USDA Foreign Agricultural Service
International Production Assessment

What we do

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International Production Assessment Division

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Linking U.S. Agriculture FAS to the World

WHAT

World's Agricultural Supply and Demand Balance Sheets by Country/Commodity

SUPPLY = DEMAND

Beginning Stocks + Production + Imports = Exports + Domestic Use + Ending Stocks

- Beginning Stocks
  - Private
    - (On-farm)
    - (Pipeline)
  - Government
    - (Security)
    - (Public Distribution)
- Production
  - Area
  - Yield
- Imports / Exports
  - Commercial
  - Concessional
- Domestic Use
  - Feed / Residual
  - FSI
    - (Food)
    - (Seed)
    - (Industrial)

Operational: Estimates are updated monthly and released through the USDA World Agricultural Supply and Demand Estimates (WASDE)
http://www.usda.gov/oce/commodity/wasde/

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WHAT

FAS Lock-up Commodities

- Wheat
- Rice
- Feed Grains
  - Corn, Barley, Oats, Rye, Sorghum
- Oilseeds
  - Soybeans, Cottonseed, Peanuts, Sunflower, Rapeseed, Copra, Palm Kernel, Palm Oil
- Cotton
- **International Production Assessment division (IPA) is organized regionally.**

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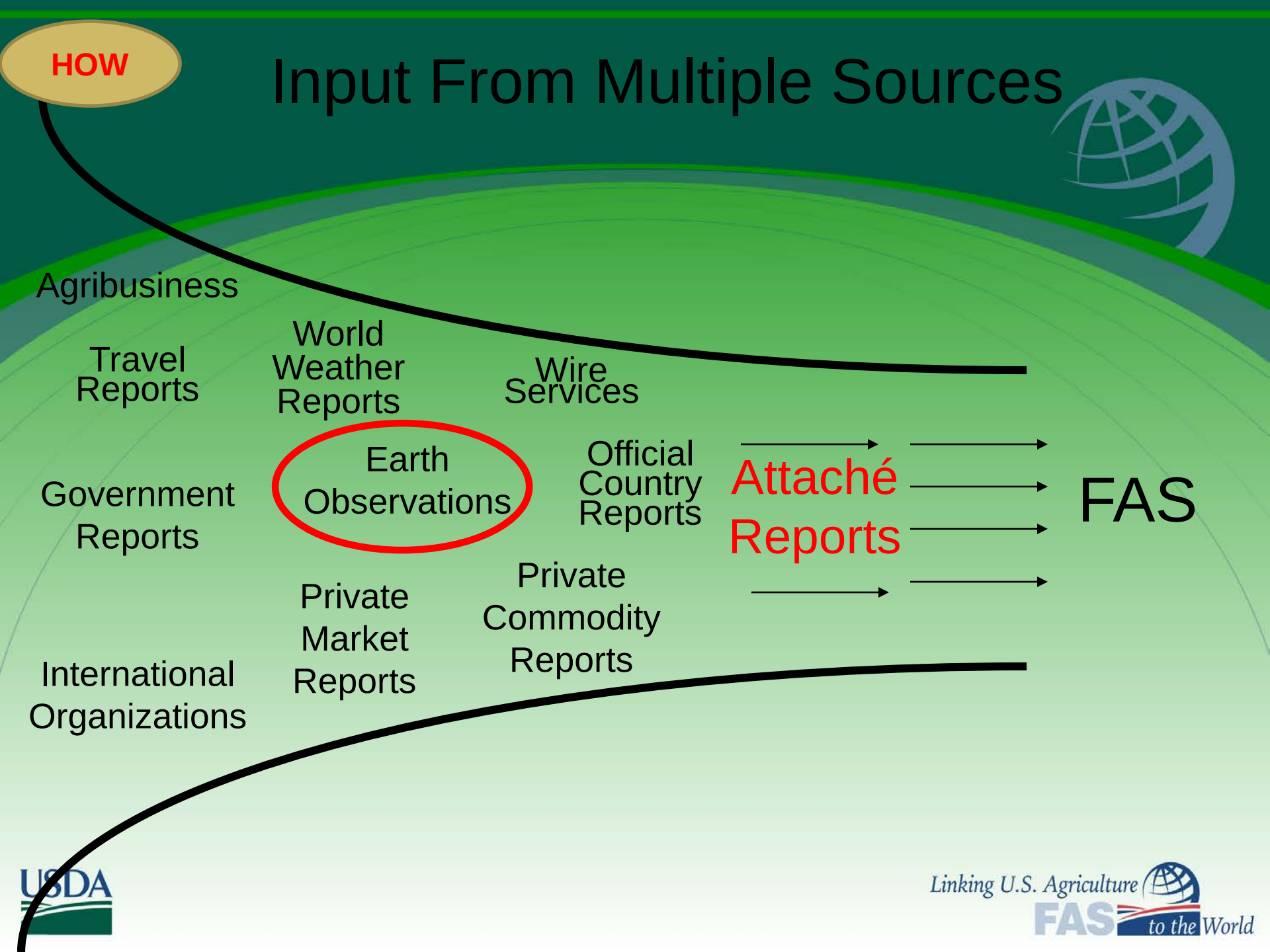
HOW

