Tidy Tuesday: Meteorites!

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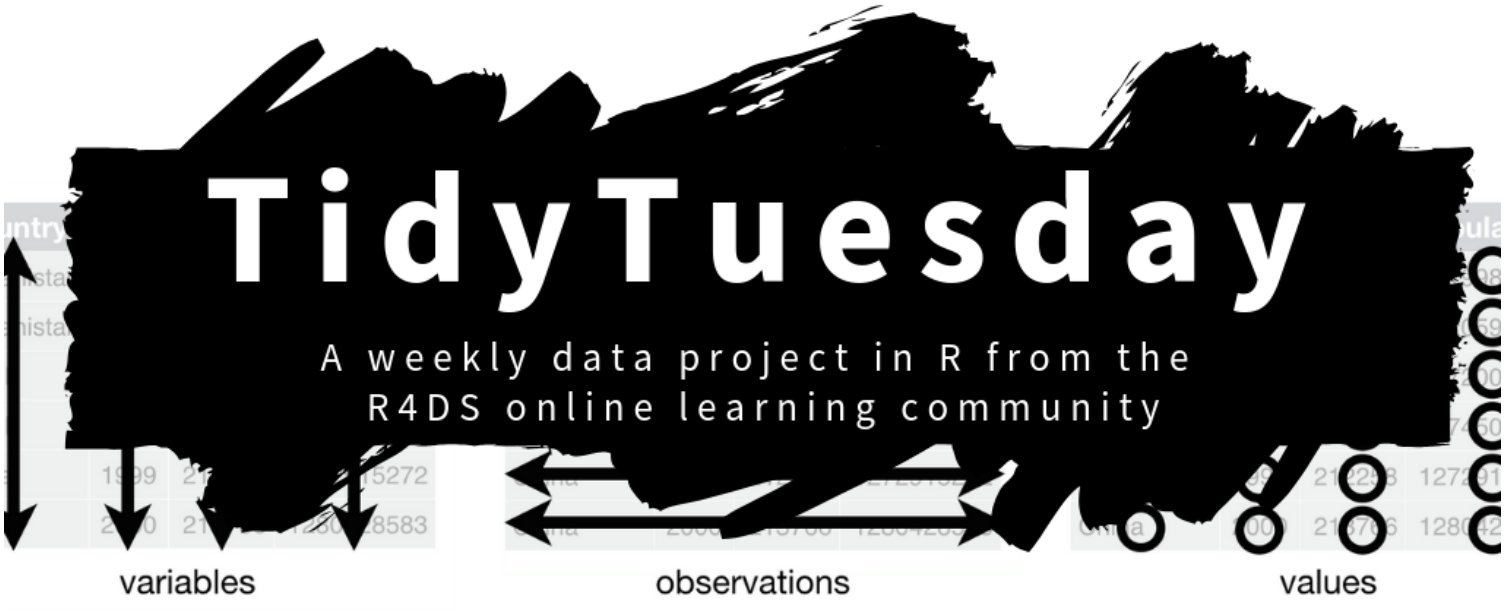
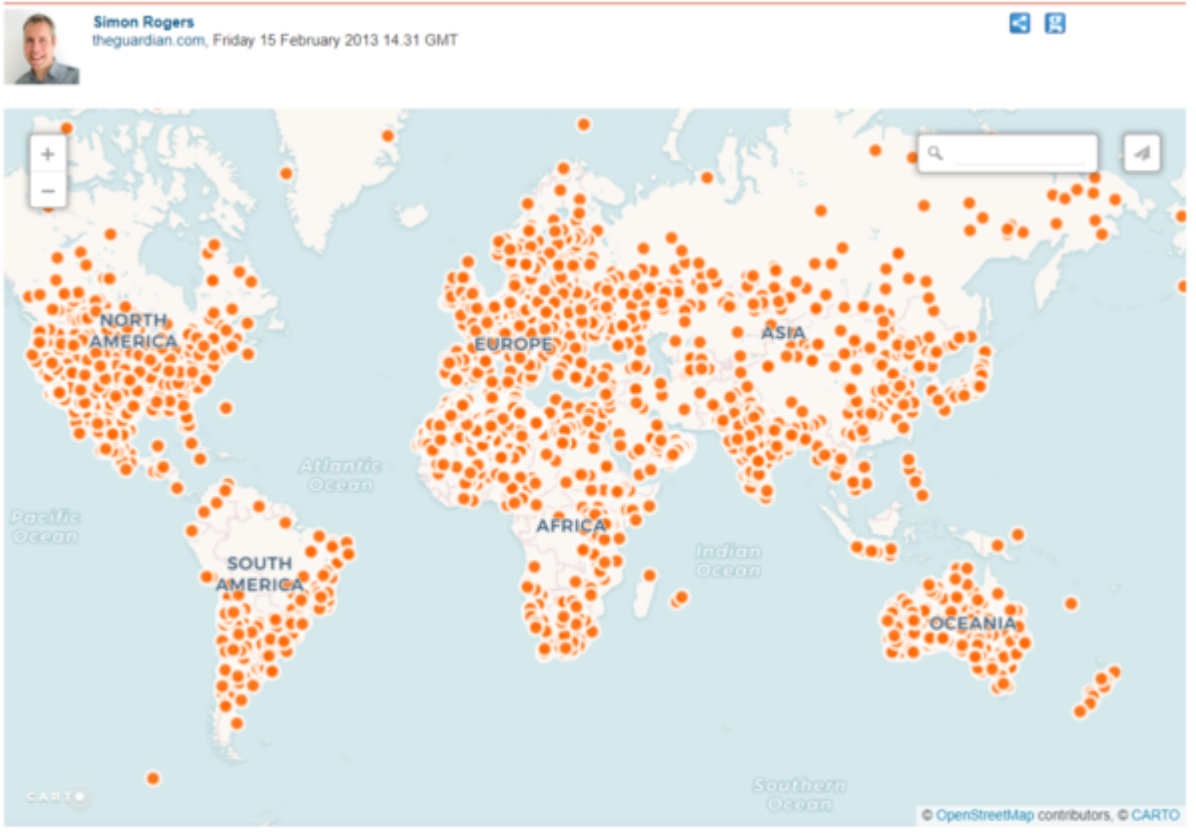
2019-10-28

