

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022



Table of Contents

Executive summary	1
Drought in Ethiopia – Overview up to January 2022	2
Analysis of temporal evolution in Somali Region (Ethiopia).....	5
Seasonal forecast	7
Reported impacts.....	8

Executive summary

- 2021 rainy seasons in Ethiopia were drier than normal resulting in a significant cumulated deficit at the end of the year
- Conflicts and widespread poverty as well as general low coping capacity reflect in high vulnerability
- If the seasonal dry forecast for February to May 2022 will be confirmed, the long sequence of poor rainy seasons could further exacerbate the current humanitarian challenges. Follow-up monitoring is required.

Drought in Ethiopia – Overview up to January 2022

With reference to the January 2022 GDO Analytical report on drought in Somalia, Kenya and Tanzania, an additional analysis on Ethiopia is here presented.

Drought is affecting part of the southern regions of Ethiopia at the border with Somalia (Somali and Oromia Regions).

The estimated Risk of Drought Impact for Agriculture (RDri-Agri) conditions and temporal evolution have been quite similar to the ones described for Somalia¹, but with a lower severity and a smaller extent. In mid-January 2022 low-to-high risk values are detected in the southern part of Ethiopia (Figure 1) that require to be monitored in the coming months.

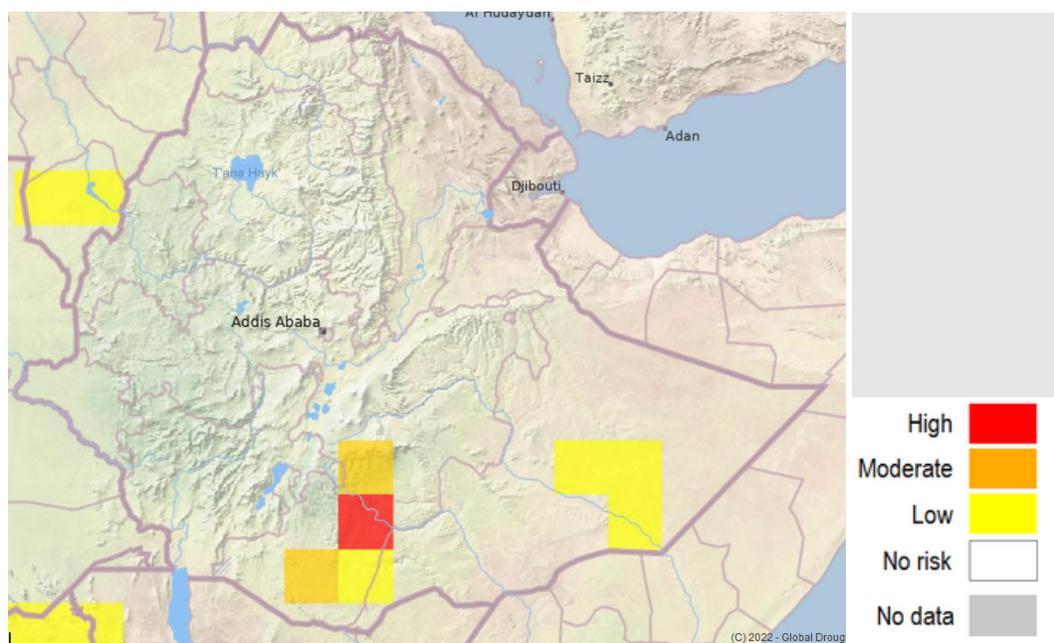


Figure 1: Risk of Drought Impact for Agriculture (RDri-Agri) – mid-January 2022.

The climate of Southern Ethiopia is similar to the one of nearby Somalia. It is characterized by main rainy seasons from March to June and from September to December.

The 2020 rainy seasons were close to the climatic average and only in 2021 rainy seasons were drier than normal, resulting in less severe and delayed precipitation deficit (Figure 2). The situation is now getting more critical already in January 2022.

