Tracking Fallow Land in California Using USDA's Cropland Data Layer

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USDA NASS

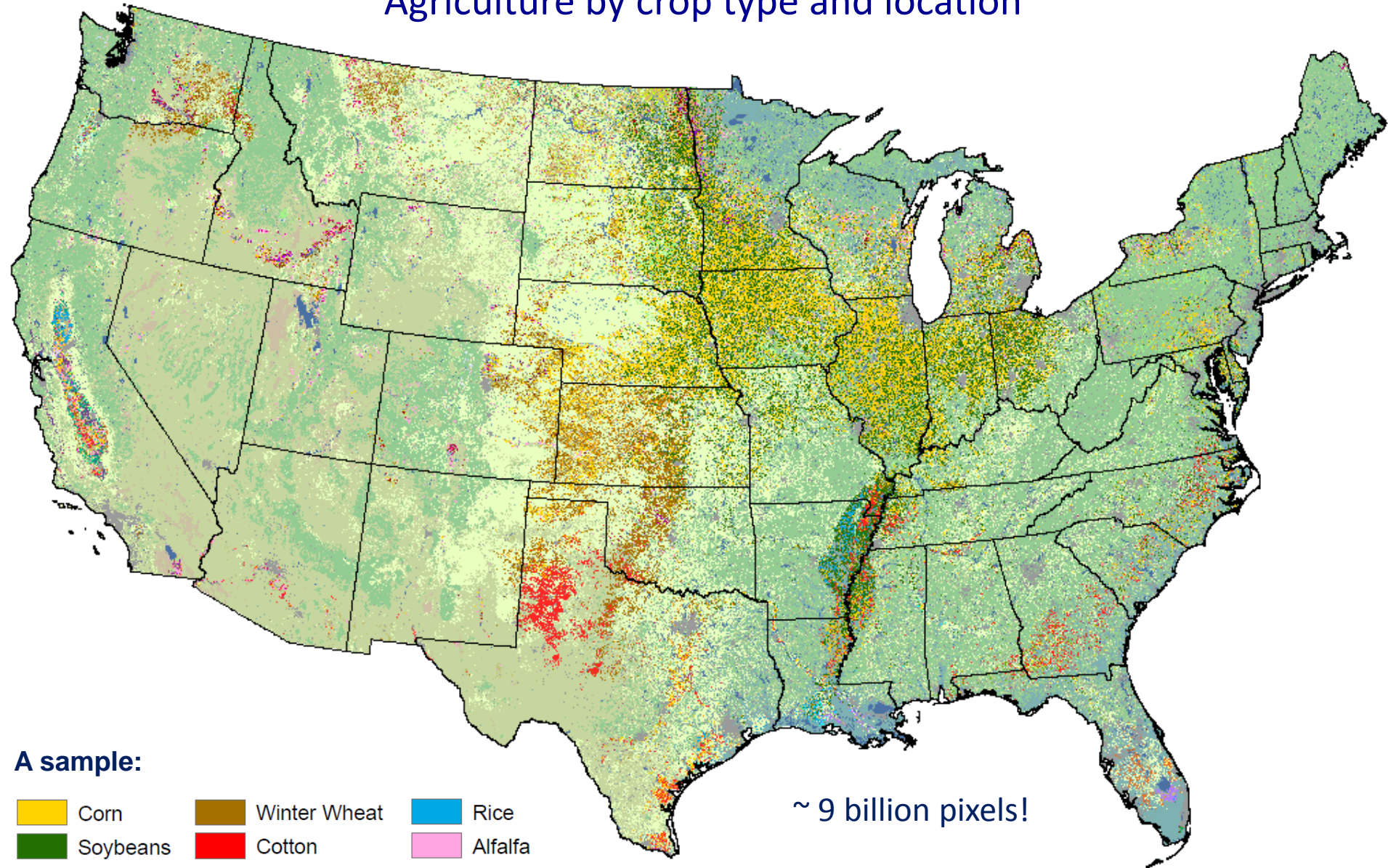## Fairfax, VA

Cropland Data Layer

Agriculture by crop type and location

A sample:

Corn	Winter Wheat	Rice
Soybeans	Cotton	Alfalfa

~ 9 billion pixels!

Crop Categories

#	Crop	#	Crop	#	Crop	#	Crop
1	Corn	41	Sugarbeets	73	Other Tree Fruits	227	Lettuce
2	Cotton	42	Dry Beans	74	Pecans	228	Cucumbers
3	Rice	43	Potatoes	75	Almonds	229	Pumpkins
4	Sorghum	44	Other Crops	76	Walnuts	230	Lettuce/Durum Wht
5	Soybeans	45	Sugarcane	77	Pears	231	Lettuce/Cantaloupe
6	Sunflower	46	Sweet Potatoes	80	Other Non-Tree Fruit	232	Lettuce/Upland Cotton
10	Peanuts	47	Misc. Vegs. & Fruits	92	Aquaculture	233	Lettuce/Barley
11	Tobacco	48	Watermelons	204	Pistachios	234	Durum Wht/Sorghum
12	Sweet Corn	49	Onions	205	Triticale	235	Barley/Sorghum
13	Pop. or Orn. Corn	50	Pickles	206	Carrots	236	WinWht/Sorghum
14	Mint	51	Chick Peas	207	Asparagus	237	Barley/Corn
21	Barley	52	Lentils	208	Garlic	238	WinWht/Cotton
22	Durum Wheat	53	Peas	209	Cantaloupes	239	Soybeans/Cotton
23	Spring Wheat	54	Tomatoes	210	Prunes	240	Soybeans/Oats
24	Winter Wheat	55	Caneberries	211	Olives	241	Corn/Soybeans
25	Other Small Grains	56	Hops	212	Oranges	242	Blueberries
26	Dbl. Crop WinWht/Soy	57	Herbs	213	Honeydew Melons	243	Cabbage
27	Rye	58	Clover/Wildflowers	214	Broccoli	244	Cauliflower
28	Oats	59	Sod/Grass Seed	216	Peppers	245	Celery
29	Millet	60	Switchgrass	217	Pomegranates	246	Radishes
30	Speltz	61	Fallow/Idle Cropland	218	Nectarines	247	Turnips
31	Canola	62	Pasture/Grass	219	Greens	248	Eggplants
32	Flaxseed	66	Cherries	220	Plums	249	Gourds
33	Safflower	67	Peaches	221	Strawberries	250	Cranberries
34	Rape Seed	68	Apples	222	Squash	251	Corn - Non-Irrigated
35	Mustard	69	Grapes	223	Apricots	252	Soybean - Non-Irrigated
36	Alfalfa	70	Christmas Trees	224	Vetch	253	WinWheat - Non-Irrigated
37	Other Hay	71	Other Tree Nuts	225	WinWht/Corn		
38	Camelina	72	Citrus	226	Oats/Corn		

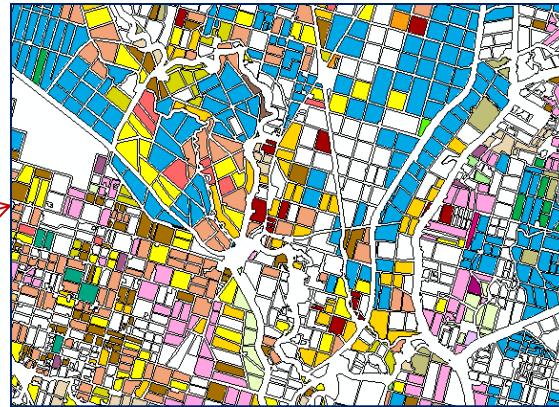# Groundtruth – Farm Service Agency 578 Data
Farmer Reported Data

