GSOC 2024: Tests for the glyph map project

```
library(tidyverse) # data manipulation
```

```
Warning: package 'ggplot2' was built under R version 4.3.1
```

```
Warning: package 'tidyr' was built under R version 4.3.1
```

```
Warning: package 'readr' was built under R version 4.3.1
```

```
Warning: package 'dplyr' was built under R version 4.3.1
```

```
Warning: package 'stringr' was built under R version 4.3.1
```

```
Warning: package 'lubridate' was built under R version 4.3.1
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.4.4     v tibble    3.2.1
v lubridate 1.9.3     v tidyr     1.3.1
v purrr     1.0.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becor
```

```
library(cubble) # glyph
```

```
Attaching package: 'cubble'

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

    filter
```

```
library(sf) # spatial
```

```
Warning: package 'sf' was built under R version 4.3.1

Linking to GEOS 3.11.0, GDAL 3.5.3, PROJ 9.1.0; sf_use_s2() is TRUE
```

EASY

```
print_p <- GGally::print_if_interactive
```

```
Registered S3 method overwritten by 'GGally':
  method from
  +.gg   ggplot2
```

```
p <- ggplot(data = GGally::nasa,
       aes(x_major = long, x_minor = day,
           y_major = lat, y_minor = surftemp)) +
  geom_glyph_box() +
  geom_glyph_line() +
  geom_glyph() +
  theme_bw()
print_p(p)

# rescale on each individual glyph ---------------
p <- ggplot(data = GGally::nasa,
       aes(x_major = long, x_minor = day,
           y_major = lat, y_minor = surftemp)) +
  geom_glyph(global_rescale = FALSE)
print_p(p)

# adjust width and height with relative & absolute value ---------------
```

```
p <- ggplot() +
  geom_glyph(data = GGally::nasa,
             aes(x_major = long, x_minor = day,
                 y_major = lat, y_minor = surftemp),
                 width = rel(0.8), height = 1) +
   theme_bw()
print_p(p)

# apply a re-scaling on Y and use polar coordinate
p <- GGally::nasa %>%
  ggplot(aes(x_major = long, x_minor = day,
             y_major = lat, y_minor = ozone)) +
    geom_glyph_box(fill=NA) +
    geom_glyph_line() +
    geom_glyph(y_scale = GGally::range01, polar = TRUE)
print_p(p)
```

MEDIUM

I understood this test as creating an example with a glyph on a map strictly based on geoms in the ggplot2 package (i.e., not using the cubble package).

```
# modify the data prepped from https://huizezhang-sherry.github.io/cubble/articles/cb4glyp
tmax <- climate_aus %>%
    rowwise() %>%
    filter(nrow(ts) == 366) %>%
  face_temporal() %>%
  group_by(month = tsibble::yearmonth(date)) %>%
  summarise(tmax = mean(tmax, na.rm = TRUE)) %>%
  unfold(long, lat) %>%
  filter(!is.na(tmax)) %>%
  mutate(tmax_cat = cut(tmax,breaks=c(0,10,20,30,40,50)))


ggplot(data=tmax,
       aes(x_major = long, y_major = lat,
           x_minor = month, y_minor = tmax)) +
  geom_sf(data = ozmaps::abs_ste,
       fill = "grey95", color = "white",
       inherit.aes = FALSE) +
```

```
geom_point(data=tmax,aes(x=long,y=lat,shape=tmax_cat)) +
coord_sf(xlim = c(110, 155)) +
theme_void() +
theme(legend.position = "bottom") +
labs(x = "Longitude", y = "Latitude",shape="maximum temperature")
```