



UN-SPIDER NEWSLETTER

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SpaceAid

Supporting response to earthquakes in Chile and in China

From 15 to 21 March UN-SPIDER, upon request of the Government of Chile, visited the country to follow-up on the support the programme has been providing to the response activities of the 8.3 magnitude earthquake of 27 February.

The UN-SPIDER SpaceAid framework, within hours after the earthquake, had started contributing to coordination with local partners and providers of space-based information and value-adding organizations, in order to help provide adequate support to the disaster relief community. In Santiago UN-SPIDER met with the inter-institutional team of experts which is providing support to the response efforts. UN-SPIDER also had several additional meetings including with the Minister of National Goods, Ms. Catalina Parot, who oversees the National System of Coordination of Territorial Information (SNIT). UN-SPIDER also carried out a field mission to the region of Talca and Constitución to get a picture of the

recovery activities and the usefulness of the space-based information provided.

Follow-up activities include ensuring all acquired satellite imagery is accessible to the Chilean institutions, helping SNIT include all imagery in their Geoportal, and also help ONEMI (Oficina Nacional de Emergencia del Ministerio de Interior) make this information available to the end users. They further include ensuring that all available imagery has been received by the Chilean institutions, that all imagery is made widely available through an image server taking advantage of SNIT's Geoportal, implementing a GeoViewer for ONEMI to support its work and finally working with regional and municipal administrations to build capacity to take advantage of these data and services. ■

On 14 April 2010 the Southern Quinghai region in the north-west of China experienced a 6.9 magnitude earthquake which left hundreds of people dead and the majority of the population injured. The importance of high resolution satellite imagery was highlighted by the fact that the affected area of Yushu County is located 500 miles from the nearest major airport, which raised logistical challenges for relief operations on the ground. Immediately after the first reports of the earthquake, the UN-SPIDER team activated the SpaceAid framework in order to assist in the response phase by bridging the space data providers with the Chinese disaster management authorities in charge of the response. The EU SAFER mechanism was also activated and triggered its services. The coordinates of the estimated affected area were provided by the UN-SPIDER National Focal Point in China



Concepción, Chile. Copyright 2010 RapidEye AG

and were then forwarded to the respective space-based imagery providers. All the information, including the status of available satellite imagery, was collected and published on the UN-SPIDER Knowledge Portal SpaceAid Page for this earthquake.

GeoEye quickly delivered a post-event half-meter resolution satellite image taken by GeoEye-1, which was ideally suited not only for damage assessment but also for the response and recovery phases. The high resolution image was immediately offered for no-cost download to UN-SPIDER, and was also shared with the media. It was then used to create a detailed damage assessment product by the German Aerospace Center (DLR/ZKI). In the context of SAFER, a number of other satellites were tasked and data provided to produce various map products for assessment. All these products were promptly and directly provided to the Chinese colleagues and made available on the UN-SPIDER Knowledge Portal SpaceAid page.

It should be noted that the Chinese end-users were particularly thankful for the quick and full access to the GeoEye image, having solicited post-disaster very high resolution raw imagery data as well for their own efforts, and also for all the derived products made available quickly by the activated mechanisms. ■

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UN-SPIDER supporting Small Island Developing States ...

Vulnerability of Small Island Developing States calls for special support

Small Island Developing States (SIDS) are characterized by particular development challenges which are strongly related to their vulnerability to natural disasters. Tropical cyclones and hurricanes pose a major threat to these states, as well as tsunamis resulting from seaquakes. Some of them are threatened by rising sea levels. Periodic droughts are also a recurring phenomenon. In addition, some of these states are threatened by potential volcanic eruptions. Due to these circumstances, UN-SPIDER has been conducting Technical Advisory Missions to these countries in order to analyse and subsequently help strengthen their capacities to access and use space-based information for disaster management. Some of the recurring findings

Maldives (3 15 N, 73 00 E)

Capital: Male

Land area: 115.06 square miles

Population: 396,334 (July 2009 est.)

Natural hazards: tsunamis, monsoons, sea level rise



Situation room at the Maldives Meteorological Service

Jamaica (18 15 N, 77 30 W)

Capital: Kingston

Land area: 4,2436 square miles

Population: 2,825,928 (July 2009 est.)

