Committee on the Peaceful Uses of Outer Space

Script

Fifty-sixth session

670th Meeting
Wednesday, 19 June 2013, 10.00 a.m.
Vienna

Chairman: Mr. Yasushi Horikawa (Japan)

The meeting was called to order at 10.03 a.m.

The Chairman. Good morning distinguished delegates.

I now declare open the 670th meeting of the Committee on the Peaceful Uses of Outer Space.

Distinguished delegates, I would first like to inform you of our programme of work for this morning. We will continue and hopefully conclude our consideration of agenda item 10, Space and water. We will continue our consideration of agenda items 11, Space and climate change and 12, Use of space technology in the United Nations system.

There will be three technical presentations: by the representative of SCOSTEP entitled "SCOSTEP 'Variable Sun and its Terrestrial Impact (varsiti)' program", by a representative of Japan entitled "G-COM-W1 'SHIZUKU", and by a representative of China entitled "The current status of the education and research on space law in China".

Expert Group B is meeting from 9.30 a.m. to 12.30 p.m. in room C4. Expert Group D is meeting from 9.00 a.m. to 2.00 p.m. in room C0713, and Expert Group C is meeting from 10.00 to 12.00 p.m. in room C0739.

Following our morning meeting, at 1.00 p.m. in this Board Room D there will be a signing ceremony on the establishment in the Russian Federation of the Regional Support Office of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) between the United Nations Office for Outer Space Affairs and the Ministry of the Russian Federation for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters, in presence of the Director-General Yury Fedotov. That is at 1.00 p.m. in this Board Room.

Following the signing ceremony, in the Board Room D, there will be an information briefing by the Office for Outer Space Affairs on fundraising opportunities with activities of the Office.

Are there any questions to this proposed schedule?

I see none.

Distinguished delegates, I would now like to continue and conclude our consideration of agenda item 10, Space and water.

The first speaker on my list is the distinguished representative of United States of America. You have the floor.

Mr. Hodkins (United States). Mr. Chairman, my delegation is pleased to make a statement about current and future activities in the United States related to space-derived data and water. With increasing population pressure and water usage coupled with climate variability and change, water issues are becoming some of the most critical environmental problems facing us in the 21st century. Competitive uses and the prevalence of river basins and aquifers that extend across boundaries engender political tensions between communities, stakeholders, and countries. Mitigating these conflicts and meeting water demands require using existing resources more efficiently.

The United States is working to bring its many assets to bear to address these problems, and our free and open data policy regarding Earth science and satellite data is providing synoptic and repetitive coverage to help water managers make more informed decisions. This is especially valuable for developing countries of the world where sparse in-situ and observational data where remote sensing data may be the most valuable data available. This space information on water can be used to support sound water management practices and to inform policymakers.

In scientific research, we understand that the global water cycle is vast and cannot be fully understood with only in-situ observation networks. Satellite observations offer an alternative method for seeing the entire Earth, and are essential for understanding remote, hard-to-reach places. The

National Aeronautics and Space Administration, or NASA, the National Oceanic and Atmospheric Administration (NOAA), the US Agency for International Development (USAID), and the US Geological Survey (USGS) are working to leverage the investment of satellite and information systems for national and global applications. For example, observations of precipitation, soil moisture, snow pack, water levels, agriculture and land cover, and ground water can benefit society through the widest practical use. Such observations provide a huge volume of valuable data in both near-real-time and, in some cases, extending back nearly 50 years about the condition of Earth's land surface and water resources.

Observations of this type are combined with models and analysis to enable satellite-based assessment of numerous water source management activities. In 2012, NASA invested $1.7 billion to support Earth science, research and applications. Within this effort, NASA has a large portfolio of projects delivering results and enabling partnerships with private and public organizations to address water issues for developing countries. This includes over 35 international water projects which cost on the order of $21 million.

Here are some examples of US satellite systems that contribute to this effort. Data from NOAA's operational satellites, the US Polar Orbiting Environmental Satellites and Geostationary Orbiting Environmental Satellites, are used by NOAA's Climate Prediction Center for issuing global seasonal climate outlooks, allowing for more effective planning and efficient use of water resources. NASA's research satellites Gravity Recovery and Climate Experiment or GRACE, Tropical Rainfall Measuring Mission (TRMM), Terra and Aqua, some of which involve international partners, are helping to determine precipitation activity, snow properties, soil moisture, as well as changes in underground water storage, flood inundation areas, and estimates of evaporation. The Landsat-8 satellite, a collaboration between NASA and the USGS, was launched in February of 2013 to provide moderate resolution measurements of the Earth's surface for various aspects of climate, carbon cycle, ecosystems, water cycle and land use. This satellite has two sensors, the Operational Land Imager and the Thermal Infrared Sensor. A key aspect of the Thermal Infrared Sensor will be to enhance the capability to estimate water loss from the surface to the atmosphere by evapotranspiration.

There are several satellite systems planned for the future that will provide enhanced data for environmental and water resources management, these include: the Joint Polar Satellite System — the next generation US. polar-orbiting operational environmental satellite system; the Global Precipitation Measurement Satellite or GPM; Soil Moisture Active Passive Mission or SMAP; GRACE 2 — follow-on to GRACE, which was launched in 2002; and the Surface Water Ocean Topography mission.

Mr. Chairman, space-borne observations are also playing a key role in three recent US State Department initiatives or efforts:

First, in 2011, Secretary of State Clinton and World Bank President Robert Zoellick signed a Memorandum of Understanding between the US Government and the World Bank on cooperation in the water sector. Since that time, numerous activities have been identified in which various US departments and agencies can work more closely with the World Bank and with each other to improve our individual efforts on water security.

Secondly, during the 2012 World Water Day, Secretary of State Clinton announced the new US Water Partnership, a public-private partnership that will help mobilize US assets to address global water challenges with an emphasis on the developing world.

And thirdly, the State Department solicited the assistance of the US intelligence community to conduct a global assessment of the impact water may have on US and global security. The assessment concluded that numerous countries will have water problems of scarcity, water quality and flooding that could cause instability and increase regional tensions. The use of space technology through a free and open data policy will help address many of these water resource issues.

Supporting these initiatives is a portfolio of projects delivering results and partnering with private and public organizations to address water issues to benefit society. I would like to highlight just a few examples of space-derived data being used to address water-related problems here on the Earth:

The NASA/USAID SERVIR program, with nodes in Mesoamerica, East Africa and the Hindu Kush Himalaya areas, is a regional monitoring and visualization system combining satellite measurements and other data for use by decision makers and we have plans for extensions to South-East Asia and West Africa;

The USAID Famine Early Warning System or FEWS is a network serving 21 countries that uses data from NASA and NOAA operationally to monitor crop performance, water balance and drought potential;

Then there is the NASA Water Information System Platforms for water management in the Middle

East and North Africa (this is a collaboration between NASA and the World Bank);

The NASA Project Nile is a collaboration between NASA and the US Department of Agriculture to work with regional partners in the Nile basin to improve water resource management decision-making;

And we have the USGS Stream-gauge network which combines satellite data with in-situ measurements to provide near-real-time data for flood monitoring.

Mr. Chairman, I think we all agree that the topic of "space and water" is very timely and one that we need to continue to highlight. There is great potential for expanding the applications of space technology to address water-related issues here on the Earth. The challenge now for all Member States, and one the United States is actively pursuing, will be to ensure that this new wealth of valuable water information from space is readily available, converted into practical information, and usable by decision- and policymakers. Thank you very much, Mr. Chairman.

Mr. Chairman. I thank the distinguished representative of the United States of America for his statement. The next speaker on my list is the distinguished representative of Algeria. You have the floor.

Mr. Oussedik (Algeria, translated from Arabic). Thank you, Mr. Chairperson. My presentation today will be intended to give you a brief overview of the use of space technology in Algeria to study and preserve water resources.

With the Algerian Space Agency, together of course with the Ministry responsible for water, we entered into a convention and there are eight main development areas mentioned there. We use the space tool to that effect. We have satellite multispectral imagery to assess water resources. We have an early warning, prevention and flooding management programme. We have a large-scale mapping programme, of course. We also trace all hydraulic structures from space. And we study hydrology at the catchment areas and erosion by tele-detection. And furthermore we have multispectral imagery for hydrogeological studies.

So these activities in essence are a broader aspect of the Algerian Space Programme in terms of the practical applications. Now, for Earth observation purposes, and telecommunications also, since even for telecommunications we need to develop a hydrology data collection system using space technology, we use satellite surveillance in order to assess the state of our hydrological built infrastructure.

In the eastern part of Algeria, which is now what I am showing on the screen, [ ] we see that we have a dam here and you see the colouring because the satellite, LSAT-2A, gives us this type of resolution with chromatic technology and we have multispectral resolution technology there. If you then zoom in on the dam, per se, you will see that the LSAT-2A give excellent reproduction of the basin, the retention area, the 134 metre dam and the overflow area, which you see on this slide. So we are monitoring the whole construction. We want to control its status and trace all appropriate defects. And in a semi-arid or dry area, the Aflu region, which I am showing now, and thanks to LSAT-2 imagery we can now reconstitute hydrography that is all water conditions. And we can have a finer or a broader approach by honing in with the satellite.

Then we have devices all around the dam area and the GPS system allows us to control the small movements in the whole dam area and take preventive action, because they may pinpoint possible anomalies. We do this with the national authority for dams. And now, as for drainage, we have the satellite imagery for mapping and irrigation perimeters. We can follow the hydro-agricultural networks and we have irrigation campaign data. Furthermore, we have an important issue, which is hydrogeological prospection in the Sahara, because in this area you have to have full knowledge of the underground water resources. And the radar imagery in the Tindouf area provided for mapping of potential underground water resources.

I didn't want to give you the methodology and all the details, of course. But this breakdown shows the indirect methods using geology and the spectrum on the ground. We then use radar technology to determine potential areas where we have underground pockets of water. Very important in the desert area for the local population and agriculture.

We can, of course, update the drainage area using these optical data. This is important to find more information on water resources.

And now the lines important for underground prospection activities. Here in the catchment area in Tindouf [ ] work has been completed and the water resources unit can now go on to the operational phase and make use of the underground water resources.

