

#1

#1.1

```
1 library(sp)
2 library(rgdal)
3 library(sf)
4 library(raster)
5 |
6 wind_Jan <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_01.tif")
7 wind_Feb <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_02.tif")
8 wind_Mar <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_03.tif")
9 wind_Apr <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_04.tif")
10 wind_May <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_05.tif")
11 wind_Jun <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_06.tif")
12 wind_Jul <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_07.tif")
13 wind_Aug <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_08.tif")
14 wind_Sep <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_09.tif")
15 wind_Oct <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_10.tif")
16 wind_Nov <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_11.tif")
17 wind_Dec <- raster("F://R/ESE5023/wind/wc2.1_2.5m_wind_12.tif")
18 prec_Jan <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_01.tif")
19 prec_Feb <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_02.tif")
20 prec_Mar <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_03.tif")
21 prec_Apr <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_04.tif")
22 prec_May <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_05.tif")
23 prec_Jun <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_06.tif")
24 prec_Jul <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_07.tif")
25 prec_Aug <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_08.tif")
26 prec_Sep <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_09.tif")
27 prec_Oct <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_10.tif")
28 prec_Nov <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_11.tif")
29 prec_Dec <- raster("F://R/ESE5023/prec/wc2.1_2.5m_prec_12.tif")
30 srad_Jan <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_01.tif")
31 srad_Feb <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_02.tif")
32 srad_Mar <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_03.tif")
33 srad_Apr <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_04.tif")
34 srad_May <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_05.tif")
35 srad_Jun <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_06.tif")
36 srad_Jul <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_07.tif")
37 srad_Aug <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_08.tif")
38 srad_Sep <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_09.tif")
39 srad_Oct <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_10.tif")
40 srad_Nov <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_11.tif")
41 srad_Dec <- raster("F://R/ESE5023/srad/wc2.1_2.5m_srad_12.tif")
```

下载数据解压

```
45 wind_year<- mean(wind_Jan+wind_Feb+wind_Mar+wind_Apr+wind_May+wind_Jun+wind_Jul+
46                  wind_Aug+wind_Sep+wind_Oct+wind_Nov+wind_Dec)
47 prec_year <- mean(prec_Jan+prec_Feb+prec_Mar+prec_Apr+prec_May+prec_Jun+prec_Jul+
48                  prec_Aug+prec_Sep+prec_Oct+prec_Nov+prec_Dec)
49 srad_year <- mean(srad_Jan+srad_Feb+srad_Mar+srad_Apr+srad_May+srad_Jun+srad_Jul+
50                  srad_Aug+srad_Sep+srad_Oct+srad_Nov+srad_Dec)
```

可以直接用 mean 计算平均值（感谢蒋浩同学启发），赋值。

```
China_map <- readOGR("F://R/ESE5023/China_map", "bou2_4p")
```

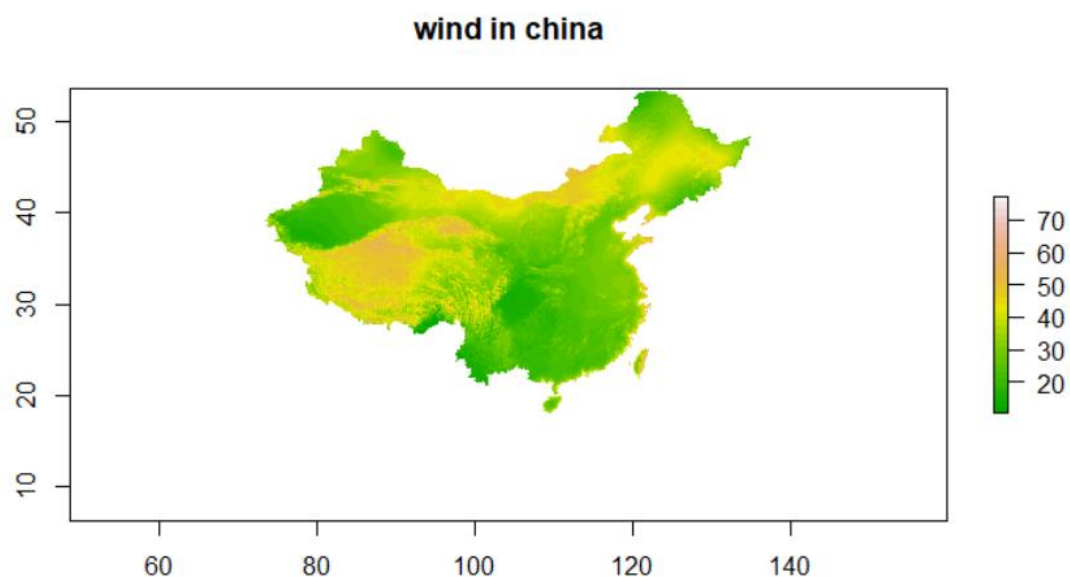
用 China_map 作为规定区域，使用 crop 规定，使用 mask 去除 na 值

