

RECLAMATION

Managing Water in the West

Hood River Basin Study

Surface Water Modeling (DHSVM)

Water Resource Modeling (MODSIM)

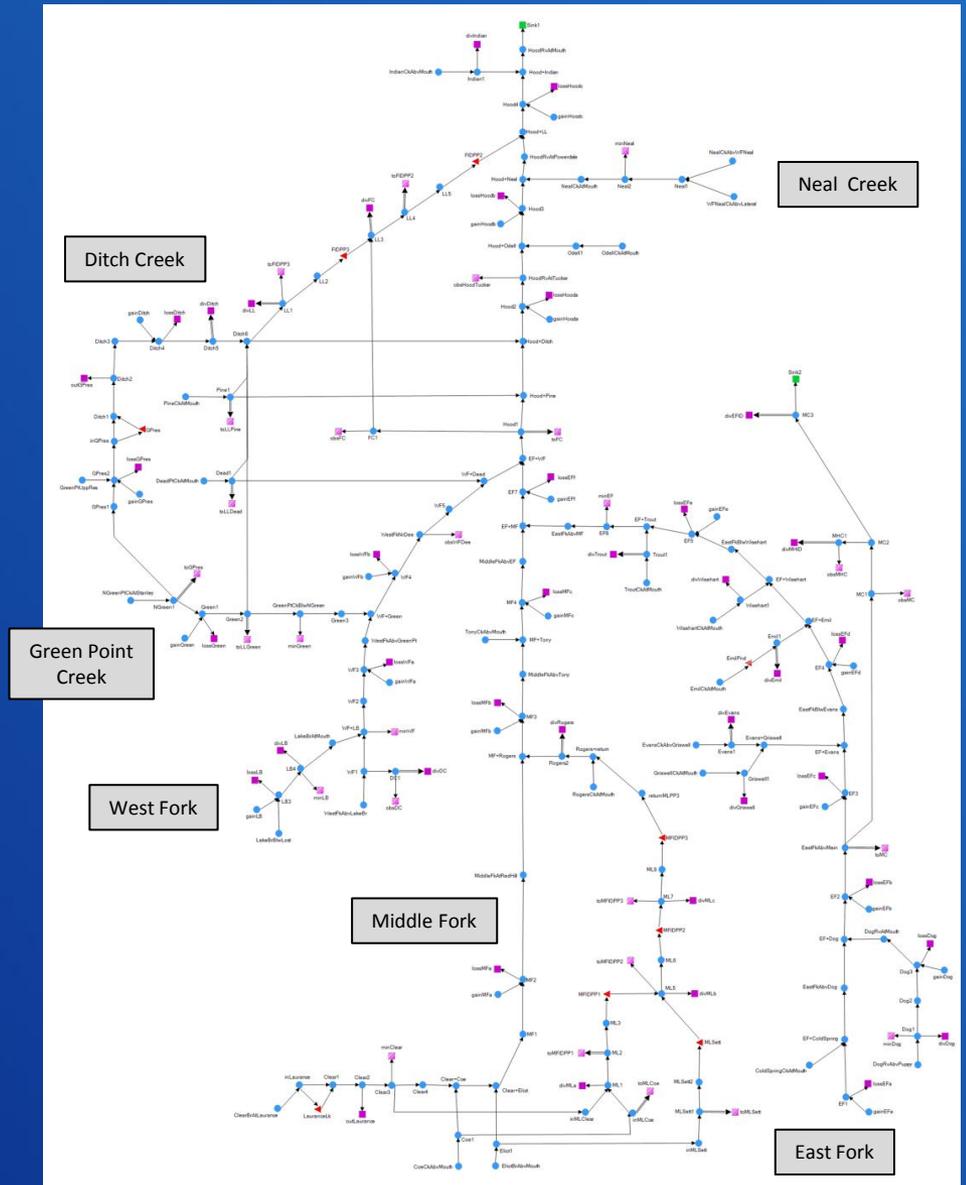
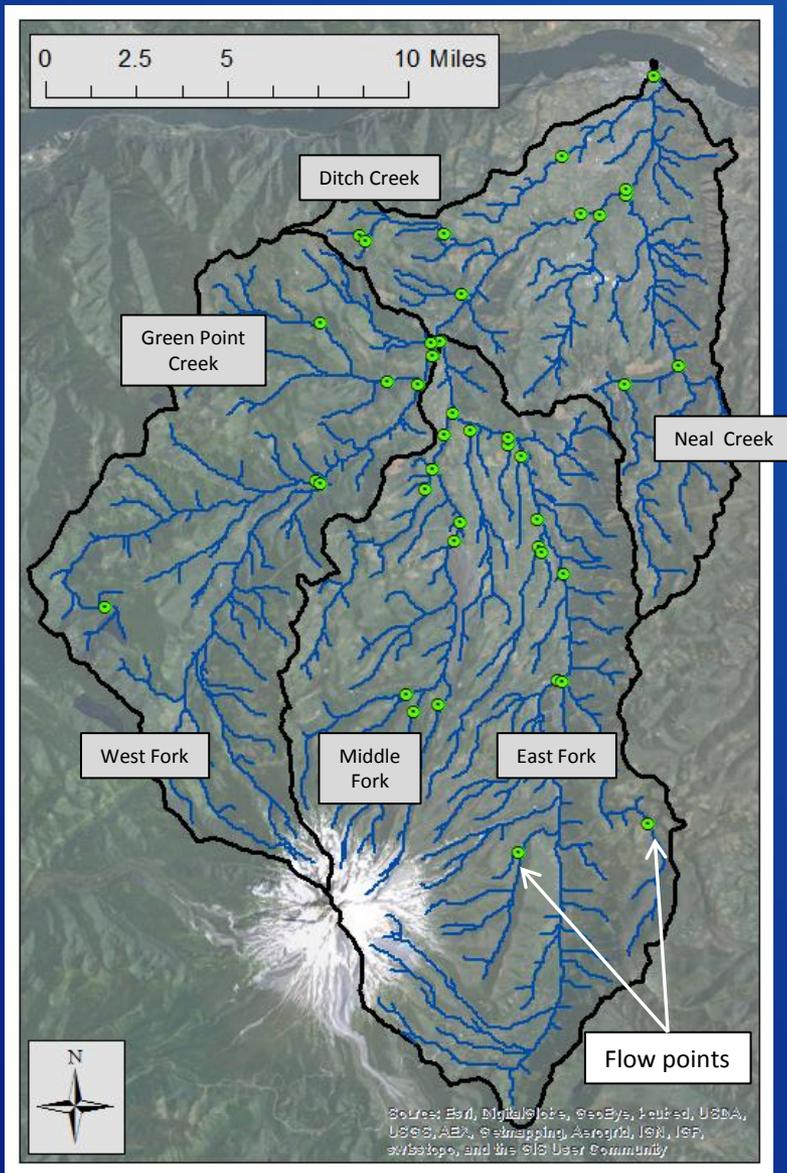
Taylor Dixon, Hydrologist

November 20, 2013



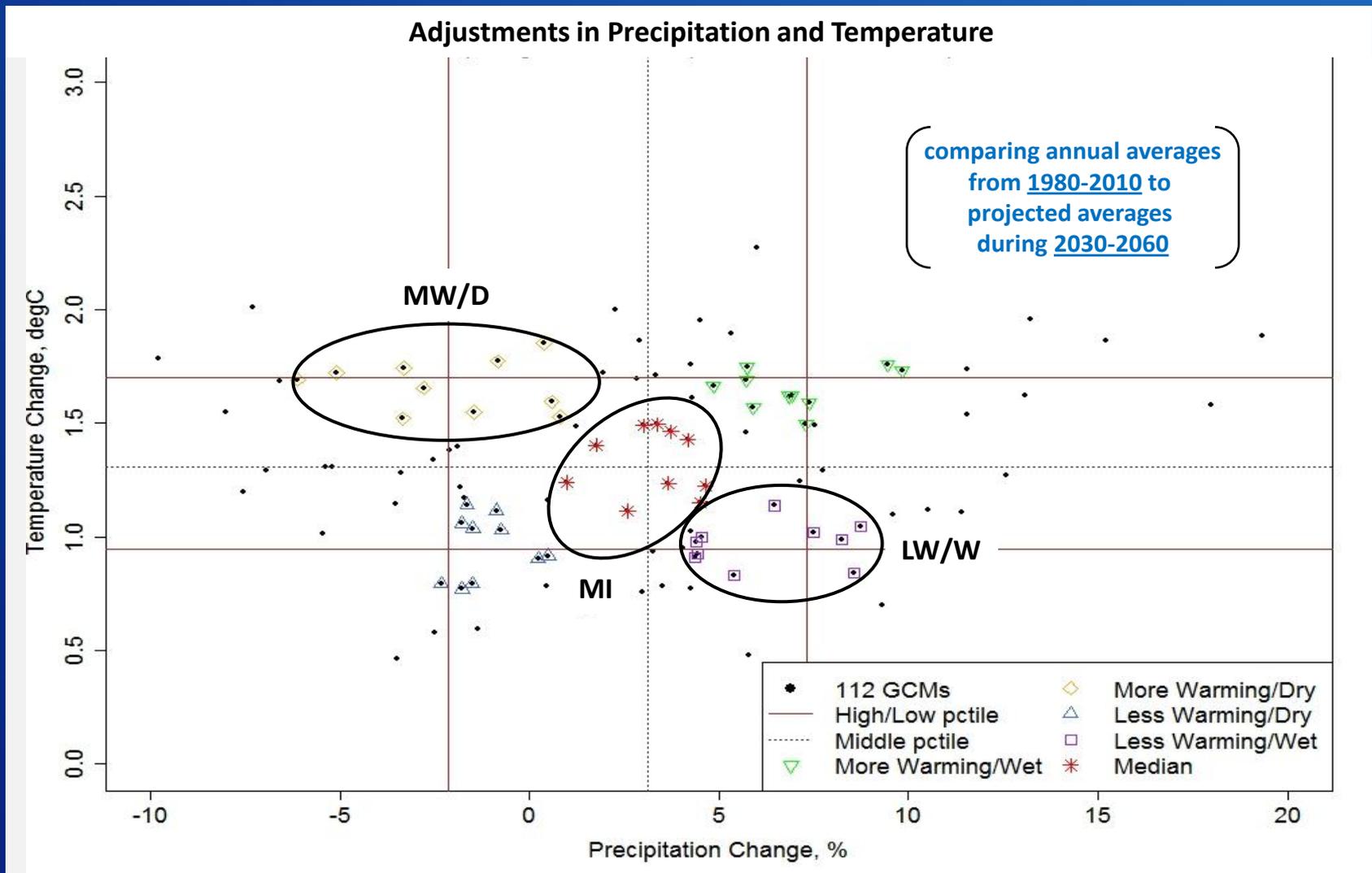
U.S. Department of the Interior
Bureau of Reclamation

