ICPAC
IGAD Climate Prediction & Applications Centre

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Policy Brief

Key Messages

Significant space-time variations were observed in rainfall characteristics in Hiiraan region, Hirshabelle.

A cooling trend was observed in mean and maximum temperatures were observed in Hiiraan region, Hirshabelle.

Climate related risks emphasized the need for reliable, accurate and timely climate information that requires investment in weather observation instruments, data management, prediction and early warning systems, as well as capacity building for all.

Climate Trends over Hiiraan region, Hirshabelle

The main goal of the Rural Livelihood's Adaptation to Climate Change in the Horn of Africa – Phase II (RLACC II) by the IGAD Climate Prediction and Applications Centre (ICPAC) project in Somalia and Sudan is to improve the resilience of pastoral and agro-pastoral communities to climate change. The Somalia project targets Puntland (Bari and Nugaal regions), Somaliland (Awdal region and Woqooyi Galbeed region), Galmudug (Galguduud region) and Hirshabelle (Hiiraan region). A workshop was organized at the ICPAC premises to undertake baseline climate data analysis for the four RLACC sites between February 10 and 14. Analysis of the baseline climate was one of the first major activities carried out under the project as users must be able to understand and appreciate the significance of these baseline data as well as basic weather and climate concepts. The key highlights from the analysis of the historical climate data in Hirshabelle included:

Significant space-time variations were observed in rainfall characteristics in the Hiiraan region, Hirshabelle. The location to location variation in rainfall amounts as well as the observed rainfall trends is now well documented. There is clear evidence of recurrences of above and below normal rainfall extremes with indications of changes in frequency and severity of the above and below rainfall events that are often associated with droughts and floods. Some of the observed climate extremes occurred during ENSO and positive/negative Indian Ocean Dipole (IOD) years, making ENSO and IOD based prediction and early warning extremely useful in the local climate risk management.

Hirshabelle region experienced a general cooling trend in mean and maximum temperatures particularly in the Deyr season. This is similar to trends seen in some coastal regions inspite the global warming trends being observed worldwide. However, an increasing trend is observed in the the minimum temperature similar to the observed global warming . The short duration of data used could not enable an associate the observed warming trends to climate change and global warming signals.

The observed climate extremes such as floods and droughts that are common in the area often had far reaching socio-economic implications that include lack of water and food, migrations, human conflicts, unemployment, loss of life, etc. The climate risks seem to be increasing the vulnerability of the poor local community.

The observed climate related risks emphasized the need for reliable, accurate and timely climate information that requires investment in weather observation instruments, data management, prediction and early warning systems, as well as capacity building for all including climate scientists, policy makers, and the sector specific climate sensitive local users.

The climate data and the derived products and information including those associated with climate change provides a basis for investment in effective and well integrated strategies for mainstreaming disaster risk reduction and build climate change resilience in all development plans that are locally-driven, gender-sensitive, participatory and fully transparent, taking into consideration vulnerable groups, communities and ecosystems.

There is clear need for enhanced national and sub-national level institutional framework and integrated policies, coordination and collaboration in the local use of climate information and services by all climate sensitive sectors an the relevant local systems.

Background Information and Recommendations

Climate change and variability remains a threat to sustainable development. The climate data from the National Meteorological Service is insufficient. There is therefore the need to invest more on weather observation systems including the use of remotely sensed data in Hiiraan region, Hirshabelle.

The available data shows that there is significant variability not only the annual rainfall received, but also from one month to another. Peak rainfall months are centred around Gu season, March to June (MAMJ) and Deyr Season, September to December (SOND). Positive and negative rainfall trends were also observed that were not consistent from season to season in all locations.

Inter-annual variability patterns further showed evidence of recurrences of rainfall extremes associated with floods and droughts, as well as increasing frequency and severity of extreme events such as drought and floods. Some of the observed recurrent positive and negative rainfall anomalies were observed during El Nino / Nina (commonly represented as ENSO) years and positive/negative Indian Ocean Dipole (IOD) years. Rainfall amounts and intensity in Hirshabelle is generally 200mm – 300mm annually. However, some parts of Buulo Burdo receives 300mm - 400mm of rainfall annually.

