United States Department of Agriculture

Foreign Agricultural Service

May 1, 2018

# Commodity Intelligence Report

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**Drought Across Syria and Northern Iraq Impacts Winter Grains**

The Syrian winter grains crop for 2018 experienced a serious drought which extended across the border into the northern Iraqi province of Ninawa. Drought hit this food insecure region during the prime growing months from January through April. Harvest begins in mid-to-late May and the probability of any benefit from additional precipitation is very low.

Winter grains in these areas are typically planted from October into early December. The main wheat growing region extends across the northern part of Syria and into Iraq, and can receive as much as 300 to 600 mm of precipitation during the growing season. Agricultural lands in Syria and Iraq are shown in **Figure 1** with the bread basket provinces for Syria highlighted in red and the important winter grains province of Ninawa, Iraq, highlighted in yellow.

Precipitation for the 2018 crop was favorable for parts of the western growing region in Syria and across Iraq from the northeast extending south through the center of the other Iraqi winter grains provinces (**Fig. 2**). In Iraq, however, the western half of Ninawa was impacted by drought and in Syria, nearly all of the winter grains area experienced a severe drought. Cumulative precipitation is shown in **Figure 3**. Early season rainfall levels were barely enough at the start of the season to provide for emergence. Several small rainfall events occurred during the prime growing season, but none of these were sufficient. Cumulative rainfall was less than 150 mm which is well below normal.

The satellite derived vegetation index (NDVI - Normalized Difference Vegetation Index) map, shows below normal conditions for all of Syria and a large portion of Ninawa, Iraq (**Fig. 4**). For Al Hasakah, Syria, the NDVI values reflect an uptick from rainfall that occurred in the middle of February (**Fig. 5**). Overall, the NDVI values for Al Hasakah indicate a significantly below average crop with an early decline into maturation and senescence. The NDVI observations for the winter grains crop in Ninawa were also found to be well below average with an apparent flat growth peak that suggests a wide window of planting dates. Field activity, possibly planting, was observed in early December using high resolution satellite imagery for this area of Iraq (**Fig. 6**). December field activity is later than expected for this region. While the NDVI charts indicate a strong, negative impact from the dry weather, this year's drought is not as severe as the drought observed in 2007-2008. Although it has been drier than normal, temperatures for the 2018 growing season were found to be slightly warmer than last year (**Fig. 7**).

NASA's MODIS satellite imagery (Moderate Resolution Imaging Spectroradiometer) for the entire bread basket region of Syria and Iraq is shown in **Figure 8**. A comparison of the mid-April 2018 image to the same time period in 2016 shows a dramatic difference in the presence of winter vegetation. Higher

resolution imagery in Al Hasakah, Syria, along the northern border with Turkey further confirmed the lack of winter grains as compared to the 2017 crop (**Fig. 9**). Much of this region depends on irrigation so a lack of equipment and fuel due to the on-going conflict is expected to be a contributing factor rather than lack of water. A check of the surface water level for the Euphrates River indicated lower than normal conditions, but with enough flow to provide for irrigation. In Iraq, Lake Qadisiyah serves as an indirect measure of Euphrates River volume. Recent satellite imagery indicated the lake has less water than last year (**Fig. 10**).

Syria and Iraq are food insecure nations that depend on imports of winter grains to meet domestic consumption demands. This year's drought is a cause for concern. Syria's winter grain production will be dramatically impacted as well as Iraq's, to a lesser extent. Iraq has wheat producing areas near the border with Iran that were not affected by this year's drought. Because the crop has peaked and started to mature, however, any additional rainfall would not be expected to help alleviate the impact of this drought on yield. The first USDA out year (2018/19) forecasts will be released on May 10th as part of the World Agricultural Supply and Demand Estimates report.

For additional information contact William Baker | william.baker@fas.usda.gov .

Current area and production estimates for grains and other agricultural commodities are available on IPAD's Agricultural Production page:
Crop Explorer https://ipad.fas.usda.gov/cropexplorer/ or

Production, Supply and Distribution Database (PSD Online):
http://apps.fas.usda.gov/psdonline/psdHome.aspx

U. S. Department of Agriculture
Foreign Agricultural Service
Office of Global Analysis
International Production Assessment Division Ag Box 1051, Room 4630, South Building
Washington, DC 20250-1051
Telephone: (202) 720-1662 Fax: (202) 720-1158

Figure 1. General agricultural land cover map.

