

**Committee on the Peaceful
Uses of Outer Space***Unedited transcript*603rd Meeting

Monday, 8 June 2009, 10 a.m.

Vienna

Chairman: Mr. Ciro Arévalo Yepes (Colombia)

The meeting was called to order at 10.15 a.m.

The CHAIRMAN (*interpretation from Spanish*): Good morning distinguished delegates. I hope you had a pleasant weekend and that you have returned refreshed. The weather was wonderful and in those conditions we shall begin our second week with a great deal of energy and dynamism in order to achieve the best possible results.

I now declare open the 603rd meeting of the Committee on the Peaceful Uses of Outer Space.

This morning we will continue and hopefully conclude our consideration of agenda item 5, Ways and Means of Maintaining Outer Space for Peaceful Purposes, item 6, Implementation of the Recommendations of UNISPACE III, item 7, Report of the Scientific and Technical Subcommittee at its Forty-Sixth Session, and begin item 8, Report of the Legal Subcommittee on its Forty-Eighth Session, and item 9, Spin-Off Benefits of Space Technology: Review of Current Status.

Following the Plenary, we will have three technical presentations. The first one by a representative of the United States on "Sustainable Development In and Through Space Governance Financing and Education Issues". The second one is by a representative of the Russian Federation on the "Solar Mission Coronas-Photon: Scientific Objectives and Initial Results". The third one by Pakistan on "Application of Remote Satellite Sensing for Crop Monitoring and Environmental Purposes".

Let me remind delegations to provide the Secretariat with any corrections to the provisional list of participants so that we can finalize the document. Any corrections to CRP.2 should be submitted by tomorrow afternoon by the latest.

And now we are going to begin our work. Let me also take this opportunity to express my thanks to the Committee for having favourably received the document presented by the Chair which we think will serve as an adequate foundation for further discussions on this topic, that is the President's Initiative, the Chairman's Initiative towards a United Nations space policy. I would very much like to thank you for the support you have shown and in this sense, I would ask if the Secretariat reflect this favourable welcomed by the Assembly of this document in the report.

Now we were fully active over the weekend. Many of the delegates attended a meeting convened by the Space Advisory Council, the Space Generation Advisory Council. It is very difficult. I have got the translation in Spanish that is why this Chairman is seen in action. In any case, many delegates here attended that meeting where we had what I would call one or two historic presentations, very important. It set the context for the future of our activities especially too by Mr. Jankowitsch and Mr. Hodgkins who, as I said, made these very memorable presentations. And also Ambassador Raimundo González was there and many others attended this very important Conference on Inner(?) Space(?). Mr. Abiodun as well, Craig Williamson, a series of people who, together with the energy and dynamism of these young people, made this very interesting. Sergio Camacho was also there really motivating the young people to move forward. Again,

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.



let me reiterate it is very important that young people participate in this field.

Now having said that, let me give the floor to Ambassador González from Chile.

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): Thank you. Very briefly. I have a few words on technical and on bureaucratic issues that I have to attend to and I am going to have to leave before we end the meeting.

I would just like to ask the Secretariat to please take note of the following for a proposal that we made during the course of the discussion here. We, first of all, requested that in the next General Assembly resolution we take into account a COPUOS recommendation dealing with the Secretary-General to take the Group of 15 as high-level advisors. This is something we have to ask the General Assembly to do. We would ask them that the Committee, and I have heard no opinions to the contrary, ask the Committee to do this because this is something that everyone who is participating in this Group of 15, I think, can be very useful and directly advise the Secretary-General. So with your technical, like you, Mr. Chairman, I have going to use a little bit of English, the word is "upgrading". I think that is the correct word in English, upgrading of this Group of 15. Another thing is that we mentioned this and there was no opposition.

Secondly, I think this is already in the report and I think this is a consensus point to it. We need beginning arrangements for a Fourth UNISPACE. And our national situation has gone through drastic and brutal changes and I think with this new political framework, we have to take into account through that.

Thirdly, it goes without saying that your document, of course, has our full support. We repeat this. Naturally, it will have much greater chances of being well received and being well analyzed if we have the appropriate institutional framework which leads me back to my first point about the Group of 15, but it seems to me that it is important. There is a kind of an implicit resolution in the General Assembly resolution of last year that we deal with things like food security on a high level and things like space technology and pandemics. This is something that has to be attended to by the Committee.

And also in the year 2010 we are going to have the FIDAE Meeting in Chile. This will, of course, correspond more or less to the launching of our first satellite and at the Sixth Space Conference of the Americas we are going to be beginning our preparatory

work with our PrepCom. Part of my delegation will be working on the agenda, the themes of that Conference at that time and I just wanted this to be very clear to the Secretariat that this be reflected when we discuss the report in that very report, of course, unless there is any opposition in the room. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you distinguished Ambassador from Chile.

If there are no observations or questions, I think we can accept this and ask the Secretariat to take due note of what you have said.

I have two announcements. There is a meeting of the G15 today, a briefing, around 1.00 p.m. on Near-Earth Objects. Everyone is invited to this meeting. It is in C0713. This is a room that is next to the document room here on the seventh floor. We will be having the pleasure of hearing Rusty Schweikart speaking on this topic of NEOs.

Next, an invitation from the Secretariat of the GEO Earth Observation Group with the support of Brazil, inviting to us a briefing on this Group and its efforts in trying to set up systems for, well the GEO system of Earth observation. This information meeting will take place today between 2.00p.m. and 3.00 p.m. in the afternoon in C06727(?). Everyone from the GRULAC Group is cordially invited to attend.

That was my second announcement. The Austrian delegation wanted to make an announcement about a very cordially invitation that is traditional to the Committee and I think you are going to make that announcement this afternoon and I will at that time give you the floor.

Ways and means of maintaining outer space for peaceful purposes (agenda item 5)

There is no other business and I do not think there is. Let us continue with ways and means of maintaining outer space for peaceful purposes, agenda item 5. Let us continue with this topic and my first speaker is, there is no first speaker. There is no one on the list.

So let us continue. If there is on delegation that wishes to take the floor, we can, I think, conclude on item 5.

Implementation of the Recommendations of UNISPACE III (agenda item 6)

Item 6 then, Implementation of the Recommendations of UNISPACE III. I now ask that we continue our consideration of this agenda item, number six, as I said, implementation of the recommendations of UNISPACE III.

I now open the floor for statements and the first speaker on my list under this agenda item, six, is France, Mario Hucteau. You have the floor Sir.

Mr. M. HUCTEAU (France) (*interpretation from French*): Thank you very much Chairman. Good morning to one and all.

This year we are celebrating the tenth anniversary of the UNISPACE III Conference held here in Vienna in July 1999. Following this Conference, CNES established, along with ESA, the European Space Agency, the International Charter on Outer Space and Major Disasters which at present comprises nine partners, space agencies cooperating on a voluntary basis without any exchange of funds. This Charter aims at offering a unified system to acquire and supply products resulting from satellite data in case of major disasters.

Since November 2000, wherever such a disaster may occur, an authorized user may request the activation of the Charter turning to an operator who is available on a 24/24 hour basis every single day of the year. And France, for example, through CNES, makes available on a free basis, such a data to any authorized applicants whatever they request by way of images resulting from SPOT satellites.

Since its operational implementation in November 2000, the Charter has been activated roughly 220 times. From one year to the next there is a regular increase of activations. Its activations indeed concern the entire world and principally respond to disasters linked to phenomena of meteorological origin 60 per cent of the activations, seismic 13 per cent of the cases, volcanic six per cent of the cases, and it seems premature for the time being to link the spectacular increase of the number of activations which has doubled since 2006 and the type of catastrophes or disasters noted, be they floods or hurricanes, and tie them just to the climate change alone. The heavier involvement of authorized users, authorized to activate the Charter, in particular the action of United Nations organisms and programmes which are the origin of more than 30 per cent of the activations can also explain the increase in the number of activations.

Enlarging, facilitation, opening access to the Charter has been one of CNES' priorities, CNES which

has been at the head of the Charter since October 2008 and April 2009. France shares the idea that the Charter should become accessible to more countries and we advocate the principle of as universal access is possible to the Charter. Over the last couple of months various achievements have been registered in the implementation or the strengthening of the access mechanisms. For example, the Charter at present is considering the GEO Secretariat request that all of the member States of GEO should have access to the Charter. At present, indeed, 45 out of the 77 GEO members do not have direct access to the Charter.

Secondly, a new Agreement concerning the Asia-Pacific is in the final negotiation phase and Sentinel-Asia. That initiative will be linked to the Charter through the ADRC, that is the Asian Disaster Regional Centre, which will be enabled and authorized to present the request on the part of all the users of the 18 countries of this region of the world and Sentinel-Asia comprises 20 countries and ADRC 27, I would point out.

The European Commission, its Monitoring and Information Centre, has given its green light for the activation of the Charter on behalf of the European countries which are non-members of the European Union.

Furthermore, Latin American and Central American countries have access to the Charter through Argentina. And finally, the attention of the Charter presently is focusing on Africa which is marked by ever so many disasters but the access of which to the Charter really does need great enhancement.

The Charter has allowed us to show the interest to be derived from satellite data in disaster management by way of facilitating the work of rescue teams which are sent out into the field and this represents a very successful, a very good example of international cooperation achievements. To date, more than 80 countries have benefited from Charter proposed services.

France continues through the CNES to support the Charter which presently offers the only operational service affording satellite data to rescue bodies, principally the National Civil Defence Centres and United Nations programmes and agencies.

We indeed encourage cooperation between the Charter and the various initiatives in reference to the detection of risk and disasters which are developing both at the national as well as the international levels and this is why we also support the initiative taken by

the Directing Bureau of the Charter and propose to COPUOS delegates that the International Charter be subject to a detailed presentation. This will be done on 8 June in the afternoon. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much the delegate of France for his presentation of this very important instrument. Thank you very much for giving us that briefing on that very important instrument and its extension to other countries.

I think Pakistan has asked for the floor.

Mr. I. IQBAL (Pakistan): Thank you Mr. Chairman. I would like to take this opportunity to appreciate the assistance provided to Pakistan through the use of the SPOT constellation for the imaging of the earthquake of 2005, flood cyclones in 2007, earthquake in 2008 and internally displaced person camps in 2009. This facilitated early damage assessment and it was greatly again appreciated. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much Pakistan.

Is there any other delegation that wishes to take the floor on this topic?

Chile, you have the floor.

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): Thank you, Chairman, what was said by the delegate of France and the international catastrophe and disaster mapping, I would like to take this opportunity in this Plenary to say that we have received great support from the Centre in Argentina which has helped us deal with natural catastrophes lately in Chile. We would like to have this stated in this Plenary. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you Chile.

Would any other delegation wish to take the floor?

I see none.

Let us continue and conclude then this afternoon on agenda item 6.

