Capacity Building Activities on GNSS in Japan in 2014

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November 11, 2014 @Prague

Contents

- University Consortium on GIS/GNSS Education

  GESTISS(Geospatial and Space Technology consortium for Innovative Social Services)

- Summer School on GNSS organized by IPNTJ

- Announcement for The Summer School 2015

- Introduction of the IS-GNSS 2015 in Kyoto

- Conclusion

Three Universities Involved in GESTISS

GESTISS(Geospatial and Space Technology Consortium for Innovative Social Services)

- University of Tokyo : GIS
- Tokyo University of Marine Science and Technology : GNSS
- Keio University : SDM (System Design and Management)

Visiting Lectures in Asian Institute of Technology (Bangkok) : 6-class hours for each subject in each semester.

Weekend seminar is held monthly in English.

Three-year project sponsored by MEXT (Japanese Ministry of Education) will continue to the next three years.

Seven Projects in GESITISS

- Early Warning System

- Indoor Navigation for New Business

- UAV for Timely-Information

- Agriculture Intelligence

- Inclusive Business

- Urban Mapping

- Public Health

- Cellphone Log Analysis

The Institute of Positioning, Navigation
and Timing of Japan

GNSS Summer School in 2014

Organized by The Institute of Positioning, Navigation and Timing of Japan

Co-organized by Faculty of Marine Technology, Tokyo University of Marine Science and Technology

Supported by Multi-GNSS Asia, QSS and GESTISS

GESTISS
GEospatial and Space Technology consortium
for Innovative Social Service

国立大学法人
東京海洋大学
Tokyo University of Marine Science and Technology

Etchujima Campus (Faculty of Marine Technology)

Summer School 29th July 2014
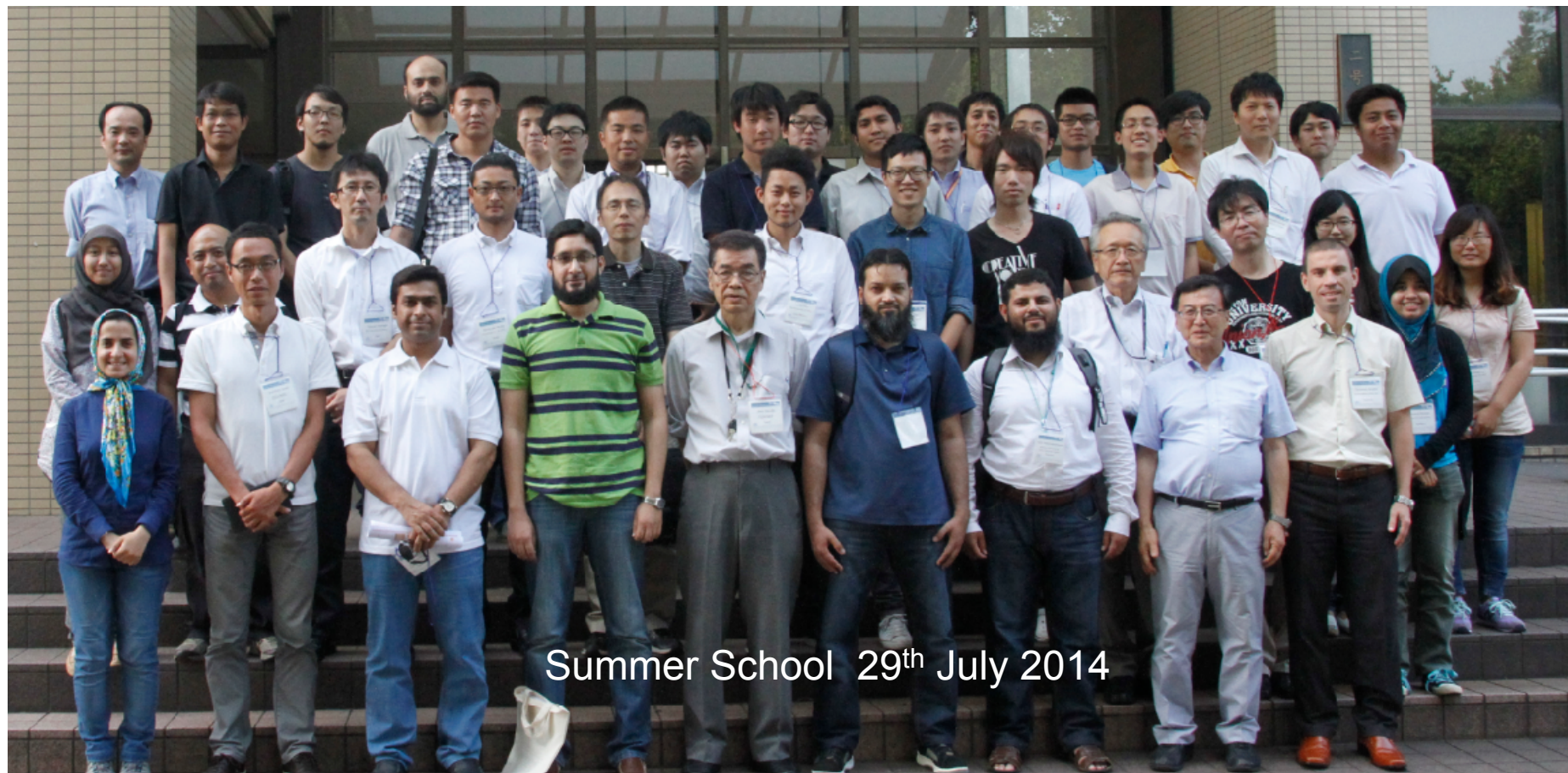
Participants in 2014

