

Instructions for Using PCTE's Corromap Script

Install Required software

Please download and install a copy of R from the R Project web page

Please then download and install a copy of R Studio

R Project

<https://www.r-project.org/>

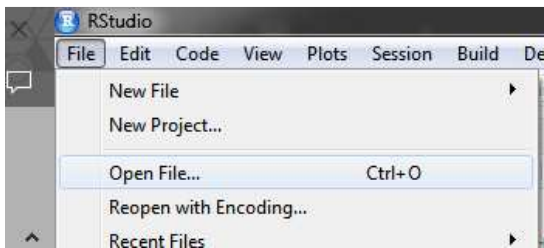
R Studio

<https://www.rstudio.com/>

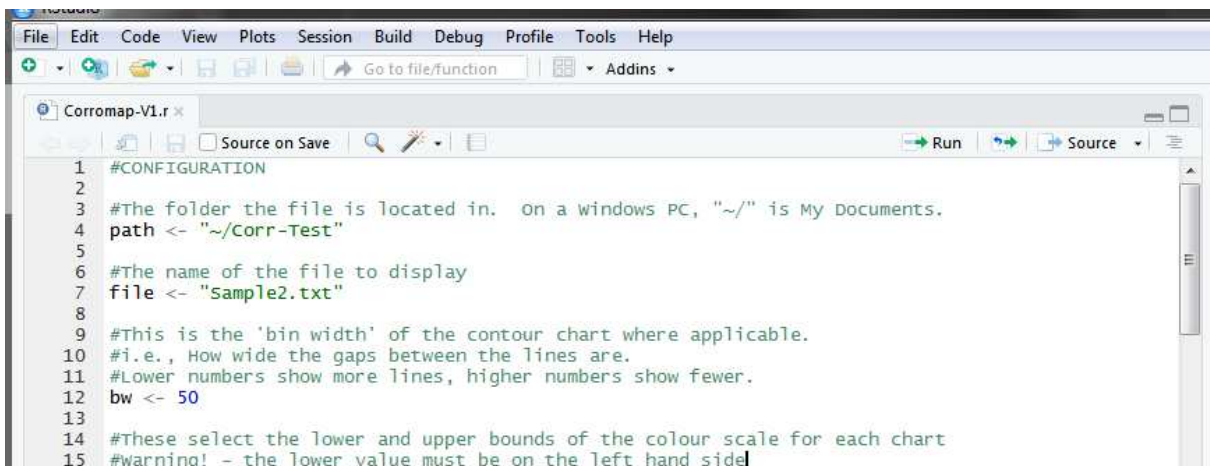
Load Script

Open R Studio

Inside R Studio please go to File>Open File... and load a copy of CorromapV1.r



This will display the script in the top left window. Now the Configuration must be edited to choose the raw CorroMap data file desired

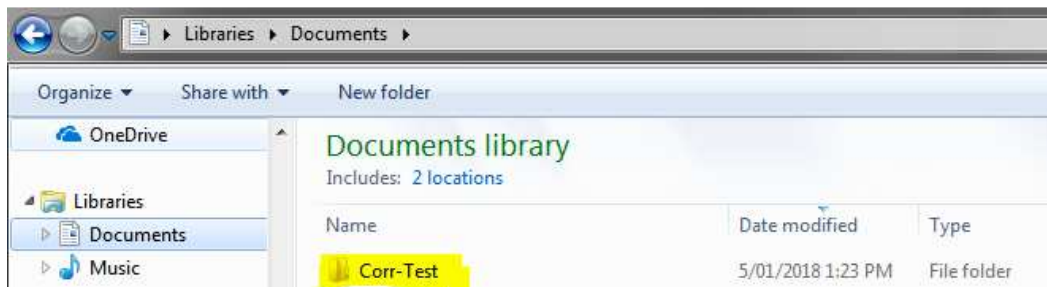
A screenshot of the RStudio editor window showing the 'Corromap-V1.r' script. The script contains configuration parameters for a contour plot. The code is as follows:

```
1 #CONFIGURATION
2
3 #The folder the file is located in. On a windows PC, "~/\" is My Documents.
4 path <- "~/Corr-Test"
5
6 #The name of the file to display
7 file <- "sample2.txt"
8
9 #This is the 'bin width' of the contour chart where applicable.
10 #i.e., How wide the gaps between the lines are.
11 #Lower numbers show more lines, higher numbers show fewer.
12 bw <- 50
13
14 #These select the lower and upper bounds of the colour scale for each chart
15 #warning! - the lower value must be on the left hand side
```

Edit Configuration to Select File

```
3 #The folder the file is located in. On a windows PC, "~/\" is My Documents.
4 path <- "~/Corr-Test"
5
6 #The name of the file to display
7 file <- "sample2.txt"
8
```

The “**path**” option chooses the folder in which the script will look for the file to load, the “~/” is by default equivalent to the Windows Documents Folder for the current user. In the default script the Raw CorroMap files are stored in a folder called “Corr-Test” inside the current users Documents Folder:



