New Dust and Copies

This code is useful for looking at variations of daily dust trends. For example, when running statistical analysis, it may be best to look at dust concentration at a specific hour, or the sum per day, or the average. We will be working with a sum that is 24hr prior to sample collection. This utilizes a data set that has the variations of dust trends

Intro

Libs

```
library(here)
```

```
here() starts at /Users/nathangreenslit/Desktop/UGA/Lipp Lab/_TX_DUST_
```

```
library(tidyverse)
```

```
-- Attaching packages --------------------------------------- tidyverse 1.3.2
--

v ggplot2 3.4.0      v purrr   1.0.1
v tibble  3.1.8      v dplyr   1.0.10
v tidyr   1.3.0      v stringr 1.5.0
v readr   2.1.3      v forcats 0.5.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
```

```
  library(lubridate)
```

```
Attaching package: 'lubridate'

The following objects are masked from 'package:base':

    date, intersect, setdiff, union
```

```
  library(kableExtra)
```

```
Attaching package: 'kableExtra'

The following object is masked from 'package:dplyr':

    group_rows
```

Data

```
  dust<- read_csv(here("data", "processed_data", "dust","dust_master.csv"))
```

```
Rows: 32 Columns: 9
-- Column specification --------------------------------------------------------
Delimiter: ","
dbl  (8): t1, t7, t13, t19, tsum, tavg, t7sum, t7avg
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.
```

```
  dust_all<- read_csv(here("data", "processed_data","tx_master.csv"))
```

```
New names:
Rows: 1464 Columns: 26
-- Column specification
-------------------------------------------------------- Delimiter: "," chr
```

```
(3): hr_cst, site, Type dbl (22): ...1, Dust, SUM, copies_mL, chl, sal, temp,
do_mgl, do_per, pH, s... 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.
* `` -> `...1`
```

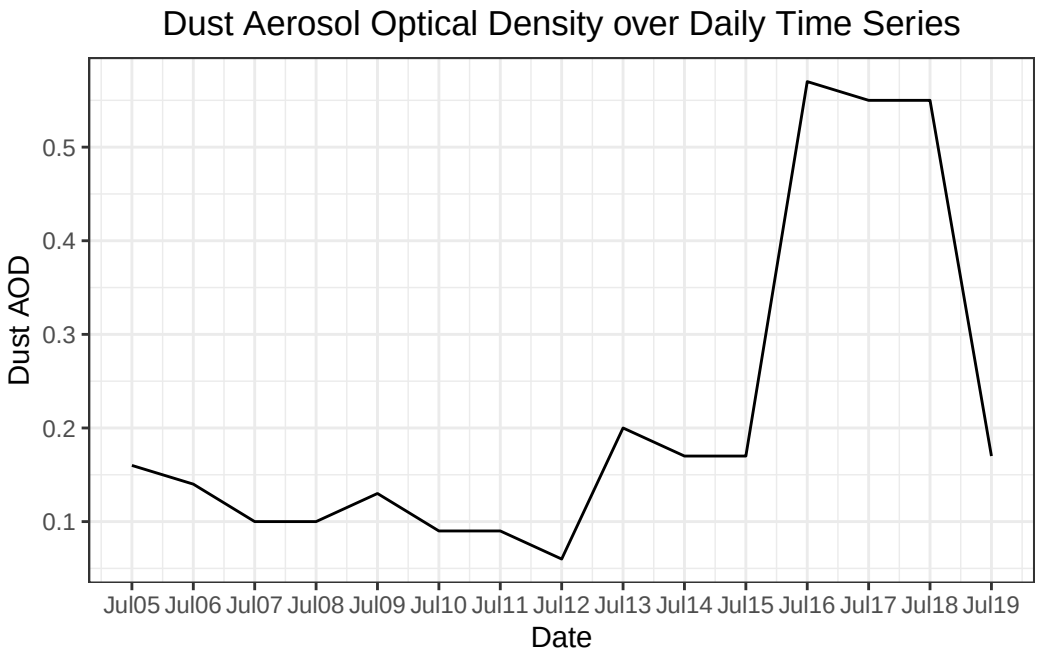
There are a few columns that we do not need or that contain NaN. So let's remove those.

Clean

```
dust<- dust %>%
  filter(between(date,as.Date('2022-07-05'), as.Date('2022-07-19')))

dust_all<- dust_all %>%
  select(date, hr_cst, Dust) %>%
  filter(between(date, as.Date('2022-07-07'), as.Date('2022-07-19')))

dust_all<- dust_all %>%
  mutate(ymdh = paste(dust_all$date, dust_all$hr_cst, sep = "-")) #Combines Hour and Date

dust_all<- dust_all %>% #Set as YMDH
  mutate(ymdh = ymd_h(dust_all$ymdh))
```

Plot T7sum

```
dust %>% ggplot()+ geom_line(
  aes(x = date,
      y = t7sum))+
  labs(title = "Dust Aerosol Optical Density over Daily Time Series",
       x = "Date",
       y = "Dust AOD")+
  theme_bw()+
  scale_x_date(date_breaks = "1 day", date_labels = "%b%d") +
  theme(plot.title = element_text(hjust = 0.5))
```




```
ggsave(here("results", "plots", "dust_daily.png"))
```

```
Saving 5.5 x 3.5 in image
```

Make Pretty Dust Table

```
dust_tbl<-
  dust %>%
  select(t1,t7,t13,t19,t7sum,date) %>%
  rename("1:00" = "t1",
         "7:00" = "t7",
         "13:00" = "t13",
         "19:00"= "t19",
         "Dust" = "t7sum",
         "Date" = "date")

dust_tbl<-
  kable(dust_tbl[,c(6,1:5)])
dust_tbl
```

Date	1:00	7:00	13:00	19:00	Dust
2022-07-05	0.04	0.04	0.04	0.04	0.16
2022-07-06	0.03	0.03	0.03	0.03	0.14
2022-07-07	0.02	0.02	0.02	0.02	0.10
2022-07-08	0.03	0.03	0.03	0.03	0.10
2022-07-09	0.03	0.04	0.03	0.02	0.13
2022-07-10	0.02	0.02	0.03	0.02	0.09
2022-07-11	0.02	0.02	0.02	0.02	0.09
2022-07-12	0.01	0.01	0.05	0.04	0.06
2022-07-13	0.05	0.06	0.05	0.04	0.20
2022-07-14	0.04	0.04	0.04	0.04	0.17
2022-07-15	0.04	0.05	0.08	0.14	0.17
2022-07-16	0.17	0.18	0.12	0.14	0.57
2022-07-17	0.14	0.15	0.17	0.15	0.55
2022-07-18	0.13	0.10	0.05	0.04	0.55
2022-07-19	0.04	0.04	0.05	0.05	0.17