

# LEGAL AND POLICY ASPECTS OF DISASTER MANGAGEMENT SUPPORT IN ASIA

IISL and ESCL Space Law Symposium 2006  
Vienna, April 2006

**Masami Onoda**

Research Fellow, Japan Society for the Promotion of Science  
Graduate School of Global Environmental Studies, Kyoto University  
Kyoto, JAPAN

## **1. Introduction**

The International Charter “Space and Major Disasters<sup>1</sup>”, initially announced at the 1999 UNISPACE III Conference, has now become a worldwide initiative. Asian countries participate as well, the Indian Space Research Organization (ISRO) joining the Charter in 2001, and the Japan Aerospace Exploration Agency (JAXA) in 2005.

The effort to coordinate space resources is not new in the field of Earth observation. The Committee on Earth Observation Satellites took the challenge up as early as in the 1980s, and a number of attempts have been made in the United Nations, and other multilateral and bilateral forums. Not only within the space community, but also local authorities who actually deal with the disaster management operations need to be involved in developing such a mechanism. Although the space agencies would willingly provide data to demonstrate the usefulness of their space resources, this motivation is not always shared by the user.

This situation is underlined by the fact that, unlike in the field of environmental monitoring, there is no multilateral legal instrument that comprehensively calls for the need of disaster relief nor monitoring, much less for space resources coordination for this purpose<sup>2</sup>. It seems to be that in the field of space-based disaster management support, the activity is still in the stage of voluntary action by space agencies as demonstration efforts.

With such a background, the International Charter can be regarded as an initial attempt of a multilateral framework – taking the form of a voluntary agreement between space agencies – for demonstrating the use of satellite data for disaster management support. At the regional level in Asia, there is also an emerging initiative for utilization of satellite data for Asian countries. In order to consider the present situation of disaster management support from space in Asia, this paper will review the situation in Japan concerning the International Charter, and then introduce an emerging initiative in the Asian region for disaster management, “Sentinel Asia”. We will further consider these activities in light of international law, and discuss some data policy issues.

---

### Copyright

Copyright© 2006 by Masami Onoda., Published by American Institute of Aeronautics and Astronautics, Inc., with permission.

## 2. Japan and the International Charter

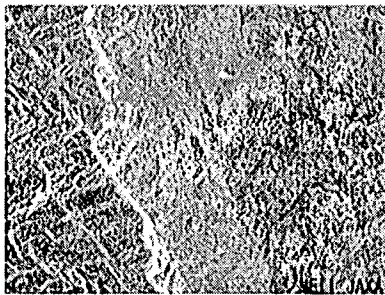
The International Charter, established in 2002, is a framework to promote contributions from space organizations to help areas affected by disasters by providing Earth observation satellite data voluntarily, based on the best efforts of the member organizations. The Parties to the International Charter (space agencies) and “associated bodies”<sup>3</sup> organize the overall cooperation. The activities are coordinated by the Board of representatives from each Party and an Executive Secretariat. No financial exchange takes place among participating organizations.

JAXA joined the International Charter on the occasion of the Third Earth Observation Summit (Brussels, February 16, 2005), with the purpose of promoting contribution to disaster management by Earth observation satellites<sup>4</sup>. It was six years after the initial launch of the International Charter in 1999, a period when Japan did not possess its own satellite in orbit, and there was less incentive to join the Charter until the launch of the "Daichi" (the Advanced Land Observing Satellite (ALOS)) came reasonably in sight. Just after its successful launch in January

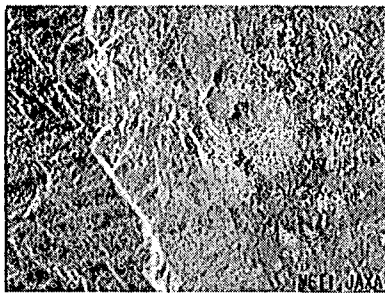
2006, Daichi acquired images of the Leyte Island in the Republic of the Philippines, where a huge landslide occurred on February 17. The images were observed and taken by the PALSAR instrument onboard Daichi around 10:50 a.m. February 24 (JST). JAXA provided the images to the International Charter, and to the Asian Disaster Reduction Center (ADRC) – as part of the Asian regional initiative to be described in the next section.

Since this was before the start of operational distribution of ALOS satellite data, the provision of these images was a voluntary act by JAXA, i.e. without official request from the International Charter. This, together with the fact that JAXA joined the Charter a year before ALOS launch, suggests that the International Charter is functioning as an international framework for ALOS data distribution for disaster management support. Such a framework would spare the individual space agencies the work to set up separate systems for this purpose, thus enhancing their capability to work with local authorities worldwide.

