



17 September 2015

Issue 11

## ISRO takes over chairmanship of the International Charter 'Space and Major Disasters'

Indian Space Research Organisation (ISRO) took over the responsibility of lead agency of International Charter 'Space and Major Disasters', from Korea Aerospace Research Institute (KARI) during April, 2015.

More than 25 delegates of the Charter Member agencies participated in the 33<sup>rd</sup> meeting of the International Charter, at Hyderabad, India.

ISRO will be continuing the responsibility of Charter Lead for the next six months, until mid-October 2015.

### Recent Activation

- Flood in Brazil
- Landslide in Colombia
- Typhoon Dolphin in the Mariana Islands
- Earthquake and landslide in Nepal and India
- Earthquake in China
- Calbuco Volcano In Chile

### Charter Members

- [European Space Agency \(ESA\)](#)
- [Centre national d'études spatiales \(CNES\)](#)
- [Canadian Space Agency \(CSA\)](#)
- [Indian Space Research Organisation \(ISRO\)](#)
- [National Oceanic and Atmospheric Administration \(NOAA\)](#)
- [Argentina's Comision Nacional de Actividades Espaciales \(CONAE\)](#)
- [Japan Aerospace Exploration Agency \(JAXA\)](#)
- [US Geological Survey \(USGS\)](#)
- [DMC International Imaging \(DMC\)](#)
- [China National Space Administration \(CNSA\)](#)
- [German Aerospace Center \(DLR\)](#)
- [Korea Aerospace Research Institute \(KARI\)](#)
- [National Institute for Space Research \(INPE\)](#)
- [European Organisation for the Exploitation of Meteorological Satellites \(EUMETSAT\)](#)
- [The Russian Federal Space Agency \(ROSCOSMOS\)](#)

Bringing together new and efficient space technologies to support disaster management





## Nepal Earthquake



A massive 7.9 magnitude shallow focus earthquake struck Nepal on 25 April 2015 at 11.41 AM (IST), followed by number of aftershocks. The epicentre of this earthquake was near Barpak village, which is approximately 80 km NW of Kathmandu, the capital city of Nepal. This earthquake also caused tremors in many parts of India, mainly in the states of Bihar, West Bengal and Uttar Pradesh.

International Charter was activated on 25 April 2015 (call 530/531) to collect satellite data for damage assessment. Charter member agencies contributed more than 286 scenes/frames of data from 19 satellite sensors towards this activation.

Value Addition was done by ISRO, UNOSAT, SERTIT, ROSCOSMOS, BGS, NGA, ICIMOD, AIT and other agencies. The value added products were provided to relief agencies of India, Nepal, UK, USA, France, Germany, China, Korea, Russia and others.

Value added products were also distributed through the following web-portal.

<https://www.disasterscharter.org/web/guest/activations/-/article/landslide-in-nep-2>

