SPoRT Science Seminar Abstract

Use of Satellite-Derived Smoke Emissions and Aerosol Optical Thickness for Air and Water Quality Decision Support Applications

Presented by: Udaysankar S. Nair
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External inputs of nutrients into inland water bodies and oceans are an important modulator of aquatic ecosystem functions and services. Direct atmospheric deposition of nutrients into water, deposition on land and subsequent transport into water are important nonpoint sources of nutrient fluxes into water bodies. Satellite derived aerosol optical depth (AOT) is being used to constrain the column atmospheric aerosol loading in the CMAQ and to potentially improve these sources of nutrient fluxes. Nutrient flux deposition products are being made available to the Alabama Department of Environmental Management (ADEM) which is responsible for monitoring water quality in the state of Alabama.

Alabama Forestry Commission (AFC) is responsible for detection and control of wildfire and also for issuing burn permits for prescribe burn activities. Two concerns associated with smoke from wild fires and prescribe burns are adverse health impact and visibility reduction. Currently the AFC do not have access to forecasts products or modeling systems to assist in decisions related to wildfire control and smoke management. An interactive modeling system is being developed for assisting AFC for decision support related to control burn activities. An emissions database developed using satellite derived smoke emissions will be used for driving this modeling system. In addition, a customized forecasting system for air quality and visibility during wild fire events is also being developed.

In addition to the modeling techniques, this talk will also discuss mobile device applications that are being developed in order to improve the end user utility of these decision support tools.