

GNSS Education Activities The University of Tokyo

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Overview

- Conducts GNSS Trainings, Workshops and Seminars
 - Basically in Asian countries
 - Indonesia, India, Laos, Malaysia, Myanmar, Nepal, Thailand, The Philippines, Singapore, Vietnam
 - Bangladesh (planned in 2020), Egypt (FEB 2020)
 - Also, Some African Countries
 - Mozambique, Rwanda
- Conducts Webinars
 - Conduct webinars under MGA (Multi-GNSS Asia)
 - Global Access, Anybody can attend and free
 - Up to 100 participants online webinar at a time
 - Please register at <http://gnss.peatix.com>
- Conducts Joint Research and Pilot Projects
 - Low-Cost High-Accuracy GNSS Systems
 - Traffic Congestion Management
 - Traffic Monitoring
 - GNSS Signal Authentication
 - Supply-Chain Value Analysis
 - Illegal Fishing Monitoring
 - Any GNSS-based Application of your interest
- Installation of GNSS CORS
 - Install GNSS CORS in the Universities around the world for joint research, GNSS technology promotion and capacity building
- RPD (Rapid Prototype Development) Challenge during MGA (Multi-GNSS Asia)
 - Encourage students and researchers to bring solutions and business values by solving real-life problems
 - The 1st RPD Challenge was done during MGA 2018 in Melbourne, Australia on 24th OCT 2018
 - The 2nd RPD Challenge was done during MGA 2019 in Bangkok, Thailand on 27 – 29 AUG 2019
 - The 3rd RPD Challenge will be held during MGA 2020 in Bangkok, Thailand on XX AUG 2020
- Develop Low-Cost High-Accuracy Positioning Systems (L-CHAPS)
 - Integrate low-cost receivers for RTK, PPK or PPP processing
 - Android or Raspberry Pi versions
 - Based on QZSS MADOCA Signals
 - RTKDROID : An android APP for RTK with external GNSS receiver

GNSS Training

Global Navigation Satellite System (GNSS) Training, Course T-151

6 – 10 JAN 2020, AIT Conference Center, AIT, Thailand



Global Navigation Satellite System (GNSS) Training, Course T-151

6 – 10 JAN 2020, AIT Conference Center, AIT, Thailand



Sponsor  septentrio

GNSS Training, Course T-151 and GNSS for Policy and Decision Makers, Course T-131

14 – 18 January 2019

AIT Conference Center, AIT, Thailand



Special Support



Sponsors



GNSS Training at GIC/AIT, Thailand, 23 – 26 JAN 2018

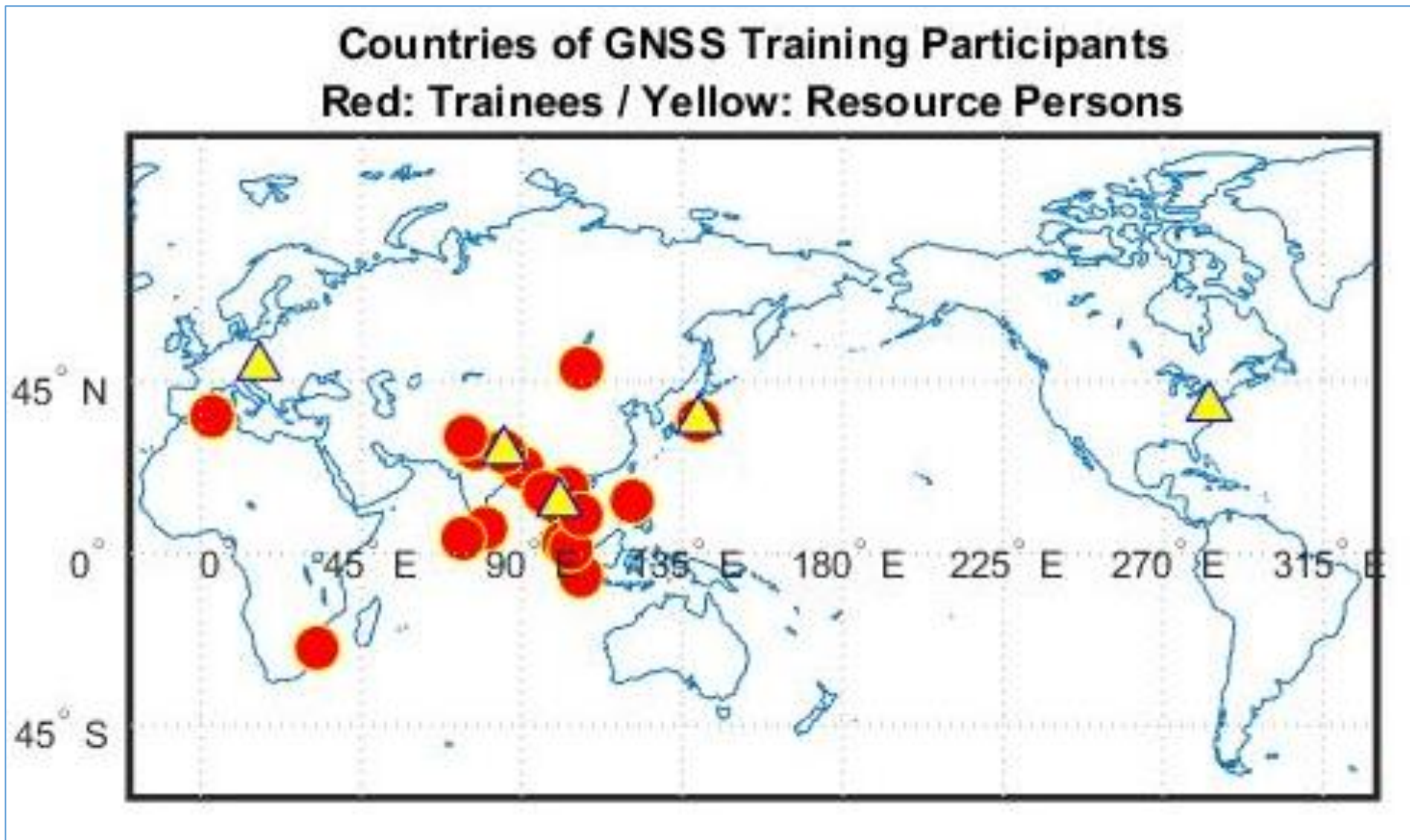


Afghanistan, Australia, Austria, Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan,
Maldives, Mongolia, Nepal, The Philippines, Sri Lanka, Tajikistan, Thailand,
The United States of America, Vietnam
64 Participants from 15 Countries

GNSS Training 2020 : Participants Statistics

Number of Participants	JAN 2020	JAN 2019	JAN 2018
	T-151	T-151/T-131	T-141
(A) ICG Funded International (travel only)	18 (22)	23	14
(B) ESCAP Funded International (travel only)	x	4	x
(C) Self Funded International	40	40	11
(D) Self-Funded Thailand	20	27	42 (24 + 18)
Total (A + B + C + D)	81	94	67
Applicants	160+	180+	80+
Number of Resource Persons	17 (16) 7 (Int) + 10 (GIC)	20 11 (Int) + 9 (GIC)	13 7 (Int) + 6 (GIC)
Number of Countries	18	15	15
Resource Persons Countries	5	7	4