We are now going to get the contribution of the Committee on Sustainable Development. We are going to approve the text of this contribution,

paragraph-by-paragraph. This is document 7, Session Document CRP.7.

Six delegations have asked for the floor on this. They are Japan, Chiaki Shimazu first. You have the floor Madam.

Ms. C. SHIMAZU (Japan): Mr. Chairman, distinguished delegations, on behalf of the Japanese delegation, I am pleased to have the opportunity to address the fifty-second session of COPUOS. Japan is pleased to announce its support for report adopted by the forty-sixth session of the Scientific and Technical Subcommittee. I would like to express our deep appreciation and especially the Chairman of the Subcommittee, Mr. Aboubekr Seddik Kedjar and for the excellent work of Dr. Mazlan Othman and her staff of the Office for Outer Space Affairs.

Mr. Chairman, first I would like to express my heartfelt condolences for the recent lives lost due to the earthquake in L'Aquila in Italy. I would also like to extend my deepest sympathy to the families of the victims. In this tragic event. We supported Italy by providing DAICHI data through the data node which is the distribution scheme of DAICHI. Now even more we realize that the importance of space technology for disaster monitoring. Japan believes constructing the managing system of space data of which(?) and delivery to those affected by natural or manmade disasters should be one of the top priority issues.

Japan is promoting the Sentinel-Asia project that utilizes satellite data to support disaster management in the Asia-Pacific region which was aided through the Asia-Pacific Regional Space Agency Forum, APRSAF. The Japan Aerospace Exploration Agency has been carrying emergency observations about 40 times so far using the Advanced Land Observation Satellite DAICHI.

Since January 2008, the second stage of Sentinel-Asia concept has been carried out and its activities for disaster management support have been going smoothly.

In the Sentinel-Asia Step 1 Phase, regionally only JAXA was providing satellite images of the data of the Indian Space Research Organization, ISRO, joined forces.

In Step 2, more agencies are ready to facilitate the sharing of data through Sentinel-Asia. The Korea Aerospace Research Institute, KARI, and the Geo-Informatics and Space Technology Development Agency, GISDA, Thailand, have agreed to provide

satellite images to the Sentinel-Asia and the operations will start soon after in the phasing(?) among the systems have been established.

Additionally, in Step 2, Japan is also working on the high data make a satellite communications system by using the launch of the Japanese satellite wide band Internet(?) working engineering tests and demonstration satellites _____(?) which is called in Japanese, KISNA. We expect this more expansion of the use of Sentinel-Asia.

We think JAXA activities for disaster management can be transpired into the next three stages and interconnection among each of the activities is important.

For the first step, the response phase, saving land is the top priority and we need prompt information immediately after the disaster.

For the second step, the construction phase information for the revival of the affected(?) area is necessary.

Finally, in the third step, preparedness(?) space(?), we try to make the hazard marked, etc., and to reduce the potential risk of natural disaster.

Sentinel-Asia has been _____ (*not clear*) information sharing about natural disasters. In the Sentinel-Asia Step 2 phase, we use advantage of land, _____(?) data transmission. The Sentinel-Asia project and participating members enhance their independent action in the preparedness phase. Moreover, Sentinel-Asia tries to enhance the disaster emergency system placed on training and gather the success stories.

Japan has organized the effectiveness on the importance of a space system-based of disaster management. We, therefore, would like to express our appreciation for the effort of the United Nations _____(?) based disaster management.

Sentinel-Asia is a project that Japan has constantly prompted under that typical disaster management system in the Asia-Pacific region aiming to construct a viable relationship that can be implemented(?) usually between Sentinel-Asia and the UNSPIDER. Japan has been exchanging views on the information in the consideration of the possibility of collaboration with these projects. We believe that it is important to construct such a relationship in order to advance disaster management activities effectively.

Mr. Chairman, we are very pleased to inform you that the Asian Disaster Reduction Centre, ADRC, applied as a Regional Support Office, RSO, of the UNSPIDER and has signed their Cooperation Agreement during lunchtime last week. The ADRC has acted as a focal point receiving requests for emergency observation in Sentinel-Asia and it has abundant experiences with disaster management support in the Asia area as a disaster reduction centre. Through this Organization, Japan is going to make significant contributions to UNSPIDER and we are convinced that it will be a positive development for the UNSPIDER Programme.

At the APRSAF-15 of December, two brand new initiatives were established. The first one is a project called the "Space Application For Environment" or the SAFE Project which observes climate change and its effect on human activities and the environment. We have already started the pilot project with Viet Nam in the fields of water resources management and land use monitoring. Working together with other interested countries, it is expected that the SAFE Project will expand its scope of activities and also increase in the number of the participating countries.

The second initiative is called the STAR Programme. STAR stands for Satellite Technologies for the Asia-Pacific Region. It is designed to support the capacity-building efforts of developing countries in the Asia-Pacific region towards their own satellite development. The arrangement of this Programme have been met since the APRSAF-15 last December and lectures about satellite technologies have just begun since the beginning of this month in Japan.

It is expected that the satellites developed by those countries may be able to provide imagery data to countries in the Asia-Pacific region through the _____(?) of Sentinel-Asia in the future.

We are convinced that the successful results will derive from these initiatives.

Next winter, the Sixteenth Session of the APRSAF will be held in Thailand under the auspices of the Thailand Geo-Informatics and Space Technology Development Agency, GISDA, and Japan. We welcome the participation of delegates from all interested countries, including those from outside of the Asia region.

Please feel free to take information from the pocket of APRSAF from the back of the room

including the report of the last session and the announcement of the upcoming session.

Regarding issues of space debris, Japan would like to express its deepest respect for the COPUOS Space Debris Mitigation Guidelines which have been endorsed in paragraph 26 of the Sixty-Second United Nations General Assembly resolution 62/217. Japan will continue to make a report(?) to mitigation of space debris. We hope that other nations will implement the COPUOS Guidelines on Space Debris.

With regard to GNSS, Japan is promoting two GNSS, the Quasi-Zenith Satellite System, QZSS, and MTSAT Satellite-Based Augmentation System, MSAS, also which are the augmentation systems of the Global Positioning System, GPS.

Japan has actively participated as a member country in the International Committee on Global Navigation Satellite System, ICG, in which cooperation on the utilization of GNSS and the competitiveness and inter-brevity(?) among GNSS are discussed.

Mr. Chairman, we think it is very important to have a long-term vision and to contribute to creating a prosperous society by participating in these international activities. From this viewpoint, we would like to express our respect for the efforts of the United Nations systems in these fields. Japan intends to promote international cooperation with the members and observers of the United Nations COPUOS so that the benefits derived from space activities can also be enjoyed by the whole of humankind. Thank you for your kind attention.

The CHAIRMAN (*interpretation from Spanish*): Let me thank the delegate from Japan for that very interesting presentation, the results of the APRSAF-15 and regional cooperation measures, of course, which are a fundamental part of our programme and the new SAFE Project on the environment and this goes hand-in-hand with educational efforts under safe, the SAFE Project, and everything that includes the support for technologies in the field of agriculture as in the case of Viet Nam. Thank you very much for your contribution.

The next speaker on my list is the representative of the Czech Republic, my friend and colleague, Petr Lála. You have the floor.

Mr. P. LÁLA (Czech Republic): Thank you Mr. Chairman. Mr. Chairman, first of all, our delegation would like to use this opportunity to express

how happy we are to have you chairing our deliberations again and a long time distinguished service to the promotion of space science and technology, particularly for the benefit of developing countries, gives us assurance that under your able leadership and the substantial report of the Secretariat, our Committee will make further progress in most items of its agenda.

At the same time, we would also like to pay tribute to the work of your co-Chairman, Suvit Vibulsresth of Thailand, and Filipe Duarte Santos of Portugal.

Mr. Chairman, distinguished delegates, let me briefly inform you on recent developments in the exploration and peaceful uses of outer space in the Czech Republic. For more details, please refer to the document A/AC.105/923 which is available at this session.

As you probably know, the long process of the accession of our country to the European Space Agency was successfully completed by depositing the signed Accession Agreement and incorporating the ratification documents at the French Minister of Foreign Affairs in Paris on 12 November 2008. Therefore, the Czech Republic, now the eighteenth ESA member State, attended the Space Council Meeting at minister level last November with full _____(?) for us for the first time.

Among many activities directly related to the Czech Presidency of the European Union, in addition to coordinating the development of the European Code of Conduct, of course, I would like to mention a Workshop on Securing Human Resources for the Future Space Sector, which was organized under the auspices of the Presidency by EURISSY, together with the Czech Space Office. It was held in Prague on 12 and 13 March this year when a total of 54 professionals from space agencies and national governments, industry and academies representing 14 countries assessed qualitatively and quantitatively the human resources needs of the space sectors in the mid-term future. The Report, including recommendations of this very productive Workshop has been presented to European officials.

From 24 to 27 March, 350 delegates from 31 countries and European institutions met in Prague for the Conference Towards E-Environment: Opportunities for Integrating Environmental Knowledge in Europe. The Conference was also organized in the framework of the Czech Presidency of the EU Council. It was really focused on information

exchange about the environment, the process to which the Global Monitoring Environment and Security Programme known as GMES, contributes significantly. Three half-day sessions of the Conference were devoted to GMES Start of Art(?), GMES Pre-operational Services, and Atmosphere and Climate at GMES. The Conference resolution has been adopted by participants at its concluding session and submitted to the Council of the European Union.

The Czech Republic has also participated in preparatory work of the Sixth Space Council, in close cooperation with the European Commission, the Council of the European Union, the European Space Agency and with Italy.

The Space Council took place in Brussels on 26 May as a joint meeting of the EU and ESA member States at ministerial level and was devoted to strategic issues of the European Space Policy. The Space Council Ministers have endorsed the Orientation Document which calls for support of data research and commercial activity in space and, therefore, to help Europe out of its current recession and to keep its high-level economical capabilities for the next generation of Europeans.

The Document specifically highlighted the potential of satellite broadband communication technologies in ensuring better access to modern information and communications technology, particularly in rural and remote areas.

The Ministers underlined the importance of securing the initial operations of the Programme and stressed the need to give funding priority to the operations of the GMES satellites. The Council reaffirmed the need to set space exploration in a vital(?) European political perspective. The first step in this process will be a proposed high-level political conference on space exploration which is tentatively planned for the second half of this year and for which the Czech Republic has expressed interest to host in Prague.

Mr. Chairman, a special event on the results and perspectives from the Czech Presidency for the European Space Policy and Programmes will be organized together with ESPI on 29 June at the Permanent Mission of the Czech Republic in Vienna.

I am also pleased to recall that according to the decision of the General Assembly of the International Astronautical Federation, the Sixty-First International Astronautical Congress will be held in Prague from 27 September to 1 October 2010. This

will be a great opportunity to host more than 2,000 topmost experts from around the world and present our scientific and industrial activities. As usual, the Congress Programme also includes a space exhibition with many large and small exhibitors. I hope we will have the pleasure to meet many of you at this opportunity in Prague in autumn 2010.

