KOMPSAT-EOC SENSOR MODEL ANALYSIS

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ABSTRACT

In recent years, many countries have been giving special interest on space program, especially multipurpose high resolution and hyperspectral satellite. As one of national space programs in Korea, the first Multi-Purpose Satellite 1 (KOMPSAT-1) was launched on December 1999 and carried out its own mission. The EOC (Electro-Optical Camera) is the primary payload for KOMPSAT-1. The main mission of EOC is to provide the stereo images for the production of topographic maps of Korean territory. An essential element in capturing geospatial information through satellite imagery is to establish accurate sensor model. There have been so many researches on satellite camera model. In general, camera model for satellite imagery could be categorized into three groups: physical, semi-physical and mathematical models. The semi-physical model could be collinearity model or extended collinearity model. In this study, we developed ten different sensor models for KOMPSAT-EOC and applied to stereopair for analyzing their behaviors. The satellite sensor models, which were extended from collinearity condition equations, were developed and then the behavior of each sensor model was investigated. The satellite sensor models were represented by the six exterior orientation parameters in 1st, 2nd and 3rd order function of satellite image scanline. Among them, the rotational angle parameters such as ω(omega) and ϕ(phi) correlated highly with positional parameters could be assigned to constant values. For the experiments, two different stereopairs of KOMPSAT-EOC satellite images exposed to the similar area in different pass were used.

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