Natural hazards: hurricanes

Jamaica is located in the Caribbean Sea, south of Cuba. It is especially prone to hurricanes in the months from July to November. During the first week of December 2009, UN-SPIDER conducted a Technical Advisory Mission to Jamaica, with the purpose of assessing the current capacities of institutions regarding access and use of space-based information for disaster risk reduction and response

of these missions are the following:

- The need to consolidate and implement a National Spatial Data Infrastructure and to ensure the sharing and use of geospatial information within Ministries and other stakeholders of the national disaster management systems. Having an NSDI in place is a basic requirement for the effective use of geospatial information
- The necessity to ensure there are policies in place that empower national disaster management authorities to get access to geospatial information
- A need to consider the decentralization of disaster management activities through the promotion of community-

The Maldives are a group of atolls in the Indian Ocean, south-southwest of India. They are characterized by flat, sandy beaches, which makes them particularly vulnerable to sea level rise and floods. The northeast monsoon season lasts from November to March, the southwest monsoons from June to August.

The Technical Advisory Mission was conducted from 15 to 22 April this year upon request from the State Minister for Disaster Management, which highlighted the disaster management perspective during the discussions. The mission team comprised six experts: in addition to two UN-SPIDER staff members, UNESCAP, UN OCHA, SAARC/DMC and ISDR each sent one expert. In addition to meetings

in order to suggest a variety of measures to strengthen such institutional capacities. The mission team consisted of one expert from the Panama-based institute CATHALAC and one expert from the University of the West Indies in Trinidad and Tobago, as well as two UN-SPIDER staff members. The mission included meetings with representatives of more than 20 institutions from the Government, international organizations, and academia, in particular the Planning Institute of Jamaica, the Office for Disaster Preparedness and Emergency Management, and the Spatial Data Management Division of the Office of the Prime Minister. A general workshop for all

based disaster risk reduction activities

- Land use planning is central to disaster risk reduction and development. Current studies and datasets should be used to support vulnerability analysis and risk reduction activities
- Capacity-building is vital to ensure successful use of space-based information in support of disaster management and should include the strengthening of individuals, institutions and infrastructure. Institutions articulated demand for in-house, project-based, on-the-job training. Furthermore, the need for institutional arrangements to ensure continuous capacity-building was ascertained. ■

with the National Disaster Management Centre (NDMC), the Ministry of Health and Family, Maldives Meteorological Service, the Department of National Planning, and three UN Offices: UNDP, WHO, and UNICEF, a workshop was held to discuss the following topics:

- Awareness-raising about the use of space-based and geographic information for development planning, disaster risk reduction etc.
- The status of use of such information within the country
- Ideas to enhance the use of such information
- Promoting data collection, sharing and utilization
- Policy interventions. ■

relevant stakeholders, which was conducted at the Office of the Prime Minister, was part of the programme.

The mission identified strengths in key areas such as Geographic Information Systems (GIS), spatial data infrastructures, capacity-building, and disaster risk management and emergency response. A number of agencies have GIS and Remote Sensing capacities, while the institutionalization of their use is still under way. As a follow-up to the mission, UN-SPIDER will facilitate training activities in order to strengthen the Jamaican institutions in accessing and using space-based information for disaster management. ■

... Technical Advisory Missions to the Dominican Republic, Fiji, Haiti, ...

Haiti (19 00 N, 72 25 W)

Capital: Port au Prince
Land area: 10,714 square miles
Population: 9,035,536 (July 2009 est.)
Natural hazards: hurricanes, flooding, earthquakes

Haiti occupies the western third of the island of Hispaniola, between the Atlantic Ocean and the Caribbean Sea, which it shares with the Dominican Republic. Its capital and largest city, Port-au-Prince, lies in a bay on the country's southwestern coast. The country is subject to various hazards like earthquakes, floods, and severe weather. It lies in the middle of the hurricane belt and therefore is subject to severe storms from June to October. Periodic droughts occur as well.

The 12 January 2010 earthquake which devastated Haiti, in particular its capital city, Port au Prince, created an unprecedented situation in this country, as national and international agencies were affected to the point that it took several days for the United Nations and international agencies and NGOs to establish a coordination mechanism to respond in an effective way. The earthquake killed over

220,000 people, injured more than 300,000 people, and left about 1.3 million inhabitants homeless (Haiti PDNA, 2010), leading to the establishment of over 500 camps or shelters. The situation forced the Government to request the assistance of the international community to coordinate and manage relief and recovery efforts. Unfortunately, even UN organizations such as OCHA which were already present in Haiti, as well as NGOs such as OXFAM, were severely impacted and lost valuable resources which could have been employed to speed the response and relief efforts.