What is Tidy Tuesday?



https://github.com/rfordatascience/tidytuesday

I want to learn about maps and animation! What about meteorites?



https://www.theguardian.com/news/datablog/interactive/2013/feb/15/meteorite-fall-map

Meteorites data has space and time!

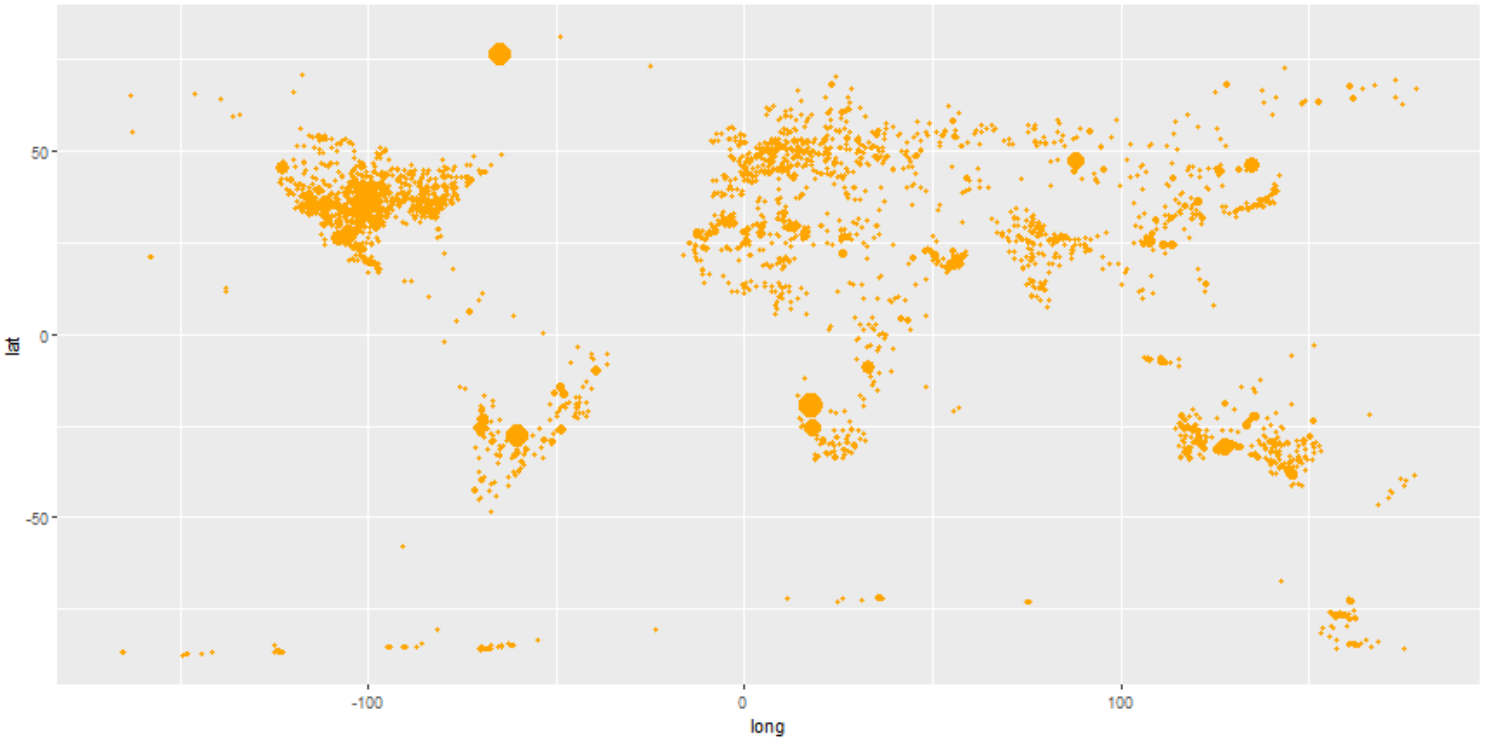
```
library(tidyverse)
library(maps)
library(gganimate)

meteorites <- readr::read_csv("meteorites.csv") %>%
  tidyr::drop_na() %>% dplyr::filter(geolocation != '(0.0, 0.0)')
```

