

Agro-meteorological Impact outlook for Belg 2011

Introduction

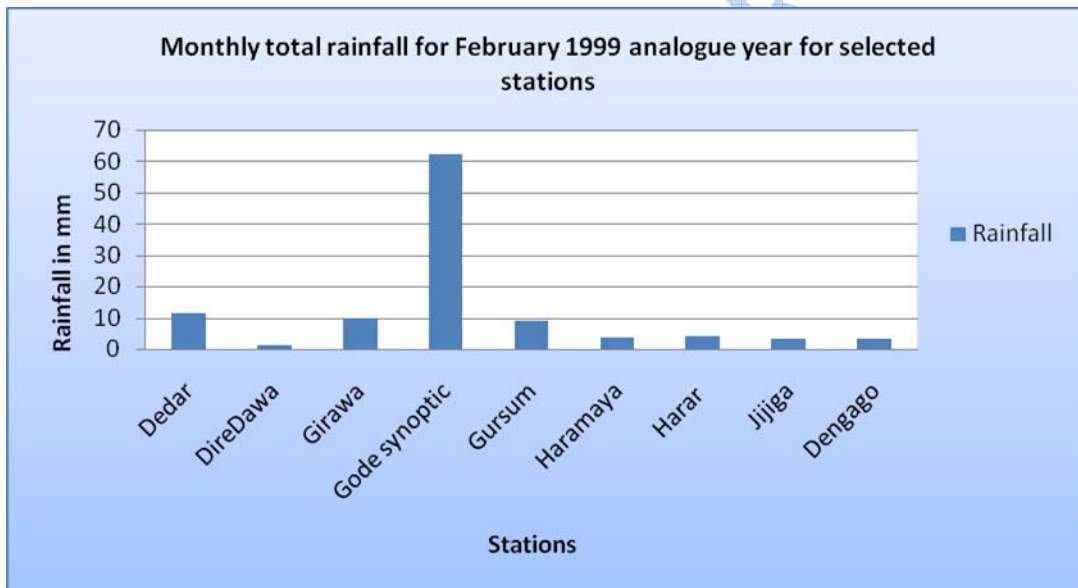
Belg is the season that extends from February to May. It is the main rainy season for south and southeastern regions. It is the time for water harvesting over pasioral and agro-pastoral. Based on the analogue year 1999(NMA), We tries to outlook Agro-meteorological impact for Belg 2011 by analyzing rainfall distributions, moisture status over selected stations and Water requirement satisfaction index (WRSI) for Rangeland

Rainfall Distribution for analogue year 1999

✚ Rainfall distribution for February

During this month, Gode synoptic received 60-70 mm rainfall. Deder ,Girawa and Gursum received 5-10 mm rainfall. The rest part received little rainfall. The obseved rainfall could favor land preparation and sowing activities over Belg growing areas. (See graph 1.0)

