



## FROM THE DG'S DESK

**T**he year 2014 is now coming to an end, and looking back, I am glad to announce that we have had a successful year indeed.

We had an outstanding performance in the implementation of our 2010 – 2014 Strategic Plan. We achieved an impressive 85% of our targets despite various challenges facing us in the last four years. I am pleased to announce the approval of our 2015 – 2018 Strategic Plan by our Council of Ministers in their meeting held in Addis Ababa, Ethiopia in November. The plan provides bold steps to position RCMRD strategically to play a key role in the development and use of geo-information for sustainable development in our Member States and beyond.

In this issue, you will find that we engaged a lot with many stakeholders, and also had active interaction with institutions of higher learning as part of capacity building and encouraging the use of GIS not only in public organizations but also by students who are indeed our future. The future lies in geo-information and it is part of our mission to promote the penetration and use of geo-information in public and private institutions to make better and more informed decisions.

**With that, I wish you happy holidays!**

## GIS and GPS for Slum Mapping Training

**A** two-week GIS and GPS for Slum Mapping course for staff in the Slum Upgrading Unit of the Ministry of Lands & Housing, Kenya officially closed today under the tutelage of Leonard Sweta. The closing ceremony was presided over by Charles Muya, Land/Mapping Surveyor at RCMRD on behalf of the Director General who awarded the participants with the completion certificates.

The main objectives of the course included learning methodologies to delineate low income dwellings, event mapping and map production.

The RCMRD addresses Member States' needs by imparting requisite and sufficient skills to address emerging challenges in managing urban scenarios.



## Water Resource Users Association Meet

**R**CMRD representatives recently attended a meeting in Kisumu, geared towards formation of a decision support system to be used by the Water Resource Users Association (WRUAs). This worked towards effectively participating in the sustainable co-management of Water Resources (WRs) within their respective sub-catchments. It aimed to empower the WRUAs to understand water resources situation within the sub-catchment and utilize the sub-catchment data to make recommendations

/decisions related to water resources management to ensure sustainable use of the sub catchment water resources and mitigate impacts of deteriorating climatic conditions. This will be achieved through modelling the sub-catchment water resources situation within a Water Evaluation and Planning (WEAP) – model framework- a simple and appropriate tool that can be used for visualization and analysis of different water scenarios within the sub catchment based on water use information, policies, regulations and environmental water requirements.



The meeting brought together the identified WRUAs and stakeholders for consultations on roles and responsibilities of WRUAs in Water

Resource Management (WRM), their capacity to meet their expectations and the significance of this project.

## Hyacinth... A Beautiful Problem

Popular among water gardeners for its showy flowers and glossy leaves, water hyacinth (*Eichhornia crassipes*) is one of the fastest-spreading plants in the world. As a result, the floating flower—which is native to the Amazon but now thrives on every continent except Antarctica and Europe—has become one of the most widely reviled, especially in Africa.

People living along Lake Victoria, the

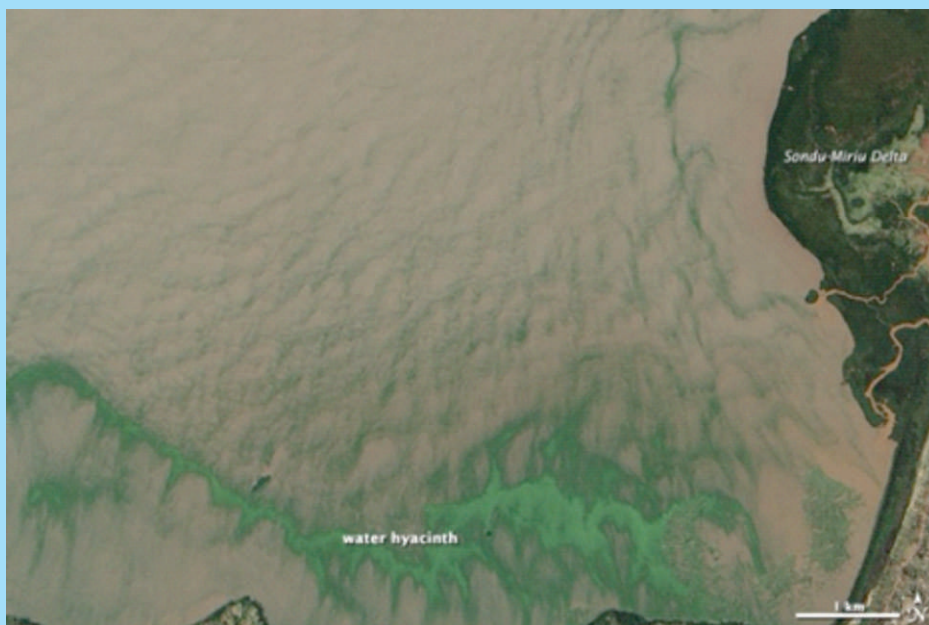
world's second largest lake, have a particular loathing for water hyacinth. Since the plant became established in the 1990s, occasional outbreaks have caused serious problems for communities bordering the lake, particularly those along Winam Gulf, a shallow inlet in Kenya.

