Dwight Look College of ENGINEERING
TEXAS A&M UNIVERSITY

Team 25: Plant Attribute Extraction
Bi-Weekly Update 4

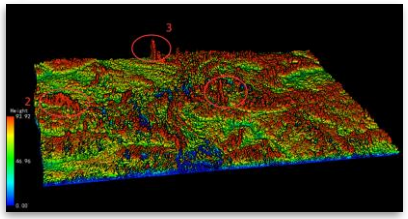
Ronald Batista, Campbell Motter, Rosendo Torres

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

Project Summary

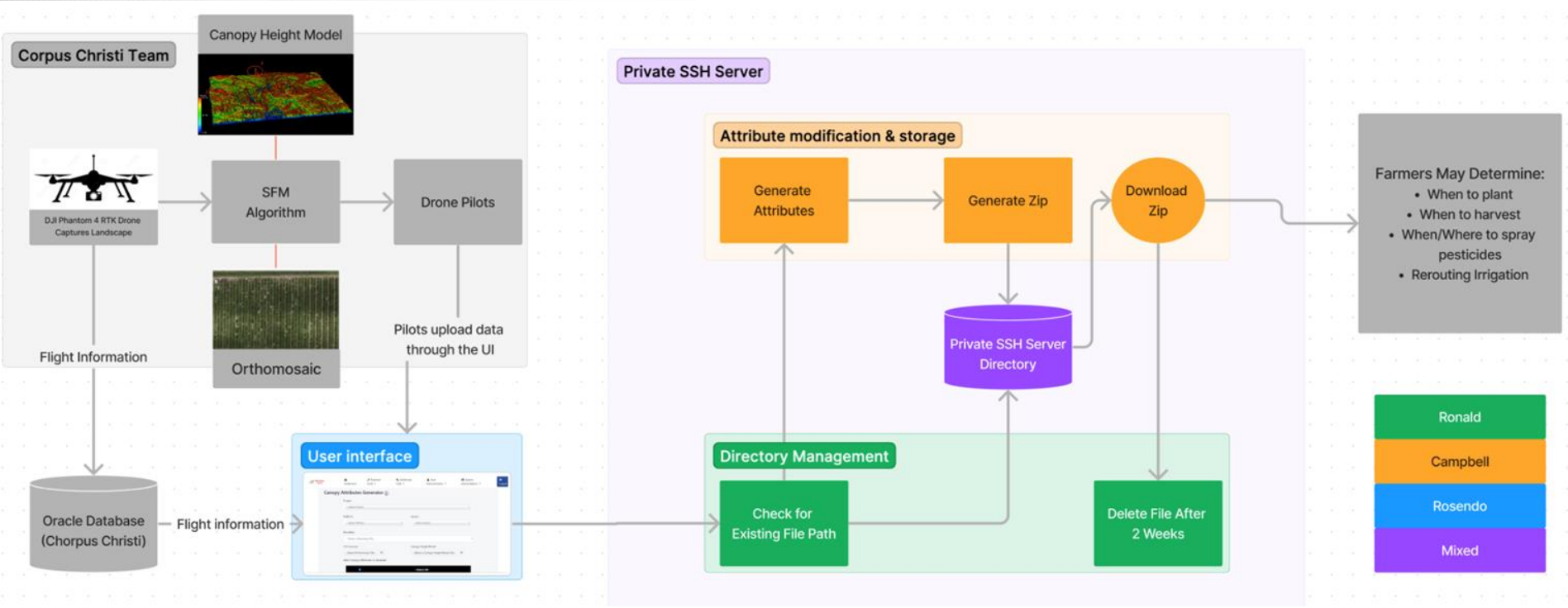
- The current website that receives crop imagery from a drone is inefficient in generating data and lacks the ability for large scale attribute extraction.

  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.

