Broken Hill ASTER

ASTER SWIR image products

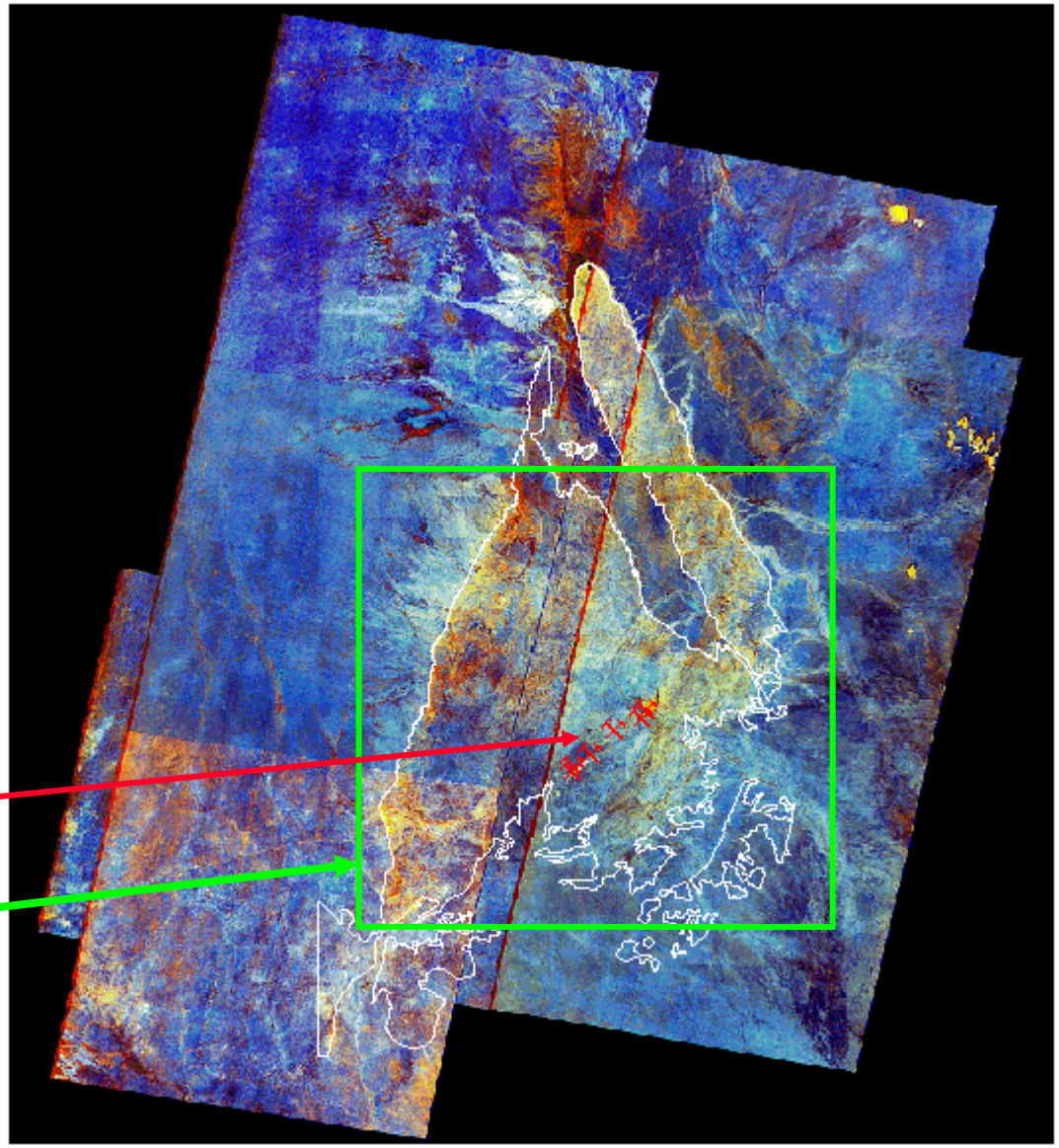
Radiance at sensor (Level 1B)

