



# Climate Hubs

U.S. DEPARTMENT OF AGRICULTURE

A map of the United States divided into six Climate Hubs: Pacific Northwest, Northern Plains, Northeast, Southwest, Southern Plains, and Southeast. Each hub is color-coded and includes a representative location. The Pacific Northwest hub is green and includes Corvallis, OR. The Northern Plains hub is tan and includes Ames, IA. The Northeast hub is green and includes Ithaca, NY. The Southwest hub is tan and includes Davis, CA. The Southern Plains hub is tan and includes Las Cruces, NM. The Southeast hub is green and includes Raleigh, NC. Other locations shown include Houghton, MI, Durham, NH, University Park, PA, and Piedras, PR.

***Climate information benefiting  
agriculture & forestry***

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Soil Moisture and Wildfire Prediction Workshop  
Albuquerque, NM – April 29, 2019

# USDA Climate Hub Network



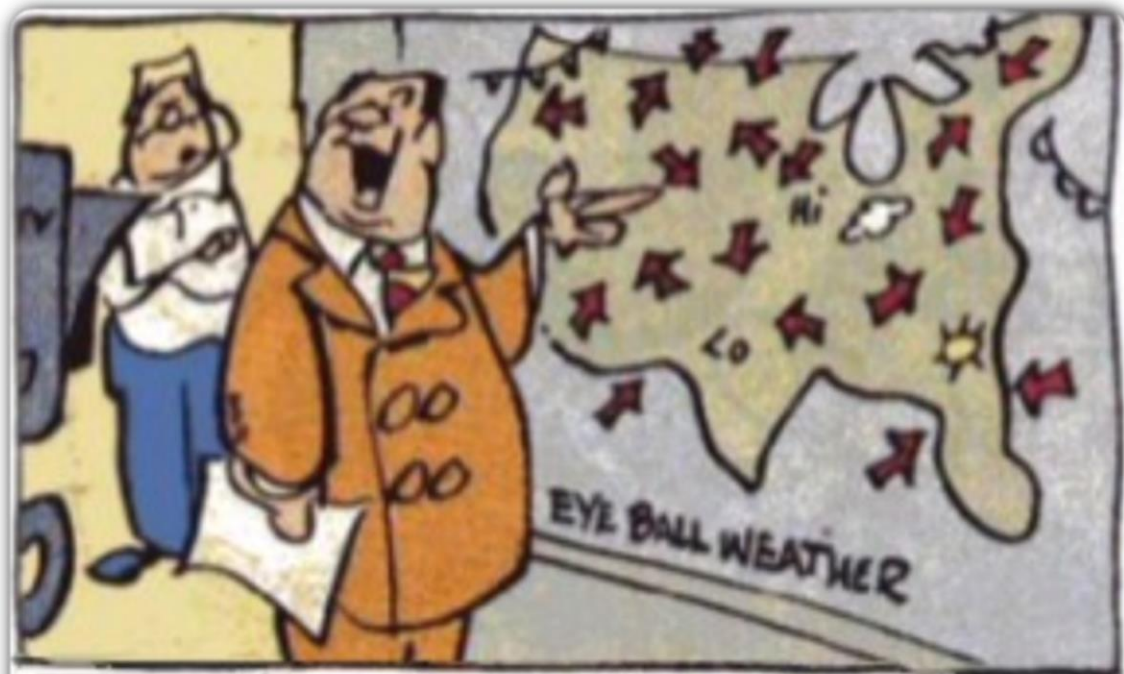
# Hubs' Guiding Principles

- **Interface between *science & services*; achieved thru 3 functional areas:**
  1. Science synthesis & translation
  2. Stakeholder outreach
  3. Tool development & transfer

# Hubs' Guiding Principles

- **Span boundaries via *partnerships***
  - Ag & Forestry ↔ Climate/Weather Science
  - Across USDA (ARS, FS, NRCS, FSA, APHIS)
  - USDA ↔ Other Feds (DOI, NOAA)
  - USDA ↔ Tribes, States, NGOs, producers

# Science Synthesis & Translation



"The forecast for today:  
scattered arrows."

scattered arrows."

