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REPORT OF ACTIVITIES OF THE REGIONAL
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REMOTE SENSING (1990-1992)

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REPORT OF ACTIVITIES OF THE REGIONAL CENTRE FOR
SERVICES IN SURVEYING, MAPPING AND REMOTE SENSING
(1990 - 1992)

by

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1. I N T R O D U C T I O N

The Regional Centre for Services in Surveying, Mapping and Remote Sensing, here in after, the Centre was established in 1975.

The objectives of establishing the Centre to quote the Charter are:

- . to provide services in surveying, mapping and remote sensing, including in particular, but not limited to aerial photography, photogrammetry, photo-interpretation, orthophotography, satellite remote sensing, data applications, airborne geophysical surveys, electronic computation and data processing, zero order surveys, calibration and maintenance of surveying and mapping equipment.
- . to provide training for nationals of member states in surveying, mapping and remote sensing.
- . to carry out studies and research in surveying, mapping and remote sensing.
- . to make available to member states data and results of the studies, research and tests carried out by it.

- . to provide advisory services upon request on problems relating to surveying, mapping and remote sensing to the Governments of the States who are members of the Economic Commission for Africa and their agencies.

When the Centre was established, five countries signed the Charter and these were, Kenya (the host), Tanzania, Uganda, Malawi and Somalia. However, by 1993, there are 13 signatory member states namely, Botswana, Comoro, Ethiopia, Kenya, Lesotho, Malawi, Seychelles, Somalia, Sudan, Swaziland, Tanzania, Uganda and Zambia.

The Centre also provides services at subsidized cost to the remaining countries of the Eastern and Southern Africa sub-region, but it is hoped that they will also join the Centre in the near future.

2. CONSULTANCY AND PROJECT EXECUTION

During the last three years, the Centre carried out a number of consultancies and projects in support of development programmes for its member states.

These activities are carried out either as a service to the member states or as part of contracts in which the Centre competes with the private industry. The activities of each of the main programmes of the Centre is presented.

2.1 REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM (GIS)

The Remote Sensing and GIS Department continued to implement various projects in the application of satellite data and mapping techniques. In 1990, the Centre produced a Lesotho Image map at a scale of 1/250,000. In Uganda, the Kaproron forest was mapped at a scale of 1/50,000 using satellite data.

Phase 1 of the Sudan Emergency and Recovery Information and Surveillance System (SERISS) Project was completed and the report submitted to the Sudan Government.

In 1991, the Centre implemented the following projects using remote sensing techniques. A research was carried out in Land Use mapping in rangelands for Arusha Region, Tanzania and the report and results were presented at the International Rangeland Congress in Montpellier, France. A Land Use Mapping Project was started for the Mara Region in Tanzania. Further a research on tsetse habitat was carried out jointly with the

International Centre for Insect Physiology and Ecology (ICIPE) Nairobi, Kenya using SPOT data. In the same year, using SPOT satellite data, a research was carried out for the monitoring of sisal estates in Nakuru, Central Rift Valley, Kenya.

In 1992, the Phase 11 of Land Use Mapping Project of Mara Region, Tanzania continued. This project generated US\$ 95,000 as revenue to the Centre. SPOT satellite data was used in the execution of the SIRENE project in which land use mapping was carried out and completed in Comores. Similar mapping is continuing in Mauritius and Seychelles. SPOT data was also used in an Integrated mapping of natural resources of Lake Manyara, Tanzania.

A project, 'Monitoring of Inland Lakes in Kenya: An Environmental Analysis Methodology for Developing Countries' started towards the end of 1992. In this project, Lakes Nakuru, Elmenteita and Naivasha and their environs would be monitored for various changes using satellite data and GIS.

Finally, throughout the reporting period, the Early Warning System for Food Security Project for the IGADD countries continued. This project is hosted by the Centre on behalf of IGADD. It is financed by Japan and executed by FAO.

During this time various image maps derived from NOAA and METEOSAT data have been regularly sent to member states. The project has continued to provide useful rainfall data to the six IGADD countries and other users for agricultural planning and so guarantee food security.

2.2 THE MAPPING DEPARTMENT

This Department has two sections, that is, the Geodesy and Aerial Survey and the Cartography Sections. The activities of each section are presented below.

2.2.1 THE GEODESY AND AERIAL SURVEY

The Geodesy and Aerial Survey Section of the Centre continued to coordinate the establishment of a unified geodetic datum for Africa. The harmonisation of the Eastern Africa geodetic network continued to occupy a high priority in the Centre's geodetic activities in 1990. A contract to establish 50 doppler points in Mara Region of Tanzania was secured by the Centre. These points would be used to control mapping and the survey of rural projects in the area. The contract sum for this project was US\$60,000.

In 1990, the Centre participated in the 4th CGA symposium held in Tunis, Tunisia in May 1990. An ad hoc committee was formed at this symposium to coordinate the establishment of an Integrated Geodetic network for Africa. The Centre was one of the convenors of this Committee. In 1990, aerial photography for mapping was carried out by the Centre in Tanzania and Kenya. In the same year, a project proposal was prepared and submitted to IHB for establishing a Regional Hydrographic Survey Unit at the Centre. The Centre also carried out a feasibility study for an oil pipeline in Tanzania. It also carried out a reconnaissance for a survey network in the Western Rift Valley of Uganda to be used in oil exploration.

