



# ***JAXA's Activities for Disaster Management Support***

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Japan Aerospace Exploration Agency (JAXA)**

# JAXA Vision

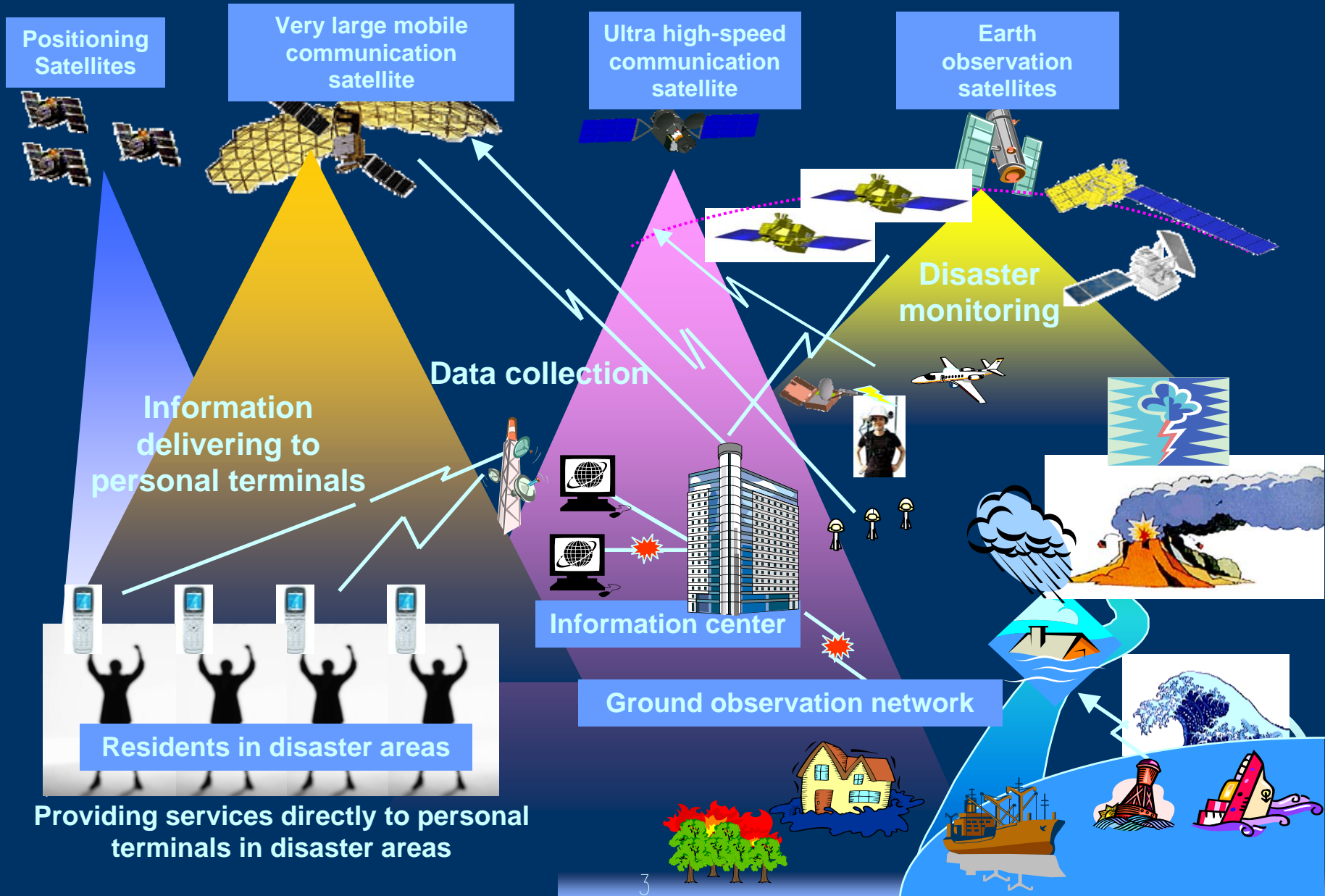
## - JAXA 2025 -

### Space exploration and utilization for the next 20 years

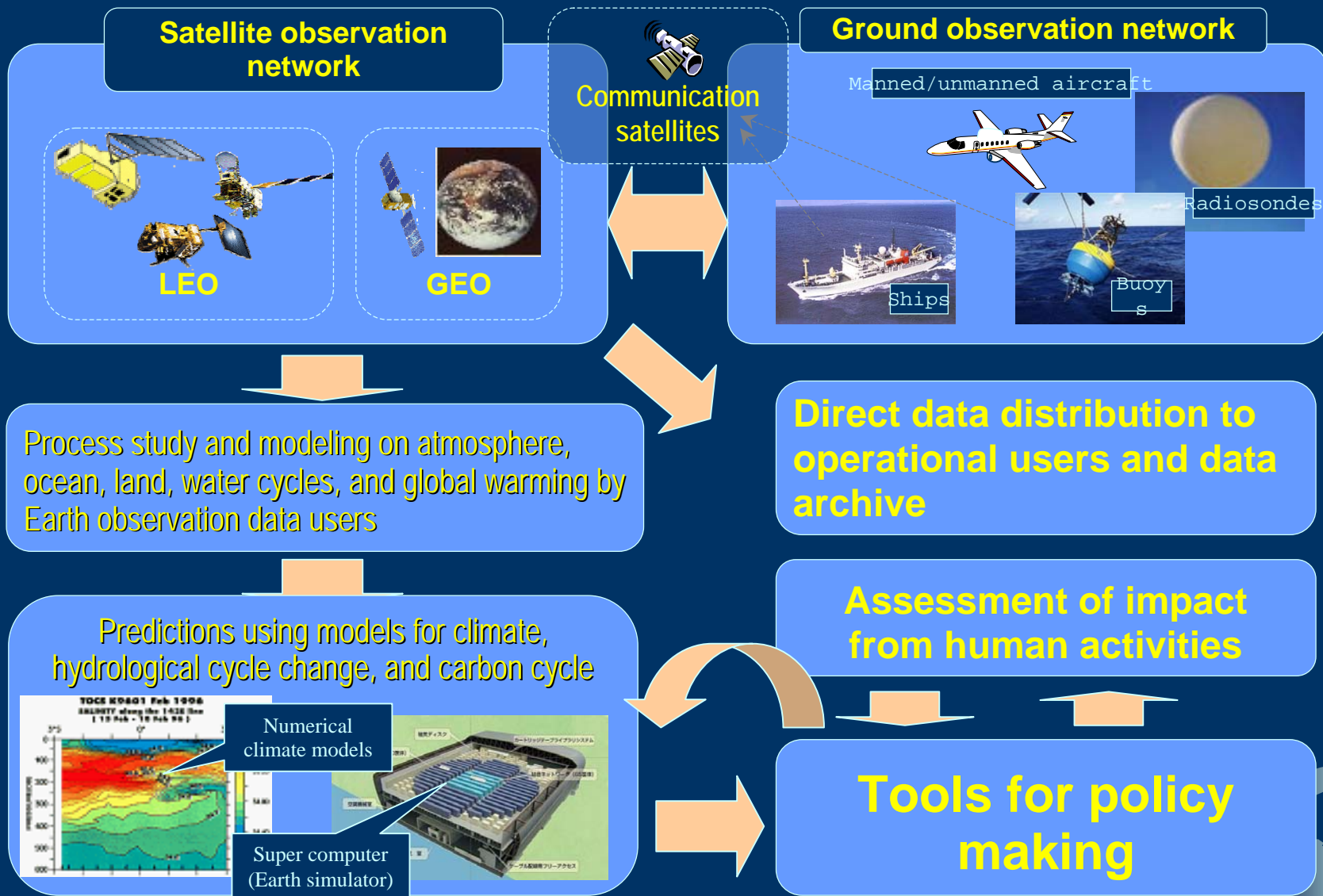
- ✓ Develop launch vehicles and satellites with the highest reliability and world class capability, contributing to **the realization of a secure and prosperous society**.
- ✓ Promote “top science” in the field of space science while preparing for Japan’s own human space activities and the utilization of the Moon.
- ✓ Conduct flight demonstration of a prototype hypersonic vehicle with the cruising speed at Mach 5.
- ✓ With all of the above activities, contribute to turning the aerospace industry into a key industry.



