

# Latitudinal Intensity Structure in Solar Particle Access to the Earths Polar Caps and Interplanetary Particle and Field Parameters

Blake, J. B.,<sup>1</sup> Mazur, J. E.<sup>1</sup>, Looper, M. D.<sup>1</sup>, Mewaldt, R. A.<sup>2</sup>

<sup>1</sup>*The Aerospace Corporation, Los Angeles, CA*

<sup>2</sup>*CalTech, Pasadena, CA*

## Abstract

Solar particle intensity structure over the Earths polar caps was studied extensively in the 1960s as a means of determining the access points of solar particles to the magnetosphere. Interest vanished with the disappearance of low-altitude polar-orbit missions containing appropriate instrumentation, and the absence of improved geomagnetic field models. One of the original goals of the SAMPEX Science Team was to revisit the question of solar particle access using the greatly increased capabilities of the SAMPEX instrumentation, especially geometric factors. However the launch date of SAMPEX in July 1992 marked almost the end of significant solar particle events during that period of the decline to solar minimum. The return of frequent solar particle events now has enabled us to begin these particle access studies. Detailed knowledge of the interplanetary input conditions from WIND and ACE also have greatly helped this work. We have seen not only the large-scale structures seen in the early work, but also variability on much shorter time scales - tens to hundreds of seconds. Although some of this variability appears to be interplanetary in origin, the observations suggest that periodicity in the magnetospheric access occurs at times. Several examples of the variety of solar particle access will be shown, and placed in the context of interplanetary and magnetospheric conditions.