During 1991, six calibration baselines were measured in Lesotho (1), Swaziland (1), Zambia (1) and Malawi (3). The baselines were measured using a mekometer ME 3000. The Centre participated at the XXth IUGG General Assembly held in Vienna, Austria in August 1991. The establishment of an Integrated Geodetic Network for Africa was again deliberated and the Centre was given the secretarial role for establishing a sub-commission under IAG Commission X - Continental Networks.

Early this year (1993), the Centre hosted a Seminar on the establishment of a Zero Order GPS Network along the 30th Arc Meridian Network and the countries using the 30th Arc Datum. The Seminar was organized by the Royal Institute of Technology, Sweden and the Centre. It was attended by surveyors from Kenya, Tanzania, Zambia, Malawi and Zambia.

In 1992, the section concentrated on the preparation of project proposal for the acquisition of various equipment to cope with the changing technology in surveying and mapping techniques. Reconnaissance for 8 calibration baselines in Kenya was carried out towards the end of 1992.

2.2.2 CARTOGRAPHY SECTION

This section carries out map production, research in the use of photomechanical techniques for mapping from satellite data, bulk printing for member states and other projects. During the reporting period, a Land Use map of Mwando Forest, Taita-Taveta, Kenya was produced.

Using photomechanical techniques the following maps were produced:

- (i) Gaborone, Botswana at 1/250,000.
- (ii) Mt. Kenya tourist map, Kenya, at 1/500,000.
- (iii) Greater Khartoum at 1/50,000 using SPOT data.

(iv) Bujumbura-Burundi at 1/50,000 using SPOT data.

(v) Menengai Crater at 1/50,000 using SPOT data.

A Land use mapping project was carried out for Mara Region, Tanzania at a scale of 1/250,000 with data compiled by the Remote Sensing and GIS Department. Also a Land Use and Image map was produced for the Comores using SPOT satellite data.

3. COMMON TECHNICAL SERVICES DEPARTMENT

This Department is made up of the Engineering and Calibration Workshop, the Photo-laboratory and the Library.

During the reporting period, the Engineering Department serviced and repaired 811 pieces of both electronic and optical equipment in all the member states. The service is free for all member states but the private sector has to pay a subsidised rate.

The Photo-laboratory continues to support the Remote Sensing Department in meeting user needs. A total of 5552 Image items at various sizes were produced valued at more than US\$200,000.

4. T R A I N I N G

The Centre has an established training programme with courses planned in each of its departments.

A printed brochure is available which outlines the courses, venue, fees and dates. These brochures are sent to member countries and are available on request by any user. Courses are held both at the Centre and in member states. Some courses are financed by donors, but the majority are financed by participants. Sponsorship can also be obtained from donors in Embassies in each country. Specialised courses can be tailor made on request by users either at the Centre or at the user's premises.

LIST OF COURSES HELD AT THE CENTRE : 1990 - 1992

<u>1990</u> <u>Course</u>	<u>No. of</u> <u>Participants</u>
1. Digital Electronics	31
2. Microprocessor Engineering	4
3. Care and Maintenance of Equipment	2
4. Remote Sensing - Urban Planning	15
5. Remote Sensing - Agriculture Statistics	13
6. Remote Sensing - Hydrogeological mapping	10
7. GIS - Agriculture and Land Use mapping	22
8. Remote Sensing - Earth Observations	42
9. Introduction to Remote Sensing	30

10. Early Warning Systems	24
11. AIS/ICAO Cartography course	6
Total	<u>199</u>

<u>1991</u> <u>course</u>	<u>No. of participants</u>
1. Digital Electronics	28
2. Microprocessor Engineering	32
3. Remote Sensing Seminar, Kampala	99
4. GIS courses	30
5. On the job Cartography courses	2
6. AIS/ICAO Cartography	<u>8</u>
Total	<u>199</u>

<u>1992</u> <u>Course</u>	<u>No. of participants</u>
1. Digital Electronics	27
2. Microprocessor Engineering	19
3. Use of NOAA/LAC Data	15
4. GIS and Remote Sensing	6
5. Introduction to Remote Sensing	5
6. Early Warning System for Food Security	2
7. Use of Visible, Infrared and Rector Systems in Hydrological and Agrometeorology Applications	17
8. Training in the Application of Remote Sensing and GIS for Natural Resources Management	15
9. Lithographic Printing	<u>2</u>
Total	<u>108</u>

5. COOPERATION WITH DONOR AGENCIES

From the beginning, the Centre continues to cooperate with the International donor community. To further this goal, in November 1991, the Centre organized a Donors Meeting at which 19 donor agencies and observers attended and made pledges to support the Centre in its development programmes. At present, France, Japan, FAO, ESA, BADEA, the EC, UNEP, etc provide technical assistance in support of pilot projects and training. The Centre has submitted project proposals to DANIDA, GTZ, BITS, EC, Japan, Switzerland, the Netherlands, UNEP, World Bank, ADB, BADEA, and OPEC seeking technical assistance for its planned development projects.

6. C O N C L U S I O N

The main target of the Centre is to reduce the burden of contribution of its budget from member states. By the end of the current development plan, the Centre aims at raising 50% of its budget from revenue generated through project execution.

The Centre is also sensitizing more countries of the sub-region to join the Centre. In doing so, the level of contribution made by each country will be reduced.