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**Committee on the Peaceful Uses of  
Outer Space**  
**Scientific and Technical Subcommittee**  
**Forty-sixth session**  
Vienna, 9-20 February 2009  
Agenda item 5  
**Implementation of the recommendations  
of UNISPACE III**

**African Leadership Conference on Space Science and Technology  
for Sustainable Development**

**Communiqué from the second conference, held in Pretoria, South Africa  
2-4 October 2007**

**I. Background**

1. The African Leadership Conference on Space Science and Technology for Sustainable Development was first proposed by the Nigerian delegation to the UN Committee on the Peaceful Uses of Outer Space in 2004. The conference aims (i) to raise awareness among African leaders of the importance of space science and technology, (ii) to provide a regular forum for the exchange of information among African countries and (iii) to enhance intra-African cooperation in the development and application of space technology. The leadership that is targeted by this conference is not only the national leadership of African countries, but also the collective leadership of the African Union (AU) and its New Partnership for Africa's Development (NEPAD).

2. The first conference in this series was held in Abuja, Nigeria, from 23–25 November 2005. This communiqué presents a review of the second conference, held in Pretoria, South Africa, from 2–4 October 2007. The next conference in this series will be hosted by Algeria in 2009. In this paper we refer to the African Leadership Conference on Space Science and Technology for Sustainable Development by the commonly used abbreviated name: 'the ALC'.

## II. Attendance and programme of the ALC 2007

3. The ALC 2007 conference was held at the Convention Centre of the Council for Scientific and Industrial Research in Pretoria, South Africa. A total of 113 participants from 11 African countries (Algeria, Congo, Kenya, Lesotho, Mozambique, Nigeria, Rwanda, South Africa, Sudan, Zambia and Zimbabwe) attended the conference. Of these, five countries are members of the Committee. The conference was opened by South Africa's Minister of Science and Technology.

4. The programme covered the role of space in Africa's development and reviewed the status of space activities on a regional and national level. A total for 47 presentations were delivered in 4 plenary sessions and 6 parallel sessions spread over 3 days. There were sessions on Earth observation, capacity-building in space policy and space law, space-based disaster management, astronomy and space science, satellite position determination, timing and navigation, and commercial applications of space technology. A session was devoted to discussions on the African Resource Management Satellite Constellation, a pan-African project being led by Algeria, Kenya, Nigeria and South Africa. The final session of the conference was a panel discussion on ways and means to strengthen the ALC in future.

5. The technical sessions were complemented by a well-attended exhibition in which fifteen entities participated. The exhibitors comprised aerospace and defence companies, parastatal organizations and government research organizations from South Africa and Nigeria.

6. All the presentations delivered at the ALC are available for downloading online from the ALC 2007 website.<sup>1</sup> The proceedings of the conference were published as issue No. 12 of *African Skies / Cieux Africains*. The proceedings volume contains a summary of all the papers presented at the ALC, the full texts for 19 papers and the participants' observations and recommendations. The proceedings volume was distributed to all delegations attending the forty-sixth session of Scientific and Technical Subcommittee of the Committee.

## III. Summary of deliberations

### A. The role of space in Africa's development

7. The conference began by reviewing the outcomes of the first ALC, held in Abuja in 2005, with particular reference to how the ALC was being institutionalized and recognized by the United Nations through the Committee. The conference then reviewed the role of space in Africa's development with emphasis on new developments in the global space arena and how Africa should position itself to participate in these developments more effectively.

8. The space activities in Algeria, Nigeria, South Africa and Zambia were described. A common thread running through all those activities is the use of space technology to work towards sustainable development objectives. Some of the areas highlighted include the development and management of natural resources, management of disasters, monitoring of environmental degradation and rehabilitation, and capacity-building in all aspects of the development and application of space technology.

9. The conference considered regional cooperation in space-related activities. Since many of Africa's development challenges are trans-frontier in nature, improved inter-regional and intra-regional cooperation were identified as effective measures to allow African countries to develop capacity to utilize space applications for sustainable development.

