



Practical training session for HADMA and MOA on data recording and transmission in Garowe



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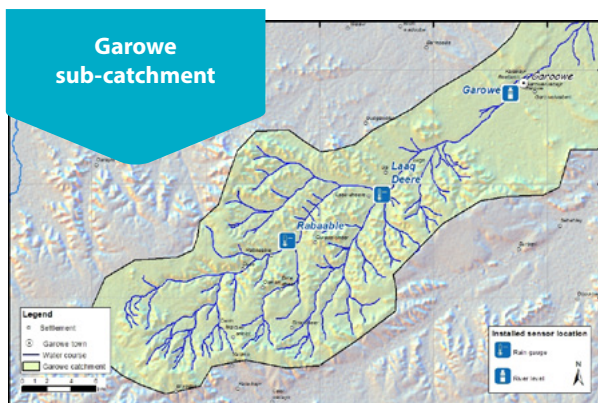
## SWALIM Establishes Flash Flood Alert Systems

by *Flavian Muthusi*

Hargeisa and Garowe towns and their environs are subject to erratic weather systems which can generate extremely high water flows in their sub-catchments lasting for several hours. These “flash floods” cause major destruction of property and infrastructure, and in extreme scenarios, loss of human life and livelihoods.

FAO SWALIM is addressing the problems caused by flash floods in Hargeisa and Garowe by establishing alert systems for the two sub-catchments. Implementation of the system is being carried out in partnership with the National Environment Research and Disaster Preparedness (NERAD) and the Humanitarian Affairs and Disaster Management Agency (HADMA), the disaster management agencies for Somaliland and Puntland respectively.

At NERAD and HADMA, flash flood alert centres have been established complete with a station for receiving and processing data from the weather monitoring sensors. Training of staff from the two disaster management agencies to operate and maintain the system has been done. Through early warning, the system is expected to contribute significantly to disaster preparedness and management in the two regions.



The state of the art flash flood alert system consists of three main components: automatic rain and river level data collection sensors; data analysis and interpretation; and preparation and dissemination of alert messages through different media. The system automates most of these processes and requires minimal human intervention. The sensors record data at 15 minute intervals, and

transmit after every hour using satellite network. The system is designed to trigger an alert once a certain threshold of either the rainfall or the river level is reached. The data is transmitted to a network data server, which SWALIM, NERAD, HADMA and other stakeholders can access via internet in near real time through the link: <http://data.faoswalim.org:1080/>.

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# SWALIM Completes Cultivable Areas Analysis for Somalia

by Ugo Leonardi

Following the recent conclusion of updates to the Southern Somalia land datasets, SWALIM has completed a comprehensive database on land cover with a focus on cultivable areas for the whole of Somalia. Previous land datasets covering Somaliland, Puntland and Central Somalia were combined with Southern Somalia datasets to produce the complete database.

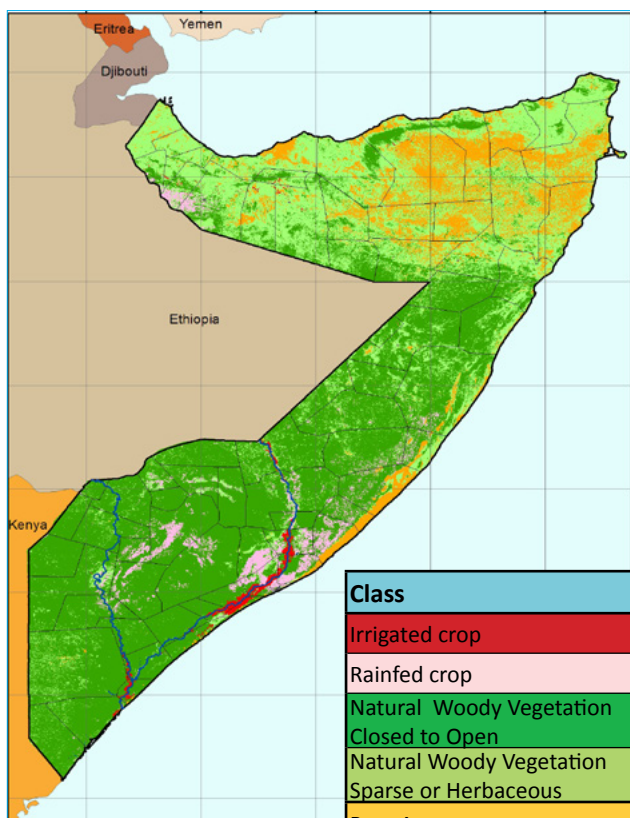
The study was carried out through an analysis of medium, high and very high resolution satellite images and the application of the USGS dot grid matrix methodology. This is a fast methodology suitable for producing statistical data of large areas. Though the primary objective was to create an updated database of cultivable areas in Somalia, a general purpose simplified land cover map has been derived from the study.