"The forecast for today:

# Science Synthesis & Translation

## 4<sup>th</sup> National Climate Assessment

NCA  
4

ABOUT ▾ CHAPTERS ▾ DOWNLOADS ▾



FOURTH NATIONAL CLIMATE ASSESSMENT

CHAPTER 25: SOUTHWEST



<https://nca2018.globalchange.gov/chapter/25/>

# Science Synthesis & Translation

## 4<sup>th</sup> National Climate Assessment

NCA  
4

ABOUT ▾ CHAPTERS ▾ DOWNLOADS ▾



FOURTH NATIONAL CLIMATE ASSESSMENT

CHAPTER 6: FORESTS



<https://nca2018.globalchange.gov/chapter/6/>

# Outreach & Education

I'm From The Government...



...And I'm Here To Help



# Ranching with Wildfire:

Casper, WY

December 2, 2018

## Ranching with WILDFIRE: LESSONS LEARNED FROM FELLOW PRODUCERS



Two-Part session

organized by  
University of Wyoming Extension & Montana State University Extension

10:00 – 10:50am

from WY ranchers & agency partners  
(Please COME BACK for the second half of our session!)

learned from WY ranchers & agency partners

lets Wyoming livestock producers  
& agency partners through  
experiences with major wildfires\*\*\*

experiences with wildfire

oming, where fire hit **public** grazing allotments  
ng, where fire affected **private** lands

out wildfire preparedness, response, recovery  
ch the moderator  
ence

through South Dakota State University\*



# After Fire Toolkit

## Southwest Climate Hub, Summer 2018



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## After Fire: Toolkit for the Southwest

This site is meant to serve as a resource for those interested in understanding the methods available to assess potential risks associated with post-fire events. However, wildfire preparation also involves actions that occur before and long after a burn. Therefore the site also includes links to other useful resources for more information regarding other aspects of fire planning.

Visit this tool's website:

[After Fire: Toolkit for the Southwest](#)

