GDAS atmospheric models in astroparticle shower simulations







Height [km]

Universidad Industrial de Santander

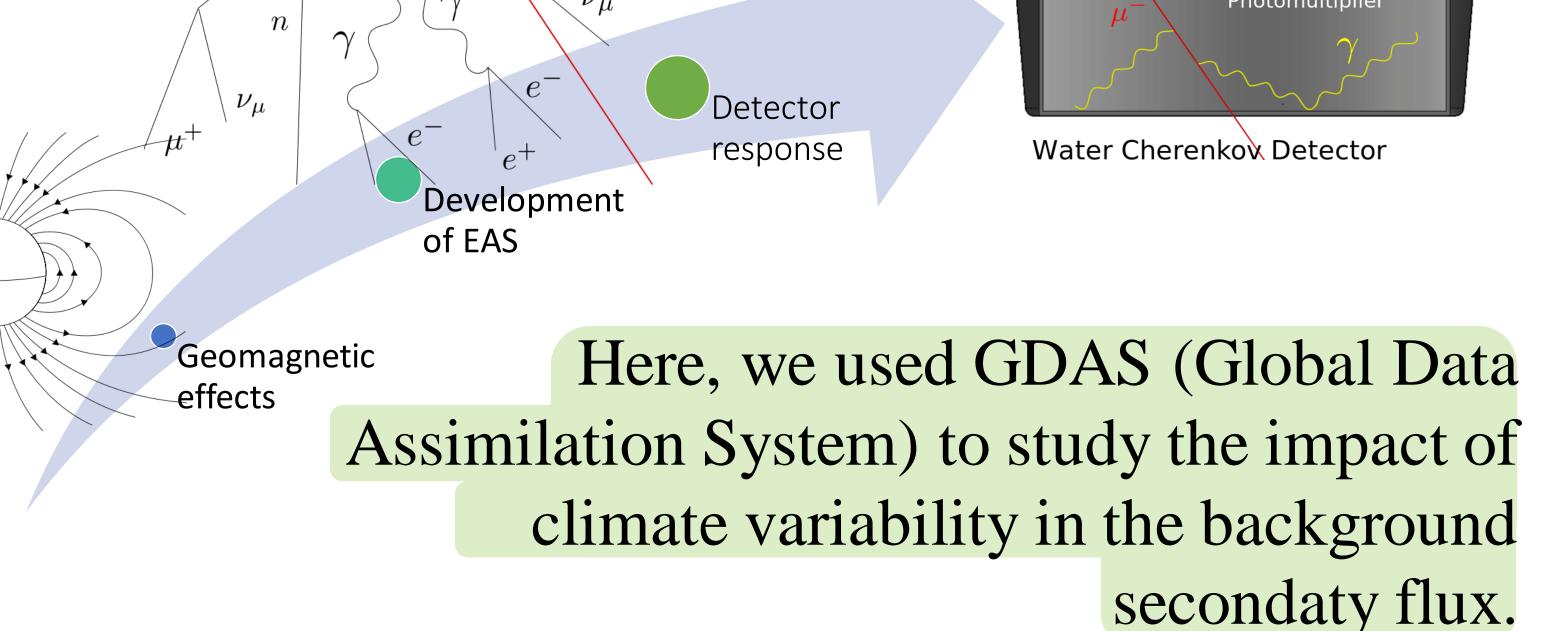
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How the atmosphere influeces the background flux of secondary Cosmic Rays?

