Week 2 - Homework

Hilary Dugan

February 6, 2018

1) Download the LTER lake shapefiles from the LTER database. Map Lake Mendota. Add a point for the location of the CFL.

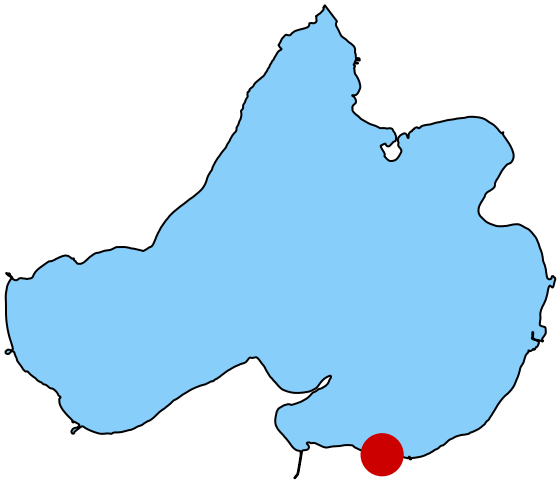
```
library(rgdal)
library(sp)
library(raster)
lakes = readOGR('../Lecture3_Shapefiles/Data/yld_study_lakes.shp',layer = 'yld_study_lakes',stringsAsFa
```

```
## OGR data source with driver: ESRI Shapefile
## Source: "../Lecture3_Shapefiles/Data/yld_study_lakes.shp", layer: "yld_study_lakes"
## with 4 features
## It has 9 fields
```

```
mendota = lakes[lakes@data$LAKEID == 'ME',]

cfl = data.frame(lat = 43.077391, long = -89.404241)
coordinates(cfl) = ~long+lat
crs(cfl) = CRS("+init=epsg:4326")
cfl = spTransform(cfl,crs(mendota))

plot(mendota,col='lightskyblue',main='Lake Mendota')
plot(cfl,add=T,pch=16,col='red3',cex=3)
```



2) Download the National Land Cover (NLCD) dataset for 2011. Load it into R. What is the CRS?

```
nlcd = raster('~/NLCD/nlcd_2011_landcover_2011_edition_2014_10_10/nlcd_2011_landcover_2011_edition_2014
crs(nlcd)
```

```
## CRS arguments:
##  +proj=aea +lat_1=29.5 +lat_2=45.5 +lat_0=23 +lon_0=-96 +x_0=0
## +y_0=0 +ellps=GRS80 +towgs84=0,0,0,-0,-0,-0,0 +units=m +no_defs
```

Projection is `aea` = albers equal area

3) What's the best way to check that CRS of two objects are identical?

```
identicalCRS(mendota,cfl)
```

```
## [1] TRUE
```

```
identicalCRS(mendota,nlcd)
```

```
## [1] FALSE
```