Airborne magnetic coverage of the Australian continent is among the best in the world, after more than 60 years of data acquisition by state, territory and Australian Government geoscience agencies, complemented by publicly available company data. The 5th Edition of the Magnetic Anomaly Map of Australia is one recent outcome of these surveys and contains significant improvements to data quality, coverage and resolution over previous editions. The map, released in 2010 by Geoscience Australia (GA), is based on a new composite grid of the continent with a cell resolution of 3 seconds of arc (approximately 80 m). That grid results from combining nearly 800 grids of individual surveys. Use of independent Australia-wide Airborne Geophysical Survey (AWAGS) magnetic data collected in 2007 enabled control of the base levels of overlapping survey grids, so constraining long wavelengths. The AWAGS also collected gamma-ray spectrometric data that have enabled production of the first Radiometric Map of Australia in 2009. GA acquired the AWAGS data through the Australian Government's Onshore Energy Security Program. North-south lines were flown with a spacing 75 km and east-west lines with a spacing of 400 km. Average acquisition height was 80 m above ground level. A range of interpretive products, such as differential reduction to the pole and various derivatives and continuations, are being derived from the grid. These can be used for a wide variety of scientific applications, including energy and minerals resource evaluation, geological and environmental mapping, groundwater investigations and depth-to-basement calculations.