

SMART-1 IMPACT CAMPAIGN: PREDICTIONS, OBSERVATIONS, LCROSS IMPLICATIONS

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Abstract: SMART-1 was launched in 2003 and is currently orbiting the Moon with a 5 hour period [1,2,3] for a few weeks more. SMART-1 impact will occur at grazing incidence with a remaining mass of 285 kg and a velocity of 2 km/s. Possible arrival time scenarios have been organized to permit near-side impact and adequate illumination conditions, for observations. Fine-tuning of the orbit using hydrazine thrusters took place at the end of June in preparation, and trim maneuvers at end of July, and possibly on 25 August, for a planned impact on 3 September 2006 at 5:41 UT at 36.4 degrees south latitude in Lacus Excellentiae (or on previous orbit at 00:36 UT). We have invited the community to make predictions of the impact magnitude, cloud ejecta dynamics, exospheric effects and other observable manifestation of the impact. We also called the ground-based observers to perform coordinated measurements of the impact-related phenomena.

We will describe the final operations affecting the impact conditions, and first results from the coordinated impact campaign and LCROSS implications.

References: [1] Foing, B. et al (2001) Earth Moon Planets, 85, 523 . [2] Racca, G.D. et al. (2002) Earth Moon Planets, 85, 379. [3] Racca, G.D. et al. (2002) P&SS, 50, 1323.

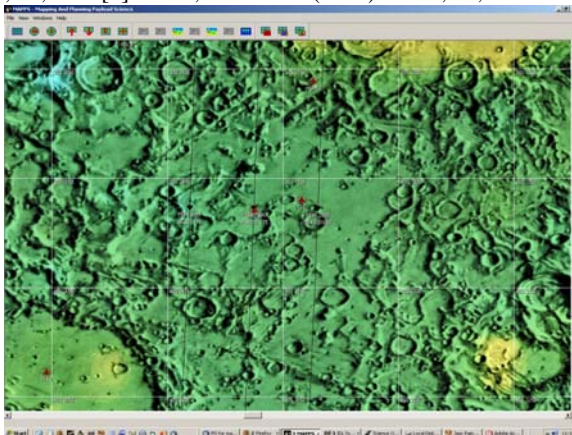


Fig. 1: Topography of SMART-1 impact site with the impact orbit (middle) and 5 hours before (right)

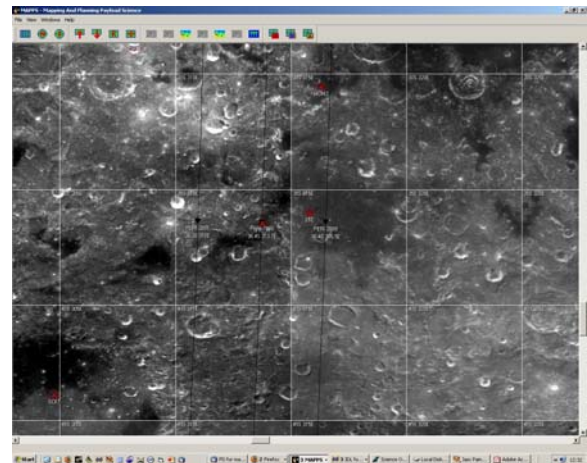


Fig.2 : Albedo map of SMART-1 impact site

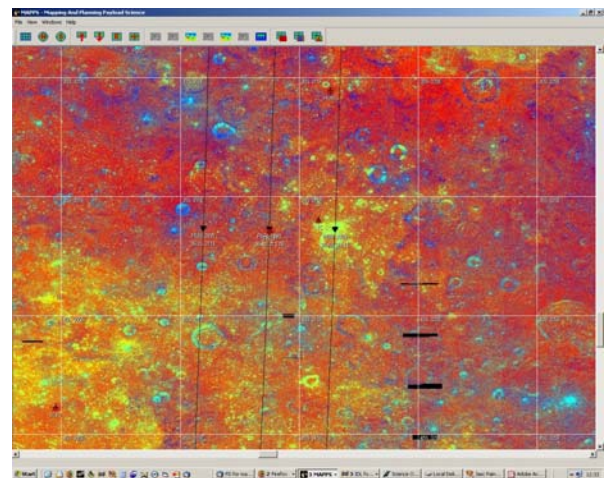


Fig.3: False colour map around SMART-1 impact site

Figs credits: ESA/ SMART1/ US Clementine project