

REPORT:

4th AARSE Conference
On
Geoinformation for Sustainable Development in Africa
October 14-18 2002
Abuja, Nigeria

By
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ORGANISATION, SPONSORS, WORKSHOP TOPICS AND FORMAT

The Conference “**Geoinformation for Sustainable Development in Africa**” held at the Sheraton Hotel, Abuja, Nigeria, 14-18 October 2002 was organized by the African Association of Remote Sensing of the Environment (AARSE) (<http://www.itc.nl/personal/aarse/>).

201 participants attended the conference from 25 countries and three continents with 180 participants from Africa and the rest from Europe, the Middle East and North America. Sponsors of the conference (from outside Nigeria) included the International Institute for Geo-information Science and Earth Observation (ITC), UNESCO and SPACE IMAGING. ITC, as a committed supporter of AARSE initiatives, fully funded 20 of its Alumni from Nigeria and the surrounding Region to attend 1) a two weeks pre-conference refresher workshop at the Regional Center for Training in Aerospace Surveys (RECTAS), Ile-Ife and 2) the 4th AARSE conference in Abuja. UNESCO support was in fully funding 6 African participants to the conference, while SPACE IMAGING donated the IKONOS data of Abuja and sponsored a reception during the conference.

Logistics and funding to support the conference also came from a number of Nigerian organizations such as: the Regional Center for Training in Aerospace Surveys (RECTAS); UNILOG Consult of Lagos University; Federal University of Technology – Akure; Nigerian Defense Agency (NDA); National Agency for Science & Engineering Infrastructure; National Space Research and Development Agency (NASRDA); Chevron; Nigerian National Petroleum Corporation; Raw Materials Research and Development Council (RMRDC); Aero Geomatics Surveys (GAMLAR); Federal Ministry of Water Resources; Federal Ministry of Works & Housing; National Boundary Commission; National Planning Commission; Ministry of Foreign Affairs; Ministry of Federal Capital Territory; Federal Ministry of Solid Minerals Development; Federal Inland Waterways; Centre for Space Science and Technology Education, OAU, Ile-Ife; Federal Universities of Technology –Minna and Yola; Federal School of Surveying – Oyo; National Remote Sensing Centre – Jos; Nigerian Cartographic Association; University of Port Harcourt. The Céntré National de Télédétection et de Surveillance du Couvert Forestier (CENATEL) in Benin contributed by facilitating and putting in place a prominent member of the organization to support the LOC.and the Conference Secretariat.

Opening Session

Following the National Anthem and the introduction of the dignitaries by the Local Organizing Committee, the President of AARSE, Prof. Dr. Peter Adeniyi, welcomed the Nigerian VIP’s, the Local Organizing Committee, AARSE Executive Council and all participants to the conference. He went further to explain the role of AARSE and pointed out that the conference on “Geoinformation for Sustainable Development in Africa” was deliberately chosen to alert: all levels of decision-makers in all sectors of Africa and their professionals, the growing importance of Geoinformation in planning, developing and managing available natural resources for human sustainability and environmental enhancement. He also stressed that the theme of the conference was directed on how the benefits of

Geoinformation technology can be harnessed to provide the fundamental basis for sustainable Development in Africa. He also made a strong appeal for active participations of Africans in the AARSE activities.

The conference was officially opened by Ing. Alhaji Yahja Mohammed, the Director of Abuja City Environmental Protection Agency (the host City) representing the Honorable Minister of the Ministry of Federal Capital Territory. Ing. Alhaji Yahja Mohammed praised AARSE's achievements and he reiterated the full commitment of his Ministry in terms of financially and logistically support to the 10th Anniversary AARSE conference in Abuja. This indeed underscored the importance of the meeting and the significance being attached to remote sensing and GIS technologies by the African governments. Ing. Alhaji Yahja Mohammed stressed the importance that these technologies provide in the planning and execution of the physical development of Abuja city, in providing basic infrastructure information for a variety of applications such as urban mapping, regional planning and development, urban transportation and utilities as well as to aspects of natural resources development such as solid mineral, petroleum, agriculture, forestry, wildlife and water resources just to mention a few. He welcomed everyone present at the conference and wished all success during their stay in Abuja. The full address is given in: ([http:// www.itc.nl/personal/aarse](http://www.itc.nl/personal/aarse))



