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DESIGN AND PERFORMANCES OF THE FLUORESCENCE IMAGING SPECTROMETER OF CHINA

Abstract

The Space Chlorophyll Fluorescence Hyper-spectral Monitor (CFHM) is China's first space fluorescence imaging spectrometer. The system feasibility study has been completed. CFHM is a grading imaging spectrometer flying in a Sun synchronous orbit at a height of about 506 km with an expected 8 years of lifetime. During the lifetime, it will observe vegetation fluorescence within a spectral range between 670 and 780nm, covering vegetation fluorescence spectrum range from 677 to 691nm and from 759 to 780nm, in which the spectral resolution can be as high as 0.3nm, allowing the monitoring of seasonal variations of the vegetation cycles, and will offer a ground spatial sampling of 2km for a swath width of 150km. It could draw the global or local space-time distribution of vegetation fluorescence from space, to realize the quantitative monitoring of global carbon source and sink, the assessment of vegetation productivity, and the evaluation of national ecological projects by scanning the remote-sensing data of the fluorescence induced by sunlight. In a manner of speaking, the study of CFHM settles technical basis on the space exploration of terrestrial ecosystem investigation. In this paper, we will describe the concurrent design of the mission as far as its performances.