DPN Report
ALOS-2 Status

Nov 19, 2014

Sentinelasia Joint Project Team Meeting

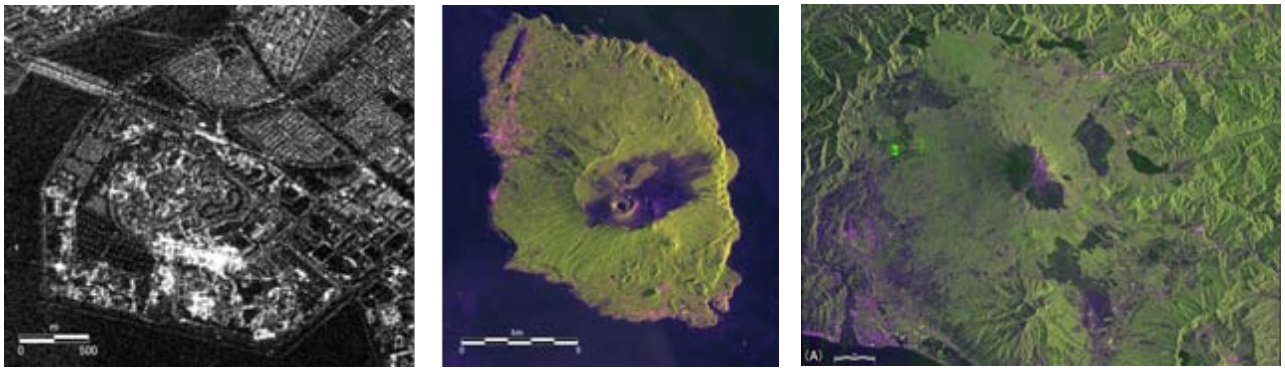
Disaster Management Systems Support office

Japan Aerospace Exploration Agency (JAXA)

Contents

1. Launch and Initial Checkout

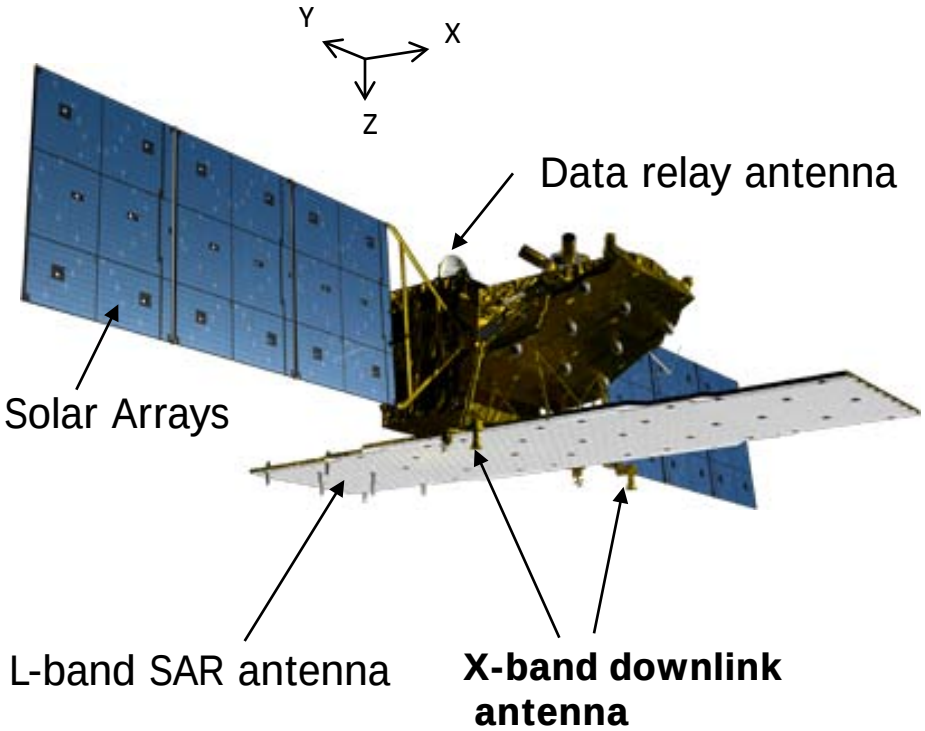
- Launched on May 24, 2014 by the H-IIA Launch Vehicle from the Tanegashima Space Center
- Critical Phase completed on May 27th
- Initial Checkout completed on August 20th
- First Images of PALSAR-2 released on May 27th
- Emergency acquisition upon request from Japanese government for typhoons, volcano, and landslide since July 10th
- Initial Calibration and Validation is ongoing
- The data distribution will begin at the end of November, 2014



First Images of PALSAR-2
（Tokyo bay area, Izu-Ohshima island, Mt. Fuji)