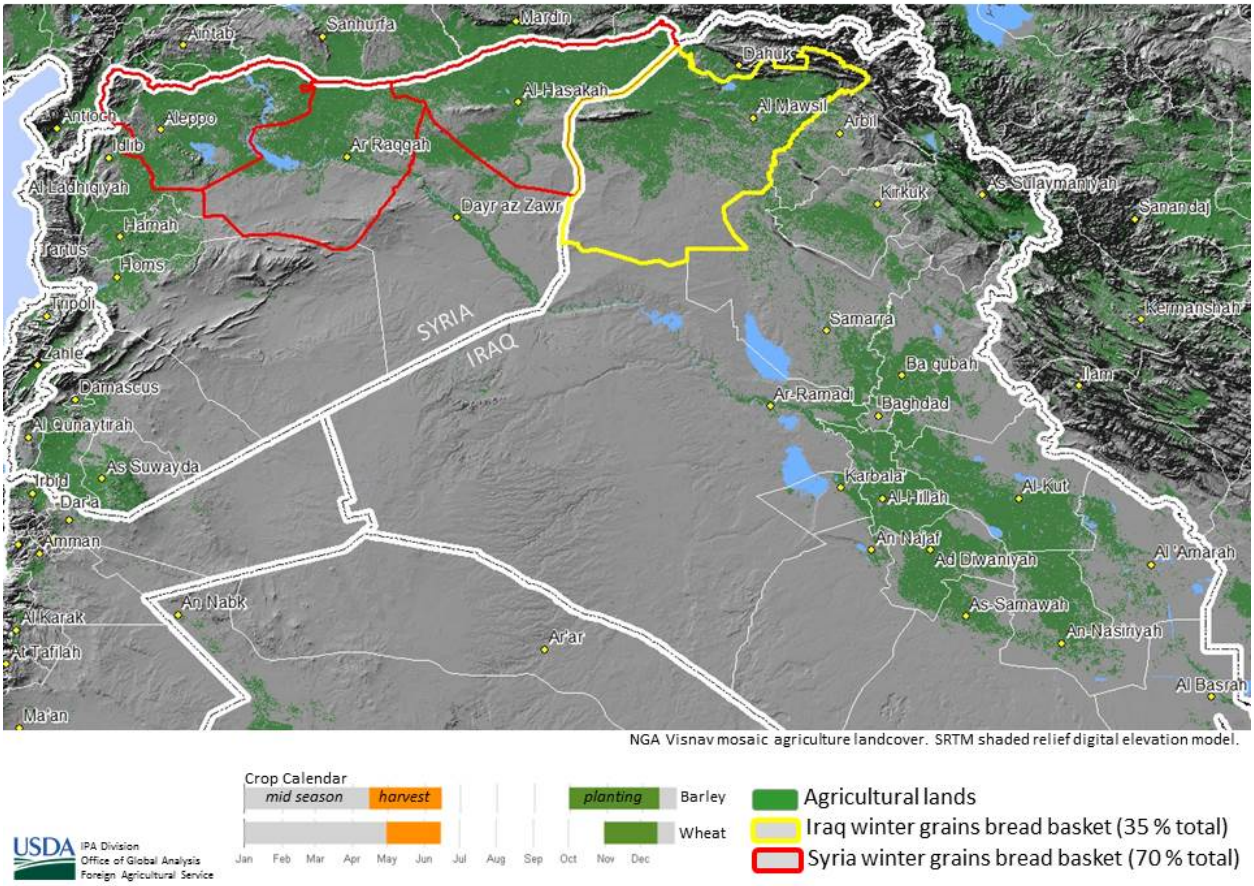
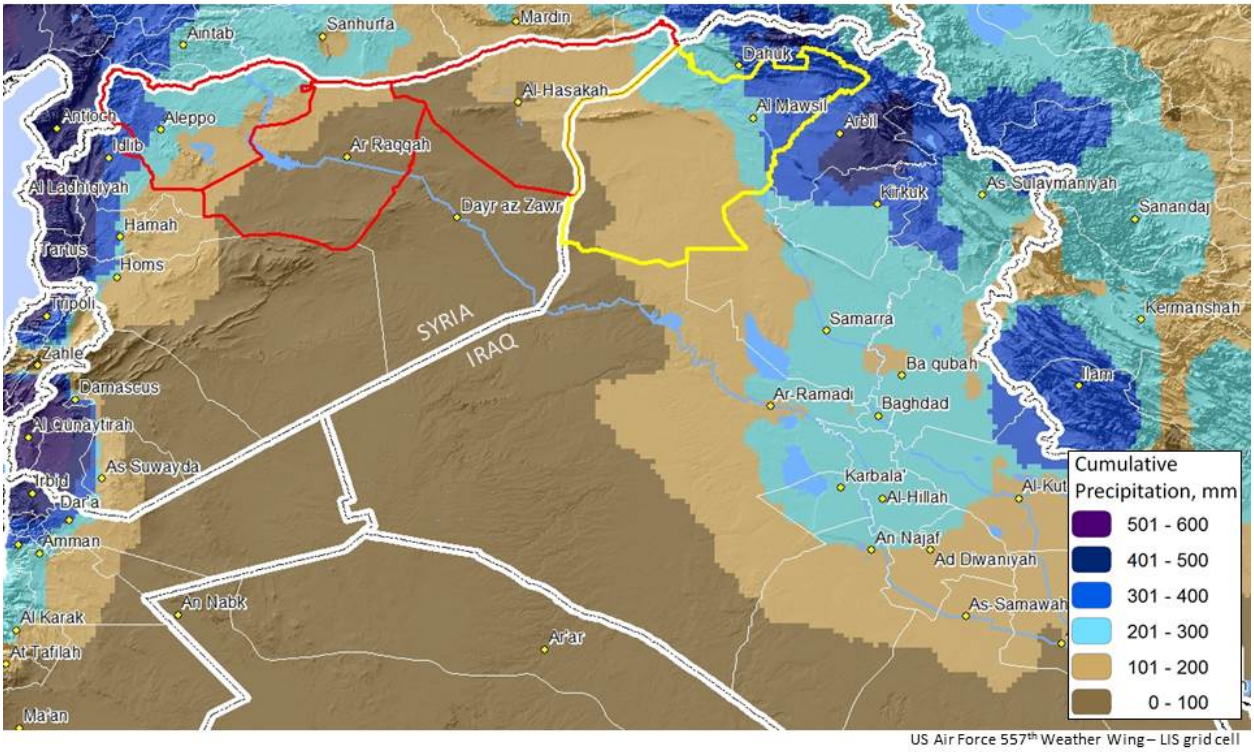


