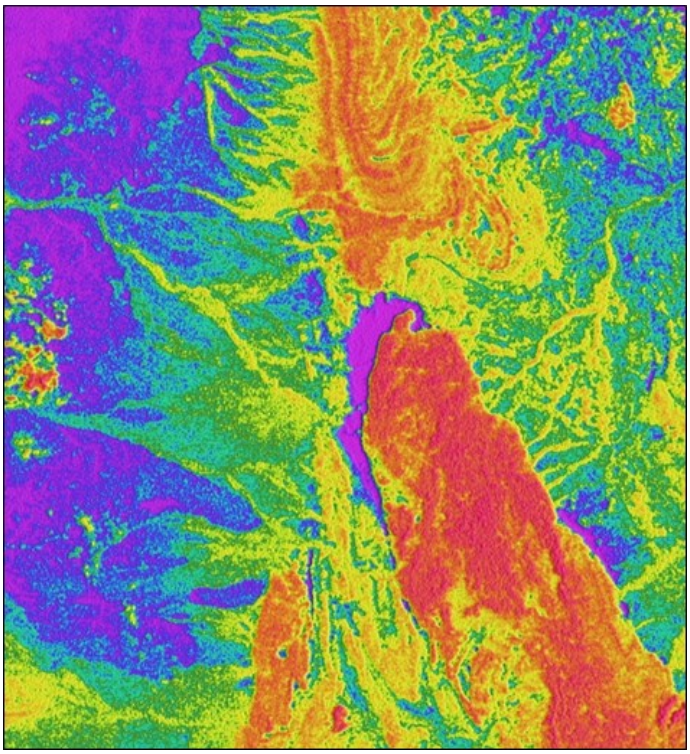
Product Brochure

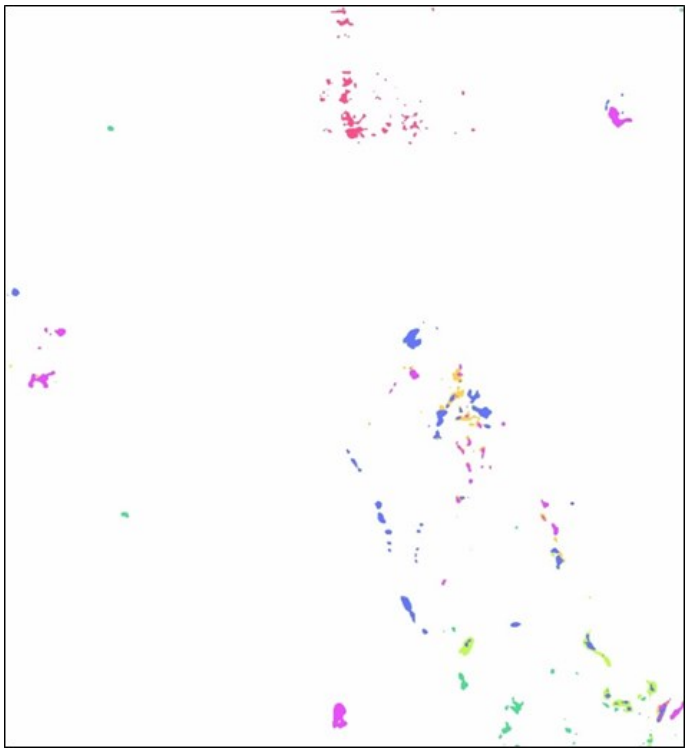
GAMMA_Target

Minty Geophysics

Automatic Gamma Anomaly Detection

GAMMA_Target is a new method for the automatic detection of radioelement anomalies on either grid or profile data

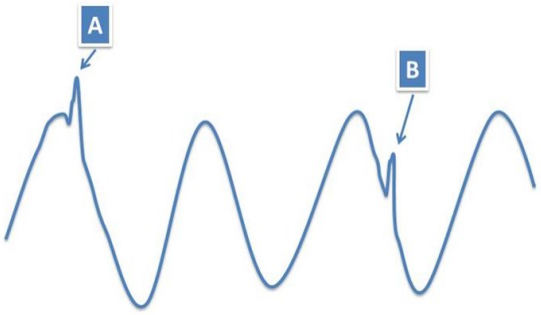




(Data courtesy Geoscience Australia)

Features

- Rigorous, un-biased method for the rapid detection of radioelement anomalies
- Used for the identification of both spectral and point anomalies
- Output is to ESRI shape files for further GIS assessment and analysis



Anomaly types

GAMMA_Target recognises 2 types of anomalies. The value at anomaly A occurs only once in the dataset – its value is rare. We call this a "*spectral anomaly*". In the case of 3-component radioelement data (K, U and Th), spectral anomalies are those areas of the map or profiles where the 3-component radioelement signature (K, U and Th concentrations) are rare. The value at anomaly B, on the other hand, occurs at several places in the dataset. But it is anomalous with respect to the local background. We call these "*point*" anomalies.

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Spectral anomalies do not necessarily have anomalous amplitudes - rather, it is the relative concentrations of K, U and Th (i.e. the ratios between the radioelement concentrations) that is anomalous. Spectral anomalies may, or may not, be important from a mapping or mineral/petroleum exploration perspective. But because they have unusual signatures, they need to be identified and assessed.

Point anomalies are contextual anomalies – they are anomalous within a local context. These are the classical geophysical anomalies.

After importing into a GIS, users can use the anomaly attributes to selectively display anomalies to assist in their interpretation.

Point anomaly attributes

Survey ID	Survey name
TimeStamp	Date and time anomalies were generated
AnomalyID	Anomaly identification string – prefixed by "LP" for point anomalies on line data and "GP" for point anomalies on grid data
LineNumber	Line number on which anomaly occurs (zero for grid data)
Fiducial	Fiducial at centre of anomaly (zero for grid data)
X_coord	X coordinate of anomaly centre
Y_coord	Y coordinate of anomaly centre
K_conc_pct	K concentration at anomaly centre (% K)
U_conc_ppm	U concentration at anomaly centre (ppm eU)
T_conc_ppm	Th concentration at anomaly centre (ppm eTh)
AnomalyIndex	Anomaly index number (1-7). All anomalies are indexed as one of 7 classes, depending on the relative concentrations of the radioelements at the anomaly centre
AnomalyType	Anomaly type associated with each anomaly index - K, U, Th, UandTh, KandU, KandTh, and KandUandTh correspond with anomaly indices 1-7, respectively
AnomalyAmpl	Relative amplitude of the anomaly above local background
AnomalyFit	Measure of the goodness-of-fit of the anomaly to the theoretical

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