

Current Development Status And Future Trends For High Resolution Optical Earth Observation Satellites

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Abstract:

With the advance of science and technology in material, electronic, and information etc., the space technology, especially in satellite remote sensing area, make great strides in the latest 40 years, since Landsat-1, the first civilian remote sensing satellite, was launched in 1972.

On the other hand, during the cold war era, only a handful of governments and military organizations could gain access to satellite remote sensing images. After the end of cold war in the early of 90's, US gradually relaxed the control over the technology for commercial remote sensing satellites and the world also began to recognize their potential applications for various national needs. As a result, more and more countries are willing to acquire remote sensing satellites or associated satellite technology since then. Up to now, at least more than 15 countries own their high resolution (resolution < 4 meter) optical earth observation satellites for civil purposes.

The aim of this paper is to analyze current development status of high resolution optical earth observation satellite systems and portray future trends of their developments. The technical data of high resolution optical earth observation satellite are collected through public domains, such as web sites, open literatures etc., and development status of remote sensing satellites are described through three categories: (1) image sensors (resolution, ratio of swath and resolution), (2) spacecraft capability (agility, mass), and (3) orbit characteristics (orbit type, revisit day). Finally, based on our analysis, several development trends are also observed.

National Space Organization (NSPO) of Taiwan not only owe and operate FORMOSAT-2 remote sensing satellite, but also indigenously develop its FORMOSAT-5, scheduled to be launch in 2015. These activities demonstrate NSPO's determination to compete in the world arena of earth observation satellite. With those trends in mind, NSPO's plan for next generation remote sensing satellites becomes realistic and tangible.

Keyword: High Resolution, Optical, Remote Sensing Satellites, Earth Observation