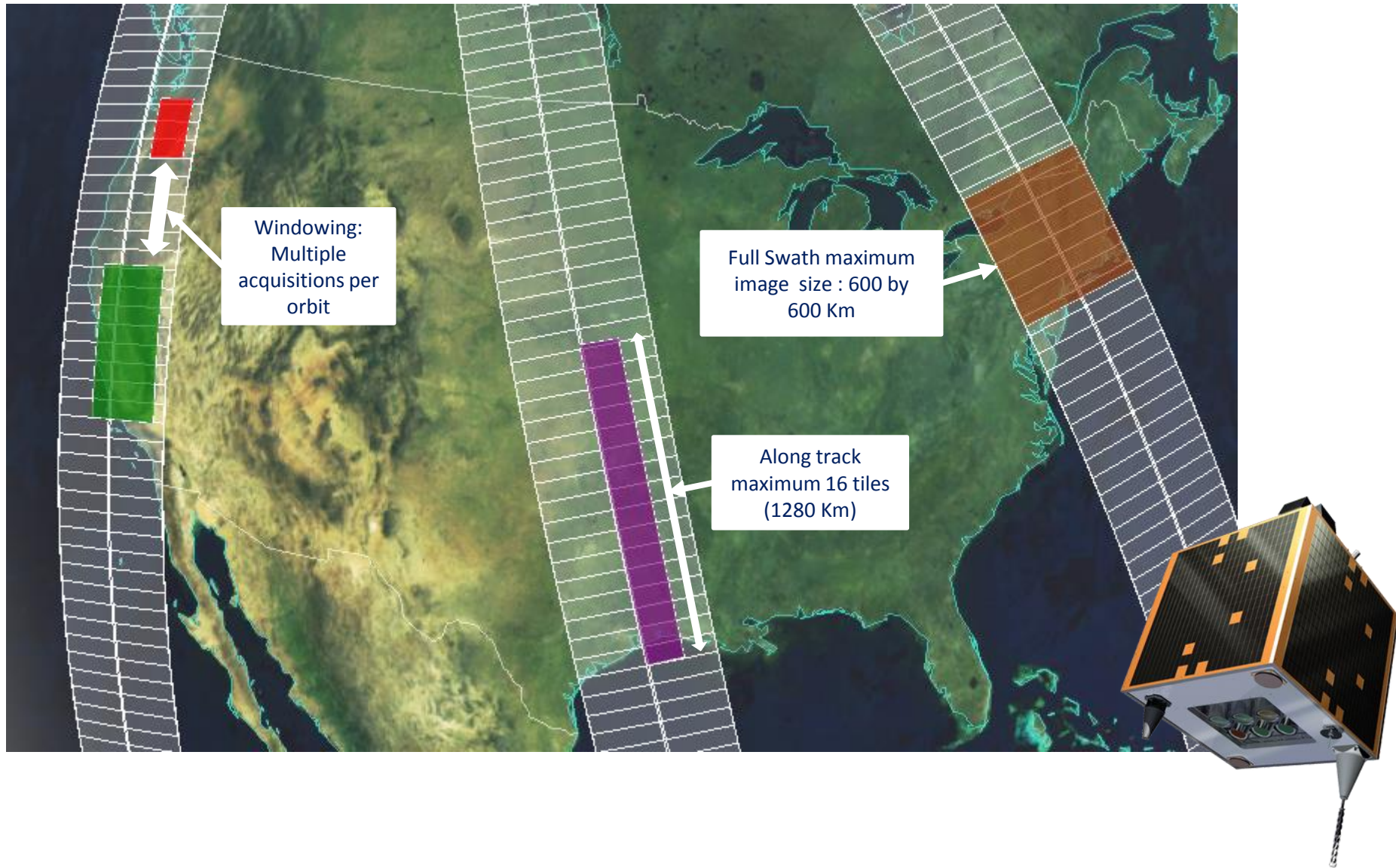**FSA 578 & Common Land Unit**

FSA 578 Data
- Farmer reported data specifying crop type and location

Common Land Unit
- Polygon field data

Rice | Sunflower | Alfalfa | Dry Beans

Corn | Alfalfa | Winter Wheat
Cotton | Almonds | Pistachios

2013 Deimos-1/UK2 Satellite Tasking

Windowing: Multiple acquisitions per orbit

Full Swath maximum image size : 600 by 600 Km

Along track maximum 16 tiles (1280 Km)

Landsat 8

Launched February 11, 2013
FREE to public
30 meter pixels
10 bands

Landsat 8 collections: April 11 to September 30, 2013

5,882 Scenes – 5.25 TB of Storage

Overlap counts

Layers

Color	Count	Color	Count
	3 - 10		28 - 32
1	11 - 15		33 - 38
2	16 - 20		39 - 44
	21		45 - 52

AGRICULTURE COUNTS
NASS
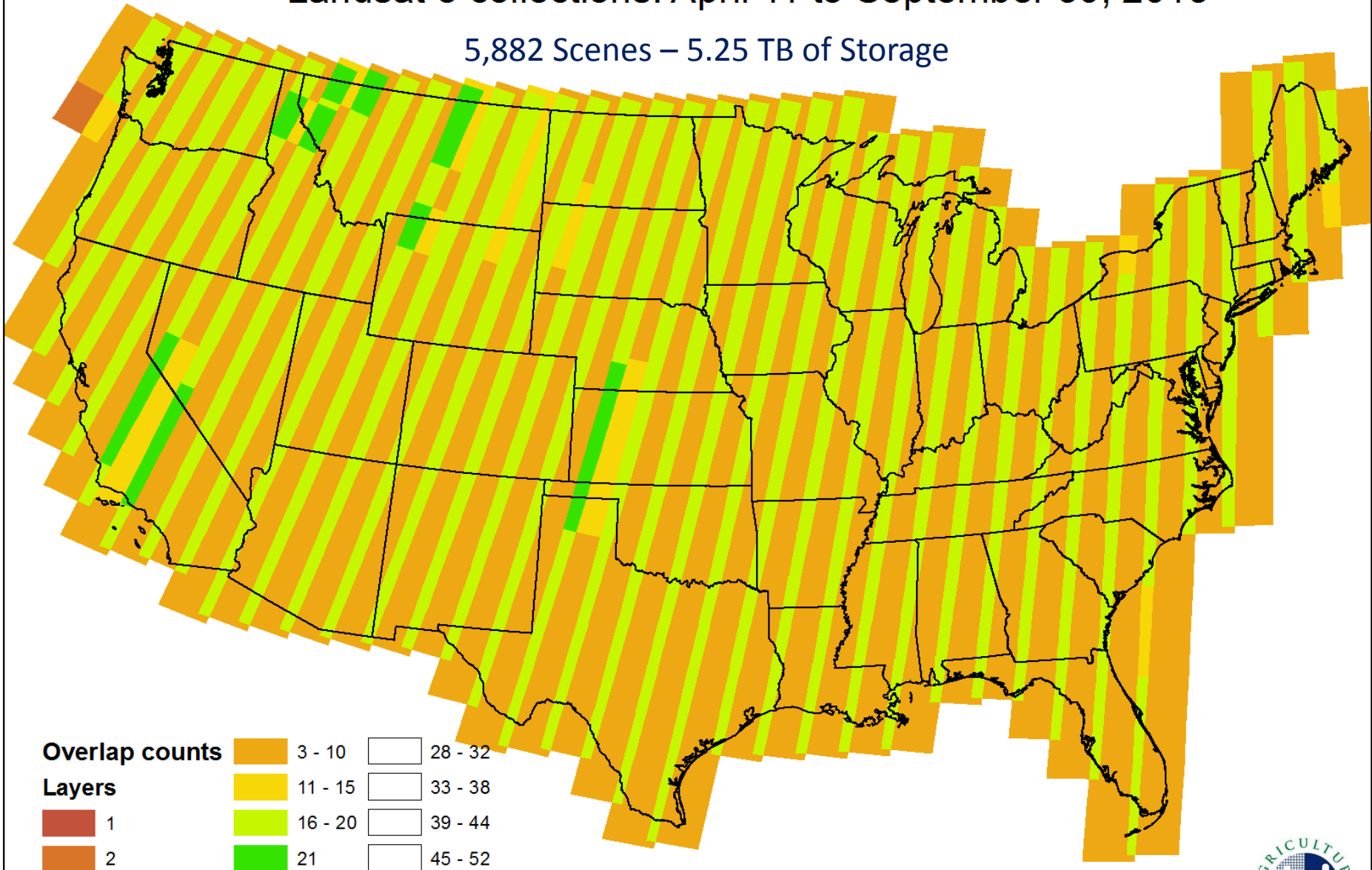
DMC collections: April 15 to September 30, 2013
~1,350 Scenes – 0.7 TB of Storage

