**Flooding**

**Part I – What is flooding and how can we describe it?**

1. **Vocabulary**

Search online: What is a flood?

**Part II - How do we measure flooding?**

1. **Explore the hydrograph of the Mississippi at St. Paul.**

Type the following in your favorite search engine “*USGS national water dashboard river levels*” to open the website of the [**National Water Dashboard – USGS**](https://www.bing.com/ck/a?!&&p=7fe7c84401ed46f541755786547d7c0848966d0edb9d724dd2d580914fc83febJmltdHM9MTc1MDYzNjgwMA&ptn=3&ver=2&hsh=4&fclid=232d9a06-1420-6338-3a64-8edf150b6203&psq=usgs+national+water+dashbord+river+levels&u=a1aHR0cHM6Ly9kYXNoYm9hcmQud2F0ZXJkYXRhLnVzZ3MuZ292L2FwcC9ud2QvZW4v&ntb=1) (https://dashboard.waterdata.usgs.gov/app/nwd/en/).

A close-up of a website

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1. Once you can see the map, select only the layer with the USGS stations with stream flow flooding by going to the “USGS Stations” section, then “Streamflow”.
2. Click on the gage station (displayed as a point) in Downtown St. Paul, called “Mississippi at St. Paul, MN”. A new tab or window will open.
3. Explore and study this hydrograph.
4. Has a flood occurred during the last week?
5. What was the approximately highest discharge that occurred during the last week?
6. At which timestep (~ how often) are the discharge measurements usually available?
7. Click on the “Site page” label in the top bar to open a new window or tab with the information of the measurement station. What does the main graph display? How is it different from the hydrographs we have seen before?
8. Find the legend for the different color sections (yellow, orange, red and pink). What do they mean?
9. A screenshot of a computer

   AI-generated content may be incorrect.Extend the time scale to one year by selecting on the top. Has a major flood occurred during the last year at the Mississippi at St. Paul? If yes, what was approximately the highest gage height?
10. Bonus: Go to the “Layers” section in the top panel, click on “Streamflow” and select “High flow”. This will allow you to select only stations where flooding is occurring. Are all points (stations) displayed with the same color? If not, what do those differences mean?

**Part III – How can we plan with natural river processes?**

You and your group are a team of USGS scientists tasked with identifying what communities could do for future planning. How can they ensure the least amount of damage in the future? Discuss as a group and write down your ideas.