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Characteristics of the *N*- component of the heliospheric magnetic field observed by IMP and ACE over 46 years

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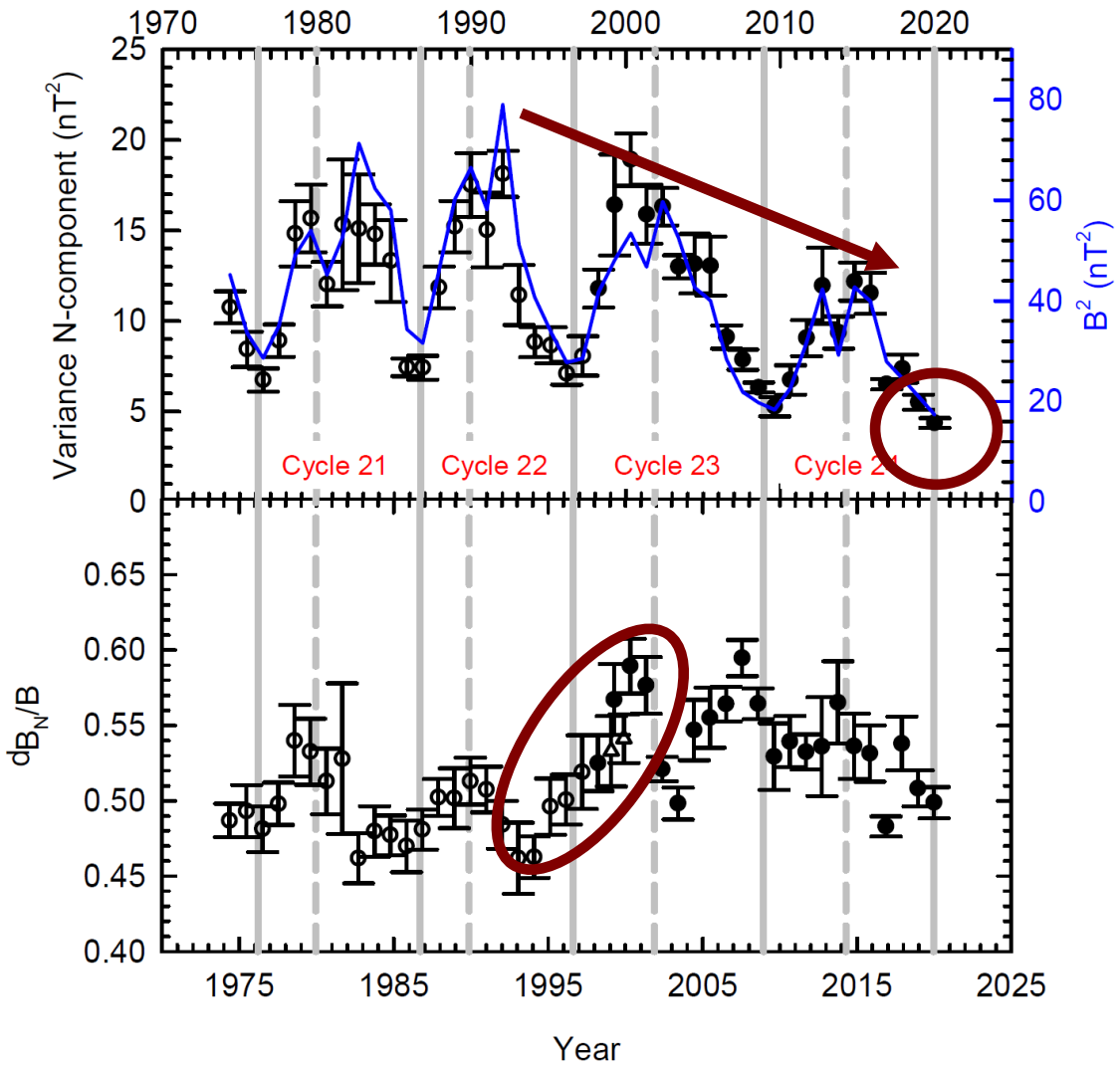


Fig 1 (top): Both variance and magnetic field magnitude squared show clear solar-cycle dependence with good correlation between the two. A significant decrease occurs in both from cycle 22 to cycle 24. Lowest value for magnetic field and variance is during 2020 solar minimum period, 4.2 nT and 4.4 nT^2 respectively.

