Natural Gas and Hydraulic Fracturing
States surrounding Maryland have begun the processes of horizontal drilling and hydraulic fracturing to obtain significant amounts of natural gas from within the Marcellus shale. The composition of this natural gas was found to be 79-96% methane, with 3-16% ethane, and natural gas operations have been estimated to lose anywhere from 0.42-17.3% of recovered gas to the environment.

Ambient VOC Measurements
An EPA PAMS site at Essex, MD has recorded hourly values for ethane and other VOCs from June through August for boundary layer stability.

Essex, MD Ethane Concentrations
Despite an initial decline, ethane concentrations have increased in the most recent years. Between 2004 to 2010 concentrations were relatively constant, but began to increase starting in 2011.

Other PAMS Sites
Another PAMS site in nearby Washington, DC also displayed significantly greater ethane concentrations in recent years.

Conclusions
Over the past couple years, ethane concentrations have grown significantly at Essex, MD. Other natural gas sources such as landfills and CNG usage do not appear to be capable of causing this increase. This trend suggests that natural gas operations can impact not only locations in close proximity but areas great distances downwind as well.

References
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