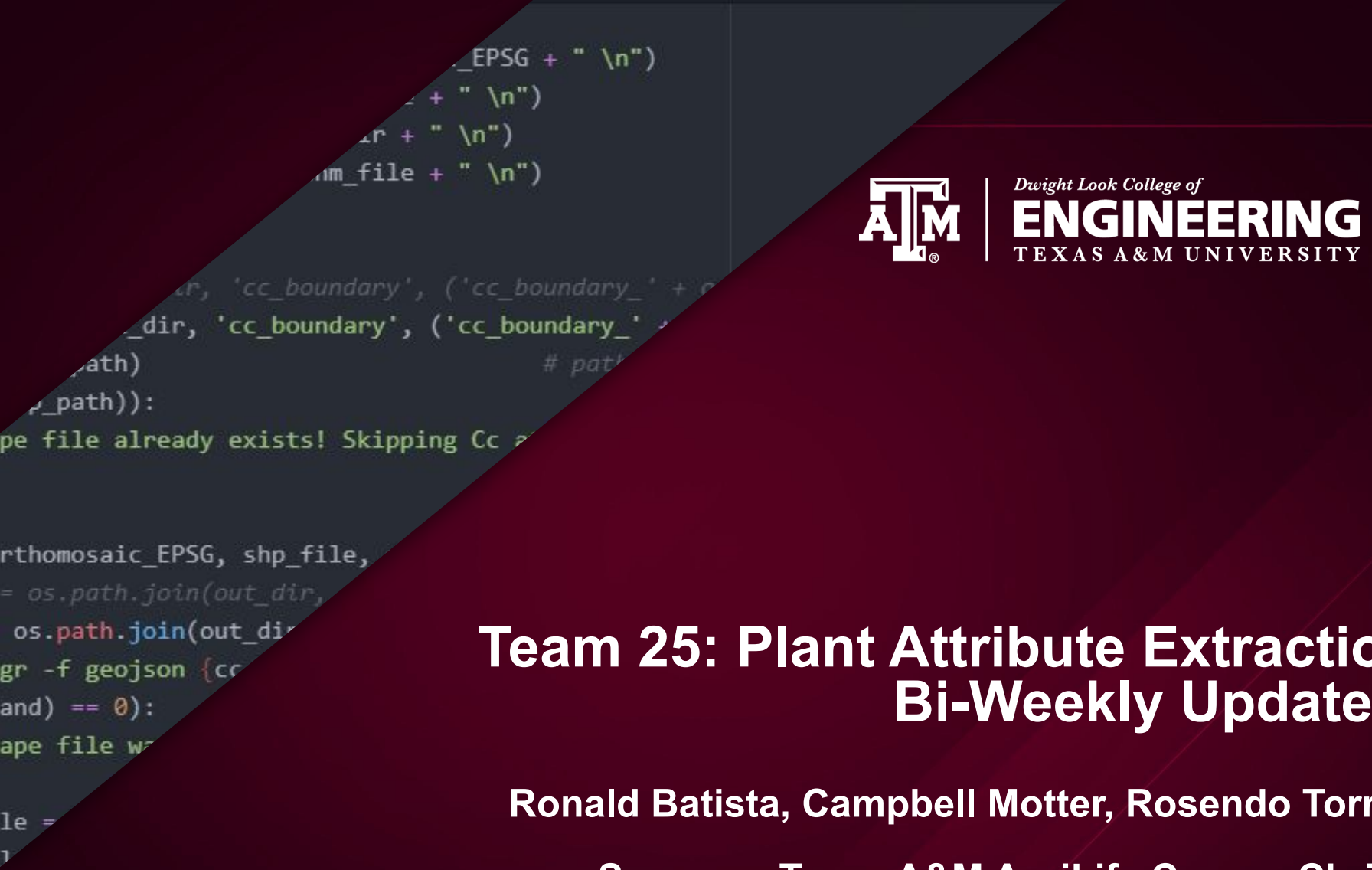



Dwight Look College of ENGINEERING
TEXAS A&M UNIVERSITY

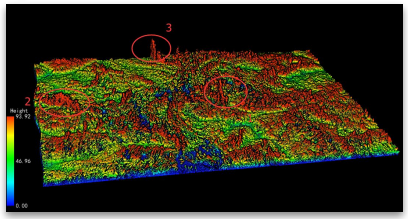
# Team 25: Plant Attribute Extraction
# Bi-Weekly Update 4

