



# MASSACHUSETTS RIVER OVERVIEW



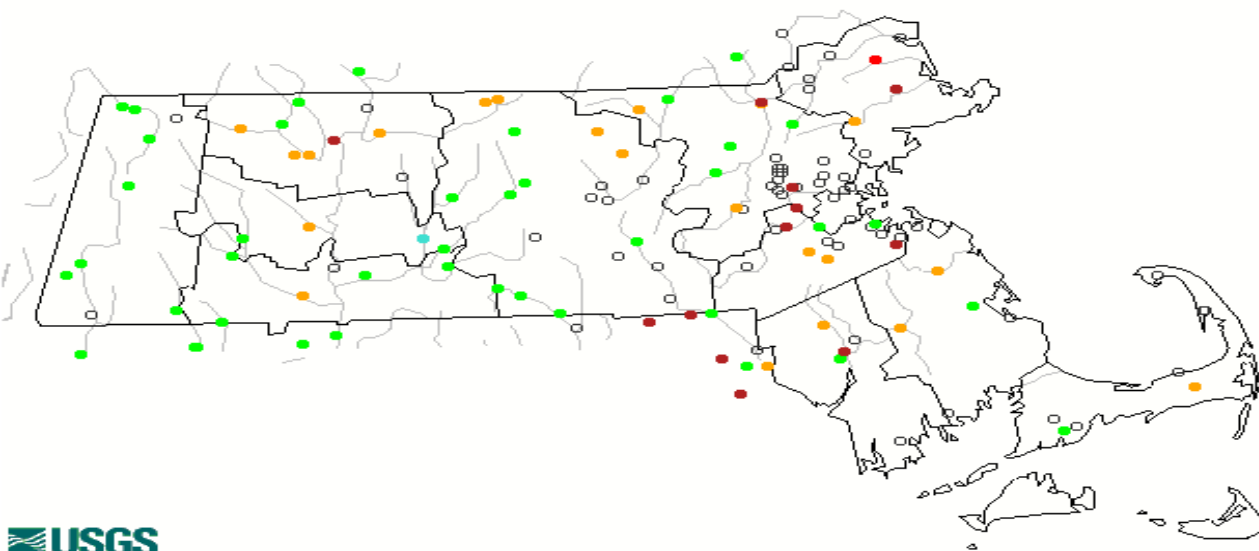
Ronald S.W. Horwood  
Sr. Meteorologist  
National Weather Service  
Northeast River Forecast Center  
Norton MA  
MA Drought Management Task Force  
8 August 2022

