

3-3. Transmitting Image of Disaster Area and Offering Image Analysis Technique

3-3-1. Sentinel Asia

(1) Objective

The Asian Disaster Reduction Center (ADRC) continues to participate in the “Sentinel Asia” project, which was endorsed and launched by the Asia-Pacific Regional Space Agency Forum (APRSAP). The project was launched in 2006 with an objective of establishing a disaster risk management system by making the use of satellite images in Asia. ADRC functions as the focal point to receive emergency observation request in the framework of the Sentinel Asia. Upon receiving a request from the disaster management agencies of Asian countries, ADRC decides whether the request is appropriate considering the emergency observation should be utilized mainly for the assessment of damages and casualties etc. Once the request is decided as appropriate, ADRC will forward the request to six space agencies, namely, ISRO (India), JAXA (Japan), GISTDA (Thailand), KARI (Korea), NARL (Taiwan) and CRISP (Singapore) that are participating in the Sentinel Asia Project.

On 4 June 2009, in accordance with the Cooperation Agreement between the United Nations Office for Outer Space Affairs (UNOOSA) and ADRC, “ADRC UN-SPIDER Regional Support Office (ADRC UN-SPIDER RSO)” was established, for the purpose of UN disaster management and immediate response, within ADRC premises and operated by ADRC staff members as coordinators of the ADRC UN-SPIDER RSO.

ADRC, as a UN-SPIDER RSO, should work towards ensuring the successful completion of the UN-SPIDER Work Plan thereby facilitating countries in Asia to make access to and develop the capacity of utilizing space-based information to support the full disaster management cycle.

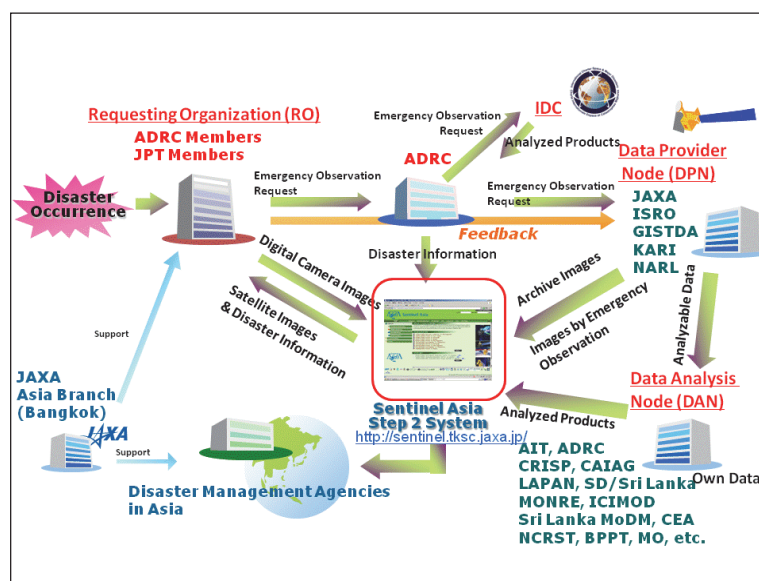


Fig. 3-3-1-1 Flow of emergency observation

(2) Activities for this year

① Emergency observation

From January to December 2012, twenty-five (25) emergency observations were requested, and nineteen (19) were undertaken. And from January to October 2013, eighteen (18) emergency observations were requested, and sixteen (16) were undertaken.

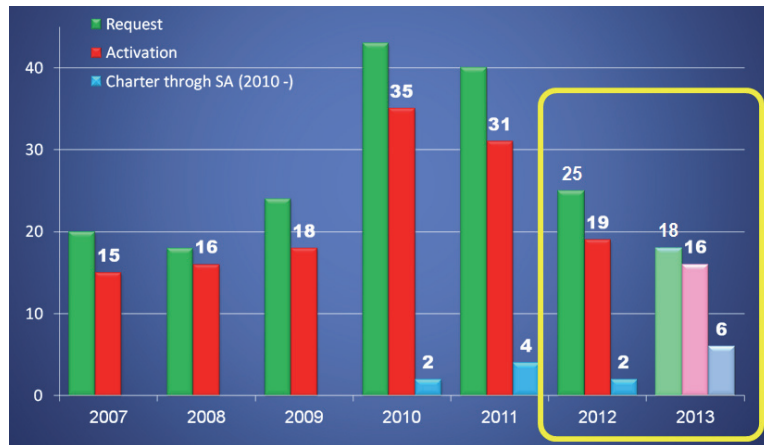


Fig. 3-3-1-2 Changes in the number of emergency observation 2007-2013

② Participation in Sentinel Asia Joint Project Meeting Step-3 (JPTM)

The 1st Sentinel Asia Joint Project Meeting Step-3 (JPTM) was held on 27-29 November 2013 in Bangkok, Thailand. It was organized jointly by the Japan Aerospace Exploration Agency (JAXA) and the Asian Institute of Technology (AIT) of Thailand. Relevant organizations of Sentinel Asia, such as space agencies, disaster management agencies, international organizations and academia participated in JPTM. At the meeting, ADRC reported on the status of the emergency observations that have been implemented, and presented suggestions for improving the questionnaires that are sent out after emergency observations have been conducted.



