RADIOMETRIC CALIBRATION AND VALIDATION OF KOMPSAT-2 IMAGES USING RELATIVE METHOD

Yonghwa Jung*, JinSoo KIM**, Chuluong Choi*

559-1, Daeyeon 3-dong, Nam-gu, Busan, 608-737, Korea;

,Dept. of Geoinformatic Engineering, Pukyung National University*

Tel: +82-51-629-6655, FAX: +82-51-629-6653

E-mail:cuchoi@pknu.ac.kr

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ABSTARACT: The purpose of this study is to validate and supplement radiometric calibration coefficient of KOMPSAT-2 image with relative radiometric calibration method. For the purpose, satellites which KOMPSAT-2 can refer were selected and the images taken from same target at the same day were compared. First of all, IKONOS and QuickBird Satellites whose resources and spectral band were similar as KOMPSAT-2 were chosen and similarity of spectral response was figured out to obtain more accurate results. The comparison result of spectral response showed that area and range of lower part of graphs from each satellite were different that made matching rate low each other to some extent. In spite of this result, since more than 90% of matching rate could be obtained and response graph were in proportion, it was thus judged that research with images from two reference satellites can be carried out. After that, the square polygon size 8m x 8m from arbitrary target. And then only those data whose deviation were within 2.5% were used by calculating standard deviation of overlapping pixels with lattice. This effort was made to improve accuracy of data by reducing geometric error of satellite and by removing effect caused by scattering that was existed in sampled pixels. The coefficient which has been used on reference image from reference satellites during relative radiometric calibration of KOMPSAT-2 with preset data was radiometric calibration coefficient which is provided during satellite image procurement. The coefficients that were used in images from reference satellites were validated through sufficient research, but these again went through validation process by absolute quoted from field campaign data performed by Korea Aerospace Research obtained by relative radiometric calibration technique were finally calculated as 0.0114294 at Blue Band, 0.0139369 at Green Band, 0.0148859 at Red Band, and 0.0151555 at Near Infra-Red Band.