

Addressing the molecular atmosphere at the CTAO sites

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The Cherenkov Telescope Array Observatory (CTAO) has set ambitious goals in terms of energy and angular resolution. Achieving these goals requires a detailed understanding of the atmosphere over the CTAO sites and the development of atmospheric calibration methods. In this contribution, we focus on the molecular atmosphere. We discuss ongoing efforts to estimate systematic uncertainties in CTAO science performance introduced through atmospheric monitoring methods and variations in atmospheric conditions over different timescales. Subjects addressed include the validation of data assimilation system datasets over CTAO sites compared to weather station measurements, the effects of ozone variations (seasonal or stratosphere to troposphere transport events) on measured Cherenkov light density on the ground, and ongoing efforts to assess uncertainties introduced by the use of seasonal or tailored nightly molecular profiles. Finally, we discuss the molecular atmosphere calibration suite implemented in the calibration pipeline of the Data Processing and Preservation System (DPPS) of CTAO.

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