of view of both sites. The data were then averaged in bins of 100 ms and looked for excesses (4σ with σ being the square root of the average rate over 200 seconds before the burst) in coincidence in at least 2 detectors. Thus, 2 bursts candidates for Chacaltaya and 2 candidates for Sierra Negra were selected by this method. These were individually checked and found consistent with statistical fluctuations. The highest signal in a 100 ms bin was then taken in order to set a limit to the fluence between 0.5 GeV and 100 GeV assuming a spectral slope of -2.2, with a formula based on simulations (De Castro 2009).

Bursts can furthermore be searched independently of satellite data. However, should such a burst be found it would be very difficult to attribute it to a cosmic event and reject any possible instrument noise, unless a correlation is found between sites. The current large angular separation between the two sites of LAGO makes such a coincidence unlikely. New sites in between (Venezuela, Peru, Colombia) will greatly increase this possibility (Bertou 2010).

3.2. *LAGOVirtual for Data storage, access and sharing*

Nowadays the cost, sophistication and rapid advance of new experiments makes it essential that previous results remain accessible for accountability, re-analysis, and training of future generations. These needs have prompted the Open Data Movements (Arzberger et al. 2004; Sabourin & Dumouchel 2007; Xu 2007).

The LAGO Collaboration has developed a prototype of data repository, `LAGOvirtual` (Camacho et al. 2009) where the data are classified mainly into three types: instrument calibration data, data sets captured by the WCD instruments and simulated data. In the future we want the members of the collaboration use this repository also to preserve papers, thesis, Labs Notes and/or any documents related with the project. Each data file is tagged by a metadata set specifically adapted to LAGO. The existence and implementation of a scientific metadata standard model will allow an uniform access to data for all the members of LAGO colaboration, interoperability between scientific information systems, and will also contribute to data preservation and its usability in time. The metadata model we propose for `LAGOvirtual` is an adaptation of the model raised for the Council for the Central Laboratory of the Research Councils (CCLRC).

Metadata standardization allows the definition of common terminologies specifying entry, validation, access, integration and synthesis in automation, and ensures complete and accurate documentation of data-set content. Structures (classes) are composed of metadata items associated with descriptive semantic definitions for some of the possible data attributes. The incorporation of metadata demands an investment of time and effort, but ensures their relevance to future generations (Borgman et al. 2007).

The prototype of the data repository for the LAGO collaboration is implemented by adapting the system DSpace (DSpace), an open source software that enables open sharing of many types of content, generally used for institutional repositories. Dspace can expose the data and metadata through the Open Archives Initiatives Protocol for Metadata Harvesting (OAIPMH). This protocol is used by external systems to collect the data and metadata and create services of aggregated value like meta-searchers. Also offers the data through Really Simple Syndication channels, RSS, which is available at all levels in the structure of the repository. These channels are a simple mechanism to show contents recently submitted.

3.3. *Solar Program*

The LAGO solar program was started in 2010, and aims at using LAGO WCD for the study of galactic cosmic rays (GCR) modulation. GCR flux is modulated by solar activity, and is therefore an indirect indicator of this activity. Both long term variations (typically the 11 and 22 years solar cycles) and short term variations can be determined.

In order to do such studies, it is sufficient to use 5 minutes averages of the counting rates. One then has to correct for pressure effects, as a high pressure corresponds to a large amount of air above the WCD, hence a higher absorption of cosmic ray cascades, and therefore a lower counting rate. The anticorrelation of counting rate with pressure has been measured in Chacaltaya and is reported in (Augusto et al. 2010), together with some measurement of the GCR at the LAGO site. The increasing solar activity registered since end of 2009 points to a maximum of activity around 2013. LAGO will have many detectors in operation at that time to provide relevant GCR measurements at different geomagnetic cutoffs.

3.4. *Vertical Muon Flux and Seismic Precursors*

The purpose in this experiment is to utilize WCD used by LAGO to study the vertical muon flux, before, during and after a seismic event in Mérida-Venezuela. There is experimental evidence, but no general consensus, that variations of electromagnetic activity before an earthquake occur (Lockner et al.