The purpose of this presentation was to give you an overview of the development programme in terms of water resources in Algeria. And likewise we wanted to encourage an exchange of information with African countries. Any country that has similar problems in terms of preserving resources, understanding those resources and using space technology to gain a full understanding a proper follow up of water resources.

Algeria and Nigeria in Africa have satellites of the similar technological specifications, you see. So with Nigeria, we will be entering into an exchange of satellite-derived data. But also of course with other African countries, at the service of development, and we encourage any other country with such technology placing it at the service of the population in effort to mitigate poverty.

And thank you for your attention, sir.

Mr. Chairman. I thank the distinguished representative of Algeria for his statement and presentation.

The next speaker on my list is the distinguished representative of France. You have the floor.

Mr. Courteille (France, translated from French). Thank you, Chairman. Chairman, water conservation is one of the great challenges of our society. Space technology is contributing to better scientific understanding of experts regarding water, but also climate change. France will support the specific and pragmatic actions undertaken by the United Nations to preserve this scant resource which is water. It is a huge challenge which should also be covered by the sustainable development framework under item 8 of the agenda.

To have a quality space programme, it seems that national space agencies or intergovernmental space agencies should also involve scientists and people in the field with expert knowledge of water conservation. France's space policy is to accompany, is very active in terms of accompanying water conservation and we also support a strong contribution of space satellite or scientific instrument technology within a European or international framework. Satellite altimetry developed by the CNES and French industry enables us to measure with a great deal of accuracy variations in the height of the Earth's surface but also in terms of continental water bodies large enough to be detected as well as the role of oceans in the water cycle.

Since 1992, within the framework of a French/US cooperation the satellites topics on Poseidon and Jason have enabled us to measure an average global increase in sea level of 3 mm a year with strong variability, up to plus or minus 20 mm a year in some regions. We can anticipate the impact of greater climate phenomenon. This increase in the level of sea water is an indicator of global warming and the greatest challenge of our missions is to maintain accuracy in this measurement.

The SMOS mission, undertaken within the framework of a partnership with the European Space Agency and Spain's CDTI launched in 2009 has enabled us to provide charts and monitor the humidity of land and the salinity of oceans. This satellite is currently in service and is providing better understanding of the impact of the variations in salinity on the momentum of the tropical ocean surfaces and the heat flow between tropical oceans and the atmosphere.

The SMOS mission is also providing significant information on the water content of vegetation and on the management of water resources. It also enables us to monitor drought at a global level. It is a real contribution to better understanding water cycles as well as global warming and sustainable development.

With other space technologies, the scientific mission between France and India, Megatropics, is devoted to studying the water cycle, storm systems and climate in the tropical atmosphere. Thanks to its specific orbit, this satellite periodically measures rain fall, water vapour and flows with the aid of its four instruments. Megatropics will also provide monitoring and anticipation of dangerous phenomena, such as tropical cyclones and violent rainstorms.

France's Space policy in favour of water with several partners in the world: NASA, NOAA, EUMETSAT, European Space Agency, JAXA and ISRO is providing international information with the ocean surface topography science team. Our aim is to provide new services which are indispensable for the understanding of water climate change and France will continue to do this in terms of international cooperation and make a significant contribution to the scientific community. Thank you.

Mr. Chairman. I thank the distinguished representative of France for his statement.

Are there any other delegations wishing to make a statement under this agenda item at this time? I see none.

Therefore, we have concluded our consideration of agenda item 10, Space and water.

Distinguished delegates, I would now like to continue our consideration of agenda item 11, Space and climate change. The first speaker on my list is the distinguished representative of Egypt. You have the floor.

Mr. El-Nahry (Egypt, translated from Arabic). In the name of god, merciful and compassionate. Mr. Chairman, ladies and gentlemen, members of COPUOS.

We have all noted climate change in the world. Even nowadays we notice that weather in Austria has

changed. We have to address the causes and ways to address these challenges.

We all know that disturbances happen in climate due to greenhouse effects. This is due to heavy industrialization as well as forest fires. Even in developing countries like Egypt, the agricultural residues, especially the rice husks, are also burnt, and they may cause climate change. Thus, the temperature on Earth has increased by one and a half to two degrees and we have truly felt those changes.

I would like to talk about the role of climate change in the rise in sea level. Due to the rise in temperature, as I said, ice has melted in huge amounts and thanks to satellite imagery we have been able to detect such meltdown. This has increased, of course, the level of the seas and the oceans, thus threatening the submersion and flooding of many areas, including the Nile Delta. Some regions in the Nile Delta can be as high as 50 cm below sea level. This is due to the climate change and its effects on the Nile River. This has been noticed by one of the professors at Stuttgart University in Germany.

Many scenarios have been set up related to subsidence, which could lead to flooding of many areas within the next 90 years. Thus, by using the digital elevation model, based on satellite imagery, based in turn on a mathematical model, it is observed that in 30 years the seas, especially the Mediterranean Sea, will rise by 1 metre, thus threatening flooding of a large area of the Nile Delta region.

After 60 years the level of the seas will rise to one and a half metre, thus flooding additional areas. Thus, 9,000 square km of land are threatened by flooding and submersion. After that, additional areas will be flooded and thus 12,000 square km, that is half of the Nile Delta will be flooded.

Some inadequate measures have been taken, such as adding concrete walls up to two and a half metres along the areas threatened with submersion on the Mediterranean Sea from El Agamy to Aboukir in Alexandria. We have also established dikes offshore, but this is so primitive that the waves have been able to go over them and flow into the river. The study examined all threatened areas, but due to lack of resources we were only able to take the measures mentioned above.

Here I'd like to salute and commend both the Netherlands and Japan which have established sea walls with innovative engineering and to stop the waves. Indeed, we can only face nature with means that are accepted by nature. Here we'd like to request the help of industrialized countries to countries threatened with submersion. Here I'd like to commend also UN-SPIDER, which provides technical cooperation. I'd also like to request both Japan and the Netherlands to extend technical assistance to countries threatened with submersion and drowning. Indeed I work in remote sensing techniques and I truly sense the threat that we face. I would like to request this personally because this is my personal mission. Thank you.

Mr. Chairman. I thank the distinguished representative of Egypt for his statement.

The next speaker on my list is the distinguished representative of Pakistan. You have the floor.

Mr. Rashid (Pakistan). Thank you, Mr Chairman. Like several other countries of the region, Pakistan is prone to natural disasters including extreme weather events, monsoonal precipitation, cyclones, floods, landslides and lake formation, especially in the mountains. The location of the country, at latitude ranging from 23° N to 37.5° N makes it diverse in its climate and weather from humid to dry, very warm up to subfreezing temperatures, extreme rainfall to dry regions. These extreme hydro-meteorological processes like floods in 2010, 2011 and 2012, and the drought in 2009 and 10 and earlier, have resulted in a lot of miseries in Pakistan.

Pakistan has been making significant use of space technologies to study climate change in the country and the region, which is focused on determining and highlighting the consequences of deforestation, desertification, land degradation, and loss of biodiversity. Satellite based studies for rainfall estimation, glacier changes, droughts, winter fog and extreme weather phenomenon are also undertaken.

SUPARCO, in collaboration with Ministry of Climate Change has recently completed the development of a "National Environmental Information Management System" known as NEIMS which has created a baseline data on various environmental and climate variables as well as land use and land cover changes, including floods, haze, fog, earthquake, dust storms, droughts, glaciers, glacial lakes, landslides, cyclones, cloud cover, precipitation trends, and air quality, water quality, aerosol optical depth and sea surface temperatures. This system will be deployed shortly for use by all stakeholders.

A cryospheric monitoring programme has been initiated to study the health of the glaciers in northern Pakistan. A research centre at high elevation mountainous areas is also planned to be established shortly.

Mr. Chairman, remote sensing based marine resources study is being conducted in order to quantify the mangroves along the coastline.

Pakistan continues to analyse and study the application of space based technologies to ascertain the effects of climate change and impacts, impinging on the socioeconomic development of the country and welcomes all international cooperation in this regard.

I thank you Mr Chairman.

Mr. Chairman. I thank the distinguished representative of Pakistan for his statement.

The next speaker on my list is the distinguished representative of Pakistan. You have the floor.

Are there any other delegations wishing to make a statement under this agenda item at this time? I see none.

We will continue and hopefully conclude our consideration of agenda item 11, Space and climate change, this afternoon.

Distinguished delegates, I would now like to continue our consideration of agenda item 12, Use of space technology in the United Nations system.

The first speaker on my list is the distinguished representative of Japan. You have the floor.

Mr. Yu Takeuchi (Japan). Thank you, Mr. Chairman.

Mr. Chairman, distinguished delegates, on behalf of the Japanese delegation, I am pleased to express our view on this agenda item.

Various space-based technologies have the potential to contribute to resolving many global issues faced by today's human society. Japan has been cooperating with the UN system in tackling these issues by utilizing space-based technologies. I would like to share with you some of our experiences in this regard.

Firstly, JAXA contributes to the activities of the UN Economic and Social Commission for Asia and the Pacific or ESCAP that address the most important development issues in Asia and the Pacific, such as disaster management, bridging the digital divide, water resource management and adaptation to climate change. Besides the cooperation through Sentinel Asia, JAXA has cooperated with ESCAP's Statistical Institute for Asia and the Pacific by using the communications satellite "KIZUNA" to provide distance training for statistics experts in Mongolia.

We are also pleased to see that the proposal of "Asia-Pacific Years of Action for Applications of Space Technology and Geographic Information System for Disaster Risk Reduction and Sustainable Development, from 2012 to 2017" at ESCAP, during its 69th Commission session last year is successfully being continued. We look forward to working with many other Member States in support of the Asia-Pacific Years of Action.

Secondly, JAXA has concluded a Memorandum with the United Nations Educational, Scientific and Cultural Organization, known as UNESCO, cooperated in monitoring World Heritage Sites using the Advanced Land Observation Satellite, ALOS or "DAICHI", to see and protect the common legacy of all mankind, JAXA has provided image data on 310 World Heritage Sites in Japan and other foreign countries. Although "DAICHI" terminated its operation on May 12, 2011, JAXA will continue to provide images to the database of the World Heritage Site. JAXA also provides "DAICHI" images to the Ramsar Convention Secretariat to support the wetlands survey.

Thank you, Mr. Chairman.

Mr. Chairman. I thank the distinguished representative of Japan for his statement.

