



The Northwest of china hyperspectral mineral mapping project

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This five year collaborative project was established in September 2010 with the overall aim of developing, validating, evaluating and delivering a suite of publicly available, pre-competitive mineral mapping products from airborne CASI/SASI/TASI hyperspectral imagery. Moreover, it was important to establish whether these mineral maps would complement other precompetitive geological and geophysical data and provide valuable new information for enhanced mineral exploration by the china resources community. The project acquisition and generation of a suite of 21 mineral abundance and mineral composition maps derived from airborne CASI/SASI/TASI hyperspectral imagery (171 flight-lines) covering covering 12000 km² in northwest china.

A mineral analysis approach was used to appreciate the value of these mineral maps for exploration. That is, mineral products need to be selected on the basis of critical parameters, such as what minerals are expected to develop as fluids migrate from source rocks to depositional sites and then to outflow zones with each associated with different physicochemical conditions (e.g. metasomatic metal budget, nature of the fluids, water-rock ratios, lithostatic pressure, pore fluid pressure, REDOX, pH, and temperature).

In summary, this project has shown that it is possible to generate accurate, large area mineral maps that provide new information about mineral system footprints not seen in other precompetitive geoscience data and that the vision of a mineral map of china is achievable and of potential value for the resources industry.