



2012/04/24  
CEOS/WGISS WS

# JAXA's Activities on Disaster Management field

April 2012

JAXA

Space Applications and Promotion Center  
Disaster Management Support Systems Office





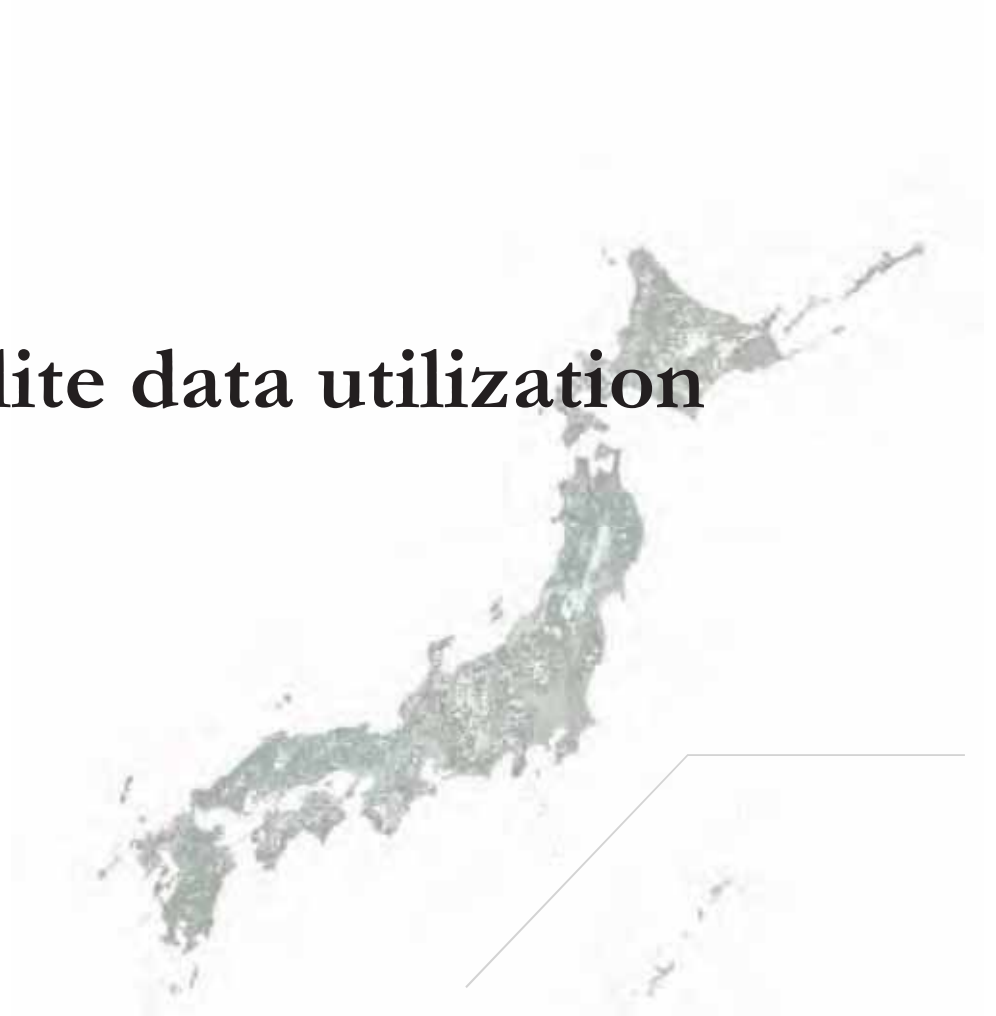
# Contents

1. Status of satellite data utilization
2. **Space application to Disaster Management in Japan**
3. International Disaster Charter
4. **Sentinel Asia**





# 1. Status of satellite data utilization



## Status of satellite data utilization

- JAXA started applying satellite data seriously for disaster management field after ALOS launched.
- One of the local governments started to use satellite images for their disaster management.  
(hazard map, drills, etc)
- Government agencies start to use satellite data but still seeking a more effective way to utilize satellite images for disaster management and monitoring.

