

BreZo 4.0 Release Notes
B. Sanders August 28, 2008

A new version of BreZo has been posted with new features, a larger number of allowable cells, and new file formatting requirements to make input (slightly) more intuitive. I'm sorry, but BreZo 4.0 is **not** backwards compatible with BreZo 3.0. However, the differences are quite minor a checklist of file format differences is included below. Here is an overview of the changes:

1. New options for the run-time log that is set in brezo.start file with "write_options": 0=no log, 1=run-time log on screen, 2=run-time log in .log file, 3=log on-screen AND in .log file. [Old options: 0=on-screen, 1=file]
2. New option to create an output file that is formatted for VISIT, a free visualization package. This option was contributed by Dave Hargreaves at Nottingham. Animation options are now as follows: 0=off, 1=Tecplot, 2=Matlab, 3=Tecplot and Matlab, 4=VISIT, 5=VISIT and Tecplot, 6=VISIT and Matlab, and 7= all three. [Old options: 0=off, 1=Tecplot, 2=Matlab]
3. New option to enforce a wall boundary condition along a boundary that is flagged as an inflow/outflow boundary. In .bc file, set type_bc=6. Setting up wall boundary conditions in the mesh generation process is still recommended, but once a mesh is prepared with inflow/outflow boundaries it is sometimes useful to revert those boundaries to walls for testing purposes.
4. New option to add point sources of inflow from precipitation-driven watershed runoff. User specifies the catchment area (A) and a runoff coefficient (C) and supplies a time series of precipitation intensity data $i(t)$. Runoff is computed as $Q(t)=C A i(t)$. This represents an alternative to the .source option for adding point sources of inflow. "A" should be specified in units of square meters or square feet, consistent with the grid units, and precipitation intensity data should be specified in units of centimeters/hr or in/hr. Note that an on/off switch has been added to the .input file, "runoff_options" so old .input files must be updated for compatibility with BreZo 4.0
5. New, standardized formatting for all time-series data including support for decimal seconds. This applies to boundary condition data, point source inflow data, wind data, and precipitation data (see sample files in inputtimeseries folder).
6. Restart support for "maxflood" calculations. Now, it is possible to re-start a simulation and continue the maxflood calculations from the previous run.
7. New option to output cell-based "maxflood" data in a .txt format that can be loaded into ArcGIS. This is activated by setting "maxflood_options=2".
8. New format for .rough file. The file should now be prepared as a single column of resistance or roughness parameters corresponding to cells in the mesh. Previously, the .rough file included two columns and the first column was a integer (cell index) that was not used by the code. The new format is consistent with the .bed file, which consists of a single column of elevation data corresponds to vertices of the mesh.
9. New option to input and use a time-series of wind to model wind stresses.
10. Several bugs fixed.

And here is a checklist of file formatting changes:

1. brezo.start file; write_options should be set as follows: 0=no log, 1=run-time log on screen, 2=run-time log in .log file, 3=log on-screen AND in .log file.
2. <root prefix>.input file; runoff_options is now a required input parameter (line 30 at end of .input file). When runoff_options=1, BreZo will open a <root prefix>.runoff file. See sample files in partialdbrk.1 and castjunc.2 project folders.
3. All time series data should be (slightly) reformatted to include seconds, which may be decimal seconds. See the inputtimeseries folder for sample files.
4. If a <root prefix>.rough file is used to input a resistance parameter (Manning n, Chezy C, or Nikuradse ks), then the file should now only include a single column of data correspond to the parameter for each cell. Previously, this information constituted the second column and a dummy integer was placed in the first column, such as the cell number. This change is designed to mirror the format of the .bed file, except that .rough parameters are associated with cells while elevation data are associated with vertices.