The official Opening Ceremony: Prof. Dr. Ayeni (Chairman, Local Organizing Committee), Ing. Alhaji Yahja Mohammed (Director of Abuja City Environmental Protection Agency), Prof. Dr. Peter Adeniyi (President, AARSE), representative (accompanying Ing. Alhaji Yahja Mohammed), Dr. Joseph Akinyede (Director of the Space Application, NASRDA), Dr. Tsehaie Woldai (Secretary General, AARSE), Dr. Evelynne Embede (Treasurer of AARSE), Dr. Mamadou Fofana (AARSE Vice-President for West Africa) and Dr. Justin Ahanhanzo (UNESCO)

Following the opening speech, the address of the Honorable Minister of Science and Technology, Professor Dr. Turner T. Isoun to the conference was read by Dr. Joseph Akinyede, the Director of the Space Application. Dr. Akinyede, first apologized that his Excellency is abroad and could not address the participants himself. He went on further to read the welcoming message sent by the Honorable Minister. The latter in his welcoming address, praised AARSE's firm commitment to providing a forum for African national remote sensing bodies, decision makers and educational institutions to share ideas, give reports and appraise projects, analyze policy issues and evaluate technologies as well as strategies for sustainable development in Africa. He recognized the unprecedented opportunities the new partnership for Africa's development (NEPAD) initiatives would offer the continent. He went on further to explain, that Nigeria has identified space technology and Geoinformation as one of its priority programmes and has consequently taken concrete actions through the establishment of a National Space Research and Development Agency (NASRDA) as the focal point for driving space technology and GIS development in the country. He also stressed that his ministry has signed a contract with Surrey Satellite Technology Limited in the UK on November 7th 2000 for the development of a Micro-satellite

as part of a constellation of six countries. The Remote Sensing Micro-Satellite NIGERIASAT1 with a resolution of 30m would be launch ready in mid-2003. Plan is also underway for NIGERIASAT2 (communication satellite), which will boost Nigerian communication in future. With this statement (full address is given in <http://www.aarse.itc.nl>) he wished everyone a success and declared the conference open.

Dr. Tsehaie Woldai, as Secretary General of AARSE, thanked first the Honorable Ministers for their kind words on AARSE and for the financial and logistic support that their Ministries have made available to the conference. He further went to welcome the participants and outlined the conference programme and technical exhibitions. He thanked the Local Organizing Committee and the Government of Nigeria for organizing the Conference. He went further to outline the activities of AARSE since its creation and also gave an elaborate view on the activities of AARSE in promoting remote sensing, GIS and Environment in Africa. With the vote of thanks from Woldai, the Honorable Minister went to open the technical exhibitions. This was followed by a reception.

Conference Topics and Formats:

The conference topics and formats were put together with valuable suggestions from the Local and Scientific Committee Members. The conference focussed was not only directed at assessing the current sustainable development problems in Africa, but also on how the benefits of Geoinformation technology such as, remote sensing, Global positioning Systems (GPS) and Geographic Information Systems (GPS) as well as the improved communications technology can be harnessed to provide the fundamental basis for sustainable development in Africa. Great emphasis was also given to Geospatial Data Infrastructure and the need for metadata in Africa. Several papers covering topics on geology, land use, groundwater, vegetation and institutions or organizations activities in the field of remote sensing and GIS including environment were also discussed. Other presentations included on active and passive remote sensing activities in Africa, collaborative capacity building, education and training, technology transfer, mapping and spatial data infrastructure, Ecosystems protection and resource management and Internet applications.

The conference format included: opening session and invited keynote papers in four plenary sessions and presentations in eight technical sessions, Three meetings (AARSE Council, AARSE General Assembly and Geoinformation Society of Nigeria meetings), AARSE Presidential Award (to the best paper submitted by an African) and the Local Organizing Committee Award (to the best paper submitted by secondary school and University students) were conducted during the conference. In spite of the long conference daily duration (up to 7:30 p.m. sometimes), the attendance was very high and constant to the workshop end, and discussions were lively. The technical programme was accompanied by visit to various exhibition stands (SPACE IMAGING, TRIMBLE, MAPS Geosystems, Leica, Aerospace Geomatics Surveys (GAMLAR)/HUGIN GMBH) and social events (Welcome Party, Technical presentation and cocktail reception by Space Imaging, Gala Dinner by Raytheon Company - USA, AARSE 10th Anniversary dinner, ITC alumni party), which allowed a better social interaction and fruitful discussions. The hotel facilities and services were very good, enabling work in a relaxed atmosphere.



