Installation of R

1. Install R (only default settings)

Installation program of R can be downloaded from https://www.r-project.org. Run the program "*R-4.x.x-win.exe*" and follow the steps given below (default settings). For analyzing SWAP-results, R version 4.2.x or later is required[1].
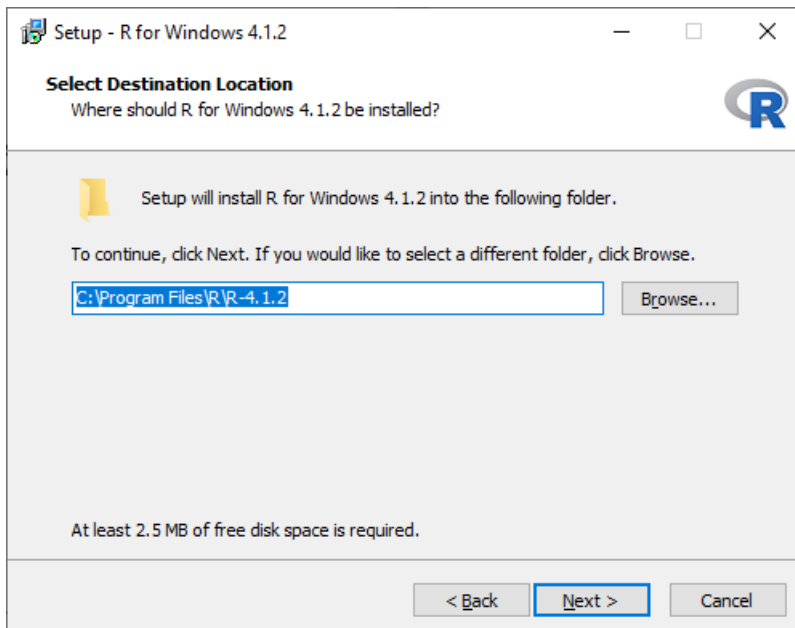
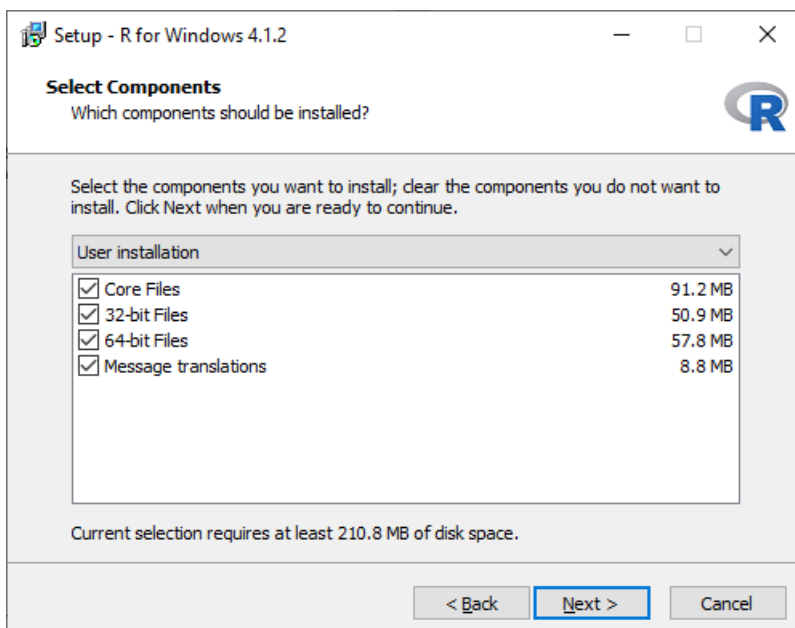Step 1 Select setup Language: **English**
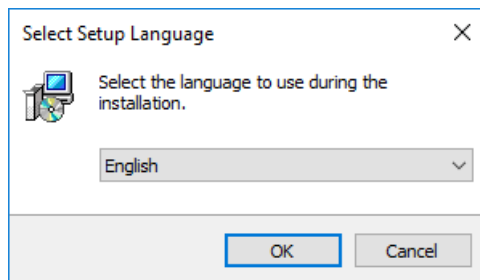
Step 2 Information: **Next**
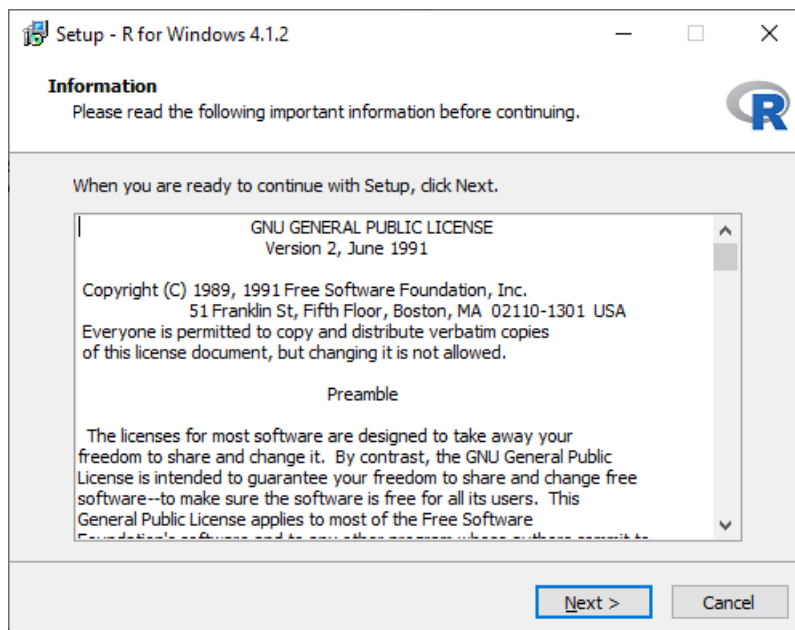
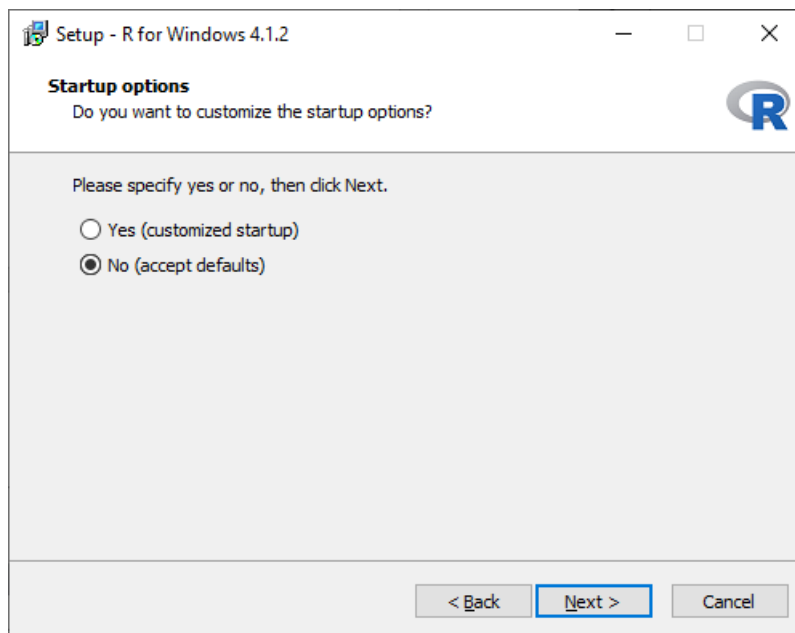Step 3: Select Destination Location: **Next**

