United Nations A/AC.105/749

General Assembly

Distr.: General
27 December 2000

Original: English

Committee on the Peaceful Uses of Outer Space

Regional centres for space science and technology education (affiliated to the United Nations)*

Contents

Chapter		Paragraphs	Page
I.	Introduction	1-5	2
	A. United Nations Programme on Space Applications	1	2
	B. General Assembly resolutions	2-3	2
	C. Governing boards and advisory committees of the centres	4	2
	D. Reporting on the status of the centres	5	3
II.	Status of establishment and operation of the regional centres	6-42	3
	A. Asia and the Pacific	6-28	3
	B. Africa (French Language)	29-31	7
	C. Africa (English Language)	32-33	8
	D. Latin America and the Caribbean	34-36	8
	E. Western Asia	37-38	8
	F. Central, eastern and south-eastern Europe	39-42	8

Annexes

I.	Contact addresses for the regional centres	10
II.	List of publications of the Centre for Space Science and Technology Education in Asia and the Pacific	12

* The present document was submitted on 27 December 2000 so as to include as much up-to-date information as possible about the status of the regional centres for space science and technology education.

V.00-60449 (E) 120101 180101

I. Introduction

A. United Nations Programme on Space Applications

1. The United Nations Programme on Space Applications of the Office for Outer Space Affairs of the Secretariat was established in 1971 on the recommendation of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space in 1968. The Programme was expanded and its mandate broadened in 1982 by the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82) and by the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in July 1999. Fulfilling one element of the Programme's mandate, more than 150 workshops, with a total of approximately 8,000 participants, have been organized since its establishment. In response to the needs of developing countries and taking into account the space-related agenda of the Programme, the majority of workshops have focused on core disciplines: remote sensing and geographic information systems (GIS), satellite communications, satellite meteorology and global climate, and space and atmospheric sciences. Despite the success of those workshops in promoting regional and international cooperation and the development of space science and technology, in particular in developing countries, in the 1980s the limitations of short-term activities were recognized and participants indicated the need for long-term training to build regional capacity in space science and technology and its applications. Subsequently, in 1990, under the auspices of the Programme, a project to establish centres for space science and technology education at the regional level was initiated. A unique element of the project was that it was planned to establish the centres in developing countries.

B. General Assembly resolutions

2. The General Assembly, in its resolution 45/72 of 11 December 1990, endorsed the recommendation of the Working Group of the Whole of the Scientific and Technical Subcommittee, as approved by the Committee on the Peaceful Uses of Outer Space in 1990, that the United Nations should lead, with the active support of its specialized agencies and other international organizations, an international effort to establish regional centres for space science and technology education in existing national/regional educational institutions in the developing countries (A/AC.105/456, annex II, para. 4 (n)).

3. Subsequently, the General Assembly, in its resolution 50/27 of 6 December 1995, also endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space 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.

C. Governing boards and advisory committees of the centres

4. Each centre shall aspire to be a highly reputable regional institution, which, as the needs arise, and as directed by its governing board, may grow into a network of specialized and internationally acclaimed affiliate nodes. Because the General Assembly in its resolution 45/72 specifically limited the role of the United Nations to leading an international effort to establish regional centres, it is apparent that, once a centre is inaugurated, its governing board will assume all decision-making and policy-formulating responsibilities for it. The governing board is the overall policy-making body of each centre and consists of member States (within the region where the centre is located), that have agreed, through their endorsement of the centre's agreement, to the goals and objectives of the centre. The agreement of the centre calls for the establishment of an advisory committee that provides advice to the governing board on all scientific and technical matters, in particular on the centre's education curricula, and consists of experts in the field of space science and technology. The United Nations serves the centre and its governing board and advisory committee in an advisory capacity.

D. Reporting on the status of the centres

5. As agreed by the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space (A/AC.105.736, annex II, para. 35), the Office for Outer Space Affairs invited the regional centres for space science and technology education established in Africa (two), Asia and the Pacific and Latin America and the Caribbean, as well as the regional Centre for Western Asia and the Network of Space Science and Technology Education and Research Institutions of Central Eastern and South-Eastern Europe, to provide reports on their accomplishments, including a list of courses held. The present report contains information received by the Office on the status of the activities the institutions have conducted since their establishment, together with any relevant information regarding their main objectives and the programmes through which those objectives are being achieved. Annex I to the present report contains contact information for the regional centres and the Network.

