



MASSACHUSETTS RIVER OVERVIEW



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MA Drought Management
Task Force

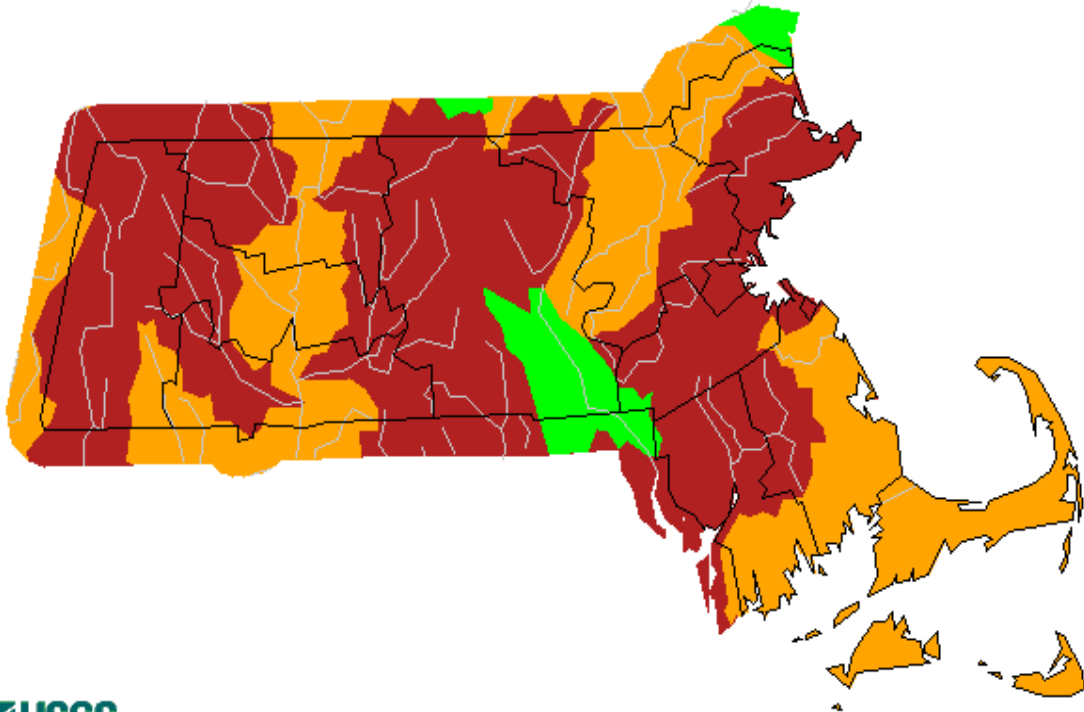
05 December 2024

OUTLINE

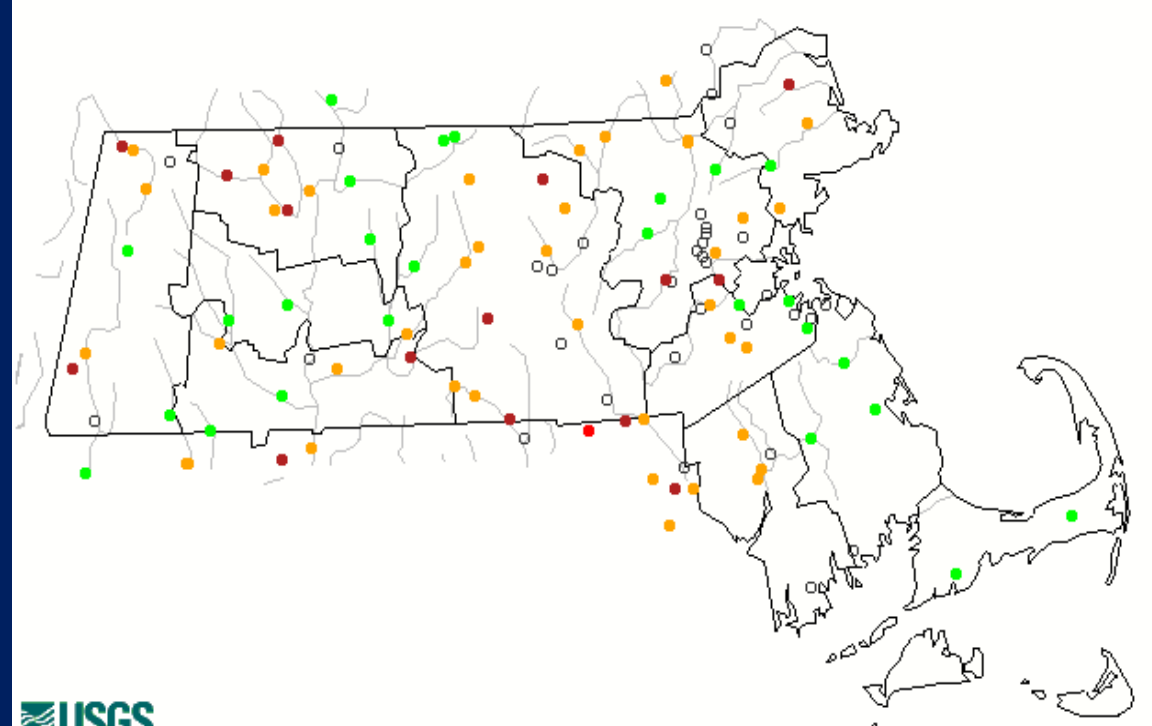
- Snapshot of Massachusetts River Flows
- NERFC River Forecast Outlook Focus – Eastern and Central Portions of the state.
- Brief look at Western Massachusetts River Flows including a snow water simulation.
- Conclusions

MASSACHUSETTS RIVER FLOWS

Friday, November 01, 2024



Saturday, November 30, 2024



Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

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Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

From November 1, 2024 to November 30, 2024: Flows relative to normal have improved some across the Commonwealth. Below normal streamflows remain across most of the state, but well below normal streamflows decreased some in areal coverage.

