AUTOMATIC SIMULATION OF IMAGES AND AUXILIARY DATA FOR PROGRAMMING AND RECEIVING LOOP VALIDATION OF THE VENUS IMAGE GROUND SEGMENT

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ABSTRACT:

The Venµs scientific demonstration satellite, a French-Israeli cooperation, is aimed at imaging a set of scientific sites every second day, with an identical scan angle, thus allowing the production of series of multi temporal maps of top of canopy reflectances and geophysical variables, which in turn will allow the scientists to develop and validate vegetation models. The VENµS scientific payload is a 12 bands multi-spectral camera, operating in the visible and NIR, which will image the ground at 5.3 m resolution at nadir. In the frame of this project, where the bus is developed in Israel, the camera in Israel under a CNES contract, and the scientific image ground segment in France, the need has raised to : 1) simulate the scientific mission acquisitions with a simplified model of the satellite capabilities, 2) validate the scientific acquisition plan with regard to the real system capabilities, 3) generate realistic raw data for image processing software, in terms of geometry and radiometry and 4) generate programming and receiving loop system level messages for system level tests. All those activities had to be performed with very limited budget resources, hence in a cost effective way. The paper first briefly presents the VENµS project, then explains the overall policy of programming and imaging simulation and finally focuses on the CNES integrated raw and auxiliary data simulation tool, which geometrical kernel has been used in various system level tests, allowing to get a good confidence on its validity.

TOPIC: Geometric modeling
ALTERNATIVE TOPIC: New earth observation satellites