**Ronald Batista, Campbell Motter, Rosendo Torres**

**Sponsor: Texas A&M AgriLife Corpus Christi**
**TA: Dalton Cyr**

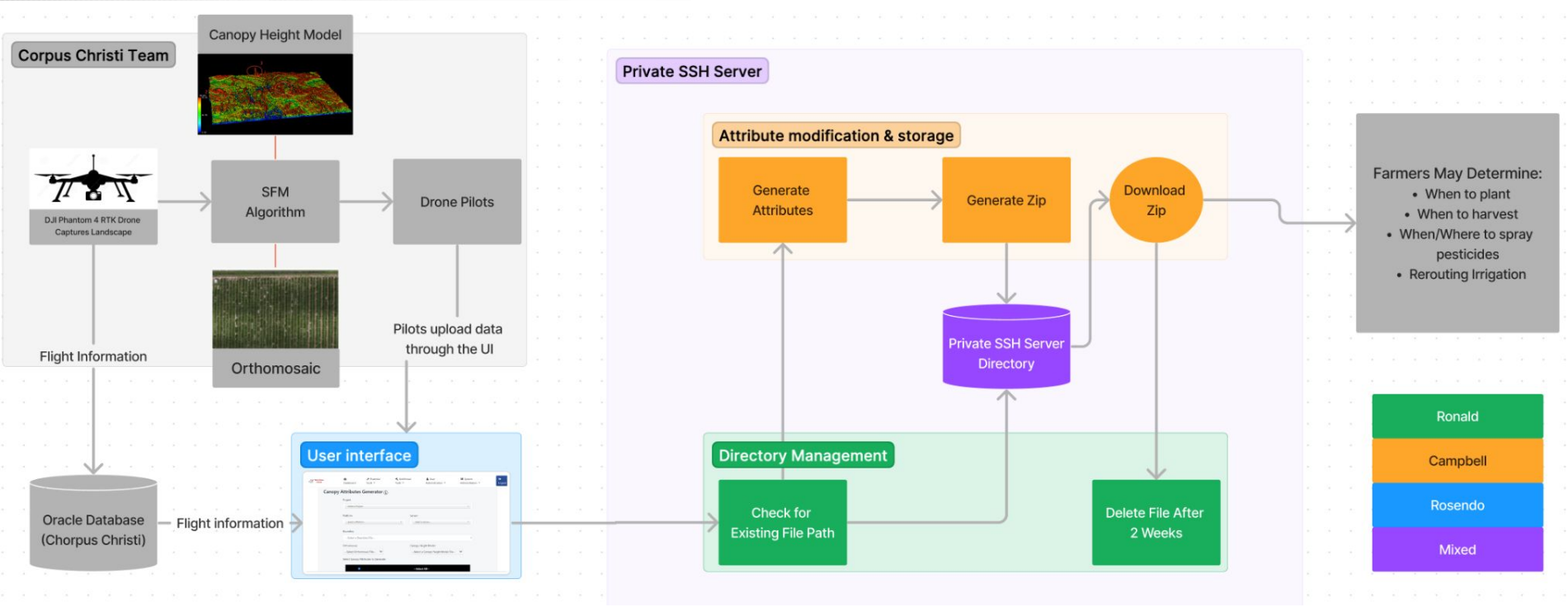
# Project Summary

- The current website that receives crop imagery from a drone is inefficient in generating data and lacks the ability for large scale attribute extraction.
- We plan to manipulate the current code and website to be able to generate more data for the desired attributes based on user input and better show crop growth changes.

