Remsoft

Woodstock

Answers to frequently asked questions

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Double-clicking on filenames to open them in the Woodstock Editor

I am using the Woodstock editor to create input files, but I'm having problems with opening files using the double-click procedure – sometimes it works, sometimes it doesn't. I really like the feature, but its frustrating when it doesn't work. Any suggestions?

Answer

For those who don't know what the double-click procedure is, the Woodstock editor will let you open external input files by simply double-clicking on the file name within the square brackets (e.g., [filename.ext]). However, the file must be present in the directory that you started the editor from, or it will not work. I suspect that you are starting the Woodstock editor in a different directory from where the input files are stored.

What is probably confusing you is the fact that the editor seems to be working in the proper directory. The Woodstock editor stores the names of the files you were working on last in a file called WKE.SAV and this file includes the full pathname of each file. The next time you run WKE without specifying a file, the editor checks the WKE.SAV file and loads those files for you, even if you start the Woodstock editor in a different directory. To correct the problem, simply quit WKE, change to the directory where your input files are stored, and then run WKE again. The same files will load as before, but now you will be able to open external input files by double-clicking on the filename within square brackets.

Woodstock keeps re-running the model over and over

I generated and solved a Woodstock LP model, but now when I try to generate the reports and graphics, the interpreter keeps re-running the model over and over. Why?

Answer

If you converted a model from a Monte Carlo simulation, you probably had specified multiple runs in the Control section (e.g., *RUNS 20). When you generate a matrix, the *RUNS parameter is ignored, but when you process a sequence file you are basically running a simulation and thus the interpreter runs the simulation as many times as specified in the Control section. Simply delete or comment out the *RUNS parameter.

Errors related to the Queue section in LP models

I am trying to build a LP matrix, but the Woodstock interpreter generates an error message that it cannot find the Queue section. Why do I need a Queue section if I'm not running a simulation model?

Answer

You don't need a Queue section in your LP model but if you make references in your model to simulation structures (e.g., *QUEUE OFF), the Woodstock interpreter will check to make sure that the required Queue section is present. The reason for this behavior is

that it is possible to use the same model input files for either LP or simulation analysis and therefore the model must be syntactically correct for both uses. To get rid of the error message, simply delete any references to simulation structures from your LP model.

The Woodstock interpreter is not calculating partial cuts correctly

I've defined a partial cut action to simulate selection harvesting. I have three separate yield components that represent the total standing inventory in each development type and I have created a summary yield component that calculates the total. In my action definition, I have specified the three yield components in the *PARTIAL subsection and I have defined an output that reports the total volume produced by selection harvesting. However, it seems like the Woodstock interpreter is not calculating the partial cut volumes correctly. I've included the appropriate sections from my model. What's wrong?

```
YIELDS
*Y ? ? ? ?
comp1....
comp2....
comp3...
totcomp comp1 + comp2 + comp3
ACTIONS
*ACTION selection N Selection harvest
*OPERABLE selection ? ? ? ? _AGE >= 10
*PARTIAL comp1 comp2 comp3
OUTPUTS
*OUTPUT selectvol Total volume from selection harvesting
*SOURCE selection totcomp
```

Answer

This is an easy fix. Because you used totcomp instead of the individual components you listed in the *PARTIAL specification, the Woodstock interpreter does not calculate the selectvol output as a partial cut. The easiest fix is to add totcomp to the *PARTIAL specification so that any output generated by selection harvesting will be calculated as a partial cut. Alternatively, you can redefine selectvol using the individual components specified in *PARTIAL:

Operable inventory greater than total inventory

I have defined several outputs to track standing inventories – one calculates total inventory and the others are operable inventories for various actions. The problem is, some of the operable inventories reported in a given period are higher than the total inventory in the same period. How can this be?

Answer

An operable inventory for a given period is an indication of how much of an output could potentially be produced if the associated action is carried out. Therefore, it makes sense to calculate these inventory measures before any actions have occurred. The criteria for total standing inventory is less clear – some people prefer to know what the inventory is before any actions or stand growth takes place and others prefer to know what the inventory is

afterwards. In general, we subscribe to the latter opinion and every planning period the Woodstock interpreter first calculates operable inventories, then performs actions and transitions, then it ages the forest one period and then, finally, it calculates standing inventories. However, you are allowed to report standing inventories for period 0 which is really just the period one standing inventory before growth or activities take place.

