SWALIM

SWALIM Update

9th Edition
May - August 2015

Empowering Women to Manage Information Better

by Mohamed Gees & Mohammed Hiis

Participants in the information Management training in Garowe

Between 17 and 26 May, SWALIM in partnership with the East Africa University in Garowe, and Golis University in Hargeisa, conducted a week long training on information management for women. The 41 participants in the training were drawn from SWALIM line ministries, ministries of planning, women and labour, disaster management agencies and local NGOs in Puntland and Somaliland.

The objective of this training was to empower women in the workplace to acquire the skills necessary to improve their efficiency and increase their chances of career advancement, as well as enable them to manage information better. The Training was conducted by lecturers from the two universities with support from SWALIM, who covered all the logistical and training costs.

The trainees were examined at the end of each module, and their test scores evaluated to determine their final score on completion of the course. Certificates were awarded to the trainees, who expressed appreciation for the opportunity and were confident that the training will improve their work performance. They also requested similar training on information management in the future to develop the skills necessary to improve their efficiency and increase their chances of career advancement.

The training focused on increasing skills in computer hardware and software, features and functions of operating systems, using internet, email and social media and application scenarios and ministry case studies as requested by the participants. The participants who were mainly administration, finance and registry staff are expected to use the skills learnt to better use and manage the data that SWALIM develops in preparing workplans, diaries and reports for the line ministers and assessing available water and land information to support development of ministry policy documents.

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El Nino! What Does It Mean For Somalia?

by Peris Muchiri

People wading through floodwaters in Beletweyne in October 2014

The El Niño phenomenon is a global system that affects many regions of the world in different ways, as shown in the El Nino Infographic. In Somalia the event is associated with higher than normal rains. The coming rainy season ("Deyr", which runs from October to December) is expected to be influenced by the predicted El Niño phenomenon, where rainfall distribution is expected to be higher than usual in many parts of the country.

The increased rains associated with El Nino can be seen as a blessing for Somalia. For example, ground water recharge and the replenishment of soil moisture for crop and pasture growth are some of the benefits that will come with the enhanced rains. Communities could take advantage of this good rain and "harvest" the water for use at a later date. Unfortunately, El Niño rains have always been associated with floods and destruction.

During the past 25 years, Somalia has been affected by six moderate-to-strong El Niño events in which floods of different magnitudes were reported. However, the 1997/98 event was the strongest in memory, followed by that of 2006. These floods led to the collapse of virtually all large irrigation schemes and damaged the major flood relief channels, roads and other major infrastructure.

Since that devastating event, there has been little or no progress in rehabilitating the broken infrastructure and should the predictions of the El Niño event of 2015 occur, things would then move from bad to worse.

In order to prevent a recurrence of the disruptive events that occurred during past El Niño events, SWALIM and partners have taken the lead in placing early warning systems on high alert and encouraging other preparedness activities. As an early measure, SWALIM has mapped the river breakages along the Shabelle and Juba rivers. A total of 21 open river breakages have been identified along the Shabelle and 47 open breakages along the Juba. The recommended action is to close existing open river banks and strengthen the weak river embankments. To this end, The Ministry of Agriculture and FAO have initiated the closure of open breakages in Middle Shabelle. This will go a long way in reducing the magnitude of floods and their impact in the areas which frequently experience flooding.

SWALIM has also started issued "Flood Preparedness and Safety" materials. The leaflets contain key messages for local communities on what to do before, during and after a flood. They also provide advice on river bank protection and placement of sand bags. SWALI is also developing an sms alert system to provide communities with up-to-date messages on river levels, rainfall and potential or occurring floods.

