

# Geology of Queensland

## Ongoing regional mapping – 1968 to the digital age

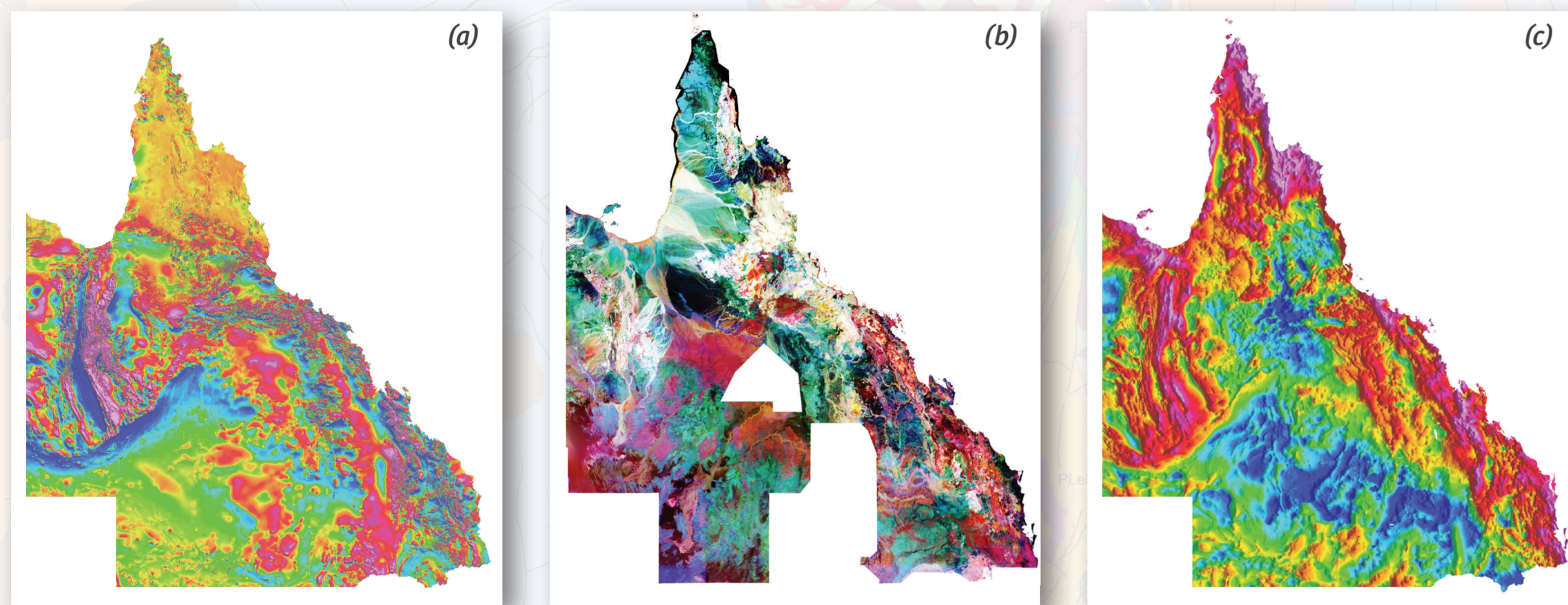
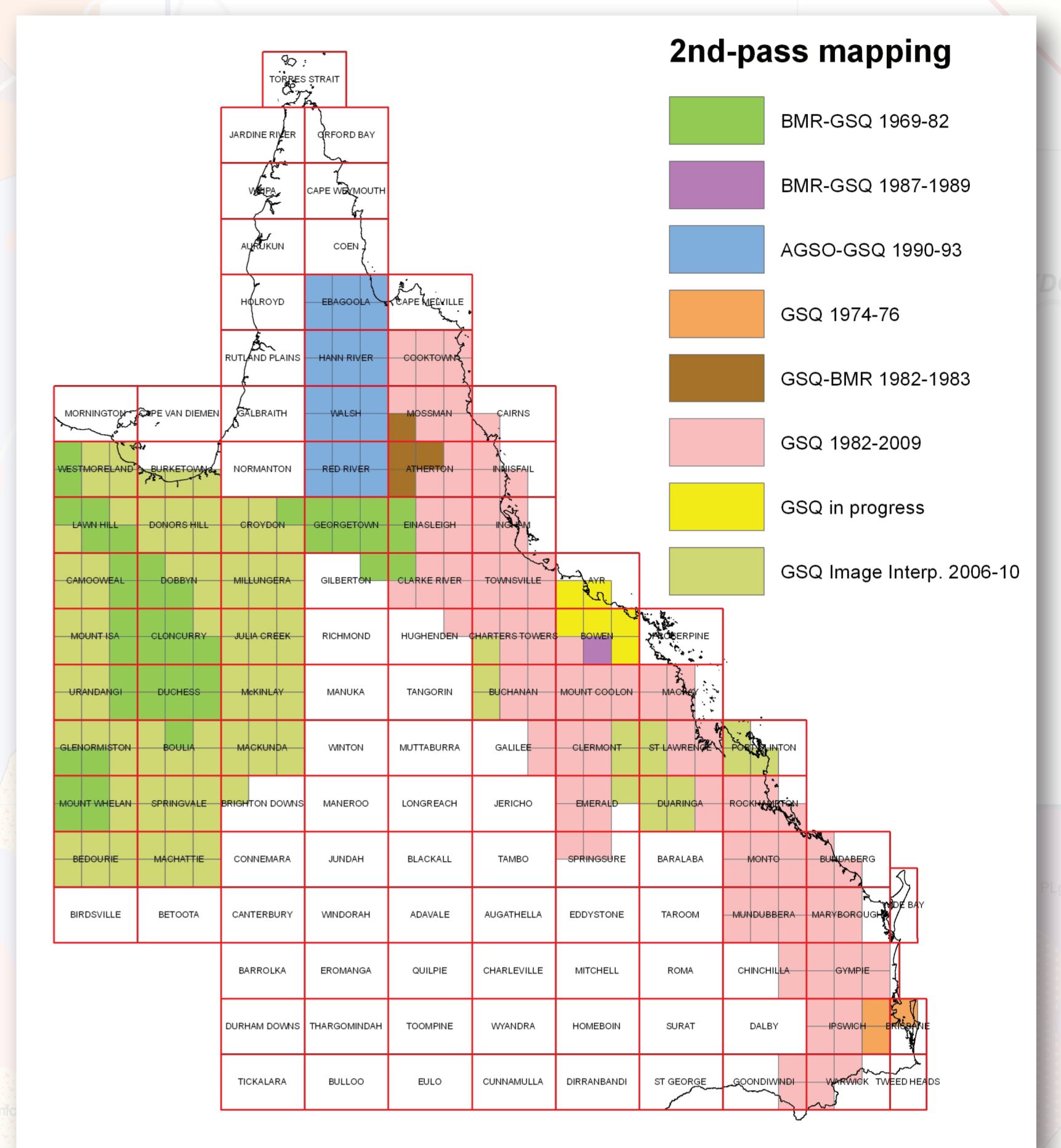
In the 1968, BMR and GSQ commenced remapping important mineralised regions in Queensland at 1:100 000 scale. Work in north-west Queensland from 1969 to 1979, was conducted by teams in both the Proterozoic rocks and the Georgina Basin. A separate project in the Georgetown Inlier ran from 1972 to 1981.

