United Nations COPUOS/T.592

Committee on the Peaceful Uses of Outer Space

Unedited transcript

592nd Meeting
Wednesday, 18 June 2008, 10 a.m.
Vienna

Chairman: Mr. Ciro Arévalo-Yepes (Colombia)

The meeting was called to order at 10.17 a.m.

The CHAIRMAN *(interpretation from Spanish)*: Good morning everyone. I now declare open the 592nd meeting of the Committee on the Peaceful Uses of Outer Space.

Before we start our deliberations, on behalf of all those present, I would like to express our thanks to the delegation of Austria for the pleasure of organizing this wonderful time for us yesterday.

Spin-off benefits of space technology: review of current status (agenda item 10)

One member State has requested to speak under agenda item 10. So what we are going to do is re-open item 10 and then continue our consideration of the other agenda items.

At this time, I would like to give the floor to the representative of Burkina Faso, Madam Béatrice Damiba you have the floor madam.

Ms. B. DAMIBA (Burkina Faso) *(interpretation from French)*: Chairman, thank you. I thank you for having allowed us to re-open this debate on the agenda item we had already closed because unfortunately yesterday I had not been able to be present here.

So the delegation of Burkina Faso would to speak to agenda item 10.

Chairman, the delegation of Burkina Faso would like to echo previous delegations to convey to you its most heartfelt congratulations. Your commitment to the lofty ideals championed by the Committee, as well as your ongoing constructive contributions during the debate of the Committee, mean that we are gratified to see you chairing this meeting, convinced that you will bring your skilful touch to bear to our exercise and consideration on the future activities of the Committee.

I should also like to pay tribute to Mr. Brachet and to all of the outgoing Bureau for the outstanding work accomplished, as clearly shown by the Memorandum provided us.

Please also allow me to convey my gratitude to Dr. Mazlan Othman, as well as to the Office for Outer Space Affairs Bureau, for their dedication to the preparation conducts of all our sessions.

Chairman, as a non-space-faring nation, Burkina Faso's accession to the Committee and its participation in its work is motivated by a desire to benefit from space technology and research. We have great hope for the Committee's conclusions as a result of its consideration of agenda item 10 on the spin-off benefits of space technology. This issue has always been of great interest to the international community and especially its Committee, lead body, as far as the management of space activities is concerned, since UNISPACE III on the topic "Space in the Twenty-First Century: Spin-Off Benefits for Mankind" which was held a decade ago.

Since then, as a result of the synergy and action which had gave rise to by our various partnerships between member States, the Office for Outer Space Affairs, space agencies and institutions, United Nations bodies and the private sector, tangible progress in the equitable distribution of the beneficial

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spin-offs of space technology and research have taken place.

Thus, today, the various contributions of space applications have enabled mankind as a whole to achieve astonishing qualitative leaps especially in the fields of telecommunication, health, education, management of the environment and meteorological forecasting, amongst others.

Unfortunately, whereas the spin-offs of space research and technologies have become commonplace in developed States, in the majority of the developing States, they remain quite a rarity, under-used, because information about them is not sufficiently disseminated or perhaps the capacity does not exist to draw benefits from them.

Because we are searching for ways and means to enable African States to enter their policies, incorporate the astonishing tools which are space activities to meet the many developing challenges they face, Burkina Faso, from 5-9 May 2008, hosted a Workshop, a Regional Workshop on the Application of Space Technologies for Tele-Health in Africa, Tele-Medicine. Its objectives were the following ones: raising the awareness of political decision-makers and African leaders to become aware of the stakes of research in space technologies to strengthen the capacity of African States to use the fruit of space research and applications and spin-offs, mainly in the sector of health; the promotion of international cooperation for the peaceful use of space, one which would not damage space; the identification, research and the negotiation of projects.

Something which was organized in conjunction between Burkina Faso, the Office for Outer Space Affairs, the United Nations, the WMO, ESA and the National Space Centre of France, I am referring here to this Workshop, witnessed the participation of over 100 individuals from 11 States in Africa, America and Europe. As a result, 36 communications and on-the-site visit and an open discussion session, the Workshop was a propiscious framework for fruitful exchange of experiences between countries of the north and south. At the end of their work, the participants adopted 11 measures whose implementation will, we are sure, enable African States to overcome the obstacles in the field of health, obstacles which are both quantitative and qualitative in nature, and to guarantee a better life for their populations.

Mr. President, I should like here on behalf of our delegation and the authorities of Burkina Faso to reiterate our gratitude to the Office for Outer Space Affairs, especially Madam Lee and all our partners whose support have undoubtedly contributed to the success of the Workshop.

It is also the right place to voice the hope that these results not remain dead letter which would attest that international cooperation is not just an empty slogan.

Chairman, China, just as Myanmar, have just suffered greatly from natural disasters. I should include Japan here which was affected by a natural disaster a few days ago. To these three nations and the bereaved families of the victims, we would like to extend our heartfelt sympathy, voice our solidarity. These tragedies remind us the pertinence of the SPIDER Programme but also clearly show the urgency of opera(?)-nationalizing it. Given the increase in natural disasters which are the result of climate change, the SPIDER Programme deserves special attention paid by it because it will enable us in an ongoing fashion to assess our capacity and our ability to prevent and to mitigate natural disasters and their consequences.

Chairman, it is clear that developing States which are the most vulnerable in the face of climate change are also those which will pay most dearly as a result of natural disasters which it will lead to.

In an attempt to strengthen our capacities, to respond and mitigate to the consequences of natural disasters, Burkina Faso would be pleased to host a Workshop on the Management of Natural Disasters during the year 2009. To guarantee the success of this Workshop, we would like to, in the coming months, welcome a mission of the SPIDER Programme to assist us in assessing our present capacity when it comes to managing natural disaster. We would like to invite all, especially African States, to actively participate in this Workshop. Thank you Sir.

The CHAIRMAN *(interpretation from Spanish)*: Thank you Madam Damiba of the delegation of Burkina Faso. Thank you for your statement and for your kind words addressed to the Chair.

Now, it is my pleasure to inform you of the schedule of work for this morning. We will continue and hopefully conclude our consideration of agenda item 11, Space and Society. We will also continue our consideration of agenda items 12, Space and Water, 13, Use of Space-Derived Geospatial Data for Sustainable Development, and 14, Other Matters.

There will be four technical presentations this morning. The first by a representative of the Russian Federation entitled "International Project Rimpamera(?) Between Russia and Italy: The Investigation of the Cosmic Anti-Particle Fluxes".

The second presentation will be made by the Goodwill Ambassador of the International Year of Planet Earth on the International Year of Planet Earth".

The third by a representative of India entitled "Water for Livelihood: Watershed Development Strategy Through Space".

And the fourth presentation will be made by a representative of Colombia and will deal with the use of geospatial data in Colombia.

Space and society (agenda item 11)

Thus, we are now re-opening agenda item 11, Space and Society.

The first speaker on my list is the representative of the United States. Kenneth, you have the floor.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. Mr. Chairman, my delegation is pleased to address the special theme of space and education. We acknowledge the important role of space education for inspiring students and to pursue careers in science, technology, engineering and mathematics, to increase the number of professionals entering those fields, to strengthen national capabilities in the fields of science and industry, and to enhance educational opportunities using distance learning technologies such as tele-education and e-learning.

The United States Space Programme continues to emphasize the importance of space to education and education to space. One of our top priorities is to expand the science, technology, engineering and mathematics pipeline in the pre-College grades and to increase the science, technology, engineering and mathematics workforce in the post-Secondary grades.

The platform of the International Space Station who are conducting education and reaching out to international educational communities is best demonstrated through opportunities built around the flights of NASA's Educator Astronaut and the Amateur Radio on the International Space Station, the ARISS. A dedicated group of international amateur radio operators support radio contacts in which students interact with astronauts and cosmonauts on the Space Station. Since its inception, this Programme has reached over 107 million people around the world.

Last summer, Barbara Morgan, our first educator-astronaut to fly in space, served as a mission specialist aboard the Space Shuttle Endeavour. The NASA Engineering Design Challenge, associated with the Endeavour, presented students worldwide with the challenge to design and build lunar plant growth chambers. Plant seeds flown on the Shuttle are now being distributed to United States educators who have completed the Design Challenge with students. Over 860,000 students are already participating in the Challenge.

Educator-astronauts, Joe McCaber and Ricky Arnold, are assigned to an upcoming Space Shuttle mission. Education activities on spacesuit design and spacewalks are being developed for this mission. NASA will shortly launch a website that will highlight the many agency-sponsored education flight projects and those undertaken with our educator-astronauts.

The NASA Explorer Schools Programme selects school teams from Grades 4 to 9 for a three-year partnership with NASA. This partnership aims to promote ongoing professional development for educators and administrators and to create family involve through electronic and web-based opportunities.

The Explorer Schools Programme targets under-served populations in diverse geographic locations throughout the United States. There are now over 200 schools associated with this Programme.

NASA is proud of the cultural and education exchanges made possible with the European Space Agency and The Netherlands Ministry of Education, Culture and Science, through the Delta Research Schools Programme in The Netherlands and the NASA Explorer Schools.

The Delta Research Schools Programme is patterned after the NASA Explorer Schools model and selects schools throughout The Netherlands for a three-year partnership. The Delta Research School educators and students have participated in unique learning opportunities including professional development at NASA Centres and live in-flight communications with astronauts and cosmonauts onboard the Space Station.

The Science, Engineering, Mathematics and Aerospace Academy, or SEMAA, is another project by

NASA that targets K through 12 science technology, engineering and maths education.

SEMAA was recognized as one of 18 programme finalists in the 2008 Innovations in American Government Award Programme. The SEMAA Project brings together resources of NASA, institutions of higher education, science centres and primary and secondary schools to bridge the education gap for historically under-served and under-represented K through 12 youth in science, technology and engineering.

The goals of the Programme are to inspire more diverse populations students to pursue careers in the science and technology and engineering fields, to engage students, teachers and parents by incorporating emerging technologies into the Programme and provide a challenging curriculum that meets States maths, science and technology standards.

The Programme addresses these goals by delivering a hands-on curriculum, a state-of-the-art aerospace education laboratory and an innovative family café.

During 2007, SEMAA engaged over 64,000 students, parents and teachers in 13 States in the District of Colombia.

SEMAA sites also developed a network of 200 plus partners that contributed more than US$3.8 million in matching funds for operations nationwide.

The United States continues to work with foreign partners in developing global capacity in the space and technology fields, particularly in the remote sensing area.

As you may recall from special presentations in years past, the GLOBE Programme continues to be an excellent example of worldwide students-teachers-scientists partnership that is continued to grow. GLOBE is an exciting hands-on, school-based, international environment, science and education programme. Now in its thirteenth year, over 42,000 teachers in more than 20,000 schools in 109 countries use the GLOBE Programme in their classrooms.

Students have provided data from over 17 million measurements to the GLOBE Database which is accessible on the World Wide Web.

The International Space Station is playing a role in education and reaching out to the international education community and we are working to expand the ability of students to use it as a research platform. The United States segment of the International Space Station has payload resources and accommodations that exceed the requirements for planned NASA missions. Under the United States Space Station National Laboratory Concept, NASA is pursuing a strategy for the use of some of these available resources and accommodations to engage and educate students, teachers and faculty in the area of science, technology and engineering. Under this concept, Space Station resources will be managed as a national education centre accessible to teachers, students and kindergarten through post-Doctoral studies in university and college faculties.

