HME PARTNERSHIP

GEOLOGICAL REMOTE SENSING AND DIGITAL IMAGE MAPPING

Satellite Image Data Packages for Exploration Reconnaissance

GENERAL

A number of remote sensing and digital mapping options are presented here. We have anticipated a series of mapping requirements based on our experience of past client specifications in exploration geological mapping, using remotely sensed data, at a variety of scales and in projects around the world. For convenience, the options are scaled according to budget and increasing technical requirements; other options are available beyond the simple packages presented here so that we may tailor our work to more closely fit your requirements.

To assist your workflow we have provided a six-step procedure describing the necessary preliminary requirements of this type of work. Some example images are also provided below for illustration.

Geological mapping 'entry level' options can be found on the following pages.

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GEOLOGICAL MAPPING OPTION 1

Enhanced GIS ready thematic image package for mapping at regional scales (ca 1:25,000 to 1:50,000)

LANDSAT - Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 531 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions
- 432 (RGB) - 'Standard' false colour image for mapping vegetation types
- 321 (RGB) - True colour image simulating the appearance of a normal colour photograph for general navigation and ground surface mapping

ASTER - Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 321 (RGB) - 'Standard' false colour image for mapping vegetation (equivalent to Landsat7 432 (RGB) image)
- 721 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions (comparable to Landsat7 531 (RGB) image)
- 468 (RGB) - False colour image for distinguishing hydrated minerals (hydrothermal alteration products)

Option 1 contains the following products delivered to you via DHL: All digital data are supplied via FTP, on an External Firewire/USB 2 Hard Drive or DVD-ROM, a brief report detailing spectral and detectable surface features, 1:50,000 scale ready to print maps for each of the band combinations above (inc scale bar, Lon/Lat) and an ERViewer 2.0 exe file.

In addition, an optional discussion with our senior remote sensing geologist, to discuss the final results.

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GEOLOGICAL MAPPING OPTION 2

Enhanced GIS ready thematic image package for mapping at regional scales (ca 1:25,000 to 1:50,000)

LANDSAT- Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 531 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions
- 432 (RGB) - 'Standard' false colour image for mapping vegetation types
- 321 (RGB) - True colour image simulating the appearance of a normal colour photograph for general navigation and ground surface mapping

ASTER - Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 321 (RGB) - 'Standard' false colour image for mapping vegetation (equivalent to Landsat7 432 (RGB) image)
- 721 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions (comparable to Landsat7 531 (RGB) image)
- 468 (RGB) - False colour image for distinguishing hydrated minerals (hydrothermal alteration products)
- Up to 3 Spectral index images - For distinguishing key mineral groups (e.g. iron-oxides, MgOH, AlOH) chosen according to the litho-geochemical setting

DEM

- A digital elevation model (DEM) for the production of elevation contours assisting in the understanding of the geological setting and your prospect evaluation. The ASTER scene will also be ortho-rectified using the DEM.

Option 2 contains the following products delivered to you via DHL: All digital data are supplied via FTP, on an External Firewire/USB 2 Hard Drive or DVD-ROM, a brief report detailing spectral and detectable surface features, 1:50,000 ASTER/Landsat ready to print maps for the band combinations above (inc scale bar, Lon/Lat) and an ERViewer 2.0 exe file. Supplied as raster grid files (.bil or Arc grid format) for any bespoke area.

Raw elevation data and shaded relief images. Includes an ortho-rectified ASTER scene plus the DEM.

In addition, an optional discussion with our senior remote sensing geologist, to discuss the final results.

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GEOLOGICAL MAPPING OPTION 3

Enhanced GIS ready thematic image package for mapping at sub-regional to local scales (ca 1:3,000 to 1:50,000)

VERY HIGH RESOLUTION (VHR) IMAGERY - Covering an area around a centre point of 100 sq km

- . VHR imagery including all Multi-Spectral & Panchromatic bands based around the centre point

LANDSAT - Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 531 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions
- 432 (RGB) - 'Standard' false colour image for mapping vegetation types
- 321 (RGB) - True colour image simulating the appearance of a normal colour photograph for general navigation and ground surface mapping

