

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

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SMART-1 ARCHIVE DATA COMBINED ANALYSIS RESULTS
WITH RECENT LUNAR MISSIONS**Abstract**

We highlight new results from combined data analysis using ESA SMART-1 archive with other recent lunar missions. SMART-1 demonstrated the use of Solar Electric Propulsion for deep space, tested new technologies for spacecraft and instruments miniaturisation, and provided an opportunity for science [1-12] until impact on 3 September 2006. To date, 75 refereed papers and more than 325 conference or technical papers have been published based on SMART-1 (see ADS/SMART-1 scitech website). The SMART-1 data are accessible on the ESA Planetary Science Archive PSA [13]. Recent results using these SMART-1 archives combined with other data include: multi-angular photometry of Mare and specific regions to diagnose the regolith roughness and to constrain models of light reflection and scattering [14] and compared to laboratory granular photometric studies [15]; the lunar North and South polar illumination was mapped and monitored over the entire year, permitting to identify “SMART-1 peaks of quasi-eternal light” and to study their topography [16, 17]; SMART-1 was also used for radio occultation experiments [18], and positioning reduction of SMART-1, Chang'E1 and 2 VLBI tracking data was performed [19]; the X-Ray Solar Monitor studied the Sun as a flare star in conjunction with GOES and RHESSI [20,21]; SMART-1 SIR data were combined with HySI data from Chandrayaan-1 to study the composition of the central peak of craters [22]; the SMART-1 impact observed from Earth was modelled using laboratory experiments predicting the size of asymmetric crater and ejecta [23] in comparison with Kaguya and LCROSS impacts. The SMART-1 archive observations have been used to support Kaguya, Chandrayaan-1, Chang'E1, the US LRO, ILEWG tasks and to characterise potential sites relevant for lunar science and exploration.

Acknowledgements: we thank the SMART-1 Project Team, the Spacecraft Operations Team, the Science and Technology Operations Coordination (STOC), the Science and Technology Working Team (STWT) and supporting organizations.

Links: sci.esa.int/smart-1 or www.esa.int/smart-1

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