List of Deliverables

- Google Colab File
- Excel Sheet of data
- Canvas Quizzes (will live in Canvas Commons, whole module will be sent over)
    - Append any info from Scott on Canvas Commons
- Handoff document (this document)

23W Biosatellite Module Handoff Document

How do I get the datasets used for external analysis?

All the datafiles and shapefiles for each state are stored in the DIFUSE Github repo for the Biosatellite project: **https://github.com/difuse-dartmouth/BIOSAT_W23**

If you would not like to access the dataset through GitHub, the complete dataset used for the land-use, animal population, and weather data is linked here (until the DIFUSE Google Drive is closed): Bio_Sat_Module_2015_Data_DIFUSE_23W
https://docs.google.com/spreadsheets/d/1JZnp4piKxa8jMlL3zzMwGiI51QRBS2g9RQtgLPJLP20/edit?usp=share_link

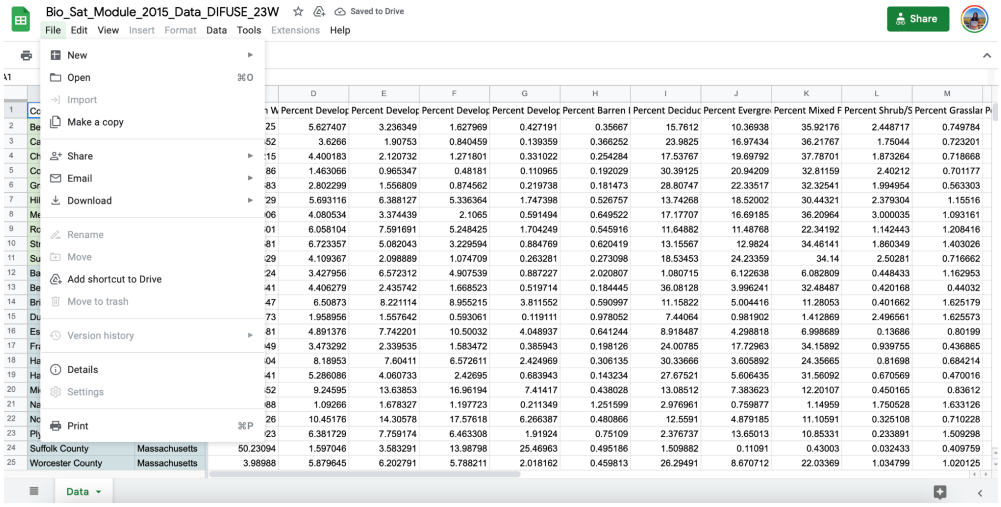
Please make a copy of this document onto your own computer or Google Drive. To do that:

To save as a Google Sheets document:

1. Go to **File**
2. Select **Make a Copy**

To save as a Microsoft Excel (.xlsx) or a Comma-Separated Values File (.csv):

1. Go to **File**
2. Select **Download**
3. Select the desired file type



How do I launch the module?

You should make a copy of the Colab and host it in your own google drive.

Option 1: Open the Google Colab File from this link (until the DIFUSE Google Drive closes): https://colab.research.google.com/drive/13u7hqudQtghHMckYn6D26Lhmc7Sw8Avq

1. Go to **File**
2. Select **Make a Copy**
3. Move it wherever you desire in your Drive, **share it with view permissions** and replace the links to the Colab in the Canvas quizzes with your new link

Option 2: Download the Colab directly into your Drive from the github repository

1. Go to your Google Drive, and under the "New" button in the top right, go to "More" and see if you find **"Google Colaboratory"** as an option. If you do, Colab is already enabled. If you don't, select **"Connect more apps"** and search for "Google Colaboratory" to add it as an option.
2. Once Colab is enabled, go to "New" --> "More" --> "Google Colaboratory" to **create a new Colab file**
3. In the Colab that opens, go to "File" --> **"Upload Notebook"** to open the upload menu. Go to the "GitHub" tab and search for the file in the repo using either the filepath or the direct file link. You may need to select "Include Private repos" to find the file. Once you find the file, select it to upload a copy to your Google Drive.
4. This upload will create a new Colab file in a top-level Drive folder called "Google Colaboratory." This new file is a **working copy of the Colab!**
5. Move it wherever you desire in your Drive, **share it with view permissions** and replace the links to the Colab in the Canvas quizzes with your new link

