Asian Base Station Network Project Report

13/09/2015

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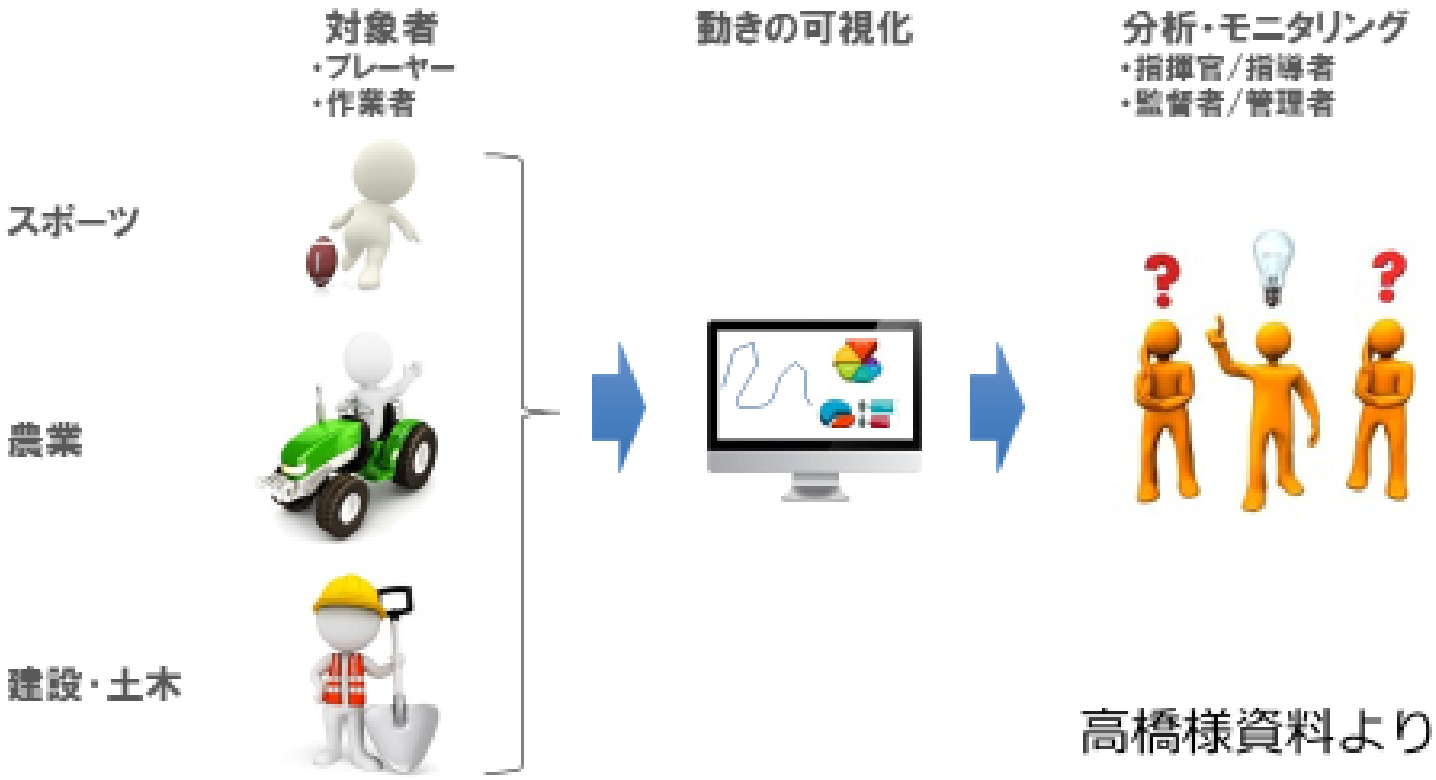
Collaborate with Sport Project

