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Method of airborne SAR image match integrating multi-information for block adjustment

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Abstract. For the automation of SAR image Block Adjustment, this paper proposed a method of SAR image matching integrating multi-information. It takes full advantage of SAR image geometric information, feature information, gray-related information and external auxiliary terrain information for SAR image matching. And then Image Tie Points (ITPs) of Block Adjustment can be achieved automatically. The main parts of extracting ITPs automatically include: First, SAR images were rectified geometrically based on the geometric information and external auxiliary terrain information (existed DEM) before match. Second, ground grid points with a certain interval can be get in the block area and approximate ITPs were acquired based on external auxiliary terrain information. Then match reference point was extracted for homologous image blocks with Harris feature detection operator and ITPs were obtained with pyramid matching based on gray-related information. At last, ITPs were transferred from rectified images to original SAR images and used in block adjustment. In the experiment, X band airborne SAR images acquired by Chinese airborne SAR system – CASMSAR system were used to make up the block. The result had showed that the method is effective for block adjustment of SAR data.

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