The NASA Education Portal has been revised to make it easier to find educational products and materials and with the introduction of Web Point 2.0 technologies, visitors can now participate in polls and comment on articles. We have enhanced our use of distance learning technologies through the NASA Digital Learning Network. The Learning Network capacity has allowed us to create a direct link from every NASA Explorer School right back to the NASA Centres where original science is being conducted.

The DLN has expanded its use of webcasting to allow for anyone in the world with a high-speed Internet connection to watch special events originating from the 10 NASA Field Centres.

To learn more about these educational programmes, we encourage delegations to visit the website www.nasa.gov\education.

For the fourth year, NASA is sponsoring graduate student researchers to be present at the Annual International Astronautical Congress which will be held 29 September to 3 October in Glasgow, Scotland.

NASA also serves on the International Space Education Board that hosts an International Education Forum concurrent with the IAC.

In addition, NASA is sponsoring under-graduate and graduate student researchers at the Thirty-Seventh Committee on Space Research, or COSPAR, which will be held in July in Montreal, Canada.

At each of these events, nations from around the globe will gather to share and learn from each other. Exposing our students to the activities of international scientific conferences and allowing them to be active in presenting their own related research will open new doors to those prospective space

professionals. Our next generation of researchers and engineers will increasingly need global perspectives and experiences to solve the future challenges we face as space explorers.

A likely challenge in using the unique environment of space to inspire students to study science and technology in all nations is the availability of resources. NASA continues to welcome opportunities for international collaboration where resources can be leveraged and where collaboration supports NASA's education strategic goals and objectives. Thank you Mr. Chairman.

The CHAIRMAN *(interpretation from Spanish)*: Yes, I would like to thank the representative of the United States.

And it is with great pleasure that I will give the floor to the representative of Brazil. André Tenório Mourão.

Mr. A. TENÓRIO MOURÃO (Brazil): Thank you very much Mr. President. The Brazilian delegation is pleased to have the opportunity to once again address the very relevant issue of space and society with a special focus on the relationship between space and education.

My country is of the view that some of the most evidence and pervasive benefits of space science and technology can be obtained by means of their use in the education field. We also believe that very positive results can be reached through the promotion of awareness and knowledge on the peaceful uses of outer space, that is to say that this is a two-way channel where space and education are mutually reinforcing elements.

In 2003, the Brazilian Agency, AEB, established the AEB School Programme which aims at promoting the Brazilian Space Programme and encouraging children and young people to develop an interest in science and technology as well as in careers in this field. This is achieved through the organization of presentations and workshops, distribution of books and learning material, as well as by the support through student participation in scientific events.

The AEB School Programme also develops capacity-building among teachers and educators, through the organization of courses on astronautics and space sciences.

Mr. Chairman, also regarding the issue of space and education, we believe it is relevant to mention that the Brazilian Society for the Advancement of Science, SBPC, is completing 60 years in 2009. Its Annual Meeting will take place in Campiños in the State of São Paulo, from 13-18 July. The Meeting should have the participation of more than 25,000 people, among speakers, researchers, professors, students and people interested in acquiring and sharing scientific knowledge.

The SBPC is one of the most active and respected Brazilian social organizations known for its relevance and competent work towards the dissemination of science, scientific education and technological development in Brazil.

The annual and regional meetings of the SBPC are events that usually draw the attention of the public opinion to the scientific and technological challenges faced by the people in Brazil, Latin America and the world. One of the highlights of the annual meetings of the SBPC has been the organized of eight-hour mini-courses on space law which draw a great deal of curiosity from students and professors and introduce them to this important branch of law.

This year, the Sixtieth Annual Meeting of the SBPC is going to have a special part dedicated to the Brazilian Space Programme so as to celebrate the 20 years of CBERS, the Chinese-Brazilian Earth Resources Satellite Programme.

In addition to the three satellites already launched by the CBERS Programme, CBERS-1, CBERS-2 and CBERS-2B, our countries plan to launch CBERS-3 and CBERS-4 in 2010 and 2011 respectively, 2013, I beg your pardon.

CBERS plays a major role in the study and protection of the Amazon Forest as well as in agriculture, urban planning, water resources management and other areas.

This Annual Meeting of the SBPC will have a major exhibition on the history of space cooperation between Brazil and China, from the signing of the first bilateral Agreement in 1988 which constituted the first Agreement on Advanced Space Technology Between Developing Countries.

After SBPC, the exhibition will move to the Brazilian Congress and later to our major capital cities. The CBERS anniversary is also being celebrated with a commemorative stamp, just recently launched, and the editing of a comprehensive publication with stories and pictures of the Chinese-Brazilian Cooperation Programme.

Finally, Mr. Chairman, we would like to inform the Committee that, through its Ministry of Science and Technology, the Brazilian Government is making all possible efforts to support the National Commission for the International Year of Astronomy. A series of events should take place all over the country, including the National Science and Technology Week, which happens every year in the month of October, with activities in all Brazilian States and hundreds of cities.

The Brazilian delegation is looking forward to the discussions the International Year of Astronomy should spur in this Committee and elsewhere in 2009. Thank you Mr. Chairman.

The CHAIRMAN *(interpretation from Spanish)*: Yes I thank the delegate of Brazil for his statement.

And I now turn to the delegate of the Islamic Republic of Iran. You have the floor Sir.

Mr. A. TALEBZADEH (Islamic Republic of Iran): In the name of God, the Compassionate and the Merciful, Mr. Chairman, since this is the first time that I take the floor, allow me to express my congratulations to you on your election as the Chairperson of the Committee on the Peaceful Uses of Outer Space. Under your able leadership, I am confident that this session will come to a satisfactory and successful conclusion.

I would also like to congratulate the other members of the Bureau on their election, Mr. Vibulsresth, as the First Vice-Chairman, and Mr. Filipe Santos, as the Second Vice-Chairperson and Rapporteur.

Mr. Chairman, allow me to take this opportunity to extend the sincere appreciation of the Islamic Republic of Iran to Dr. Mazlan Othman, the Director of the United Nations Office for Outer Space Affairs and all her able colleagues for all their efforts they made for the enhancement of international cooperation in the field of peaceful uses of outer space.

Mr. Chairman, distinguished delegates, the Islamic Republic of Iran attaches great importance _____(?) leading to enhancing the knowledge of the society and increasing the awareness on the relevant application of space technology for the prosperity of mankind. The young generation is the main target of such information campaign.

The Iranian Space Agency, as the main national focal point in the field of space-related activity, is trying to take into account the needs and interests of all particular age groups.

After truly analyzing the requirements and criteria, some educational programmes for each of a particular age group are then designed and prepared. These products have been in the form of _____(?) books, CDs, games, songs, compaction(?) and cartoon. We will keep this task at a continuous process. We have a special programme for the Space Week every year. This broach(?) the role of the universities in this area of education cannot be ignored.

W would like to inform you that the Iranian Space Agency has planned and carried our various projects and activities in the field of space technology and applications focusing on information campaigns at the level of university students. We hope this step will help us to enhance the public awareness and knowledge about space technology and its applications.

Mr. Chairman, in addition to the space technology and its applications, we paid special attention to this mention of astronomic material and education in this area. We have successfully organized various events and conducted several activities in order to increase public knowledge about the sky and its secrets.

Moreover, the current Iranian calendar year marks for commemoration of the Ancient(?) Iranian scientist, _____(?), who is one the pioneers in astronomy. To commemorate this year, we plan some other specific events to promote the public knowledge.

The Islamic Republic of Iran also warmly welcomes the International Year of Astronomy and we will actively contribute in the global celebrations of astronomy next year. Thank you.

The CHAIRMAN *(interpretation from Spanish)*: I thank the distinguished delegate of the Islamic Republic of Iran for the statement and the kind words which he addressed to the Chair.

There seem to be no other speakers under agenda item 11, Space and Society.

Begging your indulgence, I am mistaken, we have Argentina and Brazil wishing to take the floor. And Brazil will therefore take the floor.

Mr. J. MONSERRAT FILHO (Brazil) *(interpretation from Spanish)*: It is with great pleasure

that I listened to the information provided over these last few days regarding efforts undertaken in various States under the item on space and society, and especially space and education, but to be honest, I want to warn you against something.

In Brazil, and this, despite all the efforts which we had undertaken, we are a 100,000 mathematics or science teachers short and I am sure that in a great many countries throughout the world, and not only developing States, this also includes developed States. We are forecasting a shortfall of engineers, mathematicians and so forth over the coming 10, 20 years and we are extremely concerned by this. And this is the reason why I believe that there is a need to, in addition, celebrate and mark the many successes we have achieved these last few years by attempting to raise the profile of all that is going on in the world of space. In addition to all of this, I believe that it is important to grant all our attention to a very serious debate on the ways to overcome the difficulties which we continue to face over the coming 10, 20 years, ensure that we have all the engineers, mathematicians, scientists we need to ensure that the level of progress we have achieved is preserved. This is extremely important for development, not only for Brazil, it is important for the whole of mankind, the whole of our planet.

The CHAIRMAN *(interpretation from Spanish)*: I thank the delegate of Brazil. Indeed, this is an alarming issue. I am referring to this shortfall of human resources in various fields and sectors and I believe that any suggestions on this would be most welcome. Thank you.

It is now my great pleasure to give the floor to the delegate of Argentina.

Mr. F. MENICOCCI (Argentina) *(interpretation from Spanish)*: Thank you Chairman. The Gulich Institute continues to expand its activities in the field of capacity-building. Recently the Academic Council of the Gulich Institute hired an eminent specialist in this field and we are currently elaborating a programme of work for 2009 which includes a number of regional courses and the launch of two tele-education projects in Italy and Argentina which will turn the Gulich Institute into a Regional Centre for Excellence.

As a result of the support of the Office for Outer Space Affairs and a project for 2008, we will organize a special internship, a four-month internship for specialists on the use of space technologies to combat epidemic diseases. Participants will include specialists from Brazil, Ecuador and other Latin America States. We have also invited Algeria and Burkina Faso to participate in this Workshop and CONAE, as a member of the International Space Charter, is offering a course during the beginning of the month of May(?) 2008. This course will enjoy the participation of the European and American Space Agencies. Guatemala, Ecuador, Costa Rica, Panama, Jamaica and Peru, amongst others, will also participate.

CONAE, with the support of the Office for Outer Space Affairs, will organize a Workshop on Space Applications for Tele-Medicine within the framework of the Third Meeting of Latin American Experts on Remote Sensing, and this will be held in Havana, in Cuba, from 22-26 September 2008. Thank you Chairman.

The CHAIRMAN *(interpretation from Spanish)*: I thank the distinguished delegate of Argentina for his statement.

Moving on to agenda item 12, but the distinguished delegate of Brazil has the floor first.

Mr. J. MONSERRAT FILHO (Brazil) *(interpretation from Spanish)*: Thank you Mr. Chairman. Just to clarify an item of information. The commemorative meeting to commemorate the 60 years happens this year in July, not next year as was said. The Brazilian Society overseeing cultural and scientific activities will be celebrating this Jubilee this year. Thank you.

The CHAIRMAN *(interpretation from Spanish)*: Thank you very much. We have taken note of the correction as to this commemorative event.

Would any other delegation like to take the floor under that agenda item?

I see none.

Space and water (agenda item 12)

In that case, we are moving on to agenda item 12, Space and Water, and the previous item, Space and Society, will be reprised this afternoon.