II. Status of establishment and operation of the regional centres

A. Asia and the Pacific

1. General information on the Centre

6. In response to General Assembly resolution 45/72, the Office for Outer Space Affairs prepared a project document envisaging the establishment of centres for space science and technology education in the developing countries (A/AC.105/534). The objective of the centres was to enhance the capabilities of Member States in different areas of space science and technology that could advance their social and economic development. The first such centre, the Centre for Space Science and Technology Education in Asia and the Pacific was established in India in November 1995. The Centre is hosted by the Department of Space of the Government of India. The Government of India has made available appropriate facilities and expertise to the Centre through the Indian Institute of Remote Sensing in Dehra Dun, the Space Applications Centre in Ahmedabad and the Physical Research Laboratory in Ahmedabad. The Centre is an educational and research institution that is capable of high attainments in the development and transmission of knowledge in the fields of space science and technology. The initial emphasis of the Centre has been on in-depth education, research and applications programmes, linked to global programmes and databases, execution of pilot projects, continuing education and awareness and appraisal programmes.

7. The Centre offers postgraduate-level courses in the fields of remote sensing and GIS; satellite communications; satellite meteorology and global climate; and space and atmospheric sciences.

8. A set of standard curricula developed by the United Nations (A/AC.105/649) has been adapted for the educational programmes. The Centre is affiliated to the United Nations and its programmes are recognized by Andhra University, India. To date, 258 individuals from 39 countries have participated in the activities of the Centre.

9. The Centre is located in Dehra Dun, India, on the campus of the Indian Institute of Remote Sensing, Department of Space, Government of India. The Centre also has an operational office in Ahmedabad on the campus of Space Applications Centre, Department of Space, Government of India.

2. Goals of the Centre

10. The goals of the Centre are:

(a) To increase knowledge and understanding in space science and technology: education, research applications and analysis;

(b) To build and/or enhance national and regional capacity: socio-economic development, regional cooperation and support to international programmes.

11. The Centre aspires to grow into a nodal organization in the region responsible for comprehensive capacity-building. Its guiding principles are the following:

(a) Developing indigenous capability at the local level;

(b) Provision of technical advisory services in the region;

(c) Provision of information in space science and technology;

(d) Developing long-term fellowship programmes;

(e) Organization of technology transfer programmes;

(f) Promotion of greater cooperation in space science and technology between industrialized and developing countries as well as among developing countries.

To those ends, the Centre is engaged in education and training programmes, applications activities, research and pilot projects, data management, extension activities and awareness programmes.

3. Educational programmes

(a) Educational design

12. Educational design programmes are aimed at the following:

(a) Development of skills in Earth observation, satellite communications, meteorology and space science;

(b) Project support in planning, execution and policy development;

(c) Awareness at the planning level to the execution level and participation in the process of development.

(b) Educational facilities

13. The Department of Space of the Government of India has provided comprehensive facilities to the Centre in terms of institutional support, expert teaching staff, buildings, laboratories and financial support. This has made it possible for the Centre to conduct its educational programmes in an efficient and state-of-the-art manner. As a result, the Centre conducts its activities in one of the institutions of the Department of Space and enjoys access to all its physical and intellectual facilities. All the educational programmes are conducted in English, requiring the participants to have proficiency in that language. Candidates aspiring to admission to the Centre need to hold a master's degree in science or a bachelor's degree in engineering or other relevant discipline. The courses are taught using modern teaching methods such as multimedia and participants visit various national facilities on study tours.

(c) Educational programmes and available institutional facilities

14. The Centre offers the following programmes:

(a) Postgraduate programme in remote sensing and GIS (first phase of nine months at the Centre followed by a second phase of one year in the home country of each participant) at the Indian Institute of Remote Sensing, Dehra Dun;

(b) Postgraduate programme in satellite communications (first phase of nine months at the Centre followed by a second phase of one year in the home country of each participant) at the Space Applications Centre, Ahmedabad;

(c) Postgraduate programme in satellite meteorology and global climate (first phase of nine months at the Centre followed by a second phase of one year in the home country of each participant) at the Space Applications Centre, Ahmedabad;

(d) Postgraduate programme in space and atmospheric sciences (first phase of nine months at the Centre followed by a second phase of one year in the home country of each participant) at the Physical Research Laboratory, Ahmedabad;

(e) Short-term workshops and awareness programmes in the above disciplines at all the above institutions.

