



**Federal Democratic Republic of Ethiopia  
Ministry of Agriculture & Rural Development**

**Disaster Risk Management & Food Security Sector,  
Early Warning and Response Directorate**



**Flood Early Warning Information**

July 10, 2010

# FLOOD EARLY WARNING

## INTRODUCTION

In view of the imminent threats posed by flooding in some flood prone areas in the country based on forecasts by the National Meteorological Agency (NMA), the Flood Taskforce led by DRMFS and comprised of representation from NMA, sectoral line ministries, UN agencies, NGOs and donors, under the Disaster Risk Management Working Group (DRMTWG) has been reactivated to closely monitor the situation and facilitate timely preparedness and response measures.

The taskforce prepared this Flood Early Warning Information update, which indicates the forecast for the current *kiremt* season, performance of the 2010 *belg* rains, the start and performance of the current *kiremt* rains and identifies flood risk areas in order to trigger timely preparedness and response measures. The report will be updated on bi-monthly basis inline with further forecasts by NMA and the development of the situation on the ground. Based on the early warning information, the taskforce will prepare a Flood Contingency Plan, which identifies the required preparedness and response activities in order to mitigate the likely adverse impact of flooding.

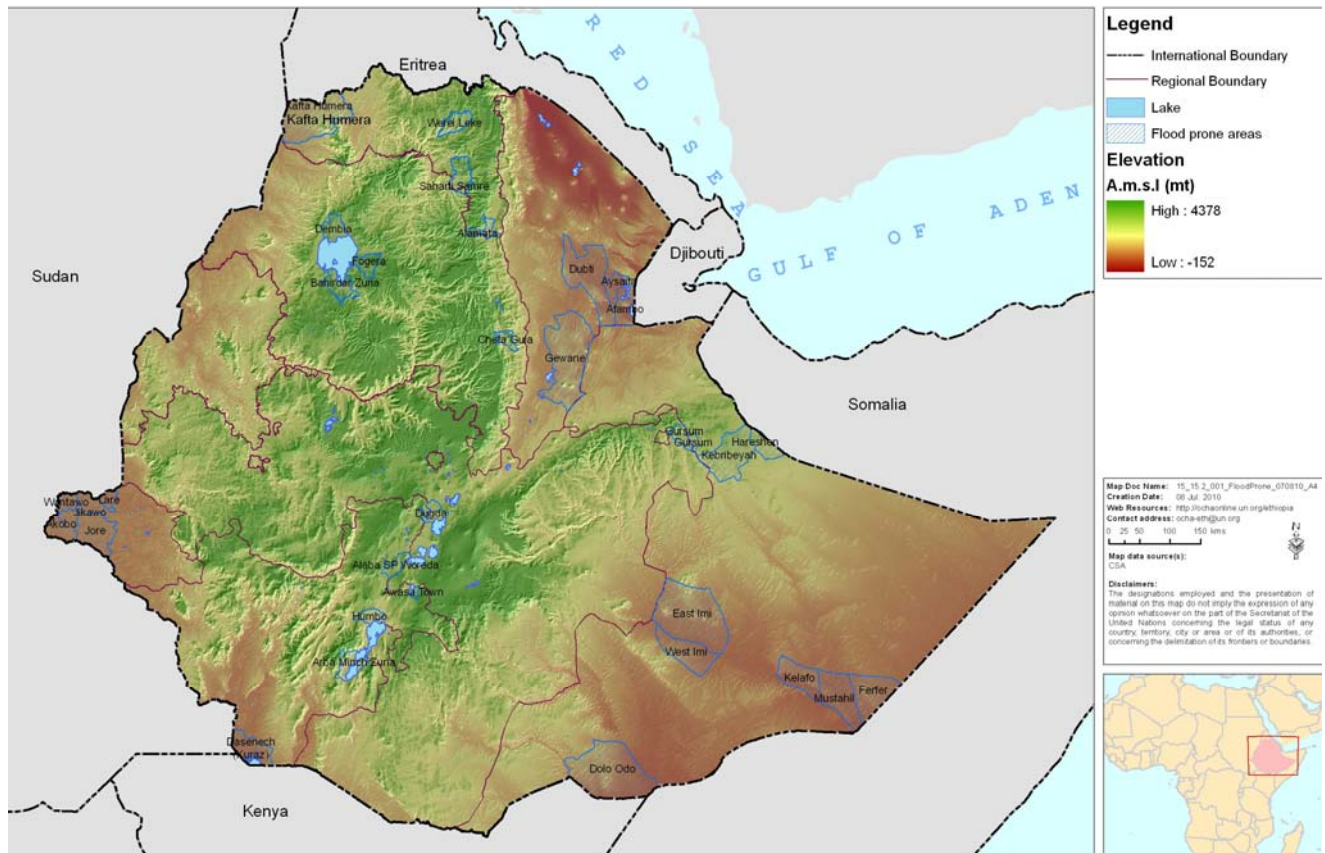
## BACKGROUND

Flooding is one of the major natural hazards in Ethiopia, owing to a national topography of mountainous highlands and lowland plains, with natural drainage systems formed by the principal river basins.

