

Abstract Submitted
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Upper Atmospheric Particulate Monitoring and Sample Return

ALAN LIDDELL, JOHN E. SOHL, Weber State University — H.A.R.B.O.R. (High Altitude Reconnaissance Balloon for Outreach and Research) is a student-run program in which high-altitude balloon systems are designed, constructed, and flown by students conducting individual or group research projects. One area of interest is in the sampling of particles in the upper atmosphere. Collecting airborne particulates and studying them under an SEM can answer questions on the origins of airborne particulate matter. We could find explanations for climate change or directly measure pollution caused by smokestacks. The SEM has the capacity to capture images of particulates and determine their composition. I am building a system capable of sampling air up to 30km (100,000 ft). The system will contain a servo-controlled filter system for sampling air captured by the ascent of the balloon. Currently, filter types are being evaluated for capture rate and air flow resistance. A circuit has been built to test the mass throughput of the airflow as the balloon travels its course. A vacuum chamber is being built to simulate the nearspace environment. Testing and simulation should be complete in time to fly a finalized sample return mission in spring 2011.

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