SWALIM will continue to issue early warning information throughout the season through its regular bulletins. You can subscribe to receive these bulletins by filling in the subscription form on the website: www.faoswalim.org

Refining Land Use / Land Cover Data to Support Land Policy in Somaliland

by Ugo Leonardi

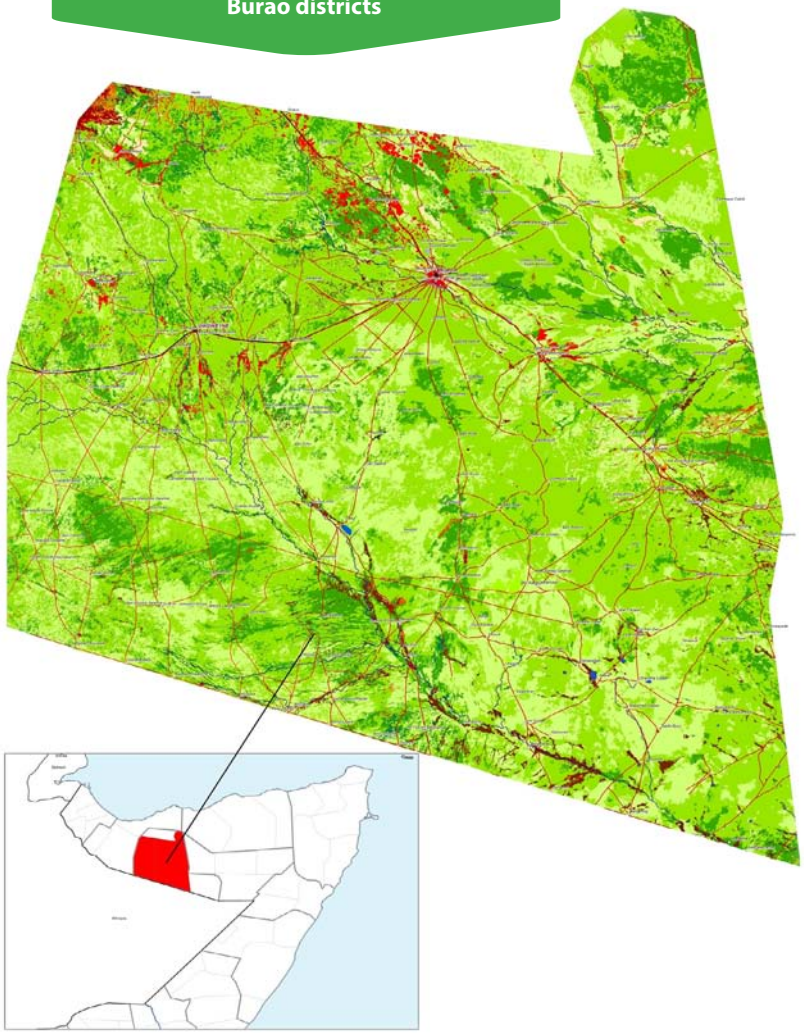
SWALIM has recently completed a preliminary mapping of the land cover of Owdweyne and Burao districts in the Togdheer region of Somaliland. This effort is part of a long-term objective of mapping land cover for all Somali territories as an important tool for the planning and management of land resources. The 2 districts were selected in order to increase coverage of land cover assessment, following a similar mapping previously done in Awdal and Woqooyi Galbeed in 2007. The districts are also the pilot areas selected for the FAO Somalia Resilience Program. The mapping will also provide a more representative land resources database to produce the territorial land use report that will form the main input for the Land Tenure Project in Somaliland.

The two northern districts have been mapped with a wall-to-wall approach, which means that the figures derived from this work represent the true extension of each class mapped. The legend, consisting of eighteen Land Cover classes, was created using the FAO Land Cover Meta Language (LCML) and gives an unprecedented level of detail in the description of the natural vegetation of the area. In fact, ten land cover classes have been created to differentiate grassland, scrubland and woodland with different vegetation cover. The various vegetation types were mapped using high resolution satellite images used to refine the interpretation of agricultural areas and verify the natural vegetation types and coverage. The preliminary results show a high level of correspondence with the data derived from a statistical analysis of agricultural land classes undertaken by SWALIM in 2013.

Field work to validate the preliminary results of this study is currently in progress, and 150 sites have been selected for verification. Both data and observations collected in the field will be used to clarify any inconsistencies that arose during the visual interpretation phase and will allow the completion of the land cover mapping.

The final land cover maps and terretotrial land use reports for Owdweyne and Burao districts are expected to be released by the end of 2015. These maps will enable local institutions to make informed decisions on land planning and environmental policies of the areas. The updated dataset could also be used as a baseline for change analysis, in order to give valuable insight in the evolution and changes occurring in the ecosystems over time.