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With the completion of this mapping effort, SWALIM is now able to provide all Somali institutions and development partners, with an accurate dataset of its potential cultivable areas as well as more detailed information about the country's natural vegetation distribution.

During the mapping of Southern Somalia, agricultural areas carried out in 2012, only six classes of land cover were mapped; i.e. irrigated crops, rainfed crops, natural vegetation, bare areas, built-up areas and water bodies. The recent upgrade of the 2012 analysis consisted of a further enrichment of the classification scheme by splitting the natural vegetation class into two separate categories: 1) natural woody vegetation (closed to open), and 2) natural woody (sparse or herbaceous)

Thanks to this analysis, the results of which are displayed in the chart below, Somalia will be able to use up-to-date information for planning agricultural interventions and thus enhance food security. Plans are underway to develop a Land Resources Information Management System (LRIMS). This will be an online platform that will enable users to access and query this and other land use and land cover databases developed by SWALIM.



Class	Area in km <sup>2</sup>
Irrigated crop	6 234
Rainfed crop	23 445
Natural Woody Vegetation Closed to Open	335 930
Natural Woody Vegetation Sparse or Herbaceous	191 783
Bare Areas	75 472
Built Up Areas	604
Water Bodies	321

## Highlights for the next quarter:

- \* Release of the Somalia Water Sources Live Map
- \* Academic Open Day
- \* EU Information Day

## Did You Know?

- \* SWALIM has an online [Digital Document Repository \(SDDR\)](#) where all of SWALIM's products and data collected in activities is easily available? All you need is an internet connection!
- \* You can subscribe to receive weather updates disseminated by SWALIM by sending an e-mail to [swalim@fao.org](mailto:swalim@fao.org) with the words "subscribe weather updates" as the subject?

## Subscribe/Unsubscribe?

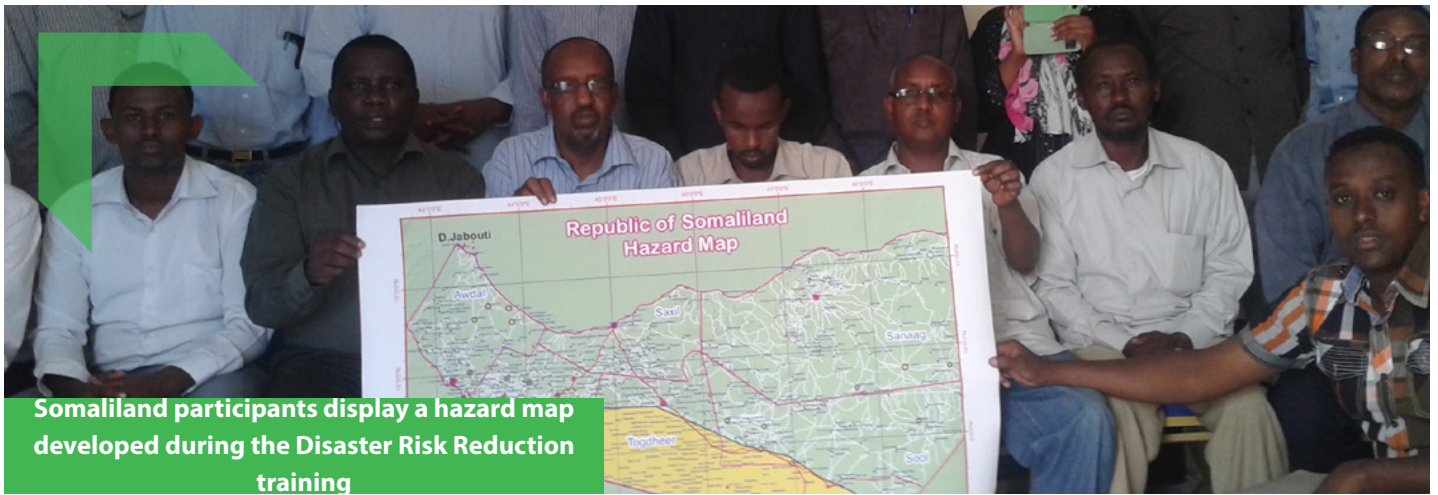
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## Comments?

