

FConst Input File Documentation

'#' in first column indicates a comment line.

General Format

Switch: Value

Note the : and the minimum of 1 space of whitespace after the :

Whitespace can be blanks and/or tabs.

Switches can occur in any order in the inputs file. A switch must start in the first column, and the switch and corresponding value must appear on the same line.

Mandatory Switches:

Switch: **landscape:**

Sets the landscape file.

Usage:

landscape: Filename

Where Filename is the complete path and name of the desired landscape file to use.

Example:

landscape: C:\data\test.lcp

Switch: **Resolution:**

Sets calculation resolution.

Usage:

Resolution: X

Where X is the desired resolution of calculations. X can be an integer or floating point number.

Example 1:

Resolution: 270

Example 2:

Resolution: 270.0

Switch: **GridDistanceUnits:**

Sets grid distance units.

Usage:

GridDistanceUnits: X

Where X is either 0 for meters or 1 for feet

Example:

GridDistanceUnits: 0

Switch: **WindSpeed:**

Sets simulation wind speed.

Usage:

WindSpeed: X

Where X is the wind speed in MPH.

Example:

WindSpeed: 15

Switch: **WindDirection:**

Sets simulation wind direction.

Usage:

WindDirection: X

Where X is the wind speed in MPH.

Example:

WindDirection: 270

Switch: **NumFires:**

Sets number of fires to simulate.

Usage:

NumFires X

Where X is an integer greater than zero.

Example:

NumFires: 10000

Switch: **FmsFile:**

Sets fuel moistures file.

Usage:

FmsFile: Filename

Where Filename is the complete path to custom fuel moistures file.

Example:

FmsFile: C:\data\sample.fms

Switch: **OutputsName:**

Sets output burn probability grid file name.

Usage:

OutputsName: Filename

Where Filename is the base path and name of the FConst outputs files. Do not include a file extension, FConst will add the proper file extensions to this base name. If the output files exist they will be overwritten.

Example:

OutputsName: C:\data\outputs\constweather

Switch: **Duration:**

Sets fires duration (minutes, -1 for unlimited)

Usage:

Duration: X

Where X is an integer representing each fires burn duration in minutes. Use -1 for unlimited.

Example:

Duration: 120

Optional Switches

Switch: **customfmd**:

Sets custom fuels file.

Usage:

customfmd: Filename

Where Filename is the complete path to custom fuels definition file. Filename can be -1 for no custom fuels file.

Example: customfmd: C:\data\sample.fmd

Switch: **ThreadsPerFire**:

Sets number of threads per fire.

Usage:

ThreadsPerFire X

Where X is an integer from 1 to 64. The default is 1

Example:

ThreadsPerFire: 2

Note: ThreadsPerFire is now deprecated for FConstMTT

Switch: **FireListFile**:

Sets path to pre-processed ignition locations file.

Usage:

FireListFile: Filename

Where Filename is the complete path to the desired FSIM generated fire size list file with ignition locations. Filename can be -1 for no fire list file. -1 is the default.

Example:

FireListFile: C:\data\firesizelist.txt

Switch: **CrownFireMethod**:

Sets Crown Fire Method

Usage:

CrownFireMethod: X

Where X is either 0 for the Finney method, or 1 for use of ScottRheinhardt method. FConst will default to use of the Finney method if this switch is not present.

Example:

CrownFireMethod: 1

Switch: **EnvisionFireListFile:**

Sets the Envision fire list file to use for an FConst run

Usage:

EnvisionFireListFile: Filename

Where Filename is the complete path to an Envision output fire list file. Omit this switch when not using an Envision fire list file

Example:

EnvisionFireListFile: C:\data\envisionfirelist.txt

Switch: **WxSceneFile:**

Sets the name of the weather scene file for an FConst run

Usage:

WxSceneFile: Filename

Where Filename is the complete path to the weather scene file for FConst to use. Omit this switch when not using a weather scene file

Example:

WxSceneFile: C:\data\wxscene.txt

Switch: **WxSceneSeed:**

Sets the random seed for use with the WxSceneFile

Usage:

WxSceneSeed: X

Where X is an integer value representing the initialization seed.