RGB : 5/6 7/6 7/5

AlOH composition (qualitative)

Broken Hill lode

Integration study area

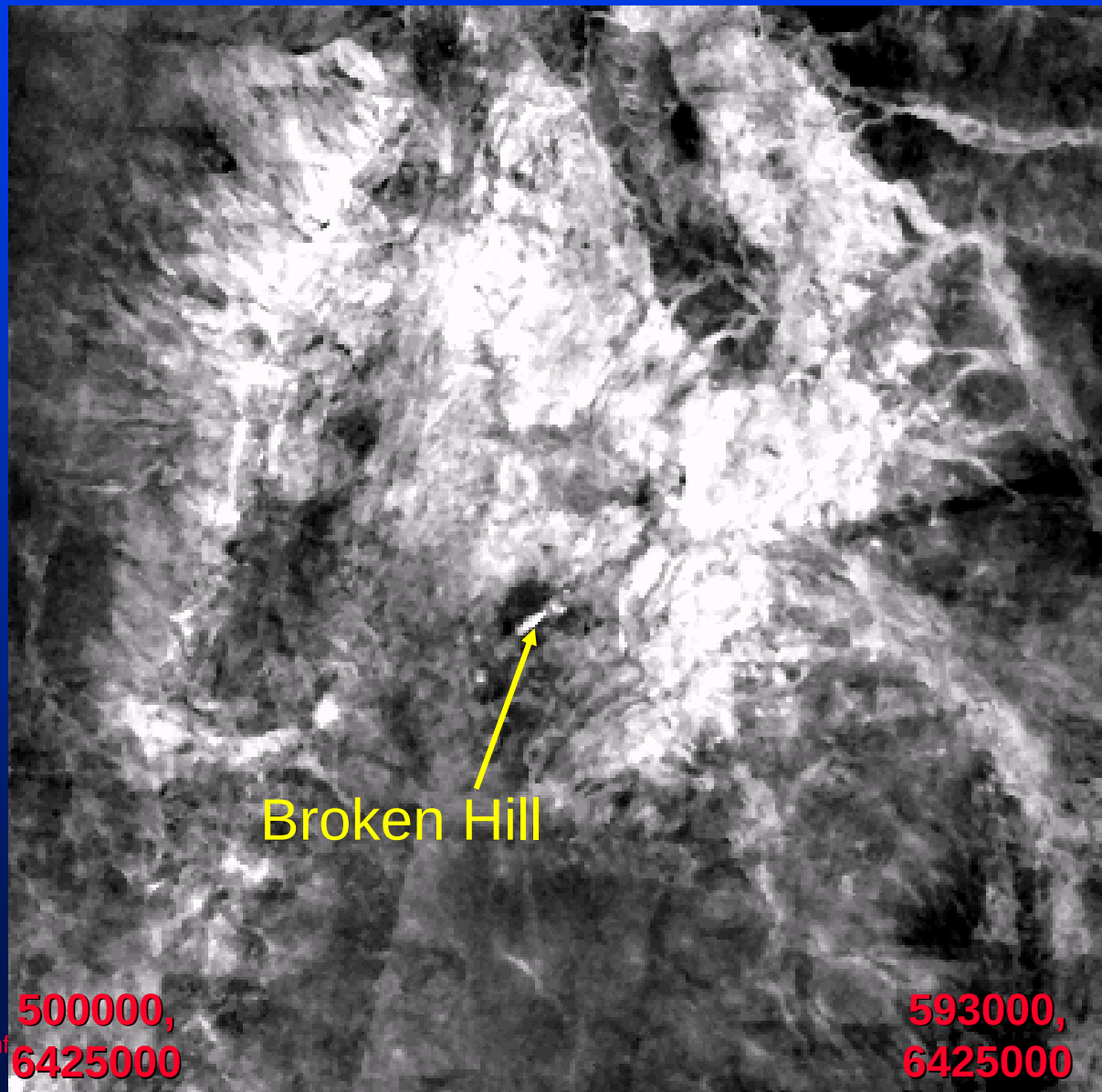


Broken Hill ASTER

ASTER SWIR imagery

White mica / sericite content