Mr. Chairman, regarding the agenda of our session, I would like to recall the position of our delegation on the issue of space debris. We have always considered this problem extremely important, particularly for the safety of space traffic in the future. With great interest, we forward information provided on national and international experience in practical applications of the United Nations Space Debris Mitigation Guidelines, and in particular information on the traffic accident which happened in orbit on 10 February this year.

It is clearly demonstrated that the collision problem is real and not just a theoretical question for long deliberations. At the same time, it is a pertinent argument in favour of the French proposal to add the item on long-term sustainability on space traffic into the agenda of the Scientific and Technical Subcommittee for 2010. Our delegation strongly supports this initiative. Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much for that interesting presentation in particular when you mentioned the work undertaken by the European Union doing with the strategic themes of the European Space Policy, a very interesting topic to be observed. And we, of course, are very pleased to hear about the upcoming meeting of the International Astronautical Federation to be held in Prague next year and we would hope that delegates here will go to attend this in the vast majority.

We thank the delegate from the Czech Republic. It is now my pleasure to give the floor to James Higgins from the United States. You have the floor.

Mr. J. HIGGINS (United States of America): Mr. Chairman, on behalf of my delegation, I would like to express our appreciation for the excellent work of Mr. Aboubekr Seddik Kedjar of Algeria as Chair of the Scientific and Technical Subcommittee this year. Under his guidance, the forty-sixth session of the Subcommittee made significant progress and addressed a wide variety of topics.

In addition, the United States delegation once again commends the outstanding work of the Office for Outer Space Affairs in supporting the Subcommittee meeting and its several working groups.

My delegation has noted the positive developments in the Scientific and Technical Subcommittee in addressing how it will proceed in addressing the UNISPACE III recommendations. We believe the flexible approach that uses multi-year work plans, actions teams where appropriate and reports by other groups on their activities is proving to be an effective means of implementing UNISPACE III recommendations in permitting us to address a broad range of relevant issues.

We fully endorse the report of the 2009 Scientific and Technical Subcommittee.

We would especially like to note the progress at the Scientific and Technical Subcommittee in reaching consensus on a Safety Framework for the Use of Nuclear Power Sources in Outer Space. Based on the thorough work of the Working Group on Nuclear Power Sources in Outer Space under the direction of its Chairman, Mr. Sam Harbison of the United Kingdom, and the Joint Expert Group consisting of Scientific and Technical Subcommittee and IAEA representatives, the Framework was approved by the Scientific and Technical Subcommittee and forwarded to the IAEA for review by its Commission on Safety Standards. In view of the Commission's endorsement of the Safety Framework at its meeting in April this year, we look forward to the full Committee's endorsement at this session.

Mr. Chairman, I would also mention that the United States was pleased with the successful completion of the Multi-Year Work Plan on the International Heliophysical Year, IHY 2007. The IHY Campaign was officially opened here in Vienna in February 2007 in conjunction with the forty-fourth Scientific and Technical Subcommittee session and was officially closed at the forty-sixth session of the Scientific and Technical Subcommittee this past February. It has been a truly international endeavour with countries from every region of the world hosting instrument arrays, providing scientific investigators or offering support in space missions. In order to continue to focus on this important area of research, we are pleased that the Scientific and Technical Subcommittee has agreed to take up a new multi-year agenda item on Space Weather Research.

On the matter of space debris, the February 2009 collision between the Iridium and Cosmos

satellites certainly served to refocus our attention on this issue. Our national experts will continue to pursue research to mitigate the effects of space debris and we look forward to hearing in the future how member States are implementing the United Nations Space Debris Mitigation Guidelines through appropriate national mechanisms.

At the Scientific and Technical Subcommittee session, we welcomed new information about the activities of the International Committee on Global Navigation Satellite Systems, or the ICG, which emerged from the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space and was formally established in November 2006. It continues to make significant progress towards the goals of encouraging compatibility and interoperability among global and regional space-based PNT systems and promoting the use of GNSS in its integration into infrastructures, particularly in developing countries.

The United States will continue to coordinate with COPUOS member States in support of the ICG in the Providers Forum.

As General Assembly resolution A56/20 has provided reports on activities of the International Satellite System for Search and Rescue are to be considered under this agenda item. Accordingly, I would like to briefly address United States participation in the International COSPAS-SARSAT Satellite Search and Rescue Programme.

Presently, the COSPAS-SARSAT Programme consists of 38 member countries and two participation organizations. The United States continues to provide a space segment to a contribution of the geostationary and polar orbiting environment satellite systems. Combined with contributions from our international partners, the COSPAS-SARSAT Programme now has six polar orbiting and five geostationary satellites that provide worldwide coverage for emergency beacons.

In 2008, COSPAS-SARSAT helped save 2,386 lives in 562 different search and rescue events worldwide. Since becoming operational in 1982, the COSPAS-SARSAT system has helped save more than 25,000 lives.

We would like to remind member States that as of 1 February 2009, the COSPAS-SARSAT system ceased processing the 121.5 MHz beacons and it is only processing emergency beacons operating at 406 MHz. However, given the large number of 121.5 MHz beacons that are still in service, outreach efforts

continue in order to provide information on this change.

The United States continues to assist in an effort to expand the use of the International Beacon Registration Database of COSPAS-SARSAT. This capability enables beacon owners who live in countries that do not register beacons to have a place to do so. It also enables nations that maintain a Beacon Registration Service but do not have it available online to manage their beacons within the International Database.

Accurate and timely beacon registration is vital to the success of a search and rescue response to beacon activation and it gives SAR authorities appropriate information about the beacon owner.

Additionally, the United States and its partners continue to explore the use of satellites in mid-Earth orbit to improve international satellite-aided search and rescue operations.

The United States is currently conducting proof of concept testing using its Global Positioning System satellites. It envisions that this new NEO system will improve location accuracy while reducing the inherent delay associated with satellites in low-Earth orbit.

The COSPAS-SARSAT Programme has adopted a new strategic plan to chart the system's future and is developing a quality management system that is based on ISO9000 and more in principles. A special Working Group met from 9 to 13 February 2009 in Savannah, Georgia, United States of America, to identify a set of qualitative and quantitative performance measures to support the strategic planning and the quality management activities. These performance measures are scheduled to be reviewed by the COSPAS-SARSAT Joint Committee that is presently meeting in Cape Town, South Africa.

And lastly on COSPAS-SARSAT, I would like to report that the United States, along with our partners and the Office for Outer Space Affairs, successfully hosted a Regional Training Course on Satellite-Aided Search and Rescue, from 19 to 23 January of this year in Miami Beach, Florida. A total of 22 nations participated in the training, including 16 that were sponsored by the United States and the Office for Outer Space Affairs. The Training Course sought to promote an awareness of the COSPAS-SARSAT system and to establish a formal interface with user countries for better understanding and coordination of the system's operations to improve

search and rescue services throughout the Western Hemisphere.

I would like to note that Ms. Yana Gevorgyan, a member of our delegation from the National Oceanic and Atmospheric Administration, will give a special presentation on COSPAS-SARSAT later this week.

In that regard, Mr. Chairman, I would like to reiterate that my delegation welcomes the special presentations made before this Committee and the Scientific and Technical Subcommittee on a wide variety of topics. We continue to believe that these presentations serve to provide complementary technical content for our deliberations and they provide timely information that is useful in keeping delegations informed about new programmes and developments in the space community, as well as illustrative examples of the application of space technology. Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much delegate of the United States, Mr. Higgins, for that presentation of yours. I would also like to say that it is very important indeed to talk about this COSPAS-SARSAT system given recent events. And when we hear that the COSPAS-SARSAT Programme enabled the rescue of more than 25,000 persons with the use of beacons, I believe that this is certainly something which we can only be satisfied with. And I would like to say that it is certainly very important to continue the training courses which are being run, especially for developing countries. This is a matter which is very topical and it is of vital interest and significance given recent events which have taken place. You have also referred to the potential of the system. Thank you very much once again Mr. Higgins for that presentation.

And now I have the honour of giving the floor to Ms. Pearl Williams, the delegate of Canada.

Ms. P. WILLIAMS (Canada): Mr. Chairman, Canada is pleased with the progress of the work and the conclusions of the forty-sixth session of the Scientific and Technical Subcommittee. The adoption of this session of the Safety Framework for Nuclear Power Source Applications in Outer Space, with the potential for the improvement of safety in space and on Earth, was a significant milestone and an achievement which has been many years in the making.

Throughout the Subcommittee's session, Canada had the opportunity to showcase the achievements and projects of the Canadian Space

Programme. A number of these were highlighted in our general exchange of views last week and at the Subcommittee's session, we also provided an opportunity to present an Annual Report on National Activities.

We have seen the progress made by the United Nations Programme on Space Applications and the activities of 2009 seem very promising. We also listened with great interest to the comments related to the agenda item on the implementation of UNISPACE III recommendations. The comments included a statement by Canada reporting on the work of Action Team 6 on Public Health which Canada chairs.

With respect to the agenda item related to remote sensing of the Earth, Canada completed a detailed report on the activities of several of its departments and its cooperation with a number of countries and regional organizations including the United States, Mexico, Peru, Argentina, China and the Mekong River Commission.

In support of the GEOS vision, Canada reported on its activities as part of the Group on Earth Observation and the Committee on Earth Observation Satellites.

During the Subcommittee's session, we welcomed the presentation by the Secretariat of the Group on Earth Observations. Canada believes that better coordination among international and regional entities with an interest in the peaceful uses of space can only increase the benefits for humanity.

On the issue of space debris, Canada indicated the urgency of moving forward with the tools that are currently at our disposal and intensifying our efforts on all fronts in order to build mutual trust among space-faring nations for whom space is an environment that must be sustained for the use of all.

Mr. Chairman, the use of space technology to manage natural disasters is important to Canada. As a member of the International Charter Space and Major Disasters, we have provided national and international organizations with a great deal of RADARSAT data. However, the existence of numerous initiatives makes flight(?) coordination necessary to ensure optimal use of resources for all.

During the Subcommittee's session, Canada reported on progress with respect to COSPAS-SARSAT, the International Satellite System for Search and Rescue which was mentioned by the previous speaker. Canada relies on the existence of the

COSPAS-SARSAT system daily as an essential tool for search and rescue operations and is actively working on future enhancement to the system. Canada, together with our international partners, continues to develop and test the next generation of COSPAS-SARSAT, known as MEOSAR, Medium Earth Orbit Search and Rescue Satellite. We are coordinating with GNSS providers to incorporate operational search and rescue payloads on future global navigation satellites in medium-Earth orbit, such as GPS, GLONASS and Galileo, in order to improve the coverage and speed of detecting and locating emergency distress beacons worldwide.

