Introduction of
Base station Network project

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Base station network

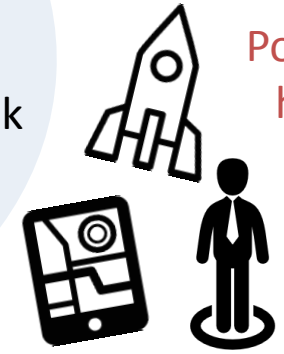
What is Base Station ?

GNSS:GPS, QZSS, GLONASS, BeiDou, Galileo, etc…

GNSS
antenna/receiver

Base station

Communication link
(Via the internet)



USER
Position

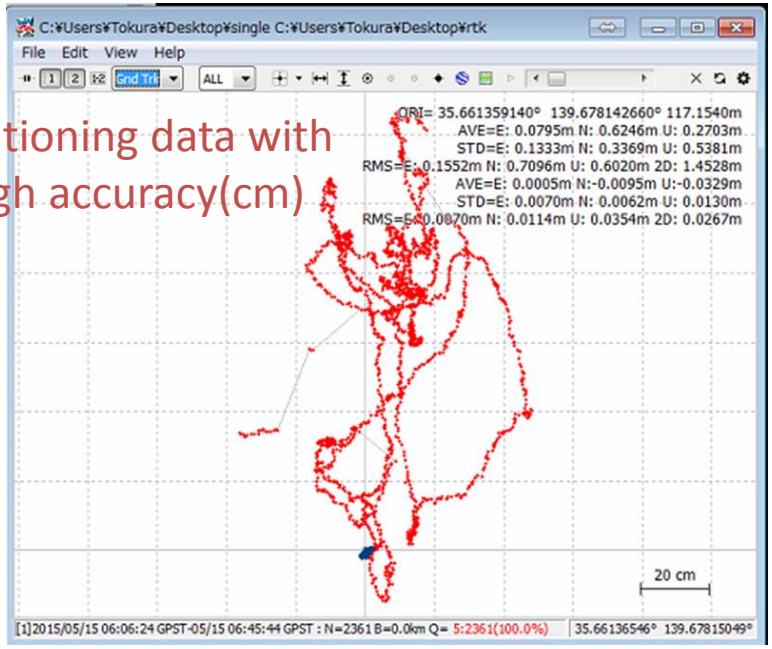
RTK-GNSS

- High accuracy absolute position

  (latitude, longitude and altitude)

- Real-time

Positioning data with high accuracy(cm)



Positioning infrastructure service
Make network and connection

CORS (Continuously Operating Reference Stations)

- Construction Base station in 2014
  - Asian Institute of Technology (Thailand)
  - Chulalongkorn University (Thailand)
  - University of the Philippines (Philippines)
  - Japan
    - University of Tokyo **Komaba campus**
    - Keio University **Hiyoshi campus**
    - Tokyo university of Marine Science and Technology **Etchujima campus**
    - **Via the internet**

    (Ntrip : Networked transport of RTCM via internet protocol)