# Information Gathering and Warning System for Disaster and Crisis Management

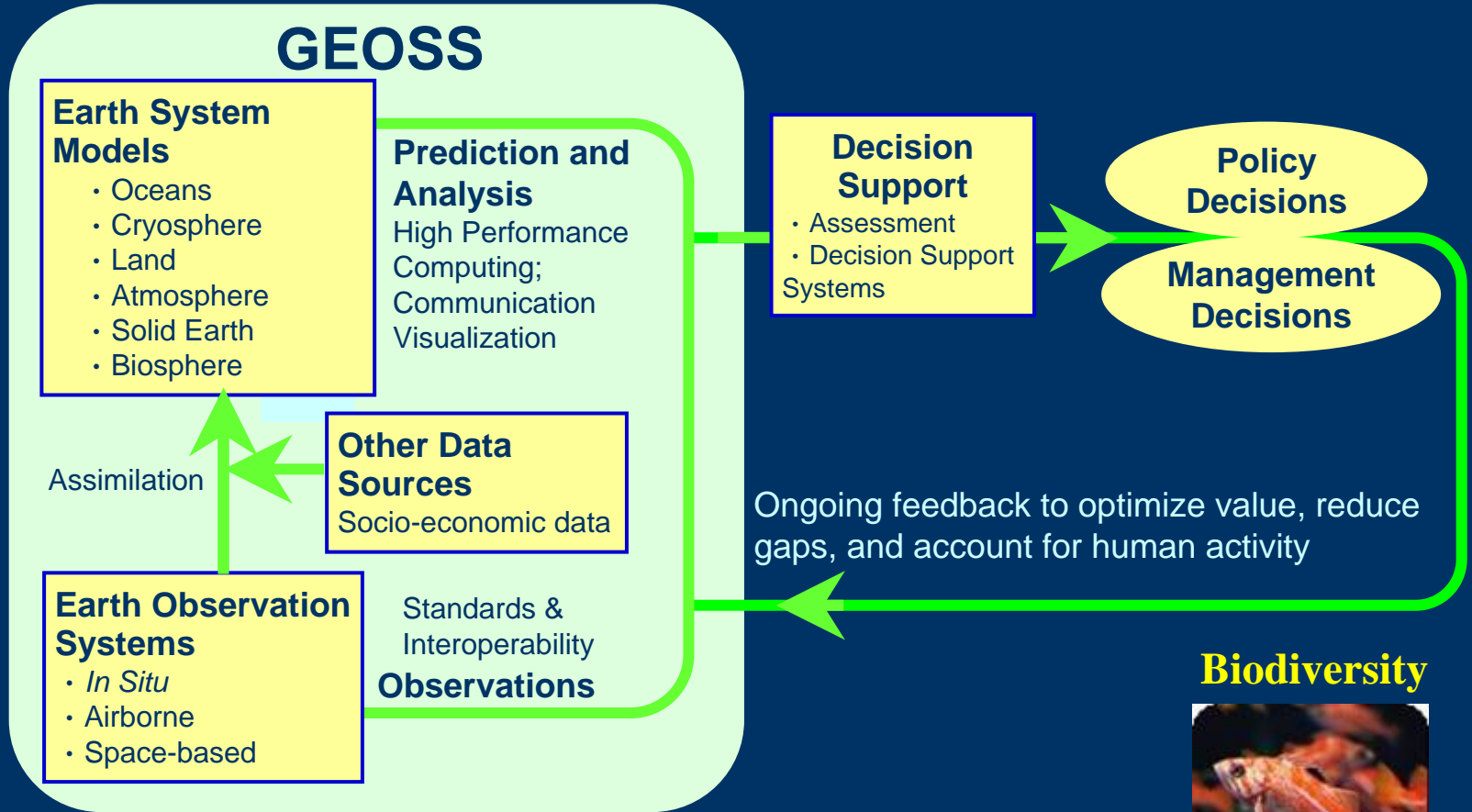


# Integrated Global Environmental Observing System for Environmental Observations and Predictions

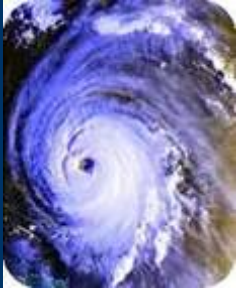


# GEOSS

## (Global Earth Observation System of Systems)



### Disasters



### Biodiversity



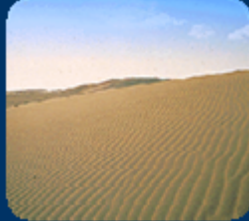
## 9 Societal Benefit Areas



Health



Energy



Climate



Water



Weather



Ecosystems



Agriculture

# The Long Term Plan of JAXA Earth Observation for GEOSS

Japanese Contribution Field	Observation Parameter	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Reduction and Prevention of Disasters	Land Change, Volcanic Ash Fall, Flood Area, etc.	<b>Terra/ASTER</b>																
	Crustal Movements Amount, Biomass, Flood Area, etc.				<b>ALOS / PRISM, AVNIR-2</b>													
Climate Change including Water Cycle Variation	3D structure of Precipitation, Soil Moisture, etc.	<b>TRMM/PR</b>																
	Precipitation, Water Vapor, Sea Surface Temperature, etc.																	
	Sea Surface Wind Vector, etc.																	
	Cloud Optical Thickness, Aerosol Optical Thickness, Land Biomass, etc.																	
	3D structure of Cloud and Aerosol, etc.																	
Global Warming and Carbon Cycle Change	Carbon Dioxide(CO <sub>2</sub> ), Methane(CH <sub>4</sub> ), etc.																	

