

**Committee on the Peaceful
Uses of Outer Space
Fifty-fourth session**

Unedited transcript

637th Meeting

Tuesday, 7 June 2011, 3 p.m.

Vienna

Chairman: Mr. Dumitru Dorin PRUNARIU (Romania)

The meeting was called to order at 3.16 p.m.

The CHAIRMAN Good afternoon distinguished delegates. I now declare open the 637th meeting of the Committee on the Peaceful Uses of Outer Space.

First I give the floor to the Secretariat for an announcement.

Mr. N. HEDMAN (Secretariat) Distinguished delegates, informal consultations on the long-term sustainability of outer space activities will now begin in room M0E19 under the chairmanship of the chair of the working group on long-term sustainability. An updated revised text of the draft terms of reference, based on the informal consultations held today in the morning, is now being printed and will be provided in that particular room, M0E19.

The CHAIRMAN I thank the Secretariat for the announcement.

I hope delegates had a chance to view last night's screening of videos. This afternoon we will continue and conclude our consideration of agenda item 6, implementation of the recommendations of UNISPACE III. We will begin our consideration of agenda item 11, space and water; agenda item 12, space and climate change; agenda item 13, use of space technology in the United Nations system and, time permitting, agenda item 14, future role of the Committee.

Following the plenary there will be three technical presentations. The first by a representative of Canada entitled 'Space Security Index 2011'. The second by a representative of Japan entitled 'Contribution to monitoring climate change through JAXA's earth observation missions' and the third by a representative of Ukraine entitled '100th Anniversary of Academician Mikhail Yangel, Missile and Space Systems Chief Designer'.

In the evening there will be a reception and exhibition hosted by the European Space Policy Institute at 7 p.m. at their premises.

I would like to inform delegates that the Action Team 14 on near-Earth objects is currently holding its meeting in room M7. Delegations are also kindly reminded to provide the Secretariat with written amendments to the provisional list of participants which was distributed as CRP.2 by today, close of business, so that the Secretariat can finalize the list of participants.

Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) (agenda item 6)

Distinguished delegates I would now like to continue and conclude our consideration of agenda item 6, implementation of recommendations of UNISPACE III.

Are there any speakers wishing to speak at this afternoon's meeting on this agenda item? I see none.

In its resolution 50/27 of 6 December 1995, the General Assembly endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space that, beginning with its thirty-ninth session, the Committee would be provided with unedited transcripts in lieu of verbatim records. This record contains the texts of speeches delivered in English and interpretations of speeches delivered in the other languages as transcribed from taped recordings. The transcripts have not been edited or revised.

Corrections should be submitted to original speeches only. They should be incorporated in a copy of the record and be sent under the signature of a member of the delegation concerned, within one week of the date of publication, to the Chief, Conference Management Service, Room D0771, United Nations Office at Vienna, P.O. Box 500, A-1400, Vienna, Austria. Corrections will be issued in a consolidated corrigendum.

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We have therefore concluded our consideration of agenda item 6, implementation of the recommendations of UNISPACE III.

Space and water (agenda item 11)

Distinguished delegates, I would like now to begin our consideration of agenda item 11, space and water.

The first speaker on my list is the distinguished representative of India.

Mr. V. HEGDE (India) Mr. Chairman, the Indian delegation greatly acknowledges the deliberation under this agenda item as it is creating awareness on use of space technology in effectively managing water resources.

Mr. Chairman. Conserving and proper utilization of water resources is of paramount importance to sustain life on planet Earth. The Indian space programme, since its inception, has continuously demonstrated ways and means of capturing the variability, vulnerability and dynamism of the diverse ecosystems leading to effective natural resources management. The strength of space based input lies in unfolding the various linkages and the underlying fact that exists between the state of natural resources and livelihood opportunities.

Mr. Chairman. India has been periodically mapping and monitoring natural resources using satellite data and creating digital data repositories on natural resources including water. This is done at a coarser scale annually and at a finer scale once every five years using satellite data of multiple resolutions derived from various space platforms. _____(?) initiated to create geospatial databases at 1:10,000 inch scale in order to generate natural resource conservation plan at the lowest administrative level. Satellite data provides potential information about hydro-geological parameters required to identify the groundwater prospect zones _____(?) sites. This is effectively demonstrated under the national level project called Rajiv Gandhi National Drinking Water mission taken on behalf of the Ministry of Rural Development. As of today, groundwater prospect maps have been prepared for 20 States covering more than 60 per cent of the country's geographical area. Using these maps, a large number of wells have been drilled with success rates varying from 90-95 per cent.

Mr. Chairman, to provide easier and faster access for sharing the water resource data, through a centralized web-enabled database, India WRIS, that is

Indian Water Resource Information System, is being developed at the behest of the Ministry of Water Resources. This database will have over 100 geospatial layers with about 4,000 attributes. Under the Accelerated Irrigation Benefit Programme, high resolution satellite data is being effectively used in mapping and monitoring of irrigation infrastructure in the country. So far 5.5 million hectares, spread across 18 States, have been covered.

Mr. Chairman. Satellite data is effectively used in India in studies pertaining to glacial inventory and retreat of the Himalayan glaciers, snow cover monitoring and study of mass balance. The snow melt _____(?) in certain basins in the Himalaya is being provided operationally during the summer months towards optimal planning of hydropower generation. Satellite data is also being effectively used for selecting suitable sites for hydropower generation in the inaccessible terrain of the Himalayas. Flood forecasting models using various satellite derived inputs have been developed for selected river basins in the country.