Figure 2. Cumulative precipitation map from 01NOV17 to 31MAR18.




US Air Force 557th Weather Wing – LIS grid cell

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Syria winter grains bread basket (70 % total)
Iraq winter grains bread basket (35 % total)

Figure 3. Cumulative precipitation from 01NOV17 to 15APR18 over northern Syria and Iraq.

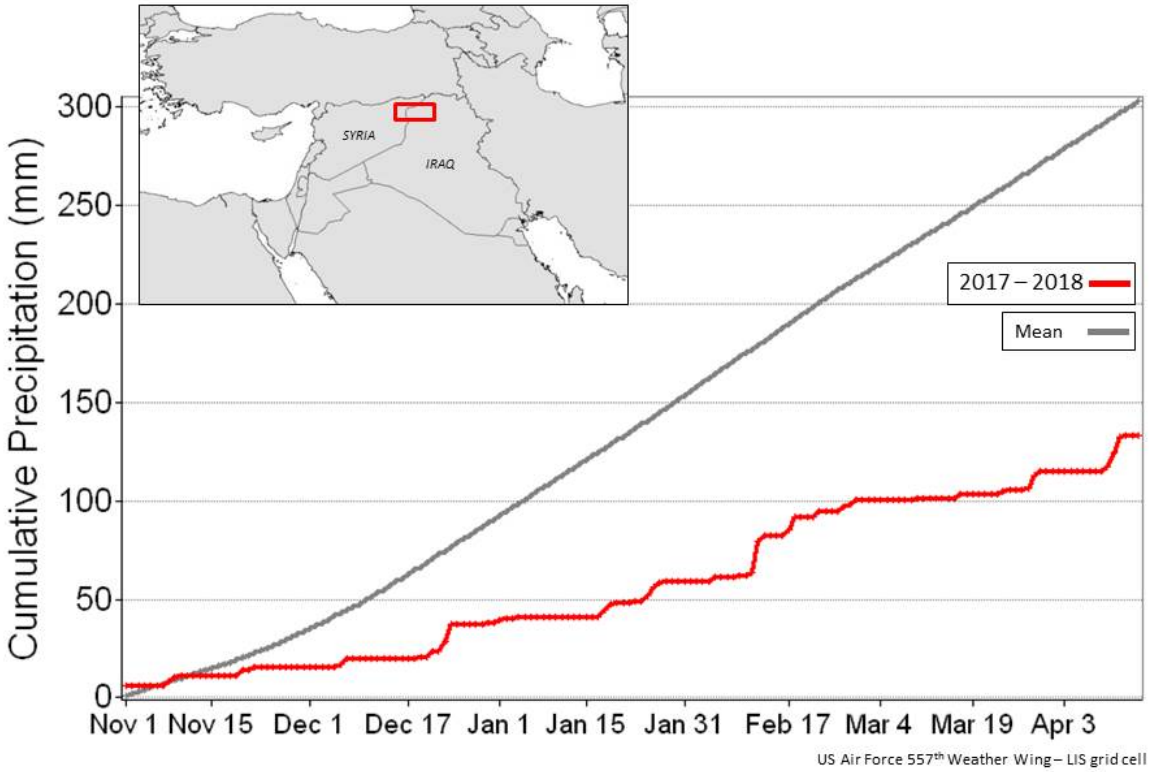


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Figure 4. Vegetation anomaly map for 30MAR18 to 06APR18.

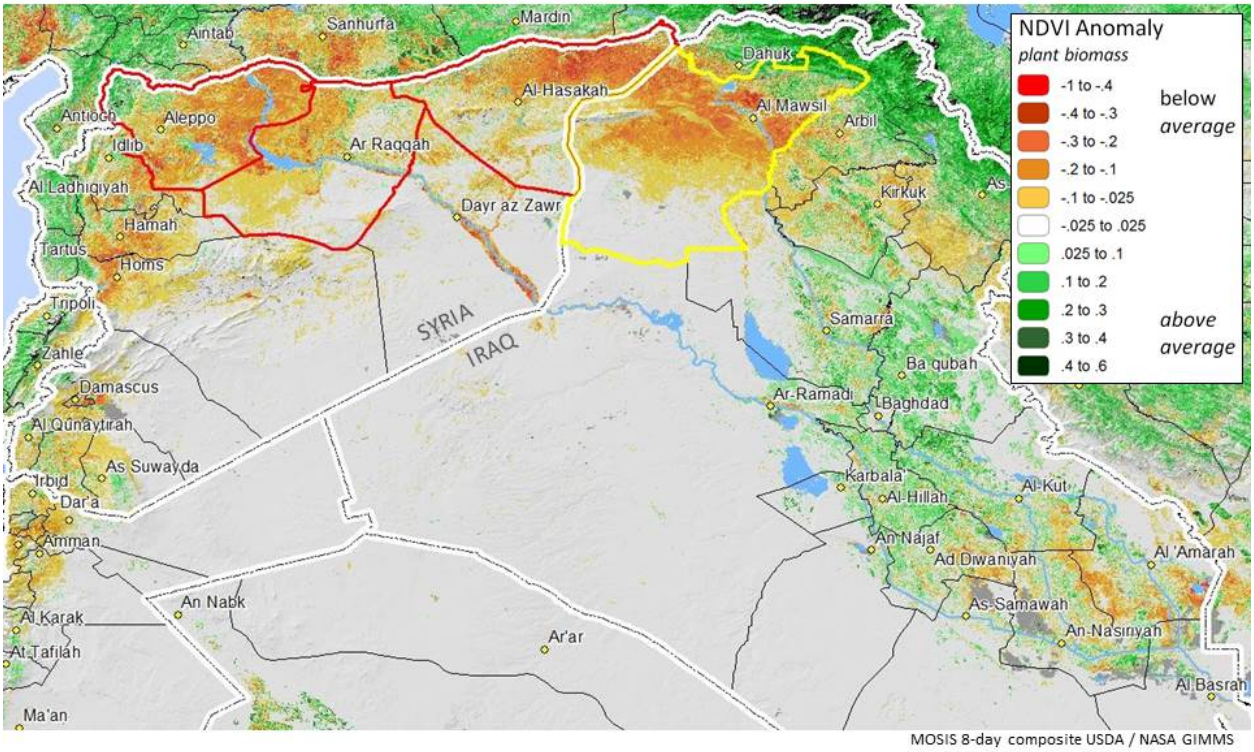

Figure. 5. Winter grains vegetation indices for Al Hasakah, Syria and Ninawa, Iraq.

