

应用

极化SAR图像的联合加权极化差异度变化检测算法

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摘要:

以联合加权极化差异度为特征提出了一种极化SAR图像变化检测新算法。首先计算两个不同时相的极化SAR图像的极化散射差异度和极化功率差异度,然后根据二者的相对大小分配加权系数计算联合加权极化差异度,得到差异图像,最后通过阈值分割技术提取变化区域实现变化检测。利用两组美国UAVSAR系统采集的全极化SAR实测数据对算法进行了验证,结果表明,本文算法能有效检测地物的变化情况,且检测虚警少、轮廓清晰。除此之外,算法无需知道图像的统计分布,通用性强。

关键词: 极化合成孔径雷达; 变化检测; 联合加权极化差异度; 散射特性; 功率特性

Change Detection Algorithm of Polarimetric SAR Image Based on Joint Weighted Polarization Difference Degree

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Abstract:

A new change detection algorithm of polarimetric SAR image based on joint weighted polarization difference degree is proposed in this paper. First, the scattering difference degree and the power difference degree are computed between the bi-temporal POLSAR images. Secondly, weighted coefficients are chosen according to the relative size between scattering difference degree and the power difference degree. Then we created the difference map based on the joint weighted polarization difference degree. At last, the technology of threshold segmentation is used to extract the changed areas from the difference map. Two sets of fully polarimetric SAR datas collected by U.S. UAVSAR system are adopted to test and verify the new algorithm. Experimental results show that the novel method can find the changes of the surface features effectively with low false alarm rates and sharp outlines. Besides, this method can be used in any case without determining the statistical distribution of the image.

Keywords: polarimetric synthetic aperture radar change detection joint weighted polarization difference degree scattering characteristic power characteristic

收稿日期 2013-05-01 修回日期 2013-08-09 网络版发布日期 2013-10-25

DOI:

基金项目:

国家自然科学基金重点项目(61231017); 中央高校基金(ZXH2012D001); 中国民航大学科研基金(2012KYE03); 中央高校基本科研业务费资助项目(3122013SY26)

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