FastPlume Dosage Calculations

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# Purpose

This document describes the input and output files used by FastPlume for performing dosage calculations.

# Files

|  |  |
| --- | --- |
| File | Description |
| sample\_in.csv | Sample FastPlume input file |
| sample\_out.csv | Sample FastPlume output file |
|  |  |

# How Samples were Made

Files were created by Steve’s programs plume.py and plot\_plume.py.

# Input Variables

The following table shows the input variables used by FastPlume.

The input file may optionally contain additional columns which are not used by FastPlume.

Variables with no default values listed are required. Variables having default values are optional in the input file.

|  |  |  |
| --- | --- | --- |
| **Input** | | |
| **Meteorology** | | |
| istab | Stability Class (0-6) |  |
| U | Wind Speed (m/s) |  |
| zi | Height of Mixing Layer (m) | Default = 10000 m |
| stab | Stability (A-G) | Not used by FastPlume |
| **Release** | | |
| Q\_mg | Mass Released (mg) |  |
| zplume | Release Height of Plume (m) | Default = 0 m |
| dur | Duration (s) | Default = 0 s |
| sig\_x0 | Source Sigma x (m) | Default = 0 m |
| sig\_y0 | Source Sigma y (m) | Default = 0 m |
| sig\_z0 | Source Sigma z (m) | Default = 0 m |
| **Receptor Location** | | |
| x | Downwind Distance (m) |  |
| y | Crosswind Distance (m) | Default = 0 |
| z | Vertical Height (m) | Default = 0 |
| t | Time (s) |  |

# Output Variables

The output file contains all of the variables from the input file plus the following quantities that are calculated by FastPlume.

|  |  |  |
| --- | --- | --- |
| **Output** | | |
| sig\_x | Sigma x (m) |  |
| sig\_y | Sigma y (m) |  |
| sig\_z | Sigma z (m) |  |
| zfunc | (1/m) |  |
| cpeak | Peak Concentration (mg/m3) | Not a function of time |
| conc | Concentration (mg/m3) |  |
| dinf | All-Times Dosage (mg-s/m3) | Not a function of time |
| dose | Dosage (mg-s/m3) |  |