Small LULC errors can have a substantial effect on watershed model output. LUU Uncertainty enables the user to integrate LULC realizations in the SWAT model and evaluate the sensitivity of SWAT output to LULC errors.

https://saraswat-swat.rcac.purdue.edu

LUU Uncertainty

User Manual

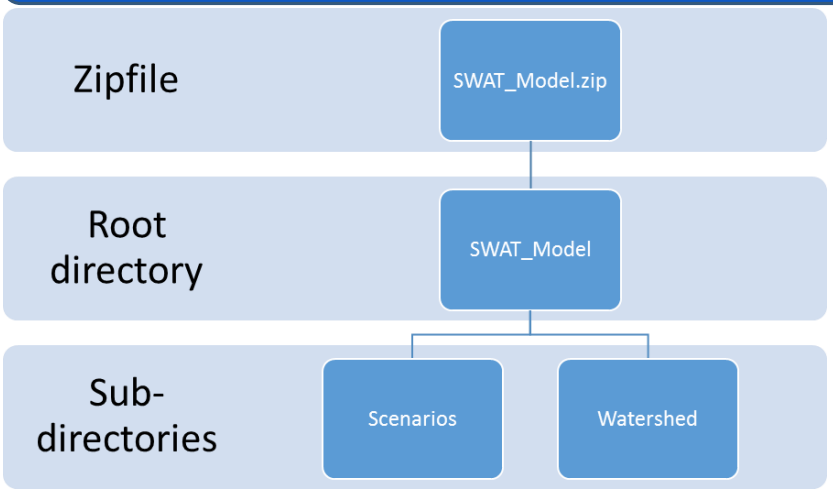
Last Revised: 08/18/2016

PURDUE UNIVERSITY®

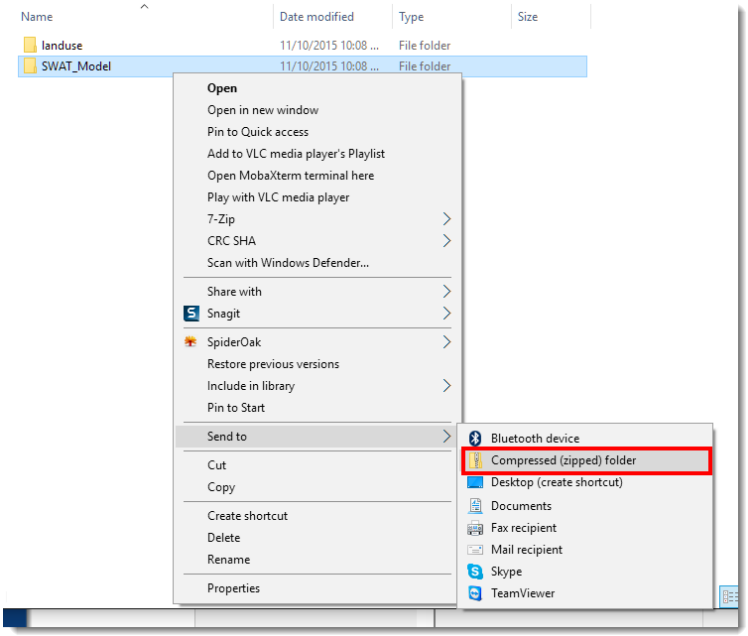
Step 1 – SWAT Model Input

1. The first file you will need to upload is a zipped copy of your SWAT model. The zipfile should be provided with the same name as the directory containing the SWAT model. For example, if your SWAT model is in a directory named "SWAT_Model", the zipfile should be named "SWAT_Model.zip." It is necessary that the SWAT model directory has the "Scenarios" and "Watershed" sub-directories and that those two directories contain all of their associated sub-directories and files. The next step will demo how to create a zipfile.

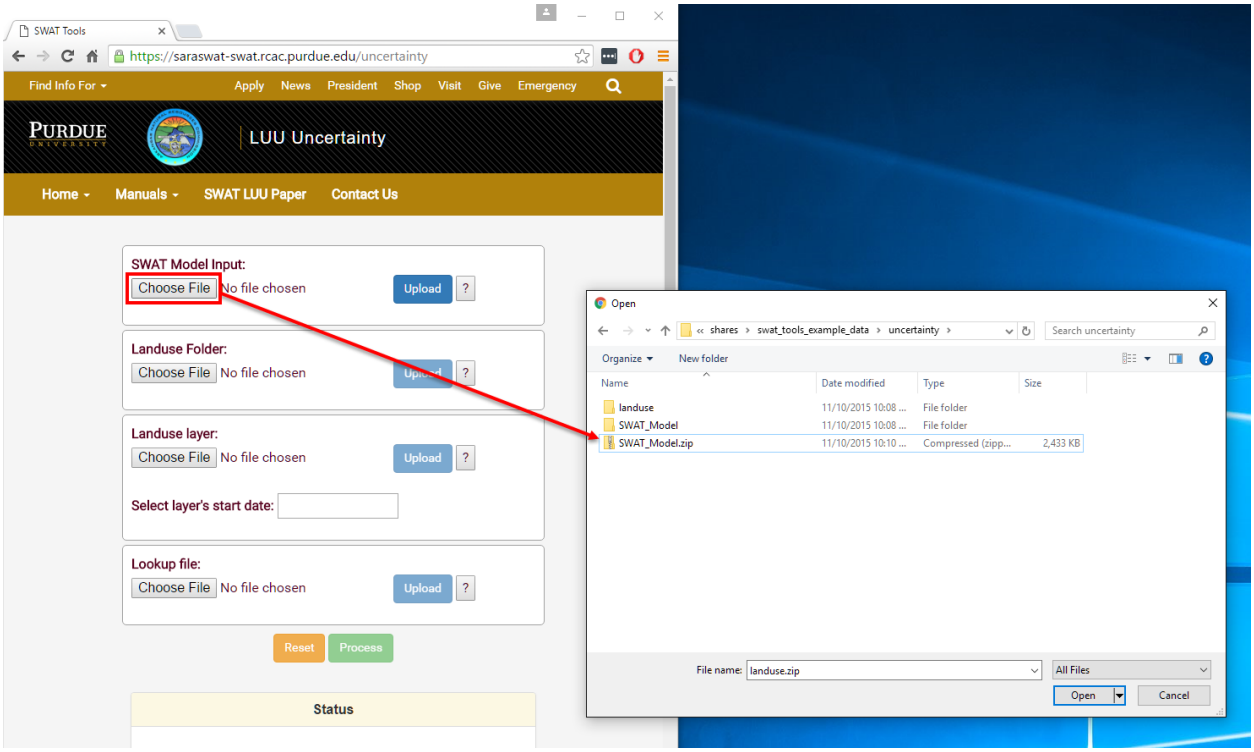
Caution: Your landuse rasters must have the same resolution as the hrus1 raster in your SWAT Model. They must have the same number of rows and columns for proper analysis.