Construction Base station in Asia

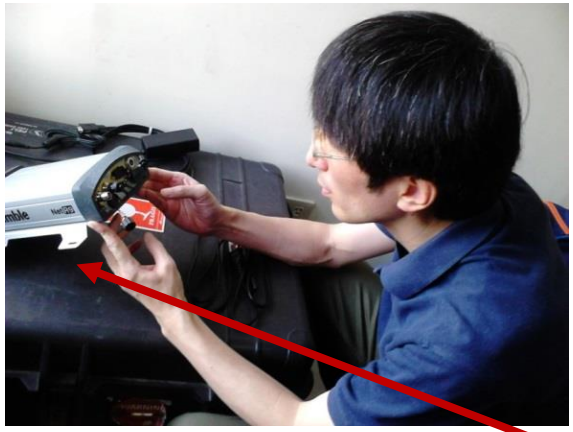
Chulalongkorn University

Antenna

Receiver

University of the Philippines

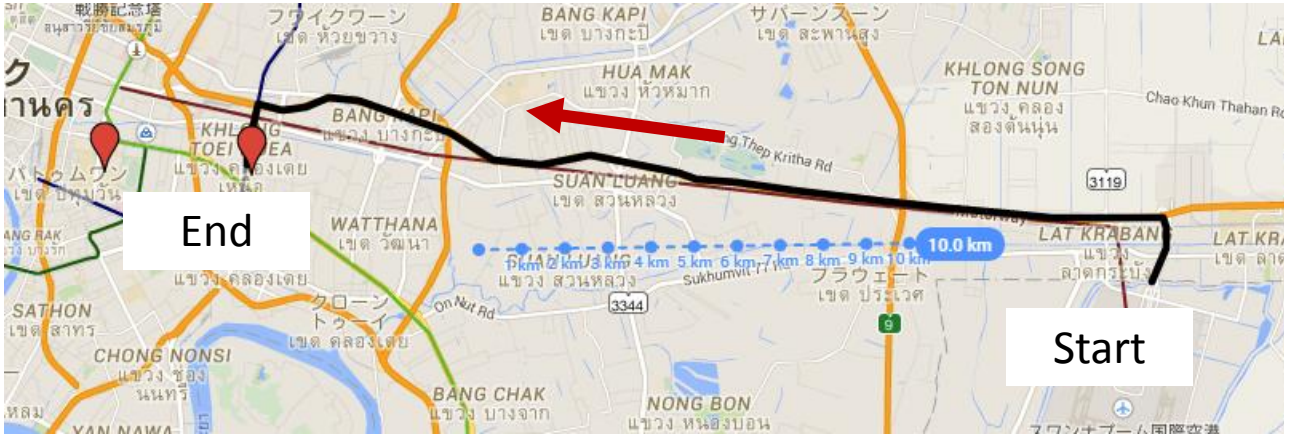
Antenna

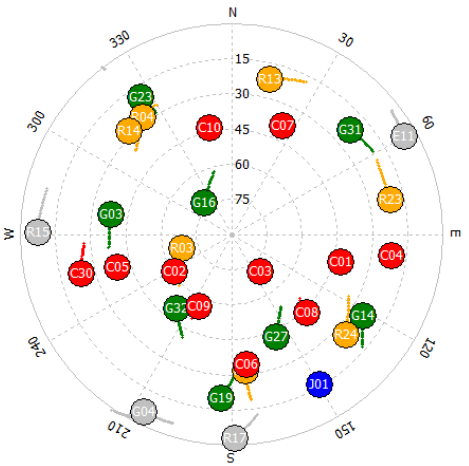


Receiver

Archives

Testing in Thailand



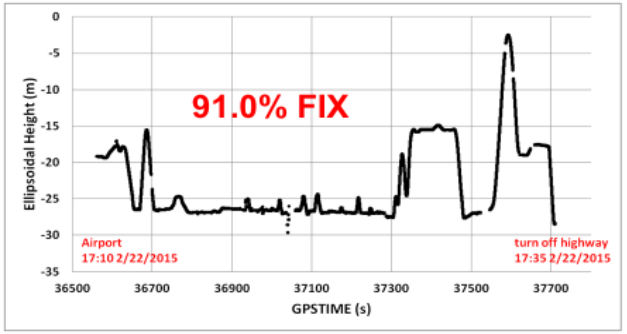


Antenna
NovAtel

Receiver
Trimble

:QZSS :GPS :GLONASS :BeiDou

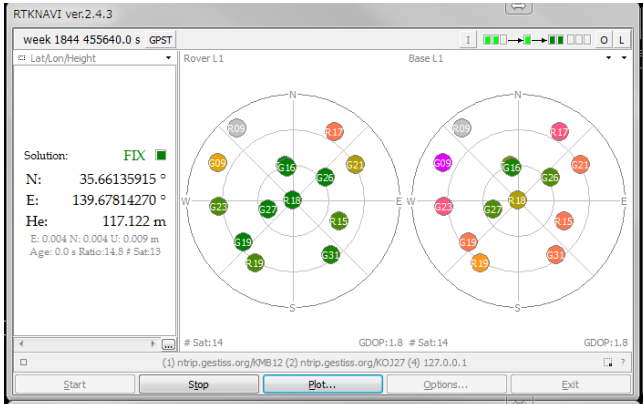
- from Airport to Tai-Pan Hotel
- 24 minuets - 10 Hz
- Trimble SPS-855 Multi-GNSS
- GPS/QZSS/GLONASS/BeiDou

