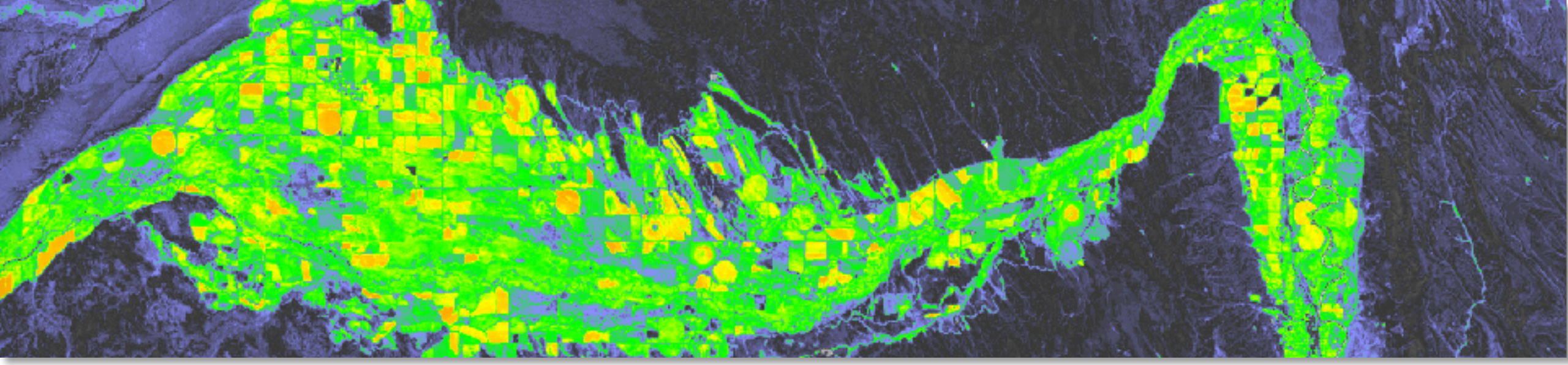


BARLEY BRAIN

PREDICTING THE FUTURE OF YOUR FIELD!

