

Key Takeaways from the March 2022 SE DEWS Technical Workshop Series

Flash Drought and Soil Moisture

Overview | Meredith Muth, NIDIS

NATIONAL

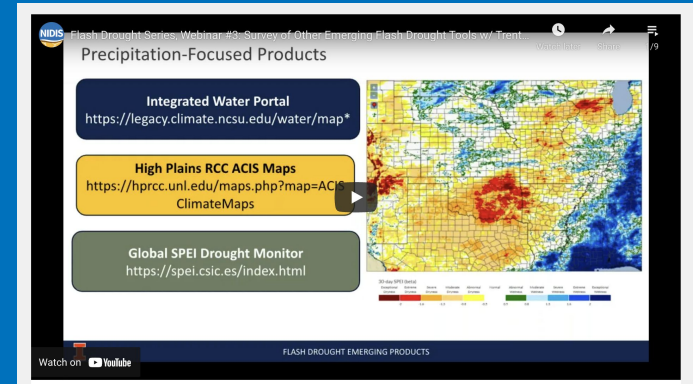
Want to learn more about Flash Drought? Visit [drought.gov](https://www.drought.gov)

<https://www.drought.gov/what-is-drought/flash-drought>

3-part webinar series on Flash Drought (recordings)

- State of the Science
- Current Understanding and Future Priorities
- Emerging tools for FD Monitoring and Prediction

Flash Drought Literature Review, 2021 JASC



Making sense of flash drought:
definitions, indicators, and where
we go from here

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3. University of Southern Queensland, Toowoomba, QLD, Australia

NATIONAL

Want to learn more about Soil Moisture? Visit drought.gov

<https://www.drought.gov/topics/soil-moisture>

Current Soil Moisture Conditions

[0-100 cm Soil Moisture Percentile](#) [20 cm Soil Moisture Percentile](#)

NASA's Short-term Prediction and Transition Center – Land Information System (SPoRT-LIS) provides high-resolution (about 3-km) gridded soil moisture products in real-time to support regional and local modeling and improve situational awareness. The 0-100 cm soil moisture percentile data has shown to be a utility for drought monitoring. The near-surface (0-10 cm) layer responds quickly to heavy precipitation and rapidly drying events. In deeper layers, soil moisture evolves more slowly and has demonstrated greater utility overall for drought monitoring purposes since drought evolves typically on timescales of weeks to years. [Learn more.](#)

0-100 cm Soil Moisture Percentile

0 2 5 10 20 30 70
70 80 90 95 98 100

Map and legend colors may be altered when using dark or high-contrast mode.

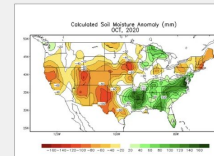
***Currently, data are only available for the contiguous U.S.**
Source(s): NASA

Updates Daily - 08/04/22

[Learn more about these data.](#)

Data and Map Gallery

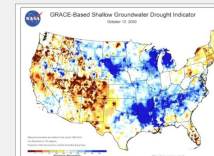
Soil moisture data, maps, and tools vary by the source of their input data (e.g., *in situ* sensors, satellites, numerical models, or a blend of any of these), the depths they represent, and the metrics they display (e.g., volumetric water content, mm, changes and anomalies, daily ranking percentages). This supports a range of different end user applications.



CPC Soil Moisture

Soil moisture conditions at the daily and monthly scales depicting total soil moisture, percentiles and anomalies, as well as monthly and seasonal change.

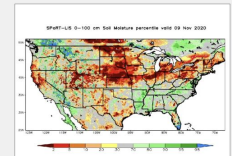
🕒 2008 - Present 📄 images, shapefile



Groundwater and Soil Moisture Conditions from GRACE Data

Groundwater and soil moisture drought indicators based on terrestrial water storage observations derived from GRACE satellite data and integrated with other

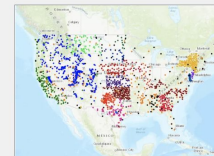
🕒 2003 - Present 📄 images, pdf, xml, other



NASA SPoRT-LIS Soil Moisture Products

NASA's Short-term Prediction and Transition Center – Land Information System (SPoRT-LIS) provides high-resolution (about 3-km) gridded soil

🕒 Current Conditions 📄 images, geotiff, other



NationalSoilMoisture.com

The research-based website NationalSoilMoisture.com provides high-resolution gridded soil moisture products derived from *in situ* soil moisture

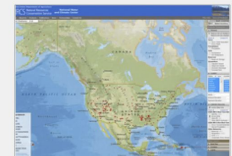
🕒 January 2018 - present 📄 csv, geotiff



U.S. Climate Reference Network (USCRN): Quality-Controlled Daily

The U.S. Climate Reference Network (USCRN) is a NOAA network of climate monitoring stations with sites across the continental U.S., Alaska, and Hawaii.

