Presentation to the CFTC

April 11, 2019

Gro - A Single Data Platform

Applications of Gro

Application Programming Interface (API)

- Solve an enterprise problem with large, hard to manage agricultural datasets
- Combine Gro data with client data for a unique client product
- Forecast long term supply and demand for business planning purposes
- Consolidate and efficiently manage many sources and types of agricultural data

Web Application

- Get a Global view on Agricultural supply and demand
- Stay on top of data, countries, and crops of interest
- Collaborate with colleagues, customers

Users of Gro

- Seed companies
- Nutrient companies
- Food companies
- Processing companies
- Cooperatives
- Farmers
- Universities/Academics
- Commodity Trading Advisors (CTA)/Technical Traders
- Physical Merchants
- Banks
- Insurance Companies

Global Agricultural Data Coverage

- https://app.gro-intelligence.com/#/docs/user-manual#source-master-list
- 100+ Sources
- Climate, production, consumption, trade, demographic, price data
- Grains, Oilseeds, Softs, Fruits, Vegetables, Livestock, Dairy data

Agricultural Data Issues

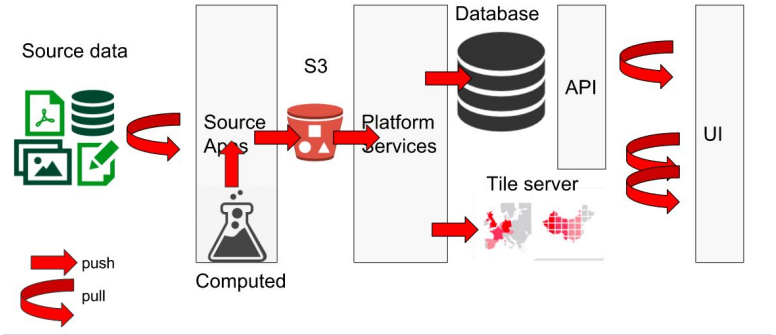
Agricultural Data Issues:

- Hard to maintain spreadsheets, legacy files, and processes
- Disparate datasets that are difficult to combine and analyze
- Data in different units, languages, frequencies
- Data updating, quality, and integrity requirements
- Large scale and scope of agricultural data across many crop-country pairs

Data Identification, Mapping, Integration

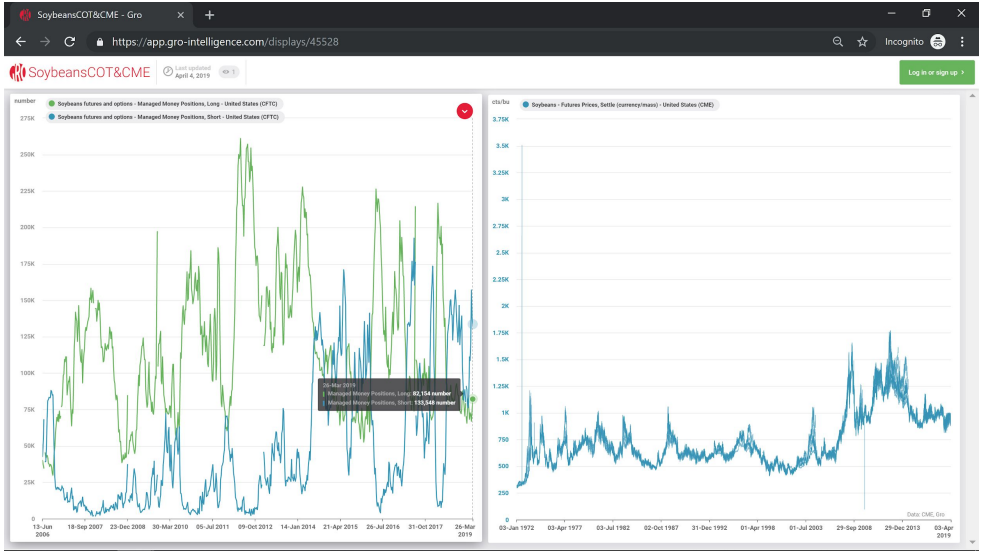
- Identification and documentation
- Code written to automate data harvest (what Gro calls a ‘source app’)
- Source’s data structure is researched and converted, or ‘mapped’, to conform with Gro’s proprietary Ontology.
- Code written to automate data translation (second half of the ‘source app’)
- Source app is rigorously tested to ensure data quality and proper functionality

