

**Committee on the Peaceful
Uses of Outer Space***Unedited transcript*561st Meeting

Wednesday, 14 June 2006, 3 p.m.

Vienna

*Chairman: Mr. G. Brachet (France)**The meeting was called to order at 3.06 p.m.*

The CHAIRMAN (*interpretation from French*): Distinguished delegates, I now declare open the 561st session of the Committee on the Peaceful Uses of Outer Space.

This afternoon we will continue with item 11, Space and Society, and 12, Space and Water.

We might also move on to 13, Recommendations of the World Summit on the Information Society, and we will continue then with 14, Other Matters.

We will then come back to item 8 of the agenda, Report of the Scientific and Technical Subcommittee on its Forty-Third Session. And it is that context, that we will resume our discussion on sources of nuclear energy in space and other reports.

And then at the end of the afternoon, we will have three technical presentations. The first will be by Ms. Yolanda Berenguer of UNESCO and it will be about recent information of UNESCO's Space Education Programme. Then Mr. Peter Martinez from South Africa will have his presentation that was initially scheduled for this morning and that was postponed to this afternoon, on the subject of Space and Society. And then from Japan, we will be hearing about practical applications of space technology at the University of Japan.

And finally, I would like to report to delegates that the Working Group on Nuclear Power Sources in Space is now meeting and having an intersessional

meeting in Room C-0713. Anyone who is interested is invited to attend.

Space and society (agenda item 11)

So let us now continue with item 11 of the agenda, Space and Society.

And the first speaker on my list is the distinguished delegate of Japan, Mr. Hirohama has the floor. You have the floor Sir.

Mr. E. HIROHAMA (Japan): Mr. Chairman, distinguished delegates, on behalf of the Japanese delegation, I am honoured to have the opportunity to address the forty-ninth session of the Committee on the Peaceful Uses of Outer Space under the agenda item on space and society.

As the Committee may recall, Japan led the Action team on Capacity-Building, which was established by the Committee to implement one of the action items adopted by the UNISPACE III Conference in 1999 in its Vienna Declaration. Capacity-building is an essential element of the development of the society. In this regard, Japan continues to work towards the objectives articulated in the process to review the recommendations of UNISPACE III, known as UNISPACE III+5 Review, to enhance capacity-building in space-related activities.

The Plan of Action endorsed by the General Assembly in its resolution 59/2, as contained in the report of the Committee in document A/59/174, provides that further action should be taken to achieve a systematic exchange of experiences and information and coordination of capacity-building efforts. The

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.



recommendations of the Action Team on Capacity-Building provide the basis for such action. Japan has been contributing to the implementation of some of those recommendations, such as, first, to promote the sharing of educational materials and information; second, to coordinate international activities on capacity-building; and third, to enhance opportunities for the ongoing exchange of ideas on capacity-building. Efforts have been made particularly through the Asia-Pacific Regional Space Agency Forum, known as APRSAF.

The Space Education and Awareness Working Group of APRSAF has been serving as the forum for space-related entities in Asia and the Pacific to exchange information, experiences and opinions regarding education, training and capacity-building in space activities. It also supports activities to increase public awareness of the importance of space science and technology and their applications for the benefit of the society. As recommended by the Working Group, APRSAF held the first regional water rocket competition in conjunction with its twelfth session, held in Kitakyushu, Japan, in October last year. In addition to holding the second regional water rocket event in conjunction with the next APRSAF session, in Indonesia, in November this year, APRSAF endorsed the recommendations of the Working Group to organize a regional poster contest mainly for primary school children and to convene a space education forum, to increase public awareness of the importance of space activities for the society. Under the theme of "Importance of Space", participating countries of APRSAF are currently selecting works done by schoolchildren to be submitted to the regional contest. Together with UNESCO, APRSAF successfully organized a Space Education Forum in Hanoi, Viet Nam, in March this year.

Concerning the contributions to the activities at the global level, Japan hosted the United Nations/IAF Workshop in October last year. Under the theme entitled "Space Education and Capacity-Building for Sustainable Development", the Workshop addressed: first, space education for primary and secondary schoolchildren; second, education and training for space scientists and engineers, third, enhancing public awareness; and fourth, strengthening international framework to support global and regional initiatives. The Workshop, among other things, stressed the importance of hands-on training for teachers, encouraged space agencies to make education and teaching materials available for use and dissemination by UNESCO, suggested the dissemination of education and training programmes through the media that are best suited for the local

situations and stressed the need to support United Nations-affiliated Regional Centres for Space Science and Technology Education.

We hope that the recommendations resulting from this Workshop as well as other activities organized by the Office for Outer Space Affairs relating to space education will be turned into reality in the near future. Japan, through its various entities involved in education and training in space-related areas and through collaborations with other interested countries, will continue its efforts to implement some of those recommendations.

One of such entities is the Japan Aerospace Exploration Agency, JAXA. Through its Space Education Centre, established in May last year, JAXA has been carrying out various hands-on activities for primary and secondary schoolchildren to learn about space activities and their relevance to our history and future as well as our society. The details of the activities of JAXA's Space Education Centre have been reported to the Committee through the presentation this morning as we showed on the Centre's activities.

At the regional level, JAXA, through its Space Education Office, supports the activities of APRSAF Space Education and Awareness Working Group by serving as its Secretariat. Through its cooperation with UNESCO in organizing APRSAF activities in space education, JAXA is ensuring that the regional efforts made through APRSAF are in line with global strategies pursued by such international organizations as UNESCO. This is particularly important as UNESCO leads the global efforts to promote the Decade of Education for Sustainable Development from 2005 to 2014.

JAXA also joined the Canadian Space Agency, ESA and NASA in establishing the International Space Education Board, ISEB. Various initiatives currently being discussed within ISEB would strengthen cooperation among those four space agencies in promoting space education.

While the primary focus of JAXA's Space Education Centre is currently on providing education opportunities for primary and secondary schoolchildren and supporting school teachers, some universities in Japan are making noteworthy efforts to provide hands-on training opportunities for university and graduate students in space science and engineering.

In the area of remote sensing and GIS, JAXA continues to provide advanced engineering education

opportunities in Asia and the Pacific through the Asian Institute of Technology, AIT. JAXA continues to send its staff to support this course on remote sensing and GIS, which has been benefited by now hundreds of promising engineers in the region.

Many universities and technical colleges in Japan are engaged in hands-on space engineering activities such as developing satellites and rockets by the students. Four CubeSats by Tokyo University and the Tokyo Institute of Technology, as well as a small satellite by the Chiba Institute of Technology to investigate the ecology of whales, five satellites in total developed by students have been launched into outer space.

Numerous universities pursue research and development of satellites. Students find great joy in having their own products fly into outer space. This type of activity should serve as a model of hands-on training that could be far more effective than listening to lecturers in classrooms in space engineering. Those students who have been fortunate to experience such joy are pursuing careers in the Japanese Space Agency or aerospace companies, to become the driving force to promote space activities of Japan.

In order to support those hands-on activities that I have just mentioned, the University Space Engineering Consortium, UNISEC, has been formed. Its membership now consists of more than 20 universities and 30 voluntary groups and it carries out such activities to promote CubeSat activities and to provide opportunities to participate in the launch of CanSat and hybrid rockets.

At the global level, Japan also supports efforts to enhance capacity-building in Earth observation with the use of space technologies such as those made by the Working Group on Education, Training and Capacity-Building of the Committee on Earth Observation Satellites, CEOS, and by the Capacity-Building Committee of the Group on Earth Observations, to carry out the 10-Year Implementation Plan of the Global Earth Observation System of Systems, known as GEOSS.

Mr. Chairman, numerous conferences held within the United Nations system and other international meetings highlighted the importance of education, training and capacity-building as a fundamental requirement to achieve sustainable development. This is also true as we strengthen our efforts to contribute to the sustainable development of the society through space science and technology and their applications.

In this regard, we are pleased to note the agreement reached by the Working Group of the Whole of the Scientific and Technical Subcommittee this year that member States of the Committee, entities of the United Nations system and other organizations having permanent observer status with the Committee should continue to report to the Working Group of the Whole on their efforts to promote education and opportunities for greater participation of youth in space science and technology.

While the three-year work plan to address "Space and Education" as a special theme under this agenda item of "Space and Society" concludes this year, in view of the importance of the subject, we believe that the Committee should continue to address space and education, bearing in mind that space education is not limited only to the fields of science and technology but extends to such fields as social sciences. We are also of the view that it would be useful for the Committee to identify entities that are already contributing to the implementation of the activities contained in the Plan of Action endorsed by the General Assembly in the report of the Committee, in paragraphs 300 to 309, in document A/59/174, based on the information provided to the Committee in accordance with the work plan and to examine how their efforts could be further supported and better coordinated.

Mr. Chairman, distinguished delegates, we appreciate the opportunities to present these activities pursued by JAXA as well as universities and other entities in Japan later during this session.

Thank you very much for your attention.

The CHAIRMAN (*interpretation from French*): Thank you very much for that presentation. Indeed, it confirms the clear and pronounced involvement of your country in this area, the area of education and training with regard to space. And, in passing, I would also like to underscore the comments you made at the end of your speech recalling that space education is not just limited to issues related to space and engineering but can also touch upon space and society and the consequences for society, even the cultural consequences of space applications and I fully share that view.

I believe that under this item of the agenda, we will now be hearing from the distinguished delegate of Thailand, Madam Thanomsri Rangsiyanbhum.

Ms. T. RANGSIKANBHUM (Thailand): Thank you very much Mr. Chairman. Mr. Chairman, distinguished delegates, realizing the importance of space education, in early 2005, Thailand established the Institute of Space-based Knowledge Development under the auspicious of the Geo-Informatics and Space Development Agency, GISTDA. The objective of the Institute is to transfer knowledge on space and its applications through training courses, workshops, seminars, exhibitions and publication. For the first year of the establishment, the Institute organized about 20 short course trainings including regular courses and special topics upon request. So far, most courses are mainly focusing on remote sensing technology, GIS and its application.

In 2006, GISTDA provides more opportunity to local entities. Several trainings and seminars have, therefore, been conducted in the provinces in various regions especially for the people who work for the local administrative office, which is the smallest administrative unit in Thailand. This is not only to transfer knowledge on space and its applications but also to encourage local people to be aware of the importance and to learn how to manage their natural resources and environments.

Mr. Chairman, GISTDA, as the core agency for remote sensing and GIS activities, also cooperates with the universities in setting up regional centres in five regions since the establishment of GISTDA in the year 2000. The regional centres include Chiangmai University in the upper north, Naresuan University in the lower north, Khonkaen University in the north-east and Burapha University in the eastern region. Each regional centre provides training courses for relevant entities in its respective region. Courses on space and applications are also available in the curriculum of both under-graduate and post-graduate programmes of those universities.

In addition, each year funding is also provided for space-related research work through these regional centres.

Mr. Chairman, this year, Thailand also provides support for the representatives from our neighbouring countries, including Cambodia, Laos, Myanmar and Viet Nam to attend the training course on Remote Sensing Application for Agricultural Policy. The training is to be conducted from 20 to 28 June in Bangkok. This training course is conducted under the cooperation between Thailand and France.

