



# ***Welcome/Goals and Objectives***

***DISCOVER-AQ Data Workshop  
14-16 February 2012***

***Phase 1: Baltimore Washington***

***Relate column observations to surface conditions for aerosols and key trace gases  $O_3$ ,  $NO_2$ , and  $CH_2O$***

- A. How well do column and surface observations correlate?***
- B. What additional variables (e.g., boundary layer depth, humidity, surface type) appear to influence these correlations?***
- C. On what spatial scale is information about these variables needed (e.g., 5 km, 10 km, 100 km) to interpret column measurements?***

***Expected outcome: Improved understanding of the extent to which column observations (as observed from space) can be used to diagnose surface conditions***

***Characterize differences in diurnal variation of surface and column observations for key trace gases and aerosols***

- A. How do column and surface observations differ in their diurnal variation?***
- B. How do emissions, boundary layer mixing, synoptic transport, and chemistry interact to affect these differences?***
- C. Do column and surface conditions tend to correlate better for certain times of day?***

***Expected Outcome: Improved understanding of diurnal variability as it influences the interpretation of satellite observations from both LEO and GEO perspectives and improved knowledge of the factors controlling diurnal variability for testing and improving models***

***Examine horizontal scales of variability affecting satellites and model calculations***

- A. How do different meteorological and chemical conditions cause variation in the spatial scales for urban plumes?***
- B. What are typical gradients in key variables at scales finer than current satellite and model resolutions?***
- C. How do these fine-scale gradients influence model calculations and assimilation of satellite observations?***

***Expected outcome: Improved interpretation of satellite observations in regions of steep gradients, improved representation of urban plumes in models, and more effective assimilation of satellite data by models***