(d) Award of diploma and degrees

15. In all the programmes above, completion of the first phase leads to the award of a postgraduate diploma or certificate from the Centre and completion of both phases leads to the award of a masters degree from Andhra University, India, to the eligible candidates.

4. Remote sensing and geographic information systems

16. A fundamental requirement of Agenda 21, adopted by the United Nations Conference on

Environment and Development in 1992, is to support sustainable development while safeguarding the Earth's environment. This will require optimal management of natural resources, which depends upon the availability of reliable and timely information at the national and regional levels. Remotely sensed data play an increasingly important role as a source of reliable and timely information needed for sustainable management of natural resources and for environmental protection. Through the use of GIS, remote sensing data can be integrated with data from other sources to facilitate the efforts of resource managers, planners and decision makers in obtaining the relevant information they need. With a view to facilitating such a sustainable resource management in developing countries, the Centre conducts a postgraduate course in remote sensing and GIS as applied to various Earth resource disciplines. The venue of the course, the Indian Institute of Remote Sensing, is a premier training institution in the region that has trained more than 3,000 individuals from India and elsewhere in the last three decades. The Institute is well equipped with state-of-the-art computing facilities such as personal computers and workstations with modern peripherals and software. It also possesses laboratories for ground truth equipment and technology understanding. It also has collaborative mechanisms with prominent international institutions and is engaged in research and consultancy activities besides training.

5. Satellite communications

17. Satellite-based communications are the most effective medium for reaching out to the world and bringing nations closer together into the global village. It is against that background that an educational programme must provide scholars from developing countries with the skills to appreciate the fullest potential of technology. In recognition of that need, the Centre has developed a postgraduate educational programme to cover the basics of communications systems and provide an in-depth understanding of projects in the field. The course enables the participating countries in preparing satellite-based communications projects, policy definition, establishment of communications systems, use of operational systems and integration of advances in communications technology in day-to-day activities while also enhancing public awareness of the benefits of satellite-based communications technologies in improving the quality of life. The course is conducted at the Space Applications Centre, which is a major centre for space applications research and development whose primary goals are to conceptualize, plan and conduct research that will enable the application of space technology for the socio-economic benefit of the country. In order to achieve those goals, the Centre focuses on two major areas, satellite-based communications and remote sensing and meteorology.

6. Satellite meteorology and global climate

18. Meteorological information and its timely and real-time delivery is of utmost concern to the region of Asia and the Pacific, a region that covers countries many of which experience typical tropical weather systems—especially tropical cyclones and monsoons (both in summer and winter)—and some other mid-latitude weather phenomena. The recommendations contained in Agenda 21 concerning the safeguard of the global environment are also of great relevance for many countries of the region, in particular as regards climate change, global warming, rise in sea-level and ozone depletion. The understanding of meteorological information has been historically connected to the aspiration and ability to predict the quantitative aspects of the monsoon in order to plan and manage resources judiciously. More than ever is it apparent that this can only be done with the use of synoptic and real-time information, which is the crux of satellite meteorology. The Centre conducts a comprehensive postgraduate training programme on the subject with a complete treatment of principles, applications and prospects of using technology to solve grass-roots problems concerning the state and dynamics of atmospheric processes in the region. The course is conducted at the Space Applications Centre, which is a premier institution for satellite meteorology applications, equipped with Earth stations to receive satellite data and with strong laboratory support for experimental studies. In addition to this, the Centre, through coordination at the Space Applications Centre, will also be able to obtain support from India's Meteorological Department and many other meteorological centres spread throughout the country with their modern facilities. By participating actively the programmes and objectives of the World Meteorological Organization or through the results of its efforts in the region, the Centre stands to gain in general and to enrich its training programmes in particular.