Besides, space education in Thailand is also conducted through exhibitions on various occasions

such as Children's Day, Science and Technology Week. Publications on basic knowledge on space are also provided for schoolchildren.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you Madam Thanomsri, the delegate of Thailand, for the information she supplied us with regard to training activities in Thailand. These are activities which have been underway for some years and which lead to a degree. And I also would like to highlight Thailand's application in the regional arena of space technology education, and this was mentioned, for example, the session that will be held at the end of June in Bangkok.

I now give the floor to the distinguished delegate of the Republic of Korea, Mr. Chung.

Mr. K.-Y. CHUNG (Republic of Korea): Thank you Mr. Chairman. My delegation notes with satisfaction that the forty-ninth session of COPUOS is addressing the agenda item on space and society, in particular the special theme on space and education in accordance with the United Nations General Assembly resolution 60/99. Under the special theme, my delegation would like to introduce Korea's recent activities by briefly touching upon two aspects of space and education. Firstly, how space is incorporated into educational curricula and how awareness of space is enhanced. And secondly, how space-based technology has contributed to strengthening education and achieving higher goals of society.

First of all, major universities of Korea have their own departments on space technology. Space law is mostly included in the curricular of the Department of Law at the universities. To enhance awareness of space, in particular among young students, the Korean Government, the local government, where the Korea Space Centre will open and several NGOs have been holding various events leading up to the launch of KOPSAT-2 next month and the launch of STSAT-2 by a Korean space launch vehicle from the domestic space centre in Korea in 2007.

The first Space Week events last year, including the National Model Rocket Contest, space exhibitions and the "name-on-a-chip to space" event inspired more than 30,000 participants. Twenty-four space student ambassadors were selected to promote space-related activities in the cyber space and have the opportunity to attend various space-related events. The Korea Space Centre, which will open next year, will feature a space exhibition centre to promote and

educate the public on space-related issues, with a particular emphasis on raising awareness among young people. In addition, the local government near the space centre will also hold a Space and Air Festival in July and August of 2006.

Last year, the Korea Aerospace Research Institute, KARI, launched the Internet KARI School. The website provides students a rich resource of information on space and space activities and as well as interactive web communities. The KARI School was awarded the prize for best recommendable website for students in a contest hosted by the Ministry of Information and Communication. The website is located at www.karischool.re.kr. Unfortunately, the English version is not yet available.

Last April, the Korean Government announced the project to send a Korean astronaut to space in 2008. This astronaut will board a Russian Soyuz spacecraft and spend several days at the International Space Station. The astronaut will be selected by the end of this year through an application process open to the public. Four days after the initial announcement, more than 15,000 people had submitted their applications and 50,000 are expected to apply by July, a sign of the success of the above-mentioned programmes in increasing interest in and awareness of space science and technology. Korea's major broadcasting companies and other media have taken note of this phenomenon and are creating programmes documenting space and the space-related activities.

Turning to the second aspect of space and education, my delegation is of the view that the proper use of space-based technology will contribute to providing more equal and further educational opportunities to those with no access to high-quality education due to economic disadvantages, geographical remoteness or time constraints, thereby helping narrow the information gap and reduce poverty.

In Korea, several educational satellite channels are being broadcasted, including the Open University Lecture Channel, the Kids Channel and educational channels for middle school and high schools students. In particular, the Government-funded Educational Broadcasting System, EBS, is running two satellite channels dedicated to education. Although various programmes of EBS address both young students and adults, the satellite broadcast was introduced mainly in order to provide equal opportunity to enter university to young students without access to high-quality education from their local secondary schools or private educational institutes. The EBS programmes have reached their

objectives by gaining high popularity and have even been recently enhanced by DMB satellite technology, which allows Korean students to access the programmes via mobile phones even when while underway.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you very much Mr. Chung for your presentation on behalf of the Republic of Korea. Thank you for the information provided on the educational activities related to space research underway in your country. Obviously, the Republic of Korea has accomplished major success and particularly the announcement of the future mission and if you have all of those thousands of candidates for the position of astronaut, I wish you luck with the selection. It is a very good sign, an interesting sign of the interest, the fascination of the public with space research. Again, thank you for your statement.

Are there any further requests for the floor or questions, comments on the part of delegations to the three speakers?

I see none.

Thus, we will continue our consideration of agenda item 11, Space and Society, tomorrow morning.

Distinguished delegates, we are moving on to the consideration of agenda item 12, Space and Water.

I am sorry, on the previous agenda item, item 11, Ambassador González of Chile has asked for the floor.

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): Thank you very much Mr. Chairman. I only need a few minutes. I do not know if it is a good time to make these comments but I do have a suggestion to make on the subject of space and education.

Begging your indulgence, Mr. Chairman, if you are willing to give me the floor.

The CHAIRMAN (*interpretation from French*): Yes, distinguished representative of Chile. I am giving you a chance to speak.

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): Thank you. First of all, I wanted to say that regardless of other subjects, this particular area, space and education, is of critical

importance to developing countries, and under your leadership we have had a very productive session here. You have inspired a rich and far-reaching debate. We have heard fascinating information from Italy, Japan and others, as well as the statement made by the Republic of Korea and India, I think UNESCO has also prepared some information for us, all of this is extremely important. But I asked for the floor to make the following comment.

There is no doubt that today there is no access to space technology without education. Because of that, the efforts undertaken by this Committee are crucial in that regard. Also, I believe that the efforts undertaken so far do not go far enough. Really, to cover such a vast subject in one session only is impossible. From my point of view, or from the point of view of Chile rather, and I have also exchanged views with other representatives, particularly of Latin American countries, in our view, this theme requires deeper and broader consideration and we think it should be put on the Committee's agenda next year. It is impossible to exhaust all matters pertaining to the sphere of education in one session. Developing countries need to digest a vast amount of information, consider the various options before them and we need to start a dialogue with our citizens, with the public at large, to make sure that there is awareness and a willingness on behalf of the public to accede to space technology and knowledge about outer space exploration.

For me, this is extremely important and I wanted to emphasize this. In my delegation's view, and as I said in the view of many other delegations, I believe, this subject, this area should be considered by the Committee in the future, specifically at its next session.

And having said that, I would like to commend you and congratulate you once again, Mr. Chairman, for having led a truly inspired debate here.

Thank you.

The CHAIRMAN (*interpretation from French*): Thank you very much distinguished representative of Chile. Your comments actually fit with the concluding paragraph in the statement of our Japanese colleague who reminded us that the work plan for three years on space and education, within a broader agenda item, space and society, was supposed to be concluded this year, but our distinguished colleague from Japan has recommended, as have you, Ambassador, that we continue considering this item within the framework of the Scientific and Technical

Subcommittee, and thus is part of the larger Committee, activities at the Scientific and Technical Subcommittee's session next year. And we are going to recommend that space and education does indeed remain on the agenda of the Scientific and Technical Subcommittee because of its utmost importance.

Space and water (agenda item 12)

Now, we are going to take on agenda item 12, Space and Water.

The first speaker on the list I have is Mr. James Higgins from the United States. Mr. Higgins, you have the floor.

Mr. J. HIGGINS (United States of America): Thank you Mr. Chairman. My delegation is pleased to make a statement about current and future activities in the United States related to space and water. From our perspective, there is a lot of interest being generated in the various aspects of water, particularly in areas related to science research, management and policy setting. This interest is derived from the potential to get new pieces of information from space-borne platforms, including those currently in space, those in the planning stage and those still in the theoretical stage.

In scientific research, we understand that the global water cycle is vast and cannot be fully understood with only *in situ* observation networks. Not only are many of these networks fading, but augmenting these networks for global coverage would be extremely costly. Satellite observations offer an alternative method for seeing the entire Earth and are essential for understanding remote, hard-to-reach places.

In the realm of water management and policy setting, decisions are often applicable for a local area, so it is sufficient to use only local observations as guidance. However, the growing areas of water cycle science and the use of satellite technology allow a much broader view to be distilled for local usages, either by adding new pieces of information or information that allows for a reduction in the uncertainty of local assessments and forecasts.

Currently, there are many research and operational space-borne assets that shed light on water in all its forms. These include satellites that allow us to look at the state of the ocean, enabling improved skill in seasonal forecasting of climate. In the case of El Niño and La Niña, satellites also provide information about the potential for various hydrological extremes,

such as flooding, droughts or high numbers of intense thunderstorms. The synergy between operational and research missions cannot be overstated. The research missions not only test new technology and science, but if successful, they are readily used by scientists to support operational functions because the research data can fill operational data voids or offer other science information that may be unavailable from current operational satellites.

The United States continues to explore the uses of satellite remote sensing data to solve and/or mitigate the problems related to limited water resources. For real-time assessment of water properties, data from many operational satellites, including the United States Polar Orbiting Environmental Satellites, Geostationary Orbiting Environment Satellites and our Defence Meteorological Satellite Programme and the research satellites and Gravity Recovery and Climate Experiment, or GRACE, LandSat, the Tropical Rainfall Measuring Mission, or TRMM, and Terra and Aqua, can help to determine precipitation activity, snow cover, soil moisture, changes in underground water storage, flood inundation areas and even estimates of evaporation. Additional information can also be derived that are critical for water science and management, such as surface temperature, wind speed, short- and long-wave radiation, and vegetation type and health.

NASA, NOAA and the United States Departments of the Interior, Agriculture, and Defence are presently contributing to a National Integrated Drought Information System, or NIDIS. Contributions include uses of satellite data to improve drought prediction and monitoring. NIDIS is one of the United States contributions to the Global Earth Observing System of Systems, or the GEOSS, activity.

Another activity I would like to mention is NASA's recent involvement in a multi-agency effort to assess the readiness of the Mahgreb countries of North-West Africa to receive science and technology capability from the United States to enhance their water management activities. We have noted particular interest on the part of Moroccan scientists and managers to learn more about NASA's capability to assimilate remotely-sensed data.

In the future, the United States plans to begin operating its next-generation environmental satellites, the National Polar-Orbiting Operational Environmental Satellite programme, and the next Geostationary Operational Environmental Satellite series. These satellites will collect and disseminate data about the

Earth's oceans, atmosphere, land, climate, and space environment, providing high-quality, sustained environmental measurements for monitoring the global water cycle and related weather phenomena.

Mr. Chairman, I think we all agree that the topic of Space and Water is a very timely one with many current discoveries and the prospect of future developments. The challenge now for all member nations, and one the United States is pursuing, will be the task of ensuring that this new wealth of valuable science data is readily available and converted into practical information, usable by the decision and policy makers.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you very much Mr. Higgins from the United States delegation for your statement on the activities pursued by the United States in the area of space and water. This is a broad and a very important area which corresponds to the needs of humankind.

I now call upon the distinguished delegate of India, Mr. D. Radhakrishnan.

Mr. D. RADHAKRISHNAN (India): Thank you Mr. Chairman. The Indian delegation is happy to note that since the inclusion of this agenda item on space and water during the forty-third (47th?) session, it has continued to make good progress. Capacity-building in the use of space applications for water resources management continues to be an important agenda item for discussion during this session. The presentations and the pilot projects undertaken so far under this theme are quite appreciative.