Under agenda item 12, the United States representative is the first on my list. You have the floor.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. Mr. Chairman, there is a broad spectrum of water-related issues facing

the world at large, ranging from too much water causing floods and destruction, to the absence of sufficient water to sustain human life or food production.

Space platforms including those currently in space, those in the planning stage, and those still in the theoretical stage, provide a rapidly expanding potential to obtain new and increased information regarding water and water management.

In scientific research, we understand that the global water cycle is vast and cannot be fully understood with only *in situ* observation networks.

Satellite observations offer an alternative method for seeing the entire Earth and is essential for understanding remote, hard to reach places.

In the realm of water management and policy settings, decisions are necessarily moving beyond local areas and the growing areas of water cycle science and use of satellite technologies, allow a much broader view to be distilled at the local and regional use.

Currently there are many research and operational space-borne assets that shed light on water in all its forms. These include satellites that allow us to look at the state of the ocean with improved accuracy, per seasonal climate forecasting.

Satellites also provide information about the potential to various hydrological extremes, such as flooding, droughts or high numbers of intense thunder storms.

The United States continues to explore the uses of satellite remote sensing data to solve and to mitigate the problems related to limited water resources. For real-time assessment of water properties, data from many operational satellites, including the Polar Orbiting Environment Satellite, known as POES, or the Geostationary Orbiting Environmental Satellite, known as GOES, and the Defence Meteorological Satellite Programme, and the Research Satellites, Gravity, Recovery and Climate Experiment, known as GRAZE, LANDSAT and the Tropical Rainfall Measuring Mission, TRIM, QUICKSAT and TERRA and AQUA, can help to determine precipitation activity, snow properties, soil moisture, changes in underground water storage, flood areas and even some estimates of evaporation.

Additional information can also be derived that is critical for water science and management, such as surface temperature, wind speed, short- and long-term radiation and vegetation-type and help (health?).

I would like to highlight some specific examples of space-derived data being used to solve water-related problems.

Altimetry products are being used for lake and reservoir elevation monitoring. Data from the Moderate Resolution Imaging Spectrometer, MODIS, on the TERRA and AQUA satellites, is used for various applications, including snow cover area products, the development of US State and Local Agencies Monthly Climate Reports, products for use by the African Famine Early Warning System, products for use by the South Asia Drought Monitor, and in conjunction with the Advanced Microwave Scanning Radiometer on the AQUA satellite, for use by the _____(?) Flood Observatory.

In 2006, the United States Congress directed the establishment of a National Integrated Drought Information System. This effort is led by the National Oceanic and Atmospheric Administration, and is a multi-agency approach to improve drought monitoring, forecasting and early warning. The system's features include consolidation of physical, hydrological and socio-economic impacts data, integrated observing networks, development of the suite(?) of drought decisions support and simulation tools and interactive delivery of standardized products through an Internet portal.

Provision for the Programme is a dynamic and accessible drought risk information system that provides users with the ability to determine the potential impacts of drought and the decision support tools to better prepare for and mitigate the effects of drought.

The use of satellite remote sensing in outer space-based measurements will be a important component of observations to this system. The system is one of the United States contribution to the Global Earth Observing System of Systems activity as well.

In the future, the United States plans to begin operating its next generation of environmental satellites, the ENPO series and the next geostationary operational environmental satellites, the GOES-R series. These satellites will collect and disseminate data about the Earth's oceans, atmosphere, land, climate and space environments, providing high-quality sustained environmental measurements for monitoring the global water cycle.

In addition, as a result of recommendations in the United States National Academy's Dictatal(?) Survey, the soil moisture active and passive satellite is planned to be launched in late 2012. The satellite will provide information on the soil moisture at spatial resolutions between three to 10 kilometres, which will be useful to many communities through weather forecasts, short-term climate prediction, agricultural monitoring, wet (weather?) assessment and drought prediction. The satellite will also produce a soil freeze carbon cycle in northern latitudes.

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

The CHAIRMAN *(interpretation from Spanish)*: I thank the distinguished delegate of the United States for his statement.

I now recognize the representative of Japan, Mr. Kazushi Kobata. You have the floor Sir.

Mr. K. KOBATA (Japan): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, on behalf of the delegation of Japan, I have the honour to present Japan's experiences with and future plans for space-based water cycle observations and their applications.

Recently, last year, we have witnessed the damaging effects caused by major water disasters across the world. Of course, the devastation caused by Cyclone _____(?) is on all of our minds and the _____(?) affecting Sichuan, China, after last month's terrible earthquake. Many people died, who have lost their homes in these disasters. I would like to extend my deepest sympathy to the affected nations, their people and the families of all victims.

In each of the aforementioned cases, Japan's Aerospace Exploration Agency, JAXA, made rapid response observations using the Advanced Land Observing Satellite, DYICHI(?). This satellite was launched in 2006 in order to map and monitor the disaster zones. The images obtained from DYICHI are being provided through the International Charter and used in order to monitor the extensive damage and progress of recovery efforts.

DYICHI carries two types of typical sensors, one which provides a stellar(?) viewing ground surface images and the second, Synthetic Aperture Radar, SAR, which can conduct observations regardless of the time and of the day while research.

Today, Japan supports projects to increase international information sharing and dissemination such as Sentinel-Asia, which is concentrated in the Asia-Pacific region. Sentinel-Asian Internet Operation Site has been operational since 2006.

Sentinel-Asia is implementing Space Step(?) II after the successful completion of the pilot project. In 5-6 June in Kobe, Japan, the Joint Project Team held its first meeting on Step II with participation from 18 countries across Asia and several international organizations. Step II will expand Sentinel-Asia to reach by increasing of the number of the satellites which _____(?) the data through Sentinel-Asia and will expand the communications satellites like wind(?), in order to facilitate the dissemination of disaster information. Additionally, Sentinel-Asia contributes to the _____(?) of GEOSS.

Mr. Chairman, of utmost importance to Japan is the ability to distribute and share information on water-related disasters and water disaster management through mechanisms that can quickly and accurately disseminate satellite data and information.

The two Japanese geostationary meteorological satellites, HIMAWARI-6(?) and HIMAWARI-7(?), _____(?) along with the satellite in the Worldwide Geostationary Meteorological Satellite Network, be in forth the Japanese Meteorological Observation and Earth Disaster Monitoring System.

Earlier this year, Japan continues to contribute to the collection of data in the Asia-Pacific region as evidenced by the 30-year old HISHAMARAWI(?) Series Observation. Observation data from HISHAMARAWI(?) is also utilized efficiently as a basis for research of climate change and water cycles.

Recently, research has discovered that global scale water cycle changes are directly affecting the precipitation and the water research management and contributing to water disasters on a regional and national scale.

Like our East Asian neighbours, Japan is particularly affected by monsoons. Understanding the global water cycle is, therefore, vital for predicting its future and for improving the quality of our daily lives. Water cycle observation needs to be met globally and frequently due to short-term viability. Satellite observations provide the single most effective means of making global water cycle observations.

For these reasons, Japan, with JAXA, promotes water cycle observations with the focus on precipitation. JAXA is working with NASA to monitor global water cycles. Data acquired by the Tropical Rainfall Measuring Mission, TRIM, and by AQUA, contributes to the analysis of global water cycle mechanisms and to improve in the accuracy of the weather forecasts.

The Precipitation Radar, PR, aboard the TRIM, is the first space-borne precipitation radar that enables three-dimensional observations of precipitation. We expect PR to contribute to the understanding of precipitation mechanisms and the development of the advanced models of the precipitation system.

To improve the Advanced Microwave Scanning Radiometer for EOS, AMSAR-E is the most advanced particle microwave radiometer in the world, providing high-spatial resolution of unique capabilities of all _____(?) the surface temperatures and soil moisture measurements, not possible with other similar sensors.

Observation data are being used not only for research but also for weather forecasting and trajectory predictions of cyclones, hurricanes and typhoons by meteorological and disaster management agencies worldwide.

Japan also makes efforts to publish global rainfall maps which are created from the data of _____(?).

Mr. Chairman, plans are under way to complete the Global Precipitation Measurement, GPM, Project, a joint Japan-United States initiative in order to establish the monitoring of international water cycles. GPM seeks to forecast weather and monitor water cycle variations and natural disasters including torrential rain, typhoons, wet and drought. The GPM system accurately observes rainfall every three hours using a main satellite which carries a Dual Frequency Precipitation Radar, DPR, upgrading the PR Observatory(?) in Japan, and a microwave radiometer like TERRAIN(?).

In addition to smaller satellites that carry microwave radiometers in polar orbit, DPR is achieved to ensuring accurate rainfall intensity data acquired by the GPM Project and will contribute to improving the accuracy of weather forecasting.

Recently, we have just started the development of a Global Water Cycle Change Observation Mission, GCOMW, which carries microwave radiometers to continue the measurement of the AMSAR-E.

The Global Flat Alert System, GFA, initiated by the Ministry of Land Infrastructure and Transportation, is conducting experimental operations to optimize the use of satellite data. The GFA is taking account of GPM enabling the prediction of areas of high-cloud probability based upon precipitation data was entered by satellite and disseminating water hazard information to member agencies and users worldwide, through the International Flat Network, IFNet.

The International Centre of Hydrological Assessment and Risk Management, ICHARM, was established within the Public _____(?) Research Institute in the City of Askuba(?), Japan, in 2006, under the auspices of UNESCO. ICHARM is promoting three periods of activities, research, training and information network, in cooperation with national and international-related programmes including the IFNet, JAXA and the Research Institute.

The cost of water and risk management of the Disaster Management Policy, opened last year by ICHARM, to support active research with 10 students until this September.

As for the Network of Information, ICHARM played an important role already in the First Asia-Pacific Water Forum last December and also contributing to UNESCO's upcoming Report on the World Water Development.

Mr. Chairman, demand for space-based observation and the prediction of global water cycle and water continues due to an increase in water disaster trends and _____(?) water-related issues in many countries. Therefore, it is necessary to promote the development and the utilization of space-based observations as an effective tool to respond to the associated demands for information.

Water cycle changes and the viability of water resources lately impact societies around the world, such as water-related disasters, the availability of fresh

water, the consequence of agriculture and the commercial activities, including the accuracy of weather forecasts with directory impact over all of our lives.

Mr. Chairman, it is fair to say that we have come to a point where we must target the operations of the global water cycle observations and use of this data in daily weather forecasts, river management and the Flat Reduction(?) Systems.

We believe space-based Earth observation will be able to play a major role in these areas. Integrating the outcome of space-based and *in situ* observations, achieving a high accuracy and frequency global water cycle observation using the forecasts and hazard information for disaster management and agriculture production planning, will bring numerous benefits to all humankind. Japan, in full cooperation with other countries, will make every effort to achieve these targets. Thank you for your attention.

The CHAIRMAN *(interpretation from Spanish)*: Yes, thank you very much distinguished delegate of Japan for your statement. Thank you.

Now it is my pleasure to give the floor to the representative of Iraq, Mr. Mohammed Raouf. You have the floor Sir.

Mr. S.S.M. RAOUF (Iraq) *(interpretation from Arabic)*: In the name of God, the Compassionate, the Merciful, the problem of water is very important, Sir, and is one of the main challenges in the world, especially here in the Middle East, our region, and particularly in Iraq.

Indeed, Iraq, this year, is threatened with drought due to the dwindling water supplies in it. This leaves us to employ all means in order to rationally use this vital resource. We should also encourage research and innovation to this end.