GNSS Training 2020 : Participants Statistics



GNSS Training at AIT, Thailand, JAN 2020



GNSS Training at AIT, Thailand, JAN 2019



GNSS for Policy and Decision Makers, Course: T131, 2019



GNSS Field Survey and Data Processing, 2019

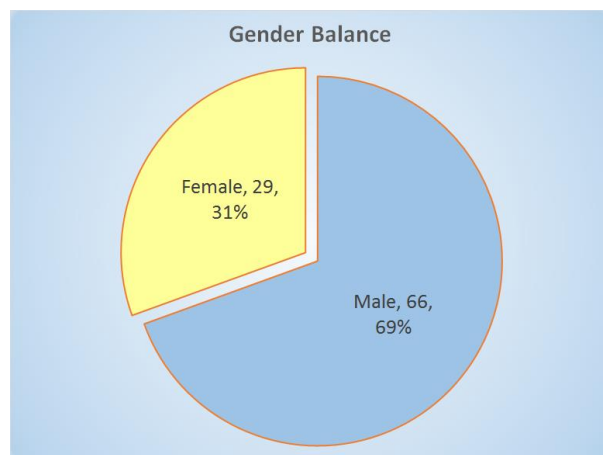
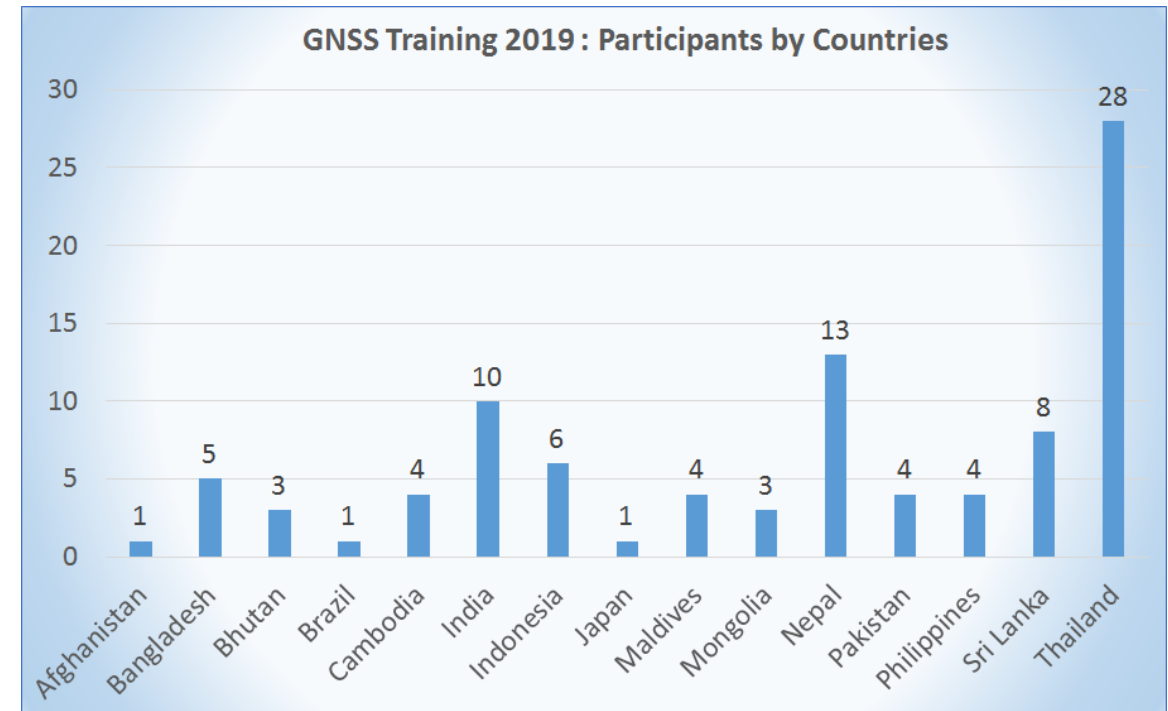
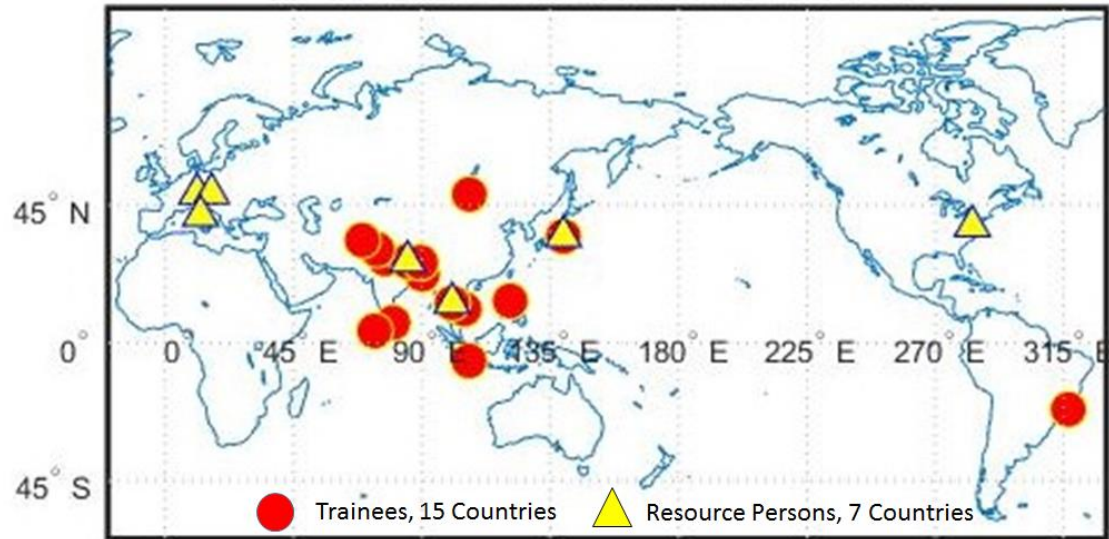