Note: Select a other location in case you don't have writing permissions on the C-drive
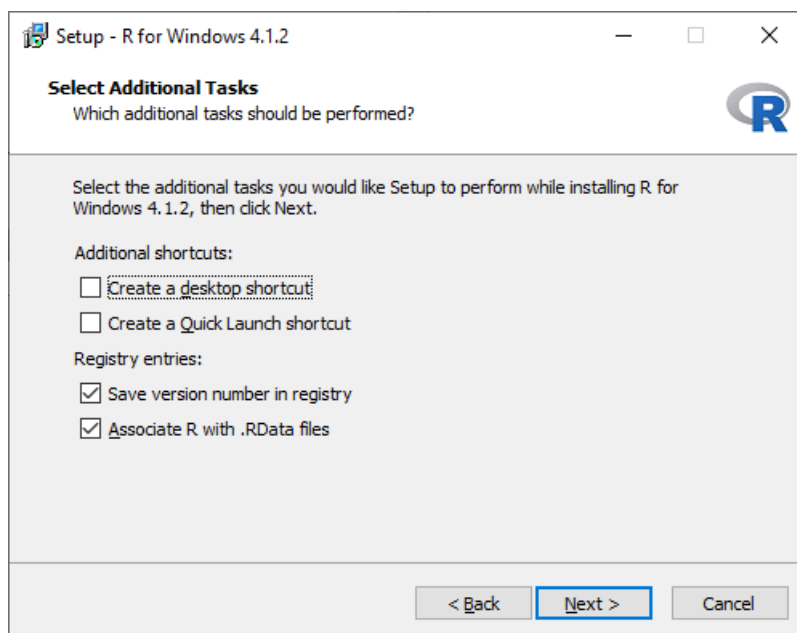

