



General Assembly

Distr.: Limited
23 February 1999

Original: English

Committee on the Peaceful Uses of Outer Space

Scientific and Technical Subcommittee
Thirty-sixth session
Vienna, 22-26 February 1999

Draft report of the Scientific and Technical Subcommittee on the work of its thirty-sixth session

I. Introduction

1. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its thirty-sixth session at the United Nations Office at Vienna from 22 to 26 February 1999 under the chairmanship of Dietrich Rex (Germany).
2. Representatives of the following Member States attended the session: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, Lebanon, Mexico, Morocco, Netherlands, Nigeria, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, South Africa, Spain, Sudan, Sweden, Syrian Arab Republic, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela and Viet Nam.
3. Representatives of the following specialized agencies and other organizations in the United Nations system attended the session: United Nations Educational, Scientific and Cultural Organization (UNESCO), International Telecommunication Union (ITU) and World Meteorological Organization (WMO).
4. The session was also attended by representatives of the European Space Agency (ESA), Committee on Space Research (COSPAR), European Association for the International Space Year (EURISY), International Academy of Astronautics (IAA), International Astronautical Federation (IAF), International Astronomical Union (IAU), International Organization of Space Communications (INTERSPUTNIK), International Society for Photogrammetry and Remote Sensing (ISPRS), International Space University (ISU) and International Telecommunications Satellite Organization (INTELSAT).

5. A list of the representatives of Member States, specialized agencies and other international organizations attending the session is contained in document A/AC.105/C.1/INF.28.
6. On 22 February 1999, the Subcommittee adopted the following agenda:¹
 1. Adoption of the agenda.
 2. Statement by the Chairman.
 3. Preparations for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) by the Advisory Committee for UNISPACE III.
 4. Space debris.
 5. United Nations Programme on Space Applications and the coordination of space activities within the United Nations system.
 6. Other matters:
 - (a) Schedule of work for the Scientific and Technical Subcommittee at its thirty-seventh session, in 2000;
 - (b) Other reports.
 7. Report to the Committee on the Peaceful Uses of Outer Space.

A. Meetings and documentation

7. The Subcommittee held [...] meetings.
8. A list of the documents that were before the Subcommittee is provided in annex I of the present report.

¹ In paragraph 14 of its resolution 53/45 of 3 December 1998, the General Assembly endorsed the recommendation of the Committee of Peaceful Uses of Outer Space that, in view of the abbreviated schedule of work of the Scientific and Technical Subcommittee at its thirty-sixth session and the preparatory work to be conducted for UNISPACE III, the Subcommittee should suspend, as an exception, its consideration of the following items for one year, to be resumed at its thirty-seventh session, in the year 2000:

- (a) General exchange of views;
- (b) Matters relating to the remote sensing of the Earth by satellites, including, *inter alia*, applications for developing countries;
- (c) Use of nuclear power sources in outer space;
- (d) Questions relating to space transportation systems and their implications for future activities in space;
- (e) Examination of the physical nature and technical attributes of the geostationary orbit and of its utilization and applications, including, *inter alia*, in the field of space communications, as well as other questions relating to space communications developments, taking particular account of the needs and interests of developing countries;
- (f) Matters relating to life sciences, including space medicine;
- (g) Progress in national and international space activities related to the Earth's environment, in particular progress in the International Geosphere-Biosphere (Global Change) Programme;
- (h) Matters relating to planetary exploration;
- (i) Matters relating to astronomy;
- (j) The theme fixed for the special attention of the Subcommittee.

9. Following the adoption of the agenda, the Chairman made a statement outlining the work of the Subcommittee at its current session. He also reviewed the activities of Member States in space exploration, including important advances that had been achieved as a result of international cooperation during the past year.

10. At the 515th, 516th and 517th meetings, the Chairman informed the Subcommittee that requests had been received from the permanent representatives of Azerbaijan, Bolivia, Costa Rica, Finland, Peru, Slovakia and Tunisia, together with the permanent observer for the League of Arab States, to attend the session. Following past practice, those delegations were invited to attend the current session of the Subcommittee and to address it as appropriate, without prejudice to further requests of that nature; that action did not involve any decision of the Subcommittee concerning status, but was a courtesy that the Subcommittee extended to those delegations.

11. At the 515th meeting, the Director of the Office for Outer Space Affairs of the Secretariat made a statement reviewing the work programme of the Office. At the 518th meeting, the Expert on Space Applications made a statement outlining the activities carried out and planned under the United Nations Programme on Space Applications.

