

# pRecipe

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<https://cran.r-project.org/web/packages/pRecipe/vignettes/introduction.html#heatmap>

```
library(pRecipe)
```

```
## Warning: package 'pRecipe' was built under R version 4.4.1
```

```
library(kableExtra)
```

```
library("raster")
```

```
## Warning: package 'raster' was built under R version 4.4.1
```

```
## Loading required package: sp
```

## Satellite-Based Products

## Reanalysis Products

## Hydrological Model Forcing

```
setGeneric("sellonlatbox", function(x, y) standardGeneric("sellonlatbox"))
```

```
## [1] "sellonlatbox"
```

```
#' @rdname sellonlatbox
```

```
#' @method sellonlatbox Raster
```

```
setMethod("sellonlatbox", "Raster",  
  function(x, y) {  
    lonlatbox <- extent(y[1], y[2], y[3], y[4])  
    dummie <- crop(x, lonlatbox)  
    return(dummie)  
  })
```

Data Set	Spatial Resolution	Spatial Coverage			Temporal Resolution	Record Length	
		Global	Land	Ocean			
CHIRPS v2.0	0.05°		50°SN		Monthly	1981/01-2022/07	
CMAP	2.5°	x	x	x	Monthly	1979/01-2022/07	
CMORPH	0.25°	60°SN	60°SN	60°SN	Daily	1998/01-2021/12	[Download]
GPCP v2.3	0.5°	x	x	x	Monthly	1979/01-2022/05	
GPM IMERG v06	0.1°	x	x	x	Monthly	2000/06-2020/12	
MSWEP v2.8	0.1°	x	x	x	Monthly	1979/02-2022/06	
PERSIANN-CDR	0.25°	60°SN	60°SN	60°SN	Monthly	1983/01-2022/06	
TRMM 3B43 v7	0.25°	50°SN	50°SN	50°SN	Monthly	1998/01-2019/12	

Data Set	Spatial Resolution	Spatial Coverage			Temporal Resolution	Record Length	
		Global	Land	Ocean			
20CR v3	1°	x	x	x	Monthly	1836/01-2015/12	[Download]
ERA-20C	1.125°	x	x	x	Monthly	1900/01-2010/12	[Download]
ERA5	0.25°	x	x	x	Monthly	1959/01-2021/12	[Download]
JRA-55	1.25°	x	x	x	Monthly	1958/01-2021/12	
MERRA-2	0.5° x 0.625°	x	x	x	Monthly	1980/01-2023/01	[Download]
NCEP/NCAR R1	1.875°	x	x	x	Monthly	1948/01-2022/08	[Download]
NCEP/DOE R2	1.875°	x	x	x	Monthly	1979/01-2022/08	[Download]