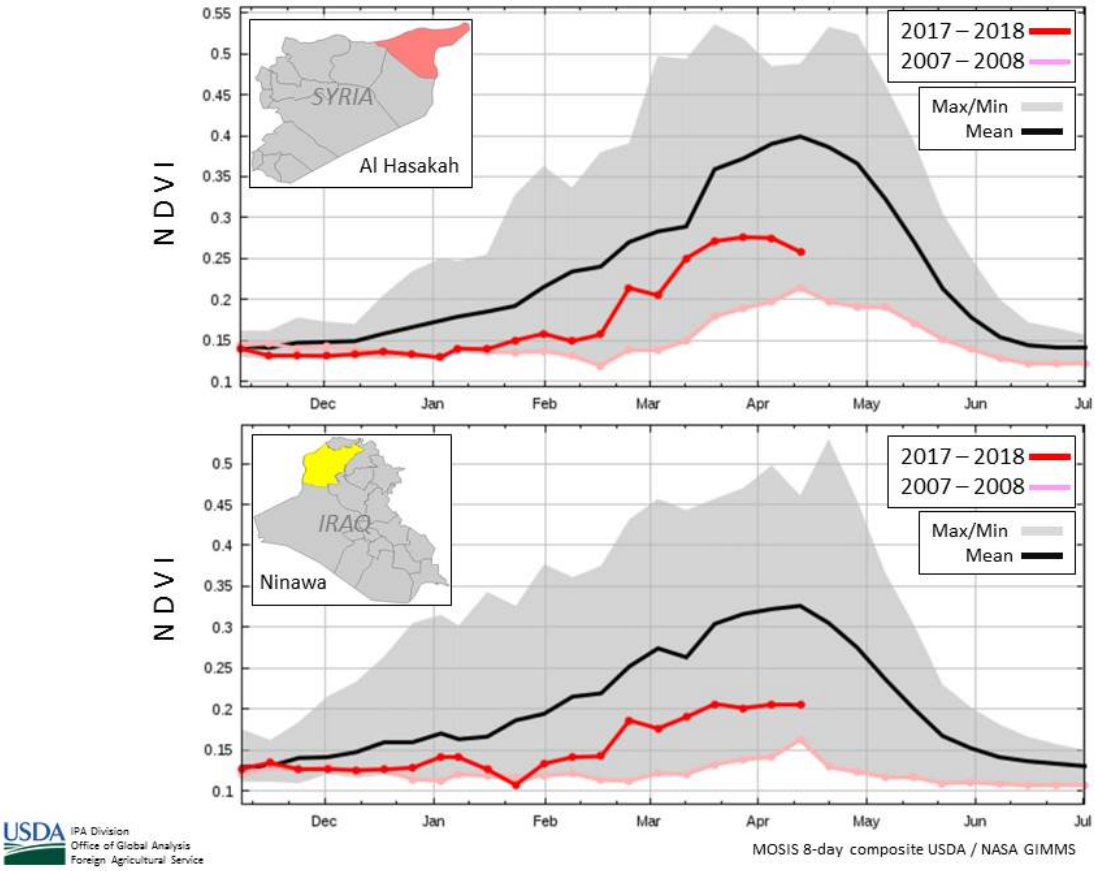

Figure 6. Field preparation near Erbil, Iraq (02DEC2017).


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DigitalGlobe EV Viewer WorldView-3 satellite

Figure 7. Comparison of maximum temperature departure for March 2018 to 2017.

