



Contribution ID: 890

Type: **Oral contribution**

## Preliminary results from the first EUSO-Balloon flight

*Tuesday, 4 August 2015 16:00 (1 hour)*

EUSO-Balloon is a pathfinder mission for JEM-EUSO with main objective to perform a full scale end-to-end test of all the key technologies and instrumentation of JEM-EUSO detectors, as well as a detailed and precise measurement of the UV background in different atmospheric and ground conditions, and a first measurement of air shower tracks from the edge of space. For its first flight, EUSO-Balloon was launched by the French Space Agency CNES from Timmins (Ontario, Canada) on the moonless night of August 24, 2014. After reaching the floating altitude of about 38 km, EUSO-Balloon imaged the UV background in the wavelength range 290 - 430 nm for more than 5 hours.

The spatial and temporal resolutions of the detector were  $\sim 200$  m and  $2.5 \mu\text{s}$ , respectively, and a full field of view in nadir mode of about 12 degrees. The UV data were complemented by Infrared (IR) images taken by an IR camera on board EUSO-Balloon.

During part of the flight, a helicopter circled under the balloon operating UV laser and flashers to simulate the optical signals from extreme energy cosmic rays, calibrate the apparatus, and characterize the optical atmospheric conditions.

EUSO-Balloon took more than 2.5 million images in flight that are being analysed to infer different informations:

- a) performance of the different parts of the detector;
- b) response of the detector to the UV flasher and laser events;
- c) UV radiance from the Earth atmosphere and ground in different conditions: clear and cloudy atmosphere, grass, forests, lakes, as well as city lights.

In parallel the data of the IR camera are used to localize clouds and estimate their cloud-top.

This contribution will summarize the preliminary results obtained concerning all the above aspects.

### Collaboration

JEM-EUSO

### Registration number following "ICRC2015-I"

314

**Primary author:** BERTAINA, Mario (Univ. & INFN Torino)

**Co-authors:** DEL PERAL, Luis (University of Geneva); VON BALLMOOS, Peter (IRAP)

**Presenter:** BERTAINA, Mario (Univ. & INFN Torino)

**Session Classification:** Poster 3 CR

**Track Classification:** CR-EX