

MASSACHUSETTS RIVER OVERVIEW



Ronald S.W. Horwood

Sr. Meteorologist

National Weather Service

Northeast River Forecast Center

Norton MA

MA Drought Management Task Force

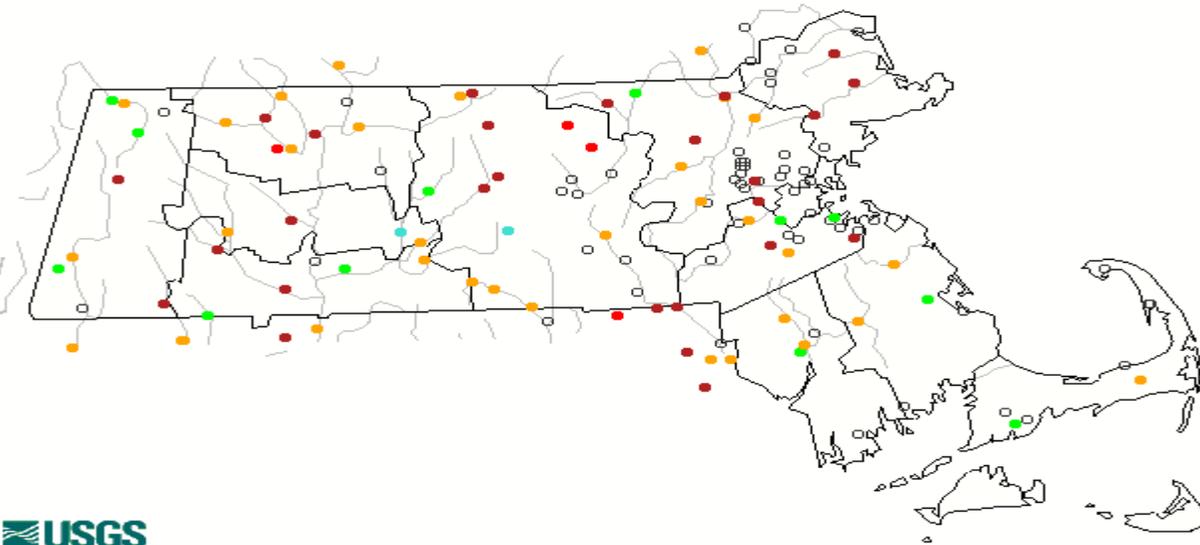
21 July 2022

OUTLINE

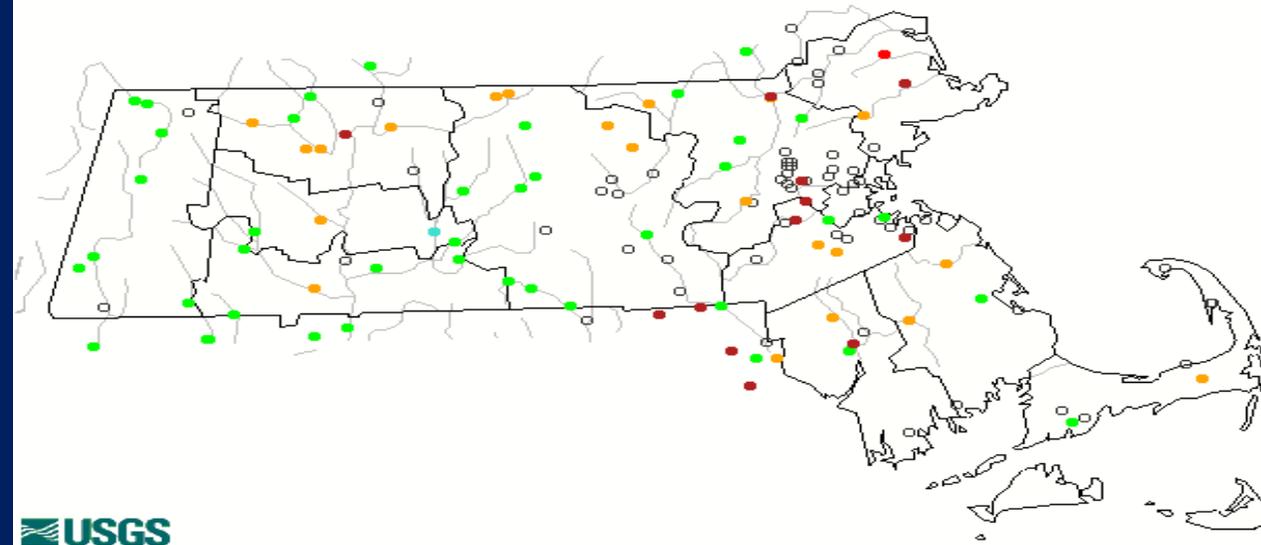
- Snapshot of Massachusetts River Flows
- NERFC River Forecast Outlook
- Takeaways