🕒 2006 - Present 📄 images, text (ascii), csv



Soil Climate Analysis Network (SCAN)

The Soil Climate Analysis Network (SCAN) provides soil and climate data to support natural resource assessments and conservation activities, focusing on

🕒 1991 - Present 📄 csv, other

- **Southeast DEWS - 2022 Technical Workshop Series**
March 1 – 2, 2022
-

Flash Drought

- Kyle Lesinger, Auburn University

Soil Moisture

- Lee Ellenburg, University of Alabama Huntsville

Synergies for Flash Drought + Soil Moisture

Participants - SE DEWS 2022 Technical Workshop Series

State and Municipal Partners

- State Climate Office of North Carolina
- South Carolina State Climatology Office
- NC Forest Service
- NC Division of Water Resources
- Florida Climate Center
- Georgia EPD
- Tennessee Climate Office
- Atlanta Regional Commission
- Miami Dade Water & Sewer Dept.
- Florida Division of Emergency Management
- Fayette County Water System

Federal Partners

- NWS Weather Forecast Offices (GA, AL, VA)
- NWS Regional Offices
- NWS Climate Prediction Center
- NWS Southeast River Forecast Center
- NOAA NIDIS

Research and Academic Partners

- National Drought Mitigation Center
- University of Alabama
- University of Georgia
- University of South Carolina
- University of Florida
- North Carolina State University
- Auburn University
- Carolinas Integrated Sciences and Assessments
- Cooperative Institute for Satellite Earth System Studies (CISS)
- Albany State University - GA Water Policy Center
- GSFC/SSAI
- Georgia Agricultural Extension
- Southwest Research Institute
- Texas A&M University
- University of South Alabama/ South Alabama Mesonet
- NEON/Battelle

Specific workshop input was captured on 'Jam Boards'

What rate of intensification is "flash drought" in the Southeast?

For example: 2 category degradation on USDM in 4 weeks

Or, click 4th button down on left panel. ←

Effective Rain (in)	Water Deficit (in)	Water Deficit (%)
0	1.88	60
0	2.1245	68
0	2.3639	76
0	2.5690	82
0	2.7991	90
0	3.0329	97
0	3.12	100
0	3.12	100
0	3.12	100
0.0088	3.12	100
0	3.12	100
0	3.12	100
0	3.12	100
0	3.12	100
0.4412	3.12	100
0.315	2.8115	90
0	2.7101	87
0.2431	2.8981	93
1.5212	2.8209	90
0.5488	1.4678	47

Continuous degradation can span a long period except there is an multi-fields intervention

It seems the rate of intensification can be rapid (perhaps scales of perhaps a week), because of poor water-retention soils (in some areas), high vegetation coverage, and hot warm season temperatures. Although, high

USDM categories

Precipitation deficiency is one of the important factors for flash drought.

USDM can tend to lag in assigning drought categories, after negative impacts are already occurring on vegetation.

I like the example at the top! Or when conditions worsen 2 out of 3 weeks.

In the past I've used 3 levels of degradation in the past 5 weeks; however, this was arbitrarily chosen, such that a maximum of 5 levels (None to D4) was possible.

Monitor now, rather than wait for a few weeks (USDM changes)

Units of degradation are important as well

Impact

If no impacts, not a FD

Wasn't the 2007 drought the most severe in SEUS in terms of rainfall deficits?

Flash drought seems to be mainly agricultural drought, since other sectors respond more slowly but plants need water regularly.

Tie to crop calendars, specific impacts

Seasonality

I like the example definition. Should season/time of year be a factor?

Soil Moisture

Image: Geoplin, accumulation of withholding water from corn. Tasting is everything.

Winter FD? Impacts are fewer

Would this rate be different, depending on the time of year the intensification happens in the Southeast?

Flash drought could appear in as little as a week if temps and evaporation are high at a critical period of crop growth

Soil type will go hand in hand with the rate at which soil moisture is being lost

SM may be better than evaporative demand for SE

Rapid decrease in root-zone soil moisture in 3 weeks or less.

When soil moisture levels decrease to the point that water stress is induced in crops and this is sustained for more than a week.

Combined anomalous degradation in soil moisture + vegetation stress.

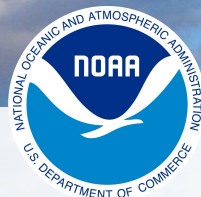
Soil moisture drying faster than typical climatological rate (think high relative rate of SM drydown) for the season under high atmospheric moisture demand.

It is hard, at times, based upon the seasonality of when FD is taking place, to identify constraints or guidance. What happens in July for example would be quite different from what would be happening in October.

Seasonality is key in Florida...Late onset of the summer rainy season for the peninsula. Dry spells in late July/August in North Florida and Tri-state area when row crop/pasture water demand is highest.