GNSS Field Survey and Data Processing, 2019



GNSS Training 2019 : Participants Statistics

Countries of GNSS Training Participants
Red: Trainees / Blue: Resource Persons



GNSS Training at AIT, Thailand, JAN 2018



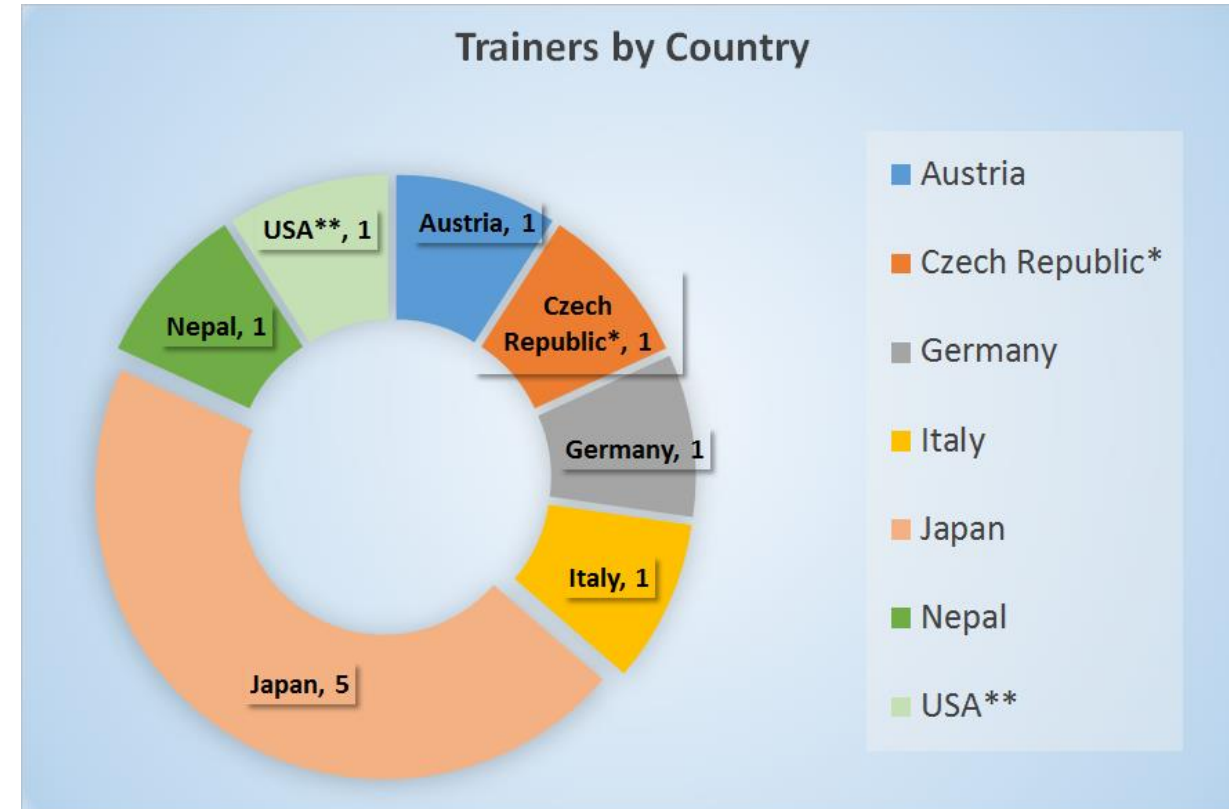
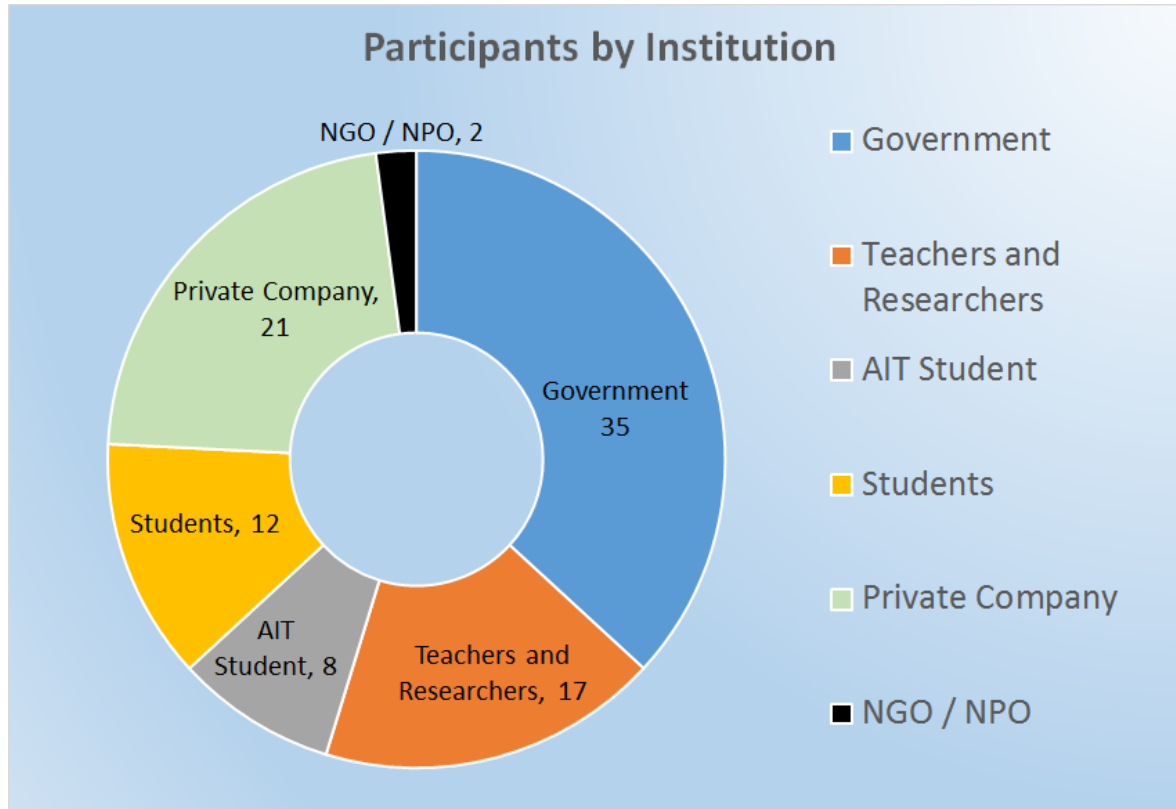
Day 1: Online Presentation

GPS Introduction : David Turner, State Dept. of the USA

GPS Signal Structure : Tom Stansell, Stansell Consulting, USA

1. Sharafat Gadimova, UNOOSA/ICG, Austria
2. Dinesh Manandhar, Associate Professor, The University of Tokyo, Japan
3. Yuichi Hayakawa, Associate Professor, The University of Tokyo, Japan
4. Nobuaki Kubo, Associate Professor, TUMST, Japan
5. Suelynn Choy, Associate Professor, RMIT University, Australia
6. David Turner, State Department, USA (online lecture)
7. Thomas Stansell, Stansell Consulting, USA (online lecture)
8. GIC/AIT resource persons and staffs

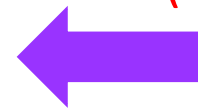
GNSS Training 2019 : Participants Statistics



MGA

MGA (Multi-GNSS Asia) Activities

- We organize the following programs in MGA
 - Webinars
 - Regular webinars by inviting experts in the field
 - Please accept our requests to become a resource persons to give webinars
 - RPD Challenges
 - Rapid Prototype Development Challenge is held under Young Professionals' Forum session of MGA
 - Students, Researchers or Enthusiasts who would like to challenge with their ideas related with GNSS applications are welcome to attend
 - Forthcoming MGA Programs
 - MGA 2020 in Singapore : 6 – 7 FEB 2020
 - MGA 2020 in Thailand : xx AUG 2020 (During Thailand Space Week)
 - Refer : <https://www.multignss.asia/>



MGA 2018 & (YP/S) Young Professional & Student Forum Melbourne, Australia, 2018

- ICG provided Travel Funding to SIX Participants from Asia to attend MGA 2018 in Melbourne
 - India (2), The Philippines (2), Thailand (1), Vietnam (1)
- YP/S : Forum for interaction between the students, researchers and professionals
 - A networking event between the YPS Forum participants and industry representatives



RPD (Rapid Prototype Development) Challenge Melbourne, Australia, 2018

- RPD Challenge Topics during MGA 2018
 - PPP from GNSS Dual Frequency Smart-Phone Raw Data
 - GNSS for Rowing Speed Measurement
 - Low-Cost GNSS for Smart-Agriculture
 - Driver's Behavior Index (DBI) Development from GNSS Data
 - Interference Monitoring
- All ICG funded participants participated the RPD Challenge
- Follow-Up Discussions will take place even after MGA through online meetings