Mr. Chairman, with the ever-increasing population, the need of the hour is to preserve and better utilize the water resources on the planet Earth to ensure minimum quality of life to every citizen. Therefore, it is imperative not only to develop the new water resources, but to conserve, recycle and re-use the water resources wherever possible. Earth observation satellites, by virtue of variability, vulnerability and dynamism of the diverse eco-systems, provide the operational inputs to the decision-making body, leading to the natural resources management. The strength of Earth observation and Geographic Information System lies in unfolding the various linkages and the underlying factors that exist between the state of natural resources and the livelihood opportunities of the stakeholders.

In India, the Indian remote sensing satellite systems, the workhorse for major Earth observation applications, have made considerable impact in the areas of natural resources management, particularly in the surface and ground water management. Rajiv Gandhi National Drinking Water Mission has been quite successful towards effective water resources utilization in the country. Enabling the community centric Earth observation products in terms of maps like ground water prospects as well as recharge sites are of great relevance to embark on rainwater harvesting movement. The generation of natural resources repository for the country comprising mainly from the remote sensing data has shown good progress.

Mr. Chairman, with this rich experience in water resources management in the country, India is willing to share its experience and consider providing the necessary assistance for the developing countries, particularly in the African region, with the support of few like-minded countries.

Several Earth observation-based national missions such as Wasteland Mapping, Watershed Monitoring, Crop Acreage and Production Estimation, Satellite-based Potential Fishery Zone Assessment, has provided valuable inputs towards developmental planning, monitoring and evaluation. All these initiatives have paid rich dividends and have made possible optimum utilization of the country's natural resources.

Mr. Chairman, the acute water shortages and floods are a point of major concern in developing countries. Putting to use the space-borne platforms in a cost-effective manner for water resources management and handling water-related emergencies, is getting more prominence in the international arena. In India, we have plans to adopt a two-prong approach for meeting the future challenges of water requirements. One is the short-term approach, which would involve conserving water through rainwater harvesting and ground water recharge by putting to use the space-based systems. Other long-term plans could be for transfer of water by interlinking of rivers. The Space Applications Programme in India will continue to contribute towards meeting all of the national initiatives taken up for water resources management for the benefit of mankind.

I would like to inform this Committee the Indian delegation will be making a special presentation tomorrow on this important agenda item on space and water.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Radhakrishnan for your statement on behalf of the delegation of India. Thank you for the information you have provided to the Committee on India's activities in this area and with regard to the needs and the priorities of your country and India's society. Obviously, we will be listening with great attention the presentation that you will be making tomorrow, specifically on this subject. Thank you again.

I now call upon the delegation of France, Mr. Trébaol.

Mr. J. Y. TRÉBAOL (France) (*interpretation from French*): Thank you Mr. Chairman. Mr. Chairman, my delegation would like to briefly share with the Committee the current results and the future wished for development of these activities conducted by the researchers of the French Institute of Research and Development, the IRD, with regard to hydrological properties of Lake Chad, using space technologies, among others.

Since more than 30 years, the Sahel area has been a victim of droughts and the media have announced on many occasions the disappearance of Lake Chad. The Lake has indeed diminished in a spectacular fashion over a number of years. However, such rapid fluctuations were already observed in the past centuries and are linked to the strong climatic variability of tropical Africa. More further into the nests(?) of the past on a multi-millennia scale, far greater fluctuations were known to occur. Based on the data of remote sensing, the existence of a gigantic Mega-Lake Chad has been confirmed at the historical period of more than 6,000 years ago. This was done by the researchers of the IRD.

These results were obtained through the use of multiple satellite data, LandSat, MODIS, and remote sensing, SRTM, Shuttle Radar Topographic Mission, in cooperation with the University of Monash in Australia.

The Chad Mega Lake poses a very striking example of the consequences of climatic change in tropical Africa. In the current context of global warming, analysis of this hydrological phenomenon is particularly important if we are to understand the mechanisms involved and to discover retroactive processes that can develop in the future.

Climatic models on a prospective scale of several centuries have so far provided contradictory

results with regard to the future of the hydrological basin. Thus, these data need to be refined further to allow sustainable management of these water resources. It is a crucial objective for the development of the countries of the area.

Satellite data are also used to identify unique hydrological zones. The favoured replenishment of ground waters overflowing, floods etc. In these examples, space technology complements and sometimes replaces data that are often difficult to obtain on the ground.

For a decade, the IRD, in partnership with the administrations and universities of the countries concerned, has pursued a number of research projects in terms of the hydrological modelling of Lake Chad. Research is currently underway to integrate SRTM and topographical data within a three-dimensional hydrological model. This work shows the great sensitivity of the Basin to even slight modifications in the climate and very acutely pose the matter of its future in the medium and long term.

In the near future, the IRD wishes to emphasize the need for better knowledge of the surface water levels and modelling the dynamics of ground water reserves.

Furthermore, future research, based on space data could broaden the range of processed information and add gravity measurements to estimate the fluctuations of waterways on a wider scale, a GRACE-type programme but with better resolution or monitoring vegetation with a view to knowing more refined evaporation data.

Finally, Mr. Chairman, my delegation would like to share with you the initiative concerning new technologies directly applied to water research.

The humanitarian organization Action Against Hunger has launched a programme focusing on the Touaregs Peuls nations of Mali to study the food crisis menacing the nomadic population. The initiative of this organization looks at the movement of herds to pasture lands throughout the territory. This action is part and parcel of an operation that this non-governmental organization has developed over 10 years, in cooperation with the Mali authorities and especially with the local agricultural chambers to organize the management of pasture lands in periods of drought.

Cartography of rainfall, the study of precipitation and the presence of biomass were

obtained through the processing of satellite images, particularly provided by SPOT-5 satellite of the CNES, and hydrological analysis, level of water in the wells, access to wells distribution of precipitation. This information is transmitted to agricultural experts on the ground and they share it with the students.

Mr. Chairman, I thank you.

The CHAIRMAN (*interpretation from French*): Thank you very much to the French delegation for this presentation and for the information you have provided with regard to the hydrology of the Lake Chad area.

I now call upon the distinguished delegate of Argentina, Mr. Felix Menicocci.

Mr. F. MENICOCCHI (Argentina) (*interpretation from Spanish*): Thank you Mr. Chairman. Mr. Chairman, the National Space Plan of Argentina, pursued by CONAE, has, as its main objective, providing information based on space data to improve the socio-economic development of the country. One of the thematic areas thus developed within the National Space Plan is the Information Cycle linked to climate hydrogeology and oceanography. This cycle includes quantification and follow-up on the critical parameters linked to the provision of water and humidity of the soil and agricultural activities.

Mr. Chairman, CONAE, particularly since the launch of the Institute of Advanced Space Studies, named after Mario Gulich, has accomplished important projects, jointly with the National Institute of Water of our country, through information obtained in outer space to contribute to better management of the water cycle.

In this regard, an addition to the study of the rivers and reservoirs of our country, we are conducting a study of the capacities monitoring and conservation of the Guarani Waterway System. The Guarani Waterway System contains the largest water reservoirs in the world, a total of about 1,190,000 square kilometres, an area that is larger than Spain, France and Portugal combined. For that reason, it is called the Gigantic Aquifer of the Mercosur. In Brazil, it covers an area of about 850,000 square kilometres, 9.9 per cent of its territory, in Argentina 225,000 square kilometres, 7.8 per cent of its territory, in Paraguay 70,000 square kilometres, in Uruguay 45,000 square kilometres.

In accordance with what we know at present, except(?) in Argentina where the depth of the reservoir is about 900 metres. In the other countries, it varies within a wide range, from 50 to 1,500 metres. In general, the reservoir possesses upward pressure so that once a preparation is made to the depth of the aquifer, water rises in a natural fashion under pressure to reach the ground level. Temperatures in the depths of the reservoir vary from 33 to 65 degrees Centigrade. The total volume of water stored there is immense, 37,000 cubic kilometres and one cubic kilometre is equal to one billion litres. In reality, the exploitable volume established as water reserves that can be renewed, ranges from 40 to 80 cubic kilometres per year. These figures correspond, for example, to an amount comparable to volumes that account for one third of all water resources of Uruguay and thus represent four times the annual requirement of water of Argentina for all purposes.

Mr. Chairman, as at the Rio Conference in 1992, the world agreed to strengthen the new global paradigm of economic development with environmental sustainability. This sustainable world which brings forth a new relationship between mankind and its habitat must, in principle, and realistically, comply with three basic conditions.

First, renewable resources should not be used faster than they can be renewed. Non-renewable resources should not be used at a rate faster than they can be replaced and pollution should not be produced at a rate which is faster than nature can convert it into harmless entities. And thus the States acquires a great deal more importance and responsibility with regard to the environment and must ensure a proper quality of life and preserve natural resources, renewable resources, and administer non-renewable resources with equity, sustainability and taking into account the common good.

Mr. Chairman, taking into account the importance of managing resources and the context of Argentina's policies to integrate activities at a regional level with regard to water resource management. We held a Workshop on Capacity-Building in Latin America, Earth Observation in the Search(?) of Water Research Management. It took place in Buenos Aires from 26 to 28 October 2005 and 100 representatives of water-related entities attended, as well as international organizations and countries of the region. The Workshop was organized by CONAE and the National Water Institute of Argentina, NASA and NOAA of the United States, the Strategy for Integrated World Observation, IGOS, the Committee of Satellites for Earth Observation, CEOS, and the GEWEX, Global

Energy and Water Cycle Experiment, the International Water Programme of UNESCO, the World Meteorological Organization and GEO.

During the event, presentations were made with regard to specific needs for information for those who are responsible for managing water in the region and the possibility of accessing this information from supplier agencies. Three working groups were set up: floods, availability of superficial and cryosphere(?) water and water quality and subterranean waters. The conclusions of the various working groups were presented at the end of the Plenary session and a Declaration was drawn up to establish the strengthening of observation programmes that are already in place and to achieve better integration of information services in order to support water management in Latin America. The workshop recommended that programmes be developed at a national and regional level in order to make progress in the efficient and sustainable use of water resources in the region.

Mr. Chairman, it is hoped that these programmes will provide the necessary support to the development of activities as necessary to strengthen and generate integrated systems for information that promote that promote: number one, the efficient and effective management of water resources, for example, quantification of water, preservation and other multiple uses of water; two, management and monitoring of the consequences of excesses and deficits which are increasingly occurring and alternates of more repetitiveness; and, three, taking advantage of space observation capacity which has been developed in recent decades.

Likewise, it was recommended that regional programmes be developed for the use of Earth observation to take advantage of pragmatic structures and current institutions or emerging institutions in countries in the region and corresponding structures such as GEO, CEOS, EOPA and regional programmes of the United Nations. These would be corresponding in Latin America.

In order to ensure that data is provided by these systems and is used in an effective and efficient manner for the management of water, it was recommended that efforts be made to establish a government agenda through which socio-economic studies and environmental studies would be carried out and this in turn would make it possible to provide greater political support for water management.

To this end, it should also involve socio-economic studies, educational programme developments and public awareness-raising and training for the managers and users of water.

