United Nations

A/AC.105/1027

General Assembly

Distr.: General
26 November 2012

Original: English

**Committee on the Peaceful
Uses of Outer Space**

Report on activities carried out in 2012 in the framework of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response

Summary

The present report contains a review of the activities carried out in 2012 in the framework of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) in accordance with its revised workplan for the biennium 2012-2013.

In 2012 the UN-SPIDER programme reached its target of providing technical advisory support to 26 countries; worked on the further improvement of its knowledge portal; organized or contributed to a number of international and regional workshops and expert meetings; and facilitated the organization of capacity-building activities in Africa and Asia.

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I. Introduction

1. In its resolution 61/110, the General Assembly decided to establish the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) as a programme within the United Nations to provide universal access to all countries and all relevant international and regional organizations to all types of space-based information and services relevant to disaster management to support the full disaster management cycle; and agreed that the programme should be implemented by the Office for Outer Space Affairs of the Secretariat.

2. At its fiftieth session, the Committee on the Peaceful Uses of Outer Space agreed that progress reports on UN-SPIDER and its future workplans should be considered by the Scientific and Technical Subcommittee under a regular agenda item on space-system-based disaster management support and that the agenda item should be included in the list of issues to be considered by its Working Group of the Whole.

3. The present report contains a review of activities carried out under the UN-SPIDER programme in 2012 in accordance with its revised workplan for the biennium 2012-2013 (A/AC.105/C.1/2012/CRP.22).

4. In its resolution 64/251, entitled "International cooperation on humanitarian assistance in the field of natural disasters, from relief to development", the General Assembly encouraged the further use of space-based and ground-based remote-sensing technologies, including as provided by UN-SPIDER. In its resolution 66/71, the Assembly noted with satisfaction the progress made within the framework of UN-SPIDER.

5. During the first year of the biennium 2012-2013, UN-SPIDER staff reached the target of providing technical advisory support to 26 countries; worked on further improving and expanding the UN-SPIDER knowledge portal; and organized or contributed to a number of international and regional workshops and expert meetings, including the Fifth United Nations International UN-SPIDER Bonn Workshop on Disaster Management and Space Technology; the United Nations International Conference on Space-based Technologies for Disaster Management: Risk Assessment in the Context Global Climate Change; and the International Meeting of Experts on Crowdsource Mapping for Disaster Management and Emergency Response. In addition, the programme facilitated the organization of regional training activities in Cameroon, China and India focusing on the use of remote-sensing applications for disaster management, as well as national training activities in Myanmar and Sri Lanka.

II. Organizational framework

6. The organizational framework of UN-SPIDER has three cornerstones: the UN-SPIDER staff, the network of regional support offices and the national focal points. It fosters knowledge management, builds bridges between communities of providers of information and users of services, and provides technical advisory support to Member States.

A. Staff of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response

7. In 2012, the supervision of the UN-SPIDER programme was transferred to the Chief of the Space Applications Section of the Office for Outer Space Affairs, who is responsible for its overall implementation. The Chief of the Space Applications Section is assisted by a senior programme officer, who is responsible for planning, coordinating and implementing all UN-SPIDER activities with the support of a programme officer who manages the activities of the UN-SPIDER office in Bonn, Germany, a programme officer who manages the activities of the UN-SPIDER office in Beijing and a programme officer who manages outreach and capacity-building activities.

8. During 2012, 16 staff members, senior experts and consultants worked in the framework of UN-SPIDER, distributed as follows:

(a) In Vienna: a senior programme officer, a programme officer for advisory services, a programme officer responsible for outreach and capacity-building activities, a senior expert (provided by Turksat as a non-reimbursable loan), an associate expert (provided by the Government of Austria) to support outreach activities, emergency response support and the administration of the programme, and a team assistant to assist with the administrative tasks of the programme;

(b) In Bonn: a programme officer to manage the activities of the UN-SPIDER office in Bonn, one senior expert (provided by the German Aerospace Centre (DLR) as a non-reimbursable loan) to support the implementation of knowledge management activities, an associate expert (provided by the Government of Germany) to support the development and routine operation of the knowledge portal and an associate expert (also provided by the Government of Germany) to support the compilation and dissemination of information and the maintenance of the content of the knowledge portal, one senior expert (provided by Turksat as a non-reimbursable loan) to support programme activities with regard to satellite communications, and a third associate expert (also provided by the Government of Germany from December 2012) to support the remote-sensing advisory service;

(c) In Beijing: a programme officer to manage the activities of the UN-SPIDER office in Beijing and coordinate technical advisory support to Member States, two senior experts to organize the technical advisory support activities (provided by the Government of China as non-reimbursable loans) and a team assistant to assist with the administrative tasks of the office.

