

High Energy Solar Physics at the Y2K Maximum

Gordon Emslie (Department of Physics, UAH)

The Y2K maximum in solar activity will be observed with an impressive array of instrumentation, particularly at high energies (hard X-ray, gamma-ray). In addition to the CGRO, Yohkoh, and SoHO satellites currently aloft, the High Energy Solar Spectroscopic Imager (HESSI) satellite is planned for a July 2000 launch. This instrument will provide hard X-ray spectra with 2 keV energy resolution, 2 arc second (~ 1500 km) spatial resolution, and temporal resolution of 2 s for a full image, and down to ~ 0.1 s for selected Fourier spatial components. These scales are, for the first time, commensurate with the physical particle acceleration and transport processes believed to be operating, and consequently the data will provide us with a unique insight into these processes. HESSI will also perform true gamma-ray spectroscopy on nuclear gamma-ray lines – its high energy resolution will enable the shape of these lines to be discerned, so providing fundamental information on the characteristics of the exciting high-energy particles.

In this overview, I will discuss the interpretation of HESSI observations in conjunction with data from other sources, and CGRO in particular.