Release/Version

1

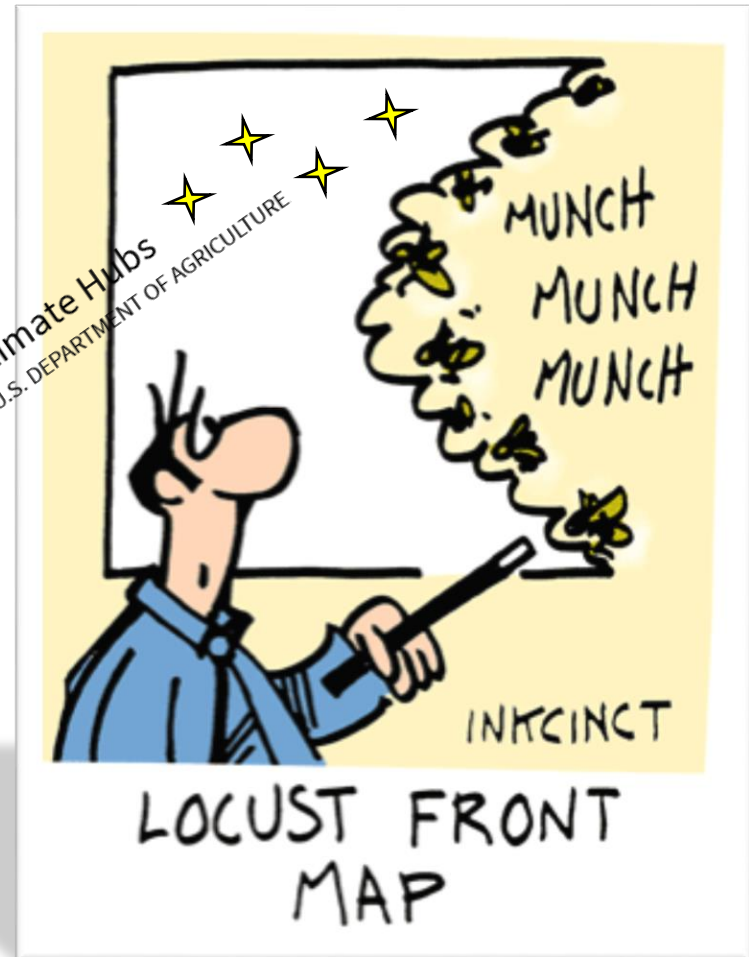
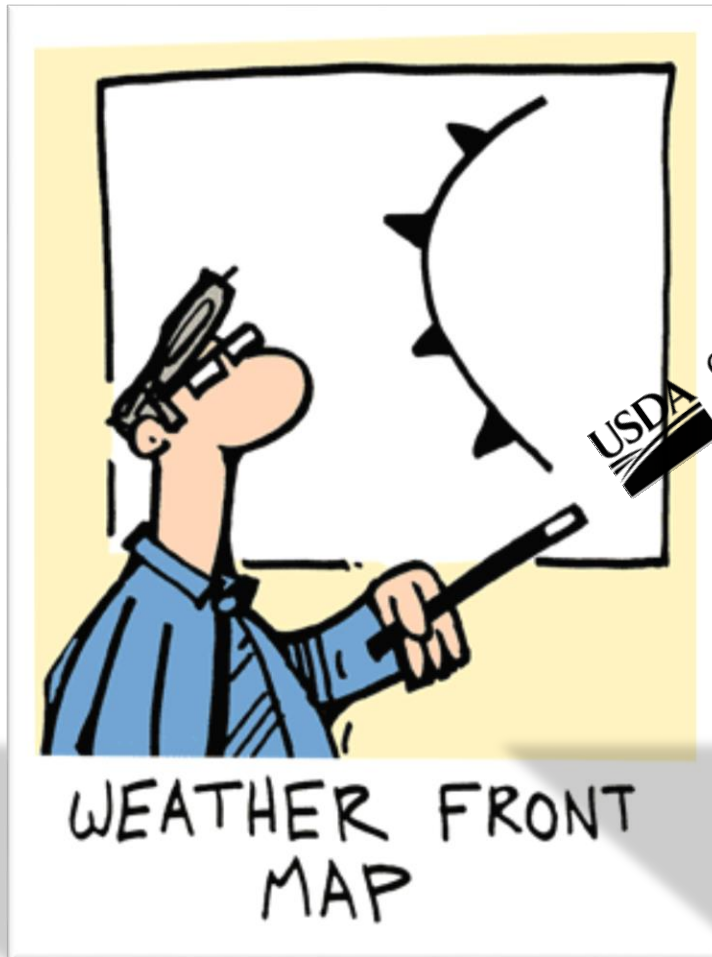
Tool Developers

