NOAA Flask Measurements of Greenhouse and Trace Gases during the ACT-America Campaign

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The Atmospheric Carbon and Transport – America (ACT-America) mission studies the transport of atmospheric CO_2 and CH_4 in order to reduce uncertainty associated with regional-scale transport and fluxes of carbon in atmospheric inversion models. A series of five, six-week flight campaigns will be conducted over four seasons in three regions of the United States to capture a wide range of ecosystems, carbon sources and sinks, and seasonally-varying weather patterns. NOAA flask measurements of greenhouse and other trace gas species, along with isotopic ratios of CO_2 and CH_4, can help to distinguish regional carbon sources and sinks. We present a brief overview of preliminary observations during the first two summer and winter ACT-America campaigns, along with analyses of regional source/sink tracers to help explain observed CO_2 and CH_4 enhancements.

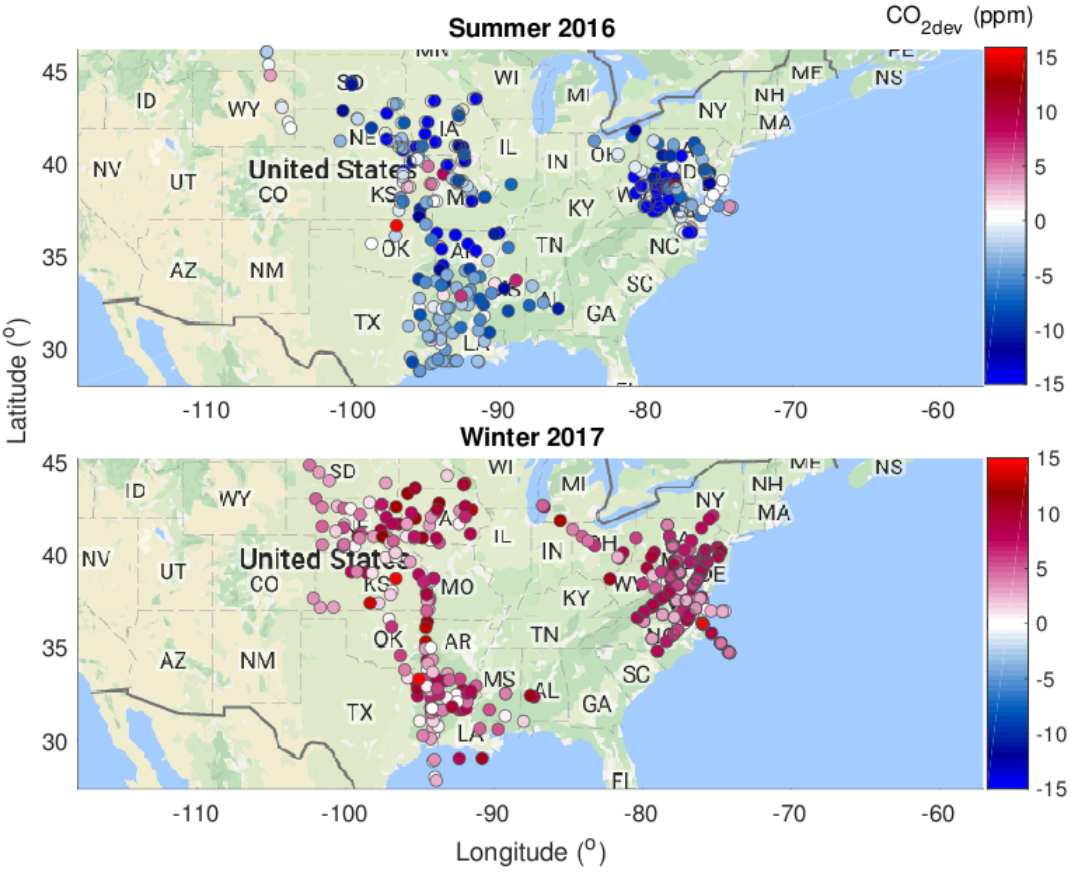

Figure 1. Deviation of NOAA flask CO_2 relative to Mauna Loa background CO_2 levels for the three regions of the ACT-America domain. Top: CO_2 deviation from background levels during summer 2016. Bottom: CO_2 deviation from background levels during winter 2017.