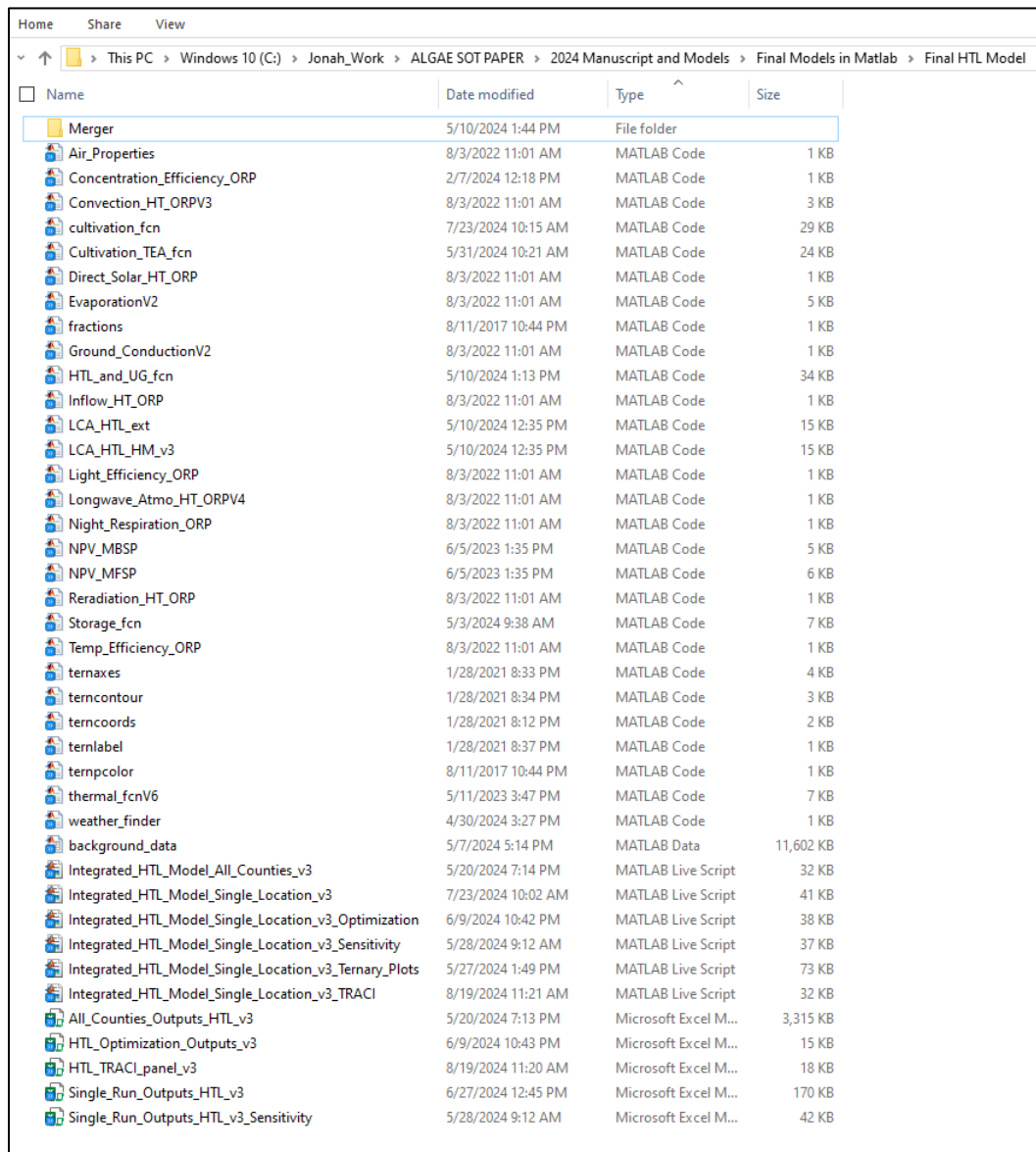


To use the CSU_algae_biofuels_model (HTL model) you must put each of the following files into a single folder. This folder can be anywhere on your computer, and you can name it whatever you want to, but the code requires that all files are in the same folder. Also, **you should have separate folders for the HTL and HEFA models.**

Required Files for the HTL model:

- All files contained in the HTL branch of the data repository found through this link (GitHub): https://github.com/jonahgreene01/CSU_algae_fuels_model/tree/HTL
- The “Merger” folder which contains all weather station data found through this link (Google Drive): https://drive.google.com/drive/folders/15i6FB_46SpMV6J7lG36U82KxgUVbyXGz?usp=sharing

Once everything has been consolidated the final folder should look like this:



Name	Date modified	Type	Size
Merger	5/10/2024 1:44 PM	File folder	
Air_Properties	8/3/2022 11:01 AM	MATLAB Code	1 KB
Concentration_Efficiency_ORP	2/7/2024 12:18 PM	MATLAB Code	1 KB
Convection_HT_ORPV3	8/3/2022 11:01 AM	MATLAB Code	3 KB
cultivation_fcn	7/23/2024 10:15 AM	MATLAB Code	29 KB
Cultivation_TEA_fcn	5/31/2024 10:21 AM	MATLAB Code	24 KB
Direct_Solar_HT_ORP	8/3/2022 11:01 AM	MATLAB Code	1 KB
EvaporationV2	8/3/2022 11:01 AM	MATLAB Code	5 KB
fractions	8/11/2017 10:44 PM	MATLAB Code	1 KB
Ground_ConductionV2	8/3/2022 11:01 AM	MATLAB Code	1 KB
HTL_and_UG_fcn	5/10/2024 1:13 PM	MATLAB Code	34 KB
Inflow_HT_ORP	8/3/2022 11:01 AM	MATLAB Code	1 KB
LCA_HTL_ext	5/10/2024 12:35 PM	MATLAB Code	15 KB
LCA_HTL_HM_v3	5/10/2024 12:35 PM	MATLAB Code	15 KB
Light_Efficiency_ORP	8/3/2022 11:01 AM	MATLAB Code	1 KB
Longwave_Atmo_HT_ORPV4	8/3/2022 11:01 AM	MATLAB Code	1 KB
Night_Respiration_ORP	8/3/2022 11:01 AM	MATLAB Code	1 KB
NPV_MBSP	6/5/2023 1:35 PM	MATLAB Code	5 KB
NPV_MFSP	6/5/2023 1:35 PM	MATLAB Code	6 KB
Reradiation_HT_ORP	8/3/2022 11:01 AM	MATLAB Code	1 KB
Storage_fcn	5/3/2024 9:38 AM	MATLAB Code	7 KB
Temp_Efficiency_ORP	8/3/2022 11:01 AM	MATLAB Code	1 KB
ternaxes	1/28/2021 8:33 PM	MATLAB Code	4 KB
terncontour	1/28/2021 8:34 PM	MATLAB Code	3 KB
terncoords	1/28/2021 8:12 PM	MATLAB Code	2 KB
ternlabel	1/28/2021 8:37 PM	MATLAB Code	1 KB
ternpcolor	8/11/2017 10:44 PM	MATLAB Code	1 KB
thermal_fcnV6	5/11/2023 3:47 PM	MATLAB Code	7 KB
weather_finder	4/30/2024 3:27 PM	MATLAB Code	1 KB
background_data	5/7/2024 5:14 PM	MATLAB Data	11,602 KB
Integrated_HTL_Model_All_Counties_v3	5/20/2024 7:14 PM	MATLAB Live Script	32 KB
Integrated_HTL_Model_Single_Location_v3	7/23/2024 10:02 AM	MATLAB Live Script	41 KB
Integrated_HTL_Model_Single_Location_v3_Optimization	6/9/2024 10:42 PM	MATLAB Live Script	38 KB
Integrated_HTL_Model_Single_Location_v3_Sensitivity	5/28/2024 9:12 AM	MATLAB Live Script	37 KB
Integrated_HTL_Model_Single_Location_v3_Ternary_Plots	5/27/2024 1:49 PM	MATLAB Live Script	73 KB
Integrated_HTL_Model_Single_Location_v3_TRACI	8/19/2024 11:21 AM	MATLAB Live Script	32 KB
All_Counties_Outputs_HT_L_v3	5/20/2024 7:13 PM	Microsoft Excel M...	3,315 KB
HTL_Optimization_Outputs_v3	6/9/2024 10:43 PM	Microsoft Excel M...	15 KB
HTL_TRACI_panel_v3	8/19/2024 11:20 AM	Microsoft Excel M...	18 KB
Single_Run_Outputs_HT_L_v3	6/27/2024 12:45 PM	Microsoft Excel M...	170 KB
Single_Run_Outputs_HT_L_v3_Sensitivity	5/28/2024 9:12 AM	Microsoft Excel M...	42 KB

Once you have placed all required files into a single model folder (that looks like the picture on the previous page) you can run the model using one of the user interface live scripts described below:

1. **Integrated_HTL_Model_Single_County_v3.mlx**: Use this code to get comprehensive TEA and LCA results for a single county in the contiguous US or Hawaii. All inputs can be configured within the live script. Also, the user can view results through the live script or by printing to the Excel sheet: **Single_Run_Outputs_HTL_v3.xlsm**
2. **Integrated_HTL_Model_Single_County_v3_Optimization.mlx**: Use this code to run the optimization algorithm for a single county in the contiguous US or Hawaii. All inputs can be configured within the live script. Also, the user can view results through the live script or by printing to the Excel sheet: **HTL_Optimization_Outputs_v3.xlsm**
3. **Integrated_HTL_Model_Single_County_v3_Sensitivity.mlx**: Use this code to run the sensitivity analysis for a single county in the contiguous US or Hawaii. All inputs can be configured within the live script. Within the live script, results can be printed to the Excel sheet: **Single_Run_Outputs_HTL_v3_Sensitivity.xlsm**
4. **Integrated_HTL_Model_Single_County_v3_Ternary_Plots.mlx**: Use this code to run the compositional analysis for a single county in the contiguous US or Hawaii. All inputs can be configured within the live script. The code generates ternary diagrams which can be copied and pasted out of Matlab. This code does not print to Excel.
5. **Integrated_HTL_Model_Single_County_v3_TRACI.mlx**: Use this code to generate environmental impacts from the Tool for the Reduction of Chemical and Other Environmental Impacts (TRACI) methodology for 5 case study locations. The user can print outputs to the Excel sheet: **HTL_TRACI_panel_v3.xlsm**
6. **Integrated_HTL_Model_All_Counties_v3.mlx**: Use this code to run the model in each of the 5,626 locations included in the weather grid within the “Merger” file. This will generate an output matrix with key LCA and TEA results metrics that is saved to the Excel file: **All_Counties_Outputs_HTL_v3.xlsm**