Enter the full name of the folder into the path option, this is case sensitive and must have quotation marks before and after. It should be preceded by the ~/ starting from the users documents folder

e.g.

```
path <- "~/Corr-Test"
```

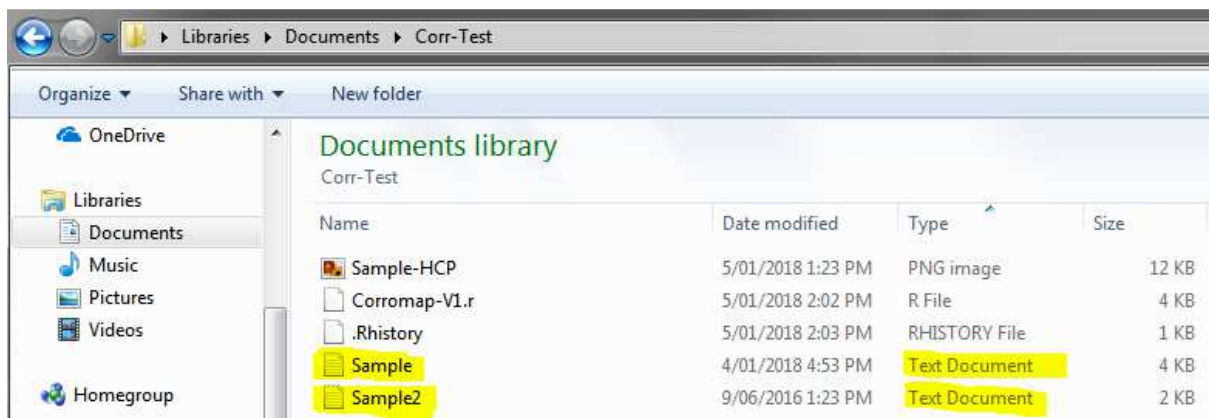
Which goes to: "C:\Users\William Ward\Documents\Corr-Test" on the authors computer

```
path <- "~/Corromap Files/Project"
```

Which goes to: "C:\Users\William Ward\Documents\Corromap Files\Project" on the authors computer

The “**file**” option points to the full file name including the file extension suffix. These are in the format #####.txt and are the files automatically saved when a new file is created on the Corromap Psion mobile device.

If your computer is not set to show the file extensions these files can be identified like the yellow highlighted files below:



Enter the full name of the file into the “**file**” option, this is case sensitive and must include the .txt files extensions suffix

E.g.

```
file <- "Sample2.txt"
```

```
file <- "Project name.txt"
```

Run Script for the First Time

Now that the correct folder and file name is selected the user can run the script. In order to run the whole script as written you need to use the “Source” button highlighted below:



Please press the “Source” button, the console pane at the bottom left of the window will show the environment working to prepare the first images from this file.

You do not need to be concerned if any Errors or Warning appear in the console, provided that the images produced are correct once the run is complete. The images will appear on the bottom right pane.

If this is your very first time running the script it may need to load a library called “tidyverse” which is a collection of extra capabilities for the R programming language. This will happen automatically but may take 15 to 20 minutes to complete. This is only required once and requires no user input after the “Source” button is pressed.

Note: If the images do not appear on your first time run after “tidyverse” installs please close RStudio, open it again and run the script a second time, following the steps above.

Review Images

Once the run is complete the images will appear in the bottom right pane, you can use the arrow buttons highlighted to move between the image for HCP Data, Resistance and Corrosion rate.



Adjust Configuration for Colour Scales and Contour Chart

The configuration section of the script contains options for how the colour appears in the three charts, and individual settings for the colour scale of each chart. There is also an option for the “bin width” of the contour lines.

When you change any configuration values please press “**Source**” again to see the result on the charts.

```
9 #This is the 'bin width' of the contour chart where applicable.
10 #i.e., How wide the gaps between the lines are.
11 #Lower numbers show more lines, higher numbers show fewer.
12 bw <- 50
13
14 #These select the lower and upper bounds of the colour scale for each chart
15 #warning! - the lower value must be on the left hand side
16 #hcplimit adjusts the Half Cell Potential chart
17 #reslimit adjusts the Resistance chart
18 #corrlimit adjusts the Corrosion chart
19 hcplimit <- c(-800,100)
20 reslimit <- c(0,100)
21 corrlimit <- c(0,300)
22
23 #Set the colours that the charts will use
24 #For a list of supported colours, see
25 # http://sape.inf.usi.ch/quick-reference/ggplot2/colour
26 lowcol <- "red"
27 highcol <- "steelblue2"
```

bw

“bw” is the bin width setting for the contours, the lower this number the more contour lines appear on each chart. Values should be a positive whole number greater than zero:

e.g.

```
bw <- 50
bw <- 100
bw <- 8
```

hcplimit, reslimit and corrlimit

“hcplimit”, “reslimit” and “corrlimit” are the lower and upper bound of the colour scale of the corresponding chart. These values should be changed by the user to correctly represent their data, then left consistent while creating graphs for all files from one exposure region of a project.