And finally, another element that is very important to under this, is the programme for capacity-building and we took as a model the TIGER and PUMA activities in Africa which takes advantage of the knowledge and services of regional data and is led by national and regional centres in Latin America, in close cooperation with international agencies for Earth observation.

Mr. Chairman, in Argentina, in the area of intense cooperation which has been underway with the Republic of Chile for some time, in the area of satellite applications, we held a meeting in San Juan, Argentina, at the beginning of June 2006, and at the meeting a workshop was held, "Space Technology Applied to the Study of the Central Andes Mountains of Argentina and Chile" in the context of agreements subscribed to by CONAE and the Government and Province of San Juan, the University of San Juan and the University of Serena of Chile.

A number of representatives attended the workshop from scientific institutions, academic institutions and other related bodies for water management, such as the Water Department, the Fishing and Agricultural Departments, and experts in remote sensing from both countries. We looked at analyzing the priorities to be envisaged and the respective methodologies for the use of data provided by space technology in real-time or deferred time with a view to generating appropriate and timely information in order to be able to identify and evaluate, both in terms of space and time, coverage of snow, glaciers, vegetation and other issues that are related to the irrigation of the valleys.

During the workshop, following the complication guidelines, we discussed and set general and specific objectives. We discussed furthermore the methodologies for a more appropriate work, taking into account the scale of time and space with regard to human resources, material, economic resources as necessary. We then looked at putting into an activities plan with a timeline set which would be a provisional timeline for work for immediate action and medium-term plan for the second half of 2006.

We also looked at the tasks for analyzing the possibility of setting determinations for looking at accumulated snowfall, height of the snowfall, using SAR to qualitatively assess it and quantitatively assess

it to look at the positive data and descriptions after developing respective algorithms for quantitative evaluation. Simultaneously, CONAE will be flying over the area and SARAT will be looking at validating the algorithms that are being developed to understand the data *in situ* that comes from SAR.

Various entities from both countries agreed on the first results from this project which are expected and will be extended to other regions of the Andes. We will see the results of this at the Space Conference of the Americas this year.

Thank you very much Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you to Argentina. Your statement shows us how active Argentina is in the area of space and water management. And I would also like to thank you for teaching me a little bit about additional geography. I did not know the enormous magnitude of the Guarani Aquifer and know, thanks to you I do know about it. And that indeed is an important issue in future management of water needs for the entire Latin American region.

I believe that there are no other speakers on the list under this item of the agenda.

Are there any questions from delegations to any of the four preceding speakers? This would be the time to ask.

I see none.

In any event, what I retained from these statements as a whole is that the issue of space and water is first of all one that interests everyone and secondly, it is one where we have seen considerable headway made. The use of space applications is quite varied and there are many space applications and to understand the water cycle, for instance, both subterranean and surface water, the development of space technology is quite remarkable in this regard. I, myself, had the opportunity to see the results at a continental level with the analysis of the data which came from the joint United States/Germany GRACE Mission. Indeed, it is remarkable because it is simply by measuring gravity at a regional level that we are able to re-constitute the water masses that are subterranean in the region and this is a very new technology and clearly it would open up new horizons in the area of knowledge of water resources on the planet. And we all know that that knowledge and good management of water resources is key to future economic development of mankind on planet Earth.

Recommendations of the World Summit on the Information Society (agenda item 13)

And if you are willing, ladies and gentlemen and delegates, we will now move on to the next item of the agenda. This item of the agenda is Recommendations of the World Summit on the Information Society.

I would like to recall to delegates that in resolution 59/2 of 20 October 2004, the General Assembly requested the Committee to include items in the agendas of its future sessions, starting from the current session, consideration of its contributions to the work of those entities responsible for convening United Nations conferences and/or for implementing their outcomes.

At its session last year, the Committee agreed to consider, at the current session, an item concerning the recommendations of the World Summit on the Information Society and to consider it at this session whether to retain the item on the agenda beyond 2006.

The Committee also agreed that the International Telecommunication Union should be invited to brief the Committee on the recommendations of the World Summit and their implementation.

And now I do not think that there is a representative of the ITU, the International Telecommunication Union, in the room and I am not aware of any requests for the floor under this item of the agenda at this time.

Would anyone wish to take the floor on item 13, Recommendations of the World Summit on the Information Society?

I see none.

So we will continue with our consideration of item 13, Recommendations of the World Summit on the Information Society, tomorrow morning.

But we do have a request for the floor from Colombia.

Mr. C. ARÉVALO YEPES (Colombia) (*interpretation from Spanish*): Thank you Mr. Chairman. Actually, it is not an issue of substance but rather a different issue. According to the document that we have of the annotated agenda, there was an invitation issued to the ITU for them to comment on the recommendations that emerged from the very

important Summit on the Information Society. And I am wondering, my question is, Mr. Chairman, what happened with that invitation? The ITU is not present. Why? Because they were not invited? Or they were invited and they declined? Or they plan to come later?

Thank you Sir.

The CHAIRMAN (*interpretation from French*): Thank you to the representative of Colombia for that question because I personally had the same question. So I will now turn to the Director of the Office for Outer Space Affairs. Perhaps he can help us with an answer.

Mr. S. CAMACHO-LARA (Director, Office for Outer Space Affairs): Thank you Mr. Chairman. The ITU was invited to participate and, as we have not received a reply, then we contacted the ITU Secretariat to find out what their reply would be. And what we found is that, to begin, no, ITU would not be sending a representative, and one of the indications that they made was that for the World Summit on the Information Society there was a Secretariat that was established for the preparations of the Summit itself. When the Summit finished, the Secretariat was disbanded so people that were working in various department within the ITU went back to their respective departments and those that were engaged only for the Conference, they are no longer working with it. And the WSIS did not establish a follow-up mechanism such as what the World Summit on Sustainable Development did by establishing a Commission on Sustainable Development that would be following up on the Plan of Implementation.

This is just a copy of the reply from ITU. And what we also understand is that ITU does not have any plan to follow-up on the recommendations except for whatever falls within the mandate of the various departments of the ITU.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Camacho, Director of the Office for Outer Space Affairs, for that answer.

I must say that that answer is not terribly encouraging.

I give the floor to the distinguished representative of Colombia.

Mr. C. ARÉVALO YEPES (Colombia) (*interpretation from Spanish*): Yes, Mr. Chairman, you

took the words right out of my mouth. Indeed, it is not entirely surprising from the ITU. There is more than one delegation, I think, here that would agree with us on this, not in this particular instance, but in other instances, this august Committee has addressed what I would consider a sister organization. There are many similar areas for institutional cooperation between the two at a time when the United Nations is requiring of itself more and more that it be involved in this kind of inter-institutional cooperation. And it seems to me that the Summit, which was an important Summit, should have some follow-up mechanism in place. It is quite logical and natural that there be a follow-up mechanism in place and indeed one of it needs to be that ideas should be disseminated. And I know that the Secretariat of the Office for Outer Space Affairs took the time and the pains to participate in some of the meetings and wanted to ensure that the fruits of the meeting be extended, this other Summit be extended to countries around the world. And so this is a discouraging response from the ITU.

So my question is this. Are we going to just stay with an appetite but our hunger unsatisfied with regard to this particular Summit or can we think of another formula, another way of addressing this item of the agenda that does not involve the ITU? Perhaps from the organizing committee, there might be an initiative and we could look into that so that we do not continue with this frustration because it is an important item of the agenda.

Thank you Sir.

The CHAIRMAN (*interpretation from French*): I thank the distinguished colleague and representative of Colombia for his statement and for his question. I think he is expressing and possibly quite likely reflecting the views of many delegations here.

So I would like to now to the Director of the Office for Outer Space Affairs myself to ask him an additional question. Does the Secretariat of the ITU participate in the Inter-Agency Coordination Meeting that you hold every year? Which I think you had in UNESCO in January of this year.

Mr. Camacho?

Mr. S. CAMACHO-LARA (Director, Office for Outer Space Affairs): Thank you Mr. Chairman. Yes, there might be other ways of addressing the issue. One is, it is not that there is no activity in ITU or in other places to implement follow-up to the WSIS. What the situation is that there is not the responsibility

to one body or to one Secretariat. The activity that goes on is in different departments and different sectors from the results of the Conference. There is work that is going on.

The suggestion that was made by our Chairman right now would be a way of addressing it. ITU is a member of the Inter-Agency Meeting on Outer Space Activities and they do participate actively in that. We have not had in the past as main responsibility working on any type of preparation or follow-up to the World Summit on the Information Society. But that does not mean that they would not be involved in some type of follow-up. And the same might be said for several of the other inter-agency entities that participate. This could be brought into the agenda. We have a Secretariat for that meeting so a Secretariat we could then bring this up into the agenda of our next meeting and request inputs on to provide information on activities that are being followed up by any of the entities of the United Nations system. So we might cover then, if the ITU is not doing something that the Committee can interact with. There might be something that some of the other agencies are doing that the Committee could have a contribution to.

And there may be other ways of doing it, if perhaps delegations would have suggestions on whether there might be national follow-ups or perhaps even the observers who somehow are related to topics covered in the World Summit might also have some contributions.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Camacho for that additional information. Indeed, the issue of the Informational Society is an important one and space technology has a new contribution to make to the issue, for example, I am thinking of radio broadcasts towards small developing entities and this is creating a new situation in terms of information dissemination and broadcasting. And I think also of rapid access to the Internet which is now much more possible in remote areas thanks to satellite technology. So these are areas where we have or should have something, some issues to think about in terms of implications for society and applications for society.

In any case, we will continue item 13, Recommendations of the World Summit on the Information Society, tomorrow morning.

Other matters (agenda item 14)

Distinguished delegates, I would now like to continue our consideration of item 14 of the agenda, Other Matters.

As you will recall, item 14 is then sub-divided into a number of other sub-items. I listed them for your this morning but we will take them in order of appearance.

So I would first like to invite delegates to make any comments on observations with regard to the proposed draft Strategic Framework for the Programme on the Peaceful Uses of Outer Space for the biennium 2008-2009, as contained, and I will recall here for you, in document CRP.5.

Do we have any questions or comments on document CRP.5?

I recall that this document was distributed in the middle of last week, on 8 June, specifically.

I will give you a few moments to bring it to mind.

For the time being, I see no requests for the floor, no one wishing to make comments on this document.

So with your agreement then, I would consider the proposed draft Strategic Framework, contained in CRP.5, adopted as is.

It is so decided.

I would now like to inform delegates that the Secretariat distributed this morning, Addendum No. 1 to Conference Room Paper 3. Addendum 1 has the information with regard to the candidature of Professor Vladimir Kopal to Chair the Legal Subcommittee for the next period. I think this was also discussed yesterday afternoon.

Distinguished representatives, I come now to the role on future activities of the Committee. And on this item, I might first ask Mr. Hedman to please give us a brief presentation or summary of document A/AC.105/L.265 which is the Secretariat's Working Paper on the evolution of space activities and how to develop a long-term plan to strengthen the role of the Committee in international cooperation in the peaceful uses of outer space.

Mr. Hedman, I give you the floor.

Mr. N. HEDMAN (Deputy Secretary, Office for Outer Space Affairs): Thank you very much Mr. Chairman. I would like to draw delegation's attention to document L.265, and as I said, Mr. Chairman, this is the Working Paper prepared by the Secretariat on the future role and activities of the Committee on the Peaceful Uses of Outer Space.

