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DROUGHT MONITORING BULLETIN

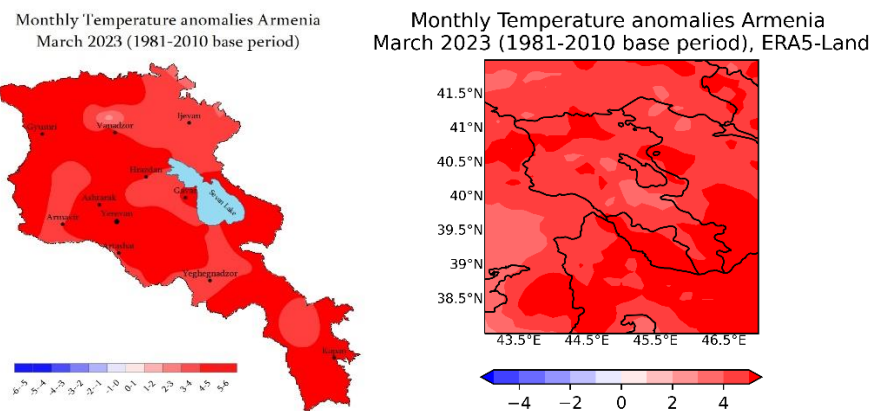
2023 March

Content

1. *Monthly temperature anomaly* *Error! Bookmark not defined.*
2. *Monthly precipitation anomaly*..... *Error! Bookmark not defined.*
3. *Drought indices* *Error! Bookmark not defined.*
 - 3.1 Vegetation Condition Index (VCI).....**Error! Bookmark not defined.**
 - 3.2 Normalized Difference Vegetation Index (NDVI).....**Error! Bookmark not defined.**
 - 3.3 Agricultural Stress Index (ASI).....**Error! Bookmark not defined.**
 - 3.4 Assessment of meteorological drought intensity**Error! Bookmark not defined.**

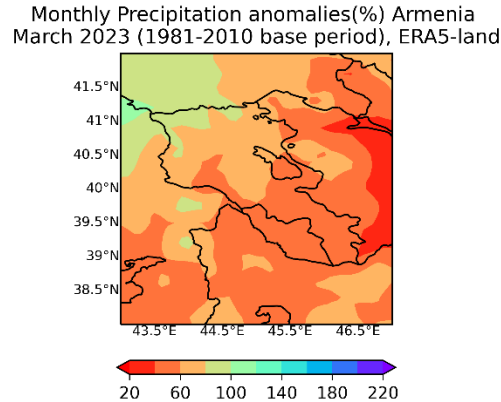
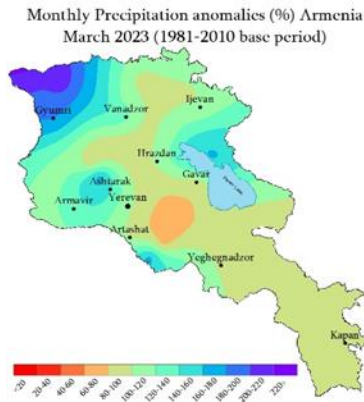
1. Monthly temperature anomaly

In March, the average monthly air temperatures significantly exceeded the norm (1981-2010). According to the observations of 43 meteorological stations of Armenia, the average monthly air temperatures in most regions were higher than normal by more than 3°C. The maximum temperature anomalies were recorded in the south-eastern regions of Armenia, up to 5°C, while in the Ararat valley, and central regions monthly temperature anomalies reached to 4-5°C. At the same time, deviations of average monthly temperatures of the ERA5-Land global reanalysis successfully captured the observed positive anomalies of temperatures in the territory of Armenia in March.



2. Monthly anomalies of precipitation

The warm March was accompanied by higher than normal precipitation. North-western regions of Armenia were the wettest, where the observed precipitation was two times higher than monthly norms in March, i.e. more than 200% (in Ashotsk, the amount of precipitation was 70 mm or 222% of the norm). Observations show that due to the mountainous relief of Armenia local precipitation was observed in some areas. In most of the territory of Armenia, the amount of precipitation exceeded the norm in March, producing 100-140% of the norm. ERA5-Land global reanalysis precipitation data shows that the northwestern regions of Armenia were the wettest, and the precipitation deficit is increasing towards the southeast, where the monthly precipitation amounts to 40-60% of the norm. In general, the ERA5-Land global reanalysis successfully reproduces the spatial distribution of precipitation anomalies from northwest-to-southeast direction, however the amount of precipitation in March is underestimated relative to the norm in the entire territory of the Republic. Furthermore, the local precipitation enhancement are not reproduced adequately by ERA5-Land reanalysis.

