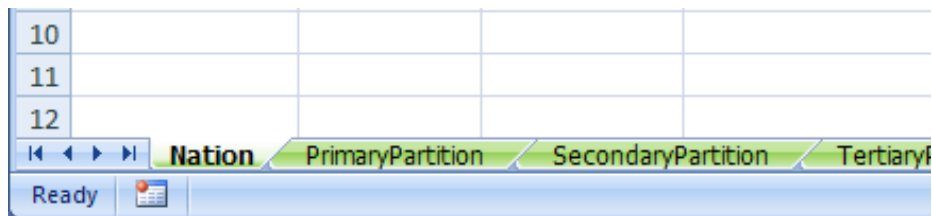


i-Tree-Eco International

New Location Input

*Note for this section all tabs referenced will be colored Green

1. Start by opening the document titled "iTreeEcoUserInput.xls"
2. Select the Nation tab.



3. Locate the 'ContinentName' heading. Select the name of the continent from the drop down list.

ContinentName	NationName	NationAbbrev	MainPrimaryPartitionType
<input type="text" value="Africa"/>			
Africa			
Antarctica			
Asia			
Australia			
Europe			
North America			
South America			
Other			

4. Locate the 'NationName' heading. Select the nation name from the drop down list.

ContinentName	NationName	NationAbbrev	MainPrimaryPartitionType
	<input type="text" value="Afghanistan"/>		
	Afghanistan		
	Albania		
	Algeria		
	American Samoa		
	Andorra		
	Angola		
	Anguilla		
	Antigua and Barbuda		

5. Locate the 'MainPrimaryPartitionType' heading. Select the main partition type for the nation here (State, Province, ect).

NationName	NationAbbrev	MainPrimaryPartitionType	CurrencyName
		<div style="border: 1px solid black; padding: 2px;"> <div style="text-align: right; padding-right: 5px;">▼</div> <ul style="list-style-type: none"> Atoll Autonomous community Borough Canton City Commonwealth Commune County <div style="text-align: left; padding-left: 5px;">▲</div> </div>	

6. Locate the 'CurrencyName' heading. Select the currency type from the drop down list.

MainPrimaryPartitionType	CurrencyName	ClimateRegionName	Nation
	<div style="border: 1px solid black; padding: 2px;"> <div style="text-align: right; padding-right: 5px;">▼</div> <ul style="list-style-type: none"> Afghani Algerian Dinar Andorran Peseta Argentine Peso Armenian Dram Aruban Guilder Australian Dollar Azerbaijani Manat <div style="text-align: left; padding-left: 5px;">▲</div> </div>		

If the currency is not listed, it will have to be added to the Currency table.

- a. Select the tab titled 'CurrencyTable'

	A	B	C	D
1	CurrencyID	CurrencyName	CurrencyAbbreviation	CurrencySymbol
2	1	Afghani	AFA	Af
3	2	Algerian Dinar	DZD	DA
4	3	Andorran Peseta	ADP	Pts

Ready | < > <> <> | ContinentTable CurrencyTable ClimateRegion PartitionTypes AlbedoStatio

- b. Scroll to the bottom of the list and populate the fields under the headings CurrencyName, CurrencyAbbreviation, and CurrencySymbol

7. In the Nation sheet locate the ClimateRegion heading. Select a region from the drop down list whose climate is the most similar to that of the new location. Appendix C in <http://www.fs.fed.us/psw/publications/documents/gtr-171/gtr-171.pdf> provides a methodology for selecting the appropriate climate region for your site.

