

AtmoHEAD: Atmospheric Monitoring for High-Energy Astroparticle Detectors



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Aerosol characteristics at VERITAS

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The stereoscopic Imaging Atmospheric Cherenkov Telescope array of VERITAS, situated at the F.L. Whipple Observatory administrative complex at the foot of the Santa Rita Mountains in southern Arizona, operates in the energy range between 100 GeV and 30 TeV.

The VERITAS collaboration engages in wide-ranging scientific and observational programs in the areas of galactic and extra-galactic gamma-ray emitters, in addition to measurements of the extragalactic background light and the search for astrophysical dark matter among others. All of the mentioned programs are dependent on accurate calorimetry and effective area estimates for spectral energy distribution plots and other scientific studies. Currently we estimate the systematic error in energy reconstruction of individual events to be of the order of 20%.

Present re-evaluation of atmospheric data, thanks to the introduction of a continuous operation 905nm ceilometer at the administrative complex since December 2011, has introduced the possibility of more accurate determination of the atmosphere's aerosol constituency at lower stratospheric, tropospheric and boundary layer levels. The proposed talk aims to present detailed interpretation of contemporaneous atmospheric data from IR cameras, ceilometer and the telescope array itself and assess if more accurate modeling can be achieved, with the ultimate aim of future implementation into radiative transfer simulations.

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