Input From Multiple Sources



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HOW

Convergence of Evidence

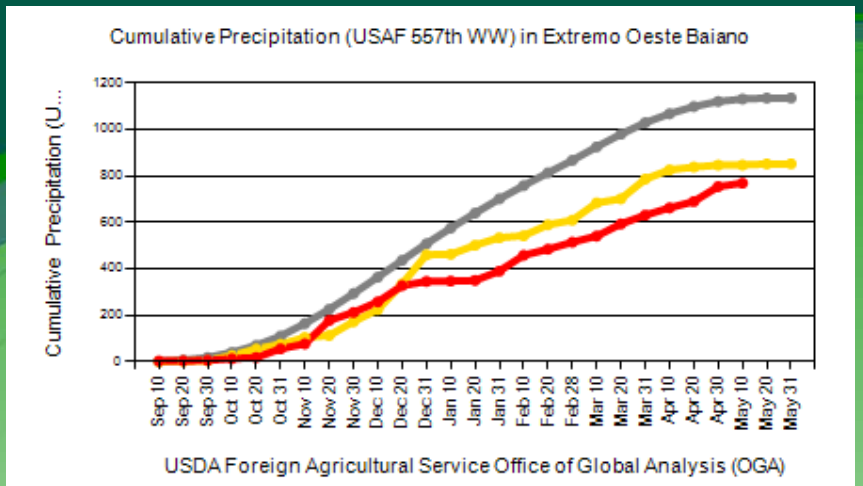
- Convergence of evidence is
  - "…evidence from several studies or observations that point to one conclusion."
- Earth Observations that FAS-IPAD uses include:
  - Satellite-derived products such as normalized difference vegetation index (NDVI)
    - >>tells us about the biomass and the growth cycle
  - Weather:
    - from the ground >>weather stations provide precipitation and temperature
    - from space>>satellites provide estimates of precipitation

Precipitation: Sources and Products

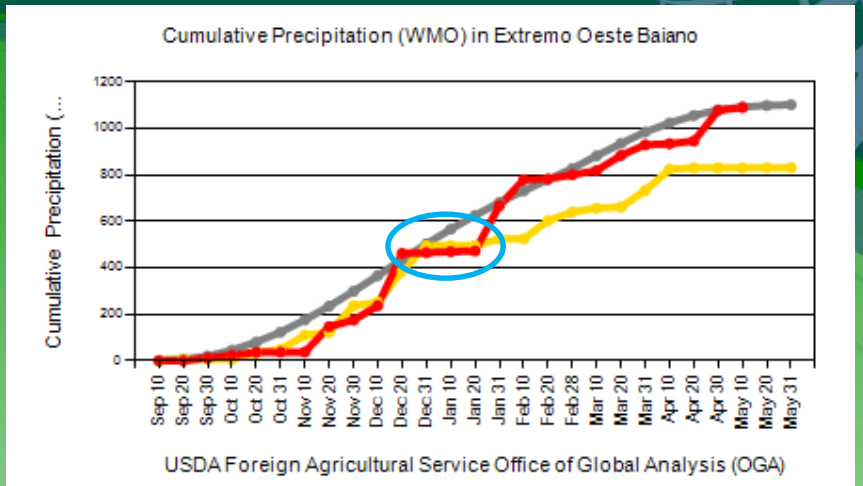
1. U.S. Air Force 557 Weather Wing: daily, global coverage, 25 km^2 spatial resolution (262,483 LIS grid cells).
2. World Meteorological Organization: daily, point-based (7,348 active stations, 80% frequency of reporting)
3. NASA TRMM (Multi-precipitation Analysis (MPA): daily, 25 km^2 spatial resolution
4. NOAA/CMORPH: daily, 25 km^2 spatial resolution

