

Release of the Australian Geomagnetic Reference Field, 1985

The Australian Geomagnetic Reference Field, 1985 (AGRF1985) is now available as a software package. It is supplied as a main-frame version on 1/2-inch magnetic tape and also as an MS-DOS version on a 5 1/4-inch floppy disk for IBM PC's and compatibles. The package comprises full documentation, a set of general-purpose subroutines and a main program for generating AGRF1985 at either a single station or at a set of grid points within the Australian region. Options are included for computing values of IGRF1985 (the International Geomagnetic Reference Field), or IGRF1985 extrapolated using the AGRF1985 secular variation model, or differences between AGRF1985 and IGRF1985 (termed the "regional residual field").

AGRF1985 is BMR's prospective model of Earth's magnetic field and its annual change (i.e. secular variation) over the Australian region for epoch 1985.0. It is a combination of Earth's main field originating within the core represented by IGRF1985 and the broad-scale crustal field represented by a rectangular harmonic analysis of observations at 86 repeat stations and magnetic observatories in the region (reduced to epoch 1985.0). The AGRF1985 model is expressed as a set of spherical harmonic coefficients of IGRF1985 (120 for the field and 80 for the secular variation) together with a set of rectangular harmonic coefficients of the regional residual field (71 for each of the field and the secular variation). The numbers of harmonics included in the analyses of the regional

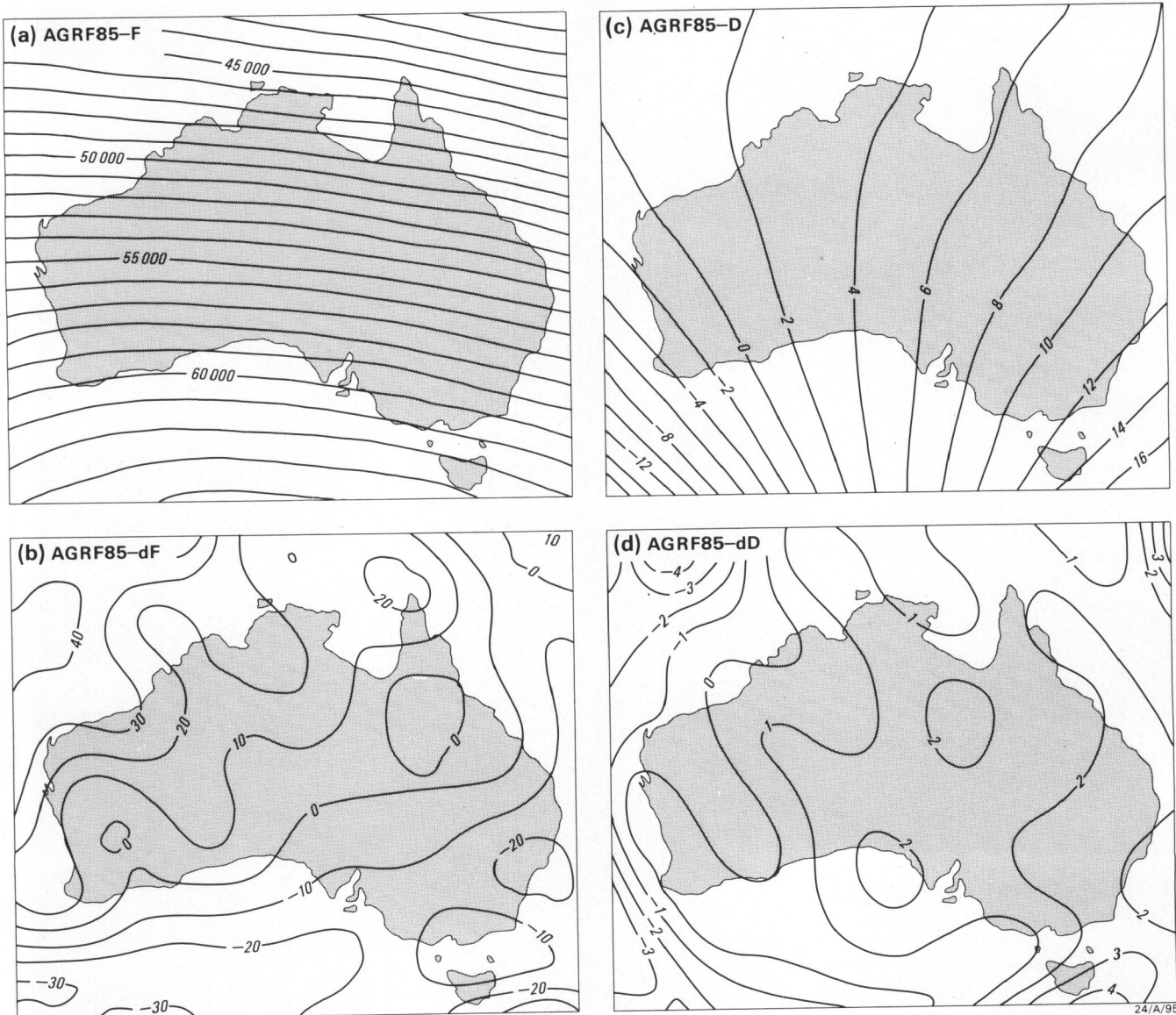


FIGURE 1
Charts of the Australian Geomagnetic Reference Field (AGRF1985) for 1st January, 1985.
(a) Total field, contour interval 1000 nT,
(b) annual change in total field, contour interval 10 nT per year,
(c) declination, or variation, contour interval 2 degree, and
(d) annual change in declination, contour interval 1 minute of arc per year.

residual field and the secular variation were chosen objectively by a data-adaptive procedure. The resulting models contain information down to wavelengths of 1300 km in the north-south direction and 1200 km in the east-west direction at the centre of the modelled region. Charts and regional field models produced by BMR for earlier epochs were more highly smoothed than this.

AGRF1985 is recommended as the best available regional model for the secular variation within the time interval 1980.0 to 1990.0, and hence for reducing magnetic survey data to a common epoch. Altitude information is incorporated into the model, and the field can be upwards and downwards continued. AGRF1985 will eventually be replaced by a 'definitive' model (DAGRF1985) sometime after 1990.0. This

will incorporate more accurate, retrospective secular variation data and a comprehensive set of observations of the field derived from all available sources.

A charge of \$195.00 is made for the software package which is available from:

Geomagnetism Section, Division of Geophysics,
Bureau of Mineral Resources, P.O. Box 378, Canberra, ACT
2601.

Tel. 062-49 9111, Fax. 062-48 8178.

(This charge includes a set of isomagnetic charts of AGRF1985 when they become available). For further information about AGRF1985 contact C. E. Barton, tel. 062-49 9611.