
JAXA's Disaster Monitoring Activities

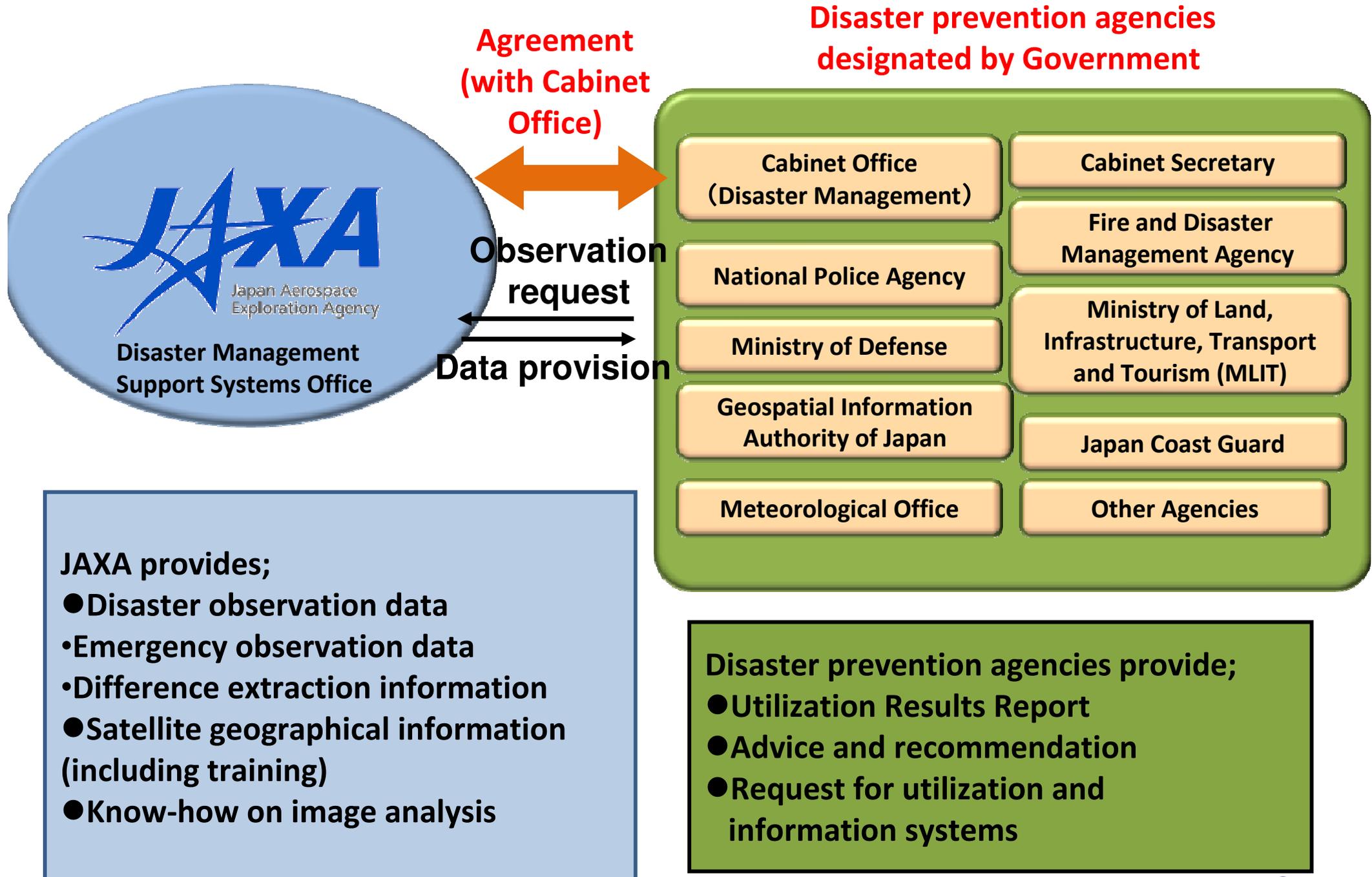
- the case of Great East Japan Earthquake-

June 6th 2011

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1. JAXA's role in Disaster Management Scheme



2. Activity themes and summary of Demonstration of Daich Applications in Disaster Management

Application Theme	Summary
Map Application	Overlap “Daichi” and geographical data and utilize it for disaster prevention and response
Volcanic eruptions	Utilize “Daichi” data for monitoring active volcanos and capturing the situation of damage caused by eruptions
Crustal deformation	Utilize “Daichi” data for detecting the crustal deformation and capturing the situation of disasters
RAS applications	Utilize “Daichi” data for the Real Damage Information Analysis System (RAS) led by Cabinet Office
Marine and coastal disasters	Utilize “Daichi” data for the response to marine and coastal disasters such as heavy oil spills
Landslide disasters	Utilize “Daichi” data for predicting landslides and the response to landslide disasters
Wind and flood damage	Utilize “Daichi” data for capturing the situation of flood damages and for other disaster management activities

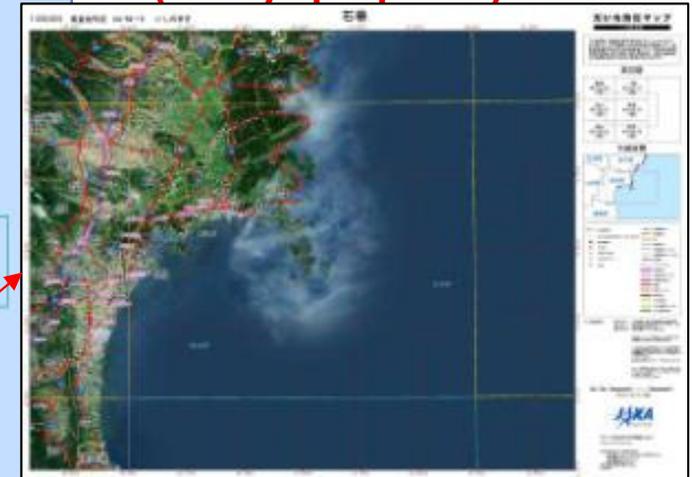
3. “DAICHI Disaster Prevention Map”



1:400,000 scale (special order)



1:200,000 scale (always prepared)



1:50,000 scale (always prepared)

- Indicating details of public infrastructure such as railroads, roadways, bridges, police and fire stations as well as evacuation centers.