MGA: RPD Challenge, Bangkok, 2019



MGA RPD Challenge, Bangkok, 2019

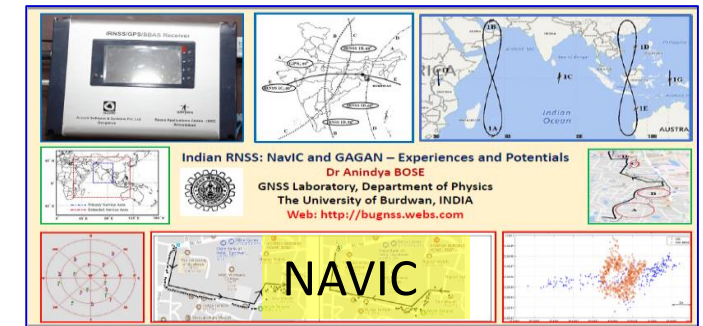
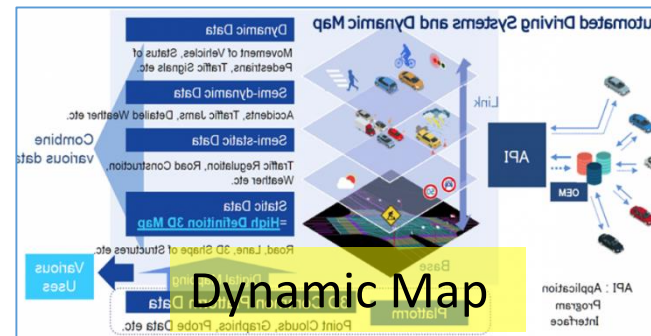
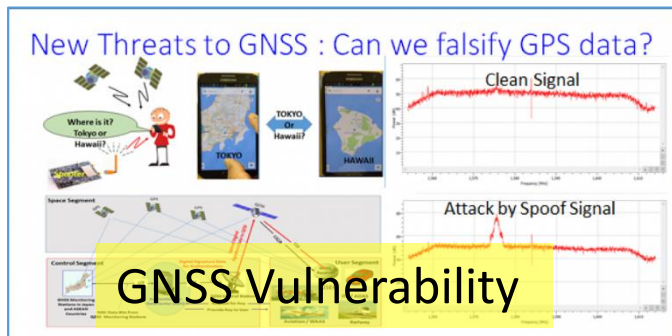
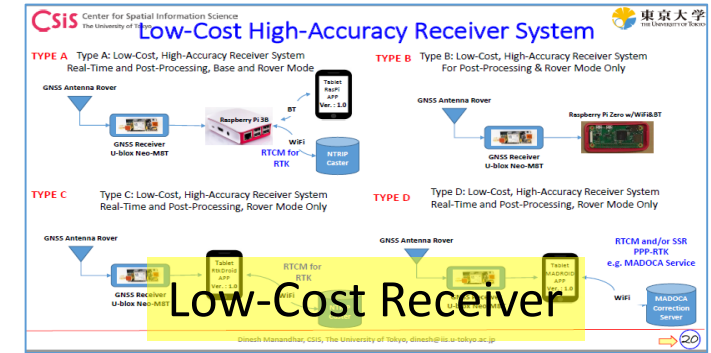
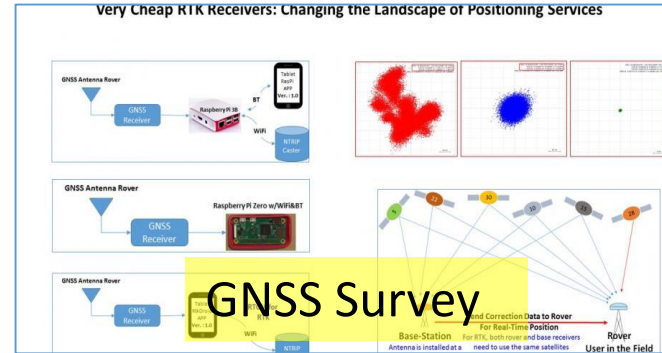
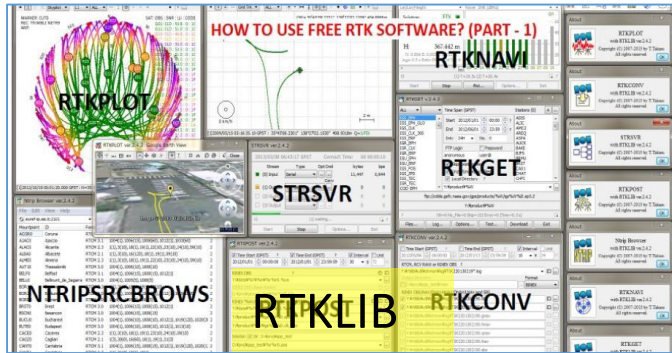


RPD Challenge Participants, MGA 2019, Bangkok



RPD Challenge Participants during MGA 2019 held in Bangkok in AUG 2019

MGA GNSS Webinar



Upcoming Webinars: (1) RTK from Android GNSS Raw Data (2) Early Warning System (3) GNSS Signal Authentication (4) PNT from Micro/Cube Satellites and many more.....

Webinar Registration : <http://gnss.peatix.com>

Past Webinar Reference: <https://home.csis.u-tokyo.ac.jp/~dinesh/WEBINAR.htm>

We need YOU as a Resource Person. Please contact us....

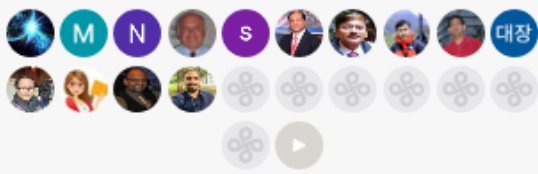
MGA Webinars

MGA Webinar # 08
by GNSS

Tokyo
Dec 6, 2018 (Thu)

Invitation Ticket (Free)

Tickets closed




33 ATTENDING

MGA Webinar #09
by GNSS

Tokyo
Jul 16, 2019 (Tue)

By Registration Only

Tickets closed



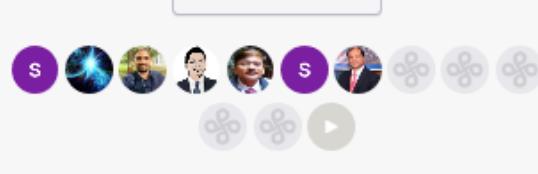
37 ATTENDING

MGA Webinar # 10
by GNSS

Tokyo
Aug 6, 2019 (Tue)

By Registration Only (Tickets are Free)

Tickets closed




12 ATTENDING

MGA WEBINAR # 12
by GNSS

Surat, Gujarat, India
Dec 6, 2019 (Fri)

Free Invitation

Tickets closed



30 ATTENDING

Please Refer the following sites for details (Past presentation files, video files and data are available):