One of Canada's Ground Receiving Stations has been tracking experimental payloads on some GPS satellites in order to conduct preliminary MEOSAR trials and these have already shown the great potential of the MEOSAR system. We are currently linking this Ground Station to those in the United States, France and the United Kingdom to exchange data and further improve the system.

Canada is moving forward with a space-based neo-detection and characterization project. We were pleased to provide the Subcommittee with a technical presentation on Near-Earth Object Surveillance Satellite NEOSAT, the first Canadian space telescope designed to detect and track asteroids as well as satellites. NEOSAT's two missions are to make observations to discover asteroids and comets near the Earth's orbit and to demonstrate the capacity to observe and survey satellites and space debris. Canada continues to innovate and demonstrate its technological expertise by developing small satellites.

Mr. Chairman, Canada welcomes constructive initiatives which contribute to finding solutions for space debris, threats and impacts of space weather on our space Infrastructure and Earth equipment and installation. Therefore, Canada was very supportive of the decision of the Scientific and Technical Subcommittee last February to review at this meeting a proposal by France for a new agenda item which would establish a working group within the Scientific and Technical Subcommittee on the long-term sustainability of outer space activities.

Canada was also supportive of the proposal to have a new agenda item on international space weather.

Mr. Chairman, as we mentioned earlier, Canada is pleased with the results of deliberations held during the Subcommittee's session. Therefore, we

would like to support the adoption of the report by the Committee. Thank you very much Mr. Chairman.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much Canada. I have listened to your statement with great pleasure. You have referred to the activities that Canada has conducted in ever so many fields. You have referred to your work with countries in your region, with your cooperation with Peru and Mexico, China, and you have referred to the Mekong River Commission and how you are involved in that work. This was all very interesting and I am sure that at the upcoming Conference of the Americas, which is going to be staged soon which will probably be staged in Mexico, will be very interesting indeed.

I would now like to give the floor to Italy, the next speaker. You have the floor Madam.

Ms. S. DI CIACCIO (Italy): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, the Italian delegation is pleased to join other delegations in congratulating the Scientific and Technical Subcommittee on its forty-sixth session for the outstanding results achieved under the chairmanship of Mr. Aboubekr Seddik Kedjar.

Italy, through the Italian Space Agency, supported the United Nations COPUOS for the establishment of the United Nations Space Debris Mitigation Guidelines and continues to be committed in the Space Debris Mitigation Policies. Indeed, such Guidelines are already implemented in all the Italian Space Agency projects and action will be taken to implement them also in military and commercial projects.

Since 1998, the Italian Space Agency is a member of the Inter-Agency Space Debris Coordination Committee and participates in dedicated international fora as the ISO Working Group and the European Technical Coordination Network. Italy believes that sustainability of outer space exploration activities is a matter of concern for space-faring nations and regional space organizations as well as for commercial satellite operators. Sustainability of space activities in Earth orbit over the long term could be achieved only through ambiguous common cooperation rules among all countries and in particular among the COPUOS member States.

As already stated at the Scientific and Technical Subcommittee, the Italian delegation is convinced that following the Iridium-33 and Cosmos-2251 collision event, there is the need to increase the

international efforts of coordination in order to promote a warning alert system on a voluntary basis.

As stated during the panel discussion, concrete results in the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, UNISPACE III, have been achieved but still more can and should be done. We believe that the potentialities of space science and technology for sustainable development have to be more and more studies and ways for their implementation explored.

We are also convinced that some recent missions where the Italian Space Agency is involved showed the strong commitment of Italy in maximizing the benefits of existing space capabilities.

In the field of disaster and natural environment management, for instance, we would like to mention COSMOS-SKYMED which will be presented in a technical presentation on 10 June.

Mr. Chairman, Italy supports the objectives of the International Committee on Global Navigation Satellite Systems. In particular, our delegation would like to remind that the Italian and French as coordinators among providers of the national and international navigation systems and as focal point for international exchange of information related to its activities.

As already announced, the 2010 Assembly of the International Committee on Satellite Navigation will be hosted next year in Turin by Italy and the European Union.

In May 2009, Italy hosted the yearly European Navigation Conference in Naples at the Italian Institute of Navigation. The Conference gave the participants a unique opportunity to exchange updated information about the technology progress in the radio-navigation sector with emphasis on satellites, ground segments and user segment technologies in the frame of the Global Navigation Satellite Systems.

Mr. Chairman, through its scientific community, industries and under the coordination of the Italian Space Agency, Italy is at the forefront of the space science and plays a significant role in several missions in the field of cosmology, fundamental physics, astrophysics and solar system exploration.

The last success in the field of cosmology is the participation to the ESA Herschel-Planck mission launched on 14 May 2009. The participation of the

Italian scientific community is focused on the measure of the cosmic background in microwave frequencies that will allow an improvement of our knowledge of the region and evolution of the Universe.

The scientific and technological objectives that Italy has achieved in the sector of astrophysics missions since the launch of the BEPOSAX satellite has made the Italian Space Agency able to participate in the most important missions in the last years, Swift(?) and GLAST/FERMI with NASA and XM with ESA. And finally to develop and launch a nationally-funded small scientific mission named AGILA(?) which is targeted at studying the gamma ray phenomenon.

Regarding the exploration of the solar system, the Italian payloads give important results on several missions. As an example, the Mars(?) radar system on the Mars Space Probe and the Shuttle(?) radar system on board the NASA Mars Reconnaissance Orbiter Probe, have given some evidence of the presence of water in the Mars sub-surface.

Among the other results achieved in the last month, it is worth mentioning the better understanding of Saturn and its satellites, the CASSINI-HUYGENS missions. The proof of the presence of methane in the Martian atmosphere and the better understanding of the Venus atmosphere.

Italy is playing a key role in the study of comets and asteroids as well as pre-module bricks of the solar system through the participation in the ongoing missions down NASA and ROSETTA ESA.

The month of December 2008 of the American Institute of Physics Bulletin of Research News published the list of the 10 2008 most important scientific achievements, among which five were related to research activities and missions where the Italian Space Agency, the Italian scientific community and the Italian industries played a significant role.

Another important mission in which Italy participates with intent of contributing in the advance of the scientific knowledge of space is the Mars 500. A crew of six embarked on a simulated mission to Mars and are experiencing all aspects of a mission to the Red Planet and a group of Italian scientists studying the six volunteers by running a series of measurements and tests which aim at measuring the responses of humans to those particular conditions. The study is called RS Astronauts Announcement Resistance to Stress and the first results are already available. The team conducted a series of experiments

designed to investigate the biological mechanisms, psychological and physical form, the individual _____(?) ability to stress and to use the data obtained to develop corrective measures.

On 28 April, the final qualification test of VEGA took place at the Salto di Quirra Inter-Force Test Range in Sardinia, Italy. This success is testament to the Italian tradition rooted in research and development of space transportation systems. The design of the VEGA carrier, in fact, was born in Italy and subsequently endorsed by the European Space Agency. Italy supports the Development Programme with 65 per cent of funding. The launch scheduled for the end of 2009 will crown a decade for the realization of this new European launcher.

Mr. Chairman, following the tradition to name the International Space Station modules, NASA has chosen to name Node-3 Tranquillity after the Sea of Tranquillity, the Lunar landing site of Apollo 11 in 1969, highlighting the link between the International Space Station and the Moon. The Node-3 connecting module is the last element of the Barter Agreement by which ESA supplied NASA with International Space Station hardware, including the Cupola and two node modules, Node-2 and Node-3. An Italian prime contractor gradually build all these parts in Italy.

Mr. Chairman, Italy is strongly committed to contribute to the advance of scientific knowledge of outer space and of technological development for the benefits of humankind.

Mr. Chairman, thank you for your kind attention.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much to the distinguished delegate from Italy for that presentation in which she highlighted the main aspects of coordination and cooperation with the Italian Space Agency and the role it has played in very important topics such as cosmology, astrophysics, solar system and the traditional Italian work in terms of design and research and transport systems. Thank you very much for that presentation.

The next speaker on my list is the representative of Turkey, Cem Ulusoy. You have the floor.

Mr. C. ULUSOY (Turkey): Thank you Mr. Chairman. As I am taking the floor for the first time, on behalf of my delegation, I would like to express our

firm belief that under your able leadership this session will come to a successful conclusion.

Also we wish to thank the Secretariat for their outstanding efforts in preparing this session.

Turkey believes that long-term sustainability of outer space activities deserves particular attention mainly due to (a) raise(?) to attempt continues increase in the activities of governments and private entities in outer space, (b) proliferation of space debris, and (c) the growing risk of using ground-based weapons against low-Earth orbit spacecraft.

We share the view that in order to effectively deal with these issues, limited frequency resources and orbital positions should be managed in a more coordinated and centralized manner. The content of space law needs to be adjusted accordingly and an international mechanism to oversee these issues should be established.

In this vein, our delegation believes that firstly there is an urgent need to increase coordination and cooperation in the international arena as regards the outer space affairs. Secondly, the disorder in the outer space activities which might emerge as a consequence of uncontrolled proliferation of usage of space systems, bears a high risk of harming long-term sustainability of outer space activities. Thirdly, the arrangements to secure long-term sustainability of outer space activities are also important for utilization of outer space in egalitarian conditions, taking into account of the needs of the nearly space-faring and other developing countries.

To complete my remarks, our delegation supports the French initiative to incorporate a new item to the agenda of the Scientific and Technical Subcommittee under the title "Long-Term Sustainability of Outer Space Activities". Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much the distinguished representative of Turkey. We very much welcome your remarks. Every time a country, as your own, expresses its opinion, we welcome this. We welcome your active participation in the Scientific and Technical Subcommittee and the Legal Subcommittee. Thank you.

The final speaker under 7 is France, Mario Hucteau. You have the floor Sir.

Mr. M. HUCTEAU (France) (*interpretation from French*): Thank you Chairman. Chairman, to begin, we would like to, of course, say that we approve the report of the Scientific and Technical Subcommittee and we wish to thank its Chair, Mr. Seddik Kedjar from Algeria, for the two years work at the head of that Subcommittee.

And before I go into the details of space debris, we would like to highlight the importance of the Scientific and Technical Subcommittee and with the exchange of views that takes place during the sessions of that Subcommittee. As the United States said, there are technical presentations that are provided that are quite interesting.

As you stated earlier Chair, I would like to say a few words on the COSPAS-SARSAT rescue system. As you said, day after day we are working to try to find and to properly locate emergency and distress. At times these do not work. I can cite the most recent disaster with the Air France flight. So progress still remains to be major in this type of situation. But bear in mind that in this case, and in the case of catastrophes of this nature, technology cannot really fulfil all of our hopes. In any case, within the OCE(?) and COSPAS-SARSAT, we hope to work towards solutions.