2. ALOS-2 satellite

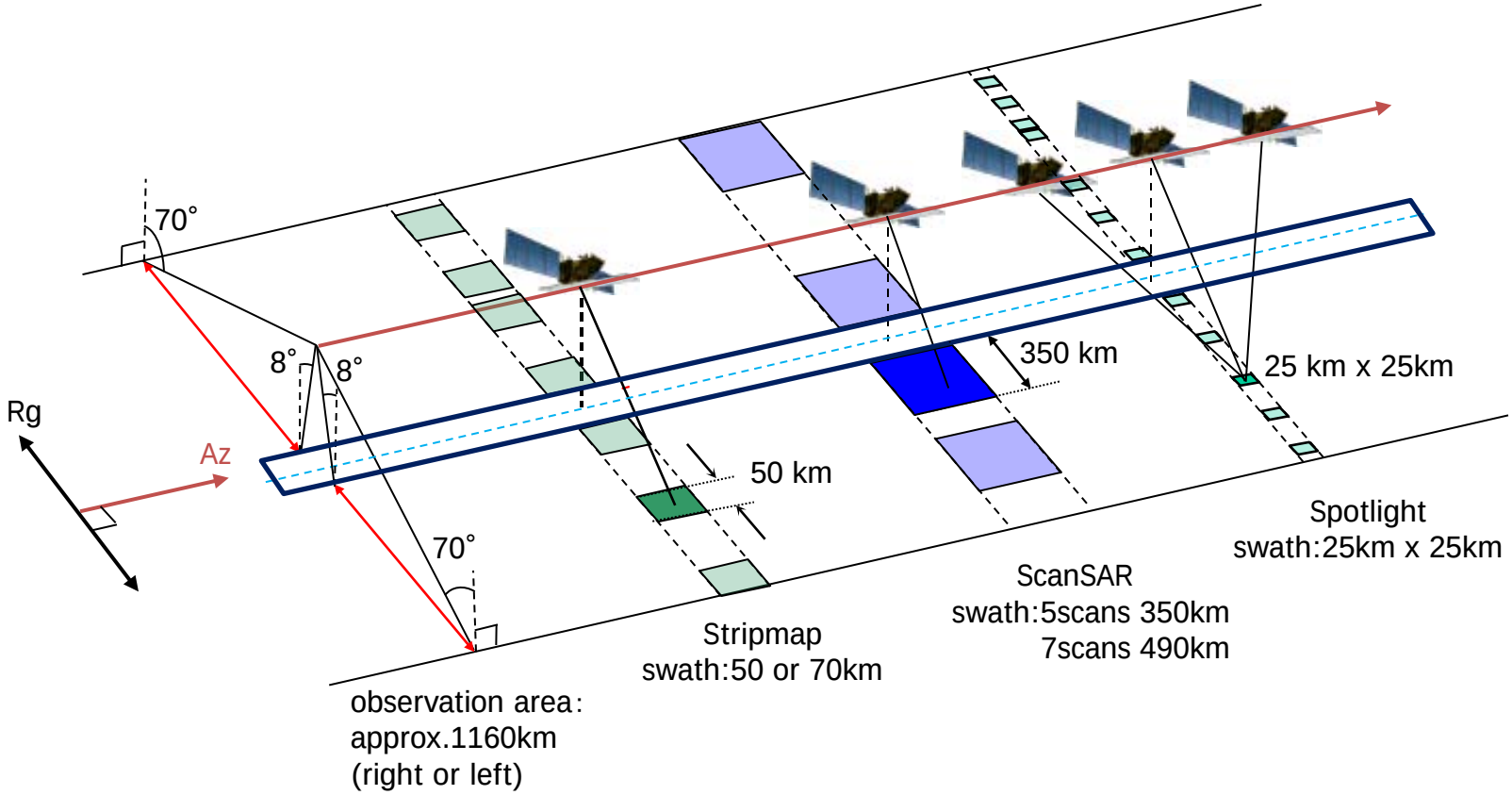
ALOS-2 in-orbit configuration



Specification

L-band SAR (PALSAR-2)	Stripmap: 3/6/10m res., 50/50/70km swath ScanSAR: 100/60m res., 350/490km swath Spotlight: 1×3m res., 25km swath
Life time	5 years (target: 7 years)
Agility	Earth pointing attitude to observation < 120 seconds Change observation direction (right/left) < 180 seconds
Downlink	X-band: 800Mbps(16QAM) 400/200Mbps(QPSK) Ka-band: 278Mbps (Data Relay)
Orbit	Sun-synchronous orbit Altitude: 628km Local sun time : 12:00 +/- 15min Revisit: 14days Orbit control: ≦+/-500m Orbit determination: ≦1m

PALSAR-2 imaging mode



Observable area :

Right or left-looking by spacecraft maneuvering at 30 degrees off-nadir with electric beam steering using active phased array antenna (incidence angle from 8 to 70 degrees).