4. Disaster Prevention Drill

In the disaster prevention drill at the local government, JAXA provides ALOS images for demonstration.

Kouchi



Mie



5. JAXA's actions after the Earthquake

(1) 3/11 night - 3/12 morning

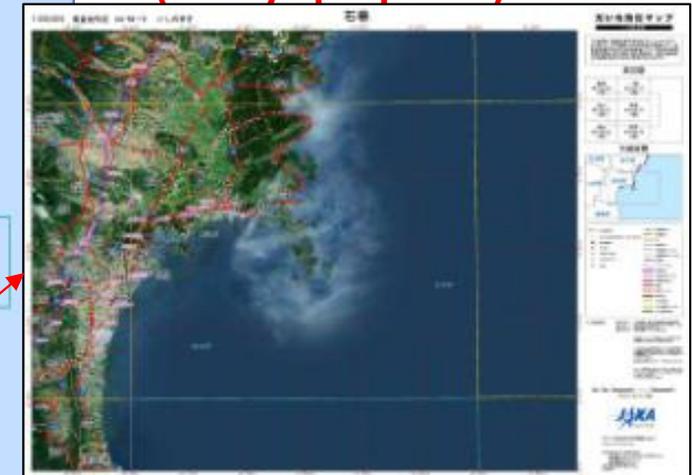
➤ JAXA prepared “**Daichi Disaster Prevention Map**” overlaid geographical information and provided to the Cabinet Office.



1:400,000 scale (special order)



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



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

6. Overview of satellite data utilization

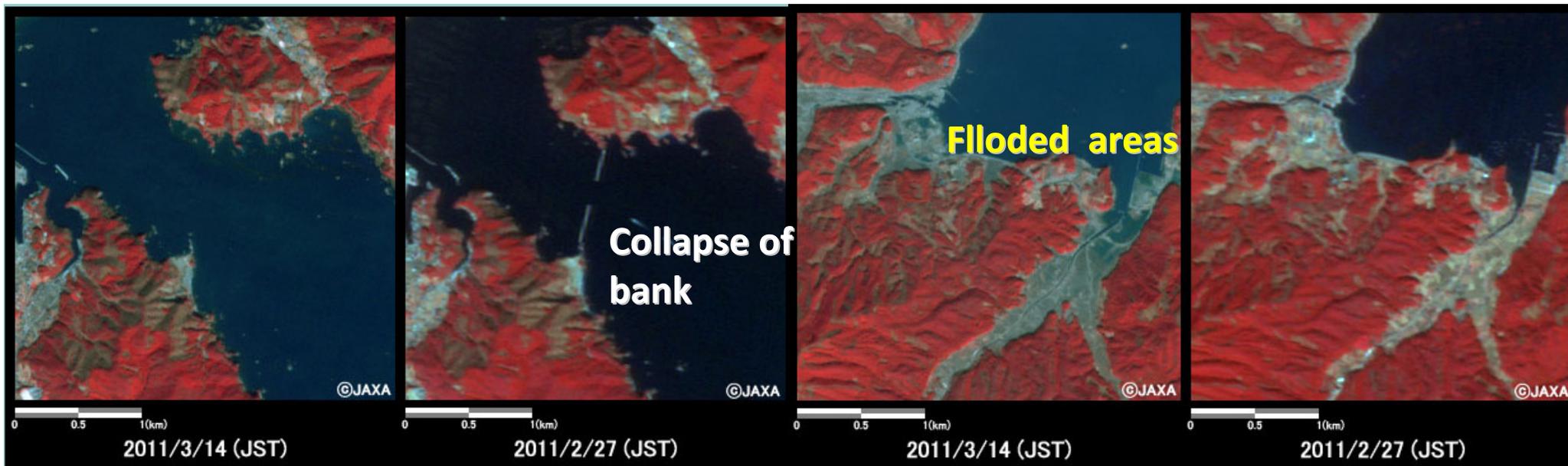
➤ Satellite List providing images in response to Great East Japan Earthquake

International Charter		
Country. Regions	Satellite Name	Characteristics
USA	LANDSAT-5	Medium Resolution Optical Sensor
	LANDSAT-7	Medium Resolution Optical Sensor
	EO-1	Medium Resolution Optical Sensor
	IKONOS	Very High Resolution Optical Sensor
	GeoEye	Very High Resolution Optical Sensor
	Quickbird-2	Very High Resolution Optical Sensor
	Worldview-1	Very High Resolution Optical Sensor
	Worldview-2	Very High Resolution Optical Sensor
India	Cartosat-2	High Resolution Optical Sensor
Europe (ESA)	ENVISAT	C Band SAR
Canada	RADARSAT-2	C Band SAR
Rep of Korea	KOMPSAT-2	High Resolution Optical Sensor
China	HJ	Medium Resolution Optical Sensor
Germany	TerraSAR-X	X Band SAR
	RapidEye	High Resolution Optical Sensor
France	SPOT-4	Medium Resolution Optical Sensor
	SPOT-5	High Resolution Optical Sensor
	FORMOSAT-2	High Resolution Optical Sensor