Here, we would like to mention the application made by the Prince Sultan Bin Abdulaziz International Prize for Water to become an observer in COPUOS. Due to the importance of this question and the successes made by this Prize during the past two years, we support this application and we recommend its acceptance.

Mr. Chairman, I would like now to explain the main activities of my country regarding water and space. The region of Hawaar(?) Marshes in the south of Iraq, which dates back to thousands of years, has suffered many environmental catastrophes during the last three decades, due to the drying up of the whole area which led to a complete change in its fauna and flora and affected the economy as well as the livelihood of the population.

After 2003, the rehabilitation of that area was the main objective in our Government. A Centre was created to this end within the Ministry of Water Resources. This Centre has cooperated with many international organizations such as UNEP, as well as UNESCO, the UNDP, and friendly countries, such as the United States Government, through the US Aid, and the Japanese Government through the Japan International Cooperation Agency, JICA, and with the financial support by the Italian Government and the Canadian Government, through the Canadian-Iraq Marshland Initiative. Many other NGOs and civil society organizations also contribute to this work.

Almost five years after the start of this process, about 70 per cent of the total area of the Hawaar(?) has been reclaimed. This action has been planned and monitored constantly through satellite imagery using satellites such as MODIS. We have also used the software of the GIS to monitor the total water immersion of the area as well as monitoring and studying the environmental and livelihood changes which accompany it.

Other applications to be mentioned are the creation of a system of 105 stations, water stations, which record data pertaining to run-off water and water level in dams, reservoirs and river beds. This data is transferred through satellites to a central station in Baghdad.

Those activities are some of the main applications of space technology in Iraq regarding water. We strive to expand those applications in order to improve the efficiency of our water management. Thank you for your attention.

The CHAIRMAN *(interpretation from Spanish)*: I thank the representative of Iraq for his statement.

I have two more speakers on my list, Brazil and Spain.

The representative of Brazil has the floor.

Mr. J. MONSERRAT FILHO (Brazil) *(interpretation from Spanish)*: Thank you Mr. Chairman. Speaking about space and water, we would like to address two important items of information in that regard.

First, this is information provided by the delegation of Argentina which we would like to expand a little bit. Brazil and Argentina have started joint work in the construction of a special satellite for oceanographic research and research into the coastline of the two countries. I believe it is important to briefly touch upon the background of that project.

The Governments of Brazil and Argentina decided to undertake four major joint scientific and technological programmes. The project is cooperation in the nuclear area, the second, nano-technology, the third, clean and renewable energy, and the fourth, and the last one but definitely not the least important one, is the space programme, which exactly is about designing and construction the special satellite for researching oceans and the coastal waters of the South Atlantic, along the coastline of the two countries.

Mr. Chairman, distinguished delegates, it is an ambitious far-reaching project which covers the whole array of issues pertaining to the subject space and water as it applies to our region.

The second item of information I wanted to convey to the delegations in the room has to do with the plan for scientific research which is currently being drawn up with the purpose of bringing together a number of countries, Brazil, Argentina, Uruguay, Angola, Namibia and South Africa, and it will focus on the use of space resources in the South Atlantic. This part of the Atlantic Ocean, Mr. Chairman, is one of the last studied regions of the world today. There is a lot to discover, a lot to find out as far as the resources dormant in this part of the Atlantic Ocean. We hope that this project will be successful and if it is successful, it would help us better understand our planet and thus benefit all of humankind, everybody concerned with the preservation of natural resources. Thank you very much Mr. Chairman.

The CHAIRMAN *(interpretation from Spanish)*: I thank the distinguished representative of Brazil for this important contribution and information about the cooperation between your country and Argentina. Thank you very much.

Now it is my pleasure to recognize the representative of Spain. You have the floor Sir.

Mr. J. L. ROSELLÓ-SERRA (Spain) *(interpretation from Spanish)*: Thank you Mr. Chairman. The comments I wanted to make do not really have to do with the agenda item currently under discussion, or not directly. Still, I think it is important to convey this information to the Committee.

A few days ago, in Spain, we opened an International Exhibition about water, Water and Sustainable Development. This Exhibition was set up in the city of Saragossa. It will stay there until September and we are not going to talk about this Exhibition here but this is about water and I thought that this is information that it is important to convey to the delegations here. Interested delegations are invited to visit the Exhibition. Again, it is in Saragossa in northern Spain, north of Madrid, west of Barcelona. Thank you.

The CHAIRMAN *(interpretation from Spanish)*: Thank you very much for this information. I am sure that it will cause great interest among member States.

We have thus concluded our discussion of agenda item 12, Space and Water, at least for now. We will continue our consideration of this agenda item this afternoon.

Use of space-derived geospatial data for sustainable development (agenda item 13)

Now, we are going to take up agenda item 13, Use of Space-Derived Geospatial Data for Sustainable Development, international cooperation in this regard.

At the moment, the only speaker I have under this item is the representative of the United States. Kenneth, you have the floor.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. Mr. Chairman, the pursuit of sustainable development has been one of the pillars of United States Foreign Policy and has served as the main guide to most of US developmental assistance around the world. A large portion of United States international science and technology cooperation emphasizes the need to promote this type of development. This cooperation includes, of course, geospatial technologies which can better address sustainable development problems such as environmental degradation, loss of biodiversity, food and security, access to clean water, natural and technological disasters, human disease and urban sprawl.

In 1994, the President signed an Executive Order that directed the Federal Geographic Data Committee to help guide and manage public geospatial data, technologies, standards, policies, laws and

institutional organizations involved in collecting that data in order to facilitate the widest possible distribution to multiple users.

This developed into the National Spatial Data Infrastructure. The United States was one of the first Governments to give priority to spatial data infrastructure, or SDI, and many countries around the world have now followed suit.

Today the international community shares its experience on SDI development, through the umbrella organization GSDI, which is Global Spatial Data Infrastructure. This Organization brings together national and regional committees and other relevant international institutions. Two major benefits stemming from GSDI including the monthly electronic GSDI newsletter and the GSDI Small Grants Programme, from which many African nations have directly benefited.

Mr. Chairman, last year my delegation gave a comprehensive review on the efforts underway in the United States to promote geospatial data for sustainable development. Rather than repeat that material today, I would like to highlight those examples that deserve special attention.

One of the most robust demonstrations of the full spectrum of capabilities that geospatial technologies offer us today can be found at NASA's SEVERE Project, a regional visualization and monitoring system based in Panama City, Panama.

This Project uses a satellite visualization system, computers and the web to monitor the environment, often using real-time data to track and combat wild fire and prove land use and agricultural practices and assist local officials to respond faster to natural disasters. SEVERE's sophisticated super computers integrate data from a variety of sources and displays the information, sometimes in real time. This data is provided to a wide variety of users using local, national and regional government agencies for multiple uses from daily weather forecasts to agricultural research projects.

SEVERE has been so successful in Central America that it has been expanded to the Caribbean and will soon be in Africa where an African node is being established at the Regional Centre for Mapping of Resources for Development, located in Nairobi, Kenya.

The United States is also developing the Americas Component of GEO NetCast, which is a near real-time global environmental information delivery system by which *in situ*, airborne and space-based observations, products and services are transmitted to users through communications satellites.

GEO NetCast has significant potential to enhance access to a wide range of information by users who may not have previously had access to such resources, as it will be able to reach users in developing countries with limited or no access to high-speed Internet. Reception equipment is generic, office shelf equipment and is relatively inexpensive. The user decides which data is to be received, managed and saved locally.

An initial technical capability has been demonstrated and near-global coverage by GEO NetCast is expected in the next few years.

The United States Government has also made significant contributions to the wide dissemination of Global Earth Observation Dataset. For instance, in May 2001, NASA and the United States Geological Survey announced the distribution of Global Landsat Datasets to the international community, through the United Nations Environmental Programme. More recently, under the transition to the National Land Imaging Programme, the United States Geological Survey is pursuing an aggressive schedule to provide users with no-charge electronic access to any Landsat scene held in the USGS-managed national archive of global scenes dating back to Landsat-1 which was launched in 1972. By February 2009, any archived scenes selected by a user will be processed automatically to a standard product and then staged for electronic retrieval.

Lastly, the State Department has been implementing a related initiative in Africa under its Global Dialogue on Emerging Science and Technologic Programme, or GDEST. GDEST focused last year on geospatial sciences for sustainable development in Africa. The Project brought a team of United States experts to nine different countries in Africa to look at challenges and opportunities for collaboration in geospatial science and technology. These visits were followed by a Conference, hosted by the University of Cape Town, 17-19 March 2008, where over 100 geospatial experts from over 15 countries presented papers about geoinformation research and activities in Africa. The Conference's vision was to make better use of United States and African scientists and practitioners to create a sustainable critical mass of African expertise, one that leverages the indigenous educational infrastructure and

utilizes appropriate tools for the full utilization of geospatial information.

A full report from GDEST activity will be made available in the near future.

The list of initiatives I have described here is just a sample of what the United States has contributed and will continue to contribute internationally to use geospatial technologies for sustainable development.

For your information, we have provided in the back of the room, copies of a brochure on United States domestic and international geospatial programmes in land cover applications. Thank you Mr. Chairman.

The CHAIRMAN *(interpretation from Spanish)*: I thank the distinguished delegate of the United States of America for his statement.

I give the floor to Brazil.

Mr. J. MONSERRAT FILHO (Brazil) *(interpretation from Spanish)*: Thank you Chairman. We all well know that for us Brazilians, the use of data will contribute to sustainable development. And we realized very early on that without space data, and if we could not rely on space data, States generally speaking, but developing States especially, often find it very hard to overcome the many obstacles in the field of development.

In our view, this issue of the creation of conditions which ensure that countries have access to space-based data is something which must be resolved in the field of development. New forms of development need to be set up to ensure that this problem is settled as rapidly as possible.

We would like to add something to the statement and comments which have been made so far and I am referring here to the presentation of India more specifically. India's presentation was very clear, and from an educational point of view, it was extremely pertinent. We, too, will make a presentation on Brazil's experience focusing on the creation in our country, or any country, of infrastructure to allow us, to enable us to use space-based data and satellite data, add value to them and incorporate them in our national development strategies. Thank you Chairman.

The CHAIRMAN *(interpretation from Spanish)*: I thank the delegate of Brazil for this statement.

And the last speaker on my list is the observer of the United Nations Office for the Coordination of Humanitarian Affairs.

If you will allow me to do so, dear friend, I will give him the floor first. We will conclude this part of our session and then we will hear the various other comments. I thus give you the floor.

Mr. S. ULGEN (United Nations Geographic Information Working Group Secretariat): Thank you Mr. Chairman. Mr. Chairman and distinguished delegates, yesterday under agenda item 13, as the Coordinator of the UNGIWIG Secretariat, I made a technical presentation on the progress of the United Nations Geographic Information Working Group communities recorded in the development of the United Nations spatial data infrastructure, the UNSDI, since I reported on UNSDI at the twenty-seventh session of the Inter-Agency Meeting on Outer Space Activities in 2007. Today, I would like to take the opportunity to recognize the efforts of a number of members of COPUOS who helped the United Nations to advocate for a United Nations Spatial Data Infrastructure. The UNGIWIG Co-Chairs expressed their gratitude to the delegates from the Czech Republic, Hungary, The Netherlands and Spain, for the enthusiasm with which these member States had embraced the UNSDI initiative and proceeded to establish their National Coordination Offices, where UNSDI, even before UNSDI is established as a fully-funded United Nations project.

