Abstract submitted to the Fall 1995
American Geophysical Union Meeting

Fast Imaging of High Altitude Atmospheric Flashes (Sprites)*

J.D. Molitoris (Lawrence Livermore National laboratory, University of California, P.O. Box 808, L-262, Livermore, CA 94550; 510-423-3496; e-mail: molitoris1@llnl.gov)
J.F. Arens (Space Sciences Laboratory, University of California Berkeley, Berkeley, CA 94720)
C. Price (Department of Geophysics and Planetary Physics, Tel Aviv University, Ramat Aviv, Israel 69978; 972-3-6407470; cprice@flash.tau.ac.il)
M. Peck (Berkeley Camera Engineering, 3616 Skyline Drive, Hayward, CA 94550; 510-889-9690; e-mail: mikep@bce.com)
W. Lyons (ASTER Inc., 46050 Weld County, Road #13, Fort Collins, CO 80524; 970-568-7664)

High altitude upper atmospheric flashes now commonly referred to as sprites have been studied in the visible over the past several years by several groups using intensified video systems. Due to the video format, these data are limited to temporal resolutions of 16.7 ms. Although typical sprites last from a single to several video fields, the formation of the sprite is so rapid that it is lost with these temporal resolutions.

During summer 1995 we participated in the Yucca Ridge Sprites '95 Field Experiment in Fort Collins, Colorado in order to study the temporal development of sprites using hybrid focal pane arrays (FPAs). We employed FPA imagers sensitive in the visible and long wave infrared during the campaign. Typical imaging times used for this observation were less than 2.0 ms and our present systems can be operated at up to 0.5 ms per frame. The infrared data was taken in a spectrally resolved mode using a variable filter passing selected wavelengths within the thermal infrared. Our results along with a description of our infrared optical imaging system will be presented.

* This work was supported by the NASA Sprite Program and performed under the auspices of the U.S. department of Energy by Lawrence Livermore National Laboratory under contract number W-7405-ENG-48.