Step 4 Select Components: **Next**
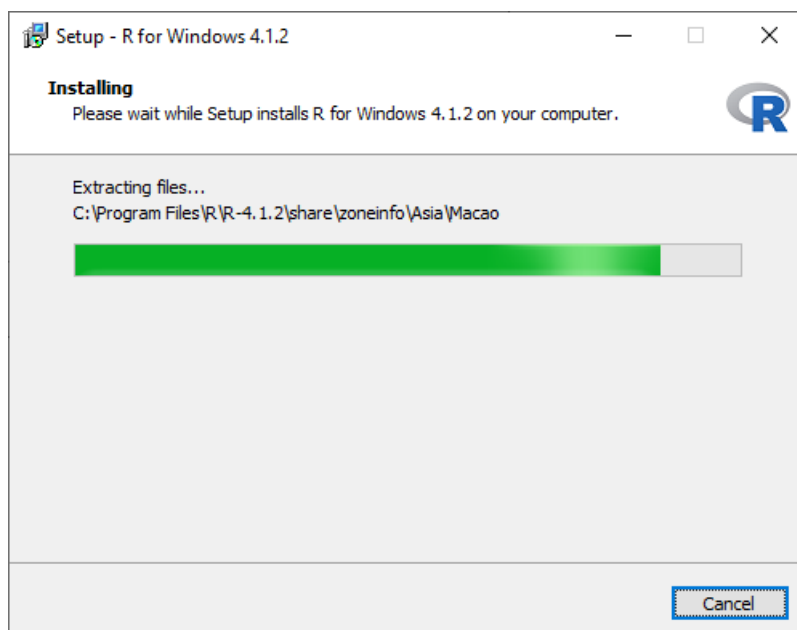
Step 5 Startup options: **Next**