B. Network of regional support offices

9. In its resolution 61/110, the General Assembly agreed that UN-SPIDER should work closely with regional and national centres of expertise in the use of space technology in disaster management to form a network of regional support offices for implementing the activities of the programme in their respective regions in a coordinated manner.

10.   The UN-SPIDER 13 regional support offices[1] are currently being hosted by the following national organizations: the Agustín Codazzi Geographic Institute (IGAC) of Colombia; the Algerian Space Agency; the Iranian Space Agency; the National Commission on Space Activities (CONAE) of Argentina; the National Space Research and Development Agency of Nigeria; the Research Institute for Remote Sensing at Károly Róbert College of Hungary; the Romanian Space Agency; the Space and Upper Atmosphere Research Commission (SUPARCO) of Pakistan; and the State Space Agency of Ukraine. They are also hosted by the following regional organizations: the Asian Disaster Reduction Center (ADRC), based in Kobe, Japan; the Regional Centre for Mapping of Resources for Development, based in Nairobi; the University of the West Indies, based in St. Augustine, Trinidad and Tobago; and the Water Centre for the Humid Tropics of Latin America and the Caribbean (CATHALAC) in Panama City. Additional negotiations are taking place with institutions in Indonesia, Nepal and the Russian Federation to increase the number of regional support offices to 16 by 2013.

C.   National focal points

11.   A national focal point is a national institution nominated by the Government of the respective country that represents the disaster management and space application communities. The role of national focal points is to work with UN-SPIDER staff to strengthen national disaster management planning and policies and to implement specific national activities that incorporate space-based technology solutions in support of disaster management. National focal points are the main institutions with which UN-SPIDER staff work at the national level with the aim of promoting access to and the use of space-based solutions for disaster management in the country concerned.

12.   In calling for the nomination of national focal points, the Office for Outer Space Affairs specifically requested Governments to consider the possibility of nominating the same focal point that had been appointed for the implementation of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. By the end of 2012, 45 Member States had nominated a national focal point.[2]

III.   Activities carried out in 2012

13.   The work carried out in the framework of the UN-SPIDER programme in 2012 followed the revised workplan for the biennium 2012-2013 (A/AC.105/C.1/2012/CRP.22). In carrying out those activities, UN-SPIDER staff worked closely with the regional support offices, building upon the offices' resources and expertise. Collaboration has also been initiated within the Space Applications Section of the Office for Outer Space Affairs.

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[1] See www.un-spider.org/content/5699/regional-support-offices.
[2] See www.un-spider.org/network/national-focal-points.

A. Outreach and capacity-building activities

14. The targets set for the UN-SPIDER programme for 2012 were met: the proposed workshops, expert meetings and training courses were organized and conducted. In addition, UN-SPIDER staff participated in a number of relevant international conferences and ensured the provision of expert speakers. Furthermore, experts were mobilized to take part in activities organized by partner institutions.

15. Major outreach activities conducted by UN-SPIDER staff included the organization of international and regional workshops and expert meetings. A review of the activities carried out in 2012 is provided below. Further information, including detailed reports on the activities, is available on the UN-SPIDER knowledge portal (www.un-spider.org).

Fifth United Nations International UN-SPIDER Bonn Workshop on Disaster Management and Space Technology

16. From 24 to 26 April 2012, UN-SPIDER and DLR conducted the Fifth United Nations International UN-SPIDER Bonn Workshop on Disaster Management and Space Technology, focusing on the topic of "Strengthening global synergies through knowledge management, portals and networks". The Workshop was supported by the Federal Ministry of Economics and Technology of Germany, Secure World Foundation and the City of Bonn. (The report of the Workshop can be found in document A/AC.105/1023.)

17. The Workshop gathered 45 decision makers and experts from 14 countries, representing 28 national, regional and international organizations, specifically from the space community, the disaster-risk management and emergency response communities, knowledge transfer and academic institutions, as well as internationally active private companies.

