Stream temperatures

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```
library(tidyverse)
library(lubridate)
knitr::opts_chunk$set(fig.height = 3)
```

Explore stream temperatures for the sites:

- GSWS01 Andrews Lookout Creek Gaging Station
- GSMACK Andrews Mack Creek Gaging Station
- GSWS01 Andrews Watershed 1 Gaging Station

Data Import

```
streams <- read_csv("data/HT00441_v8.csv")
names(streams) <- tolower(names(streams))
```

GSLOOK

Get site data:

```
gslook <- streams %>%
  filter(sitecode == "GSLOOK")
```

Filter for quality and time period:

```
gslook <- gslook %>%
  filter(year(date) > 2000, year(date) < 2020) %>%
  mutate(
    watertemp_mean_day = ifelse(watertemp_mean_flag != "A",
      NA, watertemp_mean_day)) %>%
  select(sitecode, date, watertemp_mean_day, watertemp_method)
```

Checks on data quality/coverage:

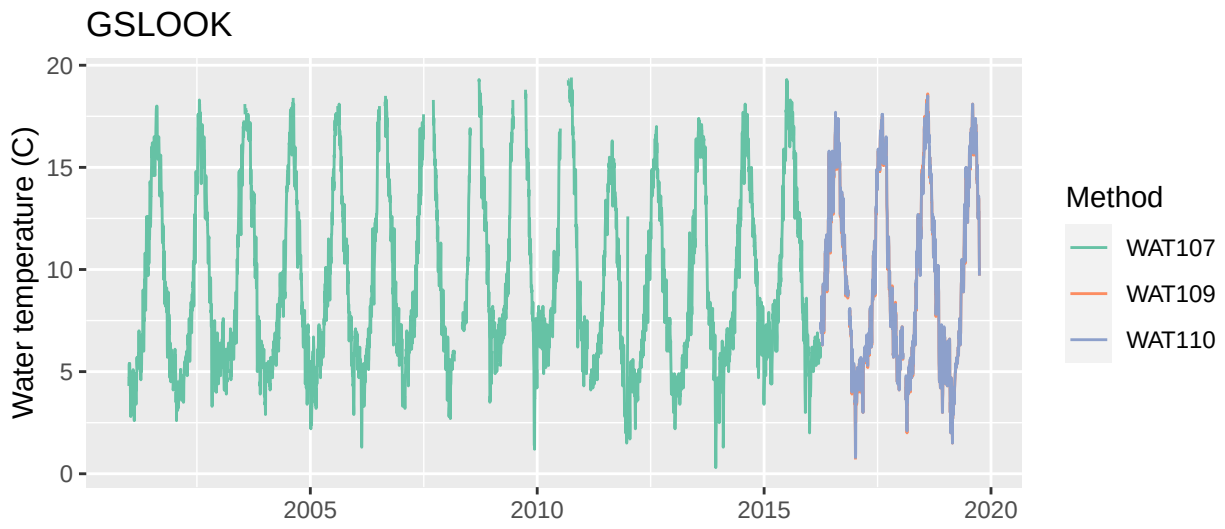
```
gslook %>%
  summarise(
    n_obs = n(),
    n_days = n_distinct(date),
    n_missing = sum(is.na(watertemp_mean_day))
  )
```

```
## # A tibble: 1 x 3
##   n_obs n_days n_missing
##   <int>  <int>     <int>
## 1  8120   6841       543
```

Plot site stream temperature over time:

```
gslook %>%
  ggplot(aes(date, watertemp_mean_day)) +
  geom_line(aes(color = watertemp_method)) +
  scale_color_brewer("Method", palette = "Set2") +
  labs(x = "", y = "Water temperature (C)",
    title = "GSLOOK")
```

```
## Warning: Removed 5 row(s) containing missing values (geom_path).
```



GSMACK

Get site data:

```
gsmack <- streams %>%
  filter(sitecode == "GSMACK")
```

Filter for quality and time period:

```
gsmack <- gsmack %>%
  filter(year(date) > 2000, year(date) < 2020) %>%
  mutate(
    watertemp_mean_day = ifelse(watertemp_mean_flag != "A",
      NA, watertemp_mean_day)) %>%
  select(sitecode, date, watertemp_mean_day, watertemp_method)
```

Checks on data quality/coverage:

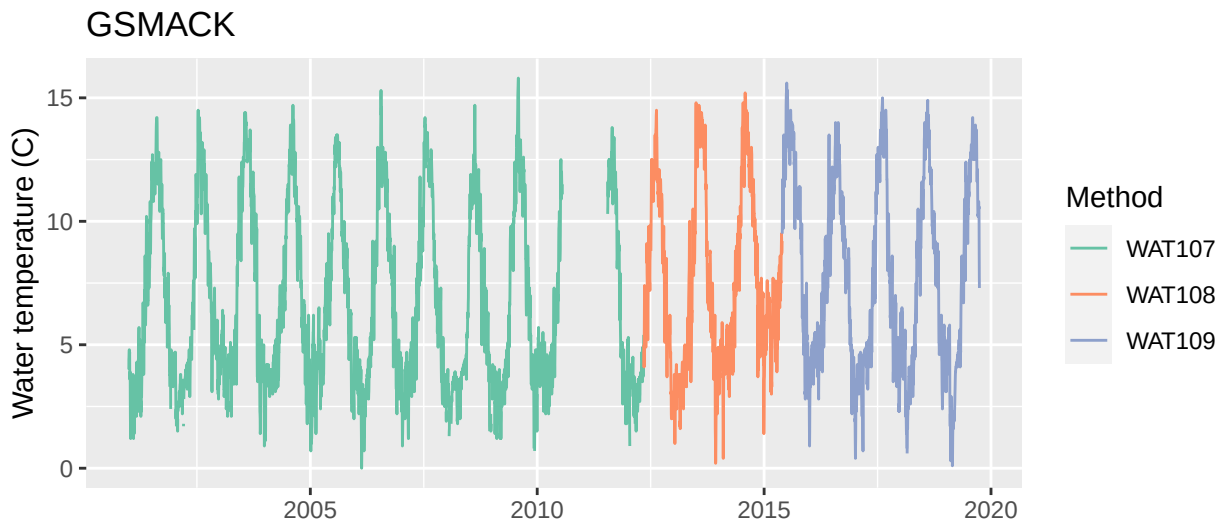
```
gsmack %>%
  summarise(
    n_obs = n(),
    n_days = n_distinct(date),
    n_missing = sum(is.na(watertemp_mean_day))
  )
```

```
## # A tibble: 1 x 3
##   n_obs n_days n_missing
##   <int>  <int>     <int>
## 1  6847   6847       428
```

Plot site stream temperature over time:

```
gsmack %>%
  ggplot(aes(date, watertemp_mean_day)) +
  geom_line(aes(color = watertemp_method)) +
  scale_color_brewer("Method", palette = "Set2") +
  labs(x = "", y = "Water temperature (C)",
    title = "GSMACK")
```

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



GSWS01

Get site data:

```
gsws01 <- streams %>%
  filter(sitecode == "GSWS01")
```

Filter for quality and time period:

```
gsws01 <- gsws01 %>%
  filter(year(date) > 2000, year(date) < 2020) %>%
  mutate(
    watertemp_mean_day = ifelse(watertemp_mean_flag != "A",
      NA, watertemp_mean_day)) %>%
  select(sitecode, date, watertemp_mean_day, watertemp_method)
```

Checks on data quality/coverage:

```
gsws01 %>%
  summarise(
    n_obs = n(),
    n_days = n_distinct(date),
    n_missing = sum(is.na(watertemp_mean_day))
  )
```

```
## # A tibble: 1 x 3
##   n_obs n_days n_missing
##   <int>  <int>     <int>
## 1  6847   6847       223
```

Plot site stream temperature over time:

```
gsws01 %>%
  ggplot(aes(date, watertemp_mean_day)) +
  geom_line(aes(color = watertemp_method)) +
  scale_color_brewer("Method", palette = "Set2") +
  labs(x = "", y = "Water temperature (C)",
    title = "GSWS01")
```

```
## Warning: Removed 2 row(s) containing missing values (geom_path).
```