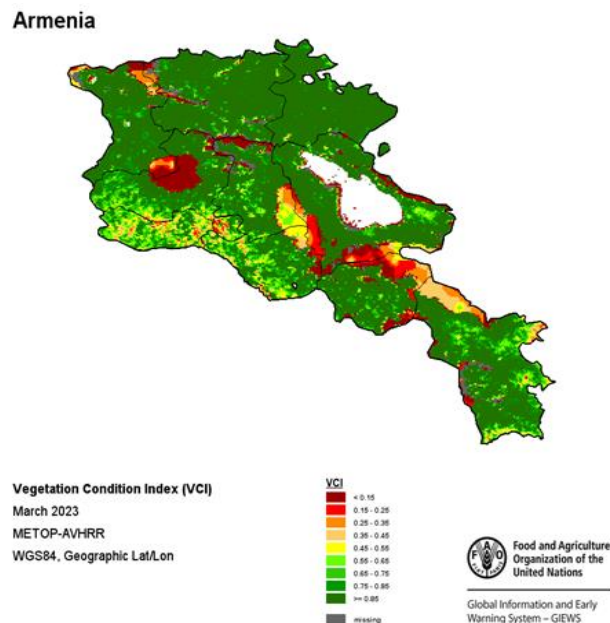


3. Drought indices

3.1 Vegetation Condition Index (VCI)

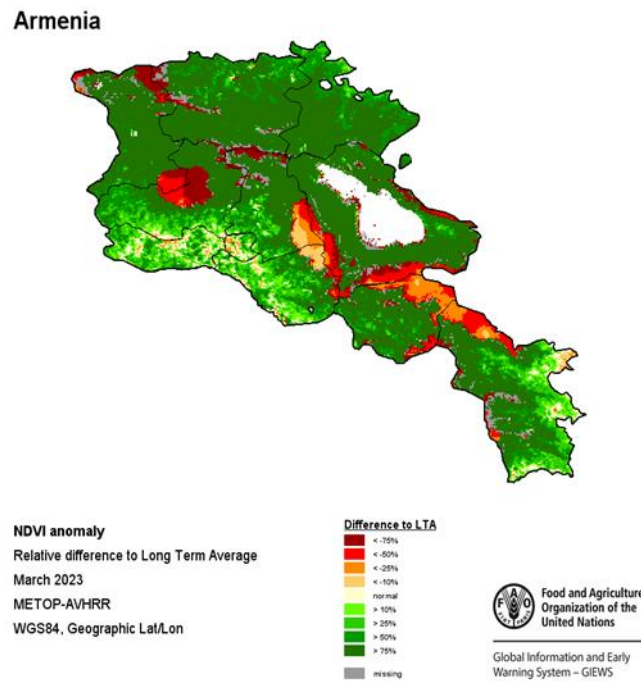
VCI shows the condition of vegetation in a given period compared to the average condition of vegetation associated with the climatic conditions of the given location. Lower and higher VCI values indicate poor and good vegetation conditions, respectively.

As can be seen from the March VCI map, vegetation is in good condition in most of the territory of Armenia. In mountainous regions, due to the presence of snow cover, and in some parts of the Ararat valley, due to land use VCI values are low showing poor vegetation conditions .



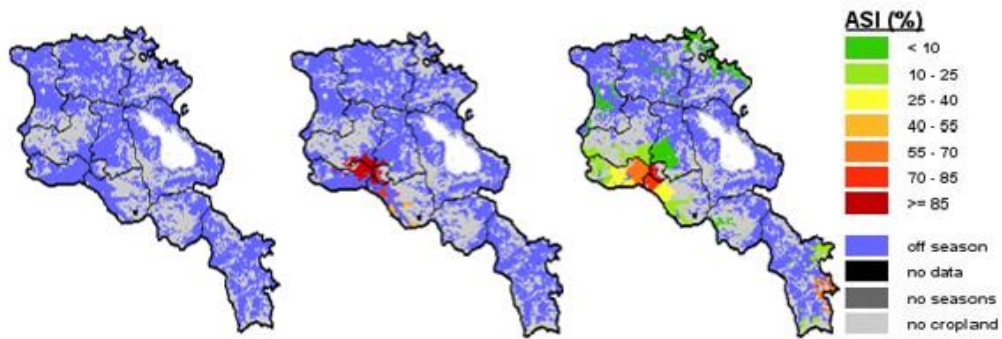
3.2 Normalized Difference Vegetation Index (NDVI)

The Normalized Difference Vegetation Index (NDVI) is an indicator of photosynthetically active biomass which is obtained by comparing the amount of absorbed visible red light and reflected infrared light. NDVI values range from -1 to 1. Negative values correspond to water surfaces, man-made structures. NDVI for bare soil usually ranges between 0.1 and 0.2, while plants will always have positive values varying between 0.2 and 1. In general, the spatial distribution of NDVI values in March is consistent with the distribution of VCI showing favorable vegetation conditions in most regions of Armenia.



3.3 Agricultural Stress Index (ASI)

The Agricultural Stress Index (ASI) indicates the impact of agricultural drought. As can be seen from the data of March, the vegetation started mainly from the third decade of March in the valley regions of Armenia.



3.4 Assessment of meteorological drought intensity

Drought intensity was evaluated by Selyaninov's hydrothermal coefficient according to the data of 38 meteorological stations. The drought intensity map shows that there was no drought conditions in the territory of Armenia during the first ten days of April.

