Analysis of temporal variation of cosmic ray intensity observed with global networks of neutron monitors and muon detectors

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The temporal variation of cosmic ray intensity recorded by a ground-based detector includes contributions from varying cosmic ray density (or isotropic intensity) and anisotropy in space. We deduce these contributions separately and accurately, each as a function of primary cosmic ray rigidity every hour, by analyzing the cosmic ray intensity observed with global networks of neutron monitors and multidirectional muon detectors altogether. In such analyses, however, we need to pay special attention to local effects including atmospheric effects which are superposed on the signal temporal variation of cosmic ray density and anisotropy. This is particularly important in analyses of the data during the "quiet period" when only small signal variation is expected. We present our analyses of the data during two sample periods in January-February and July-August, 2012, during each of which an extended cosmic ray decrease lasting for ~five days with a strong anisotropy was observed.