Mr. Chairman, India has also the problem of _____(?) in many regions especially during the rainy season. India has, on several occasions, mastered its ability to handle water-related emergencies by harnessing the capabilities of both Earth observation and communication satellites. The August 2010 flash floods in Jammu and Kashmir in northern India, September 2010 floods in Bihar due to the breaching of a major river, Kosi, across our terrain were monitored and mapped using space inputs. The track, intensity and landfall of cyclone Phet in the Arabian Sea in June 2010 and cyclone Jal in the north Indian Ocean in November 2010 were observed and advanced predictions were made.

India also shares its Earth observation data products and expertise through many international mechanisms including International Charter on Space and Major Disasters and Sentinel Asia. India's RiSat-2 and CartoSat satellite data were used to monitor the damage due to the tsunami in Japan, _____(?) inundation of Sendai airport, damage to Fukushima nuclear reactors, residential areas, agricultural fields, _____(?) analysis of the information, which was hosted on our website.

Mr. Chairman in conclusion, the Indian delegation would like to reiterate that it is willing to share its knowledge in this important area of space technology application with _____(?) countries. Thank you Mr. Chairman and distinguished delegates.

The CHAIRMAN I thank the distinguished representative of India for your statement.

The next speaker on my list is the distinguished representative of Germany.

Ms. A. FROEHLICH (Germany) Mr. Chairman, distinguished delegates. Regarding the very important topic of space and water, I would like to introduce to you some research activities done at the port of Rostock in northern Germany.

In order to benefit from the Global Navigation Satellite Systems, and especially from Galileo, the Network for Maritime Applications was founded. It is one major _____(?) of the research done at the port and city of Rostock. This network focuses on the identification and commercialization of maritime products and services that are based on satellite navigation. One major field the network deals with is maritime navigation. The aim is to improve the navigation abilities of ships in the harbour area, that means making the navigation process more time-saving, safer and environmentally acceptable, by using products and services that are satellite-based. The Network for Maritime Applications advises companies, public authorities and non-profit institutions on how to use satellite navigation technologies.

Another major field of the network's activity is maritime logistics with the aim of optimizing shipping, storage and the inter-modal transport between various parties of the logistic process with the help of satellite-based navigation applications. In this context, I would like to mention two special infrastructures namely, Allegro and Seagate.

Let us start with Allegro which is a local ground-based augmentation system to assist high precision and security _____(?) GNSS applications in the maritime sector. It evaluates real GNSS signal quality and provides correction and integrated data for application with demanding reliability and high precision accuracy.

Seagate, the second special infrastructure, is a maritime test bed that enables potential users to test future receiver technology with Galileo frequency already today. Furthermore, it offers the possibility to develop new maritime applications based on GNSS signals. Precision within the range of 1 decimetre can be accomplished as well.

Mr. Chairman, distinguished delegates, I will spare you more technical details. If you need further detailed information please visit the website,

netmaritime.de. Thank you very much for your kind attention.

The CHAIRMAN I thank the distinguished representative of Germany for her statement.

Is there any other delegation wishing to speak under this agenda item at this afternoon's meeting? I see none. We will therefore continue our consideration of agenda item 11, space and water, tomorrow morning.

Space and climate change (agenda item 12)

Distinguished delegates, I would now like to begin our consideration of agenda item 12, space and climate change.

The first speaker on my list is the distinguished representative of India.

Mr. D. GOWRISANKAR (India) Thank you Mr. Chairman. The Indian delegation recognizes the importance of climate change and its impact on the global environment and is happy to share several initiatives taken in India on climate change studies using various space and ground-based observations.

Climate change, a major concern to the global community, is altering the extent and state of natural resources. With the Indian economy closely tied to the natural resources sector, it calls for preparedness towards climate change and to further enhance the ecological sustainability of developmental _____(?).

Space technology through its applications in retrieving land, ocean and atmospheric parameters and monitoring the interlinked existing processes is greatly contributing to understanding the vagaries of climate. The data, derived from Indian Earth observation systems, consisting of geo, polar, and low inclination orbit satellites, enable mapping and monitoring of ecosystem, directing changes in atmospheric parameters on a temporal, spatial scale for calibrating and validating the general circulation models.

India is continuously augmenting ground-based observation networks to provide initial condition in weather models for _____(?) global and regional weather prediction. These include the indigenously developed automatic weather stations, agromet towers, Doppler weather radar, _____(?) radiometer, _____(?), wind profilers and GPS sonde. This system is helping to validate science data, beside supporting weather and climate modelling efforts of ISRO, geosphere,

biosphere and atmospheric science programmes. The resolution of these models are being improved by extending the observation network and also by assimilation of satellite derived parameters into the models.

In addition, India is _____(?) for conducting multi-institutional, multi-platform, multi-parameter observational _____(?) for a comprehensive understanding of the Earth atmosphere ocean system. India has successfully carried out _____(?), ship, _____(?), balloon and ground-based _____(?) over the last few years from which significant findings emerge that help us to better understand the complexity of the problem of climate change. India has carried out many important studies to understand the impact of climate change. The status of climate change indicators suggest glacial retreat in the Himalayas, polar icecap change and the _____(?) suggest greenhouse gases are being studied and documented. Modelling of ecosystem processes to understand the climate dynamic is also being pursued.

Mr. Chairman. India is taking initiatives in developing newer satellites and sensor systems to study the short-term atmospheric _____(?) long-term impact of climate on a global scale. In the near future, India is planning to launch a series of satellites such as Megha-Tropiques for retrieving atmospheric profiles namely humidity, pressure and precipitation in the tropical atmosphere; Insat-3D with imager and sounder for retrieving water vapour, wind and temperature; Saral, a satellite to study sea surface altimetry and small satellites for measuring aerosol and trace gases. These satellites will carry advanced payloads developed indigenously and also through international cooperation. These satellites will enhance the _____(?) of the global Earth observation community to address the challenges of _____(?) and associated socio-economic issues.