(b5 + b7) / b6



Broken Hill ASTER

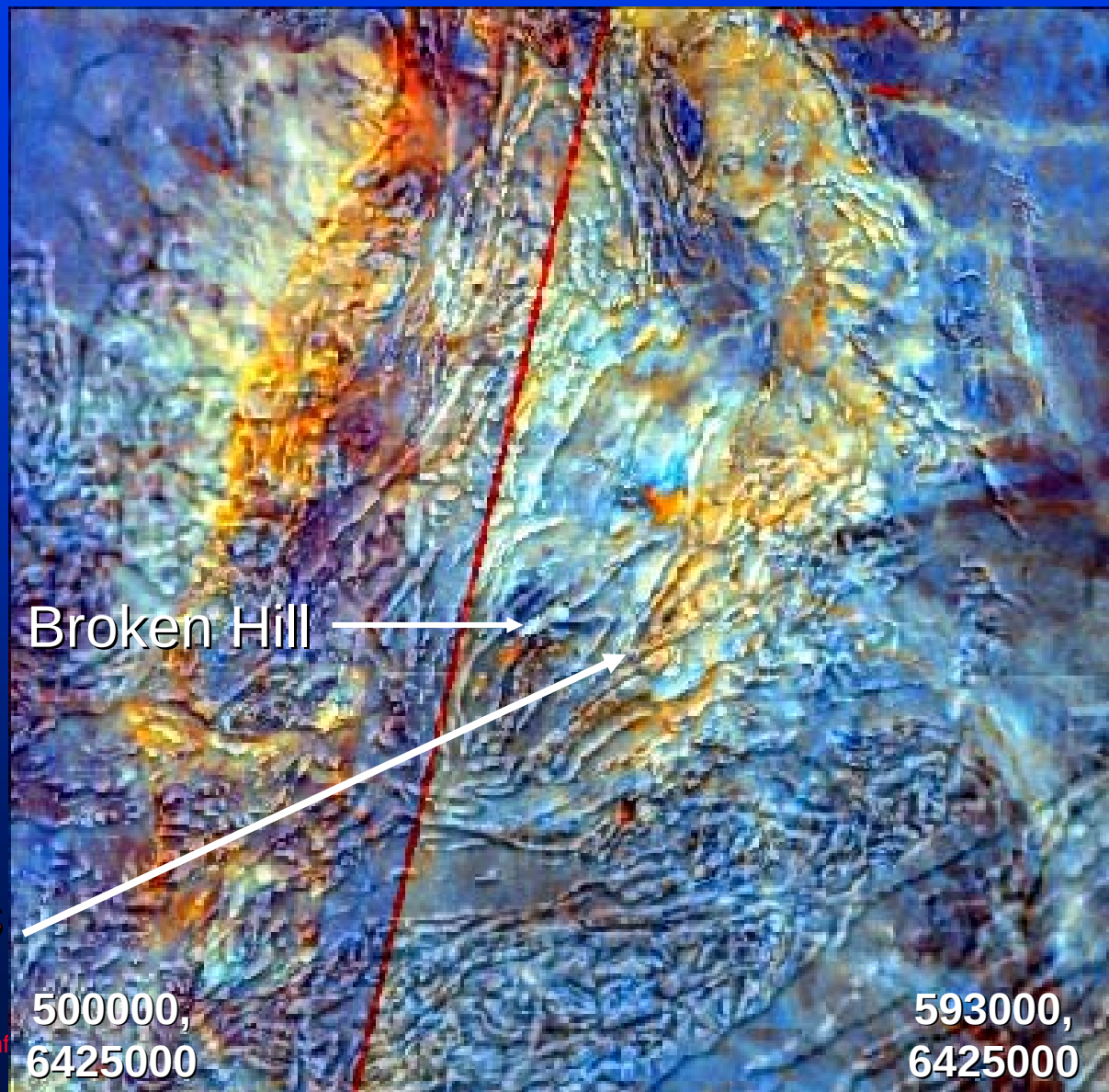
ASTER SWIR imagery

RGB 5/6 7/6 7/5 + AGC filtered TMI

Inferred white mica (AlOH) composition :