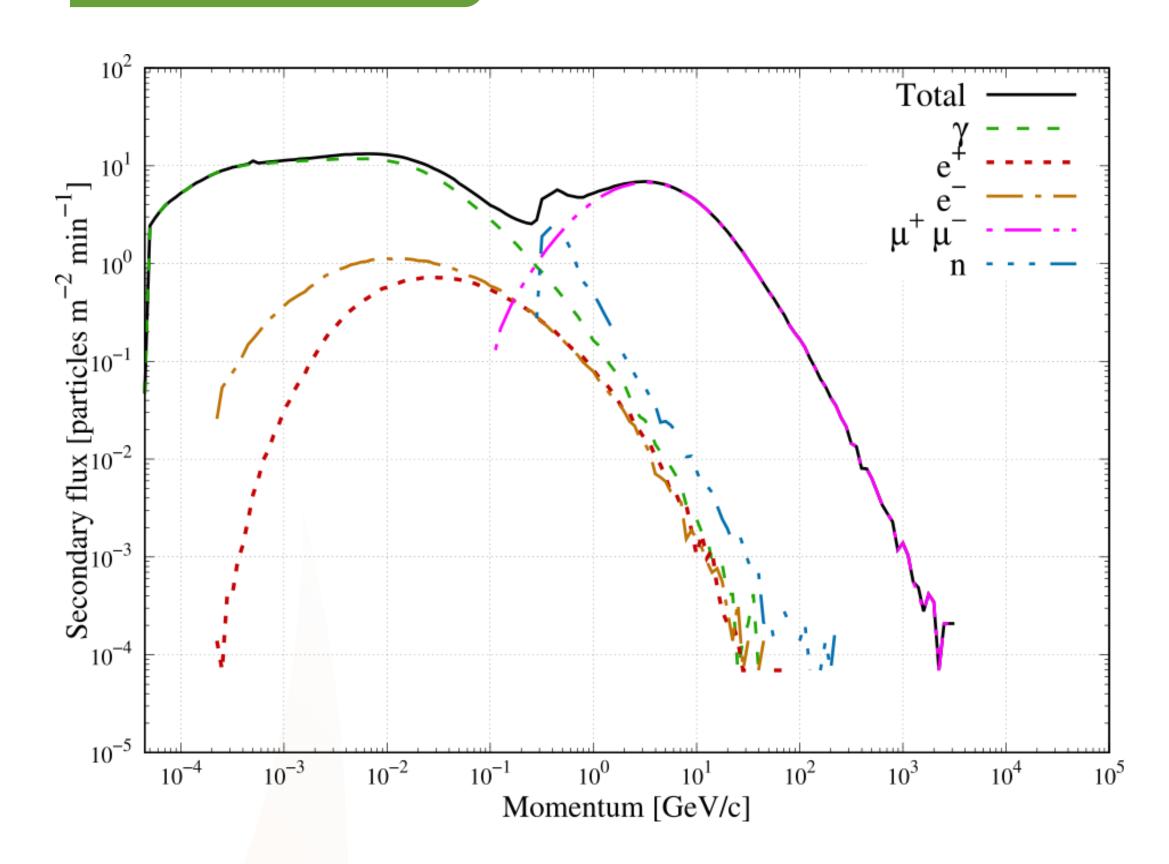
1 = Marambio (200 m)
2 = Machu Picchu (10 m)
3 = Bariloche (850 m)
4 = Buenos Aires (10 m)
5 = VinabelMar (347 m)
6 = La Serena (28 m)
7 = Tucuman (430 m)
8 = Asuncion-Paraguay (136 m)
9 = Sao Paulo-UPABC (760 m)
10 = Campinas (640 m)
11 = La Paz (3630 m)
12 = Cota cota(bo) (3917 m)
13 = Chacaltaya (5240 m)
14 = Cusco (3400 m)
15 = Lima (150 m)
16 = Huancayo (3370 m)
17 = Campina Grande (550 m)
18 = Riobamba-EPOSCH (2750 m)
19 = Quito-USFQ (2200 m)
21 = Pasto (2530 m)
22 = Bucaramanga (956 m)
23 = Pamplona (2342 m)
24 = Pico Espejo-ULA (4700 m)
25 = Merida-ULA (1893 m)
26 = Caracas-UCV (900 m)
27 = Caracas-USB (900 m)
28 = Guatemala (1490 m)
29 = Tacama (4606 m)
30 = Chiapas (522 m)
31 = Sierra Negra (4550 m)

