**Watershed Production Model Introduction**

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The following instructions instruct a user how to install R, configure R to be able to run the watershed production model, and then run the watershed production model with the example input files provided with the code. For a full set of instructions, consult the watershed production model user’s guide. For users that already have R installed on their machine, begin at step 2. This “Introduction” is not intended to instruct the user on how to change inputs, interpret results, etc.; rather, it’s intended only as a “get started” cheat sheet to ensure that software is installed correctly and all files are in place.

1. **Downloading and Installing R:**

The Watershed model has been written in the R programming language. R is a free, open source programming language designed specifically for statistical computing and graphics. The software and documentation are available free at: <http://www.r-project.org/>.

1. **Installing Required Add-On Packages**

To install the required add-on packages, start R, click on “install package” and select a CRAN mirror site (any site should work). Scroll down and select the package “MCMCpack”, after which installation will take place automatically. Repeat this process for the “VGAM” package.

Installation of these packages need only be done once for the computer on which R is loaded (after which time, these files remain on the computer, as long as R is installed, and do NOT have to be re-installed each time the code is to be run).

1. **Download Files from SharePoint**

Download Watershed Production Model and Related Files from the dropbox folder “Watershed Model Files”. Create a folder on your pc, and save all files in the folder you create on your PC.

1. **Start R and Set the Working Directory**

Start R. Set the working directory to the folder created in step 3 by selecting, from the menu bar, <file>, <change dir…>, then navigate to the folder from step three, and click <OK>.

1. **Open and run the Watershed Model**

Open the file “Watershed.R” by selecting, from the menu bar, <file>, <open script>, and the selecting the R file “Watershed”. Ensure the window with the Watershed.R script is active (by clicking on this window). Then run the entire code by selecting, from the menu, <edit> and <run all>. The program may take several minutes to complete. (The code is set, initially, to run 5 monte-carlo iterations. The iteration numbers is printed on the screen to track progress).

1. **Examine the Output Plots and Files**

Upon completion, a series of plots will be generated to the screen. Use the page-up and page-down buttons to scroll through the plots. Output plots are also written to a folder “Output Plots”, which will be created as a subfolder to the working directory. Output data files are created in the folder “Output Files”. Details on these output files are provided in the Watershed Model User’s Guide. Refer to 9 of the user’s guide for further information on output plots and data files.

1. **Graphing the Inputs**

An R file called “Watershed\_Graph\_Inputs.R” is included in package. This is not part of the watershed model, but rather a separate script available to allow users to automatically generate plots of all inputs versus simulation time. This may be especially useful to those users who are including stochasticity, step function changes, and/or trend changes in their parameter specifications.

To run this script, simply open R, set the working directory to where the files are stored, and run the script by selecting all and running all (or use the shortcuts “ctrl-a” followed by “ctrl-r”. Depending on the number of sites and number of Monte-Carlo iterations, the code may take up to several minutes to run.

Refer to Section 10 of the user’s guide for details on this script.