Current State of the Practice & Research Needs

Rick Mueller/USDA NASS
Emerging Technologies and Methods in Earth Observation for Agricultural Monitoring Workshop
Feb. 13, 2018
The Cropland Data Layer

2008 – 2017 publically available @ 30m

https://nassgeodata.gmu.edu/CropScape

Year started 2011
CDL Update

• Dec 2017 release of reprocessed 2008 & 2009 @ 30m

• Feb 1 release of 2017 CDL
  – Release 5 year cultivated and 10 year crop frequency products (Corn, Soybean, Wheat, Cotton)

• 2018 Plans
  – Sentinel 2 A & B, Disaster Monitoring Constellation (DMC) - Deimos-1 & UK2, Landsat 8, and Indian Remote Sensing (IRS) Resourcesat-2 (Liss III)
VegScape

Vegetation Condition: circa 2000
Daily, Weekly, Biweekly @ 250m

https://nassgeodata.gmu.edu/VegScape

Year started 2013
Remote Sensing Yield

• Time-series MODIS data to obtain biomass and temperature estimates
  – Use Cropland Data Layer (CDL) to isolate known crop areas
    • Empirically-based prediction model
      – Based on historical imagery and NASS county-level yield statistics

• Run model at National, State, and County levels
  – Integrating over growing season approach
  – Operational monthly within growing season
  – Using decision trees (Rulequest Cubist)
Needs for the Future

• 2016 JASON Report – New Technologies for Evaluating Crop Production
  – Recommendation 4: Upgrade Computers
    • Upgraded to centralized environment, cloud lite
    • Move analysis to the data/cloud, awaiting ATO
  – Recommendation 5: Embrace SAR
    • Disaster assessments
      – Impact on agricultural domain
      – Quantifiable NRT response
    • Potential for early season land cover classification
    • Hybrid SAR/optical approach
Needs for the Future II

• 2017 National Academies Report – Improving Crop Estimates by Integrating Multiple Data Sources
  – Adopt Farm Service Agency’s Common Land Unit (CLU) as a spatial unit
    • Small area/specialty crop estimation via CLU Frame

• Investigate soil moisture mapping
  – SMAP early adopter continuation