MASSACHUSETTS RIVER FLOWS

Sunday, July 10, 2022 09:30ET



Wednesday, July 20, 2022 11:30ET



Search USGS streamgage

Choose a data retrieval option and select a location on the map

- List of all stations
 Single station
 Nearest stations
 Peak flow

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Search USGS streamgage

Choose a data retrieval option and select a location on the map

- List of all stations
 Single station
 Nearest stations
 Peak flow

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Showers and thunderstorms brought some short term flow relief to central and western Massachusetts. Coastal eastern Massachusetts including Cape Cod and the Islands have largely missed out on the rain.

NAEFS ENSEMBLE RIVER FORECAST OUTLOOK

- A 42 member ensemble run for all NERFC forecast points to give us an idea of the possible range of river flows out 10 days.
 - Basically 42 slightly different initial conditions in the weather models lead to 42 different river forecasts based on rainfall and temperature.
- Will show results for...
 - North Nashua River at Fitchburg (FBGM3)
 - Squannacook River at West Groton (WGTM3)
 - Shawsheen River at Wilmington (WLMM3)
 - Charles River at Dover (DOVM3)

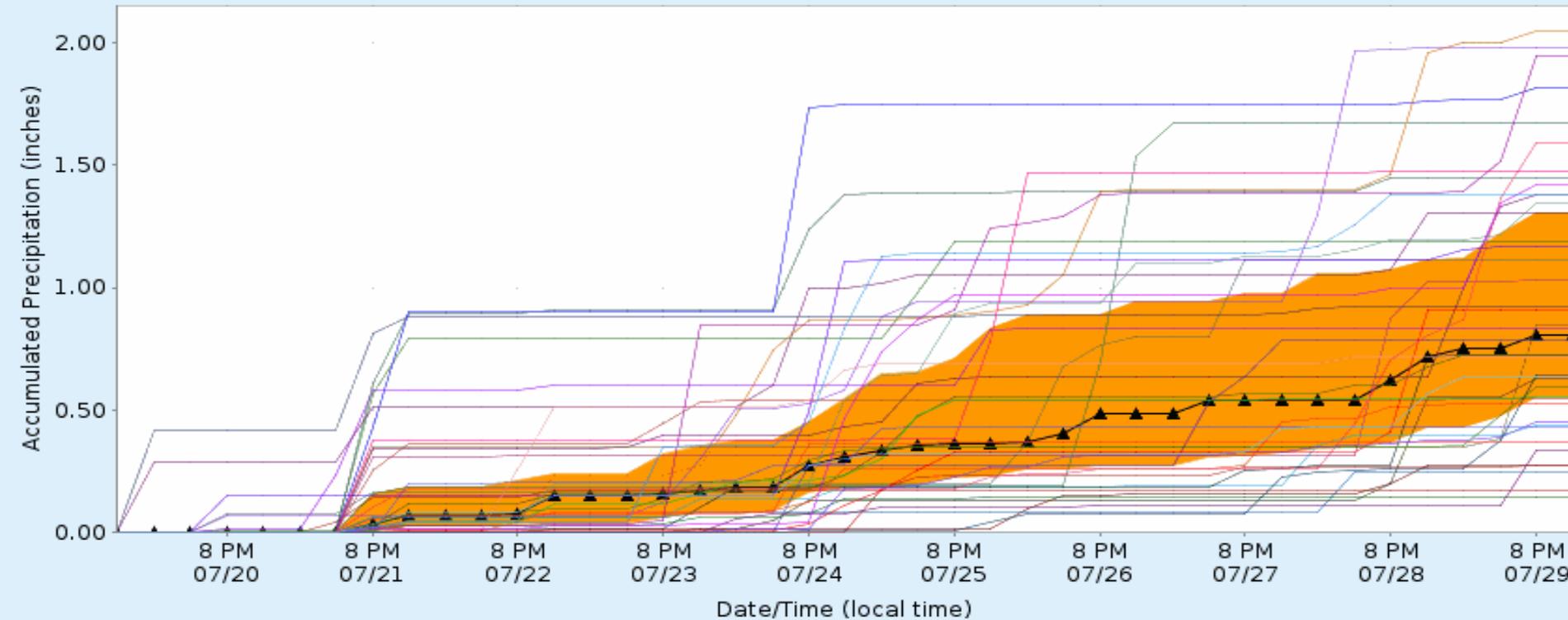
NAEFS – FBGM3



10 Day NAEFS Accumulated Precipitation Simulations Used as Input to the River Level Simulations



North Nashua River at Fitchburg, MA (FBGM3)



