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# Investigating the effect of aerosol variations in high-level analyses of Cherenkov telescope data

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As aerosols influence the optical transmission properties of the atmosphere, variations in atmospheric aerosols yield variations in the signals from extensive air-showers (EAS) measured with imaging atmospheric Cherenkov telescopes (IACTs).
With the optical transmission of the atmosphere affecting the amount of Cherenkov light reaching IACTs, wrongly accounted aerosol levels yield a misinterpretation of the brightness of the detected signals. And as the number of Cherenkov photons produced in an EAS is related to its primary particle's energy, such unaccounted aerosol variations cause errors in the reconstructed particle energies. As this reconstructed energy is commonly used to bin the data for further spectral, morphological or temporal modelling of the data, any error on the reconstructed air-shower energy propagates to all higher levels of an analysis. In this contribution, the effect of unaccounted aerosol variations on high-level physics results from IACT data is investigated by simulating observations with the CTAO in gammapy and adapting the reconstructed EAS energies as expected for variations in atmospheric aerosol content observed at the southern CTAO site. This data is then used to reconstruct the properties of the simulated gamma-ray sources and the results are compared to results obtained from simulated observations which are not affected by changing aerosol levels.

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