The *aa* Index

The three-hourly *aa* index, retrospectively calculated from 1868, provides one of the longest continuous global geophysical data sets that can be used in the analysis of magnetospheric and ionospheric phenomena.

Designed to cancel out systematic LT and annual variations, *aa* is derived according to:

- *K* indices from 2 geomagnetically near- **a**ntipodal magnetic observatories
- equivalent **a**mplitudes (nT) and scale factors to correct for differences in geomagnetic latitude and local induction effects (providing aa_n and aa_s)
- average of aa_n and aa_s

Further LT cancellations can be gained by applying:

- 8-point (24 hour) running mean. These 3-hour indices are denoted *aa**

Years	Northern Observatory	Scale Factor
1868-1925	Greenwich	1.007
1926-1956	Abinger	0.934
1957-	Hartland	1.059

Years	Southern Observatory	Scale Factor
1868-1919	Melbourne	0.967
1920-1979	Toolangi	1.033
1980-	Canberra	1.084

Locations of the aa_n (top) and aa_s (bottom) observatories. The years when each observatory were used for the derivation of *aa* are shown in the table. The scale factor for each observatory is also shown.

Extracted from
Clarke, E. and Clilverd, M. A., 2007. Is there a need to revise the aa index?, Poster presented at XXIV IUGG General Assembly, Perguia, Italy, July 2007, IAGA Session: ASV039, Poster: 11916

Further details of the aa index series is given in
Mayaud, P. N., 1972. The aa indices: , A 100-year series characterizing the magnetic activity, J. Geophys. Res., 77, 6870- 6874