- Individual Model Simulations (42 Total)
- ▲ Median Precipitation (Simulations indicate a 50% Chance of Exceeding this Rainfall Amount)
- More Likely Range (Simulations indicate a 40% chance precipitation amounts will fall within this range)

Rainfall forecasts are clustered in the 0.50 – 1.25 inch range over the next 10 days.

No extreme solutions indicated.

NAEFS – FBGM3

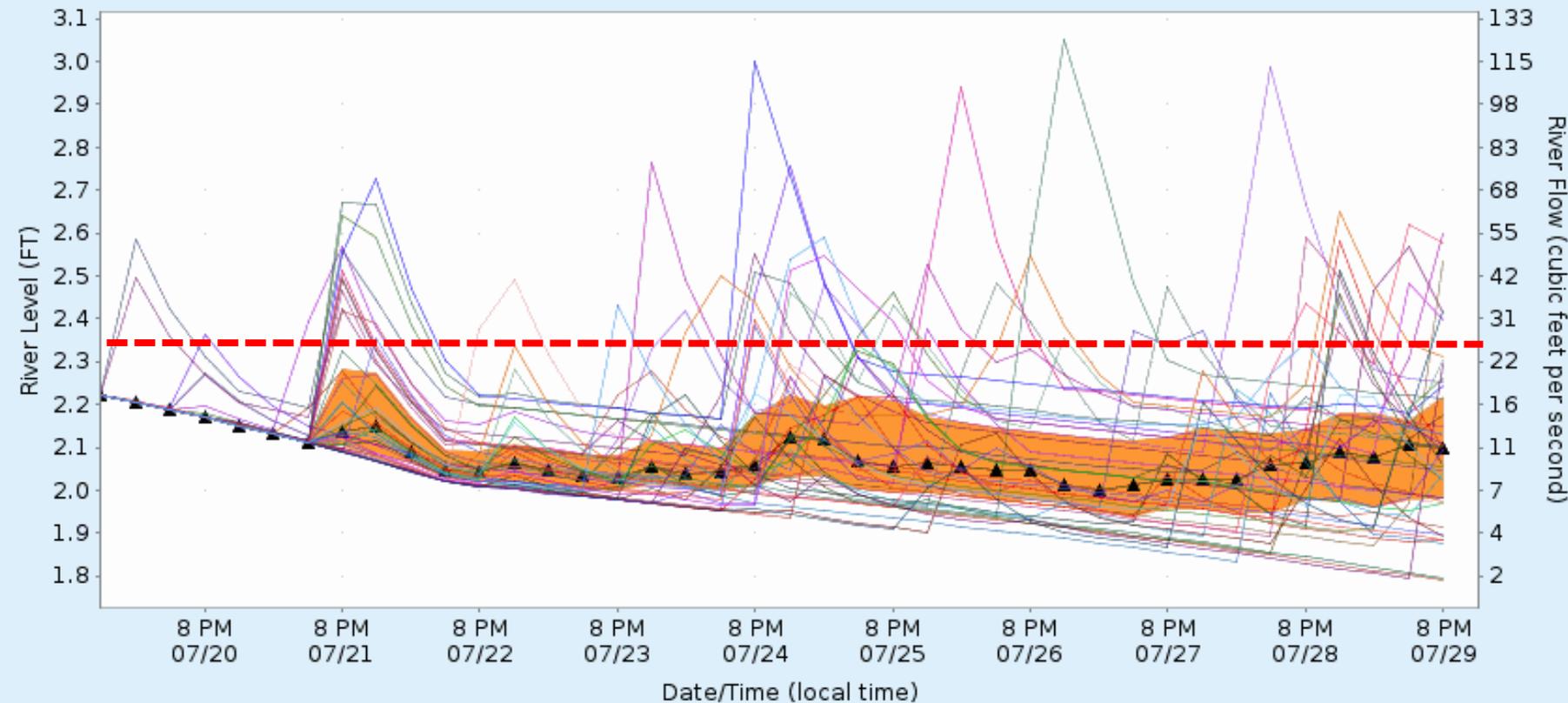


7 Day NAEFS River Level Simulations

Used to Estimate the Chance of Flooding and the Range of Possible River Levels
Each Line Shows an Individual Model Simulation (42 Total)



