



## **Strong driving of Earth's magnetosphere: open questions about sawtooth events**

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Sawtooth events in Earth's magnetosphere are large-amplitude oscillations of energetic particle fluxes and geostationary magnetic fields with a period of about 2-4 hours. Initially thought to be a separate class of events, current thinking leans more towards seeing them as a subset of large, recurrent substorms. Despite this development, there are some unique characteristics of sawtooth events that either have not yet been fully understood, or which are indeed unique when compared to large, non-storm substorms. The sawtooth recurrence rate is shorter than for non-storm substorms, and there is no clear indication as to the driver of the activations. Unlike non-storm substorms, sawtooth activations are also often remarkably efficient in injecting large amounts of oxygen into the ring current. In this paper we discuss the impact of solar wind driving on sawtooth event characteristics in the inner magnetosphere specifically geared towards shedding additional light on these issues.