GNSS Technology Promotion and Joint Research Activities in Asia and Africa

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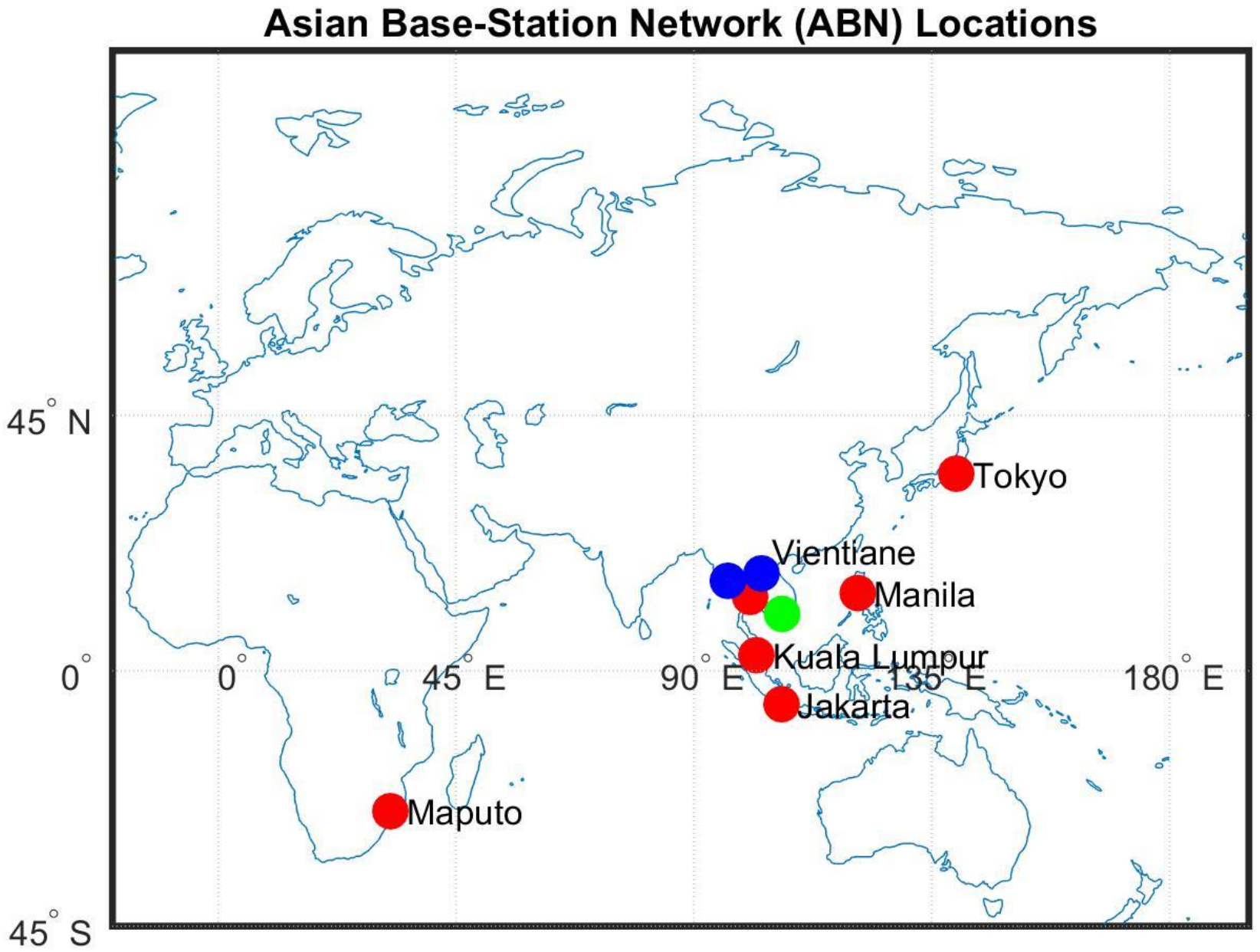
Asian Base-Station Network (ABN) Locations
45° N
0°
45° S
0°
45° E
90° E
135° E
180° E
Tokyo
Vientiane
Manila
Kuala Lumpur
Jakarta
Maputo