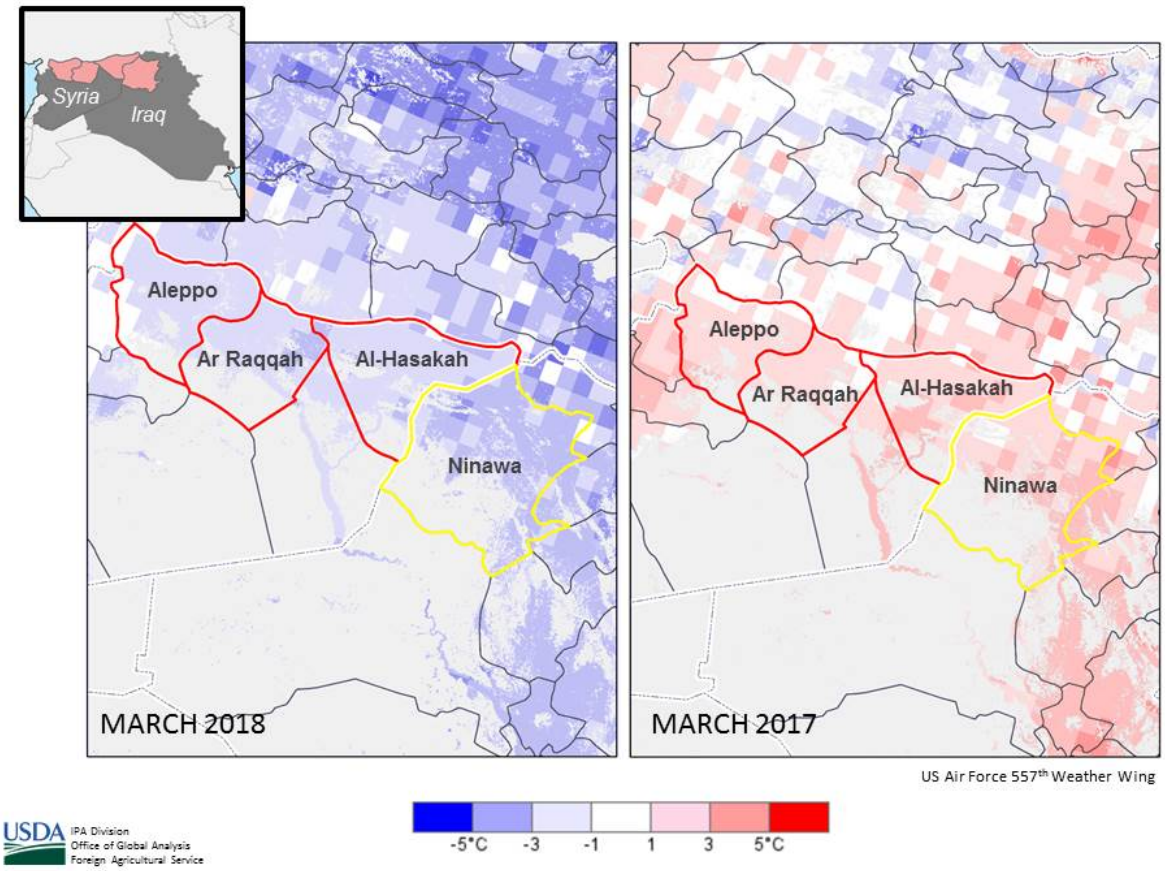
