

baytrendsmap Shiny App

**ITAT Meeting
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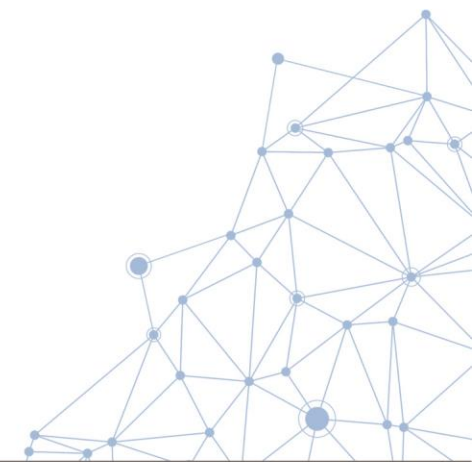
What is it?

- **baytrends**

- The baytrends package was developed to enable users to **evaluate long-term trends in the Chesapeake Bay using a Generalized Additive Modeling (GAM) approach**. The model development includes selecting a GAM structure to describe nonlinear seasonally-varying changes over time, incorporation of hydrologic variability via either a river flow or salinity, the use of an intervention to deal with method or laboratory changes suspected to impact data values, and representation of left- and interval-censored data. This approach, which is fully transferable to other systems, allows for Chesapeake Bay water quality data to be evaluated in a statistically rigorous, yet flexible way to provide insights to a range of management- and research-focused questions.

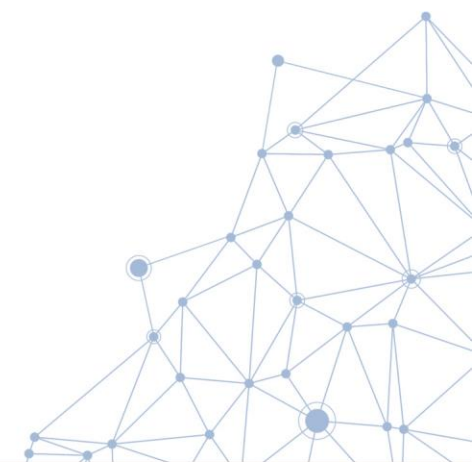
- **baytrendsmap**

- **Shiny app** to create maps on-the-fly from output of the baytrends package.



Shiny App Options

- **Dataset**
 - Multiple data sets based on time period and flow adjustment
- **Map Layer**
 - Based on dataset but includes parameter, layer, and season
- **Maps**
 - Range (interactive and static)
 - Trends
- **Colors**
 - Defaults are color blind friendly



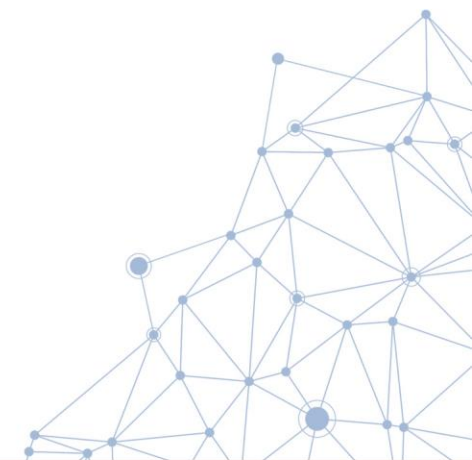
Changes

- **Target Audience**

- Researchers and small group
- Change to a wider technical group but no specific background knowledge of baytrends
 - Agency Scientist

- **Split the app into “advanced” for existing users and “basic”**

- “Advanced” for expert users and includes all past functionality
- “Basic”, streamlined
 - Auto-loads at start up (data and all 3 maps)
 - Single selection screen controls all 3 maps
 - Changes to selection boxes automatically update the maps
 - Simplified choices from Advanced version
 - Fits on single screen