Robert Wade

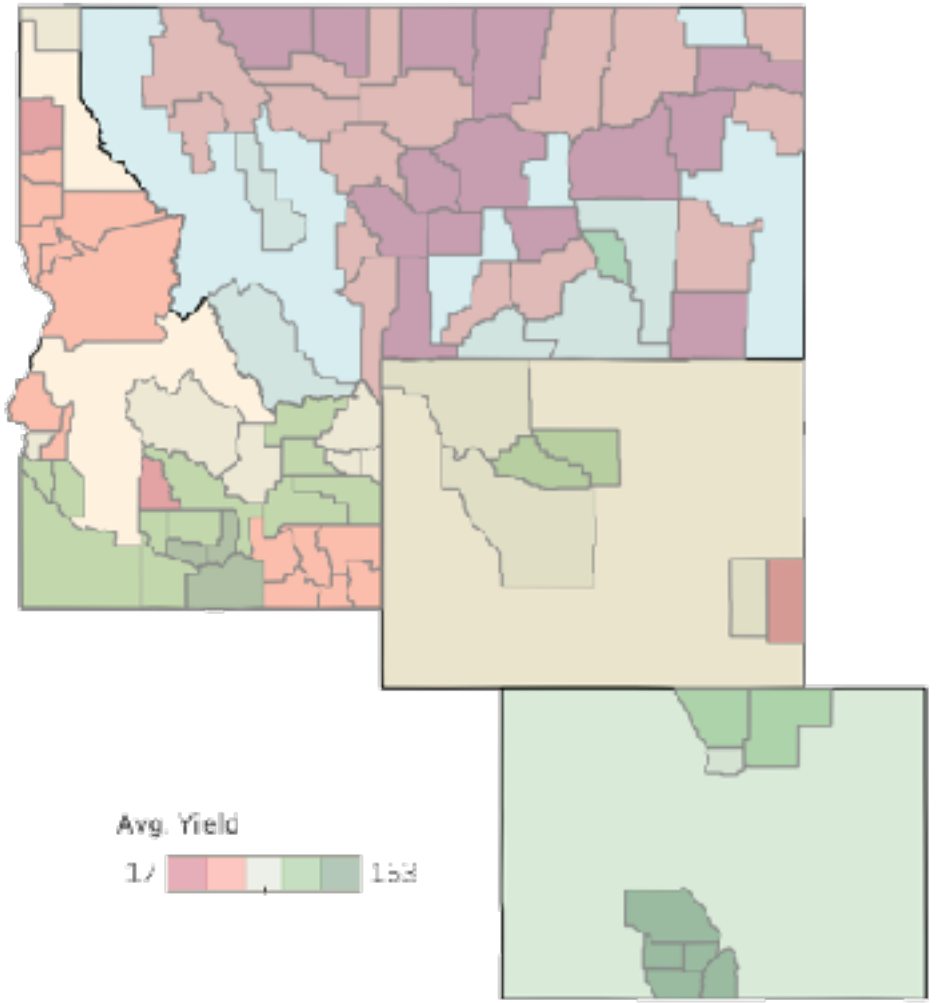
March 2017

INTRO

What is Barley Brain

Barley Brain is a computer model to forecast regional barley yields in Colorado, Wyoming, Idaho and Montana.

