

Pacific Northwest Weather and Climate Outlook
April 3, 2012
Seattle

The Generation and Application of Weather and Climate Information at Seattle Public Utilities



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Outline

- Use of weather data and derivative products
- Application of climate data for assessments
- Water sector collaboration
- Observations on knowledge to action



Seattle Public Utilities' Operating Context

- Department of City of Seattle
 - Report to Mayor
 - City Council approves budget
 - ~\$800 M annual budget
- Manage and operate drinking water utility
 - 1.4 million customers
 - Manage river flows for people, salmon and flood control
 - Own/manage 100K acres of forested watershed for ecosystem services
- Manage and operate drainage/wastewater utility
 - Protect life, property, creeks, lakes and marine shoreline

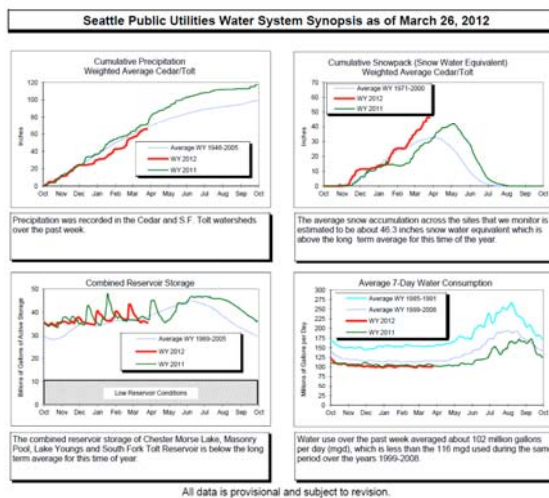
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Data, Monitoring and Forecasts

- Real time monitoring info and forecasting is essential for managing and planning
- Utilize several federal agency sources
 - USGS stream gages
 - USDA/NRCS SnoTel sites
 - NOAA/NWS daily and mid range weather forecasts
 - NOAA's Climate Prediction Center 30-90 day outlooks
 - NOAA/NASA remote sensing of snowpack
- Applications
 - Inform short term operational needs and longer term planning horizons
 - Compliance with instream flows
 - Inform reservoir management and releases
 - Project water supply availability

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Derivative Products: System Metrics

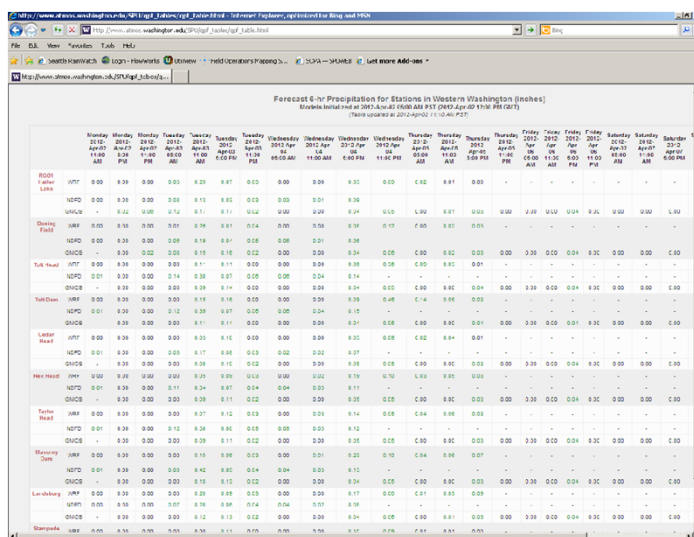


All data is provisional and subject to revision.

