



## **USDA-CSREES 2006 National Water Quality Conference**

### [Base Cations in Forested Watersheds: A Comparison of Laboratory Methods](#)

Changes in base cation concentrations have been studied in forested watersheds to assess impacts of atmospheric deposition for decades. Laboratory methods have changed over time and there are now several different ways to quantify base-cations. Extracting trends from long-term records can be difficult if different analytical methods were employed. In this study, the authors compare the accuracy and precision of three common analytical methods used to quantify base cations: Atomic Absorption Spectrophotometry; Inductively-Couple Plasma optical emission spectroscopy; and Ion Chromatography. Results are comparable but each method exhibits a bias with respect to atomic absorption. The amount of dissolved organic carbon in a sample appears to effect the magnitude of the bias. Although it is possible to compare results using different analytical methods and to correct reported concentrations for method bias, care must be employed when determining long-term changes in base cations. Extra care is required because analytical uncertainty or bias is difficult to separate from the compositional variability of the sample.

Author: John Peckenham

Coauthor(s): Steve Kahl Kenneth Johnson