We need to continue enlightening how we utilize satellite data.



## *2. Space Application to Disaster Management in Japan*



# JAXA's Disaster Monitoring Activities

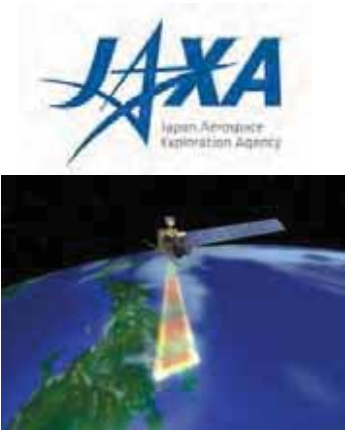
**Disaster Strikes**

Cooperation  
Contribution



**International Cooperation**

- International Disaster Charter
- Sentinel Asia



**Ordinary times**

Application  
Promotion



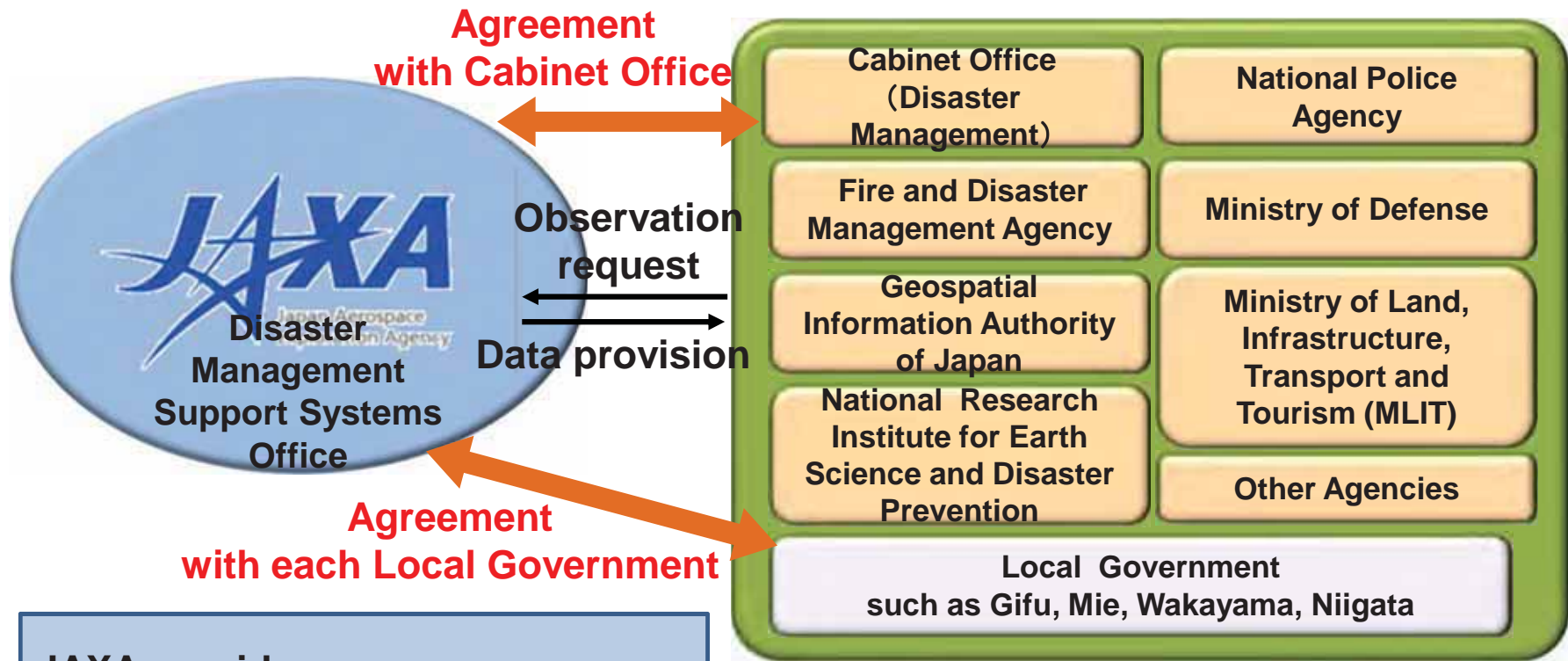
**Space Applications to Disaster Management**