The UN-SPIDER Technical Advisory Mission was conducted from 14 to 20 March 2010, and benefitted from the substantive support provided by the Office of the Special Representative of the Secretary General of the United Nations to Haiti (SRSG) and the MINUSTAH-GIS Unit. UN-SPIDER established contact with representatives from a variety of agencies on the ground, who provided documents and insights into the recovery situation in Haiti, as well as on current gaps and needs.

The mission to Haiti was conducted with the

following goals in mind:

- To assess how space-based information has been used by different agencies (national and international)
- To assess how best to support the Civil Protection Agency of Haiti (CPA) to rebuild its capacity to access and make use of space-based information for disaster risk reduction
- To gather elements to provide recommendations related to risk management and emergency response, particularly in the context of the coming hurricane season
- To liaise with international and national agencies on the ground to make them aware of UN-SPIDER and the technical advisory support it can provide.

The mission was able to find examples regarding how space-based information was and is currently used to support ongoing recovery activities and established links with several units such as the MINUSTAH-GIS Unit and the OCHA Information Management Unit (OCHA-IMU). ■

Samoa (13 35 S, 172 20 W)

Capital: Apia
Land area: 1.0931 square miles
Population: 219,998 (July 2009 est.)
Natural hazards: typhoons, active volcanism

Samoa comprises a group of islands in the South Pacific Ocean, about half way between Hawaii and New Zealand. Savaii and Upolu are the two main islands, with several smaller islands and uninhabited islets nearby. Samoa occupies an almost central position within Polynesia.

The Technical Advisory Mission (TAM) to Samoa was conducted to evaluate the availability of space-based information and international support during the tsunami response, and to develop a working relationship with the Government to offer long-term support. UN-SPIDER gathered the necessary information during meetings within the Ministry of Natural Resources and Environment which

included members of the National Disaster Management Office, Mapping Section, the Global Environment Facility (GEF) and World Bank consultants, within the Meteorology Department, with UN Offices (UNEP, UNDP, OCHA, WHO, FAO and UNESCO), and with regional organizations (Conservation International, Secretariat of the Pacific Regional Environment Programme (SPREP) etc.). An expert from SOPAC, who worked on map-

ping during the tsunami response, joined the mission team and complemented it with his expertise.

The outcome of this TAM will focus on two subjects: 1. an evaluation of international support to provide space-based information during tsunami response and 2. observations and recommendations about a Spatial Data Infrastructure, capacity-building and opportunities to access space-based information. ■



Tsunami damage in Samoa

... Jamaica, Maldives, and Samoa

Dominican Republic (19 00 N, 70 40 W)

Capital: Santo Domingo
 Land area: 18,704 square miles
 Population: 9,650,054 (July 2009 est.)
 Natural hazards: hurricanes, flooding, earthquakes

The Dominican Republic is a state in the Caribbean, covering the eastern two-thirds of the island of Hispaniola, which it shares with Haiti. It lies in the middle of the hurricane belt and is subject to severe storms from June to October, in addition, occasional flooding and periodic droughts occur.

The UN-SPIDER Technical Advisory Mission was conducted from 26 to 29 January 2010. The mission team consisted of one expert from the Panama-based Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC), one expert from the Venezuelan Space Agency (Agencia Bolivariana para Actividades Espaciales, ABAE) and two staff members of UN-SPIDER. During the four days of the mission, 13 institutions were visited, including meetings with representatives of the institutions that compose the National Emergency Council and a visit to the

National Emergency Operations Center. The mission benefitted from the guidance provided by the National Emergency Commission (Comisión Nacional de Emergencias, CNE), the State Secretariat for Foreign Affairs (Secretaría de Estado de Relaciones Exteriores), and the Technological Institute of the Americas (Instituto Tecnológico de las Américas, ITLA).

The mission focused on four main topics:

- Capacities to access space-based information
- Capacities to use Geographic Information Systems (GIS)
- Current efforts concerning the implementation of a Spatial Data Infrastructure (SDI)
- Capacities to conduct training programmes focusing on the use of space-based information.