Data Set	Spatial Resolution	Spatial Coverage			Temporal Resolution	Record Length	
		Global	Land	Ocean			
FLDAS	0.1°		x		Monthly	1982/01-2021/12	[Download]
GLDAS CLSM v2.0	0.25°		x		Daily	1948/01-2014/12	[Download]
GLDAS NOAH v2.0	0.25°		x		Monthly	1948/01-2014/12	[Download]
GLDAS VIC v2.0	1°		x		Monthly	1948/01-2014/12	[Download]
TerraClimate	4\$km\$		x		Monthly	1958/01-2021/12	[Download]

```

#' @rdname sellonlatbox
#' @method sellonlatbox data.table

setMethod("sellonlatbox", "data.table",
  function(x, y) {
    dummie <- x[(lon >= y[1]) & (lon <= y[2]) &
                (lat >= y[3]) & (lat <= y[4])]
    return(dummie)
  })

#' @rdname sellonlatbox
#' @method sellonlatbox character

setMethod("sellonlatbox", "character",
  function(x, y) {
    dummie_brick <- brick(x)
    lonlatbox <- extent(y[1], y[2], y[3], y[4])
    dummie <- crop(dummie_brick, lonlatbox)
    return(dummie)
  })

wd<="/Users/taohuang/Downloads"
download_data(

  #"merra2",
  "terraclimate",
  wd, timestep = "yearly")
r <- raster::brick(paste0( wd,
  #"/merra-2_tp_mm_global_198001_202410_025_yearly.nc"
  #"/terraclimate_tp_mm_land_195801_202312_025_yearly.nc"
))
s <- sellonlatbox(r, c(
  43.1 ,43.2, -70.94, -70.93

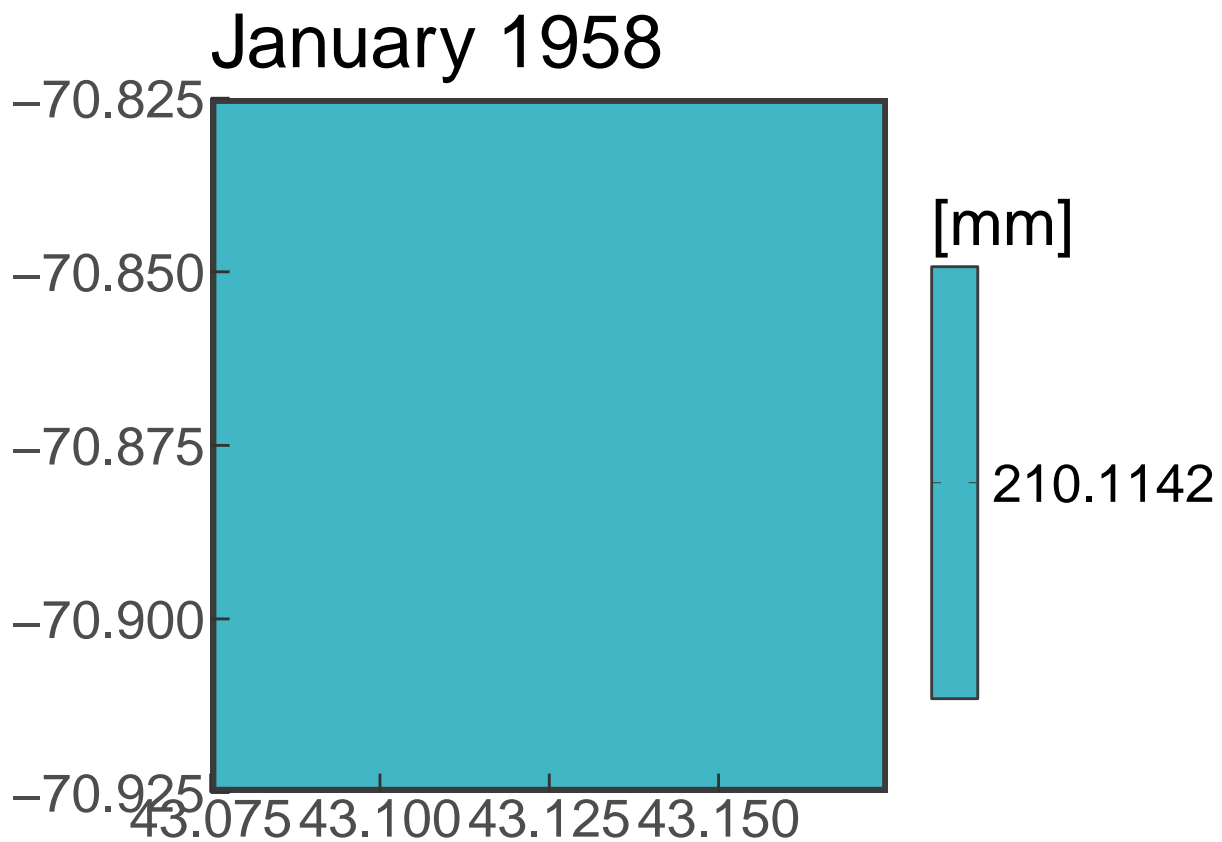
  #12.24, 18.85, 48.56, 51.12

```

```
))
s
```

```
## class      : RasterBrick
## dimensions : 1, 1, 1, 66 (nrow, ncol, ncell, nlayers)
## resolution : 0.25, 0.25 (x, y)
## extent     : 43, 43.25, -71, -70.75 (xmin, xmax, ymin, ymax)
## crs        : +proj=longlat +datum=WGS84 +no_defs
## source     : memory
## names      : X1958.01.01, X1959.01.01, X1960.01.01, X1961.01.01, X1962.01.01, X1963.01.01, X1964.01.01
## min values : 210.11418, 171.42313, 152.20905, 168.23589, 200.96382, 343.12561, 238.4253
## max values : 210.11418, 171.42313, 152.20905, 168.23589, 200.96382, 343.12561, 238.4253
## time       : 1958-01-01, 2023-01-01 (min, max)
```

```
plot_map(s)
```