Season dependent. Short term in during the growing season, and specifically tied to crop calendars

All 'Jam Boards' which can be accessed from the supplemental resources document



Soil Moisture

Lee Ellenburg, University of Alabama in Huntsville

Objectives of SE DEWS Soil Moisture workshop

1. Share progress in **expanding state and regional networks**
2. Identify **near-term opportunities** to capitalize on current soil moisture data & research for regional early warning / FD
3. Identify additional regional soil moisture **research priorities**

Soil Moisture: Future SE DEWS Opportunities

**Updates were
provided on
current regional
soil moisture
activities**

- National Coordinated Soil Moisture Monitoring Network
- Southeast Buildout (AL, GA, FL)
- NC Econet
- S Alabama Mesonet
- USCRN
- SCAN
- NEON

SOUTHEASTERN U.S. SOIL MOISTURE NETWORK BUILD-OUT AND RESEARCH

Developing new soil moisture technologies and applications for improving assessments and forecasts of water issues in the SE



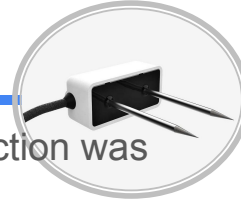
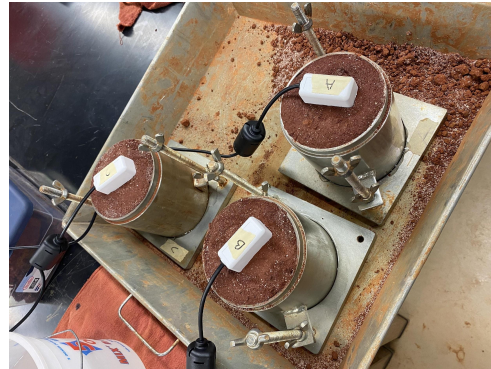
Project Goals and Objectives

The overall goal of this multi-state project is to enhance the soil moisture monitoring network in the Southeast and to improve the application of soil moisture data to decision making in the region. To achieve this goal, the project will address the following objectives:

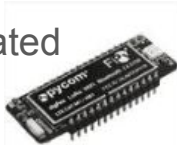
- Assess the viability of low-cost soil moisture sensors via test-bed calibration (AL, GA)
- Expand the regional soil moisture network by installing viable versions of low-cost sensors in the existing networks (AL, FL)
- Perform validation of remote sensing-derived root-zone soil moisture (AL, FL, GA)
- Improve the Cropping Model System and develop additional crop-support tools (AL, GA)
- Ensure accessibility and useability of soil moisture data and products (AL, GA)

SOUTHEASTERN U.S. SOIL MOISTURE NETWORK BUILD-OUT AND RESEARCH

Assess the viability of low-cost soil moisture sensors via test-bed calibration

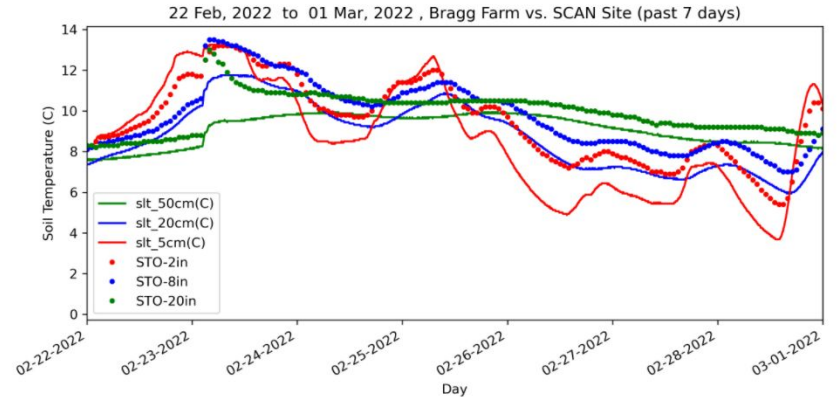
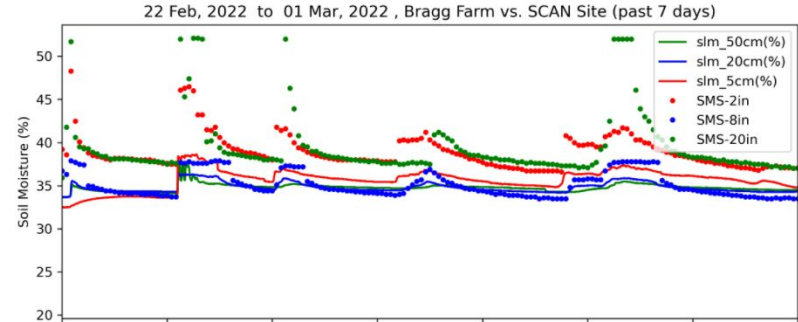
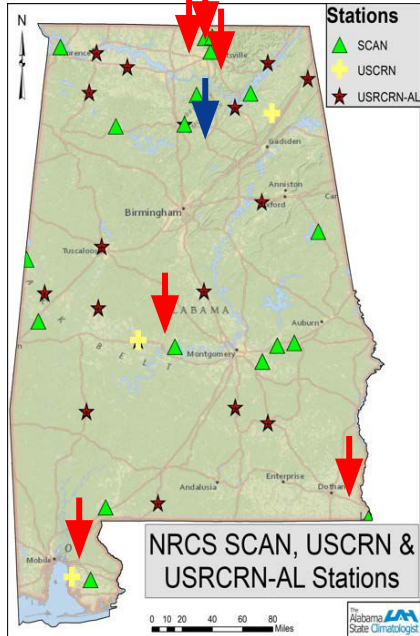


