

# iemiscdata: Map of Tennessee Exceptional Waters

Irucka Embry, E.I.T. (EcoC<sup>2</sup>S)

2023-09-25

## Contents

Creating a ggplot2 Map of the Tennessee Exceptional Waters	1
R Sources	3
EcoC <sup>2</sup> S Links	4
Copyright and License	4

## Creating a ggplot2 Map of the Tennessee Exceptional Waters

```
install.load::load_package("iemiscdata", "iemisc", "USA.state.boundaries", "ggplot2",  
  "sfheaders", "sf", "dplyr", "data.table")  
# load needed packages using the load_package function from the install.load  
# package (it is assumed that you have already installed these packages)  
  
# load the exceptional_tn_waters data from iemiscdata (containing the  
# Exceptional Tennessee Waters)  
data(exceptional_tn_waters)  
  
# load the state_boundaries_wgs84 data from USA.state.boundaries (for the US  
# map)  
data(state_boundaries_wgs84)  
  
# determine all states that have a river source or end point  
states1 <- unique(lat_long2state(na.omit(exceptional_tn_waters$From_Lat), na.omit(exceptional_tn_waters$To_Lat))  
states2 <- unique(lat_long2state(na.omit(exceptional_tn_waters$To_Lat), na.omit(exceptional_tn_waters$From_Lat))  
get_states <- unique(states1, states2)  
  
# subset all states that have a river source or end point from  
# state_boundaries_wgs84  
river_states <- subset(state_boundaries_wgs84, NAME %in% get_states)
```

```

# Source 1 / subset for Southeast states only

states_map <- st_as_sf(river_states, crs = "+proj=longlat +datum=NAD83")

# add an id column to exceptional_tn_waters
exceptional_tn_waters_map <- exceptional_tn_waters[, id := seq(nrow(exceptional_tn_waters))]

# Source 2 begins the data has to be in long form to use sfheaders
tn_dt1 <- exceptional_tn_waters[, .(id, lon = From_Long, lat = From_Lat)]

tn_dt2 <- exceptional_tn_waters[, .(id, lon = To_Long, lat = To_Lat)]

# Add a 'sequence' variable to identify which one occurs first
tn_dt1[, sequence := 1L]
tn_dt2[, sequence := 2L]

# rbind the data.tables
exceptional_tn_waters_map2 <- rbindlist(list(tn_dt1, tn_dt2), use.names = TRUE)

# set the row ordering
setorder(exceptional_tn_waters_map2, id, sequence)
# Source 2 ends

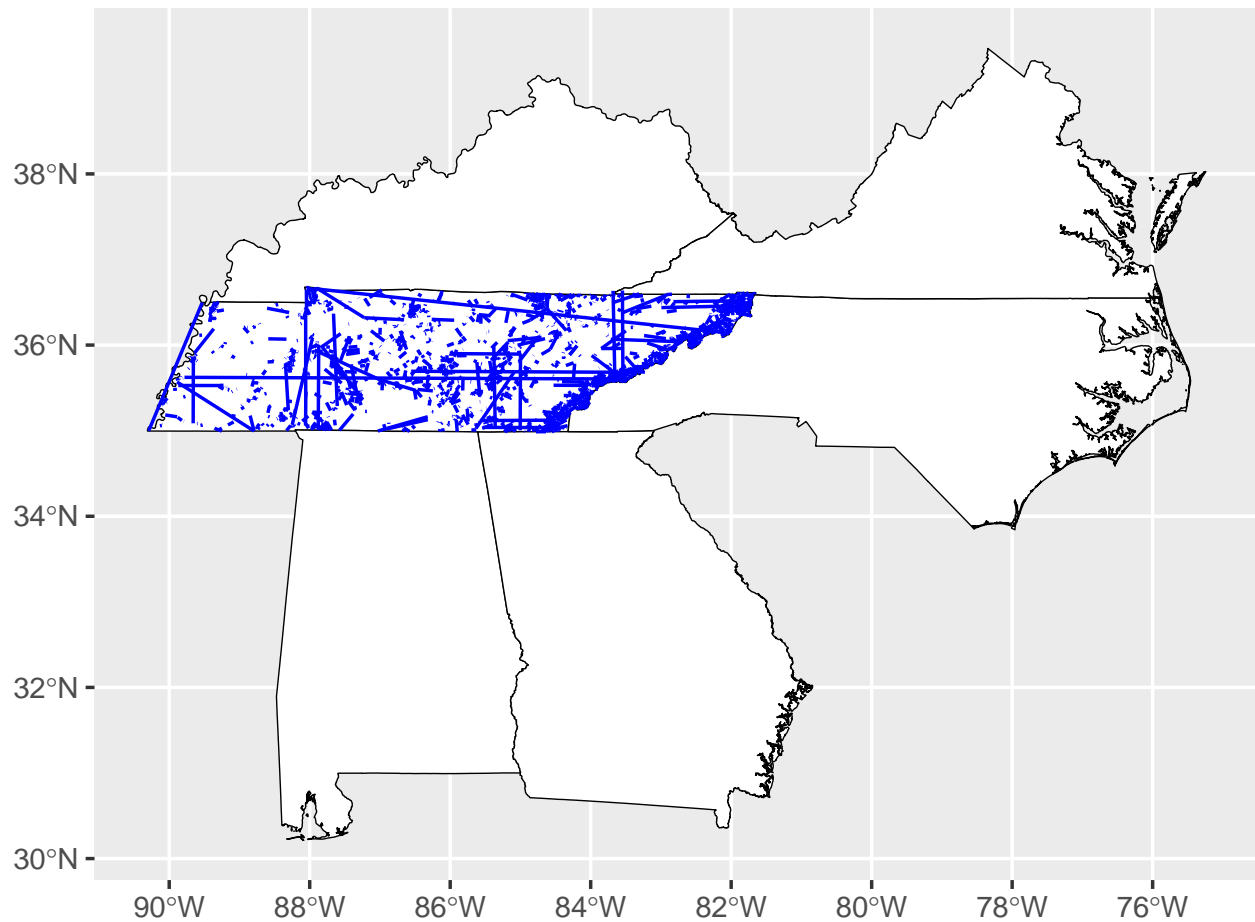
map1 <- exceptional_tn_waters_map2

# Source 3 begins
map2 <- map1 %>%
  st_as_sf(coords = c("lon", "lat"), na.fail = FALSE, crs = "epsg:4326") %>%
  group_by(id) %>%
  summarize() %>%
  filter(st_geometry_type(.) == "MULTIPOINT") %>%
  st_cast("MULTILINESTRING")
# Source 3 ends

p <- ggplot() + geom_sf(data = states_map, colour = "black", fill = "white")
p <- p + geom_sf(data = map2, colour = "blue")
p <- p + labs(x = "", y = "", title = "Tennessee Exceptional Waters Map")
print(p)