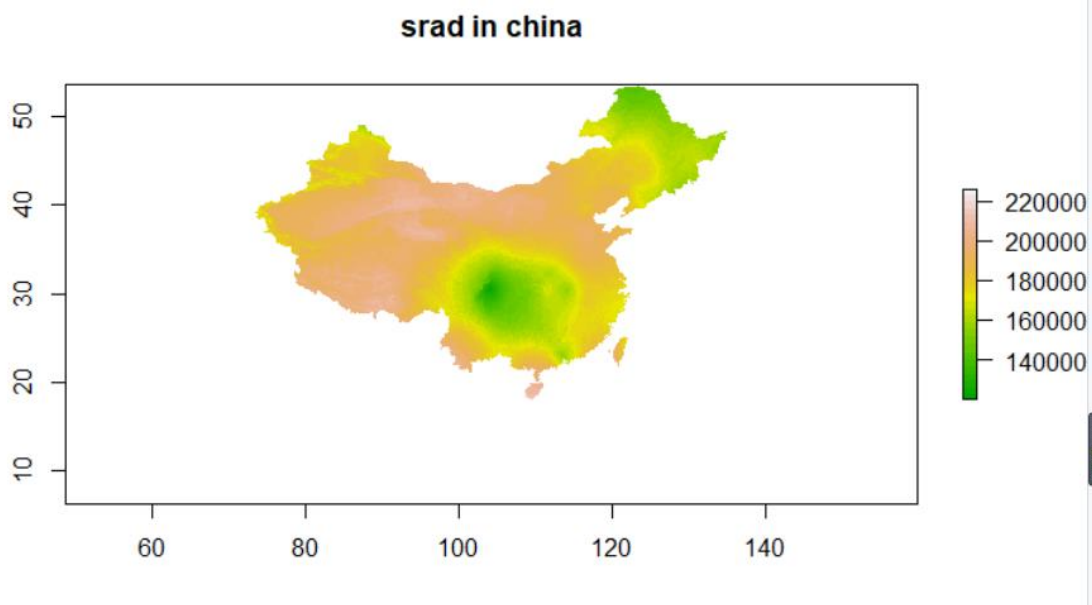
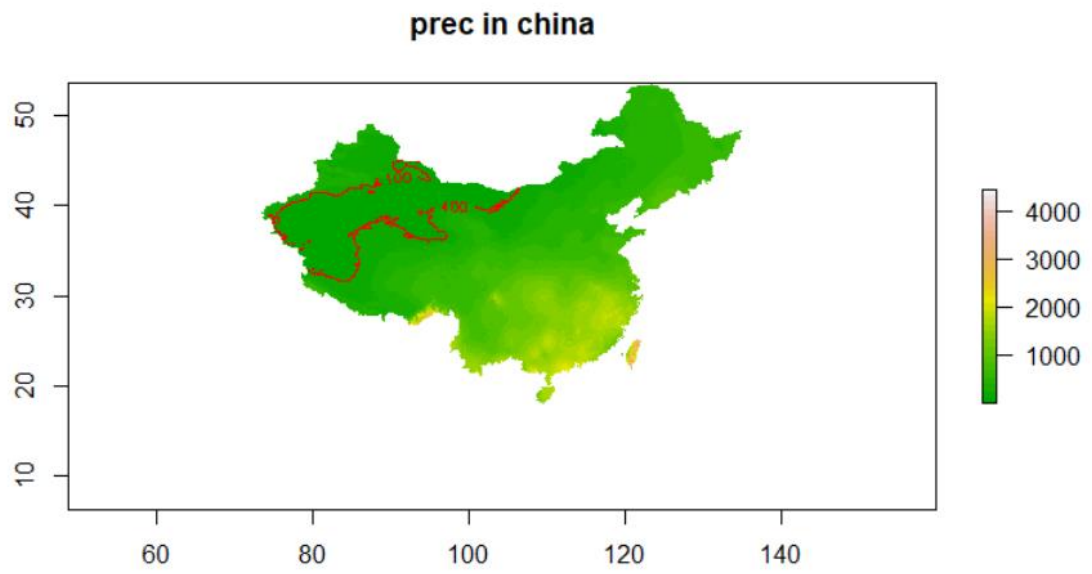
```

54 wind_china<-crop(wind_year,China_map)
55 wind_china <- mask(wind_china,China,na.rm=T)
56 plot(wind_china, main="wind in china", col=col)
57 contour(wind_china, add=T, levels=4,col="red")|
58
59
60 prec_china<-crop(prec_year,China_map)
61 prec_china <- mask(prec_china,China,na.rm=T)
62 plot(prec_china, main="prec in china", col=col)
63 contour(prec_china, add=T,levels=100, col="red")
64
65 srاد_china<-crop(srad_year,China_map)
66 srاد_china <- mask(srad_china,China,na.rm=T)
67 plot(srad_china, main="srad in china", col=col)
68 contour(srad_china, add=T,levels=16000, col="red")
69