Preliminary land cover map of Owdweyne and Burao districts



Classification and acerage of various vegetation types

CLASS (MAP CODE)	TOTAL (ha)	%
AGRICULTURE		
Trees Crop Irrigated (TCI)	63	0.002
Herbaceous Crop Rainfed (HCR)	506	0.015
Herbaceous Crop Irrigated (HCI)	24,209	0.705
NATURAL VEGETATION		
Grassland Open to Close (GOC)	19,719	0.574
Sparse Grasses & Shrubs (SGS)	896,338	26.107
Shrubs Very Open (SVO)	2,044,722	59.554
Shrubs Open (SO)	345,347	10.059
Shrubs Close (SC)	12,433	0.362
Trees Sparse (TS)	10,697	0.312
Trees Very Open (TVO)	7,333	0.214
Trees Open (TO)	6,847	0.199
Trees Close (TC)	526	0.015
Woodland Open to Close (WOC)	39,852	1.161
BARE,BUILT UP & WATER BODIES		
Bare Area (BA)	15,376	0.448
Sand (SA)	12	0.000
Seasonal Water Body (WB)	1,348	0.039
Wadi& Riverbed (WA)	4,753	0.138
Built-Up Area (BU)	3,301	0.096
Total	3,433,382	100.00

Information Open Days in Somaliland and Puntland

by Evelyne Karanja

SWALIM conducted two open days in Somaliland and Puntland, on 26 August and 2 September 2015 respectively. The purpose of the information days was to create awareness and increase the visibility of SWALIM as a useful source of information for new players in the water and land resources field, as well as to help existing stakeholders better understand what information products are available to them.

SWALIM staff explaining the use of soil analysis kits during the Information Open Day in Somaliland

The open days were used as an avenue to demonstrate SWALIM's information platforms, equip stakeholders with the technical knowledge and ability to use SWALIM's information for programme and policy development and launch the SWALIM Information, Communication and Knowledge Management (ICKM) strategy and SWALIM website: www.faoswalim.org.

Participants were also able to see practical demonstrations by SWALIM and line ministry data centre staff on the use of various land and water survey equipment and information systems. Information materials such as maps and posters on water sources, land degradation, the charcoal production chain, technical reports and other publications were on display.

The open days, which took place at Mansoor Hotel in Hargeisa and the Puntland Community Library in Garowe, attracted nearly 100 participants from both regions. For the first time, presentations on water, land, information management systems and capacity development were made in Somali language by SWALIM's staff. The participants were drawn from government ministries and agencies, local and international NGOs, UN agencies and the private sector.

The participants raised useful questions, provided valuable feedback and highlighted areas that SWALIM could improve to increase dissemination of information. These included providing offline systems to counter challenges with internet connectivity for many stakeholders, linking data to practice and reaching the land and water resource users at the community level by establishing resource centres for better data access including by students and universities.

Presentation to participants at the Information Open Day in Puntland

SWALIM plans to hold a similar information sharing day in Mogadishu in October and will continue to carry out campaigns to increase the awareness and understanding of available data, information and systems , the potential benefits of water and land resources – as well as the threats facing them.This will assist in identifying areas where stakeholders can develop proposals and programmes to protect these resources and equip communities with sustainable natural resource management practices.

Feature Article: Monitoring Using Remote Sensing

by Ugo Leonardi

The ability to analyse objects from a distance and extract information about them is the underlying principle behind Remote Sensing (RS). The term usually refers to information collected in the form of photos from satellites revolving around the earth. The advantages of using remotely sensed data include timeliness, accuracy and reliability, allowing the capture of information from large geographical areas at predefined intervals and in a cost effective manner, thus enabling the detection and assessment of trends and changes over time.