PALSAR-2 Specification

		Spotlight	Ultra Fine	High sensitive	Fine	ScanSAR nominal		ScanSAR wide
Bandwidth		84MHz	84MHz	42MHz	28MHz	14MHz	28MHz	14MHz
Resolution		Rg × Az : 3 × 1m	3m	6m	10m	100m(3 looks)		60m(1.5 looks)
Swath		Rg × Az : 25 × 25km	50km	50km	70km	350km 5scan		490km 7scan
Polarization		SP	SP/DP	SP/DP/FP/CP		SP/DP		
NESZ		-24dB	-24dB	-28dB	-26dB	-26dB	-23dB	-23dB
S/A	Rg	25dB	25dB	23dB	25dB	25dB		20dB
	Az	20dB	25dB	20dB	23dB	20dB		20dB

SP : HH or VV or HV , DP : HH+HV or VV+VH , FP : HH+HV+VH+VV , CP : Compact pol (Experimental mode)

Spotlight :	**Detail observation of damaged area**
Ultra Fine:	**Basemap**
High sensitive:	**Flood / Coast monitoring**
Fine:	**Global forest monitoring**
ScanSAR nominal :	**ScanSAR InSAR (28MHz)**
ScanSAR wide:	**Ice monitoring, Ship detection**

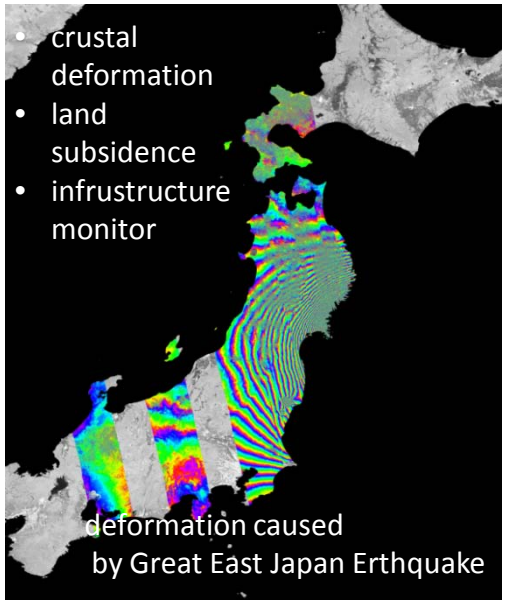
3. ALOS-2 Mission

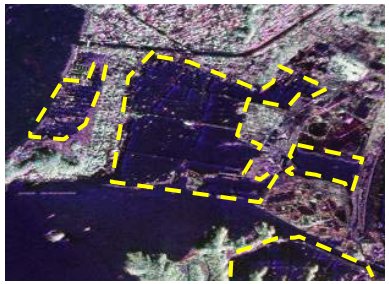
ALOS-2 will achieve significant contributions to:

- **Disaster Monitoring**
  - **quick access to damaged areas and continuous monitoring**
  - **InSAR for deformation**
- **Land Monitoring**
  - **generate systematic archive**
  - **sea ice monitoring**
- **Agricultural Monitoring**
  - **evaluation of irrigated rice fields**
- **Natural Resource Exploration**
  - **detecting oil slick over sea**
  - **analysis of geology and topography**
- **Global Forest Monitoring**
  - **deforestation monitoring**
- **Potential Use**
  - **maritime safety**