This Working Paper comprises of three sections. Section 1, the Introduction outlines the mandate for this paper prepared by the Secretariat. As you may recall, it was a request by the Committee last year, at last year's session of the Committee, for the Secretariat to prepare this paper. And that mandate is reflected in paragraph 3.

The second section, Section 2, Background, comprises three sub-sections: A. is the summary of the presentation made by the Chairman of the Scientific and Subcommittee for the period 2001-2003 and that is Mr. Karl Doetsch of Canada. In this sub-section A, the Secretariat has summarized the views expressed by Mr. Doetsch during his presentation to the Committee at its session last year.

The next sub-section B is the summary of the non-paper presented by the Chairman of the Committee for the period 2004-2005 and that is Mr. Adigun Ade Abiodun of Nigeria. This sub-section summarizes the non-paper and I would like to draw the attention of delegations to paragraph 12 on Page 4 which outlines the specific concrete proposals for action provided by Mr. Abiodun in his non-paper.

Sub-section C reflects the debate at the Committee's last session on the consideration of the presentation made by Mr. Doetsch and the non-paper presented by Mr. Abiodun.

Delegations may also recall that all the statements are reflected in transcripts of the Committee, COPUOS/T.536, T.538 and T.547-T.549.

Distinguished delegates, the last section of this document is Section 3, Future Role and Activities of the Committee. This section provides elements that the Secretariat puts forward to the Committee in order to assist the Committee in its further deliberations. In preparing the overall document and, of course, in particular this Section 3 with the elements, the Secretariat has taken into account the presentation by Mr. Doetsch, the non-paper by Mr. Abiodun and the views expressed by delegations.

The elements are based on three pillars. The first pillar is the United Nations Programme on the

Peaceful Uses of Outer Space. The second pillar is the decision by the Committee in 1999 to revise the agenda structures of the respective Subcommittees. And thirdly, the so-called UNISPACE III+5 Review, which is contained in document A/59/174.

The very last paragraph of this document, paragraph 34, on Page 8, is a paragraph that I would like to read out.

“In its continued deliberations on the proposed long-term planning for future role and activities of the Committee, the information provided in this document could be taken into account by the Committee in considering the strengthening of the continued role of the Committee in advancing international cooperation and coordination for space activities.”

So, Mr. Chairman, by this presentation, the document is then open for any views and comments by delegations.

Thank you.

The CHAIRMAN (*interpretation from French*): Thank you very much Mr. Hedman for the summary that you have provided to us of the main highlights of the document prepared by the Secretariat.

Now we are going to hear the first reactions, the first comments from delegations.

And I, too, have a few suggestions to make. Maybe after we have heard statements from delegations.

Who wants to take the floor?

I recognize our distinguished colleague from The Netherlands.

Mr. A. S. REIJNGOUD (The Netherlands): Thank you Mr. Chairman. Since this is the first time that The Netherlands has the floor in this meeting, I still would like to congratulate you with your election as the Chair of this Committee.

The Netherlands delegation would like to thank the Secretariat for this Working Paper on this item, contained in document L.265. This Working Paper is very useful and gives us a good overview of what already has been said and written about this issue over the last few years.

It takes us from the view of the Chairman of the Scientific and Technical Subcommittee for the period 2001-2003, prior the non-paper of the Chairman of the Committee for the period 2004-2005, to the views expressed by the different delegations at the forty-eighth session of COPUOS last year.

And, Mr. Chairman, the Committee, established in 1959, access almost 50 years. The main overall goal of the Committee has not really changed and that there is advancing international cooperation and coordination of space activities for peaceful purposes. But, in these 50 years, the content and the context in which COPUOS is functioning, has changed. For example, technology and space science has made a jump forward. Developing countries are much more involved in space than at the start of COPUOS. Space issues are included in the agenda of various international meetings and private companies are coming in.

Mr. Chairman, the future role and activities of COPUOS in this changing context can possibly be affected by the way and working methods of COPUOS in reaching its goals. The role and activities of COPUOS on the one hand, and the very reaching goals on the other hand, cannot be seen completely separated. They have a bearing on each other.

Now that future role and activities are subject to discussion, there is an opportunity to include this item, and I am referring to the way of reaching goals, in the long-term planning for the future role and activities of COPUOS. It is, of course, up to the Committee to decide on that.

Further, Mr. Chairman, it is important to have space on the political agenda worldwide to address, and now I quote the wording in the document prepared by the Secretariat, “to address the problems generally recognized by world leaders as being of great significance to the world community, such as the environment, sustainability, the digital divide and reducing and management the effects of natural and man-caused disasters.”

COPUOS can and must play a major role in putting and keeping space on the political agenda. The long-term planning for the future role and activities of the Committee can contribute to that pursuit. The role that space technology and space applications can play in improving life on Earth is tremendous and this is increasingly recognized worldwide. After all, Mr. Chairman, space has to serve mankind.

Thank you.

The CHAIRMAN (*interpretation from French*): Thank you distinguished representative of The Netherlands for your contribution.

Are there any further requests for the floor from delegations?

Yes, the delegation of Colombia. You have the floor Ambassador.

Mr. C. ARÉVALO YEPES (Colombia) (*interpretation from Spanish*): Thank you Mr. Chairman. Mr. Chairman, first of all, I would like to say that for us, for Colombia, it is extremely important to carefully consider the evolution of space activities over the years and plan for the future. Colombia has always very actively followed the work of this Committee and it seems to us that even more important than to engage in long-term planning of the Committee's work, would be to try and identify the main trends, the areas where the interests and the needs of States converge and the areas where cooperation would be the most fruitful and productive.

And in that regard, we have observed that the tendency to set up groups of experts, as suggested by the Chairman of the Scientific and Technical Subcommittee, for the past periods, has been very productive.

I thank the Secretariat for having prepared this truly fundamental document. It is an attempt to not only sum up but synthesize and analyze the trends that have manifested themselves over the years and try and get back to our initial vocation, if you will, to the *raison d'être*, the reason for existing of this important United Nations Committee.

And I see in this document, a reference to the various elements that need to be taken into account. For example, in paragraph 5, we read about the role played by the United Nations, in broad terms, and the need to integrate space activities within the United Nations system overall. I think this is very important. This should be considered in conjunction with paragraph 4 which lists the initiatives, the programmes accomplished by member States of the Committee to address specific recommendations, specifically defined goals, particularly as they relate to sustainable development. Again, this is fundamental, in our view, and it reflects the recommendations that we adopted in our recent session to strengthen and further consolidate international cooperation and cooperation between COPUOS and other international organizations.

The paper prepared by the Secretariat further addresses our discussion under agenda item 6, ways in which our activities will truly contribute to maintaining outer space for peaceful purposes. Looking at paragraph 6 of the Secretariat's document, it refers to the emergence of alternative mechanisms for information exchange in terms of raising the effectiveness and efficiency of space programmes. I am not entirely in agreement with the statement made in this paragraph. The role of this Committee seems to have diminished over the years, it is true, but the true potential of this Committee has grown. What this Committee can be, the role that it can play has increased in terms of how it corresponds to the needs of nations and that is important to point out.

Looking at paragraph 7, it makes very important, very topical references to sustainability to trying to bridge the digital divide and efforts to prevent forecast and manage natural and man-made disasters. For countries like ours, this is of key importance and again, the thing is to look at how we can use our potential, our methods to open up to the real needs of nations to broach other themes, other challenges that have arisen over the years.

The informal document presented by the Chairman of the Committee for the period 2004-2005, the non-paper, which is included in this document by the Secretariat highlights some of the Committee's activities.

I do believe we have some very positive results to report and then there are other areas where we have not made sufficient progress which also need to be highlighted.

Further, Mr. Chairman, with regard to long-term planning, certain things need to be pointed out. In particular, with regard to Section 3 of the document, Future Role and Activities of the Committee, I would like to dwell briefly on the general objective of the work of the United Nations Committee on the Peaceful Uses of Outer Space.

First and foremost, it is to promote the peaceful uses of outer space, which is what this Committee is all about, which is built into the Committee's name. The thing is to look at the ways and means of doing that in the most effective way. We are also here to promote international cooperation in the area of space activities and that is equally important to try and spell out in our future plans.

Having analyzed this document, Mr. Chairman, and compared it to the recommendations of

UNISPACE III and the Work Plan that we have, we come to a point where we need a real long-term plan of action. We have a strategic document for the period up to 2009 which addresses strategic issues.

And to conclude my comments, I am looking at paragraphs 32, 33 and 34 of the Secretariat's paper. This, again, addresses the critical points that have to do with our future activities and it is not about re-inventing the wheel, it is about refining and clearly defining for the years to come the methodology that we are going to use in pursuing our mission and in working together with other international organizations, particularly within the United Nations systems. In paragraph 33, the Secretariat particularly highlights the need to address the priorities faced by developing countries in terms of raising the well-being of their people and achieving sustainable development.

There is a wealth of experience accomplished here and it needs to be put to good use. We have spoken in the course of this session about the various international conferences that have taken place and will be taking place in the months to come and that should be within the attention of focus.

With apologies for having spoken at some length, Mr. Chairman, I would like to conclude by saying that this document should be very carefully perused and analyzed. This document lies at the very heart of what we do here, of our basic mandate, and Colombia, at this point, is not entirely prepared to discuss in concrete terms the general vision of the future. We believe that it is too early to do that, that we have to engage in a more profound analysis. I do not think a Plenary session like this is not the right venue to discuss matters of such fundamental importance.

Thank you.

The CHAIRMAN (*interpretation from French*): Thank you Ambassador for your statement. It shows that we have before us indeed the crux of the matter, the essential elements that we need to plan our future activities, our plan of work for years to come.

The Secretariat has just recalled for our benefit the most important issues that underlie this attempt at an analysis and should form the basis for a future strategy to be taken up by the Committee. I do believe that a Plenary session of the Committee, such as this one, does have all the necessary elements at hand to be able to have a discussion of this issue, our role and our plan of action for the future.

Any further requests for the floor at this point?

Yes, the delegation of India, Dr. Suresh.

Mr. B. N. SURESH (India): Thank you Mr. Chairman. First of all, I think, we would like to compliment the Office for Outer Space Affairs for comprehensive data on the future role and activities of the Committee. This is an important topic.

What we feel is that the Committee's role, objectives and mandate, they are quite clear. What is important here is the due attention towards the advancing the international cooperation as well as the coordination of space activities.

Although there are two important things. One is to have some kind of clear thought(?) on the long-term planning for the future role. Having said that, it is also important how would we achieve it? We believe that the only right way of achieving it is how well we structure the agenda. Within each of the Committees, it has to be very clearly defined. As long as the agenda is defined very clear and we take it for debate. Depending on the importance of the topic, sometimes it may be essential as we have been doing to set up specialist committees to look into that and come out with certain specific recommendations. It has been what has been applied(?) well.

