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.
```

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

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

```
yield_anomalies %>% knitr::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", tag = "a") +
  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))
```

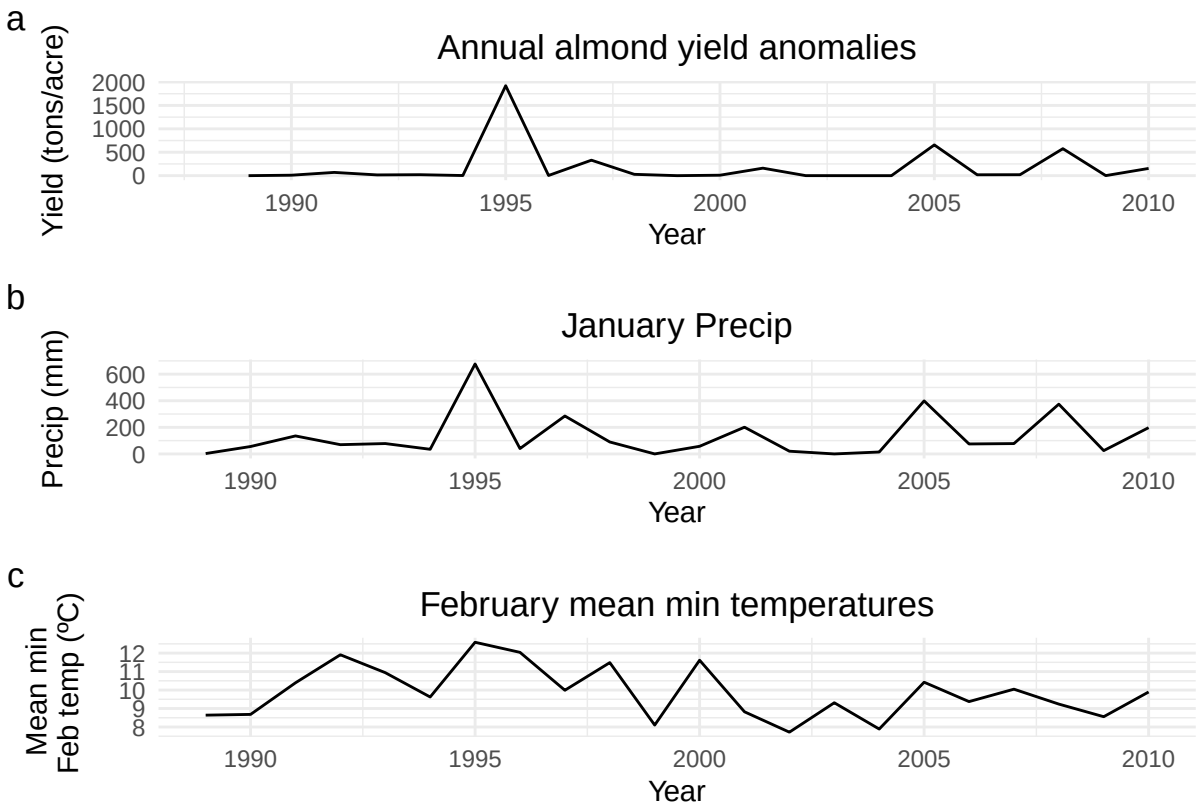
```
## `summarise()` has grouped output by 'year'. You can override using the `.groups` argument.
```

```
precip_plot <- ggplot(sum_precip, aes(x = year, y = sum_precip)) +
  geom_line() +
  labs(title = "January Precip", y = "Precip (mm)", x = "Year", tag = "b") +
  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", tag = "c")
  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).
```



Plot (a) shows estimated annual almond yield anomaly based on temperature and precipitation data. Plot (b) shows summed precipitation in January of each year. Plot (c) shows mean minimum daily temperatures in February of each year.