JAXA agency report

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Satellite Applications and Operations Center(SAOC), JAXA

JAXA Activities

Space Transportation

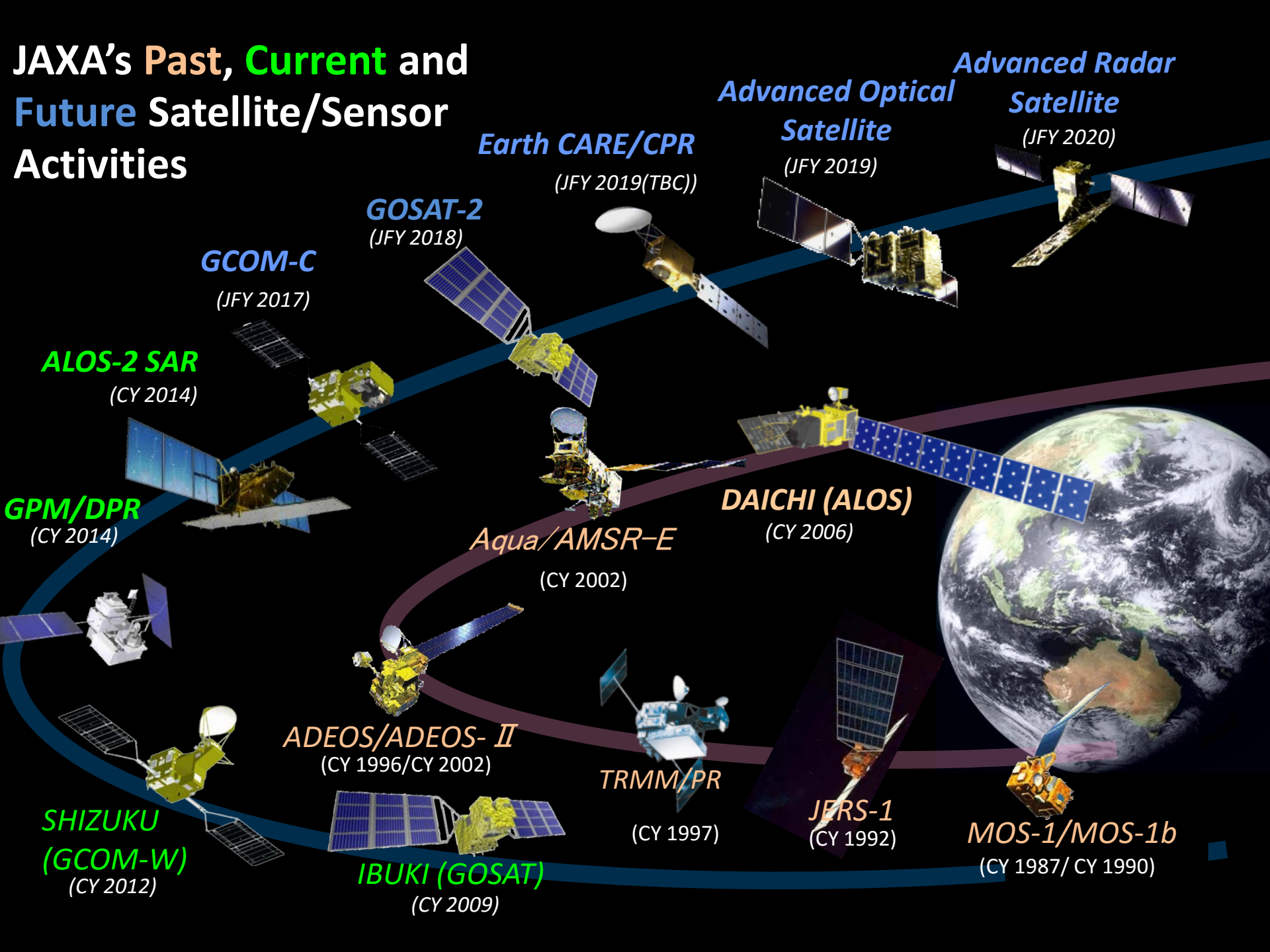
Human Space Activities

Satellite Programs

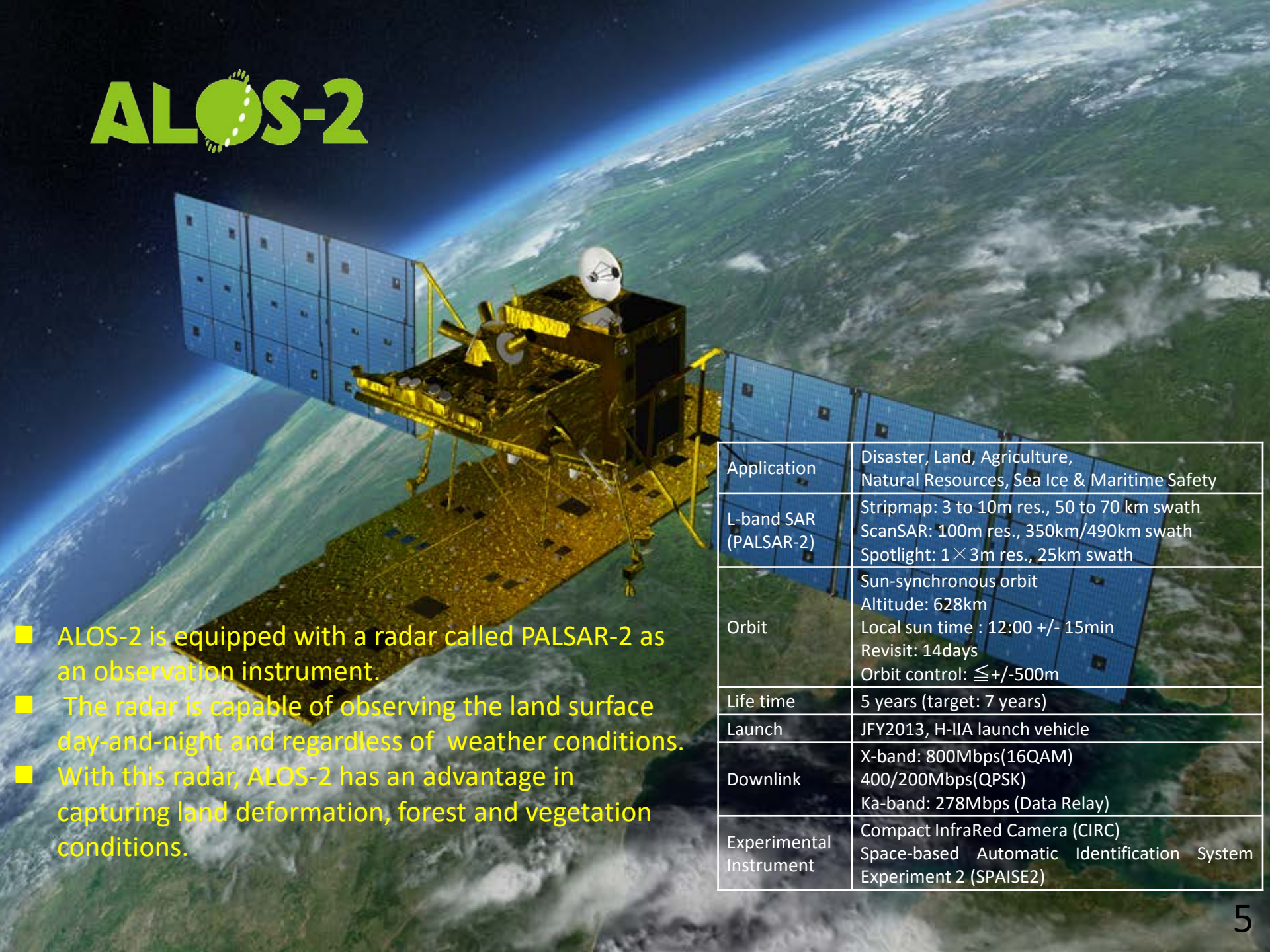
Lunar & Planetary Exploration Programs

Aviation Programs

Space Science


JAXA's Past, Current and Future Satellite/Sensor Activities
Advanced Radar Satellite
(JFY 2020)
Advanced Optical Satellite
(JFY 2019)
Earth CARE/CPR
(JFY 2019(TBC))
GOSAT-2
(JFY 2018)
GCOM-C
(JFY 2017)
ALOS-2 SAR
(CY 2014)
GPM/DPR
(CY 2014)
DAICHI (ALOS)
(CY 2006)
Aqua/AMSR-E
(CY 2002)
ADEOS/ADEOS- Ⅱ
(CY 1996/CY 2002)
TRMM/PR
(CY 1997)
JERS-1
(CY 1992)
MOS-1/MOS-1b
(CY 1987/ CY 1990)
SHIZUKU (GCOM-W)
(CY 2012)
IBUKI (GOSAT)
(CY 2009)

Satellites in Operation



- ALOS-2 is equipped with a radar called PALSAR-2 as an observation instrument.
- The radar is capable of observing the land surface day-and-night and regardless of weather conditions.
- With this radar, ALOS-2 has an advantage in capturing land deformation, forest and vegetation conditions.

