

## **AR4 Climate Model performance in simulating snowpack over Catskill Mountain watersheds**

Aavudai Anandhi<sup>2</sup>, Soni M. Pradhanang<sup>2</sup>, Donald C. Pierson<sup>1</sup>, Allan Frei<sup>2</sup>, Eliot M. Schneiderman<sup>1</sup>, Mark S. Zion<sup>1</sup>, Rajith Mukundan<sup>2</sup>, Adao Matonse<sup>2</sup>, Jim Porter<sup>1</sup>, David G. Lounsbury<sup>1</sup>, and Donald P. Kent<sup>1</sup>

<sup>1</sup> Institute for Sustainable Cities Hunter College, City University of New York, New York, NY.

<sup>2</sup> Bureau of Water Supply, New York City Environmental Protection, Kingston, NY.

The ability of Global Climate Models (GCMs) to simulate observed meteorologic and hydrologic variables is an important indicator of the reliability of these models to project future climate conditions. In this study we evaluate the ability of GCMs participating in the Intergovernmental Panel for Climate Change's (IPCC) Fourth Assessment Report (AR4) to simulate observed temporal variability in the snowpack in New York City Water Supply watersheds located northwest of NYC in the Catskill Mountains. The snowpack is estimated using an empirical temperature-based degree day model. Inputs to this model are either measured historical meteorological (1961-2000) data or GCM model output for the same historical period. The evaluation of the GCMs is based on a skill score developed using probability distribution functions derived from the time series of simulated snowpack. From the skill scores calculated, the GCMs are ranked based on their ability to simulate the snowpack. These results have implications for selecting a subset of GCM simulations for climate change impact assessments in New York City's water supply.

<sup>1</sup>CUNY Institute for Sustainable Cities, CUNY

<sup>2</sup> Bureau of Water Supply, New York City Environmental Protection, 71 Smith Avenue, Kingston, NY 12401

<sup>1</sup>CUNY Institute for Sustainable Cities, CUNY

<sup>2</sup> Bureau of Water Supply, New York City Environmental Protection, 71 Smith Avenue, Kingston, NY 12401