Provide  
Satellite  
Images





# Disaster Management Scheme in Japan



- JAXA provides;**
- Disaster observation data
  - Emergency observation data
  - Difference extraction information
  - Satellite geographical information (including training)
  - Know-how on image analysis

- Disaster prevention agencies provide;**
- Utilization Results Report
  - Advice and recommendation
  - Request for utilization and information systems

# Space Application to Disaster Management in Japan

	Activities	Theme	Disaster Management Partners
1	<b>Satellite image map</b>	-Preparation of “common geographical information” based on the standard maps and satellite images, in conjunction with the needs of disaster-operation organizations.	Cabinet Office, NPA (Police), FDMA (Fire), MOD (Defense), GSI (Geography), NIED (Disaster)
2	<b>Emergency Observation</b>	-Accept emergency observation request and observe disaster afflicted area by international cooperation, and provides satellites imagery.	Cabinet Office, Local Government , Japan Coast Guard,etc
3	<b>Volcanic activity monitoring (WG)</b>	-Investigation of satellite data applicability on volcano surveillance, through ALOS observation of Japanese major volcanoes. -Inclusion of satellite data as one of the standard measures of regular volcano surveillance .	CCPVE(Coordinating Committee for Prediction of Volcanic Eruptions) organized by Japan Meteorological Agency (JMA))
4	<b>Earthquake monitoring (WG)</b>	-Investigation of satellite data applicability on ground distortion monitoring before and /or after earthquake.	H.q. for Earthquake Research promotion , be consist of GSI, AIST(Industrial), NIED, ERI(academia)
5	<b>Flood /Landslide monitoring (WG)</b>	- Investigation of satellite data applicability on landslide and flood.	National Institute for Land and Infrastructure Management, etc.



# Satellite Image Map by JAXA

- Developed as a geospatial information tool
- Indicates minimum required information such as major landmarks and roads.
- Can intuitively understand for anyone



1/50,000 scale map using AVNIR-2.



1/25,000 scale map using pansharpen images of PRISM and AVNIR-2.

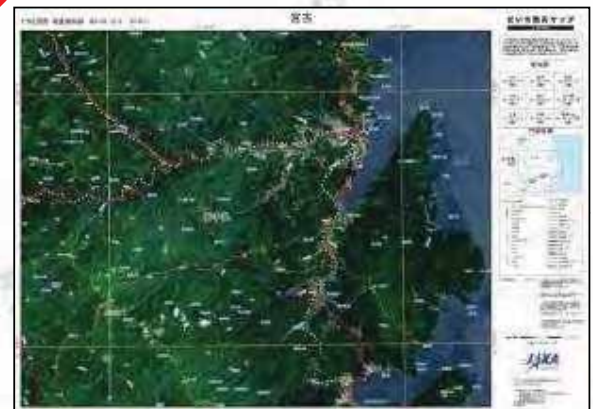
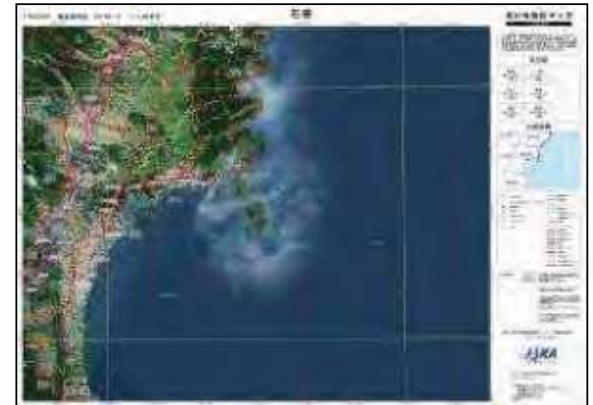
# DAICHI Satellite Image Map by JAXA

Satellite Image Map is always maintained as base map by using ALOS image in normal time, and it's provided to disaster prevention agencies.

