Paper ID: 57580
oral

27th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Small Satellite Operations (3)

Author: Prof. Chunling Lu
Dong Fang Hong Satellite Co. Ltd., China

Mr. Zhaoguang Bai
China

ON ORBIT SATELLITES CAPABILITY PROMOTION FOR GLOBAL LAND COVERAGE

Abstract

The two small optical satellites both have multi-spectral imaging capability with super wide observation and outstanding imaging quality on orbit. They composed a constellation with two days revisit period. Motivated by the "One Belt and One Road" initiative, satellite systems should make effort to promote the development of application in climate change and disaster prevention, which require quick acquisition of the global coverage data. Therefore, the initial imaging mission within the range of ground station need to be changed to the global land coverage. This shift requires not only the coordination of orbit design, remote sensor's field of view, satellite energy system, data storage and downlink capabilities, but also the rational task planning according to the distribution of global land area. In this article, an overview of the two small optical satellites is provided. After analyzing the need of global land coverage by STK software (setting constraints like work time, data storage and data receiving range), the constellation capability promotion solution of quick global land coverage is proposed, such as prolonging the working time, alternate using the primary or standby storages, and so on. The global land distribution shows that the north areas are more than the south. Hence, effective working modes strategy is also put forward according to the rational task plan, which can not only guarantee the domestic imaging businesses, but also maximize the acquisition of the global data. The potential of the satellites is promoted by all the methods.

Key words: optical satellite, constellation, wide field of view camera, one belt and one road, global observation, revisit period, STK