Architecture: information flow



Combination of Data Sources/Sets

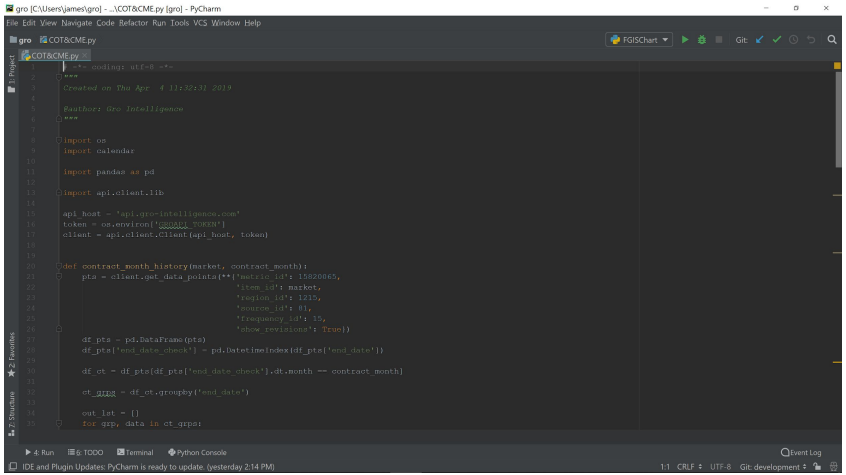
CFTC COT & CME Price Example

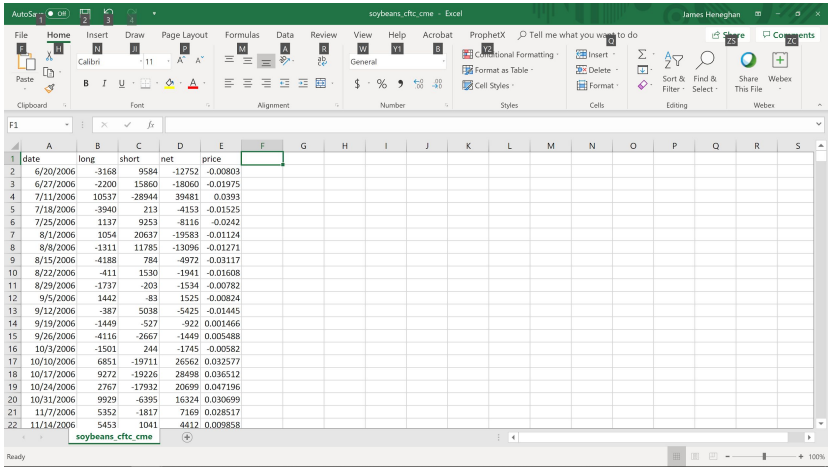


- CFTC Commitments of Traders (COT) data (Legacy, Disaggregated, Index Traders reports)
- CME Futures data
- https://app.gro-intelligence.com/displays/45528

API Data Combination & Analysis

Weekly COT & CME Price Example





date	long	short	net	price
6/20/2006	-3168	9584	-12752	-0.00803
6/27/2006	-2200	15860	-18060	-0.01975
7/11/2006	10537	-28944	39481	0.0393
7/18/2006	-3940	213	-4153	-0.01525
7/25/2006	1137	9253	-8116	-0.0242
8/1/2006	1054	20637	-19583	-0.01124
8/8/2006	-1311	11785	-13096	-0.01271
8/15/2006	-4188	784	-4972	-0.03117
8/22/2006	-411	1530	-1941	-0.01608
8/29/2006	-1737	-203	-1534	-0.00782
9/5/2006	1442	-83	1525	-0.00824
9/12/2006	-387	5038	-5425	-0.01445
9/19/2006	-1449	-527	-922	0.001466
9/26/2006	-4116	-2667	-1449	0.005488
10/3/2006	-1501	244	-1745	-0.00582
10/10/2006	6851	-19711	26562	0.032577
10/17/2006	9272	-19226	28498	0.036512
10/24/2006	2767	-17932	20699	0.047196
10/31/2006	9929	-6395	16324	0.030699
11/7/2006	5352	-1817	7169	0.028517
11/14/2006	5453	1041	4412	0.009858