Just a few words about COSPAS-SARSAT. You know that France is one of the providers of satellite instrumentation that help locate these emergency beacons and this in partnership with the United States. The Programme is based on an Intergovernmental Agreement and this was signed in Paris in 1988. France continues to work under this Agreement by providing the necessary instrumentation, as I said, in relation with the United States, Canada and the Russian Federation.

As the United States delegate pointed out, COSPAS-SARSAT has developed within the medium orbit through the MEDIASAR system, using both United States GPS satellites as well as European Union satellites Galileo and the GLONASS system from Russia.

Concerning space debris, this is of crucial importance for the future of the space realm, you know that the amount of space debris is increasing regularly and recent events such as the collision in February 2009 between satellites Iridium-33 and Cosmos-2251 are important sources of new space debris and this in orbits that are already very crowded. This highlights the risk for operational satellites.

The CNES in Toulouse currently monitors 15 low-orbit satellites as well as two GSOs. Prevention measures recommended by COPUOS and the IADC are voluntary implemented and have been for years. End-of-life measures, that is re-orbitation or end of orbit or pacivation are the most efficient measures after the dis-orbiting of SPOT-1 in 2002 which was successful. The CNES is currently preparing the same operation for SPOT-2 this summer. Geostationary satellites TELECOM-1A, 1B and 1C, TDF-1,2, TELECOM-2A and 2B have been re-orbited and pacivated with success. Future studies on TELECOM-2C and 2D are currently under way concerning their future operations.

In order to reduce risk here, there is an operational service for collision forecast set up in Toulouse. This is the service that tries to identify any potential close calls between satellites that are monitored by CNES and are part of our Registry. When we see that a dangerous situation is a possibility, the trajectories are calculated using the available radar in order to specifically identify the trajectory of the space debris. The satellite's trajectory is also known to a greater detail at the Control Centre and it is possible to calculate the characteristics of the probability of collision. When we see that there is unacceptable risk here, avoidance manoeuvres may be decided upon.

Now with this system, several alerts have been detected, three to four per day, and avoidance measures are taken three to four times a year with this, of course, and may increase considerably in the future. I believe that it is in the interest of all agencies and operators to mitigate collision risks because it is particularly concerned low-orbits between 700 and 900 kilometres where we have a high density of objects as well as geostationary orbit where the life span of debris is almost infinite. Greater cooperation between actors here is necessary. We have to exchange orbit parameters, information of other operators when we have, for example, end-of-life or other exceptional movements under way as well as the different data for monitoring space objects which are not classified and its sharing.

All of this leads us to ask for the long-term sustainability of outer space activities being a part of the Scientific and Technical Subcommittee of COPUOS on its future agendas.

And just in conclusion, let me say that you all in your pigeonholes have received a Working Paper. It gives you the results of the Working Group meetings we held last week concerning a Multi-Year Work Plan which we would ask this Committee accept as a part of

the Scientific and Technical Subcommittee's Work Plan. In order to finalize the text, which will be submitted to this Plenary, we are asking delegations to attend an informal meeting tomorrow at 2.00 p.m., Conference Room VII, so that we can work on this text and finalize the proposal. Thank you Chair.

The CHAIRMAN (*interpretation from Spanish*): Let me thank the delegate of France for that statement and also for the effort that your country has made under COSPAS-SARSAT, a very important initiative taking into account the recent catastrophe that has afflicted your country as well as the responsibility of CNES to voluntarily follow up on the guides that this Committee has produced concerning space debris, dis-orbiting, all of this work is very important. It is also important what you said at the end that increased cooperation between different actors, that it is absolutely necessary, in my opinion, to continue this kind of cooperation, exchange of orbital parameters between operators in the case of exceptional manoeuvring of objects. Thank you very much for those remarks and we take note of your announcement of the consultations on the French proposal. Thank you.

Chile, you have the floor.

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): Thank you. Let me again congratulate you on your French. I am very impressed. I think that in the future and this is a very positive development as well.

Please let me refer now to the proposal advanced by the distinguished representative of France, a very substantive initiative which we fully appreciate. There is one small detail here. When France presented its document on long-term sustainability, you have to clear up how this is set in Spanish, Chair. They mentioned something that was already discussed. They may remember in the Scientific and Technical Subcommittee we debated on space debris and my doubt is this, how can we make progress here in terms of sustainability of outer space activities if we do not have guidelines and legal texts that govern space debris. The only scientific basis really only can give us orientations in the scientific field. How is the difficulty for developing countries who many times are not in a position to be able to follow up on these proposals? So let me take this opportunity to ask you Chair, through you, if we should not in the future, the very immediate future, think about sustainability here, long-term sustainability and whether or not this should not include new legislation on space debris.

In recent times we have had these collisions which could have been very catastrophic, much more than they were, between different space objects and this is really a lot of work we have before us here.

A great deal of space debris has been created and we only have very general legislation here in terms of responsibility or liability, you know objective liability when we have this kind of accident but does not cover the whole spectrum and the more specific topic of space debris. So how can we tackle the issue of long-term sustainability if one of the main, let us say, “enemies” of sustainability, space debris, is at that stage. I would like to have the opinion of the French delegation on this so that we can begin a debate on this. Our position has always been one of being constructive and cooperative with these proposals. Thank you.

The CHAIRMAN (*interpretation from Spanish*): I turn to the delegate of France to know whether they wish to respond. It is a very important question at this time. What we do is we have significant guides that were reached on a consensus basis concerning the mitigation of space debris but his question is to know whether, in your opinion, we need a stronger legal regime as he described it. You have the floor France.

Mr. M. HUCTEAU (France) (*interpretation from French*): Thank you Chair. Indeed, on the first point concerning the Spanish translation, I will let the Chairman answer that question. Concerning the second one, I think it is a bit premature to respond at this time. We have really decided to work on this point within the Scientific and Technical Subcommittee. Let us stay there with this for the time being. I would, as I said, invite you to meet with us tomorrow at 2.00 p.m. if you wish to participate in our, let us say, informal consultation so that we can move forward on this question. That is, I think, all we can do for now.

The CHAIRMAN (*interpretation from Spanish*): Are you satisfied Chile?

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): No.

The CHAIRMAN (*interpretation from Spanish*): I do not want to try and anticipate the debate and discussion here because there is times like this but Colombia has asked for the floor, Switzerland after, Chile first.

Mr. R. GONZÁLEZ ANINAT (Chile) (*interpretation from Spanish*): Thank you Chair. First of all, the fact that we are debating this means that this

Committee is very much alive and I am very pleased with that and I congratulate you because you are stimulating the debate here. There were some very dark periods that I wish not to remember where we spent entire sessions in which people just came and read speeches. Some people took a nap and woke up only to make their own speech and then went for coffee.

This time it is completely different. We have got the beginnings of a big debate stimulated by you, by France, and I think the technical presentations can wait. That is not the most important point. What is the most important point? Our deciding policy here, negotiations of a political nature and all of the time we spent on it is certainly well spent with all respect to what was said by France. I do not think it is premature.

Now, how many more accidents do we have to have before we start coming up with legal regulations here when our duty is to act in a preventive manner? Secondly, how could it be premature if we already have guidelines approved by the Scientific and Technical Subcommittee? And thirdly, I want to help them. I am going to help the French delegation move this document forward, that document on long-term sustainability, but we have to have some more elements here that are part of the sustainability they are talking about. And one of the main components of sustainability here is dealing with the problem of space debris, a way in which does not have an adequate legislative framework around it at this time.

The CHAIRMAN (*interpretation from Spanish*): Colombia.

Mr. J. H. OJEDA BUENO (Colombia) (*interpretation from Spanish*): Good morning Chair and let me thank Professor Raimundo for his remarks on this incipient discussion Colombia from the very outset has supported the need for discussion on sustainability whether it is “sostenible” or “sostantabilidad”, well actually we say “durable(?)” in Spanish which at times means something different. In any case, I think we all understand it, it means preserving the activities in human security forever, not long term, but forever.

In this respect, Colombia has always felt that there was a need for a debate on sustainability and that there was a legal framework that was necessary as well and this Committee, I think, cannot not attend to this question, leaving us just in the hands of scientists and technicians. That would not be responsible.

In response to what was stated by the distinguished delegate of Turkey who mentioned studying and debating sustainability on an equitable basis, on a rational basis, as this is done in the ITU and in our Legal Subcommittee as well, the principle of equity here, the kind of sustainability and equity and rationally. This has always been our position and we very much want to contribute to the French proposal which we welcome and which we will collaborate with. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you Colombia.

Switzerland has the floor.

Ms. N. ARCHINARD (Switzerland) (*interpretation from French*): Thank you Chair. Since this is the first time that we take the floor, please allow me to express our satisfaction seeing you at the head of our work again.

I also would like to take this opportunity to give our heartfelt thanks to all members of the Bureau as well as to the Director of the Office for Outer Space Affairs for the excellent work they have deployed.

Chairman, Switzerland feels that it is important that the Scientific and Technical Subcommittee think about how to make space safer and how to make space operations more sustainable and during this session. This is why Switzerland fully supports the French proposal in including on the Scientific and Technical Subcommittee's agenda beginning 2010 a new item entitled "Long-Term Sustainability of Outer Space Activities".

We also support the Multi-Year Work Plan as expressed in its latest version as well as the setting of an informal working group in 2010.

The CHAIRMAN (*interpretation from Spanish*): Thank you Switzerland. You used another word here, saying "durable", so we have got the whole range of words that cover sustainability. It is, of course, the same idea.

Pakistan has the floor.

Mr. I. IQBAL (Pakistan): Thank you Mr. Chairman. In our view, space debris is an important issue. It is going to affect all of us. Therefore, we request that there should be some guidelines and legal regime in place but what we can suggest is expeditious action on this issue through consensus. Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from Spanish*): Thank you Pakistan.

If there are no other delegations, and there are, Brazil.

Mr. J. M. FILHO (Brazil) (*interpretation from Spanish*): Distinguished Ambassador Ciro Arévalo, since this is the first time that I take the floor, please allow me to express the fact that we are sure that under your leadership we will reach a very successful conclusion.

I would also like to commend the two Vice-Chairmen from Portugal and the Philippines(?) (Thailand?).

Now this issue of sustainability, or "durabilité" or "viabilité" in outer space activities is a very important one for Brazil. We believe that the French initiative that we have, in fact, contemplating for years now, this is nothing new. This is extremely important, so important, that in next August we will be promoting in the main Law School in Brazil, the University of São Paulo, a Workshop on Space Law. And among the topics of that Workshop we have sustainability of space activities. So our interest here is to have foreign guests from countries that are very active in space activities to come and to discuss the legal and political implications of this subject which is very topical.

Now, of course, we are trying to move forward in space activities in an organized fashion, in a normal fashion, and this means that we must not just study the scientific and technical aspects, which, of course, are fundamental, but the legal and political aspects as well. It is a complex topic. We must have the courage, the talent and skill to confront it from every viewpoint.