NAEFS ENSEMBLE RIVER FORECAST OUTLOOK

- A 52 member ensemble run for all NERFC forecast points to give us an idea of the possible range of river flows out 10 days.
 - Basically 52 slightly different initial conditions in the weather models lead to 52 different river forecasts based on rainfall and temperature.
- Will show results for...
 - Shawsheen River at Wilmington (WLMM3)
 - Sudbury River at Saxonville (SAXM3)
 - North Nashua River at Fitchburg (FBGM3)
 - Housatonic River at Great Barrington (GTBM3)

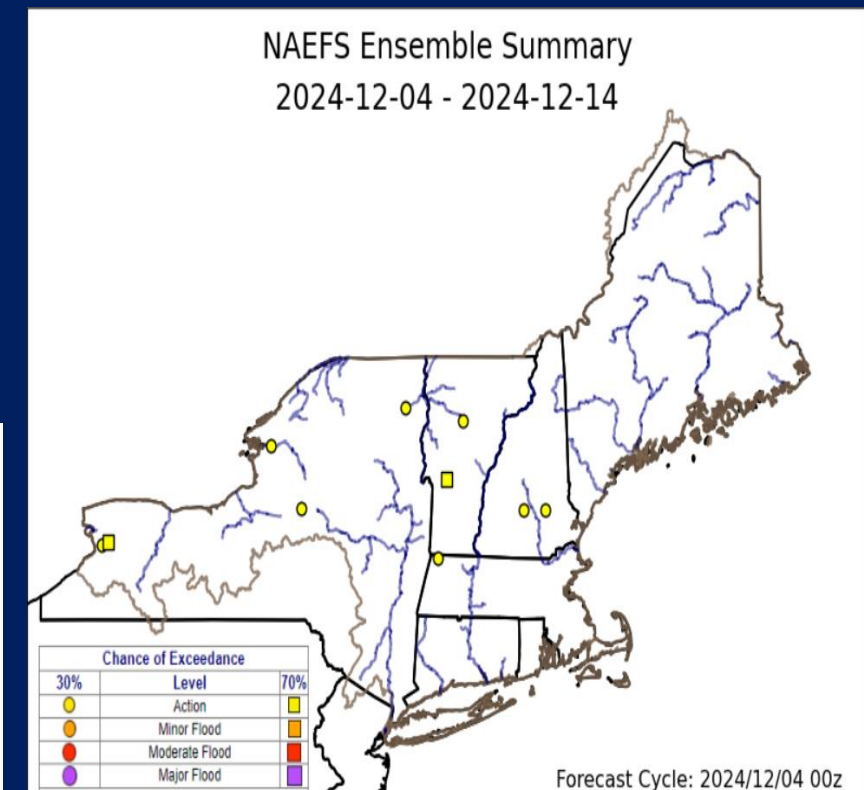
Meteorological Model Ensemble River Forecast Status for Northeast River Forecast Center

This table provides the status of hydrologic information generated using various meteorological model ensemble forcings for the NERFC.

System	Last Updated	Fcst Cycle	Analysis Period	Fcst Hours	Members
GEFS	2024-12-04 13:01 UTC	2024-12-04 06 UTC	2024-12-04 - 2024-12-14	240	31
NAEFS	2024-12-04 10:20 UTC	2024-12-04 00 UTC	2024-12-04 - 2024-12-14	240	52
HEFS	2024-12-04 01:26 UTC	2024-12-04 00 UTC	2024-12-04 - 2024-12-14	240	65

Any questions? Contact [NERFC](#)

For the official NWS hydrologic forecasts, please visit the [National Water Prediction Service web site \(NWPS\)](#).



NAEFS PRECIPITATION – WLMM3

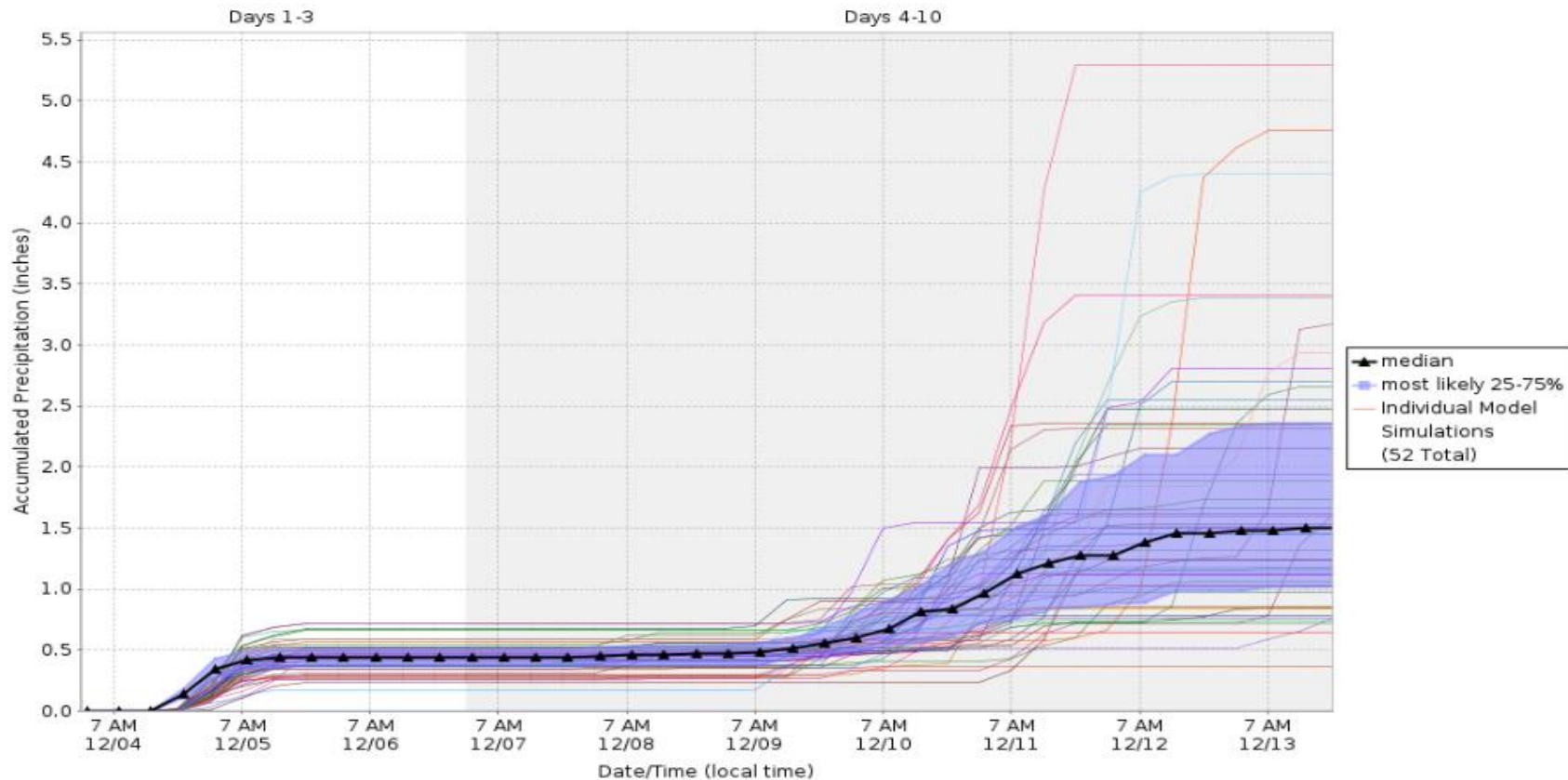
NAEFS - 10 Day Accumulated Precipitation Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Shawsheen River at Wilmington, MA (WLMM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Over the next 10 days...median forecast rainfall is 1.50". Most likely probabilities range from 1.00" to 2.00"+