Application	Disaster, Land, Agriculture, Natural Resources, Sea Ice & Maritime Safety
L-band SAR (PALSAR-2)	Stripmap: 3 to 10m res., 50 to 70 km swath ScanSAR: 100m res., 350km/490km swath Spotlight: 1×3m res., 25km swath
Orbit	Sun-synchronous orbit Altitude: 628km Local sun time : 12:00 +/- 15min Revisit: 14days Orbit control: ≦+/-500m
Life time	5 years (target: 7 years)
Launch	JFY2013, H-IIA launch vehicle
Downlink	X-band: 800Mbps(16QAM) 400/200Mbps(QPSK) Ka-band: 278Mbps (Data Relay)
Experimental Instrument	Compact InfraRed Camera (CIRC) Space-based Automatic Identification System Experiment 2 (SPAISE2)

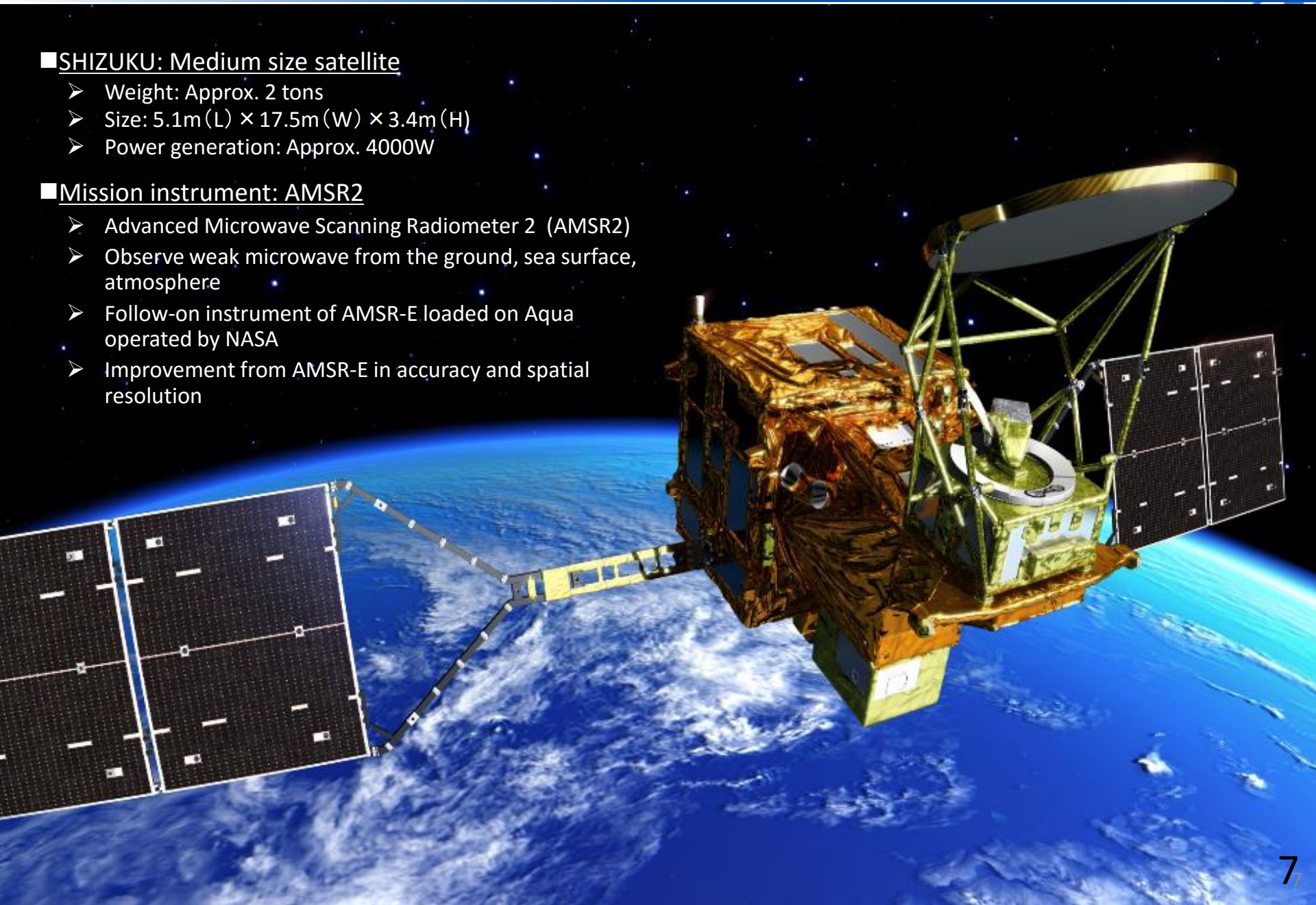
Global Precipitation Measurement Mission (GPM)

GPM is US-Japan space cooperation for monitoring global precipitation. GPM core satellite with DPR was launched on February 28, 2014.