# OUTLINE

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

# MASSACHUSETTS RIVER FLOWS

Wednesday, July 20, 2022 11:30ET

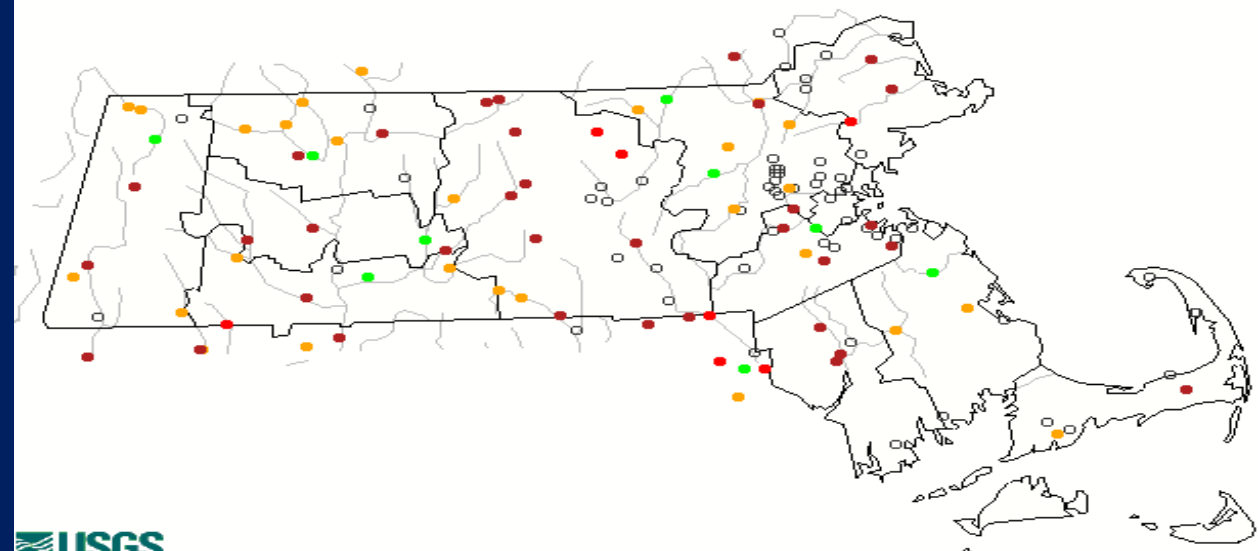


Search USGS streamgauge

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

Sunday, August 07, 2022 15:30ET



Search USGS streamgauge

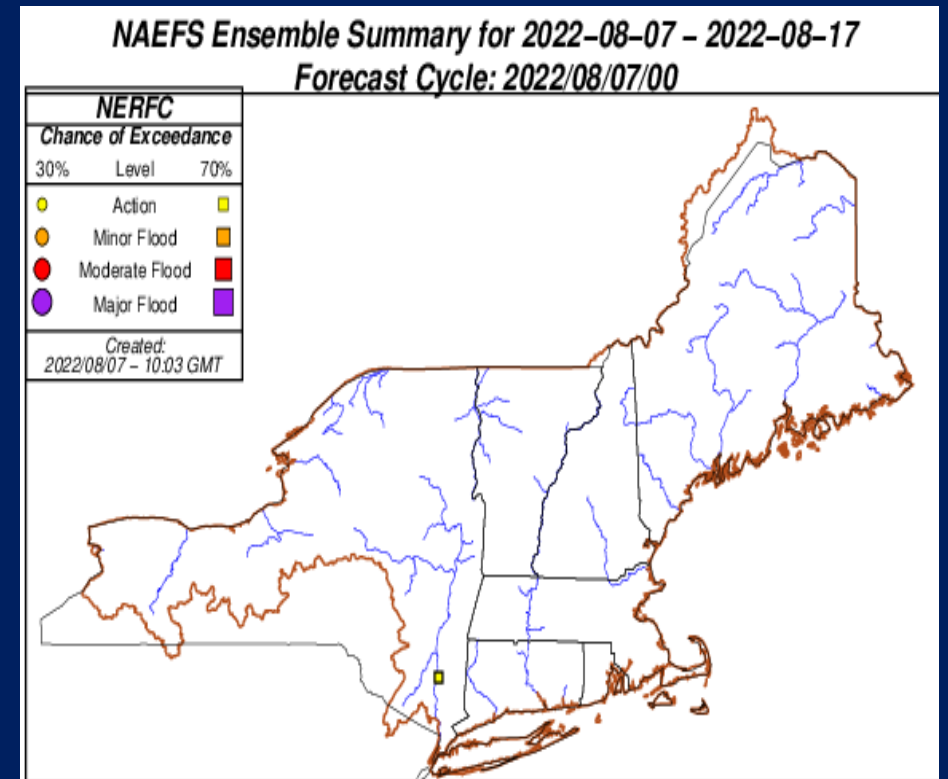
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Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Almost all areas in the Commonwealth have seen intensifying drought and degrading river and stream flows since our last meeting. Worcester...Essex and Bristol counties look especially poor.

# 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...
  - Charles River at Dover (DOVM3)
  - Neponset River at Norwood (NRWM3)
  - North Nashua River at Fitchburg (FBGM3)
  - Taunton River near Bridgewater (BDGM3)



