

# The first sprite detection by high school students

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<http://www.astro-hs.net/en/index.html>

Sprites are not well-known to public people because of 15-years observation history of sprites is shorter than other popular atmospheric phenomena. However, recent development of high-sensitivity digital imaging devices enables us to detect this rarely observed phenomena by public imaging tools like high-sensitivity CCD video cameras. In December 2003, a meteor observer detected sprites, in chance, by a high-sensitivity video camera WAT-100N with a motion-capture software UFOCapture. This leading observation created a new observing method for unexpected and rare atmospheric phenomena like sprites. The Astro-Classroom (Astro-HS) was established in 1998 by many high school teachers as one of the practical approach of science education using interesting astronomical events like Leonids meteor shower, solar eclipse, observation of planets and comets. In 2004, sprites are selected as one of the observation themes of Astro-HS, resulting in great success of the first sprite detection by Japanese high school students.

In the Forum of Astro-HS held in March 2004, sprite was selected as an observing theme of Astro-HS after an introduction of the unpopular phenomena to high school students and their teachers. In order to lead successful observation campaign of sprites by high school students, promotion of sprites campaign was carried out by Astro-HS staff from July 2004, having local meetings of high school students with scientists and publishing 'Astro-HS sprite observation handbook 2005.' In the handbook, basics of upper atmosphere, sprites, and recent scientific targets are introduced as well as observing manuals of WAT-100N and UFOCapture are written in detail. The handbook is probably the first guidebook of sprite observation to public people, so that many amateur observers including high school students can begin their observations of sprites at their schools or at home.

An observation campaign of sprites was operated from December 2004 to February 2005 because sprites in Japan are observed in relatively large numbers in winter season. From the entire nation, 21 high school teams were participated in the campaign. On December 26, 2004, the first sprite detection by high school students was achieved by student team of Ichinomiya high school in Aichi pref. In January 2005, another student team of Sendai-daini high school in Miyagi pref. detected carrot type sprites. Students of Higashi-katsushika high school in Chiba pref. also detected sprites in success in February 2005. During the campaign, more than 10 observations were successfully reported to Astro-HS.

Sprites observers were gradually spread to the high school students due to the promotion of Astro-HS, resulting in establishment of multiple auto-observing stations for sprites at high school in Japan. Scientifically significant results are expected to be obtained by many high school students as well as by amateur observers in near future. The powerful observing tools of WAT-100N and UFOCapture lead significant scientific observation by public people. If the observing method is more widely spread to public people, the significance of these observations becomes grater, especially for unexpected rare phenomena in upper atmosphere or undiscovered phenomena to be captured.

## Reference:

Yamamoto, M.-Y., Suzuki, B., Astro-HS sprite observation handbook 2005 (in Japanese), Astro-classroom, 2004.