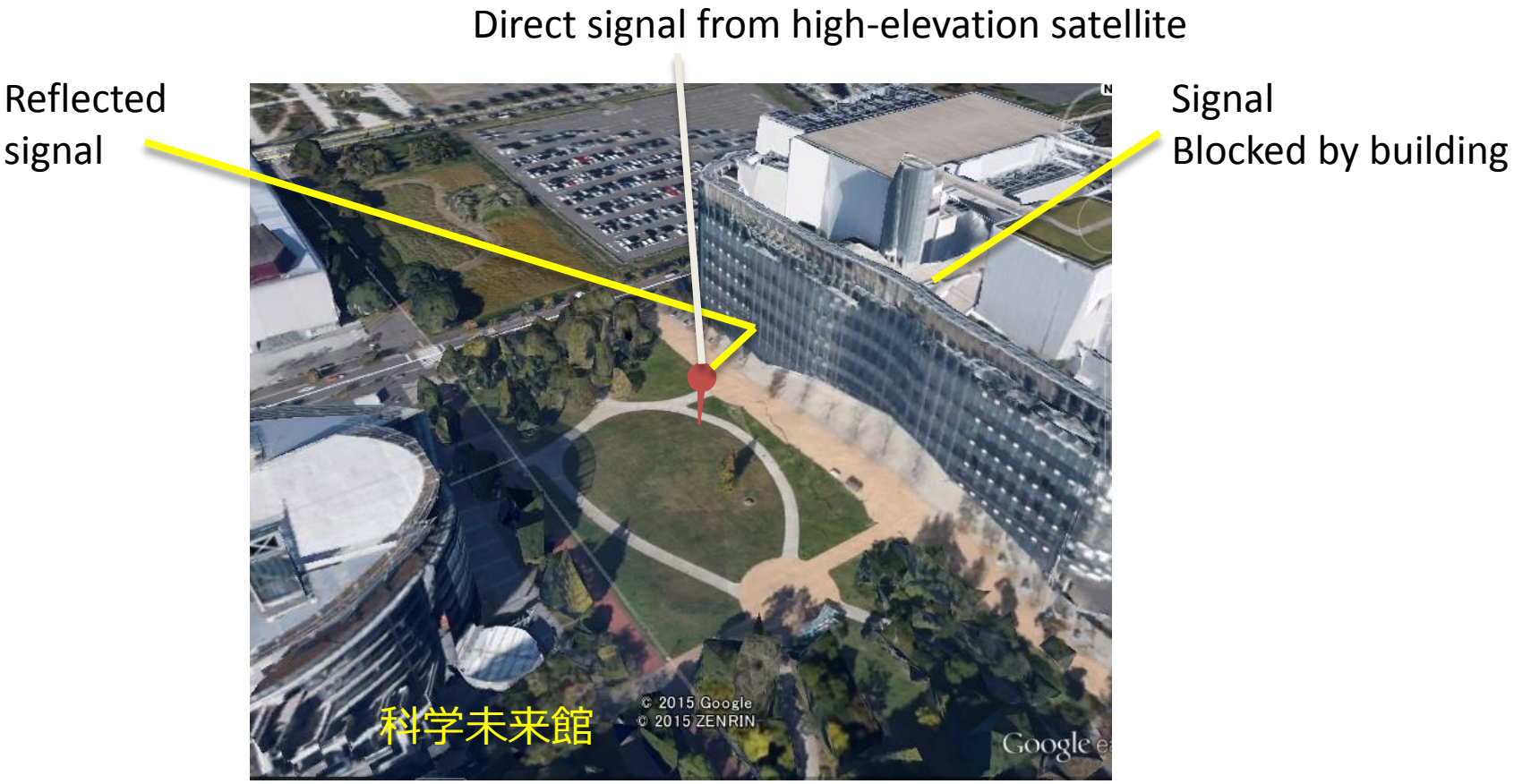
低価格・高信頼性RTKウェアラブルシステムにより、
『人』の動きを高精度に測位し、各種パフォーマンスの向上に役立てる。