Country	2013	2014
Pakistan	0	5
Taiwan	6	3
Thailand	4	2
Philippine	2	2
Russia	2	0
Mongol	0	2
China	0	3
Indonesia	2	2
Sri Lanka	1	0
Italy	1	1*
Malaysia	0	1
Turkey	0	1**
Vietnam	1	0
Nepal	1	0
Japan	20	17
Total	40	39

Age	FRN No.	JPN No.
40+	2	3
38-39	1	3
31-37	5	0
28-30	3	3
26-27	3	3
25	1	4
23-24	7	1
Total	22	17

Jobs from Abroad	FRN No.	JPN No.
Student	11	1
Academics	2	1
Institute	5	1
Officer	1	0
Private Co.	3	14
Total	22	17

2014 Participants

* from Vietnam, ** from Iran
15 of them were invited including partial support.
Selected from 40 applicants for scholarship.

Time Table in 2014

	Jul 28	Jul 29	Jul.30	Jul 31	Aug. 01	Aug. 02
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0830-0950	Introduction	Class B-1	Class B-4	Class C-1	Class C-5	Practice for System Design, to be continued to workshop -I
0950-1010	Break	Break	Break	Break	Break	
1010-1130	Class A-1	Class B-2	Class B-5	Class C-2	Class C-6	
1140-1230	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1230-1350	Class A-2	Class B-3	**RTK-LIB Practice**	**IMES-DEMO**	**SDR Practice**	Workshop-1
1350-1410	Break	**QZSS-Intro**	Break	Break	Break	Workshop-2
1410-1530	Class A-3	Class B-4	**RTK-Demo G-I**	Class C-3	**UAV Demo**	
1530-1550	Break	Break	Break	Break	Break	
1550-1710	Self introduction	**RTK-LIB Practice**	**RTK-Demo G-II**	Class C-4	**UAV-Appli.**	Closing
1710-	Welcome Party	1 class=80 minutes			Farewell party	

Instructors	Introduction	Dr. Akio Yasuda		System Design	Dr. Naohiko Kohtake
	Class-A	Dr. Nobuaki Kubo			Mr. Hiroaki Tateshita
	Class-B	Mr. Tomoji Takasu Dr. Harumasa Hojo			
	Class-C	Dr. Toshiaki Tsujii Dr. Taro Suzuki			