Mr. Chairman. As part of the national action plan on climate change, space-related activities are pursued under relevant technological missions addressing, sustainable habitat, waste resources, Himalayan ecosystem, greening India, sustainable agriculture, strategic knowledge, solar energy and enhanced energy efficiency. Considering the focus research on climate, India has already initiated a network of institutions to carry out comprehensive research on climate and environment using space and ground-based observational assets.

Mr. Chairman. The deliberations under this agenda item would certainly pave the way for a better understanding of the Earth ecosystem and evolve

several projects through international cooperation. India is looking forward to join _____(?) member countries to address the climate change issues which is a threat to affect all humankind. Thank you Mr. Chairman.

The CHAIRMAN I thank the distinguished delegate of India for his statement.

The next speaker on my list is the distinguished representative of Germany.

Ms. A. FROELICH (Germany) Thank you once again Mr. Chairman. Indeed our declaration is under item 12 but it is related also to item 13, use of space technology in the United Nations system, so we combine them.

Mr. Chairman, distinguished delegates. There are new and quite positive insights on the changes in the ozone layer. A report on that subject, elaborated by the chairman of the Aerospace Centre for the World Meteorological Organization, recently estimated that by the middle of twentieth century the thickness of the ozone layer will be the same as in the early 1980s. The report states that 'this positive development is due to the successful regulation of the production and use of substances containing fluoride, chlorine and bromine, to the Montreal Protocol of 1987 and subsequent international agreements. This process has demonstrated the positive results that can come about when scientific findings lead to political action. This positive development can only be guaranteed if the agreement in the Montreal Protocol continues to be followed strictly'.

According to this report we can expect climate change to accelerate the restoration of the ozone layer. The hole in the ozone layer over Antarctica will have largely closed by the middle of the century. In some regions there may even be _____(?), this means that once the CFCs have completely degraded, ozone concentrations will actually be higher than they were before the ozone hole first appeared in the early 1980s.

_____ (?) prediction in the ozone report are based on computational models that simulate physical, dynamic and chemical processes in the atmosphere. To gain an understanding of atmospheric processes, data products derived from satellite supported measurements are used. To obtain the highest accuracy possible, these satellite data products are compared against other independent data. This process culminates in high value, quality tested data that scientists can work with.

Right now the news is positive, Mr. Chairman and distinguished delegates, let us hope it stays that way. Thank you for your attention.

The CHAIRMAN I thank the distinguished delegate of Germany for her statement.

The next speaker on my list is the distinguished representative of Portugal.

Space and climate change (agenda item 12)

Mr. F. DUARTE SANTOS (Portugal) Thank you Mr. Chairman. The Portuguese delegation wishes to express its satisfaction on seeing the inclusion on the COPUOS agenda of a point dealing specifically with space and climate change.

Climate change is one of the major challenges of our time and adds considerable stress to our societies and to the environment. It is a growing crisis with economic health and safety, food production and security dimensions. It threatens food security through increased precipitation vulnerability and more intense extreme weather events such as storms, heavy precipitation, events leading to floods, tropical cyclones and droughts. Furthermore, rising sea levels contaminate coastal freshwater reserves and increase the risk of catastrophic flooding.

Mr. Chairman, the Portuguese delegation wishes to congratulate the Office for Outer Space Affairs and the World Meteorological Organization for leading the preparation of a very useful special report of the Interagency Meeting on Outer Space Activities on the use of space technology within the United Nations system to address climate change issues in A/AC.105/991. I would like to make some comments and suggestions on this document with the objective of enhancing its scientific quality and its usefulness.

In paragraph 8, it is said that satellites contribute to the monitoring of carbon emissions, the changing of ice in polar caps and glaciers and temperature changes. I believe it would be useful to mention ____ (?) satellites contribute to give early warning and to monitor the number and characteristics of extreme weather and climate events such as storms, floods, tropical cyclones and droughts. This kind of information is very important to better understand the climate system and climate change and to validate climate models which are essential to obtain projections of future climate.

In paragraph 24, page 5, the causes of global sea level rise are mentioned but in an incomplete way.

Besides the contribution from the expansion of the upper ocean layers, it should also be referred that melting mountain glaciers and polar ice sheets is also currently occurring and contributing to global sea level rise.

Paragraph 44 states that, the International Telecommunication Union is focusing on the issue of telecommunications and its use and other forms of information and communications technology for preventing and averting climate change. Maybe it would be more accurate to say, for addressing climate change since it is no longer possible to completely prevent or avert climate change. We are already observing changes in the climate and the question is how to address it through mitigation and adaptation options.

The references to the initiatives of the United Nations Environment Programme (UNEP) on climate change in paragraphs 56 and 57, are relatively limited especially in view of the very strong programme that the Organization has on addressing the climate change challenges. It is worth remembering that it was UNEP, in collaboration with WMO, that proposed and established the Intergovernmental Panel on Climate Change in 1988. UNEP is presently preparing a new action plan on climate change that complements the programme of work for 2010/2011.

Three priorities have been established as lead areas that match calls for international guidance and urgent need for action. These priorities are ecosystem-based adaptation, REDD Plus, and clean technologies. I believe that the REDD Plus initiative, meaning Reducing Emissions from Deforestation and Degradation, including sustainable management of forests and enhancement of forest carbon stocks should be referred to in the special report of the Interagency Meeting because it greatly benefits from space technologies. Space applications are essential for the success of the REDD Plus initiative.

In fact Earth observation satellites are very important to monitor deforestation and forest degradation and also very useful to implement the sustainable management of forests. Land use changes, especially deforestation, contribute to about 20 per cent of the annual global CO² carbon dioxide emissions to the atmosphere. The REDD Plus initiative is therefore a very important win-win type of measure since it contributes to climate change mitigation and also to the preservation of biodiversity.

