



Organic aerosol composition and sources in summer on the North Slope of Alaska

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The Arctic ecosystem is undergoing rapid changes including warming, wetting, loss of sea ice, and thawing of permafrost. The biogenic emissions that result from these changes have the potential to affect the regional chemistry and climate through the production of secondary organic aerosol (SOA) from biogenic volatile organic compound (BVOC) emissions, while anthropogenic emissions have the potential to increase with increased local activity. Recent studies investigating marine sources of organic aerosol in the Arctic highlight the need to understand the temporality, variability and characteristics of biogenic sources in the changing system. Terrestrial sources of biogenic aerosol in the Arctic are even less understood and may be more variable from low to high Arctic regions. The study site on the North Slope of Alaska is primarily sedge/grass, moss wetland, with more vegetation than high Arctic sites. To understand the long-term impact of these sources on carbonaceous aerosol concentration and composition in the Arctic, a multi-year view is needed. This presentation will highlight summer trends in organic aerosol sources and composition over 5 years on the North Slope of Alaska (2012-2017). Sources and composition of organic aerosol will be discussed with respect to results from isotopic analysis (radiocarbon), organic and elemental carbon, organic acids (including methanesulfonic acid), biogenic SOA tracers (including pinic acid and methyl tetrols), levoglucosan, and combustion tracers (including polycyclic aromatic hydrocarbons and hopanes).