IPNTJ

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Curriculums (2014)

Day 1
- Introduction of Multi-GNSS evolution trend(by Dr. A. Yasuda)
- Class A fundamentals of GNSS Technology (by Dr. N. Kubo)

Day 2 & 3
- Class B Positioning Algorithm and RTKLIB Practice
- (By Mr. T. Takasu and Dr. H. Hojo)

Day 4
- Class C GNSS Signal and Receiver-I (by Dr. T. Tsujii)

 Day 5
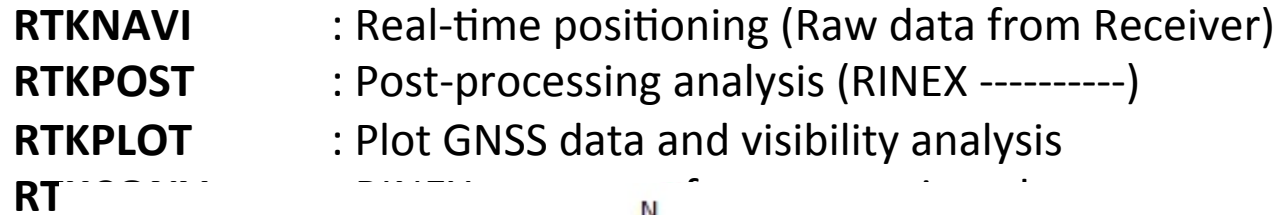- Class C GNSS Signal and Receiver-2 (by Dr. T. Suzuki)

Day 6
- System Design Workshop (by Dr. N. Kohtake and Mr. H. Tateshita)

RTKLIB

- **Open source program package for RTK-GPS**
  - Has been developed by Mr. Takasu since 2006
  - Latest version: 2.4.3
  - More than 30,000 downloads
- **Portable C library + several positioning APs**
  - GUI APs on Windows
  - Console APs on Linux etc...

http://www.rtklib.com

Application Programs (APs)

RTKNAVI : Real-time positioning (Raw data from Receiver)
RTKPOST : Post-processing analysis (RINEX ----------)
RTKPLOT : Plot GNSS data and visibility analysis

2014/11/04 5:50 UTC@Prague

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Preparing RTKLIB Practice inside the class room

RTKLIB Practice

On Board @ Port Cruise

@Play Ground

Drawing a Picture
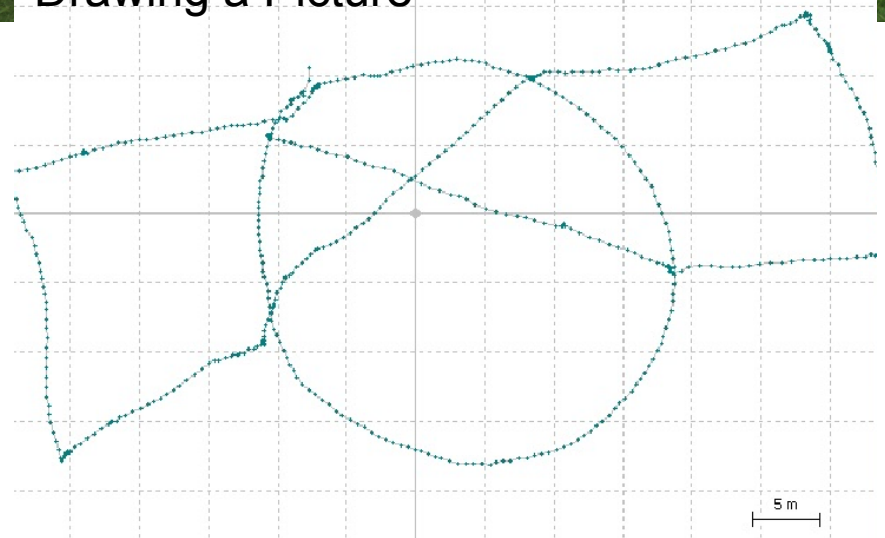
Curriculums (2014)

