What we do

May 20, 2015, Robert Tetrault
USDA-FAS Office of Global Analysis
International Production Assessment Division
World’s Agricultural Supply and Demand Balance Sheets by Country/Commodity

SUPPLY = DEMAND

Beginning Stocks

Private
(On-farm)
(Pipeline)

Government
(Security)
(Public Distribution)

+ Production

Area
Yield

+ Imports

Commercial
Concessional

Exports

Domestic Use

Feed / Residual
FSI
(Food)
(Seed)
(Industrial)

Ending Stocks

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

- Agribusiness
  - Travel Reports
- Government Reports
- International Organizations
- World Weather Reports
- Private Market Reports

Earth Observations

- Wire Services
  - Official Country Reports
  - Private Commodity Reports

Attaché Reports

FAS

Linking U.S. Agriculture to the World
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


2. World Meteorological Organization: daily, point-based (7,348 active stations, 80% frequency of reporting)

3. NASA TRMM (Multi-precipitation Analysis (MPA)): daily, 25 km² spatial resolution

4. NOAA/CMORPH: daily, 25 km² 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

Comparison of Cumulative Precipitation between USAF 557th WW and WMO in Extremo Oeste Baiano

USAF

Cumulative Precipitation (USAF 557th WW) in Extremo Oeste Baiano

WMO

Cumulative Precipitation (WMO) in Extremo Oeste Baiano

TRMM

Cumulative Precipitation (MPA) in Extremo Oeste Baiano

CMORPH

Cumulative Precipitation (CMORPH) in Extremo Oeste Baiano
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.
Daily precipitation 536-193

~20 to 25 days of little to no rainfall

Bahia, Brazil: daily precipitation
SMOS-corrected soil moisture shows stress, agreeing with field conditions.
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.