Dinesh Mana

Asian Base-Station Network (ABN) Locations

Country	Place	University
Indonesia	Jakarta	University of Indonesia
Japan	Tokyo-A	The University of Tokyo
Japan	Tokyo-B	Tokyo University of Marine Science & Technology
Japan	Tokyo-C	KEIO University
Laos	Vientiane	National University of Laos
Malaysia	Kuala Lumpur	Malaysia Japan International Institute of Technology
Myanmar	Yangon	Yangon Technological University
Thailand	Bangkok	Chulalongkorn University
The Philippines	Manila	University of the Philippines
Vietnam	Ho Chi Minh City	Vietnam National University (to be installed this year)
Mozambique*	Maputo	Universidade Eduardo Mondlane

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GNSS Lecture for RS/GIS Students at AIT, Thailand

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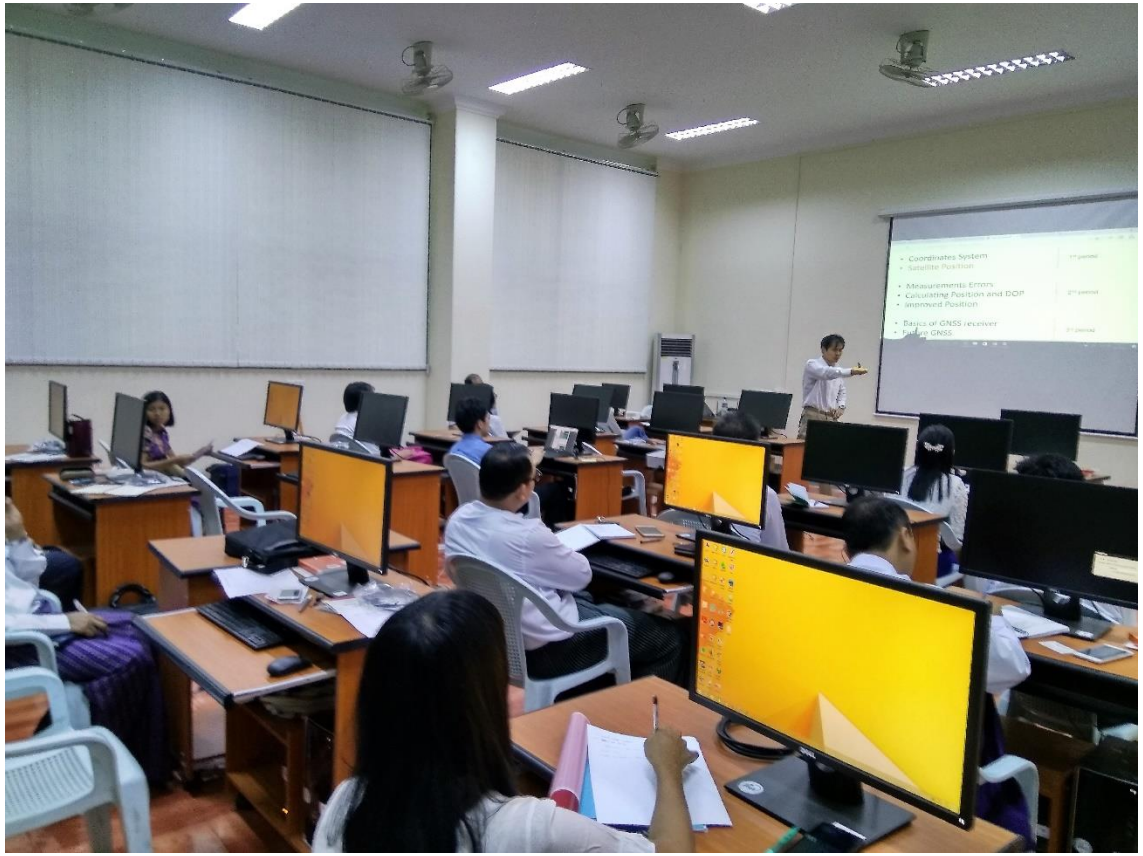
GNSS Lecture at University of Indonesia

GNSS Training at Yangon Technological University, Myanmar



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GNSS Lecture at National University of Laos

https://www.youtube.com/watch?v=JaicV8egzFo

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UN-Nepal Workshop on GNSS December 2016