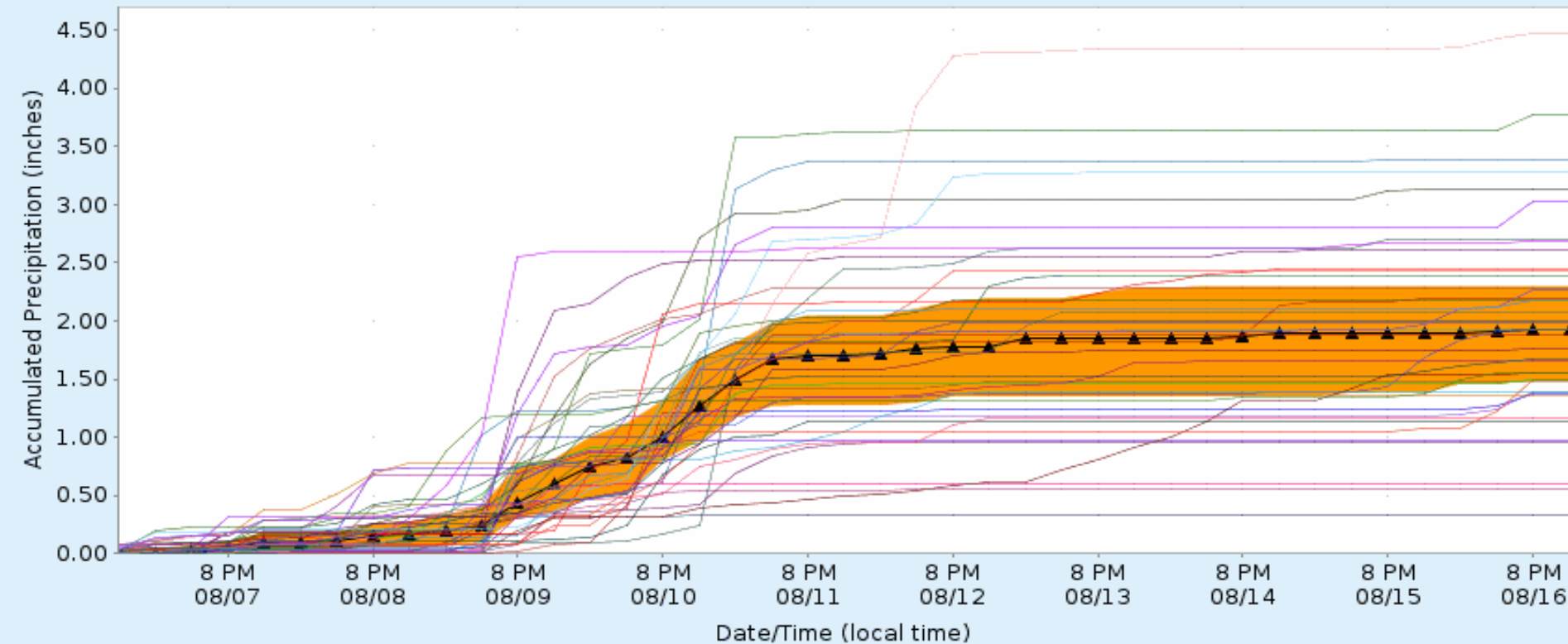
# NAEFS – DOVM3



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



### Charles River at Dover, MA (DOVM3)



- 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)

Finally a promising rainfall outlook with 1 to 2 inches of rain most likely over the next 10 days.

Very few solutions remain below an inch.

