

技术方法

基于PALSAR数据的DEM提取方法研究

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摘要:

针对PALSAR Level 1.1数据, 研究使用NASA/JPL 提供的开源干涉软件包ROI\_PAC Version 3.0提取DEM。ROI\_PAC的目前版本只能处理Level 1.0数据, 因此, 文章在分析了ROI\_PAC软件包处理流程的基础上, 提出处理Level 1.1数据的方法, 并用PALSAR Level 1.1数据对该方法做了验证。干涉重建DEM与参考DEM的对比结果表明, 二者的差异均值为0.27 m, 标准差为±9.24 m, 80%像元点的高程误差在±10 m以内。

关键词: 雷达干涉测量 数字高程模型(DEM) PALSAR ROI\_PAC

RESEARCHES ON THE DIGITAL ELEVATION MODEL EXTRACTION METHOD BASED ON ALOS PALSAR DATA

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Abstract:

In the past decades, researchers have successfully rebuilt the digital elevation model (DEM) using such Interferometric synthetic aperture radar data (InSAR) as SIR-C/X SAR and ERS1/2. As a new generation of synthetic aperture radar, Phased Array type L-band Synthetic Aperture Radar (PALSAR), which is onboard Advanced Land Observing Satellite (ALOS), works at a longer wave length-L band. Its penetrating depth is deeper than the radars that work at C band. Thus it has advantages in the construction of DEM. However, there have been few reports about the DEM extraction from this technology. The open source program-package ROI\_PAC version3.0 provided by NASA/JPL can be used to rebuild DEM from PALSAR Level 1.0 data that is not calibrated. Therefore, ROI\_PAC version 3.0 was modified in this study to make it rebuild DEM from PALSAR Level 1.1 data. The workflow of ROI\_PAC was described. The method introduced in this paper was validated by a set of PALSAR Level 1.1 data. A comparison between InSAR DEM and reference DEM was made. The difference between them is 0.27 m, with a standard deviation of 9.24 m. There are more than 80% pixels having height errors within 10 m. The results show that the method proposed in this study is useful.

Keywords: InSAR Digital elevation model (DEM) PALSAR ROI\_PAC

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