FlamMap Input Files

Use of the FlamMap DLL is only supported thru use of input files.

'#' in first column indicates a comment line.

The following is a list of available switches to embed in the FlamMap input files.

MANDATORY Switches:

Switch: **FUEL_MOISTURES_DATA:**
Usage:

    FUEL_MOISTURES_DATA: X
    where X = the number of fuel model entries
    NOTE: Fuel Model 0 is required! This is the default moistures to
    use when a fuel model is encountered in the lcp file that does not
    have an entry in the inputs file.

    Fuel mode entry format:
    Model FM1   FM10 FM100   FMLiveHerb   FMLiveWoody

    Example:
    FUEL_MOISTURES_DATA: 3

# Model	F1	F10	F100	FLH	FLW
0	2	2	3	4	5
1	4	3	6	10	16
2	4	3	19	10	16

Switch: **WIND_DIRECTION:**
Usage:

    WIND_DIRECTION: X
    where X is the azimuth of the wind direction to use. Valid range:
    0-360, -1, -2
    # Downhill = -2, uphill = -1, azimuth = 0 - 360

    Example:
    WIND_DIRECTION: 280

Switch: **WIND_SPEED:**
Usage:
    WIND_SPEED: X
    where X is the wind speed to use, valid range 0-200

Output Switches: At least one VALID output switch is mandatory. One switch per line is allowed in the inputs file.

The following switches are always available:
FLAMELENGTH:
SPREADRATE:
INTENSITY:

HEATAREA:
CROWNSTATE:
MIDFLAME:
HORIZRATE:
MAXSPREADDIR:
ELLIPSEDIM_A:
ELLIPSEDIM_B:
ELLIPSEDIM_C:
MAXSPOT:
MAXSPOT_DIR:
MAXSPOT_DX:
CROWNFRACTIONBURNED:

The following output switches are only available when using fuel
conditioning:
SOLARRADIATION:
FUELMOISTURE1:
FUELMOISTURE10:
FUELMOISTURE100:
FUELMOISTURE1000:

The following output switches are only available when using WindNinja to
calculate gridded winds:
WINDDIRGRID:
WINDSPEEDGRID:

Optional Switches:

Switch: **WIND_SPEED_UNITS:**
Usage:
> **WIND_SPEED_UNITS:** X
> where X is an integer designating units for wind speed input and
> output according to the following:
> 0 - MPH
> 1 - KPH
> 2 - m/sec
> 3 - ft/min
>
> The default is WIND_SPEED_UNITS: 0, which will input/output data in
> MPH
> NOTE: This switch applies to constant (global) wind speeds and
> gridded wind speed file wind speeds only. Wind speeds in WXS and
> WND (deprecated) files use the ENGLISH (MPH) or METRIC (KPH) units
> designated in the file or embedded in the inputs file with the
> **RAWS_UNITS** or **WIND_DATA_UNITS** switches.

Switch: **CUSTOM_FUELS_FILE:**
Usage:
> **CUSTOM_FUELS_FILE:** Filename

```
        where filename is the complete path and name of the desired custom
        fuels file to use.
        Example:
        CUSTOM_FUELS_FILE: C:\data\customfuels.fmd

Switch: RAWS
Usage:
        RAWS: X
        Where X is the number of sequential hourly weather data entries,
        followed by X number of hourly weather data records, 1 per line.
        Note that this switch must be used with the RAWS_ELEVATION switch,
        and this switch can not be used with the WEATHER_DATA and WIND_DATA
        switches. Units are indicated by the RAWS_UNITS switch which is
        also required when using RAWS weather data.

        Example and Format
        # Year Mth  Day  HHMM Temp RH Pcp WS WDir CC
        # Year = Year
        # Mth = month,
        # Day = day of month,
        # HHMM = time of record (2 digits for hour, two digits for minute)
        # Temp = temperature at time of record
        # RH = relative humidity at time of record
        # Pcp = hourly precipitation for the hour ending at time of record
        # WS = wind speed at time of record
        # WDir = azimuth of wind direction at time of record
        # CC  = cloud cover as integer percent (0 - 100) at time of record

        Example:
        RAWS: 5
        2018 3 23 0700 78 18 0.00 2 177 40
        2018 3 23 0800 76 22 0.00 3 235 35
        2018 3 23 0900 74 22 0.00 3 236 0
        2018 3 23 1000 72 22 0.00 7 233 0
        2018 3 23 1100 71 22 0.00 1 230 30

Switch: RAWS_ELEVATION:
Usage:
        RAWS_ELEVATION: X
        Where X is the elevation of the weather observations in the RAWS
        section. Units are indicated by the RAWS_UNITS switch, feet when
        RAWS_UNITS is English, meters when RAWS_UNITS is metric.
        Example:
        RAWS_ELEVATION: 3532

Switch: RAWS_UNITS:
Usage:
        RAWS_UNITS: X
        Where X is either the string English or Metric indicating the units
        for the weather data in the RAWS section as well as the
        RAWS_ELEVATION
        Example:
        RAWS_UNITS: English
```