Sentinel Asia		
Country. Regions	Satellite Name	Characteristics
India	Cartosat-2	High Resolution Optical Sensor
Thailand	THEOS	High Resolution Optical Sensor
NARL	FORMOSAT-2	High Resolution Optical Sensor

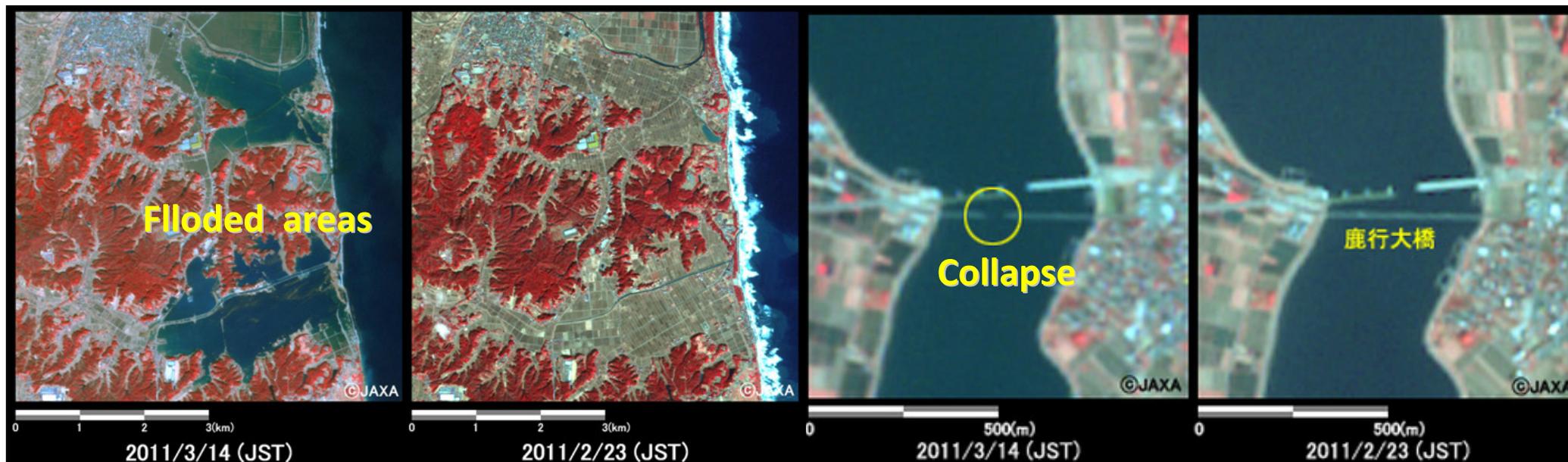
Others		
Country. Regions	Satellite Name	Characteristics
Italy	COSMO-SkyMed	X Band SAR
Spain	DEIMOS-1	Medium Resolution Optical Sensor
Russia	Resurs-DK	High Resolution Optical Sensor
UAE	DubaiSat	High Resolution Optical Sensor