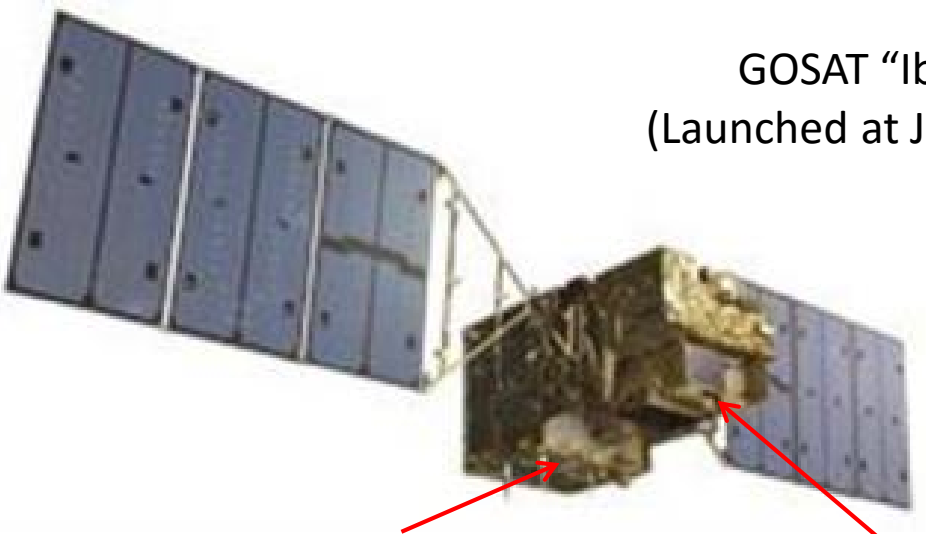
GCOM-W (Global Climate Observation Mission): Water

■SHIZUKU: Medium size satellite
- Weight: Approx. 2 tons
- Size: 5.1m（L）×17.5m（W）×3.4m（H）
- Power generation: Approx. 4000W

■Mission instrument: AMSR2
- Advanced Microwave Scanning Radiometer 2 (AMSR2)
- Observe weak microwave from the ground, sea surface, atmosphere
- Follow-on instrument of AMSR-E loaded on Aqua operated by NASA
- Improvement from AMSR-E in accuracy and spatial resolution



Greenhouse Gases Observing Satellite (GOSAT)



GOSAT “Ibuki”
(Launched at Jan. 2009）

CAI
(Cloud and Aerosol Imager)

FTS
(Fourier Transform Spectrometer)

- Measure global distribution of GHGs, and understand how their emission is reduced.
- The only operation satellite for monitoring CO_2 and methane from space

Future Missions

GCOM-C: Climate

GCOM-C SGLI Characteristics (Current Baseline)	
Orbit	Sun-synchronous (local time: 10:30) Altitude: 798km Inclination: 98.6 deg.
Launch	2017
Power/Mass	About 4kw/798kg
Mission Life	5 years
Scanning	Push-broom electric scanning Wisk-broom mechanical scanning
Digitalization	12 bit
Polarization	3 Polarizations angles
Sensor	SGLI (Second Generation Land Imager) Band: 380nm～12μm (19 bands) Resolution: 250m～1km Swath: 1150～1400km

