March 4

**Desk**

Download planet images for poly5 from 2017 – 2018 and upload as GEE assets; delineate fields, agri, urban, centerPivot, natural veg with Planet Manual Field Delineation for poly 3 and poly5.

March 5

**Desk**

Create timing validation data for poly3 and poly5 using LandCover/Planet Create Validation Data v2

March 6

**Desk**

In LandCover/Planet Do Validation, add ability to look at MODIS EVI timeseries and validation/estimated crop timing at pixel level, streamline code to easily switch between polys instead of re-loading a bunch of stuff, changing the year, etc every time want to change the poly

New Functions repo files to help streamline: ModisPhenologyFunctions/ModisTimeseriesChart.js and PlanetValidationFunctions/GetPolyValidationData.js

March 7

**Desk**

For poly1, poly3, and poly5, look at how crop timing and land use validated and think about insights, next steps.

**Meeting with Sally**

For SC vs DC accuracy, normalize by total agri/field, NOT by SC+DC, so the confusion matrix sums to one

For natural vs agri accuracy, try masking edges and masking by crop cycle and peak EVI target only agri

Look at the dates corresponding to the low error fields and see if they represent the full range of crop dates represented by all the fields, because there might be a bias towards fields that were planted at a time when there weren’t clouds. This bias would also be solved if there are many locations of validation data.

Pick Gaussian error distribution for timing error, not uniform distribution, because it will give tighter confidence intervals

Purchase Planet images. Talk to Jen Dawson

Extrapolating timing and land use to outside MT and Matopiba: see if MT and Matopiba behave similarly. If they do, can extrapolate. If they don’t, don’t extrapolate.

Read papers that produce agri datasets. Find one or two that are nice to read and analyze how they write about it.

Use ShareLatex and start outlining

Look at Slack for ‘how to write a paper’ article that Sally shared

Think about the story and figures that illustrate the story

March 8

**Desk**

Asked Jen Dawson about purchasing Planet images, and contacted sales of Planet for a quote

Worked on adding QA to validation data for poly1, poly3 and poly5 with LandUse/Planet Add QA for Validation Data

March 11

**Desk**

Emailed Robert Saxon from Planet about poly10 images that I want to purchase

New GEE file, LandCover/Planet Do Validation v2, masks out validation data by ‘confidence’ band and estimates by peak timing and crop cycle, then does validation on comparing the ‘good’ validation data to the ‘final’ estimates

March 12

**Desk**

New GEE file, LandCover/Planet Create Validation Data v2, that adds onclick MODIS EVI timeseries and ability to put in the ‘confidence’ level of crop timing and crop intensity validation data

In GEE file LandCover/Soy Classification Trial 2, use both MT\_PLOS\_pts and soy\_pts\_agsat\_1 to classify crop intensity and soy vs nonsoy

March 14

**Desk**

* In Soy Classification Trial 2, restructure PLOS training points to match soy\_pts\_agsat\_1 training points and produce soymap (titled “base\_soymap\_agsat\_PLOS\_(year)”), then use Soy Classification Create Final Asset to create single image with bands representing 2014, 2017 and 2018’s soymaps. This final image is called soymaps\_2. Soymaps\_2 is then input into Planet Do Validation v2 to see if this way of creating soymap improves on Jake’s method and soymap 1.
* New GEE file: LandCover/Soy vs Nonsoy Agri Differentiation to look at how to best separate soy from nonsoy agri. This will export reflectance of 8day modis composites

March 15

**Desk**

New R code Spectral\_differentiation.Rmd to look at the output of LandCover/Soy vs Nonsoy Agri Differentiation, and generate plots/explore data to see how we can separate soy from nonsoy agri

Try to debug LandCover/Soy Classification Trial 2; start Soy Classification Trial 2 v2, instead of infilling only within a year’s worth of sample points, infill over all years – because if all values of one property are null, infilling will give error

March 18

**Desk**

More work on Soy Classification Trial 2 v2

New R code Spectral\_differentiation\_v2.Rmd to create plots that look like (Wilson et al, 2014) in Remote Sensing – band wavelength/id number on x axis, reflectance on y axis, class as different lines

March 19

**Desk**

Created GEE asset soymaps\_2 using Soy Classification Create Final Asset, this asset is the combination of all years’ of soymaps using agsat and PLOS training points, with Jake’s input data MINUS the landsat info

Looked at whether vegetation indices can differentiate among soy SC/DC and nonsoy agri; they don’t look promising (used R code: Spectral\_differentiation\_v2.Rmd).

March 20

**Desk**

R code: Temporal\_differentiation.Rmd to do temporal PCA for agsat and plos points, for all classes together and separately for each class

March 21

**Desk**

Continue temporal PCA analysis using R code Temporal\_differentiation.Rmd, reporting PCA results for individual classes in PLOS’s old class classification scheme where nonsoy agri wasn’t yet lumped together. Renamed this file Temporal\_differentiation\_PCA.Rmd

R code: Temporal\_differentiation\_timeseries.Rmd to look at timeseries of each class to see how they are different

**Meeting with Sally**

Monitor BearBuy, may have to chase purchasing with Jen Dawson’s help

Chase down the algorithm error in the red pixel in Mato Grosso timing validation

Add QA/QC on peak height to make sure the algorithm is picking the right peak in the case of a short, low peak followed by a normal size peak. Look at a definitely DC pixel to see what the length and height of a peak should be to come up with a good threshold.

Don’t necessarily put both NIR (and individual bands) AND EVI in the input data for soymap classification due to multicollinearity. Plot the bands against EVI and if R < 0.07 can keep the individual bands and EVI in the input.

In terms of using timing information to classify SC vs DC, think about the extent to which you want to separate timing estimate from the soymap – don’t check them against each other more than once.

In going from Mato Grosso to Matopiba classification, if simply shift the input data’s dates, make sure everything (including nonsoy agri and SC and DC soy) shifts by the same amount across Matopiba. Maybe pick a period in time that maximizes variation in EVI? But this is hard to justify.

It’s better to do a good job in Mato Grosso; ignore center pivot and just do 2014 and before; define uncertainty in Mato Grosso; don’t pursue soymap in Matopiba for now.

Buy the Matopiba data because it will help in getting a timing estimate error in Matopiba. Then use the monthly quota to download Mato Grosso data, preferably in areas (~40 fields) that are far from each other to avoid bias.

Outline methods section