Step 6 Select Start Menu Folder: **Next**
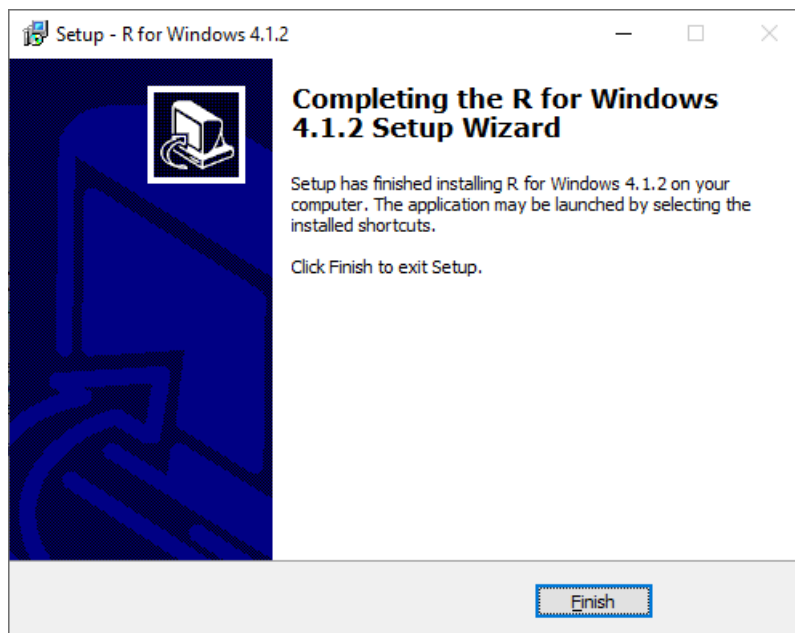
Step 6 Select Additional Task: **Next**

Step 7 Select Additional Task: **Next**

Step 8 Select Additional Task: **Finish**
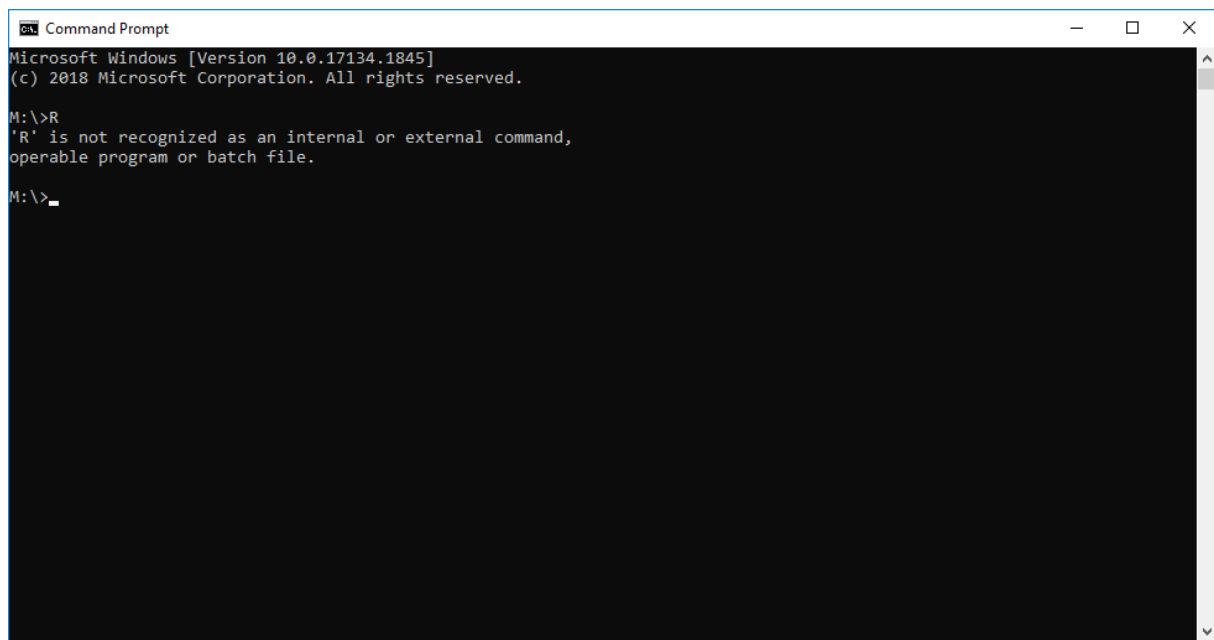
2. Communication with WINDOWS