¹ https://edo.jrc.ec.europa.eu/documents/news/GDODroughtNews202201_Somalia_Kenya_Tanzania.pdf

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022

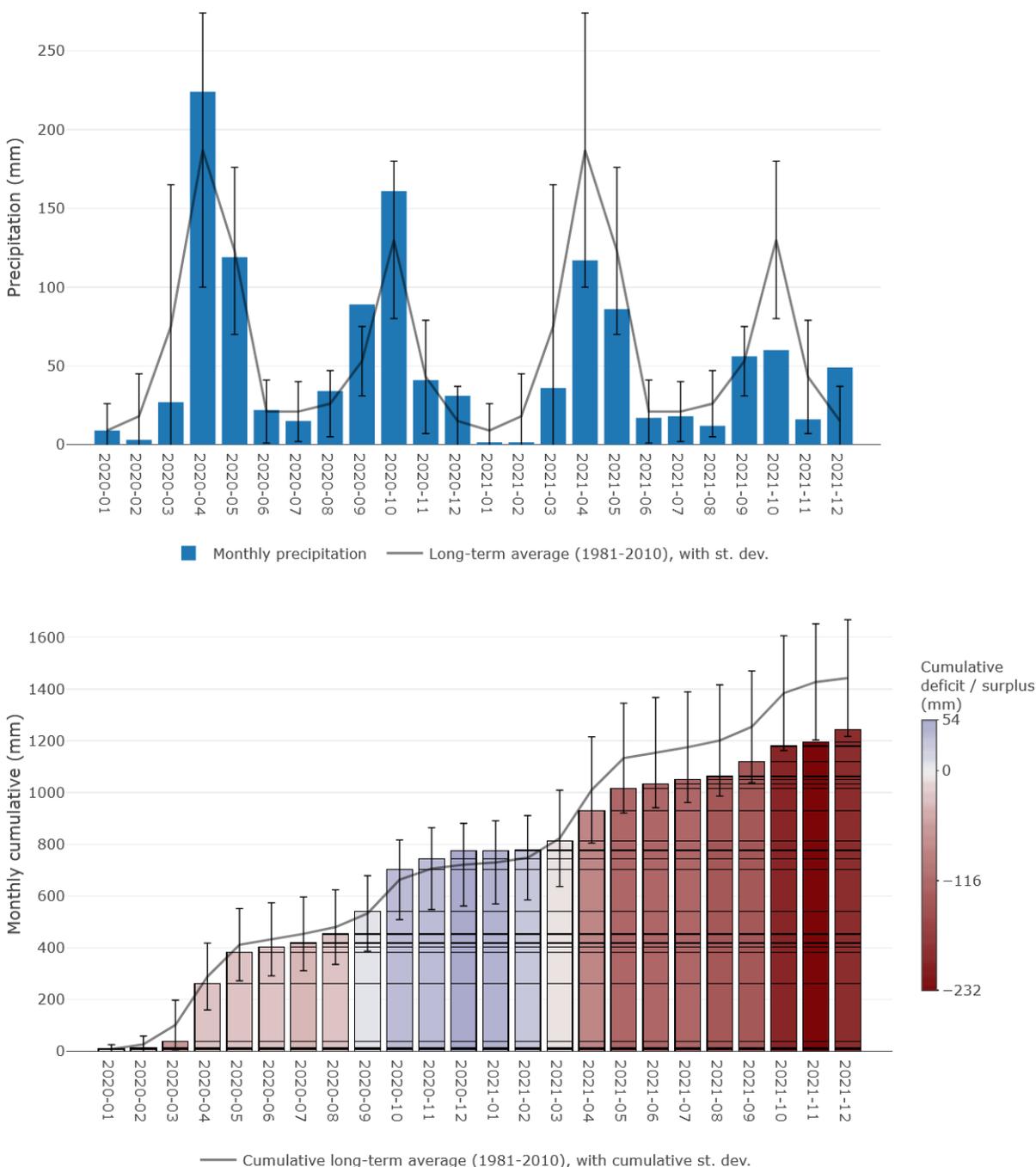


Figure 2: Monthly total (upper panel) and cumulative (lower panel) precipitation - temporal evolution in Ethiopia (Somali close to the border with Oromia) (5.3N, 40.9E) from January 2020 to December 2021

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022



The Standardized Precipitation Index with 12 months of accumulation period (SPI-12 December 2021) confirms the 2021 precipitation deficit with the worst situation in the central and southern part of Ethiopia (in Oromia and western Somali - Figure 3)