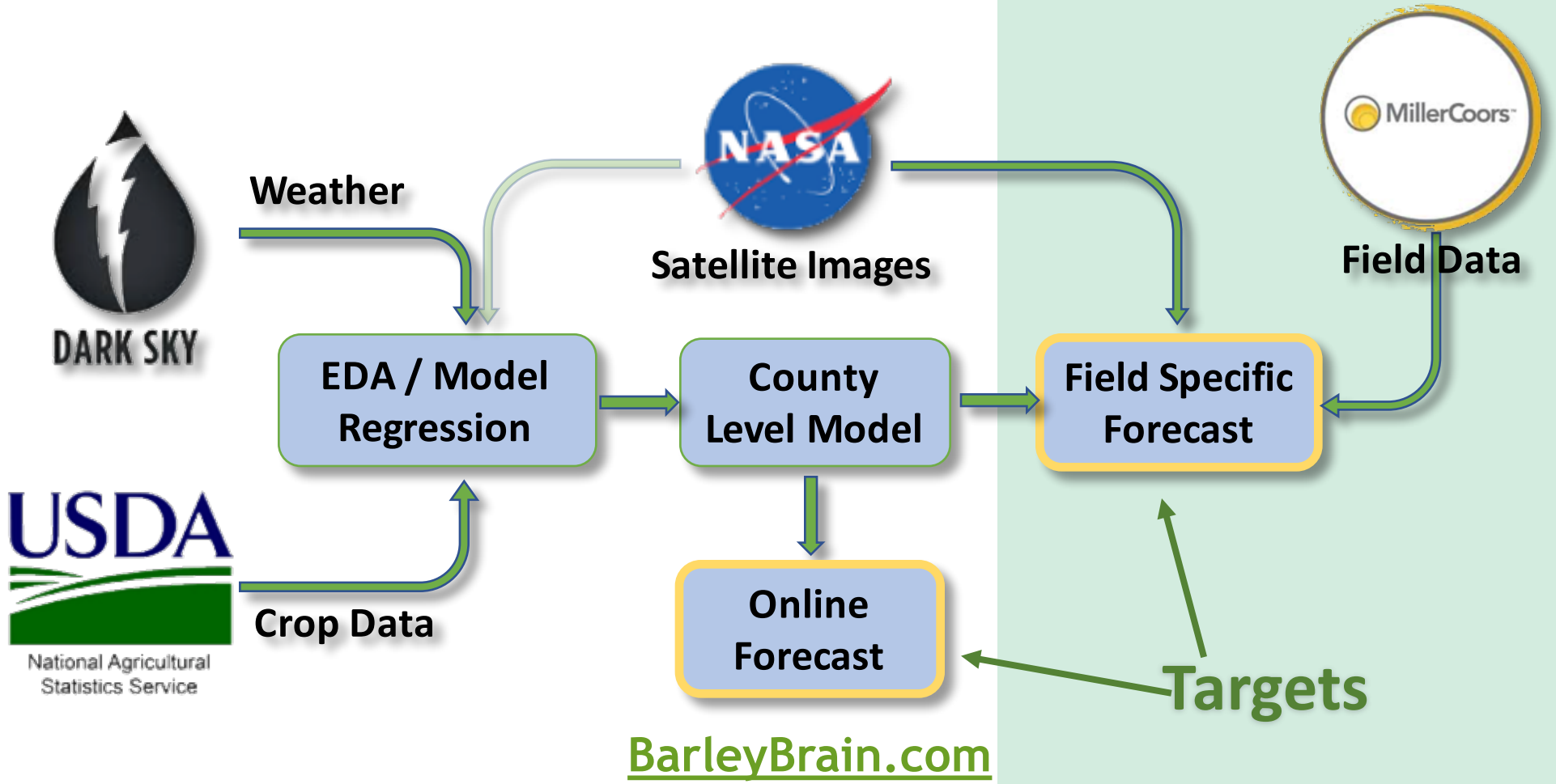
The model aggregates crop information, historic weather, and reported yield from 2010 to present to forecast future yields on a county basis