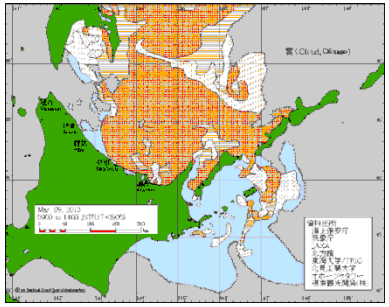
3. ALOS-2 Mission

1) Monitoring Disasters for life security



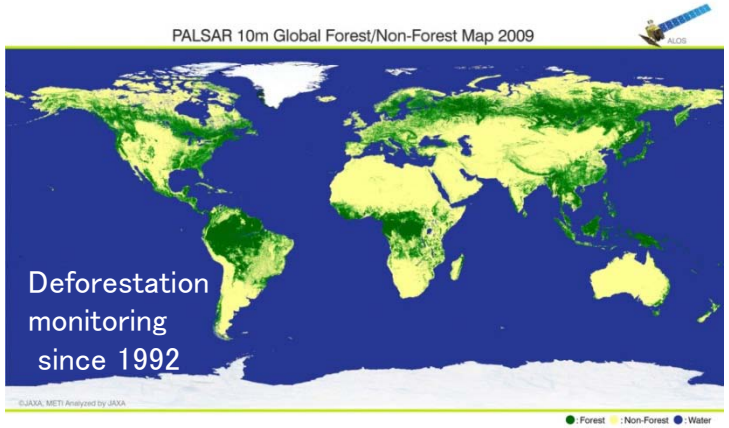


・flood monitoring
・landslide



Sea ice monitoring over the Sea of Okhotsk

2) Monitoring Global Change



3) Social Benefit

natural resources

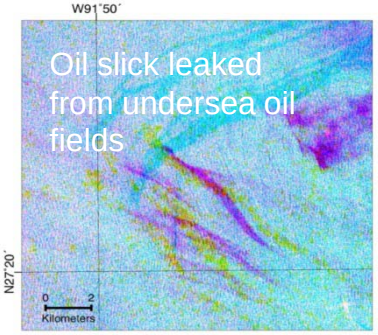
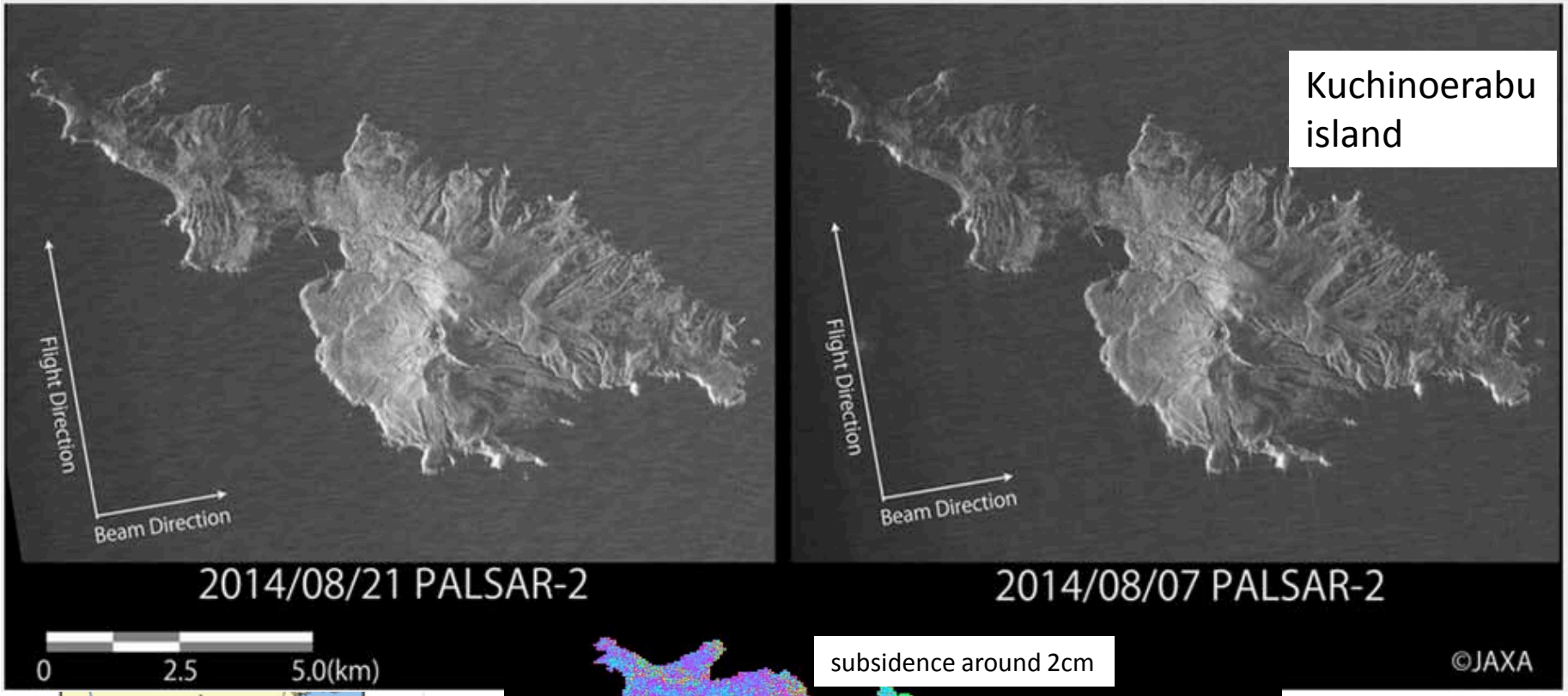


Image provided by JSS

4. Data Use Example (Volcano)



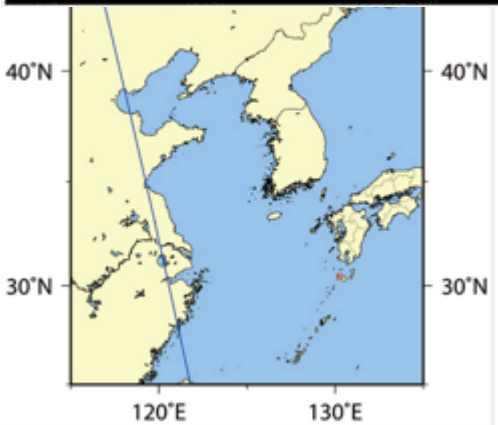
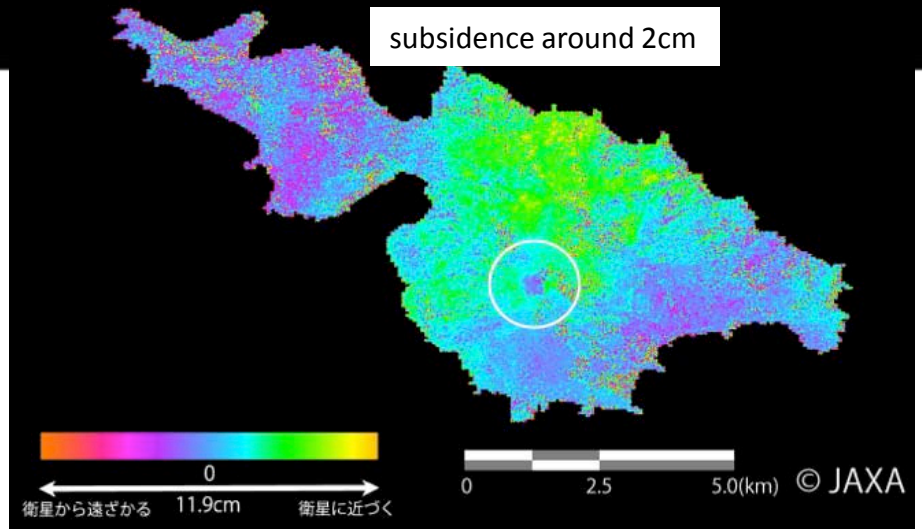


