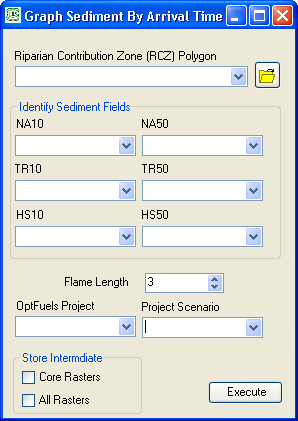
**Graph Sediment By Arrival Time Tool**

*Overview*

After running OptFuels for a given landscape, users can graph sediment by arrival time using the post processing Graph Sediment by Arrival Time tool. Users can access this tool by clicking the Graph Sediment button (commandSedByArival.bmp ) on the OptFuels toolbar. Clicking the graph sediment button opens the Graph Sediment by Arrival Time form (below). This form provides users with an intuitive interface that when executed creates a .csv file that stores incremental and accumulative tons of sediment by a given arrival time (spread minutes in hour increments), period, erosion event (10 and 50 year), and treatment across an OptFuels landscape. From this file users can quickly and easily graph tons of sediment by arrival time.



*Inputs*

**Riparian Contribution Zone (RCZ) Polygon**: Layer defining the area for potential erosion reaching study streams. For the tool to run correctly the polygon layer should be projected into the same coordinate system as the OptFuels raster outputs (Albers equal Area). The Sediment Polygon layer should have 6 fields that provide sediment rates (10 and 50 event-year); these are labeled as following in the default database: no action (NA10, NA50); treatment (TR10, TR50); and high-severity fire (HS10, HS50) in tons-per-acre.

**Identify Sediment Fields:** The program will pick up the fields by default from the Riparian Contribution Zone Polygon layer if labeled as above, but you may point these fields as you wish with the functionality in the *sediment fields section* of the *User Inputs* form.

**Flame Length:** Set your flame length assumption defining high-severity fire (meters)

**OptFuels Project:** the name of the OptFuels project used to graph sediment by arrival time

**Project Scenario**: the name of the OptFuels project scenario used to graph sediment by arrival time

**Core Rasters:** a check box that indicates whether or not to store core intermediate raster datasets used to create the output table. Checking this box will increase processing time and storage space requirements.

**All Rasters:** a check box that indicates whether or not to store all intermediate raster datasets used to create the output table. Checking this box will substantially increase processing time and storage space requirements.

**Execute Button:** executes the summarization routine used to create the sedimentByArrivaltime.csv file. Clicking this button creates a series of potential sediment rasters stored within the sed directory located within a given project’s input folder. If these rasters already exist the user will be asked if they want to replace existing sediment rasters. If this is the case meaning a different RCZ file is being used select yes, otherwise select no.

*Outputs*

All outputs are stored within the graph folder of a given OptFuels results scenario (e.g., C:\magfire\DBF\_LT\_NORTH\Input\S3\_test3\RESULTS\graph). At minimum, outputs consist of a RCZ raster dataset and a csv file called SedimentByArrivaltime.csv and a series of potential sediment rasters stored within a sed directory located within a given project input directory. The .csv file summarizes (incremental and accumulative) 10 and 50 year errosion events and cell counts for each period of the no action and optimal OptFuels treatment by fire and arrival times. If desired, additional outputs can be generated by checking the store intermediate outputs core and all checkboxs. If checked, all processing function raster datasets used to create the .csv file are written to file within the graph directory. Intermediate raster datasets follow a naming convention that corresponds to a given OptFules iteration, fire, and period.

*Intermediate raster datasets*

Raster dataset named rcz represents the conversion of the RCZ polygon layer to a raster format. The value field in this raster dataset corresponds to the objectid field within the original RCZ layer.

Raster datasets n10, n50, t10, t50, h10, and h50 correspond to no action, treatment, and HSF tons of sediment for 10 and 50 year rain events. These raster datasets and sediment cell values within the dataset are created based on the RCZ polygon layer, sediment fields, and cell size of the analysis (default is 5m).

Raster datasets treat\_ followed by the iteration number, fire #, and each period of the OptFuel analysis: These rasters are binary (values of 0 and 1) and identify all cells within a stand that area treated for a given iteration and period (raster value of 1).

Raster datasetsNoAct\_ followed by the iteration, fire #, and period of the OptFuel analysis: These rasters are binary and represent the inverse values of a given *treat\_* raster datasets (above).

Raster datasets named na10\_ followed by the iteration, fire #, and period of the OptFuel anlaysis: These rasters are the product of a given noAct\_ raster and the n10 sediment raster.

Raster datasets named na50\_ followed by the iteration, fire #, and period of the OptFuel anlaysis: These rasters are the product of a given noAct\_ raster and the n50 sediment raster.

Raster datasets named t10\_ followed by the iteration, fire #, and period of the OptFuel analysis: These rasters are the product of a given treat\_ raster and the t10 sediment raster.

Raster datasets named t50\_ followed by the iteration, fire #, and period of the OptFuel analysis: These rasters are the product of a given treat\_ raster and the t10 sediment raster.

Raster datasets named s10\_ followed by the iteration, fire #, and period of the OptFuel analysis: These rasters are the summation of a given t10 and na10 raster dataset.

Raster datasets named s50\_ followed by the iteration, fire #, and period of the OptFuel analysis. These rasters are the summation of a given t50 and na50 raster dataset.

Raster datasets named flm\_ followed by the iteration, fire #, and period of the OptFuel analysis: These rasters are binary rasters based on flame length input. Cell flame lengths greater than the specified input value, get an output value of 1.

Raster datasets named fl10\_ followed by the iteration, fire #, and period of the OptFuel anlaysis: These rasters represent the total sediment for an erosion event-year (10) and are calculated using a condition statement. If a given flame cell is greater than 0 then that cell receives the corresponding h10 value otherwise it receives the s10 cell value. These rasters are considered core intermediate rasters.

Raster datasets named fl50\_ followed by the iteration, fire #, and period of the OptFuel anlaysis: These rasters represent the total sediment for an erosion event-year (50) and are calculated using a condition statement. If a given flame cell is greater than 0 then that cell receives the corresponding h50 value otherwise it receives the s50 cell value. These rasters are considered core intermediate rasters.

Raster datasets named az\_ followed by the iteration, fire #, and period of the OptFuel anlaysis: These rasters identify arrival time in spread minutes (classified by hours). These groups are used to summarize all 10 and 50 event-year cell values and create the output csv file. These rasters are considered core intermediate rasters.

*Conceptual modeling process for one iteration, one fire, and three periods.*