name	id	name_type	class	mass	fall	year	lat	long
Aachen	1	Valid	L5	21	Fell	1880	50.77500	6.08333
Aarhus	2	Valid	H6	720	Fell	1951	56.18333	10.23333
Abee	6	Valid	EH4	107000	Fell	1952	54.21667	-113.00000
Acapulco	10	Valid	Acapulcoite	1914	Fell	1976	16.88333	-99.90000
Achiras	370	Valid	L6	780	Fell	1902	-33.16667	-64.95000
Adhi Kot	379	Valid	EH4	4239	Fell	1919	32.10000	71.80000

https://raw.githubusercontent.com/rfordatascience/tidytuesday/master/data/2019/2019-06-11/meteorites.csv

Start with good old ggplot

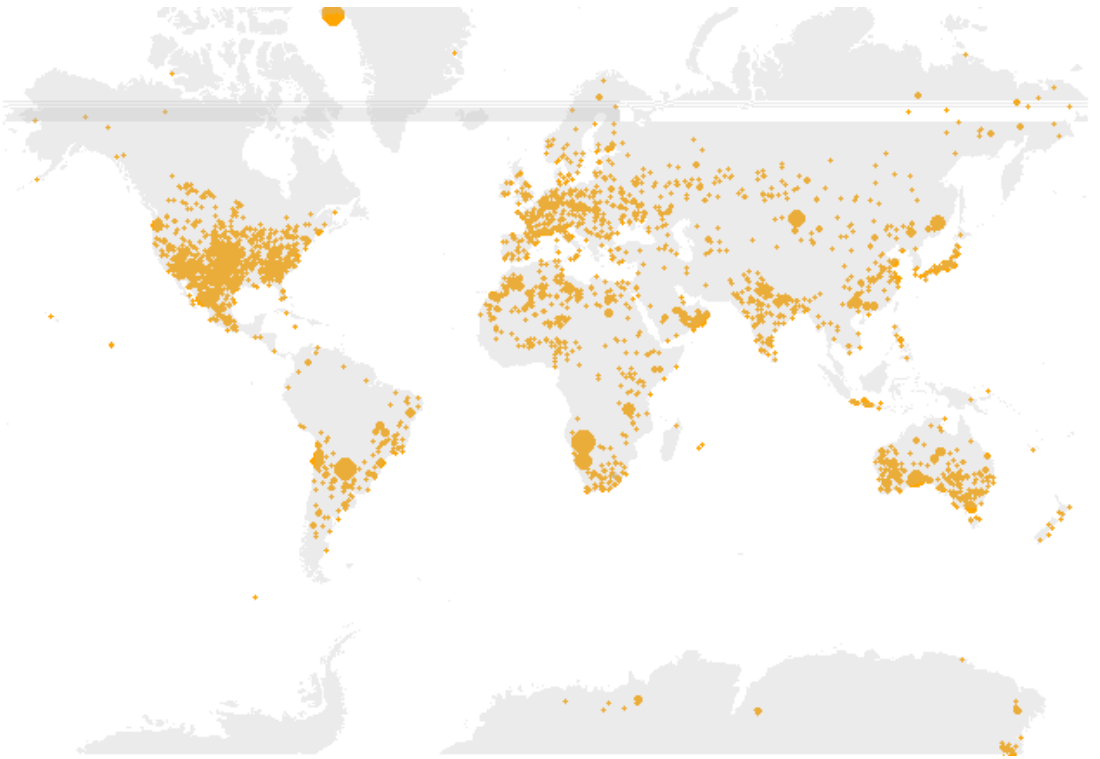
```
points <- ggplot() + geom_point(data = meteorites,
  aes(x = long, y = lat, size = mass), color = 'orange', show.legend = F)
```



