

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

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FUTURE EARTH OBSERVATION SYSTEM BASED ON SPACECRAFT WITH SUPER
HIGH-RESOLUTION OF 0,35 M.

Abstract

A great success in developing and operating Russian orbital constellation gave a rise to start a new ambitious project – the development of Earth observation (EO) space system based on satellite with optoelectronic equipment of super high-resolution of 0.35 meter. A future EO system is a unique product that makes it is possible to develop spacecraft for the benefit of any interested country, providing receiving a super high-resolution data in several spectral ranges and imaging Earth's surface in different modes. A high re-orientation rate and acceleration speed of new satellite ensure the possibility of fast transition from one object to other. Availability of imaging modes, secured by the spacecraft, significantly increases its technical capabilities in acquiring a qualitative space images. The spacecraft provides projection of a pixel on the ground in nadir with resolution of 0.35 meter in panchromatic mode and 1.4 meter in multispectral mode. The swath width of the imaging equipment is 17.5 km and the system is able to operate in the following imaging modes: • object imaging of Earth area which is equal to the swath width, within the coverage at roll angles from -40 to +40 and pitch angles from -30 to +30; • stereo imaging with no less than 2 imaging sessions of the same Earth area with the length of up to 250 km during one orbit; • strip map imaging of Earth area with the duration between 2 and 100 seconds; • wide swath imaging with no less than 2 consecutive imaging sessions during one orbit; • video imaging with frequency of up to 24 frames per second. Earth observation data provided by different imaging modes and application of advanced processing technologies secure development of variety of high quality Geo-information system (GIS) products and services. It helps to resolve a wide range of priority economic and social tasks such as: • inventory of natural resources (agricultural and forest lands, seafood harvesting areas); • creation and updating topographic maps and city plans, digital elevation models development; • monitoring of environmental pollution and soils degradation; • emergencies and ecological monitoring (floods, droughts, landslides); • monitoring activity of construction facilities. Glavkosmos today is a team of highly qualified specialists combining technical competence with the spirit of pioneers and space explorers. The key objectives of the company are promotion of Russian space industry achievements to the world markets and management of complex international projects.