- Gro API code
- Sample Outputs (Plots, CSVs)
- https://github.com/gro-intelligence/api-client

Potential Applications of Gro

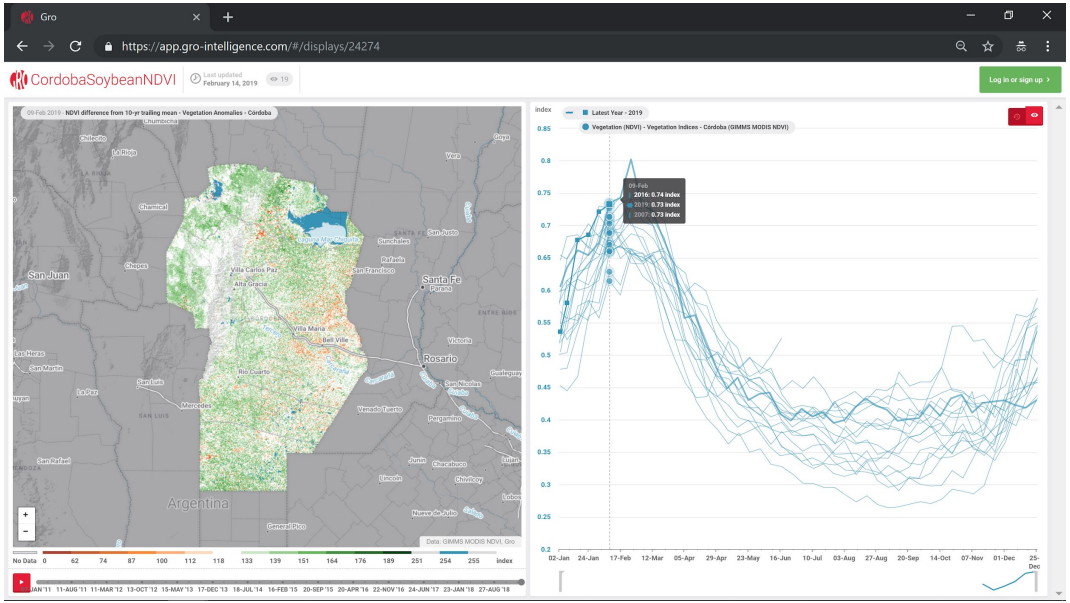
- Replacing spreadsheets, combining multiple sources of data, automating processes for:
- Deliverable Supply calculations
- Physical and Futures Price Convergence calculations
- Futures Delivery calculations
- Enumerated Agricultural Commodities

