Hi User,

The routine for implementing vegetation treatments in the DYNAFFOREST model is contained in the script called "**Modules\_KD.R**", after the second big row of hash marks. It gets called from the model script using a source() command. Take a look in the model script “**model\_10-10-2021\_KD.R**” between steps 4 and 5 in the loop to see how it is called up. The other modules in the *modules* script are the initialization module (setting paths, loading libraries, calling the functions script that contains functions I wrote for the model, etc), and a data collection module that gathers data on fire behavior and carbon flux.

Before you run the model, first update the paths in the beginning of the initialization module in **Modules\_KD.R**, and the LOCAL variable (explained in script). You'll also need to enter the path to the scripts in **BATCH\_Model\_P1.R**, near the top (prompted with comment)

The experiment is designed in the spreadsheet called "**Params\_BATCH.csv**" in the parameters folder. Any file with this name will be used as the active file for the experiment. I left a test run as a template. The columns are as follows:

"**Run\_handle**" is a column defining a name given to separate experiments that should not be synthesized/compared in post-processing. All entries for each unique experiment should share a name. It's easiest to begin with just one. Do not include underscores or spaces in these names.

"**Run\_group**" is a column naming each separate scenario within an experiment (for example, if an experiment is systematically varying the treatment return interval, this value could be 'Return1', 'Return2', and so on. Do not include underscores or spaces in these names.

"**Run\_rep**" is a column defining how many replicates of each parameterization should be run. This should be the same for all entries within an experiment.

"**Notes**" can be anything. For reference.

"**Years**" defines how many years the model should run. This should be the same for all entries within an experiment.

Leave "**is\_Control**" false.

"**Region**" is set to "Sierra". You can modify this if you use this system and expand it to include more regions.

"**P\_snapshot\_yrs**" can be a series of numbers separated by commas and will define which yeard snapshots of conditions hsould be taken (possible initialization data for future runs).

"**P\_snapshot\_init**" should define a folder containing an initialization snapshot. I included one in this package.

"**P\_firesize\_mult**" and "**P\_firefreq\_mult**" are WDH's variables. I haven't messed with them, but they're the same here as in the model script (there they're without the "P\_").

"**P\_climate\_yrs**" defines which years from the climate loop to use.

All columns beginning with "**P\_quant\_**" set the thresholds that determine whether cells are eligible for treatment. Acceptable arguments (except ‘agency’, see below) are:

*-9999, which ignores the parameter*

*SORT, which prioritizes treatable cells for this variable. (I don’t think I set up a way to sort in ascending order…..) Only one parameter can have this value. (re-calculated annually)*

*>=X% ; or ; <=X%, where X can be a number between 1 and 99, and represents the percentile above or below which cells for this variable will be considered. (re-calculated annually)*

*>=X# ; or ; <=X#, where X can be any number within the existing range for this variable, and represents the number above or below which cells for this variable will be considered. (re-calculated annually)*

"**P\_quant\_conn**" defines the connectivity value threshold for fuels treatments.

"**P\_quant\_lbio**" defines the live biomass value threshold for fuels treatments.

"**P\_quant\_dbio**" defines the dead biomass value threshold for fuels treatments.

"**P\_quant\_roads**" defines the distance-from-road threshold for fuels treatments.

"**P\_quant\_slope**" defines the hill-slope threshold for fuels treatments.

"**P\_quant\_agency**" defines the (categorical) numbers associated with land jurisdictions in which treatment can occur, according to *agency* raster. To get these numbers, run the initialization procedure and call ‘agency.df’ for definitions.

"**P\_quant\_WUI**" defines the distance threshold from inhabited grid-cells for fuels treatments.

"**P\_quant\_strikes**" defines the lightning strike frequency threshold for fuels treatments.

"**P\_quant\_PET**" defines the PET threshold for fuels treatments.

"**P\_quant\_fprob**" defines the fire probability threshold for fuels treatments.

“**P\_treat\_return**” defines the shortest re-treatment interval permitted for each treated cell.

Parameters listing “P\_burn\_” and “P\_thin\_” define parameters for “thinning” (live biomass treatment) and “burning” (dead biomass treatment), respectively.

“**P\_…\_age**” defines the youngest stand age permitted for each treated cell.

“**P\_…\_PFT**” defines the PFTs permitted for treatment.

“**P\_…\_intvl**” defines how often treatment campaigns are carried out (in years).

“**P\_…\_redux**” defines by what percent (as a decimal) each cell should have its biomass reduced during treatments.

“**P\_…\_area**” defines how many square kilometers should be treated in this way each year. If only one (thin, burn) is defined, the same cells will be treated in both pools, else, different cells will be selected for each treatment type.

“**P\_…\_tstart**” defines by what year of the simulation to begin treatments. I think this should stay 1 for now, as it might get buggy with higher numbers.

Don’t worry about the rest. They correspond to modules that I did not include in this package. Except:

“**P\_misc**” which can be sections of code separated by ;s that are run at the beginning of each annual loop. Should include ‘ instead of “ in all instances.

Start with the **BATCH\_Model\_P1.R** script. You can run the model from here off the cluster (on your local). Give it a go and troubleshoot.

To run on the cluster, you’ll have to modify the **BATCH.sh** script with updated paths. It calls **BATCH\_Model\_P0.R** which shouldn’t be used off the cluster.

Good luck!

- Kris