- Soil moisture sensor selection was based on: 1) performance characteristic compared to HydraProbe used at SCAN sites; 2) ease of interface with data logging system; 3) low power consumption and; 4) price
- TERSO10 sensor produced by the METER group, capacitance based measurement
- Data logger utilizes a microcontroller with an integrated cell modem – Fipy



SOUTHEASTERN U.S. SOIL MOISTURE NETWORK BUILD-OUT AND RESEARCH

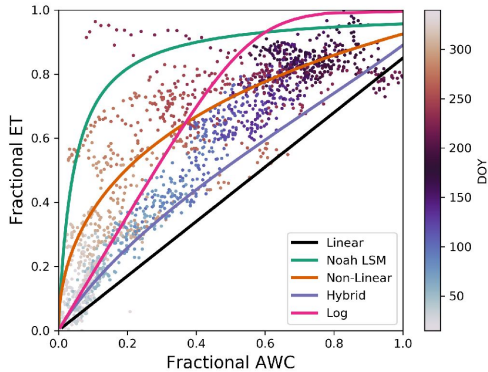
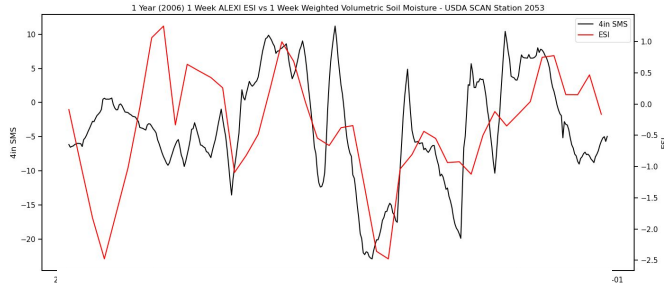
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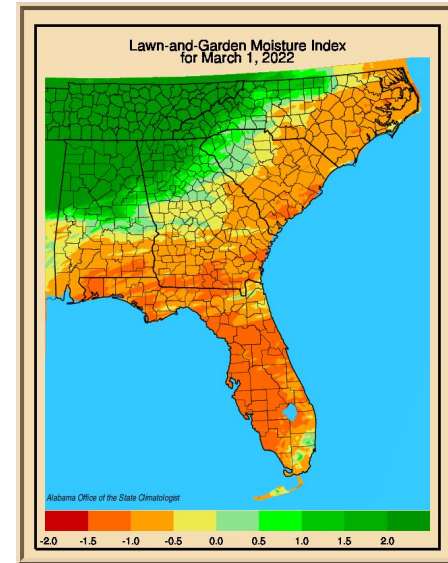
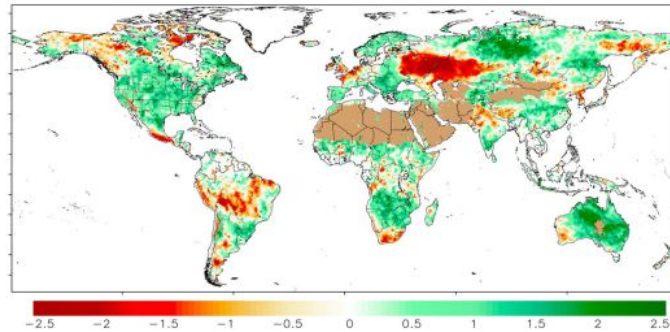
▲ SCAN co-location sites ▼ CRN co-location sites

SOUTHEASTERN U.S. SOIL MOISTURE NETWORK BUILD-OUT AND RESEARCH

Perform validation of remote sensing-derived root-zone soil moisture and drought indices



$$ESI = fRET = \frac{AET}{PET}$$



Seeking opportunities and projects to leverage a planned dense network (~ 40-50 sensors) for validation

**Soil Moisture: Future SE DEWS
Opportunities**

**Capitalizing on
current activities
to improve regional
drought early
warning:**

Networks & Data

NETWORKS:

- **Expand in-situ monitoring**
- **Financial support** to allow data sharing

DATA:

- Identify best practices to **harmonize multiple networks and remotely sensed datasets**
- Make data **GIS-compatible**

Soil Moisture: Future SE DEWS Opportunities

Capitalizing on
current activities
to improve regional
drought early
warning:

Research & User Access

RESEARCH:

- Assess **which existing products "best" reflect** real-time status of drought in the SE
- **Link SE drought impacts to drought indicators** (already done for USDM)

USER ACCESS:

- Develop **online clearing house** (“one-stop shop”)
- **Build connections:** More opportunities for sharing experiences, product demos,

**Soil Moisture: Future SE DEWS
Opportunities**

**Capitalizing on
current NETWORK
activities
to improve regional
drought early
warning**

- **Expand in-situ monitoring:**
 - More coverage
 - Denser networks
 - Consider rapid deployment option
- **Standardize networks:**
 - More validation
 - Develop operator guidelines
 - Uniformity across networks (sensor type, depth, etc.)
- **Data sharing:**

Soil Moisture: Future SE DEWS
Opportunities

Capitalizing on
current **DATA**
activities
to improve regional
drought early
warning

