



## **SEMINAR SERIES PRESENTATION**

**Tuesday, October 16, 2012 – NSSTC CR1010 – 12:45 PM**

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**TOPIC:** Civil Environmental Monitoring Using Small Low-Cost Unmanned Aircraft Systems: Platform Development and Example Remote Sensing Applications

### **ABSTRACT**

Small unmanned aircraft system (UAS), including unmanned aerial vehicle (UAV) and ground devices, have many advantages in environmental monitoring applications over traditional aircraft- or satellite-based platforms or ground-based probes for many applications. This is because small UAVs cost less money but can provide more accurate information (meter-level spatial resolution and hour-level temporal resolution) from low altitudes with less interference from clouds. More importantly, small UAVs remove the need for human pilots to perform tedious or dangerous jobs such as aerial mapping, or tornado chasing. In addition, small UAVs combined with ground and orbital sensors can form a multi-scale remote sensing system. This presentation focuses on the platform development and example applications of small low-cost UAS for civil environmental monitoring tasks based from years of UAS flight experiences. It first provides an overview of the state-of-the-art small UAS technology. Then, AggieAir, a low-cost multi-spectral remote sensing system is introduced in detail with several typical missions including land survey, water area survey, and riparian applications. Phastball, a small UAS testbed is further presented with its high-accuracy navigation sensor suites for both remote sensing and sensor fusion researches. Finally, the civil UAS regulations and FAA certification procedure for routine manipulation of small UAS is discussed.