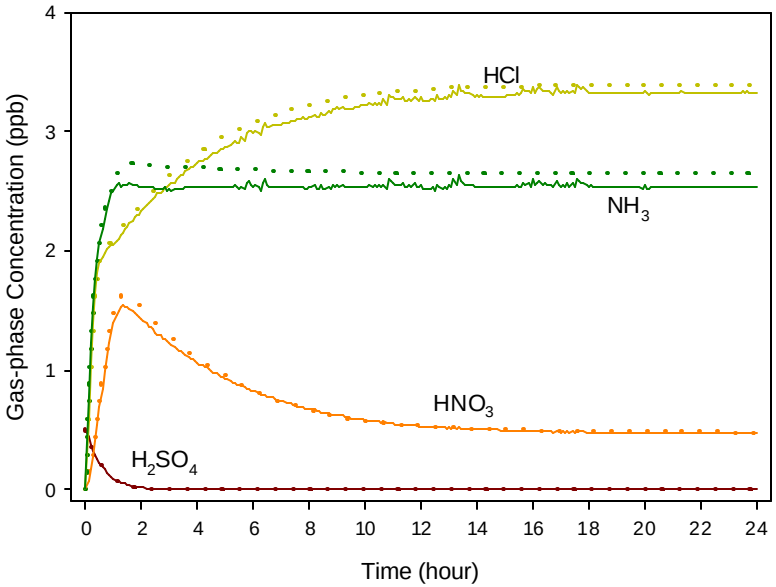
Pilot-2 Highlight

PNNL

Gas/Aerosol Interactions in the Atmosphere



R. Zaveri/ASTG

With the increased accessibility to parallel computing systems has come an opportunity to add previously unheard of detail to reactive transport air chemistry models. These large codes are used for both applications and basic studies, being tools for developing plans by which states can meet federally mandated air quality standards and used by investigators involved in a wide variety of basic studies in atmospheric chemistry.

An example of the type or detail that can now be included in PNNL's air chemistry modeling studies is shown to the left. This figure compares the evolution of selected atmospheric trace-gases over an aerosol system predicted by conventional technique (solid lines) and PNNL's newly developed "hybrid dynamic/equilibrium" approach" (dotted lines). This new approach is up to 10-20 times faster than the conventional method, and produces smoother, more realistic solutions while maintaining the desired accuracy. Understanding this type of gas/aerosol interaction will be of central importance to the public policy discussion on strategies to control $PM_{2.5}$ and O_3.