Overlap counts

Layers

1	3 - 10	28 - 32
2	11 - 15	33 - 38
	16 - 20	39 - 44
	21 - 27	45 - 52
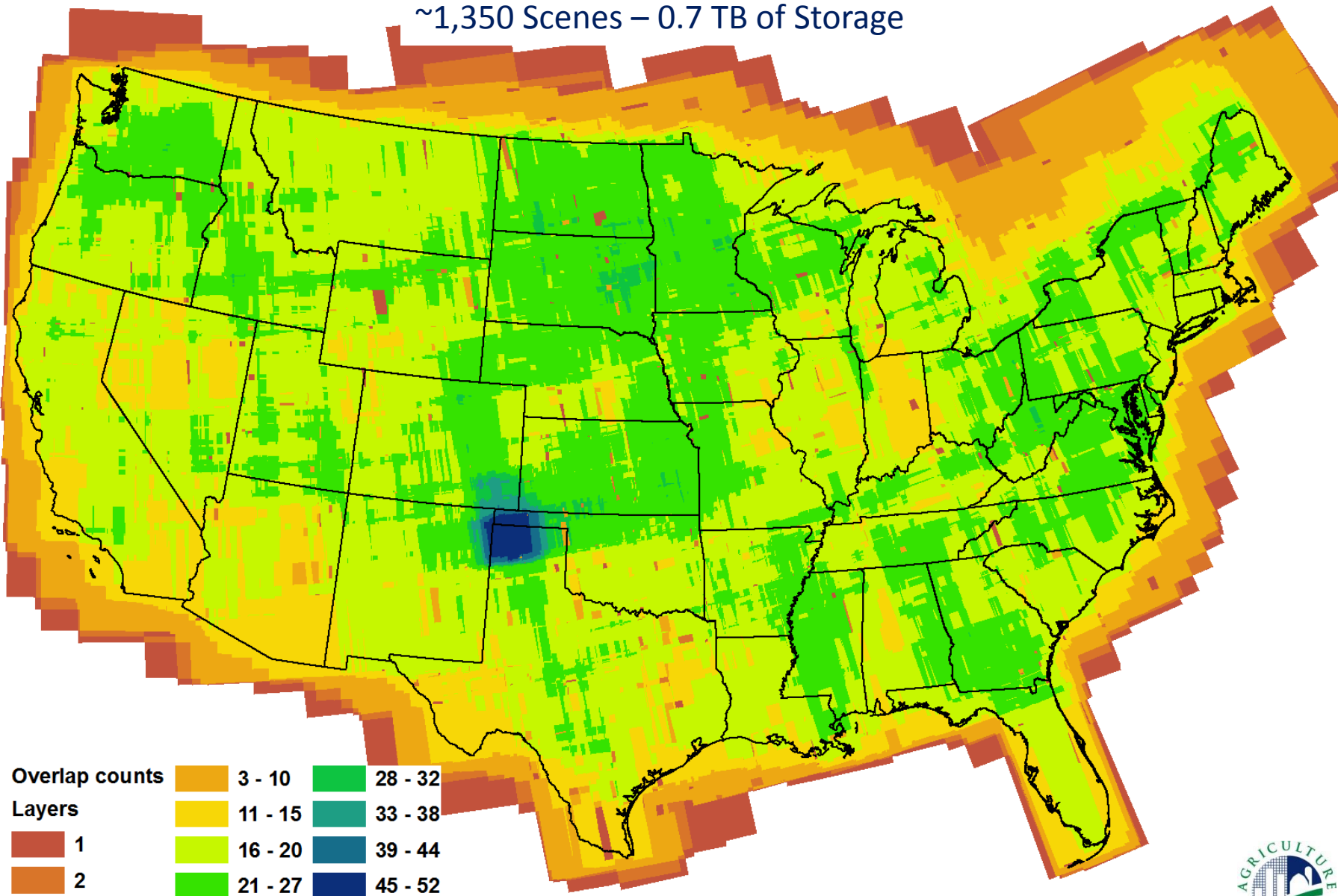
Crop Phenologies

Kansas 5-year average 2006-2010
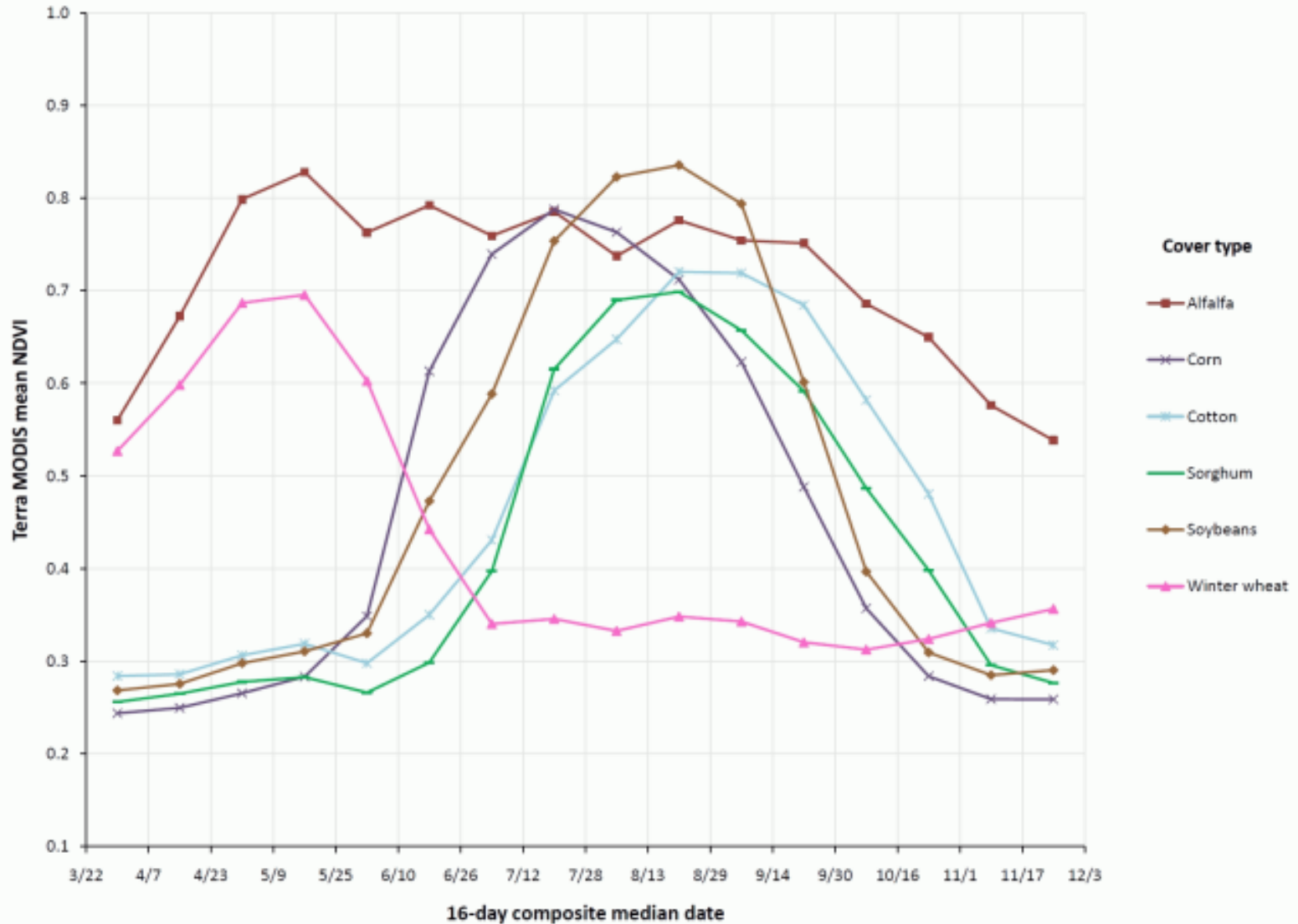
State average corn phenologies