- Multi-band Imaging Radiometer (Near UV ~ TIR)
- Polarimetry
- Tilt Observation

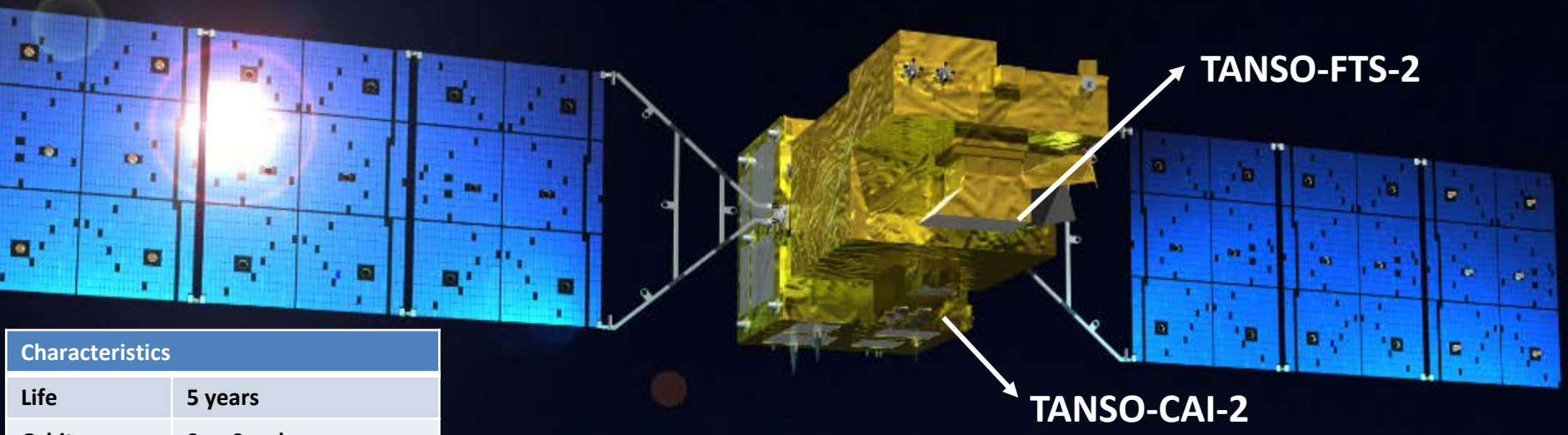
Earth Cloud, Aerosol and Radiation Explorer (EarthCARE)

To reduce the uncertainties in global warming prediction by measuring the three dimensional structure of clouds and aerosols, which are most uncertain parameter in the numerical climate models.

Characteristics	
Life	3 years
Orbit	Sun-Synchronous (around 400km)
Mass/Power	About 2.2 t/ about 3.4 kw
Launch	FY 2019 (TBC)
Instruments	CPR: Cloud Profiling Radar (JAXA/NICT) ATLID: Atmospheric Lidar (ESA) MSI: Multi-Spectral Imager (ESA) BBR: Broadband Radiometer (ESA) Satellite bus: Airbus DS Satellite launch: ESA

CPR (Cloud Profile Radar)

GOSAT-2



Characteristics	
Life	**5 years**
Orbit	**Sun-Synchronous (628km)**
Mass	**About 2 t**
Launch	**FY 2018**
Observation Valuables	**CO2, CH4 and CO** **Accuracy: 0.5 ppm (CO2) and 5 ppb (CH4) at 500-km mesh over earth's surface**

TANSO-FTS-2

	Band 1	Band 2	Band 3	Band 4	Band 5
Target Gases	O_2	CO_2, H_20	CO_2, CH_4, CO, H_20		
Spectral Coverage (μm)	0.75-0.77	1.56-1.69	1.92-2.33	5.5-8.4	8.4-14.3
Spectral Coverage (cm-1)	12,950 - 13,250	5,900 - 6,400	4,200 - 5,200	1,188 - 1,800	700 - 1,188
Spectral Resolution	0.2 cm^{-1}				
Exposure	4 sec				
IFOV	9.7 km				
Pointing	±40 deg. (Along track), ±35 deg. (Cross track)				
Polarimetry	Yes (P and S channels)			No	

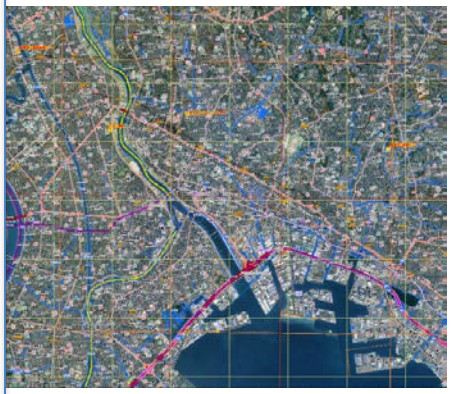
TANSO-CAI-2

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Spectral Band (nm)	333 - 353	433 - 453	664 - 684	859 - 879	1585 - 1675	370 - 390	540 - 560	664 - 684	859 - 879	1585 - 1675
Tilt	+20 deg. (Forward viewing)					-20 deg. (Backward viewing)				
Spatial Resolution	460 m				920m	460 m				920m
Swath	920 km									

