TITLE: EU-FP7-iMARS: analysis of Mars multi-resolution images using auto-coregistration, data mining and crowd source techniques: A Status Report

ABSTRACT BODY:

Abstract (2,250 Maximum Characters): There has been a revolution in 3D surface imaging of Mars over the last 12 years with systematic stereoscopy from HRSC and the production for almost 50% of the Martian surface of DTMs and ORIs. The iMars project has been exploiting this unique set of 3D products as a basemap to co-register NASA imagery going back to the 1970s. DLR have produced 3D HRSC mosaic products for large regions with c. 100 individual strips/region (MC-11E/W). UCL have developed an automated processing chain for CTX and HiRISE 3D processing to densify this global HRSC dataset with DTMs down to 18m and 75cm respectively [1].

A fully Automated Co-Registration and Orthorectification (ACRO) system has been developed at UCL and applied to the production of around 8,000 images co-registered to a HRSC pixel (typically 12.5m) and orthorectified to HRSC DTMs of 50-150m spacing [2]. These images are viewable through an OGC-compliant webGIS developed at FUB including tools for viewing sequences over the same area [3]. Corresponding MARSIS and SHARAD data can be viewed through the QGIS plugin available [4]. An automated data mining system is being developed at UCL [5] for change detection to search and classify features in images going back to Viking Orbiter of IFoV ≤100m. In parallel, a citizen science project at Nottingham University [6] is defining training samples for classification of change features and eventually for verification of change [7]. Scientific applications include change mapping over the SPRC [8], mass movements near the North Pole [9]; dark streaks [10] CRISM mapping of mineralogy of dust in the SPRC "Swiss cheese" layers [11] and mapping of dune movement [12].

[1] Tao, Y. & J.-P. Muller LPSC16-2074; [2] Gwinner, K. et al. EPSC15-672; [3] van Gasselt, S. et al. EPSC14-693; [4] Ivanov, A. & Cantini, F. EPSC16; [5] Sidiropoulos, P. & J.-P. Muller EPSC16; [6] Sprinks et al. EPSC16; [7] Wardlaw et al. EPSC16; [8] Putri et al., EPSC16;[9] Fanara, L. et al. EPSC 16; [10] Schreiner, B. et al., EPSC16; [11] Campbell, J.et al., EPSC16;[12] Kim, J-R., et al., EPSC16;

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