```

作图如下





#2

```

1 #2.1
2 cd ~
3 ln -s data_demo data_demo_link
4 ll
5 #2.2
6 cd data_demo
7 cd data
8 touch planets.txt_1st
9 #2.3
10 echo ~
11 #2.4
12 cd pdb
13 find
14 #2.5
15 grep -c "$c" tnt.pdb
16 #2.6
17 diffdiff ethane.pdb ethanol.pdb ethane.pdb ethanol.pdb
18 #2.7
19 cd ~/data_demo
20 du
21 #2.8
22 zip -r data_demo_new.zip data_demo_new
23 unzip data_demo_new.zip
24 A #all replace
25 #2.9
26 chmod 710 data_demo_new
27 #2.10
28 history 10
29

```

在 Linux 上运行的代码

```

[ese-zenghx@login03 ~]$ cd ~
[ese-zenghx@login03 ~]$ ln -s data_demo data_demo_link
[ese-zenghx@login03 ~]$ ll
total 646
drwxr-xr-x  2 root      root          4096 Sep 26 15:20 billing_report
drwxr-xr-x 10 ese-zenghx ese-ouycc    4096 Dec  3 18:23 data_demo
lrwxrwxrwx  1 ese-zenghx ese-ouycc      9 Dec  3 10:58 data_demo_link -> data_demo
drwx--x--- 10 ese-zenghx ese-ouycc    4096 Dec  3 13:41 data_demo_new
-rw-r--r--  1 ese-zenghx ese-ouycc 583577 Dec  3 13:40 data_demo_new.zip
-rw-r--r--  1 ese-zenghx ese-ouycc      0 Nov 26 19:39 err.log
drwxr-xr-x  2 ese-zenghx ese-ouycc    4096 Sep 12 11:00 exam
-rw-r--r--  1 ese-zenghx ese-ouycc     12 Nov 19 19:43 file
-rw-r--r--  1 ese-zenghx ese-ouycc    1719 Nov 26 19:39 job.log
-rw-r--r--  1 ese-zenghx ese-ouycc     312 Nov 26 19:35 job.sh
-rw-r--r--  1 ese-zenghx ese-ouycc      64 Nov 26 19:39 result.log
drwxr-xr-x  2 ese-zenghx ese-ouycc    4096 Nov 24 20:02 test
-rw-r--r--  1 ese-zenghx ese-ouycc      19 Nov 26 19:28 ti.R
[ese-zenghx@login03 ~]$