- Organized by Survey Dept. of Nepal and UNOOSA/ICG
- About 150 participant from 32 different countries
- Full Five days workshop including ICG's IDM WG Meetings

Seminar at NIMT, Thailand

1St Seminar in AUG – 2016, About 30 Participants

2nd Seminar in APR – 2017, About 45 Participants

NIMT: National Institute of Metrology

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Seminar at NIMT, Thailand

3nd Seminar in AUG – 2017, About 100 Participants

Demonstration of GPS Spoofing

NIMT: National Institute of Metrology

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GNSS Lecture at SIIT, Thamassat University, Thailand

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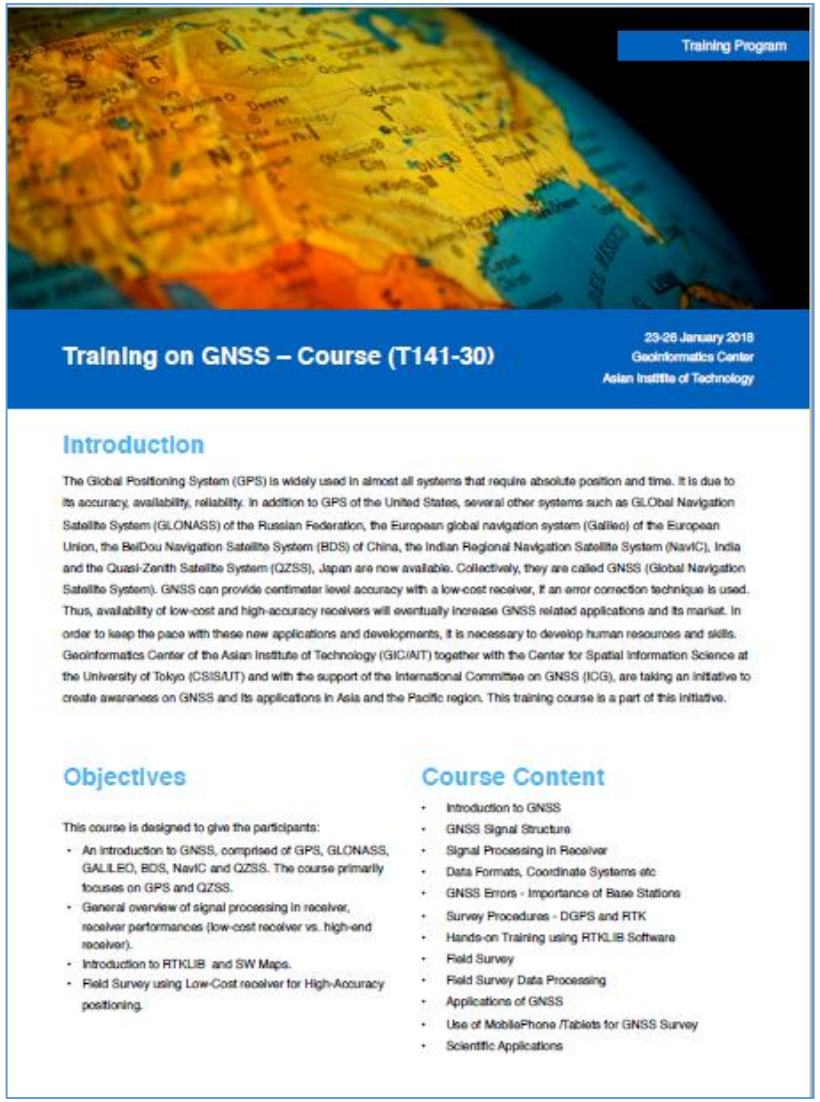
Organization of Training on GNSS, Thailand
JAN 23 – 26 2018



Training Program

Training on GNSS – Course (T141-30)

