



日本・アジア青少年サイエンス交流事業  
**さくらサイエンスプラン**  
Japan-Asia Youth Exchange Program in Science



**HATOYAMA**

**October 24, 2019**



**RESTEC**

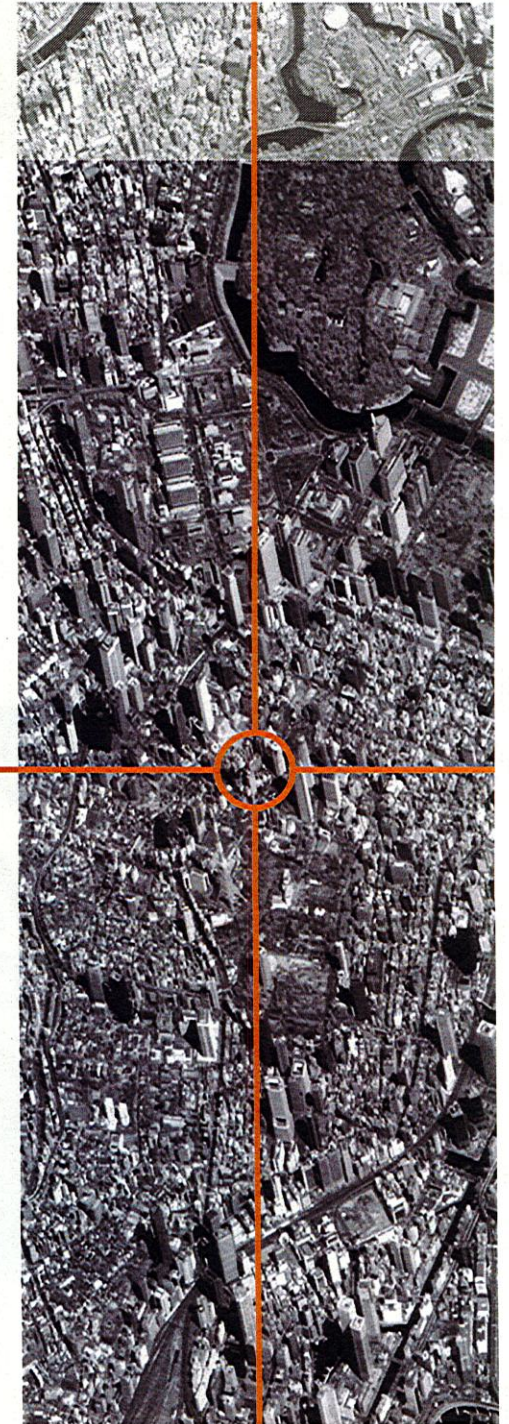
OCTOPSL 34' 30' 12"

# Japan Aerospace eXploration Agency /Earth Observation Center

## Overview

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Oct. 2019  
Remote Sensing Technology Center of Japan  
Hatoyama Station