Option 3: Download the Colab from github as a .ipynb, then reupload to

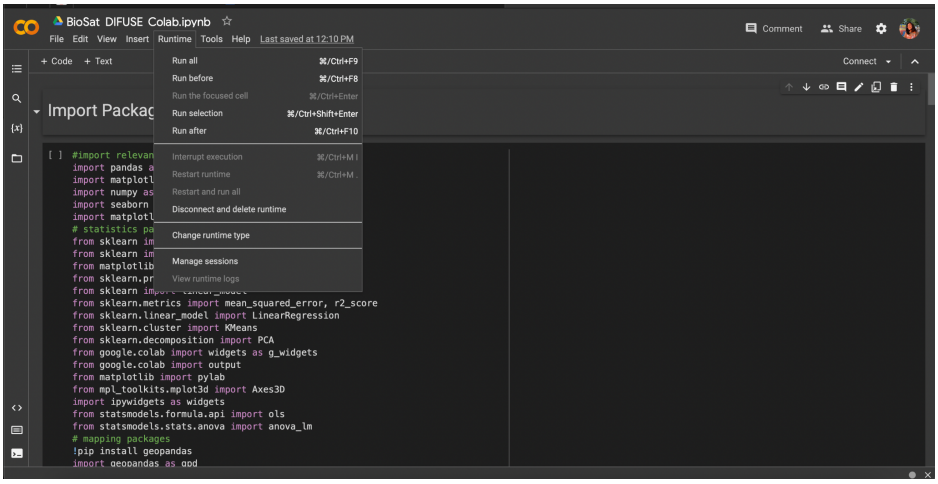
1. Go to your Google Drive, and under the "New" button in the top right, go to "More" and see if you find **"Google Colaboratory"** as an option. If you do, Colab is already enabled. If you don't, select **"Connect more apps"** and search for "Google Colaboratory" to add it as an option.
2. Once Colab is enabled, go to "New" --> "More" --> "Google Colaboratory" to **create a new Colab file**
3. Select the Colab file in the DIFUSE repo and view it as a **raw file.** Right-click on the raw view and use **"Save As.."** to save the content of the page to your downloads or desktop.
4. The saved file may be a ".txt"; if so, the file needs to be changed to end in **".ipynb".** Rename your downloaded file to end in .ipynb. On a Mac, you may need to right-click the file, select "Get Info," and rename the file under "Name & Extension."
5. Back to the Colab file you created, go to "File" --> **"Upload Notebook"** to open the upload menu. Go to the "Upload" tab, and select the .ipynb file from your files to upload a copy to your Google Drive.
6. This upload will create a new Colab file in a top-level Drive folder called "Google Colaboratory." This new file is a **working copy of the Colab!**

7. Move it wherever you desire in your Drive, **share it with view permissions** and replace the links to the Colab in the Canvas quizzes with your new link

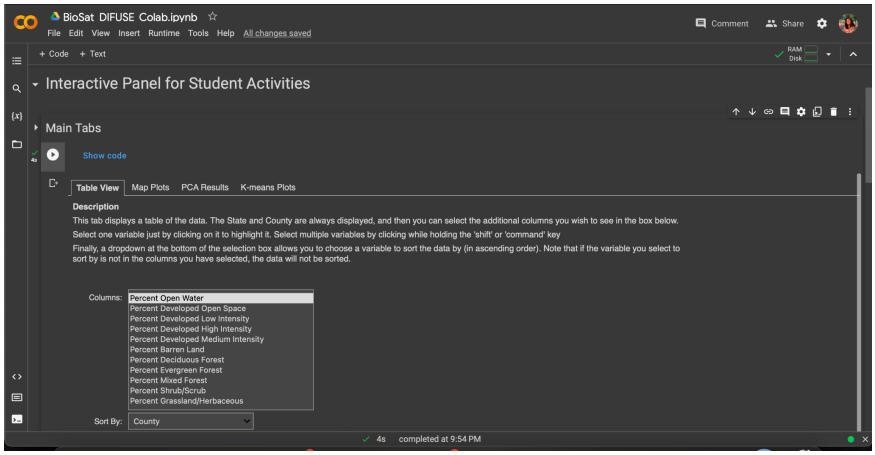
Once you have your copy, in the top bar, go **Runtime** and select **Run all**.

There will be a warning message saying the notebook isn't authorized by Google, select **Run Anyway** to ignore this. It might take a full minute to run the first time. Once it's done, there should be a **green checkmark** at the very bottom of your screen and it should say **completed at [time]**. The graphs and maps should be at the very bottom of the page.

To make the document easier to read, you can select the little downwards carrots next to Import Packages to minimize the code.