23-26 January 2018
Geoinformatics Center
Asian Institute of Technology

Introduction

The Global Positioning System (GPS) is widely used in almost all systems that require absolute position and time. It is due to its accuracy, availability, reliability. In addition to GPS of the United States, several other systems such as GLObal Navigation Satellite System (GLONASS) of the Russian Federation, the European global navigation system (Galileo) of the European Union, the BeiDou Navigation Satellite System (BDS) of China, the Indian Regional Navigation Satellite System (NavIC), India and the Quasi-Zenith Satellite System (QZSS), Japan are now available. Collectively, they are called GNSS (Global Navigation Satellite System). GNSS can provide centimeter level accuracy with a low-cost receiver, if an error correction technique is used. Thus, availability of low-cost and high-accuracy receivers will eventually increase GNSS related applications and its market. In order to keep the pace with these new applications and developments, it is necessary to develop human resources and skills. Geoinformatics Center of the Asian Institute of Technology (GIC/AIT) together with the Center for Spatial Information Science at the University of Tokyo (CSIS/UT) and with the support of the International Committee on GNSS (ICG), are taking an initiative to create awareness on GNSS and its applications in Asia and the Pacific region. This training course is a part of this initiative.

Objectives

This course is designed to give the participants:

- An introduction to GNSS, comprised of GPS, GLONASS, GALILEO, BDS, NavIC and QZSS. The course primarily focuses on GPS and QZSS.
- General overview of signal processing in receiver, receiver performances (low-cost receiver vs. high-end receiver).
- Introduction to RTKLIB and SW Maps.
- Field Survey using Low-Cost receiver for High-Accuracy positioning.

Course Content

- Introduction to GNSS
- GNSS Signal Structure
- Signal Processing in Receiver
- Data Formats, Coordinate Systems etc
- GNSS Errors - Importance of Base Stations
- Survey Procedures - DGPS and RTK
- Hands-on Training using RTKLIB Software
- Field Survey
- Field Survey Data Processing
- Applications of GNSS
- Use of MobilePhone /Tablets for GNSS Survey
- Scientific Applications

Participants

This course is designed to those who would like to learn about GNSS from the basics. We recommend to attend this course if your work is related with one of the following fields - Surveying, Mapping, GIS, Remote Sensing, Telecommunications, Safety and Security services, Geodesy, Transport, Logistics, Agriculture, Marine, Fishing, Aviation, Location Based Services (LBS) or APP developers.

Benefits

Upon completion of this course, participants will be able to understand about how a GNSS receiver works, its signal structures as well as its applications including survey methods for obtaining higher accuracies.

Course Schedule

23-26 January 2018 (4 days, 30 hrs)

Funding

Co-organizers have kindly agreed to provide limited financial assistance for travel for eligible participants and preference given to participants from the developing countries. Financial assistance will cover the travel costs only, and will NOT include expenses such as accommodation, food, insurance, medical emergencies etc. The organisers reserve the right to selecting the participants for granting the financial assistance for travel.

Deadline for Applications

Requesting for travel Funding: 31 October 2017

Self-funding: 15 December 2017

Accommodation and Logistics

Participants can stay at the AIT Conference Center with a tariff of US$ 40-50/night/person. Travel time from the Suvarnabhumi International Airport to AIT is usually one hour. Living cost inside the AIT campus is very reasonable and lunch/dinner cost may vary from 3 USD to 5 USD per meal.

Insurance

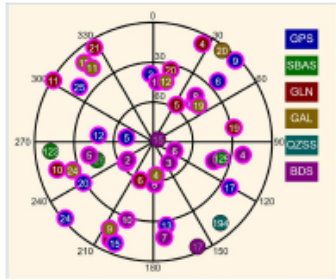
Participants are requested to obtain travel and medical insurance before entering in to Thailand.

Assessment and Certification

Participants will receive a certificate upon completion of the course.

Organizers

Asian Institute of Technology
International Committee on GNSS (ICG)
S4D/CSIS, The University of Tokyo



For further information please contact

Training Coordinator
Geoinformatics Center
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P.O.Box 4, Klong Luang, Pathumthani 12120
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T : +66 2524 5580
E : geoinfo@ait.asia

Applications can be downloaded from:
www.geoinfo.ait.asia/downloads/GNSS_application.pdf

