



The International Charter Space and Major Disasters NEWSLETTER

April 2021 | Issue 22



Activations on map

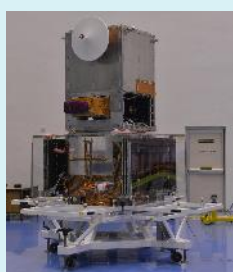


@DisastersChart



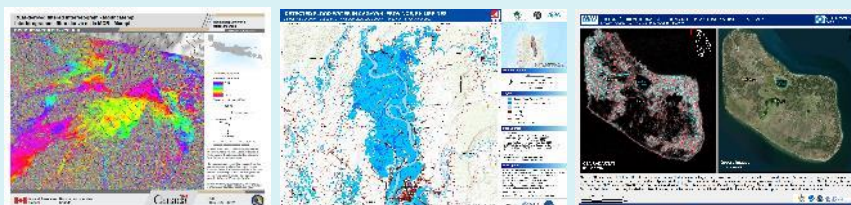
JAXA lead the Charter for the last 6 months

Japan Aerospace Exploration Agency (JAXA), a member of the Disasters Charter since 2005, started its leadership period of the Charter in November, 2020.



Three new satellites joined the Charter (virtual) constellation

- 🌐 Vision-1, Airbus
- 🌐 CBERS, INPE
- 🌐 SAOCOM, CONAE



Canada's recent contributions to the Disasters Charter

Since June 2, 2020, the RADARSAT Constellation Mission (RCM) has been providing its data to the Disasters Charter



Bringing together new and efficient space technologies to support disaster management

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Japanese Space Agency took the leadership of the International Charter 'Space and Major Disasters' for six months

Japan Aerospace Exploration Agency (JAXA), a member of the Disasters Charter since 2005, started its leadership period of the Charter in November 2020. JAXA was expected to organize the 44th meeting of the Charter in Japan but COVID-19 did not allow it and the meeting was held online.

During the JAXA leadership period, the Charter had its 700th activation, requested by Manila Observatory via Charter Co-Operating Body, Asian Disaster Reduction Center (ADRC). The members of Sentinel Asia, a disaster reduction framework in Asia and the Pacific area, can benefit from the collaboration between the Charter and Sentinel Asia.

The leadership of the Charter rotates every six months and the next lead agency, after JAXA, is the Indian Space Research Organisation (ISRO) who starts its leadership in April 2021.



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Vision-1 Airbus

Launched on September 16, 2018, Vision-1 provides complementary imaging capacity to the existing Airbus Earth Observation constellation. Vision-1 provides 0.87 m resolution imagery in the panchromatic band, 3.48 m in the multispectral bands (NIR, RGB), across a 20.8 km swath width, and delivers orthorectified imagery products to end users. These specifications are ideal for infrastructure monitoring and environmental applications, crucial for disaster response.

Vision-1 operations are coordinated by Airbus in the UK, following integration into the Airbus UK Payload Data Ground Segment, which already operates the commercial imaging of the DMC Constellation.



*Fires and burn scars, NSW, Australia, Charter Call 726 - Credit: Vision-1
© Airbus Defence and Space Limited 2019*

This satellite image is an example of Vision-1 imagery, acquired on December 16, 2019, during extensive wildfires in Australia. The image presents a false-color composite of near-infrared (NIR), red and green spectral bands of Vision-1. Healthy vegetated areas are highlighted in bright red in the false-color composite, and areas with dark grey/brown highlights indicate burned vegetated areas caused by wildfire damage.



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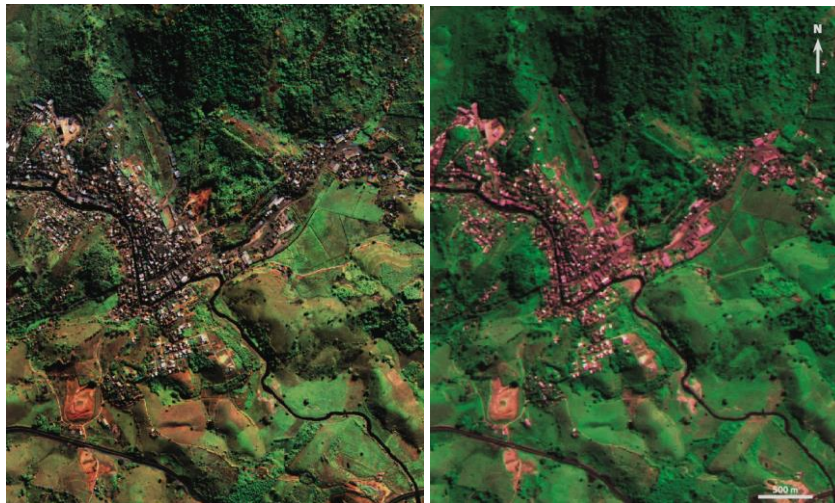
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INPE contribution to the Charter: CBERS program and future Amazonia satellites

