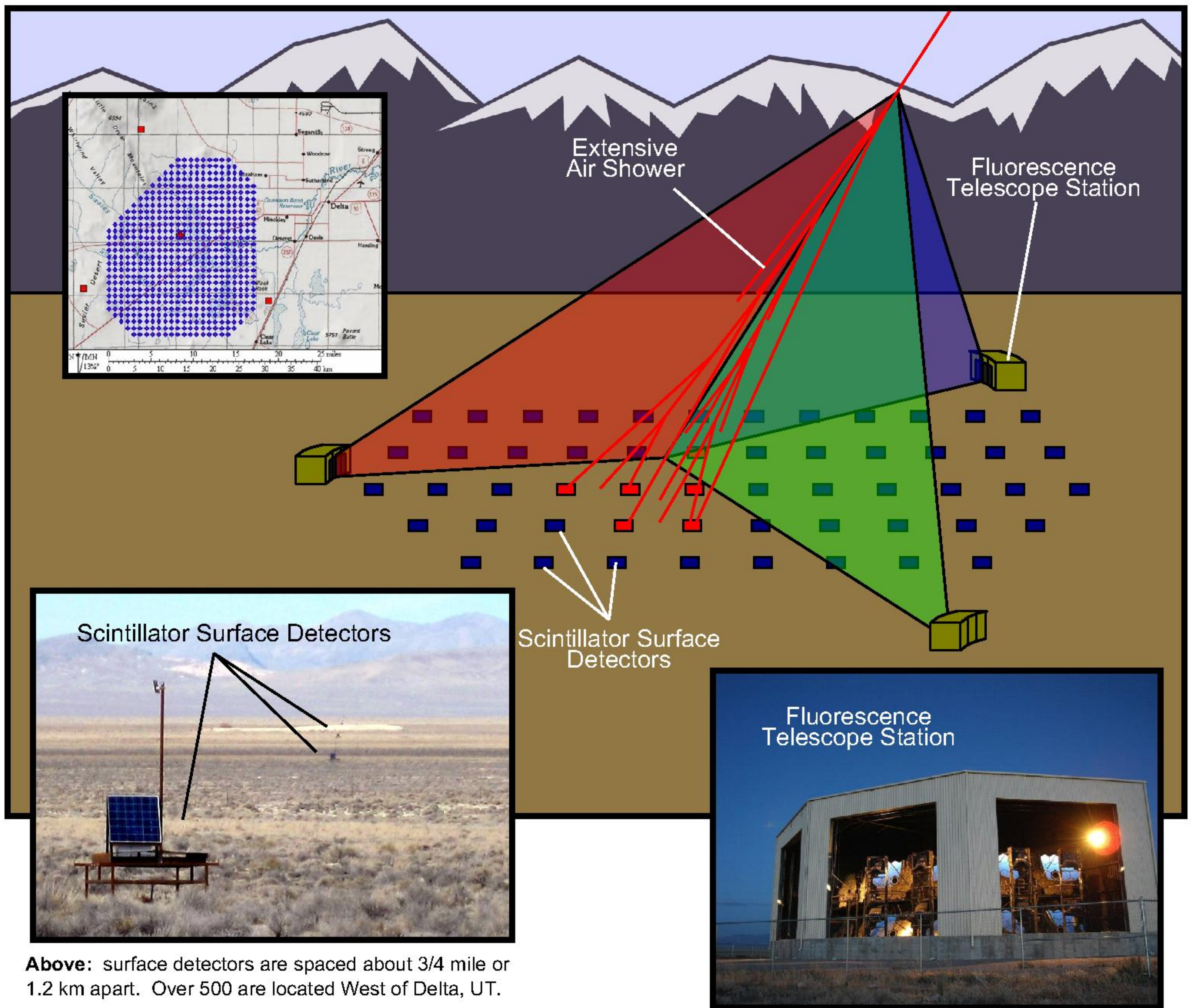


# Telescope Array

Telescope Array is an international collaboration of universities and research institutes. The University of Utah is the host institute and the experiment is located in Millard County, Utah.

The Telescope Array collaboration was formed from members of the High Resolution Fly's Eye (HiRes), and the Akeno Giant Air Shower Array (AGASA). These two groups, formerly competitors, were the world's experts in fluorescence and ground-based scintillation detection, respectively. The alliance of these groups also allowed them to combine the two main techniques for measuring ultra-high energy cosmic rays.

Telescope Array combines three fluorescence telescope sites with an array of over 500 surface detectors to cover a large area. Construction for the Telescope Array began in 2003 and 2008 marked the onset of data collection. The image below is an artist's rendering of how these three fluorescence telescope sites and the surface array detect a single cosmic ray event. The colored triangle wedges indicate the portion of the event which the fluorescence telescope observe and the red boxes indicate surface detectors hit by shower particles.



**Above:** surface detectors are spaced about 3/4 mile or 1.2 km apart. Over 500 are located West of Delta, UT.

**Above:** Fluorescence telescope sites contain large, spherical mirrors which observe the sky over the surface detector array. These are located at Black Rock Mesa, Long Ridge and Middle Drum. The sites operate on clear, moonless nights. Collaborators from the United States, Japan, Russia, Korea and Belgium work to maintain and operate the Telescope Array.

**Left:** Event display demonstrating the measurements of a cosmic ray induced extensive air shower by each of the detector systems. The three telescope stations (MD, BR, and LR) each see a track of light coming down through the atmosphere. The Surface Detector (SD) array measures the footprint of the shower when it reaches the Earth's surface. The color of the circle indicates the time information for when the pixel saw the light and the size of the circle indicates the amount of light which the pixel saw.

## Example Event from 2008 10 26

