

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

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TOWARD HIGH RESOLUTION HIGH ALTITUDES OBSERVATION SYSTEMS FOR  
ENVIRONMENT & SECURITY**Abstract**

High orbits, MEO to geosynchronous, are very attractive to ensure a high revisit and even continuous observation. Up to recently, geostationary orbits were mostly used for meteo applications requiring low resolution (500m). Today technologies, enable to consider high resolution systems in geostationary observation enabling to ensure spatial resolution in the order of 10 to 20m, and a very short response time (order of minutes between tasking order and image data availability).

The paper will in a first review the technology readiness level according to the spatial and spectral resolution and the potential heritage and in a second step identify the potential applications and mission concepts for high resolution high altitude systems.

The main enabling technologies addressed are:

- - The stabilization, micro-vibration isolation, and attitude restitution technical solutions necessary for such systems are developed in the frame of Meteosat third generation system, under the full responsibility of the prime contractor, Thales Alenia Space. - High stable, large Optical instruments, necessary to achieve the spatial resolution, can rely on the same technologies used for the LEO high resolution instruments design for high resolution ( $\leq 1m$ ). Thales Alenia Space is now the unique European space optical instrument prime with proven flight experience of sub-metric resolution, as recently demonstrated on PLEIADES (0.7m). - Technologies under preparation by Thales RD group encompassing: Image processing to enhance resolution / quality, image active stabilization.

The potential applications of such systems will be introduced in the paper. They are ranging from environment to security with missions such as: High Resolution Ocean Colour for costal zone monitoring, Fire detection and tracking, Pollution and outgassing, Non-Collaborative Maritime surveillance, disaster Monitoring.

The paper will conclude with some system concepts, meeting identified mission needs and relying on mature buildingblocks to ensure their affordability.