R-Based Interfaces to Google Maps

John Maindonald\textsuperscript{1}

\textsuperscript{1}Centre for Mathematics & Its Applications, Australian National University

July 19, 2012
The `plotGoogleMaps` package has quite a few dependencies. Note a particular issue with installing the `XML` package.

Windows users can find a binary of the `XML` package (needed by `plotGoogleMaps`, but not on CRAN) at:
http://www.stats.ox.ac.uk/pub/RWin/bin/windows/contrib/
Install the package version that matches your version of R.

To see a vignette that describes `plotGoogleMaps`, type:

vignette('plotGoogleMaps-intro')
NZ Earthquake Data can be obtained from:
http://magma.geonet.org.nz/resources/quakesearch/

Use, e.g., data for 1 Jan 2009 through 2 July 2012. An unnamed blank final column slightly complicated the correct assignment of column names.

colnam <- names(read.csv('earthquakes.csv',
                        header=TRUE, nrows=1))
nzquakes <- read.csv('earthquakes.csv',
                      col.names=c(colnam,"xx"), skip=1)
nzquakes$xx <- NULL
nzquakes$Energy <- 10^nzquakes$MAG
library(plotGoogleMaps)
subNZquakes <- subset(nzquakes, LONG>0 & MAG>4.25)
  # 'Large' earthquakes only; limit Eastern extent
coordinates(subNZquakes) <- ~ LONG+LAT
  # subNZquakes is now a SpatialPointsDataFrame
proj4string(subNZquakes) <- CRS("+proj=longlat
  +ellps=WGS84 +datum=WGS84")
  # Ensures that the coordinates will be interpreted
  # as longitudes and latitudes.
library(RColorBrewer)
key.energy <- c(30000, 150000, 500000,
  1500000, max(subNZquakes$Energy))
  # NB: These are upper endpoints
  # Do not include lowest value
key.depth <- c(20, 60, 200, max(subNZquakes$Depth))
Function Calls to Create the Overlaid Map

m1 <- bubbleGoogleMaps(subNZquakes, zcol='Energy',
                        max.radius=1500,
                        key.entries=key.energy,
                        layerName="Energy",
                        add=TRUE, zoom=16,
                        colPalette=brewer.pal(5,"Accent"))

subNZquakes2 <- subNZquakes
    # For a 2nd bubbleGoogleMaps overlay, use a new data
    # object name is required (circumvents a ?bug!)

m2 <- bubbleGoogleMaps(subNZquakes2, zcol='DEPTH',
                        filename='Energy+Depth.htm',
                        layerName='Depth', max.radius=500,
                        key.entries=key.depth,
                        previousMap=m1,
                        shape="t",
                        colPalette=rev(brewer.pal(4,"Oranges")))
library(dismo)
venue <- gmap("Sydney University", type="hybrid")
plot(venue)
zoomin <- gmap("Sydney University", type="hybrid", exp=0.25)
plot(zoomin)
xy <- locator(n=2) # Locate a particular building
with(xy, arrows(x[1], y[1], x[2], y[2], col="purple", lwd=4))
selectPart <- drawExtent()
## Now click on map, then on two opposite corners of a rectangle, marking out a red rectangle on the map
plot(selectPart)