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Trends in the chemistry of atmospheric deposition and surface waters in the Lake Maggiore catchment

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Abstract. The Lake Maggiore catchment is the area of Italy most affected by acid deposition. Trend analysis was performed on long-term (15-30 years) series of chemical analyses of atmospheric deposition, four small rivers draining forested catchments and four high mountain lakes. An improvement in the quality of atmospheric deposition was detected, due to decreasing sulphate concentration and increasing pH. Similar trends were also found in high mountain lakes and in small rivers. Atmospheric deposition, however, is still providing a large and steady flux of nitrogen compounds (nitrate and ammonium) which is causing increasing nitrogen saturation in forest ecosystems and increasing nitrate levels in rivers. Besides atmospheric deposition, an important factor controlling water acidification and recovery is the weathering of rocks and soils which may be influenced by climate warming. A further factor is the episodic deposition of Saharan calcareous dust which contributes significantly to base cation deposition.

Keywords: trend, atmospheric deposition, nitrogen, stream water chemistry.

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