First map! ... not exactly right?!

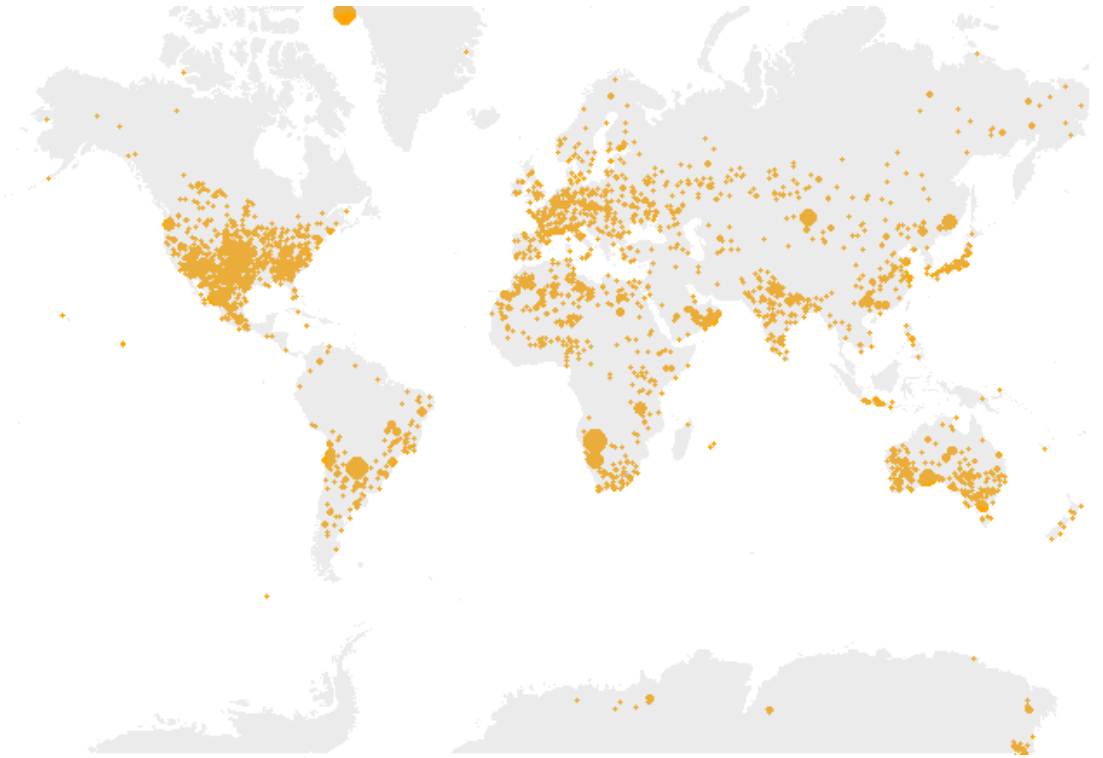
https://ggplot2.tidyverse.org/reference/map_data.html

```
points_on_map  <- points + geom_polygon(data = map_data("world"),
  aes(x=long, y=lat, group=group),
  fill="grey", alpha=0.3) + coord_map() + theme_void()
```



