

Tuesday, March 16, 2004

POSTER SESSION I: LUNAR REMOTE SENSING: FIRE, ICE, AND REGOLITH
7:00 p.m. Fitness Center

Fristad K. Bussey D. B. J. Robinson M. S. Spudis P. D.

Ideal Landing Sites near the Lunar Poles [#1582]

The extreme lighting conditions and the presence of volatiles make the lunar poles an ideal place for a future landing site. We have used quantitative illumination maps and Clementine UVVIS and high resolution data to identify the best lander sites.

Pinet P. C. Cord A. Chevrel S. Daydou Y.

Optical Response and Surface Physical Properties of the Lunar Regolith at Reiner Gamma Formation from Clementine Orbital Photometry: Derivation of the Hapke Parameters at Local Scale [#1660]

The set of Hapke parameters is derived for the Reiner Gamma area at 900m resolution using Clementine multiangular imaging; the local photometric variations seen are consistent with the plowing of the regolith by a swarm of cometary fragments.

Chevrel S. D. Pinet P. C. Daydou Y. Baratoux D. Costard F. Le Mouélic S. Langevin Y. Erard S.

Compositional and Structural Study of the Aristarchus Plateau from Integrated UV-VIS-NIR Spectral Data [#1559]

The study of the Aristarchus Plateau, a volcanic complex on the Moon, integrating UV-VIS-NIR Clementine spectral data, permits to characterize the mineralogy and the relationships (degree of mixing, stratigraphy) of the different crustal and volcanic units present on the Plateau.

Gillis J. J. Lucey P. G.

Clementine 2.7- μ m Data: Mapping the Mare and Searching for Water [#2158]

Clementine 2700 nm data is used to look for the presence of water-bearing minerals on the lunar surface, and the spectral contrast and topographic information provided by this band allows mapping individual mare units in the Imbrium-Procellarum region

Elphic R. C. Lawrence D. J. Feldman W. C. Bussey D. B. J. Spudis P. D. Lucey P. G.

On the Search for Water at the Lunar Poles: Results of Forward Modeling of Permanently Shaded Areas and Lunar Prospector Measurements [#2147]

Lunar polar water abundances and locations can be further refined by considering permanently shadowed regions near the poles. A forward model of the Lunar Prospector neutron spectrometer data provides feedback.

Kramer G. Y. Jolliff B. L. Neal C. R.

Searching the Moon for Aluminous Mare Basalts Using Compositional Remote-Sensing Constraints I: Finding the Regions of Interest [#2077]

Using Clementine FeO and TiO₂, and Lunar Prospector (LP) thorium, we highlighted areas of the Moon that reflect the compositional constraints of the high-Al basalts.

Willoughby N. J. Cook A. C. Robinson M. S.

Semi-automated Extraction of Contours from Lunar Topographic Maps [#2040]

We discuss a semi-automated software package, LTMD, which will enable low cost digitization of contours on 1:50K–1:10K Lunar Topophotomaps using an A4 scanner. The end result will be a Digital Elevation Model of the map.

Hackwill T. Guest J. Spudis P.

Basalts in Mare Humorum and S.E. Procellarum [#1062]

Clementine images are used to delineate 109 flow units within Mare Humorum and S.E. Procellarum. 34 major units are aged by crater counting. Trends in FeO and TiO₂ wt% with time are investigated. Two regions that apparently have distinct FeO/TiO₂ wt% characteristics are discussed.

Wagner R. Head J. W. III Wolf U. Neukum G.

The Hansteen and Helmet Volcanic Dome Regions on the Moon: Stratigraphy and Ages [#1842]

Lunar volcanic domes are characterized by a high albedo, a strong absorption in the ultraviolet (red spots), and show a wide range in morphologies. From geologic mapping and crater counts we will put constraints on the crustal evolution during Imbrian and Eratosthenian periods.

Shkuratov Yu. Pinet P. Omelchenko V. Kaydash V. Stankevich D. Chevrel S. Daydou Y.

Derivation of Elemental Abundance Maps at 15-km Spatial Resolution from the Merging of Clementine Optical and Lunar Prospector Geochemical Data [#1162]

We use low resolution GRS data as a "Ground Truth" to establish relationships linking optical and geochemical information on the basis of the maximum of correlation, which permit the derivation of elemental abundance maps with intermediate spatial resolution, ~15 km.