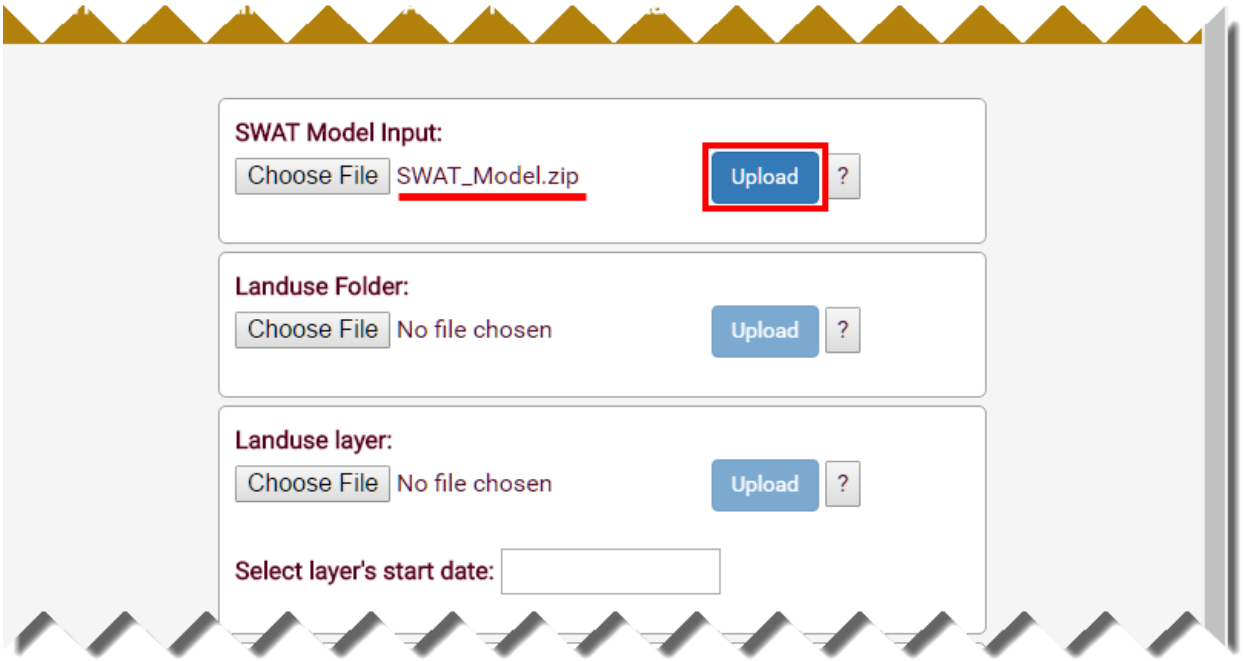
2. Make sure your SWAT model directory matches the above requirements. You can use any software you like to create the zipfile. In Windows 7 and up, you can simply right-click the directory and then select **Send to -> Compressed (zipped) folder** in the menu that appears. The zipfile name should match the SWAT model directory name.



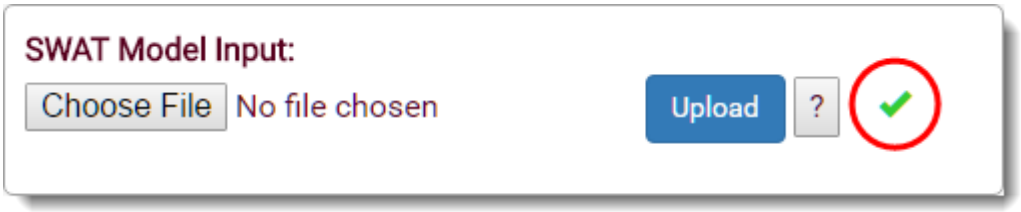
3. Click the **Choose File** button in the **SWAT Model Input** section to start the process of uploading your zipped SWAT model. Navigate to the location of your zipped SWAT model and double-click it, or click it once and click the **Open** button.



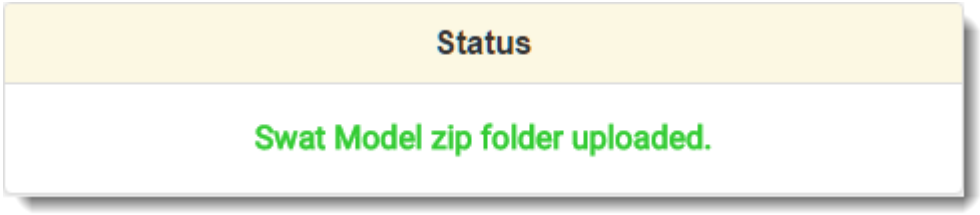
4. After selecting the zipped SWAT model, click the **Upload** button.



5. The speed it takes to upload and unzip the file will be dependent on the transfer speed and the size of the file. A green checkmark will appear when the upload has successfully finished.

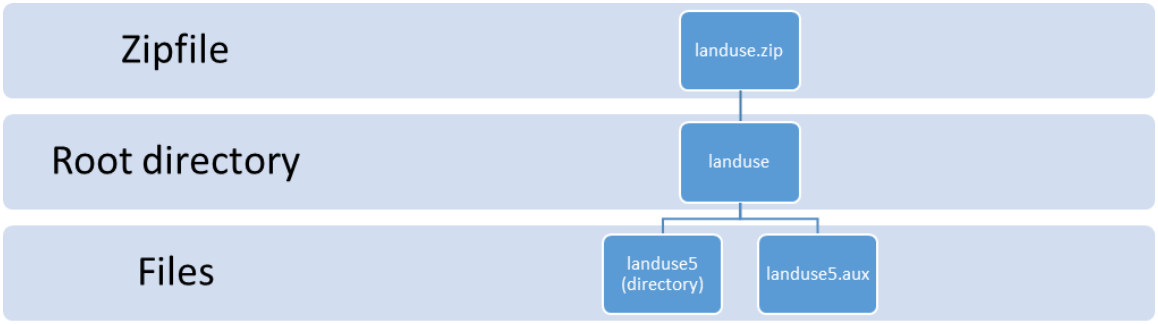


The **Status** frame located at the bottom of the page will be updated with relevant information as you use the tool. If there had been a problem with the shapefile, a message would have appeared in the **Status** frame informing you of the issue.