B. Technical presentations

12. In response to General Assembly resolution 53/45, F. Alby (France), P. Moskwa of the Inter-Agency Space Debris Coordination Committee (IADC) and W. Flury of ESA made technical presentations on the complex issue of space debris and the solutions currently being adopted at the national and international levels.

C. Recommendations of the Scientific and Technical Subcommittee

13. After considering the various items before it, the Subcommittee, at its [...]th meeting, on [...] 1999, adopted its report to the Committee on the Peaceful Uses of Outer Space, containing its views and recommendations as set out in the paragraphs below.

III. United Nations Programme on Space Applications and the coordination of space activities within the United Nations system

14. In accordance with General Assembly resolution 53/45, paragraph 13 (c), the Subcommittee continued its consideration of the item on a priority basis.

A. United Nations Programme on Space Applications

15. The Subcommittee had before it the report of the United Nations Expert on Space Applications (A/AC.105/715). The report was supplemented by a statement from the Expert. The Subcommittee noted that the United Nations Programme on Space Applications for 1998 had been carried out satisfactorily and commended the work accomplished by the Expert in

that regard; in particular, the Subcommittee expressed its appreciation for the organization of the regional preparatory conferences for UNISPACE III.

16. The Subcommittee noted with appreciation that, since its previous session, additional contributions for 1998 and 1999 had been offered by various Member States and organizations and that they had been acknowledged in the report of the Expert (A/AC.105/715, paras. 41-42).

17. The Subcommittee continued to express its concern over the still limited financial resources available for carrying out the United Nations Programme on Space Applications and appealed to Member States to support the Programme through voluntary contributions. The Subcommittee felt that the limited resources of the United Nations should be focused on the activities with the highest priority and noted that the United Nations Programme on Space Applications was the priority activity of the Office for Outer Space Affairs.

1. Period 1998-1999

United Nations conferences, training courses, workshops and symposia

18. With regard to the activities of the Programme carried out in 1998 and early in 1999, the Subcommittee expressed its appreciation to the following:

(a) The Government of India, as well as ESA, for co-sponsoring the Workshop on Emerging Trends in Satellite Meteorology, hosted by the Centre for Space Science and Technology in Asia and the Pacific and the Indian Space Research Organization and held in Ahmedabad from 9 to 12 March 1998;

(b) ISPRS, as well as Spectrum Astro, Inc., Lockheed Martin Corporation and the Federal Laboratory Consortium, for co-sponsoring the Second United Nations International Conference on Spin-off Benefits of Space Technology, hosted by ISPRS and held in Tampa, Florida, United States, from 30 March to 3 April 1998;

(c) The Government of Malaysia, as well as ESA, for co-sponsoring the Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for Asia and the Pacific, hosted by the Space Sciences Division of the Ministry of Science, Technology and the Environment and held in Kuala Lumpur from 18 to 22 May 1998;

(d) The Government of Sweden, represented by the Swedish International Development Agency (SIDA), for co-sponsoring the Eighth United Nations International Training Course on Remote Sensing Education for Educators, hosted by Stockholm University and the Swedish Space Corporation and held in Stockholm and Kiruna, Sweden, from 4 May to 12 June 1998;

(e) The Government of Austria, as well as the province of Styria, the city of Graz and ESA, for co-sponsoring the United Nations/European Space Agency Symposium on Economic Benefits of Using Space Technology Applications in Developing Countries, held in Graz, Austria, from 7 to 10 September 1998;

(f) The Government of Spain, as well as ESA, for co-sponsoring the United Nations Workshop on Space Technology for Emergency Aid/Search and Rescue Satellite-Aided Tracking System for Ships in Distress, hosted by the National Institute for Aerospace Technology (INTA) of Spain and held in Maspalomas, Gran Canaria, Spain, on 24 and 25 September 1998;

(g) The Government of Australia, IAF and the Centre national d'études spatiales (CNES) of France for co-sponsoring the United Nations/International Astronautical Federation Workshop on Expanding the User Community of Space Technology in Developing Countries, hosted by the Cooperative Research Centre for Satellite Systems and held in Melbourne, Australia, from 24 to 27 September 1998;

(h) The Government of Chile, as well as ESA, for co-sponsoring the Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for Latin America and the Caribbean, hosted by the Ministry of Foreign Affairs, the University of Concepción and Intendencia de la Región del Biobío and held in Concepción, Chile, from 12 to 16 October 1998;

(i) The Government of Sweden for co-sponsoring the Workshop on the Evaluation of the United Nations/Sweden International Training Course Series on Remote Sensing Education for Educators, hosted by SIDA and Stockholm University and held in Gaborone from 18 to 21 October 1998;