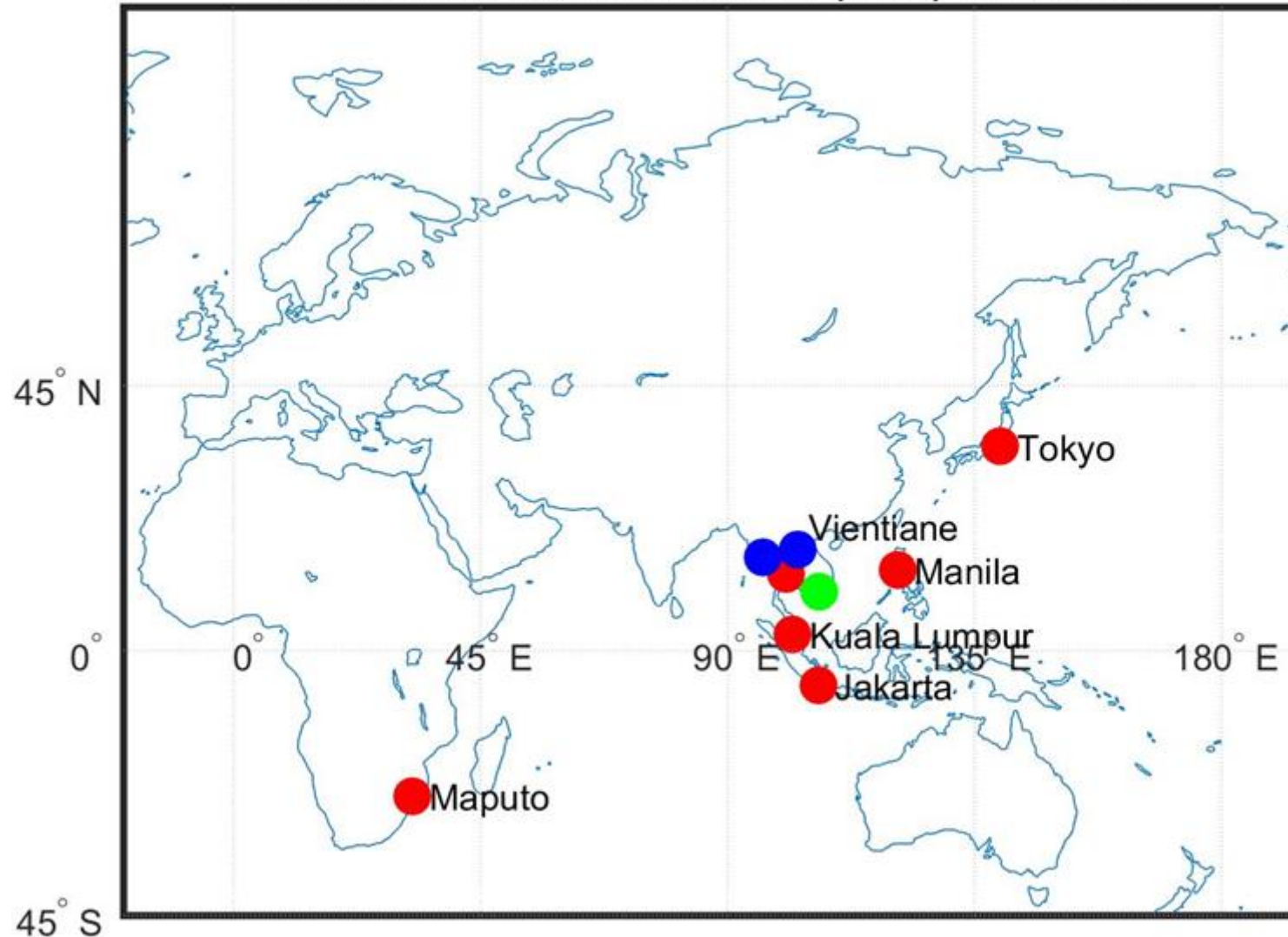
<https://gnss.peatix.com/>

<https://home.csis.u-tokyo.ac.jp/~dinesh/WEBINAR.htm>

Asian Base-Station Network and MADOCA Receiving Stations

Installation of Base-Stations in Universities for Capacity Building

Asian Base-Station Network (ABN) Locations



Installation of Base-Stations in Universities for Capacity Building

Country	Place	University	Receiver Type
Indonesia	Jakarta	University of Indonesia	GNSS (1) / GNSS + MADOCA (1)
Japan	Tokyo-A	The University of Tokyo	GNSS (1) / GNSS + MADOCA (1)
Japan	Tokyo-B	Tokyo University of Marine Science & Tech.	GNSS (1) / GNSS + MADOCA (1)
Japan	Tokyo-C	KEIO University	GNSS (1)
Laos	Vientiane	National University of Laos	GNSS (1)
Malaysia	Kuala Lumpur	Malaysia Japan International Institute of Tech.	GNSS (1) / GNSS + MADOCA (1)
Myanmar	Yangon	Yangon Technological University	GNSS (1)
Thailand	Bangkok	Chulalongkorn University	GNSS (1) / GNSS + MADOCA (1)
Thailand	Pathumthani	Asian Institute of Technology	GNSS(1)
Philippines	Manila	University of the Philippines	GNSS (1) / GNSS + MADOCA (1)
Vietnam	Ho Chi Minh City	International University Vietnam National University	GNSS (1) GNSS + MADOCA (Feb 2020)
Mozambique*	Maputo	Universidade Eduardo Mondlane	GNSS (1)
Singapore	Singapore	TBD	GNSS + MADOCA (1)
Australia	Perth	Curtin University	GNSS + MADOCA (1)