**1:200,000 scale**  
(always prepared)



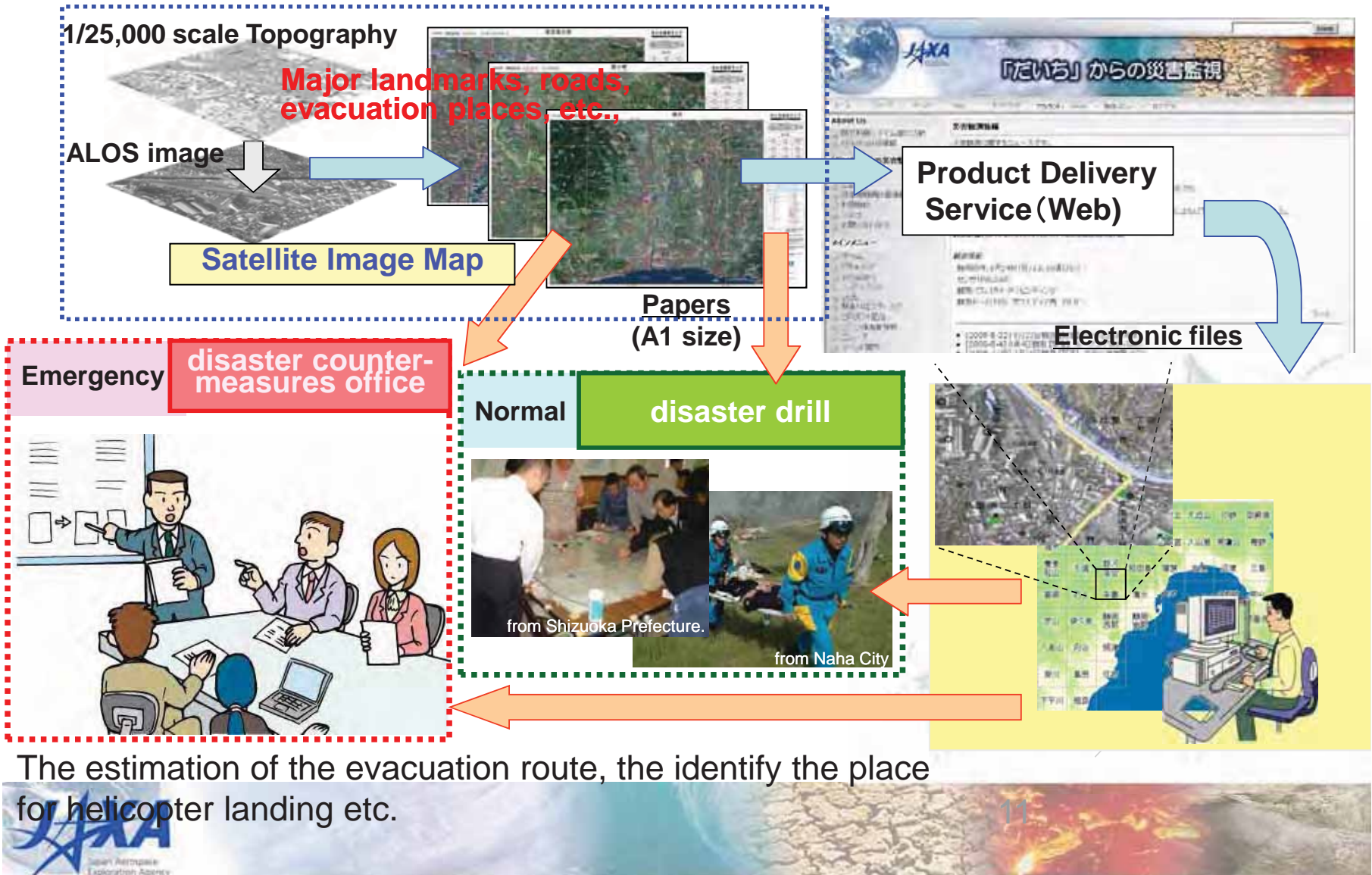
**1:400,000 scale** (special order)



**1:50,000 scale**  
(always prepared)



# Utilization of Satellite Image Map





### *3. The International Charter on Space and Major Disasters*





## What is *The Charter*

The Charter was initiated by CNES/ESA at the occasion of the UNISPACE III Conference in Vienna (July 1999)

- the Charter is an international cooperation among space agencies, making their resources available to emergency operations
- the Charter is a global mechanism to task satellites in emergency response situations, and to provide rush access to EO data in case of natural or man made disaster.

