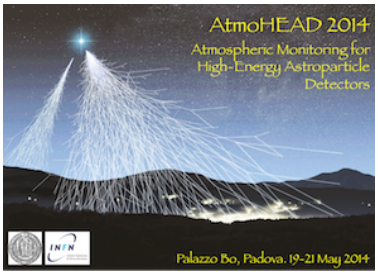

Contribution ID: **56** Type: **Oral**

Clouds phase identification based on brightness temperatures provided by the bi-spectral IR Camera of JEM-EUSO Mission

Tuesday, 20 May 2014 17:55 (25 minutes)

Cloud information is extremely important to correctly interpret the JEM-EUSO telescope data since UV radiation coming from the Extensive Air Shower can be partially absorbed or reflected by clouds. In order to observe the atmosphere and clouds in the field of view of the UV telescope the JEM-EUSO system will include an atmospheric monitoring system, which consist of a LIDAR and an IR Camera.
Different methods can be applied to retrieve the cloud top height from IR images: stereovision and techniques based on radiative measurements. Until now several radiative algorithms have been developed to retrieve the cloud top temperature from the brightness temperatures (BT) that the IR Camera will provide in two IR spectral bands (10.8 and 12 ⊠m). In some cases the performance of the algorithms depends on cloud phase: water, ice or mixed. For this reason the identification of the cloud phase is valuable information for the correct interpretation of the cloud temperatures retrieved by radiative algorithms.
Cloud classification from bands in the 10-12 (micrometers) spectral region is not an easy task. Some previous proposals based on BT and brightness temperature difference (BTD) in 11 and 12 (micrometers) bands have revealed that there are not clear limits to determine unambiguously the phase. In this work we present criteria for BTD and BT(10.8⊠m) to retrieve the cloud phase. These criteria has been checked with MODIS images to evaluate the possibilities to identify cloud phase with the JEM-EUSO IR Camera, although these results can be also applied to other sensors measuring in the same spectral bands.

Primary author: Ms RODRÍGUEZ, Irene (Universidad Carlos III de Madrid)

Co-authors: Dr DE CASTRO, Antonio J. (Universidad Carlos III de Madrid); Dr LÓPEZ, Fernando (Universidad Carlos III de Madrid); Dr FERNÁNDEZ-GÓMEZ, Isabel (Universidad Carlos III de Madrid); Dr BRIZ, Pacheco (Universidad Carlos III de Madrid)

Presenter: Dr BRIZ, Pacheco (Universidad Carlos III de Madrid)

Session Classification: Instruments and Tecniques Developments