An overview of some of the participants present during the conference.

Invited Talk

Eminent African scientists within and outside Africa have been invited to present keynote papers at the plenary sessions on important aspect of Geoinformation. The invited papers revolved around:

- Dr. A. A. Abioudun (Advisor to the President of Nigeria on Space matters) on “National, regional and international policies in Space Technology Development”
- Dr. David Stevens (UN Office of Outer Space Affairs) on “Space Technology and Disaster Management – A plan-of-action for Africa”
- Dr. Tsehaie Woldai (ITC) on “Geospatial Data Infrastructure: The Problem of developing metadata for Geoinformation in Africa”
- Prof. Dr. Gottfried Konecny on “ The concept. Principle and benefits of internet, intranet and mobile GIS for maximum utilization of geospatial data.”
- Dr. Jacob Gyamfi-Addo (EIS Africa) on “The way forward for coping with rapid advances in Geoinformation technologies for social economic development in Africa”
- Mr. Vincent Mama (Former Director of CENATEL) on “New trends in application of Geoinformation technology to environmental management”
- Dr. M. Fofana (Executive Director, African center for Environmental Information) on” New trends in integrating monitoring systems for national resources management”
- Prof. Dr. Peter Adeniyi (Vice Chancellor, Federal University of Technology, Akure) on “The responsibility, constraints and challenges of Geoinformation and their institutions in providing the fundamental framework dataset in Africa”
- Dr. E.W. Octichelo (Director General, Regional center for mapping of resources for development –RCMRS, Nairobi, Kenya) on “The economic values of Geoinformation technology development and application for Africa”
- Prof. R. A. Boroffice on “Geoinformation and National security”
- Prof. Dr. O.O. Ayeni (University of Lagos and Chairman of the Local Committee) on “New challenges in human capacity building in geoinformatics: Distance learning via the internet”
- Dr. O. Kufoniyi (Executive Director, RECTAS) on “The problem of curriculum development in Geoinformation technology in Africa”
- Dr. S.O. Ihemadu (National Boundary Commission, Abuja) on “Popularising the adoption of remote sensing technology for national development: the role of the Open University systems”
- Dr. P.C. Nwilo (University of Lagos) on “Legal aspects of Geoinformation”

Technical Presentations And Proceedings

80 papers from 69 authors in 20 countries were arranged in five technical sessions. All submitted abstracts were presented, with 7 exceptions. Out of the latter, 3 full paper were still submitted. Except for these, no programme changes, as often happens in other events, were necessary. Presentation time was short, focusing on the main points of each paper, with common discussion of all papers of each session at the end of the session. The presentations gave valuable and detailed enough information and were mature in many aspects with very few exceptions. The Abstract proceedings including some of the full invited papers were distributed during the conference. The full Proceedings of the conference including invited papers delivered (but not included in the original proceedings), other information from AARSE, OOSA and PR materials will be distributed on a CD shortly to all participants of the conference and supporting organizations. AARSE will step-up its tradition of publishing the invited papers and some selected technical papers into a book. In this regard, the submitted papers will be sent to various referees in the coming weeks.

Pre-Conference Workshop

Two workshop topics and formats were selected with valuable suggestions from many Programme Committee members.

1. Workshop on “*Novel Approaches in Earth Observation in Geo-information Science for Earth System Analysis*” (October 1 to 11 2002)

The two weeks pre-conference refresher workshop was organized and funded by the International Institute for Geo-information Sciences and Earth Observation (ITC), The Netherlands and was held in cooperation with the Regional Centre for Training in Aerospace Surveys (RECTAS), Obafemi Awolowo University (O.A.U) Campus, Ile-Ife, Osun State, Nigeria. The pre-conference refresher course was designed to retool ITC graduates (ITC Alumni) to take on new and more complicated

challenges in their working environment, based on the idea that former training and experience gained at ITC and RECTAS and in subsequent work environment of the course participants constituted the proper basis for the introduction of new approaches in earth observation and geo-information science for earth systems analysis.

