

The IPS Extreme Space Weather Service

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An Extreme Space Weather Service is being developed at the Australian Ionospheric Prediction Service (IPS) to cover very large events and predicting their effects on specific technologies. Several technologies such as power grids, aviation GNSS approach systems (e.g. GBAS) and spacecraft have high thresholds before space weather takes effect, but often they also have very strong responses once that threshold is crossed. Very strong GICs cause HV transformer failures in power grids, very strong ionospheric gradients cause larger than acceptable errors in GBAS and spacecraft can have critical damage from dielectric discharge and SEUs. IPS aims to provide a service to these technologies above its normal services, based on cumulative observations of various parameters during large, usually CME related, events and analytically underpinned by a linear modelling technique of an optimized regressive storm model.