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<sup>1</sup> <http://www.space.gov.za/conferences/alc2007>.

10. The conference took note of the work of the UN-affiliated African Regional Centres for Space Science and Technology Education in Rabat, Morocco, for francophone Africa and in Ile-Ife, Nigeria, for anglophone Africa. The activities of the Centre at Ile-Ife were presented in detail. The Centre was serving the region well. Training had been provided in remote sensing and GIS, satellite communications and satellite meteorology to participants from 17 African countries: Botswana, Cameroon, Democratic Republic of Congo, Egypt, Ethiopia, Gambia, Kenya, Liberia, Malawi, Namibia, Nigeria, South Africa, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe. The Centre also organized numerous other workshops and training and outreach activities. Sourcing of adequate resources and funding is an ongoing challenge for the Centre.

11. In order to maximize the use of available resources, it was suggested that African countries with space programmes should consider pooling their scarce human and financial resources in an African Space Agency. Participants noted that Africa's Science and Technology Consolidated Plan of Action<sup>2</sup> identified a need to establish an African Institute of Space Sciences. It was noted that not all African countries were ready to participate in a continental space agency and that the proposed African Institute of Space Sciences could play an important role in raising the level of activity in those countries to the point where they might wish to join a continental space agency.

12. The participants noted that space science and technology have a critical role to play in addressing the development challenges of the continent, as acknowledged in Africa's Science and Technology Consolidated Plan of Action. They recommended that the observations and recommendations of the ALC should be forwarded to the African Ministerial Council on Science and Technology (AMCOST), to NEPAD and the AU.

13. In order to maximize the benefits of space science and technology for Africa, consideration should be given to bilateral and multilateral mechanisms for promoting greater cooperation among African countries in the space arena and for strengthening Africa's role in the global space arena. The ALC could play a role in promoting this concept through lobbying of continental organizations such as the African Union.

## **B. Earth observation for supporting Africa's development**

14. The participants noted the role of Earth observation in supporting, monitoring and enforcing a variety of government policies. Affordable access to timely data continues to be a challenge for numerous African countries. In this regard, the South African government multi-license arrangement for Earth observation data provides a cost-effective model for data acquisition for other African countries to consider.

15. It was proposed that organizational operational capabilities, as well as the capabilities of individual scientists in the various institutions in Africa should be evaluated to ensure a purposeful interplay between research in Earth observation applications and operational Earth observation projects.

16. Participants noted that in spite of the widespread use of satellite data on the continent, not many African countries were participating actively in the Group on Earth Observations (GEO). Participants proposed that the next ALC should consider how Africa might derive benefit from its participation in the GEO. It was further recommended that the next ALC should include an agenda

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<sup>2</sup> This Plan, issued by the NEPAD Office of Science and Technology in 2006, consolidates the science and technology programmes of the African Union and the New Partnership for Africa's Development (NEPAD).

item led by South Africa on cooperative usage of space technology to address issues of mutual concern relating to climate change effects in Africa.

### **C. Capacity-building in space law**

17. The participants noted that only a few African countries have acceded to the four core UN space treaties. Participants recommended that African countries should consider ratifying the core outer space treaties as a means to preserve space for peaceful purposes and to adopt/adapt national legislation in keeping with these treaties as a way to promote fair and responsible uses of outer space, for the benefit of all nations.

18. The participants noted that the space arena is evolving rapidly, with consequent implications for international and domestic space law. They further noted that there is a low level of African involvement in the activities of the Committee, especially its Legal Subcommittee. The participants recommended that African countries should consider the establishment of national focal points for space law issues and should consider active participation in space law conferences and in international fora where space law issues are debated.

19. The participants recommended that African countries should consider capacity-building in space law a high priority, especially in those countries intending to become active participants in the space arena.