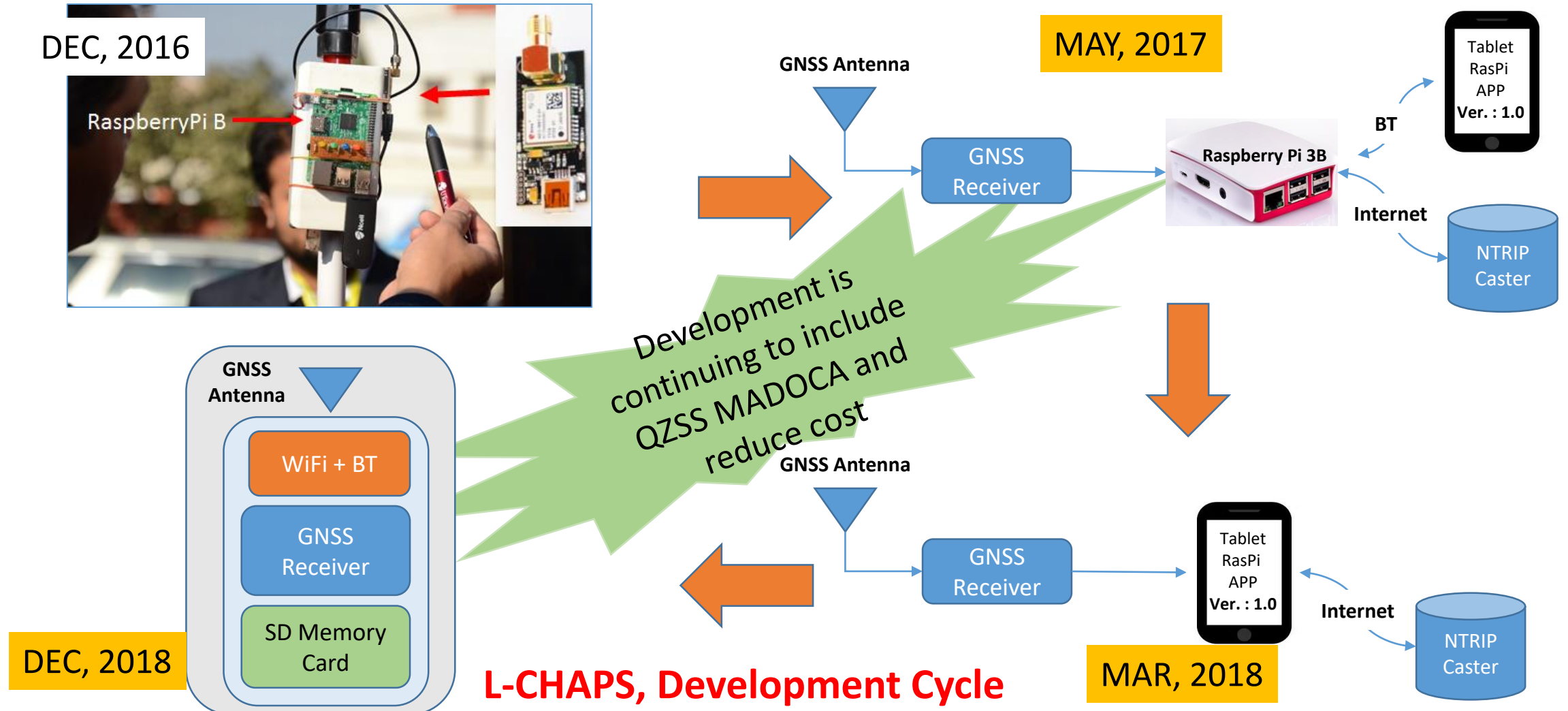
Low-Cost Receiver Systems

Android APPs for GNSS Data Logging & Processing

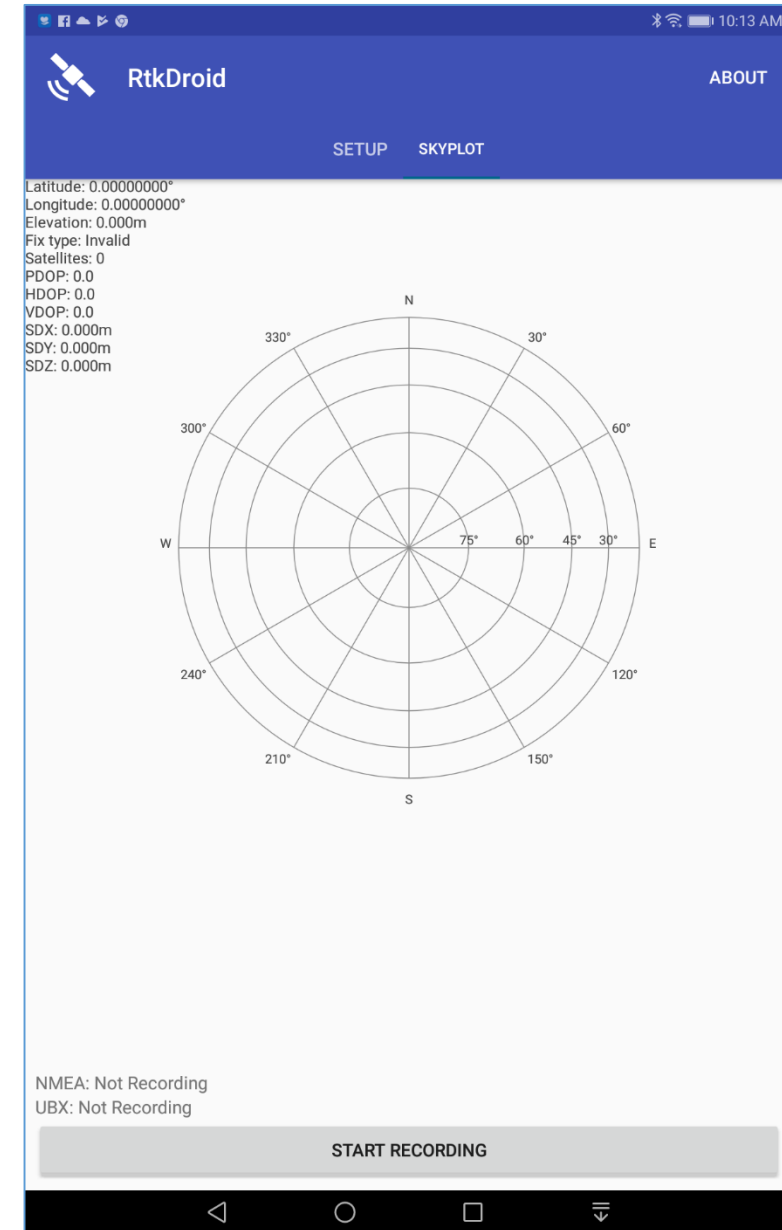
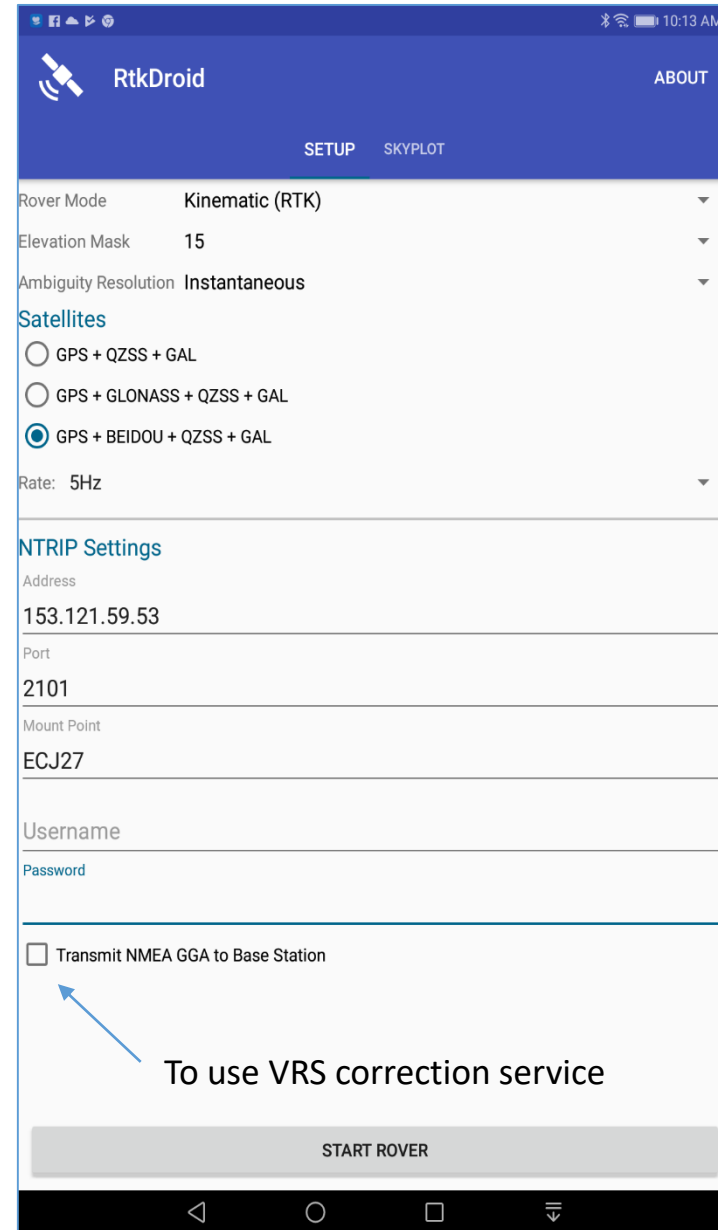
- RTKDROID
 - Real-Time RTK for Android devices
 - Based on RTKLIB
 - Already Released – Distribution by Request
 - Send e-mail to dinesh@csis.u-Tokyo.ac.jp
- MADROID
 - Real-Time PPP based on MADOCA correction data through MADOCA server
 - Based on u-blox F9 dual frequency receiver
 - Under Developed – will be released Q1 2019
 - Development Delayed / New Plan is Q2 2020

Low-Cost High-Accuracy Positioning System(L-CHAPS),Development Cycle

Definition of Low Cost : Cost Less than \$100, Accuracy Better than 100cm, Weight Less than 100gm



RTKDROID APP



Capacity Development and Information Dissemination under UNOOSA/ICG

ICG, WG-C Members

Capacity Development and Information Dissemination



Conduction of Trainings, Seminars and Workshops

Advanced GNSS Training at SVNIT, Surat, DEC 2019



GNSS Lecture and Training on ZBL Data Processing Wakkanai, Hokkaido, NOV 2019

Zero Base-length Processing

Post-Processing Kinematic (PPK) for High-Accuracy Position Data

How to process GNSS data for centimeter level accuracy?
How much errors are there in GNSS Data?