Fig 1 (bottom): Ratio of magnitude of fluctuations to field magnitude has an average value of 0.52 ± 0.02 for whole period. Increase of about 10% during cycle 23 confirmed by WIND data.

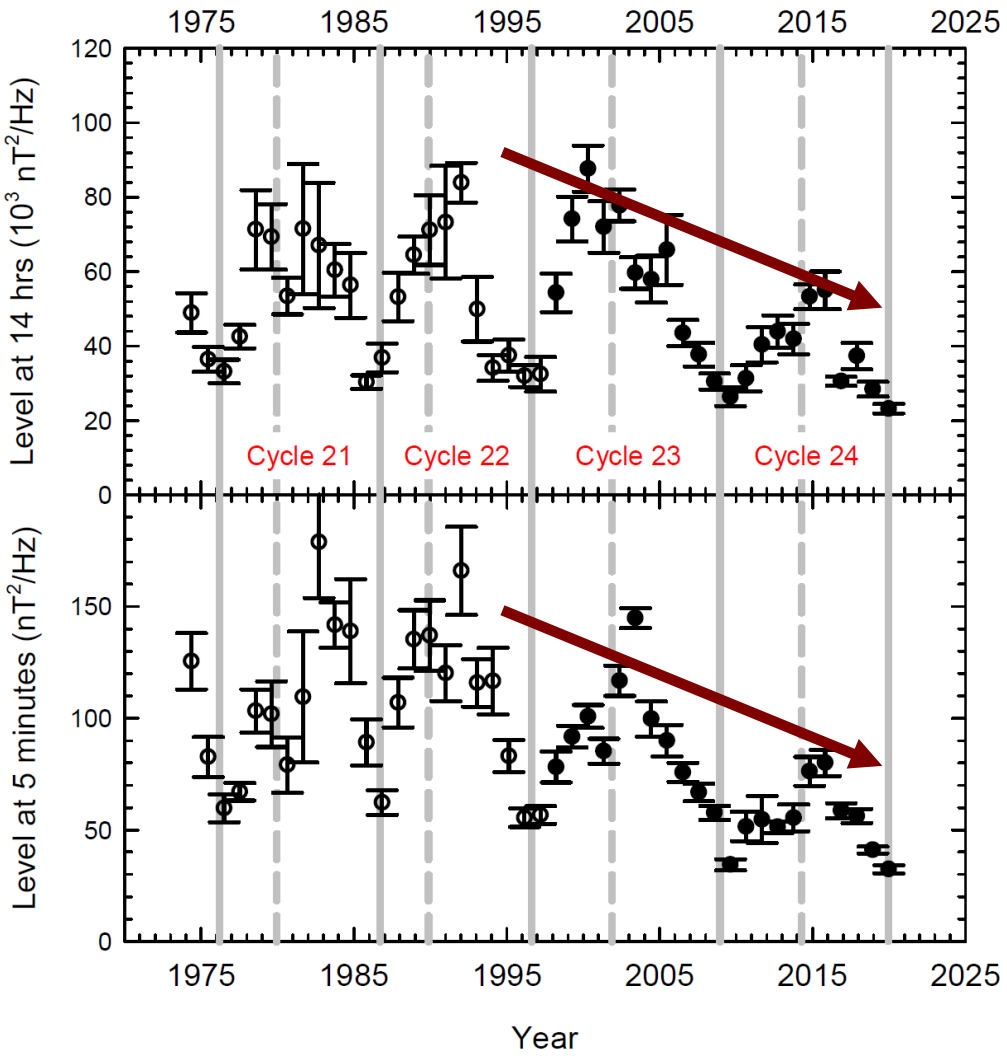
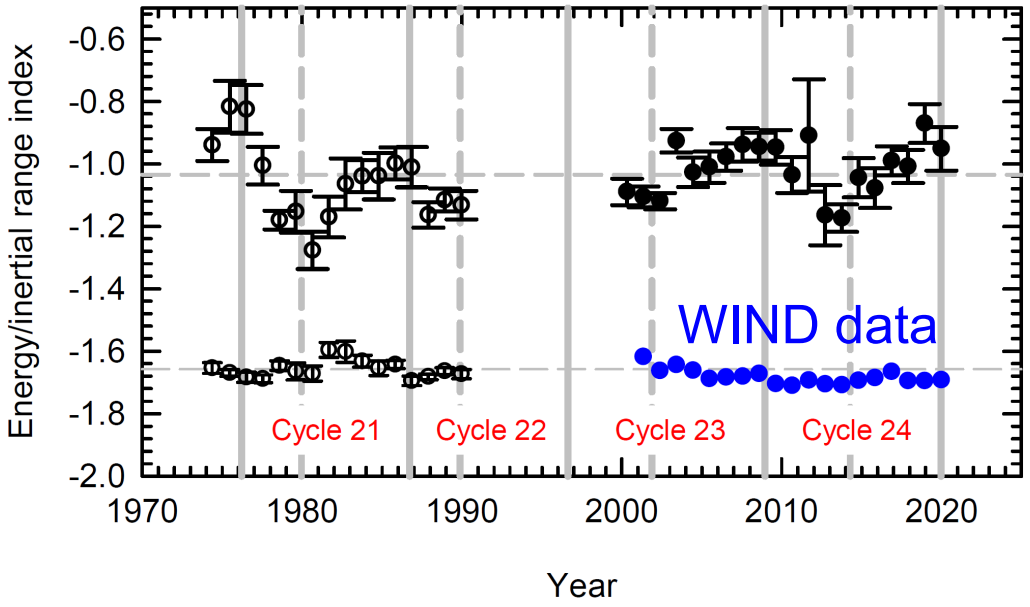