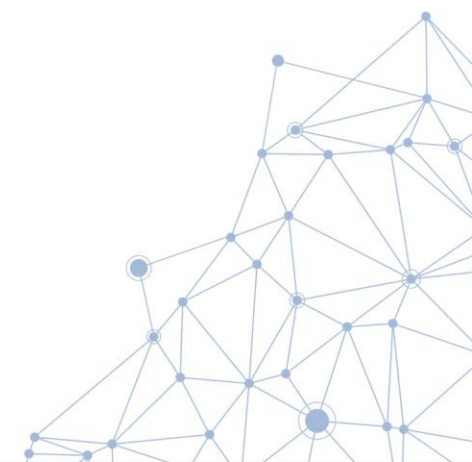
Live Demonstration

- **Web**

- https://tetrattech-wtr-wne.shinyapps.io/baytrendsmap_test_march/

- **R Console (local computer using code on web)**

- `shiny::runGitHub("baytrendsmap", "tetrattech", subdir = "inst/shiny-examples/baytrendsmap")`



Browser Notes

- Application scales dynamically based on size of browser window
- Use browser controls to increase or decrease zoom (e.g., Ctrl+, Ctrl-, or Ctrl0).
- Blue select filters can be opened and closed with a click.

2. Choose Map Layer
(parameter|layer|season)

Filters

Filter by 'Map Layer'

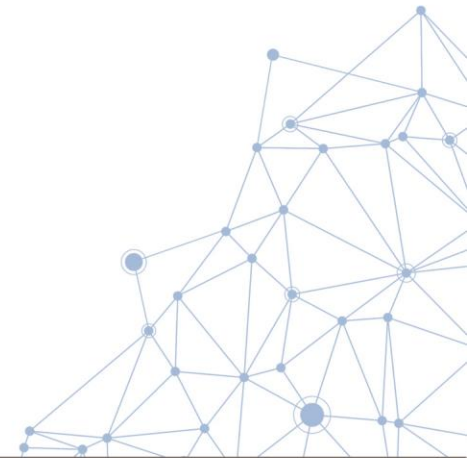
3. Map Options

3.a. Range Map Options

Color Palette (Range Map Only)

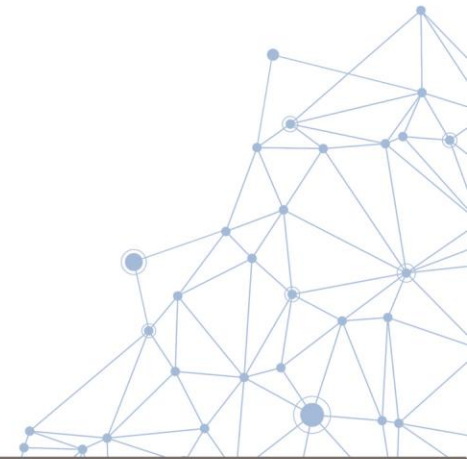
Select palette:

Purple_Orange ▼



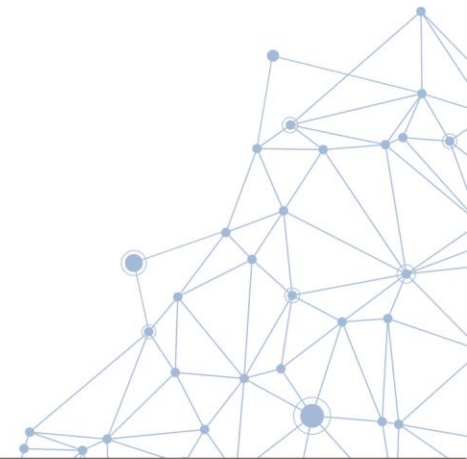
Questions and Comments

- Open forum for questions and comments



Questions

- Is it easier to use?
- Does it make sense?
- What could be improved?
- What could be added?
- What could be removed?



Resources

- **baytrends, R package**
 - <https://github.com/tetrattech/baytrends>
- **baytrendsmap, R package**
 - <https://github.com/tetrattech/baytrendsmap>
 - Includes the Shiny app in the package
- **baytrendsmap, Shiny App**
 - Official (Does not include recent updates.....yet)
 - <https://baytrends.chesapeakebay.net/baytrendsmap/>
 - Testing (Includes recent updates demonstrated today)
 - https://tetrattech-wtr-wne.shinyapps.io/baytrendsmap_test_march/
 - R Console using GitHub (latest)
 - `shiny::runGitHub("baytrendsmap", "tetrattech", subdir = "inst/shiny-examples/baytrendsmap")`