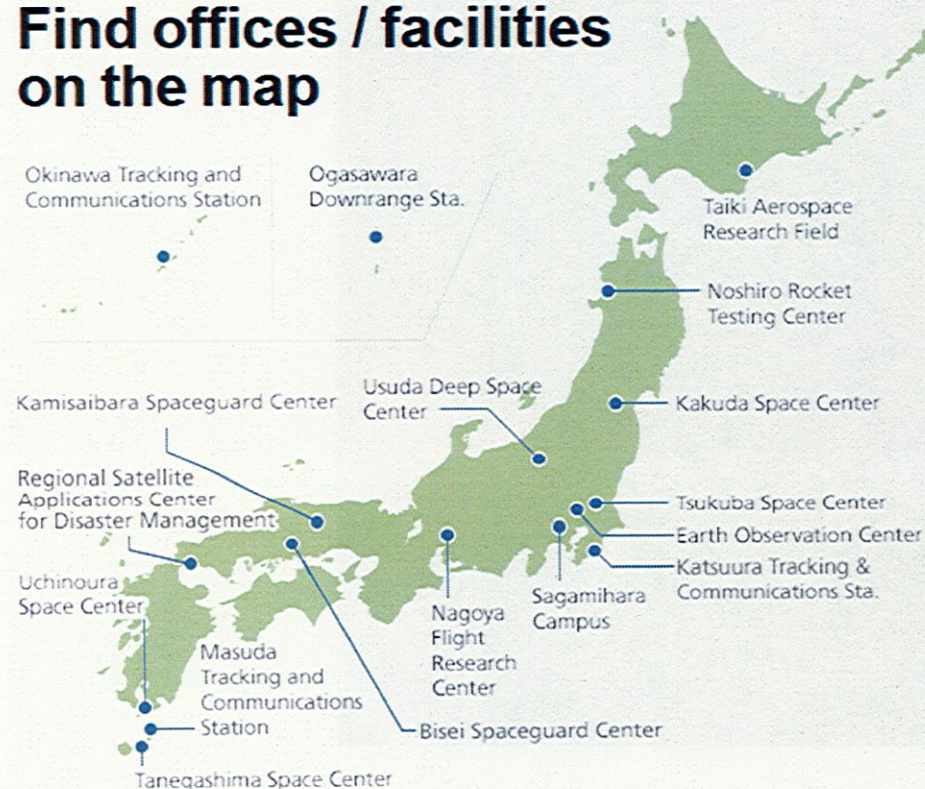




# EOC, Earth Observation Center

JAXA(Japan Aerospace Exploration Agency) = Space Agency of Japan  
EOC(Earth Observation Center) = One of the JAXA's facilities, ground stations