Check if WINDOWS is recognizing the installation of R by opening a Command Prompt:
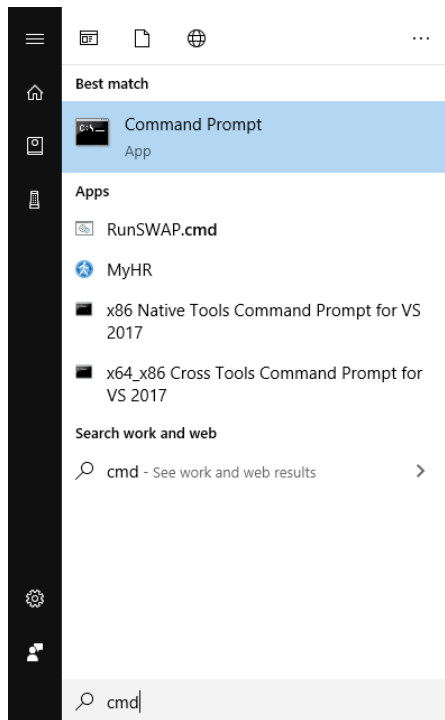
And give the command 'R':

In case WINDOWS does not recognize the 'R' command (like in the example above), you'll have to add an extra Environment Variable. Go to System Properties (Control Panel -> System and Security -> System -> Advanced system settings) and select Environment Variables:
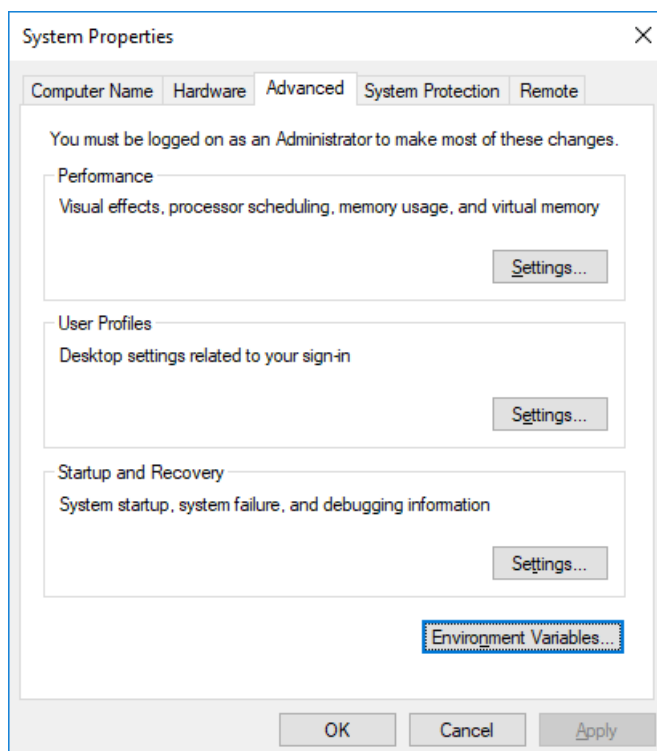
Edit *Path* at System Variable by adding the folder with the R installation:

Environment Variables

User variables for mulde027

Variable	Value
msExchHomeServer	6b34b7c2-86bb-4938-ad82-37aa47b0ec78@wur.nl
OneDrive	C:\Users\mulde027\OneDrive - WageningenUR
OneDriveCommercial	C:\Users\mulde027\OneDrive - WageningenUR
Path	C:\Users\mulde027\AppData\Local\Microsoft\WindowsApps;
PERSONAL	\\WURNET.NL\Homes\mulde027\My Documents
TEMP	C:\Users\mulde027\AppData\Local\Temp
TMP	C:\Users\mulde027\AppData\Local\Temp

New... Edit... Delete

System variables

Variable	Value
OfficePath	C:\Program Files (x86)\Microsoft Office\root\Office16
OS	Windows_NT
OSTYPE	US_W1064
Path	%INTEL_DEV_REDIST%redist\intel64_win\mpirt;%INTEL_DEV_REDIS...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 158 Stepping 10, GenuineIntel

