

## **TLE Observation Campaign by High School Students: 4 years Activities of SSH Consortium KOCHI**

SUMITO OKAMOTO<sup>1</sup>, TERUNORI MIYOSHI<sup>2</sup>, YUKA MIYOSHI<sup>2</sup>, TOSHIKI HARIKI<sup>2</sup>,  
KAZUYA AKITOMO<sup>2</sup>, MASA-YUKI YAMAMOTO<sup>3</sup>, and SSH CONSORTIUM KOCHI

<sup>1</sup>*Kochi Ozu High School*

<sup>2</sup>*Sanbonmatsu High School*

<sup>3</sup>*Kochi University of Technology*

Triangulation observation of TLE (Transient Luminous Events: sprites, elves, blue-jets, etc.) has been carried out since 2006 as a space educational projects in Japan, expanded to large-scale collaboration between 29 Super Science High-schools (SSH) and Kochi University of Technology (KUT). Following with successful sprite detection by "Astro High-school" since 2004, the SSH consortium KOCHI was established as a national space educational project supported by Japan Science and Technology Agency (JST). Almost full-coverage of Northern night sky over Japan by high-sensitivity CCD camera (Watec Neptune-100 with Fujinon 6 mm F/1.4 C-mount lens) and motion-detective software (UFO-Capture, SonotaCo) was successfully established by student activities. It is worthy not only for educational purposes but also for scientific ones in monitoring occasional events in night sky.

The observation campaign began in December 2006, thereafter, thousands of TLE images were taken by many student teams. During each school year (from April to March in Japan), considerably large numbers of successful triangulations were obtained.

<u>School Year</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Numbers of TLE Observations	43	441	734	337*
Numbers of Triangulations	3	95	115	78*

*\* Note the numbers are as of Feb. 28, 2010.*

Recently, some high schools started wide field and/or filtered observations using multiple cameras, and others started VLF observations using handmade loop antennae and amplifiers. Information exchange in scientific and technical matters are frequently communicated among SSH consortium KOCHI via KUT's mailing lists.

Not only as an educational project but also as a scientific one, the project is in great success. In February 2008, simultaneous observations of Elves were obtained (Okamoto *et al.*, 2008), in November 2009 a Giant "Graft-shaped" Sprites driven by Jets was clearly imaged with VLF signals (Okamoto *et al.*, 2009). Most recently, observations of Elves and sprite halos with stripes like wave structures on airglow were successfully imaged in January 2010.

In this talk, four years activities of the SSH consortium KOCHI will be presented by participating high-school students and teachers with their own impressions.

Keywords: Space education; High school students; SSH consortium; TLE, Sprites; Elves; Triangulation.

### **References**

- [1] Okamoto, S., Yamamoto, M.-Y., the SSH consortium, AOGS 2008, Busan, 2008.
- [2] Okamoto, S., Yamamoto, M.-Y., the SSH consortium, AOGS 2009, Singapore, 2009.

