NEAR INFRARED SPECTRA OF THE MARTIAN SURFACE

S. Chamberlain, J. Bailey, M. Walter, D. Crisp
1. Australian Centre for Astrobiology, Macquarie University. 2. Anglo-Australian Observatory. 3. Jet Propulsion Laboratory NASA.

ABSTRACT

Images and spectra were obtained using the United Kingdom Infrared Telescope (UKIRT), Mauna Kea. The data was taken during August and September 2003. Preliminary results are shown here.

This data was stored in a data cube (Fig 2) that has two spatial (x,y) and one spectral (z) axes. Spectra can then be obtained from any spatial location on the Martian disk (Fig 3) or an image can be produced using any wavelength region available (Fig 5 - 8).

Fig 4 are composite images composed of three different wavelengths. The component narrow band images were taken at 1.57, 1.64 and 2.12 μm. Due to the excellent observing conditions on the nights these images were obtained and with the Martian disk being greater than 25 arcseconds due to our close approach, these may be the sharpest images of Mars yet taken from a ground-based telescope.

ACKNOWLEDGEMENTS

Our appreciation goes to Chris Davies (Joint Astronomy Centre) for the initial reduction and creation of the first composite image of Mars and also to Paul Hirst (Joint Astronomy Centre) for observing the subsequent runs of Mars in September. Also thanks to Vikki Meadows (NASA, Jet Propulsion Laboratory) for her financial support during the observing run and to Sun Microsystems for donating the computer equipment used to process the data.