An important innovation was the use of coloured aerial photographs that allowed better representation of geological units in these arid areas.

GSQ also commenced 1:100 000 mapping in south-east Queensland. In 1982, BMR withdrew from systematic geological mapping to put greater emphasis on research. GSQ obtained additional funding to take over the role. The emphasis was initially in north Queensland carrying on from the joint mapping.

The more detailed nature of the work meant that each team mapped only one or two 1:100 000 sheets per season, so complete coverage of even the hard-rock areas was likely to take many decades.

Important breakthroughs in the late 1980s to 1990s changed this. These included the flying of airborne magnetic-radiometric surveys at 200 to 400 m line spacing and availability of satellite multispectral data such as Landsat and Aster. The development of Image Processing and Geographic Information Systems software allowed better visualization of these datasets and integration of them with field data.



Geophysical images for Queensland: (a) airborne magnetic and (b) airborne radiometric ternary images. Airborne data was collected at 200 to 400 m flight line spacing, except for blank areas in (b) for which magnetic data was collected at 1.6 km spacing. (c) bouguer image of data from ground gravity stations (mostly at 2 or 4 km spacing).

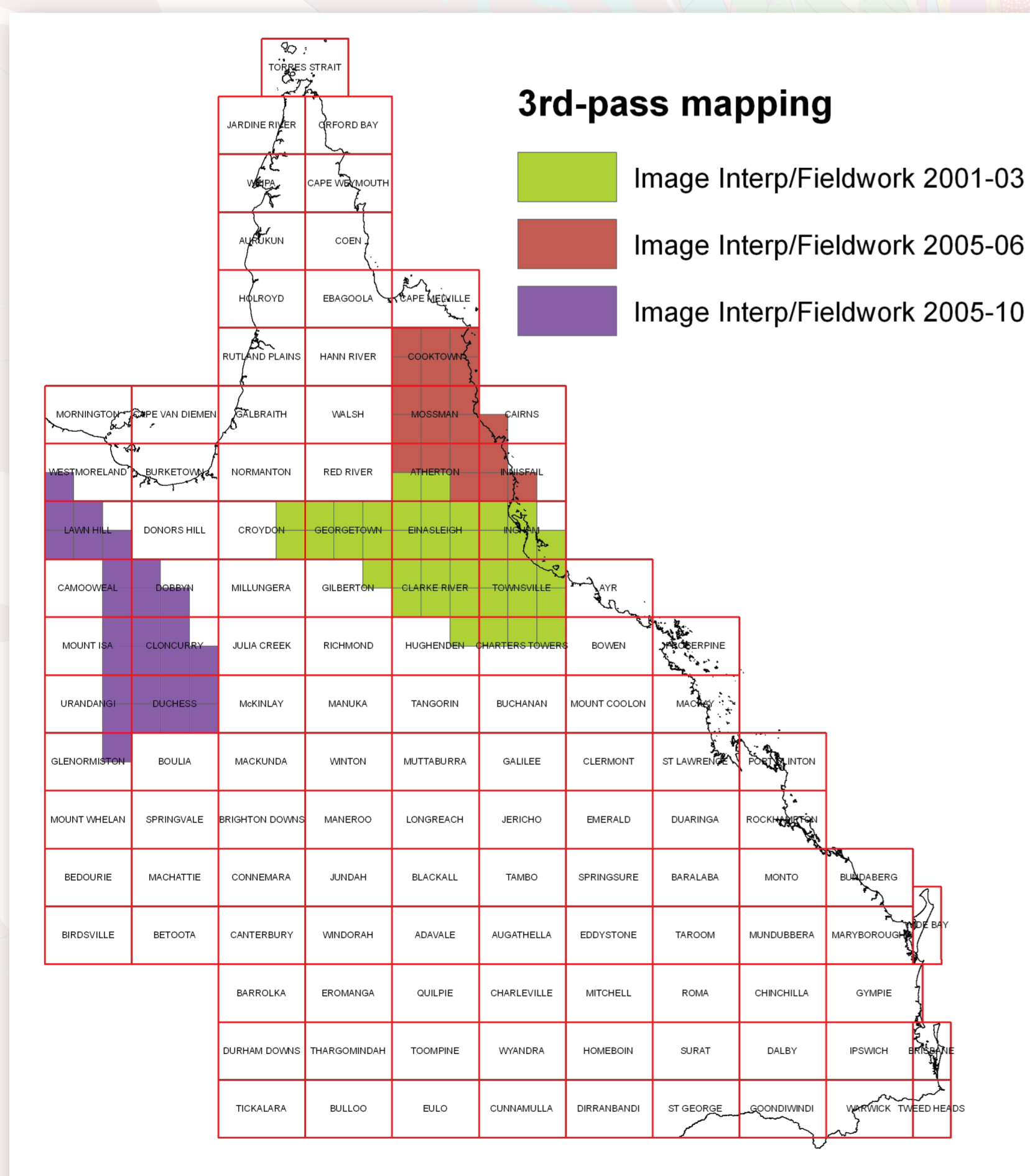
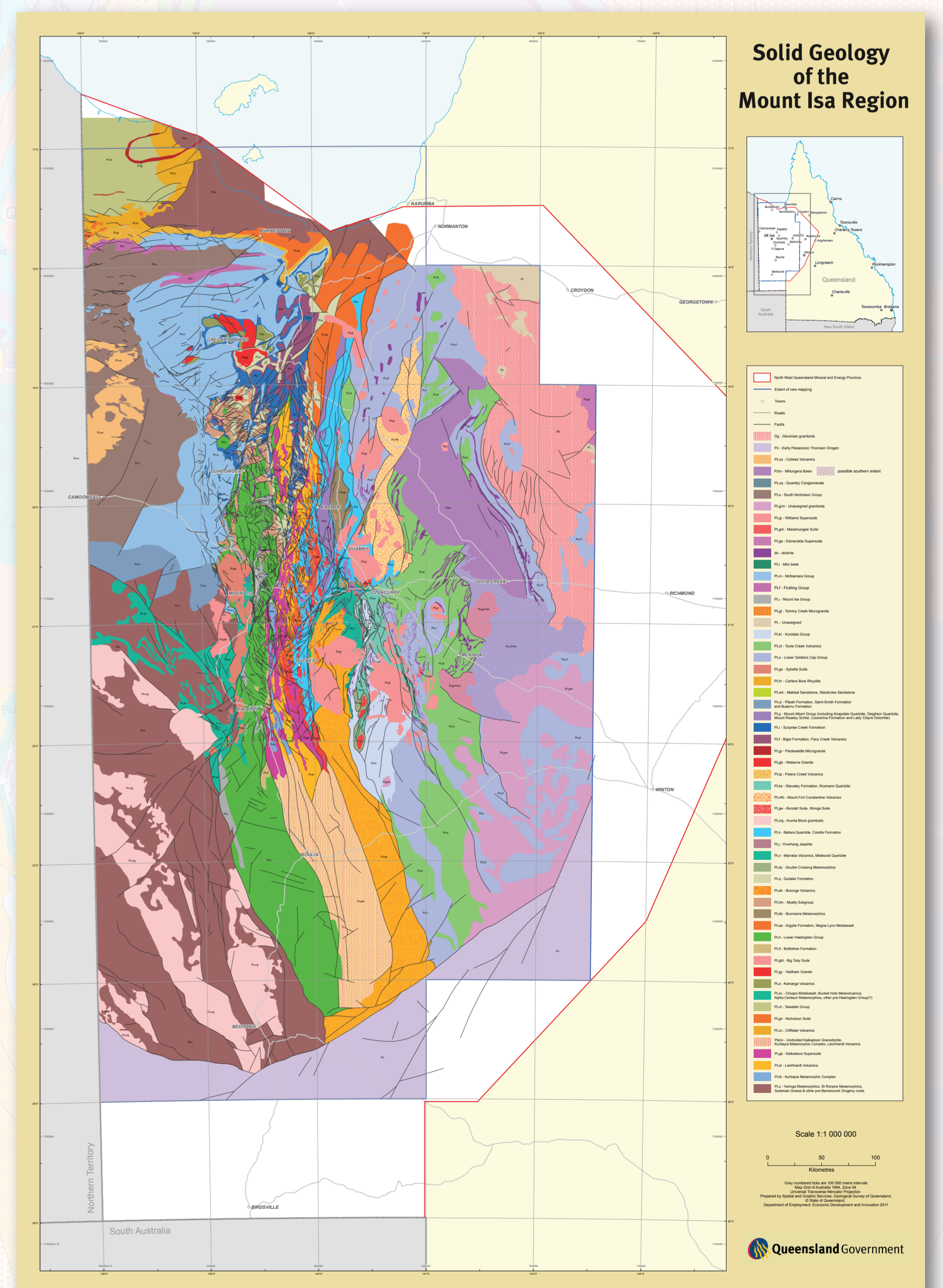
In 1990, GSQ funded its first airborne geophysical survey to assist mapping in the Anakie Inlier in central Queensland.

