Observations of the South Polar Atmosphere and Condensates: Early Results from the Mars Climate Sounder. D. J. McCleese[1], J. T. Schofield[1], O. Aharonson[2], S. B. Calcutt[3], P. Irwin[3], A. B. Ivanov[1], D. M. Kass[1], C. B. Leovy[4], S. Lewis[5], D. A. Paige[6], P. L. Read[3], M. I. Richardson[2], F. W. Taylor[3], R. W. Zurek[1]. [1]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; [2]California Institute of Technology, Pasadena, CA; [3]Department of Atmospheric, Oceanic, and Planetary Physics, Oxford, UK; [4]Department of Atmospheric Sciences,University of Washington, Seattle, WA; [5]Department of Physics and Astronomy, Open University, Milton Keynes, UK; [6]Department of Earth and Space Sciences, University of California Los Angeles, Los Angeles, CA.

The Mars Climate Sounder (MCS) onboard the Mars Reconnaissance Orbiter is a nine channel radiometer operating between 0.3 and 50 microns wavelength. MCS observes the atmosphere and surface from the MRO near circular polar orbit by observing the limb of the atmosphere from 0 to 80 km with 5 km vertical resolution, the surface with 5 km resolution, and the bi-directional reflection function in the polar regions. Eventually, retrievals of atmospheric properties from measured radiances will provide vertical profiles of atmospheric temperature, water vapor, dust, CO_2 and H_2O condensates globally for at least one Martian year. To date, the MCS team has focused on studies of the thermal structure, clouds, and hazes in the winter South Polar regions, as well as high altitude clouds at mid-latitudes. These phenomena are the subject of this paper.