Fig. 3-3-1-3 JPTM

3-3-2. Achievements of the Sentinel Asia in the HFA and recommendations for the Post-HFA

(1) Objective

It has been more than six years since the Sentinel Asia began to operate a system in 2007 to provide satellite image data of a disaster in the Asia-Pacific region. Participating disaster management /satellite agencies requested implementation of this activity a total of 190 times as of the end of December, 2013.

Meanwhile, as the International Strategy for Disaster Reduction that succeeds the International Decade for National Disaster Reduction (IDNDR) proposed in the 1990s, the Hyogo Framework for Action (HFA) adopted in 2005 will serve as action guidelines until 2015. There are about two years left until the end of the HFA implementation. Review of the past activities based on the HFA and inputting work toward the formulation of a new framework (post-HFA) after 2015 are being performed by domestic and foreign agencies.

(2) Achievements of Sentinel Asia in terms of the HFA

① Achievements in the application of space and satellite technologies concerning Priority for Action 2: "To identify, assess, and monitor disaster risks and enhance early warning."

Sentinel Asia is a voluntary initiative founded for the sharing of disaster information within Asia-Pacific region, operated by ARPSAF. It is currently working to realize effective utilization of earth observation satellites for regional disaster management using technologies such as remote sensing, Geographical Information System (GIS) and Information Communication Technologies (ICT.)

In a disaster, to a varying degree of urgency depending on the current phase of the disaster (prevention and preparedness, response, recovery or reconstruction), there is a need to "communicate the necessary information accurately and quickly to those in need in the affected area/country." The emergency observation activities under the Sentinel Asia program proceed according to the following work flow: an observation request is received from the affected area/country, the request is accepted, archived data (of the affected area) is provided, observation data of the affected area is provided, and finally, the analyzed product is provided. A system is being constructed for quickly providing services while sharing information through an online system. Data showing the time required for services to be provided using Sentinel Asia in recent disasters (Jan 2011 to Aug 2013) is shown in Fig. 3-3-2-1 and Fig. 3-3-2-2.

Sentinel Asia responds to most Emergency Observation Requests within 48 hours, as shown in Fig. 3-3-2-1.

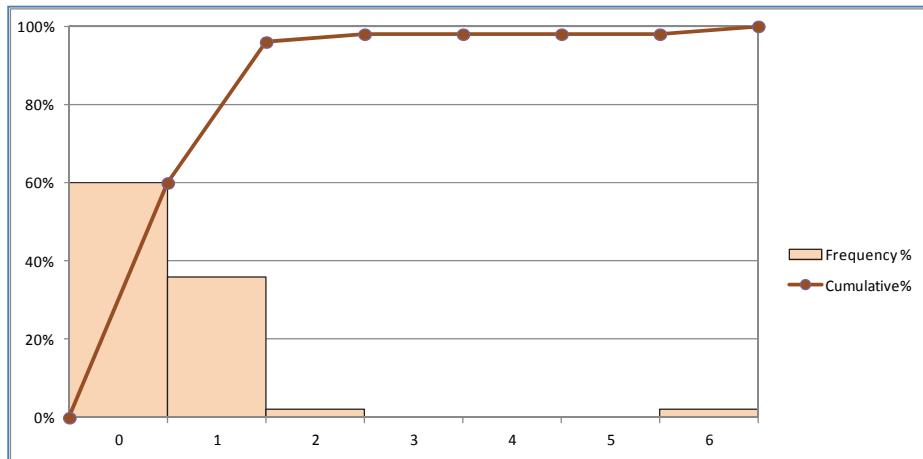


Fig. 3-3-2-1 Number of days between submission of requests and initiation of action in response