FIND US www.geoinfo.ait.asia www.facebook.com/gicait www.twitter.com/gicait

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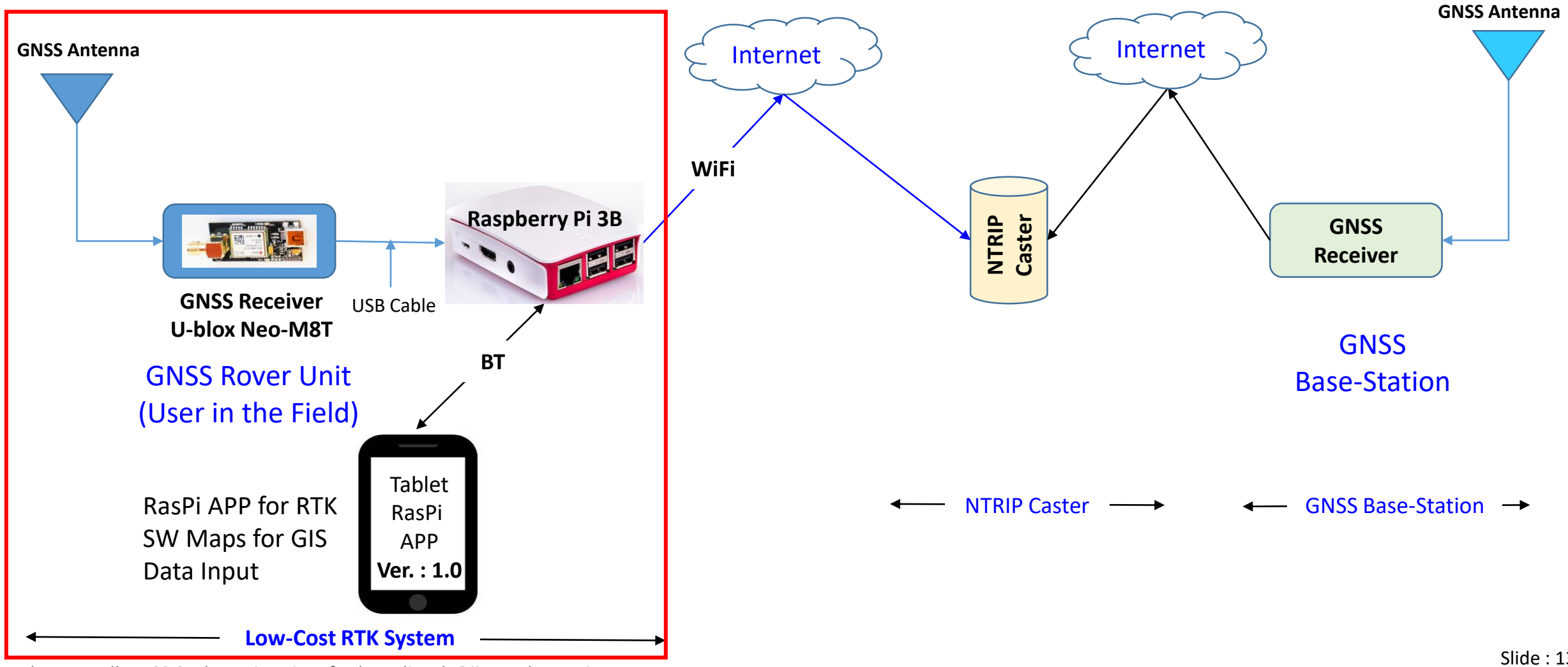
Low-Cost High Accuracy System



