

HUBBLE SPACE TELESCOPE OBSERVATIONS OF MARS; P.B. James, Univ. Toledo, R.T. Clancy, S.W. Lee, Univ. Colorado, R. Singer, Univ. Arizona, L. Martin, Lowell Observatory, R. Kahn, and R. Zurek, Jet Propulsion Lab.

The combination of spatial and spectral resolution provided by the Hubble Space Telescope is ideally suited to a synoptic study of seasonal and interannual variability on Mars. A three year program of such observations commenced on December 13, 1990, when the angular size of Mars was 16.5 arcseconds. The first phase of the program will include additional monitoring sequences through May, 1991, when the elongation of Mars becomes less than the critical value for HST viewing. The objectives of the program are: multispectral mapping of geological surface units, quantitative study of seasonal and interannual variations in albedo features, diurnal behavior of martian clouds, measurements of concentration of ozone and derived water vapor abundance, and observation of polar caps and hoods. The data acquired include planetary camera images through filters at 230, 336, 439, 502, 588, 673, and 889 nm and spectra of Mars using the FOS instrument (roughly 1 arcsecond resolution).

Images obtained during the December 13, 1990 observations will be presented; these include color composites of Mars at two central meridians and the first UV images of the planet. Identifiable features in these observations include Syrtis Major, Hellas Planitia, Solis Planum, Valles Marineris, the Tharsis volcanoes, the north polar hood, and a large cloud at high southern latitudes. Preliminary results of the data analysis will be presented, including application of deconvolution routines to partially compensate for the effects of HST's spherical aberration.

This work is supported by a grant from the Space Telescope Science Institute.