A statistical test of the assumptions used to form a minimal substorm model and the complications of the intrinsic correlations in the solar wind.

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A minimal model for the evolution of the global dynamical state of the magnetotail during the substorm, involving only three simple rules has been developed. The model considers the general state of the magnetospheric system rather than concentrate on the physical nature of the substorm instability. When driven by a real solar wind power input, the minimal substorm model produces a probability distribution of times between substorm onsets that compares favourably with the distribution of 1001 inter-substorm intervals found by Borovsky et al. from observation. In this paper we examine the validity of the assumptions behind the model, specifically that the integrated solar wind input between two contiguous substorm onsets is proportional to the solar wind input at the time of the first substorm. We do this by comparing the integrated solar wind input between pairs of substorm onsets with the solar wind input at the time of the first substorm onset for a set of observed substorm pairs. The significance of the correlations found in our tests are considered in the context of the intrinsic correlations in the solar wind.