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**Somaliland participants display a hazard map developed during the Disaster Risk Reduction training**

## Partnering with SWALIM in Disaster Risk Reduction & Early Warning

by Osman Abdulle & Ali Ismail

Through the capacity building programme, SWALIM has worked with numerous partners over the years to implement its activities. The capacity building includes training, practical skills development through inclusion in field work, one-on-one sessions and provision of necessary equipment. The National Environment Research and Disaster preparedness (NERAD) and the Humanitarian Affairs and Disaster Management Agency (HADMA), the disaster management agencies for Somaliland and Puntland respectively are beneficiaries of this programme. SWALIM sought their views on this partnership.

### What is the mandate and role of your organization?

**HADMA:** Humanitarian and Disaster Management for Puntland.

**NERAD:** Disaster prevention, preparedness and management, management of national food reserve, registration of aid assistance to Somaliland and coordination and supervision of relief work implemented by various agencies.

### How long have you worked in partnership with SWALIM?

**HADMA:** From 2007 to date.

**NERAD:** Since 2007, NERAD staff have participated in different workshops, trainings and open days that SWALIM has conducted. The partnership in early warning on drought and floods began in December 2013.

### What are the areas in which you are partnering with SWALIM?

**HADMA:** Information sharing (rainfall data and rainfall forecasting), capacity building for HADMA staff on disaster management, support of the data centre office (early warning centre) and droughts and flash floods early warning preparedness and response in Puntland.

**NERAD:** Early warning including drought and flooding.

### Tell us the particular areas of success

**HADMA:**

- The establishment of the automatic rain gauges in Laac dheere and Rabaable.

- Training HADMA staff on flash floods data acquisition and transmission.
- Producing Social Economic Baseline survey report on Garowe Pilot River Basin.
- Support Puntland disaster risk contingency plan development.

**NERAD:**

- Baseline study on socio-economic and environment in Hargeisa river basin.
- Development of Somaliland Flood and Drought Contingency Plan.
- Establishment of Early Warning System at NERAD office.
- Sensitization of project communities
- Somaliland regional governors meetings.

All these are CHF funded project activities.

### Where are the weak areas? What would you recommend to SWALIM to improve on these weaknesses?

**HADMA:** Relative to Puntland's large surface area (approximately 212,000km<sup>2</sup>), limited number of automatic weather stations are installed and the data is not real time. There is also a need for more intensive training in areas related to HADMA's activities e.g. GIS.

**NERAD:** Information on early warning alone cannot solve communities' problems e.g. severe soil erosion and land degradation are additional problems that need to be addressed.

### How is the training provided through the partnership benefiting your organization?

**HADMA:** It is good and provides new skills.

**NERAD:** It has helped in developing a Somaliland contingency plan and establishing early warning system.

### How is the partnership with SWALIM influencing policies, practices, or systems?

**HADMA:** It has improved the capacity of weather forecasting and information sharing on rainfall forecasting, performance, distribution and data with other partners, and has facilitated timely decision making regarding interventions on droughts and floods such as water trucking, delivery of food aid, preparing for cyclones, enacting contingency plans. Rainfall data also provides information on the seasonal replenishment of berkedes and the underground water system.

**NERAD:** The Somaliland contingency plan can be used to update NERAD'S disaster strategy.

### In what additional areas would you like to partner with SWALIM?

**HADMA:** In developing vulnerability map on drought in Puntland, because it directly relates to water shortage.

**NERAD:** SWALIM should continue to provide capacity building on early warning systems to NERAD after the CHF project ends.

## SWALIM Annual Planning Meeting

by Evelyne Karanja

SWALIM held its annual planning meeting on 3 - 5 February, at the Great Rift Valley Lodge in Naivasha.

The meeting provided an opportunity for the staff to review their achievements during the first year of Phase V (February 2013 – January 2014).

Staff developed work plans for the second year of the current phase of SWALIM, identified specific activities and timelines during which these activities will be carried out, and

ensured that activities tied in with the FAO Somalia Country Programming Framework (CPF).