If you want to learn about these, please join MGA Webinar by
Dr. Dinesh Manandhar, Associate Professor (Project), The University of Tokyo
6th December 2019, 18:00 – 19:00 (Indian Standard Time)

The diagram shows an Antenna connected to a Signal Splitter, which feeds into both a Base Receiver and a Rover Receiver. Below this, a flow shows the Antenna Reference Coordinate (Absolute Value) $\begin{pmatrix} X_0 \\ Y_0 \\ Z_0 \end{pmatrix}$ being processed (OR) to produce the Computed Base Receiver Coordinate $\begin{pmatrix} X_b \\ Y_b \\ Z_b \end{pmatrix}$, which is then processed (OR) to produce the Computed Rover Receiver Coordinate $\begin{pmatrix} X_r \\ Y_r \\ Z_r \end{pmatrix}$.

The diagram illustrates GNSS satellites in orbit receiving signals from a Base Station or CORS and transmitting them to a Rover or Station in the Field. A 'Base length' is indicated between the base and rover stations. A note says 'Send Correction Data Back For Real Time Position'.

Three plots show position accuracy: SPP (Single Point Positioning) with a large red cloud of points, DGPS (Differential GPS) with a smaller blue cloud, and RTK (Real Time Kinematic) / PPK (Post Processing Kinematic) with a single green point, indicating centimeter-level accuracy.



GNSS Trainings in Nepal 2019



Visit to SAR, Manila, The Philippines, 2019



Summer School 2019, TUMSAT, Tokyo



International GNSS Summer School
Organized by Tokyo University of Marine Science and Technology

Course

- Module A: GNSS Signal Security
- Module B: Spoofing & GNSS Signal Authentication
- Module C: Android GNSS Raw Data Processing

Dinesh MANANDHAR
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dinesh@iis.u-tokyo.ac.jp
29th July – 3rd August 2019, Tokyo

Dinesh Manandhar, The University of Tokyo, dinesh@iis.u-tokyo.ac.jp

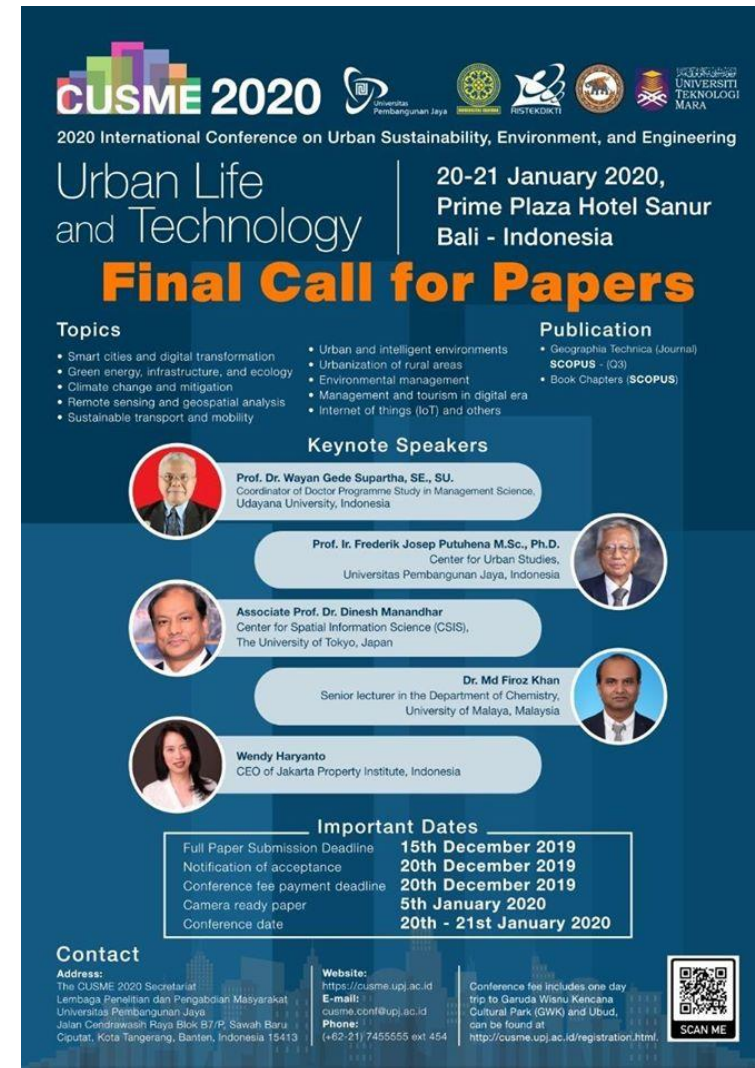


Seminar on GNSS Signal Security: Spoofing and Signal Authentication



CUSME 2020, Bali, 20 – 21 JAN 2020

Keynote Speech on Gate-Less Gates Application of Authenticated GNSS Data



CUSME 2020 2020 International Conference on Urban Sustainability, Environment, and Engineering

Urban Life and Technology | 20-21 January 2020, Prime Plaza Hotel Sanur Bali - Indonesia

Final Call for Papers

Topics

- Smart cities and digital transformation
- Green energy, infrastructure, and ecology
- Climate change and mitigation
- Remote sensing and geospatial analysis
- Sustainable transport and mobility
- Urban and intelligent environments
- Urbanization of rural areas
- Environmental management
- Management and tourism in digital era
- Internet of things (IoT) and others

Publication

- Geographia Technica (Journal)
- SCOPUS - (Q2)
- Book Chapters (SCOPUS)

Keynote Speakers

- Prof. Dr. Wayan Gede Supartha, SE., SU.**
Coordinator of Doctor Programme Study in Management Science, Udayana University, Indonesia
- Prof. Ir. Frederik Josep Putuhena M.Sc., Ph.D.**
Center for Urban Studies, Universitas Pembangunan Jaya, Indonesia
- Associate Prof. Dr. Dinesh Manandhar**
Center for Spatial Information Science (CSIS), The University of Tokyo, Japan
- Dr. Md Firoz Khan**
Senior lecturer in the Department of Chemistry, University of Malaya, Malaysia
- Wendy Haryanto**
CEO of Jakarta Property Institute, Indonesia

Important Dates


Full Paper Submission Deadline	15th December 2019
Notification of acceptance	20th December 2019
Conference fee payment deadline	20th December 2019
Camera ready paper	5th January 2020
Conference date	20th - 21st January 2020

Contact

Address: The CUSME 2020 Secretariat
Lembaga Penelitian dan Pengabdian Masyarakat
Universitas Pembangunan Jaya
Jalan Cendrawasih Raya Blok B7/P, Sawah Baru
Ciputat, Kota Tangerang, Banten, Indonesia 15413

Website: <https://cusme.upj.ac.id>
E-mail: cusme.conf@upj.ac.id
Phone: (+62-21) 7455555 ext 454

Conference fee includes one day trip to Garuda Wisu Kencana Cultural Park (GWK) and Ubud, can be found at <http://cusme.upj.ac.id/registration.html>



GNSS Lecture for RS/GIS Students at AIT, Thailand

Teach Remote Sensing & GIS Master Students at AIT in January and August Semesters