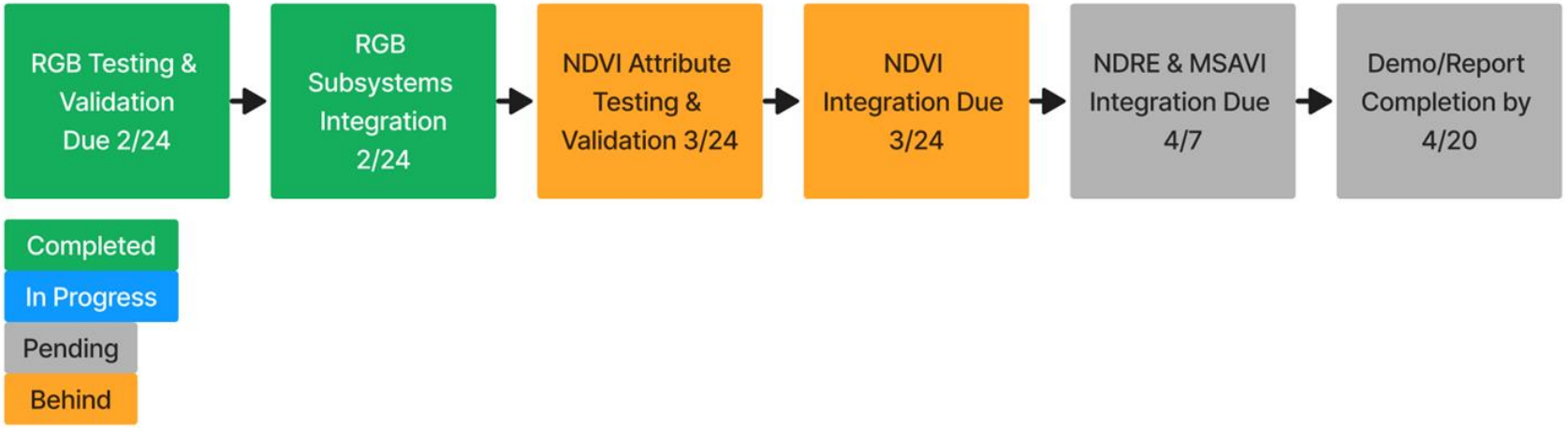


Row name	Col	FID	20220523
1	1	0	0.02056595
1	2	1	0.02549317
1	3	2	-0.0121878
1	4	3	0.06381568
1	5	4	0.17575994
1	6	5	0.06538012
1	7	6	0.52365637
1	8	7	0.28521359
1	9	8	0.42652851
1	10	9	0.39120442
1	11	10	0.18587758
1	12	11	0.38030854
1	13	12	0.18536243
1	14	13	-0.0772267
1	15	14	0.19025867

Integrated Subsystem Diagram



Project Timeline



Ronald Batista

Accomplishments since last update 13 hrs of effort	Ongoing progress/problems and plans until the next presentation
Validated Deletion of directory after zip file is downloaded. Validated new method of stopping attribute generation by request of sponsor.	Test and Validate Multispectral.

Ronald Batista

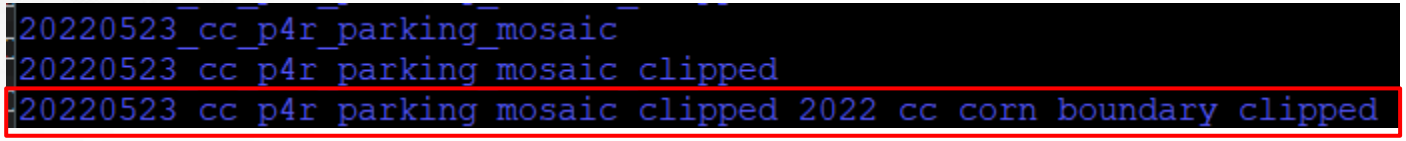


Figure 1: File Paths in Project Directory

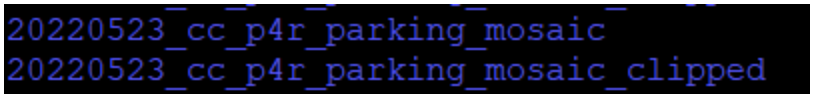


Figure 2: Deletion of Project Path

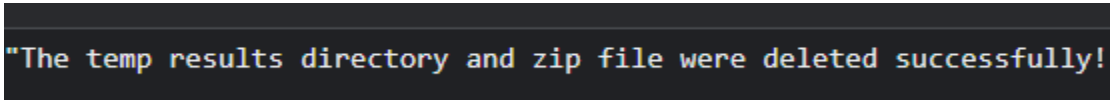


Figure 3: Validation of Deletion from Website

Rosendo Torres

User Interface

Accomplishments since last update 13 hrs of effort	Ongoing progress/problems and plans until the next presentation
• Completed all validation test cases for RGB • UI friendliness testing complete • Improved UI based on feedback from user tests	• Test and Validate Multispectral Data • Test and Validate progress bar for both RGB and Multispectral Data