Now I will take the statement from observers. The next speaker is the distinguished representative of Economic and Social Commission of Asia and the Pacific. You have the floor.

Mr. Wang (UNESCAP). Thank you, Mr. Chair. Distinguished representatives, good morning.

It is an honour for the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) to take part in this Fifty-sixth Session of the Committee on the Peaceful Uses of Outer Space, to present to the Committee the efforts made by ESCAP, on promoting the use of space technologies in supporting disaster risk reduction and the inclusive and sustainable development in the Asia and Pacific region.

ESCAP, being the largest regional development arm of the United Nations Secretariat for the Asia and Pacific region, with 62 members and associate members, has over 25 years of experience in raising awareness, enhancing capacity and promoting the benefits of space technology for inclusive and sustainable development.

Asia-Pacific is the most disaster-prone region of the world. In 2011 alone, economic damages and losses from disaster in this region reached more than 293 billion US dollars. Disasters often occur together with other shocks such as financial crises and food and fuel crises, applied to the complex systems that interlink social, economic and environmental factors.

Governments across the Asia-Pacific region often find themselves dealing with overlapping shocks that demand a more comprehensive and systemic approach to building resilience, that is, the capacity of the country to withstand, adapt to, and recover from natural disasters and major economic crises — so that their people can continue to lead the kind of life they value. For many policymakers this is new territory: they are more accustomed to focusing on problems in particular economic or social sectors rather than treating them as systemic wholes; they have to take difficult and decisive action now about events that may or may not take place.

In this regard, building resilience to multiple shocks has been recognized as one of the most urgent development challenges facing Asia and the Pacific, as acknowledged by the Ministers at the ESCAP's 69th Commission session, held in April 2013 in Bangkok Thailand. ESCAP's publication explores this subject matter in depth in its Theme Study on Building Resilience to Natural Disasters and Major Economic Crises.

ESCAP member States recognizing the importance of regional cooperation and significant impact that applications of space technology and GIS can contribute to address issues related to disaster risk management and sustainable development in the region, called for strengthened disaster risk management and better preparedness as key development imperatives — that people at every level must be empowered partners in change; that political, technical and financial resources must be mobilized before shocks hit; that apathy is our biggest risk; and that early warnings and early actions save lives and livelihoods.

The resolutions adopted at the 69th of the ESCAP Commission session towards the implementation of the Years of Action on applications of space technology and GIS for disaster risk reduction and sustainable development, 2012-2017, provides an avenue for space and GIS technologies in providing advanced tools and possible solutions to the current issues in social and economic development, within the framework and insight already provided by the strong acknowledgement and key commitments of the Rio+20 outcome document on information and communications technologies. ESCAP, working closely with the member States and other regional initiatives, will spearhead in implementation of this regional Plan of Action, to provide the definitive intergovernmental platform for member States to foster a strong regional voice to build resilience in the region and to integrate disaster risk reduction considerations into the post-2015 development agenda. Tasked with harmonizing and enhancing existing regional initiatives and pool expertise and resources at regional, subregional levels and acting as a clearing house for good practices and lessons, ESCAP will take the lead at the regional level in implementing of this Plan of Action.

ESCAP is pleased to inform the Committee that in 2012 to 2013, we have undertaken several initiatives to support member States in implementing disaster risk reduction, management and sustainable development through providing near-real-time satellite products, facilitating exchanging of information and good practices, providing capacity-building training, and further technical assistance through ESCAP's Regional Space Applications Programme for Sustainable Development (RESAP).

When typhoon, earthquake, tropical cyclone and other natural disasters hit the member States, ESCAP coordinated with the RESAP member countries, such as China, India, Japan, Republic of Korea, Pakistan and Thailand, as well as UNITAR/UNOSAT, UN-SPIDER and Sentinel Asia to contribute near real-time satellite imagery and products to the disaster affected countries for response and damage assessment. ESCAP is updating the compendium on space applications capacity and needs of the member States, and has developed an online survey with associated training to complete it so as to establish the regional needs for space applications.

In 2013, ESCAP provided fellowships to participants from least developed countries and small island developing countries for short-term training course on remote sensing and GIS applications organized at the RESAP education and training network in India and Indonesia. Such human resource development opportunities enhanced the knowledge, understanding, and practical experiences of those countries on space applications for disaster risk management and sustainable development.

At its 16th Session, the Intergovernmental Consultative Committee on RESAP agreed to establish regional operational service nodes for the Regional Cooperative Mechanism on Disaster Monitoring and Early Warning, Particularly Drought (the Mechanism). This will allow the Mechanism to begin services shortly to identify high-risk drought-prone areas so that effective monitoring and early warning for drought can be derived. Several steps have already been taken to operationalize the Mechanism, including setting up of the Service Nodes to provide localized modelling through the use of space-based products for more effective drought monitoring, preparing the standard operation procedure at regional level, encouraging member States and regional initiatives to commit their

existing satellite and technical resources and relevant services as in-kind contribution, as well as regular sharing of work programmes, cross-participation and joint delivery of capacity-building with related regional initiatives.

ESCAP had worked closely with countries with special needs to address capacity gaps in accessing up-to-date and accurate socioeconomic data and satellite imagery in areas of disasters. Under this initiative, ESCAP has developed prototype georeferenced disaster risk management (Geo-DRM) portals, established an online Community of Practice, and improved operational links to regional networks for transboundary disaster events. A regional meeting and training workshops were held to build awareness and enhance capacity for policymakers and technicians. The first GeoDRM portal has been established and used by National Emergency Management Agency of Mongolia. More experimental portals will be established with training and technical assistance in Cook Islands, Kyrgyzstan and other developing countries in the Asia-Pacific region to build capacity for developing, sharing and using the georeferenced information for disaster management.

ESCAP continues to work closely with UNOOSA, providing inputs to the report of the Secretary-General on the peaceful use of space technology, participated in the Inter-Agency Meeting on Outer Space Activities, and collaborated with UNSPIDER to conduct advisory missions in Asia-Pacific region. An International Training Programme on Flood Risk Mapping, Modelling and Assessment Using Space Technology will be jointly organized by ESCAP, UNOOSA, International Water Management Institute and Centre for Space Science Technology Education for Asia and the Pacific (CSSTEAP) in July 2013 in Dehradun, India

ESCAP is pleased to inform the Committee that a Memorandum of Agreement has been signed between ESCAP and UNITAR/UNOSAT in 2013 on enhancing the capacity of the member countries in using satellite imagery and products for disaster management. A joint training course on space and GIS applications will be organized in November 2013 in Bangkok Thailand.

ESCAP is also actively participating in the activities organized by Global Geographic Information Management (GGIM), GEO, CEOS and other international organizations and important regional initiatives, such as APSCO, [ ] Sentinel Asia to pool more resources to support the developing countries for better use of space technology in disaster risk reduction and sustainable development.

ESCAP will work with all related regional and global partners to facilitate the member States in deepening and broadening the contribution of space and GIS applications in supporting disaster risk management and the inclusive and sustainable development, and to integrate building resilience to disasters in the post-2015 development agenda. Thank you for your attention.

Mr. Chairman. I thank the distinguished representative of ESCAP for his statement.

Are there any other delegations wishing to make a statement under this agenda item at this time? I see none.

We will continue and hopefully conclude our consideration of agenda item 12, Use of space technology in the United Nations system, this afternoon.

Distinguished delegates, upon request, I would like to reopen agenda item 6, Report of the Scientific and Technical Subcommittee on its Fiftieth Session. Now I will give the floor to the distinguished representative of Mexico. You have the floor.

Mr. Camacho Lara (Mexico). Thank you, Chairman. Well, I made my statement as co-chair of the Near-Earth Objects Group.

Thank you for the opportunity to inform the Committee on the work carried out by the Action Team on Near-Earth Objects on the margins of the 56th session of the Committee on the Peaceful Uses of Outer Space.

I particularly appreciate the opportunity to make this statement, as only yesterday afternoon we finished the work that we carried out at this session.

Mr. Chairman and distinguished delegates, at its 50th session, the Scientific and Technical Subcommittee, through its Working Group on Near-Earth Objects, considered the final report of the Action Team on Near-Earth Objects (document A/AC.105/C.1/L.330), and the recommendations of the Action Team for an international response to the near-Earth object impact threat as contained in document A/AC.105/C.1/L.329.

Upon considering the two reports of the Action Team, the Working Group on Near-Earth Objects recommended that an international asteroid warning network known by the acronym of IAWN, open to contributions by a wide spectrum of organizations should be established. The Working Group also recommended that a space mission planning advisory group, known by the acronym SMPAG, should be established by States members of the United Nations

that have space agencies and other relevant entities. The full text describing the functions of the Network and the Group is contained in the report of the Working Group, Annex III of document A/AC.105/1038. This report was endorsed by the Subcommittee.

The Working Group also recommended that the Action Team on Near-Earth Objects should assist in the establishment of the Network, the IAWN, and of the Group of Space Agencies SMPAG.

The Action Team held three meetings on the margin of the current session of the Committee to elaborate the plans for the establishment of the International Asteroid Warning Network and of the Space Mission Planning Advisory Group. At this session, the Action Team also invited representatives of space agencies to a meeting to continue reviewing the draft Terms of Reference of the Space Mission Planning Advisory Group.

Mr. Chairman and distinguished delegates, I am pleased to inform the Committee that at that meeting the representatives of eleven space agencies made excellent progress in their review of the draft Terms of Reference of the Space Mission Planning Advisory Group. At this meeting, the participants agreed that the Action Team, in collaboration with the European Space Agency, should organize the first official meeting of representatives of space agencies and relevant space bodies prior to the 51st session of the Scientific and Technical Subcommittee. The Terms of Reference of the SMPAG will be finalized at this first official meeting, leading to the establishment of the SMPAG.

As a next step, the Action Team proposes to request the assistance of the Office for Outer Space Affairs to transmit an invitation to all member States of the Committee to designate a space agency or relevant space body as well as intergovernmental organizations with space faring capabilities to participate in the first official meeting of the Space Mission Planning Advisory Group. The Action Team invites the Committee to take note of the planned first official meeting of the Space Mission Planning Advisory Group and of the mechanism for invitations to participate in it.

Thank you Mr. Chairman and distinguished delegates.