North Nashua River at Fitchburg, MA (FBGM3)



- Individual Model Simulations (42 Total)
- ▲ Median River Level (Simulations indicate a 50% Chance of Exceeding this Level)
- More Likely Range (Simulations indicate a 40% chance river levels will fall within this range)

Most solutions agree that flow will not change much over the next 10 days...perhaps decreasing slightly from current levels.

Quick spikes above the median (dashed red line) are possible with thunderstorms.

Flows have improved at this site over the last 10 days.

NAEFS – WGTM3

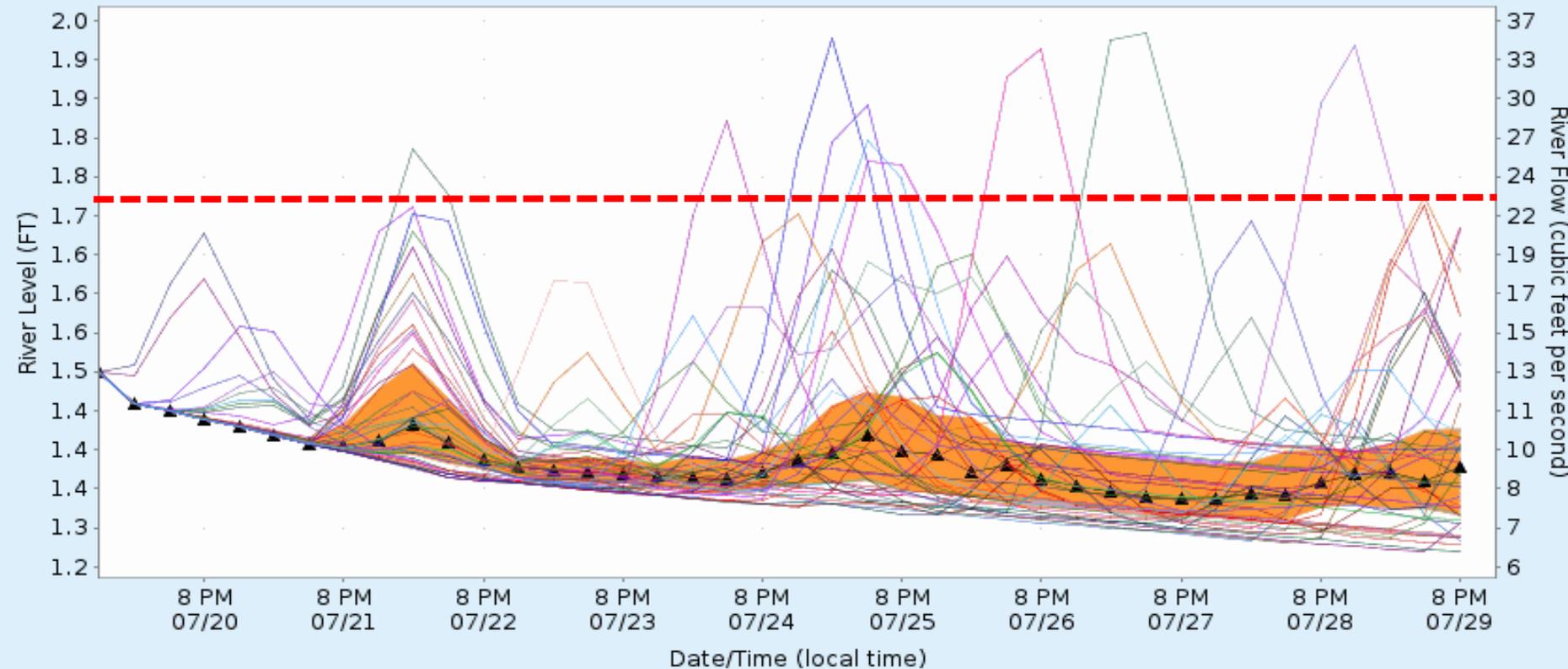


7 Day NAEFS River Level Simulations

Used to Estimate the Chance of Flooding and the Range of Possible River Levels
Each Line Shows an Individual Model Simulation (42 Total)



Squannacook River at West Groton, MA (WGTM3)



A slow but steady decrease in flows is expected over the next 10 days with very little chance of reaching the median for this time of year.

