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技术方法

SCS+C地形辐射校正模型的应用分析研究

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摘要：

在对有森林覆盖的山区影像进行地形辐射校正时，基于太阳-冠层-传感器（SCS）几何关系的校正模型优于基于太阳-地形-传感器（STS）几何关系的模型。SCS校正模型解释了树木不依赖于地形、观测角和光照入射角而具有向地性生长的本质特性，但在某些地形区域，SCS与余弦校正同样存在过度校正的问题。为了解决这个问题，研究者在SCS校正模型中引入C校正系数来解释散射辐射项，提出了SCS+C校正模型。以北京密云Landsat 5影像为数据源，通过目视判别、直方图、定量的统计参数和地物光谱曲线对比等方法，对SCS+C校正模型与传统的余弦校正、C校正和SCS校正模型进行了对比。结果表明，4种方法均能在很大程度上消除地形阴影，更好地反映阴影区域的细节信息； 从总体的光谱特性保真程度来说，余弦和SCS校正都因过度校正问题表现较差，SCS+C校正最好，C校正次之。

关键词： 遥感影像 地形辐射校正 SCS SCS+C

THE APPLICATION OF SCS+C METHODS FOR TOPOGRAPHIC RADIATION CORRECTION

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Abstract:

As irradiance depends on slope and aspect, the remote sensing image in rugged areas is severely affected by the topographic effects. Topographic correction based on sun-canopy-sensor (SCS) geometry is more appropriate than terrain-based corrections in forest areas because SCS preserves the geotropic nature of trees (vertical growth) regardless of terrain, view, and illumination angles. However, in some terrain orientations, SCS might encounter the overcorrection problem similar to other simple photometric functions. To solve this problem, Scott proposes a new SCS+C correction that accounts for diffused atmospheric irradiance based on the C-correction. The SCS+C method was tested by a Landsat 5 image in a rugged area of Beijing. The results show that SCS+C can provide improved corrections compared with the SCS and three other photometric approaches (cosine, C, SCS), remove topographic effects successfully and restore the land-surface information in shadow areas effectively.

Keywords: Remote senseing image Topographic correction Sun-canopy-sensor (SCS) SCS with C-correction (SCS+C)

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