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## Atmospheric Monitoring for The Telescope Array Experiment

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### Abstract

The hybrid Telescope Array (TA) experiment consists of three air fluorescence stations and a large plastic scintillator ground array of 760 km<sup>2</sup> large. The fluorescence stations look over the area of the ground array thus forming a hybrid detector. For the precise determination of the shower energy, the scattering loss of the fluorescence light in the transmission path to the telescope must be correctly estimated and corrected. The aim of the atmospheric monitoring system of the hybrid-TA is to achieve this with an accuracy better than 10%. The accuracy of monitoring is particularly important for such extensive air showers (EASs) that are dropping in the region of the ground array. These events will be detected by the telescope and the ground array independently and simultaneously, and will be used to cross-calibrate the energy scale of both systems. The atmospheric monitoring will be made by the lidar using the pulsed YAG laser located on the roof of each telescope station. A few more additional laser guns will be located in the center of the ground array area. The analysis will be made both for the back scattered light (lidar) and the side scattered light. In this paper, the results of field tests since 1997 in Utah and Akeno will be summarized and the plan of the TA atmospheric monitoring will be presented.