



Regional lithology mapping using airborne hyperspectral data

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This paper proposed a new procedure for rock identification and mapping using airborne hyperspectral CASI/SASI data (wavelength: 380-2450 nm) for the Nanbaishiling in Liuyuan area, Gansu Province, NW China. Rocks in the study area include granite, diorite, marble, basalt and quartzite. In situ and laboratory reflectance spectra (400 to 2500 nm) show Al-OH absorption of muscovite, kaolinite, and illite in granite, granodiorite and quartz diorite, and Fe-OH, Mg-OH absorptions of biotite and chlorite. The absorption near $2.3\mu\text{m}$ caused by carbonate is most intense in marble reflectance spectra. Ferric-iron absorption is intense in most of the felsic rocks. CASI/SASI data with approximately 2-m spatial resolution were recorded in 149 narrow bands along a 1.2-km-wide swath. Correction of the data to spectral reflectance was performed by reference to in situ measurements of an extensive, alluvial plain. Five major rock types have been identified by using MNF and analysis of in situ and laboratory spectra. The lithologic map presented in this study were verified by field investigation, and was compared with previous lithologic map. The result show a reliable classification of lithology using Airborne Hyperspectral data.