DHSVM & MODSIM

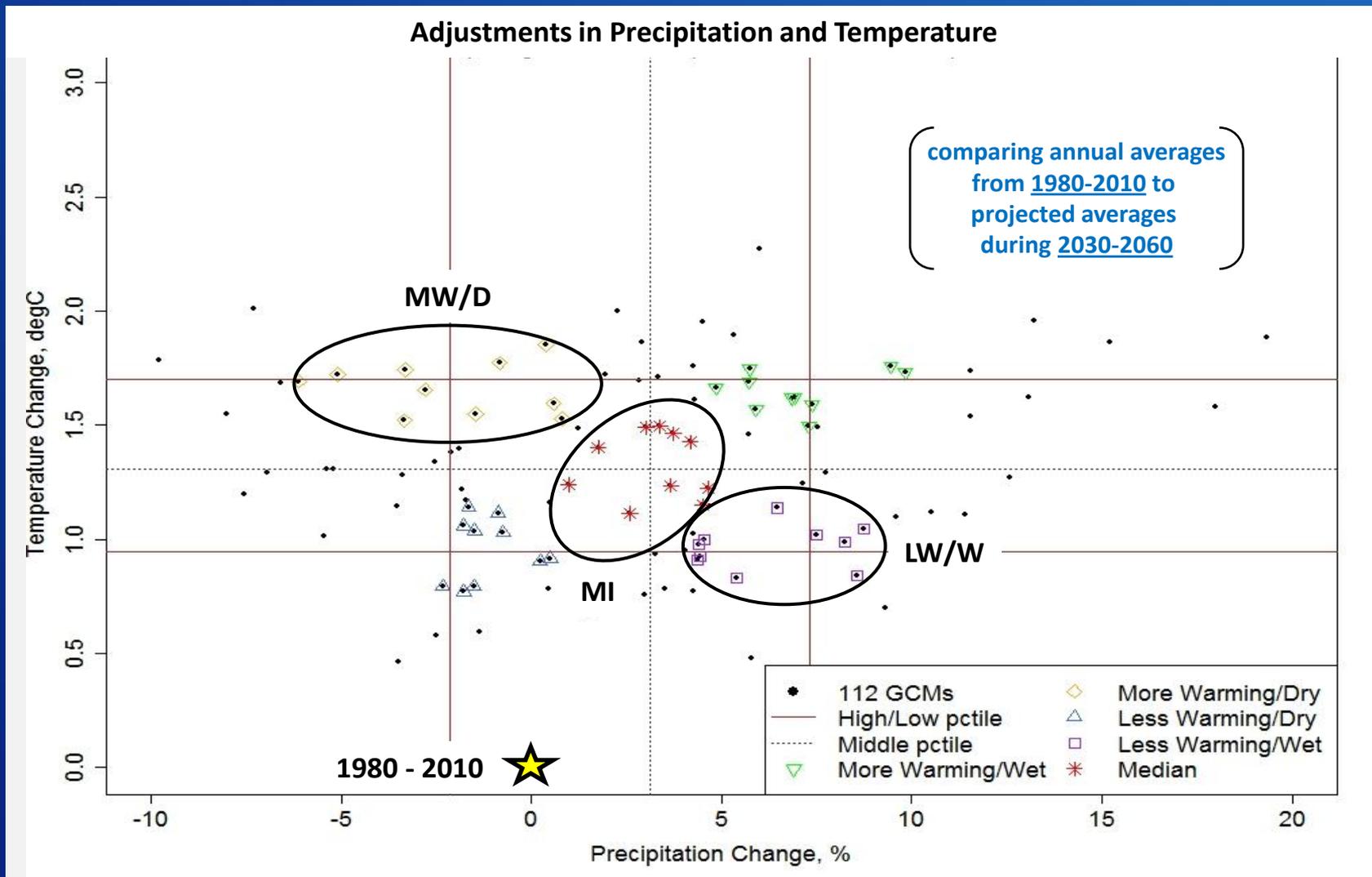


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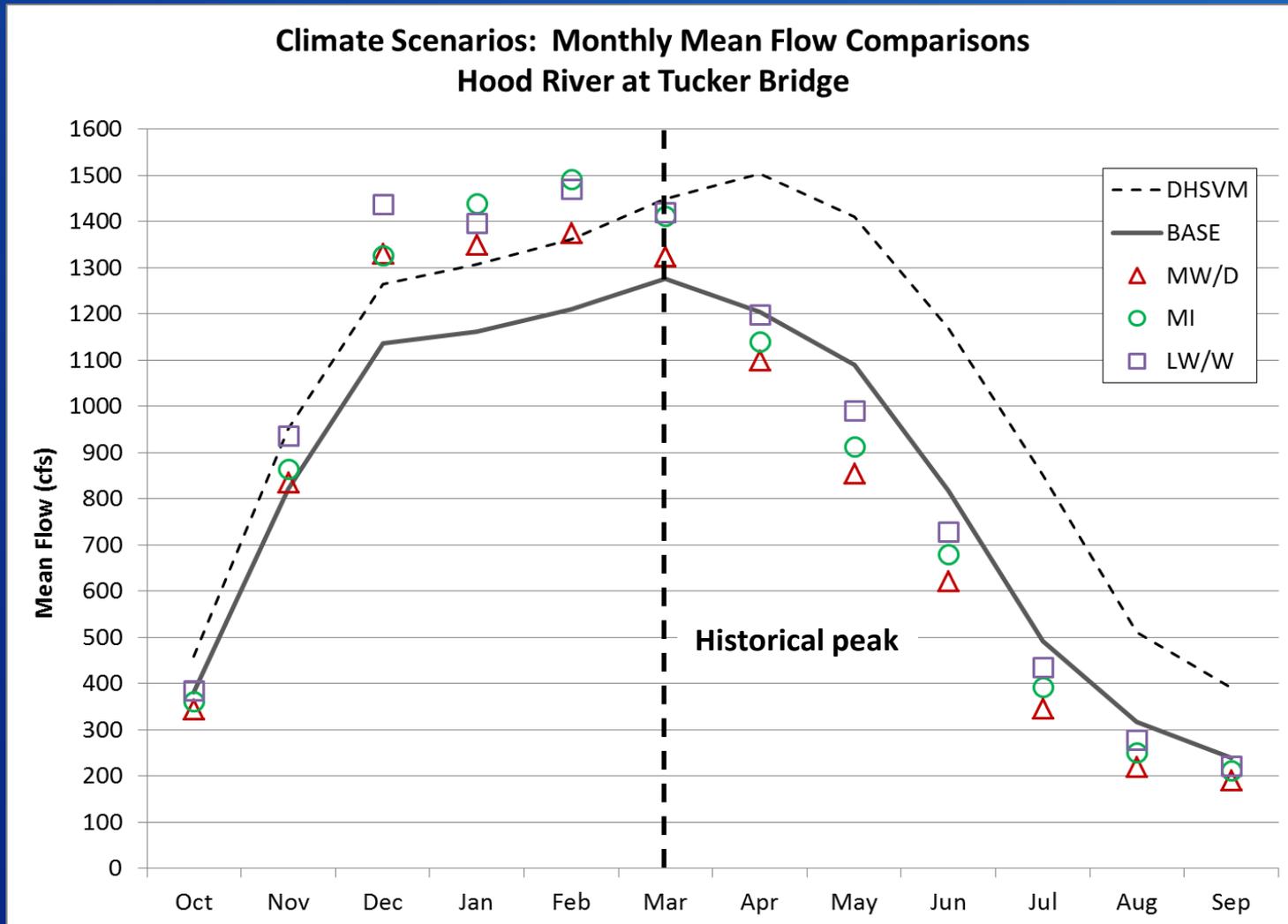
Climate Scenario Selection