ポイント ①単独測位に対する圧倒的な高精度
②従来のRTKシステムに対する低価格
③コンパクトなウェアラブル端末



高橋様資料より

Contributions of position errors

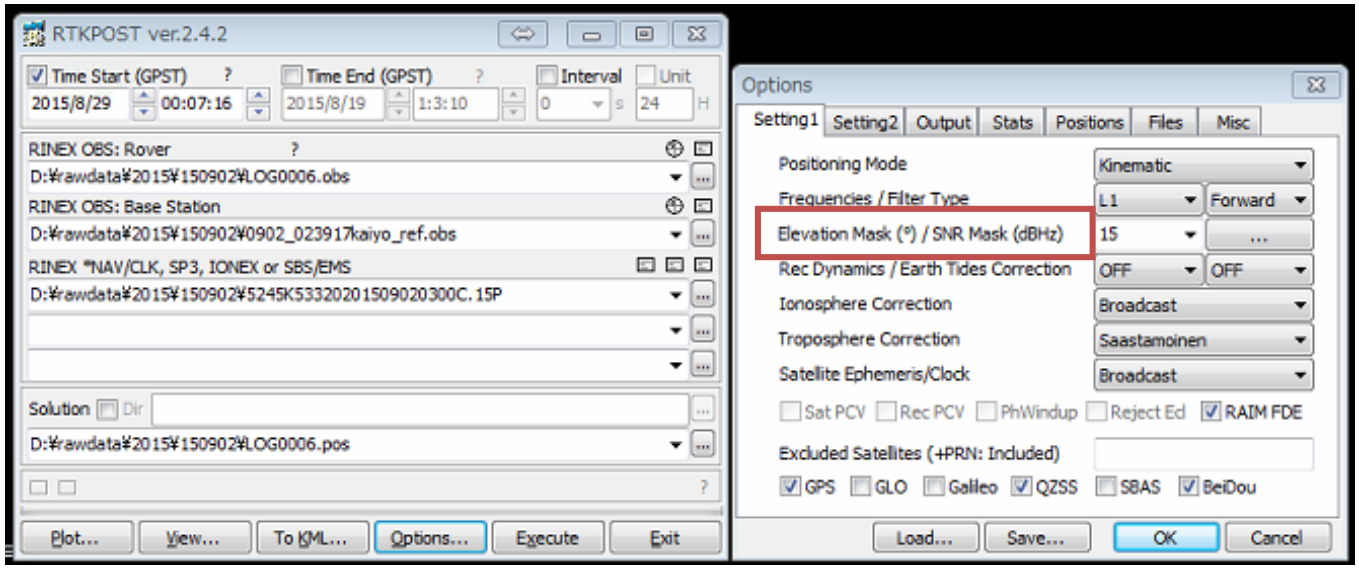


Wearable RTK Test conditions

Test1 : 外周	1周	0.9%
Test2 : 正方形	2.5周	0.1%
Test3 : 外周	1周	2.1%
Test4 : 正方形	5周	0.4%

受信機　UBLOX-M8T　GPS/QZSS/BeiDou　およそ20分5Hz　3割程度でラン

How to tuning using RTKLIB - RTKPOST



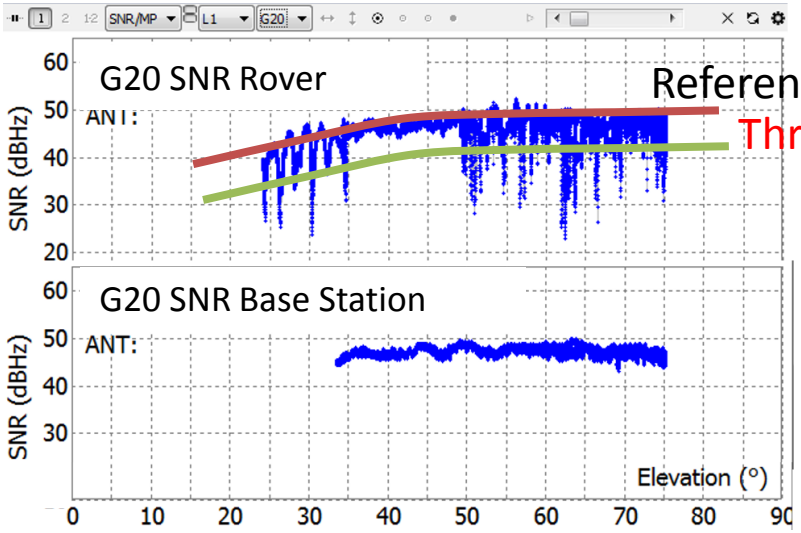
✓Elevation Mask

(low angle satellites are strongly affected by multipath)