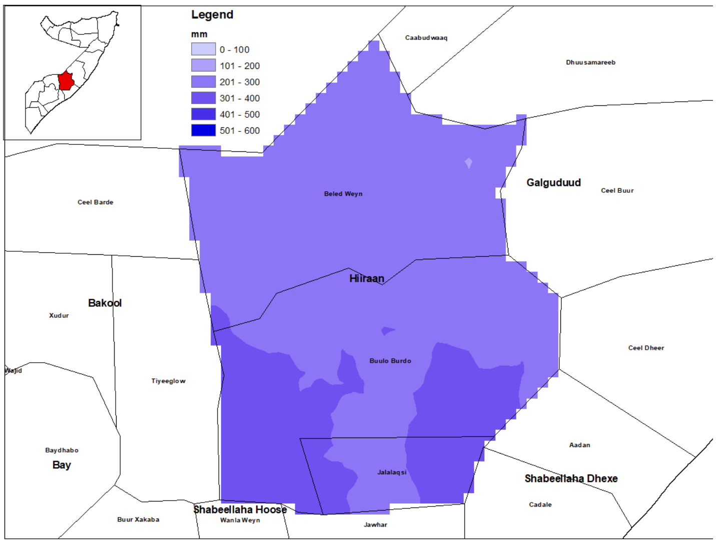

Figure 1: Long Term Annual Mean Rainfall (1981-2010)

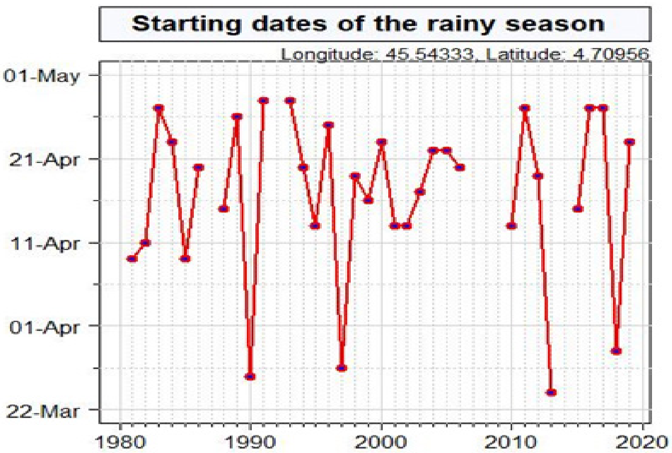

Figure 2: Rainfall Anomaly During SOND in Comparison to Long Term Mean (1981-2010)

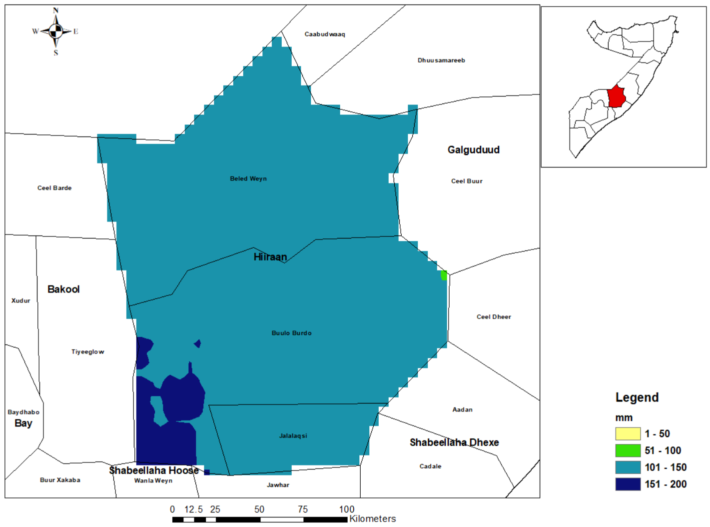

Figure 3: MAMJ Long Term Mean Rainfall (1981-2010)

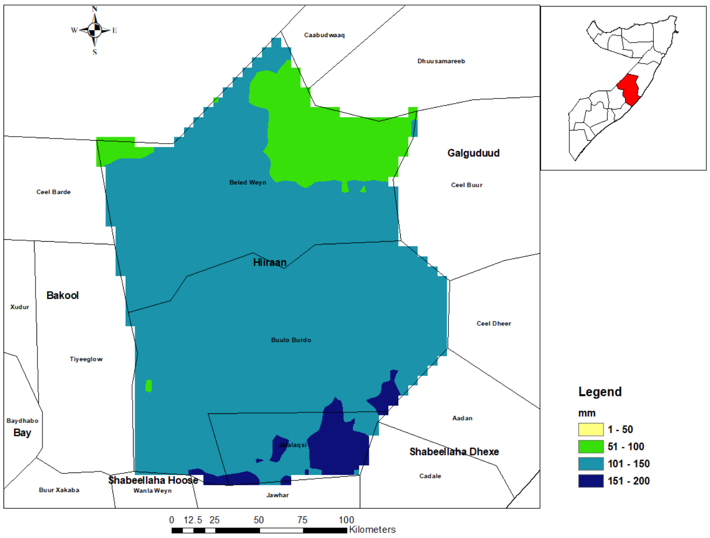

Figure 4: SOND Long Term Mean Rainfall (1981-2010)

The rainfall trend in Hiiraan region, Hirshabelle varies in magnitude from place to place and season to seasion with some areas experiencing a positive rainfall trend while others a negative trend. Reccurence in climate extremes, also observed in the region, often have far reaching socio-economic implications that include lack of water and food, hunger, migrations, human conflicts, unemployment, loss of life, etc.