Corn 5-year average 2006-2010
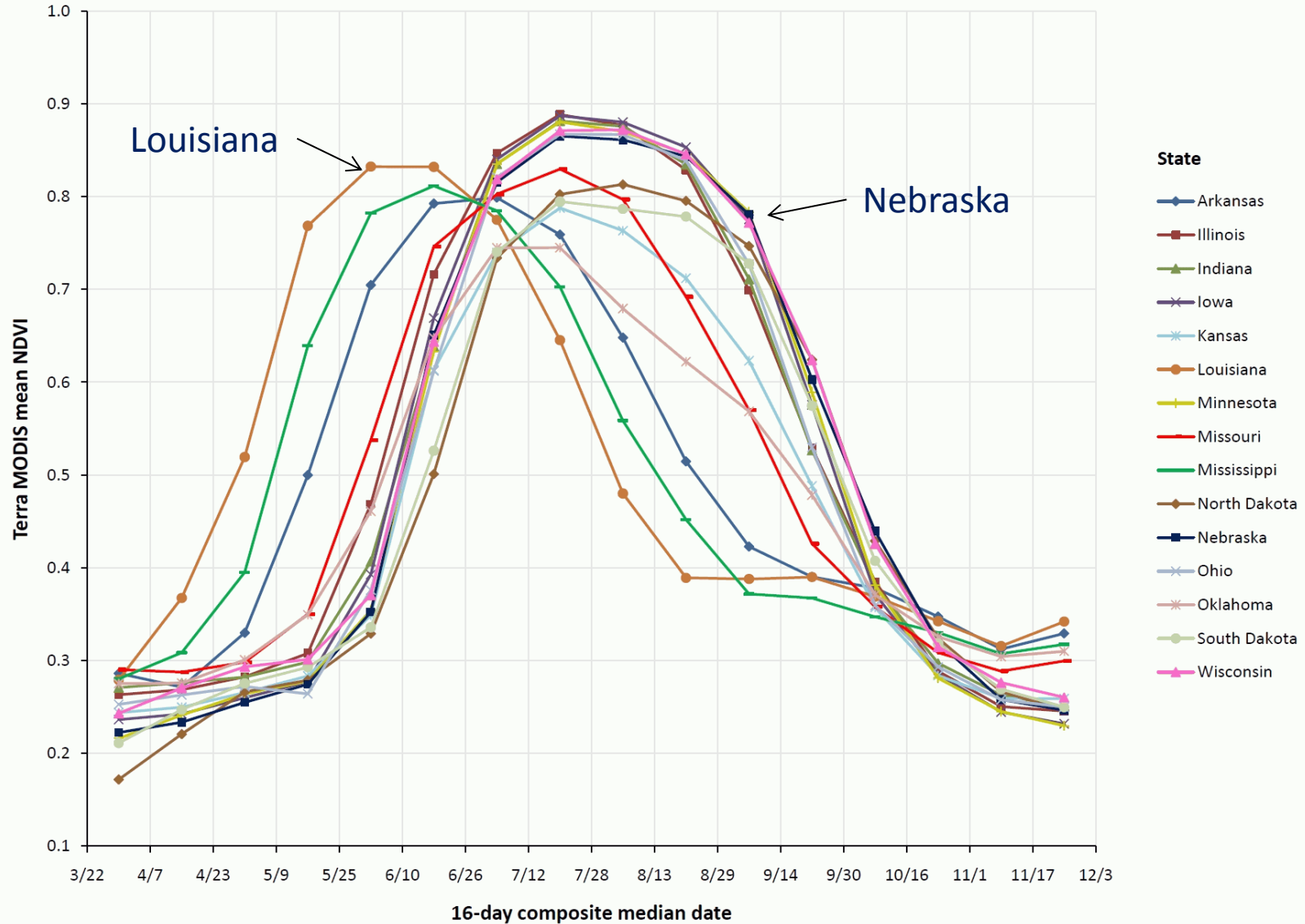
April
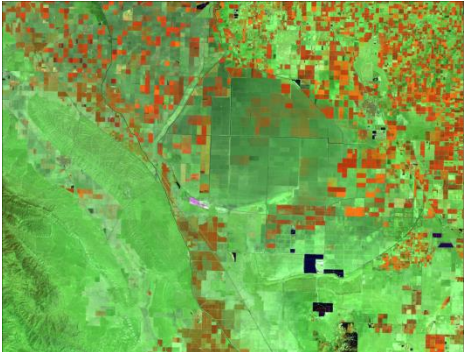
May
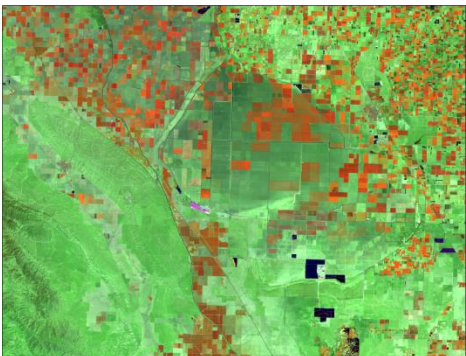
June
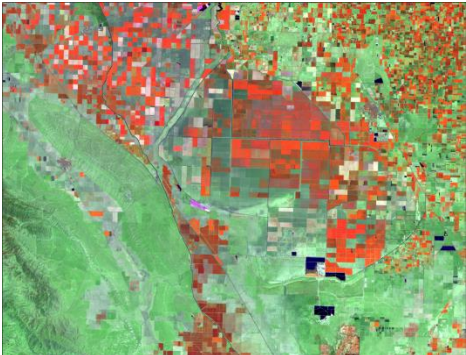
July
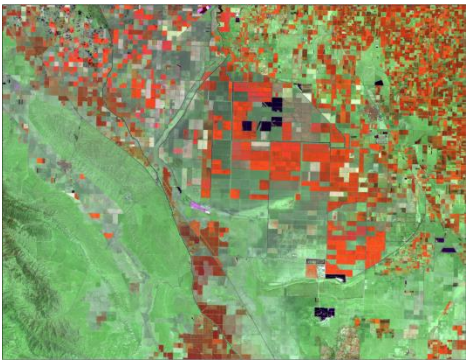
August
with farm
data