20. The participants noted that the University of the Witwatersrand in South Africa offers a Masters degree and short courses in space and satellite law and is interested in pursuing cooperation opportunities with other African educational institutions. The UN-affiliated African Regional Centre for Space Science and Technology Education in English in Nigeria is also planning to start offering short courses on space law in the near future.

21. The participants noted that NEPAD has allocated resources to the NEPAD e-Africa Commission for the development of information and communication technology in Africa. African countries should explore the possibility of securing assistance from this Commission for capacity-building in space law through the creation of web portals, and other internet-based methods.

22. The participants recommended that the establishment of an African Space Law and Policy Association should be considered as a means to promote greater cooperation, capacity-building and exchange of information among the legal fraternity in Africa in matters pertaining to space law.

23. The participants noted that the Legal Subcommittee of the Committee had agreed in 2007 to a new agenda item on "Capacity-building in space law." They recommended that the observations and recommendations of the ALC with regard to capacity-building in space law should be communicated to the Legal Subcommittee of the Committee during the consideration of this new agenda item. In this regard it was recommended that the Office for Outer Space Affairs should be requested to develop a database of fellowship and scholarship opportunities for training in space law and that it should be requested to develop a baseline course on space law to be made freely available on the internet.

### **D. Space-based disaster management support in Africa**

24. The participants noted that space systems play an increasingly important role in all phases of the management of natural and man-made disasters. The participants further noted that the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) initiative for space-based disaster management support would enhance

the region's capabilities in this domain. The participants recommended that Africa should have five fully developed regional centres, in West, North, South, East and Central Africa for proper coordination of UN-SPIDER activities for the benefit of all the countries within their regions and for easy access to disaster information. The establishment of a regional technical advisory committee for the implementation of UN-SPIDER in the various regions was also recommended.

25. The need to develop expertise in the application of space technology for disaster management was noted. Participants recommended the establishment of a special working group on training needs and capacity development in space-based disaster management.

26. The need for greater information sharing among disaster management experts was noted. The participants recommended that consideration should be given to the organization of regional conferences or workshops for: (i) bringing together communities of practice in disaster management and the space data providers; (ii) identifying available information from various countries and user communities; (iii) compiling a data inventory and (iv) profiling and monitoring levels of implementation of space-based tools and also for sharing of usage experiences. The development of a regional disaster management knowledge portal using a standard metadata format and inter-operable information technology infrastructure was identified as another means to promote greater information sharing.

27. The participants noted that a significant number of humanitarian crises and natural disasters in Africa are trans-frontier phenomena and recommended greater regional cooperation and information exchange in disaster management. The need for linkages among the various regional hubs for easy, timely access by all countries to critical information was also noted. Participants recommended to the AU and NEPAD to consider means to promote improved cooperation and commitment of all the countries in Africa to support regional disaster management structures.

## **E. The African Resource Management Satellite Constellation**

28. The participants noted that the African Resource Management Satellite Constellation (ARMSC) is an initiative of Algeria, Kenya, Nigeria and South Africa to develop a constellation of satellites for a wide variety of Earth observation applications of mutual interest.

29. Representatives of the ARMSC partner countries reviewed progress and developed plans for future work. The ARMSC representatives agreed to develop a non-binding Declaration of Intent to be signed by political principals in each of the member countries. This would be followed at a later stage by a binding Memorandum of Agreement, which would detail the roles and commitments of each of the partners. The ARMSC is open to participation by other interested African countries. Participants recommended that the ARMSC project should be a central element of the programme for the next ALC in Algiers in 2009.

## **F. Satellite-based position, timing and navigation applications**

30. The participants noted that satellite-based global position determination, timing and navigation services are critical for Africa's development. Participants noted the Africa Geodetic Reference Frame project (AFREF) provides a platform to enhance intra-African cooperation in the applications of GNSS and recommended that all African countries should consider participation in AFREF.