CurrencyName	ClimateRegionName	NationalElectEmissions	CostOfEle
	<div style="border: 1px solid black; padding: 2px;"> <div style="text-align: right; padding-right: 5px;">▼</div> <div style="padding: 2px;"> <p>California Coast</p> <p>Desert Southwest</p> <p>Gulf Coast/Hawaii</p> <p>Mid-Atlantic</p> <p>Mountains</p> <p>North Central</p> <p>Northern Tier</p> <p>Pacific Northwest</p> </div> <div style="text-align: left; padding-left: 5px;">▲</div> </div>		

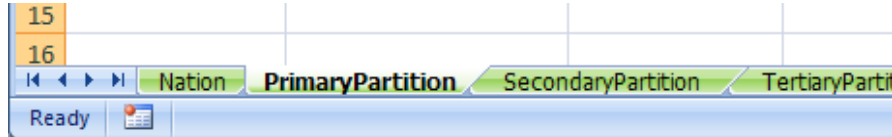
8. * Note * This section may not have any information at the Nation level. If that is the case then leave the fields blank listed under A.
- a. Fill in the fields for;
 - National Electricity Emissions – in kg CO₂/KWh
 - CostOfElectricity - in nations standard monetary units per Kwh
 - CostofFuels - nations standard monetary units per MBTU
 - Year of Costs - for which the CostOfElectricity and CostOfFuels are applicable.
 - CarbonValueFactor - in metric tonnes per standard currency
 - Latitude and Longitude – the centroid in decimal degrees
 - National MeanMin - in degrees Fahrenheit
 - National LeafOff Day of Year - Autumn frost date
 - National Leaf On Day of Year - Spring frost free date
 - National Frost Free Length – The number of days that are frost free
 - National Elevation – in meters
 - National GMT Offset – in hours ie +/-9.5
9. If you have pollutant monetary value information for the nation, navigate to the **PollutantValue** table. Enter the monetary value of pollution removal by trees or the median externality value for each pollutant and a source year for these values. Pollutant monetary values will adjusted according to the ProducerPriceIndex (PPI) for any year thereafter.
- a. Enter the Nation name
 - b. Enter the pollutant cost in local currency and source year of these costs for any of the follow pollutants

- CO – Carbon
- NO2 – Nitrogen dioxide
- O3 - Ozone
- PM10 - Particulate matter up to 10 micrometers
- PM2.5 - Particulate matter up to 2.5 micrometers
- SO2 – Sulfur dioxide
- VOC – Volatile organic compounds

10. If you entered pollutant dollar value information, navigate to the **ProducerPriceIndex** tab. In this table you will add the annual Producer Price Index (PPI) for your nation so that the monetary value of pollutants may be calculated for a year following the year that pollutant costs were sourced. A PPI value must be entered for each subsequent year following the year that earliest pollutant cost was sourced.

- Enter the Nation name
- Enter the ProducePriceIndexYear and the associated ProducerPriceIndex for that year.

11. Navigate to the PrimaryPartition tab. This is where attributes related to the primary partitions of the nation will be entered. (e.g. In the United States Primary Partitions are called States).



12. Select NationName.

ContinentName	NationName	NationAbbrev	MainPrimaryPartitionType
	<input type="text"/>		
	Afghanistan		
	Albania		
	Algeria		
	American Samoa		
	Andorra		
	Angola		
	Anguilla		
	Antigua and Barb		

13. Enter in the name of the Primary Partition.

14. Create an abbreviation for that primary partition. The abbreviation can be no more than 3 characters long.

15. Locate the PartitionType heading. Select from the drop down list the type of partition for the PrimaryPartitions.
16. Locate the MainSecondaryPartitionType heading. Select from the drop down list the title of the main partition of the primary partition (eg for New York, main secondary partition is county).
17. Locate the Latitude heading. Fill in the value for the latitude of the centroid of primary partitions.
18. Locate the Longitude heading. Fill in the value for the longitude of the centroid of primary partitions.
19. Locate the PrimaryPartitionElectricityEmissions heading. This is the electricity emissions factor (in kg CO2/KWh) for the primary partition. The primary partition electricity factor values for the US states can be found in Appendix F of the [Voluntary Reporting of Greenhouse Gases](#) document.
20. *Note* This section is optional because there may not be data for these attributes at the Primary partition level. If that is the case skip section A.
 - a. Fill in the fields for; CostOfElectricity, CostofFuels, Year of Costs, Primary MeanMin, Primary LeafOff Day of Year, Primary Leaf On Day of Year, Primary Frost Free Length, Primary Elevation, and Primary GMT Offset.
 - See section 8.a for units
21. Locate the ClimateRegion heading. Select a region from the drop down list that is the most similar to the climate in the new location.