Rosendo Torres

User Interface

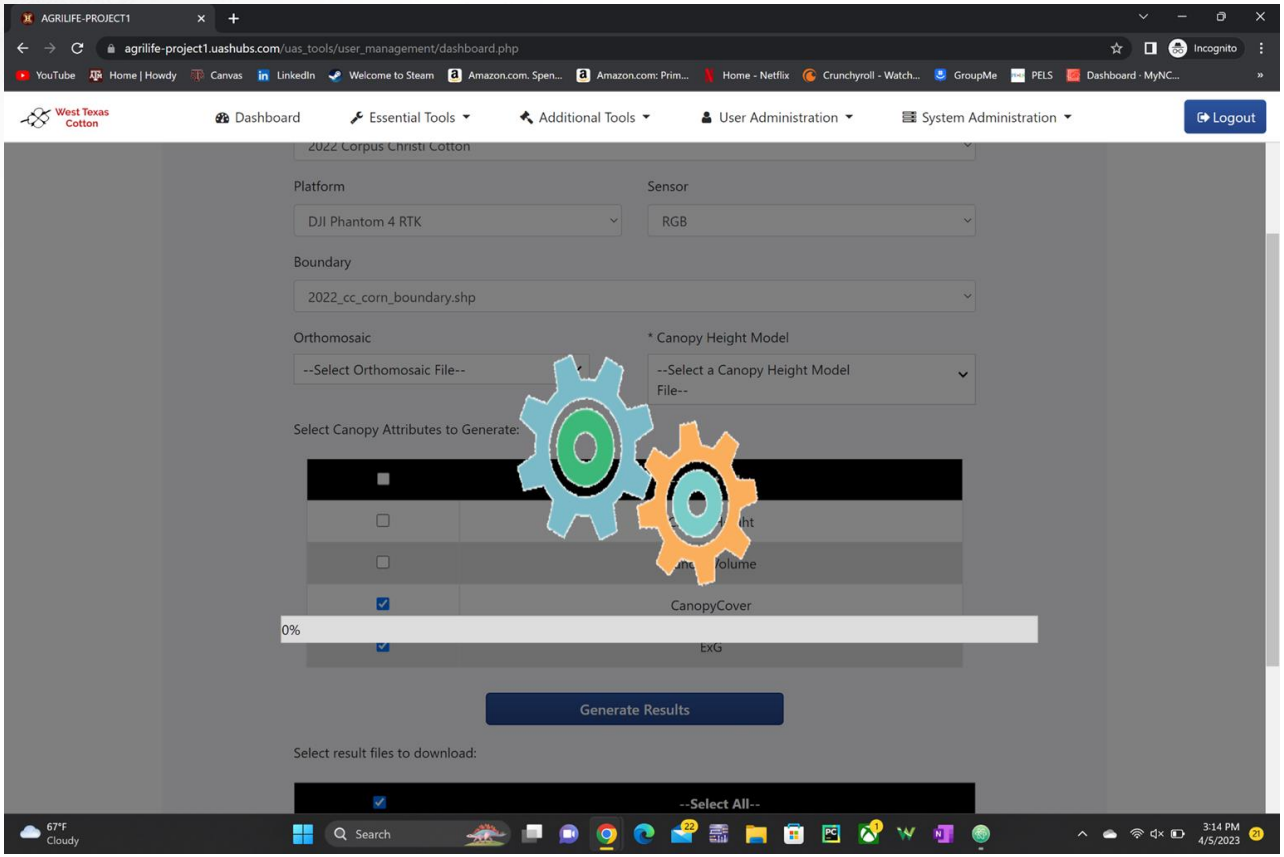


Figure 1: Progress Bar addition