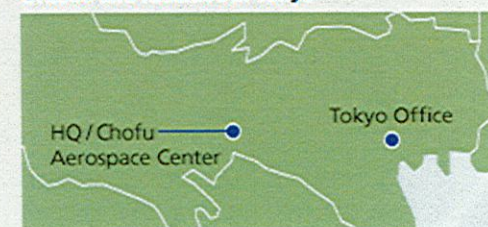
## Find offices / facilities on the map



## Overseas offices / facilities

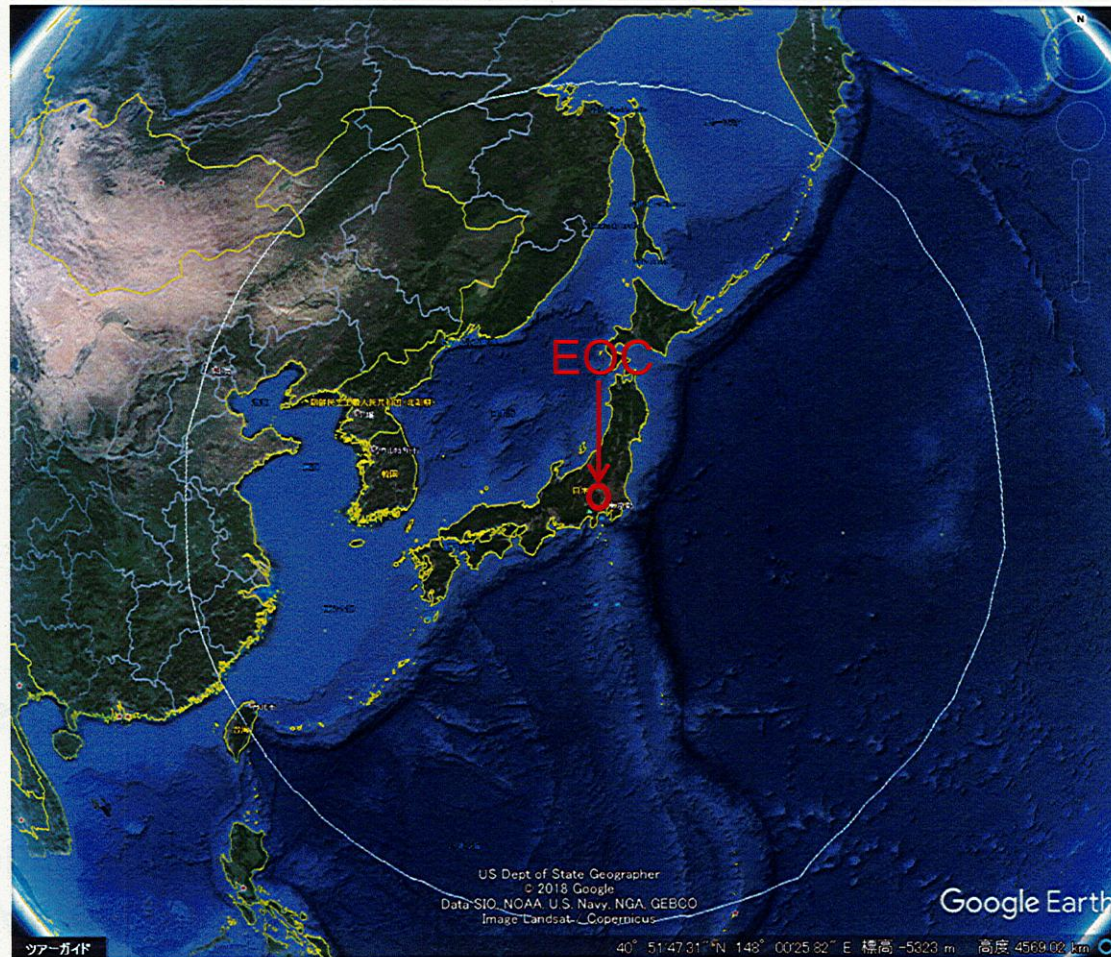


## Offices and facilities in Tokyo





# Location of the Earth Observation Center, EOC





# Location of the Earth Observation Center, EOC





# Earth Observation Center, EOC



a) Antenna No.3 b) JDRS antenna for Optical data-relay satellite c) Operation building No.1  
d) Operation building No.2 e) Main building f) Regulation pond g) Electric Power building

\* Antenna No.1 and No.2 had already removed.

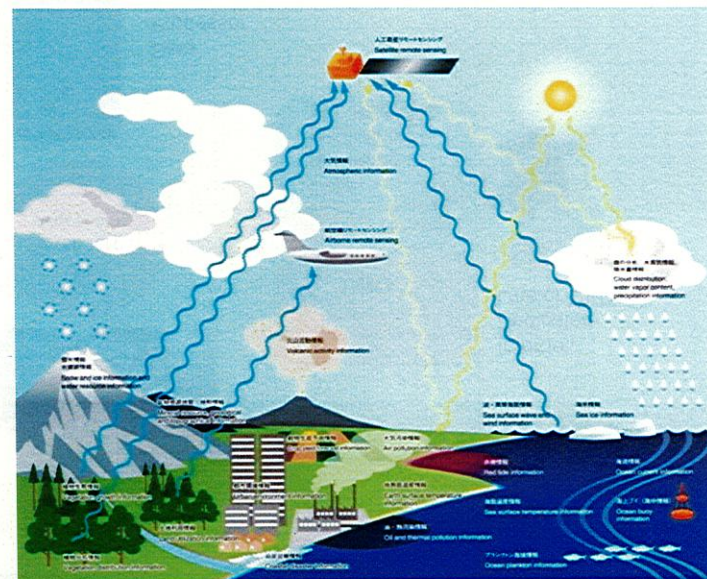
Total site area : 110,000m<sup>2</sup>  
Visitors: 15,000 visitors/year



# About Earth observation

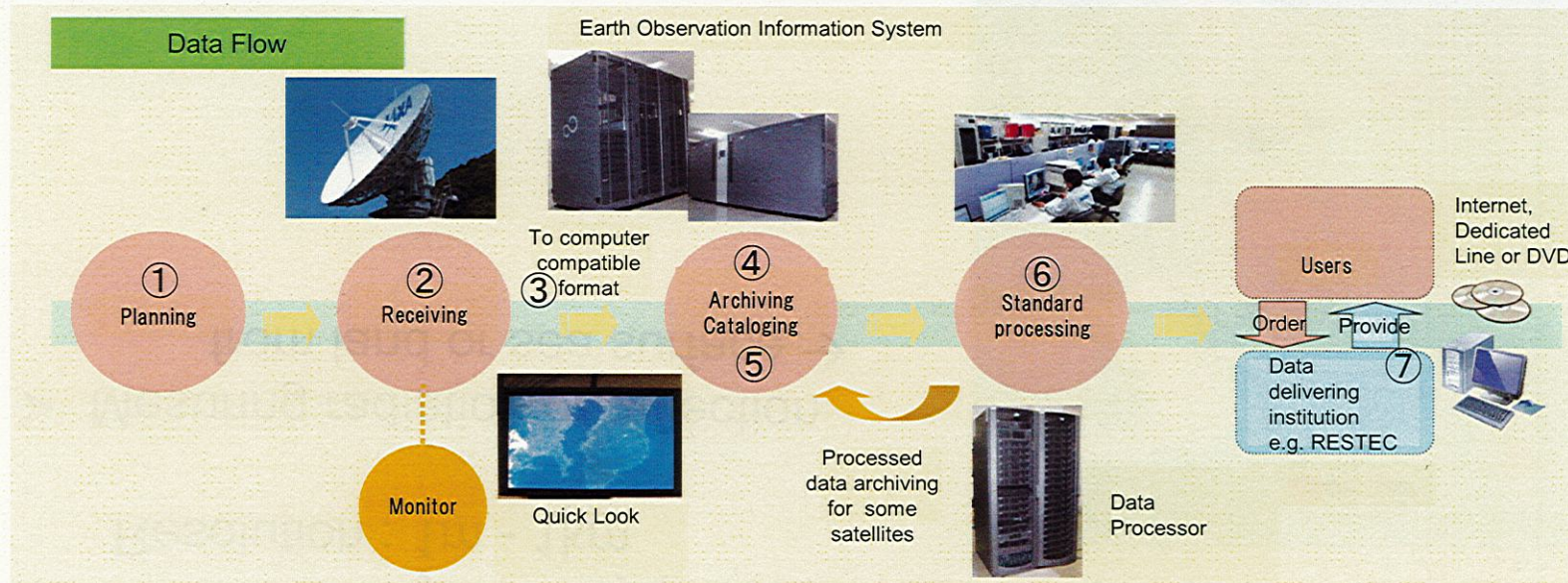
**to monitor various natural phenomena from space :**