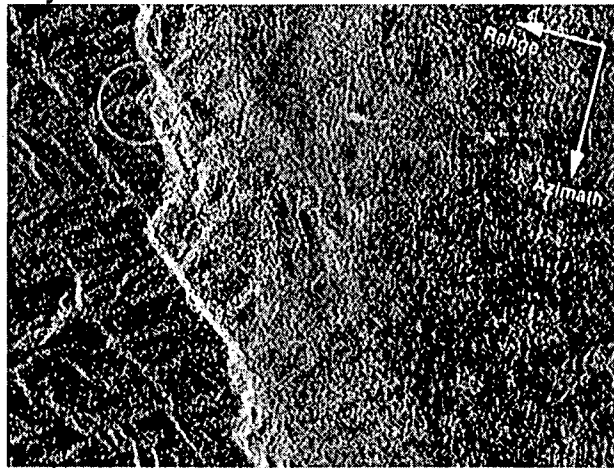
### Leyte Island Observation Images



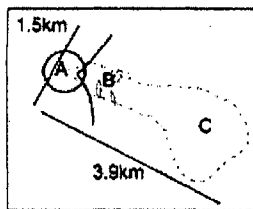
Prior to the landslide: observed by JERS-1/SAR around 11:12 a.m. on Feb. 2, 1996 (JST)



After the landslide: observed by ALOS/PALSAR around 10:53 a.m. on Feb. 24, 2006 (JST)



Color composite image (Red: PALSAR, Green and Blue: SAR)



Longitude and latitude at the center of the image

Around 10° 20' N, 125° 5' E

5,000 x 3,750 m



Figure 1: Leyte Island Observation Images by ALOS/PALSAR

Source: JAXA press release at [http://www.jaxa.jp/press/2006/02/20060225\\_daichi\\_e.html](http://www.jaxa.jp/press/2006/02/20060225_daichi_e.html)

### **3. “Sentinel Asia”<sup>5</sup>**

As the ALOS satellite will become operational in autumn 2006 timeframe, the data is to be utilized for the benefit of Asian countries. For this purpose, there is an ongoing project for developing a disaster management system called “Sentinel-Asia”.

“Sentinel Asia” is a project to establish a network using data acquired from satellites (ALOS and MODIS onboard NASA’s Terra satellite) for disaster management. The First Joint Project Team Meeting for establishing this system was held in February 2006, in Vietnam. The meeting was organized by JAXA in corporation with the Vietnamese Academy of Science and Technology (VAST), and was supported by the UN-Economic and Social Commission for Asia and the Pacific (UN-ESCAP). 70 participants from 34 agencies of 18 countries, and 4 international organizations attended the meeting to discuss the implementation plan of the “Sentinel-Asia”. This was the first step for establishing a “disaster management system in the Asia-Pacific Region”, which was agreed upon at the 12th Asia-Pacific Regional Space Agency Forum (APRSAF-12) of October 2005.

In this system, the space agencies, the international community, disaster related organizations, and universities will cooperate in constructing an information-sharing platform to extract and share disaster information. The vision for “Sentinel Asia” is that it will be a fundamental service distributing, in near real-time where possible, disaster-related data products / images in the Asia-Pacific region. An information-sharing platform based on the Internet and Geographic Information System, “Digital Asia”, will be utilized for this purpose. Member organizations will also cooperate in capacity building, including disaster status analyses, and training and education. At the first meeting, participants agreed on the concept and basic structure of “Sentinel Asia”, which consists of three nodes: Data Provider Node; Research and Training Node; and Local Service Provider Node. To promote Sentinel

Asia, a Joint Project Team ( JPT) was organized. JPT is open to all the APRSAF member countries, disaster related organizations and regional or international organizations who wish to participate in disaster information sharing activities.

The framework of ALOS data distribution through “Sentinel Asia” project is as follows:

- Once disaster occurs in Asian countries, request of image and data in damaged area is sent to the ADRC (Asian Disaster Reduction Center);
- ADRC accepts such order from Member Countries and notifies JAXA;
- JAXA develops a plan of Action, and JAXA acquires image and data of the damaged area by ALOS and distributes those image and data to the Asian countries through ADRC using communication satellites; and/or JAXA notifies Partner Agencies to support Asian countries.