Rosendo Torres

User Interface

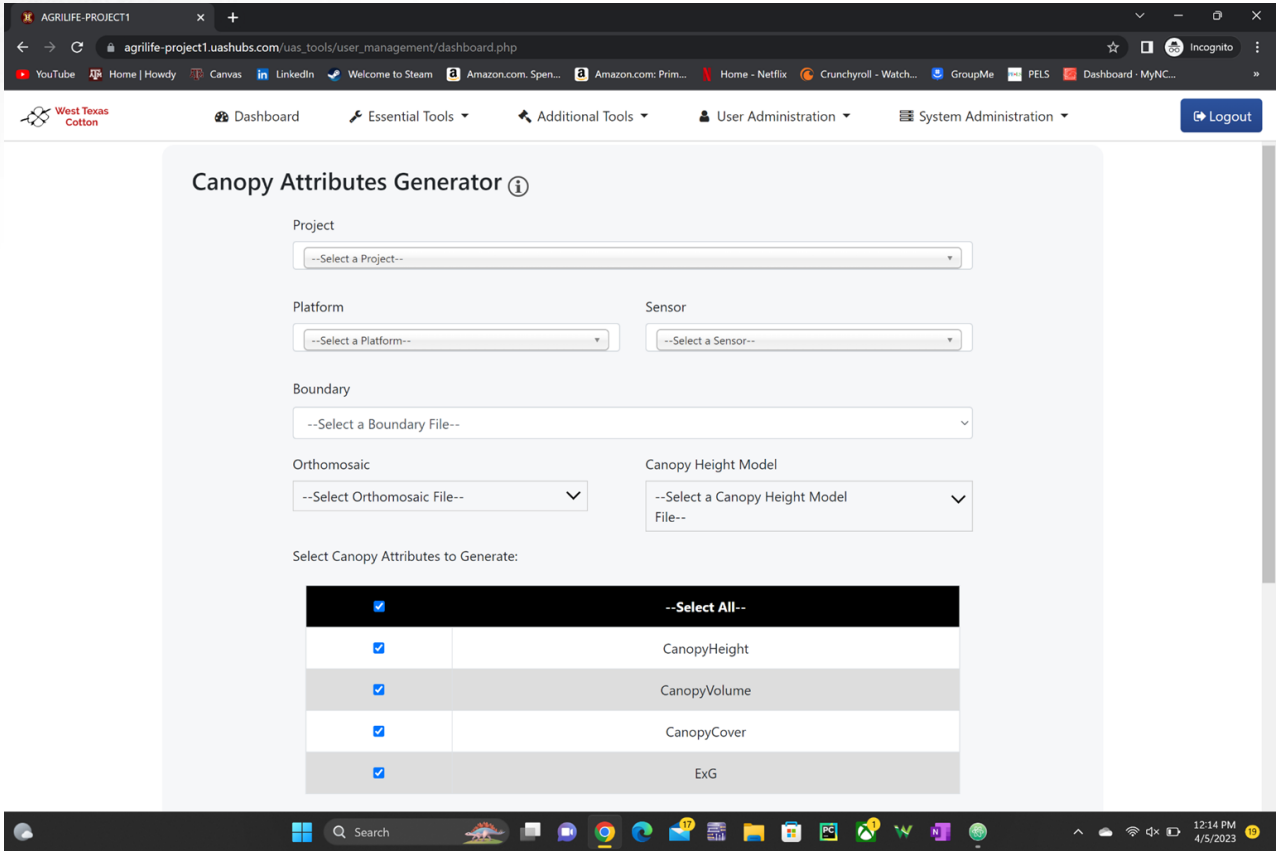


Figure 2: Website before updates