Most flooding in the country is caused by river over flow, when prolonged rainfall causes rivers to overflow and inundate lowland plains. Among the major river flooding-prone areas are parts of Oromia and Afar regions lying along the mid- and downstream plains of the Awash River; parts of Somali Region along the Wabishebelle, Genale and Dawa rivers; low-lying areas of Gambella along the Baro, Gilo and Akobo rivers; downstream areas along the Omo River in SNNPR and the extensive floodplains surrounding Lake Tana and the Gumara and Rib rivers in Amhara.

Some parts of the country are also vulnerable to flash floods. Flash floods, which occur in lowlands when excessive rain falls in the highlands, are frequent in central and western Tigray; North and South Wollo, West Gojjam and Oromia zone (Amhara); North and West Shewa (Oromia); Wolayita, Hadiya, Guraghe and Sidama zones (SNNPR) and Dire Dawa. Flash floods, which are characterized by sudden onset with little lead time for early warning, often result in considerable loss of life and property.

## Flood Prone Areas



Normally, flooding occurs at the peak of the *kiremt* rainy season, in July (end of July) and August, in the most flood-prone areas. In Somali Region, flooding often occurs during the month of August/September. However, heavy *belg* rains can also cause unusual flooding, as seen between March and May/2010 in parts of the country, including Dire Dawa, Somali Region, Oromia and SNNP.

### PERFORMANCE OF 2010 *BELG* SEASON

The onset of the 2010 *belg/gu* (February to May) rains was timely in most areas and the amount and distribution of rainfall was normal to above-normal in most parts of the country. Although the rains were beneficial to seasonal crops and replenished pasture and water availability for livestock in most areas, excessive rain caused unusual flooding in parts of Gode, Korahe, Liban and Warder zones of Somali Region; Borena zone in Oromia; Gamo Gofa, Sidama, Selti and Wolayita zones in SNNPR; Western zone of Tigray, Zone 1 and 5 of Afar, Nuer and Aguwak zones of Gambella, and the administrative region of Dire Dawa. The flooding was due to un-seasonal rains, which started as early as October/November 2009 in some areas and continued with increasing intensity and coverage. These un-seasonal rains extended into and merged with the *belg/gu* rains in some areas. The sometimes torrential and prolonged rains saturated soil and caused some rivers to overflow, submerging surrounding fields and flood plains.

**Flood Affected Population by Woreda**

Region	Zone	Wereda	(Month)	Affected population	
Afar	1& 5	Mille & Sumrobi	March	4000	
Harari	Harari	Harari	March	4580	
SNNP	Gamo -Gofa	West Abbaya	March	2500	
		West Abbaya	May	606	
		Arba Minch Zuri	May	1145	
		Selti	Sankura	May	970
		Sidama	Awassa-Zuria	May	6624
			Boricha & Loka Abya	May	8207
		Wolayita	Humbo	May	1750
Tigray	Western	Humera	March	3500	
Oromia	Kelem Welega	Hawa Gelan, Gewie Kebi & DalleSoda	May	9750	
		West Arsi	Shala & Siraro	May	29974
	Borena	Gelana	May	2157	
			Das	May	25
			Meo	May	600
		Moyalle	May	2994	
Somali	Gode	Mustahil, Kelafo & East Imi	May	2994	
	Korahe	Shilabo	May	737	
	Korahe	kebridahar	May	625	
	Warder	Warder	May	2813	

Source -DRMFSS

During the Occurrence of the event, DRMFSS together with the Regional DRMFSS and humanitarian partners provided the necessary food and non-food assistance to the flood affected population.

