Preface

This tutorial introduces the reader to some of the amazing capabilities of **R** to work with and map geographic data. Geographic data are data that contain spatial attributes (or spatial data) that define a geographic space (location, area, elevation, etc.) and non spatial attributes (f.e., population density, pollutant concentrations, temperature).

This tutorial was developed for one the units of the course "ENVS 420: Research Seminar in Environmental Sciences" offered at the University of Baltimore. However, it is hoped that readers outside of ENVS 420 who are interested in geospatial analysis and with a basic familiarity of **R** find this tutorial useful.

The use of an integrated developer environment (IDE) or an IDE like configuration such as the IDE **RStudio** (https://rstudio.com/) or the **Nvim-R** plug-in for the integration of **vim/neovim** and **R** (https://github.com/jalvesaq/Nvim-R/tree/stable) is recommended but not necessary.

The tutorial was written with **RMarkdown** (v. 2.6) (Allaire *et al.*, 2020; Xie *et al.*, 2018, 2020) in **R** (v. 4.0.2) (R Core Team, 2020).

Required **R** packages:

- **dplyr** (Wickham *et al.*, 2020)
- **openxlsx** (Schauberger & Walker, 2020)
- **RColorBrewer** (Neuwirth, 2014)
- **sf** (Pebesma, 2018)
- **tmap** (Tennekes, 2018)
- **tidyr** (Wickham & Henry, 2020)

Data

Datatasets used are archived in a zip compressed file (**SpatialAnalysisData.zip**) that can be downloaded at SpatialAnalysisData (**URL**: https://mega.nz/file/hYk02AyK#4knQ1zcaIxKTN_GX3JN8ZyOPD4lXjynIbA3PvpvSaG4). The link will connect you to a cloud storage service (MEGA, https://mega.nz) and ask you to download the file. By accessing the cloud storage service and downloading the file/data you agree to the terms of service of MEGA and to the terms of use of the code and data.