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The association of Substorm Chorus Events with drift echoes of substorm injected electrons.

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Over recent years Substorm Chorus Events (SCEs) have been proposed as a useful indicator of substorm onset. The events are regularly seen in the data from the VELOX (VLF/ELF Logger Experiment) instrument at Halley, Antarctica, which has provided over a decade of near continuous observations. SCEs are generally thought to be excited by the injection of electrons near midnight as they gradient-curvature drift towards dawn. On close one-to-one inspection of SCEs seen at Halley and energetic electron signatures seen with the LANL geostationary spacecraft we have found that many events are associated with the drift echo of the injected electrons rather than the initial injection. In this paper we present some example events as well as the relative statistics. We also present an argument that drift echoes may in fact present more favourable conditions for the generation of the whistler mode chorus seen on the ground as SCEs.