

## 5. DEPOSITION PROCESSES

### 5.1 Introduction

The purpose of this chapter is to examine the manner in which current knowledge of atmospheric deposition processes is incorporated into the MOI long range transport models under discussion.

"Deposition processes" include all the mechanisms by which atmospheric constituents are removed from the atmosphere and deposited at the earth's surface. Their role may be demonstrated by a simple example: if pollutant-sulfur emissions were not subjected to removal processes, the average concentration of sulfur in the global troposphere would be increasing by approximately  $10 \mu\text{g S m}^{-3} \text{ y}^{-1}$  (assuming no escape to the stratosphere) - something that is not observed. In view of the importance of removal processes, with regard both to cleansing the atmosphere and delivering material to surface ecosystems, it is desirable that models be able to simulate the most important processes in a quantitative manner, and be able to reproduce major features of actual observed deposition fields in time and space.

In this chapter, the processes of deposition and those factors which have an important influence on deposition are reviewed briefly; methods of incorporating deposition processes into the MOI long range transport models are examined; and finally some conclusions are drawn regarding the adequacy of deposition representation in MOI models. Throughout the discussion emphasis is given to those substances and processes which are of greatest importance in the acid deposition issue.

This chapter is not meant to be a comprehensive review of the subject of deposition. The recent scientific literature abounds with theoretical, experimental and modeling studies of deposition. MOI