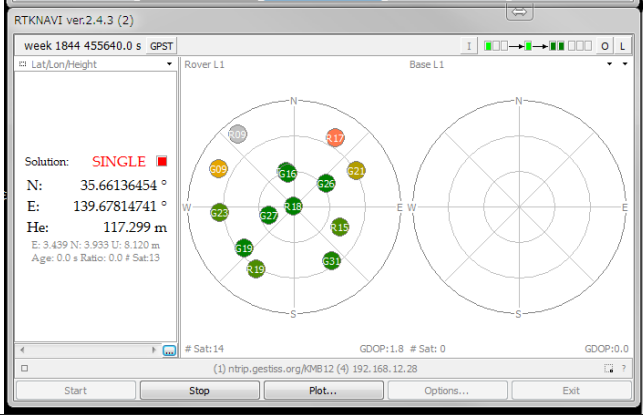


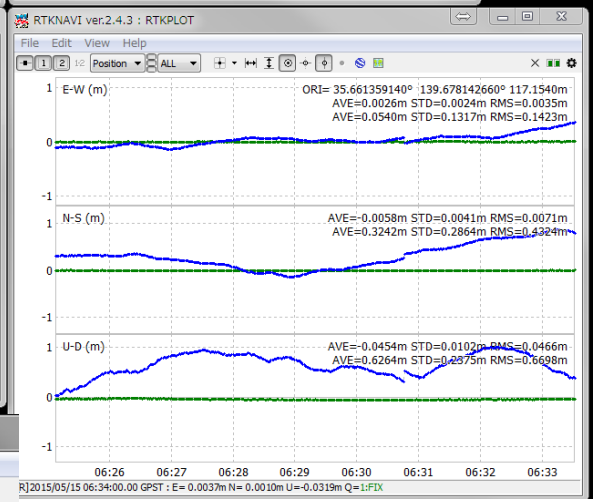
Example of RTK vs. Single point positioning with CORS

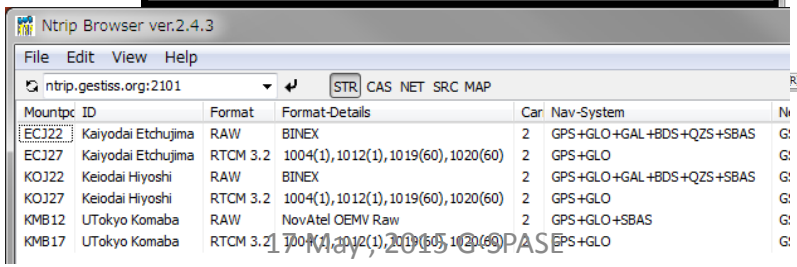
Overview | Release Notes | Support | Documents | References | Porting to BB | To Do | Statistics | SDR Receiver