The support of the experts from CATHALAC and ABAE was found to be a strong asset since their participation reinforced the technical aspects of the mission. Both were able to respond directly to questions regarding

technical issues and capacity-building topics with regard to their respective fields and institutions. In general, capacity-building was a prominent topic during the mission and in most of the institutions visited by the mission team. The need for a plan of action to institutionalize capacity-building measures as well as improved access to and use of space-based information were the main outcome of this mission. ■



National Office for Seismic Evaluation and Infrastructure and Building Vulnerability

Fiji (18 00 S, 175 00 E)

Capital: Suva
 Land area: 7,055 square miles
 Population: 944,720 (July 2009 est.)
 Natural hazards: cyclonic storms, floods

Fiji is a group of 300 islands, 100 of which are inhabited, about 1,300 miles north of New Zealand in the South Pacific Ocean. It has two main islands, Viti Levu and Vanua Levu. Viti Levu covers about half of Fiji's area. Vanua Levu takes a third of the land. Fiji is particularly vulnerable to floods and cyclonic storms which can occur from November to January.

Due to the country's high vulnerability, the Government requested a Technical Advisory Mission. The UN-SPIDER team visited Fiji from 30 November to 4 December 2009 to carry out this mission. The team held detailed discussions with the National Disaster Management Office (NDMO) and key stake-

holders of the NDMO within the government and with regional and international organizations supporting the NDMO. Topics discussed included the improvement of coordination between the NDMO, the UN and regional agencies like the Pacific Islands Applied Geoscience Commission (SOPAC) to use and access space-based information in a timely manner.

The mission was aimed at the following:

1. Building a long-term relationship with the NDMO for extending the benefits of space-based information to the NDMO
2. Review the status of the use of space-based information for disaster management
3. Raise awareness within the NDMO to use space-based information for disaster management
4. Introduce the NDMO to SpaceAid, the framework to access satellite images

5. Identify linkages of NDMO with the custodians of spatial data providers in the country and facilitate the coordination between these organizations
6. Submit recommendations based on the discussions with NDMO and its key stakeholders, both national and international. These recommendations should provide guidelines to NDMO to review disaster management plans with view to incorporate use of space-based information.

Furthermore, the mission team looked at a much broader prospectus of space-based information for disaster management in Fiji, including preparedness planning, response and recovery stages of potential disasters. ■

Special session conducted by UN-SPIDER during the 2nd Hemispheric Encounter on National Mechanisms and Networks for Risk Reduction

Taking advantage of the 2nd Hemispheric Encounter of Santa Marta, titled „From Theory to Practice“ from 14 to 16 April 2010, UN-SPIDER organized and conducted the special session „Space-based Applications for Managing Risk Reduction and Emergency Response in Latin America and the Caribbean“ to promote the SPIDER Thematic Partnership for Latin America and the Caribbean. The session allowed UN-SPIDER to bridge the space community represented through the Colombian Space Commission (CSC) and the Argentinean National Commission on Space Activities (Comisión Nacional de Actividades Espaciales, CONAE), and the community working in the field of disaster risk management. The session allowed representatives of space

commissions of South American countries to present examples of their activities, as well as the presentation of a geo-viewer for displaying information based on which to make decisions in case of disasters, UN-SPIDER staff to present this programme and the SPIDER Thematic Partnership for Latin America and the Caribbean, and to discuss elements to elaborate a Plan of Action for the Thematic Partnership with a focus on disaster risk management to support national platforms for disaster risk reduction. Suggestions included the conduction of a workshop to identify how to tailor space-based information so that it can be utilized more efficiently and quickly by disaster management agencies in the assessment of risks, as well as in the context of early warning. ■



UN-SPIDER at Ministerial Conference on DRR in Nairobi and at ISDR Asia Partnership Meeting in Bangkok



UNOOSA mentioned as official partner in newly adopted Africa Programme of Action for the Implementation of the Africa Regional Strategy for Disaster Risk Reduction

Following the invitation of the organizers, UN-SPIDER participated in the Second Ministerial Conference on Disaster Risk Reduction (DRR) from 14 to 16 April 2010 in Nairobi, Kenya, and in the First Ministerial Conference of Ministers Responsible for Meteorology in Africa. During this important constitutional event African ministers adopted the extended Africa Programme of Action for the Implementation of the Africa Regional Strategy for DRR, mentioning UNOOSA as an official partner. The ministerial conference was organized by the African Union Commission, the Government of Kenya, and the United Nations International Strategy for Disaster Reduction, ISDR in collaboration with the World Bank Global