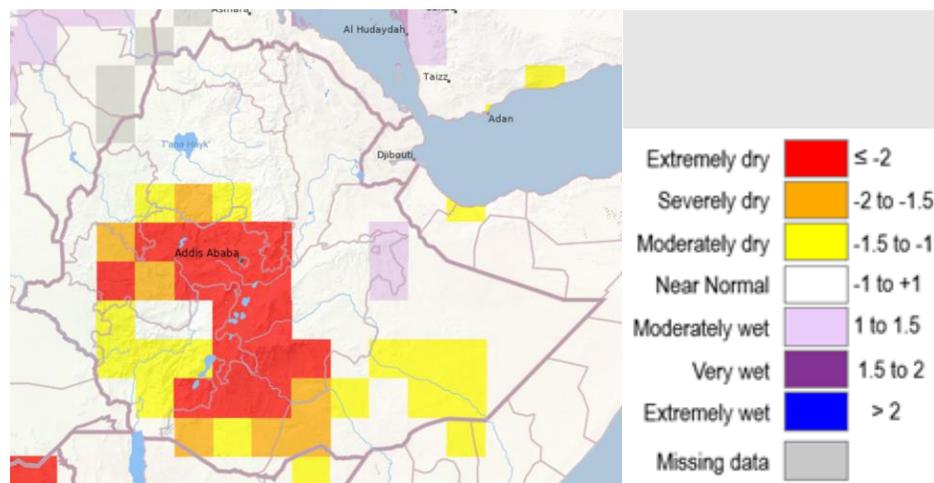


Figure 3: Standardized Precipitation Index (SPI-12) December 2021

Drier soil moisture conditions occurred in Ethiopia and Somalia between the end of November 2021 and the beginning of December 2021². After a very brief slight improvement in mid-January 2022, the soil is getting already drier than normal in Central-Southern Ethiopia (Figure 4).

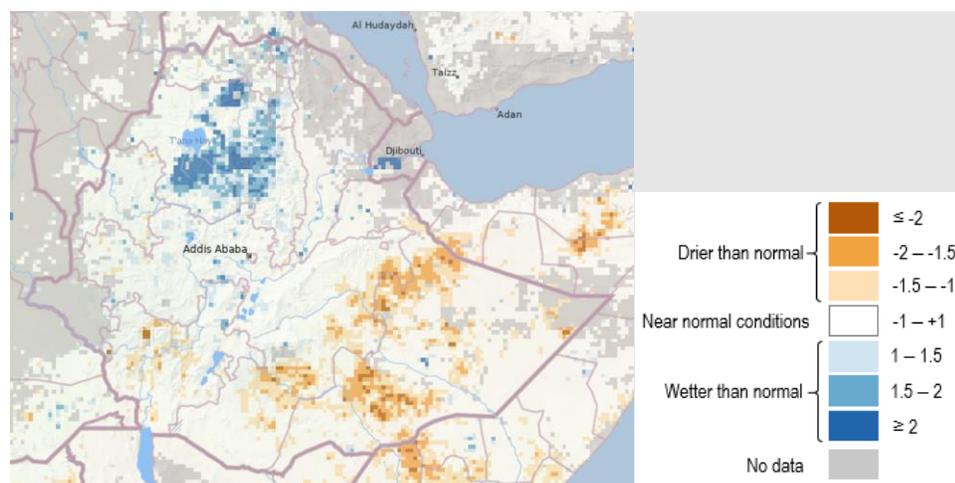


Figure 4: Soil Moisture Anomaly – mid-January 2022

² https://edo.jrc.ec.europa.eu/documents/news/GDODroughtNews202201_Somalia_Kenya_Tanzania.pdf

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022



Similarly, impact on vegetation followed the same spatial-temporal pattern with the most critical situation at the end of 2021, and already adverse conditions detected at the beginning of 2022 (Figure 5).

