

ENCORE OF THE BASHFUL BALLERINA IN SOLAR CYCLE 23

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The rotation averaged location of the heliospheric current sheet has been found to be systematically shifted southward for about three years in the late declining to minimum phase of each solar cycle. This behaviour, called now by the concept of the Bashful ballerina, has been shown to be valid at least during the active solar cycles of the last century since the late 1920s. The IHY CIP program number 67 “Steps of the Bashful Ballerina: Global structure of the Solar/Inner Heliospheric Magnetic Field” studies these interesting global solar developments and their heliospheric/magnetospheric consequences. Recently, Zhao et al have analysed the WSO solar magnetic observations and conclude that there is no southward shift in HCS or north-south difference in the heliospheric magnetic field during the late declining phase of solar cycle 23. In disagreement with these results, we now find, using the HMF observations at 1 AU and their coronal sources as given by the WSO PFSS model, that there is a similar but smaller southward shift of the HCS during solar cycle 23, as in all previous solar cycles. This is further verified by the direct observations of the HCS location by Ulysses during its third fast latitude scan pass in 2007. The smaller asymmetry in SC 23 is in agreement with an earlier observation based on long-term geomagnetic activity that solar hemispheric asymmetry is larger during highly active solar cycles.

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