Climate Scenario Selection



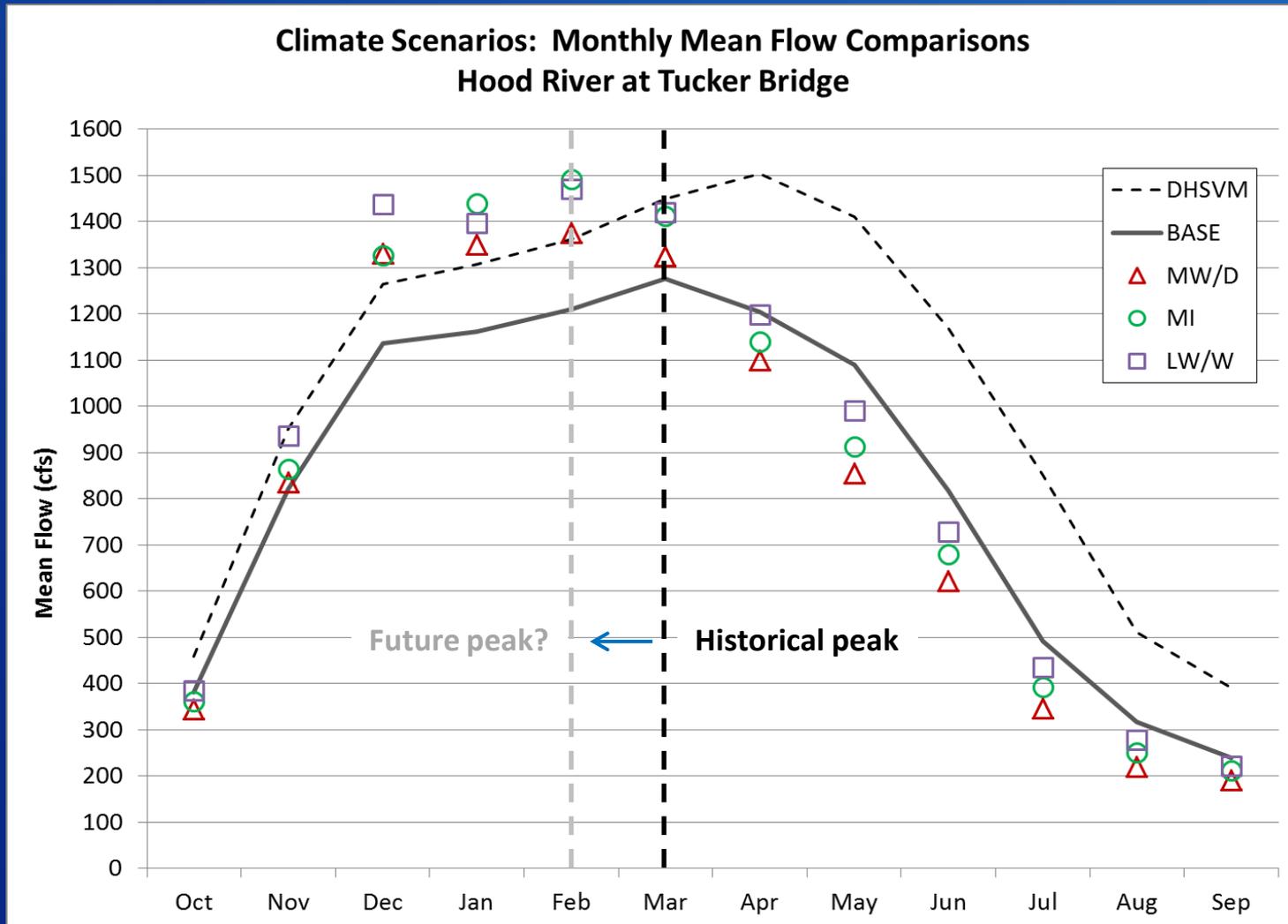
DHSVM & MODSIM Climate Scenario Results



On an annual basis, *natural* flow volumes relatively unchanged, but runoff timing impacted

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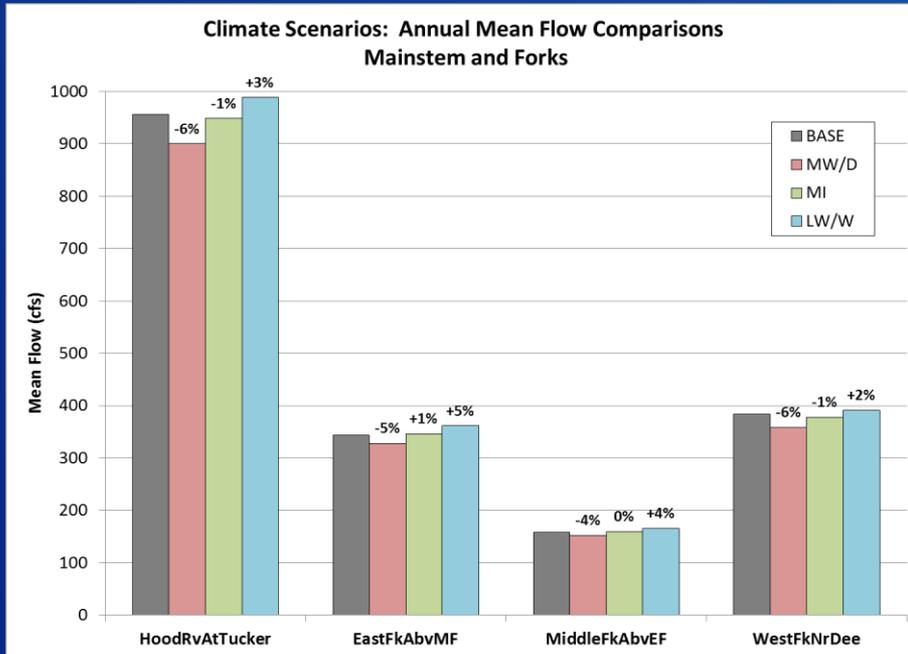
DHSVM & MODSIM Climate Scenario Results



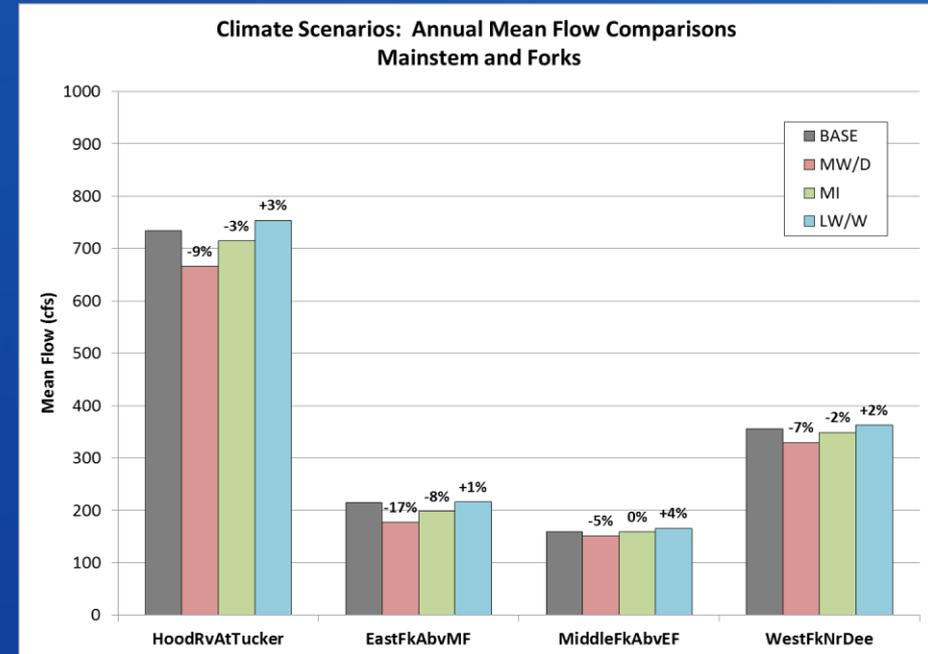
Moreover, seasonal changes more apparent in *regulated* flows

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DHSVM & MODSIM Climate Scenario Results



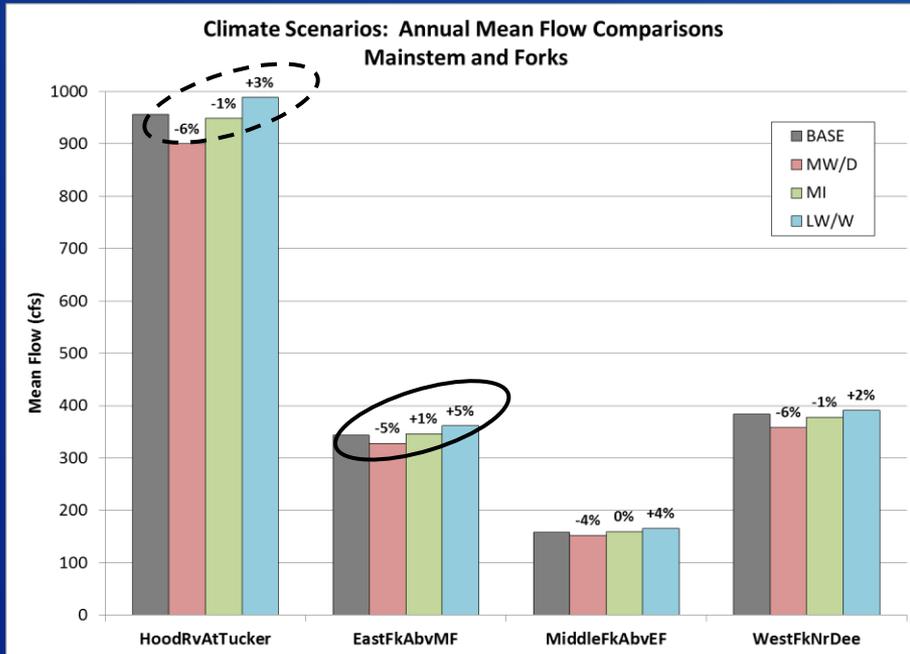
DHSVM



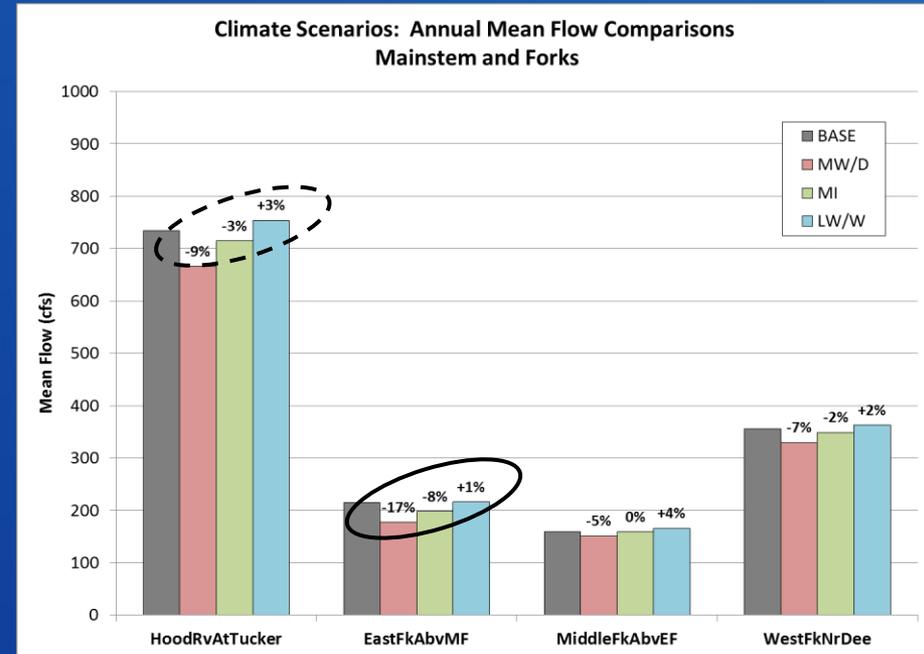
MODSIM

Relative changes in annual mean flows more apparent after considering water usages

