soil_extract.R

a

Fri Feb 8 11:00:24 2019

```
# extracting soil data to points

library(raster)
library(sf)
library(tidyverse)

plot_file <- "data/all_plot_locations.gpkg"
soil_tax <- "/home/a/data/soil/soilgrids/TAXNWRB_250m.tif"
soil_meanings <- '/home/a/data/soil/soilgrids/TAXNWRB_250m_ll.tif.csv'
elevation_file <- '/home/a/data/background/elevation/PRISM_us_dem_800m_bil.bil'

soil <- raster(soil_tax)
points <- st_read(plot_file)
```

```
## Reading layer `all_plot_locations' from data source `/home/a/projects/cg_biomass/data/all_plot_locati
## Simple feature collection with 128 features and 2 fields
## geometry type:  POINT
## dimension:      XY
## bbox:           xmin: -118.2447 ymin: 40.49317 xmax: -116.2438 ymax: 43.05817
## epsg (SRID):    4326
## proj4string:    +proj=longlat +datum=WGS84 +no_defs
```

```
meanings <- read.csv(soil_meanings) %>%
  select(soil_num=Number, Group)
dem <- raster(elevation_file)
slope<-terrain(dem, opt="slope", unit = 'degrees')
aspect <- terrain(dem, opt="aspect", unit = 'degrees')

points$soil_num <- raster::extract(soil, points)
points$elevation<- raster::extract(dem, points)
```

```
## Warning in .local(x, y, ...): Transforming SpatialPoints to the CRS of the
## Raster
```

```
points$aspect <- raster::extract(aspect, points)
```

```
## Warning in .local(x, y, ...): Transforming SpatialPoints to the CRS of the
## Raster
```

```
points$slope <- raster::extract(slope, points)
```

```
## Warning in .local(x, y, ...): Transforming SpatialPoints to the CRS of the
## Raster
```

```
points <- left_join(points, meanings) %>%
  mutate(soil_num =as.factor(soil_num),
         Group = as.factor(as.character(Group)))
```

```
## Joining, by = "soil_num"
```

```
st_write(points,"data/all_plots_w_soil.gpkg", delete_dsn = TRUE)
```

```
## Deleting source `data/all_plots_w_soil.gpkg' using driver `GPKG'
## Writing layer `all_plots_w_soil' to data source `data/all_plots_w_soil.gpkg' using driver `GPKG'
## features:       128
## fields:         7
## geometry type:  Point
```

```
big_table <- points %>%
  mutate(Latitude = st_coordinates(.)[,2],
         Longitude = st_coordinates(.)[,1]) %>%
  st_set_geometry(NULL) %>%
  write_csv("data/big_table.csv")

soil_summary <- points %>%
  count(study, Group) %>%
  st_set_geometry(NULL) %>%
  spread(Group, n, fill=0) %>%
  write_csv("data/soil_summary.csv")

stargazer(soil_summary, summary = FALSE)
```

```
##
## % Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harva
## % Date and time: Fri, Feb 08, 2019 - 11:00:32 AM
## \begin{table}[!htbp] \centering
##   \caption{}
##   \label{}
## \begin{tabular}{@{\extracolsep{5pt}} cccccccc}
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
##  & study & Calcic Solonetz & Haplic Calcisols & Haplic Cambisols & Haplic Kastanozems & Haplic Luviso
## \hline \\[-1.8ex]
## 1 & bm & 1 & 1 & 20 & 7 & 10 & 1 \\
## 2 & cg & 0 & 0 & 7 & 25 & 8 & 0 \\
## 3 & ff & 1 & 0 & 10 & 4 & 10 & 3 \\
## 4 & js & 0 & 1 & 9 & 5 & 5 & 0 \\
## \hline \\[-1.8ex]
## \end{tabular}
## \end{table}
```