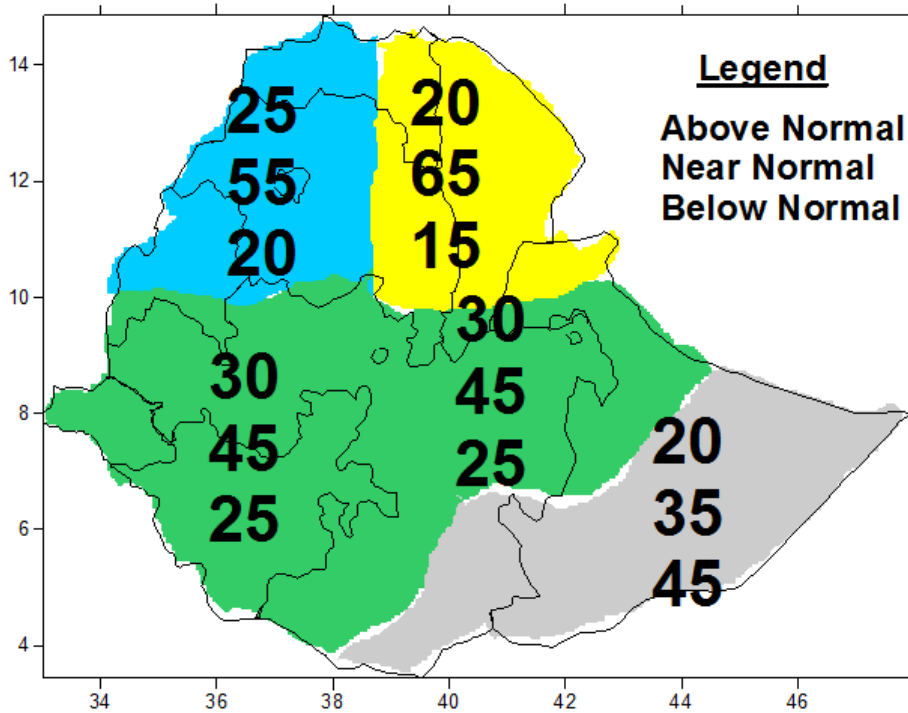
**WEATHER OUTLOOK FOR THE KIREMT 2010**

The National Meteorological Agency (NMA) weather outlook for the 2010 *kiremt* (June to September 2010) season anticipates near-neutral to slight colder than normal Sea Surface Temperature (SST) over the Tropical Equator Pacific Ocean during the season. The outlook indicates that the closest analogue years for the 2010 *kiremt* season are 1992, 1995 and 2005. Additionally, years 2003 and 2007 have been identified as analogue years.

The 2010 *kiremt* weather forecast indicates:-

- Normal onset and cessation of the *kiremt* rains
- Normal to above-normal *kiremt* rains in southwestern, western, central and eastern parts of the country
- Peak seasonal rains in end of July and August
- Near normal rainfall in northwestern and north-eastern parts of the country
- Normal to below-normal moisture conditions in parts of southern and southeastern lowlands

### Tercile Rainfall Probabilites of Kiremt 2010



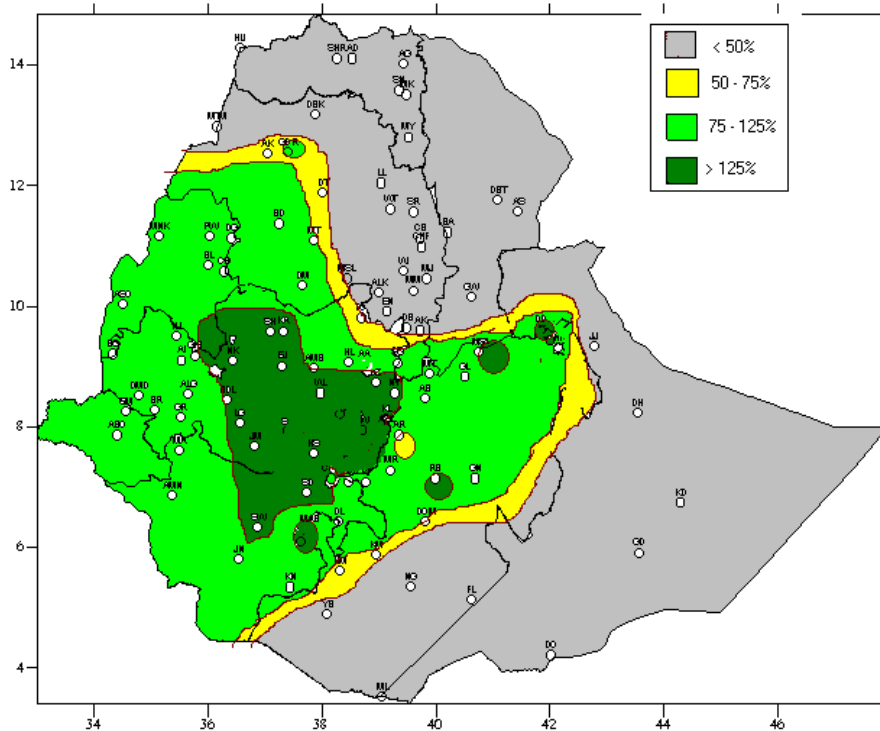
(Source –NMA)

According to the NMA, heavy rainfall is expected to lead to water-logging in low-lying areas; flooding is also expected to occur along rivers and in flood-prone areas, **mainly in western and southwestern flood-prone areas.**