"This plant has at various times covered so much of the lake, especially in Winam Gulf, that it completely blocked out local fishing,

clogged water supplies, and harbored pathogens harmful to local people and animals," explained University of Nevada–Reno conservation biologist Thomas Albright. "At times, it has been an economic calamity at local and even regional levels."

In 1997, an outbreak along the eastern and southern shores of Winam Gulf, carpeted 172 square kilometers (66 square miles) of water with hyacinth. In 2006-2007, heavy rains and nutrient-rich runoff fueled an even more extreme outbreak. The plant-covered area increased from about 40 square kilometers in March 2007 to more than 400 square kilometers just a month later—about one-third of Winam Gulf.

Aggressive control efforts—including removal by hand or with harvesters on boats, as well as the release of weevils that eat the plant—followed both outbreaks. Ecologists think the weevils can help keep the plant in check, but several other factors affect water hyacinth's abundance as well. "In the 2000s, we saw big reductions in water





hyacinth coverage that we attributed in large part to the effects of an El Niño year with winds, water levels, and wave action possibly uprooting the plants,” Albright said. “The declines we saw in some parts of the lake predated the release of weevils.”

Though its numbers are down, water hyacinth has hardly been eradicated in Winam Gulf. The Advanced Land Imager (ALI) on the Earth Observing 1 satellite captured this image showing mats of water hyacinths on May 17, 2014, in Osodo Bay, off the Sondu-Miri Delta. An analysis of nearly a decade of satellite imagery found that this area was one of the most common places for the plant to grow.

In addition to water hyacinth, blue-green algae and other opportunistic

aquatic vegetation—water lettuce, papyrus, and tussock grasses—likely contribute to the green in the image. The water is likely brown with sediment and runoff from recent rains.

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## Ongoing Assessment and Training on Land and Land Related Fields Project in Addis Ababa

The Regional Centre for Mapping of Resources for Development (RCMRD) is currently leading a Consortium of institutions including Geospatial System Analysis and Services (GeoSAS); Land Equity International (LEI); and Panafric Geoinformation Services (PanaGIS) in implementing a Ministry of Urban Development, Housing and Construction (MoUDHCo) project on Assessment and Training of its employees on Land and Land Related Fields in Addis Ababa, Ethiopia.

The project is anticipated to be completely implemented in two phases and within nine months, starting from July 2014. The first phase of the project started with two Centres, namely, Addis Ababa and Adama, then is to be followed by three other Centres, namely, Hawassa,



Bahir Dar and Mekelle. The second phase is to be conducted simultaneously at the five Centres on the basis of lessons learnt from the initial phase.

The Assessment and certification will be performed under the direct supervision of Occupational

Competence Assessment and Certification Centre (OCACC). Also, the training materials development, quality control and training offering will be conducted in close collaboration with TVET.

The Consortium is expected to train and enable certification of 4,800

candidates by the end of the project.

RCMRD and its partners are committed to offering highly qualified professionals and creating knowledge and skill transfer to both federal and local land administration officers including private sectors officers in the related fields.