New... Edit... Delete

OK Cancel

Edit environment variable

- C:\Program Files (x86)\Common Files\Oracle\Java\javapath
- C:\Python39\Scripts\
- C:\Python39\
- C:\WINDOWS\system32
- C:\WINDOWS
- C:\WINDOWS\System32\Wbem
- C:\WINDOWS\System32\WindowsPowerShell\v1.0\
- C:\WINDOWS\System32\OpenSSH\
- C:\Program Files\WUR_SYS\
- C:\Oracle\instantclient_12_2
- C:\Oracle\instantclient_12_2_x64
- C:\Program Files\Common Files\ThinPrint\
- C:\Program Files\PuTTY
- C:\Program Files\dotnet
- c:\Program Files\MiKTeX 2.9\miktex\bin\x64\
- C:\Program Files\Microsoft VS Code\bin
- c:\Program Files\R\R-4.1.2\bin
- C:\Program Files\Git\cmd
- C:\Program Files (x86)\dotnet\
- %SystemRoot%\system32

New
Edit
Browse...
Delete
Move Up
Move Down
Edit text...

OK Cancel

Also add a new variable 'R_LIBS_USER' at System Variable. You can use 'Browse Directory' and select the a folder in which R-libraries will be installed[2]:

Check if WINDOWS is recognizing the installation of R again by opening a Command Prompt and give the command 'R':