- Individual Model Simulations (42 Total)
- ▲ Median River Level (Simulations indicate a 50% Chance of Exceeding this Level)
- More Likely Range (Simulations indicate a 40% chance river levels will fall within this range)

NAEFS-WLMM3

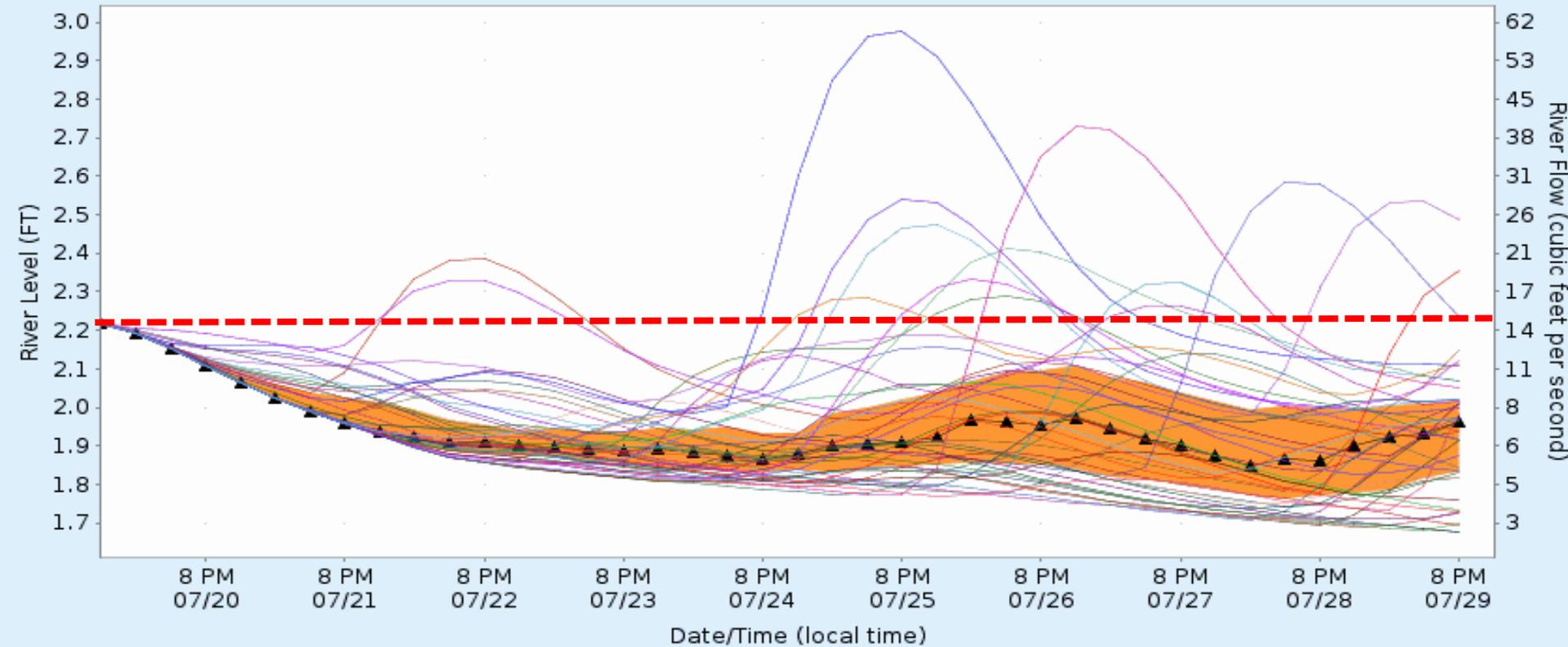


7 Day NAEFS River Level Simulations

Used to Estimate the Chance of Flooding and the Range of Possible River Levels
Each Line Shows an Individual Model Simulation (42 Total)



Shawsheen River at Wilmington, MA (WLMM3)



- Individual Model Simulations (42 Total)
- ▲ Median River Level (Simulations indicate a 50% Chance of Exceeding this Level)
- More Likely Range (Simulations indicate a 40% chance river levels will fall within this range)

- Flows in 10 days are likely to be lower than their current levels.
- Very little overall spread for a 10 day forecast.