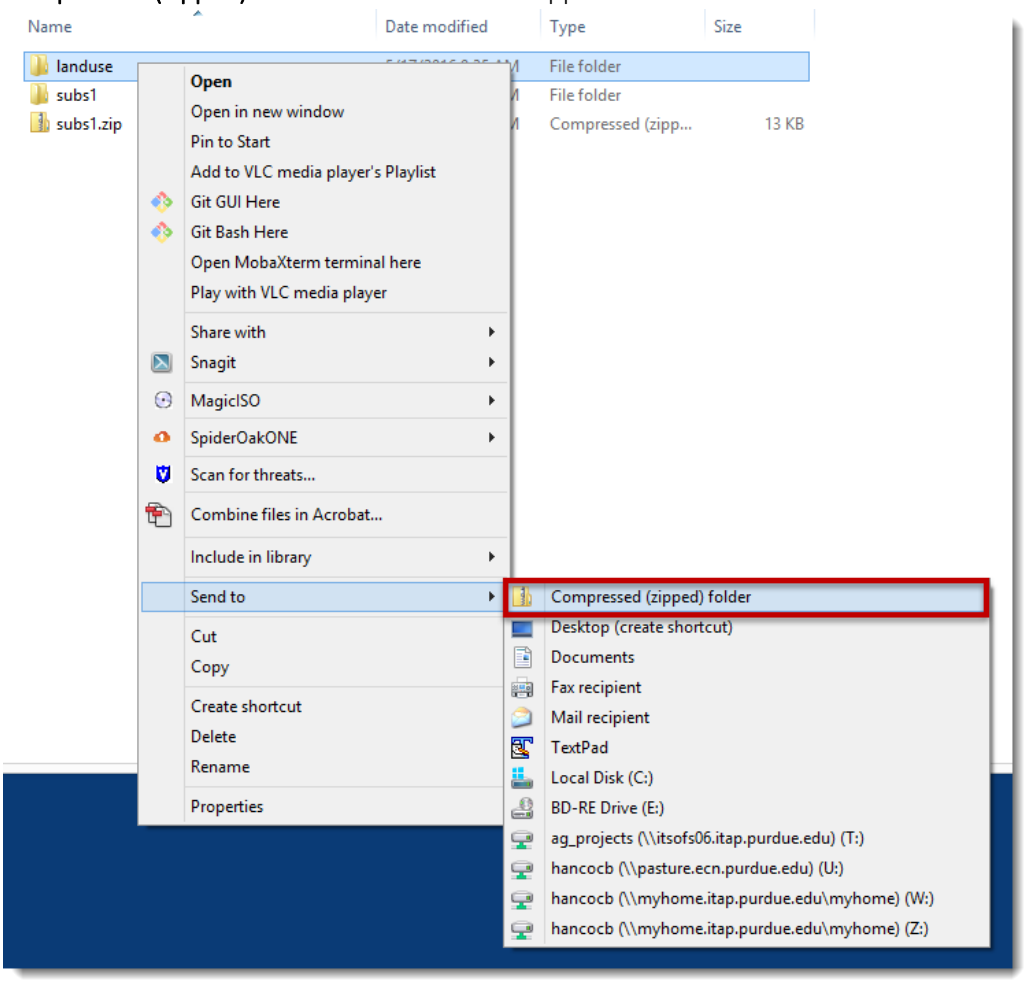
Step 2 – Upload landuse folder

1. The **Landuse Folder** section will be activated after you have completed step 1. You will need to provide your landuse data in a zipfile. The zipfile should have a root directory that contains only the landuse data you are interested in analyzing. For example, if you have a 2005 landuse layer named "landuse5 you would need to include the "landuse5" directory as well as the corresponding ".aux" file. These files should be placed into the same directory. The next step will demo how to create a zipfile.

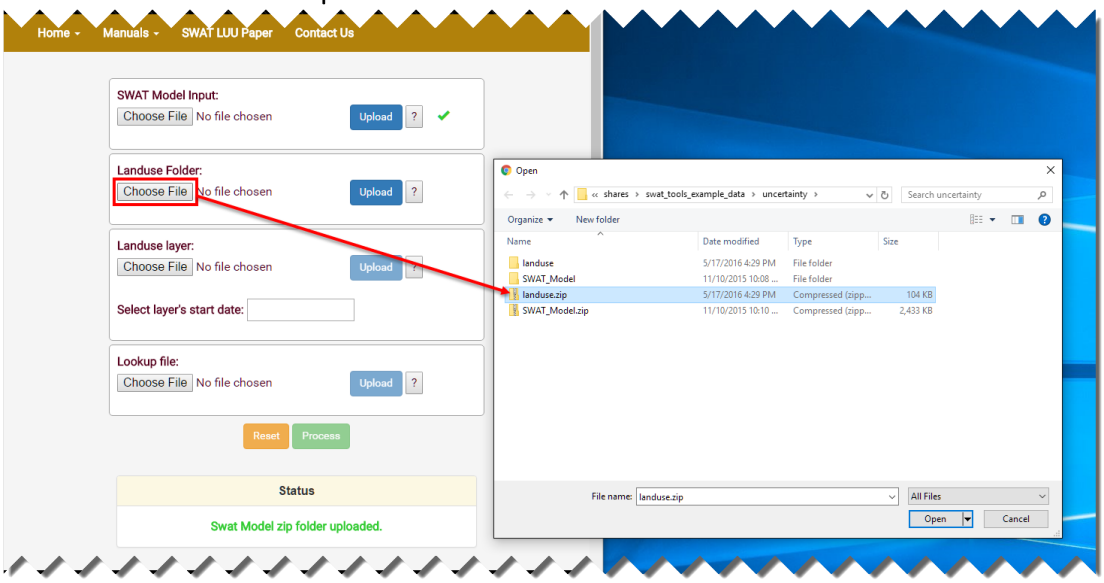


2. Once you have placed your landuse data into a common directory, you will need to zip that directory. You can use any software you like to create the zip file. In Windows 7 and up, you can simply right-click the directory containing the landuse data and then select **Send to ->**