18. The Workshop covered the following topics: knowledge management in the context of space-based information; the role of portals and gateways as platforms to access space-based data and information; synergies among international support networks and mechanisms; novel information technology tools and infrastructure; and e-learning environments and the role of portals in facilitating such efforts. One outcome of the Workshop was that UN-SPIDER could gather elements to develop a road map to strengthen its knowledge management efforts; identify directions and priorities for action; and enhance the performance of its networks of regional support offices and national focal points. In addition, the Workshop strengthened the links between UN-SPIDER and companies in the private sector that devote their efforts to geoinformation technologies.

United Nations International Conference on Space-based Technologies for Disaster Management: Risk Assessment in the Context of Global Climate Change

19. The aim of the Conference, held in Beijing from 7 to 9 November 2012, was to offer a forum for disaster managers and experts to strengthen their understanding of the use of space-based information to assess, monitor and respond to climate change and related disaster risks, and to integrate space technology into long-term disaster risk reduction efforts. The specific subject of the Conference was

hydro-meteorological hazards induced by climate change, such as floods and droughts, melting of glaciers and sea-level rise and other coastal hazards.

20.   A special session on drought monitoring provided guidelines for African participants for the use of the services for drought monitoring of the National Disaster Reduction Centre of China (NDRCC) through the UN-SPIDER platform. A second special session focused on the mechanism of technical advisory support.

International Meeting of Experts on Crowdsource Mapping for Disaster Management and Emergency Response

21.   The Meeting of Experts held in Vienna from 3 to 5 December 2012 brought together more than 75 experts and practitioners from over 30 countries. It was attended by representatives of several United Nations entities, space and remote-sensing agencies, and national, regional and international disaster management and civil protection agencies, as well as various actors from the crowdsource communities representing voluntary and technical communities, non-governmental organizations, expert groups, universities, research institutions and the private sector.

22.   The meeting[3] consisted of six plenary sessions and four breakout group sessions. The plenary sessions provided an overview of the various topics to be discussed and an opportunity for the three communities (crowdsource mapping, disaster management and space technology) to learn about their respective innovative fields of expertise. One ignite talk session was arranged with 11 presentations to allow for a maximum number of experts to present their ideas.

23.   The breakout sessions focused on the following discussion points:

(a)   How can UN-SPIDER contribute to the efforts made by the different communities and serve as a platform to support their interactions?

(b)   What is the role of the United Nations and especially of UN-SPIDER in helping all three communities and how could the framework of collaboration between the disaster management, space, voluntary and technical communities and the United Nations develop in the future?

(c)   How can space-based information contribute to improvements regarding validation and verification of crowdsourced information?

(d)   What form could a simulation exercise take in 2013? The participants discussed in smaller groups the framework, organization and process of a possible crowdsourcing simulation exercise.

Support for capacity-building

Training Course on Space Technology Applications in Disaster Risk Reduction, India

24.   The Training Course on Space Technology Applications in Disaster Risk Reduction, held at the Centre for Space Science and Technology Education in Asia and the Pacific in Dehradun, India, from 9 April to 4 May 2012, was conducted

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   [3] See www.un-spider.org/crowdsource-mapping.

jointly by the Indian Institute of Remote Sensing of the Indian Space Research Organization (ISRO), UN-SPIDER, the Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations University (UNU). The UN-SPIDER programme sponsored five participants from Bangladesh, Myanmar, the Solomon Islands and Sri Lanka. The course was a follow-up to the recent technical advisory missions carried out by UN-SPIDER in the four countries. The objective was to raise participants' understanding of how space-based information, services and solutions could be used to reduce disaster risks and losses. The course consisted of the following modules: overview of disaster risk reduction; overview of space technology in the context of disaster risk reduction; application of space technology for disaster risk reduction and case studies; a short project; and evaluation of the course. A total of 27 participants from 17 countries took part.

Training Workshop on Space Technology Applications in Disaster Management and Emergency Response, India

25.   UN-SPIDER and the National Disaster Management Authority of India jointly sponsored the Training Workshop on Space Technology Applications in Disaster Management and Emergency Response in New Delhi from 2 to 4 April 2012. The event provided a platform to the state disaster management authorities and providers of space-based information (state remote-sensing applications centres and the national remote-sensing centres of ISRO) to discuss the latest systems, tools, technologies, products and best practices. It brought together 25 key participants and resource persons, who were able to share best practices and also highlight the gap between end-users and providers of technology.

