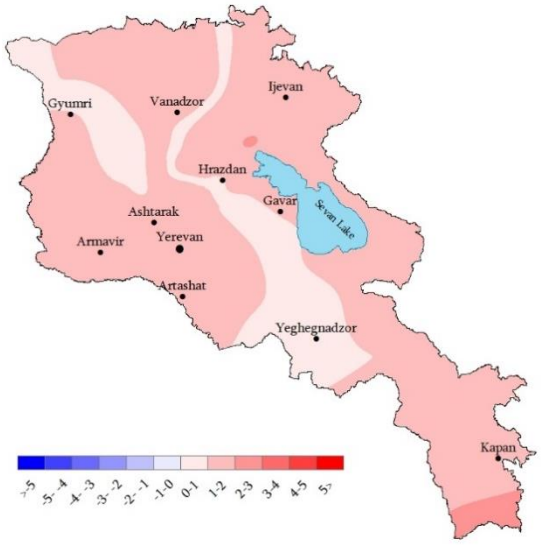
DROUGHT MONITORING BULLETIN

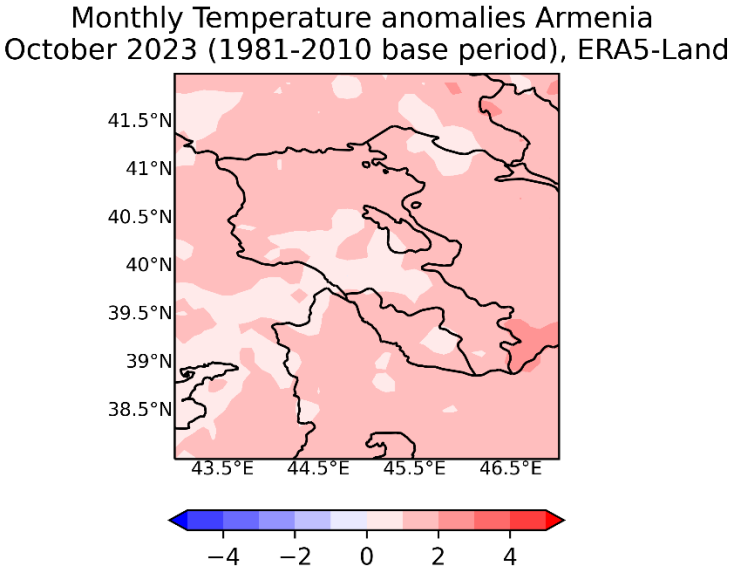
2023 October

Content

1. Monthly temperature anomaly

In October, the average monthly air temperatures were close to the norm (1981-2010) in Armenia, mainly with a positive anomalies. According to the observations of 43 meteorological stations in Armenia, the monthly temperature anomalies were up to 1°C. The maximum deviation was observed at the Meghri station (1.5°C). The monthly temperature anomaly map from ERA5-Land global reanalysis quite well reproduces the observed near-normal temperatures over the territory of Armenia in October.