Graph 1. Rainfall distribution for February 1999

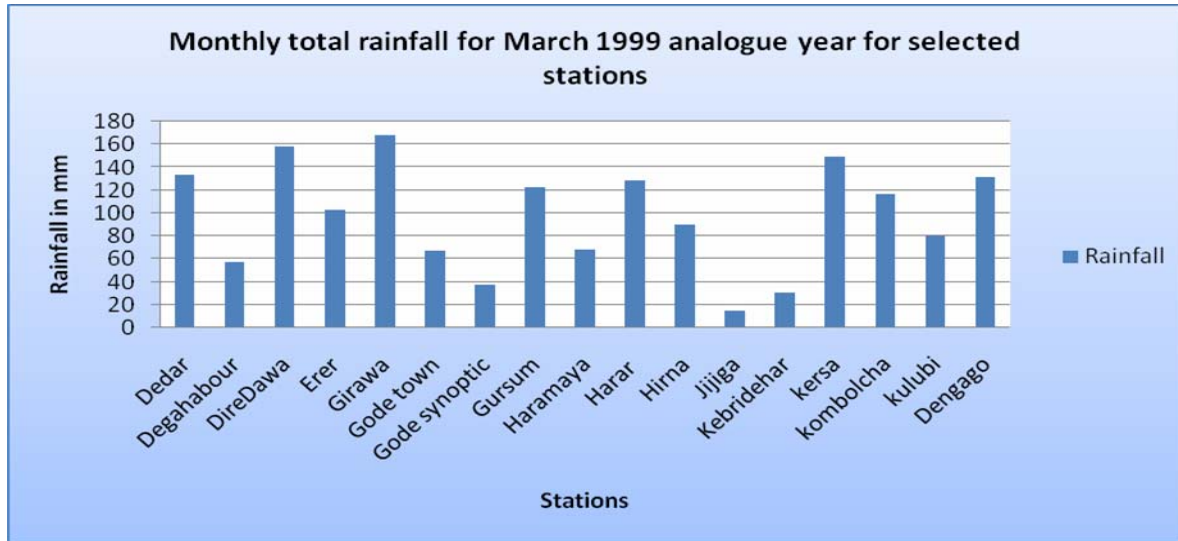


✚ Rainfall distribution for March

During the month of March 1999, Girawa received 160-180 mm rainfall. Dire Dawa and Kersa expreined 140-160 mm rainfall. Deder ,Erer, Gursum, Harar, Dengego and Kombolcha exhibited 100-140 mm rainfall. Gode town , Haramaya, Kulubi and Hirna received 60-100 mm rainfall. Degahabour, Gode synoptic, Kebridehar and Jijiga received 10- 60 mm rainfall.(See graph 2.)

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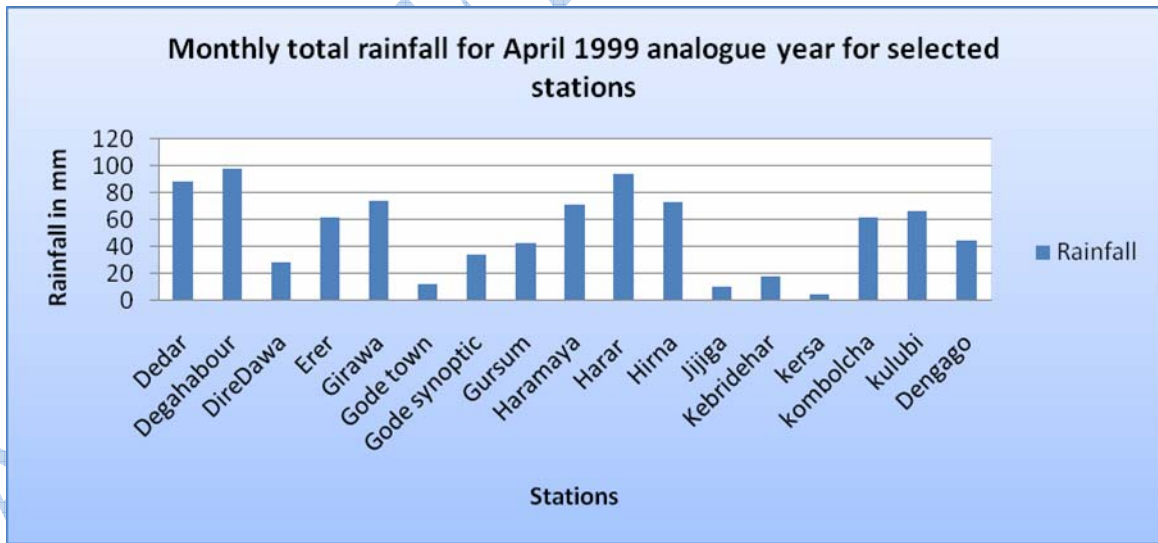
Graph 2. Rainfall distribution for March 1999



Rainfall distribution for April

During this month, Harar, Deder and Degahabour received 80-100 mm rainfall. Erer, Girawa, Haramaya, Hirna, Kulubi received 60-80 mm rainfall. Diredawa, Gode synoptic, Gursum, Kombolcha and Dengego experienced 20-60 mm rainfall. The rest part received little rainfall.

