Exploratory Data Analysis for `std-year.csv`

Enqun Wang (EW)

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Setup

```
# load packages
require(ggmap)
require(ggplot2)
require(RColorBrewer)

# load data
df = read.csv("https://raw.githubusercontent.com/Ewen2015/ChinaMeteorology/master/data/std-year.csv",
              skip = 1, header = F)
```

Cumulative Annual Sunshine Hours

EW: The data are from column 2, 3, and 93 in `std-year.csv`, conresponding to `latitude`, `longtitude`, and `cumulative annual sunshine hours`.

We try to make a contour plot.

```
# preprocess data
sunlight = df[,c(2, 3, 93)]

colnames(sunlight) = c("lat", "lon", "hours")

sunlight$lat = sunlight$lat/100
sunlight$lon = sunlight$lon/100


# Specify a map with center at the center of all the coordinates
mean.longitude <- mean(sunlight$lon)
mean.latitude <- mean(sunlight$lat)

center = c(lon = mean.longitude, lat = mean.latitude)
map = get_map(location = center, zoom = 4, color = "bw")

ggmap(map, extent = "panel", maprange=FALSE) +
  geom_density2d(data = sunlight, aes(x = lon, y = lat)) +
  stat_density2d(data = sunlight, aes(x = lon, y = lat,
                                fill = ..level.., alpha = ..level..),
                 size = 0.01, bins = 16, geom = 'polygon') +
  scale_fill_gradient(low = "green", high = "red") +
  scale_alpha(range = c(0.00, 0.25), guide = FALSE) +
  theme(legend.position = "none", axis.title = element_blank(),
        text = element_text(size = 12))
```

```
## Warning: Removed 21 rows containing non-finite values (stat_density2d).

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```

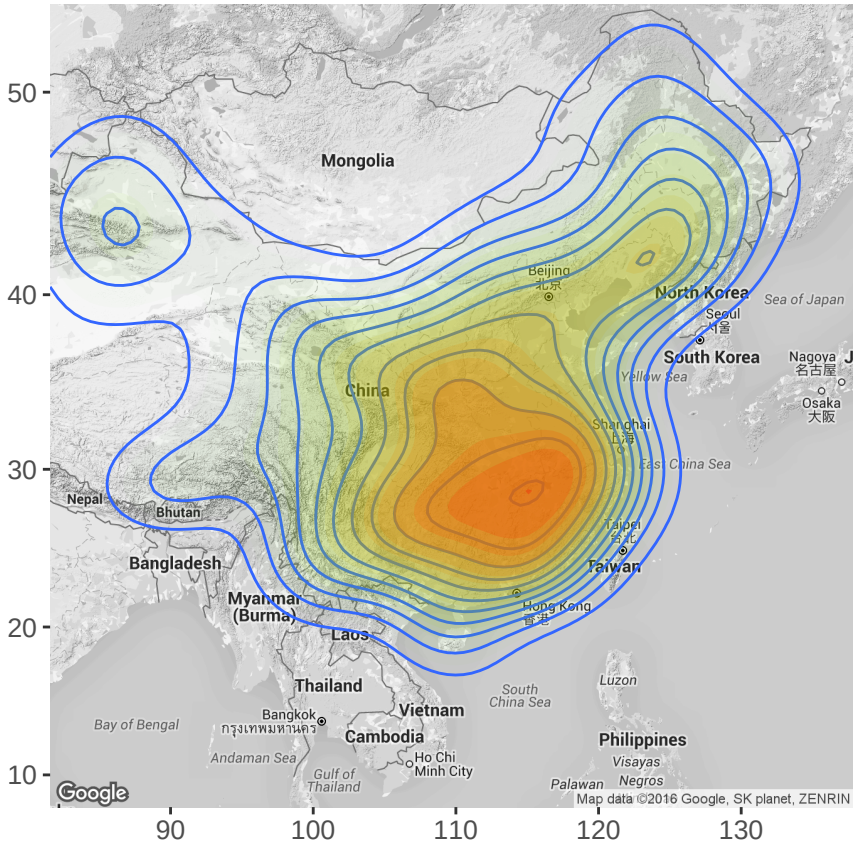
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Mongolia
China
North Korea
South Korea
Beijing
北京
Seoul
서울
Sea of Japan
Yellow Sea
Nagoya
名古屋
Osaka
大阪
Shanghai
上海
East China Sea
Taipei
臺北
Taiwan
Hong Kong
香港
Nepal
Bhutan
Bangladesh
Myanmar
(Burma)
Laos
Thailand
Vietnam
Cambodia
Bangkok
กรุงเทพมหานคร
Bay of Bengal
Andaman Sea
Gulf of
Thailand
Ho Chi
Minh City
South
China Sea
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