We invite COPUOS to take note of and encourage the development of a United Nations Spatial Data Infrastructure and hope that other COPUOS members join the Czech Republic, Hungary, The Netherlands and Spain in establishing their National Coordination Offices for the United Nations Spatial Data Infrastructure. Thank you.

The CHAIRMAN *(interpretation from Spanish)*: I thank you for your statement.

And we will now yield the floor to Colombia, followed by Argentina, and then Hungary.

Mr. I. D. GÓMEZ-GUZMÁN (Colombia) *(interpretation from Spanish)*: Thank you Chairman. Chairman, Colombia would like to refer to our country's experience and the importance of space-based data for us within the framework of development. Our main objective is to organize and generate geographical data and promote access to geographical data to promote development. Traditionally, access to space-based data is intended to

promote the use of geospatial data obtained in space to promote sustainable development. And given the importance of high-level support when it comes to setting up infrastructure within the framework of space-based data, it was proposed that a topic be devoted to this within the Colombian Space Centre, an agency which would ensure that synergy between development and the use of space-based data be set up.

The information obtained in such a way would enable us to map our territory, analyze meteorological change, improvements in transport, improvement of telecommunications, and other types of activities such as, for example, the prevention and management and forecasting of natural disasters, mitigating their impact and so forth.

The technology at our disposal is not yet advanced enough to always enable us to use the data that is generated in the best possible way but this would enable us to better manage the knowledge which we do possess. And we could strive to improve norms and standards and collaboration for the best possible use of space-based data and, thus, for example, implement concrete mapping projects.

We believe that it is important to draw full benefit from space-based data and mapping which are all tools which enable us to generate and collate geographical information.

These all become elements which promote institutional management and the drawing up of policies to promote national development.

In the international context, the Colombian Space Commission has elaborated a number of projects in this field which apply to all of Latin America. The main cooperation projects include an Agreement concluded between ESA and us on the Prevention of Natural Disasters. Collaboration was established between Latin American States, Andean States and others.

We also backed the organizing of workshops on the use of space-based data and the application of information systems. The space-based data infrastructure of the Colombian community aims to improve the use of space-based data for geographical mapping to ensure that we have all best possible data available. And the Geographical Institute was consulted by an Intergovernmental Committee which is of interest to States such as Argentina, Brazil, Uruguay, Paraguay, and the idea here is to see what the potential is to incorporate digital mapping into projects already undertaken and to ensure that it covers the regional as a whole.

Over the course of the past year, a geographical institute was asked to participate in initiatives launched to promote the publication and dissemination of the geographical services of all countries in the region. Support was provided by the OAS and we intend to promote the organizing of courses on the use of space-based data, geographical information and the specialized use of geographical data.

By way of conclusion, Sir, we would like to officially present the experience of our country, Colombia, on the use of space-based data.

The CHAIRMAN *(interpretation from Spanish)*: And, as we have very little time at our disposal, that we have four statements to make, or presentations rather to hear, I would ask the delegate of Argentina and Hungary to perhaps make their statements this afternoon, unless, of course, these are very short statements. If this is the case, it is with a great deal of pleasure that I give the floor to Argentina.

Mr. F. MENICOCCI (Argentina) *(interpretation from Spanish)*: Thank you Chairman. I will be very brief this time.

My country wishes to state that it associates itself with what was stated by the delegate of Brazil, Mr. Monserrat Filho. We all are familiar with my country's policy regarding the free access, open access to satellite data and I would like to state that a number of countries have agreed that satellite data from Argentinian satellites should be open for us by all Latin American States and this would also cover Caribbean States. Thank you.

The CHAIRMAN *(interpretation from Spanish)*: Thank you and I give the floor to the delegate of Hungary.

Mr. E. BOTH (Hungary): Thank you Mr. Chairman. I would like to react only in a few words to the statement of the distinguished representative of the United Nations OCHA on the Spatial Data Infrastructure. Thanks for his kind words mentioned in Hungary yesterday of good examples or activities in this field.

Hungary as early as in 2006 created the Hungarian Coordination Office for the UNSDI Programme and now this Office comprises more than 30 entities, mainly from the governmental field, mainly

from the university and research fields. And this works with close cooperation in the Hungarian Association for Geoinformation which comprises more than 100 member organizations including also some representatives from private companies, beyond the governmental and scientific institutions. The Hungarian Space Office fully supports the activities of these entities and I would like to thank once more to the representative of OCHA for his kind words which I will convey to the Hungarian Secretariat. Thank you Mr. Chairman.

The CHAIRMAN *(interpretation from Spanish)*: Yes thank you very much and I will give the floor to the representative of Chile.

Mr. R. GONZÁLEZ ANINAT (Chile) *(interpretation from Spanish)*: Thank you Chairman. I, too, will be brief, do not fear, but just to state very clearly, following the outstanding presentation by Brazil, or rather statement made by Brazil, and the outstanding statement made by Colombia, and I am sure that all of us agree with what she(?) has said. There is also the very positive comments voiced by Argentina, and this as an aside, is a country with whom we will soon be signing an Agreement. I believe that all of these are the positive results of the Space Conference of the Americas and this needs to be pointed out.

The CHAIRMAN *(interpretation from Spanish)*: Yes, thank you, and thank you to all the delegates who have taken the floor and I would like to thank all of those who found it in their hearts to be brief when making their statements.

I would now like to continue our consideration but we will continue this afternoon. This afternoon we will also consider a number of other items, for example, the proposed Strategic Framework for the Programme on the Peaceful Uses of Outer Space for the period 2010-2011 and we reached agreement on this and other topics and items we are to consider this afternoon. And all I will do now is tell you what we will consider.

We will start with the composition of the Bureau of the Committee and its subsidiary bodies for the period 2010-2011. And we have some very good news under this item. Then we have the operation and future functioning of the Committee. Then the fourth question is the proposal for a new item on the agenda of the Committee. And finally, the last item will be the observer status. These are the issue which we will examine under other matters and this is what we will do this afternoon. But for now we will move on to various technical presentations.

The first of these presentations is that by Mr. Arkady Galper of the Russian Federation, "The International Russian-Italian Project Rimpamera(?): Investigation on Flows of Cosmic Anti-Particles".

Mr. A. M. GALPER (Russian Federation) *(interpretation from Russian)*: Mr. Chairman, colleagues, thank you very much for this opportunity to make a brief presentation on an interesting project that we call Rimpamera. I am a Professor at the Moscow Engineering Technical Institute. I am Co-Leader of the Project for the Russian side. On the Italian, Professor Ricozzi(?) of the University of Rome is the Head of the Project.

By talking about this project, we seem to be moving slightly apart from the subject of this meeting. This is about fundamental research in the area of astrophysics, cosmology. Still, when I speak about the various aspects of our research, I will try and focus on the practical issues that you are discussing in this Committee meeting, yesterday and today.

Now, the next slide refers to the various entities involved in this project. A number of Italian universities, once again, universities are participating, as well as universities from Russia, Germany, the University of Ziegen, and Sweden, the Royal Polytechnical Institute in Stockholm. So this is the geographical pattern of the various partners involved in this truly international project.

From the very outset, the preparation stage, the fine-tuning of the equipment and the processing of the results throughout the chain of events, at every stage in the project we involve a large number of students from all of these universities. And, of course, the experimental results are used in training courses offered to these undergraduate and graduate students and this is an important aspect of space and education, a subject I know that you have been considering here.

This slide lists the participants in the project from all of these universities and institutes. I am showing this list not for you to try and find familiar names. The only point I am trying to make here is that most of these, more than half of these are young people under 30 years of age.

Now, before I list the most important objectives of this experimental study, I would like to briefly dwell on the situation that arose in recent years in the area of cosmos-physics and astronomy.

The most important research in recent years into space, microwave radiation, infrared radiation has demonstrated that a considerable part of our Universe consists of the so-called invisible matter or dark matter and also what we call invisible energy or dark energy.

This slide appears to be very scientific but actually it is quite simple. If a volume of one cubic metre in our Universe contains a certain amount of substance matter and a certain amount of energy that goes with this matter, you will remember Einstein's formula on the relationship between energy and matter. And if we consider this amount of matter to be one unit, then this unit will be composed up to five per cent of regular matter which we are familiar with, stars, celestial bodies, planets, gas and even black smoke. The so-called regular matter, once again, accounts for no more than five per cent of one cubic unit of the Universe. The rest is accounted for one so-called dark matter and dark energy associated with it. And they are not called dark or invisible for nothing.

Up until the present, the very existence and the source that gives rise to this type of matter and energy, has been unknown. So this is truly dark matter.

Just think about the entire science of astronomy, everything we have studied to date accounts for only five per cent of the matter that makes up our Universe. Obviously there is keen interest among the scientific community as to what is this dark matter and dark energy all about. I am going to talk about dark matter only, leaving dark energy aside today, and I have only demonstrated this slide to get you interested in the overall objective of this experimental study which is a huge, as I pointed out earlier, international collaborative project.

As happens almost always, once we started looking into the nature of this dark matter, we identified several alternative candidates, or possible candidates. Obviously any experimental fact is taking up by puriticians and they come up with various hypotheses, various alternatives that could in theory be dark matter or give rise to dark matter.

This simple diagram shows two of such alternative models that would provide a possible explanation of what dark matter is all about. These are either very heavy particles whose mass exceeds the massive proton by a hundred or hundreds of times. This matter almost does not interact with regular matter or engages in very weak interaction only which is why it defies our instruments. Still, these particles can be registered, can be recorded in certain ways or at least attempts are being made in a number of countries.

How do scientists go about it? They try to detect these particles which emerged in the early stages of our Universe, at the birth of our Universe and then have spread throughout space. We can, in theory, record the collisions of these particles with regular nuclei. Another way of establishing their existence is the so-called annihilation process. According to these theoretical models, and once again these are theoretical models only, that might have consisted of particles which once they collide might disappear and give rise to regular matter particles that we are all familiar with, electrons, positrons, anti-protons and others. So our mission here, our task, is to go through these cosmic rays and look for those regular particles that arose as a result of the annihilation, the collision and annihilation of dark matter particles.

It shows our Milky Way and a point at which these particles self-destruct giving rise to protons, positrons, gamma quanta, anti-protons. So we followed the flux of these regular particles that, as far as we can tell, arose as a result of the annihilation of dark matter.

In their natural forms, these particles also appear in cosmic rays but they are very few and far between, and if dark matter particles give rise to large numbers of regular particles, we can use those to track the traces of dark matter which has been annihilated to give birth to these regular particles.

So this was a brief introduction by way of background. To give you an idea, maybe enhance your interest, whet your interest a little bit.

Now, once we understand these fundamental things, a number of practical tasks arise and they are listed in this slide. We have to look for anti-matter particles. These are not anti-protons, these are anti-nuclei where both protons and neutrons are replaced by anti-matter particles.

Next, we studied the origin of dark matter, something I have spoken about at greater length just now, and since we have these instruments in place we can also use them to study many phenomena associated with the generation of cosmic rays. And at the same time, this is very important, we can study the structure of near-Earth space.

Now, moving on to our experiment proper. Rimpamera(?) was manufactured with the active participation of the institute which, the institutes and

the universities which I listed earlier and using a Soyuz launch vehicle, it was put in orbit on 15 June 2006. Today we can celebrate the second anniversary of this unique experiment. And, by the way, there is no other experiment being carried out anywhere in the world at present focusing on these specific issues. A number are being prepared but this is the only one that is actually already in space, to the best of my knowledge.