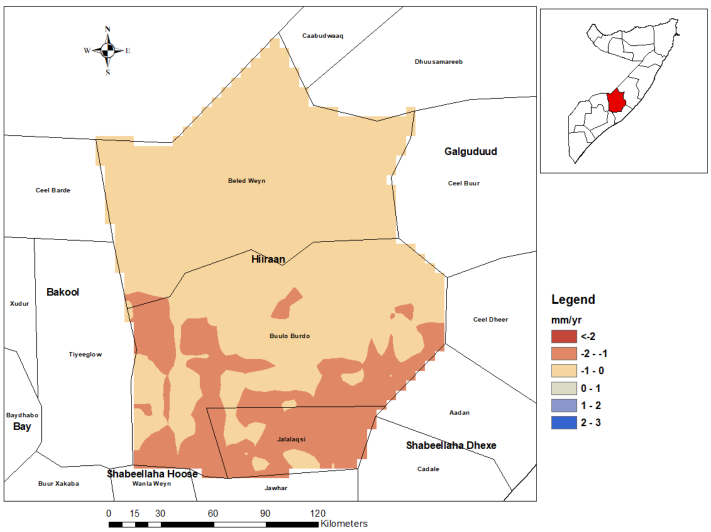

Figure 5: MAMJ Season Rainfall Trend/Yr (1981-2018)

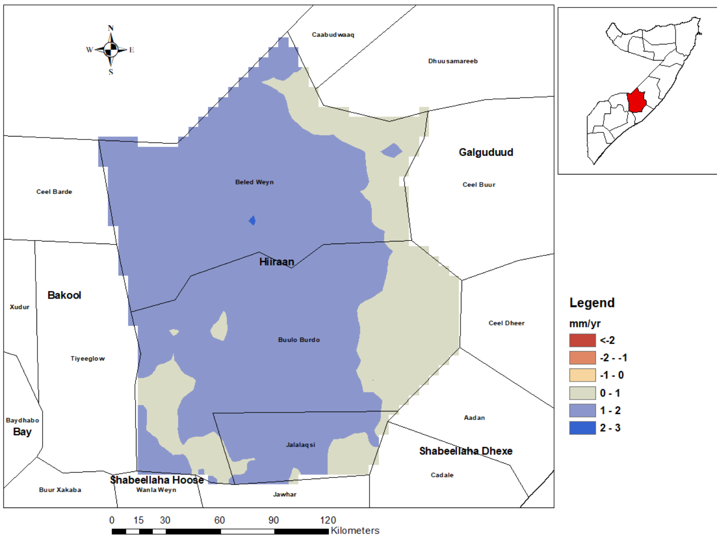

Figure 6: SOND Season Rainfall Trend/Yr (1981-2018)