> Some increasing spread among the ensemble precipitation simulations heading into next week.

NAEFS – WLMM3

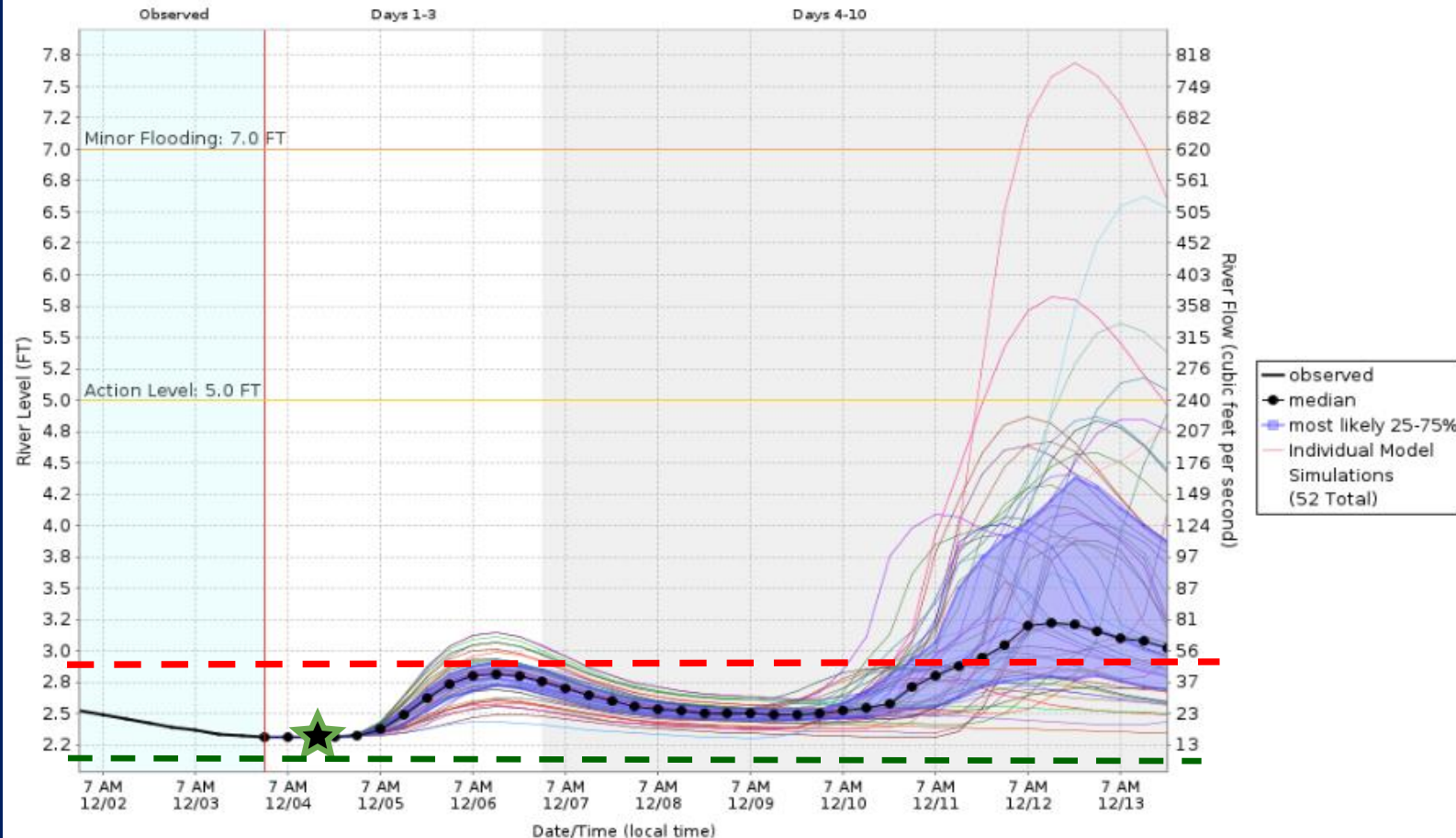
NAEFS - 10 Day River Level Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Shawsheen River at Wilmington, MA (WLMM3)



> Currently at 10th to 25th percentile level for early December.

> Most likely river flows forecast to remain above minimum levels (green dashed line) into mid December.

> Most likely river flows forecast below to near median levels (red dashed line) this week then near to above the median mid December levels for next week.