# NAEFS – DOVM3

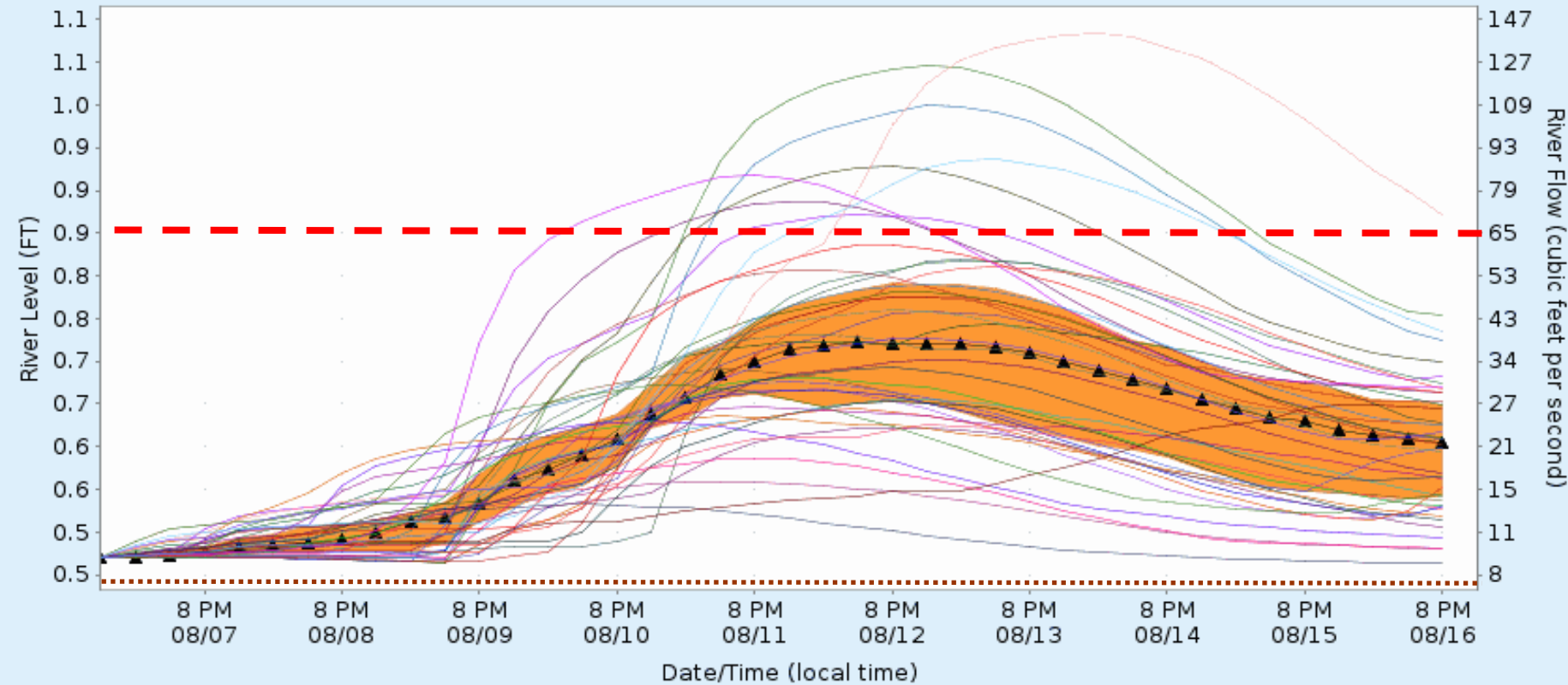


## 7 Day NAEFS River Level Simulations

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)

Strong consensus for at least some slight drought relief over the next week.

Flows could near the median for this time of year ( red dashed line ) and will rise above the near current daily record low flows ( brown dashed line ).

