AbSciCon 2012

Project Dorothy

the 50th anniversary of Project OZMA, Worldwide Joint SETI Observation

Shin-ya Narusawa (Nishi-Harima Astron. Obs., Japan), G. R. Harp (SETI Institute), Andrew Siemion (UC Berkeley), Douglas Vakoch (SETI Institute), Mitsumi Fujishita (Tokai Univ., Japan), Rob Ackermann (SETI Institute), Alfredo Astorga (SETI Institute), Peter Backus (SETI Institute), Marco Batrolini (INAF, IRA, Italy), Ragbir Bhathal (Univ. of Western Sydney, Australia), Samantha Blair (SETI Institute), Lourdes Cahuich (Mexico), Iban Cardona (SETI League, Spain), Tobia Carozzi (Onsala Space Observatory, Sweden), Pierre Colom (Observatoire de Paris, France), Heino Falcke (Radboud Univ., Netherlands / LOFAR), Rob Fender (Univ. of Southampton, UK / LOFAR), Kenta Fujisawa (Yamaguchi Univ., Japan), Vishal Gajjar (GMRT, India), Mike Garrett (LOFAR), Hiroyuki Geshiro (Geshiro-Gumi Machinery MFG Company, Japan), Paul Horowitze (Harvard Univ.), Jasper Horrell (SKA South Africa), Kazumasa Imai (Kochi national College of Technology, Japan), Takafumi Ishida (Yamaguchi Univ., Japan), Eric J. Korpela (UC Berkeley), Kang Hwan Lee (Gwacheon National Science Museum, South Korea), Guillermo A. Lemarchand (Instituto Argentino de Radioastronomia), Andrea Mattana (Istituto Nazionale di Astrofisica, Italy), Jean-Michel Martin (Observatoire de Paris, France), Curtis C. Mead (Harvard Univ.), Stelio Montebugnoli (INAF, IRA, Italy), Jader Monari (INAF, IRA, Italy), late Masaki Morimoto (Nishi-Harima Astron. Obs., Japan), Takahiro Morimoto (Yamaguchi Univ., Japan), Ian S. Morrison (Australian Centre for Astrobiology / Univ. of New South Wales, Australia), Hiroshi Nagira (Yamaguchi Univ., Japan), Halca Nagoshi (Yamaguchi Univ., Japan), Hiroyuki Naito (Nagoya Univ., Japan), Yusei Nanto (Japan), Bob Nichol (Univ. Portsmouth, UK / LOFAR), Masami Okyudo (Wakayama Univ., Japan), Toshimitsu Ono (Niyodogawa town, Japan), Andrea Orlati (INAF, IRA, Italy), Jong-Hyun Park (Korean Amateur Astronomical Society), Alan Penny (The Univ. of St Andrews, UK / LOFAR), Antonis Polatidis (LOFAR), Giuseppe Pupillo (INAF, IRA, Italy), Simon Ratcliffe (SKA South Africa), Myung-Hyun Rhee (Korea Astronomy and Space Science Institute), Simona Righini (INAF, IRA, Italy), Emma Salerno (INAF, IRA, Italy), Naoko Sato (Wakayama Univ., Japan), Nagisa Shino (Yamaguchi Univ., Japan), Seth Shostak (SETI Institute), Yoshitaka Takahashi (Takahashi Radio Station, Japan), Jill Tarter (SETI Institute), Naoto Tatsumi (Ryuten Astron. Obs., Japan), Gilles Theureau (Observatoire de Paris, France), Wim van Driel (Observatoire de Paris, France), Sander ter Veen (Radboud Univ., Netherlands / LOFAR), Dan Werthimer (UC Berkeley), Michael Wise (LOFAR), Shelley Wright (UC Berkeley), Hideyo Yokotsuka (Tokai Univ. Space Information Center, Japan), teams SERENDIP, SETI@home, Kepler@GBT and Frank Drake (SETI Institute)

First SETI “Project OZMA” Frank Drake (1960)