Mr. Chairman. I thank the distinguished representative of Mexico for his report of the Action Team on the Near-Earth Objects. And I congratulate your good progress on this matter.

Are there any other delegations wishing to speak at this time on this agenda item at this time? I see none.

We have concluded our consideration of agenda item 6, Report of the Scientific and Technical Subcommittee on its 50th Session.

Distinguished delegates, I would now like to proceed with the technical presentations. Presenters are kindly reminded that technical presentations should be limited to 15 minutes in length.

I would like to give the floor to the Secretariat. There will be several presentations this morning. So he will clarify that.

Mr. Hedman (Secretariat). Thank you, Mr. Chairman. Distinguished delegates, as you can see, we have two hours before one o'clock when there will be the Signing Ceremony between the Office for Outer Space Affairs and the Russian Federation on setting up of the UN-SPIDER regional support office and the Director-General, Mr. Fedotov, will be attending that ceremony.

In order to use our time efficiently, we have been restructuring the presentations. So I will read out the presentations that we will benefit from this morning.

First, as scheduled, there will be a presentation by SCOSTEP, Mr. Nat Gopalswamy. The second presentation will be by Mr. Kawamoto of Japan. The third presentation will be by Mr. Wang of China, as scheduled. Furthermore, we will have a presentation by Mr. Santillan of Mexico, that is the fourth presentation. The fifth presentation will be by Ms. Jaime of SGAC. The sixth presentation will be by Mr. Bako, Burkina Faso. And, time permitting, we will have another presentation by Burkina Faso delivered by Mr. Bayala.

So, Mr. Chairman, this is the order of presentations and we can proceed. Thank you.

Mr. Chairman. Thank you Niklas about your informations. So now the first presentation is by Mr. Nat Gopalswamy of SCOSTEP entitled "SCOSTEP 'Variable Sun and its Terrestrial Impact (VarSITI)' program". Mr. Gopalswamy, you have the floor.

Mr. Gopalswamy (SCOSTEP). Mr. Chairman and distinguished delegates, my name is Nat Gopalswamy and I'm going to make a presentation on the next scientific programme of SCOSTEP, known as Variability of the Sun and Its Terrestrial Impact or VarSITI.

SCOSTEP is an international organization whose main activities are science in solar-terrestrial physics, capacity-building and outreach.

Under science, SCOSTEP does long-term programmes, four to five years programmes which are of interdisciplinary nature and international. And also

interacts with international organizations dealing with solar-terrestrial physics.

SCOSTEP runs this capacity-building mainly running Space Science Schools in cooperation with the International Space Weather Initiative. And also communicates important results to the public.

This SCOSTEP science goal is to advance our understanding of solar-terrestrial relationships using space- and ground-based data, cutting edge models, theory, international, interdisciplinary research.

Under capacity-building, SCOSTEP organizes the Space Science Schools and organizes lectures and hands-on experience, which is normally not done in classroom setting.

The picture shown is a huge school that was conducted last year in Indonesia, organized by LAPAN. And I am pleased to report that the next school will be organized in Kenya, in October 2013, this year. And next year the school will be conducted in Peru. And all these schools are conducted in collaboration with the International Space Weather Initiative.

Under public outreach, SCOSTEP publishes these comic books. These books are on topics of interest to the public. And you can see there are nine topic right now, including global warming, cosmic rays, solar wind, solar-terrestrial relationship and so on. These comic books are published in many languages and all these translations and originals are available in the SCOSTEP website, given there: yorku.ca/scostep. SCOSTEP invites efforts to translate the books into new languages.

The current scientific programme of SCOSTEP is known as CAWSES — Climate and Weather of the Sun-Earth System. Most of the SCOSTEP programmes deal with the two pathways in which energy flows from the Sun; namely mass emission and the electromagnetic emission and how these two emissions effect Earth. In addition, there is cosmic rays coming from outside the heliosphere and solar activity [ ] those cosmic rays. And accordingly there is different impact on Earth.

The CAWSES programme dealt with space weather and climate. And this programme will end this year in 2013. So we have been working on setting up the new programme for 2014 onwards. And this presentation is going to be about this new programme.

So how did we do this new programme? Last year we sent out announcements in all possible channels, soliciting white papers about the next scientific programme. We received nine white papers in 2012. Then we set up a forum at the International Space Sciences Institute, known as ISSI, in Bern, Switzerland. And 27 experts were invited to that forum. And the brainstorming took place last month, May 7th to 8th in Bern. And this ISSI forum came up with this new programme known as VarSITI. So the variability we are dealing with are the short-term variability and also the longest-term variability, namely the lifetime of the Sun. So this is the group which did the deliberation last month in Bern.

So the ISSI forum identified four elements for this VarSITI programme. The first one is solar evolution and extrema, extrema meaning very high solar activity and very low solar activity. Currently we have very low solar activity and that became a focus of this new programme. The MiniMax24/ISEST element deals with the day-to-day events taking place on the sun, like coronal mass ejections and coronal holes. The ISEST is the programme, International Study on Earth-effecting Solar Transience. Basically analyses these day-to-day events to find out how the energy flow changes because of the weak activity of the Sun.

The next element is called SPeCIMEN. It deals with the inner-magnetosphere and will make use of the new NASA mission Van Allen Probes. And the final element is known as ROSMIC — Role Of the Sun and the Middle atmosphere/thermosphere/ionosphere In Climate.

This chart provides the context. And you can see the solar activity currently is very low. This is the current solar cycle 24. Compared to the previous cycles the activity has gone down. And because of this low activity, you have high levels of cosmic rays coming to Earth. And you can see in the previous cycles the cosmic ray levels was lower. And now we have the highest level in space age, the amount of cosmic rays flowing to Earth.

So all these four elements deal with this weakened solar activity and what is the implications for Earth's climate and space weather.

The MiniMax24 programme observes the Sun like this and you can see today's Sun. These are regions where potentially storms can be generated. And these are the sun spots. And these are the coronal mass ejections observed by [ ]. So MiniMax24 Campaign records these mass ejections and then the ISEST programme analyses those events. And this is Jupiter.

MiniMax24/ISEST programme basically deals with space weather. For example, this is the data, geomagnetic data, from the World Data Centre in Kyoto. The beginning of this month we had two storms, but currently the sun is quiet. And if there is a storm we also will see particle radiation. Right now the particle level is very low, there is no event. But this

time last month there was a big event. The Earth was immersed in high-energy protons from the sun, as you can see from here — these are elevated protons compared to this level.

The SPeCIMEN programme deals with the inner-magnetosphere where many satellites reside. Space weather satellites, communication satellites, they all reside. And the particle radiation in the magnetosphere, electrons and protons, they can affect these satellites. So the Van Allen Probes measure these particles and this new programme will make use of the Van Allen Probe data with all the other data to specify the conditions in the inner magnetosphere.

The ROSMIC programme deals with energy input from the sun in the form of total solar irradiance, ultraviolet radiation, spectral solar irradiance, energetic particle precipitation and also cosmic rays from outside. As I noted in the previous slide, all these quantities are diminished because of low solar activity. On the other hand, number 3, cosmic rays, increased due to diminished solar activity. And what will be the impact of these variable sun on Earth is what this group will deal with.

In addition, this group will deal with coupling within the various layers of the atmosphere and also coupling between the atmosphere and the ocean. And waves starting from the surface of the sun and flowing upwards into the atmosphere.

The last group, Solar Evolution and Extrema group, will deal with the largest time [ ] time scale of variation for the sun, of course, in its lifetime. Right now it is in the main sequence. Right here eventually it will become a red giant and become a white dwarf over 9 billion years. But of course we are dealing with five years right now. But it is important to place the current variability in the context of the lifetime of the sun. One important aspect is solar magnetism because that is what causes a lot of this variability and we are trying to model the production of solar magnetism using the dynamo simulations.

Also, we would like to amalgamate the best current models and observations for solar spectral and mass output over the Earth's history. This group will also determine the size and expected frequency of extreme solar events, flares and coronal mass ejections. This is very important because 10 years ago we had huge solar storms which caused a lot of problems for space operations.

So here we have two of these mass ejections. This little white circle is the size of the sun. And all these streaks are particle radiation. And you can see these huge explosions and which travel within a day to reach Earth. And one of the impacts was the demise of MARIE, which was a Mars radiation measuring instrument on Mars Odyssey, because of this mass ejection of particles. So it is very important to benchmark these extreme events so spacecraft design can take into account how this extreme radiation that we receive from the sun.

Conclusions: the VarSITI programme is the next scientific programme of SCOSTEP to be run from 2014 to 2018. VarSITI has four elements dealing with current and urgent issues in solar terrestrial connection. VarSITI will also flavour the capacity-building and outreach activities with the current issues. Any global cooperation in making the best use of the VarSITI programme will be highly appreciated. Thank you, Mr. Chairman.

Mr. Chairman. Thank you, Mr. Gopalswamy, for your presentation. Is there any delegate who has questions for this presenter? I see none. Since we have many presentations this morning, so I will proceed further.

The second presentation is by Mr. Chiyoshi Kawamoto of Japan entitled "G-COM-W1 'SHIZUKU'". Mr. Kawamoto, you have the floor.

Mr. Kawamoto (Japan). Thank you, Mr. Chairman, for your kind introduction. My name is Chiyoshi Kawamoto, representing JAXA or Japan Aerospace Exploration Agency for this presentation. It is my great pleasure and honour to participate in the session of the committee and briefly present JAXA's most recent Earth observation satellite GCOM-W1, or SHIZUKU in Japanese, which means a water drop — the "w" stands for water, for your reference.

The GCOM-W belongs to the GCOM series as a whole, which are composed of the GCOM-W series and the GCOM-C series. The "c" stands for climate. Through the slides and animation before you, I'd like to introduce SHIZUKU and the GCOM series as a whole, briefly.

On May 17th, 2012, JAXA launches SHIZUKU by H-IIA rocket launch vehicle from Tanegashima Space Center. After the launch, the critical operational phase of SHIZUKU, including the deployment of the solar ray paddle and of the main refractor for the mission sensor was completed successfully. Since a year has passed SHIZUKU has been working very well.