Precipitation Products: Daily, dekadal, seasonal cumulative, percent of normal, number of dry days, number of wet days, and input into soil moisture model.

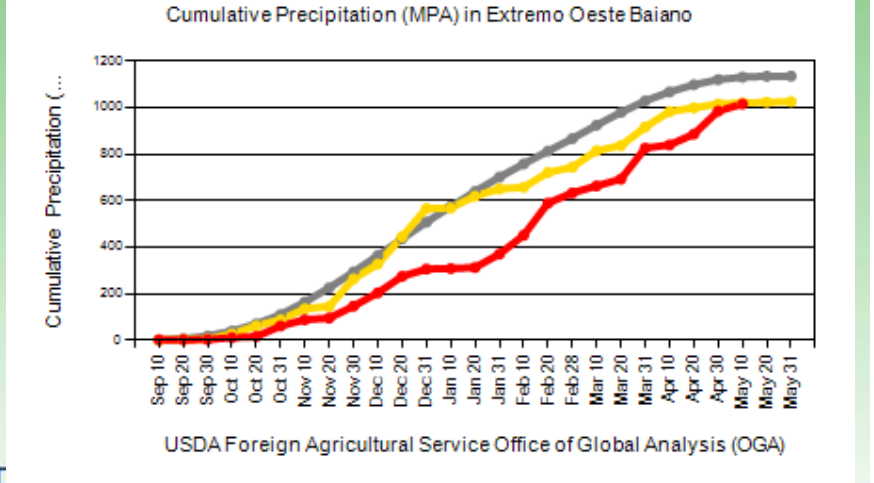
Comparison of Precipitation Sources



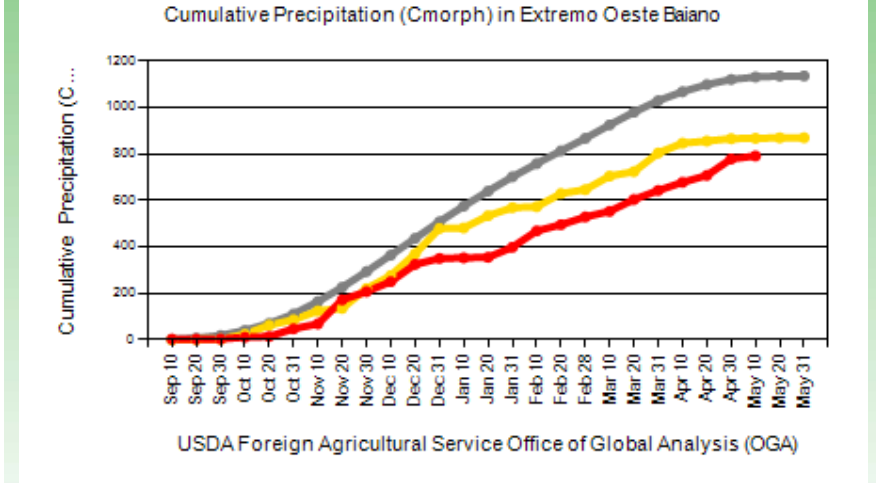
USAF 2014 2013 Normal



WMO 2014 2013 Normal



TRMM 2014 2013 Normal



CMORPH 2014 2013 Normal

Field verification of Satellite-Corrected Soil Moisture

- This field affected by dryness. Lower leaves have dropped. This area had 20 to 25 days without rain, according to farmer Pablo Schmidt (in photo)
- Photo: Feb. 4, 2015 by Bob Tetrault in gridcell 536-193, Bahia, Brazil.