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

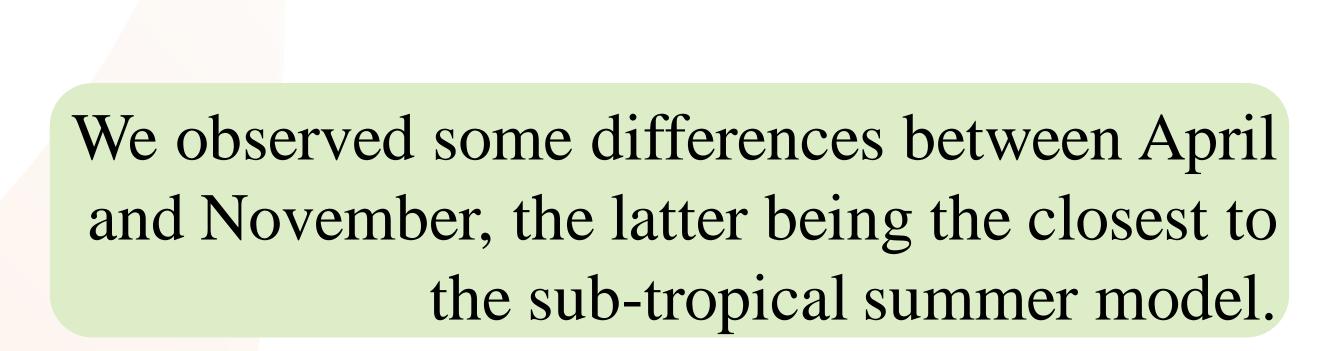


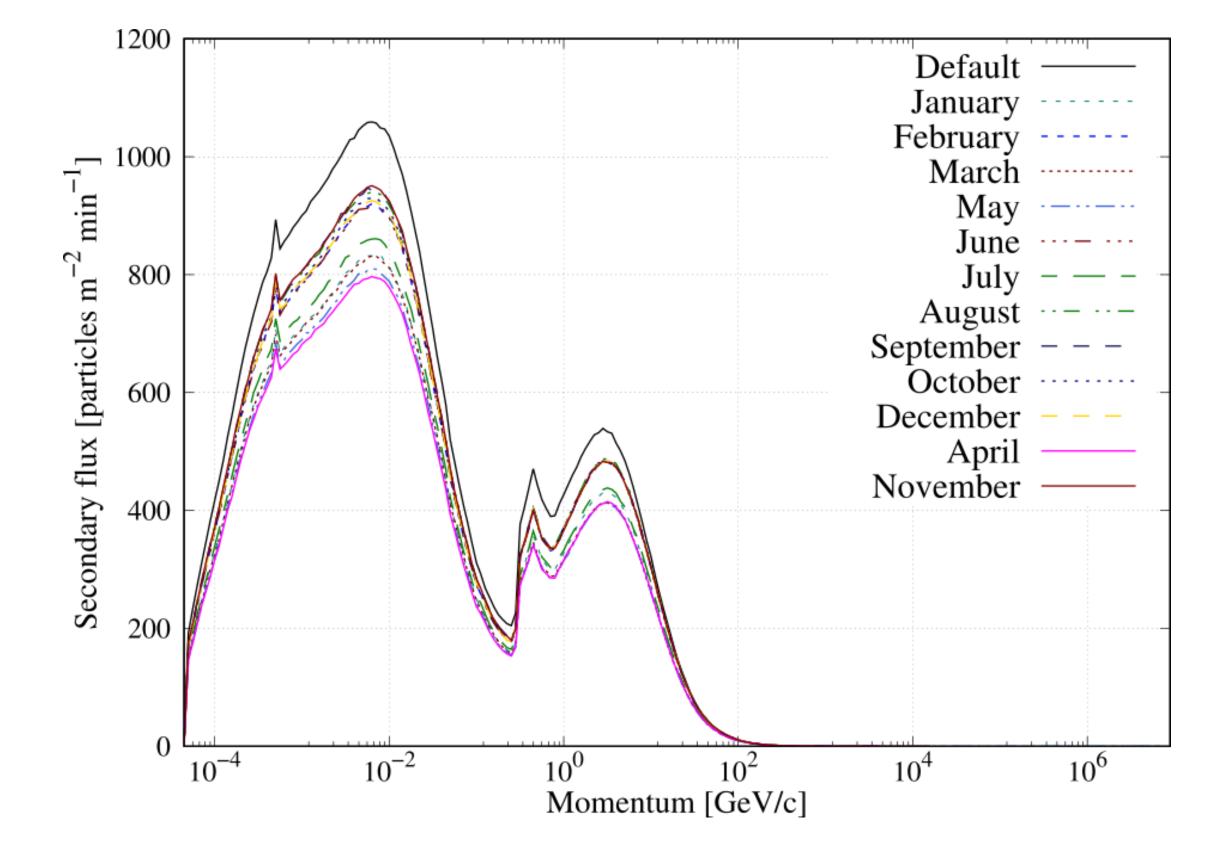
We observed some differences between the GDAS and the CORSIKA default models (tropical and sub-tropical summer) in the first 30 km.

