Sentinel Asia and ICIMOD
Space-based disaster management support

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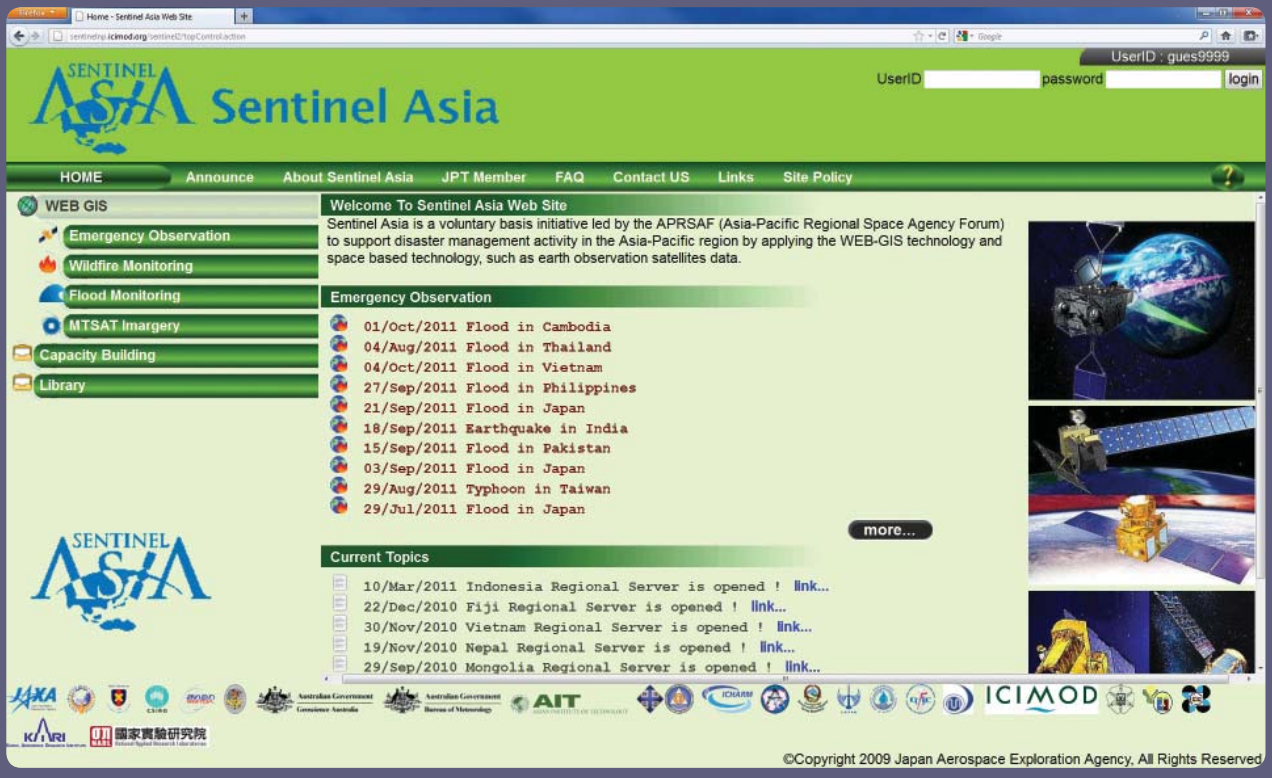
Asia has been seriously affected by natural disasters over the last 35 years, the effects of which are exacerbated by its high population levels. The region has sustained 61 per cent of global fatalities associated with such disasters (ADRC 2011).

The Asia-Pacific Regional Space Agency Forum (APRSAF) initiated the Sentinel Asia programme in 2005 to to showcase the value and impact of Earth observation technologies, combined with near real-time Internet dissemination methods and WebGIS mapping tools, for disaster management support in the Asia-Pacific region (Figure 1).

Sentinel Asia aims to improve safety in society through information and communication technology (ICT) as well as space technology, to boost the speed and accuracy of disaster preparedness and early warnings and to minimise the number of victims and socioeconomic losses.

Sentinel Asia is involved in ongoing collaboration with the international community and the Asian Disaster Reduction Center (ADRC). Technical support is provided by the Japan Aerospace Exploration Agency (JAXA). Sentinel Asia receives data from a number of satellites of Asian countries such as India, Japan, Korea, Taiwan, and Thailand. The activities of Sentinel Asia include

Figure 1: **Sentinel Asia website (http://sentinel.tksc.jaxa.jp)**



emergency observation in the case of major disasters such as wildfires, floods, and earthquakes. Sentinel Asia also undertakes capacity building in the use of satellite imagery for disaster management.

International Charter on Space and Major Disasters

The International Charter on Space and Major Disasters is a system for making space satellite data available quickly and free of charge in the event of major disasters. Sentinel Asia and the International Charter for Space and Major Disasters began collaborating in 2009. In the event of a Sentinel Asia emergency observation, the charter can facilitate access to additional satellite resources in disaster-affected areas.

Activities of Sentinel Asia and ICIMOD in the Hindu Kush-Himalayas

The Hindu Kush-Himalayan (HKH) region is one of the world's disaster hotspots. ICIMOD collaborates with Sentinel Asia as a member of the data analysis node to support space-based disaster management in the Himalayan region. Sentinel Asia provides emergency observation for major disasters in the region such as floods and forest fires. Some of the emergencies observed include the Koshi flooding in Nepal in 2008, flooding in Bhutan in July 2010, and the Pakistan floods in July 2010. In addition, flood and wildfire monitoring products are being developed for the region.

Establishment of WINDS receiving station at ICIMOD

ICIMOD inaugurated a receiving station for JAXA WINDS (Wide-band Interworking Engineering Test and Demonstration Satellites) at its headquarters in Kathmandu in October 2010. WINDS is a super high-speed Internet satellite for emergency response. Its purpose is to ensure steady communication during sudden disasters and to improve communication services in underserved areas. WINDS has the capability to provide quick access to satellite imagery from the Sentinel Asia data providers.

Pakistan floods

Starting in July 2010, the Khyber Pakhtunkhwa province of Pakistan was hit by massive flooding due to monsoon rains. Floodwaters moved south through the Punjab and Sindh provinces, mainly down the Indus River valley. Officials described the flooding in northwestern Pakistan as the worst since 1929. ICIMOD conducted rapid response mapping for the flood-affected areas in the three provinces with the support of Sentinel Asia's partners. The floods were observed and analysed using ALOS, IRS, and FORMOSAT-2 satellite imagery.

Pakistan flooding, 2010

Capacity building

To build the capacity of national partners involved in disaster management, ICIMOD and JAXA jointly organised a regional training workshop for ICIMOD's member countries in the first quarter of 2011. The workshop focused on the use of the Sentinel Asia system and on visualising and interpreting satellite data obtained through Sentinel Asia during emergency situations.

Reference

ADRC (Asian Disaster Reduction Center) (2011) Natural Disaster Data Book 2009 (An Analytical Overview). Kobe, Japan. www.adrc.asia/publications/databook/ORG/databook_2009/pdf/DataBook2009.pdf (accessed October 2011)