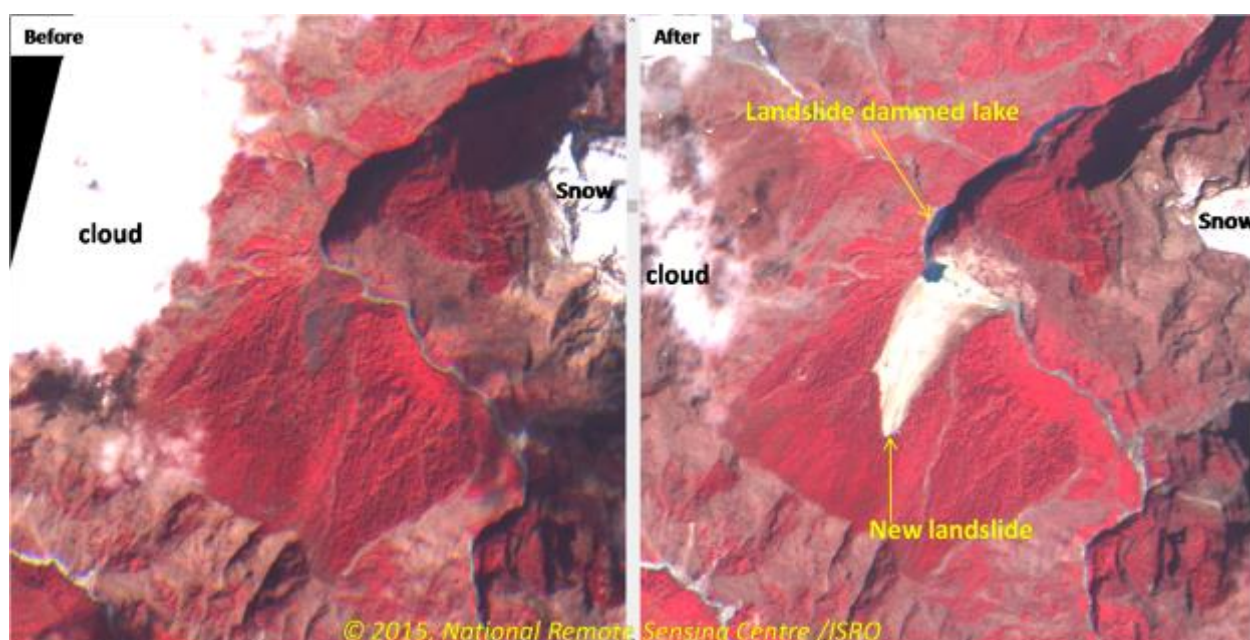
<http://drrportal.gov.np/>

<http://bhuvan-noeda.nrsc.gov.in/disaster/disaster/disaster.php#>

<https://unosatgis.cern.ch/live/EQ20150425NPL/>

<http://hddsexplorer.usgs.gov/>

Satellite data collected through Charter were mainly used to assess damage to the building including the heritage structures. Mapping of co-seismic landslides and identification of valley blocking landslides were carried out from high resolution satellite data.



**Valley blocking landslide, Prok village, Gorkha district, Nepal**





**Dharahara tower, Kathmandu**

## 10 years of CARTOSAT-1

CARTOSAT-1 was launched on 05 May 2005 and will be completing 10 years in orbit on 05th May 2015. During these 10 years the satellite was operated in different modes to collect valuable data for the users as well as the International Ground Stations.

The spacecraft is configured with the Panchromatic cameras which are mounted such that one camera is looking at +26 deg. w.r.t. nadir and the other at -5 deg. w.r.t. nadir along the track. (Fig-1) While this is the normal mode of operations of Cartosat-1, these two cameras provide stereoscopic image pairs in the same pass. Also the whole spacecraft is steerable across track to provide wider coverage (~ 53 km) through Wide Mono mode.

During the years Cartosat-1 has supported much activation with stereo as well as mono collections in place. Presently with the increase in satellite resources, we have been able to cater to the increased demand and the turnaround time of the data supplied has been improved to 1h after the data is downloaded at any station.

### Major Events supported:

- |   |  |
|---|--|
| 2008- Floods in India   | 2012- Earthquakes in Iran, China                 |
| 2009- Flood in Myanmar  | Floods in Niger, Philippines                     |
| 2010- Tsunami in Indonesia  | 2013 - Earthquakes in China, Philippines         |
| 2011- Tsunami in Japan, Earthquake in New Zealand, Earthquake in Turkey | Fires in Cordoba, Storm/Hurricane in Philippines |
|   | 2014- Landslide and Floods in Petro              |



## Charter at “UN World Conference on Disaster Risk Reduction” in Sendai, Japan

Third UN World Conference on Disaster Risk Reduction (WCDRR) was held from 14 to 18 March, 2015 in Sendai City, Japan, one of the most severely damaged areas by the Great East Japan Earthquake occurred 2011. This is an UN-hosted conference to discuss international strategy on disaster risk reduction. More than 6000 registered delegates, including the Secretary-General of the UN, ministers and high level officials from disaster management authorities from 187 UN member nations participated to the official conference.

JAXA exhibited how EO solutions are very useful for disaster management using example of EO product during the Great East Japan Earthquake. The charter activities were also introduced at the exhibition to the participants. This presentation promoted a better understanding on the Charter and usefulness of EO solutions.

The conference adopted “Sendai Framework for Disaster Risk Reduction 2015-2030”. For more information about WCDRR, visit: <http://www.wcdrr.org/home>