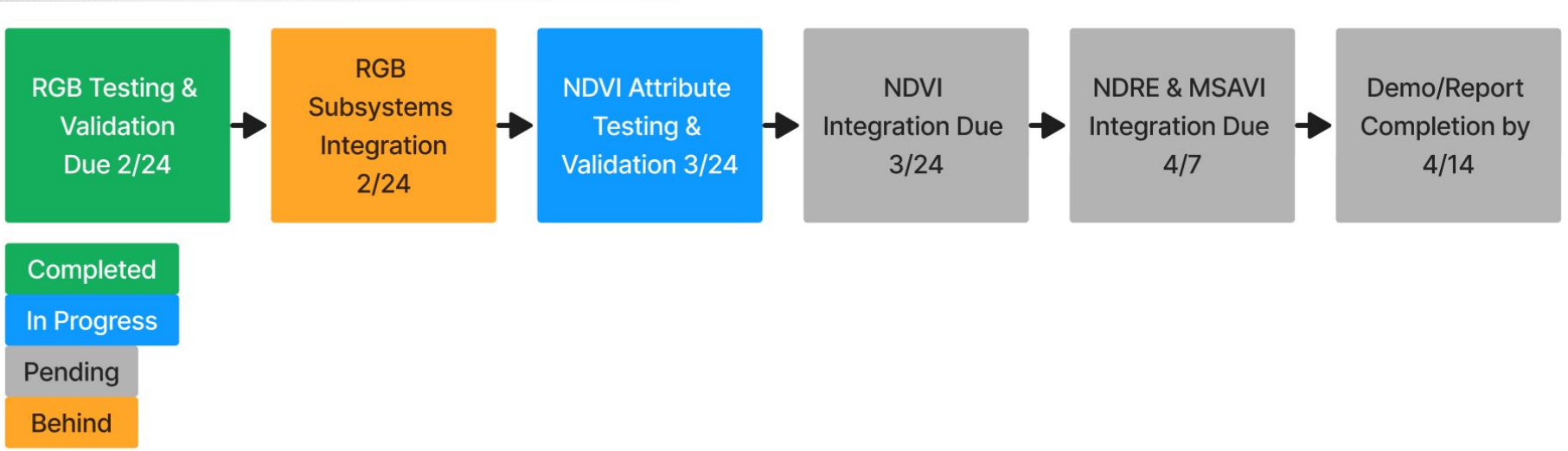


| Row name | Col | FID | 20220523 |
|---|---|---|---|
| 1 | 1 | 0 | 0.02056595 |
| 1 | 2 | 1 | 0.02549317 |
| 1 | 3 | 2 | -0.0121878 |
| 1 | 4 | 3 | 0.06381568 |
| 1 | 5 | 4 | 0.17575994 |
| 1 | 6 | 5 | 0.06538012 |
| 1 | 7 | 6 | 0.52365637 |
| 1 | 8 | 7 | 0.28521359 |
| 1 | 9 | 8 | 0.42652851 |
| 1 | 10 | 9 | 0.39120442 |
| 1 | 11 | 10 | 0.18587758 |
| 1 | 12 | 11 | 0.38030854 |
| 1 | 13 | 12 | 0.18536243 |
| 1 | 14 | 13 | -0.0772267 |
| 1 | 15 | 14 | 0.19025867 |

# Integrated Subsystem Diagram



# Project Timeline



# Directory Management

**Ronald Batista**

| Accomplishments since last update<br>10 hrs of effort | Ongoing progress/problems and plans until the next presentation |
|---|---|
| Verified EPSG identification from 403 per request by sponsor.<br><br>Testing new code for deleting the generated directory. Previous code failed some cases.<br><br>Generating new code for multispectral to eventually test and validate to integrate with rest of team. | Meeting with sponsor to begin testing and validation for multispectral. Code they have must be given to us to be able to test and validate subsystem.<br><br>Contacting sponsor for module installation permissions |

# Directory Management

**Ronald Batista**

- EPSG: European Petroleum Survey Group
  - Coordinate system
- New Amarillo Project added to test EPSG
  - EPSG of Amarillo = 32613