NAEFS PRECIPITATION – SAXM3

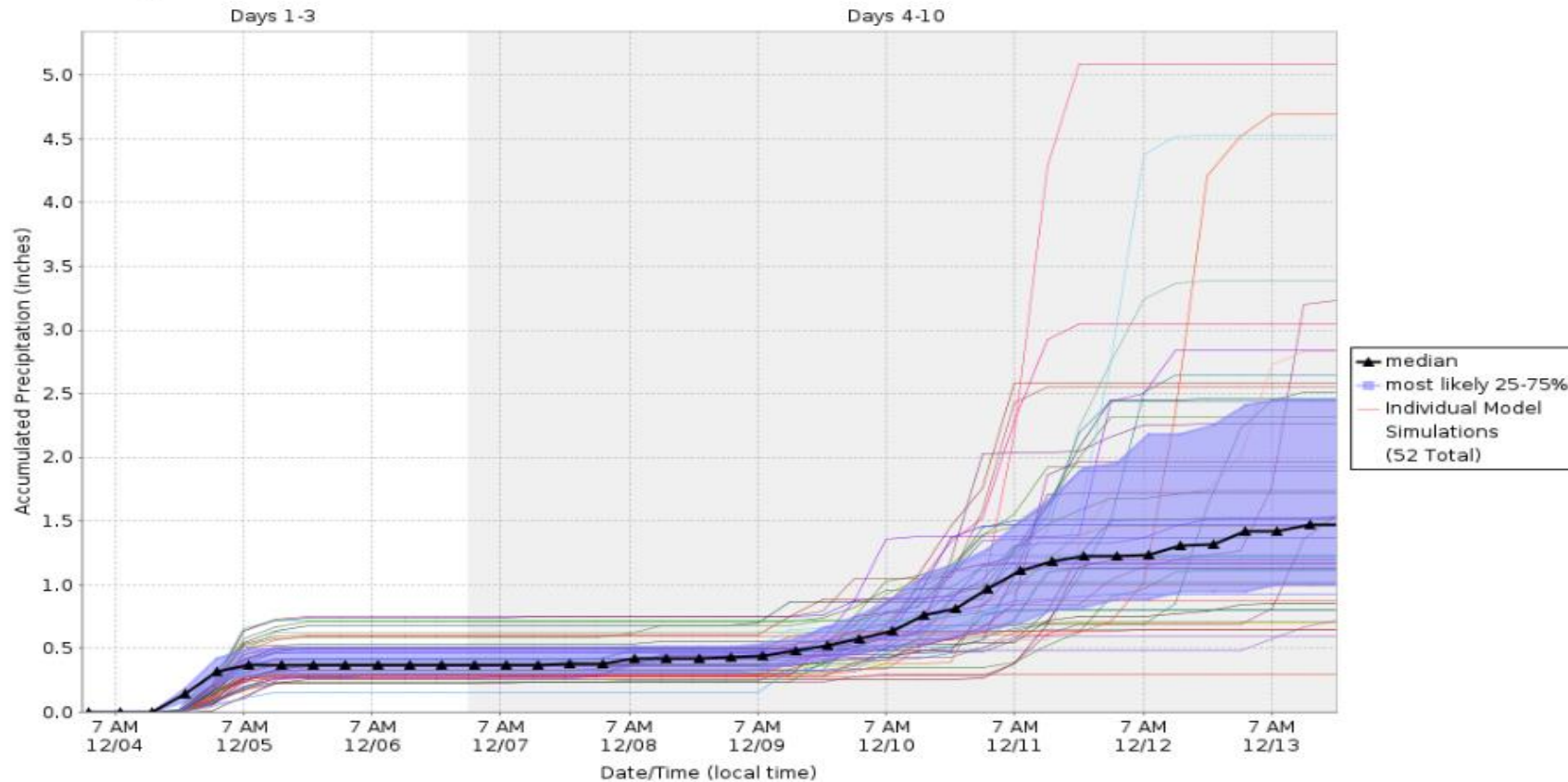
NAEFS - 10 Day Accumulated Precipitation Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Sudbury River at Saxonville, MA (SAXM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Over the next 10 days...median forecast rainfall is 1.50". Most likely probabilities range from 1.00" to 2.50".

> Some increasing spread among the ensemble precipitation simulations heading into next week.