Compared to the efforts of the International Charter, which is essentially a global initiative of major space agencies, this system is more focused and perhaps manageable, in terms of membership and satellite systems involved. If successful, the realization of such a framework through partnership among regional organizations would facilitate and expand the use of space technology for disaster monitoring in Asian countries<sup>6</sup>. However, the limited space resources at the regional level may imply less time frequency, a crucial factor for disaster monitoring. Thus, the outcomes at both the global and regional levels should be taken into consideration in developing disaster management support systems in the future.

### **4. International Law and Data Policy Issues**

#### **4.1 Obligations under international law**

When we look at the international legal basis for such activities, there is a lack of comprehensive treaty or legal framework on natural disasters<sup>7</sup>. For bilateral treaties, there are agreements on specific circumstances or individual disaster response activities, early-warning notification and information sharing,

and mutual assistance treaties covering most of central Europe. There are also a limited number of multilateral Treaties, such as the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986)<sup>8</sup>, and a recent development could be that the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (1998) entered into force in 2005<sup>9</sup>. This Convention also contains detailed provisions pertaining to the broader activities of disaster response including offers and requests, privileges and immunities facilities, costs and coordination in the field of emergency telecommunications, including satellite telecommunications. In addition, it also extends some of these provisions to non-governmental organizations and non-state entities, thus extending the cope beyond the States themselves. While remaining in the field of telecommunications, the Tampere Convention calls for “the sharing of information about natural hazards, health hazards and disasters among the States Parties and with other States, non-State entities and intergovernmental organizations, and the dissemination of such information to the public, particularly to at-risk communities”<sup>10</sup>. This development in the field of multilateral legal instrument for disaster management suggests the need for international coordination of information in the event of disasters.

In general, international human rights law, humanitarian law and refugee law provide the underlying principles for the objectives of the International Charter<sup>11</sup>. Such principles are applicable to space activities under the provisions of Article III of the Outer Space Treaty<sup>12</sup>, which states as follows:

“States Party to the Treaty shall carry on activities in the exploration and use of outer space [...] in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding”.

This could be understood as establishing the basis for Principle XI of the UN Remote Sensing Principles<sup>13</sup>, which states as follows:

“Remote Sensing shall promote the protection of mankind from natural disasters. To this end, States participating in RS activities that have identified processed data and analysed information in their possession that may be useful to States affected by natural disasters, or likely to be affected by impending natural disasters, shall transmit such data and information to States concerned as promptly as possible.”

However, with the ambiguity of the international legal obligations of States in relation to space-based disaster management support, unlike multilateral treaty frameworks on human rights or environmental law, there is a lack of a multilateral international institution for controlling State obligations in this field. The activities through the International Charter, as well as projects such as “Sentinel Asia”, remain to be on a best-effort basis cooperation by participating countries. In order to know whether this is a developing process or not, further observation on States’ practice and the development of international law is necessary.

#### 4.2 Data policy issues

It should be worthwhile to point out a few data policy issues at this stage. There are three main issues: balance between the space agencies’ rendering support and bearing its cost; data rights protection (commercial entities involvement); and responsibility and liability arising from the use of data.

Firstly, to what extent should States provide humanitarian assistance through provision of Earth observation data? In other words, how could the balance between humanitarian assistance and cost be maintained? There is a need to identify the various phases of warning, rescue, refuge, hazard, mitigation, and prevention and the role of Earth observation satellite data, and to agree on setting a line, if necessary, taking into account the financial and technical capabilities.

Secondly, open access to data often conflicts with data rights protection. If any form of commercial distribution of the same satellite

data is to be involved, there is a need to carefully determine the terms of conditions of data use. Especially, if the data is to be open to the public, there is a need of government support or compensation to the commercial entity involved. The satellites listed for the International Charter are government-owned and partly commercialized in their data distribution activities in many cases. The same could be said with the case of ALOS data used in Sentinel Asia. While it is generally welcome to space agencies that their data is utilized for public purposes, they should be careful not to deprive the opportunities of the commercial distributor in expanding the role of public purpose data distribution. One solution to this is the government to purchase data from the distributor to provide data to the international framework, and to agree on data rights conditions with the commercial entity. Rather than having the space agency directly provide the data, this would create the incentive for private companies to enhance their capabilities in data applications, which often exceeds the role and capability of space agencies. This is an issue common in any other fields of Earth observation as well. It is crucial for government space agencies to study and determine the optimal policy for public and private relations in satellite data distribution.

