Possible signatures of local and nonlocal processes seen at 1AU in the intermittent turbulent solar wind.

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The solar wind provides a natural laboratory for observations of MHD turbulence over extended temporal scales. A hallmark of turbulence is scaling in statistical measures of fluctuations in the flow. In data this is quantified by testing for scaling in the Probability Density Functions (PDF) of fluctuations either directly, or via structure function analysis. Comparisons can then be made, at least in principle, with turbulence phenomenologies which predict both an underlying scaling exponent (for example, 1/3 in the case of Kolmogorov) and an intermittency correction. Fluctuations in certain solar wind in- situ bulk plasma parameters, such as mass and energy densities, are then found, from WIND and ACE observations, to exhibit underlying Kolmogorov-like scaling on timescales up to a few hours, the intermittency in the system being expressed through the non-Gaussian nature of the fluctuations PDF. Parameters that more closely reflect Alfvenic phenomenology are found, on the other hand, to have underlying scaling that is closer to that of Iroshnikov- Kraichnan. One interpretation of the co- existence of these scalings in the solar wind is that they reflect both local and nonlocal phenomenologies, the implications of this for our understanding of the evolving solar wind will be discussed.