A NEW LOOK AT THE APOLLO 16 LANDING SITE USING CLEMENTINE DATA. D. Ben J. Bussey[1] , Paul D. Spudis[1], Paul G. Lucey[2], Dave T. Blewett[2] and B. Ray Hawke[2]. [1]Lunar and Planetary Institute, TX 77058, [2]PGD-HIG, Univ. Hawaii, Honolulu HI 96822.

We have created image mosaics of the region around the Apollo 16 landing site using the UVVIS Clementine data and have used these mosaics to construct a variety of compositional maps of the area. From these we are able to ascertain qualitative mineralogy information for the region as well as quantitative iron concentrations. The Apollo 16 landing site is an important area to study with Clementine data, as information from samples collected there are used to calibrate maps of quantitative mineral content, based on multi-spectral image data.

Clementine mapped the moon in eleven different wavelengths [1]. We have produced mosaics of the Apollo 16 landing site using the 415, 750 and 950 nm images (The 750 nm image is shown in Figure 1). A "true" RGB colour image was made by using the 415 nm as the blue channel, 750 nm the green and 950 nm the red. A "false" colour rgb image was produced to show qualitative mineralogy (predominantly maturity and mafic content). In this image, the red channel is controlled by the 750/415 nm ratio, green is 750/950 nm, and the blue channel is the 415/750 nm ratio. Using this false-colour scheme, the red and blue channels indicate the steepness of the reflectance continuum (as well as titanium content in mare basalts) whilst the green intensity is a function of the one micron absorption which increases with mafic content. In the mosaic, mature highlands are red/purple, fresh highlands are light blue. Mature mare regions are red and fresh outcrops of basalt are yellow [2,3]. Finally a quantatative map of iron concentration was produced using the method of Lucey et al. [4].

In order to enhance surface morphology, an Apollo metric image was scanned and the subsequent digital image was then co-registered with the 750 nm mosaic. We then overlaid our three multispectral images on top of the metric image which allows surface detail to be seen where before there was only saturation. This is particularly useful for locating North Ray crater in the multi-band images.

The true colour image shows how the natural colour of the moon is a faint brown/red colour. There is however a blue tint to a portion of the Descartes mountains covered by fresh ejecta, indicating that fresh material on the Moon is relatively blue. The multi-spectral image shows that the Cayley plains and the Descartes mountains appear to have similar compositions. Some of the Descartes mountains are covered with fresh highland material, largely ejecta from the crater Dollond E. The iron map shows the amount of FeO in the Cayley plains to be approximately 4-5 wt%, consistent with the number obtained from samples in the region [5].

References [1] Nozette S. and 33 others (1994) *Science* **266**, 1835. [2] Pieters C. and 11 others (1993) *J. Geophys. Res.* **98**, 17127. [3] McEwen A.S., et al. (1994) *Science* **266**, 1858. [4] Lucey P.G.et al. (1995) *Science* **268**, 1150. [5] Heiken G.H. (1991)*Lunar Sourcebook* ,CUP, 736 pp.

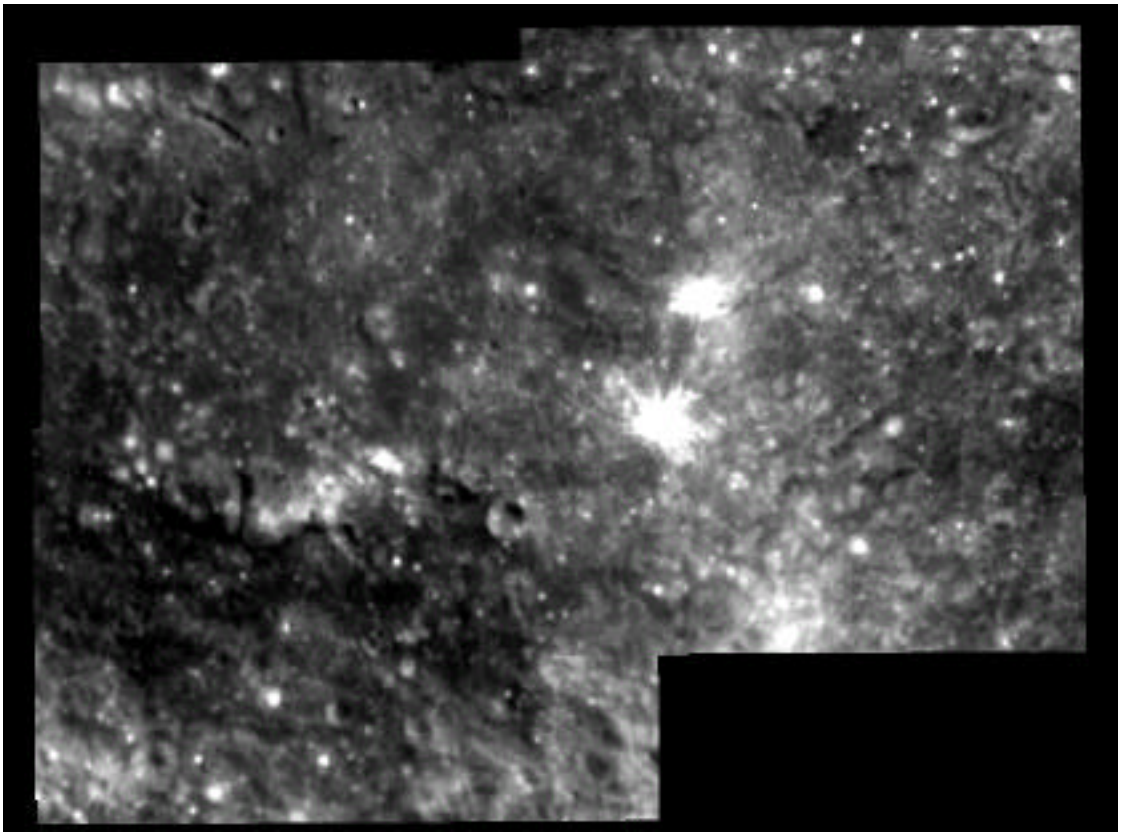

Figure 1. The 750nm mosaic showing the Apollo 16 landing site and surrounding area. The 2 saturated craters are North Ray and South Ray craters.