- Identify best practices to **harmonize multiple networks and remotely sensed datasets** to account for differing depths, sensors, and satellite sensing methods
- Facilitate **data integration** of different the networks
- Make data **GIS-compatible**

Soil Moisture: Future SE DEWS
Opportunities

Capitalizing on
current **RESEARCH**
activities
to improve regional
drought early
warning

- Assess **which existing products "best" reflect** real-time status of drought in the SE
- Generate **ensemble probabilities** for soil moisture forecasts
- **Link SE drought impacts to drought indicators** (already done for USDM)

Soil Moisture: Future SE DEWS
Opportunities

Capitalizing on
current **USER**
ACCESS activities
to improve regional
drought early
warning

- **Centralization.** Develop online clearing house (“**one-stop shop**”)
 - Multiple sources of data
 - Converted to usable format
 - Easy access by growers, other users
- **Integration.** Blend different data sources to create the best possible soil moisture map for the SE
- **Building connections.**
 - More opportunities for sharing experiences, product demos, etc

Tangible regional soil moisture research priorities

NETWORK:

- Increase the # of stations that **measure organic soil moisture**
- Focus on **equipment calibration / installation / standardization**

DATA:

- Systematize **scaling and QA/QC** of soil moisture data
- Update & verify the **soil moisture regime lines** of the SE US
- Investigate how **data sets are currently being used**

Tangible regional soil moisture research priorities

PRODUCTS/MODELS:

- Identify/generate a few **SE regional-scale soil moisture data products** for the community (researchers, government, and industry)

IMPACTS:

- Connect soil moisture states to **fire weather risk**
- Explore relationships between soil moisture and **live fuels** in different environments

2022+ National Priorities (NCSMMN)

Data Generation:

- Increase monitoring in underserved areas (forests, tribal lands)
- Deliver technical assistance to *in situ* networks
- Coordinate sensor testbed activities

Data Delivery and Application:

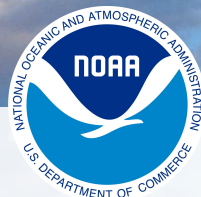
- Develop a curated "kiosk" for soil moisture products
- Soil moisture and wildfire nexus – advance



Reactions to the Key Takeaways and Next Steps for Soil Moisture in the SE?

Questions for Audience

- What do you think of the targeted research areas identified for the SE DEWS?
- Are you, or others, working on these issues right now so we can build on that?
- What is missing?



Flash Drought

Kyle Lesinger, Auburn University

NATIONAL

Flash Drought Overview

What is Flash Drought?

Rapid onset or intensification of drought conditions that culminates in impacts to one or more sectors.

Dec 2020: National Flash Drought Virtual Workshop

Purpose - Collaboratively explore and expand understanding of flash drought and to co-develop a path forward for research and products.

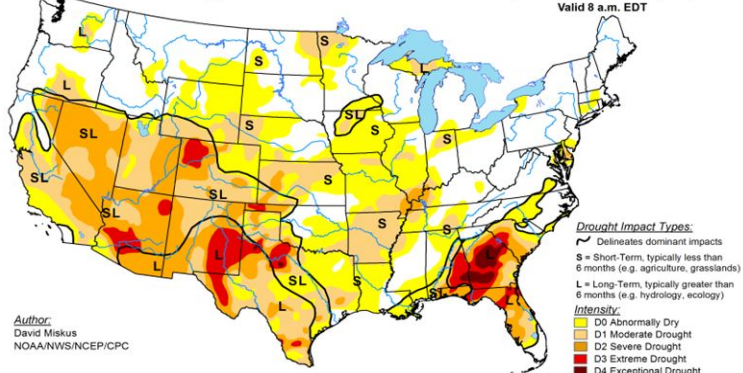
Recommendation: Hold **regional-based** discussions on flash drought



2012 Central US Flash Drought

U.S. Drought Monitor

June 5, 2012
(Released Thursday, Jun. 7, 2012)
Valid 8 a.m. EDT



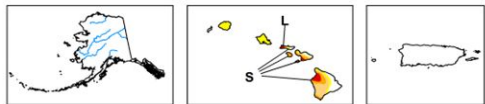
Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

Author:
David Miskus
NOAA/NWS/NCEP/CPC

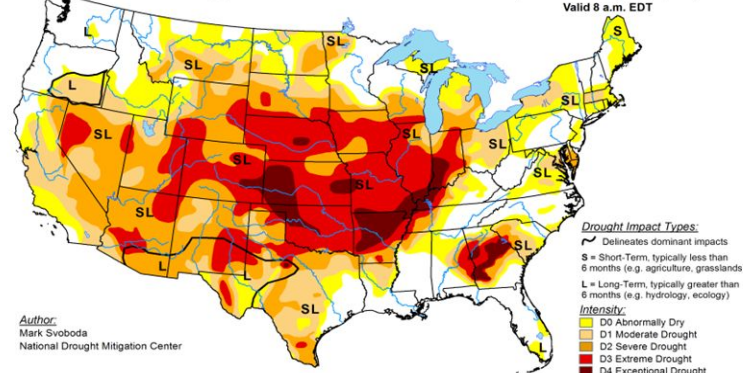


<http://droughtmonitor.unl.edu/>

2 months

U.S. Drought Monitor

August 7, 2012
(Released Thursday, Aug. 9, 2012)
Valid 8 a.m. EDT



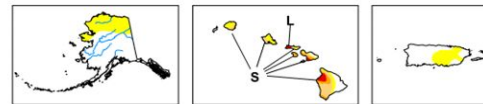
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- D4 Exceptional Drought