This figure shows the spacecraft itself, the space object itself, it is called ResulsDK-1(?) and it is specially designed for photographing the Earth's surface with a very great(?) resolution and the widescope. It always looks down and if we set it up in a hernatically(?) sealed container, then we can continuously watch incoming particles, these cosmic rays that get to the Earth's surface from outer space. This is an elliptical orbit we are talking about here, the apogee and the perigee are 360 and 600 kilometres respectively. We work in continuous mode, no interruptions. We do not turn off the equipment at any time, even when we cross the South Atlantic anomaly. And because of this continuous work over the two years, we have accumulated an amazing array of data.

Now, this is briefly a description of the space vehicle, the spacecraft itself, and the photographic equipment we used to photograph the Earth's surface. If you need more information, I invite you to apply to the Russian Space Agency which will be happy to provide all details and also ways to access the information that we collected through this work for remote sensing of the Earth.

Now, I would like to discuss at greater length this Rimpamera(?) set up. Its central part is a five-section constant magnet. It is also equipped with a number of gauges and a number of detectors, the kind of detectors that are used not just in outer space experiments but also at particle accelerators. This is the first time, I think, that this technology developed for particle accelerators has been transferred to outer space. It is a unique instrument. In a magnetic field, charged particles are deflected one way and, of course, anti-matter particles are deflected the other way. So we have in our hands a very reliable set up for isolating anti-matter, anti-protons and positrons.

We are looking at the curvature of the magnetic field and that curvature is measured with a very high accuracy to within a few microns. We can assess the impulse, the energy, the mass of these particles, the entire array of information we need to analyze these anti-matter particles. The weight of the instrument is about 500 kilograms and also, this is important, this instrument has gone through every preparatory phase before the actual space mission, including accelerated experiments, exposure to accelerated particle beams to make sure that all of its characteristics are refined with the utmost precision.

As you see these particles go through, the space are detected by the various gauges then electro-magnetic interaction occurs which provides us with additional characteristics of these particles. And below, there is an electronic detector which registers electrons that arise in outer space or is a result of these interactions.

The next slide provides an overall view of the spectronometer, before it was mounted on the Rimpamera(?) spacecraft.

All of the elements we have discussed are here, magnetic field, calorimeter at the bottom, neutron detector and so forth. On the right we list some of the technical characteristics of the instrument.

The next slide. The orbit is relatively low, relatively low altitude, and when our instrument passes over the data reception station, which is at the outskirts of Moscow in a suburb called Otragnoya(?). Every day when it passes space above that station outside of Moscow, it receives information. Several times a day, this information is transmitted to us with a very high degree of reliability.

This next figure is a diagram of the process involved in receiving and analyzing the data we collect from Rimpamera(?). This is our data, as well as remote sensing data, which is in addition to what we do, then we separate out our own data that has to do with anti-matter particles, something that we are looking into, and then we show here the data processing stages that occur at the data processing station itself, that station outside of Moscow that I mentioned earlier. By the way, young people are very actively involved in this work and data processing right there at the station.

Then processed data is transmitted to my Institute and then through an international scientific data transfer network which was developed by CERN in Switzerland and is used by us and by our Italian colleagues. This data is shared with all of the institutions involved, the Institute in Italy, in Bologna, and the others. The Italians are also involved in a number of projects at CERN. Therefore, they have access to this network which we are making good use of.

I also wanted to share with you a couple of figures which illustrate the way we reproduced this information, these data once we have it and have processed it on Earth. The picture I showed earlier was a drawing and this is the actual image. It shows what anti-protons do, they pass through the magnetic field, they are deflected. You do not see this deflection with the naked eye because this is a matter of a few microns but trust me it is there, and then the process of annihilation occurs. The particles, the anti-matter particles interact with the calorimeter matter and they both vanish, the anti-particle and its partner, they collide and they vanish. But as a result of that annihilation, new regular particles arise, which we then detect. I do not want to dwell on this at great length. I just wanted to give you a general idea of what happens and of the capabilities that we have because of these very fine instruments of establishing very accurately which particles these are, helium, deuterium, proton, anti-proton, the pulses, positive for the particles on the right, negative for the particles on the left.

You see we have these excellent instruments and we can process these data and draw very important conclusions. I am not at this point going into the scientific accomplishments we already have. All I want you to retain in your memory if possible is the overall idea of what it is we do. This is how these nuclei are isolated by the way.

The images I am showing are just to demonstrate the vast capabilities of the instruments we have, the degree of accuracy for measuring these particles which was unknown until the present time. This is where we look at the origin, the source of the dark matter particles and again to a scientist this slides show that the accuracy of these studies is extremely high.

This is again a demonstration of various other events that our instruments can record, solar events.

The CHAIRMAN *(interpretation from Spanish)*: Just to remind you that we have three more technical presentations and the time limit is 20 minutes per presentation. Your presentation is extremely interesting but please we should proceed to conclusions.

Mr. A. M. GALPER (Russian Federation) *(interpretation from Russian)*: Yes, thank you very much. I need one more minute, seriously.

I just wanted to show the various ameterspectra and here is the conclusion. We are going through the Brazilian anomaly as it is called, it is so-called in this slide, and if you look closely you will see that the particle fluxes here are hundreds and thousands of times more powerful. This is that part of Brazil in red.

In conclusion, this machine ResulsDK-1 is in operation as of 20 May. We had received 706 working days worth of data from Rimpamera(?). It is a very efficient operation.

And the final slide, just before leaving Moscow, I checked the machine was working perfectly, normally. In the last 24 hours we have had four downlinks and have obtained 14.6 gigabytes of information. This is just the very latest. Thank you very much.

The CHAIRMAN *(interpretation from Spanish)*: Yes thank you very much Mr. Galpar. Thank you also for your understanding. Your presentation is truly technical. Some of us do not have the necessary specialized knowledge but it does demonstrate very clearly the high-level of international cooperation. Thank you very much.

The second presentation this morning will be made by the Goodwill Ambassador of the Year of the Planet Earth. Mr. Janoschek, you have the floor.

Mr. JANOSCHEK (Goodwill Ambassador, Year of Planet Earth): Thank you very much Mr. Chairman, distinguished delegates. I would like to thank the organizers for giving the International Year of Planet Earth the opportunity to introduce this international year here at this distinguished assembly and to give you some information about what we like to do.

The title of my presentation is called “The International Year of Planet Earth”, an extraordinary chance to _____(?) two kinds of information.

May I briefly introduce myself? I am a geologist by profession and I am working with the International Year of Planet since a couple of years and voluntarily I am called the Goodwill Ambassador but it is nothing very serious.

The International Year of Planet Earth is thus proclaimed by the General Assembly of the United Nations in December 2005 to the year 2008, but as one year is a little too short for doing science and outreach so we have altogether a three-year time span and that means from 2007 and 2009 so we are just in the middle of the so-called International Year of Planet Earth.

The idea behind, why do we need an International Year of Planet is, the main idea is to demonstrate the great potential of the Earth Sciences and the building of a safer, happier and wealthier society and to encourage the society to apply this potential more effectively. We have the feeling that the knowledge of pure sciences is not properly used for the benefit of the society.

The International Year stands for the people and for the planet itself. The people is _____(?) for safer, healthier and prosperous society across the globe, the planet to reduce environmental impact of human activities. It is included in this under the umbrella of the sustainable development and under United Nations patronage, of course, and we are also working to creating bridges between the brown and the green. The brown that is basically extractive(?) industry or industry at large, and the green is, of course, you know what I mean is the green.

Behind the International Year of Planet Earth is basically the International Union of Geological Sciences, that is a scientific union under the umbrella of ICSU, and it was co-initiated by UNESCO at the end of the year 2000 and the beginning of the year 2001. At that time, UNESCO still had an Earth Science Division.

We have 12 standing partners globally, 26 associate partners and 15, this is the data, the figures of April, now we have 17 international partners, and we have now 69 national committees plus one regional committee, 69 does not too much but these 69 national committees represent more than 76 per cent of the global population.

Here you see a global map and in part there you see the way the national committees in operation In Asia, we have this regional committee and we have yellow in progress and in green under consideration, so I guess that again at the end of the year we will have 75 to 80 national committees in operation more or less representing the global population.

We are in close cooperation with other international years which are done in the same time span. These are not United Nations programmes, these are basically scientific years and right back to the International Polar Year, you have heard in the sense the Electronic Year, Physical Year, physically celebrating the International Geophysical Year last week, it was in the years 1957 and 1958, and that one on the left, the International Heliophysical Year which was basically based here in this United Nations august space organization.

The idea, of course, we use some models. I already mentioned the International Geophysical in 1957 and 1958. We used a very good example of the German _____(?(*(in German)*, Year of Geosciences, which was performed in the year 2002, and as a good example, we are using the International Year of Physics and the Einstein Celebration of Heliophysics(?) in 2005.

We have other models which should not follow, that was the International Year _____(?) by the United Nations, the International Year of Deserts and Desertification, and in the year 2006, and today the topic is of fixed importance of many countries, physically nobody was aware of this international year. And if you keep this last information confidential, the United Nations General Assembly in the same meeting of the same session, decided also for the year 2008, the International Year of the Potato and it reported the _____(?) or the _____(?) German word of potato that it responded here, or kartoffel, that there might be some secret relations between the International Year of Planet Earth and the International Year of the Potato.

We focused on two items on science and outreach, as we feel, science is already done and there are good results in science and we continue but we have the big gap, the missing link is outreach. I give you here information about our science themes. We have chosen 10 science teams and you see from the wording of the science themes, we try to avoid as much as possible the geo-scientific _____(?) or the geoscientific planned(?) which mostly are the public, most of the journalists and be the makers of decision-makers and politicians, not really understand. So we try to speak in an easy understandable language, not only in English, in all the countries, of course, in their national languages. You see current water _____(?) has a very important phase and test and upcoming and very interesting topics, climate, climate change, nothing works at present without reference to climate change, but you know, geologists have a century(?) every past climate change and climate change always happens at the climate since more than 500 millions. So we, the _____(?), can we, climate change in the _____(?). We are dealing with resources, mega-cities, as well as important, deep thought(?) is the most scientific topic of our time since the ocean, of course, soils is the living skin of the planet and earth and life, oceans and diversity all have _____(?) very well known. And you see it is not only geoscientists, it is a weighty and

inter-disciplinary topic we try to get _____(?) in the International Year.

One of the leading scientific outcomes, and I have listened with great interest, is to the previous delegations and delegates, is that when geologists, that is let me say a geological information, a geological map, but understandably, to everybody which is preferred in all the participating countries, by all geological series, it will be fully digitalized, not in different phase, and everybody should have access to all the data. And the group of scientists and geo_____(?) experts is working on that and the first data portal of the system will be opened at the end of this year and we hope that many, many people, not only pure scientists, will use this information.

Outreach. I mentioned already that outreach is the most important item we feel and it is also the topic of this presentation is outreach. Outreach is to generate data awareness amongst the public, as to by their _____(?) importance of the geosciences to human life and prosperity. It is to stimulate awareness of the societal contribution of the pure sciences within national education systems. Education is an important item of outreach. And to increase the understanding the societal importance of the geosciences on the part of decision-makers and politicians.

