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MMM SEMINAR *NCAR*

UAV-Based 3D Acoustic Atmospheric Tomography

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This talk will describe a technique for remotely monitoring the near-surface air temperature and wind fields using an unmanned aerial vehicle (UAV). The technique is thought to be effective up to altitudes of about 1km. The sound spectrum emitted by the engine of a small UAV is parasitically observed by sensors located on both the aircraft and ground. The projected and observed Doppler shifts in frequency between the two are compared and converted into effective sound speed values. Two and three dimensional spatially varying atmospheric temperature and wind velocity fields are then obtained using tomography. The flight paths of the UAV are under user-direction so the system is both controllable and potentially mobile, particularly if multi-UAV configurations are employed. Additionally, one of the main issues for existing outdoor acoustic tomography – formulation of robust and accurate reconstructions of the temperature and wind-velocity fields from a spatially limited set of observations – is overcome. The results of a series of simulations and trials will be discussed.

This seminar will be recorded and available via webcast at:
http://www.fin.ucar.edu/it/mms/fl2-live.htm

******Please note the special day and time******
Friday, 3 October 2014, 11:00 AM
Refreshments 10:45 AM
NCAR-Foothills Laboratory
3450 Mitchell Lane
Bldg 2 Small Seminar Room 1001

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