DHSVM & MODSIM Climate Scenario Results



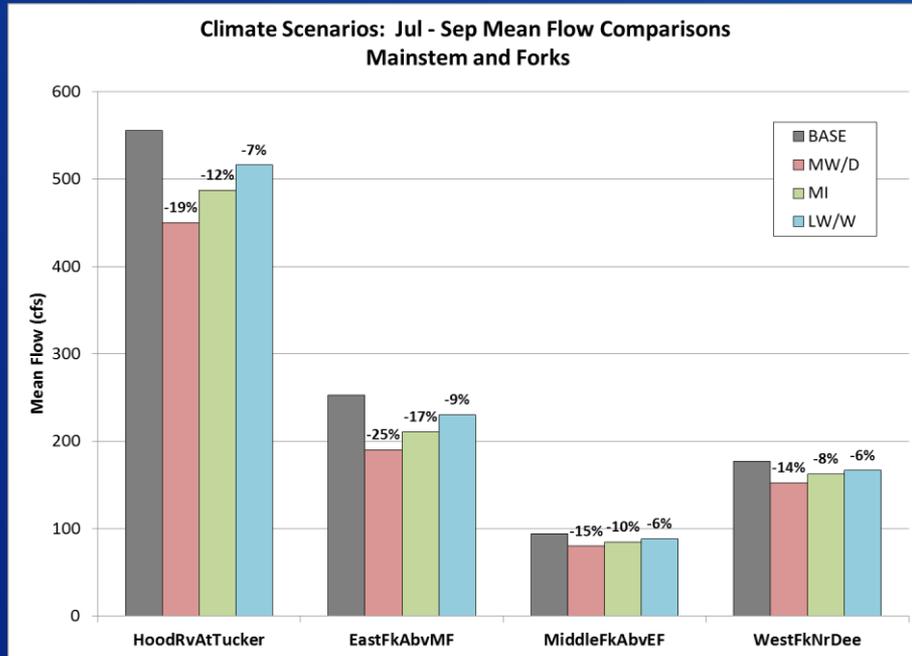
DHSVM



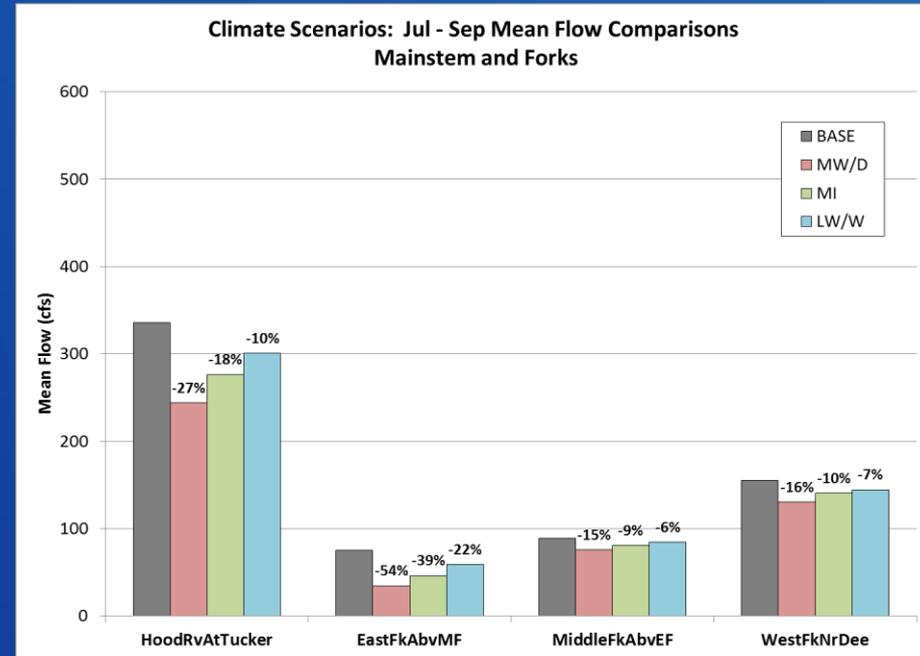
MODSIM

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DHSVM & MODSIM Climate Scenario Results



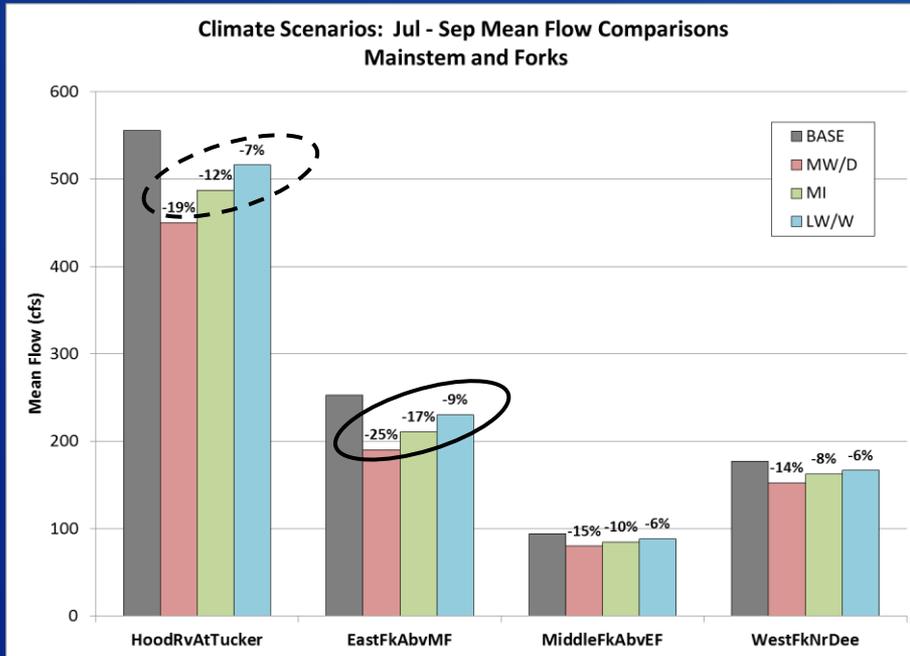
DHSVM



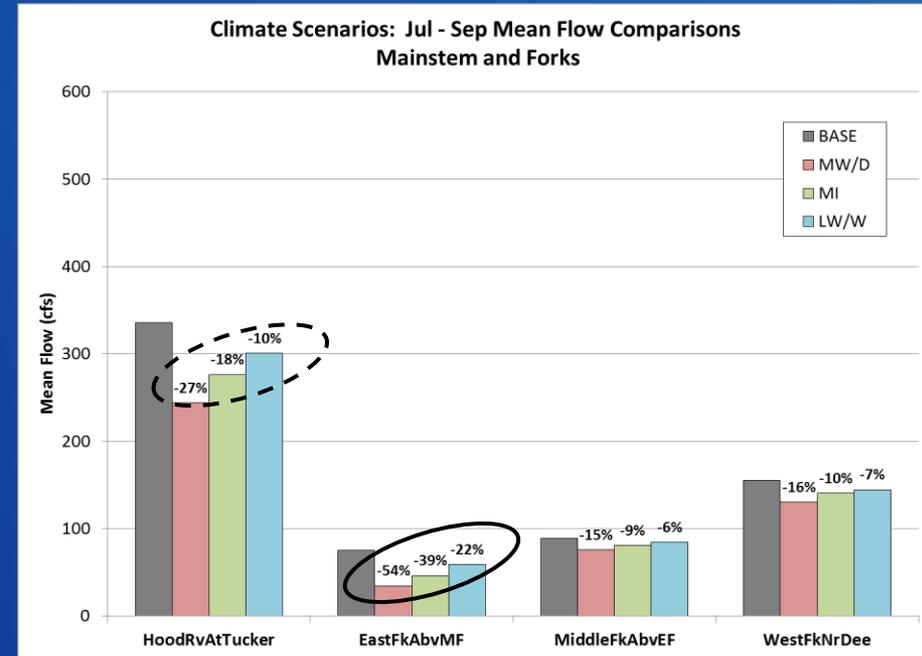
MODSIM

Relative changes in late summer mean flows amplified after considering water usages