But what is more important now is to define clearly, particularly now I think we have more numbers of countries as members in this COPUOS, so the needs of all these countries, how this particular COPUOS is going to need and what is the long-term planning and how well we are going to structure the agenda to meet these requirements. I think these are the areas we need to give more attention. Once we do, I am sure that the way in which Committee has been functioning will be able to provide the needed solutions for the long-term activities of this Committee.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you very much Dr. Suresh for this contribution to our discussion on the future work of the Committee.

I see no further requests for the floor for the moment.

Here is what I suggest. It is already five minutes to five and we have three technical presentations to hear and the report of the Chairman of

the Working Group on Nuclear Power Sources in Outer Space. I suggest that we reprise our consideration of this agenda item _____ (*not clear*), specifically the matter of the future role and activities of COPUOS tomorrow morning.

And right now move on to the presentations. First the report of the Temporary President of the Working Group on the Use of Nuclear Power Sources in Outer Space, and then the technical presentations and we will continue talking about item 14 tomorrow morning.

Report of the Scientific and Technical Subcommittee on its forty-third session (agenda item 8)

Thus, right now, we are coming back to our agenda item 8, Report of the Scientific and Technical Subcommittee on its forty-third session, and specifically the Working Group on Nuclear Power Sources in Outer Space.

I am going to recognize the temporary Chairman of the Working Group, Madam Alice Caponiti of the United States, to report to us on the progress made in that Working Group in the last few years.

Madam Caponiti, and I apologize for mispronouncing your name, you have the floor.

Ms. A. CAPONITI (United States of America): Thank you Mr. Chairman for giving me the floor.

Please allow me to start my progress report by extending my heartfelt congratulations to you on your election as the Chairman of this Committee.

Mr. Chairman, distinguished delegates, the Working Group held its three-days meeting on the margins of this session of the Committee under its multi-year work plan for the period 2003-2007, adopted at the fortieth session and amended at the forty-second session of the Scientific and Technical Subcommittee.

The intersessional meeting included the following tasks.

One, consideration of the reply of the Secretariat of the International Atomic Energy Agency to the letter sent by the Secretariat of the Committee on the Peaceful Uses of Outer Space concerning the questions identified at the Joint Technical Workshop

on the Objectives, Scope and General Attributes of a Potential Technical Safety Framework for Nuclear Power Sources in Outer Space, held in Vienna from 20 to 22 February 2006. This was in document A/AC.105/L.264.

Two, review of the status of the activities of the Working Group under its multi-year work plan.

Three, consideration of the status of the preliminary draft report of the Joint Technical Workshop on the Objectives, Scope and General Attributes of a Potential Technical Safety Framework for Nuclear Power Sources in Outer Space.

And, four, discussion of the timeframe, inputs and other organizational issues related to the preparation of the draft report of the Working Group to be presented to the Scientific and Technical Subcommittee at its next session in 2007.

At its current intersessional meeting, the Working Group held an extensive discussion of the replies received from the Secretariat of the IAEA. This discussion was particularly assisted by the presence of the representatives of this organization, Mr. Ches Mason and Mr. Ken Brockman, Director of the Division of Nuclear Installation Safety. This discussion will inevitably have a positive impact on the determination of the implementation option by the Working Group that will be recommended at the Scientific and Technical Subcommittee at its next meeting in 2007.

The Working Group has also considered the preliminary draft report of the Joint Technical Workshop, as well as comments received from member States, and agreed that the report, at its current form, could constitute a solid basis for the final draft report, to be presented to the Scientific and Technical Subcommittee at its next meeting in 2007.

The Working Group reviewed the status and outstanding tasks of its current work plan for the remainder of 2006.

The Working Group has also started elaborating a draft report based on the final outline of the objectives, scope and attributes of an international technically-based framework of goals and recommendations, taking into account of the final draft report of the Joint Technical Workshop, as well as the results of the consultations with the IAEA on factors that could facilitate joint development of a framework.

The Working Group had the opportunity to review the Draft Fundamental Safety Principles, version 34 dated 9 June 2006, which is currently in the latter stages of development and review by the IAEA. It was brought to the attention of the Working Group that a recent change to the draft fundamentals has the effect of expanding the scope of that document to include one type of nuclear power source. The view was expressed by some members of the Working Group that this expansion of scope of the IAEA document could have an impact on our work. There is extended discussion on this matter and the view was expressed by some members of the Working Group, including the IAEA, that action should be taken to resolve this issue.

And finally, the Working Group will request to be represented at the next session of the IAEA's Commission on Safety Standards, to be held from 20 to 22 November 2006. The Working Group will inform the Commission on its activities in the developing of a potential safety framework for nuclear power sources in outer space.

The Working Group has concluded today its intersessional meeting.

Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): I would like to thank Madam Caponiti for her report on the intersessional meeting of the Working Group on the use of nuclear power sources in outer space of the Scientific and Technical Subcommittee. And I would like to especially thank Ms. Caponiti for playing the role of Chair for the Group and for making this presentation.

What we can retain is that the work in cooperation with the International Atomic Energy Agency are continuing and are underway. We can further retain that we will have another report on the evolution of that work during the Scientific and Technical Subcommittee's meeting next year, at the beginning of the year.

What is not, however, entirely clear to me is whether the work plan has good chances of being followed or are we behind in terms of the timeline for that? If you could give us some information on that, I think it would reassure a lot of delegates.

Thank you. You have the floor Madam.

Ms. A. CAPONITI (United States of America): Thank you Mr. Chairman. I am pleased to

inform you that we are making good progress with respect to our work plan and we expect to conclude our anticipated work under this work plan on time at our meeting in February of 2007.

The CHAIRMAN (*interpretation from French*): Thank you Ms. Caponiti for that more specific information. I think it allays some of the concerns that were expressed to me by delegates before the session.

Are there any questions for Ms. Caponiti on this Working Group?

I see a question from the distinguished representative of Venezuela. You have the floor Madam.

Ms. N. ORIHUELA (Venezuela) (*interpretation from Spanish*): Thank you Mr. Chairman. I would like to have some clarity on the statement about a possible inclusion of using nuclear power sources in space in the future. In other words, I understood there might be a possibility but I did not understand it clearly that it would take place in the context of the IAEA. Could you give me some more specifics on that please?

Ms. A. CAPONITI (United States of America): I am not sure that I understood the question. I am sorry but could you please repeat the question?

Ms. N. ORIHUELA (Venezuela) (*interpretation from Spanish*): Yes, of course. Let me be a bit more extensive about it. Part of the problem that we have right now is that current regulations in the IAEA does not envision the use of nuclear power in space, only on Earth. So it is Earth-based nuclear activities. That is what is involved. Now that would imply, if we are going to start cooperation between this Committee and the Agency, we would have to broaden the scope of application for the agency. So the very specific question is, is this feasible, as something that is possible in the future or is it still being assessed? How is this problem going to be handled?

Ms. A. CAPONITI (United States of America): Thank you. This was one of the questions that was raised at the Joint Technical Workshop. It was a Workshop held jointly with the IAEA and this issue was raised as part of our deliberations and how we can work cooperatively with the IAEA on this matter. And, in fact, this was a relevant question that was included in questions sent by our Secretariat to the IAEA and was addressed and the response of the IAEA to our Secretariat and it was this response that we did

discuss in our meetings held during these past three days. The specific answer of whether this topic is included, I would say within the mandate of the IAEA, is a response that needs to come from the IAEA. And I do not want to attempt to speak on their behalf at this time but we are working on the details of how to work cooperatively on this matter and the details for working jointly will be elaborated in our subsequent products that we are going to be drafting for discussion in the February 2007 timeframe.

The CHAIRMAN (*interpretation from French*): Thank you for that response. I will give the floor back to the distinguished delegate of Venezuela. You have the floor Madam.

Ms. N. ORIHUELA (Venezuela) (*interpretation from Spanish*): Thank you Mr. Chairman. I am sorry but it seems to me that it is an ambiguous answer. I did not really understand. I was not able to understand what the position was that was taken in the context of that three-day meeting. The delegation of Venezuela would be much reassured about this meeting if we could discern some kind of specific position or some sort of feasible way of grappling with this in terms of the regulation instruments in this matter. In any case, I would like to know at what time delegations will have information about this. When will we get information specifically about this please?

Ms. A. CAPONITI (United States of America): Thank you. If I understand your question, and please tell me if I am not getting it quite right, if the question relates to whether the safety of space nuclear power sources is something that falls within the jurisdiction of the IAEA, that is a response that needs to come from the IAEA. What we do now is that we have been working collaboratively with the IAEA on this topic and that the details of how we can proceed in a more formal collaboration at the end of this work plan, would be worked out subsequent to a decision of this Group to proceed with a development effort of a safety framework with them. I cannot speak on behalf of the IAEA.

The CHAIRMAN (*interpretation from French*): Thank you for that response. That is what I had also understood.

I note that we have a request for the floor from the United States. You have the floor.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. I just wanted to note briefly that we do have a paper in front of us,

L.264, which contains a letter from the IAEA outlining what they are capable of doing in conjunction with the Committee and this whole consideration of space nuclear power. So I think there at least is some information that our distinguished delegate from Venezuela would probably find helpful in answering her question. But ultimately, there is a basic question about IAEA's mandate and competencies. We would have to obviously defer it to the IAEA but I do think that in L.264 there is some information that would be helpful to the Committee and others who have a question about what IAEA is in a position to do from a competency standpoint.

Thank you.

The CHAIRMAN (*interpretation from French*): I would like to thank Mr. Hodgkins for that statement. Indeed, part of an answer can be found in document L.264 which is the reply of the Secretariat of the IAEA.

Another request for the floor from our distinguished colleague from the Czech Republic. You have the floor Sir.

Mr. V. KOPAL (Czech Republic): Thank you very much Mr. Chairman. Mr. Chairman, my intervention would be rather a question and it relates to the Principles that were adopted in 1992, Principles on the Use of Nuclear Power Sources in Outer Space. In the last Principle that was included in this document and I repeat that it was adopted 14 years ago. So the last Principle read "these Principles shall be re-opened for revision by the Committee on the Peaceful Uses of Outer Space no later than two years after their adoption". It was in 1994, it was expected that these Principles would be re-opened and re-visited for further consideration and eventual revision.

Well, 14 years have passed and the Legal Subcommittee has this particular question on its agenda and we repeat each year that it should remain on the agenda of the Legal Subcommittee but that the Legal Subcommittee, of course, would wait the results of the special Working Group that was established under the Scientific and Technical Subcommittee programme and then will start, of course, the analysis whether a revision of the 1992 Principles should be really accomplished and how much and to which extent and so on.

Can we, and now my question is, can we really count that in 2007 this work of the special Working Group in cooperation with the International Atomic Energy Agency and all the other institutions

that might be involved in this question will come to the conclusion of this debate so that the Legal Subcommittee could then really continue and fulfil its task that was included in Principle 11 of the 1992 Principles?