Figure 1: Amarillo location in the bounds of the EPSG value 32613

```
This is the selected orthomosaic:
20220408_ar_p4p_wheat_irr_mosaic_clipped.tif
rillo_Wheat_Irrigation_Land/DJI_Phantom_4_RT
2022/20220408/RGB_Ortho/20220408_ar_p4p_whea
tif::32613
```

Figure 2: EPSG Result When Running Website

# Rosendo Torres

| Accomplishments since last update<br>15 hrs of effort | Ongoing progress/problems and plans until the next presentation |
|---|---|
| • Integrated with Campbell and Ronald in order to display the correct file restrictions<br>• Validation and Testing of UI for RGB. Working on failing cases | • Test how user friendly the UI is<br>• Test and Validate Multispectral Data |

# Rosendo Torres

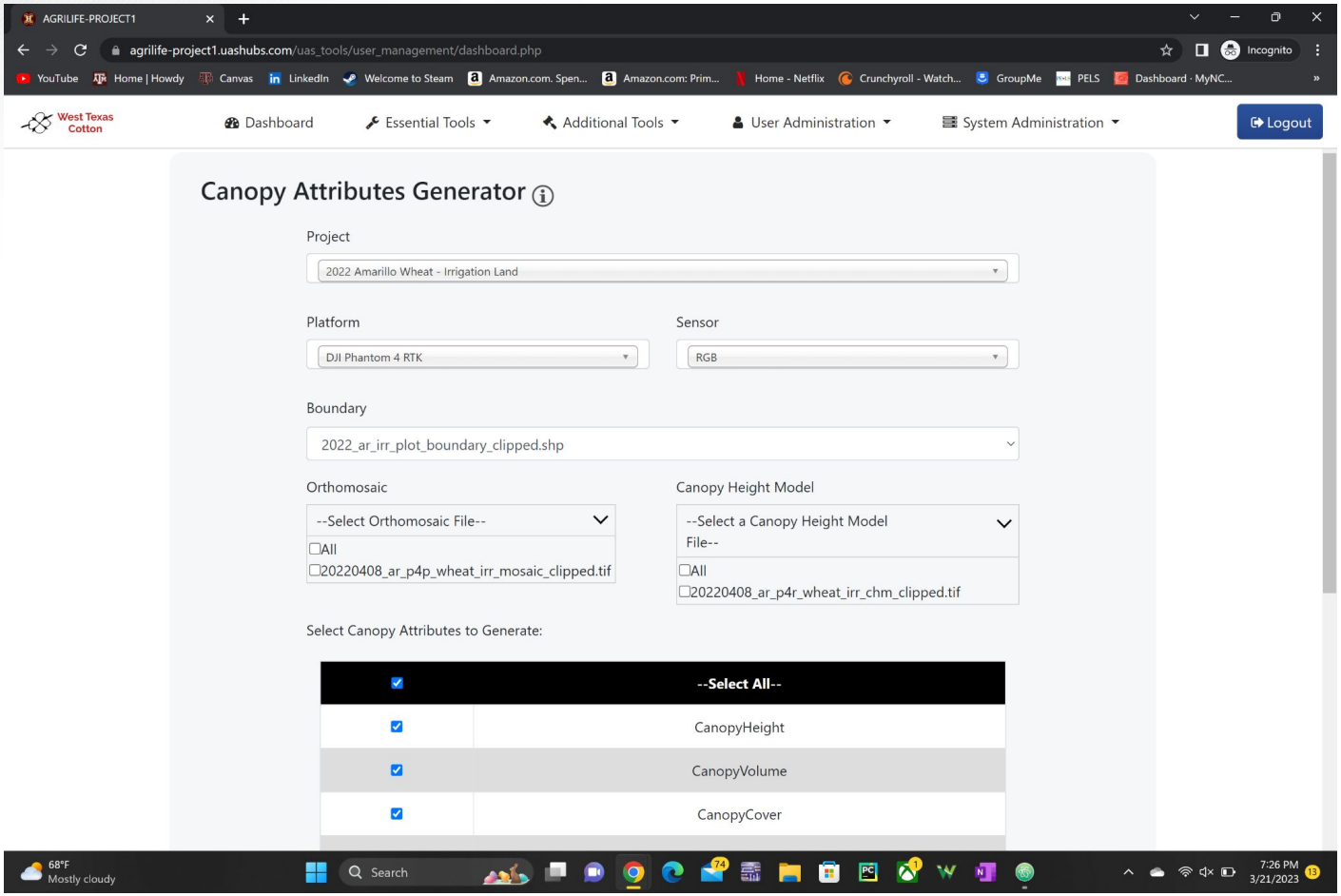



Image 4: Fixed UI with new project

# Rosendo Torres

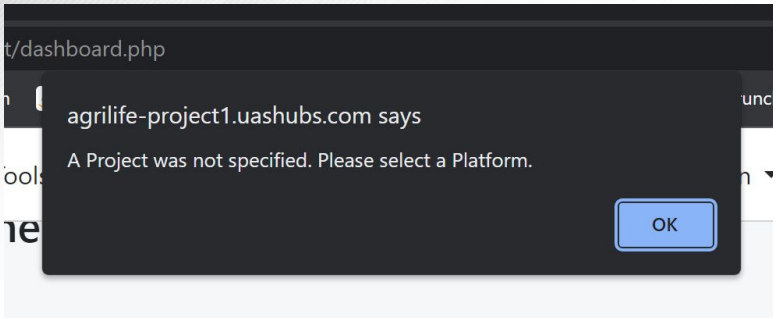



Image 1: Failing Warning

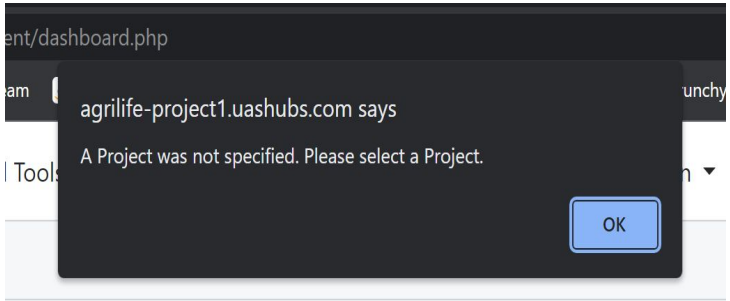



Image 2: Warning Fixed

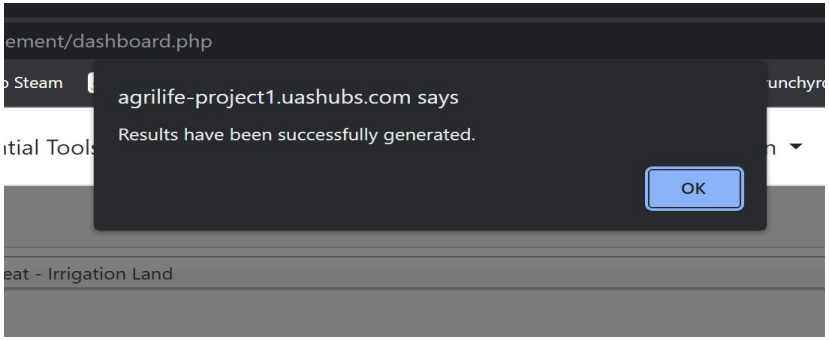



Image 3: Notification allowing user to see results have been generated

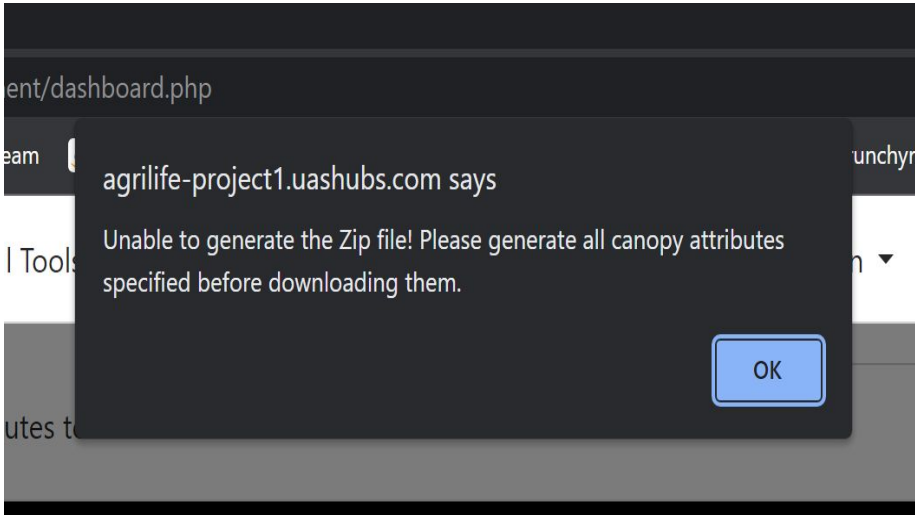


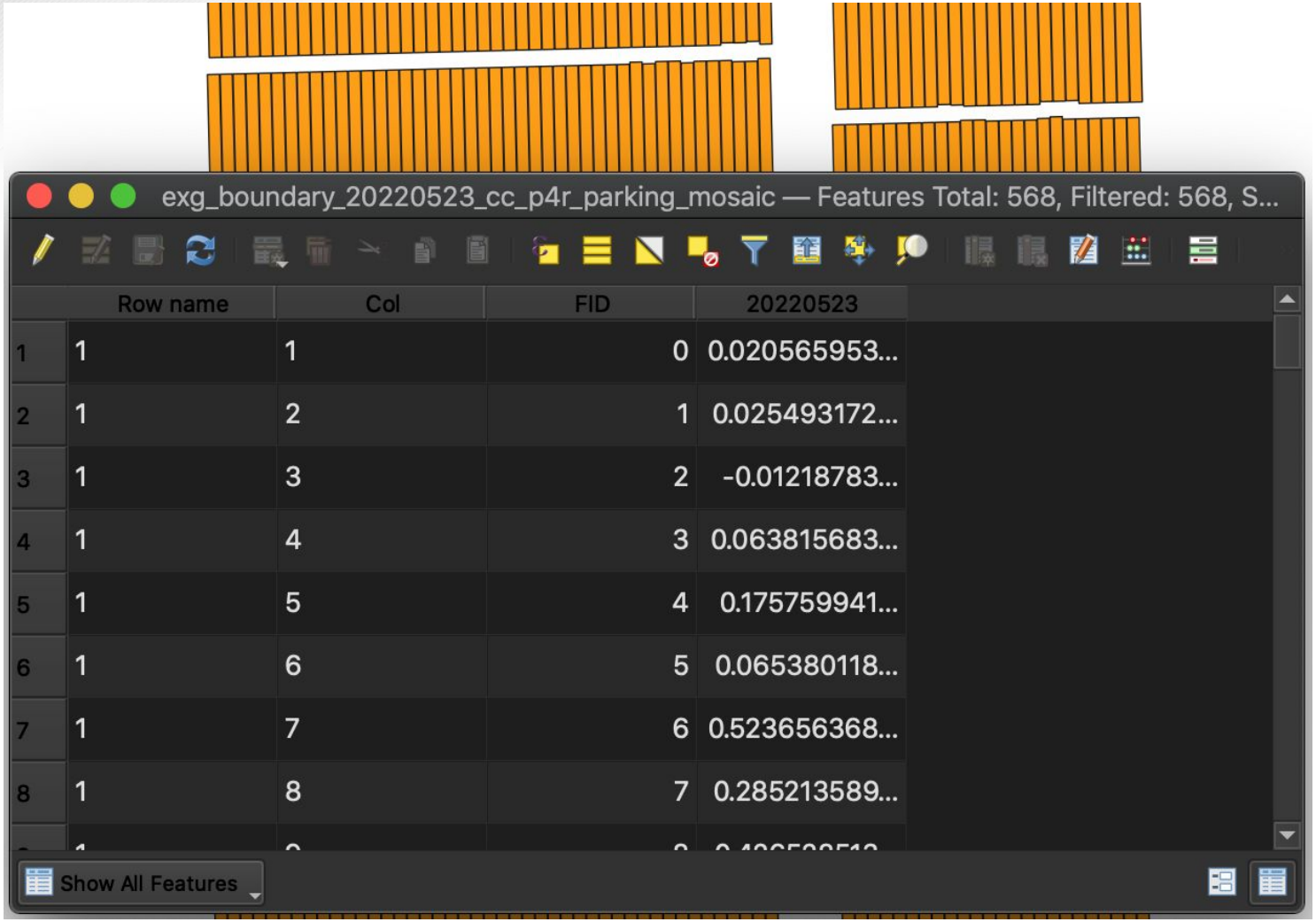

Image 4: Failed downloading files due to “no attributes”

# Attribute manipulation & Storage

**by Campbell Motter**

| Accomplishments since last update<br>20 hrs of effort | Ongoing progress/problems and plans until the next presentation |
|---|---|
