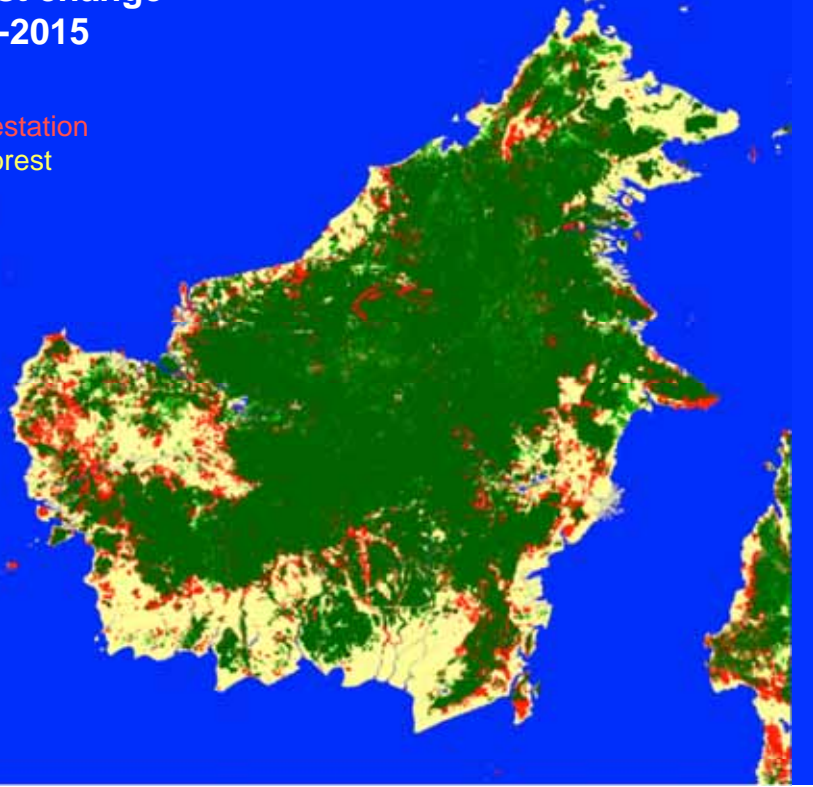
Forest Change in Borneo

2010: 34929.8[1000ha]
 2015: 32010.4[1000ha]
 -8.36%/5 years
 -1.67%/year

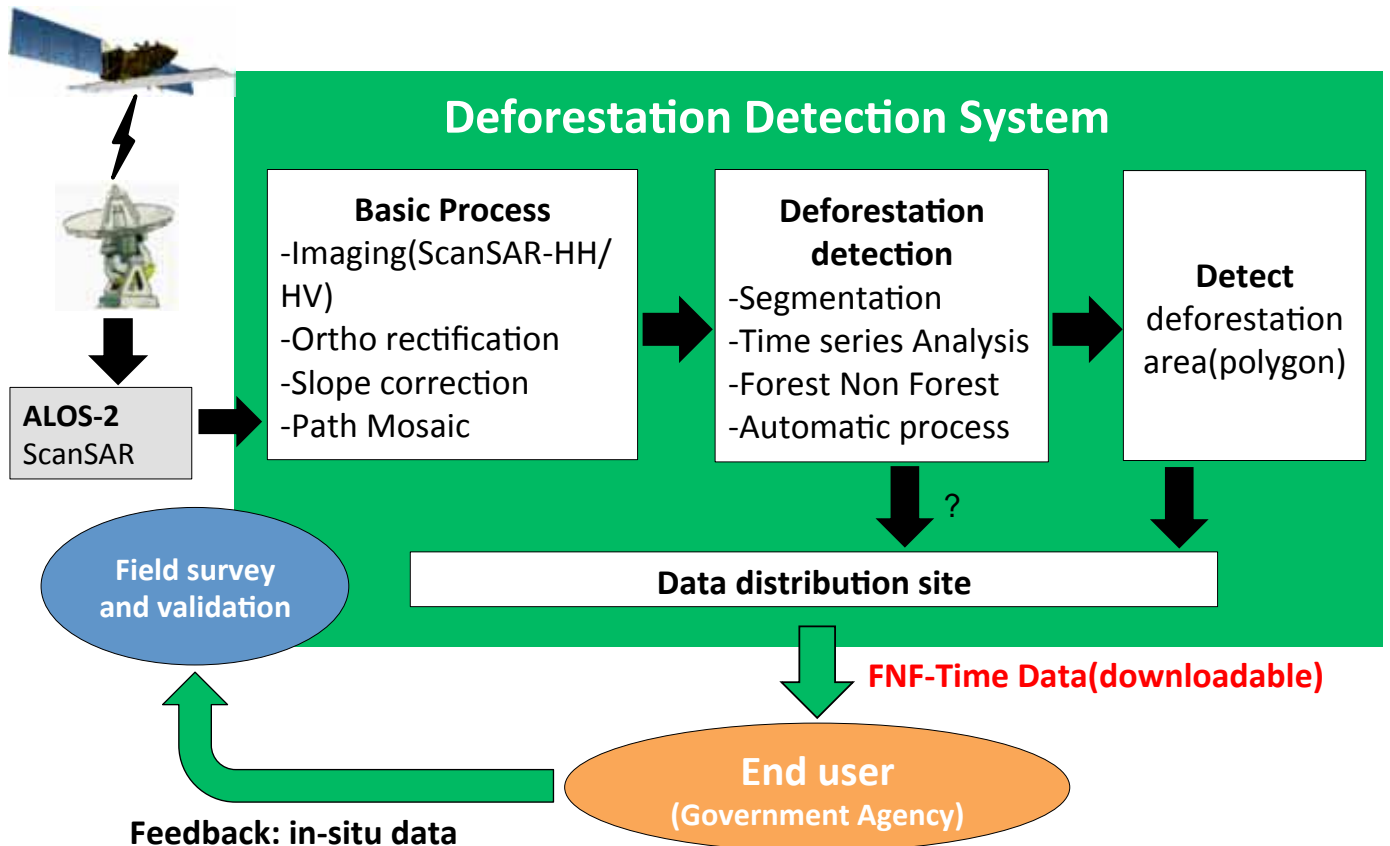


Forest change 2010-2015

Forest
 Deforestation
 Non-forest

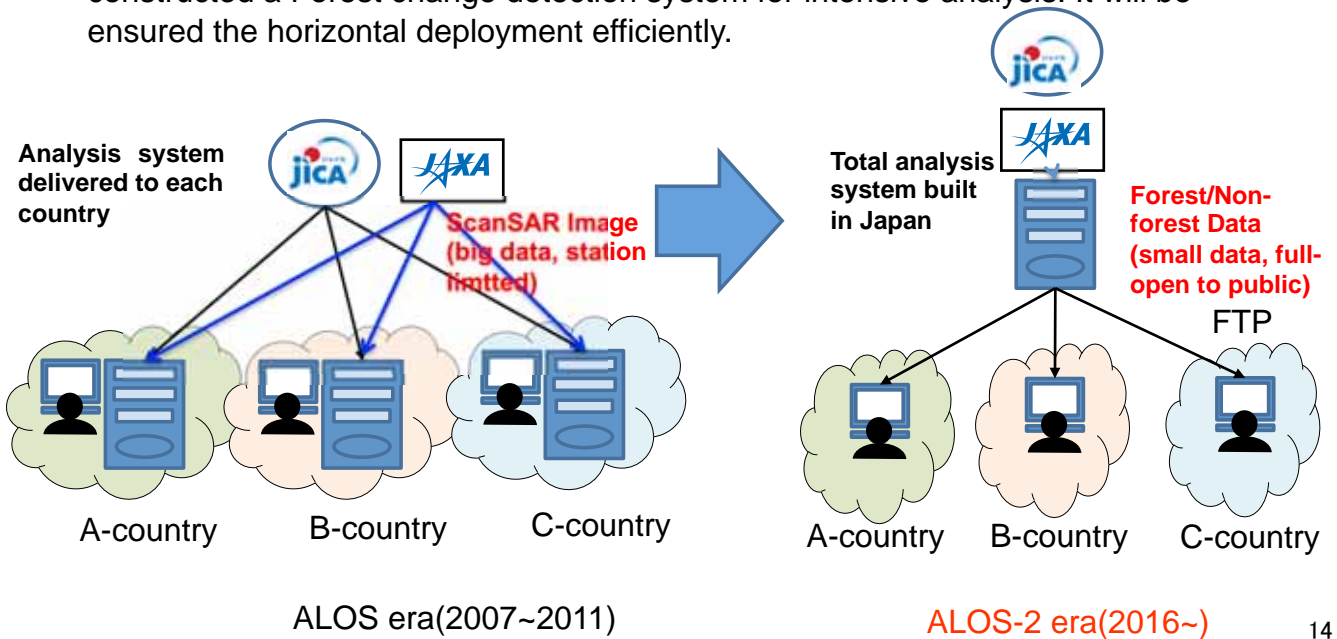


Quick Deforestation Detection using ALOS-2



Concept of the analysis system

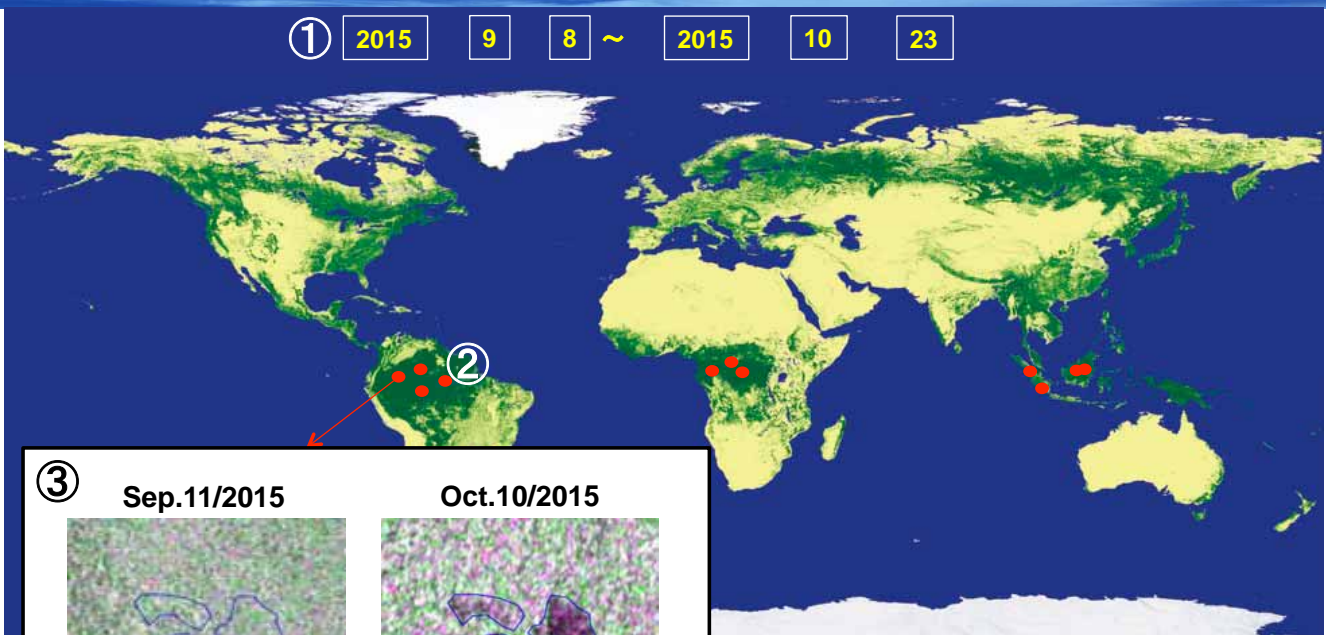
- JICA plans to expand their project internationally to such as Peru, Columbia(South America), Myanmar(Asia), Gabon(Africa), etc., not only Brazil deforestation Monitoring Project.
- At that time, it is not to be installed analysis system in each country, but it will be constructed a Forest change detection system for intensive analysis. It will be ensured the horizontal deployment efficiently.



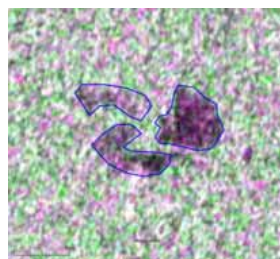
14

Data distribution site(Tentative)

① 2015 9 8 ~ 2015 10 23



③ Sep.11/2015 Oct.10/2015



- ① Select date
> Display forest change area as red dot
- ② Select area(dot)
> Display extended images
- ③ Browse before and after of deforestation and download polygon data



General

- **Five years project**
- **Quick deforestation monitoring system using the ALOS-2/PALSAR-2 time series analysis**
- **Open data using the internet**

Schedule

- **JAXA-JICA agreement to be finalized: March E 2016**
- **Computer installation.~Aug. 2016**
- **System start: Oct. 2016**