The meeting was also a good opportunity for the entire SWALIM team to work together and realize the impact that each individual's efforts have on the overall success of the programme. Staff also enjoyed team building games and activities geared towards enhancing team-work and fostering a healthy competitive spirit.

SWALIM team at the Annual Planning Meeting



## SWALIM at SOPEC

by Evelyne Karanja

SWALIM participated in this event held at Dubai's World Trade Center and gave a presentation on the state of Somalia's soils and land resources, and highlighted areas and opportunities for sustainable management of these natural resources in support of Somali productive sectors. In addition SWALIM displayed posters, maps and reports in soft copy on the various studies conducted in water and land in Somalia. The event attracted business people, government representatives and producers, including H.E. Abdul Rahman Saif Al Ghurair, Chairman, Dubai Chamber of Commerce and Industry, the

The Somali Producers' Conference & Exhibition 2014 (SOPEC), which took place in the United Arab Emirates commercial capital Dubai, from March 17 to 19, was an event linking Somali businesses in farming, fisheries and livestock to international markets under the technical support of the UN Food and Agriculture Organization with funding from the European Union.

European Union Ambassador to Somalia, Michele Cervone d'Urso, and Somalia's Minister for Trade and Industry, Adan Mohamed Nur.



SWALIM CTA with H.E. Abdul Rahman Saif Al Ghurair

Participants at the SWALIM display



## SWALIM at the Somaliland Food and Water Security Conference & Exhibition

by Ali Ismail

SWALIM participated in Somaliland Food and Water Security Conference & Exhibition, that was held from 2nd to 3rd March at Maansoor Hotel in Hargeisa. The conference was organized by the Somaliland Ministry of National Planning and Development and attracted nearly 100 people drawn from government, local and international NGOs, CBOs, Somaliland universities, private sector and cooperatives. Another 500 members of public visited the exhibition. Both the conference and exhibition were aimed at improving domestic food and water security and the promotion of investment opportunities in Somaliland.

SWALIM distributed 50 hard copies and 200 CDs of the Somali water and land reports, hydrogeological survey of selected areas in Somaliland, atlas of the Somali water and land resources and the key messages on the Somali water and land resources among others. In addition, SWALIM displayed 6 posters on water and land related data and maps in Somaliland providing a good opportunity for SWALIM to share its products with visitors to the exhibition.

SWALIM presented papers on agriculture, environment and water resources, and contributed to the preparation of a presentation which was made by Somaliland Ministry of Water Resources.

The SWALIM liaison office manager also participated in the Food and Water Security Week through a televised debate held at the Ministry of Water Resources by Somaliland National TV which was also available on the Hubaalmedia website - <http://hubaalmedia.com/?p=8484>. SWALIM also contributed to the development of the Food and Water Security Strategy for Somaliland.



## Somali Water Sources Live Map Complete!

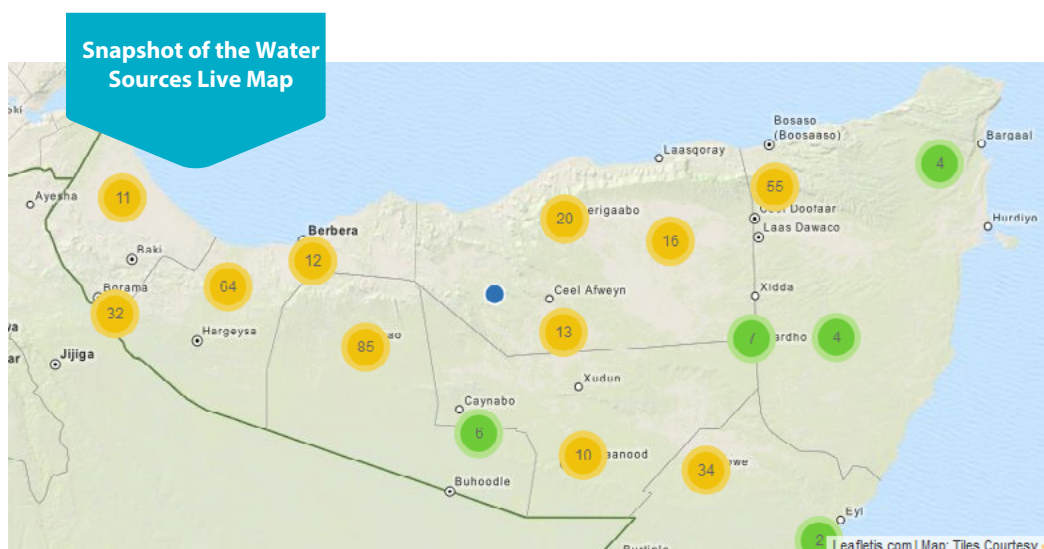
by Jeremiah Njeru

SWALIM readies the release of the Somalia Water Sources Live Map.