7. Space and atmospheric sciences

19. Beginning with space exploration in the early 1950s, space sciences and the technologies thus developed have made inroads in almost every sphere of human life. Space sciences and technologies are now being used not only to explore the Earth's environment and outer space but in a number of other applications. Reliable global communication through satellites, accurate weather forecasts through meteorological satellites, television broadcasts and educational programmes, remote sensing of Earth's resources, satellite navigation, satellite geodesy and satellite-based disaster warning systems are some of the applications that play a crucial role in day-to-day life. Space platforms, such as balloons, rockets, and satellites, or deep space probes are being used to probe the oceans, Earth's near environment, upper atmosphere, ionosphere and magnetosphere and the solar system and beyond. Thus space sciences, technology and applications are of an inter-disciplinary nature. There is therefore a need for trained manpower in the discipline of space sciences in every part of the globe so that various space-related activities can be managed harmoniously. In view of this, the Centre has initiated an educational programme in the form of a post-graduate course in space and atmospheric sciences at the Physical Research Laboratory, which is a leading centre for space sciences in India. The Laboratory has one of the longest series of ozone measurements and radio sounding data of the ionosphere. A number of ground-based radio techniques, such as ionosonde, night and day glow photometers, all-sky images, lidars, interferometers, gas chromatography, laboratory astrophysics, in-situ probes such as the Langmuir probe, electric field probes, mask spectrometers and so on are developed here to study the special features of the equatorial ionosphere.

8. International cooperation

(a) Memorandum of understanding entered into by the Centre

20. The Centre for Space Science and Technology Education in Asia and the Pacific was established in India for the Asia and the Pacific region on 1 November 1995 under an agreement concluded initially by 10 countries of the region, Indonesia, India, Kazakhstan, Kyrgyzstan, Mongolia, Nauru, Nepal, the Republic of Korea, Sri Lanka and Uzbekistan. Subsequently, the Democratic People's Republic of Korea and Malaysia signed the agreement in 1997. In 1998, the Philippines and Myanmar signed the agreement, so that at present there are 14 signatory countries.

(b) Affiliation agreement with the United Nations

21. The affiliation agreement with the United Nations was signed on 7 May 1996. The Chairman of the Governing Board signed the agreement on behalf of the Centre and the Director of the Office for Outer Space Affairs on behalf of the United Nations.

(c) Host country agreement

22. The Government of India has concluded a host country agreement with the Centre by which specific privileges and status are accorded. Under the agreement, the Centre has access to the facilities, infrastructure and expertise of the Indian Institute of Remote Sensing in Dehra Dun, the Space Applications Centre in Ahmedabad and the Physical Research Laboratory, also in Ahmedabad.

(d) Fellowship provision and support

23. In its five-year existence, the Centre has established international cooperation for its diverse activities. Bodies of the United Nations system, for example, the Office for Outer Space Affairs and the Economic and Social Commission for Asia and the Pacific (ESCAP) and international organizations such as the Committee on Science and Technology in Developing Countries (COSTED), the International Centre for Integrated Mountain Development (Nepal), the South Asia Regional Committee of the Global Change System for Analysis, Research and Training (START-SASCOM) and the Scientific and Technical Subcommittee of the Movement of Non-Aligned Countries have been providing travel fellowships to some of the course participants. Some of the short duration programmes of the Centre are also supported by organizations such as the International Tropical Timber Organization, the Japan Overseas Forestry Consultants Association and the Scientific and Technical Committee of the Movement of Non-Aligned Countries. The Centre's activities have also attracted the participation of an international faculty in the teaching programmes of its various courses. The

Centre has signed agreements of cooperation and support with international organizations such as the Aerospace Remote Sensing Development Group (France), the International Centre for Science and High Technology and the International Space University for its educational programmes. The Third World Academy of Sciences, Italy, has recognized the Centre as a "centre of excellence".

(e) Participation in international conferences

24. The Centre was invited to participate in UNISPACE III, held in Vienna in July 1999, and the Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, held in New Delhi in November 1999. In Vienna, representatives of the Centre met with those of other regional centres and it was agreed that a formal mode of interaction to exchange materials, faculty and other experiences needed to be developed under the auspices of the Office for Outer Space Affairs.

9. Publications of the Centre

25. A list of publications produced by the Centre from 1996 to 2000 is given in annex II.

10. Governing Board and Advisory Committee

26. The Centre for Space Science and Technology Education in Asia and the Pacific held five Governing Board meetings and two Advisory Committee meetings during the period from 1995 to 2000.