Training in remote sensing for disaster management, Cameroon

26.   In June 2011 UN-SPIDER conducted a technical advisory mission to Cameroon. Based on the recommendations of the mission, UN-SPIDER assisted in organizing training in remote sensing for disaster management, conducted from 7 to 11 May 2012 jointly with the Institute for Environment and Human Security of UNU (UNU-EHS). Twenty-five participants from the Ministry of Territorial Administration and Decentralization of Cameroon and various other ministries and universities attended the training. In addition, UN-SPIDER and UNU-EHS funded the participation of five selected representatives from four other Central African States (Burundi, Democratic Republic of the Congo, Gabon and Republic of the Congo). The training covered basic elements of remote sensing, geographic information systems (GIS), simple data extraction and geo-referencing techniques, and the use of remote sensing for disaster management. The training also aimed at raising awareness of existing mechanisms to access space-based information such as the International Charter "Space and Major Disasters" or the Global Monitoring for Environment and Security.

Training in space technology for improving hazard mapping in Sri Lanka

27.   Following a technical advisory mission in 2011, UN-SPIDER organized training in space technology for improving hazard mapping in Sri Lanka from 15 to 18 August 2012 in cooperation with the Disaster Management Centre of Sri Lanka and with the support of the Uva Wellassa University of Sri Lanka, the United Nations Development Programme (UNDP) in Sri Lanka and NDRCC. The course

was conducted by invited experts from some 10 international organizations: UNDP Sri Lanka; UN-SPIDER; ESCAP; the Asian Institute of Technology, Bangkok; the Institute of Remote Sensing Applications of the Chinese Academy of Sciences; Jena Instrument, Russian Federation; the Ministry of Land and Land Development of Sri Lanka; the National University of Singapore; NDRCC; and the Tropical Marine Science Institute. The training course was attended by 25 participants involved in disaster management and hazard mapping in key Sri Lankan services and authorities. During the course, experts conducted sessions on the current state of use of space-based information for disaster management in Sri Lanka; regional cooperation for disaster reduction management and disaster reduction strategy; the Light Detection and Ranging (LiDAR) digital evaluation model and its applications; flood hazard mapping and training in GIS, metadata, GeoNetwork and water data portals; and coastal hazard mapping, coastal zone management and integrated shoreline management planning. In addition, NDRCC donated to the Disaster Management Centre of Sri Lanka an image covering Sri Lanka and licence-free image-processing software to be used for hazard and natural resource mapping.

Workshop on Space Technology for Drought Monitoring in Africa and Asia, China

28. Following the initial assistance provided by UN-SPIDER and NDRCC during the 2011 crisis in the Horn of Africa, UN-SPIDER and NDRCC, with assistance from the Capital Normal University of China, organized the Workshop on Space Technology for Drought Monitoring in Africa and Asia in Beijing from 11 to 16 November 2012. Some 20 technical staff of agencies involved in disaster management and hazard mapping from Africa and Asia attended the workshop, whose objective was to strengthen the capacity of national agencies in the use of space-based technologies for drought monitoring and assessment. The training included comprehensive hands-on sessions based on data sets (satellite images) prepared for Africa and Asia. The main topics were drought management and space technology; satellite data processing and spatial-temporal analysis; space technology applications for drought risk assessment; and space technology applications for drought monitoring and loss assessment.

National Training Course on Geoinformatics for Disaster Risk Management, Myanmar

29. The National Training Course on Geoinformatics for Disaster Risk Management was held from 26 to 30 November 2012, pursuant to a recommendation made by the technical advisory mission to Myanmar undertaken in March 2012. The training course was organized to strengthen the capacity of national organizations and stakeholders involved in disaster management activities by increasing their knowledge and skills in the use of space-based and geospatial information, tools and techniques for effective disaster risk management. The training aimed at providing a technology basis to all partners of the Relief and Resettlement Department of the Ministry of Social Welfare, Relief and Resettlement of Myanmar by strengthening their ability to deliver quality products and services for disaster management, specifically using space-based and other geospatial information. The training was organized jointly by UN-SPIDER and the International Centre for Integrated Mountain Development (ICIMOD). Experts from UN-SPIDER, ICIMOD and Wuhan University (China) led technical sessions.