Before going further into a detailed explanation of SHIZUKU, or GCOM-W1, please let me first share an outline of GCOM. GCOM stands for Global Change Observation Mission. The main objective of GCOM is to contribute to climate change observations. Since there are various factors related to climate change,

GCOM generates various products useful in observing oceans and atmosphere. The products will contribute to the comprehensive understanding of climate change factors, such as radiation budget, carbon cycles, and water and energy cycles.

In order to develop a system observing various products effectively, JAXA decided to develop two kinds of satellites, GCOM-W and GCOM-C. The GCOM-W observes water cycles and energy circulation related products, such as the sea surface temperature, sea ice concentration and so on. The GCOM-C observes climate change related products, such as cloud, aerosol, land cover and so on.

Please let me introduce the SHIZUKU system in detail here. SHIZUKU is a medium-sized satellite. It weighs approximately 2 tons and is 5 metres in length, 18 metres in width and 3.4 metres high. The mission sensor of SHIZUKU is the Advanced Microwave Scanning Radiometer 2, also known as AMSR2. AMSR2 observes the microwaves emitted naturally from the ground, sea surface and atmosphere. AMSR2 is the follow-up sensor of AMSR-E, loaded on Aqua with an improvement in accuracy and spatial resolution.

AMSR2 observes the six different frequency bands, ranging from 7 GHz to 89 GHz, shown in this [ ] graph as blue lines. Since the strengthening of certain frequency differs according to physical objects and conditions on the ground and atmosphere where radio waves are emitted we can calculate the physical quantity of the Earth by combining the data in several frequencies. For example, 6.9 GHz brightness temperature product, which indicates a radio wave strength of a specific frequency that is sensitive to the ocean's surface. It is mainly used for finding such a temperature while connecting the impact of atmospheric vapour using 23.8 GHz and 36.5 GHz brightness temperature products.

SHIZUKU satellite carrying AMSR2, is flying over the Earth at the altitude of 700 km. The diameter of the antenna is about 2 metres, making it the world's largest observation sensor aboard a satellite. The height of the rotating part is about 2.7 metres and the weight is about 250 kg. AMSR2 can keep rotating such a large and heavy antenna at a speed of 1 turn per 1.5 seconds for 24 hours a day, and more than 5 years without a minute of rest. The antenna of the AMSR2 scans the ground surface at a ratio of 1 turn every 1.5 seconds and observes an area of approximately 1,450 km wide in one scan. Using this scanning method, AMSR2 can observe over 99 per cent of the Earth's area in just 2 days.

In order to enhance its scientific value, SHIZUKU participants in satellite constellation A-Train, run by NASA. The A-Train consists of multiple satellites observing the Earth in close proximity at an altitude of about 700 km, crossing the equator at around 1.30 p.m. local mean solar time. For Earth observation it is very efficient to perform observations by measuring the same location with various sensors at the same time. With various satellites lining up on almost the same orbit, the A-Train enables us to observe the same location on Earth by multiple satellites around the same time, approximately within 10 minutes.

Mr. Chairman, please let me move to the topic on the current activities on SHIZUKU or GCOM-W1. JAXA started offering eight kinds of products. First the physical quantity concerning water on the Earth this May. These products will contribute to capture environmental changes on a global scale, such as El Niño and La Niña phenomenon. The products can also be utilized for various fields, including weather and precipitation forecasts for storms and downpours; by global meteorological agencies such as Japan Meteorological Agency and the National Oceanic and Atmospheric Administration (NOAA) of the United States; compiling fishing and oceanographic conditions for fish and finding fishing points by Japan Fisheries Information Centre; and enhancing images against the floods in Asian countries engaging in cooperative projects with Asian Development Bank (ADB).

This shows sea surface temperature. As I mentioned, this product will contribute to monitoring the El Niño and La Niña. This also contributes to the fishery field. The sea surface temperature is known to correlate closely with the distribution of fish. The high accuracy and high frequency provision of the sea surface temperature from SHIZUKU will contribute to a decrease in the cost of fuel to reach a fishery.

Sea surface wind speed. Total precipitable water. Cloud liquid water. Snow depth. And soil moisture. This product contributes to the [ ]. According to this product, we can detect drought trend earlier and more precisely.

In combination with other meteorological satellites data, this precipitation product can be useful for prompt report of precipitation distribution on the global scale.

One of the most interesting products of GCOM-W1 data is this one: sea ice concentration. Left image shows the average distribution of Arctic sea ice and the right one was the smallest record of 4.25 median square km, marked in 2007. Last August, as a result of our sea ice data measured by the on-board

microwave scanning radiometer, we found that the sea ice extent in the Arctic Ocean has become the smallest. The extent on August 24th was 4.21 median square km. Furthermore, the extent on September 16th was 3.49 median square km and now it is the smallest record in observation history.

The smallest sea ice extent may show the increase of the global warming. In this way, water on Earth is closely bound to weather phenomenon and climate change. And SHIZUKU or GCOM-W1 observes the water cycle. The water circulating around the globe is indispensable for our lives. Rain in crucial for maintaining the ecosystem and benefits our society as well. However, typhoons and heavy rains are occasionally cause damage to our society and cost lives. Drought can also damage the ecosystem and directly harm crops.

There is a growing concern about frequent outbreaks of extreme weather phenomenon, such as typhoons, heavy rains and droughts, along with a rise in temperatures. We need to minimize the damage caused by natural disasters, but at the same time, harness precipitation as a water resource. It is therefore crucial to monitor the current global water cycle to understand the water cycle based on the collected observation data and to predict its behaviour in the short-, medium- and long-term.

Along with this context, observation by SHIZUKU is a kind of health check-up of the Earth from space. JAXA has hope the expansion of the use of the data by the globe.

Mr. Chairman, I finally like to briefly introduce the GCOM data provision. As I mentioned, JAXA has just started providing eight geophysical parameter products this May, or just last month. AMSR2 brightness temperature data is also already available to the public since this January. JAXA prepared the data providing service for people who are interested in SHIZUKU products. The products are provided free of charge for research purposes.

And this chart shows the JAXA satellite monitoring for environmental studies, JASMES. JASMES provides users with not only satellite data sets, but also information on the current status of the climate variables, such as solar radiation reaching the Earth's surface, cloudiness, snow and sea ice cover, dryness of vegetation, soil moisture, wildfire, precipitation, land and sea surface temperature, including SHIZUKU observation data.

To conclude my presentation, JAXA developed and launched SHIZUKU, the most recent Earth observation satellite. The products obtained by SHIZUKU are expected to contribute to various fields, not only scientific but practical fields. JAXA does hope that data obtained by SHIZUKU or GCOM-W1 will be broadly utilized all over the world. Thank you very much Mr. Chairman and distinguished delegates for your attention.

Mr. Chairman. Thank you Mr. Kawamoto for your presentation. The next presentation is by Mr. WANG Guoyu of China entitled "The current status of the education and research on space law in China". Mr. Wang Guoyu, you have the floor.

Mr. Wang Guoyu (China). Thank you, Mr. Chairman for giving me the floor. Good morning, distinguished delegates. My name is Guoyu Wang. I'm associate professor in the law school of Beijing's Institute of Technology. So it's my great honour to be here and to introduce the current status of education and research on space law in China to all of you.

After decades of endeavour, China had made a big step in space arena. As known to all, China has successfully launched the Shenzhou 10 spacecraft last week. The outstanding achievements in space activities also led to tremendous promotion of the education and the research in space law.

The specific research on space law in China started from 1980s with great contributions from the leading pioneer Professor Hanqin Xue. After 30 years of development, China has achieved outstanding progress in education and the research on space law.

China has been fully aware of the significance of capacity-building in space law. In China, it is generally accepted that a successful operation of space law policies and institutions in the country relies on the presence of qualified professionals. So in this presentation, I would like to introduce the institutes of space law, education programmes, research platforms and the achievements in space law in China.

Institutes that address the subject of space law and policy play an important role in promoting national expertise and the capacity. For this part, first I would like to briefly introduce the four institutes based around universities. And then introduce the Chinese Institute of Space Law.

The following four institutes of space law will be stated by chronological order. The first one, Institute of Space Law of Beihang University. It was founded in 2001. The first specialized research agency of space law. Moreover, with the establishment of the Regional Center for Space Science and Technology in Asia-Pacific Area in Beihang University. This institute will take a lot of advantages of that platform. In particular with space law teaching and training.

The second one is Institute of Space Law of Harbin Institute of Technology. I was established in 2005, located in Harbin city Heilongjiang province, north-east China, possessing pretty much the same latitude as Vienna.

The third one is Institute of Space Law of Beijing Institute of Technology, where I am come from. It was established in 2006. During the last few years, it has intensified wide and active cooperation with several world institutes, such as Institute of Space Law in Mississippi University, Leiden University, [ ] University and McGill University.

Last one is Research Center of Air and Space Law, coming from CUPL. It was established in 2007 as a subsidiary of the international law school of CUPL.

Ok, now I would like to introduce the objectives and functions of the above four institutes. The first, to conduct and promote space law research and teaching. Second, to contribute to the draft of national space law and policy. And to offer legal advices for domestic space industry. Here, I would like to note that, in 2012, a working group on investigation on national space legislation was established by the Finance and Economic Committee of the People's Congress. The professionals coming from institutes of space law of BIT, HIT and BOAA were invited to join in that working group. It is my great honour to be one of them.

And now I would like to introduce the Chinese Institute of Space Law. CISL was established in 1992. At present, it is under the supervision of China National Space Administration. Having been growing increasingly for 20 years, CISL now have 185 members, which represent more than 50 institutes. It has several missions, many missions that show on the Power Point so I just skip it.

The second part is about education programmes for students. I will talk about the courses, the degree offered programme and international communication for students in space law.

So as to the courses in space law, just a few years ago there were no independent space law courses offered in Chinese universities. However, space law has been an independent chapter in international law course of the law school every since 30 years ago. That is the future of the space law education in China. At present, there are more than 600 law schools in China and each year there are approximately 40,000 students who have in general an education in space law.

To keep up with the rapid pace of space industry, Chinese universities have become more and more focused on capacity-building in space law. For now, there are at least five law schools offering courses of space law. An estimated more than 400 students have attended and finished law courses each year.

Here's the outline of the space law course of BIT, a law school. It shows the contents and the corresponding class hour so given that you could find it well on the website of OOSA, so I would like to skip it.