NAEFS – SAXM3

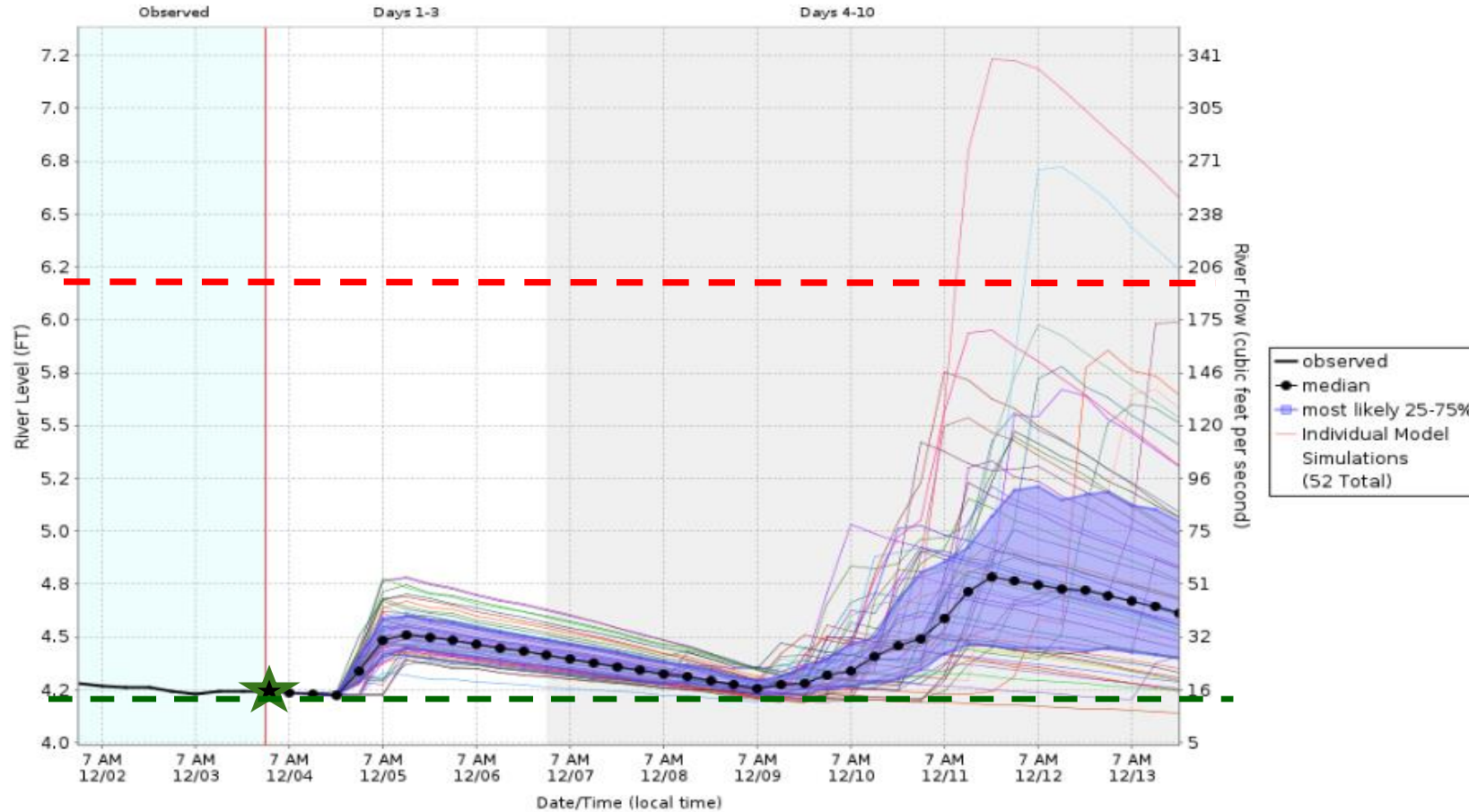
NAEFS - 10 Day River Level Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Sudbury River at Saxonville, MA (SAXM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Currently near minimum flow for early December.

> Most likely river flows forecast to remain near to above minimum levels (green dashed line) into mid December.

> Most likely river flows are forecast below median levels (red dashed line). Less likely members approach the median mid December levels for next week.

NAEFS PRECIPITATION – FBGM3

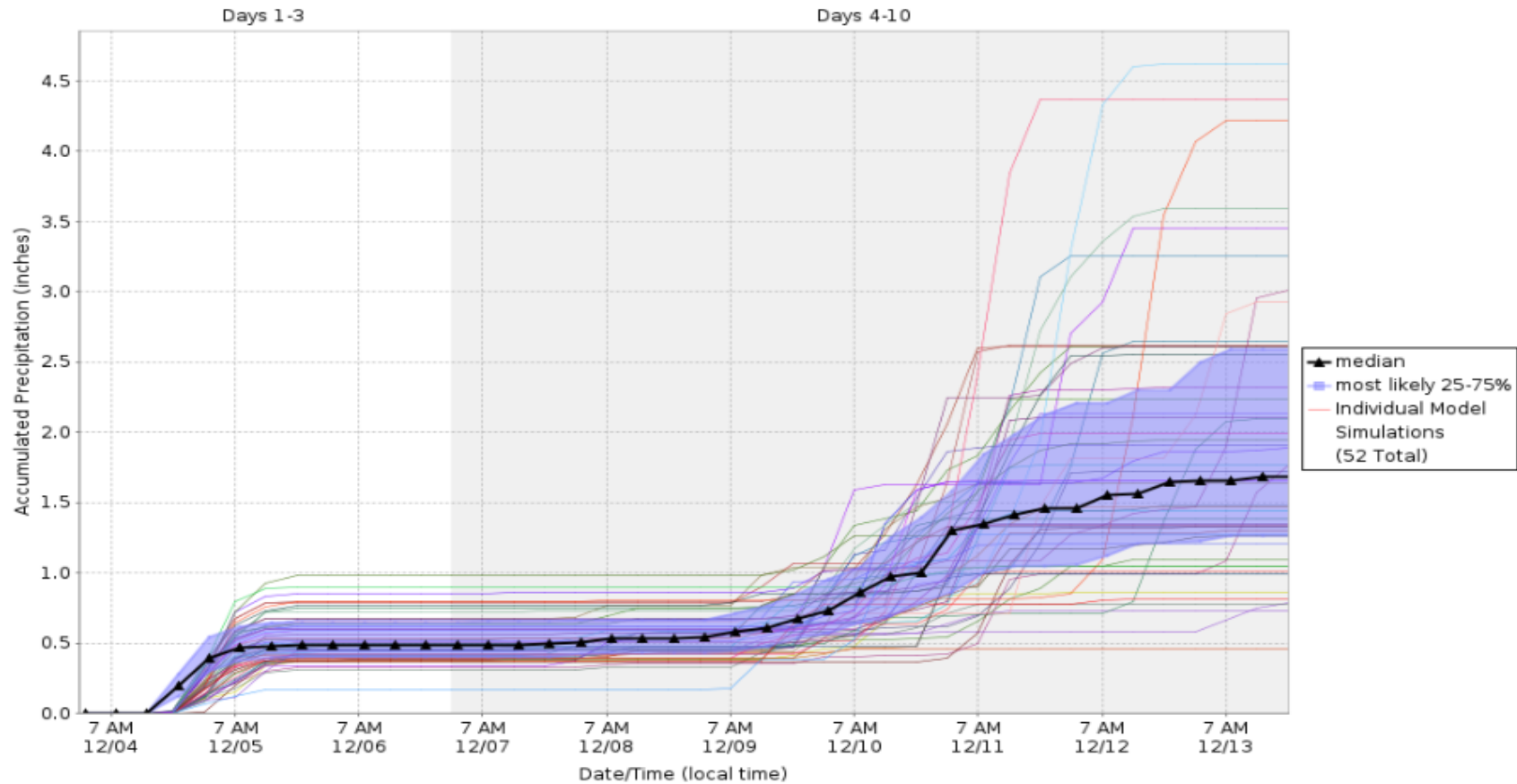
NAEFS - 10 Day Accumulated Precipitation Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

North Nashua River at Fitchburg, MA (FBGM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Over the next 10 days...median forecast rainfall is 1.75". Most likely probabilities range from 1.25" to 2.50".