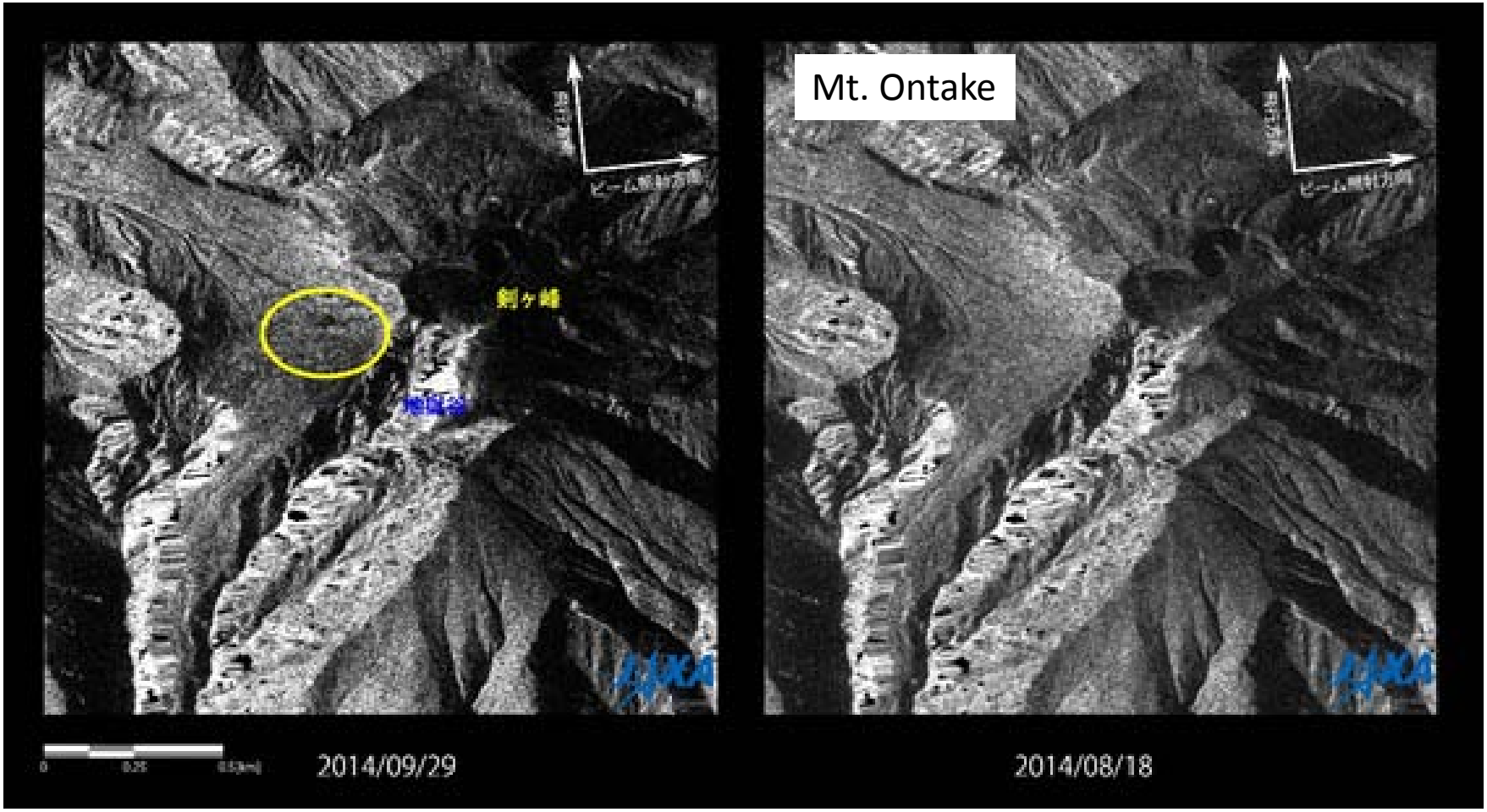
図1: 観測領域（赤枠: 鹿児島県口永良部島）と衛星の軌道（青線）



4. Data Use Example (Volcano)

After Eruption

Before Eruption

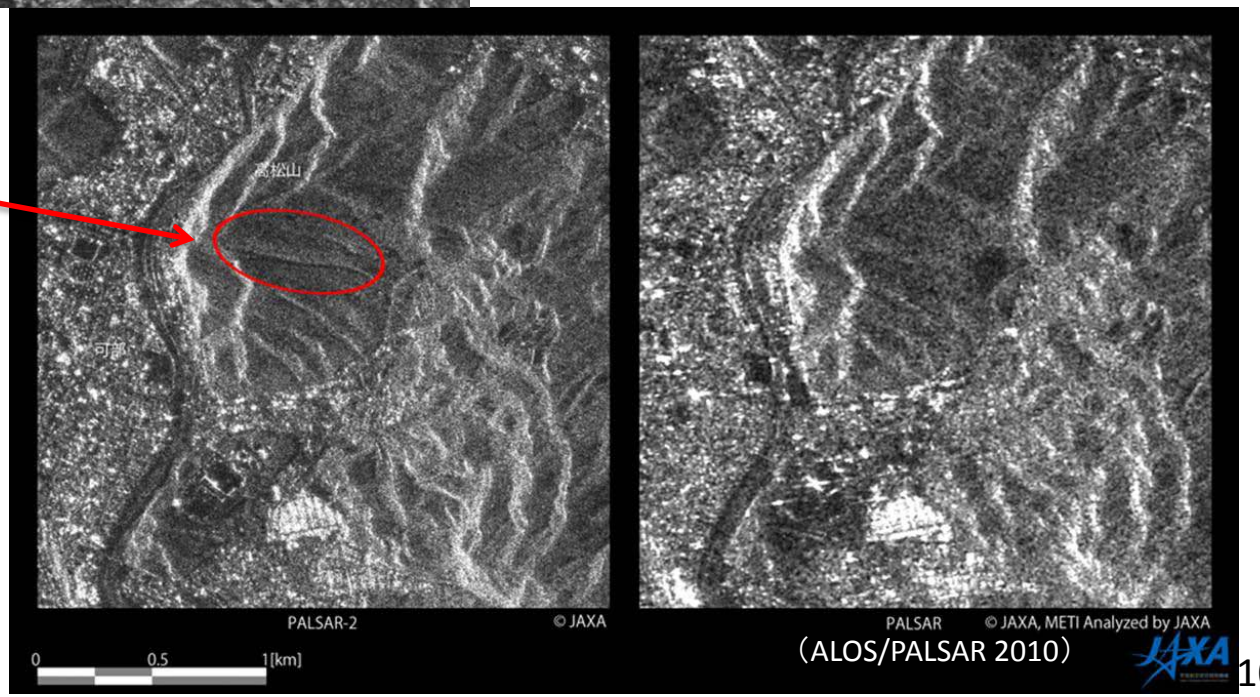


New crater appeared around the summit of Mt. Ontake

4. Data Use Example (Landslide)

