Accuracy Comparison between low-cost receiver and high-cost receiver

GNSS Training, Team No: 15		
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How data are collected and processed

Reference Data - Zero baseline data

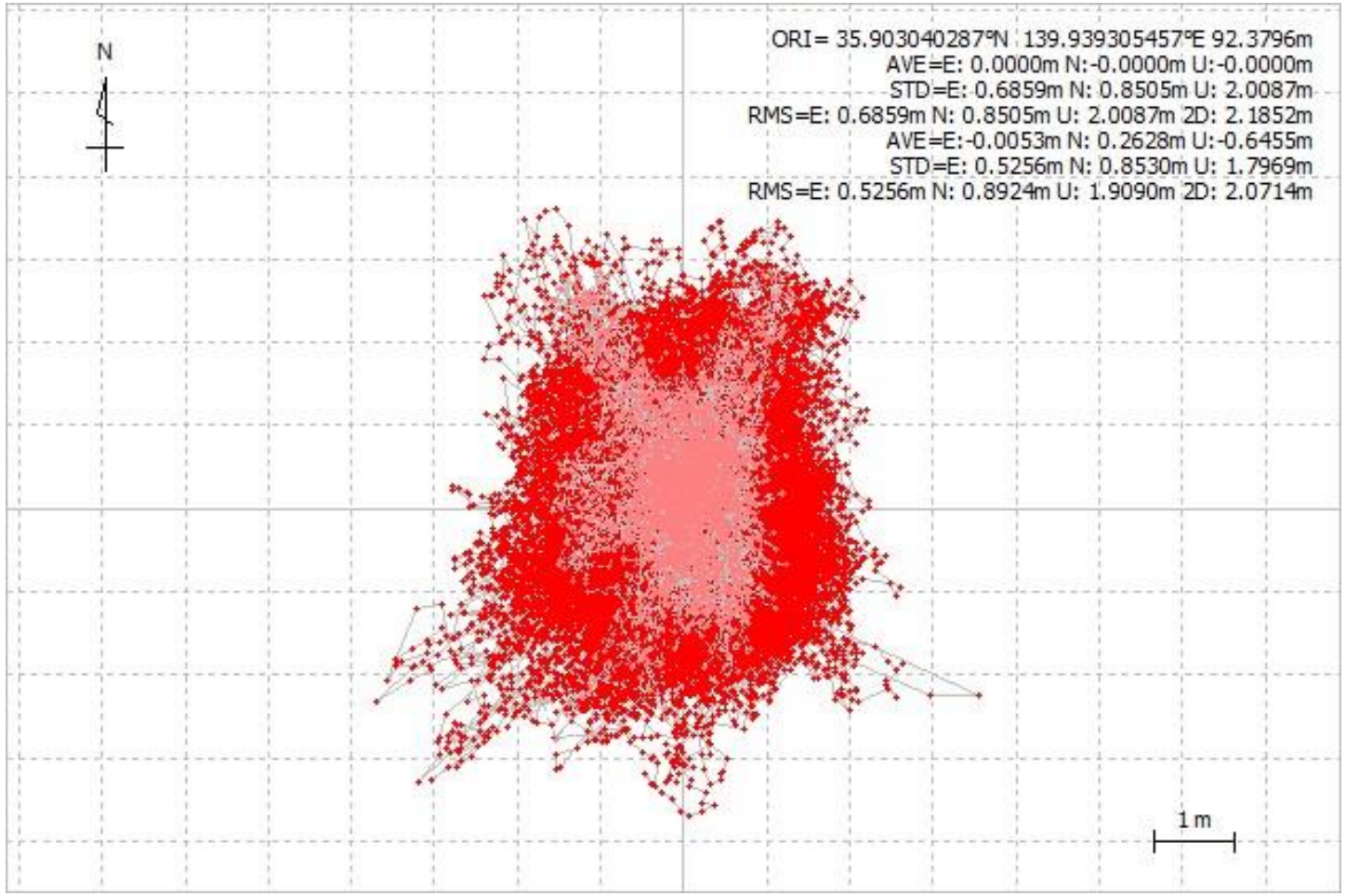
Type of receivers – Trimble Net R9 and U-blox M8T

Software _ RTKLIB 2.43 b33

Processing types

- SPP (single point positioning)
- DGPS/DGNSS (Differential GPS)
- RTK (Real time kinematic)