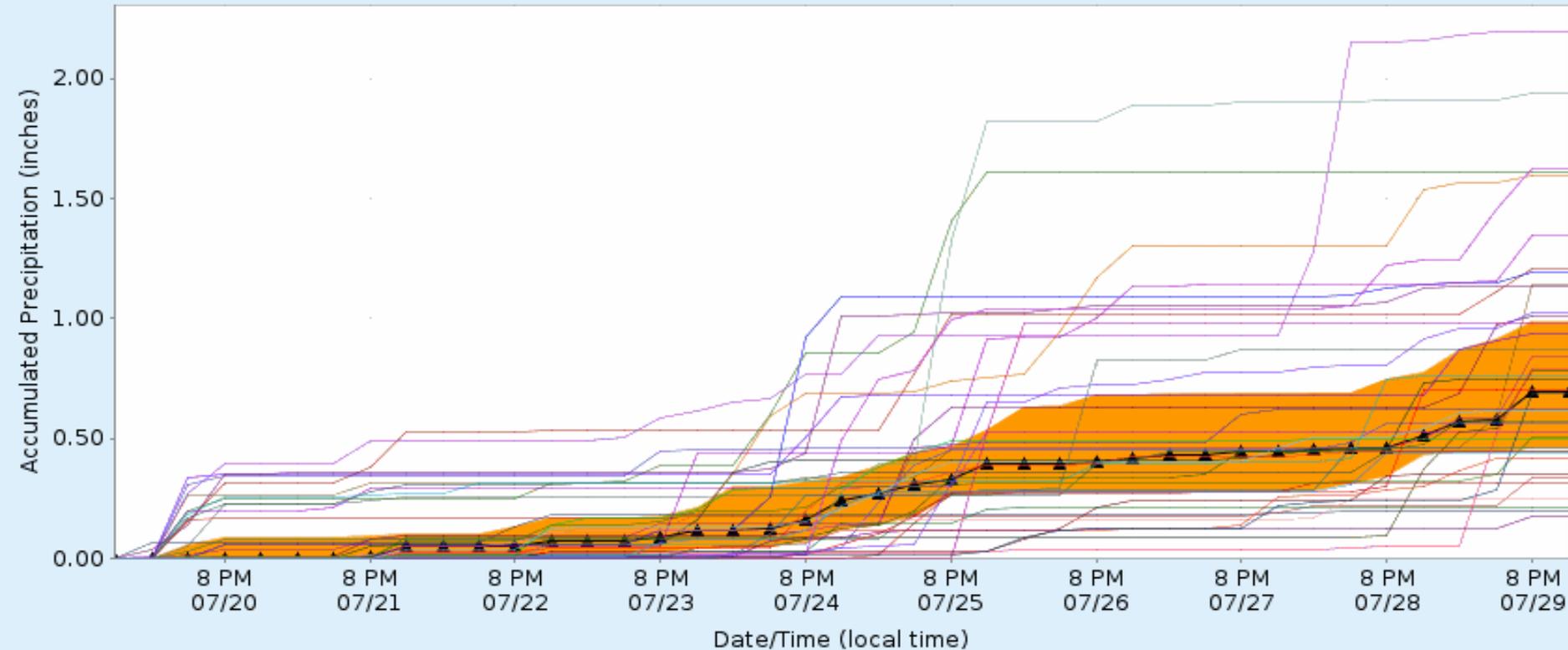
NAEFS – DOVM3



10 Day NAEFS Accumulated Precipitation Simulations

Used as Input to the River Level Simulations

Charles River at Dover, MA (DOVM3)



- Rainfall is forecast to be less here than across central Massachusetts over the next 10 days with most likely values under an inch. This is below normal for July.