- Using Earth Observation Satellites
  - Altitude : 600km - 800km, cf. : Geostationary sat. 36,000km
  - Orbit : Polar orbit
  - 14 - 15 cycles/day (90min – 100min/cycle)
  - Resolution : 1m - 1km
- Measuring radiation or reflection from land or sea surface →





# Ground systems Operation @ EOC



EOC used to have all the above functions until ALOS-1 operation days. Tsukuba space center now has the functions, e.g. data archiving, data processing and/or providing data for ALOS-2 and GCOM-C etc. JAXA plans to install all the functions in EOC's systems again for the next generations high resolution satellites like ALOS series, and still continue to have the same ones at TKSC for the satellites on-board global sensors like GCOM series etc.



### Earth Observation Center's role : (ground systems for earth observation satellites)

- ① Mission operation **planning**
- ② Mission data **receiving** from Earth Observation Satellites
- ③ Making level 0(zero) data
  - ☞ To transform radio waves into **computer compatible data**
- ④ **Archiving** level 0 data
- ⑤ **Cataloging**
- ⑥ **Standard processing** (level 1 processing)
  - ☞ Radiometric corrections and geometric corrections
- ⑦ **Providing** level 1 data
- ⑧ Maintain sub-systems and networks



### The data by Earth Observation satellites are utilized to monitor :

- ① Disaster and Crisis Management  
Early understanding of natural hazards  
Forest fire, Typhoon, Flood, Avalanche, Earthquake and Eruption
- ② Investigation of Earth Resources  
Efficiently understanding of earth resources  
Forest Resources, Ocean Resources, Crops and Vegetation
- ③ Monitoring Global Environment  
Detect and utilize global phenomenon in daily life  
Ozone hole, El Nino, Yellow Dust, Sea Ice/Pack Ice, Heat Wave, Marine Pollution, Rainfall, Soil Wetness and Geography



## History

The following data were received, archived, processed and/or Distributed.

Established on Oct., 1978. (40 years)

☞ received Landsat data

MOS-1 was launched on Feb., 1987 (30 years)

☞ the first Japanese earth observation satellite

MOS-1b was launched on Feb., 1990

☞ tandem operation with MOS-1

JERS-1 was launched on Feb., 1992

☞ global data were acquired by using on-board recorder

ADEOS was launched on Aug., 1996

☞ JAXA's sensors and other agency's sensors including NASA's and CNES'

TRMM was launched on Nov., 1997

☞ JAXA's sensor, PR, was carried on NASA's satellite

Aqua was launched on May, 2002

☞ JAXA's sensor, AMSR-E, was carried on NASA's satellite

ADEOS-II was launched on Dec., 2002

☞ JAXA's sensors and other agency's sensors including NASA's and CNES'