ALOS successors: Advanced Optical Satellite and Radar Satellite

Advanced Optical Satellite

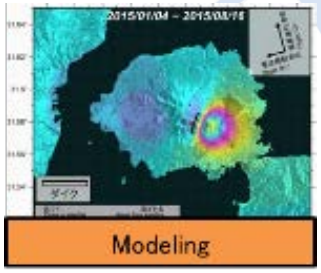
Hazard Map

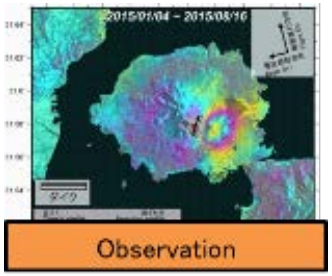


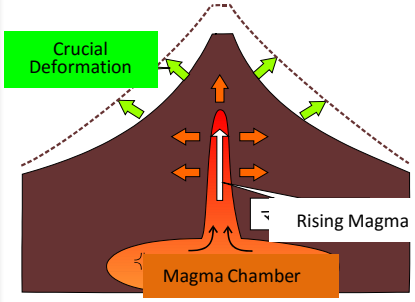
High Precision 1/25,000 Map (C) GSI

Characteristics	
Life	7 years
Orbit	Sun-Synchronous (670km)
Mass	About 2.7 t
Launch	FY 2019
Resolution	Panchromatic : 0.8m (swath: 70km) Multi: 3.2m (swath: 70km)