Land Cover Categories

Agriculture

	Pasture/Grass
	Alfalfa
	Fallow/Idle Cropland
	Winter Wheat
	Barley
	Cotton
	Almonds
	Corn
	Durum Wheat
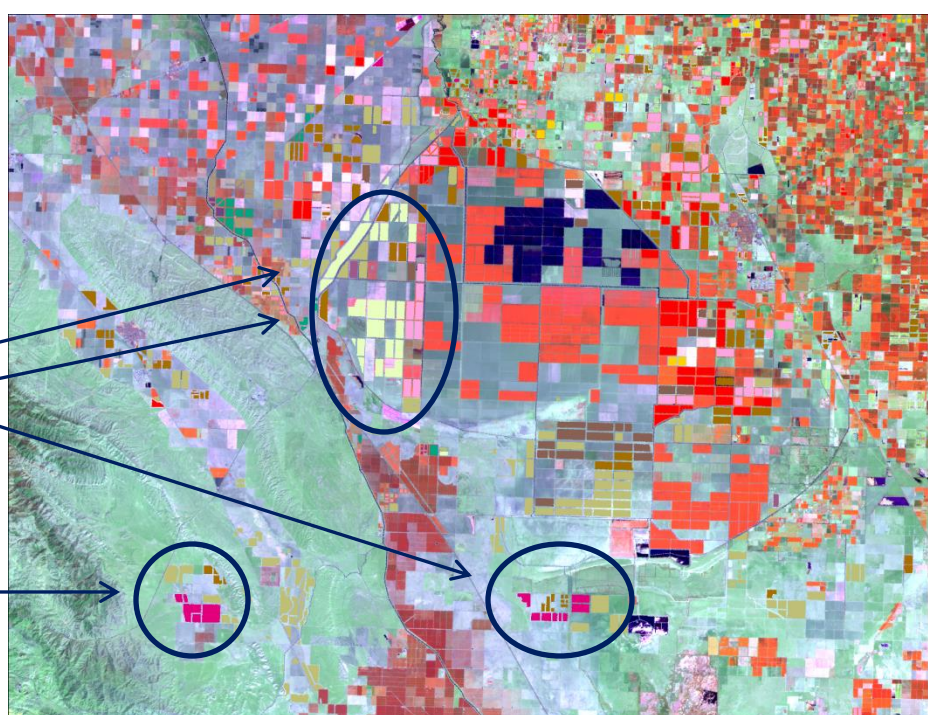
Final
CDL
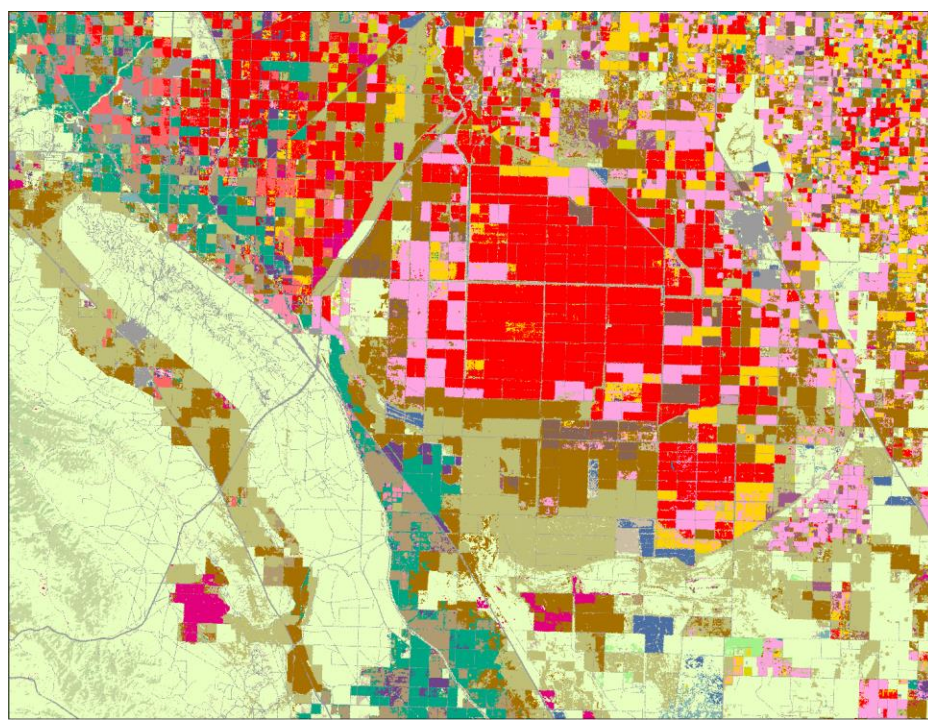
Counties & Field Level
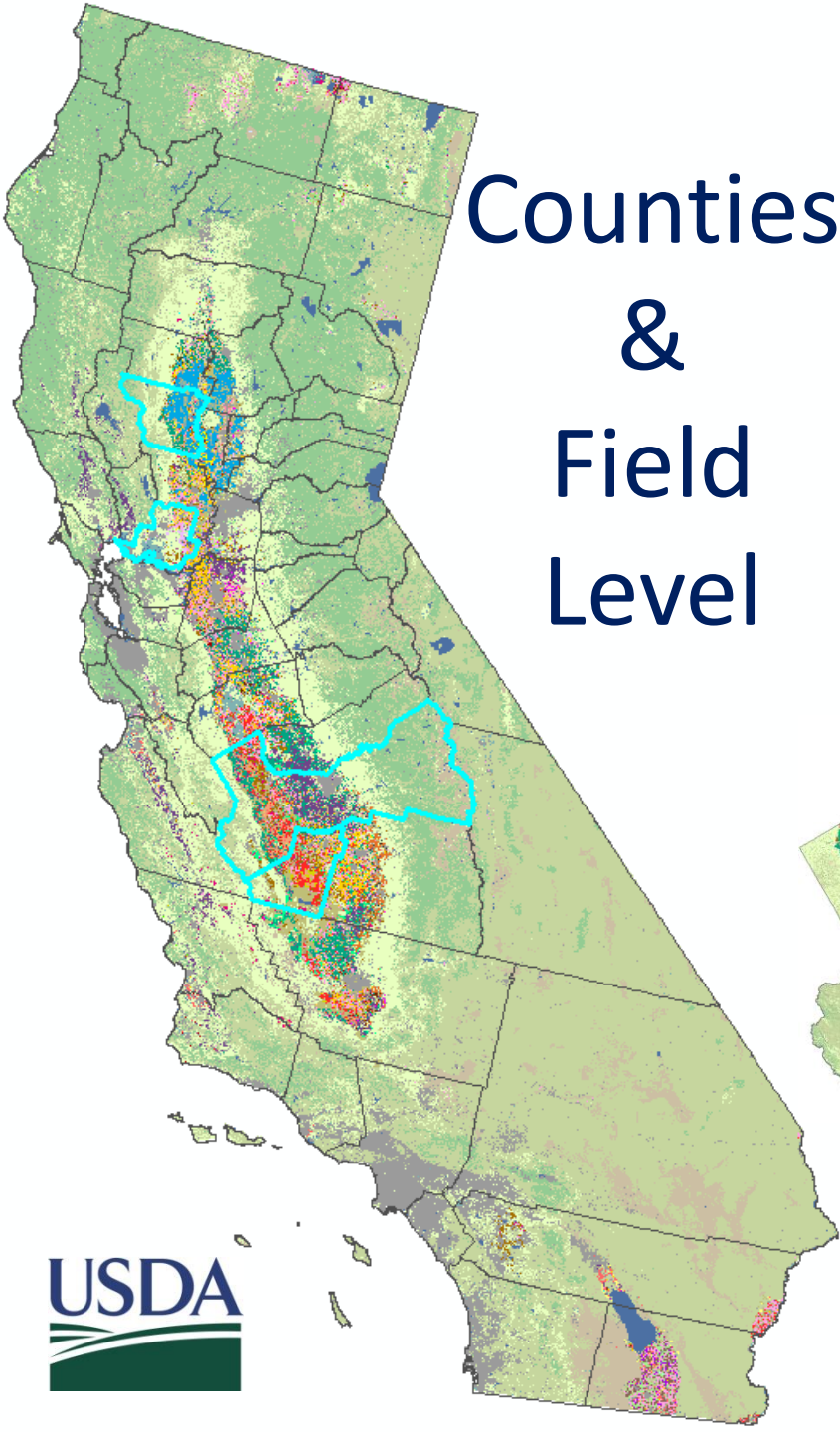
Colusa

Rice
Sunflower
Dry Beans
Winter Wheat

Solano

Clover
Tomatoes
Sunflower
Alfalfa

Fresno

Grapes
Almonds
Alfalfa
Corn

Kings

Cotton
Pistachios
Tomatoes
Safflower

USDA
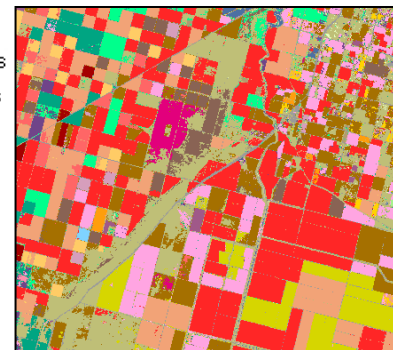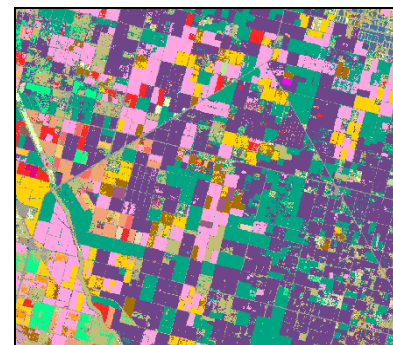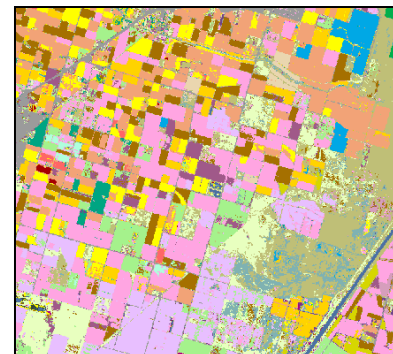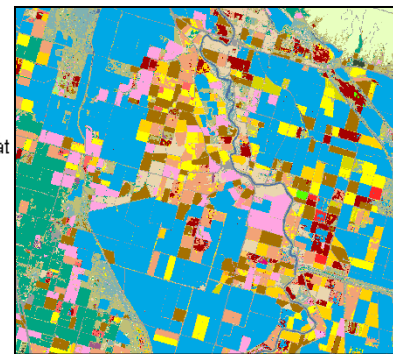
Fallow/Idle Land Mask

Category 61 in CDL

In Season CDL Iterations				
	June	**August**	**September**	**October**
Total Pixels	573,585	639,383	677,913	714,388
Total Acreage	127,562	142,195	150,764	158,875
Producer Accuracy	75.0%	79.4%	82.7%	78.2%
User Accuracy	66.6%	69.9%	71.1%	67.6%

Pixels – 30 meter pixels = 0.223 acres

Producer Accuracy/Omission – relates to the probability that a ground truth pixel will be correctly mapped; occurs when a pixel is excluded from the correct category.

