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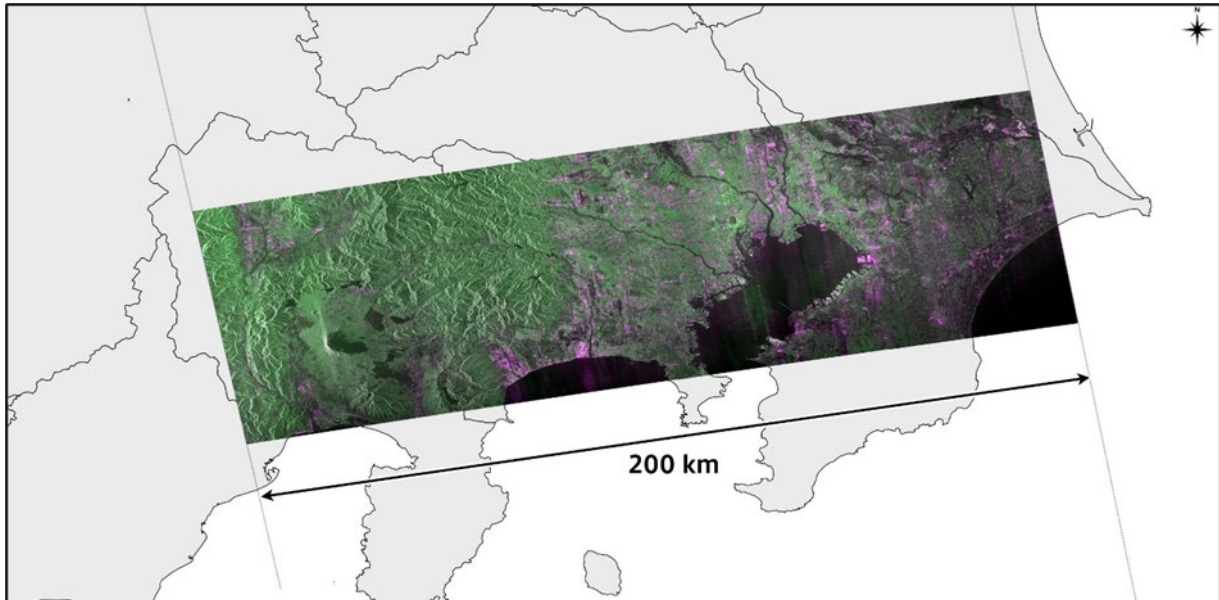
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## **“DAICHI-4” ALOS-4 Satellite Acquires First Observation Images**

*World-class satellite’s wide-area, high-resolution images will support disaster prevention and mitigation*



First observation image from the DAICHI-4 (courtesy JAXA)

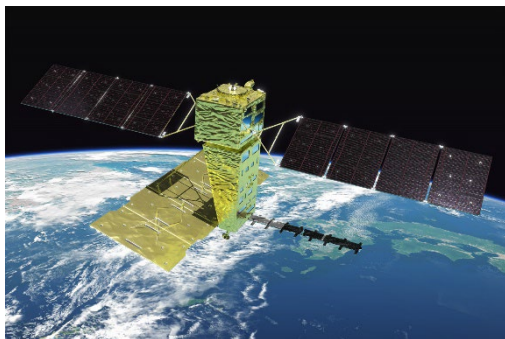
**TOKYO, August 6, 2024** – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today that the first observation images have been acquired in a radio-irradiation test conducted with the Phased Array type L-band Synthetic Aperture Radar-3 (PALSAR-3) on board the Advanced Land Observing Satellite-4 “DAICHI-4” (ALOS-4). The satellite, manufactured by Mitsubishi Electric under contract from the Japan Aerospace Exploration Agency (JAXA), was launched at 12:06:42 (Japan Standard Time) on July 1 aboard the third H3 Launch Vehicle from Tanegashima Space Center in Japan.

The new satellite’s PALSAR-3 radar beams radio waves to Earth’s surface and receives the reflected waves that are used to produce high-resolution images over wide areas. This capability will enable rapid monitoring of disaster-stricken areas, including in the event of multiple natural disasters over a wide area. Mitsubishi Electric began developing the DAICHI-4 in 2017 and was responsible for overall designing, manufacturing

and testing at its Kamakura Works in Japan. The company also developed the PALSAR-3 radar for wide-area, high-resolution observations.

PALSAR-3 achieves the same level of high-resolution images as the radar on board the “DAICHI-2” (ALOS-2), but is also capable of wider, global-scale high-precision observations from an altitude of about 628 km. It will be used to monitor crustal and ground deformation, enabling early detection of abnormalities such as volcanic activity, ground deformation and landslides, as well as support more efficient management of forest resources.

Mitsubishi Electric continues to leverage its well-established expertise to develop and manufacture satellites as well as utilize satellite data to help address critical issues in society.