Thank you very much.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Kopal for that statement and for your question. Indeed, that is why I had asked the interim Chairman of the Working Group if her work plan was going to be finished on time or in the time expected. And, indeed, we are awaiting for the results of that Working Group to decide what to do next and specifically within the context of the Legal Subcommittee. Her response did reassure me. However, since it is a relative complex subject matter, I think it would be wise to await the report of the Working Group to decide what the Legal Subcommittee should do in February, who, of course, in turn will report to the full Committee in June 2007. And at that time, and we will probably be in a much better position to be certain that the technical aspects are far enough along to make a decision. So in the meantime, it will remain on the agenda, the timeline seems good. We are making headway towards the scientific and technical aspects, having those resolved and in the meantime, I would ask the Legal Subcommittee to see whether or not it is appropriate to look at it and update the 1992 resolution on this. So we will come back to this issue during the Scientific and Technical Subcommittee in February and, of course, in the full Committee in June of next year.

I would now like to thank the Chair of the Working Group of the Scientific and Technical Subcommittee on the issue of nuclear power sources in space.

And I would now propose that we move on to the three technical presentations that we have scheduled for this afternoon before ending this session at 6.00 p.m.

As I had indicated earlier, the first technical presentation will be that of Mr. Peter Martinez of South Africa on Space and Society. You have the floor Sir.

Mr. P. MARTINEZ (South Africa): Thank you Mr. Chairman. Mr. Chairman, we would like to thank you for the opportunity to address the Committee to report the current status of capacity-building for the utilization of space for peaceful development purposes in South Africa. Our delegation has always appreciated and learnt much from the various technical

presentations at COPUOS and its two Subcommittees. We are, therefore, grateful for this opportunity to share our capacity-building experiences with the other members of this Committee under the agenda item on Space and Society.

South Africa recognizes the importance of space in the modern information society. Space applications contribute in many ways to the achievement of national development goals. The South African Government has recently initiated the development of a national space policy which will address national development objectives. This policy will be informed by the various national research and development strategy as well as the various sectoral policies.

One of the objectives of this policy development is to promote convergence and harmonization of various existing space activities, with particular attention to capacity-building activities.

South Africa has been active in the space arena pretty much since the beginning of the space age, beginning with involvement in satellite tracking and reception in the 1960s, supporting various early missions to the Moon and to the planets. Later on in the 1980s, there was a programme to develop an Earth observation satellite and a launch vehicle. This programme was terminated in 1994 before it reached completion. Space legislation was enacted in 1993, the Space Affairs Act which created a Space Affairs Council. And the first South African micro-satellite was designed and built a faculty and students at the University of Stellenbosch and launched in 1999 on a United States Delta-2 rocket as a secondary payload. And then, of course, much more recently, a South African, Mark Shuttleworth, was the second tourist to fly into space, which caused much interest and excitement in South Africa in space issues in general.

There is a growing level of support for space activities by the South African Government. Much of this support has been manifested in the creation of new large-scale ground-based facilities for astronomy in the region, a principle development there being the Southern African Large Telescope, which is a 10 metre class optical telescope. South Africa is also partner in the High Energy Stereoscopic System, a large international collaboration of telescopes in Namibia to study the high-energy Universe. More recently, South Africa has submitted a bid to host the Square Kilometre Array, a large radio telescope. And in support of this bid, and to develop local capacity in the technology and also radio-astronomy research and the capability to utilize such a telescope, the South African

Government has also recently started the Karoo Array Telescope Project, which is a radio telescope and is a demonstrative project at one per cent of the level of the Square Kilometre Array.

South Africa is one of the co-Chairs of GEO and has initiated the South African Earth Observation Strategy as our own response to GEO.

In October 2005, the Minister of Science and Technology announced the commencement of a micro-satellite programme, stretching over three years, which includes launch and operations. We expect this 80 kilogram class micro-satellite to be launched in late 2006. South Africa has also recently been in discussions with Algeria, Kenya and Nigeria on the possibility of establishing an African Resource Management Constellation.

All of these projects will require capacity across a wide-range of disciplines and I will briefly outline some of the various capacity-building initiatives currently underway.

In the area of astrophysics and space science, a new Masters programme called the National Astrophysics and Space Science Programme was initiated in 2003. The Programme basically comprises 12 months of coursework at advanced under-graduate level and early-graduate level, followed by a mini-thesis lasting six to eight months. Because students come to this Programme with varying degrees of preparation and, in many cases, no previous exposure to the space arena, we also offer a bridging course which lasts one month and students who have no previous space experience attend this course.

The Programme brings together faculty from all over the country, from eight universities and three national laboratories to one institution, being the University of Cape Town where the Programme is currently hosted, and the students then benefit from the diverse expertise which is present in the other universities. Prior to the start of the Programme, universities were offering courses that were very specific to their own areas of expertise and the graduates of this new Programme have a much wider breadth of training in space sciences.

The Programme offers full scholarships that cover tuition, travel and living allowances and students from all over the world are eligible to apply but applications from African countries are especially welcome and indeed also applications from women.

The emphasis in the Programme is on skills development. We recognize that not all of the graduates will remain in the space arena and so we aim to equip them with skills which will make them marketable in the broader labour market in the country and in the region.

The Programme is still in its very early stages. To date, we have had 31 Honours-level graduations. I shall explain in a moment what I mean by that, but of those, 10 are women and we have had a small number of Masters graduates, six at this stage, of which all of them are female. And you can see on the bottom right hand side of that slide, some of the students from various African countries have taken this Programme.

A brief word on the Programme's structure. The course is normally 18 months in length. It comprises a Senior Undergraduate Segment which provides training in space sciences to bring everybody up to a basic level that they would require to commence with their Masters thesis topic. And in the Masters Segment, students can also take elective advanced courses in a particular specialization. They present a mini-dissertation, which is usually six to eight months in duration but if the topic is of enough substance, there is the possibility to convert it into a PhD, obviously for a longer duration.

The Programme was set up in such a way that there are multiple exit points because we recognize that some students may realize that the space arena is not where they want to spend their careers and we felt that students who embark on the Programme should have several exit points at which they would emerge with a qualification. So after one year, the exit point is what we call a Bachelor of Science Honours, basically the Undergraduate qualification in space science. Students who stay with the Programme for one and a half to two years would emerge with a Master of Science in Space Sciences and those who convert to PhD after three to four years would graduate with a Doctorate.

In the area of satellite engineering, a new Programme was initiated as part of the Minister's announcement to develop the micro-satellite. This Programme is posted by the University of Stellenbosch, which is also the organization responsible for delivering the satellite. The satellite is being manufactured at a company called Sunspace, under contract to the University of Stellenbosch. And a Post-Graduate Diploma has been initiated, as well as Masters Degrees in the area of satellite engineering and also a number of internships.

I can report that at the moment the enrolment in this Programme is one Post-Doctoral Fellow, two PhD students and six Masters students. There are also nine interns who are qualified engineers that have been seconded to the Programme by their organizations or have taken up the internship opportunities that are available to them in this Programme. And the training opportunities cover the space segment, the ground segment and applications of the satellite.

In the area of remote sensing, lamentably there is no degree in remote sensing in South Africa at the moment. There are undergraduate courses which are offered at the University of Cape Town, University of Pretoria and the University of Johannesburg. And at the post-graduate level, there is some training that has been provided in the past. The formerly, up until last year, the Institute of Satellite and Software Applications was able to send students to France to receive Masters-level training under a bilateral Cooperation Agreement. Thirteen students were trained under this Agreement. Unfortunately, the Agreement, this Programme is no longer in operation, and the training activities have been transferred from this Institute to the newly-established Moroccan(?) Institute for Information and Communication Technologies. This Institute is jointly funded by the Department of Science and Technology, the Department of Communications and our Council for Scientific and Industrial Research, and they have yet to begin their training programmes in remote sensing in earnest.

In the area of position, navigation and timing, training is offered at the basic level in several universities in land surveying departments. And at the post-graduate level in GNSS applications is offered at the Hart_____ (?) Radio Astronomy Observatory, in collaboration with various universities and this is mostly in the area of space geodetic applications, ionospheric sounding and so on.

In the area of space policy and space law, we do not currently have dedicated undergraduate degrees in the areas of space policy or space law but training is provided at the post-graduate level, primarily at the Witwatersrand University Law School which offers a Diploma on space law issues, mostly in a course that is mostly oriented around the legal issues of satellite communications. And this programme has about 12 students in any given year.

Because we recognize that the training needs were greater than the capacity in our system, a few years ago we started collaborating with the International Space University and we have enjoyed

very good support from the ISU for our various capacity-building initiatives. In December 2004, we organized an introductory space course lasting four days in Cape Town which was aimed at government officials in a variety of government departments that we wished to engage in the forthcoming space policy process.

In October 2005, ISU faculty again participated in a series of one-day workshops that were held in Pretoria, Durban and Cape Town. These workshops were aimed at government officials and policy makers in Pretoria, educators in Durban and the academic and research community in Cape Town.

In 2005, we also hosted one ISU Masters student for her internship programme, thereby making the benefits of the South African facilities also available to ISU as a two-way exchange.

In April 2005, to enable one of our officials here at our mission to work more effectively on his responsibility with the COPUOS portfolio, he attended a short course at ISU in Strasbourg.

And in April of this year, six more Government officials attended the introductory space course in order to improve their knowledge of the space arena to support their work in policy development issues.

And South Africa is currently considering the possibility of hosting the first ISU Summer Session in Africa in 2009.

We also are looking at ways of creating scholarship opportunities to send significant numbers of South Africans to ISU in future to grow the size of the young scientists and engineering community that is educated in space issues.

We have encountered a number of challenges in the capacity-building programmes that are described above. Firstly, as in many countries, we experience a severe shortage of students in the physical sciences and mathematics. This shortage is less severe in engineering but still a challenge to us.

We have capacity-building programmes that compete for a very small pool of students and even though we have a limited number of scholarships to offer, often the offers are not all taken up because there simply are not enough students with the requisite backgrounds.

There is also the situation that students come from heterogeneous backgrounds with varying degrees of preparation so, therefore, bridging courses are essential to bring everybody up to the same level of participation.

We also have very few women in scientific and technical careers and one of our objectives is to increase the number of women in the scientific and technical professions in general and in the space arena in particular.

One of the challenges that we have in recruiting students is that scientific and technical careers are not seen as lucrative and so, therefore, any scholarships that we offer have to be above the usual levels of post-graduate support in order to attract suitably qualified candidates who would otherwise be drawn into the job market because we are in a number of these programmes aiming for graduates who are already qualified and, therefore, capable of seeking employment in the job market.

So far I have spoken about the university training programmes. I now want to spend a few minutes talking about the public outreach dimension of our work in South Africa.

For us, World Space Week is an important platform on which to build public awareness of space and we have taken the opportunity of World Space Week each year to develop the public consciousness of space issues and to elevate it to the next level in support of government policy and agency-building initiatives. Each year, we try to identify a theme for the Space Week. This is not in competition with the normal topic of the Space Week but just a particular theme that we want to push and also we identify a specific message.

So in 2003, the objective was raising the public awareness of space in general and the message to people was that space is exciting and useful to you and a number of public activities were organized to communicate the benefits of space.

In 2004, the objective was to raise the political awareness of space and the potentials of space for development and the message during that year was that space should be part of our national development agenda. And it was in this context that a workshop was organized and indeed we had the input from ISU, as I mentioned a few minutes ago. We also launched the South African Space Portal which I shall speak about in more detail in a few moments.