User Accuracy/Commission – indicates the probability a pixel from the classification matches the ground truth data; occurs when a pixel is included in an incorrect category

Definition of "Fallow/Idle" up to farmers

Fallow/Idle by County
arranged by descending October Fallow/Idle acreage

|	Acres by CDL Iteration			
	June	**August**	**September**	**October**
Kern	246,472	263,599	282,865	310,068
Kings	118,197	154,153	214,607	223,455
Fresno	163,500	152,763	157,149	161,372
Tulare	74,511	92,147	100,263	110,517
Yolo	70,598	75,134	77,686	84,979
Sutter	49,477	63,264	62,025	61,019
Imperial	39,163	45,520	52,748	60,706
Butte	54,520	58,213	55,053	53,638
Colusa	31,402	40,790	42,760	45,132
Glenn	28,729	36,061	36,514	39,323

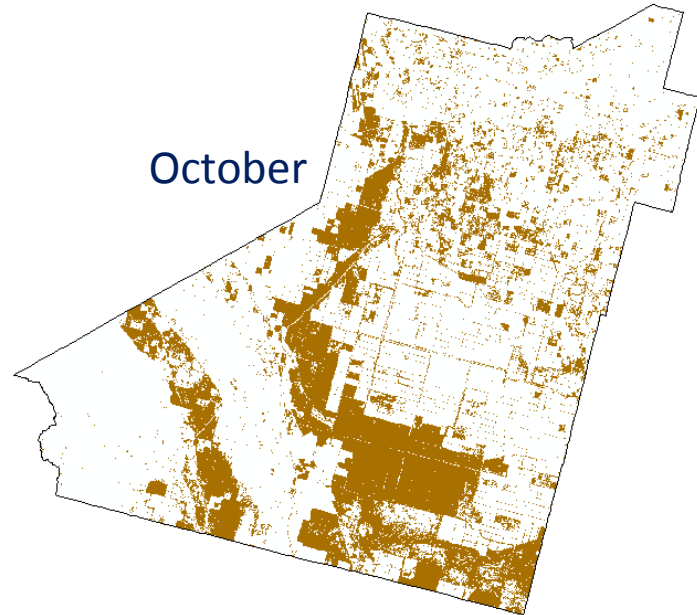USDA

Kern Close-Up
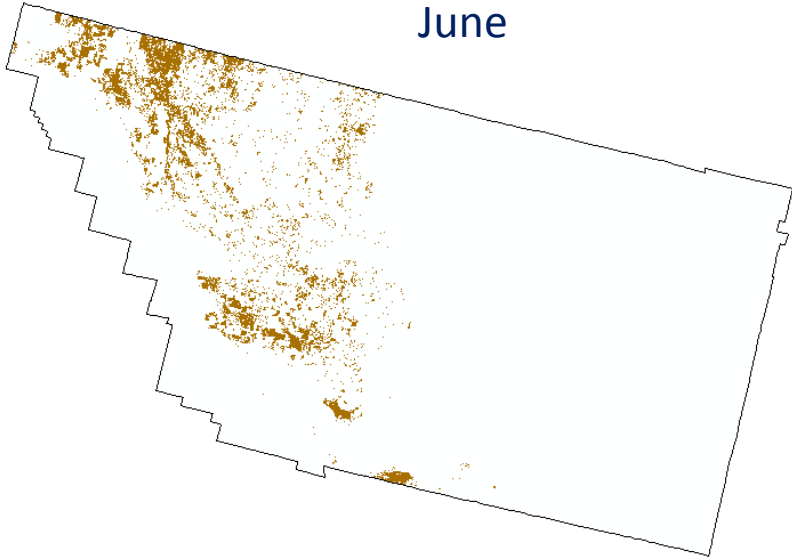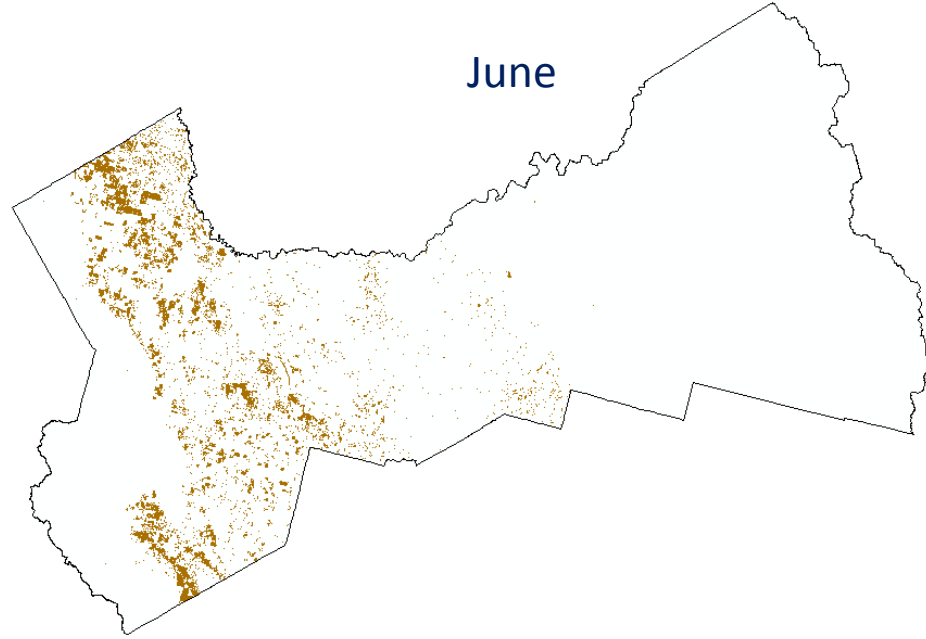
June