The science of remote sensing evolved rapidly over the past several decades, from cameras mounted on airplanes to satellite sensors to the latest unmanned aircraft (drones) that are currently used to provide detailed descriptions of the Earth's surface using digital sensors. Coarse, medium, high and very high resolution images are captured by these sensors. The history and evolution of remote sensing technology and it various uses is well documented in the World Wide Web (see for example: http://www.engr.usask.ca/classes/GEOE/218/notes/airphoto_reading/ip1.html or http://geography.about.com/od/geographictechnology/a/remotesensing.htm

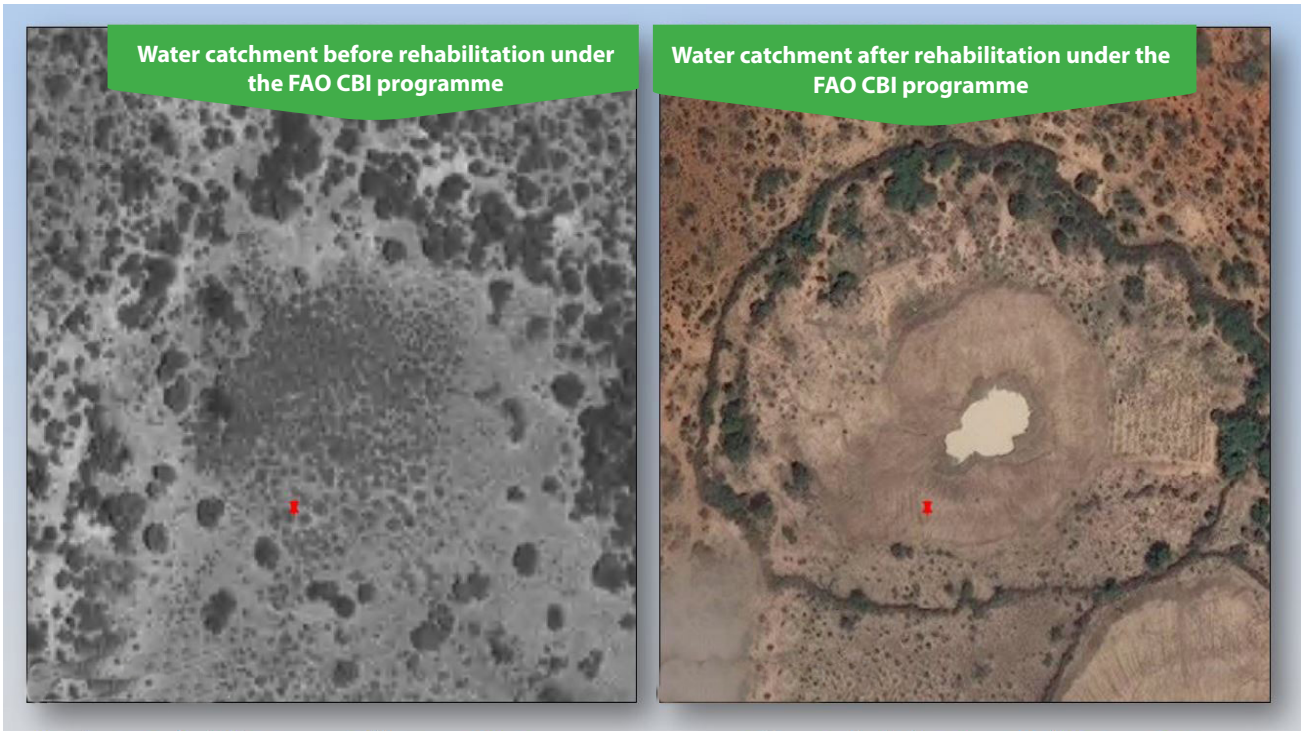
Due to the lack of environmental data that resulted from the civil war in Somalia, SWALIM has been using RS since its establishment in 2002. Given the often uncertain conditions on the ground, it was deemed prudent - depending on the task at hand and the availability of images - to fill in the information gaps through the use of satellite technology.

The first data produced by SWALIM using remotely sensed data dealt with the land resources of Somalia, including landforms and vegetation types. The vegetation (land cover) map was produced through the interpretation of satellite images acquired between 1995 and 1998 (later updated in 2006 with a detailed focus on the agricultural areas of Somalia).

With the availability of better satellite data, in 2013 SWALIM further updated the agricultural areas database, focusing more on the segregation of rain fed areas from irrigated fields. The statistics that emerged were revealing, showing areas once considered to have no agricultural potential containing thousands of hectares of irrigated fields using traditional systems. The 2013 data gave updated figures and maps of large areas of Somalia in a reasonably short period time. The data derived from this study is currently still being used by line ministries in developing their policies and programmes.