Graph 4. Rainfall distribution for May 1999

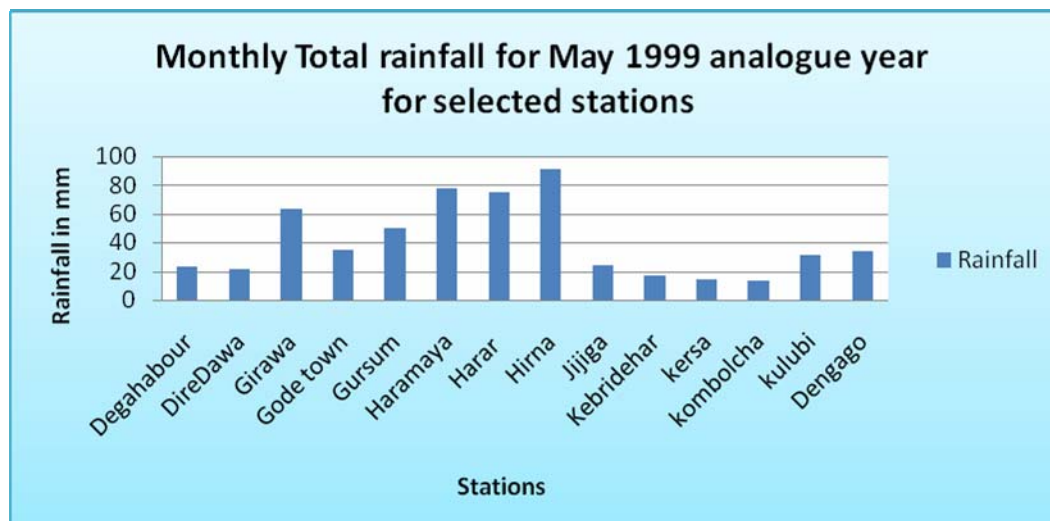


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✚ Rainfall distribution for May

During the month of May 1999 analogue year, Hirna received 80-100 mm rainfall. Gursum, Girawa, Haramaya and Harar exhibited 40-80 mm rainfall. Degahabour, Diredawa, Gode town, Jijiga, Kulubi and Dengego experienced 20-40 mm rainfall. The rest part received little rainfall. (See graph 4)

Graph 4. Rainfall distribution for May 1999



Computed Moisture status for analogue years 1999

❖ Moisture Status for February

During the month of February, Gode synoptic has been observed **moderately dry** moisture condition. The rest part experienced **dry to very dry** moisture condition. This situation might have a positive impact for Belg agricultural activities and land preparation. And also have a negative impact for pasture and drinking water availabilities over pastoral and agro-pastoral areas. (See table1.)

Table 1. Climatic and Agro-climatic elements of different stations for the month of February 1999 analogue year

| Station | Rainfall(mm) | Monthly Eto(mm) | Moisture Index(RF/Eto) | Moisture |
|---------------|--------------|-----------------|------------------------|----------|
| Edar | 11.6 | 109.2 | 0.11 | D |
| Degahabour | 0.0 | 151.2 | 0.00 | VD |
| DireDawa | 1.3 | 151.2 | 0.01 | VD |
| Gode town | 0.0 | 204.4 | 0.00 | VD |
| Gode synoptic | 62.3 | 198.8 | 0.31 | MD |
| Gursum | 9.2 | 137.2 | 0.07 | VD |
| Haramaya | 3.7 | 112 | 0.03 | VD |
| Harar | 4.2 | 106.4 | 0.04 | VD |
| Hirna | 0.0 | 123.2 | 0.00 | VD |
| Jijiga | 3.2 | 112 | 0.03 | VD |
| Kebridehar | 0.0 | 128.8 | 0.00 | VD |
| Dengago | 3.2 | 103.6 | 0.03 | VD |
| Kulubi | 0.9 | 117.6 | 0.01 | VD |

❖ Moisture Status for March

During March 1999 analog year, **Moist to humid** moisture conditions has been experienced over Kulubi, Hirna, Haramaya, Gursum and Deder. This condition was conducive for Belg crops, perennial crops, availability of pasture and water. **Dry to moderately dry** moisture condition observed over Kebridehar, Jijiga, Gode synoptic, Degahabour and Gode town. This situation might have a negative impact on agricultural activities of Belg crops and availability of pasture and water over pastoral and agro-pastoral areas. (See table2)