Back Up

JAXA Activities

Space Transportation



Human Space Activities



Astronaut Kimiya YUI
Expedition 44,45 Crew

Satellite Program



Lunar & Planetary Exploration Program



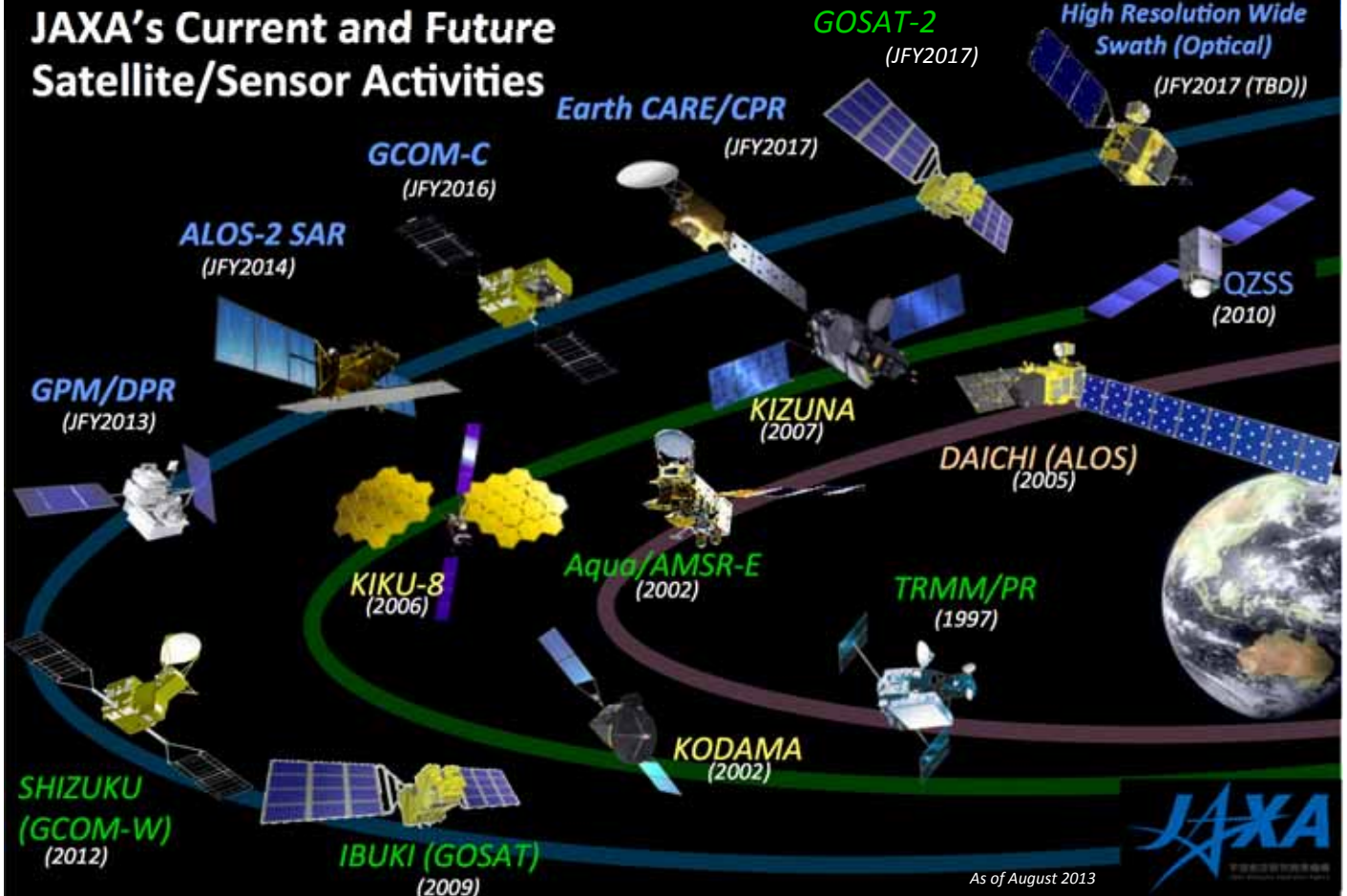
Aviation Program



Space Science

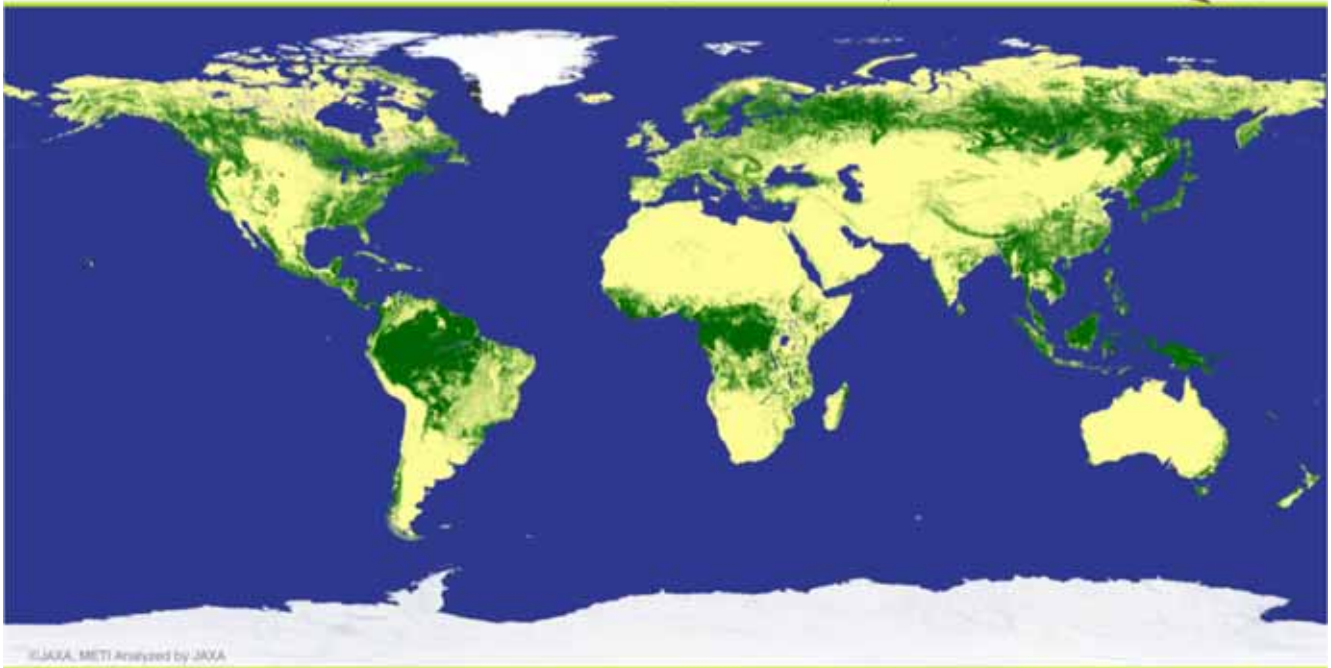


JAXA's Current and Future Satellite/Sensor Activities



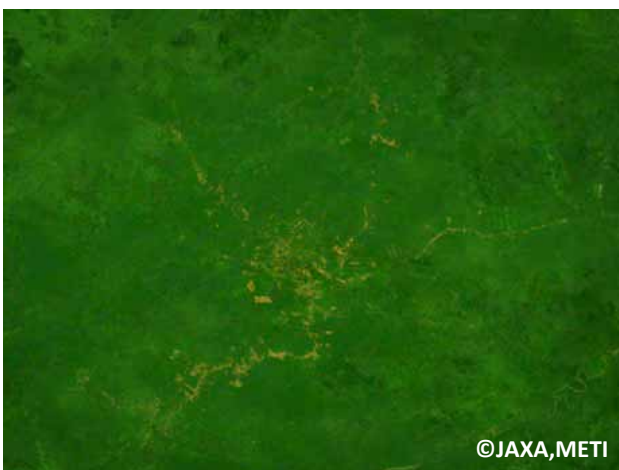
10m Global Forest/Non-Forest Map by ALOS/PALSAR

PALSAR 10m Global Forest/Non-Forest Map 2009



Forest/non-forest map is the important geophysical information on investigating the temporal forest land change, terrestrial causes on global warming, and proceeding the activity on Reducing the Emission from Deforestation and forest Degradation plus (REDD+).

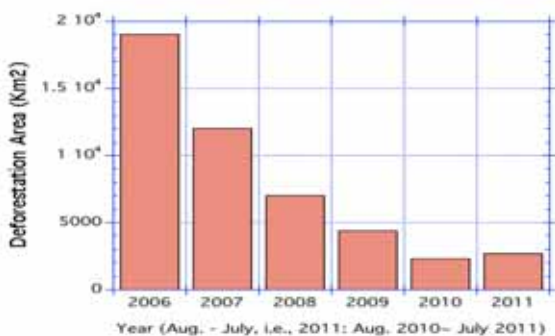
Deforestation Monitoring in Brazil by JERS-1/ALOS



1995 (JERS-1)



2007 (ALOS)



- Application for deforestation monitoring by provision of ALOS/SAR data to IBAMA (Brazilian Institute of Environment and Renewable Natural Resources)
- Contribution to declination of deforestation area in Brazil

Forest cover change in Rondonia, Brazil)

2009 (ALOS/PALSAR)

13 years

1996 (JERS-1/SAR)