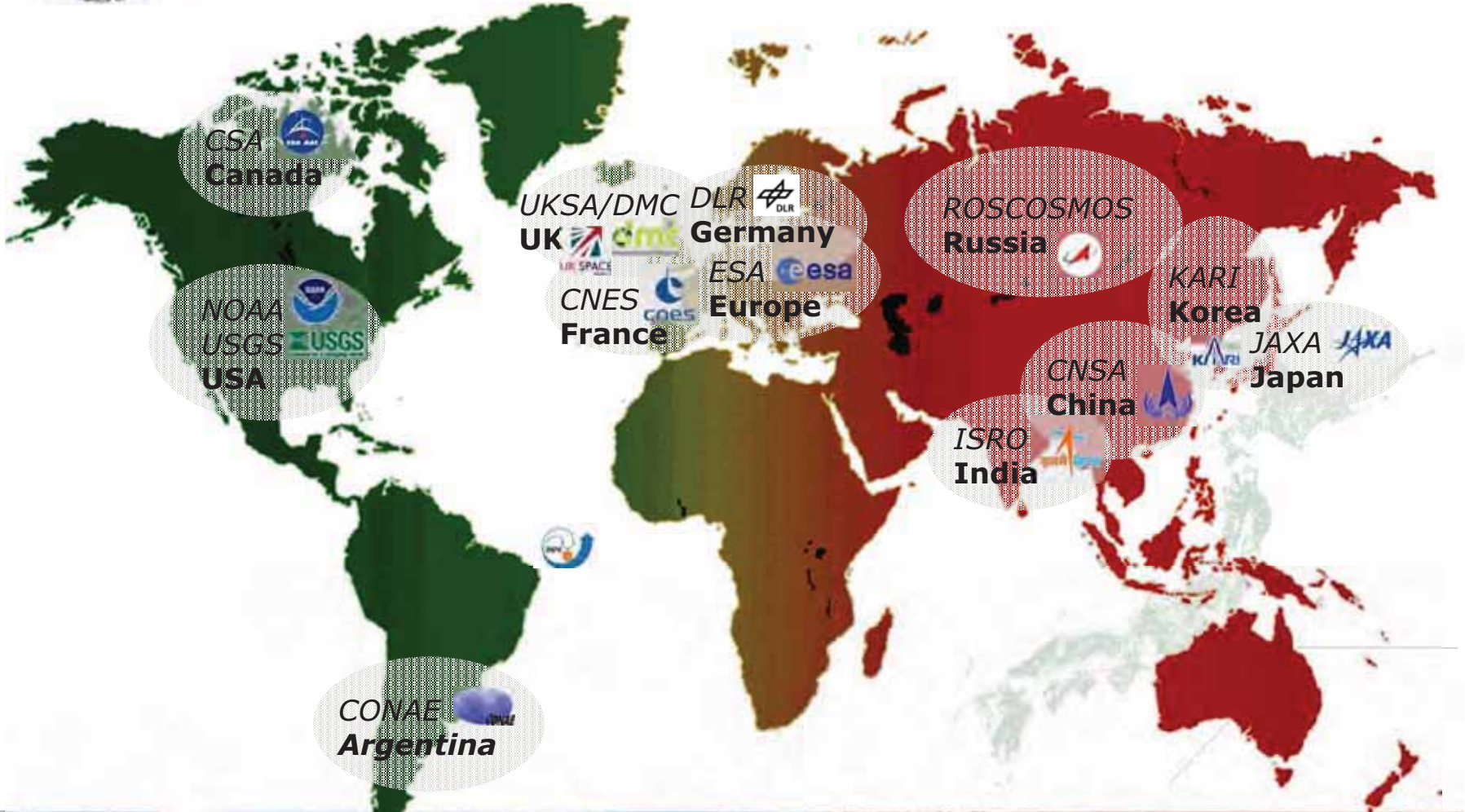
<http://www.disasterscharter.org/home>







