**Hydro-climatological Assessment of New York City Water Supply Management: Towards a Sustainable Seasonal Inflow Forecast Based on Climate Indices and Water Releases and Storages**

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New York City (NYC) water supply and management is an important issue for the city residents, governments and scientists as well as the environment. The climate-based streamflow forecasting combined with adaptive reservoir operation policy can potentially improve those decisions made by the water suppliers and watershed stakeholders in the city which are often straying too far from their current management practices. This paper presents a multi decisions framework for utilizing streamflow forecasts that can be applied to the works within the existing management structure and climate indices. To do this, the climate predictors are employed to develop the seasonal inflow forecasts behind the dam for the major NYC water supply reservoirs including the Cannonsville, Neversink and Pepacton dams. Also, those physically plausible climate-based reservoir inflow forecasts corresponding to March, April and May are developed and presented in details. Moreover, multivariate regression model and physical prediction approaches are employed to statistically build a sustainable framework for release/storage procedures based on the existing climate indices variations to specify the operating rules. This can help ultimately for having a more sustainable water supply strategies for the current NYC water supply management and systems.