## GIS and Remote Sensing Training on Land Cover for IGEBU



Geographic Institute of Burundi (IGEBU) staff from Burundi.

The training is being directed by Leonard Sweta, GIS analyst & Geo-Information instructor at the Centre. A number of objectives of the training comprise learning techniques of map editing, digitizing, Geo-referencing, among others.

Derrick Kinyua, a participant, is looking forward to learning the basics of Geographic Information Systems by the end of the training. RCMRD helps training participants from member states acquire adequate knowledge and expertise to deal with challenges that arise due to land degradation activities.

The Regional Centre for Mapping of Resources for Development (RCMRD) is hosting

a two-week training on the use of Earth Observation Data for Land Degradation Assessment for

## Introduction to Geographic Information Systems (GIS) & Remote Sensing (RS) Applications for the IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI) Course Hosted at RCMRD

A two-week Introduction to Geographic Information Systems (GIS) & Remote Sensing (RS) Applications for the IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI) course started at the Regional Centre for Mapping of Resources for Development (RCMRD). The course will run from 13<sup>th</sup> to 24<sup>th</sup>

October, 2014, and will be coordinated by Mr. Luca Dell'Oro, Specialist, UNITAR/UNOSAT. The participating member states are all part of the Intergovernmental Authority on Development (IGAD).

The course was officially opened by Dr. Hussein Farah, Director General

RCMRD. He asserted that the course was important because of the numerous challenges facing the Horn of Africa as a result of drought and associated consequences.

In early 2003, the United Nations Institute for Training and Research (UNITAR's) Operational Satellite



Applications Programme (UNOSAT) started the implementation of a regional project aimed at strengthening IGAD's capacity in geospatial technology for Disaster Risk Reduction (DRR). The major objective of the project is to improve geospatial capacities for DRR in the Horn of Africa region, within the overall framework of sustainable development.

Okecho Emmanuel, a Disaster Preparedness Officer, Office of the Prime Minister, Uganda, and a third time participant, appreciated that the course manual will cover more areas than the previous courses he had attended. Moreover, his expectation is to learn new things and have the capacity to apply them.



RCMRD will help with the implementation of the course aim, which is to provide participants with basic concepts and methodologies

related to Geographic Information Systems (GIS) and Remote Sensing (RS) analysis.

## Geographic Information Systems Using ArcGIS Training Starts at RCMRD

The Regional Centre for Mapping of Resources for Development (RCMRD) is hosting a Geographic Information System Using ArcGIS training for Staff in the Slum Upgrading Unit of the Ministry of Land, Housing & Urban Development, Kenya. The training will last for two weeks and will be coordinated by Leonard Sweta, GIS analyst and Geo-Information instructor at RCMRD.

The aim of the training is to provide hands-on knowledge to the participants so that they can identify, manage and upgrade low income residences under the Kenya Slum



Upgrading Programme (KENSUP). Consequently, this will help improve

the living conditions of the many individuals residing in slums in Kenya.

## SERVIR Will Connect Space to Village in Lower Mekong Region

On 6 October 2014, the United States Agency for International Development (USAID) and the U.S. National Aeronautics and Space Administration (NASA) announced the expansion of their joint initiative called

SERVIR to Asia's Lower Mekong region. SERVIR fuses USAID's development expertise with NASA's scientific and technical know-how to help developing countries use information provided by Earth

observing satellites and geospatial technologies for managing climate risks and land use. SERVIR-Mekong, in particular, will promote the use of satellite imagery to help Burma, Cambodia, Laos, Thailand, and

Vietnam better predict and cope with floods and other natural disasters and increase resilience to the negative effects of climate change. SERVIR-Mekong, funded by USAID and NASA and implemented by the Asian Disaster Preparedness Center (ADPC) and its partners, joins SERVIR-Eastern and Southern Africa and SERVIR-Himalaya and continuing activities in Mesoamerica as part of the SERVIR network.