Once it's run, you can close the Main Tabs code by clicking the carrot next to the heading. It should look like this:

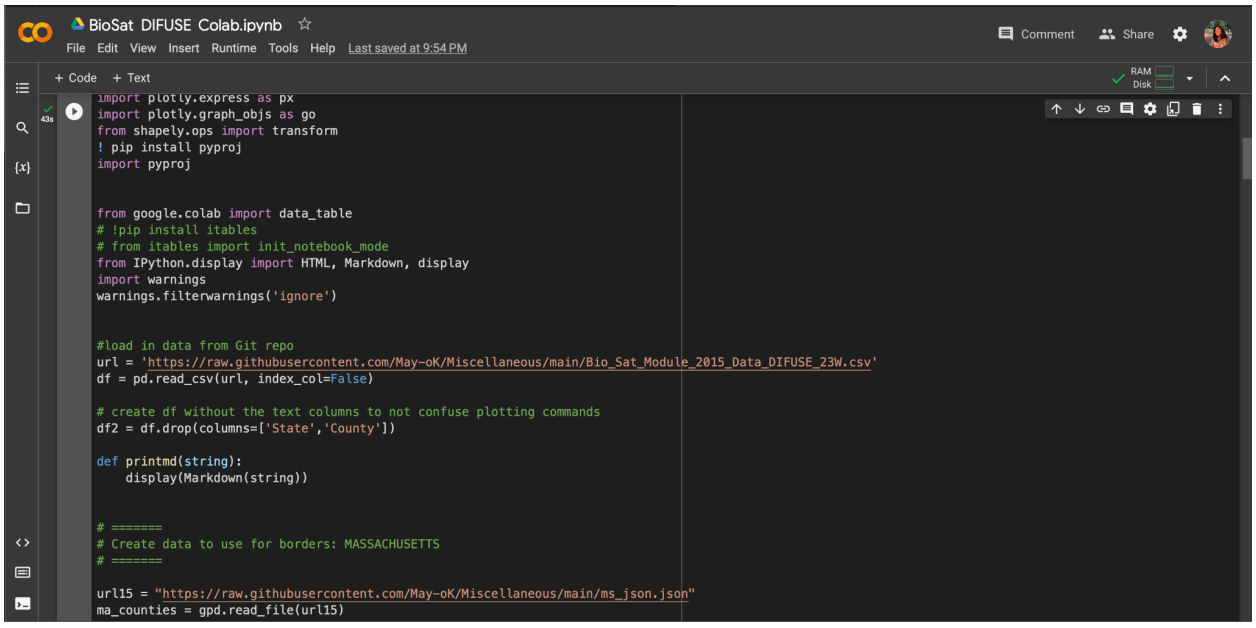


How can I update the csv data for a different year?

If you would like to change the dataset of analysis, first create your new dataset in a .csv with the same format as the current csv. It may help to download the current dataset and import it to Excel for editing.

- The county and state names columns should not change
- The land-use data must be updated according to satellite images in the year you desire for the data. The attribute percentages were produced by Prof. Guerra in arcGIS, it would be best to use his algorithm for your new images
- The precipitation and average temperature data can be extracted from NOAA data using the year of data you desire. See the pre-lab for links to the data source
- The Deer Population data can be updated by using the method described in the pre-lab assignment. The harvest by county data was found for this module at the following locations, start your search in related locations. Remember that you also need an official estimate to create your “scaling factor” from harvest to population:
    - NH: https://www.nhfishandwildlife.com/2021-est-deer-kill.php
    - CT: https://portal.ct.gov/-/media/DEEP/wildlife/pdf_files/game/deersum2020.pdf
    - MA: https://www.mass.gov/service-details/deer-harvest-data
    - MD: https://dnr.maryland.gov/wildlife/Documents/md_annual_deer_report15-16.pdf
- The Lyme disease data can be extracted from CDC data using the year of data you desire. See the pre-lab for links to the data source. You will also need Census data for your year of interest to scale the incidence to per 100,000 residents.

Next, update the link within the Colab for the script to read the new data file. Open the Google Colab file and view the code under “Import Packages.” If you have it closed, you can just refresh the page and it should open back up, or you can click the arrow next to the block to open it.



The only part you should change is the portion of the code that says **load in data from Git repo**. You can paste the link to your new file in GitHub, replacing the old link. Make sure the labels for the variables are the same as the file that's already in there, otherwise the script will not work.

What links need to change or stay?

The Canvas quizzes currently contain a few hyperlinks to other items. Some of these can stay while others need to be updated.

- Prelab Readings
    - The pre-lab contains links to two papers which analyze land use and lyme disease using k-means. These currently link to the DIFUSE google drive, and this will work until the drive closes
    - **Consider replacing these** with links to the article DOI's if possible
- Link to the Colab
    - The link to the Colab currently links to the DIFUSE google drive copy
    - **You should replace all instances of this link** to your own copy of the colab which you upload to your own Drive according to the instructions above.
- Intra-Assignment Links
    - These links are preserved with the module from Canvas commons, and **do not need to be changed**