Change only the values inside the brackets, leaving two numbers separated by a comma. The first number must be lower than the second number.

These default values should be changed for your data, the defaults are not chosen based upon any formal data interpretation method. Half Cell Potential values are commonly negative, the Resistance and Corrosion Rate values are positive numbers and do not need a negative scale region.

e.g.

```
hcplimit <- c(-800,100)
reslimit <- c(0,100)
corrlimit <- c(0,300)
```

```
hcplimit <- c(-500,-100)
reslimit <- c(0,50)
corrlimit <- c(0,500)
```

```
hcplimit <- c(-1050,-500)
reslimit <- c(0,70)
corrlimit <- c(0,200)
```

lowcol and highcol

“lowcol” and “highcol” define the colour that the charts use for their scale. These are chosen from a standard list of colour names that is summarized at the following website, or a few examples are shown below:

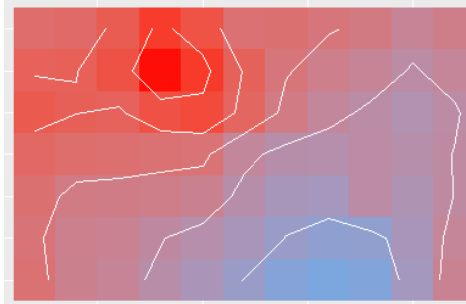
<http://sape.inf.usi.ch/quick-reference/ggplot2/colour>

To vary the chart colour change the colour name to one of your choosing. Each name must have quotation marks before and after.

e.g.

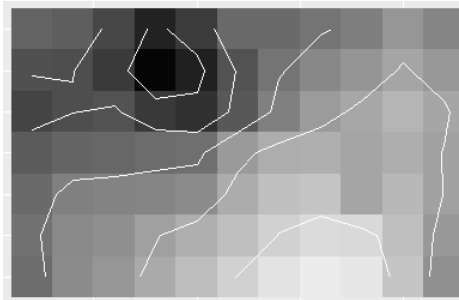
```
lowcol <- "red"
```

```
highcol <- "steelblue2"
```



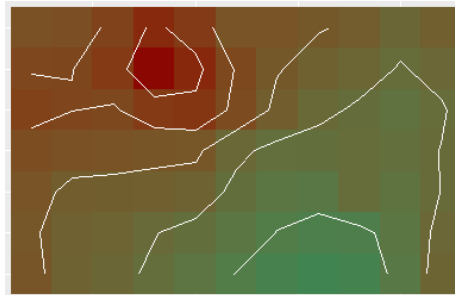
```
lowcol <- "black"
```

```
highcol <- "white"
```



```
lowcol <- "darkred"
```

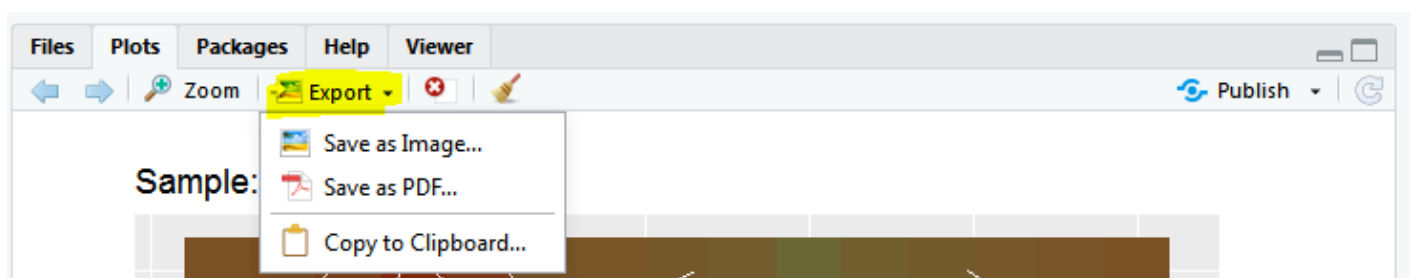
```
highcol <- "seagreen"
```



Export Images

Once you are satisfied with the colour and range of your data you can now export images of each chart.

The “export” button highlighted below will present you with the option to export an image file, a .pdf file, or to copy the chart to the computer clipboard. You must use the arrows to navigate to the chart you wish to export.



Choosing “Save as Image...” the export window opens, and you can edit the image format (e.g. .jpg .png), the size of the image in pixels, the folder to save the image to and the file name of the image.

Save Plot as Image

Image format:

Width: Height:

Directory... Maintain aspect ratio

File name:

Sample: Half Cell Potential

Y Position (mm)

X Position (mm)

mV

-100

-200

-300

-400

View plot after saving

Similar options are available for the .pdf export or the clipboard export.