Dan Irwin, the NASA research scientist who pioneered the SERVIR project, describes SERVIR's vision as "connecting space to village." Examples of SERVIR successes include satellite applications enabling environmental ministries in El Salvador and Nicaragua to issue real-time alerts pinpointing harmful algal blooms so fishermen can avoid them; Kenya's Ministry of Natural Resources to map and forecast areas of frost so they can protect crops; and forestry officials in Nepal and Bhutan to locate and monitor forest fires.

At first, it was only a dream that SERVIR would become a global network of regional hubs in the developing world. Irwin attributes the project's success to its emphasis on building people-to-people



relationships, and on working with regional partners to identify specific problem areas where SERVIR can help.

"We look forward to working with the people of the Lower Mekong region," says Irwin. "We will strive to understand what types of data and trainings are most critical to support the development needs of the region, and work with our new SERVIR-Mekong hub at ADPC to co-develop cutting edge applications, leveraging NASA's constellation of

satellites." Notes SERVIR-Eastern and Southern Africa, which began in 2008, is hosted by the Regional Center for Mapping of Resources for Development (RCMRD) in Nairobi, Kenya. The SERVIR-Himalaya hub was inaugurated in October 2010 in cooperation with the International Centre for Integrated Mountain Development (ICIMOD) in Kathmandu, Nepal. SERVIR-Mesoamerica operated from 2005-2011. The SERVIR Coordination Office is at NASA Marshall Space Flight Center in Huntsville, Alabama.

## RCMRD Team Attends the African Association of Remote Sensing of the Environment 2014 Conference

**D**r. Hussein Farah led a team from the Regional Centre for Mapping of Resources for Development (RCMRD) to the 10th biennial International Conference of the African Association of Remote Sensing of the Environment (AARSE) in the University of Johannesburg, Johannesburg, South Africa. The team had the opportunity of meeting

Grace Naledi Mandisa Pandor, South Africa's Minister of Science and Technology, with whom they shared information related to RCMRD's activities.

The theme of the conference was 'Space technologies for societal benefits in Africa'. This theme was sensibly picked to play a part in the

development of the individual and institutional capability of countries in the African continent and their people in the use of space technologies for sustainable practices at all stages.

Usually, this conference attracts professionals from various fields and from different parts of the world with the aim of encouraging the furthering





of knowledge, training, education, research and development in space science and geospatial technology incorporating remote sensing, photogrammetry and geospatial information sciences and their applications in sustainable development.

Moreover, the conference included technical plenary and parallel sittings comprising the AARSE General Assembly; oral and interactive paper presentations; scientific and commercial exhibitions of services and latest equipment; pre- and post-conference workshops; and social events and tours.

## RCMRD Hosts the Open Source Geospatial Data Processing For REDD+ Applications Workshop



The "Open source Geospatial data processing for REDD+ Applications" workshop began at the Regional Centre for Mapping of Resources for Development (RCMRD) and was officially opened by Dr. Hussein Farah, the Director General of RCMRD.

The workshop was organized and led by Ned Horning (AMNH) and Dr. Nadine Laporte (NASA SERVIR science team –Consultant) and facilitated by NASA-USAID-SERVIR, Kenya Forest Service, Woods Hole Research Center, American Museum

of Natural History, and Regional Centre for Mapping of Resources for Development.

The technical training workshop is being conducted as part of a NASA-SERVIR funded project "Forest carbon assessment for REDD+ in the East Africa SERVIR region." The participants will be introduced to data processing with the "R" software package, focusing on processing spatial data for forest and carbon monitoring and mapping in the context of REDD+.

Recently, "R" has been important in providing many spatial data processing functions that allows for the access of advanced data processing algorithms often unavailable in any other software. At the conclusion of the workshop, participants will know the importance of using "R" and many of the spatial data processing functions, and will be able to learn more as new capabilities are added to the changing "R" data processing archive.

Kibuga Dominic and Asiimwe Eden Sarah, participants representing Uganda Bureau of Statistics (UBOS), are expecting to have the capacity to use "R" for Statistical analysis and geospatial data processing after the workshop. On the other hand, Abel Siampale from the Forestry Department, Zambia, is looking forward to learning the application of "R", interacting with participants from different areas, and sharing the gained skills.

