Precipitação

2024-01-25

### Carregando bibliotecas

library(tidyverse)  
library(geobr)  
source("R/gafico.R")  
source("R/my-function.R")  
#> | | | 0% | |=== | 4% | |===== | 7% | |======== | 11% | |========== | 15% | |============= | 19% | |================ | 22% | |================== | 26% | |===================== | 30% | |======================= | 33% | |========================== | 37% | |============================= | 41% | |=============================== | 44% | |================================== | 48% | |==================================== | 52% | |======================================= | 56% | |========================================= | 59% | |============================================ | 63% | |=============================================== | 67% | |================================================= | 70% | |==================================================== | 74% | |====================================================== | 78% | |========================================================= | 81% | |============================================================ | 85% | |============================================================== | 89% | |================================================================= | 93% | |=================================================================== | 96% | |======================================================================| 100%  
#> Downloading: 1.6 kB Downloading: 1.6 kB Downloading: 4.1 kB Downloading: 4.1 kB Downloading: 8.3 kB Downloading: 8.3 kB Downloading: 8.3 kB Downloading: 8.3 kB Downloading: 8.3 kB Downloading: 8.3 kB Downloading: 16 kB Downloading: 16 kB Downloading: 33 kB Downloading: 33 kB Downloading: 41 kB Downloading: 41 kB Downloading: 57 kB Downloading: 57 kB Downloading: 65 kB Downloading: 65 kB Downloading: 73 kB Downloading: 73 kB Downloading: 73 kB Downloading: 73 kB Downloading: 89 kB Downloading: 89 kB Downloading: 110 kB Downloading: 110 kB Downloading: 120 kB Downloading: 120 kB Downloading: 140 kB Downloading: 140 kB Downloading: 150 kB Downloading: 150 kB Downloading: 150 kB Downloading: 150 kB Downloading: 160 kB Downloading: 160 kB Downloading: 180 kB Downloading: 180 kB Downloading: 180 kB Downloading: 180 kB Downloading: 190 kB Downloading: 190 kB Downloading: 210 kB Downloading: 210 kB Downloading: 220 kB Downloading: 220 kB Downloading: 220 kB Downloading: 220 kB Downloading: 230 kB Downloading: 230 kB Downloading: 240 kB Downloading: 240 kB Downloading: 240 kB Downloading: 240 kB Downloading: 240 kB Downloading: 240 kB Downloading: 240 kB Downloading: 240 kB Downloading: 250 kB Downloading: 250 kB Downloading: 270 kB Downloading: 270 kB Downloading: 270 kB Downloading: 270 kB Downloading: 280 kB Downloading: 280 kB Downloading: 290 kB Downloading: 290 kB Downloading: 290 kB Downloading: 290 kB Downloading: 300 kB Downloading: 300 kB Downloading: 310 kB Downloading: 310 kB Downloading: 320 kB Downloading: 320 kB Downloading: 340 kB Downloading: 340 kB Downloading: 360 kB Downloading: 360 kB Downloading: 370 kB Downloading: 370 kB Downloading: 390 kB Downloading: 390 kB Downloading: 410 kB Downloading: 410 kB Downloading: 420 kB Downloading: 420 kB Downloading: 440 kB Downloading: 440 kB Downloading: 450 kB Downloading: 450 kB Downloading: 470 kB Downloading: 470 kB Downloading: 470 kB Downloading: 470 kB Downloading: 480 kB Downloading: 480 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 490 kB Downloading: 500 kB Downloading: 500 kB Downloading: 510 kB Downloading: 510 kB Downloading: 520 kB Downloading: 520 kB Downloading: 530 kB Downloading: 530 kB Downloading: 540 kB Downloading: 540 kB Downloading: 550 kB Downloading: 550 kB Downloading: 550 kB Downloading: 550 kB Downloading: 560 kB Downloading: 560 kB Downloading: 560 kB Downloading: 560 kB Downloading: 570 kB Downloading: 570 kB Downloading: 570 kB Downloading: 570 kB Downloading: 580 kB Downloading: 580 kB Downloading: 580 kB Downloading: 580 kB Downloading: 580 kB Downloading: 580 kB Downloading: 600 kB Downloading: 600 kB Downloading: 620 kB Downloading: 620 kB Downloading: 630 kB Downloading: 630 kB Downloading: 630 kB Downloading: 630 kB Downloading: 640 kB Downloading: 640 kB Downloading: 660 kB Downloading: 660 kB Downloading: 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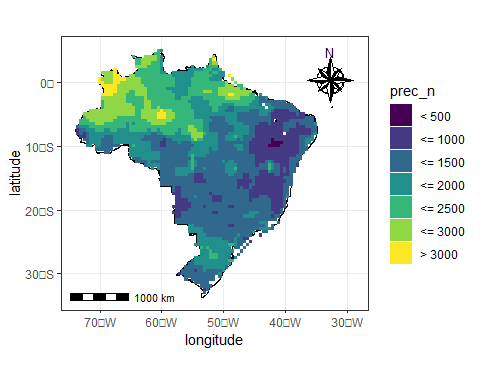
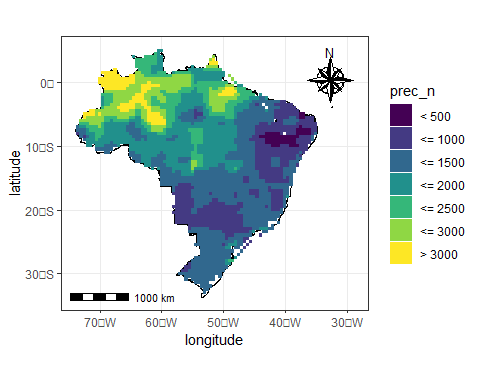
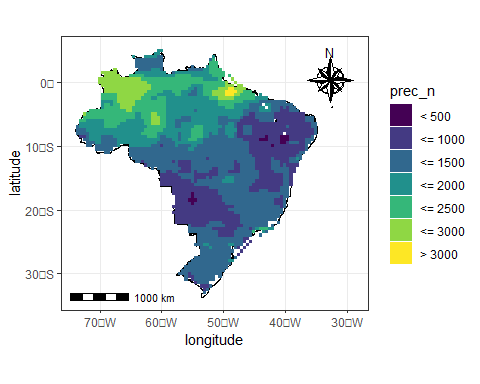
### Carregando dados

file\_name <- list.files('precipitation/data/',full.names = T)  
df <- read\_rds(file\_name)