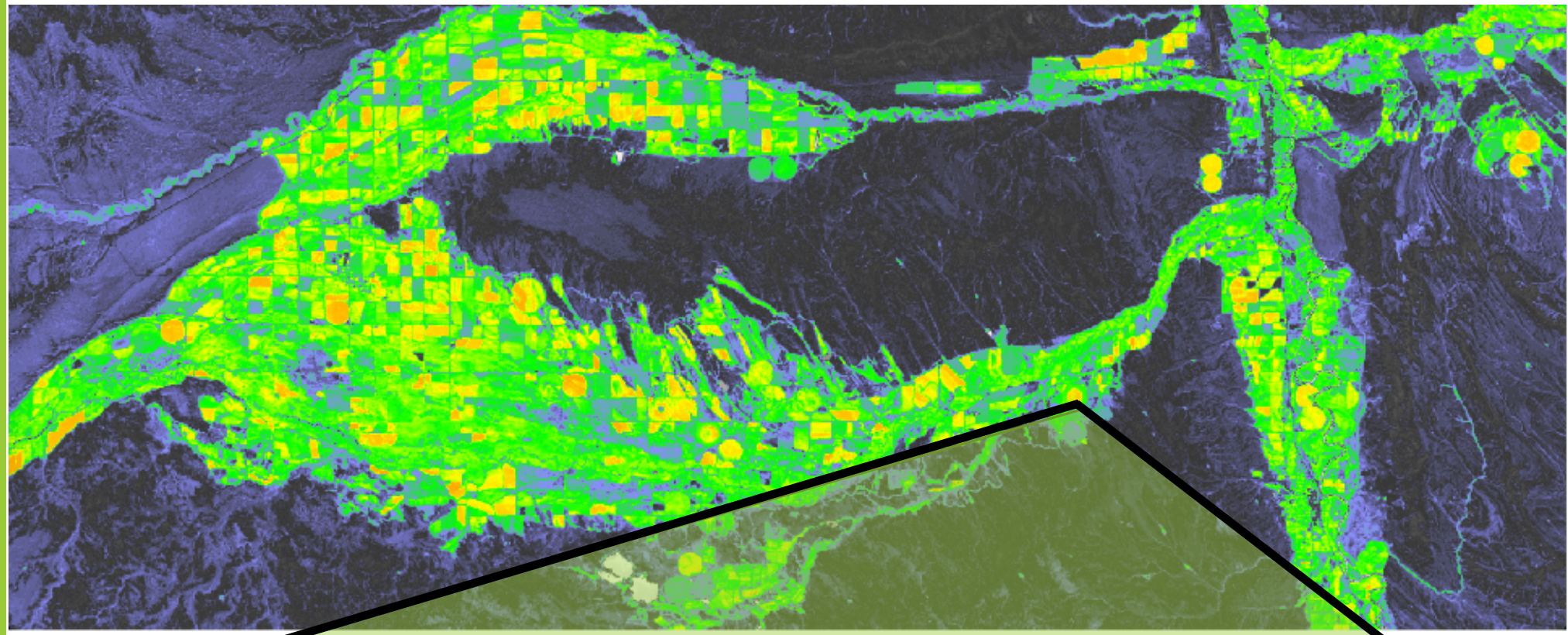
Process

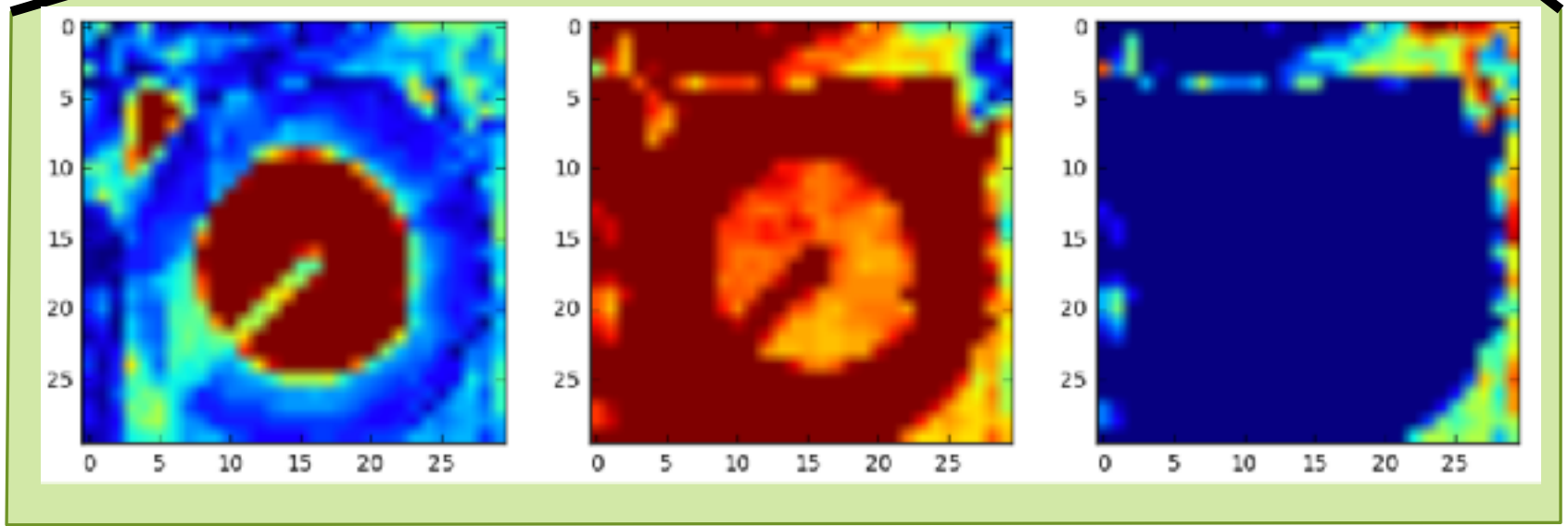
Barley Brain Public

Private

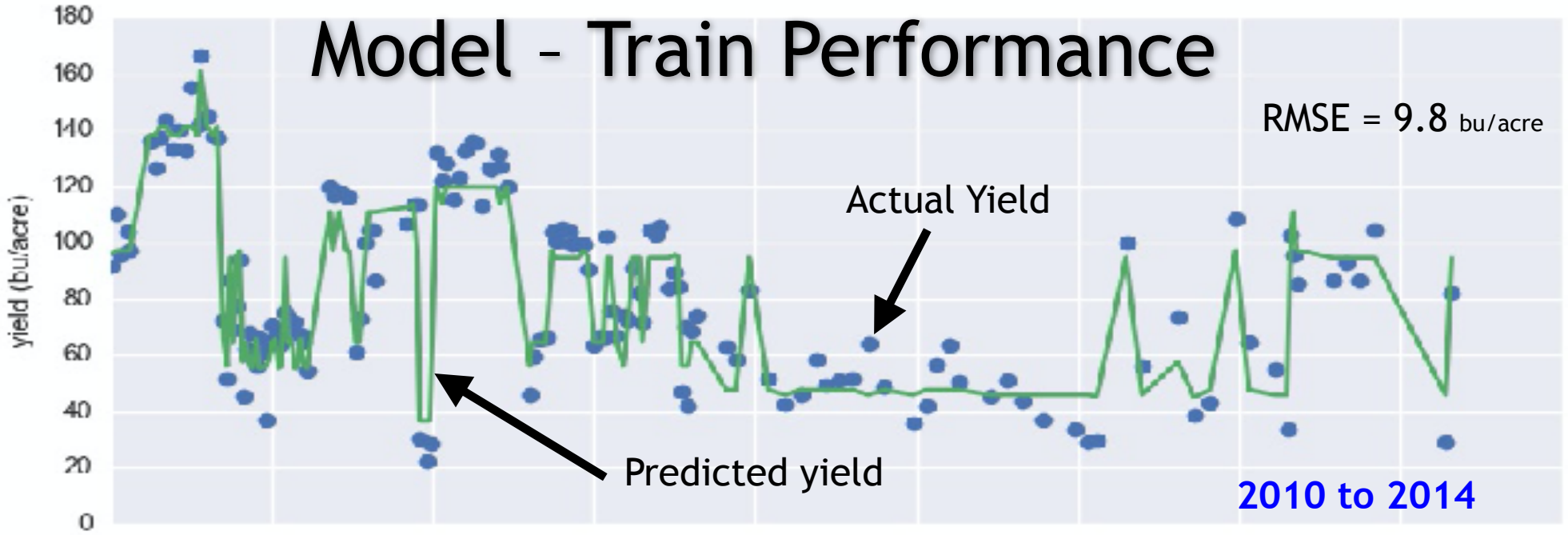


Satellites

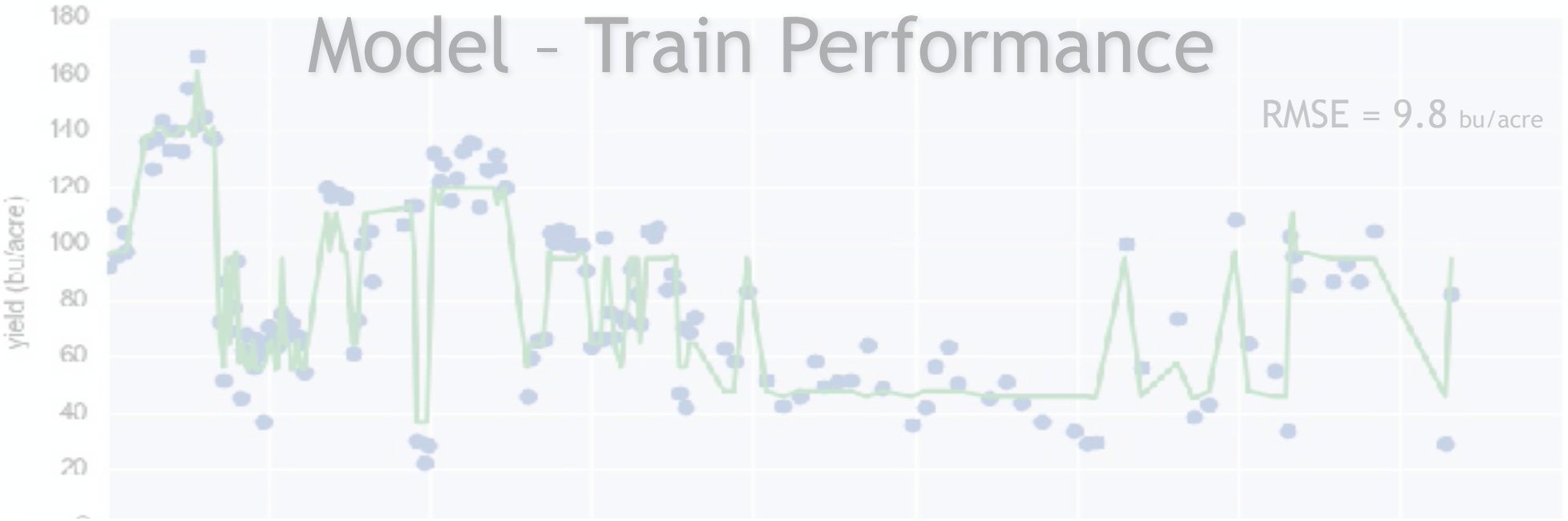


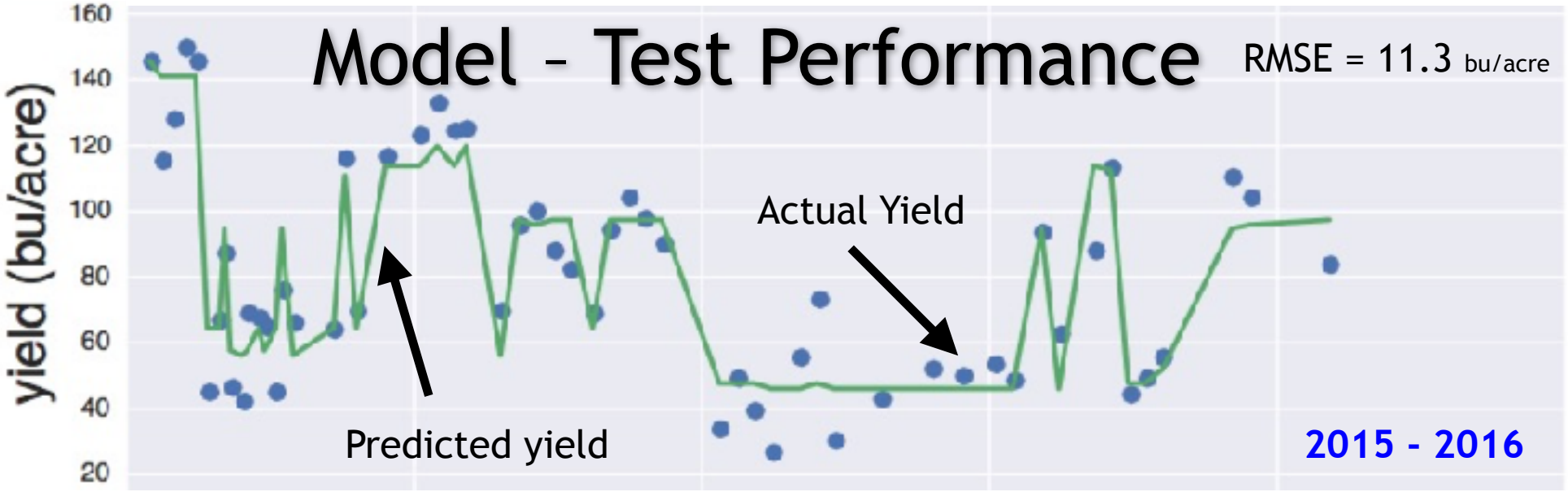


Results


Model - Train Performance
RMSE = 9.8 bu/acre
yield (bu/acre)
180
160
140
120
100
80
60
40
20
0
Actual Yield
Predicted yield
2010 to 2014

Results


Model – Train Performance
RMSE = 9.8 bu/acre
yield (bu/acre)
180
160
140
120
100
80
60
40
20


Model – Test Performance
RMSE = 11.3 bu/acre
yield (bu/acre)
160
140
120
100
80
60
40
20
Actual Yield
Predicted yield
2015 - 2016

Technology

python

LANDSAT

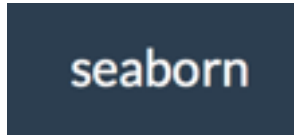
USDA
National Agricultural
Statistics Service

