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## The LAGO Space Weather Program: Directional Geomagnetic Effects, Background Fluence Calculations and Multi-Spectral Data Analysis

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The Latin American Giant Observatory (LAGO) is an extended Cosmic Ray (CR) observatory operating in nine Latin American countries. Within the LAGO framework, several scientific and academic programs are being developed and conducted. One of them, the LAGO Space Weather program, aims to produce real time, high time resolution and high quality data of the flux of secondary particles at each site of the LAGO detection network, complementing and expanding present measurements of the influence of Solar activity from ground level observations. The geographic distribution of the LAGO water-Cherenkov detectors (WCD) allows the measurement of simultaneous transient events at different geomagnetic rigidity cut-offs and atmospheric reaction levels. Moreover, the usage of this type of detectors combined with the new electronic system, allow the discrimination of individual pulses at the detector and to study the flux of secondary particles at each site at different bands of deposited energy in the detector. This program is intensively supported by a complex chain of simulations that accounts for geomagnetic and atmospheric effects and the different detectors response. In this work, the complete simulation chain is described, and the first multi-spectral analysis of the Forbush decrease of March of 2012 is presented.

### Collaboration

LAGO

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