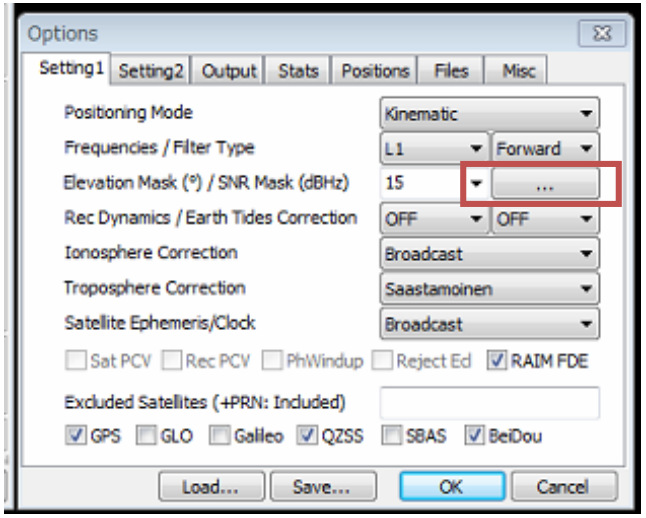
✓SNR Mask

(Checking the SNR dependent elevation for detecting multipath errors)

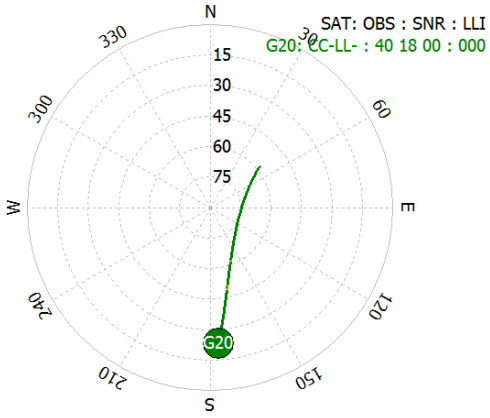
SNR Mask



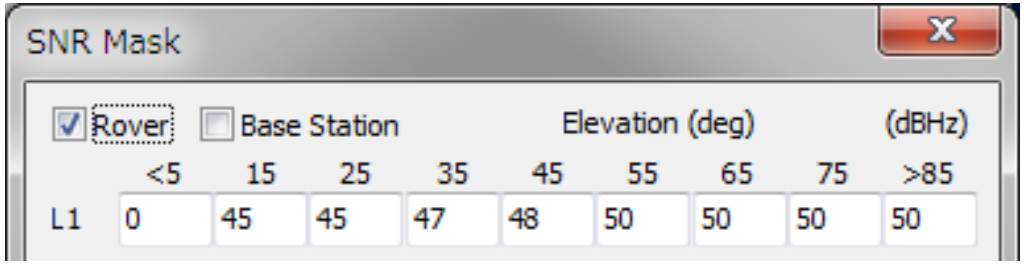
- Multipath affected signals SNR is disturbed
- To reject low quality signals, Masking SNR is effective



