

# **The AIM Mission**

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The overall goal of the Aeronomy of Ice in the Mesosphere (AIM) experiment is to resolve why Polar Mesospheric Clouds (PMCs) form and why they vary. By measuring PMCs and the thermal, chemical and dynamical environment in which they form, AIM will quantify the connection between these clouds and the meteorology of the polar mesosphere. This will provide the basis for the study of long term variability in the mesospheric climate and its relationship to global change.

The results of AIM will be a rigorous validation of predictive models that can reliably use past PMC changes and present trends as indicators of global change. This goal will be achieved by measuring PMC abundances, spatial distribution, particle size distributions, gravity wave activity, cosmic dust influx to the atmosphere and precise, vertical profile measurements of temperature, H<sub>2</sub>O, OH, CH<sub>4</sub>, O<sub>3</sub>, CO<sub>2</sub>, NO, and aerosols. These data can be obtained only by a complement of instruments on an orbiting spacecraft because of the need for global coverage and because extinction and foreground emissions compromise optical sensing from the ground.

The AIM satellite has three instruments aboard: 1) Solar Occultation for Ice Experiment (SOFIE); 2) Cosmic Dust Experiment (CDE); and 3) Cloud Imaging and Particle Size Experiment (CIPS). This talk will summarize the science goals, measurement requirements, and the expected performance of the AIM instruments.

AIM is scheduled for launch in September, 2006.