↓

more than 100 SETI projects

Drake Equation, Moore’s Law

↓

First Contact: within the next 20-30 years

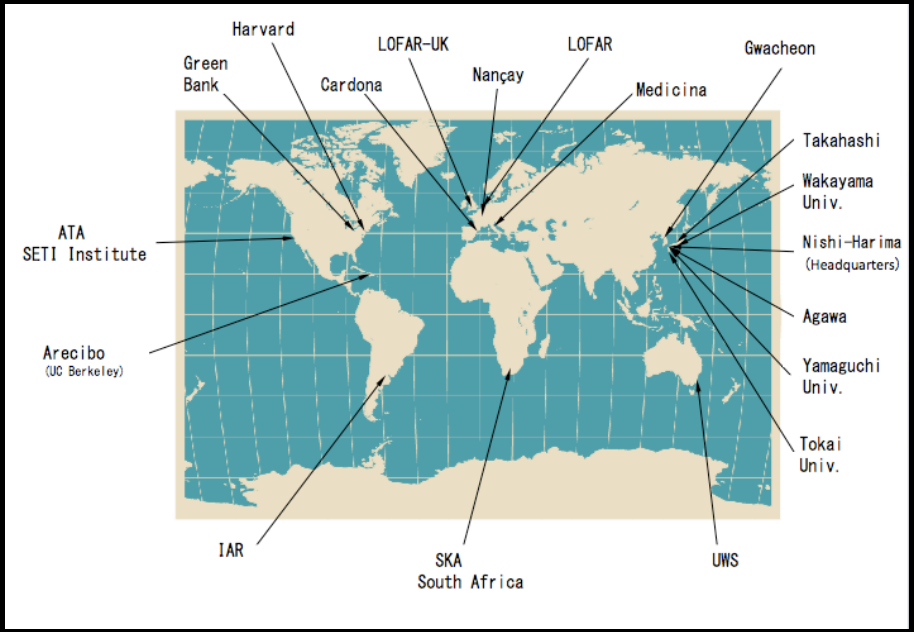
e.g. Shostak (2004) *Acta Astronautica*, *55*, *753*

The Post Detection SETI Protocol of IAA

the discoverer should promptly inform other observers to confirm the discovery by independent observations.

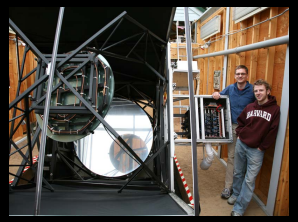
Project Dorothy:
Worldwide Joint (multisite and multifrequency) SETI Observations

Main goal practice run of the First Contact
Commemorate 50th anniversary of Project OZMA



The distribution of registered observatories. (There are more relevant authorities.)
29 relevant authorities in 15 countries on 5 continents

registered observatories

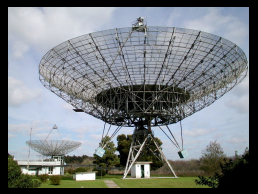


Harvard Univ. (OSETI)
Oak Ridge 180cm

ATA (SETI Institute)
6m × 42

Arecibo
305m （UC Berkeley）

Green Bank
100m （UC Berkeley）



IAR(Instituto Argentino
de Radioastronomia),
ARG 30m × 2

Gwacheon National
Science Museum,
KOR 7.2m

Univ. Of Western Sydney,
AUS (OSETI) 60cm
(This team could not observe
due to various reasons.)

SKA South Africa
12m MeerKAT

Nançay Radio Telescope, FRA 100m

LOFAR (RS503),
NLD (DEU,FRA, GBR, SEW)

LOFAR –UK (UK608), Chilbolton,
GBR (DEU,FRA, GBR, NLD,SEW)

Medicina Radio Station,
ITA 32m

Cardona, ESP
(SETI League) 2m

Wakayama Univ.,
JPN 12m

Takahashi Radio Station,
JPN 6m

←
Aagawa Jovian
Radio Obs. Of
Kochi national
College of
Technology/
NASA,
JPN
Log periodic

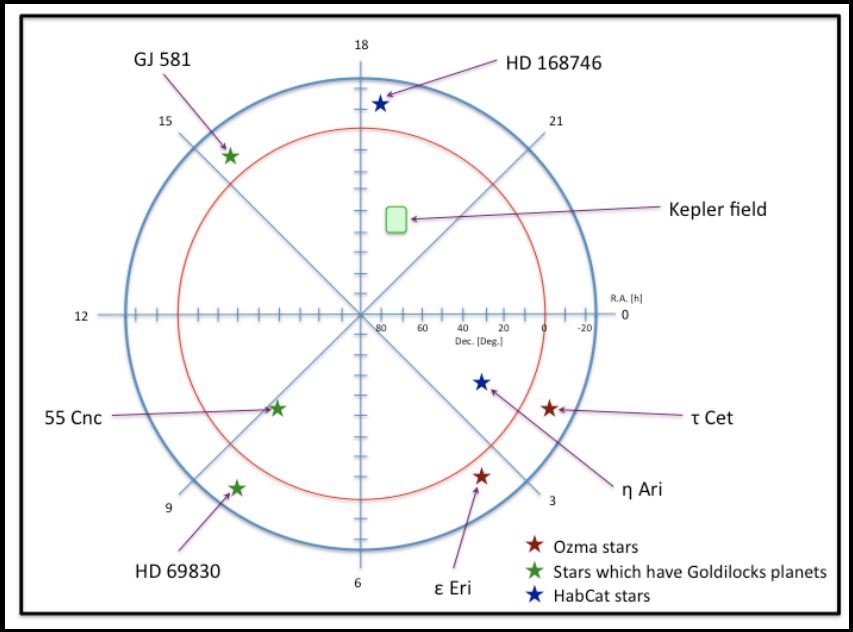
Tokai Univ., JPN
11m

5m

Yamaguchi Univ.,
JPN 32m

Nishi-Harima Astron. Obs.,
Univ. of Hyogo, JPN
The headquarters

Target Stars



Distance < 140 ly

Estimation

Arecibo S-band planetary radar : 2.4 Mega [W], 73 [dBi]