Author:
Mark Svoboda
National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

NIDIS Flash Drought Priority Actions



1: Organize FD
Technical Working
Group

2: Regional
Engagement

3: Increasing
Monitoring

4: CPC Collaboration
(Improve Prediction)

5: FD Tool
Development

6: Network
Building

Objectives of SE DEWS Flash Drought workshop

1. Define the **unique characteristics** of flash drought in the Southeast context
2. Assess and synthesize our **current state of monitoring and predicting** flash drought in the Southeast
3. Identify additional **monitoring and research needs** for flash drought in the region

SE Flash Drought

Defining the unique characteristics of flash drought in the Southeast context

No consensus on a single DEFINITION - multiple factors to consider

- USDM category degradation
- Rate of precipitation deficiency
- Rate of soil moisture change
- Agricultural impacts
- Depends on Season

No consensus on UNIQUE impacts, and challenging to draw the line as different from non-FD impacts

- Agriculture; Vegetation and Fire; Water quality and quantity; Air quality
- Sub-regional differences (e.g. irrigation differs across the region)

SE Flash Drought

EXISTING

products used to
monitor & predict
flash drought

Wide Variety Utilized!

- Soil Moisture products - most commonly mentioned
- CPC flash drought products (discontinued)
- Ppt and Temp predictions and anomalies
- USDM
- Vegetation Indexes, Lawn and Garden Index
- EDDI
- Other drought indices and modelling, including FLASH (SMAP soil moisture)
- Irrigation scheduling tools
- Phone calls and emails from producers

Resource Document has summary of 'Useful Resources for Monitoring and Predicting Flash Drought**'**

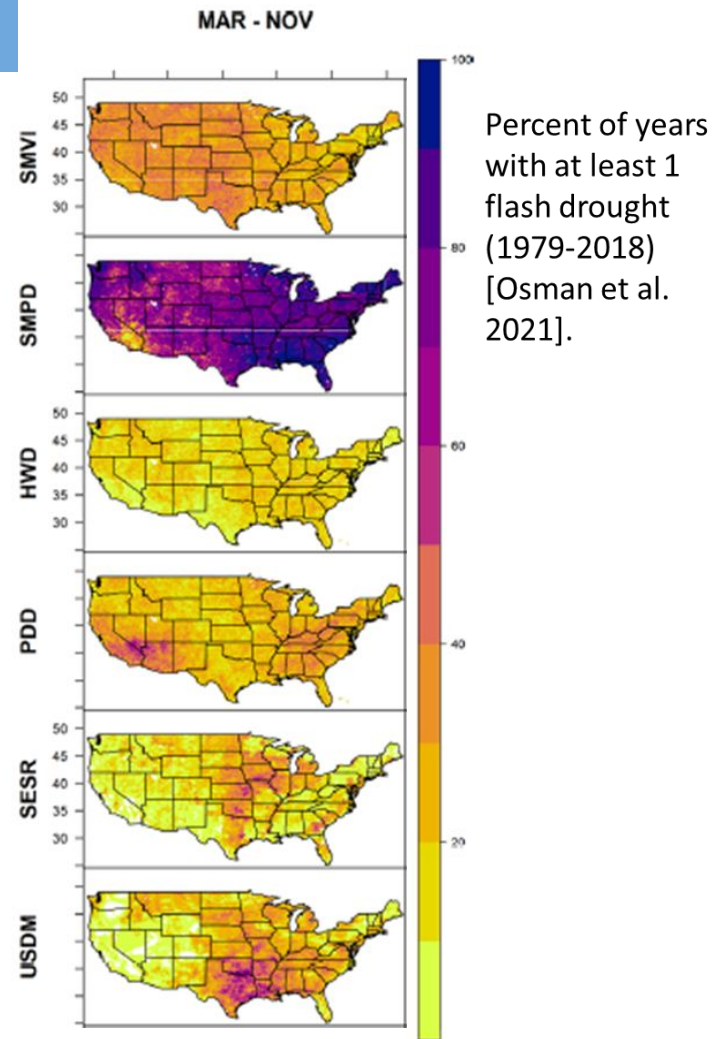
Indexes used in research

- **SMVI** (Soil Moisture Volatility Index)
 - **SMPD** (Soil Moisture Percentile Drop)
 - **HWD** (Heat Wave Drought)
 - **PDD** (Precipitation Deficit Drought)
 - **SESR** (Standardized Evapotranspiration Stress Ratio)
 - **USDM** (United States Drought Monitor)
-
- **EDDI** (Evaporative Demand Drought Index) [Hobbins et al. 2016]
 - **LSWI** (Land Surface Water Index) [Christian et al. 2022]

Christian, J., Basara, J., Lowman, L., Xiao X., Mesheske, D., Zhou, Y. (2022). Flash drought identification from satellite-based land surface water index. *Remote Sensing Applications: Society and Environment*. <https://doi.org/10.1016/j.rsase.2022.100770>.