Rosendo Torres

User Interface

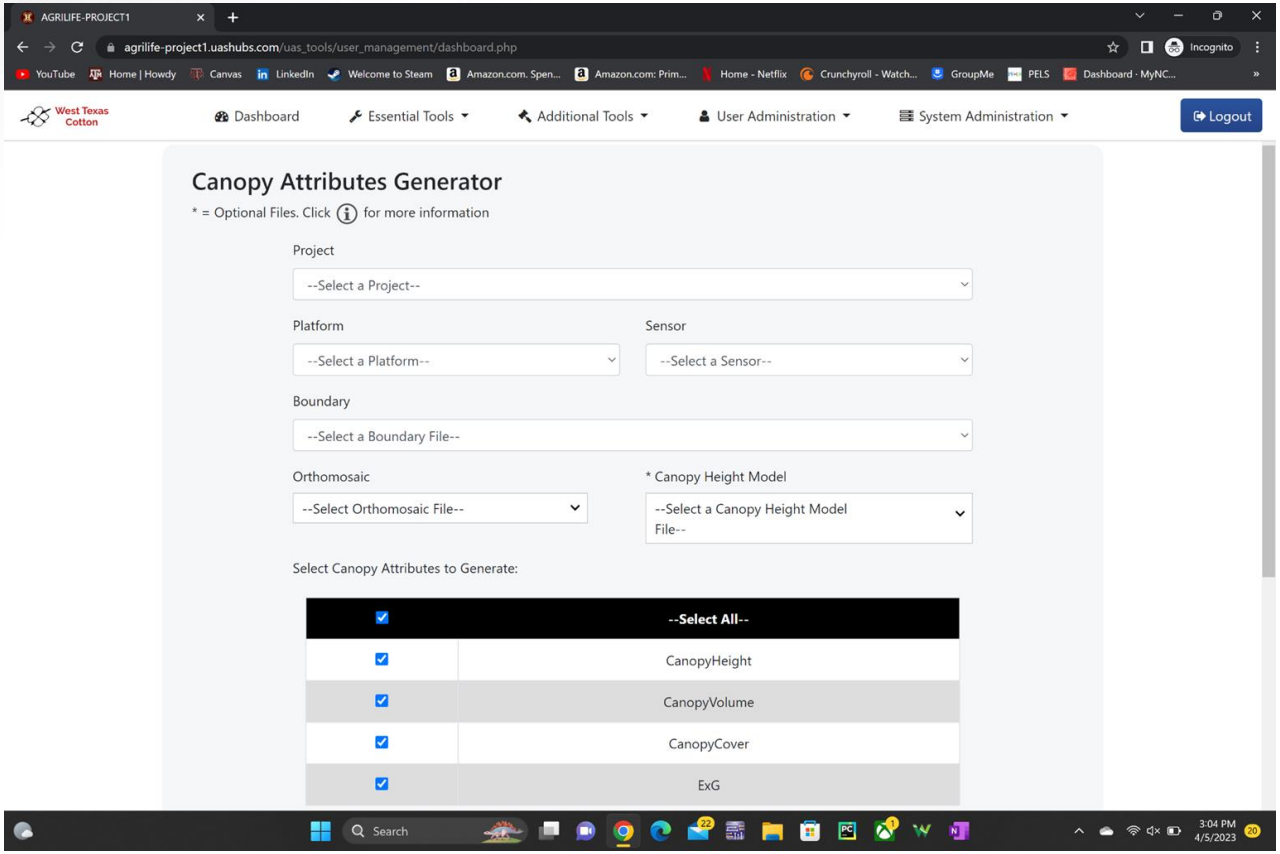
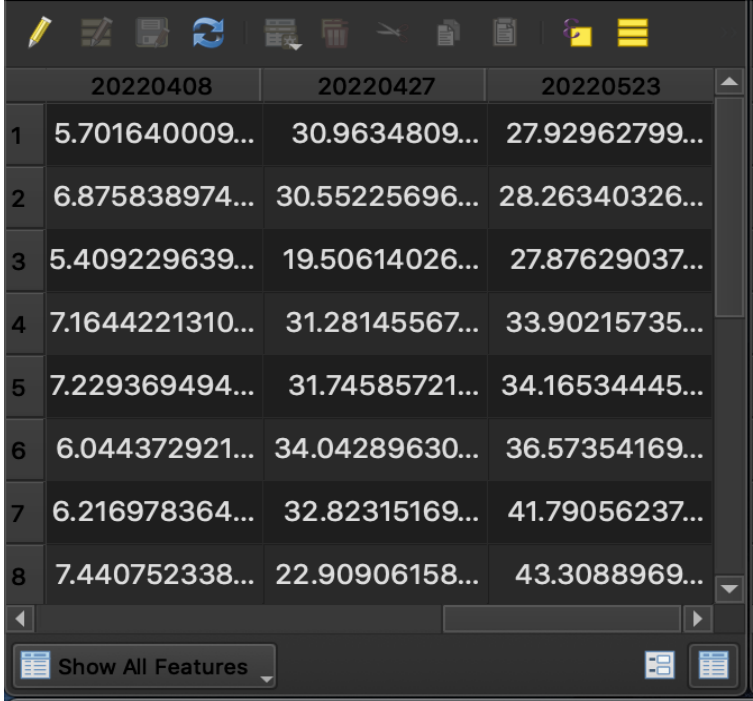