Day 1
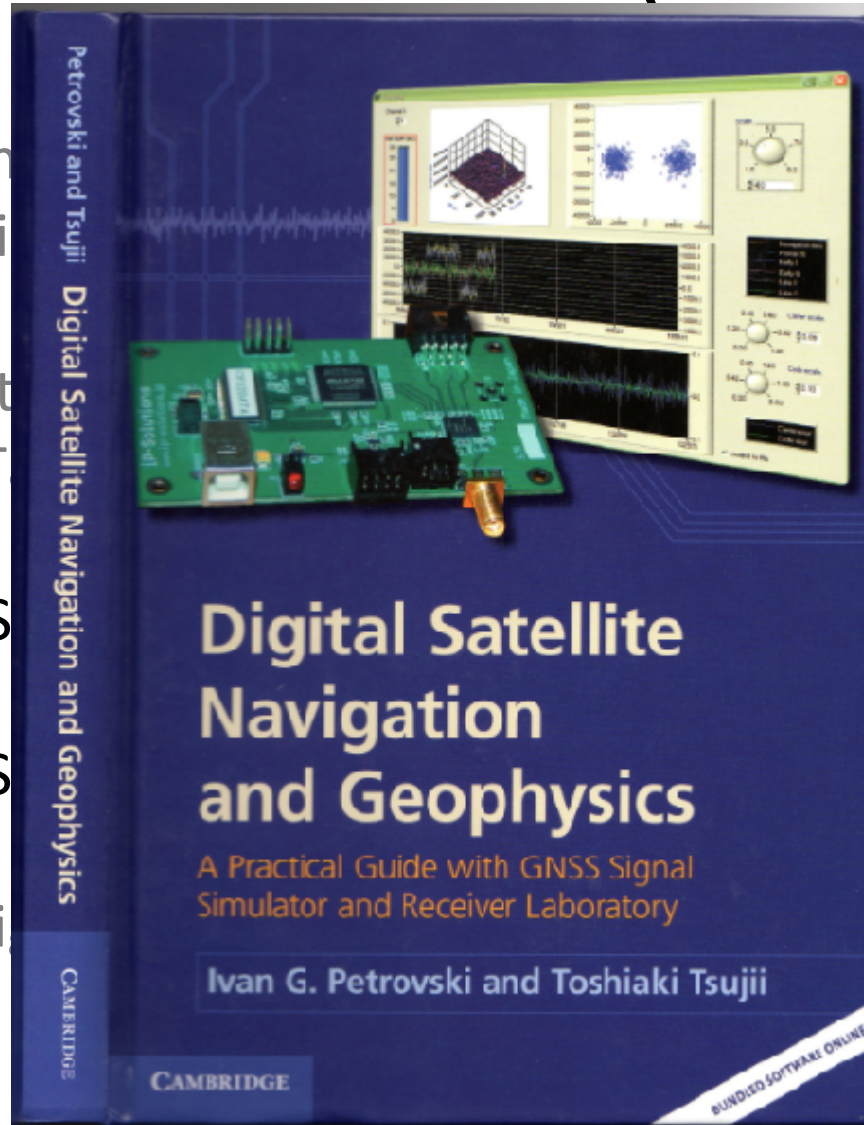- Introduction
- Class A Basi

Day 2 & 3
- Class B Posit   tice
- (By Mr. T. T

Day 4
- Class C GNS   Tsujii)

Day 5
- Class C GNS   Suzuki)

Day 6
- System Desi   and Mr. H. Tateshita)

