PROBABLE DETECTION OF SOLAR NEUTRONS BY GROUND-LEVEL NEUTRON MONITORS DURING STIP INTERVAL XVI

M. A. Shea and D. F. Smart
Air Force Geophysics Laboratory
Hanscom AFB, Massachusetts, 01731 U.S.A.

E. O. Flückiger
Physikalisches Institut, Universität Bern
Sidlerstrasse 5, CH-3012 Bern, Switzerland

The third solar neutron event detected by earth-orbiting spacecraft was observed during STIP Interval XVI. The solar flare beginning at 2356 UT on 24 April 1984 produced a variety of emissions including gamma rays and solar neutrons. The neutrons were observed by the SMM satellite and the neutron-decay protons were observed on the ISEE-3 spacecraft. Between 0000 and 0010 UT on 25 April an increase of 0.7 and 1.7 percent was recorded by neutron monitors at Tokyo (Itabashi) and Morioka, Japan. These stations were located about 42 degrees from the sub-solar point, and consequently, there is approximately 1400 grams of atmosphere between the incident neutrons at the top of the atmosphere and their detection on the earth's surface. Nevertheless, the time coincidence of a small increase in the total counting rate of two independent neutron monitors indicates the presence of solar neutrons with energies > 400 MeV at the top of the earth's atmosphere. The small increases in the counting rate emphasize the difficulty in identifying similar events using historical neutron monitor data.