10. Schedule of activities beyond 2000

27. For the period from July 2000 to the end of 2001, the Centre proposes to take up educational activities, research programmes, databank generation and various other programmes. Research will begin in the areas of advanced image processing, environmental monitoring and digital signal processing in satellite communications.

28. Educational activities in 2001 will include:

(a) Third Training Course on Satellite Communications (from 1 July);

(b) Four-week International Training Course on Remote Sensing and Geographic Information Systems (August-September);

(c) Sixth Training Course on Remote Sensing and Geographic Information Systems (from 1 October);

(d) Workshop on Space Applications for Social Scientists;

(e) Training Programme on Coastal Land Use, in cooperation with COSTED and the United Nations Industrial Development Organization;

(f) International Workshop on Space Weather (December).

B. Africa (French Language)

29. The African Centre for Space Science and Technology—in French Language was inaugurated in Casablanca, Morocco, on 24 October 1998 and is located at the École Mohammadia d'Ingénieurs in Rabat.

30. The activities of the Centre between 2000 and 2003 include:

(a) Workshop on Remote Sensing and Geographic Information Systems, followed by a Training Course on Remote Sensing and Geographic Information Systems (from 17 April 2000);

(b) Workshop on Space Communications, followed by a Training Course on Satellite Communications (from 22 November 2000);

(c) Workshop on Remote Sensing, Geographic Information Systems and Satellite Meteorology (from October 2001);

(d) Training Course on Satellite Meteorology, Remote Sensing and Geographic Information Systems (from October 2001);

(e) Satellite Communications and Space and Atmospheric Sciences (from October 2002);

(f) Remote Sensing and Geographic Information Systems and Satellite Communications (from October 2003);

(g) Workshop on the Contribution of Training in Space Science and Technology in the Development of the African countries (from summer/autumn 2003).

31. In cooperation with the Office for Outer Space Affairs, the Centre has started preparation of a directory on the availability of African skills in space technology.

C. Africa (English Language)

32. The African Regional Centre for Space Science and Technology Education—in English Language was inaugurated in Abuja on 24 November 1998 and is located at Obafemi Awolowo University in Ile-Ife.

33. The activities of the Centre in 2000-2001 include:

(a) Regional Workshop on Remote Sensing and Geographic Information Systems Applications (9-14 April 2000);

(b) First Course on Remote Sensing and Geographic Information Systems (from May 2000);

(c) Inauguration of the Centre for Basic Space Science. Although the Centre will eventually be based at the University of Nigeria, Nsukka, the activities for the inauguration took place at the Centre in Ile-Ife (September 2000);

(d) Celebrations of the First World Space Week. The Centre participated in the celebrations of World Space Week and an exhibition was organized, visited by some 200 persons (October 2000);

(e) An outreach programme to popularize space science among secondary schools took place from 20 to 24 November 2000. About 35 secondary schools participated;

(f) Training Course in Satellite Meteorology (March-April 2001).

D. Latin America and the Caribbean

34. The first meeting of the Governing Board of the Regional Centre for Space Science and Technology Education in Latin America and the Caribbean was held in Brasilia on 15 October 1999. Derli Chaves Machado da Silva was designated Secretary-General of the Centre and entrusted with the task of defining the role and composition of the secretariat of the Centre and promoting its affiliation to the United Nations through a cooperation agreement.

35. The headquarters agreement for the operation of the Centre in Brazil was signed in Brasilia on 12 September 2000 by the Government of Brazil and the secretariat of the Centre. The signing of the agreement will make possible the beginning of operations of the Centre in São José dos Campos Brazil, in the near future.

36. The inauguration of the Centre is expected to occur in 2001 in Brazil and Mexico. In preparation for the operation of the campus of the Centre in Brazil, the National Institute for Space Research (INPE) is already active in organizing a number of workshops for the benefit of Member States in the region.

E. Western Asia

37. In 2000, the Office for Outer Space Affairs announced the establishment and location of a centre in Jordan and requested the Government of Jordan to prepare a draft agreement with respect to the establishment of the centre, to be discussed, adopted and entered into by all countries of western Asia. The draft agreement will cover such issues as the goals, objectives and future direction of the centre and the structure of its governing board and personnel.

