The excel interface tool is an Excel-based database/script program for MAIZSIM that holds the data for 1 or more simulations and builds the input files and file structure to run the model.

The scripts and written in VBA and are located in the Code section of the Excel file (turn on the Developer menu item). Code and data are also included to automatically build the grid files needed for the finite element domain. Each input file has its own sheet.

The executables and secondary files needed are described below.

The following files are used to create the grid and soil files. These are not executed by the vba code but are executed in a separate DOS command file:

CreateSoilFIles.exe This program calls GridGen.DLL and Rosetta.exe

GridGen.DLL a fortran dll that creates the finite element mesh

Rosetta.exe A program that uses pedotransfer functions and a neural net to estimate soil hydraulic properties from soil texture data. The program (source code was obtained from:

<https://www.ars.usda.gov/pacific-west-area/riverside-ca/agricultural-water-efficiency-and-salinity-research-unit/docs/model/rosetta-model/>

The program was mostly written by Marcel Schapp

The following files are needed by the Excel VBA code:

Dispersivity Lookup.xls This contains one sheet that is a lookup table for soil dispersivity vs soil texture class

TextureClass(32).dll This program takes sand, silt and clay values and gives the texture class (silty clay loam, etc). It was originally written by Aris Gerakis, 2001 with help from Brian Baer

(<https://nowlin.css.msu.edu/software/triangle_form.html>)

TextureClass.dll finds the soil texture class and this is used to lookup the correct value of dispersivity in the Dispersivity lookup file.

Excel file sheets (tables)

The first sheet is the Description. This sheet contains the id’s that link the various tables and are used for lookup. The number of rows in this table has to be equal to the number of simulations to be carried out. Also, the filenames for the output files can be specified here.

The ID is the main identifier and there is one for each simulation. There is no requirement other than each is unique.

The linkages are as followsThe WeatherID, hybrid, soilfile links to the row of the climate file used in that simulation

[Description]WeatherID

[Description]ClimateID [Climate]ClimateID

[Description]SoilFIle [Soil]SoilName

[Description]Hybrid [Variety]Hybrid

[Description]Biology [Biology]BiologyID

[Description]Solute [Solute]ID

The variable [Description]path is the path name for the simulation files in the directory structure.