> Some increasing spread among the ensemble precipitation simulations heading into next week.

NAEFS – FBGM3

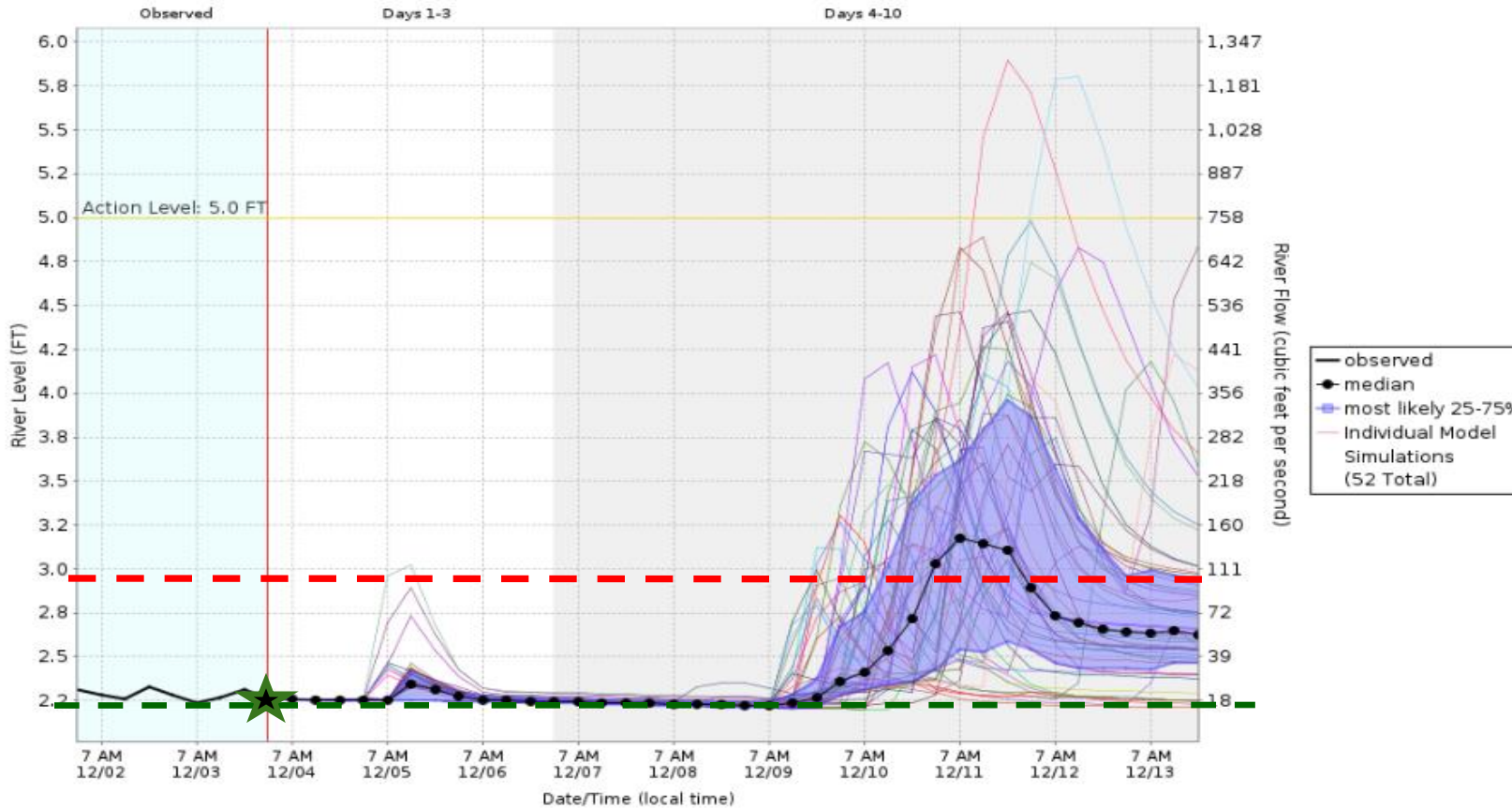
NAEFS - 10 Day River Level Probabilities

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Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

North Nashua River at Fitchburg, MA (FBGM3)



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Northeast River Forecast Center

> Currently near minimum flow for early December.

> Most likely river flows forecast to remain near to above minimum levels (green dashed line) into mid December.

> Most likely river flows forecast below median levels (red dashed line) this week then near to above the median mid December levels for next week.