DHSVM & MODSIM Climate Scenario Results



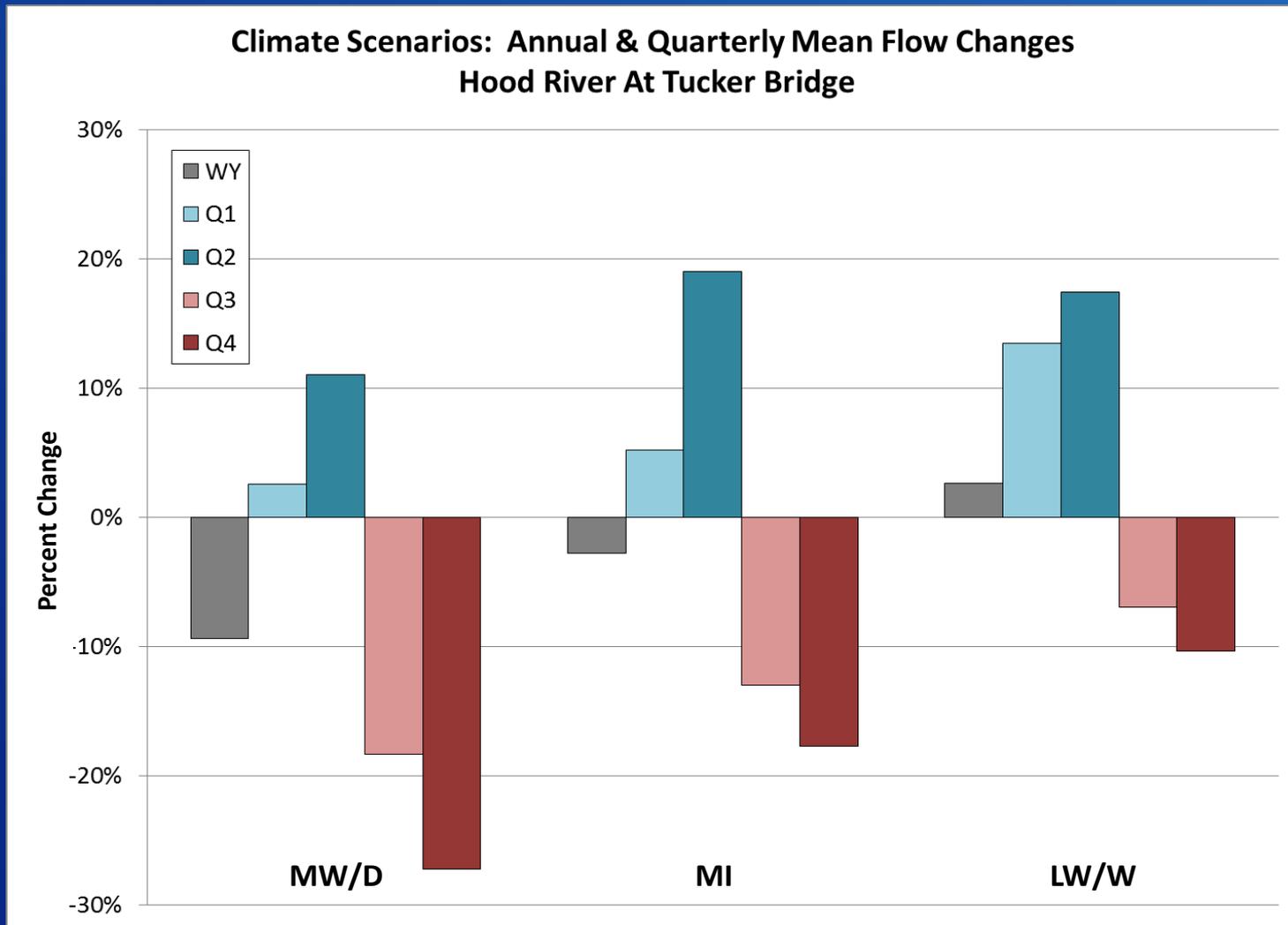
DHSVM



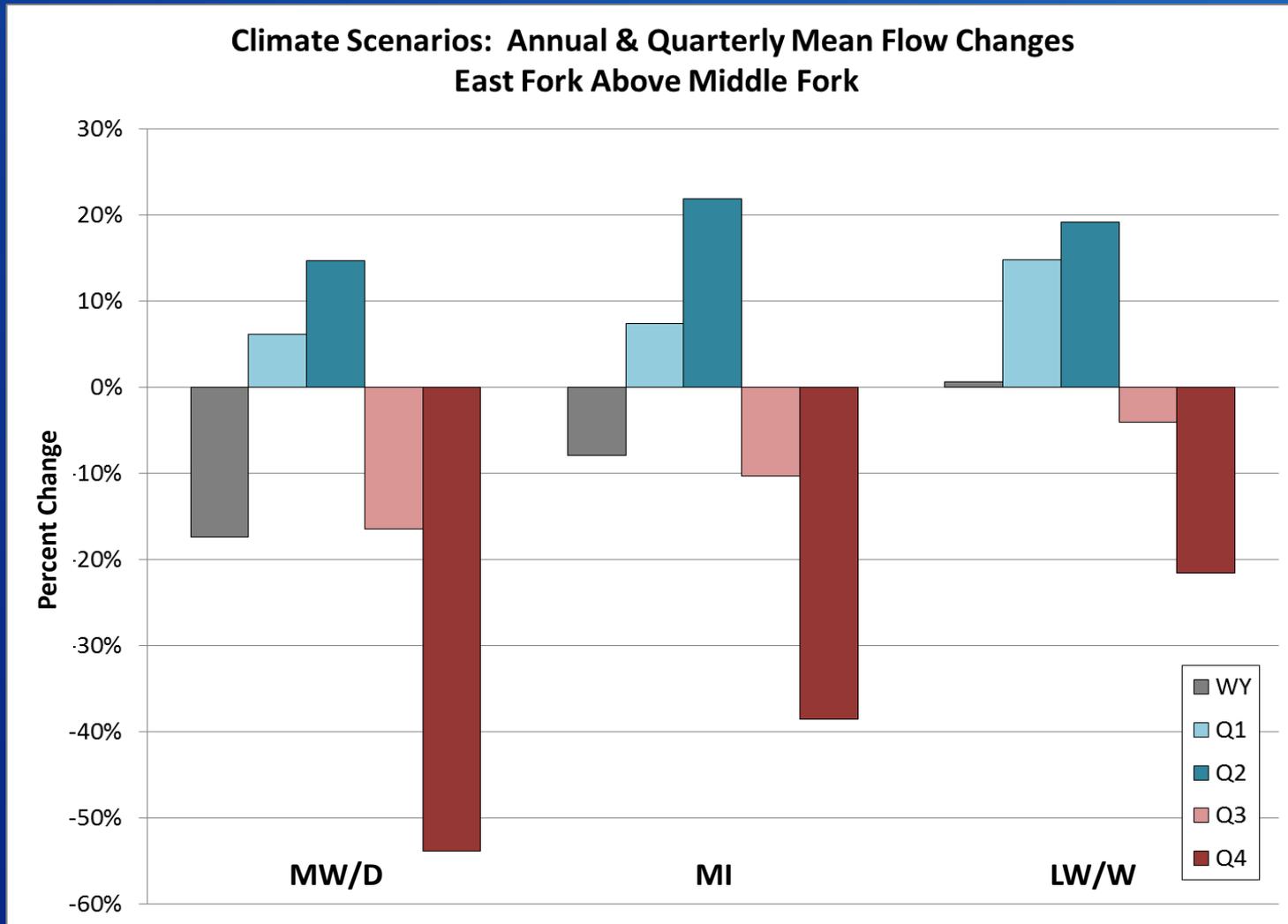
MODSIM

Relative changes in late summer mean flows amplified after considering water usages

MODSIM Climate Scenario Results

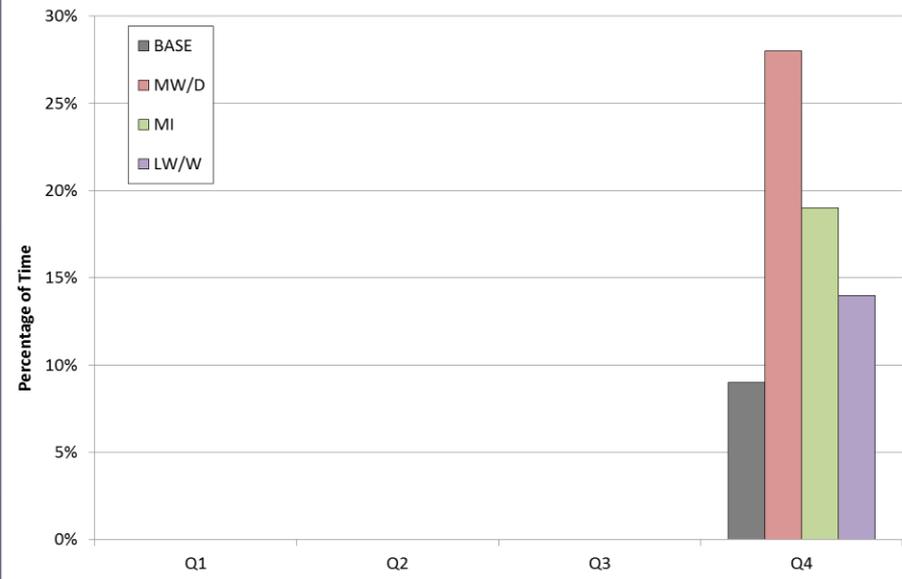


MODSIM Climate Scenario Results

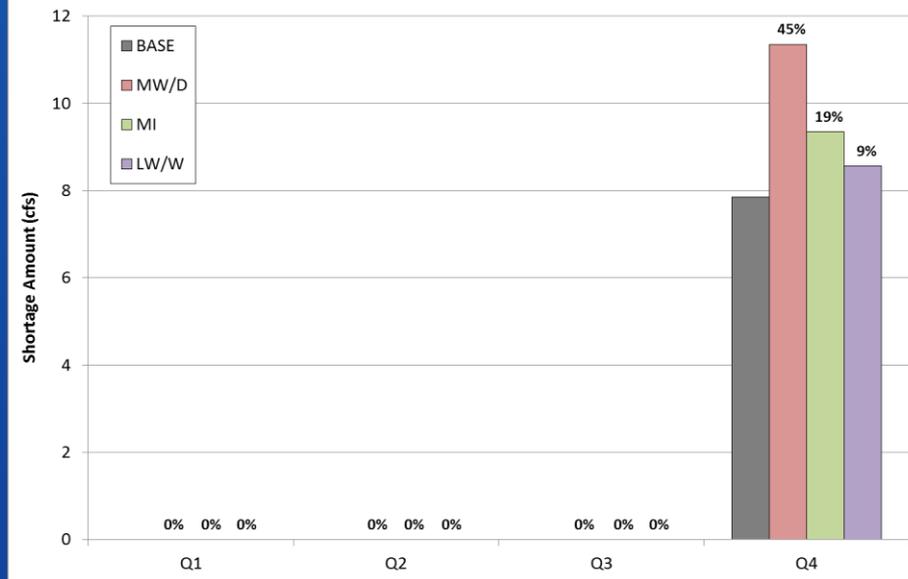


MODSIM Climate Scenario Results

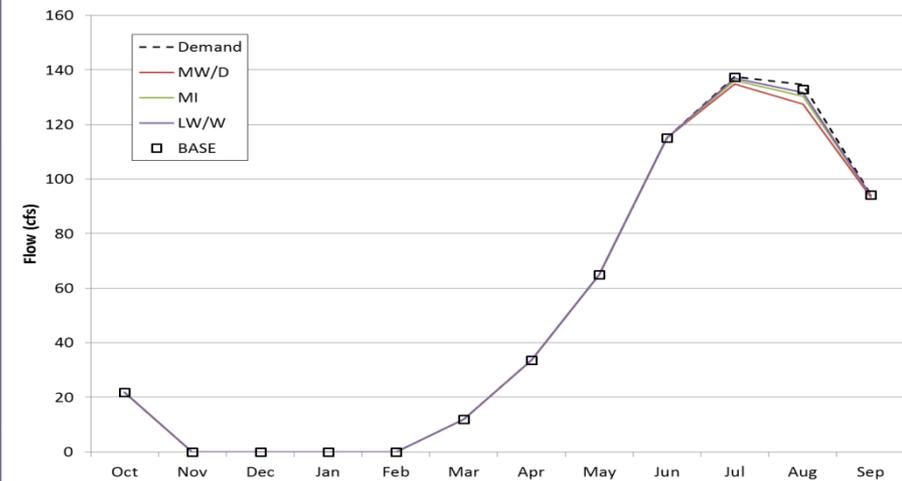
Climate Scenarios: Quarterly Shortage Occurrence Comparisons
East Fork Main Canal