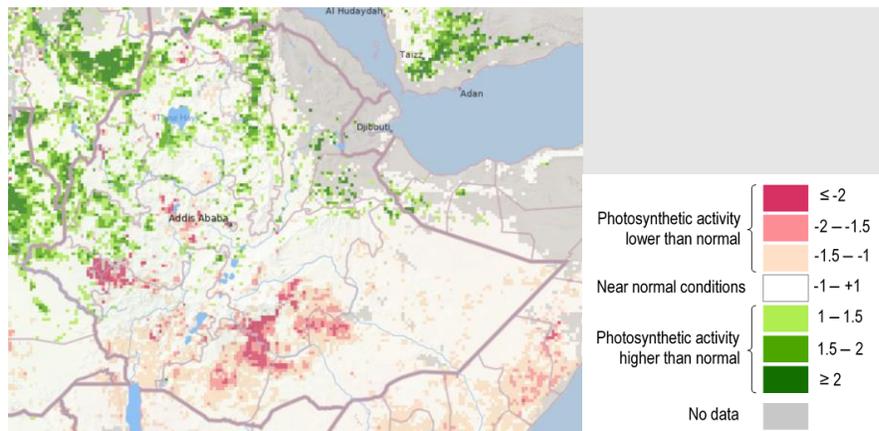


Figure 5: fAPAR Anomaly - mid-January 2022

Analysis of temporal evolution in Somali Region (Ethiopia)

The conditions in the Somali Region at the border with Oromia Region are here discussed in details.

RDri-Agri started to detect risk already in March 2021 (see also August 2021 GDO Analytical report³), but at the end of June 2021 the situation completely recovered and remained stable until the end of November 2021. Then, severe drought re-emerged and, even if conditions have improved, it is still present (Figure 6).

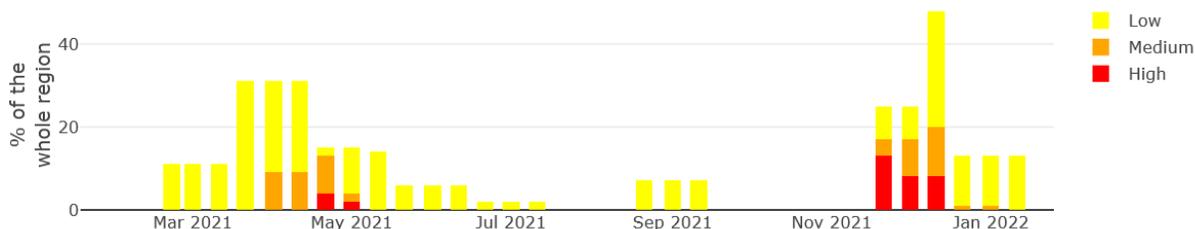


Figure 6: Risk of Drought Impact for Agriculture (RDri-Agri) - temporal evolution in Ethiopia (Somali) from February 2021 to January 2022

³ https://edo.jrc.ec.europa.eu/documents/news/GDODroughtNews202108_Sub-Saharan_and_Southern_Africa.pdf

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022



The evolution of the SPI in the last two years (2020 and 2021) in the Somali Region, close to the border with Oromia Region, shows the first drought onset in March 2021 for a 3-month accumulation period (SPI-3), but its severity rises from October 2021, as detected by SPI-12 after a long lasting drier than normal period (Figure 7).

