



## **Signature of Hale and Gleissberg cycles in the geomagnetic activity**

**C. Demetrescu**, V. Dobrica

Institute of Geodynamics, Bucharest, Romania (crisan@geodin.ro)

The aa index, designed to describe the geomagnetic activity at global scale has been shown by several authors to have increased in the 20th century by cca 100%. In terms of 11-year running averages there is a long-term similarity between aa, R (the sunspot number), the solar irradiance and the geomagnetic indices x, y, z, r designed to characterize the solar quiet daily variation, controlled by the solar UV radiation. This implies that both the heliospheric conditions at 1 AU (and the open solar magnetic field), for which aa stands as a proxy, and the photospheric conditions (and the solar irradiance), for which R and x, y, z, r stand as proxies, are subject to the same long-term variations, caused by processes developing in the Sun. We show that the variation depicted by 11-year running averages of aa and R (and by consequence also of the other parameters mentioned), defining a so-called overall magnetic trend, results from the superposition of Hale and Gleissberg cycles signatures in the corresponding time series. Characteristics of the two cycles are discussed.