Petrovski and Tsujii Digital Satellite Navigation and Geophysics

Digital Satellite Navigation and Geophysics

A Practical Guide with GNSS Signal Simulator and Receiver Laboratory

Ivan G. Petrovski and Toshiaki Tsujii

CAMBRIDGE

BUNDLED SOFTWARE ONLINE

GNSS-SDRLIB

GNSS-SDRLIB

http://www.taroz.net/gnsssdrlib_e.html
https://github.com/taroz/GNSS-SDRLIB

gnss-sdrgui.exe

Curriculums (2014)

Day 1
- Introduction (by Dr. A. Yasuda)
- Class A Basics of GNSS (by Dr. N. Kubo)

Day 2 & 3
- Class B Positioning Algorithm and RTKLIB Practice
- (By Mr. T. Takasu and Dr. H. Hojo)

Day 4
- Class C GNSS Signal and Receiver-I (by Dr. T. Tsujii)

Day 5
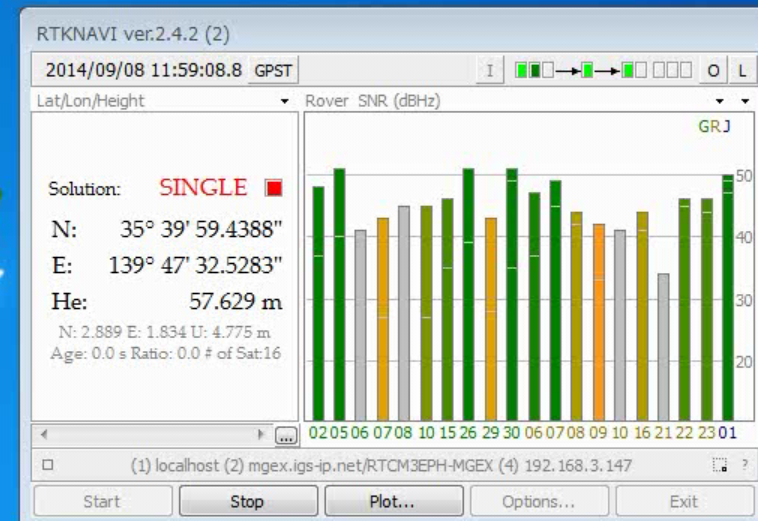- Class C GNSS Signal and Receiver-2 (by Dr. T. Suzuki)
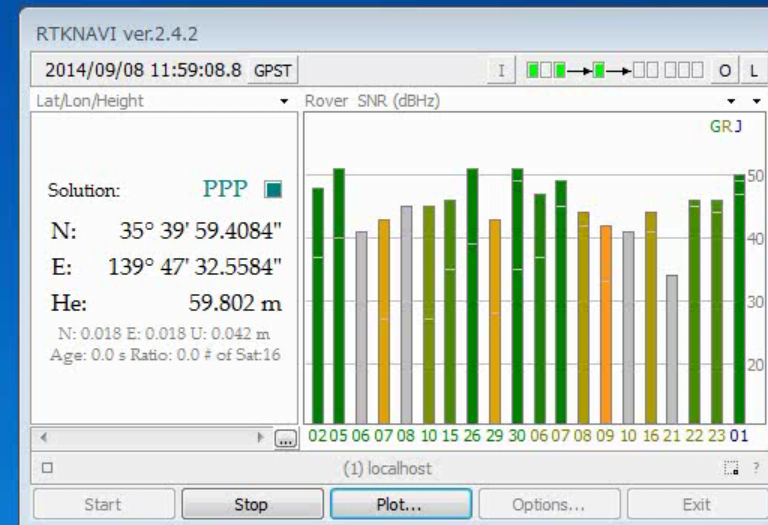
Day 6
- System Design Workshop (by Dr. N. Kohtake and Mr. H. Tateshita)

System Design Workshop

- Lecture on System Design Engineering by Dr. Kohtake.

- Study the important concept to resolve the global subjects and problems using the advanced GIS technology.

- They proposed targets and studied how to resolve the problems in 7 groups.

- The results were presented by each group.

