

SPOT5 IN-FLIGHT COMMISSIONING : INNER ORIENTATION OF HRG AND HRS INSTRUMENTS

Roland Gachet

CNES/IGN, France

ABSTRACT :

SPOT5 is the latest of the SPOT series of satellites continuing and complementing the mission assigned to its predecessors in the field of Earth Observation and Mapping. Launched on May 2002 the 3rd, its in-flight commissioning was led in two phases : the qualification phase permitted to hand over the satellite to Spot Image in July 2002 ; the second phase included fine tuning of the components and continued until early 2003.

One of the objectives of this fine tuning was to fully take advantage of the geometric improvements brought to SPOT5 compared to its elders (star tracker and improved steering mirror for the localization, monolithic CCD array, resolution, along track stereoscopic instrument). In order to achieve this fine tuning, an optimized inner orientation of the instruments has been necessary, especially for the HRS stereoscopic instrument with an optical distortion of several pixels.

On previous SPOT satellites the geometric performance of the detectors has been assessed with relative methods involving simultaneous acquisitions of the same scene with both instruments ; these methods never permitted to obtain an absolute measurement of the viewing directions. The characteristics of SPOT5 instruments together with the objective of inner orientation made it necessary to implement another method based on absolute calibration using airborne images and elevation information from our « super site » in southeastern France.

Since March 2003, ancillary data provided in the « METADATA.DIM » file associated with SPOT5 images include the instruments look angles for each detector with an estimated RMS accuracy of 0.03 pixel.