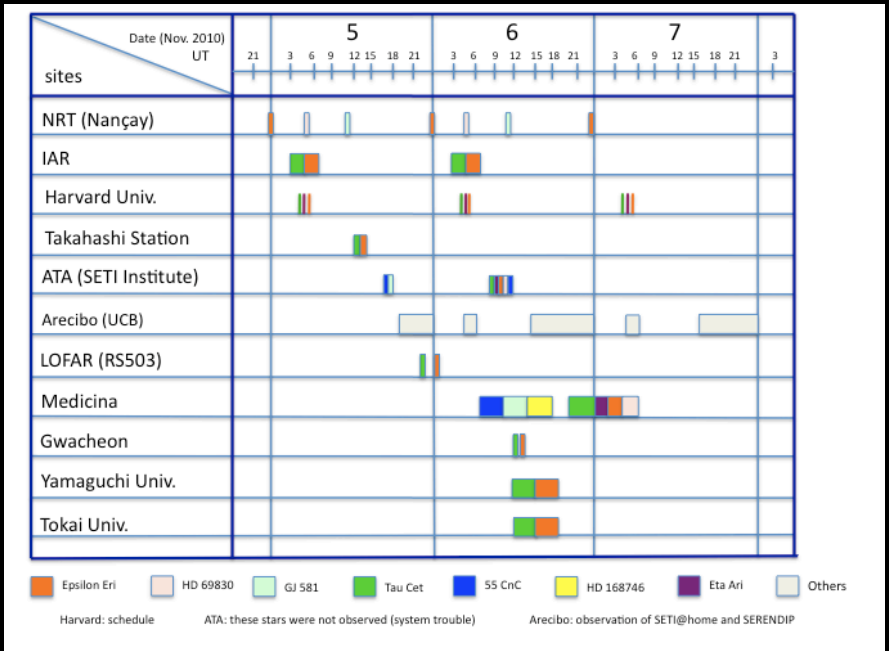
EIRP (Effective Isotropic Radiation Power) : (2.4*10^6) * (10^7.3)
=2.4*10^13 [W]

if distance was 100 ly away → (2.4*10^13) / (1.1*10^37)
= 10^-24 [W/m^2]

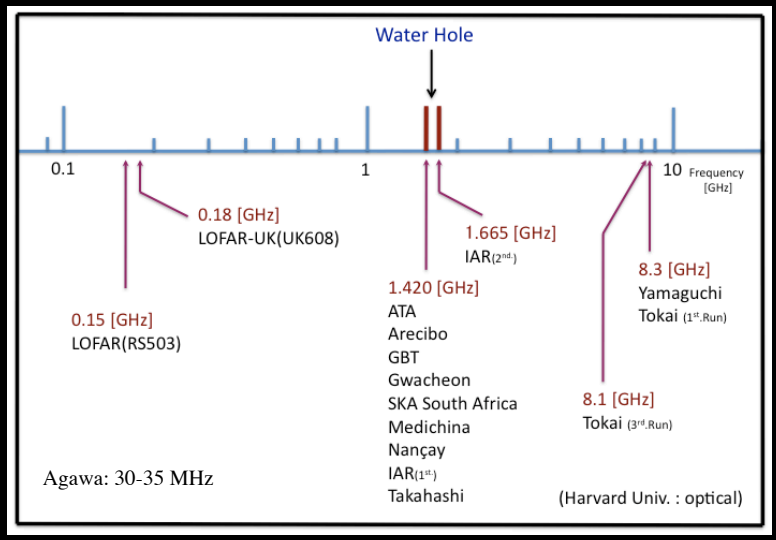
e.g., Flux limit of 32m antenna of Yamaguchi Univ. is
10^-24 [W/m^2]

Time Schedule

1st. run (main): Nov. 5-7, 2010
2nd. run (additional) Nov. 23-26, 2010
3rd. run (urgent): Mar. 3 – May, 22 2011
4th. run (special): Nov. 16, 2011



Time Table of 1st run



Observation Frequencies

2nd. Run: SKA South Africa, Takahashi and Nançay (τ Cet, η Ari, ε Eri, 55 Cnc)
3rd. Run: Green Bank (UCB), Takahashi and Tokai (Kepler planets)
4th. Run: Cardona, Takahashi, Wakayama, Agawa, Yamaguchi and Tokai (η Ari, 55 Cnc, Kepler planets)

1st worldwide SETI observation was successful!

No signal have detected (so far)

Temporary mailing list of Project Dorothy

↓

Permanent mailing list (UC Berkeley)

↓

Worldwide SETI network (powerful searches)

↓

First Contact !

Contact us: Shin-ya Narusawa (narusawa@nhao.jp)