# NAEFS – NRW3

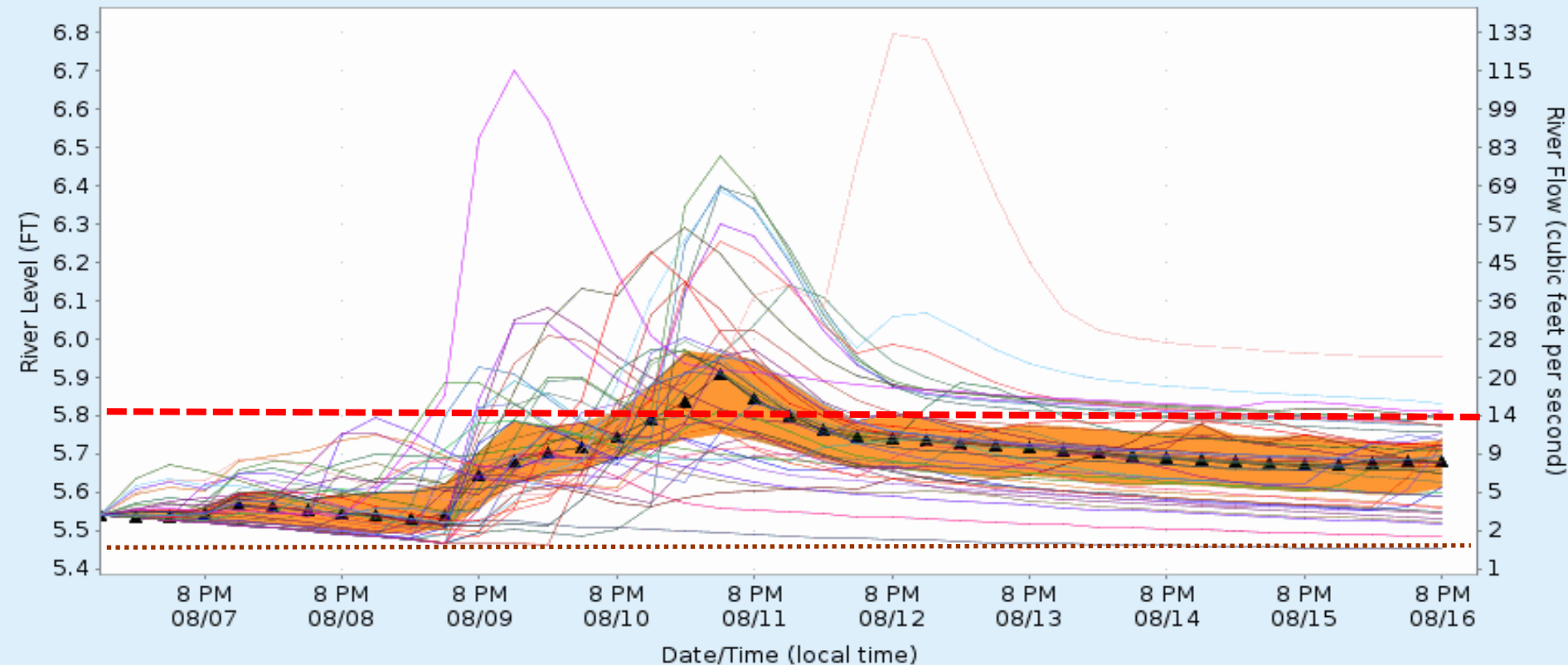


## 7 Day NAEFS River Level Simulations

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



### Neponset River at Norwood, MA (NRWM3)



- 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)

Again we see promise for at least a brief recovery in flow conditions this week.

Many solutions spike above the median flow line.

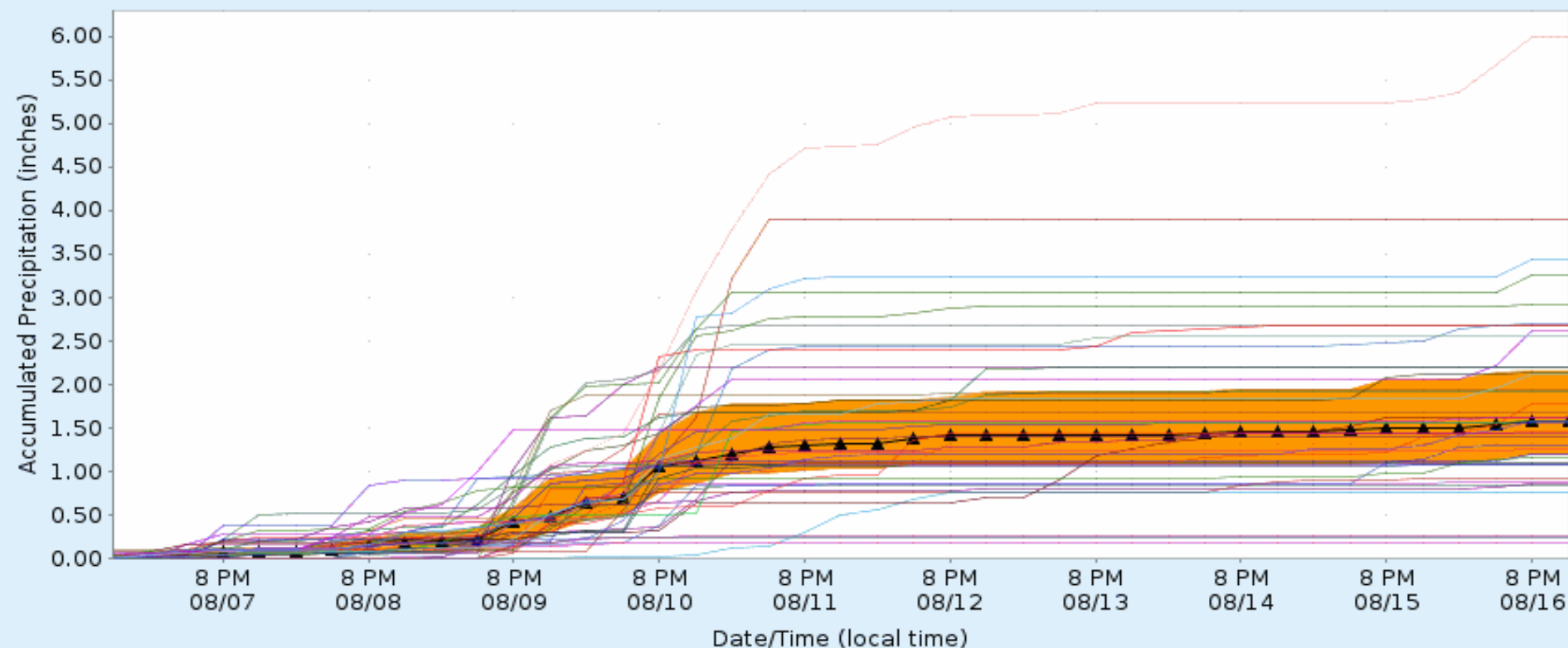
# NAEFS-FBGM3



## 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)

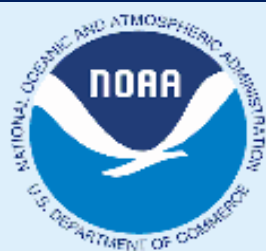
▲ Median Precipitation (Simulations indicate a 50% Chance of Exceeding this Rainfall Amount)