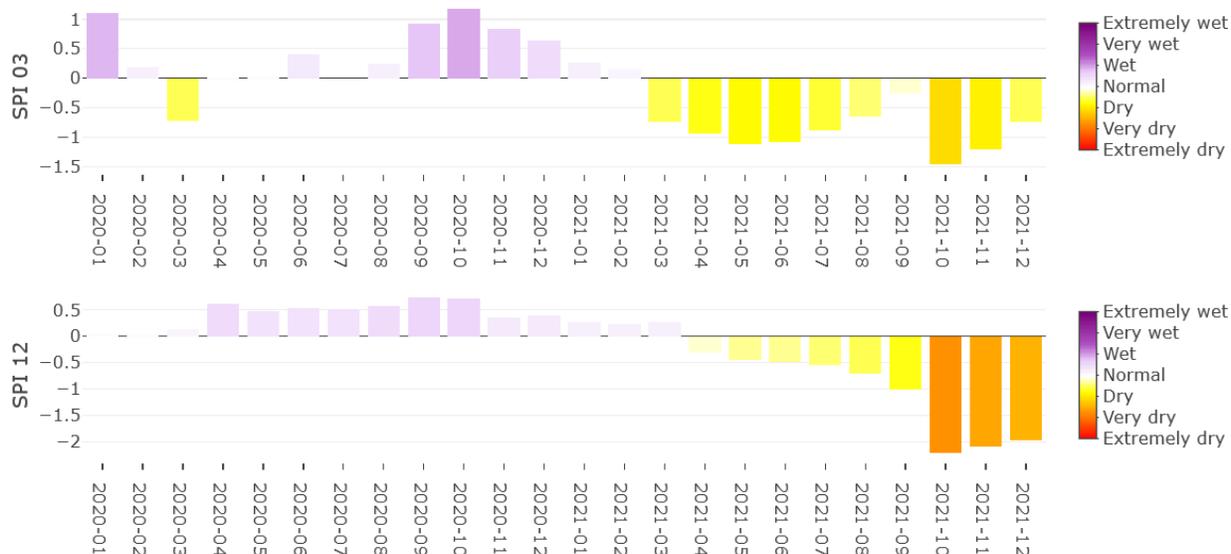


Figure 7: Standardized Precipitation Index (SPI-3, SPI-12) temporal evolution in Ethiopia (Somali) from January 2020 to December 2021

The temporal evolution of Soil Moisture Anomaly in Somali Region, despite an earlier and persistent precipitation deficit that already started in March-April 2021, shows wide and persistent drier than normal conditions only from November 2021 and the anomaly is still present in mid-January 2022 (Figure 8) and requires a close monitoring in the coming months.

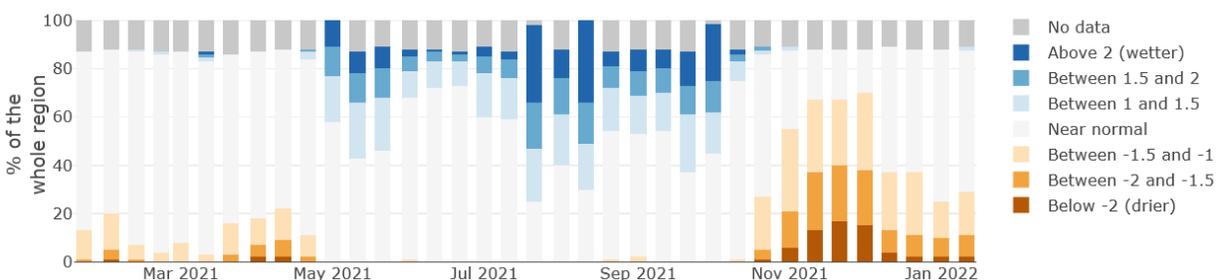


Figure 8: Soil moisture anomaly temporal evolution in Ethiopia (Somali) from February 2021 to January 2022

Seasonal forecast

The wet season from March to May 2022 will be extremely important for the development of the current drought and its severity. High probability of La Niña climate conditions are forecasted for March-May 2022⁴, but the climate predictions are still uncertain according to GDO analysis based on ECMWF seasonal precipitation forecast. ICPAC⁵ Rainfall Probabilistic Forecast for February-April 2022 shows wetter than usual conditions for southern Ethiopia, but with less than 50% of probability, and drier than normal conditions are expected in north-eastern regions (Figure 9).

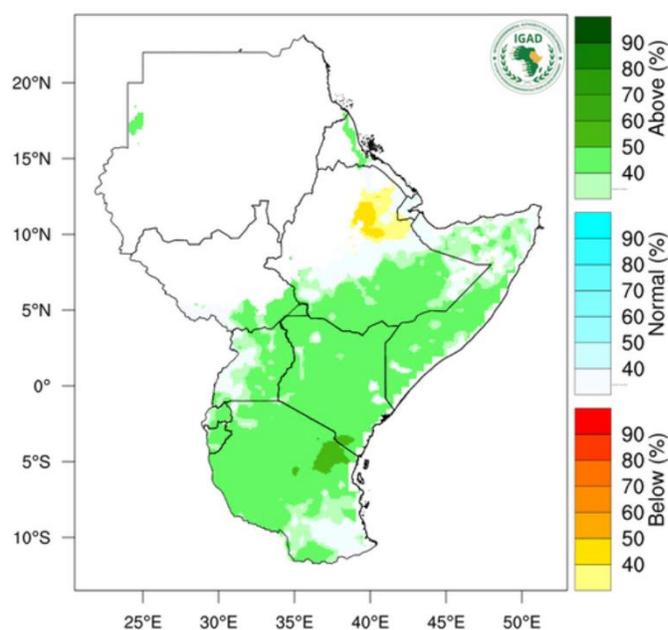


Figure 9: Rainfall Probabilistic Forecast for February-April 2022. Source ICPAC: <https://www.icpac.net/seasonal-forecast/>

