

Techniques and Obstacles in Assessing Climate Change Impacts on Water-Related Needs and Issues in the Pacific Northwest

Jennifer Adam, Washington State University

On average, global mean temperature has increased nearly 1°C during the 20th century and is projected to increase another 1 to 6°C by the end of the 21st century. Increasing temperatures have the potential to impact numerous water-related issues in the Pacific Northwest (PNW), including water supplies, water excess management, and hydropower production. For example, summer water availability in the western United States may diminish due to decreased snowpack and an earlier snowmelt. Also, as rainstorms potentially become more intense and frequent, current stormwater infrastructure may be inadequate to handle the increased volume of stormwater. Techniques have been developed to assess the potential impacts of climate change on water issues. One technique involves the use of models to simulate the hydrological conditions of a site in an altered climate. The hydrology model is calibrated and evaluated using historical meteorology and hydrology data; subsequently, output from a Global Climate Model (GCM) is used as input to the hydrology model to simulate the hydrological impacts of the GCM-projected climate change. Accompanying this technique are various obstacles that are the topics of ongoing research projects. For example, there are obstacles related to the temporal and spatial downscaling of GCM data to the relevant scale of the project. Some of these obstacles will be addressed and a few examples of PNW climate change impact assessment will be discussed.

Jennifer Adam

Jennifer Adam is an Assistant Professor in the Department of Civil and Environmental Engineering at Washington State University, a position she has held since January 2008. She applies numerical hydrologic modeling to understand the impacts of climate change and human actions on regional to continental scale hydrology. She has also been involved in the development of meteorological forcing data for widely-used continental and global hydrologic model applications. She teaches courses in Water Resources Engineering, Sustainable Development in Water Resources, and Hydroclimatology. Jennifer received her PhD and MS degrees at the University of Washington in 2007 and 2002, respectively. She received her BS degree at the University of Colorado at Boulder in 1997. Jennifer served as a Peace Corps Volunteer in the Solomon Islands from 1997 to 1999, teaching mathematics and science to junior high school students.