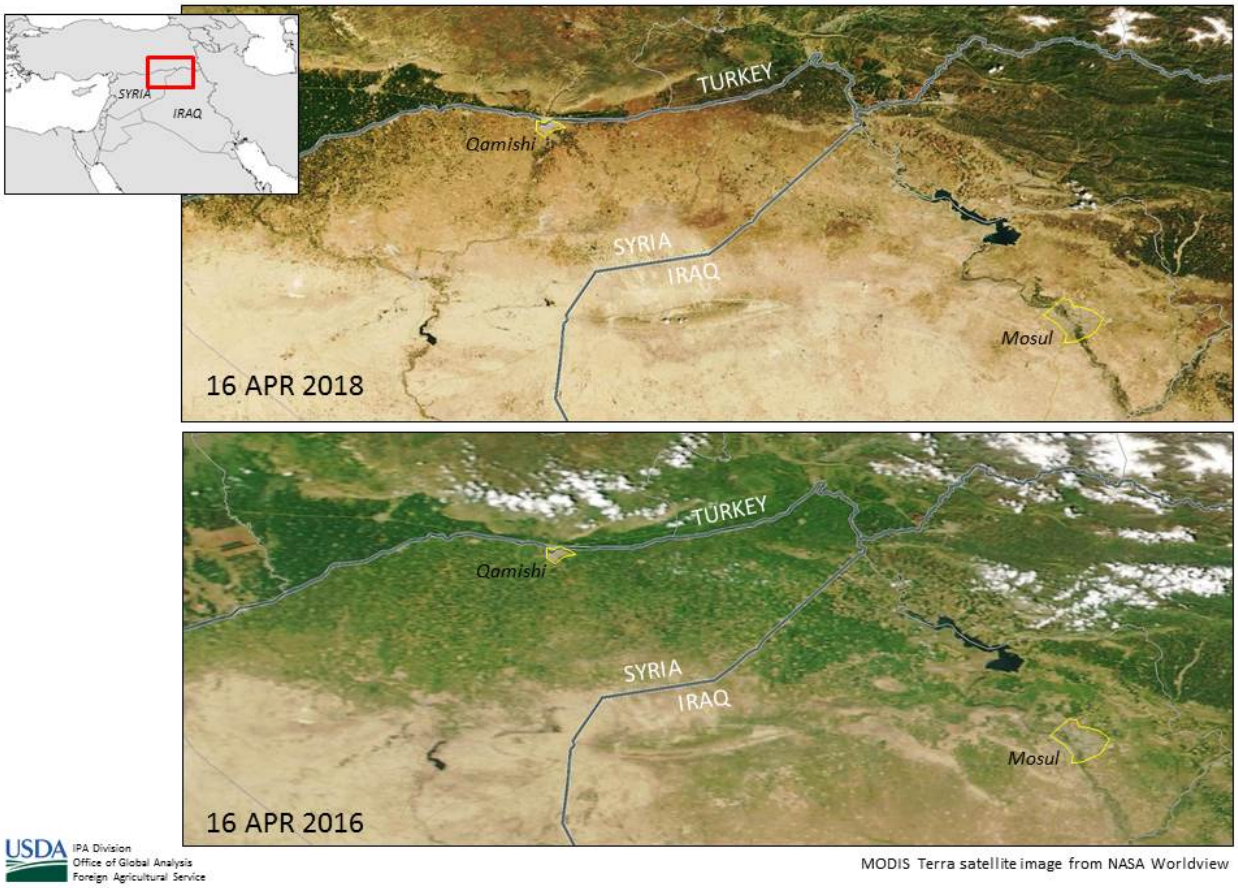


