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THE LATEST DEVELOPMENT OF SPACE OPTICAL REMOTE SENSOR IN CHINA

Abstract

After half a century development, China's earth observation system and remote sensor have made remarkable achievements. From the prospective of optical payload, the high-resolution camera, spectrometer and active laser radar have formed. This paper summarizes the latest progress of optical payload in the recent three years for earth observation in china and look forward to the future development. In terms of high resolution imaging payload, commercial remote sensor have achieved earth observation with a visible resolution better than 0.5m. in 2022, the Beijing-3B satellite launched, which have three work mode including push-scan imaging, frame imaging and video imaging, the space resolution in visible light better than 0.5m. The resolution of infrared cameras has been greatly improved. The Ziyun-1 02E satellite launched in December 2021, with a long-wave infrared camera has been added to realize all-day earth observation. The long-wave infrared camera works at the spectrum of 8-10m, and the spatial resolution is 15m and the temperature resolution is 0.1K at the orbital altitude of 778km. The intelligence of remote sensing satellite and payload had been greatly improved in recent years. The LuoJia-3 satellite be launched in 2023. It explores an efficient and intelligent service mode of mapping and remote sensing information from data acquisition to application terminal. The spatial resolution and spectral resolution of spectral detection payloads have been greatly improved. A new generation of ocean color satellite be launched in 2023 is equipped with a color and water temperature scanner, a coastal zone imager and a medium-resolution programmable spectrometer. The Solar-Induced Chlorophyll Fluorescence Imaging Spectrometer (SIFIS) is one of the four payloads of the first terrestrial ecosystem carbon inventory satellite which is launched in 2023. The spectrometer achieved a spectral resolution of 0.3nm in the spectral range of 670nm-780nm. In terms of laser active detection, The measurement accuracy of the laser altimeter is better than 0.3m on the Gaofen-7 satellite. In August 2022, china launched he first terrestrial ecosystem carbon inventory satellite, which is equipped with four types of payloads, including an active LiDAR. The multi-channel Carbon Sinks and Aerosol LiDAR (CASAL) adopts the working mode of combing laser and camera. While using LiDAR to obtain the height information of ground vegetation, using the camera to obtain the multi-spectral image. The measurement accuracy of the LiDAR is better than 0.3m and the laser pointing error is less than 6m, the spatial resolution of the multi-spectral imaging is better than 2m.