RESULTS



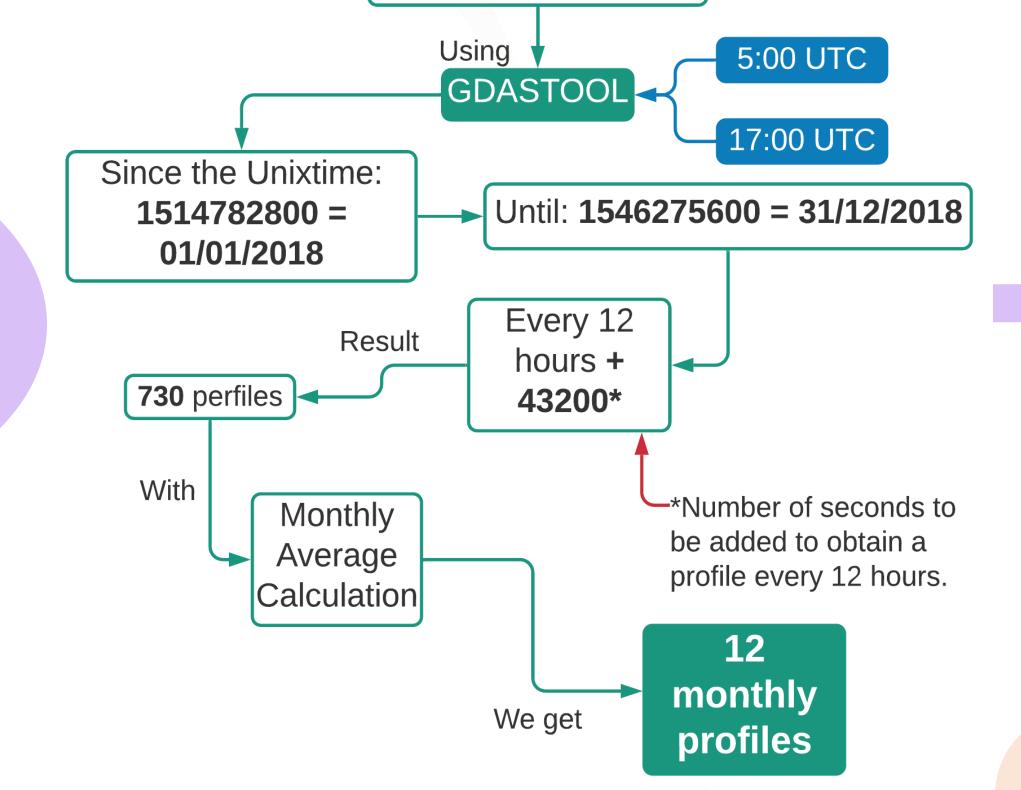
The secondary particle flux at ground level are composed by different particles that dominates at certain energies. We observed the known flux distribution with the new atmospheric profiles.





HOW WE DO THAT?

Creating monthly atmospheric profiles



Algorithm for the

acquisition of 2 daily

atmospheric profiles

10³
10²
10¹
10¹
10²
10⁻¹
10⁻³
10⁻⁴
0 20 40 60 80 100

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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