NAEFS PRECIPITATION – GTBM3

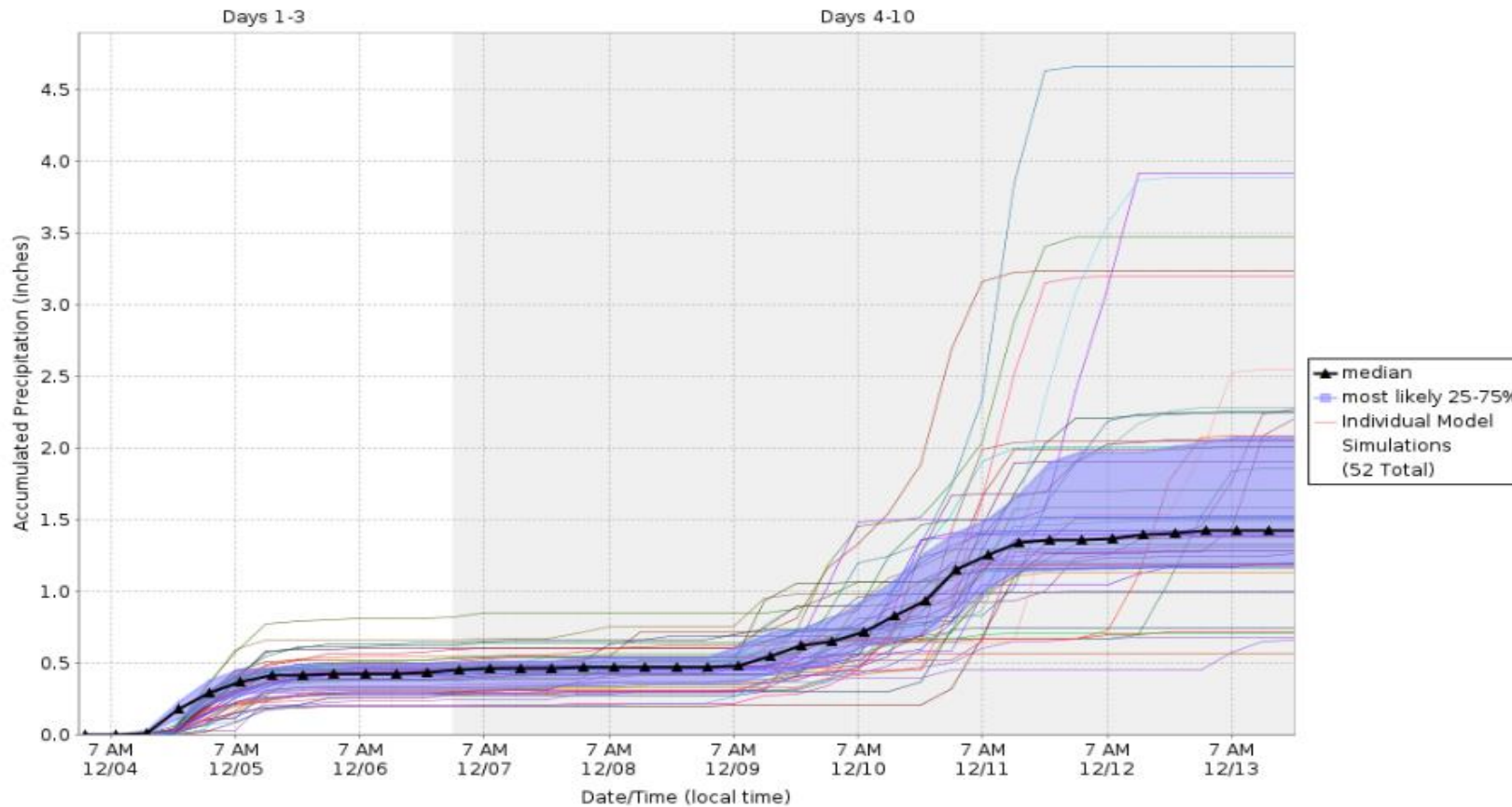
NAEFS - 10 Day Accumulated Precipitation Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Housatonic River at Great Barrington, MA (GTBM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Over the next 10 days...median forecast rainfall near 1.50". Most likely probabilities range from 1.00" to 2.00".

> Some increasing spread among the ensemble precipitation simulations heading into next week.

NAEFS – GTBM3

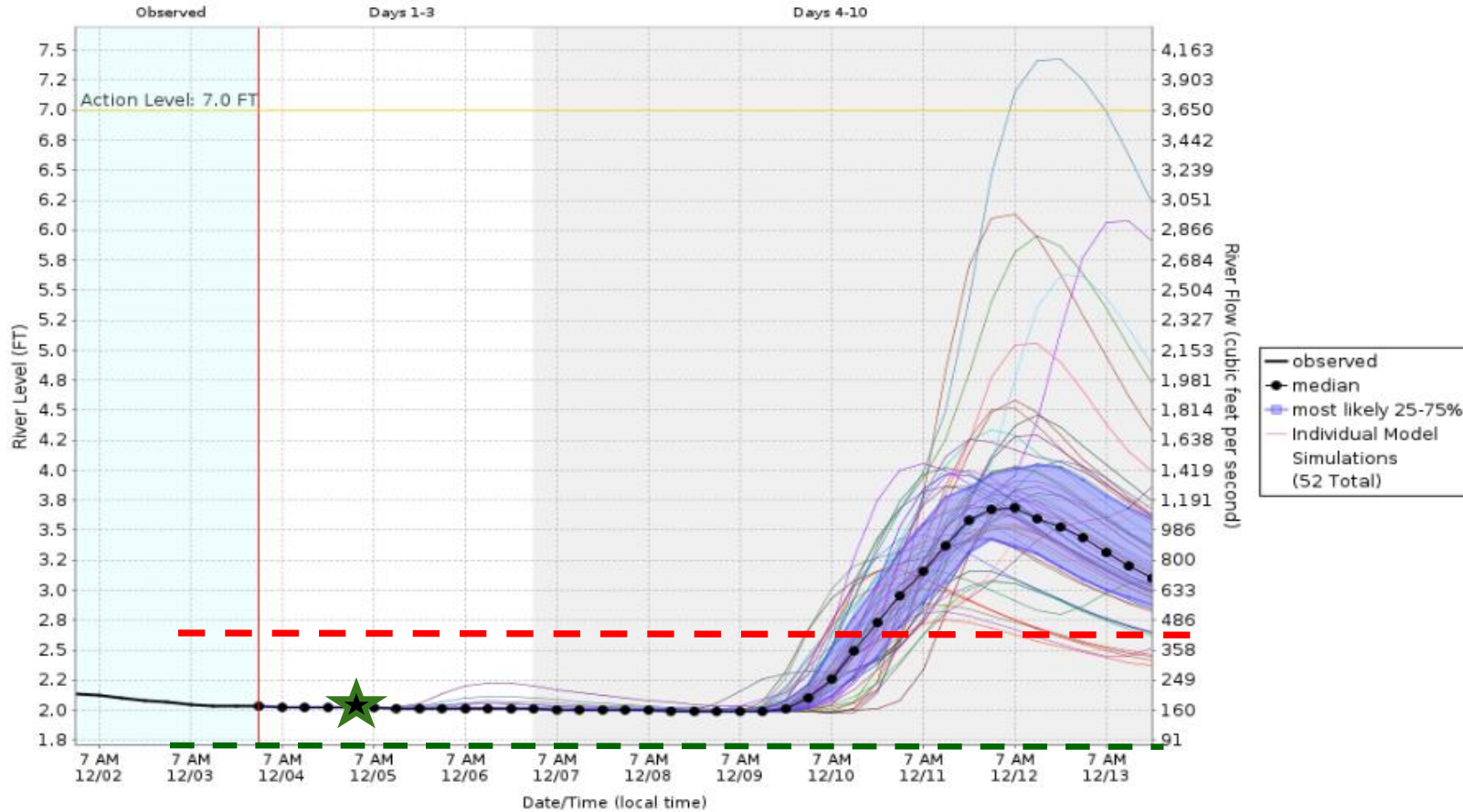
NAEFS - 10 Day River Level Probabilities

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Housatonic River at Great Barrington, MA (GTBM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Currently at 10th to 25th percentile level for early December.