## The 48th Meeting of the RCMRD Technical Committee in Addis Ababa, ETHIOPIA

The 48th Meeting of the RCMRD Technical Committee was held at the United Nations Economic Commission for Africa (UNECA) Conference Centre, Conference Hall 5.

During the opening ceremony, Dr. Dozie Ezigbalike (UNECA) gave the welcome speech alongside Dr. Hussein Farah, the Director General of Regional Centre for Mapping of Resources for Development (RCMRD) and Sultan Mohammed, the Director General of Ethiopian Mapping Agency (EMA) who also made brief remarks.

Mr. Felix Mangani, the Chairperson of RCMRD Technical Committee and Surveyor General of Malawi addressed the participants, while Mr. Charles Bolden, the National Aeronautics and Space Administration (NASA) Administrator delivered the key note address. Mr. Bolden highlighted the importance of the collaboration between African nations and NASA. He stated, "Every time I meet my colleagues – the leaders of space agencies and science and technology endeavors across the world – we agree that investment in space improves life on Earth, stimulates the economy, and provides that intangible inspiration that I think is so important not only for us, but for future generations. These benefits are why many nations that don't have formal space programs are nevertheless setting up offices and agencies to focus on exploration."

He noted that NASA has close to 700 active agreements for collaboration with over 120 countries in all mission areas and is uniquely qualified to handle Earth observation and the satellite data gathered to understand the planet and the ever changing climate.

Mr. Bolden also revealed that five NASA Earth Science missions are being launched into space within a 12-month period. They include the Global Precipitation Measurement core observatory (GPM) launched in February as a joint mission developed by NASA and the Japan Aerospace Exploration Agency (JAXA); The Orbiting Carbon Observatory-2 (OCO-2) launched in July as the second of NASA's Earth science missions; RapidScat launched aboard the SpaceX-4 mission in September to study ocean surface winds aboard the International Space Station (ISS); the ISS Cloud-Aerosol Transport System (CATS) set for December; and the Soil Moisture Active Passive Mission (SMAP) to be launched in January.

Additionally, NASA has signed an agreement with the French space agency, CNES, for Surface Water Ocean Topography, or SWOT, a new mission to gather ocean data and is also using the International Space Station to monitor Earth.

Earth science is a key area where RCMRD member countries and NASA are cooperating for mutual benefit. Using NASA satellite technology,

RCMRD experts work in areas such as health, climate, ecosystems and analysis of extreme events.

He stressed the importance of the SERVIR program in global collaboration. The SERVIR program is a joint development initiative of NASA and USAID that works with partners like RCMRD and other leading regional organizations around the globe to make informed regional decisions and contribute to the bigger picture of global climate. According to him, "The SERVIR Eastern and Southern Africa hub, housed at RCMRD, is proving to be a valuable resource for NASA and for Africa."

Furthermore, he explained the importance of Earth observations and programs like SERVIR in understanding Earth as a system and strengthening NASA's relationships with diverse partners around the world.

Mr. Bolden concluded his speech by quoting Nkosi Johnson, a young boy from Kwa Zulu Natal, South Africa, "Do all you can with what you have in the time that you have in the place that you are" – Nkosi Johnson 2001.





## Workshop for Stakeholders of Trend Analysis of Climate Change on the Available Resource Base Project

The Regional Centre for Mapping of Resources for Development (RCMRD) hosted a one-day Workshop for Stakeholders of the Trend Analysis of Climate Change on the Available Resource Base Project.

The opening ceremony was commenced by Dr. Hussein Farah, the Director General of RCMRD. He gave an overview of the Centre, including the member states, RCMRD's mission and RCMRD's different activities. Dr. Farah stated that the findings of the project will contribute to the bigger effort of collecting resources in different counties of Kenya.

Dr. Farah opening the Trend Analysis of Climate Change on the Available Resource Base Project workshop.



Abdallah Siro and Rose Waswa from RCMRD gave presentations on the different components of the project, including Introduction; Approach and Methodology; Results and Findings; and Recommendations. On the other hand, Dr. Robinson Mugo (Earth Observation Lead-SERVIR East Africa) said that the

information derived from the project should be used to bring change on the ground.

