积雪遥感数据产品研发与精度验证

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本报告将介绍我们项目近几年在积雪遥感数据产品的发展与精度验证的进展。在积雪面积遥感方面，我们重点分析了 VIRSS 和 MODIS 两个积雪产品之间的一致性，发现尽管两个传感器获取的 NDSI 非常一致，但是由于云识别算法的差异，导致最终的积雪面积产品之间有很大的差别。该研究建议，我们应该发展一个同时适用于 VIRSS 和 MODIS 的云识别算法，以保证积雪面积数据产品的一致性，为进一步的积雪变化与相关研究提供可靠的数据。在积雪深度遥感方面，我们发展了一个基于机器学习的北半球积雪深度融合方法，该方法融合了已有的六种积雪深度遥感和再分析数据，通过学习北半球近 20000 站点的观测，获得了融合后的雪深数据，其精度远远高于已有的数据精度。

Development And Validation of Snow Cover Remote Sensing Data Products

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This report will present the recent developments and accuracy validation of our project's snow remote sensing data products. In terms of snow cover area, we focused on analyzing the consistency between two snow products, VIRSS and MODIS. We found that although the NDSI obtained by the two sensors were very consistent, there were significant differences between the final snow cover area products due to differences in cloud identification algorithms. This study suggests that we should develop a cloud identification algorithm that can be applied to both VIRSS and MODIS to ensure the consistency of snow cover area data products and provide reliable data for further research on snow changes and related studies. In terms of snow depth remote sensing, we developed a machine learning-based fusion method for snow depth in the northern hemisphere. This method combined six existing snow depth remote sensing and reanalysis data, and through learning observations from nearly 20,000 stations in the northern hemisphere, obtained the fused snow depth data, which is much more accurate than existing data.