Climate Scenarios: Quarterly Mean Shortage Comparisons
East Fork Main Canal



Climate Scenarios: Mean Monthly Demand Flows
East Fork Main Canal

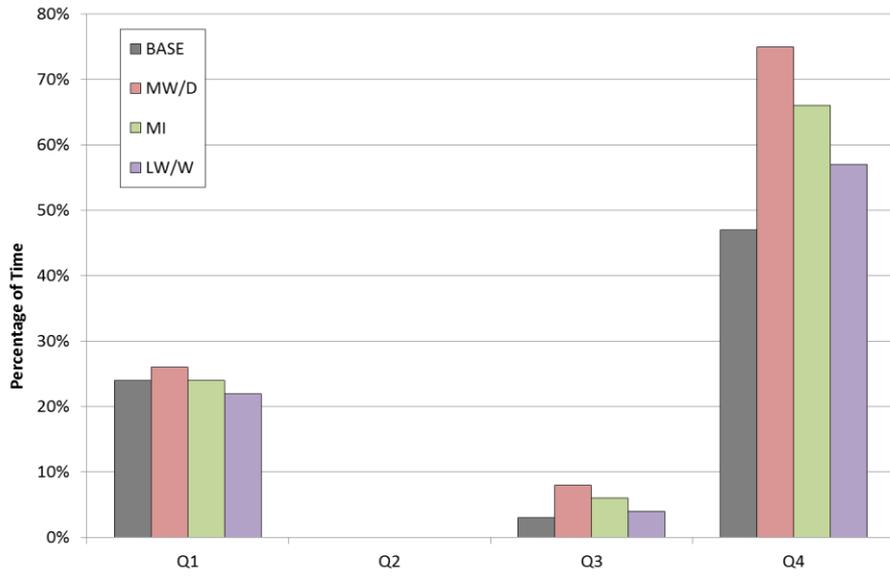


Both the magnitudes and occurrences of shortages increase

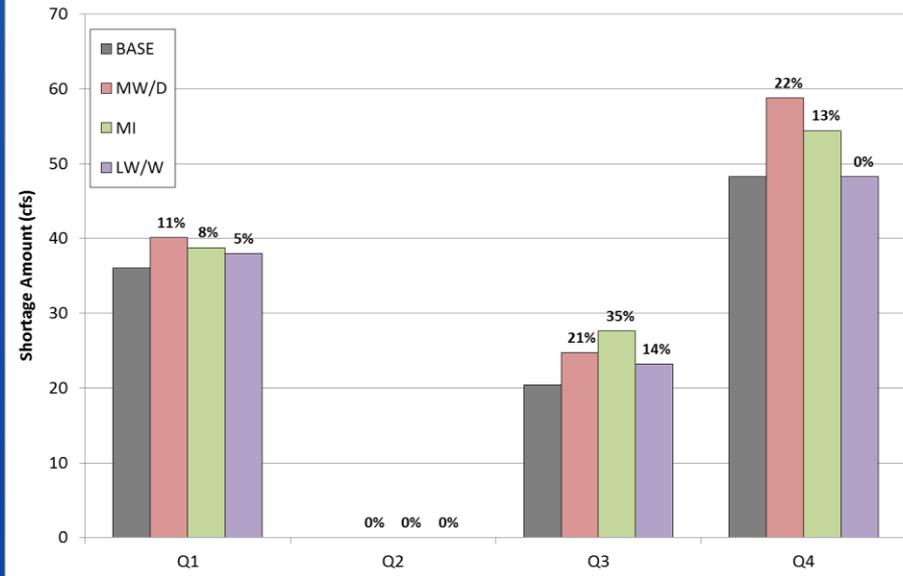
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MODSIM Climate Scenario Results

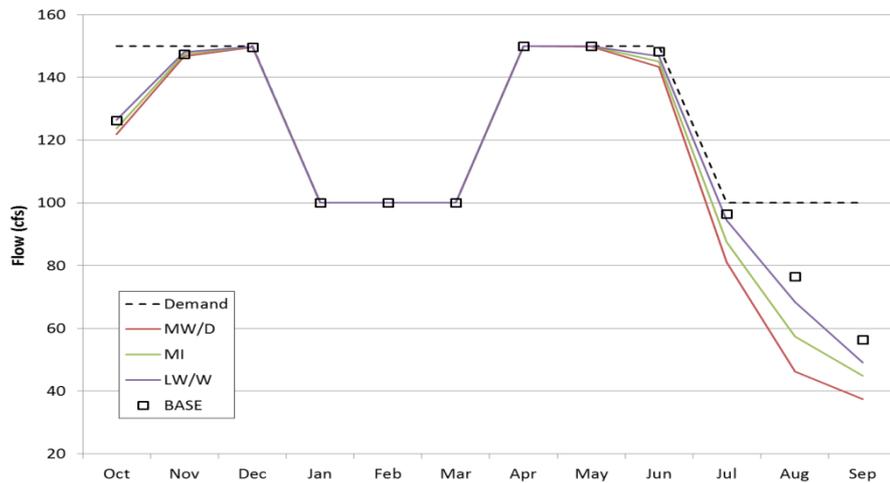
Climate Scenarios: Quarterly Shortage Occurrence Comparisons
East Fork Minimum Flow Requirement



Climate Scenarios: Quarterly Mean Shortage Comparisons
East Fork Minimum Flow Requirement



Climate Scenarios: Mean Monthly Demand Flows
East Fork Minimum Flow Requirement

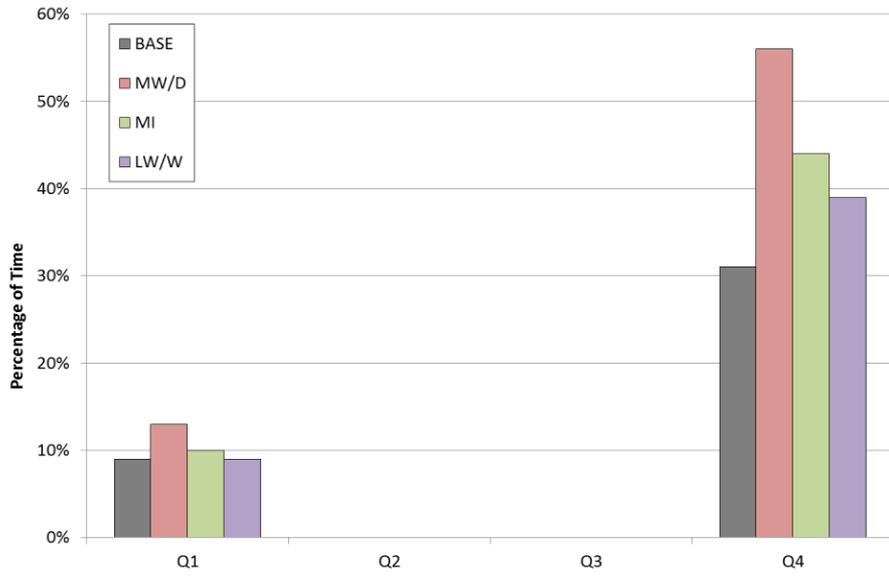


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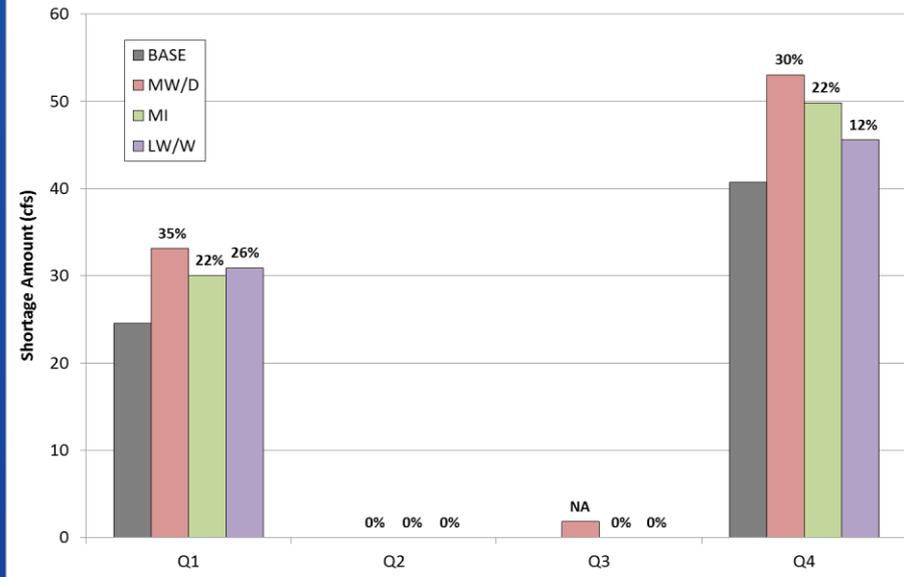
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MODSIM Climate Scenario Results

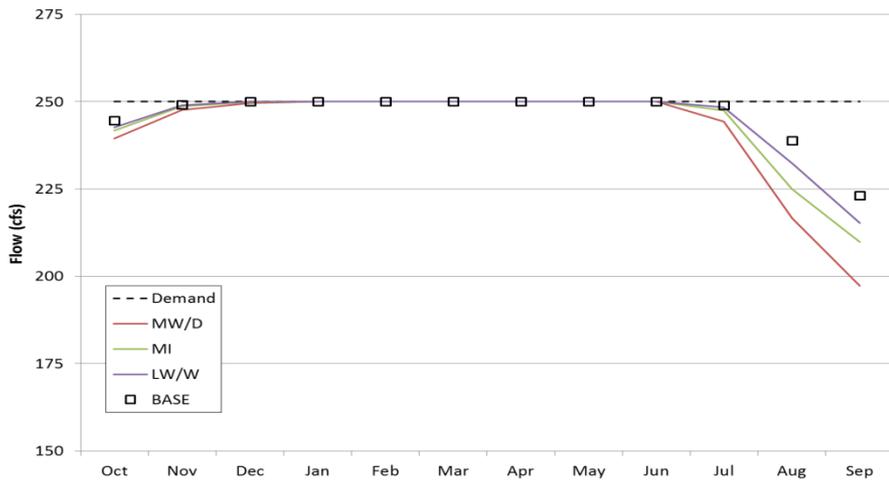
Climate Scenarios: Quarterly Shortage Occurrence Comparisons
Hood River Minimum Flow Requirement