Following the successful use of satellite images to detect small agricultural fields, it became clear that small irrigated areas could be mapped with confidence. Another RS-fed database, on irrigated areas of northern Somalia, was also developed in 2013. This allowed the measurement of herbaceous irrigated crops and orchards, amounting to 31,000 hectares of crops and 5,000 hectares of irrigated trees. Throughout the RS mapping process, field surveys were used to ascertain and verify some of the features digitized from the satellite images. SWALIM-supported line ministry staff played a key role in providing detailed field information for the verification of RS data. With GPS enabled cameras, it was possible to tightly link information captured in the field to maps produced from satellite images.

Lack of access to major FAO donor project areas due to insecurity has made it nearly impossible to carry out field monitoring activities in many areas. In 2013, in response to this situation, SWALIM devised a robust remote sensing monitoring system to monitor and verify works done by FAO contractors, service providers and various NGOs under the Cash Based Intervention (CBI) program. The RS-based monitoring system developed not only serves as a tool for accountability but also as an important source of information for future planning.

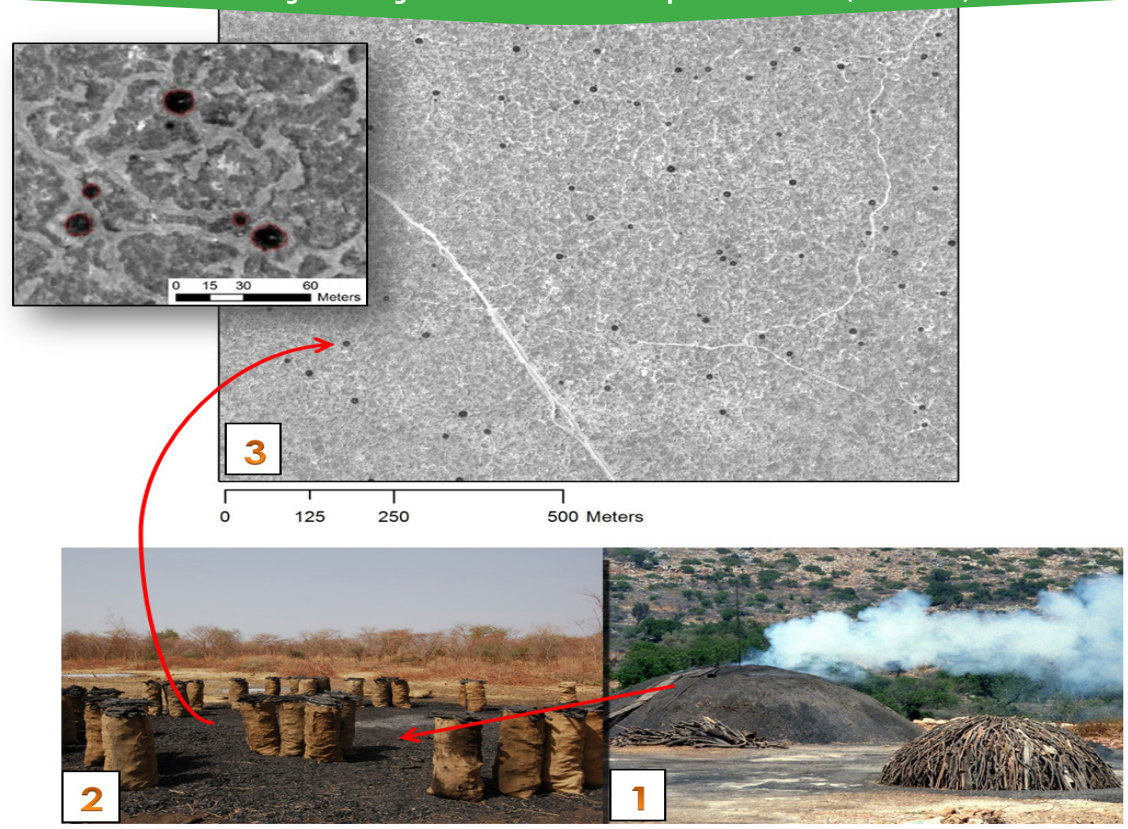


Very High Resolution (VHR) satellite images are used to detect and track the 'before and after' status of rehabilitation works on infrastructure such as canals, feeder roads and water catchments, making it possible for the work to be verified and the beneficiaries to be paid.