(j) The Government of Morocco, as well as ESA, for co-sponsoring the Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for Africa and the Middle East, hosted by the Royal Centre for Remote Sensing of Morocco and held in Rabat from 26 to 30 October 1998;

(k) The Government of Romania, as well as ESA, for co-sponsoring the Regional Preparatory Conference for the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space for Eastern Europe, hosted by the Romanian Space Agency and held in Bucharest from 25 to 29 January 1999;

19. The Subcommittee took note of the status of United Nations workshops, training courses, symposia and conferences planned for 1999, including the following, which were described in the report of the Expert on Space Applications (A/AC.105/715, annex IV):

(a) United Nations/European Space Agency Workshop on Basic Space Science, to be held in Mafraq, Jordan, from 13 to 17 March 1999;

(b) American Institute of Aeronautics and Astronautics Workshop on International Space Cooperation: Solving Global Problems, to be held in Bermuda from 11 to 15 April 1999;

(c) Regional workshop on the role of the Centre for Space Science and Technology Education for French-speaking African Countries in national and regional development, to be held in Rabat in the second or third quarter of 1999;

(d) Regional workshop on the role of the Centre for Space Science and Technology Education for English-speaking African Countries in national and regional development, to be held in Ile-Ife, Nigeria, in the second or third quarter of 1999;

(e) Ninth United Nations/Sweden International Training Course on Remote Sensing Education for Educators, to be held in Stockholm and Kiruna, Sweden, from 3 May to 11 June 1999;

(f) United Nations/European Space Agency Conference on Space Applications in Promoting Sustainable Agriculture, to be held in Beijing from 14 to 17 September 1999;

(g) United Nations/European Space Agency Symposium on Economic Benefits of Applying Space Systems for Resource Planning, Education and Communication Infrastructure, being organized with the Government of Austria, the province of Styria, the city of Graz and ESA, to be held in Graz, Austria, in September 1999;

(h) Second United Nations Workshop on Space Technology for Emergency Aid/Search and Rescue Satellite-Aided Tracking System for Ships in Distress, to be held in Maspalomas, Gran Canaria, Spain, in September 1999;

(i) United Nations/International Astronautical Federation Workshop on Space: An Integral Part of Sustainable Development, being co-sponsored by ESA and the European Commission and organized in cooperation with the Government of the Netherlands and the International Institute for Aerospace Survey and Earth Sciences (ITC), to be held in Amsterdam and Enschede, Netherlands, from 30 September to 3 October 1999;

(j) Post-UNISPACE III briefing at the Second Asia-Pacific Ministerial Conference on Space Applications for Sustainable Development, to be held in New Delhi from 2 to 8 December 1999;

(k) Third United Nations International Conference on Spin-off Benefits of Space Technology, to be held in Japan from 27 to 29 May 1999.

Long-term fellowships for in-depth training

20. The Subcommittee expressed appreciation to ESA for having offered five training fellowships in various areas relating to space activities for the period 1998-1999. The status of the fellowships for the period 1998-1999 and the countries whose candidates had received fellowships were indicated in the report of the Expert on Space Applications (A/AC.105/715, annex II).

21. The Subcommittee noted with satisfaction that China had offered to the United Nations Programme on Space Applications two long-term fellowships for the period 1998-1999.

22. The Subcommittee noted that it was important to increase the opportunities for in-depth education in all areas of space science, technology and applications projects through long-term fellowships and urged Member States to make such opportunities available at their relevant institutions.

Technical advisory services

23. The Subcommittee took note of the technical advisory services being provided under the United Nations Programme on Space Applications in support of projects on regional space applications, as indicated in the report of the Expert on Space Applications (A/AC.105/715, paras. 20-35):

(a) Assistance in the growth and operation of the Asia-Pacific Satellite Communications Council;

(b) Collaboration with several African countries on the implementation of the project on cooperative information network linking scientists, educators, professionals and decision makers in Africa (COPINE), pursuant to one of the recommendations of the United Nations Regional Conference on Space Technology for Sustainable Development in Africa, held in Dakar from 25 to 29 October 1993, regarding the establishment, as a matter of urgency, of an efficient communications network among African and European professionals and scientists at the national, continental and intercontinental levels;

(c) Collaboration with ESA and the Department of Economic and Social Affairs of the Secretariat on follow-up activities related to the recommendations of the training courses on applications of the remote sensing satellite data to natural resources, renewable energy and the environment held in Frascati, Italy, in 1993, 1994, 1995 and 1997;

- (d) Collaboration with ESA on follow-up activities relating to the series of workshops on basic space science;
- (e) Follow-up to the United Nations international training course series in Sweden on remote sensing education for educators;
- (f) Contribution to the Committee on Earth Observation Satellites (CEOS) proposal on the Integrated Global Observing Strategy.