Switch: **WEATHER_DATA:**
Usage:

    WEATHER_DATA: X
    where X is the number of weather data entries, followed by X number
    of weather data records, 1 per line. NOTE: The weather data records
    must be in sequential order! No skipping days!
    Example:
    # Mth Day Pcp mTH xTH   mT xT   xH mH   Elv   PST   PET
    # Mth = month,
    # Day = day,
    # Per = precip in hundredths of an inch (integer e.g. 10 = 0.1
    inches),
    # mTH = min_temp_hour 0-2400,
    # xTH = max_temp_hour 0 - 2400,
    # mT = min_temp,
    # xT = max_temp,
    # mH = max_humidity,
    # xH = min_humidity,
    # Elv = elevation,
    # PST = precip_start_time 0-2400
    # PET = precip_end_time   0-2400
    # NOTE: do not leave any blank values
    WEATHER_DATA: 17
    7 17 0 400 1500 53 94 36 8 4478 0 0
    7 18 0 500 1400 52 94 43 9 4478 0 0
    7 19 0 500 1300 55 96 48 8 4478 0 0
    7 20 0 500 1200 57 90 48 12 4478 0 0
    7 21 0 600 1200 59 89 59 16 4478 0 0
    7 22 0 500 1500 52 88 59 11 4478 0 0
    7 23 0 400 1300 55 92 54 10 4478 0 0
    7 24 0 400 1400 54 96 50 9 4478 0 0
    7 25 0 500 1300 52 95 48 7 4478 0 0
    7 26 50 600 1400 54 93 38 11 4478 1100 1700
    7 27 0 400 1300 55 93 41 7 4478 0 0
    7 28 0 500 1500 53 93 38 9 4478 0 0
    7 29 0 500 1300 56 91 35 11 4478 0 0
    7 30 0 500 1500 53 94 46 11 4478 0 0
    7 31 0 500 1300 55 93 45 9 4478 0 0
    8 1 0 500 1400 53 96 46 10 4478 0 0
    8 2 0 400 1200 55 91 44 2 4478 0 0

Switch: **WEATHER_DATA_UNITS:**
Usage:

    WEATHER_DATA_UNITS: units
    where units is either METRIC or ENGLISH
    Note: If not used weather data is assumed to be in English units.
    Example:
    WEATHER_DATA_UNITS: METRIC

Switch: **WIND_DATA:**
Usage:

    WIND_DATA: X
    where X is the number of Wind Data records
    Example:

```
WIND_DATA: 7
# Mth  Day  Hour    Speed Direction CloudCover
7 17 0 3 114 0
7 17 100 1 31 0
7 17 200 1 127 0
7 17 300 5 114 0
7 17 400 2 58 0
7 17 500 2 22 0
7 17 600 1 53 0
```

Wind Data records should be in ascending order, and should cover the same time frame as the weather data records. Small gaps are allowed.

Switch: **WIND_DATA_UNITS:**
Usage:
> **WIND_DATA_UNITS:** units
> where units is either METRIC or ENGLISH
> Note: If not used wind data is assumed to be in English units.
> Example:
> WIND_DATA_UNITS: METRIC

Switch: **CONDITIONING_PERIOD_END:**
Usage:
> **CONDITIONING_PERIOD_END:** Date/Time
> where Date/Time is the month, day and military time of end of conditioning period.
> Example:
> CONDITIONING_PERIOD_END: 08 01 1600

Switch: **FOLIAR_MOISTURE_CONTENT:**
Usage:
> **FOLIAR_MOISTURE_CONTENT:** X
> where X is the foliar moisture content in percent. The default is 100 and 100 percent will be used if this switch is not present.
> Example:
> FOLIAR_MOISTURE_CONTENT: 90

Switch: CROWN_FIRE_METHOD
Usage:
> **CROWN_FIRE_METHOD:** cfmethod
> where cfmethod is either **Finney** or **ScottReinhardt**
> Note: If not used the Finney crown fire method will be used.
> Example:
> CROWN_FIRE_METHOD: ScottReinhardt

Switch: **NUMBER_PROCESSORS:**
Usage:
> **NUMBER_PROCESSORS:** X
> where X is the number of processors for FlamMap to use. Valid Range: 1 .. Number of logical processors on the machine. If X is greater than the number of available processors 1 will be used. The default value is 1 if this switch is not present.

