

EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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NEW GENERATION OF EARTH OBSERVATION OPTICAL SYSTEMS

Abstract

Astrium is a key actor in European Earth Observation, accompanying users quest for higher performances by developing ground-breaking high resolution missions, such as the entire Spot family (up to the newest Spot 6 and 7 satellites) and the new Pléiades high-resolution satellite for CNES. The race for ever-increasing image performances is now primarily focusing on a dire improvement of either the spatial or the temporal resolution, or even both of them, targeting sub-metric spatial resolution and revisit of a few hours.

Facing this demand, Astrium is now exploring new concepts and innovative systems for the next generation of Earth Observation Optical Systems. This is fully supported by CNES, the French Space Agency, who is currently funding two studies on this topic in Astrium.

Affordable solutions for Earth Observation optical missions offering very high spatial resolution (20cm-35cm) should overcome numerous technical constraints: the development of large telescopes with high stability (up to 2 m with current SiC technology) or with active optics (to alleviate the calibration and integration process), the implementation of large focal planes and the handling of large onboard data volumes. This is the subject of the ARCTOS study.

Through the second study, HRT ("Haute Revisite Temporelle"), Astrium is exploring innovative orbits to maximise the temporal resolution with a single satellite or a small constellation of satellites. These orbits are proposed for optical Earth Observation missions as an alternative to classical Low Earth Orbits that are limited both in revisit intervals and persistence of observation, but necessarily induce constraints of their own (such as higher radiation doses).

The paper will present the conclusions of these on-going studies.