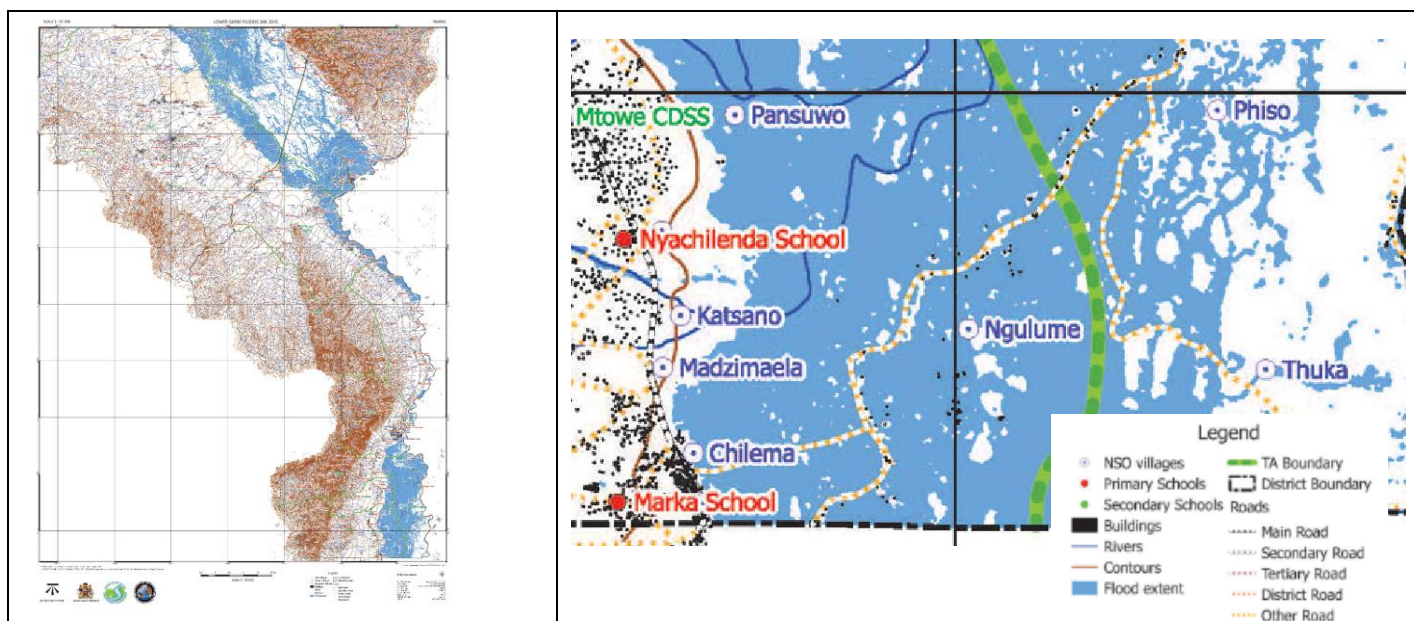
## Malawi benefits from direct access to the Charter



In 2012, the International Charter 'Space and Major Disasters' launched its "Universal Access Initiative". Since then, any national disaster management authority can register with the Charter and become an "Authorized User" after short training. Thus, Universal Access benefits national disaster management authorities in countries beyond those of the Charter members, which were previously unable to make direct requests to the Charter.

In August 2014 Malawi has become an Authorized User of the Charter. Some months later, in January 2015, a severe flood struck the country. About 200,000 people have been forced from their homes by the disaster, and at least fifty have died. The disaster has also taken a toll on crops, damaging or destroying fields with the rising flood waters. On 13th of January, Malawi's President declared approximately half of the country a disaster zone, and appealed to the international community for support (provision of tents or food, search and rescue operations). At that time, Malawi's Department of Disaster Management Affairs had already activated the Charter for this major disaster and soon received imagery and derived information products from the Charter's constellation of earth-observing satellites. At that time, there was poor information about the extent of the flooding, as well as possibly affected infrastructure. Charter products such as the one shown below could significantly help to overcome this information deficit. The new Charter user from Malawi stated afterwards that operations and planning benefitted a lot from the Charter data, because huge areas of the country were not reachable over land.

The Charter itself is ready to contribute with satellite imagery to relief efforts after major disasters worldwide and confident that more success stories will be reported in future, following the registration of new users under Universal Access.