— Individual Model Simulations (42 Total)
▲ Median Precipitation (Simulations indicate a 50% Chance of Exceeding this Rainfall Amount)
■ More Likely Range (Simulations indicate a 40% chance precipitation amounts will fall within this range)

NAEFS – DOVM3

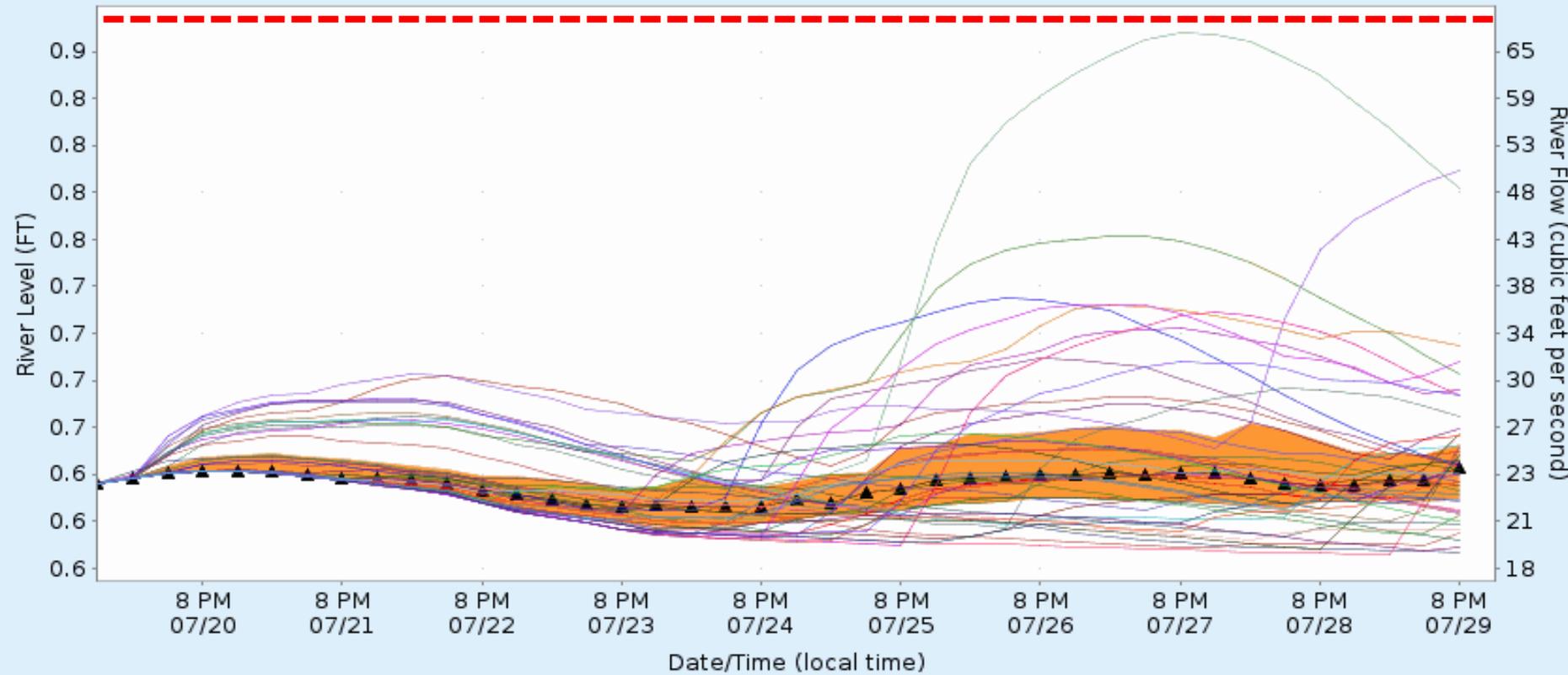


7 Day NAEFS River Level Simulations

Used to Estimate the Chance of Flooding and the Range of Possible River Levels
Each Line Shows an Individual Model Simulation (42 Total)



Charles River at Dover, MA (DOVM3)



- Individual Model Simulations (42 Total)
- ▲ Median River Level (Simulations indicate a 50% Chance of Exceeding this Level)
- More Likely Range (Simulations indicate a 40% chance river levels will fall within this range)

- Very low flows likely to continue on the Charles over the next 10 days. This is currently among the worst looking basins in Massachusetts forecast by the NERFC.

TAKEAWAYS

- River flows across central and western Massachusetts increased a bit over the last 10 days due to recent showers and thunderstorms.
- The lowest flows are now found in eastern Massachusetts.
 - Parker River at Byfield at record low levels for 20 July (76 years of record).
- Rain chances overall are not that promising over the next 10 days.
 - Best chance for thunderstorms over central and western Massachusetts.
 - Lowest chance for in southeastern Massachusetts.
- NERFC ensemble river forecasts call for steady or slowly falling river levels through the end of July.

[weather.gov/nerfc](https://www.weather.gov/nerfc)