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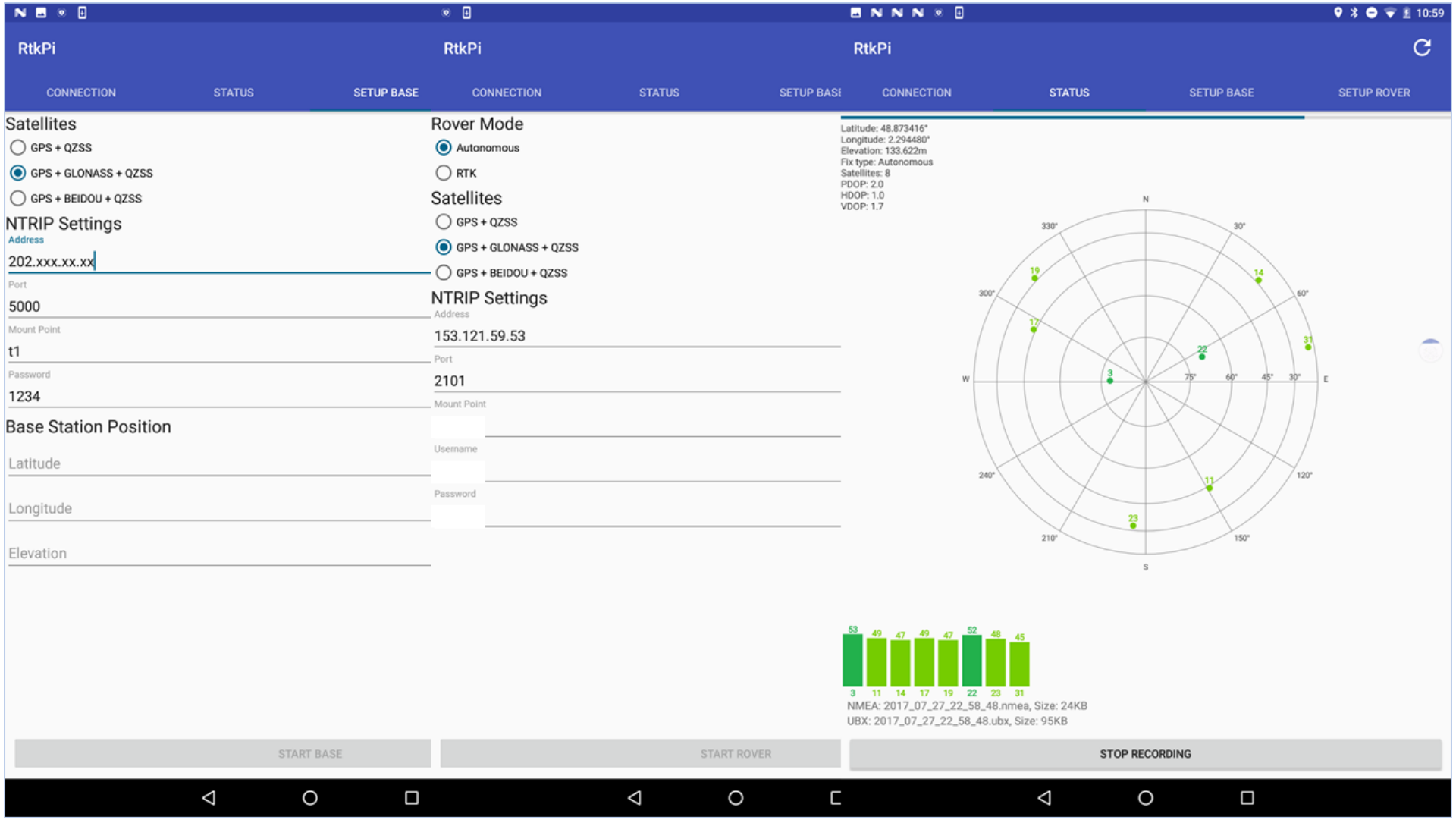
RtkPi APP for Low-Cost RTK System



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Board Computer for Low-Cost RTK System