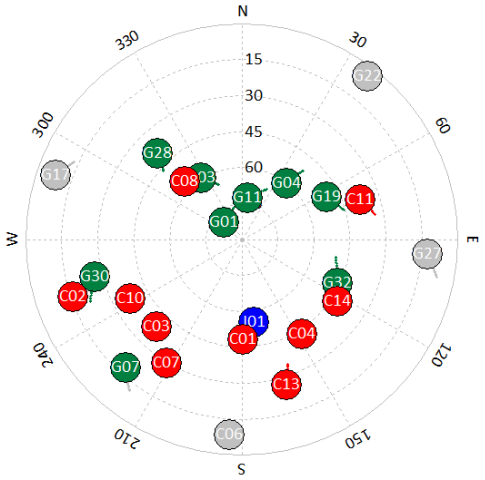
G20 衛星配置

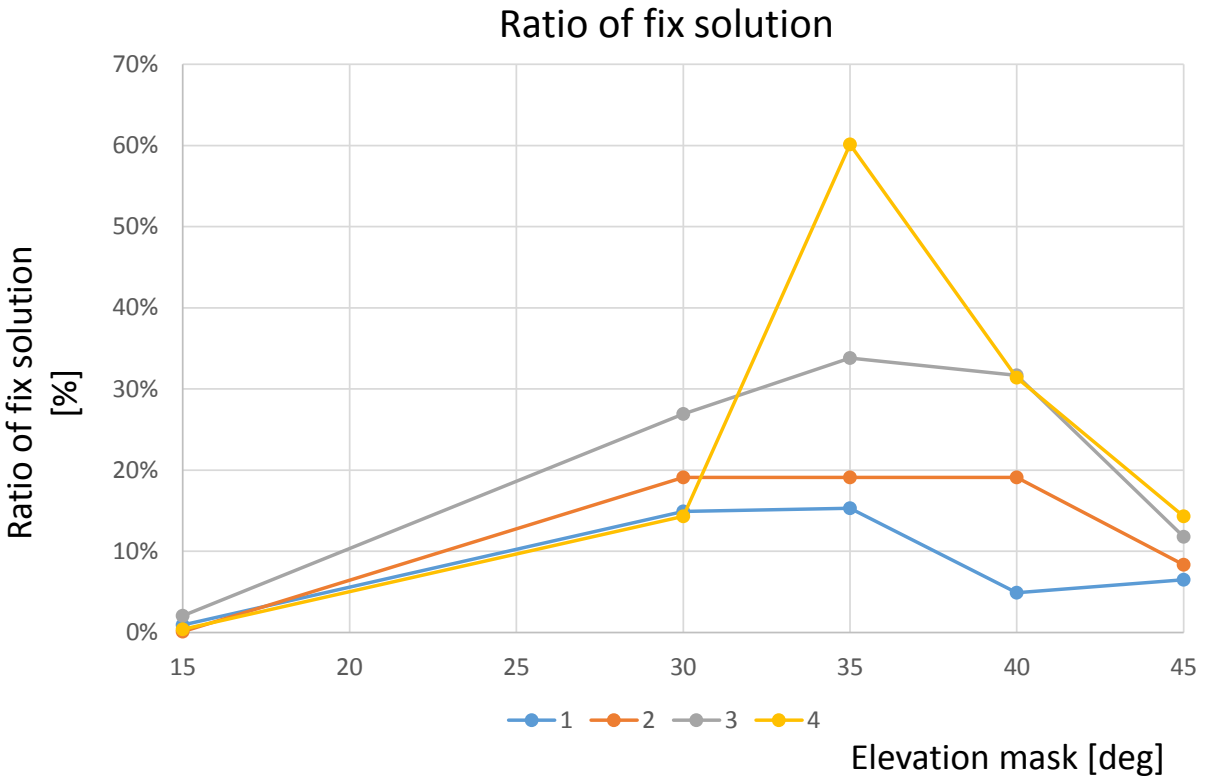


Reference line



Effects of Elevation Mask

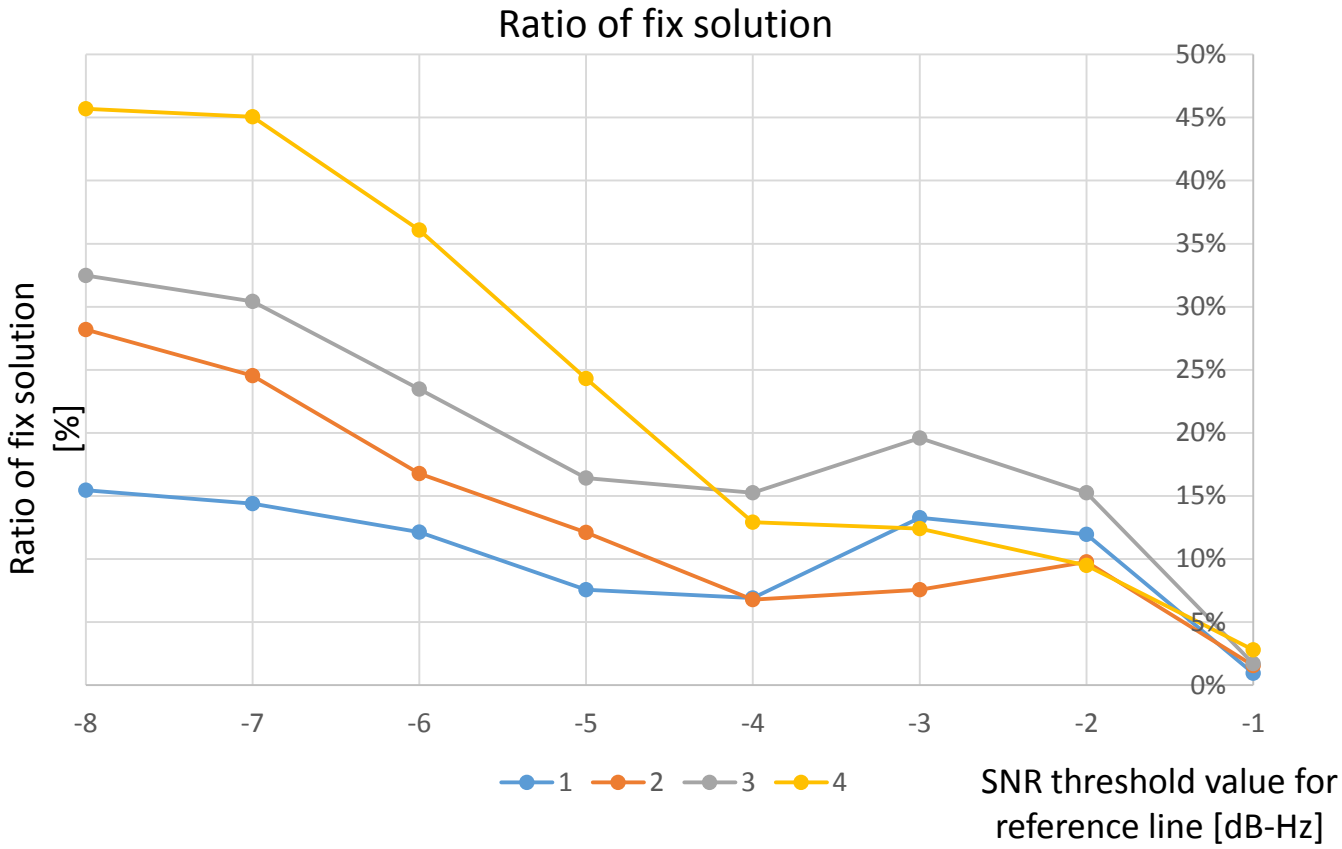




- Changing the elevation mask angle to reduce the multipath errors

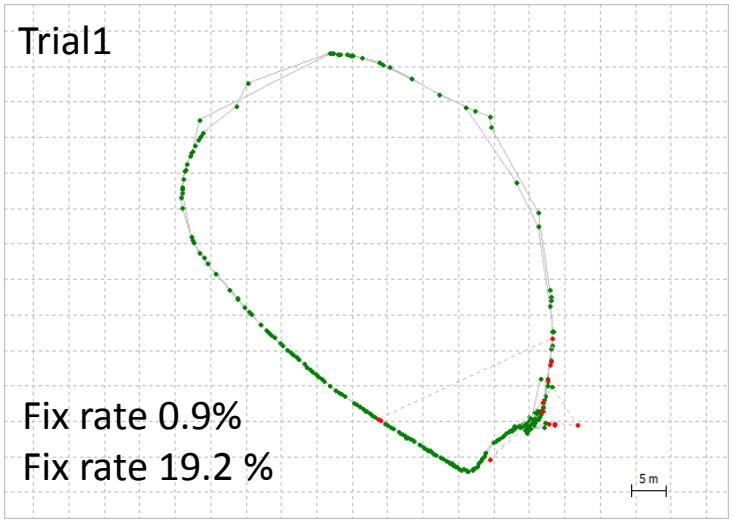
Effects of SNR Mask

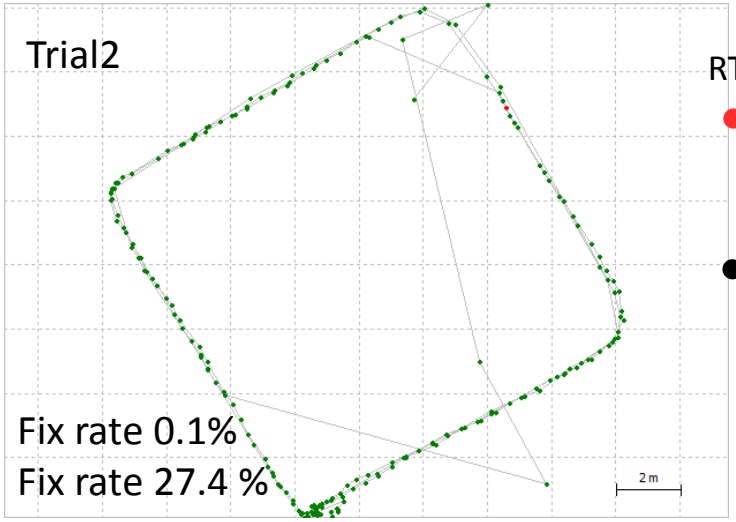
