The recommendations of the OFCM Report –

-- capture and use existing data
-- construct standards for model evaluation
-- use all available approaches (physical models, CFD, etc.)
-- enhance measurement capabilities/expand local and regional networks
-- set up ATD test beds.

The reminders of Tennekes --

-- No observation is complete without an appropriately sampled estimate of the variance of the properties observed
-- No forecast is complete without a preceding estimate of model skill.
-- No model calculation is complete without an estimate of the variance.

Model uncertainty – Internal, External, and Stochastic

1. Uncertainty is a critical issue for many reasons. The conditions, constraints, and model configurations associated with minimum uncertainty will vary from situation to situation.

2. How can we help the decision maker decide on the best solution? We must find a way to have uncertainty communicated, even to an unwilling listener.

3. In communicating levels of uncertainty, there is need to provide some immediate progress – we need to identify some low-hanging fruit.

4. We need a source of data against which to test models and evaluate their uncertainty. The concepts of intensive data sets and test beds need to be explored.

Capturing historic data sets – Often the data are lousy. How can we tell? *Moreover the supporting information needed by today's models was often not collected. We need to be careful. Using re-analysis results has not been rewarding. ECMWF>NCAR/NCEP?*

Can we predict uncertainty? First we need to learn about it. *The causes change according to the situation.*

Stakeholders – federal agencies, scientists, emergency responders. Is there a report being prepared for the average citizen? There is an existing effort to enhance environmental literacy.

Multiple test beds are planned – each needs to be long term (a decade or more).

-- Do finer grids mean better forecasts? There is a convective “no man’s land” between 4 and 10 km. A turbulence “no man’s land” between 0.1 and 1 km. (Dave S.)

-- Need to separate between acute and chronic categories. “ . . it will not be possible to generate atmospheric data bases adequate for testing episodic models.” Need to couple models and experiments to produce relevant data sets. (John W.)

-- In models, can use either explicit or statistical methods to estimate uncertainty. Always need to define the ensemble average. (Ian S.)

-- Some uncertainties are acceptable – depends on the application.
The biggest uncertainty is due to the source term. Depending on the location, mesoscale meander could be important. (Michael B.)

-- Many data sets are maintained. They are very inconsistent. (Joe C.)

But we really need to revisit some classic studies – Prairie Grass II.