Finally, in section 6 on the way forward, in paragraph 84, the Portuguese delegation wishes to

indicate that the use of space-based technologies should be used to monitor climate change and its impact, as it is stated, but also to promote and manage mitigation and adaptation measures.

Finally, Mr. Chairman, I would like to refer that Portugal has a climate change strategy that addresses the impacts of climate change and the implementation of adaptation measures in various socio-economic sectors and bio-physical systems such as water resources, agriculture, forests, bio-diversity, coastal zones and health. In 70 sectors, we use extensively space technologies and space data for instance in monitoring forest fires which have been one big problem in recent years. Mr. Chairman, distinguished delegates thank you for your attention.

The CHAIRMAN I thank you Mr. Santos for your statement on behalf of Portugal.

Now, I would like to give the floor to His Excellency, Ambassador Padilla de León, to speak on behalf of GRULAC.

Mr. F. PADILLA DE LEÓN (Colombia on behalf of GRULAC) (*interpretation from Spanish*) Thank you Mr. Chairman. GRULAC acknowledges the global impact and the adverse affects of climate change as we have not been spared. A variety of meteorological anomalies, droughts, floods and ice melts, inter alia, have affected our region and knowledge of these processes and subsequent mitigation therefore are a vital goal for our countries. Therefore we are aware that the application of space technology, through space-based satellite observations, can provide us with tools to better understand these phenomena and hence to be able to manage them.

Moreover, GRULAC acknowledges the valuable contribution of COPUOS through the UN SPIDER platform in natural disaster management. In this respect, we welcome the training activities in the fields of natural disaster management which have been organized under UNSPIDER in 2010 and we wish to express our gratitude to the UN Office for Outer Space Affairs as well as the co-sponsoring countries for their cooperation. In this respect, GRULAC wishes to reaffirm to the UN Office for Outer Space Affairs how important it is to upgrade international coordination and cooperation through training programmes in these areas and in particular those directed to the developing countries. Thank you very much Mr. Chairman.

The CHAIRMAN I thank your Excellency, Ambassador Padilla de León, for your statement on behalf of GRULAC.

The next speaker on my list is the distinguished representative of the United States of America.

Mr. J. HIGGINS (United States of America) Thank you Mr. Chairman. I think this body recognizes that climate change is truly a global issue. The United States commends the Committee for continuing to include the topic of space and climate change on its agenda. UNCOPUOS is one of many global organizations that rightly consider the Earth observation of climate variability and change a priority. Earth observing satellites provide a unique perspective of the global integrated Earth system. Satellite observations are an indispensable tool in the creation of fundamental knowledge about our environment and for understanding the implications of global climate change for society. They offer the potential for major breakthroughs and, for satellites to collect and produce these critical environmental observations, international cooperation is profoundly necessary.

The United States shares in the common global goal of understanding the Earth's physical and living systems including its changing climate, the impact of climate change and how human activities affect the environment. In 1960, the United States launched its first robotic mission to explore Earth's environment from space and it continues to make significant strides in developing satellites and instruments. These systems provide a baseline of observations of the Earth's environment, such as global land use and land cover changes since 1972, Antarctic ozone hole since 1978, summertime depletion of Arctic sea ice since 1978, total solar radiance at the top of the atmosphere since 1978, global sea level rise since 1992, global ocean phytoplankton abundances since 1997 in Greenland and Antarctic ice sheet volume since 2002.

Using these satellite observations scientists around the world have demonstrated that climate change is, without doubt, occurring. Global deforestation is proceeding rapidly, reducing the ability of our terrestrial biosphere to absorb carbon dioxide from the atmosphere. Because of climate change the recovery of the ozone hole over Antarctica is not happening as fast as anticipated when the Montreal Protocol was developed. The summertime sea ice coverage in the Arctic is being dramatically reduced by warming ocean waters and by increased air temperatures. These warming events have happened much faster than expected causing increased heating of the atmosphere. The Greenland ice sheet is losing more mass each year than three times the total amount of ice in the Alps, global marine life is being diminished by increased heating of the oceans from the atmosphere

and by increased absorption of carbon dioxide from the atmosphere. Greenland's melting ice, the loss of mountain glaciers and the heating of the oceans are major contributors to global sea level rise.

Many more examples of the Earth's changing climate as observed from satellites exist. It is a worthy testament of our collective science and technology endeavours that satellite observations are a primary source of scientific understanding of the Earth's changing environment and thereby form the foundation for subsequent actions by society.

NASA presently operates 13 research satellite missions that provide high spatial on temporal resolution, high accuracy, well calibrated sustained observation of the land surface, oceans, atmosphere, ice sheets and biosphere. It is noteworthy that 9 of the 13 satellites have a mixture of 13 different international partners illustrating the value of cooperation in the peaceful use of space. Additionally, NASA is now developing 9 Earth observing research satellites for launch between 2011 and 2017 and several of these involve international partners.

NASA's Earth observing satellites also serve society directly. For example, many of the existing missions provide data for management, forecasts, and response to floods and drought, air quality, infectious diseases and weather and extreme events.

Mr. Chairman, the United States National Oceanic and Atmospheric Administration (NOAA) currently has five geostationary satellites and five polar orbiting environmental satellites devoted to improve weather forecasts. Three geostationary satellites are operational and two are in on-orbit storage. One of the operational spacecraft provides coverage of the South American region. In polar orbit, NOAA operates two primary and three residual spacecraft. NOAA's partnership with the European Organization for the Exploitation of Meteorological Satellites (Eumetsat) provides essential polar coverage as well. Additionally, NOAA operates the Jason-2 ocean surface topography spacecraft, developed by NASA and CNES for Eumetsat.