```

## Tennessee Exceptional Waters Map



## R Sources

### Source 1

How to draw good looking maps in R by Jie Zhou on April 18, 2011. See <https://uchicagoconsulting.wordpress.com/tag/r-ggplot2-maps-visualization/>.

### Source 2

geometry - r - Create linestring from two points in same row in dataframe - Stack Overflow. Edited answer by SymbolixAU on Jan 29, 2021. See <https://stackoverflow.com/questions/51918536/r-create-linestring-from-two-points-in-same-row-in-dataframe>

### Source 3

R - sf - create linestrings from sets of coordinate points with missing values - Geographic Information Systems Stack Exchange. Answer by dimfalk on Dec 27, 2022 and edited on Dec 28, 2022. See <https://gis.stackexchange.com/questions/448455/r-sf-create-linestrings-from-sets-of-coordinate-points-with-missing-values>

## EcoC<sup>2</sup>S Links

EcoC<sup>2</sup>S Home – <https://www.ecoccs.com/>

About EcoC<sup>2</sup>S – [https://www.ecoccs.com/about\\_ecoc2s.html](https://www.ecoccs.com/about_ecoc2s.html)

Services – <https://www.ecoccs.com/services.html>

1 Stop Shop – [https://www.ecoccs.com/other\\_biz.html](https://www.ecoccs.com/other_biz.html)

Products – <https://www.questionuniverse.com/products.html>

Media – <https://www.ecoccs.com/media.html>

Resources – <https://www.ecoccs.com/resources.html>

R Trainings and Resources provided by EcoC<sup>2</sup>S (Iruka Embry, E.I.T.) – <https://www.ecoccs.com/rtraining.html>

## Copyright and License

All R code written by Iruka Embry is distributed under the GPL-3 (or later) license, see the [GNU General Public License {GPL} page](#).

All written content originally created by Iruka Embry is copyrighted under the Creative Commons Attribution-ShareAlike 4.0 International License. All other written content retains the copyright of the original author(s).

This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).