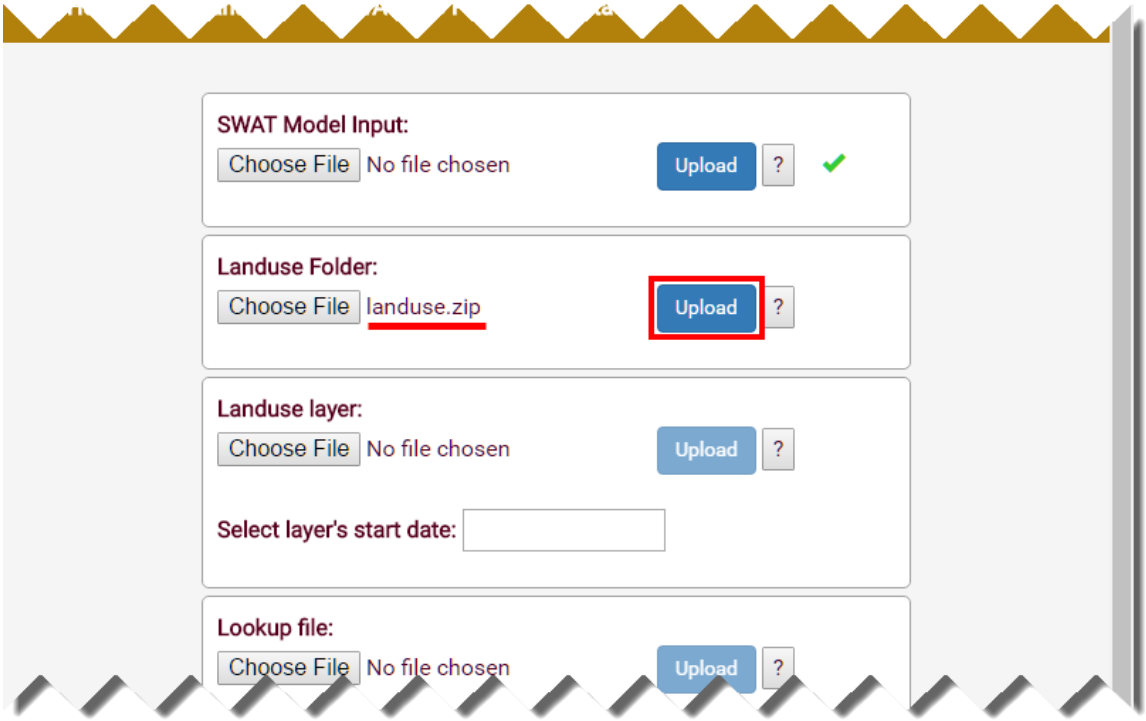
Compressed (zipped) folder in the menu that appears.



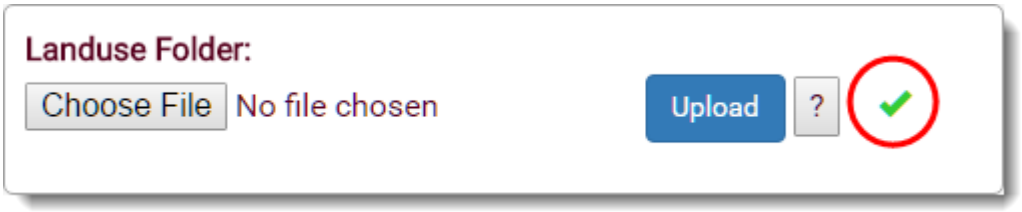
3. Click the **Choose File** button in the **Landuse Folder** section to start the process of uploading your zipped landuse data. Navigate to the location of your zipped landuse data and double-click it, or click it once and click the **Open** button.



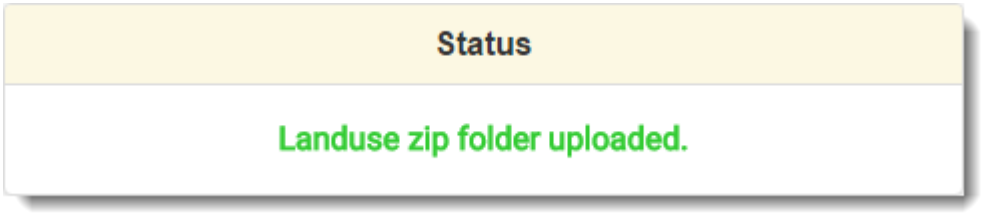
4. After selecting the zipped landuse file, click the **Upload** button.



5. The speed it takes to upload and unzip the file will be dependent on the transfer speed and the size of the file. A green checkmark will appear when the upload has successfully finished.



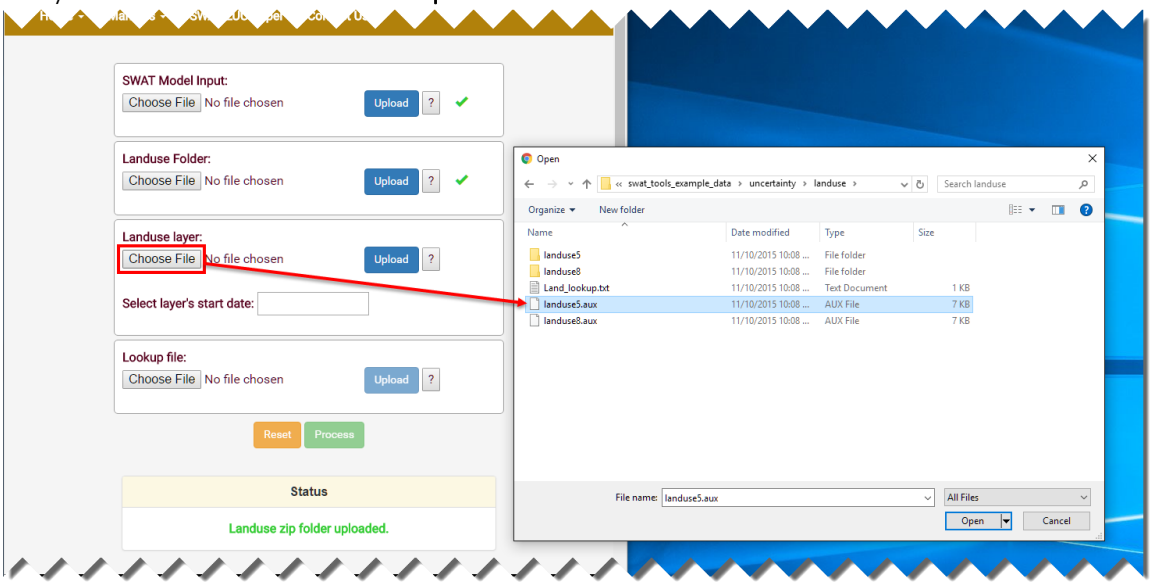
The **Status** frame located at the bottom of the page will be updated with relevant information as you use the tool. If there had been a problem with the landuse data, a message would have appeared in the **Status** frame informing you of the issue.



