YORK UNIVERSITY
THE CENTRE FOR RESEARCH IN EARTH AND SPACE SCIENCE
and
DEPARTMENT OF EARTH AND SPACE SCIENCE
AND ENGINEERING

SEMINAR

Dr. Cameron S. Dickinson
Phoenix MET/Lidar Science Team
York University

Lidar Atmospheric Measurements on Mars and Earth

ABSTRACT

The LIDAR instrument operating from the surface of Mars on the Phoenix Mission measured vertical profiles of atmospheric dust and water ice clouds. An equivalent lidar system was utilized for measurements in the atmosphere of earth under similar conditions, namely at temperatures around -65oC for ice-water clouds, and the South Australian Desert for Aeolian dust. Coordinated aircraft in situ sampling provided a verification of lidar measurement and analysis methods and also insight for interpretation of lidar derived optical parameters in terms of the dust and cloud microphysical properties. It was found that the vertical distribution of airborne dust above the Australian Desert is quite similar to what is observed in the planetary boundary layer above Mars. Comparisons with the in situ dust sampling will be discussed, as well as their use in deriving optical properties such as extinction coefficient. Airborne lidar measurements were also conducted to study cirrus clouds that form in the Earths atmosphere at a similar temperature and humidity as the clouds observed with the lidar on Mars. Comparison with the in situ sampling provide a method to derive the cloud ice water content (IWC) from the lidar measurements on Mars.

Refreshments will be served at 3:15 p.m. in 317 Petrie.

DATE: **Wednesday, January 27th, 2010**
TIME: **3:30 p.m. to 5:00 p.m.**
LOCATION: **Room 317, Petrie Building**