

Australian Geographic Reference Image

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Version

1.0.0

Program

Digital Earth Australia

Resource type

Baseline

Published Date

12/03/2018



View the [original metadata page](#) for the most up-to-date information on this product.

Basics

Background

It is important to ensure that satellite images are consistently and accurately registered to allow the maximum extraction of information.

What this product offers

The Australian Geographic Reference Image (AGRI) is a consistent and accurate reference image for rectification of imagery from multiple sources at resolutions of 2.5 m or less.

The AGRI provides a consistent base image intended, at the time of production, to provide an important foundation for future mapping and monitoring across Australia.

Applications

The AGRI is a resource for both users and providers of satellite imagery covering Australia in:

- Government agencies – Commonwealth, State and Local
- Research institutions
- Spatial Information Industry
- International satellite operators

Ground Control Points from the AGRI have fed into satellite image processing systems of the United States Geological Survey and of the European Space Agency. Consequently, imagery from the Landsat satellites and from the Copernicus Sentinel satellites are accurately and consistently geo-registered across Australia.

Similarly, commercial satellite operators are understood to have used the AGRI to improve their product quality.

Reference image – image to image rectification, image chip source, quality control layer

Basemap – feature revision and verification, reference layer

Publications

Ravanbakhsh, M., Wang, L.-W., Fraser, C. S., & Lewis, A. (2012). Generation of the Australian Geographic Reference Image Through Long-Strip Alos Prism Orientation. *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 39B1, 225–229. <https://doi.org/10.5194/isprsarchives-XXXIX-B1-225-2012>

Access

Data access

Link to data	THREDDS
eCat record	72657
CMI RESTful node ID	116
NCI project code	rs0
Security classification	Unclassified
Update frequency	asNeeded

Details

Technical information

- National mosaic - 10m georeferenced image
- UTM zone mosaics - 2.5m georeferenced images
- Ground Control Point spatial database
- Ground Control Point ancillary data (photographs, site sketches and image chips).

Accuracy and limitations

Absolute geometric accuracy: 5.6m CEP90.

Cloudy over some areas.

Quality assurance

Independent check points from GPS survey.

References

Ravanbakhsh, M., Wang, L.-W., Fraser, C. S., & Lewis, A. (2012). Generation of the Australian Geographic Reference Image through long-strip ALOS PRISM orientation. *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XXXIX-B1, 225–229. <https://doi.org/10.5194/isprsarchives-XXXIX-B1-225-2012>

Rottensteiner, F., Weser, T., Lewis, A., & Fraser, C. S. (2009). A strip adjustment approach for precise georeferencing of ALOS optical imagery. *IEEE Transactions on Geoscience and Remote Sensing*, 47(12), 4083–4091. <https://doi.org/10.1109/TGRS.2009.2014366>

Processing

Lineage

The Australian Geographic Reference Image (AGRI) is a consistent and accurate reference image for rectification of imagery from multiple sources at resolutions of 2.5 metres or less. The AGRI is needed because the emerging new satellites and other sources of imagery will generate increasing amounts of data. The AGRI can ensure that images from these sources are consistently and accurately registered to allow the maximum extraction of information.

During compilation more than 9560 satellite scenes, totalling over 6 terabytes, were used to produce eight mosaics, covering each of Australia's Universal Transverse Mercator map zones. These mosaics were then combined to produce a single mosaic covering the Australian continent. Intensity and contrast balancing were used to ensure visual consistency across the mosaic while maintaining the dynamic range of the image.

The AGRI was made possible by new scientific and technical capabilities, international collaboration, the Australian spatial information industry, and the leadership and capabilities of Geoscience Australia. Japan's Advanced Land Observing Satellite (ALOS) made possible the complete coverage of high quality imagery, which forms the foundation of the AGRI, as well as accurate data on the satellite orbit. Geoscience Australia was an international collaborator on the ALOS; handling data for the Oceania region. The Barista software, developed by the Cooperative Research Centre for Spatial Information, made the project feasible in terms of time, logistics, and cost. Barista reduced the image registration problem from correction of almost 10 000 scenes to correction of just 105 orbit segments (Lewis et al, 2011).

The expertise and capability of the Australian spatial information industry was used in the design of GIS databases to manage the survey data and to conduct the many field surveys to remote areas of Australia. The expertise and capabilities of Geoscience Australia staff in both Earth observation and geodesy were also essential inputs to the project (Lewis et al, 2011).

The AGRI mosaic and associated datasets are available to the public under the Creative Commons-Attribution licensing terms at cost of transfer from Geoscience Australia.

Data sources

- [ALOS PRISM Level 1B1 imagery](#)
- [Ephemeris Data](#)
- [USGS Ground Control Points \(GCP\)](#)
- [SRTM DSM/DEM data](#)

Processing steps

- [Identify cloud-free ALOS PRISM passes](#)
- [BARISTA](#)
- [Identify Ground Control Points](#)
- [Full pass/strip processing](#)
- [Ortho-processing using DSM](#)

Major algorithms

- Full pass/strip processing

Media

Files

[AGRI Technical Report](#) 1.48 MB

Credits

Owner

Commonwealth of Australia (Geoscience Australia)

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