

Video 1 of 5: Model organization and changing one disturbance in one state class

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Welcome and goals

Hi everyone, Randy Swaty here hoping to get you started with modifying a LANDFIRE Biophysical Settings model in a way that better represents current conditions. In this series of 5 videos we will work through our trusty Sage Steppe model as an example, learning how to organize our work, and change one disturbance in one state class.

I assume that:

1. You have, or can find the Sage Steppe model [INSERT LINK TO FIND YOUR MODEL VIDEO]
2. You are ready to iterate-that is, apply a change, run and review the outputs, apply another change, run and review the models and so on.
3. If working on your own model you have a sketch, a document... *something* that documents changes you want/need to make.

While we are focused on the sage steppe, and introducing transitions you might not have on your landscape, these basic modeling tasks will apply to almost all modeling efforts.

Model Organization

Before you actually do any modeling you'll need to organize your work. Here will be keeping things simple, dealing with one 'strata" (a Biophysical Setting for us) and apply one change per new scenario. As you advance you may want to have multiple Biophysical Settings per project, and make multiple changes per scenario. Got it? I think it will quickly become clear.

Change the probability in one class

Let us imagine that the fire regime of one state class has changed. Perhaps people have started camping in the Shrub Savanna State, leading to a substantial increase in the Replacement Fire in that class.

Disturbance probability math Most of us think about disturbance in terms of area (e.g. 2% of the area logged per year) or return intervals (e.g., expecting surface fire to return to a place every 10 years on average). SyncroSim is a probabilistic model expecting probability inputs. How do we do that? For the two examples:

1. 2% of the area logged (or other disturbance) would be converted to an annual probability by dividing 2 by 100 = 0.02.
2. 10 year return interval would be 1 divided by 10 = 0.1

In our fictional example, the annual probability has gone from 0.0062 (1/0.0062= 161yr reference Fire Return Interval, FRI) to 0.1 (for the current 10yr FRI). How do we model this? We go through the following steps:

First we will run the reference condition model: 1. Make sure you have a library with the Sage Steppe BpS loaded. Check the Run Control and Initial Conditions Tabs, changing the Total Iterations from “10” to “3” on the Run Control tab so that the model runs 3 times instead of 10, which is OK for doing quick iterations. On the Initial Conditions tab you will type (if needed) 1000 into both the “Total (acres)” and “Number of simulation cells” boxes. and that you have run the model so that you have “LANDFIRE Reference Condition” results. Then Run the model, and review the results in the Results pane, Succession classes 500-1000 years chart.

Second we will make a new scenario with our modified disturbance: 2. Copy/Paste the LANDFIRE scenario then rename to “changed fire in ShrubSav class” 3. Open the new scenario, click on the “Summary” tab. While there **make sure the “Read Only” box in the lower lefthand corner is *not* checked**. Then document what you are about to do: Changed fire probability in Shrub Savanna state (Mid1:OPN) from 0.0062 to 0.1. 4. Click on “Transition Pathways”. There you will see the states and transitions. Try zooming in and out by using the -/+ buttons in the bottom righthand corner. 5. Double click the state where you need to make the change. In the model this is the “Mid1:OPN” state. 6. Orient yourself to the data table that has rows for disturbances (known as “Transitions”) and columns for specific disturbance parameters. Double click in the appropriate cell to change the probability for “ReplacementFire”. Make the change, hit Enter. While there explore some of the other columns. There will be some that are “hidden”. Unhide them by right clicking on the table header, then “checking” ones you want to add. 7. You can close that table and get ready to run the model. 8. You will close out of the scenario panel, make sure the correct scenario is highlighted, then hit the Run button. If you have not saved the Library you will be asked to do so before running. 9. The run will not take long, but you will have time to ask yourself “what could g wrong?”, and “what do I think will happen when we shorten the interval between Replacement Fires in the Shrub Savanna state?” 10. We trust you had a successful model run indicated by a little green circle with a white checkmark in the middle. If not, grab a beverage and start troubleshooting, or call us. 11. You will do as above, checking out the results. You will see two sets of bars, one for the reference scenario, one for the new scenario.

You can close out of the Run Status pane and go to reviewing your results! Do you remember how to do that? If not please jump back to FILL IN THE BLANK RANDY.