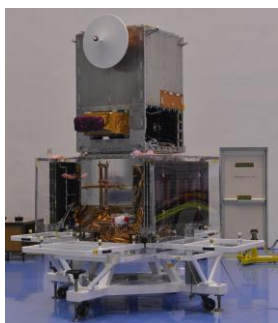
INPE started the development of satellites in the 1980's and launched the first data collecting satellite in the 1990's. In addition to data collection satellites, INPE's program included Earth Observation satellites in two series: CBERS and Amazonia. The CBERS (China-Brazil Earth Resources Satellite) Program has been running since 1988 between China and Brazil and 6 satellites have been built (CBERS-1, CBERS-2, CBERS-2B, CBERS-3, CBERS-4, CBERS-4A). Currently CBERS-4 and CBERS-4A images are used to detect deforestation and fires in Brazil, including the Amazon region, to monitor water resources, agricultural areas, urban growth, land occupation, for educational purposes and to respond to Disasters Charter emergencies, among countless applications.

CBERS-4A was launched in December 2019 and has been supplying images to the Disaster Charter since August 2020 and, in comparison to CBERS-4, has improved overall characteristics including the WPM (Multispectral and Panchromatic Wide-Scan) Camera with more detailed spatial resolution, while maintaining compatibility with the MUX and WFI cameras. The WPM camera adds an additional band in the visible blue spectral region and enhanced spatial resolution.



CBERS-4 and CBERS-4A image acquired over the city of Iconha (Espírito Santo, Brazil) where flooding and landslides took place in January 2020 (Charter Activation 642). On the left, CBERS-4A WPM sensor at 2-meter spatial resolution true color image. On the right, CBERS-4 PAN sensor at 5-meter spatial resolution false color (Red band in red highlight, Infrared band in green, and green band in blue).

The Amazonia series satellites are fully developed in Brazil and use a Multi-Mission Platform. This platform provides the common parts of a satellite and couples different instruments. Amazonia-1 carries the WFI camera to ensure compatibility and high temporal repeatability with the same cameras on CBERS-4 and CBERS-4A. Amazonia-1 was launched on February 28, 2021, from Satish Dhawan Space Centre (SHAR) in India, and its commissioning phase will be finished by May, 2021. For disaster response by the Charter, the combination of WFI images from three satellites will ensure almost daily coverage of the world at the 60-meter spatial resolution range.



Amazonia-1 shown at Sriharikota in India during preparations for launch and, on the left, the WFI sensor image over Brazilian Northeastern coast.



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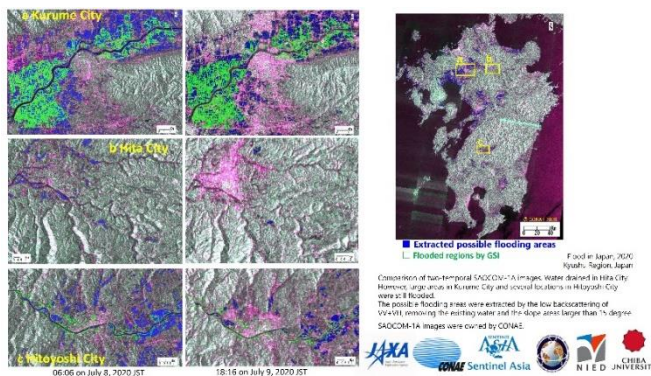


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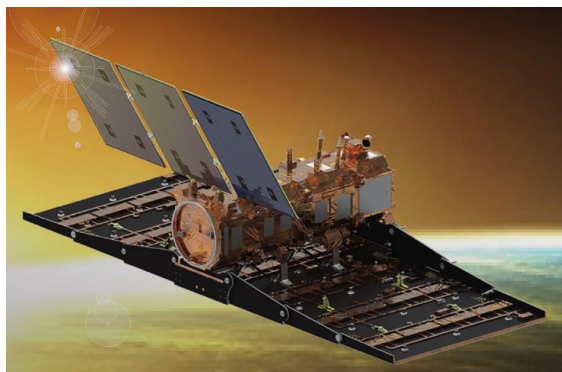
SAOCOM Argentinean Radar Earth Observation Mission

Developed by CONAE, the National Commission on Space Activities, within the scope of the Ministry of Science, Technology and Innovation of Argentina, the SAOCOM constellation is the first Latin American Radar Earth Observation Mission. It consists of two satellites: SAOCOM 1A, launched in October 2018, and SAOCOM 1B, launched in August 2020, each one carrying a full polarimetric L-band synthetic aperture radar (SAR) instrument. SAOCOM 1A contributed approximately 330 products to the International Charter during 2020.



Flood in Japan. SAOCOM 1A product acquired 09/07/2020. Charter Activation #657.