Table 2. Climatic and Agro-climatic elements of different stations for the month of March 1999 analogue year

| Station | Rainfall(mm) | Monthly Eto(mm) | Moisture Index(RF/Eto) | Moisture |
|---------------|--------------|-----------------|------------------------|----------|
| Dedar | 134.0 | 117.0 | 1.15 | M |
| Degahabour | 56.9 | 159.0 | 0.36 | MD |
| DireDawa | 158.3 | 144.0 | 1.10 | H |
| Gode town | 66.9 | 225.0 | 0.30 | MD |
| Gode synoptic | 37.7 | 207.0 | 0.18 | D |
| Gursum | 122.2 | 138.0 | 0.89 | M |
| Haramaya | 68.3 | 111.0 | 0.62 | M |
| Harar | 128.6 | 105.0 | 1.22 | H |
| Hirna | 90.0 | 129.0 | 0.70 | M |
| Jijiga | 15.1 | 129.0 | 0.12 | D |
| Kebridehar | 30.8 | 141.0 | 0.22 | D |
| Dengago | 131.1 | 102.0 | 1.29 | H |
| Kulubi | 79.7 | 111 | 0.72 | M |

❖ Moisture Status for April

During April 1999 analog year, **moist** moisture condition exhibited over Deder, Haramaya, Harar, Hirna, Kulubi and Degahabour. This condition might have favoured Belg crops, planting of long cycle crops and availability of pasture and drinking water. **Moderately dry** moisture status experienced over Dengego and Gursum areas. **Dry to very dry** moisture condition has been observed over Kebridehar, Gode synoptic, Dire Dawa, Jijiga and Gode town. This situation affected Belg crops and sowing of long cycle crops. (See table3.)

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Table 3. Climatic and Agro-climatic elements of different stations for the month of April 1999 analogue year

| Station | Rainfall(mm) | Monthly Eto(mm) | Moisture Index(RF/Eto) | Moisture |
|---------------|--------------|-----------------|------------------------|----------|
| Dedar | 88.6 | 123 | 0.72 | M |
| Degahabour | 97.8 | 165 | 0.59 | M |
| DireDawa | 28.3 | 171 | 0.17 | D |
| Gode town | 12.7 | 213 | 0.06 | VD |
| Gode synoptic | 34.7 | 207 | 0.17 | D |
| Gursum | 42.7 | 138 | 0.31 | MD |
| Haramaya | 71.3 | 126 | 0.57 | M |
| Harar | 93.9 | 120 | 0.78 | M |
| Hirna | 73.2 | 132 | 0.55 | M |
| Jijiga | 10.7 | 141 | 0.08 | VD |
| Kebridehar | 18.5 | 141 | 0.13 | D |
| Dengago | 45.2 | 120 | 0.38 | MD |
| Kulubi | 66.9 | 126 | 0.53 | M |