38. The centre in Jordan will be established at the following educational and research facilities:

(a) Royal Jordanian Geographic Centre;

(b) Al al-Bayt University;

(c) National Information Centre.

F. Central, eastern and south-eastern Europe

39. Following discussions in 1999 on the Network of Space Science and Technology Education and Research Institutions of Central Eastern and South-Eastern Europe, a meeting of the national coordinators on the operation and functioning of the Network was organized and hosted by the Bulgarian Academy of Sciences in Sofia on 21 and 22 October 1999. The deliberations of the first session were based on:

(a) The report of the United Nations technical study mission, which emphasized projects and pro-

grammes that could benefit the operation of the Network;

(b) Recommendations of experts and informal meetings of the Network held between 1996 and 1999;

(c) Recommendations of the Regional Preparatory Conference for the UNISPACE III for Eastern Europe;

(d) recommendations of UNISPACE III. The deliberations focused extensively on the role of the core institutions within the Network and on the institutional, legislative, regulatory and administrative measures needed for their operation within it.

40. At the first session, the national coordinators agreed that the Chairman of the Steering Committee of the Network should circulate a draft text of an agreement for the Network, to be revised and returned to the Chairman in order to have a final text reading for signature by all members (national coordinators and permanent representatives to the United Nations (Vienna) (of States of the region) during a future session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space.

41. The Office for Outer Space Affairs will also prepare a cooperation agreement between the Office and the Network.

42. Following the first session of the Network, two member States of the Network submitted proposals for projects to be implemented through the operation of the Network. Hungary presented a proposal for the establishment of a regional space geodesy centre in Penc, Hungary. Poland proposed studies in the following areas:

(a) Studies and applications related to the electromagnetic environment of the Earth;

(b) Estimation of drought hazard using information derived from remotely sensed data;

(c) Accelerating and heating in the magnetosphere. Network member States would have the opportunity to discuss and develop the project further during the Committee on Space Research/European Space Agency Colloquium on Acceleration and Heating in the Magnetosphere, to be held in Konstancin-Jeziorna, Poland from 6 to 10 February 2001.

Annex I

Contact addresses for the regional centres

Asia and the Pacific

Mr. L. Deekshatulu
Centre for Space Science and Technology Education in Asia and the Pacific
Indian Institute of Remote Sensing
4 Kalidas Road
Dehra Dun 248 001
India
Telephone: +(91) (135) 740-737
Facsimile: +(91) (135) 740-785
E-mail: deekshatulu@hotmail.com

Africa (French Language)

Mr. A. Touzani
African Centre for Space Science and Technology Education—in French Language
École Mohammadia d'Ingénieurs
Avenue Ibn Sina
B.P. 765
Rabat-Agdal
Morocco
Telephone: +(212) (7) 681-824
Facsimile: +(212) (7) 681-826
E-mail: craste@emi.ac.ma

Africa (English Language)

Mr. E. E. Balogun
African Regional Centre for Space Science and Technology Education—in English Language
Department of Physics
Obafemi Awolowo University
Ile-Ife
Nigeria
Telephone: +(234) (36) 230-454
Facsimile: +(234) (36) 233-973
E-mail: ebalogun@oauife.edu.ng

Latin America and the Caribbean

Mr. D. C. Machado da Silva
Regional Centre for Space Science and Technology Education in Latin America and the Caribbean
Instituto Nacional de Pesquisas Espaciais
Divisão de Sensoriamento Remoto
Av. dos Astronautas, 1758
Cx. P. 515
CEP 12201-970 São José dos Campos, SP
Brazil
Telephone: +(55) (12) 345-6872
Facsimile: +(55) (12) 345-6870, E-mail: derli@dem.inpe.br

Western Asia

Mr. M. A. Bakhit
Al al-Bayt University
P.O. Box 772
Jubayha
Amman
Jordan
Telephone: +(962) (6) 840-190
Facsimile: +(962) (6) 846-721
E-mail: aabu@amra.nic.gov.jo

Annex II

List of publications of the Centre for Space Science and Technology Education in Asia and the Pacific

A. Publications in 1996

1. Announcement brochures

Nine-month Postgraduate Course in Remote Sensing and Geographic Information Systems (1 April-31 December 1996)