Megan Friggens, U.S. Forest Service Rocky Mountain Research Station



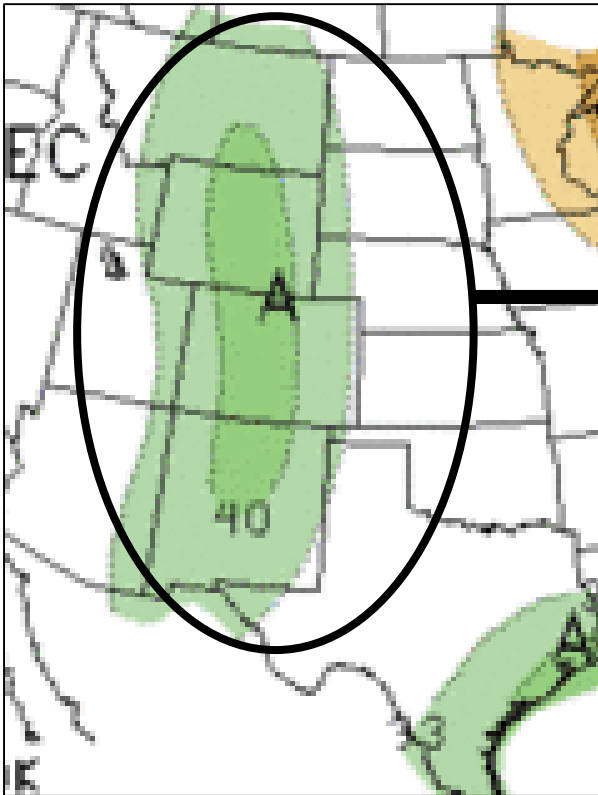
<https://www.climatehubs.oce.usda.gov/hubs/southwest/tools/after-fire-toolkit-southwest>

# Tool Development & Technology Transfer



# Making Weather Info Usable for Ag

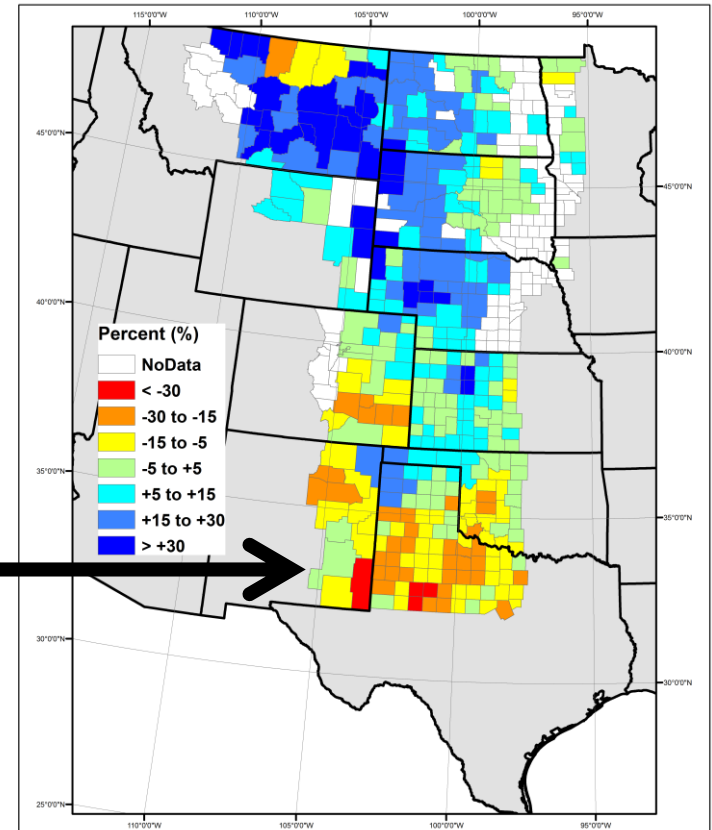
## Seasonal Outlook



What *IS*  
this &  
what does  
it *MEAN*  
for  
ranchers?

## “Grass-Cast”

Percent Change in 2018 Predicted NPP compared to 1982-2015 mean NPP  
Assuming Above Normal July Precipitation (%)



Data are from 7/16/2018



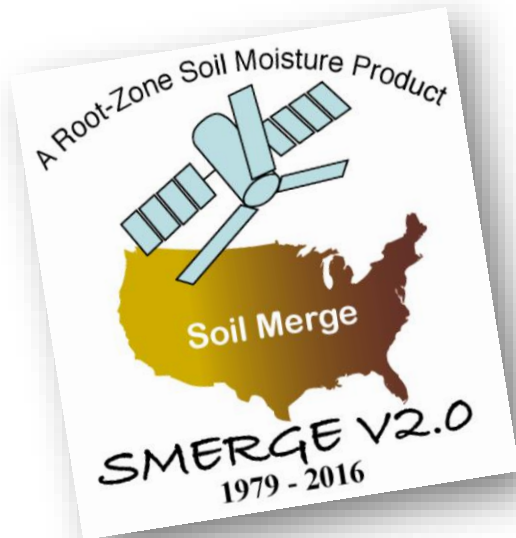
THREE-MONTH OU  
PRECIPITATION  
0.5 MONTH LEAD  
VALID MJJ 2017  
MADE 20 APR 20