..but simple fix to xlim will do :)

```
points_on_map  <- points + geom_polygon(data = map_data("world"),
  aes(x=long, y=lat, group=group),
  fill="grey", alpha=0.3) + coord_map(xlim = c(-180, 180)) + theme_void()
```



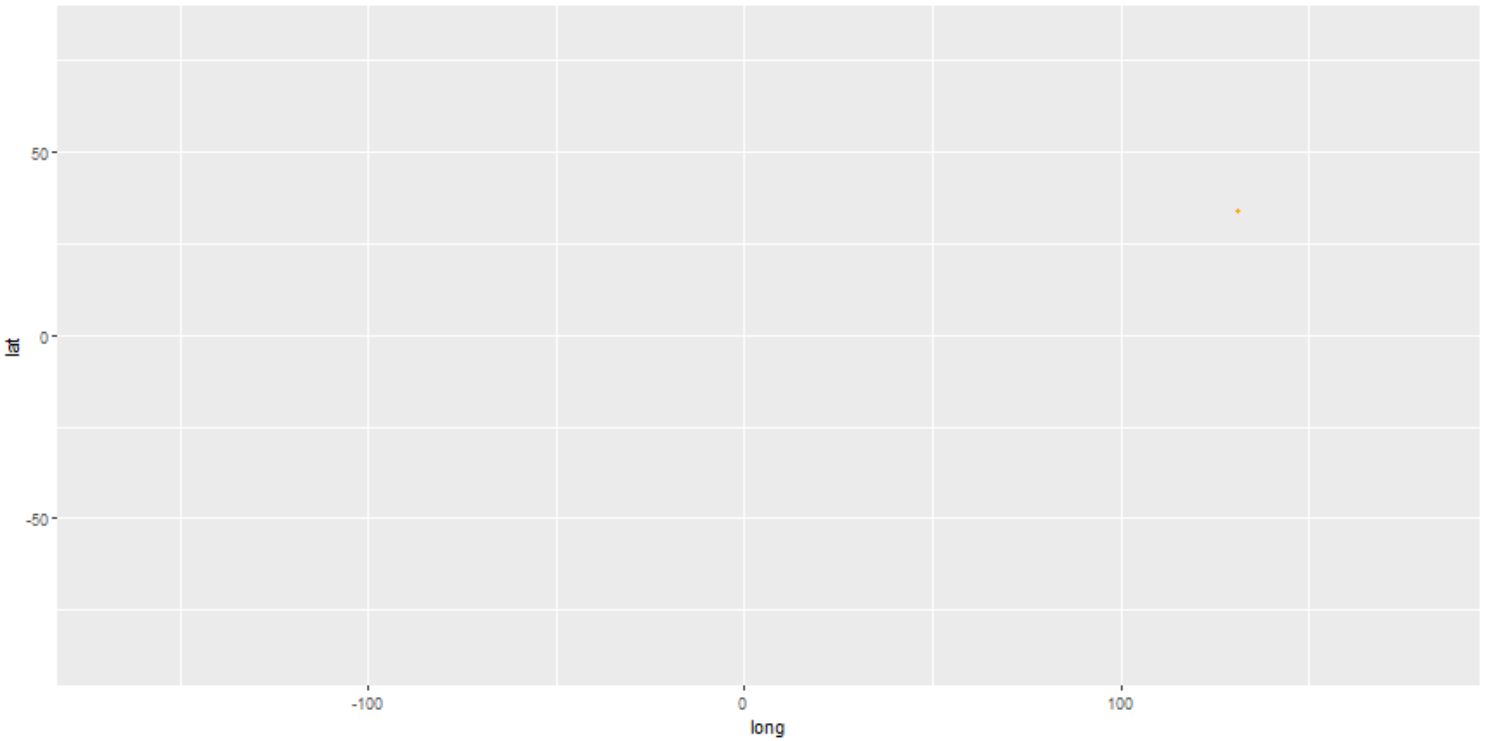
https://github.com/tidyverse/ggplot2/issues/1104

Animate!

https://gganimate.com/

My first animation!

```
meteorites_animation <- points +
  transition_time(year) +
  shadow_mark(past = TRUE, future = FALSE)
```



..but why are the points moving around like that?