The workshop also included a question and answer session, and ended with a discussion on matters related to the project and suggestions on the way forward.

## 9th Conference of RCMRD Ministers Meeting Held in Addis Ababa, Ethiopia



The 9th Conference of Regional Centre for Mapping of Resources

for Development (RCMRD) Ministers Meeting was Held in Addis Ababa,

Ethiopia from the 17th to the 18th of November.

The Conference of Ministers is the highest Political and Policy Organ of RCMRD. Representatives from 17 RCMRD Member States attended the two-day meeting.

The main highlight of the meeting was the approval of RCMRD's 2015-2018 Strategic Plan. In addition, the Ministers discussed the report on the external evaluation of RCMRD's performance in implementing the 2011-2014 Strategic Plan presented by an independent reviewer.

## CBERS-4 Successfully Launched

The fifth mission performed jointly between China and Brazil was launched on the 7th of December,

2014. The CBERS-4 satellite was launched by China's Long March-4B from the LC9 launch complex at the

Taiyuan Satellite Launch Center. This was a ground-breaking 200th launch for the Chinese rocket fleet.



CBERS (China-Brazil Earth Resources Satellite) is a joint program between China and Brazil. In addition, the strategic joint program between CAST (China Academy of Space Technology) and INPE (Instituto Nacional de Pesquisas Espaciais) makes use of improved versions of spacecraft and instruments.

CBERS-4 contains a mass of 1,980 kg and will run on a sun-synchronous orbit at 778 km altitude with an inclination of 98.504 degrees and 100.26-minute orbital period. The orbit consists of a repeat cycle of 26 days.

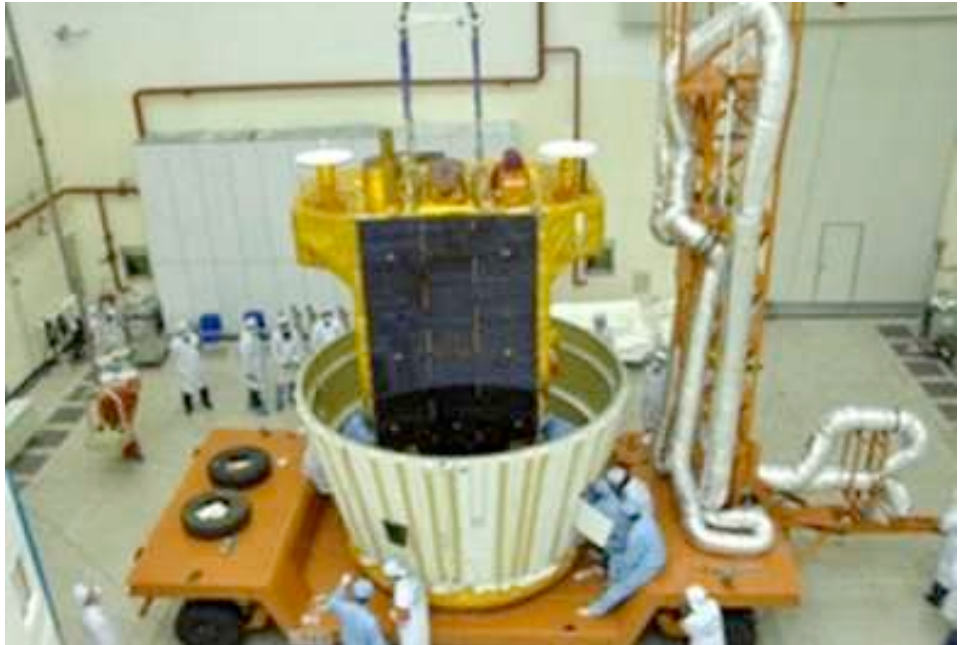
The major aim of the program is to observe and monitor the Earth's resources and surrounding using a multi-sensor imaging payload offering distinctive spatial resolutions.

The Regional Centre for Mapping of Resources for Development (RCMRD) is part of the network that will benefit

once the CBERS-4 products are operational. Consequently, this will be extended to RCMRD member states.