Advanced Radar Satellite







Estimate situation of magma chamber under the ground and faulting

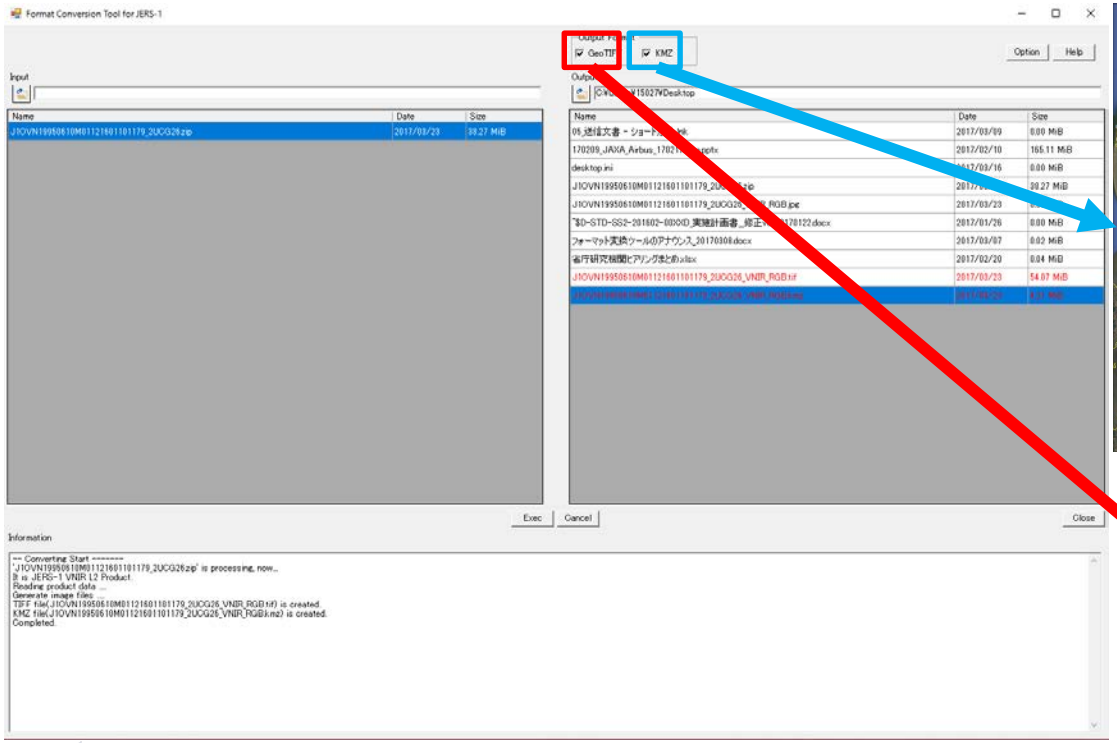
Take a decision for evacuation

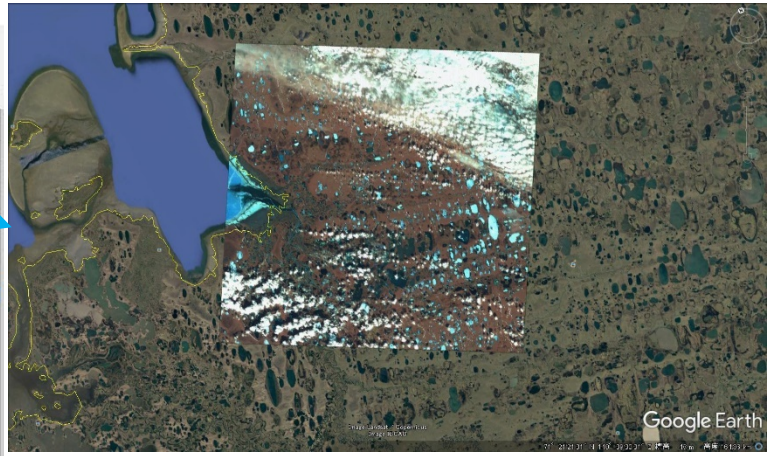
Characteristics	
Life	7 years
Orbit	Sun-Synchronous (628km)
Mass	About 3 t
Launch	FY 2020
Resolution	Spotlight 1 × 3 m (swath: 35km) Strip map 3/6/10m (swath: 200km) ScanSAR 25m (swath: 700km)

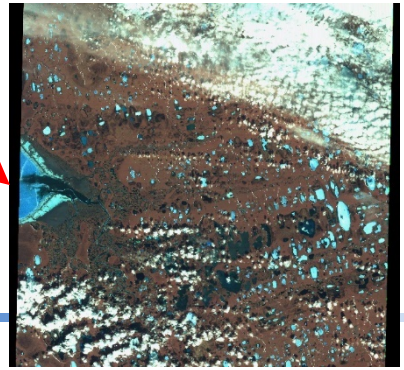
SAOC activities

Format conversion tool

