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The Weather Research and Forecasting (WRF) model contribution to the atmospheric conditions estimation during the EUSO-Balloon experiment

Tuesday 4 August 2015 16:00 (1 hour)

EUSO-Balloon is a first prototype of the spaced-based JEM-EUSO telescope. Built on a stratospheric balloon, the telescope flew for eight hours, the night of August 25, 2014, above Canada. Interactions of light with clouds might impact the signal received by JEM-EUSO & EUSO-Balloon from cosmic-ray events. Reliable informations on cloud properties, such as the cloud-top-height (CTH), are thus crucial to properly reconstruct air showers. For that purpose, atmospheric vertical profiles are needed to convert the cloud-toptemperature (CTT), measured by the InfraRed (IR) camera onboard the telescope, to the CTH. When real profiles from radiosoundings are not available, real-time vertical profiles simulated by Numerical Weather Prediction (NWP) models can be used.
In this preliminary work, the mesoscal Weather Research and Forecasting (WRF) model is applied to the EUSO-Balloon scene to check its reliability in evaluating atmospheric vertical profiles. We first test WRF simulated profiles by comparing with real radiosounding observations. Then, we consider EUSO-balloon scene observations from the very accurate satellite sensor MODIS.

Collaboration

JEM-EUSO

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Author: Dr TABONE, Ilaria (Univ. & INFN Torino)

Co-authors: Prof. CASSARDO, Claudio (Univ. & INFN Torino); Dr CARLI, Daniele (Univ. Torino); BERTAINA, Mario (Univ. & INFN Torino); Dr CREMONINI, Roberto (Univ. Torino); Dr FERRARESE, Silvia (Univ. & INFN Torino)

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

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