

Robert
Leamon
Lynker Space
Scott McIntosh, Lynker Space
Poster

It is important to understand that sunspot number maximum, solar eruptive activity maximum and geomagnetic effectiveness maximum are not one and the same.

The difference between odd and even numbered Schwabe (11-year) Cycles -- halves of the {\bf Hale Cycle} -- in terms of cosmic rays (global solar dipole being parallel or anti-parallel to the local ISM field) is well known. That is, a difference external to the sun and heliosphere.

Here we show that differences exist in various other activity measures and proxies, including flare occurrence rates, solar wind parameters and geomagnetic indices. These differences between odd and even cycles are intrinsic to the sun, or even internal to the sun.

Odd cycles, of which Cycle 25 is one, tend to produce X-class solar flares for longer after polar field reversal/sunspot maximum than even cycles. Current expectations of the "last best flare" for Cycle 25 is late 2027. Further, following the polar field reversal, the alignment of the sun's and the earth's large-scale dipoles is such that the most geo-effective storms in odd cycles (think Halloween 2003) occur on their Downsides.

We discuss the implications of this for Operators and SWx End Users: While the "Gannon Storm" of May 2024 may end up being the single largest event of Cycle 25, it will not be a "once in a lifetime" event; we expect that it would not even be the only event with significant geo-effective consequences (GNSS degradations, etc.) of Cycle 25.

Poster category:

Poster category
Solar and Interplanetary Research and Applications
Meeting homepage
[Space Weather Workshop 2025](#)
[Download to PDF](#)