

**Project SAZANKA; The Multi-site and Multi-frequency Simultaneous SETI Observation in Japan.**S. Narusawa<sup>1</sup>, M. Fujishita<sup>2</sup> and Team SAZANKA<sup>1</sup>Nishi-Harima Astronomical Observatory. (Sayo-cho, Hyogo 679-5313, Japan E-mail: narusawa@nhao.go.jp)<sup>2</sup>Tokai University (9-1-1 Toroku, Kumamoto-shi, Kumamoto 862-8652, Japan E-mail: mfuji@ktmail.tokai-u.jp)

**Introduction:** We carried out the world's first multi-site and multi-wavelength simultaneous SETI observation with 12 radio and 26 optical telescopes in Japan.

It is thought that a narrow carrier signal is the most possible one from Extra-Terrestrial Intelligence (ETI), because it needs only one parameter "frequency". However, we do not have been discovered any clear signals from ETI in these 50 years since project OZMA was carried out in 1960 based on this assumption. Therefore, there is some possibility that other types of signals are used to inform their existence[1]. For example, Ultra-Wide Band (UWB) signals is one of the possible signals, because generally it is advantageous on the standpoint of signal to noise ratio as shown by the Global Positioning System. We carried out multi-site and multi-frequency SETI observations based on similar idea.

We also did the multi-site optical monitoring observations simultaneously. If radio antennas detect the candidate signals, we check these optical (CCD, Digital camera and Video) images. It gives a clue of clarification of radio events {e.g. natural phenomenon (flare of surface of the star, nova, GRB, meteor, microlens etc.), artificial signals (aircraft, artificial satellite, reflection off space debris etc.) and ETI }.

We call this project "Sazanka". It is named after a flower which blossoms in observing period of this project.

**Observations:** We selected the 30 arc-minute field of the Cassiopeia constellation as the target. The candidate signal from ETI was detected on November 17, 1989 in this region at 1420 MHz by one of the SETI project "META" [2].

We used total 12 antennas of 8 radio observatories in Japan for this project on November 11 and 12, 2009. In addition to these observations, we used 26 optical systems, including 2m NAYUTA of Nishi-Harima Astronomical Observatory which is the largest telescope in Japan, to monitor the same region at the same time.

Since the weather condition, we could observe with 9 and 8 optical monitoring systems at first and second night, respectively. On the other hand, we could obtain the available data through all radio ob-

servations. Data is under reduction (on late November in 2009). We will report the result on this conference.

**References:**

- [1] Fujishita, M. et al. (2006) *Journal of the British Interplanetary Society*, 59, 346-348.  
[2] Horowitz, P. and Sagan, C. 1993 *Astrophysical Journal*, 415, 218-235.

Table 1: Radio SETI sites of project Sazanka  
{observatory, antenna, frequency }

Tokai Univ.	11m SD	8.3 GHz
	5m SD	8.3 GHz
Yamaguchi Univ.	32m SD	8.3 GHz
Wakayama Univ./Misato Obs.	8m SD	1420 MHz
Takahashi Obs.	6m SD	1420 MHz
Kagami Obs.	Yagi	1420 MHz
	Discone	31 MHz
Matsuo Obs.	1m SD	1420 MHz
	Dipole	38.2 MHz
Kochi National College of Technology	Log periodic	30-35 MHz
	Dipole	38.0 MHz
Nishi-Harima Astro. Obs.	Dipole	38.0 MHz
	Yagi	22.0 MHz

(SD: single dish)

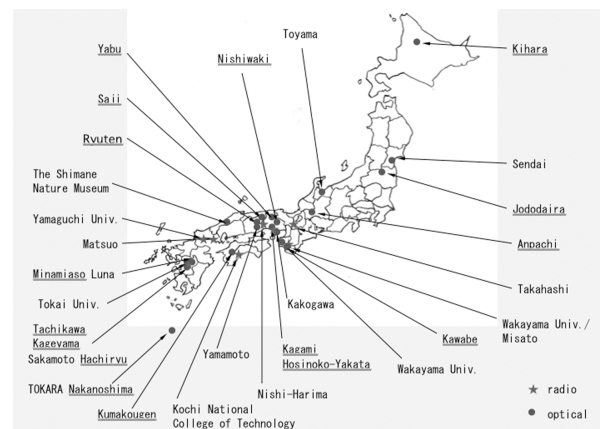


Fig.1 The Distribution of observatories.



The 32m single dish of Yamaguchi Univ.



The log periodic antenna of Agawa Jovian Radio Obs.  
Of Kochi National College of Technology



The 8m single dish of Wakayama Univ.



The 6m single dish of Takahashi Observatory



The 11m single dish of Tokai Univ.



The 2m NAYUTA telescope of Nishi-Harima Astron. Obs.