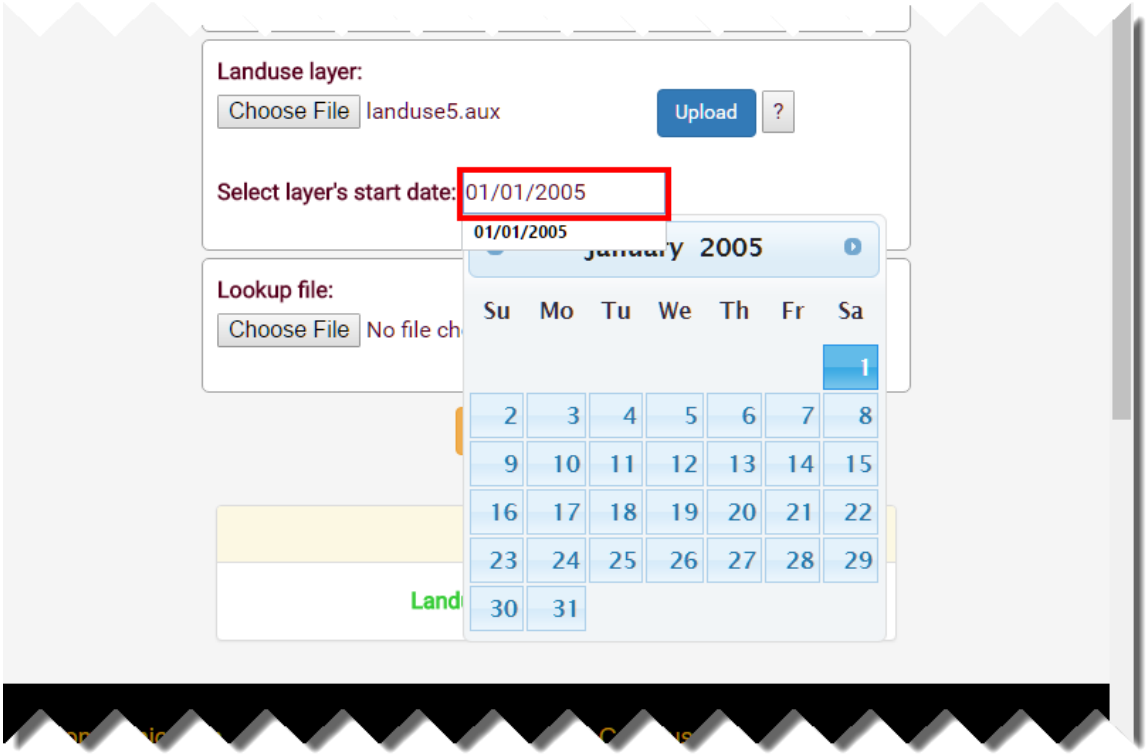
Step 3 – Landuse layer

1. Click the **Choose File** button in the **Landuse layer** section and navigate to the directory containing your landuse data. Either double-click the ".aux" file associated with the landuse layer you wish to

analyze or left-click it and click the **Open** button.

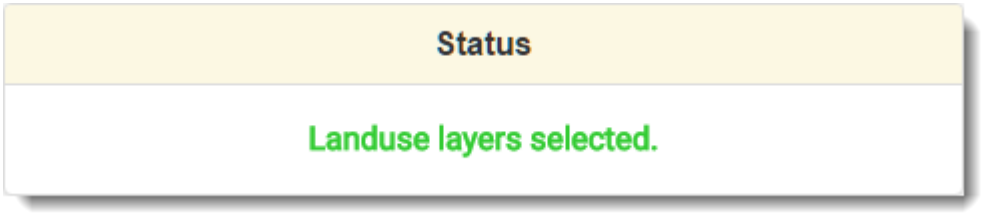


2. Next enter the start date for the landuse layer.



3. After selecting the landuse layer's ".aux" file and entering a start date, click the **Upload** button. A green checkmark will appear when the upload has successfully finished.

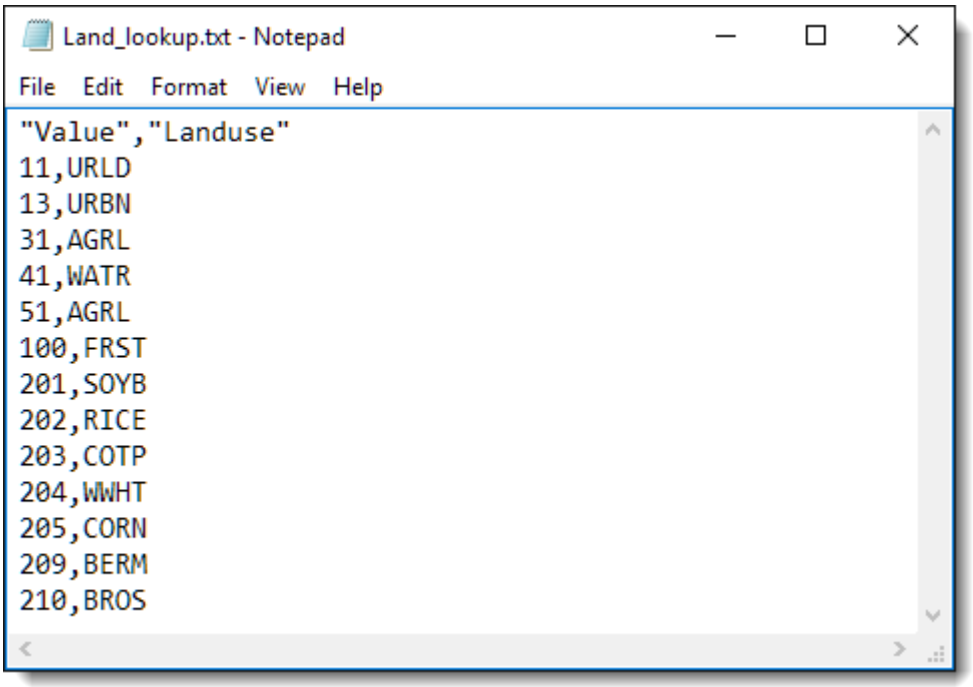
The **Status** frame located at the bottom of the page will be updated with relevant information as you use the tool. If there had been a problem with the landuse data, a message would have appeared in the **Status** frame informing you of the issue.