7. Examples of observation results (AVNIR-2)



Ofunato City

Minami-Sanriku Town

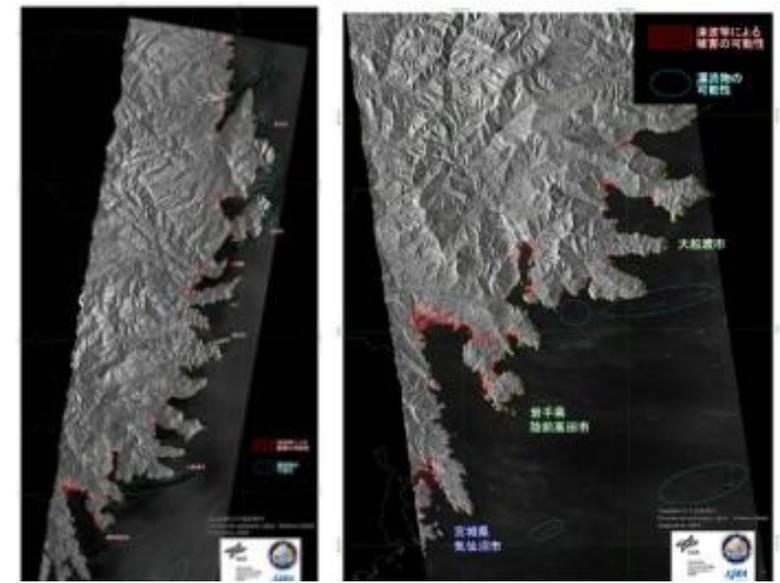
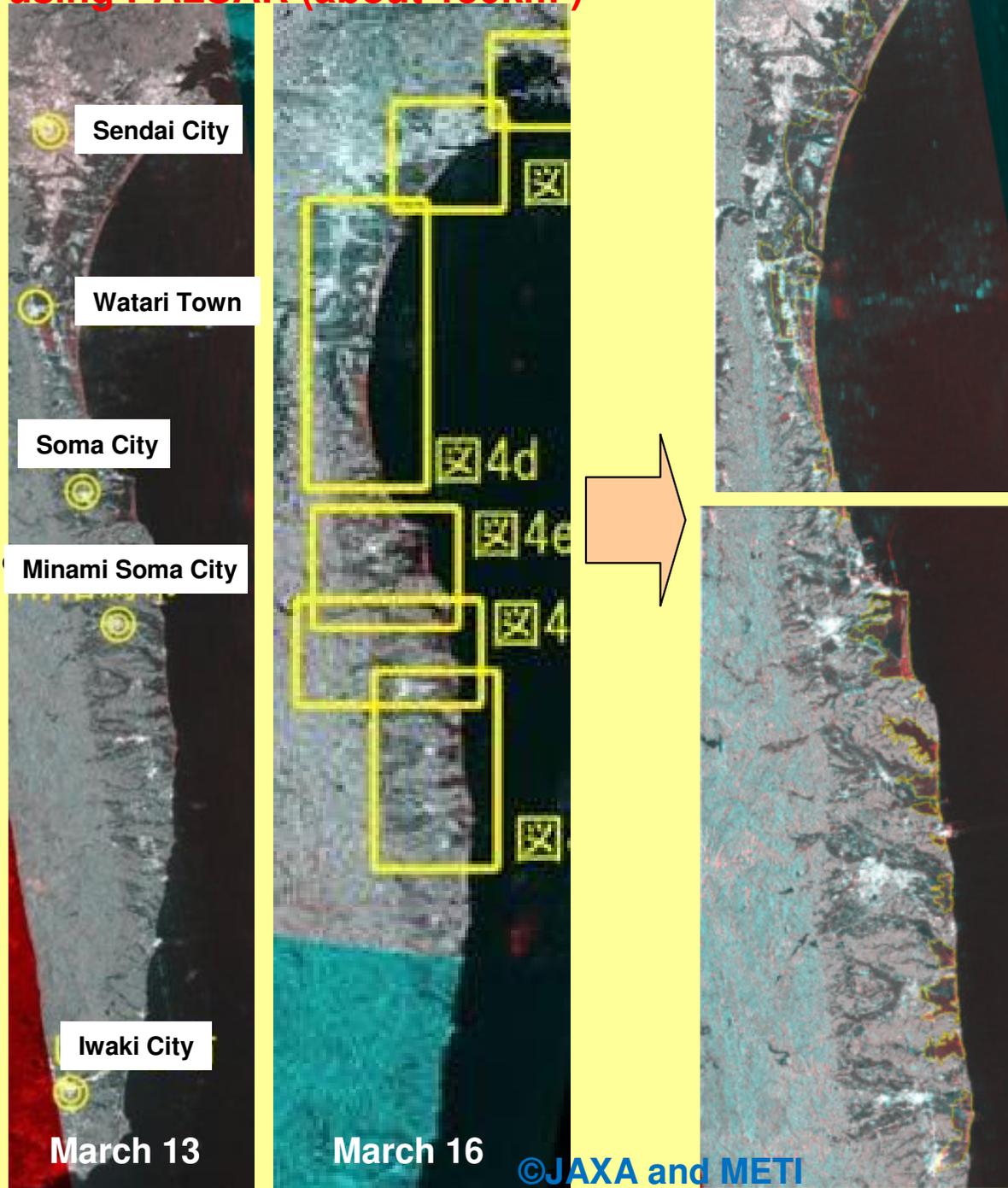


Minami-Soma City

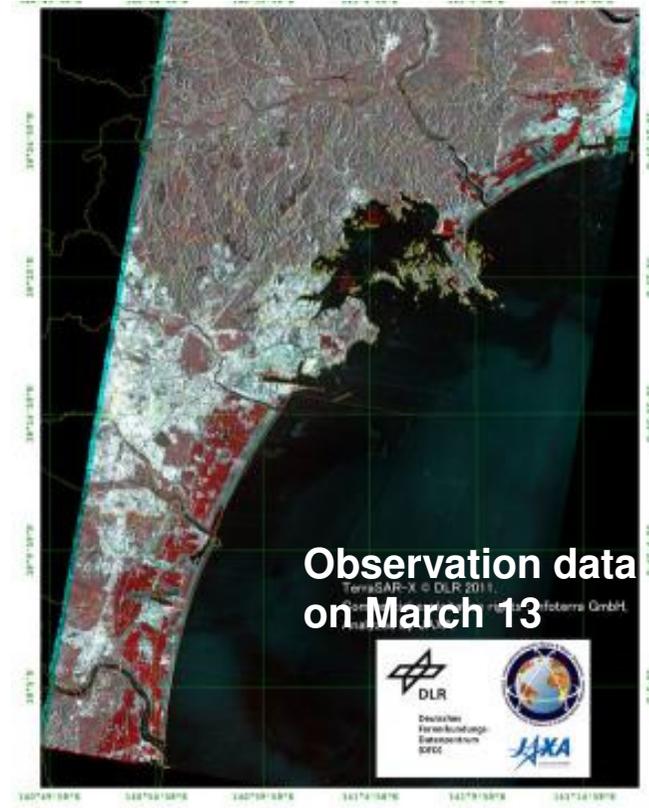
Rokko-Ohashi Bridge

8. Evaluation and analysis using SAR

Evaluation of the water-covered area using PALSAR (about 150km²)