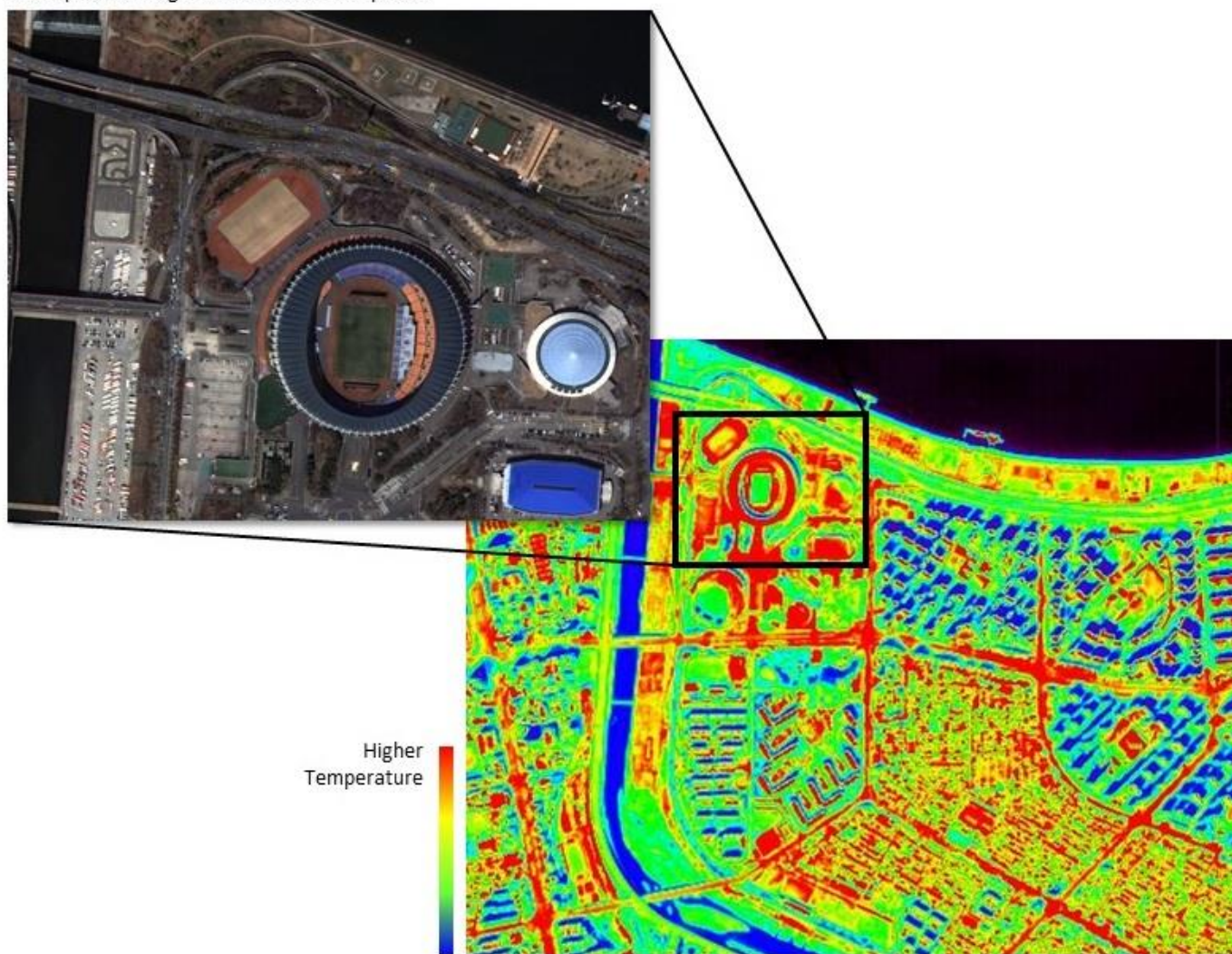
**Figures Left (full map) and right (enlarged section):** Product based on the analysis of RADARSAT-2 data provided by CSA (© MacDonald, Dettwiler and Associates Ltd. 2015). The map was produced by Malawi Department of Surveys, Ministry of Lands, with the help of DLR, which took the role of the Charter Project Manager for this activation



## Successful launch of KOMPSAT-3A and its first imagery

The Korean Multi-Purpose Satellite KOMPSAT-3A, equipped with an infrared imaging payload was successfully launched on March 25, 2015 on a Dnepr-1 vehicle from the JasnyDombarovsky launch site in Russia. It operates in a sun-synchronous orbit at an altitude of 528 km and provides high-resolution infrared and electro-optical images. The spatial resolution is 0.55 m in the panchromatic band, 2.2 m for the multispectral bands and 5.5m in the infrared band. The swath width is 12 km. It is expected to complement the KOMPSAT-3 multispectral earth observation mission launched on May 18, 2012, and to enhance civilian applications such as terrestrial change detection, environmental monitoring, and disaster management. KOMPSAT-3A is currently under the Cal/Val phase and the imagery will be distributed approximately from October this year.

Multispectral image with true color composite



Infrared image by pseudo color

Figure 1. Multispectral and Infrared images gathered by KOMPSAT-3A in Seoul, Korea on April 1, 2015 (Credit by KARI)