The Water Sources Live Map is a web application that has features for both data management and data visualization through the internet. Agencies that manage water information can use the live map to collect, update, and disseminate water sources data while other information users will be able to use the live map to visualize the data as well as “export” it for a variety of uses outside the live map.

The live map will dramatically improve how water source information is managed in Somalia, where point water sources are the primary source of water. Through the live map, water sources information will be accessible from any location, as long as there is internet connectivity.

For example, when a water agency visits a water source, they will use the data collection tool to collect and submit the water source data to the live map. Depending on the case, they could



submit a single record or multiple records, as necessary. Upon submission, the data will be available to SWALIM where it will be validated and integrated onto the live map data server. Back at the office, staff who happen to be administrators of the live map, will use the server features to publish the data. The water agency can publish different visualizations of the same data to show the information in different dimensions—for example, sources that have certain yield levels, sources in a given district, sources maintained by a given agency, etc.

The published data will be available to all users in UN agencies, NGOs and private sector users. End users will also be able to define their own ways to look at the data by applying filters

and using a variety of reporting tools.

Live map data visualization tools include various maps, tables, charts and summary reports that can be exported to different formats. Maps display source locations spatially while tables and charts summarize the selected set of data depending on the needs of the user.

The live map is currently undergoing internal testing, which will be followed by external testing with a number of key partners. FAO SWALIM aims to complete and launch the application in the near future.

Source type	Agency	Record date	Region	District	Depth (m)	Agency that established source	No. of households using source
Borehole	PSAWEN	24/12/2013	Nugaal	Burtinle	410	WVI	1 500
Borehole	PSAWEN	25/12/2013	Mudug	Galkayo	180	Finland Government	250
Borehole	PSAWEN	01/01/2014	Bari	Bossaso	80	UNOPS/UNODC	66
Borehole	MOWR	04/01/2014	Awdal	Lughaye	105	Somali government	250
Borehole	MOWR	15/01/2014	Woqooyi_galbeed	Gebiley	140	ICRC Abu Dhabi	10 200
Borehole	MOWR	02/02/1014	Togdheer	Sheikh	130	Private company	3 000
Borehole	MOWR	04/02/2014	Woqooyi_galbeed	Hargeisa	100	Islamic Organization	150

Sample table showing water sources data



Data centre staff in Hargeisa, Somaliland at an automatic weather station

## Feature Article: 12 Years of Sustained Weather Monitoring in Somalia

by Peris Muchiri

Internal civil strife in Somalia led to the collapse of many monitoring systems including the weather monitoring network. In 1997 the FAO Food Security Analysis Unit (FAO-FSAU) in collaboration with some NGOs and UN agencies re-established a few rainfall stations in Somalia with the hope of reviving the network of weather observations. Unfortunately this network did not last long due to lack of maintenance and prevailing insecurity. During this civil war and especially when Somalia was particularly hard-hit by drought and famine, early warning activities in Somalia relied heavily on satellite data for rainfall estimates.

After its establishment in 2002, SWALIM started efforts to re-establish an integrated rainfall network throughout Somalia. This has been a welcome initiative which continues to generate essential ground data to supplement satellite predictions. The success of this initiative is due to collaboration between SWALIM, local authorities and other partners. The network has continued to grow progressively since efforts to rebuild it began. At present the network consists of 8 Automatic Weather Stations (AWS), 82 manual rain

