INDICES BIOCLIMATICOS

## Indice de aridez de Martonne

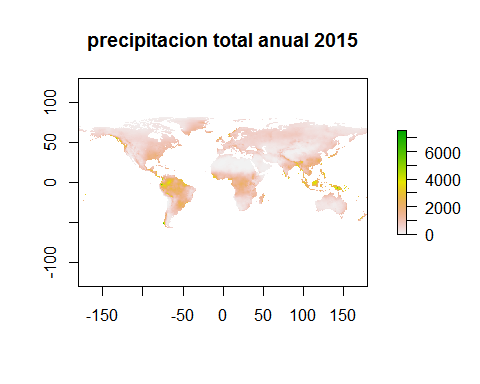
Permite una primera identificación fitoclimática del mundo, aunque es especialmente efectivo en zonas tropicales y subtropicales. Se usará el IMa, cuya fórmula:

#instalando librerias  
library(raster)  
library(rgdal)  
library(maptools)

#definiendo directorio de trabajo   
setwd("E:/R/pp")  
#precipitacion anual mensual  
 pp\_ene <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-01.tif")  
 pp\_feb <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-02.tif")  
 pp\_mar <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-03.tif")  
 pp\_abr <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-04.tif")  
 pp\_may <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-05.tif")  
 pp\_jun <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-06.tif")  
 pp\_jul <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-07.tif")  
 pp\_ago <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-08.tif")  
 pp\_sep <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-09.tif")  
 pp\_oct <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-10.tif")  
 pp\_nov <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-11.tif")  
 pp\_dic <- raster("E:/R/pp/wc2.1\_2.5m\_prec\_2015-12.tif")  
 pp\_total <- pp\_ene + pp\_feb + pp\_mar + pp\_abr + pp\_may + pp\_jun + pp\_jul + pp\_ago + pp\_sep + pp\_oct + pp\_nov + pp\_dic

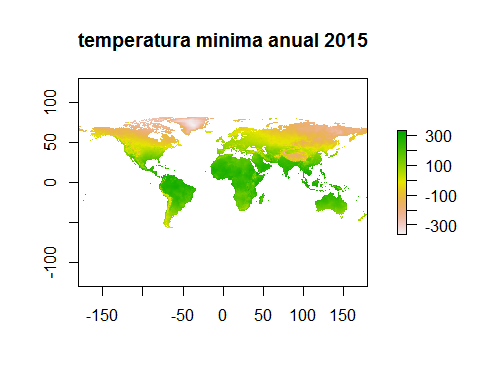
## Precipitacion Total Tnual Perido 2015

plot(pp\_total, main="precipitacion total anual 2015")



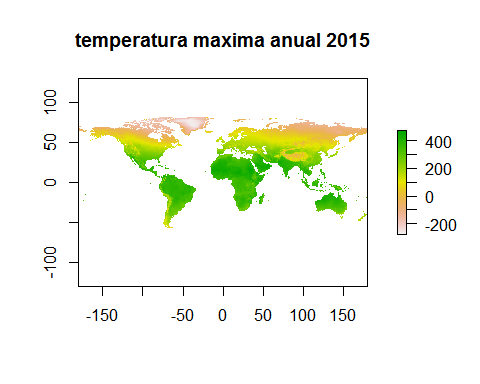
#Temperatua minima periodo 2015  
setwd("E:/R/tmin")  
  
tm\_ene <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-01.tif")  
 tm\_feb <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-02.tif")  
 tm\_mar <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-03.tif")  
 tm\_abr <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-04.tif")  
 tm\_may <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-05.tif")  
 tm\_jun <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-06.tif")  
 tm\_jul <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-07.tif")  
 tm\_ago <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-08.tif")  
 tm\_sep <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-09.tif")  
 tm\_oct <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-10.tif")  
 tm\_nov <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-11.tif")  
 tm\_dic <- raster("E:/R/tmin/wc2.1\_2.5m\_tmin\_2015-12.tif")  
 tm\_total <- tm\_ene + tm\_feb + tm\_mar + tm\_abr + tm\_may + tm\_jun + tm\_jul + tm\_ago + tm\_sep + tm\_oct + tm\_nov + tm\_dic

# Temperatura Minima Anual periodo 2015  
plot(tm\_total , main = "temperatura minima anual 2015")

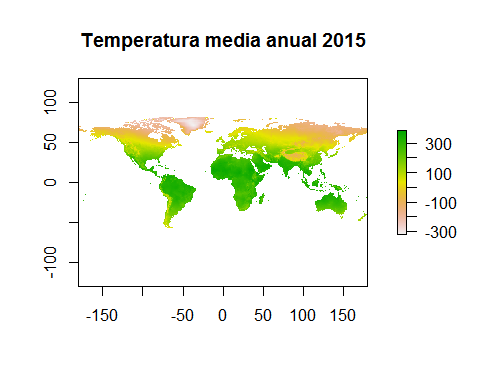


#Temperatua maxima periodo 2015  
setwd("E:/R/tmax")  
  
tmx\_ene <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-01.tif")  
 tmx\_feb <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-02.tif")  
 tmx\_mar <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-03.tif")  
 tmx\_abr <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-04.tif")  
 tmx\_may <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-05.tif")  
 tmx\_jun <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-06.tif")  
 tmx\_jul <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-07.tif")  
 tmx\_ago <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-08.tif")  
 tmx\_sep <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-09.tif")  
 tmx\_oct <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-10.tif")  
 tmx\_nov <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-11.tif")  
 tmx\_dic <- raster("E:/R/tmax/wc2.1\_2.5m\_tmax\_2015-12.tif")  
 tmx\_total <- tmx\_ene + tmx\_feb + tmx\_mar + tmx\_abr + tmx\_may + tmx\_jun + tmx\_jul + tmx\_ago + tmx\_sep + tmx\_oct + tmx\_nov + tmx\_dic

# Temperatura Maxima Anual periodo 2015  
plot(tmx\_total , main = "temperatura maxima anual 2015")



# Calculando la temperaatura media anual 2015   
tm\_prm <- (tmx\_total + tm\_total) / 2  
plot(tm\_prm , main = "Temperatura media anual 2015")



# Cargar mapa del poligono   
hua <- readOGR("E:/QGIS/HUANUCO.shp")

## OGR data source with driver: ESRI Shapefile   
## Source: "E:\QGIS\HUANUCO.shp", layer: "HUANUCO"  
## with 1 features  
## It has 7 fields

plot(hua)