■ More Likely Range (Simulations indicate a 40% chance precipitation amounts will fall within this range)

- Rainfall solutions are a bit lower than for the Charles River basin further east with 1.00 – 1.50 inches being the most likely scenario.



# NAEFS – FBGM3

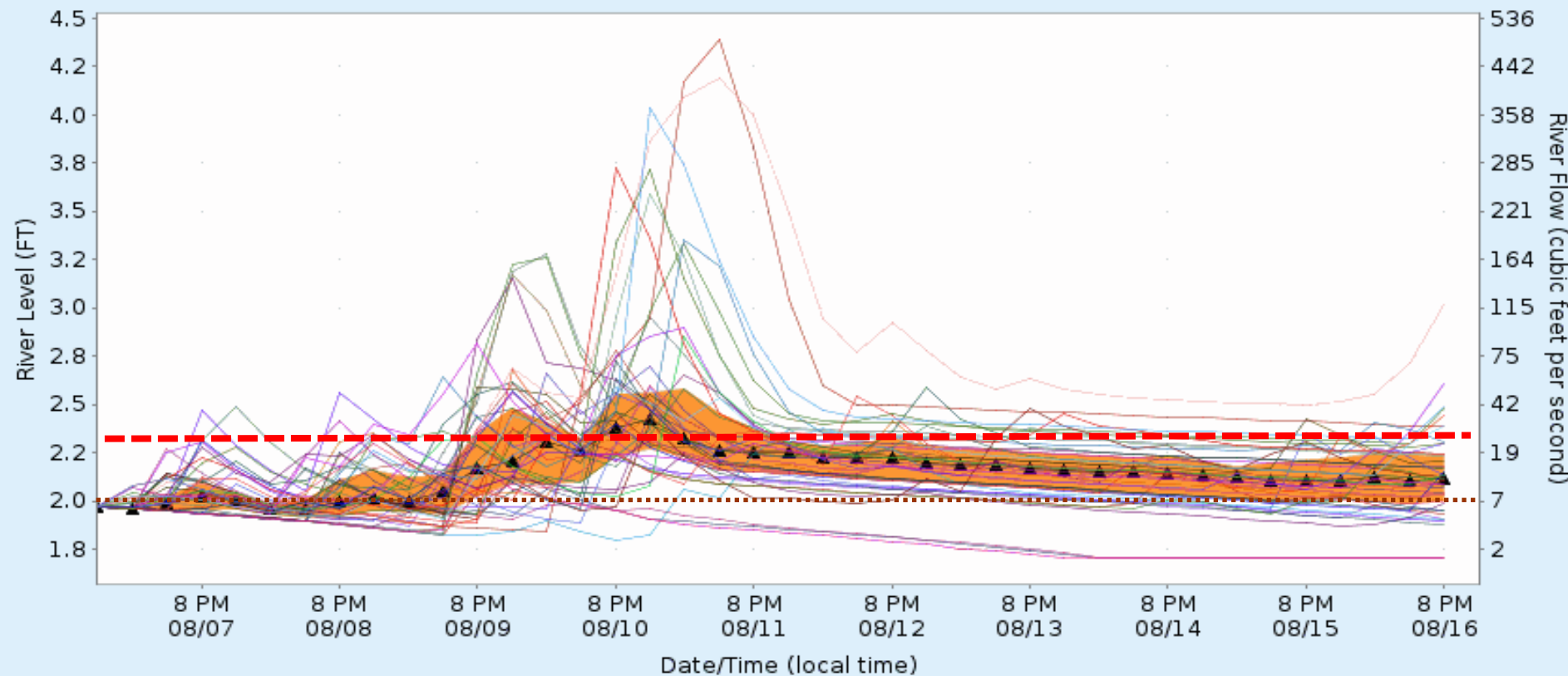


## 7 Day NAEFS River Level Simulations

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)

- The North Nashua River at Fitchburg set record low flows on 7 August with a 49 year period of record.
- Flows should return to near median levels for early August before retreating by the end of the 10 day period.