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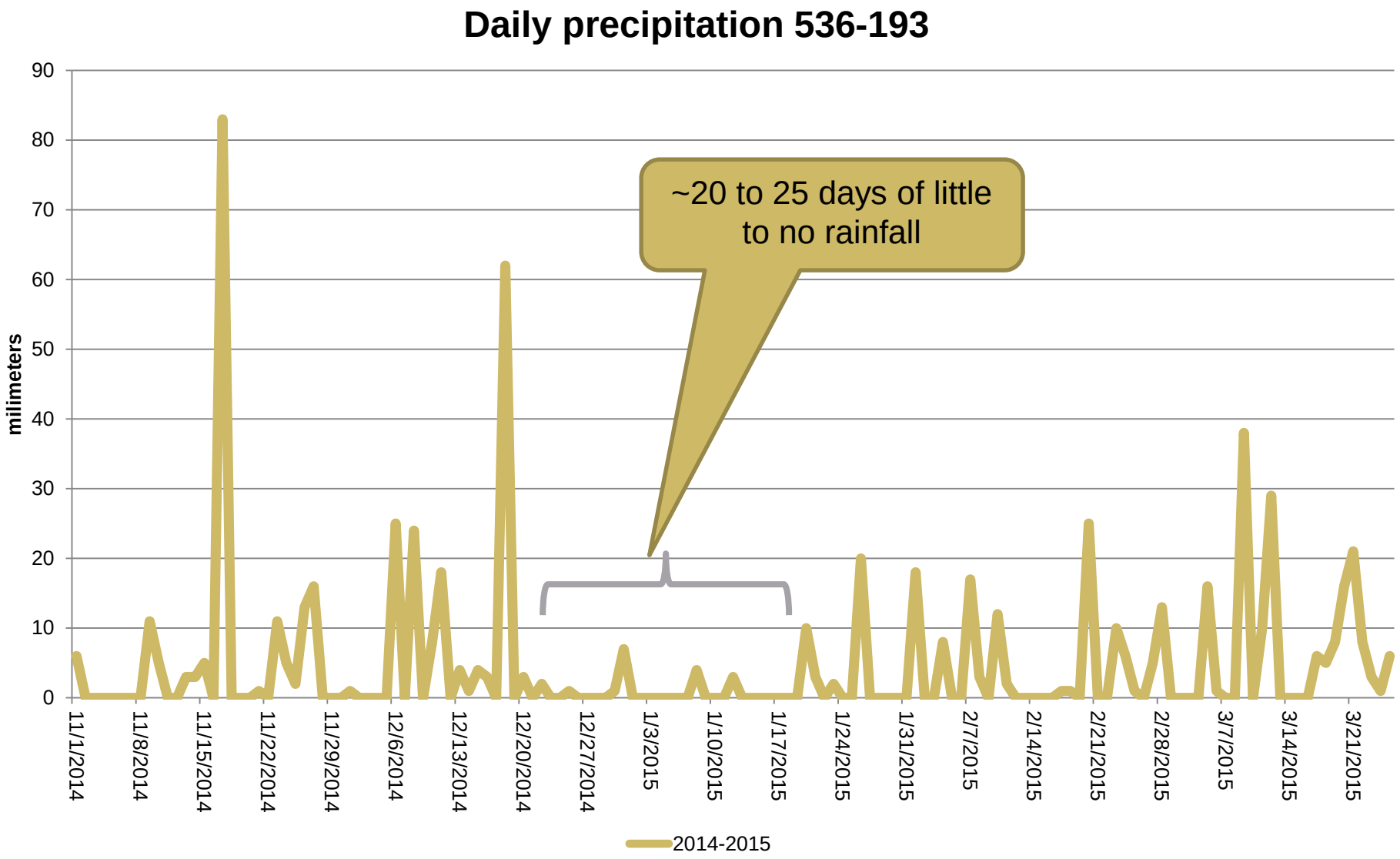
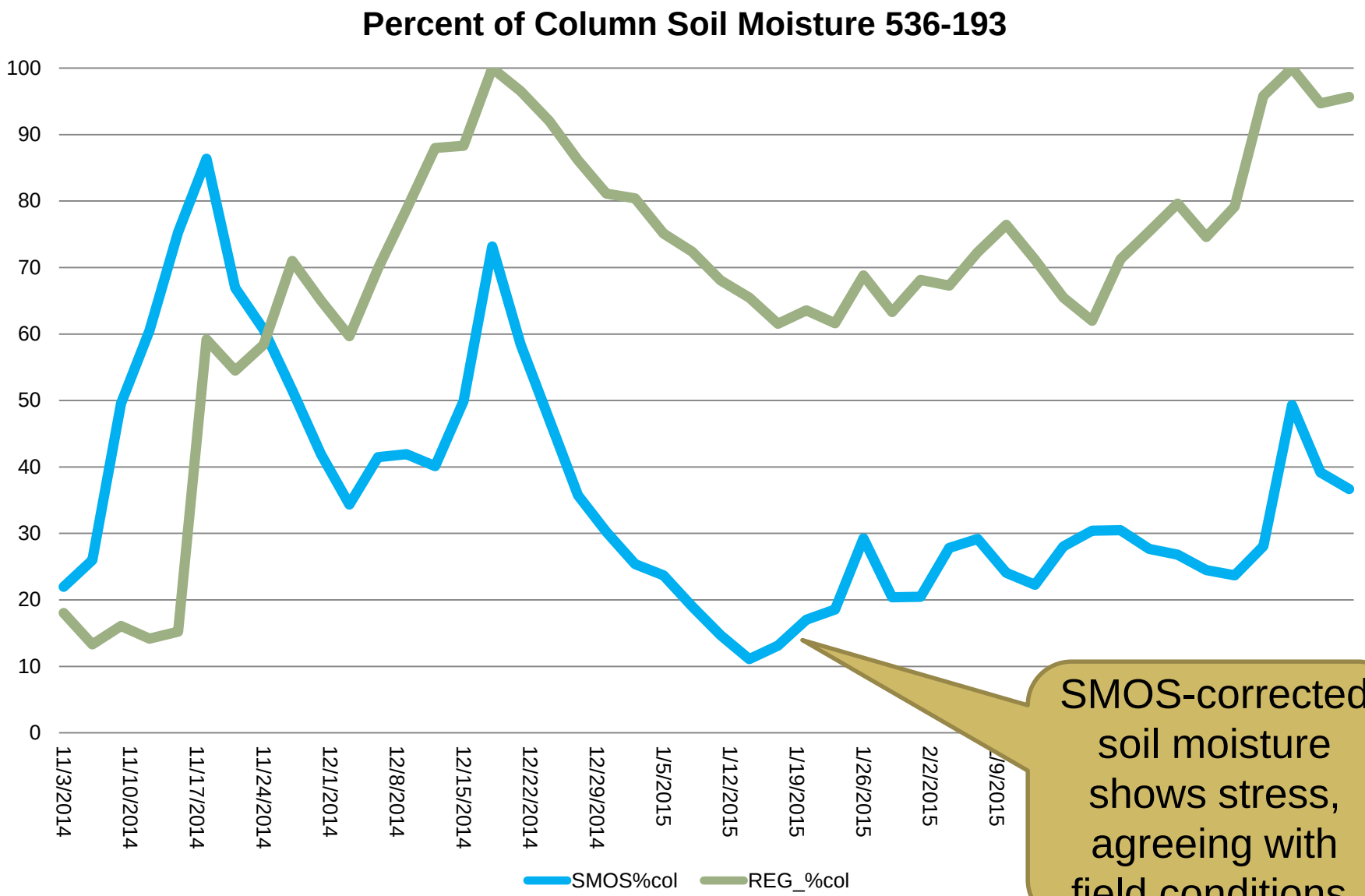
Bahia, Brazil: daily precipitation



Bahia, Brazil: percent of column



SMOS-corrected soil moisture shows stress, agreeing with field conditions.

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Future Needs

- FAS has data and observations but limited capability to cross-check, especially vexing is the issue of scale.
- Using satellite data to “correct,” “guide” or “steer” as ARS is doing with the satellite-corrected soil moisture is a very beneficial example of integrating data.
- Satellite-based crop water use and stress such as the evaporative stress index and its implication as an “early warning” to crop yield reductions is the next step.
- Integrate “steering” data from satellite-based observations to crop-specific process models, especially with the upcoming multi-platform Landsat-8/Sentinel-2 fusion product.