| • Apart from one test case(mismatching CHM and orthomosaic), testing is finished and working as expected, and failing as expected.<br>• Able to read SHP files as a GeoDataFrame and concatenate them.<br>• Added and changed IDs in the database to be read separately by the javaScript | • Exporting merged GeoDataFrame data into a new SHP file.<br>• Fix the only missing test case.<br>• Meeting with sponsor to begin testing and validation for multispectral. Code they have must be given to us to be able to test and validate subsystem. |

# SHP Spatial and Attribute data



# Validation Plan

| FSR Section | Test Name | Success Criteria | Methodology | Ownership | Staus |
|---|---|---|---|---|---|
| 3.2.1.3 | Zip File Path Identification (RGB) | The code created will identify if there is an existing file path that was generated by the user, and depending on the result, will either let the generation continue, or stop the generation and notify the user a file path exists. Can run for multiple cases for accessing different types of data and attributes. | Using Python and SQL code to identify filepaths and send a printed response to the console. A boolean function will be created to pass a binary 1 or 0 to let the main.js know whether to cancel or continue with the generation. | RONALD | VALIDATED |
| 3.2.1.4 | File Path Deletion (RGB) | Once the data has been generated and it has been 2 weeks since the generation, the filepath and the contents in the path will be deleted. Can run for all attributes and for any number of files. | Using Python and SQL code to implement a timer in the background of the website to keep the generated file path for 2 weeks. Using a similar structure to identifying file paths, the code used for deletion will generate after the attribute is generated. | RONALD | TESTED |