The United States continues to infuse new technology into its next generation of operational geostationary and polar orbiting satellites. NASA develops new technology for satellite observing system and NOAA maintains the operational system for atmosphere and ocean. Through a partnership between NASA and the US Geological Survey (USGS), the United States operates the Landsat satellites for understanding land use and land cover changes. In fact,

in 2012, we will mark the fortieth anniversary of this important satellite system. The Landsat Earth observation system maintains a free and open data policy allowing access to more than 39 years of terrestrial land cover change data. Currently NASA and USGS are working in partnership to develop the space and ground systems for the Landsat data continuity mission which will be renamed Landsat-8 after its December 2012 launch and on-orbit checkout.

Working in partnership with other nations is an essential precept of the US satellite observation strategy for weather and climate. US satellite observing activities contribute significantly to several international observing systems principally sponsored by elements of the United Nations, such as the World Meteorological Organization, Intergovernmental Oceanographic Commission and the Food and Agriculture Organization. The United States continues to work with the Global Climate Observing System (GCOS) whose goal is to provide a comprehensive view of the total climate system. As part of GCOS, the United States strongly supports the international Committee on Earth Observation Satellites (CEOS) and the CEOS virtual constellations which are a set of coordinated space and ground segment capabilities operating together.

In addition GCOS constitutes the climate observing component of the Global Earth Observation System of Systems (GEOSS) which the United States continues its leadership role as part of the intergovernmental Group On Earth Observations (GEO). GEOSS will be a comprehensive and coordinated system of observing systems through which satellite and other observations are intended to flow seamlessly to the users. It is a very challenging endeavour but one that promises great benefits to both developed and developing countries.

Mr. Chairman, the United States continues to demonstrate the immense value of satellites to observe the changing global climate and for developing new fundamental knowledge on the global integrated Earth system. Satellite observations and the increased understanding they enable can prove international security, enhance economic prosperity, mitigate impacts of short-term and climate-related hazards and strengthen global stewardship of the environment. The United States is striving to develop and share the practical, societal benefits that Earth observing satellites can provide. For example, the NASA/US Agency for International Development (USAID) SERVIR programme establishes both data access and analysis and visualization capabilities that support local and regional decision making for environmental and

disaster management in the developing world. This past year saw the expansion of the SERVIR network from two to three regional hubs, Servir Meso-America, Servir East Africa and Servir Himalaya. NASA is presently in discussion with USAID to expand the network to even more regions.

We would also like to emphasize the importance of collaboration in providing ground-based and in-situ observations to complement, validate and enhance the satellite data. This is an area that needs improvement and is an excellent area for potential cooperation among nations of varying research capacity. The United States will continue to work with the international community to enable comprehensive, coordinated and sustained Earth observation systems for the benefit of human kind today and into the future. To achieve this vision our policy is to maximize rapid, free and open access to data from its civil satellites and to disseminate tools and knowledge to use this information so that we all may observe and understand the global climate changes occurring yesterday, today and tomorrow. The United States urges all countries to implement similar policies for open and transparent data sharing.

Mr. Chairman, today there is a growing understanding of the interactions among our planet's atmosphere, oceans, land and ecosystems. Through Earth observations we will be able to work together across all nations to understand, protect and enhance quality of life on our own planet. Thank you for the opportunity to share these views.

The CHAIRMAN Thank you Mr. Higgins for your statement on behalf of the USA.

The next speaker on my list is the distinguished representative of Japan.

Mr. R. YOSHIDA (Japan) Thank you Mr. Chairman. Mr. Chairman and distinguished delegates, on behalf of the Japanese delegation I am pleased to express our view on the current agenda item.

Climate change is an urgent issue for all countries not only for developed countries but also for developing countries because this issue is a threat to human security across borders. Because of this issue's unique feature we should solve this problem in an urgent manner and Japan is therefore working on this actively.

Based on our idea that it is crucial for all major countries to prevent a gap in taking action to solve this issue, Japan has participated in the UNFCCC and other

bodies, therefore Japan would like to share the issues each nation is addressing as well as introduce our action with regard to using CO² monitoring data from outer space under this agenda item. We also expect this agenda item in COPUOS to help solve climate change.

Mr. Chairman, concerning contributions made on the issue of global climate change and other global environmental issues by Earth observation satellites, Japan has played a leading role in the establishment of Group on Earth Observations. In the next step Japan intends to implement the observation of greenhouse gases, climate change and global water saturation monitoring, by working to establish the Global Earth Observation System of Systems. Currently, JAXA is serving on the management of the Strategic Implementation Team of the Committee on Earth Observation Satellites (CEOS) as the chair, together with other members. Japan has been playing a leading role mainly in working on the priority items of CEOS, such as greenhouse gases monitoring from space and forest and carbon tracking.

The greenhouse gases monitoring from space meant to prevent global warming and reduce greenhouse gas emissions such as CO² was agreed to at the Kyoto Protocol. Before the greenhouse gases observing satellite, Ibuki, we did not have the means to measure the concentration and distribution of greenhouse gases globally and accurately and there were only about 300 ground observing points in the world. Ibuki can accurately observe the concentration and distribution of global greenhouse gases in the atmosphere, which had not been directly measured before, by taking measurements in certain spots of almost the entire surface of the Earth with high precision sensors. We have been producing and distributing the CO² and methane concentration data hence we will distribute final products of CO² net flux after necessary verification and improvement. We expect that this analysis will show a lower ____ (?) in the CO² net flux estimation than the error when the estimation is calculated using only data obtained through ground observation. We will give a more detailed technical presentation about the result of Ibuki under this agenda item.

