

Atmospheric Sciences and Analysis Work Group

Final Report

Executive Summary

As specified by the U.S./Canada Memorandum of Intent (MOI) of 1980, the major objective of the Atmospheric Sciences and Analysis Work Group (Work Group 2) has been to provide technical advice for the development of a bilateral agreement on transboundary air pollution. Specifically, the Work Group has developed information on the application of current long range transport models and acidic deposition monitoring data for this purpose.

This Final Report is a summary of more detailed technical information provided in four sub-group reports to be published separately. The report discusses these technical matters using terms defined in a glossary.

Acid rain occurs in eastern North America within and downwind of the major source regions of oxides of sulfur and nitrogen. This geographical association between the region of the largest North American emissions of sulfur and nitrogen oxides and the region of the largest wet deposition of sulfur and nitrogen acids constitutes the strongest evidence of an anthropogenic origin for much, if not most, of the acidic deposition in the northeastern U.S. and eastern Canada. Furthermore, there is no doubt that polluted air can readily cross the Canada-United States border in either direction.

The modeling effort by Work Group 2 has tried to quantify the origin of the sulfur falling on various parts of eastern North America. The adequacy of available models to predict the results of alternative emission patterns (i.e., the change in deposition that would result from a change in emissions) is uncertain.

The modeling effort has been directed toward sulfur and its compounds because relatively more information is available about sulfur oxides than for other chemical species. Further Work Group 2 has focused its efforts on emissions and depositions encompassing large time and space scales over