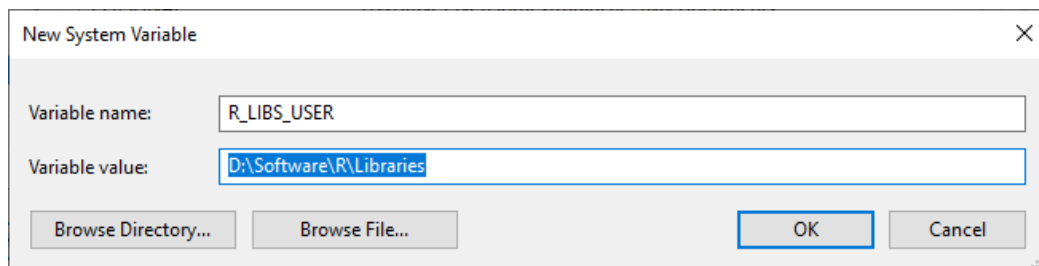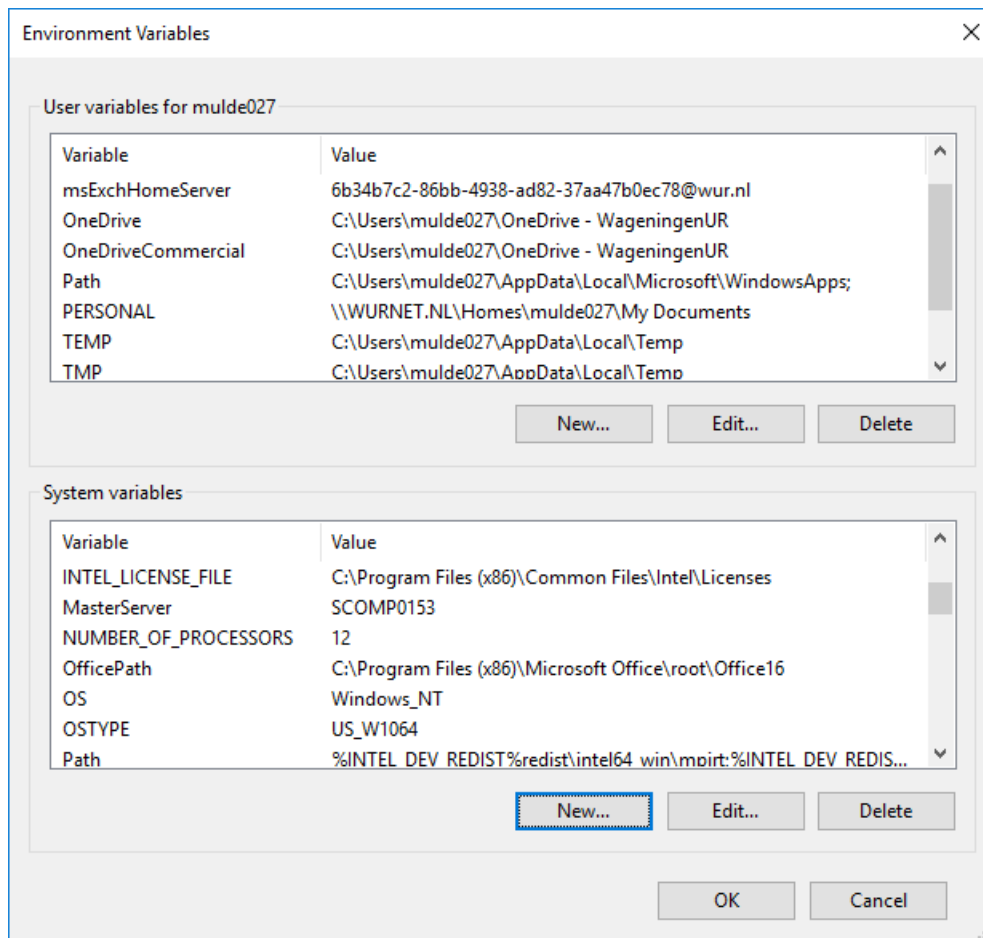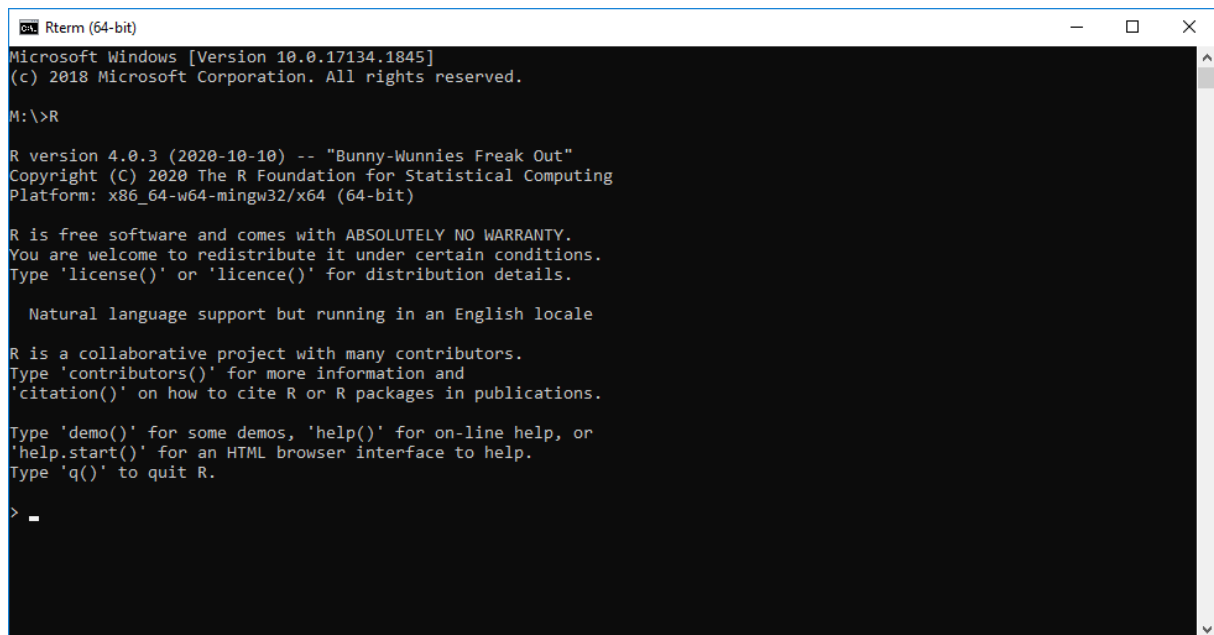In case of successful installation, the R program will start with the message in the example above. To check if the default folder for installation of R-packages is set successfully, give the command '.libPaths()', this should be the same as the system variable R_LIBS_USER.

