Title: Statistical Air Quality Forecast Support during DISCOVER-AQ

Problem to be solved: Flight decisions for the Deriving Information on Surface Conditions from Column and Vertically Resolved Observations Relevant to Air Quality (DISCOVER-AQ) campaign rely on timely and accurate air quality forecasts.

Project description: We will bring newly developed statistical models derived specifically for predicting air quality at sites within the DISCOVER-AQ region of interest (See Figure 1). These forecasts will be provided on a daily basis to the AQ contact listed above as a supplemental tool in forecasting ozone alert days and help with decisions regarding flying the research aircraft during DISCOVER-AQ. These Fly/No-Fly forecasts will be evaluated post-campaign for level of optimization relative to decision-making. This, in turn, will be used to develop an optimal decision algorithm that can be implemented in real-time during later campaigns.

Figure 1: Ozone model comparison for the Beltsville, MD site using (left) our statistical post-processing of the National Air Quality Forecast Capability (NAQFC), (center) the output from the NAQFC, and (right) a least-squares regression model. Solid lines indicate the NAAQS threshold for ozone. The dashed line indicates the 1:1 relationship. Dots represent an observation-forecast pair during the ozone seasons (Apr. – Oct.) of 2005 – 2009. False, Miss, and Cor indicate the number of observation-forecast pairs in their respective quadrant. Optimal forecasts will have large Cor with minimum False and Miss. These results are considered preliminary.