The adoption of this topic should not only be of great importance, of course, for the Scientific and Technical Subcommittee but for the Legal Subcommittee as well. That is our position on this question, as I said, which is of prime importance for space activity. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you Professor Filho for that statement.

The distinguished Ambassador from Ecuador has the floor.

Mr. J. BARBERIS (Ecuador) (*interpretation from Spanish*): Thank you Chair. Having heard the reactions to the French proposal, let me just reiterate that the Ecuadorian delegation, in its opening statement, stated that we hoped that we would go into more detail on this proposal. At this time, let me support the idea that this topic has taken on great importance and going beyond scientific and technical aspects. We were one of the first to say that this issue of sustainability of outer space activities had to be examined by the Legal Subcommittee as well. One cannot exist without the other, the Scientific and Technical Subcommittee and the Legal Subcommittee. We think that the effort here then should be undertaken by both Subcommittees. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you Ambassador Barberis.

Venezuela has the floor.

Mr. R. BECERRA (Bolivarian Republic of Venezuela) (*interpretation from Spanish*): Thank you. First of all, we are very pleased to see this debate beginning here. We would like to commend the Chilean delegate. He is quite right, this is a substantive issue that we face and we cannot deal with this only through a scientific and technical approach, there is a legal approach as well. So just to add that there is indeed an interconnection between the two Subcommittees and I am sorry that up to now we have had these kind of separate, as if these two entities were not part of the same organism. We really to have to work so that there is more and more fluid interaction between the two in relation to the past.

There are indeed some critical questions concerning sustainability that we have to deal with and we would support what was said by Venezuela(?) (Ecuador?) and Brazil. We have to work on this basis in dealing with sustainability, that is by ensuring there is very close connection between the Legal Subcommittee and the Scientific and Technical Subcommittee. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you.

Anyone else wish to take the floor?

I see no one. I think we can say that we have had a discussion on this. I have always tried to stimulate debate and discussion. That is, in fact, the Terms of Reference of this body in order to reach consensus positions. Thank you one and all for your remarks.

We still have one delegation on our list, an observer, Azerbaijan, Mr. Ismayilov. You have the floor Mr. Ismayilov.

Mr. G. ISMAYILOV (Azerbaijan) (*interpretation from Russian*): Thank you very much Chairman. Chairman, from the 11 to 15 May 2009, in Baku, jointly with the United Nations Committee on Outer Space, the ESA, and the USA, we held a seminar on the theme of the "Practical Implementation of Global Navigation Satellites". And on the Government side, the Azeris were represented by the Ministry of Communications and Information Technologies. There were 48 experts from abroad from 26 countries and roughly 50 Azeri specialists who work in various areas of satellite navigation. There were eight Plenary Sessions with 36 presentations made and three Working Groups were created by conclusion of the Symposium in order to determine how best to ensure cooperation in the future on the activities to be undertaken in the various spheres and in order with interest the proposal to establish a regional treaty, etc., on global satellite navigation and this to be set up Azerbaijan.

I would like to refer to some of the involvement in activities that we have on the Azeri specialist side. These are, for example, international aero-cosmic experiments which are being conducted on the north-west area of Azerbaijan with a comparison of outer space and natural measurements on plant cover, a joint project on plant cover and soil use, and this run with the FAO resulting in establishing a database for planning of successful work in agriculture in Azerbaijan and jointly with Caspian States, we ran a joint project called the "Caspian Sea: Planning Our Future Activity".

At present, we in Azerbaijan are establishing and developing our Outer Space Policy and I would like to indicate that the Decree establishing the space industry and the placing on orbit of telecommunication satellites was signed by the President of Azerbaijan on 4 November 2008.

Our Programme is as follows. We are interested in developing outer space strengthening activities with an impact on national information security profiles and ensuring technical development which is important for the Azeri Republic, developing a land-based infrastructure to control and manage the satellites operated for various purposes, establishing operational systems to forecast and control climate change and natural disasters, establishing systems of multi-purpose aerospace monitoring over our territory,

the use of GIS technologies to prevent environmental pollution, mitigate harm resulting from natural and manmade disasters, establishment of a legal basis, establishing _____(?) systems for control over transport management, etc.

We certainly are looking forward to mutually beneficial and fruitful cooperation with the United Nations Outer Space Committee in order to pursue successful endeavours in the future. Thank you very much.

The CHAIRMAN (*interpretation from Spanish*): I would like to thank the observer of Azerbaijan for having participated in our debate and I would also like to make an appeal to all the States speaking as observers. You may, of course, speak in the course of the debate. Please do not hesitate to do so. I would like to thank Azerbaijan for having spoken and made a statement. He referred to the development of the Space Policy of Azerbaijan and he also referred to the launching of a satellite which is an excellent piece of news indeed. Thank you very much for that statement.

Technical presentations

We have now wrapped up our list of speakers as concerns States and observers. I believe that we can now take up our technical presentations.

I would like to give the floor to Mrs. Bander from the United States who is going to be referring to sustainable development, exploration of outer space and telecommunications. You have the floor Madam.

Ms. A. BANDER (United States of America): Thank you. The Center for Strategic and International Studies, CSIS, that is a bi-partisan non-profit think tank in Washington D.C. We cover a variety of foreign policy, national and international security topics and space is key to many of these issues. Therefore, since 2004, the Space Initiatives Project at CSIS has addressed global space policy issues and opportunities.

Our Programme starts by recognizing the development that happens through space activities from the benefits to international security garnered through cooperation in space to the innovations of space that have improved the way we live to the inspiration that space activities provide.

However, we believe that all of that beneficial development that happens through space can only be sustained if there is sustainable development in space. For instance, there are an ever-increasing number of

players operating an ever-increasing number of systems that requires better coordination between those activities.

Further, in order to continue these activities into the future, current sources of financing must be sustained and new ones found. Public support is important not only for these financing reasons but also so that future generations remain interested in space-related careers.

Space initiatives at CSIS breaks down this need for sustainable development in and through space in three ways: governance, financing and public support.

In our work on governance, we consider the need for international governance structures and examine how key issues like interoperability, redundancy and standardization get addressed. For instance, in 2006, we convened a Working Group on Inoperability bringing in experts from other industries to share their approaches to the issue.

In finance, we promote the use of public/private partnerships and increase industry to industry cooperation.

Our work in public support is through space education, something that crosses borders and generations.

Working with the IAS and UNESCO, we are building a web portal, a guide to space education resources created by space agencies and other organizations at the grade-school level.

We are also working on an initiative at the university-level that would bring together engineering students around the world to work virtually on a common project.

As part of our work on governance, in April 2008 we held the First Global Space Development Summit, co-organized with the Chinese Society for Astronautics. Participants from 15 countries, academia, non-profit and international organizations came together in Beijing to discuss space development. The Summit resulted in the Beijing Declaration.

The Beijing Declaration recognizes the important role that space plays in foreign policy, international security and the global economy and recommended two areas that are ripe for further international cooperation: Earth observations in the form of the Group on Earth Observations, and

exploration through the proposed creation of an International Lunar Base.

The other recommendation to come from the Beijing Declaration was that we needed to do this again, that the Global Space Development Summit was not a one-time event.

Therefore, we are pleased to announce the Second Global Space Development Summit held this November in Washington D.C. The Summit will be co-organized by the American Institute of Aeronautics and Astronautics, the Chinese Society for Astronautics, CSIS, and the Space Foundation, with co-sponsorships by the American Astronautical Society, the International Academy of Astronautics, and the International Astronautical Federation, with one day spent on exploration and the second day spent on Earth observations.

On the first day of the Summit, we will examine questions of space exploration governance looking beyond the International Space Station to what future exploration cooperation might entail. There will be a particular focus on the International Lunar Base that was recommended by the Beijing Declaration.

On the second day, the Symposium on Earth Observations will examine the importance of Earth observations to a variety of national and international issues and discuss the current state of cooperation, particularly with regard to developments of the Global Earth Observing System of Systems.

I welcome any interest about the programmes or reports that I have referred to. Most of the reports are available on our website as well. Thank you very much.

The CHAIRMAN (*interpretation from Spanish*): ... (*no interpretation*) ... International Centre for Studies. I would also like to refer to the Beijing Centre's statement that states that this is of major importance that States that outer space is of major political importance and it is necessary to place stress on international cooperation.

I believe that at the end of the presentations, we could usefully have a question and answer period. But first we are going to be listening to all of the technical presentations and if a little bit of time is left over, we will be able to have a question and answer period.

Now, our second presentation of the morning will be by Mr. Yuri Kotov of the Russian Federation

and that is going to be telling us about the Solar Mission Coronas-Photon: the Scientific Objectives and First Observational Results.

Mr. Y. D. KOTOV (Russian Federation) (*interpretation from Russian*): Chairman, distinguished delegates, I would like to thank you for having given me this opportunity for presenting to you a short description of the Russian satellite Coronas-Photon and the initial results from its orbital work.

This is the third satellite in a satellite series which have been launched to study the Sun, solar physics, and this on the basis of instruments launched on to near-Earth orbit.

Preceding this satellite, there was a Coronas-I launched on 2 March 1994, followed by a Coronas-F launched on 31 July 2001, and the Coronas-Photon was launched on orbit on 30 January this year. This is a satellite which is the first Russian satellite launched by a fundamental outer space project team after a significant break in our work and indeed our State University is the major research team involved and the satellite itself was designed by Russian organizations called NIIEM and VNIEM. The Coronas can be deciphered as being the comprehensive orbital near-Earth observation of solar activity project and this project is being conducted and financed by the Russian Outer Space Agency, together with the Russian Academy of Science.

Now the main object of the Coronas-Photon Project is to indeed conduct a detailed study of the high-energy processes taking place during solar flares on the basis of monitoring of the electromagnetic radiation taking place of a broad range of energies going from ultraviolet vacuum to gamma radiation.

I would like to briefly refer to the present problems relating to solar flares and eruptions. Some of them are unresolved in spite of the many projects conducted to study these patterns of behaviour from Earth. In May 1973, the American Station Skylab opened the era of ultraviolet and Roentgen solar astronomy. In subsequent years, indeed the latest generation of optical systems were brought to bear and digital focal instruments on board satellites were brought into operation and this on various satellites, the Yoncon(?), the SOHO, the TRACE, RESI, CONAS(?), etc. Orbital solar telescopes with ultraviolet radiation made it possible for us to achieve fabulous angular resolutions down to fractions of a second and the use of land-based optical and radio telescopes also brought us forward.

However, if we take a look at the accuracy of our forecasts of solar activity, we see that there can be amazingly quiet periods of solar activity that does not match various models of activity that we have established. For example, here you have the determined and the forecast models which are presented. And here you have the same time periods on these slides and you have the forecasts shown which was projected three years back and the one that was established in 2009. The green line gives you the present state of affairs.