Appendix

Key Crops & Countries

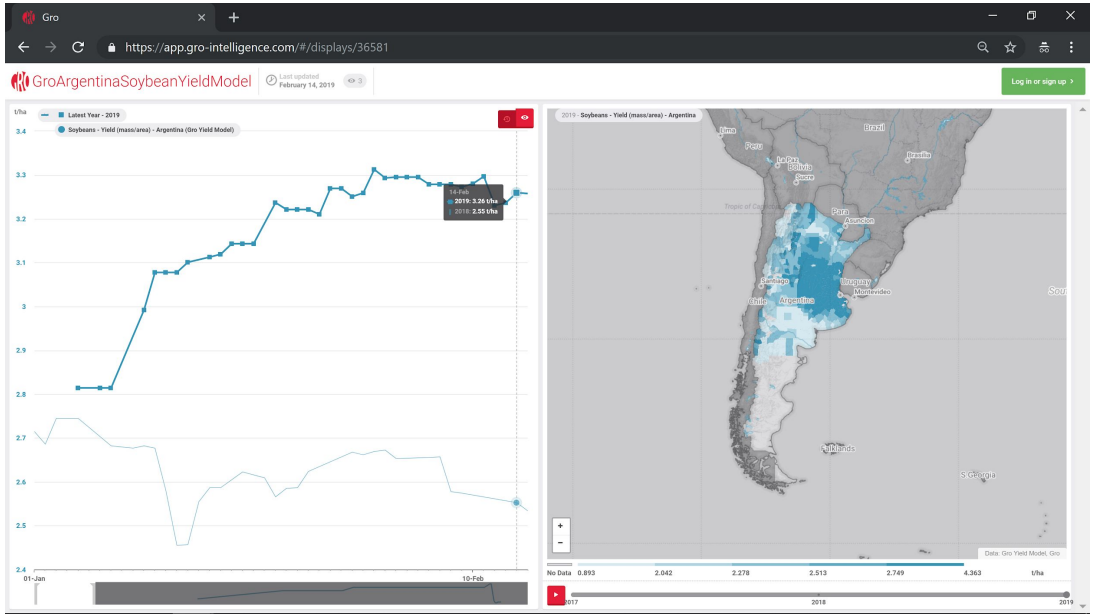
Corn	https://app.gro-intelligence.com/#/displays/40051
Soybeans	https://app.gro-intelligence.com/#/displays/40050
Wheat	https://app.gro-intelligence.com/#/displays/32074
US	https://app.gro-intelligence.com/#/displays/32106
Brazil	https://app.gro-intelligence.com/#/displays/31068
Black Sea	https://app.gro-intelligence.com/#/displays/40052
China	https://app.gro-intelligence.com/#/displays/45506

Geospatial/Climatological Data



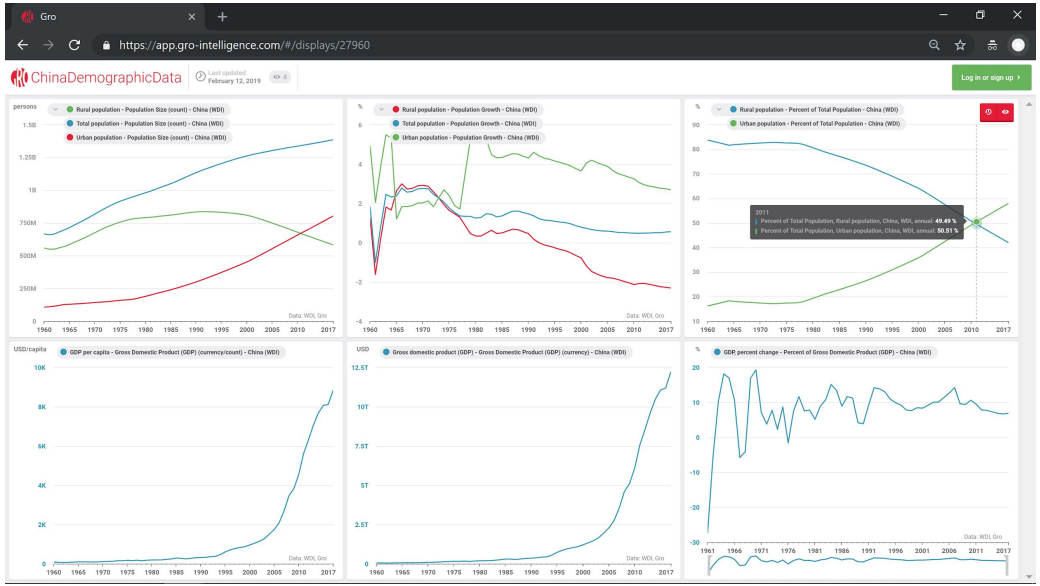
- https://app.gro-intelligence.com/#/displays/24274
- NDVI, Evapotranspiration, Soil Moisture, Rainfall, Temperature, Drought Indicator, Anomalies
- Global data consistently updated in Time Series and Maps