- Change these threshold for -1 to -8



- Changing the SNR threshold mask for -1 to -8 to reduce the multipath errors

Final Results





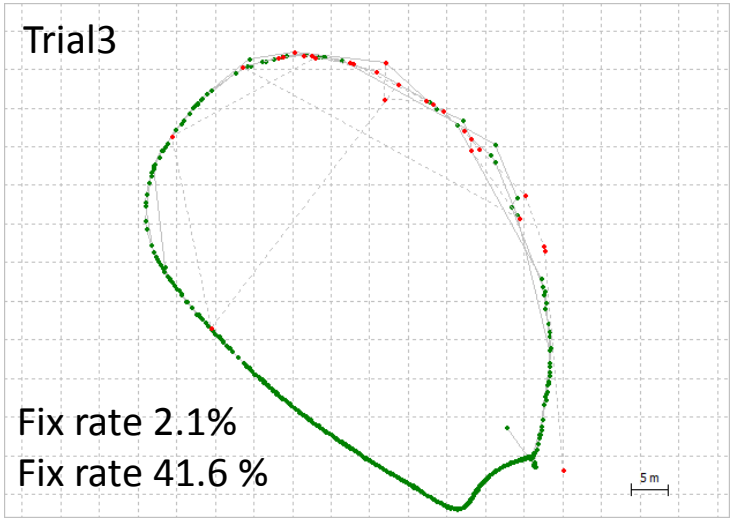
RTK Fix solution

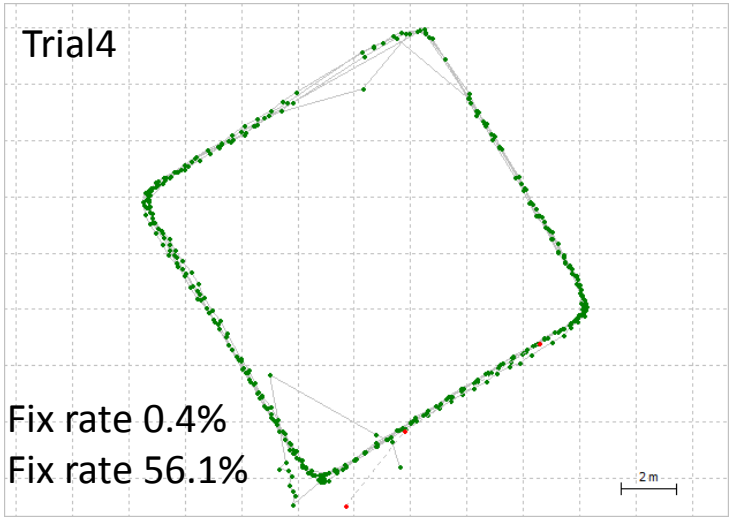
- Normal conditions

Elevation mask =15
SNR mask = off

- Tuning conditions

Elevation mask =35
SNR mask = -8





Wearable RTK System

Conclusions and future work

Conclusions

- Two ways for improving accuracy in sub-urban area
- These threshold is depend on the environment

⇒ find optimization threshold for obtain high accurate solution

Future work

- Positioning accuracy
  - coupling with velocity information

- Thank you!