Rendition of DAICHI-4 (courtesy JAXA)



DAICHI-4 mission mark (courtesy JAXA)

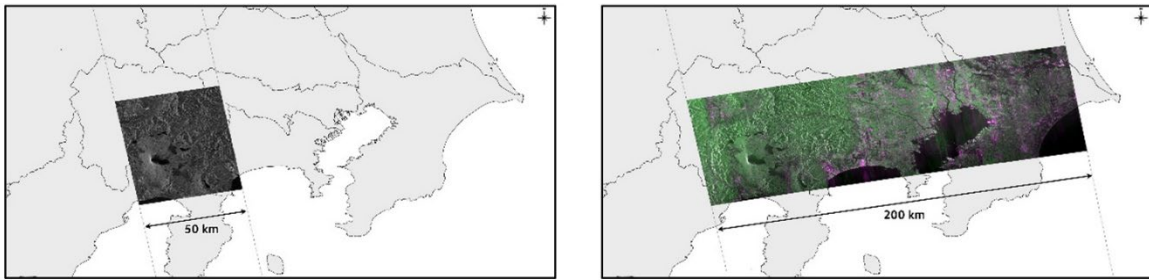
## **Product Features**

### ***1) High-resolution, wide-area observations using new radar developed with new methods and technologies***

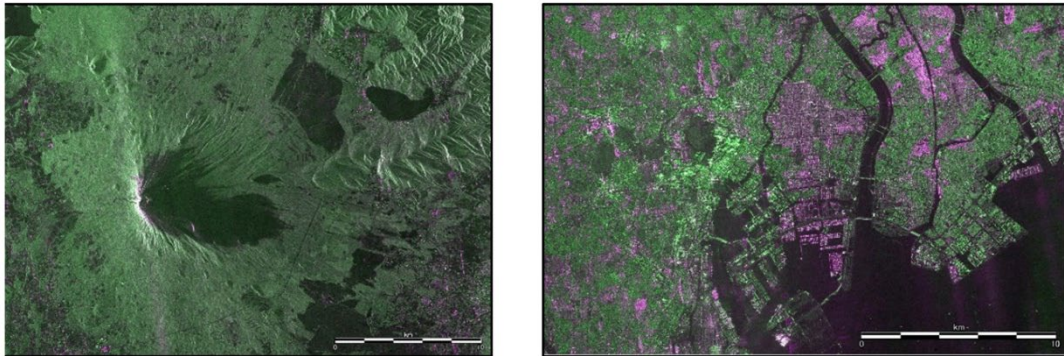
- The DAICHI-4 adopts the world's first<sup>1</sup> multiple transmit channel technology that transmits signals of different frequencies from different areas of the antenna and then combine the signals upon reception.
- While maintaining the DAICHI-2's 3-meter resolution, the DAICHI-4 is the world's first<sup>1</sup> radar satellite to deploy digital beamforming technology, which uses onboard high-speed computing to generate arbitrary beam directions for an observation swath extended to a top-level 200km, four times that of the DAICHI-2.
- Acquisition of wider-area imagery with single observations accelerates information collection following wide-area disasters.
- High output power of the radar is achieved using Mitsubishi Electric's top-level high-power gallium nitride (GaN) amplifier, which has been proven in the DAICHI-2, enabling the DAICHI-4 to maintain image quality even with its expanded observation swath.

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<sup>1</sup> As a practical satellite, according to Mitsubishi Electric research as of August 6, 2024



Observation swaths of DAICHI-2 (left) and DAICHI-4 (courtesy JAXA)



3m-resolution, 200km-wide images acquired by PALSAR-3, showing Mt. Fuji (left) and upper Tokyo Bay (courtesy JAXA)

**2) *More frequent observations due to wider swath contribute to disaster prevention and mitigation***

- The DAICHI-4's wider swath capability enables observations of whole locations across Japan 20 times per year, which is substantially greater than four observations with DAICHI-2.
- When a disaster occurs, the DAICHI-4 can be switched from normal to emergency observation to compare data obtained immediately before and after the disaster, enabling changes to be identified and analyzed to quickly grasp the situation in the affected area. Data across Japan can be continuously and frequently updated, contributing to faster and more accurate assessment of disasters.
- The increased frequency of observations will enable more periodic monitoring across Japan, which is expected to contribute to earlier and multiple detection of abnormal changes, such as ground and crustal deformation.

**3) *Enhanced transmission rate with Ka-band direct transmission system<sup>2</sup>***

- The Ka-band direct data transmission system developed under "DAICHI-3" (ALOS-3) has been enhanced to support the DAICHI-4 mission. The transmission data rate of the DAICHI-4 is 3.6 Gbps, 4.5 times<sup>3</sup> higher than that of the DAICHI-2's X-band system, which is the world's highest<sup>4</sup> performance for an earth observation satellite.
- For both normal and post-disaster emergency observations, large amounts of observation data can be rapidly transmitted to the ground.

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<sup>2</sup> A method of sending data directly from the satellite to the ground

<sup>3</sup> For dual-frequency transmissions

<sup>4</sup> According to Mitsubishi Electric research as of August 6, 2024

**Main Specifications**

Dimensions (in orbit)		10.0m×20.0m×6.4m	
Mass		approx. 3,000kg	
Electricity	Power generation	approx. 7,000W	
	Battery capacity	380Ah	
Transmission rate		3.6Gbps (Ka-band)	
Storage capacity		approx. 1Tbyte	
Observation performance	Spotlight mode	Resolution	1m×3m
		Swath	35km×35km
	Stripmap mode	Resolution	3m, 6m and 10m
		Swath	200km
	ScanSAR mode	Resolution	max. 25m
		Swath	700km
Orbit		628km	
Design life		7 years	

**Mitsubishi Electric’s Space Business**

Mitsubishi Electric, a leader in Japan’s space development, has participated as a prime contractor in nearly half of JAXA’s satellite-development projects. Going forward, Mitsubishi Electric will continue to enhance its advanced technologies and space business to contribute to greater sustainability and resilience in society for increased prosperity.

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**About Mitsubishi Electric Corporation**

With more than 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its “Changes for the Better.” The company recorded a revenue of 5,257.9 billion yen (U.S.\$ 34.8 billion\*) in the fiscal year ended March 31, 2024. For more information, please visit [www.MitsubishiElectric.com](http://www.MitsubishiElectric.com)

\*U.S. dollar amounts are translated from yen at the rate of ¥151=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2024