```

创建链接

```

[ese-zenghx@login03 ~]$ cd data_demo
[ese-zenghx@login03 data_demo]$ cd data
[ese-zenghx@login03 data]$ touch planets.txt_1st
[ese-zenghx@login03 data]$ ll
total 260
-rw-r--r-- 1 ese-zenghx ese-ouycc 283 Nov 19 20:20 amino-acids.txt
drwxr-xr-x 2 ese-zenghx ese-ouycc 4096 Nov 19 20:20 animal-counts
-rw-r--r-- 1 ese-zenghx ese-ouycc 136 Nov 19 20:20 animals.txt
drwxr-xr-x 2 ese-zenghx ese-ouycc 4096 Nov 19 20:20 elements
-rw-r--r-- 1 ese-zenghx ese-ouycc 554 Nov 19 20:20 morse.txt
drwxr-xr-x 2 ese-zenghx ese-ouycc 4096 Nov 26 20:43 pdb
-rw-r--r-- 1 ese-zenghx ese-ouycc 8898 Nov 19 20:20 planets.txt
-rw-r--r-- 1 ese-zenghx ese-ouycc 0 Dec 3 18:25 planets.txt_1st
-rw-r--r-- 1 ese-zenghx ese-ouycc 45 Nov 19 20:20 salmon.txt
-rw-r--r-- 1 ese-zenghx ese-ouycc 73861 Nov 19 20:20 sunspot.txt
[ese-zenghx@login03 data]$

```

用 touch 创建文件

```

[ese-zenghx@login03 data]$ echo ~
/work/ese-zenghx

```

用 echo ~ 打出主菜单位置

```

[ese-zenghx@login03 data]$ cd pdb
[ese-zenghx@login03 pdb]$ find
.
./lanoxin.pdb
./methanol.pdb
./citronellal.pdb
./norethindrone.pdb
./heme.pdb
./mustard.pdb
./count.sh
./ammonia.pdb
./ascorbic-acid.pdb
./lactic-acid.pdb
./methane.pdb
./morphine.pdb
./piperine.pdb
./maltose.pdb
./testosterone.pdb
./thiamine.pdb
./quinine.pdb
./tyrian-purple.pdb
./tuberin.pdb
./cinnamaldehyde.pdb
./vitamin-a.pdb
./ethylcyclohexane.pdb
./strychnine.pdb
./sucrose.pdb
./pentane.pdb
./nerol.pdb
./vinyl-chloride.pdb
./camphene.pdb
./aldrin.pdb

```

用 find 搜索 pdb 中的文件

```
[ese-zenghx@login03 pdb]$ grep -c "$c" tnt.pdb
25
[ese-zenghx@login03 pdb]$
```

寻找 c 字母出现的次数， -c 表示计数功能

```
[ese-zenghx@login03 pdb]$ diff ethane.pdb ethanol.pdb
1,11c1,12
< COMPND          ETHANE
< AUTHOR          DAVE WOODCOCK    95 12 18
< ATOM             1  C              1      -0.752   0.001  -0.141   1.00   0.00
< ATOM             2  C              1       0.752  -0.001   0.141   1.00   0.00
< ATOM             3  H              1     -1.158   0.991   0.070   1.00   0.00
< ATOM             4  H              1     -1.240  -0.737   0.496   1.00   0.00
< ATOM             5  H              1     -0.924  -0.249  -1.188   1.00   0.00
< ATOM             6  H              1       1.158  -0.991  -0.070   1.00   0.00
< ATOM             7  H              1       0.924   0.249   1.188   1.00   0.00
< ATOM             8  H              1       1.240   0.737  -0.496   1.00   0.00
< TER              9
---
> COMPND          ETHANOL
> AUTHOR          DAVE WOODCOCK    96 01 03
> ATOM             1  C              1     -0.426  -0.115  -0.147   1.00   0.00
> ATOM             2  O              1     -0.599   1.244  -0.481   1.00   0.00
> ATOM             3  H              1     -0.750  -0.738  -0.981   1.00   0.00
> ATOM             4  H              1     -1.022  -0.351   0.735   1.00   0.00
> ATOM             5  H              1     -1.642   1.434  -0.689   1.00   0.00
> ATOM             6  C              1       1.047  -0.383   0.147   1.00   0.00
> ATOM             7  H              1       1.370   0.240   0.981   1.00   0.00
> ATOM             8  H              1       1.642  -0.147  -0.735   1.00   0.00
> ATOM             9  H              1       1.180  -1.434   0.405   1.00   0.00
> TER            10
```