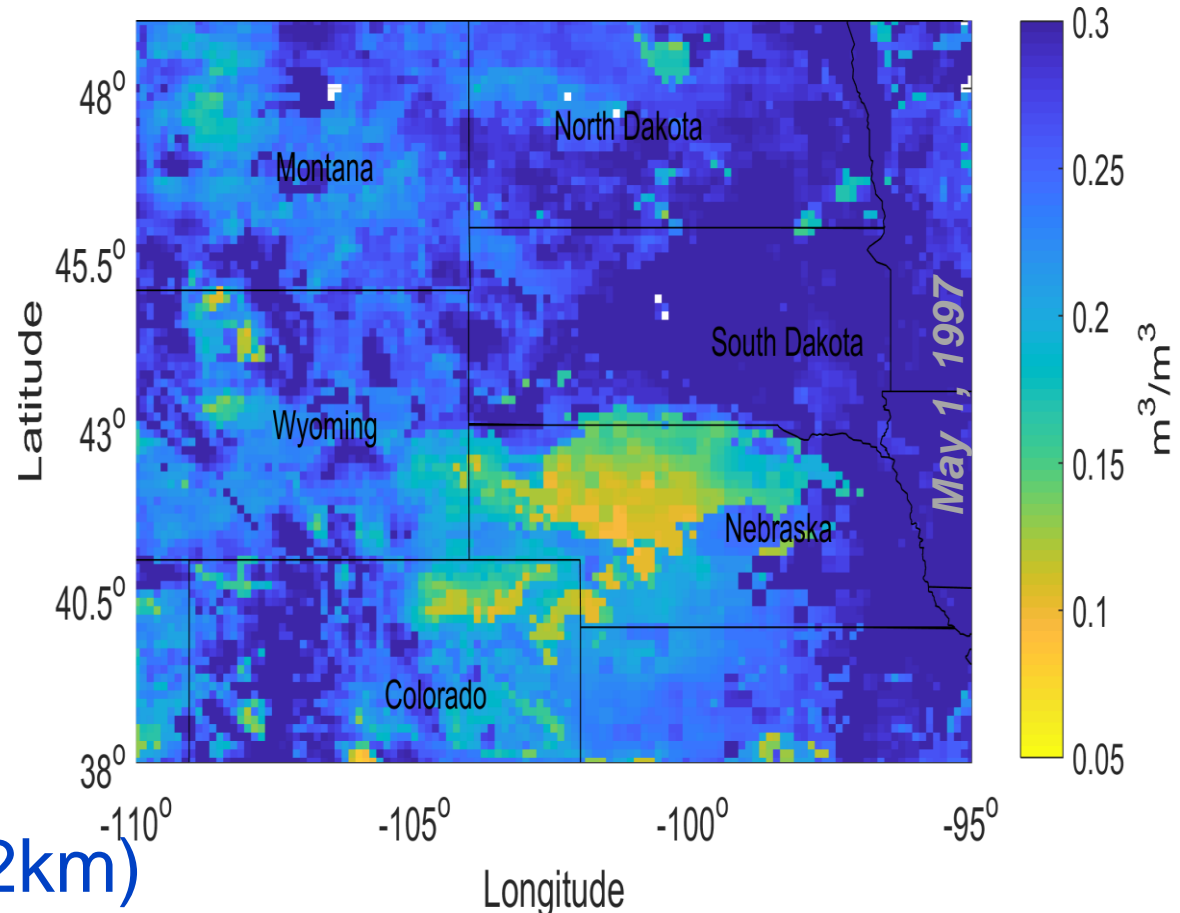
# SMERGE



## Improved Historical (1979-2016) Root-Zone Soil-Moisture Dataset



- Continental US,
- 0-40 cm depth,
- Daily timestep,
- 0.125-degree (~12km)