The mission's main goal is to gather soil moisture information and provide data to support emergency response. The data provided by SAOCOM 1A and 1B contribute to increase productivity and competitiveness of sectors like agriculture by generating, for example, risk maps for the control of crop diseases, to create efficient fertilizer application systems and for early warning of floods, especially in the Argentinean Pampas region.



Each SAOCOM satellite weighs 3 tons, carries a SAR antenna composed of 7 folding panels 35 square meters fully deployed, and can acquire about 225 images per day.

The SAOCOM Mission Control Center is located at CONAE's Teófilo Tabanera Space Center, in the Province of Córdoba, Argentina. The ground segment consists of two ground stations in Argentina with the support of partner stations around the world. SAOCOM was developed within the framework of the Argentine National Space Program by CONAE with the participation of the Argentine space industry and organizations of the national system of science and technology like the Atomic Energy Commission (CNEA) and companies like INVAP (the main contractor of the project) and VENG.

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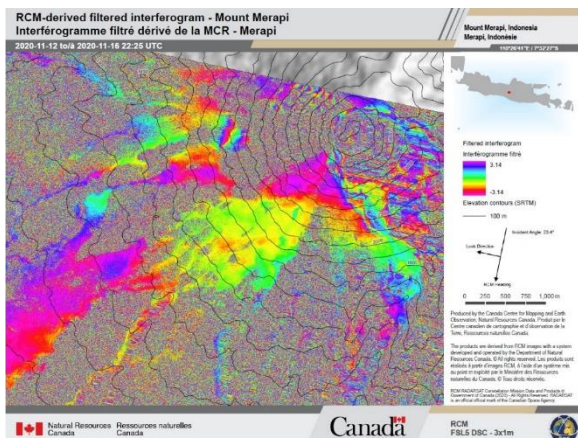
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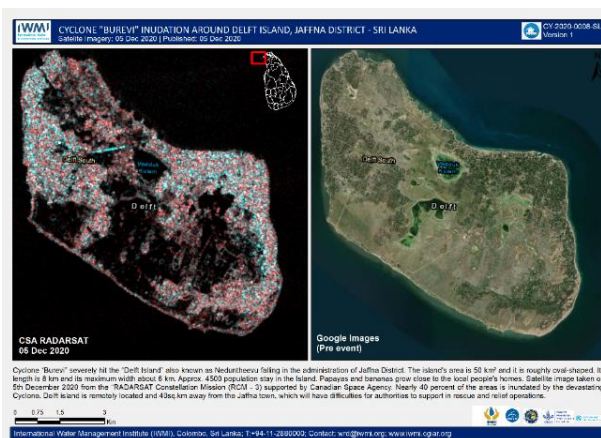
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Since June 2, 2020, the RADARSAT Constellation Mission (RCM) has been providing its data to the Disasters Charter, to support disaster response worldwide. Below are some examples of recent value-added products, created using RCM data.



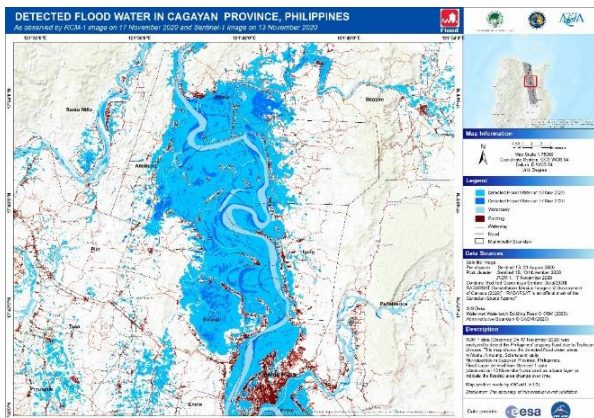
Volcanic eruption of Mount Merapi in Indonesia
RCM-derived filtered interferogram showing phase change on the descending pass of Mount Merapi, between November 12 and November 16, 2020.

RADARSAT Constellation Mission Imagery © Government of Canada (2020). RADARSAT is an official mark of the Canadian Space Agency. Map produced by the Canada Center for Mapping and Earth Observation.



Effects of Cyclone Burevi on Delft Island, Sri Lanka
RCM image (left) showing that nearly 40 percent of Delft Island was flooded by the cyclone.

RADARSAT Constellation Mission Imagery © Government of Canada (2020). RADARSAT is an official mark of the Canadian Space Agency. Map produced by International Water Management Institute (IWMI).



Flood water detection in Cagayan Province, Philippines
RCM data was analyzed to detect flood water areas in Cagayan Province following Typhoon Ulysses.

Contains modified Copernicus Sentinel data (2020). RADARSAT Constellation Mission Imagery © Government of Canada (2020). RADARSAT is an official mark of the Canadian Space Agency. Map produced by Geoinformatics Center AIT.

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