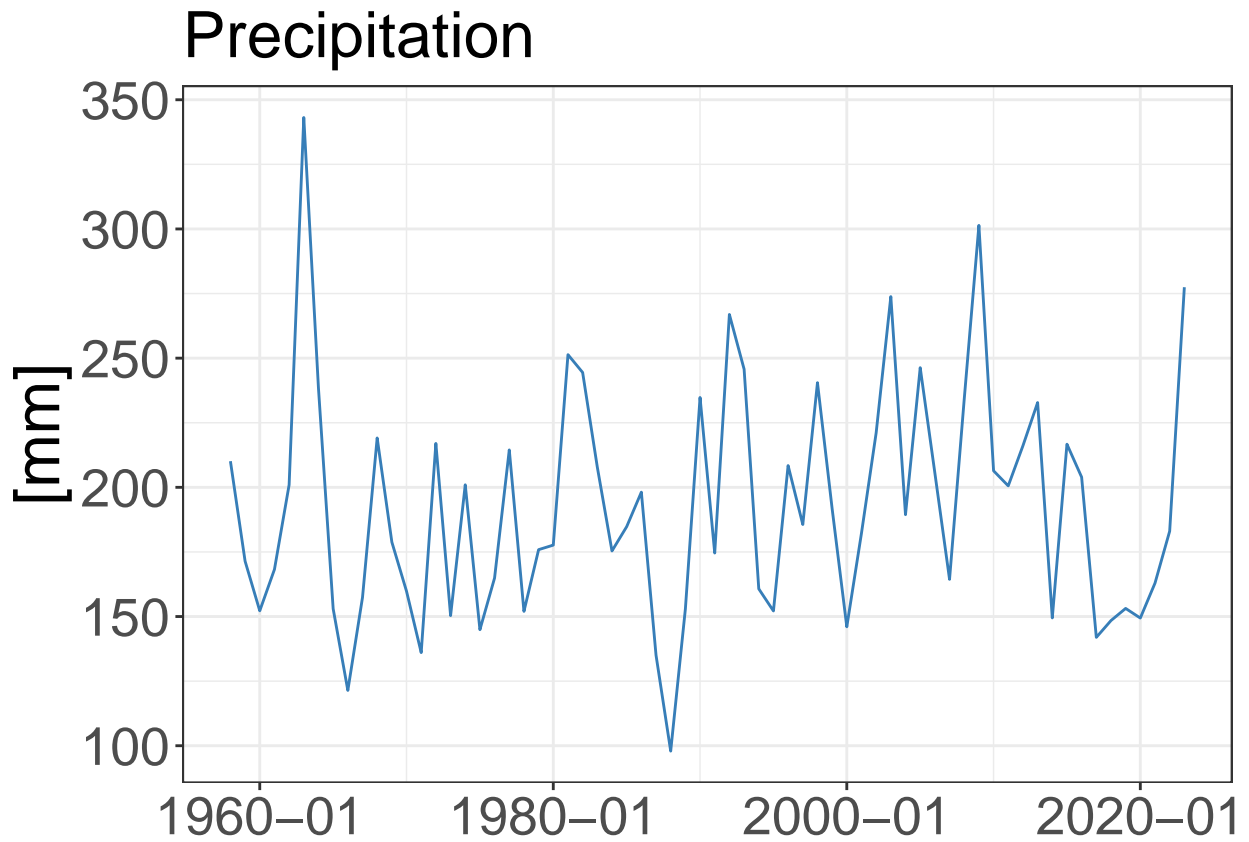


```
gpm_global_ts <- fldmean( s)
head(gpm_global_ts, 12)
```

```
##      date      value
##      <Date>    <num>
## 1: 1958-01-01 210.1142
## 2: 1959-01-01 171.4231
## 3: 1960-01-01 152.2090
## 4: 1961-01-01 168.2359
## 5: 1962-01-01 200.9638
## 6: 1963-01-01 343.1256
## 7: 1964-01-01 238.4253
```

```
## 8: 1965-01-01 152.9801
## 9: 1966-01-01 121.4010
## 10: 1967-01-01 157.3960
## 11: 1968-01-01 219.1014
## 12: 1969-01-01 178.7904
```

```
plot_line(gpm_global_ts)
```



```
plot_heatmap(gpm_global_ts)
```

