



Long Dance of the Bashful Ballerina

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We have shown that the heliospheric current sheet (HCS) is southward shifted or coned during the late declining to minimum phase of the solar cycle. This rule, called the bashful ballerina, was first found in the 40-year OMNI data set of the heliospheric magnetic field (HMF) observations at 1AU, and later verified by observations of the solar photospheric magnetic field for the last 30 years. This north-south asymmetry is due to a large scale solar quadrupole field synchronized with the oppositely oriented solar dipolar field. Here we extend the study of the north-south asymmetry of the HCS using a recent data set of HMF sector polarities extracted from ground-based magnetic observations. We find that the HCS was similarly southward shifted during the late declining to minimum phase of the solar cycle in the early part of the studied data interval (1926-1955). Accordingly, the solar ballerina has been bashful at least during the last 80 years. We also discuss the solar cycle 19 which presents a period of a very curious behaviour for the HCS with an exceptionally large HMF toward sector dominance in 1957, the year of cycle 19 maximum, and an equally strong away sector dominance in 1960, the time of final solar polarity reversal.