用 diff 比较两个文件

```
[ese-zenghx@login03 pdb]$ cd ~/data_demo
[ese-zenghx@login03 data_demo]$ du
4      ./molecules
1      ./MYTEST/t1/t2
1      ./MYTEST/t1
3      ./MYTEST
1      ./writing/tools/old
2      ./writing/tools
1281   ./writing/data
1      ./writing/thesis
1285   ./writing
1      ./pdb
1      ./link
2050   ./north-pacific-gyre/2012-07-03
2051   ./north-pacific-gyre
2      ./creatures
408    ./data/pdb
52     ./data/elements
1      ./data/animal-counts
720    ./data
4195   .
```

Du 表示目前状态


```
[ese-zenghx@login03 ~]$ zip -r data_demo_new.zip data_demo_new
zip warning: name not matched: data_demo_new/data_demo_link
updating: data_demo_new/ (stored 0%)
updating: data_demo_new/molecules/ (stored 0%)
updating: data_demo_new/molecules/methane.pdb (deflated 66%)
updating: data_demo_new/molecules/pentane.pdb (deflated 74%)
updating: data_demo_new/molecules/cubane.pdb (deflated 73%)
updating: data_demo_new/molecules/ethane.pdb (deflated 70%)
updating: data_demo_new/molecules/propane.pdb (deflated 71%)
updating: data_demo_new/molecules/octane.pdb (deflated 75%)
updating: data_demo_new/MYTEST/ (stored 0%)
updating: data_demo_new/MYTEST/file2 (deflated 9%)
updating: data_demo_new/MYTEST/file1 (deflated 9%)
updating: data_demo_new/MYTEST/t1/ (stored 0%)
updating: data_demo_new/MYTEST/t1/t2/ (stored 0%)
updating: data_demo_new/solar.pdf (deflated 9%)
updating: data_demo_new/writing/ (stored 0%)
updating: data_demo_new/writing/haiku.txt (deflated 29%)
updating: data_demo_new/writing/tools/ (stored 0%)
updating: data_demo_new/writing/tools/stats (stored 0%)
updating: data_demo_new/writing/tools/old/ (stored 0%)
updating: data_demo_new/writing/tools/old/oldtool (stored 0%)
updating: data_demo_new/writing/tools/format (deflated 13%)
updating: data_demo_new/writing/data/ (stored 0%)
updating: data_demo_new/writing/data/one.txt (deflated 53%)
updating: data_demo_new/writing/data/littleWomen.txt (deflated 61%)
```

压缩

```
[ese-zenghx@login03 ~]$ unzip data_demo_new.zip
Archive: data_demo_new.zip
replace data_demo_new/molecules/methane.pdb? [y]es, [n]o, [A]ll, [N]one
  inflating: data_demo_new/molecules/methane.pdb
  inflating: data_demo_new/molecules/pentane.pdb
  inflating: data_demo_new/molecules/cubane.pdb
  inflating: data_demo_new/molecules/ethane.pdb
  inflating: data_demo_new/molecules/propane.pdb
  inflating: data_demo_new/molecules/octane.pdb
```

解压缩

```
[ese-zenghx@login03 ~]$ chmod 710 data_demo_new
[ese-zenghx@login03 ~]$ ll
total 646
drwxr-xr-x  2 root      root      4096 Sep 26 15:20 billing_report
drwxr-xr-x 10 ese-zenghx ese-ouycc 4096 Dec  3 18:23 data_demo
lrwxrwxrwx  1 ese-zenghx ese-ouycc   9 Dec  3 10:58 data_demo_link -> data_demo
drwx--x--- 10 ese-zenghx ese-ouycc 4096 Dec  3 18:31 data_demo_new
-rw-r--r--  1 ese-zenghx ese-ouycc 582577 Dec  3 18:20 data_demo_new.zip
```

改变权限 710

```
[ese-zenghx@login03 ~]$ history 10
252  zip -r data_demo_new.zip data_demo_new
253  unzip data_demo_new.zip
254  ll
255  cd ~
256  ll
257  zip -r data_demo_new.zip data_demo_new
258  unzip data_demo_new.zip
259  chmod 710 data_demo_new
260  ll
261  history 10
[ese-zenghx@login03 ~]$
```

history 10 得到前十步操

作