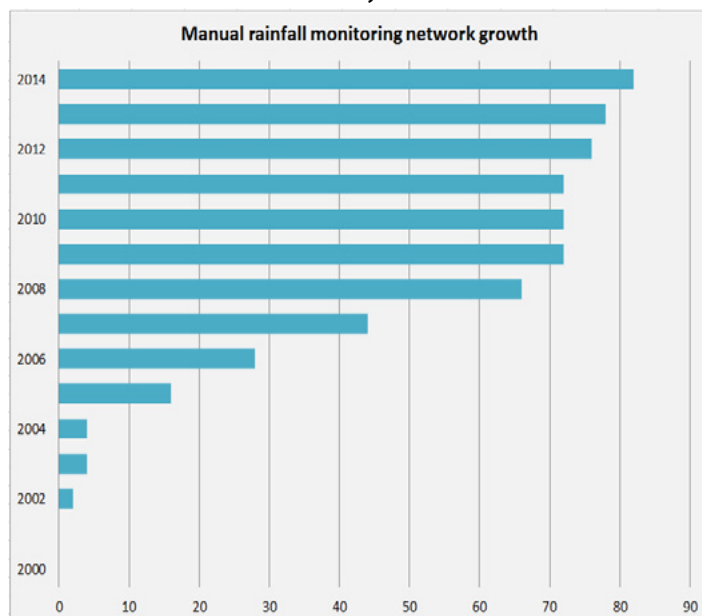
gauge stations and 5 synoptic weather stations. These stations measure a variety of weather parameters such as rainfall, temperature, wind speed and direction, humidity, solar radiation, and atmospheric pressure.

AWSs record weather data on an hourly basis and transmit it to a central climate server every four hours and more frequently during extreme rainy events to support flood monitoring in Somaliland and Puntland. The manual stations are managed by the ministries of agriculture while local NGOs aid in data collection in the south and central parts of the country.

All data, including historical data is archived in a dedicated climate database and is available on the [SWALIM website](#) as well as the [SWALIM Digital Document Repository \(SDDR\)](#).

Using the observed data and information provided by partners such as FSNAU, FEWSNET and USGS,

SWALIM produces regular weather bulletins such as 3-day rainfall forecasts, floodwatch bulletins, 10-day(dekadal) rainfall bulletins and monthly weather bulletins during the Gu and Deyr rainy seasons and shares these with a wide variety of stakeholders. The data is widely used by SWALIM and other humanitarian agencies to monitor climate related disasters like droughts and floods. The data collected is also used to support research both locally and internationally. The rich climate archive of Somalia has been useful in supporting climate change debate in the country and has been used to