◀Bird Eye view of PALSAR-2 by using ALOS/PRISM Digital Surface Model

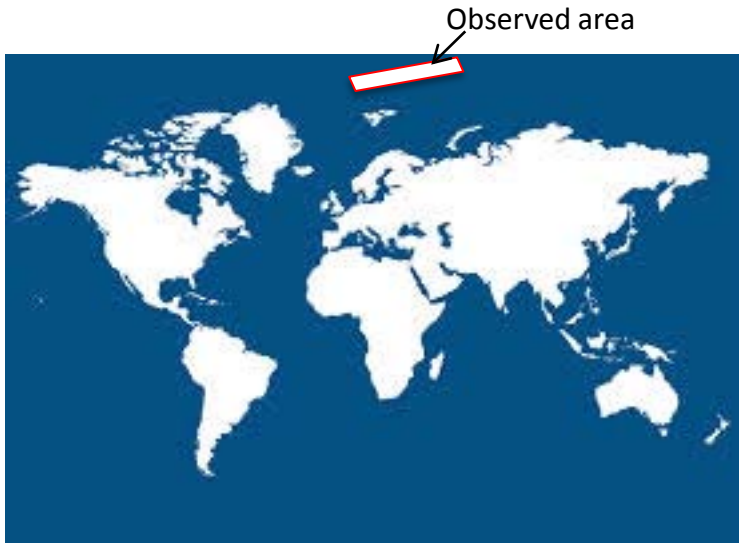
Landslide



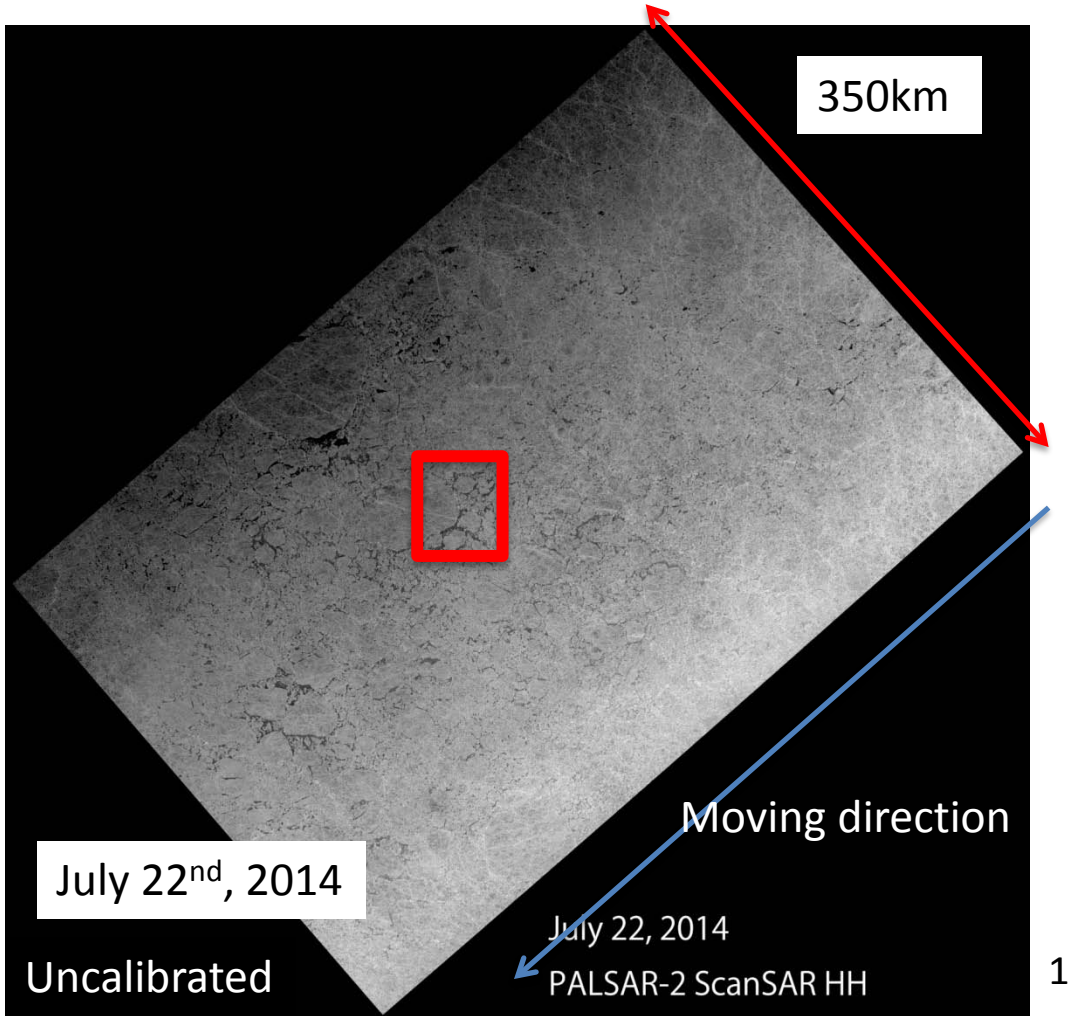
（ALOS/PALSAR 2010）

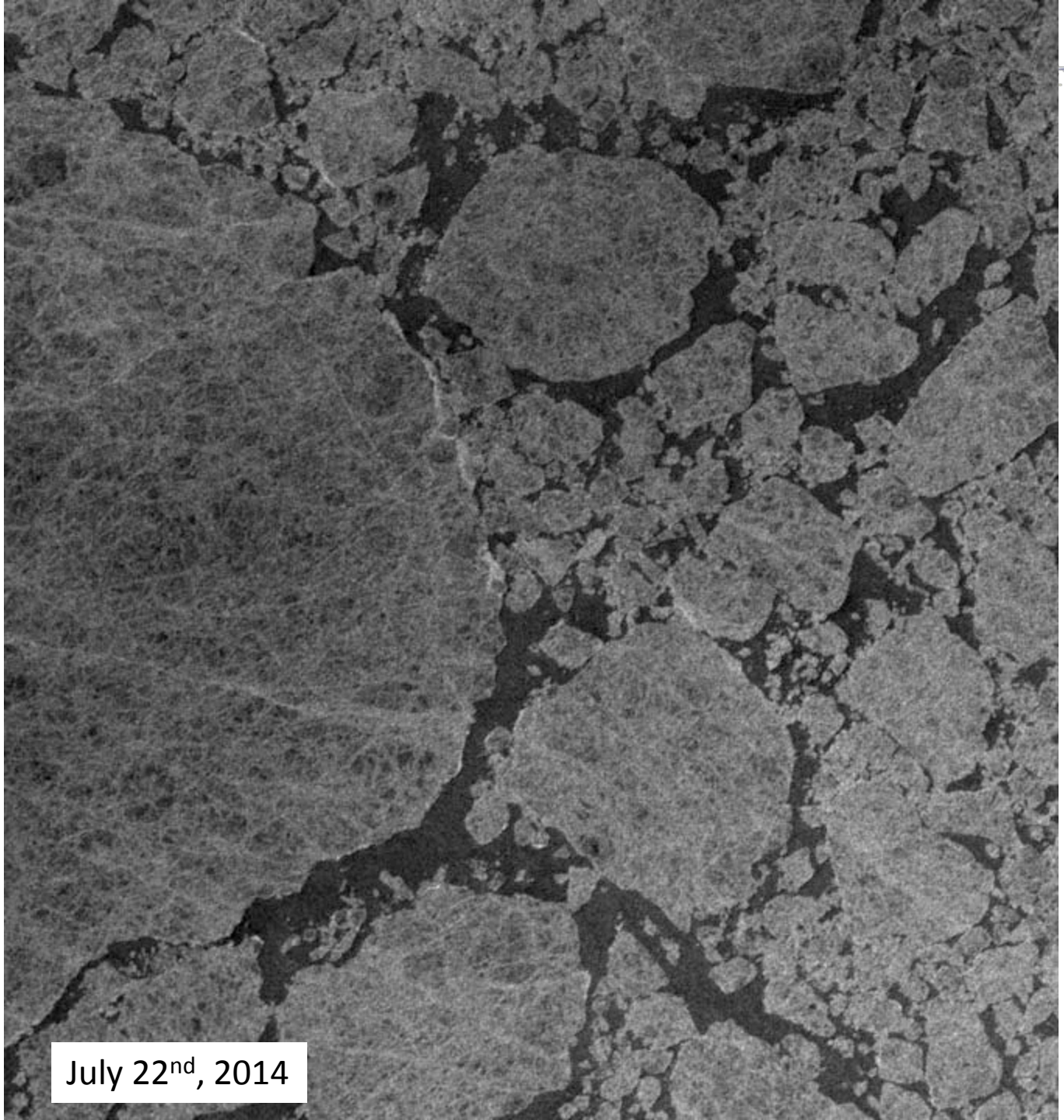
4. Data Use Example (Sea ice Monitoring)