Other activities

30. In providing support to countries of the Asia and Pacific region UN-SPIDER ensures close cooperation with existing coordination mechanisms and networks, including participating in the International Strategy for Disaster Reduction Asia Partnership for Disaster Reduction (IAP); contributing to the biennial Asian Ministerial Conference on Disaster Risk Reduction; contributing to expert group meetings organized by ESCAP; participating in the Pacific Platform for Disaster Risk Management; and contributing to the efforts of the Asia and Pacific humanitarian team led by the Office for the Coordination of Humanitarian Affairs of the Secretariat.

31. Following its participation at the UN-SPIDER/IAP meeting held in Yogyakarta, Indonesia, from 7 to 9 August 2012, UN-SPIDER organized a side event during the Fifth Asian Ministerial Conference on Disaster Risk Reduction, held in Yogyakarta from 22 to 25 October 2012. The side event was organized in partnership with NDRCC, ADRC and SUPARCO. The forum offered UN-SPIDER an opportunity to meet participants with a view to developing an action plan for 2013.

32. UN-SPIDER also participated in the Expert Group Meeting on Georeference Disaster Risk Management Systems in the Asia-Pacific Region, held in Bangkok from 15 to 17 February 2012. The Meeting was organized to launch the United Nations Disaster Assessment and Coordination project to improve capacity for disaster preparedness in the ESCAP region. The presentation by UN-SPIDER was useful for representatives of Member States in understanding how UN-SPIDER advisory missions addressed issues related to the use of geospatial and space-based information for disaster management.

33. Additionally, UN-SPIDER participated in the Fifth Annual Pacific Humanitarian Team Regional Workshop, held in Nadi, Fiji, from 22 to 26 October 2012. The objective of the Workshop was to strengthen disaster preparedness and response capacity of team partners by reviewing recent global, regional and national developments in humanitarian action; initiating a performance review of the team; mapping subregional and national humanitarian response settings; providing all the team partners an opportunity to review preparedness efforts and response capacity in a one-day preparedness exercise; and providing for panel discussions on partnerships and donor coordination.

34. UN-SPIDER continued to participate in the International Working Group on Satellite-based Emergency Mapping. The Working Group held a meeting in Ispra, Italy, from 16 to 18 April 2012, to follow up on the discussions and decisions of the first meeting hosted by DLR in Hohenkammer, Germany, in September 2011. The meeting brought together some 20 participants from the Canadian Space Agency/Athena Global; DLR; the European Union Joint Research Centre; the Group on Earth Observations; Information Technology for Humanitarian Assistance, Cooperation and Action, Turin, Italy; the Mesoamerican Regional Visualization and Monitoring System (SERVIR); the Regional Service of Image Treatment and Remote Sensing (SERTIT) of the University of Strasbourg, France; Sentinel Asia; and the United States Geological Survey (USGS). The mission statement of the Working Group was agreed upon, referring to the establishment of best practices between emergency mapping programmes to enable better collaboration and

coordination of capacity, with a view to drawing up a set of professional standards for emergency mapping and data use.

35. The United Nations Committee of Experts on Global Geospatial Information Management organized a forum on future trends in geospatial information management in Amsterdam, the Netherlands, on 24 April 2012. The forum brought together a working group of experts established by Member States to assist the United Nations Committee of Experts in assessing future trends in geospatial information management. The working group compiled an initial background document entitled "Future trends in geospatial information management: the five to ten year vision". Some 45 experts participated in the visioning exercise to discuss themes such as creation, maintenance and management of data; uses of geospatial data; trends in technology; legal and policy developments; skill requirements and training mechanisms; the future role of national mapping agencies; and the role of the private sector and volunteer groups.

36. UN-SPIDER took part in an exercise organized by the Space Research Centre of Poland, Secure World Foundation and the Main School of Fire Service of Poland and held in Warsaw from 16 to 19 May 2012. The workshop included participants from the United Nations Environment Programme, the European Aeronautic Defence and Space Company (EADS) Astrium, the European Association for the International Space Year, the European Union, the European Union Satellite Centre, the International Space University, the National Oceanic and Atmospheric Administration of the United States of America, and private and public sector institutions of Poland. It included the simulation of a response to a large flood in a hypothetical non-European country that would require humanitarian assistance from non-governmental and international organizations outside the country.

37. UN-SPIDER participated in the Fourth Annual International Conference on Crisis Mapping in Washington, D.C., from 10 to 16 October 2012. The Conference brought together experts, practitioners, policymakers, technologists, researchers, journalists, scholars, hackers and skilled volunteers engaged at the intersection between humanitarian crises, technology, crowdsourcing and crisis mapping. This activity contributed to the consolidation of the UN-SPIDER International Meeting of Experts on Crowdsource Mapping for Disaster Management and Emergency Response, held in Vienna from 3 to 5 December 2012 (see paras. 21-23 above).