Considering the 2021 cumulative deficit, long-term balance will be most likely negative also in case of near-normal rainy season in March-May 2022. Coupled with the high vulnerability of the region, this scenario could lead to severe impacts for Ethiopia and requires a close monitoring in the coming months.

⁴ Famine Early Warning System Network <https://fews.net/sites/default/files/multi-agency-east-africa-drought-alert-120121.pdf>

⁵ IGAD (Intergovernmental Authority on Development) Climate Prediction and Applications Centre

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022



Reported impacts

In the southern and southeastern pastoral areas, rainfall deficits are marking the driest conditions for October in forty years. The drought caused diminishing pasture and water stocks and livestock deaths have been reported in some southern areas of the Oromia and Somali Regions. Minimal to no improvements in livestock conditions are expected through 2022 given the forecast for a poor March to May rainy season. Crisis (IPC Phase 3) conditions are expected to become widespread, with the worst drought-affected areas likely to face Emergency (IPC Phase 4) conditions starting in February 2022. Conflict and drought, coupled with poor macroeconomic conditions, are likely to drive extremely high and persistent food assistance needs. Due to the conflict in northern Ethiopia, despite lower drought related issues, normal agricultural practices cannot be carried out safely, and food insecurity is expected to be the most severe in the area, with extremely critical levels of acute malnutrition and likely hunger-related mortality concentrated in Tigray. If the conflict intensifies, the livelihoods of millions more people will be disrupted, with attendant rises in food insecurity including in typically food secure areas of the country.⁶

GDO indicators versioning:

The GDO indicators appear in this report with the following versions:

- Ensemble Soil Moisture Anomaly 2.3.0
- fAPAR (fraction of Absorbed Photosynthetically Active Radiation) Anomaly 1.3.1
- Precipitation (GPCC) 1.2.0
- Risk of Drought Impact for Agriculture (RDRI-Agri) 2.3.2
- Standardized Precipitation Index (SPI, GPCC) 1.2.0

Check <https://edo.jrc.ec.europa.eu/download> for more details on indicator versions.

Distribution:

For use by the ERCC and related partners, and publicly available for download at GDO website: <https://edo.jrc.ec.europa.eu/reports>

⁶ Famine Early Warning System Network – East Africa Food Security Outlook November 2021 to May 2022
<https://fews.net/east-africa/food-security-outlook/november-2021>

GDO Analytical Report

Drought in Ethiopia (follow-up of January 2022 analytical report) JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) - 02/02/2022



Authors:

JOINT RESEARCH CENTRE, Directorate E: Space, Security & Migration, Disaster Risk Management Unit - DROUGHT TEAM

Toreti A.ⁱ (Team Leader)

Bavera D.ⁱⁱ (Lead Author)

Cammalleri C.ⁱ

de Jager A.ⁱ

Di Ciollo C.ⁱⁱⁱ

Maetens W.ⁱ

Magni D.ⁱⁱ

Masante D.ⁱ

Mazzeschi M.^{iv}

McCormick N.ⁱ

Spinoni J.ⁱ

Disclaimer and Legal Notice: *this report by the Joint Research Centre (JRC) is a product under constant development and may change at any time without notice. It was generated using Copernicus Emergency Management Service information (2021). The views expressed may not be regarded as an official position of the European Commission (EC) in any circumstances. The designations employed and the presentation of material on the map do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory or area or of its authorities or concerning the delimitation of its frontiers or boundaries.*



ⁱ Joint Research Centre (JRC) of the European Commission

ⁱⁱ Arcadia SIT, Vigevano, Italy

ⁱⁱⁱ Arhs Development, Milan, Italy

^{iv} Uni Systems, Luxembourg