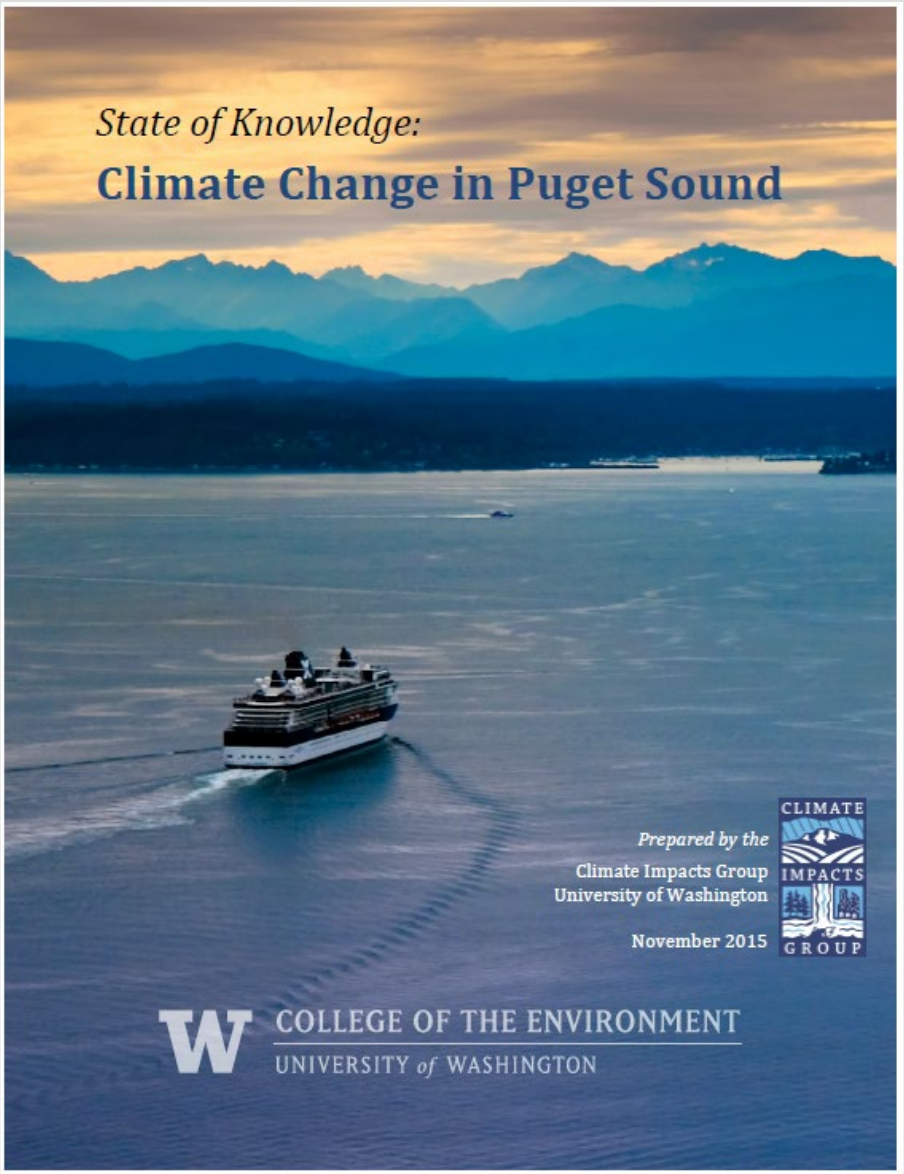
Storm and Surface Climate Change Planning

Utility Advisory Committee
February 2, 2023

2015 UW Report



Stormwater and Climate Change

RCP 8.5 and 4.5 scenarios both used

Average of multiple models gives most info

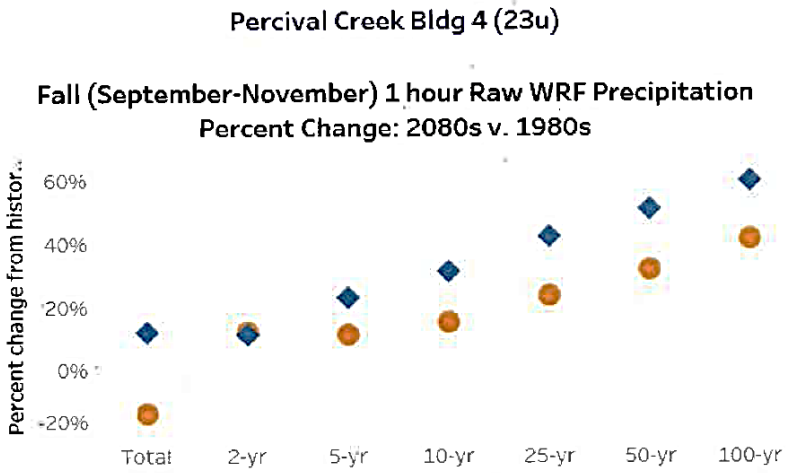
- **Temperature increase projected in all seasons**
- **Changes in rainfall**
  - **High natural variability – no observed trend yet**
  - **Projected Changes**