Raspberry Pi 3B for Realtime and Postprocessing RTK

Raspberry Pi Zero w/WiFi & BT for Post-processing RTK

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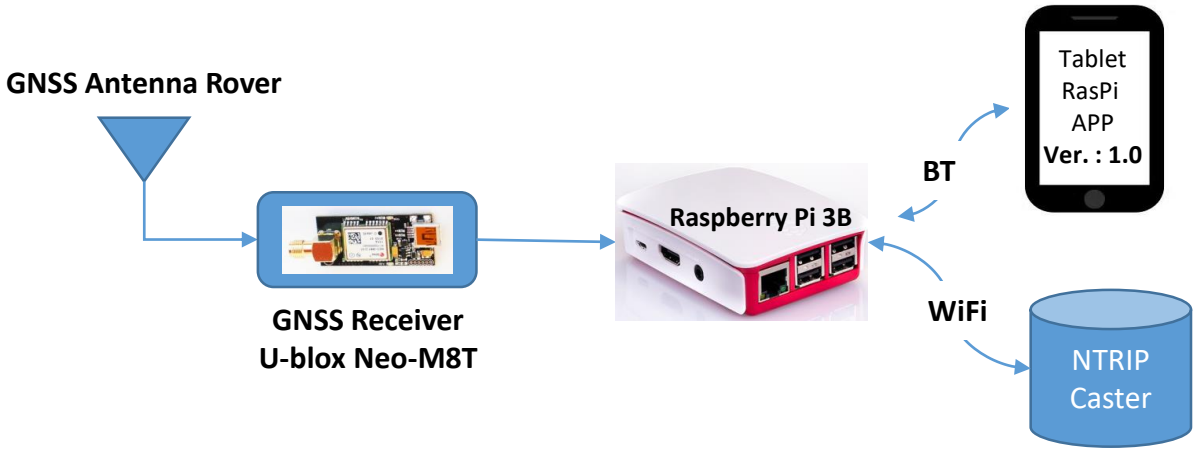
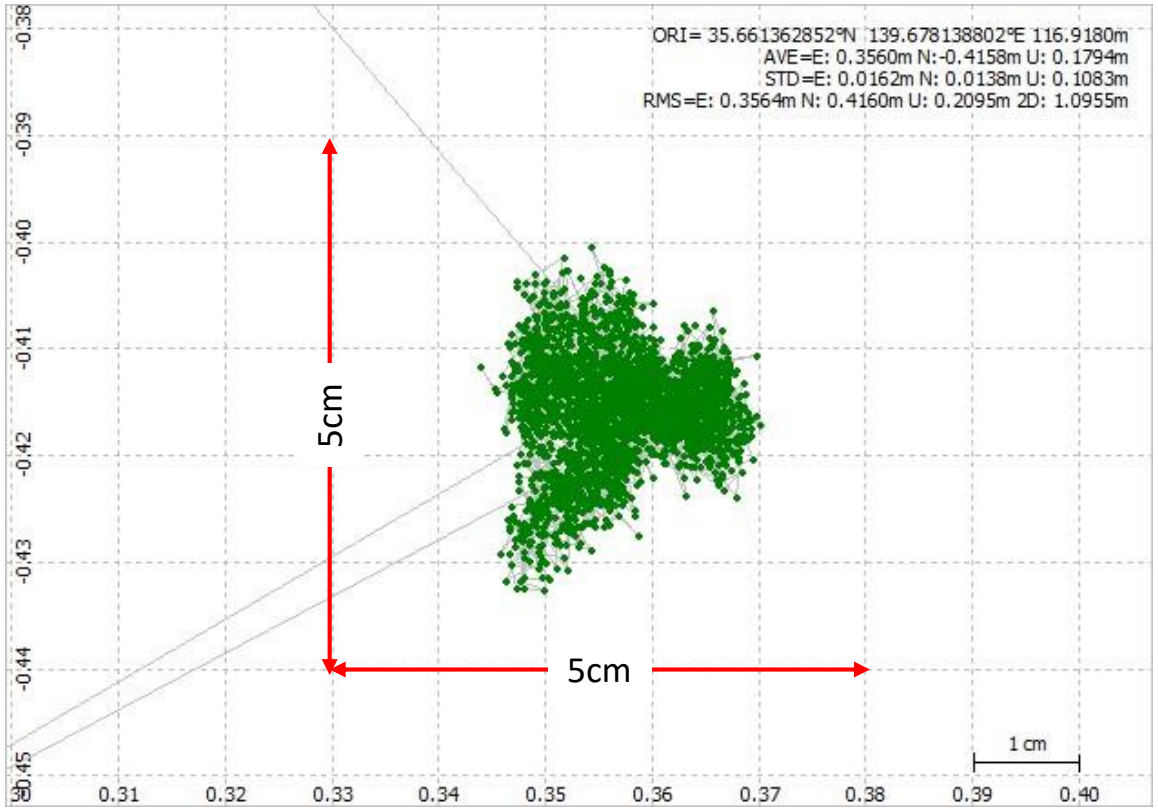
Accuracy from Low-Cost RTK System



Rover-Station:
Receiver: u-blox M8T
Antenna: Zephyr 2
Computer: RaspberryPi 3B+
Distance between Base and Rover : about 12Km