NumPy

SM

scikit
learn

DARK SKY


seaborn

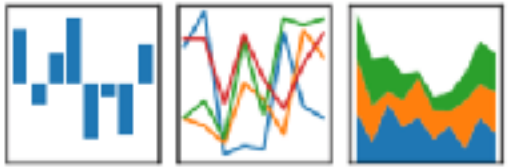
matplotlib

Flask
web development,
one drop at a time

USGS
science for a changing world
Landsat Missions

+ a b | e a u

pandas
$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$



Contact

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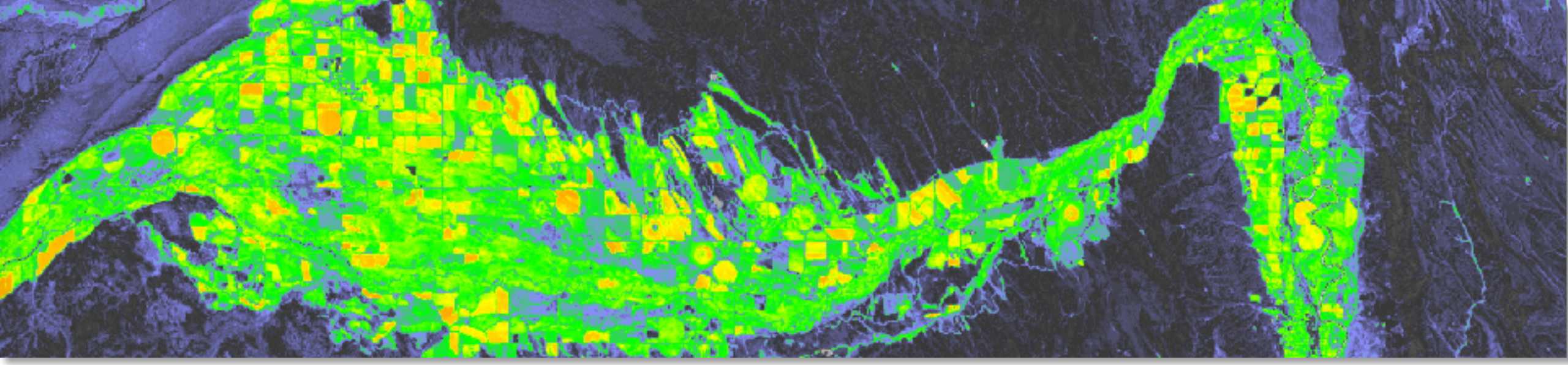
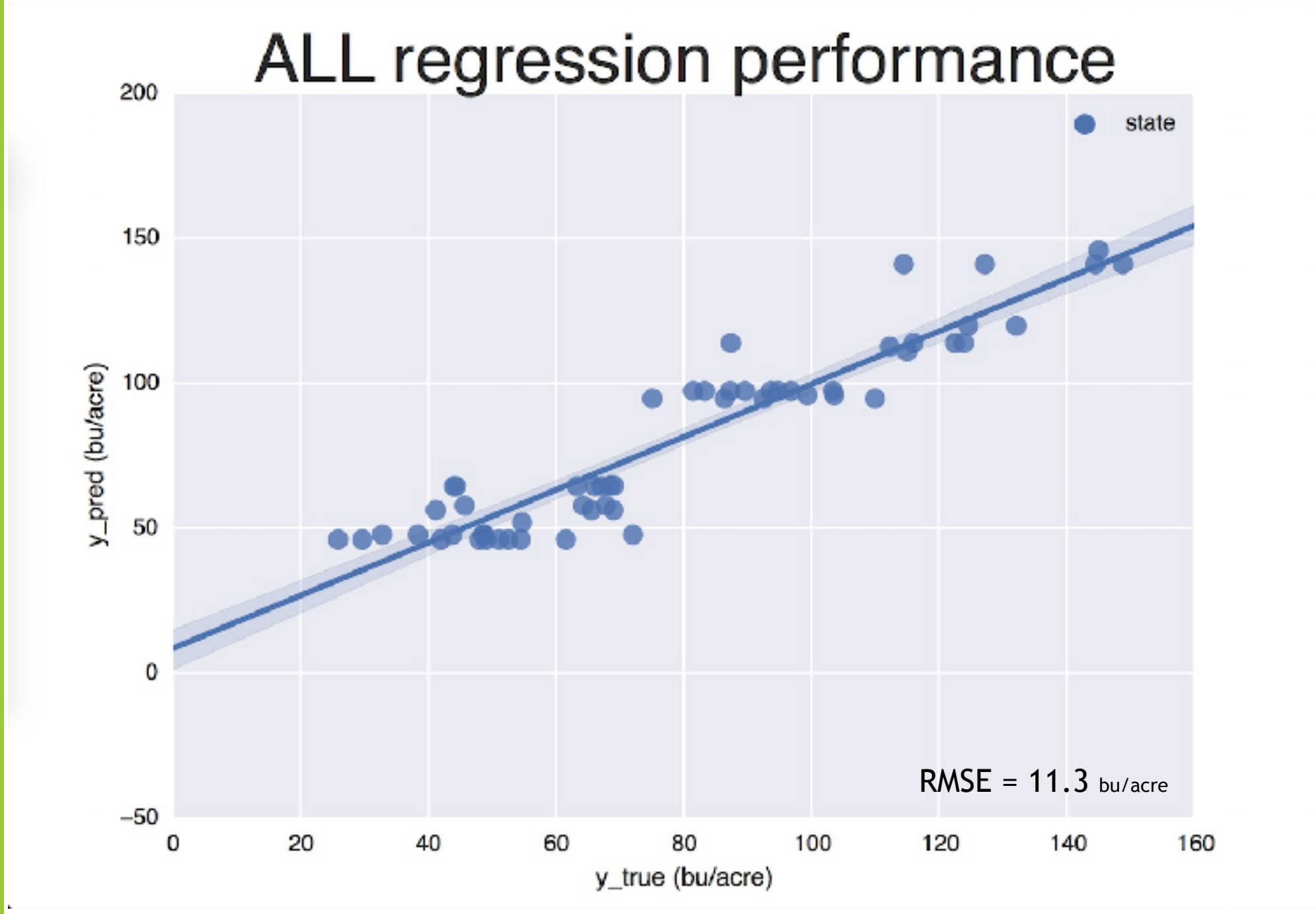
(303) 513-5962