ASTER - Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 321 (RGB) - 'Standard' false colour image for mapping vegetation (equivalent to Landsat7 432 (RGB) image)
- 721 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions (comparable to Landsat7 531 (RGB) image)
- 468 (RGB) - False colour image for distinguishing hydrated minerals (hydrothermal alteration products)
- Up to 3 Spectral index images - For distinguishing key mineral groups (e.g. iron-oxides, MgOH, AlOH) chosen according to the litho-geochemical setting

Option 3 contains the following products delivered to you via DHL: All digital data are supplied via FTP, on an External Firewire/USB 2 Hard Drive or DVD-ROM, a brief report detailing spectral and detectable surface features, 1:3000 scale or better VHR & 1:50,000 ASTER/Landsat ready to print maps for the band combinations above (inc scale bar, Lon/Lat) and an ERViewer 2.0 exe file.

In addition, an optional discussion with our senior remote sensing geologist, to discuss the final results.

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GEOLOGICAL MAPPING OPTION 4

Enhanced GIS ready thematic image package for mapping at sub-regional to local scales (ca 1:3,000 to 1:50,000)

VERY HIGH RESOLUTION (VHR) IMAGERY - Covering an area around a centre point of 100 sq km

- VHR imagery including all Multi-Spectral & Panchromatic bands based around the centre point

LANDSAT- Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 531 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions
- 432 (RGB) - 'Standard' false colour image for mapping vegetation types
- 321 (RGB) - True colour image simulating the appearance of a normal colour photograph for general navigation and ground surface mapping

ASTER - Covering an area around a centre point of ca 1500 sq km +

Colour composite ortho-images images (and pan-sharpened colour composites):

- 321 (RGB) - 'Standard' false colour image for mapping vegetation (equivalent to Landsat7 432 (RGB) image)
- 721 (RGB) - False colour image for maximum discrimination of geological information (solid and drift lithologies) in semi-arid and arid regions (comparable to Landsat7 531 (RGB) image)
- 468 (RGB) - False colour image for distinguishing hydrated minerals (hydrothermal alteration products)
- Up to 3 Spectral index images - For distinguishing key mineral groups (e.g. iron-oxides, MgOH, AlOH) chosen according to the litho-geochemical setting

DEM

- A digital elevation model (DEM) for the production of elevation contours assisting in the understanding of the geological setting and your prospect evaluation. The ASTER scene will also be ortho-rectified using the DEM.

Option 4 contains the following products delivered to you via DHL: All digital data are supplied via FTP, on an External Firewire/USB 2 Hard Drive or DVD-ROM, a brief report detailing spectral and detectable surface features, 1:3000 scale or better VHR & 1:50,000 ASTER/Landsat ready to print maps for the band combinations above (inc scale bar, Lon/Lat) and an ERViewer 2.0 exe file. Supplied as raster grid files (.bil or Arc grid format) for any bespoke area.

Raw elevation data and shaded relief images. Includes an ortho-rectified ASTER scene plus the DEM.

In addition, an optional discussion with our senior remote sensing geologist, to discuss the final results.

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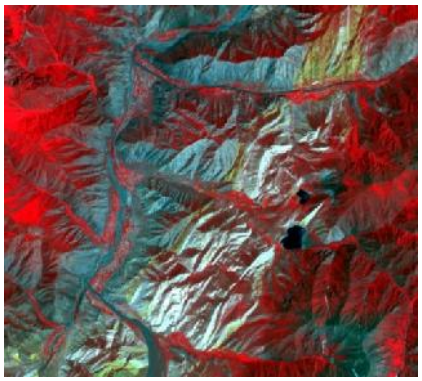
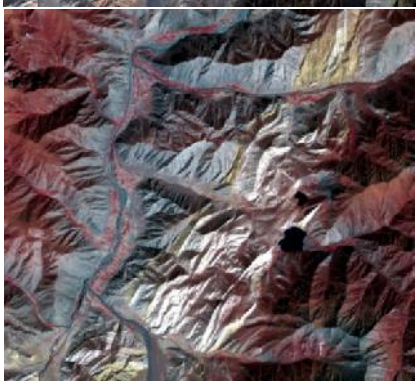
THE SIX STEP PROCEDURE

1. Select an option that suits your requirements and budget
2. E-mail us the centre point coordinates of your area of interest (AOI)
3. We then confirm that data of a suitable quality exists and send you a ProForma invoice
4. On receipt of the funds we then acquire & process the data
5. We load the deliverables onto a DVD / hard disk and despatch direct to you via DHL (or by FTP link)
6. Delivery of products to you *ca* 3 weeks after settlement of ProForma invoice**.

