# Assignment 2 - Almond Yield

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```
# read in the clim data
clim_original <- read_delim(here("data", "clim_original.txt"), delim = " ")
```

```
## Warning: One or more parsing issues, see ‘problems()‘ for details
```

```
## Rows: 7920 Columns: 9
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: " "
## chr  (1): wyd
## dbl  (7): D, month, year, wy, tmax_c, tmin_c, precip
## date (1): day
```

```
##
## i Use ‘spec()‘ to retrieve the full column specification for this data.
## i Specify the column types or set ‘show_col_types = FALSE‘ to quiet this message.
```

```
clim <- read_delim(here("data", "clim.txt"), delim = " ")
```

```
## Rows: 7920 Columns: 10
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: " "
## dbl  (9): N, day, month, year, wy, tmax_c, tmin_c, precip, wyd
## date (1): date
```

```
##
## i Use ‘spec()‘ to retrieve the full column specification for this data.
## i Specify the column types or set ‘show_col_types = FALSE‘ to quiet this message.
```

```
# wrangle the data to find monthly averages of min temp and precipitation for February
clim_jan_feb <- clim %>%
  filter(month %in% c(1, 2)) %>%
  group_by(year, month) %>%
  summarize(avg_tmin = mean(tmin_c, na.rm = TRUE),
            avg_precip = mean(precip, na.rm = TRUE))
```

```
## ‘summarise()‘ has grouped output by 'year'. You can override using the ‘.groups‘ argument.
```

```
yield_anomalies <- almond_yield(clim)
```

```
## Warning in almond_yield(clim): year '1988' lacks sufficient data to calculate
## yield anomaly
```

```
yield_anomalies %>% kable()
```

| year | yield |
|---|---|
| 1988 | NA |
| 1989 | -0.3552237 |
| 1990 | 9.2906757 |
| 1991 | 68.9130633 |
| 1992 | 15.4280698 |
| 1993 | 20.2083803 |
| 1994 | 2.4820009 |
| 1995 | 1919.9811511 |
| 1996 | 3.5818399 |
| 1997 | 329.6938750 |
| 1998 | 27.8636956 |
| 1999 | -0.1436364 |
| 2000 | 9.5999883 |
| 2001 | 159.5119587 |
| 2002 | 0.2450914 |
| 2003 | -0.2585997 |
| 2004 | -0.2367722 |
| 2005 | 656.3724121 |
| 2006 | 18.6324135 |
| 2007 | 20.2007396 |
| 2008 | 576.2821943 |
| 2009 | 0.7367438 |
| 2010 | 153.7655092 |

```
yield_plot <- ggplot(yield_anomalies, aes(x = year, y = yield)) +
  geom_line() +
  labs(title = "Annual almond yield anomalies", y = "Yield (tons/acre)", x = "Year") +
  theme_minimal() +
  theme(plot.title = element_text(hjust = 0.5))
```

```
sum_precip <- clim %>%
  filter(month == 1) %>%
  group_by(year, month) %>%
  summarize(sum_precip = sum(precip))
```

```
## `summarise()` has grouped output by 'year'. You can override using the `.groups` argument.
```

```
mean_min_temp <- clim %>%
  filter(month == 2) %>%
  group_by(year, month) %>%
  summarize(mean_min_temp = mean(tmin_c))
```

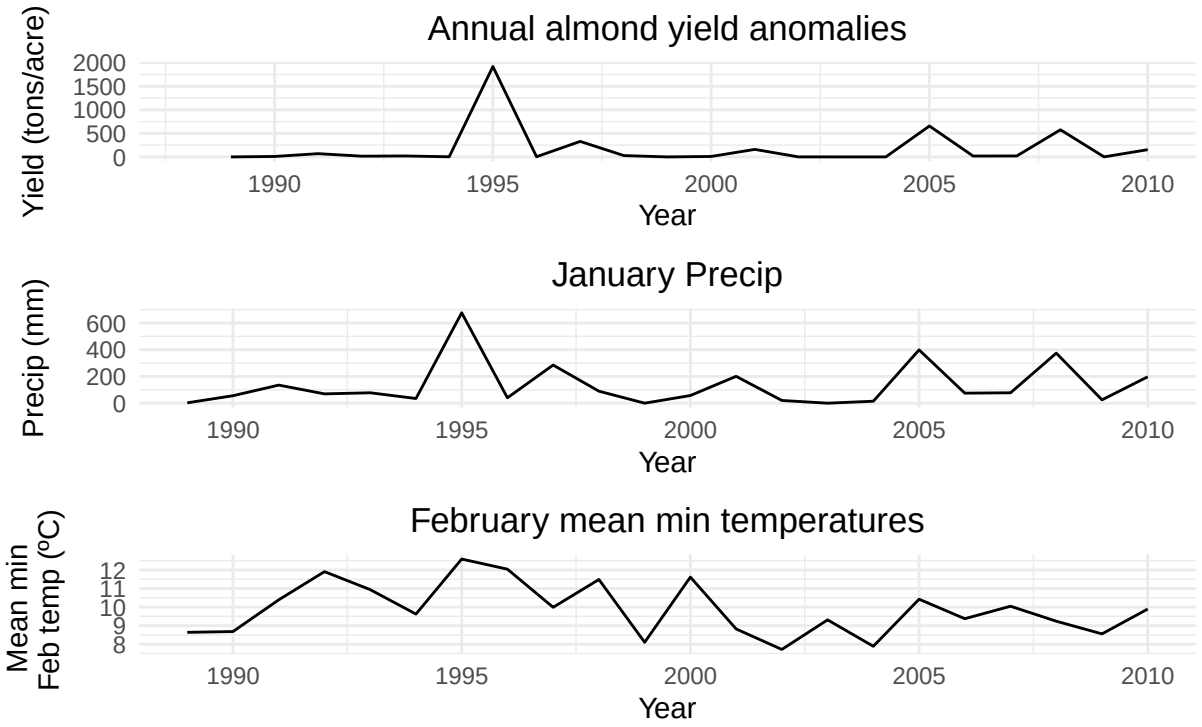
```
## `summarise()` has grouped output by 'year'. You can override using the `.groups` argument.
```

```
precip_plot <- ggplot(sum_precip, aes(x = year, y = sum_precip)) +
  geom_line() +
  labs(title = "January Precip", y = "Precip (mm)", x = "Year") +
  theme_minimal() +
  theme(plot.title = element_text(hjust = 0.5))

temp_plot <- ggplot(mean_min_temp, aes(x = year, y = mean_min_temp)) +
  geom_line() +
  labs(title = "February mean min temperatures", y = "Mean min \n Feb temp (ºC)", x = "Year") +
  theme_minimal() +
  theme(plot.title = element_text(hjust = 0.5))
```

```
yield_plot / precip_plot / temp_plot
```

```
## Warning: Removed 1 row(s) containing missing values (geom_path).
```




```
# graph
```