At the same time, BMR, under the new name Australian Geological Survey Organisation (AGSO), returned to regional studies as part of the National Geoscience Mapping Accord. Assisted by airborne geophysics, four 1:250 000 sheet areas were mapped to provide geological data for land-use investigations of Cape York Peninsular in 1990-93.

Also supported by airborne geophysics, GSQ was able to rapidly remap most of southern and central coastal Queensland by the end of the 1990s.

Digital map capture and the ability to publish print-on-demand maps without labour-intensive manual drafting and expensive offset printing meant that full-coloured maps could be made available for all of these areas. GIS also became an essential avenue for making data available.

In 2001, the availability of detailed airborne geophysics and gravity data over areas of north Queensland that had second-pass mapping prior to 1990, prompted a new program to revise some of these areas. Largely office-based (with some ground-truthing), it involved geologists who took part in earlier mapping and could relate new interpretations to what they had previously observed on the ground. The results were incorporated into new 1:100 000-scale maps and GIS.



### Back to where we started

In 2006, GSQ undertook to again revise the geology of the Mount Isa area and extend the interpretation into surrounding under-cover areas. The aim was to integrate new field work with previous mapping and satellite (Landsat and Aster), airborne magnetics and radiometrics, gravity and deep crustal seismic data. The work also incorporated, where possible, university and company mapping, AMIRA and pmd\*CRIC investigations and exploration drilling.

Fieldwork was completed in 2009 and the results released in early 2011 as a seamless GIS, including both surface and solid geology for the area from the Gulf of Carpentaria to Bedourie. A 3-D model and detailed syntheses of the geodynamics and mineral and energy resources were part of the data package.