Abstract Submitted for the SES08 Meeting of The American Physical Society

Cavity Ring Down Spectroscopy for Atmospheric Research IS-RAEL BEGASHAW, SOLOMON BILILIGN, ANTHONY COCHRAN, CHRISTO-PHER JESSAMY, North Carolina A&T State University — The study of the atmosphere requires full appreciation for several important chemical processes that occur at very small scales. Cavity ring down spectroscopy is one of the most sensitive absorption techniques available. The technique involves measuring the rate of absorption of light by a sample placed in a high-finesse optical cavity. Our lab uses an Nd-Yag pumped dye laser. The laser light is passed through an isolator and telescope set up and is coupled into an optical cavity containing highly reflective mirrors. As the light reflects back and forth between the two mirrors, a small amount leaks out of the cavity the decay time of the leaked light is measured. This decay time constant is dependent on the cavity design and sample placed in the cavity. We are using this sensitive technique to study the spectra of water vapor around 715-740nm. Work is also underway to study NO3 + Isoprene with the same technique. Preliminary results will be reported.

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Date submitted: 18 Aug 2008

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