Higher b5/b6 (RED) infers longer λ AlOH spectral feature (more phengitic mica)

Magnetic lineaments trend and correlate closely with shear zones



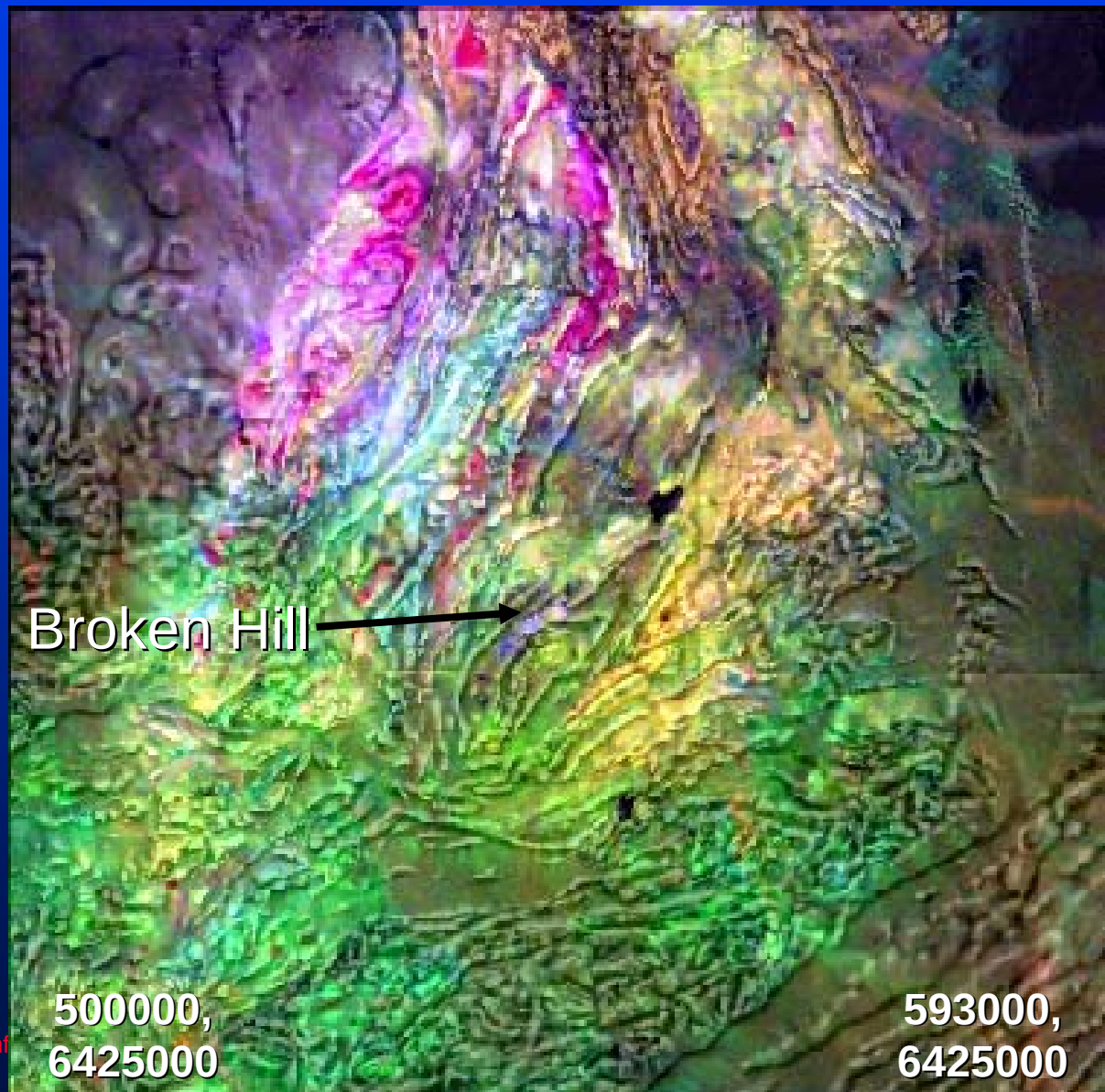
Broken Hill Geophysics

Radiometrics

Ternary K Th U

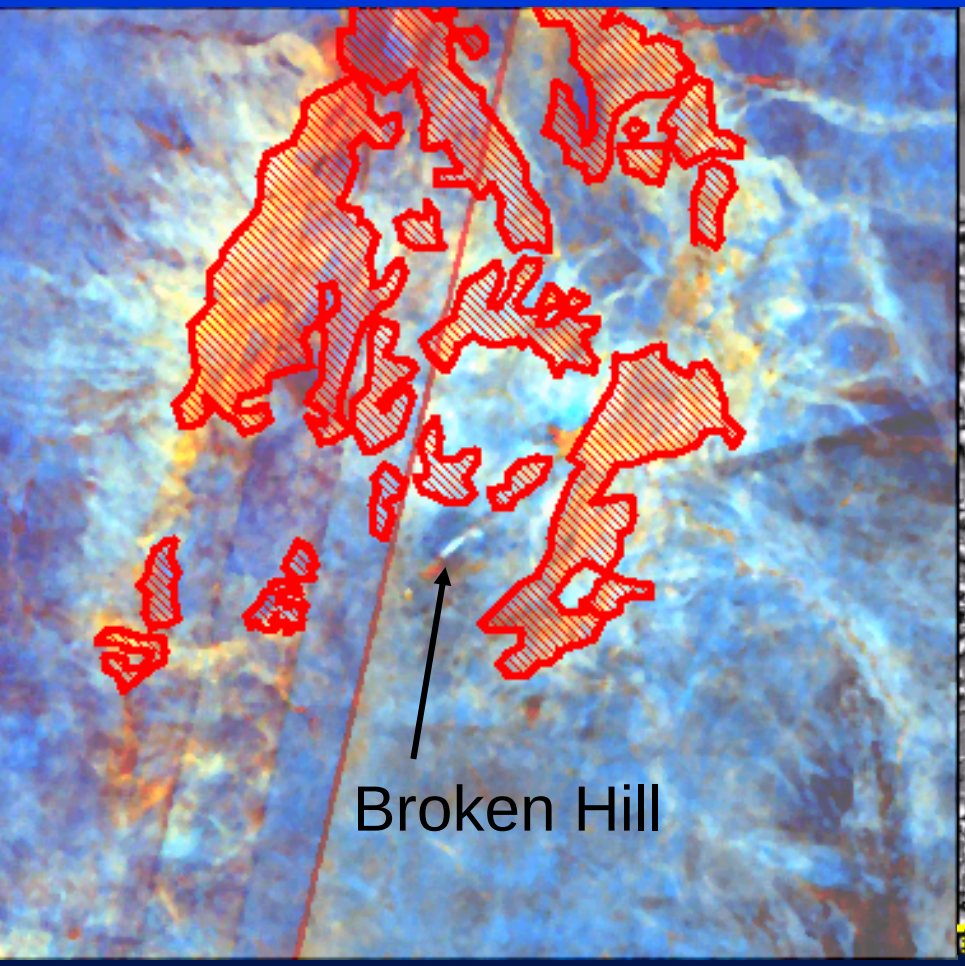
+

AGC filtered TMI

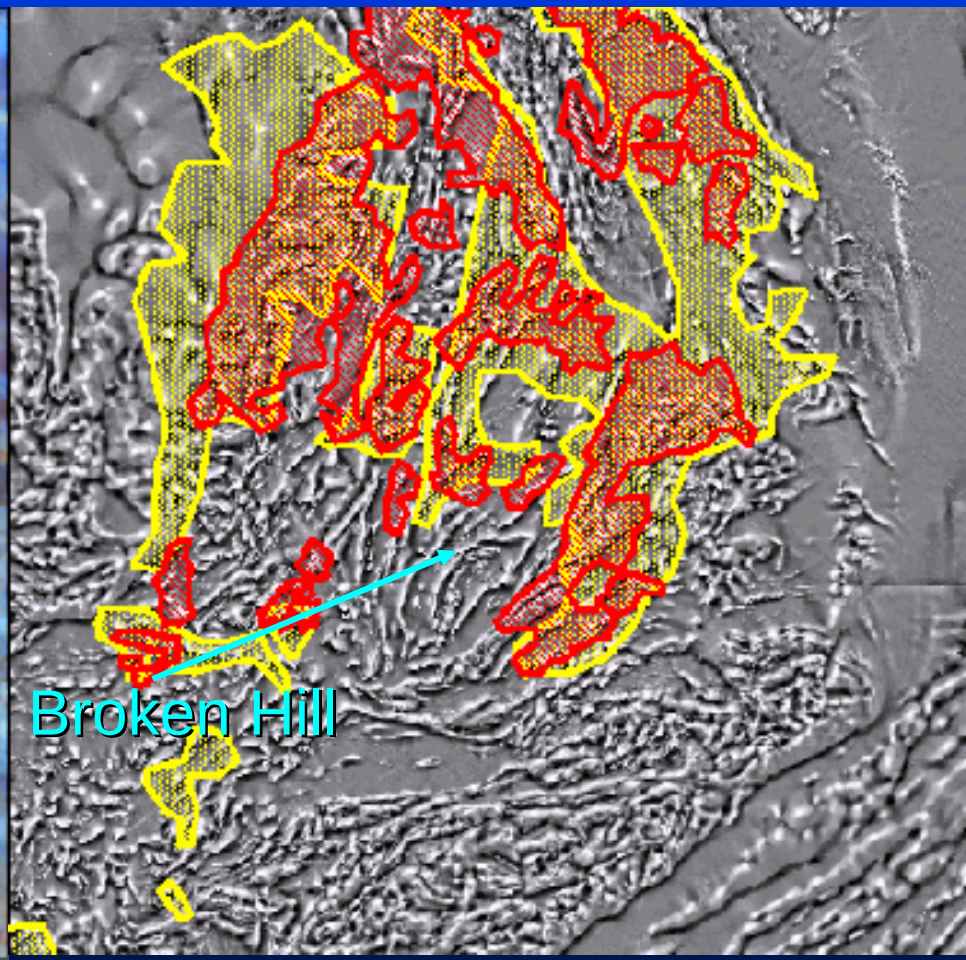