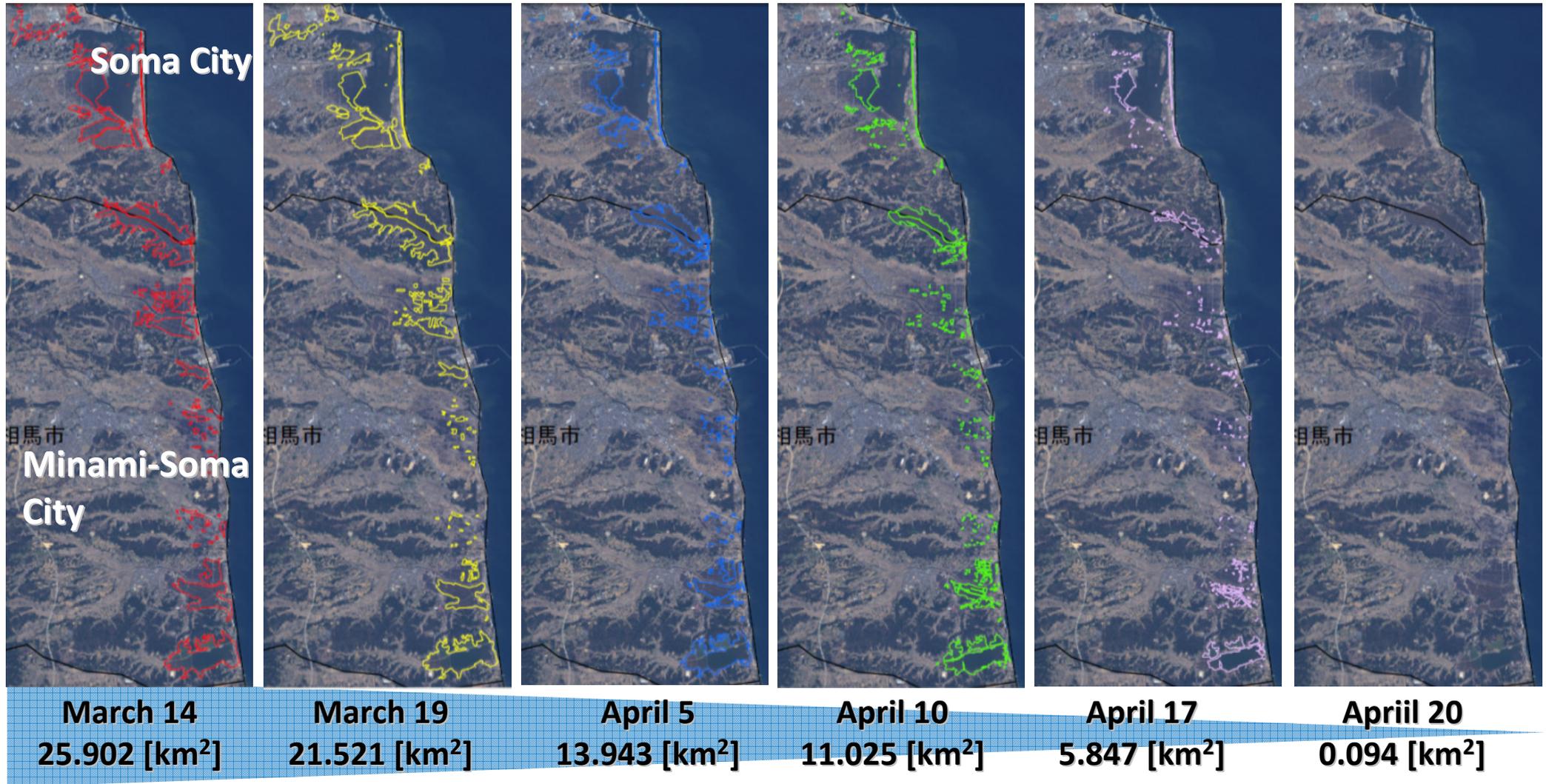
Comparison between March 13 and 14 data



Using also TerraSAR-X data provided via International Charter

9. Analysis of flooded areas

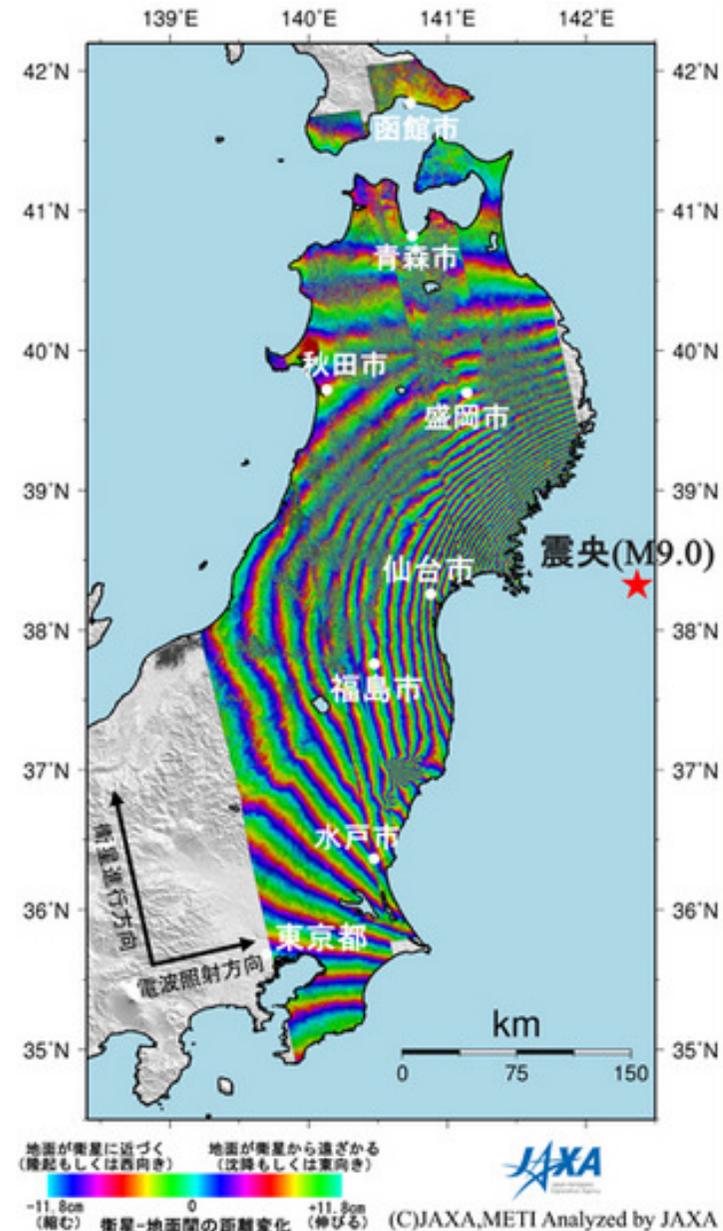