# Charter Members

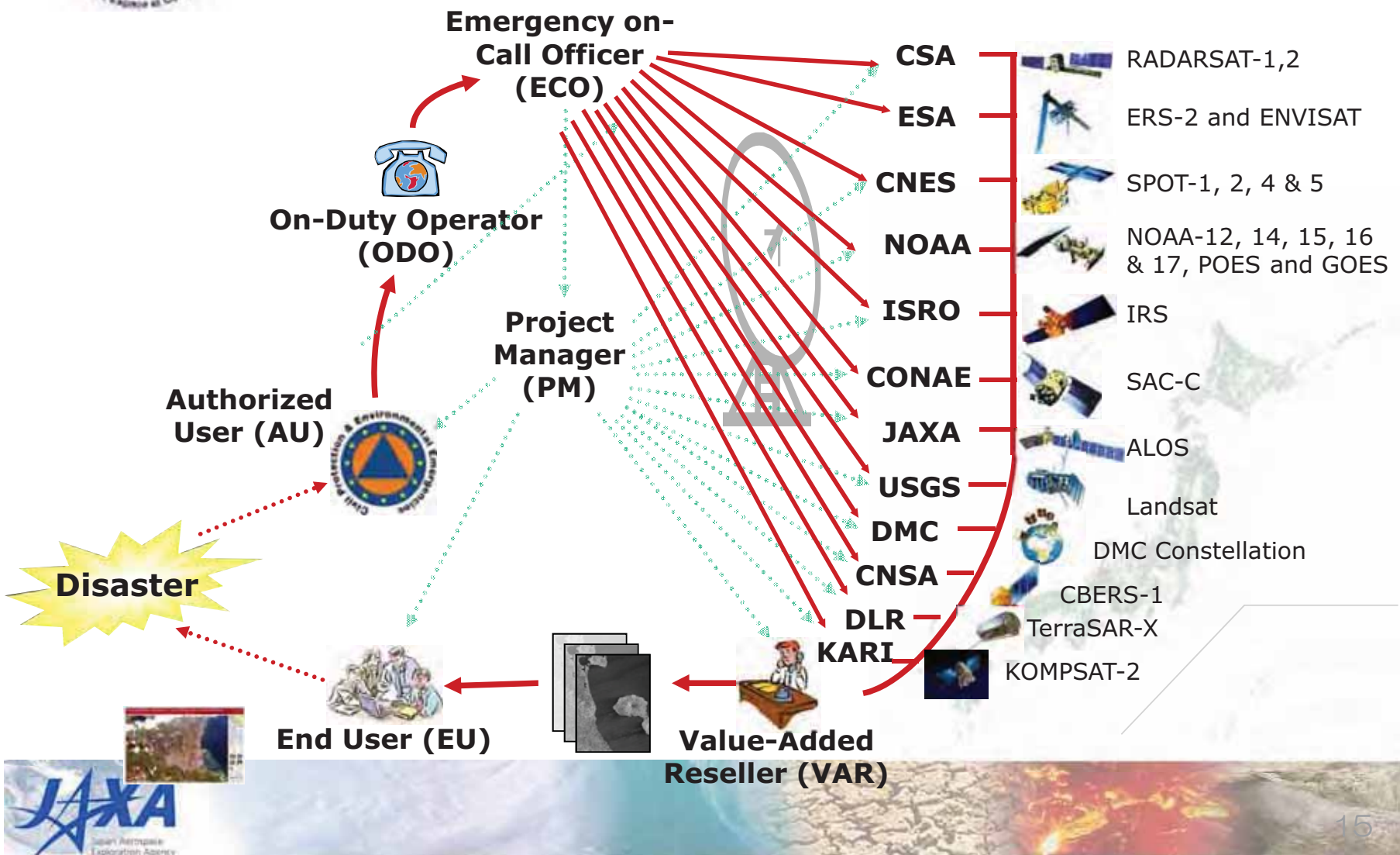


INPE, EUMETSAT will join soon...





