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Current Status of Pre-Calibration Techniques for Enhancing the Positional Accuracy of the Agricultural and Forestry Satellite

Joongbin Lim¹, Chaeyeon Kim², Jong-Hwan Son², Taejung Kim², Sooahm RLee², Junghee Lee¹, Kyoungmin Kim¹, and Seunghyun Lee¹

¹National Institute of Forest Science, Forest ICT Research Center, Korea, Republic of (jlim@korea.kr)

²Image Engineering Reserach Center, 3DLabs Co. Ltd., Republic of Korea

The agricultural and forestry satellite, scheduled for launch in 2025, is a satellite being jointly developed by the Ministry of Science and ICT, the Rural Development Administration, and the Korea Forest Service of South Korea. Prior to its launch, technological developments have been made to ensure the positional accuracy of the agricultural and forestry satellite. For the geometric calibration of the satellite, a total of 4,650 precise image reference points have been established across the Korean Peninsula. These established precise image reference points have been verified to have a positional error of less than 1 meter based on field survey results. Utilizing this, the Rational Function Model (RFM) was corrected, determining the optimal parameters with six coefficients as suitable RFM correction coefficients for the precise geometric establishment of simulated images of the agricultural and forestry satellite. Subsequently, using the Digital Elevation Model for orthorectification, a final positional error of within 1 pixel (less than 5 meters) was confirmed.