Base-Station:
Receiver: Trimble NetR9
Antenna: Zephyr 2



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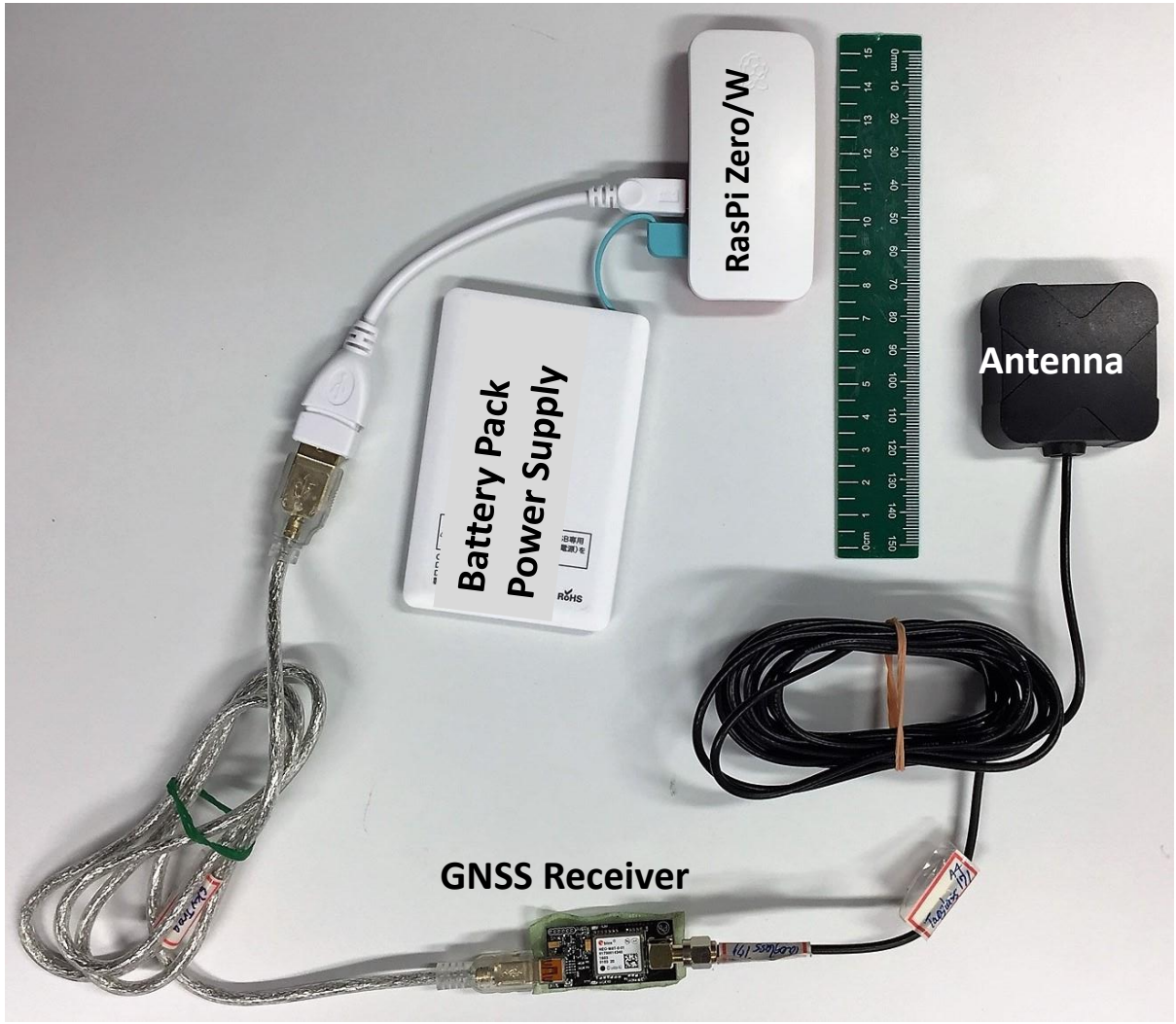
Simple to Use, Low-Cost System

Simple to Use, No Commands, Just One Time Setting
Connect Antenna, Receiver and Battery Pack
Device Starts Logging GNSS Raw Data required for RTK Post-Processing



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Recommendations

- Capacity Buildings shall be conducted at various levels, for example, end-user level, developer level, system integrator, policy and decision making level.
- Promotion of low-cost GNSS receivers for education and training purpose

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