Climate Scenarios: Quarterly Mean Shortage Comparisons
Hood River Minimum Flow Requirement



Climate Scenarios: Mean Monthly Demand Flows
Hood River Minimum Flow Requirement



Both the magnitudes and occurrences of shortages increase

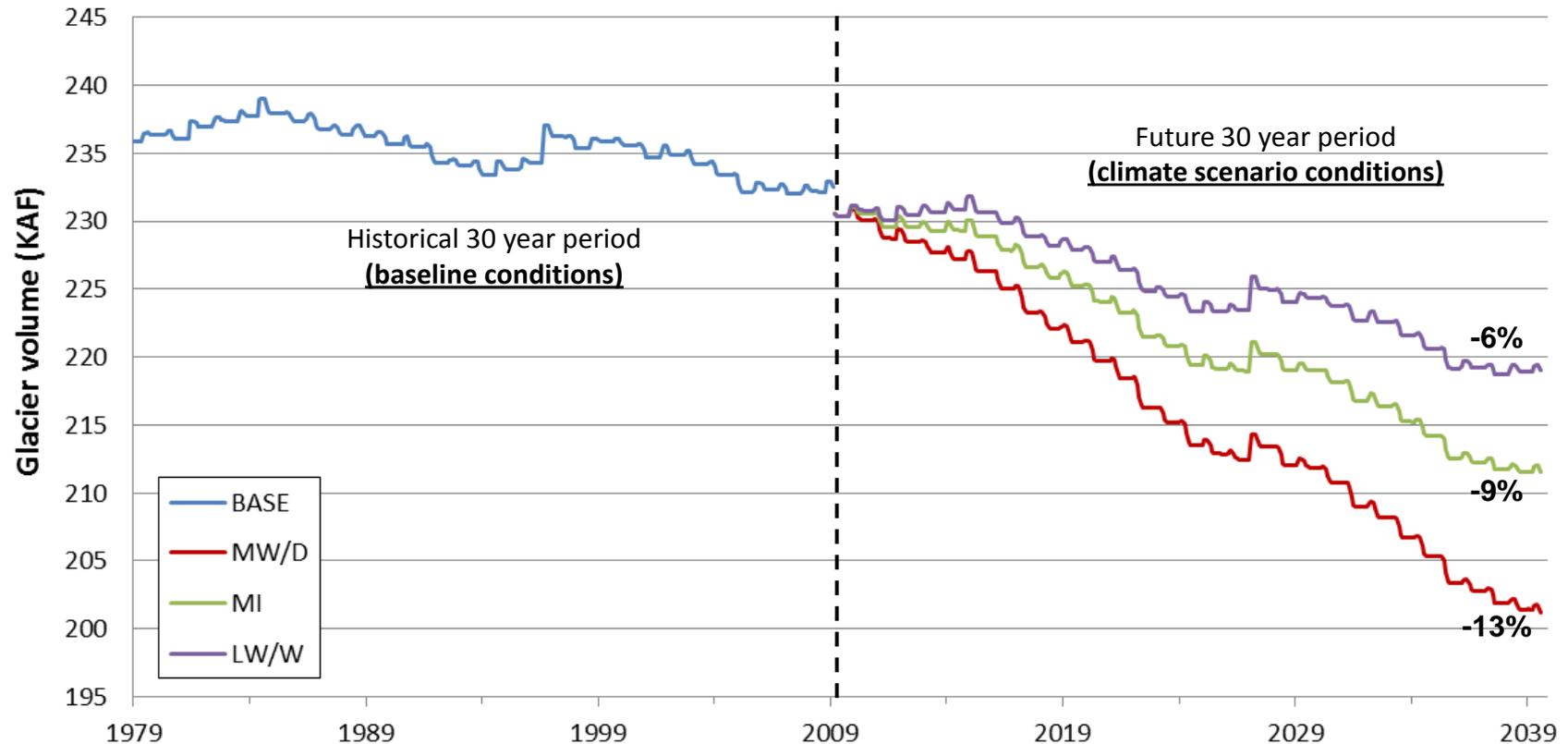
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Questions?

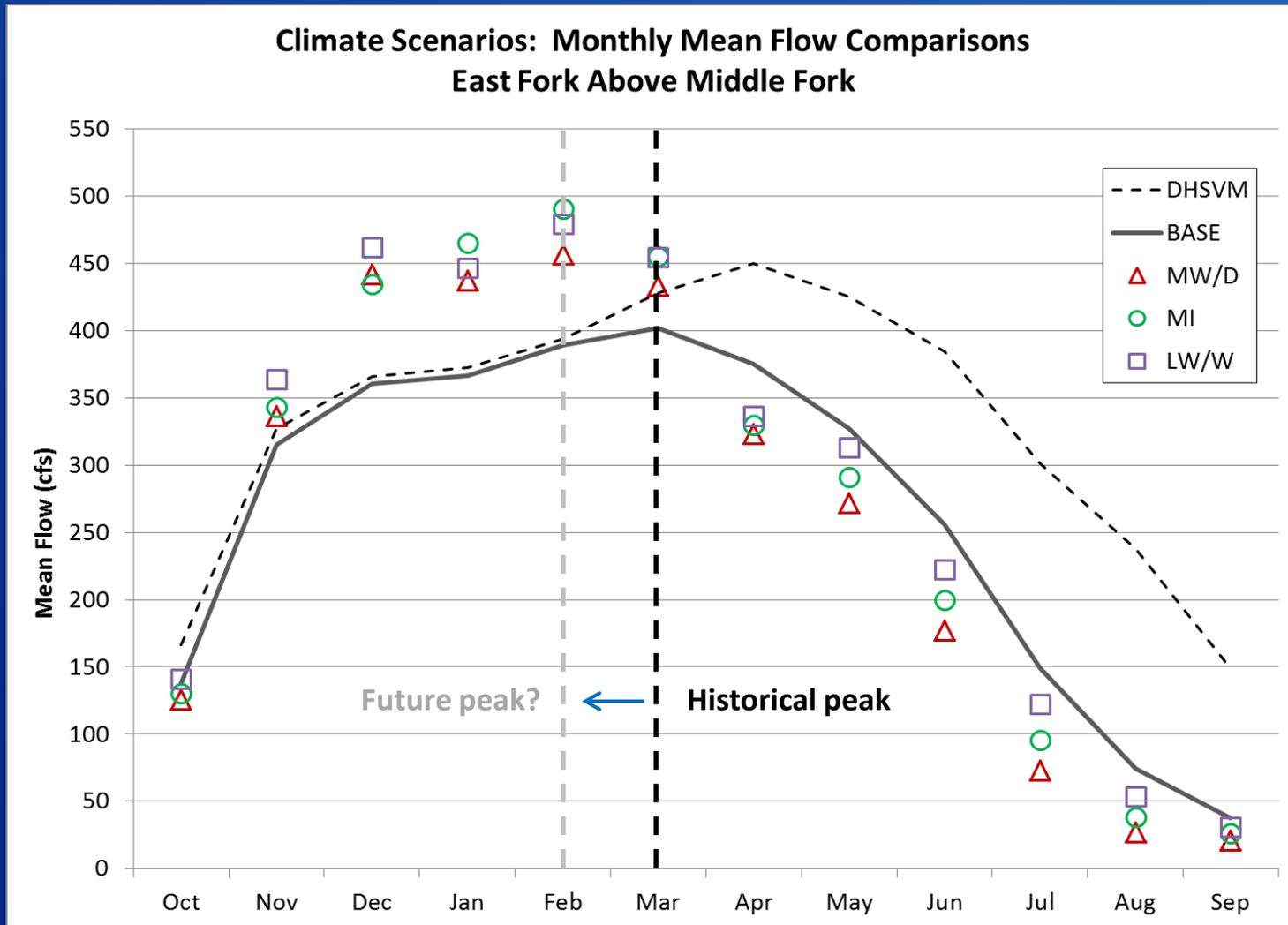
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DHSVM Climate Scenario Results