❖ Moisture Status for May

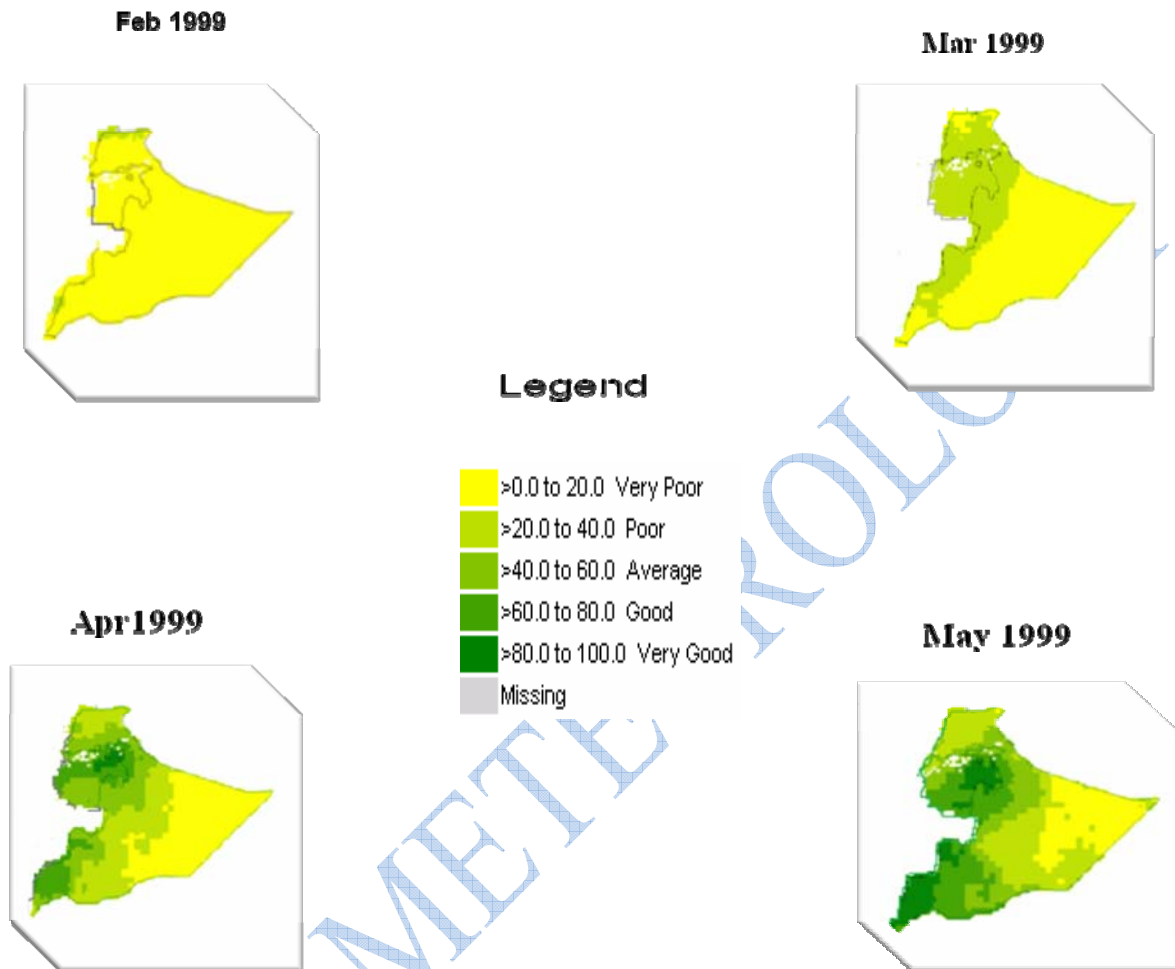
During this month, Haramaya, Hirna and Harar experienced **moist** moisture conditions. This situations favor Belg crops and planting of long cycle crops. **Moderately dry** moisture conditions exhibited over Dengego and Gursum areas. And also **dry to very dry** moisture condition observed over most selected stations. This deficit moisture condition might have a negative impact on availability of pasture and drinking water over pastoral and agro pastoral areas. (See table 4)

Table 4. Climatic and Agro-climatic elements of different stations for the month of May 1999 analogue year

| Station | Rainfall(mm) | Monthly Eto(mm) | Moisture Index(RF/Eto) | Moisture |
|---------------|--------------|-----------------|------------------------|----------|
| Degahabour | 23.1 | 155 | 0.15 | D |
| DireDawa | 21.8 | 179.8 | 0.12 | D |
| Gode town | 35.0 | 217 | 0.16 | D |
| Gode synoptic | 0.0 | 195.3 | 0.00 | VD |
| Gursum | 50.1 | 133.3 | 0.38 | MD |
| Haramaya | 77.4 | 120.9 | 0.64 | M |
| Harar | 75.0 | 114.7 | 0.65 | M |
| Hirna | 91.3 | 130.2 | 0.70 | M |
| Jijiga | 24.0 | 133.3 | 0.18 | D |
| Kebridehar | 16.8 | 133.3 | 0.13 | D |
| Dengago | 33.8 | 120.9 | 0.28 | MD |
| Kulubi | 31 | 133.3 | 0.23 | D |

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Water requirement satisfaction index (WRSI) of rangeland for analogue Years 1999 (source NMA)



Conclusion and Recommendations

- Generally, the analyzed moisture status of 1999 analogue year expected to favor general agricultural activities over Belg growing areas.
- The observed moisture condition of March and April 1999 analogue years expected to favor planting of long cycle crops, availability of pasture and drinking water over Belg growing areas and pastoral and agro-pastoral areas.
- Below normal with a possibility of close to normal rainfall is expected over eastern Hararghe and southern portion of Somali which includes the Belg crop growing areas and the south-eastern pastoral areas are expected to experience moderate to high probability of moisture stress. Thus, proper moisture conservation, rain water harvesting and cultivation of moisture stress resistance crops can help in coping with expected occurrences of dry spells in the season.

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Explanation notes

Eto –Reference evapotranspirations

Legend for Moisture status

| | |
|---------------------|----------|
| Very dry (D) | < 0.1 |
| Dry (D) | 0.1-0.25 |
| Moderately dry (MD) | 0.25-0.5 |
| Moist (M) | 0.5-1.0 |
| Humid (H) | > 1.0 |

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