A total of 20 participants from West African Countries and some from Nigeria participated in this workshop. The workshop centered on the state-of-the-art in geological remote sensing, GIS and digital field data capture techniques, predictive modeling and data integration approaches. It combined the specialist knowledge in Earth Science fields with the latest insights in the fields of geoinformation management and earth observation methods. Implementation of these objectives was by means of a series of formal lectures complemented by hands-on practice in the interpretation and analysis of imagery, application of various remotely sensed data in Earth science related surveying and mapping, digital image processing, geoinformation management and data integration, predictive modeling (data-driven, knowledge- and model-driven) and monitoring change detection. Increased relevance to the course was achieved by means of fieldwork organized by the RECTAS staff.

An important criterion for selecting the participants was that they submit a full paper on their research at home to the conference. The quality of the paper defines their selection. The approach ITC followed was fully appreciated. The Local Organizing Committee in its closing ceremony fully acknowledged the ITC approach of integrating the pre-conference workshop with the conference and appealed to all funding organizations to follow the ITC footsteps in future.

2. Workshop on “*Fundamentals of Geoinformation*” (October 14 2002)

The one day workshop offered by NSPRS/NISORS of Nigeria, focussed on the use of Remote Sensing, GIS, Environmental Information Systems, Photogrammetry and GPS as tools to generate geo-spatial information infrastructure for environmental and resources management.

AARSE Has New Officers

The Executive Council of AARSE held a launch meeting in October 16 to discuss policy issues regarding the Association, its members and its activities. During the meeting, AARSE’s Secretary General outlined current problems facing the Association, member’s drive, funding problems (in particular membership dues) and mal- function of some of its council members. The meeting was held in friendly atmosphere and many action points to correct these problems were suggested. In the General Assembly, which followed on 18 October, the Secretary General highlighted AARSE past activities including, its success and failures. AARSE vision and trajectories for the coming four years were also outlined. The new officers for the year 2002 to 2006 were selected effective November 1, 2002. Their position in AARSE is dependent upon their dedication and active roles within the region they serve and is subject for review in the years 2002 to 2004. The new officers of AARSE include:

- Prof. Dr. Peter Adeniyi, as President of AARSE
- Dr. Tsehaie Woldai, as Secretary General of AARSE
- Dr. Evelyne Mbede, Vice-President for East African Region
- Dr. Heinz Ruther, as Vice-President for South African Region
- Dr. Olajide Kufoniyi, as Vice-President for West Africa
- Dr. Wilber K. Ottichilo as Treasurer
- Dr. Wilber K. Ottichilo as Conference Director 2002-2004
- Dr. Musisi Nkambwe as Editor

Councilors of AARSE include:

- Dr Justin Ahanhanzo (UNESCO, Paris, France)
- Dr. Mamadou Fofana (Ass. Secretary of AARSE, Cote d’Ivoire)
- Prof. Dr. Gottfried Konecny (Germany)
- Mr. Vincent Mama (Benin)
- Dr. Jacob Gyamfi-Aiddo (Ghana)

- Prof. Dr. Ayeni (Nigeria)
- Dr. Peter Zeil (University of Salzburg, Austria)
- Dr. Andre Bassole (Burkina Faso)
- Dr. Dave McDevette (UNEP, Kenya)
- Dr. Hubert George (FAO, Italy)
- Dr. C. Ezigbalike (UNECA, Addis Ababa)

Kenya (RCMRS, Nairobi) organize AARSE 5th Conference

The bid to organize the 2004 AARSE 5th Conference was won by the *Regional Center For Mapping Of Resources For Development –RCMRS, Nairobi, Kenya*. Two countries showed interest and bid to organize the 5th AARSE conference. Apparently, RCMRS, through its Director General came with the detailed workout plan and format to win the heart and mind of the Selection Committee. RCMRS is a registered and important member of AARSE. The AARSE Council unanimously approved the election of Dr. E.W. Octichelo to be the Conference Director of AARSE for the period 2002-2004. AARSE will also cooperate in the AFRICAGIS 2003 in Senegal.