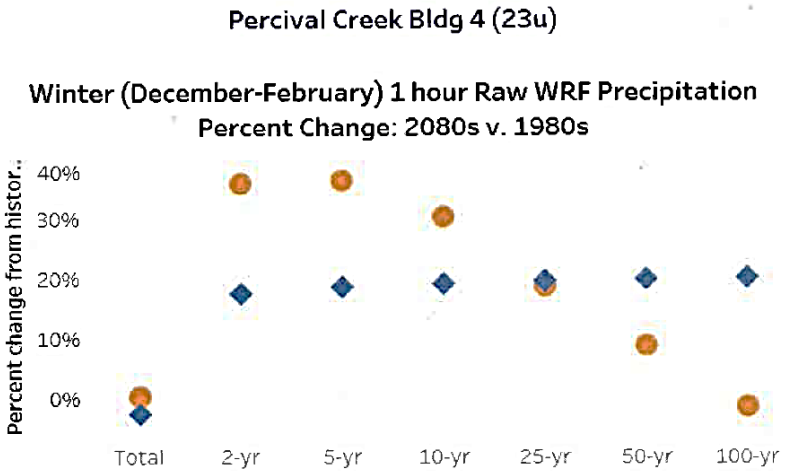
    Summer decline, Winter increase 2-11%

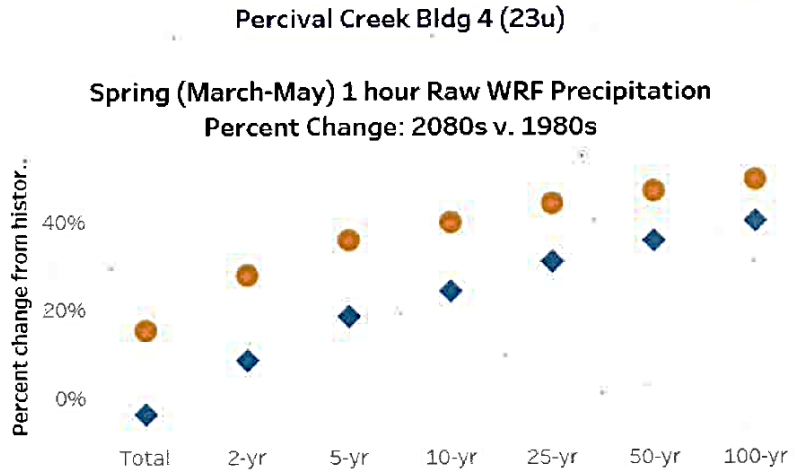
    Winter extremes projected to increase
    - **(+22% in largest 24-hr events)**

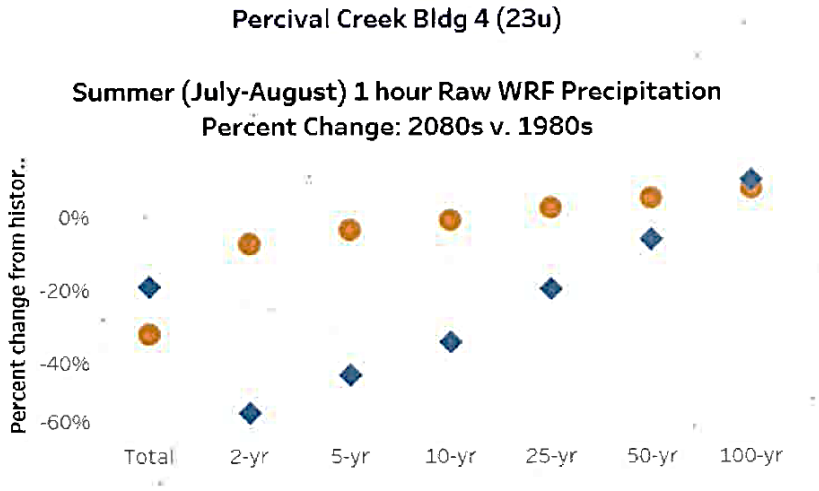
More atmospheric rivers due to increased water vapor in atmosphere in warmer world (Warner and Mass 2015)

