Long-term Trends in Stream Chemistry

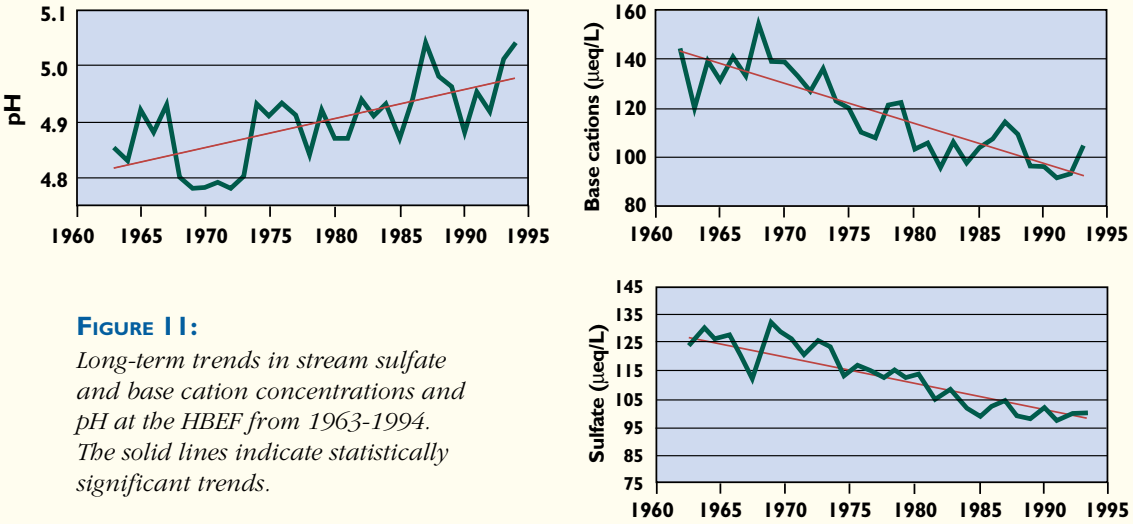

Figure 11:
Long-term trends in stream sulfate and base cation concentrations and pH at the HBEF from 1963-1994. The solid lines indicate statistically significant trends.

Regional trends in surface water chemistry indicate that the slow recovery of the streams at the HBEF is characteristic of sensitive lakes and streams throughout the Northeast. Twenty-five lakes and streams in the Adirondack and Catskill Mountains and seventeen in New England have been intensively monitored since 1982. A recent analysis shows that these lakes and streams exhibit limited recovery in pH and acid neutralizing capacity (see Figure 12).

Three factors account for the slow recovery in chemical water quality at the HBEF and across the Northeast, despite the decreased deposition of sulfur associated with the CAAA. First, acid-neutralizing base cations have been depleated from the soil due to acid deposition and, to a lesser extent, a reduction in atmospheric inputs of base cations. Second, inputs of nitric acid have acidified surface waters and elevated their concentration of nitrate in many regions of the Northeast, particularly the Adirondack and Catskill regions of New York. Finally, sulfur has accumulated in the soil and is now being released to surface waters as sulfate, even though sulfate deposition has decreased.

Figure 12:
Trends in surface water chemistry from 1982-1998. The arrows indicate the magnitude and direction of statistically significant trends. N = the number of lakes and streams monitored.

Chemistry of lakes & streams	Adirondacks & Catskills (N=25)	New England (N=17)
Sulfate	↓	↓
Nitrate	no significant change	no significant change
Base Cations	↓	↓
Acid Neutralizing Capacity	no significant change	↑