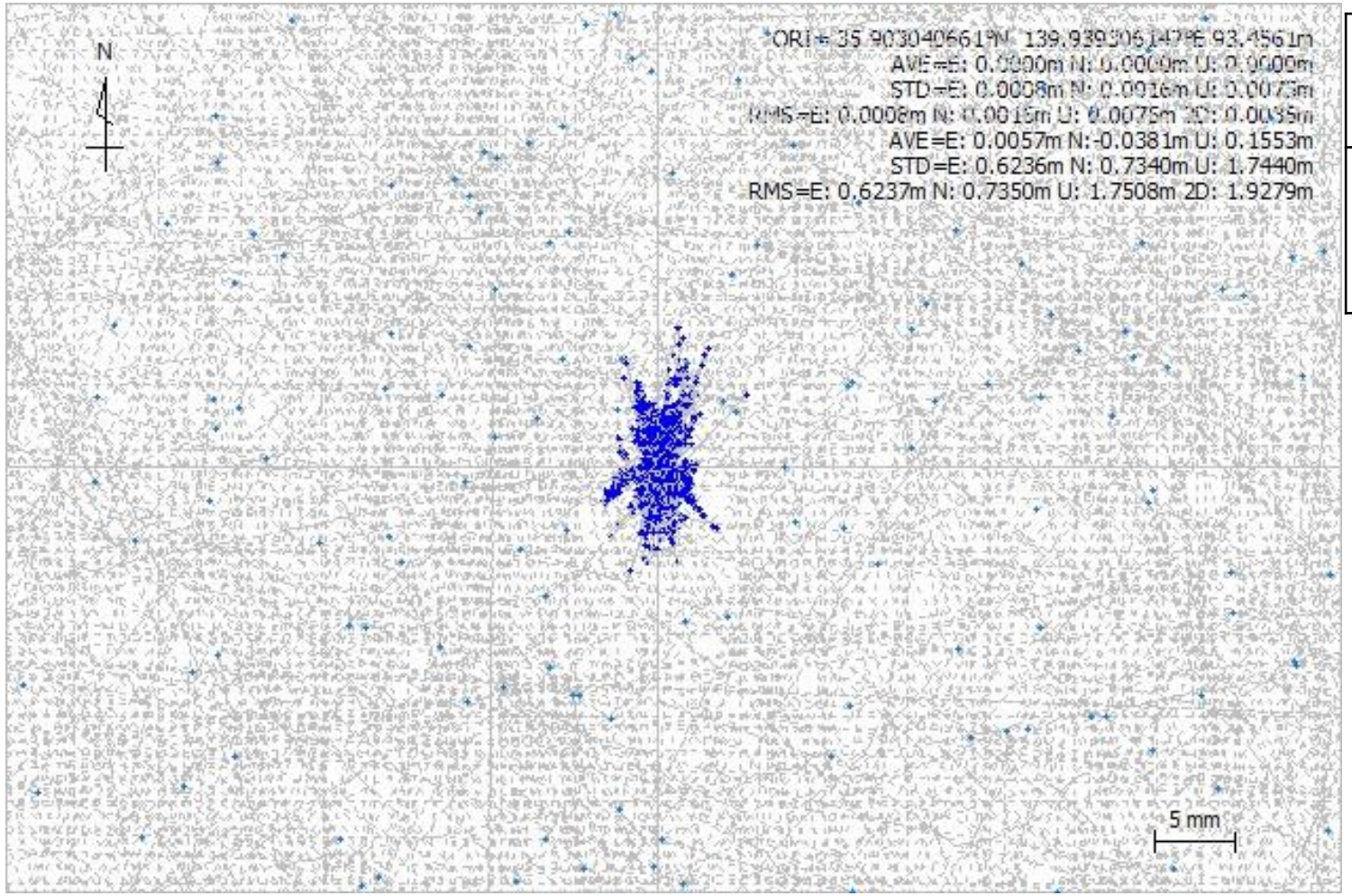
Results_SPP



	Types of receivers	ex (m)	ey (m)	ez (m)
SPP	M8T	-0.6933	0.5017	0.6685
	NetR9	-1.2148	0.9334	0.8342

	Types of receivers	Std.x	Std.y	Std.z
SPP	M8T	0.6859	0.8505	2.0087
	NetR9	0.5256	0.8530	1.7969

