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Data quality monitoring in the presence of aerosols and other adverse atmospheric conditions with H.E.S.S.

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Cherenkov telescope experiments, such as H.E.S.S., have been very successful in the astronomical observation in the very-high-energy (VHE, $E > 100\text{GeV}$) regime.

As an integral part of the detector, such experiments use the earth atmosphere as a calorimeter. For the calibration and energy determination, a standard model atmosphere is assumed. Deviations of the real atmosphere from the model may therefore lead to an energy misreconstruction of primary gamma-rays.

To guarantee a satisfactory data quality with respect to difficult atmospheric conditions, several atmospheric data quality criteria are implemented in the H.E.S.S. software. These quantities are sensitive to clouds and aerosols.

Here, the Cherenkov transparency coefficient will be presented. It is a new monitoring quantity that is able to measure long-term decreases in the atmospheric transparency. The Cherenkov transparency coefficient derives exclusively from Cherenkov data and is quite hardware-independent.

Furthermore, its positive correlation with independent satellite measurements, performed by the Multi-angle Imaging SpectroRadiometer (MISR), will be presented.

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