Promotion of greater cooperation in space science and technology

24. The Subcommittee noted that the United Nations was collaborating with international professional bodies within the space community to promote the exchange of experiences on space activities. The United Nations Programme on Space Applications had co-sponsored the United Nations/International Astronautical Federation Workshop on Expanding the User Community of Space Technology in Developing Countries, held in Melbourne in September 1998, in conjunction with the forty-ninth Congress of the International Astronautical Federation. Participants at the Workshop also attended the Congress.

25. The Subcommittee noted that the United Nations Programme on Space Applications had co-sponsored the participation of scientists from developing countries in the thirty-second Scientific Assembly of the Committee on Space Research, held in Nagoya, Japan, from 12 to 19 July 1998.

26. The Subcommittee noted that the United Nations Programme on Space Applications would co-sponsor the participation of scientists from developing countries in the United Nations/International Astronautical Federation Workshop on Space: An Integral Part of Sustainable Development, to be held in Amsterdam and Enschede from 30 September to 3 October 1999, in conjunction with the fiftieth Congress of the International Astronautical Federation, and that participants at the Workshop would also attend the Congress, which would be held from 4 to 8 October 1999.

2. Year 2000

United Nations conferences, training courses, workshops and symposia

27. The Subcommittee recommended the approval, after appropriate consultations, of the following programme of workshops, training courses, symposia and conferences planned for 2000:

- (a) Tenth United Nations/Sweden International Training Course on Remote Sensing Education for Educators;
- (b) United Nations/European Space Agency/Committee on Space Research Workshop on Data Analysis Techniques, to be held in India;
- (c) United Nations/Austria Symposium on space technology and development, to be held in Graz, Austria;
- (e) United Nations/International Astronautical Federation Workshop on space technology for the benefit of developing countries, to be held in Rio de Janeiro.

28. The Subcommittee noted that other activities would be organized under the auspices of the United Nations Programme on Space Applications on the basis of recommendations of UNISPACE III.

B. International space information service

29. The Subcommittee noted with satisfaction that the Office for Outer Space Affairs had continued to develop a World Wide Web home page (<http://www.un.or.at/OOSA/index.html>), including both information within the United Nations system and access to external databases.

30. The Subcommittee noted with satisfaction the publication of the document entitled *Seminars of the United Nations Programme on Space Applications: Selected Papers on Remote Sensing, Space Science and Information Technology* (A/AC.105/711).

C. Reports

31. The Subcommittee took note with appreciation of the reports submitted to it by Member States and international organizations in response to the recommendations of the Working Group of the Whole in its report on the work of its eleventh session.

D. Coordination of space activities within the United Nations system and inter-agency cooperation

32. The Subcommittee noted that the General Assembly, in its resolution 53/45, paragraph 24, had encouraged all Member States, organizations within the United Nations system and other international organizations with space activities to contribute actively to achieving the objectives of UNISPACE III.

33. The Subcommittee continued to stress the necessity of ensuring continuous and effective consultations and coordination in the field of outer space activities among organizations within the United Nations system and the avoidance of duplicative activities. The Subcommittee also noted that the United Nations Programme on Space Applications should enhance coordination efforts with regional space events such as the Regional Space Applications Programme for Sustainable Development in Asia and the Pacific of the Economic and Social Commission for Asia and the Pacific (ESCAP).

34. The Subcommittee noted with satisfaction that the Inter-Agency Meeting on Outer Space Activities had held its nineteenth session at the United Nations Office at Vienna from 2 to 3 June 1998 and that the report on its deliberations (A/AC.105/701) and the report of the Secretary-General entitled "Coordination of outer space activities within the United Nations system: programme of work for 1998 and 1999 and future years" (A/AC.105/700) were before the Subcommittee.

35. The Subcommittee noted that the sessions of the Inter-Agency Meeting on Outer Space Activities would continue to be convened at the United Nations Office at Vienna and to be hosted by the Office for Outer Space Affairs prior to the sessions of the Scientific and Technical Subcommittee each year, without prejudice to any invitation by an interested agency to host a session at its headquarters. The Subcommittee noted that the twentieth session of the Inter-Agency Meeting on Outer Space Activities, scheduled to be held at the United Nations Office at Vienna from 2 to 4 February 2000, would address, among other things, coordination of activities related to the plan of action of UNISPACE III.