With regard to forest and carbon tracking, Daichi is likely to be ____ (?) for achieving measurements, reporting and verification proposed in REDD Plus. Daichi can detect forest or non-forest areas and measure the amount of above-ground forest biomass which is critical information for measuring forest carbon absorption and emission. Last October JAXA generated 10-meter resolution images and maps of the global forest and non-forest area distribution

using ALOS which has the highest resolution in the world. JAXA will further contribute to understanding global-scale forest carbon volume change and REDD Plus with the use of verification by ground measurements.

Furthermore, Daichi is currently monitoring illegal logging in the Amazon in cooperation with Brazilian forest management entities and JAXA has initiated REDD Plus cooperation using Daichi with the Brazilian National Institute for Space Research. JAXA and the Brazilian institute will verify the utilization of the data onboard Daichi to monitor tropical deforestation. Although Daichi terminated its operation as of 12 May this year, Japan will continue to contribute to the solution of global environmental and climate change issues by collaborating with international entities such as UNESCO and the _____(?) Secretariat.

Moreover, by utilizing Daichi and Ibuki, a method to evaluate the amount of greenhouse gas emissions has been developed and a trial detection of the forest degradation index which demonstrates the increasing concentration of CO² by deforestation is underway. The goal of these activities is to contribute to the development of climate science and effective countermeasures to global warming through the establishment of accurate estimation methods in the concentration and distribution of greenhouse gases which includes many contributing factors such as emissions flow and absorption of these gases.

Mr. Chairman, lastly I would like to share information on our efforts to facilitate the food supply in Japan. Regarding advancements in agriculture it is possible to estimate the growth status of grains such as rice and the quality of content such as protein, moisture and so on, using the analysis of the satellite images. In this regard, operations are underway in Japan. Our next step is to improve the sophistication of farm management by improving estimation accuracy. The continuous satellite monitoring of agriculture production would provide important information for determining a strategy to secure food production in our country. We will continue to utilize this type of information.

Mr. Chairman. Japan supports this agenda item being continued after next year's session because it is an opportunity for us to share our actions or solutions and we believe that COPUOS can make efforts to solve climate change issues globally no matter how small we, the space community, are. Thank you for your attention.

The CHAIRMAN I thank the distinguished representative of Japan for his statement.

The next speaker on my list is the distinguished representative of Saudi Arabia.

Mr. M. TARABZOUNI (Saudi Arabia) (*interpretation from Arabic*) Chairman, the events which have an effect on life on Earth and which are space generated are very important for us to observe and to monitor and this makes it necessary for us to observe the skies and the stars. We would like to pay tribute to the STAR initiative of COPUOS which makes it possible for States to coordinate their action in observing space and to step up their capacity to observe and to monitor the skies.

The activities of the University Abdulaziz for Technology and Cooperation have been focusing on this as well and we are working on space meteorology and this with various international partners. Thank you.

The CHAIRMAN I thank the distinguished representative of Saudi Arabia for your statement.

Is there any other delegation wishing to speak under this agenda item at this afternoon's meeting? I see none. We will therefore continue our consideration of agenda item 12, space and climate change, tomorrow morning.

Use of space technology in the United Nations system (agenda item 13)

Distinguished delegates, I would now like to begin our consideration of agenda item 13, use of space technology in the United Nations system. Is there any speaker wishing to speak at this afternoon's meeting on this agenda item? I see none. We will therefore continue our consideration of agenda item 13, use of space technology in the United Nations system, tomorrow morning.

Future role of the Committee (agenda item 14)

Distinguished delegates, I would now like to begin our consideration of agenda item 14, future role of the Committee.

The first speaker on my list is the distinguished Ambassador *Ciro Arévalo Yepes*. As you recall in 2010 the Committee agreed to discuss under this agenda item the topic entitled 'towards a United Nations space policy'. The topic, proposed by the former chair of the Committee for the period 2008-

2009 Ambassador **Ciro Arévalo Yepes**, is approached now.

Mr. C. ARÉVALO YEPES (United Nations Space Policy) (*interpretation from Spanish*) Thank you very much Mr. Chairman. Allow me to begin my presentation with a quote from the previous Secretary-General of the United Nations and I will say this in English 'only with governments by now we know that peace and prosperity cannot be a shift without partnerships involving governments, international organizations, the business community and civil society. In today's world we depend on each other'. This was a quote from Kofi Annan, former United Nations Secretary-General.

Mr. Chairman, pursuant to resolution 65/97 of 10 December 2010 with the recommendation from COPUOS to include consideration of the document towards a UN Space Policy, I have the pleasure of submitting, in my capacity as Chair of the Committee for the period 2008-2009, the progress which has transpired on this matter which I had the honour to submit for consideration of the Committee at the fifty-second session of COPUOS.

Mr. Chairman. I would like to begin by expressing my personal appreciation for the many and constructive contributions which you, Mr. Chairman, have made to the document during the informal consultations which we carried out together and the time you devoted to this. Your perceptions regarding the need for global governance in the space sphere are extremely valuable and have been articulated in the text. I am very pleased that we have the same vision, we share that vision, regarding the rule of the Committee as expressed at the general assembly of the International Astronautical Academy last year.

Mr. Chairman I have had the opportunity to present and gather opinions in many different fora and I would like to mention, in particular, the Space Conference of the Americas held in Mexico last year, the African Leadership Conference held in Algiers in 2009, the Asia-Pacific Regional Space Agency Forum, held in Viet Nam in 2008. I would also like to express my gratitude to the institutions which organized symposia on space policy where I had the opportunity to present this initiative as well as the Conference on Disarmament in Geneva. I would like to express special gratitude to the experts of all the regional groups, all of them participated in this as well as the international group of experts of the Space Conference of the Americas.