Approved Project
  Planned Project
  GEOSS 10-Year Implementation Period

Legends: Satellite name/Sensor name      Japanese Satellite/Japanese Sensor, Foreign satellite/Foreign Sensor

# Advanced Land Observing Satellite (ALOS, “*Daichi*”)

Japanese Earth  
Resources Satellite-1  
(**JERS-1**)

Advanced Earth  
Observing Satellite  
(**ADEOS**)

Enhanced land-observation technology



- Disaster monitoring
- Cartography
- Regional observation
- Resources surveying



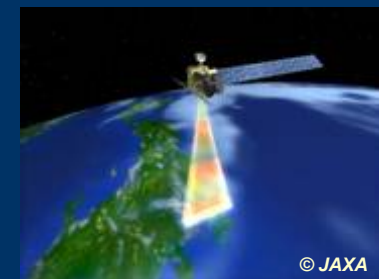
## PRISM

Panchromatic Remote  
sensing Instrument for  
Stereo Mapping



## PALSAR

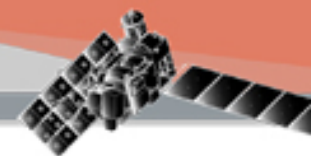
Phased Array type L-band  
Synthetic Aperture Radar



## AVNIR-2

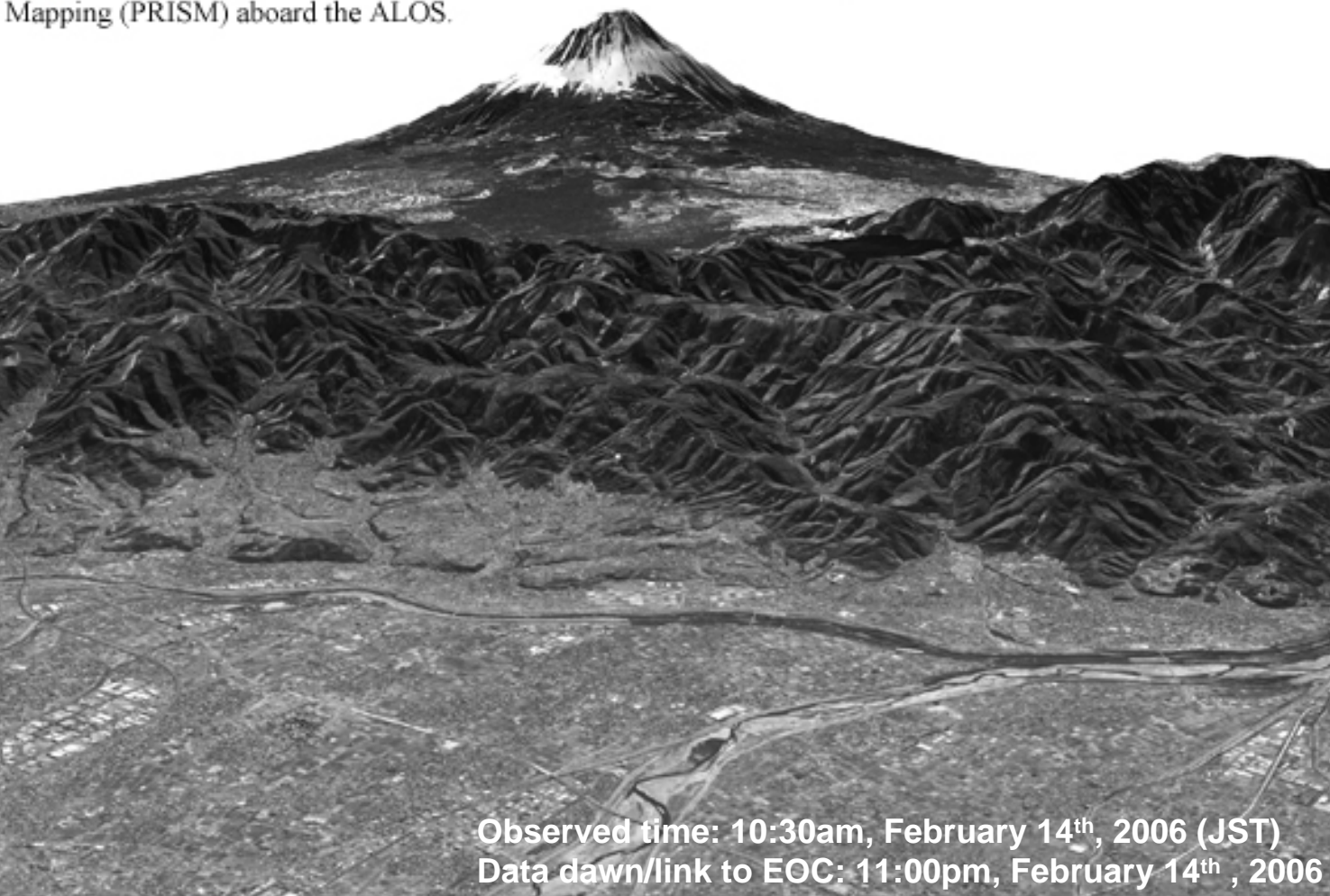
Advanced Visible and Near  
Infrared Radiometer type 2