Facility for Disaster Reduction and Recovery. The event included an Expert Meeting followed by a Ministerial Conference. Participants discussed and agreed on clear recommendations for action, as well as operational mechanisms and requests to countries to allocate resources. In particular, the Extended Africa Programme of Action for Disaster Risk Reduction 2006-2015 and the Draft Decision to be submitted to the AU Summit 2010 were debated. The ministerial declaration includes the official statement: „**To encourage the development of capacities of, and partnerships among, Member States to access and utilise existing traditional knowledge, space-based and other technologies for disaster risk reduction.**“ On this basis, Africa now has the legal framework in place to further develop DRR with space-base technology being part of the portfolio of supporting technologies.

■ www.un-spider.org/news/NairobiDRR



UN-SPIDER strengthening ties in Thailand

From 24 to 26 March 2010, UN-SPIDER participated in the ISDR Asia Partnership meeting in Bangkok, taking the opportunity to contribute in the working group on the Hyogo Framework for Action (HFA) reporting and in the working group on the Fourth Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR). The meeting was attended by 19 countries from the region, IGO participants (ASEAN, APEC and SOPAC), UN agencies, donors, and other organizations involved in DRR. Being part of these working groups provided the opportunity to promote the use of space-based information for DRR and to ensure that it is considered as an important component in all DRR related regional initiatives, including during AMCDRR.

■ www.un-spider.org/news/BangkokIAP

Monitoreo satelital del Lago Atitlán, Guatemala, por SERVIR/CATHALAC

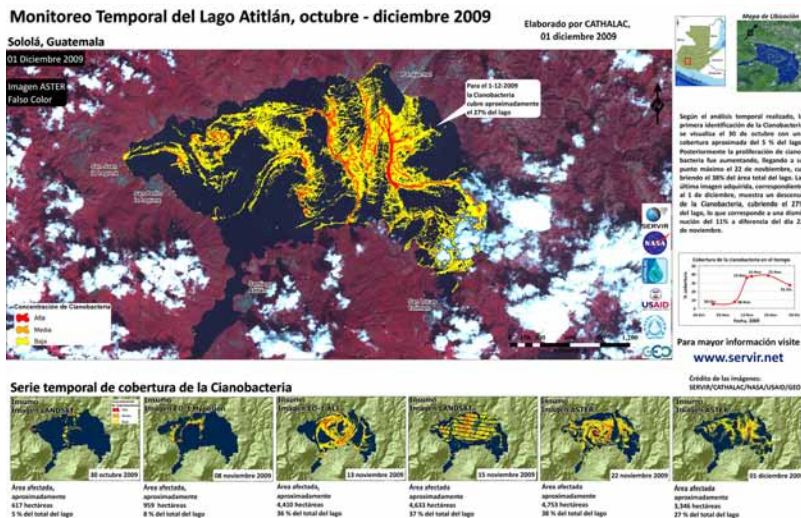


Figura 1. Monitoreo Satelital de Cobertura de Cianobacteria, Oct – Dic 2009

El Lago de Atitlán, ubicado en Sololá, es uno de los principales destinos turísticos de Guatemala, entre otras cosas por la belleza paisajística que ofrece. Está situado en una antigua caldera volcánica, y sus orillas se encuentran delimitadas por profundos escarpes al norte y este, y por tres volcanes en la parte sur occidental.

A su alrededor se alojan poblaciones que suman más de 200 mil habitantes, y se encuentran prósperos cultivos agrícolas, como maíz, café, frijol y verduras. Debido a la actividad humana en esta cuenca endorreica, que ha venido presionando los recursos de la misma por décadas, el lago ha presentado recientemente señales de estrés ambiental severo y como consecuencia la calidad del agua del lago se ha deteriorado a niveles alarmantes. En respuesta a la solicitud del Ministerio de

En este caso, SERVIR ha elaborado y publicado análisis basados en la información satelital para el monitoreo de las cianobacterias en el lago, permitiendo evaluar el comportamiento y evolución de la contaminación.

Para estos análisis se utilizaron diferentes insumos, provenientes de sensores como Landsat, ASTER y EO-1. Las técnicas de teledetección utilizadas variaron dependiendo del insumo analizado, principalmente se identificó la firma espectral de la cianobacteria, representada como concentración de clorofila sobre el agua. Para realizar este proceso se utilizaron las bandas espectrales que mejor absorbían la clorofila, que por ejemplo en el caso de ASTER fue en el espectro infrarrojo cercano.

