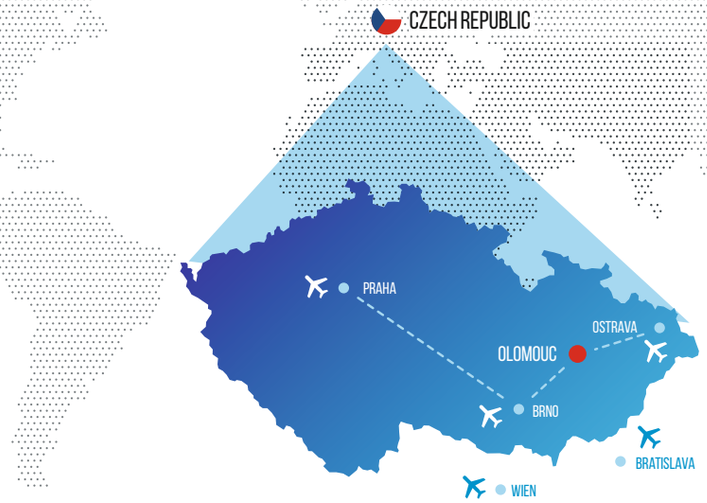
SIGNIFICANT INSTALLATIONS

PIERRE AUGER OBSERVATORY

UNAM

cta



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ALL-SKY **CAMERA**

AN EYE TO THE SKY

REGIONAL CENTRE OF ADVANCED TECHNOLOGIES AND MATERIALS

Palacký University Olomouc

REGIONAL CENTRE OF ADVANCED TECHNOLOGIES AND MATERIALS

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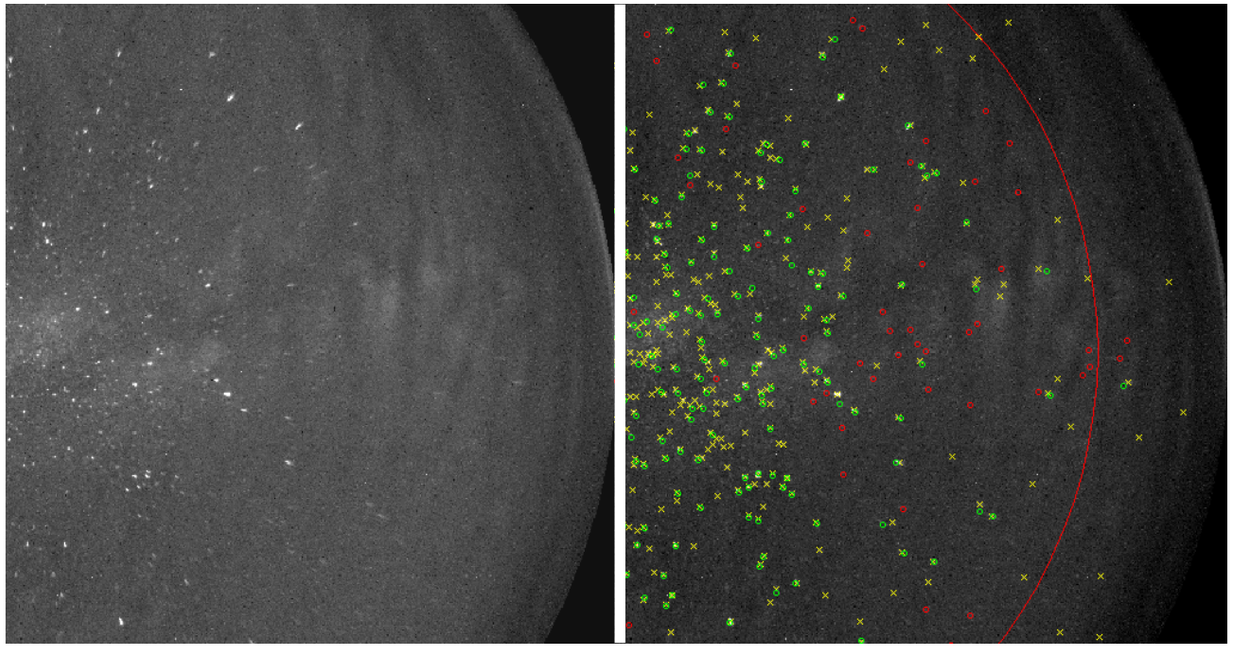
AUTONOMOUS ALL-SKY CAMERA