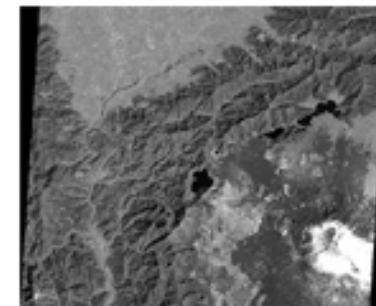


# 陸域観測技術衛星「だいち」(ALOS)パナクロマチック立体視センサ(PRISM)が観測した富士山

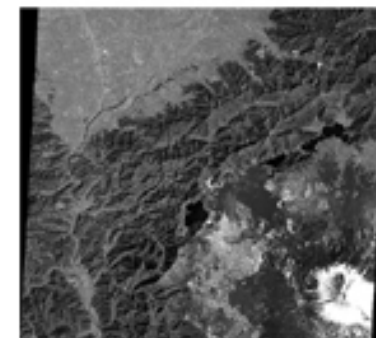
View of Mt. Fuji, Japan observed by the Panchromatic Remote-sensing Instrument for Stereo Mapping (PRISM) aboard the ALOS.



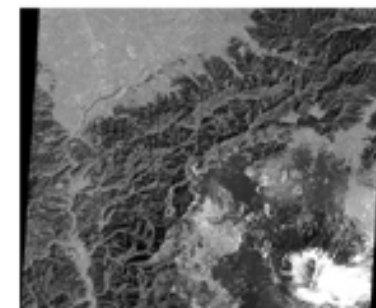
Observed time: 10:30am, February 14<sup>th</sup>, 2006 (JST)  
Data dawn/link to EOC: 11:00pm, February 14<sup>th</sup>, 2006



