28 March 2007: SpaceMaster experiments on BEXUS 5 successfully completed their mission

Fifth BEXUS (Balloon EXperiment for University Students) mission successful completed. After lift off, the balloon ascended to about 25 km ceiling. Total flight time was 3.5 hours. The following two experiments with SpaceMaster participation were on-board:

ASDS - Attitude Sensing and Determination System
Objective: Real-time determination of the BEXUS platform attitude with respect to the North-East-Up coordinate frame
Method: The design is based on a 3-axis magnetometer determining the earth's magnetic field vector. It is complemented by two 2-axis accelerometers based on MEMS technology sensing the forces acting about the gondola. Furthermore a 3-axis gyroscope also based on MEMS technology is implemented to sense the rate of change thus combined with the accelerometer information the tilting of the gondola with respect to the gravity vector is determined. After telemetry downlink to ESRANGE ground station the attitude of the gondola throughout its flight path is displayed near real-time in a 3-D software.

CANSAT - A satellite in a can
Objective: Measure temperature, pressure and humidity levels localized with GPS coordinates
Method: The CANSAT incorporates GPS measurements with temperature (+-2 degrees), pressure (+-6kPa to 0 degrees, temperature compensated below this) and humidity (+-3.5% RH) sensors. The sensor data is relayed to ground every fourth second and will be processed and used to derive atmospheric and meteorological data to predict cloud formation. The temperature data will also be used to calculate heat flux through the CANSAT structure and evaluate the quality of the insulation.

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Picture taken during the flight by the experiment MMSP (multi motif stratospheric photography)

Further information
Student website: http://www.rex4bex5.spelaroll.se
Swedish Space Corporation: http://www.ssc.se/?id=7697