31. Participants noted that Global Navigation Satellite Systems (GNSS) provide a tool for scientific research in a variety of disciplines. Participants also noted that several national GNSS

base station networks are operational in Africa and recommended greater coordination among the entities operating these networks to support research applications such as ionospheric mapping, geophysical research (e.g. tectonic plate motion), weather forecasting and climate monitoring.

32. Participants recommended that African countries should consider the concept of an African satellite-based augmentation system for air navigation. Such a system could be based on NigComSat-1 as the primary communication satellite and on the European Geostationary Navigation Overlay Service (EGNOS). The two systems would complement one another and provide a back-up in event of failure of either system.

33. The participants noted a need for training opportunities in the field of GNSS and its applications at all levels in Africa. The participants recommended that the existing UN-affiliated Regional Centres for Space Science and Technology Education could be excellent platforms for building capacity in GNSS and its applications. The possibility of network-based learning of GNSS and its applications should be investigated as a means to promote wider knowledge and utilisation of GNSS applications in Africa.

## **G. Commercial applications of space technology**

34. Participants noted that the private sector is already engaged in a wide variety of commercially viable applications of space technology in Africa that make use of existing space systems. However, the market for the development of space systems in Africa remains very limited. New African private sector actors face significant entry-level barriers in terms of technology and investment, as well as competition with established actors from other regions in the world seeking to expand into markets in Africa.

35. Although communication applications make use of space in a commercially sustainable way, Earth observation, space science and many other space-related ventures are in the nature of public good activities that rely on governments for initiation and implementation. Moreover, only governments can provide the long-term user demand that allows industry to develop its capabilities to meet those demands. The participants noted that a supportive, stable regulatory environment is a key requirement for establishing a viable space industry. Participants recommended that future ALC conferences should continue to incorporate a session devoted to private sector participation in the African space arena.

## **H. Strengthening the ALC**

36. The final plenary session of the conference was a panel discussion on ways and means of strengthening Africa's participation in global space fora in general and strengthening the ALC in particular. The panel comprised government officials from four economic regions of Africa.

37. Participants noted that the ALC provided a very unique forum for African policy makers and technical experts to meet and exchange information about space applications and benefits for Africa. Hence the ALC participants should comprise a combination of politicians, decision makers and scientists. The programme should include both scientific and political elements and should be structured in such a manner that these groups could interact in high-level plenary sessions, but also allow the policy makers to interact with each other in parallel sessions to discuss issues of regional cooperation and coordination.

38. It was noted that the ALC should aim to increase participation of countries in each of the four economic regions of Africa. To this end, participants noted the importance of holding the ALC at a variety of locations around the continent and even in interested non-spacefaring countries to make it a truly pan-African conference.

39. It was proposed that the ALC should encourage the establishment of regional groups to promote intra-regional cooperation and to strengthen the ALC on a regional level. Meetings of those regional groups could take place between the main ALC meetings as a way to maintain momentum, and also as a way to identify common regional issues that could be taken up at the ALC. Participants further recommended that an inventory of Africa's space science and technology resources should be conducted with a view to maximizing the uses of resources on the continent.

40. The establishment of a coordinating body for the ALC to oversee the implementation of resolutions and recommendations was proposed. This would ensure that the ALC would have capacity to implement the recommendations and follow-up actions of the conference, and that the ALC continue to be active during the inter-sessional periods.

41. Participants noted that the relationship of the ALC with African structures, such as the AU and NEPAD, should be clarified. This would facilitate the participation of Africa's political leaders in the conference. Participants recommended inviting African Ministers of Science and Technology to participate in the next ALC and crafting the programme in such a way that it would be of interest to them. One possibility would be to have a technical segment in the programme covering the role of space in one or two topical issues, followed by a high-level political segment on those same issues for the ministers. Ministers could be invited to make recommendations for issues that should appear on the agenda of the ALC. It was proposed that the ALC could be implemented as a NEPAD pilot project. As the host of the conference in 2007, the South African Department of Science and Technology was requested to investigate this possibility and to report back at the next ALC in 2009.