Broken Hill ASTER and geophysics

ASTER AlOH + High K



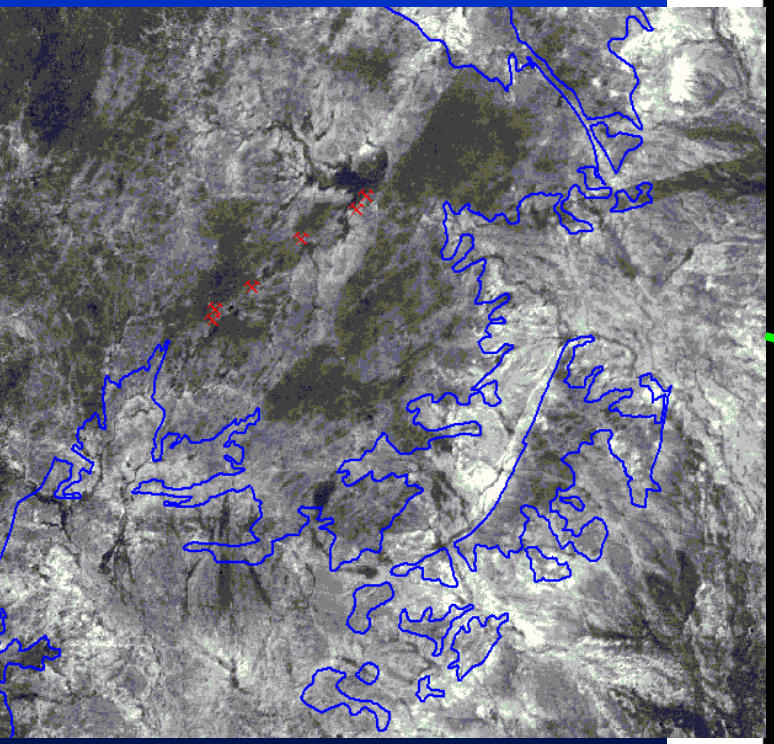
ASTER High b5/b6 + High K+ AGC filtered TMI