It is education and the identification of all sciences and Earth systems sciences within the curricula of the schools and the universities and create the academic feasibility of Earth Sciences with the national education system. It is, of course, the media relation and it is the political liaison we try to create or to enhance.

I will give you some examples of outreach that was, for instance, the big global launch event at UNESCO's Headquarters in Paris, mid-February 2008. We have planned and already performed some continental launch event in Africa which was this May in Tanzania. We had national launches in many different countries, India and the United Kingdom have them the first and they start early January 2010, outreach to have _____ buses, trains, ships which tour, which cruise around the country and give any information to the public, to the students who are working in Austria and The Netherlands and Germany, we have a 18 mega-train which travelling through India. We have geo-parks(?), I will come back to geo-parks later. We have a big success throughout the world, the world's biggest deep oiling(?) research vessel, it is Chaptamedis(?), it is painted in the colours of the International Year. You see the logo on the top left on this. We have TV documentaries and we do it on DVDs with some countries have produced stamps. We have plenty of exhibitions globally. We produce popular books and articles for we encourage the scientists to do that. A very good item is _____(?) excursions to show the relations between geology and wine.

And, of course, we will be present any many international and national congresses and conventions. To highlight this, the International Astronomy Congress in Oslo in August 2008, there is a World Landslide Forum in Japan this year, a Geo-Tourism(?) Conference in Astoylia(?) in August. It is the Third UNESCO Geo-Parks(?) Conference which will take place next week in Germany in Opnerbruck(?), and there is the big United States event, the Geological Society of America Annual Convention, together with many other American geo-societies which will take place at the beginning of October in Houston, Texas.

We did not forget art competitions, art expressions here following these paintings and music and whatever.

This is also information about the launch event I already had mentioned at UNESCO's Headquarters in Paris took place on 12 and 13 February this year. We had the Head of State, leaders of industry and top scientists. We had three main debates about resources, about assets, and about citizens of system Earth, nearly 1,000 participants and we were very crowded, we had about more than 100 award-winning students from across the world. We prepared a competition under the umbrella degree on national level that students in geosciences should give their ideas about planet Earth geosciences on the Earth. One hundred students have been invited.

This is a picture of the national launch event. I took this from London. It was in Piccadilly, in the heart of London, on 10 January they launched 4,567 completed biodegradable, it is important, completely biodegradable balloons. Each balloon, 4,567, each balloon representing one billion youth of the planet Earth.

Important, of course, is the language. We cannot do this in English, though we have to speak the national languages of the different countries, of course, so we have our logo in many different languages here. It is a short presentation of some 12 different logos in different languages. We have publications, 10 on the science themes I have already mentioned and one for general information and one on the outreach programme. All these themes are available on the Internet. You can download it, you can print, you can

read it and you can ask, you will find the address of the Secretariat and you can access all this information, all this brochure.

I will come back to gee-paths(?). I have briefly mentioned geo-parks and I think this is one of the best possibilities to really distribute to the public the idea what is geosciences, what can geoscience do? Geo-park(?) has three main items, main goals to this conservation, it is to contribute, it has to contribute to sustainable development and to tourism and it is, of course, important to education.

Geo-park(?) is an area with a geological heritage of significant. It is _____(?) and strong management structure and where sustainable economical development strategy is in place. It should create enhanced employment opportunities for the people who live there and that it, amazingly enough, perfectly working and it should bring sustainable and real economic benefit usually through the development of sustainable and physical _____(?) tourism. In a geo-park, geology heritage and geological knowledge is shared with the globe public and linked with broader aspects of the natural and cultural environment which are often closely related towards sociology and the landscape. And either geo-parks should look like that. It should be an area of some 100 to 2,000 or something like that square kilometres and in a geo-park(?), it should have, of course, geo-sites of geological interest, of geological heritage. You should have cultural sites. You should have cryotopes and, of course, there should be people settlement(?) and it should work in the geo-park(?), for this is the difference to many of national paths(?) where the people and work is basically excluded(?).

A geo-site is an outstanding example of presenting major status of the Earth's history, including the record of life, significant ongoing geological process in the development of land forms or significant geomorphic or physio-graphic features. This is a geo-site, of course.

And in the geo-parks(?), we should use the geo-parks. We, the scientists, ourselves, should use the geo-parks to re-thinking the whole of Earth Sciences. This is closely-related and has to play an important role in the protection of the environment. It has to play an important role in education and in popularization of Earth Sciences. It should be an education for sustainable development. It should create a bigger respect for nature by the people and it should provide education for everybody.

The word geo-park(?) is not protected but there are some rules to be had, together with UNESCO, there is an Agreement that strict regulations have to be kept, have to be met and then it is a global geo-park and there is a method of this which is under the auspices of UNESCO, but there are also national geo-parks(?) on, let me say, a little bit lower level and, of course, there are regional geo-parks, although the geo-park itself is not perfected but if you have a global geo-park, then you know that it is really checked, it is evaluated and it meets the strict rules of UNESCO.

So far, there exists 56 geo-parks in 17 countries globally but many are in the _____(?) and are waiting to be evaluated as geo-parks. Leading countries in the geo-parks field is China, there are plenty of global geo-parks, which is UNESCO, and with many national geo-parks, it is France, it is Germany and it is the United Kingdom and Ireland and, I am proud to say there is an Austrian geo-park.

I hope I could give you a short introduction as to what the International Year of Planet Earth is and I hope that you could understand the outreach that we know much more and that we hope that you could use, that our knowledge could be use for a better understanding and for all sustainable development and of the society. And please visit us under our home page yearofplanetearth.org and if you are interested in geo-parks then please visit the home page europeangeoparks.org but everything is in together. Thank you for your attention.

The CHAIRMAN *(interpretation from Spanish)*: Yes thank you. Thank you Dr. Janoschek, Goodwill Ambassador. I would like to thank him for this very interesting presentation and if we have sufficient time left at the end, we could perhaps have a question and answer session.

But for now, we will move on to the third presentation for this morning which will be made by Mr. Sri Shivakumar of India who will make a presentation entitled "Water for Livelihood: Watershed Development Strategy Through Space".

Mr. S. K. SHIVAKUMAR (India): Thank you Chairman. Let me begin my presentation on the Water for Livelihood: Watershed Development Strategies Through Space".

Our Watershed Development Programme is _____ *(not clear)* this and I would like to present the findings of this project and what we really achieved in this specific programme.

Just to recap, in earlier presentations to the COPUOS, the Indian delegation had presented about the integrated mission for sustainable development which was carried out when _____(?) started looking at the operation of remote sensing satellites in the early 1990s and the _____(?) were covered in India because the findings were separate from the country. Later on, when _____(?) advanced with the knowledge of GIS and Management Resource(?) Systems and high-resolution satellites through space, we pick up the very focus from it which is named SYBILLA(?), the _____(?) derived from Sanskrit legislature(?) to stand for the good or the holy and General(?) stands for the water.

So with this small backdrop, let me go ahead with what we really have done in developing it.

This is a project that is conceived to take care of demonstrating how one could partner the several agencies and bring about really the progress in specific regions, whether we can demonstrate that the synergy of many branches of remote sensing applications, we can show progress. The SYBILLA(?) was conceived in Kanatica(?), the capital of Kanatica is Bangalore(?) which is in South India, and it was focused on about five districts of different agro-climatic zones. We had about 77 watersheds covering about 350,000 families and about 1,270 villages. This is about different, I should say, the problem here is because all of these things well we should, if one has to address and what we are talking about, improving the specific areas under consideration.

This one, of course, consider a unique project because the goals right here, there is uniqueness(?) in the whole project, the players were partner(?) _____(?) and the tools that we used were very modern which are current and one could very easily, and they try to use them and show how that would be and for that could be achieved.

Then, of course, we set a goal of improving the products for _____(?) that give essential, _____(?) poverty, development to strengthen the community and local institutions and sustainability of _____ *(not clear).*

I would underline that _____ *(not clear)* because this has been considered as one of the priority projects which will stay there for many, many people to emulate this project. Then, of course, we have to do within the participatory planning and implementation which is slightly more focussed and more energetic _____(?) and the use of modern space, of course, we had many new satellites with better capabilities in space. The management information system has already been already available and we had many communications satellites which could be used for producing first the communication links and the community infrastructure(?) data and similar data. That, of course, concurrent monitoring, of course, was one of the course of research in terms of management and impact assessment. The whole project was run with _____(?) excellence in terms of providing the information top down the bottom map, which generated a bit the transparency of available service projects and to produce _____(?) social equities(?), economical activities and _____(?) quality and _____(?) requirements. And participation was available for us on the thematic based organizations, non-governmental organizations and the governmental bodies.

But _____Net(?), the whole project got the facilities(?) from the Department of Space and the World Bank approved this specific project. The Government of Kanatica(?) and the State where we all come from, and the _____(?) *(not clear) (speaker not clear)* … and the three partners and the _____(?) available for us, the Committee can help _____(?).

The private _____(?) looks like. We have the satellites available. We have the resource maps available with regard the participation of the community of _____(?) and other parties, and the fourth one on this is all about the language which we talk about. This, of course, was one of the major practices also in this project wherein the local people who are inland want to be talked to in their language that they can understand. The bi-lingual approach was taken and done in the language of their land, the _____(?) land, the language that is used bi-lingual was accepted therefore making sure that people understand what they are really doing.

So geospatial data and multi-_____(?) based _____(?) watershed helped in making an unbiased choice of the current _____(?) development of _____(?) and they selected the different sites that were _____(?) that we talk about.

Then application(?) for planning in the community has several major composites. An Action Plan is generated by integrating the resource map. We had people operation including the socio-economics effects of included and multi-action by this _____(?) done by watershed level and for land and water, this is the developments here and hope the target was set.

Some of the important years _____(?) considered and satisfied as the natural resources we use the red lines, delegated(?) areas, forests, rainfall distribution, _____(?) and associated link(?) indicators, we use electric _____(?), like the population, the distribution of _____(?) poverty line families and _____(?) *(not clear)*.

For _____(?) realization(?), or a continuous one I should say, because some current monitoring is available and also thoroughly we have impact assessments going on. We use most modems, management of _____(?) system was developed, designed, developed and deployed and also the tropic was monitored through self-assessments and also the quality checks through the random _____(?). And the impact assessments, we took the _____(?) environment sectors, both in terms of _____(?) application(?) based and also ground-based _____(?) were conducted and socio-economic affects were also taken by ground-based _____(?) service.

_____(?) the management information systems, of the _____(?), even when the _____(?) is developed to make it simple and user-friendly so that the information flows available to everybody who is part of this programme. And this is to be included all about user-friendly software, maintenance _____(?), records, typical and financial information to be used in targets and institutes here. Of course, databases are created, that are synthetisized and we ensure that the data is updated and put _____(?) are not duplicated(?).

A bi-lingual _____(?) developed for communities to prepare integrated watershed development plans at the local level by the communities increased.

The plan was adopted with the _____(?), an initiative of the project with different partners are available and then we went through the training of acceptable links there appropriate to _____(?) and also we had in the mountains as a realization and learning _____(?) and at the end of it, we did have an impact assessment done and the people who started this, with the _____(?) to see that how much of sustainability(?) of the project.

Then the impact assessment, we went to a lot of activities, a combination of conventions and remote sensing approaches, which were utilized to generate the benchmark data, the design and service of multi-States _____(?) approach in learning _____(?) criteria, randomization, area by sampling the _____(?) professionals to find a link to be _____(?) in providing _____(?) estimates of baseline and sufficient(?) benchmarking. We used the mapping available, we had done this at micro-level and the macro-(?)level and the _____(?) was and hyper-service(?) was conducted.

