

GDAS atmospheric models in astroparticle shower simulations.

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Atmospheric conditions affect the development of cascades of secondary particles produced by primary cosmic rays. Global Data Assimilation System, implementing atmospheric models based on meteorological measurements and numerical weather predictions, could significantly improve the outcomes of the simulations for extensive air shower.

In this work, we present a methodology to simulate the effect of the atmospheric models in secondary particle flux at the Earth's surface. The method was implemented for Bucaramanga-Colombia, using ARTI: a complete computational framework developed by the Latin American Giant Observatory Collaboration to estimate the particle spectra on Water Cherenkov Detectors depending on the geographical coordinates. As preliminary results, we observe differences in the total flux that varies from month to month with respect to the subtropical summer atmospheric profile.

Keywords: flux, atmospheric, astroparticle, extensive, air, showers, models.