Figure 8. Comparison of winter grains crops in April 2018 to April 2016.

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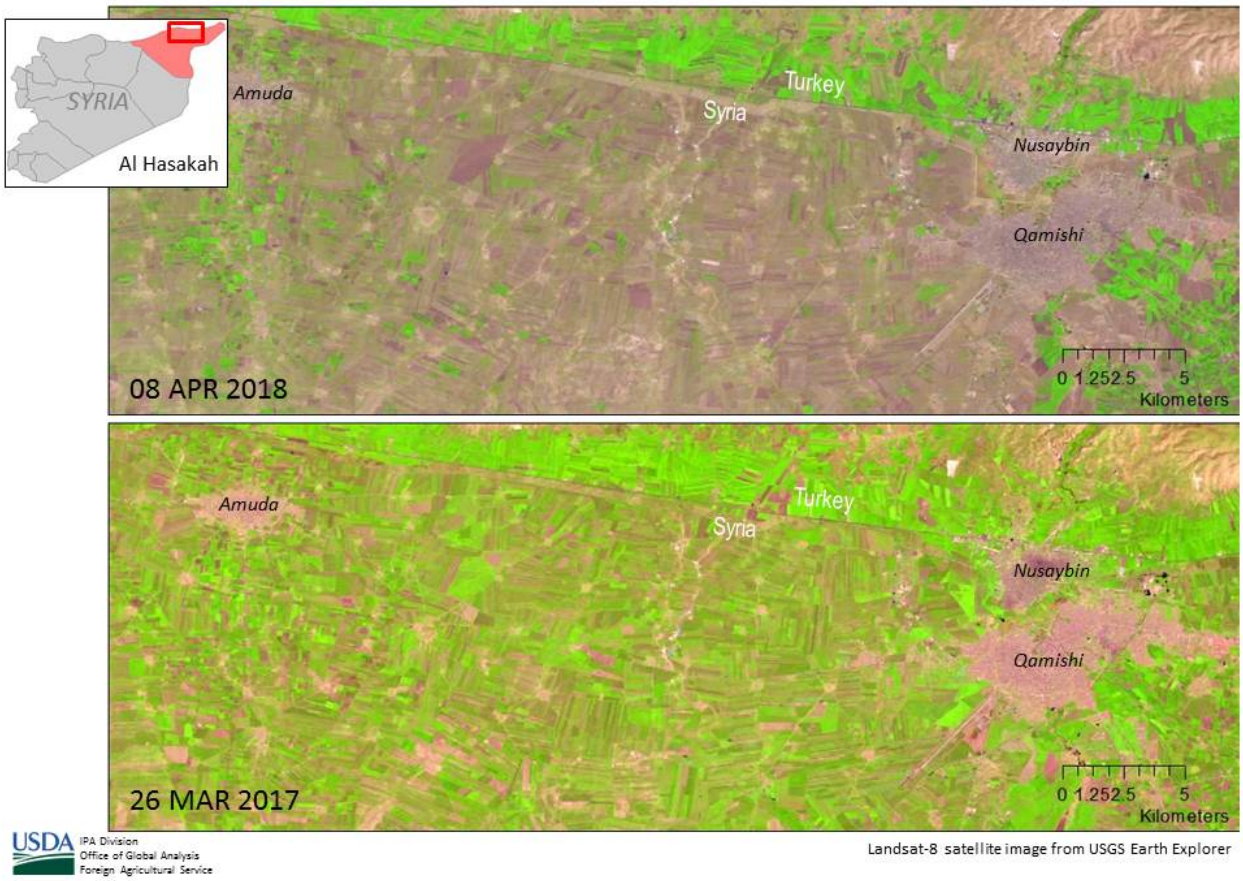
MODIS Terra satellite image from NASA Worldview