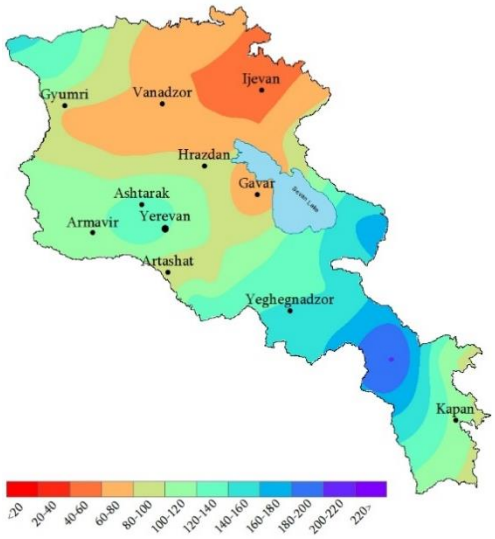


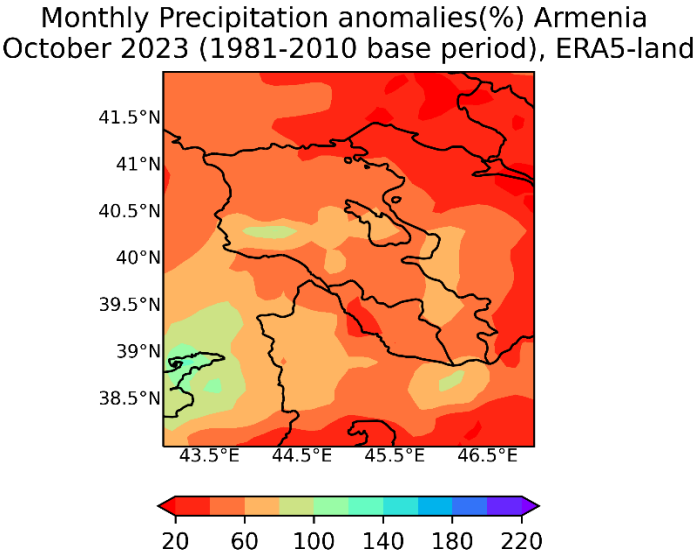


2. Monthly precipitation anomaly

In October, the main part of the republic received above-normal precipitation. The maximum amount of precipitation was recorded in Jermuk station (84 mm), and the maximum deviation from the norm was recorded at Sisian station (201%). In north-eastern part of republic, the amount of precipitation was significantly less than the norm. The lowest amount of precipitation was recorded in Ijevan station (20 mm).

In contrast to the observations, the ERA5-Land global reanalysis data show that October was dry in Armenia, and precipitation was mostly below normal. In the western regions of the republic, the amount of precipitation was 40-60% of the norm, while reaching to 100% in Armavir.



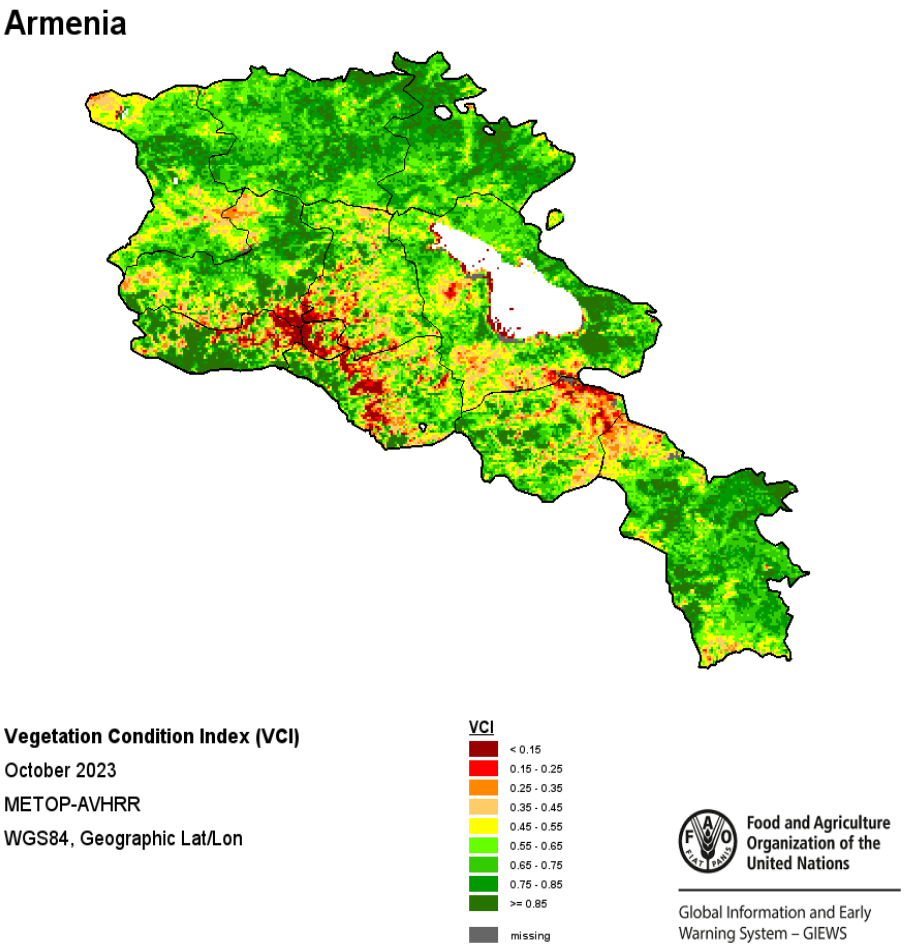


3. Drought indices

3.1 Vegetation Condition Index (VCI)

The Vegetation Condition Index (VCI) compares the current NDVI to the range of values observed in the same period in previous years. The VCI is expressed in percents and gives an idea where the observed value is situated between the extreme values (minimum and maximum) in the previous years. Lower and higher values indicate bad and good vegetation state conditions, respectively.

