

ACS-SA of Eastern Illinois University Present  
The 2<sup>nd</sup> of ACS-SA SEMINARS on CLIMATE CHANGE

**Dr. Gavin Edwards**

**Atmospheric Chemistry Measurements  
Using Micrometeorology**

**Monday Mar. 23<sup>rd</sup> at 4:00 pm**  
Physical Science Building 1205



Recent discoveries indicate that plants emit large amounts (>1200 T grams per year) of hydrocarbons including isoprene,  $\alpha$ -pinene and other biological volatile organic compounds (BVOC's) into the atmosphere at rates that appear linked to plant stress factors such as elevated temperatures. These gases have significant impacts on atmospheric chemistry and can have a profound influence on local air quality. Due to climate change, average global temperatures continue to rise. It will be important to know the impact of these temperatures changes on global BVOC emission rates in the next century. Over

the last decade, there have been many techniques developed to measure atmospheric 'flux', the rate of exchange of gases between the surface and the atmosphere. These micrometeorological methods are based on high-frequency measurements of vertical wind. The drawback of these systems is that the temporal resolution is such that very fast analytical methods are needed to quantify these exchange of gases. No such fast detection method exists for the majority of BVOCs and hence, such micrometeorological methods are unable to capture short term variations in BVOC concentrations. One solution to the problem of insufficiently fast analysis is the new technique of Disjunct Eddy Accumulation (DEA) where, short, separate samples are taken instead of continuously sampling the air as in traditional methods. In this presentation, the development and construction of a Disjunct Eddy Accumulation sampler for the evaluation of BVOC fluxes is described, together with preliminary data obtained using this instrument during a recent deployment at a forest site in Northern Michigan.