CurrencyName	ClimateRegionName	NationalElectEmissions	CostOfEle
	<div style="border: 1px solid black; padding: 2px;"> <div style="text-align: right; padding-right: 5px;">▼</div> <ul style="list-style-type: none"> California Coast Desert Southwest Gulf Coast/Hawaii Mid-Atlantic Mountains North Central Northern Tier Pacific Northwest <div style="text-align: left; padding-left: 5px;">▲</div> </div>		

22. Navigate to the heading titled OzoneState. Because the current data collected is only for the US, you will have to select a U.S. state that has similar ozone levels collected. For this you will have to look at Figure 1 in the supplemental document titled Figures.doc. This shows each state(sometimes broken into multiple latitudes) and their

ozone values (thickness in cm) for each month. Once an area with similar values is chosen, select that state from the drop down list under the heading OzoneState.

23. Navigate to the SecondaryPartition tab. This is where attributes related to the secondary partitions of the nation will be entered.



24. Under the heading 'NationName' select the nation from the drop down list.
25. Under the heading 'PrimaryPartitionName' select the primary partition from the drop down list.
26. Under the heading 'SecondaryPartitionName' enter in the name of the Secondary Partition.
27. Locate the PartitionType heading. Select from the drop down list the type of partition for the SecondaryPartitions.
28. Locate the Latitude heading. Fill in the value for the latitude (decimal degrees) of the centroid of secondary partitions.
29. Locate the Longitude heading. Fill in the value for the longitude (decimal degrees) of the centroid of secondary partitions.
30. Locate the SecondaryPartitionElectricityEmissions heading. This is the electricity emissions factor (in kg CO2/KWh) for the primary partition. The primary partition electricity factor values for the US states can be found in Appendix F of the [Voluntary Reporting of Greenhouse Gases](#) document.
31. *Note* This section is optional because there may not be data for these attributes at the secondary partition level. If that is the case skip section A.
 - a. Fill in the fields for CostOfElectricity, CostofFuels, Year of Costs, Secondary MeanMin, Secondary LeafOff Day of Year, Secondary Leaf On Day of Year, Secondary Frost Free Length Secondary Elevation, Secondary GMT Offset, and FrostFreeLength.
 - See section 8.a for units
32. In order to generate an albedo value for your area fill in the following fields:

- a. Warm Temps (Yes / No) – Yes if average summer maximum temperatures are greater than 25°C.
- b. Abundant Rain (Yes / No) – Yes if the amount of rain is greater than 1,000mm per year.
- c. Abundant Vegetation (Yes / No) – Yes if vegetation covers 50% or more of the land area.
- d. Snow (Yes / No) – Yes if there is 10 cm or more of average annual snowfall.

The answers to the preceding questions will help to generate a value for Surface Albedo and the associated parameters.

- 33. Navigate to the heading titled OzoneState. Because the current data collected is only for the US, you will have to select a U.S. state that has similar ozone levels collected. For this you will have to look at Figure 1 in the supplemental document titled Figures.doc. This shows each state (sometimes broken into multiple latitudes) and their ozone values (thickness in cm) for each month. Once an area with similar values is chosen, select that place from the drop down list under the heading OzoneState.
- 34. Navigate to the TertiaryPartition tab. This is where attributes related to the tertiary partitions of the nation will be entered.

SecondaryPartition	TertiaryPartition	AlbedoStations	AlbedoTable

- 35. Select NationName.
- 36. Select Primary Partition Name.
- 37. Select Secondary Partition Name
- 38. Enter in the name of the Tertiary Partition.
- 39. Under the heading 'TertiaryPartitionID', create a unique numeric ID for each tertiary partition entered.
- 40. Locate the PartitionType heading. Select from the drop down list the type of partition the TertiaryPartitions are located in.
- 41. Locate the Latitude heading. Fill in the value for the latitude of the centroid of tertiary partitions.

