GDAS atmospheric models in astroparticle shower simulations

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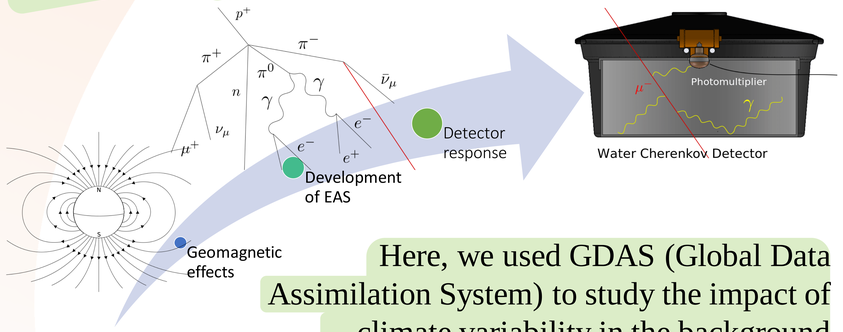
How the atmosphere influeces the background flux of secondary Cosmic Rays?

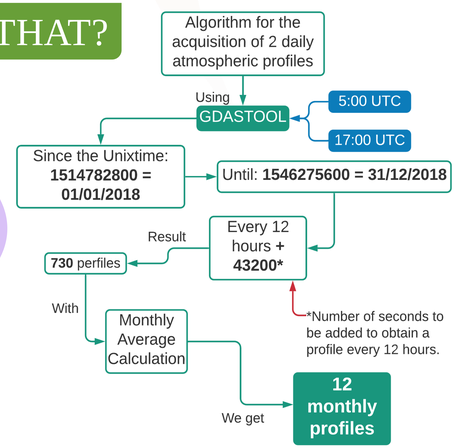
The LAGO collaboration exploits its array of detectors to examine the influence of space weather on the cosmic ray flux at the Earth surface.

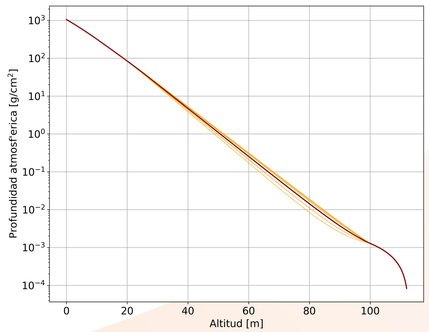


Here, we used GDAS (Global Data Assimilation System) to study the impact of climate variability in the background secondaty flux.

HOW WE DO THAT?

Creating monthly atmospheric profiles





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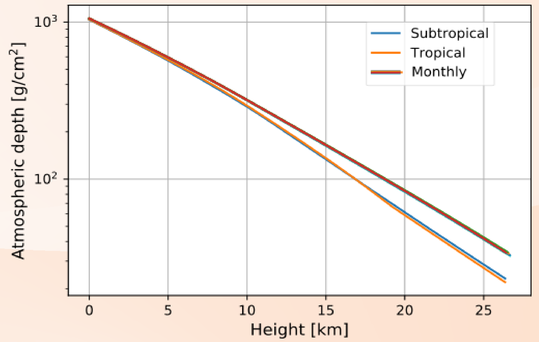
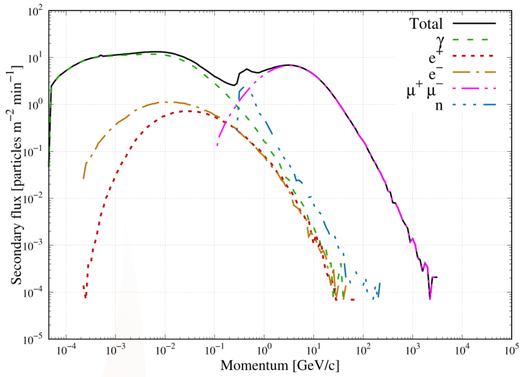
We observed some differences between the GDAS and the CORSIKA default models (tropical and sub-tropical summer) in the first 30 km.

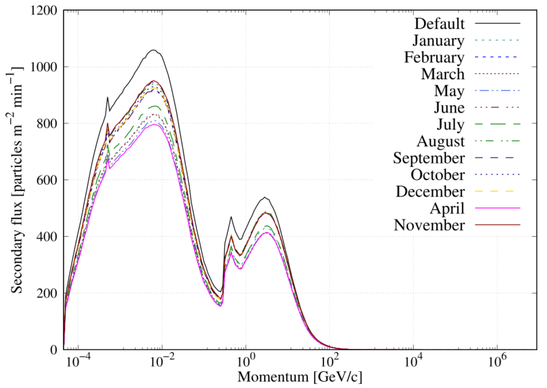


RESULTS



The secondary particle flux at ground level are composed by different particles that dominates at certain energies. We observed the known flux distribution with the new atmospheric profiles.

We observed some differences between April and November, the latter being the closest to the sub-tropical summer model.



SUMMARY

-**We** have **devised** a methodology that enables one to obtain a month-by-month averaged atmospheric profiles for any geographic location.

-**These** results **suggest** the importance of continuing to study these effects in greater detail.

-**Through** this work we **update** the sequence of simulations for the LAGO collaboration, to study the modulation of the solar wind on the flux of secondaries detected.

Scan for more information:

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