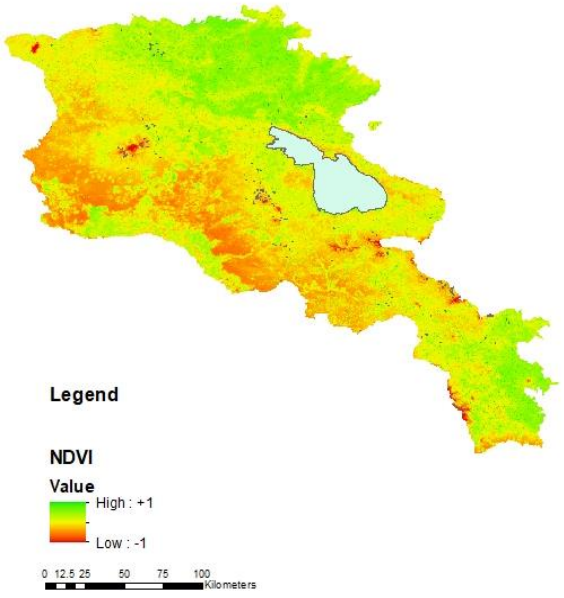
As can be seen from the October VCI map published on the FAO website, Ararat valley and foothills of Vayots Dzor were characterized by unfavorable conditions for the growth and development of vegetation.



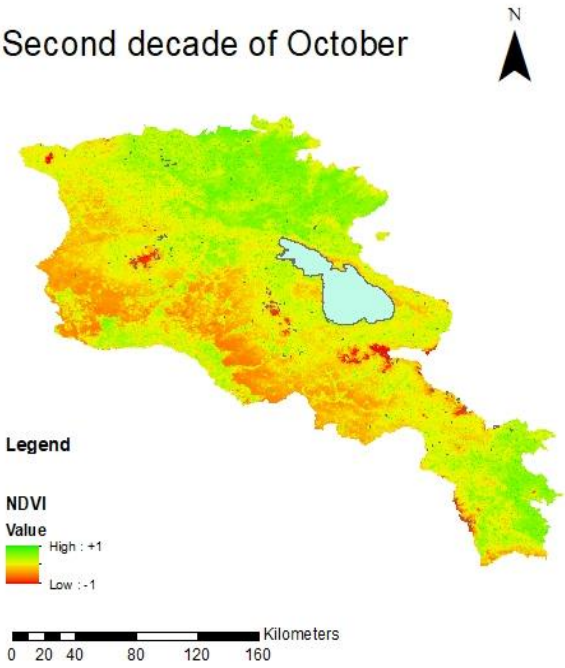
3.2 Normalized Difference Vegetation Index (NDVI)

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 defines values from -1.0 to 1.0 where negative values coincide with areas devoid of vegetation. As can be seen from the October NDVI map based on the Landsat 8 satellite, (the spatial resolution is 60 m) in October, the conditions for the growth and development of vegetation were unfavorable in Ararat valley, in the foothills of Shirak, Aragatsotn, Vayots Dzor and Syunik regions.