Fig 2: Spectral levels in the energy range (top) and in the inertial range (bottom) show a clear solar-cycle dependence. The behaviour of the ratio of the two levels indicates that the bend-over scale also has a solar-cycle dependence. As is the case for the magnetic field and the variance, there is a significant decrease in the levels over this period.



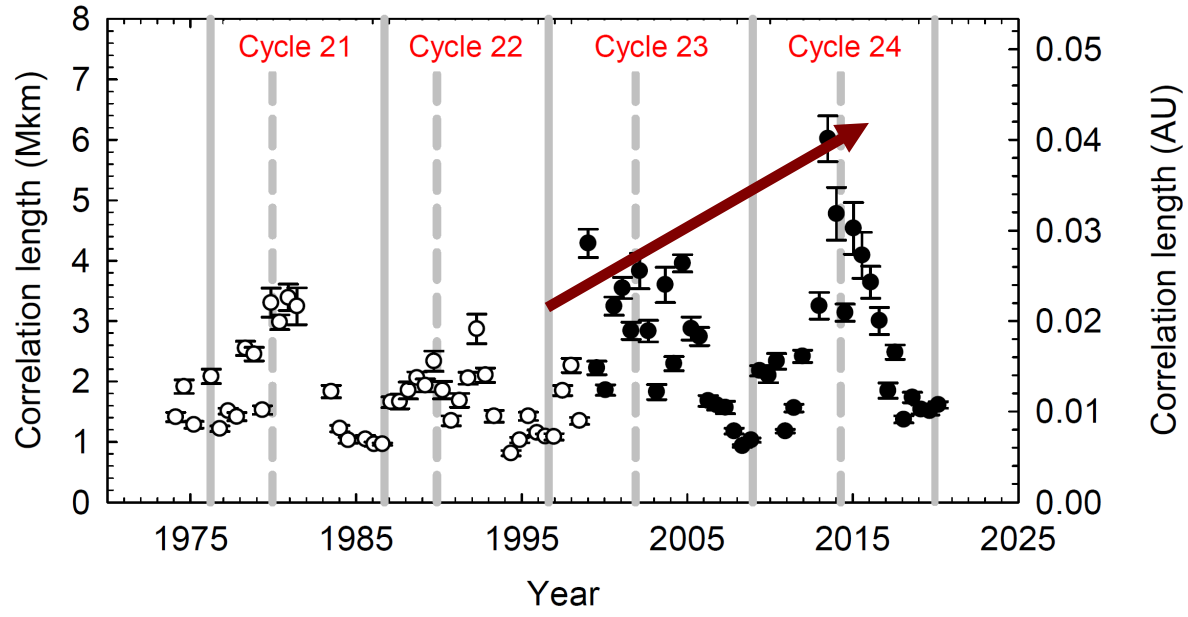


Fig 3: Data for the energy range spectral index are very variable during the period 1990 and 2000. If these are discarded, the remaining data show an 11.1 yr periodicity with a false-alarm probability of $p = 0.022$.
The inertial range spectral index is consistent with the Kolmogorov -5/3 value. There is a small difference between ACE and WIND data, here the latter is shown in blue.

Fig 4: Correlation lengths calculated from the 2nd order structure function also show a clear solar-cycle dependence with a significant increase in values from cycle 22 to 24.