WELCOME
HATOYAMA
October 24, 2019
Japan Aerospace eXploration Agency
Earth Observation Center

Overview

Oct. 2019
Remote Sensing Technology Center of Japan
Hatoyama Station
JAXA (Japan Aerospace Exploration Agency) = Space Agency of Japan
EOC (Earth Observation Center) = One of the JAXA's facilities, ground stations
Location of the Earth Observation Center, EOC
Location of the Earth Observation Center, EOC

About 50km north-west of Tokyo
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: 110,000 m²
Visitors: 15,000 visitors/year
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 →
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
JAXA will contribute to the SDGs by using the earth observation satellites.

- Monitoring of Asia Pacific disasters
- JICA-JAXA Tropical Forest Early Warning System
- Flood forecasting warning
- Predicting food harvest using satellite data
- Air pollution monitoring using Himawari satellite
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.