B. Knowledge management

38. The acquisition, processing and transfer of knowledge should be seen as central to the success of the mission of the UN-SPIDER programme. This includes managing the kind of knowledge held by individuals in the form of know-how and experience and the kind of knowledge that is recorded in a variety of media.

39. As a contribution to knowledge management, UN-SPIDER regional support offices are preparing booklets on specific topics based on experience in their respective countries, namely, "Considerations on the effective use of space-based information to assess tsunami impact: lessons learned from the recent tsunami in Japan" (ADRC); "Considerations on the effective use of space-based information to monitor massive flood disasters and their impact: lessons learned from the Pakistan floods of 2010" (SUPARCO); and "Considerations on the effective use of

space-based information to assess drought at the national level: the experience of the Islamic Republic of Iran" (Iranian Space Agency). The three booklets are scheduled to be published in early 2013. Other regional support offices are developing methodologies that make use of archived imagery to track how changes in land use have modified the spatial and temporal dynamics of four types of hazard: floods, landslides, forest fires and droughts. This work will continue into 2013.

Knowledge portal

40. The UN-SPIDER knowledge portal is central to knowledge management efforts carried out by UN-SPIDER, as it provides the means by which information on activities and their outputs can be collected, disseminated and archived. The purpose of the portal is to integrate all useful information, knowledge and resources identified and available to support the UN-SPIDER mandate, including data contributed by relevant user communities, and to serve as a platform to share space-based information on the disaster management cycle in general. During 2012, improvements were made to the layout of the portal and new content material was added. The Fifth United Nations International UN-SPIDER Bonn Workshop (see paras. 16-18 above) also formulated recommendations relating to a new road map for the knowledge portal:

(a) It was recommended that a proper balance be found between reporting scientific advances and providing essential information required to respond to a disaster, taking into account the different types of end-user worldwide;

(b) In the context of risk reduction and emergency response, it was recommended that UN-SPIDER include information in other languages, including French and Spanish, taking into account those countries where UN-SPIDER has been more active;

(c) It was also recommended that the portal include more information on risk management so as to balance ongoing efforts as regards emergency response;

(d) Easy-to-use tools and procedures to generate and make use of space-based information using archived imagery, a glossary and case studies should also be included.

41. In parallel to this, throughout 2012 the Bonn Office has been conducting an internal evaluation of the knowledge portal through three related efforts: a telephone-based survey targeting members of the space, disaster-risk management and emergency communities; a web-based questionnaire; and a statistical analysis of the portal using Google Analytics. The evaluation has made UN-SPIDER more aware of the use being made of the portal. Since establishment of the portal in 2009, the number of content items has been increasing steadily: by July 2012, more than 3,300 items had been included.

42. A key recommendation stemming from the survey and from the technical advisory missions to developing countries in many regions of the world is the need to continue raising awareness regarding the usefulness of space-based information at all phases of the disaster management cycle, using not only the knowledge portal, the newsletters and the monthly updates, but also through the enhanced use of social media. To that end the Bonn Office developed a strategy to use social media as

platforms to enhance the visibility of the programme and the activities it carries out worldwide.

43. The portal continued to attract interest from the end-user community, with the number of regular visitors increasing steadily and reaching record levels during major disasters, a clear indication that users find information on the portal that is relevant to their work and needs. This is also supported by the web access statistics that are collected on a monthly basis.

C. Technical advisory support

44. Technical advisory support is one of the main activities of UN-SPIDER at the national level, providing Member States with assistance that can include technical advisory missions by experts from space and disaster management agencies from other countries and relevant international and regional organizations and institutions; technical advice to national institutions by means of meetings, teleconferences and videoconferences; direct cooperation between national institutions and providers of space-based information and solutions; and help in accessing space-based information to enhance emergency response. Detailed information on technical advisory support activities carried out in 2012 by UN-SPIDER is contained in document A/AC.105/1009.

D. Activities carried out by the regional support offices

45. In its resolution 61/110, the General Assembly agreed that UN-SPIDER should work closely with regional and national centres of expertise in the use of space technology in disaster management to form a network of regional support offices for implementing the activities of the programme in their respective regions.