SIMPLE AND EFFECTIVE TOOL
FOR OBSERVATORIES AROUND THE WORLD

The All-Sky Camera is an autonomous and versatile night-time all sky imaging system. With high sensitivity and low dark current performs extremely well for night time imaging of the entire sky. Dedicated for both professional and amateur observers to monitor and evaluate the condition of the sky.

The All-Sky Camera maximizes effectivines and performance of an observatory by analyzing the real time sky conditions. It allows to monitor the sky conditions from a local control room or from any remote operating location. The clouds could be detected in advance using built-in algorithm and prevent so a long time exposure of a telescope. The system could operate fully independently far away from any energy source. Analyzed data are optionally stored in a database for future analysis and expertises.



The software for clouds analysis detects clouds in the field of view of the All-Sky Camera.
The red circles represent the stars covered by the thin cirrus clouds and show the position of the clouds.

TECHNICAL SPECIFICATIONS

> Resolution from 656 x 494 up to 3358 x 2536 pixels (color or monochrome)
> Canon/Nikon lenses
> Changeable filters (up to 5 position filter wheel; Johnsons or custom filters)
> Peltier cooling system - 45 °C below ambient temperature (resolution 0,1 °C)
> Dome heating system
> Power consumption <80 W
> Power supply independent (optional)
> Working temperature -20 ÷ 50 °C

BENEFITS

> Significant improvement of the measurement time of an observatory (knowledge of the cloud coverage in the field of view of the telescopes)
> Raw and fast atmosphere condition characterization
> Systematic and longtime study of the atmosphere and clouds conditions
> All aquired data stored in the database; detailed history is available (up to 1 min time resolution).
> Autonomous operation at distant places
> Full sky clouds localization with ±2 % precision and short-term prediction

SOFTWARE

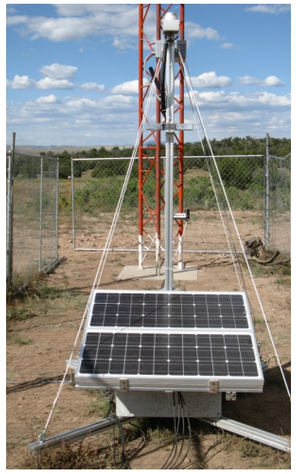
> Automated software for data aquisition and image processing
> Customizable measurement period, exposure, filter type
> Clouds position calculated by using astrometry algorithm and star catalogues
> Comparison of the visible stars positions with star catalog data

INSTALLATIONS

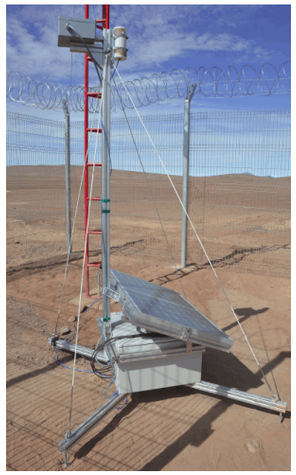
> Cherenkov Telescope Array (Nambia, Argentina, Mexico, USA, Spain, Chile, Czech Republic)
> Pierre Auger Observatory (Argentina)
> Observatorio Astronómico Nacional de San Pedro Mártir (Mexico)

SCIENTIFIC REFERENCES

> D. Mandat et all 2014 ATMOHEAD WORKSHOP http://arxiv.org/abs/1402.4762
> C. Fruck et al 2015 JINST 10 P04012 doi:10.1088/1748-0221/10/04/P04012
> http://www.gxccd.com/art?id=395&lang=409



CTA USA



CTA Chile

CTA Mexico