42. Locate the Longitude heading. Fill in the value for the longitude of the centroid of tertiary partitions.

43. Locate the ClimateRegion heading. Select a region from the drop down list that is the most similar to the new location.

CurrencyName	ClimateRegionName	NationalElectEmissions	CostOfEle
	California Coast		
	Desert Southwest		
	Gulf Coast/Hawaii		
	Mid-Atlantic		
	Mountains		
	North Central		
	Northern Tier		
	Pacific Northwest		

44. Locate the TertiaryPartitionElectricityEmissions heading. This is the electricity emissions factor (in kg CO₂/KWh) for the tertiary partition. The primary partition electricity factor values for the US states can be found in Table 41 on page 179 of the McPherson & Simpson report.

45. Populated the fields listed in Section 'a' for tertiary partitions if the data is available. Fields listed in Section b are required and must be populated

- a. Fill in the fields for CostOfElectricity, CostofFuels and Year of Costs.
- b. Tertiary MeanMin, Tertiary LeafOff Day of Year, Tertiary Leaf On Day of Year, Tertiary Frost Free Length, Tertiary Elevation and Tertiary GMT Offset
 - See section 8.a for units

46. In order to generate albedo data for your area fill in the following fields:

- a. Warm Temps (Yes / No) – Yes if average summer maximum temperatures are greater than 25°C.
- b. Abundant Rain (Yes / No) – Yes if the amount of rain is greater than 1,000mm per year.
- c. Abundant Vegetation (Yes / No) – Yes if vegetation covers 50% or more of the land area.
- d. Snow (Yes / No) – Yes if there is 10 cm or more of average annual snowfall.

The answers to the preceding questions will help to generate a value for Surface Albedo and for the associated parameters.

47. Navigate to the heading titled OzoneState. Because the current data collected is only for the US, you will have to select a U.S. state that has similar ozone levels collected.

For this you will have to look at Figure 1 in the supplemental document titled Figures.doc. This shows each state (sometimes broken into multiple latitudes) and their ozone values (thickness in cm) for each month. Once an area with similar values is chosen, select that state from the drop down list under the heading OzoneState.

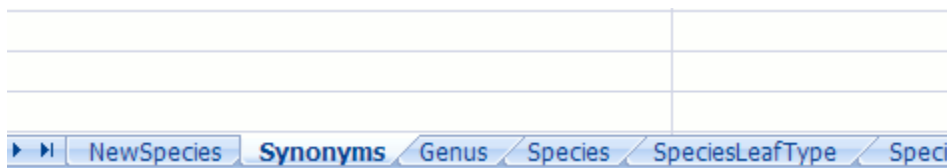
New Species Input

*Note for this section all tabs referenced will be colored Orange.

1. Check to see if the species already exists in the database.
 - a. Click the Species tab at the bottom of the workbook. This opens up the current species list in the database. Search to make sure the new species does not already exist here.



- b. Click the Synonyms tab. Search this list to make sure the new species is not listed as a synonym for a species currently in the database.



- c. If the species is not found in steps A or B proceed to step 2. If the species is found in steps A or B, but the user wishes to update species specific information pertaining to native range, growth form and habit, proceed to step 2.

2. Click the NewSpecies tab. Under the heading 'Genus' select the name of the genus from the drop down list. If it does not exist here then follow steps a through d to add it to the genus list.

Note: If you do not manually add the Genus Name to table using the dropdown list, make sure that all of the Genus names are in the Genus Table and that there are no spaces before or after the text you are entering into the Genus Name field.

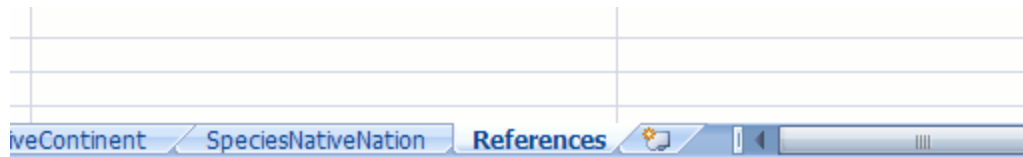
Genus Name	Species Name	Sub species	Scientific Name Check	Species Code	Sub species Code
			OK		
Abelia			OK		
Abies			OK		
Abutilon			OK		
Acacia			OK		
Acalypha			OK		
Acer			OK		
Achyranthes					
Acnistus					

- a. Click the Genus tab.