Switch only applicable when WxSceneFile is used. If not present a random seed is used.

Example:

WxSceneSeed: 2112

Switch: **IgnitionProbabilityGrid:**

Sets the grid of ignition probabilities for the run

Usage:

IgnitionProbabilityGrid: Filename

Where filename is the complete path to the ascii grid of ignition probabilities (0.0 – 1.0 for each cell). Coverage must encompass the entire landscape

Example:

IgnitionProbabilityGrid: C:\Data\ignitionProbs.asc

Switch: **IgnitionProbabilitySeed:**

Sets the random seed for ignition random number generator to be used with the ignition probability grid

Usage:

IgnitionProbabilitySeed: X

Where X is an integer representing the initialization seed for the ignition probability random number generator

Example:

IgnitionProbabilitySeed: 2112

Switch: **IgnitionMultiplier:**

Sets a multiplier for each ignition probability cell in the ignition probability grid

Usage:

IgnitionMultiplier: X

Where X is a floating point number to multiply ignition grid probabilities by.

Example:

IgnitionMultiplier: 0.9

Switch: **SpotProbability:**

Sets the spotting probability for fires in the run.

Usage:

SpotProbability: X

Where X is a floating point number from 0.0 to 1.0 representing the spot probability for fires

Example:

SpotProbability: 0.2

Switch: **ProgressFilePathName:**

Sets the path to the file for progress information

Usage:

ProgressFilePathName: Filename

Where filename is the complete path to the progress file. Any existing progress file will be overwritten.

Example:

ProgressFilePathName: C:\Data\FConstProgress.txt

Switch: **OutputFirePerims:**

Sets whether to output the fire perimeters shape file

Usage:

OutputFirePerims: X

Where X is an integer indicating whether or not to output the perimeters. 0 is off, any other value is on.

Example:

OutputFirePerims: 1

Switch: **MetricFLP:**

Indicates that FLP output file should be a metric FLP (20 categories)

Usage:

MetricFLP: X

Where X is either 0 or 1, 1 indicates FLP should be the metric FLP.

Switch: **MaxNumProcessors:**

Sets the maximum number of processors for FConstMTT to use. Helps when using all processors causes out of memory conditions.

Usage:

MaxNumProcessors: X

Where X is an integer representing the maximum number of processors for FConstMTT to use. Must be ≥ 1 and \leq number of logical processors available.

Switch: **GRIDDED_WINDS_DIRECTION_FILE:**

Sets the pre-generated ascii grid file to use for direction gridded winds. Coverage must completely cover the landscape, values are azimuth (0 – 359)

Usage:

GRIDDED_WINDS_DIRECTION_FILE: Filename

Where Filename is the complete path to the gridded winds direction ascii grid file.

Example:

GRIDDED_WINDS_DIRECTION_FILE: C:\Data\Wind_Dir_180_5mph.asc

Switch: **GRIDDED_WIND_SPEED_FILE:**

Sets the pre-generated ascii grid file to use for direction gridded winds. Coverage must completely cover the landscape, values are in mile per hour (mph)

Usage:

GRIDDED_WIND_SPEED_FILE: Filename

Where Filename is the complete path to the gridded winds speed ascii grid file.

Example:

GRIDDED_WIND_SPEED_FILE: C:\Data\Wind_Speed_180_5mph.asc

Switch: **FLPinFirelist:**

Add Flame Length proportions for each fire to the output fire list. Uses Metric FLP classes (0.5 m increments)

Usage:

FLPinFirelist: X

Where X is an integer value, 0 is off any other value is on.

Default is 0.