With the demand for remote monitoring information rising, SWALIM envisions creating a system that will not only make it possible to query past interventions, but also create a platform for enhanced accountability and informed planning for future interventions.

As part of its on-going monitoring activities, SWALIM also charts riverbank breakages and areas of potential flooding along the Juba and Shabelle Rivers. Different VHR image sets are used to carry this out and the information gathered plays a crucial role in assisting local authorities and communities in closing the open breakages and monitoring potential new ones. The information is also used to assist partner agencies with disaster-preparedness in the two areas, of crucial importance in the flood-prone region. The output of this analysis represents a forward leap in early warning and complements SWALIM's rainfall updates, flood alerts and other bulletins of potential and/or on-going floods along the Juba and Shabelle rivers during the rainy seasons.

1) Charcoal Kilns; 2) Ashes creating a circular shape after loading the bags with charcoal. 3) VHR satellite image showing the location of charcoal production sites (black dots).



The availability of commercial very high resolution (VHR) satellite images has also made it possible to monitor land degradation, especially the loss of tree cover due to charcoal production. This practice is destroying valuable trees and degrading Somalia's environment, particularly in areas under militia control, where lack of access prevents a clear picture of the extent of degradation. Remote Sensing can detect the production sites where charcoal is harvested from kilns. Left behind on the ground are dark circles of ash that can be seen on VHR satellite images. The production sites can easily be detected using specialized software. A SWALIM study in lower Juba area estimated that about 24,000 tons of charcoal were produced over an area of 4,700 km2, resulting in tree loss of about 2.7% in 2 years, or one tree cut down every 2 minutes. When many countries are struggling to increase their forest area, this percentage represents an alarming figure in an arid country like Somalia. The study further revealed that production is expanding into new sites, further reducing the number of trees and degrading the environment.

SWALIM data and information is a key source of reference for Somalia's water, land, natural resources and environment. The data and information derived from Remote Sensing is used in a wide range of applications, including policy development, project design and implementation, resource planning and management, monitoring and evaluation, and research and learning. Evidence of these various uses comes from the SWALIM client service platform, which logs all information requests made to SWALIM's different offices.

The Outputs of SWALIM's remote monitoring activities are available through the SWALIM's Digital Document Repository (SDDR), the Flood Risk and Response Management Information System (FFRMIS), the Water Resources Live Map and will soon be in the SWALIM Land Portal, currently under development. All of these resources can be accessed through the SWALIM web site (www.faoswalim.org). Furthermore, SWALIM offers training on RS procedures and software tools and has developed a curriculum that can be used at universities or through distance learning.

Ceel Waaq Hydrogeology Study Completed

by Flavian Muthusi

SWALIM completed a hydrogeological survey in Ceel Waaq district to identify potential aquifers with potable water, where successful boreholes can be drilled. Water scarcity in the Gedo region, and in Ceel Waaq district in particular, has been a major concern for local authorities and humanitarian agencies in the recent past. Almost every dry season results in severe water shortages for domestic and livestock use in the region, with the humanitarian community responding by trucking water to save lives. High costs, poor infrastructure and other additional challenges make water trucking unsustainable. The focus has therefore shifted to finding permanent sources of water in the region.

Twenty five water points, comprising 3 boreholes, 18 shallow wells and 4 water pans, were visited and detailed information collected about their location, current operational status, physical characteristics, water quality, ownership and usage. This information is available on the SWALIM Water Sources Live Map.

Results of the hydrogeology study indicate a shallow aquifer of between 12 – 21m from which shallow wells can tap water; while the boreholes vary in depth from 120m to 210m, with an estimated yield of up to 8m3/hr. Salinity in the majority of the water sources is however high; in excess of the World Health Organisation (WHO) salinity levels of 1,500 µS/cm

A man searching for water in a near-dry well in Ceel Waaq district

Features assosciated with groundwater availability were identified through satellite image analysis, while desk reviews helped understand the groundwater aquifer. Field geophysical and hydrogeological surveys were then carried out to validate the initial desk analysis. The coverage for field surveys was limited to accesible areas due to insecurity in other parts of the district. In total seven sites were investigated, out of which six were recommended for drilling. Details about the seven sites can be obtained from the 'Hydrogeological Study in Ceel Waaq District' report.

recommended as suitable for human consumption. Some common compounds like Flouride, Calcium, Magnesuim, Sodium, Sulphate, etc. are also high owing to the geology of the area. However, the heavy metals were found to be within the WHO recommended levels for human consumption.

