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Long-term changes in acidification and recovery at nine calibrated catchments in Norway, Sweden and Finland

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Abstract. International agreements to reduce the emissions of acidifying pollutants have resulted in major changes in deposition of sulphur and nitrogen in southern Scandinavia over the past 25 years. Long-term monitoring of deposition and run-off chemistry over the past 12-25 years at nine small calibrated catchments in Finland, Norway and Sweden provide the basis for analysis of trends with special attention to recovery in response to decreased sulphur and nitrogen deposition in the 1980s and 1990s. During the 1980s and 1990s sulphate deposition in the region decreased by 30 to 60%, whereas inorganic nitrogen deposition showed very little change until the mid-1990s. Deposition of non-marine base cations (especially calcium) declined in the 1990s most markedly in southern Finland. Run-off response to these changes in deposition has been rapid and clear at the nine catchments. Sulphate and base cations (mostly calcium) concentrations declined and acid neutralising capacity increased. Occasional years with unusually high inputs of sea-salt confound the general trends. Trends at all the catchments show the same general picture as that from small lakes in Scandinavia and in acid-sensitive waters elsewhere in Europe.

Keywords: acidification, recovery, Scandinavia, catchment, trend analysis

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