Close the R-program by the command 'q()' and close the Command Prompt.

3. Installing R-libraries

Once R is installed, it is time to install R-libraries. For this purpose an R-script is created called 'libraries.R' which is called by command file "install_libraries.cmd". The script can be opened in any text-editor. In the initial part of the procedure settings are user-specific.

```
# libraries.R
# Wageningen Environmental Research
#_____
#

# initial part of procedure
#-----------------------------------------------

# general R-settings
repos_CRAN <- "https://cloud.r-project.org/"  # default CRAN-repository
repos_LOCAL <- "file:./Local"                 # path to LOCAL-repository

# install settings
dir_pkg <- NULL                               # in case of default R settings use 'NULL'
online <- TRUE                                # try to load the packages in case there is no connection to the internet
update <- FALSE                               # check for package updates

# set packages to load
pkg_load <- c("stringr", "fs", "progress", "tibble", "dplyr", "readr", "ggplot2", "grid", "controlR", "KNMItools", "SWAPtools")

# main part of procedure
#-----------------------------------------------
```
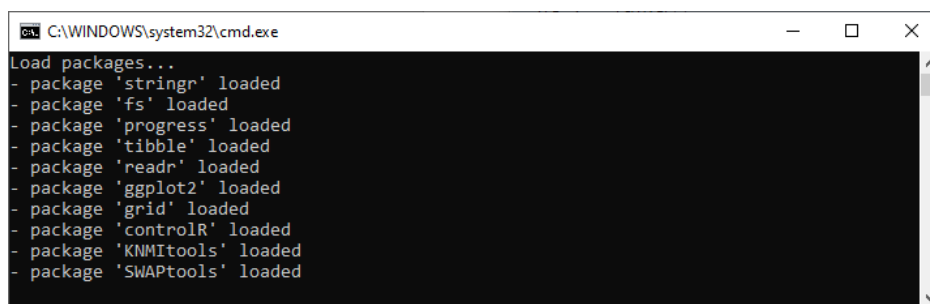
For installing default R-libraries a link to the 'CRAN_mirror' and 'repos_CRAN' should be specified (see default settings above). For installing tailormade packages a link to a local repository can be specified with 'repos_LOCAL' (use 'NULL' if not present).

The location where R-libraries should be installed on your computer is set by 'dir_pkg'. In case 'R_LIBS_USER' is added as a System Variable (see Chapter 2) use 'NULL', otherwise specify a path to the location where you want to install R-libraries. A list of libraries to install is given by 'pkg_load'.

Before executing the command file 'install_libraries.cmd' by double clinking, first open the file 'set_Rversion.cmd' in a text-editor and check for the path to the R installation. In case a command file is not starting in the folder where it is executed you will need to set the default work-directory each time you start an R-procedure. You can provide the "set_Rversion.cmd" with the default work-directory. After this check above, you can start with the installation of the R-libraries. This can take a few minutes.

To check if all libraries are installed, rerun this procedure ('install_libraries.cmd'). In the MSDOS box only messages of loading packages should appear.

```
C:\WINDOWS\system32\cmd.exe                    —    □    ×
Load packages...
- package 'stringr' loaded
- package 'fs' loaded
- package 'progress' loaded
- package 'tibble' loaded
- package 'readr' loaded
- package 'ggplot2' loaded
- package 'grid' loaded
- package 'controlR' loaded
- package 'KNMItools' loaded
- package 'SWAPtools' loaded
```

In case a local repository is used in combination with a relative path like in the example above, make sure to set 'online' to 'FALSE' and save the file 'libraries.R'.