distance greater than 50 km has been reported by van den Hout and van Dop (1981). They describe general features of the models and the various formulations of the physical and chemical processes. Twenty-nine models were reviewed. A summary of the models, with their individual characteristics, is given in Table 4. A comparison of model characteristics as given in Table 3 compared to those given in Table 4 will show some apparent discrepancies for the same models that appear in both tables. Reasons for these differences probably result from a lack of "hands-on" experience with each model by the authors who prepared the tables. Model developers may disagree with how their model has been characterized. Therefore, the tables are presented as the authors included them in their reports without interpretation by the sub-group report authors.

The U.S. Department of Energy recently sponsored a mesoscale model validation workshop at the Savannah River Laboratory. The proceedings of this workshop was published by the Savannah River Laboratory (1981). The participants of the workshop included representatives from nine laboratories funded by the Department of Energy. A common emissions source-term, meteorological data, and observed krypton-85 concentrations were used to evaluate model accuracy for each of the models. The model calculations were compared to the observed Kr-85 concentrations collected at 13 stations located at distances as far away as 150 km. This study is of particular importance to the Local/Mesoscale Subgroup of the U.S./Canada Transboundary Committee because of the distance for which predictions were compared with observations.

A statistical evaluation of the models showed a degradation in the ability to predict Kr-85 concentrations, as the averaging time for calculations and observations was reduced. The predictions for annual periods were reasonably accurate with the weighted-average squared correlation coefficient (R^2) for all models equal to 0.74 for annual, 0.28 for monthly, 0.21 for weekly, and 0.18 for twice-daily predictions. Model performance varied considerably within each category, however, and it was concluded that "the more complex, three-dimensional models provide only marginal increases in accuracy." A general conclusion of the evaluation was that the overriding factor in the calculation accuracy is the accurate description of the wind field and that this is more important than further improvements of the numerical accuracy of complex models.