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Vertical Aerial Photography

Figure 1. Higginsville regolith base map (Lintern, et al., 1996), compiled by Mike Craig on RC9 aerial photographs.

Landsat Thematic Mapper

Figure 1. Spectra of selected surface materials and wavelength positions of LANDSAT TM band passes.

Figure 2. Three-band Landsat TM image of second principal component of ratios 4/3 and 5/7 in red, ratio 5/4 in green and the addition of bands 7 + 1 in blue, overlain with regolith and landform vectors.

Figure 3. Regolith and landforms from part of the Jumbuck map, Half Moon Lake region, Gawler Craton, South Australia (Wilford, et al., 1998).

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Figure 3. An example for regolith-landform mapping.

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Radar Imaging

Figure 1. Images of Landsat TM and AIRSAR polarimetric data compare surface and sub-surface textural information from radar with surface mineralogy and vegetation from TM.

Figure 2. Variation in vertically polarized radar backscatter with changing surface roughness according to AIRSAR C, L and P band wavelengths, and a composite image of the three wavelengths.

Figure 3. Landforms in vicinity of Ophthalmia Range, Hamersley Basin – a composite image of AIRSAR bands Cvv/Lvv/Pvv as RGB. Site dimensions - 16x8 km.

Figure 4. AIRSAR C-, L- and P-band multi-polarization composite image of stratigraphic sequence comprising Arkaroola syncline, Flinders ranges, South Australia, shows a strong relationship with the mapped geology.

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Figure 6. DEMs generated from TOPSAR radar interferometry of two contrasting terrains – semi-arid central Australia (a) and humid-tropical Papua New Guinea (b).

Airborne and Ground Magnetism

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Figure 2. Greyscale image of the first vertical derivative of magnetic data reduced to the pole.

Figure 3. Forward modelling from Mackey, et al. (2000) in which a near surface palaeochannel deposit and deeper volcanic units are modelled.

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Figure 4. a) Transmitter loop and receiver coil configuration for the TEMPEST AEM system. b) TEMPEST AEM system on a Trislander aircraft in 1999.

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Figure 9. a). TEMPEST AEM Z-component square-wave B-field response profiles. b). conductivity section; and, c). total magnetic intensity profile for line 10281 (211600 mE) over the Walford East base metal prospect, Queensland (Lane, et al., 2000).

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Ground Penetrating Radar

Figure 1. a) and b) An application of using the GPR technique to map the groundwater surface and the sand / gravel-bedrock interface (Scaife and Annan, 1991).

Figure 2. This section illustrates the use of GPR for the location of underground services and in this case a pipe buried at approximately 2 metres (Courtesy of Mala Geoscience).

Figure 3. Radar section across an area that has two plumes of contaminated groundwater present. Note the lack of GPR signal penetration due to the contamination having a much higher conductivity than the surrounding ground (Davis and Annan, 1989).

Figure 4. This illustrates the versatility of the GPR system to locate various different items made of different material at various depths (Courtesy of Mala Geoscience).

Figure 5. An example of a borehole radar section obtained with a Mala Geoscience borehole probe.

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Geophysical well logging

Figure 1. The original geophysical logging equipment used by the Schlumberger brothers in the late 1920's.

Figure 2. Part of the first geophysical log obtained by the Schlumberger brothers in 1927.

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