GLE alert and express estimation of the SEP spectrum by the neutron monitor data in Real Time.

Criteria of the GLE ALERT signal creation for each station and common signal.
Choose of the base period.
The first full hourly interval preceded GLE is chosen as the base period. This period is moving with the current time, but if it is found that enhancement started this time interval remains fixed up to the end of recorded enhancement.
Choice of threshold level and criteria of an alert signal formation.
 The choice of a level of selection of events at formation of alert signal is very important and critical. The aspiration to lower selection level (for example, 2.5 σ) creates the problems with false events. The choice of high level of selection (for example, 5 σ) leads to the admission of small GLE. Really, statistical accuracy of the minute data of the neutron monitor 18NM64, which are in the majority, nearby 1 %. We choose level of selection of 3 %.
Choice of the time-resolution of data used.
        Having developed an alert signal at each station, at a following stage it is necessary to unite this information and to develop the general signal. Can happen that at small and enough anisotropic GLEs, for parts of stations it will not be feasible to get an alert signal. Therefore at development of general ALERT signal it is necessary to use soft enough conditions to consider a possible situation of possible anisotropic GLE. The analysis of retrospective events has shown that at generation of general signal ALERT it is enough to have alert signal on 60 % considered stations. It has proved to be true on 12 events investigated by us without formation of a false signal.

Data from which stations are used for producing GLE ALERT in Real Time?
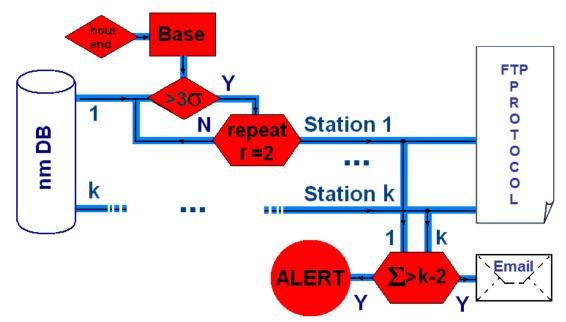For formation an alert signal it is enough to use the data of several (4-6) high-latitude stations in regular intervals located on a longitude. For reliable definition of spectrum GLE it is necessary to include in addition middle-latitude and even equatorial stations. Depending on used model it can be from 10 to all possible number of stations, publishing data in a real time mode.
Auto testing of the ALERT system
Considered events are very rare, so, continuous testing of software and hardware therefore is necessary to provide. With this aim two copies of the program have to start. The first one analyzes the real data, and the second is used for system testing. In current date a year was replaced by the year in which the real GLE was observed in analogous month. As a result within a year the second program will monthly generate test alert signal as shown in table1, where the number of GLE in each month is taken from the former years.

Table 1.

1	2	3	4	5	6	7	8	9	10	11	12
069	059	060	061	057	51-53	059	064	042	065	067	070
2005-01/20	2000 07/14	2001 12/26	2001-04/18	1998-05/06	1991 06/11; 1991 06/15; 1992-06/25	2000-07/14	2002-08/24	1989-09/29	2003-10/28	2003-11/02	2006-12/13

Block-scheme of a system for elaboration of ALERT signal of GLE

	STEP	RESULT
1	The general acquaintance with a resource http://cr0.izmiran.ru/GLE-AlertAndProfilesPrognosing/index.htm	Main web page of the site
2	Look the result of current ALERT analysis **2**	RESULT of the GLE Alert for the last 12 minutes.
3	Look the result of GLE spectrum calculation **3**	Results obtained for the GLE by retrospective data
4	Subscribing on automatic ALERT mail messages **1**	Dialogue window of a subscription and management.
5	Program protocol (real time) **4**	List for learning
6	Program protocol (retro) **5**	List for learning
7	Other Version of ALERT system established at Athens University **6**	Version of Athens University.
8	Last Xray+GLE+Protons EVENTs And Full List of GLE **7**	List of GLE и Xray, Protons EVENTs.
9	Real Time parameters of Space Weather **8**	acquaintance with a resource
10	NOAA Space Weather Alerts **9**	acquaintance with a resource
11	NOAA Space Weather Scales **10**	acquaintance with a resource.
12	Examples of a code in Perl for searching of solar protons **11**	acquaintance with a resource.
13	References **12**	Acquaintance with a list

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