Hawke B. R. Gillis J. J. Giguere T. A. Blewett D. T. Lawrence D. J. Lucey P. G. Smith G. A.

Spudis P. D. Taylor G. J.

Remote Sensing and Geologic Studies of the Balmer Region of the Moon [#1190]

Lunar Prospector elemental abundance data and Clementine multispectral images were used to identify and investigate a major cryptomare deposit within the Balmer basin on the east limb of the Moon.

Bugiolacchi R. Spudis P. D. Guest J. E.

Lava Flows in Mare Nubium and Mare Cognitum: A Geological History Based on Analysis of Multispectral Data [#1507]

We present the results of Clementine multispectral image analysis covering the Lunar Maria, Nubium and Cognitum, which allows us to map basaltic flow fields according to age and composition.

Matsushita M. Takata T. Ikeda Y. Hirao N. Saito M. Chiba Y. Takeyama Y. Honda R. Iijima Y.

Development of Ground-based Lunar VIS/NEAR IR Spectral Imager [#1595]

In order to obtain 3 dimensional spectral images of mare on the nearside of the moon, we have developed a ground based Lunar Spectral Imager. It focuses on the absorption band of 950 nm. The resolutions of the space and the wavelength are 9 km and 10 nm (VIS), and 20 km and 20 nm (IR).

Gunderson K. Whitby J. Thomas N.

A BRDF Measurement Apparatus for Lab-based Samples [#1662]

We have constructed an instrument to make full-hemisphere bidirectional reflectance distribution function (BRDF) laboratory measurements of terrestrial samples in order to validate BRDF models and help interpret data of solar system objects.

Wood C. A. Pau K. C. Daversin B.

A New Source of High Resolution Lunar Images: Amateur Astronomers! [#1749]

A new source of relatively high-resolution lunar images exists. Amateur astronomers using 8" to 14" telescopes, webcams and stacking software, produce images with resolutions of 300–500 m. Near-terminator images can show unknown small features.

Yamashita N. Hasebe N. Kobayashi M.-N. Miyachi T. Miyajima M. Okudaira O.

Berezhnoy A. A. Shibamura E.

Leakage of Gamma Rays and Neutrons from Thick Targets Bombarded by Energetic Protons [#1761]

The behavior of secondary neutrons and gamma rays produced by energetic protons in thick materials are studied by Monte Carlo simulation code Geant4 and accelerator experiments for gamma-ray spectroscopy.

Becker T. Weller L. Gaddis L. Soltész D. Cook D. Bennett A. Galuszka D. Redding B. Richie J.

Progress on Reviving Lunar Orbiter: Scanning, Archiving, and Cartographic Processing at USGS [#1791]

We report on our ongoing effort to digitize, archive, and process a subset of the Lunar Orbiter photographic data. The results of this work will be a global, cartographically accurate, cosmetically enhanced, digital photographic mosaic of the Moon.

Agrawal A. Barnouin-Jha O. S.

Modeling Lateral and Vertical Mixing by Impact Cratering with Applications for the Moon [#1975]

We have begun a simple numerical modeling effort to investigate how lateral and vertical mixing via cratering might operate, in order to re-evaluate how factors that might influence the evolution of boundaries between geological units.

Blewett D. T. Hawke B. R.

Optical Maturity Study of Stuart's Crater Candidate Impact [#1098]

It has been suggested that a small crater may have formed in 1953 when a flash on the Moon was photographed. We use Clementine OMAT and compositional images to examine the candidate feature and conclude that it may not be unusually fresh.

Byrne C. J.

Evidence for Three Basins Beneath Oceanus Procellarum [#1103]

Oceanus Procellarum, the largest area of mare material on the moon, is an anomaly because its shape is an arc, not a circle. This paper suggests that it is a depression formed by three basins that have been flooded from Mare Imbrium and Mare Humorum.

Garrick-Bethell I.

Ellipses of the South Pole-Aitken Basin: Implications for Basin Formation [#1515]

By fitting ellipses to the iron, thorium, and topographic features of the South Pole-Aitken basin, several conclusions are made about how the basin may have formed.