The findings of the study have been shared with development partners to permit them to commence drilling boreholes in the recommended sites as part of the long term strategy for solving the recurrent water problems in the district.

SWALIM Digital Document Repository (SDDR) Updates

SDDR has been updated with the following time-series data for the period May to August 2015:

**** Rainfall data***

**** River levels***

**** Other climate data from automatic weather stations***

Data Centres in Mogadishu

by Jeremiah Njeru

Data Centre at Ministry of Water and Electricity

SWALIM and the line ministries of the Federal Government of Somalia; Ministry of Water and Electricity and Ministry of Agriculture, recently signed letters of agreement to facilitate the opening of data centres at the two ministries, after receiving hardware and software from SWALIM. This collaboration, will culminate in a capacity development programme that will include training of the two ministries' staff, development of field monitoring systems and water and land data and information management systems at the two ministries.

The opening of the two data centres marks an important milestone as the water and land information management system developed by SWALIM will ultimately be transferred to Somali government institutions. The data centres provide one means through which this transfer process can be acheived and facilitate skills development and knowledge transfer to ministry staff, act as a central hub for setting-up of the ministry monitoring systems and are key to the eventual transfer of water and land information systems, products and services.

The two data centres are housed within the ministry offices inMogadishu and SWALIM has provided equipment, furniture, computers, stationery and other consumables, to facilitate a suitable environment for staff training, day to day computing and data processing and basic field monitoring. The capacity of the data centres will continue to expand over time.

As a next step, SWALIM is meeting with the technical staff of the ministries in October to discuss a rigorous training programme for staff. The training programme will include an intensive training of staff from each of the ministries using a "Training of Trainers" approach, to equip these staff with the skills required to run the data centres efficiently, train others, and support the rest of the ministry in water and land information management tasks.

In October, SWALIM also plans to transfer data and information to the two data centres and set up procedures to prepare the centres to serve the water and land information needs of the federal government, development agencies and the general public. As centres of excellence, the data centres will also collaborate and work closely with Somali academic, research and public policy institutions.

To ensure that these data centres become functional as soon as possible, SWALIM has already put in place all the necessary systems, including training courses, data and information management systems, as well as the business processes for the efficient running of the data centres. The development of the data centers will be guided by a coordination committee that will bring together SWALIM, the two ministries and other relevant stakeholders, to ensure sustainability and accountability.

Did You Know?

* Somalia's annual average rainfall is 282 millimetres with 75% of the rain falling during Gu rainy season and 25% during the Deyr rainy season?
* Somalia has 6 river basins namely: Juba, Shabelle, Ogaden, Darror, Gulf of Aden and Nugaal
* SWALIM has a total of 7 weather alerts amd bulletins before, during and after the rainy seasons? Subscribe by sending an email to swalim@fao.org with the words "subscribe weather updates" or visit the subscription page on www.faoswalim.org

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Study on Flood and Irrigation Control Systems in Middle Shabelle

by Flavian Muthusi

The Jowhar Off-Stream Storage Reservoir (JOSSR) is a natural depression located in Jowhar district, in the Middle Shabelle Region of southern Somalia, with a storage capacity of about 200 million cubic metres. During high flows, water from the Shabelle River is diverted to the reservoir through FAO canal, thus preventing the flooding of Jowhar town, which lies downstream. During dry periods water from the reservoir is released back to the river which ensures a reliable supply of irrigation water downstream in Lower Shabelle. The reservoir is also used for fishing and watering livestock.

The state and operation of the JOSSR began to deteriorate after the civil war in 1991 due to lack of maintenance, which eventually led to its total collapse. The Sabuun barrage that regulates the water flow to the reservoir is only partially functional while the supply and release canals have silted and are overgrown with thick vegetation. This has reduced the scale of irrigated agriculture supported by the reservoir and increased the threat of floods to communities living along the river.