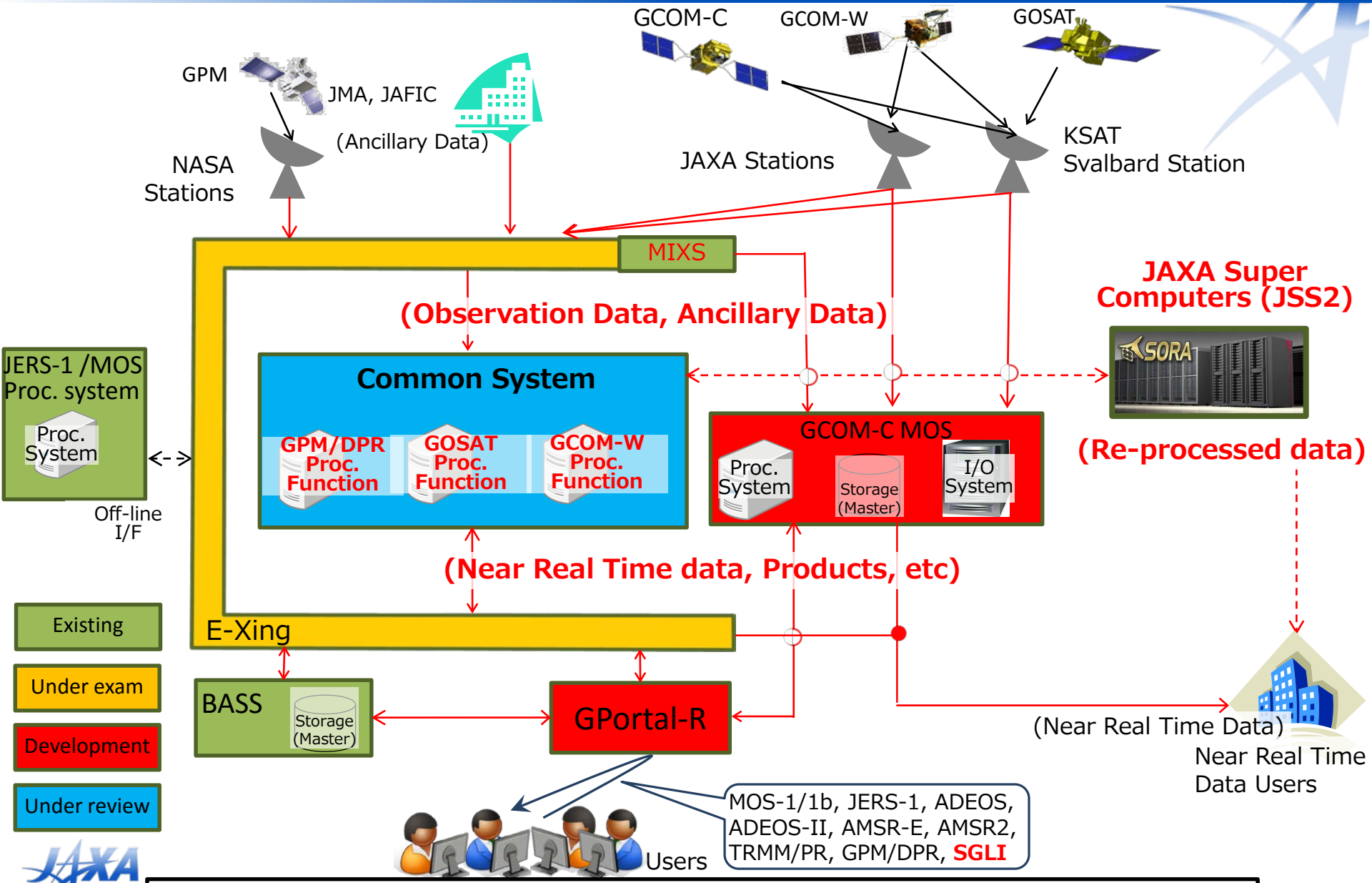
- The format conversion tool was released from G-Portal（JAXA's data distribution system）
- JERS-1 SAR level 2.1, OPS VNIR level2, and OPS SWIR level2
  CEOS format can be converted to GeoTIFF or KMZ format.
- GPM/DPR,GSMaP,GCOM-W,JASMES
  HDF5/HDF4/Binary format can be converted to GeoTIFF or KMZ format.
  (GCOM-W(HDF5) can be converted to NetCDF format since version 2.0.)
- You can download this tool from https://www.gportal.jaxa.jp/gp/tool.html.