System Design Workshop

Group Photo after the System Design Workshop, August 2nd

Evaluation (2014)

Day 1
- Introduction (by Dr. A. Yasuda)
- Class A Basics of GNSS (by Dr. N. Kubo)

Day 2 & 3
- Class B Positioning Algorithm and RTKLIB Practice
- (By Mr. T. Takasu and Dr. H. Hojo)

Day 4
- Class C GNSS Signal and Receiver-I (by Dr. T. Tsujii)

 Day 5
- Class C GNSS Signal and Receiver-2 (by Dr. T. Suzuki)

Day 6
- System Design Workshop (by Dr. N. Kohtake and Mr. H. Tateshita)
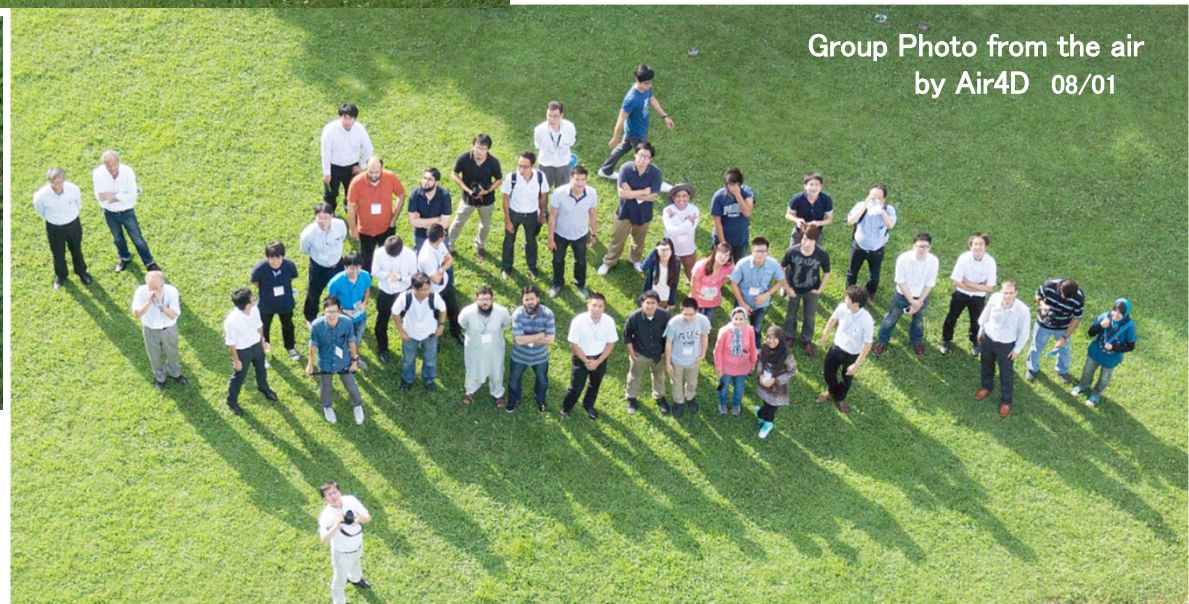
Total Satisfaction for Lectures 4.2/5.0   for Summer School 4.6/5.0

Real Time-PPP by MADOCA-LEX(QZSS Application Developed by JAXA)

UAV Demonstration

Group Photo from the air
by Air4D   08/01

GNSS Summer School in 2015

- Date : 2015/07/27-08/01
- Place : Tokyo University of Maine Science and Technology (TUMSAT), Japan
- Organized by : TUMSAT and The Institute of Positioning, Navigation and Timing of Japan
- Instructors:

  Dr. A. Yasuda, Prof. Emeritus at TUMSAT

  Dr. N. Kubo : Associate Prof. at TUMSAT

  Dr. T. Sakai : Researcher at ENRI, Guest Professor at TUMSAT

  Mr. T. Takasu : Inventor of RTK-LIB, Research Associate at TUMSAT

  Dr. T. Tsujii : Research Associate at JAXA, Co-author of 'Digital Satellite Navigation and Geophysics' CUP book