RTKLIB: An Open Source Program Package for GNSS Positioning







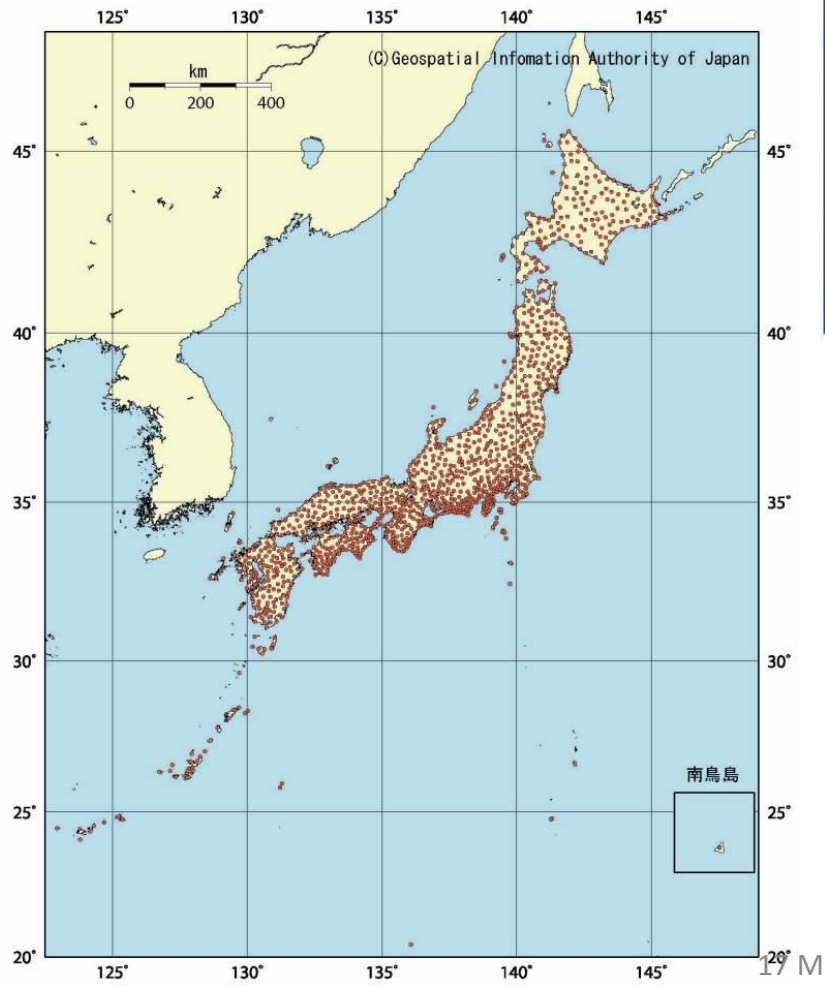


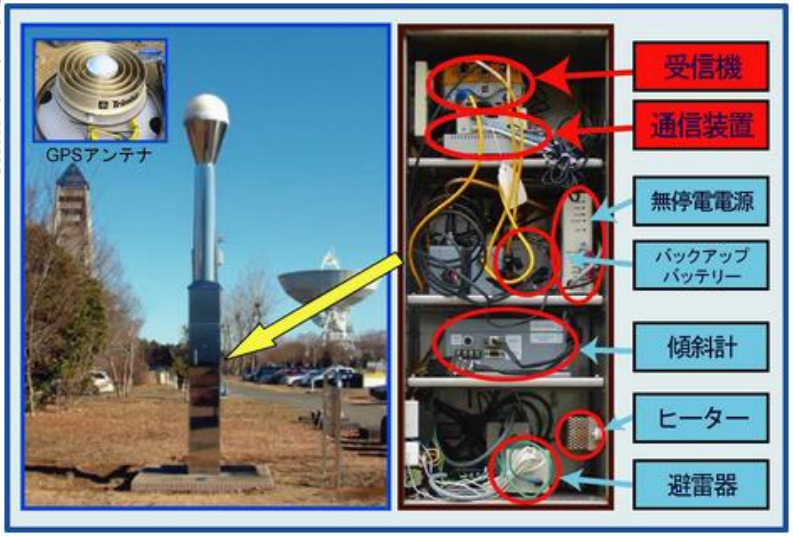
Mountpc	ID	Format	Format-Details	Car	Nav-System	N
ECJ22	Kaiyodai Etchujima	RAW	BINEX	2	GPS+GLO+GAL+BDS+QZS+SBAS	G
ECJ27	Kaiyodai Etchujima	RTCM 3.2	1004(1),1012(1),1019(60),1020(60)	2	GPS+GLO	G
KOJ22	Keiodai Hiyoshi	RAW	BINEX	2	GPS+GLO+GAL+BDS+QZS+SBAS	G
KOJ27	Keiodai Hiyoshi	RTCM 3.2	1004(1),1012(1),1019(60),1020(60)	2	GPS+GLO	G
KMB12	UTokyo Komaba	RAW	NovAtel OEMV Raw	2	GPS+GLO+SBAS	G
KMB17	UTokyo Komaba	RTCM 3.2	1004(1),1012(1),1019(60),1020(60)	2	GPS+GLO	G

Objection

GEONET (GEONET：GNSS Earth Observation Network System)

国土交通省
国土地理院
Geospatial Information Authority of Japan





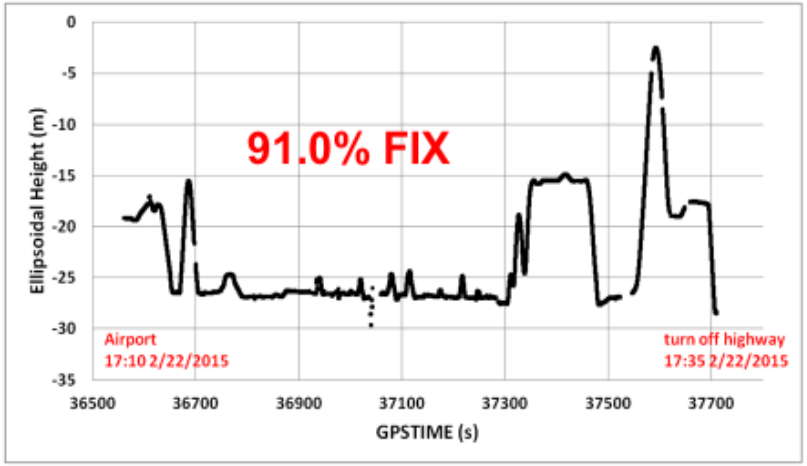
- An intervals of 20km
- About 1300 points

- Base-line
- Real time network

Objection

Who would profit by high accuracy positioning?

RTK post-processed results in Highway based on Chulalongkorn's CORS



- Traffic jam
- Hazard map for flood
- Infrastructures

Conclusion

Example of project objections

- Positioning infrastructure service
  - Construction Base station
  - Support
  - Connections to other universities

- Portable base station
  - Support other project
  - Lending GNSS receivers and antennas
  - Making a reference data