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THE EFFECTS OF SHADOWREMOVAL ON ACROSS-DATE SETTLEMENT TYPE CLASSIFICATION OF QUICKBIRD IMAGES

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Abstract

QuickBird imagery acquired on separate dates may have significant differences in viewing- and illumination geometries, which can negatively impact across-date settlement type classification accuracy. The effect of cast shadows on classification accuracy is specifically investigated in this study by performing shadow removal, before the calculation of texture features which are then used as classifier inputs. It is shown that popular texture features are sensitive to differences in shadow profiles, and that across-date classification accuracy can be improved with shadow removal. The strong relationship between the best shadow detection threshold and the best settlement classification accuracy is indicated for the study data set. A refined shadow correction algorithm is proposed, and demonstrated to be more effective than basic shadow correction methods.