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How to build your own NIR, using basic power tools...

1 message

Bryce Contor <bcontor.uidaho@gmail.com>**Wed, Apr 28, 2010 at 10:54 AM**

To: "McVay, Michael" <michael.mcvay@idwr.idaho.gov>

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Mike -

The attached to files should give you all you need to generate non-irrigated recharge input for the MKMOD3 recharge tool.

The *.nir file is the "Non-irrigated recharge" file and gives you the format you need to duplicate. The code reads the *.nir file to get the recharge depths.

The *.sol file was used in ESPAM1.1 to enable PEST to multiply non-irrigated recharge, by soil-type zone. I believe this capability will be restored in the next iteration of MKMOD.

In the *.nir file there should be 342 blocks, one for each stress period. Stress periods are one month long (exact number of days), starting with May 1980 and continuing through October 2008. I truncated the last 340, and a good part of the second, to get the file small enough to e-mail.

The first line of each block identifies the stress period. I expect Willem was careful in his programming and it shouldn't matter, but to be safe it would be well to duplicate the format precisely, including the exact count of spaces.

The second line of the block is the number "1," which in ESPAM1.1 signified "look for new data this period." I don't know if Willem's code relies on it, but probably you want to put it in.

The next 104 lines of the block correspond to the 104 rows in the model grid. Each line contains 209 entries, one for each of the 209 columns in the model grid. The value is the depth of non-irrigated recharge in feet, on that model cell, for that stress period. In ESPAM1.1 (FORTRAN code) there were line-length limitations that made it important to round the entries to 5 decimal places. I doubt it makes any difference for MKMOD3 (PERL code) but it wouldn't hurt to round for safety.

This particular version of the *.nir ignores soil type. We can talk about why if it is a burning interest, but it is not important to what you will be doing. What is important is that for each model cell, you need to apply one of three recharge depths - thick soil, thin soil, or lava rock. To know which, you need the *.sol file.

The *.sol file is organized in the same manner as the *.nir, but only one stress period is represented because we assume cells will not change soil type over the calibration period. We assume that only trivial distortion results from assuming that each cell is homogeneously a single soil type. The following possible entries exist:

- 1) 1 through 5 indicate the cell is thin soil (that is, zones 1 through 5 are thin-soil zones and correspond to multipliers 1 through 5 in the list of non-irrigated-recharge multipliers).
- 2) 6 through 8 indicate the cell is lava rock.
- 3) 9 through 11 indicate the cell is thick soil.
- 4) -9999 indicates we don't know the soil type. I propose you arbitrarily assign one soil type for calculating depth on those cells, or use zero depth. The other alternative would be to carry the -9999 forth in the *.nir data set, but

that interferes with graphical output of results. No -9999 soil types exist in active model cells so it makes no difference in the actual calculations.

Call me if this is clear as mud.

Bryce

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2 attachments

 **P100108A.sol**
69K

 **P100108A_truncated.nir**
126K