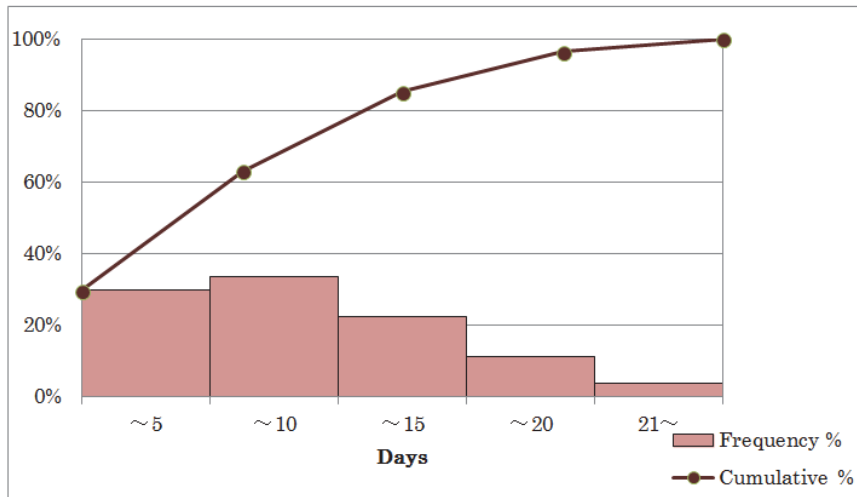


Fig. 3-3-2-2 Number of days between submission of requests and provision of satellite imageries (after disaster)

② Achievements in building regional partnership concerning Priority for Action 3: “Use knowledge, innovation and education.”

Major characteristics of Sentinel Asia scheme are the provision of satellite data by member space agencies upon requests of users (disaster management agencies of the affected area/country) and the additional value by analyzed products of relevant data produced by specialist institutions when needed (see fig. 3-3-2-3 below.)

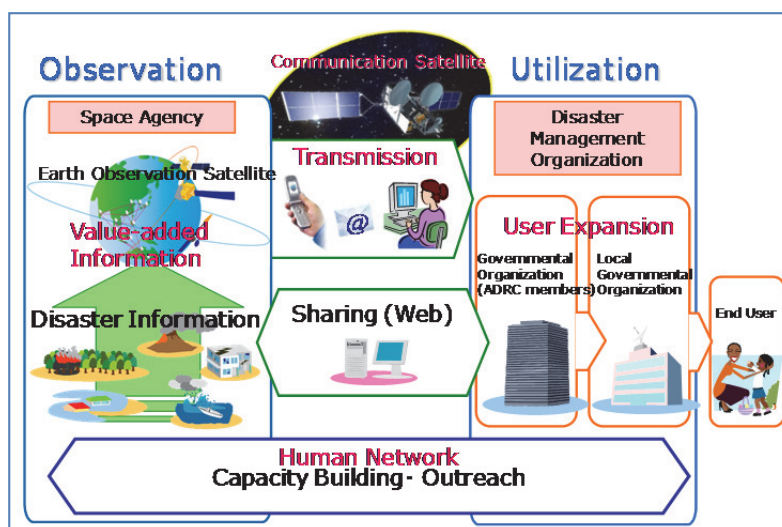


Fig. 3-3-2-3 System of data and information for users

③ Achievements through application of space and satellite technologies in the area concerning knowledge, innovation and education as outlined in Priority for Action 3.

In order to continue and strengthen the network among space agencies, specialists and disaster management agencies, Sentinel Asia has so far carried out a total of nine operational training sessions inviting total 179 users from relevant fields of relevant countries. In addition, ADRC has been disseminating knowledge and information concerning utilization of space-based technologies in disaster management in international conferences such as the Asian Conference on Disaster Reduction, which is the annual conference of ADRC’s member countries, or the Asian Ministerial Conference on Disaster Risk Reduction.

④ Implementation as an international agency, provision of platform for follow-ups and achievements from the application of space & satellite technology

“Implementation of follow-up” for international agencies defined in the HFA states: “In close collaboration with existing networks and platforms, cooperate to support globally consistent data collection and forecasting on natural hazards, vulnerabilities and risks and disaster impacts at all scales.” With its intended use in disaster risk reduction, the platform is required to be versatile, rapid and robust. The latter part of the same section from the HFA states that “these initiatives should include the development of standards, the maintenance of databases, the development of indicators and indices, support to early warning systems, the full and open exchange of data and the use of in situ and remotely sensed observations” referring to the use of satellite imageries in networks and platforms. In this respect, Sentinel Asia, which is a voluntary-based initiative but supported firmly by various potent

organizations such as JAXA or AIT, would meet this requirement.

(3) Recommendations for Post-HFA

Given the challenges yet to be fulfilled by Sentinel Asia as an international cooperation project for the HFA, it makes following recommendations for post-HFA:

- ✓ Utilization of space and satellite technology for monitoring in all disaster phases
- ✓ Promotion of multi-stakeholder dialogues and discussions
- ✓ Promotion of integrated use of satellite and ground data and studies
- ✓ Collection, gathering and sharing of information on the needs of the affected area and the feedback