Percival Seasonal Projections (1 hr)

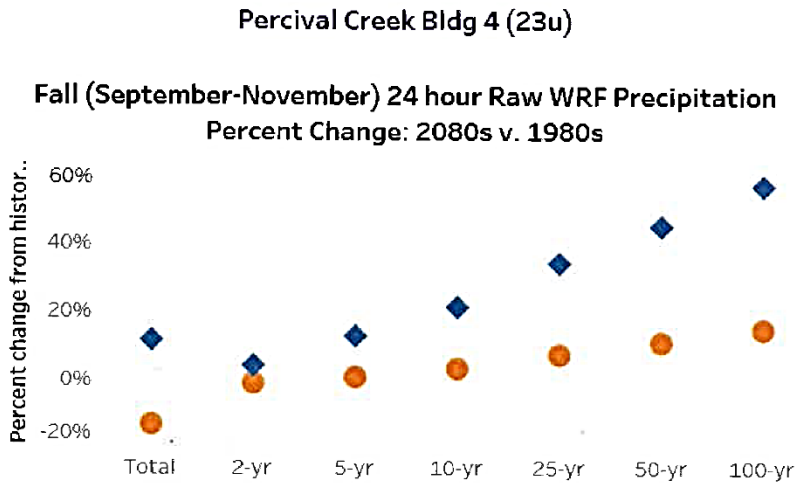


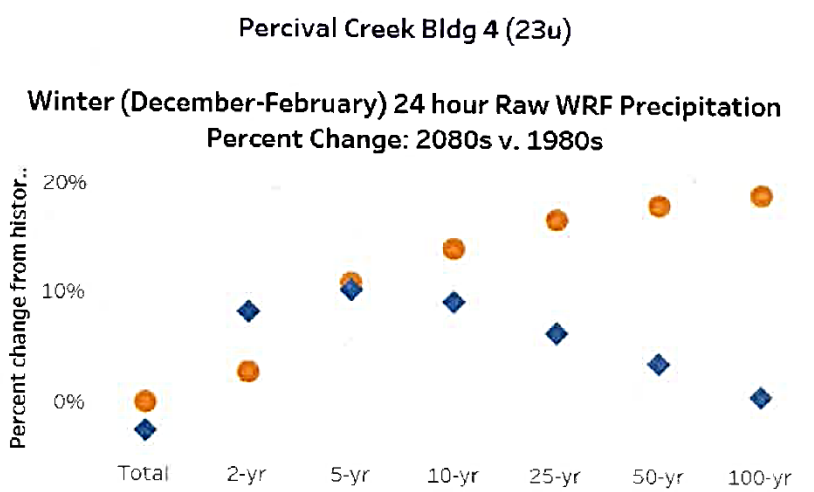


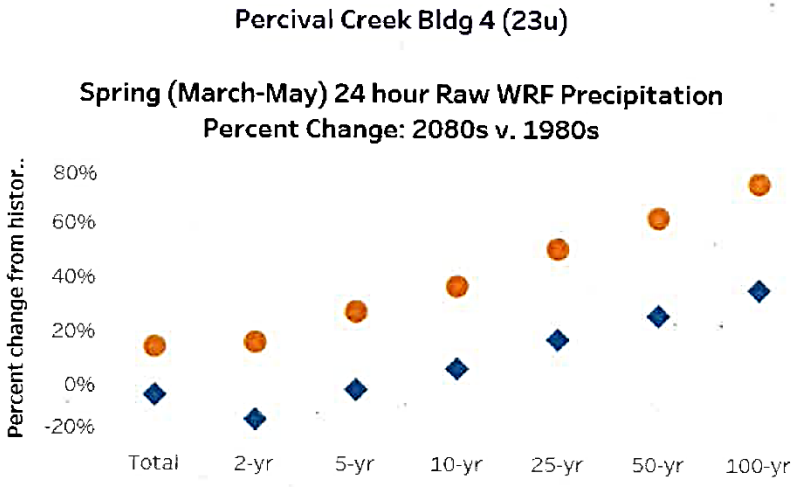


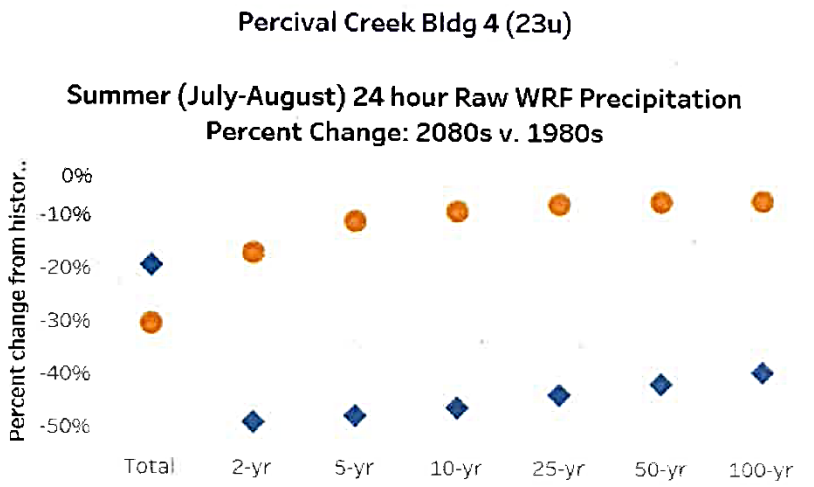


Percival Seasonal Projections (24 hr)