後方視画像



直下視画像

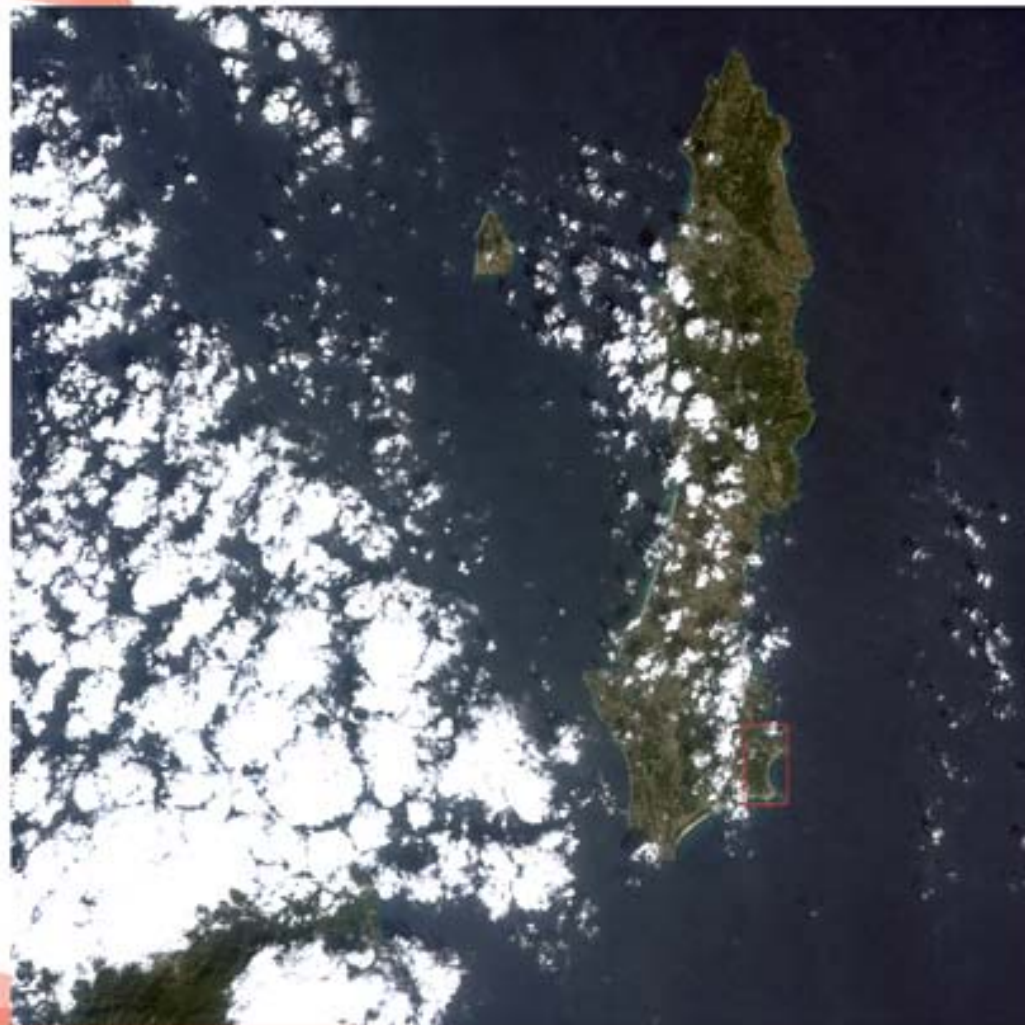


前方視画像





陸域観測技術衛星「だいち」(ALOS)高性能可視近赤外放射計2型(AVNIR-2)が観測した種子島  
View of Tanegashima Island, Kagoshima Pref., Japan observed by the Advanced Visible and Near Infrared Radiometer type 2 (AVNIR-2) aboard ALOS



- ①大型ロケット発射台
- ②種子島灯台
- ③総合指令棟
- ④竹崎展望台

Observation and D/L: 10:50am, February 17<sup>th</sup>, 2006 (JST)