Switch: **SPREAD_DIRECTION_FROM_NORTH:**
Usage:

SPREAD_DIRECTION_FROM_NORTH: X
where X is the azimuth to offset spread directions.
Note: Usage of this switch is rare. Valid values: 0-360

Switch: **GRIDDED_WINDS_GENERATE:**
Usage:

GRIDDED_WINDS_GENERATE: val
where val is either 'Yes' or 'No'
Default is 'No'
This switch will be ignored if the gridded winds resolution switch
is not present or invalid.
Example:
GRIDDED_WINDS_GENERATE: Yes

Switch: **GRIDDED_WINDS_RESOLUTION:**
Usage:

GRIDDED_WINDS_RESOLUTION: X
where X is the resolution to use for gridded winds in the same
units as the landscape file.
Example:
GRIDDED_WINDS_RESOLUTION: 200

Switch: **GRIDDED_WINDS_DIURNAL:**
Usage:

GRIDDED_WINDS_DIURNAL: val
where val is either 'Yes' or 'No'
Default is 'No'
This switch will be ignored if the gridded winds usage is set to
'No'. Setting this switch to 'Yes' requires all other gridded winds
settings be used for Diurnal calculations to be used.
Example:
GRIDDED_WINDS_DIURNAL: Yes

Switch: **GRIDDED_WINDS_DIURNAL_AIRTEMP:**
Usage:

GRIDDED_WINDS_DIURNAL_AIRTEMP: X
where X is the air temperature in degrees Fahrenheit.
Example:
GRIDDED_WINDS_DIURNAL_AIRTEMP: 84.5

Switch: **GRIDDED_WINDS_DIURNAL_CLOUDCOVER:**
Usage:

GRIDDED_WINDS_DIURNAL_CLOUDCOVER: X
where X is the percent cloud cover. (0.0 – 100.0)
Example:
GRIDDED_WINDS_DIURNAL_CLOUDCOVER: 15.0

Switch: **GRIDDED_WINDS_DIURNAL_LONGITUDE:**
Usage:

GRIDDED_WINDS_DIURNAL_LONGITUDE: X
where X is the longitude in decimal degrees. (-180.0 – 180.0)
Example:
GRIDDED_WINDS_DIURNAL_LONGITUDE: -114.0

Switch: **GRIDDED_WINDS_DIURNAL_DATE:**
Usage:

GRIDDED_WINDS_DIURNAL_DATE: mm dd yyyy
where mm is the month (1 – 12)
dd is the day of the month (1 – 31, must be a valid day for the month)
yyyy is the calendar year (e.g. 2009)
Example:
GRIDDED_WINDS_DIURNAL_DATE: 03 16 2009

Switch: **GRIDDED_WINDS_DIURNAL_TIME:**
Usage:

GRIDDED_WINDS_DIURNAL_TIME: ss mm hh tz
where ss is seconds (0 – 59)
mm is minutes (0 – 59)
hh is hours (0 - 23)
tz is time zone (-12 – 12), indicates time zone offset from GMT
for example, -7 is Mountain Standard Time
Example:
GRIDDED_WINDS_DIURNAL_TIME: 0 00 14 -7

Switch: **GRIDDED_WINDS_DIRECTION_FILE:**
Usage:

GRIDDED_WINDS_DIRECTION_FILE: filename
Where filename is the path to an ASCII grid of wind azimuths.
Example:
GRIDDED_WINDS_DIRECTION_FILE: C:\Data\angle_20_225.asc

Switch: **GRIDDED_WIND_SPEED_FILE:**
Usage:

GRIDDED_WIND_SPEED_FILE: filename
Where filename is the path to an ASCII grid of wind velocities in MPH.
Example:
GRIDDED_WIND_SPEED_FILE: C:\Data\velocity_20_225.asc