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## United Nations Committee of Experts on Global Geospatial Information Management Meet in Tunis, TUNISIA



The inaugural meeting of the United Nations Global Geospatial Information Management for Africa (UN-GGIM: Africa) is taking place in Tunis, TUNISIA. The meeting started on 8<sup>th</sup> December, 2014 and will end on 12<sup>th</sup> December, 2014. The theme of the meeting is "Making Statistics and Maps Count".

There is a proposal to convert UN-GGIM: Africa into a regional UN-GGIM subdivision to organize activities of African Global Geospatial Information

Management. The meeting will see UN-GGIM: Africa recommend the formal creation of a body to replace CODIST-Geo and make decisions related to the major challenges and issues concerning geospatial information in Africa.

In addition, the meeting of the United Nations Global Geospatial Information Management for Africa will look at the worldwide trend of incorporating geospatial technology into national statistical offices.



## The Africa Geodetic Reference Frame Steering Committee meeting Held during the UNGGIM Meeting

The International Steering Committee meeting of Africa Geodetic Reference Frame (AFREF) was held during the United Nations Global Geospatial Information Management (UNGGIM) meeting in Tunisia. The meeting was chaired by Dr. Hussein Farah, the Director General of Regional Centre for Mapping of Resources for Development (RCMRD).

The main outcome of the meeting was the approval of the first common and accurate coordinates for Africa. African countries have been encouraged to adapt the coordinates



at the national level. In addition, the meeting approved the distribution of 87 GPS equipment to various African

countries in order to support the establishment of permanent GPS networks.

## COURTESY CALLS AT RCMRD

*Pictorial*



Kayom Wilson and Miriam Kiconco from the Physical Department of the Ministry of Lands, Housing and Urban Planning, Uganda visited the RCMRD to meet with Management and Technical Teams of RCMRD led by Dr. Katetegeilwe Rwiza and Dr. Hussein Farah



The Director of IGAD Climate Prediction and Applications Centre (ICPAC) visited the Regional Centre for Mapping of Resources for Development (RCMRD).



Dr. Evans Mukolwe and John Shihemi, Consultants from the Intergovernmental Authority on Development (IGAD) during a visit to RCMRD



# Pictorial

## COURTESY CALLS TO CENTRE



Officers from the Ministry of Defence, Kenya, paid a visit to the Regional Centre for Mapping of Resources for Development (RCMRD). The main purpose of their visit was a study tour of the Centre.



A delegation of members of the Parliamentary Committee on Agriculture from Uganda visited the Centre



Josef Grimm and Jackson Muchoki, representatives from The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German Federal Enterprise for International Cooperation)



GFA, IGAD and GIZ Consultants Visit RCMRD



National Defence College Delegates Visit RCMRD



Meeting with the Minister of Urban Development, Housing and Construction of the Federal Democratic Republic of Ethiopia





## CAPACITY BUILDING



Students from Masinde Muliro University of Science and Technology (MMUST) and Technical University of Kenya (TU-K) visited the Centre for a study tour.



Staff from the Regional Centre for Mapping of Resources for Development (RCMRD) took part in a two-day in-house training on Communication Skills conducted by Kentrain Limited at Safari Park Hotel.



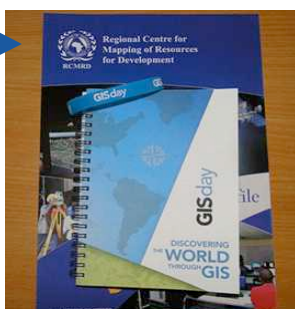
Participants from Mozambique, Rwanda, and Kenya during a two-week Geographic Information Systems (GIS) training program at the Centre



Students from University of Kabianga and Maasai Mara University visit RCMRD



RCMRD Conducts a Workshop on Acquisition of Remote Sensing Data and Land Cover Mapping for Tende and Kibuo river Basin Stakeholders



RCMRD took part in Kenyatta University's GIS Day under the theme "Discovering the world through GIS."



RCMRD Participates in the Validation of GHG Land Cover Maps in Ethiopia