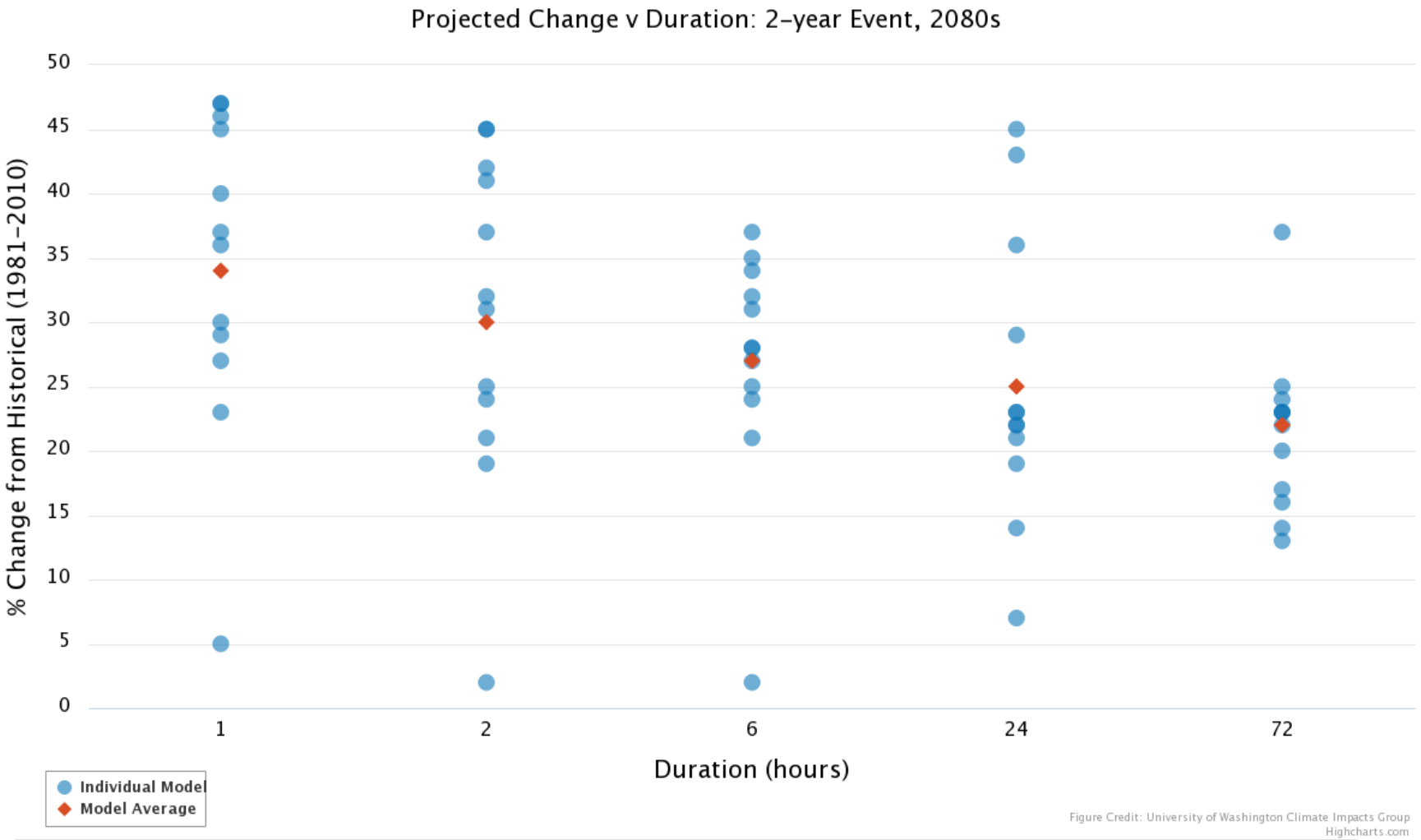


UW Climate Impacts Group Extreme Precipitation Tool

https://data.cig.uw.edu/picea/stormwater/pub/viz/

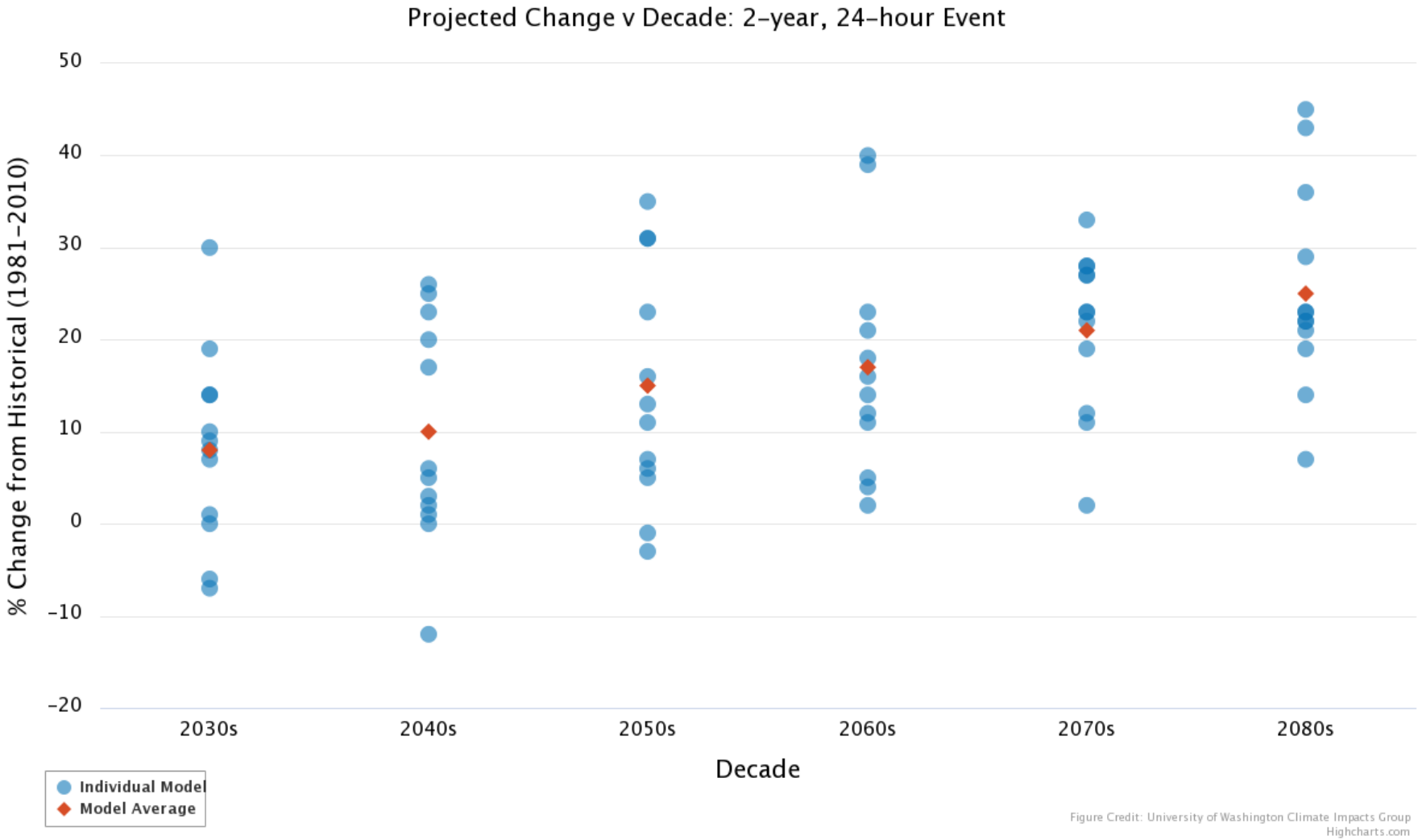
- More heavy rainfall events – (3”+ days +22%)
- Larger changes in high return interval events
- Larger changes in short duration events
- Based on high emissions scenario (RCP8.5)

