The Operations Support Tool (OST): Forecast-informed Decision Making and the New York City Water Supply

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FIRO Workshop
University of Texas at Arlington
12 Sep 2019
Presentation Outline

• Water supply system overview
• Operations Support Tool (OST)
• OST Use Cases
• Summary
New York City Water Supply

- Three systems
  - Croton
  - Catskill
  - Delaware
- 19 reservoirs & 3 lakes
- 2,000 square mile watershed
- 8 upstate counties
- Serves 9 million people
- Delivers 1.1 billion gal per day
- Unfiltered supply (Cat/Del)
Multiple Objectives and Challenges

- Supply reliability
- Drinking water quality
- Tailwater fisheries
- Ecological flows
- Recreation
- Spill mitigation
- Operating costs
- Hydropower
- Long-term supply/demand
- Regulatory changes
- Stakeholders
- Climate change
Near-real-time data

- Reservoir
- Streamflow
- Snowpack
- Water quality

Operations Support Tool (OST)

OASIS & W2 models

Guidance for Routine Reservoir Operations

Emergency Response

Long-term Planning

Impacts of Climate Change, Watershed Development, etc.

Policy Evaluation
OST Use Cases
OST Use Case #1
2015 Delaware Basin
2015 Delaware Basin Storage Observations

- STORAGE PCT USABLE.PCN.1dEOP@PCN

Usable Storage (%)

1/1 1/31 3/2 4/2 5/2 6/2
2015 Delaware Basin Storage Forecast

[Graph showing usable storage percentage over time with different lines representing Pr50 and STORAGE PCT USABLE.PCN.1dEOP@PCN]
2015 Delaware Basin Storage Observations

- STORAGE PCT USABLE.PCN.1dEOP @ PCN
OST Use Case #2
2016-17 Delaware Basin
Development Timeline

22 Mar 2016


Statistics Comparison

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<th>D0-D4</th>
<th>D1-D4</th>
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2016 Delaware Basin Storage Observations
PCN Usable Storage: 2016-11-01_OPS_Open

- STORAGE PCT USABLE.PCN.1dEOP@PCN
- Pr10
- Pr50
- Pr90
DELAWARE RIVER BASIN COMMISSION
P.O. Box 7360, 25 State Police Drive
West Trenton, NJ 08628

FOR IMMEDIATE RELEASE

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DRBC APPROVES DROUGHT MANAGEMENT SPECIAL PERMIT

West Placed in “Drought Watch” Stage Effective Immediately

WEST TRENTON, N.J. (Nov. 23) – The Delaware River Basin Commission (DRBC) at a
special meeting today issued a special permit for coordinated operation of regional reservoirs, out-of-
basin diversions, and Delaware River flow objectives in response to persistent dry conditions.

“The special permit unanimously approved today provides for enhanced coordination of
operations of regional reservoirs, diversions, and flow objectives during the ongoing, extended period of
below-normal precipitation,” said DRBC Executive Director Steve Tambini. “Today’s action also makes
clear that the entire basin is currently deemed to be in a ‘drought watch’ stage.”
Summary

• Forecasts provide invaluable decision-support
  • BUT uncertainty information is essential

• Ensembles are a paradigm shift
  • No longer focus on single trace or “right” forecast
  • Provide greater context for evaluation and decision-making
  • Allow us to see the forest, not just the trees

• Hydrologic system type/season matters
  • Snowpack-dominated: less uncertainty
    • Value of observations increases
  • Rainfall-dominated: greater uncertainty
    • QPF, QPF, QPF
Thank You

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