E. Regional and interregional cooperation

36. The Subcommittee noted with appreciation the continuing efforts undertaken by the United Nations Programme on Space Applications, in accordance with General Assembly resolution 45/72, in leading an international effort to establish regional centres for space science and technology education in existing national or regional educational institutions in developing countries. The Subcommittee also noted that, once established, each centre could expand and become part of a network that could cover specific programme elements in established institutions related to space science and technology in each region.

37. The Subcommittee recalled that the General Assembly, in its resolution 50/27, had endorsed the recommendation of the Committee that the centres be established on the basis of affiliation to the United Nations as early as possible and that such affiliation would provide the centres with the necessary recognition and would strengthen the possibilities of attracting donors and of establishing academic relationships with national and international space-related institutions.

38. The Subcommittee recalled that the General Assembly, in its resolution 53/45, had noted with satisfaction that, in accordance with paragraph 30 of its resolution 50/27, the Centre for Space Science and Technology Education in Asia and the Pacific had continued its education programme in 1998 and that significant progress had been achieved in establishing regional centres for space science and technology education in the other regions.

39. The Subcommittee noted with satisfaction that the Centre for Space Science and Technology Education in Asia and the Pacific would conduct its seventh nine-month course at the Space Applications Centre at Ahmedabad, India, from 1 July 1999 to 31 March 2000. The theme of the course would be satellite communications.

40. The Subcommittee recommended that, in Asia and the Pacific, the Member States concerned should hold further consultations, with the assistance of the Office for Outer Space Affairs, to lessen outstanding differences in their views on the issue of expanding the Centre for Space Science and Technology Education in Asia and the Pacific into a network of nodes.

41. The Subcommittee noted with satisfaction that the Centre for Space Science and Technology Education for French-speaking African Countries had been inaugurated on 24 October 1998 in Morocco and that its first programme event would be a seminar lasting 2-3 days that would be attended by senior administrative and scientific representatives of each of the participating countries. The Subcommittee also noted with satisfaction that the Centre for Space Science and Technology Education for English-speaking African Countries had been inaugurated on 24 November 1998 in Nigeria and that a document on the proposed activities of the Centre, which had been developed for implementation in March 1999, as well as other matters relating to the Centre, would be reviewed at the resumed session of the Governing Board of the Centre in 1999.

42. The Subcommittee noted with satisfaction that the regional centre for space science and technology education in Latin America and the Caribbean, to be located in Brazil and Mexico, was expected to be inaugurated in 1999 and that, in preparation for the opening of the campus of the centre in Brazil, the National Institute for Space Research (INPE) of Brazil had carried out a number of activities for the benefit of States in the region, as presented in the report of the Expert on Space Applications (A/AC.105/715, para. 12).

43. The Subcommittee noted that missions had been sent to Jordan and the Syrian Arab Republic from 24 June to 1 July 1998 to evaluate the establishment of a regional centre for space science and technology education in western Asia and that the reports of those missions

were being finalized, in consultation with the Governments of the two countries, with a view to selecting a host country for the Centre.

44. The Subcommittee noted that a mission had been sent to Bulgaria, Greece, Hungary, Poland, Romania, Slovakia and Turkey from 24 November to 7 December 1998, with the objective of undertaking a technical study and providing a report that could be used in determining an agreed framework for the operation of a network of space science and technology education and research institutions for central eastern and south-eastern European countries. The Subcommittee also noted that the steering committee for the network had held a meeting during the current session to discuss further procedures for the operation of the network.

45. The Subcommittee noted that the satellite-based COPINE project would offer an excellent opportunity for the exchange of information needed to promote progress in health care, agriculture, education, science and technology, and the management and survey of natural resources and the environment in Africa. The Subcommittee noted that such cooperation would provide long-term benefits to the participating African countries and would contribute to economic growth in the region. The Subcommittee also noted that the Provisional Governing Board of COPINE, at its meeting held in London on 27 April 1998, had made conclusions and recommendations concerning the future of the project (A/AC.105/715, para. 21). It was noted that the Office for Outer Space Affairs was continuing consultations on the implementation of the project with a number of interested countries.

46. The Subcommittee noted with satisfaction that the regional preparatory conferences for UNISPACE III, mentioned in paragraph [...] above, had served to promote regional and interregional cooperation.

47. The Subcommittee emphasized the importance of regional and international cooperation in making the benefits of space technology available to all countries by such cooperative activities as sharing payloads, disseminating information on spin-off benefits, ensuring compatibility of space systems and providing access to launch capabilities at reasonable cost.