As for the impact assessments, we made long-term and short-term, all short-term type of changes, making changes of forestation to deforestation, crop area intensity, watershed, biodiversity and other land _____(?) changes, impact on the environment was taken note. There are a lot of indicators for us. Here is an example of what happened before treatment in that treatment.

With this is an example of how water could be effective as a firm point. This is the collected map which was referred and _____(?) useful for the local people.

This is another example of what the field standing of how it is being done implemented and what, before the programme of the assessment(?) what it appointed(?) because the maps are available for us and then the field(?) managers have adapted their progress.

In the field of education, in the _____(?) area what it considers one can see that between the yellow(?) lines, _____(?) of certain intensity, including the diversity of crops from two to five crops, the _____(?) crops including the _____(?) for us minimum changes for their _____(?), … *(not clear)* noticeably _____(?) product seeds, _____(?) considerations, and ground water level increase, all these things could be mounted, particularly at the science _____(?) application for this.

_____(?) of soil and water concentration(?), banding, compound, _____(?), wet the earth, check damp, the _____(?), rubble(?) checks, run-off, the water excess, all these are available at the sites that are taken for this.

Other instruments are _____(?) and called the spin-offs are the _____(?) from this specific programme was to generate the employment of quite a lot of people, it is the farming systems, could check out some of these R&D aspects of that, it could be _____(?) livestock improvement, noticeable human employment _____(?) rates, income generation increase, capacity-building was visible.

Implementing high-programme(?) cameras(?) is also visible. The land looks marginally the land holding people, small _____(?) holding people(?) and big plant _____(?) is available there, improvement, generating from 1.5 _____(?) factor to 1.8 _____(?) factor.

And, of course, the underlying _____(?) is the mandates for employment generated and the migration was created _____(?).

How do we get this success? To start off, what one should be doing lately. I will just _____(?) here what could be the replicating aspects of the _____(?). I think it was the convergence of the _____(?) the local action, multiple stakeholders were available but no _____(?) were there to implement them. Natural and human aspects with adoption for _____(?) *(not clear)* the vertical and horizontal integration. Naturally, the general success and all the needs for the _____(?) into rural development and also some other States like _____(?) and _____(?) again, are thinking, are planning to adopt this project in the _____(?) areas, international and _____(?) comes from families, _____ *(not clear).*

The World Bank remarked on this _____(?) a model of excellence and should be promoted widely for a better _____(?) to follow. It can be used to be a model of excellence to provide global background and change induction data that is in there. The World Bank will be using _____(?) and list of its projects that you hear a lot about of what exactly happens to the last project.

Just to conclude, this is the way we are going ahead _____ being a part of where we are _____(?) with micro increase and these particular areas, particularly affect the _____(?) story which I am very happy to report to you Chairman. Thank you for your attention. Thank you.

(The speaker was very difficult to understand)

The CHAIRMAN *(interpretation from Spanish)*: Yes, I would like to thank Mr. Shivakumar for the outstanding presentation he has just given on us for water for livelihood and the project which was implemented in his country. This is something to which all of us seems to be one of the most interesting aspects of space and we will return to this later, I am sure.

But for now, I will give the floor to Iván Darío Gómez-Guzmán, Executive Secretary of the Colombian Space Agency and the National Geographical Institute of Colombia. I give you the floor Sir.

Mr. I. D. GÓMEZ-GUZMÁN (Colombia) *(interpretation from Spanish)*: President, thank you. We are running a little late and I will, therefore, attempt to present my presentation as briefly and as condensed a form as I can. And I can do this because a number of the ideas we are going to present have already been touched upon these last few days. But there are things which I will take just a little more time to dwell upon.

There are countries which possess satellite communication infrastructure which is very advanced and there are developing States which have their first satellites in orbit, and then, of course, there are countries which, in the medium, short- and long-term, will not be able to obtain remote sensing data in any other way but purchasing it from private enterprises or countries which collect such data, gather such data. Or they will have to wait until countries possess such satellite-based data decides to provide this data for the good of the social, economic development of these countries.

So, faced with such a situation, a country such as Colombia, which is most interested in all aspects of space exploration, took a very important decision about of setting up the Colombian Space Committee. So this Committee seeks to, at an internal or domestic level, to organize the players and stakeholders who require information and data, Ministries which use space-based data, as well as other bodies which deal with issues such as planification, geographical aspects, air transport, both civilian and military, over flights of the national territory and meteorology, science and technology, international technical cooperation, social action and so forth. And a Decree covering this was adopted in 2006 which deals with the various uses of space-based data.

So this Decree stipulates that we are to use the space-based and satellite technology in a coordinate way. We are to strengthen our research and knowledge management programmes in our country. In Colombia, we have a National Development Plan which has been under way for six or seven years now and has another three years to run. It provides for us to use space-based technology in a number of fields, such as those which are on the slide here, I will not list them

all. We all know in which areas such data and space technology can be used.

We took the decision of not dwelling on all the issues but specializing ourselves in a number of areas, such as, for example, telecommunications, remote sensing, Earth observation, satellite navigation, astronomy, tele-medicine, aerospace and so forth and a number of other aspects such as political and legal issues, research and the Colombian Space Data Infrastructure. And this is something which I am going to address here and now.

Now, the telecommunications group dealt with the issue of the transmission of data, radio transmission, television, emergency assistance services, disaster management services. We also looked at how to manage the market for such services and we carried out feasibility studies. And here on this slide, we are looking at the National Satellite Navigation Plan. We used data gathered for various applications. I apologize, I am just running through this because we have so little time and that is why I cannot look at the detail of each of these issues but we are currently implementing a National Satellite Navigation Plan to regulate the use of existing systems and to implement applications which enable us to apply maritime and terrestrial geographical utilization(?) centres (sensors?).

As far as managing the national _____(?) is concerned, we use imagery from various sources which come from various countries and various continents and which are also provided us by commercial enterprises which sell us this information and this data.

We have heard other countries here say that this data was available on the Internet. This is probably true but in certain cases, it is difficult to access to this data or at least to access recent data and this is why we have drawn up an official map of the country and we have broken it down at various topics, by various topics, to enable us to use this data for environmental management and for early warning systems, especially applying to natural disasters.

We are currently setting up national systems, environmental systems, systems for the prevention of natural disasters to mitigate their consequences and we are also currently determining what we can do with our future Colombian Earth Observation Satellite, where we have set up a number of groups which represent various sectors of engineering and the application of space-based data which will be generated by this satellite.

We have a number of other groups which deal with research and development and I would like to especially here highlight the Colombian Space Infrastructure Group. Now, this is data which we can obtain from various sources, from various continents, from various entities. Some of these sources provide us information, this data, free of cost, in other cases, it has to be purchased, and we have decided to strengthen our National Space Data Infrastructure because we are of the belief that even the smallest, remotest village must be one for which data must be available and must be obtained. And this is why we have seen to the organization of the generation of data and the management of access to data.

We have set up a number of norms and standards regarding geographical data. We have a number of policies at the ministerial level which enable us to determine the major axis to follow. We have a number of geo-portals and we have a number of geo-space courses for all players interested in the use and application of these processes in the country and we wish to set up a National Imagery Database resulting from remote sensing which would enable us to have easy access to the information and which can be used by all players at a national level who require this information and require this on an ongoing basis.

There are a number of entities which generate imagery data. It is a multi-spectoral approach and we have to be able to enjoy information on soils, on the Land Register, alpha-numeric information, statistical, geographical and geo-spatial information which all overlap.

We have a website. This website is at our disposal. We have a web page which is the Colombian Geo-Portal and all entities which generate and utilize data place this data at the public disposal. There are a number of norms and protocols which have to be complied with to ensure that these entities not analyze data or an image. What we require, therefore, is transmission of data and we have to ensure that they all operate under equal protocols.

This website thus provides multi-sectoral diverse information in accordance with the protocols established in our country.

And last but not least, we have a portal that provides about 34,000 different types of products, data, to be used by various bodies that use as their resource cartography, satellite imagery, fundamentally all types of statistical information that make it possible to come up with informed decisions in those areas.

We provide imagery obtained from different satellites processed and included in the National Database with regard to Liberia's(?) affected infrastructure and so on and so forth.

We are in the process of working together with a number of entities and have a number of agreements already in place. This is the structure of institutions working with the Colombia Outer Space Committee, a structure whereby this information is conveyed to the users. We have set up a number of courses, seminars, upgrading syllabi for academic institutions for all types of institutions that the Colombian Committee on Outer Space helps with their preparing human resources publications that we use to support our work.

And finally, the factors that contribute to success, we have a Development Plan up to the year 2010, a financing strategy for our work in terms of funding human resources, technical resources, finding adequate sources of funding and four structural projects, development of communication satellites, development of satellites for Earth observation and remote sensing, and here, we are trying to create synergies, optimize efforts and minimize expenses.

We are setting up a Colombian infrastructure for processing and conveying space data to the various users and this makes use of international cooperation as well. It is a fundamental element of this work.

In conclusion, I am going to try and sum up everything that I have said earlier. We use all of the various scientific resources throughout the country and put it all together, everything that has to do with outer space and space-based technologies.

How do we make sure that the information that all of these various entities and all of these various institutions generate observation of the Earth, communications, emergency response, information obtained from all of the satellites that in their orbits passed over the various countries, collect these data in a consistent and coordinated way, particularly to assist countries that are in development, that require these data for their development but does not have the capability and the platform for obtaining this type of information?

We have set up an Administration to guarantee that such countries are assisted in setting up their platforms and their infrastructures to make the most and the best use of this information generated everywhere in the world so that information obtained by the most developed countries in the world is used by those that need it the most for developing their economic capabilities, their national capabilities, their human resources, so that they advance rapidly towards the information society, towards the community of space-faring nations. Thus, Colombia is assisting in developing such platforms and such infrastructures that make it possible to coordinate the work of the various entities, the various users, in a truly multi-sectoral, multi-dimensional way. Thank you very much for your attention and I apologize for having taken us beyond the 1.00 p.m. time limit. Thank you very much.

The CHAIRMAN *(interpretation from Spanish)*: Thank you Dr. Gómez for your very interesting presentation which gives us food for thought to all of us in this room, particularly on the matter of priorities.

Distinguished delegates, we will continue our consideration of agenda item 11, Space and Society, this afternoon and we will hear a presentation of the Office for Outer Space Affairs on its Programme for Education and Capacity-Building.

We will also continue our consideration of agenda item 12, Space and Water, item 13, the Use of Space-Derived Geo-Spatial Data for Sustainable Development, and obviously item 14, Other Matters.

This afternoon there will be four technical presentations. The first one by a representative of the Republic of Korea on the "Korean Astronauts Programme". The second by a representative of Nigeria entitled "National and International Collaboration in Geo-Spatial Data Utilization for Sustainable Development in Nigeria". Next, there will be a presentation by a representative of Indonesia entitled "Acceleration of the Establishment of the Indonesian Geo-Spatial Data Infrastructure". And the last presentation this afternoon will be made by a representative of the non-governmental organization Prince Sultan Bin Abdulaziz International Prize for Water and he will speak about the activities of that Organization.

If there are no questions or comments on this proposed schedule, I adjourn this meeting. Thank you very much.

The meeting adjourned at 1.09 p.m.