El punto máximo de contaminación fue identificado el 22 de noviembre, donde la ciano-

ambiente y Recursos Naturales (MARN), el Sistema Regional de Visualización y Monitoreo (SERVIR) instalado en CATHALAC, inició un monitoreo satelital constante del lago desde que, a finales de Octubre de 2009 se detectó una alta proliferación de cianobacterias, incidente que se extendió hasta Diciembre del mismo año.

bacteria cubría aproximadamente el 38% de la superficie del lago. Ver Figura 1.

Posteriormente la proliferación de cianobacteria fue disminuyendo paulatinamente, hasta llegar a niveles de 0% de cobertura en la superficie del lago, como se muestra en la Figura 2.

Las instituciones gubernamentales, de cooperación internacional y los medios de comunicación escrita han utilizado la información generada por SERVIR para mantener informado al pueblo guatemalteco de este caso e iniciar procesos de recuperación de este valioso cuerpo de agua. ■

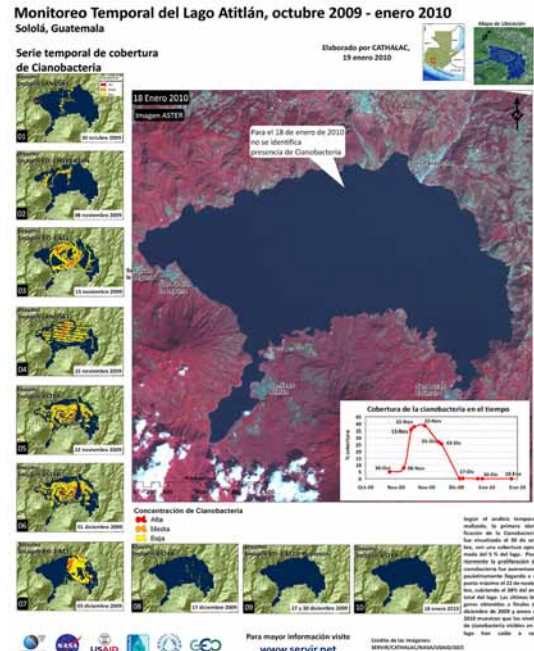


Figura 2. Monitoreo Satelital de Cobertura de Cianobacteria, Octubre 2009–Enero 2010

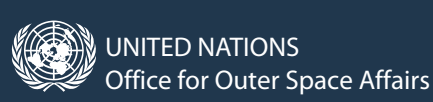
Network

New Regional Support Offices: CATHALAC, SUPARCO, SRI NASU/NSAU

The Panama-based Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC) recently joined the Network of UN-SPIDER Regional Support Offices after signing a cooperation agreement with the United Nations Office for Outer Space Affairs (UNOOSA). In this role

CATHALAC will promote the strengthening of national capacities in Latin American and Caribbean countries, and provide horizontal cooperation and technical assistance to organizations involved in disaster prevention and mitigation. As reported in the UN-SPIDER February Up-

dates, RSOs have also been established in the Space and Upper Atmosphere Research Commission (SUPARCO) of Pakistan and in the Space Research Institute of the National Academy of Sciences of Ukraine and the National Space Agency of Ukraine (SRI NASU/NSAU). ■



The United Nations Office for Outer Space Affairs (UNOOSA) implements the decisions of the General Assembly and of the Committee on the Peaceful Uses of Outer Space and its two Subcommittees, the Scientific and Technical Subcommittee and the Legal Subcommittee. The Office is responsible for promoting international cooperation in the peaceful uses of outer space, and assisting developing countries in using space science and technology. In resolution 61/110 of 14 December 2006 the United Nations General Assembly agreed to establish the "United Nations Platform for Space-based Information for Disaster Management and Emergency Response - UN-SPIDER" as a new United Nations programme to be implemented by UNOOSA. UN-SPIDER is the first programme of its kind to focus on the need to ensure access to and use of space-based solutions during all phases of the disaster management cycle, including the risk reduction phase which will significantly contribute to the reduction in the loss of lives and property. UN-SPIDER Newsletter, Volume 2/10, May 2010. © United Nations Office for Outer Space Affairs.