In 2005, the objective of our World Space Week campaign was to demonstrate Government's commitment to developing space and the message was exciting things are happening and this message was communicated by the Minister's announcement of this new micro-satellite programme. There was a one-day policy development workshop organized for Government officials in Pretoria and several other workshops, and, of course, the usual public awareness campaign.

The South African Space Portal was created as a platform to communicate the developments in the South African and international space arena. This is a screen snapshot of the Portal as it was at the time of the last Space Week when the Minister was announcing the new Programme. The URL of the Space Portal is given at the bottom of the page and it is updated on a fairly regular basis and I believe that today's view of the Space Portal actually describes some of the discussions that have been happening here at COPUOS and includes things like the South African statement that was delivered in the exchange of views.

We have also realized that we have to engage the media proactively so a number of publications that have shown interest in space issues are contacted on a regular basis and there are a growing number of stories in the media which express enthusiasm and excitement for the developments around space and we consider the media to be essential partners in the various developments that are happening.

In terms of the next steps, the capacity-building initiatives that I have described are taking place in the context of several developments in the South African space arena, which you see summarized on this slide. The space policy process is well underway and we expect that to come to a conclusion in the coming months. South Africa is also considering ratification of the Liability and Registration Conventions. We are looking seriously at the development of a national space plan to give purposeful direction to our various activities in the space arena which have been somewhat disparate in the past. And there is also serious consideration being given to the establishment of a South African Space Agency to implement a national space programme in due course.

The successful execution of these steps outlined here and the utilization of space-based systems for national development will depend critically on the success of the capacity-building initiatives I have outlined here and others to follow.

Mr. Chairman, this concludes my presentation.

Thank you.

The CHAIRMAN (*interpretation from French*): Thank you very much Mr. Martinez for your presentation. It was very interesting and had a lot to teach us on the current status of the space programme of South Africa, educational programme, training activities, public communications, projects and congratulations on the great interest that obviously your Government has shown in promoting space activities and outer space policies and also hope in working towards the ratification of the Conventions on Registration and Rescue (Liability?).

I will go on immediately to the presentation by Professor Tetsuo Yasaka of Japan on "University Hands-On Space Education in Japan."

Mr. T. YASAKA (Japan): Thank you Mr. Chairman, distinguished delegates. It is my great happiness to share with you our experiences on hands-on education which we found rather successful and effective in energizing young people in getting them prepared to take part of creative works in the real world, including space development.

My talk will complement those presentations made by my colleague, Ms. Chiku and Mr. Hirohama today but my talk is mainly centred on the activity on the non-government sector. And this is a healthy situation, I believe, government sector and non-government working towards a similar, same objective, complementing each other.

We have a rather successful and long history in Japan in terms of space development but unfortunately the necessity of hands-on education in the university level was recognized very recently. In the 1990s, the people in the academic societies thought that this was necessary to complement what the Government agencies had been doing. So in the Satellite Design Context which is the second line on the chart, was the first item to be noted. Three academic societies, mechanical, electric and aerospace created a forum for students to present and compete with their own idea of space missions. This forum eventually fostered various universities to initiate programmes to have students devote to actual engineering practices, by applying theories and methodologies, taught in classes, into actual design works.

While this contest involved only paper works, the USSS, or the University Space Systems Symposium, introduced real chances to implement systems to really fly. And CanSat, CubeSat, which I will describe shortly, were proposed and put into practice.

In 2003, a non-profit organization, UNISEC, University Space Engineering Consortium, founded by a group of people from the universities who were taking the steps in real hands-on education. The hands-on education has now been systematically organized in Japan. Now the final line, JAXA recently announced the launch of opportunity of several small satellites onboard the H-IIA vehicle and this is the chance that we have been longing for for years.

This Satellite Design Context started in 1993 with the initiative of three academic societies, as I mentioned. In 1992, later joined by space agencies. It did provide a trigger to university space activities and it was very well received by society in general. What are required by the context, not only the mission description with creativity, but also every aspect of space system design considerations, launch load, thermal vacuum conditions, reliability and cost. It really made accumulation of student expertise in building space systems and without it, the following activities I have mentioned would not have happened.

These are some of the examples of the results that the students and universities did. The first one on the top in 1992 is a whale observation satellite by the Chiba Institute of Technology and this was actually put into development and launched in 2001 by NASDA. It is now on operation.

Some of the other satellites are already in actual development.

The University Space Systems Symposium is organized by JUSTSAP which is a larger mother organization, it is a _____(?) Japan/United States Science Technology and Space Applications Programme and they have a meeting every year, every November in one of the Hawaiian islands. This bilateral Symposium opened a new era where actual space system development takes place. Students from both countries defined various international joint projects through three-day discussions each year. CanSat and CubeSat are typical products of this Symposium. The only relatively small cost and short time period, making it an ideal educational tool that students can complete within their school days. The CanSat and CubeSat were originally proposed by Professor Twigg of Stanford University at this

Symposium and later on were intensively developed in Japanese universities.

Here are the examples of USSS in action in the beautiful surrounding of Hawaii. Students sit inside and make discussions. To the left are the launches of CanSat.

UNISEC is a non-profit organization, as I stated, and many space-related university laboratories join and cooperate in hands-on educational activities. This was mentioned somewhat in the previous talks and I will just skip these.

And these are the actual actions which are taking place, meetings and several projects. CanSat, CubeSat, Ground Station and Hybrid Rocket projects.

We have 35 university laboratories in the group with more than 300 students and I have listed some of the typical universities and their projects but I will just skip it.

To your right is the diagram of the actual universities being active in satellite development, in red, and rock development in blue. The larger circle shows the regional satellites which are being carried on in these three local regions in Japan, Hokkaido, Osaka and Kyushu.

It is quite interesting that university activity is activating rural companies, very small ones, which usually are not incorporated into the national space programmes and they started to form their own programme with the universities in the centre, to be their leaders and at the same, cooperating their expertise to build student satellites as well.

CanSat is our basic tool for those who want to go into satellite design, fabrication and operation. A soda can of 350 millilitres holds all basic functions of satellite. Power, communication and others. In many cases, they have a GPS received for position sensing which controls a device for manoeuvring parafoil, to control the direction of flight during the descent. In average, two students can build a CanSat in a matter of a few weeks, provided there is a trained leader available. The cost seldom exceeds 1,000 Euros or equivalent.

Exciting portion of CanSat is sub-orbital flight operation on small rockets. To your top left, three small CanSats are put into the payload section and then assembled and getting them ready to launch. After reaching the altitude of a couple of kilometres, they are jettisoned from the rocket and parachuted or parafoil is

deployed. A Comeback Competition is usually associated with this where the parafoil is controlled so that the CanSat reaches pre-assigned location when it lands. During descent, telemetry data is sent to the ground to a hand-held ground facility, shown on the above right.

Much easier flight operations are executed in many occasions in Japan using balloons. CanSat released from the balloon deploys its parafoil and controls its path to the designated target point, just in the same way as it done in sub-orbital flight. On the occasion of last years IAC in Fukuoka, students worked on CanSat for a week and they had a competition on the last day using a tether balloon for release. In this case, necessary hardware units were provided by UNISEC and teams with a combination of a Japanese university and international students defined the system, coded software, assembled and launched. It was an exciting experience for all students, irrespective of nationality.

A 10 centimetre, one kilogram CubeSat, started at the USSS Symposium is now a world standard for student educational satellites. At Tokyo University and the Tokyo Institute of Technology shared a flight on a Russian vehicle, along with those from other countries, in June 2003. This was the first occasion of the CubeSat launch. Both universities had second ones recently and other universities had also completed assembly and await for launches. In average, the cost to build a CubeSat is 50,000 Euros or equivalent, without student labour cost. If included, it will easily go up 10 times more and become close to half a million Euros or so. Commercially available components, or COTS, are extensively utilized in these satellites. And this is the only way to achieve very low-cost and high-performance space systems.

Extensions into larger and more powerful satellites on their way. They have more complex and ambitious missions, tether, on your left, bubble(?), tele-satellites for this university and astronomy and Earth observing missions for Tokyo University. They are expected to be launched in a couple of years.

Ground Station Network is going to play a vital role during the operation of university satellites. As we all know, those stations only have 10 minutes of visibility for satellite built by students so data collection could be enhanced by utilizing other stations in distance.

In other times of development, each university adopted its own protocol to control their station, thus unification was necessary to build a network system.

So UNISEC set a standard procedure which could be adopted by any ground stations, at any country.

The network had been confirmed operability among domestic universities and started recently to co-utilize stations between Japan and United States stations. In this coming July, we will have the first international ground networks systems workshop in Tokyo as shown on the bottom of this line. It should be noted that to have permanent system of the whole globe would not only be beneficial in satellite operations but will develop friendships in an understanding among students in the world. The benefit of young students working in a global system can never be over-estimated.

Finally, I would like to mention about development of small rocket vehicles. A majority of the universities in this area have their focuses on hybrid-type rocket. Hybrid rocket utilizes rubber-like organic material as fuel, combined with liquid oxidizer. Because safety in combustion is far superior compared to pure liquid or solid propellant rocket, hybrid is an ideal for development involving students. So far, altitude achieved is still not(?) favourable but our primary goal is to launch CanSats to a few kilometre altitude by these rockets.

So far, our hands-on space education has gone through productive processes.

In summary, Mr. Chairman, 15-year Japanese hands-on space university education resulted in:

Number one, accumulation of space system expertise in many universities, leading to a less expensive, more effective way of space system integration;

Number two, student's experience on complete cycle of projects under their own initiative, from conception to operation, including design, fabrication, integration, testing and review;

Third, cultivation of international minds and understanding through multi-national collaborative works which are expected to be enhanced more in the near future; and

Number four, meeting social demands to provide creative youths readily applicable not only to space development but also to any industrial and scientific practices.

Finally, Mr. Chairman, we are proud to have shown an excellent example of effective educational

practice to bring up challenging youths, within university capacity alone, and I believe that this is the way which would be found applicable or at least put into consideration in any nation.

Thank you very much.

The CHAIRMAN (*interpretation from French*): Thank you Professor Yasaka for your very convincing and very impressive presentation on the activities conducted within the university framework in Japan and the international ramifications of that work.

The late hour makes it impossible for us to have questions, for the same reason the presentation by Madam Berenguer on UNESCO's space education programme will have to be postponed until tomorrow morning and I ask her to accept my apologies.

Before adjourning the meeting, I would like to inform you of our schedule of work for tomorrow morning.

We will reconvene promptly at 10.00 a.m. At that time, we will continue our consideration of agenda item 8, the Report of the Scientific and Technical Subcommittee. We will continue and conclude our consideration of agenda item 11, Space and Society. We will also continue and will try to conclude our consideration of agenda items 12, Space and Water, 13, Recommendations of the World Summit on the Information Society, and finally, we will continue our consideration of item 14, Other Matters.

At the end of the morning's session, there will be four technical presentations including those that could not be presented tonight.

If there are no questions or comments on this proposed schedule for the morning, I suggest adjourning this meeting until tomorrow.

I would like to remind delegates that tomorrow is a national holiday in Austria but not for the United Nations so tomorrow we will see you at 10.00 a.m.

Thank you.

The meeting closed at 6.00 p.m.