Geophysical Research Abstracts
Vol. 19, EGU2017-8600, 2017
EGU General Assembly 2017

Angular Distribution of light emission in ELVES events

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The Pierre Auger Observatory, located in Malargüe (Argentina), is the largest facility (3000 kmq) for the study of Ultra High Energy Cosmic Rays (E>0.3 EeV). The four sites of the Fluorescence Detector (FD) are continuously observing the night sky with moon fraction below 50% (13% duty cycle) with 100 ns time resolution and a space resolution below one degree. Since 2013, the Observatory has implemented a dedicated trigger for the study of ELVES events, produced by lightning activity in Northern Argentina during summer months. A network of ancillary devices (lidars, cloud cameras, weather stations, lightning sensors, E-field mills) complements the FD data to correct for the variation of atmospheric optical properties.
This paper will report about the angular distribution of the light emission around the vertical above the lightning source and compare with existing models.