# Developing drought triggers and indicators using the National Water Model: A case study to improve the U.S. Drought Monitor in support of the Northeast DEWS

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## **Objectives**

- Validate historical NWM simulations based on soil moisture observations from the NYS Mesonet (and other networks) and USGS streamflow data
- Evaluate whether changes in ground water storage can be inferred from NWM streamflow predictions;
- Conduct a NWM reforecast experiment focused on the 2016 drought;
- Develop a suite of NWM drought trigger and indicator products including DM blends;
- Engage DM authors to assess differences in drought depictions based on our newly developed products; and
- Integrate NYS Mesonet- and NWM-based indicators into the NE DEWS Dashboard.









NWM Current Streamflow (wrt/ 1993-2018)

NWM Soil Moisture, 10-40cm, (wrt/ 1993-2018)



## Critical Success Index: Hits below 30<sup>th</sup> (D0-D4) and 10<sup>th</sup> (D2-D4) percentiles

		Drought Observed	Drought not Observed	Total Drought Predicted	
NWM	Drought Predicted	Hits	False Alarms	Predicted Drought	$CSI = \frac{Hits}{Hits + Misses + False Alarms}$
	Drought not Predicted	Misses	Correct no Prediction	Predicted no Drought	
	Total Droughts Observed	Observed Drought	Observed no Drought	Total	

#### Observations

CSI at 30th percentile of Streamflow in NE



CSI at 10th percentile of Streamflow in NE



#### **Results:**

+ bias NWM>obs; good correlation

CSI better at higher drought threshold (30<sup>th</sup> vs. 10<sup>th</sup> percentiles)

- Rate of drought prediction varies
- widely across Northeast





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## **USDM** Author Case Study Assessments

Author: SDSDD	LOGOUT	
Analysis for: Cas	e C CHANGE	

Recording your analysis for Case C :

1) Pan and zoom to the map area you would like to edit.

2) Turn 'Edit Mode' to ON and select a drought category you would like to assign to the map.
3) Hold your mouse button down while dragging the cursor to assign the selected category to the map.
4) Turn 'Edit Mode' back OFF to pan/zoom to a new area, repeating the steps until complete.
5) Click Save to finish your analysis later, or click Submit if you have completed this case.



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