Hobbins, Michael T., Wood, A., McEvoy, D. J., Huntington, J. L., Morton, C., Anderson, M., & Hain, C. (2016b). The evaporative demand drought index. Part I: Linking drought evolution to variations in evaporative demand. *Journal of Hydrometeorology*, 17(6), 1745–1761. <https://doi.org/10.1175/JHM-D-15-0121.1>

Osman, M., Zaitchik, B. F., Badr, H. S., Christian, J. I., Tadesse, T., Otkin, J. A., & Anderson, M. C. (2021). Flash drought onset over the contiguous United States: Sensitivity of inventories and trends to quantitative definitions. *Hydrology and Earth System Sciences*, 25(2), 565–581. <https://doi.org/10.5194/hess-25-565-2021>



Flash Drought

Opportunities for IMPROVING products for the SE context

Improved Understanding:

- Historical evaluation of SE droughts, including FD - what happened, what has changed, seasonality. Can provide guidance on chances of going into FD.
- Rates of change of preferred drought indicators to define flash drought for this specific region and sub-regional unique areas.

Observation Networks: Comprehensive soil moisture and precipitation networks, more fine scale information with better coverage across the region; timely impact information

User Perspective and Applications: Understanding sector-specific interpretations of FD - what does it mean to them (ag vs fire vs water); Ag impact forecasting with FD outlooks

Data Integration. How is different SM products integrated with ag models etc.?

Flash Drought

Flash drought needs that we can work on as a regional DEWS network

What are the needs around flash drought that we could work on as a regional DEWS network?

1

Observational

- High resolution (30m) gridded data to access the biological cycle.
- Reports of dry flash events - need to be better linked - need to agree where to use it and if it is available
- Support for soil moisture monitoring different depths, particularly early part of existing proposed statewide networks. If enough sites have these, could a regional level be created that assumes/diagnoses data?
- Overstressed data - what are the associated risks and impacts
- Resolve observations of agricultural or microclimate health/damage
- FLASH - does look at crop specific parameters, but still on coarse resolution scale/outputs

Research

- Begin to link repeated drought outcomes with rates of drought intensification.
- Joint SE publication for FD special issue in Atmosphere Journal - due Aug 1. (https://www.mdpi.com/journal/atmosphere/special_issues/Flash_drought)
- For research, FD with various antecedent conditions prior to development. How will the environmental conditions either accelerate or decelerate the development. Not all FD's are alike ->
- What are the effects of flash drought on the physiological growth of forage or pasture crops (bermuda grass, bahia grass etc.)? There is very little research about this available on the internet.
- Some ecological component - need to better understand

Product

- Predicting FD impacts on vegetation using existing products.
- Integrating QA Qcd soil moisture information from various sources to generate a high resolution soil moisture product with continuous spatial coverage.
- Since droughts are felt mostly based on impact, FLASH drought may need to be defined as being specific to crops where natural vegetation has been disturbed. Not everyone/all crops will be impacted equally
- Historical analysis of FD in the Southeast
- Historical drought event dataset that is combined with drought impact reports.
- Real-time, high resolution, county-level FD assessment and crop health prediction
- Deploy UAV products for real time monitoring and assessment and also for validation of other analysis and products considered
- Evaluating the value of a forecast?
- Integrating different products to provide uniform comprehensive flash drought assessment Kind of like USDM, but more tuned towards FD's
- Objective tools, Products and tools that take forward information, e.g. a new CPC product, also this tool (<https://dismasterlab.org/flashdroughtmap/>)

Other (ex. communication, awareness, planning)

- When communicating flash drought perhaps focus on how rare is the rate of intensification, the types of impacts occurring, and associated risks (heat, fire, etc.) These will likely vary by season and location.
- For communication to the public and sectors, do we even need to use the term 'flash'?
- How would stakeholders utilize the FD message?
- Regular communication on when we can expect lagging effects drought externally. Even if nothing is happening. No time lag, don't wait till there is a drought
- At the NWS, we have the responsibility of issuing Drought Statements (DS) based on specific drought designations via the USDM. Some of the info we can provide in the DS can be a bit difficult to come by, especially ag
- Effectively communicating about FD that includes their sector-specific impacts.
- Responses and resilience plans. Have they been adjusted to changing trends in temperature and precipitation? Are all states equally resilient? How can the Southeast support each other in times of drought.
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- Sector specific communication - what flash drought means to end users.
- Discuss needs with energy industry for cooling process - what needs with sectors including use water and may feel drought impacts