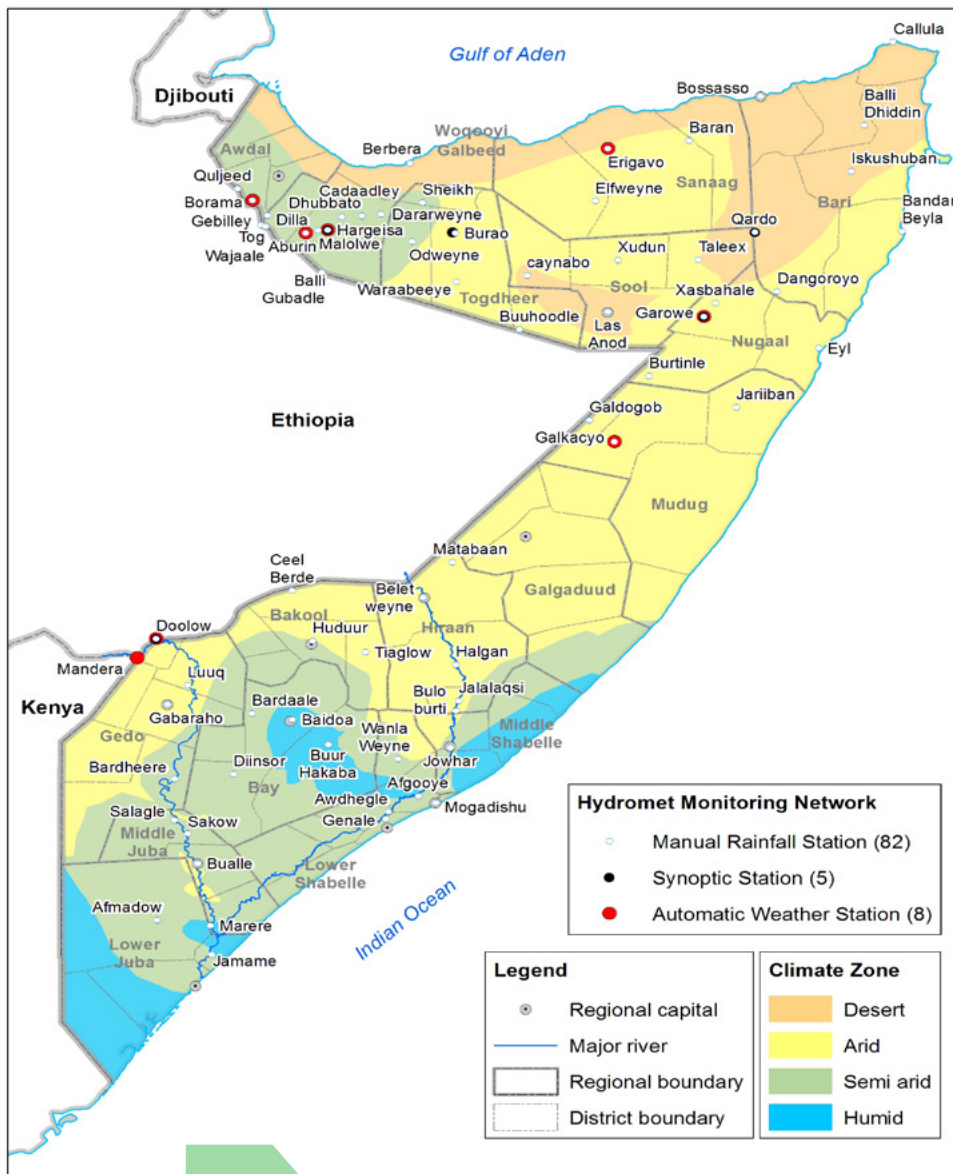




generate climate patterns and cycles in the region.

The weather monitoring network started off as a SWALIM brainchild, fully established and run by SWALIM staff in Nairobi. However in the 12 years since its establishment, through an extensive training and capacity building programme developed by SWALIM, the network is now largely run by Somalis drawn from the respective agriculture ministries and disaster management agencies of Puntland and Somaliland and local NGOs in South Central, with minimal supervision and support from SWALIM in Nairobi. This factor is important as weather monitoring in most countries is a role played by the local government and the Somalis are now equipped to do just that.

The weather monitoring activity has not been without its fair share of challenges. The greatest challenge is the lack of access to some areas either due to their remoteness or the absence of security. Vandalism of weather monitoring equipment is also a problem.



## Hydrometeorological Monitoring Network

### Pictorial



Exhibiting maps at the Somaliland Food and Water Security Conference in Hargeisa



Groundwater level monitoring equipment installation in Garowe



Report writing training session in Garowe



Flash flood monitoring training session in Garowe

## Capacity Building Programme

### Report Writing and Client Service Management Training

by Evelyne Karanja

Between March 31 to April 12, a training to improve skills in report writing and logging client requests in an online client service platform (CSP) was conducted for data center and SWALIM staff in Hargeisa and Garowe. A total of 16 Somali staff participated in the trainings. The training methods were a combination of classroom instruction using manuals developed by the trainer, discussions, and practical and question and answer sessions.

Through this training, the participants will be able to improve their report writing skills and to ensure that they correctly log client requests in the CSP thus allowing for better monitoring and evaluation of client service activities.

### Flash Flood Monitoring Training

by Flavian Muthusi

A training on the flash flood monitoring system was carried out from 14 - 17 April, for 6 staff from HADMA and the Ministry of Agriculture in Garowe and 3 staff from NERAD and the Ministry of Agriculture in Hargeisa. The training focused on the operation, maintenance and trouble shooting of the installed rain and river level sensors; data transmission and access from the internet.

The training was practical oriented, giving the participants an opportunity to practice accessing and downloading data, data interpretation and trouble shooting the overall system.

### Training Timetable May - July 2014

Course	Date	Location
MS Powerpoint	May 2014	Somaliland and Puntland
Land degradation	May 2014	Puntland and Somaliland
Google Earth, GPS and Basic GIS	May 2014	Puntland
Google Earth, GPS & map-reading	June 2014	Kenya
LC/LU Field Survey	June 2014	South-Central Somalia
SWIMS Online	June 2014	Puntland, Somaliland and Kenya
Combined Drought Index	June 2014	Puntland and Somaliland
Google Earth, GPS and Basic GIS	July 2014	Somaliland

### SWALIM Digital Document Repository (SDDR) Updates

SDDR has been updated with the following time-series data for the period January to March 2014:

- \* Climate data from automatic weather stations
- \* Rainfall data from manual stations
- \* River levels and discharge data
- \* Synoptic stations data