August
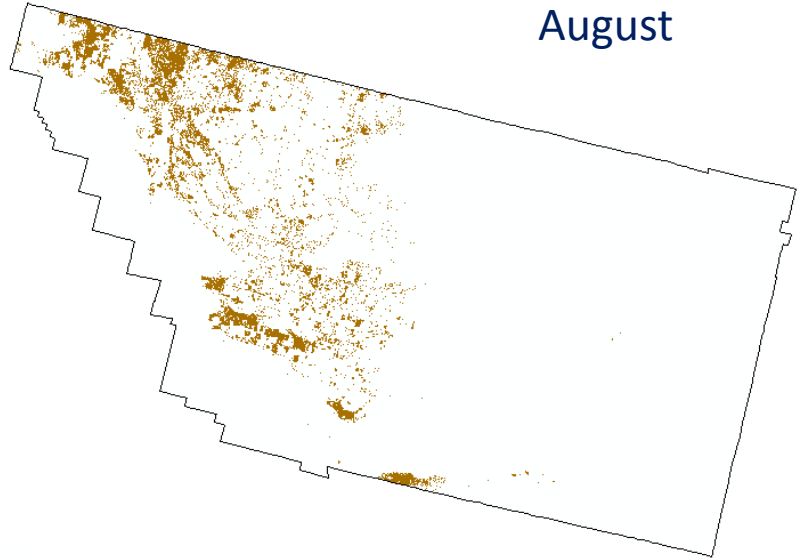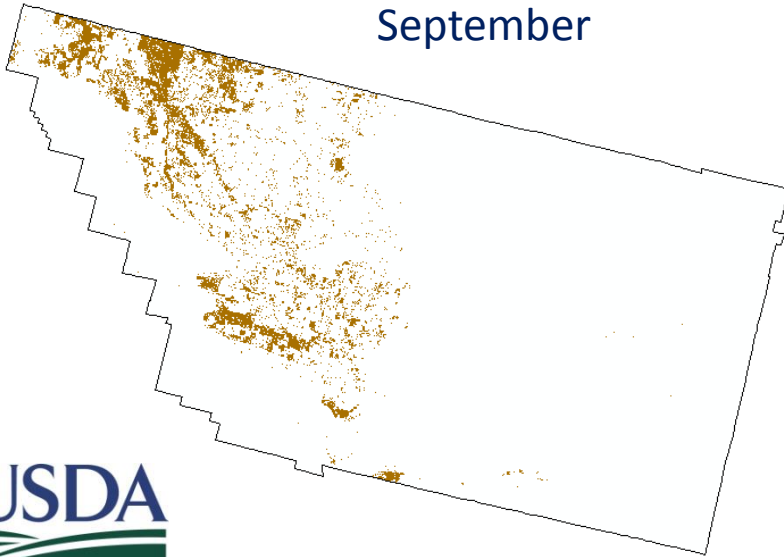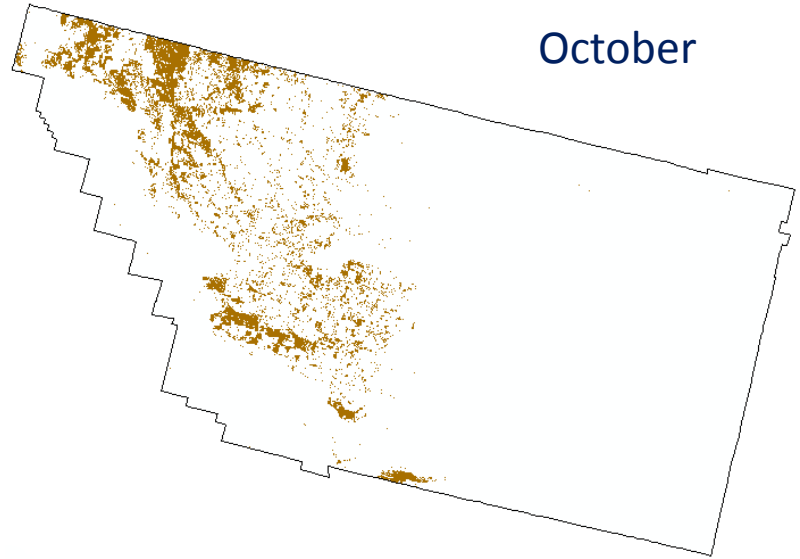
September

October

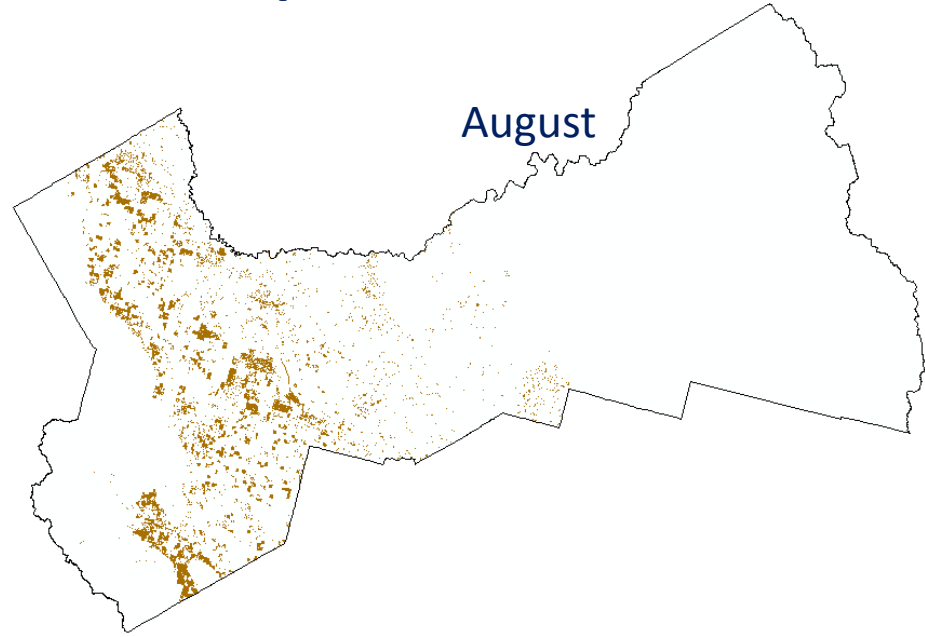# Kings Close-Up
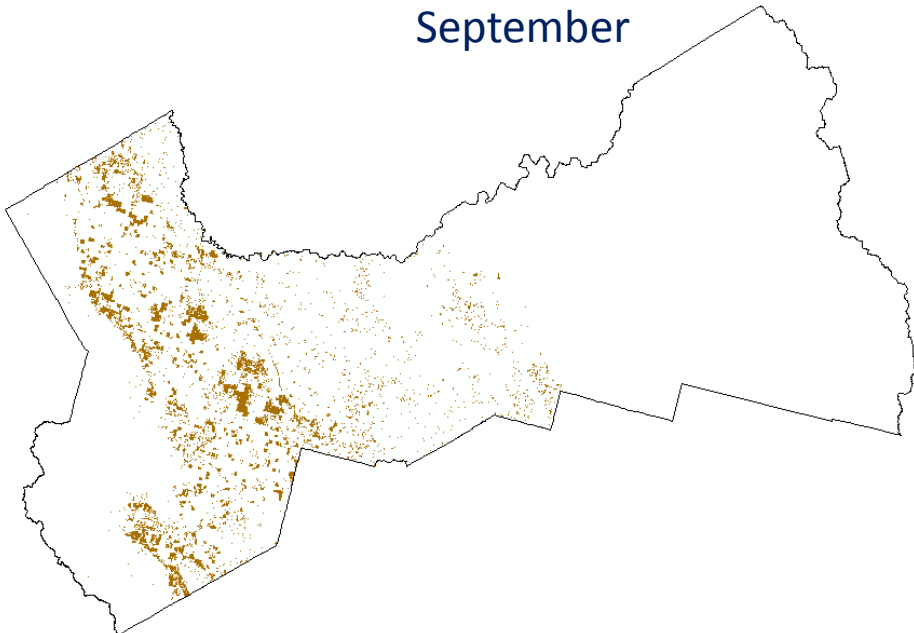