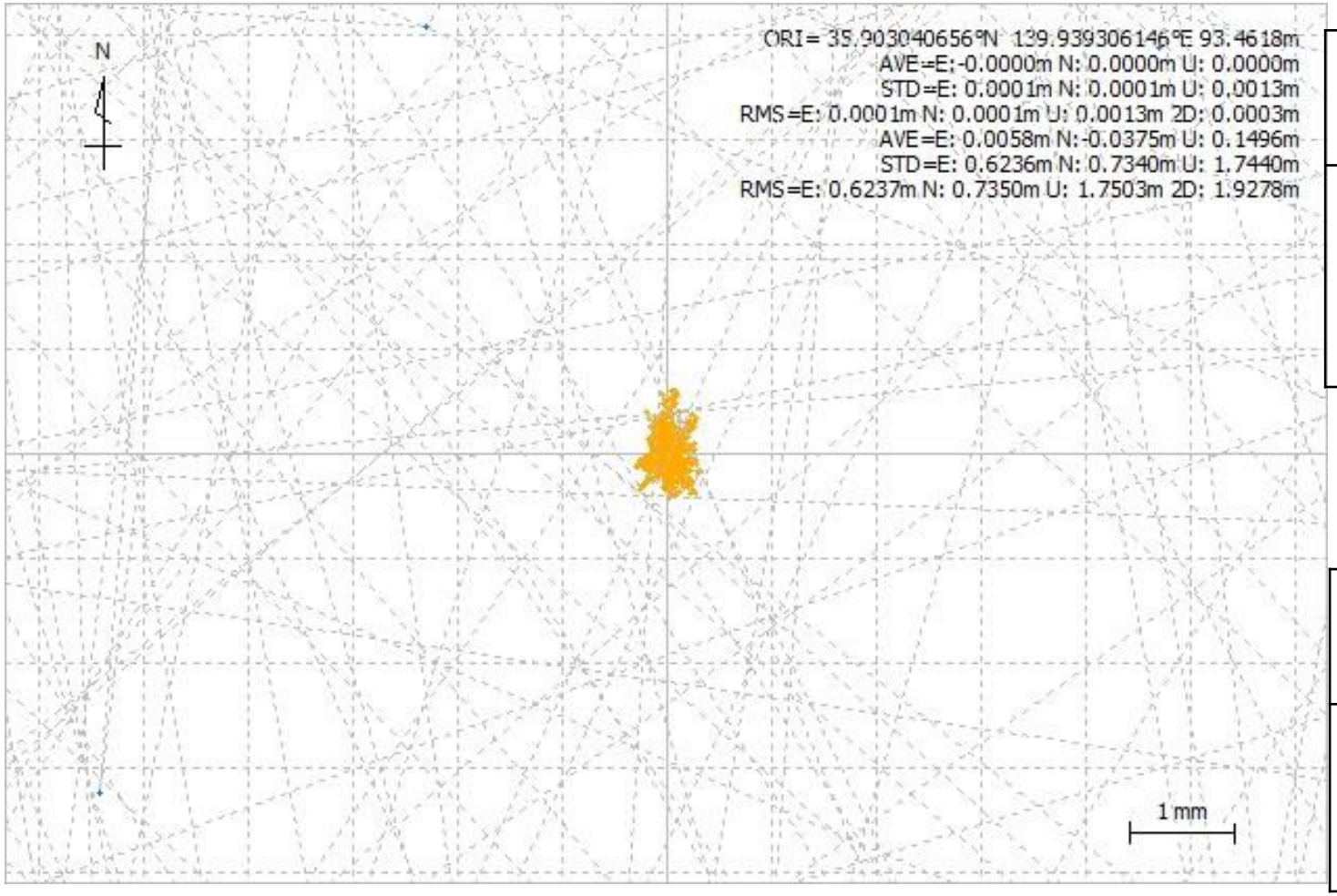
Results_DGPS



	Types of receivers	ex (m)	ey (m)	ez (m)
DGPS	M8T	0.1125	-0.0871	-0.0566
	NetR9	-0.0046	0.0039	0.0036

	Types of receivers	Std.x	Std.y	Std.z
DGPS	M8T	0.6236	0.7340	1.7440
	NetR9	0.0008	0.0016	0.0075

Results_RTK



	Types of receivers	ex (m)	ey (m)	ez (m)
RTK	M8T	0.1106	-0.0864	-0.0561
	NetR9	-0.0008	0.0006	0.0007

	Types of receivers	Std.x	Std.y	Std.z
RTK	M8T	0.6236	0.7340	1.7440
	NetR9	0.0001	0.0001	0.0013

Summary

- In SPP, Data results between two receivers are not much different
- But results in DGPS and RTK, NetR9 receiver generates higher accuracy, less errors, less SD than M8T
- Standard (code based) and Precise positioning (carrier based)
  - Cost (low / high)
  - Multiple GNSS (Beido or Glonass / all)
  - Multiple Frequency (L1 only / all)
  - Number of channel (Less / more)
  - Accuracy of fixed position (meter/ mm)

  However,
  - Short baseline + open sky (Almost perfect/ perfect)

Thank you