<https://www.ait.ac.th/>

AIT: Asian Institute of Technology

GNSS Lecture at University of Indonesia



GNSS Training at Yangon Technological University, Myanmar



GNSS Lecture at National University of Laos



Video at : <https://www.youtube.com/watch?v=JaicV8egzFo>

UN-Nepal Workshop on GNSS

The screenshot shows a web browser displaying the UN Office for Outer Space Affairs (UNOOSA) website. The URL in the address bar is unoosa.org/oosa/en/ourwork/psa/schedule/2016/2016-nepal-workst. The page header includes the UNOOSA logo and name, social media icons for Twitter, Facebook, YouTube, and Instagram, and a search bar. A navigation menu contains links for 'About Us', 'Our Work', 'Benefits of Space', 'Information for...', 'Events', and 'Space Object Register'. Below the menu, a breadcrumb trail reads 'Our Work > Programme on Space Applications > Schedule of Activities > 2016'. The main content area features the title 'United Nations/Nepal Workshop on the Applications of Global Navigation Satellite Systems' in green, followed by the dates 'KATHMANDU, NEPAL, 12 - 16 DECEMBER 2016'. The text describes the workshop as organized jointly by UNOOSA and the Survey Department of the Ministry of Land Reform and Management of Nepal, and co-organized/co-sponsored by the International Committee on Global Navigation Satellite Systems (ICG) and GfRmbH Galileo Control Centre, German Space Agency (DLR). A sidebar on the right titled 'Our Work' lists various activities, with 'Schedule of Activities' expanded to show years from 2012 to 2018, with 2016 highlighted. At the bottom left, there is a section for 'UPDATED INFORMATION' with a link to 'Programme'.

← → ↻ 🏠 | unoosa.org/oosa/en/ourwork/psa/schedule/2016/2016-nepal-workst 📖 ☆ ☰ 📝 🗺️ ⋮

 UNITED NATIONS
Office for Outer Space Affairs

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Search 🔍

About Us ▾ Our Work ▾ Benefits of Space ▾ Information for... ▾ Events ▾ Space Object Register ▾

Documents ▾ COPUOS 2018 ▾

Our Work > Programme on Space Applications > Schedule of Activities > 2016

United Nations/Nepal Workshop on the Applications of Global Navigation Satellite Systems

KATHMANDU, NEPAL, 12 - 16 DECEMBER 2016

Organized jointly by the United Nations Office for Outer Space Affairs and Survey Department of the Ministry of Land Reform and Management of Nepal

Co-organized and co-sponsored by the International Committee on Global Navigation Satellite Systems (ICG) and GfRmbH Galileo Control Centre, German Space Agency (DLR)

UPDATED INFORMATION

- [Programme](#)

Our Work

- Secretariat of COPUOS
- Programme on Space Applications
 - PSA News
 - Fellowships
 - Schedule of Activities
 - 2018
 - 2017
 - 2016**
 - 2015
 - 2014
 - 2013
 - 2012

12 – 16 DEC 2016

- Organized by Survey Dept. of Nepal and UNOOSA/ICG
- **Total 154 participants from 32 different countries**
- **66 International participants from 31 countries**
- 25 International participants were fully funded by ICG
- Full Five days workshop including ICG's IDM WG Meetings



Seminar at NIMT, Thailand



1st Seminar in AUG – 2016, About 30 Participants

Introduction to GNSS/QZSS, QZSS New Applications and GNSS Spoofing

2nd Seminar in APR – 2017, About 45 Participants

GNSS : How Accurate and How Secured?

Seminar at NIMT, Thailand



3rd Seminar in AUG – 2017, About 100 Participants
GNSS Signal Vulnerability and Spoofing Issues



Demonstration of GPS Spoofing

GNSS Lecture at SIIT, Thammasat University, Thailand



Malaysia-Japan International Institute of Technology (MJIIT)



GPS Seminar 2017

Date: 09 January 2017 (Monday) | Venue: MJIIT Level 4 Seminar Room, UTM Kuala Lumpur:

Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia with the support of The University of Tokyo Japan are hosting Global Positioning Seminar 2017, together with the Opening of UTM-MJIIT GPS Base Station.

GPS Seminar 2017 aims at bringing together stakeholders, prominent figures, leading academic scientists, professors, especially participants who are involved in determining, measuring, and observing position using satellite navigation systems. We are aiming to discuss and advance our understanding on potential of global navigation system for social benefits in Malaysia. This event will be able to get a glimpse of the applications of GPS Base Station and current satellite navigation activities in Malaysia which not limited to Survey & mapping, Railway, Public health, Telecommunication, Car navigation, Remote sensing, IoT, Precise farming, M2M, Environment, Disaster management, Game & entertainment, Weather, Tectonic movement, Security, Power grid for timing




GPS Seminar 2017

Malaysia-Japan International Institute of Technology (MJIIT)
09 January 2017 | Monday | Universiti Teknologi Malaysia (UTM) Kuala Lumpur
@ <http://mjiit.utm.my/seminar2017>

	Tentative agenda
08:30 – 09:00	Registration
09:00 – 09:10	Opening address Prof Datin Dr Rubiyah Yusof, Dean, Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia (UTM) Kuala Lumpur, Malaysia
09:10 – 09:40	Keynote speech "Social Service Improvement and Information Communication Technology" by Prof. Ryosuke Shibasaki CSIS The University of Tokyo
09:50 – 10:20	Keynote speech "Potential of Global Navigation Satellite System" by Assoc. Prof. Nobuaki Kubo Marine Science and Technology, The University of Tokyo
10:20 – 11:00	Coffee Break
11:00 – 11:40	Keynote speech "Asian Base Station Network" by Assoc. Prof. Dinesh Manandhar CSIS The University of Tokyo
11:40 - 12:10	Introduction study for GNSS 1
12:10 – 12:40	Introduction study for GNSS 1
12:40 – 14:00	Lunch Break
14:00 – 17:00	Hands on GPS Demonstration on RTK-GNSS using the Base Station Conducted by The University of Tokyo
17:00 – 18:00	Coffee Break / End of Seminar

Further information, please contact secretariat:-
Dr. Shuib Rambat shuibrambat@utm.my | 010 2788387
Dr. Hairi Zamzuri hairi@utm.my

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Helpdesk No.: +6018 2251 517 | Tel: +603 2203 1517 | Fax: +603 2203 1266
Email: shuibrambat@utm.my | website: <http://mjiit.utm.my/seminar2017>



Base-Station Installation at International University of Vietnam National University, HCM City, JAN 2018



Exchange of MOU for Joint Research



Participants of GNSS Training

GNSS Training at International University of Vietnam National University, HCM City, JAN 2018



GNSS Training in Laos, Feb 2018



45 Participants from Dept. of Lands, Dept. of Agriculture and Land Management, Department of Natural Resources and Environment, College Students and some private company participants

Link for Reference Materials

- Lab Home Page
 - <https://home.csis.u-tokyo.ac.jp/~dinesh/>
- GNSS Training Materials, Data etc
 - 2019: https://home.csis.u-tokyo.ac.jp/~dinesh/GNSS_Train.htm
 - 2018: https://home.csis.u-tokyo.ac.jp/~dinesh/T141_30.htm
- GNSS Webinar
 - <https://home.csis.u-tokyo.ac.jp/~dinesh/WEBINAR.htm>
 - <https://gnss.peatix.com>
- Link to Documents, Software, Android APP etc.
 - <https://home.csis.u-tokyo.ac.jp/~dinesh/Download.htm>
- Facebook : <https://www.facebook.com/gnss.lab> (GNSS Related)
- Contact : dinesh@csis.u-tokyo.ac.jp