| 3.2.1.5 | Zip File Path Deletion (Multispectral) | The code created will identify if there is an existing file path that was generated by the user, and depending on the result, will either let the generation continue, or stop the generation and notify the user a file path exists. | Similar to how the RGB code has been setup, but with the different types of multispectral data instead and testing for each attribute and for multiple files. | RONALD | NOT TESTED |
| 3.2.1.6 | File Path Deletion (Multispectral) | Once the data has been generated and it has been 2 weeks since the generation, the filepath and the contents in the path will be deleted. | Similar to the RGB code. Testing deletion of the file path and zip folder in the location created by Campbell. | RONALD | NOT TESTED |
| 3.2.2.1 | User Friendliness (RGB) | The tested user is able to go through the website relatively easily and with minimal confusion. | I will have friends try out the website to see how they perform | ROSENDO | NOT TESTED |
| 3.2.2.2 | UI Restrictions (BOTH) | The UI is able to successfully display files based on restrictions and selected files. | Select different files and constraints to see if the UI successfully updates based on selected files | ROSENDO | TESTED |
| 3.2.2.3 | Warnings (RGB) | Based on what type of error occurs the user is notified through popups and warnings. | Run through all possible errors that can occur and make sure each one has a pop up that lets the user know what went wrong. | ROSENDO | TESTED |