In addition to space law course, the training course for international space law moot court competition is offered both in CUPL and BIT. Moreover, our BIT is the only one that offers such course in English.

As to the degree offered programme, as the same case in other countries, there are no specific doctor degree in China in space law being offered in China. However, space law could still be chosen as a research field of the doctor degree in international law or other relevant majors, such as civil law, which is set up in almost every law school in China. And the economic analysis law, which is offered as a doctor degree in BIT.

As for master degree, in China there is no specific degree for space law so far. But master for international law is provided. Till now, in China there are no specific degree programme in space law for international students. But the relevant LLM and PHD programme are offered in some law schools.

Here I have to mention that by cooperating with APSCO, the Institute of Space Law of BIT is embarking on the application for the first LLM programme in space law in China.

As to international communication for students in space law, on account of the purpose of internationalization of [ ] training, students are always encouraged to be engaged in international communication regarding space law in China. In this part, I would like to highlight two type of programmes. The first one, Manfred Lachs International Moot Court Competition, of course. Since 2003, Chinese team have kept competing in the Asia-Pacific round of this competition. The team come from law schools specialized in space law or interested in space law, such as Tsinghua University, CUPL, HIT, BIT, etc. In the just concluded twenty-second Asia-Pacific round, the Chinese team created its best record so far.

The team of Beijing Foreign Studies University achieved a runner-up prize and the best oralist award. In September, the world final will most likely be held in BIT during the sixty-fourth IAC Sorry about the picture. I counted it, the arm on the picture. Can't do that.

So the second platform is the US-China Students Space Law Forum. In 2010 the first US-China Students Space Law Forum was held in Mississippi University, co-hosted by the National Center for Remote Sensing and Space Law, Institute of Space Law of BIT and HIT. In the following two years, 2011 and 2012, it was held in China and in the US in turn. If you look at the picture you can find the guy under the red arrow. It's me.

The last part is, I would like to introduce the research platform and achievements in space law. It includes the journals, special column in journals and academic paper on them overseas, monographs, textbooks, research projects and dissertations in space law. These contain major products of China's leading space law professionals and it would consequently be taking as crucial references in the making of space law or policy.

As to the space column in journals for space law , like Space Law Newsletter is the first, the specific research platform for space law in China, launched by CISL. And Space Law Review is issued by HIT. Five volumes have been published so far. Chinese Yearbook for Space Law, issued by BIT Law School. And the special column is set up in several journals, such as Space Law Volume and Journal of the UAA, Journal BIT and Aerospace China, which is issued by China Aerospace Science and Technology Corporation, as shown on the PowerPoint.

As to the monographs, textbooks in space law, the [ ] of course is Outer Space Law, published in 2000. And the co-editor, the distinguished pioneer professor He Qizhu and the Director of Treaty and Legal Department of Foreign Affair Ministry, Huang Huikang.

So other monographs, textbooks included the New Comments on International Law, Comments on Space Law, the Outline of Space Law, etc. So there have been published a dozen monographs and textbooks so far.

So the last part about the research projects on space law. Till now, there are nearly 50 research projects launched by sponsors coming from different governmental departments, research institutes and universities. It should be noticed that the CISL played the most important job among the various sponsors to facilitate and promote the research on space law in China.

By this year, CISL has sponsored 28 research projects, including 24 regular ones and 4 ad hoc ones. You see on the Power Point, the research projects has covered major issues in space law and many fields in China space activities, including national space law, space policy making, national space legislation.

And so I hope this presentation will be of assistance and encourage cooperation between China and other member States concerning education institutes focusing on space law. Particularly, I hope the information on education opportunities in China will be of some help to assist other developing countries in establishing [ ] capacity in space law.

Finally, I would like to sincerely invite all of you, my dear colleagues, to come to Beijing in September this year to attend the 64th IAC. Thank you for your attention.

Mr. Chairman. Thank you Mr. Wang for your presentation. We are looking forward to the next IAC Congress in Beijing. The next presentation is by Mr. Saul Santillan from Mexico, entitled CONACYT Network for Space Science and Technology Development. Mr. Santillan, you have the floor.

Mr. Santillan (Mexico). Thank you, Mr. Chairman and all the delegates. I'll give my presentation in English. So I want to try to keep things brief. This is work that we are conducting in Mexico with the Research and Science Council that has the top networking programme and we are also working very closely with our newly formed space agency.

So what we are going to present is some of the projects that we are doing. I'm going to concentrate in these five points: is history, Mexico today, strategies and some of the projects that we are doing.

Mexico today is having a very fast change in industrialization and also on the demand of knowledge, because we are having several industries from the automotive, the aeronautic and other industrial sectors, that they also are requiring more information — not only for the educational point of view, but for practical matters. Also, we have a statistic that we are not proud of it, that is that we have more or less 37 million people on poverty and 5 per cent of unemployment. So this is not acceptable for a country that wishes to get in a better state and wishes to have a better position in the world.

So after the foundation of the Space Agency and the recent change of our Government, we have a strong change in the policy. And while previously there was a lot of focus on the drug cartel fighting and anti-terrorism policies, the good news for all of us is that space now is consider not only as a means for communications but also we are trying to make the space also means for producing welfare and making societal applications of the space technology.

The changing economic models that makes that Mexico is receiving investment and private and public research and development facilities are [ ] setting on. And we are trying to use them also to support our space technology programme.

The network that we are presenting here comprises 140 members and they are work on the space related matters. And they belong to 19 universities, 6 research and development centres, 3 civilian associations, 8 companies and 2 research centres from the armed forces.

The UNAM, that is the National University of Mexico, where I work, is the largest University of Mexico. We have over 300,000 students. And in our system we have something between 350 universities, both in the public and private systems. So we are selecting those universities that can make contributions. And one of our main problems and tasks is to develop the Mexico's Early Warning Initiative. This is for civilian protection.

As a big country we have several issues to address. For example, we have the Saint Andrews failure that produces earthquakes all along our country. It's not common that we have in a year 10 or 5 earthquakes of magnitude 5 or bigger. We also have several regions with active volcanoes. Hurricanes, we are hit at least for five or six hurricanes per year. We have floodings, forest fires, we are just getting out of our worst drought season in the last century. And we also have pollution problems in several of our cities. So in order to address some of these problems that we also share with several countries in the world, we are making a strong effort to integrate space technology and making a rational use of this.

So the mission and the vision that we are having is to develop a new concept and using first LEO, later on MEO, technologies in order to get sensible results for all of these problems and programmes.

Ok, this is not working very well. Ok. Next one. No. Ok. So, the approach that we are having is we are setting at our university, the first laboratories for integration and testing of nano- and microsatellites. And also we are looking to make infrastructure in other universities for materials development, optics, telecommunications and prototype development. And here are some of the projects that we are doing. We are trying to enhance international collaboration and we are looking forward to have it in order to make sensible results — not only for our country, but for the world.

For instance, we have some space instrumentation development and we are working with the United Kingdom and Russia. We are also, Taiwan is one of the countries that we are working with. The ground stations and imaging processing facilities for downloading and distributing images and information for the early warning system is a project that we are also make with international collaboration. We are also participating in outreach that is toward the CANSAT programme. And we are trying to make a uniform project development methodology in order to corporate in the international arena our projects.

So we have a big problem because we have more than 10,000 communities with less than 100 persons. And it's practicable impossible to get them normal facilities for having education, for having health services. So what we are learning is that with technology, the proper use of technology, and for instance for having some solar cells, and having satellite port, we can give these communities opportunity to have access to health, to education and also to promote their economical development.

So our idea is that we are going to make a swift change for the business of using only satellites for communications and making satellites a societal equalizer technology. That's our main target. And we are working fast for this. And for achieving that we need, in the long term, to consolidate an innovation ecosystem. And this ecosystem cannot be feasible unless we have international cooperation with several countries. And also we share, not only geographically, but we share many of the problems that we have in the world, like the pollution. We have the water management and also this climate change. So one of our aims is to make Mexico a good actor and a positive contributor to the international arena in space technologies.

So you are going to see that we have some projects ongoing. For instance the CONDOR is a microsatellite that we are working with the Aeronautic Institute of Moscow. And also we are working another project with the MIT in USA. We have also collaborations with NASA. And we are working also with Japanese institutions. One of our main projects is the JEM EUSO that we are going to show in a few slides. And those are some of the facilities that we are at the moment setting up in order to work in this area.

So we also are working on our ground structure installing observatories and making some collaborations for the sustainability and with mitigation and also the studies on the space weather and the way that they are effecting our weather on the Earth. One of our programmes that we are working very hard is the telemedicine programme. And we are focusing as a first system on the Chagas disease that is called also the disease of the poorest. And one of the problems with these diseases is that you can be bitten by a bug and you can have no symptoms for up to 20 years. But

once you get the symptoms, you die for heart attack. And it is very difficult to monitor and distinguish what caused the heart attack. The only symptom that you have when you are bitten by the bug is that one of your eyes gets closed for a couple of days and that's it. So that people that doesn't have access to education or to communications cannot prevent and fight this disease that is a very cheap vaccination that they need. So it's not acceptable that we have people dying of this disease and on the map that you see on the left part of this slide you will see that the Chagas disease is spread all over the American continent.

So we are working using the space technology to communicate the doctors with a remote communities. And also we are starting to make assessments of the plans where these bugs grow. So we can make an integral approach for fighting and controlling this disease. And what we are trying to get from this methodology for working on endemic diseases that are transmitted by these kind of organisms.

The JEM EUSO, that is a Japanese-led project that is also one of our main programmes. We are working very hard on some parts of the instrument that is going to be in the international space station. And we are also trying to set up some industrial work in our country that is space-related.

So, just to conclude this is that we are strongly developing a strategy to help almost 40 million people that is living in poverty. And not only that, we are willing to share the knowledge that we would get with this strategy in order to spread the benefits to other countries. So thank you for your time. And I hope this should be our good contribution for the forum.

Mr. Chairman. Thank you, Mr. Santillan, for your presentation. The next presentation is Ms. Andrea Jaime of SGAC. Ms. Jaime, you have the floor.

Ms. Jaime (SGAC). Thank you, Mr. Chairman. Distinguished delegates, it's my pleasure to introduce to you the Space Generation Fusion Forum 2013.

