# R4EnvChem Project Template

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## Background

This is an example rmarkdown document you can use to complete the *R4EnvChem* Tutorial. It showcases some important `rmarkdown` features. Assuming you've downloaded the entire *R4EnvChem* project template, and downloaded the packages listed in Section 5, it should work out of the box. Remember, there's the PDF (what you'd hand it/present) and the rmarkdown file (what you use to code and *generate* the PDF); you'll be modifying the latter.

## Task 1: Copying project template

See instructions in Section 5 and download a copy of the *R4EnvChem Project Template* onto your computer.

## Task 2: Installing packages

See instructions in Section 5 and install the following packages if you haven't done so already:

- `tidyverse`
- `rmarkdown`
- `tinytex`

Verify that you have everything installed by opening the `Rmarkdown-example.rmd` file in *RStudio* and knitting it (*knit* button top right, or see Section 4). You should recreate this exact document.

## Task 3: Importing your dataset

In the `rmarkdown` file, modify the following code to import a different ECCC National Airborne Pollution Surveillance (NAPS) dataset from Quercus or one already listed in the `/data` sub-folder:

```
library(tidyverse)

# Pick a different dataset, Toronto is soooooooo passé
airData <- read_csv(file = "data/2018-07-01_60430_Toronto_ON.csv")
head(airData)
```

```
## # A tibble: 6 x 8
##    naps city    p     latitude longitude date.time           pollutant
##   <dbl> <chr>   <chr>    <dbl>     <dbl> <dttm>              <chr>
## 1 60430 Toronto ON        43.7     -79.5 2018-07-01 00:00:00 O3
## 2 60430 Toronto ON        43.7     -79.5 2018-07-01 00:00:00 NO2
## 3 60430 Toronto ON        43.7     -79.5 2018-07-01 00:00:00 SO2
## 4 60430 Toronto ON        43.7     -79.5 2018-07-01 01:00:00 O3
## 5 60430 Toronto ON        43.7     -79.5 2018-07-01 01:00:00 NO2
## 6 60430 Toronto ON        43.7     -79.5 2018-07-01 01:00:00 SO2
## # ... with 1 more variable: concentration <dbl>
```

## Task 4: Images

Download an image of your chosen city to the `/images` sub-folder. Then modify the `rmarkdown` file to display it (your image should reflect the city from your dataset):

Figure 1: Glorious downtown Toronto in the summertime.

## Task 5: Visualizations

Modify the `rmarkdown` file to generate a plot of your data. *Remember* to change the plot title and figure caption to reflect your new dataset.

```
ggplot(data = airData,
       aes(x = date.time,
           y = concentration,
           colour = pollutant)) +
  geom_line() +
  labs(title = "Toronto 60430 Air Quality")
```

## Task 6: Visualuzations 2: Redux

Using the same data from Task 5: Visualizations create a new plot to visualization a different aspect of your data.

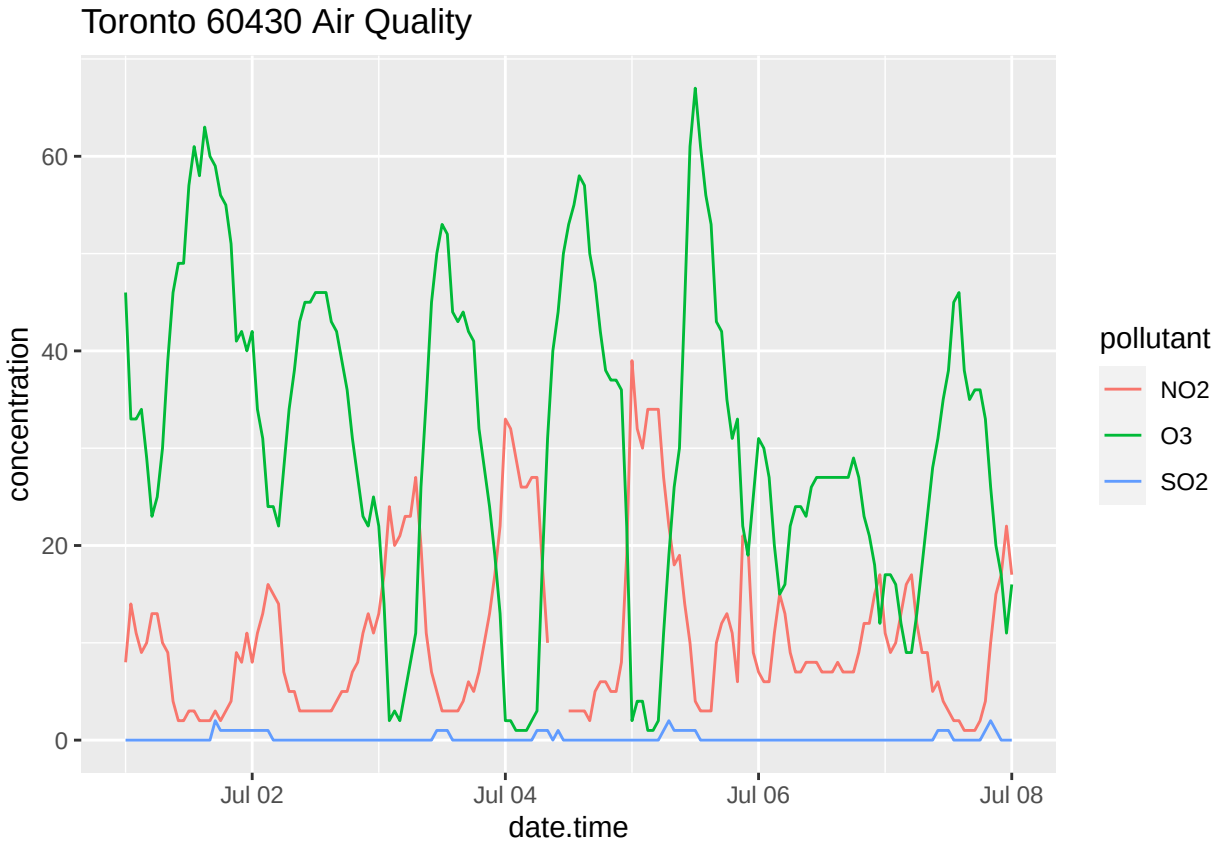


Figure 2: Time series plot of ambiant airborn pollutant concentrations measured by downtown Toronto NAPS station 60430

```
# Try and make another type of visualization with your data (i.e. box plot, violin plot)
# or enhance the default geom_line plot (i.e. marginal histograms, aesthetic changes)
```