Figure 9. Satellite image comparison of 2018 and 2017 northern border in Al Hasakah, Syria.

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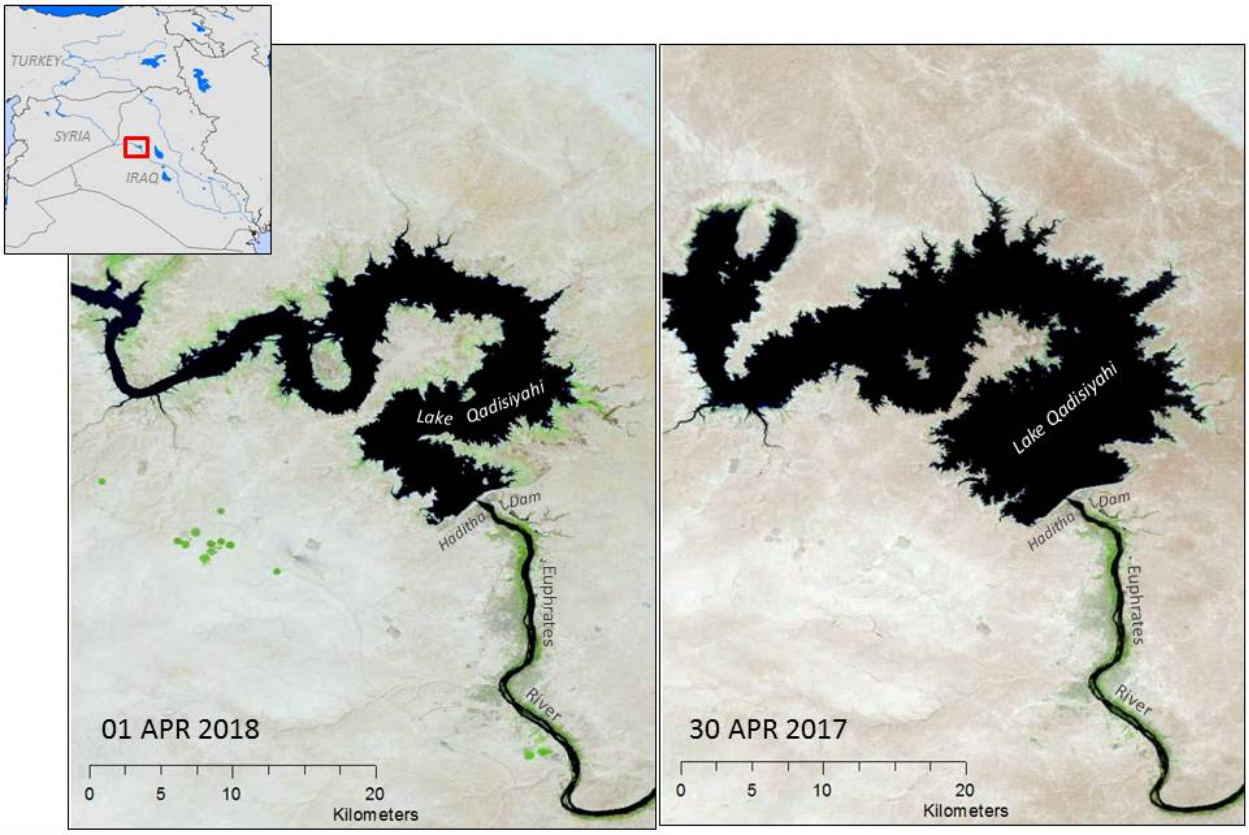
Landsat-8 satellite image from USGS Earth Explorer

Figure 10. Satellite image comparison of 2018 and 2017 Lake Qadisiyah water levels.

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Landsat-8 satellite image from USGS Earth Explorer