First, I will give a brief introduction on what Space Generation Advisory Council is. So basically, we are a non-profit organization that represents young professionals in the space sector. We were founded in UNISPACE III conference in Vienna in 1999 and we have permanent observer status in COPUOS since 2001. We are a network of more than 4,000 people in over 100 countries.

So basically our purpose is to create a volunteer network to promote the network between young professionals and students, but also them with top space professionals and organizations. And also give the next generation of space sector leaders a voice in global space policy.

Now going more into details of the event that we hold last April in Colorado Springs, USA. We basically had some keynote speakers that addressed four topics. And then we had four interactive panels with delegates, so young professionals, as panellists and space sector leaders as moderators. It's a new way of doing it. And we also held a panel during the National Space Symposium, also in Colorado Springs.

Some statistics so you have an idea of the type of delegates we had. We're about 40/60 female/male distribution. Most of our delegates were young professionals, although some of them were either masters students or PhD candidates. We had 47 delegates coming from 15 countries, and with an average age of 28 years old.

We also SGAC was able to give 8 different scholarships for people from 7 different countries to come to, not only the Space Generation Fusion Forum, but also the National Space Symposium. In total it was more than $10,000 in scholarships that were awarded.

Now I will give you a brief introduction to the four topics that were discussed. And because we are a bit short in time, I would like to let you know that you can reach me anytime here, the UN COPUOS, or send me e-mail or consult our report that will be published in a couple of weeks. I will introduce you it later to you. But basically I want to just give you the introduction on what we talked about and if you are interested or you think it's topics that might be of the interest of your country just please look for more details.

So the first panel was about long-term sustainability of space, and our panellists came from India, Germany and the USA. And it was moderated by Victoria Samson from Secure World Foundation. Topics that were discussed were about space debris, especially legal implications and ownership, obligations and rights of those. Also collision avoidance and national security, radio frequency interference and also the importance of involve emerging space nations in the sustainability debate since early on.

The second panel we had was about operational data exchange and sharing of space assets. So our panellists came from Greece, Australia, Indonesia and Canada. And it was moderated by Richard Dalbello from Intelsat. The topics that were discussed were sharing of data to avoid collisions and other maybe kind of disasters. Then frameworks for broad international civil and commercial collaboration, open

source approaches, data assurance, integrity and security, and many others.

Our third panel was about innovative space exploration strategies. The panellists came from USA, Germany, Canada and UK. And it was moderated by A. C. Charania from Virgin Galactic. Some of the topics were discussed were about the space sector's emerging credibility gap, and the public support to exploration, or the lack of public support, then institutional, policy-related, and cultural factors that hinder innovative space exploration strategies. Then, the relations between industry and government. Also we touched a bit on human life science and health as one of the main barriers to go beyond LEO. And then, of course, we also talked about the ISS as a unique platform to prepare for this future exploration.

And the fourth panel was about regional space programmes: benefits and risks. The panellists came from USA, Canada, Japan and Germany. And it was moderated by Norimitsu Kamimori from JAXA. The topics, of course, were benefits of having regional space programmes, and we touched topics such as sharing costs, increase influences, technology transfer, etc. But also the risks of having regional space programmes, like risks for outflow or leakage of technology, loss of autonomous development, and many others. Then we also talked about the European Regional Programme as a European space agency as an example of success. And then we also talk about the ways of doing these regional space programme in Asia-Pacific and in particular we talked about APRSAF and APSCO.

And, as I said before, distinguished delegates, I don't have the time to go into details on all the conclusions and recommendations that the delegates came during this two-day event. But the report, the Space Generation Fusion Forum Report, will be available in about two weeks in our website: www.spacegeneration.org, or just come to me here at the UN, or send me an e-mail anytime and I will be able to provide you more details on any of the topics that you might be more interested.

So I would like also to thank the partners and sponsors of this event, especially Space Foundation as one of our hosts. And all of you for hearing me today here. Thank you Mr. Chairman.

Mr. Chairman. Thank you, Ms. Jaime, for your presentation. The next presentation is by Mr. Ferchinand Bako from Burkina Faso, entitled "Benefits of space technologies in Burkina Faso: the case of urban planning". Mr. Ferchinand Bako, you have the floor. The remote control can be _____.

Mr. Bako (Burkina Faso, translated from French). Microphone, please for the speaker. Could we have a speaker for the, yes. Microphone please. My presentation will have to do with the benefits of space technology and spin-off.

We have an example of one tool used for that purpose with the urban management plan that we have up until 2030. As you know, African countries, and developing countries in general, I would say, urban space is not a matter that is fully mastered. So human developments are constantly moving ahead. There is space available for use, but we do have to make wise use of available space, because often we don't have the required services there yet. But we are going to develop those areas. To do that we require proper policy.

We have the urban perimeter, as we call it, and this is determined with participation from the local population, so that we can ensure better development of the available space.

Burkina Faso, as you can see here, is a country in Western Africa that is widely known. And the area we will be looking at is the green area shown on the screen and precisely the town here is part of that area.

So without further ado, I will embark on my presentation. I have three main areas that I would like to discuss: the context for the preparation of town planning exercises, the methodology used to produce the tool and then we will take a detailed look at results.

Now, to put you in the right context, let me say the following: this tool comes from the fact that we have growing urban sprawl and we need to have plots in areas where there are services provided for the population. This means that we have to have expansion of such plots, of course with electricity, water and sanitation, schools that need to be built, health clinics and markets — everything that is there to make the area viable. But of course you cannot expand indefinitely. This is a costly thing. We don't have many funds available in our countries to do this. Hence, you need to have a tool, which is this urban planning tool, so that you can circumscribe the area and have a good approach, making wise use of your funds for extension purposes, including required infrastructure.

So which methods did we use to apply this tool? Initially we need very high resolution satellite images. And when we said that, it's less than 60 cm. For the 13 main towns of the region in Burkina Faso we have required such images. But there still are other regions and large towns where this new image acquisition policy should apply. Then we need to harmonize, because we have private planning agencies responsible

for this mission, and then they are supported by the State, providing appropriate guidelines.

So the initial private agencies are then within the oversight of the State services. There's a technical committee that is created, bringing together public and private actors with experience in town expansion. There is a data collection exercise. This is done by the individual agencies. So we have a multidisciplinary team. Experts in geography, economics, social aspects, physical matters in order to study the area, assess the regional requirements and to see to what an extent urbanization can take place.

Still on the technical issues, let me say that we need to delimitate the urban area that we wish to deal with. The planning exercise is, as I said, up until 2030. What is this town going to look like by then? We can simulate the developments, so that, together with the population, we can proceed to that new delimitation of the town area. Then we have to do some mapping. And we use very high resolution satellite images to do that. We zoom in on the details.

Still on technical subjects, we need to produce the diagnostic document, as we call it. The pros and cons are mentioned there. The elements that create risk in the physical environment. The natural environment, as such, that is the soil, vegetation, the of course composition of that zone. Then we have to see whether any social threat. Is the population in favour of such urban development, because you know that some groups would resist any development. And then you have to assess the economic aspects, because you know that whenever you have urban development you have to see whether local population has the wherewithal, the funds, to develop those plots of land. It's not development for the sake of development we want. We have to bear in mind the pros and cons and the physical environment.

These are some of the results that we've achieved. Let's take the case of Dédougou: 230 km from Ouagadougou, the capital, where the urban area that was delimitated up until 2030 is 81 square km. Not a very very large city, but if urban development is applied we can avoid mishaps such as we've had in the past.

For Dédougou, therefore, some 30 maps were done. We're going to highlight just the most important maps, bringing together all the information that we have gleaned elsewhere. Here we see Burkina Faso. This is our study area now shown on the screen. The perimeter, as contained in the urban development plan, is outlined here: 81 square km, as I said earlier on. If you look at this picture, giving you the outline, you see that this is what we have by way of urban development in the middle.

The remainder of the space has not yet been the subject of urban development. But up until 2030 we need to have activities such as to develop this area in an orderly fashion. Because, you see, the document that we have, the Urban Development Plan, is validated by the Council of Ministers. It is a formal, official document that should be implemented as it stands. So here we would have to have a hospital. Once the Ministers have decided. You can't put schools in that area because the decision has already been taken to have a hospital there. And in order to do orderly planning, you should — here we have a river or a stream so obviously you have to bear that in mind. All the information needs to be included to ensure proper planning.

On this map, we're showing what I just described. Here we have natural space that is not yet being used, so we have natural plant or vegetation cover. Then you have a protected wooded area. As a result thereof, I'm not going to put there a school or a building to serve as a market, for example. This area is set aside and protected. And the population would not go along with development there.

Here we have a stone quarry. We're using stone for building purposes from this area, if required. This map shows the present occupation of the space we have. We have a landing strip there. Not a very large airport, but it's an available area recognized in legislation and you can't, for example, have fields there or agriculture. It's devoted to that purpose.

So all the information is on the map. And it gives us status of our space before or prior to development that needs to be borne in mind in our development plans. Now here we have the plots of land. These are provided with the basic services and the population has been organized and there are roads. We see that this is the core area in blue. And when we went there in 1995, the blue and orange areas were there. In 1996, we had plots that had been on the map since earlier on, 85-86, and this was the part that was planned for in 1995, while the new areas are shown in different colours.

So these circumstances show that plots are to be planned for in such a manner as to make sure that occupied plots are devoted to certain end-uses. To make sure that these plots are already allocated, we then had to integrate these areas on the planning breakdown. So this is to find out which lots have already been allocated. Where there are buildings, where there are no buildings, so that we make sure that people are making proper use of plots, that this is

actually required. Because if there are unoccupied areas, they are not really being put to use.

Now the planning exercise on the basis of the tool that the Ministers have taken a decision on is here. And it's a tool that lets us say that in these areas roads will have to be built so that people can move around freely and that we have to have crossroads, stop signs, red lights. Beyond that area there are activity areas, as we call them. Usually these will be devoted to secondary and tertiary industry. You couldn't have agriculture there, that would not be admissible. And then there's a military area also set aside around our small airstrip, and it is off limits for anybody else. That space is set aside for military administration or other military activities.

Then there is the preserved area. These are environmental areas that need to be preserved. They could be agro-herding, so pasture land also, and nothing else can possibly be done there. A business or a manufacturer would not be able to establish there. And finally, there are residential areas where we're going to be building houses. And for any new building activity, citizens will be given authorization there.

