TEST ALERT SERVICE AGAINST VERY LARGE SOLAR ENERGETIC PARTICLE EVENTS WITH HARD SPECTRA

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The Aragats Solar Environment Center (ASEC) located on Mt. Aragats provides real time monitoring of different components of secondary cosmic ray fluxes. We plan to use this information to establish an early warning alert system against *extreme, very large solar particle events with hard spectra* dangerous for the satellite electronics and for the crew of the Space Station. ASEC neutron monitors operating at altitude 2000 m and 3200 m are continuously gathering data to detect possible abrupt variations of the particle count rates. Additional high precision detectors measuring muon and electron fluxes along with directional information are being commissioned on Mt. Aragats. Registered fine structures of the Ground Level Enhancements (GLE) in neutron and muon fluxes are analyzed to reveal possible correlations with expected times of arrival of dangerous solar energetic particles.

One of the most important features of the alert service must be its reliability, timeliness, and ease of access to the customer. Thus as soon as the high energy particles from severe solar storms arrive at earth, the data must be analyzed very quickly, processed and sent to the customer, allowing to take mitigation actions.

The alert service comprises of a distributed network of detectors, readout computers and servers issuing the alert to the customer via e-mail.
The data from each detector is stored on hard disks of on-line computers in 1-minute intervals. FTP server running under LINUX OS every minute initiates parallel downloading processes for each of the 3 ASEC detectors.

Also every minute the server initiates procedure which performs checks for abrupt increases on the latest available data. Independent data from the three monitors ensure robust operation against false alarms due to technical or human error. If 2 out of 3 detectors demonstrate more than 3σ increase in the count rate, the *Strong Radiation Hazard Alert* is issued.
The time from arrival of the energetic particles at the detectors to the delivery of the alert is expected to be not more than 3 minutes.

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