46. UN-SPIDER held the Third Annual Meeting of Regional Support Offices during the forty-ninth session of the Scientific and Technical Subcommittee, held in Vienna from 6 to 17 February 2012, at which the activities of the regional support offices in 2011 were reviewed and a plan of joint activities for 2012 was drawn up.

47. As mentioned in paragraph 10 above, in 2012 UN-SPIDER expanded its network of regional support offices, with two new partners signing agreements: the Károly Róbert College of Hungary (with its own agreement with the Hungarian Association for Geoinformation) and CONAE of Argentina.

48. The Károly Róbert College of Hungary participated in the twelfth plenary meeting of the United Nations Geographical Information Working Group, held in Vienna from 28 to 30 March 2012. It thereby benefited from the presentations on geospatial information management and technology activities, as well as from discussions focusing on the EuroGEOSS broker INSPIRE, GeoCat, the Geospatial Data Warehouse and the United Nations Spatial Data Infrastructure gazetteer framework.

49. The Hungarian regional support office made a series of presentations at the North University of Baia Mare (Romania) on how to apply GIS and remote-sensing technologies in managing natural disasters. The presentations were intended to build

institutional capacity, as both countries face similar tasks in and after natural disasters.

50. The Hungarian regional support office, hosted by the Károly Róbert College, also signed a cooperation agreement with the Hungarian UN-SPIDER national focal point, the National Directorate General for Disaster Management, on 15 May 2012. The aim is to strengthen disaster management at every stage by means of joint lectures and training courses.

51. Together with a Slovakian partner in Sajó Valley, a pilot project was launched that combines use of hyperspectral data and satellite images for flood management, including risk estimation. The project is funded by the European Union as part of its Hungary-Slovakia Cross-border Cooperation Programme.

52. The Hungarian regional support office announced that it was the winner of the national competition "Digital Hungarian Maps 2011", for developing a database that monitored the impact of catastrophes on the environment.

53. IGAC of Colombia signed a cooperation agreement on the establishment of a regional support office in 2011 and at the beginning of 2012 the definition and allocation of the tasks and support activities of the office according to the workplan for 2012-2013 were agreed upon. In order to update the knowledge portal, the Colombian regional support office provides information on its activities as a regional geographic institute, including constant assessment of projects and initiatives in disaster management and emergency response in Colombia.

54. The Colombian regional support office also produced various publications dealing with knowledge and management of disasters and emergency response, such as "Estimation and elaboration of cartography of threats from floods and landslides in the Corantioquia region with the use of geospatial technologies" and "Identification of zones in the process of desertification using optical remote sensing in the Andean dryland of Villa de Leyva (Boyacá)".

55. CATHALAC, Panama, supported emergency efforts in Costa Rica and Guatemala. In the case of Costa Rica, CATHALAC used the EO-1 satellite of the National Aeronautics and Space Administration (NASA) of the United States to assess the areas affected by the earthquake that had occurred on 5 September 2012. In the case of Guatemala, CATHALAC provided support during the eruption of the Fuego volcano on 13 September 2012 by producing maps depicting the spatial extension of the ash clouds; and in the case of the earthquake of 7 November 2012, CATHALAC provided maps showing the areas that could potentially be struck by landslides triggered by the earthquake.

56. In addition, CATHALAC developed several geospatial products for Central America and the Caribbean, including maps presenting areas susceptible to forest fires, landslides and other hazards.

57. CONAE also assisted Guatemala in the activation of the International Charter "Space and Major Disasters", as a consequence of the volcanic eruption in September and the earthquake in November.

58. CATHALAC, IGAC and CONAE are contributing, along with other experts from countries of Latin America and the Caribbean, to the development of

methodologies to assess how land-use changes in recent decades are modifying the dynamics of floods and droughts.

59. The Iranian Space Agency supported UN-SPIDER's knowledge management with various activities, ranging from the preparation of a booklet entitled "Considerations on the effective use of space-based information to assess drought at the national level: the experience of the Islamic Republic of Iran" to the initiation of a national geoportal for geodata archiving and processing. In addition, case studies on monitoring of dust storms and on detection of fires in the northern part of the country using remote sensing and GIS, as well as technical reports and newsletters based on experience after disasters in the region, enhance the Agency's collection of disaster-related information. These resources improved humanitarian and emergency response, for example after the Ahar earthquake, for which satellite imagery was processed after activation of the Charter in August 2012.