And so you see that there has been a shift of three years and there has been a change in the level of activity. So obviously there is a lack of correspondence here and this is why we may have an exaggeration of risk which emerges and this with an impact, of course, on our outer space flights.

The predictability and reliability of our predictions is not particularly convincing and this shows that we do not have enough data allowing us to properly forecast solar activity. Sometimes there is an irregular intervention in our solar cycles and this basically disturbs the forecast that we have. However, by disturbing, of course, it also affords us more understanding of what is actually going on. So it is necessary for us to see exactly to what extent any changes in the solar flows actually, what the impact of solar flow changes are on global climate changes. We have seen, for example, increasingly that most probably it is the manmade activity on Earth which has an impact on global climate change on Earth. However, we see also that the variations of solar radiation, the Sun taken as a star, can also have a significant role to play in global climate change because there is a very significant role played in the observed potential which is displayed. And in this fashion, we have to take a closer look at this activity and relate it to the upcoming anomaly within the 11-year period which has been determined as being a very interesting observation benchmark(?).

I am not going to be giving you all the detail on this but here you see on the graphs that if you take a look at solar activity in sunspots over the past 400 years, the temperature does correlate within our understanding. The main goal of this mission, of this project, is to conduct a detailed study, as I have said, of the high energy processes in solar flares on the basis of our monitoring of the electromagnetic hard radiation in a very broad energy range.

On this slide, we are seeking to show the spectrum of the electromagnetic radiation from a given very intense flare which allows us to determine the

characteristics for our instruments to predict all of the processes taking place and the intensity of those processes.

The main objectives of the mission are presented here on this slide. There is a more detailed description of the processes and the observation goals. You can see this so I will not be presenting this orally. Additional scientific objectives for the mission are missions in the area of astrophysics, of cosmic rays, as well as better study of the Earth upper atmosphere and improvement of the instrumentation for such observation.

This slide presents the various scientific organizations involved in this work and here are, I am giving you the scientific institutes. They were the institutes involved in the design and development of the various instruments carried on the satellite. Eight of these are Russian, three Indian, one Ukrainian and one Polish organization institute is involved. And the foreign equipment which is mounted on the satellite is financed by the Russian side.

The Russian organizations certainly are more numerous than the others. Here you have an enumeration of the main designers of the instrumentation carried on the satellite.

Now the various instruments which are carried on the satellite and the characteristics of these instruments is listed here. This in order to register the gamma ray spectroscopy, for example, to start off, solar neutrons. The capability of this instrumentation, of course, ensures a proper spectroscopy. All of these instruments can work in various regimes of observation depending on the rotation of instruments which is insured(?). These instruments do not register solar imagery directly, they just reflect the impact thereof.

The TESIS-assembled instruments gives you the entire series of spectral instruments used in engaging in these experiments. This goes from eight to 335 angstroms.

The technical resolution gives you a fraction of a second with one to five degrees, two to five degrees occasionally. These instruments are also presented on this slide. Some of these optical elements are used in concurrence with others.

Here I am going very quickly through my slides. I am giving you a presentation of the scientific payload on this satellite. This is how the given instruments are carried and where they are placed on the satellite which here you get the various axes which

are presented. The instruments are properly placed so as not to interfere with each other nor to interfere with a proper presentation to the solar end.

This is the scientific payload. This gives you a presentation of the way it actually looks. This gives you the scientific parameters and specifications. The satellite is 660 kilograms. This was launched from the northern launching pad and it gives you the proper range of satellite orbital movement. This is a Ukrainian-designed rocket. This was the last time it was used. And the normal mission lifetime is roughly five years. That is the plan for the time being.

The orientation of the longitudinal access to the Sun is plus/minus two minutes. The duration of the orientation recovery after the achievement of the day's part of the orbit is one minute. And the subsequent slides give you some ideas to the presentation, the prep work. This is the satellite which is ready to be taken out. The prep time takes a couple of hours.

This is a picture of the satellite moving on to its launching pad, positioning, the day's temperature was minus 30 here, preparation of the satellite being launched, and right here this is the launch itself taking place, it is being placed on orbit.

On this slide, you have a presentation of the information exchange between the satellite and the ground infrastructure for this mission and this work is coordinated by the various organizations involved in the Russian Outer Space Agency.

The transmission of satellite data is on two channels. The first on one gigabyte and the other on two gigabyte levels. This is on four coils at stations in Moscow.

As you see from this slide, the brunt of the work in processing the information, accumulating it and distributing it amongst the users is done by the Moscow-based Physical (Physics?) Institute. This Physics Institute is thus doing the basic coordination work for the preparation and the operations and most of the work in distributing the information, a very active role is played by senior students from the Moscow Physics University, at least 25 young physicists, young scientists and researchers are involved in this work.

Now some of the examples of work that take place. The major instrument, at least the heaviest one certainly, is the one to study the high-energy gamma radiation. It is one metre in diameter. This shows you the calibration of this instrument, cosmic protons. The

conclusion was routed that the instruments could be used for flights because they were very, their presence was justified.

This is something to examine the ultraviolet radiation of the Sun during eruptions and during quiet periods.

Here we are talking about monitoring of the upper Earth atmosphere by observation of solar EUV occultation on a 24-hour basis as the Sun goes down and when it comes up.

Here on this graph you can see the patterns of behaviour of the absorption of the solar system as a quiet star, depending on the level of occultation in outer space. If you take a close look at this graph, you can see that this instrument does allow us to study the characteristics of the various layers of atmosphere up to an altitude of 1,400 kilometres, depending on the density of the atmosphere and other parameters as well. This allows us to monitor up to 1,400 kilometres. This is very important for various applied scientific work and studies for computations of orbits at 1,400 kilometres and lower.

I can also give you in passing some very quick presentations of scientific results produced. This is the first image of the Sun which was produced by the use of the TESIS instrument at 171 and 304 angstrom. Here you have a presentation of a simultaneous correlated observation of the solar disk with the XRT and with the TESIS satellite. It is for the very first time that we have been able to monitor and gauge the quiet corona x-ray spectrum.

Here you have a presentation of the results produced. You see that the results provide a hundred times better spectral resolution here.

Many of the data are already placed on the sites of various corresponding organizations. Here you have the site of the Moscow University which gives data on the flow of protons and electrons on Earth orbit.

This presents the first maps of electrons in the range studied. This from our work from the 3 to 13 March 2009. We worked with our Ukrainian colleagues and with specialists from the French Research Aerospace Centre as well.

This is the first cosmic gamma burst which was observed with instruments carried on our satellite. On the right you have the cone that was registered. We see the difference in the information input and output.

This is one of the most intense gamma bursts observed on 8 April 2009 with all our instruments.

In concluding, I would like to point out that the satellite was taken out to the orbit which was very close to the orbit that it was meant to be placed on. All the satellite systems and scientific instruments were working according to the requirement specifications. Our orbital adjustment settings and the calibration of our instruments have been completed already. All of the instruments have been switched on to monitoring mode. The official scientific results are being produced and some of the observation results are already being published online. Right now we are working on expanding the access real time to the data being produced. Thank you very much for your attention.

The CHAIRMAN (*interpretation from Spanish*): On behalf of the Committee, let me thank Mr. Kotov, the main researcher for the Coronas-Photon Project who spoke on behalf of the entire team that participated in this project, the Coronas-Photon Mission, supported by the Federal Space Agency of Russia and the Russian Academy of Science and which has already produced the first results, the initial results of problems linked to solar activity. Thank you very much for that presentation. I am sure that you have certainly spoken to the interest and concern of many people here. Perhaps towards the end of the session, we will have a few questions to be responded to. Thank you.

Let me now give the floor to the third technical presentation. This is Mr. Imran Iqbal of Pakistan speaking on application of satellite remote sensing for monitoring crops and the environment. You have the floor Sir.

Mr. I. IQBAL (Pakistan): Thank you Mr. Chairman. It is indeed a pleasure and a privilege to give a presentation on the application of satellite remote sensing for monitoring of crops and environment. The presentation is divided in two parts. Firstly, I will discuss the monitoring of crops in Pakistan through the stated technology and subsequently how we monitor major environmental disasters whether natural or manmade.

Notwithstanding the investment made by the Ministry of Food and Agriculture in years(?) the performance of the crop reporting system was not satisfactory. The agri-statistics were available late in the cropping season and their final versions were further delayed beyond pragmatic timelines. The quality of data was also a concern because of poorly

trained manpower, procedure, technological deficiencies and bureaucratic inertia in reporting channels.

Therefore, MINFA requested SUPARCO, the National Space Agency, to initiate monitoring of major crops, namely wheat, cotton, rice, sugar cane and maize, through satellite remote sensing technology.

The objectives of the project were crop area and yield estimation, capacity-building of crop reporting services in provinces and federal institutions. The consolidation of linkages with the FAO United Nations.

It is worth mentioning here that Pakistan is a Federation consisting of four provinces. We have two cropping seasons, one in winter called Rabi and the other in summer and is known as Kharif. Wheat is the predominant crop in winter while cotton and rice, etc., are sown and harvested in summer.

A pragmatic _____(?) was made by providing production statistics of three contiguous districts of the cotton and wheat zone in Punjab and the Sindh Province in 2005-2006. The crop covered were wheat, cotton and rice.

This slide shows the covered area on the map of Pakistan. The project area was subsequently expanded to 44 districts covering all provinces. The crop cover was also increased from three to five crops in 2006 and 2007. The slide represents the area covered during this timeframe.

In 2007 and 2008, 61 districts covering 94 per cent of the arable area of Pakistan consisting of 20 million hectares was monitored during the summer Kharif cropping season. The entire country was covered for wheat estimates of the same during the Rabi winter season. The project has now become fully operational and is providing agri-statistics on a regular basis.

The area framing work by the Crop Reporting Services at that time in 2005 and 2006 was designed 35 years ago and had not been updated to take into account changes in agriculture cropping patterns and practices. It was, therefore, felt prudent to redesign an area frame for use by the satellite remote sensing technology based on stratification of agriculture land. Image classification techniques were also fine-tuned for project purposes.

In this slide, we can see that the Province Punjab was stratified in four zones based on cropping

patterns and ecological zones. Each zone was further stratified on the basis of agriculture coverage 75 to 100 per cent.

For the ground verification surveys, segments of 30 hectares in size were finalized in the slide of southern Punjab. I think I have lost that slide but anyway I will read it. We can see how well the segments were spread. For wheat we had segments of 30 hectares each in size were verified through ground surveys. This constitutes 0.06 per cent of the cultivated area as compared to four to five per cent of the area that was surveyed by the Crop Reporting Services. The time and cost savings could be well imagined.

As far as the image classification methodology was concerned, it included acquisition of satellite imagery at multiple stages of crop growth covering initiation of canopy development, peak levels of photo-synthetic activity and browning stage. It also involved mosaicing and spectral signature development as well as classification techniques.

