Paper ID: 79180
student

51st IAF STUDENT CONFERENCE (E2)
Student Conference - Part 1 (1)

Author: Ms. Aytaj Khankishiyeva
Institute of Physics of the National Academy of Science, Azerbaijan

Mr. Rustam Rustamov
Azerbaijan
Mr. Kamil Mustafa
United Kingdom
Dr. Rustam Rustamov
Institute of Physics of the Ministry of Science and Education of the Republic of Azerbaijan, Azerbaijan

OPTICAL SYSTEMS FOR SATELLITE DATA EARTH CHANGE DETECTION

Abstract

Earth observation satellites operating for collection of spatial information with performing features of the Earth based on the platform of advances space science and technology. It performs actual picture of Earth circumstances with use of satellite data processing and application to a specific task realization for discovering Earth segments classification. What is change detection and why it is important? Timely and accurate change detection of Earth's surface features is extremely important for understanding relationships and interactions between human and natural phenomena in order to promote better decision making. Remote sensing data are primary sources extensively used for change detection in recent decades. The fact is that remote sensing method is the main source of satellite data gathering for observation of change detection. It is an important application of remote sensing image interpretation that aims to compare and analyze minimum two and more remote sensing images taken at different times in the same region and obtain change information about the ground object. There is no doubt that variety of sensors are needed to be used for observation and fixing of any change detection taken place in the selected area for investigation. Below are the sensors can be used for different task solving: vision and imaging sensors, temperature sensors, radiation sensors, proximity sensors, pressure sensors, position sensors, photoelectric sensors, particle sensors. There are two general classes of remote sensors: active and passive remote sensors. Active sensors have their own source of light or illumination which actively sends a pulse and measures the backscatter reflected to the sensor. Passive sensors measure reflected sunlight emitted from the sun. When the sun shines, passive sensors measure this energy. It operates on the base of diodes include p-n photodiodes, p-i-n, avalanche photodiodes and schottky diodes. Optical remote sensing makes use of visible, near infrared and short-wave infrared sensors to form images of the earth's surface by detecting the solar radiation reflected from targets on the ground. Different materials reflect and absorb differently at different wavelengths. For the sake of convenience, the change detection methods are grouped into seven categories: algebra, transformation, classification, advanced models, Geographical Information System approaches, visual analysis, and other approaches. This paper is dedicated to the research of sensor systems and integration of remote sensing method for achievement high performance of change detection in Earth observation. It demonstrates advantage in case of demand of high accuracy of satellite data processing in change detection.