| 3.2.3.4 | Merged CSV data (RGB) | Within the attribute zip files, there is a single CSV file containing the merged data sets of the individual data sets for a specific attribute. | Examining the generated CSV files individaully and verifying that the data contained in the merged CSV file is correct and doesnt have any overlapping or missing data. This is done through Excel. | CAMPBELL | TESTED |
| 3.2.3.5 | Merged SHP data (RGB) | Within the attribute zip files, there is a single SHP file containing the merged data sets of the individual data sets for a specific attribute. | Examining the generated SHP files individaully and verifying that the data contained in the merged SHP file is correct and doesnt have any overlapping or missing data. This is done through QGIS LTR. | CAMPBELL | TESTED/ INCOMPLETE |
| 3.2.3.6 | Merged CSV data (multispectral) | Within the multispectral zip files, there is a single CSV file containing the merged data sets of the individual data sets for a specific multipectral attribute. | Examining the generated CSV files individaully and verifying that the data contained in the merged CSV file is correct and doesnt have any overlapping or missing data. This is done through Excel. | CAMPBELL | NOT TESTED |
| 3.2.3.7 | Merged SHP data (multispectral) | Within the multispectral zip files, there is a single SHP file containing the merged data sets of the individual data sets for a specific multipectral attribute. | Examining the generated SHP files individaully and verifying that the data contained in the merged SHP file is correct and doesnt have any overlapping or missing data. This is done through QGIS LTR. | CAMPBELL | NOT TESTED |