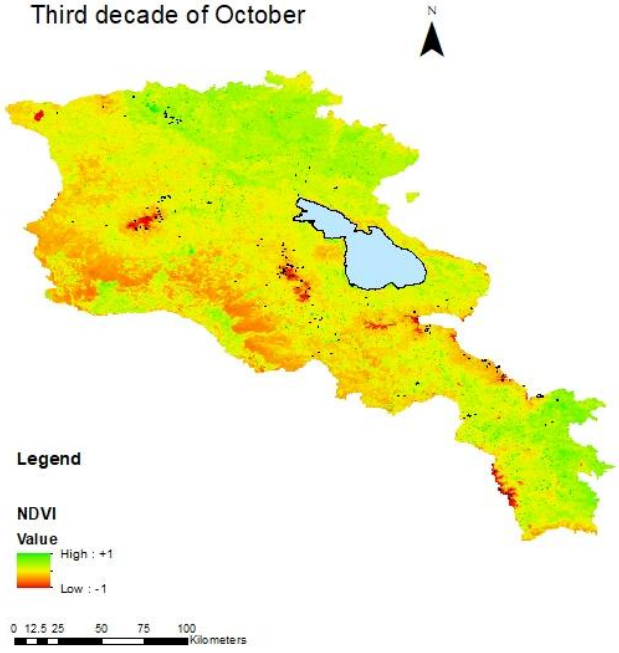
Fisrt decade of October



Second decade of October



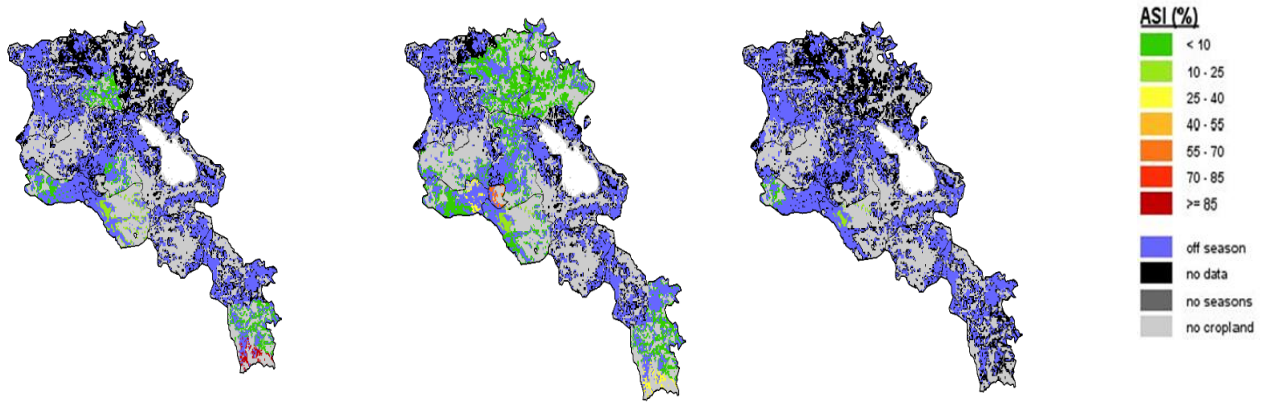
Third decade of October



3.3 Agricultural Stress Index (ASI)

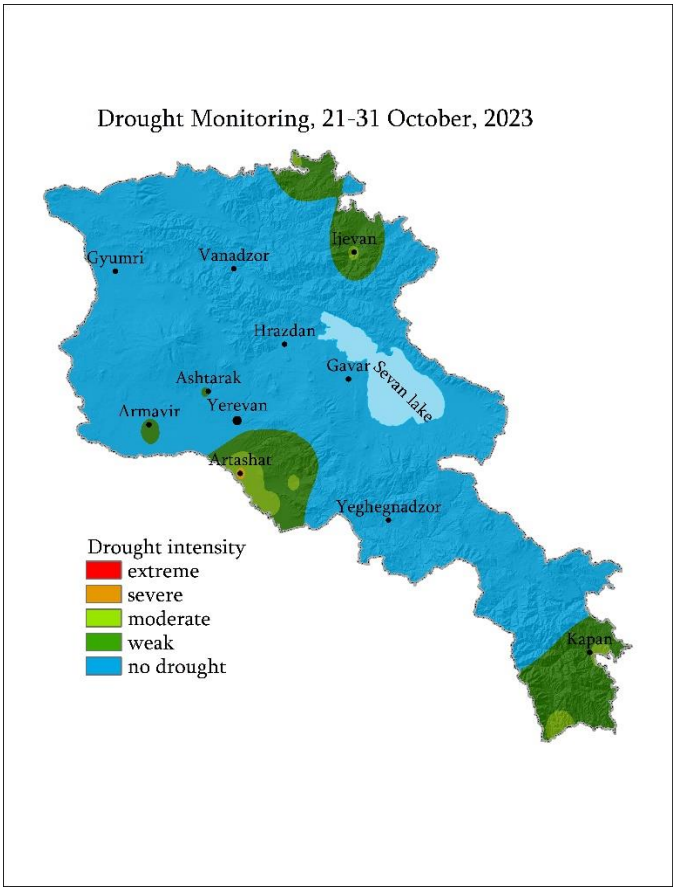
The Agricultural Stress Index (ASI) indicates the impact of agricultural drought. ASI integrates the temporal and spatial image of the Vegetation Health Index (VHI). ASI estimates the intensity and duration of dry spells during the growing season of agricultural crops. Areas with VHI values below 35 percent are critical to assessing the intensity of drought. As can be seen from the data of October, there was no agricultural drought in the territory of the republic Armenia . During October in all regions of the republic, vegetable and fruit crops were harvested. The observed weather condition in October were favorable for the growth and development of cereal crops.

1st decade 2nd decade 3rd decade



3.4 Assessment of meteorological drought intensity

Drought intensity was evaluated by Selyaninov's hydrothermal coefficient according to the data of 38 meteorological stations. As can be seen from the map for the last 10 days of October, there was no drought in the territory of the republic Armenia, except for some parts of the Ararat valley, Tavush and Vayots Dzor valley regions, where weak and moderate drought was recorded.



In summary, analyzing the observed temperature and precipitation anomalies, as well as the values of the drought indices and vegetation conditions, we can conclude that, in October, the drought conditions affected mostly the Ararat valley and the valley regions in Syunik, Tavush and Vayots dzor.