Finally, there is the issue of responsibility and liability in case of data flaws, or misuse or misinterpretation in applying satellite data to practical disaster relief implementations. While the members of the International Charter agree to waive any liability under Article 5.4 of the Charter, for Earth observation activities in general, the liability regime applicable to the use of Earth observation data in the data application phase remains unclear. Therefore, members participating in regional frameworks such as “Sentinel Asia” would have to establish a liability regime, and extend it to the participating local authorities as necessary. For the future development of satellite data utilization, particularly in the field of disaster management support, there is a need to establish an unambiguous legal basis for responsibility and liability.

The current situation suggests that much remains to be clarified in the legal and policy domain for Earth observation data use in disaster management support. We may see this as a reflection of the premature status of satellite data utilization in this field. As States and other actors accumulate more practice, and with further studies into these issues, we may well expect that the establishment of agreed policy and legal framework would contribute to the future utilization of space resources in this field.

## 5. Conclusion

International initiatives for promoting the use of satellite data for disaster management support are developing at the global level through the International Charter, and at the regional level in Asia, a project “Sentinel Asia” has been initiated with the participation of a number of Asian countries. However, the status of international law in relation to natural disasters, the general principles or trends, and relevance to space activities are yet to be established. It seems too early to discuss the role of disaster management support from space in terms of international obligations.

Nevertheless, as these activities develop, various issues regarding the legal status and policy issues arise. It is important to identify the underlying international obligations and to clarify the procedures, in close coordination with humanitarian/disaster related agencies. At the same time, it is essential to address the policy issues in order to establish a working framework. In this way, through accumulation of successful practices, it should be possible to emerge from the space agencies’ demonstration phase to constructing a truly effective framework for applying satellite data to the needs of disaster management.

---

<sup>1</sup> Charter On Cooperation To Achieve The Coordinated Use Of Space Facilities In The Event Of Natural Or Technological Disasters, *available at* [http://www.disasterscharter.org/charter\\_e.html](http://www.disasterscharter.org/charter_e.html) (last visited December 22, 2006) [hereinafter International Charter].

---

<sup>2</sup> On the other hand, in certain areas in environmental law there are obligations of States to cooperate in environmental monitoring: See Masami Onoda, *Satellite Earth Observation As Systematic Observation in Multilateral Environmental Treaties*, 31 *Journal of Space Law* 339-411 (2005).

<sup>3</sup> International Charter, *supra* note 1, at Art. 1 and 5.2.

<sup>4</sup> Based on a press release by JAXA on February 10, at [http://www.jaxa.jp/press/2005/02/20050210\\_disastersche\\_rter\\_j.html](http://www.jaxa.jp/press/2005/02/20050210_disastersche_rter_j.html) (last visited January 3, 2007) (only in Japanese).

<sup>5</sup> See Sentinel Asia website at <http://dmss.tksc.jaxa.jp/sentinel/index.php> (last visited January 7, 2007).

<sup>6</sup> See JAXA press release at [http://www.jaxa.jp/press/2006/03/20060301\\_sac\\_sentine\\_l\\_j.html](http://www.jaxa.jp/press/2006/03/20060301_sac_sentine_l_j.html) (last visited January 7, 2007) (only in Japanese).

<sup>7</sup> See International Federation of Red Cross and Red Crescent Societies, *International Disaster Response Law: A Preliminary Overview and Analysis of Existing Treaty Law*, Jan. 2003, available at <http://www.ifrc.org/what/disasters/idrl/research.asp> (last visited January 7, 2007).

<sup>8</sup> Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, Sept. 26, 1986, 1457 UNTS 133.

<sup>9</sup> Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, ICET-98, (June, 18, 1998).

<sup>10</sup> *Id.*, Art. 3.2.

<sup>11</sup> See "Humanitarian Charter" Principles at [www.sphereproject.org/](http://www.sphereproject.org/) (last visited January 7, 2007).

The Humanitarian Charter expresses agencies' commitment to these principles, based on agencies' appreciation of their own ethical obligations, and reflects the rights and duties enshrined in international law in respect of which states and other parties have established obligations: The right to life with dignity, the distinction between combatants and non-combatants, the principle of non-refoulement.

<sup>12</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 1, 1967, 610 U.N.T.S. 2005 [hereinafter Outer Space Treaty].

<sup>13</sup> Principles Relating to Remote Sensing of the Earth from Space, G.A. Res. 41/65, Annex, U.N. Doc. A/RES/41/65/Annex (Dec. 3, 1986).