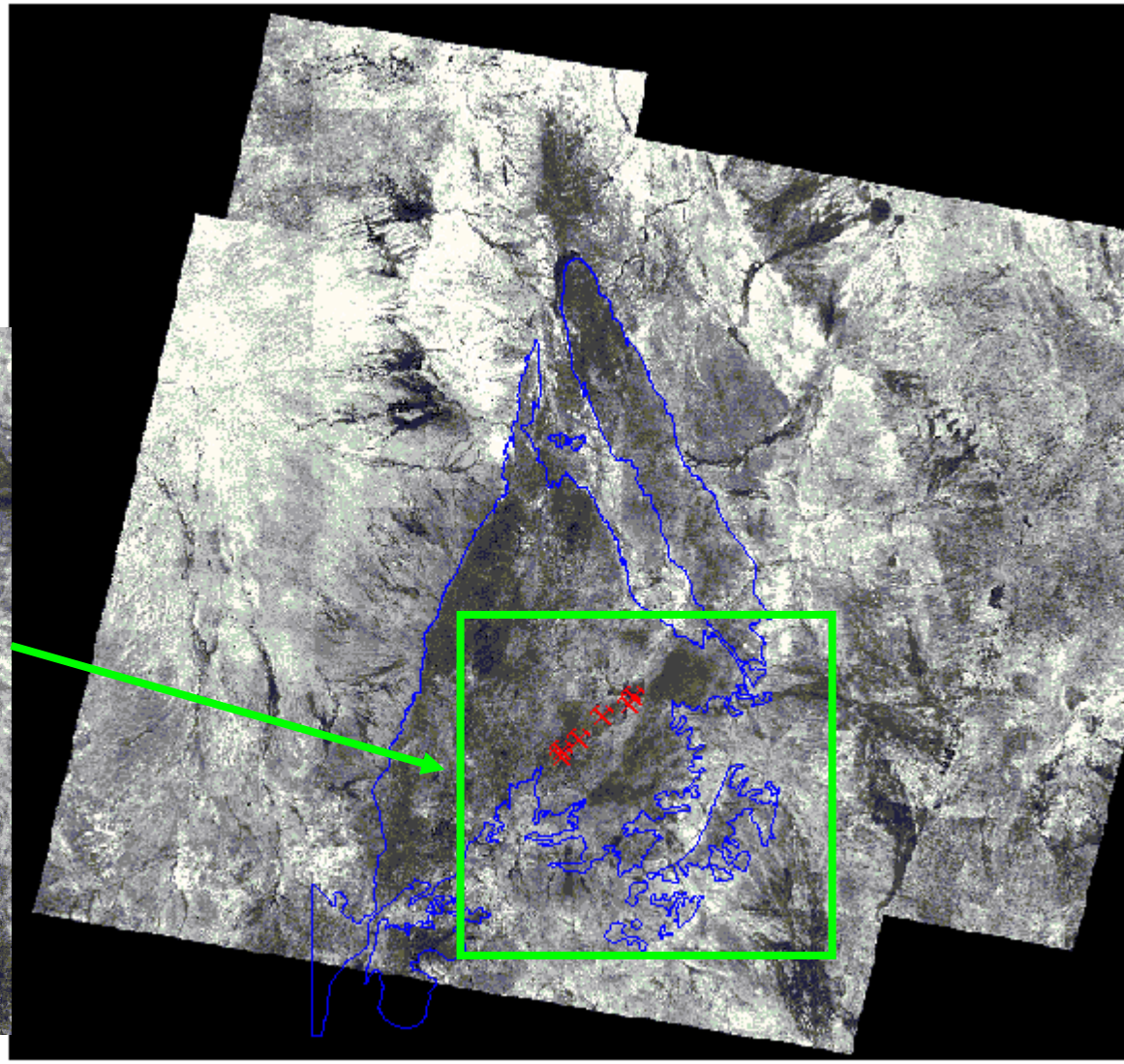


Broken Hill ASTER

ASTER TIR imagery (emissivity, Level 2)

Quartz (regolith) : b13 / b10





Conclusions

- ASTER provides varied surface compositional and topographic information at detailed geological mapping scale

- Integration of ASTER imagery with airborne geophysics assists in the comparison of mineralogical, geochemical and structural features, in particular at Broken Hill :

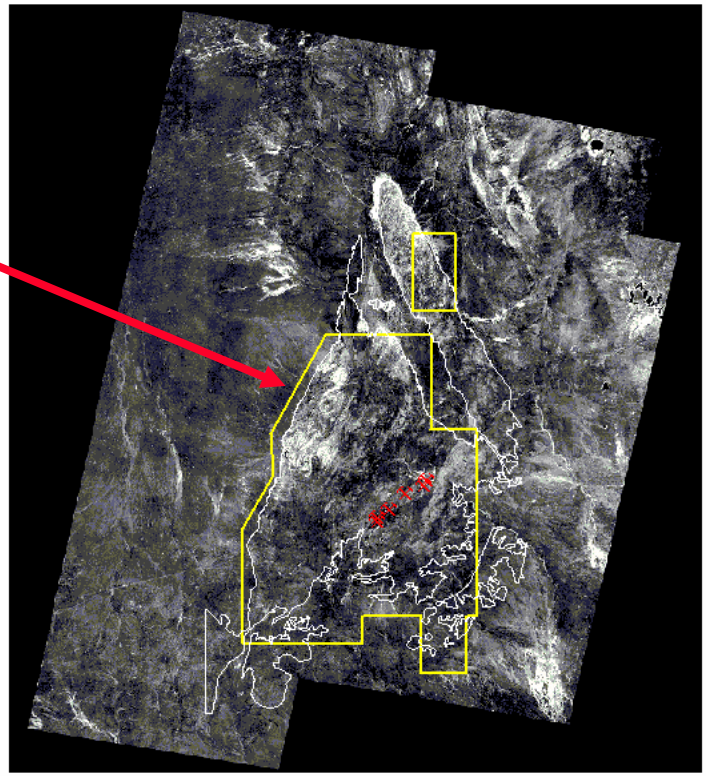
  - correlation between ASTER derived SWIR AlOH map and K radio-element composition suggests areas of decreased retrograde metamorphism

Broken Hill – future work …

- Future analytical and geochem analysis of field samples to confirm K levels and phengitic mica composition
- Extension of mosaiced ASTER products across SA's Curnamona (GIS PIRSA product)
- Integration with depth interpreted and processed geophysics

DMR HyMap 2002 survey outline

(4000 km^2 @ 3 metre resolution 128 bands visible-SWIR)



Acknowledgements

Dept of Primary Industries and Resources of SA (PIRSA)

BHEI - Geoscience Australia & NSW's DMR

NASA & ERSDAC

Summitomo

Perilya Ltd