Flood_analysis

2025-10-04

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```r
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.

```r
#insall once
#install.packages("terra")

library(terra)
```

```
## terra 1.8.70
```
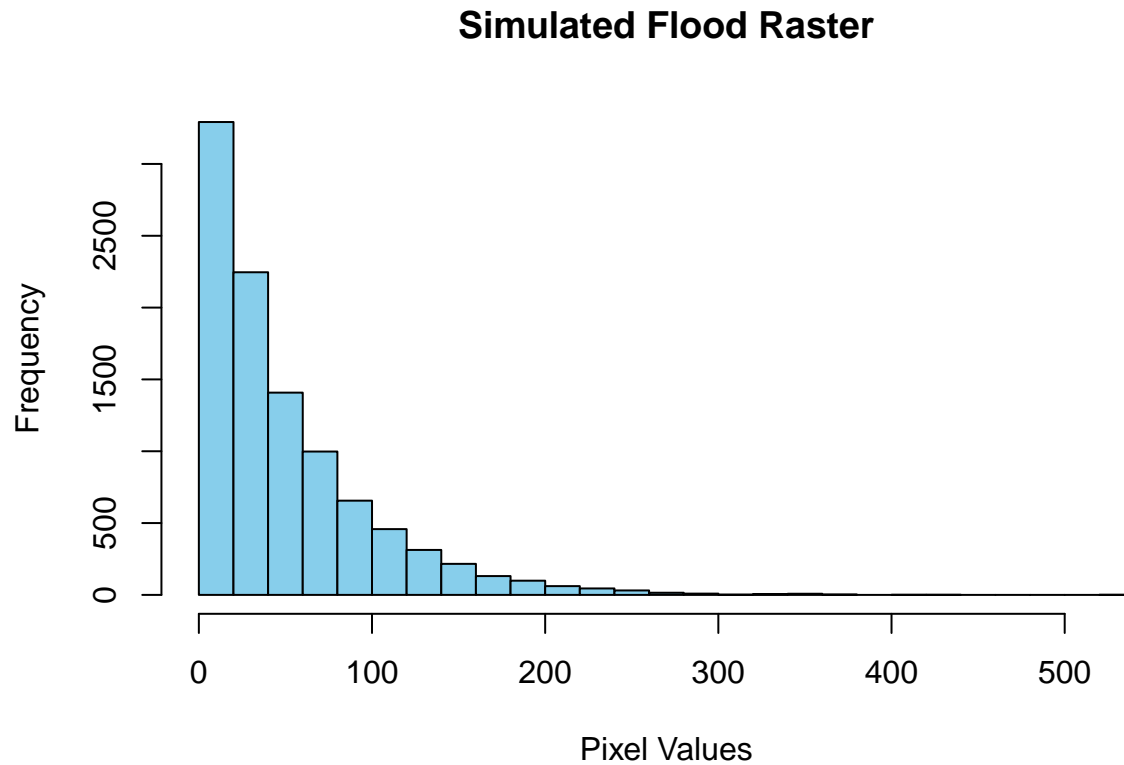
```r
flood_raster <- rast(ncols=100, nrows=100)

set.seed(42)
values(flood_raster) <- rexp(ncell(flood_raster), rate = 0.02)

summary(values(flood_raster))
```

```
##       lyr.1
##  Min.   :  0.00975
##  1st Qu.: 14.37979
##  Median : 34.43370
##  Mean   : 50.32554
##  3rd Qu.: 70.63722
##  Max.   :529.22515
```

```r
hist(values(flood_raster), main="Simulated Flood Raster",
     xlab="Pixel Values", col="skyblue", breaks=25)
```

Simulated Flood Raster


```r
# Apply log transformation
log_raster <- log(values(flood_raster) + 1)  # +1 to avoid log(0)

# Histogram after log transform
hist(log_raster, main="Log-Transformed Flood Raster",
     xlab="Log(Pixel Values + 1)", col="orange", breaks=50)
```

Log−Transformed Flood Raster

Frequency

Log(Pixel Values + 1)