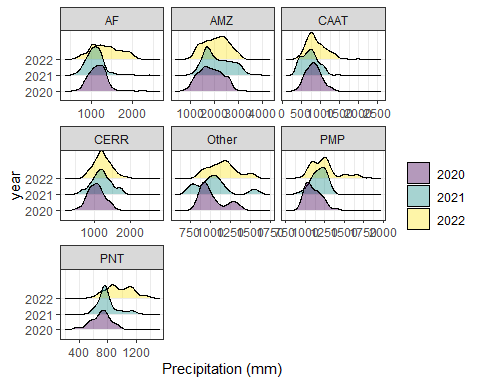
### Processando dados de precipitação

df |>  
 mutate(year= year(YYYYMMDD),  
 month = month(YYYYMMDD),  
 longitude=LON,  
 latitude=LAT) |>  
 group\_by(longitude, latitude, year) |>  
 summarise(  
 prec = sum(PRECTOTCORR)  
 ) |>   
 pull(prec) |>   
 max()  
#> [1] 3985.28

anos <-2020:2022  
  
for(i in seq\_along(anos)){  
 plot\_prec <- biomes |>   
 filter(name\_biome!='Sistema Costeiro') |>   
 ggplot() +  
 geom\_sf(fill="white", color="black",  
 size=.15, show.legend = FALSE)+  
 geom\_tile(  
 data= df |>   
 mutate(year= year(YYYYMMDD),  
 month = month(YYYYMMDD),  
 longitude=LON,  
 latitude=LAT) |>  
 group\_by(longitude, latitude, year) |>  
 summarise(  
 prec = sum(PRECTOTCORR)  
 ) |>   
 filter(year==anos[i]) |>   
 mutate(  
 prec\_n = case\_when(  
 prec < 500 ~ '< 500',  
 prec <= 1000 ~ '<= 1000',  
 prec <= 1500 ~ '<= 1500',  
 prec <= 2000 ~ '<= 2000',  
 prec <= 2500 ~ '<= 2500',  
 prec <= 3000 ~ '<= 3000',  
 prec > 3000~ '> 3000'  
 )  
 ),  
 aes(x=longitude,y=latitude,fill=prec\_n)  
 )+  
 # scale\_fill\_gradientn(limits=c(0,4000),   
 # colours =viridisLite::viridis(256, option = "D"),  
 # breaks=c(0,500,1000,1500,2000,2500,3000,3500,4000),  
 # labels=format(c(0,500,1000,1500,2000,2500,3000,3500,4000)))  
 scale\_fill\_viridis\_d()+  
 tema\_mapa()+  
 theme\_bw()  
 ggplot2::ggsave(paste0('img/precipitacao\_media\_',anos[i],'.png'),  
 units="in", width=8, height=6,  
 dpi=1000)  
 print(plot\_prec)  
}



df |>   
 mutate(year= year(YYYYMMDD),  
 month = month(YYYYMMDD),  
 longitude=LON,  
 latitude=LAT) |>  
 group\_by(longitude, latitude, year) |>  
 filter(year!=2023) |>   
 summarise(  
 prec = sum(PRECTOTCORR)  
 ) |>   
 mutate(  
 prec\_n = case\_when(  
 prec < 500 ~ '< 500',  
 prec <= 1000 ~ '<= 1000',  
 prec <= 1500 ~ '<= 1500',  
 prec <= 2000 ~ '<= 2000',  
 prec <= 2500 ~ '<= 2500',  
 prec <= 3000 ~ '<= 3000',  
 prec > 3000~ '> 3000'  
 )  
 ) |>   
 mutate(  
 biomes = get\_geobr\_biomes(longitude,latitude)  
 ) |>  
 mutate(  
 biomes\_n =  
 case\_when(  
 biomes=='Other'& longitude>=-45 & latitude <0~'AF',  
 biomes=='Amazônia'~'AMZ',  
 biomes=='Other'& longitude< -45 & latitude >=-10 ~'AMZ',  
 biomes == 'Mata Atlântica' ~ 'AF',  
 biomes=='Cerrado'~'CERR',  
 biomes =='Pampa'~'PMP',  
 biomes == 'Pantanal' ~ 'PNT',  
 biomes=='Caatinga'~'CAAT',  
 .default = 'Other'  
 )  
 ) |>   
 ggplot(aes(x=prec,y=as.factor(year),fill=as.factor(year)))+  
 ggridges::geom\_density\_ridges(alpha=.4)+  
 facet\_wrap(~biomes\_n,scales='free\_x')+  
 labs(x='Precipitation (mm)',  
 y='year',  
 fill=''  
 )+  
 scale\_fill\_viridis\_d()+  
 theme\_bw()



ggplot2::ggsave('img/prec\_distribution.png',  
 units="in", width=8, height=6,  
 dpi=1000)