This is a description of what we have done using high-resolution satellite images in Burkina Faso. Thank you for your attention.

Mr. Chairman. Thank you, Mr. Bako, for your presentation. The next, and final presentation this morning, is by Mr. Rigobert Bayala from Burkina Faso entitled, Spatial information to support Burkina Faso's integral municipalization in climate change context. Now Mr. Bayala, you have the floor.

Mr. Bayala (Burkina Faso, translated from French). Thank you, Mr. Chairperson. The presentation contains information I would like to share with this meeting. A first part will be devoted to space information to support integrated municipal developments and in Burkina Faso this applies. Before I do that, I'd like to thank the UN-SPIDER programme, as they have participated in our exercise in November 2012. We were given the opportunity to participate in a meeting. There are very specific products derived from Earth observation and we have benefitted from this.

We often refer to the use of space for Earth monitoring and observation purposes. And of course we have satellites circling our planet. In the case of Burkina Faso, let us consider this tree as if it were our planet. And the branches surrounding the tree are satellites moving around the planet. If space is not properly preserved, we will always get that situation. So this was a part that we investigated in Burkina Faso.

By using spacial support services, and in particular the Spot satellite, with its resolution — my friend here was speaking on urban issues. I was looking at rural matters. Particularly, I wanted to see how vegetation had evolved over the years and how one can resolve conflict that have to do with soil occupation, land occupation, how a municipality, a community to the south of Burkina Faso could settle disputes. Three areas had an area that they all laid claim to. And here is the village. There are three villages claimed by a given municipality. But now, we have an area officially delimitated and the various mayors that were at war, so to speak, over this area were brought on board in data collection exercises to pinpoint the area and the problem was finally settled.

So one of the advantages we got from data processing also was to draw attention to a drastic change in land occupation. Essentially, in these areas shown on the screen, where, in essence, are exploited areas are now taken over natural areas. These often involve agricultural use of areas beyond the rainy season. Because, you see, there are drought areas and populations often resort to speculation and this has an adverse impact. In fact, even fruit trees that we have in these areas are the subject of speculation.

In the commune of Djigoue we have the same problem. Where are those villages actually in terms of the delimitation of the communities. This municipality up here will have to have exchanges with the neighbouring community to decide where this village belongs — should it be part of one community, and therefore the southernmost delimitation would have to be adjusted, or should it go to the other community.

Still in this community or municipality you see dark green, the national preservation areas. These are protected forests or national parks. A village was administratively created and its plum in the middle of a protection area, meaning that the department responsible for these municipalities is likewise responsible for sustainable development and forestry-related issues, and in the days to come they will have to meet to take a decision as to the particular case of that village. Should it be relocated elsewhere or should we reconsider the delimitation of the natural area.

As for Niangoloko, which is on the top, close to our borderline with Côte d'Ivoire, observation has made it clear that there is no cause for litigation here. But agriculture is taking over in respect of the natural reserve, which happens to be located there in the yellow area. And the populations in that area have invaded the natural reserve and are farming the land there.

This has been done for 47 municipalities. 350 is the total number of municipalities in Burkina Faso. So for statistical purposes, we have selected a small selection therefor, in a variety of agro areas of Burkina Faso. And we have used maps derived from spot imagery. Then we have compared them with data that build up on weather parameters to then evolve our climate change adaptation programme.

To have a general assessment to the vulnerability to climate change of the sector and assess climate change impact in the sector, as well as for purposes of evaluation of available information on climate change, a series of images linked to weather parameters were used. Or climate data generally. And this takes us to the horizon of 2050.

In preparing this climate scenario, we were able to determine the requirements for development and vulnerability to climate and also adaptation needs and to apply them to the identified areas for the environment and renewable resources — where we have defined four main areas: improved productivity and ecosystem resilience; (2) biodiversity conservation; and (3) research and environmental monitoring; while (4) has to do with greenhouse mitigation.

In the first area, four main activities were defined: improve biomass production forests and promoting new technologies for wood. If we say that Burkina Faso in the Sahel, we see that this is savannah area, or low growth. But we see that the southern portion of the country has a lot of fuel wood. And fuel wood has been exploited in a clandestine manner. A lot of people coming in from neighbouring countries are responsible for that. So now, as part of this plan, we want to see how we can possibly solve those problems.

Now, our second activity, that I'm showing here, is intended to accompany the various sectors in order to have them adapt to climate change. The environmental areas are global in nature and we need to see what can be done from the various sectors in that environment and how this would impact the environment. What can we do by way of accompanying measures, so that they can have activities or that their behaviour may be respectful of plant or vegetation coverage?

This is our third activity: how to enhance soil fertility and combat desertification. Rural populations, we often hear, burn off surface vegetation. They are compelled to do this because they don't have any other means of clearing the land or giving it. They have no fertilizers. So that they move from one plot to another, year after year, for their farming purposes.

The fourth method that was identified is an improvement of ecosystems in terms of productivity and resilience. In Burkina Faso we have blue wetlands, we show them in blue. And then we have eco-tones, as we call them. But over the past five years we see that waterways in the western areas of Burkina Faso have now turned rose in colour, they're pink. In essence, this shows the practices of the population. They tend to move closer to the waterways in farming activities. Something that you could not see before. It's now clearly visible where we have small dams and means of communication.

The second area has to do with biodiversity, conservation. Where here we have pinpointed two essential areas of activity: one, preserving biodiversity in respect of natural hazards. And Burkina Faso is one of the tourist destinations when wetland resources are mentioned and also wild animals. So we need to take action and preserve the biodiversity that we have.

The other activity that was identified was preserving wildlife from risks associated with climate change. On this picture a local teacher is shown. He usually came to this area to take samples of local fish, in particular. When he came this year, the water surface had decreased. And even in the month of May there was a reasonable amount of water there. So now we are monitoring this area.

People will have to adapt to this because now the waterfowl has also increased. But they will no longer be concentrated in one area, but rather scattered over a large area.

Here we have follow up and environmental surveillance. We will have a permanent tool there, helping us adapt to climate change. This picture was done in May. If you travel to Burkina Faso and you see sorghum plants of this size, you would normally assume that it's the month of August. But here, we already see that plants have grown substantially by May. This is one manner the local population has of adapting to climate change. The local population, in essence, has used plants and seeded to adapt to climate change. They will therefore have two harvests on their fields.

Still on the use of environmental monitoring, we here have an ongoing monitoring system for the measurement of impact of climate change on natural ecosystems.

As for mitigating greenhouse gas implications, we are here showing implementation measures to reduce pollution in urban areas. Here, we show teams in the field, and we would all assume that it was possible to cross the river. But here we see that there

already is a lot of water and it's difficult to cross the river. The next activity has to do with the observation of these natural areas.

Before thanking you for your attention, let me say that normally speaking, when you visit this area, from the cows you can see on this photo you could usually have very very skinny cows. This year in May we saw that we had cows in very good shape, so our herds are very healthy. The data we use from the African Monitoring System for Sustainable Development were useful to guide our herdsman and to have them move their cattle to the right area. A number of indicators were used: live area index, the dry matter productivity index, the small water body index is in use and any drought related factors are likewise put to use. So we can orient herdsmen, leading them to water sources for their cattle and proper pasture land to make sure that cattle is in good health and properly fed. This is one of the positive spin-offs of space derived data. And the Government of Burkina Faso decided, since we tested this over a period of two years, we saw that nomad populations, if they move to this area they will always find proper sustenance for their herds. So the Government then decided to apply this across the board and have proper monitoring so as to ensure the health of herds.

Before I complete my presentation, let me ask all space countries, you see space-faring nations are called upon to help us. We are not a space-faring nation. To see what they could do to help us in Burkina Faso in terms of data processing, to make it easier to use for development policy purposes. And second, how to support Burkina Faso so that we are able to process radar images because we have ever-greater need for this. And how to support our meteorological services in terms of wind prediction. Because you see, we have large dust clouds and this is very troublesome over the past years. These are like small-scale cyclones or small-scale violent winds that have an adverse impact on our farming activities.

Having said that, I would like to thank you.

Mr. Chairman. Thank you, Mr. Bayala, for your presentation. Now we conclude the technical presentations.

Distinguished delegates, I will shortly adjourn this meeting so that the signing ceremony can take place on the establishment of the UN-SPIDER Regional Support Office in the Russian Federation. Before doing so, I would like to inform delegates of our schedule of work for this afternoon.

We will meet promptly at 3.00 p.m. At that time, we will continue and hopefully conclude our consideration of agenda items 11, Space and climate change and 12, Use of space technology in the United Nations system. We will begin our consideration of agenda item 13, Future role of the committee.

There will be two technical presentations: by the representative of India entitled "Space observation for governance and empowering citizens in India", by a representative of the Russian Federation entitled "Deflecting hazardous asteroids from collision with the Earth by using small asteroids".

Expert Group B will meet from 2.00 to 5.00 p.m. in room C4. Expert Group A will meet from 2.00 to 6.00 in room C6 and Expert Group C will meet from 2.00 to 4.00 in room C0739.

Now I will give the floor to the Secretariat. You have the floor.

Mr. Hedman (Secretariat). Thank you, Mr. Chairman. And another announcement on side meetings during lunch time. The Japanese delegation will hold informal consultations on their proposal for a new agenda item on the Legal Subcommittee. The document, conference room paper 6, revision 3, is already out in all pigeonholes and captures the status so far on the ongoing consultations on that particular agenda item proposal. Those informal consultations by Japan will be held today, at lunch time, between 2.00 and 3.00 p.m. in meeting room C0435, that side of the corridor. Thank you, Mr. Chairman.

Mr. Chairman. Thank you for your information.

Distinguished delegates, this evening there will be the traditional Austrian Heurigen evening starting at 7.00 p.m.

Delegations are now cordially invited to attend the signing ceremony on the establishment of the Regional Support Office of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) in the Russian Federation between the United Nations Office for Outer Space Affairs and the Ministry of the Russian Federation for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters, in presence of the Director-General, Yury Fedotov.

Following the signing ceremony, in this Board Room D, there will be an information briefing by the Office for Outer Space Affairs on fundraising opportunities with activities of the Office.

Are there any questions to this proposed schedule? I see none.

This meeting is adjourned until 3.00 p.m. Thank you very much.