

10. LOCAL AND MESOSCALE CONSIDERATIONS

10.1 Concentrations and Deposition on a Local Scale

Although the emphasis in the Work Group 2 transboundary pollution studies have been for travel distances of the order of 1000 kilometers or more, the understanding and prediction of atmospheric processes occurring in the local to mesoscale range (up to several hundred kilometers from the source) are also important. There are many instances of transboundary transport of air pollution which occur over local and mesoscale distances, such as those occurring in the Detroit, Michigan - Windsor, Ontario region and in the vicinity of the power plant at Poplar River, Saskatchewan. There are also sensitive areas including publicly owned land at or near the international border which could be adversely affected by local or mesoscale transport. Concentrations and deposition from sources within local and mesoscale distances may augment or even dominate those from long range transport and may be a factor that has to be taken into account if we are to develop accurate regional sulfur and nitrogen budgets. Finally, apart from the aspect of mesoscale transboundary transport, improved knowledge and modeling of mesoscale effects may improve the predictions of the models that are used for long range transboundary transport.

The literature describes many field studies that attempt to evaluate the contribution of sulfur sources to concentrations and depositions within the local and mesoscale. For a more detailed summary of the literature, the reader is referred to the Local/Mesoscale Analysis Subgroup Report 2F-L.