UW Projected Change (2-year 2080s)



Larger projected changes in shorter duration events (1 hour vs. 24 hour +)

UW Projected Changes over Time (2-yr 24hr)



Larger projected changes in shorter duration events (1-hr vs 24-hr+)

Implications

- Western Washington Hydrology Model used to size facilities – Continuous flow
  - 6-month, 24-hour storm also used
- Existing system deigns may be under sized
- Increased potential localized flooding in large events
- Increased nonpoint pollution
- Need for flexible strategy given high uncertainty
- Increase natural areas to provide buffers
- Need to assess existing infrastructure for vulnerabilities
- Consider updated sizing of flow control BMPs in future

Regulatory

- King County working on integrating this info into guidance and planning for their drainage manual, but not regulatory at this point
- No regulatory climate related requirements in WA currently
- Guidance to be included in 2024 Western Washington Stormwater Manual

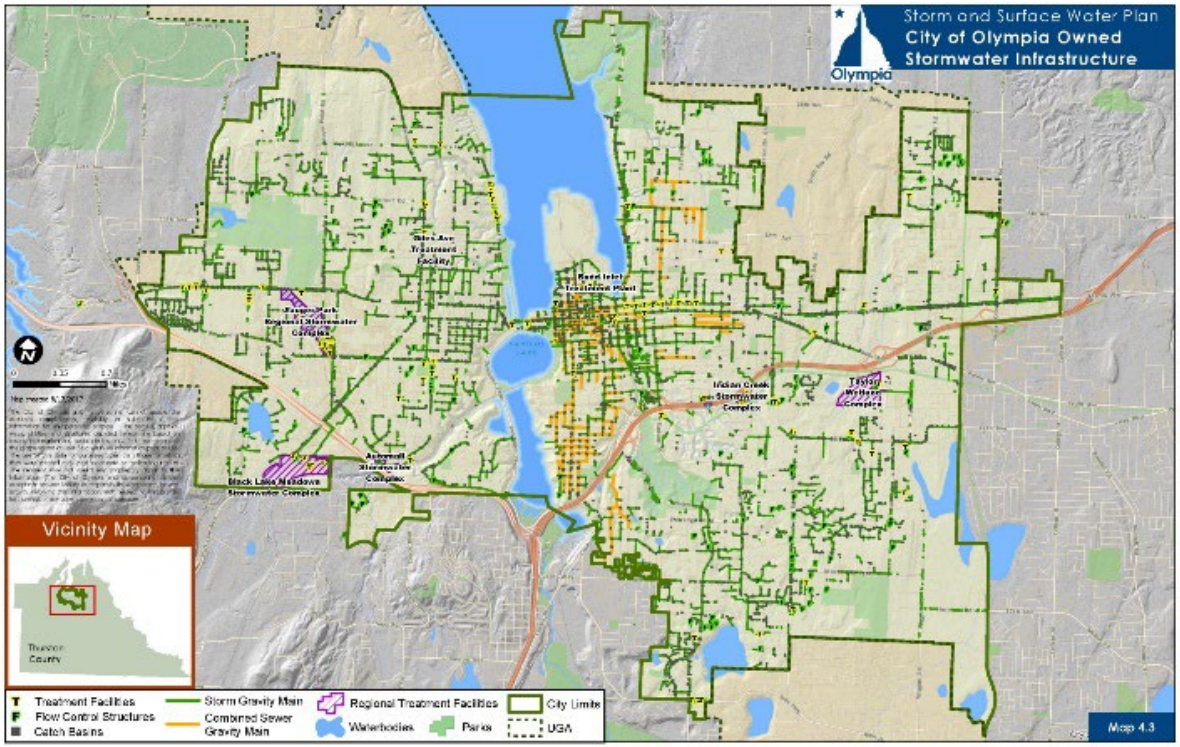
The Future

Incorporate future precipitation intensity forecasts into stormwater design for best management practices

Science and regulatory environment are not there yet

Waiting for Ecology and others to vet science and best approach to do so

Questions and Discussion



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