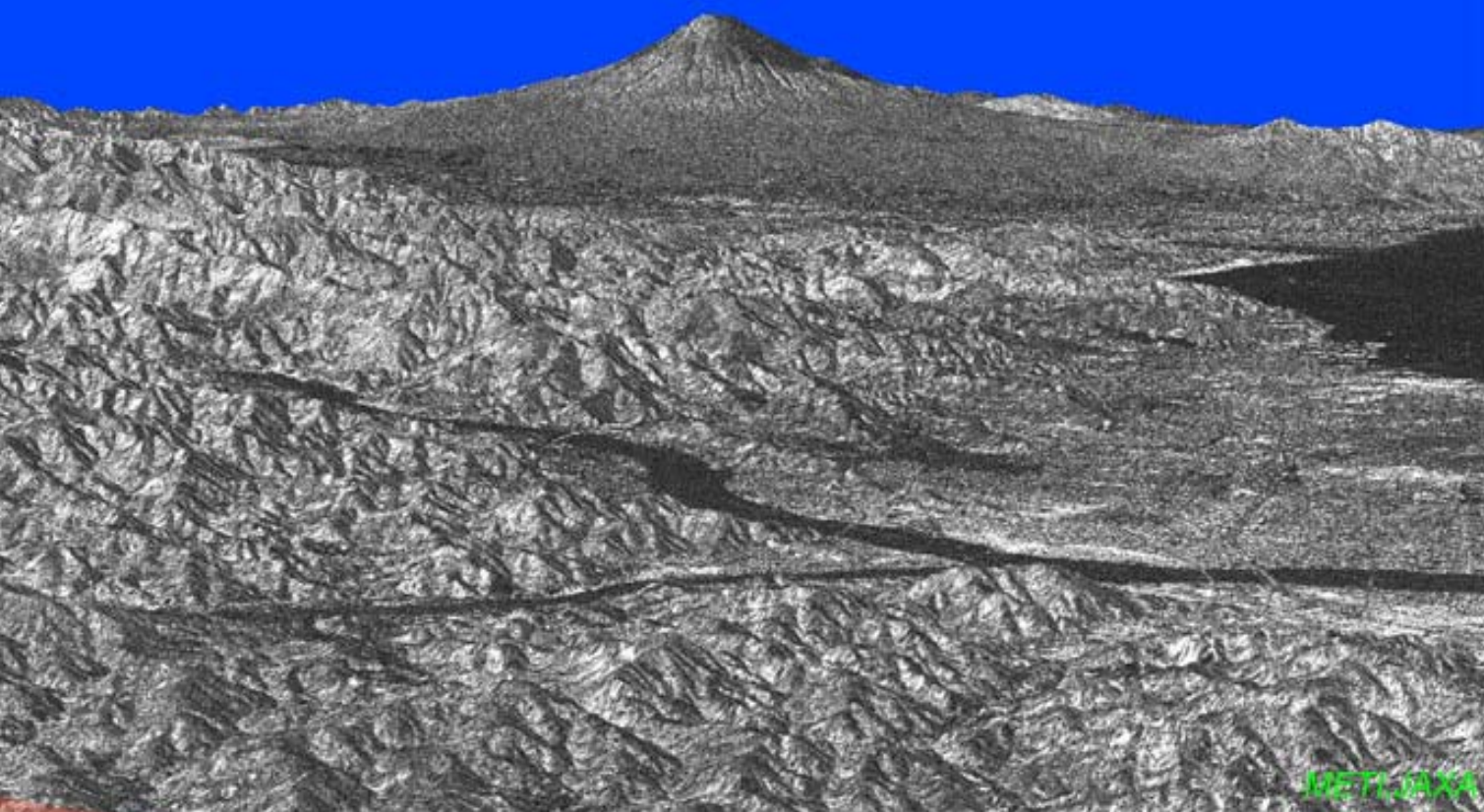
2006年2月17日観測 ©JAXA



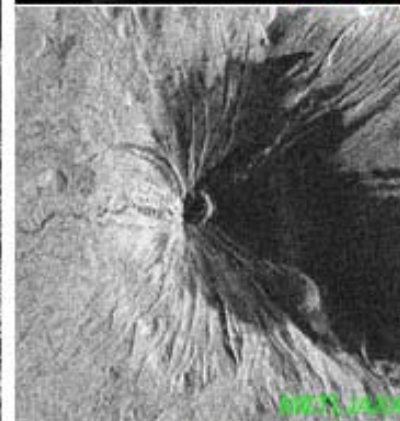
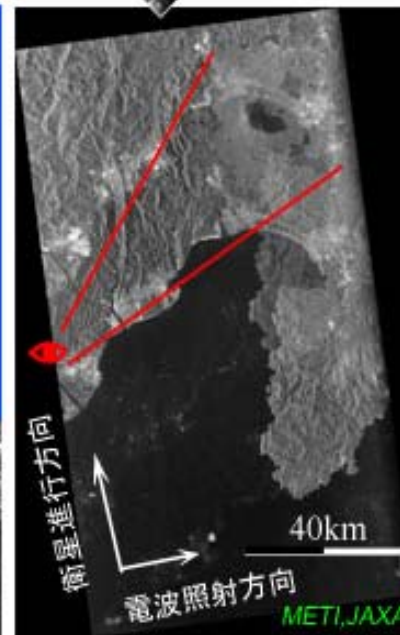


# PALSARが観測した夜間の富士山

PALSAR Night View of Mt. Fuji



PALSARが観測した富士山の鳥瞰図



富士山

# ALOS Rapid Response for Disaster Management



**Disaster!**

Request Image/Data



**Asian Countries**  
Disaster Management Organizations

**ADRC**  
Asian Disaster Reduction Center  
Accept Order from Member Countries



WINDS/  
ETS-8

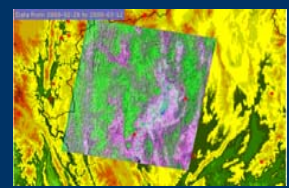


ALOS

Notify



ADRC



Distribute Image/Data



**JAXA**  
Develop a plan of Action

**Partner Agencies**  
to support Asian Countries

Notify

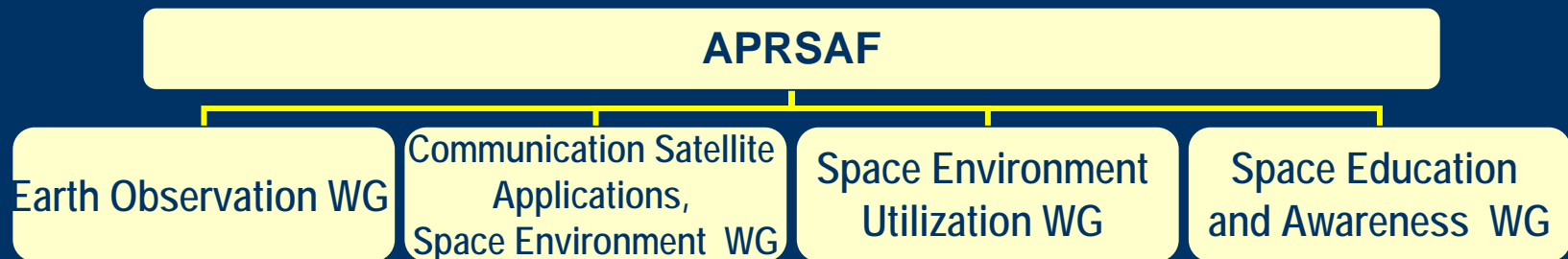
Discussion with ADRC, UN-ESCAP, APRSAF members



# Knowledge Sharing & Int'l Cooperation

## The Asia-Pacific Regional Space Agency Forum (APRSAF)

APRSAF is an annual meeting initiated jointly by MEXT/JAXA, and a co-host country to discuss current space-related issues faced by member countries.



