6.110 Influence of winds on retrievals of space based measurements of NO2.

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Abstract:

Satellite remote sensing of provides beautiful maps of the tropospheric column NO2 and their trends. Interpretation of the observed spectrum requires an intial guess, the a priori, about the vertical distribution of NO2 in the observed column. Here we will review why a high spatial resolution (~4-12km) a priori is essential to an accurate retrieval and how wind speed affects the lifetime of NO2. We will then show that there are substantial imporvements in the accuracy of a retreival--at high spatial resolution--if daily instead of monthly average a priori fields are used. Consequences of these improvements for estimates of emissions will be described. We find emission estimates change by as much as 10-30% using a prioris that correctly capture the effects of the boundary layer winds.