Japan Coast Guard will use ALOS-2 data to produce Sea Ice Charts over the Ses of Okhotsk from the winter of 2014.
The image below is over the Arctic Sea.



secne center :
latitude 84 north
longitude 43 east




July 22nd, 2014

4. Data Use Example (High Resolution Image)

moving direction

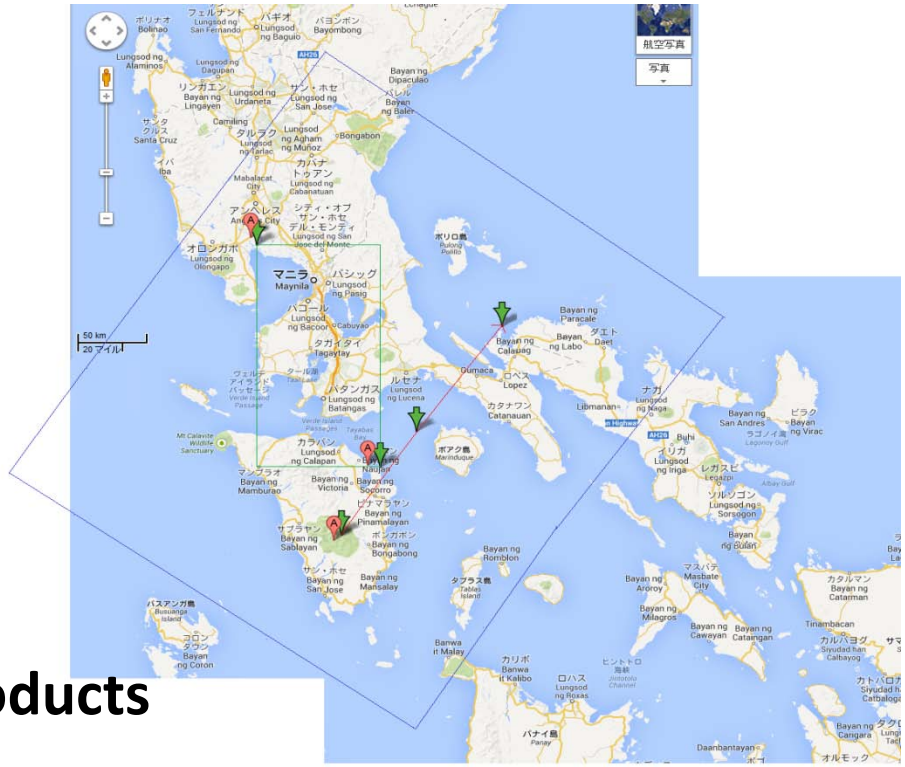
beam direction

Resolution:3m August 29th, 2014
UBS/Right/Asc.

m
0 200

5. ISS KIBO Status

ISS KIBO HighVision Camera is in operation



- swath 350km
- Provide Movie and GeoTiff products
- a few observation chance