I will now try to sum up in the following way, the key aspects which have been expressed and which I have tried to capture here.

First of all, societal, economic and environmental challenges which face us today are complex and interconnected. The only way is to have a common approach to dealing with these different sectors from local collaboration to global alliances and partnerships with governments, civil societies, development agencies, academic centres, all must join together in order to stimulate innovation and ensure sustainability.

Nonetheless, Mr. Chairman, the multiplicity of players and actors with different cultures, interests and missions are, by their very nature, difficult to put together unless you have this umbrella approach that we are trying to take. There has to be a good dose of commitment and new forms of leadership, a will to collaborate, as we saw 50 years ago but it is now reinforced with a very broad range of governmental and non-governmental players and actors. For example, there are some very great challenges, the sea and space and this can be seen in topics such as how to preserve ecosystems and marine sea coasts in all the continents, and I hope this will be approached by COPUOS under the topic of space and the sea.

Secondly, the sustainability of space activities is a central concern of COPUOS member States because from various perspectives it derives from legitimate concerns and this makes the discussion even more complex. A/AC.105/L.278 on UNSP, contains elements which are essential for the development and evolution of the sustainability of space activities which at the present time is the topic of discussion within the Committee.

UNSP has a central link with two critical issues to be dealt with if we are to have sustainable activity in space. The first, of grave concern for developing countries, is that of the use of space so as to support sustainable development on Earth with an integrated, holistic approach. It is not possible to separate out these two aspects, that is to say, the use of space and sustainable development on Earth and this is linked up to the use of the orbits as well and both of these elements are dealt with jointly in the document to hand and the technical part as a complement in treatment of the discussions regarding sustainability as well.

The third key point is the following. It is clear that there is a growing need to establish an environment which will enable the new users of space

and the countries which are beginning space activities to be accommodated. Constant changes in the space context and in particular its growing complexity steps up the importance of multilateral fora such as COPUOS to address the long-term sustainability of space activities. Without a road map, Mr. Chairman, with this multitude of challenges in the future we cannot in a responsible way take on this great challenge unless we have the adequate tools.

Fourthly. Regional and interregional cooperation calls for a well-articulated, homogenous vision of the rules of the game which must be clear and understandable to all. If we have new homogeneity in rules, we will have greater cooperation as well. We must have a new map with players including emerging countries and those which will emerge a bit later because space is a limited natural resource.

Fifthly. In addition to our own framework as contained in the treaties and the declarations on international cooperation there must be a broad and linked up consideration within the UN, gathering together the efforts in the following initiatives and I will indicate this in English to avoid confusion.

First. The Millennium Development Goals (MDGs); second, the triannual comprehensive policy review, this is very important and it has had very great impact that is to say the one UN initiative; then, the United Nations Development Group (UNDG); the next is the United Nations Development Assistance Framework; then you also have the Paris Declaration on Aid Effectiveness and, finally, and this does not exclude others, the Global Compact which is an effort from citizens and corporations to have a multilateral management of these topics.

These are some of the key components which could be inserted into the concept of space development for sustainable development on Earth, taking into account in particular the developing nations.

Finally, Mr. Chairman, and thanks to the contents of this undertaking, I think we could summarize it as follows.

First. The UN Space Policy (UNSP) document should be seen as a conceptual framework document for support of other initiatives. It is a complement which can address concerns which are constantly coming to the fore in the States realm particularly for countries which are just beginning their activities regarding regulation and others as well.

Second. The UN Space Policy is a forward looking platform, projecting into the future regarding special activities to be considered not only within COPUOS but also by other players, other actors, which are acting not only nationally but regionally as well in handling space.

Third. The UNSP is a constantly evolving document. It will be enriched by additional suggestions and the final version will be presented at the time which is deemed appropriate by this Committee.

Finally, Mr. Chairman, allow me to express gratitude to all the delegates who have participated and who hearkened to the call that was made for formal and informal consultations. Thanks for all the bilateral meetings that I had the honour to direct and to you, Mr. Chairman, allow me to extend my deep gratitude as well as the United Nations for its wholehearted support. Thank you very much.

The CHAIRMAN I thank Your Excellency, Ambassador Ciro Arévalo Yepes, for your statement.

Now I want to give the floor to the Second Vice-Chairman, Ambassador Mr. Raimundo González Aninat, for a short comment.

Mr. R. GONZÁLEZ ANINAT (Second Vice-Chairman) (*interpretation from Spanish*) Thank you very much Mr. Chairman. Thank you very much for warning me that I have to be brief. I was ____ (?) to, unfortunately my friend here Ciro Arévalo is in a bilateral conversation at the moment, but there was one thing that made think that he has hearkened to my comments.

I was one of the International Group of Experts for the Americas at the Space Conference of the Americas, I was proud to be part of this and to participate in the sixth Space Conference of the Americas which recently took place in Pachuca in Mexico. I would like to make just a few comments which address the dynamism and a call for greater systematization in a topic which is gaining strength and at the same time I would like to thank Ambassador Arévalo for his presentation.

First of all, it is essential to add certain elements which he has said are very important. This conceptual framework has to be that of sustainable development and within this framework we have to add some other elements which are to a certain extent neglected, for example, the Global Compact. Nonetheless, this Global Compact has to be made known to all delegations, also within another very

important concept which is the responsibility to protect and this goes beyond humanitarian intervention. There has to be a technological protection that can lead to and enable us to prevent hunger and malnutrition.

I would also like to say that the University of Santiago, which is very well represented by Dr. José Luis Cárdenas, will be organizing next year a seminar on space policy, so that too should be taken on board.

