



Space weather diagnosis using cosmic rays: observation with a global network of cosmic ray muon detectors

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Abstract: The galactic cosmic ray (GCR) intensity often shows a dramatic variation responding to the arrival of interplanetary disturbances at the Earth. Aiming to observe such a variation with muon detectors, we constructed a prototype network of multidirectional detectors in March 2001 by installing a small detector in Brazil in addition to two detectors in Japan and Australia [1]. By March 2006, the network was upgraded by expanding the Brazilian detector in size and also by putting an additional detector in operation at Kuwait City in Kuwait. This new global network, currently consisting of four detectors at Nagoya (Japan), Hobart (Australia), Sao Martinho (Brazil) and Kuwait City (Kuwait), can continuously monitor the GCR intensity in the total of 60 directional channels covering almost the entire sky and can precisely measure the variation of the GCR streaming separately from the variation of the GCR density. In this paper, we summarize results derived from observations using the prototype network and also report an initial performance of the new global network.

References

- [1] K. Munakata et al., *Proc. 27th ICRC*, 9:3494, 2001.