HydroExplore Progress Report

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What's Working:

Our app has a tab that has a trend line for precipitation and streamflow, with the ability to add baseflow as well. This data is separated by each watershed, meaning the baseflow lines, the streamflow lines, and the precipitation are all separated by their watershed. This allows for comparison of different watersheds, without having to search for their lines on the graph. This main page also has summary statistics for the selected period including median and average discharge, as well as a count of the number of flagged days. You can also adjust the date range from what is selected and pick the watersheds you want to analyze. These changes to the date range and watershed selections are what changes the data in the upcoming graphs as well.

We also have a tab that showcases weekly or monthly trend analysis, so looking at how the values for each month or week of the year have changed over time. For these graphs we have four different lines that can be show. Precipitation, streamflow, snow depth, and Precipitation/Streamflow. The point of this is that you can look at a specific month and better understand the trends involved, being able to see how these values have changed over the years.

Our third tab is where we look at rolling averages, the point of this is to be able to see whether these values have changed over time. A rolling average is used to summarize how much values have changed using different periods of time. Our code allows for up to a 364-day rolling-average, in which case each year would be a singular point. But rolling averages work better when analyzing smaller timescales, like 30 to 90 days. This tab also has an average precipitation and streamflow by month graph. It's an easy way to see how each month differs in its average daily streamflow and precipitation.

Lastly, we have a page that allows you to download and examine our data. This dataset matches the selections made earlier. So, the watersheds and data ranges that were selected will show up here. This allows you to use the data generated from this app for your own purposes, Hubbard Brook doesn't offer a combined precipitation, snowfall, and streamflow dataset for example, so this is an easy way to get this data.

What we have left to Finish

Ensuring the weekly and monthly trend analysis graphs are displaying properly. Work on understanding our snow depth data correctly. Deciding on if we want to display weekly average plots (grouped by month still), instead of just grouping the plots by week. That way the output is still monthly, but it's an average of each week.

We also need to work more on cleaning up and defining the pages and what each graph means. Making sure that each graphs shows the plots for each watershed separately is important as well, we want to make sure that it is clear which data comes from which watershed.
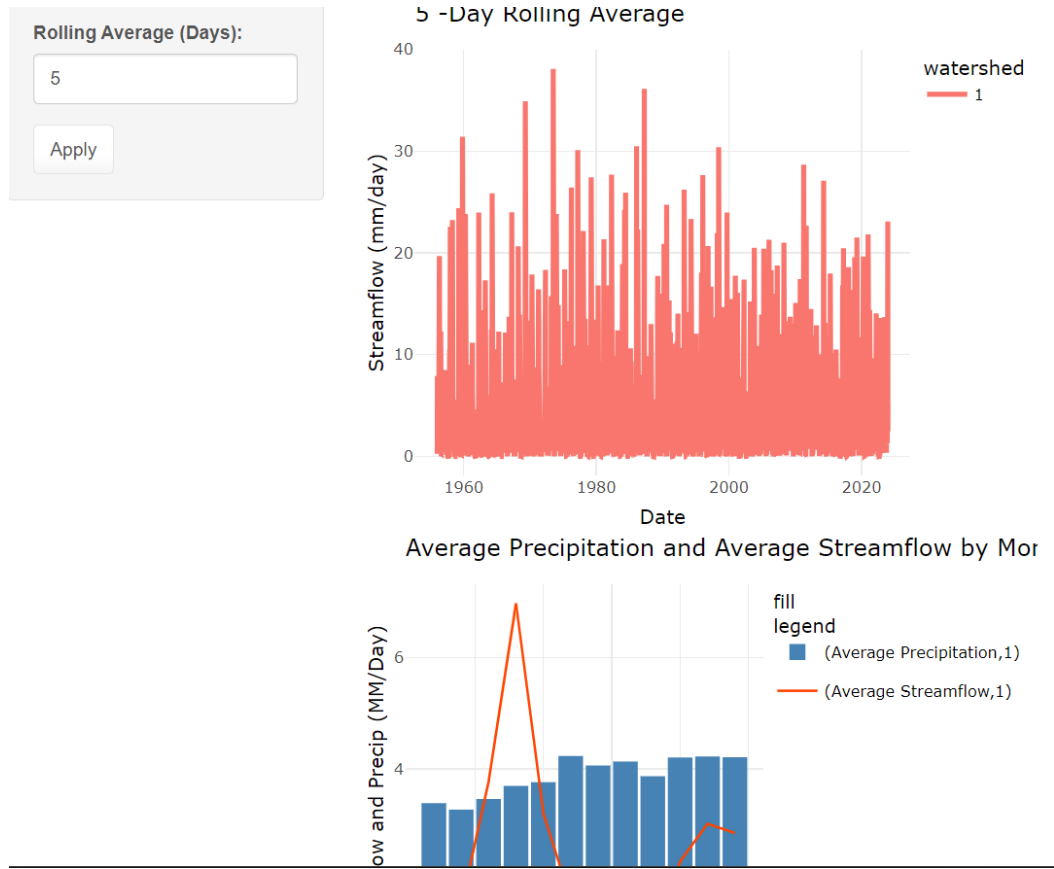
Our App so Far:

Main Tab/Trend Analysis
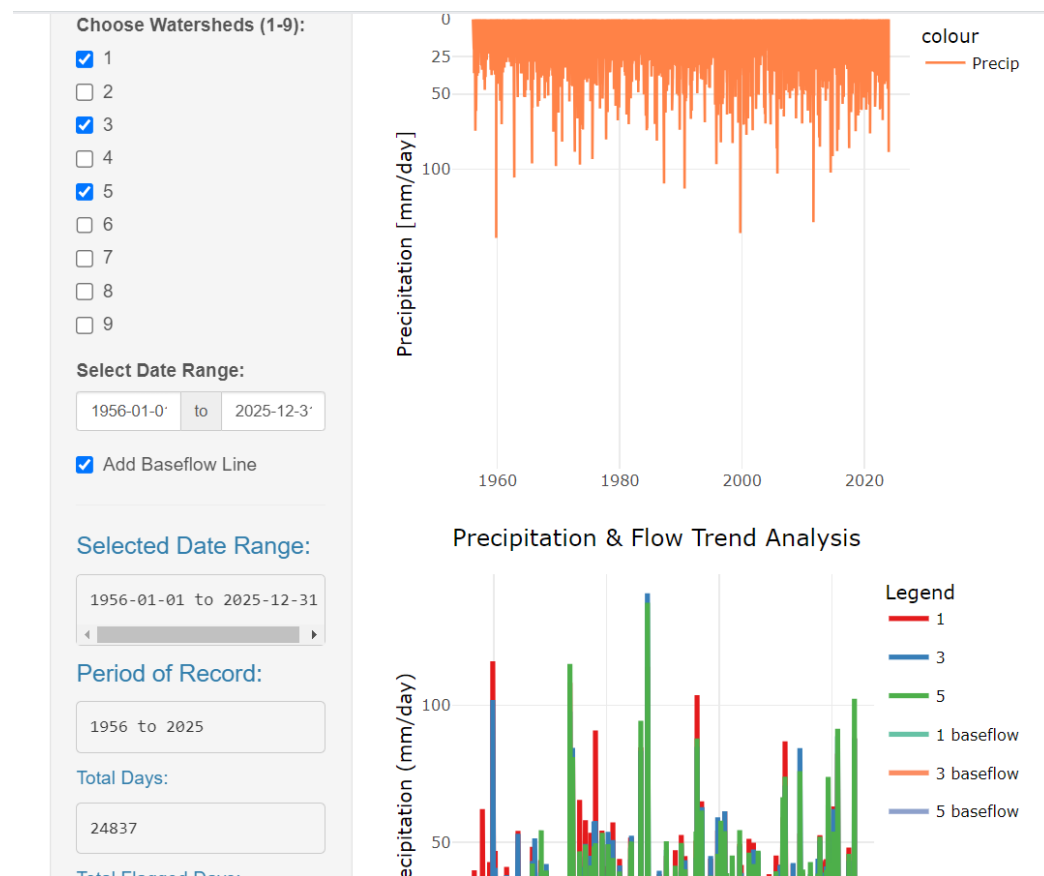
Monthly Trends Tab

Monthly Trend Analysis

Rolling Averages Tab

Possible Additional Features:

We would like to have a page that goes into depth explaining the apps features and methods. We also need to work more on cleaning up and defining the pages and what each graph means. Making sure that each graphs shows the plots for each watershed separately is important as well, we want to make sure that it is clear which data comes from which watershed.

Welcome! Hydro Explore Project

Hubbard Brook Streamflow Data

Welcome to the Hubbard Brook Streamflow Data App! This tool provides interactive insights into streamflow data collected from the Hubbard Brook Experimental Forest. Use the different tabs to explore patterns, trends, and seasonal variations in streamflow.

Features:

- **Trend Analysis** – Examine long-term streamflow trends and detect patterns over time.
- **Monthly Analysis** – Explore seasonal variations in streamflow and compare month-to-month changes.
- **Rolling Averages** – Smooth out short-term fluctuations to better understand overall trends.
- **See Tables** – Access raw streamflow data in table format for further inspection and analysis.

Navigate through the tabs to explore the data in different ways and gain insights into streamflow dynamics at Hubbard Brook!