ALOS was launched on Jan., 2006

GOSAT was launched on Jan., 2009

ALOS-2 was launched on May, 2014

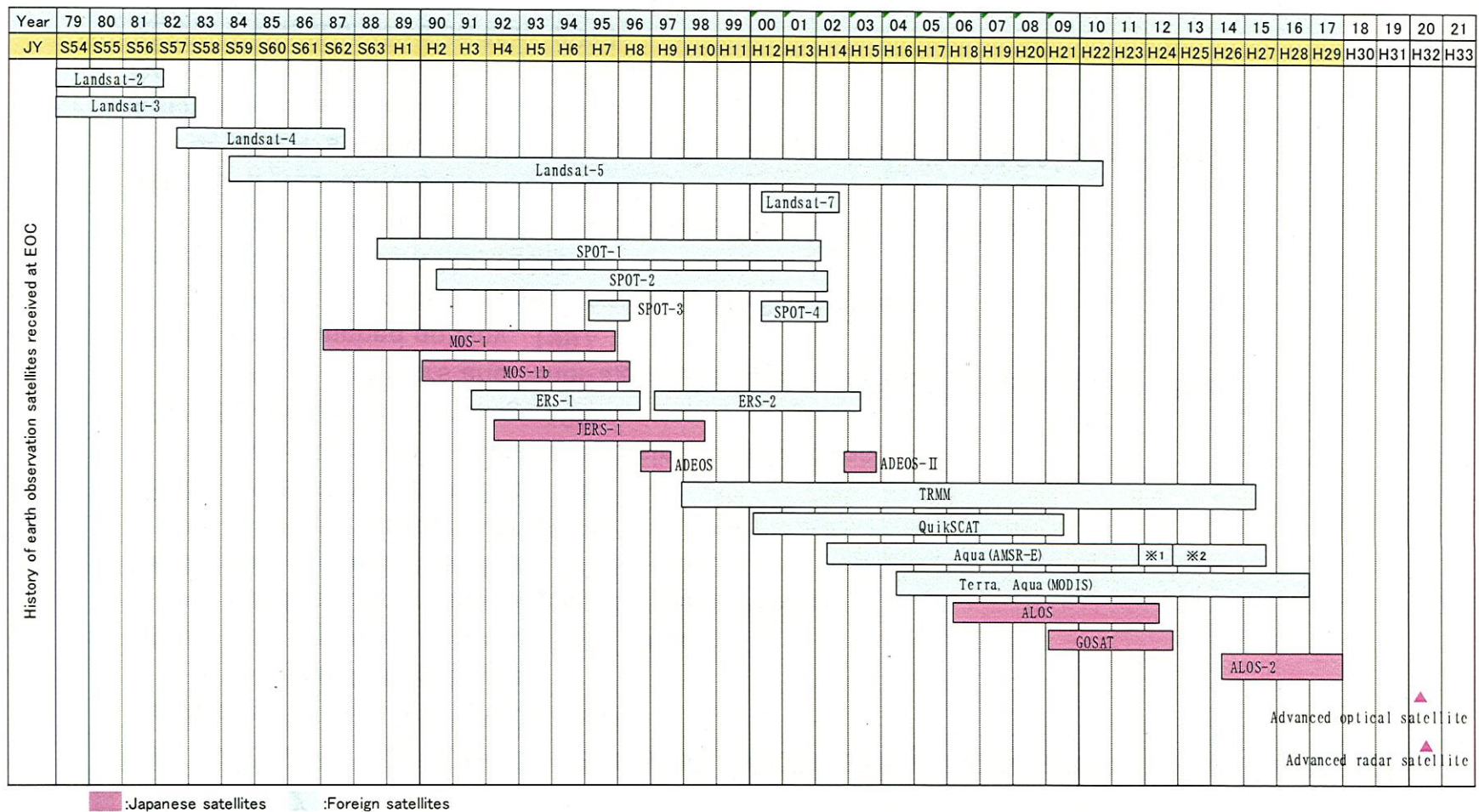
GCOM-C was launched on Dec., 2017

GOSAT-2 was launched on Oct. 29, 2018

☞ JAXA plan to launch next generation earth observation satellites within a couple of years



# EOC history





# Contribution to the SDGs

– by the earth observation satellites with regularity



JAXA will contribute to the SDGs by using the earth observation satellites.

- Monitoring of Asia Pacific disasters **Sentinel Asia**
- JICA-JAXA Tropical Forest Early Warning System **JJ-FAST**
- Flood forecasting warning **GSMaP**
- Predicting food harvest using satellite data **JASMIN system**
- Air pollution monitoring using **Himawari** satellite



# International Disaster Charter

– by the earth observation satellites in emergency

JAXA join the International Disaster Charter which the space agencies of countries that operate the earth observation satellites.

- Forest fire
- Typhoon
- Flood
- Avalanche
- Earthquake, Tsunami
- Volcanic eruption

When a disaster occurs, earth observation data are used for comparing the images before and after the disaster to estimate the magnitude of the disaster