# NAEFS – BDGM3

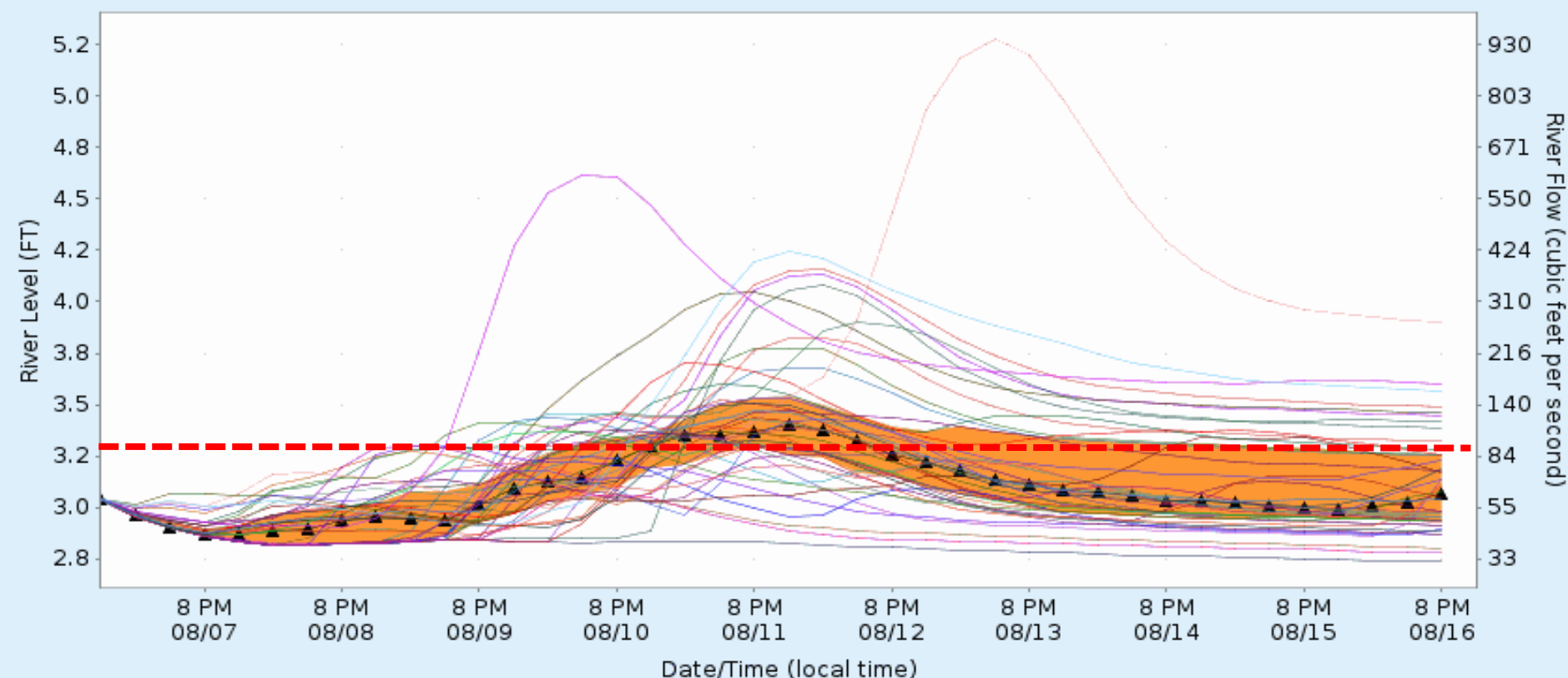


## 7 Day NAEFS River Level Simulations

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



### Taunton River at Bridgewater, MA (BDGM3)



- 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)

- A thunderstorm here earlier in the week boosted flows a bit.
- A return to at or above median flow levels is likely this week.

# CONCLUSIONS

- River flows have degraded across the Commonwealth since our last meeting on 21 July 2022.
- Many rivers and streams are passing flow in the lowest 10 percent of the historical record for early August.
  - North Nashua River at Fitchburg at record low levels on 7 August ( 49 years of record ).
- Rain chances are promising this week.
  - Rainfall amounts could be in the 1-2 inch range over the next 10 days with the heavier amounts possibly occurring in east coastal Massachusetts.
- NERFC ensemble river forecasts call for many Massachusetts rivers to see flow increases to near median early August levels this week.

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