#### JUNE 2010 KIREMT RAIN PERFORMANCE

The *kiremt* (June to September) season in most parts of the country usually starts with low amounts of rain, gradually increasing and extending from southern and western parts of the country to northern and eastern regions. Normally, there is a break of four to five weeks between the end of the *belg* and the start of the *kiremt*. In 2010, however, the *kiremt* rains started early in June, with an insufficient gap between the current *meher* and preceding *belg* seasons. Throughout the month, normal to above-normal rains were received in some central and western parts of the country. Above normal rains were received in central and west Oromia, northern SNNPR, eastern Benishangul-Gumuz, and pocket areas of eastern Oromia; normal rains were received in most parts of Gambella and Benishangul-Gumuz parts of western and south eastern Ormia and parts of western Amhara; while the remaining parts of the country received below normal rains (see the map below).

### Rainfall Performance 1-to -30 June, 2010



### FORECAST FOR JULY 2010

In July, high rainfall is anticipated to continue in western and central parts of the country, including western Tigray, western and central Amhara, western and central Oromia, Gambella, SNNPR, much of Benishangul-Gumuz. Heavy and continuous rainfall is likely to cause flooding and water logging in these areas. Meanwhile, near normal rainfall is expected in the eastern Amhara, eastern Tigray, eastern Oromia, Dire Dawa, Harari, northern Somali, the highlands of southern Oromia, and Afar.

### RIVER WATER LEVELS

According to the monitoring data from MoWR, the current water level in the major dams stands at: Koka, 104.37 m; Melka Wakena, 2514.31 m; Tana, 1784.90 m; Gibe, 1661.84 m; Fincha, 2214.66 m; and Tekeze, 1095.44 m. Overall, the current water level in the dams is not at concerning levels. Seasonal reservoir level predictions are undertaken based on analogous years and meteorological forecasts, and used to determine when water should be released from the dams in order to minimize the risk of flooding.

### FLOOD RISK AREAS

As per the NMA forecast, flooding (due to river and flash floods) is expected in **western, northwestern and southwestern** parts of the country, starting at the end of July / beginning of August. Continuous rains in some of these areas are likely to lead to high levels of soil saturation, with increased concern about possible landslides and flooding. Additionally,

normal to above-normal rains are expected to continue in central parts of the country, which needs to be closely monitored.

**Western and central Amhara:** Expansion and increase in surface water levels in Lake Tana, and overflow of the Rib and Gumera rivers in South Gondar, Gilgel Abay river in West Gojam, and Dirma and Megech rivers in North Gondar can cause flooding in surrounding areas, including Fogera, Libo Kemkem and Dera in South Gondar zone, Achefer and Bahir Dar Zuriya woredas in West Gojam zone, and Dembia woreda in North Gondar zone.

**Gambella:** The major rivers in the region include the Baro, Gilo, and Akobo. Flood-prone woredas include Akobo, Lare, Itang, Gambella Zuria, Gambella town, Jor, Gog, Jikawo, Wanthoa, Dima, and Lower Abobo. Flooding has already been reported in Lare woreda, Nuer zone during the first week of July 2010.

**SN NPR:** The flood-prone areas in the region include Dasenech and Nyangatom woredas in the lower parts of Omo River, and areas surrounding Woito River in South Omo zone. Additionally, other flood- and landslide-prone areas include Kemba woreda of Gamogofa zone; Humbo woreda of Wolayita zone (Bilate river); Hula, Dale, Shebedino woredas and Awassa town in Sidama zone; Shashigo woreda in Hadiya zone; Dalocha, Lanfaro, Silte and Sankura in Silite zone; Decha woreda and Bonga town in Keffa zone; and Alaba Special Woreda.

#### **PREPAREDNESS MEASURES TO MITIGATE AND ENSURE TIMELY RESPONSE TO FLOODS**

As part of the preparedness measures to mitigate and facilitate timely response to flooding, a flood contingency plan, outlining expected sectoral requirements, as well as preparedness and response activities, should be prepared.

**Mitigation and preparedness measures** should be undertaken in order to minimize the likely adverse impacts of flooding including dissemination of early warning information to populations at risk, enhancing communication linkage between woreda officials in highland receiving heavy rainfall and those downstream that are at risk of flooding, dam management, strengthening flood protection structures, reactivation of regional flood taskforces in areas that are likely to be affected, and preparation of evacuation plans. Additionally, pre-positioning of food and non-food items, particularly in areas that may become inaccessible is a priority.

Government and humanitarian partners are urged to get prepared for timely response measures. The flood taskforce will closely monitor the situation and regularly update the early warning report and facilitate the preparation of the flood contingency plan.