If you want to fairly compare operable inventories to total inventories, you need to compare the operable inventory of a given period with the total inventory from the previous period. Since you can report total inventory for period 0, you can make valid comparisons for all planning periods in your planning horizon. Furthermore, you should be able to verify that operable inventories do not exceed the total standing inventory, as in the following example:

```
Run = 1 Period = 0
Total Growing Stock 1,313,800.00
Run = 1 Period = 1
Total Pulpwood Cut 250,000.00
Total Growing Stock 1,218,878.49
Total operable growing st 1,130,000.00
Run = 1 Period = 2
Total Pulpwood Cut 250,000.00
Total Growing Stock 1,123,155.35
Total operable growing st 1,046,578.49
Run = 1 Period = 3
Total Pulpwood Cut 250,000.00
Total Growing Stock 1,012,284.28
Total operable growing st 965,855.35
Run = 1 Period = 4
Total Pulpwood Cut 250,000.00
Total Growing Stock 886,111.21
```

Age zero forest classes are not allowed

I am constructing a harvest scheduling model based on a new inventory that includes areas that were just harvested. However, the Woodstock interpreter flags these area entries with an error message that says age zero is not a valid age class? Why?

Answer

Age class 0 has special significance in a Woodstock model and it represents the transitional state between pre-treatment and post-treatment development types within a given period. Since the Woodstock interpreter immediately ages development types after all actions have been completed, development types with an age of zero don't really exist for reporting purposes. If your planning periods are 5 years, the first planning period is assumed to represent all actions that occur in the next five years. Therefore, the stands just harvested will be aggregated with stands that are as old as five years of age and thus the average age for the development type must be greater than 0 in period 1.

How to formulate a perpetual timber harvest constraint

FORPLAN offers something called a perpetual timber harvest constraint. Can I formulate something similar in a Woodstock LP model?

Answer

The FORPLAN perpetual timber harvest constraint (PTHC) is interpreted as "the ending inventory (inventory in the last period) must be greater than or equal to the average inventory in all planning periods." The Woodstock syntax does not have a built-in function to calculate PTHC, but you can represent the constraint in the following manner. First, define an output that calculates the inventory measure of interest (e.g., TINV). Then, specify a constraint similar to the following:

```
*CONSTRAINTS
TINV - _AVG(TINV) >= 0 _LENGTH
```

The _AVG() function calculates a running average from the first period to the current period. Since the constraint is implemented only in the final planning period (_LENGTH), _AVG(TINV) will equal the average inventory over the planning horizon. By algebraically rearranging the equation, you can see that we have the constraint formulated properly: TINV(final) - TINV(average) >= 0 is equivalent to TINV(final) >= TINV(average).

How to constrain an output average

I want to be able to report the average volume per hectare harvested in each planning period. Can I control harvesting to ensure that the average in each period is greater than or equal to 150 cubic metres per hectare?

Answer

To report an average volume per hectare harvested, you will need to define an output which sums up the total volume harvested each period (TVOL), and one which sums up the total area harvested each period (TAREA). Then, in your Reports section, simply specify:

```
REPORTS
*TARGET model.txt
TVOL / TAREA 1.._LENGTH
```

The required division causes some problems if you are trying to control your model based on average volume harvested. You cannot define an output to calculate average volume harvested using the construct:

```
OUTPUTS
*OUTPUT TVOL Total volume harvested
*SOURCE harvest vol
*OUTPUT TAREA Total area harvested
*SOURCE harvest _AREA
*OUTPUT AVVOL Average volume harvested
*SOURCE TVOL / TAREA
```

because it calculates sum(TVOL/TAREA) rather than the desired result, sum(TVOL)/TAREA. There is no way to formulate this properly in a simulation model, but you can formulate a constraint in a LP model using a few tricks of algebra. What we are trying to do is formulate a constraint as follows: TVOL / TAREA >= 150, where TVOL is cubic metres, TAREA is hectares and the 150 is m3/ha. The trick involves getting rid of the division which is not allowed in linear programming, and it is accomplished by multiplying both sides of the inequality by TAREA. The resulting equation is: TVOL >= 150 * TAREA. By moving the variables to the left hand side of the inequality we have the required constraint. In Woodstock syntax, we would write the constraint as:

```
*CONSTRAINTS
TVOL - 150 * TAREA >= 0 1.._LENGTH
```

The _LOCK function isn't working the way I thought

My Woodstock model includes a shelterwood action that requires an overstory removal no earlier than 15 years after the regeneration cut. I am using 5 year planning periods and to prevent the shelterwood types from being harvested too early, I implemented a 2 period _LOCK on them in the Transitions section. However, when I run my model I find that some of the shelterwood types are harvested after only 10 years have elapsed. Is this a programming error?

Answer

No, there is nothing wrong with the Woodstock interpreter. The _LOCK parameter applies in the period in which it is implemented plus additional periods up to the number specified in the _LOCK statement. In your example, the 2 period _LOCK prevents harvesting in the current period, plus one additional period. Thus, the earliest opportunity for harvesting the shelterwood times is two periods hence (ten years). To prevent the overstory removal for 15 years, you need to specify a 3 period _LOCK.

Questions?

We would be happy to answer any questions you may have about Remsoft, Woodstock, or any of our other software packages.

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