60. The Iranian Space Agency was also involved in a number of workshops and seminars, such as the disaster management training course of the Asia-Pacific Space Cooperation Organization (APSCO) in Beijing in September 2012 and Space Week 2012, in order to illustrate best practices in the use of space technology for disaster management.

61. Pakistan's regional support office, hosted by SUPARCO, provided continuous support to Pakistan's national and provincial disaster management authorities on the use of space-based information in the efficient management of national emergencies. Assistance was given during the heavy rains at the beginning of September 2012 that had led to flash flooding in two provinces, Punjab and Sindh. In April 2012 an infantry unit was struck by an avalanche in the northern region of Pakistan and many people were buried under it. During both disasters satellite-based information for use in the relief and rescue operations was made available.

62. SUPARCO organized practical training on the International Satellite System for Search and Rescue (COSPAS-SARSAT) programme to enhance the capabilities of search and rescue operators in emergency situations using satellite services. The training was offered in Karachi from 17 to 19 July 2012 at the request of the Civil Aviation Authority.

63. In the field of knowledge management, SUPARCO is working on a booklet entitled "Considerations on the effective use of space-based information to monitor massive flood disasters and their impact: lessons learned from the Pakistan floods of 2010". It also developed a rapid mapping tool to be used in the mapping of large areas in a comparatively short time during disasters.

64. The regional support office in Japan, ADRC, continued to implement the Association of Southeast Asian Nations (ASEAN) cooperation project on the utilization of space-based technologies for disaster risk management in cooperation with the Geoinformatics Centre of the Asian Institute of Technology (GIC-AIT) in Thailand. The project is funded by the Japan-ASEAN Integration Fund.

65. ADRC is preparing a booklet entitled "Considerations on the effective use of space-based information to assess tsunami impact: lessons learned from the recent tsunami in Japan". ADRC will share its experience in applying satellite data to disaster risk reduction at various meetings, including the Asia-Pacific Regional Space Agency Forum, to be held in Kuala Lumpur from 11 to 14 December 2012.

IV. Voluntary contributions

66.   The successful implementation of UN-SPIDER activities benefited from the support and voluntary contributions (financial and in-kind) received from Governments and private sector entities, in particular:

     (a)   The Government of Austria, which contributed 150,000 euros through the Austrian Research Promotion Agency (FFG);

     (b)   The Federal Ministry for European and International Affairs of Austria, which financed the services of an associate expert;

     (c)   The Government of Germany, which renewed its financial support for an additional two years starting in the last quarter of 2012 and financed the services of two associate experts in 2012;

     (d)   The Government of China, which contributed 1,250,000 yuan a year towards the activities of the UN-SPIDER office in Beijing and the services of two senior experts (as non-reimbursable loans);

     (e)   DLR, which financed the services of one senior expert (as a non-reimbursable loan);

     (f)   Turksat, which financed the services of two senior experts (until June 2012 for one of them, as non-reimbursable loans);

     (g)   Secure World Foundation, which contributed towards two events organized by UN-SPIDER.

67.   Several institutions contributed to the UN-SPIDER programme by providing the services of experts to join technical advisory missions and special events organized by the programme or by making training facilities available for capacity-building efforts. These included UNDP Sri Lanka; UNU-EHS; the Asia Pacific Space Cooperation; the Center for Interdisciplinary Geospatial Information Technologies (United States of America); Cloneshouse Nigeria; Digital Globe Inc.; DMC Sri Lanka; the European Commission; the European Systems Research Institute; the Geoscience and Remote Sensing Society of the Institute of Electrical and Electronic Engineers; ICIMOD (Cologne University of Applied Sciences (Germany)); the Indian Institute of Remote Sensing of ISRO; the Institute for Technology and Resources Management in the Tropics and Subtropics; the International Network of Crisis Mappers; the Mekong Consultant Co. Ltd.; the National Institute of Disaster Management of India; the National Institute of Space Research (INPE) of Brazil; the National Space Research and Development Agency of Nigeria; the New University of Lisbon; the Regional Centre for Training in Aerospace Surveys at Ile-Ife, Nigeria; Secure World Foundation; the Southern African Development Community; the Southern Mapping Company, South Africa; Umvoto Africa (Pty) Ltd., South Africa; the University of Salzburg Department of Geoinformatics (Austria); the University of the Azores (Portugal); the USGS Earth Resources Observation System Center; Uva Wellassa University (Sri Lanka); and Wuhan University (China).