

# Studying molecular profiles above the Cherenkov Telescope Array sites

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Cherenkov Telescope Array (CTA) will bring a whole new insight to the gamma-ray Universe. In order to fulfill its performance requirements we need to understand and correct the atmospheric effects that influence the acquired instrument data. For this reason we have studied atmospheric molecular profiles above both CTA sites, La Palma and Cerro Armazones, using publicly available historical data assimilation archives. Our study reveals that we can distinguish at least three differentiated epochs at the northern site and at least two at the southern site, if we want to model the molecular part of the atmosphere using average profiles, as with current Cherenkov telescope projects. Seasonal transitions are smoother in the southern than in the northern site, moreover the latter shows a greater amplitude in density variations at an altitude of 15 km, where variations are generally larger.

We explored also the deviations in the molecular profiles with respect to the mean value in a 6 year data set and saw that they are always within within the CTA site atmospheric requirements.

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