Observational

- High resolution (30m) gridded data to access the biological cycle.
- Reports of dry flash events - need to be better linked - need to agree where to use it and if it is available
- Support for soil moisture monitoring different depths, particularly early part of existing proposed statewide networks. If enough sites have these, could a regional level be created that assumes/diagnoses data?
- Overstressed data - what are the associated risks and impacts
- Resolve observations of agricultural or microclimate health/damage
- FLASH - does look at crop specific parameters, but still on coarse resolution scale/outputs

Research

- Begin to link repeated drought outcomes with rates of drought intensification.
- Joint SE publication for FD special issue in Atmosphere Journal - due Aug 1. (https://www.mdpi.com/journal/atmosphere/special_issues/Flash_drought)
- For research, FD with various antecedent conditions prior to development. How will the environmental conditions either accelerate or decelerate the development. Not all FD's are alike ->
- What are the effects of flash drought on the physiological growth of forage or pasture crops (bermuda grass, bahia grass etc.)? There is very little research about this available on the internet.
- Some ecological component - need to better understand

Product

- Predicting FD impacts on vegetation using existing products.
- Integrating QA Qcd soil moisture information from various sources to generate a high resolution soil moisture product with continuous spatial coverage.
- Since droughts are felt mostly based on impact, FLASH drought may need to be defined as being specific to crops where natural vegetation has been disturbed. Not everyone/all crops will be impacted equally
- Historical analysis of FD in the Southeast
- Historical drought event dataset that is combined with drought impact reports.
- Real-time, high resolution, county-level FD assessment and crop health prediction
- Deploy UAV products for real time monitoring and assessment and also for validation of other analysis and products considered
- Evaluating the value of a forecast?
- Integrating different products to provide uniform comprehensive flash drought assessment Kind of like USDM, but more tuned towards FD's
- Objective tools, Products and tools that take forward information, e.g. a new CPC product, also this tool (<https://dismasterlab.org/flashdroughtmap/>)

Other (ex. communication, awareness, planning)

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Current Research Underway

Subseasonal flash drought prediction

1. Identify probabilistic and deterministic flash drought skill using SubX models: GMAO, EMC, ESRL, RSMAS
 - i. Soil moisture and evaporative demand indices
 - ii. Data window (2000-2021)
 - iii. Skill by USDM region, lead time, season, realization
2. Identify model skill during El Nino Southern Oscillation phases
3. Flash drought case studies - 2012, 2017, 2019

Flash Drought: Future SE DEWS Opportunities

Idea 1: Conduct an Historical Southeast Drought Assessment / Evaluation

- Provide an **historical analysis of previous droughts (not just FD)**, rate of intensification, conditions in which they evolved (antecedent conditions, seasonal, etc.), soil type, how well they were predicted, etc.
- Include **description of impacts** observed with a focus on a few sectors, especially agriculture and livestock (as well as wildfire and air quality).
- **Use this assessment to:**
 - Look at how available tools could have predicted the drought
 - Describe what a SE 'flash drought' looks like.
 - Describe what areas may be more susceptible and likelihood of future droughts

Flash Drought: Future SE DEWS
Opportunities

Idea 2.
Product
Evaluation and
Assessment

Assess the current suite of indicators/indices/tools/models for rapid drought onset and intensification in the context of the Southeast, and use this to inform improvement/development of new tools

In particular, look at **objective tools that integrate different products/indicators** with soil type, and provide the best snapshot of flash drought, and broader drought, in the Southeast

Flash Drought: Future SE DEWS
Opportunities

Idea 3:
Guidance for
Communication
on 'Flash
Drought'

Provide **guidance on communications** around flash drought, especially when lagging effects may kick in (March recharge)

Should include the push for **regular and consistent drought communication throughout the year**, and consideration of **when using the term 'flash drought' makes sense and when it doesn't**.

Have **conversations with end users** on what flash drought means to them

Idea 1: Feedback on conducting an Historical Southeast Drought Assessment / Evaluation

Questions this research will answer:

- Look at how available tools could have predicted the drought (space/time/intensity)
- Describe what a SE 'flash drought' looks like.
- Describe what areas may be more susceptible to future droughts

Proposed components:

- Look at conditions for drought evolution, prediction skill, and amelioration in the past 30 years, including impacts observed
- Include StoryMap with interactive data
- Database or repository of drought events for future studies

Feedback needed from the Region

1. How could such a historical assessment be useful to you? What would it need to include?

Reactions to the Key Takeaways and Next Steps for Flash Drought in the SE ?

Other Proposed Ideas for the SE DEWS

- **Idea 2:** Product Evaluation and Assessment
- **Idea 3:** Guidance for Communication on 'Flash Drought'

Questions for the Audience

- What do you think of these three near-term focus areas for the SE DEWS?
- Are you working on these issues right now so we can build on that?
- Are you interested in being a part of additional scoping discussions, especially for Idea 1?
- What is missing?

Q&A, Discussion

Discussion Questions for the Audience:

- How could the proposed **Southeast historical drought assessment** be useful to you? What would it need to include?

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Day 1 Wrap Up

Moderator: Meredith Muth, NIDIS

Identifying Some Next Steps for the SE DEWS

Are there other potential DEWS network activities or products related to **drought monitoring, forecasting and planning** that would be useful for the region?