System development status (Including future plans)



E-XING, GPortal-R and GCOM-C MOS are planed to be in operation this JFY.

Notification

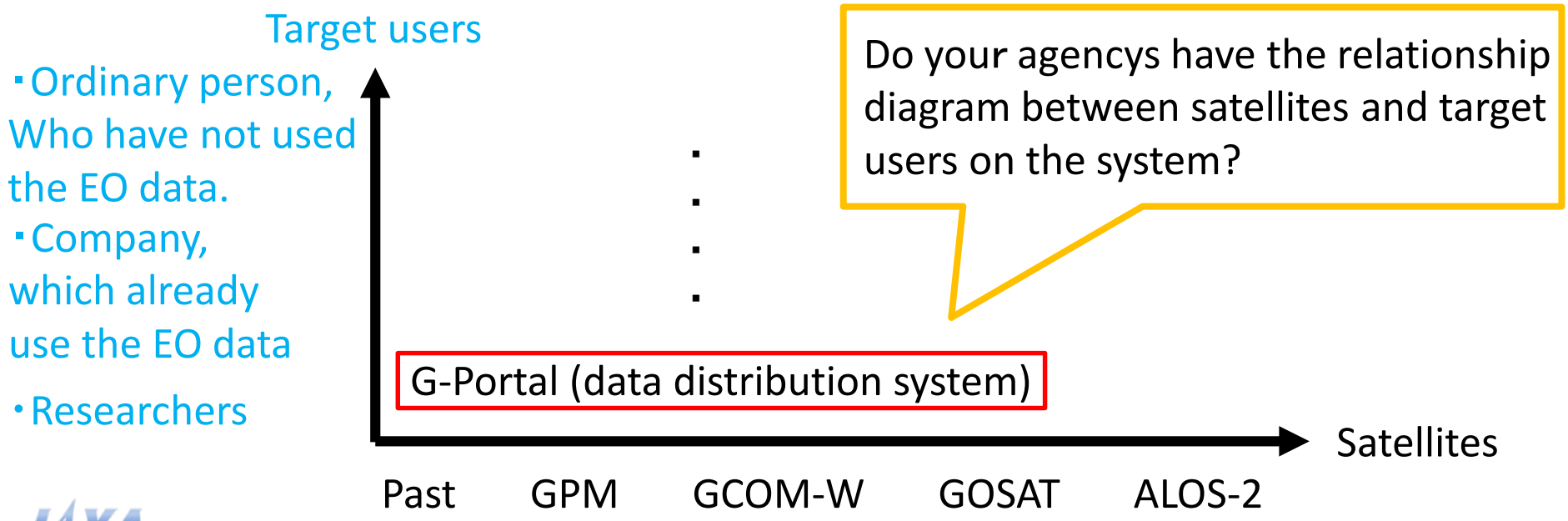
■JAXA mailing list's domain have be changed.

rd-mos@jaxa.jp ⇒ rd-mos@ml.jaxa.jp

It includes Makoto NATSUISAKA (New member), Yosuke IKEHATA, and me.

■We are considering future system development.

- Data transmission problem
- Large volume data
- User's service




Thank you for your attention.