A Study on the Fusion of DEM Using Optical and SAR Imagery

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Abstract

The most widespread techniques for DEM generation are stereoscopy for optical sensor images and interfereometry for SAR images. These techniques suffer from certain sensor and processing limitations, which can be overcome by the synergetic use of both sensors and DEMs respectively. In this paper, different strategies for fusing SAR and optical data are combined to derive high quality DEM products. The filtering techniques which take advantage of the complementary properties of SAR and stereo optical DEMs will be applied for the fusion process. By taking advantage of the fact that errors of the DEMs are of different nature using the filtering technique, affected part are filtered and replaced by those of the counterpart and is tested with two sets of SPOT and ERS DEM, resulting in a remarkable improvement in DEM. For the analysis of results, the reference DEM is generated from digital base map(1:5000).

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