**If no data exists for your AOI, a new acquisition may take up to 60 days to acquire, since it is weather dependent. In such cases, we will discuss this with you, prior to the issue of an invoice, so you may decide to proceed with, or cancel the order with no obligation. We will be pleased to discuss any requirements that you may have above and beyond of the four entry level packages listed here.

EXAMPLE IMAGERY

Band combinations	**ASTER (Ortho)**	**LANDSAT (Ortho)**
True colour composite: Landsat 321 (RGB) for general interpretation and navigation	No equivalent band combination	
Standard false colour composite: Aster 321 (RGB) Landsat 432 (RGB) Used primarily for highlighting vegetation (red tones)		

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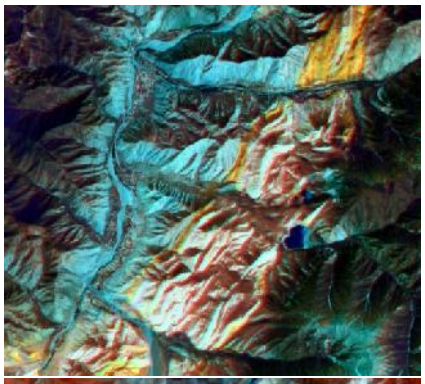
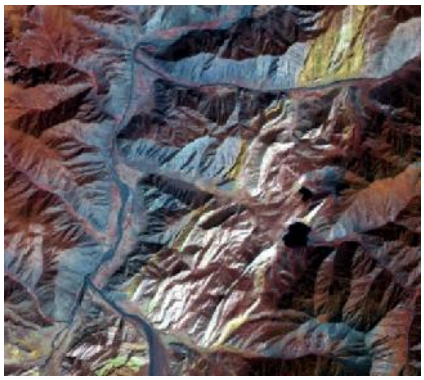
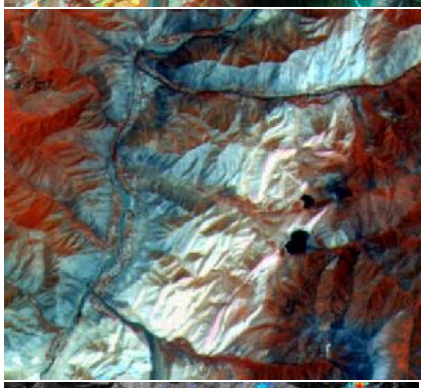
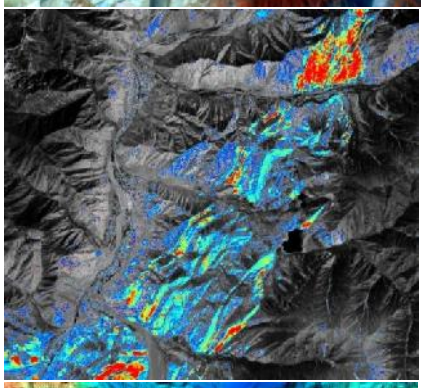
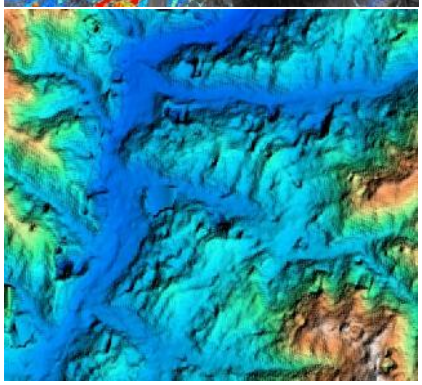
Band combinations	ASTER	LANDSAT
False colour composite: Aster 721 (RGB) Landsat 531 (RGB) Use for lithological discrimination		
False colour composite: Aster 468 (RGB) Indicating the presence of hydrated (alteration) minerals in pink tones		
Spectral index images (iron-oxides shown here) in which a blue-red colour scale indicates increasing iron-oxide content, overlain on a greyscale single band image		
DEM (15m) Constructed from bands 3N and 3B. Presented here as a shaded relief image (illumination angle at 60° elevation, 130° azimuth) with elevation increasing from 1854 – 4465m on a blue to red colour scale.		

..... do get in touch with us, we may be able to help you

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