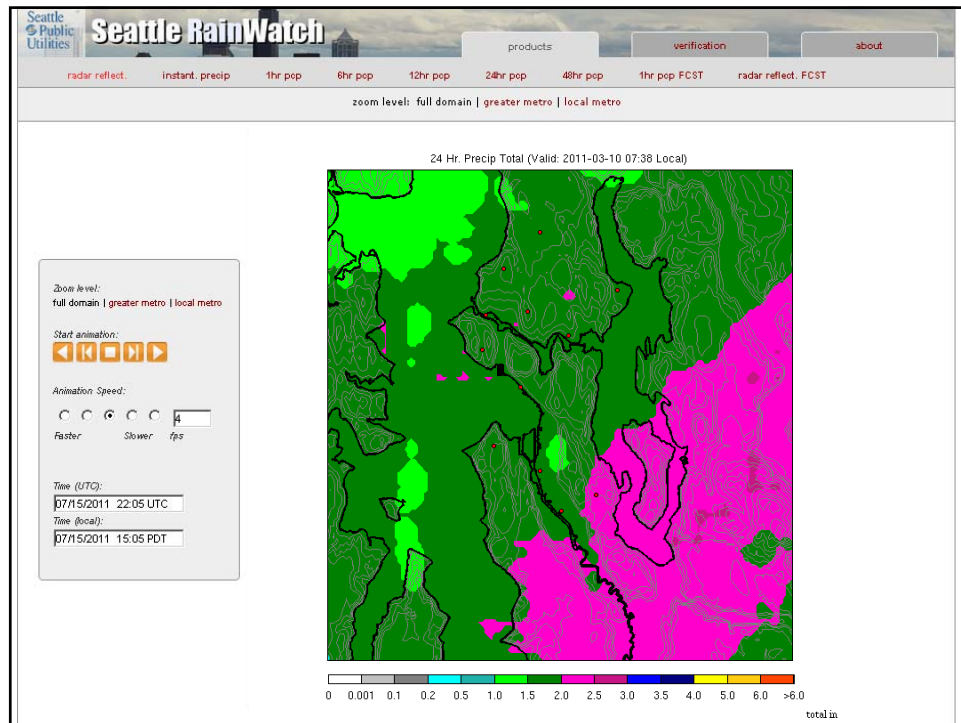


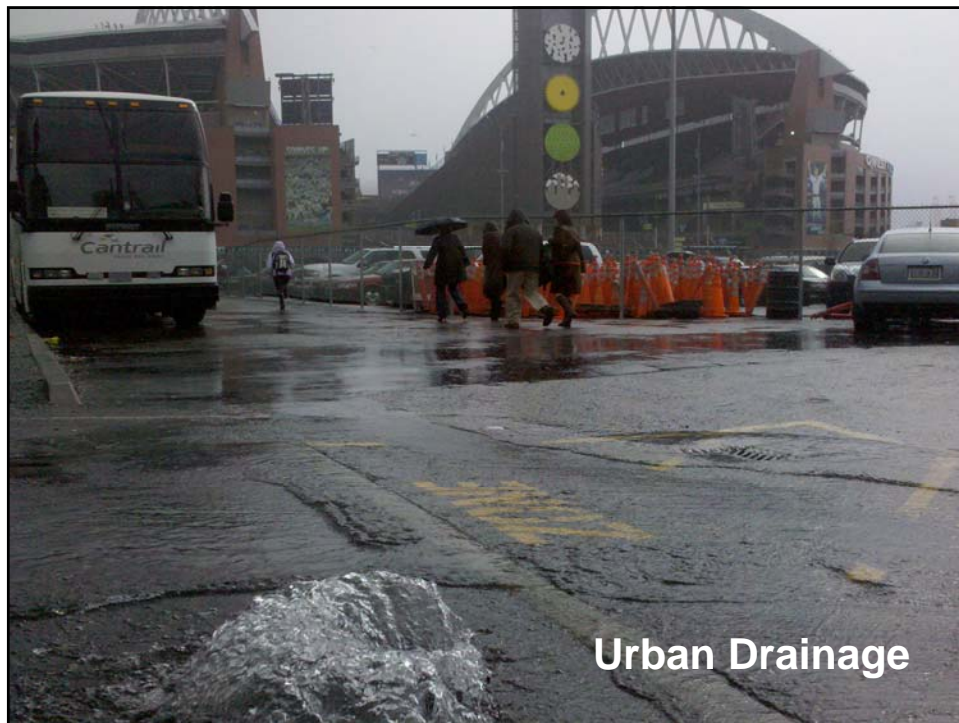
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Derivative Products: SPU Weather Portal



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Objectives of SPU Climate Program

- Enhance our knowledge
- Engage the science
- Assess impacts
- Establish collaborative partnerships
- Influence our operating environment
- Inform decision-making
- Reduce our contribution
- Strengthen system resiliency through adaptation

Downscaling Studies

Statistical Downscaling – Water Supply

- 2002-2006: SPU-funded project with University of Washington –Climate Impacts Group (UW CIG)
 - Methods and uncertainties
 - Supply impacts
- 2006-2008: Regional study with UW CIG
 - Regional Datasets
 - Supply and demand Impacts
 - Adaptation options
- 2008: UW CIG study for State of Washington
 - Supply Impacts
- 2011: Update of 2006-2008 study, results in 2013 Water System Plan
- 2012-2013: PUMA Project

Dynamical Downscaling – Urban Drainage

- 2008: UW CIG study for State of Washington
 - SPU ran downscaled data through urban hydrology model

2011 Climate Change Analysis

Results for SPU's Water System Under Worse Scenario:

- Loss of Available Supply:
 - 2025: 4%
 - 2050: 6%
 - 2075: 13%
- Increase in Water Demand:
 - 2025: 1%
 - 2050: 2%
 - 2075: 5%
- Reduced supply exceeds climate-impacted demands for all years except 2075

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Water Utility Climate Alliance

43 million drinking water customers



Mission Statement

The Water Utility Climate Alliance provides leadership in assessing and adapting to the potential effects of climate change through collaborative action. We seek to enhance the *usefulness of climate science* for the adaptation community and improve water management *decision-making in the face of climate uncertainty*.

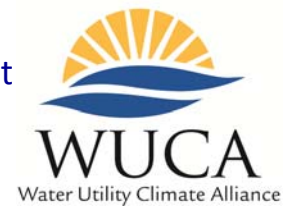
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Slide created by David Behar, SFPUC

Collaborative Partnerships

“...enhance usefulness of climate science...improve water management decision making...”

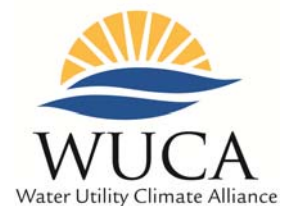
- 2012 Work Plan
 - NCAR’s CESM Societal Dimensions Working Group
 - PUMA
 - Decision support planning methods



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Piloting Utility Modeling Applications (PUMA)

- Partnership with WUCA and climate researchers/RISAs
- Identify state-of-the-art climate modeling tools and techniques to generate climate data
- For use by utilities to conduct impacts assessments and inform the development of adaptation strategies



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Observations

- Customized studies vs commodity products
- T-shaped coordination
 - horizontal across the federal enterprise
 - vertical with different sectors
- Multidisciplinary approaches – physical and social sciences
- Users and shapers
- Front end involvement and co-production enhances likelihood of research being used

Derivative Products: Probabilistic Seasonal Forecasts

