

R workshop preparation instructions - part 1

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Welcome!

Thank you for attending the CSHS Workshop: **R for hydrologists**.

This is the first of 2 sets of instructions that you will receive. The second set will show you how to download the working files for the workshop.

The workshop will be interactive and will consist of the following sessions:

Morning

Introduction to R - Kevin Shook

Coffee break

Working with **CSHShydRology** - Paul Whitfield

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Lunch (not provided)

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Afternoon

Catchment delineation - Dan Moore

Coffee break

Functions, projects and packages - Kevin Shook

Writing your own functions - Paul Whitfield

Creating documents in RMarkdown - Dan Moore

Setup instructions - part 1

As this is a workshop, you will need a laptop with **R** and **Rstudio** pre-installed. We won't have time to help you with the installation, so please make sure that your system is working ahead of time. This is especially important if you have a computer from your employer - please talk to your IT people ahead of time to make sure that everything is installed correctly.

Installing R

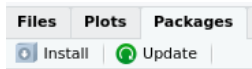
R needs to be installed first. You can get the program here: <https://cran.r-project.org/index.html>

Next, you need to install **RStudio**. You can get it from here: <https://www.rstudio.com/products/rstudio/>

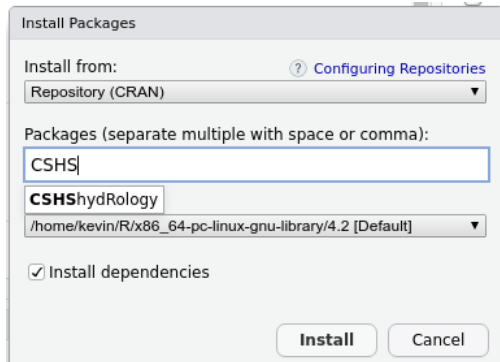
Please run **RStudio** *before* attending the workshop to be sure that everything is working properly.

Installing CSHShydRology

The Workshop is based on the CSHShydRology package, so you will need to have it installed ahead of time. You can do this inside **RStudio** by selecting the **Packages** tab and clicking the “Install” button.



Now type “CSHShydRology” into the dialog box. Make sure that the checkbox “Install dependencies” is selected and click the **Install** button.



Other programs and packages

whitebox

CSHShydRology requires the use of the package **whitebox**. It should have been installed as a dependency when you installed CSHShydRology.

whitebox also requires an executable program to be installed. After the **whitebox** package is installed, you can install the executable program inside **RStudio** with the following commands:

```
library(whitebox)
install_whitebox()
```

ggplot2

The package **ggplot2** is used very widely for graphs. We have a few exercises which use it, so it would be a good idea to install it. It is installed in the same as was CSHShydRology.

rmarkdown

We will be using the package **rmarkdown** to create documents, so you should also install it. This allows you to create html documents. If you want to be able to export .pdf and .docx files, you will also need to install the program **Pandoc** <https://pandoc.org/installing.html> and **LaTeX**. Note that the **Pandoc** installation page also shows where you can obtain **LaTeX** for your system.

git

git is a distributed version control program. We will be showing how to use **git** with **RStudio** to manage the versions of your files. You can install **git** from here: <https://git-scm.com/downloads>.

devtools

We will be showing how you can build packages in **R**, which requires installing the package **devtools**. Make sure that all the dependencies (there are many!) are installed.

GitHub

GitHub is a web site which works with **git** to share versions of files among people. It is very widely used in software development, including by the developers of **CSHShydRology**. In the next set of instructions, we will show you how to download the files needed for the workshop from **GitHub**. Therefore you must first set up a **GitHub** account. The account is free of charge. You can register for **GitHub** at: <https://github.com/>.