Does not apply when EnvisionFireListFile is used, that switch automatically turns on FLP metric classes in the output firelist.

Switch: **NetworkGridResolution:**

Sets for creation of network grid and network flow output.

Usage:

NetworkGridResolution: X

Where X is the resolution of the created network grid. NetworkGridResolution must be greater than or equal to the resolution of calculations.

Switch: **WxSceneGrid:**

Use a WxScene grid configuration file to run with gridded wxScenes.

Usage: **WxSceneGrid:** Filename

Where filename is the complete path to the WxScene grid configuration file.

The format of the WxScene grid configuration file is:

- 1) One line denoted with the keyword GRID_FILE: which contains the path to the ascii grid file containing indices of wxScenes to use for each cell.
- 2) Entries for each scene to be found in the GRID_FILE. Each unique value in the grid file needs an entry here. The format of each entry is
 - a.) Index Windspeed Direction Duration Probability FM1 FM10 FM100 FMHerb FMWood SpotProbability
 - i.) Index is the index to match the scene in the GRID_FILE (integer)
 - ii.) Windspeed is the scene's wind speed in MPH (integer)
 - iii.) Direction is the scene's wind direction azimuth (integer)
 - iv.) Duration is the scene's burn duration in minutes (integer)
 - v.) Probability is the scene probability (will be normalized by index)
 - vi.) FM1 is the scene's 1 hour fuel moisture (integer)
 - vii.) FM10 is the scene's 10 hour fuel moisture (integer)
 - viii.) FM100 is the scene's 100 hour fuel moisture (integer)
 - ix.) FMHerb is the scene's live herbaceous fuel moisture (integer)
 - x.) FMWood is the scene's live woody fuel moisture (integer)
- 3) Comments, any line starting with a #

There can be multiple entries per Index, with each Index's corresponding probability considered relative for the index. All probabilities will be normalized for each Index so the total probability for each Index is 1.0

The WxSceneSeed value, if present, will be used to initialize the random number generator for scene selection.

Sample WxSceneGrid file:

GRID_FILE: F:\Alan\GridWxScene\fuel.asc

Each cell in grid contains an Index to the following table

#Index Speed Direction Duration Probability FM1 FM10 FM100 FMHerb FMWoody SpotProbability

1 13 127 240 0.09 4 6 9 49 79 0.05

1 23 227 340 0.09 4 6 9 49 79 0.05

1 33 77 340 0.09 2 4 6 49 79 0.05

1 3 227 240 0.09 4 6 9 49 79 0.05

1 10 327 140 0.09 4 6 9 49 79 0.05

2 13 167 240 0.11 2 4 6 49 79 0.05

2 18 227 240 0.11 4 6 9 49 79 0.05

Switch: EmberOutputs:

Output Embers generated in an FConstMTT run. Embers are output if they survive the spot probability draw, regardless of whether or not they start a new fire.

Usage:

EmberOutputs: X

Where X is an integer from one of the following values:

0 = No ember outputs (default)

1 = Ember outputs in CSV format

2 = Ember output in shape file format

3 = Ember output in both CSV and shape file format

Switch: **MajorPathVecs:**

If set to 1 FConstMTT will create an output csv file with major path information for the five longest major paths for each fire. Information include vector points and arrival time.

Usage:

MajorPathVecs: X

Where X is an integer value, 1 turns MajorPathVecs calculation on, zero (default) disables MajorPathVec generation.

Sample FConst Inputs File

```
#set the lcp file
landscape: C:\data\sample.lcp
#set calculation resolution
Resolution: 270
#set number of fires to simulate
NumFires: 10000
#set grid distance units
GridDistanceUnits: 0
#set the FMS file
FmsFile: C:\data\sample.fms
#set the wind speed to 15 mph
WindSpeed: 15
#set wind direction to 270
WindDirection: 270
#set fire duration
Duration: 120
#set outputs base name
OutputsName: C:\data\outputs\run1
```