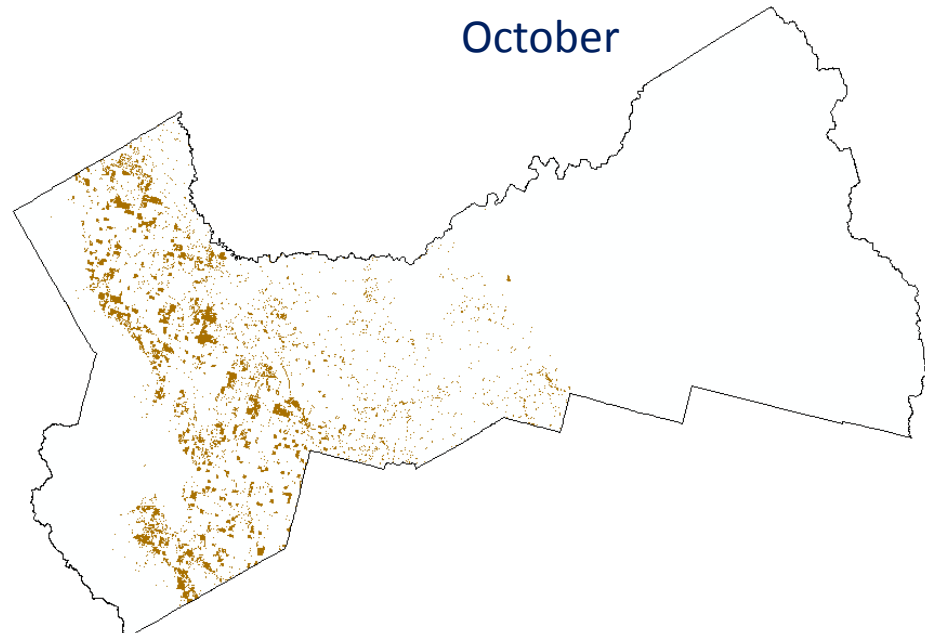June
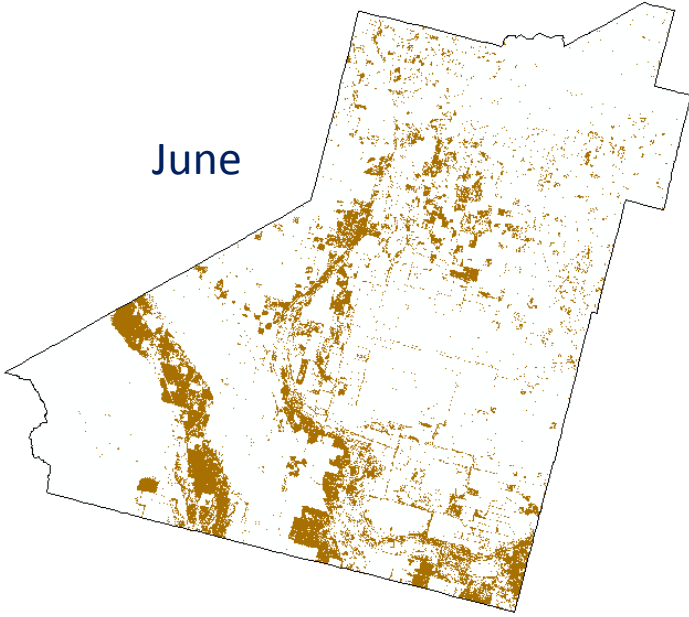
August
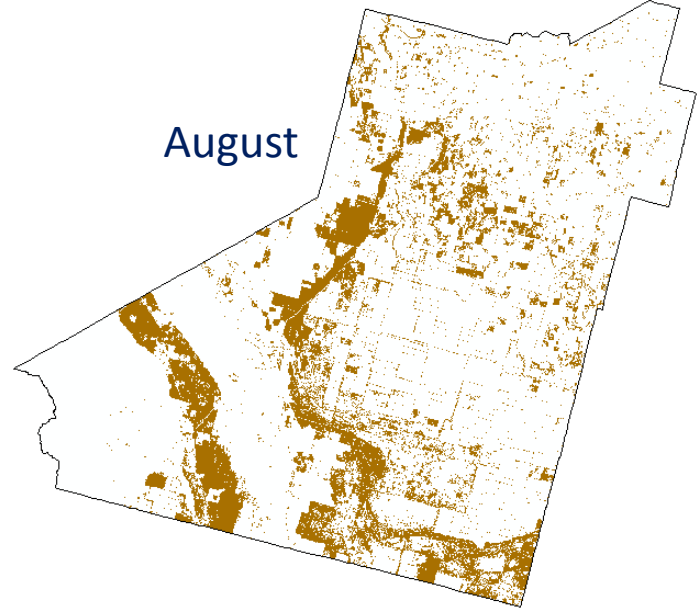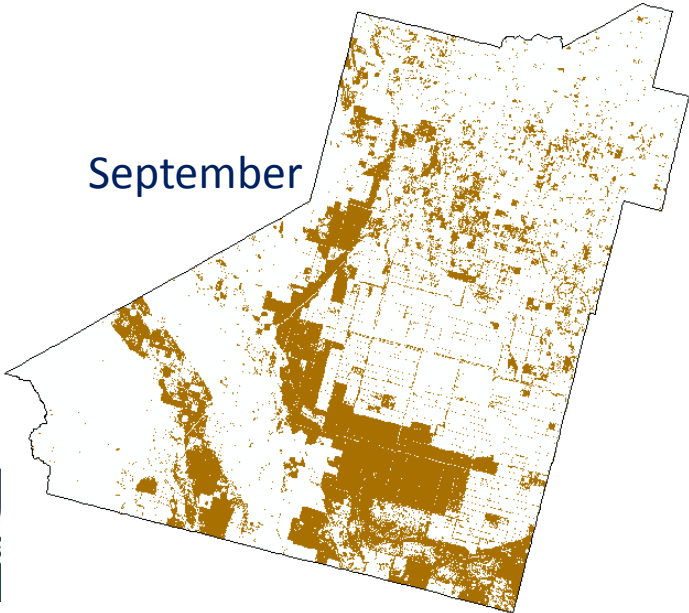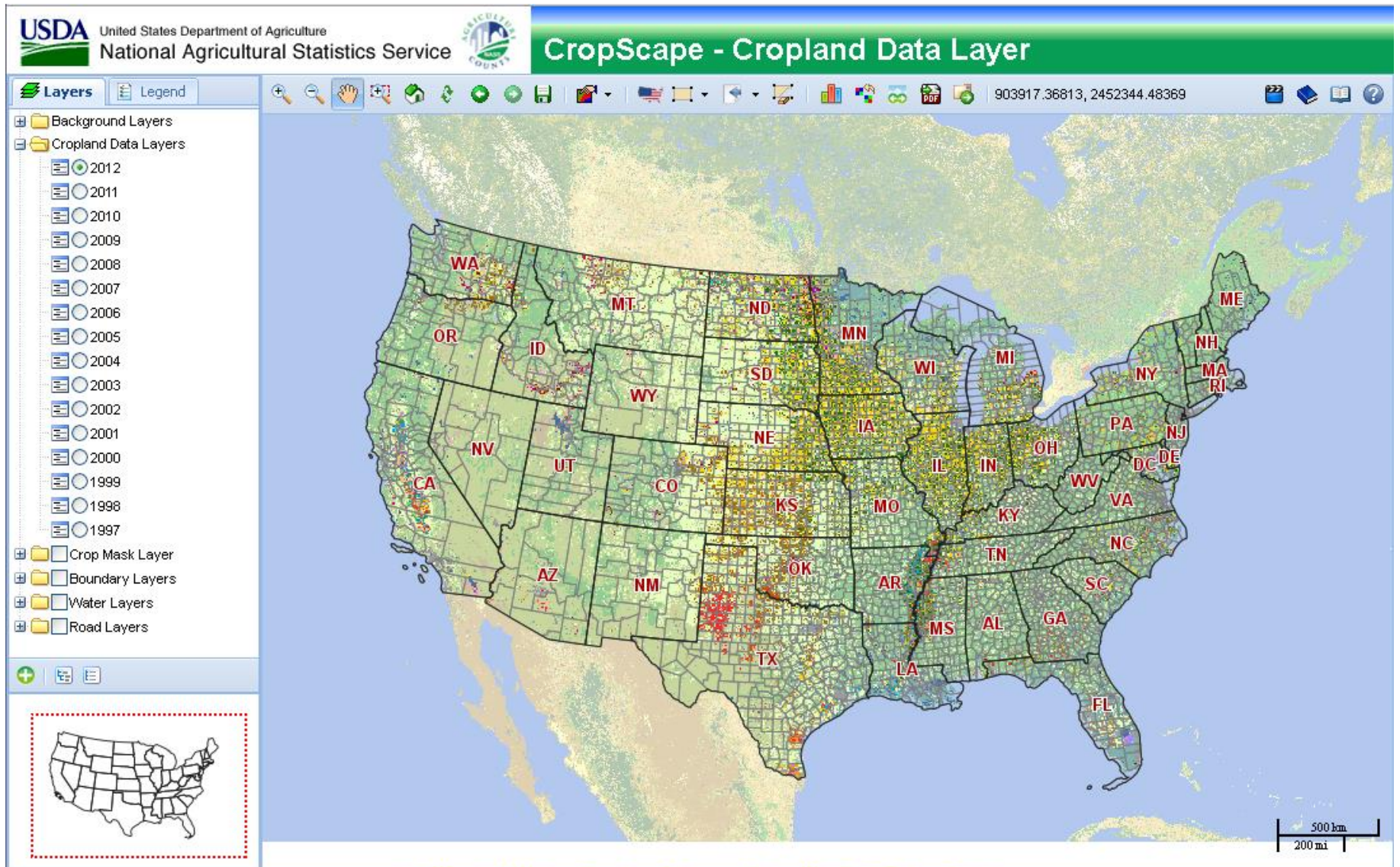
September

October

Fresno Close-Up

June

August

September

October

CropScape

Thank You! Questions?

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