# SMERGE

## Merges Model & Satellite Approaches

**NLDAS-2 Noah  
model simulations**

**Model Attributes:**

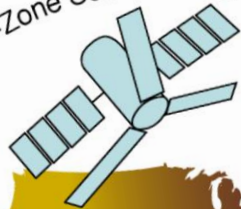
- 1) **Poor forcing**
- 2) **Uncertain calibration/physics**
- 3) **Good continuity in time/space**
- 4) **Multi-layer soil moisture**

**ESA CCI remote  
sensing retrievals**

**Remote Sensing Attributes:**

- 1) **Discontinuous in time/space**
- 2) **Surface soil moisture only**
- 3) **Retrieval errors**
- 4) **Direct “observations”**

A Root-Zone Soil Moisture Product



Soil Merge

SMERGE V2.0  
1979 - 2016

**SMERGE:** Continental U.S.  
0.125-degree, daily, 0-40 cm

# SMERGE Present'n Later Today



## Wade Crow (USDA ARS):

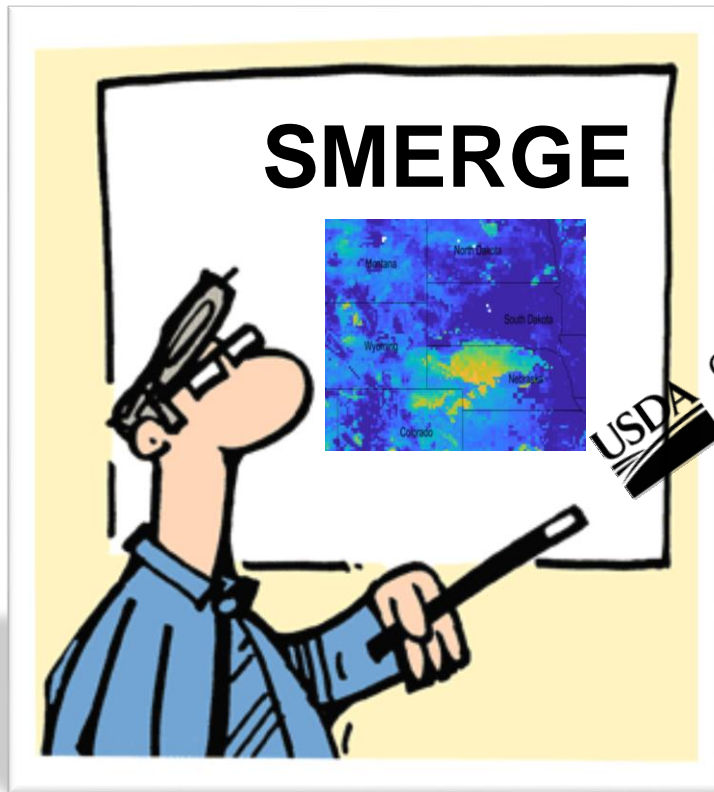
- What *is* SMERGE?
- How is it produced?
- How can you *access* it?

Tobin et al. 2017. *Hydrology & Earth Sys Sci* **21**:4403-17

Gruber et al. 2018. *Water Res Res* **54**:1353-67

<https://www.tamtu.edu/cees/smerge/overview.shtml>

# Let's Discuss How SMERGE Might be Useful to You!



Fire  
Ratings  
???





<https://climatehubs.oce.usda.gov>

Twitter: @USDAClimateHubs

**What can we achieve  
*together as partners?***

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