



Spectral enhancement of satellite images for easier detection and mapping of glacial landforms

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Satellite images are widely used for mapping of glacial landforms over extensive areas. Commonly visual display of the satellite images in this context involves simple band combinations in visible and/or near-IR wavelengths. For example Landsat images are commonly viewed using RGB band combinations 321, 432 or 742. The advantage of this simple approach is that landforms, hydrology and vegetation is reasonably easy to comprehend and the image is intuitive to understand since it resembles common aerial photographs. The drawback is that these spectral bands often are closely spectrally correlated and the full spectral potential of the image is not utilized. Moreover, detail is lost in areas with uneven illumination (shadows and highlights). To overcome these problems it is advisable to use common remote sensing techniques, which are oftentimes used in e.g. lithological mapping, such as band rationing, principal component analysis or eigenvalue analysis of spectral bands. The use of these more advanced techniques makes better use of the spectral information in the satellite scene and may even, to some extent, facilitate automated spectral classification of landscape elements. On the other hand, it may complicate visual interpretation of landforms since the image is less intuitive to understand.