Genus Name	Species Name	Sub species	Scientific Name Check	Species Code	Sub species Code

- b. Scroll to the bottom of the table. Enter information for Genus Name, Common Name, Sub Genus (if any), and Family Name. To add Reference ID, the reference information will have to be added to the references list.

- c. Click the References tab.



- d. Populate a new row with reference information for the new genus. The reference ID has to be unique so it should be the number following the last entry.
- e. Go back to the New Species tab and the new genus will be listed in the drop down list.

3. Under the heading 'Species Name', type the name of the species.

Note: Make sure there are no spaces before or after the text you are entering into the Species Name field. If so, remove them using the TRIM function.

- a. If the Species already exists in the database, the Scientific Name Check field will change from 'OK' to 'Species Already Exists' and all current information for the species will be populated in the table.

Genus Name	Species Name	Sub species	Scientific Name Check	Species Code	Sub species Code	Species Code Check
Morus	alba		Species Already Exists	MOAL		Code Already Exists
			OK			OK
			OK			OK
			OK			OK
			OK			OK

- b. If any information for this species is missing from the table, feel free to populate it. Note: The cell of any updated field will turn **red**.
4. If you would like to add a Sub species to the database ie. variety or cultivar, populate the Sub species field with the name of the variety or cultivar.
- a. If the Sub species already exists the box next to it will highlight red and say "Species Already Exists".
 - b. Either delete the entry or populate any information for this species that is missing.

Genus Name	Species Name	Sub species	Scientific Name Check	Species Code	Sub species Code	Species Code Check
Morus	alba	pendula	Species Already Exists	MOALPE		Code Already Exists
			OK			OK
			OK			OK
			OK			OK
			OK			OK

Navigation tabs: NewSpecies, Synonyms, Genus, Species, SpeciesLeafType, SpeciesGrowthForm, SpeciesPercentLeafType

5. Under the heading 'Species Code', create a **unique** code for the species. There are a number of rules for this code.
 - a. The species code should be in all capital letters.
 - b. The first two characters are the first two letters of the Genus Name.
 - c. The second two characters are the first two letters of the Species Name.
 - d. There cannot be any duplicate species codes in the database. If the code already exists in the database the box next to species code will highlight red and read "Code Already Exists". In that case, try adding the number one next to the code. If the species code check box stays red then continue increasing the value of that number until it reads "OK".

6. If you have entered a Sub species, under the heading 'Sub species Code', create a unique code for the Sub species.
 - a. The Sub species code should be the first two characters of the Sub species name.

7. Type the common name under the heading 'Common Name'.
 - a. If the common name already exists the box next to it will highlight red and say "Already Exists". This has to be unique so pick another common name. If one cannot be found then just type the genus and species as the common name.

8. Select the native continent from the drop down list under the heading 'Native Continent'.

Species Name	Common Name	Native Continent	Native Nation Name	Native Primary Partition Name
		<input type="text"/> <ul style="list-style-type: none"> Africa Antarctica Asia Australia Europe North America South America Other 		

Species SpeciesLeafType SpeciesGrowthForm SpeciesPercentLeafType Species

- a. If there is more than one native continent, list them in the Comments field (this is the last field in the table).
9. Select the species native nation from the drop down list under the heading 'Native Nation'.

E	F	G	
Native Continent	Native Nation Name	Native Primary Partition Name	Native Location Ref ID
	<input type="text"/> <ul style="list-style-type: none"> United States of America Canada Brazil Argentina Uruguay Bolivia Zimbabwe Zambia 		

10. If there is a native Primary Partition for the species then select it from the drop down list under the heading 'Native Primary Partition Name'. (eg. In the United States primary partitions would be State names).
 - a. If there are multiple Native Primary Partitions for the species, enter one in the field and list the additional Native Primary Partitions in the Comments field.
11. Add the references for the species native nation in the References sheet. Add the ID created to the field under the heading 'Native Location Ref ID'.