# Operational Flow





## *4. Sentinel Asia*



# What is Sentinel Asia ?

## Sentinel Asia is

- a voluntary initiative
- collaboration between space agencies and disaster management agencies
- applying remote sensing and Web-GIS technologies to assist disaster management in the Asia-Pacific region.

## Main Activities are

### (1) Emergency observation

### (2) Working Group (WG)

- Wildfire
- Flood
- Glacial Lake Outburst Flood (GLOF)
- Tsunami

### (3) Capacity building

- human resource development
- human network



<http://sentinel.tksc.jaxa.jp/>

# Framework of Sentinel Asia

## Space Community

**APRSAF\***

Data Provision

Promotion of Utilization

Capacity Building

## Disaster Management Community

**ADRC\*\***  
Member Countries

Utilization (User)

## Sentinel Asia

### Joint Project Team (JPT)

Join Project Team consists of total 82 organizations including 71 organizations of 24 countries/region and 11 international organizations as of March 2012  
JAXA is the secretariat of JPT.

\* Asian-Pacific Regional Space Agency Forum

\*\* Asian Disaster Reduction Center

## International Community

UN / ESCAP UN / OOSA  
ASEAN AIT etc.

International Cooperation

JPT meeting in Putrajaya, Malaysia in July 2011



# Emergency Observation Flow





# Example of Emergency Observation



Inundation map of Pakistan flood analyzed by ICIMOD, using ALOS data  
(Photo is provided courtesy of ICIMOD)



Inundation map of Japanese tsunami analyzed by CRISP, using FORMOSAT-2 data

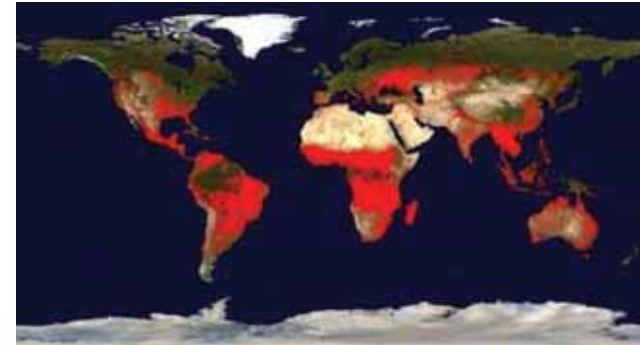


## (2) Working Group Activities for Disaster Risk Reduction

- **Wildfire WG**
  - To contribute to the Asia-Pacific region with wildfire management
  - To contribution to REDD-plus
  - JST-JICA(\*) project for wildfire and carbon management in a peatland in Kalimantan, Indonesia

(\*)JST: Japan Science and Technology Agency  
JICA: Japan International Cooperation Agency

- **Flood WG**
  - To contribute to the mitigation of flood disasters in Asia
  - Flood analysis using IFAS
- **GLOF WG** (Glacial Lake Outburst Flood)
  - Monitor and establish early warning system in the risk areas
  - Local awareness and knowledge transfer through capacity building
- **Tsunami WG**
  - Tsunami early warning system



### (3) Capacity Building and Human Network

A good human network is the foundation of the project



The 7th Sentinel Asia System Operation Training by JAXA, hosted by ICIMOD in February-March 2011

The 8th Sentinel Asia System Operation Training by JAXA, hosted by AIT in Feb 2012



## (4) Toward Further Utilization

- Cooperation for disaster risk reduction (DRR) in preparedness phase
  - Regional cooperation including end-users
  - Local Awareness and Knowledge Transfer through Capacity Building
  - Human resources development and human network through **WG activities** and **Sentinel Asia Success Story (SASS)**
    - Flood analysis by Integrated Flood Analysis System (IFAS)
    - Fire Danger Rating System (FDRS) for wildfire preparedness
    - Tsunami early warning system
- Finally, a part of “**Social System**”

---

**Thank you for attention**