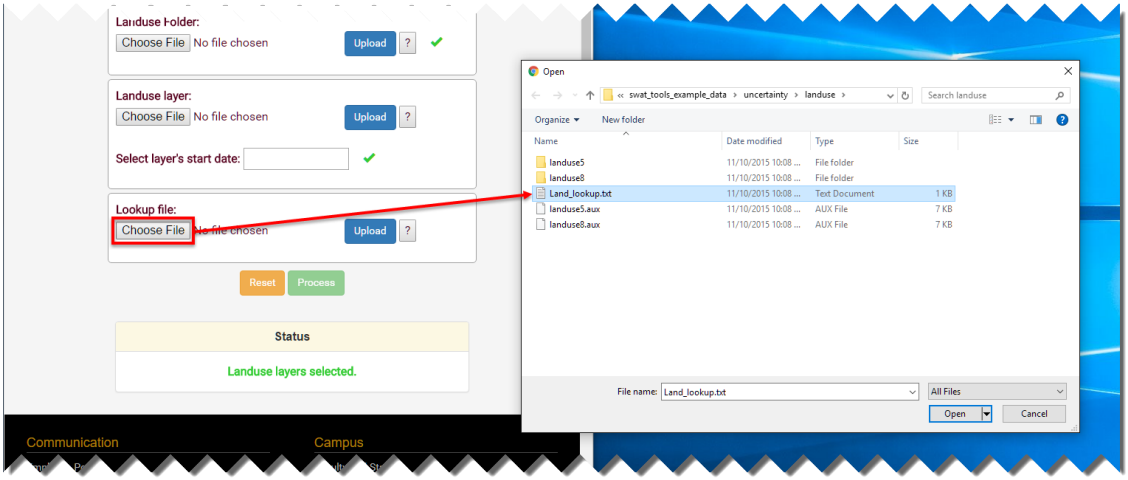
Step 4 – Lookup file

1. The lookup file should be a text file that follows a specific format. It should have the following line as its header: **"Value", "Landuse"**

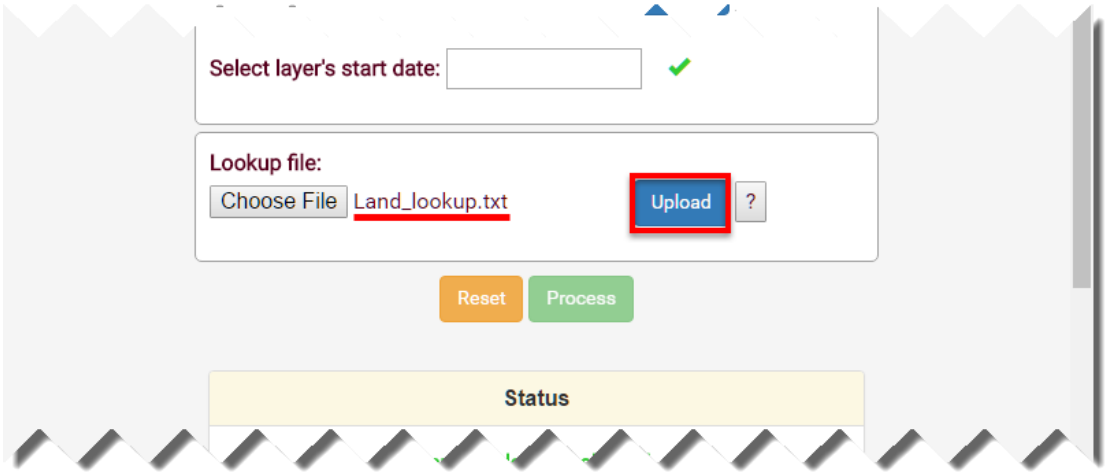
   The subsequent rows should contain an integer value and landuse description used in your SWAT model separated by a comma. For example, "41,WATR" or "100,FRST" – an example lookup file can be seen in the below screenshot:



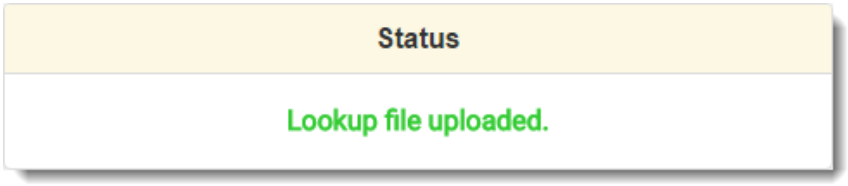
2. Once your lookup file is in the correct format, click the **Choose File** button in the **Lookup File** section to start the process of uploading the lookup file. Navigate to the location of your lookup file and double-click it, or click it once and click the **Open** button.



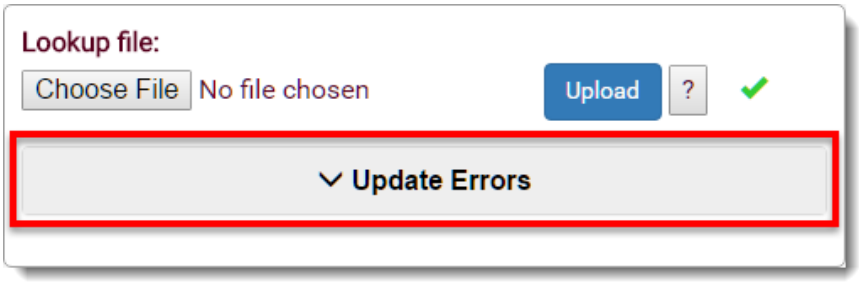
3. After selecting the lookup file, click the **Upload** button.



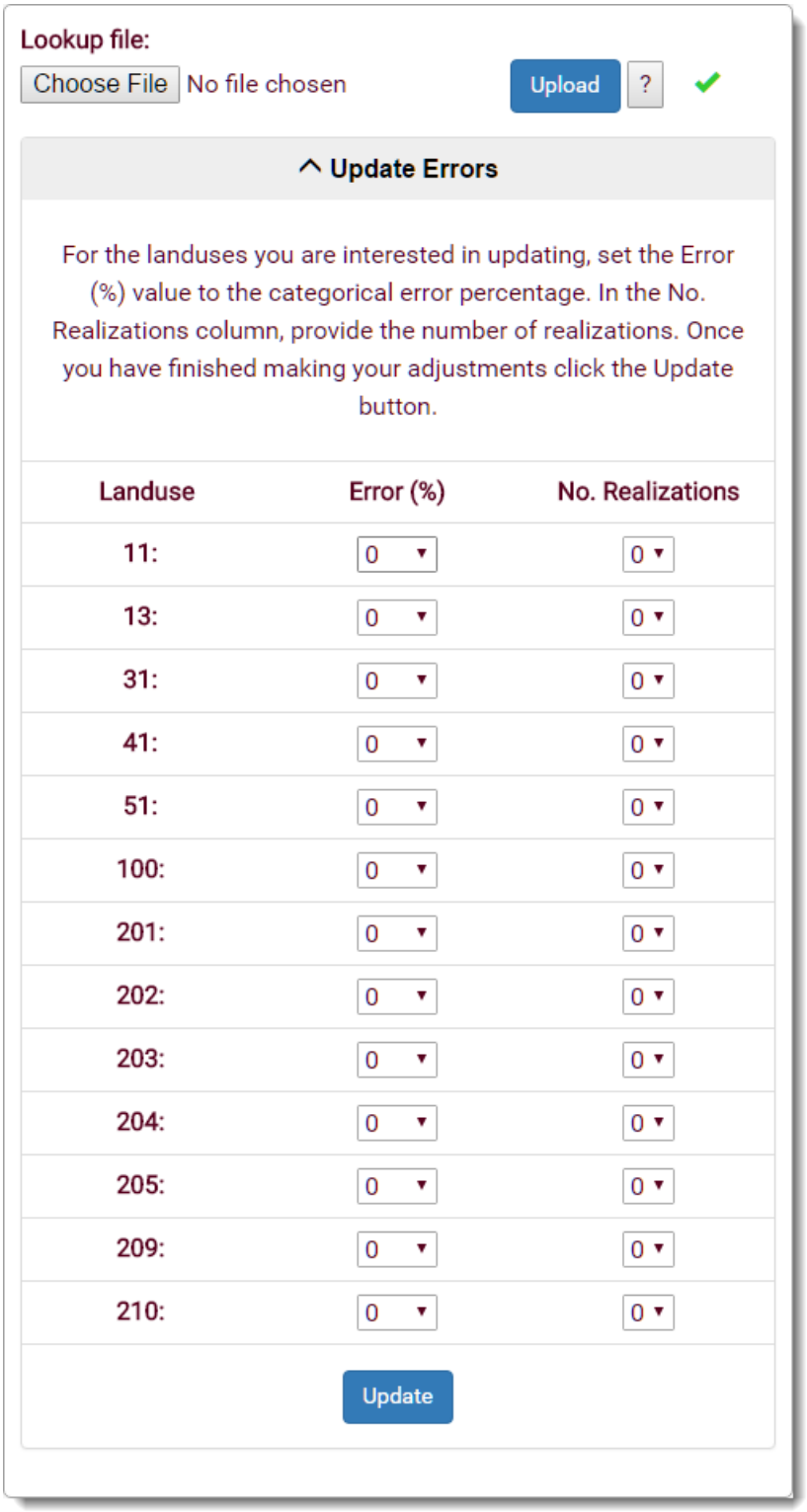
4. The **Status** frame will be updated to indicate the file was successfully uploaded.