AARSE Award

Four students entered for the Essay Competition with the title “Application of Geoinformation for Sustainable Development”. Two university undergraduate students were declared winners. These include:

- Mr. E.O. Owolabi, Department of Surveying and Geomatics, University of Lagos, Nigeria and,
- Mr. A.T. Okekunle, Department of Forestry Resources Management, University of Ibadan, Ibadan, Oyo State, Nigeria

AFRICAGIS, Senegal 2003

The AARSE Executive Council has agreed to co-organize AFRICAGIS 2003 in Senegal.

Other Items

AARSE will revive its Newsletter and discussion is underway to publish an AARSE Geoinformation Journal (more on this and other items on AARSE Council Meeting minutes of 16 October 2002 to be available shortly in AARSE web-page) .

GENERAL OBSERVATIONS AND SPECIFIC RECOMMENDATIONS

The workshop was well organised, before and during the workshop with the support of the Local Organising Committee. From presentations and discussions made, it appears:

- The developments in Geospatial Data Infrastructure (GDI) have been too rapid to cope with - particularly in Africa where in-depth understanding of Geoinformation technologies has been minimal.
- Most metadata (particularly the framework and thematic data) in Africa are out-of-date. Data follows multiplicity of standards, scale, currency, content, formats and quality to be used properly. Most are in analogue rather than digital.
- There is need to (a) standardise and harmonise available geo-information to facilitate and ease data exchange and transfer and (b) generate metadata for all existing data in order to evaluate its quality, quantity and availability, and enhance its use.
- Currently in Africa, there is a limited data-exchange network, something that should be improved urgently – by the Africans themselves.
- There is a lack of information exchange and cooperation within African countries, between countries and even more regions, with obvious negative effects.
- Education and training has to receive high attention if current effort towards sustainable development in Africa is to be realized.

The Organizing Committee and the Executive Council of AARSE through its Secretary General in the closing ceremony thanked the Government of Nigeria, the Local Organizing Committee, and all funding and supporting organizations described above for making the conference a success. Special word of thanks went to ITC for fully funding the pre-conference 2-weeks workshop in Ile-Ife and subsequently funding 20 participants to attend the conference. The support of UNESCO was also highly applauded for funding 6 African participants to the conference.

Recommendations from the Fourth AARSE Conference

Preamble

At the Fourth Conference and the Tenth Anniversary of the African Association of Remote Sensing for the Environment (AARSE) held from 14-18 October 2002 in Abuja, Nigeria, the African Community of Geoscientists, Remote Sensing, Space Science and Technology specialists took stock of their historical mission at the historic time of the development of the Vision and the Plan of Action of the New Partnership for the Africa's Development (NEPAD).

In recognition of the key role of geoinformation and space technology in the sustainable management of Africa's natural resources and environment, and the potential applications of these technologies for poverty alleviation, the Fourth Conference adopted the following Recommendations:

Part I: Contribution of AARSE to the NEPAD Initiative

- 1- Set up a Committee to produce an Action Plan/Position Paper to address the application of the above technologies to key NEPAD objectives.
- 2- The above Committee should submit a draft document of the Action Plan/Position Paper for consideration and adoption at an AARSE Special Session during the 2003 AFRICAGIS Meeting in Dakar.
- 3- Respond to the African Ministerial Conference on the Environment (AMCEN) initiative by identifying ways to contribute to the Environmental Assessment process at local, national and continental level.

Part II: National Frameworks for Collaboration

- 4- Promote the establishment of appropriate national frameworks for the application of geoinformation and space technology for sustainable development in each member country.
- 5- Promote the harmonization and sharing of data, information, and expertise among geospatial professionals and users in member countries through national co-coordinating structures, as appropriate.
- 6- AARSE Members should commit themselves individually as active stakeholders within the national frameworks.
- 7- Support the integration of educational and training institutions within member countries in the development and implementation of national geospatial data infrastructures.
- 8- Encourage the involvement of women in geosciences and space technology by creating opportunities for leadership, advanced training, and professional development.

Part III: AARSE and Governance

- 9- Develop initiatives to address the challenges of governance through the application of remote sensing and GIS expertise to the integrated management of natural resources for the empowerment of local Governments and self-sustainability.
- 10- Reinforce existing partnerships and develop new collaboration with international institutions, including United Nations Agencies, overseas research and educational institutions, and funding agencies.