To restore the JOSSR to its original state, significant rehabilitation work is required - with enormous resources to drive and support it. SWALIM has undertaken the initial steps of the JOSSR rehabilitation through DFID funds that were released through the United Nations Resident Co-ordinator's office, to identify the status of the reservoir and associated irrigation infrastructure. The feasibility study involves desk review of original project documents, designs, and studies carried out in the project area, field work at the Jowhar Off-Stream Storage Reservoir and associated irrigation infrastructure to determine their current structural status and analysis of the data and information collected, to help make recommendations for the proposed rehabilitation work.

Damaged bridge at Sabuun barrage as at September 2015

The desk review has been completed and the findings discussed with representatives of the Ministry of Agriculture. Field data collection is currently on-going, with the final products of the study expected in the beginning of October 2015. The outcome of the feasibility study will be presented to partners, stakeholders and donors in order to mobilize resources for the important rehabilitation works of the JOSSR.

Training Timetable
September - December 2015

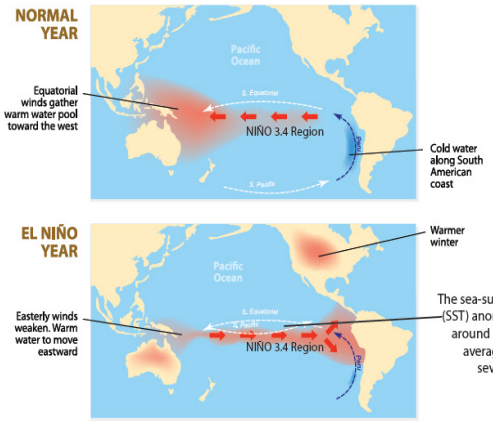
Course	Date	Location
GIS & Remote Sensing	September 2015	Garowe & Hargeisa
Disaster Risk Reduction	October 2015	Mogadishu
GIS & Remote Sensing	October 2015	Nairobi
Water Sources Live Map	November 2015	Hargeisa, Garowe, Mogadishu & Nairobi
Water Quality	December 2015	Garowe

An infographic on El Nino

THE EL NIÑO PHENOMENON

WHAT IS EL NIÑO?

An El Niño state occurs when the central and eastern equatorial Pacific sea-surface temperatures (SSTs) are substantially higher than usual. The National Oceanic and Atmospheric Administration (NOAA) defines an El Niño event when the NIÑO 3.4 area has sea-surface temperatures at least 0.5 ºC higher than normal for five consecutive three-month-averaged periods.



HOW PREVIOUS EL NIÑOS AFFECTED HORN OF AFRICA

During the last 25 years, Somalia has been affected by six moderate-to-strong El Niño events: 1991-2, 1994-5, 1997-8, 2002-3, 2006-7, and 2009-10 in which floods of different magnitudes were reported. The 1997/98 was the strongest followed by that of 2006.

2,000 people were killed in the 1997-8 Elnino in the region, most of them in Somalia

1.7 MILLION people were affected though dispacement and loss of property and livestock during the 1997/8 and 2006 El Niño.

HOW THE 2015 EL NIÑO IS LIKELY TO AFFECT HORN OF AFRICA

According to the International Research Institute (IRI), El Niño conditions in the east-central Pacific have intensified to moderate strength. There is now a greater than 85% probability of occurrence of El Niño in the October-December (Deyr) rainfall season through 2016.

Above normal rainfall, sustained throughout the rainfall season Oct-Dec 2015

Large scale floods, extended flash floods and river breakages and displacement.

Direct livestock losses due to drowning and disease outbreaks.

Loss of crop yields and harvest stored in traditional underground pits.

HOW EL NIÑO WILL AFFECT EAST/HORN OF AFRICA

While some countries experience depressed rains during El Niño events, Somalia experiences heavier rainfall amounts that usually lead to flooding, disease, destruction and death.

900,000 PEOPLE An estimated 900,000 people, living in the Shabelle and Juba basins which are prone to flooding in a worst case scenario, and are at high risk of being affected by the above conditions.

Food and Agriculture Organization of the United Nations

SWALIM

Data centre staff explaining the use of a water quality testing kit at the Puntland Information Open Day

Measuring silt levels at the inlet to the Jowhar Offstream Storage Reservoir

Comments?

The Editorial Staff of SWALIM Update invites letters, comments and opinions from readers. Address your comments to:

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