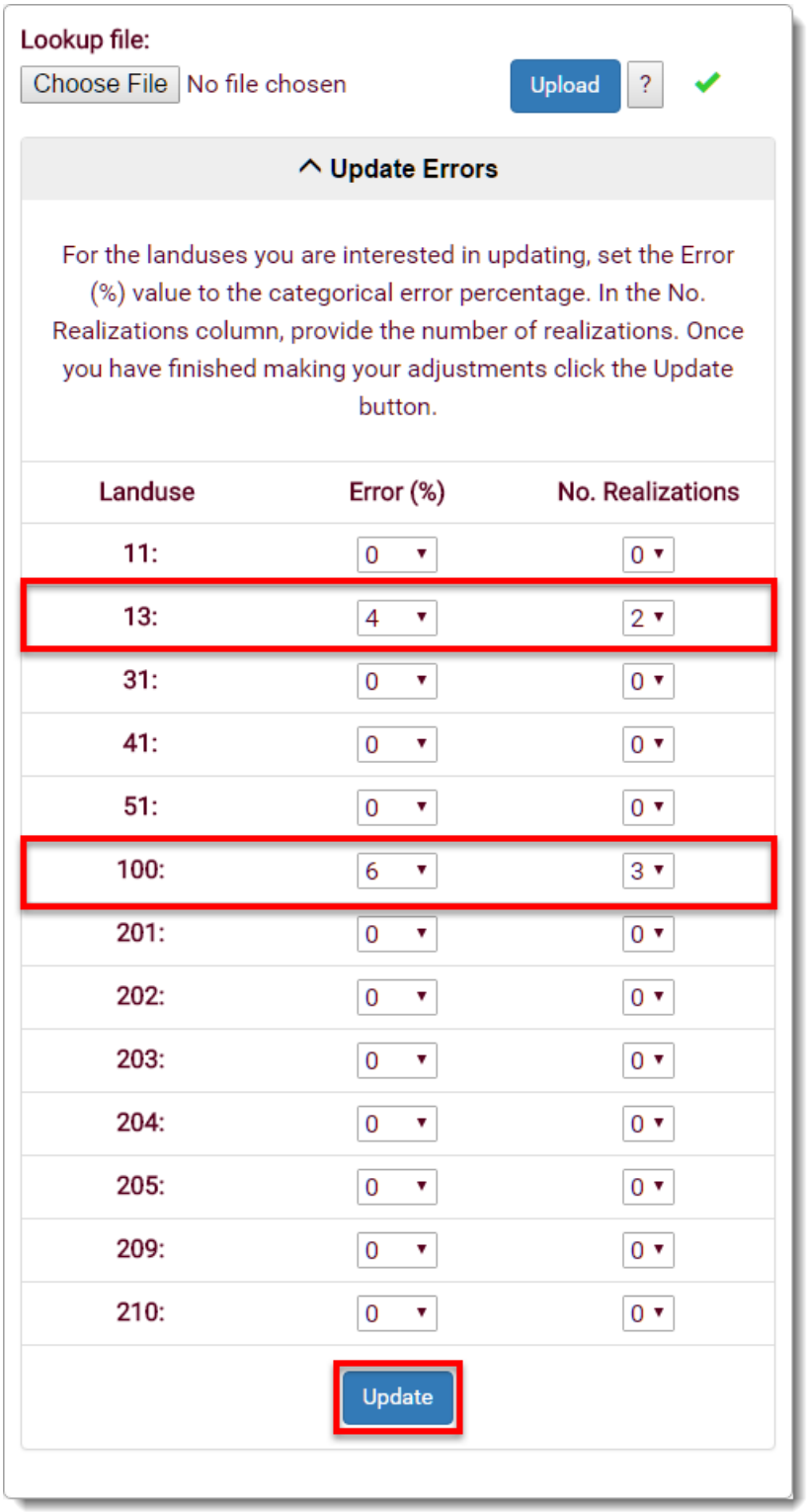
5. When the lookup file finishes uploading, a new button will appear in the **Lookup file** section named **Update Errors**. Click the **Update Errors** button to expand the view.



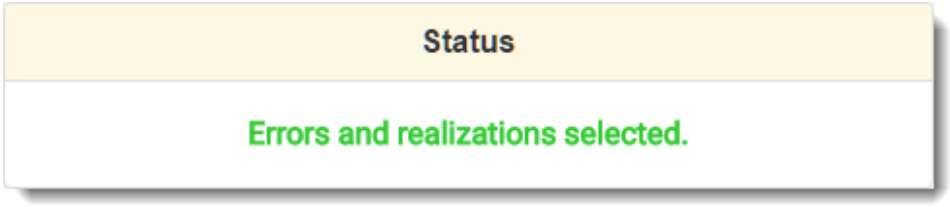
6. Clicking the button will reveal a new form containing an entry for each of the landuse codes provided in the lookup file. You will be able to set an error (%) and number of realizations for each landuse code. Clicking the **Update Errors** button will cause the form to close. The next few steps will show how to use this form.



