Geophysical Research Abstracts, Vol. 7, 03417, 2005 SRef-ID: 1607-7962/gra/EGU05-A-03417 © European Geosciences Union 2005



Statistical Analysis of the Solar Cycle 23 with Sunspot Solar Feature Catalogue

S. Zharkov (1), V.V. Zharkova (2)

Cybernetics Department, Bradford University, BD7 1DP, UK

The statistical properties of sunspots (distribution in sizes and longitudes) during the 9 years of the solar cycle 23 (1996-2004) are determined based on the results of automated sunspot detection in white light SOHO/MDI images used in SFC http://www.cyber.brad.ac.uk/egso/. The distribution of numbers of sunspots versus their area is a well defined power-law function that decreases logarithmically with the area increase. The results for the whole period of observation show that only a total number of sunspots rises and decreases with the rise and decline of the cycle while the shape of the area distribution of sunspots is independent of the cycle while revealing a decrease in the number of sunspots towards the cycle decline with a constant scaling factor for all areas. Existence of active longitudes is confirmed during the solar cycle 23. As expected from the other cycles, there are largest active complexes of activity located at the active longitudes being separated by 180^{circ} . However, in addition, there are also the smaller activity complexes having periods of \$30^{\circ\$} and \$60^\circ\$ that were not reported in the previous cycles. The activity complex North-South asymmetry and migration from one solar rotation to another are also investigated.