Chapter 1: Basic prerequisits

Manual for R package `reservoir`

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Learn to:

- *Download and install R and R-Studio*
- *Install latest version of the reservoir library*
- *Work with time series objects*

Step 1: Get R and R Studio

The latest version of R can be downloaded here. R is an open source, statistical programming environment, popular with academics in a variety of fields, including hydrology and water resources engineering.

R Studio is a powerful Integrated Development Environment (IDE) for R. Whislt an IDE is not absolutely necessary to use `reservoir`—or indeed any R library—it makes life lot easier. There are various IDEs for R, but R Studio is the undoubtedly the most popular and its capabilities extend well beyond writing basic R code (this manual was written using R Studio, for instance). Once R is installed on your machine, download and install R-Studio from here.

If you have never used R before, some basic introduction is recommended before attempting the exercises in this manual (although this isn't strictly necessary as step-by-step code is given for all coding required). Some popular starer courses are:

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The best thing about R is that it's open source, and so there are thousands of users worldwide continually sharing ... If you ever get stuck then there's a strong chance that someone else has encountered the same problem and requested help on a user forum, such as Stack Overflow.

One additional R skill that is generally not covered in more general tutorials is the use of time series objects. This is covered in ***step 3*** below.

Step 2: Get the *reservoir* package

reservoir is available on the Comprehensive R Archive Network, or, 'CRAN'. Packages on CRAN can be downloaded using `install.packages`:

```
install.packages("reservoir")
```

Sometimes new developments to the package won't be immediately available on the CRAN version. As of writing, the CRAN version contains everything described in this manual. But if you want to make sure you have all new features, you can install the development version from github. To install a package from github, you'll need to get `devtools` and then install the development version of *reservoir* using `install_github`:

```
install.packages("devtools")
devtools::install_github("swd-turner/reservoir")
```

Finally, load *reservoir* into your working environment using:

```
library("reservoir")
```

You can start to browse through the help material for `reservoir` by entering:

```
?reservoir
```