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Atmospheric cloud monitoring Infrared Camera onboard NASA stratospheric balloon for Extensive Air Shower experiments

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The new generation of experiments for the indirect detection of cosmic radiation by observing Extensive Air Showers (EAS) in the atmosphere, requires continuous observation of the atmospheric physical properties in their Fiel of View. For this purpose, these experiments on ground and in space use large atmospheric volumes as calorimeters. One of the key points is the determination of the presence of clouds in the FoV of the infrared camera. The presence of clouds in the atmospheric detection volume modifies the transmissivity of the atmosphere producing scattering and attenuation of the fluorescence radiation generated by the secondary particles of the Extensive Air Shower on their way to the detector. We have developed a thermal space infrared camera capable of detecting the presence of clouds, determining their temperature and obtaining the Cloud Top Height (CTH). This parameter is essential for data analysis when an EAS is detected. This paper shows the analysis of the data obtained during 667N test flight of the stratospheric balloon launched by the CSBF/NASA in New Mexico.

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