

description of eight long range transport models and their computational results. These models produce transfer matrices for the purpose of determining source-receptor relationships over eastern North America. The long range transport models can be used to indicate the fraction of both wet and dry sulfur deposited on the mesoscale or available for long range transport. The models generally suggest that a larger fraction of the dry deposition occurs within the mesoscale than does wet deposition. The models also indicate substantial, but variable, deposition amounts on both scales. Possible reasons for the variability between these two ranges are: (1) the inadequate spatial resolution to accommodate near-source region contributions to air pollution concentrations; (2) the variations in the distributions of the emissions used in the models; (3) the variations in the vertical resolution and treatment of vertical diffusion among the long range transport models; (4) lack of detailed chemistry in the models especially close to sources; and (5) the variations in the way that the models treat the deposition processes. Therefore, consideration should be given to using local and mesoscale models for estimates at distances smaller than 300 kilometers.

Recent modeling survey papers, which are referenced in the Local/Mesoscale Subgroup Report, indicate that there are many models presently in use for predicting local/mesoscale air pollution concentration distributions.

Included in this chapter is a brief discussion of local and mesoscale models which have been applied to distances as great as 300 kilometers. Since there has been more extensive use and evaluation of models on the local scale (less than 50 kilometers) than on the mesoscale (50 - 300 kilometers), the modeling survey is broken into two parts: local and mesoscale.