# Execution Plan

| Case | Ownership | Due | 1/27/23 | 2/10/23 | 2/24/23 | 3/10/23 | 3/24/23 | 4/7/23 | 4/14/23 |
|---|---|---|---|---|---|---|---|---|---|
| Generating attributes with the selection of multiple files for RGB data. | | 1/27/23 | | | | | | | |
| Files successfully downloaded from the website in a zip file. | | 1/27/23 | | | | | | | |
| Implement & test more specific grouping and file zipping based around attributes. | | 2/10/23 | | | | | | | |
| Test function that will zip together all of the seperate attribute zip files. | | 2/10/23 | | | | | | | |
| Implement & test merging together CSV files for RGB data. | | 2/24/23 | | | | | | | |
| Implement & test merging together SHP files for RGB data. | | 2/24/23 | | | | | | | |
| Implement & test NDVI attribute generation and storage. | | 3/10/23 | | | | | | | |
| Implement & test NDRE attribute generation and storage. | | 3/24/23 | | | | | | | |
| Implement & test MSAVI attribute generation and storage. | | 3/24/23 | | | | | | | |
| Finish validating subsystem from 403 | | 1/27/23 | | | | | | | |
| Attribute restriction setups | | 3/10/23 | | | | | | | |
| Population of dropdown menus with new requirements | | 3/10/23 | | | | | | | |
| Validation of results table and download table | | 3/24/23 | | | | | | | |
| Testing and Validation of Multispectral UI | | 4/7/23 | | | | | | | |
| Testing functionality and use of checkZipStatus and deleteTempResults for RGB | | 2/24/23 | | | | | | | |
| Initialization of testing directory manipulation of multispectral data. | | 3/10/23 | | | | | | | |
| Testing checkZipStatus and deleteTempResults for NDVI attribute. | | 3/24/23 | | | | | | | |
| Integration of respective subsystems for RGB attributes. | | 2/24/23 | | | | | | | |
| Integration of respective subsystems for NDVI attribute. | | 3/24/23 | | | | | | | |
| Integration of respective subsystems for NDRE attribute. | | 4/7/23 | | | | | | | |
| Integration of respective subsystems for MSAVI attribute. | | 4/7/23 | | | | | | | |

| Legend | |
|---|---|
| Ownership | |
| | Ronald |
| | Rosendo |
| | Campbell |
| | All |
| Progression | |
| | Completed |
| | In Progress |
| | Pending |
| | Behind |

# Thank you!
# Questions?