Lastly, I believe it is absolutely fundamental that this topic and endeavour, with such lofty conceptual inputs but has very concrete possibilities for our citizens, should be kept on the agenda of this Committee at least for another year. Thank you very much.

The CHAIRMAN Thank you very much Ambassador Raimundo González Aninat for your comment.

Is there any other delegation wishing to speak under this agenda item at this afternoon's meeting?

The distinguished representative of Mexico, you have the floor.

Mr. F. ROMERO VÁZQUEZ (Mexico) (*interpretation from Spanish*) I just want to point out that I had the good fortune to revise and review this document that has been under discussion, as led by Ambassador Arévalo and very well led indeed. I think that there still can be further work done by the working group on sustainability and I also agree with Ambassador Raimundo González that we should continue to keep this document under consideration by the Committee and that it will not be until next year that its final version will be submitted.

I would also like to conclude by commending Ambassador Arévalo for the progress that has been made. We have made some comments which we would also like to see incorporated into the document, I am not sure if this is still possible but we do have some recommendations that we would like to see taken onboard. Thank you.

The CHAIRMAN Thank you distinguished representative of Mexico for your intervention.

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

We will therefore continue our consideration of agenda item 14, future role of the Committee, tomorrow morning.

Report of the Scientific and Technical Subcommittee on its forty-eighth session (agenda item 7)

Distinguished delegates, I would like to continue our consideration of agenda item 7, report of the Scientific and Technical Subcommittee, which was suspended. Are there any delegations that want to take the floor on this agenda item? I see none.

I just wanted to save time if any of you wanted to speak under this agenda item. So we will therefore continue our consideration of this agenda item, tomorrow.

Distinguished delegates, I would now like to proceed with the technical presentations. Presenters are kindly reminded that technical presentations should be limited to 20 minutes in length.

The first presentation on my list is by Mr. Cesar Jaramillo of Canada entitled 'Space Security Index 2011'.

[Technical presentation]

The CHAIRMAN Thank you Mr. Jaramillo for your presentation. Is there any delegate who has questions for the presenter?

Mr. J. MONTSERRAT FILHO (Brazil) (*interpretation from Spanish*) I would like to commend the presenter for this very fine presentation and I wonder whether it would not be uncomfortable for him to give his opinion or that of his association regarding the code of conduct which has been developed by the European Union in this area?

Mr. C. JARAMILLO (Canada) (*interpretation from Spanish*) Thank you for your question. The code of conduct is at the present time or let me say one of the three proposals which exist for a legal regime in space. The main difference with ours can be seen in two specific aspects. First of all, compulsory or not. There is a proposal from China and Russia to prohibit the positioning of weapons in space which, if it were approved, would be compulsory in nature. Nonetheless there has not been much progress in this respect, inter alia, because of the dysfunctional way in which the Disarmament Conference has been proceeding.

Secondly, the European Union code of conduct is not compulsory, the signatories simply make a public commitment but not a legal binding commitment. That is one difference.

The second difference has to do with the different types of issues addressed. The PPWT is mainly focused on positioning of weapons in space. The other one, the European Union code of conduct, is known as 'soft power' if you will, the rules of the road as they say, which is very important, coordination, sharing of information, sharing of spatial awareness etc.

As far as I am concerned, and this is a personal view which does not necessarily represent that of the organizers, the problem is that what you end up with are policy silos, each of the authors or groups look only at the merits of their own approach. When we speak of a space security regime it may seem that we are seeking one single instrument and it should not be the case. There can be coexistence, both of them can exist. One which will be used for the coordination and exchange of information and the other used for weapons issues. That is what I would reply to the question that has been put.

The CHAIRMAN Thank you Mr. Jaramillo for your answer. Are there any other comments or questions to the presenter? I see none.

The second presentation on my list is by Mr. Takao Akutsu of Japan entitled 'Contribution to monitoring climate change through JAXA's earth observation missions'.

[Technical presentation]

The CHAIRMAN Thank you Mr. Akutsu for your presentation. Is there any delegate who has questions for the presenter? I see none.

The third presentation on my list is by Mr. Oleg Ventskovskyy of Ukraine entitled '100th Anniversary of Academician Mikhail Yangel, Missile and Space Systems Chief Designer'.

[Technical presentation]

The CHAIRMAN Thank you Mr. Ventskovskyy for your presentation. Is there any delegate who has questions for the presenter? I see none.

Time permitting, we take the fourth presentation now. It is a technical presentation by the Prince Sultan Bin Abdulaziz International Prize for Water and it is connected with agenda item 11, space and water. The Director of Technical Affairs of the Foundation has the floor.

[Technical presentation]

The CHAIRMAN I thank you. Mr. Ali-Wafa Abu-Risheh for your presentation. Are there any questions or comments on the presentation? I see none.

Distinguished delegates. I would now like to inform you of our schedule of work for tomorrow morning. We will reconvene promptly at 10 a.m. At that time we will begin our consideration of agenda item 9, spin-off benefits of space technology: review of current status. We will also continue our consideration of agenda item 11, space and water; agenda item 12, space and climate change; and, item 13, use of space technology in the United Nations system.

We suspended agenda item 7, report of the Scientific and Technical Subcommittee until after tomorrow.

Following the plenary, there will be three technical presentations. The first by a representative of Italy, the second by a representative of the Russian Federation and the third, by a representative of Pakistan.

The Action Team 14 on near-Earth objects will hold its second meeting and the teleconference in the meeting room M7 from 2.30-5.30 p.m. to continue its work on the draft recommendations for an international response to the near-Earth object impact threat.

In the evening, delegates are invited to the traditional heurigen evening hosted by Austria.

Are there any questions or comments on this proposed schedule? I see none.

This meeting is adjourned until 10 a.m. tomorrow.

The meeting closed at 5.32 p.m.