Figure 3: Website after updates

Attribute Modification and Storage

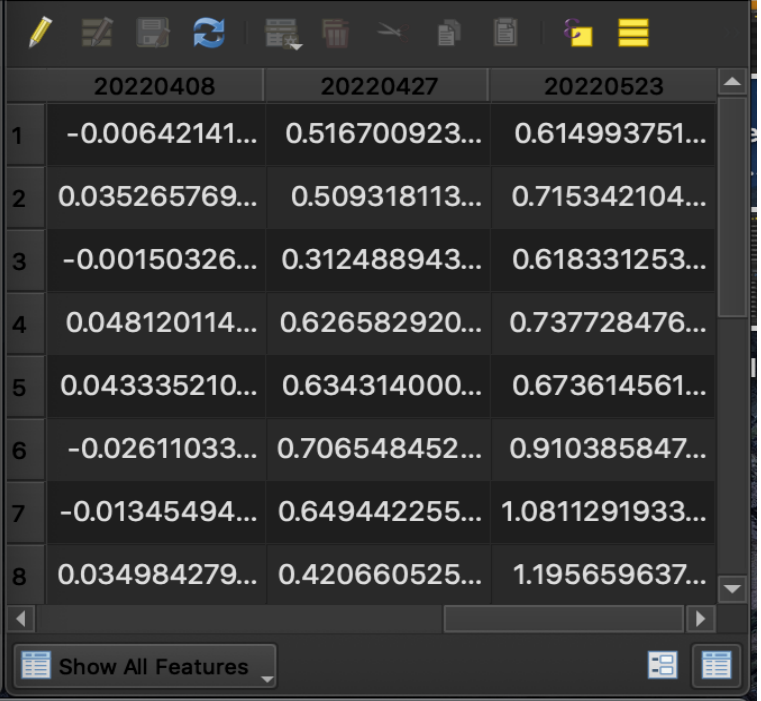
by Campbell Motter

Accomplishments since last update 35 hrs of effort	Ongoing progress/problems and plans until the next presentation
• SHP file merging has been completed and validated. • Validated that using more Orthomosaics than CHMs is working and generating the correct attributes • RGB is fully validated	• Test and Validate Multispectral.



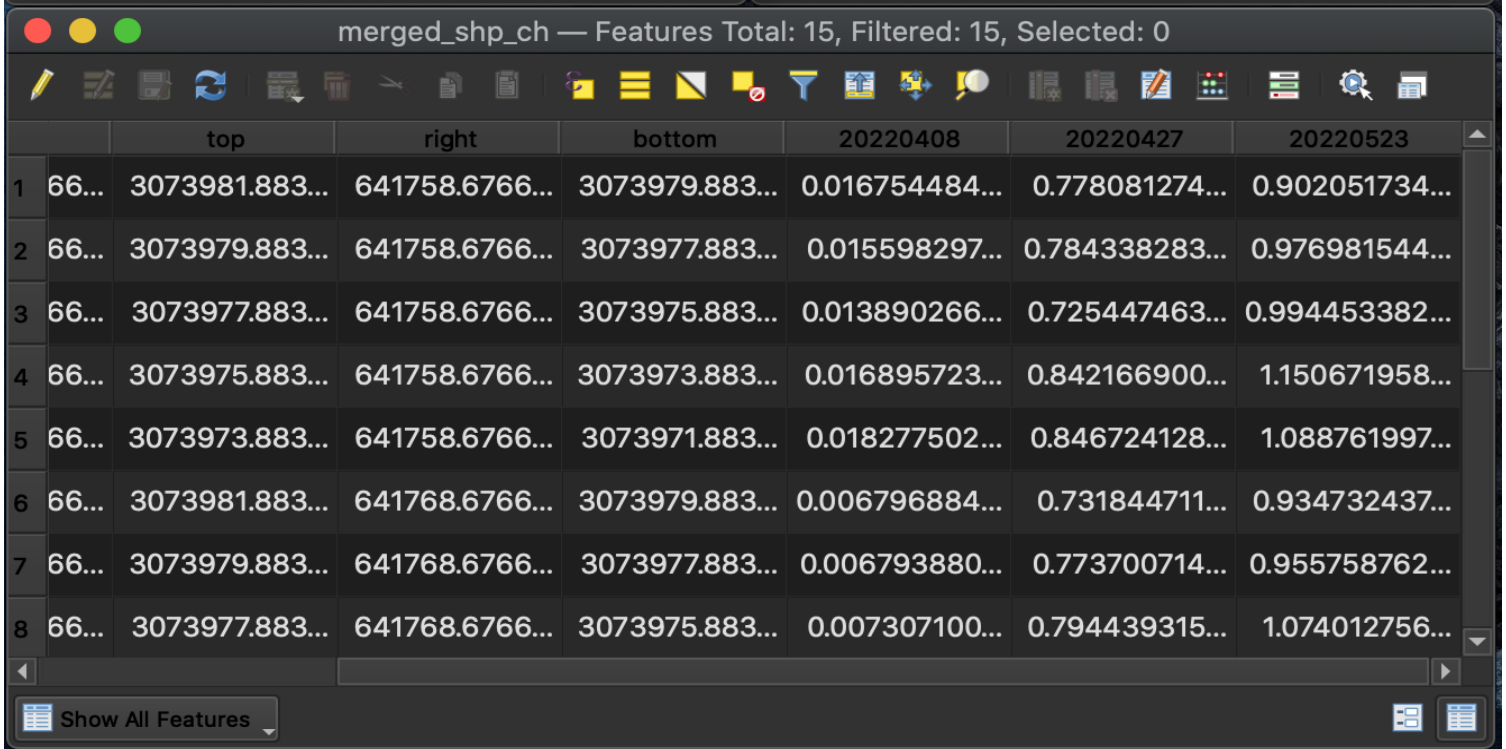
	20220408	20220427	20220523
1	5.701640009...	30.9634809...	27.92962799...
2	6.875838974...	30.55225696...	28.26340326...
3	5.409229639...	19.50614026...	27.87629037...
4	7.1644221310...	31.28145567...	33.90215735...
5	7.229369494...	31.74585721...	34.16534445...
6	6.044372921...	34.04289630...	36.57354169...
7	6.216978364...	32.82315169...	41.79056237...
8	7.440752338...	22.90906158...	43.3088969...