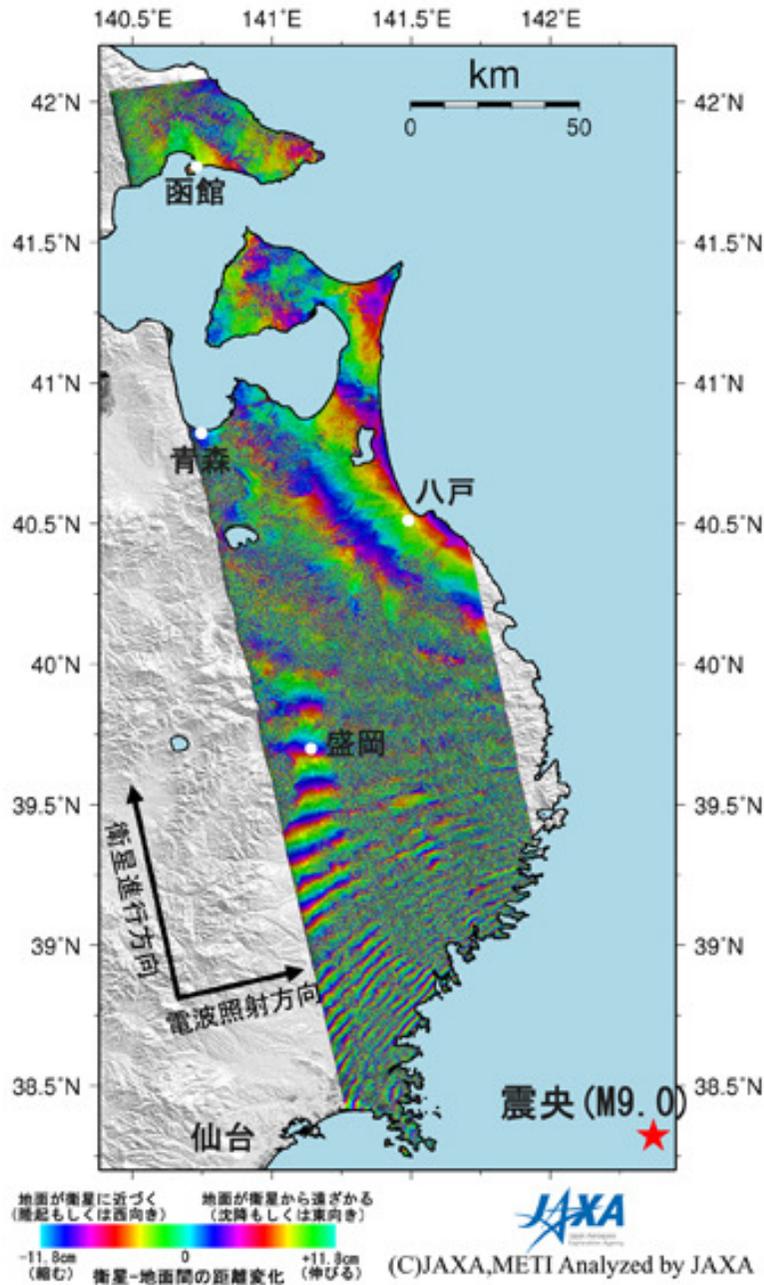
Baseline image: April 17, AVNIR-2



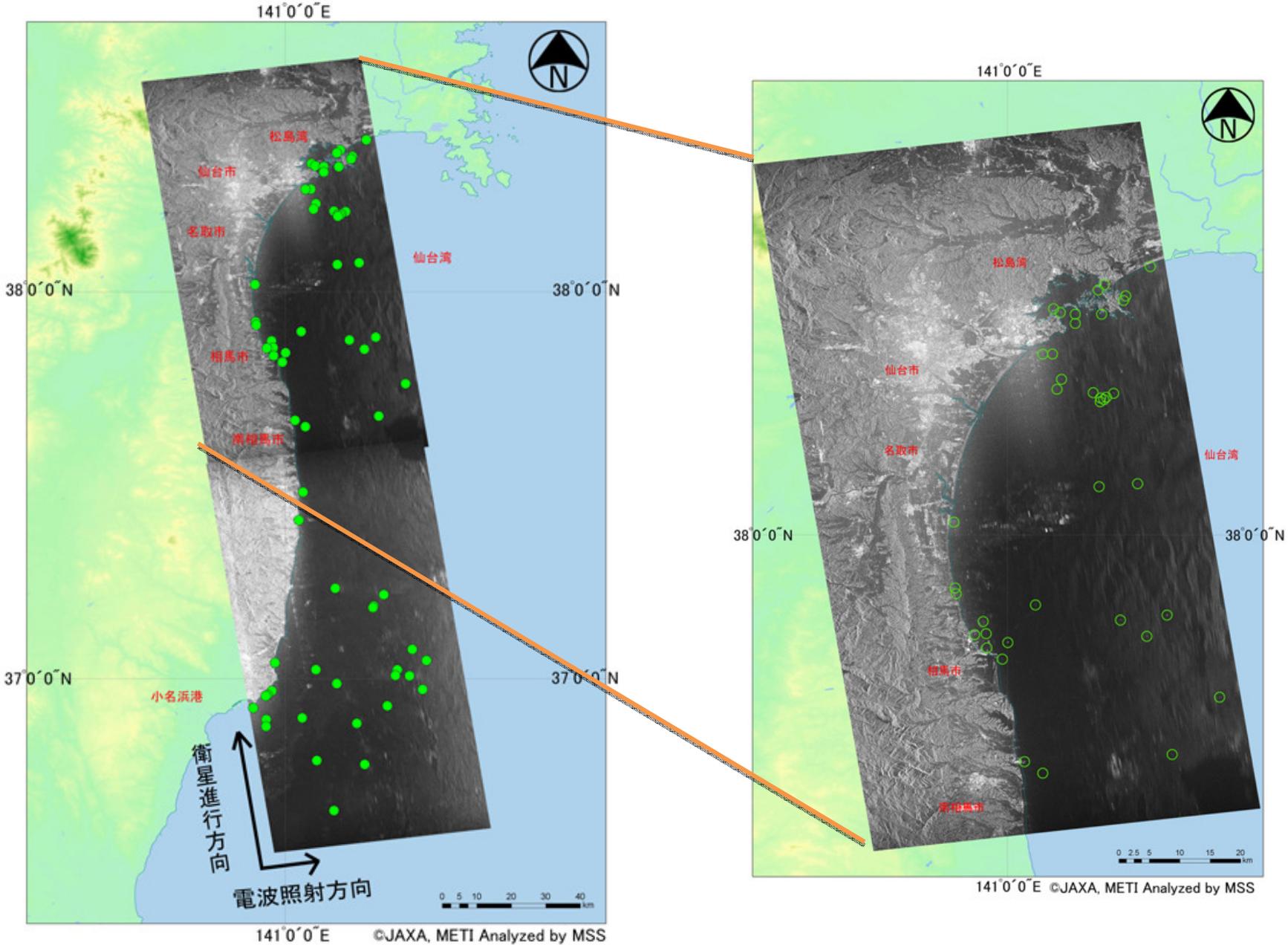
- Detecting the square measure for each cities and towns
- Providing to Cabinet Secretariat, Cabinet Office, MLIT, MAFF, etc