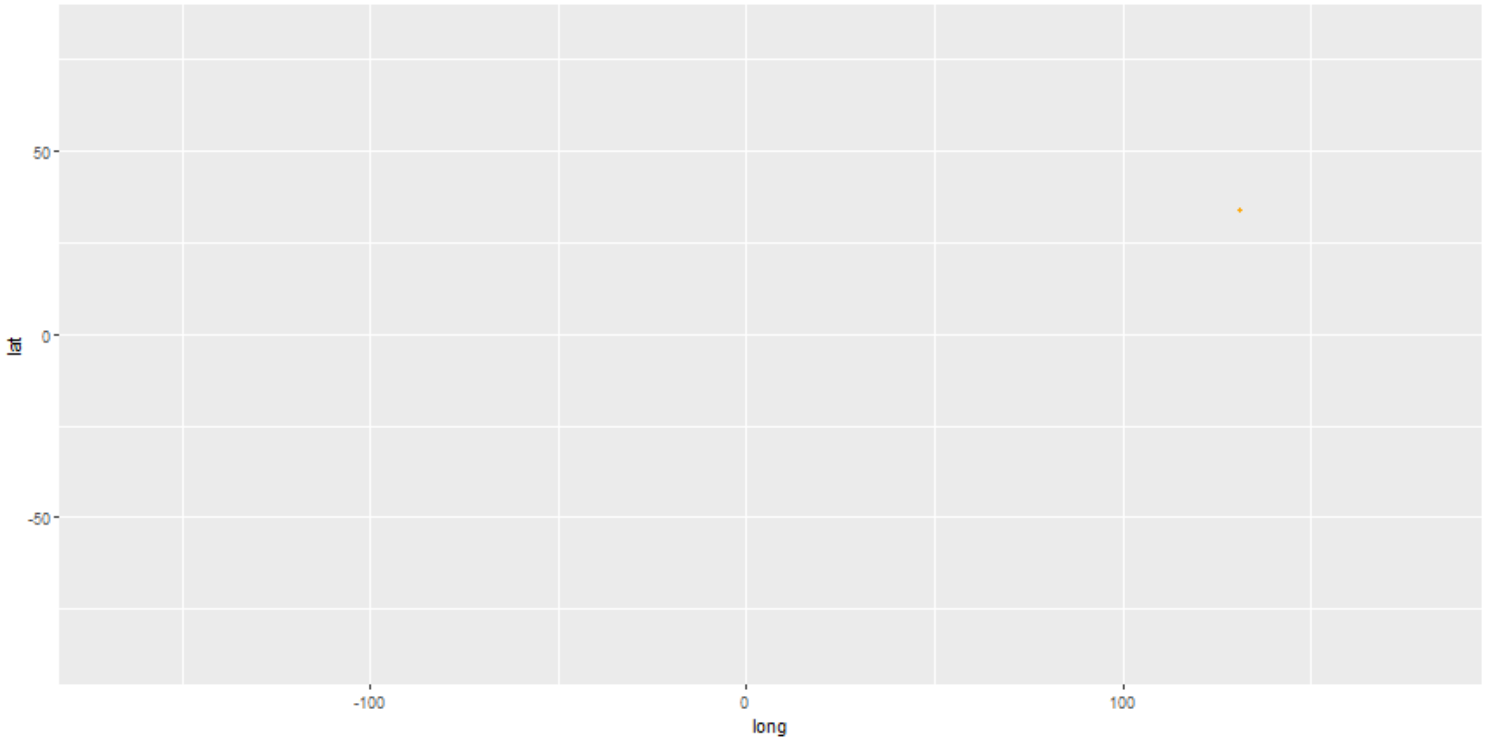
aes(group = year) makes sure we don't animate between years!