12. Select the species leaf type from the drop down list under the heading 'Species Leaf Type'.

Native Location Ref ID	Species Leaf Type	Leaf Type Ref ID	Species Growth Form
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		
	<input type="text" value=""/>		

Navigation: NewSpecies / Synonyms / Genus / Species / SpeciesLeafType / SpeciesGro

13. Add the references for the species leaf type in the References sheet. Add the ID created to the field under the heading 'Leaf Type Ref ID'.

14. Select the species growth form from the drop down list under the heading 'Species Growth Form'.

Species Leaf Type	Leaf Type Ref ID	Species Growth Form	Growth Form Ref ID
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	
		<input type="text" value=""/>	

Navigation: NewSpecies / Synonyms / Genus / Species / SpeciesLeafType / SpeciesGro

15. Add the references for the species growth form in the References sheet. Add the ID created to the field under the heading 'Growth Form Ref ID'.

16. Add species percent leaf type from the drop down list under the heading 'Percent Leaf Type'.

Species Growth Form	Growth Form Ref ID	Species Percent Leaf Type	% Leaf Type Ref ID
		<input type="text"/> Hardwood Herbaceous Palm Picea Pinus unknown	

[NewSpecies](#)
[Synonyms](#)
[Genus](#)
[Species](#)
[SpeciesLeafType](#)
[SpeciesGrowthForm](#)

17. Add the references for the species leaf type in the References sheet. Add the ID created to the field under the heading ‘% Leaf Type ID’.

18. Navigate to the heading ‘Growth Rate’.

- a. Select from the drop down list the growth rate (inches per year) from the options.
 - Slow: 0 – 0.24
 - Moderate: 0.24 – 0.41
 - Fast: 0.41 and greater

19. Navigate to the heading ‘Longevity’.

- a. Select from the drop down list the species longevity (years)
 - Short: 0-35
 - Moderate: 35-55
 - Long: 55 and greater

20. Navigate to the heading ‘Mature Height’

- a. Enter the mature height of the species measured in feet.

Biomass Equation Input

1. Only add biomass equations for species in the Species Database and only if the minimum and maximum tree variables for which the equation is relevant covers a significant portion of the tree size throughout the lifespan of the tree.
 - a. If there is no Biomass equation for an inventoried species, the program will use the average Biomass value for the Genus, followed by Order, Family etc.
2. Click the Biomass tab. Under the heading 'Genus Name' select the name of the genus from the drop down list. If it does not exist in the list do not add the biomass equation.

Genus Name	Species Name	Equation	A Coefficient	B Coefficient	C Coefficient	Variable	Units
Abelia							
Abies							
Abutilon							
Acacia							
Acalypha							
Acer							
Achyranthes							
Acnistus							

Navigation tabs: Biomass, Synonyms, Genus, Species, SpeciesLeafType, SpeciesGrowthForm, SpeciesPercentLe

3. Under the heading 'Species Name' enter the name of the species for which the biomass equation is applicable.
4. Under the heading 'Equation' type in the biomass equation. Use a format similar to the following for the equation:

$$BM = A_Coeff * (Variable^{**}B_Coeff)$$

- a. BM refers to Biomass
- b. A_Coeff, B_Coeff and C_Coeff refer to the A, B and C coefficients in the equation. Some equations may not have a C coefficient.
- c. Variable refers to the tree variable used in the equation ie. DBH, Height etc.

5. Under the 'A Coefficient', 'B Coefficient' and 'C Coefficient' headings enter the values for each of the Coefficients. Leave the fields blank if the coefficient is not present in the equation.
6. Under the 'Variable' heading, enter the variable used in the equation ie. DBH, DBH**2, Height.
7. Under the units heading enter the units of the variable.
8. Under the 'Variable Min' and 'Variable Max' fields enter the minimum and maximum variable values for which the equation is relevant.
9. Under the ReferenceID heading enter the number that corresponds to the ReferenceID for this equation in the References table. If the reference is not in the References table, add it.