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Abstract

**Impulsive Nitrate Enhancements in Polar Ice:
A Historical Record of Large Fluence Solar Proton Events**

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Impulsive increases in the nitrate measurements in polar ice are recognized in the solar-particle community as proxies for identifying the occurrence of large fluence solar proton events. Using a 125.6 meter ice core from Summit, Greenland, covering the period 1561-1950, we have identified 70 unique solar proton events with a > 30 MeV fluence $> 2 \times 10^9$ cm⁻². Nineteen of these events were larger than the "well known" August 1972 events which are often used as the "standard" against which one must prepare. This presentation will cover the historical background leading to this identification, the dating process, examples of extremely large events such as the Carrington Event in 1859, the correlation with low-latitude auroral sightings, and a discussion of possible locations where ice cores might be drilled for further research.