

Injections of relativistic electrons jointly observed with POLAR-TG2 and RHESSI during geomagnetic storms

Ping Zhang, Wojtek Hajdas, and Hualin Xiao

Paul Scherrer Institut, Laboratory For Particle Physics, PSI-Villigen, Switzerland (wojtek.hajdas@psi.ch)

Both POLAR instrument onboard of the Chinese TG2 Space Laboratory as well as the Reuven Ramaty High Energy Solar Spectroscopic Imager (RHESSI) NASA Small Explorer proved to be very valuable for space weather studies. In addition to its main Ge-spectrometer RHESSI also contains a small radiation monitor measuring charged particles in two energy bands above energy deposition thresholds of 65 keV and 650 keV. Due to its location perpendicularly to the spacecraft rotation axis the monitor, with a field of view of about 5 deg only, continuously scans the sky with the 4 sec period. This feature allows for precise mapping of the incoming radiation directionality and measurements of its pitch angle distribution. The POLAR instrument wide field of view covers about a third of the sky while its 40x40 array of fast plastic scintillators is also direction sensitive. POLAR energy range spans from about 10 keV up to 500 - 1000 keV allowing for accurate determination of the incoming particle energy spectra. Both instruments are sensitive to energetic particle injections occurring during geomagnetic storms induced by solar events. Thus, the complementary data analysis makes it possible for determination of directionality maps and energy spectra of injected electrons. Time dependent event dynamics on the level of sub-seconds is also feasible helping to pin down various acceleration models. We present details of data analysis and provide first results for energy spectra and directionality maps correlated with selected SEP and CME events.