- Established in 1993
- Objective : to enhance the development of each country's space program and to exchange views toward the future cooperation in space activities in the Asia-Pacific region

[Members]  
26 countries  
+ 8 International Organizations

### **APRSAF-12, October 2005, Fukuoka, Japan**

***Agreed to establish a joint project team for "Sentinel-Asia", a pilot project to develop a satellite information distribution network for Disaster Management of Asia-Pacific.***

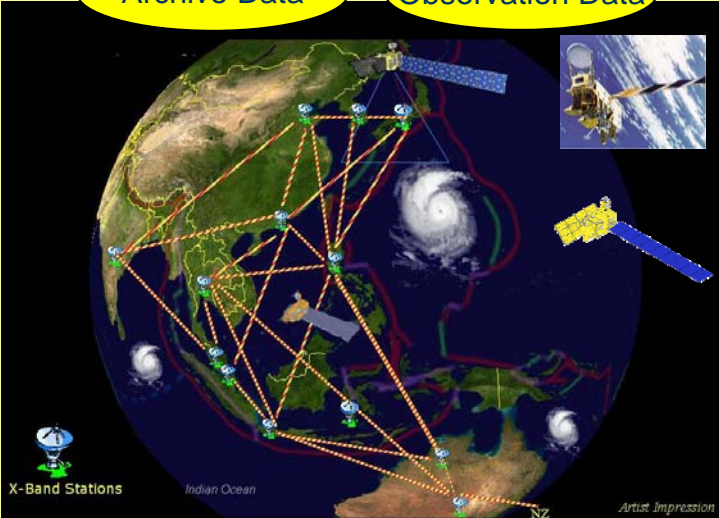


# STEP 1: Establishment of Sentinel Asia (2006 - 2007)

## Observation System

Archive Data

Observation Data



**JAXA, MODIS stations**

Capacity Building

**JAXA, AIT**



Information Sharing Platform



Digital Asia

**JAXA, AIT, Keio Univ.**



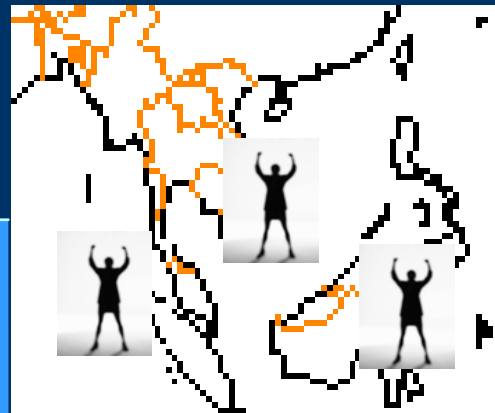
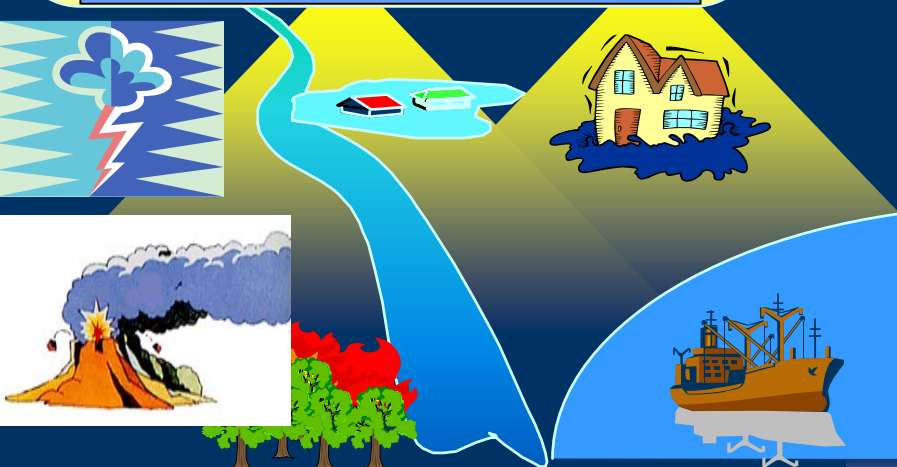
ALOS Rapid Response System

**JAXA, ADRC**

**Disaster Management Agencies**



Disaster Prevention



Residents in disaster areas

Warning

Refuge

Rescue

# The International Charter

The European and French space agencies (ESA and CNES) initiated the International Charter “Space and Major Disasters” in 2000.

## ➤ The Parties and Resources of the Charter

- European Space Agency (ESA) . . . ERS,  
ENVISAT
- Center National d’Etudes Spatiales (CNES) . . . SPOT
- Canadian Space Agency (CSA) . . . RADARSAT
- National Oceanic and Atmospheric Administration (NOAA) . . . POES, GOES
- Indian Space Research Organization (ISRO) . . . IRS
- Comision Nacional de Actividades Espaciales (CONAE) . . . SAC-C



**JAXA is participating in the Charter!**



# Summary

- JAXA's Vision 2025
  - Information Gathering and Warning System for Disaster
  - Integrated Global Environmental Observing System
  - Contribute to GEOSS
- The overview of ALOS and the first imageries
- ALOS Rapid Response for Disaster
  - Step 1: “Sentinel-Asia” Project
  - International Disaster Charter