Supply Side - Yield Models



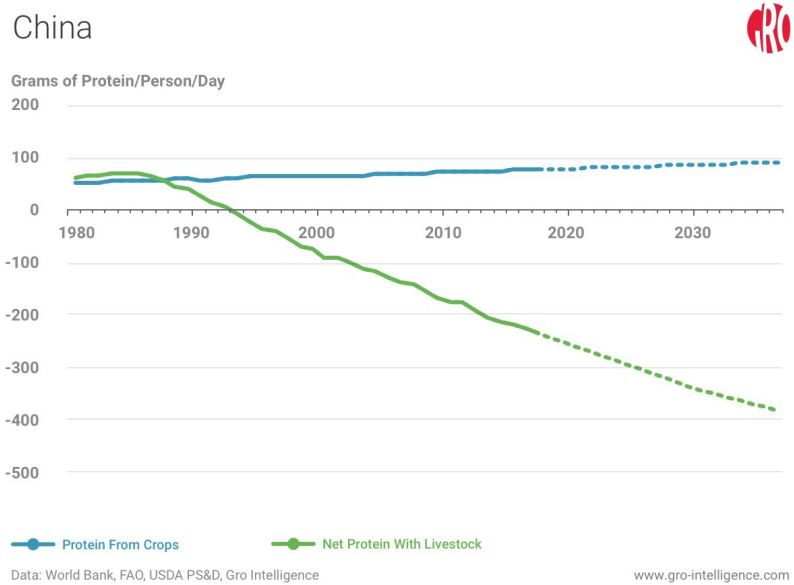
- https://app.gro-intelligence.com/#/displays/36581
- 20 year backtested, district/county, state/province, national model estimates
- Crop mask weighted inputs (NDVI, Evapotranspiration, Rainfall, Temperature, Soil Moisture)

Demand Side - Demographic Data



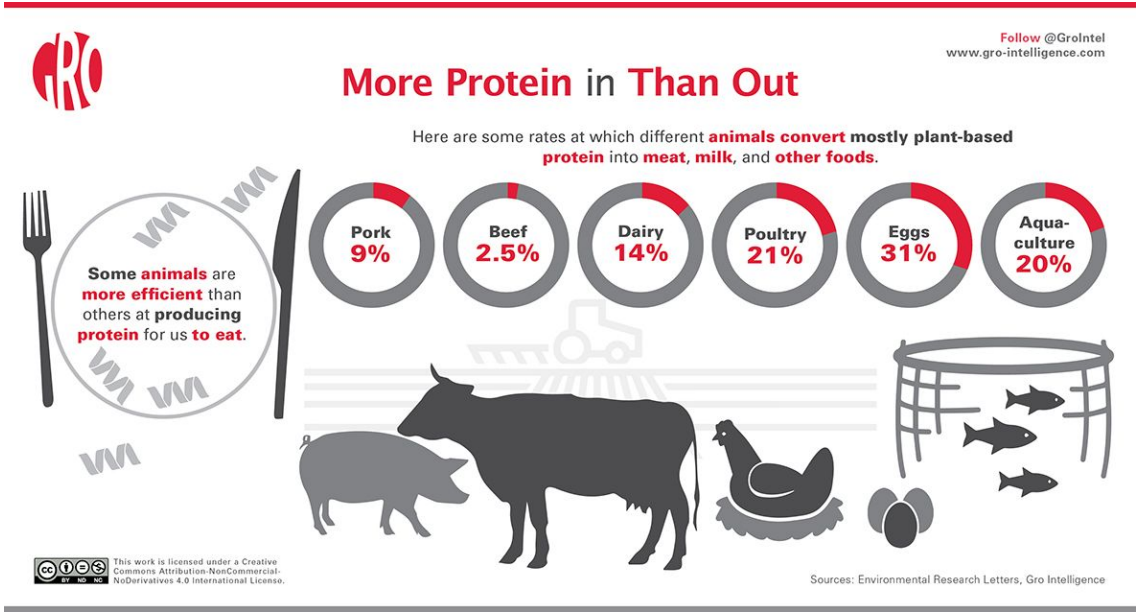
- https://app.gro-intelligence.com/#/displays/27960
- Population, Income, Urbanization data that drives demand

Demand Forecasts - Protein Consumption



- Long Term Chinese Protein demand driven by demographics, meat demand, livestock feeding

Content



- https://gro-intelligence.com/insights/which_countries_have_a_protein_shortage