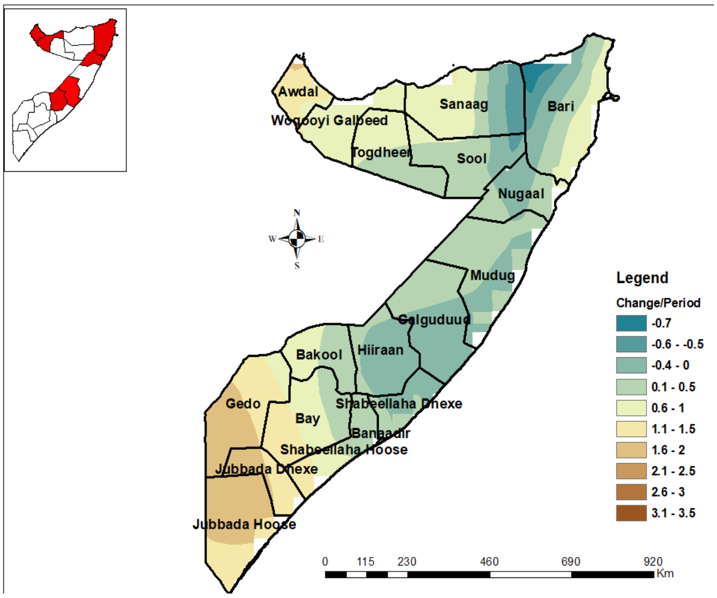

Figure 7: Mean MAM Season Surface Temperature Trends

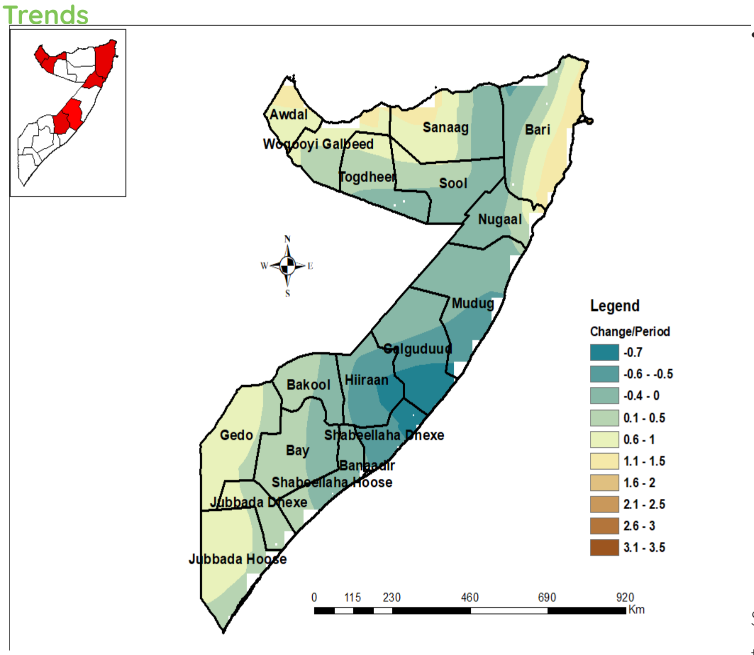

Figure 8: Mean SON Season Surface Temperature Trends

Annual evapotranspiration in arid and semiarid lands (ASALs) usually exceeds rainfall. Agricultural productivity is also limited by poor availability of moisture thus affecting the food and nutrition security of populations. Spatial analysis of the observed temperature data showed a general cooling trend in maximum and mean temperature. The results are consistent with some costal areas that are experiencing a cooling trend contrary to the global warming trend.

There is need for investment in infrastruction and capacity for improved aquisition of climate data. The available data supports the need for integration of local knowledge in the planning and development of national climate change adaptation strategies. Policy makers should strengthen inter-linkages between adaptation and development strategies that enable communities to build climate resilience. Policies should be linked across different sectors of government at both the sub-national and national level. Sectoral level policy makers, planners and managers should be given information in suitable forms as they are most likely to mainstream adaptation efforts into their planned work.

Other critical baseline rainfall characteristics including rainfall intensity; probability of exceedance of specific rainfall thresholds; mean characteristics of wet/dry days; probability of occurrence of specific wet/dry spells; onset, cessation and length of crop growing seasons have been well documented.

Policy Recommendations

The significance of the observed rainfall data shows continued exposure to recurring events of drought and flooding for local communities. The following are recommendations from the research:

- There is need to integrate local knowledge in the national development strategies to cope with climate variability and adaptation to climate change;
- Need for increased investment for collection and processing climate data throughout the county as this would help improve planning and timely intervention;
- Need to invest in climate information services including prediction, multi hazards early warning systems at all-time scales ranging from daily to climate change time scales. This will also require the following among others;
    - The right infrastructure to generate accurate downscaled, location specific climate information services;
    - Capacity building for all including scientists, users and policy makers;
    - Established communication and feedback systems to disseminate this information to end users, and for feedback and evaluations of the impacts; and
    - Awareness to end users on how to use climate information provided.

Strengthen inter-linkages between adaptation and development strategies that enable communities to build resilience. This calls for all sectoral level policy makers, planners and managers to take into account climate information to mainstream adaptation efforts into their planned work.

About ICPAC

ICPAC is a specialised IGAD institution which covers IGAD members' states plus Tanzania, Rwanda and Burundi. The mission of ICPAC is to foster climate services and knowledge to enhance community resilience for prosperity in the Greater Horn of Africa. ICPAC Services cover six main sectors, that include, Climate Forecasting and Early Warning, Hydrology, Agriculture and Food Security, Climate Change, Environmental Monitoring, Disaster Risk Management and Climate Information Dissemination.

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