  Dr. T. Suzuki : Research Associate at TUMSAT

  Dr. N. Kohtake : Associate Prof. at Keio University

  Mr. H. Tateshita : Engineer at JAXA

- Attendees : Students with post graduate level & young engineers on GNSS
- Number of participants : 40 (**Invite at least 10 from the Developing Countries**)
- Language : English
- Fee : 60,000JPY, (20,000JPY for students and academics).
- Supported by : MGA(Multi-GNSS Asia), GESTISS (Geospatial and Space Technology Consortium for Innovative Social Service), QSS(QZSS System Service)
- URL: http://www.gnss-pnt.org/   mail: info@gnss-pnt.org

Supporters

- **Sponsors:**

  Furuno Electric

  PASCO Cooperation

  Spirent Communications

  Aisan Technology

- **Cooperated by:**

  JAXA   HITACHI Corp.

  Air 4 D   JRC

MGA New Working Group

- Capacity Building WG was established at the steering committee in Phuket in the last October.
- Our Summer School will be organized as an activity of MGA.
- Collaboration with G-Navis and SGAC must promote the international activity of the Capacity Building.

Working Group	Topic
Network	MGM-Net, Ionospheric Observation
Precise Positioning	Precise Agriculture, Machine control
Disaster Mitigation and Management	Tsunami monitoring, land slide monitoring, GNSS meteorology
Intelligent Transportation System	Probe-car, Driver Behavior Monitoring, lane control, autonomous driving
Location Based Service	Mapping, Short Message, Personal Navigation
（New）Capacity Building	educational program

History of GPS/GNSS Symposium in Tokyo and IS-GNSS

International Symposium on GNSS

Year	Location
2003	**Tokyo**
2004	Sydney
2005	Jeju, Korea
2006	Hong Kong
2007	Johor Bahr, Malaysia
2008	**Tokyo**
2009/11/04～06	Jeju, Korea
2010/10/25 ～28	Taipei
2011/11/ 15～17	Sydney
2012/10/31 ～11/02	Xi'an, China
2013/10/22 ～ 25	Istanbul, Turkey
2014/10/21 ～ 24	Jeju, Korea
2015/11/16 ～ 19	**Kyoto, Japan**

	No. of Participant	Date
1.	320	28/11/1996
2.	310	13-14/11/1997
3.	380	26-27/11/1998
4.	400	24-26/11/1999
5.	410	15-17/11/2000
6.	410	14-16/11/2001
7.	350	11-13/11/2002
8.*	440	15-18/11/2003
9.	350	17-19/11/2004
10.	320	16-18/11/2005
11.	350	15-17/11/2006
12.	300	21-23/11/2007
13. *	420	11-14/11/2008
14.	380	30/11-01/12/2009
15.	280	04-06/11/2010
16.	413	26-28/10/2011
17.	440	24-27/10/2012
18.	290	29-31/10/2013
19.	400	28-30/10/2014

International Symposium on GNSS
IS-GNSS 2015 in Kyoto

Scholorship will be prepared for Excelent Students' Papers.

Important Dates

- Abstract Submission for Reviewed Paper Deadline : 2015/06/30

- Abstract Submission for Regular Paper Deadline：2015/08/15

- Full Paper Submission for Reviewed and Scholarship: 2015/07/31

- Acceptance Notification: 2015/09/15

- Full Paper Submission for Regular Paper: 2015/10/26

- **Conference Date : 16-19, November 2015**

Contact: info@gnss-pnt.org

Conclude Remarks

- Introduce the framework of GESTISS.
- Introduce the GNSS Summer School 2014.
- The 6-day course of the lecture were successfully held with high satisfactions.
- Next Summer School will be held in July 2015.
- Introduce IS-GNSS 2015 in Kyoto, Japan
- Please check the IPNTJ home page time to time. http://www.gnss-pnt.org/

  Thank you very much for your attention.