Making Data Actionable!



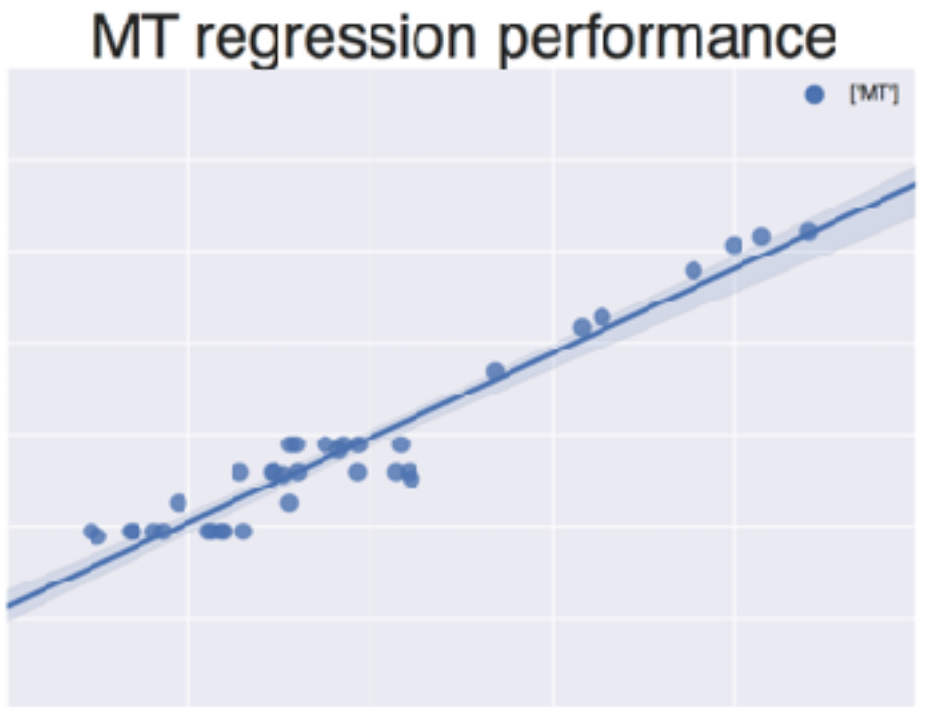
APPENDIX

Results


ALL regression performance
state
y_pred (bu/acre)
y_true (bu/acre)
200
150
100
50
0
−50
0
20
40
60
80
100
120
140
160
RMSE = 11.3 bu/acre

Results

CO regression performance
['CO']


MT regression performance
['MT']

ID regression performance
['ID']

WY regression performance
['WY']