It is to be noted that we have two complementary techniques for working out the area and the cultivation as previously highlighted, i.e., area frame and classification. Both these techniques are used to ensure that the quality of estimates is good and reliable.

I would now show some classification imagery of agriculture areas in Pakistan.

In 2005 and 2006, these are brown bananas, just to highlight the classification, cotton another area.

In 2006 and 2007, sugar cane, cotton, sugar cane. In 2007 and 2008, cotton, again Peshawar.

As regards to yield estimation, a methodology was developed which provided regression relationships between NDVI imagery, Agromet data, crop cut data, fertilizer update data and water availability.

It was the first time in Pakistan that a database of stated(?) dataset was created for the archive as well as the current data. This involved extensive efforts in collecting, sorting and cleaning up data.

It could be seen from this slide that the estimates provided to the Government by SUPARCO, the National Space Agency, for wheat in April 2008 had a difference of only three per cent with the final estimates released by the Government in October 2008.

Similarly, there is only a difference of four per cent between the estimates provided by SUPARCO and the Federal Commission on Agriculture forecast.

Thus the project is not only providing timely and reliable data to the decision-makers but also helping in food security of the country.

The project involved transfer of technology as well. On this behalf, assistance from SPOT Image France. After the United Nations, the University of _____(?) Belgium(?) (*not clear*) is greatly appreciated.

The beneficiary organizations have been, as far as the technology transfer is concerned is the Economic Wing of our Ministry, the Agriculture Policy Institute, Crop Reporting Services, the Meteorological Departments, the Federal Bureau of Statistics, the Agriculture Department, _____(?) Kashmir(?).

Now I will come along to the monitoring of the environment. Pakistan is extensively utilizing satellite remote sensing and GIS technologies for the monitoring of the environment. I would now show you some examples of it.

This slide shows the monitoring of damage to the banana crop due to frost, surface draining system in Cholistan, Indus floods in RYK-Rajan(?) section and we do a lot of damage assessment. This was the Shadi Kor Dam which burst and you can see pre- and post-imagery. An earthquake in 2005, I will just highlight you one fact that the earthquake struck northern parts of Pakistan at around 8.55 in the morning. The first satellite passed and that was a SPOT-4, passed through the area at 10.05 a.m. and that helped us greatly.

We did this exercise as far as damage assessment was concerned using the satellite imagery for the World Bank.

Again, we had a lot of landslides in 2005 and a lot of water channels were blocked and by comparing pre- and post-imagery we could work out the areas where there was a chance of further damage. And in this particular case, the water was released taking appropriate measures so there was no damage. But this was due to the availability of satellite imagery that we could work out that something was happening in one area.

Again we do measure deforestation and also aforestation(?). This is just an example of deforestation.

With this, I come to the end of my presentation and I am very grateful to you all. Thank you Sir.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much Mr. Iqbal for that presentation on satellite remote sensing applications applied to crops and the environment. A very topical question indeed especially of interest to developing countries. Thank you very much for that presentation.

I believe that we have about five to 10 minutes left for questions to the presenters and I see several delegations, I am very pleased to see this interest in the different presentations and let us begin with Brazil.

Mr. J. M. FILHO (Brazil) (*interpretation from Spanish*): Thank you. I will relay a question, one observation. But I think it is an adequate and right one to make.

It has been a privilege here to see these clear demonstrations of the fact that Earth observation today is a strategic tool for development. So the main conclusion, I think, we have to draw from this is that we really need to set up an instrumental, rather an international tool for cooperation so that the totality of countries that have the necessary tools and infrastructure to receive, analyze, process and creatively apply, creating added value to this data gathered from satellites. This is exactly why in Brazil we consider this kind of satellite data as global public property because of the absolutely indispensable nature of this element for development. Thank you.

The CHAIRMAN (*interpretation from Spanish*): Very interesting that observation on global public property or goods. They need to have this kind of data for all which begs the question of facilitating access which is not always the case today. I am pleased to see that Brazil has adopted this very clear policy.

The distinguished representative of Poland.

Mr. P. WOLANSKI (Poland): Thank you Mr. Chairman. I would like to have a comment and question to the presentation made by Yuri Kotov from the Russian Federation about the Coronas-Photon Mission. He, at the beginning, mentioned how important it is to improve the models of the solar activities because we still are not able to predict future activity of our Sun and how important the solar activity is to Earth temperature, the temperature on our planet. Solar activity as it was shown very well correlate to the

variation of the temperature and this is one of the very important factors, among others, human activities and natural activities on Earth on the variation of the climate.

So now the question. When will we be able to have a better prediction of the solar activity after this mission? Thank you.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much. Professor Kotov, I think, needs to answer this question.

Mr. Y. KOTOV (Russian Federation) (*interpretation from Russian*): Thank you for that question. The representative of Poland quite rightly noted the problems with which we are having to be confronted during our work. I doubt whether just this project alone will really allow us to put an end to all of these problems. As we see it, we are making advances towards understanding this problem and that has to be done on the basis of a comprehensive study of all of the ranges of energy radiation taking place.

Just the purely energy sort of radiation cannot really explain the impact of solar patterns and the impact that it has on Earth. The energy is not all that significant. There are not great changes in the energy falling on Earth but part of the radiation is absorbed in the atmosphere of the Sun and even this absorbed part is not great. Nonetheless, it initiates processes which can subsequently trigger many other physical, chemical, climatic, weather-type processes taking place. So if we study the variations in solar patterns and do this over the full range of energy changes, this would allow us to better predict the impacts and the changes.

The CHAIRMAN (*interpretation from Spanish*): Yes, thank you very much Professor Kotov for responding to the question, indeed, concerning the need of better predictability on this very important topic for space activity.

Nigeria has asked for the floor. You have the floor Sir.

Mr. B.P.Z. LOLO (Nigeria): Thank you Mr. Chairman and let me congratulate all the presenters for their presentations. In particular, I want to congratulate Imran Iqbal for his last presentation which is of great interest to my country. We do see here the challenges that we face and in particular in 2009 when we have to find a successful instrument in Copenhagen and to see the possibilities of using satellites to monitor the changes that are taking place.

I come from a country and a continent that is in the throes now of receiving heavy damage from climate change, and I am referring here to the pace at which we are losing our land and the resources that go with the land and this will call for cooperation and capacity-building, given that not all countries have the capacity to respond to these global challenges. And the previous discussion, in fact, on sustainability that our colleague from France was pushing, we look forward to the discussions that will take place, bearing in mind that we have to cooperate, we have to build synergies, and at the end of the day the aim is to sustain the environment for the future generations. Thank you very much.

The CHAIRMAN (*interpretation from Spanish*): Let me thank the delegate from Nigeria for those very pertinent questions and remarks on the need to increase the capacity in terms of education and information, especially in countries like yours.

Following the Pakistan presentation, are there any other questions.

I have one for the lady from the Strategic Studies Institute which was a very interesting study. She mentioned two Summits, the Global Development Summit for Space Studies in 2008 in Beijing, and mentioned another high-level meeting this year to be held in Washington D.C., the Second Summit, the Global Space Development Summit.

Now a question. Is there a third one scheduled? Have you thought about having a third one because they are very important, it is a very impressive title for me. Thank you.

Ms. A. BANDER (United States of America): The Third Global Space Development Summit is not yet scheduled but is something that we have discussed, that we do see this as being a continuous thing so that in different years we will hold them in different parts of the world and to continue the discussion because it is not, these are not issues that can be addressed at one time or in two times but continual conversations.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much. If only as a recommendation it would be interesting to have that with a geographical distribution. I am sure that the interest here could be very important in other parts of the world and for everyone here in this room.

I see no further requests. On behalf of the Committee, let me thank the presenters for very interesting work this morning.

We will be adjourning the meeting for today within just a few moments. Let me just say that for this afternoon we will meet at 3.00 p.m. on the dot. At that time we will continue our consideration of agenda item 6, Implementation of the Recommendations of UNISPACE III, and item 7, Report of the Scientific and Technical Subcommittee at its Forty-Sixth Session, and item 8, Report of the Legal Subcommittee on its Forty-Eighth Session, and item 9, Spin-Off Benefits of Space Technology: Review of Current Status.

Time permitting, we will consider agenda item 12, Space and Climate Change, and item 13, Use of Space Technology in the United Nations System.

The third of these will be handled by the representative of Algeria, "Algeria's Response" to the topic of floodings in the Ghardaia area. That will be the presentation by Algeria for this afternoon.

Following the Plenary, there will be two technical presentations. The first one by a representative of Argentina on "International Charter Space and Major Disasters". And the second by a representative of the Earth Observation Group on "The World System GEOS for Climate Activities and Achievements".

At the end of the afternoon, there will be a Reception hosted by ESPI. An invitation has been placed in your pigeonholes for this.

If there are no questions or comments on this schedule, and I see none, let me also inform delegates that today at 2.20 p.m., two videos from Japan will be projected, "JAXA 2009: Beyond the Sky and Into Space", and results from the Japanese Lunar Explorer KAGUYA.

Now before I conclude, let me give the floor to the Austrian delegation who wish to make an announcement. You have the floor.

Ms. C. REINPRECHT (Austria) (*interpretation from Spanish*): Thank you very much Chair.

(*Continued in English*) I would just like to make a small request to delegates in relation to the traditional Austrian Heurigen, the social event that you are all aware will take place on Thursday, 11 June at 7.30 p.m. at the Heurigen Millerschmidt(?). We have

distributed invitations to the delegations. As they request, the delegates will be to come up to the Austrian delegation and announce your attendance. This is for us convenient in order to sort of have an idea who will attend the meeting.

And the second point that I wanted to address is in relation to tomorrow's presentation at the University of Vienna on behalf of the National Point of Contact for Space Law. We are going to distribute information as regards tomorrow's event which is entitled "Perspectives of Space Exploration and the Role of the United Nations". As I said, it will take place tomorrow, Tuesday, 9 June, at 7.00 p.m. at the small Ceremony Hall. Thank you very much and have a good lunch.

The CHAIRMAN (*interpretation from Spanish*): Thank you very much. I would highly recommend the Austrian Reception because it is in a spot which is so beautiful, so typically Viennese, and I think we are going to have good weather. Just one question, what does Heurigen mean exactly? To motivate people here.

Ms. C. REINPRECHT (Austria): The term "Heurigen" refers to the young wine because the Heurigen location is normally in the midst of a vineyard and the vintner normally presents his own wines. It is very typical. It is typical food, typical Austrian young wine, and Heurigen refers to the fresh young wine of this year. So all delegates are warmly welcome to this event. It is a beautiful location to see Vienna from the top. It is in the midst of vineyards and in the midst of green. It is very beautiful and serene and always a lively debate on a very formal note. So we are looking forward to welcoming all delegates to this event.

The CHAIRMAN (*interpretation from Spanish*): After that description, I think we will have full attendance. Thank you.

I adjourn this session.

The meeting adjourned at 1.03 p.m.