

## **ZONBUDUSG**

### **Version 1.00**

#### **DESCRIPTION**

ZONBUDUSG is a version of the ZONEBUDGET program (Harbaugh, 1990) that has been modified to work with budget files created by MODFLOW-USG (Panday and others, 2013).

ZONBUDUSG is a command line executable program contained in the \bin directory. When ZONBUDUSG is executed, it prompts for a listing file, a DISU file, a MODFLOW-USG budget file, a title, and a zone input file. The zone input file starts with one line for the number of nodes in the model. Then a zone code is read for each node using the 1-D integer array reader (U1DINT). The following is an example of a zone input file for a 121 cell model:

```
121
internal 1 (free) -1 zone numbers
1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2 2 2
2

```

The present version of ZONBUDUSG requires that the arrays in the DISU file are read using CONSTANT, INTERNAL, or OPEN/CLOSE because the program does not read the name file to get the file units for external files.

If the ZONBUDUSG program is used with output from a MODFLOW-USG model that uses the Connected Linear Network (CLN) Process, then budget output from the CLN Process should not be written to the same budget file that contains output from the Groundwater Flow (GWF) Process.

#### **REFERENCES**

Harbaugh, A.W., 1990, A computer program for calculating subregional water budgets using results from the U.S. Geological Survey modular three-dimensional ground-water flow model: U.S. Geological Survey Open-File Report 90-392, 46 p. Online at: <http://water.usgs.gov/nrp/gwsoftware/zonebud3/zonebudget3.html>

Panday, Sorab, Langevin, C.D., Niswonger, R.G., Ibaraki, Motomu, and Hughes, J.D., 2013, MODFLOW-USG version 1: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume finite-difference formulation: U.S. Geological Survey Techniques and Methods, book 6, chap. A45, 66 p. Online at: <http://water.usgs.gov/ogw/mfusg/>