> The group aesthetic defines how the data in a layer is matched across the animation. https://gganimate.com/

```
points <- ggplot() + geom_point(data = meteorites,
  aes(x = long, y = lat, size = mass, group = year),
  color = 'orange', show.legend = F)
```

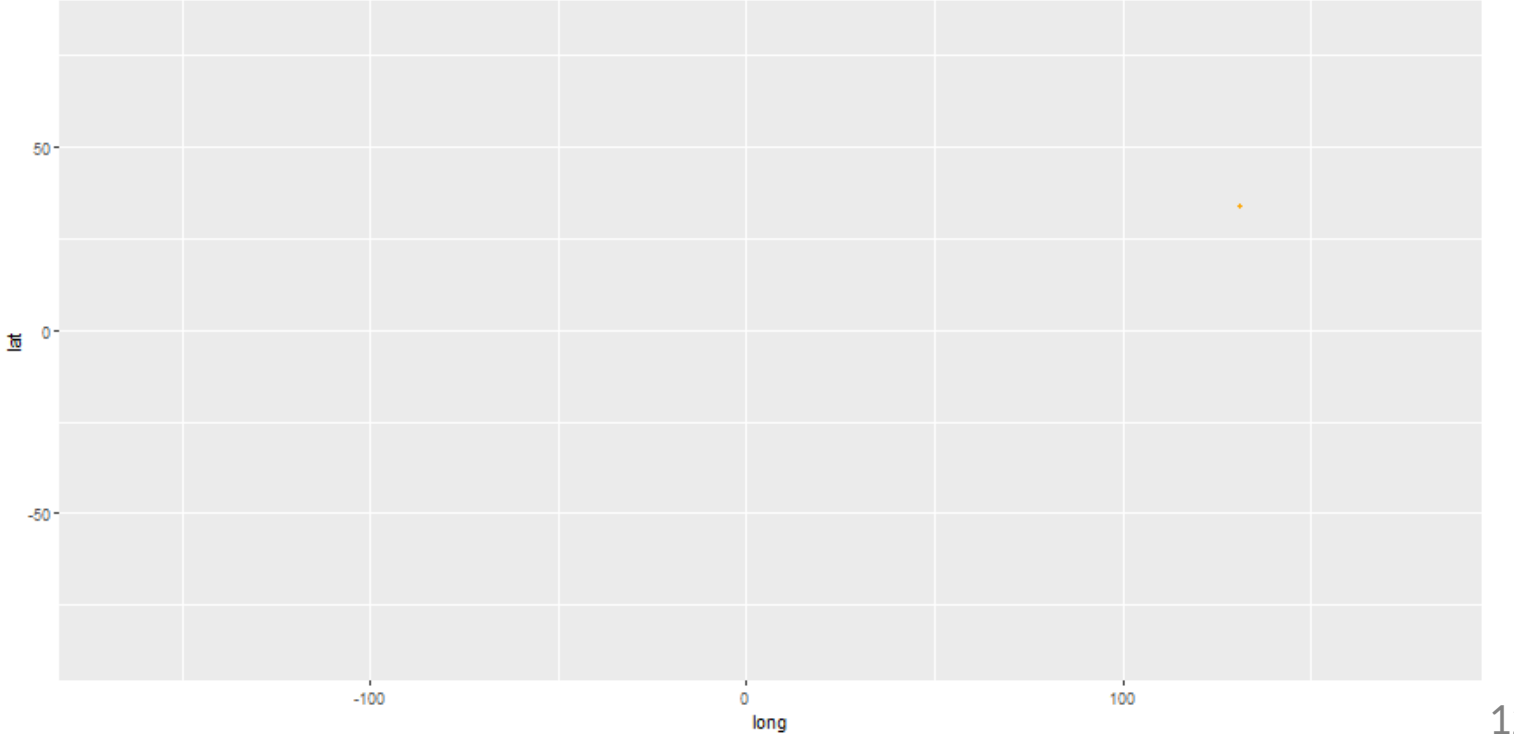
aes(group = year) makes sure we don't animate between years!

```
meteorites_animation <- points +
  transition_time(year) +
  shadow_mark(past = TRUE, future = FALSE)
```



Focus the animation to the years that matter!

```
meteorites_animation <- points +
  transition_time(year, range = c(1300, 2013)) +
  shadow_mark(past = TRUE, future = FALSE)
```



Map + Animation = <3

```
# Remember to re-run points_on_map code after adding the group (hidden)
meteorites_animation <- points_on_map +
  transition_time(year, range = c(1300, 2013)) +
  shadow_mark(past = TRUE, future = FALSE)
```


..but it does take several minutes to render

Reduce render time using nframes and voila!

```
animate(meteorites_animation, nframes = 40, end_pause = 10, duration = 10)
```

Please come back 3rd of Desember!

https://www.meetup.com/rladies-oslo/events/264701504/