Results and Analysis from the Cosmic Dust Experiment

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The Cosmic Dust Experiment (CDE) onboard the Aeronomy of Ice in the Mesosphere (AIM) mission is a dust impact experiment designed to monitor the variability of the cosmic dust inux. To accomplish this objective CDE uses 12 polyvinylidine flouride (PVDF) impact dust detectors with a total surface area of $\approx 0.1m^2$. These detectors are based on permanently polarized thin plastic lm sensors that generate an electrical signal when an impacting dust particle penetrates them. The detection threshold for this instrument is about a micron in particle radius. The variability of these small grains is assumed to follow the variability of the dominant 100 micron radius particles, hence the measured ux can be used in correlation studies with various Noctilucent Cloud (NLC) activity indexes.

AIM was launched on April 25, 2007 and CDE was turned on May 23, 2007. Following calibration and testing, CDE has been operating nominally since about June 1, 2007. In this talk we will give a brief overview of the CDE instrument. The talk will also describe the data processing algorithms including the reduction steps and noise analysis from the raw data. Results from the rst nine months of operation (6/2007 - 2/2008) including temporal and spacial variation will be presented. Finally, size and mass distribution results will be compared to dust ux models from various sources and dust measurements.