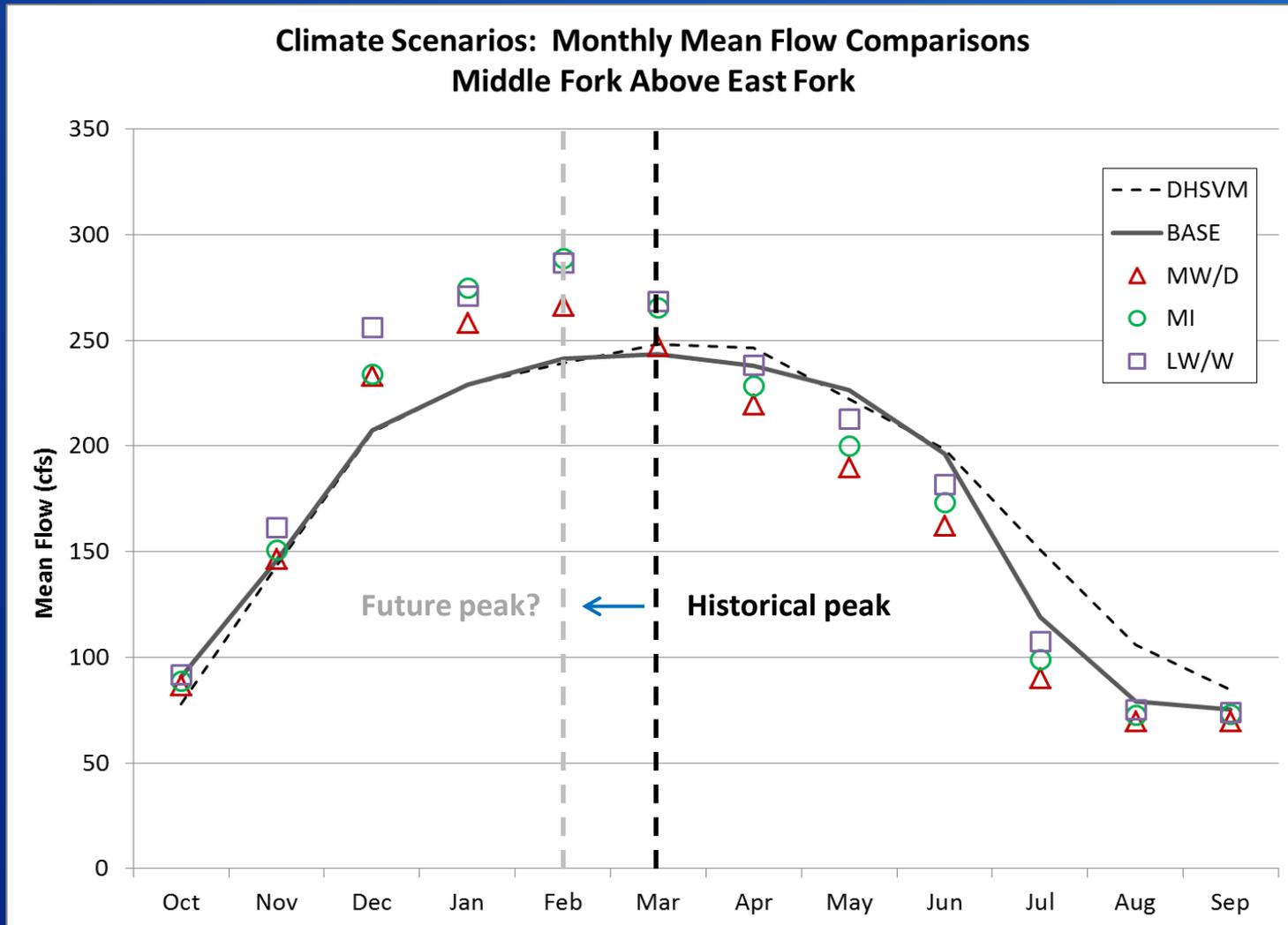
Climate Scenarios: Simulated Glacier Volume Comparisons



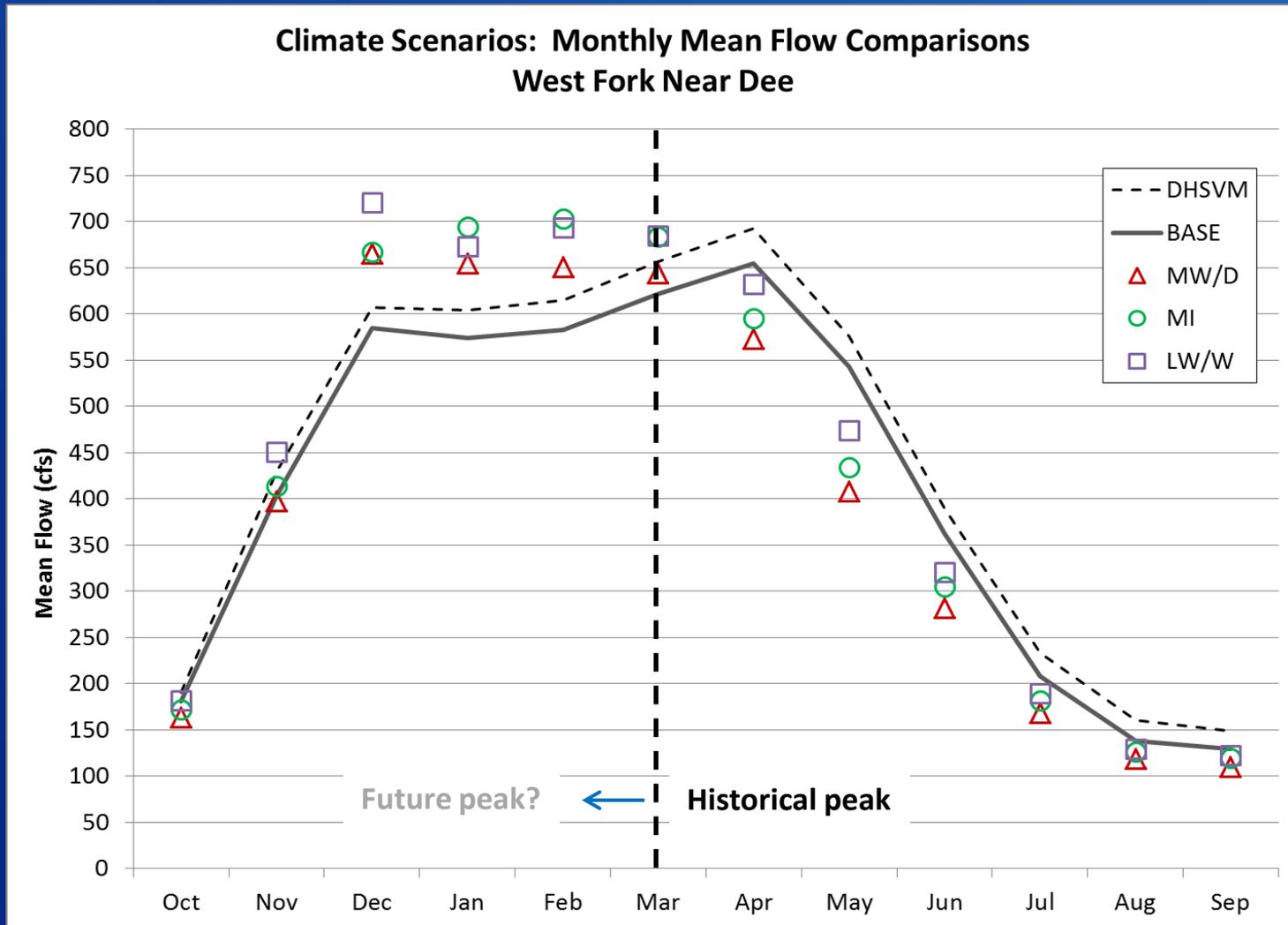
DHSVM & MODSIM Climate Scenario Results



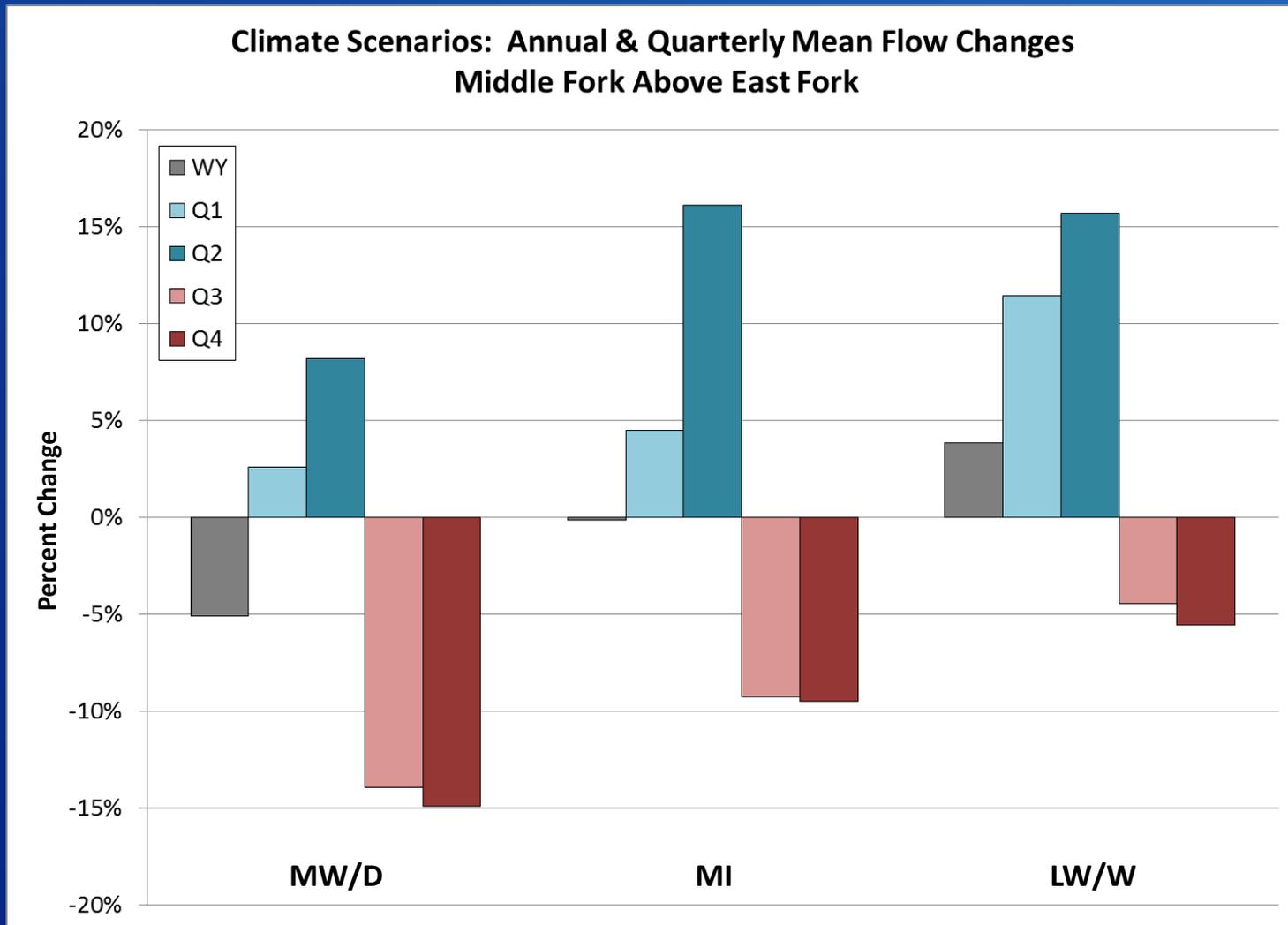
DHSVM & MODSIM Climate Scenario Results



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MODSIM Climate Scenario Results



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