> Most likely river flows forecast to remain above minimum levels (green dashed line) into mid December.

> Most likely river flows forecast below median levels (red dashed line) this week then above the median mid December levels for next week.

NAEFS Snow Water Simulation – GTBM3

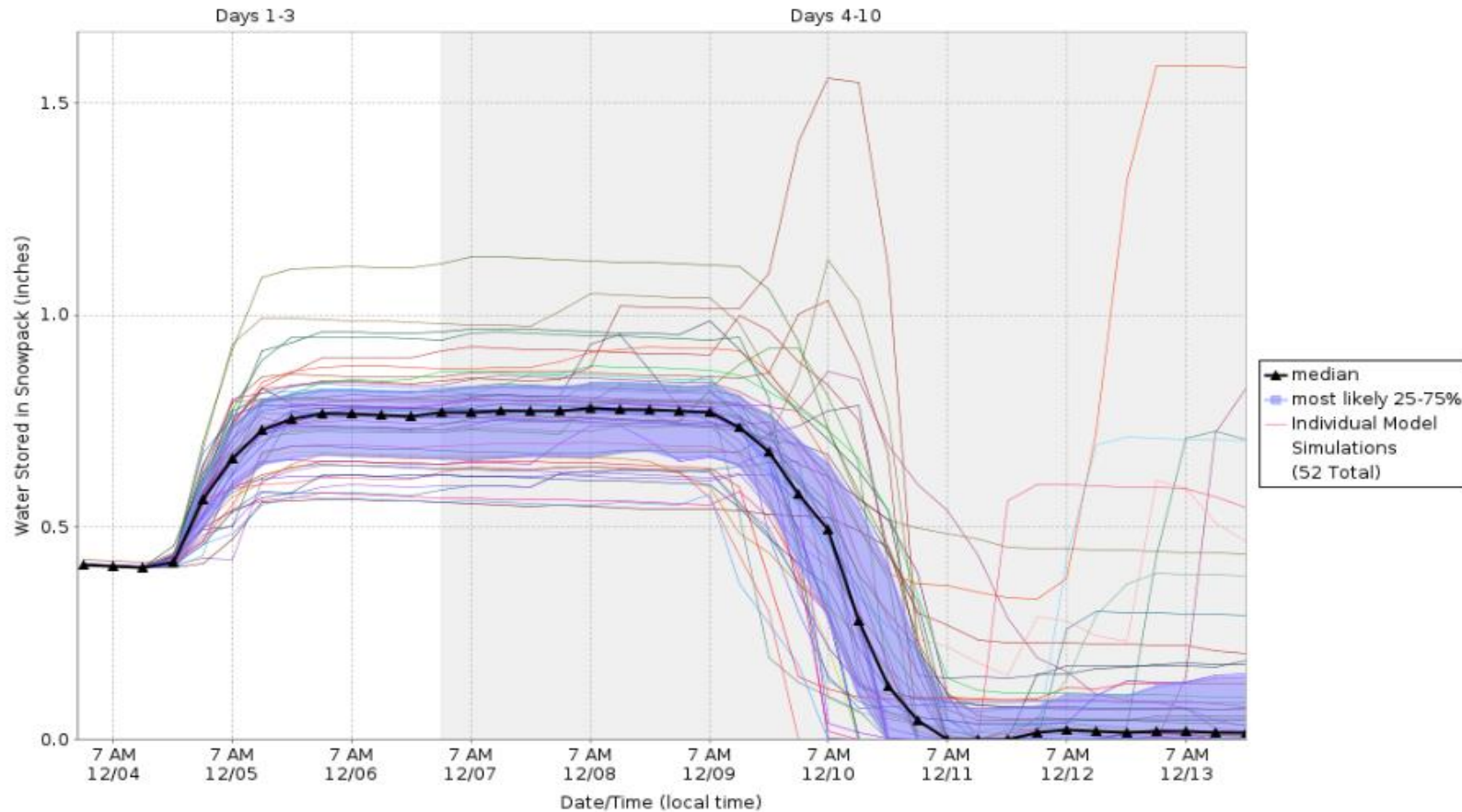
NAEFS 10 Day Simulated Stored Water in Snowpack

Based on North American Ensemble Forecast System Model Simulations
Used to Estimate the Range of Possible River Levels



Dec 04 - Dec 14, 2024

Housatonic River at Great Barrington, MA (GTBM3)



Model runtime: 01:00 AM EST Dec 04 2024
Northeast River Forecast Center

> Snow water values generally an inch or less were found across northwestern Massachusetts particularly high terrain areas.

> Increased melt runoff develops next week contributing to streamflow.

CONCLUSIONS

- During November...river flows have shown some improvement across most of the Commonwealth but generally remained below normal.
- Some of the lowest flows by late November had remained in portions of Middlesex and Worcester counties including areas of eastern and central Massachusetts.
- Some snow water up to an inch or so was available for melt runoff focused across northwestern portions primarily northern Berkshire and Franklin county high terrain areas. Runoff from snow melt and precipitation is forecast to increase early next week.
- The weather pattern looks more active heading into next week. Ensemble data indicates the possibility for hydrologically significant rainfall during the next 10 days but with spread in timing and amounts for next week. The NERFC river forecast ensemble data as a result indicates an increase in river flows heading into mid December.

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