2. Proceedings

Inauguration of the First Postgraduate Course in Remote Sensing and Geographic Information Systems (1 April-31 December 1996)

3. Memoirs

First Postgraduate Course in Remote Sensing and Geographic Information Systems (April-December 1996)

4. Souvenir

Inaugural Postgraduate Course in Remote Sensing and Geographic Information Systems (1 April-31 December 1996)

B. Publications in 1997

1. Announcement brochures

Nine-month Postgraduate Course in Remote Sensing and Geographic Information Systems (1 October 1997-30 June 1998)

Nine-month Postgraduate Course in Satellite Communications (1 January-30 September 1997)

2. Proceedings

Postgraduate Course in Satellite Communications and Workshop on Distance Education and Training via Satellite Space Applications Centre, Ahmedabad (20-24 January 1997)

3. Memoirs

First Postgraduate Course in Satellite Communications (January-September 1997)

C. Publications in 1998

1. Announcement brochures

Nine-month Postgraduate Course in Remote Sensing and Geographic Information Systems (5 October 1998-30 June 1999)

Nine-month Postgraduate Course in Satellite Meteorology and Global Climate (1 March- 30 November 1998)

Six-month Postgraduate Course in Space Sciences (1 June-30 November 1998)

2. Proceedings

Workshop on Emerging Trends in Satellite Meteorology: Technology and Applications, Space Applications Centre, Ahmedabad (9-12 March 1998)

3. Memoirs

First Postgraduate Course in Satellite Meteorology and Global Climate (March-November 1998)

First Postgraduate Course in Space Sciences (June-November 1998)

Second Postgraduate Course in Remote Sensing and Geographic Information Systems (October 1997-June 1998)

4. Souvenir

First Postgraduate Course in Space Sciences (June-30 November 1998)

Postgraduate Course in Satellite Meteorology and Global Climate (1 March-30 November 1998)

International Workshop on Emerging Trends in Satellite Meteorology: Technology and Applications (9-12 March 1998)

5. Newsletter

Vol. 1, No. 1, March 1998
Vol. 1, No. 2, June 1998
Vol. 1, No. 3, September 1998
Vol. 1, No. 4, December 1998

D. Publications in 1999

1. Announcement brochures

Nine-month Postgraduate Course in Remote Sensing and Geographic Information Systems (1 October 1999-30 June 2000)

Nine-month Postgraduate Course in Satellite Communications (1 July 1999-31 March 2000)

Four-week Course on Digital Image Processing for Environmental Management: A Remote Sensing Perspective (Indian Institute of Remote Sensing, Dehra Dun, (30 August-24 September 2000)

2. Memoirs

Third Postgraduate Course in Remote Sensing and Geographic Information Systems (October 1998-June 1999)

3. Newsletter

Vol. 2, No. 1, March 1999
Vol. 2, No. 2, June 1999
Vol. 2, No. 3, September 1999
Vol. 2, No. 4, December 1999

E. Publications in 2000

1. Announcement brochures

Nine-month Postgraduate Course in Remote Sensing and Geographic Information Systems (1 October 2000-30 June 2001)

Nine-month Postgraduate Course in Space and Atmospheric Sciences (1 August 2000-30 April 2001)

Nine-month Postgraduate Course in Satellite Meteorology and Global Climate (1 July 2000-31 March 2001)

Four-week International Training Course on Remote Sensing and Geographic Information Systems Technology and Applications in Natural Resources and Environmental Management (Indian Institute of Remote Sensing, Dehra Dun (28 August-22 September 2000)

Course on Applications of Satellite Communications for Development (Space Applications Centre, Ahmedabad (17-21 July 2000)

International Workshop on Earth Observation Education and Training and Meeting of the Ad Hoc Working Group on Earth Observation Education and Training of the Committee on Earth Observation Satellites (Indian Institute of Remote Sensing, Dehra Dun (9 and 10 August 2000)

2. Memoirs

Second Postgraduate Course in Satellite Communications (1 July 1999-31 March 2000)

Fourth Postgraduate Course in Remote Sensing and Geographic Information Systems (October 1999-June 2000)

3. Newsletter

Vol. 3, No. 1, March 2000
Vol. 3, No. 2, June 2000

F. Three general information brochures on the Centre