Areas:
Fukushima Pref.
Flooded Areas
Decreasing
as time goes by

10. Interferogram Image using PALSAR



11. Detetcion of the Drifted Mterials



12. Provision of satellite communication: KIZUNA

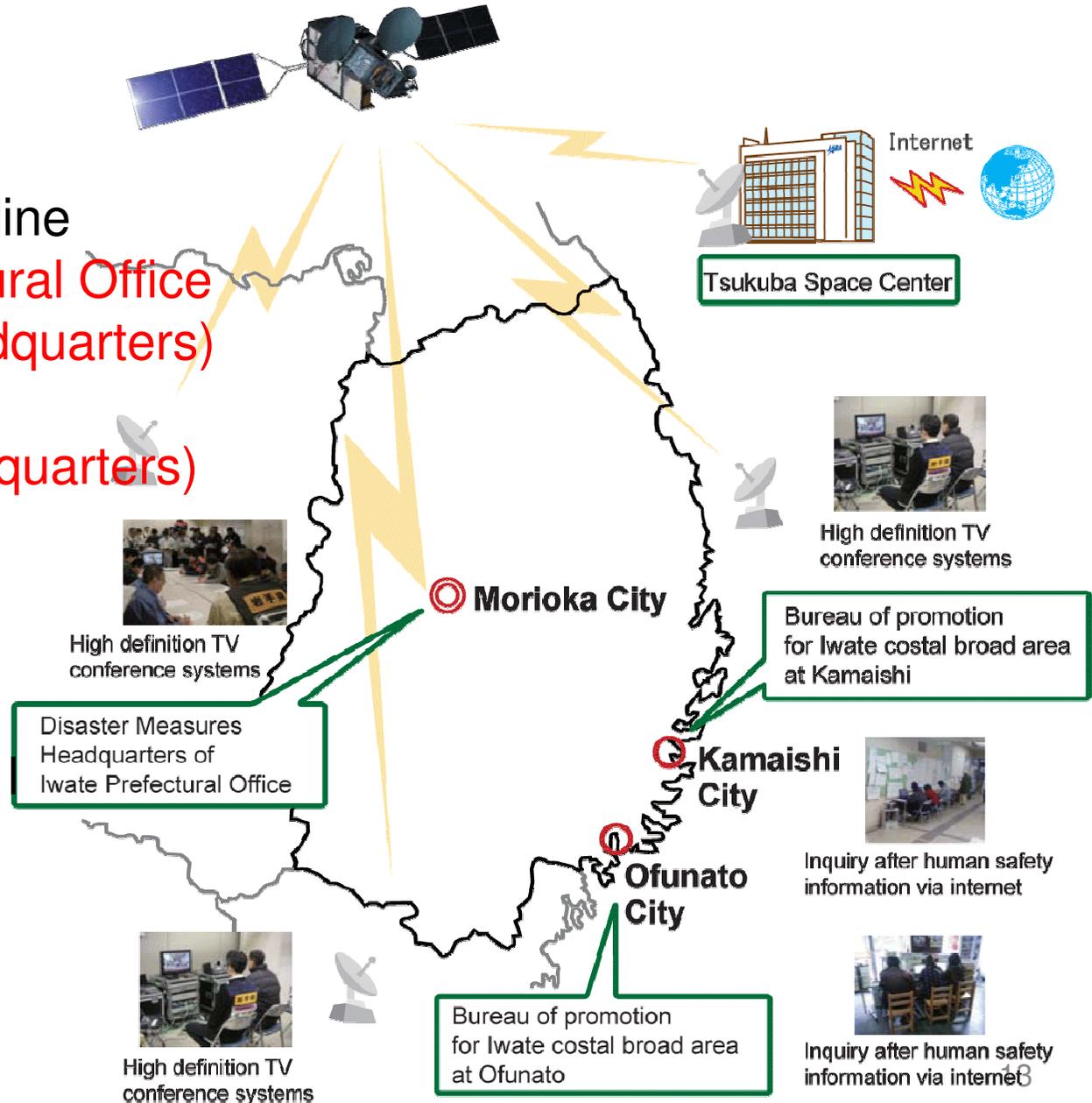
➤ March 17:
Arrival at Iwate Pref. Office

