

Key Points:

- Drought conditions have subsided across most of the Northeast (NE) region (as anticipated, see previous newsletter).
- Future conditions (July-August-September; JAS) will likely remain moist or above average, but marginal regions experiencing dry conditions (D0) might appear.
- CICCS and ECRL have launched a new drought visualization tool: <http://climatesmartfarming.org/tools/csf-nys-ne-drought-atlas/>
- Can't completely rule out the possibility of drought in late summer, despite considerable improvements over last year's conditions.

Drought conditions have subsided

As of the first week in July, drought conditions are no longer widespread in the Northeast (**Fig. 1**). The US drought monitor reported zero population under drought conditions for the NE (**Fig. 2**), a significant reduction since March (200,336 people under drought). At the Cornell Institute for Climate Smart Solutions – Emergent Climatic Risk Lab (CICSS-ECRL), our 4km Palmer Drought Severity Index (PDSI) product (**Fig. 1**) tracks this drought recovery with the majority of the region dominated by PDSI values greater than 2 (Moderate Wet). This 4km-PDSI product is updated each month and now accessible at: <http://climatesmartfarming.org/tools/csf-nys-ne-drought-atlas/>.

Above normal temperature (~2 F) and positive anomaly precipitation (~1 inch) were observed in the NE for April-May-June (AMJ) season, and the month of May was the wettest one on record. These conditions alleviated the remaining drought in the eastern NE region. Improvements in drought conditions were likewise seen in the spring in the Southern US, which saw increases in soil moisture anomalies along with most of the eastern US [1].

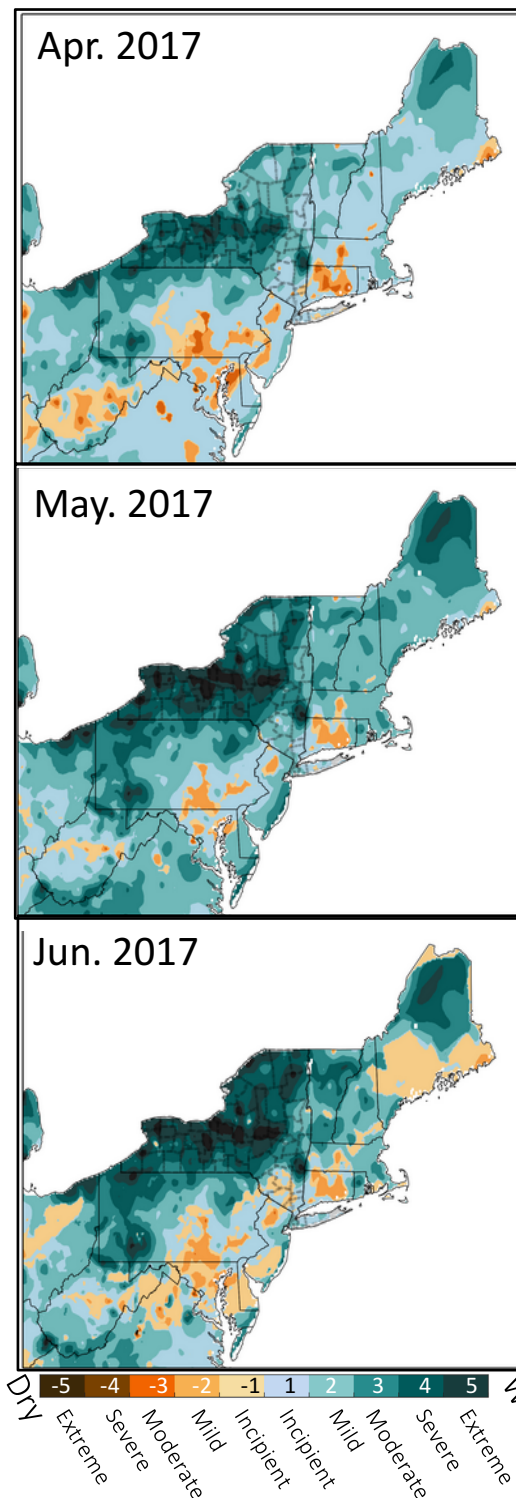
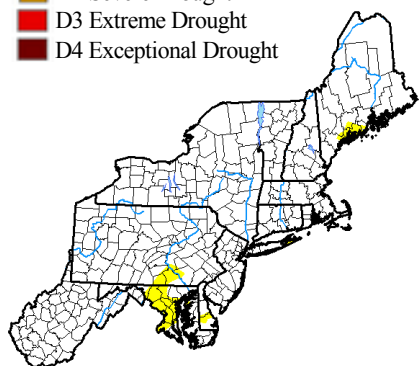


Figure 1. NYS/NE Drought atlas maps from the second quarter of 2017.

Drought Monitor

Intensity

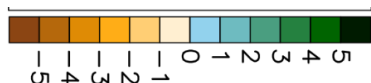
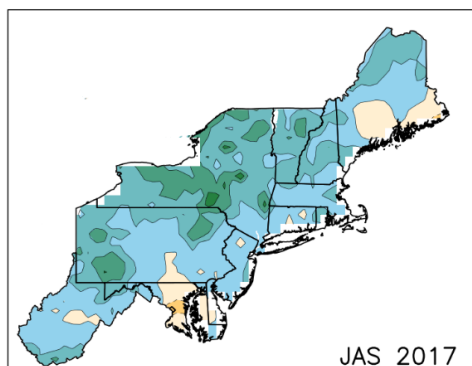
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought



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Figure 2. US Drought monitor map for the Northeast (<http://droughtmonitor.unl.edu/>).

NYS/NE Forecast



Valid for March 16 - June 30, 2017
Released March 16, 2017

Figure 3. Seasonal drought forecast from the ECRL-CICCS NYS/NE Drought Atlas.

For the previous season (AMJ), the Climate Prediction Center (CPC) issued a wet anomaly in the northern Great Plains (Montana, North and South Dakota) and below normal in eastern U.S. (Kentucky and Tennessee). However observations show the opposite: dry in the northern Great Plains and wet in the eastern U.S. Therefore, at continental scale the drought seasonal outlook did not forecast the current severe (D2) and extreme (D3) drought in the northern Great Plains. However, it did estimate well in the current drought in Southern Arizona and the drought recovery in the NE.

For the rest of the summer (JAS), our PDSI-based forecasts suggest conditions should be neutral to wet across the the NE (Fig. 3). This forecast forecast is consistent with the NOAA CPC Seasonal Outlook (<http://go.usa.gov/3eZ73>). However, above normal conditions for temperature are expected with 50% of probability that might promote abnormally dry (D0) conditions in limited regions.

Note that the PDSI forecasts shown here (Fig. 3) are **experimental (beta) products**. This PDSI seasonal forecast confirm the absence of drought for the JAS season in the NE region with anomalous positive water balance. The 32-km PDSI forecast is based on multiple models from the North American Multi-Model Ensemble experiment [2], some of which do predict drought conditions. Hence we cannot completely rule out the possibility of late-summer drought.

References cited:

- [1] http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#
- [2] <http://www.cpc.ncep.noaa.gov/products/NMME/data.html>

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