Show All Features



	20220408	20220427	20220523
1	-0.00642141...	0.516700923...	0.614993751...
2	0.035265769...	0.509318113...	0.715342104...
3	-0.00150326...	0.312488943...	0.618331253...
4	0.048120114...	0.626582920...	0.737728476...
5	0.043335210...	0.634314000...	0.673614561...
6	-0.02611033...	0.706548452...	0.910385847...
7	-0.01345494...	0.649442255...	1.0811291933...
8	0.034984279...	0.420660525...	1.195659637...

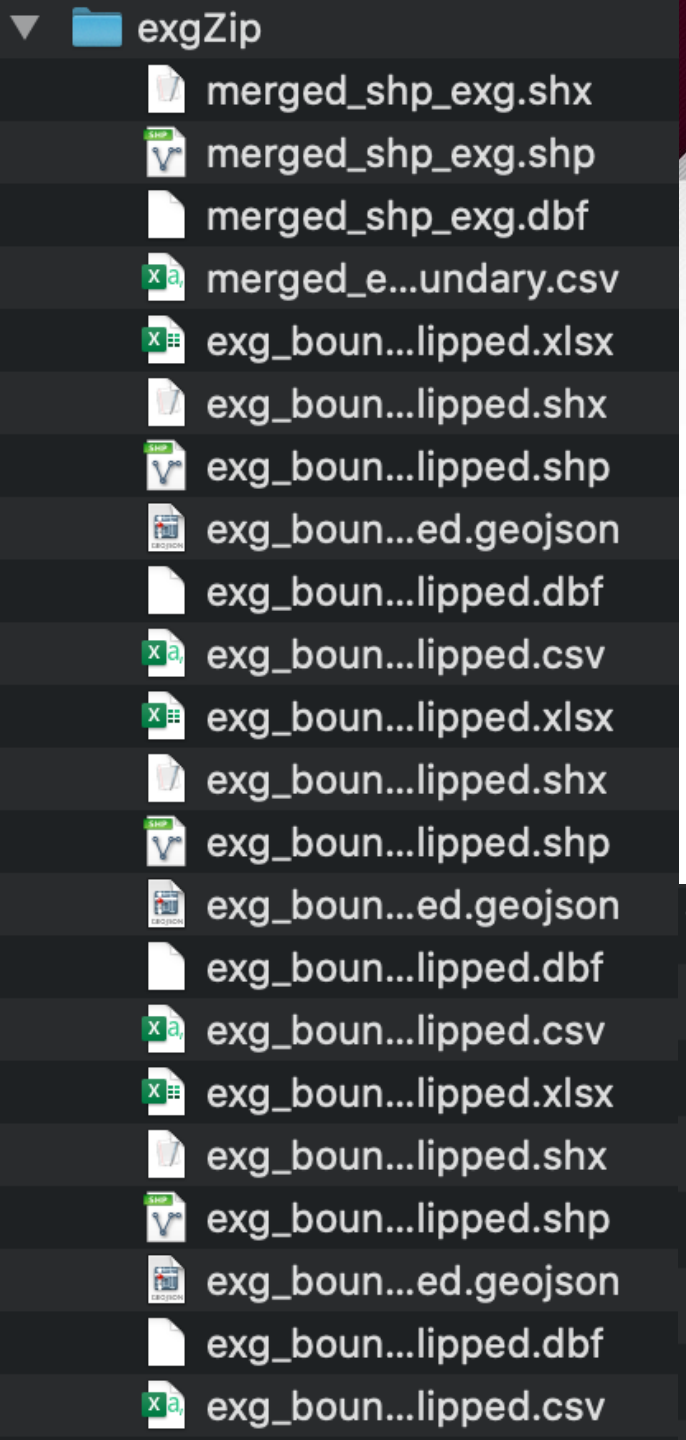
Show All Features



merged_shp_ch — Features Total: 15, Filtered: 15, Selected: 0

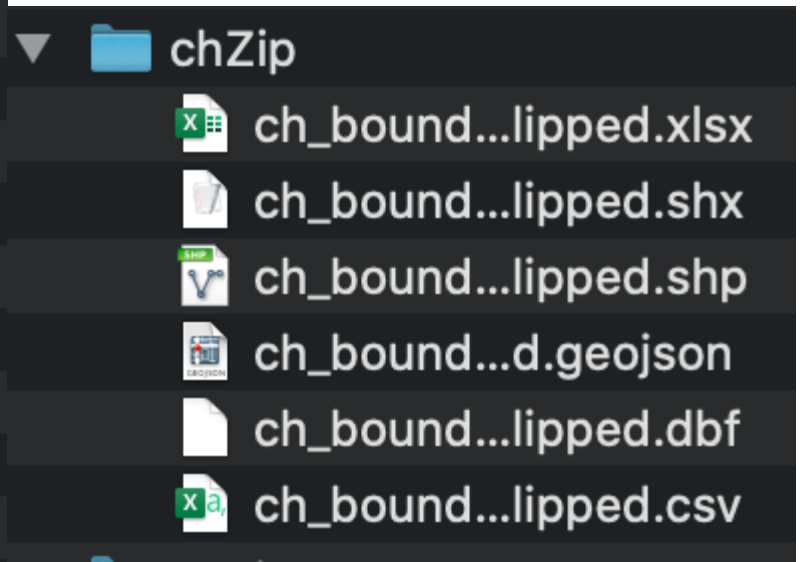
		top	right	bottom	20220408	20220427	20220523
1	66...	3073981.883...	641758.6766...	3073979.883...	0.016754484...	0.778081274...	0.902051734...
2	66...	3073979.883...	641758.6766...	3073977.883...	0.015598297...	0.784338283...	0.976981544...
3	66...	3073977.883...	641758.6766...	3073975.883...	0.013890266...	0.725447463...	0.994453382...
4	66...	3073975.883...	641758.6766...	3073973.883...	0.016895723...	0.842166900...	1.150671958...
5	66...	3073973.883...	641758.6766...	3073971.883...	0.018277502...	0.846724128...	1.088761997...
6	66...	3073981.883...	641768.6766...	3073979.883...	0.006796884...	0.731844711...	0.934732437...
7	66...	3073979.883...	641768.6766...	3073977.883...	0.006793880...	0.773700714...	0.955758762...
8	66...	3073977.883...	641768.6766...	3073975.883...	0.007307100...	0.794439315...	1.074012756...

Show All Features



This was tested with 3 orthomosaic files and a single CHM.

Thus only one set of data will be created for the ch_boundary, because it requires a CHM file for attribute generation.



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	VALIDATED
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	VALIDATED
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	VALIDATED
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?