➤ March 20:
Setting up communication line
between **the Iwate Prefectural Office**
(emergency response headquarters)
and **Kamaishi City** (Local
emergency response headquarters)

➤ March 24:
Setting up ground antenna
at **Ofunato City**, and
completing communication
line **in three points**

➤ April 24
Connection completed

“KIZUNA”



13. Provision of satellite communication: KIKU-8

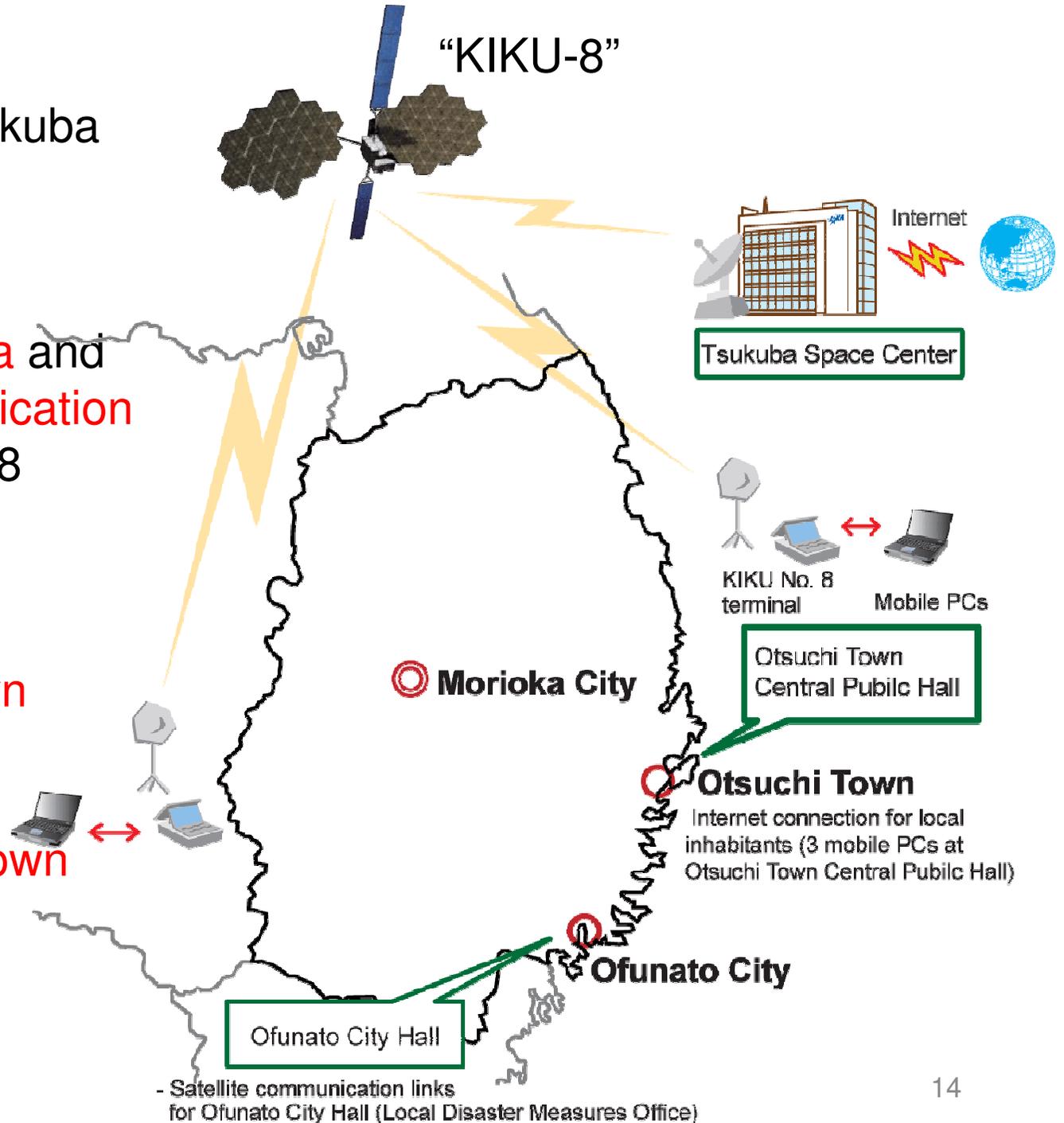
➤ March 23:
Departure from JAXA Tsukuba Space Center

➤ March 24:
Setting up **ground antenna** and the **movable test communication terminal** for the KIKU No. 8 at **Ofunato City Hall**.

➤ April 4
Setting up at **Otsuchi Town**

➤ April 26
Setting up at **Onagawa Town**

➤ May 21
Connection completed



14. Provision of Space Technology

➤ Water Purifier

- New Medican Tech Corporation developed water purifier from the application of research results of **recycling the water from wastewaters in space**.
- It provided several sets of water purifier to **solve the water shortage** in affected areas.



Photo: provided by New Medican Tech Corporation

➤ Space underwear

- GOLDWIN INC. developed the underwear applying the **underwear for astronauts**. The clothes are made of fiber that is processed **to deodorize itself and stay clean**.
- It provided more than 12,000 **underweares**. It suits the circumstance where the victims are forced to be reside in refuge places for a long period.



Photo: provided by GOLDWIN INC.

Conclusion

JAXA will reflect the lessons and learned of this Great East Japan Earthquake, to make the most use of Space Applications to the disaster management and mitigation.