7. Set the error and number of realization for the landuse codes you are interested in modifying. For the codes you do not wish to modify, simply leave them on their default values (0, 0). After making your adjustments, click the **Update** button located at the bottom of the form.

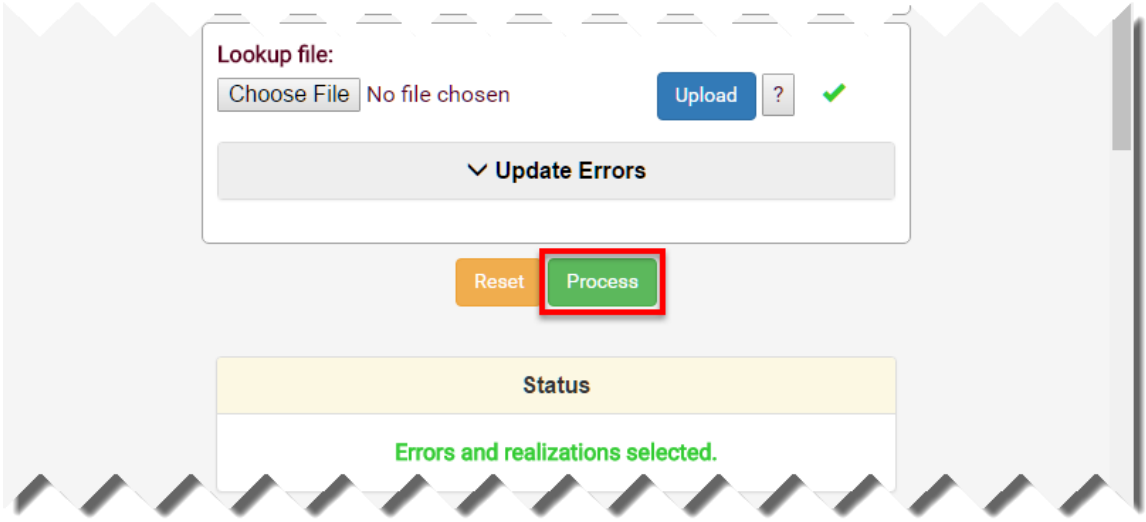


8. The **Status** frame will be updated to indicate your errors and realizations have been selected.

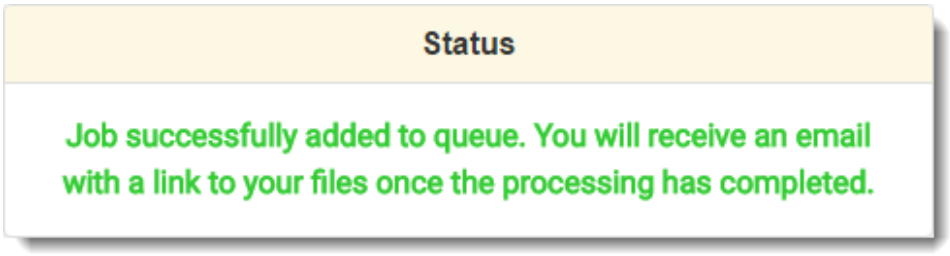


Step 5 – Process

1. Once all of the inputs have been entered, click the **Process** button to submit the job request.



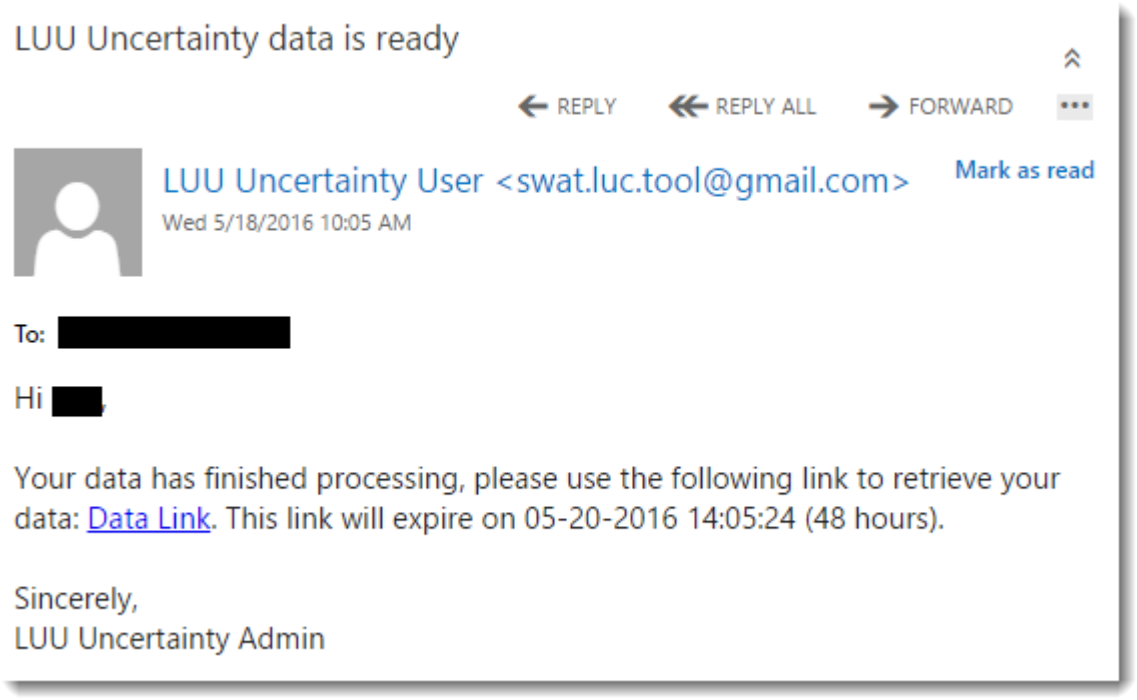
2. Once the job has been successfully added to the queue, the **Status** frame will update to the following message:



At this point you can either click the **Reset** button (clears the form) and start uploading a new dataset or leave the page. When the job has finished running, an email will be sent to you containing a link to your results.

Step 7 – Downloading your data

1. You will receive an email when your data is ready for download. It will look similar to the below screenshot:



2. As indicated by the email message, you will have 48 hours to download your results before the results are permanently deleted. Click the "Data Link" to start the download. If you are not signed in to the site, you will be asked to do so before the download begins.

If you have any questions, please contact us at swat.luc.tool@gmail.com or saraswat@purdue.edu.